# 2. Summary of Results

### GSM 850 MHz

The data of HSTNH-F606 from the SAR report of FCC ID: B94HHF606.

| Mode | Position | Distance (mm) | CH | Freq. (MHz) | Max. Rated Avg. Power + Max. Tolerance (dBm) | Measured Avg. Power (dBm) | Scaling | Averaged SAR over 1g (W/kg) | | Plot page |
|---|---|---|---|---|---|---|---|---|---|---|
| | | | | | | | | Measured | Reported | |
| GSM850 (Head) | Re Cheek | - | 128 | 824.2 | 33.50 | 31.62 | 154.17% | 0.203 | 0.313 | - |
| | Re Cheek | - | 190 | 836.6 | 33.50 | 31.69 | 151.71% | 0.237 | 0.360 | 210 |
| | Re Cheek | - | 251 | 848.8 | 33.50 | 31.72 | 150.66% | 0.201 | 0.303 | - |
| | Re Tilt | - | 251 | 848.8 | 33.50 | 31.72 | 150.66% | 0.126 | 0.190 | - |
| | Le Cheek | - | 251 | 848.8 | 33.50 | 31.72 | 150.66% | 0.161 | 0.243 | - |
| | Le Tilt | - | 251 | 848.8 | 33.50 | 31.72 | 150.66% | 0.099 | 0.149 | - |
| GSM850 (Body-Worn) | Front side | 10 | 128 | 824.2 | 33.50 | 31.62 | 154.17% | 0.313 | 0.483 | - |
| | Back side | 10 | 190 | 836.6 | 33.50 | 31.69 | 151.71% | 0.369 | 0.560 | 211 |
| | Back side | 10 | 251 | 848.8 | 33.50 | 31.72 | 150.66% | 0.322 | 0.485 | - |
| | Back side | 10 | 251 | 848.8 | 33.50 | 31.72 | 150.66% | 0.280 | 0.422 | - |
| GPRS850 (Hotspot) (1Dn4UP) | Front side | 10 | 128 | 824.2 | 27.50 | 26.59 | 123.31% | 0.340 | 0.419 | - |
| | Front side | 10 | 190 | 836.6 | 27.50 | 26.66 | 121.34% | 0.416 | 0.505 | - |
| | Front side | 10 | 251 | 848.8 | 27.50 | 26.65 | 121.62% | 0.505 | 0.614 | 212 |
| | Back side | 10 | 190 | 836.6 | 27.50 | 26.66 | 121.34% | 0.371 | 0.450 | - |
| | Bottom side | 10 | 190 | 836.6 | 27.50 | 26.66 | 121.34% | 0.152 | 0.184 | - |
| | Right side | 10 | 190 | 836.6 | 27.50 | 26.66 | 121.34% | 0.256 | 0.311 | - |

Tested HSTNH-F606V SAR at the worst case position.

| Mode | Position | Distance (mm) | CH | Freq. (MHz) | Max. Rated Avg. Power + Max. Tolerance (dBm) | Measured Avg. Power (dBm) | Scaling | Averaged SAR over 1g (W/kg) | | Plot page |
|---|---|---|---|---|---|---|---|---|---|---|
| | | | | | | | | Measured | Reported | |
| GSM850 (Head) | Re Cheek | - | 190 | 836.6 | 33.50 | 31.69 | 151.71% | 0.229 | 0.347 | - |
| GSM850 (Body-Worn) | Back side | 10 | 190 | 836.6 | 33.50 | 31.69 | 151.71% | 0.356 | 0.540 | - |
| GPRS850 (Hotspot) (1Dn4UP) | Front side | 10 | 251 | 848.8 | 27.50 | 26.65 | 121.62% | 0.497 | 0.604 | - |


SGS Taiwan Ltd. 台灣檢驗科技股份有限公司
No.134,Wu Kung Road, New Taipei Industrial Park, Wuku District, New Taipei City, Taiwan 24803/新北市五股區新北產業園區五工路134號
t (886-2) 2299-3279 f (886-2) 2298-0488 www.tw.sgs.com
Member of SGS Group

**GSM 1900 MHz**

The data of HSTNH-F606 from the SAR report of FCC ID: B94HHF606.

| Mode | Position | Distance (mm) | CH | Freq. (MHz) | Max. Rated Avg. Power + Max. Tolerance (dBm) | Measured Avg. Power (dBm) | Scaling | Averaged SAR over 1g (W/kg) | | Plot page |
|---|---|---|---|---|---|---|---|---|---|---|
| | | | | | | | | Measured | Reported | |
| GSM1900 (Head) | Re Cheek | - | 512 | 1850.2 | 30.50 | 29.30 | 131.83% | 0.284 | 0.374 | - |
| | Re Cheek | - | 661 | 1880 | 30.50 | 29.53 | 125.03% | 0.297 | 0.371 | - |
| | Re Cheek | - | 810 | 1909.8 | 30.50 | 29.78 | 118.03% | 0.336 | 0.397 | 213 |
| | Re Tilt | - | 810 | 1909.8 | 30.50 | 29.78 | 118.03% | 0.074 | 0.087 | - |
| | Le Cheek | - | 810 | 1909.8 | 30.50 | 29.78 | 118.03% | 0.169 | 0.199 | - |
| | Le Tilt | - | 810 | 1909.8 | 30.50 | 29.78 | 118.03% | 0.088 | 0.104 | - |
| GSM1900 (Body-Worn) | Front side | 10 | 810 | 1909.8 | 30.50 | 29.78 | 118.03% | 0.442 | 0.522 | - |
| | Back side | 10 | 512 | 1850.2 | 30.50 | 29.30 | 131.83% | 0.457 | 0.602 | - |
| | Back side | 10 | 661 | 1880 | 30.50 | 29.53 | 125.03% | 0.469 | 0.586 | - |
| | Back side | 10 | 810 | 1909.8 | 30.50 | 29.78 | 118.03% | 0.482 | 0.569 | 214 |
| GPRS1900 (Hotspot) (1Dn3UP) | Front side | 10 | 810 | 1909.8 | 26.50 | 25.74 | 119.12% | 0.482 | 0.574 | - |
| | Back side | 10 | 512 | 1850.2 | 26.50 | 25.73 | 119.40% | 0.414 | 0.494 | - |
| | Back side | 10 | 661 | 1880 | 26.50 | 25.22 | 134.28% | 0.419 | 0.563 | - |
| | Back side | 10 | 810 | 1909.8 | 26.50 | 25.74 | 119.12% | 0.582 | 0.693 | 215 |
| | Bottom side | 10 | 810 | 1909.8 | 26.50 | 25.74 | 119.12% | 0.257 | 0.306 | - |
| | Right side | 10 | 810 | 1909.8 | 26.50 | 25.74 | 119.12% | 0.201 | 0.239 | - |

Tested HSTNH-F606V SAR at the worst case position.

| Mode | Position | Distance (mm) | CH | Freq. (MHz) | Max. Rated Avg. Power + Max. Tolerance (dBm) | Measured Avg. Power (dBm) | Scaling | Averaged SAR over 1g (W/kg) | | Plot page |
|---|---|---|---|---|---|---|---|---|---|---|
| | | | | | | | | Measured | Reported | |
| GSM1900 (Head) | Re Cheek | - | 810 | 1909.8 | 30.50 | 29.78 | 118.03% | 0.184 | 0.217 | - |
| GSM1900 (Body-Worn) | Back side | 10 | 512 | 1850.2 | 30.50 | 29.30 | 131.83% | 0.390 | 0.514 | - |
| GPRS1900 (Hotspot) (1Dn3UP) | Back side | 10 | 810 | 1909.8 | 26.50 | 25.74 | 119.12% | 0.428 | 0.510 | - |

## WCDMA Band II

The data of HSTNH-F606 from the SAR report of FCC ID: B94HHF606.

| Mode | Position | Distance (mm) | CH | Freq. (MHz) | Max. Rated Avg. Power + Max. Tolerance (dBm) | Measured Avg. Power (dBm) | Scaling | Averaged SAR over 1g (W/kg) | | Plot page |
|---|---|---|---|---|---|---|---|---|---|---|
| | | | | | | | | Measured | Reported | |
| R99 (Head) | RE Cheek | - | 9262 | 1852.4 | 24 | 23.45 | 113.50% | 0.600 | 0.681 | - |
| | RE Cheek | - | 9400 | 1880 | 24 | 23.43 | 114.02% | 0.590 | 0.673 | - |
| | RE Cheek | - | 9538 | 1907.6 | 24 | 23.51 | 111.94% | 0.626 | 0.701 | 216 |
| | RE Tilt | - | 9538 | 1907.6 | 24 | 23.51 | 111.94% | 0.147 | 0.165 | - |
| | LE Cheek | - | 9538 | 1907.6 | 24 | 23.51 | 111.94% | 0.304 | 0.340 | - |
| | LE Tilt | - | 9538 | 1907.6 | 24 | 23.51 | 111.94% | 0.167 | 0.187 | - |
| Hotspot | Front side | 10 | 9262 | 1852.4 | 24 | 23.45 | 113.50% | 0.792 | 0.899 | - |
| | Front side | 10 | 9400 | 1880 | 24 | 23.43 | 114.02% | 0.779 | 0.888 | - |
| | Front side | 10 | 9538 | 1907.6 | 24 | 23.51 | 111.94% | 0.799 | 0.894 | - |
| | Back side | 10 | 9262 | 1852.4 | 24 | 23.45 | 113.50% | 0.836 | 0.949 | - |
| | Back side | 10 | 9400 | 1880 | 24 | 23.43 | 114.02% | 0.913 | 1.041 | - |
| | Back side | 10 | 9538 | 1907.6 | 24 | 23.51 | 111.94% | 0.925 | 1.035 | 217 |
| | Back side* | 10 | 9538 | 1907.6 | 24 | 23.51 | 111.94% | 0.875 | 0.980 | - |
| | Bottom side | 10 | 9538 | 1907.6 | 24 | 23.51 | 111.94% | 0.428 | 0.479 | - |
| | Right side | 10 | 9538 | 1907.6 | 24 | 23.51 | 111.94% | 0.362 | 0.405 | - |

* - repeated at the highest SAR measurement according to the KDB865664D01v01r04

Tested HSTNH-F606V SAR at the worst case position.

| Mode | Position | Distance (mm) | CH | Freq. (MHz) | Max. Rated Avg. Power + Max. Tolerance (dBm) | Measured Avg. Power (dBm) | Scaling | Averaged SAR over 1g (W/kg) | | Plot page |
|---|---|---|---|---|---|---|---|---|---|---|
| | | | | | | | | Measured | Reported | |
| R99 (Head) | RE Cheek | - | 9538 | 1907.6 | 24 | 23.51 | 111.94% | 0.381 | 0.427 | - |
| Hotspot | Back side | 10 | 9400 | 1880 | 24 | 23.43 | 114.02% | 0.818 | 0.933 | - |


SGS Taiwan Ltd. No.134,Wu Kung Road, New Taipei Industrial Park, Wuku District, New Taipei City, Taiwan 24803/新北市五股區新北產業園區五工路134號
台灣檢驗科技股份有限公司 t (886-2) 2299-3279 f (886-2) 2298-0488 www.tw.sgs.com
Member of SGS Group

**WCDMA Band IV**

The data of HSTNH-F606 from the SAR report of FCC ID: B94HHF606.

| Mode | Position | Distance (mm) | CH | Freq. (MHz) | Max. Rated Avg. Power + Max. Tolerance (dBm) | Measured Avg. Power (dBm) | Scaling | Averaged SAR over 1g (W/kg) | | Plot page |
|---|---|---|---|---|---|---|---|---|---|---|
| | | | | | | | | Measured | Reported | |
| R99 (Head) | RE Cheek | - | 1312 | 1712.4 | 24 | 23.49 | 112.46% | 0.576 | 0.648 | - |
| | RE Cheek | - | 1412 | 1732.4 | 24 | 23.24 | 119.12% | 0.566 | 0.674 | - |
| | RE Cheek | - | 1513 | 1752.6 | 24 | 23.28 | 118.03% | 0.613 | 0.724 | 218 |
| | RE Tilt | - | 1312 | 1712.4 | 24 | 23.49 | 112.46% | 0.140 | 0.157 | - |
| | LE Cheek | - | 1312 | 1712.4 | 24 | 23.49 | 112.46% | 0.284 | 0.319 | - |
| | LE Tilt | - | 1312 | 1712.4 | 24 | 23.49 | 112.46% | 0.167 | 0.188 | - |
| Hotspot | Front side | 10 | 1312 | 1712.4 | 24 | 23.49 | 112.46% | 0.770 | 0.866 | - |
| | Front side | 10 | 1412 | 1732.4 | 24 | 23.24 | 119.12% | 0.704 | 0.839 | - |
| | Front side | 10 | 1513 | 1752.6 | 24 | 23.28 | 118.03% | 0.708 | 0.836 | - |
| | Back side | 10 | 1312 | 1712.4 | 24 | 23.49 | 112.46% | 0.811 | 0.912 | 219 |
| | Back side* | 10 | 1312 | 1712.4 | 24 | 23.49 | 112.46% | 0.810 | 0.911 | - |
| | Back side | 10 | 1412 | 1732.4 | 24 | 23.24 | 119.12% | 0.770 | 0.917 | - |
| | Back side | 10 | 1513 | 1752.6 | 24 | 23.28 | 118.03% | 0.771 | 0.910 | - |
| | Bottom side | 10 | 1312 | 1712.4 | 24 | 23.49 | 112.46% | 0.438 | 0.493 | - |
| | Right side | 10 | 1312 | 1712.4 | 24 | 23.49 | 112.46% | 0.296 | 0.333 | - |

* - repeated at the highest SAR measurement according to the KDB865664D01v01r04

Tested HSTNH-F606V SAR at the worst case position.

| Mode | Position | Distance (mm) | CH | Freq. (MHz) | Max. Rated Avg. Power + Max. Tolerance (dBm) | Measured Avg. Power (dBm) | Scaling | Averaged SAR over 1g (W/kg) | | Plot page |
|---|---|---|---|---|---|---|---|---|---|---|
| | | | | | | | | Measured | Reported | |
| R99 (Head) | RE Cheek | - | 1513 | 1752.6 | 24 | 23.28 | 118.03% | 0.362 | 0.427 | - |
| Hotspot | Back side | 10 | 1412 | 1732.4 | 24 | 23.24 | 119.12% | 0.753 | 0.897 | - |

## WCDMA Band V

The data of HSTNH-F606 from the SAR report of FCC ID: B94HHF606.

| Mode | Position | Distance (mm) | CH | Freq. (MHz) | Max. Rated Avg. Power + Max. Tolerance (dBm) | Measured Avg. Power (dBm) | Scaling | Averaged SAR over 1g (W/kg) | | Plot page |
|---|---|---|---|---|---|---|---|---|---|---|
| | | | | | | | | Measured | Reported | |
| R99 (Head) | RE Cheek | - | 4132 | 826.4 | 24.5 | 24.05 | 110.92% | 0.313 | 0.347 | 220 |
| | RE Cheek | - | 4183 | 836.6 | 24.5 | 23.87 | 115.61% | 0.311 | 0.360 | - |
| | RE Cheek | - | 4233 | 846.6 | 24.5 | 24.11 | 109.40% | 0.243 | 0.266 | - |
| | RE Tilt | - | 4233 | 846.6 | 24.5 | 24.11 | 109.40% | 0.165 | 0.181 | - |
| | LE Cheek | - | 4233 | 846.6 | 24.5 | 24.11 | 109.40% | 0.211 | 0.231 | - |
| | LE Tilt | - | 4233 | 846.6 | 24.5 | 24.11 | 109.40% | 0.121 | 0.132 | - |
| Hotspot | Front side | 10 | 4132 | 826.4 | 24.5 | 24.05 | 110.92% | 0.544 | 0.603 | - |
| | Front side | 10 | 4183 | 836.6 | 24.5 | 23.87 | 115.61% | 0.550 | 0.636 | - |
| | Front side | 10 | 4233 | 846.6 | 24.5 | 24.11 | 109.40% | 0.583 | 0.638 | 221 |
| | Back side | 10 | 4233 | 846.6 | 24.5 | 24.11 | 109.40% | 0.467 | 0.511 | - |
| | Bottom side | 10 | 4233 | 846.6 | 24.5 | 24.11 | 109.40% | 0.276 | 0.302 | - |
| | Right side | 10 | 4233 | 846.6 | 24.5 | 24.11 | 109.40% | 0.381 | 0.417 | - |

Tested HSTNH-F606V SAR at the worst case position.

| Mode | Position | Distance (mm) | CH | Freq. (MHz) | Max. Rated Avg. Power + Max. Tolerance (dBm) | Measured Avg. Power (dBm) | Scaling | Averaged SAR over 1g (W/kg) | | Plot page |
|---|---|---|---|---|---|---|---|---|---|---|
| | | | | | | | | Measured | Reported | |
| R99 (Head) | RE Cheek | - | 4183 | 836.6 | 24.5 | 23.87 | 115.61% | 0.301 | 0.348 | - |
| Hotspot | Front side | 10 | 4233 | 846.6 | 24.5 | 24.11 | 109.40% | 0.520 | 0.569 | - |

## LTE FDD Band II

The data of HSTNH-F606 from the SAR report of FCC ID: B94HHF606.

| Mode | Bandwidth (MHz) | Modulation | RB Size | RB start | Position | Distance (mm) | CH | Freq. (MHz) | Max. Rated Avg. Power + Max. Tolerance (dBm) | Measured Avg. Power (dBm) | Scaling | Averaged SAR over 1g (W/kg) | | Plot page |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | | | | | | | | | | Measured | Reported | |
| LTE Band 2 (Hotspot) | 20MHz | QPSK | 1 RB | 0 | Front side | 10 | 18700 | 1860 | 24 | 23.89 | 102.57% | 0.801 | 0.822 | - |
| | | | | | Front side | 10 | 18900 | 1880 | 24 | 23.69 | 107.40% | 0.798 | 0.857 | - |
| | | | | | Front side | 10 | 19100 | 1900 | 24 | 23.61 | 109.40% | 0.848 | 0.928 | 222 |
| | | | | | Front side* | 10 | 19100 | 1900 | 24 | 23.61 | 109.40% | 0.845 | 0.924 | - |
| | | | | | Back side | 10 | 18700 | 1860 | 24 | 23.89 | 102.57% | 0.784 | 0.804 | - |
| | | | | | Back side | 10 | 18900 | 1880 | 24 | 23.69 | 107.40% | 0.778 | 0.836 | - |
| | | | | | Back side | 10 | 19100 | 1900 | 24 | 23.61 | 109.40% | 0.812 | 0.888 | - |
| | | | | | Bottom side | 10 | 18700 | 1860 | 24 | 23.89 | 102.57% | 0.424 | 0.435 | - |
| | | | | | Right side | 10 | 18700 | 1860 | 24 | 23.89 | 102.57% | 0.333 | 0.342 | - |
| | | | 50 RB | 0 | Front side | 10 | 18900 | 1880 | 23 | 22.29 | 117.76% | 0.580 | 0.683 | - |
| | | | | | Back side | 10 | 18900 | 1880 | 23 | 22.29 | 117.76% | 0.617 | 0.727 | - |
| | | | | | Bottom side | 10 | 18900 | 1880 | 23 | 22.29 | 117.76% | 0.313 | 0.369 | - |
| | | | | | Right side | 10 | 18900 | 1880 | 23 | 22.29 | 117.76% | 0.223 | 0.263 | - |
| | | | 100 RB | | Front side | 10 | 18700 | 1860 | 23 | 22.24 | 119.12% | 0.554 | 0.660 | - |
| | | | | | Back side | 10 | 18700 | 1860 | 23 | 22.24 | 119.12% | 0.513 | 0.611 | - |
| | | | | | Bottom side | 10 | 18700 | 1860 | 23 | 22.24 | 119.12% | 0.302 | 0.360 | - |
| | | | | | Right side | 10 | 18700 | 1860 | 23 | 22.24 | 119.12% | 0.204 | 0.243 | - |

* - repeated at the highest SAR measurement according to the FCC KDB865664D01v01r04

Tested HSTNH-F606V SAR at the worst case position.

| Mode | Bandwidth (MHz) | Modulation | RB Size | RB start | Position | Distance (mm) | CH | Freq. (MHz) | Max. Rated Avg. Power + Max. Tolerance (dBm) | Measured Avg. Power (dBm) | Scaling | Averaged SAR over 1g (W/kg) | | Plot page |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | | | | | | | | | | Measured | Reported | |
| LTE Band 2 (Hotspot) | 20MHz | QPSK | 1 RB | 0 | Front side | 10 | 19100 | 1900 | 24 | 23.61 | 109.40% | 0.791 | 0.865 | - |

## LTE FDD Band IV

The data of HSTNH-F606 from the SAR report of FCC ID: B94HHF606.

| Mode | Bandwidth (MHz) | Modulation | RB Size | RB start | Position | Distance (mm) | CH | Freq. (MHz) | Max. Rated Avg. Power + Max. Tolerance (dBm) | Measured Avg. Power (dBm) | Scaling | Averaged SAR over 1g (W/kg) | | Plot page |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | | | | | | | | | | Measured | Reported | |
| LTE Band 4 (Hotspot) | 20MHz | QPSK | 1 RB | 0 | Front side | 10 | 20050 | 1720 | 24 | 23.55 | 110.92% | 0.727 | 0.806 | - |
| | | | | | Front side | 10 | 20175 | 1732.5 | 24 | 23.33 | 116.68% | 0.639 | 0.746 | - |
| | | | | | Front side | 10 | 20300 | 1745 | 24 | 23.21 | 119.95% | 0.644 | 0.772 | - |
| | | | | | Back side | 10 | 20050 | 1720 | 24 | 23.55 | 110.92% | 0.924 | 1.025 | 223 |
| | | | | | Back side* | 10 | 20050 | 1720 | 24 | 23.55 | 110.92% | 0.904 | 1.003 | - |
| | | | | | Back side | 10 | 20175 | 1732.5 | 24 | 23.33 | 116.68% | 0.741 | 0.865 | - |
| | | | | | Back side | 10 | 20300 | 1745 | 24 | 23.21 | 119.95% | 0.745 | 0.894 | - |
| | | | | | Bottom side | 10 | 20050 | 1720 | 24 | 23.55 | 110.92% | 0.412 | 0.457 | - |
| | | | | | Right side | 10 | 20050 | 1720 | 24 | 23.55 | 110.92% | 0.275 | 0.305 | - |
| | | | 50 RB | 0 | Front side | 10 | 20050 | 1720 | 23 | 21.90 | 128.82% | 0.517 | 0.666 | - |
| | | | | | Back side | 10 | 20050 | 1720 | 23 | 21.90 | 128.82% | 0.676 | 0.871 | - |
| | | | | | Back side | 10 | 20175 | 1732.5 | 23 | 21.88 | 129.42% | 0.621 | 0.804 | - |
| | | | | | Back side | 10 | 20300 | 1745 | 23 | 21.74 | 133.66% | 0.624 | 0.834 | - |
| | | | | | Bottom side | 10 | 20050 | 1720 | 23 | 21.90 | 128.82% | 0.293 | 0.377 | - |
| | | | | | Right side | 10 | 20050 | 1720 | 23 | 21.90 | 128.82% | 0.196 | 0.252 | - |
| | | | 100 RB | | Front side | 10 | 20050 | 1720 | 23 | 21.76 | 133.05% | 0.490 | 0.652 | - |
| | | | | | Back side | 10 | 20050 | 1720 | 23 | 21.76 | 133.05% | 0.513 | 0.683 | - |
| | | | | | Bottom side | 10 | 20050 | 1720 | 23 | 21.76 | 133.05% | 0.275 | 0.366 | - |
| | | | | | Right side | 10 | 20050 | 1720 | 23 | 21.76 | 133.05% | 0.184 | 0.245 | - |

* - repeated at the highest SAR measurement according to the FCC KDB865664D01v01r04

Tested HSTNH-F606V SAR at the worst case position.

| Mode | Bandwidth (MHz) | Modulation | RB Size | RB start | Position | Distance (mm) | CH | Freq. (MHz) | Max. Rated Avg. Power + Max. Tolerance (dBm) | Measured Avg. Power (dBm) | Scaling | Averaged SAR over 1g (W/kg) | | Plot page |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | | | | | | | | | | Measured | Reported | |
| LTE Band 4 (Hotspot) | 20MHz | QPSK | 1 RB | 0 | Back side | 10 | 20050 | 1720 | 24 | 23.55 | 110.92% | 1.010 | 1.120 | 224 |


SGS Taiwan Ltd. No.134,Wu Kung Road, New Taipei Industrial Park, Wuku District, New Taipei City, Taiwan 24803/新北市五股區新北產業園區五工路134號
台灣檢驗科技股份有限公司 t (886-2) 2299-3279 f (886-2) 2298-0488 www.tw.sgs.com
Member of SGS Group

## LTE FDD Band V

The data of HSTNH-F606 from the SAR report of FCC ID: B94HHF606.

| Mode | Bandwidth (MHz) | Modulation | RB Size | RB start | Position | Distance (mm) | CH | Freq. (MHz) | Max. Rated Avg. Power + Max. Tolerance (dBm) | Measured Avg. Power (dBm) | Scaling | Averaged SAR over 1g (W/kg) | | Plot page |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | | | | | | | | | | Measured | Reported | |
| LTE Band 5 (Hotspot) | 10MHz | QPSK | 1 RB | 0 | Front side | 10 | 20600 | 844 | 24.5 | 23.45 | 127.35% | 0.504 | 0.642 | 225 |
| | | | | | Back side | 10 | 20600 | 844 | 24.5 | 23.45 | 127.35% | 0.406 | 0.517 | - |
| | | | | | Bottom side | 10 | 20600 | 844 | 24.5 | 23.45 | 127.35% | 0.316 | 0.402 | - |
| | | | | | Right side | 10 | 20600 | 844 | 24.5 | 23.45 | 127.35% | 0.302 | 0.385 | - |
| | | | | 25 | Front side | 10 | 20450 | 829 | 24.5 | 23.26 | 133.05% | 0.447 | 0.595 | - |
| | | | | | Front side | 10 | 20525 | 836.5 | 24.5 | 23.36 | 130.02% | 0.500 | 0.650 | - |
| | | | 25 RB | 25 | Front side | 10 | 20600 | 844 | 23.5 | 22.51 | 125.60% | 0.408 | 0.512 | - |
| | | | | | Back side | 10 | 20600 | 844 | 23.5 | 22.51 | 125.60% | 0.330 | 0.414 | - |
| | | | | | Bottom side | 10 | 20600 | 844 | 23.5 | 22.51 | 125.60% | 0.280 | 0.352 | - |
| | | | | | Right side | 10 | 20600 | 844 | 23.5 | 22.51 | 125.60% | 0.245 | 0.308 | - |
| | | | 50 RB | | Front side | 10 | 20600 | 844 | 23.5 | 22.31 | 131.52% | 0.403 | 0.530 | - |
| | | | | | Back side | 10 | 20600 | 844 | 23.5 | 22.31 | 131.52% | 0.325 | 0.427 | - |
| | | | | | Bottom side | 10 | 20600 | 844 | 23.5 | 22.31 | 131.52% | 0.264 | 0.347 | - |
| | | | | | Right side | 10 | 20600 | 844 | 23.5 | 22.31 | 131.52% | 0.241 | 0.317 | - |

Tested HSTNH-F606V SAR at the worst case position.

| Mode | Bandwidth (MHz) | Modulation | RB Size | RB start | Position | Distance (mm) | CH | Freq. (MHz) | Max. Rated Avg. Power + Max. Tolerance (dBm) | Measured Avg. Power (dBm) | Scaling | Averaged SAR over 1g (W/kg) | | Plot page |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | | | | | | | | | | Measured | Reported | |
| LTE Band 5 (Hotspot) | 10MHz | QPSK | 1 RB | 0 | Front side | 10 | 20600 | 844 | 24.5 | 23.45 | 127.35% | 0.501 | 0.638 | - |


SGS Taiwan Ltd. No.134,Wu Kung Road, New Taipei Industrial Park, Wuku District, New Taipei City, Taiwan 24803/新北市五股區新北產業園區五工路134號
台灣檢驗科技股份有限公司 t (886-2) 2299-3279 f (886-2) 2298-0488 www.tw.sgs.com
Member of SGS Group

## LTE FDD Band VII

The data of HSTNH-F606 from the SAR report of FCC ID: B94HHF606.

| Mode | Bandwidth (MHz) | Modulation | RB Size | RB start | Position | Distance (mm) | CH | Freq. (MHz) | Max. Rated Avg. Power + Max. Tolerance (dBm) | Measured Avg. Power (dBm) | Scaling | Averaged SAR over 1g (W/kg) | | Plot page |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | | | | | | | | | | Measured | Reported | |
| LTE Band 7 (Hotspot) | 20MHz | QPSK | 1 RB | 0 | Front side | 10 | 20850 | 2510 | 23 | 22.67 | 107.89% | 0.969 | 1.045 | 226 |
| | | | | | Front side* | 10 | 20850 | 2510 | 23 | 22.67 | 107.89% | 0.966 | 1.042 | - |
| | | | | | Front side | 10 | 21100 | 2535 | 23 | 22.62 | 109.14% | 0.878 | 0.958 | - |
| | | | | | Front side | 10 | 21350 | 2560 | 23 | 22.52 | 111.69% | 0.852 | 0.952 | - |
| | | | | | Back side | 10 | 20850 | 2510 | 23 | 22.67 | 107.89% | 0.760 | 0.820 | - |
| | | | | | Back side | 10 | 21100 | 2535 | 23 | 22.62 | 109.14% | 0.702 | 0.766 | - |
| | | | | | Back side | 10 | 21350 | 2560 | 23 | 22.52 | 111.69% | 0.630 | 0.704 | - |
| | | | | | Bottom side | 10 | 20850 | 2510 | 23 | 22.67 | 107.89% | 0.394 | 0.425 | - |
| | | | | | Left side | 10 | 20850 | 2510 | 23 | 22.67 | 107.89% | 0.601 | 0.648 | - |
| | | | 50 RB | 0 | Front side | 10 | 20850 | 2510 | 22 | 21.56 | 110.66% | 0.692 | 0.766 | - |
| | | | | | Back side | 10 | 20850 | 2510 | 22 | 21.56 | 110.66% | 0.630 | 0.697 | - |
| | | | | | Bottom side | 10 | 20850 | 2510 | 22 | 21.56 | 110.66% | 0.297 | 0.329 | - |
| | | | | | Left side | 10 | 20850 | 2510 | 22 | 21.56 | 110.66% | 0.426 | 0.471 | - |
| | | | 100 RB | | Front side | 10 | 20850 | 2510 | 22 | 21.52 | 111.69% | 0.683 | 0.763 | - |
| | | | | | Back side | 10 | 20850 | 2510 | 22 | 21.52 | 111.69% | 0.628 | 0.701 | - |
| | | | | | Bottom side | 10 | 20850 | 2510 | 22 | 21.52 | 111.69% | 0.302 | 0.337 | - |
| | | | | | Left side | 10 | 20850 | 2510 | 22 | 21.52 | 111.69% | 0.425 | 0.475 | - |

* - repeated at the highest SAR measurement according to the FCC KDB865664D01v01r04

Tested HSTNH-F606V SAR at the worst case position.

| Mode | Bandwidth (MHz) | Modulation | RB Size | RB start | Position | Distance (mm) | CH | Freq. (MHz) | Max. Rated Avg. Power + Max. Tolerance (dBm) | Measured Avg. Power (dBm) | Scaling | Averaged SAR over 1g (W/kg) | | Plot page |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | | | | | | | | | | Measured | Reported | |
| LTE Band 7 (Hotspot) | 20MHz | QPSK | 1 RB | 0 | Front side | 10 | 20850 | 2510 | 23 | 22.67 | 107.89% | 0.908 | 0.980 | - |

## LTE FDD Band XII

The data of HSTNH-F606 from the SAR report of FCC ID: B94HHF606.

| Mode | Bandwidth (MHz) | Modulation | RB Size | RB start | Position | Distance (mm) | CH | Freq. (MHz) | Max. Rated Avg. Power + Max. Tolerance (dBm) | Measured Avg. Power (dBm) | Scaling | Averaged SAR over 1g (W/kg) | | Plot page |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | | | | | | | | | | Measured | Reported | |
| LTE Band 12 (Hotspot) | 10MHz | QPSK | 1 RB | 49 | Front side | 10 | 23130 | 711 | 24.5 | 24.00 | 112.20% | 0.167 | 0.187 | - |
| | | | | | Back side | 10 | 23130 | 711 | 24.5 | 24.00 | 112.20% | 0.122 | 0.137 | - |
| | | | | | Bottom side | 10 | 23060 | 704 | 24.5 | 23.87 | 115.61% | 0.219 | 0.253 | - |
| | | | | | Bottom side | 10 | 23095 | 707.5 | 24.5 | 23.89 | 115.08% | 0.229 | 0.264 | - |
| | | | | | Bottom side | 10 | 23130 | 711 | 24.5 | 24.00 | 112.20% | 0.242 | 0.272 | 227 |
| | | | | | Right side | 10 | 23130 | 711 | 24.5 | 24.00 | 112.20% | 0.214 | 0.240 | - |
| | | | | | Left side | 10 | 23130 | 711 | 24.5 | 24.00 | 112.20% | 0.058 | 0.065 | - |
| | | | 25 RB | 25 | Front side | 10 | 23130 | 711 | 23.5 | 23.12 | 109.14% | 0.145 | 0.158 | - |
| | | | | | Back side | 10 | 23130 | 711 | 23.5 | 23.12 | 109.14% | 0.091 | 0.099 | - |
| | | | | | Bottom side | 10 | 23130 | 711 | 23.5 | 23.12 | 109.14% | 0.193 | 0.211 | - |
| | | | | | Right side | 10 | 23130 | 711 | 23.5 | 23.12 | 109.14% | 0.176 | 0.192 | - |
| | | | | | Left side | 10 | 23130 | 711 | 23.5 | 23.12 | 109.14% | 0.047 | 0.051 | - |
| | | | 50 RB | | Front side | 10 | 23130 | 711 | 23.5 | 23.00 | 112.20% | 0.143 | 0.160 | - |
| | | | | | Back side | 10 | 23130 | 711 | 23.5 | 23.00 | 112.20% | 0.088 | 0.099 | - |
| | | | | | Bottom side | 10 | 23130 | 711 | 23.5 | 23.00 | 112.20% | 0.185 | 0.208 | - |
| | | | | | Right side | 10 | 23130 | 711 | 23.5 | 23.00 | 112.20% | 0.172 | 0.193 | - |
| | | | | | Left side | 10 | 23130 | 711 | 23.5 | 23.00 | 112.20% | 0.047 | 0.053 | - |

Tested HSTNH-F606V SAR at the worst case position.

| Mode | Bandwidth (MHz) | Modulation | RB Size | RB start | Position | Distance (mm) | CH | Freq. (MHz) | Max. Rated Avg. Power + Max. Tolerance (dBm) | Measured Avg. Power (dBm) | Scaling | Averaged SAR over 1g (W/kg) | | Plot page |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | | | | | | | | | | Measured | Reported | |
| LTE Band 12 (Hotspot) | 10MHz | QPSK | 1 RB | 49 | Bottom side | 10 | 23130 | 711 | 24.5 | 24.00 | 112.20% | 0.242 | 0.272 | - |


SGS Taiwan Ltd. No.134,Wu Kung Road, New Taipei Industrial Park, Wuku District, New Taipei City, Taiwan 24803/新北市五股區新北產業園區五工路134號
台灣檢驗科技股份有限公司 t (886-2) 2299-3279 f (886-2) 2298-0488 www.tw.sgs.com
Member of SGS Group

## LTE FDD Band XIII

| Mode | Bandwidth (MHz) | Modulation | RB Size | RB start | Position | Distance (mm) | CH | Freq. (MHz) | Max. Rated Avg. Power + Max. Tolerance (dBm) | Measured Avg. Power (dBm) | Scaling | Averaged SAR over 1g (W/kg) | | Plot page |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | | | | | | | | | | Measured | Reported | |
| LTE Band 13 (Hotspot) | 0MHz | QPSK | 1 RB | 0 | Front side | 10 | 23230 | 782 | 25 | 23.71 | 34.59% | 0.554 | 0.746 | - |
| | | | | 25 | Front side | 10 | 23230 | 782 | 25 | 23.97 | 26.77% | 0.563 | 0.714 | 228 |
| | | | | | Back side | 10 | 23230 | 782 | 25 | 23.97 | 26.77% | 0.308 | 0.390 | - |
| | | | | | Bottom side | 10 | 23230 | 782 | 25 | 23.97 | 26.77% | 0.337 | 0.427 | - |
| | | | | | Right side | 10 | 23230 | 782 | 25 | 23.97 | 26.77% | 0.312 | 0.396 | - |
| | | | | 49 | Front side | 10 | 23230 | 782 | 25 | 23.79 | 32.13% | 0.533 | 0.704 | - |
| | | | 25 RB | 0 | Front side | 10 | 23230 | 782 | 24 | 22.60 | 38.04% | 0.426 | 0.588 | - |
| | | | | | Back side | 10 | 23230 | 782 | 24 | 22.60 | 38.04% | 0.257 | 0.355 | - |
| | | | | | Bottom side | 10 | 23230 | 782 | 24 | 22.60 | 38.04% | 0.263 | 0.363 | - |
| | | | | | Right side | 10 | 23230 | 782 | 24 | 22.60 | 38.04% | 0.246 | 0.340 | - |
| | | | 50 RB | | Front side | 10 | 23230 | 782 | 24 | 22.67 | 35.83% | 0.419 | 0.569 | - |
| | | | | | Back side | 10 | 23230 | 782 | 24 | 22.67 | 35.83% | 0.265 | 0.360 | - |
| | | | | | Bottom side | 10 | 23230 | 782 | 24 | 22.67 | 35.83% | 0.269 | 0.365 | - |
| | | | | | Right side | 10 | 23230 | 782 | 24 | 22.67 | 35.83% | 0.264 | 0.359 | - |


SGS Taiwan Ltd. No.134,Wu Kung Road, New Taipei Industrial Park, Wuku District, New Taipei City, Taiwan 24803/新北市五股區新北產業園區五工路134號
台灣檢驗科技股份有限公司 t (886-2) 2299-3279 f (886-2) 2298-0488 www.tw.sgs.com
Member of SGS Group

## LTE FDD Band XXX

The data of HSTNH-F606 from the SAR report of FCC ID: B94HHF606.

| Mode | Bandwidth (MHz) | Modulation | RB Size | RB start | Position | Distance (mm) | CH | Freq. (MHz) | Max. Rated Avg. Power + Max. Tolerance (dBm) | Measured Avg. Power (dBm) | Scaling | Averaged SAR over 1g (W/kg) | | Plot page |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | | | | | | | | | | Measured | Reported | |
| LTE Band 30 (Hotspot) | 10MHz | QPSK | 1 RB | 0 | Front side | 10 | 27710 | 2310 | 23.5 | 22.57 | 123.88% | 0.637 | 0.789 | 229 |
| | | | | | Back side | 10 | 27710 | 2310 | 23.5 | 22.57 | 123.88% | 0.624 | 0.773 | - |
| | | | | | Bottom side | 10 | 27710 | 2310 | 23.5 | 22.57 | 123.88% | 0.575 | 0.712 | - |
| | | | | | Left side | 10 | 27710 | 2310 | 23.5 | 22.57 | 123.88% | 0.451 | 0.559 | - |
| | | | | 25 | Front side | 10 | 27710 | 2310 | 23.5 | 22.41 | 128.53% | 0.604 | 0.776 | - |
| | | | | 49 | Front side | 10 | 27710 | 2310 | 23.5 | 22.37 | 129.72% | 0.597 | 0.774 | - |
| | | | 25 RB | 25 | Front side | 10 | 27710 | 2310 | 22.5 | 21.91 | 114.55% | 0.555 | 0.636 | - |
| | | | | | Back side | 10 | 27710 | 2310 | 22.5 | 21.91 | 114.55% | 0.519 | 0.595 | - |
| | | | | | Bottom side | 10 | 27710 | 2310 | 22.5 | 21.91 | 114.55% | 0.466 | 0.534 | - |
| | | | | | Left side | 10 | 27710 | 2310 | 22.5 | 21.91 | 114.55% | 0.335 | 0.384 | - |
| | | | 50 RB | | Front side | 10 | 27710 | 2310 | 22.5 | 21.53 | 125.03% | 0.551 | 0.689 | - |
| | | | | | Back side | 10 | 27710 | 2310 | 22.5 | 21.53 | 125.03% | 0.514 | 0.643 | - |
| | | | | | Bottom side | 10 | 27710 | 2310 | 22.5 | 21.53 | 125.03% | 0.468 | 0.585 | - |
| | | | | | Left side | 10 | 27710 | 2310 | 22.5 | 21.53 | 125.03% | 0.339 | 0.424 | - |

Tested HSTNH-F606V SAR at the worst case position.

| Mode | Bandwidth (MHz) | Modulation | RB Size | RB start | Position | Distance (mm) | CH | Freq. (MHz) | Max. Rated Avg. Power + Max. Tolerance (dBm) | Measured Avg. Power (dBm) | Scaling | Averaged SAR over 1g (W/kg) | | Plot page |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | | | | | | | | | | Measured | Reported | |
| LTE Band 30 (Hotspot) | 10MHz | QPSK | 1 RB | 0 | Front side | 10 | 27710 | 2310 | 23.5 | 22.57 | 123.88% | 0.746 | 0.924 | 230 |


SGS Taiwan Ltd. No.134,Wu Kung Road, New Taipei Industrial Park, Wuku District, New Taipei City, Taiwan 24803/新北市五股區新北產業園區五工路134號
台灣檢驗科技股份有限公司 t (886-2) 2299-3279 f (886-2) 2298-0488 www.tw.sgs.com
Member of SGS Group

## CDMA / EVDO Cellular (BC0)

| Mode | Service | Position | Distance (mm) | CH | Freq. (MHz) | Max. Rated Avg. Power + Max. Tolerance (dBm) | Measured Avg. Power (dBm) | Scaling | Averaged SAR over 1g (W/kg) | | Plot page |
|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | | | | | | | Measured | Reported | |
| 1xRTT Cellular BC0 (Head) | SO55/RC3 | Re Cheek | - | 1013 | 824.7 | 24.50 | 23.33 | 30.92% | 0.297 | 0.389 | - |
| | | Re Cheek | - | 384 | 836.52 | 24.50 | 23.36 | 30.02% | 0.343 | 0.446 | 231 |
| | | Re Cheek | - | 777 | 848.31 | 24.50 | 23.19 | 35.21% | 0.308 | 0.416 | - |
| | | Re Tilt | - | 384 | 836.52 | 24.50 | 23.36 | 30.02% | 0.226 | 0.294 | - |
| | | Le Cheek | - | 384 | 836.52 | 24.50 | 23.36 | 30.02% | 0.291 | 0.378 | - |
| | | Le Tilt | - | 384 | 836.52 | 24.50 | 23.36 | 30.02% | 0.188 | 0.244 | - |
| 1xEVDO Cellular BC0 (Head) | Rev. A Subtype 2 | Re Cheek | - | 1013 | 824.7 | 24.50 | 23.33 | 30.92% | 0.175 | 0.229 | - |
| | | Re Cheek | - | 384 | 836.52 | 24.50 | 23.28 | 32.43% | 0.231 | 0.306 | 232 |
| | | Re Cheek | - | 777 | 848.31 | 24.50 | 23.14 | 36.77% | 0.210 | 0.287 | - |
| | | Re Tilt | - | 1013 | 824.7 | 24.50 | 23.33 | 30.92% | 0.093 | 0.122 | - |
| | | Le Cheek | - | 1013 | 824.7 | 24.50 | 23.33 | 30.92% | 0.154 | 0.202 | - |
| | | Le Tilt | - | 1013 | 824.7 | 24.50 | 23.33 | 30.92% | 0.093 | 0.122 | - |
| 1xRTT Cellular BC0 (Body-Worn) | SO32/FCH | Front side | 10 | 1013 | 824.70 | 24.50 | 23.31 | 31.52% | 0.759 | 0.998 | - |
| | | Front side | 10 | 384 | 836.52 | 24.50 | 23.29 | 32.13% | 0.801 | 1.058 | - |
| | | Front side | 10 | 777 | 848.31 | 24.50 | 23.06 | 39.32% | 0.852 | 1.187 | 233 |
| | | Front side* | 10 | 777 | 848.31 | 24.50 | 23.06 | 39.32% | 0.841 | 1.172 | - |
| | | Back side | 10 | 1013 | 824.70 | 24.50 | 23.31 | 31.52% | 0.438 | 0.576 | - |
| 1xRTT Cellular BC0 (Body-Worn) | SO55/RC3 | Front side | 10 | 1013 | 824.7 | 24.50 | 23.33 | 30.92% | 0.837 | 1.096 | - |
| | | Front side | 10 | 384 | 836.52 | 24.50 | 23.36 | 30.02% | 0.835 | 1.086 | - |
| | | Front side | 10 | 777 | 848.31 | 24.50 | 23.19 | 35.21% | 0.847 | 1.145 | 234 |
| | | Front side* | 10 | 777 | 848.31 | 24.50 | 23.19 | 35.21% | 0.842 | 1.138 | - |
| | | Back side | 10 | 1013 | 824.7 | 24.50 | 23.33 | 30.92% | 0.537 | 0.703 | - |
| 1xEVDO Cellular BC0 (Hotspot) | Rev. 0 Subtype 0/1 | Front side | 10 | 1013 | 824.7 | 24.50 | 23.32 | 31.22% | 0.717 | 0.941 | - |
| | | Front side | 10 | 384 | 836.52 | 24.50 | 23.31 | 31.52% | 0.756 | 0.994 | - |
| | | Front side | 10 | 777 | 848.31 | 24.50 | 23.13 | 37.09% | 0.778 | 1.067 | 235 |
| | | Back side | 10 | 1013 | 824.7 | 24.50 | 23.32 | 31.22% | 0.333 | 0.437 | - |
| | | Bottom side | 10 | 1013 | 824.7 | 24.50 | 23.32 | 31.22% | 0.264 | 0.346 | - |
| | | Right side | 10 | 1013 | 824.7 | 24.50 | 23.32 | 31.22% | 0.306 | 0.402 | - |

* - repeated at the highest SAR measurement according to the KDB865664D01v01r04


SGS Taiwan Ltd.
台灣檢驗科技股份有限公司
No.134,Wu Kung Road, New Taipei Industrial Park, Wuku District, New Taipei City, Taiwan 24803/新北市五股區新北產業園區五工路134號
t (886-2) 2299-3279 f (886-2) 2298-0488 www.tw.sgs.com
Member of SGS Group

## CDMA / EVDO PCS (BC1)

| Mode | Service | Position | Distance (mm) | CH | Freq. (MHz) | Max. Rated Avg. Power + Max. Tolerance (dBm) | Measured Avg. Power (dBm) | Scaling | Averaged SAR over 1g (W/kg) | | Plot page |
|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | | | | | | | Measured | Reported | |
| 1xRTT PCS BC1 (Head) | SO55/RC3 | Re Cheek | - | 25 | 1851.25 | 24.00 | 23.41 | 14.55% | 0.468 | 0.536 | 236 |
| | | Re Cheek | - | 600 | 1880 | 24.00 | 23.58 | 10.15% | 0.462 | 0.509 | - |
| | | Re Cheek | - | 1175 | 1908.75 | 24.00 | 23.43 | 14.02% | 0.410 | 0.468 | - |
| | | Re Tilt | - | 600 | 1880 | 24.00 | 23.58 | 10.15% | 0.139 | 0.153 | - |
| | | Le Cheek | - | 600 | 1880 | 24.00 | 23.58 | 10.15% | 0.274 | 0.302 | - |
| | | Le Tilt | - | 600 | 1880 | 24.00 | 23.58 | 10.15% | 0.180 | 0.198 | - |
| 1xEVDO PCS BC1 (Head) | Rev. A Subtype 2 | Re Cheek | - | 25 | 1851.25 | 24.00 | 23.41 | 14.55% | 0.669 | 0.766 | - |
| | | Re Cheek | - | 600 | 1880 | 24.00 | 23.54 | 11.17% | 0.702 | 0.780 | 237 |
| | | Re Cheek | - | 1175 | 1908.75 | 24.00 | 23.42 | 14.29% | 0.680 | 0.777 | - |
| | | Re Tilt | - | 600 | 1880 | 24.00 | 23.54 | 11.17% | 0.262 | 0.291 | - |
| | | Le Cheek | - | 600 | 1880 | 24.00 | 23.54 | 11.17% | 0.332 | 0.369 | - |
| | | Le Tilt | - | 600 | 1880 | 24.00 | 23.54 | 11.17% | 0.197 | 0.219 | - |
| 1xRTT PCS BC1 (Body-Worn) | SO32/FCH | Front side | 10 | 25 | 1851.25 | 24.00 | 23.43 | 14.02% | 0.918 | 1.047 | - |
| | | Front side | 10 | 600 | 1880.00 | 24.00 | 23.54 | 11.17% | 1.070 | 1.190 | 238 |
| | | Front side | 10 | 1175 | 1908.75 | 24.00 | 23.47 | 12.98% | 0.963 | 1.088 | - |
| | | Front side* | 10 | 600 | 1880.00 | 24.00 | 23.54 | 11.17% | 1.050 | 1.167 | - |
| | | Back side | 10 | 25 | 1851.25 | 24.00 | 23.43 | 14.02% | 0.872 | 0.994 | - |
| | | Back side | 10 | 600 | 1880.00 | 24.00 | 23.54 | 11.17% | 0.954 | 1.061 | - |
| | | Back side | 10 | 1175 | 1908.75 | 24.00 | 23.47 | 12.98% | 0.905 | 1.022 | - |
| 1xRTT PCS BC1 (Body-Worn) | SO55/RC3 | Front side | 10 | 25 | 1851.25 | 24.00 | 23.41 | 14.55% | 0.939 | 1.076 | - |
| | | Front side | 10 | 600 | 1880.00 | 24.00 | 23.58 | 10.15% | 1.020 | 1.124 | 239 |
| | | Front side | 10 | 1175 | 1908.75 | 24.00 | 23.43 | 14.02% | 0.970 | 1.106 | - |
| | | Front side* | 10 | 600 | 1880.00 | 24.00 | 23.58 | 10.15% | 0.998 | 1.099 | - |
| | | Back side | 10 | 25 | 1851.25 | 24.00 | 23.41 | 14.55% | 0.958 | 1.097 | - |
| | | Back side | 10 | 600 | 1880.00 | 24.00 | 23.58 | 10.15% | 1.020 | 1.124 | - |
| | | Back side | 10 | 1175 | 1908.75 | 24.00 | 23.43 | 14.02% | 0.980 | 1.117 | - |
| 1xEVDO PCS BC1 (Hotspot) | Rev. 0 Subtype 0/1 | Front side | 10 | 25 | 1851.25 | 24.00 | 23.39 | 15.08% | 0.901 | 1.037 | - |
| | | Front side | 10 | 600 | 1880.00 | 24.00 | 23.51 | 11.94% | 0.951 | 1.065 | 240 |
| | | Front side | 10 | 1175 | 1908.75 | 24.00 | 23.43 | 14.02% | 0.926 | 1.056 | - |
| | | Front side* | 10 | 600 | 1880.00 | 24.00 | 23.51 | 11.94% | 0.942 | 1.055 | - |
| | | Back side | 10 | 25 | 1851.25 | 24.00 | 23.39 | 15.08% | 0.901 | 1.037 | - |
| | | Back side | 10 | 600 | 1880.00 | 24.00 | 23.51 | 11.94% | 0.875 | 0.980 | - |
| | | Back side | 10 | 1175 | 1908.75 | 24.00 | 23.43 | 14.02% | 0.858 | 0.978 | - |
| | | Bottom side | 10 | 600 | 1880.00 | 24.00 | 23.51 | 11.94% | 0.468 | 0.524 | - |
| | | Right side | 10 | 600 | 1880.00 | 24.00 | 23.51 | 11.94% | 0.369 | 0.413 | - |

* - repeated at the highest SAR measurement according to the KDB865664D01v01r04

**WLAN 802.11b (Main antenna)**

The data of HSTNH-F606 from the SAR report of FCC ID: B94HHF606.

| Antenna | Mode | Position | Distance (mm) | CH | Freq. (MHz) | Max. Rated Avg. Power + Max. Tolerance (dBm) | Measured Avg. Power (dBm) | Scaling | Averaged SAR over 1g (W/kg) | | Plot page |
|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | | | | | | | Measured | Reported | |
| Main | WLAN 802.11 b (Head) | RE Cheek | - | 1 | 2412 | 17 | 16.09 | 123.31% | 0.771 | 0.951 | - |
| | | RE Cheek | - | 6 | 2437 | 17 | 16.15 | 121.62% | 0.802 | 0.975 | 241 |
| | | RE Cheek* | - | 6 | 2437 | 17 | 16.15 | 121.62% | 0.788 | 0.958 | - |
| | | RE Tilt | - | 6 | 2437 | 17 | 16.15 | 121.62% | 0.564 | 0.686 | - |
| | | LE Cheek | - | 6 | 2437 | 17 | 16.15 | 121.62% | 0.284 | 0.345 | - |
| | | LE Tilt | - | 6 | 2437 | 17 | 16.15 | 121.62% | 0.268 | 0.326 | - |
| | Hotspot | Front side | 10 | 6 | 2437 | 17 | 16.15 | 121.62% | 0.218 | 0.265 | - |
| | | Back side | 10 | 6 | 2437 | 17 | 16.15 | 121.62% | 0.315 | 0.383 | 242 |
| | | Top side | 10 | 6 | 2437 | 17 | 16.15 | 121.62% | 0.180 | 0.219 | - |
| | | Left side | 10 | 6 | 2437 | 17 | 16.15 | 121.62% | 0.188 | 0.229 | - |

* - repeated at the highest SAR measurement according to the KDB865664D01v01r04

Tested HSTNH-F606V SAR at the worst case position.

| Antenna | Mode | Position | Distance (mm) | CH | Freq. (MHz) | Max. Rated Avg. Power + Max. Tolerance (dBm) | Measured Avg. Power (dBm) | Scaling | Averaged SAR over 1g (W/kg) | | Plot page |
|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | | | | | | | Measured | Reported | |
| Main | WLAN 802.11 b (Head) | RE Cheek | - | 6 | 2437 | 17 | 16.15 | 121.62% | 0.801 | 0.974 | - |
| | Hotspot | Back side | 10 | 6 | 2437 | 17 | 16.15 | 121.62% | 0.315 | 0.383 | - |


SGS Taiwan Ltd. No.134,Wu Kung Road, New Taipei Industrial Park, Wuku District, New Taipei City, Taiwan 24803/新北市五股區新北產業園區五工路134號
台灣檢驗科技股份有限公司 t (886-2) 2299-3279 f (886-2) 2298-0488 www.tw.sgs.com
Member of SGS Group

**WLAN 802.11b (Aux antenna)**

The data of HSTNH-F606 from the SAR report of FCC ID: B94HHF606.

| Antenna | Mode | Position | Distance (mm) | CH | Freq. (MHz) | Max. Rated Avg. Power + Max. Tolerance (dBm) | Measured Avg. Power (dBm) | Scaling | Averaged SAR over 1g (W/kg) | | Plot page |
|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | | | | | | | Measured | Reported | |
| Aux | WLAN 802.11 b (Head) | RE Cheek | - | 11 | 2462 | 17 | 16.6 | 109.65% | 0.123 | 0.135 | - |
| | | RE Tilt | - | 11 | 2462 | 17 | 16.6 | 109.65% | 0.072 | 0.079 | - |
| | | LE Cheek | - | 11 | 2462 | 17 | 16.6 | 109.65% | 0.426 | 0.467 | 243 |
| | | LE Tilt | - | 11 | 2462 | 17 | 16.6 | 109.65% | 0.197 | 0.216 | - |
| | Hotspot | Front side | 10 | 11 | 2462 | 17 | 16.6 | 109.65% | 0.148 | 0.162 | - |
| | | Back side | 10 | 11 | 2462 | 17 | 16.6 | 109.65% | 0.247 | 0.271 | 244 |
| | | Top side | 10 | 11 | 2462 | 17 | 16.6 | 109.65% | 0.027 | 0.030 | - |
| | | Left side | 10 | 11 | 2462 | 17 | 16.6 | 109.65% | 0.219 | 0.240 | - |

Tested HSTNH-F606V SAR at the worst case position.

| Antenna | Mode | Position | Distance (mm) | CH | Freq. (MHz) | Max. Rated Avg. Power + Max. Tolerance (dBm) | Measured Avg. Power (dBm) | Scaling | Averaged SAR over 1g (W/kg) | | Plot page |
|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | | | | | | | Measured | Reported | |
| Aux | WLAN 802.11 b (Head) | LE Cheek | - | 11 | 2462 | 17 | 16.6 | 109.65% | 0.421 | 0.462 | - |
| | Hotspot | Back side | 10 | 11 | 2462 | 17 | 16.6 | 109.65% | 0.138 | 0.151 | - |


SGS Taiwan Ltd. No.134,Wu Kung Road, New Taipei Industrial Park, Wuku District, New Taipei City, Taiwan 24803/新北市五股區新北產業園區五工路134號
台灣檢驗科技股份有限公司 t (886-2) 2299-3279 f (886-2) 2298-0488 www.tw.sgs.com
Member of SGS Group

**WLAN 802.11a 5.2G**

The data of HSTNH-F606 from the SAR report of FCC ID: B94HHF606.

| Antenna | Mode | Position | Distance (mm) | CH | Freq. (MHz) | Max. Rated Avg. Power + Max. Tolerance (dBm) | Measured Avg. Power (dBm) | Scaling | Averaged SAR over 1g (W/kg) | | Plot page |
|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | | | | | | | Measured | Reported | |
| Main | WLAN 802.11 a 5.2G (Head) | RE Cheek | - | 36 | 5180 | 14 | 13.86 | 103.28% | 1.290 | 1.332 | 245 |
| | | RE Cheek* | - | 36 | 5180 | 14 | 13.86 | 103.28% | 1.270 | 1.312 | - |
| | | RE Cheek | - | 40 | 5200 | 14 | 13.75 | 105.93% | 0.890 | 0.943 | - |
| | | RE Tilt | - | 36 | 5180 | 14 | 13.86 | 103.28% | 1.110 | 1.146 | - |
| | | RE Tilt | - | 40 | 5200 | 14 | 13.75 | 105.93% | 0.845 | 0.895 | - |
| | | LE Cheek | - | 36 | 5180 | 14 | 13.86 | 103.28% | 0.402 | 0.415 | - |
| | | LE Tilt | - | 36 | 5180 | 14 | 13.86 | 103.28% | 0.446 | 0.461 | - |

* - repeated at the highest SAR measurement according to the KDB865664D01v01r04

Tested HSTNH-F606V SAR at the worst case position of WLAN Main 5.2G Head.

| Antenna | Mode | Position | Distance (mm) | CH | Freq. (MHz) | Max. Rated Avg. Power + Max. Tolerance (dBm) | Measured Avg. Power (dBm) | Scaling | Averaged SAR over 1g (W/kg) | | Plot page |
|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | | | | | | | Measured | Reported | |
| Main | WLAN 802.11 a 5.2G | RE Cheek | - | 36 | 5180 | 14 | 13.86 | 103.28% | 0.806 | 0.832 | - |

**WLAN 802.11n(20M) 5.2G**

The data of HSTNH-F606 from the SAR report of FCC ID: B94HHF606.

| Antenna | Mode | Position | Distance (mm) | CH | Freq. (MHz) | Max. Rated Avg. Power + Max. Tolerance (dBm) | Measured Avg. Power (dBm) | Scaling | Averaged SAR over 1g (W/kg) | | Plot page |
|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | | | | | | | Measured | Reported | |
| Main | WLAN 802.11 n(20M) 5.2G (Head) | RE Cheek | - | 44 | 5220 | 14 | 13.88 | 102.80% | 0.970 | 0.997 | 246 |
| | | RE Cheek | - | 48 | 5240 | 14 | 13.76 | 105.68% | 0.742 | 0.784 | - |
| | | RE Tilt | - | 44 | 5220 | 14 | 13.88 | 102.80% | 0.865 | 0.889 | - |
| | | LE Cheek | - | 44 | 5220 | 14 | 13.88 | 102.80% | 0.389 | 0.400 | - |
| | | LE Tilt | - | 44 | 5220 | 14 | 13.88 | 102.80% | 0.402 | 0.413 | - |


SGS Taiwan Ltd. No.134,Wu Kung Road, New Taipei Industrial Park, Wuku District, New Taipei City, Taiwan 24803/新北市五股區新北產業園區五工路134號
台灣檢驗科技股份有限公司 t (886-2) 2299-3279 f (886-2) 2298-0488 www.tw.sgs.com
Member of SGS Group

## WLAN 802.11n(40M) 5.2G

The data of HSTNH-F606 from the SAR report of FCC ID: B94HHF606.

| Antenna | Mode | Position | Distance (mm) | CH | Freq. (MHz) | Max. Rated Avg. Power + Max. Tolerance (dBm) | Measured Avg. Power (dBm) | Scaling | Averaged SAR over 1g (W/kg) | | Plot page |
|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | | | | | | | Measured | Reported | |
| Main | WLAN 802.11 n (40M) 5.2G (Head) | RE Cheek | - | 38 | 5190 | 14 | 13.87 | 103.04% | 0.989 | 1.019 | - |
| | | RE Cheek | - | 46 | 5230 | 14 | 13.75 | 105.93% | 1.200 | 1.271 | 247 |
| | | RE Tilt | - | 38 | 5190 | 14 | 13.87 | 103.04% | 0.913 | 0.941 | - |
| | | RE Tilt | - | 46 | 5230 | 14 | 13.75 | 105.93% | 1.120 | 1.186 | - |
| | | LE Cheek | - | 38 | 5190 | 14 | 13.87 | 103.04% | 0.305 | 0.314 | - |
| | | LE Tilt | - | 38 | 5190 | 14 | 13.87 | 103.04% | 0.328 | 0.338 | - |
| | Body-worn | Front side | 10 | 38 | 5190 | 14 | 13.87 | 103.04% | 0.258 | 0.266 | 248 |
| | | Back side | 10 | 38 | 5190 | 14 | 13.87 | 103.04% | 0.243 | 0.250 | - |

| Antenna | Mode | Position | Distance (mm) | CH | Freq. (MHz) | Max. Rated Avg. Power + Max. Tolerance (dBm) | Measured Avg. Power (dBm) | Scaling | Averaged SAR over 10g (W/kg) | | Plot page |
|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | | | | | | | Measured | Reported | |
| Main | WLAN 802.11 n (40M) 5.2G (product specific 10-g SAR) | Front side | 0 | 38 | 5190 | 14 | 13.57 | 110.41% | 1.100 | 1.214 | 249 |
| | | Back side | 0 | 38 | 5190 | 14 | 13.57 | 110.41% | 0.997 | 1.101 | - |
| | | Top side | 0 | 38 | 5190 | 14 | 13.57 | 110.41% | 0.390 | 0.431 | - |
| | | Left side | 0 | 38 | 5190 | 14 | 13.57 | 110.41% | 0.460 | 0.508 | - |

Tested HSTNH-F606V SAR at the worst case position of WLAN Main 5.2G Body-worn & product specific 10-g SAR.

| Antenna | Mode | Position | Distance (mm) | CH | Freq. (MHz) | Max. Rated Avg. Power + Max. Tolerance (dBm) | Measured Avg. Power (dBm) | Scaling | Averaged SAR over 1g (W/kg) | | Plot page |
|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | | | | | | | Measured | Reported | |
| Main | Body-worn | Front side | 10 | 38 | 5190 | 14 | 13.87 | 103.04% | 0.113 | 0.116 | - |

| Antenna | Mode | Position | Distance (mm) | CH | Freq. (MHz) | Max. Rated Avg. Power + Max. Tolerance (dBm) | Measured Avg. Power (dBm) | Scaling | Averaged SAR over 10g (W/kg) | | Plot page |
|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | | | | | | | Measured | Reported | |
| Main | WLAN 802.11 n (40M) 5.2G (product specific 10-g SAR) | Front side | 0 | 38 | 5190 | 14 | 13.57 | 110.41% | 0.508 | 0.561 | - |

**WLAN 802.11n(40M) 5.2G**

The data of HSTNH-F606 from the SAR report of FCC ID: B94HHF606.

| Antenna | Mode | Position | Distance (mm) | CH | Freq. (MHz) | Max. Rated Avg. Power + Max. Tolerance (dBm) | Measured Avg. Power (dBm) | Scaling | Averaged SAR over 1g (W/kg) | | Plot page |
|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | | | | | | | Measured | Reported | |
| Aux | WLAN 802.11 n (40M) 5.2G (Head) | RE Cheek | - | 38 | 5190 | 14 | 13.83 | 103.99% | 0.161 | 0.167 | - |
| | | RE Tilt | - | 38 | 5190 | 14 | 13.83 | 103.99% | 0.150 | 0.156 | - |
| | | LE Cheek | - | 38 | 5190 | 14 | 13.83 | 103.99% | 0.461 | 0.479 | 250 |
| | | LE Tilt | - | 38 | 5190 | 14 | 13.83 | 103.99% | 0.294 | 0.306 | - |
| | Body-worn | Front side | 10 | 38 | 5190 | 14 | 13.83 | 103.99% | 0.145 | 0.151 | - |
| | | Back side | 10 | 38 | 5190 | 14 | 13.83 | 103.99% | 0.279 | 0.290 | 251 |

| Antenna | Mode | Position | Distance (mm) | CH | Freq. (MHz) | Max. Rated Avg. Power + Max. Tolerance (dBm) | Measured Avg. Power (dBm) | Scaling | Averaged SAR over 10g (W/kg) | | Plot page |
|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | | | | | | | Measured | Reported | |
| Aux | WLAN 802.11 n (40M) 5.2G (product specific 10-g SAR) | Front side | 0 | 38 | 5190 | 14 | 13.83 | 103.99% | 0.649 | 0.675 | - |
| | | Back side | 0 | 38 | 5190 | 14 | 13.83 | 103.99% | 0.664 | 0.691 | - |
| | | Top side | 0 | 38 | 5190 | 14 | 13.83 | 103.99% | 0.171 | 0.178 | - |
| | | Right side | 0 | 38 | 5190 | 14 | 13.83 | 103.99% | 0.807 | 0.839 | 252 |

Tested HSTNH-F606V SAR at the worst case position of WLAN 5.2G Aux.

| Antenna | Mode | Position | Distance (mm) | CH | Freq. (MHz) | Max. Rated Avg. Power + Max. Tolerance (dBm) | Measured Avg. Power (dBm) | Scaling | Averaged SAR over 1g (W/kg) | | Plot page |
|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | | | | | | | Measured | Reported | |
| Aux | WLAN 802.11 n (40M) 5.2G (Head) | LE Cheek | - | 38 | 5190 | 14 | 13.83 | 103.99% | 0.363 | 0.377 | - |
| | Body-worn | Back side | 10 | 38 | 5190 | 14 | 13.83 | 103.99% | 0.229 | 0.238 | - |

| Antenna | Mode | Position | Distance (mm) | CH | Freq. (MHz) | Max. Rated Avg. Power + Max. Tolerance (dBm) | Measured Avg. Power (dBm) | Scaling | Averaged SAR over 10g (W/kg) | | Plot page |
|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | | | | | | | Measured | Reported | |
| Aux | WLAN 802.11 n (40M) 5.2G (product specific 10-g SAR) | Right side | 0 | 38 | 5190 | 14 | 13.83 | 103.99% | 0.631 | 0.656 | - |



SGS Taiwan Ltd.
台灣檢驗科技股份有限公司
No.134,Wu Kung Road, New Taipei Industrial Park, Wuku District, New Taipei City, Taiwan 24803/新北市五股區新北產業園區五工路134號
t (886-2) 2299-3279 f (886-2) 2298-0488 www.tw.sgs.com
Member of SGS Group

**WLAN 802.11ac(40M) 5.2G**

The data of HSTNH-F606 from the SAR report of FCC ID: B94HHF606.

| Antenna | Mode | Position | Distance (mm) | CH | Freq. (MHz) | Max. Rated Avg. Power + Max. Tolerance (dBm) | Measured Avg. Power (dBm) | Scaling | Averaged SAR over 1g (W/kg) | | Plot page |
|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | | | | | | | Measured | Reported | |
| Main | WLAN 802.11 ac(40M) 5.2G (Head) | RE Cheek | - | 38 | 5190 | 14 | 13.60 | 109.65% | 0.954 | 1.046 | 253 |
| | | RE Cheek | - | 46 | 5230 | 14 | 13.28 | 118.03% | 0.924 | 1.091 | - |
| | | RE Tilt | - | 38 | 5190 | 14 | 13.60 | 109.65% | 0.922 | 1.011 | - |
| | | RE Tilt | - | 46 | 5230 | 14 | 13.28 | 118.03% | 0.854 | 1.008 | - |
| | | LE Cheek | - | 38 | 5190 | 14 | 13.60 | 109.65% | 0.300 | 0.329 | - |
| | | LE Tilt | - | 38 | 5190 | 14 | 13.60 | 109.65% | 0.315 | 0.345 | - |


SGS Taiwan Ltd. No.134,Wu Kung Road, New Taipei Industrial Park, Wuku District, New Taipei City, Taiwan 24803/新北市五股區新北產業園區五工路134號
台灣檢驗科技股份有限公司 t (886-2) 2299-3279 f (886-2) 2298-0488 www.tw.sgs.com
Member of SGS Group

**WLAN 802.11a 5.3G**

The data of HSTNH-F606 from the SAR report of FCC ID: B94HHF606.

| Antenna | Mode | Position | Distance (mm) | CH | Freq. (MHz) | Max. Rated Avg. Power + Max. Tolerance (dBm) | Measured Avg. Power (dBm) | Scaling | Averaged SAR over 1g (W/kg) | | Plot page |
|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | | | | | | | Measured | Reported | |
| Main | WLAN 802.11 a 5.3G (Head) | RE Cheek | - | 52 | 5260 | 14 | 13.92 | 101.86% | 1.310 | 1.334 | 254 |
| | | RE Cheek* | - | 52 | 5260 | 14 | 13.92 | 101.86% | 1.220 | 1.243 | - |
| | | RE Cheek | - | 56 | 5280 | 14 | 13.87 | 103.04% | 1.300 | 1.340 | - |
| | | RE Cheek | - | 60 | 5300 | 14 | 13.83 | 103.99% | 1.280 | 1.331 | - |
| | | RE Cheek | - | 64 | 5320 | 14 | 13.80 | 104.71% | 1.260 | 1.319 | - |
| | | RE Tilt | - | 52 | 5260 | 14 | 13.92 | 101.86% | 1.210 | 1.232 | - |
| | | RE Tilt | - | 56 | 5280 | 14 | 13.87 | 103.04% | 1.190 | 1.226 | - |
| | | RE Tilt | - | 60 | 5300 | 14 | 13.83 | 103.99% | 1.150 | 1.196 | - |
| | | LE Cheek | - | 52 | 5260 | 14 | 13.92 | 101.86% | 0.427 | 0.435 | - |
| | | LE Tilt | - | 52 | 5260 | 14 | 13.92 | 101.86% | 0.375 | 0.382 | - |

* - repeated at the highest SAR measurement according to the KDB865664D01v01r04

Tested HSTNH-F606V SAR at the worst case position of WLAN Main 5.3G Head.

| Antenna | Mode | Position | Distance (mm) | CH | Freq. (MHz) | Max. Rated Avg. Power + Max. Tolerance (dBm) | Measured Avg. Power (dBm) | Scaling | Averaged SAR over 1g (W/kg) | | Plot page |
|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | | | | | | | Measured | Reported | |
| Main | WLAN 802.11 a 5.3G (Head) | RE Cheek | - | 56 | 5280 | 14 | 13.87 | 103.04% | 0.725 | 0.747 | - |

**WLAN 802.11n(20M) 5.3G**

The data of HSTNH-F606 from the SAR report of FCC ID: B94HHF606.

| Antenna | Mode | Position | Distance (mm) | CH | Freq. (MHz) | Max. Rated Avg. Power + Max. Tolerance (dBm) | Measured Avg. Power (dBm) | Scaling | Averaged SAR over 1g (W/kg) | | Plot page |
|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | | | | | | | Measured | Reported | |
| Main | WLAN 802.11 n(20M) 5.3G (Head) | RE Cheek | - | 52 | 5260 | 14 | 13.71 | 106.91% | 0.993 | 1.062 | 255 |
| | | RE Cheek | - | 56 | 5280 | 14 | 13.68 | 107.65% | 0.720 | 0.775 | - |
| | | RE Tilt | - | 52 | 5260 | 14 | 13.71 | 106.91% | 0.742 | 0.793 | - |
| | | LE Cheek | - | 52 | 5260 | 14 | 13.71 | 106.91% | 0.312 | 0.334 | - |
| | | LE Tilt | - | 52 | 5260 | 14 | 13.71 | 106.91% | 0.289 | 0.309 | - |

**WLAN 802.11n(40M) 5.3G**

The data of HSTNH-F606 from the SAR report of FCC ID: B94HHF606.

| Antenna | Mode | Position | Distance (mm) | CH | Freq. (MHz) | Max. Rated Avg. Power + Max. Tolerance (dBm) | Measured Avg. Power (dBm) | Scaling | Averaged SAR over 1g (W/kg) | | Plot page |
|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | | | | | | | Measured | Reported | |
| Main | WLAN 802.11 n (40M) 5.3G (Head) | RE Cheek | - | 54 | 5270 | 14 | 13.16 | 121.34% | 0.973 | 1.181 | - |
| | | RE Cheek | - | 62 | 5310 | 14 | 13.12 | 122.46% | 1.030 | 1.261 | 256 |
| | | RE Tilt | - | 54 | 5270 | 14 | 13.16 | 121.34% | 0.955 | 1.159 | - |
| | | RE Tilt | - | 62 | 5310 | 14 | 13.12 | 122.46% | 0.954 | 1.168 | - |
| | | LE Cheek | - | 54 | 5270 | 14 | 13.16 | 121.34% | 0.318 | 0.386 | - |
| | | LE Tilt | - | 54 | 5270 | 14 | 13.16 | 121.34% | 0.341 | 0.414 | - |
| | Body-worn | Front side | 10 | 54 | 5270 | 14 | 13.16 | 121.34% | 0.282 | 0.342 | 257 |
| | | Back side | 10 | 54 | 5270 | 14 | 13.16 | 121.34% | 0.241 | 0.292 | - |

Tested HSTNH-F606V SAR at the worst case position of WLAN Main 5.3G Body-worn.

| Antenna | Mode | Position | Distance (mm) | CH | Freq. (MHz) | Max. Rated Avg. Power + Max. Tolerance (dBm) | Measured Avg. Power (dBm) | Scaling | Averaged SAR over 1g (W/kg) | | Plot page |
|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | | | | | | | Measured | Reported | |
| Main | Body-worn | Front side | 10 | 54 | 5270 | 14 | 13.16 | 121.34% | 0.173 | 0.210 | - |



SGS Taiwan Ltd. No.134,Wu Kung Road, New Taipei Industrial Park, Wuku District, New Taipei City, Taiwan 24803/新北市五股區新北產業園區五工路134號
台灣檢驗科技股份有限公司 t (886-2) 2299-3279 f (886-2) 2298-0488 www.tw.sgs.com
Member of SGS Group

The data of HSTNH-F606 from the SAR report of FCC ID: B94HHF606.

| Antenna | Mode | Position | Distance (mm) | CH | Freq. (MHz) | Max. Rated Avg. Power + Max. Tolerance (dBm) | Measured Avg. Power (dBm) | Scaling | Averaged SAR over 10g (W/kg) | | Plot page |
|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | | | | | | | Measured | Reported | |
| Main | WLAN 802.11 n (40M) 5.3G (product specific 10-g SAR) | Front side | 0 | 54 | 5270 | 14 | 13.16 | 121.34% | 1.080 | 1.310 | 258 |
| | | Back side | 0 | 54 | 5270 | 14 | 13.16 | 121.34% | 1.030 | 1.250 | - |
| | | Top side | 0 | 54 | 5270 | 14 | 13.16 | 121.34% | 0.404 | 0.490 | - |
| | | Left side | 0 | 54 | 5270 | 14 | 13.16 | 121.34% | 0.393 | 0.477 | - |

Tested HSTNH-F606V SAR at the worst case position of WLAN Main 5.3G product specific 10-g SAR.

| Antenna | Mode | Position | Distance (mm) | CH | Freq. (MHz) | Max. Rated Avg. Power + Max. Tolerance (dBm) | Measured Avg. Power (dBm) | Scaling | Averaged SAR over 10g (W/kg) | | Plot page |
|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | | | | | | | Measured | Reported | |
| Main | WLAN 802.11 n (40M) 5.3G (product specific 10-g SAR) | Front side | 0 | 54 | 5270 | 14 | 13.16 | 121.34% | 0.791 | 0.960 | - |

The data of HSTNH-F606 from the SAR report of FCC ID: B94HHF606.

| Antenna | Mode | Position | Distance (mm) | CH | Freq. (MHz) | Max. Rated Avg. Power + Max. Tolerance (dBm) | Measured Avg. Power (dBm) | Scaling | Averaged SAR over 1g (W/kg) | | Plot page |
|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | | | | | | | Measured | Reported | |
| Aux | WLAN 802.11 n (40M) 5.3G (Head) | RE Cheek | - | 62 | 5310 | 14 | 13.98 | 100.46% | 0.191 | 0.192 | - |
| | | RE Tilt | - | 62 | 5310 | 14 | 13.98 | 100.46% | 0.187 | 0.188 | - |
| | | LE Cheek | - | 62 | 5310 | 14 | 13.98 | 100.46% | 0.607 | 0.610 | 259 |
| | | LE Tilt | - | 62 | 5310 | 14 | 13.98 | 100.46% | 0.316 | 0.317 | - |
| | Body-worn | Front side | 10 | 62 | 5310 | 14 | 13.98 | 100.46% | 0.195 | 0.196 | - |
| | | Back side | 10 | 62 | 5310 | 14 | 13.98 | 100.46% | 0.539 | 0.541 | 260 |
| Antenna | Mode | Position | Distance (mm) | CH | Freq. (MHz) | Max. Rated Avg. Power + Max. Tolerance (dBm) | Measured Avg. Power (dBm) | Scaling | Averaged SAR over 10g (W/kg) | | Plot page |
| | | | | | | | | | Measured | Reported | |
| Aux | WLAN 802.11 n (40M) 5.3G (product specific 10-g SAR) | Front side | 0 | 62 | 5310 | 14 | 13.98 | 100.46% | 0.696 | 0.699 | - |
| | | Back side | 0 | 62 | 5310 | 14 | 13.98 | 100.46% | 1.000 | 1.005 | - |
| | | Top side | 0 | 62 | 5310 | 14 | 13.98 | 100.46% | 0.181 | 0.182 | - |
| | | Right side | 0 | 62 | 5310 | 14 | 13.98 | 100.46% | 1.070 | 1.075 | 261 |

Tested HSTNH-F606V SAR at the worst case position of WLAN Aux 5.3G Body-worn & product specific 10-g SAR.

| Antenna | Mode | Position | Distance (mm) | CH | Freq. (MHz) | Max. Rated Avg. Power + Max. Tolerance (dBm) | Measured Avg. Power (dBm) | Scaling | Averaged SAR over 1g (W/kg) | | Plot page |
|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | | | | | | | Measured | Reported | |
| Aux | WLAN 802.11 n (40M) 5.3G (Head) | LE Cheek | - | 62 | 5310 | 14 | 13.98 | 100.46% | 0.364 | 0.366 | - |
| | Body-worn | Back side | 10 | 62 | 5310 | 14 | 13.98 | 100.46% | 0.390 | 0.392 | - |
| Antenna | Mode | Position | Distance (mm) | CH | Freq. (MHz) | Max. Rated Avg. Power + Max. Tolerance (dBm) | Measured Avg. Power (dBm) | Scaling | Averaged SAR over 10g (W/kg) | | Plot page |
| | | | | | | | | | Measured | Reported | |
| Aux | WLAN 802.11 n (40M) 5.3G (product specific 10-g SAR) | Right side | 0 | 62 | 5310 | 14 | 13.98 | 100.46% | 1.070 | 1.075 | - |

**WLAN 802.11ac(40M) 5.3G**

The data of HSTNH-F606 from the SAR report of FCC ID: B94HHF606.

| Antenna | Mode | Position | Distance (mm) | CH | Freq. (MHz) | Max. Rated Avg. Power + Max. Tolerance (dBm) | Measured Avg. Power (dBm) | Scaling | Averaged SAR over 1g (W/kg) | | Plot page |
|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | | | | | | | Measured | Reported | |
| Main | WLAN 802.11 ac (40M) 5.3G (Head) | RE Cheek | - | 54 | 5270 | 14 | 13.15 | 121.62% | 0.898 | 1.092 | - |
| | | RE Cheek | - | 62 | 5310 | 14 | 13.16 | 121.34% | 1.020 | 1.238 | 262 |
| | | RE Tilt | - | 54 | 5270 | 14 | 13.15 | 121.62% | 0.845 | 1.028 | - |
| | | RE Tilt | - | 62 | 5310 | 14 | 13.16 | 121.34% | 0.974 | 1.182 | - |
| | | LE Cheek | - | 62 | 5310 | 14 | 13.16 | 121.34% | 0.331 | 0.402 | - |
| | | LE Tilt | - | 62 | 5310 | 14 | 13.16 | 121.34% | 0.342 | 0.415 | - |


SGS Taiwan Ltd. No.134,Wu Kung Road, New Taipei Industrial Park, Wuku District, New Taipei City, Taiwan 24803/新北市五股區新北產業園區五工路134號
台灣檢驗科技股份有限公司 t (886-2) 2299-3279 f (886-2) 2298-0488 www.tw.sgs.com
Member of SGS Group

**WLAN 802.11a 5.6G**

The data of HSTNH-F606 from the SAR report of FCC ID: B94HHF606.

| Antenna | Mode | Position | Distance (mm) | CH | Freq. (MHz) | Max. Rated Avg. Power + Max. Tolerance (dBm) | Measured Avg. Power (dBm) | Scaling | Averaged SAR over 1g (W/kg) | | Plot page |
|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | | | | | | | Measured | Reported | |
| Main | WLAN 802.11 a 5.6G (Head) | RE Cheek | - | 100 | 5500 | 13 | 12.98 | 100.46% | 0.976 | 0.981 | - |
| | | RE Cheek | - | 120 | 5600 | 13 | 12.78 | 105.20% | 1.180 | 1.241 | 263 |
| | | RE Cheek* | - | 120 | 5600 | 13 | 12.78 | 105.20% | 1.130 | 1.189 | - |
| | | RE Tilt | - | 100 | 5500 | 13 | 12.98 | 100.46% | 0.985 | 0.990 | - |
| | | RE Tilt | - | 120 | 5600 | 13 | 12.78 | 105.20% | 0.950 | 0.999 | - |
| | | LE Cheek | - | 100 | 5500 | 13 | 12.98 | 100.46% | 0.380 | 0.382 | - |
| | | LE Tilt | - | 100 | 5500 | 13 | 12.98 | 100.46% | 0.453 | 0.455 | - |
| | Body-worn | Front side | 10 | 100 | 5500 | 13 | 12.98 | 100.46% | 0.290 | 0.291 | 264 |
| | | Back side | 10 | 100 | 5500 | 13 | 12.98 | 100.46% | 0.188 | 0.189 | - |

| Antenna | Mode | Position | Distance (mm) | CH | Freq. (MHz) | Max. Rated Avg. Power + Max. Tolerance (dBm) | Measured Avg. Power (dBm) | Scaling | Averaged SAR over 10g (W/kg) | | Plot page |
|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | | | | | | | Measured | Reported | |
| Main | WLAN 802.11 a 5.6G (product specific 10-g SAR) | Front side | 0 | 100 | 5500 | 13 | 12.98 | 100.46% | 1.030 | 1.035 | 265 |
| | | Back side | 0 | 100 | 5500 | 13 | 12.98 | 100.46% | 0.652 | 0.655 | - |
| | | Top side | 0 | 100 | 5500 | 13 | 12.98 | 100.46% | 0.456 | 0.458 | - |
| | | Left side | 0 | 100 | 5500 | 13 | 12.98 | 100.46% | 0.331 | 0.333 | - |

* - repeated at the highest SAR measurement according to the KDB865664D01v01r04

Tested HSTNH-F606V SAR at the worst case position of WLAN Main 5.6G.

| Antenna | Mode | Position | Distance (mm) | CH | Freq. (MHz) | Max. Rated Avg. Power + Max. Tolerance (dBm) | Measured Avg. Power (dBm) | Scaling | Averaged SAR over 1g (W/kg) | | Plot page |
|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | | | | | | | Measured | Reported | |
| Main | WLAN 802.11 a 5.6G (Head) | RE Cheek | - | 120 | 5600 | 13 | 12.78 | 105.20% | 0.696 | 0.732 | - |
| | Body-worn | Front side | 10 | 100 | 5500 | 13 | 12.98 | 100.46% | 0.222 | 0.223 | - |

| Antenna | Mode | Position | Distance (mm) | CH | Freq. (MHz) | Max. Rated Avg. Power + Max. Tolerance (dBm) | Measured Avg. Power (dBm) | Scaling | Averaged SAR over 10g (W/kg) | | Plot page |
|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | | | | | | | Measured | Reported | |
| Main | WLAN 802.11 a 5.6G (product specific 10-g SAR) | Front side | 0 | 100 | 5500 | 13 | 12.98 | 100.46% | 0.469 | 0.471 | - |

The data of HSTNH-F606 from the SAR report of FCC ID: B94HHF606.

| Antenna | Mode | Position | Distance (mm) | CH | Freq. (MHz) | Max. Rated Avg. Power + Max. Tolerance (dBm) | Measured Avg. Power (dBm) | Scaling | Averaged SAR over 1g (W/kg) | | Plot page |
|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | | | | | | | Measured | Reported | |
| Aux | WLAN 802.11 a 5.6G (Head) | RE Cheek | - | 140 | 5700 | 13 | 12.76 | 105.68% | 0.203 | 0.215 | - |
| | | RE Tilt | - | 140 | 5700 | 13 | 12.76 | 105.68% | 0.106 | 0.112 | - |
| | | LE Cheek | - | 100 | 5500 | 13 | 12.62 | 109.14% | 0.707 | 0.772 | - |
| | | LE Cheek | - | 140 | 5700 | 13 | 12.76 | 105.68% | 0.793 | 0.838 | 266 |
| | | LE Tilt | - | 140 | 5700 | 13 | 12.76 | 105.68% | 0.388 | 0.410 | - |
| | Body-worn | Front side | 10 | 140 | 5700 | 13 | 12.76 | 105.68% | 0.283 | 0.299 | - |
| | | Back side | 10 | 140 | 5700 | 13 | 12.76 | 105.68% | 0.740 | 0.782 | 267 |
| Antenna | Mode | Position | Distance (mm) | CH | Freq. (MHz) | Max. Rated Avg. Power + Max. Tolerance (dBm) | Measured Avg. Power (dBm) | Scaling | Averaged SAR over 10g (W/kg) | | Plot page |
| | | | | | | | | | Measured | Reported | |
| Aux | WLAN 802.11 a 5.6G (product specific 10-g SAR) | Front side | 0 | 140 | 5700 | 13 | 12.76 | 105.68% | 0.869 | 0.918 | - |
| | | Back side | 0 | 140 | 5700 | 13 | 12.76 | 105.68% | 1.410 | 1.490 | - |
| | | Top side | 0 | 140 | 5700 | 13 | 12.76 | 105.68% | 0.077 | 0.081 | - |
| | | Right side | 0 | 100 | 5500 | 13 | 12.62 | 109.14% | 2.050 | 2.237 | - |
| | | Right side | 0 | 140 | 5700 | 13 | 12.76 | 105.68% | 2.260 | 2.388 | 268 |

Tested HSTNH-F606V SAR at the worst case position of WLAN Aux 5.6G Head & product specific 10-g SAR.

| Antenna | Mode | Position | Distance (mm) | CH | Freq. (MHz) | Max. Rated Avg. Power + Max. Tolerance (dBm) | Measured Avg. Power (dBm) | Scaling | Averaged SAR over 1g (W/kg) | | Plot page |
|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | | | | | | | Measured | Reported | |
| Aux | WLAN 802.11 a 5.6G (Head) | LE Cheek | - | 140 | 5700 | 13 | 12.76 | 105.68% | 0.676 | 0.714 | - |
| Antenna | Mode | Position | Distance (mm) | CH | Freq. (MHz) | Max. Rated Avg. Power + Max. Tolerance (dBm) | Measured Avg. Power (dBm) | Scaling | Averaged SAR over 10g (W/kg) | | Plot page |
| | | | | | | | | | Measured | Reported | |
| Aux | WLAN 802.11 a 5.6G (product specific 10-g SAR) | Right side | 0 | 140 | 5700 | 13 | 12.76 | 105.68% | 1.980 | 2.092 | - |

**WLAN 802.11n(20M) 5.6G**

The data of HSTNH-F606 from the SAR report of FCC ID: B94HHF606.

| Antenna | Mode | Position | Distance (mm) | CH | Freq. (MHz) | Max. Rated Avg. Power + Max. Tolerance (dBm) | Measured Avg. Power (dBm) | Scaling | Averaged SAR over 1g (W/kg) | | Plot page |
|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | | | | | | | Measured | Reported | |
| Main | WLAN 802.11 n(20M) 5.6G (Head) | RE Cheek | - | 100 | 5500 | 13 | 12.78 | 105.20% | 0.819 | 0.862 | 269 |
| | | RE Cheek | - | 120 | 5600 | 13 | 12.52 | 111.69% | 0.712 | 0.795 | - |
| | | RE Tilt | - | 100 | 5500 | 13 | 12.78 | 105.20% | 0.745 | 0.784 | - |
| | | LE Cheek | - | 100 | 5500 | 13 | 12.78 | 105.20% | 0.289 | 0.304 | - |
| | | LE Tilt | - | 100 | 5500 | 13 | 12.78 | 105.20% | 0.328 | 0.345 | - |


SGS Taiwan Ltd. No.134,Wu Kung Road, New Taipei Industrial Park, Wuku District, New Taipei City, Taiwan 24803/新北市五股區新北產業園區五工路134號
台灣檢驗科技股份有限公司 t (886-2) 2299-3279 f (886-2) 2298-0488 www.tw.sgs.com
Member of SGS Group

## WLAN 802.11ac(80M) 5.6G

The data of HSTNH-F606 from the SAR report of FCC ID: B94HHF606.

| Antenna | Mode | Position | Distance (mm) | CH | Freq. (MHz) | Max. Rated Avg. Power + Max. Tolerance (dBm) | Measured Avg. Power (dBm) | Scaling | Averaged SAR over 1g (W/kg) | | Plot page |
|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | | | | | | | Measured | Reported | |
| Main | WLAN 802.11 ac (80M) 5.6G (Head) | RE Cheek | - | 122 | 5610 | 13 | 12.72 | 106.66% | 0.872 | 0.930 | 270 |
| | | RE Cheek | - | 138 | 5690 | 13 | 12.39 | 115.08% | 0.738 | 0.849 | - |
| | | RE Tilt | - | 122 | 5610 | 13 | 12.72 | 106.66% | 0.757 | 0.807 | - |
| | | RE Tilt | - | 138 | 5690 | 13 | 12.39 | 115.08% | 0.724 | 0.833 | - |
| | | LE Cheek | - | 122 | 5610 | 13 | 12.72 | 106.66% | 0.401 | 0.428 | - |
| | | LE Tilt | - | 122 | 5610 | 13 | 12.72 | 106.66% | 0.479 | 0.511 | - |
| | Body-worn | Front side | 10 | 122 | 5610 | 13 | 12.72 | 106.66% | 0.226 | 0.241 | 271 |
| | | Back side | 10 | 122 | 5610 | 13 | 12.72 | 106.66% | 0.134 | 0.143 | - |

| Antenna | Mode | Position | Distance (mm) | CH | Freq. (MHz) | Max. Rated Avg. Power + Max. Tolerance (dBm) | Measured Avg. Power (dBm) | Scaling | Averaged SAR over 10g (W/kg) | | Plot page |
|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | | | | | | | Measured | Reported | |
| Main | WLAN 802.11 ac (80M) 5.6G (product specific 10-g SAR | Front side | 0 | 122 | 5610 | 13 | 12.72 | 106.66% | 0.993 | 1.059 | 272 |
| | | Back side | 0 | 122 | 5610 | 13 | 12.72 | 106.66% | 0.427 | 0.455 | - |
| | | Top side | 0 | 122 | 5610 | 13 | 12.72 | 106.66% | 0.281 | 0.300 | - |
| | | Left side | 0 | 122 | 5610 | 13 | 12.72 | 106.66% | 0.252 | 0.269 | - |

The data of HSTNH-F606 from the SAR report of FCC ID: B94HHF606.

| Antenna | Mode | Position | Distance (mm) | CH | Freq. (MHz) | Max. Rated Avg. Power + Max. Tolerance (dBm) | Measured Avg. Power (dBm) | Scaling | Averaged SAR over 1g (W/kg) | | Plot page |
|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | | | | | | | Measured | Reported | |
| Aux | WLAN 802.11ac (80M) 5.6G (Head) | RE Cheek | - | 122 | 5610 | 13 | 12.92 | 101.86% | 0.181 | 0.184 | - |
| | | RE Tilt | - | 122 | 5610 | 13 | 12.92 | 101.86% | 0.094 | 0.096 | - |
| | | LE Cheek | - | 122 | 5610 | 13 | 12.92 | 101.86% | 0.737 | 0.751 | 273 |
| | | LE Tilt | - | 122 | 5610 | 13 | 12.92 | 101.86% | 0.368 | 0.375 | - |
| | Body-worn | Front side | 10 | 122 | 5610 | 13 | 12.92 | 101.86% | 0.286 | 0.291 | - |
| | | Back side | 10 | 122 | 5610 | 13 | 12.92 | 101.86% | 0.769 | 0.783 | 274 |

| Antenna | Mode | Position | Distance (mm) | CH | Freq. (MHz) | Max. Rated Avg. Power + Max. Tolerance (dBm) | Measured Avg. Power (dBm) | Scaling | Averaged SAR over 10g (W/kg) | | Plot page |
|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | | | | | | | Measured | Reported | |
| Aux | WLAN 802.11 ac (80M) 5.6G (Hand) | Front side | 0 | 122 | 5610 | 13 | 12.92 | 101.86% | 0.949 | 0.967 | - |
| | | Back side | 0 | 122 | 5610 | 13 | 12.92 | 101.86% | 1.320 | 1.345 | - |
| | | Top side | 0 | 122 | 5610 | 13 | 12.92 | 101.86% | 0.091 | 0.093 | - |
| | | Right side | 0 | 122 | 5610 | 13 | 12.92 | 101.86% | 2.050 | 2.088 | - |
| | | Right side | 0 | 138 | 5690 | 13 | 12.83 | 103.99% | 2.090 | 2.173 | 275 |

Tested HSTNH-F606V SAR at the worst case position of WLAN Aux 5.6G Body-worn.

| Antenna | Mode | Position | Distance (mm) | CH | Freq. (MHz) | Max. Rated Avg. Power + Max. Tolerance (dBm) | Measured Avg. Power (dBm) | Scaling | Averaged SAR over 1g (W/kg) | | Plot page |
|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | | | | | | | Measured | Reported | |
| Aux | Body-worn | Back side | 10 | 122 | 5610 | 13 | 12.92 | 101.86% | 0.653 | 0.665 | - |

**WLAN 802.11a 5.8G**

The data of HSTNH-F606 from the SAR report of FCC ID: B94HHF606.

| Antenna | Mode | Position | Distance (mm) | CH | Freq. (MHz) | Max. Rated Avg. Power + Max. Tolerance (dBm) | Measured Avg. Power (dBm) | Scaling | Averaged SAR over 1g (W/kg) | | Plot page |
|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | | | | | | | Measured | Reported | |
| Main | WLAN 802.11 a 5.8G (Head) | RE Cheek | - | 157 | 5785 | 13 | 12.72 | 106.66% | 0.752 | 0.802 | - |
| | | RE Cheek | - | 165 | 5825 | 13 | 12.73 | 106.41% | 0.916 | 0.975 | 276 |
| | | RE Cheek* | - | 165 | 5825 | 13 | 12.73 | 106.41% | 0.902 | 0.960 | - |
| | | RE Tilt | - | 157 | 5785 | 13 | 12.72 | 106.66% | 0.807 | 0.861 | - |
| | | RE Tilt | - | 165 | 5825 | 13 | 12.73 | 106.41% | 0.805 | 0.857 | - |
| | | LE Cheek | - | 165 | 5825 | 13 | 12.73 | 106.41% | 0.358 | 0.381 | - |
| | | LE Tilt | - | 165 | 5825 | 13 | 12.73 | 106.41% | 0.499 | 0.531 | - |
| | Body-worn | Front side | 10 | 165 | 5825 | 13 | 12.73 | 106.41% | 0.210 | 0.223 | 277 |
| | | Back side | 10 | 165 | 5825 | 13 | 12.73 | 106.41% | 0.140 | 0.149 | - |

* - repeated at the highest SAR measurement according to the KDB865664D01v01r04

| Antenna | Mode | Position | Distance (mm) | CH | Freq. (MHz) | Max. Rated Avg. Power + Max. Tolerance (dBm) | Measured Avg. Power (dBm) | Scaling | Averaged SAR over 10g (W/kg) | | Plot page |
|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | | | | | | | Measured | Reported | |
| Main | WLAN 802.11 a 5.8G (product specific 10-g SAR | Front side | 0 | 165 | 5825 | 13 | 12.73 | 106.41% | 0.906 | 0.964 | 278 |
| | | Back side | 0 | 165 | 5825 | 13 | 12.73 | 106.41% | 0.457 | 0.486 | - |
| | | Top side | 0 | 165 | 5825 | 13 | 12.73 | 106.41% | 0.512 | 0.545 | - |
| | | Left side | 0 | 165 | 5825 | 13 | 12.73 | 106.41% | 0.260 | 0.277 | - |

Tested HSTNH-F606V SAR at the worst case position of WLAN Main 5.8G..

| Antenna | Mode | Position | Distance (mm) | CH | Freq. (MHz) | Max. Rated Avg. Power + Max. Tolerance (dBm) | Measured Avg. Power (dBm) | Scaling | Averaged SAR over 1g (W/kg) | | Plot page |
|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | | | | | | | Measured | Reported | |
| Main | WLAN 802.11 a 5.8G (Head) | RE Cheek | - | 165 | 5825 | 13 | 12.73 | 106.41% | 0.681 | 0.725 | - |
| | Body-worn | Front side | 10 | 165 | 5825 | 13 | 12.73 | 106.41% | 0.206 | 0.219 | - |

| Antenna | Mode | Position | Distance (mm) | CH | Freq. (MHz) | Max. Rated Avg. Power + Max. Tolerance (dBm) | Measured Avg. Power (dBm) | Scaling | Averaged SAR over 10g (W/kg) | | Plot page |
|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | | | | | | | Measured | Reported | |
| Main | WLAN 802.11 a 5.8G (product specific 10-g SAR | Front side | 0 | 165 | 5825 | 13 | 12.73 | 106.41% | 0.565 | 0.601 | - |

The data of HSTNH-F606 from the SAR report of FCC ID: B94HHF606.

| Antenna | Mode | Position | Distance (mm) | CH | Freq. (MHz) | Max. Rated Avg. Power + Max. Tolerance (dBm) | Measured Avg. Power (dBm) | Scaling | Averaged SAR over 1g (W/kg) | | Plot page |
|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | | | | | | | Measured | Reported | |
| Aux | WLAN 802.11a 5.8G (Head) | RE Cheek | - | 149 | 5745 | 13 | 12.73 | 106.41% | 0.144 | 0.153 | - |
| | | RE Tilt | - | 149 | 5745 | 13 | 12.73 | 106.41% | 0.084 | 0.089 | - |
| | | LE Cheek | - | 149 | 5745 | 13 | 12.73 | 106.41% | 0.599 | 0.637 | 279 |
| | | LE Tilt | - | 149 | 5745 | 13 | 12.73 | 106.41% | 0.154 | 0.164 | - |
| | Body-worn | Front side | 10 | 149 | 5745 | 13 | 12.73 | 106.41% | 0.206 | 0.219 | - |
| | | Back side | 10 | 149 | 5745 | 13 | 12.73 | 106.41% | 0.543 | 0.578 | 280 |

| Antenna | Mode | Position | Distance (mm) | CH | Freq. (MHz) | Max. Rated Avg. Power + Max. Tolerance (dBm) | Measured Avg. Power (dBm) | Scaling | Averaged SAR over 10g (W/kg) | | Plot page |
|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | | | | | | | Measured | Reported | |
| Aux | WLAN 802.11 a 5.8G (product specific 10-g SAR) | Front side | 0 | 149 | 5745 | 13 | 12.73 | 106.41% | 0.782 | 0.832 | - |
| | | Back side | 0 | 149 | 5745 | 13 | 12.73 | 106.41% | 1.300 | 1.383 | - |
| | | Top side | 0 | 149 | 5745 | 13 | 12.73 | 106.41% | 0.045 | 0.048 | - |
| | | Right side | 0 | 149 | 5745 | 13 | 12.73 | 106.41% | 1.590 | 1.692 | 281 |

Tested HSTNH-F606V SAR at the worst case position of WLAN Aux 5.8G.

| Antenna | Mode | Position | Distance (mm) | CH | Freq. (MHz) | Max. Rated Avg. Power + Max. Tolerance (dBm) | Measured Avg. Power (dBm) | Scaling | Averaged SAR over 1g (W/kg) | | Plot page |
|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | | | | | | | Measured | Reported | |
| Aux | WLAN 802.11a 5.8G (Head) | LE Cheek | - | 149 | 5745 | 13 | 12.73 | 106.41% | 0.389 | 0.414 | - |
| | Body-worn | Back side | 10 | 149 | 5745 | 13 | 12.73 | 106.41% | 0.389 | 0.414 | - |

| Antenna | Mode | Position | Distance (mm) | CH | Freq. (MHz) | Max. Rated Avg. Power + Max. Tolerance (dBm) | Measured Avg. Power (dBm) | Scaling | Averaged SAR over 10g (W/kg) | | Plot page |
|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | | | | | | | Measured | Reported | |
| Aux | WLAN 802.11 a 5.8G (product specific 10-g SAR) | Right side | 0 | 149 | 5745 | 13 | 12.73 | 106.41% | 0.978 | 1.041 | - |

## Bluetooth

The data of HSTNH-F606 from the SAR report of FCC ID: B94HHF606.

| Antenna | Mode | Position | Distance (mm) | CH | Freq. (MHz) | Max. Rated Avg. Power + Max. Tolerance (dBm) | Measured Avg. Power (dBm) | Scaling | Averaged SAR over 1g (W/kg) | | Plot page |
|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | | | | | | | Measured | Reported | |
| Main | Bluetooth(GFSK) | Front | 0 | 39 | 2441 | 4.00 | 2.05 | 156.68% | 0.005 | 0.008 | - |
| | | Back | 0 | 39 | 2441 | 4.00 | 2.05 | 156.68% | 0.012 | 0.019 | 282 |

Tested HSTNH-F606V SAR at the worst case position.

| Antenna | Mode | Position | Distance (mm) | CH | Freq. (MHz) | Max. Rated Avg. Power + Max. Tolerance (dBm) | Measured Avg. Power (dBm) | Scaling | Averaged SAR over 1g (W/kg) | | Plot page |
|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | | | | | | | Measured | Reported | |
| Main | Bluetooth(GFSK) | Back | 0 | 39 | 2441 | 4.00 | 2.05 | 156.68% | 0.012 | 0.019 | - |


SGS Taiwan Ltd. No.134,Wu Kung Road, New Taipei Industrial Park, Wuku District, New Taipei City, Taiwan 24803/新北市五股區新北產業園區五工路134號
台灣檢驗科技股份有限公司 t (886-2) 2299-3279 f (886-2) 2298-0488 www.tw.sgs.com
Member of SGS Group

# 3. Simultaneous Transmission Analysis

## Simultaneous Transmission Scenarios:

| Simultaneous Transmit Configurations | Head | Body-Worn | Hotspot | Hand |
|---|---|---|---|---|
| GSM + 2.4GHz Wi-Fi Main/Aux/MIMO | Yes | Yes | No | No |
| GPRS + 2.4GHz Wi-Fi Main/Aux/MIMO | No | Yes | Yes | No |
| UMTS + 2.4GHz Wi-Fi Main/Aux/MIMO | Yes | Yes | Yes | No |
| LTE + 2.4GHz Wi-Fi Main/Aux/MIMO | No | Yes | Yes | No |
| CDMA + 2.4GHz Wi-Fi Main/Aux/MIMO | Yes | Yes | Yes | No |
| GSM + 5GHz Wi-Fi Main/Aux/MIMO | Yes | Yes | No | No |
| GPRS + 5GHz Wi-Fi Main/Aux/MIMO | No | Yes | No | No |
| UMTS + 5GHz Wi-Fi Main/Aux/MIMO | Yes | Yes | No | No |
| LTE + 5GHz Wi-Fi Main/Aux/MIMO | No | Yes | No | No |
| CDMA + 5GHz Wi-Fi Main/Aux/MIMO | Yes | Yes | No | No |
| GSM + Bluetooth + 2.4GHz Wi-Fi Aux | No | Yes | No | No |
| GPRS + Bluetooth + 2.4GHz Wi-Fi Aux | No | Yes | Yes | No |
| UMTS + Bluetooth + 2.4GHz Wi-Fi Aux | No | Yes | Yes | No |
| CDMA + Bluetooth + 2.4GHz Wi-Fi Aux | No | Yes | Yes | No |
| LTE + Bluetooth + 2.4GHz Wi-Fi Aux | No | Yes | Yes | No |
| GSM + Bluetooth + 5GHz Wi-Fi Aux | No | Yes | No | No |
| GPRS + Bluetooth + 5GHz Wi-Fi Aux | No | Yes | No | No |
| UMTS + Bluetooth + 5GHz Wi-Fi Aux | No | Yes | No | No |
| LTE + Bluetooth + 5GHz Wi-Fi Aux | No | Yes | No | No |
| CDMA + Bluetooth + 5GHz Wi-Fi Aux | No | Yes | No | No |

Note

1. Bluetooth and WLAN Main share the same antenna path, and BT may transmit simultaneously with WLAN Aux.
2. Based on KDB447498D01 note 36, when SAR test exclusion is allowed by other published RF exposure KDB procedures, such as the 2.5 cm hotspot mode SAR test exclusion for an edge or surface, then estimated SAR is not required to determine simultaneous SAR test exclusion. Also, based on KDB648474D04 note 6, simultaneous transmission SAR for 10-g extremity SAR requires consideration only when standalone 10-g SAR is required.
3. Since the extremity SAR is not required for WWAN/WLAN 2.4GHz based on hotspot SAR < 1.2 addressed in KDB 648474D04, and the extremity SAR is only required for WLAN 5GHz, hence the simultaneous transmission analysis for extremity is not required.


SGS Taiwan Ltd. No.134,Wu Kung Road, New Taipei Industrial Park, Wuku District, New Taipei City, Taiwan 24803/新北市五股區新北產業園區五工路134號
台灣檢驗科技股份有限公司 t (886-2) 2299-3279 f (886-2) 2298-0488 www.tw.sgs.com
Member of SGS Group

4. For 2.4/5GHz WLAN Main and Aux antennas, the maximum output power of each antenna during simultaneous transmission (for 802.11n/ac) is the same with that used in standalone transmission (for 802.11a/b/g/n/ac), and we used the sum of 1-g SAR provision in KDB447498D01 to exclude the SAR measurement for 802.11n/ac MIMO.
5. The device doesn't support VOLTE function.
6. Held to ear configurations are not applicable to Bluetooth and therefore were not considered for simultaneous transmission.
7. The device does not support DTM function.

### 3.1 Estimated SAR calculation

According to KDB447498 D01v05 – When standalone SAR test exclusion applies to an antenna that transmits simultaneously with other antennas, the standalone SAR must be estimated according to following to determine simultaneous transmission SAR test exclusion:

$$\text{Estimated SAR} = \frac{\text{Max. tune up power(mW)}}{\text{Min. test separation distance(mm)}} \times \frac{\sqrt{f(GHz)}}{7.5}$$

If the minimum test separation distance is < 5mm, a distance of 5mm is used for estimated SAR calculation. When the test separation distance is >50mm, the 0.4W/kg is used for SAR-1g.

### 3.2 SPLSR evaluation and analysis

Per KDB447498D01, when the sum of SAR is larger than the limit, SAR test exclusion is determined by the SAR sum to peak location separation ratio(SPLSR).

The simultaneous transmitting antennas in each operating mode and exposure condition combination must be considered one pair at a time to determine the SAR to peak location separation ratio to qualify for test exclusion.

The ratio is determined by **(SAR1 + SAR2)^1.5/Ri**, rounded to two decimal digits, and must be **≤ 0.04** for all antenna pairs in the configuration to qualify for 1-g SAR test exclusion.

SAR1 and SAR2 are the highest reported or estimated SAR for each antenna in the pair, and Ri is the separation distance between the peak SAR locations for the antenna pair in mm.

When standalone test exclusion applies, SAR is estimated; the peak location is assumed to be at the feed-point or geometric center of the antenna.


SGS Taiwan Ltd. No.134,Wu Kung Road, New Taipei Industrial Park, Wuku District, New Taipei City, Taiwan 24803/新北市五股區新北產業園區五工路134號
台灣檢驗科技股份有限公司 t (886-2) 2299-3279 f (886-2) 2298-0488 www.tw.sgs.com
Member of SGS Group

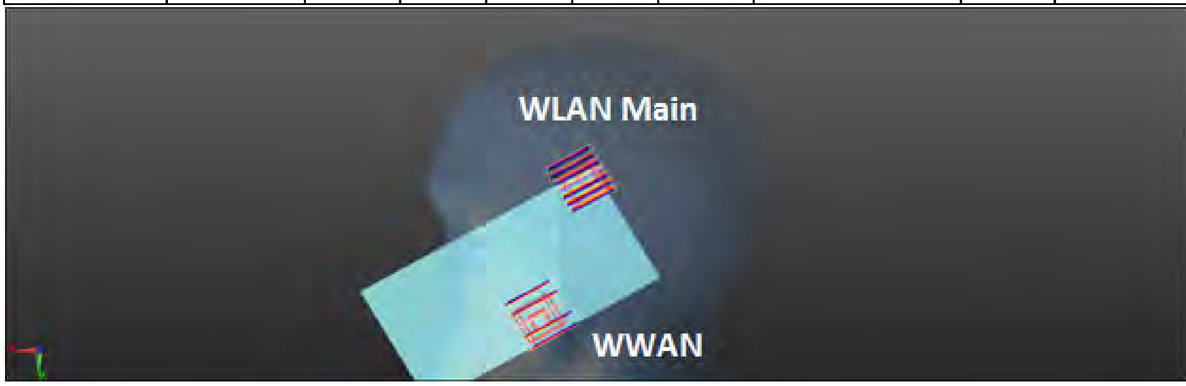
Simultaneous Transmission Combination

| reported SAR WWAN and WLAN 2.4GHz, ΣSAR evaluation | | | | | | |
|---|---|---|---|---|---|---|
| Frequency band | Position | | reported SAR / W/kg | | | ΣSAR |
| | | | WWAN | WLAN Main | WLAN Aux | <1.6W/kg |
| GSM 850 | Head | Right cheek | 0.360 | 0.975 | 0.135 | 1.470 |
| | | Right tilt | 0.190 | 0.686 | 0.079 | 0.955 |
| | | Left cheek | 0.243 | 0.345 | 0.467 | 1.055 |
| | | Left tilt | 0.149 | 0.326 | 0.216 | 0.691 |
| GPRS 850 (1Dn4UP) | Hotspot | Front | 0.614 | 0.265 | 0.162 | 1.041 |
| | | Back | 0.450 | 0.383 | 0.271 | 1.104 |
| | | Top | - | 0.219 | 0.030 | - |
| | | Bottom | 0.184 | - | - | - |
| | | Right | 0.311 | - | - | - |
| | | Left | - | 0.229 | 0.240 | - |
| GSM 1900 | Head | Right cheek | 0.397 | 0.975 | 0.135 | 1.507 |
| | | Right tilt | 0.087 | 0.686 | 0.079 | 0.852 |
| | | Left cheek | 0.199 | 0.345 | 0.467 | 1.011 |
| | | Left tilt | 0.104 | 0.326 | 0.216 | 0.646 |
| GPRS 1900 (1Dn3UP) | Hotspot | Front | 0.574 | 0.265 | 0.162 | 1.001 |
| | | Back | 0.693 | 0.383 | 0.271 | 1.347 |
| | | Top | - | 0.219 | 0.030 | - |
| | | Bottom | 0.306 | - | - | - |
| | | Right | 0.239 | - | - | - |
| | | Left | - | 0.229 | 0.240 | - |


SGS Taiwan Ltd. No.134,Wu Kung Road, New Taipei Industrial Park, Wuku District, New Taipei City, Taiwan 24803/新北市五股區新北產業園區五工路134號
台灣檢驗科技股份有限公司 t (886-2) 2299-3279 f (886-2) 2298-0488 www.tw.sgs.com
Member of SGS Group

| reported SAR WWAN and WLAN 2.4GHz, ΣSAR evaluation | | | | | | |
|---|---|---|---|---|---|---|
| Frequency band | Position | | reported SAR / W/kg | | | ΣSAR |
| | | | WWAN | WLAN Main | WLAN Aux | <1.6W/kg |
| WCDMA Band II | Head | Right cheek | 0.701 | 0.975 | 0.135 | **1.811** |
| | | Right tilt | 0.165 | 0.686 | 0.079 | 0.930 |
| | | Left cheek | 0.340 | 0.345 | 0.467 | 1.152 |
| | | Left tilt | 0.187 | 0.326 | 0.216 | 0.729 |
| | Hotspot | Front | 0.899 | 0.265 | 0.162 | 1.326 |
| | | Back | 1.041 | 0.383 | 0.271 | **1.695** |
| | | Top | - | 0.219 | 0.030 | - |
| | | Bottom | 0.479 | - | - | - |
| | | Right | 0.405 | - | - | - |
| | | Left | - | 0.229 | 0.240 | - |

| Conditions | Position | SAR Value (W/kg) | Coordinates (cm) | | | ΣSAR (W/kg) | Peak Location Separation Distance (mm) | SPLSR | Simultaneous Transmission SAR Test |
|---|---|---|---|---|---|---|---|---|---|
| | | | x | y | z | | | | |
| WCDMA Band II | Right cheek | 0.701 | 4.77 | 6.24 | -0.03 | 1.676 | 101.7 | 0.021 | SPLSR≤ 0.04, Not required |
| WLAN Main | | 0.975 | 1.71 | -3.45 | -0.11 | | | | |



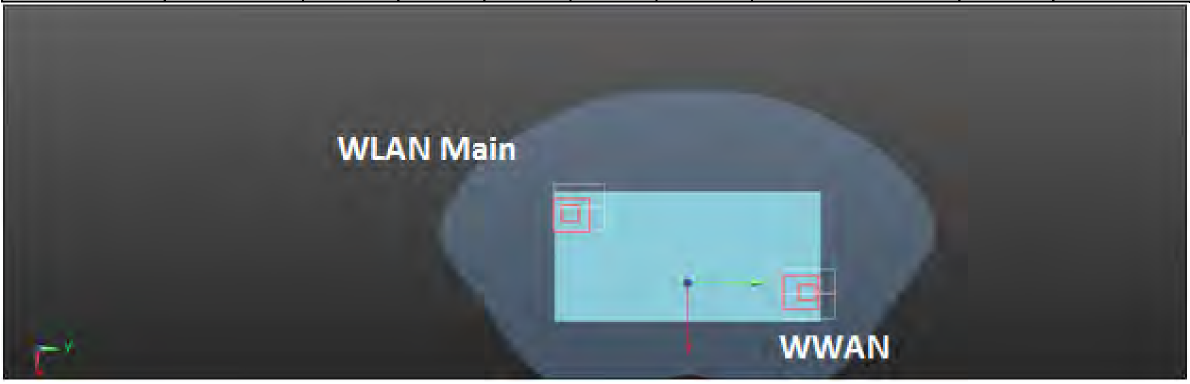


SGS Taiwan Ltd. No.134,Wu Kung Road, New Taipei Industrial Park, Wuku District, New Taipei City, Taiwan 24803/新北市五股區新北產業園區五工路134號
台灣檢驗科技股份有限公司 t (886-2) 2299-3279 f (886-2) 2298-0488 www.tw.sgs.com
Member of SGS Group

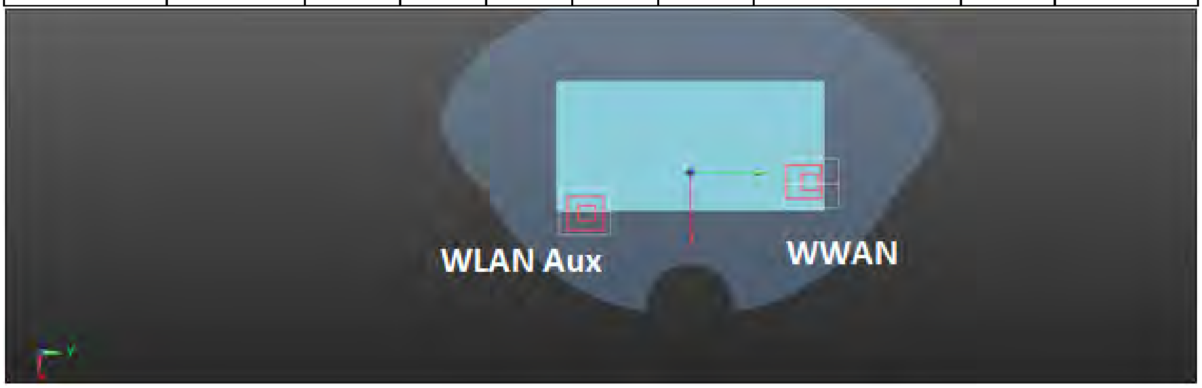
| Conditions | Position | SAR Value (W/kg) | Coordinates (cm) | | | ΣSAR (W/kg) | Peak Location Separation Distance (mm) | SPLSR | Simultaneous Transmission SAR Test |
|---|---|---|---|---|---|---|---|---|---|
| | | | x | y | z | | | | |
| WCDMA Band II | Right cheek | 0.701 | 4.77 | 6.24 | -0.03 | 0.836 | 69.6 | 0.011 | SPLSR≦ 0.04, Not required |
| WLAN Aux | | 0.135 | -1.05 | 2.47 | 0.53 | | | | |


| Conditions | Position | SAR Value (W/kg) | Coordinates (cm) | | | ΣSAR (W/kg) | Peak Location Separation Distance (mm) | SPLSR | Simultaneous Transmission SAR Test |
|---|---|---|---|---|---|---|---|---|---|
| | | | x | y | z | | | | |
| WLAN Main | Right cheek | 0.975 | 1.71 | -3.45 | -0.11 | 1.11 | 65.7 | 0.018 | SPLSR≦ 0.04, Not required |
| WLAN Aux | | 0.135 | -1.05 | 2.47 | 0.53 | | | | |

| Conditions | Position | SAR Value (W/kg) | Coordinates (cm) | | | ΣSAR (W/kg) | Peak Location Separation Distance (mm) | SPLSR | Simultaneous Transmission SAR Test |
|---|---|---|---|---|---|---|---|---|---|
| | | | x | y | z | | | | |
| WCDMA Band II | Back side | 1.041 | 2.40 | 7.09 | -0.08 | 1.424 | 151.7 | 0.011 | SPLSR≤ 0.04, Not required |
| WLAN Main | | 0.383 | -2.92 | -7.12 | -0.09 | | | | |




| Conditions | Position | SAR Value (W/kg) | Coordinates (cm) | | | ΣSAR (W/kg) | Peak Location Separation Distance (mm) | SPLSR | Simultaneous Transmission SAR Test |
|---|---|---|---|---|---|---|---|---|---|
| | | | x | y | z | | | | |
| WCDMA Band II | Back side | 1.041 | 2.40 | 7.09 | -0.08 | 1.312 | 132.1 | 0.011 | SPLSR≤ 0.04, Not required |
| WLAN Aux | | 0.271 | 4.30 | -5.98 | -0.10 | | | | |



| Conditions | Position | SAR Value (W/kg) | Coordinates (cm) | | | ΣSAR (W/kg) | Peak Location Separation Distance (mm) | SPLSR | Simultaneous Transmission SAR Test |
|---|---|---|---|---|---|---|---|---|---|
| | | | x | y | z | | | | |
| WLAN Main | Back side | 0.383 | -2.92 | -7.12 | -0.09 | 0.654 | 73.1 | 0.007 | SPLSR≤ 0.04, Not required |
| WLAN Aux | | 0.271 | 4.30 | -5.98 | -0.10 | | | | |



SGS Taiwan Ltd. No.134,Wu Kung Road, New Taipei Industrial Park, Wuku District, New Taipei City, Taiwan 24803/新北市五股區新北產業園區五工路134號
台灣檢驗科技股份有限公司 t (886-2) 2299-3279 f (886-2) 2298-0488 www.tw.sgs.com
Member of SGS Group

| reported SAR WWAN and WLAN 2.4GHz, ΣSAR evaluation | | | | | | |
|---|---|---|---|---|---|---|
| Frequency band | Position | | reported SAR / W/kg | | | ΣSAR |
| | | | WWAN | WLAN Main | WLAN Aux | <1.6W/kg |
| WCDMA Band IV | Head | Right cheek | 0.724 | 0.975 | 0.135 | **1.834** |
| | | Right tilt | 0.157 | 0.686 | 0.079 | 0.922 |
| | | Left cheek | 0.319 | 0.345 | 0.467 | 1.131 |
| | | Left tilt | 0.188 | 0.326 | 0.216 | 0.730 |
| | Hotspot | Front | 0.866 | 0.265 | 0.162 | 1.293 |
| | | Back | 0.917 | 0.383 | 0.271 | 1.571 |
| | | Top | - | 0.219 | 0.030 | - |
| | | Bottom | 0.493 | - | - | - |
| | | Right | 0.333 | - | - | - |
| | | Left | - | 0.229 | 0.240 | - |

| Conditions | Position | SAR Value (W/kg) | Coordinates (cm) | | | ΣSAR (W/kg) | Peak Location Separation Distance (mm) | SPLSR | Simultaneous Transmission SAR Test |
|---|---|---|---|---|---|---|---|---|---|
| | | | x | y | z | | | | |
| WCDMA Band IV | Right cheek | 0.724 | 4.85 | 6.12 | -0.04 | 1.699 | 100.7 | 0.022 | SPLSR≤ 0.04, Not required |
| WLAN Main | | 0.975 | 1.71 | -3.45 | -0.11 | | | | |



SGS Taiwan Ltd. No.134,Wu Kung Road, New Taipei Industrial Park, Wuku District, New Taipei City, Taiwan 24803/新北市五股區新北產業園區五工路134號
台灣檢驗科技股份有限公司 t (886-2) 2299-3279 f (886-2) 2298-0488 www.tw.sgs.com
Member of SGS Group

| Conditions | Position | SAR Value (W/kg) | Coordinates (cm) | | | ΣSAR (W/kg) | Peak Location Separation Distance (mm) | SPLSR | Simultaneous Transmission SAR Test |
|---|---|---|---|---|---|---|---|---|---|
| | | | x | y | z | | | | |
| WCDMA Band IV | Right cheek | 0.724 | 4.85 | 6.12 | -0.04 | 0.859 | 69.6 | 0.011 | SPLSR≤ 0.04, Not required |
| WLAN Aux | | 0.135 | -1.05 | 2.47 | 0.53 | | | | |


| Conditions | Position | SAR Value (W/kg) | Coordinates (cm) | | | ΣSAR (W/kg) | Peak Location Separation Distance (mm) | SPLSR | Simultaneous Transmission SAR Test |
|---|---|---|---|---|---|---|---|---|---|
| | | | x | y | z | | | | |
| WLAN Main | Right cheek | 0.975 | 1.71 | -3.45 | -0.11 | 1.11 | 65.7 | 0.018 | SPLSR≤ 0.04, Not required |
| WLAN Aux | | 0.135 | -1.05 | 2.47 | 0.53 | | | | |

| reported SAR WWAN and WLAN 2.4GHz, ΣSAR evaluation | | | | | | |
|---|---|---|---|---|---|---|
| Frequency band | Position | | reported SAR / W/kg | | | ΣSAR |
| | | | WWAN | WLAN Main | WLAN Aux | <1.6W/kg |
| WCDMA Band V | Head | Right cheek | 0.360 | 0.975 | 0.135 | 1.470 |
| | | Right tilt | 0.181 | 0.686 | 0.079 | 0.946 |
| | | Left cheek | 0.231 | 0.345 | 0.467 | 1.043 |
| | | Left tilt | 0.132 | 0.326 | 0.216 | 0.674 |
| | Hotspot | Front | 0.638 | 0.265 | 0.162 | 1.065 |
| | | Back | 0.511 | 0.383 | 0.271 | 1.165 |
| | | Top | - | 0.219 | 0.030 | - |
| | | Bottom | 0.302 | - | - | - |
| | | Right | 0.417 | - | - | - |
| | | Left | - | 0.229 | 0.240 | - |

| reported SAR WWAN and WLAN 2.4GHz, ΣSAR evaluation | | | | | | |
|---|---|---|---|---|---|---|
| Frequency band | Position | | reported SAR / W/kg | | | ΣSAR |
| | | | WWAN | WLAN Main | WLAN Aux | <1.6W/kg |
| LTE FDD Band II | Hotspot | Front | 0.928 | 0.265 | 0.162 | 1.355 |
| | | Back | 0.888 | 0.383 | 0.271 | 1.542 |
| | | Top | - | 0.219 | 0.030 | - |
| | | Bottom | 0.435 | - | - | - |
| | | Right | 0.342 | - | - | - |
| | | Left | - | 0.229 | 0.240 | - |

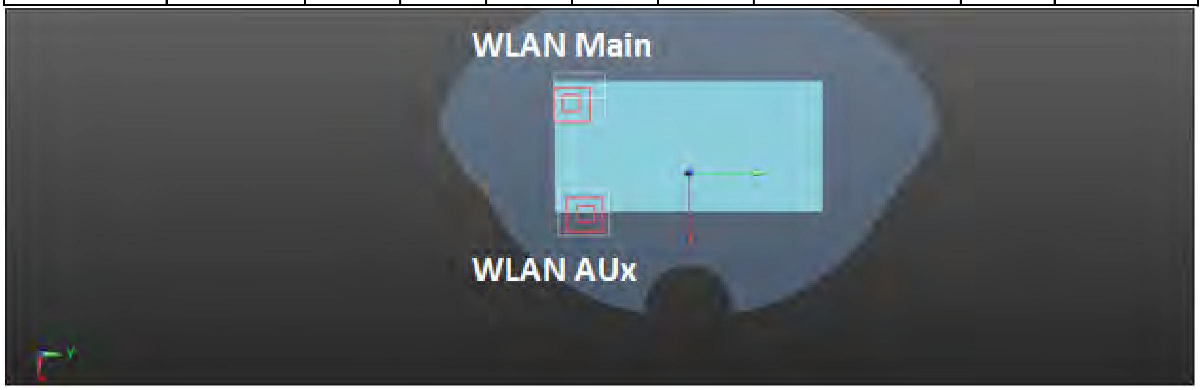

SGS Taiwan Ltd. No.134,Wu Kung Road, New Taipei Industrial Park, Wuku District, New Taipei City, Taiwan 24803/新北市五股區新北產業園區五工路134號
台灣檢驗科技股份有限公司 t (886-2) 2299-3279 f (886-2) 2298-0488 www.tw.sgs.com
Member of SGS Group

| reported SAR WWAN and WLAN 2.4GHz, ΣSAR evaluation | | | | | | |
|---|---|---|---|---|---|---|
| Frequency band | Position | | reported SAR / W/kg | | | ΣSAR |
| | | | WWAN | WLAN Main | WLAN Aux | <1.6W/kg |
| LTE FDD Band IV | Hotspot | Front | 0.806 | 0.265 | 0.162 | 1.233 |
| | | Back | 1.120 | 0.383 | 0.271 | **1.774** |
| | | Top | - | 0.219 | 0.030 | - |
| | | Bottom | 0.457 | - | - | - |
| | | Right | 0.305 | - | - | - |
| | | Left | - | 0.229 | 0.240 | - |

| Conditions | Position | SAR Value (W/kg) | Coordinates (cm) | | | ΣSAR (W/kg) | Peak Location Separation Distance (mm) | SPLSR | Simultaneous Transmission SAR Test |
|---|---|---|---|---|---|---|---|---|---|
| | | | x | y | z | | | | |
| LTE FDD Band IV | Back side | 1.120 | 2.71 | 7.24 | -0.02 | 1.503 | 154.24 | 0.012 | SPLSR≦ 0.04, Not required |
| WLAN Main | | 0.383 | -2.92 | -7.12 | -0.09 | | | | |

| Conditions | Position | SAR Value (W/kg) | Coordinates (cm) | | | ΣSAR (W/kg) | Peak Location Separation Distance (mm) | SPLSR | Simultaneous Transmission SAR Test |
|---|---|---|---|---|---|---|---|---|---|
| | | | x | y | z | | | | |
| LTE FDD Band IV | Back side | 1.120 | 2.71 | 7.24 | -0.02 | 1.391 | 133.2 | 0.012 | SPLSR≦ 0.04, Not required |
| WLAN Aux | | 0.271 | 4.30 | -5.98 | -0.10 | | | | |


| Conditions | Position | SAR Value (W/kg) | Coordinates (cm) | | | ΣSAR (W/kg) | Peak Location Separation Distance (mm) | SPLSR | Simultaneous Transmission SAR Test |
|---|---|---|---|---|---|---|---|---|---|
| | | | x | y | z | | | | |
| WLAN Main | Back side | 0.383 | -2.92 | -7.12 | -0.09 | 0.654 | 73.1 | 0.007 | SPLSR≦ 0.04, Not required |
| WLAN Aux | | 0.271 | 4.30 | -5.98 | -0.10 | | | | |



| reported SAR WWAN and WLAN 2.4GHz, ΣSAR evaluation | | | | | | |
|---|---|---|---|---|---|---|
| Frequency band | Position | | reported SAR / W/kg | | | ΣSAR |
| | | | WWAN | WLAN Main | WLAN Aux | <1.6W/kg |
| LTE FDD Band V | Hotspot | Front | 0.650 | 0.265 | 0.162 | 1.077 |
| | | Back | 0.517 | 0.383 | 0.271 | 1.171 |
| | | Top | - | 0.219 | 0.030 | - |
| | | Bottom | 0.402 | - | - | - |
| | | Right | 0.385 | - | - | - |
| | | Left | - | 0.229 | 0.240 | - |
| LTE FDD Band VII | Hotspot | Front | 1.045 | 0.265 | 0.162 | 1.472 |
| | | Back | 0.820 | 0.383 | 0.271 | 1.474 |
| | | Top | - | 0.219 | 0.030 | - |
| | | Bottom | 0.425 | - | - | - |
| | | Right | - | - | - | - |
| | | Left | 0.648 | 0.229 | 0.240 | 1.117 |
| LTE FDD Band XII | Hotspot | Front | 0.187 | 0.265 | 0.162 | 0.614 |
| | | Back | 0.137 | 0.383 | 0.271 | 0.791 |
| | | Top | - | 0.219 | 0.030 | - |
| | | Bottom | 0.272 | - | - | - |
| | | Right | 0.240 | - | - | - |
| | | Left | 0.065 | 0.229 | 0.240 | 0.534 |
| LTE FDD Band XIII | Hotspot | Front | 0.746 | 0.265 | 0.162 | 1.173 |
| | | Back | 0.390 | 0.383 | 0.271 | 1.044 |
| | | Top | - | 0.219 | 0.030 | - |
| | | Bottom | 0.427 | - | - | - |
| | | Right | 0.396 | - | - | - |
| | | Left | - | 0.229 | 0.240 | - |
| LTE FDD Band XXX | Hotspot | Front | 0.924 | 0.265 | 0.162 | 1.351 |
| | | Back | 0.773 | 0.383 | 0.271 | 1.427 |
| | | Top | - | 0.219 | 0.030 | - |
| | | Bottom | 0.712 | - | - | - |
| | | Right | - | - | - | - |
| | | Left | 0.559 | 0.229 | 0.240 | 1.028 |

| reported SAR WWAN and WLAN 2.4GHz, ΣSAR evaluation | | | | | | |
|---|---|---|---|---|---|---|
| Frequency band | Position | | reported SAR / W/kg | | | ΣSAR |
| | | | WWAN | WLAN Main | WLAN Aux | <1.6W/kg |
| CDMA Callular BC0 | Head | Right cheek | 0.446 | 0.975 | 0.135 | 1.556 |
| | | Right tilt | 0.294 | 0.686 | 0.079 | 1.059 |
| | | Left cheek | 0.378 | 0.345 | 0.467 | 1.190 |
| | | Left tilt | 0.244 | 0.326 | 0.216 | 0.786 |
| | Hotspot | Front | 1.067 | 0.265 | 0.162 | 1.494 |
| | | Back | 0.437 | 0.383 | 0.271 | 1.091 |
| | | Top | - | 0.219 | 0.030 | - |
| | | Bottom | 0.346 | - | - | - |
| | | Right | 0.402 | - | - | - |
| | | Left | - | 0.229 | 0.240 | - |

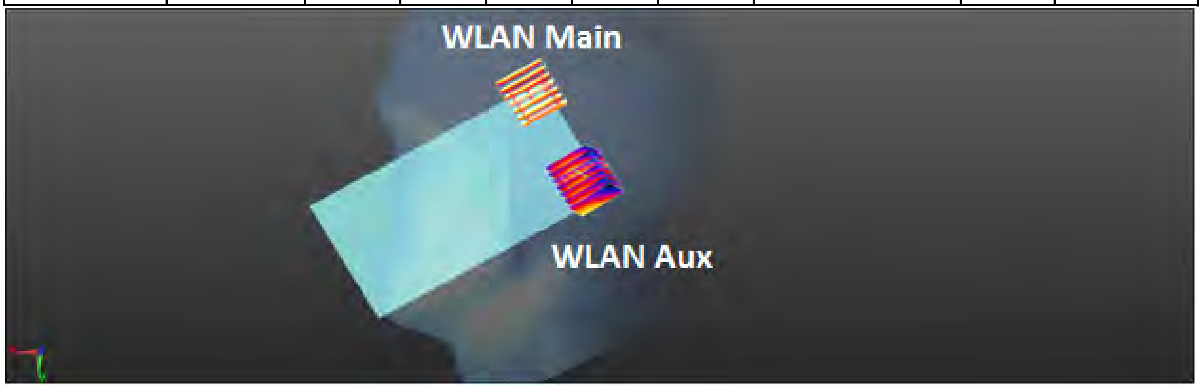

SGS Taiwan Ltd. No.134,Wu Kung Road, New Taipei Industrial Park, Wuku District, New Taipei City, Taiwan 24803/新北市五股區新北產業園區五工路134號
台灣檢驗科技股份有限公司 t (886-2) 2299-3279 f (886-2) 2298-0488 www.tw.sgs.com
Member of SGS Group

| reported SAR WWAN and WLAN 2.4GHz, ΣSAR evaluation | | | | | | |
|---|---|---|---|---|---|---|
| Frequency band | Position | | reported SAR / W/kg | | | ΣSAR |
| | | | WWAN | WLAN Main | WLAN Aux | <1.6W/kg |
| CDMA PCS BC1 | Head | Right cheek | 0.780 | 0.975 | 0.135 | 1.890 |
| | | Right tilt | 0.291 | 0.686 | 0.079 | 1.056 |
| | | Left cheek | 0.369 | 0.345 | 0.467 | 1.181 |
| | | Left tilt | 0.219 | 0.326 | 0.216 | 0.761 |
| | Hotspot | Front | 1.065 | 0.265 | 0.162 | 1.492 |
| | | Back | 1.037 | 0.383 | 0.271 | 1.691 |
| | | Top | - | 0.219 | 0.030 | - |
| | | Bottom | 0.524 | - | - | - |
| | | Right | 0.413 | - | - | - |
| | | Left | - | 0.229 | 0.240 | - |

| Conditions | Position | SAR Value (W/kg) | Coordinates (cm) | | | ΣSAR (W/kg) | Peak Location Separation Distance (mm) | SPLSR | Simultaneous Transmission SAR Test |
|---|---|---|---|---|---|---|---|---|---|
| | | | x | y | z | | | | |
| CDMA PCS BC1 | Right cheek | 0.78 | 5.03 | 6.58 | 0.07 | 1.755 | 105.67 | 0.022 | SPLSR≤ 0.04, Not required |
| WLAN Main | | 0.975 | 1.71 | -3.45 | -0.11 | | | | |

| Conditions | Position | SAR Value (W/kg) | Coordinates (cm) | | | ΣSAR (W/kg) | Peak Location Separation Distance (mm) | SPLSR | Simultaneous Transmission SAR Test |
|---|---|---|---|---|---|---|---|---|---|
| | | | x | y | z | | | | |
| CDMA PCS BC1 | Right cheek | 0.78 | 5.03 | 6.58 | 0.07 | 0.915 | 73.5 | 0.012 | SPLSR≤ 0.04, Not required |
| WLAN Aux | | 0.135 | -1.05 | 2.47 | 0.53 | | | | |


| Conditions | Position | SAR Value (W/kg) | Coordinates (cm) | | | ΣSAR (W/kg) | Peak Location Separation Distance (mm) | SPLSR | Simultaneous Transmission SAR Test |
|---|---|---|---|---|---|---|---|---|---|
| | | | x | y | z | | | | |
| WLAN Main | Right cheek | 0.975 | 1.71 | -3.45 | -0.11 | 1.11 | 65.7 | 0.018 | SPLSR≤ 0.04, Not required |
| WLAN Aux | | 0.135 | -1.05 | 2.47 | 0.53 | | | | |

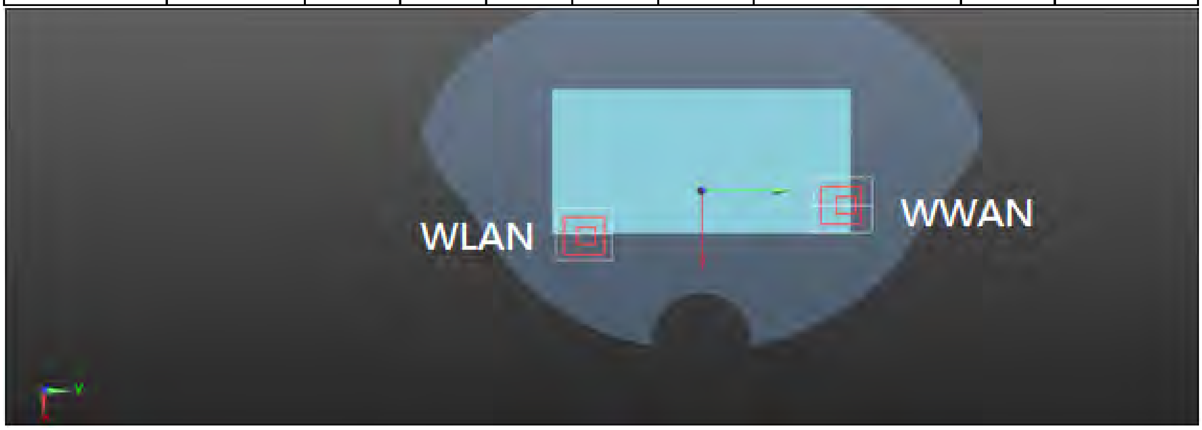





SGS Taiwan Ltd. No.134,Wu Kung Road, New Taipei Industrial Park, Wuku District, New Taipei City, Taiwan 24803/新北市五股區新北產業園區五工路134號
台灣檢驗科技股份有限公司 t (886-2) 2299-3279 f (886-2) 2298-0488 www.tw.sgs.com
Member of SGS Group

| Conditions | Position | SAR Value (W/kg) | Coordinates (cm) | | | ΣSAR (W/kg) | Peak Location Separation Distance (mm) | SPLSR | Simultaneous Transmission SAR Test |
|---|---|---|---|---|---|---|---|---|---|
| | | | x | y | z | | | | |
| CDMA PCS BC1 | Back side | 1.037 | 2.55 | 7.87 | -0.02 | 1.42 | 159.57 | 0.011 | SPLSR≤ 0.04, Not required |
| WLAN Main | | 0.383 | -2.92 | -7.12 | -0.09 | | | | |

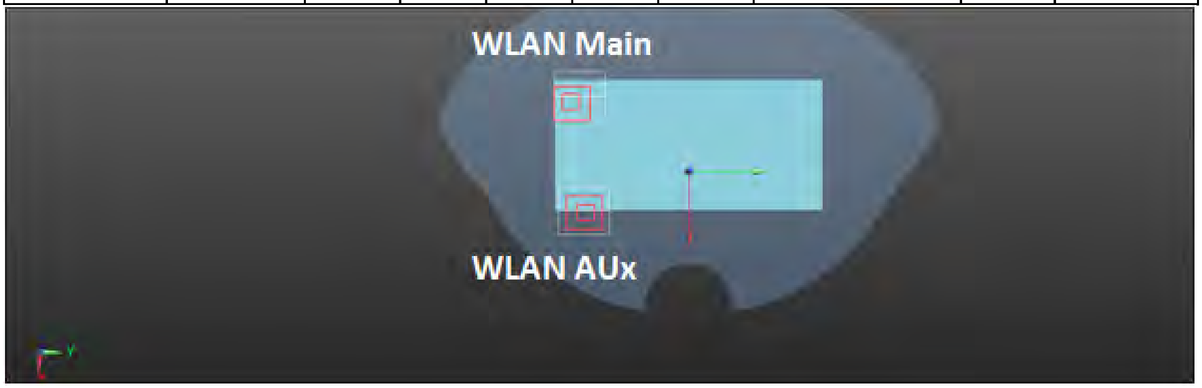

| Conditions | Position | SAR Value (W/kg) | Coordinates (cm) | | | ΣSAR (W/kg) | Peak Location Separation Distance (mm) | SPLSR | Simultaneous Transmission SAR Test |
|---|---|---|---|---|---|---|---|---|---|
| | | | x | y | z | | | | |
| CDMA PCS BC1 | Back side | 1.037 | 2.55 | 7.87 | -0.02 | 1.308 | 139.6 | 0.011 | SPLSR≤ 0.04, Not required |
| WLAN Aux | | 0.271 | 4.30 | -5.98 | -0.10 | | | | |





SGS Taiwan Ltd. No.134,Wu Kung Road, New Taipei Industrial Park, Wuku District, New Taipei City, Taiwan 24803/新北市五股區新北產業園區五工路134號
台灣檢驗科技股份有限公司 t (886-2) 2299-3279 f (886-2) 2298-0488 www.tw.sgs.com
Member of SGS Group

| Conditions | Position | SAR Value (W/kg) | Coordinates (cm) | | | ΣSAR (W/kg) | Peak Location Separation Distance (mm) | SPLSR | Simultaneous Transmission SAR Test |
|---|---|---|---|---|---|---|---|---|---|
| | | | x | y | z | | | | |
| WLAN Main | Back side | 0.383 | -2.92 | -7.12 | -0.09 | 0.654 | 73.1 | 0.007 | SPLSR≤ 0.04, Not required |
| WLAN Aux | | 0.271 | 4.30 | -5.98 | -0.10 | | | | |

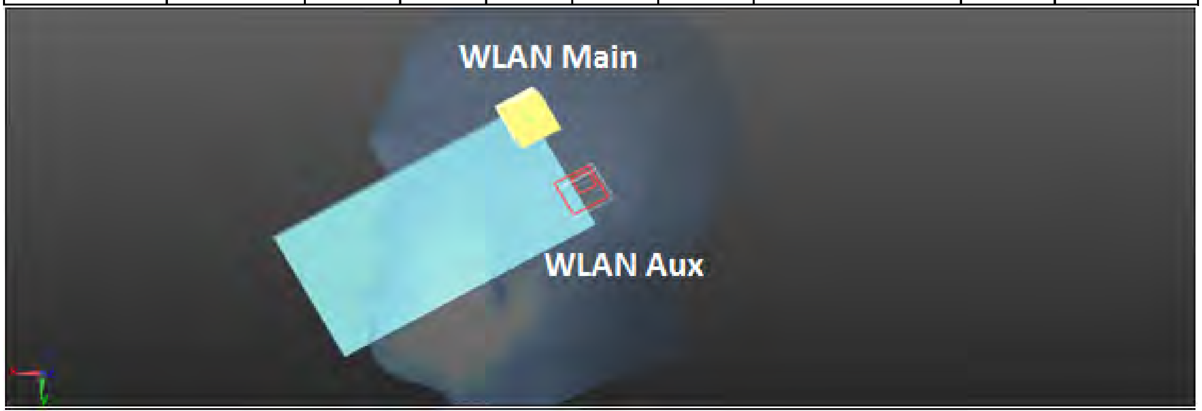


| reported SAR WWAN and WLAN 5GHz, ΣSAR evaluation | | | | | | |
|---|---|---|---|---|---|---|
| Frequency band | Position | | reported SAR / W/kg | | | ΣSAR |
| | | | WWAN | WLAN Main | WLAN Aux | <1.6W/kg |
| GSM 850 | Head | Right cheek | 0.360 | 1.340 | 0.215 | **1.915** |
| | | Right tilt | 0.190 | 1.232 | 0.188 | **1.610** |
| | | Left cheek | 0.243 | 0.435 | 0.838 | 1.516 |
| | | Left tilt | 0.149 | 0.531 | 0.410 | 1.090 |
| | Body-Worn | Front | 0.483 | 0.342 | 0.299 | 1.124 |
| | | Back | 0.560 | 0.292 | 0.783 | **1.635** |

| Conditions | Position | SAR Value (W/kg) | Coordinates (cm) | | | ΣSAR (W/kg) | Peak Location Separation Distance (mm) | SPLSR | Simultaneous Transmission SAR Test |
|---|---|---|---|---|---|---|---|---|---|
| | | | x | y | z | | | | |
| GSM 850 | Right cheek | 0.360 | 4.76 | 5.34 | -0.16 | 1.7 | 93.7 | 0.024 | SPLSR≤ 0.04, Not required |
| WLAN Main | | 1.340 | 1.84 | -3.56 | -0.08 | | | | |

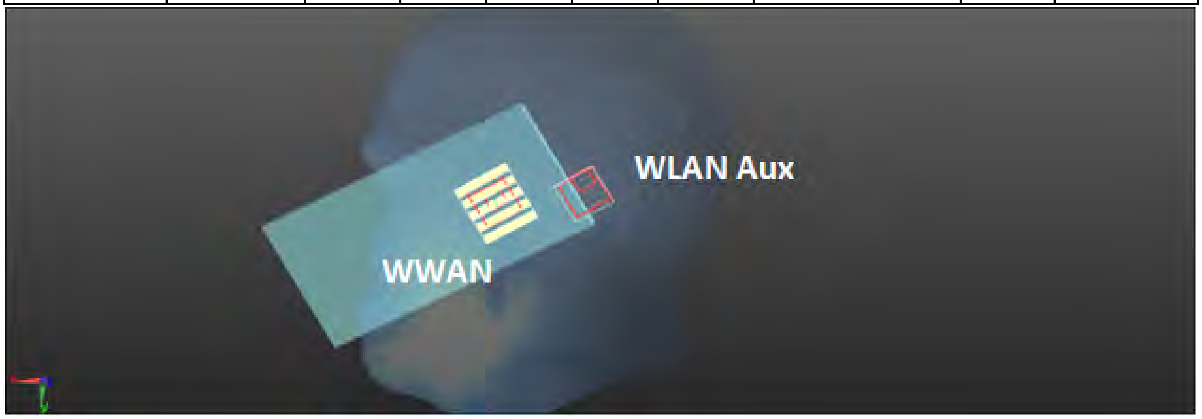
| Conditions | Position | SAR Value (W/kg) | Coordinates (cm) | | | ΣSAR (W/kg) | Peak Location Separation Distance (mm) | SPLSR | Simultaneous Transmission SAR Test |
|---|---|---|---|---|---|---|---|---|---|
| | | | x | y | z | | | | |
| GSM 850 | Right cheek | 0.360 | 4.76 | 5.34 | -0.16 | 0.575 | 77.5 | 0.006 | SPLSR≦ 0.04, Not required |
| WLAN Aux | | 0.215 | -1.28 | 0.56 | 0.63 | | | | |


| Conditions | Position | SAR Value (W/kg) | Coordinates (cm) | | | ΣSAR (W/kg) | Peak Location Separation Distance (mm) | SPLSR | Simultaneous Transmission SAR Test |
|---|---|---|---|---|---|---|---|---|---|
| | | | x | y | z | | | | |
| WLAN Main | Right cheek | 1.340 | 1.84 | -3.56 | -0.08 | 1.555 | 52.2 | 0.037 | SPLSR≦ 0.04, Not required |
| WLAN Aux | | 0.215 | -1.28 | 0.56 | 0.63 | | | | |

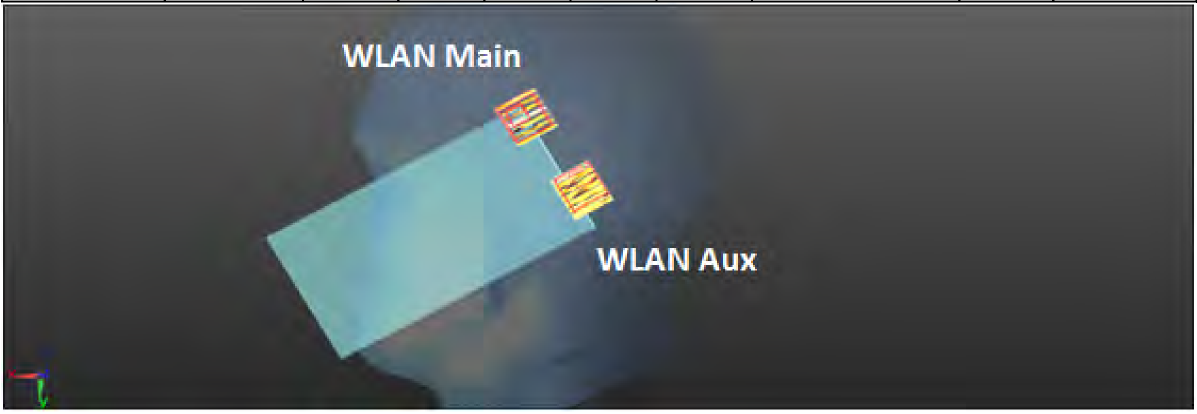


| Conditions | Position | SAR Value (W/kg) | Coordinates (cm) | | | ΣSAR (W/kg) | Peak Location Separation Distance (mm) | SPLSR | Simultaneous Transmission SAR Test |
|---|---|---|---|---|---|---|---|---|---|
| | | | x | y | z | | | | |
| GSM 850 | Right tilt | 0.190 | 2.96 | 1.54 | -0.30 | 1.422 | 42.4 | 0.040 | SPLSR≤ 0.04, Not required |
| WLAN Main | | 1.232 | 1.94 | -2.58 | -0.18 | | | | |

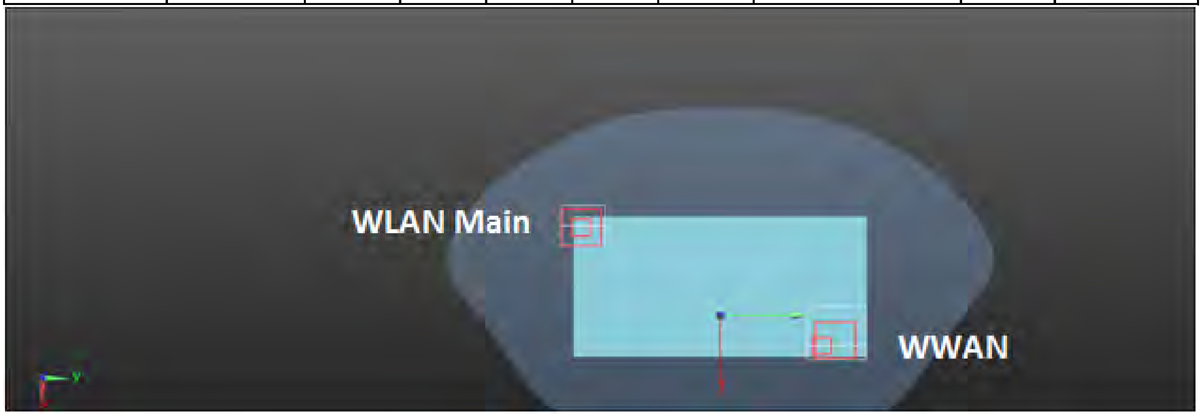

| Conditions | Position | SAR Value (W/kg) | Coordinates (cm) | | | ΣSAR (W/kg) | Peak Location Separation Distance (mm) | SPLSR | Simultaneous Transmission SAR Test |
|---|---|---|---|---|---|---|---|---|---|
| | | | x | y | z | | | | |
| GSM 850 | Right tilt | 0.190 | 2.96 | 1.54 | -0.30 | 0.378 | 54.8 | 0.004 | SPLSR≤ 0.04, Not required |
| WLAN Aux | | 0.188 | -1.50 | -0.43 | 2.21 | | | | |



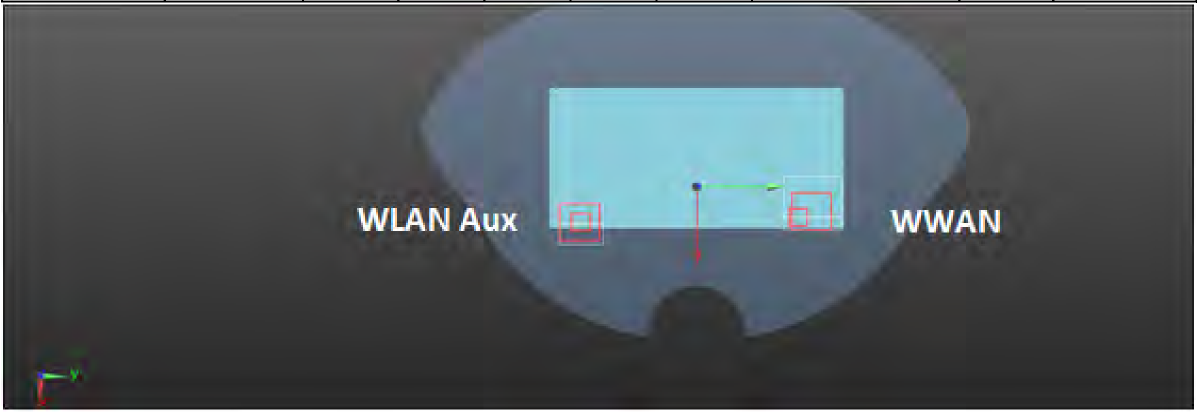
| Conditions | Position | SAR Value (W/kg) | Coordinates (cm) | | | ΣSAR (W/kg) | Peak Location Separation Distance (mm) | SPLSR | Simultaneous Transmission SAR Test |
|---|---|---|---|---|---|---|---|---|---|
| | | | x | y | z | | | | |
| WLAN Main | Right tilt | 1.232 | 1.94 | -2.58 | -0.18 | 1.42 | 47 | 0.036 | SPLSR≤ 0.04, Not required |
| WLAN Aux | | 0.188 | -1.50 | -0.43 | 2.21 | | | | |



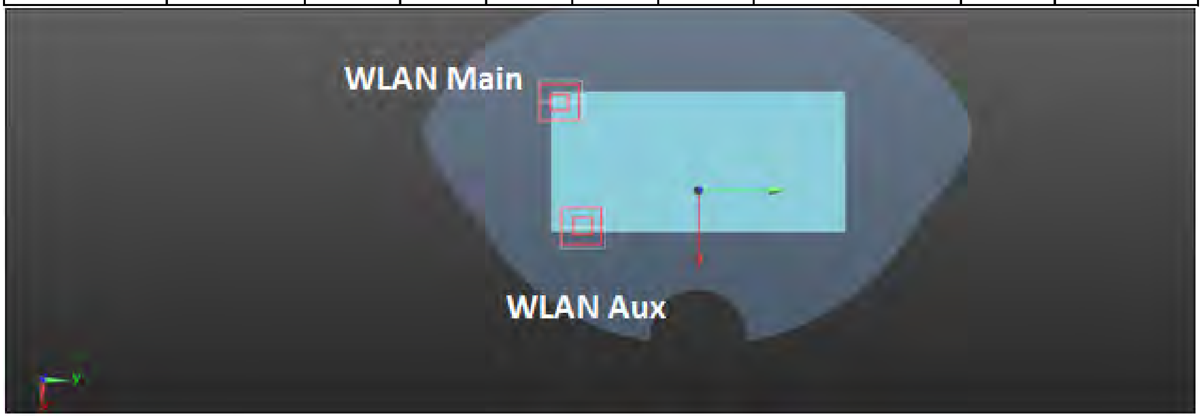

| Conditions | Position | SAR Value (W/kg) | Coordinates (cm) | | | ΣSAR (W/kg) | Peak Location Separation Distance (mm) | SPLSR | Simultaneous Transmission SAR Test |
|---|---|---|---|---|---|---|---|---|---|
| | | | x | y | z | | | | |
| GSM 850 | Back side | 0.560 | 3.50 | 6.35 | 3.11 | 0.852 | 158.9 | 0.005 | SPLSR≤ 0.04, Not required |
| WLAN Main | | 0.292 | -3.60 | -7.50 | -0.10 | | | | |



| Conditions | Position | SAR Value (W/kg) | Coordinates (cm) | | | ΣSAR (W/kg) | Peak Location Separation Distance (mm) | SPLSR | Simultaneous Transmission SAR Test |
|---|---|---|---|---|---|---|---|---|---|
| | | | x | y | z | | | | |
| GSM 850 | Back side | 0.560 | 3.50 | 6.35 | 3.11 | 1.343 | 128.9 | 0.012 | SPLSR≤ 0.04, Not required |
| WLAN Aux | | 0.783 | 3.74 | -6.14 | -0.06 | | | | |

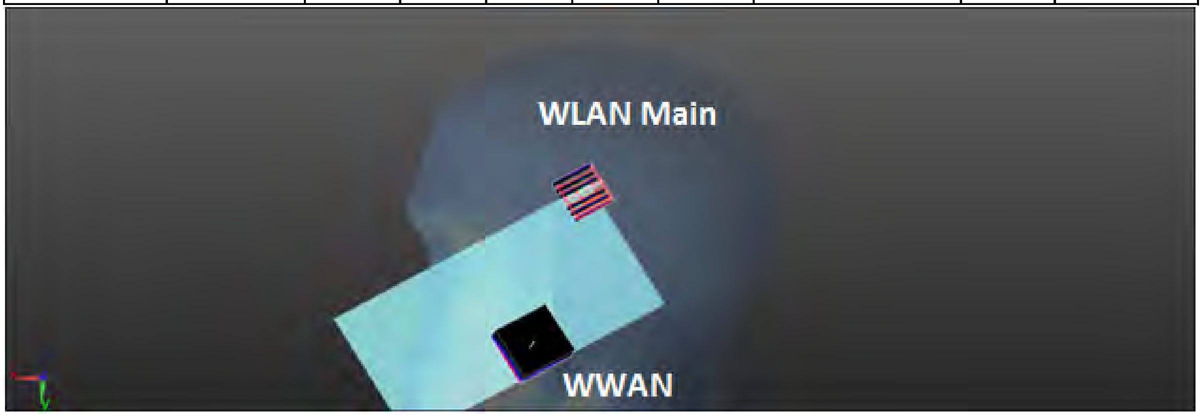



| Conditions | Position | SAR Value (W/kg) | Coordinates (cm) | | | ΣSAR (W/kg) | Peak Location Separation Distance (mm) | SPLSR | Simultaneous Transmission SAR Test |
|---|---|---|---|---|---|---|---|---|---|
| | | | x | y | z | | | | |
| WLAN Main | Back side | 0.292 | -3.60 | -7.50 | -0.10 | 1.075 | 74.7 | 0.015 | SPLSR≤ 0.04, Not required |
| WLAN Aux | | 0.783 | 3.74 | -6.14 | -0.06 | | | | |



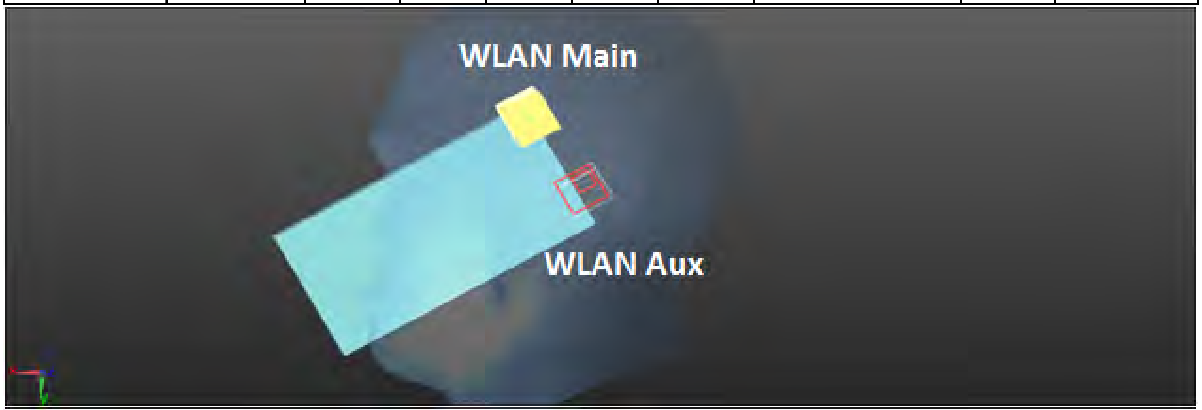
| reported SAR WWAN and WLAN 5GHz, ΣSAR evaluation | | | | | | |
|---|---|---|---|---|---|---|
| Frequency band | Position | | reported SAR / W/kg | | | ΣSAR |
| | | | WWAN | WLAN Main | WLAN Aux | <1.6W/kg |
| GSM 1900 | Head | Right cheek | 0.397 | 1.340 | 0.215 | **1.952** |
| | | Right tilt | 0.087 | 1.232 | 0.188 | 1.507 |
| | | Left cheek | 0.199 | 0.435 | 0.838 | 1.472 |
| | | Left tilt | 0.104 | 0.531 | 0.410 | 1.045 |
| | Body-Worn | Front | 0.522 | 0.342 | 0.299 | 1.163 |
| | | Back | 0.602 | 0.292 | 0.783 | **1.677** |

| Conditions | Position | SAR Value (W/kg) | Coordinates (cm) | | | ΣSAR (W/kg) | Peak Location Separation Distance (mm) | SPLSR | Simultaneous Transmission SAR Test |
|---|---|---|---|---|---|---|---|---|---|
| | | | x | y | z | | | | |
| GSM 1900 | Right cheek | 0.397 | 4.83 | 6.46 | 0.01 | 1.737 | 104.6 | 0.022 | SPLSR≦ 0.04, Not required |
| WLAN Main | | 1.340 | 1.84 | -3.56 | -0.08 | | | | |

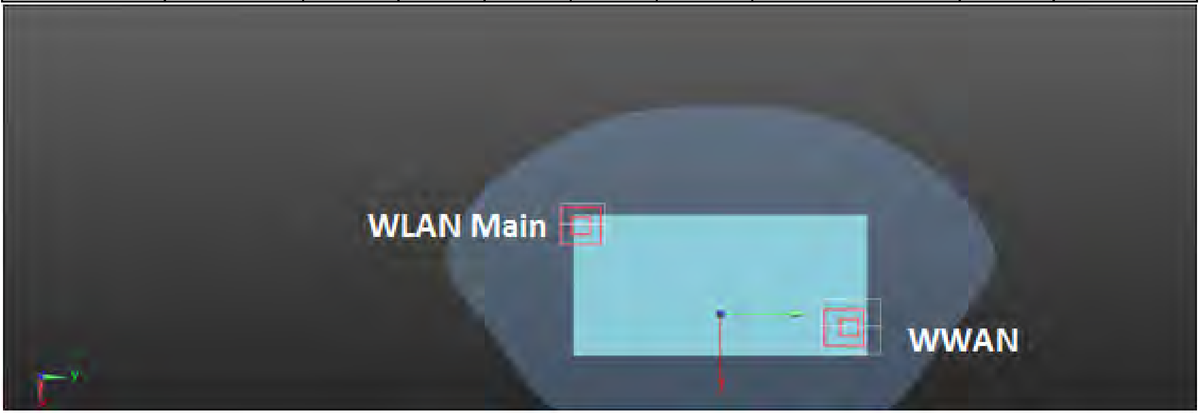


| Conditions | Position | SAR Value (W/kg) | Coordinates (cm) | | | ΣSAR (W/kg) | Peak Location Separation Distance (mm) | SPLSR | Simultaneous Transmission SAR Test |
|---|---|---|---|---|---|---|---|---|---|
| | | | x | y | z | | | | |
| GSM 1900 | Right cheek | 0.397 | 4.83 | 6.46 | 0.01 | 0.612 | 85.2 | 0.006 | SPLSR≤ 0.04, Not required |
| WLAN Aux | | 0.215 | -1.28 | 0.56 | 0.63 | | | | |

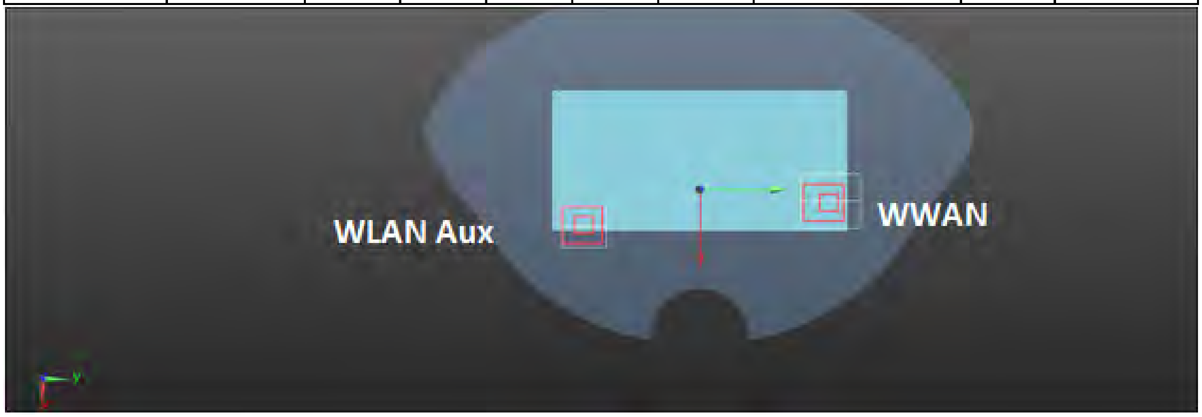

| Conditions | Position | SAR Value (W/kg) | Coordinates (cm) | | | ΣSAR (W/kg) | Peak Location Separation Distance (mm) | SPLSR | Simultaneous Transmission SAR Test |
|---|---|---|---|---|---|---|---|---|---|
| | | | x | y | z | | | | |
| WLAN Main | Right cheek | 1.340 | 1.84 | -3.56 | -0.08 | 1.555 | 52.2 | 0.037 | SPLSR≤ 0.04, Not required |
| WLAN Aux | | 0.215 | -1.28 | 0.56 | 0.63 | | | | |



| Conditions | Position | SAR Value (W/kg) | Coordinates (cm) | | | ΣSAR (W/kg) | Peak Location Separation Distance (mm) | SPLSR | Simultaneous Transmission SAR Test |
|---|---|---|---|---|---|---|---|---|---|
| | | | x | y | z | | | | |
| GSM 1900 | Back side | 0.602 | 2.56 | 6.94 | -0.08 | 0.894 | 157 | 0.005 | SPLSR≤ 0.04, Not required |
| WLAN Main | | 0.292 | -3.60 | -7.50 | -0.10 | | | | |



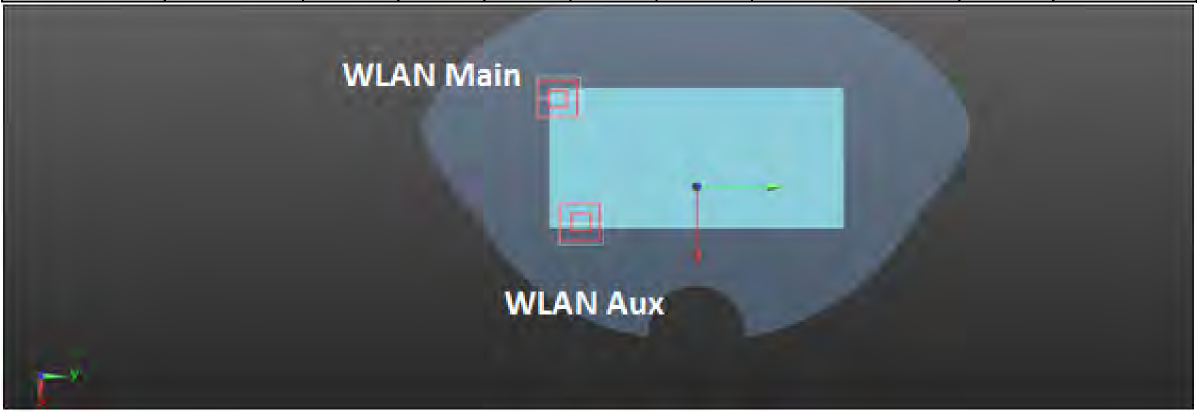

| Conditions | Position | SAR Value (W/kg) | Coordinates (cm) | | | ΣSAR (W/kg) | Peak Location Separation Distance (mm) | SPLSR | Simultaneous Transmission SAR Test |
|---|---|---|---|---|---|---|---|---|---|
| | | | x | y | z | | | | |
| GSM 1900 | Back side | 0.602 | 2.56 | 6.94 | -0.08 | 1.385 | 131.3 | 0.012 | SPLSR≤ 0.04, Not required |
| WLAN Aux | | 0.783 | 3.74 | -6.14 | -0.06 | | | | |





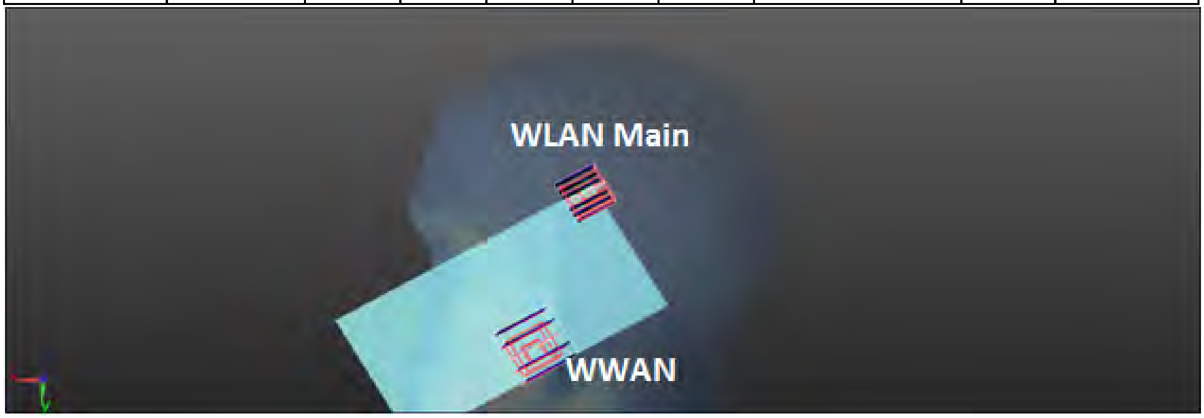
SGS Taiwan Ltd. 台灣檢驗科技股份有限公司
No.134,Wu Kung Road, New Taipei Industrial Park, Wuku District, New Taipei City, Taiwan 24803/新北市五股區新北產業園區五工路134號
t (886-2) 2299-3279 f (886-2) 2298-0488 www.tw.sgs.com
Member of SGS Group

| Conditions | Position | SAR Value (W/kg) | Coordinates (cm) | | | ΣSAR (W/kg) | Peak Location Separation Distance (mm) | SPLSR | Simultaneous Transmission SAR Test |
|---|---|---|---|---|---|---|---|---|---|
| | | | x | y | z | | | | |
| WLAN Main | Back side | 0.292 | -3.60 | -7.50 | -0.10 | 1.075 | 74.7 | 0.015 | SPLSR≤ 0.04, Not required |
| WLAN Aux | | 0.783 | 3.74 | -6.14 | -0.06 | | | | |



| reported SAR WWAN and WLAN 5GHz, ΣSAR evaluation | | | | | | |
|---|---|---|---|---|---|---|
| Frequency band | Position | | reported SAR / W/kg | | | ΣSAR |
| | | | WWAN | WLAN Main | WLAN Aux | <1.6W/kg |
| WCDMA Band II | Head | Right cheek | 0.701 | 1.340 | 0.215 | **2.256** |
| | | Right tilt | 0.165 | 1.232 | 0.188 | 1.585 |
| | | Left cheek | 0.340 | 0.435 | 0.838 | **1.613** |
| | | Left tilt | 0.187 | 0.531 | 0.410 | 1.128 |
| | Body-Worn | Front | 0.899 | 0.342 | 0.299 | 1.540 |
| | | Back | 1.041 | 0.292 | 0.783 | **2.116** |

| Conditions | Position | SAR Value (W/kg) | Coordinates (cm) | | | ΣSAR (W/kg) | Peak Location Separation Distance (mm) | SPLSR | Simultaneous Transmission SAR Test |
|---|---|---|---|---|---|---|---|---|---|
| | | | x | y | z | | | | |
| WCDMA Band II | Right cheek | 0.701 | 4.77 | 6.24 | -0.03 | 2.041 | 102.4 | 0.028 | SPLSR≤ 0.04, Not required |
| WLAN Main | | 1.340 | 1.84 | -3.56 | -0.05 | | | | |

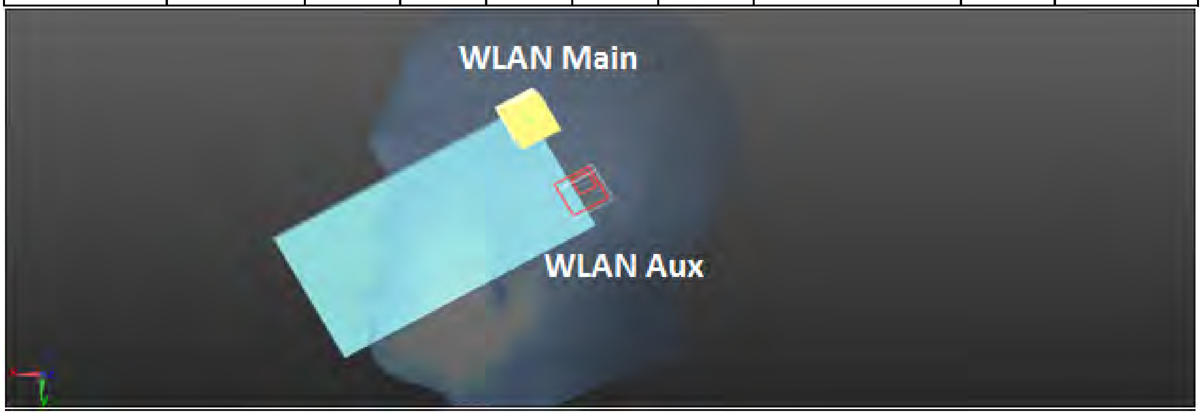




SGS Taiwan Ltd. No.134,Wu Kung Road, New Taipei Industrial Park, Wuku District, New Taipei City, Taiwan 24803/新北市五股區新北產業園區五工路134號
台灣檢驗科技股份有限公司 t (886-2) 2299-3279 f (886-2) 2298-0488 www.tw.sgs.com
Member of SGS Group

| Conditions | Position | SAR Value (W/kg) | Coordinates (cm) | | | ΣSAR (W/kg) | Peak Location Separation Distance (mm) | SPLSR | Simultaneous Transmission SAR Test |
|---|---|---|---|---|---|---|---|---|---|
| | | | x | y | z | | | | |
| WCDMA Band II | Right cheek | 0.701 | 4.77 | 6.24 | -0.03 | 0.916 | 83.4 | 0.011 | SPLSR≦ 0.04, Not required |
| WLAN Aux | | 0.215 | -1.28 | 0.56 | 0.63 | | | | |


| Conditions | Position | SAR Value (W/kg) | Coordinates (cm) | | | ΣSAR (W/kg) | Peak Location Separation Distance (mm) | SPLSR | Simultaneous Transmission SAR Test |
|---|---|---|---|---|---|---|---|---|---|
| | | | x | y | z | | | | |
| WLAN Main | Right cheek | 1.340 | 1.84 | -3.56 | -0.08 | 1.555 | 52.2 | 0.037 | SPLSR≦ 0.04, Not required |
| WLAN Aux | | 0.215 | -1.28 | 0.56 | 0.63 | | | | |

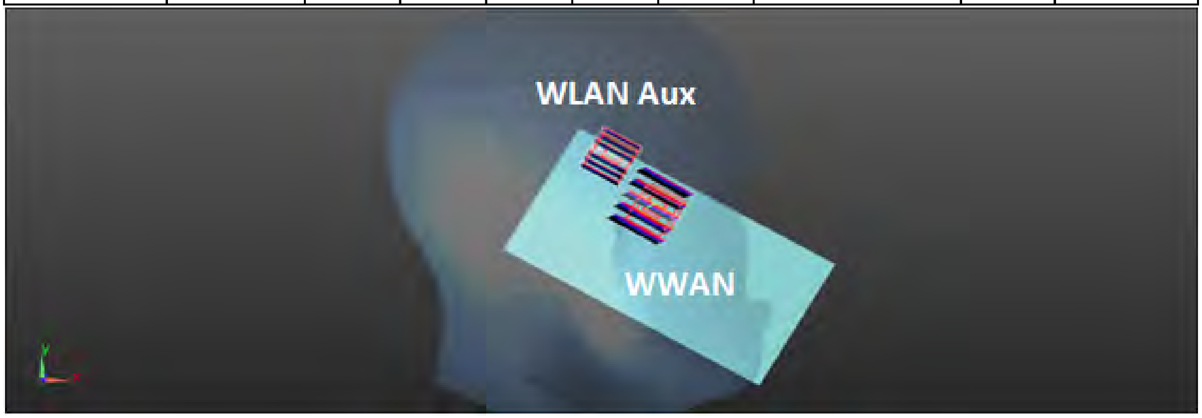




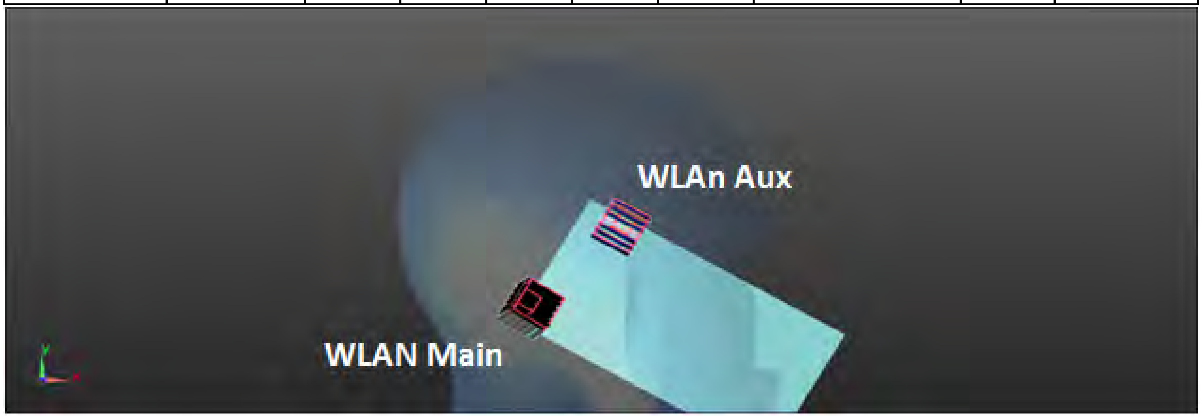
SGS Taiwan Ltd. No.134,Wu Kung Road, New Taipei Industrial Park, Wuku District, New Taipei City, Taiwan 24803/新北市五股區新北產業園區五工路134號
台灣檢驗科技股份有限公司 t (886-2) 2299-3279 f (886-2) 2298-0488 www.tw.sgs.com
Member of SGS Group

| Conditions | Position | SAR Value (W/kg) | Coordinates (cm) | | | ΣSAR (W/kg) | Peak Location Separation Distance (mm) | SPLSR | Simultaneous Transmission SAR Test |
|---|---|---|---|---|---|---|---|---|---|
| | | | x | y | z | | | | |
| WCDMA Band II | Left cheek | 0.340 | 5.94 | -0.65 | -0.08 | 0.775 | 75.4 | 0.009 | SPLSR≤ 0.04, Not required |
| WLAN Main | | 0.435 | -1.49 | -1.90 | 0.41 | | | | |

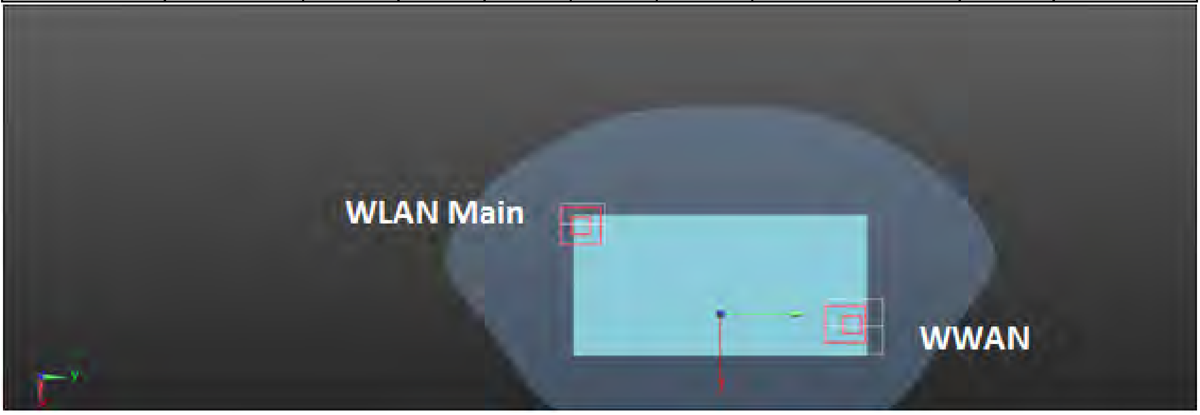

| Conditions | Position | SAR Value (W/kg) | Coordinates (cm) | | | ΣSAR (W/kg) | Peak Location Separation Distance (mm) | SPLSR | Simultaneous Transmission SAR Test |
|---|---|---|---|---|---|---|---|---|---|
| | | | x | y | z | | | | |
| WCDMA Band II | Left cheek | 0.340 | 5.94 | -0.65 | -0.08 | 1.178 | 38.2 | 0.033 | SPLSR≤ 0.04, Not required |
| WLAN Aux | | 0.838 | 3.61 | 2.38 | -0.18 | | | | |



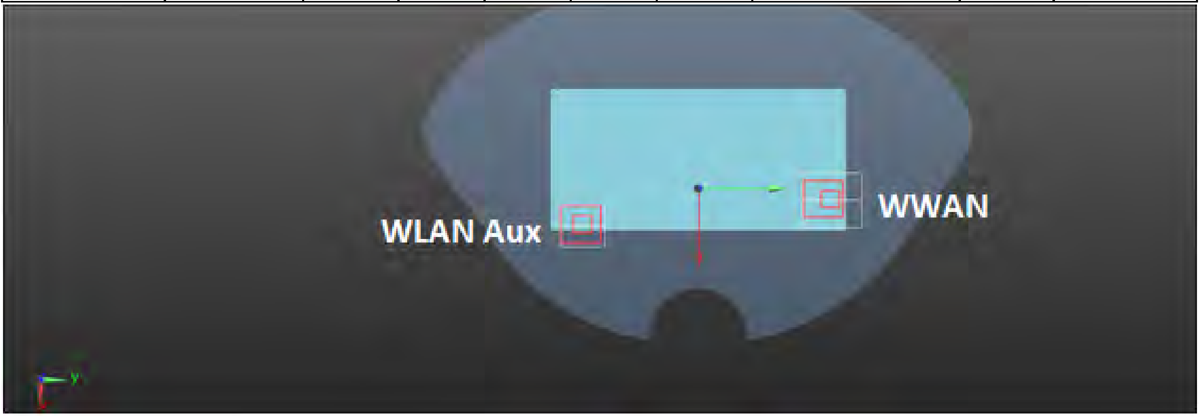
| Conditions | Position | SAR Value (W/kg) | Coordinates (cm) | | | ΣSAR (W/kg) | Peak Location Separation Distance (mm) | SPLSR | Simultaneous Transmission SAR Test |
|---|---|---|---|---|---|---|---|---|---|
| | | | x | y | z | | | | |
| WLAN Main | Left cheek | 0.435 | -1.49 | -1.90 | 0.41 | 1.273 | 66.8 | 0.022 | SPLSR≤ 0.04, Not required |
| WLAN Aux | | 0.838 | 3.61 | 2.38 | -0.18 | | | | |



| Conditions | Position | SAR Value (W/kg) | Coordinates (cm) | | | ΣSAR (W/kg) | Peak Location Separation Distance (mm) | SPLSR | Simultaneous Transmission SAR Test |
|---|---|---|---|---|---|---|---|---|---|
| | | | x | y | z | | | | |
| WCDMA Band II | Back side | 1.041 | 2.40 | 7.09 | -0.08 | 1.333 | 157.8 | 0.010 | SPLSR≦ 0.04, Not required |
| WLAN Main | | 0.292 | -3.60 | -7.50 | -0.10 | | | | |



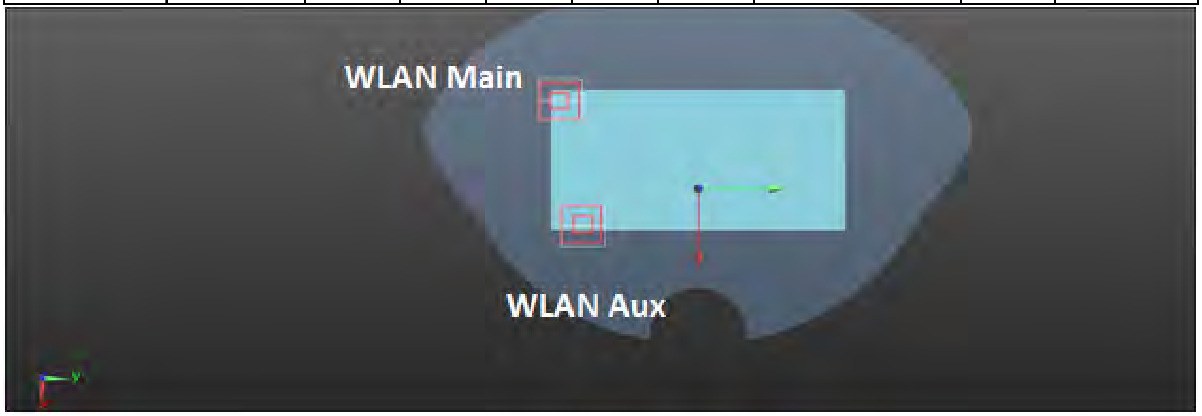

| Conditions | Position | SAR Value (W/kg) | Coordinates (cm) | | | ΣSAR (W/kg) | Peak Location Separation Distance (mm) | SPLSR | Simultaneous Transmission SAR Test |
|---|---|---|---|---|---|---|---|---|---|
| | | | x | y | z | | | | |
| WCDMA Band II | Back side | 1.041 | 2.40 | 7.09 | -0.08 | 1.824 | 133 | 0.019 | SPLSR≦ 0.04, Not required |
| WLAN Aux | | 0.783 | 3.74 | -6.14 | -0.06 | | | | |





SGS Taiwan Ltd. No.134,Wu Kung Road, New Taipei Industrial Park, Wuku District, New Taipei City, Taiwan 24803/新北市五股區新北產業園區五工路134號
台灣檢驗科技股份有限公司 t (886-2) 2299-3279 f (886-2) 2298-0488 www.tw.sgs.com
Member of SGS Group

| Conditions | Position | SAR Value (W/kg) | Coordinates (cm) | | | ΣSAR (W/kg) | Peak Location Separation Distance (mm) | SPLSR | Simultaneous Transmission SAR Test |
|---|---|---|---|---|---|---|---|---|---|
| | | | x | y | z | | | | |
| WLAN Main | Back side | 0.292 | -3.60 | -7.50 | -0.10 | 1.075 | 74.7 | 0.015 | SPLSR≤ 0.04, Not required |
| WLAN Aux | | 0.783 | 3.74 | -6.14 | -0.06 | | | | |



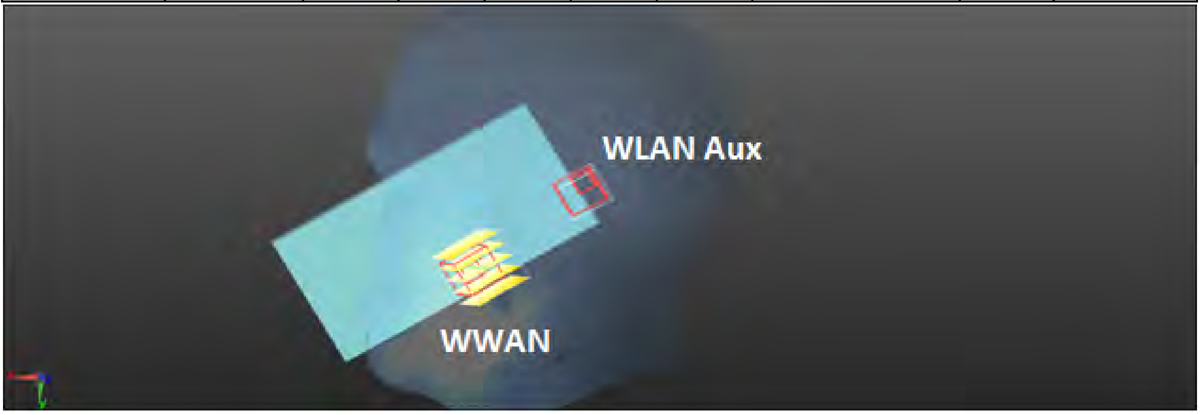
| reported SAR WWAN and WLAN 5GHz, ΣSAR evaluation | | | | | | |
|---|---|---|---|---|---|---|
| Frequency band | Position | | reported SAR / W/kg | | | ΣSAR |
| | | | WWAN | WLAN Main | WLAN Aux | <1.6W/kg |
| WCDMA Band IV | Head | Right cheek | 0.724 | 1.340 | 0.215 | **2.279** |
| | | Right tilt | 0.157 | 1.232 | 0.188 | 1.577 |
| | | Left cheek | 0.319 | 0.435 | 0.838 | 1.592 |
| | | Left tilt | 0.188 | 0.531 | 0.410 | 1.129 |
| | Body-Worn | Front | 0.866 | 0.342 | 0.299 | 1.507 |
| | | Back | 0.917 | 0.292 | 0.783 | **1.992** |

| Conditions | Position | SAR Value (W/kg) | Coordinates (cm) | | | ΣSAR (W/kg) | Peak Location Separation Distance (mm) | SPLSR | Simultaneous Transmission SAR Test |
|---|---|---|---|---|---|---|---|---|---|
| | | | x | y | z | | | | |
| WCDMA Band IV | Right cheek | 0.724 | 4.85 | 6.12 | -0.04 | 2.064 | 101.4 | 0.029 | SPLSR≤ 0.04, Not required |
| WLAN Main | | 1.340 | 1.84 | -3.56 | -0.08 | | | | |

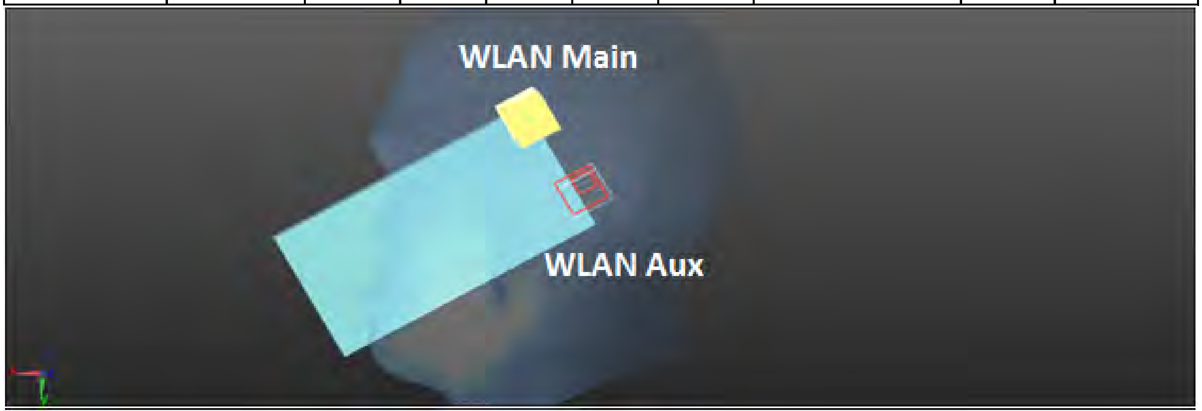



SGS Taiwan Ltd. No.134,Wu Kung Road, New Taipei Industrial Park, Wuku District, New Taipei City, Taiwan 24803/新北市五股區新北產業園區五工路134號
台灣檢驗科技股份有限公司 t (886-2) 2299-3279 f (886-2) 2298-0488 www.tw.sgs.com
Member of SGS Group

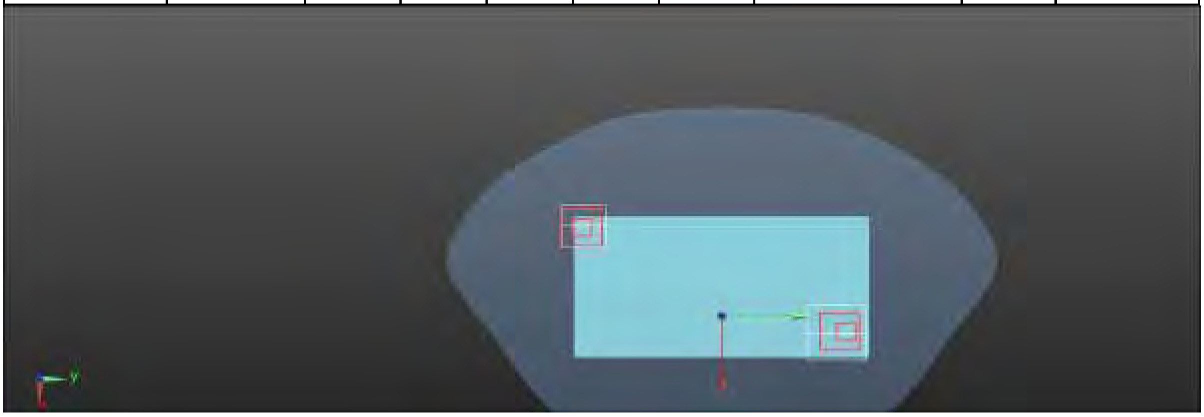
| Conditions | Position | SAR Value (W/kg) | Coordinates (cm) | | | ΣSAR (W/kg) | Peak Location Separation Distance (mm) | SPLSR | Simultaneous Transmission SAR Test |
|---|---|---|---|---|---|---|---|---|---|
| | | | x | y | z | | | | |
| WCDMA Band IV | Right cheek | 0.724 | 4.85 | 6.12 | -0.04 | 0.939 | 83.1 | 0.011 | SPLSR≦ 0.04, Not required |
| WLAN Aux | | 0.215 | -1.28 | 0.56 | 0.63 | | | | |



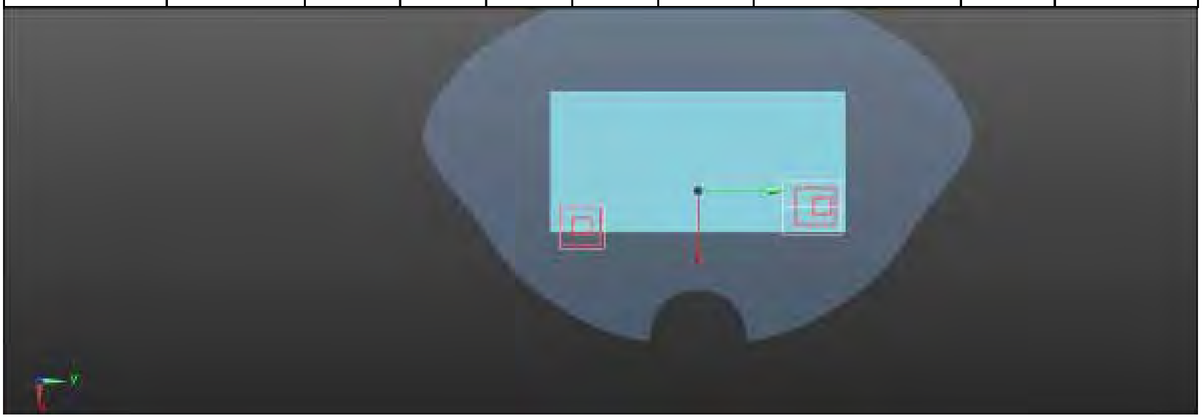

| Conditions | Position | SAR Value (W/kg) | Coordinates (cm) | | | ΣSAR (W/kg) | Peak Location Separation Distance (mm) | SPLSR | Simultaneous Transmission SAR Test |
|---|---|---|---|---|---|---|---|---|---|
| | | | x | y | z | | | | |
| WLAN Main | Right cheek | 1.340 | 1.84 | -3.56 | -0.08 | 1.555 | 52.2 | 0.037 | SPLSR≦ 0.04, Not required |
| WLAN Aux | | 0.215 | -1.28 | 0.56 | 0.63 | | | | |



| Conditions | Position | SAR Value (W/kg) | Coordinates (cm) | | | ΣSAR (W/kg) | Peak Location Separation Distance (mm) | SPLSR | Simultaneous Transmission SAR Test |
|---|---|---|---|---|---|---|---|---|---|
| | | | x | y | z | | | | |
| WCDMA Band IV | Back side | 0.917 | 2.70 | 6.84 | -0.09 | 1.209 | 156.6 | 0.008 | SPLSR≤ 0.04, Not required |
| WLAN Main | | 0.292 | -3.60 | -7.50 | -0.10 | | | | |

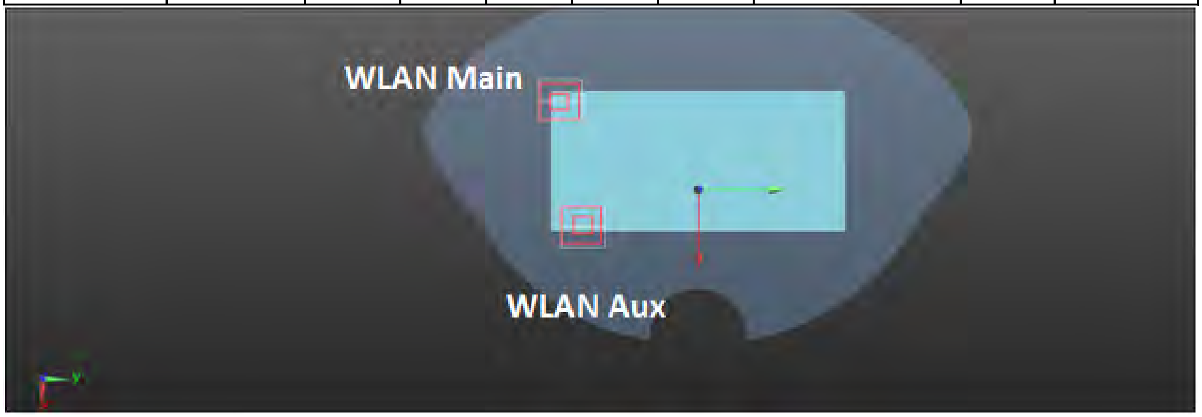


| Conditions | Position | SAR Value (W/kg) | Coordinates (cm) | | | ΣSAR (W/kg) | Peak Location Separation Distance (mm) | SPLSR | Simultaneous Transmission SAR Test |
|---|---|---|---|---|---|---|---|---|---|
| | | | x | y | z | | | | |
| WCDMA Band IV | Back side | 0.917 | 2.70 | 6.84 | -0.09 | 1.7 | 130.2 | 0.017 | SPLSR≤ 0.04, Not required |
| WLAN Aux | | 0.783 | 3.74 | -6.14 | -0.06 | | | | |




SGS Taiwan Ltd. No.134,Wu Kung Road, New Taipei Industrial Park, Wuku District, New Taipei City, Taiwan 24803/新北市五股區新北產業園區五工路134號
台灣檢驗科技股份有限公司 t (886-2) 2299-3279 f (886-2) 2298-0488 www.tw.sgs.com
Member of SGS Group

| Conditions | Position | SAR Value (W/kg) | Coordinates (cm) | | | ΣSAR (W/kg) | Peak Location Separation Distance (mm) | SPLSR | Simultaneous Transmission SAR Test |
|---|---|---|---|---|---|---|---|---|---|
| | | | x | y | z | | | | |
| WLAN Main | Back side | 0.292 | -3.60 | -7.50 | -0.10 | 1.075 | 74.7 | 0.015 | SPLSR≤ 0.04, Not required |
| WLAN Aux | | 0.783 | 3.74 | -6.14 | -0.06 | | | | |

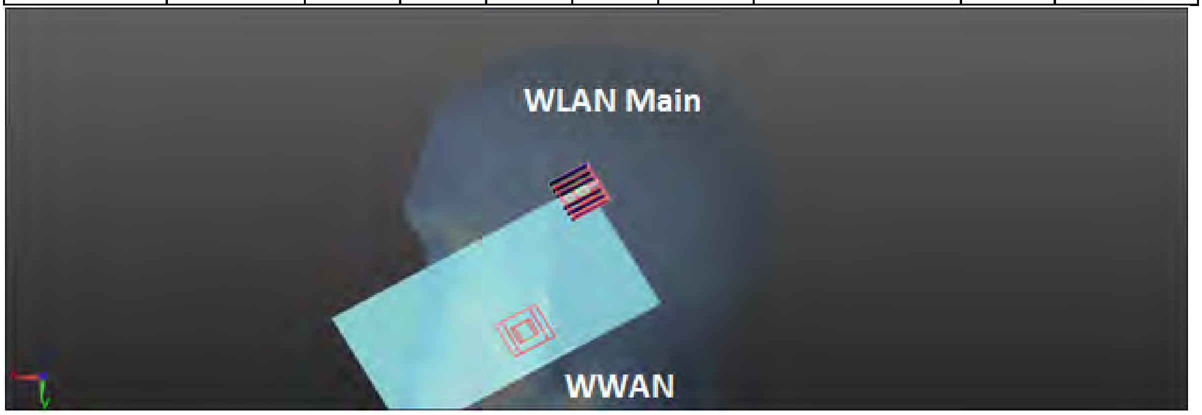




SGS Taiwan Ltd. No.134,Wu Kung Road, New Taipei Industrial Park, Wuku District, New Taipei City, Taiwan 24803/新北市五股區新北產業園區五工路134號
台灣檢驗科技股份有限公司 t (886-2) 2299-3279 f (886-2) 2298-0488 www.tw.sgs.com
Member of SGS Group

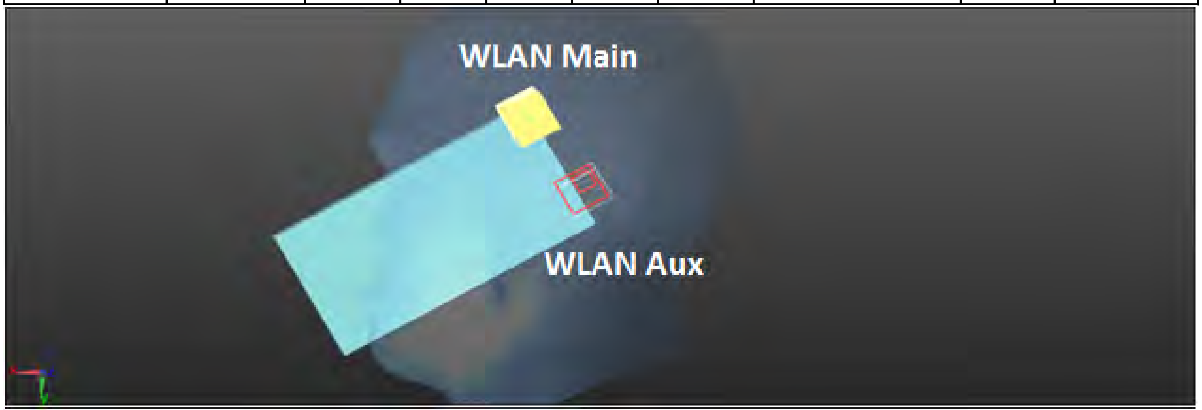
| reported SAR WWAN and WLAN 5GHz, ΣSAR evaluation | | | | | | |
|---|---|---|---|---|---|---|
| Frequency band | Position | | reported SAR / W/kg | | | ΣSAR |
| | | | WWAN | WLAN Main | WLAN Aux | <1.6W/kg |
| WCDMA Band V | Head | Right cheek | 0.360 | 1.340 | 0.215 | **1.915** |
| | | Right tilt | 0.181 | 1.232 | 0.188 | **1.601** |
| | | Left cheek | 0.231 | 0.435 | 0.838 | 1.504 |
| | | Left tilt | 0.132 | 0.531 | 0.410 | 1.073 |
| | Body-Worn | Front | 0.638 | 0.342 | 0.299 | 1.279 |
| | | Back | 0.511 | 0.292 | 0.783 | 1.586 |

| Conditions | Position | SAR Value (W/kg) | Coordinates (cm) | | | ΣSAR (W/kg) | Peak Location Separation Distance (mm) | SPLSR | Simultaneous Transmission SAR Test |
|---|---|---|---|---|---|---|---|---|---|
| | | | x | y | z | | | | |
| WCDMA Band V | Right cheek | 0.360 | 4.90 | 5.42 | -0.14 | 1.7 | 94.9 | 0.023 | SPLSR≤ 0.04, Not required |
| WLAN Main | | 1.340 | 1.84 | -3.56 | -0.08 | | | | |



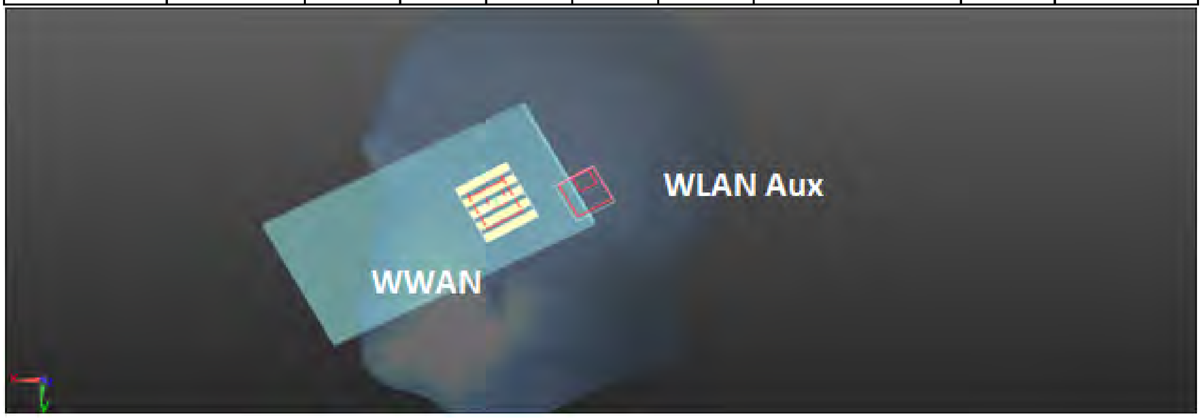
| Conditions | Position | SAR Value (W/kg) | Coordinates (cm) | | | ΣSAR (W/kg) | Peak Location Separation Distance (mm) | SPLSR | Simultaneous Transmission SAR Test |
|---|---|---|---|---|---|---|---|---|---|
| | | | x | y | z | | | | |
| WCDMA Band V | Right cheek | 0.360 | 4.90 | 5.42 | -0.14 | 0.575 | 79 | 0.006 | SPLSR≤ 0.04, Not required |
| WLAN Aux | | 0.215 | -1.28 | 0.56 | 0.63 | | | | |


| Conditions | Position | SAR Value (W/kg) | Coordinates (cm) | | | ΣSAR (W/kg) | Peak Location Separation Distance (mm) | SPLSR | Simultaneous Transmission SAR Test |
|---|---|---|---|---|---|---|---|---|---|
| | | | x | y | z | | | | |
| WLAN Main | Right cheek | 1.340 | 1.84 | -3.56 | -0.08 | 1.555 | 52.2 | 0.037 | SPLSR≤ 0.04, Not required |
| WLAN Aux | | 0.215 | -1.28 | 0.56 | 0.63 | | | | |

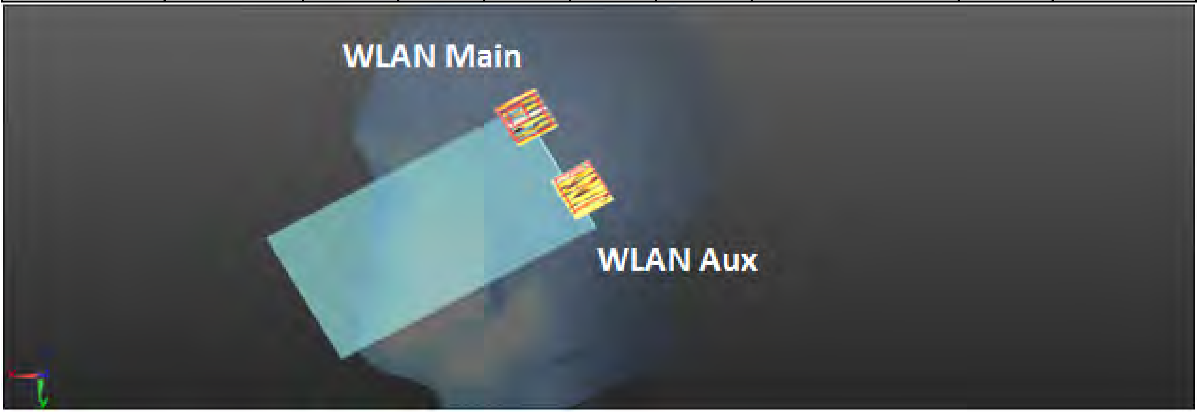


| Conditions | Position | SAR Value (W/kg) | Coordinates (cm) | | | ΣSAR (W/kg) | Peak Location Separation Distance (mm) | SPLSR | Simultaneous Transmission SAR Test |
|---|---|---|---|---|---|---|---|---|---|
| | | | x | y | z | | | | |
| WCDMA Band V | Right tilt | 0.181 | 2.96 | 1.54 | -0.29 | 1.413 | 42.4 | 0.040 | SPLSR≤ 0.04, Not required |
| WLAN Main | | 1.232 | 1.94 | -2.58 | -0.18 | | | | |


| Conditions | Position | SAR Value (W/kg) | Coordinates (cm) | | | ΣSAR (W/kg) | Peak Location Separation Distance (mm) | SPLSR | Simultaneous Transmission SAR Test |
|---|---|---|---|---|---|---|---|---|---|
| | | | x | y | z | | | | |
| WCDMA Band V | Right tilt | 0.181 | 2.96 | 1.54 | -0.29 | 0.369 | 54.8 | 0.004 | SPLSR≤ 0.04, Not required |
| WLAN Aux | | 0.188 | -1.50 | -0.43 | 2.21 | | | | |

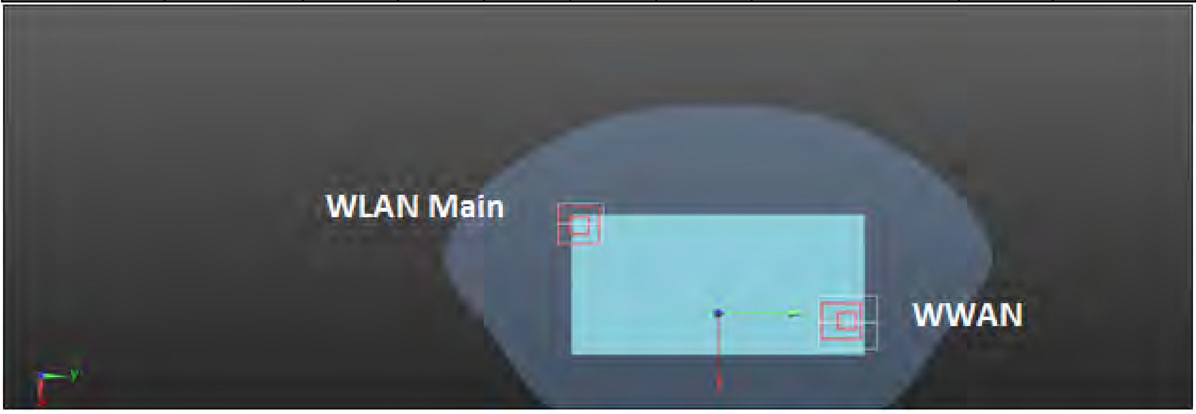


| Conditions | Position | SAR Value (W/kg) | Coordinates (cm) | | | ΣSAR (W/kg) | Peak Location Separation Distance (mm) | SPLSR | Simultaneous Transmission SAR Test |
|---|---|---|---|---|---|---|---|---|---|
| | | | x | y | z | | | | |
| WLAN Main | Right tilt | 1.232 | 1.94 | -2.58 | -0.18 | 1.42 | 47 | 0.036 | SPLSR≤ 0.04, Not required |
| WLAN Aux | | 0.188 | -1.50 | -0.43 | 2.21 | | | | |

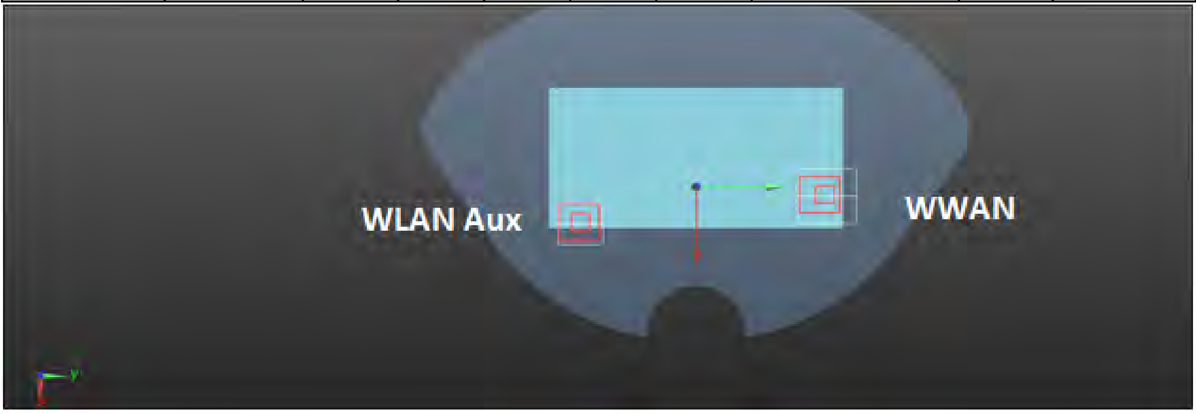


| reported SAR WWAN and WLAN 5GHz, ΣSAR evaluation | | | | | | |
|---|---|---|---|---|---|---|
| Frequency band | Position | | reported SAR / W/kg | | | ΣSAR |
| | | | WWAN | WLAN Main | WLAN Aux | <1.6W/kg |
| LTE FDD Band II | Body-Worn | Front | 0.928 | 0.342 | 0.299 | 1.569 |
| | | Back | 0.888 | 0.292 | 0.783 | **1.963** |

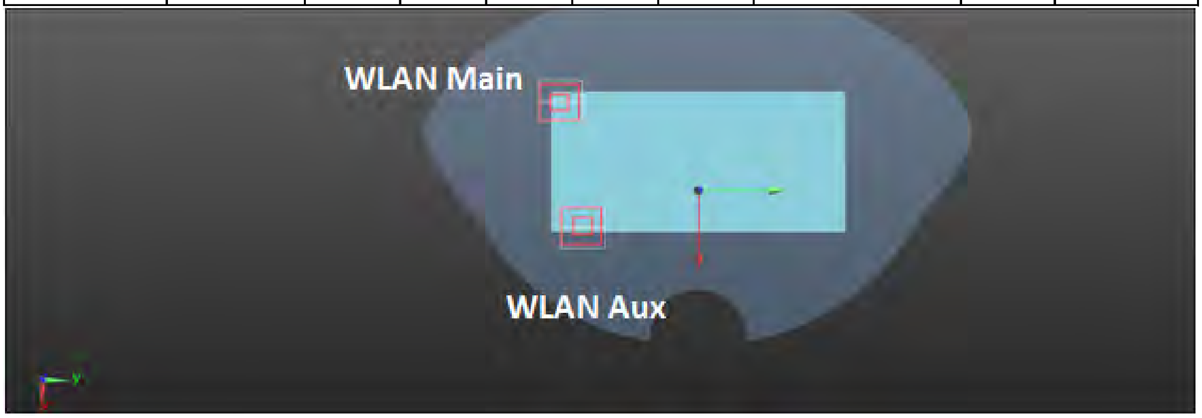
| Conditions | Position | SAR Value (W/kg) | Coordinates (cm) | | | ΣSAR (W/kg) | Peak Location Separation Distance (mm) | SPLSR | Simultaneous Transmission SAR Test |
|---|---|---|---|---|---|---|---|---|---|
| | | | x | y | z | | | | |
| LTE FDD Band II | Back side | 0.888 | 2.25 | 6.94 | -0.06 | 1.180 | 155.8 | 0.008 | SPLSR≤ 0.04, Not required |
| WLAN Main | | 0.292 | -3.60 | -7.50 | -0.10 | | | | |



| Conditions | Position | SAR Value (W/kg) | Coordinates (cm) | | | ΣSAR (W/kg) | Peak Location Separation Distance (mm) | SPLSR | Simultaneous Transmission SAR Test |
|---|---|---|---|---|---|---|---|---|---|
| | | | x | y | z | | | | |
| LTE FDD Band II | Back side | 0.888 | 2.25 | 6.94 | -0.06 | 1.671 | 131.5 | 0.016 | SPLSR≦ 0.04, Not required |
| WLAN Aux | | 0.783 | 3.74 | -6.14 | -0.06 | | | | |

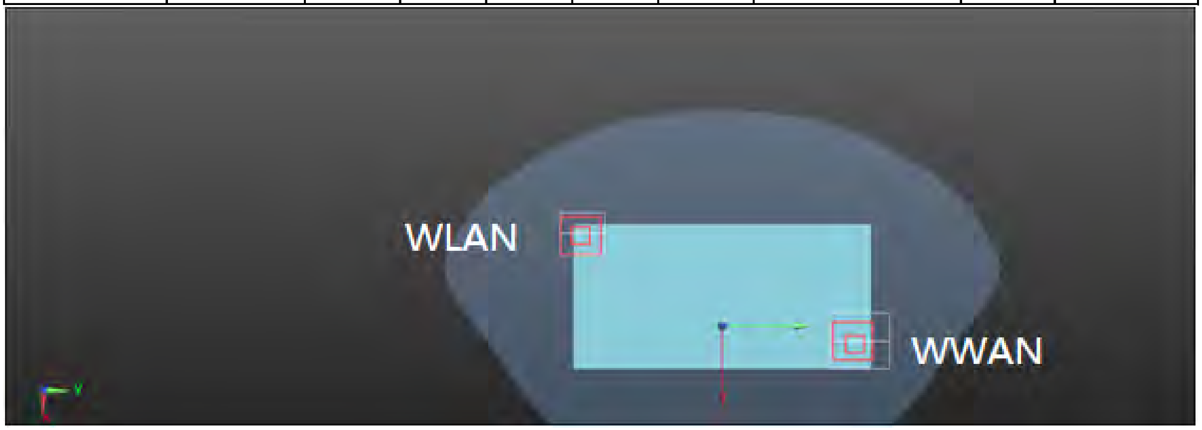



| Conditions | Position | SAR Value (W/kg) | Coordinates (cm) | | | ΣSAR (W/kg) | Peak Location Separation Distance (mm) | SPLSR | Simultaneous Transmission SAR Test |
|---|---|---|---|---|---|---|---|---|---|
| | | | x | y | z | | | | |
| WLAN Main | Back side | 0.292 | -3.60 | -7.50 | -0.10 | 1.075 | 74.7 | 0.015 | SPLSR≦ 0.04, Not required |
| WLAN Aux | | 0.783 | 3.74 | -6.14 | -0.06 | | | | |



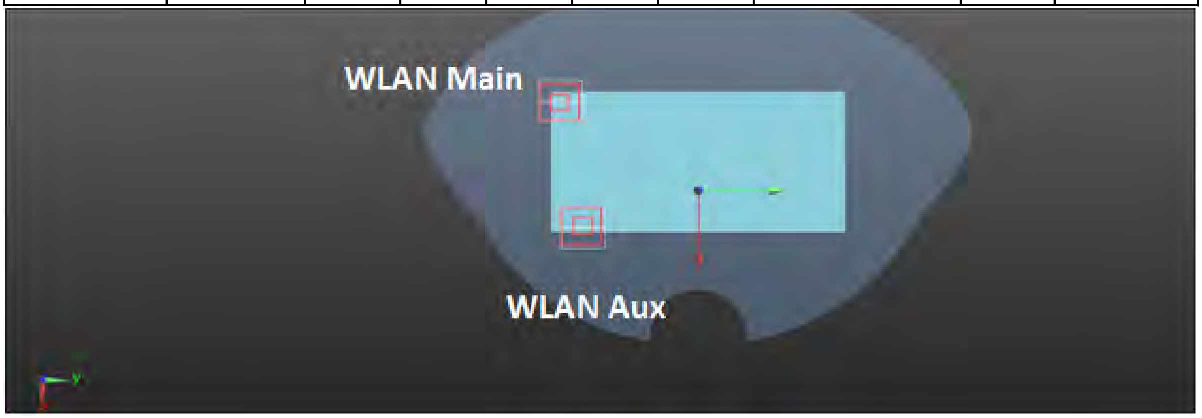
| reported SAR WWAN and WLAN 5GHz, ΣSAR evaluation | | | | | | |
|---|---|---|---|---|---|---|
| Frequency band | Position | | reported SAR / W/kg | | | ΣSAR |
| | | | WWAN | WLAN Main | WLAN Aux | <1.6W/kg |
| LTE FDD Band IV | Body-Worn | Front | 0.806 | 0.342 | 0.299 | 1.447 |
| | | Back | 1.120 | 0.292 | 0.783 | **2.195** |

| Conditions | Position | SAR Value (W/kg) | Coordinates (cm) | | | ΣSAR (W/kg) | Peak Location Separation Distance (mm) | SPLSR | Simultaneous Transmission SAR Test |
|---|---|---|---|---|---|---|---|---|---|
| | | | x | y | z | | | | |
| LTE FDD Band IV | Back side | 1.120 | 2.71 | 7.24 | -0.02 | 1.412 | 160.3 | 0.010 | SPLSR≤ 0.04, Not required |
| WLAN Main | | 0.292 | -3.60 | -7.50 | -0.10 | | | | |



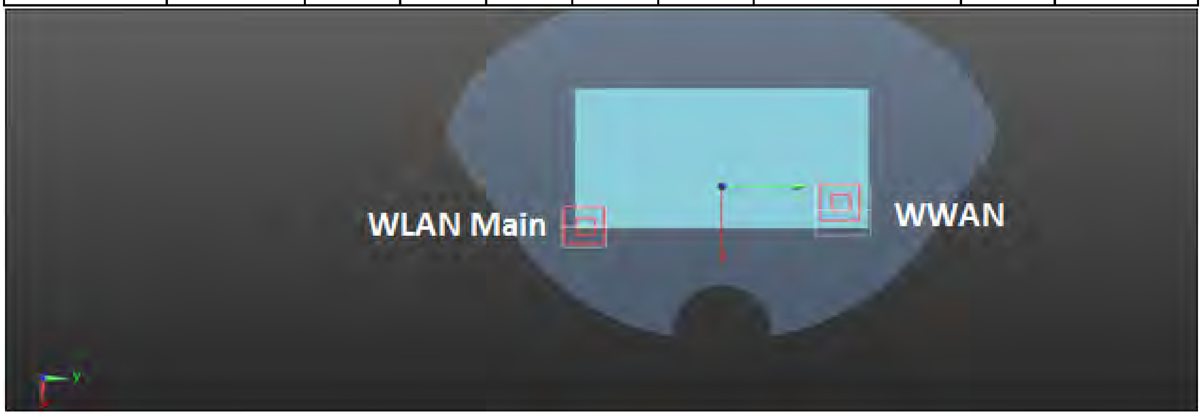
| Conditions | Position | SAR Value (W/kg) | Coordinates (cm) | | | ΣSAR (W/kg) | Peak Location Separation Distance (mm) | SPLSR | Simultaneous Transmission SAR Test |
|---|---|---|---|---|---|---|---|---|---|
| | | | x | y | z | | | | |
| LTE FDD Band IV | Back side | 1.120 | 2.71 | 7.24 | -0.02 | 1.903 | 134.2 | 0.020 | SPLSR≤ 0.04, Not required |
| WLAN Aux | | 0.783 | 3.74 | -6.14 | -0.06 | | | | |


| Conditions | Position | SAR Value (W/kg) | Coordinates (cm) | | | ΣSAR (W/kg) | Peak Location Separation Distance (mm) | SPLSR | Simultaneous Transmission SAR Test |
|---|---|---|---|---|---|---|---|---|---|
| | | | x | y | z | | | | |
| WLAN Main | Back side | 0.292 | -3.60 | -7.50 | -0.10 | 1.075 | 74.7 | 0.015 | SPLSR≤ 0.04, Not required |
| WLAN Aux | | 0.783 | 3.74 | -6.14 | -0.06 | | | | |



| reported SAR WWAN and WLAN 5GHz, ΣSAR evaluation | | | | | | |
|---|---|---|---|---|---|---|
| Frequency band | Position | | reported SAR / W/kg | | | ΣSAR |
| | | | WWAN | WLAN Main | WLAN Aux | <1.6W/kg |
| LTE FDD Band V | Body-Worn | Front | 0.650 | 0.342 | 0.299 | 1.291 |
| | | Back | 0.517 | 0.292 | 0.783 | 1.592 |
| LTE FDD Band VII | Body-Worn | Front | 1.045 | 0.342 | 0.299 | **1.686** |
| | | Back | 0.820 | 0.292 | 0.783 | **1.895** |

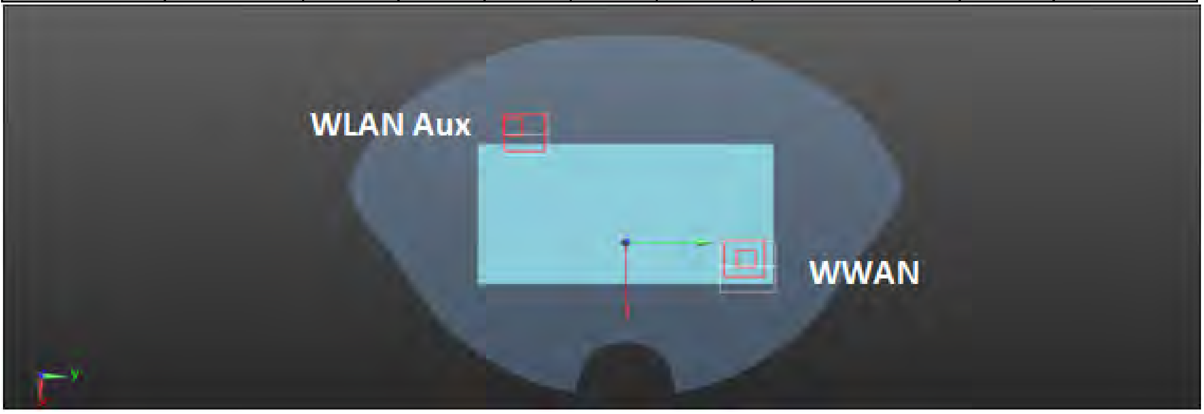
| Conditions | Position | SAR Value (W/kg) | Coordinates (cm) | | | ΣSAR (W/kg) | Peak Location Separation Distance (mm) | SPLSR | Simultaneous Transmission SAR Test |
|---|---|---|---|---|---|---|---|---|---|
| | | | x | y | z | | | | |
| LTE FDD Band VII | Front side | 1.045 | 3.02 | 6.60 | -0.08 | 1.387 | 139.8 | 0.012 | SPLSR≦ 0.04, Not required |
| WLAN Main | | 0.342 | 4.02 | -7.34 | -0.06 | | | | |



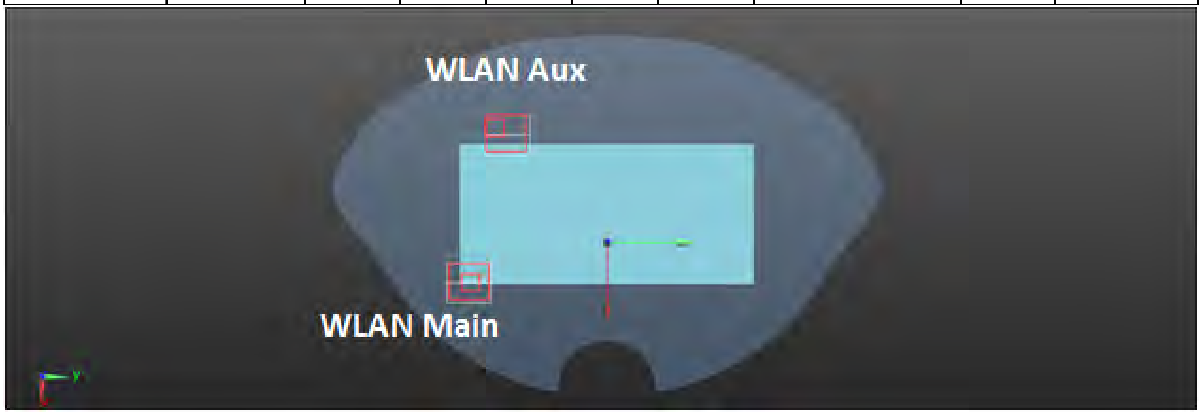



SGS Taiwan Ltd. No.134,Wu Kung Road, New Taipei Industrial Park, Wuku District, New Taipei City, Taiwan 24803/新北市五股區新北產業園區五工路134號
台灣檢驗科技股份有限公司 t (886-2) 2299-3279 f (886-2) 2298-0488 www.tw.sgs.com
Member of SGS Group

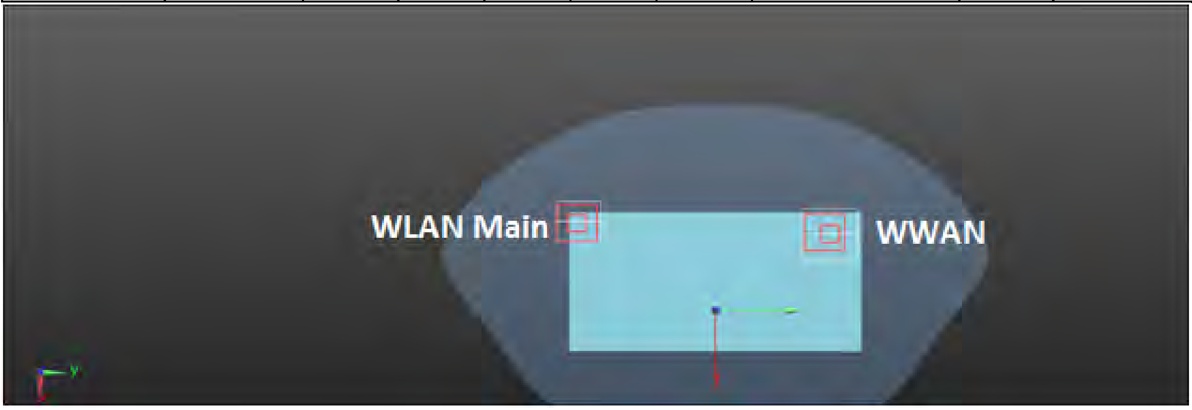
| Conditions | Position | SAR Value (W/kg) | Coordinates (cm) | | | ΣSAR (W/kg) | Peak Location Separation Distance (mm) | SPLSR | Simultaneous Transmission SAR Test |
|---|---|---|---|---|---|---|---|---|---|
| | | | x | y | z | | | | |
| LTE FDD Band VII | Front side | 1.045 | 3.02 | 6.60 | -0.08 | 1.344 | 139.4 | 0.011 | SPLSR≤ 0.04, Not required |
| WLAN Aux | | 0.299 | -3.50 | -5.72 | -0.08 | | | | |




| Conditions | Position | SAR Value (W/kg) | Coordinates (cm) | | | ΣSAR (W/kg) | Peak Location Separation Distance (mm) | SPLSR | Simultaneous Transmission SAR Test |
|---|---|---|---|---|---|---|---|---|---|
| | | | x | y | z | | | | |
| WLAN Main | Front side | 0.342 | 4.02 | -7.34 | -0.06 | 0.641 | 76.9 | 0.007 | SPLSR≤ 0.04, Not required |
| WLAN Aux | | 0.299 | -3.50 | -5.72 | -0.08 | | | | |

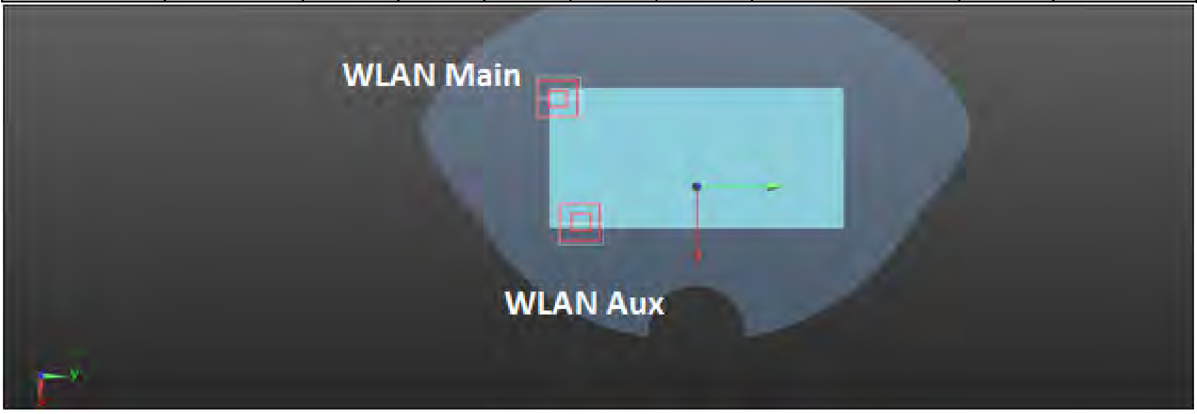


| Conditions | Position | SAR Value (W/kg) | Coordinates (cm) | | | ΣSAR (W/kg) | Peak Location Separation Distance (mm) | SPLSR | Simultaneous Transmission SAR Test |
|---|---|---|---|---|---|---|---|---|---|
| | | | x | y | z | | | | |
| LTE FDD Band VII | Back side | 0.820 | -2.98 | 6.24 | -0.07 | 1.112 | 137.5 | 0.009 | SPLSR≤ 0.04, Not required |
| WLAN Main | | 0.292 | -3.60 | -7.50 | -0.10 | | | | |



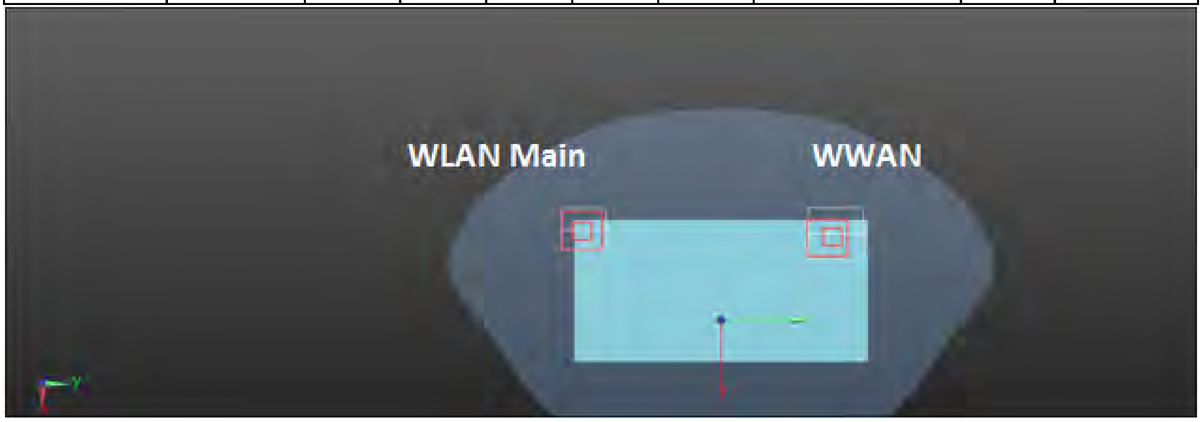

| Conditions | Position | SAR Value (W/kg) | Coordinates (cm) | | | ΣSAR (W/kg) | Peak Location Separation Distance (mm) | SPLSR | Simultaneous Transmission SAR Test |
|---|---|---|---|---|---|---|---|---|---|
| | | | x | y | z | | | | |
| LTE FDD Band VII | Back side | 0.820 | -2.98 | 6.24 | -0.07 | 1.603 | 140.9 | 0.014 | SPLSR≤ 0.04, Not required |
| WLAN Aux | | 0.783 | 3.74 | -6.14 | -0.06 | | | | |

| Conditions | Position | SAR Value (W/kg) | Coordinates (cm) | | | ΣSAR (W/kg) | Peak Location Separation Distance (mm) | SPLSR | Simultaneous Transmission SAR Test |
|---|---|---|---|---|---|---|---|---|---|
| | | | x | y | z | | | | |
| WLAN Main | Back side | 0.292 | -3.60 | -7.50 | -0.10 | 1.075 | 74.7 | 0.015 | SPLSR≤ 0.04, Not required |
| WLAN Aux | | 0.783 | 3.74 | -6.14 | -0.06 | | | | |



| reported SAR WWAN and WLAN 5GHz, ΣSAR evaluation | | | | | | |
|---|---|---|---|---|---|---|
| Frequency band | Position | | reported SAR / W/kg | | | ΣSAR |
| | | | WWAN | WLAN Main | WLAN Aux | <1.6W/kg |
| LTE FDD Band XII | Body-Worn | Front | 0.187 | 0.342 | 0.299 | 0.828 |
| | | Back | 0.137 | 0.292 | 0.783 | 1.212 |
| LTE FDD Band XIII | Body-Worn | Front | 0.746 | 0.342 | 0.299 | 1.387 |
| | | Back | 0.390 | 0.292 | 0.783 | 1.465 |
| LTE FDD Band XXX | Body-Worn | Front | 0.924 | 0.342 | 0.299 | 1.565 |
| | | Back | 0.773 | 0.292 | 0.783 | **1.848** |

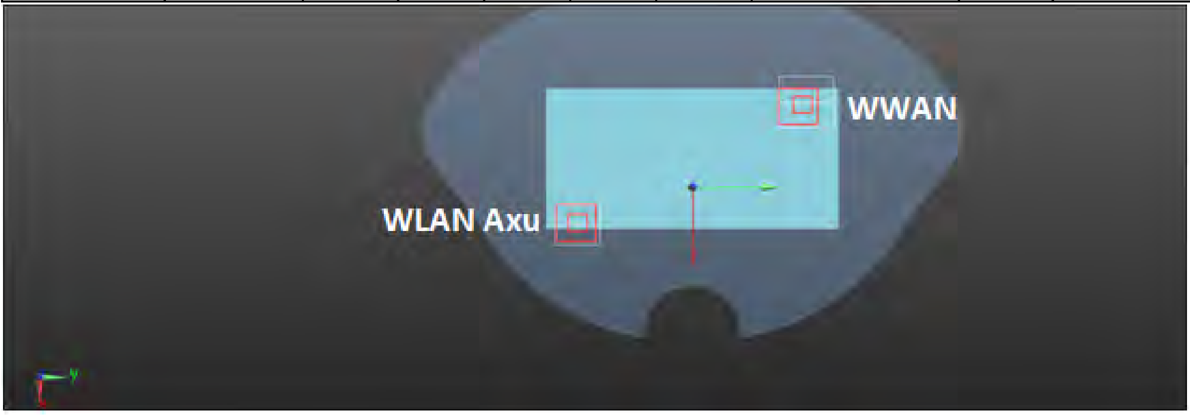
| Conditions | Position | SAR Value (W/kg) | Coordinates (cm) | | | ΣSAR (W/kg) | Peak Location Separation Distance (mm) | SPLSR | Simultaneous Transmission SAR Test |
|---|---|---|---|---|---|---|---|---|---|
| | | | x | y | z | | | | |
| LTE FDD Band XXX | Back side | 0.773 | -3.56 | 6.34 | -0.11 | 1.065 | 138.4 | 0.008 | SPLSR<0.04, Not required |
| WLAN Main | | 0.292 | -3.60 | -7.50 | -0.10 | | | | |



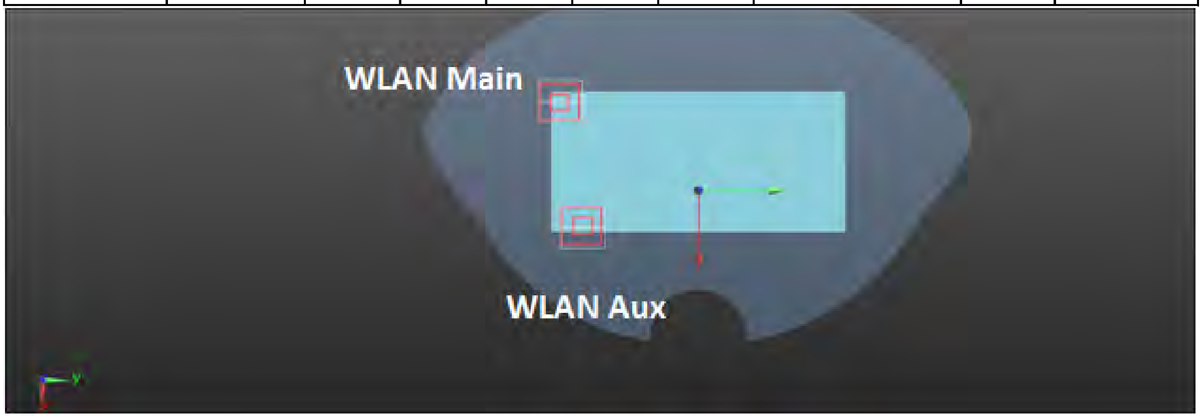



SGS Taiwan Ltd. No.134,Wu Kung Road, New Taipei Industrial Park, Wuku District, New Taipei City, Taiwan 24803/新北市五股區新北產業園區五工路134號
台灣檢驗科技股份有限公司 t (886-2) 2299-3279 f (886-2) 2298-0488 www.tw.sgs.com
Member of SGS Group

| Conditions | Position | SAR Value (W/kg) | Coordinates (cm) | | | ΣSAR (W/kg) | Peak Location Separation Distance (mm) | SPLSR | Simultaneous Transmission SAR Test |
|---|---|---|---|---|---|---|---|---|---|
| | | | x | y | z | | | | |
| LTE FDD Band XXX | Back side | 0.773 | -3.56 | 6.34 | -0.11 | 1.556 | 144.6 | 0.013 | SPLSR≤ 0.04, Not required |
| WLAN Aux | | 0.783 | 3.74 | -6.14 | -0.06 | | | | |




| Conditions | Position | SAR Value (W/kg) | Coordinates (cm) | | | ΣSAR (W/kg) | Peak Location Separation Distance (mm) | SPLSR | Simultaneous Transmission SAR Test |
|---|---|---|---|---|---|---|---|---|---|
| | | | x | y | z | | | | |
| WLAN Main | Back side | 0.292 | -3.60 | -7.50 | -0.10 | 1.075 | 74.7 | 0.015 | SPLSR≤ 0.04, Not required |
| WLAN Aux | | 0.783 | 3.74 | -6.14 | -0.06 | | | | |



| reported SAR WWAN and WLAN 5GHz, ΣSAR evaluation | | | | | | |
|---|---|---|---|---|---|---|
| Frequency band | Position | | reported SAR / W/kg | | | ΣSAR |
| | | | WWAN | WLAN Main | WLAN Aux | <1.6W/kg |
| CDMA Callular BC0 | Head | Right cheek | 0.446 | 1.340 | 0.215 | 2.001 |
| | | Right tilt | 0.294 | 1.232 | 0.188 | 1.714 |
| | | Left cheek | 0.378 | 0.435 | 0.838 | 1.651 |
| | | Left tilt | 0.244 | 0.531 | 0.410 | 1.185 |
| | Body-Worn | Front | 1.187 | 0.342 | 0.299 | 1.828 |
| | | Back | 0.703 | 0.292 | 0.783 | 1.778 |

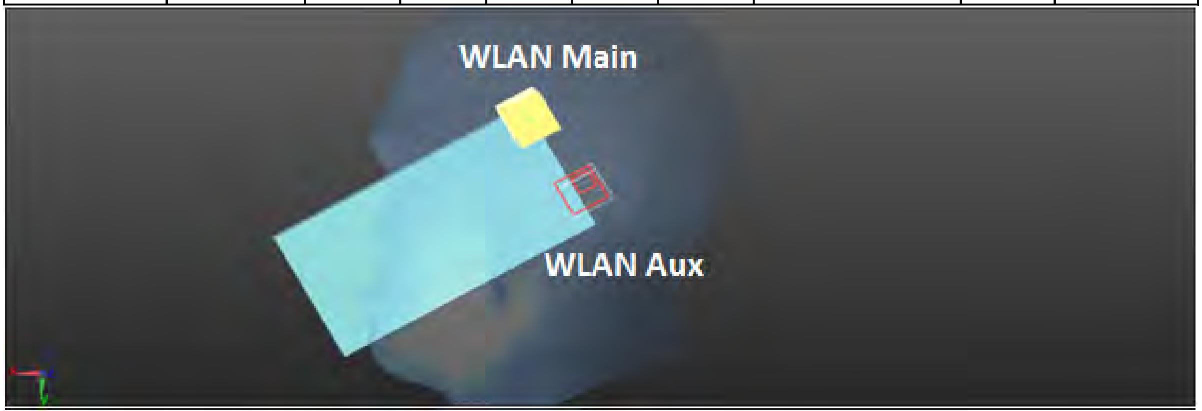
| Conditions | Position | SAR Value (W/kg) | Coordinates (cm) | | | ΣSAR (W/kg) | Peak Location Separation Distance (mm) | SPLSR | Simultaneous Transmission SAR Test |
|---|---|---|---|---|---|---|---|---|---|
| | | | x | y | z | | | | |
| CDMA Callular BC0 | Right cheek | 0.446 | 4.78 | 5.17 | -0.14 | 1.786 | 92.1 | 0.026 | SPLSR≤ 0.04, Not required |
| WLAN Main | | 1.340 | 1.84 | -3.56 | -0.05 | | | | |



SGS Taiwan Ltd. No.134,Wu Kung Road, New Taipei Industrial Park, Wuku District, New Taipei City, Taiwan 24803/新北市五股區新北產業園區五工路134號
台灣檢驗科技股份有限公司 t (886-2) 2299-3279 f (886-2) 2298-0488 www.tw.sgs.com
Member of SGS Group

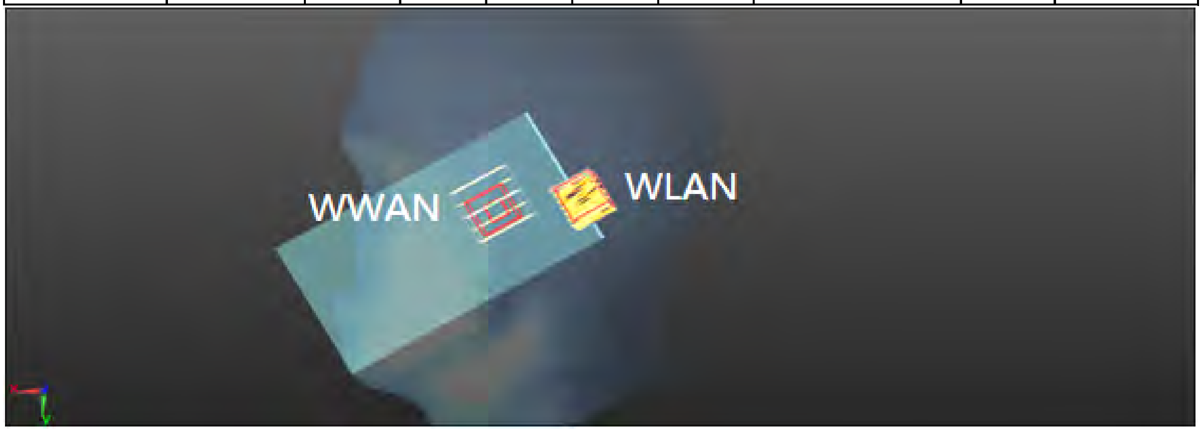
| Conditions | Position | SAR Value (W/kg) | Coordinates (cm) | | | ΣSAR (W/kg) | Peak Location Separation Distance (mm) | SPLSR | Simultaneous Transmission SAR Test |
|---|---|---|---|---|---|---|---|---|---|
| | | | x | y | z | | | | |
| CDMA Callular BC0 | Right cheek | 0.446 | 4.78 | 5.17 | -0.14 | 0.661 | 76.59 | 0.007 | SPLSR≤ 0.04, Not required |
| WLAN Aux | | 0.215 | -1.28 | 0.56 | 0.63 | | | | |


| Conditions | Position | SAR Value (W/kg) | Coordinates (cm) | | | ΣSAR (W/kg) | Peak Location Separation Distance (mm) | SPLSR | Simultaneous Transmission SAR Test |
|---|---|---|---|---|---|---|---|---|---|
| | | | x | y | z | | | | |
| WLAN Main | Right cheek | 1.340 | 1.84 | -3.56 | -0.08 | 1.555 | 52.2 | 0.037 | SPLSR≤ 0.04, Not required |
| WLAN Aux | | 0.215 | -1.28 | 0.56 | 0.63 | | | | |



| Conditions | Position | SAR Value (W/kg) | Coordinates (cm) | | | ΣSAR (W/kg) | Peak Location Separation Distance (mm) | SPLSR | Simultaneous Transmission SAR Test |
|---|---|---|---|---|---|---|---|---|---|
| | | | x | y | z | | | | |
| CDMA Callular BC0 | Right tilt | 0.294 | 3.32 | 2.21 | -0.20 | 1.526 | 49.3 | 0.038 | SPLSR≤ 0.04, Not required |
| WLAN Main | | 1.232 | 1.94 | -2.58 | -0.18 | | | | |

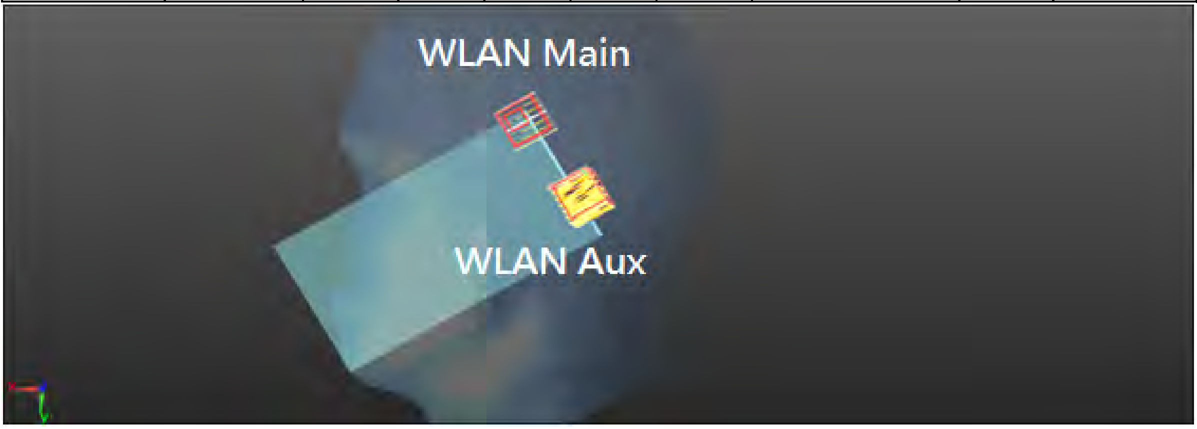

| Conditions | Position | SAR Value (W/kg) | Coordinates (cm) | | | ΣSAR (W/kg) | Peak Location Separation Distance (mm) | SPLSR | Simultaneous Transmission SAR Test |
|---|---|---|---|---|---|---|---|---|---|
| | | | x | y | z | | | | |
| CDMA Callular BC0 | Right tilt | 0.294 | 3.32 | 2.21 | -0.20 | 0.482 | 60 | 0.006 | SPLSR≤ 0.04, Not required |
| WLAN Aux | | 0.188 | -1.50 | -0.43 | 2.21 | | | | |






SGS Taiwan Ltd. 台灣檢驗科技股份有限公司
No.134,Wu Kung Road, New Taipei Industrial Park, Wuku District, New Taipei City, Taiwan 24803/新北市五股區新北產業園區五工路134號
t (886-2) 2299-3279 f (886-2) 2298-0488 www.tw.sgs.com
Member of SGS Group

| Conditions | Position | SAR Value (W/kg) | Coordinates (cm) | | | ΣSAR (W/kg) | Peak Location Separation Distance (mm) | SPLSR | Simultaneous Transmission SAR Test |
|---|---|---|---|---|---|---|---|---|---|
| | | | x | y | z | | | | |
| WLAN Main | Right tilt | 1.232 | 1.94 | -2.58 | -0.18 | 1.42 | 47 | 0.036 | SPLSR≤ 0.04, Not required |
| WLAN Aux | | 0.188 | -1.50 | -0.43 | 2.21 | | | | |



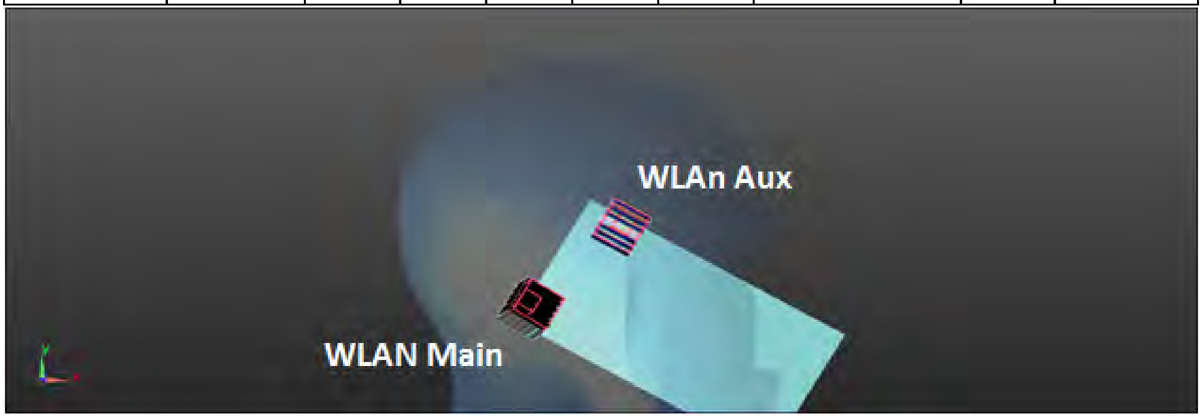

| Conditions | Position | SAR Value (W/kg) | Coordinates (cm) | | | ΣSAR (W/kg) | Peak Location Separation Distance (mm) | SPLSR | Simultaneous Transmission SAR Test |
|---|---|---|---|---|---|---|---|---|---|
| | | | x | y | z | | | | |
| CDMA Callular BC0 | Left cheek | 0.378 | 5.19 | -4.25 | -0.22 | 0.813 | 71 | 0.010 | SPLSR≤ 0.04, Not required |
| WLAN Main | | 0.435 | -1.49 | -1.90 | 0.41 | | | | |



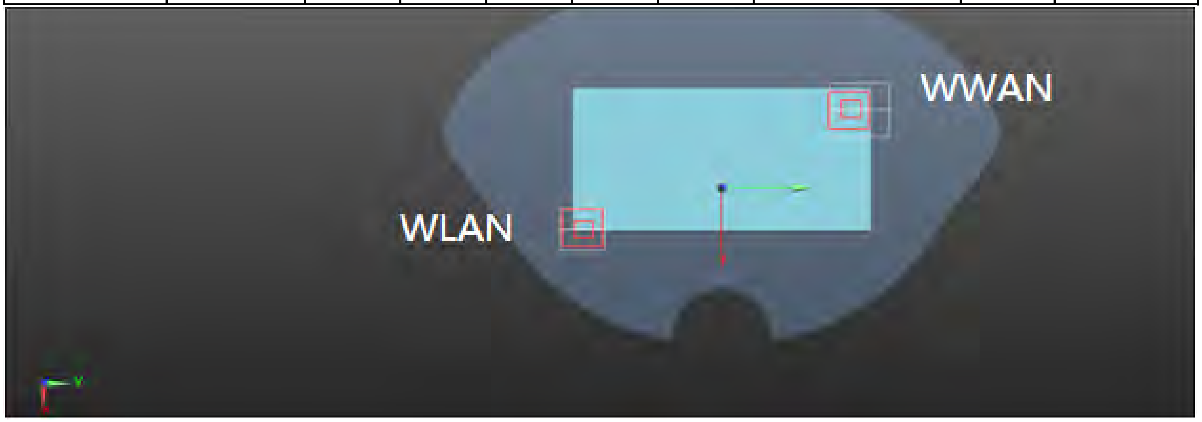
SGS Taiwan Ltd. 台灣檢驗科技股份有限公司
No.134,Wu Kung Road, New Taipei Industrial Park, Wuku District, New Taipei City, Taiwan 24803/新北市五股區新北產業園區五工路134號
t (886-2) 2299-3279 f (886-2) 2298-0488 www.tw.sgs.com
Member of SGS Group

| Conditions | Position | SAR Value (W/kg) | Coordinates (cm) | | | ΣSAR (W/kg) | Peak Location Separation Distance (mm) | SPLSR | Simultaneous Transmission SAR Test |
|---|---|---|---|---|---|---|---|---|---|
| | | | x | y | z | | | | |
| CDMA Callular BC0 | Left cheek | 0.378 | 5.19 | -4.25 | -0.22 | 1.216 | 68.18 | 0.020 | SPLSR≦ 0.04, Not required |
| WLAN Aux | | 0.838 | 3.61 | 2.38 | -0.18 | | | | |

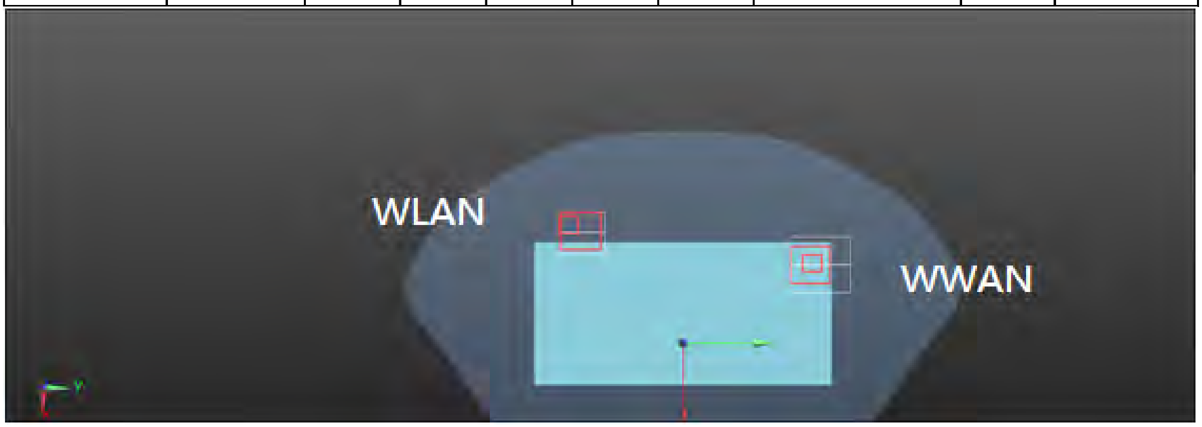

| Conditions | Position | SAR Value (W/kg) | Coordinates (cm) | | | ΣSAR (W/kg) | Peak Location Separation Distance (mm) | SPLSR | Simultaneous Transmission SAR Test |
|---|---|---|---|---|---|---|---|---|---|
| | | | x | y | z | | | | |
| WLAN Main | Left cheek | 0.435 | -1.49 | -1.90 | 0.41 | 1.273 | 66.8 | 0.022 | SPLSR≦ 0.04, Not required |
| WLAN Aux | | 0.838 | 3.61 | 2.38 | -0.18 | | | | |



| Conditions | Position | SAR Value (W/kg) | Coordinates (cm) | | | ΣSAR (W/kg) | Peak Location Separation Distance (mm) | SPLSR | Simultaneous Transmission SAR Test |
|---|---|---|---|---|---|---|---|---|---|
| | | | x | y | z | | | | |
| CDMA Callular BC0 | Front | 1.187 | -3.01 | 7.24 | -0.08 | 1.529 | 161.9 | 0.012 | SPLSR≤ 0.04, Not required |
| WLAN Main | | 0.342 | 4.02 | -7.34 | -0.06 | | | | |



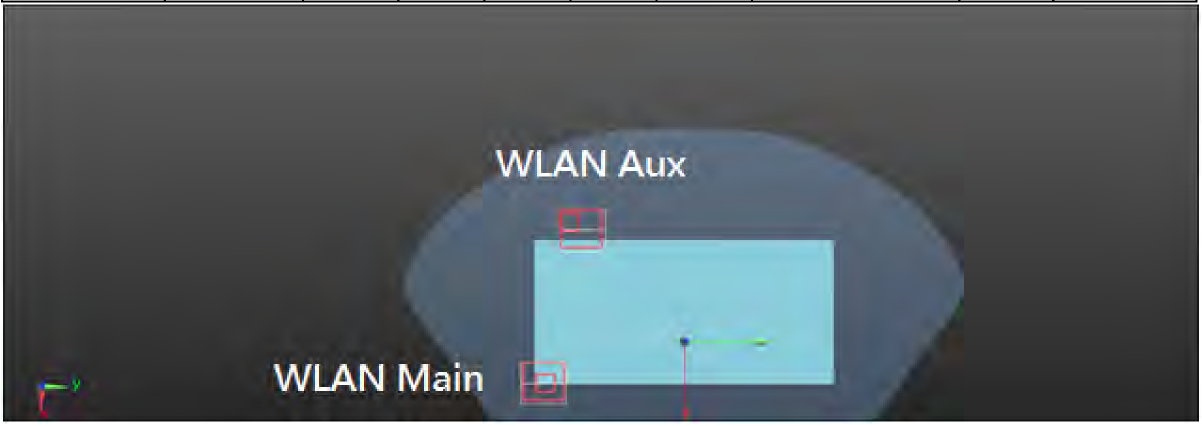

| Conditions | Position | SAR Value (W/kg) | Coordinates (cm) | | | ΣSAR (W/kg) | Peak Location Separation Distance (mm) | SPLSR | Simultaneous Transmission SAR Test |
|---|---|---|---|---|---|---|---|---|---|
| | | | x | y | z | | | | |
| CDMA Callular BC0 | Front | 1.187 | -3.01 | 7.24 | -0.08 | 1.486 | 129.69 | 0.014 | SPLSR≤ 0.04, Not required |
| WLAN Aux | | 0.299 | -3.50 | -5.72 | -0.08 | | | | |





SGS Taiwan Ltd. No.134,Wu Kung Road, New Taipei Industrial Park, Wuku District, New Taipei City, Taiwan 24803/新北市五股區新北產業園區五工路134號
台灣檢驗科技股份有限公司 t (886-2) 2299-3279 f (886-2) 2298-0488 www.tw.sgs.com
Member of SGS Group

| Conditions | Position | SAR Value (W/kg) | Coordinates (cm) | | | ΣSAR (W/kg) | Peak Location Separation Distance (mm) | SPLSR | Simultaneous Transmission SAR Test |
|---|---|---|---|---|---|---|---|---|---|
| | | | x | y | z | | | | |
| WLAN Main | Front | 0.342 | 4.02 | -7.34 | -0.06 | 0.641 | 76.93 | 0.007 | SPLSR≤ 0.04, Not required |
| WLAN Aux | | 0.299 | -3.50 | -5.72 | -0.08 | | | | |



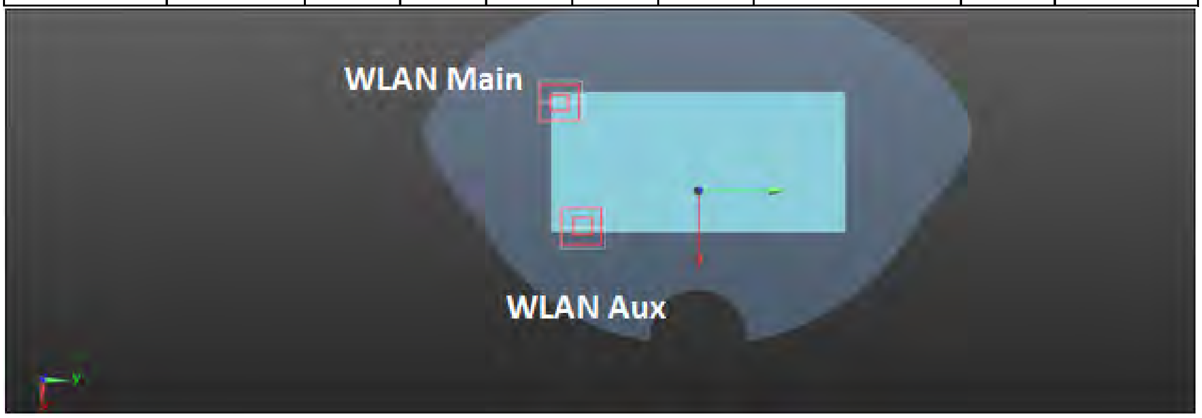

| Conditions | Position | SAR Value (W/kg) | Coordinates (cm) | | | ΣSAR (W/kg) | Peak Location Separation Distance (mm) | SPLSR | Simultaneous Transmission SAR Test |
|---|---|---|---|---|---|---|---|---|---|
| | | | x | y | z | | | | |
| CDMA Callular BC0 | Back side | 0.703 | 1.78 | 7.09 | -0.03 | 0.995 | 155.5 | 0.006 | SPLSR≤ 0.04, Not required |
| WLAN Main | | 0.292 | -3.60 | -7.50 | -0.10 | | | | |



SGS Taiwan Ltd. No.134,Wu Kung Road, New Taipei Industrial Park, Wuku District, New Taipei City, Taiwan 24803/新北市五股區新北產業園區五工路134號
台灣檢驗科技股份有限公司 t (886-2) 2299-3279 f (886-2) 2298-0488 www.tw.sgs.com
Member of SGS Group

| Conditions | Position | SAR Value (W/kg) | Coordinates (cm) | | | ΣSAR (W/kg) | Peak Location Separation Distance (mm) | SPLSR | Simultaneous Transmission SAR Test |
|---|---|---|---|---|---|---|---|---|---|
| | | | x | y | z | | | | |
| CDMA Callular BC0 | Back side | 0.703 | 1.78 | 7.09 | -0.03 | 1.486 | 133.7 | 0.014 | SPLSR≤ 0.04, Not required |
| WLAN Aux | | 0.783 | 3.74 | -6.14 | -0.06 | | | | |


| Conditions | Position | SAR Value (W/kg) | Coordinates (cm) | | | ΣSAR (W/kg) | Peak Location Separation Distance (mm) | SPLSR | Simultaneous Transmission SAR Test |
|---|---|---|---|---|---|---|---|---|---|
| | | | x | y | z | | | | |
| WLAN Main | Back side | 0.292 | -3.60 | -7.50 | -0.10 | 1.075 | 74.7 | 0.015 | SPLSR≤ 0.04, Not required |
| WLAN Aux | | 0.783 | 3.74 | -6.14 | -0.06 | | | | |

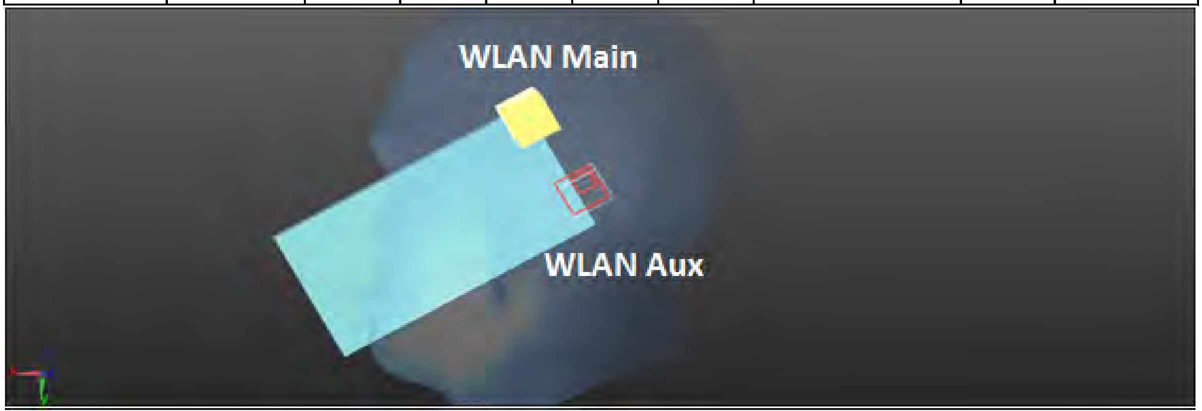


| reported SAR WWAN and WLAN 5GHz, ΣSAR evaluation | | | | | | |
|---|---|---|---|---|---|---|
| Frequency band | Position | | reported SAR / W/kg | | | ΣSAR |
| | | | WWAN | WLAN Main | WLAN Aux | <1.6W/kg |
| CDMA PCS BC1 | Head | Right cheek | 0.780 | 1.340 | 0.215 | 2.335 |
| | | Right tilt | 0.291 | 1.232 | 0.188 | 1.711 |
| | | Left cheek | 0.369 | 0.435 | 0.838 | 1.642 |
| | | Left tilt | 0.219 | 0.531 | 0.410 | 1.160 |
| | Body-Worn | Front | 1.190 | 0.342 | 0.299 | 1.831 |
| | | Back | 1.124 | 0.292 | 0.783 | 2.199 |

| Conditions | Position | SAR Value (W/kg) | Coordinates (cm) | | | ΣSAR (W/kg) | Peak Location Separation Distance (mm) | SPLSR | Simultaneous Transmission SAR Test |
|---|---|---|---|---|---|---|---|---|---|
| | | | x | y | z | | | | |
| CDMA PCS BC1 | Right cheek | 0.780 | 5.03 | 6.58 | 0.07 | 2.12 | 106.3 | 0.029 | SPLSR≤ 0.04, Not required |
| WLAN Main | | 1.340 | 1.84 | -3.56 | -0.05 | | | | |

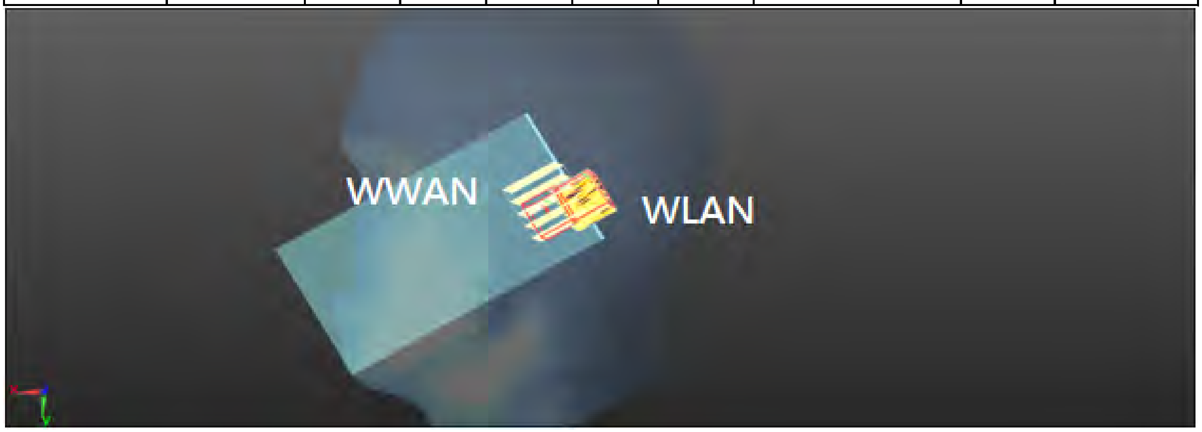
| Conditions | Position | SAR Value (W/kg) | Coordinates (cm) | | | ΣSAR (W/kg) | Peak Location Separation Distance (mm) | SPLSR | Simultaneous Transmission SAR Test |
|---|---|---|---|---|---|---|---|---|---|
| | | | x | y | z | | | | |
| CDMA PCS BC1 | Right cheek | 0.780 | 5.03 | 6.58 | 0.07 | 0.995 | 87.43 | 0.011 | SPLSR≤ 0.04, Not required |
| WLAN Aux | | 0.215 | -1.28 | 0.56 | 0.63 | | | | |


| Conditions | Position | SAR Value (W/kg) | Coordinates (cm) | | | ΣSAR (W/kg) | Peak Location Separation Distance (mm) | SPLSR | Simultaneous Transmission SAR Test |
|---|---|---|---|---|---|---|---|---|---|
| | | | x | y | z | | | | |
| WLAN Main | Right cheek | 1.340 | 1.84 | -3.56 | -0.08 | 1.555 | 52.2 | 0.037 | SPLSR≤ 0.04, Not required |
| WLAN Aux | | 0.215 | -1.28 | 0.56 | 0.63 | | | | |



| Conditions | Position | SAR Value (W/kg) | Coordinates (cm) | | | ΣSAR (W/kg) | Peak Location Separation Distance (mm) | SPLSR | Simultaneous Transmission SAR Test |
|---|---|---|---|---|---|---|---|---|---|
| | | | x | y | z | | | | |
| CDMA PCS BC1 | Right tilt | 0.291 | -0.56 | 1.52 | 0.14 | 1.523 | 48.1 | 0.039 | SPLSR≤ 0.04, Not required |
| WLAN Main | | 1.232 | 1.94 | -2.58 | -0.18 | | | | |

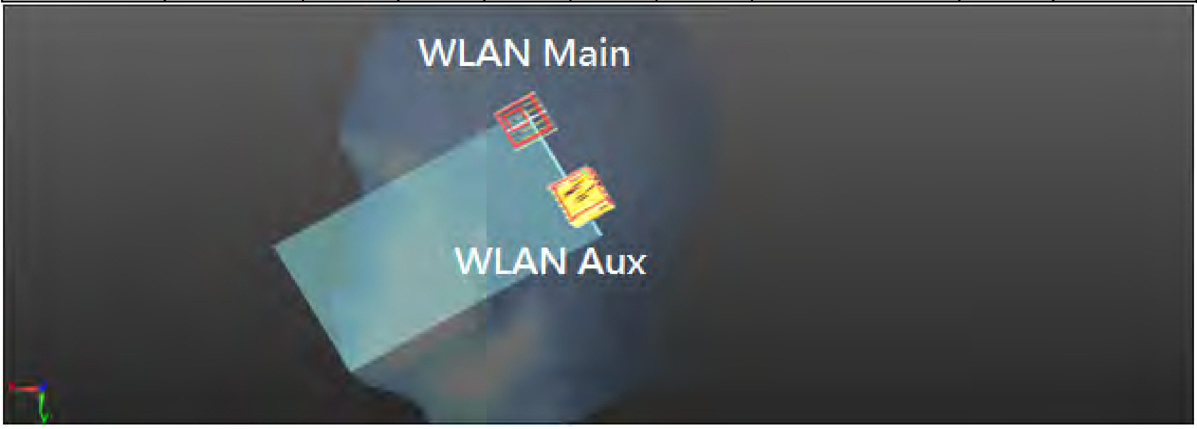

| Conditions | Position | SAR Value (W/kg) | Coordinates (cm) | | | ΣSAR (W/kg) | Peak Location Separation Distance (mm) | SPLSR | Simultaneous Transmission SAR Test |
|---|---|---|---|---|---|---|---|---|---|
| | | | x | y | z | | | | |
| CDMA PCS BC1 | Right tilt | 0.291 | -0.56 | 1.52 | 0.14 | 0.479 | 30.0 | 0.011 | SPLSR≤ 0.04, Not required |
| WLAN Aux | | 0.188 | -1.50 | -0.43 | 2.21 | | | | |



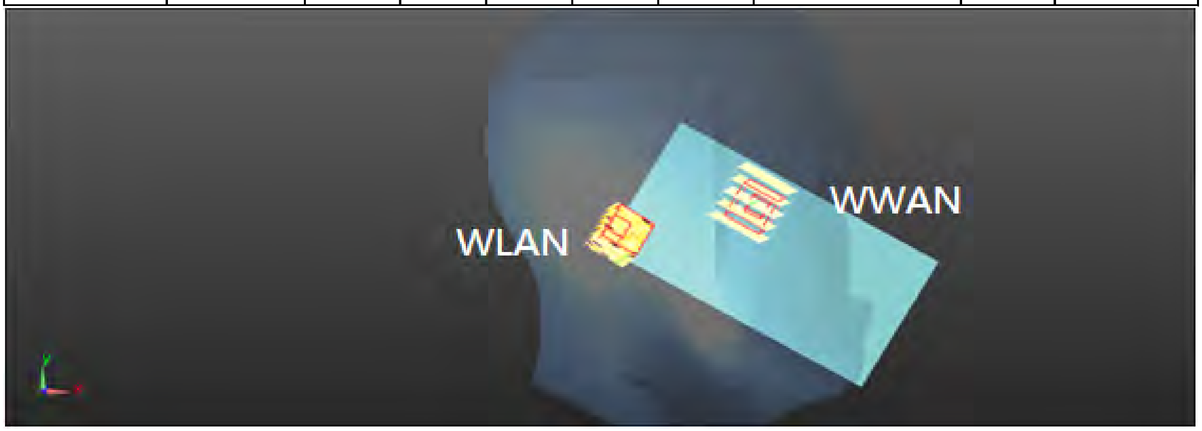


SGS Taiwan Ltd. No.134,Wu Kung Road, New Taipei Industrial Park, Wuku District, New Taipei City, Taiwan 24803/新北市五股區新北產業園區五工路134號
台灣檢驗科技股份有限公司 t (886-2) 2299-3279 f (886-2) 2298-0488 www.tw.sgs.com
Member of SGS Group

| Conditions | Position | SAR Value (W/kg) | Coordinates (cm) | | | ΣSAR (W/kg) | Peak Location Separation Distance (mm) | SPLSR | Simultaneous Transmission SAR Test |
|---|---|---|---|---|---|---|---|---|---|
| | | | x | y | z | | | | |
| WLAN Main | Right tilt | 1.232 | 1.94 | -2.58 | -0.18 | 1.42 | 47 | 0.036 | SPLSR≦ 0.04, Not required |
| WLAN Aux | | 0.188 | -1.50 | -0.43 | 2.21 | | | | |

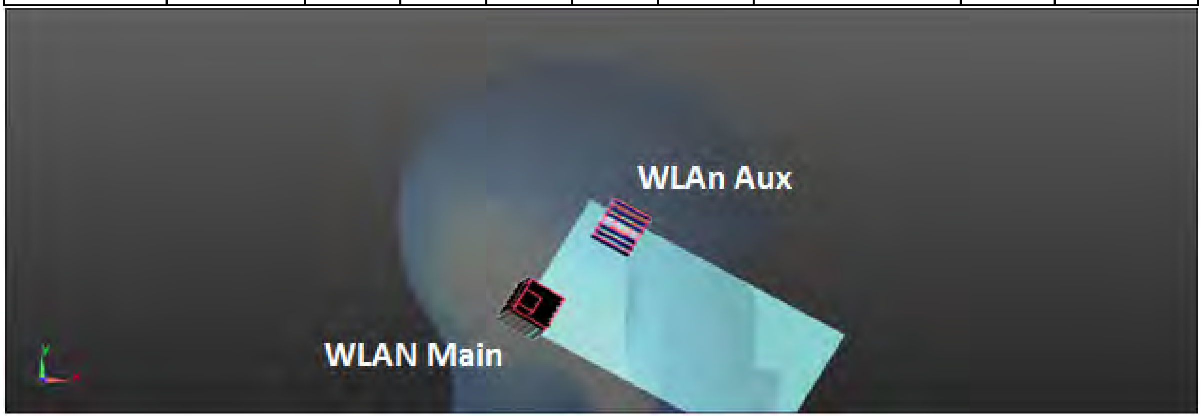



| Conditions | Position | SAR Value (W/kg) | Coordinates (cm) | | | ΣSAR (W/kg) | Peak Location Separation Distance (mm) | SPLSR | Simultaneous Transmission SAR Test |
|---|---|---|---|---|---|---|---|---|---|
| | | | x | y | z | | | | |
| CDMA PCS BC1 | Left cheek | 0.369 | 4.90 | -1.70 | -0.30 | 0.804 | 64.3 | 0.011 | SPLSR≦ 0.04, Not required |
| WLAN Main | | 0.435 | -1.49 | -1.90 | 0.41 | | | | |



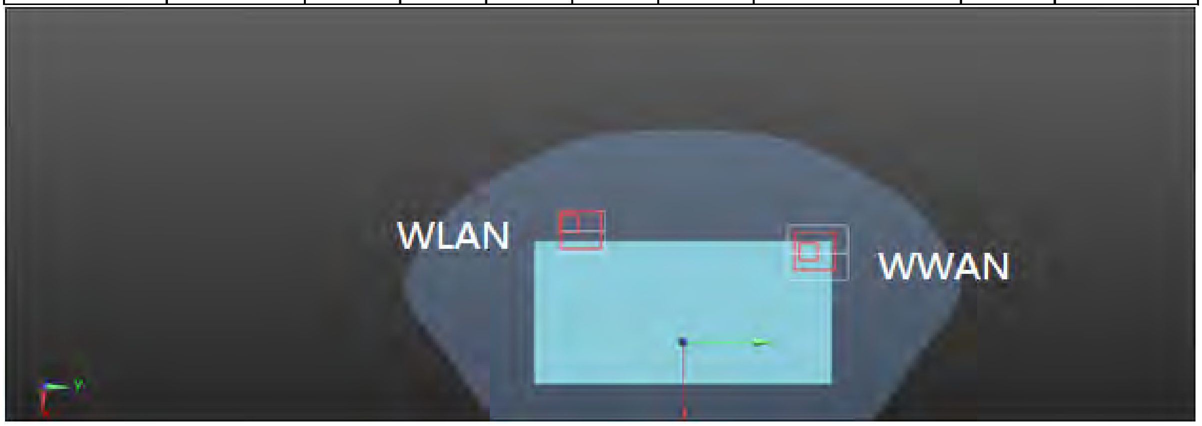
| Conditions | Position | SAR Value (W/kg) | Coordinates (cm) | | | ΣSAR (W/kg) | Peak Location Separation Distance (mm) | SPLSR | Simultaneous Transmission SAR Test |
|---|---|---|---|---|---|---|---|---|---|
| | | | x | y | z | | | | |
| CDMA PCS BC1 | Left cheek | 0.369 | 4.90 | -1.70 | -0.30 | 1.207 | 42.85 | 0.031 | SPLSR≦ 0.04, Not required |
| WLAN Aux | | 0.838 | 3.61 | 2.38 | -0.18 | | | | |


| Conditions | Position | SAR Value (W/kg) | Coordinates (cm) | | | ΣSAR (W/kg) | Peak Location Separation Distance (mm) | SPLSR | Simultaneous Transmission SAR Test |
|---|---|---|---|---|---|---|---|---|---|
| | | | x | y | z | | | | |
| WLAN Main | Left cheek | 0.435 | -1.49 | -1.90 | 0.41 | 1.273 | 66.8 | 0.022 | SPLSR≦ 0.04, Not required |
| WLAN Aux | | 0.838 | 3.61 | 2.38 | -0.18 | | | | |



| Conditions | Position | SAR Value (W/kg) | Coordinates (cm) | | | ΣSAR (W/kg) | Peak Location Separation Distance (mm) | SPLSR | Simultaneous Transmission SAR Test |
|---|---|---|---|---|---|---|---|---|---|
| | | | x | y | z | | | | |
| CDMA PCS BC1 | Front | 1.190 | -3.61 | 6.77 | -0.05 | 1.532 | 160.4 | 0.012 | SPLSR≤ 0.04, Not required |
| WLAN Main | | 0.342 | 4.02 | -7.34 | -0.06 | | | | |

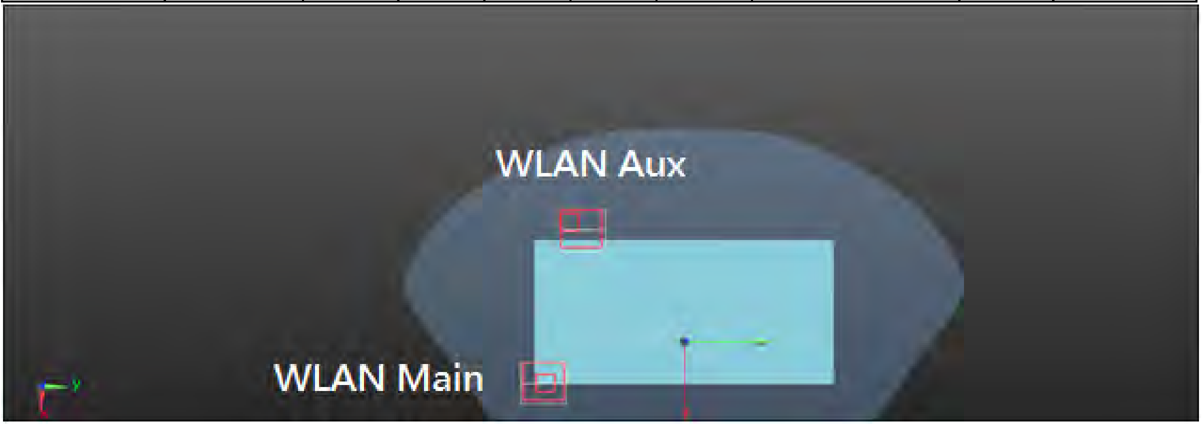

| Conditions | Position | SAR Value (W/kg) | Coordinates (cm) | | | ΣSAR (W/kg) | Peak Location Separation Distance (mm) | SPLSR | Simultaneous Transmission SAR Test |
|---|---|---|---|---|---|---|---|---|---|
| | | | x | y | z | | | | |
| CDMA PCS BC1 | Front | 1.190 | -3.61 | 6.77 | -0.05 | 1.489 | 124.91 | 0.015 | SPLSR≤ 0.04, Not required |
| WLAN Aux | | 0.299 | -3.50 | -5.72 | -0.08 | | | | |



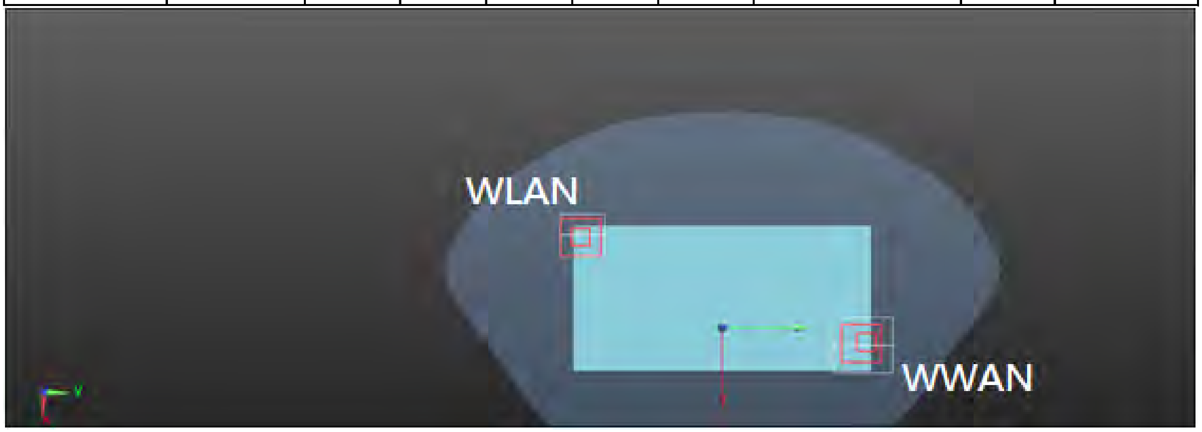


SGS Taiwan Ltd. No.134,Wu Kung Road, New Taipei Industrial Park, Wuku District, New Taipei City, Taiwan 24803/新北市五股區新北產業園區五工路134號
台灣檢驗科技股份有限公司 t (886-2) 2299-3279 f (886-2) 2298-0488 www.tw.sgs.com
Member of SGS Group

| Conditions | Position | SAR Value (W/kg) | Coordinates (cm) | | | ΣSAR (W/kg) | Peak Location Separation Distance (mm) | SPLSR | Simultaneous Transmission SAR Test |
|---|---|---|---|---|---|---|---|---|---|
| | | | x | y | z | | | | |
| WLAN Main | Front | 0.342 | 4.02 | -7.34 | -0.06 | 0.641 | 76.93 | 0.007 | SPLSR≤ 0.04, Not required |
| WLAN Aux | | 0.299 | -3.50 | -5.72 | -0.08 | | | | |

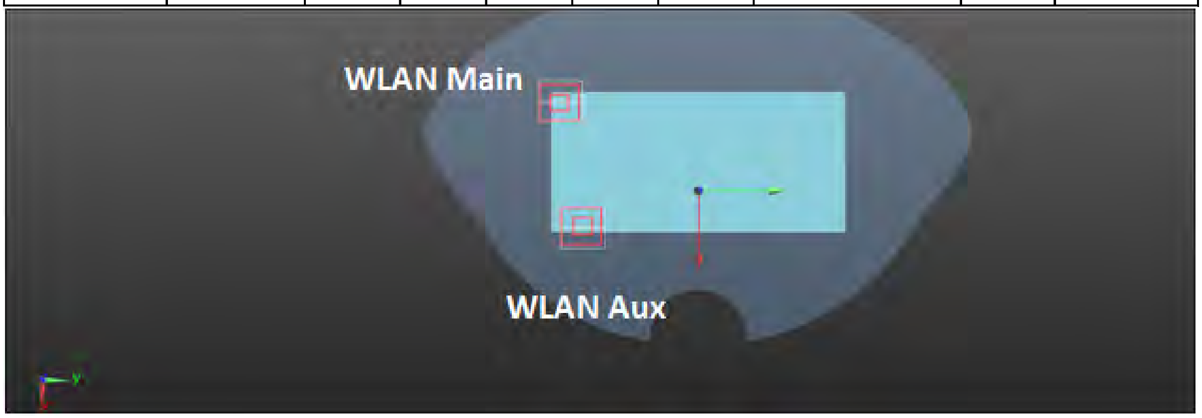



| Conditions | Position | SAR Value (W/kg) | Coordinates (cm) | | | ΣSAR (W/kg) | Peak Location Separation Distance (mm) | SPLSR | Simultaneous Transmission SAR Test |
|---|---|---|---|---|---|---|---|---|---|
| | | | x | y | z | | | | |
| CDMA PCS BC1 | Back side | 1.124 | 2.54 | 7.87 | -0.02 | 1.416 | 165.5 | 0.010 | SPLSR≤ 0.04, Not required |
| WLAN Main | | 0.292 | -3.60 | -7.50 | -0.10 | | | | |



| Conditions | Position | SAR Value (W/kg) | Coordinates (cm) | | | ΣSAR (W/kg) | Peak Location Separation Distance (mm) | SPLSR | Simultaneous Transmission SAR Test |
|---|---|---|---|---|---|---|---|---|---|
| | | | x | y | z | | | | |
| CDMA PCS BC1 | Back side | 1.124 | 2.54 | 7.87 | -0.02 | 1.907 | 140.61 | 0.019 | SPLSR≤ 0.04, Not required |
| WLAN Aux | | 0.783 | 3.74 | -6.14 | -0.06 | | | | |


| Conditions | Position | SAR Value (W/kg) | Coordinates (cm) | | | ΣSAR (W/kg) | Peak Location Separation Distance (mm) | SPLSR | Simultaneous Transmission SAR Test |
|---|---|---|---|---|---|---|---|---|---|
| | | | x | y | z | | | | |
| WLAN Main | Back side | 0.292 | -3.60 | -7.50 | -0.10 | 1.075 | 74.7 | 0.015 | SPLSR≤ 0.04, Not required |
| WLAN Aux | | 0.783 | 3.74 | -6.14 | -0.06 | | | | |





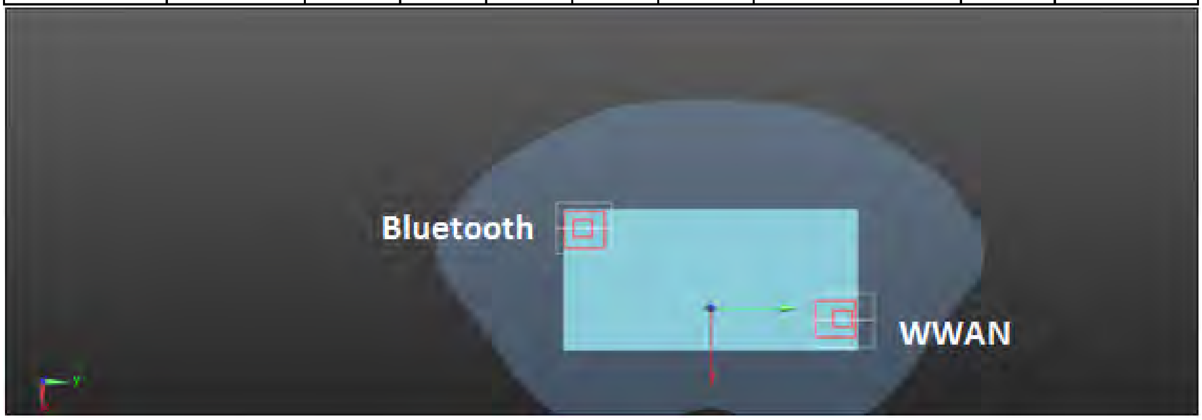

SGS Taiwan Ltd. 台灣檢驗科技股份有限公司
No.134,Wu Kung Road, New Taipei Industrial Park, Wuku District, New Taipei City, Taiwan 24803/新北市五股區新北產業園區五工路134號
t (886-2) 2299-3279 f (886-2) 2298-0488 www.tw.sgs.com
Member of SGS Group

| reported SAR WWAN and Bluetooth and 2.4G WLAN Aux, ΣSAR evaluation | | | | | | |
|---|---|---|---|---|---|---|
| Frequency band | Position | | reported SAR / W/kg | | | ΣSAR |
| | | | WWAN | Bluetooth | WLAN Aux | <1.6W/kg |
| GSM 850 | Body-Worn | Front | 0.483 | 0.008 | 0.162 | 0.653 |
| | | Back | 0.560 | 0.019 | 0.271 | 0.850 |
| GSM 1900 | Body-Worn | Front | 0.522 | 0.008 | 0.162 | 0.692 |
| | | Back | 0.602 | 0.019 | 0.271 | 0.892 |
| WCDMA Band II | Body-Worn | Front | 0.899 | 0.008 | 0.162 | 1.069 |
| | | Back | 1.041 | 0.019 | 0.271 | 1.331 |
| WCDMA Band IV | Body-Worn | Front | 0.866 | 0.008 | 0.162 | 1.036 |
| | | Back | 0.917 | 0.019 | 0.271 | 1.207 |
| WCDMA Band V | Body-Worn | Front | 0.638 | 0.008 | 0.162 | 0.808 |
| | | Back | 0.511 | 0.019 | 0.271 | 0.801 |
| LTE FDD Band II | Body-Worn | Front | 0.928 | 0.008 | 0.162 | 1.098 |
| | | Back | 0.888 | 0.019 | 0.271 | 1.178 |
| LTE FDD Band IV | Body-Worn | Front | 0.806 | 0.008 | 0.162 | 0.976 |
| | | Back | 1.120 | 0.019 | 0.271 | 1.410 |
| LTE FDD Band V | Body-Worn | Front | 0.650 | 0.008 | 0.162 | 0.82 |
| | | Back | 0.517 | 0.019 | 0.271 | 0.807 |
| LTE FDD Band VII | Body-Worn | Front | 1.045 | 0.008 | 0.162 | 1.215 |
| | | Back | 0.820 | 0.019 | 0.271 | 1.110 |
| LTE FDD Band XII | Body-Worn | Front | 0.187 | 0.008 | 0.162 | 0.357 |
| | | Back | 0.137 | 0.019 | 0.271 | 0.427 |
| LTE FDD Band XIII | Body-Worn | Front | 0.746 | 0.008 | 0.162 | 0.916 |
| | | Back | 0.390 | 0.019 | 0.271 | 0.68 |
| LTE FDD Band XXX | Body-Worn | Front | 0.924 | 0.008 | 0.162 | 1.094 |
| | | Back | 0.773 | 0.019 | 0.271 | 1.063 |
| CDMA Callular C0 | Body-Worn | Front | 1.187 | 0.008 | 0.162 | 1.357 |
| | | Back | 0.703 | 0.019 | 0.271 | 0.993 |
| CDMA PCS BC1 | Body-Worn | Front | 1.190 | 0.008 | 0.162 | 1.36 |
| | | Back | 1.124 | 0.019 | 0.271 | 1.414 |


SGS Taiwan Ltd. No.134,Wu Kung Road, New Taipei Industrial Park, Wuku District, New Taipei City, Taiwan 24803/新北市五股區新北產業園區五工路134號
台灣檢驗科技股份有限公司 t (886-2) 2299-3279 f (886-2) 2298-0488 www.tw.sgs.com
Member of SGS Group

| reported SAR WWAN and Bluetooth and 5G WLAN Aux, ΣSAR evaluation | | | | | | |
|---|---|---|---|---|---|---|
| Frequency band | Position | | reported SAR / W/kg | | | ΣSAR |
| | | | WWAN | Bluetooth | WLAN Aux | <1.6W/kg |
| GSM 850 | Body-Worn | Front | 0.483 | 0.005 | 0.299 | 0.787 |
| | | Back | 0.560 | 0.012 | 0.783 | 1.355 |
| GSM 1900 | Body-Worn | Front | 0.522 | 0.005 | 0.299 | 0.826 |
| | | Back | 0.602 | 0.012 | 0.783 | 1.397 |
| WCDMA Band II | Body-Worn | Front | 0.899 | 0.005 | 0.299 | 1.203 |
| | | Back | 1.041 | 0.012 | 0.783 | **1.836** |

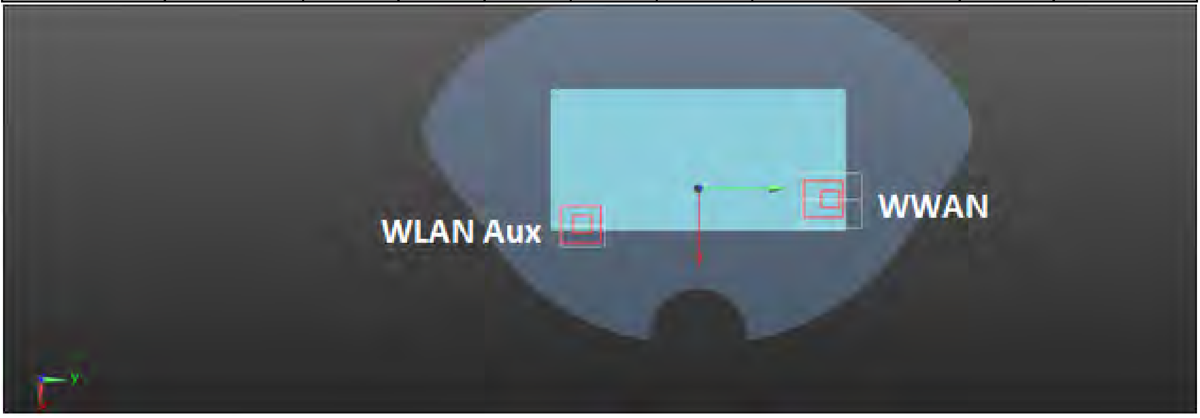
| Conditions | Position | SAR Value (W/kg) | Coordinates (cm) | | | ΣSAR (W/kg) | Peak Location Separation Distance (mm) | SPLSR | Simultaneous Transmission SAR Test |
|---|---|---|---|---|---|---|---|---|---|
| | | | x | y | z | | | | |
| WCDMA Band II | Back side | 1.041 | 2.40 | 7.09 | -0.08 | 1.053 | 150.9 | 0.007 | SPLSR≤ 0.04, Not required |
| Bluetooth | | 0.012 | -3.30 | -6.88 | -0.08 | | | | |





SGS Taiwan Ltd. No.134,Wu Kung Road, New Taipei Industrial Park, Wuku District, New Taipei City, Taiwan 24803/新北市五股區新北產業園區五工路134號
台灣檢驗科技股份有限公司 t (886-2) 2299-3279 f (886-2) 2298-0488 www.tw.sgs.com
Member of SGS Group

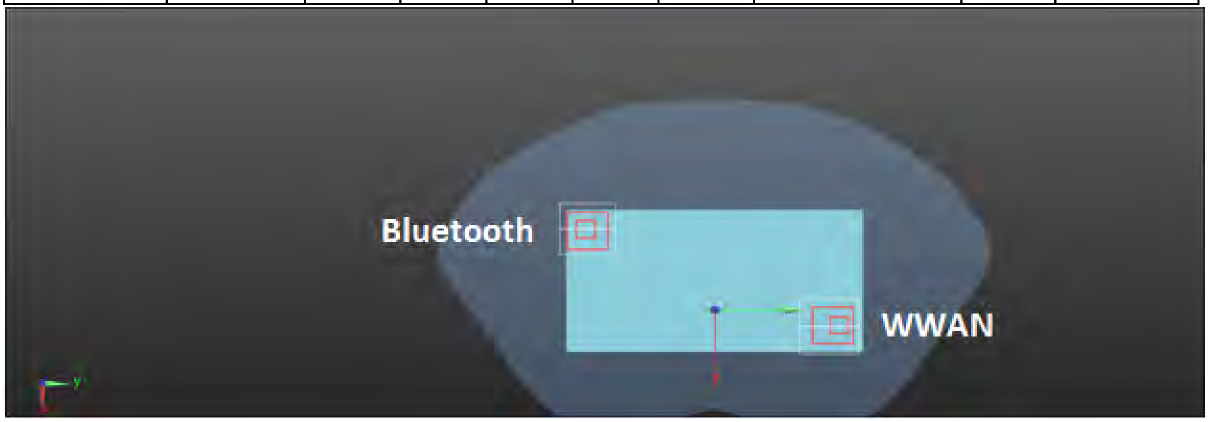
| Conditions | Position | SAR Value (W/kg) | Coordinates (cm) | | | ΣSAR (W/kg) | Peak Location Separation Distance (mm) | SPLSR | Simultaneous Transmission SAR Test |
|---|---|---|---|---|---|---|---|---|---|
| | | | x | y | z | | | | |
| WCDMA Band II | Back side | 1.041 | 2.40 | 7.09 | -0.08 | 1.824 | 133 | 0.019 | SPLSR≤ 0.04, Not required |
| WLAN Aux | | 0.783 | 3.74 | -6.14 | -0.06 | | | | |




| Conditions | Position | SAR Value (W/kg) | Coordinates (cm) | | | ΣSAR (W/kg) | Peak Location Separation Distance (mm) | SPLSR | Simultaneous Transmission SAR Test |
|---|---|---|---|---|---|---|---|---|---|
| | | | x | y | z | | | | |
| Bluetooth | Back side | 0.012 | -3.30 | -6.88 | -0.08 | 0.795 | 70.8 | 0.010 | SPLSR≤ 0.04, Not required |
| WLAN Aux | | 0.783 | 3.74 | -6.14 | -0.06 | | | | |

| reported SAR WWAN and Bluetooth and 5G WLAN Aux, ΣSAR evaluation | | | | | | |
|---|---|---|---|---|---|---|
| Frequency band | Position | | reported SAR / W/kg | | | ΣSAR |
| | | | WWAN | Bluetooth | WLAN Aux | <1.6W/kg |
| WCDMA Band IV | Body-Worn | Front | 0.866 | 0.005 | 0.299 | 1.17 |
| | | Back | 0.917 | 0.012 | 0.783 | **1.712** |
| WCDMA Band V | Body-Worn | Front | 0.638 | 0.005 | 0.299 | 0.942 |
| | | Back | 0.511 | 0.012 | 0.783 | 1.306 |

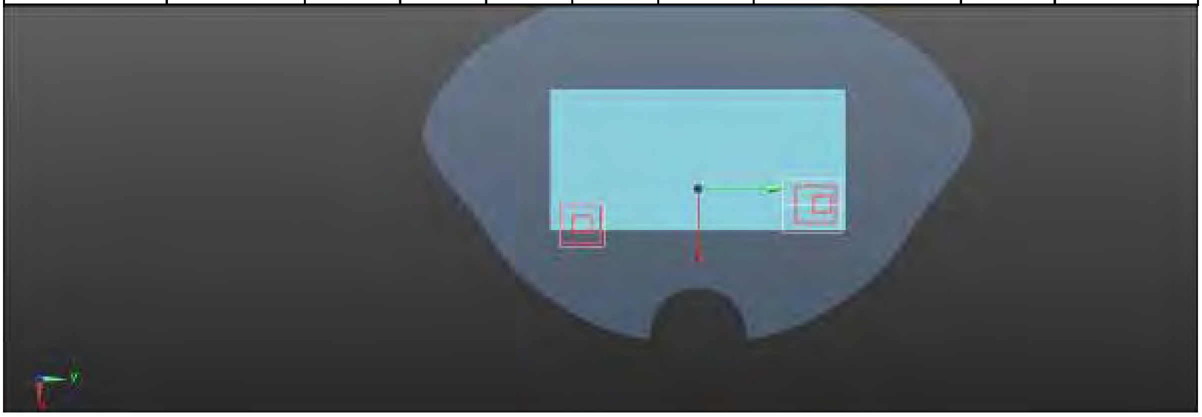
| Conditions | Position | SAR Value (W/kg) | Coordinates (cm) | | | ΣSAR (W/kg) | Peak Location Separation Distance (mm) | SPLSR | Simultaneous Transmission SAR Test |
|---|---|---|---|---|---|---|---|---|---|
| | | | x | y | z | | | | |
| WCDMA Band IV | Back side | 0.917 | 2.70 | 6.84 | -0.09 | 0.929 | 149.7 | 0.006 | SPLSR≤ 0.04, Not required |
| Bluetooth | | 0.012 | -3.30 | -6.88 | -0.08 | | | | |





SGS Taiwan Ltd. No.134,Wu Kung Road, New Taipei Industrial Park, Wuku District, New Taipei City, Taiwan 24803/新北市五股區新北產業園區五工路134號
台灣檢驗科技股份有限公司 t (886-2) 2299-3279 f (886-2) 2298-0488 www.tw.sgs.com
Member of SGS Group

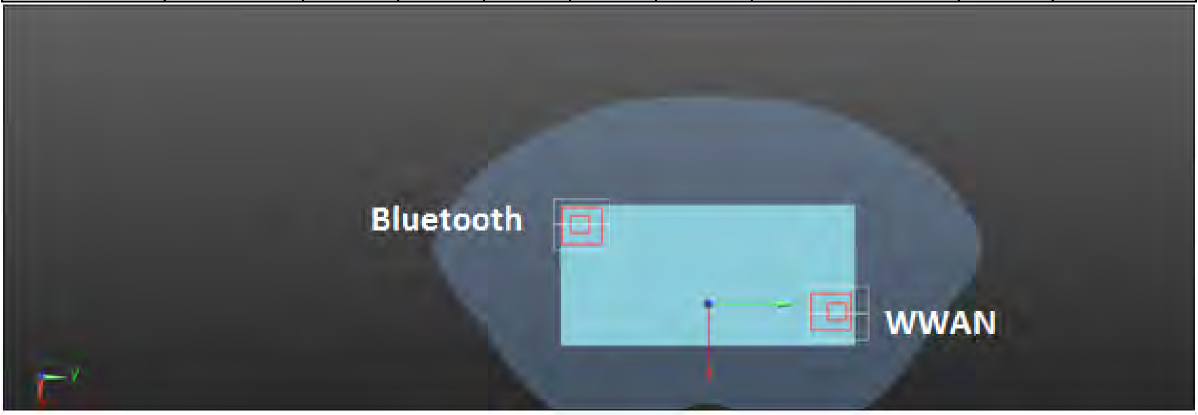
| Conditions | Position | SAR Value (W/kg) | Coordinates (cm) | | | ΣSAR (W/kg) | Peak Location Separation Distance (mm) | SPLSR | Simultaneous Transmission SAR Test |
|---|---|---|---|---|---|---|---|---|---|
| | | | x | y | z | | | | |
| WCDMA Band IV | Back side | 0.917 | 2.70 | 6.84 | -0.09 | 1.7 | 130.2 | 0.017 | SPLSR≦ 0.04, Not required |
| WLAN Aux | | 0.783 | 3.74 | -6.14 | -0.06 | | | | |



| Conditions | Position | SAR Value (W/kg) | Coordinates (cm) | | | ΣSAR (W/kg) | Peak Location Separation Distance (mm) | SPLSR | Simultaneous Transmission SAR Test |
|---|---|---|---|---|---|---|---|---|---|
| | | | x | y | z | | | | |
| Bluetooth | Back side | 0.012 | -3.30 | -6.88 | -0.08 | 0.795 | 70.8 | 0.010 | SPLSR≦ 0.04, Not required |
| WLAN Aux | | 0.783 | 3.74 | -6.14 | -0.06 | | | | |

| reported SAR WWAN and Bluetooth and 5G WLAN Aux, ΣSAR evaluation | | | | | | |
|---|---|---|---|---|---|---|
| Frequency band | Position | | reported SAR / W/kg | | | ΣSAR |
| | | | WWAN | Bluetooth | WLAN Aux | <1.6W/kg |
| LTE FDD Band II | Body-Worn | Front | 0.928 | 0.005 | 0.299 | 1.232 |
| | | Back | 0.888 | 0.012 | 0.783 | **1.683** |

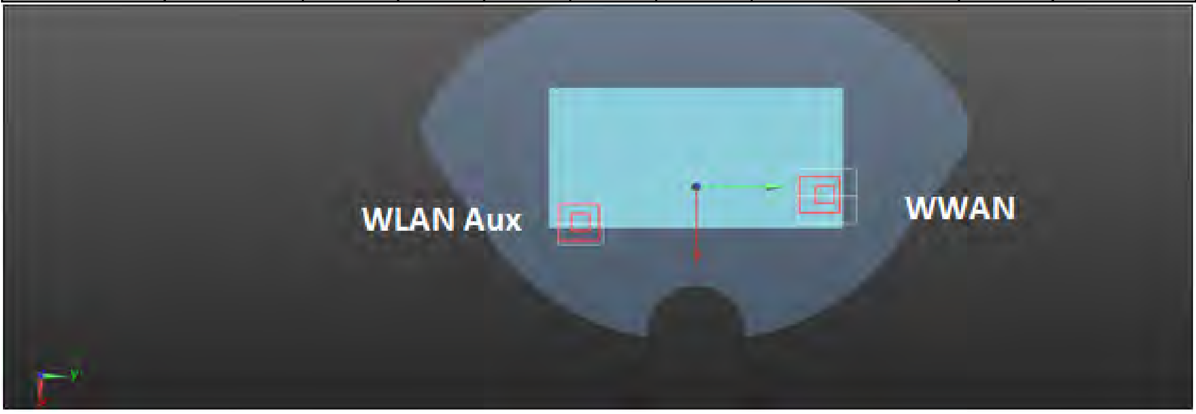
| Conditions | Position | SAR Value (W/kg) | Coordinates (cm) | | | ΣSAR (W/kg) | Peak Location Separation Distance (mm) | SPLSR | Simultaneous Transmission SAR Test |
|---|---|---|---|---|---|---|---|---|---|
| | | | x | y | z | | | | |
| LTE FDD Band II | Back side | 0.888 | 2.25 | 6.94 | -0.06 | 0.900 | 148.9 | 0.006 | SPLSR≤ 0.04, Not required |
| Bluetooth | | 0.012 | -3.30 | -6.88 | -0.08 | | | | |






SGS Taiwan Ltd. No.134,Wu Kung Road, New Taipei Industrial Park, Wuku District, New Taipei City, Taiwan 24803/新北市五股區新北產業園區五工路134號
台灣檢驗科技股份有限公司 t (886-2) 2299-3279 f (886-2) 2298-0488 www.tw.sgs.com
Member of SGS Group

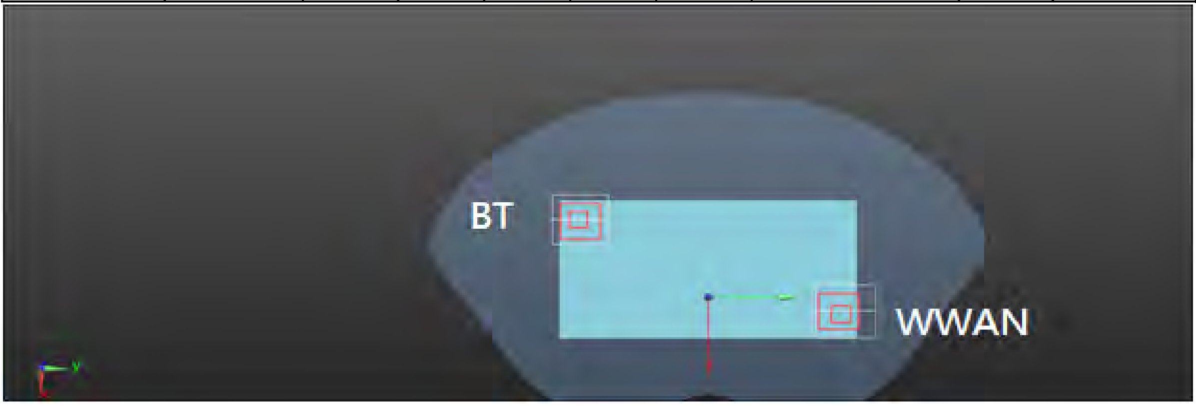
| Conditions | Position | SAR Value (W/kg) | Coordinates (cm) | | | ΣSAR (W/kg) | Peak Location Separation Distance (mm) | SPLSR | Simultaneous Transmission SAR Test |
|---|---|---|---|---|---|---|---|---|---|
| | | | x | y | z | | | | |
| LTE FDD Band II | Back side | 0.888 | 2.25 | 6.94 | -0.06 | 1.671 | 131.5 | 0.016 | SPLSR≤ 0.04, Not required |
| WLAN Aux | | 0.783 | 3.74 | -6.14 | -0.06 | | | | |



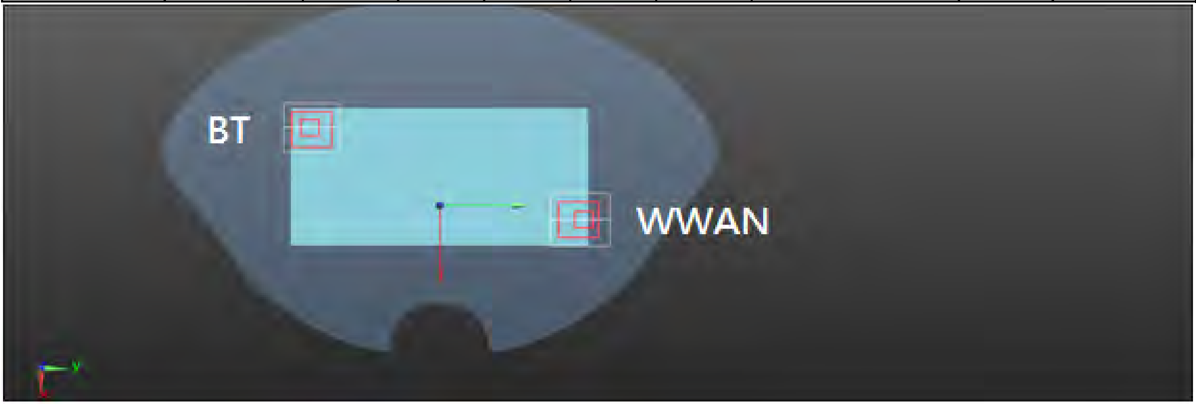

| Conditions | Position | SAR Value (W/kg) | Coordinates (cm) | | | ΣSAR (W/kg) | Peak Location Separation Distance (mm) | SPLSR | Simultaneous Transmission SAR Test |
|---|---|---|---|---|---|---|---|---|---|
| | | | x | y | z | | | | |
| Bluetooth | Back side | 0.012 | -3.30 | -6.88 | -0.08 | 0.795 | 70.8 | 0.010 | SPLSR≤ 0.04, Not required |
| WLAN Aux | | 0.783 | 3.74 | -6.14 | -0.06 | | | | |

| reported SAR WWAN and Bluetooth and 5G WLAN Aux, ΣSAR evaluation | | | | | | |
|---|---|---|---|---|---|---|
| Frequency band | Position | | reported SAR / W/kg | | | ΣSAR |
| | | | WWAN | Bluetooth | WLAN Aux | <1.6W/kg |
| LTE FDD Band IV | Body-Worn | Front | 0.806 | 0.005 | 0.299 | 1.110 |
| | | Back | 1.120 | 0.012 | 0.783 | **1.915** |

| Conditions | Position | SAR Value (W/kg) | Coordinates (cm) | | | ΣSAR (W/kg) | Peak Location Separation Distance (mm) | SPLSR | Simultaneous Transmission SAR Test |
|---|---|---|---|---|---|---|---|---|---|
| | | | x | y | z | | | | |
| LTE FDD Band IV | Back side | 1.120 | 2.71 | 7.24 | -0.02 | 1.132 | 153.46 | 0.008 | SPLSR≤ 0.04, Not required |
| Bluetooth | | 0.012 | -3.30 | -6.88 | -0.08 | | | | |



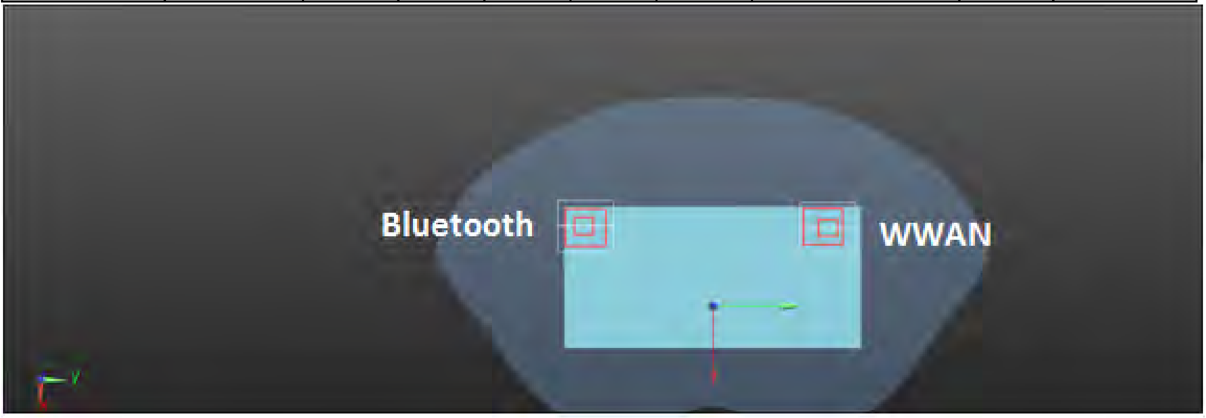
| Conditions | Position | SAR Value (W/kg) | Coordinates (cm) | | | ΣSAR (W/kg) | Peak Location Separation Distance (mm) | SPLSR | Simultaneous Transmission SAR Test |
|---|---|---|---|---|---|---|---|---|---|
| | | | x | y | z | | | | |
| LTE FDD Band IV | Back side | 1.120 | 2.71 | 7.24 | -0.02 | 1.903 | 158.7 | 0.017 | SPLSR≤ 0.04, Not required |
| WLAN Aux | | 0.783 | 3.74 | -6.14 | -0.06 | | | | |




| Conditions | Position | SAR Value (W/kg) | Coordinates (cm) | | | ΣSAR (W/kg) | Peak Location Separation Distance (mm) | SPLSR | Simultaneous Transmission SAR Test |
|---|---|---|---|---|---|---|---|---|---|
| | | | x | y | z | | | | |
| Bluetooth | Back side | 0.012 | -3.30 | -6.88 | -0.08 | 0.795 | 70.8 | 0.010 | SPLSR≤ 0.04, Not required |
| WLAN Aux | | 0.783 | 3.74 | -6.14 | -0.06 | | | | |

| reported SAR WWAN and Bluetooth and 5G WLAN Aux, ΣSAR evaluation | | | | | | |
|---|---|---|---|---|---|---|
| Frequency band | Position | | reported SAR / W/kg | | | ΣSAR |
| | | | WWAN | Bluetooth | WLAN Aux | <1.6W/kg |
| LTE FDD Band V | Body-Worn | Front | 0.650 | 0.005 | 0.299 | 0.954 |
| | | Back | 0.517 | 0.012 | 0.783 | 1.312 |
| LTE FDD Band VII | Body-Worn | Front | 1.045 | 0.005 | 0.299 | 1.349 |
| | | Back | 0.820 | 0.012 | 0.783 | **1.615** |
| LTE FDD Band XII | Body-Worn | Front | 0.187 | 0.005 | 0.299 | 0.491 |
| | | Back | 0.137 | 0.012 | 0.783 | 0.932 |
| LTE FDD Band XIII | Body-Worn | Front | 0.746 | 0.005 | 0.299 | 1.05 |
| | | Back | 0.390 | 0.012 | 0.783 | 1.185 |
| LTE FDD Band XXX | Body-Worn | Front | 0.924 | 0.005 | 0.299 | 1.228 |
| | | Back | 0.773 | 0.012 | 0.783 | 1.568 |

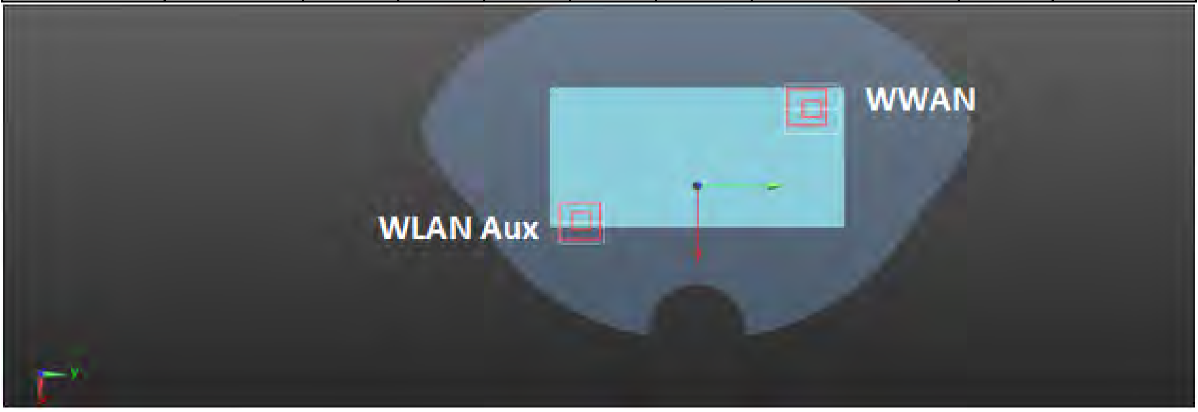
| Conditions | Position | SAR Value (W/kg) | Coordinates (cm) | | | ΣSAR (W/kg) | Peak Location Separation Distance (mm) | SPLSR | Simultaneous Transmission SAR Test |
|---|---|---|---|---|---|---|---|---|---|
| | | | x | y | z | | | | |
| LTE FDD Band VII | Back side | 0.820 | -2.98 | 6.24 | -0.07 | 0.832 | 131.2 | 0.006 | SPLSR≤ 0.04, Not required |
| Bluetooth | | 0.012 | -3.30 | -6.88 | -0.08 | | | | |





SGS Taiwan Ltd. No.134,Wu Kung Road, New Taipei Industrial Park, Wuku District, New Taipei City, Taiwan 24803/新北市五股區新北產業園區五工路134號
台灣檢驗科技股份有限公司 t (886-2) 2299-3279 f (886-2) 2298-0488 www.tw.sgs.com
Member of SGS Group

| Conditions | Position | SAR Value (W/kg) | Coordinates (cm) | | | ΣSAR (W/kg) | Peak Location Separation Distance (mm) | SPLSR | Simultaneous Transmission SAR Test |
|---|---|---|---|---|---|---|---|---|---|
| | | | x | y | z | | | | |
| LTE FDD Band VII | Back side | 0.820 | -2.98 | 6.24 | -0.07 | 1.603 | 140.9 | 0.014 | SPLSR≤ 0.04, Not required |
| WLAN Aux | | 0.783 | 3.74 | -6.14 | -0.06 | | | | |



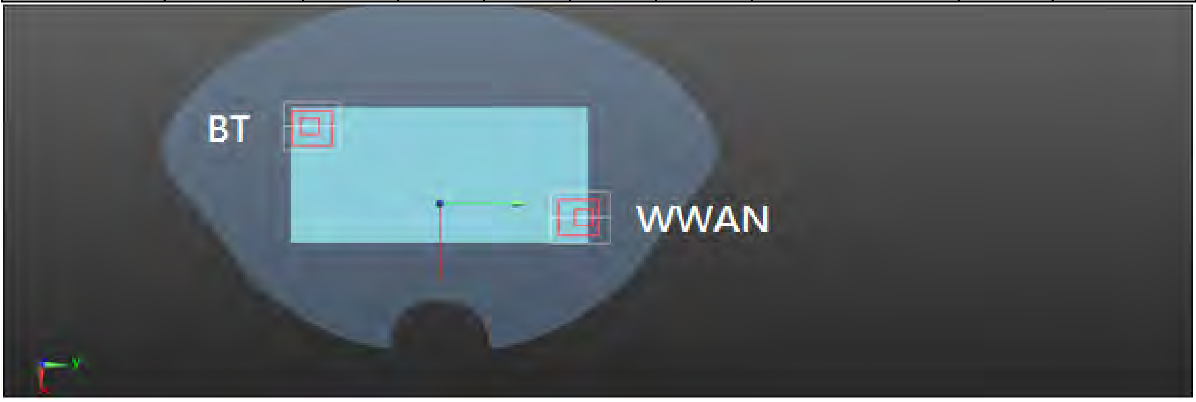

| Conditions | Position | SAR Value (W/kg) | Coordinates (cm) | | | ΣSAR (W/kg) | Peak Location Separation Distance (mm) | SPLSR | Simultaneous Transmission SAR Test |
|---|---|---|---|---|---|---|---|---|---|
| | | | x | y | z | | | | |
| Bluetooth | Back side | 0.012 | -3.30 | -6.88 | -0.08 | 0.795 | 70.8 | 0.010 | SPLSR≤ 0.04, Not required |
| WLAN Aux | | 0.783 | 3.74 | -6.14 | -0.06 | | | | |



SGS Taiwan Ltd. No.134,Wu Kung Road, New Taipei Industrial Park, Wuku District, New Taipei City, Taiwan 24803/新北市五股區新北產業園區五工路134號
台灣檢驗科技股份有限公司 t (886-2) 2299-3279 f (886-2) 2298-0488 www.tw.sgs.com
Member of SGS Group

| reported SAR WWAN and Bluetooth and 5G WLAN Aux, ΣSAR evaluation | | | | | | |
|---|---|---|---|---|---|---|
| Frequency band | Position | | reported SAR / W/kg | | | ΣSAR |
| | | | WWAN | Bluetooth | WLAN Aux | <1.6W/kg |
| CDMA Callular BC0 | Body-Worn | Front | 1.187 | 0.005 | 0.299 | 1.491 |
| | | Back | 0.703 | 0.012 | 0.783 | 1.498 |
| CDMA PCS BC1 | Body-Worn | Front | 1.190 | 0.005 | 0.299 | 1.494 |
| | | Back | 1.124 | 0.012 | 0.783 | 1.919 |

| Conditions | Position | SAR Value (W/kg) | Coordinates (cm) | | | ΣSAR (W/kg) | Peak Location Separation Distance (mm) | SPLSR | Simultaneous Transmission SAR Test |
|---|---|---|---|---|---|---|---|---|---|
| | | | x | y | z | | | | |
| CDMA PCS BC1 | Back side | 1.124 | 2.55 | 7.87 | -0.02 | 1.136 | 158.7 | 0.008 | SPLSR≤ 0.04, Not required |
| Bluetooth | | 0.012 | -3.30 | -6.88 | -0.08 | | | | |





SGS Taiwan Ltd. No.134,Wu Kung Road, New Taipei Industrial Park, Wuku District, New Taipei City, Taiwan 24803/新北市五股區新北產業園區五工路134號
台灣檢驗科技股份有限公司 t (886-2) 2299-3279 f (886-2) 2298-0488 www.tw.sgs.com
Member of SGS Group

| Conditions | Position | SAR Value (W/kg) | Coordinates (cm) | | | ΣSAR (W/kg) | Peak Location Separation Distance (mm) | SPLSR | Simultaneous Transmission SAR Test |
|---|---|---|---|---|---|---|---|---|---|
| | | | x | y | z | | | | |
| CDMA PCS BC1 | Back side | 1.124 | 2.55 | 7.87 | -0.02 | 1.907 | 140.61 | 0.019 | SPLSR≤ 0.04, Not required |
| WLAN Aux | | 0.783 | 3.74 | -6.14 | -0.06 | | | | |

| Conditions | Position | SAR Value (W/kg) | Coordinates (cm) | | | ΣSAR (W/kg) | Peak Location Separation Distance (mm) | SPLSR | Simultaneous Transmission SAR Test |
|---|---|---|---|---|---|---|---|---|---|
| | | | x | y | z | | | | |
| Bluetooth | Back side | 0.012 | -3.30 | -6.88 | -0.08 | 0.795 | 70.8 | 0.010 | SPLSR≤ 0.04, Not required |
| WLAN Aux | | 0.783 | 3.74 | -6.14 | -0.06 | | | | |

# 4. Instruments List

| Manufacturer | Device | Type | Serial number | Date of last calibration | Date of next calibration |
|---|---|---|---|---|---|
| Schmid & Partner Engineering AG | Dosimetric E-Field Probe | EX3DV4 | 7346 | Sep.02,2015 | Sep.01,2016 |
| | | | 3770 | Apr.27,2016 | Apr.26,2017 |
| Schmid & Partner Engineering AG | System Validation Dipole | D750V3 | 1015 | Aug.24,2015 | Aug.23,2016 |
| | | | | Aug.30,2016 | Aug.29,2017 |
| | | D835V2 | 4d063 | Aug.24,2015 | Aug.23,2016 |
| | | | | Aug.25,2016 | Aug.24,2017 |
| | | D1750V2 | 1008 | Aug.20,2015 | Aug.19,2016 |
| | | | | Aug.31,2016 | Aug.30,2017 |
| | | D1900V2 | 5d027 | Apr.25,2016 | Apr.24,2017 |
| | | D2300V2 | 1023 | Aug.19,2015 | Aug.18,2016 |
| | | | | Aug.26,2016 | Aug.25,2017 |
| | | D2450V2 | 727 | Apr.19,2016 | Apr.18,2017 |
| | | D2600V2 | 1005 | Jan.21,2016 | Jan.20,2017 |
| | | | | Jan.25,2017 | Jan.24,2018 |
| | | D5GHzV2 | 1023 | Jan.26,2016 | Jan.25,2017 |
| | | | | Jan.20,2017 | Jan.19,2018 |
| Schmid & Partner Engineering AG | Data acquisition Electronics | DAE4 | 916 | Dec.16,2015 | Dec.15,2016 |
| | | | 856 | Apr.21,2016 | Apr.20,2017 |
| Schmid & Partner Engineering AG | Software | DASY 52 V52.8.8 | N/A | Calibration not required | Calibration not required |
| Schmid & Partner Engineering AG | Phantom | SAM | N/A | Calibration not required | Calibration not required |

| Manufacturer | Device | Type | Serial number | Date of last calibration | Date of next calibration |
|---|---|---|---|---|---|
| Network Analyzer | Agilent | E5071C | MY46107530 | Jan.07,2016 | Jan.06,2017 |
| | | | | Jan.20,2017 | Jan.19,2018 |
| Agilent | Dielectric Probe Kit | 85070E | MY44300677 | Calibration not required | Calibration not required |
| Agilent | Dual-directional coupler | 772D | MY46151242 | Jul.15,2015 | Jul.14,2016 |
| | | | | Apr.13,2016 | Apr.12,2017 |
| | | 778D | MY48220468 | Jul.16,2015 | Jul.15,2016 |
| | | | MY52180302 | Apr.13,2016 | Apr.12,2017 |
| Agilent | RF Signal Generator | N5181A | MY50145142 | Feb.19,2016 | Feb.18,2017 |
| Agilent | Power Meter | E4417A | MY52240003 | Jul.15,2015 | Jul.14,2016 |
| | | | | Oct.17,2016 | Oct.16,2017 |
| Agilent | Power Sensor | E9301H | MY52200004 | Jul.15,2015 | Jul.14,2016 |
| | | | | Oct.17,2016 | Oct.16,2017 |
| TECPEL | Digital thermometer | DTM-303A | TP130073 | Feb.26,2016 | Feb.25,2017 |
| Anritsu | Radio Communication Test | MT8820C | 6201061014 | Oct.07,2015 | Oct.06,2016 |
| | | | 6201061049 | Apr.08,2016 | Apr.07,2017 |
| R&S | Radio Communication Test | CMU200 | 113505 | Aug.19,2016 | Aug.18,2017 |
| R&S | Radio Communication Test | CMW500 | 131123 | Mar.02,2016 | Mar.01,2017 |


SGS Taiwan Ltd.
台灣檢驗科技股份有限公司
No.134,Wu Kung Road, New Taipei Industrial Park, Wuku District, New Taipei City, Taiwan 24803/新北市五股區新北產業園區五工路134號
t (886-2) 2299-3279 f (886-2) 2298-0488 www.tw.sgs.com
Member of SGS Group

# 5. Measurements

Date: 2016/5/8

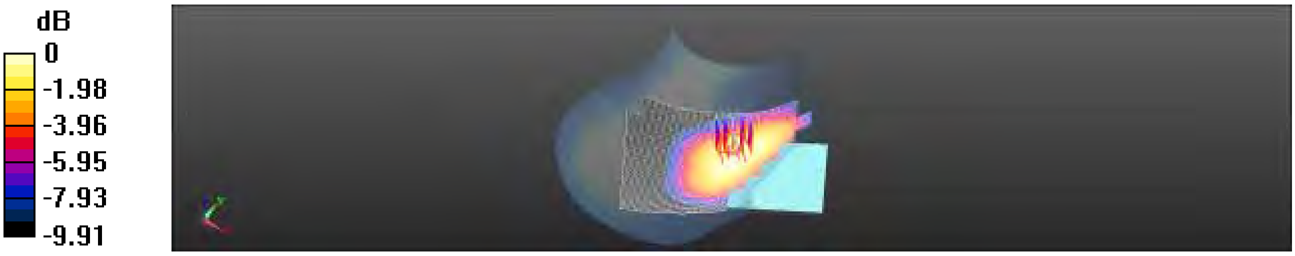
**GSM 850_Head_Re Cheek_CH 190**
Communication System: GSM ; Frequency: 836.6 MHz
Medium parameters used: f = 837 MHz; $\sigma$ = 0.923 S/m; $\varepsilon_r$ = 40.865; $\rho$ = 1000 kg/$m^3$
Phantom section: Right Section

DASY5 Configuration:

- Probe: EX3DV4 - SN7346; ConvF(9.8, 9.8, 9.8); Calibrated: 2015/09/02;
- Sensor-Surface: 2mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn916; Calibrated: 2015/12/16
- Phantom: Head
- DASY52 52.8.8(1222); SEMCAD X 14.6.10(7331)

**Configuration/Head/Area Scan (81x141x1):** Interpolated grid: dx=15 mm, dy=15 mm
Maximum value of SAR = 0.288 W/kg

**Configuration/Head/Zoom Scan (5x5x7)/Cube 0:** Measurement grid: dx=8mm, dy=8mm, dz=5mm
Reference Value = 6.238 V/m; Power Drift = 0.19 dB
Peak SAR (extrapolated) = 0.308 W/kg
**SAR(1 g) = 0.237 W/kg; SAR(10 g) = 0.175 W/kg**
Maximum value of SAR (measured) = 0.275 W/kg




0 dB = 0.275 W/kg = -5.61 dBW/kg


SGS Taiwan Ltd. No.134,Wu Kung Road, New Taipei Industrial Park, Wuku District, New Taipei City, Taiwan 24803/新北市五股區新北產業園區五工路134號
台灣檢驗科技股份有限公司 t (886-2) 2299-3279 f (886-2) 2298-0488 www.tw.sgs.com
Member of SGS Group

Date: 2016/5/3

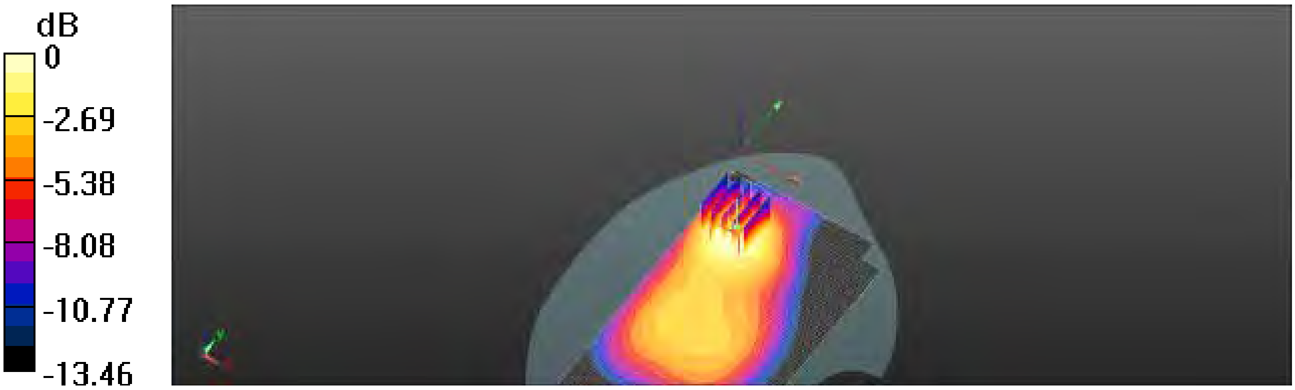
**GSM 850_Speech mode_Front side_CH 190_10mm**
Communication System: GSM; Frequency: 836.6 MHz
Medium parameters used: f = 837 MHz; $\sigma$ = 1.018 S/m; $\varepsilon_r$ = 55.733; $\rho$ = 1000 kg/m$^3$
Phantom section: Flat Section

DASY5 Configuration:

- Probe: EX3DV4 - SN7346; ConvF(10.05, 10.05, 10.05); Calibrated: 2015/9/2;
- Sensor-Surface: 2mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn916; Calibrated: 2015/12/16
- Phantom: Head
- DASY52 52.8.8(1222); SEMCAD X 14.6.10(7331)

**Configuration/Head/Area Scan (81x141x1):** Interpolated grid: dx=15 mm, dy=15 mm
Maximum value of SAR (interpolated) = 0.477 W/kg

**Configuration/Head/Zoom Scan (5x5x7)/Cube 0:** Measurement grid: dx=8mm, dy=8mm, dz=5mm
Reference Value = 13.79 V/m; Power Drift = 0.19 dB
Peak SAR (extrapolated) = 0.523 W/kg
**SAR(1 g) = 0.369 W/kg; SAR(10 g) = 0.246 W/kg**
Maximum value of SAR (measured) = 0.450 W/kg




0 dB = 0.450 W/kg = -3.47 dBW/kg


SGS Taiwan Ltd. No.134,Wu Kung Road, New Taipei Industrial Park, Wuku District, New Taipei City, Taiwan 24803/新北市五股區新北產業園區五工路134號
台灣檢驗科技股份有限公司 t (886-2) 2299-3279 f (886-2) 2298-0488 www.tw.sgs.com
Member of SGS Group

Date: 2016/5/3

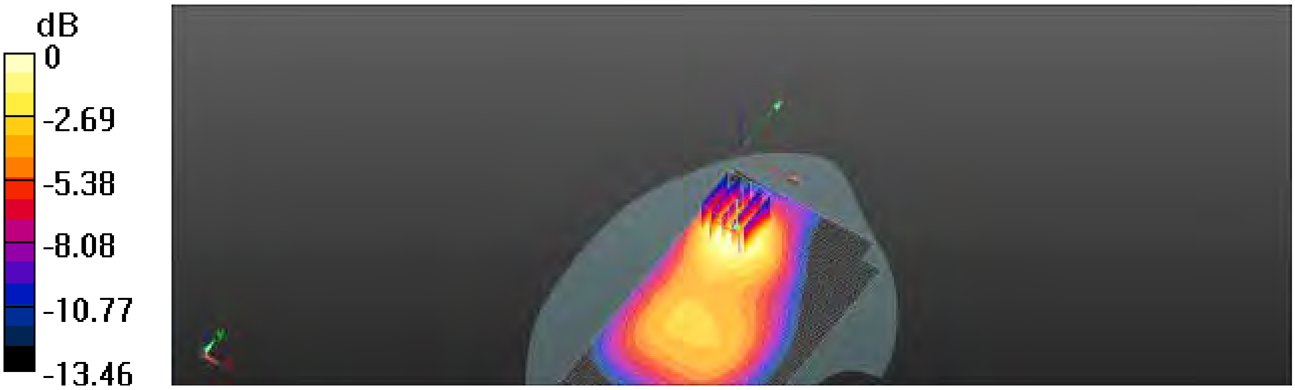
**GPRS 850_Hotspot_Front side_CH 251_10mm**
Communication System: GPRS (1Dn4Up); Frequency: 848.8 MHz
Medium parameters used: f = 849 MHz; $\sigma$ = 1.032 S/m; $\varepsilon_r$ = 55.633; $\rho$ = 1000 kg/$m^3$
Phantom section: Flat Section

DASY5 Configuration:

- Probe: EX3DV4 - SN7346; ConvF(10.05, 10.05, 10.05); Calibrated: 2015/9/2;
- Sensor-Surface: 2mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn916; Calibrated: 2015/12/16
- Phantom: Head
- DASY52 52.8.8(1222); SEMCAD X 14.6.10(7331)

**Configuration/Head/Area Scan (81x141x1):** Interpolated grid: dx=15 mm, dy=15 mm
Maximum value of SAR (interpolated) = 0.646 W/kg

**Configuration/Head/Zoom Scan (5x5x7)/Cube 0:** Measurement grid: dx=8mm, dy=8mm, dz=5mm
Reference Value = 16.67 V/m; Power Drift = -0.10 dB
Peak SAR (extrapolated) = 0.720 W/kg
**SAR(1 g) = 0.505 W/kg; SAR(10 g) = 0.334 W/kg**
Maximum value of SAR (measured) = 0.619 W/kg




0 dB = 0.619 W/kg = -2.08 dBW/kg

Date: 2016/5/2

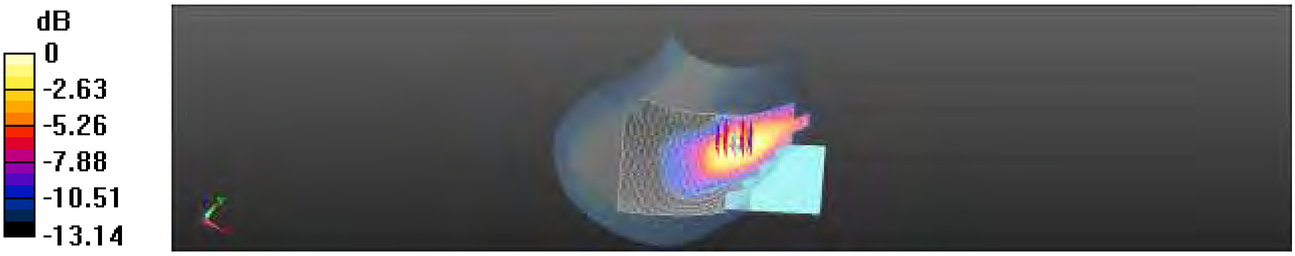
**GSM 1900_Head_Re Cheek_CH 810**
Communication System: GSM ; Frequency: 1909.8 MHz
Medium parameters used: f = 1910 MHz; σ = 1.423 S/m; $\varepsilon_r$ = 38.896; ρ = 1000 kg/$m^3$
Phantom section: Right Section

DASY5 Configuration:

- Probe: EX3DV4 - SN7346; ConvF(8.33, 8.33, 8.33); Calibrated: 2015/09/02;
- Sensor-Surface: 2mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn916; Calibrated: 2015/12/16
- Phantom: Head
- DASY52 52.8.8(1222); SEMCAD X 14.6.10(7331)

**Configuration/Head/Area Scan (81x141x1):** Interpolated grid: dx=15 mm, dy=15 mm
Maximum value of SAR = 0.464 W/kg

**Configuration/Head/Zoom Scan (5x5x7)/Cube 0:** Measurement grid: dx=8mm, dy=8mm, dz=5mm
Reference Value = 5.029 V/m; Power Drift = -0.02 dB
Peak SAR (extrapolated) = 0.500 W/kg
**SAR(1 g) = 0.336 W/kg; SAR(10 g) = 0.213 W/kg**
Maximum value of SAR (measured) = 0.412 W/kg




0 dB = 0.412 W/kg = -3.85 dBW/kg


SGS Taiwan Ltd. No.134,Wu Kung Road, New Taipei Industrial Park, Wuku District, New Taipei City, Taiwan 24803/新北市五股區新北產業園區五工路134號
台灣檢驗科技股份有限公司 t (886-2) 2299-3279 f (886-2) 2298-0488 www.tw.sgs.com
Member of SGS Group

Date: 2016/4/27

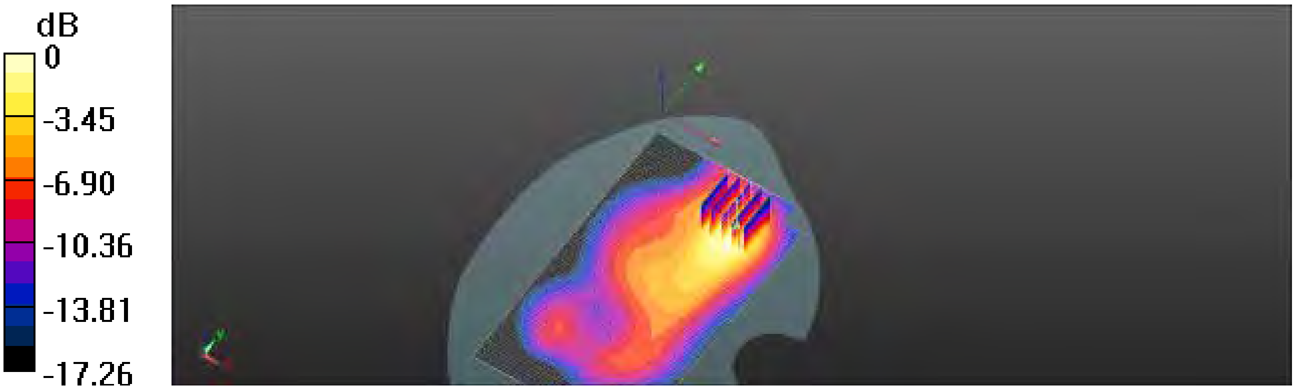
**GSM 1900_Speech mode_Back side_CH 810_10mm**
Communication System: GSM; Frequency: 1909.8 MHz
Medium parameters used: f = 1910 MHz; σ = 1.577 S/m; $\varepsilon_r$ = 53.683; ρ = 1000 kg/m$^3$
Phantom section: Flat Section

DASY5 Configuration:

- Probe: EX3DV4 - SN7346; ConvF(7.77, 7.77, 7.77); Calibrated: 2015/9/2;
- Sensor-Surface: 2mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn916; Calibrated: 2015/12/16
- Phantom: Head
- DASY52 52.8.8(1222); SEMCAD X 14.6.10(7331)

**Configuration/Head/Area Scan (81x141x1):** Interpolated grid: dx=15 mm, dy=15 mm
Maximum value of SAR (interpolated) = 0.697 W/kg

**Configuration/Head/Zoom Scan (5x5x7)/Cube 0:** Measurement grid: dx=8mm, dy=8mm, dz=5mm
Reference Value = 9.932 V/m; Power Drift = -0.01 dB
Peak SAR (extrapolated) = 0.814 W/kg
**SAR(1 g) = 0.482 W/kg; SAR(10 g) = 0.277 W/kg**
Maximum value of SAR (measured) = 0.651 W/kg




0 dB = 0.651 W/kg = -1.86 dBW/kg

Date: 2016/4/27

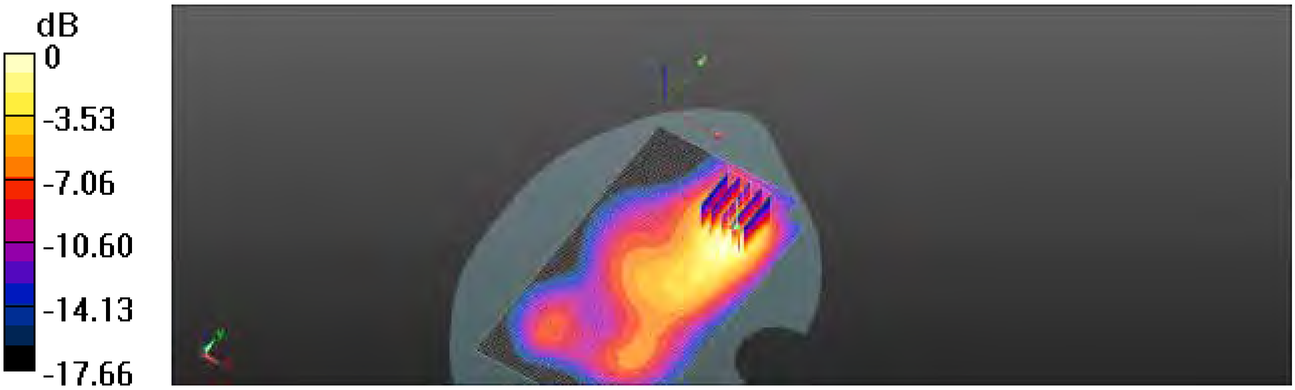
**GPRS 1900_Hotspot_Back side_CH 810_10mm**
Communication System: GPRS (1Dn3Up); Frequency: 1909.8 MHz
Medium parameters used: f = 1910 MHz; $\sigma$ = 1.577 S/m; $\varepsilon_r$ = 53.683; $\rho$ = 1000 kg/m$^3$
Phantom section: Flat Section

DASY5 Configuration:

- Probe: EX3DV4 - SN7346; ConvF(7.77, 7.77, 7.77); Calibrated: 2015/9/2;
- Sensor-Surface: 2mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn916; Calibrated: 2015/12/16
- Phantom: Head
- DASY52 52.8.8(1222); SEMCAD X 14.6.10(7331)

**Configuration/Head/Area Scan (81x141x1):** Interpolated grid: dx=15 mm, dy=15 mm
Maximum value of SAR (interpolated) = 0.812 W/kg

**Configuration/Head/Zoom Scan (5x5x7)/Cube 0:** Measurement grid: dx=8mm, dy=8mm, dz=5mm
Reference Value = 11.35 V/m; Power Drift = 0.18 dB
Peak SAR (extrapolated) = 1.00 W/kg
**SAR(1 g) = 0.582 W/kg; SAR(10 g) = 0.334 W/kg**
Maximum value of SAR (measured) = 0.791 W/kg




0 dB = 0.791 W/kg = -1.02 dBW/kg

Date: 2016/5/2

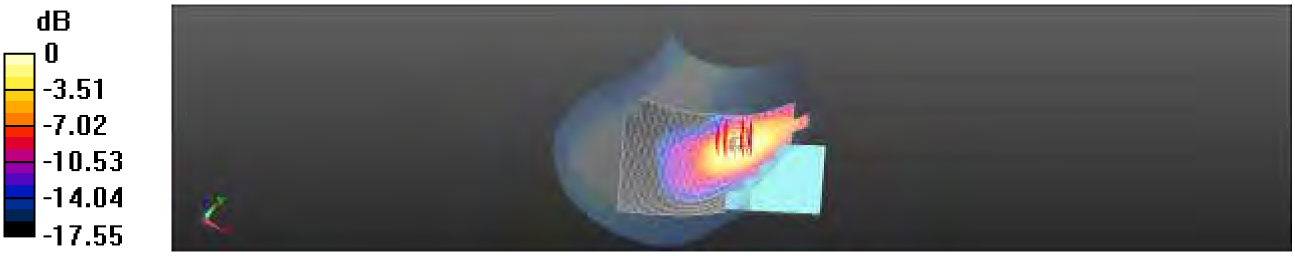
**WCDMA Band 2_Head_Re Cheek_CH 9538**
Communication System: WCDMA ; Frequency: 1907.6 MHz
Medium parameters used: f = 1908 MHz; $\sigma$ = 1.422 S/m; $\varepsilon_r$ = 38.9; $\rho$ = 1000 kg/m$^3$
Phantom section: Right Section

DASY5 Configuration:

- Probe: EX3DV4 - SN7346; ConvF(8.33, 8.33, 8.33); Calibrated: 2015/09/02;
- Sensor-Surface: 2mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn916; Calibrated: 2015/12/16
- Phantom: Head
- DASY52 52.8.8(1222); SEMCAD X 14.6.10(7331)

**Configuration/Head/Area Scan (81x141x1):** Interpolated grid: dx=15 mm, dy=15 mm
Maximum value of SAR = 0.862 W/kg

**Configuration/Head/Zoom Scan (5x5x7)/Cube 0:** Measurement grid: dx=8mm, dy=8mm, dz=5mm
Reference Value = 6.358 V/m; Power Drift = -0.10 dB
Peak SAR (extrapolated) = 0.950 W/kg
**SAR(1 g) = 0.626 W/kg; SAR(10 g) = 0.389 W/kg**
Maximum value of SAR (measured) = 0.786 W/kg




0 dB = 0.786 W/kg = -1.05 dBW/kg

Date: 2016/4/27

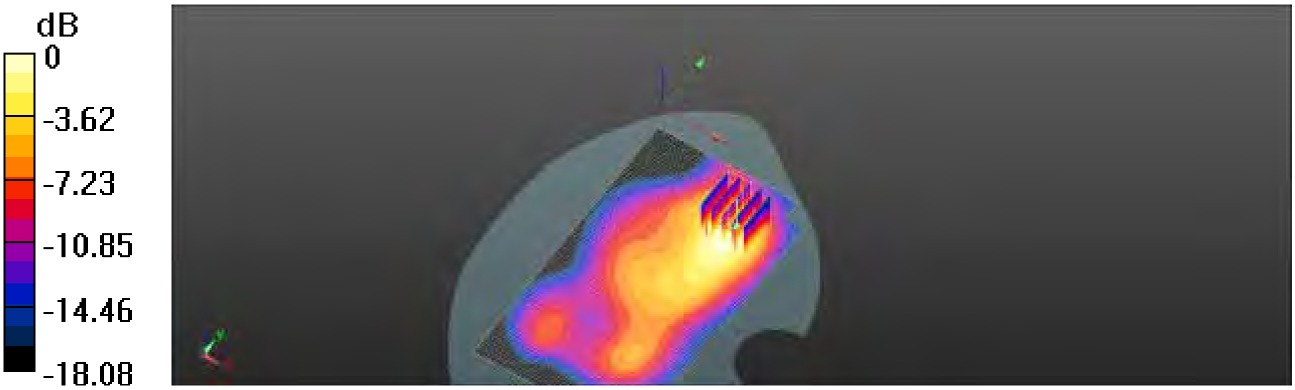
**WCDMA Band 2_Hotspot_Back side_CH 9538_10mm**
Communication System: WCDMA; Frequency: 1907.6 MHz
Medium parameters used: f = 1908 MHz; $\sigma$ = 1.572 S/m; $\varepsilon_r$ = 53.633; $\rho$ = 1000 kg/m$^3$
Phantom section: Flat Section

DASY5 Configuration:

- Probe: EX3DV4 - SN7346; ConvF(7.77, 7.77, 7.77); Calibrated: 2015/9/2;
- Sensor-Surface: 2mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn916; Calibrated: 2015/12/16
- Phantom: Head
- DASY52 52.8.8(1222); SEMCAD X 14.6.10(7331)

**Configuration/Head/Area Scan (81x141x1):** Interpolated grid: dx=15 mm, dy=15 mm
Maximum value of SAR (interpolated) = 1.33 W/kg

**Configuration/Head/Zoom Scan (5x5x7)/Cube 0:** Measurement grid: dx=8mm, dy=8mm, dz=5mm
Reference Value = 15.39 V/m; Power Drift = -0.08 dB
Peak SAR (extrapolated) = 1.59 W/kg
**SAR(1 g) = 0.925 W/kg; SAR(10 g) = 0.533 W/kg**
Maximum value of SAR (measured) = 1.26 W/kg




0 dB = 1.26 W/kg = 1.00 dBW/kg

Date: 2016/5/7

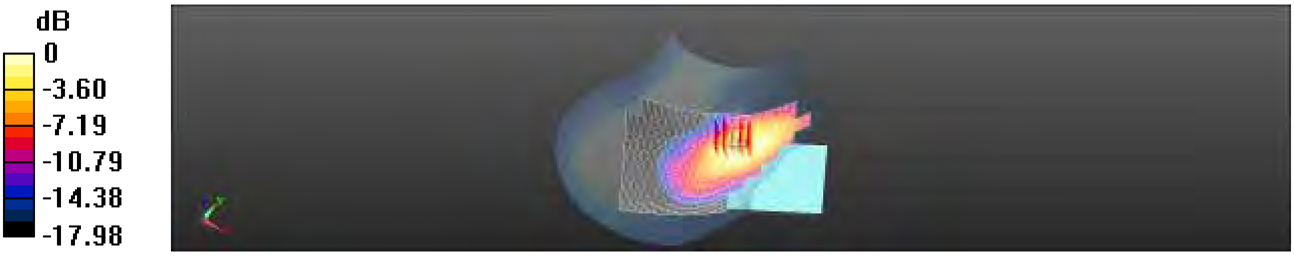
**WCDMA Band 4_Head_Re Cheek_CH 1513**
Communication System: WCDMA ; Frequency: 1752.6 MHz
Medium parameters used: f = 1753 MHz; $\sigma$ = 1.379 S/m; $\varepsilon_r$ = 39.265; $\rho$ = 1000 kg/$m^3$
Phantom section: Right Section

DASY5 Configuration:

- Probe: EX3DV4 - SN7346; ConvF(8.6, 8.6, 8.6); Calibrated: 2015/09/02;
- Sensor-Surface: 2mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn916; Calibrated: 2015/12/16
- Phantom: Head
- DASY52 52.8.8(1222); SEMCAD X 14.6.10(7331)

**Configuration/Head/Area Scan (81x141x1):** Interpolated grid: dx=15 mm, dy=15 mm
Maximum value of SAR = 0.863 W/kg

**Configuration/Head/Zoom Scan (5x5x7)/Cube 0:** Measurement grid: dx=8mm, dy=8mm, dz=5mm
Reference Value = 5.719 V/m; Power Drift = 0.19 dB
Peak SAR (extrapolated) = 0.909 W/kg
**SAR(1 g) = 0.613 W/kg; SAR(10 g) = 0.391 W/kg**
Maximum value of SAR (measured) = 0.759 W/kg




0 dB = 0.759 W/kg = -1.19 dBW/kg


SGS Taiwan Ltd. No.134,Wu Kung Road, New Taipei Industrial Park, Wuku District, New Taipei City, Taiwan 24803/新北市五股區新北產業園區五工路134號
台灣檢驗科技股份有限公司 t (886-2) 2299-3279 f (886-2) 2298-0488 www.tw.sgs.com
Member of SGS Group

Date: 2016/4/28

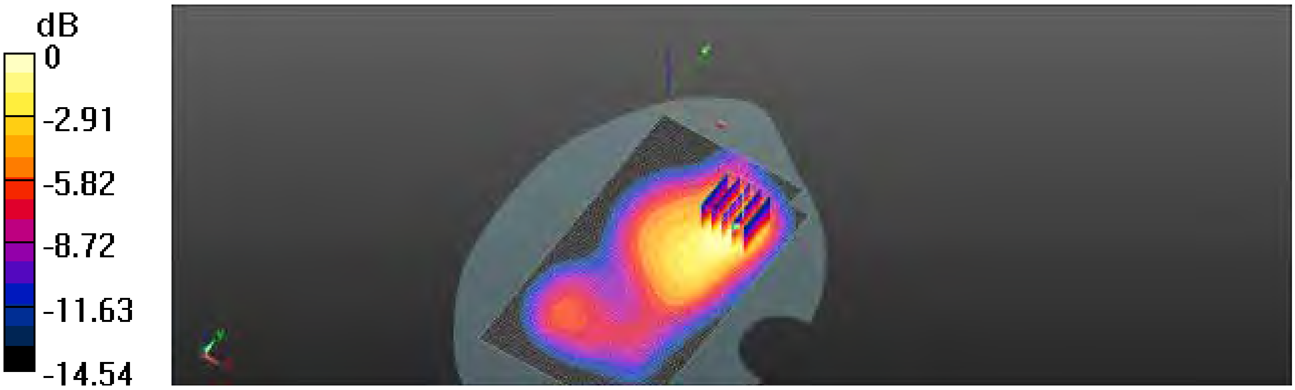
**WCDMA Band 4_Hotspot_Back side_CH 1312_10mm**
Communication System: WCDMA; Frequency: 1712.4 MHz
Medium parameters used: f = 1712.4 MHz; σ = 1.404 S/m; $\varepsilon_r$ = 54.263; ρ = 1000 kg/$m^3$
Phantom section: Flat Section

DASY5 Configuration:

- Probe: EX3DV4 - SN7346; ConvF(8.06, 8.06, 8.06); Calibrated: 2015/9/2;
- Sensor-Surface: 2mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn916; Calibrated: 2015/12/16
- Phantom: Head
- DASY52 52.8.8(1222); SEMCAD X 14.6.10(7331)

**Configuration/Head/Area Scan (81x141x1):** Interpolated grid: dx=15 mm, dy=15 mm
Maximum value of SAR (interpolated) = 1.10 W/kg

**Configuration/Head/Zoom Scan (5x5x7)/Cube 0:** Measurement grid: dx=8mm, dy=8mm, dz=5mm
Reference Value = 14.27 V/m; Power Drift = -0.03 dB
Peak SAR (extrapolated) = 1.30 W/kg
**SAR(1 g) = 0.811 W/kg; SAR(10 g) = 0.488 W/kg**
Maximum value of SAR (measured) = 1.06 W/kg




0 dB = 1.06 W/kg = 0.25 dBW/kg


SGS Taiwan Ltd. No.134,Wu Kung Road, New Taipei Industrial Park, Wuku District, New Taipei City, Taiwan 24803/新北市五股區新北產業園區五工路134號
台灣檢驗科技股份有限公司 t (886-2) 2299-3279 f (886-2) 2298-0488 www.tw.sgs.com
Member of SGS Group

Date: 2016/5/8

**WCDMA Band 5_Head_Re Cheek_CH 4132**

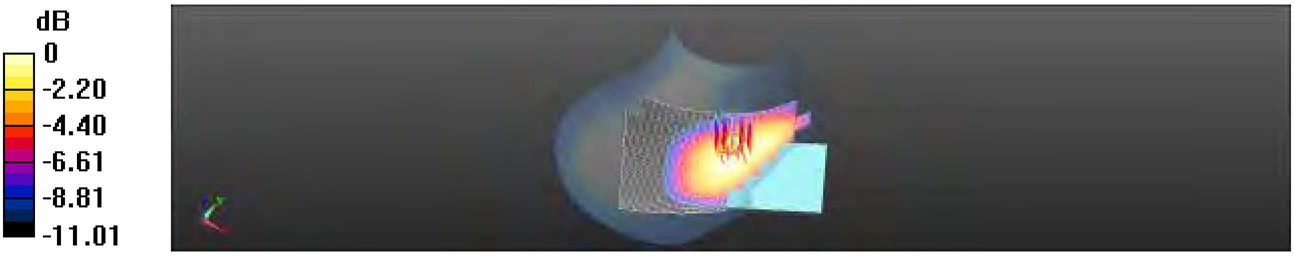
Communication System: WCDMA ; Frequency: 826.4 MHz
Medium parameters used: f = 826 MHz; σ = 0.917 S/m; $\varepsilon_r$ = 40.912; ρ = 1000 kg/$m^3$
Phantom section: Right Section

DASY5 Configuration:

- Probe: EX3DV4 - SN7346; ConvF(9.8, 9.8, 9.8); Calibrated: 2015/09/02;
- Sensor-Surface: 2mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn916; Calibrated: 2015/12/16
- Phantom: Head
- DASY52 52.8.8(1222); SEMCAD X 14.6.10(7331)

**Configuration/Head/Area Scan (81x141x1):** Interpolated grid: dx=15 mm, dy=15 mm
Maximum value of SAR = 0.382 W/kg

**Configuration/Head/Zoom Scan (5x5x7)/Cube 0:** Measurement grid: dx=8mm, dy=8mm, dz=5mm
Reference Value = 6.809 V/m; Power Drift = -0.03 dB
Peak SAR (extrapolated) = 0.410 W/kg
**SAR(1 g) = 0.313 W/kg; SAR(10 g) = 0.228 W/kg**
Maximum value of SAR (measured) = 0.364 W/kg




0 dB = 0.364 W/kg = -4.39 dBW/kg

Date: 2016/5/3

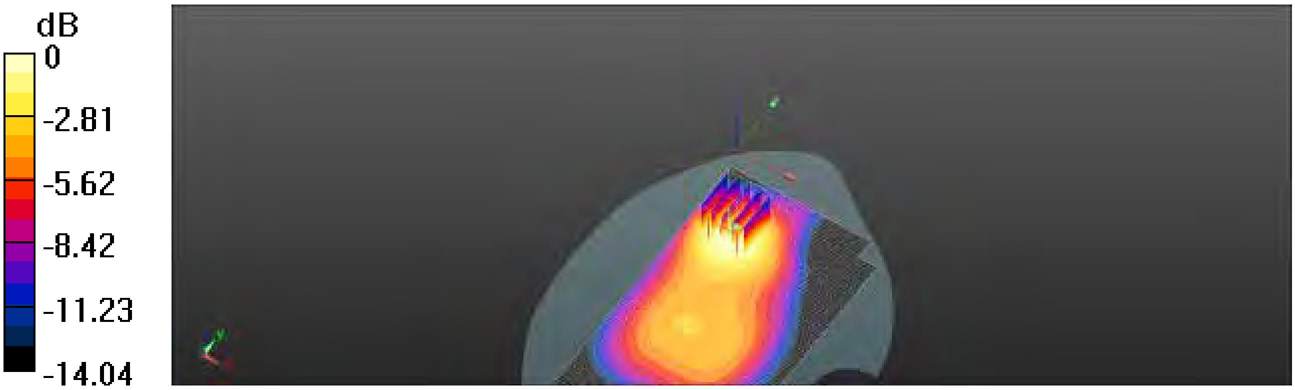
**WCDMA Band 5_Hotspot_Front side_CH 4233_10mm**
Communication System: WCDMA; Frequency: 846.6 MHz
Medium parameters used: f = 847 MHz; $\sigma$ = 1.03 S/m; $\varepsilon_r$ = 55.653; $\rho$ = 1000 kg/m$^3$
Phantom section: Flat Section

DASY5 Configuration:

- Probe: EX3DV4 - SN7346; ConvF(10.05, 10.05, 10.05); Calibrated: 2015/9/2;
- Sensor-Surface: 2mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn916; Calibrated: 2015/12/16
- Phantom: Head
- DASY52 52.8.8(1222); SEMCAD X 14.6.10(7331)

**Configuration/Head/Area Scan (81x141x1):** Interpolated grid: dx=15 mm, dy=15 mm
Maximum value of SAR (interpolated) = 0.739 W/kg

**Configuration/Head/Zoom Scan (5x5x7)/Cube 0:** Measurement grid: dx=8mm, dy=8mm, dz=5mm
Reference Value = 17.16 V/m; Power Drift = -0.03 dB
Peak SAR (extrapolated) = 0.831 W/kg
**SAR(1 g) = 0.583 W/kg; SAR(10 g) = 0.383 W/kg**
Maximum value of SAR (measured) = 0.708 W/kg




0 dB = 0.708 W/kg = -1.50 dBW/kg


SGS Taiwan Ltd. No.134,Wu Kung Road, New Taipei Industrial Park, Wuku District, New Taipei City, Taiwan 24803/新北市五股區新北產業園區五工路134號
台灣檢驗科技股份有限公司 t (886-2) 2299-3279 f (886-2) 2298-0488 www.tw.sgs.com
Member of SGS Group

Date: 2016/4/27

**LTE Band 2 (20MHz)_Hotspot_Front side_CH 19100_QPSK_1-0_10mm_10mm**

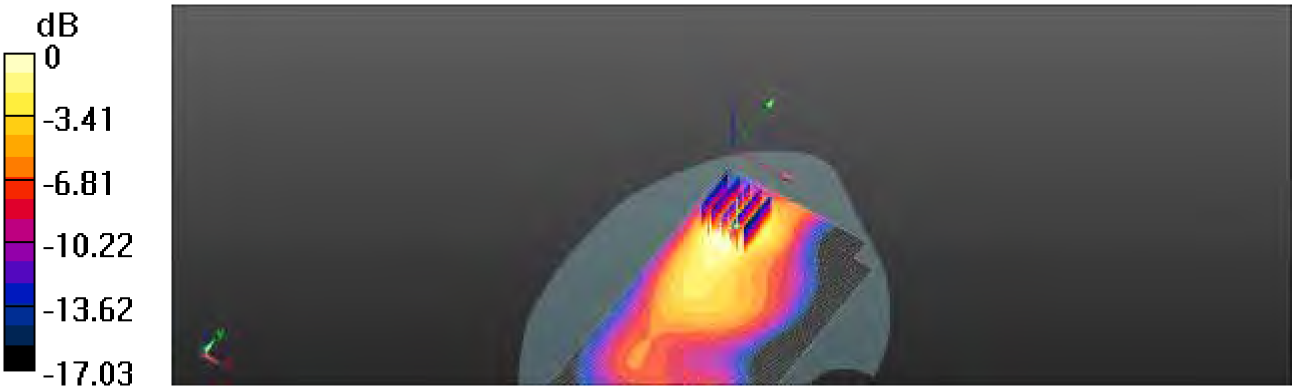
Communication System: LTE; Frequency: 1900 MHz
Medium parameters used: f = 1900 MHz; $\sigma$ = 1.559 S/m; $\varepsilon_r$ = 53.728; $\rho$ = 1000 kg/m$^3$
Phantom section: Flat Section

DASY5 Configuration:

- Probe: EX3DV4 - SN7346; ConvF(7.77, 7.77, 7.77); Calibrated: 2015/9/2;
- Sensor-Surface: 2mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn916; Calibrated: 2015/12/16
- Phantom: Head
- DASY52 52.8.8(1222); SEMCAD X 14.6.10(7331)

**Configuration/Head/Area Scan (81x141x1):** Interpolated grid: dx=15 mm, dy=15 mm
Maximum value of SAR (interpolated) = 1.23 W/kg

**Configuration/Head/Zoom Scan (5x5x7)/Cube 0:** Measurement grid: dx=8mm, dy=8mm, dz=5mm
Reference Value = 13.41 V/m; Power Drift = 0.05 dB
Peak SAR (extrapolated) = 1.47 W/kg
**SAR(1 g) = 0.848 W/kg; SAR(10 g) = 0.488 W/kg**
Maximum value of SAR (measured) = 1.12 W/kg




0 dB = 1.12 W/kg = 0.49 dBW/kg



SGS Taiwan Ltd. No.134,Wu Kung Road, New Taipei Industrial Park, Wuku District, New Taipei City, Taiwan 24803/新北市五股區新北產業園區五工路134號
台灣檢驗科技股份有限公司 t (886-2) 2299-3279 f (886-2) 2298-0488 www.tw.sgs.com
Member of SGS Group

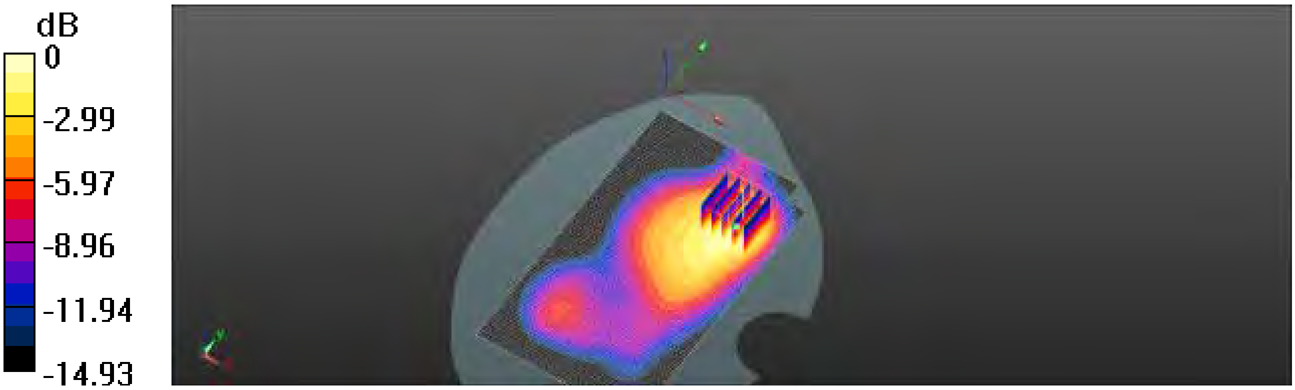
Date: 2016/4/28

**LTE Band 4 (20MHz)_Hotspot_Back side_CH 20050_QPSK_1-0_10mm**
Communication System: LTE; Frequency: 1720 MHz
Medium parameters used: f = 1720 MHz; $\sigma$ = 1.413 S/m; $\varepsilon_r$ = 54.257; $\rho$ = 1000 kg/m$^3$
Phantom section: Flat Section

DASY5 Configuration:
- Probe: EX3DV4 - SN7346; ConvF(8.06, 8.06, 8.06); Calibrated: 2015/9/2;
- Sensor-Surface: 2mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn916; Calibrated: 2015/12/16
- Phantom: Head
- DASY52 52.8.8(1222); SEMCAD X 14.6.10(7331)

**Configuration/Head/Area Scan (81x141x1):** Interpolated grid: dx=15 mm, dy=15 mm
Maximum value of SAR (interpolated) = 1.27 W/kg

**Configuration/Head/Zoom Scan (5x5x7)/Cube 0:** Measurement grid: dx=8mm, dy=8mm, dz=5mm
Reference Value = 14.24 V/m; Power Drift = -0.13 dB
Peak SAR (extrapolated) = 1.52 W/kg
**SAR(1 g) = 0.924 W/kg; SAR(10 g) = 0.542 W/kg**
Maximum value of SAR (measured) = 1.23 W/kg




0 dB = 1.23 W/kg = 0.90 dBW/kg


SGS Taiwan Ltd. No.134,Wu Kung Road, New Taipei Industrial Park, Wuku District, New Taipei City, Taiwan 24803/新北市五股區新北產業園區五工路134號
台灣檢驗科技股份有限公司 t (886-2) 2299-3279 f (886-2) 2298-0488 www.tw.sgs.com
Member of SGS Group

Date: 2017/2/3

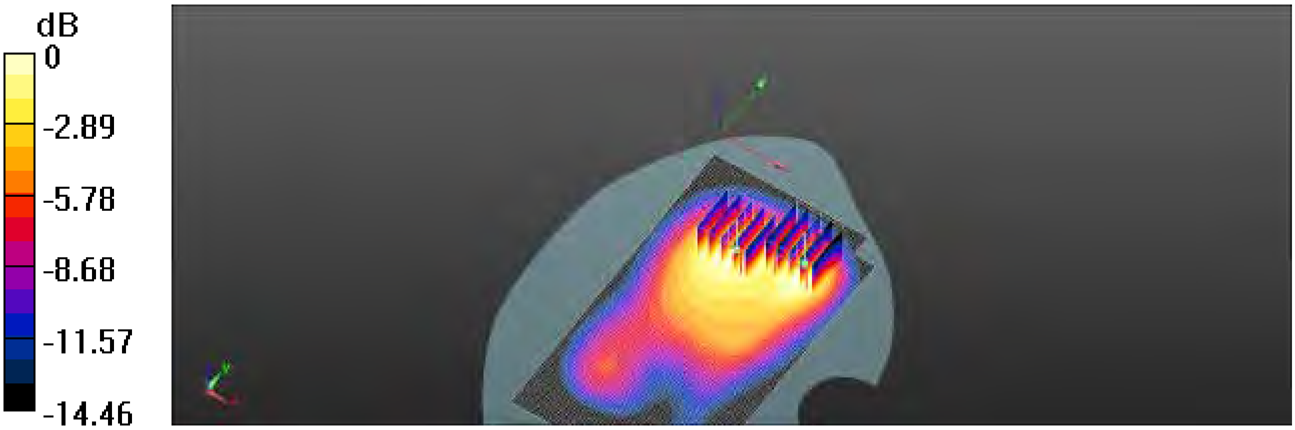
**LTE Band 4 (20MHz)_Hotsport_Back side_CH 20050_QPSK_1-0_10mm**
Communication System: LTE; Frequency: 1720 MHz
Medium parameters used: f = 1720 MHz; σ = 1.408 S/m; $\varepsilon_r$ = 53.663; ρ = 1000 kg/$m^3$
Phantom section: Flat Section

DASY5 Configuration:

- Probe: EX3DV4 - SN3770; ConvF(7.88, 7.88, 7.88); Calibrated: 2016/4/27;
- Sensor-Surface: 2mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn856; Calibrated: 2016/4/21
- Phantom: Head
- DASY52 52.8.8(1258); SEMCAD X 14.6.10(7373)

**Configuration/Head/Area Scan (81x141x1):** Interpolated grid: dx=15 mm, dy=15 mm
Maximum value of SAR (interpolated) = 1.44 W/kg

**Configuration/Head/Zoom Scan (5x5x7)/Cube 0:** Measurement grid: dx=8mm, dy=8mm, dz=5mm
Reference Value = 16.68 V/m; Power Drift = -0.05 dB
Peak SAR (extrapolated) = 1.74 W/kg
**SAR(1 g) = 1.01 W/kg; SAR(10 g) = 0.566 W/kg**
Maximum value of SAR (measured) = 1.39 W/kg
**Configuration/Head/Zoom Scan (5x5x7)/Cube 1:** Measurement grid: dx=8mm, dy=8mm, dz=5mm
Reference Value = 16.68 V/m; Power Drift = -0.05 dB
Peak SAR (extrapolated) = 1.44 W/kg
**SAR(1 g) = 0.963 W/kg; SAR(10 g) = 0.611 W/kg**
Maximum value of SAR (measured) = 1.22 W/kg




0 dB = 1.22 W/kg = 0.86 dBW/kg


SGS Taiwan Ltd. No.134,Wu Kung Road, New Taipei Industrial Park, Wuku District, New Taipei City, Taiwan 24803/新北市五股區新北產業園區五工路134號
台灣檢驗科技股份有限公司 t (886-2) 2299-3279 f (886-2) 2298-0488 www.tw.sgs.com
Member of SGS Group

Date: 2016/5/3

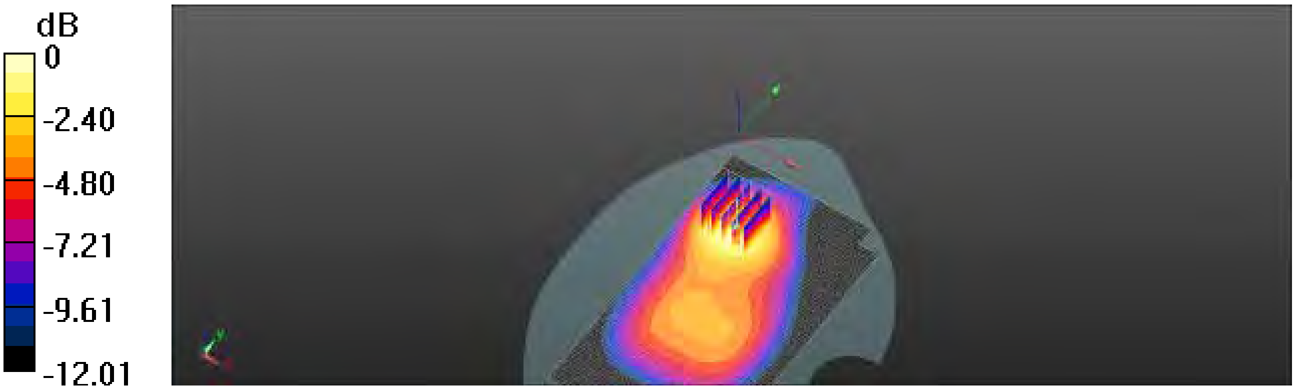
**LTE Band 5 (10MHz)_Hotspot_Front side_CH 20600_QPSK_1-0_10mm**
Communication System: LTE; Frequency: 844 MHz
Medium parameters used: f = 844 MHz; σ = 1.027 S/m; $\varepsilon_r$ = 55.712; ρ = 1000 kg/$m^3$
Phantom section: Flat Section

DASY5 Configuration:

- Probe: EX3DV4 - SN7346; ConvF(10.05, 10.05, 10.05); Calibrated: 2015/9/2;
- Sensor-Surface: 2mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn916; Calibrated: 2015/12/16
- Phantom: Head
- DASY52 52.8.8(1222); SEMCAD X 14.6.10(7331)

**Configuration/Head/Area Scan (81x141x1):** Interpolated grid: dx=15 mm, dy=15 mm
Maximum value of SAR (interpolated) = 0.630 W/kg

**Configuration/Head/Zoom Scan (5x5x7)/Cube 0:** Measurement grid: dx=8mm, dy=8mm, dz=5mm
Reference Value = 16.04 V/m; Power Drift = -0.07 dB
Peak SAR (extrapolated) = 0.716 W/kg
**SAR(1 g) = 0.504 W/kg; SAR(10 g) = 0.334 W/kg**
Maximum value of SAR (measured) = 0.612 W/kg




0 dB = 0.612 W/kg = -2.13 dBW/kg

Date: 2016/4/29

**LTE Band 7 (20MHz)_Hotspot_Front side_CH 20850_QPSK_1-0_10mm**

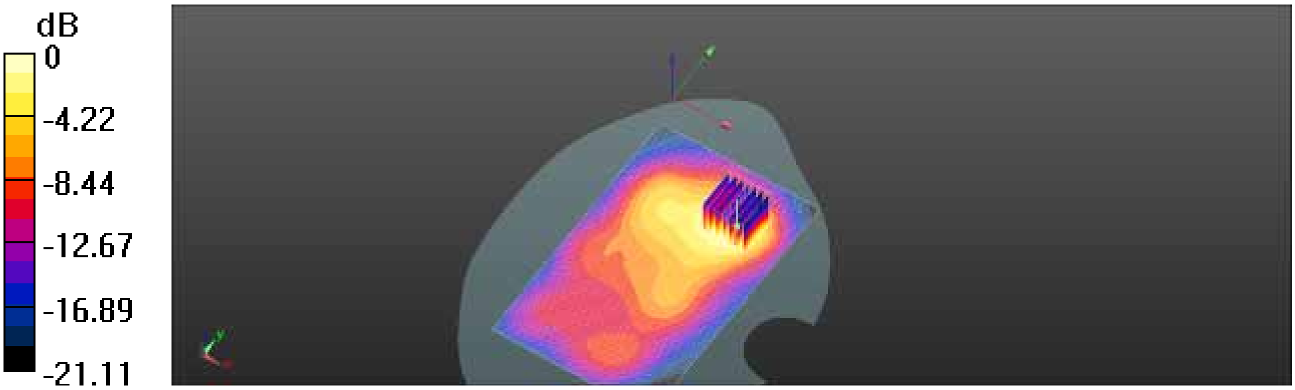
Communication System: LTE; Frequency: 2510 MHz
Medium parameters used: f = 2510 MHz; σ = 2.123 S/m; $\varepsilon_r$ = 52.002; ρ = 1000 kg/m$^3$
Phantom section: Flat Section

DASY5 Configuration:

- Probe: EX3DV4 - SN7346; ConvF(7.29, 7.29, 7.29); Calibrated: 2015/9/2;
- Sensor-Surface: 2mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn916; Calibrated: 2015/12/16
- Phantom: Head
- DASY52 52.8.8(1222); SEMCAD X 14.6.10(7331)

**Configuration/Head/Area Scan (101x161x1):** Interpolated grid: dx=12 mm, dy=12 mm
Maximum value of SAR (interpolated) = 1.48 W/kg

**Configuration/Head/Zoom Scan (7x7x7)/Cube 0:** Measurement grid: dx=5mm, dy=5mm, dz=5mm
Reference Value = 11.43 V/m; Power Drift = -0.12 dB
Peak SAR (extrapolated) = 1.87 W/kg
**SAR(1 g) = 0.969 W/kg; SAR(10 g) = 0.521 W/kg**
Maximum value of SAR (measured) = 1.37 W/kg




0 dB = 1.37 W/kg = 1.37 dBW/kg

Date: 2016/5/4

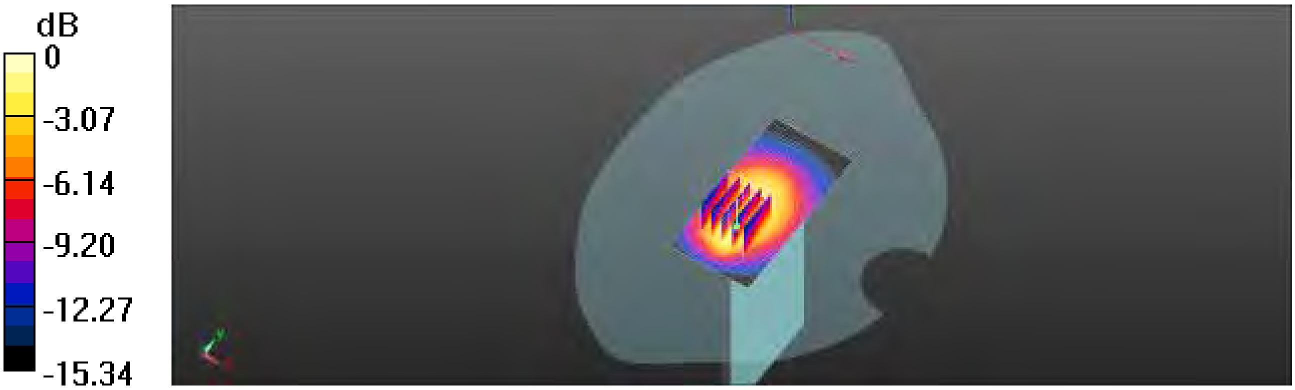
**LTE Band 12 (10MHz)_Hotspot_Bottom side_CH 23130_QPSK_1-49_10mm**
Communication System: LTE; Frequency: 711 MHz
Medium parameters used: f = 711 MHz; σ = 0.934 S/m; $\varepsilon_r$ = 56.929; ρ = 1000 kg/m$^3$
Phantom section: Flat Section

DASY5 Configuration:

- Probe: EX3DV4 - SN7346; ConvF(10.11, 10.11, 10.11); Calibrated: 2015/9/2;
- Sensor-Surface: 2mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn916; Calibrated: 2015/12/16
- Phantom: Head
- DASY52 52.8.8(1222); SEMCAD X 14.6.10(7331)

**Configuration/Head/Area Scan (41x81x1):** Interpolated grid: dx=15 mm, dy=15 mm
Maximum value of SAR (interpolated) = 0.318 W/kg

**Configuration/Head/Zoom Scan (5x5x7)/Cube 0:** Measurement grid: dx=8mm, dy=8mm, dz=5mm
Reference Value = 15.18 V/m; Power Drift = 0.03 dB
Peak SAR (extrapolated) = 0.428 W/kg
**SAR(1 g) = 0.242 W/kg; SAR(10 g) = 0.148 W/kg**
Maximum value of SAR (measured) = 0.335 W/kg




0 dB = 0.335 W/kg = -4.75 dBW/kg

Date: 2017/2/15

**LTE Band 13 (10MHz)_Hotspot_Front side_CH 23230_QPSK_1-25_10mm**

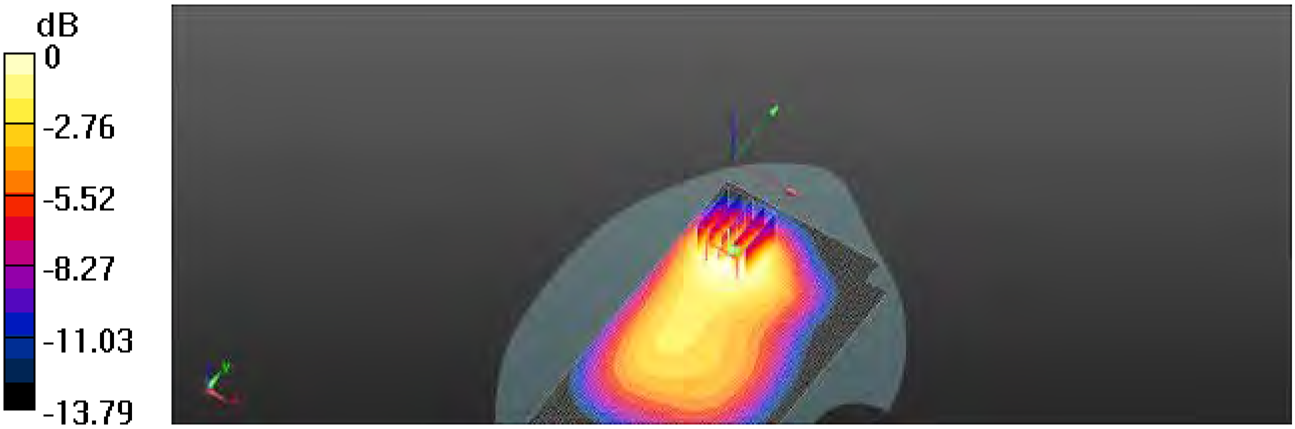
Communication System: LTE; Frequency: 782 MHz; Duty Factor: 1:1
Medium parameters used: f = 782 MHz; $\sigma$ = 1.002 S/m; $\varepsilon_r$ = 57.038; $\rho$ = 1000 kg/m$^3$
Phantom section: Flat Section
Ambient temperature: 22.1°C; Liquid temperature: 21.8°C

DASY5 Configuration:

- Probe: EX3DV4 - SN3770; ConvF(9.43, 9.43, 9.43); Calibrated: 2016/4/27;
- Sensor-Surface: 2mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn856; Calibrated: 2016/4/21
- Phantom: Head
- DASY52 52.8.8(1258); SEMCAD X 14.6.10(7373)

**Configuration/Head/Area Scan (81x141x1):** Interpolated grid: dx=15 mm, dy=15 mm
Maximum value of SAR (interpolated) = 0.706 W/kg

**Configuration/Head/Zoom Scan (5x5x7)/Cube 0:** Measurement grid: dx=8mm, dy=8mm, dz=5mm
Reference Value = 17.89 V/m; Power Drift = 0.03 dB
Peak SAR (extrapolated) = 0.773 W/kg
**SAR(1 g) = 0.563 W/kg; SAR(10 g) = 0.389 W/kg**
Maximum value of SAR (measured) = 0.666 W/kg




0 dB = 0.666 W/kg = -1.77 dBW/kg

Date: 2016/4/30

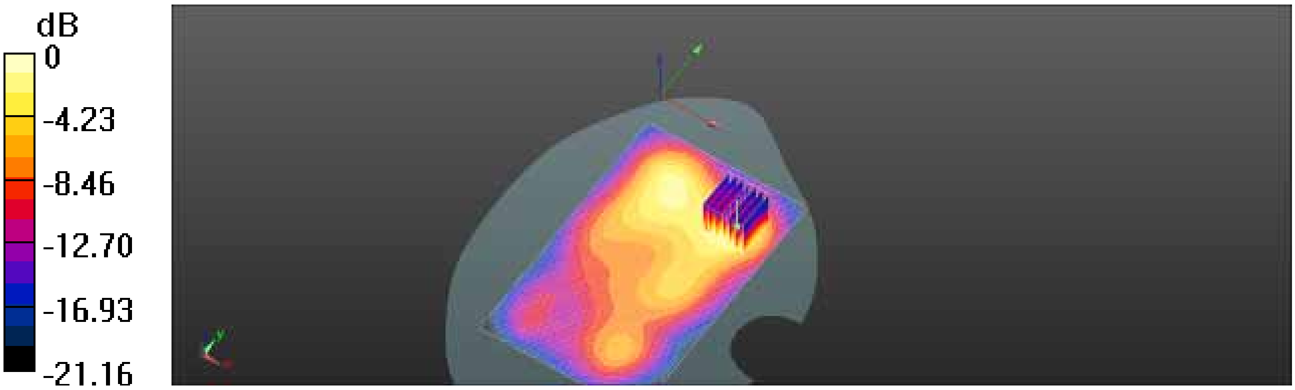
**LTE Band 30 (10MHz)_Hotspot_Front side_CH 27710_QPSK_1-0_10mm**
Communication System: LTE; Frequency: 2310 MHz
Medium parameters used: f = 2310 MHz; σ = 1.861 S/m; $\varepsilon_r$ = 52.476; ρ = 1000 kg/$m^3$
Phantom section: Flat Section

DASY5 Configuration:

- Probe: EX3DV4 - SN7346; ConvF(7.57, 7.57, 7.57); Calibrated: 2015/9/2;
- Sensor-Surface: 2mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn916; Calibrated: 2015/12/16
- Phantom: Head
- DASY52 52.8.8(1222); SEMCAD X 14.6.10(7331)

**Configuration/Head/Area Scan (101x161x1):** Interpolated grid: dx=12 mm, dy=12 mm
Maximum value of SAR (interpolated) = 0.980 W/kg

**Configuration/Head/Zoom Scan (7x7x7)/Cube 0:** Measurement grid: dx=5mm, dy=5mm, dz=5mm
Reference Value = 9.677 V/m; Power Drift = -0.06 dB
Peak SAR (extrapolated) = 1.26 W/kg
**SAR(1 g) = 0.637 W/kg; SAR(10 g) = 0.333 W/kg**
Maximum value of SAR (measured) = 0.939 W/kg




0 dB = 0.939 W/kg = -0.27 dBW/kg

Date: 2017/2/5

**LTE Band 30 (10MHz)_Hotsport_Front side_CH 27710_QPSK_1-0_10mm**

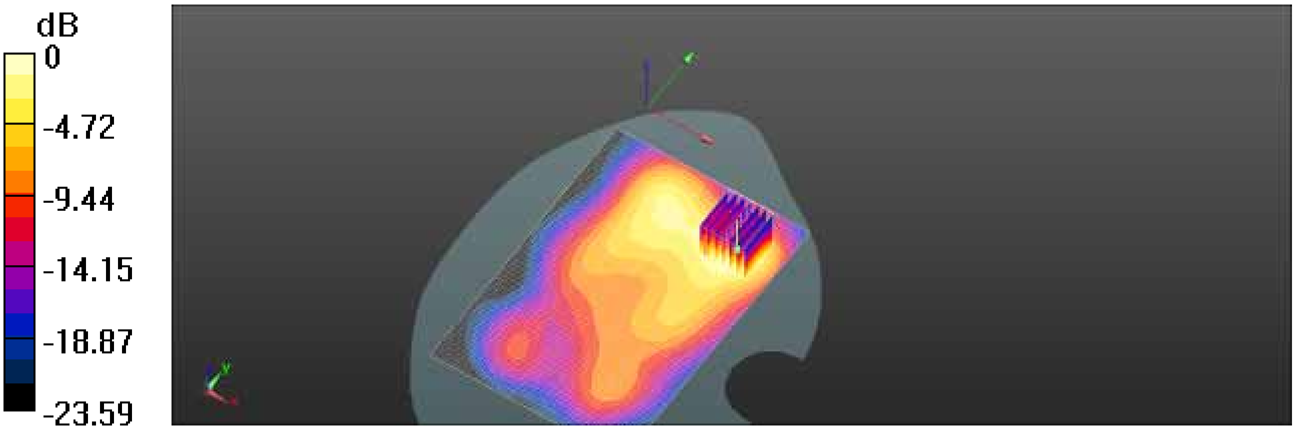
Communication System: LTE; Frequency: 2310 MHz
Medium parameters used: f = 2310 MHz; σ = 1.861 S/m; $\varepsilon_r$ = 52.476; ρ = 1000 kg/m$^3$
Phantom section: Flat Section

DASY5 Configuration:

- Probe: EX3DV4 - SN3770; ConvF(7.53, 7.53, 7.53); Calibrated: 2016/4/27;
- Sensor-Surface: 2mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn856; Calibrated: 2016/4/21
- Phantom: Head
- DASY52 52.8.8(1258); SEMCAD X 14.6.10(7373)

**Configuration/Head/Area Scan (111x161x1):** Interpolated grid: dx=12 mm, dy=12 mm
Maximum value of SAR (interpolated) = 1.17 W/kg

**Configuration/Head/Zoom Scan (7x7x7)/Cube 0:** Measurement grid: dx=5mm, dy=5mm, dz=5mm
Reference Value = 9.443 V/m; Power Drift = 0.01 dB
Peak SAR (extrapolated) = 1.53 W/kg
**SAR(1 g) = 0.746 W/kg; SAR(10 g) = 0.398 W/kg**
Maximum value of SAR (measured) = 1.13 W/kg




0 dB = 1.13 W/kg = 0.53 dBW/kg

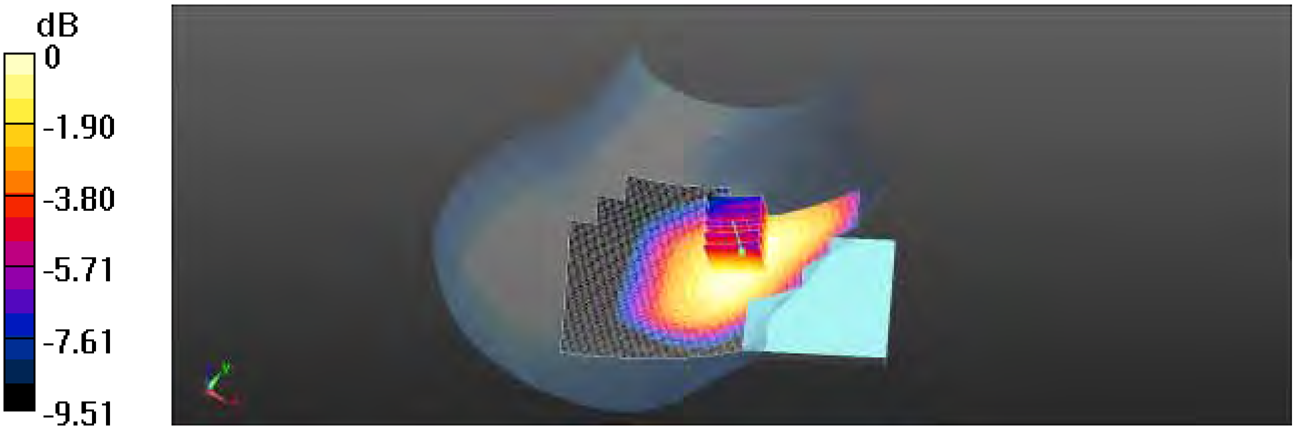
Date: 2017/2/13

**1xRTT Cellular BC0_Head_Re Cheek_CH 384_SO55/RC3**
Communication System: 1XRTT; Frequency: 836.52 MHz
Medium parameters used: f = 837 MHz; $\sigma$ = 0.93 S/m; $\varepsilon_r$ = 42.156; $\rho$ = 1000 kg/$m^3$
Phantom section: Right Section

DASY5 Configuration:
- Probe: EX3DV4 - SN3770; ConvF(9.47, 9.47, 9.47); Calibrated: 2016/4/27;
- Sensor-Surface: 2mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn856; Calibrated: 2016/4/21
- Phantom: Head
- DASY52 52.8.8(1258); SEMCAD X 14.6.10(7373)

**Configuration/Head/Area Scan (81x141x1):** Interpolated grid: dx=15 mm, dy=15 mm
Maximum value of SAR (interpolated) = 0.405 W/kg

**Configuration/Head/Zoom Scan (5x5x7)/Cube 0:** Measurement grid: dx=8mm, dy=8mm, dz=5mm
Reference Value = 7.404 V/m; Power Drift = 0.18 dB
Peak SAR (extrapolated) = 0.437 W/kg
**SAR(1 g) = 0.343 W/kg; SAR(10 g) = 0.263 W/kg**
Maximum value of SAR (measured) = 0.395 W/kg




0 dB = 0.395 W/kg = -4.03 dBW/kg


SGS Taiwan Ltd. No.134,Wu Kung Road, New Taipei Industrial Park, Wuku District, New Taipei City, Taiwan 24803/新北市五股區新北產業園區五工路134號
台灣檢驗科技股份有限公司 t (886-2) 2299-3279 f (886-2) 2298-0488 www.tw.sgs.com
Member of SGS Group

Date: 2017/2/13

**1xEVDO Cellular BC0_Head_Re Cheek_CH 384_Rev. A**

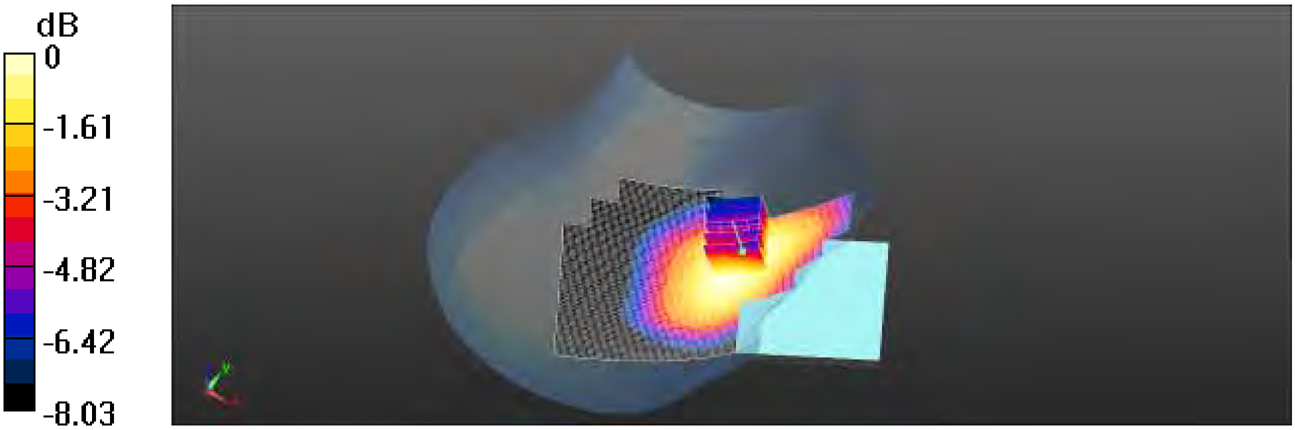
Communication System: 1xEvDO; Frequency: 836.52 MHz
Medium parameters used: f = 837 MHz; $\sigma$ = 0.93 S/m; $\varepsilon_r$ = 42.156; $\rho$ = 1000 kg/$m^3$
Phantom section: Right Section

DASY5 Configuration:

- Probe: EX3DV4 - SN3770; ConvF(9.47, 9.47, 9.47); Calibrated: 2016/4/27;
- Sensor-Surface: 2mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn856; Calibrated: 2016/4/21
- Phantom: Head
- DASY52 52.8.8(1258); SEMCAD X 14.6.10(7373)

**Configuration/Head/Area Scan (81x141x1):** Interpolated grid: dx=15 mm, dy=15 mm
Maximum value of SAR (interpolated) = 0.273 W/kg

**Configuration/Head/Zoom Scan (5x5x7)/Cube 0:** Measurement grid: dx=8mm, dy=8mm, dz=5mm
Reference Value = 6.346 V/m; Power Drift = -0.04 dB
Peak SAR (extrapolated) = 0.297 W/kg
**SAR(1 g) = 0.231 W/kg; SAR(10 g) = 0.177 W/kg**
Maximum value of SAR (measured) = 0.263 W/kg




0 dB = 0.263 W/kg = -5.80 dBW/kg

Date: 2017/2/13

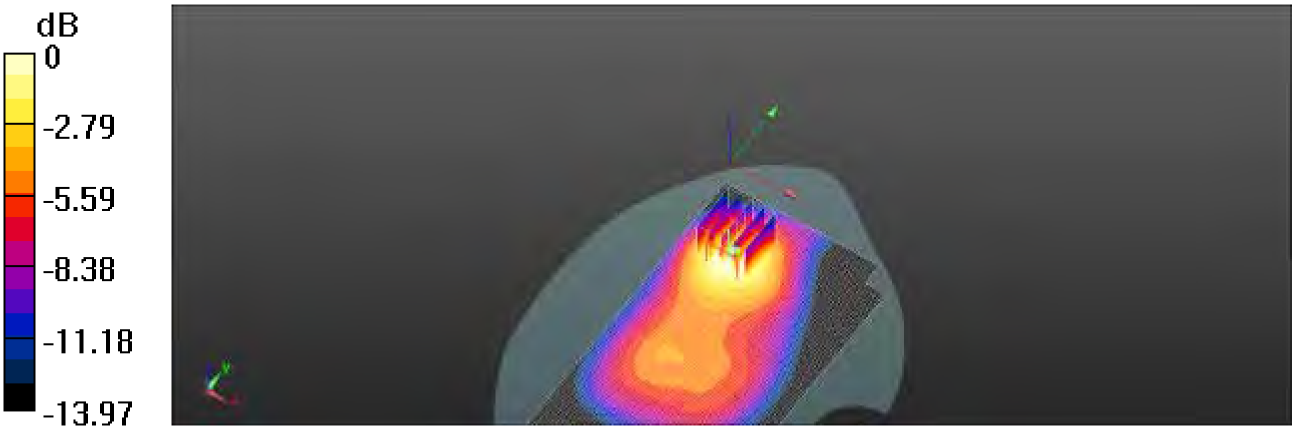
**1xRTT Cellular BC0_Body-Worn_Front side_CH 777_SO32/FCH_10mm**
Communication System: 1XRTT; Frequency: 848.31 MHz
Medium parameters used: f = 848.31 MHz; $\sigma$ = 1.013 S/m; $\varepsilon_r$ = 57.327; $\rho$ = 1000 kg/m$^3$
Phantom section: Flat Section

DASY5 Configuration:

- Probe: EX3DV4 - SN3770; ConvF(9.3, 9.3, 9.3); Calibrated: 2016/4/27;
- Sensor-Surface: 2mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn856; Calibrated: 2016/4/21
- Phantom: Head
- DASY52 52.8.8(1258); SEMCAD X 14.6.10(7373)

**Configuration/Head/Area Scan (81x141x1):** Interpolated grid: dx=15 mm, dy=15 mm
Maximum value of SAR (interpolated) = 1.22 W/kg

**Configuration/Head/Zoom Scan (5x5x7)/Cube 0:** Measurement grid: dx=8mm, dy=8mm, dz=5mm
Reference Value = 18.10 V/m; Power Drift = 0.12 dB
Peak SAR (extrapolated) = 1.27 W/kg
**SAR(1 g) = 0.852 W/kg; SAR(10 g) = 0.571 W/kg**
Maximum value of SAR (measured) = 1.08 W/kg




0 dB = 1.08 W/kg = 0.33 dBW/kg

Date: 2017/2/13

**1xRTT Cellular BC0_Body-Worn_Front side_CH 777_SO55/RC3_10mm**

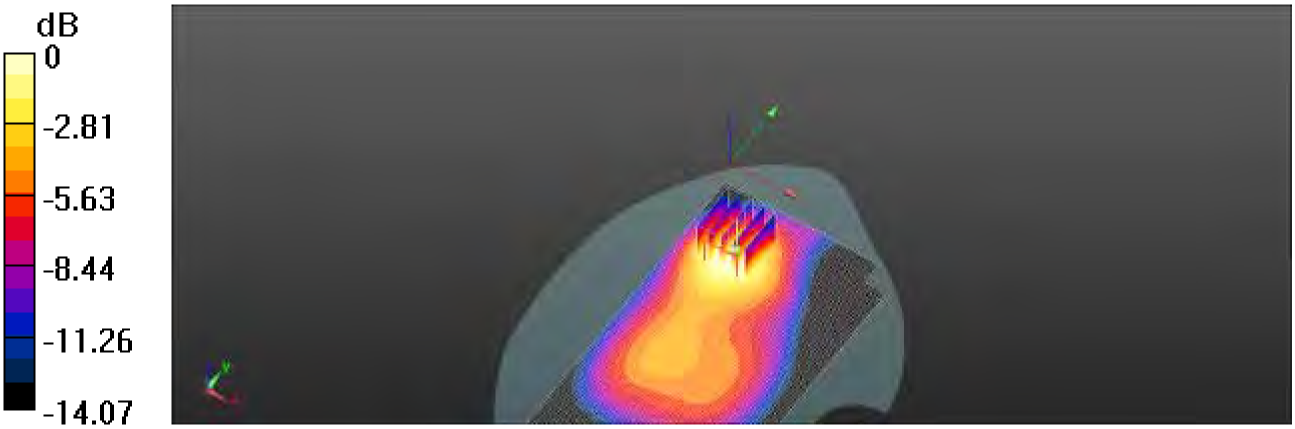
Communication System: 1XRTT; Frequency: 848.31 MHz
Medium parameters used: f = 848.31 MHz; $\sigma$ = 1.013 S/m; $\varepsilon_r$ = 57.327; $\rho$ = 1000 kg/$m^3$
Phantom section: Flat Section
Ambient temperature: 21.8°C; Liquid temperature: 22.1°C

DASY5 Configuration:

- Probe: EX3DV4 - SN3770; ConvF(9.3, 9.3, 9.3); Calibrated: 2016/4/27;
- Sensor-Surface: 2mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn856; Calibrated: 2016/4/21
- Phantom: Head
- DASY52 52.8.8(1258); SEMCAD X 14.6.10(7373)

**Configuration/Head/Area Scan (81x141x1):** Interpolated grid: dx=15 mm, dy=15 mm
Maximum value of SAR (interpolated) = 1.16 W/kg

**Configuration/Head/Zoom Scan (5x5x7)/Cube 0:** Measurement grid: dx=8mm, dy=8mm, dz=5mm
Reference Value = 18.64 V/m; Power Drift = 0.10 dB
Peak SAR (extrapolated) = 1.23 W/kg
**SAR(1 g) = 0.847 W/kg; SAR(10 g) = 0.554 W/kg**
Maximum value of SAR (measured) = 1.04 W/kg




0 dB = 1.04 W/kg = 0.17 dBW/kg


SGS Taiwan Ltd. No.134,Wu Kung Road, New Taipei Industrial Park, Wuku District, New Taipei City, Taiwan 24803/新北市五股區新北產業園區五工路134號
台灣檢驗科技股份有限公司 t (886-2) 2299-3279 f (886-2) 2298-0488 www.tw.sgs.com
Member of SGS Group

Date: 2017/2/13

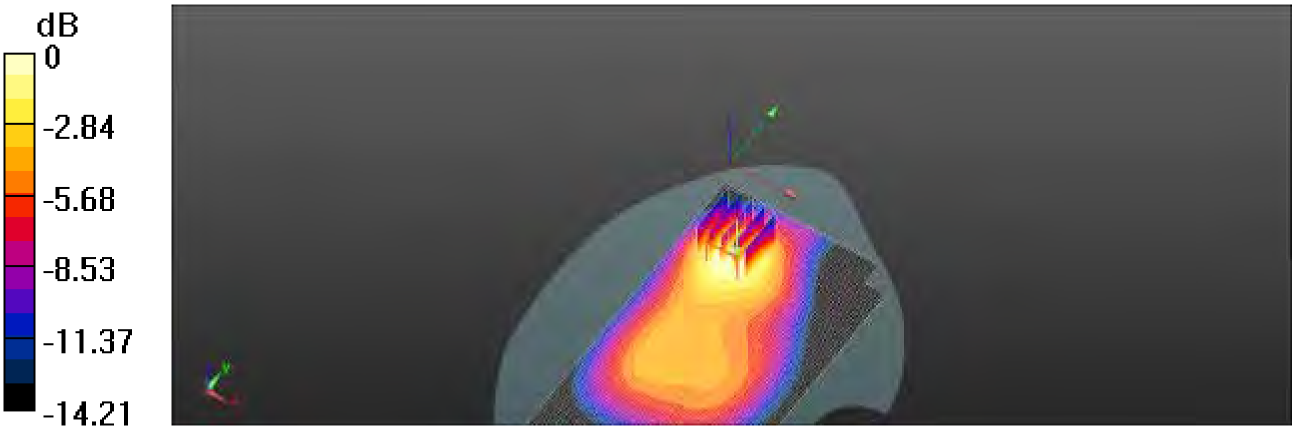
**1xEVDO Cellular BC0_Hotspot_Front side_CH 777_Rev. 0_10mm**
Communication System: 1xEvDO; Frequency: 848.31 MHz
Medium parameters used: f = 848.31 MHz; $\sigma$ = 1.013 S/m; $\varepsilon_r$ = 57.327; $\rho$ = 1000 kg/m$^3$
Phantom section: Flat Section

DASY5 Configuration:

- Probe: EX3DV4 - SN3770; ConvF(9.3, 9.3, 9.3); Calibrated: 2016/4/27;
- Sensor-Surface: 2mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn856; Calibrated: 2016/4/21
- Phantom: Head
- DASY52 52.8.8(1258); SEMCAD X 14.6.10(7373)

**Configuration/Head/Area Scan (81x141x1):** Interpolated grid: dx=15 mm, dy=15 mm
Maximum value of SAR (interpolated) = 0.674 W/kg

**Configuration/Head/Zoom Scan (5x5x7)/Cube 0:** Measurement grid: dx=8mm, dy=8mm, dz=5mm
Reference Value = 19.10 V/m; Power Drift = 0.06 dB
Peak SAR (extrapolated) = 1.12 W/kg
**SAR(1 g) = 0.778 W/kg; SAR(10 g) = 0.498 W/kg**
Maximum value of SAR (measured) = 0.925 W/kg




0 dB = 0.925 W/kg = -0.34 dBW/kg

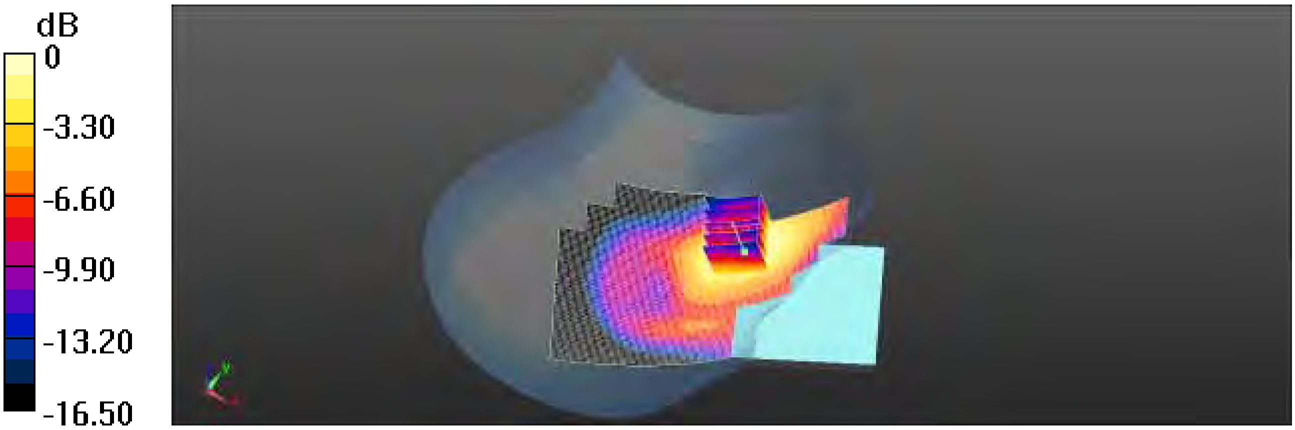
Date: 2017/2/14

**1xRTT PCS BC1_Head_Re Cheek_CH 25_SO55/RC3**
Communication System: 1XRTT; Frequency: 1851.25 MHz
Medium parameters used: f = 1851.25 MHz; $\sigma$ = 1.418 S/m; $\varepsilon_r$ = 40.288; $\rho$ = 1000 kg/$m^3$
Phantom section: Right Section

DASY5 Configuration:
- Probe: EX3DV4 - SN3770; ConvF(7.71, 7.71, 7.71); Calibrated: 2016/4/27;
- Sensor-Surface: 2mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn856; Calibrated: 2016/4/21
- Phantom: Head
- DASY52 52.8.8(1258); SEMCAD X 14.6.10(7373)

**Configuration/Head/Area Scan (81x141x1):** Interpolated grid: dx=15 mm, dy=15 mm
Maximum value of SAR (interpolated) = 0.623 W/kg

**Configuration/Head/Zoom Scan (5x5x7)/Cube 0:** Measurement grid: dx=8mm, dy=8mm, dz=5mm
Reference Value = 6.656 V/m; Power Drift = 0.12 dB
Peak SAR (extrapolated) = 0.719 W/kg
**SAR(1 g) = 0.468 W/kg; SAR(10 g) = 0.284 W/kg**
Maximum value of SAR (measured) = 0.587 W/kg




0 dB = 0.587 W/kg = -2.31 dBW/kg

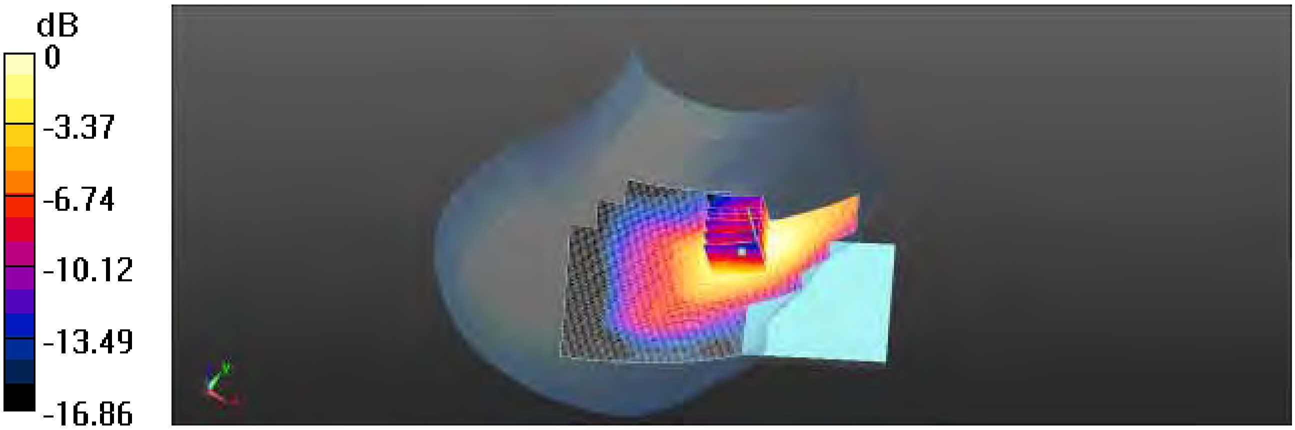
Date: 2017/2/14

**1xEVDO PCS BC1_Head_Re Cheek_CH 600_Rev. A**
Communication System: 1XRTT; Frequency: 1880 MHz
Medium parameters used: f = 1880 MHz; σ = 1.437 S/m; $\varepsilon_r$ = 40.171; ρ = 1000 kg/m$^3$
Phantom section: Right Section

DASY5 Configuration:
- Probe: EX3DV4 - SN3770; ConvF(7.71, 7.71, 7.71); Calibrated: 2016/4/27;
- Sensor-Surface: 2mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn856; Calibrated: 2016/4/21
- Phantom: Head
- DASY52 52.8.8(1258); SEMCAD X 14.6.10(7373)

**Configuration/Head/Area Scan (81x141x1):** Interpolated grid: dx=15 mm, dy=15 mm
Maximum value of SAR (interpolated) = 0.954 W/kg

**Configuration/Head/Zoom Scan (5x5x7)/Cube 0:** Measurement grid: dx=8mm, dy=8mm, dz=5mm
Reference Value = 7.057 V/m; Power Drift = -0.18 dB
Peak SAR (extrapolated) = 1.08 W/kg
**SAR(1 g) = 0.702 W/kg; SAR(10 g) = 0.429 W/kg**
Maximum value of SAR (measured) = 0.876 W/kg




0 dB = 0.876 W/kg = -0.57 dBW/kg

Date: 2017/2/14

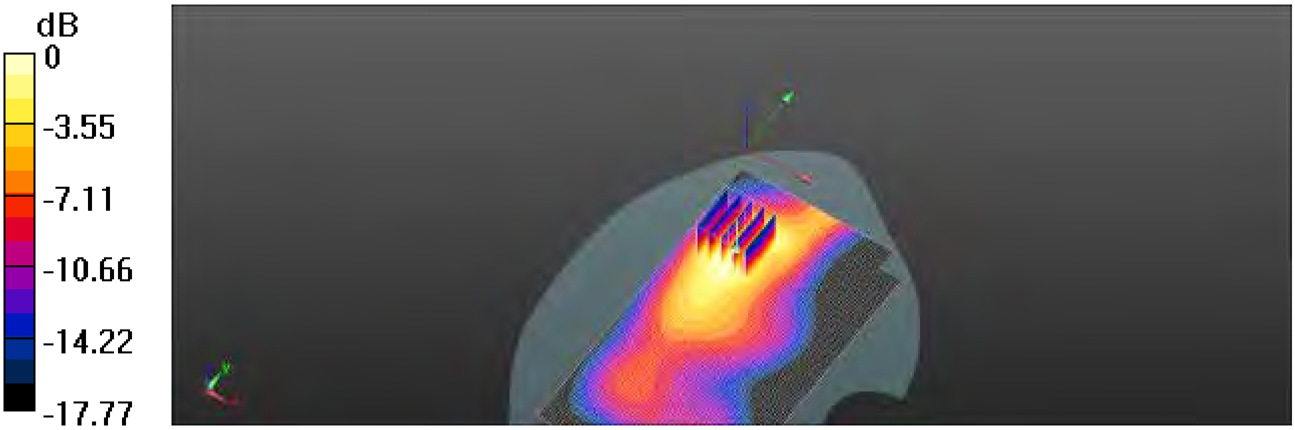
**1xRTT PCS BC1_Body-Worm_Front side_CH 600_SO32/FCH_10mm**
Communication System: 1XRTT; Frequency: 1880 MHz
Medium parameters used: f = 1880 MHz; $\sigma$ = 1.568 S/m; $\varepsilon_r$ = 53.191; $\rho$ = 1000 kg/m$^3$
Phantom section: Flat Section

DASY5 Configuration:

- Probe: EX3DV4 - SN3770; ConvF(7.71, 7.71, 7.71); Calibrated: 2016/4/27;
- Sensor-Surface: 2mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn856; Calibrated: 2016/4/21
- Phantom: Head
- DASY52 52.8.8(1258); SEMCAD X 14.6.10(7373)

**Configuration/Head/Area Scan (81x141x1):** Interpolated grid: dx=15 mm, dy=15 mm
Maximum value of SAR (interpolated) = 1.48 W/kg

**Configuration/Head/Zoom Scan (5x5x7)/Cube 0:** Measurement grid: dx=8mm, dy=8mm, dz=5mm
Reference Value = 12.59 V/m; Power Drift = -0.08 dB
Peak SAR (extrapolated) = 1.90 W/kg
**SAR(1 g) = 1.07 W/kg; SAR(10 g) = 0.609 W/kg**
Maximum value of SAR (measured) = 1.47 W/kg




0 dB = 1.47 W/kg = 1.67 dBW/kg

Date: 2017/2/14

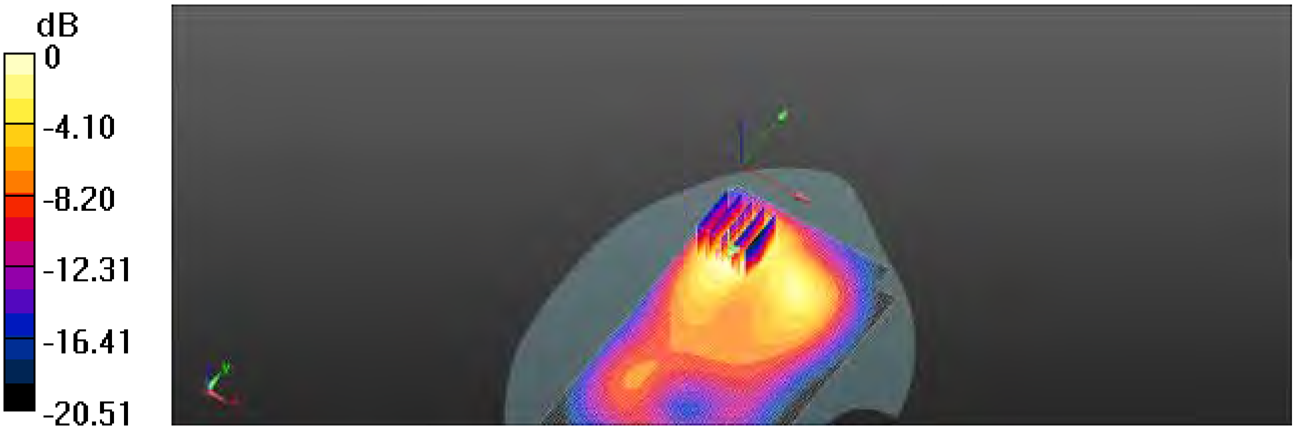
**1xRTT PCS BC1_Body-Worn_Front side_CH 600_SO55/RC3_10mm**
Communication System: CDMA 2000; Frequency: 1880 MHz
Medium parameters used: f = 1880 MHz; σ = 1.568 S/m; $\varepsilon_r$ = 53.191; ρ = 1000 kg/$m^3$
Phantom section: Flat Section

DASY5 Configuration:

- Probe: EX3DV4 - SN3770; ConvF(7.71, 7.71, 7.71); Calibrated: 2016/4/27;
- Sensor-Surface: 2mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn856; Calibrated: 2016/4/21
- Phantom: Head
- DASY52 52.8.8(1258); SEMCAD X 14.6.10(7373)

**Configuration/Head/Area Scan (81x141x1):** Interpolated grid: dx=15 mm, dy=15 mm
Maximum value of SAR (interpolated) = 1.51 W/kg

**Configuration/Head/Zoom Scan (5x5x7)/Cube 0:** Measurement grid: dx=8mm, dy=8mm, dz=5mm
Reference Value = 11.68 V/m; Power Drift = -0.02 dB
Peak SAR (extrapolated) = 1.86 W/kg
**SAR(1 g) = 1.02 W/kg; SAR(10 g) = 0.540 W/kg**
Maximum value of SAR (measured) = 1.43 W/kg




0 dB = 1.43 W/kg = 1.55 dBW/kg


SGS Taiwan Ltd. No.134,Wu Kung Road, New Taipei Industrial Park, Wuku District, New Taipei City, Taiwan 24803/新北市五股區新北產業園區五工路134號
台灣檢驗科技股份有限公司 t (886-2) 2299-3279 f (886-2) 2298-0488 www.tw.sgs.com
Member of SGS Group

Date: 2017/2/14

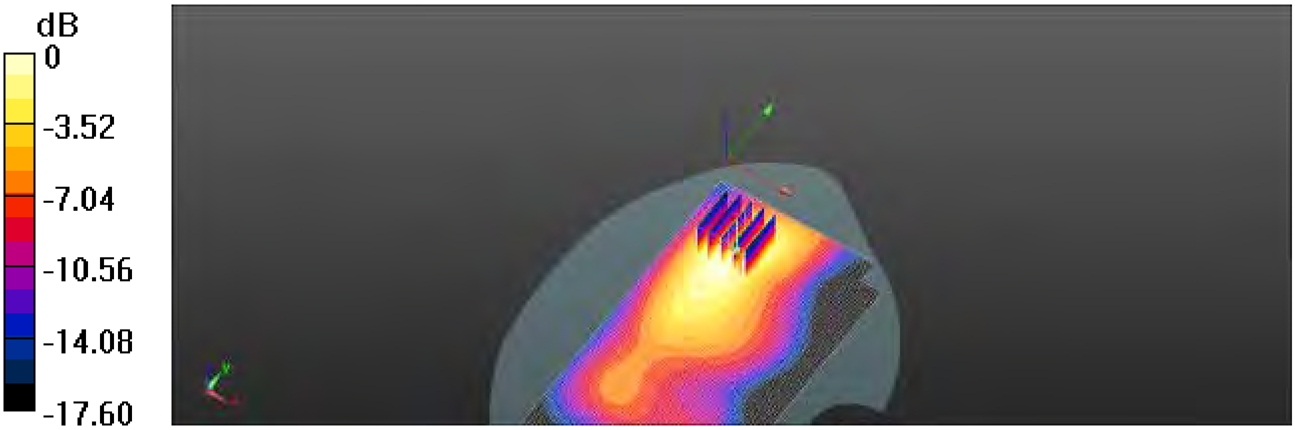
**1xEVDO PCS BC1_Hotspot_Front side_CH 600_Rev. 0_10mm**
Communication System: 1XRTT; Frequency: 1880 MHz
Medium parameters used: f = 1880 MHz; σ = 1.568 S/m; $\varepsilon_r$ = 53.191; ρ = 1000 kg/m$^3$
Phantom section: Flat Section

DASY5 Configuration:

- Probe: EX3DV4 - SN3770; ConvF(7.71, 7.71, 7.71); Calibrated: 2016/4/27;
- Sensor-Surface: 2mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn856; Calibrated: 2016/4/21
- Phantom: Head
- DASY52 52.8.8(1258); SEMCAD X 14.6.10(7373)

**Configuration/Head/Area Scan (81x141x1):** Interpolated grid: dx=15 mm, dy=15 mm
Maximum value of SAR (interpolated) = 1.42 W/kg

**Configuration/Head/Zoom Scan (5x5x7)/Cube 0:** Measurement grid: dx=8mm, dy=8mm, dz=5mm
Reference Value = 13.14 V/m; Power Drift = 0.11 dB
Peak SAR (extrapolated) = 1.70 W/kg
**SAR(1 g) = 0.951 W/kg; SAR(10 g) = 0.533 W/kg**
Maximum value of SAR (measured) = 1.31 W/kg




0 dB = 1.31 W/kg = 1.39 dBW/kg

Date: 2016/5/9

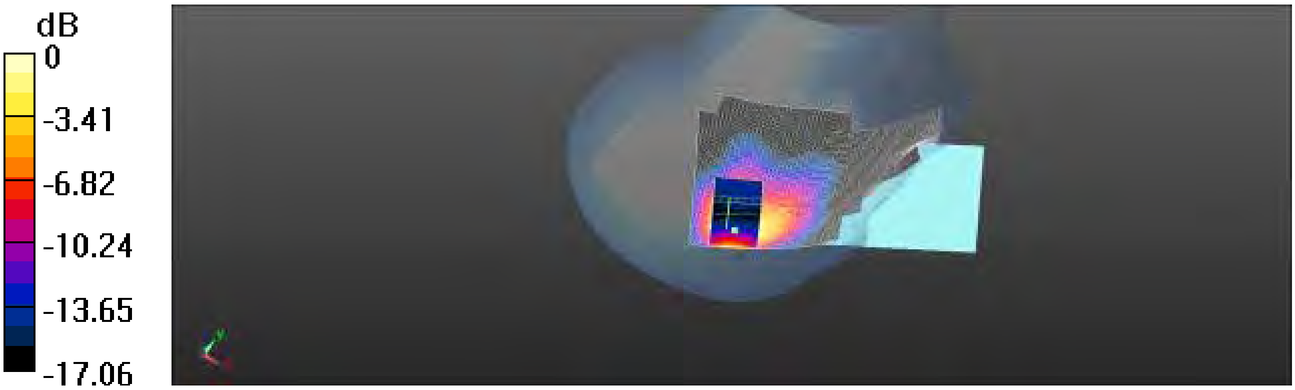
**WLAN 802.11b_Head_Re Cheek_CH 6_Main**
Communication System: WLAN 2.45G; Frequency: 2437 MHz
Medium parameters used: f = 2437 MHz; σ = 1.871 S/m; $\varepsilon_r$ = 38.142; ρ = 1000 kg/m$^3$
Phantom section: Right Section

DASY5 Configuration:

- Probe: EX3DV4 - SN3770; ConvF(7.12, 7.12, 7.12); Calibrated: 2016/4/27;
- Sensor-Surface: 2mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn856; Calibrated: 2016/4/21
- Phantom: Head
- DASY52 52.8.8(1222); SEMCAD X 14.6.10(7331)

**Configuration/Head/Area Scan (91x161x1):** Interpolated grid: dx=12 mm, dy=12 mm
Maximum value of SAR (interpolated) = 1.34 W/kg

**Configuration/Head/Zoom Scan (7x7x7)/Cube 0:** Measurement grid: dx=5mm, dy=5mm, dz=5mm
Reference Value = 8.824 V/m; Power Drift = 0.01 dB
Peak SAR (extrapolated) = 1.72 W/kg
**SAR(1 g) = 0.802 W/kg; SAR(10 g) = 0.411 W/kg**
Maximum value of SAR (measured) = 1.21 W/kg




0 dB = 1.21 W/kg = 0.83 dBW/kg

Date: 2016/5/9

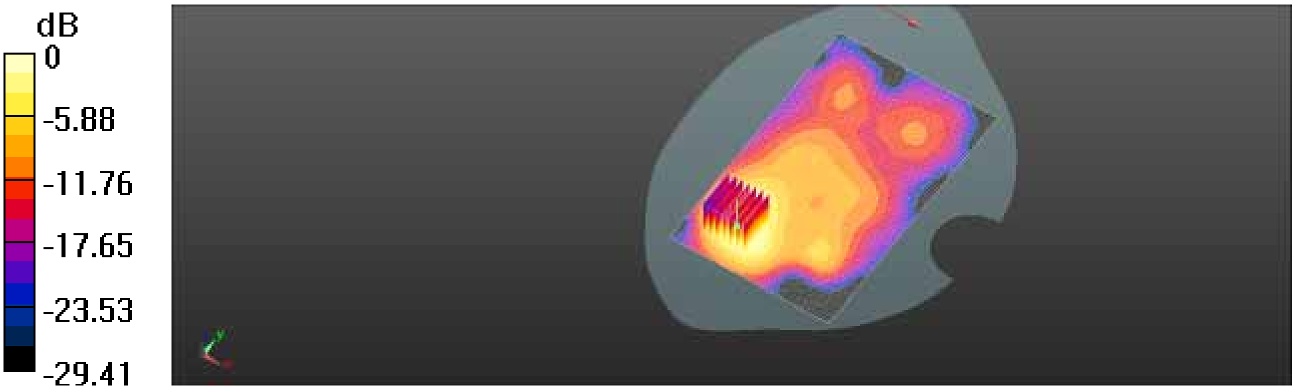
**WLAN 802.11b_Hotspot_Back side_CH 6_Main_10mm**
Communication System: WLAN 2.45G; Frequency: 2437 MHz
Medium parameters used: f = 2437 MHz; σ = 1.984 S/m; $\varepsilon_r$ = 52.859; ρ = 1000 kg/$m^3$
Phantom section: Flat Section

DASY5 Configuration:

- Probe: EX3DV4 - SN3770; ConvF(7.37, 7.37, 7.37); Calibrated: 2016/4/27;
- Sensor-Surface: 2mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn856; Calibrated: 2016/4/21
- Phantom: Head
- DASY52 52.8.8(1222); SEMCAD X 14.6.10(7331)

**Configuration/Head/Area Scan (101x161x1):** Interpolated grid: dx=12 mm, dy=12 mm
Maximum value of SAR (interpolated) = 0.497 W/kg

**Configuration/Head/Zoom Scan (7x7x7)/Cube 0:** Measurement grid: dx=5mm, dy=5mm, dz=5mm
Reference Value = 5.064 V/m; Power Drift = 0.04 dB
Peak SAR (extrapolated) = 0.649 W/kg
**SAR(1 g) = 0.315 W/kg; SAR(10 g) = 0.160 W/kg**
Maximum value of SAR (measured) = 0.466 W/kg




0 dB = 0.466 W/kg = -3.32 dBW/kg

Date: 2016/5/9

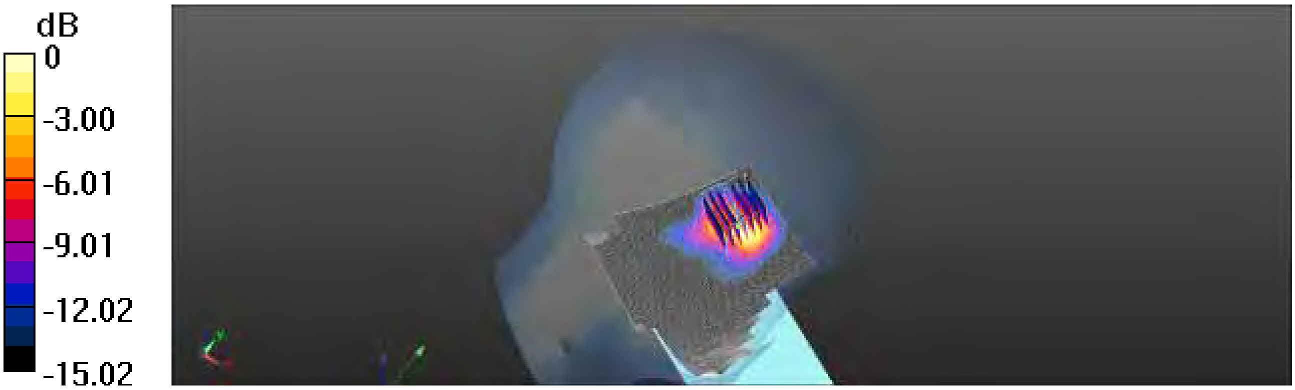
**WLAN 802.11b_Head_Le Cheek_CH 11_Aux**
Communication System: WLAN 2.45G; Frequency: 2462 MHz
Medium parameters used: f = 2462 MHz; σ = 1.898 S/m; $\varepsilon_r$ = 38.041; ρ = 1000 kg/$m^3$
Phantom section: Left Section

DASY5 Configuration:

- Probe: EX3DV4 - SN3770; ConvF(7.12, 7.12, 7.12); Calibrated: 2016/4/27;
- Sensor-Surface: 2mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn856; Calibrated: 2016/4/21
- Phantom: Head
- DASY52 52.8.8(1222); SEMCAD X 14.6.10(7331)

**Configuration/Head/Area Scan (101x161x1):** Interpolated grid: dx=12 mm, dy=12 mm
Maximum value of SAR (interpolated) = 0.627 W/kg

**Configuration/Head/Zoom Scan (7x7x7)/Cube 0:** Measurement grid: dx=5mm, dy=5mm, dz=5mm
Reference Value = 4.358 V/m; Power Drift = 0.19 dB
Peak SAR (extrapolated) = 0.925 W/kg
**SAR(1 g) = 0.426 W/kg; SAR(10 g) = 0.200 W/kg**
Maximum value of SAR (measured) = 0.658 W/kg




0 dB = 0.658 W/kg = -1.82 dBW/kg

Date: 2016/5/9

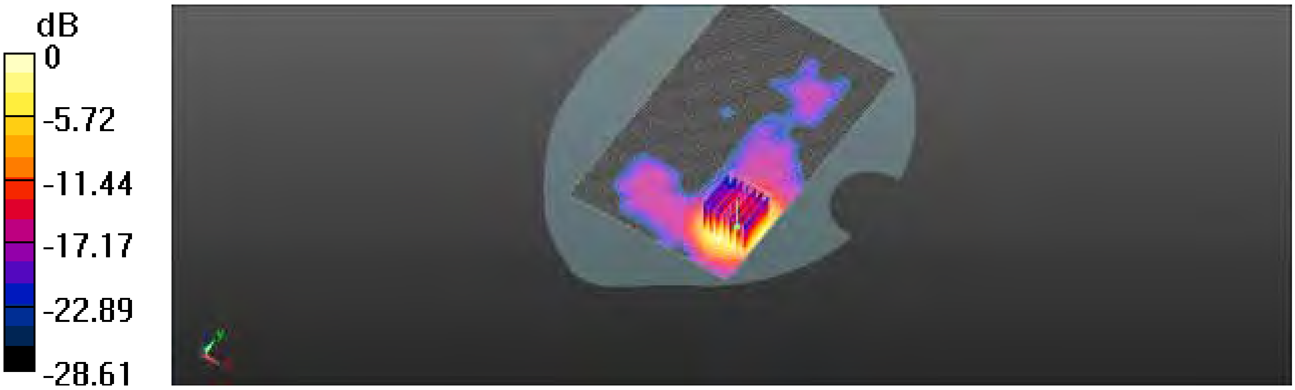
**WLAN 802.11b_Hotspot_Back side_CH 11_Aux_10mm**
Communication System: WLAN 2.45G; Frequency: 2462 MHz
Medium parameters used: f = 2462 MHz; σ = 2.021 S/m; $\varepsilon_r$ = 52.777; ρ = 1000 kg/$m^3$
Phantom section: Flat Section

DASY5 Configuration:

- Probe: EX3DV4 - SN3770; ConvF(7.37, 7.37, 7.37); Calibrated: 2016/4/27;
- Sensor-Surface: 2mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn856; Calibrated: 2016/4/21
- Phantom: Head
- DASY52 52.8.8(1222); SEMCAD X 14.6.10(7331)

**Configuration/Head/Area Scan (101x161x1):** Interpolated grid: dx=12 mm, dy=12 mm
Maximum value of SAR (interpolated) = 0.420 W/kg

**Configuration/Head/Zoom Scan (7x7x7)/Cube 0:** Measurement grid: dx=5mm, dy=5mm, dz=5mm
Reference Value = 2.957 V/m; Power Drift = -0.06 dB
Peak SAR (extrapolated) = 0.532 W/kg
**SAR(1 g) = 0.247 W/kg; SAR(10 g) = 0.111 W/kg**
Maximum value of SAR (measured) = 0.377 W/kg




0 dB = 0.377 W/kg = -4.24 dBW/kg

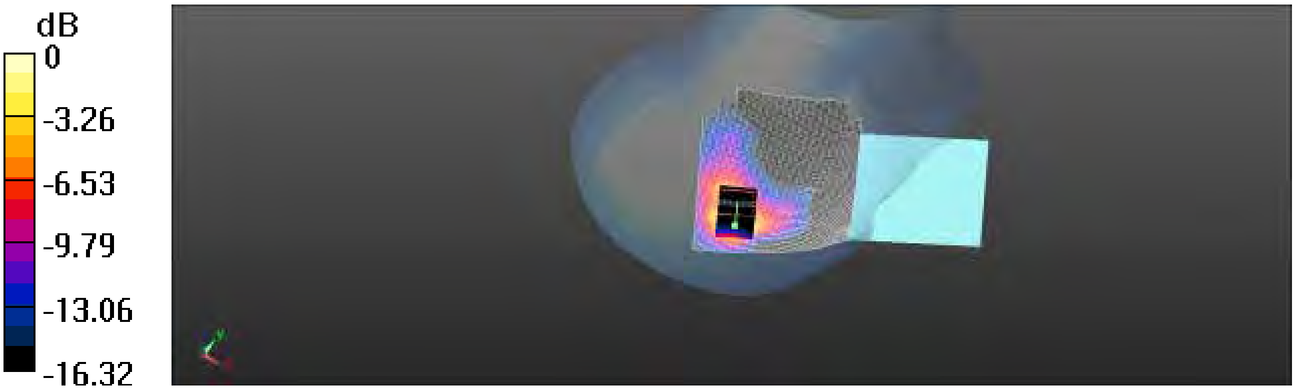
Date: 2016/5/10

**WLAN 802.11a 5.2G_Head_Re Cheek_CH 36_Main**
Communication System: WLAN 5G; Frequency: 5180 MHz
Medium parameters used: f = 5180 MHz; σ = 4.622 S/m; $\varepsilon_r$ = 36.486; ρ = 1000 kg/m$^3$
Phantom section: Right Section

DASY5 Configuration:
- Probe: EX3DV4 - SN3770; ConvF(5.03, 5.03, 5.03); Calibrated: 2016/4/27;
- Sensor-Surface: 2mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn856; Calibrated: 2016/4/21
- Phantom: Head
- DASY52 52.8.8(1222); SEMCAD X 14.6.10(7331)

**Configuration/Head/Area Scan (121x101x1):** Interpolated grid: dx=10 mm, dy=10 mm
Maximum value of SAR (interpolated) = 2.61 W/kg

**Configuration/Head/Zoom Scan (7x7x12)/Cube 0:** Measurement grid: dx=4mm, dy=4mm, dz=2mm
Reference Value = 9.672 V/m; Power Drift = 0.13 dB
Peak SAR (extrapolated) = 4.94 W/kg
**SAR(1 g) = 1.29 W/kg; SAR(10 g) = 0.482 W/kg**
Maximum value of SAR (measured) = 2.41 W/kg




0 dB = 2.41 W/kg = 3.82 dBW/kg

Date: 2016/5/10

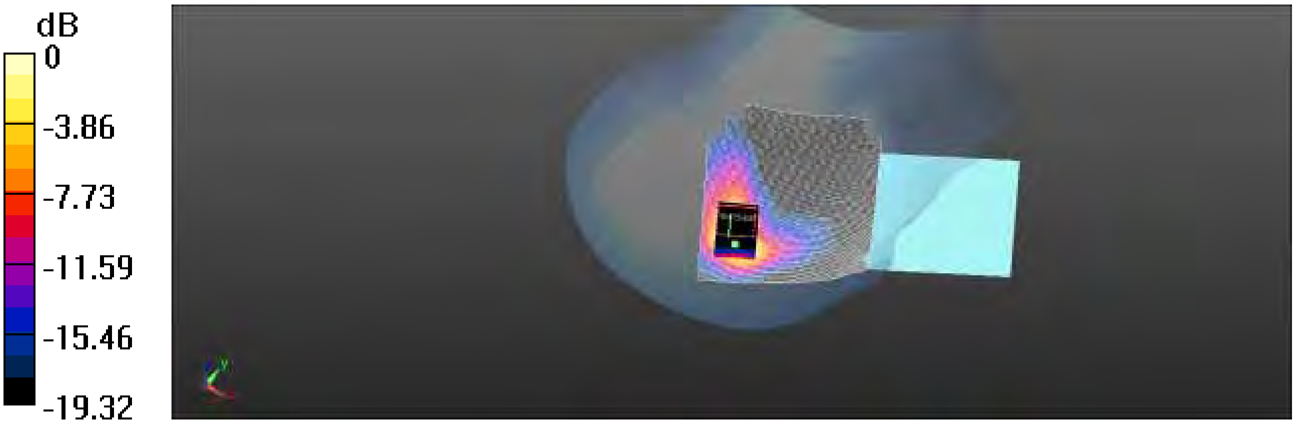
**WLAN802.11 n(20M) 5.2G_Head_Re Cheek_CH 44_Main**
Communication System: WLAN 5G; Frequency: 5220 MHz
Medium parameters used: f = 5220 MHz; $\sigma$ = 4.669 S/m; $\varepsilon_r$ = 36.361; $\rho$ = 1000 kg/$m^3$
Phantom section: Right Section

DASY5 Configuration:

- Probe: EX3DV4 - SN3770; ConvF(5.03, 5.03, 5.03); Calibrated: 2016/4/27;
- Sensor-Surface: 2mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn856; Calibrated: 2016/4/21
- Phantom: Head
- DASY52 52.8.8(1222); SEMCAD X 14.6.10(7331)

**Configuration/Head/Area Scan (121x101x1):** Interpolated grid: dx=10 mm, dy=10 mm
Maximum value of SAR (interpolated) = 1.81 W/kg

**Configuration/Head/Zoom Scan (7x7x12)/Cube 0:** Measurement grid: dx=4mm, dy=4mm, dz=2mm
Reference Value = 8.685 V/m; Power Drift = 0.15 dB
Peak SAR (extrapolated) = 4.25 W/kg
**SAR(1 g) = 0.970 W/kg; SAR(10 g) = 0.313 W/kg**
Maximum value of SAR (measured) = 1.97 W/kg




0 dB = 1.97 W/kg = 2.94 dBW/kg


SGS Taiwan Ltd. 台灣檢驗科技股份有限公司 No.134,Wu Kung Road, New Taipei Industrial Park, Wuku District, New Taipei City, Taiwan 24803/新北市五股區新北產業園區五工路134號
t (886-2) 2299-3279 f (886-2) 2298-0488 www.tw.sgs.com
Member of SGS Group

Date: 2016/5/10

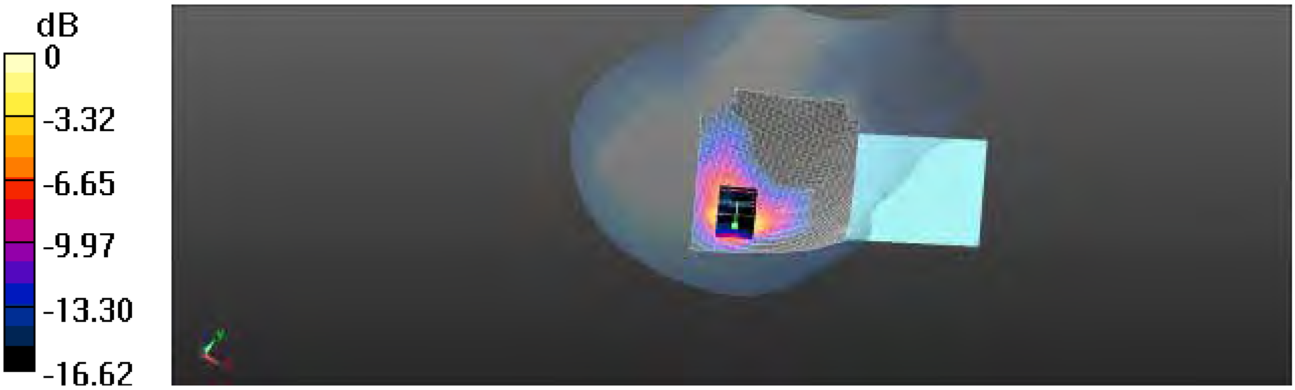
**WLAN 802.11n(40M) 5.2G_Head_Re Cheek_CH 46_Main**
Communication System: WLAN 5G; Frequency: 5230 MHz
Medium parameters used: f = 5230 MHz; $\sigma$ = 4.689 S/m; $\varepsilon_r$ = 36.342; $\rho$ = 1000 kg/m$^3$
Phantom section: Right Section

DASY5 Configuration:

- Probe: EX3DV4 - SN3770; ConvF(5.03, 5.03, 5.03); Calibrated: 2016/4/27;
- Sensor-Surface: 2mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn856; Calibrated: 2016/4/21
- Phantom: Head
- DASY52 52.8.8(1222); SEMCAD X 14.6.10(7331)

**Configuration/Head/Area Scan (121x101x1):** Interpolated grid: dx=10 mm, dy=10 mm
Maximum value of SAR (interpolated) = 2.50 W/kg

**Configuration/Head/Zoom Scan (7x7x12)/Cube 0:** Measurement grid: dx=4mm, dy=4mm, dz=2mm
Reference Value = 9.108 V/m; Power Drift = 0.10 dB
Peak SAR (extrapolated) = 4.71 W/kg
**SAR(1 g) = 1.2 W/kg; SAR(10 g) = 0.440 W/kg**
Maximum value of SAR (measured) = 2.28 W/kg




0 dB = 2.28 W/kg = 3.58 dBW/kg

Date: 2016/5/5

**WLAN 802.11n(40M) 5.2G_Body-worn_Front side_CH 38_Main_10mm**

Communication System: WLAN 5G; Frequency: 5190 MHz
Medium parameters used: f = 5190 MHz; σ = 5.447 S/m; $\varepsilon_r$ = 47.987; ρ = 1000 kg/$m^3$
Phantom section: Flat Section

DASY5 Configuration:

- Probe: EX3DV4 - SN3770; ConvF(4.34, 4.34, 4.34); Calibrated: 2016/4/27;
- Sensor-Surface: 2mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn856; Calibrated: 2016/4/21
- Phantom: Head
- DASY52 52.8.8(1222); SEMCAD X 14.6.10(7331)

**Configuration/Head/Area Scan (111x191x1):** Interpolated grid: dx=10 mm, dy=10 mm
Maximum value of SAR (interpolated) = 0.466 W/kg

**Configuration/Head/Zoom Scan (7x7x12)/Cube 0:** Measurement grid: dx=4mm, dy=4mm, dz=2mm
Reference Value = 1.970 V/m; Power Drift = 0.16 dB
Peak SAR (extrapolated) = 0.913 W/kg
**SAR(1 g) = 0.258 W/kg; SAR(10 g) = 0.099 W/kg**
Maximum value of SAR (measured) = 0.470 W/kg


0 dB = 0.470 W/kg = -3.28 dBW/kg

Date: 2016/5/5

**WLAN 802.11n(40M) 5.2G_Product specific 10-g SAR_Front side_CH 38_Main_0mm**

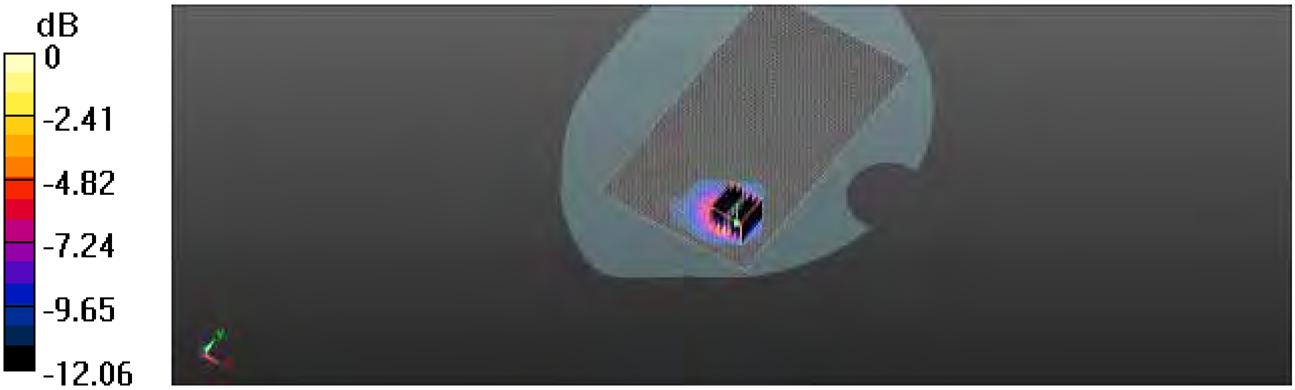
Communication System: WLAN 5G; Frequency: 5190 MHz
Medium parameters used: f = 5190 MHz; $\sigma$ = 5.447 S/m; $\varepsilon_r$ = 47.987; $\rho$ = 1000 kg/m$^3$
Phantom section: Flat Section

DASY5 Configuration:

- Probe: EX3DV4 - SN3770; ConvF(4.34, 4.34, 4.34); Calibrated: 2016/4/27;
- Sensor-Surface: 2mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn856; Calibrated: 2016/4/21
- Phantom: Head
- DASY52 52.8.8(1222); SEMCAD X 14.6.10(7331)

**Configuration/Head/Area Scan (111x191x1):** Interpolated grid: dx=10 mm, dy=10 mm
Maximum value of SAR (interpolated) = 6.14 W/kg

**Configuration/Head/Zoom Scan (7x7x12)/Cube 0:** Measurement grid: dx=4mm, dy=4mm, dz=2mm
Reference Value = 6.205 V/m; Power Drift = 0.16 dB
Peak SAR (extrapolated) = 12.9 W/kg
**SAR(1 g) = 2.89 W/kg; SAR(10 g) = 1.1 W/kg**
Maximum value of SAR (measured) = 5.40 W/kg




0 dB = 5.40 W/kg = 7.32 dBW/kg

Date: 2016/5/10

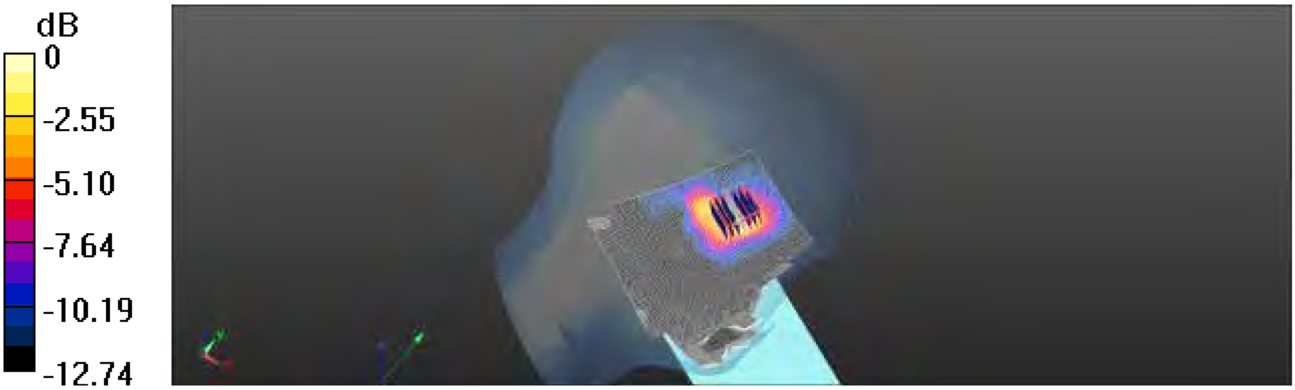
**WLAN 802.11n(40M) 5.2G_Head_Le Cheek_CH 38_Aux**
Communication System: WLAN 5G; Frequency: 5190 MHz
Medium parameters used: f = 5190 MHz; $\sigma$ = 4.635 S/m; $\varepsilon_r$ = 36.433; $\rho$ = 1000 kg/$m^3$
Phantom section: Left Section

DASY5 Configuration:

- Probe: EX3DV4 - SN3770; ConvF(5.03, 5.03, 5.03); Calibrated: 2016/4/27;
- Sensor-Surface: 2mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn856; Calibrated: 2016/4/21
- Phantom: Head
- DASY52 52.8.8(1222); SEMCAD X 14.6.10(7331)

**Configuration/Head/Area Scan (121x191x1):** Interpolated grid: dx=10 mm, dy=10 mm
Maximum value of SAR (interpolated) = 0.703 W/kg

**Configuration/Head/Zoom Scan (7x7x12)/Cube 0:** Measurement grid: dx=4mm, dy=4mm, dz=2mm
Reference Value = 3.288 V/m; Power Drift = 0.14 dB
Peak SAR (extrapolated) = 1.75 W/kg
**SAR(1 g) = 0.461 W/kg; SAR(10 g) = 0.190 W/kg**
Maximum value of SAR (measured) = 0.824 W/kg




0 dB = 0.824 W/kg = -0.84 dBW/kg



SGS Taiwan Ltd. No.134,Wu Kung Road, New Taipei Industrial Park, Wuku District, New Taipei City, Taiwan 24803/新北市五股區新北產業園區五工路134號
台灣檢驗科技股份有限公司 t (886-2) 2299-3279 f (886-2) 2298-0488 www.tw.sgs.com
Member of SGS Group

Date: 2016/5/5

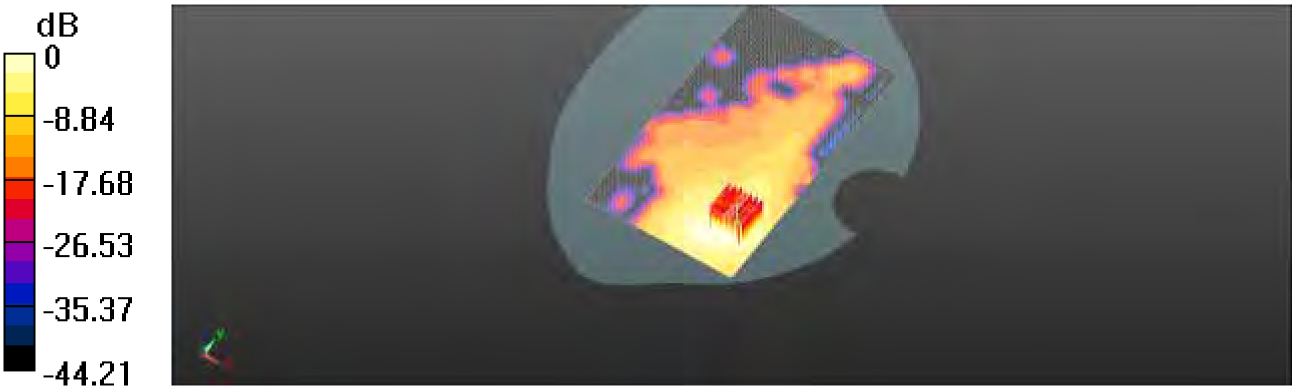
**WLAN 802.11n(40M) 5.2G_Body-worn_Back side_CH 38_Aux_10mm**
Communication System: WLAN 5G; Frequency: 5190 MHz
Medium parameters used: f = 5190 MHz; σ = 5.447 S/m; $\varepsilon_r$ = 47.987; ρ = 1000 kg/$m^3$
Phantom section: Flat Section

DASY5 Configuration:

- Probe: EX3DV4 - SN3770; ConvF(4.34, 4.34, 4.34); Calibrated: 2016/4/27;
- Sensor-Surface: 2mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn856; Calibrated: 2016/4/21
- Phantom: Head
- DASY52 52.8.8(1222); SEMCAD X 14.6.10(7331)

**Configuration/Head/Area Scan (111x191x1):** Interpolated grid: dx=10 mm, dy=10 mm
Maximum value of SAR (interpolated) = 0.556 W/kg

**Configuration/Head/Zoom Scan (7x7x12)/Cube 0:** Measurement grid: dx=4mm, dy=4mm, dz=2mm
Reference Value = 1.417 V/m; Power Drift = 0.14 dB
Peak SAR (extrapolated) = 1.06 W/kg
**SAR(1 g) = 0.279 W/kg; SAR(10 g) = 0.108 W/kg**
Maximum value of SAR (measured) = 0.536 W/kg




0 dB = 0.536 W/kg = -2.71 dBW/kg

Date: 2016/5/5

**WLAN 802.11n(40M) 5.2G_Product specific 10-g SAR_Right side_CH 38_Aux_0mm**

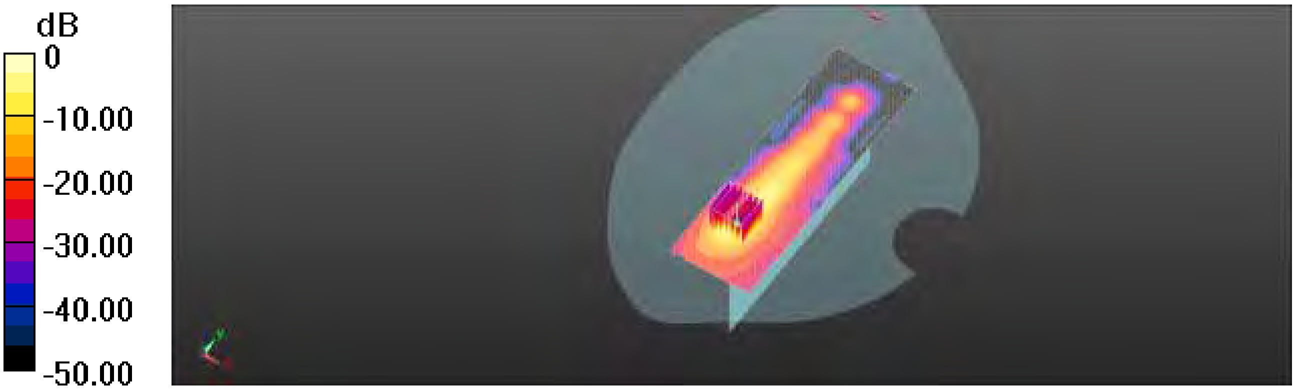
Communication System: WLAN 5G; Frequency: 5190 MHz
Medium parameters used: f = 5190 MHz; $\sigma$ = 5.447 S/m; $\varepsilon_r$ = 47.987; $\rho$ = 1000 kg/m$^3$
Phantom section: Flat Section

DASY5 Configuration:

- Probe: EX3DV4 - SN3770; ConvF(4.34, 4.34, 4.34); Calibrated: 2016/4/27;
- Sensor-Surface: 2mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn856; Calibrated: 2016/4/21
- Phantom: Head
- DASY52 52.8.8(1222); SEMCAD X 14.6.10(7331)

**Configuration/Head/Area Scan (61x191x1):** Interpolated grid: dx=10 mm, dy=10 mm
Maximum value of SAR (interpolated) = 6.91 W/kg

**Configuration/Head/Zoom Scan (7x7x12)/Cube 0:** Measurement grid: dx=4mm, dy=4mm, dz=2mm
Reference Value = 9.604 V/m; Power Drift = 0.01 dB
Peak SAR (extrapolated) = 23.8 W/kg
**SAR(1 g) = 3.8 W/kg; SAR(10 g) = 0.807 W/kg**
Maximum value of SAR (measured) = 8.99 W/kg




0 dB = 8.99 W/kg = 9.54 dBW/kg


SGS Taiwan Ltd. No.134,Wu Kung Road, New Taipei Industrial Park, Wuku District, New Taipei City, Taiwan 24803/新北市五股區新北產業園區五工路134號
台灣檢驗科技股份有限公司 t (886-2) 2299-3279 f (886-2) 2298-0488 www.tw.sgs.com
Member of SGS Group

Date: 2016/5/10

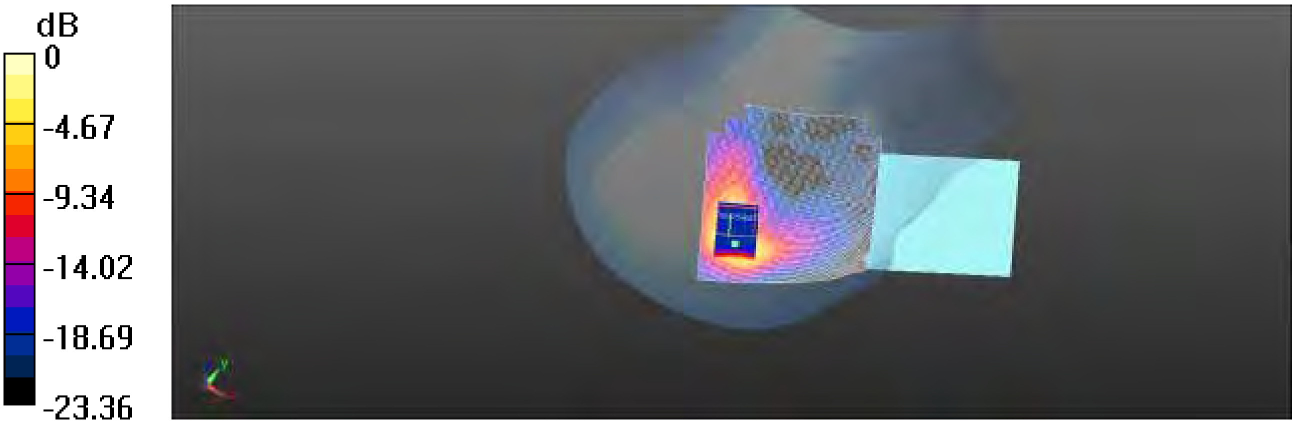
**WLAN802.11 ac(40M) 5.2G_Head_Re Cheek_CH 38_Main**
Communication System: WLAN 5G; Frequency: 5190 MHz
Medium parameters used: f = 5190 MHz; $\sigma$ = 4.635 S/m; $\varepsilon_r$ = 36.433; $\rho$ = 1000 kg/$m^3$
Phantom section: Right Section

DASY5 Configuration:

- Probe: EX3DV4 - SN3770; ConvF(5.03, 5.03, 5.03); Calibrated: 2016/4/27;
- Sensor-Surface: 2mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn856; Calibrated: 2016/4/21
- Phantom: Head
- DASY52 52.8.8(1222); SEMCAD X 14.6.10(7331)

**Configuration/Head/Area Scan (121x101x1):** Interpolated grid: dx=10 mm, dy=10 mm
Maximum value of SAR (interpolated) = 1.78 W/kg

**Configuration/Head/Zoom Scan (7x7x12)/Cube 0:** Measurement grid: dx=4mm, dy=4mm, dz=2mm
Reference Value = 6.642 V/m; Power Drift = 0.14 dB
Peak SAR (extrapolated) = 4.18 W/kg
**SAR(1 g) = 0.954 W/kg; SAR(10 g) = 0.308 W/kg**
Maximum value of SAR (measured) = 1.94 W/kg




0 dB = 1.94 W/kg = 2.88 dBW/kg


SGS Taiwan Ltd. 台灣檢驗科技股份有限公司 | No.134,Wu Kung Road, New Taipei Industrial Park, Wuku District, New Taipei City, Taiwan 24803/新北市五股區新北產業園區五工路134號
t (886-2) 2299-3279 f (886-2) 2298-0488 www.tw.sgs.com
Member of SGS Group

Date: 2016/5/11

## WLAN 802.11a 5.3G_Head_Re Cheek_CH 52_Main

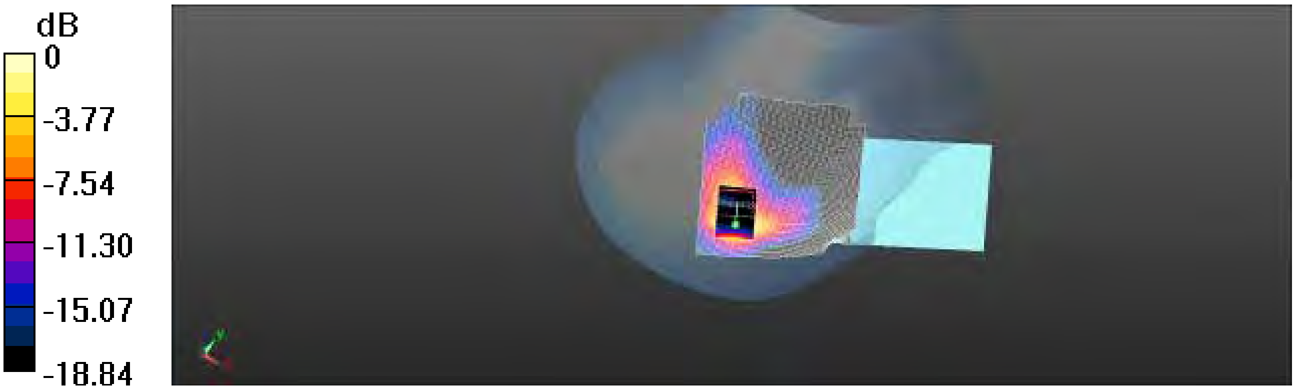
Communication System: WLAN 5G; Frequency: 5260 MHz
Medium parameters used: f = 5260 MHz; $\sigma$ = 4.717 S/m; $\varepsilon_r$ = 36.264; $\rho$ = 1000 kg/$m^3$
Phantom section: Right Section

DASY5 Configuration:

- Probe: EX3DV4 - SN3770; ConvF(5.03, 5.03, 5.03); Calibrated: 2016/4/27;
- Sensor-Surface: 2mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn856; Calibrated: 2016/4/21
- Phantom: Head
- DASY52 52.8.8(1222); SEMCAD X 14.6.10(7331)

**Configuration/Head/Area Scan (121x101x1):** Interpolated grid: dx=10 mm, dy=10 mm
Maximum value of SAR (interpolated) = 2.43 W/kg

**Configuration/Head/Zoom Scan (7x7x12)/Cube 0:** Measurement grid: dx=4mm, dy=4mm, dz=2mm
Reference Value = 10.17 V/m; Power Drift = 0.12 dB
Peak SAR (extrapolated) = 5.07 W/kg
**SAR(1 g) = 1.31 W/kg; SAR(10 g) = 0.480 W/kg**
Maximum value of SAR (measured) = 2.45 W/kg




0 dB = 2.45 W/kg = 3.89 dBW/kg


SGS Taiwan Ltd. No.134,Wu Kung Road, New Taipei Industrial Park, Wuku District, New Taipei City, Taiwan 24803/新北市五股區新北產業園區五工路134號
台灣檢驗科技股份有限公司 t (886-2) 2299-3279 f (886-2) 2298-0488 www.tw.sgs.com
Member of SGS Group

Date: 2016/5/11

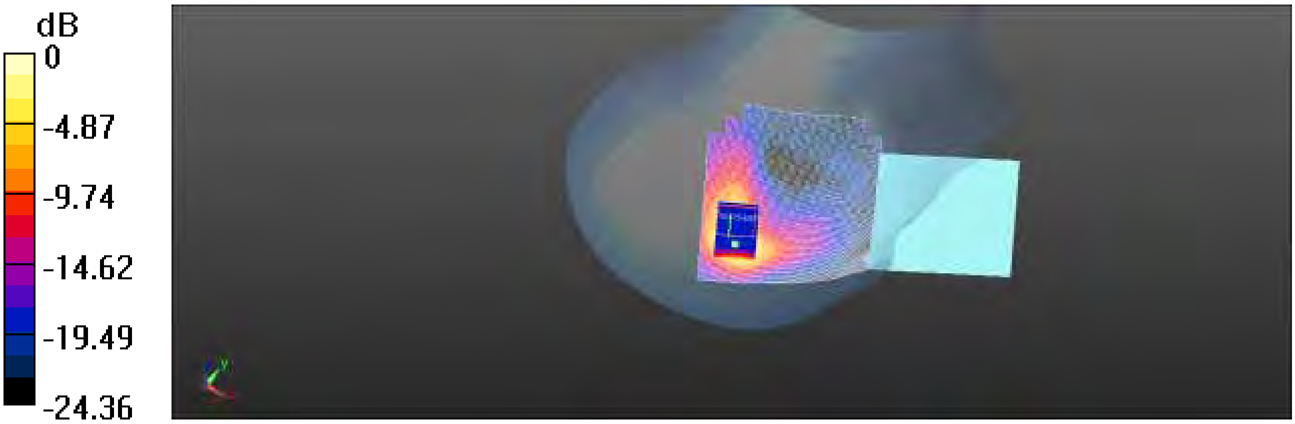
**WLAN802.11n(20M) 5.3G_Head_Re Cheek_CH 52_Main**
Communication System: WLAN 5G; Frequency: 5260 MHz
Medium parameters used: f = 5260 MHz; σ = 4.717 S/m; $\varepsilon_r$ = 36.264; ρ = 1000 kg/m$^3$
Phantom section: Right Section

DASY5 Configuration:

- Probe: EX3DV4 - SN3770; ConvF(5.03, 5.03, 5.03); Calibrated: 2016/4/27;
- Sensor-Surface: 2mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn856; Calibrated: 2016/4/21
- Phantom: Head
- DASY52 52.8.8(1222); SEMCAD X 14.6.10(7331)

**Configuration/Head/Area Scan (121x101x1):** Interpolated grid: dx=10 mm, dy=10 mm
Maximum value of SAR (interpolated) = 1.85 W/kg

**Configuration/Head/Zoom Scan (7x7x12)/Cube 0:** Measurement grid: dx=4mm, dy=4mm, dz=2mm
Reference Value = 5.742 V/m; Power Drift = 0.12 dB
Peak SAR (extrapolated) = 4.35 W/kg
**SAR(1 g) = 0.993 W/kg; SAR(10 g) = 0.320 W/kg**
Maximum value of SAR (measured) = 2.02 W/kg




0 dB = 2.02 W/kg = 3.05 dBW/kg

Date: 2016/5/11

**WLAN 802.11n(40M) 5.3G_Head_Re Cheek_CH 62_Main**

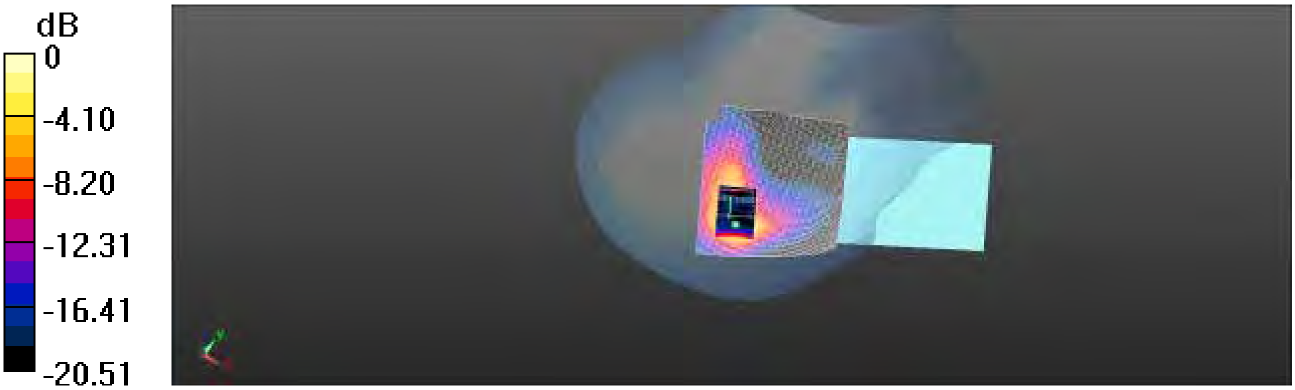
Communication System: WLAN 5G; Frequency: 5310 MHz
Medium parameters used: f = 5310 MHz; $\sigma$ = 4.788 S/m; $\varepsilon_r$ = 36.106; $\rho$ = 1000 kg/$m^3$
Phantom section: Right Section

DASY5 Configuration:

- Probe: EX3DV4 - SN3770; ConvF(5.03, 5.03, 5.03); Calibrated: 2016/4/27;
- Sensor-Surface: 2mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn856; Calibrated: 2016/4/21
- Phantom: Head
- DASY52 52.8.8(1222); SEMCAD X 14.6.10(7331)

**Configuration/Head/Area Scan (111x91x1):** Interpolated grid: dx=10 mm, dy=10 mm
Maximum value of SAR (interpolated) = 2.11 W/kg

**Configuration/Head/Zoom Scan (7x7x12)/Cube 0:** Measurement grid: dx=4mm, dy=4mm, dz=2mm
Reference Value = 10.28 V/m; Power Drift = 0.10 dB
Peak SAR (extrapolated) = 4.21 W/kg
**SAR(1 g) = 1.03 W/kg; SAR(10 g) = 0.354 W/kg**
Maximum value of SAR (measured) = 2.04 W/kg




0 dB = 2.04 W/kg = 3.10 dBW/kg

Date: 2016/5/5

**WLAN 802.11n(40M) 5.3G_Body-worn_Front side_CH 54_Main_10mm**

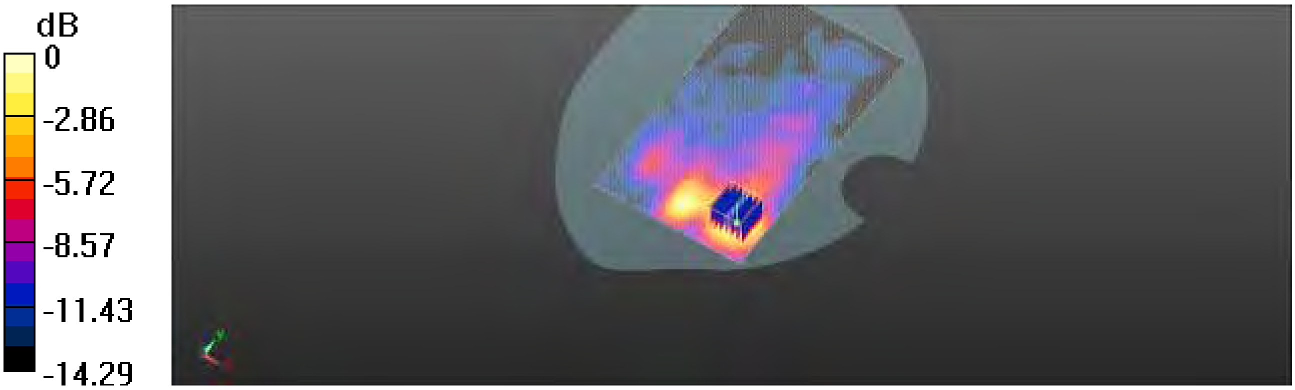
Communication System: WLAN 5G; Frequency: 5270 MHz
Medium parameters used: f = 5270 MHz; σ = 5.564 S/m; $\varepsilon_r$ = 47.698; ρ = 1000 kg/m$^3$
Phantom section: Flat Section

DASY5 Configuration:

- Probe: EX3DV4 - SN3770; ConvF(4.34, 4.34, 4.34); Calibrated: 2016/4/27;
- Sensor-Surface: 2mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn856; Calibrated: 2016/4/21
- Phantom: Head
- DASY52 52.8.8(1222); SEMCAD X 14.6.10(7331)

**Configuration/Head/Area Scan (111x191x1):** Interpolated grid: dx=10 mm, dy=10 mm
Maximum value of SAR (interpolated) = 0.501 W/kg

**Configuration/Head/Zoom Scan (7x7x12)/Cube 0:** Measurement grid: dx=4mm, dy=4mm, dz=2mm
Reference Value = 2.825 V/m; Power Drift = 0.15 dB
Peak SAR (extrapolated) = 1.04 W/kg
**SAR(1 g) = 0.282 W/kg; SAR(10 g) = 0.126 W/kg**
Maximum value of SAR (measured) = 0.500 W/kg




0 dB = 0.500 W/kg = -3.01 dBW/kg

Date: 2016/5/5

**WLAN 802.11n(40M) 5.3G_Product specific 10-g SAR_Front side_CH 54_Main_0mm**

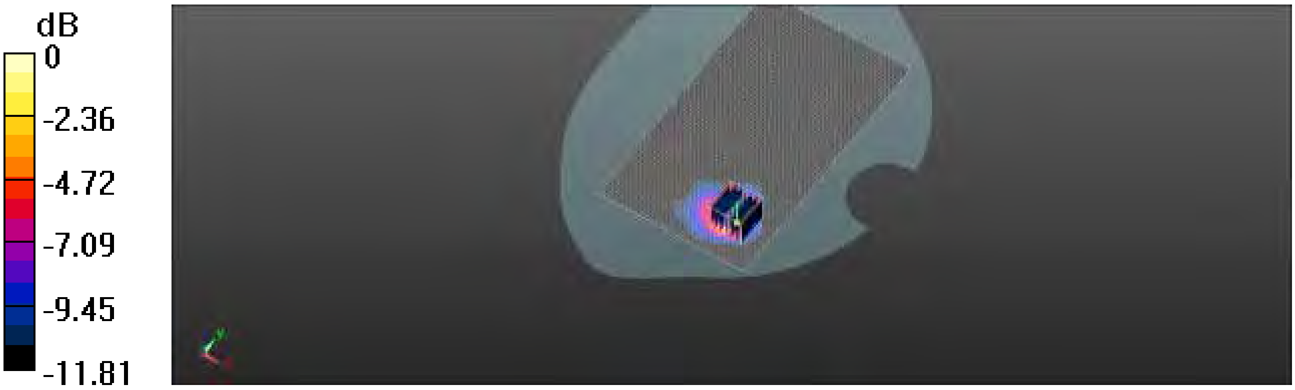
Communication System: WLAN 5G; Frequency: 5270 MHz
Medium parameters used: f = 5270 MHz; σ = 5.564 S/m; $\varepsilon_r$ = 47.698; ρ = 1000 kg/$m^3$
Phantom section: Flat Section

DASY5 Configuration:

- Probe: EX3DV4 - SN3770; ConvF(4.34, 4.34, 4.34); Calibrated: 2016/4/27;
- Sensor-Surface: 2mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn856; Calibrated: 2016/4/21
- Phantom: Head
- DASY52 52.8.8(1222); SEMCAD X 14.6.10(7331)

**Configuration/Head/Area Scan (111x191x1):** Interpolated grid: dx=10 mm, dy=10 mm
Maximum value of SAR (interpolated) = 5.89 W/kg

**Configuration/Head/Zoom Scan (7x7x12)/Cube 0:** Measurement grid: dx=4mm, dy=4mm, dz=2mm
Reference Value = 6.841 V/m; Power Drift = 0.17 dB
Peak SAR (extrapolated) = 12.7 W/kg
**SAR(1 g) = 2.8 W/kg; SAR(10 g) = 1.08 W/kg**
Maximum value of SAR (measured) = 5.19 W/kg




0 dB = 5.19 W/kg = 7.15 dBW/kg

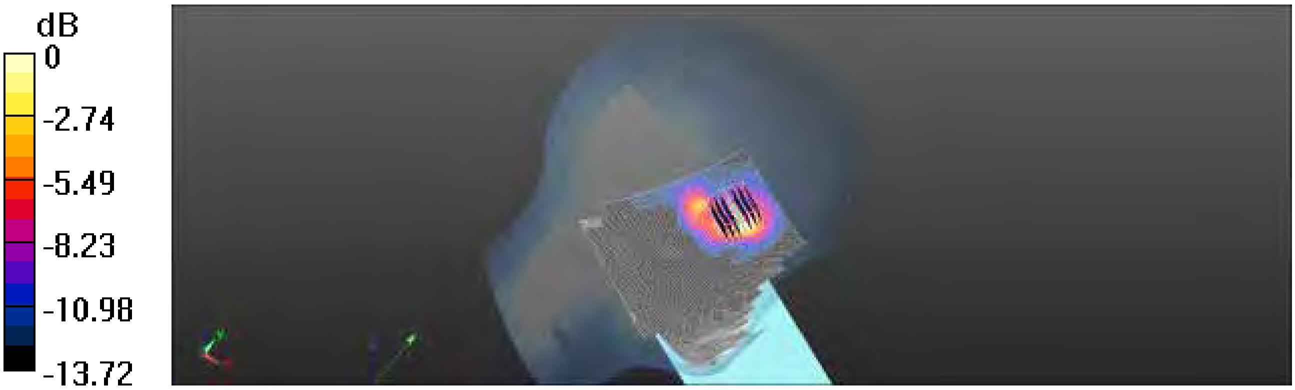
Date: 2016/5/11

**WLAN 802.11n(40M) 5.3G_Head_Le Cheek_CH 62_Aux**
Communication System: WLAN 5G; Frequency: 5310 MHz
Medium parameters used: f = 5310 MHz; σ = 4.788 S/m; $\varepsilon_r$ = 36.106; ρ = 1000 kg/$m^3$
Phantom section: Left Section

DASY5 Configuration:
- Probe: EX3DV4 - SN3770; ConvF(5.03, 5.03, 5.03); Calibrated: 2016/4/27;
- Sensor-Surface: 2mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn856; Calibrated: 2016/4/21
- Phantom: Head
- DASY52 52.8.8(1222); SEMCAD X 14.6.10(7331)

**Configuration/Head/Area Scan (121x191x1):** Interpolated grid: dx=10 mm, dy=10 mm
Maximum value of SAR (interpolated) = 1.01 W/kg

**Configuration/Head/Zoom Scan (7x7x12)/Cube 0:** Measurement grid: dx=4mm, dy=4mm, dz=2mm
Reference Value = 2.463 V/m; Power Drift = 0.14 dB
Peak SAR (extrapolated) = 2.57 W/kg
**SAR(1 g) = 0.607 W/kg; SAR(10 g) = 0.231 W/kg**
Maximum value of SAR (measured) = 1.22 W/kg




0 dB = 1.22 W/kg = 0.86 dBW/kg

Date: 2016/5/5

**WLAN 802.11n(40M) 5.3G_Body-worn_Back side_CH 62_Aux_10mm**
Communication System: WLAN 5G; Frequency: 5310 MHz
Medium parameters used: f = 5310 MHz; $\sigma$ = 5.623 S/m; $\varepsilon_r$ = 47.554; $\rho$ = 1000 kg/m$^3$
Phantom section: Flat Section

DASY5 Configuration:

- Probe: EX3DV4 - SN3770; ConvF(4.34, 4.34, 4.34); Calibrated: 2016/4/27;
- Sensor-Surface: 2mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn856; Calibrated: 2016/4/21
- Phantom: Head
- DASY52 52.8.8(1222); SEMCAD X 14.6.10(7331)

**Configuration/Head/Area Scan (111x191x1):** Interpolated grid: dx=10 mm, dy=10 mm
Maximum value of SAR (interpolated) = 1.15 W/kg

**Configuration/Head/Zoom Scan (7x7x12)/Cube 0:** Measurement grid: dx=4mm, dy=4mm, dz=2mm
Reference Value = 1.697 V/m; Power Drift = 0.13 dB
Peak SAR (extrapolated) = 2.13 W/kg
**SAR(1 g) = 0.539 W/kg; SAR(10 g) = 0.188 W/kg**
Maximum value of SAR (measured) = 1.02 W/kg


0 dB = 1.02 W/kg = 0.09 dBW/kg


SGS Taiwan Ltd. No.134,Wu Kung Road, New Taipei Industrial Park, Wuku District, New Taipei City, Taiwan 24803/新北市五股區新北產業園區五工路134號
台灣檢驗科技股份有限公司 t (886-2) 2299-3279 f (886-2) 2298-0488 www.tw.sgs.com
Member of SGS Group

Date: 2016/5/5

**WLAN 802.11n(40M) 5.3G_Product specific 10-g SAR_Right side_CH 62_Aux_0mm**

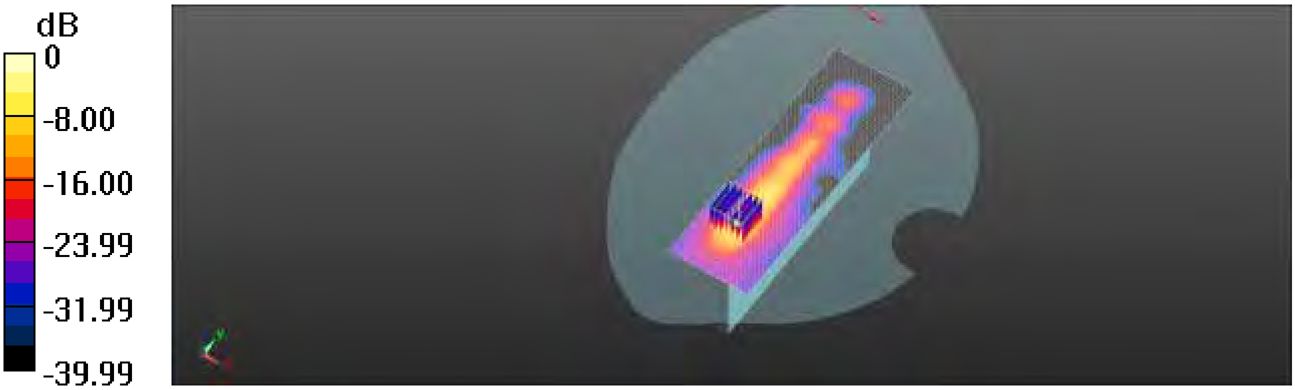
Communication System: WLAN 5G; Frequency: 5310 MHz
Medium parameters used: f = 5310 MHz; $\sigma$ = 5.623 S/m; $\varepsilon_r$ = 47.554; $\rho$ = 1000 kg/$m^3$
Phantom section: Flat Section

DASY5 Configuration:

- Probe: EX3DV4 - SN3770; ConvF(4.34, 4.34, 4.34); Calibrated: 2016/4/27;
- Sensor-Surface: 2mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn856; Calibrated: 2016/4/21
- Phantom: Head
- DASY52 52.8.8(1222); SEMCAD X 14.6.10(7331)

**Configuration/Head/Area Scan (61x191x1):** Interpolated grid: dx=10 mm, dy=10 mm
Maximum value of SAR (interpolated) = 9.00 W/kg

**Configuration/Head/Zoom Scan (7x7x12)/Cube 0:** Measurement grid: dx=4mm, dy=4mm, dz=2mm
Reference Value = 10.54 V/m; Power Drift = -0.17 dB
Peak SAR (extrapolated) = 36.9 W/kg
**SAR(1 g) = 5.42 W/kg; SAR(10 g) = 1.07 W/kg**
Maximum value of SAR (measured) = 13.1 W/kg




0 dB = 13.1 W/kg = 11.17 dBW/kg

Date: 2016/5/11

**WLAN802.11 ac(40M) 5.3G_Head_Re Cheek_CH 62_Main**

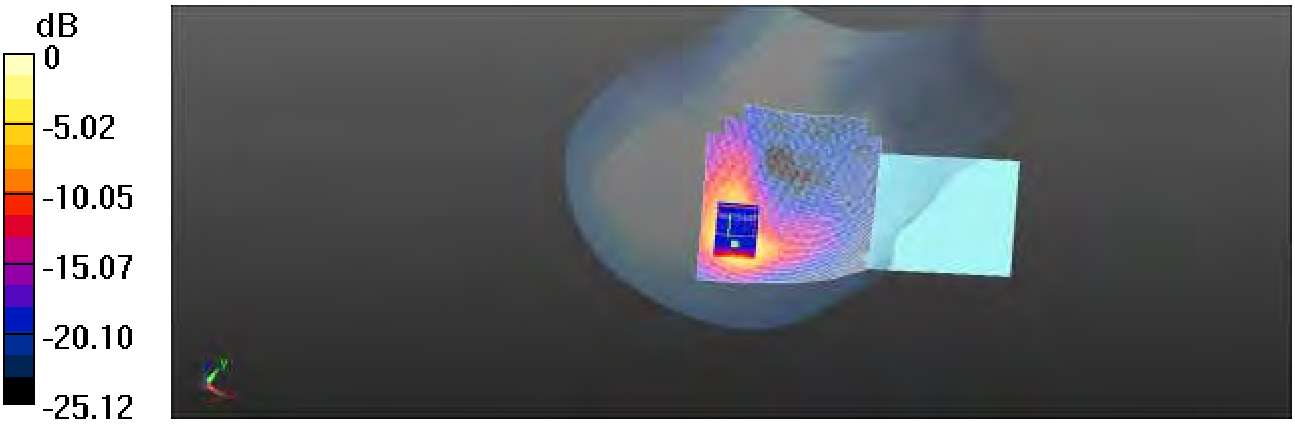
Communication System: WLAN 5G; Frequency: 5310 MHz
Medium parameters used: f = 5310 MHz; $\sigma$ = 4.788 S/m; $\varepsilon_r$ = 36.106; $\rho$ = 1000 kg/$m^3$
Phantom section: Right Section

DASY5 Configuration:

- Probe: EX3DV4 - SN3770; ConvF(5.03, 5.03, 5.03); Calibrated: 2016/4/27;
- Sensor-Surface: 2mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn856; Calibrated: 2016/4/21
- Phantom: Head
- DASY52 52.8.8(1222); SEMCAD X 14.6.10(7331)

**Configuration/Head/Area Scan (121x101x1):** Interpolated grid: dx=10 mm, dy=10 mm
Maximum value of SAR (interpolated) = 1.91 W/kg

**Configuration/Head/Zoom Scan (7x7x12)/Cube 0:** Measurement grid: dx=4mm, dy=4mm, dz=2mm
Reference Value = 8.815 V/m; Power Drift = 0.11 dB
Peak SAR (extrapolated) = 4.49 W/kg
**SAR(1 g) = 1.02 W/kg; SAR(10 g) = 0.331 W/kg**
Maximum value of SAR (measured) = 2.08 W/kg




0 dB = 2.08 W/kg = 3.18 dBW/kg

Date: 2016/5/12

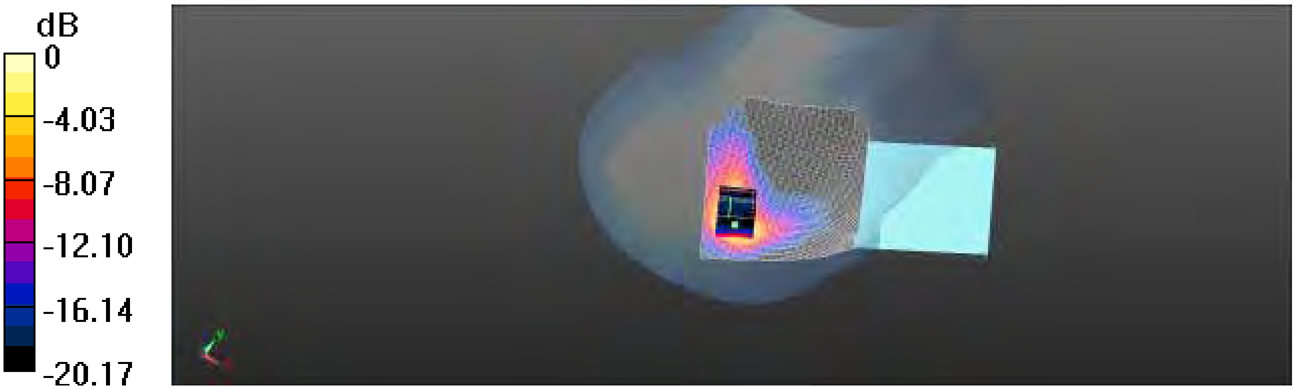
**WLAN 802.11a 5.6G_Head_Re Cheek_CH 120_Main**
Communication System: WLAN 5G; Frequency: 5600 MHz
Medium parameters used: f = 5600 MHz; σ = 5.154 S/m; $\varepsilon_r$ = 35.276; ρ = 1000 kg/$m^3$
Phantom section: Right Section

DASY5 Configuration:

- Probe: EX3DV4 - SN3770; ConvF(4.42, 4.42, 4.42); Calibrated: 2016/4/27;
- Sensor-Surface: 2mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn856; Calibrated: 2016/4/21
- Phantom: Head
- DASY52 52.8.8(1222); SEMCAD X 14.6.10(7331)

**Configuration/Head/Area Scan (121x101x1):** Interpolated grid: dx=10 mm, dy=10 mm
Maximum value of SAR (interpolated) = 2.21 W/kg

**Configuration/Head/Zoom Scan (7x7x12)/Cube 0:** Measurement grid: dx=4mm, dy=4mm, dz=2mm
Reference Value = 9.310 V/m; Power Drift = 0.15 dB
Peak SAR (extrapolated) = 4.89 W/kg
**SAR(1 g) = 1.18 W/kg; SAR(10 g) = 0.382 W/kg**
Maximum value of SAR (measured) = 2.40 W/kg




0 dB = 2.40 W/kg = 3.80 dBW/kg


SGS Taiwan Ltd. No.134,Wu Kung Road, New Taipei Industrial Park, Wuku District, New Taipei City, Taiwan 24803/新北市五股區新北產業園區五工路134號
台灣檢驗科技股份有限公司 t (886-2) 2299-3279 f (886-2) 2298-0488 www.tw.sgs.com
Member of SGS Group

Date: 2016/5/6

**WLAN 802.11a 5.6G_Body-worn_Front side_CH 100_Main_10mm**

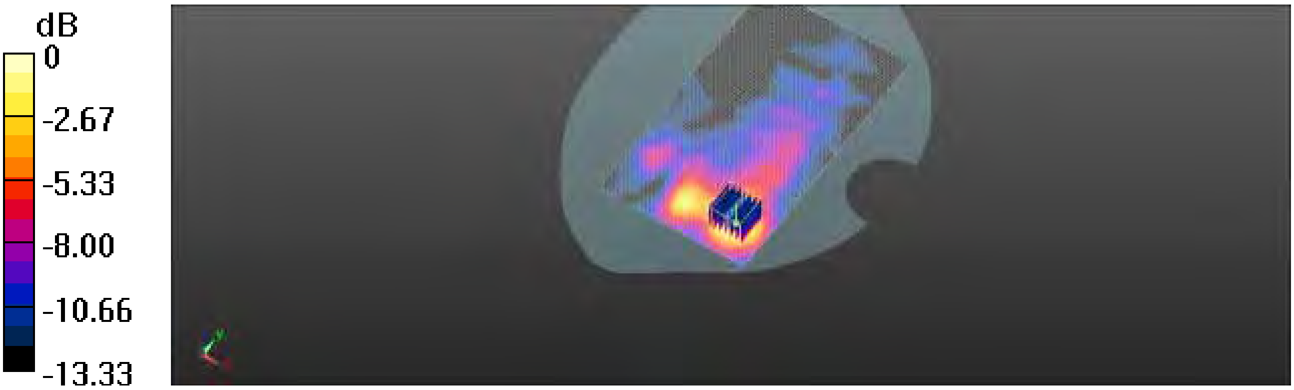
Communication System: WLAN 5G; Frequency: 5500 MHz
Medium parameters used: f = 5500 MHz; σ = 5.864 S/m; $\varepsilon_r$ = 46.91; ρ = 1000 kg/$m^3$
Phantom section: Flat Section

DASY5 Configuration:

- Probe: EX3DV4 - SN3770; ConvF(3.7, 3.7, 3.7); Calibrated: 2016/4/27;
- Sensor-Surface: 2mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn856; Calibrated: 2016/4/21
- Phantom: Head
- DASY52 52.8.8(1222); SEMCAD X 14.6.10(7331)

**Configuration/Head/Area Scan (111x191x1):** Interpolated grid: dx=10 mm, dy=10 mm
Maximum value of SAR (interpolated) = 0.555 W/kg

**Configuration/Head/Zoom Scan (7x7x12)/Cube 0:** Measurement grid: dx=4mm, dy=4mm, dz=2mm
Reference Value = 2.993 V/m; Power Drift = -0.11 dB
Peak SAR (extrapolated) = 0.989 W/kg
**SAR(1 g) = 0.290 W/kg; SAR(10 g) = 0.131 W/kg**
Maximum value of SAR (measured) = 0.515 W/kg




0 dB = 0.515 W/kg = -2.88 dBW/kg



SGS Taiwan Ltd. No.134,Wu Kung Road, New Taipei Industrial Park, Wuku District, New Taipei City, Taiwan 24803/新北市五股區新北產業園區五工路134號
台灣檢驗科技股份有限公司 t (886-2) 2299-3279 f (886-2) 2298-0488 www.tw.sgs.com
Member of SGS Group

Date: 2016/5/6

**WLAN 802.11a 5.6G_Product specific 10-g SAR_Front side_CH 100_Main_0mm**

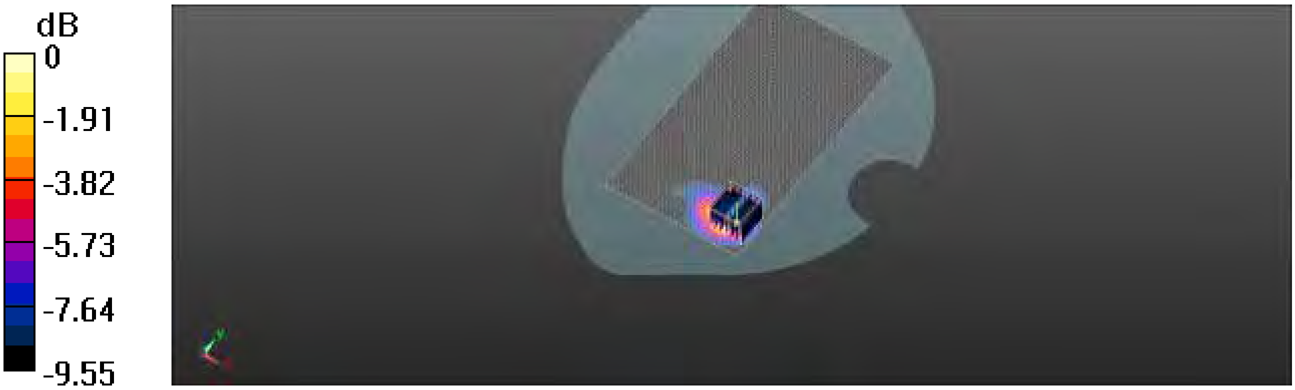
Communication System: WLAN 5G; Frequency: 5500 MHz
Medium parameters used: f = 5500 MHz; $\sigma$ = 5.864 S/m; $\varepsilon_r$ = 46.91; $\rho$ = 1000 $kg/m^3$
Phantom section: Flat Section

DASY5 Configuration:

- Probe: EX3DV4 - SN3770; ConvF(3.7, 3.7, 3.7); Calibrated: 2016/4/27;
- Sensor-Surface: 2mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn856; Calibrated: 2016/4/21
- Phantom: Head
- DASY52 52.8.8(1222); SEMCAD X 14.6.10(7331)

**Configuration/Head/Area Scan (101x181x1):** Interpolated grid: dx=10 mm, dy=10 mm
Maximum value of SAR (interpolated) = 4.29 W/kg

**Configuration/Head/Zoom Scan (7x7x12)/Cube 0:** Measurement grid: dx=4mm, dy=4mm, dz=2mm
Reference Value = 7.887 V/m; Power Drift = 0.15 dB
Peak SAR (extrapolated) = 9.98 W/kg
**SAR(1 g) = 2.25 W/kg; SAR(10 g) = 1.03 W/kg**
Maximum value of SAR (measured) = 3.95 W/kg




0 dB = 3.95 W/kg = 5.97 dBW/kg

Date: 2016/5/12

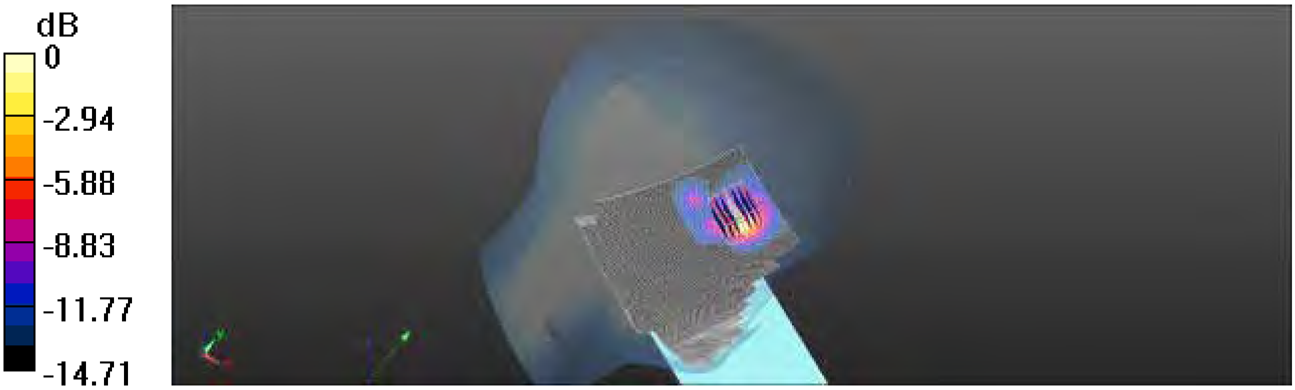
**WLAN 802.11a 5.6G_Head_Le Cheek_CH 140_Aux**
Communication System: WLAN 5G; Frequency: 5700 MHz
Medium parameters used: f = 5700 MHz; $\sigma$ = 5.279 S/m; $\varepsilon_r$ = 34.961; $\rho$ = 1000 kg/$m^3$
Phantom section: Left Section

DASY5 Configuration:

- Probe: EX3DV4 - SN3770; ConvF(4.42, 4.42, 4.42); Calibrated: 2016/4/27;
- Sensor-Surface: 2mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn856; Calibrated: 2016/4/21
- Phantom: Head
- DASY52 52.8.8(1222); SEMCAD X 14.6.10(7331)

**Configuration/Head/Area Scan (121x191x1):** Interpolated grid: dx=10 mm, dy=10 mm
Maximum value of SAR (interpolated) = 1.25 W/kg

**Configuration/Head/Zoom Scan (7x7x12)/Cube 0:** Measurement grid: dx=4mm, dy=4mm, dz=2mm
Reference Value = 2.963 V/m; Power Drift = 0.17 dB
Peak SAR (extrapolated) = 4.13 W/kg
**SAR(1 g) = 0.793 W/kg; SAR(10 g) = 0.264 W/kg**
Maximum value of SAR (measured) = 1.62 W/kg




0 dB = 1.62 W/kg = 2.10 dBW/kg

Date: 2016/5/6

**WLAN 802.11a 5.6G_Body-worn_Back side_CH 140_Aux_10mm**

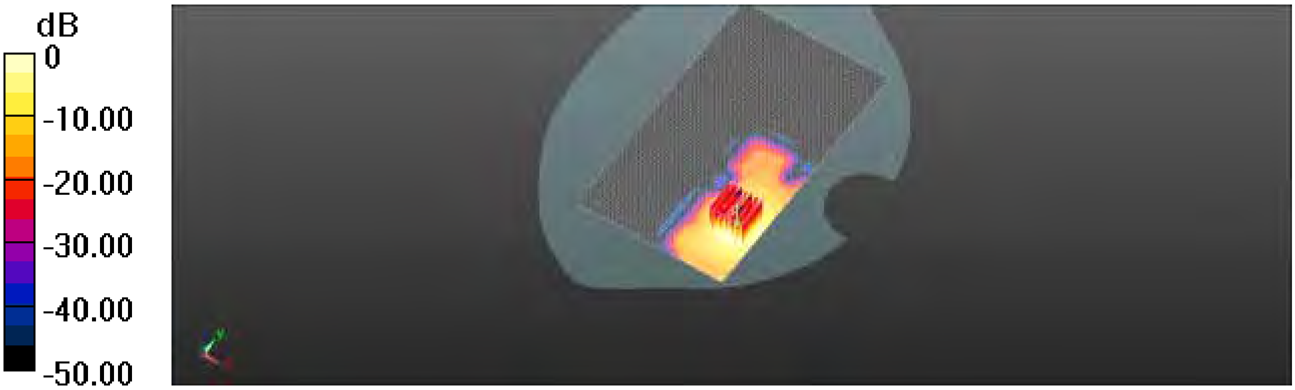
Communication System: WLAN 5G; Frequency: 5700 MHz
Medium parameters used: f = 5700 MHz; $\sigma$ = 6.058 S/m; $\varepsilon_r$ = 46.301; $\rho$ = 1000 kg/m$^3$
Phantom section: Flat Section

DASY5 Configuration:

- Probe: EX3DV4 - SN3770; ConvF(3.7, 3.7, 3.7); Calibrated: 2016/4/27;
- Sensor-Surface: 2mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn856; Calibrated: 2016/4/21
- Phantom: Head
- DASY52 52.8.8(1222); SEMCAD X 14.6.10(7331)

**Configuration/Head/Area Scan (111x191x1):** Interpolated grid: dx=10 mm, dy=10 mm
Maximum value of SAR (interpolated) = 1.52 W/kg

**Configuration/Head/Zoom Scan (7x7x12)/Cube 0:** Measurement grid: dx=4mm, dy=4mm, dz=2mm
Reference Value = 0.9680 V/m; Power Drift = 0.19 dB
Peak SAR (extrapolated) = 3.18 W/kg
**SAR(1 g) = 0.740 W/kg; SAR(10 g) = 0.248 W/kg**
Maximum value of SAR (measured) = 1.44 W/kg




0 dB = 1.44 W/kg = 1.58 dBW/kg

Date: 2016/5/6

**WLAN 802.11a 5.6G_Product specific 10-g SAR_Right side_CH 140_Aux_0mm**

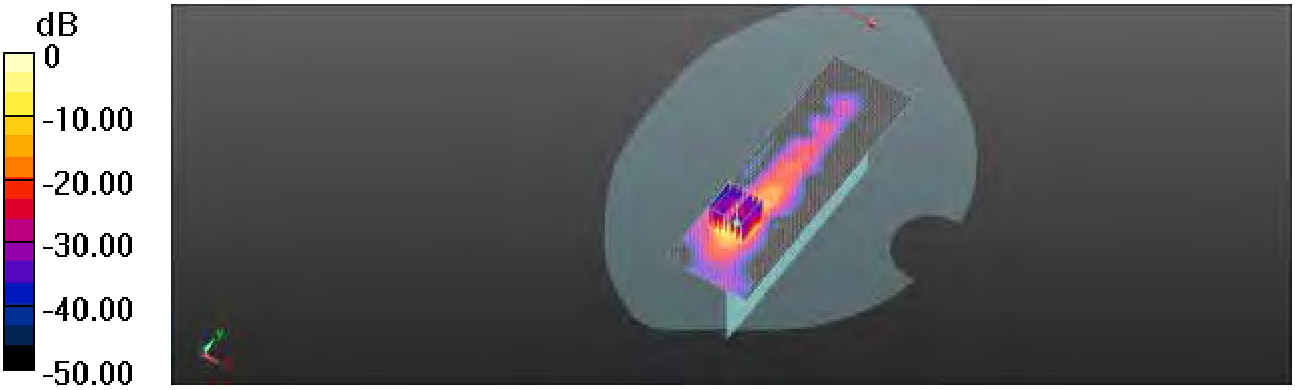
Communication System: WLAN 5G; Frequency: 5700 MHz
Medium parameters used: f = 5700 MHz; σ = 6.058 S/m; $\varepsilon_r$ = 46.301; ρ = 1000 kg/m$^3$
Phantom section: Flat Section

DASY5 Configuration:

- Probe: EX3DV4 - SN3770; ConvF(3.7, 3.7, 3.7); Calibrated: 2016/4/27;
- Sensor-Surface: 2mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn856; Calibrated: 2016/4/21
- Phantom: Head
- DASY52 52.8.8(1222); SEMCAD X 14.6.10(7331)

**Configuration/Head/Area Scan (61x191x1):** Interpolated grid: dx=10 mm, dy=10 mm
Maximum value of SAR (interpolated) = 24.0 W/kg

**Configuration/Head/Zoom Scan (7x7x12)/Cube 0:** Measurement grid: dx=4mm, dy=4mm, dz=2mm
Reference Value = 6.196 V/m; Power Drift = 0.15 dB
Peak SAR (extrapolated) = 101 W/kg
**SAR(1 g) = 13.3 W/kg; SAR(10 g) = 2.26 W/kg**
Maximum value of SAR (measured) = 33.2 W/kg




0 dB = 33.2 W/kg = 15.21 dBW/kg

Date: 2016/5/12

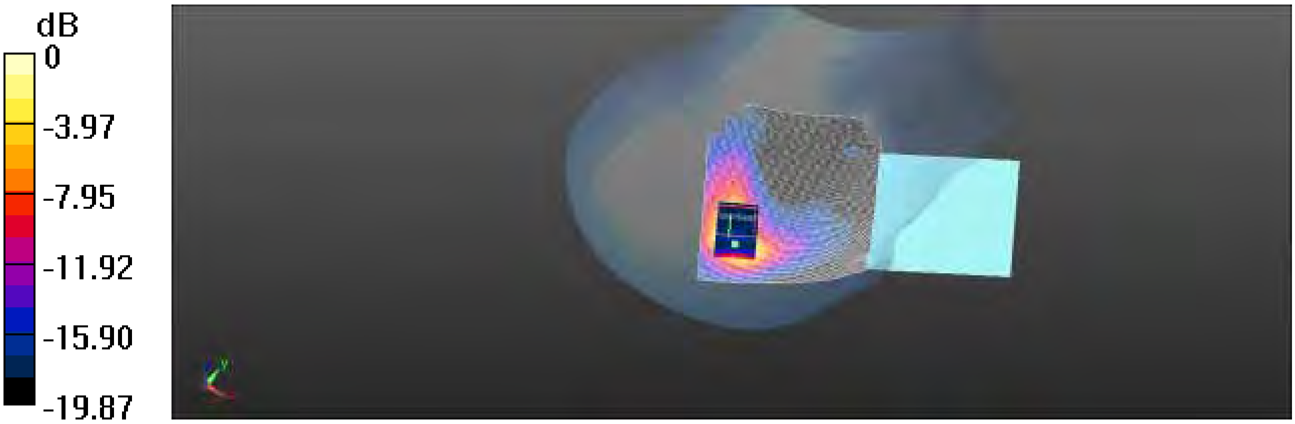
**WLAN802.11 n(20M) 5.6G_Head_Re Cheek_CH 100_Main**
Communication System: WLAN 5G; Frequency: 5500 MHz
Medium parameters used: f = 5500 MHz; σ = 5.025 S/m; $\varepsilon_r$ = 35.592; ρ = 1000 kg/$m^3$
Phantom section: Right Section

DASY5 Configuration:

- Probe: EX3DV4 - SN3770; ConvF(4.42, 4.42, 4.42); Calibrated: 2016/4/27;
- Sensor-Surface: 2mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn856; Calibrated: 2016/4/21
- Phantom: Head
- DASY52 52.8.8(1222); SEMCAD X 14.6.10(7331)

**Configuration/Head/Area Scan (121x101x1):** Interpolated grid: dx=10 mm, dy=10 mm
Maximum value of SAR (interpolated) = 1.54 W/kg

**Configuration/Head/Zoom Scan (7x7x12)/Cube 0:** Measurement grid: dx=4mm, dy=4mm, dz=2mm
Reference Value = 7.830 V/m; Power Drift = 0.10 dB
Peak SAR (extrapolated) = 3.36 W/kg
**SAR(1 g) = 0.819 W/kg; SAR(10 g) = 0.269 W/kg**
Maximum value of SAR (measured) = 1.68 W/kg




0 dB = 1.68 W/kg = 2.25 dBW/kg

Date: 2016/5/12

**WLAN 802.11ac(80M) 5.6G_Head_Re Cheek_CH 122_Main**

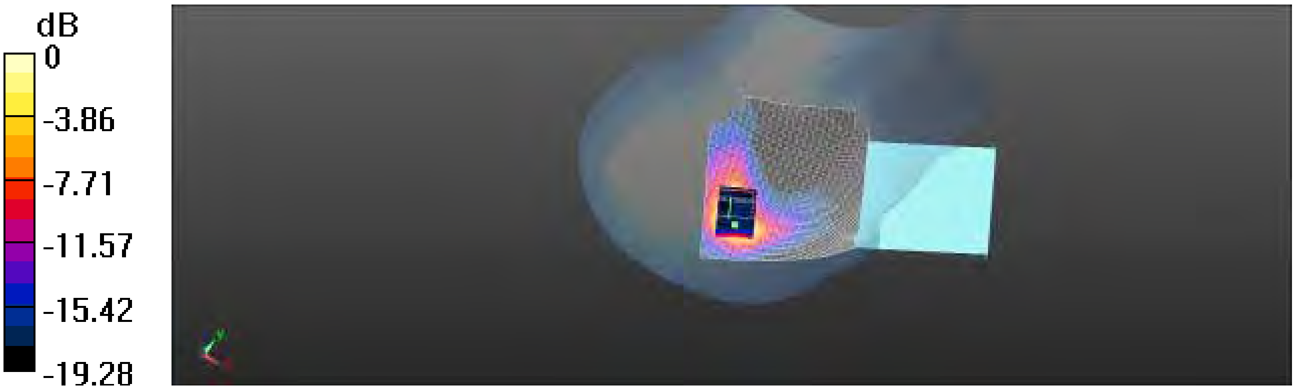
Communication System: WLAN 5G; Frequency: 5610 MHz
Medium parameters used: f = 5610 MHz; σ = 5.159 S/m; $\varepsilon_r$ = 35.257; ρ = 1000 kg/$m^3$
Phantom section: Right Section

DASY5 Configuration:

- Probe: EX3DV4 - SN3770; ConvF(4.42, 4.42, 4.42); Calibrated: 2016/4/27;
- Sensor-Surface: 2mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn856; Calibrated: 2016/4/21
- Phantom: Head
- DASY52 52.8.8(1222); SEMCAD X 14.6.10(7331)

**Configuration/Head/Area Scan (121x101x1):** Interpolated grid: dx=10 mm, dy=10 mm
Maximum value of SAR (interpolated) = 1.64 W/kg

**Configuration/Head/Zoom Scan (7x7x12)/Cube 0:** Measurement grid: dx=4mm, dy=4mm, dz=2mm
Reference Value = 7.971 V/m; Power Drift = 0.10 dB
Peak SAR (extrapolated) = 3.57 W/kg
**SAR(1 g) = 0.872 W/kg; SAR(10 g) = 0.286 W/kg**
Maximum value of SAR (measured) = 1.79 W/kg




0 dB = 1.79 W/kg = 2.53 dBW/kg

Date: 2016/5/6

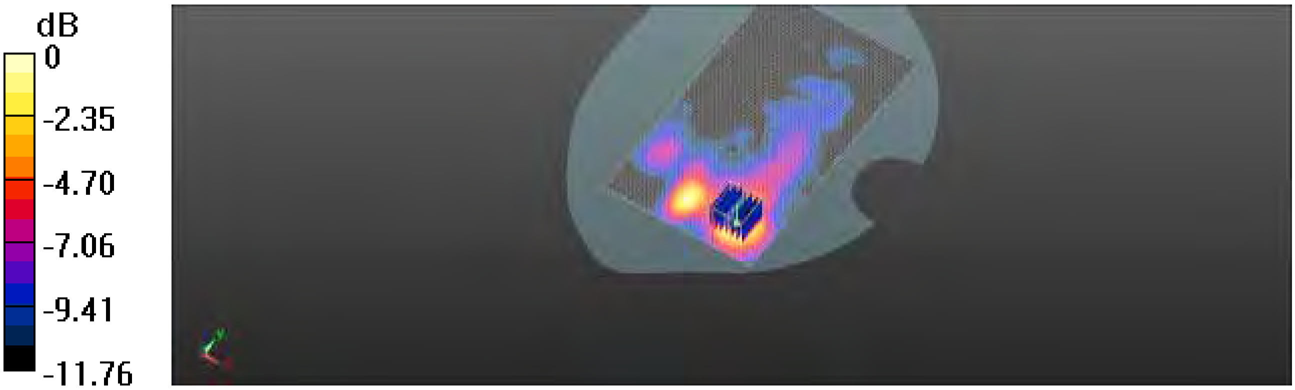
**WLAN 802.11ac(80M) 5.6G_Body-worn_Front side_CH 122_Main_10mm**
Communication System: WLAN 5G; Frequency: 5610 MHz
Medium parameters used: f = 5610 MHz; $\sigma$ = 6.029 S/m; $\varepsilon_r$ = 46.519; $\rho$ = 1000 kg/$m^3$
Phantom section: Flat Section

DASY5 Configuration:

- Probe: EX3DV4 - SN3770; ConvF(3.7, 3.7, 3.7); Calibrated: 2016/4/27;
- Sensor-Surface: 2mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn856; Calibrated: 2016/4/21
- Phantom: Head
- DASY52 52.8.8(1222); SEMCAD X 14.6.10(7331)

**Configuration/Head/Area Scan (111x191x1):** Interpolated grid: dx=10 mm, dy=10 mm
Maximum value of SAR (interpolated) = 0.406 W/kg

**Configuration/Head/Zoom Scan (7x7x12)/Cube 0:** Measurement grid: dx=4mm, dy=4mm, dz=2mm
Reference Value = 2.927 V/m; Power Drift = -0.13 dB
Peak SAR (extrapolated) = 0.844 W/kg
**SAR(1 g) = 0.226 W/kg; SAR(10 g) = 0.109 W/kg**
Maximum value of SAR (measured) = 0.393 W/kg




0 dB = 0.393 W/kg = -4.06 dBW/kg


SGS Taiwan Ltd. No.134,Wu Kung Road, New Taipei Industrial Park, Wuku District, New Taipei City, Taiwan 24803/新北市五股區新北產業園區五工路134號
台灣檢驗科技股份有限公司 t (886-2) 2299-3279 f (886-2) 2298-0488 www.tw.sgs.com
Member of SGS Group

Date: 2016/5/6

**WLAN 802.11ac(80M) 5.6G_Product specific 10-g SAR_Front side_CH 122_Main_0mm**

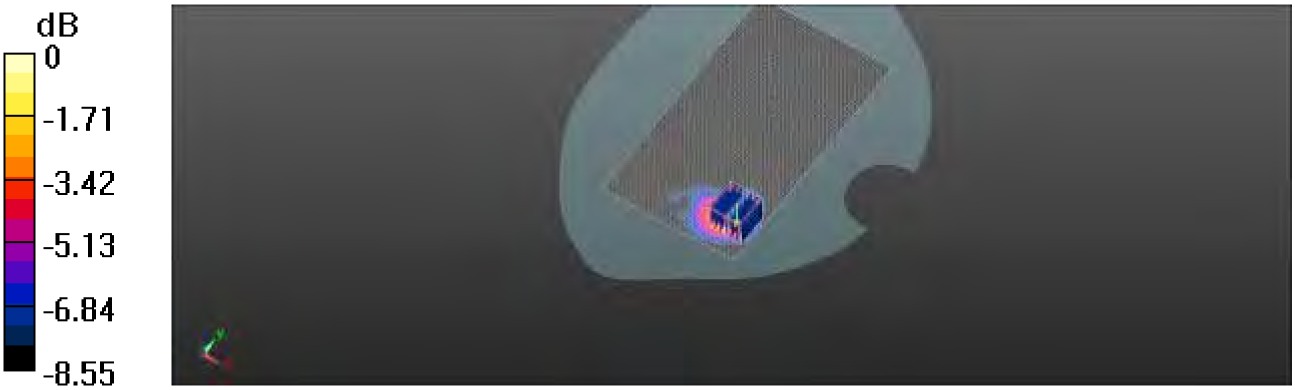
Communication System: WLAN 5G; Frequency: 5610 MHz
Medium parameters used: f = 5610 MHz; $\sigma$ = 6.029 S/m; $\varepsilon_r$ = 46.519; $\rho$ = 1000 kg/$m^3$
Phantom section: Flat Section

DASY5 Configuration:

- Probe: EX3DV4 - SN3770; ConvF(3.7, 3.7, 3.7); Calibrated: 2016/4/27;
- Sensor-Surface: 2mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn856; Calibrated: 2016/4/21
- Phantom: Head
- DASY52 52.8.8(1222); SEMCAD X 14.6.10(7331)

**Configuration/Head/Area Scan (101x181x1):** Interpolated grid: dx=10 mm, dy=10 mm
Maximum value of SAR (interpolated) = 3.65 W/kg

**Configuration/Head/Zoom Scan (7x7x12)/Cube 0:** Measurement grid: dx=4mm, dy=4mm, dz=2mm
Reference Value = 8.659 V/m; Power Drift = 0.13 dB
Peak SAR (extrapolated) = 10.1 W/kg
**SAR(1 g) = 1.97 W/kg; SAR(10 g) = 0.993 W/kg**
Maximum value of SAR (measured) = 3.33 W/kg




0 dB = 3.33 W/kg = 5.22 dBW/kg

Date: 2016/5/12

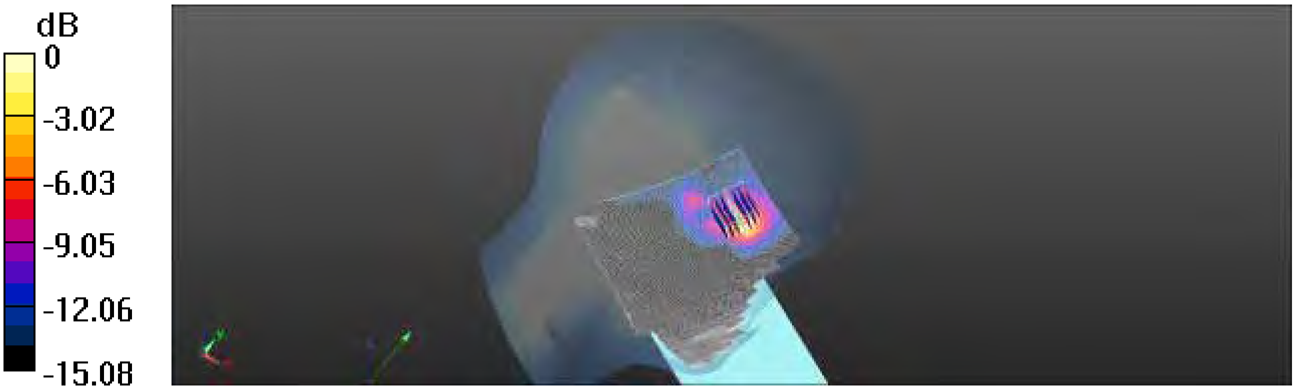
**WLAN 802.11ac(80M) 5.6G_Head_Le Cheek_CH 122_Aux**
Communication System: WLAN 5G; Frequency: 5610 MHz
Medium parameters used: f = 5610 MHz; $\sigma$ = 5.159 S/m; $\varepsilon_r$ = 35.257; $\rho$ = 1000 kg/m$^3$
Phantom section: Left Section

DASY5 Configuration:

- Probe: EX3DV4 - SN3770; ConvF(4.42, 4.42, 4.42); Calibrated: 2016/4/27;
- Sensor-Surface: 2mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn856; Calibrated: 2016/4/21
- Phantom: Head
- DASY52 52.8.8(1222); SEMCAD X 14.6.10(7331)

**Configuration/Head/Area Scan (121x191x1):** Interpolated grid: dx=10 mm, dy=10 mm
Maximum value of SAR (interpolated) = 1.15 W/kg

**Configuration/Head/Zoom Scan (7x7x12)/Cube 0:** Measurement grid: dx=4mm, dy=4mm, dz=2mm
Reference Value = 2.993 V/m; Power Drift = 0.14 dB
Peak SAR (extrapolated) = 3.62 W/kg
**SAR(1 g) = 0.737 W/kg; SAR(10 g) = 0.251 W/kg**
Maximum value of SAR (measured) = 1.49 W/kg




0 dB = 1.49 W/kg = 1.73 dBW/kg


SGS Taiwan Ltd. No.134,Wu Kung Road, New Taipei Industrial Park, Wuku District, New Taipei City, Taiwan 24803/新北市五股區新北產業園區五工路134號
台灣檢驗科技股份有限公司 t (886-2) 2299-3279 f (886-2) 2298-0488 www.tw.sgs.com
Member of SGS Group

Date: 2016/5/6

**WLAN 802.11ac(80M) 5.6G_Body-worn_Back side_CH 122_Aux_10mm**

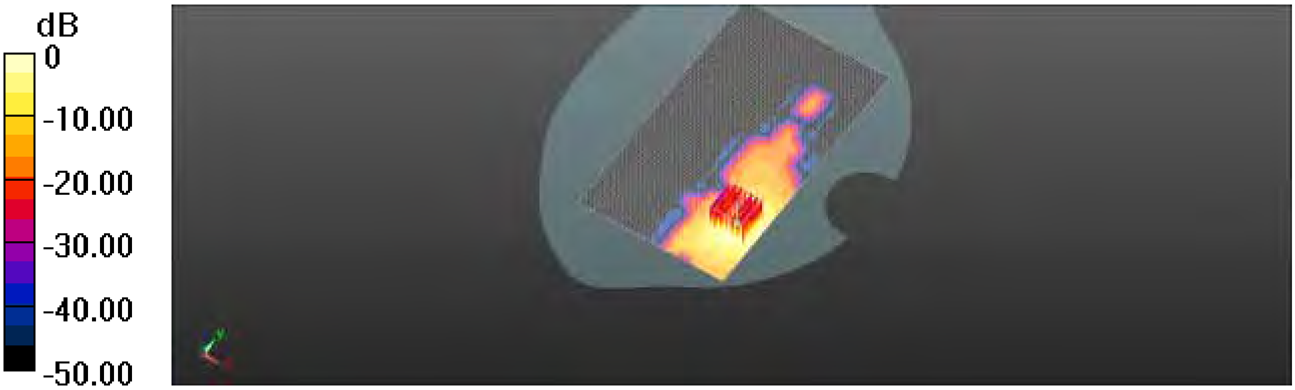
Communication System: WLAN 5G; Frequency: 5610 MHz
Medium parameters used: f = 5610 MHz; $\sigma$ = 6.029 S/m; $\varepsilon_r$ = 46.519; $\rho$ = 1000 kg/m$^3$
Phantom section: Flat Section

DASY5 Configuration:

- Probe: EX3DV4 - SN3770; ConvF(3.7, 3.7, 3.7); Calibrated: 2016/4/27;
- Sensor-Surface: 2mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn856; Calibrated: 2016/4/21
- Phantom: Head
- DASY52 52.8.8(1222); SEMCAD X 14.6.10(7331)

**Configuration/Head/Area Scan (111x191x1):** Interpolated grid: dx=10 mm, dy=10 mm
Maximum value of SAR (interpolated) = 1.56 W/kg

**Configuration/Head/Zoom Scan (7x7x12)/Cube 0:** Measurement grid: dx=4mm, dy=4mm, dz=2mm
Reference Value = 0.5370 V/m; Power Drift = -0.19 dB
Peak SAR (extrapolated) = 3.20 W/kg
**SAR(1 g) = 0.769 W/kg; SAR(10 g) = 0.256 W/kg**
Maximum value of SAR (measured) = 1.49 W/kg




0 dB = 1.49 W/kg = 1.73 dBW/kg



SGS Taiwan Ltd. No.134,Wu Kung Road, New Taipei Industrial Park, Wuku District, New Taipei City, Taiwan 24803/新北市五股區新北產業園區五工路134號
台灣檢驗科技股份有限公司 t (886-2) 2299-3279 f (886-2) 2298-0488 www.tw.sgs.com
Member of SGS Group

Date: 2016/5/6

**WLAN 802.11ac(80M) 5.6G_Product specific 10-g SAR_Right side_CH 138_Aux_0mm**

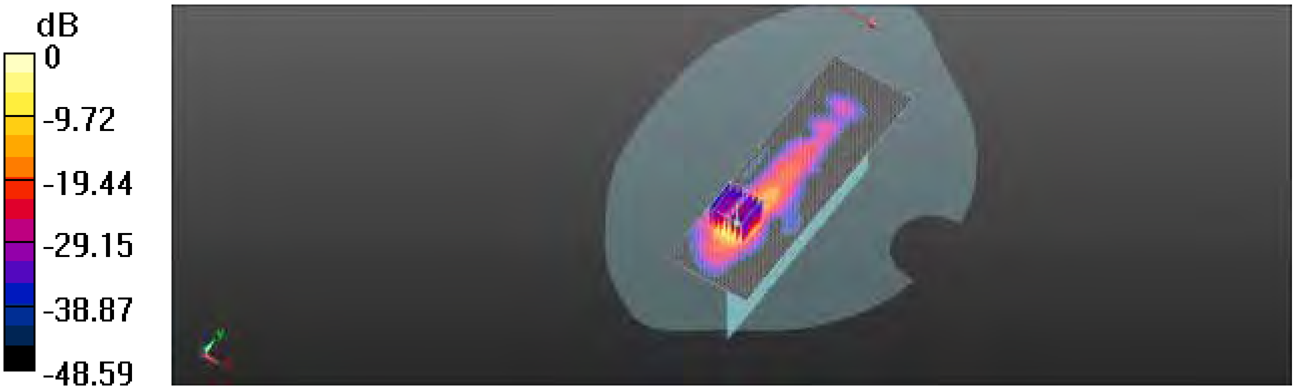
Communication System: WLAN 5G; Frequency: 5690 MHz
Medium parameters used: f = 5690 MHz; $\sigma = 6.029$ S/m; $\varepsilon_r = 46.33$; $\rho = 1000$ kg/m$^3$
Phantom section: Flat Section

DASY5 Configuration:

- Probe: EX3DV4 - SN3770; ConvF(3.7, 3.7, 3.7); Calibrated: 2016/4/27;
- Sensor-Surface: 2mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn856; Calibrated: 2016/4/21
- Phantom: Head
- DASY52 52.8.8(1222); SEMCAD X 14.6.10(7331)

**Configuration/Head/Area Scan (61x191x1):** Interpolated grid: dx=10 mm, dy=10 mm
Maximum value of SAR (interpolated) = 22.5 W/kg

**Configuration/Head/Zoom Scan (7x7x12)/Cube 0:** Measurement grid: dx=4mm, dy=4mm, dz=2mm
Reference Value = 5.891 V/m; Power Drift = 0.18 dB
Peak SAR (extrapolated) = 96.8 W/kg
**SAR(1 g) = 12.3 W/kg; SAR(10 g) = 2.09 W/kg**
Maximum value of SAR (measured) = 30.7 W/kg




0 dB = 30.7 W/kg = 14.87 dBW/kg

Date: 2016/5/13

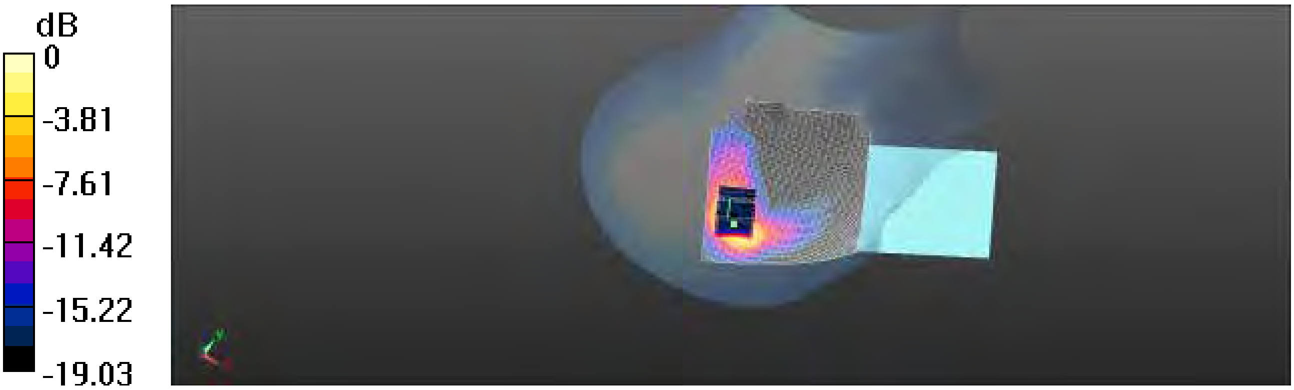
**WLAN 802.11a 5.8G_Head_Re Cheek_CH 165_Main**
Communication System: WLAN 5G; Frequency: 5825 MHz
Medium parameters used: f = 5825 MHz; σ = 5.424 S/m; $\varepsilon_r$ = 34.633; ρ = 1000 kg/$m^3$
Phantom section: Right Section

DASY5 Configuration:

- Probe: EX3DV4 - SN3770; ConvF(4.83, 4.83, 4.83); Calibrated: 2016/4/27;
- Sensor-Surface: 2mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn856; Calibrated: 2016/4/21
- Phantom: Head
- DASY52 52.8.8(1222); SEMCAD X 14.6.10(7331)

**Configuration/Head/Area Scan (121x101x1):** Interpolated grid: dx=10 mm, dy=10 mm
Maximum value of SAR (interpolated) = 1.62 W/kg

**Configuration/Head/Zoom Scan (7x7x12)/Cube 0:** Measurement grid: dx=4mm, dy=4mm, dz=2mm
Reference Value = 7.312 V/m; Power Drift = 0.17 dB
Peak SAR (extrapolated) = 4.08 W/kg
**SAR(1 g) = 0.916 W/kg; SAR(10 g) = 0.300 W/kg**
Maximum value of SAR (measured) = 1.83 W/kg




0 dB = 1.83 W/kg = 2.62 dBW/kg

Date: 2016/5/6

**WLAN 802.11a 5.8G_Body-worn_Front side_CH 165_Main_10mm**

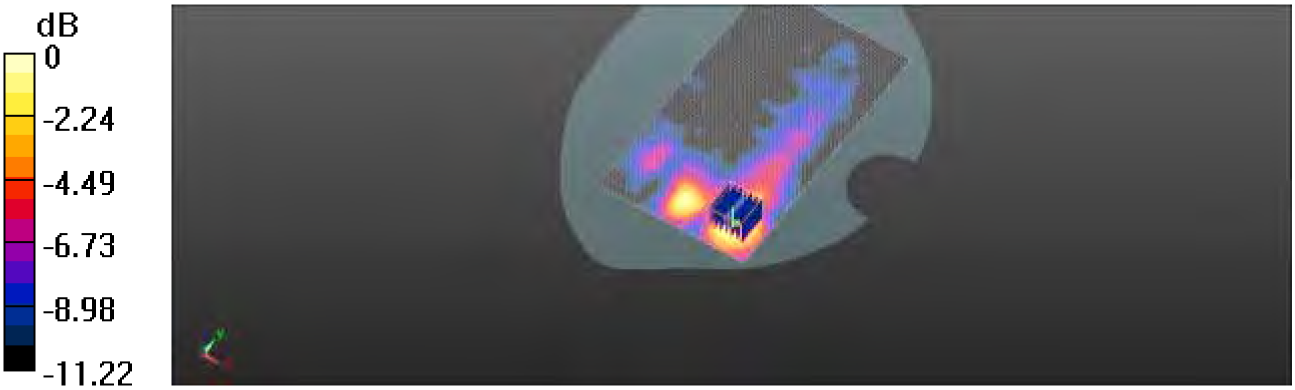
Communication System: WLAN 5G; Frequency: 5825 MHz
Medium parameters used: f = 5825 MHz; $\sigma$ = 6.233 S/m; $\varepsilon_r$ = 45.885; $\rho$ = 1000 kg/$m^3$
Phantom section: Flat Section

DASY5 Configuration:

- Probe: EX3DV4 - SN3770; ConvF(4.07, 4.07, 4.07); Calibrated: 2016/4/27;
- Sensor-Surface: 2mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn856; Calibrated: 2016/4/21
- Phantom: Head
- DASY52 52.8.8(1222); SEMCAD X 14.6.10(7331)

**Configuration/Head/Area Scan (111x191x1):** Interpolated grid: dx=10 mm, dy=10 mm
Maximum value of SAR (interpolated) = 0.383 W/kg

**Configuration/Head/Zoom Scan (7x7x12)/Cube 0:** Measurement grid: dx=4mm, dy=4mm, dz=2mm
Reference Value = 2.367 V/m; Power Drift = 0.18 dB
Peak SAR (extrapolated) = 0.821 W/kg
**SAR(1 g) = 0.210 W/kg; SAR(10 g) = 0.104 W/kg**
Maximum value of SAR (measured) = 0.363 W/kg




0 dB = 0.363 W/kg = -4.40 dBW/kg

Date: 2016/5/6

**WLAN 802.11a 5.8G_Product specific 10-g SAR_Front side_CH 165_Main_0mm**

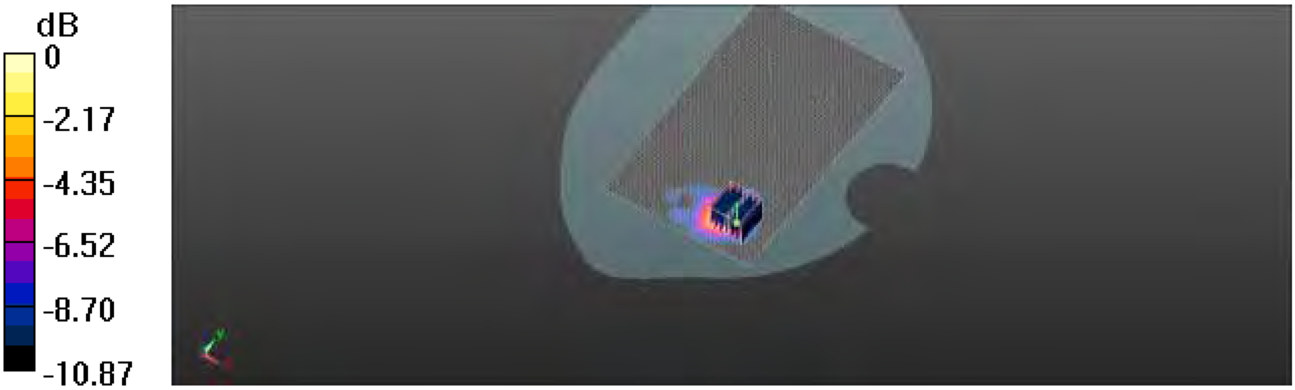
Communication System: WLAN 5G; Frequency: 5825 MHz
Medium parameters used: f = 5825 MHz; $\sigma$ = 6.233 S/m; $\varepsilon_r$ = 45.885; $\rho$ = 1000 kg/m$^3$
Phantom section: Flat Section

DASY5 Configuration:

- Probe: EX3DV4 - SN3770; ConvF(4.07, 4.07, 4.07); Calibrated: 2016/4/27;
- Sensor-Surface: 2mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn856; Calibrated: 2016/4/21
- Phantom: Head
- DASY52 52.8.8(1222); SEMCAD X 14.6.10(7331)

**Configuration/Head/Area Scan (111x181x1):** Interpolated grid: dx=10 mm, dy=10 mm
Maximum value of SAR (interpolated) = 4.40 W/kg

**Configuration/Head/Zoom Scan (7x7x12)/Cube 0:** Measurement grid: dx=4mm, dy=4mm, dz=2mm
Reference Value = 6.682 V/m; Power Drift = 0.14 dB
Peak SAR (extrapolated) = 10.8 W/kg
**SAR(1 g) = 2.24 W/kg; SAR(10 g) = 0.906 W/kg**
Maximum value of SAR (measured) = 4.16 W/kg




0 dB = 4.16 W/kg = 6.19 dBW/kg


SGS Taiwan Ltd. No.134,Wu Kung Road, New Taipei Industrial Park, Wuku District, New Taipei City, Taiwan 24803/新北市五股區新北產業園區五工路134號
台灣檢驗科技股份有限公司 t (886-2) 2299-3279 f (886-2) 2298-0488 www.tw.sgs.com
Member of SGS Group

Date: 2016/5/13

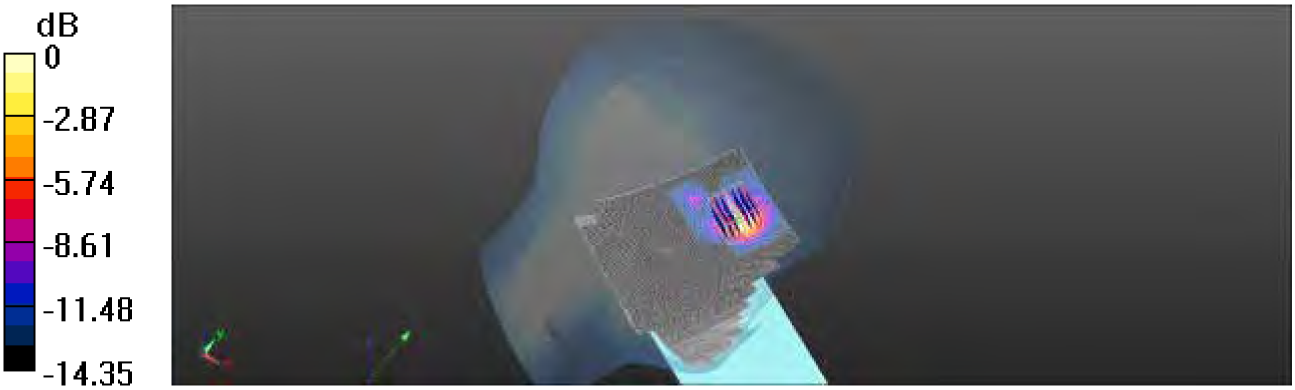
**WLAN 802.11a 5.8G_Head_Le Cheek_CH 149_Aux**
Communication System: WLAN 5G; Frequency: 5745 MHz
Medium parameters used: f = 5745 MHz; $\sigma$ = 5.333 S/m; $\varepsilon_r$ = 34.855; $\rho$ = 1000 kg/m$^3$
Phantom section: Left Section

DASY5 Configuration:

- Probe: EX3DV4 - SN3770; ConvF(4.83, 4.83, 4.83); Calibrated: 2016/4/27;
- Sensor-Surface: 2mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn856; Calibrated: 2016/4/21
- Phantom: Head
- DASY52 52.8.8(1222); SEMCAD X 14.6.10(7331)

**Configuration/Head/Area Scan (121x191x1):** Interpolated grid: dx=10 mm, dy=10 mm
Maximum value of SAR (interpolated) = 0.916 W/kg

**Configuration/Head/Zoom Scan (7x7x12)/Cube 0:** Measurement grid: dx=4mm, dy=4mm, dz=2mm
Reference Value = 2.769 V/m; Power Drift = 0.09 dB
Peak SAR (extrapolated) = 3.38 W/kg
**SAR(1 g) = 0.599 W/kg; SAR(10 g) = 0.205 W/kg**
Maximum value of SAR (measured) = 1.20 W/kg




0 dB = 1.20 W/kg = 0.79 dBW/kg

Date: 2016/5/6

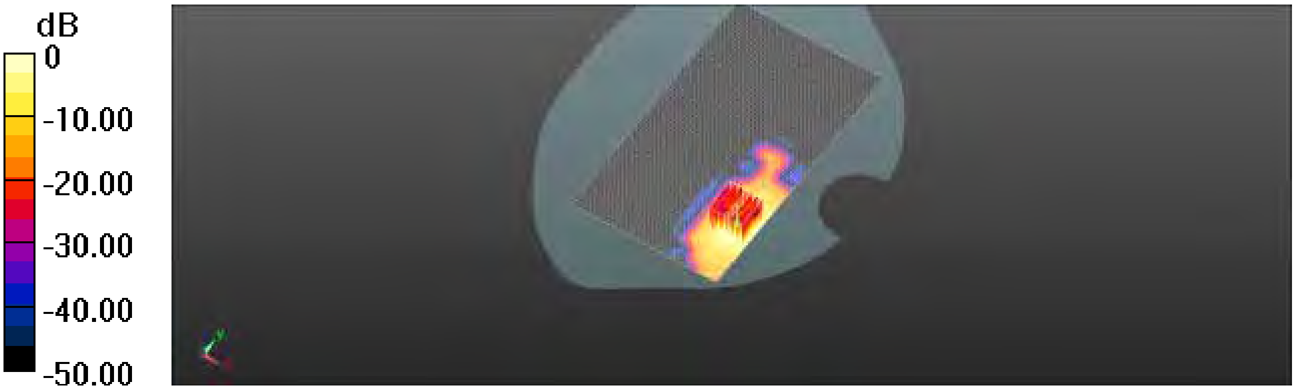
**WLAN 802.11a 5.8G_Body-worn_Back side_CH 149_Aux_10mm**
Communication System: WLAN 5G; Frequency: 5745 MHz
Medium parameters used: f = 5745 MHz; $\sigma$ = 6.209 S/m; $\varepsilon_r$ = 46.141; $\rho$ = 1000 kg/$m^3$
Phantom section: Flat Section

DASY5 Configuration:

- Probe: EX3DV4 - SN3770; ConvF(4.07, 4.07, 4.07); Calibrated: 2016/4/27;
- Sensor-Surface: 2mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn856; Calibrated: 2016/4/21
- Phantom: Head
- DASY52 52.8.8(1222); SEMCAD X 14.6.10(7331)

**Configuration/Head/Area Scan (111x191x1):** Interpolated grid: dx=10 mm, dy=10 mm
Maximum value of SAR (interpolated) = 1.11 W/kg

**Configuration/Head/Zoom Scan (7x7x12)/Cube 0:** Measurement grid: dx=4mm, dy=4mm, dz=2mm
Reference Value = 0.6170 V/m; Power Drift = 0.10 dB
Peak SAR (extrapolated) = 2.33 W/kg
**SAR(1 g) = 0.543 W/kg; SAR(10 g) = 0.176 W/kg**
Maximum value of SAR (measured) = 1.08 W/kg




0 dB = 1.08 W/kg = 0.33 dBW/kg

Date: 2016/5/6

**WLAN 802.11a 5.8G_Product specific 10-g SAR_Right side_CH 149_Aux_0mm**

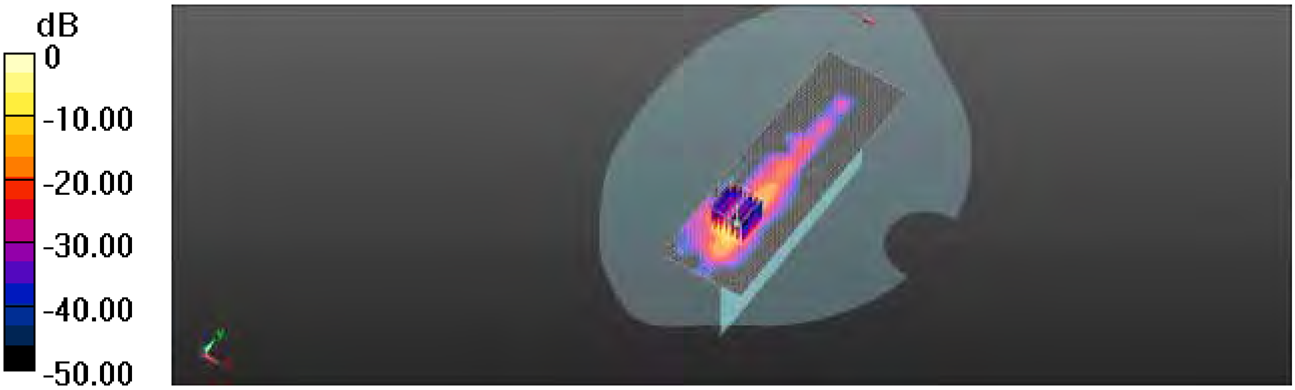
Communication System: WLAN 5G; Frequency: 5745 MHz
Medium parameters used: f = 5745 MHz; $\sigma = 6.209$ S/m; $\varepsilon_r = 46.141$; $\rho = 1000$ kg/m$^3$
Phantom section: Flat Section

DASY5 Configuration:

- Probe: EX3DV4 - SN3770; ConvF(4.07, 4.07, 4.07); Calibrated: 2016/4/27;
- Sensor-Surface: 2mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn856; Calibrated: 2016/4/21
- Phantom: Head
- DASY52 52.8.8(1222); SEMCAD X 14.6.10(7331)

**Configuration/Head/Area Scan (61x191x1):** Interpolated grid: dx=10 mm, dy=10 mm
Maximum value of SAR (interpolated) = 15.4 W/kg

**Configuration/Head/Zoom Scan (7x7x12)/Cube 0:** Measurement grid: dx=4mm, dy=4mm, dz=2mm
Reference Value = 5.949 V/m; Power Drift = 0.17 dB
Peak SAR (extrapolated) = 72.9 W/kg
**SAR(1 g) = 9.47 W/kg; SAR(10 g) = 1.59 W/kg**
Maximum value of SAR (measured) = 27.3 W/kg




0 dB = 27.3 W/kg = 14.36 dBW/kg

Date: 2016/5/9

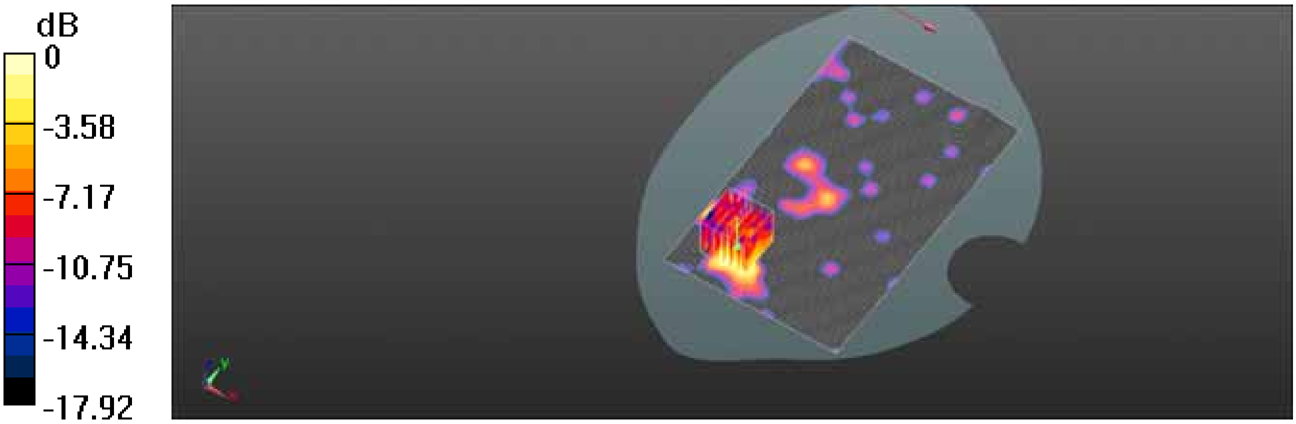
**Bluetooth_Body-worn_Back_CH 39**
Communication System: Bluetooth; Frequency: 2441 MHz
Medium parameters used: f = 2441 MHz; $\sigma$ = 1.989 S/m; $\varepsilon_r$ = 52.823; $\rho$ = 1000 $kg/m^3$
Phantom section: Flat Section

DASY5 Configuration:

- Probe: EX3DV4 - SN3770; ConvF(7.37, 7.37, 7.37); Calibrated: 2016/4/27;
- Sensor-Surface: 2mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn856; Calibrated: 2016/4/21
- Phantom: Head
- DASY52 52.8.8(1222); SEMCAD X 14.6.10(7331)

**Configuration/Head/Area Scan (101x161x1):** Interpolated grid: dx=12 mm, dy=12 mm
Maximum value of SAR (interpolated) = 0.0359 W/kg

**Configuration/Head/Zoom Scan (7x7x7)/Cube 0:** Measurement grid: dx=5mm, dy=5mm, dz=5mm
Reference Value = 5.688 V/m; Power Drift = 0.16 dB
Peak SAR (extrapolated) = 0.0200 W/kg
**SAR(1 g) = 0.012 W/kg; SAR(10 g) = 0.00691 W/kg**
Maximum value of SAR (measured) = 0.0158 W/kg




0 dB = 0.0158 W/kg = -18.01 dBW/kg



SGS Taiwan Ltd. No.134,Wu Kung Road, New Taipei Industrial Park, Wuku District, New Taipei City, Taiwan 24803/新北市五股區新北產業園區五工路134號
台灣檢驗科技股份有限公司 t (886-2) 2299-3279 f (886-2) 2298-0488 www.tw.sgs.com
Member of SGS Group

# 6. SAR System Performance Verification

Date: 2016/5/4

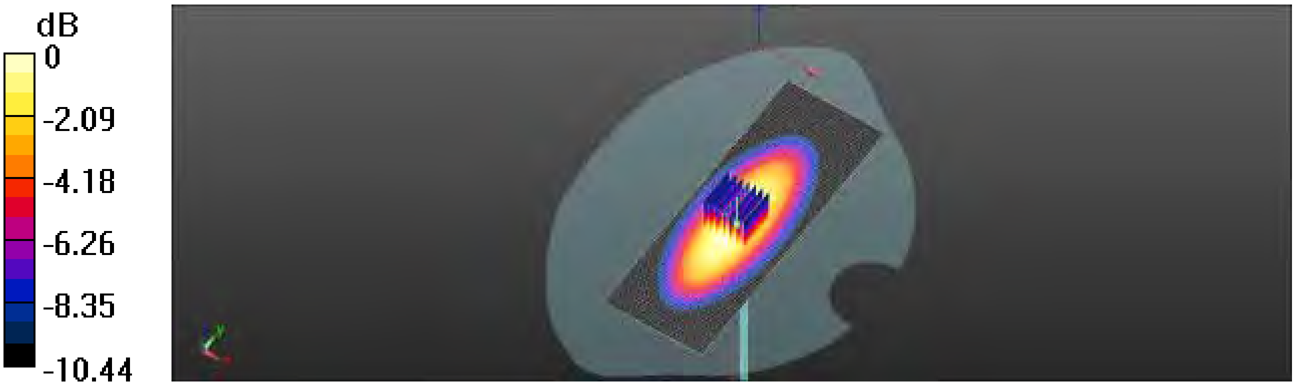
**Dipole 750 MHz_SN:1015_Body**
Communication System: CW; Frequency: 750 MHz
Medium parameters used: f = 750 MHz; $\sigma$ = 0.976 S/m; $\varepsilon_r$ = 56.475; $\rho$ = 1000 kg/$m^3$
Phantom section: Flat Section

DASY5 Configuration:

- Probe: EX3DV4 - SN7346; ConvF(10.11, 10.11, 10.11); Calibrated: 2015/9/2;
- Sensor-Surface: 2mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn916; Calibrated: 2015/12/16
- Phantom: Head
- DASY52 52.8.8(1222); SEMCAD X 14.6.10(7331)

**Configuration/Pin=250mW/Area Scan (51x141x1):** Interpolated grid: dx=15 mm, dy=15 mm
Maximum value of SAR (interpolated) = 2.60 W/kg

**Configuration/Pin=250mW/Zoom Scan (7x7x7)/Cube 0:** Measurement grid: dx=5mm, dy=5mm, dz=5mm
Reference Value = 53.23 V/m; Power Drift = 0.01 dB
Peak SAR (extrapolated) = 3.16 W/kg
**SAR(1 g) = 2.09 W/kg; SAR(10 g) = 1.37 W/kg**
Maximum value of SAR (measured) = 2.66 W/kg




0 dB = 2.66 W/kg = 4.25 dBW/kg

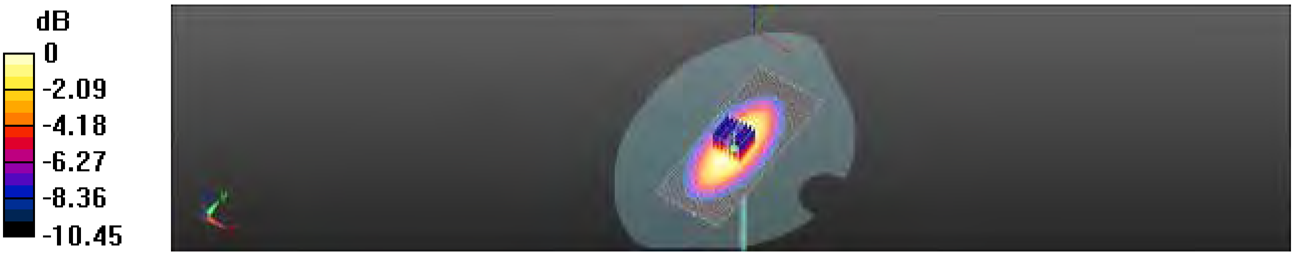
Date: 2016/5/8

**Dipole 835 MHz_SN:4d063_Head**
Communication System: CW; Frequency: 835 MHz
Medium parameters used: f = 835 MHz; $\sigma$ = 0.919 S/m; $\varepsilon_r$ = 40.894; $\rho$ = 1000 kg/m$^3$
Phantom section: Flat Section

DASY5 Configuration:
- Probe: EX3DV4 - SN7346; ConvF(9.8, 9.8, 9.8); Calibrated: 2015/09/02;
- Sensor-Surface: 2mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn916; Calibrated: 2015/12/16
- Phantom: Head
- DASY52 52.8.8(1222); SEMCAD X 14.6.10(7331)

**Configuration/Pin=250mW/Area Scan (51x121x1):** Interpolated grid: dx=15 mm, dy=15 mm
Maximum value of SAR (interpolated) = 3.09 W/kg

**Configuration/Pin=250mW/Zoom Scan (7x7x7)/Cube 0:** Measurement grid: dx=5mm, dy=5mm, dz=5mm
Reference Value = 60.13 V/m; Power Drift = -0.10 dB
Peak SAR (extrapolated) = 3.68 W/kg
**SAR(1 g) = 2.35 W/kg; SAR(10 g) = 1.56 W/kg**
Maximum value of SAR (measured) = 3.09 W/kg




0 dB = 3.09 W/kg = 4.89 dBW/kg


SGS Taiwan Ltd. No.134,Wu Kung Road, New Taipei Industrial Park, Wuku District, New Taipei City, Taiwan 24803/新北市五股區新北產業園區五工路134號
台灣檢驗科技股份有限公司 t (886-2) 2299-3279 f (886-2) 2298-0488 www.tw.sgs.com
Member of SGS Group

Date: 2016/5/3

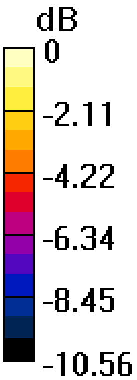
**Dipole 835 MHz_SN:4d063_Body**
Communication System: CW; Frequency: 835 MHz
Medium parameters used: f = 835 MHz; $\sigma$ = 1.018 S/m; $\varepsilon_r$ = 55.704; $\rho$ = 1000 kg/$m^3$
Phantom section: Flat Section

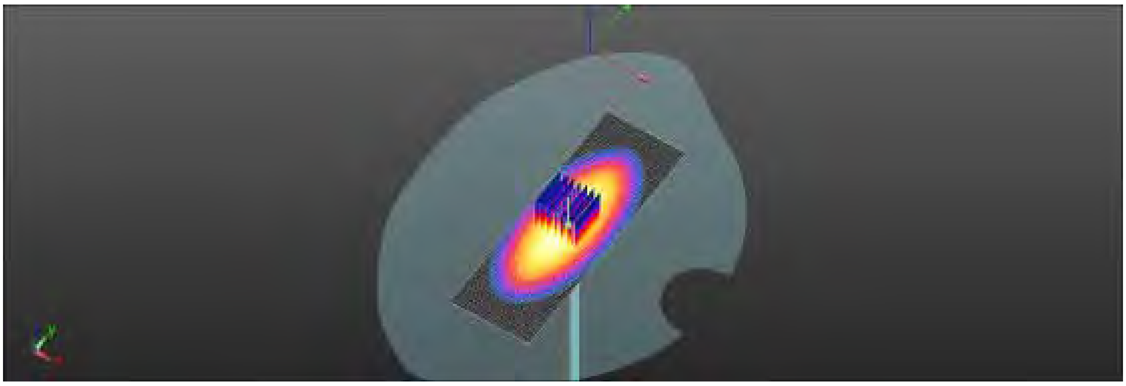
DASY5 Configuration:

- Probe: EX3DV4 - SN7346; ConvF(10.05, 10.05, 10.05); Calibrated: 2015/9/2;
- Sensor-Surface: 2mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn916; Calibrated: 2015/12/16
- Phantom: Head
- DASY52 52.8.8(1222); SEMCAD X 14.6.10(7331)

**Configuration/Pin=250mW/Area Scan (41x121x1):** Interpolated grid: dx=15 mm, dy=15 mm
Maximum value of SAR (interpolated) = 3.18 W/kg

**Configuration/Pin=250mW/Zoom Scan (7x7x7)/Cube 0:** Measurement grid: dx=5mm, dy=5mm, dz=5mm
Reference Value = 57.03 V/m; Power Drift = -0.00 dB
Peak SAR (extrapolated) = 3.72 W/kg
**SAR(1 g) = 2.4 W/kg; SAR(10 g) = 1.63 W/kg**
Maximum value of SAR (measured) = 3.17 W/kg



0 dB = 3.17 W/kg = 5.01 dBW/kg

Date: 2016/5/7

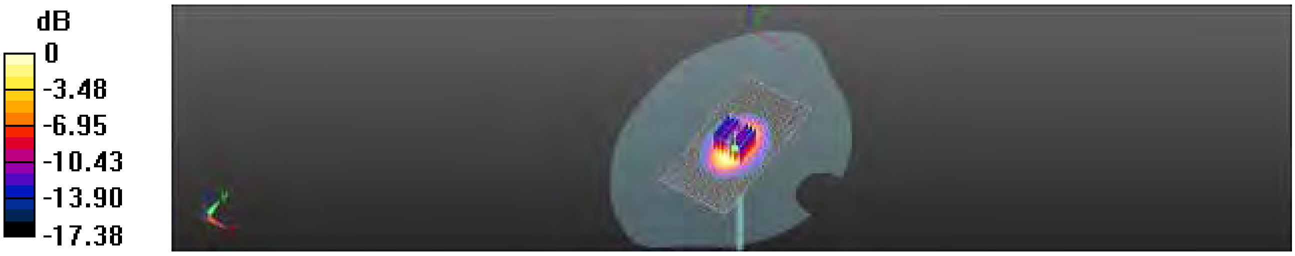
**Dipole 1750 MHz_SN:1008_Head**
Communication System: CW; Frequency: 1750 MHz
Medium parameters used: f = 1750 MHz; $\sigma$ = 1.377 S/m; $\varepsilon_r$ = 39.277; $\rho$ = 1000 kg/m$^3$
Phantom section: Flat Section

DASY5 Configuration:

- Probe: EX3DV4 - SN7346; ConvF(8.6, 8.6, 8.6); Calibrated: 2015/09/02;
- Sensor-Surface: 2mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn916; Calibrated: 2015/12/16
- Phantom: Head
- DASY52 52.8.8(1222); SEMCAD X 14.6.10(7331)

**Configuration/Pin=250mW/Area Scan (51x101x1):** Interpolated grid: dx=15 mm, dy=15 mm
Maximum value of SAR (interpolated) = 12.9 W/kg

**Configuration/Pin=250mW/Zoom Scan (7x7x7)/Cube 0:** Measurement grid: dx=5mm, dy=5mm, dz=5mm
Reference Value = 97.20 V/m; Power Drift = -0.05 dB
Peak SAR (extrapolated) = 16.2 W/kg
**SAR(1 g) = 9.34 W/kg; SAR(10 g) = 4.86 W/kg**
Maximum value of SAR (measured) = 12.5 W/kg




0 dB = 12.5 W/kg = 10.97 dBW/kg

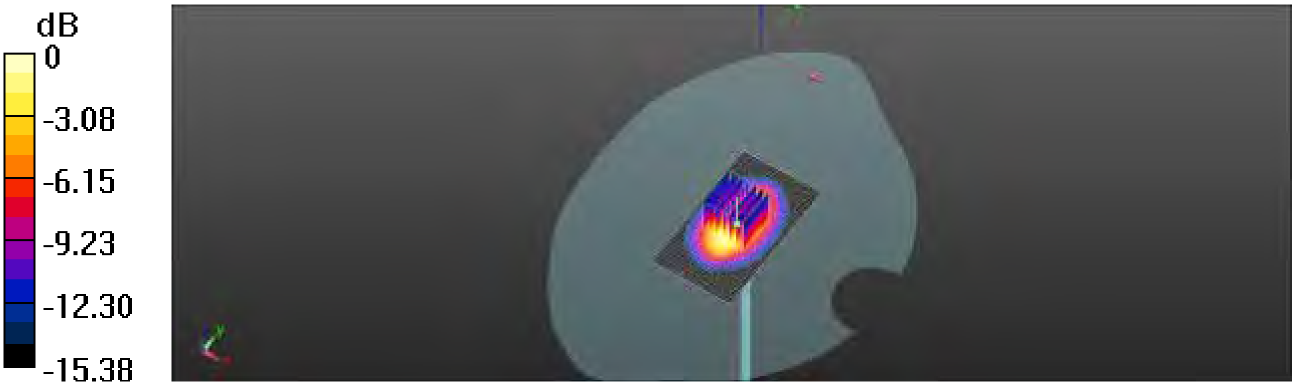
Date: 2016/4/28

**Dipole 1750 MHz_SN:1008_Body**
Communication System: CW; Frequency: 1750 MHz
Medium parameters used: f = 1750 MHz; $\sigma$ = 1.438 S/m; $\varepsilon_r$ = 54.169; $\rho$ = 1000 kg/$m^3$
Phantom section: Flat Section

DASY5 Configuration:
- Probe: EX3DV4 - SN7346; ConvF(8.06, 8.06, 8.06); Calibrated: 2015/9/2;
- Sensor-Surface: 2mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn916; Calibrated: 2015/12/16
- Phantom: Head
- DASY52 52.8.8(1222); SEMCAD X 14.6.10(7331)

**Configuration/Pin=250mW/Area Scan (41x41x1):** Interpolated grid: dx=15 mm, dy=15 mm
Maximum value of SAR (interpolated) = 13.3 W/kg

**Configuration/Pin=250mW/Zoom Scan (7x7x7)/Cube 0:** Measurement grid: dx=5mm, dy=5mm, dz=5mm
Reference Value = 81.69 V/m; Power Drift = -0.01 dB
Peak SAR (extrapolated) = 16.8 W/kg
**SAR(1 g) = 9.3 W/kg; SAR(10 g) = 4.93 W/kg**
Maximum value of SAR (measured) = 13.3 W/kg




0 dB = 9.66 W/kg = 9.85 dBW/kg

Date: 2016/5/2

**Dipole 1900 MHz_SN:5d027_Head**

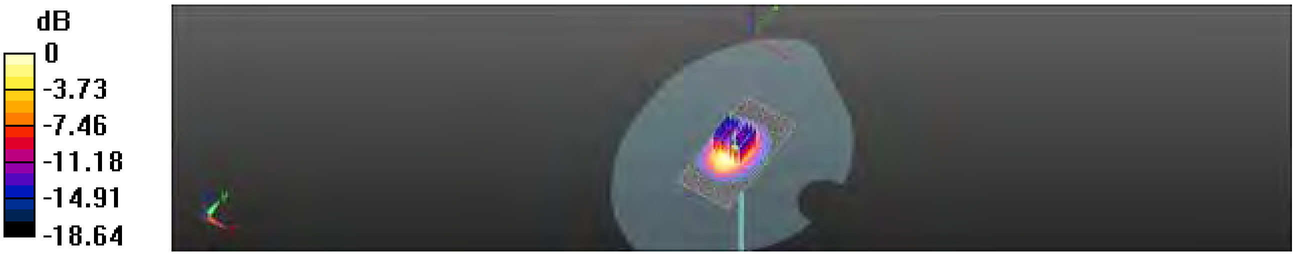
Communication System: CW; Frequency: 1900 MHz
Medium parameters used: f = 1900 MHz; σ = 1.419 S/m; $\varepsilon_r$ = 38.968; ρ = 1000 kg/$m^3$
Phantom section: Flat Section

DASY5 Configuration:

- Probe: EX3DV4 - SN7346; ConvF(8.33, 8.33, 8.33); Calibrated: 2015/09/02;
- Sensor-Surface: 2mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn916; Calibrated: 2015/12/16
- Phantom: Head
- DASY52 52.8.8(1222); SEMCAD X 14.6.10(7331)

**Configuration/Pin=250mW/Area Scan (41x81x1):** Interpolated grid: dx=15 mm, dy=15 mm
Maximum value of SAR (interpolated) = 14.9 W/kg

**Configuration/Pin=250mW/Zoom Scan (7x7x7)/Cube 0:** Measurement grid: dx=5mm, dy=5mm, dz=5mm
Reference Value = 93.11 V/m; Power Drift = 0.11 dB
Peak SAR (extrapolated) = 19.2 W/kg
**SAR(1 g) = 10 W/kg; SAR(10 g) = 5.23 W/kg**
Maximum value of SAR (measured) = 14.6 W/kg




0 dB = 14.6 W/kg = 11.65 dBW/kg

Date: 2016/4/27

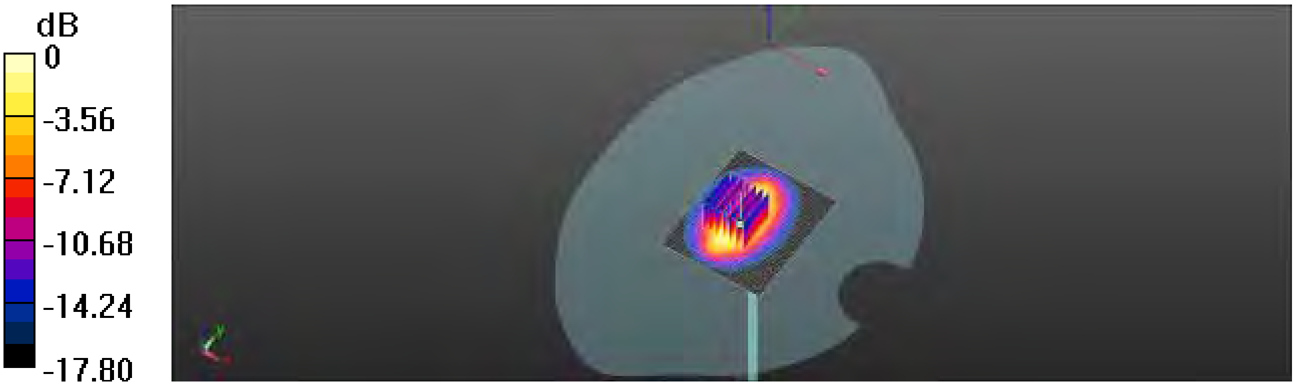
**Dipole 1900 MHz_SN:5d027_Body**
Communication System: CW; Frequency: 1900 MHz
Medium parameters used: f = 1900 MHz; $\sigma$ = 1.559 S/m; $\varepsilon_r$ = 53.728; $\rho$ = 1000 kg/m$^3$
Phantom section: Flat Section

DASY5 Configuration:

- Probe: EX3DV4 - SN7346; ConvF(7.77, 7.77, 7.77); Calibrated: 2015/9/2;
- Sensor-Surface: 2mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn916; Calibrated: 2015/12/16
- Phantom: Head
- DASY52 52.8.8(1222); SEMCAD X 14.6.10(7331)

**Configuration/Pin=250mW/Area Scan (41x41x1):** Interpolated grid: dx=15 mm, dy=15 mm
Maximum value of SAR (interpolated) = 14.0 W/kg

**Configuration/Pin=250mW/Zoom Scan (7x7x7)/Cube 0:** Measurement grid: dx=5mm, dy=5mm, dz=5mm
Reference Value = 94.61 V/m; Power Drift = -0.15 dB
Peak SAR (extrapolated) = 17.7 W/kg
**SAR(1 g) = 9.53 W/kg; SAR(10 g) = 4.96 W/kg**
Maximum value of SAR (measured) = 13.7 W/kg




0 dB = 13.7 W/kg = 11.37 dBW/kg

Date: 2016/4/30

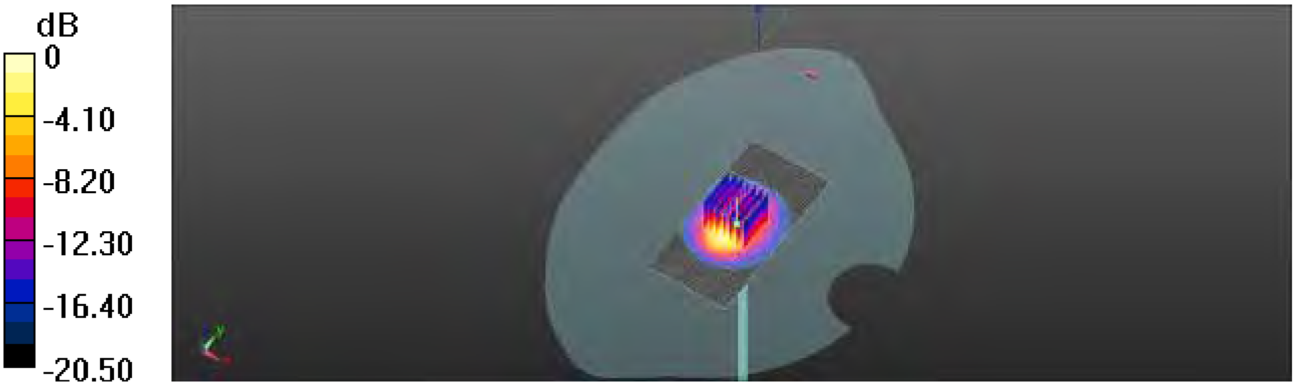
**Dipole 2300 MHz_SN:1023_Body**
Communication System: CW; Frequency: 2300 MHz
Medium parameters used: f = 2300 MHz; $\sigma$ = 1.848 S/m; $\varepsilon_r$ = 52.505; $\rho$ = 1000 kg/$m^3$
Phantom section: Flat Section

DASY5 Configuration:

- Probe: EX3DV4 - SN7346; ConvF(7.57, 7.57, 7.57); Calibrated: 2015/9/2;
- Sensor-Surface: 2mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn916; Calibrated: 2015/12/16
- Phantom: Head
- DASY52 52.8.8(1222); SEMCAD X 14.6.10(7331)

**Configuration/Pin=250mW/Area Scan (51x101x1):** Interpolated grid: dx=12 mm, dy=12 mm
Maximum value of SAR (interpolated) = 17.8 W/kg

**Configuration/Pin=250mW/Zoom Scan (7x7x7)/Cube 0:** Measurement grid: dx=5mm, dy=5mm, dz=5mm
Reference Value = 99.11 V/m; Power Drift = -0.03 dB
Peak SAR (extrapolated) = 23.2 W/kg
**SAR(1 g) = 11.7 W/kg; SAR(10 g) = 5.59 W/kg**
Maximum value of SAR (measured) = 17.4 W/kg




0 dB = 17.4 W/kg = 12.41 dBW/kg

ate: 2016/5/9

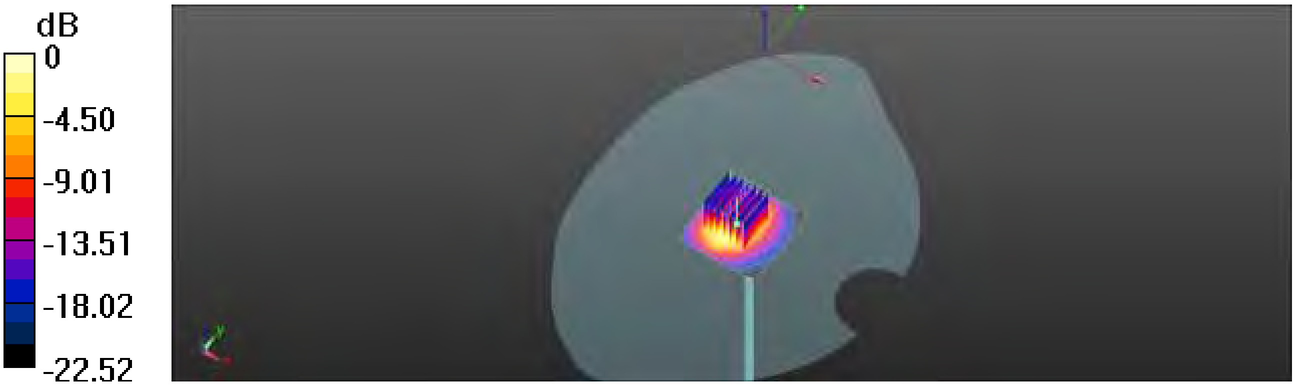
**Dipole 2450 MHz_SN:727_Head**
Communication System: CW; Frequency: 2450 MHz
Medium parameters used: f = 2450 MHz; $\sigma$ = 1.884 S/m; $\varepsilon_r$ = 38.097; $\rho$ = 1000 kg/m$^3$
Phantom section: Flat Section

DASY5 Configuration:

- Probe: EX3DV4 - SN3770; ConvF(7.12, 7.12, 7.12); Calibrated: 2016/4/27;
- Sensor-Surface: 2mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn856; Calibrated: 2016/4/21
- Phantom: Head
- DASY52 52.8.8(1222); SEMCAD X 14.6.10(7331)

**Configuration/Pin=250mW/Area Scan (51x51x1):** Interpolated grid: dx=12 mm, dy=12 mm
Maximum value of SAR (interpolated) = 21.5 W/kg

**Configuration/Pin=250mW/Zoom Scan (7x7x7)/Cube 0:** Measurement grid: dx=5mm, dy=5mm, dz=5mm
Reference Value = 95.50 V/m; Power Drift = 0.02 dB
Peak SAR (extrapolated) = 27.5 W/kg
**SAR(1 g) = 13.2 W/kg; SAR(10 g) = 6.09 W/kg**
Maximum value of SAR (measured) = 20.4 W/kg




0 dB = 20.4 W/kg = 13.10 dBW/kg

Date: 2016/5/9

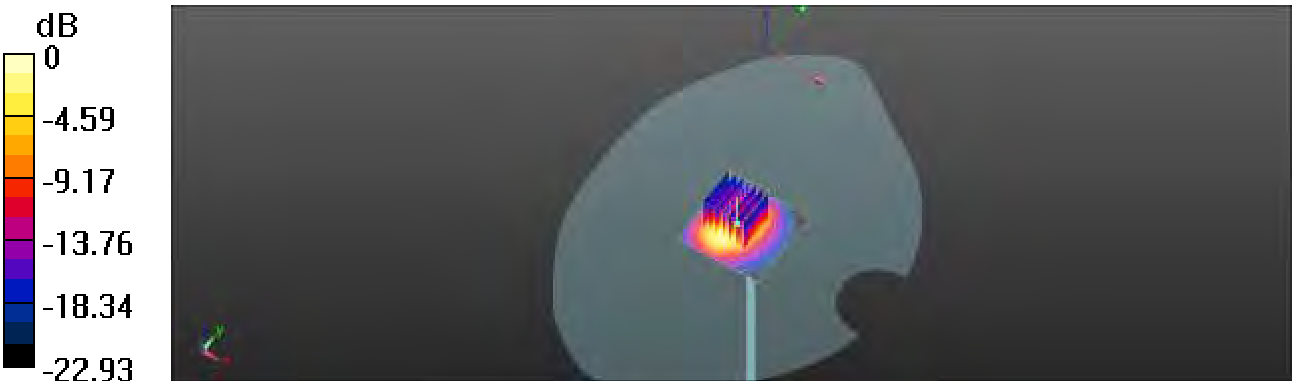
**Dipole 2450 MHz_SN:727_Body**
Communication System: CW; Frequency: 2450 MHz
Medium parameters used: f = 2450 MHz; $\sigma$ = 2.003 S/m; $\varepsilon_r$ = 52.82; $\rho$ = 1000 kg/$m^3$
Phantom section: Flat Section

DASY5 Configuration:

- Probe: EX3DV4 - SN3770; ConvF(7.37, 7.37, 7.37); Calibrated: 2016/4/27;
- Sensor-Surface: 2mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn856; Calibrated: 2016/4/21
- Phantom: Head
- DASY52 52.8.8(1222); SEMCAD X 14.6.10(7331)

**Configuration/Pin=250mW/Area Scan (51x51x1):** Interpolated grid: dx=12 mm, dy=12 mm
Maximum value of SAR (interpolated) = 21.8 W/kg

**Configuration/Pin=250mW/Zoom Scan (7x7x7)/Cube 0:** Measurement grid: dx=5mm, dy=5mm, dz=5mm
Reference Value = 87.20 V/m; Power Drift = -0.06 dB
Peak SAR (extrapolated) = 28.2 W/kg
**SAR(1 g) = 13.2 W/kg; SAR(10 g) = 5.95 W/kg**
Maximum value of SAR (measured) = 20.6 W/kg




0 dB = 20.6 W/kg = 13.14 dBW/kg


SGS Taiwan Ltd. No.134,Wu Kung Road, New Taipei Industrial Park, Wuku District, New Taipei City, Taiwan 24803/新北市五股區新北產業園區五工路134號
台灣檢驗科技股份有限公司 t (886-2) 2299-3279 f (886-2) 2298-0488 www.tw.sgs.com
Member of SGS Group

Date: 2016/4/29

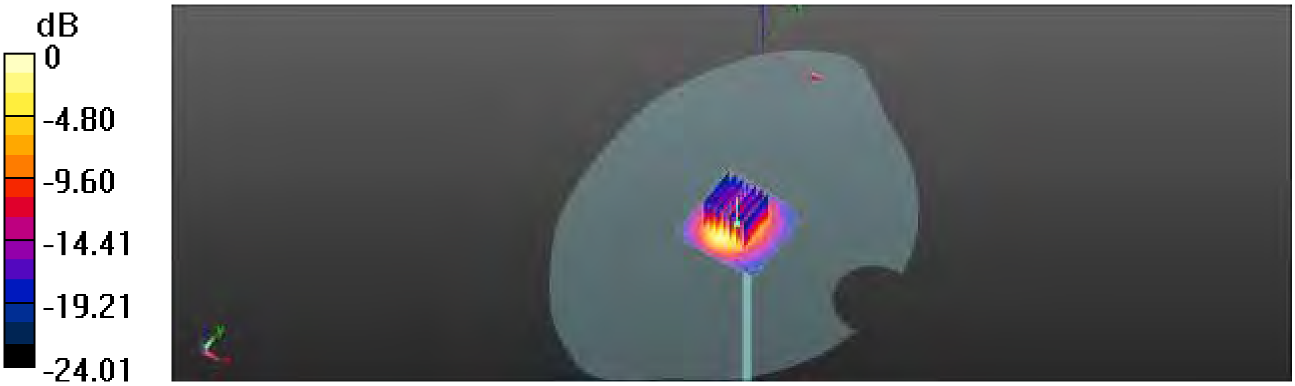
**Dipole 2600 MHz_SN:1005_Body**
Communication System: CW; Frequency: 2600 MHz
Medium parameters used: f = 2600 MHz; $\sigma$ = 2.24 S/m; $\varepsilon_r$ = 51.705; $\rho$ = 1000 kg/m$^3$
Phantom section: Flat Section

DASY5 Configuration:

- Probe: EX3DV4 - SN7346; ConvF(7.29, 7.29, 7.29); Calibrated: 2015/9/2;
- Sensor-Surface: 2mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn916; Calibrated: 2015/12/16
- Phantom: Head
- DASY52 52.8.8(1222); SEMCAD X 14.6.10(7331)

**Configuration/Pin=250mW/Area Scan (51x51x1):** Interpolated grid: dx=12 mm, dy=12 mm
Maximum value of SAR (interpolated) = 23.3 W/kg

**Configuration/Pin=250mW/Zoom Scan (7x7x7)/Cube 0:** Measurement grid: dx=5mm, dy=5mm, dz=5mm
Reference Value = 97.52 V/m; Power Drift = -0.07 dB
Peak SAR (extrapolated) = 30.8 W/kg
**SAR(1 g) = 13.8 W/kg; SAR(10 g) = 6 W/kg**
Maximum value of SAR (measured) = 22.0 W/kg




0 dB = 22.0 W/kg = 13.42 dBW/kg

Date: 2016/5/10

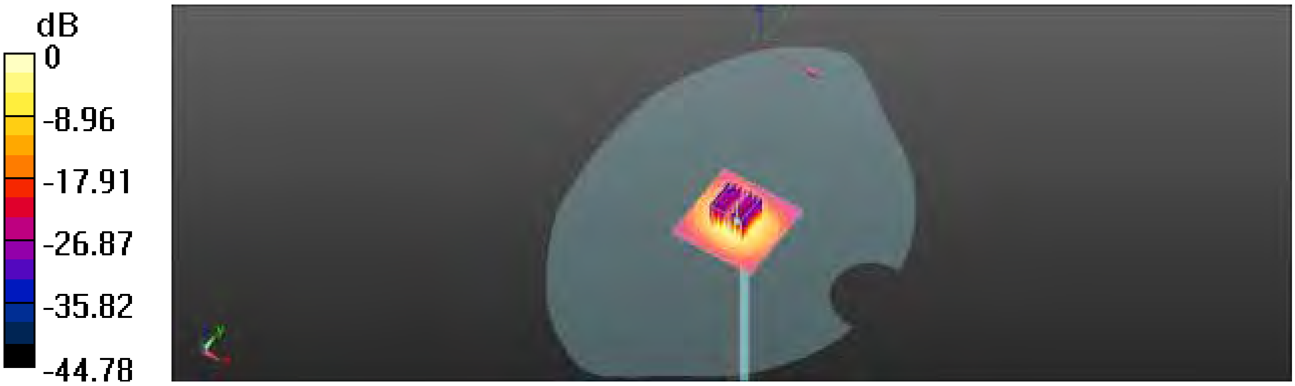
**Dipole 5200 MHz_SN:1023_Head**
Communication System: CW; Frequency: 5200 MHz
Medium parameters used: f = 5200 MHz; $\sigma$ = 4.645 S/m; $\varepsilon_r$ = 36.445; $\rho$ = 1000 kg/$m^3$
Phantom section: Flat Section

DASY5 Configuration:

- Probe: EX3DV4 - SN3770; ConvF(5.03, 5.03, 5.03); Calibrated: 2016/4/27;
- Sensor-Surface: 2mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn856; Calibrated: 2016/4/21
- Phantom: Head
- DASY52 52.8.8(1222); SEMCAD X 14.6.10(7331)

**Configuration/Pin=100mW/Area Scan (61x61x1):** Interpolated grid: dx=10 mm, dy=10 mm
Maximum value of SAR (interpolated) = 16.0 W/kg

**Configuration/Pin=100mW/Zoom Scan (7x7x12)/Cube 0:** Measurement grid: dx=4mm, dy=4mm, dz=2mm
Reference Value = 62.00 V/m; Power Drift = -0.06 dB
Peak SAR (extrapolated) = 34.9 W/kg
**SAR(1 g) = 7.59 W/kg; SAR(10 g) = 2.13 W/kg**
Maximum value of SAR (measured) = 16.2 W/kg




0 dB = 16.2 W/kg = 12.10 dBW/kg


SGS Taiwan Ltd. No.134,Wu Kung Road, New Taipei Industrial Park, Wuku District, New Taipei City, Taiwan 24803/新北市五股區新北產業園區五工路134號
台灣檢驗科技股份有限公司 t (886-2) 2299-3279 f (886-2) 2298-0488 www.tw.sgs.com
Member of SGS Group

Date: 2016/5/5

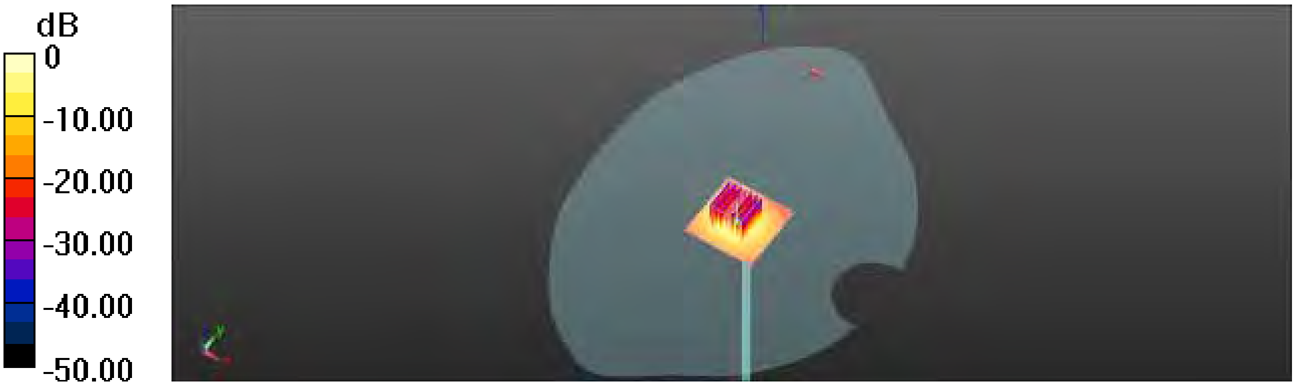
**Dipole 5200 MHz_SN:1023_Body**
Communication System: CW; Frequency: 5200 MHz
Medium parameters used: f = 5200 MHz; $\sigma$ = 5.459 S/m; $\varepsilon_r$ = 47.922; $\rho$ = 1000 kg/m$^3$
Phantom section: Flat Section

DASY5 Configuration:

- Probe: EX3DV4 - SN3770; ConvF(4.34, 4.34, 4.34); Calibrated: 2016/4/27;
- Sensor-Surface: 2mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn856; Calibrated: 2016/4/21
- Phantom: Head
- DASY52 52.8.8(1222); SEMCAD X 14.6.10(7331)

**Configuration/Pin=100mW/Area Scan (51x51x1):** Interpolated grid: dx=10 mm, dy=10 mm
Maximum value of SAR (interpolated) = 16.3 W/kg

**Configuration/Pin=100mW/Zoom Scan (7x7x12)/Cube 0:** Measurement grid: dx=4mm, dy=4mm, dz=2mm
Reference Value = 56.71 V/m; Power Drift = -0.13 dB
Peak SAR (extrapolated) = 25.6 W/kg
**SAR(1 g) = 7.59 W/kg; SAR(10 g) = 2.24 W/kg**
Maximum value of SAR (measured) = 14.8 W/kg




0 dB = 14.8 W/kg = 11.70 dBW/kg

Date: 2016/5/11

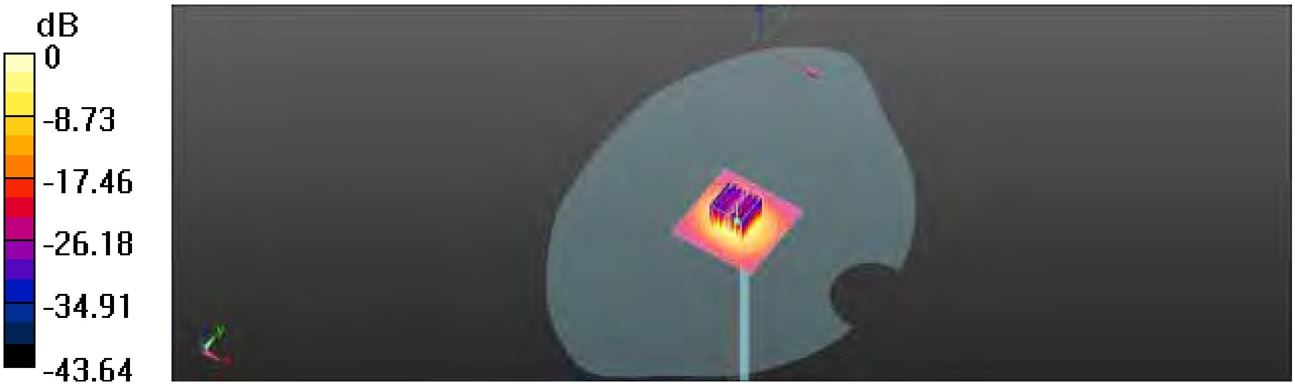
**Dipole 5300 MHz_SN:1023_Head**
Communication System: CW; Frequency: 5300 MHz
Medium parameters used: f = 5300 MHz; $\sigma$ = 4.768 S/m; $\varepsilon_r$ = 36.145; $\rho$ = 1000 kg/$m^3$
Phantom section: Flat Section

DASY5 Configuration:

- Probe: EX3DV4 - SN3770; ConvF(5.03, 5.03, 5.03); Calibrated: 2016/4/27;
- Sensor-Surface: 2mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn856; Calibrated: 2016/4/21
- Phantom: Head
- DASY52 52.8.8(1222); SEMCAD X 14.6.10(7331)

**Configuration/Pin=100mW/Area Scan (61x61x1):** Interpolated grid: dx=10 mm, dy=10 mm
Maximum value of SAR (interpolated) = 16.8 W/kg

**Configuration/Pin=100mW/Zoom Scan (7x7x12)/Cube 0:** Measurement grid: dx=4mm, dy=4mm, dz=2mm
Reference Value = 62.56 V/m; Power Drift = -0.07 dB
Peak SAR (extrapolated) = 37.4 W/kg
**SAR(1 g) = 7.9 W/kg; SAR(10 g) = 2.19 W/kg**
Maximum value of SAR (measured) = 16.8 W/kg




0 dB = 16.8 W/kg = 12.25 dBW/kg

Date: 2016/5/5

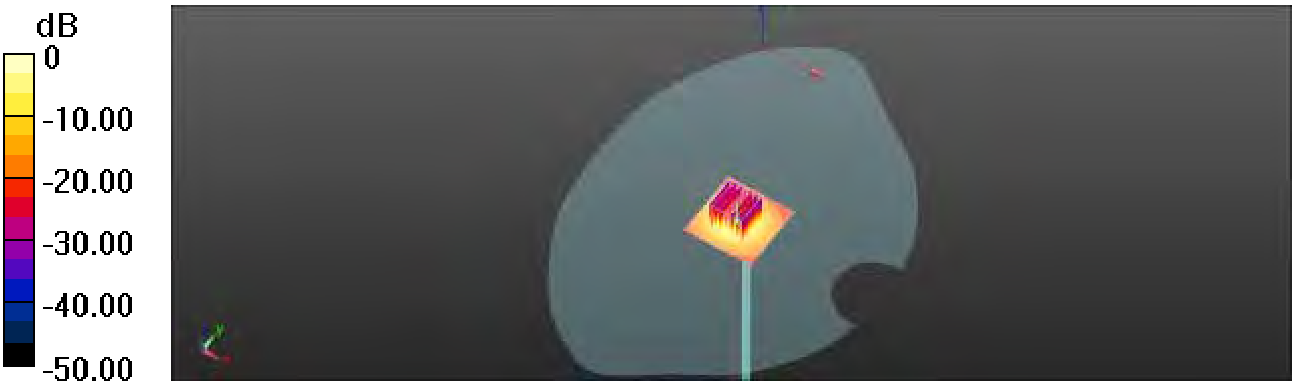
**Dipole 5300 MHz_SN:1023_Body**
Communication System: CW; Frequency: 5300 MHz
Medium parameters used: f = 5300 MHz; σ = 5.609 S/m; $\varepsilon_r$ = 47.578; ρ = 1000 kg/$m^3$
Phantom section: Flat Section

DASY5 Configuration:

- Probe: EX3DV4 - SN3770; ConvF(4.34, 4.34, 4.34); Calibrated: 2016/4/27;
- Sensor-Surface: 2mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn856; Calibrated: 2016/4/21
- Phantom: Head
- DASY52 52.8.8(1222); SEMCAD X 14.6.10(7331)

**Configuration/Pin=100mW/Area Scan (51x51x1):** Interpolated grid: dx=10 mm, dy=10 mm
Maximum value of SAR (interpolated) = 16.4 W/kg

**Configuration/Pin=100mW/Zoom Scan (7x7x12)/Cube 0:** Measurement grid: dx=4mm, dy=4mm, dz=2mm
Reference Value = 55.36 V/m; Power Drift = -0.07 dB
Peak SAR (extrapolated) = 36.7 W/kg
**SAR(1 g) = 7.8 W/kg; SAR(10 g) = 2.14 W/kg**
Maximum value of SAR (measured) = 16.6 W/kg




0 dB = 16.6 W/kg = 12.20 dBW/kg

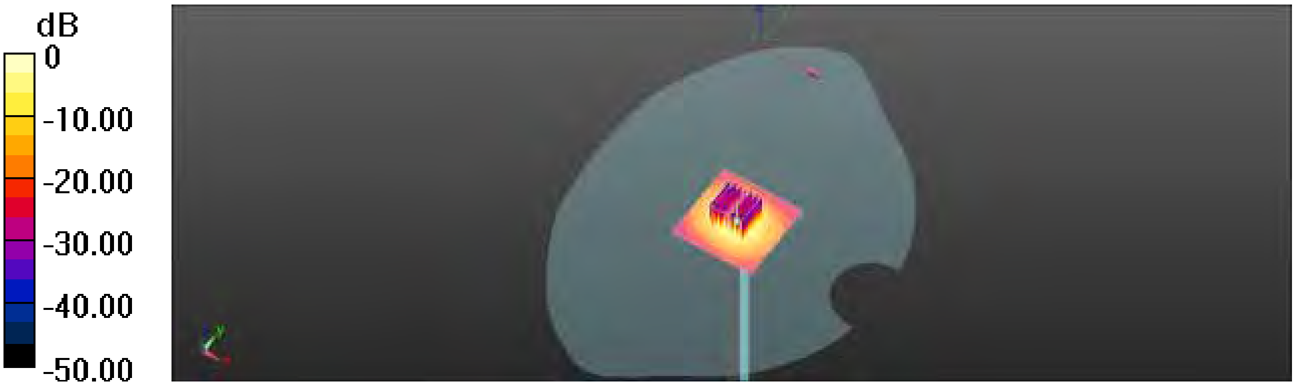
Date: 2016/5/12

**Dipole 5600 MHz_SN:1023_Head**
Communication System: CW; Frequency: 5600 MHz
Medium parameters used: f = 5600 MHz; $\sigma$ = 5.154 S/m; $\varepsilon_r$ = 35.276; $\rho$ = 1000 kg/m$^3$
Phantom section: Flat Section

DASY5 Configuration:
- Probe: EX3DV4 - SN3770; ConvF(4.42, 4.42, 4.42); Calibrated: 2016/4/27;
- Sensor-Surface: 2mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn856; Calibrated: 2016/4/21
- Phantom: Head
- DASY52 52.8.8(1222); SEMCAD X 14.6.10(7331)

**Configuration/Pin=100mW/Area Scan (61x61x1):** Interpolated grid: dx=10 mm, dy=10 mm
Maximum value of SAR (interpolated) = 18.6 W/kg

**Configuration/Pin=100mW/Zoom Scan (7x7x12)/Cube 0:** Measurement grid: dx=4mm, dy=4mm, dz=2mm
Reference Value = 64.41 V/m; Power Drift = -0.16 dB
Peak SAR (extrapolated) = 42.1 W/kg
**SAR(1 g) = 8.43 W/kg; SAR(10 g) = 2.34 W/kg**
Maximum value of SAR (measured) = 18.2 W/kg




0 dB = 18.2 W/kg = 12.60 dBW/kg

Date: 2016/5/6

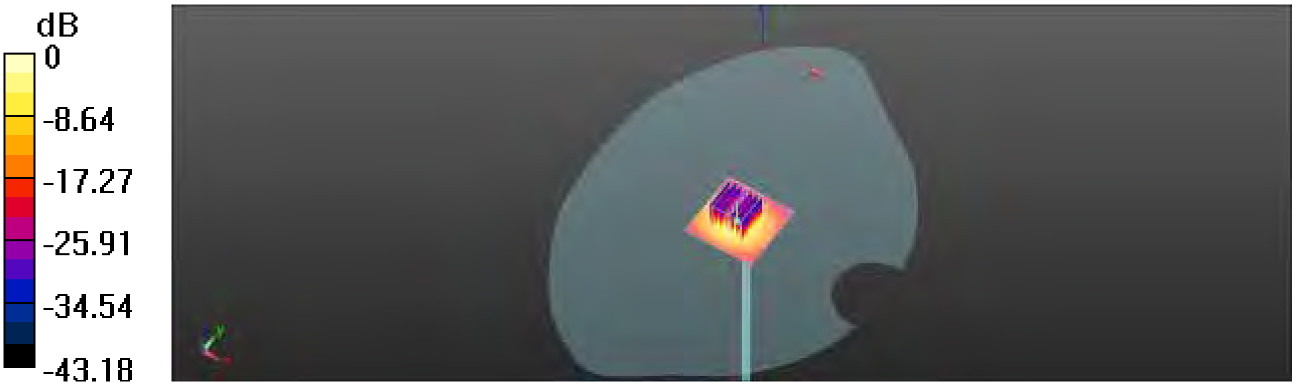
**Dipole 5600 MHz_SN:1023_Body**
Communication System: CW; Frequency: 5600 MHz
Medium parameters used: f = 5600 MHz; $\sigma$ = 6.008 S/m; $\varepsilon_r$ = 46.572; $\rho$ = 1000 kg/$m^3$
Phantom section: Flat Section

DASY5 Configuration:

- Probe: EX3DV4 - SN3770; ConvF(3.7, 3.7, 3.7); Calibrated: 2016/4/27;
- Sensor-Surface: 2mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn856; Calibrated: 2016/4/21
- Phantom: Head
- DASY52 52.8.8(1222); SEMCAD X 14.6.10(7331)

**Configuration/Pin=100mW/Area Scan (51x51x1):** Interpolated grid: dx=10 mm, dy=10 mm
Maximum value of SAR (interpolated) = 17.0 W/kg

**Configuration/Pin=100mW/Zoom Scan (7x7x12)/Cube 0:** Measurement grid: dx=4mm, dy=4mm, dz=2mm
Reference Value = 55.18 V/m; Power Drift = -0.12 dB
Peak SAR (extrapolated) = 33.3 W/kg
**SAR(1 g) = 8.25 W/kg; SAR(10 g) = 2.38 W/kg**
Maximum value of SAR (measured) = 16.5 W/kg




0 dB = 16.5 W/kg = 12.17 dBW/kg

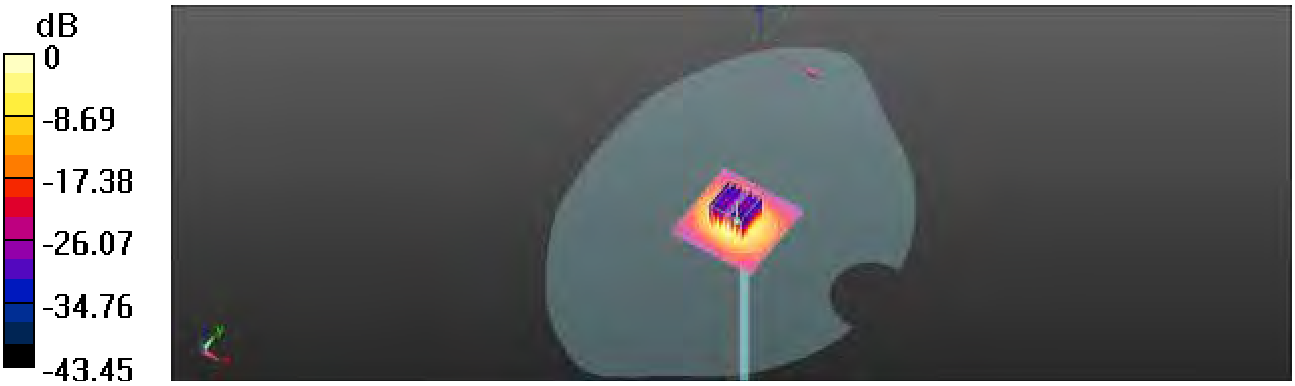
Date: 2016/5/13

**Dipole 5800 MHz_SN:1023_Head**
Communication System: CW; Frequency: 5800 MHz
Medium parameters used: f = 5800 MHz; $\sigma$ = 5.398 S/m; $\varepsilon_r$ = 34.7; $\rho$ = 1000 kg/$m^3$
Phantom section: Flat Section

DASY5 Configuration:
- Probe: EX3DV4 - SN3770; ConvF(4.83, 4.83, 4.83); Calibrated: 2016/4/27;
- Sensor-Surface: 2mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn856; Calibrated: 2016/4/21
- Phantom: Head
- DASY52 52.8.8(1222); SEMCAD X 14.6.10(7331)

**Configuration/Pin=100mW/Area Scan (61x61x1):** Interpolated grid: dx=10 mm, dy=10 mm
Maximum value of SAR (interpolated) = 16.1 W/kg

**Configuration/Pin=100mW/Zoom Scan (7x7x12)/Cube 0:** Measurement grid: dx=4mm, dy=4mm, dz=2mm
Reference Value = 58.83 V/m; Power Drift = -0.02 dB
Peak SAR (extrapolated) = 38.2 W/kg
**SAR(1 g) = 7.51 W/kg; SAR(10 g) = 2.08 W/kg**
Maximum value of SAR (measured) = 16.1 W/kg




0 dB = 16.1 W/kg = 12.07 dBW/kg

Date: 2016/5/6

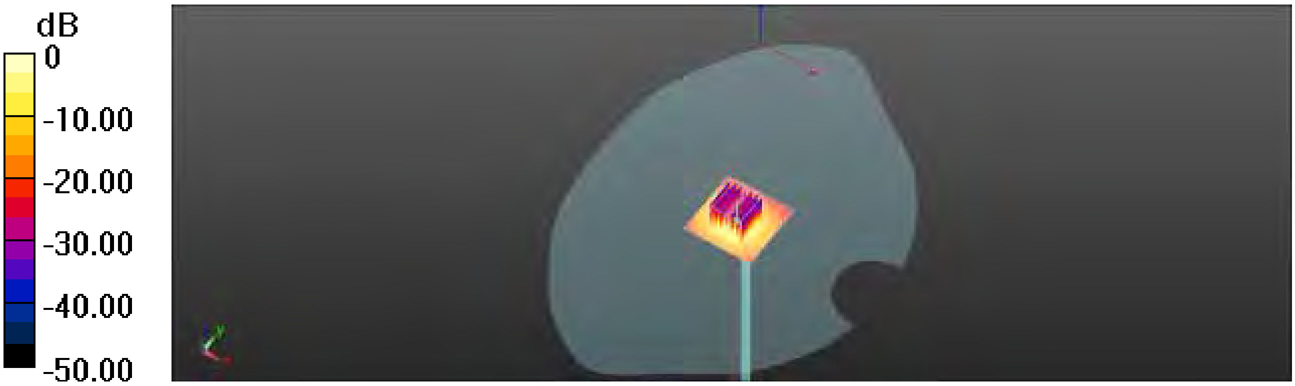
**Dipole 5800 MHz_SN:1023_Body**
Communication System: CW; Frequency: 5800 MHz
Medium parameters used: f = 5800 MHz; $\sigma$ = 6.145 S/m; $\varepsilon_r$ = 46.155; $\rho$ = 1000 kg/m$^3$
Phantom section: Flat Section

DASY5 Configuration:

- Probe: EX3DV4 - SN3770; ConvF(4.07, 4.07, 4.07); Calibrated: 2016/4/27;
- Sensor-Surface: 2mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn856; Calibrated: 2016/4/21
- Phantom: Head
- DASY52 52.8.8(1222); SEMCAD X 14.6.10(7331)

**Configuration/Pin=100mW/Area Scan (51x51x1):** Interpolated grid: dx=10 mm, dy=10 mm
Maximum value of SAR (interpolated) = 16.9 W/kg

**Configuration/Pin=100mW/Zoom Scan (7x7x12)/Cube 0:** Measurement grid: dx=4mm, dy=4mm, dz=2mm
Reference Value = 55.43 V/m; Power Drift = 0.03 dB
Peak SAR (extrapolated) = 36.5 W/kg
**SAR(1 g) = 7.87 W/kg; SAR(10 g) = 2.15 W/kg**
Maximum value of SAR (measured) = 17.1 W/kg




0 dB = 17.1 W/kg = 12.33 dBW/kg

Date: 2017/2/15

**Dipole 750 MHz_SN:1015_Body**

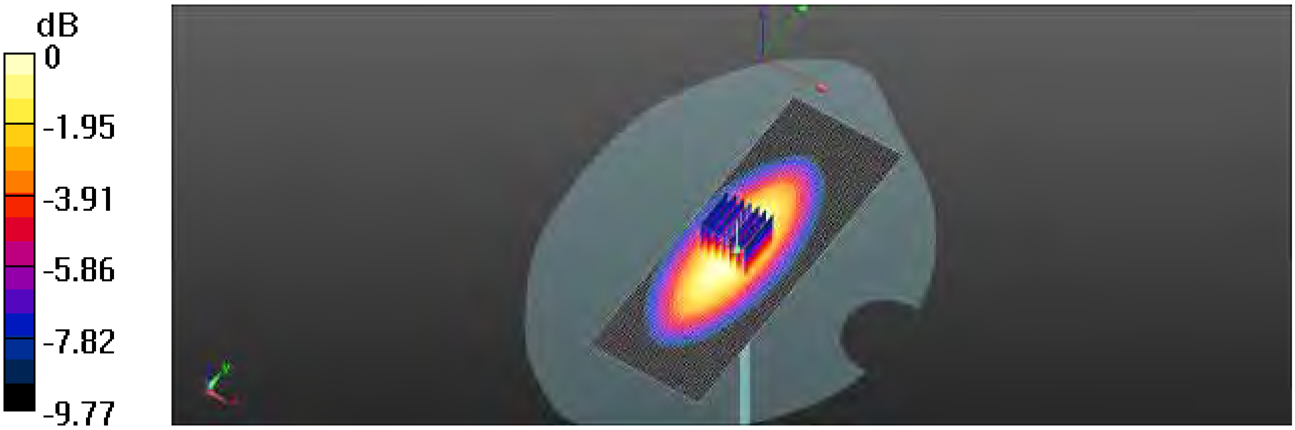
Communication System: CW; Frequency: 750 MHz;
Medium parameters used: f = 750 MHz; $\sigma$ = 0.975 S/m; $\varepsilon_r$ = 57.335; $\rho$ = 1000 kg/m$^3$
Phantom section: Flat Section

DASY5 Configuration:

- Probe: EX3DV4 - SN3770; ConvF(9.43, 9.43, 9.43); Calibrated: 2016/4/27;
- Sensor-Surface: 2mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn856; Calibrated: 2016/4/21
- Phantom: Head
- DASY52 52.8.8(1258); SEMCAD X 14.6.10(7373)

**Configuration/Pin=250mW/Area Scan (51x141x1):** Interpolated grid: dx=15 mm, dy=15 mm
Maximum value of SAR (interpolated) = 2.84 W/kg

**Configuration/Pin=250mW/Zoom Scan (7x7x7)/Cube 0:** Measurement grid: dx=5mm, dy=5mm, dz=5mm
Reference Value = 54.85 V/m; Power Drift = -0.01 dB
Peak SAR (extrapolated) = 3.30 W/kg
**SAR(1 g) = 2.24 W/kg; SAR(10 g) = 1.5 W/kg**
Maximum value of SAR (measured) = 2.81 W/kg




0 dB = 2.81 W/kg = 4.49 dBW/kg

Date: 2017/2/13

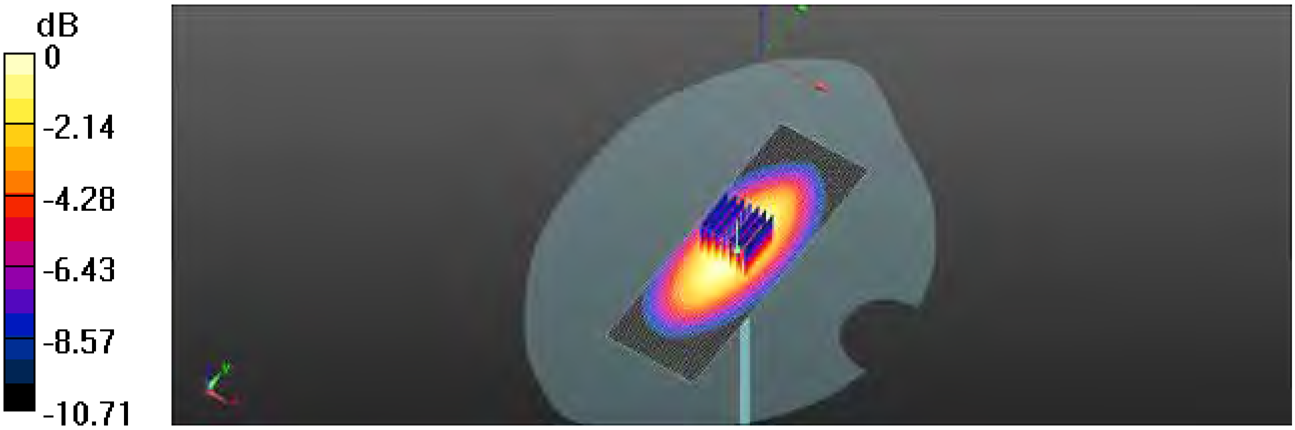
**Dipole 835 MHz_SN:4d063_Head**
Communication System: CW; Frequency: 835 MHz;
Medium parameters used: f = 835 MHz; $\sigma$ = 0.927 S/m; $\varepsilon_r$ = 42.177; $\rho$ = 1000 kg/$m^3$
Phantom section: Flat Section

DASY5 Configuration:

- Probe: EX3DV4 - SN3770; ConvF(9.47, 9.47, 9.47); Calibrated: 2016/4/27;
- Sensor-Surface: 2mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn856; Calibrated: 2016/4/21
- Phantom: Head
- DASY52 52.8.8(1258); SEMCAD X 14.6.10(7373)

**Configuration/Pin=250mW/Area Scan (41x121x1):** Interpolated grid: dx=15 mm, dy=15 mm
Maximum value of SAR (interpolated) = 3.17 W/kg

**Configuration/Pin=250mW/Zoom Scan (7x7x7)/Cube 0:** Measurement grid: dx=5mm, dy=5mm, dz=5mm
Reference Value = 59.16 V/m; Power Drift = 0.08 dB
Peak SAR (extrapolated) = 3.81 W/kg
**SAR(1 g) = 2.5 W/kg; SAR(10 g) = 1.63 W/kg**
Maximum value of SAR (measured) = 3.20 W/kg




0 dB = 3.20 W/kg = 5.05 dBW/kg


SGS Taiwan Ltd. No.134,Wu Kung Road, New Taipei Industrial Park, Wuku District, New Taipei City, Taiwan 24803/新北市五股區新北產業園區五工路134號
台灣檢驗科技股份有限公司 t (886-2) 2299-3279 f (886-2) 2298-0488 www.tw.sgs.com
Member of SGS Group

Date: 2017/2/13

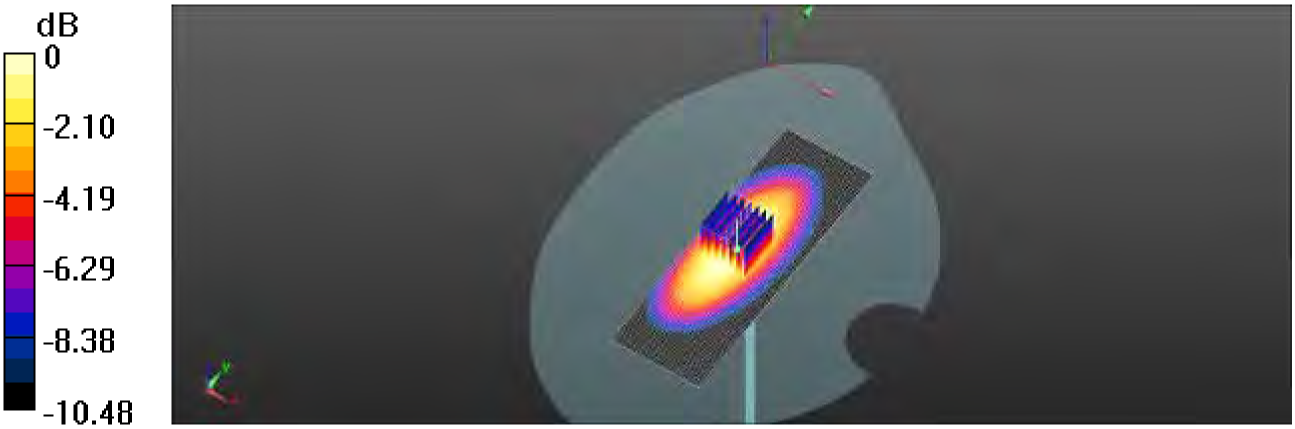
**Dipole 835 MHz_SN:4d063_Body**
Communication System: CW; Frequency: 835 MHz;
Medium parameters used: f = 835 MHz; $\sigma$ = 0.999 S/m; $\varepsilon_r$ = 57.407; $\rho$ = 1000 kg/m$^3$
Phantom section: Flat Section

DASY5 Configuration:

- Probe: EX3DV4 - SN3770; ConvF(9.3, 9.3, 9.3); Calibrated: 2016/4/27;
- Sensor-Surface: 2mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn856; Calibrated: 2016/4/21
- Phantom: Head
- DASY52 52.8.8(1258); SEMCAD X 14.6.10(7373)

**Configuration/Pin=250mW/Area Scan (41x121x1):** Interpolated grid: dx=15 mm, dy=15 mm
Maximum value of SAR (interpolated) = 2.96 W/kg

**Configuration/Pin=250mW/Zoom Scan (7x7x7)/Cube 0:** Measurement grid: dx=5mm, dy=5mm, dz=5mm
Reference Value = 51.83 V/m; Power Drift = -0.01 dB
Peak SAR (extrapolated) = 3.55 W/kg
**SAR(1 g) = 2.38 W/kg; SAR(10 g) = 1.56 W/kg**
Maximum value of SAR (measured) = 3.02 W/kg




0 dB = 3.02 W/kg = 4.80 dBW/kg

Date: 2017/2/3

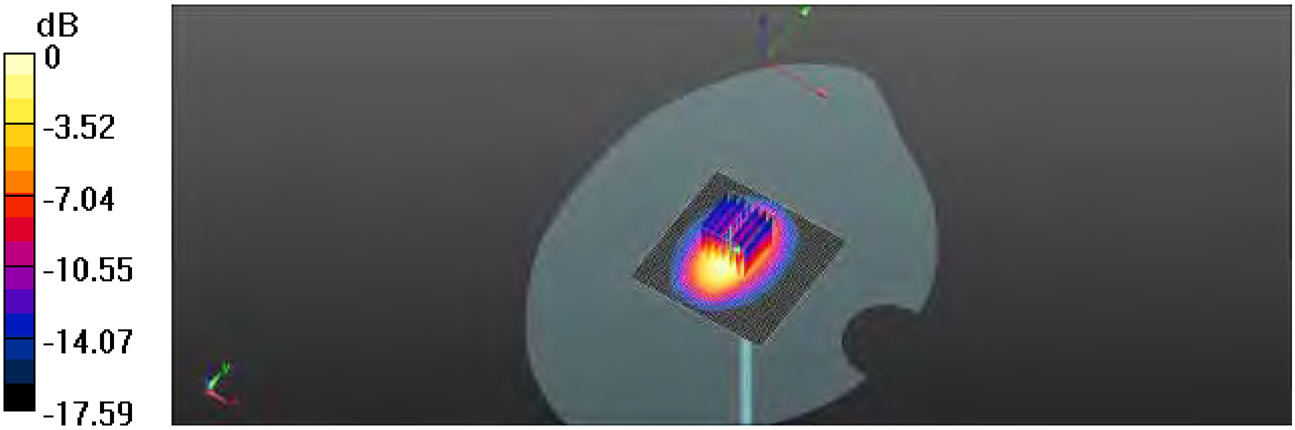
**Dipole 1750 MHz_SN:1008_Head**
Communication System: CW; Frequency: 1750 MHz
Medium parameters used: f = 1750 MHz; $\sigma$ = 1.338 S/m; $\varepsilon_r$ = 40.626; $\rho$ = 1000 kg/$m^3$
Phantom section: Flat Section

DASY5 Configuration:

- Probe: EX3DV4 - SN3770; ConvF(8.19, 8.19, 8.19); Calibrated: 2016/4/27;
- Sensor-Surface: 2mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn856; Calibrated: 2016/4/21
- Phantom: Head
- DASY52 52.8.8(1258); SEMCAD X 14.6.10(7373)

**Configuration/Pin=250mW/Area Scan (61x61x1):** Interpolated grid: dx=15 mm, dy=15 mm
Maximum value of SAR (interpolated) = 13.2 W/kg

**Configuration/Pin=250mW/Zoom Scan (7x7x7)/Cube 0:** Measurement grid: dx=5mm, dy=5mm, dz=5mm
Reference Value = 94.07 V/m; Power Drift = -0.01 dB
Peak SAR (extrapolated) = 17.0 W/kg
**SAR(1 g) = 9.17 W/kg; SAR(10 g) = 4.81 W/kg**
Maximum value of SAR (measured) = 13.2 W/kg




0 dB = 13.2 W/kg = 11.21 dBW/kg

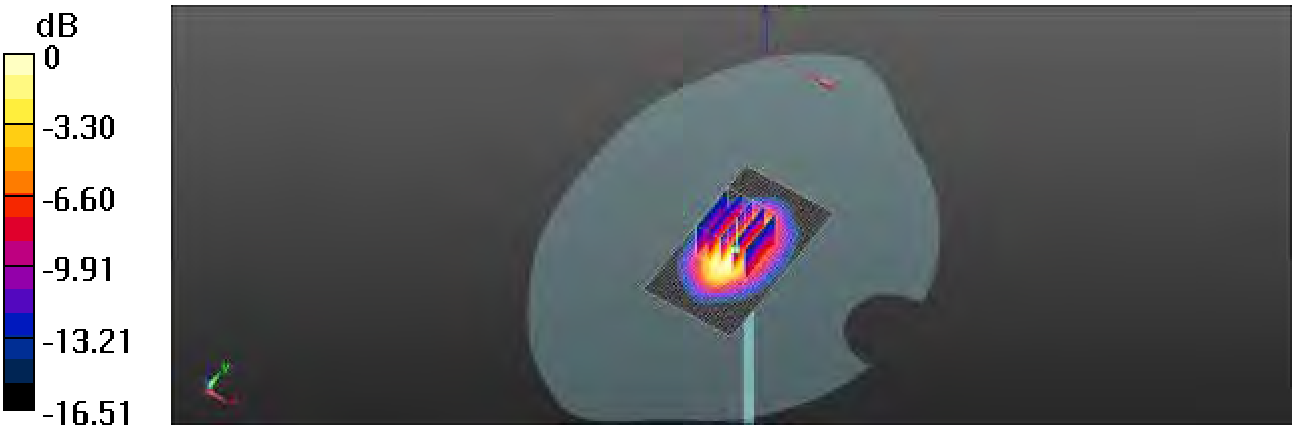
Date: 2017/2/3

**Dipole 1750 MHz_SN:1008_Body**
Communication System: CW; Frequency: 1750 MHz
Medium parameters used: f = 1750 MHz; $\sigma$ = 1.437 S/m; $\varepsilon_r$ = 53.595; $\rho$ = 1000 kg/$m^3$
Phantom section: Flat Section

DASY5 Configuration:
- Probe: EX3DV4 - SN3770; ConvF(8.19, 8.19, 8.19); Calibrated: 2016/4/27;
- Sensor-Surface: 2mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn856; Calibrated: 2016/4/21
- Phantom: Head
- DASY52 52.8.8(1258); SEMCAD X 14.6.10(7373)

**Configuration/Pin=250mW/Area Scan (41x71x1):** Interpolated grid: dx=15 mm, dy=15 mm
Maximum value of SAR (interpolated) = 14.4 W/kg

**Configuration/Pin=250mW/Zoom Scan (7x7x7)/Cube 0:** Measurement grid: dx=5mm, dy=5mm, dz=5mm
Reference Value = 99.24 V/m; Power Drift = -0.03 dB
Peak SAR (extrapolated) = 17.0 W/kg
**SAR(1 g) = 9.65 W/kg; SAR(10 g) = 5.14 W/kg**
Maximum value of SAR (measured) = 13.7 W/kg




0 dB = 13.7 W/kg = 11.37 dBW/kg

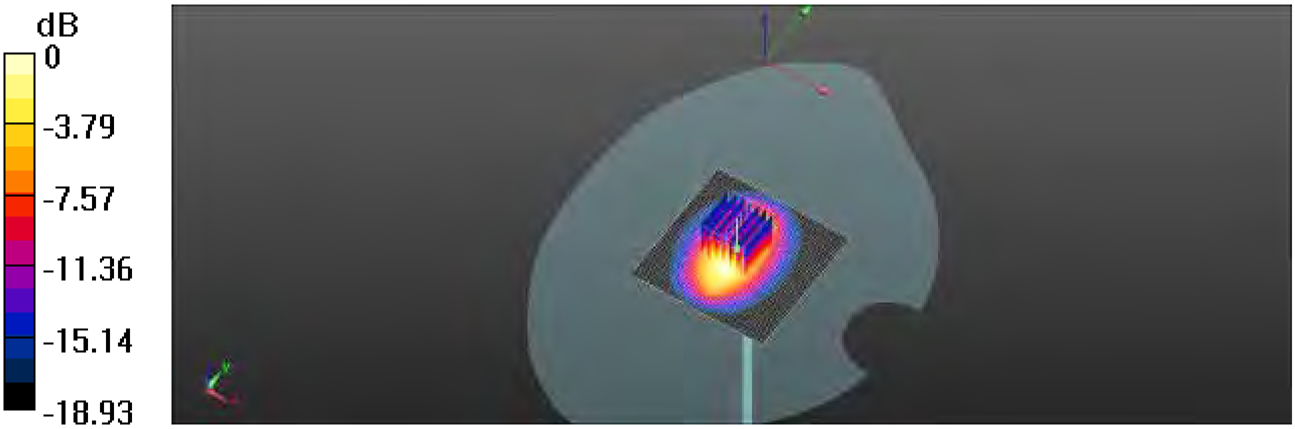
Date: 2017/2/14

**Dipole 1900 MHz_SN:5d027_Head**
Communication System: CW; Frequency: 1900 MHz; Duty Factor: 1:1
Medium parameters used: f = 1900 MHz; $\sigma$ = 1.45 S/m; $\varepsilon_r$ = 40.166; $\rho$ = 1000 kg/m$^3$
Phantom section: Flat Section
Ambient temperature: 22.1°C; Liquid temperature: 22.0°C

DASY5 Configuration:
- Probe: EX3DV4 - SN3770; ConvF(7.88, 7.88, 7.88); Calibrated: 2016/4/27;
- Sensor-Surface: 2mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn856; Calibrated: 2016/4/21
- Phantom: Head
- DASY52 52.8.8(1258); SEMCAD X 14.6.10(7373)

**Configuration/Pin=250mW/Area Scan (61x61x1):** Interpolated grid: dx=15 mm, dy=15 mm
Maximum value of SAR (interpolated) = 13.8 W/kg

**Configuration/Pin=250mW/Zoom Scan (7x7x7)/Cube 0:** Measurement grid: dx=5mm, dy=5mm, dz=5mm
Reference Value = 94.25 V/m; Power Drift = 0.05 dB
Peak SAR (extrapolated) = 18.3 W/kg
**SAR(1 g) = 9.47 W/kg; SAR(10 g) = 4.82 W/kg**
Maximum value of SAR (measured) = 13.9 W/kg




0 dB = 13.9 W/kg = 11.43 dBW/kg

Date: 2017/2/14

**Dipole 1900 MHz_SN:5d027_Body**

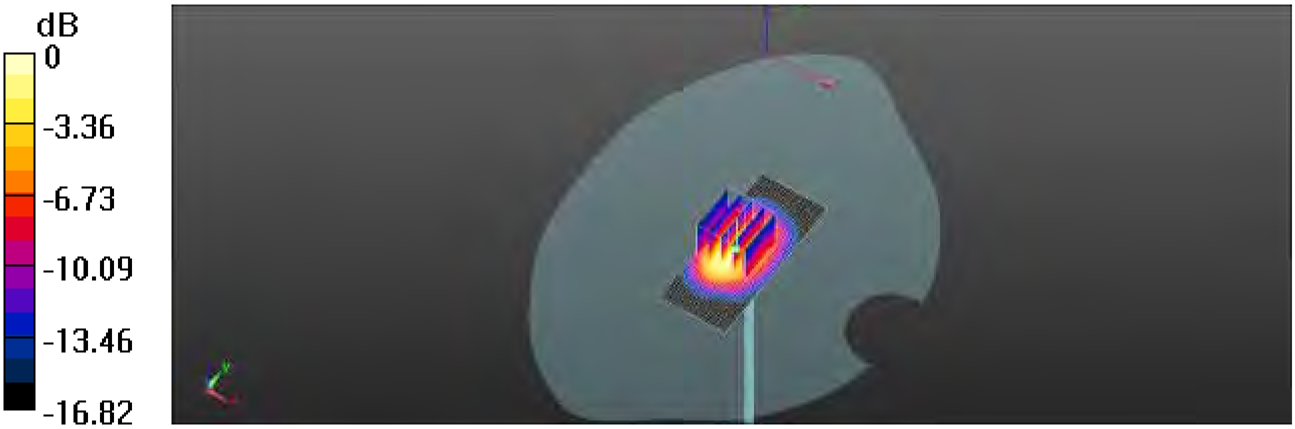
Communication System: CW; Frequency: 1900 MHz; Duty Factor: 1:1
Medium parameters used: f = 1900 MHz; $\sigma$ = 1.586 S/m; $\varepsilon_r$ = 53.128; $\rho$ = 1000 kg/$m^3$
Phantom section: Flat Section
Ambient temperature: 21.5°C; Liquid temperature: 21.7°C

DASY5 Configuration:

- Probe: EX3DV4 - SN3770; ConvF(7.71, 7.71, 7.71); Calibrated: 2016/4/27;
- Sensor-Surface: 2mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn856; Calibrated: 2016/4/21
- Phantom: Head
- DASY52 52.8.8(1258); SEMCAD X 14.6.10(7373)

**Configuration/Pin=250mW/Area Scan (31x71x1):** Interpolated grid: dx=15 mm, dy=15 mm
Maximum value of SAR (interpolated) = 14.2 W/kg

**Configuration/Pin=250mW/Zoom Scan (7x7x7)/Cube 0:** Measurement grid: dx=5mm, dy=5mm, dz=5mm
Reference Value = 95.14 V/m; Power Drift = 0.00 dB
Peak SAR (extrapolated) = 17.8 W/kg
**SAR(1 g) = 10 W/kg; SAR(10 g) = 5.29 W/kg**
Maximum value of SAR (measured) = 14.3 W/kg




0 dB = 14.3 W/kg = 11.55 dBW/kg

Date: 2017/2/5

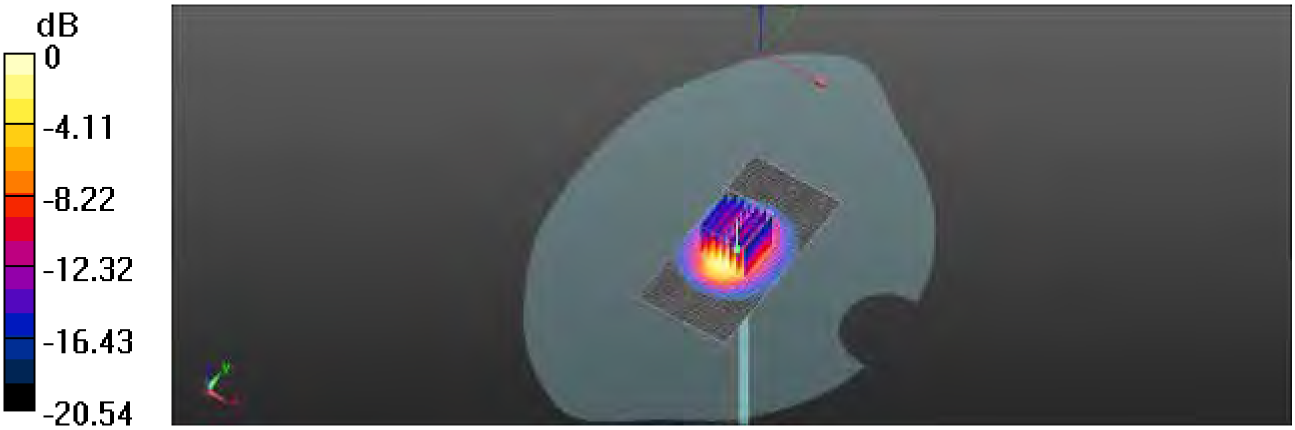
**Dipole 2300 MHz_SN:1023_Body**
Communication System: CW; Frequency: 2300 MHz
Medium parameters used: f = 2300 MHz; σ = 1.848 S/m; $\varepsilon_r$ = 52.505; ρ = 1000 kg/m$^3$
Phantom section: Flat Section

DASY5 Configuration:

- Probe: EX3DV4 - SN3770; ConvF(7.53, 7.53, 7.53); Calibrated: 2016/4/27;
- Sensor-Surface: 2mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn856; Calibrated: 2016/4/21
- Phantom: Head
- DASY52 52.8.8(1258); SEMCAD X 14.6.10(7373)

**Configuration/Pin=250mW/Area Scan (51x101x1):** Interpolated grid: dx=12 mm, dy=12 mm
Maximum value of SAR (interpolated) = 18.4 W/kg

**Configuration/Pin=250mW/Zoom Scan (7x7x7)/Cube 0:** Measurement grid: dx=5mm, dy=5mm, dz=5mm
Reference Value = 97.57 V/m; Power Drift = -0.03 dB
Peak SAR (extrapolated) = 23.7 W/kg
**SAR(1 g) = 11.7 W/kg; SAR(10 g) = 5.43 W/kg**
Maximum value of SAR (measured) = 17.9 W/kg




0 dB = 17.9 W/kg = 13.28 dBW/kg


SGS Taiwan Ltd. No.134,Wu Kung Road, New Taipei Industrial Park, Wuku District, New Taipei City, Taiwan 24803/新北市五股區新北產業園區五工路134號
台灣檢驗科技股份有限公司 t (886-2) 2299-3279 f (886-2) 2298-0488 www.tw.sgs.com
Member of SGS Group

Date: 2017/2/6

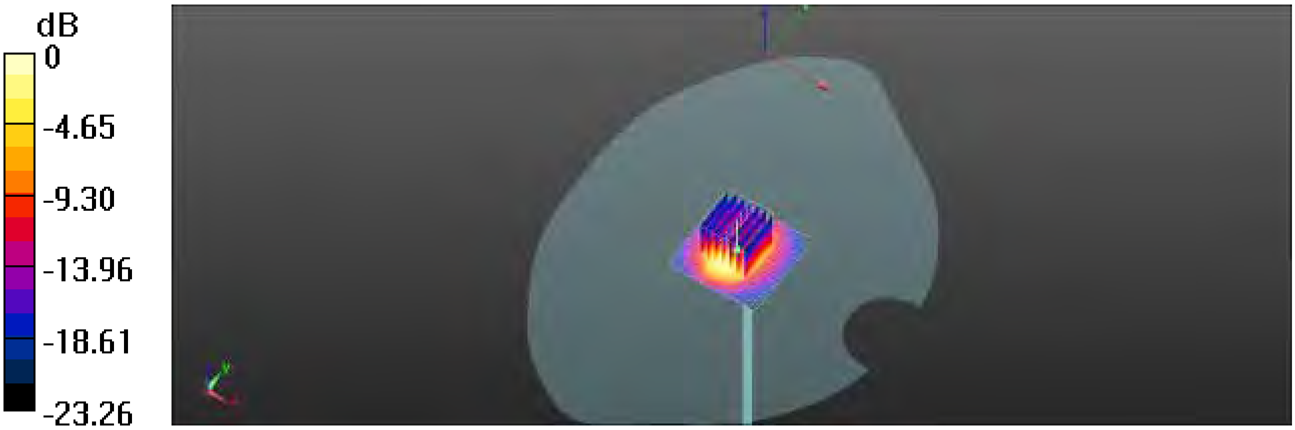
**Dipole 2450 MHz_SN:727_Head**
Communication System: CW; Frequency: 2450 MHz
Medium parameters used: f = 2450 MHz; $\sigma$ = 1.837 S/m; $\varepsilon_r$ = 38.654; $\rho$ = 1000 kg/m$^3$
Phantom section: Flat Section

DASY5 Configuration:

- Probe: EX3DV4 - SN3770; ConvF(7.12, 7.12, 7.12); Calibrated: 2016/4/27;
- Sensor-Surface: 2mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn856; Calibrated: 2016/4/21
- Phantom: Head
- DASY52 52.8.8(1258); SEMCAD X 14.6.10(7373)

**Configuration/Pin=250mW/Area Scan (51x51x1):** Interpolated grid: dx=12 mm, dy=12 mm
Maximum value of SAR (interpolated) = 22.3 W/kg

**Configuration/Pin=250mW/Zoom Scan (7x7x7)/Cube 0:** Measurement grid: dx=5mm, dy=5mm, dz=5mm
Reference Value = 106.7 V/m; Power Drift = 0.02 dB
Peak SAR (extrapolated) = 28.3 W/kg
**SAR(1 g) = 13.3 W/kg; SAR(10 g) = 5.97 W/kg**
Maximum value of SAR (measured) = 20.9 W/kg




0 dB = 20.9 W/kg = 13.20 dBW/kg


SGS Taiwan Ltd. No.134,Wu Kung Road, New Taipei Industrial Park, Wuku District, New Taipei City, Taiwan 24803/新北市五股區新北產業園區五工路134號
台灣檢驗科技股份有限公司 t (886-2) 2299-3279 f (886-2) 2298-0488 www.tw.sgs.com
Member of SGS Group

Date: 2017/2/6

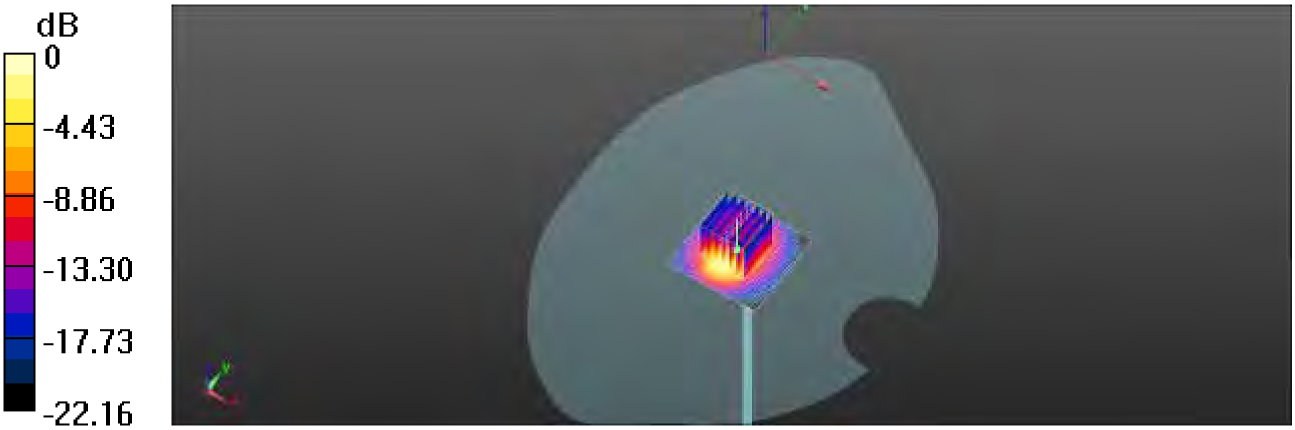
**Dipole 2450 MHz_SN:727_Body**
Communication System: CW; Frequency: 2450 MHz
Medium parameters used: f = 2450 MHz; σ = 2 S/m; $\varepsilon_r$ = 51.693; ρ = 1000 kg/$m^3$
Phantom section: Flat Section

DASY5 Configuration:

- Probe: EX3DV4 - SN3770; ConvF(7.37, 7.37, 7.37); Calibrated: 2016/4/27;
- Sensor-Surface: 2mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn856; Calibrated: 2016/4/21
- Phantom: Head
- DASY52 52.8.8(1258); SEMCAD X 14.6.10(7373)

**Configuration/Pin=250mW/Area Scan (51x51x1):** Interpolated grid: dx=12 mm, dy=12 mm
Maximum value of SAR (interpolated) = 20.2 W/kg

**Configuration/Pin=250mW/Zoom Scan (7x7x7)/Cube 0:** Measurement grid: dx=5mm, dy=5mm, dz=5mm
Reference Value = 95.02 V/m; Power Drift = 0.13 dB
Peak SAR (extrapolated) = 25.7 W/kg
**SAR(1 g) = 12.2 W/kg; SAR(10 g) = 5.55 W/kg**
Maximum value of SAR (measured) = 19.0 W/kg




0 dB = 19.0 W/kg = 12.79 dBW/kg

Date: 2017/2/5

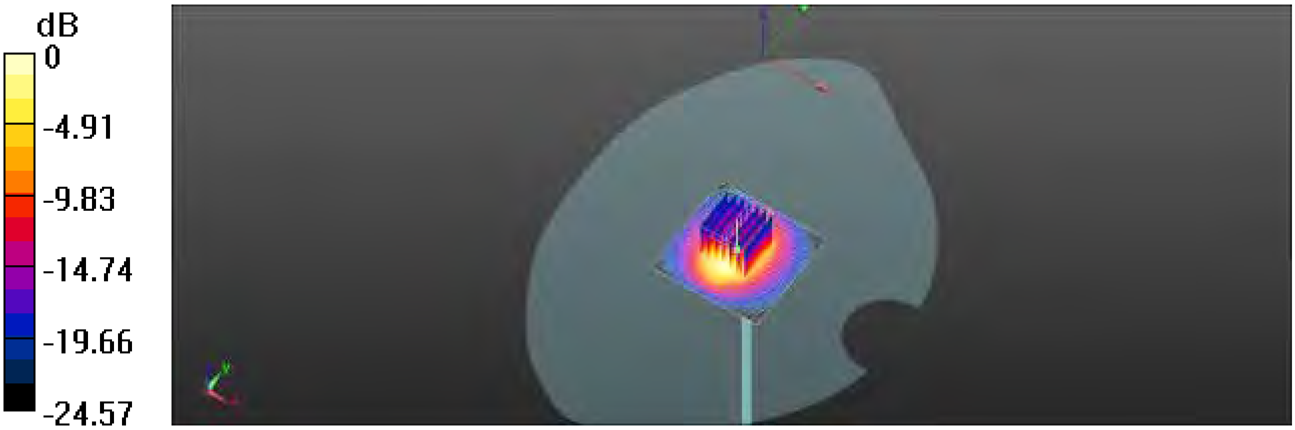
**Dipole 2600 MHz_SN:1005_Head**
Communication System: CW; Frequency: 2600 MHz
Medium parameters used: f = 2600 MHz; $\sigma$ = 1.967 S/m; $\varepsilon_r$ = 37.835; $\rho$ = 1000 kg/m$^3$
Phantom section: Flat Section

DASY5 Configuration:

- Probe: EX3DV4 - SN3770; ConvF(6.95, 6.95, 6.95); Calibrated: 2016/4/27;
- Sensor-Surface: 2mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn856; Calibrated: 2016/4/21
- Phantom: Head
- DASY52 52.8.8(1258); SEMCAD X 14.6.10(7373)

**Configuration/Pin=250mW/Area Scan (61x61x1):** Interpolated grid: dx=12 mm, dy=12 mm
Maximum value of SAR (interpolated) = 22.1 W/kg

**Configuration/Pin=250mW/Zoom Scan (7x7x7)/Cube 0:** Measurement grid: dx=5mm, dy=5mm, dz=5mm
Reference Value = 106.3 V/m; Power Drift = 0.03 dB
Peak SAR (extrapolated) = 31.1 W/kg
**SAR(1 g) = 14 W/kg; SAR(10 g) = 6.18 W/kg**
Maximum value of SAR (measured) = 22.1 W/kg




0 dB = 22.1 W/kg = 13.44 dBW/kg

Date: 2017/2/5

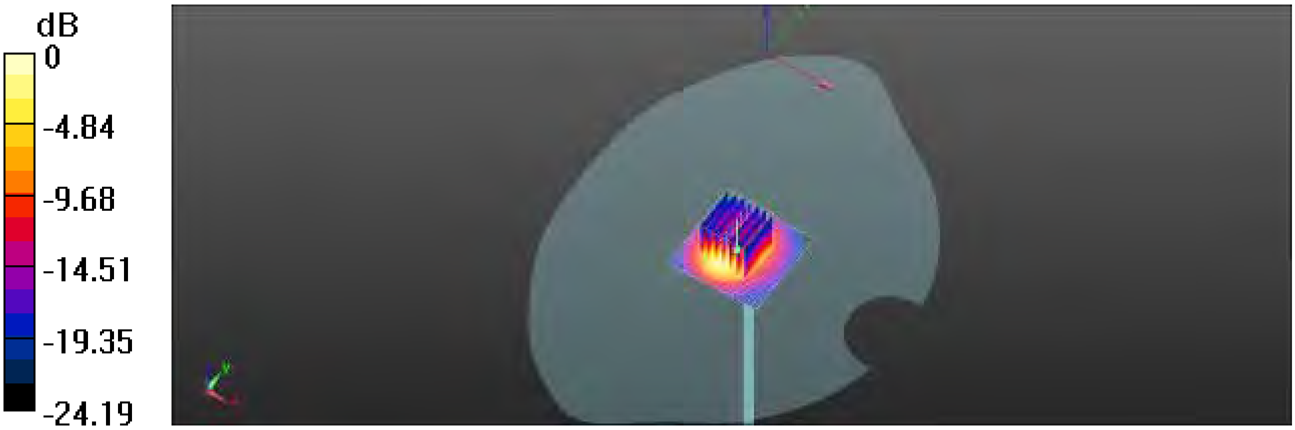
**Dipole 2600 MHz_SN:1005_Body**
Communication System: CW; Frequency: 2600 MHz
Medium parameters used: f = 2600 MHz; $\sigma$ = 2.24 S/m; $\varepsilon_r$ = 51.687; $\rho$ = 1000 kg/m$^3$
Phantom section: Flat Section

DASY5 Configuration:

- Probe: EX3DV4 - SN3770; ConvF(7.12, 7.12, 7.12); Calibrated: 2016/4/27;
- Sensor-Surface: 2mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn856; Calibrated: 2016/4/21
- Phantom: Head
- DASY52 52.8.8(1258); SEMCAD X 14.6.10(7373)

**Configuration/Pin=250mW/Area Scan (51x51x1):** Interpolated grid: dx=12 mm, dy=12 mm
Maximum value of SAR (interpolated) = 23.0 W/kg

**Configuration/Pin=250mW/Zoom Scan (7x7x7)/Cube 0:** Measurement grid: dx=5mm, dy=5mm, dz=5mm
Reference Value = 96.58 V/m; Power Drift = -0.03 dB
Peak SAR (extrapolated) = 30.7 W/kg
**SAR(1 g) = 13.7 W/kg; SAR(10 g) = 5.94 W/kg**
Maximum value of SAR (measured) = 21.9 W/kg




0 dB = 21.9 W/kg = 13.40 dBW/kg

Date: 2017/2/7

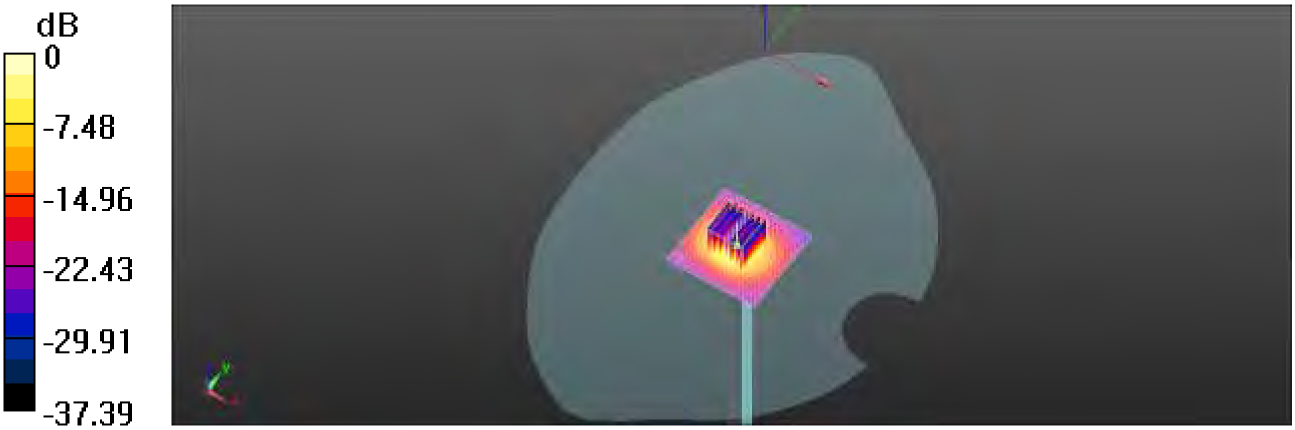
**Dipole 5200 MHz_SN:1023_Head**
Communication System: CW; Frequency: 5200 MHz
Medium parameters used: f = 5200 MHz; $\sigma$ = 4.67 S/m; $\varepsilon_r$ = 37.359; $\rho$ = 1000 kg/m$^3$
Phantom section: Flat Section

DASY5 Configuration:

- Probe: EX3DV4 - SN3770; ConvF(5.03, 5.03, 5.03); Calibrated: 2016/4/27;
- Sensor-Surface: 2mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn856; Calibrated: 2016/4/21
- Phantom: Head
- DASY52 52.8.8(1258); SEMCAD X 14.6.10(7373)

**Configuration/Pin=100mW/Area Scan (61x61x1):** Interpolated grid: dx=10 mm, dy=10 mm
Maximum value of SAR (interpolated) = 15.6 W/kg

**Configuration/Pin=100mW/Zoom Scan (7x7x12)/Cube 0:** Measurement grid: dx=4mm, dy=4mm, dz=2mm
Reference Value = 60.80 V/m; Power Drift = 0.17 dB
Peak SAR (extrapolated) = 33.1 W/kg
**SAR(1 g) = 7.67 W/kg; SAR(10 g) = 2.15 W/kg**
Maximum value of SAR (measured) = 16.3 W/kg




0 dB = 16.3 W/kg = 12.12 dBW/kg

Date: 2017/2/7

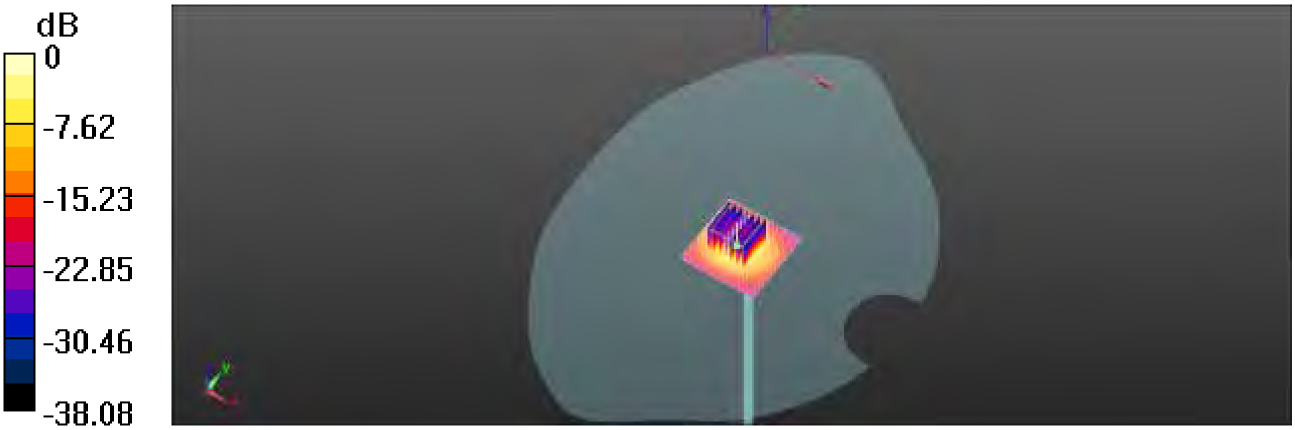
**Dipole 5200 MHz_SN:1023_Body**
Communication System: CW; Frequency: 5200 MHz
Medium parameters used: f = 5200 MHz; σ = 5.184 S/m; $\varepsilon_r$ = 49.153; ρ = 1000 kg/m$^3$
Phantom section: Flat Section

DASY5 Configuration:

- Probe: EX3DV4 - SN3770; ConvF(4.34, 4.34, 4.34); Calibrated: 2016/4/27;
- Sensor-Surface: 2mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn856; Calibrated: 2016/4/21
- Phantom: Head
- DASY52 52.8.8(1258); SEMCAD X 14.6.10(7373)

**Configuration/Pin=100mW/Area Scan (51x51x1):** Interpolated grid: dx=10 mm, dy=10 mm
Maximum value of SAR (interpolated) = 14.9 W/kg

**Configuration/Pin=100mW/Zoom Scan (7x7x12)/Cube 0:** Measurement grid: dx=4mm, dy=4mm, dz=2mm
Reference Value = 56.05 V/m; Power Drift = 0.11 dB
Peak SAR (extrapolated) = 30.2 W/kg
**SAR(1 g) = 7.09 W/kg; SAR(10 g) = 1.97 W/kg**
Maximum value of SAR (measured) = 15.1 W/kg




0 dB = 15.1 W/kg = 11.79 dBW/kg


SGS Taiwan Ltd. No.134,Wu Kung Road, New Taipei Industrial Park, Wuku District, New Taipei City, Taiwan 24803/新北市五股區新北產業園區五工路134號
台灣檢驗科技股份有限公司 t (886-2) 2299-3279 f (886-2) 2298-0488 www.tw.sgs.com
Member of SGS Group

Date: 2017/2/8

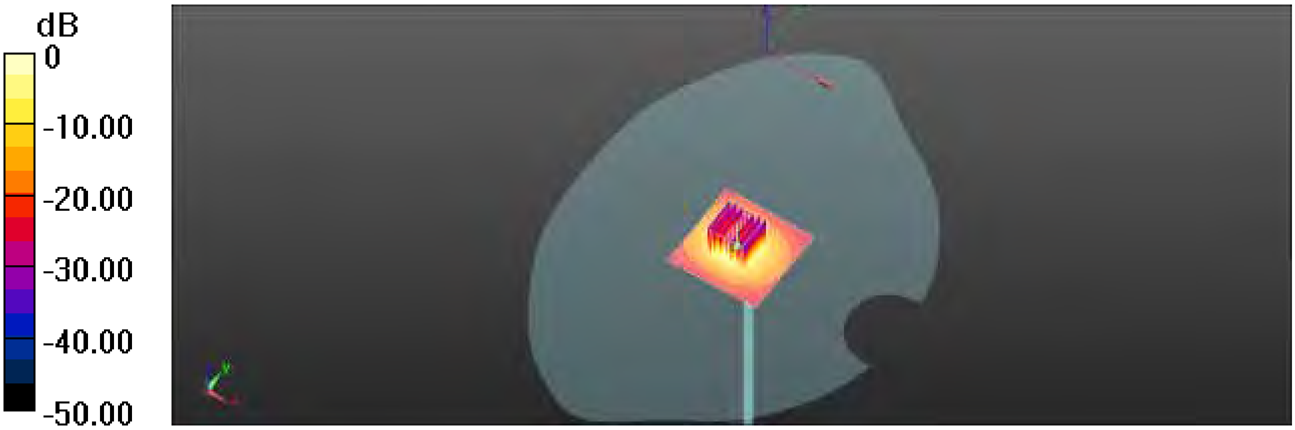
**Dipole 5300 MHz_SN:1023_Head**
Communication System: CW; Frequency: 5300 MHz
Medium parameters used: f = 5300 MHz; $\sigma$ = 4.798 S/m; $\varepsilon_r$ = 37.062; $\rho$ = 1000 kg/$m^3$
Phantom section: Flat Section

DASY5 Configuration:

- Probe: EX3DV4 - SN3770; ConvF(5.03, 5.03, 5.03); Calibrated: 2016/4/27;
- Sensor-Surface: 2mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn856; Calibrated: 2016/4/21
- Phantom: Head
- DASY52 52.8.8(1258); SEMCAD X 14.6.10(7373)

**Configuration/Pin=100mW/Area Scan (61x61x1):** Interpolated grid: dx=10 mm, dy=10 mm
Maximum value of SAR (interpolated) = 16.7 W/kg

**Configuration/Pin=100mW/Zoom Scan (7x7x12)/Cube 0:** Measurement grid: dx=4mm, dy=4mm, dz=2mm
Reference Value = 61.47 V/m; Power Drift = 0.11 dB
Peak SAR (extrapolated) = 36.4 W/kg
**SAR(1 g) = 8.27 W/kg; SAR(10 g) = 2.31 W/kg**
Maximum value of SAR (measured) = 17.6 W/kg




0 dB = 17.6 W/kg = 12.46 dBW/kg


SGS Taiwan Ltd. No.134,Wu Kung Road, New Taipei Industrial Park, Wuku District, New Taipei City, Taiwan 24803/新北市五股區新北產業園區五工路134號
台灣檢驗科技股份有限公司 t (886-2) 2299-3279 f (886-2) 2298-0488 www.tw.sgs.com
Member of SGS Group

Date: 2017/2/8

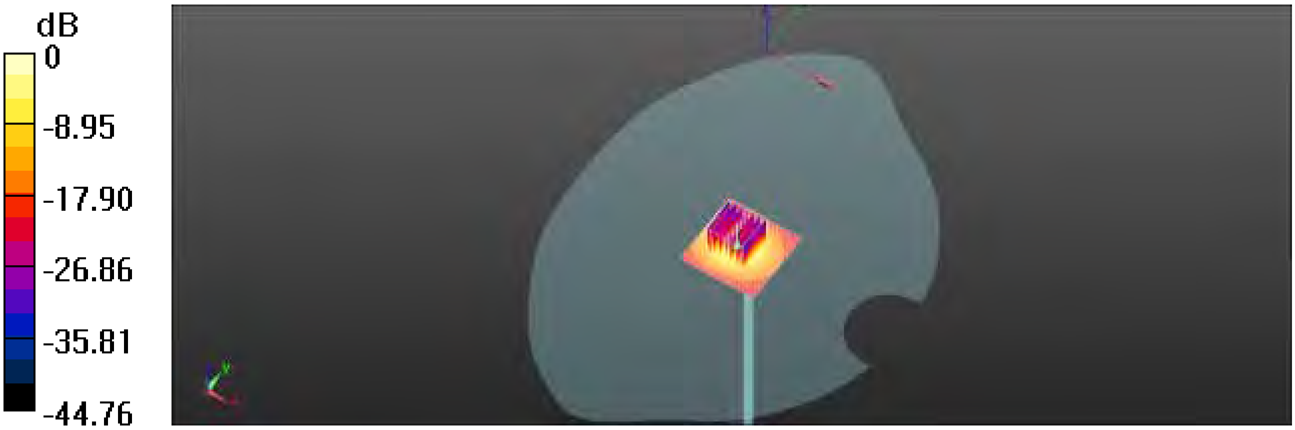
**Dipole 5300 MHz_SN:1023_Body**
Communication System: CW; Frequency: 5300 MHz
Medium parameters used: f = 5300 MHz; $\sigma$ = 5.341 S/m; $\varepsilon_r$ = 48.841; $\rho$ = 1000 kg/m$^3$
Phantom section: Flat Section

DASY5 Configuration:

- Probe: EX3DV4 - SN3770; ConvF(4.34, 4.34, 4.34); Calibrated: 2016/4/27;
- Sensor-Surface: 2mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn856; Calibrated: 2016/4/21
- Phantom: Head
- DASY52 52.8.8(1258); SEMCAD X 14.6.10(7373)

**Configuration/Pin=100mW/Area Scan (51x51x1):** Interpolated grid: dx=10 mm, dy=10 mm
Maximum value of SAR (interpolated) = 16.0 W/kg

**Configuration/Pin=100mW/Zoom Scan (7x7x12)/Cube 0:** Measurement grid: dx=4mm, dy=4mm, dz=2mm
Reference Value = 56.78 V/m; Power Drift = 0.00 dB
Peak SAR (extrapolated) = 31.8 W/kg
**SAR(1 g) = 7.41 W/kg; SAR(10 g) = 2.05 W/kg**
Maximum value of SAR (measured) = 15.9 W/kg




0 dB = 15.9 W/kg = 12.01 dBW/kg

Date: 2017/2/9

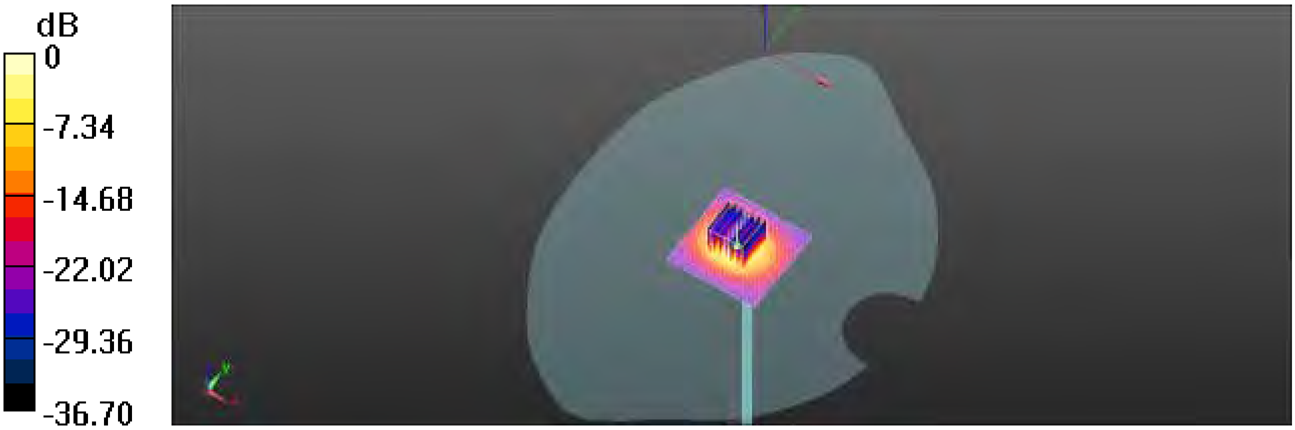
**Dipole 5600 MHz_SN:1023_Head**
Communication System: CW; Frequency: 5600 MHz
Medium parameters used: f = 5600 MHz; $\sigma$ = 5.186 S/m; $\varepsilon_r$ = 36.193; $\rho$ = 1000 kg/$m^3$
Phantom section: Flat Section

DASY5 Configuration:

- Probe: EX3DV4 - SN3770; ConvF(4.42, 4.42, 4.42); Calibrated: 2016/4/27;
- Sensor-Surface: 2mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn856; Calibrated: 2016/4/21
- Phantom: Head
- DASY52 52.8.8(1258); SEMCAD X 14.6.10(7373)

**Configuration/Pin=100mW/Area Scan (61x61x1):** Interpolated grid: dx=10 mm, dy=10 mm
Maximum value of SAR (interpolated) = 17.5 W/kg

**Configuration/Pin=100mW/Zoom Scan (7x7x12)/Cube 0:** Measurement grid: dx=4mm, dy=4mm, dz=2mm
Reference Value = 62.87 V/m; Power Drift = -0.07 dB
Peak SAR (extrapolated) = 36.4 W/kg
**SAR(1 g) = 8.3 W/kg; SAR(10 g) = 2.33 W/kg**
Maximum value of SAR (measured) = 17.9 W/kg




0 dB = 17.9 W/kg = 12.53 dBW/kg

Date: 2017/2/9

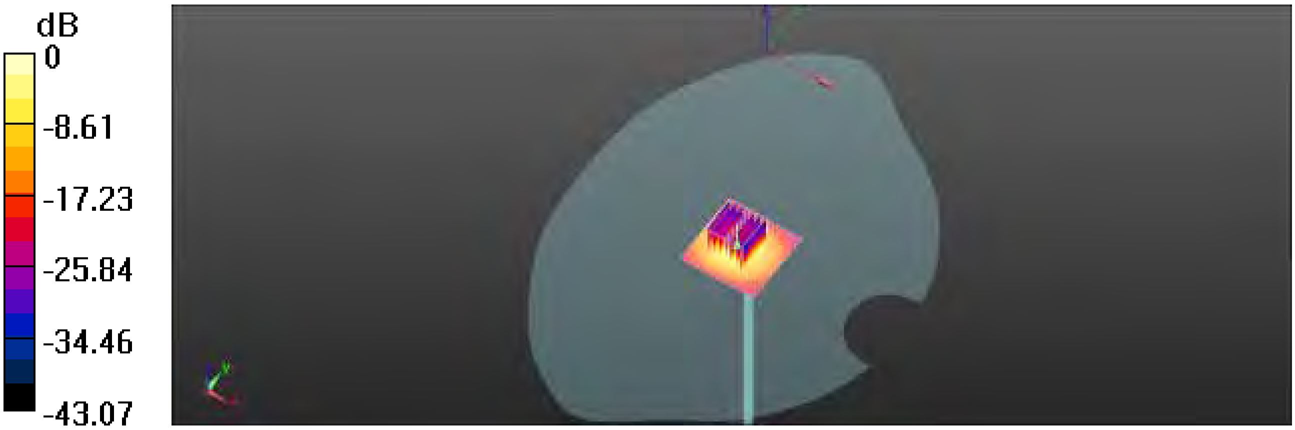
**Dipole 5600 MHz_SN:1023_Body**
Communication System: CW; Frequency: 5600 MHz
Medium parameters used: f = 5600 MHz; $\sigma$ = 5.833 S/m; $\varepsilon_r$ = 47.904; $\rho$ = 1000 kg/m$^3$
Phantom section: Flat Section

DASY5 Configuration:

- Probe: EX3DV4 - SN3770; ConvF(3.7, 3.7, 3.7); Calibrated: 2016/4/27;
- Sensor-Surface: 2mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn856; Calibrated: 2016/4/21
- Phantom: Head
- DASY52 52.8.8(1258); SEMCAD X 14.6.10(7373)

**Configuration/Pin=100mW/Area Scan (51x51x1):** Interpolated grid: dx=10 mm, dy=10 mm
Maximum value of SAR (interpolated) = 16.9 W/kg

**Configuration/Pin=100mW/Zoom Scan (7x7x12)/Cube 0:** Measurement grid: dx=4mm, dy=4mm, dz=2mm
Reference Value = 57.21 V/m; Power Drift = 0.13 dB
Peak SAR (extrapolated) = 32.4 W/kg
**SAR(1 g) = 7.71 W/kg; SAR(10 g) = 2.15 W/kg**
Maximum value of SAR (measured) = 16.5 W/kg




0 dB = 16.5 W/kg = 12.17 dBW/kg

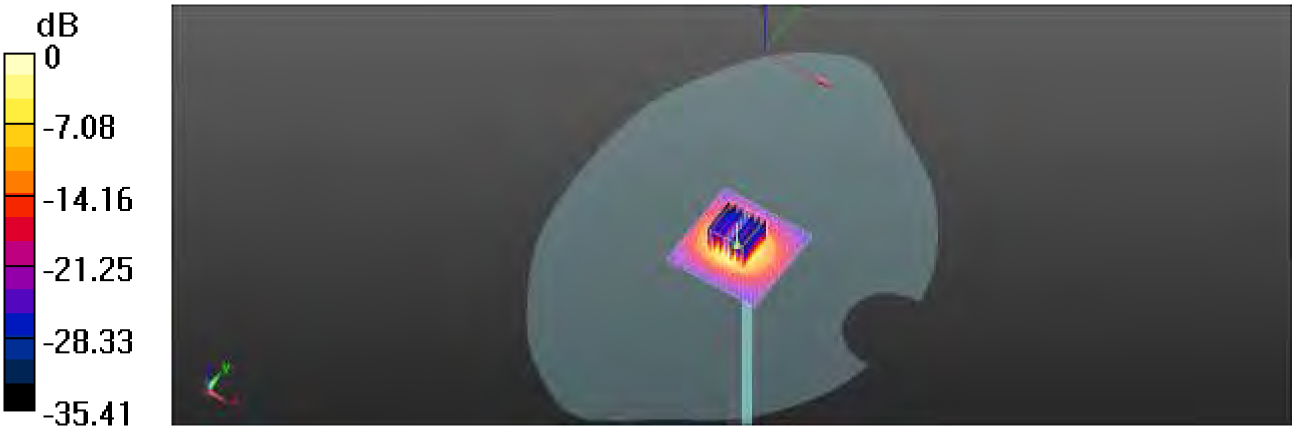
Date: 2017/2/10

**Dipole 5800 MHz_SN:1023_Head**
Communication System: CW; Frequency: 5800 MHz
Medium parameters used: f = 5800 MHz; $\sigma$ = 5.433 S/m; $\varepsilon_r$ = 35.62; $\rho$ = 1000 kg/m$^3$
Phantom section: Flat Section

DASY5 Configuration:
- Probe: EX3DV4 - SN3770; ConvF(4.83, 4.83, 4.83); Calibrated: 2016/4/27;
- Sensor-Surface: 2mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn856; Calibrated: 2016/4/21
- Phantom: Head
- DASY52 52.8.8(1258); SEMCAD X 14.6.10(7373)

**Configuration/Pin=100mW/Area Scan (61x61x1):** Interpolated grid: dx=10 mm, dy=10 mm
Maximum value of SAR (interpolated) = 15.9 W/kg

**Configuration/Pin=100mW/Zoom Scan (7x7x12)/Cube 0:** Measurement grid: dx=4mm, dy=4mm, dz=2mm
Reference Value = 58.37 V/m; Power Drift = -0.01 dB
Peak SAR (extrapolated) = 35.3 W/kg
**SAR(1 g) = 7.64 W/kg; SAR(10 g) = 2.14 W/kg**
Maximum value of SAR (measured) = 16.6 W/kg




0 dB = 16.6 W/kg = 12.20 dBW/kg

Date: 2017/2/10

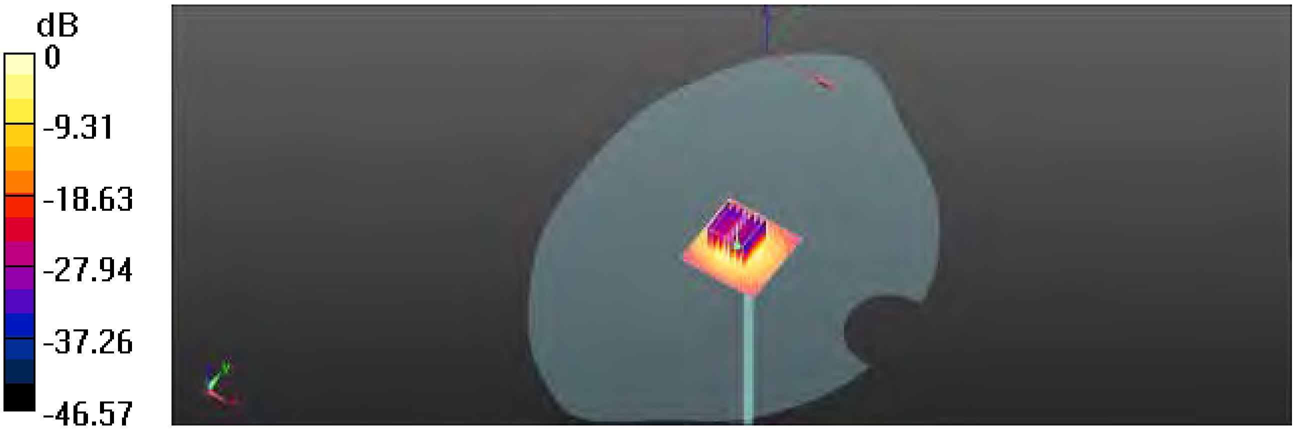
**Dipole 5800 MHz_SN:1023_Body**
Communication System: CW; Frequency: 5800 MHz
Medium parameters used: f = 5800 MHz; $\sigma$ = 6.15 S/m; $\varepsilon_r$ = 47.271; $\rho$ = 1000 kg/m$^3$
Phantom section: Flat Section

DASY5 Configuration:

- Probe: EX3DV4 - SN3770; ConvF(4.07, 4.07, 4.07); Calibrated: 2016/4/27;
- Sensor-Surface: 2mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn856; Calibrated: 2016/4/21
- Phantom: Head
- DASY52 52.8.8(1258); SEMCAD X 14.6.10(7373)

**Configuration/Pin=100mW/Area Scan (51x51x1):** Interpolated grid: dx=10 mm, dy=10 mm
Maximum value of SAR (interpolated) = 17.2 W/kg

**Configuration/Pin=100mW/Zoom Scan (7x7x12)/Cube 0:** Measurement grid: dx=4mm, dy=4mm, dz=2mm
Reference Value = 55.95 V/m; Power Drift = 0.05 dB
Peak SAR (extrapolated) = 35.6 W/kg
**SAR(1 g) = 7.76 W/kg; SAR(10 g) = 2.15 W/kg**
Maximum value of SAR (measured) = 17.1 W/kg




0 dB = 17.1 W/kg = 12.33 dBW/kg

# 7. DAE & Probe Calibration Certificate

**Calibration Laboratory of**
Schmid & Partner
Engineering AG
Zeughausstrasse 43, 8004 Zurich, Switzerland

S Schweizerischer Kalibrierdienst
C Service suisse d'étalonnage
S Servizio svizzero di taratura
S Swiss Calibration Service

Accredited by the Swiss Accreditation Service (SAS)
The Swiss Accreditation Service is one of the signatories to the EA
Multilateral Agreement for the recognition of calibration certificates

Accreditation No.: **SCS 0108**

Client **Auden**

Certificate No: **DAE4-916_Dec15**

## CALIBRATION CERTIFICATE

Object DAE4 - SD 000 D04 BK - SN: 916

Calibration procedure(s) QA CAL-06.v29
Calibration procedure for the data acquisition electronics (DAE)

Calibration date: December 16, 2015

This calibration certificate documents the traceability to national standards, which realize the physical units of measurements (SI).
The measurements and the uncertainties with confidence probability are given on the following pages and are part of the certificate.

All calibrations have been conducted in the closed laboratory facility: environment temperature (22 ± 3)°C and humidity < 70%.

Calibration Equipment used (M&TE critical for calibration)

| Primary Standards | ID # | Cal Date (Certificate No.) | Scheduled Calibration |
|---|---|---|---|
| Keithley Multimeter Type 2001 | SN: 0810278 | 09-Sep-15 (No:17153) | Sep-16 |

| Secondary Standards | ID # | Check Date (in house) | Scheduled Check |
|---|---|---|---|
| Auto DAE Calibration Unit | SE UWS 053 AA 1001 | 06-Jan-15 (in house check) | In house check: Jan-16 |
| Calibrator Box V2.1 | SE UMS 006 AA 1002 | 06-Jan-15 (in house check) | In house check: Jan-16 |

| | Name | Function | Signature |
|---|---|---|---|
| Calibrated by: | Dominique Steffen | Technician | |
| Approved by: | Fin Bomholt | Deputy Technical Manager | |

Issued: December 16, 2015

This calibration certificate shall not be reproduced except in full without written approval of the laboratory.

Certificate No: DAE4-916_Dec15 Page 1 of 5

**Calibration Laboratory of**
Schmid & Partner
Engineering AG
Zeughausstrasse 43, 8004 Zurich, Switzerland

S Schweizerischer Kalibrierdienst
C Service suisse d'étalonnage
S Servizio svizzero di taratura
Swiss Calibration Service

Accredited by the Swiss Accreditation Service (SAS)
The Swiss Accreditation Service is one of the signatories to the EA
Multilateral Agreement for the recognition of calibration certificates

Accreditation No.: SCS 0108

**Glossary**

| | |
|---|---|
| DAE | data acquisition electronics |
| Connector angle | information used in DASY system to align probe sensor X to the robot coordinate system. |

**Methods Applied and Interpretation of Parameters**

- *DC Voltage Measurement:* Calibration Factor assessed for use in DASY system by comparison with a calibrated instrument traceable to national standards. The figure given corresponds to the full scale range of the voltmeter in the respective range.
- *Connector angle:* The angle of the connector is assessed measuring the angle mechanically by a tool inserted. Uncertainty is not required.
- The following parameters as documented in the Appendix contain technical information as a result from the performance test and require no uncertainty.
  - *DC Voltage Measurement Linearity:* Verification of the Linearity at +10% and -10% of the nominal calibration voltage. Influence of offset voltage is included in this measurement.
  - *Common mode sensitivity:* Influence of a positive or negative common mode voltage on the differential measurement.
  - *Channel separation:* Influence of a voltage on the neighbor channels not subject to an input voltage.
  - *AD Converter Values with inputs shorted:* Values on the internal AD converter corresponding to zero input voltage
  - *Input Offset Measurement:* Output voltage and statistical results over a large number of zero voltage measurements.
  - *Input Offset Current:* Typical value for information; Maximum channel input offset current, not considering the input resistance.
  - *Input resistance:* Typical value for information: DAE input resistance at the connector, during internal auto-zeroing and during measurement.
  - *Low Battery Alarm Voltage:* Typical value for information. Below this voltage, a battery alarm signal is generated.
  - *Power consumption:* Typical value for information. Supply currents in various operating modes.





SGS Taiwan Ltd. No.134,Wu Kung Road, New Taipei Industrial Park, Wuku District, New Taipei City, Taiwan 24803/新北市五股區新北產業園區五工路134號
台灣檢驗科技股份有限公司 t (886-2) 2299-3279 f (886-2) 2298-0488 www.tw.sgs.com
Member of SGS Group

## DC Voltage Measurement

A/D - Converter Resolution nominal

High Range: 1LSB = 6.1μV , full range = -100...+300 mV

Low Range: 1LSB = 61nV , full range = -1.......+3mV

DASY measurement parameters: Auto Zero Time: 3 sec; Measuring time: 3 sec

| Calibration Factors | X | Y | Z |
|---|---|---|---|
| **High Range** | 403.872 ± 0.02% (k=2) | 403.658 ± 0.02% (k=2) | 403.787 ± 0.02% (k=2) |
| **Low Range** | 3.97309 ± 1.50% (k=2) | 3.98670 ± 1.50% (k=2) | 3.98020 ± 1.50% (k=2) |

## Connector Angle

| | |
|---|---|
| **Connector Angle** to be used in DASY system | 237.5 ° ± 1 ° |





SGS Taiwan Ltd. No.134,Wu Kung Road, New Taipei Industrial Park, Wuku District, New Taipei City, Taiwan 24803/新北市五股區新北產業園區五工路134號
台灣檢驗科技股份有限公司 t (886-2) 2299-3279 f (886-2) 2298-0488 www.tw.sgs.com
Member of SGS Group

Appendix (Additional assessments outside the scope of SCS0108)

1. DC Voltage Linearity

| High Range | | Reading (µV) | Difference (µV) | Error (%) |
|---|---|---|---|---|
| Channel X | + Input | 200030.55 | -1.38 | -0.00 |
| Channel X | + Input | 20007.80 | 3.85 | 0.02 |
| Channel X | - Input | -20002.99 | 2.15 | -0.01 |
| Channel Y | + Input | 200030.39 | -1.74 | -0.00 |
| Channel Y | + Input | 20005.85 | 1.87 | 0.01 |
| Channel Y | - Input | -20004.60 | 0.77 | -0.00 |
| Channel Z | + Input | 200030.93 | -1.37 | -0.00 |
| Channel Z | + Input | 20003.67 | -0.26 | -0.00 |
| Channel Z | - Input | -20007.07 | -1.73 | 0.01 |

| Low Range | | Reading (µV) | Difference (µV) | Error (%) |
|---|---|---|---|---|
| Channel X | + Input | 2000.63 | 0.02 | 0.00 |
| Channel X | + Input | 200.53 | -0.21 | -0.10 |
| Channel X | - Input | -199.49 | -0.20 | 0.10 |
| Channel Y | + Input | 2000.95 | 0.45 | 0.02 |
| Channel Y | + Input | 199.89 | -0.68 | -0.34 |
| Channel Y | - Input | -200.17 | -0.73 | 0.37 |
| Channel Z | + Input | 2000.41 | -0.10 | -0.01 |
| Channel Z | + Input | 199.38 | -1.20 | -0.60 |
| Channel Z | - Input | -200.57 | -1.09 | 0.55 |

2. Common mode sensitivity

DASY measurement parameters: Auto Zero Time: 3 sec; Measuring time: 3 sec

| | Common mode Input Voltage (mV) | High Range Average Reading (µV) | Low Range Average Reading (µV) |
|---|---|---|---|
| Channel X | 200 | 3.88 | 2.49 |
| | - 200 | -1.75 | -3.33 |
| Channel Y | 200 | -16.49 | -16.75 |
| | - 200 | 15.84 | 15.21 |
| Channel Z | 200 | -23.05 | -22.82 |
| | - 200 | 21.32 | 21.11 |

3. Channel separation

DASY measurement parameters: Auto Zero Time: 3 sec; Measuring time: 3 sec

| | Input Voltage (mV) | Channel X (µV) | Channel Y (µV) | Channel Z (µV) |
|---|---|---|---|---|
| Channel X | 200 | - | -1.09 | -3.01 |
| Channel Y | 200 | 4.79 | - | 0.67 |
| Channel Z | 200 | 8.06 | 3.10 | - |

Certificate No: DAE4-916_Dec15 Page 4 of 5


SGS Taiwan Ltd. No.134,Wu Kung Road, New Taipei Industrial Park, Wuku District, New Taipei City, Taiwan 24803/新北市五股區新北產業園區五工路134號
台灣檢驗科技股份有限公司 t (886-2) 2299-3279 f (886-2) 2298-0488 www.tw.sgs.com
Member of SGS Group

## 4. AD-Converter Values with inputs shorted

DASY measurement parameters: Auto Zero Time: 3 sec; Measuring time: 3 sec

| | High Range (LSB) | Low Range (LSB) |
|---|---|---|
| Channel X | 15879 | 14636 |
| Channel Y | 16103 | 16253 |
| Channel Z | 15949 | 14328 |

## 5. Input Offset Measurement

DASY measurement parameters: Auto Zero Time: 3 sec; Measuring time: 3 sec
Input 10MΩ

| | Average (μV) | min. Offset (μV) | max. Offset (μV) | Std. Deviation (μV) |
|---|---|---|---|---|
| Channel X | 0.23 | -0.60 | 0.95 | 0.33 |
| Channel Y | 0.00 | -1.64 | 1.23 | 0.38 |
| Channel Z | -0.98 | -2.30 | 0.94 | 0.49 |

## 6. Input Offset Current

Nominal Input circuitry offset current on all channels: <25fA

## 7. Input Resistance (Typical values for information)

| | Zeroing (kOhm) | Measuring (MOhm) |
|---|---|---|
| Channel X | 200 | 200 |
| Channel Y | 200 | 200 |
| Channel Z | 200 | 200 |

## 8. Low Battery Alarm Voltage (Typical values for information)

| Typical values | Alarm Level (VDC) |
|---|---|
| Supply (+ Vcc) | +7.9 |
| Supply (- Vcc) | -7.6 |

## 9. Power Consumption (Typical values for information)

| Typical values | Switched off (mA) | Stand by (mA) | Transmitting (mA) |
|---|---|---|---|
| Supply (+ Vcc) | +0.01 | +6 | +14 |
| Supply (- Vcc) | -0.01 | -8 | -9 |





SGS Taiwan Ltd. No.134,Wu Kung Road, New Taipei Industrial Park, Wuku District, New Taipei City, Taiwan 24803/新北市五股區新北產業園區五工路134號
台灣檢驗科技股份有限公司 t (886-2) 2299-3279 f (886-2) 2298-0488 www.tw.sgs.com
Member of SGS Group

Calibration Laboratory of
Schmid & Partner
Engineering AG
Zeughausstrasse 43, 8004 Zurich, Switzerland

S Schweizerischer Kalibrierdienst
C Service suisse d'étalonnage
S Servizio svizzero di taratura
S Swiss Calibration Service

Accredited by the Swiss Accreditation Service (SAS)
The Swiss Accreditation Service is one of the signatories to the EA Multilateral Agreement for the recognition of calibration certificates

Accreditation No.: SCS 0108

Client SGS-TW (Auden)

Certificate No: DAE4-856_Apr16

# CALIBRATION CERTIFICATE

Object: DAE4 - SD 000 D04 BM - SN: 856

Calibration procedure(s): QA CAL-06.v29
Calibration procedure for the data acquisition electronics (DAE)

Calibration date: April 21, 2016

This calibration certificate documents the traceability to national standards, which realize the physical units of measurements (SI).
The measurements and the uncertainties with confidence probability are given on the following pages and are part of the certificate.

All calibrations have been conducted in the closed laboratory facility: environment temperature (22 ± 3)°C and humidity < 70%.

Calibration Equipment used (M&TE critical for calibration)

| Primary Standards | ID # | Cal Date (Certificate No.) | Scheduled Calibration |
|---|---|---|---|
| Keithley Multimeter Type 2001 | SN: 0810278 | 09-Sep-15 (No:17153) | Sep-16 |
| **Secondary Standards** | **ID #** | **Check Date (in house)** | **Scheduled Check** |
| Auto DAE Calibration Unit | SE UWS 053 AA 1001 | 05-Jan-16 (in house check) | In house check: Jan-17 |
| Calibrator Box V2.1 | SE UMS 006 AA 1002 | 05-Jan-16 (in house check) | In house check: Jan-17 |

| | Name | Function | Signature |
|---|---|---|---|
| Calibrated by: | R Mayoraz | Technician | |
| Approved by: | Fin Bomholt | Deputy Technical Manager | |

Issued: April 21, 2016

This calibration certificate shall not be reproduced except in full without written approval of the laboratory.





SGS Taiwan Ltd. No.134,Wu Kung Road, New Taipei Industrial Park, Wuku District, New Taipei City, Taiwan 24803/新北市五股區新北產業園區五工路134號
台灣檢驗科技股份有限公司 t (886-2) 2299-3279 f (886-2) 2298-0488 www.tw.sgs.com
Member of SGS Group

**Calibration Laboratory of**
Schmid & Partner
Engineering AG
Zeughausstrasse 43, 8004 Zurich, Switzerland

S Schweizerischer Kalibrierdienst
C Service suisse d'étalonnage
S Servizio svizzero di taratura
S Swiss Calibration Service

Accredited by the Swiss Accreditation Service (SAS)
The Swiss Accreditation Service is one of the signatories to the EA
Multilateral Agreement for the recognition of calibration certificates

Accreditation No.: **SCS 0108**

**Glossary**

| | |
|---|---|
| DAE | data acquisition electronics |
| Connector angle | information used in DASY system to align probe sensor X to the robot coordinate system. |

**Methods Applied and Interpretation of Parameters**

- *DC Voltage Measurement:* Calibration Factor assessed for use in DASY system by comparison with a calibrated instrument traceable to national standards. The figure given corresponds to the full scale range of the voltmeter in the respective range.
- *Connector angle:* The angle of the connector is assessed measuring the angle mechanically by a tool inserted. Uncertainty is not required.
- The following parameters as documented in the Appendix contain technical information as a result from the performance test and require no uncertainty.
    - *DC Voltage Measurement Linearity:* Verification of the Linearity at +10% and -10% of the nominal calibration voltage. Influence of offset voltage is included in this measurement.
    - *Common mode sensitivity:* Influence of a positive or negative common mode voltage on the differential measurement.
    - *Channel separation:* Influence of a voltage on the neighbor channels not subject to an input voltage.
    - *AD Converter Values with inputs shorted:* Values on the internal AD converter corresponding to zero input voltage
    - *Input Offset Measurement:* Output voltage and statistical results over a large number of zero voltage measurements.
    - *Input Offset Current:* Typical value for information; Maximum channel input offset current, not considering the input resistance.
    - *Input resistance:* Typical value for information: DAE input resistance at the connector, during internal auto-zeroing and during measurement.
    - *Low Battery Alarm Voltage:* Typical value for information. Below this voltage, a battery alarm signal is generated.
    - *Power consumption:* Typical value for information. Supply currents in various operating modes.





SGS Taiwan Ltd. No.134,Wu Kung Road, New Taipei Industrial Park, Wuku District, New Taipei City, Taiwan 24803/新北市五股區新北產業園區五工路134號
台灣檢驗科技股份有限公司 t (886-2) 2299-3279 f (886-2) 2298-0488 www.tw.sgs.com
Member of SGS Group

## DC Voltage Measurement

A/D - Converter Resolution nominal

High Range: 1LSB = 6.1µV , full range = -100...+300 mV

Low Range: 1LSB = 61nV , full range = -1.......+3mV

DASY measurement parameters: Auto Zero Time: 3 sec; Measuring time: 3 sec

| Calibration Factors | X | Y | Z |
|---|---|---|---|
| High Range | 403.450 ± 0.02% (k=2) | 404.571 ± 0.02% (k=2) | 403.888 ± 0.02% (k=2) |
| Low Range | 3.97641 ± 1.50% (k=2) | 3.97912 ± 1.50% (k=2) | 3.97796 ± 1.50% (k=2) |

## Connector Angle

| | |
|---|---|
| **Connector Angle** to be used in DASY system | 52.0 ° ± 1 ° |





SGS Taiwan Ltd. No.134,Wu Kung Road, New Taipei Industrial Park, Wuku District, New Taipei City, Taiwan 24803/新北市五股區新北產業園區五工路134號
台灣檢驗科技股份有限公司 t (886-2) 2299-3279 f (886-2) 2298-0488 www.tw.sgs.com
Member of SGS Group

## Appendix (Additional assessments outside the scope of SCS0108)

### 1. DC Voltage Linearity

| High Range | | Reading (µV) | Difference (µV) | Error (%) |
|---|---|---|---|---|
| Channel X | + Input | 199996.11 | 0.91 | 0.00 |
| Channel X | + Input | 19999.18 | -2.34 | -0.01 |
| Channel X | - Input | -19999.41 | 1.06 | -0.01 |
| Channel Y | + Input | 199997.66 | 2.51 | 0.00 |
| Channel Y | + Input | 19998.64 | -2.84 | -0.01 |
| Channel Y | - Input | -20002.21 | -1.65 | 0.01 |
| Channel Z | + Input | 199995.99 | 0.62 | 0.00 |
| Channel Z | + Input | 19999.35 | -2.13 | -0.01 |
| Channel Z | - Input | -20002.57 | -1.88 | 0.01 |

| Low Range | | Reading (µV) | Difference (µV) | Error (%) |
|---|---|---|---|---|
| Channel X | + Input | 2001.58 | 0.10 | 0.01 |
| Channel X | + Input | 202.26 | 0.40 | 0.20 |
| Channel X | - Input | -197.29 | 0.76 | -0.38 |
| Channel Y | + Input | 2001.59 | 0.10 | 0.00 |
| Channel Y | + Input | 200.88 | -1.06 | -0.52 |
| Channel Y | - Input | -199.46 | -1.39 | 0.70 |
| Channel Z | + Input | 2001.75 | 0.28 | 0.01 |
| Channel Z | + Input | 201.40 | -0.39 | -0.19 |
| Channel Z | - Input | -198.94 | -0.69 | 0.35 |

### 2. Common mode sensitivity

DASY measurement parameters: Auto Zero Time: 3 sec; Measuring time: 3 sec

| | Common mode Input Voltage (mV) | High Range Average Reading (µV) | Low Range Average Reading (µV) |
|---|---|---|---|
| Channel X | 200 | -14.19 | -16.06 |
| | - 200 | 18.03 | 16.49 |
| Channel Y | 200 | -2.43 | -2.73 |
| | - 200 | 0.85 | 0.06 |
| Channel Z | 200 | 10.84 | 10.76 |
| | - 200 | -12.44 | -12.80 |

### 3. Channel separation

DASY measurement parameters: Auto Zero Time: 3 sec; Measuring time: 3 sec

| | Input Voltage (mV) | Channel X (µV) | Channel Y (µV) | Channel Z (µV) |
|---|---|---|---|---|
| Channel X | 200 | - | 1.98 | -2.81 |
| Channel Y | 200 | 7.60 | - | 4.11 |
| Channel Z | 200 | 9.54 | 4.60 | - |





SGS Taiwan Ltd. No.134,Wu Kung Road, New Taipei Industrial Park, Wuku District, New Taipei City, Taiwan 24803/新北市五股區新北產業園區五工路134號
台灣檢驗科技股份有限公司 t (886-2) 2299-3279 f (886-2) 2298-0488 www.tw.sgs.com
Member of SGS Group

## 4. AD-Converter Values with inputs shorted

DASY measurement parameters: Auto Zero Time: 3 sec; Measuring time: 3 sec

| | High Range (LSB) | Low Range (LSB) |
|---|---|---|
| Channel X | 16223 | 16358 |
| Channel Y | 15947 | 17393 |
| Channel Z | 15877 | 17066 |

## 5. Input Offset Measurement

DASY measurement parameters: Auto Zero Time: 3 sec; Measuring time: 3 sec
Input 10MΩ

| | Average (μV) | min. Offset (μV) | max. Offset (μV) | Std. Deviation (μV) |
|---|---|---|---|---|
| Channel X | 0.86 | 0.04 | 1.50 | 0.29 |
| Channel Y | -0.51 | -2.36 | 0.33 | 0.41 |
| Channel Z | -0.75 | -2.04 | 0.01 | 0.30 |

## 6. Input Offset Current

Nominal Input circuitry offset current on all channels: <25fA

## 7. Input Resistance (Typical values for information)

| | Zeroing (kOhm) | Measuring (MOhm) |
|---|---|---|
| Channel X | 200 | 200 |
| Channel Y | 200 | 200 |
| Channel Z | 200 | 200 |

## 8. Low Battery Alarm Voltage (Typical values for information)

| Typical values | Alarm Level (VDC) |
|---|---|
| Supply (+ Vcc) | +7.9 |
| Supply (- Vcc) | -7.6 |

## 9. Power Consumption (Typical values for information)

| Typical values | Switched off (mA) | Stand by (mA) | Transmitting (mA) |
|---|---|---|---|
| Supply (+ Vcc) | +0.01 | +6 | +14 |
| Supply (- Vcc) | -0.01 | -8 | -9 |





SGS Taiwan Ltd. No.134,Wu Kung Road, New Taipei Industrial Park, Wuku District, New Taipei City, Taiwan 24803/新北市五股區新北產業園區五工路134號
台灣檢驗科技股份有限公司 t (886-2) 2299-3279 f (886-2) 2298-0488 www.tw.sgs.com
Member of SGS Group

**Calibration Laboratory of**
Schmid & Partner
Engineering AG
Zeughausstrasse 43, 8004 Zurich, Switzerland

ilac-MRA

S Schweizerischer Kalibrierdienst
C Service suisse d'étalonnage
S Servizio svizzero di taratura
Swiss Calibration Service

Accredited by the Swiss Accreditation Service (SAS)
**The Swiss Accreditation Service is one of the signatories to the EA Multilateral Agreement for the recognition of calibration certificates**

Accreditation No.: **SCS 0108**

Client **Auden**

Certificate No: **EX3-7346_Sep15**

# CALIBRATION CERTIFICATE

| | |
|---|---|
| Object | EX3DV4 - SN:7346 |
| Calibration procedure(s) | QA CAL-01.v9, QA CAL-14.v4, QA CAL-23.v5, QA CAL-25.v6<br>Calibration procedure for dosimetric E-field probes |
| Calibration date | September 2, 2015 |

This calibration certificate documents the traceability to national standards, which realize the physical units of measurements (SI).
The measurements and the uncertainties with confidence probability are given on the following pages and are part of the certificate.

All calibrations have been conducted in the closed laboratory facility: environment temperature (22 ± 3)°C and humidity < 70%.

Calibration Equipment used (M&TE critical for calibration)

| Primary Standards | ID | Cal Date (Certificate No.) | Scheduled Calibration |
|---|---|---|---|
| Power meter E4419B | GB41293874 | 01-Apr-15 (No. 217-02128) | Mar-16 |
| Power sensor E4412A | MY41498087 | 01-Apr-15 (No. 217-02128) | Mar-16 |
| Reference 3 dB Attenuator | SN: S5054 (3c) | 01-Apr-15 (No. 217-02129) | Mar-16 |
| Reference 20 dB Attenuator | SN: S5277 (20x) | 01-Apr-15 (No. 217-02132) | Mar-16 |
| Reference 30 dB Attenuator | SN: S5129 (30b) | 01-Apr-15 (No. 217-02133) | Mar-16 |
| Reference Probe ES3DV2 | SN: 3013 | 30-Dec-14 (No. ES3-3013_Dec14) | Dec-15 |
| DAE4 | SN: 660 | 14-Jan-15 (No. DAE4-660_Jan15) | Jan-16 |
| | | | |
| Secondary Standards | ID | Check Date (in house) | Scheduled Check |
| RF generator HP 8648C | US3642U01700 | 4-Aug-99 (in house check Apr-13) | In house check: Apr-16 |
| Network Analyzer HP 8753E | US37390585 | 18-Oct-01 (in house check Oct-14) | In house check: Oct-15 |

| | Name | Function | Signature |
|---|---|---|---|
| Calibrated by: | Israe Elnaouq | Laboratory Technician | |
| Approved by: | Katja Pokovic | Technical Manager | |

Issued: September 2, 2015

This calibration certificate shall not be reproduced except in full without written approval of the laboratory.





SGS Taiwan Ltd. No.134,Wu Kung Road, New Taipei Industrial Park, Wuku District, New Taipei City, Taiwan 24803/新北市五股區新北產業園區五工路134號
台灣檢驗科技股份有限公司 t (886-2) 2299-3279 f (886-2) 2298-0488 www.tw.sgs.com
Member of SGS Group

**Calibration Laboratory of**
Schmid & Partner
Engineering AG
Zeughausstrasse 43, 8004 Zurich, Switzerland

S Schweizerischer Kalibrierdienst
C Service suisse d'étalonnage
S Servizio svizzero di taratura
Swiss Calibration Service

Accredited by the Swiss Accreditation Service (SAS)
**The Swiss Accreditation Service is one of the signatories to the EA Multilateral Agreement for the recognition of calibration certificates**

Accreditation No.: **SCS 0108**

## Glossary:

| | |
|---|---|
| TSL | tissue simulating liquid |
| NORMx,y,z | sensitivity in free space |
| ConvF | sensitivity in TSL / NORMx,y,z |
| DCP | diode compression point |
| CF | crest factor (1/duty_cycle) of the RF signal |
| A, B, C, D | modulation dependent linearization parameters |
| Polarization φ | φ rotation around probe axis |
| Polarization ϑ | ϑ rotation around an axis that is in the plane normal to probe axis (at measurement center), i.e., ϑ = 0 is normal to probe axis |
| Connector Angle | information used in DASY system to align probe sensor X to the robot coordinate system |

## Calibration is Performed According to the Following Standards:

a) IEEE Std 1528-2013, "IEEE Recommended Practice for Determining the Peak Spatial-Averaged Specific Absorption Rate (SAR) in the Human Head from Wireless Communications Devices: Measurement Techniques", June 2013
b) IEC 62209-1, "Procedure to measure the Specific Absorption Rate (SAR) for hand-held devices used in close proximity to the ear (frequency range of 300 MHz to 3 GHz)", February 2005
c) IEC 62209-2, "Procedure to determine the Specific Absorption Rate (SAR) for wireless communication devices used in close proximity to the human body (frequency range of 30 MHz to 6 GHz)", March 2010
d) KDB 865664, "SAR Measurement Requirements for 100 MHz to 6 GHz"

## Methods Applied and Interpretation of Parameters:

- *NORMx,y,z:* Assessed for E-field polarization ϑ = 0 (f ≤ 900 MHz in TEM-cell; f > 1800 MHz: R22 waveguide). NORMx,y,z are only intermediate values, i.e., the uncertainties of NORMx,y,z does not affect the $E^2$-field uncertainty inside TSL (see below *ConvF*).
- *NORM(f)x,y,z = NORMx,y,z * frequency_response* (see Frequency Response Chart). This linearization is implemented in DASY4 software versions later than 4.2. The uncertainty of the frequency response is included in the stated uncertainty of *ConvF*.
- *DCPx,y,z:* DCP are numerical linearization parameters assessed based on the data of power sweep with CW signal (no uncertainty required). DCP does not depend on frequency nor media.
- *PAR:* PAR is the Peak to Average Ratio that is not calibrated but determined based on the signal characteristics
- *Ax,y,z; Bx,y,z; Cx,y,z; Dx,y,z; VRx,y,z: A, B, C, D* are numerical linearization parameters assessed based on the data of power sweep for specific modulation signal. The parameters do not depend on frequency nor media. *VR* is the maximum calibration range expressed in RMS voltage across the diode.
- *ConvF and Boundary Effect Parameters:* Assessed in flat phantom using E-field (or Temperature Transfer Standard for f ≤ 800 MHz) and inside waveguide using analytical field distributions based on power measurements for f > 800 MHz. The same setups are used for assessment of the parameters applied for boundary compensation (alpha, depth) of which typical uncertainty values are given. These parameters are used in DASY4 software to improve probe accuracy close to the boundary. The sensitivity in TSL corresponds to *NORMx,y,z * ConvF* whereby the uncertainty corresponds to that given for *ConvF*. A frequency dependent *ConvF* is used in DASY version 4.4 and higher which allows extending the validity from ± 50 MHz to ± 100 MHz.
- *Spherical isotropy (3D deviation from isotropy):* in a field of low gradients realized using a flat phantom exposed by a patch antenna.
- *Sensor Offset:* The sensor offset corresponds to the offset of virtual measurement center from the probe tip (on probe axis). No tolerance required.
- *Connector Angle:* The angle is assessed using the information gained by determining the *NORMx* (no uncertainty required).





SGS Taiwan Ltd. No.134,Wu Kung Road, New Taipei Industrial Park, Wuku District, New Taipei City, Taiwan 24803/新北市五股區新北產業園區五工路134號
台灣檢驗科技股份有限公司 t (886-2) 2299-3279 f (886-2) 2298-0488 www.tw.sgs.com
Member of SGS Group

# Probe EX3DV4

## SN:7346

Manufactured: October 13, 2014
Repaired: August 21, 2015
Calibrated: September 2, 2015

Calibrated for DASY/EASY Systems
(Note: non-compatible with DASY2 system!)





SGS Taiwan Ltd. No.134,Wu Kung Road, New Taipei Industrial Park, Wuku District, New Taipei City, Taiwan 24803/新北市五股區新北產業園區五工路134號
台灣檢驗科技股份有限公司 t (886-2) 2299-3279 f (886-2) 2298-0488 www.tw.sgs.com
Member of SGS Group

# DASY/EASY - Parameters of Probe: EX3DV4 - SN:7346

## Basic Calibration Parameters

| | Sensor X | Sensor Y | Sensor Z | Unc (k=2) |
|---|---|---|---|---|
| Norm ($\mu V/(V/m)^2$)[A] | 0.53 | 0.52 | 0.49 | ± 10.1 % |
| DCP (mV)[B] | 98.0 | 101.9 | 96.6 | |

## Modulation Calibration Parameters

| UID | Communication System Name | | A dB | B dB√μV | C | D dB | VR mV | Unc[E] (k=2) |
|---|---|---|---|---|---|---|---|---|
| 0 | CW | X | 0.0 | 0.0 | 1.0 | 0.00 | 158.9 | ±2.7 % |
| | | Y | 0.0 | 0.0 | 1.0 | | 166.0 | |
| | | Z | 0.0 | 0.0 | 1.0 | | 163.9 | |

The reported uncertainty of measurement is stated as the standard uncertainty of measurement multiplied by the coverage factor k=2, which for a normal distribution corresponds to a coverage probability of approximately 95%.

[A] The uncertainties of Norm X,Y,Z do not affect the $E^2$-field uncertainty inside TSL (see Pages 5 and 6).
[B] Numerical linearization parameter: uncertainty not required.
[E] Uncertainty is determined using the max. deviation from linear response applying rectangular distribution and is expressed for the square of the field value.





SGS Taiwan Ltd. No.134,Wu Kung Road, New Taipei Industrial Park, Wuku District, New Taipei City, Taiwan 24803/新北市五股區新北產業園區五工路134號
台灣檢驗科技股份有限公司 t (886-2) 2299-3279 f (886-2) 2298-0488 www.tw.sgs.com
Member of SGS Group

# DASY/EASY - Parameters of Probe: EX3DV4 - SN:7346

## Calibration Parameter Determined in Head Tissue Simulating Media

| f (MHz) [C] | Relative Permittivity [F] | Conductivity (S/m) [F] | ConvF X | ConvF Y | ConvF Z | Alpha [G] | Depth [G] (mm) | Unc (k=2) |
|---|---|---|---|---|---|---|---|---|
| 750 | 41.9 | 0.89 | 10.22 | 10.22 | 10.22 | 0.22 | 1.49 | ± 12.0 % |
| 835 | 41.5 | 0.90 | 9.80 | 9.80 | 9.80 | 0.20 | 1.81 | ± 12.0 % |
| 1750 | 40.1 | 1.37 | 8.60 | 8.60 | 8.60 | 0.42 | 0.80 | ± 12.0 % |
| 1900 | 40.0 | 1.40 | 8.33 | 8.33 | 8.33 | 0.41 | 0.80 | ± 12.0 % |
| 2000 | 40.0 | 1.40 | 8.13 | 8.13 | 8.13 | 0.38 | 0.80 | ± 12.0 % |
| 2300 | 39.5 | 1.67 | 7.82 | 7.82 | 7.82 | 0.36 | 0.80 | ± 12.0 % |
| 2450 | 39.2 | 1.80 | 7.27 | 7.27 | 7.27 | 0.42 | 0.80 | ± 12.0 % |
| 2600 | 39.0 | 1.96 | 7.15 | 7.15 | 7.15 | 0.35 | 0.91 | ± 12.0 % |
| 5200 | 36.0 | 4.66 | 5.29 | 5.29 | 5.29 | 0.35 | 1.80 | ± 13.1 % |
| 5300 | 35.9 | 4.76 | 5.09 | 5.09 | 5.09 | 0.35 | 1.80 | ± 13.1 % |
| 5500 | 35.6 | 4.96 | 4.66 | 4.66 | 4.66 | 0.40 | 1.80 | ± 13.1 % |
| 5600 | 35.5 | 5.07 | 4.48 | 4.48 | 4.48 | 0.40 | 1.80 | ± 13.1 % |
| 5800 | 35.3 | 5.27 | 4.59 | 4.59 | 4.59 | 0.40 | 1.80 | ± 13.1 % |

[C] Frequency validity above 300 MHz of ± 100 MHz only applies for DASY v4.4 and higher (see Page 2), else it is restricted to ± 50 MHz. The uncertainty is the RSS of the ConvF uncertainty at calibration frequency and the uncertainty for the indicated frequency band. Frequency validity below 300 MHz is ± 10, 25, 40, 50 and 70 MHz for ConvF assessments at 30, 64, 128, 150 and 220 MHz respectively. Above 5 GHz frequency validity can be extended to ± 110 MHz.
[F] At frequencies below 3 GHz, the validity of tissue parameters (ε and σ) can be relaxed to ± 10% if liquid compensation formula is applied to measured SAR values. At frequencies above 3 GHz, the validity of tissue parameters (ε and σ) is restricted to ± 5%. The uncertainty is the RSS of the ConvF uncertainty for indicated target tissue parameters.
[G] Alpha/Depth are determined during calibration. SPEAG warrants that the remaining deviation due to the boundary effect after compensation is always less than ± 1% for frequencies below 3 GHz and below ± 2% for frequencies between 3-6 GHz at any distance larger than half the probe tip diameter from the boundary.





SGS Taiwan Ltd. No.134,Wu Kung Road, New Taipei Industrial Park, Wuku District, New Taipei City, Taiwan 24803/新北市五股區新北產業園區五工路134號
台灣檢驗科技股份有限公司 t (886-2) 2299-3279 f (886-2) 2298-0488 www.tw.sgs.com
Member of SGS Group

# DASY/EASY - Parameters of Probe: EX3DV4 - SN:7346

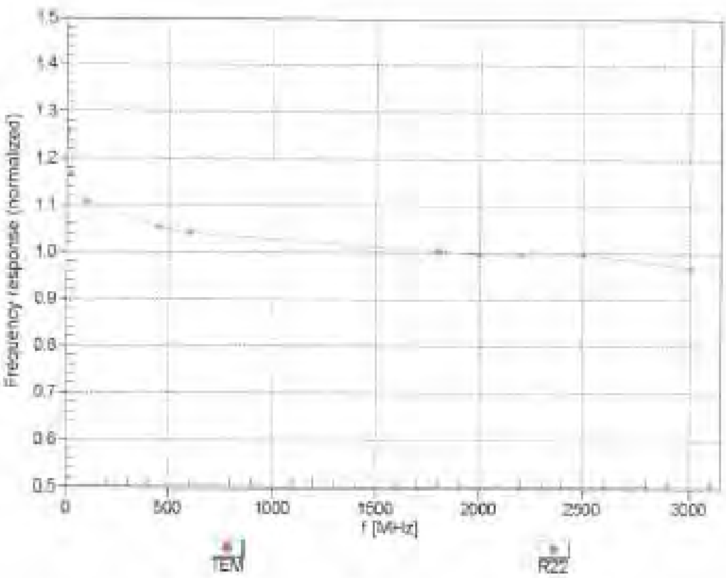
## Calibration Parameter Determined in Body Tissue Simulating Media

| f (MHz) [C] | Relative Permittivity [F] | Conductivity (S/m) [F] | ConvF X | ConvF Y | ConvF Z | Alpha [G] | Depth [G] (mm) | Unc (k=2) |
|---|---|---|---|---|---|---|---|---|
| 750 | 55.5 | 0.96 | 10.11 | 10.11 | 10.11 | 0.29 | 1.18 | ± 12.0 % |
| 835 | 55.2 | 0.97 | 10.05 | 10.05 | 10.05 | 0.45 | 0.88 | ± 12.0 % |
| 1750 | 53.4 | 1.49 | 8.06 | 8.06 | 8.06 | 0.29 | 1.03 | ± 12.0 % |
| 1900 | 53.3 | 1.52 | 7.77 | 7.77 | 7.77 | 0.41 | 0.80 | ± 12.0 % |
| 2000 | 53.3 | 1.52 | 7.99 | 7.99 | 7.99 | 0.41 | 0.83 | ± 12.0 % |
| 2300 | 52.9 | 1.81 | 7.57 | 7.57 | 7.57 | 0.32 | 0.80 | ± 12.0 % |
| 2450 | 52.7 | 1.95 | 7.43 | 7.43 | 7.43 | 0.44 | 0.80 | ± 12.0 % |
| 2600 | 52.5 | 2.16 | 7.29 | 7.29 | 7.29 | 0.32 | 0.80 | ± 12.0 % |
| 5200 | 49.0 | 5.30 | 4.64 | 4.64 | 4.64 | 0.45 | 1.90 | ± 13.1 % |
| 5300 | 48.9 | 5.42 | 4.42 | 4.42 | 4.42 | 0.45 | 1.90 | ± 13.1 % |
| 5500 | 48.6 | 5.65 | 3.95 | 3.95 | 3.95 | 0.50 | 1.90 | ± 13.1 % |
| 5600 | 48.5 | 5.77 | 3.90 | 3.90 | 3.90 | 0.50 | 1.90 | ± 13.1 % |
| 5800 | 48.2 | 6.00 | 4.08 | 4.08 | 4.08 | 0.50 | 1.90 | ± 13.1 % |

[C] Frequency validity above 300 MHz of ± 100 MHz only applies for DASY v4.4 and higher (see Page 2), else it is restricted to ± 50 MHz. The uncertainty is the RSS of the ConvF uncertainty at calibration frequency and the uncertainty for the indicated frequency band. Frequency validity below 300 MHz is ± 10, 25, 40, 50 and 70 MHz for ConvF assessments at 30, 64, 128, 150 and 220 MHz respectively. Above 5 GHz frequency validity can be extended to ± 110 MHz.
[F] At frequencies below 3 GHz, the validity of tissue parameters (ε and σ) can be relaxed to ± 10% if liquid compensation formula is applied to measured SAR values. At frequencies above 3 GHz, the validity of tissue parameters (ε and σ) is restricted to ± 5%. The uncertainty is the RSS of the ConvF uncertainty for indicated target tissue parameters.
[G] Alpha/Depth are determined during calibration. SPEAG warrants that the remaining deviation due to the boundary effect after compensation is always less than ± 1% for frequencies below 3 GHz and below ± 2% for frequencies between 3-6 GHz at any distance larger than half the probe tip diameter from the boundary.

# Frequency Response of E-Field

(TEM-Cell:ifi110 EXX, Waveguide: R22)




Uncertainty of Frequency Response of E-field: ± 6.3% (k=2)

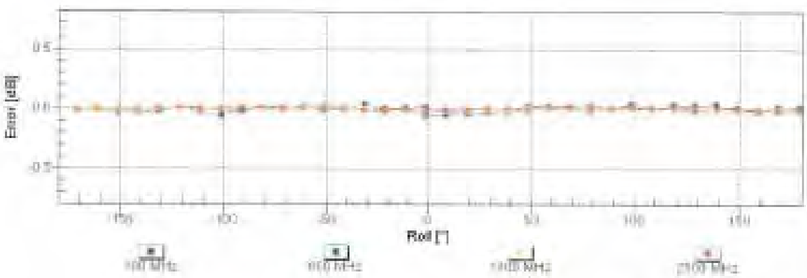




SGS Taiwan Ltd. No.134,Wu Kung Road, New Taipei Industrial Park, Wuku District, New Taipei City, Taiwan 24803/新北市五股區新北產業園區五工路134號
台灣檢驗科技股份有限公司 t (886-2) 2299-3279 f (886-2) 2298-0488 www.tw.sgs.com
Member of SGS Group

## Receiving Pattern (ϕ), ϑ = 0°

f=600 MHz,TEM f=1800 MHz,R22

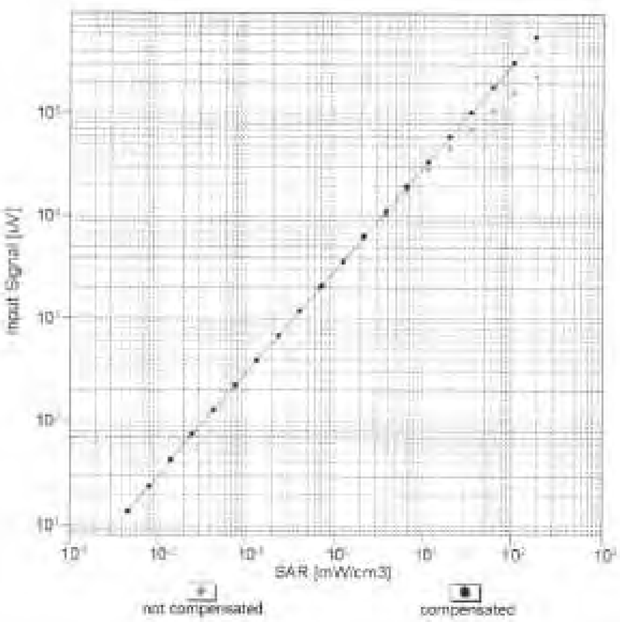

**Uncertainty of Axial Isotropy Assessment: ± 0.5% (k=2)**

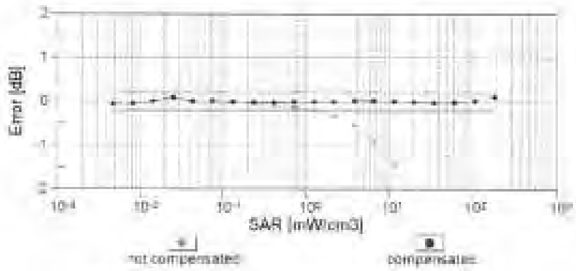




SGS Taiwan Ltd. No.134,Wu Kung Road, New Taipei Industrial Park, Wuku District, New Taipei City, Taiwan 24803/新北市五股區新北產業園區五工路134號
台灣檢驗科技股份有限公司 t (886-2) 2299-3279 f (886-2) 2298-0488 www.tw.sgs.com
Member of SGS Group

## Dynamic Range f($SAR_{head}$)
(TEM cell , $f_{eval}$= 1900 MHz)



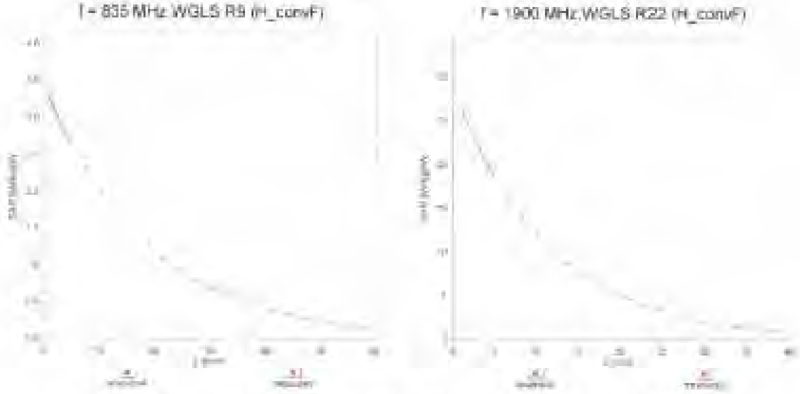

**Uncertainty of Linearity Assessment: ± 0.6% (k=2)**





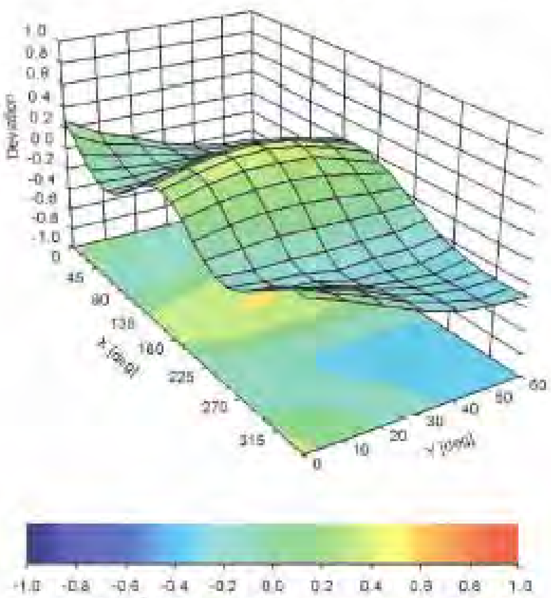
SGS Taiwan Ltd. No.134,Wu Kung Road, New Taipei Industrial Park, Wuku District, New Taipei City, Taiwan 24803/新北市五股區新北產業園區五工路134號
台灣檢驗科技股份有限公司 t (886-2) 2299-3279 f (886-2) 2298-0488 www.tw.sgs.com
Member of SGS Group

# Conversion Factor Assessment




# Deviation from Isotropy in Liquid

Error (φ, ϑ), f = 900 MHz




Uncertainty of Spherical Isotropy Assessment: ± 2.6% (k=2)





SGS Taiwan Ltd. No.134,Wu Kung Road, New Taipei Industrial Park, Wuku District, New Taipei City, Taiwan 24803/新北市五股區新北產業園區五工路134號
台灣檢驗科技股份有限公司 t (886-2) 2299-3279 f (886-2) 2298-0488 www.tw.sgs.com
Member of SGS Group

# DASY/EASY - Parameters of Probe: EX3DV4 - SN:7346

## Other Probe Parameters

| | |
|---|---|
| Sensor Arrangement | Triangular |
| Connector Angle (°) | -1.3 |
| Mechanical Surface Detection Mode | enabled |
| Optical Surface Detection Mode | disabled |
| Probe Overall Length | 337 mm |
| Probe Body Diameter | 10 mm |
| Tip Length | 9 mm |
| Tip Diameter | 2.5 mm |
| Probe Tip to Sensor X Calibration Point | 1 mm |
| Probe Tip to Sensor Y Calibration Point | 1 mm |
| Probe Tip to Sensor Z Calibration Point | 1 mm |
| Recommended Measurement Distance from Surface | 1.4 mm |





SGS Taiwan Ltd. No.134,Wu Kung Road, New Taipei Industrial Park, Wuku District, New Taipei City, Taiwan 24803/新北市五股區新北產業園區五工路134號
台灣檢驗科技股份有限公司 t (886-2) 2299-3279 f (886-2) 2298-0488 www.tw.sgs.com
Member of SGS Group

**Calibration Laboratory of**
Schmid & Partner
Engineering AG
Zeughausstrasse 43, 8004 Zurich, Switzerland

S Schweizerischer Kalibrierdienst
C Service suisse d'étalonnage
S Servizio svizzero di taratura
Swiss Calibration Service

Accredited by the Swiss Accreditation Service (SAS)
**The Swiss Accreditation Service is one of the signatories to the EA Multilateral Agreement for the recognition of calibration certificates**

Accreditation No.: **SCS 0108**

Client **SGS-TW (Auden)**

Certificate No: **EX3-3770_Apr16**

# CALIBRATION CERTIFICATE

| | |
|---|---|
| Object | EX3DV4 - SN:3770 |
| Calibration procedure(s) | QA CAL-01.v9, QA CAL-12.v9, QA CAL-14.v4, QA CAL-23.v5, QA CAL-25.v6<br>Calibration procedure for dosimetric E-field probes |
| Calibration date | April 27, 2016 |

This calibration certificate documents the traceability to national standards, which realize the physical units of measurements (SI).
The measurements and the uncertainties with confidence probability are given on the following pages and are part of the certificate.

All calibrations have been conducted in the closed laboratory facility: environment temperature (22 ± 3)°C and humidity < 70%.

Calibration Equipment used (M&TE critical for calibration)

| Primary Standards | ID | Cal Date (Certificate No.) | Scheduled Calibration |
|---|---|---|---|
| Power meter NRP | SN: 104778 | 06-Apr-16 (No. 217-02288/02289) | Apr-17 |
| Power sensor NRP-Z91 | SN: 103244 | 06-Apr-16 (No. 217-02288) | Apr-17 |
| Power sensor NRP-Z91 | SN: 103245 | 06-Apr-16 (No. 217-02289) | Apr-17 |
| Reference 20 dB Attenuator | SN: S5277 (20x) | 05-Apr-16 (No. 217-02293) | Apr-17 |
| Reference Probe ES3DV2 | SN: 3013 | 31-Dec-15 (No. ES3-3013_Dec15) | Dec-16 |
| DAE4 | SN: 660 | 23-Dec-15 (No. DAE4-660_Dec15) | Dec-16 |
| | | | |
| Secondary Standards | ID | Check Date (in house) | Scheduled Check |
| Power meter E4419B | SN: GB41293874 | 06-Apr-16 (No. 217-02285/02284) | In house check: Jun-16 |
| Power sensor E4412A | SN: MY41498087 | 06-Apr-16 (No. 217-02285) | In house check: Jun-16 |
| Power sensor E4412A | SN: 000110210 | 06-Apr-16 (No. 217-02284) | In house check: Jun-16 |
| RF generator HP 8648C | SN: US3642U01700 | 04-Aug-99 (in house check Apr-13) | In house check: Jun-16 |
| Network Analyzer HP 8753E | SN: US37390585 | 18-Oct-01 (in house check Oct-15) | In house check: Oct-16 |

| | Name | Function | Signature |
|---|---|---|---|
| Calibrated by: | Claudio Leubler | Laboratory Technician | |
| Approved by: | Katja Pokovic | Technical Manager | |

Issued: April 27, 2016

This calibration certificate shall not be reproduced except in full without written approval of the laboratory.

Certificate No: EX3-3770_Apr16 Page 1 of 11

**Calibration Laboratory of**
Schmid & Partner
Engineering AG
Zeughausstrasse 43, 8004 Zurich, Switzerland

S Schweizerischer Kalibrierdienst
C Service suisse d'étalonnage
S Servizio svizzero di taratura
Swiss Calibration Service

Accredited by the Swiss Accreditation Service (SAS)
The Swiss Accreditation Service is one of the signatories to the EA
Multilateral Agreement for the recognition of calibration certificates

Accreditation No.: **SCS 0108**

## Glossary:

| | |
|---|---|
| TSL | tissue simulating liquid |
| NORMx,y,z | sensitivity in free space |
| ConvF | sensitivity in TSL / NORMx,y,z |
| DCP | diode compression point |
| CF | crest factor (1/duty_cycle) of the RF signal |
| A, B, C, D | modulation dependent linearization parameters |
| Polarization φ | φ rotation around probe axis |
| Polarization ϑ | ϑ rotation around an axis that is in the plane normal to probe axis (at measurement center), i.e., ϑ = 0 is normal to probe axis |
| Connector Angle | information used in DASY system to align probe sensor X to the robot coordinate system |

## Calibration is Performed According to the Following Standards:

a) IEEE Std 1528-2013, "IEEE Recommended Practice for Determining the Peak Spatial-Averaged Specific Absorption Rate (SAR) in the Human Head from Wireless Communications Devices: Measurement Techniques", June 2013
b) IEC 62209-1, "Procedure to measure the Specific Absorption Rate (SAR) for hand-held devices used in close proximity to the ear (frequency range of 300 MHz to 3 GHz)", February 2005
c) IEC 62209-2, "Procedure to determine the Specific Absorption Rate (SAR) for wireless communication devices used in close proximity to the human body (frequency range of 30 MHz to 6 GHz)", March 2010
d) KDB 865664, "SAR Measurement Requirements for 100 MHz to 6 GHz"

## Methods Applied and Interpretation of Parameters:

- *NORMx,y,z:* Assessed for E-field polarization ϑ = 0 (f ≤ 900 MHz in TEM-cell; f > 1800 MHz: R22 waveguide). NORMx,y,z are only intermediate values, i.e., the uncertainties of NORMx,y,z does not affect the $E^2$-field uncertainty inside TSL (see below *ConvF*).
- *NORM(f)x,y,z = NORMx,y,z * frequency_response* (see Frequency Response Chart). This linearization is implemented in DASY4 software versions later than 4.2. The uncertainty of the frequency_response is included in the stated uncertainty of *ConvF*.
- *DCPx,y,z:* DCP are numerical linearization parameters assessed based on the data of power sweep with CW signal (no uncertainty required). DCP does not depend on frequency nor media.
- *PAR:* PAR is the Peak to Average Ratio that is not calibrated but determined based on the signal characteristics
- *Ax,y,z; Bx,y,z; Cx,y,z; Dx,y,z; VRx,y,z:* *A, B, C, D* are numerical linearization parameters assessed based on the data of power sweep for specific modulation signal. The parameters do not depend on frequency nor media. *VR* is the maximum calibration range expressed in RMS voltage across the diode.
- *ConvF and Boundary Effect Parameters:* Assessed in flat phantom using E-field (or Temperature Transfer Standard for f ≤ 800 MHz) and inside waveguide using analytical field distributions based on power measurements for f > 800 MHz. The same setups are used for assessment of the parameters applied for boundary compensation (alpha, depth) of which typical uncertainty values are given. These parameters are used in DASY4 software to improve probe accuracy close to the boundary. The sensitivity in TSL corresponds to *NORMx,y,z * ConvF* whereby the uncertainty corresponds to that given for *ConvF*. A frequency dependent *ConvF* is used in DASY version 4.4 and higher which allows extending the validity from ± 50 MHz to ± 100 MHz.
- *Spherical isotropy (3D deviation from isotropy):* in a field of low gradients realized using a flat phantom exposed by a patch antenna.
- *Sensor Offset:* The sensor offset corresponds to the offset of virtual measurement center from the probe tip (on probe axis). No tolerance required.
- *Connector Angle:* The angle is assessed using the information gained by determining the *NORMx* (no uncertainty required).





SGS Taiwan Ltd. No.134,Wu Kung Road, New Taipei Industrial Park, Wuku District, New Taipei City, Taiwan 24803/新北市五股區新北產業園區五工路134號
台灣檢驗科技股份有限公司 t (886-2) 2299-3279 f (886-2) 2298-0488 www.tw.sgs.com
Member of SGS Group

# Probe EX3DV4

## SN:3770

Manufactured: July 6, 2010
Calibrated: April 27, 2016

Calibrated for DASY/EASY Systems
(Note: non-compatible with DASY2 system!)





SGS Taiwan Ltd. No.134,Wu Kung Road, New Taipei Industrial Park, Wuku District, New Taipei City, Taiwan 24803/新北市五股區新北產業園區五工路134號
台灣檢驗科技股份有限公司 t (886-2) 2299-3279 f (886-2) 2298-0488 www.tw.sgs.com
Member of SGS Group

# DASY/EASY - Parameters of Probe: EX3DV4 - SN:3770

## Basic Calibration Parameters

| | Sensor X | Sensor Y | Sensor Z | Unc (k=2) |
|---|---|---|---|---|
| Norm ($\mu V/(V/m)^2$)[A] | 0.31 | 0.61 | 0.40 | ± 10.1 % |
| DCP (mV)[B] | 100.4 | 97.4 | 102.0 | |

## Modulation Calibration Parameters

| UID | Communication System Name | | A dB | B dB√μV | C | D dB | VR mV | Unc[E] (k=2) |
|---|---|---|---|---|---|---|---|---|
| 0 | CW | X | 0.0 | 0.0 | 1.0 | 0.00 | 145.0 | ±2.2 % |
| | | Y | 0.0 | 0.0 | 1.0 | | 148.7 | |
| | | Z | 0.0 | 0.0 | 1.0 | | 135.3 | |

The reported uncertainty of measurement is stated as the standard uncertainty of measurement multiplied by the coverage factor k=2, which for a normal distribution corresponds to a coverage probability of approximately 95%.

[A] The uncertainties of Norm X,Y,Z do not affect the $E^2$-field uncertainty inside TSL (see Pages 5 and 6).
[B] Numerical linearization parameter: uncertainty not required.
[E] Uncertainty is determined using the max. deviation from linear response applying rectangular distribution and is expressed for the square of the field value.





SGS Taiwan Ltd. No.134,Wu Kung Road, New Taipei Industrial Park, Wuku District, New Taipei City, Taiwan 24803/新北市五股區新北產業園區五工路134號
台灣檢驗科技股份有限公司 t (886-2) 2299-3279 f (886-2) 2298-0488 www.tw.sgs.com
Member of SGS Group

# DASY/EASY - Parameters of Probe: EX3DV4 - SN:3770

## Calibration Parameter Determined in Head Tissue Simulating Media

| f (MHz) [C] | Relative Permittivity [F] | Conductivity (S/m) [F] | ConvF X | ConvF Y | ConvF Z | Alpha [G] | Depth [G] (mm) | Unc (k=2) |
|---|---|---|---|---|---|---|---|---|
| 450 | 43.5 | 0.87 | 11.36 | 11.36 | 11.36 | 0.18 | 1.20 | ± 13.3 % |
| 750 | 41.9 | 0.89 | 9.83 | 9.83 | 9.83 | 0.41 | 0.88 | ± 12.0 % |
| 835 | 41.5 | 0.90 | 9.47 | 9.47 | 9.47 | 0.14 | 1.48 | ± 12.0 % |
| 900 | 41.5 | 0.97 | 9.17 | 9.17 | 9.17 | 0.15 | 1.78 | ± 12.0 % |
| 1750 | 40.1 | 1.37 | 8.19 | 8.19 | 8.19 | 0.12 | 1.68 | ± 12.0 % |
| 1900 | 40.0 | 1.40 | 7.88 | 7.88 | 7.88 | 0.12 | 1.77 | ± 12.0 % |
| 2000 | 40.0 | 1.40 | 7.91 | 7.91 | 7.91 | 0.14 | 1.61 | ± 12.0 % |
| 2300 | 39.5 | 1.67 | 7.47 | 7.47 | 7.47 | 0.13 | 2.08 | ± 12.0 % |
| 2450 | 39.2 | 1.80 | 7.12 | 7.12 | 7.12 | 0.14 | 2.00 | ± 12.0 % |
| 2600 | 39.0 | 1.96 | 6.95 | 6.95 | 6.95 | 0.21 | 1.26 | ± 12.0 % |
| 5250 | 35.9 | 4.71 | 5.03 | 5.03 | 5.03 | 0.40 | 1.80 | ± 13.1 % |
| 5600 | 35.5 | 5.07 | 4.42 | 4.42 | 4.42 | 0.50 | 1.80 | ± 13.1 % |
| 5750 | 35.4 | 5.22 | 4.83 | 4.83 | 4.83 | 0.50 | 1.80 | ± 13.1 % |

[C] Frequency validity above 300 MHz of ± 100 MHz only applies for DASY v4.4 and higher (see Page 2), else it is restricted to ± 50 MHz. The uncertainty is the RSS of the ConvF uncertainty at calibration frequency and the uncertainty for the indicated frequency band. Frequency validity below 300 MHz is ± 10, 25, 40, 50 and 70 MHz for ConvF assessments at 30, 64, 128, 150 and 220 MHz respectively. Above 5 GHz frequency validity can be extended to ± 110 MHz.
[F] At frequencies below 3 GHz, the validity of tissue parameters (ε and σ) can be relaxed to ± 10% if liquid compensation formula is applied to measured SAR values. At frequencies above 3 GHz, the validity of tissue parameters (ε and σ) is restricted to ± 5%. The uncertainty is the RSS of the ConvF uncertainty for indicated target tissue parameters.
[G] Alpha/Depth are determined during calibration. SPEAG warrants that the remaining deviation due to the boundary effect after compensation is always less than ± 1% for frequencies below 3 GHz and below ± 2% for frequencies between 3-6 GHz at any distance larger than half the probe tip diameter from the boundary.





SGS Taiwan Ltd. No.134,Wu Kung Road, New Taipei Industrial Park, Wuku District, New Taipei City, Taiwan 24803/新北市五股區新北產業園區五工路134號
台灣檢驗科技股份有限公司 t (886-2) 2299-3279 f (886-2) 2298-0488 www.tw.sgs.com
Member of SGS Group

# DASY/EASY - Parameters of Probe: EX3DV4 - SN:3770

**Calibration Parameter Determined in Body Tissue Simulating Media**

| f (MHz) [C] | Relative Permittivity [F] | Conductivity (S/m) [F] | ConvF X | ConvF Y | ConvF Z | Alpha [G] | Depth [G] (mm) | Unc (k=2) |
|---|---|---|---|---|---|---|---|---|
| 450 | 56.7 | 0.94 | 10.49 | 10.49 | 10.49 | 0.09 | 1.20 | ± 13.3 % |
| 750 | 55.5 | 0.96 | 9.43 | 9.43 | 9.43 | 0.19 | 1.26 | ± 12.0 % |
| 835 | 55.2 | 0.97 | 9.30 | 9.30 | 9.30 | 0.17 | 1.43 | ± 12.0 % |
| 900 | 55.0 | 1.05 | 9.15 | 9.15 | 9.15 | 0.28 | 1.06 | ± 12.0 % |
| 1750 | 53.4 | 1.49 | 7.88 | 7.88 | 7.88 | 0.10 | 2.60 | ± 12.0 % |
| 1900 | 53.3 | 1.52 | 7.71 | 7.71 | 7.71 | 0.11 | 2.44 | ± 12.0 % |
| 2000 | 53.3 | 1.52 | 7.82 | 7.82 | 7.82 | 0.18 | 1.42 | ± 12.0 % |
| 2300 | 52.9 | 1.81 | 7.53 | 7.53 | 7.53 | 0.54 | 0.69 | ± 12.0 % |
| 2450 | 52.7 | 1.95 | 7.37 | 7.37 | 7.37 | 0.80 | 0.56 | ± 12.0 % |
| 2600 | 52.5 | 2.16 | 7.12 | 7.12 | 7.12 | 0.80 | 0.56 | ± 12.0 % |
| 5250 | 48.9 | 5.36 | 4.34 | 4.34 | 4.34 | 0.50 | 1.90 | ± 13.1 % |
| 5600 | 48.5 | 5.77 | 3.70 | 3.70 | 3.70 | 0.60 | 1.90 | ± 13.1 % |
| 5750 | 48.3 | 5.94 | 4.07 | 4.07 | 4.07 | 0.60 | 1.90 | ± 13.1 % |

[C] Frequency validity above 300 MHz of ± 100 MHz only applies for DASY v4.4 and higher (see Page 2), else it is restricted to ± 50 MHz. The uncertainty is the RSS of the ConvF uncertainty at calibration frequency and the uncertainty for the indicated frequency band. Frequency validity below 300 MHz is ± 10, 25, 40, 50 and 70 MHz for ConvF assessments at 30, 64, 128, 150 and 220 MHz respectively. Above 5 GHz frequency validity can be extended to ± 110 MHz.
[F] At frequencies below 3 GHz, the validity of tissue parameters (ε and σ) can be relaxed to ± 10% if liquid compensation formula is applied to measured SAR values. At frequencies above 3 GHz, the validity of tissue parameters (ε and σ) is restricted to ± 5%. The uncertainty is the RSS of the ConvF uncertainty for indicated target tissue parameters.
[G] Alpha/Depth are determined during calibration. SPEAG warrants that the remaining deviation due to the boundary effect after compensation is always less than ± 1% for frequencies below 3 GHz and below ± 2% for frequencies between 3-6 GHz at any distance larger than half the probe tip diameter from the boundary.

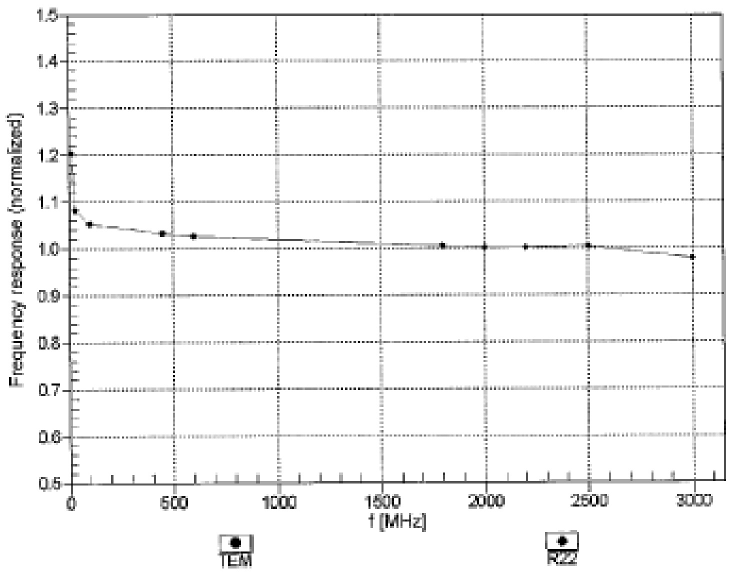




SGS Taiwan Ltd. No.134,Wu Kung Road, New Taipei Industrial Park, Wuku District, New Taipei City, Taiwan 24803/新北市五股區新北產業園區五工路134號
台灣檢驗科技股份有限公司 t (886-2) 2299-3279 f (886-2) 2298-0488 www.tw.sgs.com
Member of SGS Group

# Frequency Response of E-Field

**(TEM-Cell:ifi110 EXX, Waveguide: R22)**




**Uncertainty of Frequency Response of E-field: ± 6.3% (k=2)**

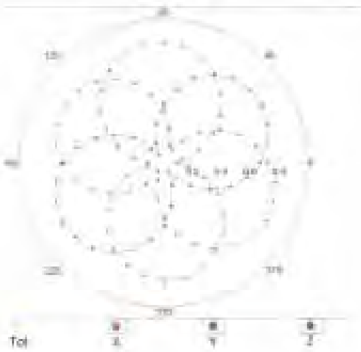


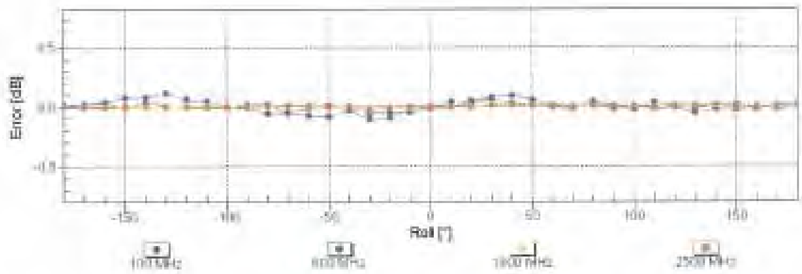


SGS Taiwan Ltd. No.134,Wu Kung Road, New Taipei Industrial Park, Wuku District, New Taipei City, Taiwan 24803/新北市五股區新北產業園區五工路134號
台灣檢驗科技股份有限公司 t (886-2) 2299-3279 f (886-2) 2298-0488 www.tw.sgs.com
Member of SGS Group

## Receiving Pattern (ϕ), ϑ = 0°

f=600 MHz,TEM f=1800 MHz,R22






**Uncertainty of Axial Isotropy Assessment: ± 0.5% (k=2)**

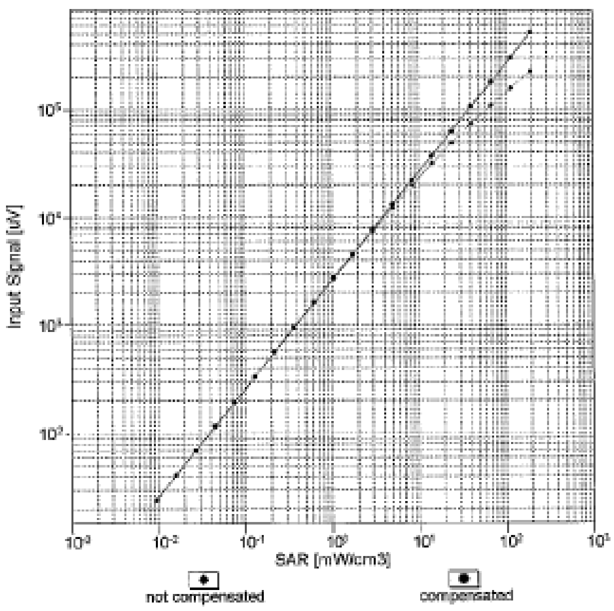


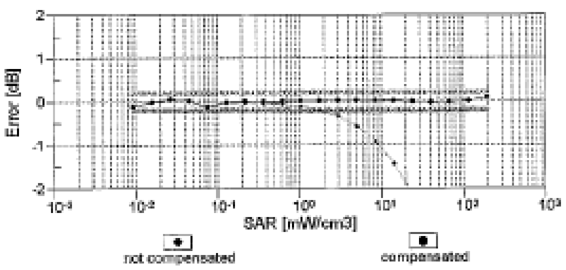


SGS Taiwan Ltd. No.134,Wu Kung Road, New Taipei Industrial Park, Wuku District, New Taipei City, Taiwan 24803/新北市五股區新北產業園區五工路134號
台灣檢驗科技股份有限公司 t (886-2) 2299-3279 f (886-2) 2298-0488 www.tw.sgs.com
Member of SGS Group

## Dynamic Range f(SAR$_{head}$)

**(TEM cell , f$_{eval}$= 1900 MHz)**




**Uncertainty of Linearity Assessment: ± 0.6% (k=2)**

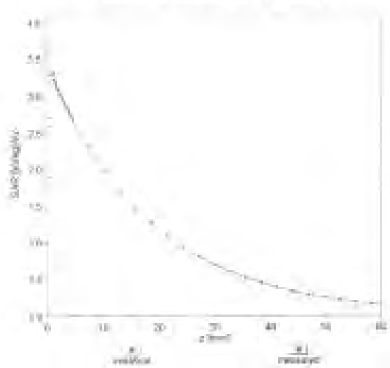




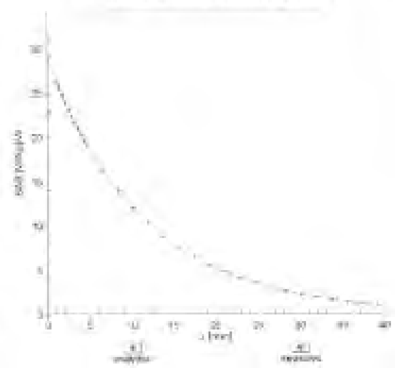
SGS Taiwan Ltd. No.134,Wu Kung Road, New Taipei Industrial Park, Wuku District, New Taipei City, Taiwan 24803/新北市五股區新北產業園區五工路134號
台灣檢驗科技股份有限公司 t (886-2) 2299-3279 f (886-2) 2298-0488 www.tw.sgs.com
Member of SGS Group

## Conversion Factor Assessment

f = 835 MHz,WGLS R9 (H_convF)

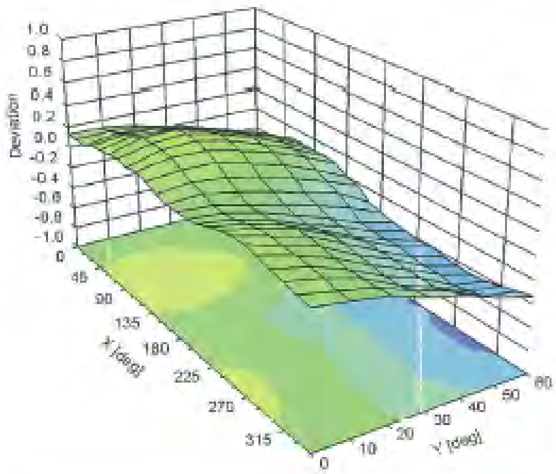


f = 1900 MHz,WGLS R22 (H_convF)



## Deviation from Isotropy in Liquid

**Error (φ, θ), f = 900 MHz**





**Uncertainty of Spherical Isotropy Assessment: ± 2.6% (k=2)**





SGS Taiwan Ltd. No.134,Wu Kung Road, New Taipei Industrial Park, Wuku District, New Taipei City, Taiwan 24803/新北市五股區新北產業園區五工路134號
台灣檢驗科技股份有限公司 t (886-2) 2299-3279 f (886-2) 2298-0488 www.tw.sgs.com
Member of SGS Group

# DASY/EASY - Parameters of Probe: EX3DV4 - SN:3770

## Other Probe Parameters

| | |
|---|---|
| Sensor Arrangement | Triangular |
| Connector Angle (°) | -29.9 |
| Mechanical Surface Detection Mode | enabled |
| Optical Surface Detection Mode | disabled |
| Probe Overall Length | 337 mm |
| Probe Body Diameter | 10 mm |
| Tip Length | 9 mm |
| Tip Diameter | 2.5 mm |
| Probe Tip to Sensor X Calibration Point | 1 mm |
| Probe Tip to Sensor Y Calibration Point | 1 mm |
| Probe Tip to Sensor Z Calibration Point | 1 mm |
| Recommended Measurement Distance from Surface | 1.4 mm |





SGS Taiwan Ltd. No.134,Wu Kung Road, New Taipei Industrial Park, Wuku District, New Taipei City, Taiwan 24803/新北市五股區新北產業園區五工路134號
台灣檢驗科技股份有限公司 t (886-2) 2299-3279 f (886-2) 2298-0488 www.tw.sgs.com
Member of SGS Group

# 8. Uncertainty Budget

Measurement Uncertainty evaluation template for DUT SAR test (3-6G)

| A | c | D | e | | f | g | h=c * f / e | i=c * g / e | k |
|---|---|---|---|---|---|---|---|---|---|
| Source of Uncertainty | Tolerance/ Uncertainty | Probability | Div | Div Value | ci (1g) | ci (10g) | Standard uncertainty | Standard uncertainty | vi, or Veff |
| | | | | | | | | | |
| **Measurement system** | | | | | | | | | |
| Probe calibration | 6.55% | N | 1 | 1 | 1 | 1 | 6.55% | 6.55% | ∞ |
| ***Isotropy , Axial*** | 3.50% | R | √3 | 1.732 | 1 | 1 | 2.02% | 2.02% | ∞ |
| ***Isotropy, Hemispherical*** | 9.60% | R | √3 | 1.732 | 1 | 1 | 5.54% | 5.54% | ∞ |
| Modulation Response | 2.40% | R | √3 | 1.732 | 1 | 1 | 1.40% | 1.40% | ∞ |
| Boundary Effect | 1.00% | R | √3 | 1.732 | 1 | 1 | 0.58% | 0.58% | ∞ |
| Linearity | 4.70% | R | √3 | 1.732 | 1 | 1 | 2.71% | 2.71% | ∞ |
| Detection Limits | 1.00% | R | √3 | 1.732 | 1 | 1 | 0.58% | 0.58% | ∞ |
| Readout Electronics | 0.30% | N | 1 | 1 | 1 | 1 | 0.30% | 0.30% | ∞ |
| Response time | 0.80% | R | √3 | 1.732 | 1 | 1 | 0.46% | 0.46% | ∞ |
| Integration Time | 2.60% | R | √3 | 1.732 | 1 | 1 | 1.50% | 1.50% | ∞ |
| ***Measurement drift (class A evaluation)*** | 1.75% | R | √3 | 1.732 | 1 | 1 | 1.01% | 1.01% | ∞ |
| RF ambient condition -noise | 3.00% | R | √3 | 1.732 | 1 | 1 | 1.73% | 1.73% | ∞ |
| RF ambient conditions -reflections | 3.00% | R | √3 | 1.732 | 1 | 1 | 1.73% | 1.73% | ∞ |
| Probe positioner Mechanical restrictions | 0.40% | R | √3 | 1.732 | 1 | 1 | 0.23% | 0.23% | ∞ |
| Probe Positioning with respect to phantom | 2.90% | R | √3 | 1.732 | 1 | 1 | 1.67% | 1.67% | ∞ |
| Post-processing | 1.00% | R | √3 | 1.732 | 1 | 1 | 0.58% | 0.58% | ∞ |
| Max SAR Eval | 1.00% | R | √3 | 1.732 | 1 | 1 | 0.58% | 0.58% | ∞ |
| | | | | | | | | | |
| **Test Sample related** | | | | | | | | | |
| Test sample positioning | 2.90% | N | 1 | 1 | 1 | 1 | 2.90% | 2.90% | M-1 |
| Device Holder Uncertainty | 3.60% | N | 1 | 1 | 1 | 1 | 3.60% | 3.60% | M-1 |
| Drift of output power | 5.00% | R | √3 | 1.732 | 1 | 1 | 2.89% | 2.89% | ∞ |
| | | | | | | | | | |
| **Phantom and Setup** | | | | | | | | | |
| Phantom Uncertainty | 4.00% | R | √3 | 1.732 | 1 | 1 | 2.31% | 2.31% | ∞ |
| Liquid permittivity (mea.) | 4.74% | N | 1 | 1 | 0.64 | 0.43 | 3.03% | 2.04% | M |
| Liquid Conductivity (mea.) | 4.60% | N | 1 | 1 | 0.6 | 0.49 | 2.76% | 2.25% | M |
| Combined standard uncertainty | | RSS | | | | | 12.41% | 12.09% | |
| Expant uncertainty (95% confidence | | | | | | | 24.83% | 24.19% | |


SGS Taiwan Ltd. No.134,Wu Kung Road, New Taipei Industrial Park, Wuku District, New Taipei City, Taiwan 24803/新北市五股區新北產業園區五工路134號
台灣檢驗科技股份有限公司 t (886-2) 2299-3279 f (886-2) 2298-0488 www.tw.sgs.com
Member of SGS Group

Measurement Uncertainty evaluation template for DUT SAR test (0.3-3G)

| A | c | D | e | | f | g | h=c * f / e | i=c * g / e | k |
|---|---|---|---|---|---|---|---|---|---|
| Source of Uncertainty | Tolerance/ Uncertainty | Probability | Div | Div Value | ci (1g) | ci (10g) | Standard uncertainty | Standard uncertainty | vi, or Veff |
| | | | | | | | | | |
| **Measurement system** | | | | | | | | | |
| Probe calibration | 6.00% | N | 1 | 1 | 1 | 1 | 6.00% | 6.00% | ∞ |
| ***Isotropy , Axial*** | 3.50% | R | √3 | 1.732 | 1 | 1 | 2.02% | 2.02% | ∞ |
| ***Isotropy, Hemispherical*** | 9.60% | R | √3 | 1.732 | 1 | 1 | 5.54% | 5.54% | ∞ |
| Modulation Response | 2.40% | R | √3 | 1.732 | 1 | 1 | 1.40% | 1.40% | ∞ |
| Boundary Effect | 1.00% | R | √3 | 1.732 | 1 | 1 | 0.58% | 0.58% | ∞ |
| Linearity | 4.70% | R | √3 | 1.732 | 1 | 1 | 2.71% | 2.71% | ∞ |
| Detection Limits | 1.00% | R | √3 | 1.732 | 1 | 1 | 0.58% | 0.58% | ∞ |
| Readout Electronics | 0.30% | N | 1 | 1 | 1 | 1 | 0.30% | 0.30% | ∞ |
| Response time | 0.80% | R | √3 | 1.732 | 1 | 1 | 0.46% | 0.46% | ∞ |
| Integration Time | 2.60% | R | √3 | 1.732 | 1 | 1 | 1.50% | 1.50% | ∞ |
| ***Measurement drift (class A evaluation)*** | 1.75% | R | √3 | 1.732 | 1 | 1 | 1.01% | 1.01% | ∞ |
| RF ambient condition - noise | 3.00% | R | √3 | 1.732 | 1 | 1 | 1.73% | 1.73% | ∞ |
| RF ambient conditions - reflections | 3.00% | R | √3 | 1.732 | 1 | 1 | 1.73% | 1.73% | ∞ |
| Probe positioner Mechanical restrictions | 0.40% | R | √3 | 1.732 | 1 | 1 | 0.23% | 0.23% | ∞ |
| Probe Positioning with respect to phantom | 2.90% | R | √3 | 1.732 | 1 | 1 | 1.67% | 1.67% | ∞ |
| Post-processing | 1.00% | R | √3 | 1.732 | 1 | 1 | 0.58% | 0.58% | ∞ |
| Max SAR Eval | 1.00% | R | √3 | 1.732 | 1 | 1 | 0.58% | 0.58% | ∞ |
| | | | | | | | | | |
| **Test Sample related** | | | | | | | | | |
| Test sample positioning | 2.90% | N | 1 | 1 | 1 | 1 | 2.90% | 2.90% | M-1 |
| Device Holder Uncertainty | 3.60% | N | 1 | 1 | 1 | 1 | 3.60% | 3.60% | M-1 |
| Drift of output power | 5.00% | R | √3 | 1.732 | 1 | 1 | 2.89% | 2.89% | ∞ |
| | | | | | | | | | |
| **Phantom and Setup** | | | | | | | | | |
| Phantom Uncertainty | 4.00% | R | √3 | 1.732 | 1 | 1 | 2.31% | 2.31% | ∞ |
| Liquid permittivity (mea.) | 4.02% | N | 1 | 1 | 0.64 | 0.43 | 2.57% | 1.73% | M |
| Liquid Conductivity (mea.) | 4.85% | N | 1 | 1 | 0.6 | 0.49 | 2.91% | 2.38% | M |
| Combined standard uncertainty | | RSS | | | | | 12.06% | 11.78% | |
| Expant uncertainty (95% confidence | | | | | | | 24.12% | 23.56% | |



SGS Taiwan Ltd. No.134,Wu Kung Road, New Taipei Industrial Park, Wuku District, New Taipei City, Taiwan 24803/新北市五股區新北產業園區五工路134號
台灣檢驗科技股份有限公司 t (886-2) 2299-3279 f (886-2) 2298-0488 www.tw.sgs.com
Member of SGS Group

# 9. Phantom Description

Schmid & Partner Engineering AG
s p e a g
Zeughausstrasse 43, 8004 Zurich, Switzerland
Phone +41 1 245 9700, Fax +41 1 245 9779
info@speag.com, http://www.speag.com

## Certificate of Conformity / First Article Inspection

| | |
|---|---|
| Item | SAM Twin Phantom V4.0 |
| Type No | QD 000 P40 C |
| Series No | TP-1150 and higher |
| Manufacturer | SPEAG<br>Zeughausstrasse 43<br>CH-8004 Zürich<br>Switzerland |

**Tests**
The series production process used allows the limitation to test of first articles.
Complete tests were made on the pre-series Type No. QD 000 P40 AA, Serial No. TP-1001 and on the series first article Type No. QD 000 P40 BA, Serial No. TP-1006. Certain parameters have been retested using further series items (called samples) or are tested at each item.

| Test | Requirement | Details | Units tested |
|---|---|---|---|
| Dimensions | Compliant with the geometry according to the CAD model. | IT'IS CAD File (*) | First article, Samples |
| Material thickness of shell | Compliant with the requirements according to the standards | 2mm +/- 0.2mm in flat and specific areas of head section | First article, Samples, TP-1314 ff. |
| Material thickness at ERP | Compliant with the requirements according to the standards | 6mm +/- 0.2mm at ERP | First article, All items |
| Material parameters | Dielectric parameters for required frequencies | 300 MHz – 6 GHz: Relative permittivity < 5, Loss tangent < 0.05 | Material samples |
| Material resistivity | The material has been tested to be compatible with the liquids defined in the standards if handled and cleaned according to the instructions. Observe technical Note for material compatibility. | DEGMBE based simulating liquids | Pre-series, First article, Material samples |
| Sagging | Compliant with the requirements according to the standards. Sagging of the flat section when filled with tissue simulating liquid. | < 1% typical < 0.8% if filled with 155mm of HSL900 and without DUT below | Prototypes, Sample testing |

**Standards**
[1] CENELEC EN 50361
[2] IEEE Std 1528-2003
[3] IEC 62209 Part I
[4] FCC OET Bulletin 65, Supplement C, Edition 01-01
(*) The IT'IS CAD file is derived from [2] and is also within the tolerance requirements of the shapes of the other documents.

**Conformity**
Based on the sample tests above, we certify that this item is in compliance with the uncertainty requirements of SAR measurements specified in standards [1] to [4].

**Date** 07.07.2005

**Signature / Stamp**

s p e a g
Schmid & Partner Engineering AG
Zeughausstrasse 43, 8004 Zurich, Switzerland
Phone +41 1 245 9700, Fax +41 1 245 9779
info@speag.com, http://www.speag.com

Doc No 881 – QD 000 P40 C – F Page 1 (1)

# 10. System Validation from Original Equipment Supplier

**Calibration Laboratory of**
Schmid & Partner
Engineering AG
Zeughausstrasse 43, 8004 Zurich, Switzerland

S Schweizerischer Kalibrierdienst
C Service suisse d'étalonnage
S Servizio svizzero di taratura
Swiss Calibration Service

Accredited by the Swiss Accreditation Service (SAS)
The Swiss Accreditation Service is one of the signatories to the EA
Multilateral Agreement for the recognition of calibration certificates

Accreditation No.: **SCS 0108**

Client **SGS-TW (Auden)**

Certificate No: **D750V3-1015_Aug15**

## CALIBRATION CERTIFICATE

| | |
|---|---|
| Object | D750V3 - SN: 1015 |
| Calibration procedure(s) | QA CAL-05.v9<br>Calibration procedure for dipole validation kits above 700 MHz |
| Calibration date: | August 24, 2015 |

This calibration certificate documents the traceability to national standards, which realize the physical units of measurements (SI).
The measurements and the uncertainties with confidence probability are given on the following pages and are part of the certificate.

All calibrations have been conducted in the closed laboratory facility: environment temperature (22 ± 3)°C and humidity < 70%

Calibration Equipment used (M&TE critical for calibration)

| Primary Standards | ID # | Cal Date (Certificate No.) | Scheduled Calibration |
|---|---|---|---|
| Power meter EPM-442A | GB37480704 | 07-Oct-14 (No. 217-02020) | Oct-15 |
| Power sensor HP 8481A | US37292783 | 07-Oct-14 (No. 217-02020) | Oct-15 |
| Power sensor HP 8481A | MY41092317 | 07-Oct-14 (No. 217-02021) | Oct-15 |
| Reference 20 dB Attenuator | SN: 5058 (20k) | 01-Apr-15 (No. 217-02131) | Mar-16 |
| Type-N mismatch combination | SN: 5047.2 / 06327 | 01-Apr-15 (No. 217-02134) | Mar-16 |
| Reference Probe ES3DV3 | SN: 3205 | 30-Dec-14 (No. ES3-3205_Dec14) | Dec-15 |
| DAE4 | SN: 601 | 17-Aug-15 (No. DAE4-601_Aug15) | Aug-16 |

| Secondary Standards | ID # | Check Date (in house) | Scheduled Check |
|---|---|---|---|
| RF generator R&S SMT-06 | 100005 | 04-Aug-99 (in house check Oct-13) | In house check: Oct-16 |
| Network Analyzer HP 8753E | US37390585 S4206 | 18-Oct-01 (in house check Oct-14) | In house check: Oct-15 |

| | Name | Function | Signature |
|---|---|---|---|
| Calibrated by: | Michael Weber | Laboratory Technician | |
| Approved by: | Katja Pokovic | Technical Manager | |

Issued: August 24, 2015

This calibration certificate shall not be reproduced except in full without written approval of the laboratory.

Certificate No: D750V3-1015_Aug15 Page 1 of 8



SGS Taiwan Ltd. No.134,Wu Kung Road, New Taipei Industrial Park, Wuku District, New Taipei City, Taiwan 24803/新北市五股區新北產業園區五工路134號
台灣檢驗科技股份有限公司 t (886-2) 2299-3279 f (886-2) 2298-0488 www.tw.sgs.com
Member of SGS Group

**Calibration Laboratory of**
Schmid & Partner
Engineering AG
Zeughausstrasse 43, 8004 Zurich, Switzerland

S Schweizerischer Kalibrierdienst
C Service suisse d'étalonnage
S Servizio svizzero di taratura
S Swiss Calibration Service

Accredited by the Swiss Accreditation Service (SAS)
The Swiss Accreditation Service is one of the signatories to the EA
Multilateral Agreement for the recognition of calibration certificates

Accreditation No.: **SCS 0108**

**Glossary:**

| | |
|---|---|
| TSL | tissue simulating liquid |
| ConvF | sensitivity in TSL / NORM x,y,z |
| N/A | not applicable or not measured |

**Calibration is Performed According to the Following Standards:**

a) IEEE Std 1528-2013, "IEEE Recommended Practice for Determining the Peak Spatial-Averaged Specific Absorption Rate (SAR) in the Human Head from Wireless Communications Devices: Measurement Techniques", June 2013
b) IEC 62209-1, "Procedure to measure the Specific Absorption Rate (SAR) for hand-held devices used in close proximity to the ear (frequency range of 300 MHz to 3 GHz)", February 2005
c) IEC 62209-2, "Procedure to determine the Specific Absorption Rate (SAR) for wireless communication devices used in close proximity to the human body (frequency range of 30 MHz to 6 GHz)", March 2010
d) KDB 865664, "SAR Measurement Requirements for 100 MHz to 6 GHz"

**Additional Documentation:**

e) DASY4/5 System Handbook

**Methods Applied and Interpretation of Parameters:**

- *Measurement Conditions:* Further details are available from the Validation Report at the end of the certificate. All figures stated in the certificate are valid at the frequency indicated.
- *Antenna Parameters with TSL:* The dipole is mounted with the spacer to position its feed point exactly below the center marking of the flat phantom section, with the arms oriented parallel to the body axis.
- *Feed Point Impedance and Return Loss:* These parameters are measured with the dipole positioned under the liquid filled phantom. The impedance stated is transformed from the measurement at the SMA connector to the feed point. The Return Loss ensures low reflected power. No uncertainty required.
- *Electrical Delay:* One-way delay between the SMA connector and the antenna feed point. No uncertainty required.
- *SAR measured:* SAR measured at the stated antenna input power.
- *SAR normalized:* SAR as measured, normalized to an input power of 1 W at the antenna connector.
- *SAR for nominal TSL parameters:* The measured TSL parameters are used to calculate the nominal SAR result.

The reported uncertainty of measurement is stated as the standard uncertainty of measurement multiplied by the coverage factor k=2, which for a normal distribution corresponds to a coverage probability of approximately 95%.





SGS Taiwan Ltd. No.134,Wu Kung Road, New Taipei Industrial Park, Wuku District, New Taipei City, Taiwan 24803/新北市五股區新北產業園區五工路134號
台灣檢驗科技股份有限公司 t (886-2) 2299-3279 f (886-2) 2298-0488 www.tw.sgs.com
Member of SGS Group

## Measurement Conditions

DASY system configuration, as far as not given on page 1.

| | | |
|---|---|---|
| **DASY Version** | DASY5 | V52.8.8 |
| **Extrapolation** | Advanced Extrapolation | |
| **Phantom** | Modular Flat Phantom | |
| **Distance Dipole Center - TSL** | 15 mm | with Spacer |
| **Zoom Scan Resolution** | dx, dy, dz = 5 mm | |
| **Frequency** | 750 MHz ± 1 MHz | |

## Head TSL parameters

The following parameters and calculations were applied.

| | **Temperature** | **Permittivity** | **Conductivity** |
|---|---|---|---|
| **Nominal Head TSL parameters** | 22.0 °C | 41.9 | 0.89 mho/m |
| **Measured Head TSL parameters** | (22.0 ± 0.2) °C | 42.1 ± 6 % | 0.91 mho/m ± 6 % |
| **Head TSL temperature change during test** | < 0.5 °C | ---- | ---- |

## SAR result with Head TSL

| **SAR averaged over 1 $cm^3$ (1 g) of Head TSL** | Condition | |
|---|---|---|
| SAR measured | 250 mW input power | 2.07 W/kg |
| SAR for nominal Head TSL parameters | normalized to 1W | **8.15 W/kg ± 17.0 % (k=2)** |

| **SAR averaged over 10 $cm^3$ (10 g) of Head TSL** | condition | |
|---|---|---|
| SAR measured | 250 mW input power | 1.35 W/kg |
| SAR for nominal Head TSL parameters | normalized to 1W | **5.33 W/kg ± 16.5 % (k=2)** |

## Body TSL parameters

The following parameters and calculations were applied.

| | **Temperature** | **Permittivity** | **Conductivity** |
|---|---|---|---|
| **Nominal Body TSL parameters** | 22.0 °C | 55.5 | 0.96 mho/m |
| **Measured Body TSL parameters** | (22.0 ± 0.2) °C | 56.3 ± 6 % | 1.00 mho/m ± 6 % |
| **Body TSL temperature change during test** | < 0.5 °C | ---- | ---- |

## SAR result with Body TSL

| **SAR averaged over 1 $cm^3$ (1 g) of Body TSL** | Condition | |
|---|---|---|
| SAR measured | 250 mW input power | 2.19 W/kg |
| SAR for nominal Body TSL parameters | normalized to 1W | **8.52 W/kg ± 17.0 % (k=2)** |

| **SAR averaged over 10 $cm^3$ (10 g) of Body TSL** | condition | |
|---|---|---|
| SAR measured | 250 mW input power | 1.44 W/kg |
| SAR for nominal Body TSL parameters | normalized to 1W | **5.63 W/kg ± 16.5 % (k=2)** |





SGS Taiwan Ltd. No.134,Wu Kung Road, New Taipei Industrial Park, Wuku District, New Taipei City, Taiwan 24803/新北市五股區新北產業園區五工路134號
台灣檢驗科技股份有限公司 t (886-2) 2299-3279 f (886-2) 2298-0488 www.tw.sgs.com
Member of SGS Group

## Appendix (Additional assessments outside the scope of SCS 0108)

### Antenna Parameters with Head TSL

| | |
|---|---|
| Impedance, transformed to feed point | 52.2 Ω - 1.1 jΩ |
| Return Loss | - 32.5 dB |

### Antenna Parameters with Body TSL

| | |
|---|---|
| Impedance, transformed to feed point | 48.5 Ω - 2.4 jΩ |
| Return Loss | - 30.9 dB |

### General Antenna Parameters and Design

| | |
|---|---|
| Electrical Delay (one direction) | 1.036 ns |

After long term use with 100W radiated power, only a slight warming of the dipole near the feedpoint can be measured.

The dipole is made of standard semirigid coaxial cable. The center conductor of the feeding line is directly connected to the second arm of the dipole. The antenna is therefore short-circuited for DC-signals. On some of the dipoles, small end caps are added to the dipole arms in order to improve matching when loaded according to the position as explained in the "Measurement Conditions" paragraph. The SAR data are not affected by this change. The overall dipole length is still according to the Standard.
No excessive force must be applied to the dipole arms, because they might bend or the soldered connections near the feedpoint may be damaged.

### Additional EUT Data

| | |
|---|---|
| Manufactured by | SPEAG |
| Manufactured on | March 22, 2010 |




SGS Taiwan Ltd. No.134,Wu Kung Road, New Taipei Industrial Park, Wuku District, New Taipei City, Taiwan 24803/新北市五股區新北產業園區五工路134號
台灣檢驗科技股份有限公司 t (886-2) 2299-3279 f (886-2) 2298-0488 www.tw.sgs.com
Member of SGS Group

**DASY5 Validation Report for Head TSL**

Date: 21.08.2015

Test Laboratory: SPEAG, Zurich, Switzerland

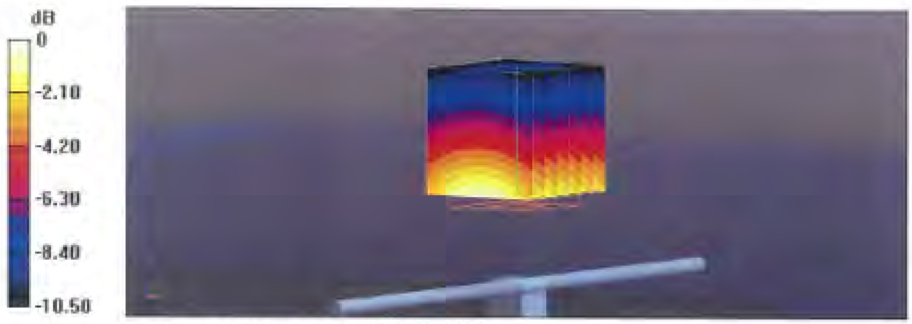
**DUT: Dipole 750 MHz; Type: D750V3; Serial: D750V3 - SN: 1015**

Communication System: UID 0 - CW; Frequency: 750 MHz
Medium parameters used: f = 750 MHz; $\sigma = 0.91$ S/m; $\varepsilon_r = 42.1$; $\rho = 1000$ kg/m$^3$
Phantom section: Flat Section
Measurement Standard: DASY5 (IEEE/IEC/ANSI C63.19-2011)

DASY52 Configuration:

- Probe: ES3DV3 - SN3205; ConvF(6.44, 6.44, 6.44); Calibrated: 30.12.2014;
- Sensor-Surface: 3mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn601; Calibrated: 17.08.2015
- Phantom: Flat Phantom 4.9L; Type: QD000P49AA; Serial: 1001
- DASY52 52.8.8(1222); SEMCAD X 14.6.10(7331)

**Dipole Calibration for Head Tissue/Pin=250 mW, d=15mm/Zoom Scan (7x7x7)/Cube 0:**
Measurement grid: dx=5mm, dy=5mm, dz=5mm
Reference Value = 53.39 V/m; Power Drift = 0.01 dB
Peak SAR (extrapolated) = 3.07 W/kg
**SAR(1 g) = 2.07 W/kg; SAR(10 g) = 1.35 W/kg**
Maximum value of SAR (measured) = 2.43 W/kg



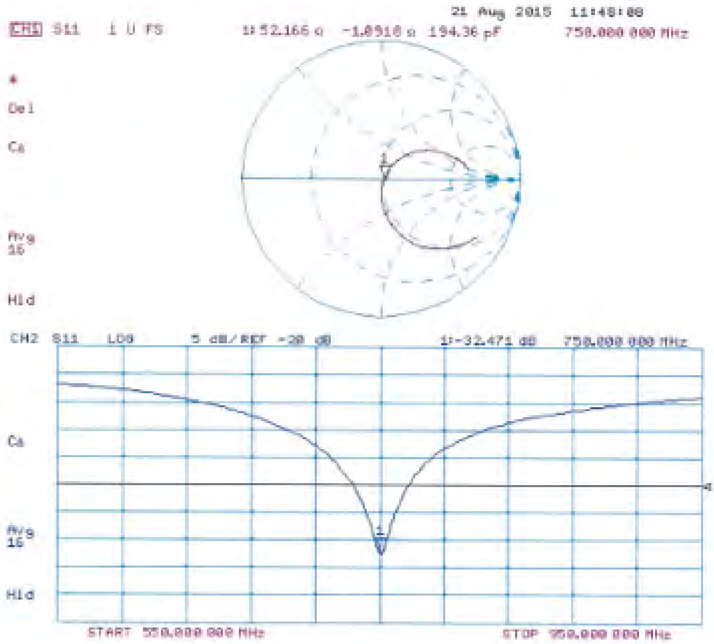

0 dB = 2.43 W/kg = 3.86 dBW/kg





SGS Taiwan Ltd. No.134,Wu Kung Road, New Taipei Industrial Park, Wuku District, New Taipei City, Taiwan 24803/新北市五股區新北產業園區五工路134號
台灣檢驗科技股份有限公司 t (886-2) 2299-3279 f (886-2) 2298-0488 www.tw.sgs.com
Member of SGS Group

Impedance Measurement Plot for Head TSL




Certificate No: D750V3-1015_Aug15 Page 6 of 8


SGS Taiwan Ltd. No.134,Wu Kung Road, New Taipei Industrial Park, Wuku District, New Taipei City, Taiwan 24803/新北市五股區新北產業園區五工路134號
台灣檢驗科技股份有限公司 t (886-2) 2299-3279 f (886-2) 2298-0488 www.tw.sgs.com
Member of SGS Group

**DASY5 Validation Report for Body TSL**

Date: 24.08.2015

Test Laboratory: SPEAG, Zurich, Switzerland

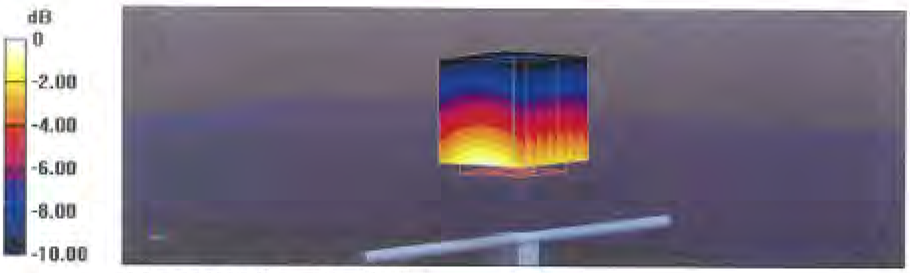
**DUT: Dipole 750 MHz; Type: D750V3; Serial: D750V3 - SN: 1015**

Communication System: UID 0 - CW; Frequency: 750 MHz
Medium parameters used: f = 750 MHz; $\sigma$ = 1 S/m; $\varepsilon_r$ = 56.3; $\rho$ = 1000 kg/m$^3$
Phantom section: Flat Section
Measurement Standard: DASY5 (IEEE/IEC/ANSI C63.19-2011)

DASY52 Configuration:

- Probe: ES3DV3 - SN3205; ConvF(6.21, 6.21, 6.21); Calibrated: 30.12.2014;
- Sensor-Surface: 3mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn601; Calibrated: 17.08.2015
- Phantom: Flat Phantom 4.9L; Type: QD000P49AA; Serial: 1001
- DASY52 52.8.8(1222); SEMCAD X 14.6.10(7331)

**Dipole Calibration for Body Tissue/Pin=250 mW, d=15mm/Zoom Scan (7x7x7)/Cube 0:**
Measurement grid: dx=5mm, dy=5mm, dz=5mm
Reference Value = 52.22 V/m; Power Drift = 0.02 dB
Peak SAR (extrapolated) = 3.19 W/kg
**SAR(1 g) = 2.19 W/kg; SAR(10 g) = 1.44 W/kg**
Maximum value of SAR (measured) = 2.56 W/kg



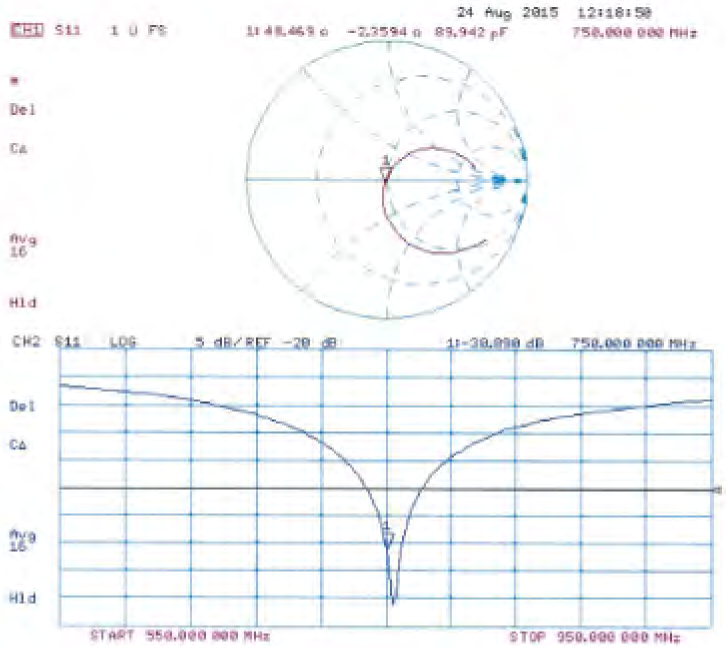

0 dB = 2.56 W/kg = 4.08 dBW/kg





SGS Taiwan Ltd. No.134,Wu Kung Road, New Taipei Industrial Park, Wuku District, New Taipei City, Taiwan 24803/新北市五股區新北產業園區五工路134號
台灣檢驗科技股份有限公司 t (886-2) 2299-3279 f (886-2) 2298-0488 www.tw.sgs.com
Member of SGS Group

Impedance Measurement Plot for Body TSL








SGS Taiwan Ltd. No.134,Wu Kung Road, New Taipei Industrial Park, Wuku District, New Taipei City, Taiwan 24803/新北市五股區新北產業園區五工路134號
台灣檢驗科技股份有限公司 t (886-2) 2299-3279 f (886-2) 2298-0488 www.tw.sgs.com
Member of SGS Group

**Calibration Laboratory of**
Schmid & Partner
Engineering AG
Zeughausstrasse 43, 8004 Zurich, Switzerland

S Schweizerischer Kalibrierdienst
C Service suisse d'étalonnage
 Servizio svizzero di taratura
S Swiss Calibration Service

Accredited by the Swiss Accreditation Service (SAS)
The Swiss Accreditation Service is one of the signatories to the EA
Multilateral Agreement for the recognition of calibration certificates

Accreditation No.: **SCS 0108**

Client **SGS-TW (Auden)**

Certificate No: **D750V3-1015_Aug16**

# CALIBRATION CERTIFICATE

| | |
|---|---|
| Object | D750V3 - SN: 1015 |
| Calibration procedure(s) | QA CAL-05.v9<br>Calibration procedure for dipole validation kits above 700 MHz |
| Calibration date: | August 30, 2016 |

This calibration certificate documents the traceability to national standards, which realize the physical units of measurements (SI).
The measurements and the uncertainties with confidence probability are given on the following pages and are part of the certificate.

All calibrations have been conducted in the closed laboratory facility: environment temperature (22 ± 3)°C and humidity < 70%.

Calibration Equipment used (M&TE critical for calibration)

| Primary Standards | ID # | Cal Date (Certificate No.) | Scheduled Calibration |
|---|---|---|---|
| Power meter NRP | SN: 104778 | 06-Apr-16 (No. 217-02288/02289) | Apr-17 |
| Power sensor NRP-Z91 | SN: 103244 | 06-Apr-16 (No. 217-02288) | Apr-17 |
| Power sensor NRP-Z91 | SN: 103245 | 06-Apr-16 (No. 217-02289) | Apr-17 |
| Reference 20 dB Attenuator | SN: 5058 (20k) | 05-Apr-16 (No. 217-02292) | Apr-17 |
| Type-N mismatch combination | SN: 5047.2 / 06327 | 05-Apr-16 (No. 217-02295) | Apr-17 |
| Reference Probe EX3DV4 | SN: 7349 | 15-Jun-16 (No. EX3-7349_Jun16) | Jun-17 |
| DAE4 | SN: 601 | 30-Dec-15 (No. DAE4-601_Dec15) | Dec-16 |

| Secondary Standards | ID # | Check Date (in house) | Scheduled Check |
|---|---|---|---|
| Power meter EPM-442A | SN: GB37480704 | 07-Oct-15 (No. 217-02222) | In house check: Oct-16 |
| Power sensor HP 8481A | SN: US37292783 | 07-Oct-15 (No. 217-02222) | In house check: Oct-16 |
| Power sensor HP 8481A | SN: MY41092317 | 07-Oct-15 (No. 217-02223) | In house check: Oct-16 |
| RF generator R&S SMT-06 | SN: 100972 | 15-Jun-15 (in house check Jun-15) | In house check: Oct-16 |
| Network Analyzer HP 8753E | SN: US37390585 | 18-Oct-01 (in house check Oct-15) | In house check: Oct-16 |

| | Name | Function | Signature |
|---|---|---|---|
| Calibrated by: | Michael Weber | Laboratory Technician | MWeber |
| Approved by: | Katja Pokovic | Technical Manager | |

Issued: August 30, 2016

This calibration certificate shall not be reproduced except in full without written approval of the laboratory.





SGS Taiwan Ltd. No.134,Wu Kung Road, New Taipei Industrial Park, Wuku District, New Taipei City, Taiwan 24803/新北市五股區新北產業園區五工路134號
台灣檢驗科技股份有限公司 t (886-2) 2299-3279 f (886-2) 2298-0488 www.tw.sgs.com
Member of SGS Group

**Calibration Laboratory of**
Schmid & Partner
Engineering AG
Zeughausstrasse 43, 8004 Zurich, Switzerland

S Schweizerischer Kalibrierdienst
C Service suisse d'étalonnage
S Servizio svizzero di taratura
S Swiss Calibration Service

Accredited by the Swiss Accreditation Service (SAS)
The Swiss Accreditation Service is one of the signatories to the EA Multilateral Agreement for the recognition of calibration certificates

Accreditation No.: SCS 0108

**Glossary:**

| | |
|---|---|
| TSL | tissue simulating liquid |
| ConvF | sensitivity in TSL / NORM x,y,z |
| N/A | not applicable or not measured |

**Calibration is Performed According to the Following Standards:**

a) IEEE Std 1528-2013, "IEEE Recommended Practice for Determining the Peak Spatial-Averaged Specific Absorption Rate (SAR) in the Human Head from Wireless Communications Devices: Measurement Techniques", June 2013
b) IEC 62209-1, "Procedure to measure the Specific Absorption Rate (SAR) for hand-held devices used in close proximity to the ear (frequency range of 300 MHz to 3 GHz)", February 2005
c) IEC 62209-2, "Procedure to determine the Specific Absorption Rate (SAR) for wireless communication devices used in close proximity to the human body (frequency range of 30 MHz to 6 GHz)", March 2010
d) KDB 865664, "SAR Measurement Requirements for 100 MHz to 6 GHz"

**Additional Documentation:**

e) DASY4/5 System Handbook

**Methods Applied and Interpretation of Parameters:**

- *Measurement Conditions:* Further details are available from the Validation Report at the end of the certificate. All figures stated in the certificate are valid at the frequency indicated.
- *Antenna Parameters with TSL:* The dipole is mounted with the spacer to position its feed point exactly below the center marking of the flat phantom section, with the arms oriented parallel to the body axis.
- *Feed Point Impedance and Return Loss:* These parameters are measured with the dipole positioned under the liquid filled phantom. The impedance stated is transformed from the measurement at the SMA connector to the feed point. The Return Loss ensures low reflected power. No uncertainty required.
- *Electrical Delay:* One-way delay between the SMA connector and the antenna feed point. No uncertainty required.
- *SAR measured:* SAR measured at the stated antenna input power.
- *SAR normalized:* SAR as measured, normalized to an input power of 1 W at the antenna connector.
- *SAR for nominal TSL parameters:* The measured TSL parameters are used to calculate the nominal SAR result.

The reported uncertainty of measurement is stated as the standard uncertainty of measurement multiplied by the coverage factor k=2, which for a normal distribution corresponds to a coverage probability of approximately 95%.





SGS Taiwan Ltd. No.134,Wu Kung Road, New Taipei Industrial Park, Wuku District, New Taipei City, Taiwan 24803/新北市五股區新北產業園區五工路134號
台灣檢驗科技股份有限公司 t (886-2) 2299-3279 f (886-2) 2298-0488 www.tw.sgs.com
Member of SGS Group

## Measurement Conditions

DASY system configuration, as far as not given on page 1.

| | | |
|---|---|---|
| DASY Version | DASY5 | V52.8.8 |
| Extrapolation | Advanced Extrapolation | |
| Phantom | Modular Flat Phantom | |
| Distance Dipole Center - TSL | 15 mm | with Spacer |
| Zoom Scan Resolution | dx, dy, dz = 5 mm | |
| Frequency | 750 MHz ± 1 MHz | |

## Head TSL parameters

The following parameters and calculations were applied.

| | Temperature | Permittivity | Conductivity |
|---|---|---|---|
| Nominal Head TSL parameters | 22.0 °C | 41.9 | 0.89 mho/m |
| Measured Head TSL parameters | (22.0 ± 0.2) °C | 42.4 ± 6 % | 0.91 mho/m ± 6 % |
| Head TSL temperature change during test | < 0.5 °C | ---- | ---- |

## SAR result with Head TSL

| SAR averaged over 1 $cm^3$ (1 g) of Head TSL | Condition | |
|---|---|---|
| SAR measured | 250 mW input power | 2.11 W/kg |
| SAR for nominal Head TSL parameters | normalized to 1W | **8.32 W/kg ± 17.0 % (k=2)** |

| SAR averaged over 10 $cm^3$ (10 g) of Head TSL | condition | |
|---|---|---|
| SAR measured | 250 mW input power | 1.38 W/kg |
| SAR for nominal Head TSL parameters | normalized to 1W | **5.45 W/kg ± 16.5 % (k=2)** |

## Body TSL parameters

The following parameters and calculations were applied.

| | Temperature | Permittivity | Conductivity |
|---|---|---|---|
| Nominal Body TSL parameters | 22.0 °C | 55.5 | 0.96 mho/m |
| Measured Body TSL parameters | (22.0 ± 0.2) °C | 54.9 ± 6 % | 0.99 mho/m ± 6 % |
| Body TSL temperature change during test | < 0.5 °C | ---- | ---- |

## SAR result with Body TSL

| SAR averaged over 1 $cm^3$ (1 g) of Body TSL | Condition | |
|---|---|---|
| SAR measured | 250 mW input power | 2.25 W/kg |
| SAR for nominal Body TSL parameters | normalized to 1W | **8.77 W/kg ± 17.0 % (k=2)** |

| SAR averaged over 10 $cm^3$ (10 g) of Body TSL | condition | |
|---|---|---|
| SAR measured | 250 mW input power | 1.47 W/kg |
| SAR for nominal Body TSL parameters | normalized to 1W | **5.76 W/kg ± 16.5 % (k=2)** |





SGS Taiwan Ltd. No.134,Wu Kung Road, New Taipei Industrial Park, Wuku District, New Taipei City, Taiwan 24803/新北市五股區新北產業園區五工路134號
台灣檢驗科技股份有限公司 t (886-2) 2299-3279 f (886-2) 2298-0488 www.tw.sgs.com
Member of SGS Group

## Appendix (Additional assessments outside the scope of SCS 0108)

### Antenna Parameters with Head TSL

| | |
|---|---|
| Impedance, transformed to feed point | 53.1 Ω - 0.2 jΩ |
| Return Loss | - 30.5 dB |

### Antenna Parameters with Body TSL

| | |
|---|---|
| Impedance, transformed to feed point | 49.0 Ω - 2.8 jΩ |
| Return Loss | - 30.5 dB |

### General Antenna Parameters and Design

| | |
|---|---|
| Electrical Delay (one direction) | 1.037 ns |

After long term use with 100W radiated power, only a slight warming of the dipole near the feedpoint can be measured.

The dipole is made of standard semirigid coaxial cable. The center conductor of the feeding line is directly connected to the second arm of the dipole. The antenna is therefore short-circuited for DC-signals. On some of the dipoles, small end caps are added to the dipole arms in order to improve matching when loaded according to the position as explained in the "Measurement Conditions" paragraph. The SAR data are not affected by this change. The overall dipole length is still according to the Standard.
No excessive force must be applied to the dipole arms, because they might bend or the soldered connections near the feedpoint may be damaged.

### Additional EUT Data

| | |
|---|---|
| Manufactured by | SPEAG |
| Manufactured on | March 22, 2010 |





SGS Taiwan Ltd. No.134,Wu Kung Road, New Taipei Industrial Park, Wuku District, New Taipei City, Taiwan 24803/新北市五股區新北產業園區五工路134號
台灣檢驗科技股份有限公司 t (886-2) 2299-3279 f (886-2) 2298-0488 www.tw.sgs.com
Member of SGS Group

**DASY5 Validation Report for Head TSL**

Date: 30.08.2016

Test Laboratory: SPEAG, Zurich, Switzerland

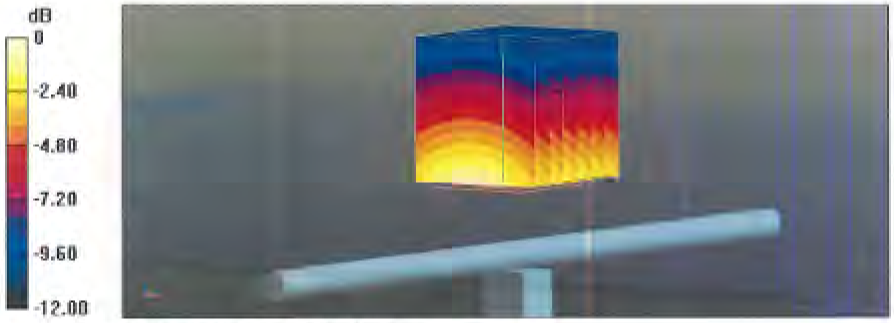
**DUT: Dipole 750 MHz; Type: D750V3; Serial: D750V3 - SN: 1015**

Communication System: UID 0 - CW; Frequency: 750 MHz
Medium parameters used: f = 750 MHz; $\sigma$ = 0.91 S/m; $\varepsilon_r$ = 42.4; $\rho$ = 1000 kg/m$^3$
Phantom section: Flat Section
Measurement Standard: DASY5 (IEEE/IEC/ANSI C63.19-2011)

DASY52 Configuration:

- Probe: EX3DV4 - SN7349; ConvF(10.07, 10.07, 10.07); Calibrated: 15.06.2016;
- Sensor-Surface: 1.4mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn601; Calibrated: 30.12.2015
- Phantom: Flat Phantom 4.9L; Type: QD000P49AA; Serial: 1001
- DASY52 52.8.8(1258); SEMCAD X 14.6.10(7372)

**Dipole Calibration for Head Tissue/Pin=250 mW, d=15mm/Zoom Scan (7x7x7)/Cube 0:**
Measurement grid: dx=5mm, dy=5mm, dz=5mm
Reference Value = 58.26 V/m; Power Drift = 0.02 dB
Peak SAR (extrapolated) = 3.16 W/kg
**SAR(1 g) = 2.11 W/kg; SAR(10 g) = 1.38 W/kg**
Maximum value of SAR (measured) = 2.81 W/kg

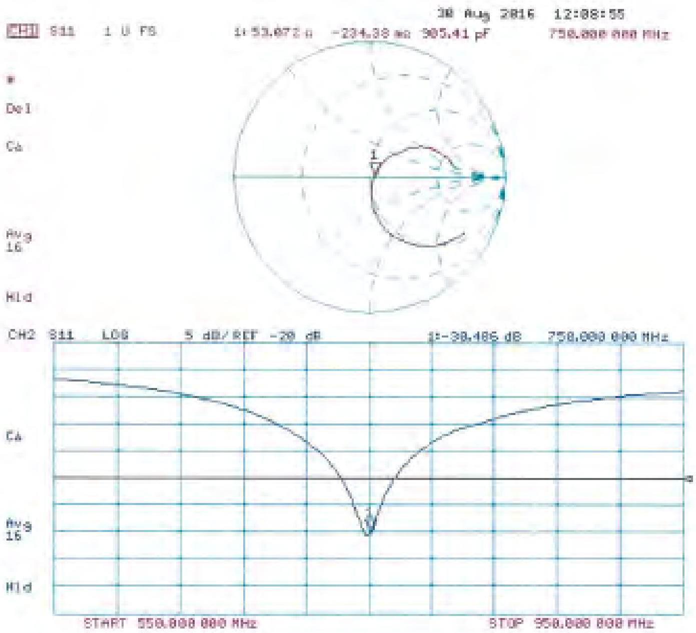



0 dB = 2.81 W/kg = 4.49 dBW/kg




SGS Taiwan Ltd. No.134,Wu Kung Road, New Taipei Industrial Park, Wuku District, New Taipei City, Taiwan 24803/新北市五股區新北產業園區五工路134號
台灣檢驗科技股份有限公司 t (886-2) 2299-3279 f (886-2) 2298-0488 www.tw.sgs.com
Member of SGS Group

## Impedance Measurement Plot for Head TSL




Certificate No: D750V3-1015_Aug16 Page 6 of 8



SGS Taiwan Ltd. No.134,Wu Kung Road, New Taipei Industrial Park, Wuku District, New Taipei City, Taiwan 24803/新北市五股區新北產業園區五工路134號
台灣檢驗科技股份有限公司 t (886-2) 2299-3279 f (886-2) 2298-0488 www.tw.sgs.com
Member of SGS Group

**DASY5 Validation Report for Body TSL**

Date: 30.08.2016

Test Laboratory: SPEAG, Zurich, Switzerland

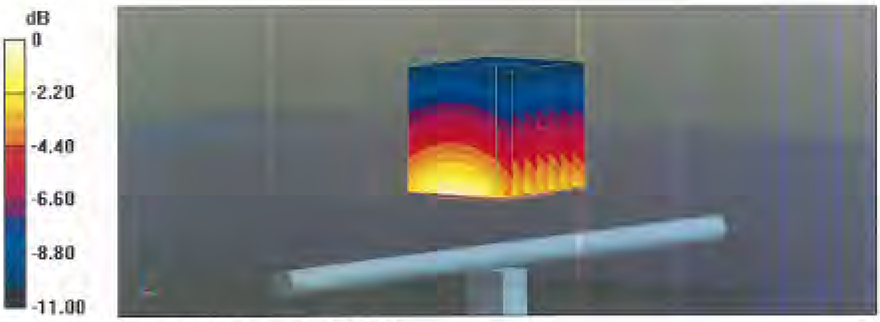
**DUT: Dipole 750 MHz; Type: D750V3; Serial: D750V3 - SN: 1015**

Communication System: UID 0 - CW; Frequency: 750 MHz
Medium parameters used: f = 750 MHz; $\sigma$ = 0.99 S/m; $\varepsilon_r$ = 54.9; $\rho$ = 1000 kg/m$^3$
Phantom section: Flat Section
Measurement Standard: DASY5 (IEEE/IEC/ANSI C63.19-2011)

DASY52 Configuration:

- Probe: EX3DV4 - SN7349; ConvF(9.99, 9.99, 9.99); Calibrated: 15.06.2016;
- Sensor-Surface: 1.4mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn601; Calibrated: 30.12.2015
- Phantom: Flat Phantom 4.9L; Type: QD000P49AA; Serial: 1001
- DASY52 52.8.8(1258); SEMCAD X 14.6.10(7372)

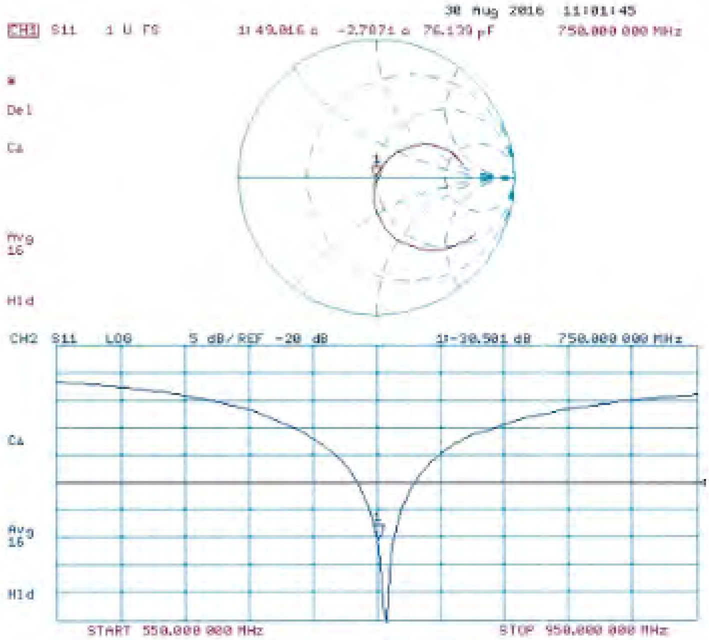
**Dipole Calibration for Body Tissue/Pin=250 mW, d=15mm/Zoom Scan (7x7x7)/Cube 0:**
Measurement grid: dx=5mm, dy=5mm, dz=5mm
Reference Value = 57.47 V/m; Power Drift = -0.01 dB
Peak SAR (extrapolated) = 3.39 W/kg
**SAR(1 g) = 2.25 W/kg; SAR(10 g) = 1.47 W/kg**
Maximum value of SAR (measured) = 2.97 W/kg




0 dB = 2.97 W/kg = 4.73 dBW/kg

Certificate No: D750V3-1015_Aug16 Page 7 of 8

Impedance Measurement Plot for Body TSL








SGS Taiwan Ltd. No.134,Wu Kung Road, New Taipei Industrial Park, Wuku District, New Taipei City, Taiwan 24803/新北市五股區新北產業園區五工路134號
台灣檢驗科技股份有限公司 t (886-2) 2299-3279 f (886-2) 2298-0488 www.tw.sgs.com
Member of SGS Group

**Calibration Laboratory of**
Schmid & Partner
Engineering AG
Zeughausstrasse 43, 8004 Zurich, Switzerland

S Schweizerischer Kalibrierdienst
C Service suisse d'étalonnage
S Servizio svizzero di taratura
S Swiss Calibration Service

Accredited by the Swiss Accreditation Service (SAS)
The Swiss Accreditation Service is one of the signatories to the EA
Multilateral Agreement for the recognition of calibration certificates

Accreditation No.: **SCS 0108**

Client **SGS-TW (Auden)**

Certificate No: **D835V2-4d063_Aug15**

# CALIBRATION CERTIFICATE

| | |
|---|---|
| Object | D835V2 - SN: 4d063 |
| Calibration procedure(s) | QA CAL-05.v9<br>Calibration procedure for dipole validation kits above 700 MHz |
| Calibration date: | August 24, 2015 |

This calibration certificate documents the traceability to national standards, which realize the physical units of measurements (SI).
The measurements and the uncertainties with confidence probability are given on the following pages and are part of the certificate.

All calibrations have been conducted in the closed laboratory facility: environment temperature (22 ± 3)°C and humidity < 70%.

Calibration Equipment used (M&TE critical for calibration)

| Primary Standards | ID # | Cal Date (Certificate No.) | Scheduled Calibration |
|---|---|---|---|
| Power meter EPM-442A | GB37480704 | 07-Oct-14 (No. 217-02020) | Oct-15 |
| Power sensor HP 8481A | US37292783 | 07-Oct-14 (No. 217-02020) | Oct-15 |
| Power sensor HP 8481A | MY41092317 | 07-Oct-14 (No. 217-02021) | Oct-15 |
| Reference 20 dB Attenuator | SN: 5058 (20k) | 01-Apr-15 (No. 217-02131) | Mar-16 |
| Type-N mismatch combination | SN: 5047.2 / 06327 | 01-Apr-15 (No. 217-02134) | Mar-16 |
| Reference Probe ES3DV3 | SN: 3205 | 30-Dec-14 (No. ES3-3205_Dec14) | Dec-15 |
| DAE4 | SN: 601 | 17-Aug-15 (No. DAE4-601_Aug15) | Aug-16 |

| Secondary Standards | ID # | Check Date (in house) | Scheduled Check |
|---|---|---|---|
| RF generator R&S SMT-06 | 100005 | 04-Aug-99 (in house check Oct-13) | In house check: Oct-16 |
| Network Analyzer HP 8753E | US37390585 S4206 | 18-Oct-01 (in house check Oct-14) | In house check: Oct-15 |

| | Name | Function | Signature |
|---|---|---|---|
| Calibrated by: | Michael Weber | Laboratory Technician | M.Weber |
| Approved by: | Katja Pokovic | Technical Manager | |

Issued: August 25, 2015

This calibration certificate shall not be reproduced except in full without written approval of the laboratory.





SGS Taiwan Ltd. No.134,Wu Kung Road, New Taipei Industrial Park, Wuku District, New Taipei City, Taiwan 24803/新北市五股區新北產業園區五工路134號
台灣檢驗科技股份有限公司 t (886-2) 2299-3279 f (886-2) 2298-0488 www.tw.sgs.com
Member of SGS Group

Calibration Laboratory of
Schmid & Partner
Engineering AG
Zeughausstrasse 43, 8004 Zurich, Switzerland

S Schweizerischer Kalibrierdienst
C Service suisse d'étalonnage
S Servizio svizzero di taratura
S Swiss Calibration Service

Accredited by the Swiss Accreditation Service (SAS)
The Swiss Accreditation Service is one of the signatories to the EA
Multilateral Agreement for the recognition of calibration certificates

Accreditation No.: SCS 0108

**Glossary:**

| | |
|---|---|
| TSL | tissue simulating liquid |
| ConvF | sensitivity in TSL / NORM x,y,z |
| N/A | not applicable or not measured |

**Calibration is Performed According to the Following Standards:**

a) IEEE Std 1528-2013, "IEEE Recommended Practice for Determining the Peak Spatial-Averaged Specific Absorption Rate (SAR) in the Human Head from Wireless Communications Devices: Measurement Techniques", June 2013
b) IEC 62209-1, "Procedure to measure the Specific Absorption Rate (SAR) for hand-held devices used in close proximity to the ear (frequency range of 300 MHz to 3 GHz)", February 2005
c) IEC 62209-2, "Procedure to determine the Specific Absorption Rate (SAR) for wireless communication devices used in close proximity to the human body (frequency range of 30 MHz to 6 GHz)", March 2010
d) KDB 865664, "SAR Measurement Requirements for 100 MHz to 6 GHz"

**Additional Documentation:**

e) DASY4/5 System Handbook

**Methods Applied and Interpretation of Parameters:**

- *Measurement Conditions:* Further details are available from the Validation Report at the end of the certificate. All figures stated in the certificate are valid at the frequency indicated.
- *Antenna Parameters with TSL:* The dipole is mounted with the spacer to position its feed point exactly below the center marking of the flat phantom section, with the arms oriented parallel to the body axis.
- *Feed Point Impedance and Return Loss:* These parameters are measured with the dipole positioned under the liquid filled phantom. The impedance stated is transformed from the measurement at the SMA connector to the feed point. The Return Loss ensures low reflected power. No uncertainty required.
- *Electrical Delay:* One-way delay between the SMA connector and the antenna feed point. No uncertainty required.
- *SAR measured:* SAR measured at the stated antenna input power.
- *SAR normalized:* SAR as measured, normalized to an input power of 1 W at the antenna connector.
- *SAR for nominal TSL parameters:* The measured TSL parameters are used to calculate the nominal SAR result.

The reported uncertainty of measurement is stated as the standard uncertainty of measurement multiplied by the coverage factor k=2, which for a normal distribution corresponds to a coverage probability of approximately 95%.





SGS Taiwan Ltd. No.134,Wu Kung Road, New Taipei Industrial Park, Wuku District, New Taipei City, Taiwan 24803/新北市五股區新北產業園區五工路134號
台灣檢驗科技股份有限公司 t (886-2) 2299-3279 f (886-2) 2298-0488 www.tw.sgs.com
Member of SGS Group

**Measurement Conditions**

DASY system configuration, as far as not given on page 1.

| | | |
|---|---|---|
| **DASY Version** | DASY5 | V52.8.8 |
| **Extrapolation** | Advanced Extrapolation | |
| **Phantom** | Modular Flat Phantom | |
| **Distance Dipole Center - TSL** | 15 mm | with Spacer |
| **Zoom Scan Resolution** | dx, dy, dz = 5 mm | |
| **Frequency** | 835 MHz ± 1 MHz | |

**Head TSL parameters**

The following parameters and calculations were applied.

| | **Temperature** | **Permittivity** | **Conductivity** |
|---|---|---|---|
| **Nominal Head TSL parameters** | 22.0 °C | 41.5 | 0.90 mho/m |
| **Measured Head TSL parameters** | (22.0 ± 0.2) °C | 41.9 ± 6 % | 0.93 mho/m ± 6 % |
| **Head TSL temperature change during test** | < 0.5 °C | ---- | ---- |

**SAR result with Head TSL**

| **SAR averaged over 1 $cm^3$ (1 g) of Head TSL** | Condition | |
|---|---|---|
| SAR measured | 250 mW input power | 2.33 W/kg |
| SAR for nominal Head TSL parameters | normalized to 1W | **9.11 W/kg ± 17.0 % (k=2)** |

| **SAR averaged over 10 $cm^3$ (10 g) of Head TSL** | condition | |
|---|---|---|
| SAR measured | 250 mW input power | 1.52 W/kg |
| SAR for nominal Head TSL parameters | normalized to 1W | **5.97 W/kg ± 16.5 % (k=2)** |

**Body TSL parameters**

The following parameters and calculations were applied.

| | **Temperature** | **Permittivity** | **Conductivity** |
|---|---|---|---|
| **Nominal Body TSL parameters** | 22.0 °C | 55.2 | 0.97 mho/m |
| **Measured Body TSL parameters** | (22.0 ± 0.2) °C | 56.1 ± 6 % | 1.02 mho/m ± 6 % |
| **Body TSL temperature change during test** | < 0.5 °C | ---- | ---- |

**SAR result with Body TSL**

| **SAR averaged over 1 $cm^3$ (1 g) of Body TSL** | Condition | |
|---|---|---|
| SAR measured | 250 mW input power | 2.40 W/kg |
| SAR for nominal Body TSL parameters | normalized to 1W | **9.28 W/kg ± 17.0 % (k=2)** |

| **SAR averaged over 10 $cm^3$ (10 g) of Body TSL** | condition | |
|---|---|---|
| SAR measured | 250 mW input power | 1.57 W/kg |
| SAR for nominal Body TSL parameters | normalized to 1W | **6.11 W/kg ± 16.5 % (k=2)** |





SGS Taiwan Ltd. No.134,Wu Kung Road, New Taipei Industrial Park, Wuku District, New Taipei City, Taiwan 24803/新北市五股區新北產業園區五工路134號
台灣檢驗科技股份有限公司 t (886-2) 2299-3279 f (886-2) 2298-0488 www.tw.sgs.com
Member of SGS Group

## Appendix (Additional assessments outside the scope of SCS 0108)

### Antenna Parameters with Head TSL

| | |
|---|---|
| Impedance, transformed to feed point | 51.3 Ω - 1.7 jΩ |
| Return Loss | - 33.4 dB |

### Antenna Parameters with Body TSL

| | |
|---|---|
| Impedance, transformed to feed point | 47.9 Ω - 2.7 jΩ |
| Return Loss | - 29.1 dB |

### General Antenna Parameters and Design

| | |
|---|---|
| Electrical Delay (one direction) | 1.394 ns |

After long term use with 100W radiated power, only a slight warming of the dipole near the feedpoint can be measured.

The dipole is made of standard semirigid coaxial cable. The center conductor of the feeding line is directly connected to the second arm of the dipole. The antenna is therefore short-circuited for DC-signals. On some of the dipoles, small end caps are added to the dipole arms in order to improve matching when loaded according to the position as explained in the "Measurement Conditions" paragraph. The SAR data are not affected by this change. The overall dipole length is still according to the Standard.
No excessive force must be applied to the dipole arms, because they might bend or the soldered connections near the feedpoint may be damaged.

### Additional EUT Data

| | |
|---|---|
| Manufactured by | SPEAG |
| Manufactured on | November 27, 2006 |




SGS Taiwan Ltd. No.134,Wu Kung Road, New Taipei Industrial Park, Wuku District, New Taipei City, Taiwan 24803/新北市五股區新北產業園區五工路134號
台灣檢驗科技股份有限公司 t (886-2) 2299-3279 f (886-2) 2298-0488 www.tw.sgs.com
Member of SGS Group

**DASY5 Validation Report for Head TSL**

Date: 21.08.2015

Test Laboratory: SPEAG, Zurich, Switzerland

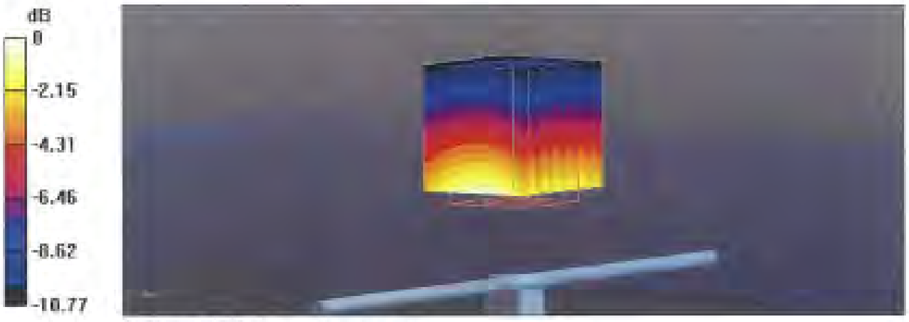
**DUT: Dipole 835 MHz; Type: D835V2; Serial: D835V2 - SN: 4d063**

Communication System: UID 0 - CW; Frequency: 835 MHz
Medium parameters used: f = 835 MHz; $\sigma$ = 0.93 S/m; $\varepsilon_r$ = 41.9; $\rho$ = 1000 kg/m$^3$
Phantom section: Flat Section
Measurement Standard: DASY5 (IEEE/IEC/ANSI C63.19-2011)

DASY52 Configuration:

- Probe: ES3DV3 - SN3205; ConvF(6.2, 6.2, 6.2); Calibrated: 30.12.2014;
- Sensor-Surface: 3mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn601; Calibrated: 17.08.2015
- Phantom: Flat Phantom 4.9L; Type: QD000P49AA; Serial: 1001
- DASY52 52.8.8(1222); SEMCAD X 14.6.10(7331)

**Dipole Calibration for Head Tissue/Pin=250 mW, d=15mm/Zoom Scan (7x7x7)/Cube 0:**
Measurement grid: dx=5mm, dy=5mm, dz=5mm
Reference Value = 55.92 V/m; Power Drift = -0.02 dB
Peak SAR (extrapolated) = 3.44 W/kg
**SAR(1 g) = 2.33 W/kg; SAR(10 g) = 1.52 W/kg**
Maximum value of SAR (measured) = 2.73 W/kg



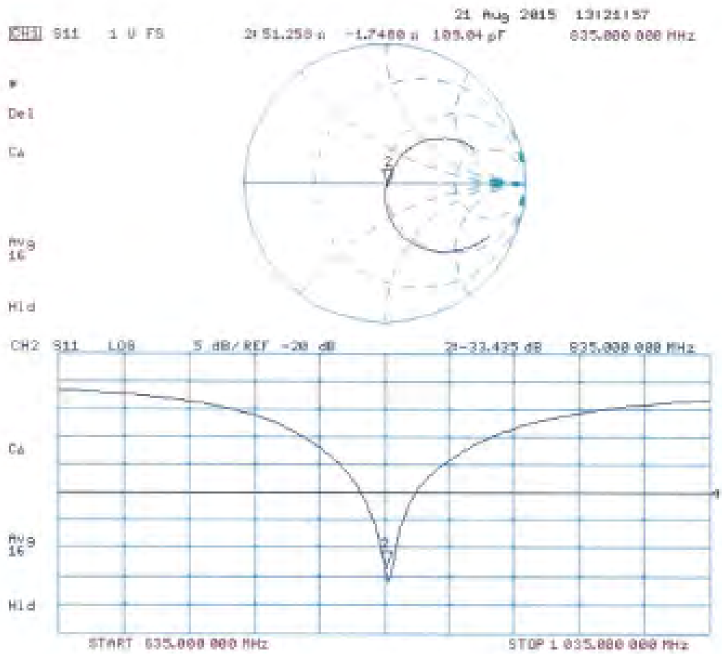

0 dB = 2.73 W/kg = 4.36 dBW/kg





SGS Taiwan Ltd. No.134,Wu Kung Road, New Taipei Industrial Park, Wuku District, New Taipei City, Taiwan 24803/新北市五股區新北產業園區五工路134號
台灣檢驗科技股份有限公司 t (886-2) 2299-3279 f (886-2) 2298-0488 www.tw.sgs.com
Member of SGS Group

Impedance Measurement Plot for Head TSL








SGS Taiwan Ltd. No.134,Wu Kung Road, New Taipei Industrial Park, Wuku District, New Taipei City, Taiwan 24803/新北市五股區新北產業園區五工路134號
台灣檢驗科技股份有限公司 t (886-2) 2299-3279 f (886-2) 2298-0488 www.tw.sgs.com
Member of SGS Group

**DASY5 Validation Report for Body TSL**

Date: 24.08.2015

Test Laboratory: SPEAG, Zurich, Switzerland

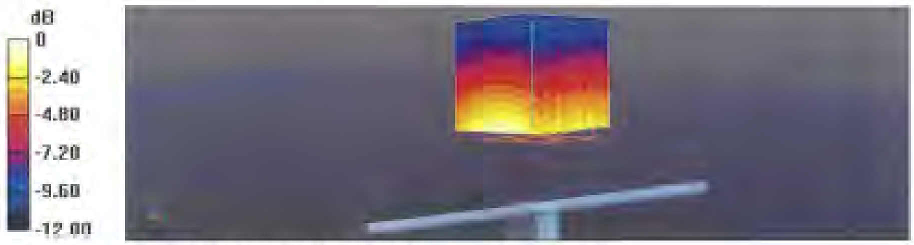
**DUT: Dipole 835 MHz; Type: D835V2; Serial: D835V2 - SN: 4d063**

Communication System: UID 0 - CW; Frequency: 835 MHz
Medium parameters used: f = 835 MHz; $\sigma$ = 1.02 S/m; $\varepsilon_r$ = 56.1; $\rho$ = 1000 kg/m$^3$
Phantom section: Flat Section
Measurement Standard: DASY5 (IEEE/IEC/ANSI C63.19-2011)

DASY52 Configuration:

- Probe: ES3DV3 - SN3205; ConvF(6.17, 6.17, 6.17); Calibrated: 30.12.2014;
- Sensor-Surface: 3mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn601; Calibrated: 17.08.2015
- Phantom: Flat Phantom 4.9L; Type: QD000P49AA; Serial: 1001
- DASY52 52.8.8(1222); SEMCAD X 14.6.10(7331)

**Dipole Calibration for Body Tissue/Pin=250 mW, d=15mm/Zoom Scan (7x7x7)/Cube 0:**
Measurement grid: dx=5mm, dy=5mm, dz=5mm
Reference Value = 54.07 V/m; Power Drift = -0.02 dB
Peak SAR (extrapolated) = 3.52 W/kg
**SAR(1 g) = 2.4 W/kg; SAR(10 g) = 1.57 W/kg**
Maximum value of SAR (measured) = 2.81 W/kg



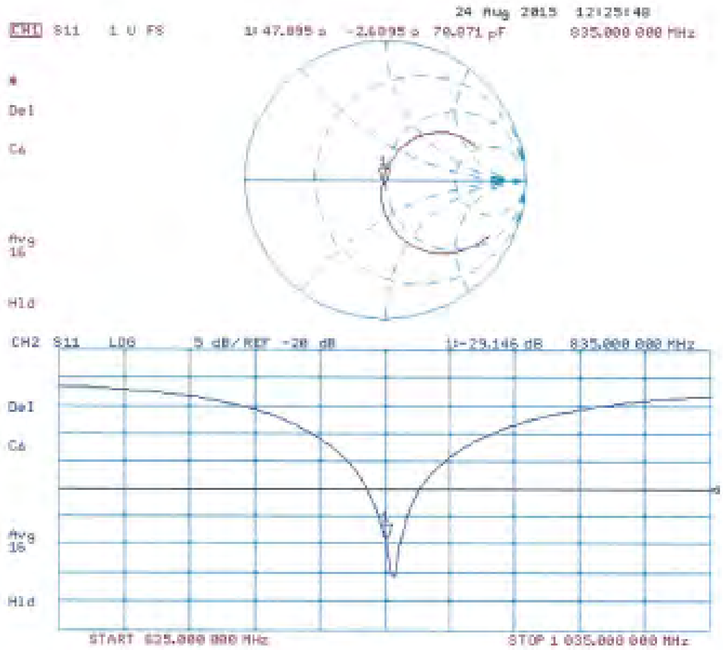

0 dB = 2.81 W/kg = 4.49 dBW/kg





SGS Taiwan Ltd. No.134,Wu Kung Road, New Taipei Industrial Park, Wuku District, New Taipei City, Taiwan 24803/新北市五股區新北產業園區五工路134號
台灣檢驗科技股份有限公司 t (886-2) 2299-3279 f (886-2) 2298-0488 www.tw.sgs.com
Member of SGS Group

Impedance Measurement Plot for Body TSL








SGS Taiwan Ltd. No.134,Wu Kung Road, New Taipei Industrial Park, Wuku District, New Taipei City, Taiwan 24803/新北市五股區新北產業園區五工路134號
台灣檢驗科技股份有限公司 t (886-2) 2299-3279 f (886-2) 2298-0488 www.tw.sgs.com
Member of SGS Group

**Calibration Laboratory of**
Schmid & Partner
Engineering AG
Zeughausstrasse 43, 8004 Zurich, Switzerland

S Schweizerischer Kalibrierdienst
C Service suisse d'étalonnage
S Servizio svizzero di taratura
S Swiss Calibration Service

Accredited by the Swiss Accreditation Service (SAS)
The Swiss Accreditation Service is one of the signatories to the EA
Multilateral Agreement for the recognition of calibration certificates

Accreditation No.: **SCS 0108**

Client **SGS-TW (Auden)**

Certificate No: **D835V2-4d063_Aug16**

# CALIBRATION CERTIFICATE

| | |
|---|---|
| Object | D835V2 - SN:4d063 |
| Calibration procedure(s) | QA CAL-05.v9<br>Calibration procedure for dipole validation kits above 700 MHz |
| Calibration date: | August 25, 2016 |

This calibration certificate documents the traceability to national standards, which realize the physical units of measurements (SI).
The measurements and the uncertainties with confidence probability are given on the following pages and are part of the certificate.

All calibrations have been conducted in the closed laboratory facility: environment temperature (22 ± 3)°C and humidity < 70%.

Calibration Equipment used (M&TE critical for calibration)

| Primary Standards | ID # | Cal Date (Certificate No.) | Scheduled Calibration |
|---|---|---|---|
| Power meter NRP | SN: 104778 | 06-Apr-16 (No. 217-02288/02289) | Apr-17 |
| Power sensor NRP-Z91 | SN: 103244 | 06-Apr-16 (No. 217-02288) | Apr-17 |
| Power sensor NRP-Z91 | SN: 103245 | 06-Apr-16 (No. 217-02289) | Apr-17 |
| Reference 20 dB Attenuator | SN: 5058 (20k) | 05-Apr-16 (No. 217-02292) | Apr-17 |
| Type-N mismatch combination | SN: 5047.2 / 06327 | 05-Apr-16 (No. 217-02295) | Apr-17 |
| Reference Probe EX3DV4 | SN: 7349 | 15-Jun-16 (No. EX3-7349_Jun16) | Jun-17 |
| DAE4 | SN: 601 | 30-Dec-15 (No. DAE4-601_Dec15) | Dec-16 |

| Secondary Standards | ID # | Check Date (in house) | Scheduled Check |
|---|---|---|---|
| Power meter EPM-442A | SN: GB37480704 | 07-Oct-15 (No. 217-02222) | In house check: Oct-16 |
| Power sensor HP 8481A | SN: US37292783 | 07-Oct-15 (No. 217-02222) | In house check: Oct-16 |
| Power sensor HP 8481A | SN: MY41092317 | 07-Oct-15 (No. 217-02223) | In house check: Oct-16 |
| RF generator R&S SMT-06 | SN: 100972 | 15-Jun-15 (in house check Jun-15) | In house check: Oct-16 |
| Network Analyzer HP 8753E | SN: US37390585 | 18-Oct-01 (in house check Oct-15) | In house check: Oct-16 |

| | Name | Function | Signature |
|---|---|---|---|
| Calibrated by: | Michael Weber | Laboratory Technician | M.Weber |
| Approved by: | Katja Pokovic | Technical Manager | |

Issued: August 26, 2016

This calibration certificate shall not be reproduced except in full without written approval of the laboratory.





SGS Taiwan Ltd. No.134,Wu Kung Road, New Taipei Industrial Park, Wuku District, New Taipei City, Taiwan 24803/新北市五股區新北產業園區五工路134號
台灣檢驗科技股份有限公司 t (886-2) 2299-3279 f (886-2) 2298-0488 www.tw.sgs.com
Member of SGS Group

**Calibration Laboratory of**
Schmid & Partner
Engineering AG
Zeughausstrasse 43, 8004 Zurich, Switzerland

S Schweizerischer Kalibrierdienst
C Service suisse d'étalonnage
S Servizio svizzero di taratura
S Swiss Calibration Service

Accredited by the Swiss Accreditation Service (SAS)
The Swiss Accreditation Service is one of the signatories to the EA
Multilateral Agreement for the recognition of calibration certificates

Accreditation No.: **SCS 0108**

**Glossary:**

| | |
|---|---|
| TSL | tissue simulating liquid |
| ConvF | sensitivity in TSL / NORM x,y,z |
| N/A | not applicable or not measured |

**Calibration is Performed According to the Following Standards:**

a) IEEE Std 1528-2013, "IEEE Recommended Practice for Determining the Peak Spatial-Averaged Specific Absorption Rate (SAR) in the Human Head from Wireless Communications Devices: Measurement Techniques", June 2013
b) IEC 62209-1, "Procedure to measure the Specific Absorption Rate (SAR) for hand-held devices used in close proximity to the ear (frequency range of 300 MHz to 3 GHz)", February 2005
c) IEC 62209-2, "Procedure to determine the Specific Absorption Rate (SAR) for wireless communication devices used in close proximity to the human body (frequency range of 30 MHz to 6 GHz)", March 2010
d) KDB 865664, "SAR Measurement Requirements for 100 MHz to 6 GHz"

**Additional Documentation:**

e) DASY4/5 System Handbook

**Methods Applied and Interpretation of Parameters:**

- *Measurement Conditions:* Further details are available from the Validation Report at the end of the certificate. All figures stated in the certificate are valid at the frequency indicated.
- *Antenna Parameters with TSL:* The dipole is mounted with the spacer to position its feed point exactly below the center marking of the flat phantom section, with the arms oriented parallel to the body axis.
- *Feed Point Impedance and Return Loss:* These parameters are measured with the dipole positioned under the liquid filled phantom. The impedance stated is transformed from the measurement at the SMA connector to the feed point. The Return Loss ensures low reflected power. No uncertainty required.
- *Electrical Delay:* One-way delay between the SMA connector and the antenna feed point. No uncertainty required.
- *SAR measured:* SAR measured at the stated antenna input power.
- *SAR normalized:* SAR as measured, normalized to an input power of 1 W at the antenna connector.
- *SAR for nominal TSL parameters:* The measured TSL parameters are used to calculate the nominal SAR result.

The reported uncertainty of measurement is stated as the standard uncertainty of measurement multiplied by the coverage factor k=2, which for a normal distribution corresponds to a coverage probability of approximately 95%.

Certificate No: D835V2-4d063_Aug16 Page 2 of 8

## Measurement Conditions

DASY system configuration, as far as not given on page 1.

| | | |
|---|---|---|
| **DASY Version** | DASY5 | V52.8.8 |
| **Extrapolation** | Advanced Extrapolation | |
| **Phantom** | Modular Flat Phantom | |
| **Distance Dipole Center - TSL** | 15 mm | with Spacer |
| **Zoom Scan Resolution** | dx, dy, dz = 5 mm | |
| **Frequency** | 835 MHz ± 1 MHz | |

## Head TSL parameters

The following parameters and calculations were applied.

| | **Temperature** | **Permittivity** | **Conductivity** |
|---|---|---|---|
| **Nominal Head TSL parameters** | 22.0 °C | 41.5 | 0.90 mho/m |
| **Measured Head TSL parameters** | (22.0 ± 0.2) °C | 42.1 ± 6 % | 0.93 mho/m ± 6 % |
| **Head TSL temperature change during test** | < 0.5 °C | ---- | ---- |

## SAR result with Head TSL

| **SAR averaged over 1 $cm^3$ (1 g) of Head TSL** | Condition | |
|---|---|---|
| SAR measured | 250 mW input power | 2.40 W/kg |
| SAR for nominal Head TSL parameters | normalized to 1W | **9.40 W/kg ± 17.0 % (k=2)** |

| **SAR averaged over 10 $cm^3$ (10 g) of Head TSL** | condition | |
|---|---|---|
| SAR measured | 250 mW input power | 1.54 W/kg |
| SAR for nominal Head TSL parameters | normalized to 1W | **6.05 W/kg ± 16.5 % (k=2)** |

## Body TSL parameters

The following parameters and calculations were applied.

| | **Temperature** | **Permittivity** | **Conductivity** |
|---|---|---|---|
| **Nominal Body TSL parameters** | 22.0 °C | 55.2 | 0.97 mho/m |
| **Measured Body TSL parameters** | (22.0 ± 0.2) °C | 54.7 ± 6 % | 1.01 mho/m ± 6 % |
| **Body TSL temperature change during test** | < 0.5 °C | ---- | ---- |

## SAR result with Body TSL

| **SAR averaged over 1 $cm^3$ (1 g) of Body TSL** | Condition | |
|---|---|---|
| SAR measured | 250 mW input power | 2.47 W/kg |
| SAR for nominal Body TSL parameters | normalized to 1W | **9.57 W/kg ± 17.0 % (k=2)** |

| **SAR averaged over 10 $cm^3$ (10 g) of Body TSL** | condition | |
|---|---|---|
| SAR measured | 250 mW input power | 1.61 W/kg |
| SAR for nominal Body TSL parameters | normalized to 1W | **6.28 W/kg ± 16.5 % (k=2)** |





SGS Taiwan Ltd. No.134,Wu Kung Road, New Taipei Industrial Park, Wuku District, New Taipei City, Taiwan 24803/新北市五股區新北產業園區五工路134號
台灣檢驗科技股份有限公司 t (886-2) 2299-3279 f (886-2) 2298-0488 www.tw.sgs.com
Member of SGS Group

## Appendix (Additional assessments outside the scope of SCS 0108)

### Antenna Parameters with Head TSL

| | |
|---|---|
| Impedance, transformed to feed point | 51.2 Ω - 2.8 jΩ |
| Return Loss | - 30.3 dB |

### Antenna Parameters with Body TSL

| | |
|---|---|
| Impedance, transformed to feed point | 47.3 Ω - 5.5 jΩ |
| Return Loss | - 24.0 dB |

### General Antenna Parameters and Design

| | |
|---|---|
| Electrical Delay (one direction) | 1.392 ns |

After long term use with 100W radiated power, only a slight warming of the dipole near the feedpoint can be measured.

The dipole is made of standard semirigid coaxial cable. The center conductor of the feeding line is directly connected to the second arm of the dipole. The antenna is therefore short-circuited for DC-signals. On some of the dipoles, small end caps are added to the dipole arms in order to improve matching when loaded according to the position as explained in the "Measurement Conditions" paragraph. The SAR data are not affected by this change. The overall dipole length is still according to the Standard.
No excessive force must be applied to the dipole arms, because they might bend or the soldered connections near the feedpoint may be damaged.

### Additional EUT Data

| | |
|---|---|
| Manufactured by | SPEAG |
| Manufactured on | November 27, 2006 |




SGS Taiwan Ltd. No.134,Wu Kung Road, New Taipei Industrial Park, Wuku District, New Taipei City, Taiwan 24803/新北市五股區新北產業園區五工路134號
台灣檢驗科技股份有限公司 t (886-2) 2299-3279 f (886-2) 2298-0488 www.tw.sgs.com
Member of SGS Group

**DASY5 Validation Report for Head TSL**

Date: 25.08.2016

Test Laboratory: SPEAG, Zurich, Switzerland

**DUT: Dipole 835 MHz; Type: D835V2; Serial: D835V2 - SN:4d063**

Communication System: UID 0 - CW; Frequency: 835 MHz
Medium parameters used: f = 835 MHz; $\sigma$ = 0.93 S/m; $\varepsilon_r$ = 42.1; $\rho$ = 1000 kg/m$^3$
Phantom section: Flat Section
Measurement Standard: DASY5 (IEEE/IEC/ANSI C63.19-2011)

DASY52 Configuration:

- Probe: EX3DV4 - SN7349; ConvF(9.72, 9.72, 9.72); Calibrated: 15.06.2016;
- Sensor-Surface: 1.4mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn601; Calibrated: 30.12.2015
- Phantom: Flat Phantom 4.9L; Type: QD000P49AA; Serial: 1001
- DASY52 52.8.8(1258); SEMCAD X 14.6.10(7372)

**Dipole Calibration for Head Tissue/Pin=250 mW, d=15mm/Zoom Scan (7x7x7)/Cube 0:**
Measurement grid: dx=5mm, dy=5mm, dz=5mm
Reference Value = 61.75 V/m; Power Drift = 0.03 dB
Peak SAR (extrapolated) = 3.65 W/kg
**SAR(1 g) = 2.4 W/kg; SAR(10 g) = 1.54 W/kg**
Maximum value of SAR (measured) = 3.24 W/kg

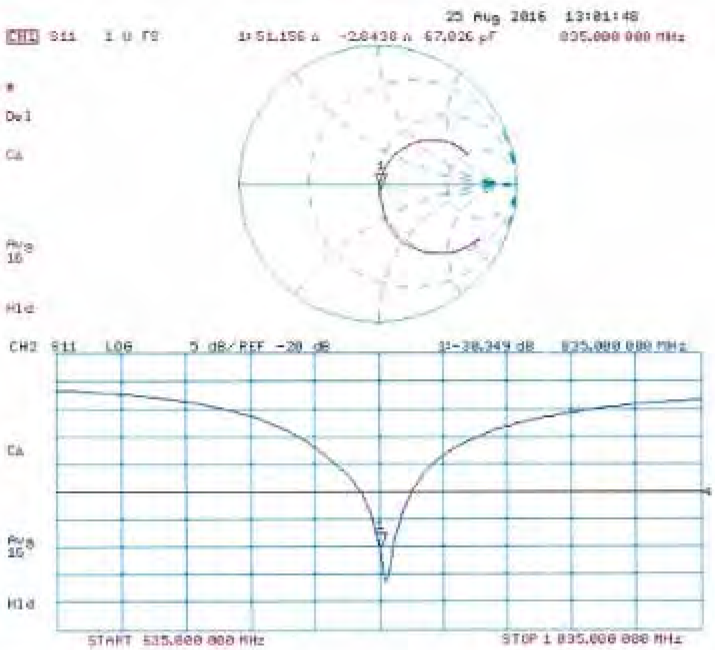

0 dB = 3.24 W/kg = 5.11 dBW/kg





SGS Taiwan Ltd. 台灣檢驗科技股份有限公司 | No.134,Wu Kung Road, New Taipei Industrial Park, Wuku District, New Taipei City, Taiwan 24803/新北市五股區新北產業園區五工路134號
t (886-2) 2299-3279 f (886-2) 2298-0488 www.tw.sgs.com
Member of SGS Group

Impedance Measurement Plot for Head TSL




Certificate No: D835V2-4d063_Aug16    Page 8 of 8

**DASY5 Validation Report for Body TSL**

Date: 25.08.2016

Test Laboratory: SPEAG, Zurich, Switzerland

**DUT: Dipole 835 MHz; Type: D835V2; Serial: D835V2 - SN:4d063**

Communication System: UID 0 - CW; Frequency: 835 MHz
Medium parameters used: f = 835 MHz; $\sigma$ = 1.01 S/m; $\varepsilon_r$ = 54.7; $\rho$ = 1000 kg/m$^3$
Phantom section: Flat Section
Measurement Standard: DASY5 (IEEE/IEC/ANSI C63.19-2011)

DASY52 Configuration:

- Probe: EX3DV4 - SN7349; ConvF(9.73, 9.73, 9.73); Calibrated: 15.06.2016;
- Sensor-Surface: 1.4mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn601; Calibrated: 30.12.2015
- Phantom: Flat Phantom 4.9L; Type: QD000P49AA; Serial: 1001
- DASY52 52.8.8(1258); SEMCAD X 14.6.10(7372)

**Dipole Calibration for Body Tissue/Pin=250 mW, d=15mm/Zoom Scan (7x7x7)/Cube 0:**
Measurement grid: dx=5mm, dy=5mm, dz=5mm
Reference Value = 59.83 V/m; Power Drift = -0.00 dB
Peak SAR (extrapolated) = 3.63 W/kg
**SAR(1 g) = 2.47 W/kg; SAR(10 g) = 1.61 W/kg**
Maximum value of SAR (measured) = 3.25 W/kg

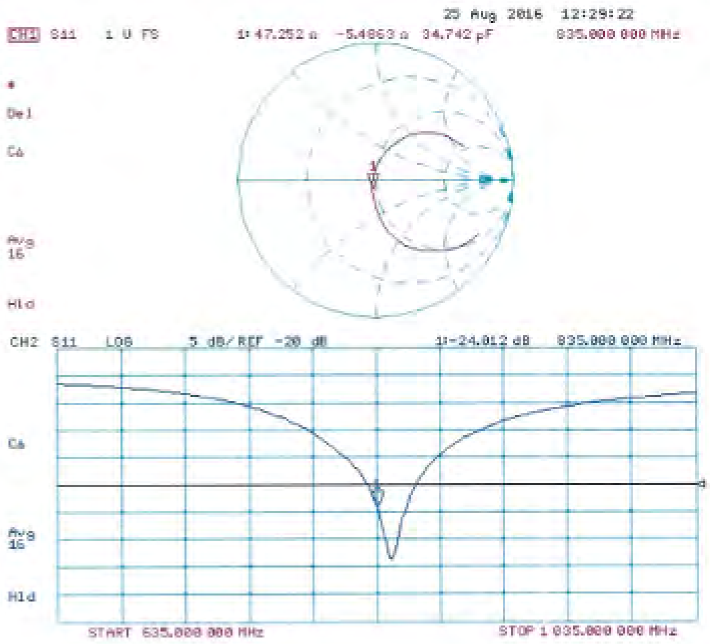

0 dB = 3.25 W/kg = 5.12 dBW/kg





SGS Taiwan Ltd. No.134,Wu Kung Road, New Taipei Industrial Park, Wuku District, New Taipei City, Taiwan 24803/新北市五股區新北產業園區五工路134號
台灣檢驗科技股份有限公司 t (886-2) 2299-3279 f (886-2) 2298-0488 www.tw.sgs.com
Member of SGS Group

Impedance Measurement Plot for Body TSL




Certificate No: D835V2-4d063_Aug16 Page 8 of 8



SGS Taiwan Ltd. No.134,Wu Kung Road, New Taipei Industrial Park, Wuku District, New Taipei City, Taiwan 24803/新北市五股區新北產業園區五工路134號
台灣檢驗科技股份有限公司 t (886-2) 2299-3279 f (886-2) 2298-0488 www.tw.sgs.com
Member of SGS Group

**Calibration Laboratory of**
Schmid & Partner
Engineering AG
Zeughausstrasse 43, 8004 Zurich, Switzerland

S Schweizerischer Kalibrierdienst
C Service suisse d'étalonnage
S Servizio svizzero di taratura
S Swiss Calibration Service

Accredited by the Swiss Accreditation Service (SAS)
**The Swiss Accreditation Service is one of the signatories to the EA Multilateral Agreement for the recognition of calibration certificates**

Accreditation No.: **SCS 0108**

Client **SGS-TW (Auden)**

Certificate No: **D1750V2-1008_Aug15**

# CALIBRATION CERTIFICATE

Object: D1750V2 - SN: 1008

Calibration procedure(s): QA CAL-05.v9
Calibration procedure for dipole validation kits above 700 MHz

Calibration date: August 20, 2015

This calibration certificate documents the traceability to national standards, which realize the physical units of measurements (SI).
The measurements and the uncertainties with confidence probability are given on the following pages and are part of the certificate.

All calibrations have been conducted in the closed laboratory facility: environment temperature (22 ± 3)°C and humidity < 70%.

Calibration Equipment used (M&TE critical for calibration)

| Primary Standards | ID # | Cal Date (Certificate No.) | Scheduled Calibration |
|---|---|---|---|
| Power meter EPM-442A | GB37480704 | 07-Oct-14 (No. 217-02020) | Oct-15 |
| Power sensor HP 8481A | US37292783 | 07-Oct-14 (No. 217-02020) | Oct-15 |
| Power sensor HP 8481A | MY41092317 | 07-Oct-14 (No. 217-02021) | Oct-15 |
| Reference 20 dB Attenuator | SN: 5058 (20k) | 01-Apr-15 (No. 217-02131) | Mar-16 |
| Type-N mismatch combination | SN: 5047.2 / 06327 | 01-Apr-15 (No. 217-02134) | Mar-16 |
| Reference Probe ES3DV3 | SN: 3205 | 30-Dec-14 (No. ES3-3205_Dec14) | Dec-15 |
| DAE4 | SN: 601 | 17-Aug-15 (No. DAE4-601_Aug15) | Aug-16 |

| Secondary Standards | ID # | Check Date (in house) | Scheduled Check |
|---|---|---|---|
| RF generator R&S SMT-06 | 100005 | 04-Aug-99 (in house check Oct-13) | In house check: Oct-16 |
| Network Analyzer HP 8753E | US37390585 S4206 | 18-Oct-01 (in house check Oct-14) | In house check: Oct-15 |

| | Name | Function | Signature |
|---|---|---|---|
| Calibrated by: | Michael Weber | Laboratory Technician | M.Weber |
| Approved by: | Katja Pokovic | Technical Manager | |

Issued: August 21, 2015

This calibration certificate shall not be reproduced except in full without written approval of the laboratory.





SGS Taiwan Ltd. No.134,Wu Kung Road, New Taipei Industrial Park, Wuku District, New Taipei City, Taiwan 24803/新北市五股區新北產業園區五工路134號
台灣檢驗科技股份有限公司 t (886-2) 2299-3279 f (886-2) 2298-0488 www.tw.sgs.com
Member of SGS Group

**Calibration Laboratory of**
Schmid & Partner
Engineering AG
Zeughausstrasse 43, 8004 Zurich, Switzerland

S Schweizerischer Kalibrierdienst
C Service suisse d'étalonnage
S Servizio svizzero di taratura
S Swiss Calibration Service

Accredited by the Swiss Accreditation Service (SAS)
The Swiss Accreditation Service is one of the signatories to the EA
Multilateral Agreement for the recognition of calibration certificates

Accreditation No.: SCS 0108

**Glossary:**

| | |
|---|---|
| TSL | tissue simulating liquid |
| ConvF | sensitivity in TSL / NORM x,y,z |
| N/A | not applicable or not measured |

**Calibration is Performed According to the Following Standards:**

a) IEEE Std 1528-2013, "IEEE Recommended Practice for Determining the Peak Spatial-Averaged Specific Absorption Rate (SAR) in the Human Head from Wireless Communications Devices: Measurement Techniques", June 2013
b) IEC 62209-1, "Procedure to measure the Specific Absorption Rate (SAR) for hand-held devices used in close proximity to the ear (frequency range of 300 MHz to 3 GHz)", February 2005
c) IEC 62209-2, "Procedure to determine the Specific Absorption Rate (SAR) for wireless communication devices used in close proximity to the human body (frequency range of 30 MHz to 6 GHz)", March 2010
d) KDB 865664, "SAR Measurement Requirements for 100 MHz to 6 GHz"

**Additional Documentation:**

e) DASY4/5 System Handbook

**Methods Applied and Interpretation of Parameters:**

- *Measurement Conditions:* Further details are available from the Validation Report at the end of the certificate. All figures stated in the certificate are valid at the frequency indicated.
- *Antenna Parameters with TSL:* The dipole is mounted with the spacer to position its feed point exactly below the center marking of the flat phantom section, with the arms oriented parallel to the body axis.
- *Feed Point Impedance and Return Loss:* These parameters are measured with the dipole positioned under the liquid filled phantom. The impedance stated is transformed from the measurement at the SMA connector to the feed point. The Return Loss ensures low reflected power. No uncertainty required.
- *Electrical Delay:* One-way delay between the SMA connector and the antenna feed point. No uncertainty required.
- *SAR measured:* SAR measured at the stated antenna input power.
- *SAR normalized:* SAR as measured, normalized to an input power of 1 W at the antenna connector.
- *SAR for nominal TSL parameters:* The measured TSL parameters are used to calculate the nominal SAR result.

The reported uncertainty of measurement is stated as the standard uncertainty of measurement multiplied by the coverage factor k=2, which for a normal distribution corresponds to a coverage probability of approximately 95%.





SGS Taiwan Ltd. No.134,Wu Kung Road, New Taipei Industrial Park, Wuku District, New Taipei City, Taiwan 24803/新北市五股區新北產業園區五工路134號
台灣檢驗科技股份有限公司 t (886-2) 2299-3279 f (886-2) 2298-0488 www.tw.sgs.com
Member of SGS Group

## Measurement Conditions

DASY system configuration, as far as not given on page 1.

| | | |
|---|---|---|
| **DASY Version** | DASY5 | V52.8.8 |
| **Extrapolation** | Advanced Extrapolation | |
| **Phantom** | Modular Flat Phantom | |
| **Distance Dipole Center - TSL** | 10 mm | with Spacer |
| **Zoom Scan Resolution** | dx, dy, dz = 5 mm | |
| **Frequency** | 1750 MHz ± 1 MHz | |

## Head TSL parameters

The following parameters and calculations were applied.

| | **Temperature** | **Permittivity** | **Conductivity** |
|---|---|---|---|
| **Nominal Head TSL parameters** | 22.0 °C | 40.1 | 1.37 mho/m |
| **Measured Head TSL parameters** | (22.0 ± 0.2) °C | 39.8 ± 6 % | 1.36 mho/m ± 6 % |
| **Head TSL temperature change during test** | < 0.5 °C | ---- | ---- |

## SAR result with Head TSL

| **SAR averaged over 1 $cm^3$ (1 g) of Head TSL** | Condition | |
|---|---|---|
| SAR measured | 250 mW input power | 9.12 W/kg |
| SAR for nominal Head TSL parameters | normalized to 1W | **36.6 W/kg ± 17.0 % (k=2)** |

| **SAR averaged over 10 $cm^3$ (10 g) of Head TSL** | condition | |
|---|---|---|
| SAR measured | 250 mW input power | 4.85 W/kg |
| SAR for nominal Head TSL parameters | normalized to 1W | **19.4 W/kg ± 16.5 % (k=2)** |

## Body TSL parameters

The following parameters and calculations were applied.

| | **Temperature** | **Permittivity** | **Conductivity** |
|---|---|---|---|
| **Nominal Body TSL parameters** | 22.0 °C | 53.4 | 1.49 mho/m |
| **Measured Body TSL parameters** | (22.0 ± 0.2) °C | 52.1 ± 6 % | 1.48 mho/m ± 6 % |
| **Body TSL temperature change during test** | < 0.5 °C | ---- | ---- |

## SAR result with Body TSL

| **SAR averaged over 1 $cm^3$ (1 g) of Body TSL** | Condition | |
|---|---|---|
| SAR measured | 250 mW input power | 9.36 W/kg |
| SAR for nominal Body TSL parameters | normalized to 1W | **37.4 W/kg ± 17.0 % (k=2)** |

| **SAR averaged over 10 $cm^3$ (10 g) of Body TSL** | condition | |
|---|---|---|
| SAR measured | 250 mW input power | 5.05 W/kg |
| SAR for nominal Body TSL parameters | normalized to 1W | **20.2 W/kg ± 16.5 % (k=2)** |





SGS Taiwan Ltd. No.134,Wu Kung Road, New Taipei Industrial Park, Wuku District, New Taipei City, Taiwan 24803/新北市五股區新北產業園區五工路134號
台灣檢驗科技股份有限公司 t (886-2) 2299-3279 f (886-2) 2298-0488 www.tw.sgs.com
Member of SGS Group

## Appendix (Additional assessments outside the scope of SCS 0108)

### Antenna Parameters with Head TSL

| | |
|---|---|
| Impedance, transformed to feed point | 50.5 Ω + 1.1 jΩ |
| Return Loss | - 38.7 dB |

### Antenna Parameters with Body TSL

| | |
|---|---|
| Impedance, transformed to feed point | 46.9 Ω + 1.0 jΩ |
| Return Loss | - 29.5 dB |

### General Antenna Parameters and Design

| | |
|---|---|
| Electrical Delay (one direction) | 1.221 ns |

After long term use with 100W radiated power, only a slight warming of the dipole near the feedpoint can be measured.

The dipole is made of standard semirigid coaxial cable. The center conductor of the feeding line is directly connected to the second arm of the dipole. The antenna is therefore short-circuited for DC-signals. On some of the dipoles, small end caps are added to the dipole arms in order to improve matching when loaded according to the position as explained in the "Measurement Conditions" paragraph. The SAR data are not affected by this change. The overall dipole length is still according to the Standard.
No excessive force must be applied to the dipole arms, because they might bend or the soldered connections near the feedpoint may be damaged.

### Additional EUT Data

| | |
|---|---|
| Manufactured by | SPEAG |
| Manufactured on | February 11, 2009 |




SGS Taiwan Ltd. No.134,Wu Kung Road, New Taipei Industrial Park, Wuku District, New Taipei City, Taiwan 24803/新北市五股區新北產業園區五工路134號
台灣檢驗科技股份有限公司 t (886-2) 2299-3279 f (886-2) 2298-0488 www.tw.sgs.com
Member of SGS Group

## DASY5 Validation Report for Head TSL

Date: 20.08.2015

Test Laboratory: SPEAG, Zurich, Switzerland

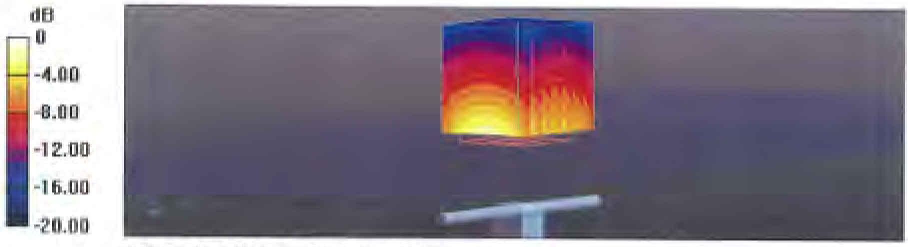
**DUT: Dipole 1750 MHz; Type: D1750V2; Serial: D1750V2 - SN: 1008**

Communication System: UID 0 - CW; Frequency: 1750 MHz
Medium parameters used: f = 1750 MHz; $\sigma$ = 1.36 S/m; $\varepsilon_r$ = 39.8; $\rho$ = 1000 kg/m$^3$
Phantom section: Flat Section
Measurement Standard: DASY5 (IEEE/IEC/ANSI C63.19-2011)

DASY52 Configuration:

- Probe: ES3DV3 - SN3205; ConvF(5.2, 5.2, 5.2); Calibrated: 30.12.2014;
- Sensor-Surface: 3mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn601; Calibrated: 17.08.2015
- Phantom: Flat Phantom 5.0 (front); Type: QD000P50AA; Serial: 1001
- DASY52 52.8.8(1222); SEMCAD X 14.6.10(7331)

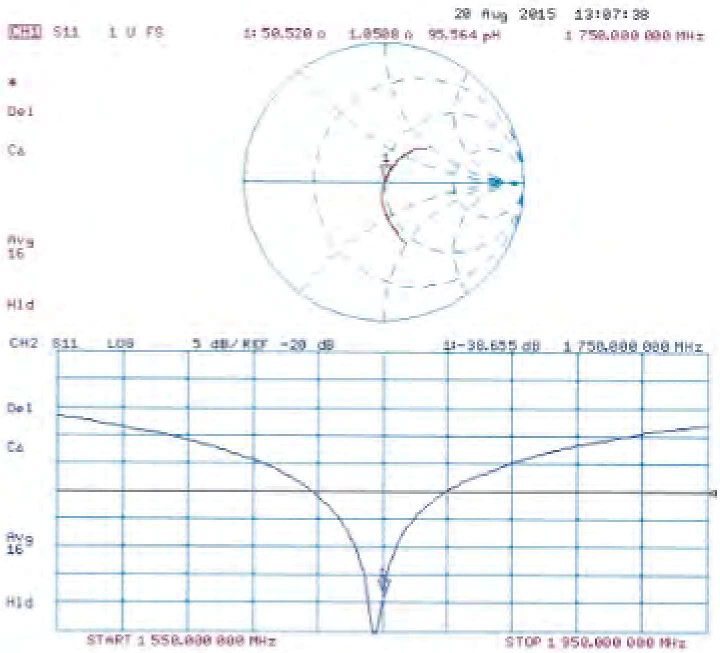
**Dipole Calibration for Head Tissue/Pin=250 mW, d=10mm/Zoom Scan (7x7x7)/Cube 0:**
Measurement grid: dx=5mm, dy=5mm, dz=5mm
Reference Value = 95.15 V/m; Power Drift = 0.04 dB
Peak SAR (extrapolated) = 16.3 W/kg
**SAR(1 g) = 9.12 W/kg; SAR(10 g) = 4.85 W/kg**
Maximum value of SAR (measured) = 11.5 W/kg




0 dB = 11.5 W/kg = 10.61 dBW/kg

Certificate No: D1750V2-1008_Aug15 Page 5 of 8

**Impedance Measurement Plot for Head TSL**







SGS Taiwan Ltd. No.134,Wu Kung Road, New Taipei Industrial Park, Wuku District, New Taipei City, Taiwan 24803/新北市五股區新北產業園區五工路134號
台灣檢驗科技股份有限公司 t (886-2) 2299-3279 f (886-2) 2298-0488 www.tw.sgs.com
Member of SGS Group

**DASY5 Validation Report for Body TSL**

Date: 20.08.2015

Test Laboratory: SPEAG, Zurich, Switzerland

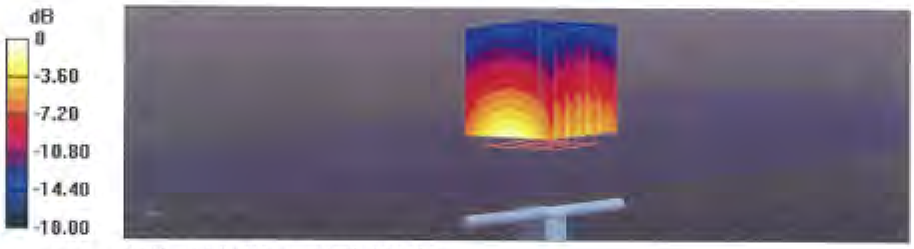
**DUT: Dipole 1750 MHz; Type: D1750V2; Serial: D1750V2 - SN: 1008**

Communication System: UID 0 - CW; Frequency: 1750 MHz
Medium parameters used: f = 1750 MHz; $\sigma$ = 1.48 S/m; $\varepsilon_r$ = 52.1; $\rho$ = 1000 kg/m$^3$
Phantom section: Flat Section
Measurement Standard: DASY5 (IEEE/IEC/ANSI C63.19-2011)

DASY52 Configuration:

- Probe: ES3DV3 - SN3205; ConvF(4.88, 4.88, 4.88); Calibrated: 30.12.2014;
- Sensor-Surface: 3mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn601; Calibrated: 17.08.2015
- Phantom: Flat Phantom 5.0 (back); Type: QD000P50AA; Serial: 1002
- DASY52 52.8.8(1222); SEMCAD X 14.6.10(7331)

**Dipole Calibration for Body Tissue/Pin=250 mW, d=10mm/Zoom Scan (7x7x7)/Cube 0:**
Measurement grid: dx=5mm, dy=5mm, dz=5mm
Reference Value = 93.12 V/m; Power Drift = 0.01 dB
Peak SAR (extrapolated) = 16.1 W/kg
**SAR(1 g) = 9.36 W/kg; SAR(10 g) = 5.05 W/kg**
Maximum value of SAR (measured) = 11.8 W/kg



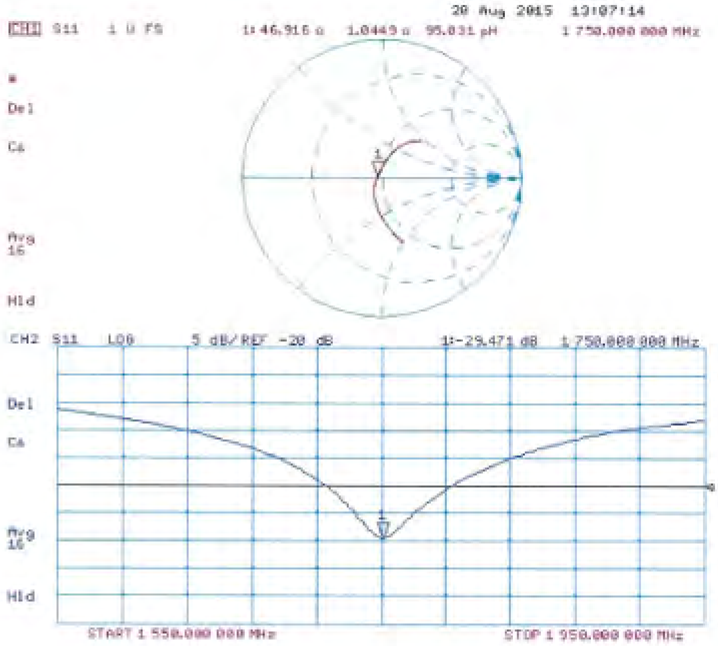

0 dB = 11.8 W/kg = 10.72 dBW/kg





SGS Taiwan Ltd. No.134,Wu Kung Road, New Taipei Industrial Park, Wuku District, New Taipei City, Taiwan 24803/新北市五股區新北產業園區五工路134號
台灣檢驗科技股份有限公司 t (886-2) 2299-3279 f (886-2) 2298-0488 www.tw.sgs.com
Member of SGS Group

Impedance Measurement Plot for Body TSL







SGS Taiwan Ltd. No.134,Wu Kung Road, New Taipei Industrial Park, Wuku District, New Taipei City, Taiwan 24803/新北市五股區新北產業園區五工路134號
台灣檢驗科技股份有限公司 t (886-2) 2299-3279 f (886-2) 2298-0488 www.tw.sgs.com
Member of SGS Group

**Calibration Laboratory of**
Schmid & Partner
Engineering AG
**Zeughausstrasse 43, 8004 Zurich, Switzerland**

**S** Schweizerischer Kalibrierdienst
**C** Service suisse d'étalonnage
Servizio svizzero di taratura
**S** Swiss Calibration Service

Accredited by the Swiss Accreditation Service (SAS)
**The Swiss Accreditation Service is one of the signatories to the EA Multilateral Agreement for the recognition of calibration certificates**

**Accreditation No.: SCS 0108**

Client **SGS-TW (Auden)**

**Certificate No: D1750V2-1008_Aug16**

# CALIBRATION CERTIFICATE

| | |
|---|---|
| Object | D1750V2 - SN:1008 |
| Calibration procedure(s) | QA CAL-05.v9<br>Calibration procedure for dipole validation kits above 700 MHz |
| Calibration date: | August 31, 2016 |

This calibration certificate documents the traceability to national standards, which realize the physical units of measurements (SI).
The measurements and the uncertainties with confidence probability are given on the following pages and are part of the certificate.

All calibrations have been conducted in the closed laboratory facility: environment temperature (22 ± 3)°C and humidity < 70%

Calibration Equipment used (M&TE critical for calibration)

| Primary Standards | ID # | Cal Date (Certificate No.) | Scheduled Calibration |
|---|---|---|---|
| Power meter NRP | SN: 104778 | 06-Apr-16 (No. 217-02288/02289) | Apr-17 |
| Power sensor NRP-Z91 | SN: 103244 | 06-Apr-16 (No. 217-02288) | Apr-17 |
| Power sensor NRP-Z91 | SN: 103245 | 06-Apr-16 (No. 217-02289) | Apr-17 |
| Reference 20 dB Attenuator | SN: 5058 (20k) | 05-Apr-16 (No. 217-02292) | Apr-17 |
| Type-N mismatch combination | SN: 5047.2 / 06327 | 05-Apr-16 (No. 217-02295) | Apr-17 |
| Reference Probe EX3DV4 | SN: 7349 | 15-Jun-16 (No. EX3-7349_Jun16) | Jun-17 |
| DAE4 | SN: 601 | 30-Dec-15 (No. DAE4-601_Dec15) | Dec-16 |

| Secondary Standards | ID # | Check Date (in house) | Scheduled Check |
|---|---|---|---|
| Power meter EPM-442A | SN: GB37480704 | 07-Oct-15 (No. 217-02222) | In house check: Oct-16 |
| Power sensor HP 8481A | SN: US37292783 | 07-Oct-15 (No. 217-02222) | In house check: Oct-16 |
| Power sensor HP 8481A | SN: MY41092317 | 07-Oct-15 (No. 217-02223) | In house check: Oct-16 |
| RF generator R&S SMT-06 | SN: 100972 | 15-Jun-15 (in house check Jun-15) | In house check: Oct-16 |
| Network Analyzer HP 8753E | SN: US37390585 | 18-Oct-01 (in house check Oct-15) | In house check: Oct-16 |

| | Name | Function | Signature |
|---|---|---|---|
| Calibrated by: | Johannes Kurikka | Laboratory Technician | |
| Approved by: | Katja Pokovic | Technical Manager | |

Issued: August 31, 2016

This calibration certificate shall not be reproduced except in full without written approval of the laboratory.

**Calibration Laboratory of**
Schmid & Partner
Engineering AG
Zeughausstrasse 43, 8004 Zurich, Switzerland

S Schweizerischer Kalibrierdienst
C Service suisse d'étalonnage
S Servizio svizzero di taratura
Swiss Calibration Service

Accredited by the Swiss Accreditation Service (SAS)
The Swiss Accreditation Service is one of the signatories to the EA
Multilateral Agreement for the recognition of calibration certificates

Accreditation No.: **SCS 0108**

**Glossary:**

| | |
|---|---|
| TSL | tissue simulating liquid |
| ConvF | sensitivity in TSL / NORM x,y,z |
| N/A | not applicable or not measured |

**Calibration is Performed According to the Following Standards:**

a) IEEE Std 1528-2013, "IEEE Recommended Practice for Determining the Peak Spatial-Averaged Specific Absorption Rate (SAR) in the Human Head from Wireless Communications Devices: Measurement Techniques", June 2013
b) IEC 62209-1, "Procedure to measure the Specific Absorption Rate (SAR) for hand-held devices used in close proximity to the ear (frequency range of 300 MHz to 3 GHz)", February 2005
c) IEC 62209-2, "Procedure to determine the Specific Absorption Rate (SAR) for wireless communication devices used in close proximity to the human body (frequency range of 30 MHz to 6 GHz)", March 2010
d) KDB 865664, "SAR Measurement Requirements for 100 MHz to 6 GHz"

**Additional Documentation:**

e) DASY4/5 System Handbook

**Methods Applied and Interpretation of Parameters:**

- *Measurement Conditions:* Further details are available from the Validation Report at the end of the certificate. All figures stated in the certificate are valid at the frequency indicated.
- *Antenna Parameters with TSL:* The dipole is mounted with the spacer to position its feed point exactly below the center marking of the flat phantom section, with the arms oriented parallel to the body axis.
- *Feed Point Impedance and Return Loss:* These parameters are measured with the dipole positioned under the liquid filled phantom. The impedance stated is transformed from the measurement at the SMA connector to the feed point. The Return Loss ensures low reflected power. No uncertainty required.
- *Electrical Delay:* One-way delay between the SMA connector and the antenna feed point. No uncertainty required.
- *SAR measured:* SAR measured at the stated antenna input power.
- *SAR normalized:* SAR as measured, normalized to an input power of 1 W at the antenna connector.
- *SAR for nominal TSL parameters:* The measured TSL parameters are used to calculate the nominal SAR result.

The reported uncertainty of measurement is stated as the standard uncertainty of measurement multiplied by the coverage factor k=2, which for a normal distribution corresponds to a coverage probability of approximately 95%.





SGS Taiwan Ltd. No.134,Wu Kung Road, New Taipei Industrial Park, Wuku District, New Taipei City, Taiwan 24803/新北市五股區新北產業園區五工路134號
台灣檢驗科技股份有限公司 t (886-2) 2299-3279 f (886-2) 2298-0488 www.tw.sgs.com
Member of SGS Group

## Measurement Conditions

DASY system configuration, as far as not given on page 1.

| | | |
|---|---|---|
| **DASY Version** | DASY5 | V52.8.8 |
| **Extrapolation** | Advanced Extrapolation | |
| **Phantom** | Modular Flat Phantom | |
| **Distance Dipole Center - TSL** | 10 mm | with Spacer |
| **Zoom Scan Resolution** | dx, dy, dz = 5 mm | |
| **Frequency** | 1750 MHz ± 1 MHz | |

## Head TSL parameters

The following parameters and calculations were applied.

| | Temperature | Permittivity | Conductivity |
|---|---|---|---|
| **Nominal Head TSL parameters** | 22.0 °C | 40.1 | 1.37 mho/m |
| **Measured Head TSL parameters** | (22.0 ± 0.2) °C | 40.3 ± 6 % | 1.37 mho/m ± 6 % |
| **Head TSL temperature change during test** | < 0.5 °C | ---- | ---- |

## SAR result with Head TSL

| **SAR averaged over 1 $cm^3$ (1 g) of Head TSL** | Condition | |
|---|---|---|
| SAR measured | 250 mW input power | 9.28 W/kg |
| SAR for nominal Head TSL parameters | normalized to 1W | **37.2 W/kg ± 17.0 % (k=2)** |

| **SAR averaged over 10 $cm^3$ (10 g) of Head TSL** | condition | |
|---|---|---|
| SAR measured | 250 mW input power | 4.90 W/kg |
| SAR for nominal Head TSL parameters | normalized to 1W | **19.6 W/kg ± 16.5 % (k=2)** |

## Body TSL parameters

The following parameters and calculations were applied.

| | Temperature | Permittivity | Conductivity |
|---|---|---|---|
| **Nominal Body TSL parameters** | 22.0 °C | 53.4 | 1.49 mho/m |
| **Measured Body TSL parameters** | (22.0 ± 0.2) °C | 53.1 ± 6 % | 1.49 mho/m ± 6 % |
| **Body TSL temperature change during test** | < 0.5 °C | ---- | ---- |

## SAR result with Body TSL

| **SAR averaged over 1 $cm^3$ (1 g) of Body TSL** | Condition | |
|---|---|---|
| SAR measured | 250 mW input power | 9.34 W/kg |
| SAR for nominal Body TSL parameters | normalized to 1W | **37.3 W/kg ± 17.0 % (k=2)** |

| **SAR averaged over 10 $cm^3$ (10 g) of Body TSL** | condition | |
|---|---|---|
| SAR measured | 250 mW input power | 4.98 W/kg |
| SAR for nominal Body TSL parameters | normalized to 1W | **19.9 W/kg ± 16.5 % (k=2)** |





SGS Taiwan Ltd. No.134,Wu Kung Road, New Taipei Industrial Park, Wuku District, New Taipei City, Taiwan 24803/新北市五股區新北產業園區五工路134號
台灣檢驗科技股份有限公司 t (886-2) 2299-3279 f (886-2) 2298-0488 www.tw.sgs.com
Member of SGS Group

## Appendix (Additional assessments outside the scope of SCS 0108)

### Antenna Parameters with Head TSL

| | |
|---|---|
| Impedance, transformed to feed point | 51.0 Ω - 0.2 jΩ |
| Return Loss | - 40.1 dB |

### Antenna Parameters with Body TSL

| | |
|---|---|
| Impedance, transformed to feed point | 46.7 Ω - 0.5 jΩ |
| Return Loss | - 29.3 dB |

### General Antenna Parameters and Design

| | |
|---|---|
| Electrical Delay (one direction) | 1.221 ns |

After long term use with 100W radiated power, only a slight warming of the dipole near the feedpoint can be measured.

The dipole is made of standard semirigid coaxial cable. The center conductor of the feeding line is directly connected to the second arm of the dipole. The antenna is therefore short-circuited for DC-signals. On some of the dipoles, small end caps are added to the dipole arms in order to improve matching when loaded according to the position as explained in the "Measurement Conditions" paragraph. The SAR data are not affected by this change. The overall dipole length is still according to the Standard.
No excessive force must be applied to the dipole arms, because they might bend or the soldered connections near the feedpoint may be damaged.

### Additional EUT Data

| | |
|---|---|
| Manufactured by | SPEAG |
| Manufactured on | May 27, 2003 |





SGS Taiwan Ltd. No.134,Wu Kung Road, New Taipei Industrial Park, Wuku District, New Taipei City, Taiwan 24803/新北市五股區新北產業園區五工路134號
台灣檢驗科技股份有限公司 t (886-2) 2299-3279 f (886-2) 2298-0488 www.tw.sgs.com
Member of SGS Group

**DASY5 Validation Report for Head TSL**

Date: 24.08.2016

Test Laboratory: SPEAG, Zurich, Switzerland

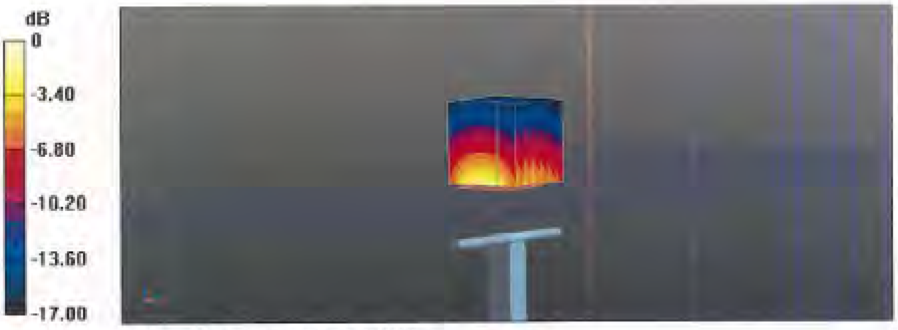
**DUT: Dipole 1750 MHz; Type: D1750V2; Serial: D1750V2 - SN:1008**

Communication System: UID 0 - CW; Frequency: 1750 MHz
Medium parameters used: f = 1750 MHz; $\sigma$ = 1.37 S/m; $\varepsilon_r$ = 40.3; $\rho$ = 1000 kg/m$^3$
Phantom section: Flat Section
Measurement Standard: DASY5 (IEEE/IEC/ANSI C63.19-2011)

DASY52 Configuration:

- Probe: EX3DV4 - SN7349; ConvF(8.46, 8.46, 8.46); Calibrated: 15.06.2016;
- Sensor-Surface: 1.4mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn601; Calibrated: 30.12.2015
- Phantom: Flat Phantom 5.0 (front); Type: QD000P50AA; Serial: 1001
- DASY52 52.8.8(1258); SEMCAD X 14.6.10(7372)

**Dipole Calibration for Head Tissue/Pin=250 mW, d=10mm/Zoom Scan (7x7x7)/Cube 0:**
Measurement grid: dx=5mm, dy=5mm, dz=5mm
Reference Value = 105.8 V/m; Power Drift = 0.03 dB
Peak SAR (extrapolated) = 17.2 W/kg
**SAR(1 g) = 9.28 W/kg; SAR(10 g) = 4.9 W/kg**
Maximum value of SAR (measured) = 14.3 W/kg



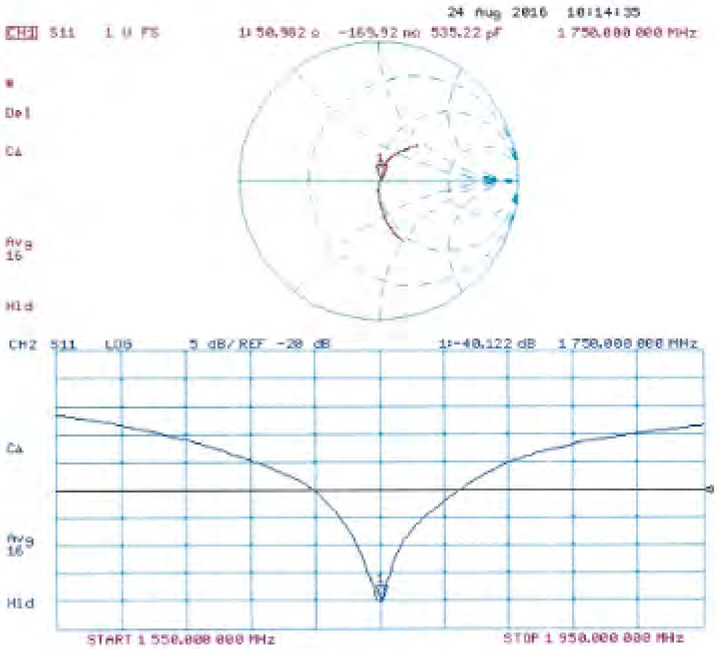

0 dB = 14.3 W/kg = 11.55 dBW/kg





SGS Taiwan Ltd. No.134,Wu Kung Road, New Taipei Industrial Park, Wuku District, New Taipei City, Taiwan 24803/新北市五股區新北產業園區五工路134號
台灣檢驗科技股份有限公司 t (886-2) 2299-3279 f (886-2) 2298-0488 www.tw.sgs.com
Member of SGS Group

**Impedance Measurement Plot for Head TSL**




Certificate No: D1750V2-1008_Aug16 Page 6 of 8



SGS Taiwan Ltd. No.134,Wu Kung Road, New Taipei Industrial Park, Wuku District, New Taipei City, Taiwan 24803/新北市五股區新北產業園區五工路134號
台灣檢驗科技股份有限公司 t (886-2) 2299-3279 f (886-2) 2298-0488 www.tw.sgs.com
Member of SGS Group

**DASY5 Validation Report for Body TSL**

Date: 31.08.2016

Test Laboratory: SPEAG, Zurich, Switzerland

**DUT: Dipole 1750 MHz; Type: D1750V2; Serial: D1750V2 - SN:1008**

Communication System: UID 0 - CW; Frequency: 1750 MHz
Medium parameters used: f = 1750 MHz; $\sigma$ = 1.49 S/m; $\varepsilon_r$ = 53.1; $\rho$ = 1000 kg/m$^3$
Phantom section: Flat Section
Measurement Standard: DASY5 (IEEE/IEC/ANSI C63.19-2011)

DASY52 Configuration:

- Probe: EX3DV4 - SN7349; ConvF(8.25, 8.25, 8.25); Calibrated: 15.06.2016;
- Sensor-Surface: 1.4mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn601; Calibrated: 30.12.2015
- Phantom: Flat Phantom 5.0 (back); Type: QD000P50AA; Serial: 1002
- DASY52 52.8.8(1258); SEMCAD X 14.6.10(7372)

**Dipole Calibration for Body Tissue/Pin=250 mW, d=10mm/Zoom Scan (7x7x7)/Cube 0:**
Measurement grid: dx=5mm, dy=5mm, dz=5mm
Reference Value = 100.8 V/m; Power Drift = -0.02 dB
Peak SAR (extrapolated) = 16.4 W/kg
**SAR(1 g) = 9.34 W/kg; SAR(10 g) = 4.98 W/kg**
Maximum value of SAR (measured) = 13.9 W/kg

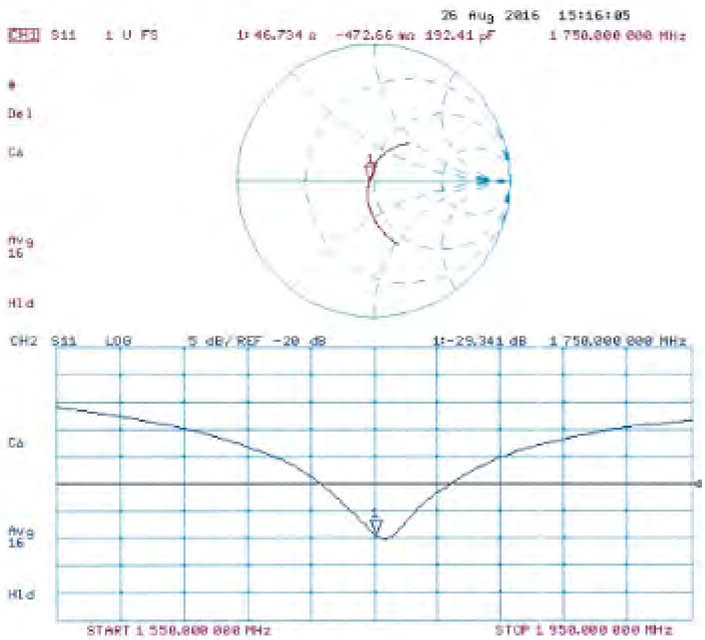

0 dB = 13.9 W/kg = 11.43 dBW/kg





SGS Taiwan Ltd. No.134,Wu Kung Road, New Taipei Industrial Park, Wuku District, New Taipei City, Taiwan 24803/新北市五股區新北產業園區五工路134號
台灣檢驗科技股份有限公司 t (886-2) 2299-3279 f (886-2) 2298-0488 www.tw.sgs.com
Member of SGS Group

Impedance Measurement Plot for Body TSL








SGS Taiwan Ltd. No.134,Wu Kung Road, New Taipei Industrial Park, Wuku District, New Taipei City, Taiwan 24803/新北市五股區新北產業園區五工路134號
台灣檢驗科技股份有限公司 t (886-2) 2299-3279 f (886-2) 2298-0488 www.tw.sgs.com
Member of SGS Group

**Calibration Laboratory of**
Schmid & Partner
Engineering AG
**Zeughausstrasse 43, 8004 Zurich, Switzerland**

**S** Schweizerischer Kalibrierdienst
**C** Service suisse d'étalonnage
Servizio svizzero di taratura
**S** Swiss Calibration Service

Accredited by the Swiss Accreditation Service (SAS)
**The Swiss Accreditation Service is one of the signatories to the EA Multilateral Agreement for the recognition of calibration certificates**

**Accreditation No.: SCS 0108**

**Client** SGS-TW (Auden)

**Certificate No: D1900V2-5d027_Apr16**

# CALIBRATION CERTIFICATE

| | |
|---|---|
| Object | D1900V2 - SN: 5d027 |
| Calibration procedure(s) | QA CAL-05.v9<br>Calibration procedure for dipole validation kits above 700 MHz |
| Calibration date | April 25, 2016 |

This calibration certificate documents the traceability to national standards, which realize the physical units of measurements (SI). The measurements and the uncertainties with confidence probability are given on the following pages and are part of the certificate.

All calibrations have been conducted in the closed laboratory facility: environment temperature (22 ± 3)°C and humidity < 70%.

Calibration Equipment used (M&TE critical for calibration)

| Primary Standards | ID # | Cal Date (Certificate No.) | Scheduled Calibration |
|---|---|---|---|
| Power meter NRP | SN: 104778 | 06-Apr-16 (No. 217-02288/02289) | Apr-17 |
| Power sensor NRP-Z91 | SN: 103244 | 06-Apr-16 (No. 217-02288) | Apr-17 |
| Power sensor NRP-Z91 | SN: 103245 | 06-Apr-16 (No. 217-02289) | Apr-17 |
| Reference 20 dB Attenuator | SN: 5058 (20k) | 05-Apr-16 (No. 217-02292) | Apr-17 |
| Type-N mismatch combination | SN: 5047.2 / 06327 | 05-Apr-16 (No. 217-02295) | Apr-17 |
| Reference Probe EX3DV4 | SN: 7349 | 31-Dec-15 (No. EX3-7349_Dec15) | Dec-16 |
| DAE4 | SN: 601 | 30-Dec-15 (No. DAE4-601_Dec15) | Dec-16 |

| Secondary Standards | ID # | Check Date (in house) | Scheduled Check |
|---|---|---|---|
| Power meter EPM-442A | SN: GB37480704 | 07-Oct-15 (No. 217-02222) | In house check: Oct-16 |
| Power sensor HP 8481A | SN: US37292783 | 07-Oct-15 (No. 217-02222) | In house check: Oct-16 |
| Power sensor HP 8481A | SN: MY41092317 | 07-Oct-15 (No. 217-02223) | In house check: Oct-16 |
| RF generator R&S SMT-06 | SN: 100972 | 15-Jun-15 (in house check Jun-15) | In house check: Oct-16 |
| Network Analyzer HP 8753E | SN: US37390585 | 18-Oct-01 (in house check Oct-15) | In house check: Oct-16 |

| | Name | Function | Signature |
|---|---|---|---|
| Calibrated by: | Michael Weber | Laboratory Technician | M.Weber |
| Approved by: | Katja Pokovic | Technical Manager | |

Issued: April 26, 2016

This calibration certificate shall not be reproduced except in full without written approval of the laboratory.





SGS Taiwan Ltd. No.134,Wu Kung Road, New Taipei Industrial Park, Wuku District, New Taipei City, Taiwan 24803/新北市五股區新北產業園區五工路134號
台灣檢驗科技股份有限公司 t (886-2) 2299-3279 f (886-2) 2298-0488 www.tw.sgs.com
Member of SGS Group

**Calibration Laboratory of**
Schmid & Partner
Engineering AG
Zeughausstrasse 43, 8004 Zurich, Switzerland

S Schweizerischer Kalibrierdienst
C Service suisse d'étalonnage
S Servizio svizzero di taratura
Swiss Calibration Service

Accredited by the Swiss Accreditation Service (SAS)
The Swiss Accreditation Service is one of the signatories to the EA
Multilateral Agreement for the recognition of calibration certificates

Accreditation No.: SCS 0108

**Glossary:**

| | |
|---|---|
| TSL | tissue simulating liquid |
| ConvF | sensitivity in TSL / NORM x,y,z |
| N/A | not applicable or not measured |

**Calibration is Performed According to the Following Standards:**

a) IEEE Std 1528-2013, "IEEE Recommended Practice for Determining the Peak Spatial-Averaged Specific Absorption Rate (SAR) in the Human Head from Wireless Communications Devices: Measurement Techniques", June 2013
b) IEC 62209-1, "Procedure to measure the Specific Absorption Rate (SAR) for hand-held devices used in close proximity to the ear (frequency range of 300 MHz to 3 GHz)", February 2005
c) IEC 62209-2, "Procedure to determine the Specific Absorption Rate (SAR) for wireless communication devices used in close proximity to the human body (frequency range of 30 MHz to 6 GHz)", March 2010
d) KDB 865664, "SAR Measurement Requirements for 100 MHz to 6 GHz"

**Additional Documentation:**

e) DASY4/5 System Handbook

**Methods Applied and Interpretation of Parameters:**

- *Measurement Conditions:* Further details are available from the Validation Report at the end of the certificate. All figures stated in the certificate are valid at the frequency indicated.
- *Antenna Parameters with TSL:* The dipole is mounted with the spacer to position its feed point exactly below the center marking of the flat phantom section, with the arms oriented parallel to the body axis.
- *Feed Point Impedance and Return Loss:* These parameters are measured with the dipole positioned under the liquid filled phantom. The impedance stated is transformed from the measurement at the SMA connector to the feed point. The Return Loss ensures low reflected power. No uncertainty required.
- *Electrical Delay:* One-way delay between the SMA connector and the antenna feed point. No uncertainty required.
- *SAR measured:* SAR measured at the stated antenna input power.
- *SAR normalized:* SAR as measured, normalized to an input power of 1 W at the antenna connector.
- *SAR for nominal TSL parameters:* The measured TSL parameters are used to calculate the nominal SAR result.

The reported uncertainty of measurement is stated as the standard uncertainty of measurement multiplied by the coverage factor k=2, which for a normal distribution corresponds to a coverage probability of approximately 95%.





SGS Taiwan Ltd. No.134,Wu Kung Road, New Taipei Industrial Park, Wuku District, New Taipei City, Taiwan 24803/新北市五股區新北產業園區五工路134號
台灣檢驗科技股份有限公司 t (886-2) 2299-3279 f (886-2) 2298-0488 www.tw.sgs.com
Member of SGS Group

## Measurement Conditions

DASY system configuration, as far as not given on page 1.

| | | |
|---|---|---|
| **DASY Version** | DASY5 | V52.8.8 |
| **Extrapolation** | Advanced Extrapolation | |
| **Phantom** | Modular Flat Phantom | |
| **Distance Dipole Center - TSL** | 10 mm | with Spacer |
| **Zoom Scan Resolution** | dx, dy, dz = 5 mm | |
| **Frequency** | 1900 MHz ± 1 MHz | |

## Head TSL parameters

The following parameters and calculations were applied.

| | **Temperature** | **Permittivity** | **Conductivity** |
|---|---|---|---|
| **Nominal Head TSL parameters** | 22.0 °C | 40.0 | 1.40 mho/m |
| **Measured Head TSL parameters** | (22.0 ± 0.2) °C | 40.0 ± 6 % | 1.37 mho/m ± 6 % |
| **Head TSL temperature change during test** | < 0.5 °C | ---- | ---- |

## SAR result with Head TSL

| **SAR averaged over 1 $cm^3$ (1 g) of Head TSL** | Condition | |
|---|---|---|
| SAR measured | 250 mW input power | 9.55 W/kg |
| SAR for nominal Head TSL parameters | normalized to 1W | **38.7 W/kg ± 17.0 % (k=2)** |

| **SAR averaged over 10 $cm^3$ (10 g) of Head TSL** | condition | |
|---|---|---|
| SAR measured | 250 mW input power | 5.03 W/kg |
| SAR for nominal Head TSL parameters | normalized to 1W | **20.3 W/kg ± 16.5 % (k=2)** |

## Body TSL parameters

The following parameters and calculations were applied.

| | **Temperature** | **Permittivity** | **Conductivity** |
|---|---|---|---|
| **Nominal Body TSL parameters** | 22.0 °C | 53.3 | 1.52 mho/m |
| **Measured Body TSL parameters** | (22.0 ± 0.2) °C | 52.9 ± 6 % | 1.49 mho/m ± 6 % |
| **Body TSL temperature change during test** | < 0.5 °C | ---- | ---- |

## SAR result with Body TSL

| **SAR averaged over 1 $cm^3$ (1 g) of Body TSL** | Condition | |
|---|---|---|
| SAR measured | 250 mW input power | 9.83 W/kg |
| SAR for nominal Body TSL parameters | normalized to 1W | **39.7 W/kg ± 17.0 % (k=2)** |

| **SAR averaged over 10 $cm^3$ (10 g) of Body TSL** | condition | |
|---|---|---|
| SAR measured | 250 mW input power | 5.21 W/kg |
| SAR for nominal Body TSL parameters | normalized to 1W | **21.0 W/kg ± 16.5 % (k=2)** |





SGS Taiwan Ltd. No.134,Wu Kung Road, New Taipei Industrial Park, Wuku District, New Taipei City, Taiwan 24803/新北市五股區新北產業園區五工路134號
台灣檢驗科技股份有限公司 t (886-2) 2299-3279 f (886-2) 2298-0488 www.tw.sgs.com
Member of SGS Group

## Appendix (Additional assessments outside the scope of SCS 0108)

### Antenna Parameters with Head TSL

| | |
|---|---|
| Impedance, transformed to feed point | 50.8 Ω + 4.4 jΩ |
| Return Loss | - 27.0 dB |

### Antenna Parameters with Body TSL

| | |
|---|---|
| Impedance, transformed to feed point | 46.5 Ω + 5.6 jΩ |
| Return Loss | - 23.3 dB |

### General Antenna Parameters and Design

| | |
|---|---|
| Electrical Delay (one direction) | 1.196 ns |

After long term use with 100W radiated power, only a slight warming of the dipole near the feedpoint can be measured.

The dipole is made of standard semirigid coaxial cable. The center conductor of the feeding line is directly connected to the second arm of the dipole. The antenna is therefore short-circuited for DC-signals. On some of the dipoles, small end caps are added to the dipole arms in order to improve matching when loaded according to the position as explained in the "Measurement Conditions" paragraph. The SAR data are not affected by this change. The overall dipole length is still according to the Standard.
No excessive force must be applied to the dipole arms, because they might bend or the soldered connections near the feedpoint may be damaged.

### Additional EUT Data

| | |
|---|---|
| Manufactured by | SPEAG |
| Manufactured on | December 17, 2002 |





SGS Taiwan Ltd. No.134,Wu Kung Road, New Taipei Industrial Park, Wuku District, New Taipei City, Taiwan 24803/新北市五股區新北產業園區五工路134號
台灣檢驗科技股份有限公司 t (886-2) 2299-3279 f (886-2) 2298-0488 www.tw.sgs.com
Member of SGS Group

**DASY5 Validation Report for Head TSL**

Date: 25.04.2016

Test Laboratory: SPEAG, Zurich, Switzerland

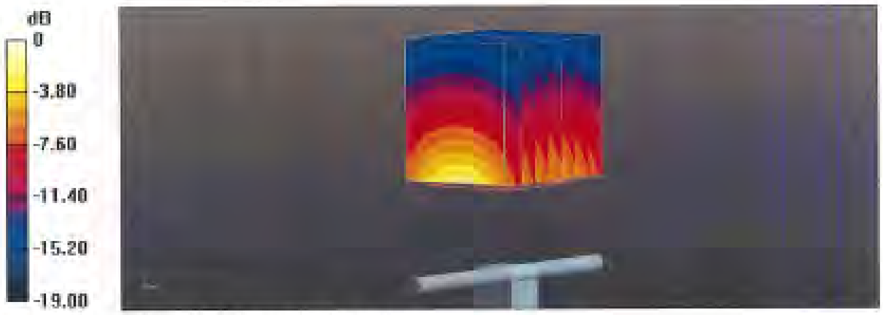
**DUT: Dipole 1900 MHz; Type: D1900V2; Serial: D1900V2 - SN: 5d027**

Communication System: UID 0 - CW; Frequency: 1900 MHz
Medium parameters used: f = 1900 MHz; $\sigma$ = 1.37 S/m; $\varepsilon_r$ = 40; $\rho$ = 1000 kg/m$^3$
Phantom section: Flat Section
Measurement Standard: DASY5 (IEEE/IEC/ANSI C63.19-2011)

DASY52 Configuration:

- Probe: EX3DV4 - SN7349; ConvF(8.2, 8.2, 8.2); Calibrated: 31.12.2015;
- Sensor-Surface: 1.4mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn601; Calibrated: 30.12.2015
- Phantom: Flat Phantom 5.0 (front); Type: QD000P50AA; Serial: 1001
- DASY52 52.8.8(1258); SEMCAD X 14.6.10(7372)

**Dipole Calibration for Head Tissue/Pin=250 mW, d=10mm/Zoom Scan (7x7x7)/Cube 0:**
Measurement grid: dx=5mm, dy=5mm, dz=5mm
Reference Value = 106.9 V/m; Power Drift = 0.02 dB
Peak SAR (extrapolated) = 17.2 W/kg
**SAR(1 g) = 9.55 W/kg; SAR(10 g) = 5.03 W/kg**
Maximum value of SAR (measured) = 14.3 W/kg



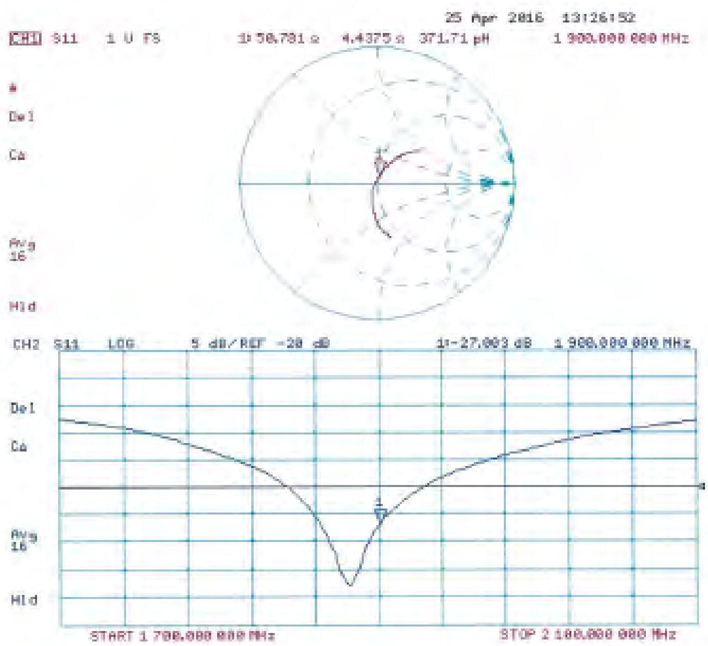

0 dB = 14.3 W/kg = 11.55 dBW/kg





SGS Taiwan Ltd. No.134,Wu Kung Road, New Taipei Industrial Park, Wuku District, New Taipei City, Taiwan 24803/新北市五股區新北產業園區五工路134號
台灣檢驗科技股份有限公司 t (886-2) 2299-3279 f (886-2) 2298-0488 www.tw.sgs.com
Member of SGS Group

Impedance Measurement Plot for Head TSL




Certificate No: D1900V2-5d027_Apr16 Page 6 of 8



SGS Taiwan Ltd. No.134,Wu Kung Road, New Taipei Industrial Park, Wuku District, New Taipei City, Taiwan 24803/新北市五股區新北產業園區五工路134號
台灣檢驗科技股份有限公司 t (886-2) 2299-3279 f (886-2) 2298-0488 www.tw.sgs.com
Member of SGS Group

**DASY5 Validation Report for Body TSL**

Date: 25.04.2016

Test Laboratory: SPEAG, Zurich, Switzerland

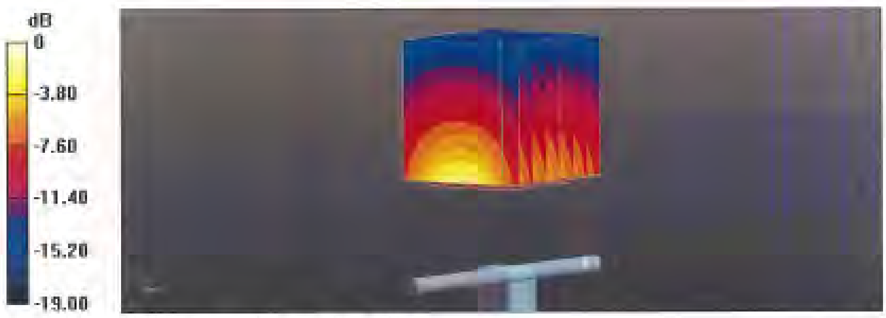
**DUT: Dipole 1900 MHz; Type: D1900V2; Serial: D1900V2 - SN: 5d027**

Communication System: UID 0 - CW; Frequency: 1900 MHz
Medium parameters used: f = 1900 MHz; $\sigma$ = 1.49 S/m; $\varepsilon_r$ = 52.9; $\rho$ = 1000 kg/m$^3$
Phantom section: Flat Section
Measurement Standard: DASY5 (IEEE/IEC/ANSI C63.19-2011)

DASY52 Configuration:

- Probe: EX3DV4 - SN7349; ConvF(8.03, 8.03, 8.03); Calibrated: 31.12.2015;
- Sensor-Surface: 1.4mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn601; Calibrated: 30.12.2015
- Phantom: Flat Phantom 5.0 (back); Type: QD000P50AA; Serial: 1002
- DASY52 52.8.8(1258); SEMCAD X 14.6.10(7372)

**Dipole Calibration for Body Tissue/Pin=250 mW, d=10mm/Zoom Scan (7x7x7)/Cube 0:**
Measurement grid: dx=5mm, dy=5mm, dz=5mm
Reference Value = 104.2 V/m; Power Drift = 0.02 dB
Peak SAR (extrapolated) = 17.2 W/kg
**SAR(1 g) = 9.83 W/kg; SAR(10 g) = 5.21 W/kg**
Maximum value of SAR (measured) = 14.7 W/kg

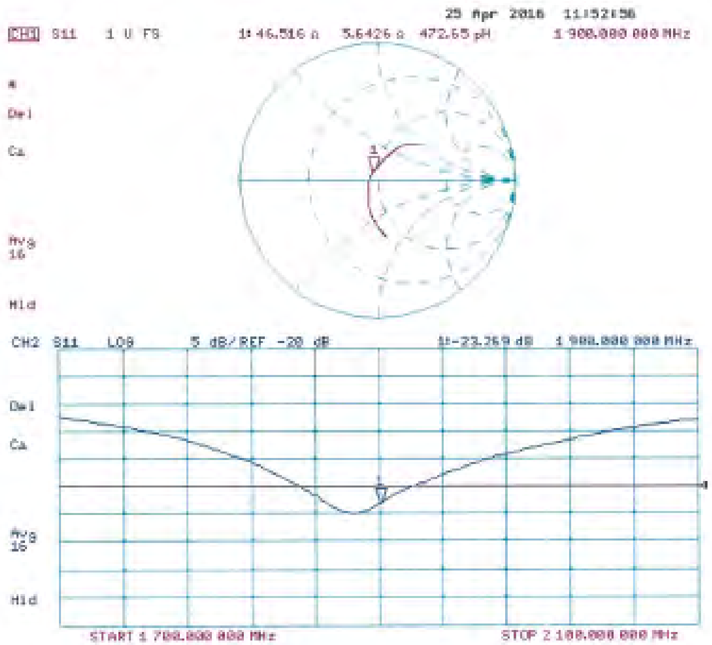



0 dB = 14.7 W/kg = 11.67 dBW/kg

Certificate No: D1900V2-5d027_Apr16 Page 7 of 8


SGS Taiwan Ltd. No.134,Wu Kung Road, New Taipei Industrial Park, Wuku District, New Taipei City, Taiwan 24803/新北市五股區新北產業園區五工路134號
台灣檢驗科技股份有限公司 t (886-2) 2299-3279 f (886-2) 2298-0488 www.tw.sgs.com
Member of SGS Group

**Impedance Measurement Plot for Body TSL**








SGS Taiwan Ltd. No.134,Wu Kung Road, New Taipei Industrial Park, Wuku District, New Taipei City, Taiwan 24803/新北市五股區新北產業園區五工路134號
台灣檢驗科技股份有限公司 t (886-2) 2299-3279 f (886-2) 2298-0488 www.tw.sgs.com
Member of SGS Group

**Calibration Laboratory of**
Schmid & Partner
Engineering AG
Zeughausstrasse 43, 8004 Zurich, Switzerland

S Schweizerischer Kalibrierdienst
C Service suisse d'étalonnage
S Servizio svizzero di taratura
S Swiss Calibration Service

Accredited by the Swiss Accreditation Service (SAS)
**The Swiss Accreditation Service is one of the signatories to the EA Multilateral Agreement for the recognition of calibration certificates**

Accreditation No.: **SCS 0108**

Client **SGS-TW (Auden)**

Certificate No: **D2300V2-1023_Aug15**

# CALIBRATION CERTIFICATE

| | |
|---|---|
| Object | D2300V2 - SN:1023 |
| Calibration procedure(s) | QA CAL-05.v9<br>Calibration procedure for dipole validation kits above 700 MHz |
| Calibration date: | August 19, 2015 |

This calibration certificate documents the traceability to national standards, which realize the physical units of measurements (SI).
The measurements and the uncertainties with confidence probability are given on the following pages and are part of the certificate.

All calibrations have been conducted in the closed laboratory facility: environment temperature (22 ± 3)°C and humidity < 70%.

Calibration Equipment used (M&TE critical for calibration)

| Primary Standards | ID # | Cal Date (Certificate No.) | Scheduled Calibration |
|---|---|---|---|
| Power meter EPM-442A | GB37480704 | 07-Oct-14 (No. 217-02020) | Oct-15 |
| Power sensor HP 8481A | US37292783 | 07-Oct-14 (No. 217-02020) | Oct-15 |
| Power sensor HP 8481A | MY41092317 | 07-Oct-14 (No. 217-02021) | Oct-15 |
| Reference 20 dB Attenuator | SN: 5058 (20k) | 01-Apr-15 (No. 217-02131) | Mar-16 |
| Type-N mismatch combination | SN: 5047.2 / 06327 | 01-Apr-15 (No. 217-02134) | Mar-16 |
| Reference Probe ES3DV3 | SN: 3205 | 30-Dec-14 (No. ES3-3205_Dec14) | Dec-15 |
| DAE4 | SN: 601 | 17-Aug-15 (No. DAE4-601_Aug15) | Aug-16 |

| Secondary Standards | ID # | Check Date (in house) | Scheduled Check |
|---|---|---|---|
| RF generator R&S SMT-06 | 100005 | 04-Aug-99 (in house check Oct-13) | In house check: Oct-16 |
| Network Analyzer HP 8753E | US37390585 S4206 | 18-Oct-01 (in house check Oct-14) | In house check: Oct-15 |

| | Name | Function | Signature |
|---|---|---|---|
| Calibrated by: | Jeton Kastrati | Laboratory Technician | |
| Approved by: | Katja Pokovic | Technical Manager | |

Issued: August 21, 2015

This calibration certificate shall not be reproduced except in full without written approval of the laboratory.

Certificate No: D2300V2-1023_Aug15 Page 1 of 8

**Calibration Laboratory of**
Schmid & Partner
Engineering AG
Zeughausstrasse 43, 8004 Zurich, Switzerland

S Schweizerischer Kalibrierdienst
C Service suisse d'étalonnage
S Servizio svizzero di taratura
S Swiss Calibration Service

Accredited by the Swiss Accreditation Service (SAS)
The Swiss Accreditation Service is one of the signatories to the EA Multilateral Agreement for the recognition of calibration certificates

Accreditation No.: **SCS 0108**

**Glossary:**

| | |
|---|---|
| TSL | tissue simulating liquid |
| ConvF | sensitivity in TSL / NORM x,y,z |
| N/A | not applicable or not measured |

**Calibration is Performed According to the Following Standards:**

a) IEEE Std 1528-2013, "IEEE Recommended Practice for Determining the Peak Spatial-Averaged Specific Absorption Rate (SAR) in the Human Head from Wireless Communications Devices: Measurement Techniques", June 2013
b) IEC 62209-1, "Procedure to measure the Specific Absorption Rate (SAR) for hand-held devices used in close proximity to the ear (frequency range of 300 MHz to 3 GHz)", February 2005
c) IEC 62209-2, "Procedure to determine the Specific Absorption Rate (SAR) for wireless communication devices used in close proximity to the human body (frequency range of 30 MHz to 6 GHz)", March 2010
d) KDB 865664, "SAR Measurement Requirements for 100 MHz to 6 GHz"

**Additional Documentation:**

a) DASY4/5 System Handbook

**Methods Applied and Interpretation of Parameters:**

- *Measurement Conditions:* Further details are available from the Validation Report at the end of the certificate. All figures stated in the certificate are valid at the frequency indicated.
- *Antenna Parameters with TSL:* The dipole is mounted with the spacer to position its feed point exactly below the center marking of the flat phantom section, with the arms oriented parallel to the body axis.
- *Feed Point Impedance and Return Loss:* These parameters are measured with the dipole positioned under the liquid filled phantom. The impedance stated is transformed from the measurement at the SMA connector to the feed point. The Return Loss ensures low reflected power. No uncertainty required.
- *Electrical Delay:* One-way delay between the SMA connector and the antenna feed point. No uncertainty required.
- *SAR measured:* SAR measured at the stated antenna input power.
- *SAR normalized:* SAR as measured, normalized to an input power of 1 W at the antenna connector.
- *SAR for nominal TSL parameters:* The measured TSL parameters are used to calculate the nominal SAR result.

The reported uncertainty of measurement is stated as the standard uncertainty of measurement multiplied by the coverage factor k=2, which for a normal distribution corresponds to a coverage probability of approximately 95%.





SGS Taiwan Ltd. No.134,Wu Kung Road, New Taipei Industrial Park, Wuku District, New Taipei City, Taiwan 24803/新北市五股區新北產業園區五工路134號
台灣檢驗科技股份有限公司 t (886-2) 2299-3279 f (886-2) 2298-0488 www.tw.sgs.com
Member of SGS Group

## Measurement Conditions

DASY system configuration, as far as not given on page 1.

| | | |
|---|---|---|
| **DASY Version** | DASY5 | V52.8.8 |
| **Extrapolation** | Advanced Extrapolation | |
| **Phantom** | Modular Flat Phantom | |
| **Distance Dipole Center - TSL** | 10 mm | with Spacer |
| **Zoom Scan Resolution** | dx, dy, dz = 5 mm | |
| **Frequency** | 2300 MHz ± 1 MHz | |

## Head TSL parameters

The following parameters and calculations were applied.

| | Temperature | Permittivity | Conductivity |
|---|---|---|---|
| **Nominal Head TSL parameters** | 22.0 °C | 39.5 | 1.67 mho/m |
| **Measured Head TSL parameters** | (22.0 ± 0.2) °C | 39.7 ± 6 % | 1.71 mho/m ± 6 % |
| **Head TSL temperature change during test** | < 0.5 °C | ---- | ---- |

## SAR result with Head TSL

| **SAR averaged over 1 $cm^3$ (1 g) of Head TSL** | Condition | |
|---|---|---|
| SAR measured | 250 mW input power | 12.4 W/kg |
| SAR for nominal Head TSL parameters | normalized to 1W | **49.1 W/kg ± 17.0 % (k=2)** |

| **SAR averaged over 10 $cm^3$ (10 g) of Head TSL** | condition | |
|---|---|---|
| SAR measured | 250 mW input power | 6.03 W/kg |
| SAR for nominal Head TSL parameters | normalized to 1W | **24.0 W/kg ± 16.5 % (k=2)** |

## Body TSL parameters

The following parameters and calculations were applied.

| | Temperature | Permittivity | Conductivity |
|---|---|---|---|
| **Nominal Body TSL parameters** | 22.0 °C | 52.9 | 1.81 mho/m |
| **Measured Body TSL parameters** | (22.0 ± 0.2) °C | 53.6 ± 6 % | 1.83 mho/m ± 6 % |
| **Body TSL temperature change during test** | < 0.5 °C | ---- | ---- |

## SAR result with Body TSL

| **SAR averaged over 1 $cm^3$ (1 g) of Body TSL** | Condition | |
|---|---|---|
| SAR measured | 250 mW input power | 12.1 W/kg |
| SAR for nominal Body TSL parameters | normalized to 1W | **48.3 W/kg ± 17.0 % (k=2)** |

| **SAR averaged over 10 $cm^3$ (10 g) of Body TSL** | condition | |
|---|---|---|
| SAR measured | 250 mW input power | 5.87 W/kg |
| SAR for nominal Body TSL parameters | normalized to 1W | **23.5 W/kg ± 16.5 % (k=2)** |





SGS Taiwan Ltd. No.134,Wu Kung Road, New Taipei Industrial Park, Wuku District, New Taipei City, Taiwan 24803/新北市五股區新北產業園區五工路134號
台灣檢驗科技股份有限公司 t (886-2) 2299-3279 f (886-2) 2298-0488 www.tw.sgs.com
Member of SGS Group

## Appendix (Additional assessments outside the scope of SCS 0108)

### Antenna Parameters with Head TSL

| | |
|---|---|
| Impedance, transformed to feed point | 47.9 Ω - 1.3 jΩ |
| Return Loss | - 31.8 dB |

### Antenna Parameters with Body TSL

| | |
|---|---|
| Impedance, transformed to feed point | 45.0 Ω - 0.6 jΩ |
| Return Loss | - 25.5 dB |

### General Antenna Parameters and Design

| | |
|---|---|
| Electrical Delay (one direction) | 1.171 ns |

After long term use with 100W radiated power, only a slight warming of the dipole near the feedpoint can be measured.

The dipole is made of standard semirigid coaxial cable. The center conductor of the feeding line is directly connected to the second arm of the dipole. The antenna is therefore short-circuited for DC-signals. On some of the dipoles, small end caps are added to the dipole arms in order to improve matching when loaded according to the position as explained in the "Measurement Conditions" paragraph. The SAR data are not affected by this change. The overall dipole length is still according to the Standard.
No excessive force must be applied to the dipole arms, because they might bend or the soldered connections near the feedpoint may be damaged.

### Additional EUT Data

| | |
|---|---|
| Manufactured by | SPEAG |
| Manufactured on | March 30, 2009 |





SGS Taiwan Ltd. 台灣檢驗科技股份有限公司
No.134,Wu Kung Road, New Taipei Industrial Park, Wuku District, New Taipei City, Taiwan 24803/新北市五股區新北產業園區五工路134號
t (886-2) 2299-3279 f (886-2) 2298-0488 www.tw.sgs.com
Member of SGS Group

**DASY5 Validation Report for Head TSL**

Date: 19.08.2015

Test Laboratory: SPEAG, Zurich, Switzerland

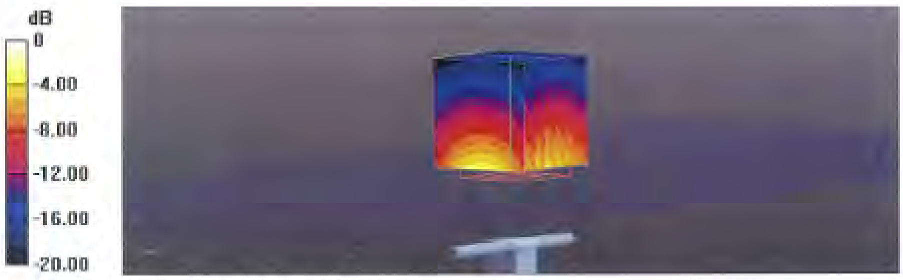
**DUT: Dipole 2300 MHz; Type: D2300V2; Serial: D2300V2 - SN:1023**

Communication System: UID 0 - CW; Frequency: 2300 MHz
Medium parameters used: f = 2300 MHz; $\sigma$ = 1.71 S/m; $\varepsilon_r$ = 39.7; $\rho$ = 1000 kg/m$^3$
Phantom section: Flat Section
Measurement Standard: DASY5 (IEEE/IEC/ANSI C63.19-2011)

DASY52 Configuration:

- Probe: ES3DV3 - SN3205; ConvF(4.75, 4.75, 4.75); Calibrated: 30.12.2014;
- Sensor-Surface: 3mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn601; Calibrated: 17.08.2015
- Phantom: Flat Phantom 5.0 (front); Type: QD000P50AA; Serial: 1001
- DASY52 52.8.8(1222); SEMCAD X 14.6.10(7331)

**Dipole Calibration for Head Tissue/Pin=250 mW, d=10mm/Zoom Scan (7x7x7)/Cube 0:**
Measurement grid: dx=5mm, dy=5mm, dz=5mm
Reference Value = 101.5 V/m; Power Drift = -0.01 dB
Peak SAR (extrapolated) = 23.5 W/kg
**SAR(1 g) = 12.4 W/kg; SAR(10 g) = 6.03 W/kg**
Maximum value of SAR (measured) = 16.1 W/kg



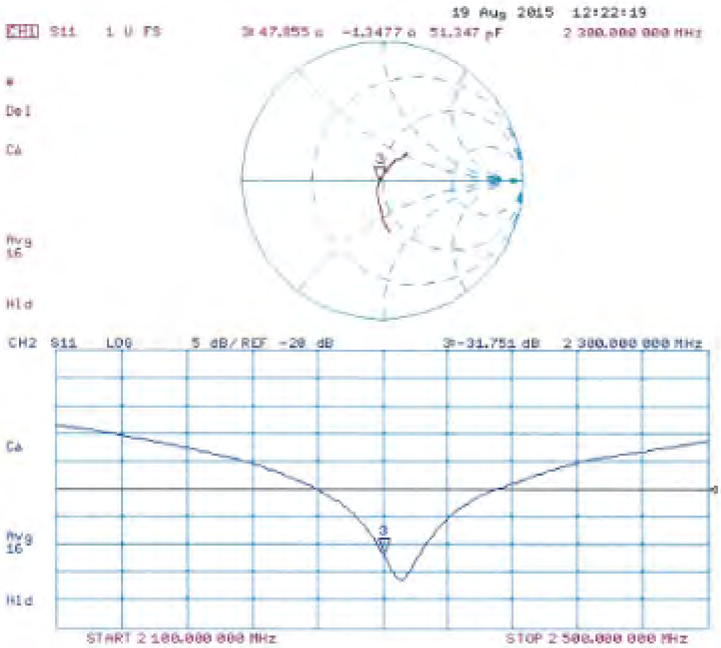

0 dB = 16.1 W/kg = 12.07 dBW/kg





SGS Taiwan Ltd. No.134,Wu Kung Road, New Taipei Industrial Park, Wuku District, New Taipei City, Taiwan 24803/新北市五股區新北產業園區五工路134號
台灣檢驗科技股份有限公司 t (886-2) 2299-3279 f (886-2) 2298-0488 www.tw.sgs.com
Member of SGS Group

Impedance Measurement Plot for Head TSL




Certificate No: D2300V2-1023_Aug15 Page 6 of 8



SGS Taiwan Ltd. No.134,Wu Kung Road, New Taipei Industrial Park, Wuku District, New Taipei City, Taiwan 24803/新北市五股區新北產業園區五工路134號
台灣檢驗科技股份有限公司 t (886-2) 2299-3279 f (886-2) 2298-0488 www.tw.sgs.com
Member of SGS Group

**DASY5 Validation Report for Body TSL**

Date: 19.08.2015

Test Laboratory: SPEAG, Zurich, Switzerland

**DUT: Dipole 2300 MHz; Type: D2300V2; Serial: D2300V2 - SN:1023**

Communication System: UID 0 - CW; Frequency: 2300 MHz
Medium parameters used: f = 2300 MHz; $\sigma$ = 1.83 S/m; $\varepsilon_r$ = 53.6; $\rho$ = 1000 kg/m$^3$
Phantom section: Flat Section
Measurement Standard: DASY5 (IEEE/IEC/ANSI C63.19-2011)

DASY52 Configuration:

- Probe: ES3DV3 - SN3205; ConvF(4.44, 4.44, 4.44); Calibrated: 30.12.2014;
- Sensor-Surface: 3mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn601; Calibrated: 17.08.2015
- Phantom: Flat Phantom 5.0 (back); Type: QD000P50AA; Serial: 1002
- DASY52 52.8.8(1222); SEMCAD X 14.6.10(7331)

**Dipole Calibration for Body Tissue/Pin=250 mW, d=10mm/Zoom Scan (7x7x7)/Cube 0:**
Measurement grid: dx=5mm, dy=5mm, dz=5mm
Reference Value = 96.46 V/m; Power Drift = -0.00 dB
Peak SAR (extrapolated) = 23.2 W/kg
**SAR(1 g) = 12.1 W/kg; SAR(10 g) = 5.87 W/kg**
Maximum value of SAR (measured) = 15.8 W/kg

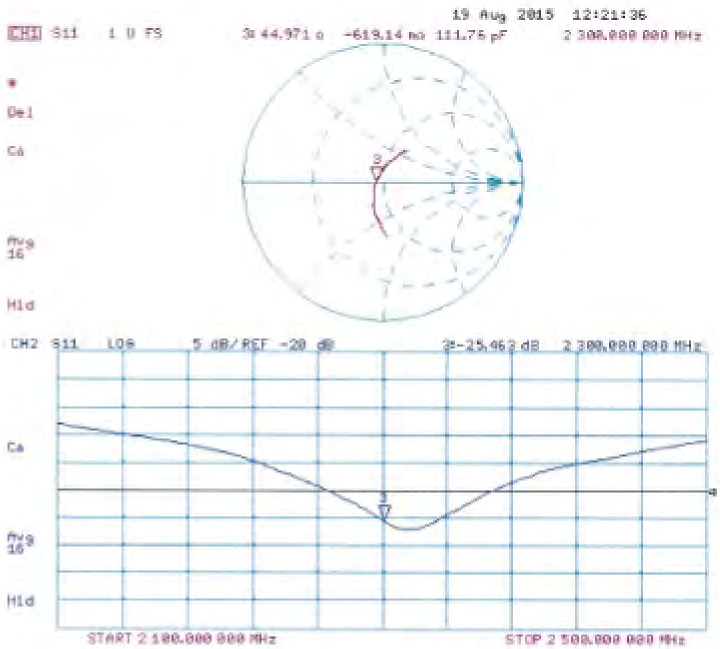

0 dB = 15.8 W/kg = 11.99 dBW/kg





SGS Taiwan Ltd. 台灣檢驗科技股份有限公司
No.134,Wu Kung Road, New Taipei Industrial Park, Wuku District, New Taipei City, Taiwan 24803/新北市五股區新北產業園區五工路134號
t (886-2) 2299-3279 f (886-2) 2298-0488 www.tw.sgs.com
Member of SGS Group

Impedance Measurement Plot for Body TSL




Certificate No: D2300V2-1023_Aug15 Page 8 of 8

**Calibration Laboratory of**
Schmid & Partner
Engineering AG
Zeughausstrasse 43, 8004 Zurich, Switzerland

S Schweizerischer Kalibrierdienst
C Service suisse d'étalonnage
S Servizio svizzero di taratura
S Swiss Calibration Service

Accredited by the Swiss Accreditation Service (SAS)
**The Swiss Accreditation Service is one of the signatories to the EA Multilateral Agreement for the recognition of calibration certificates**

Accreditation No.: **SCS 0108**

Client **SGS-TW (Auden)**

Certificate No: **D2300V2-1023_Aug16**

# CALIBRATION CERTIFICATE

Object: D2300V2 - SN:1023

Calibration procedure(s): QA CAL-05.v9
Calibration procedure for dipole validation kits above 700 MHz

Calibration date: August 26, 2016

This calibration certificate documents the traceability to national standards, which realize the physical units of measurements (SI).
The measurements and the uncertainties with confidence probability are given on the following pages and are part of the certificate.

All calibrations have been conducted in the closed laboratory facility: environment temperature (22 ± 3)°C and humidity < 70%.

Calibration Equipment used (M&TE critical for calibration)

| Primary Standards | ID # | Cal Date (Certificate No.) | Scheduled Calibration |
|---|---|---|---|
| Power meter NRP | SN: 104778 | 06-Apr-16 (No. 217-02288/02289) | Apr-17 |
| Power sensor NRP-Z91 | SN: 103244 | 06-Apr-16 (No. 217-02288) | Apr-17 |
| Power sensor NRP-Z91 | SN: 103245 | 06-Apr-16 (No. 217-02289) | Apr-17 |
| Reference 20 dB Attenuator | SN: 5058 (20k) | 05-Apr-16 (No. 217-02292) | Apr-17 |
| Type-N mismatch combination | SN: 5047.2 / 06327 | 05-Apr-16 (No. 217-02295) | Apr-17 |
| Reference Probe EX3DV4 | SN: 7349 | 15-Jun-16 (No. EX3-7349_Jun16) | Jun-17 |
| DAE4 | SN: 601 | 30-Dec-15 (No. DAE4-601_Dec15) | Dec-16 |

| Secondary Standards | ID # | Check Date (in house) | Scheduled Check |
|---|---|---|---|
| Power meter EPM-442A | SN: GB37480704 | 07-Oct-15 (No. 217-02222) | In house check: Oct-16 |
| Power sensor HP 8481A | SN: US37292783 | 07-Oct-15 (No. 217-02222) | In house check: Oct-16 |
| Power sensor HP 8481A | SN: MY41092317 | 07-Oct-15 (No. 217-02223) | In house check: Oct-16 |
| RF generator R&S SMT-06 | SN: 100972 | 15-Jun-15 (in house check Jun-15) | In house check: Oct-16 |
| Network Analyzer HP 8753E | SN: US37390585 | 18-Oct-01 (in house check Oct-15) | In house check: Oct-16 |

| | Name | Function | Signature |
|---|---|---|---|
| Calibrated by: | Johannes Kurikka | Laboratory Technician | |
| Approved by: | Katja Pokovic | Technical Manager | |

Issued: August 29, 2016

This calibration certificate shall not be reproduced except in full without written approval of the laboratory.

Certificate No: D2300V2-1023_Aug16 Page 1 of 8

Calibration Laboratory of
Schmid & Partner
Engineering AG
Zeughausstrasse 43, 8004 Zurich, Switzerland

S Schweizerischer Kalibrierdienst
C Service suisse d'étalonnage
S Servizio svizzero di taratura
Swiss Calibration Service

Accredited by the Swiss Accreditation Service (SAS)
The Swiss Accreditation Service is one of the signatories to the EA
Multilateral Agreement for the recognition of calibration certificates

Accreditation No.: SCS 0108

**Glossary:**

| | |
|---|---|
| TSL | tissue simulating liquid |
| ConvF | sensitivity in TSL / NORM x,y,z |
| N/A | not applicable or not measured |

**Calibration is Performed According to the Following Standards:**

a) IEEE Std 1528-2013, "IEEE Recommended Practice for Determining the Peak Spatial-Averaged Specific Absorption Rate (SAR) in the Human Head from Wireless Communications Devices: Measurement Techniques", June 2013
b) IEC 62209-1, "Procedure to measure the Specific Absorption Rate (SAR) for hand-held devices used in close proximity to the ear (frequency range of 300 MHz to 3 GHz)", February 2005
c) IEC 62209-2, "Procedure to determine the Specific Absorption Rate (SAR) for wireless communication devices used in close proximity to the human body (frequency range of 30 MHz to 6 GHz)", March 2010
d) KDB 865664, "SAR Measurement Requirements for 100 MHz to 6 GHz"

**Additional Documentation:**

e) DASY4/5 System Handbook

**Methods Applied and Interpretation of Parameters:**

- *Measurement Conditions:* Further details are available from the Validation Report at the end of the certificate. All figures stated in the certificate are valid at the frequency indicated.
- *Antenna Parameters with TSL:* The dipole is mounted with the spacer to position its feed point exactly below the center marking of the flat phantom section, with the arms oriented parallel to the body axis.
- *Feed Point Impedance and Return Loss:* These parameters are measured with the dipole positioned under the liquid filled phantom. The impedance stated is transformed from the measurement at the SMA connector to the feed point. The Return Loss ensures low reflected power. No uncertainty required.
- *Electrical Delay:* One-way delay between the SMA connector and the antenna feed point. No uncertainty required.
- *SAR measured:* SAR measured at the stated antenna input power.
- *SAR normalized:* SAR as measured, normalized to an input power of 1 W at the antenna connector.
- *SAR for nominal TSL parameters:* The measured TSL parameters are used to calculate the nominal SAR result.

The reported uncertainty of measurement is stated as the standard uncertainty of measurement multiplied by the coverage factor k=2, which for a normal distribution corresponds to a coverage probability of approximately 95%.





SGS Taiwan Ltd. No.134,Wu Kung Road, New Taipei Industrial Park, Wuku District, New Taipei City, Taiwan 24803/新北市五股區新北產業園區五工路134號
台灣檢驗科技股份有限公司 t (886-2) 2299-3279 f (886-2) 2298-0488 www.tw.sgs.com
Member of SGS Group

## Measurement Conditions

DASY system configuration, as far as not given on page 1.

| | | |
|---|---|---|
| **DASY Version** | DASY5 | V52.8.8 |
| **Extrapolation** | Advanced Extrapolation | |
| **Phantom** | Modular Flat Phantom | |
| **Distance Dipole Center - TSL** | 10 mm | with Spacer |
| **Zoom Scan Resolution** | dx, dy, dz = 5 mm | |
| **Frequency** | 2300 MHz ± 1 MHz | |

## Head TSL parameters

The following parameters and calculations were applied.

| | Temperature | Permittivity | Conductivity |
|---|---|---|---|
| **Nominal Head TSL parameters** | 22.0 °C | 39.5 | 1.67 mho/m |
| **Measured Head TSL parameters** | (22.0 ± 0.2) °C | 38.7 ± 6 % | 1.70 mho/m ± 6 % |
| **Head TSL temperature change during test** | < 0.5 °C | ---- | ---- |

## SAR result with Head TSL

| **SAR averaged over 1 $cm^3$ (1 g) of Head TSL** | Condition | |
|---|---|---|
| SAR measured | 250 mW input power | 12.5 W/kg |
| SAR for nominal Head TSL parameters | normalized to 1W | **49.3 W/kg ± 17.0 % (k=2)** |

| **SAR averaged over 10 $cm^3$ (10 g) of Head TSL** | condition | |
|---|---|---|
| SAR measured | 250 mW input power | 6.00 W/kg |
| SAR for nominal Head TSL parameters | normalized to 1W | **23.8 W/kg ± 16.5 % (k=2)** |

## Body TSL parameters

The following parameters and calculations were applied.

| | Temperature | Permittivity | Conductivity |
|---|---|---|---|
| **Nominal Body TSL parameters** | 22.0 °C | 52.9 | 1.81 mho/m |
| **Measured Body TSL parameters** | (22.0 ± 0.2) °C | 52.3 ± 6 % | 1.85 mho/m ± 6 % |
| **Body TSL temperature change during test** | < 0.5 °C | ---- | ---- |

## SAR result with Body TSL

| **SAR averaged over 1 $cm^3$ (1 g) of Body TSL** | Condition | |
|---|---|---|
| SAR measured | 250 mW input power | 12.2 W/kg |
| SAR for nominal Body TSL parameters | normalized to 1W | **48.1 W/kg ± 17.0 % (k=2)** |

| **SAR averaged over 10 $cm^3$ (10 g) of Body TSL** | condition | |
|---|---|---|
| SAR measured | 250 mW input power | 5.87 W/kg |
| SAR for nominal Body TSL parameters | normalized to 1W | **23.3 W/kg ± 16.5 % (k=2)** |





SGS Taiwan Ltd. No.134,Wu Kung Road, New Taipei Industrial Park, Wuku District, New Taipei City, Taiwan 24803/新北市五股區新北產業園區五工路134號
台灣檢驗科技股份有限公司 t (886-2) 2299-3279 f (886-2) 2298-0488 www.tw.sgs.com
Member of SGS Group

## Appendix (Additional assessments outside the scope of SCS 0108)

### Antenna Parameters with Head TSL

| | |
|---|---|
| Impedance, transformed to feed point | 48.8 Ω - 1.4 jΩ |
| Return Loss | - 34.7 dB |

### Antenna Parameters with Body TSL

| | |
|---|---|
| Impedance, transformed to feed point | 45.4 Ω - 2.0 jΩ |
| Return Loss | - 25.6 dB |

### General Antenna Parameters and Design

| | |
|---|---|
| Electrical Delay (one direction) | 1.171 ns |

After long term use with 100W radiated power, only a slight warming of the dipole near the feedpoint can be measured.

The dipole is made of standard semirigid coaxial cable. The center conductor of the feeding line is directly connected to the second arm of the dipole. The antenna is therefore short-circuited for DC-signals. On some of the dipoles, small end caps are added to the dipole arms in order to improve matching when loaded according to the position as explained in the "Measurement Conditions" paragraph. The SAR data are not affected by this change. The overall dipole length is still according to the Standard.
No excessive force must be applied to the dipole arms, because they might bend or the soldered connections near the feedpoint may be damaged.

### Additional EUT Data

| | |
|---|---|
| Manufactured by | SPEAG |
| Manufactured on | March 30, 2009 |




SGS Taiwan Ltd. No.134,Wu Kung Road, New Taipei Industrial Park, Wuku District, New Taipei City, Taiwan 24803/新北市五股區新北產業園區五工路134號
台灣檢驗科技股份有限公司 t (886-2) 2299-3279 f (886-2) 2298-0488 www.tw.sgs.com
Member of SGS Group

**DASY5 Validation Report for Head TSL**

Date: 26.08.2016

Test Laboratory: SPEAG, Zurich, Switzerland

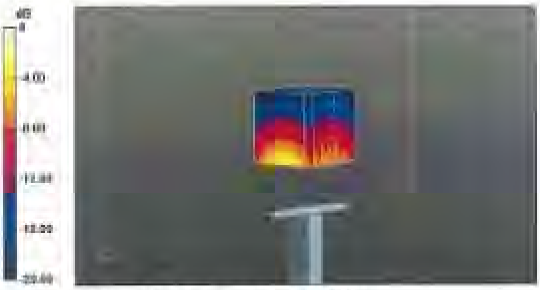
**DUT: Dipole 2300 MHz; Type: D2300V2; Serial: D2300V2 - SN:1023**

Communication System: UID 0 - CW; Frequency: 2300 MHz
Medium parameters used: f = 2300 MHz; $\sigma$ = 1.7 S/m; $\varepsilon_r$ = 38.7; $\rho$ = 1000 $kg/m^3$
Phantom section: Flat Section
Measurement Standard: DASY5 (IEEE/IEC/ANSI C63.19-2011)

DASY52 Configuration:

- Probe: EX3DV4 - SN7349; ConvF(7.99, 7.99, 7.99); Calibrated: 15.06.2016;
- Sensor-Surface: 1.4mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn601; Calibrated: 30.12.2015
- Phantom: Flat Phantom 5.0 (front); Type: QD000P50AA; Serial: 1001
- DASY52 52.8.8(1258); SEMCAD X 14.6.10(7372)

**Dipole Calibration for Head Tissue/Pin=250 mW, d=10mm/Zoom Scan (7x7x7)/Cube 0:**
Measurement grid: dx=5mm, dy=5mm, dz=5mm
Reference Value = 113.6 V/m; Power Drift = -0.00 dB
Peak SAR (extrapolated) = 24.8 W/kg
**SAR(1 g) = 12.5 W/kg; SAR(10 g) = 6 W/kg**
Maximum value of SAR (measured) = 20.4 W/kg



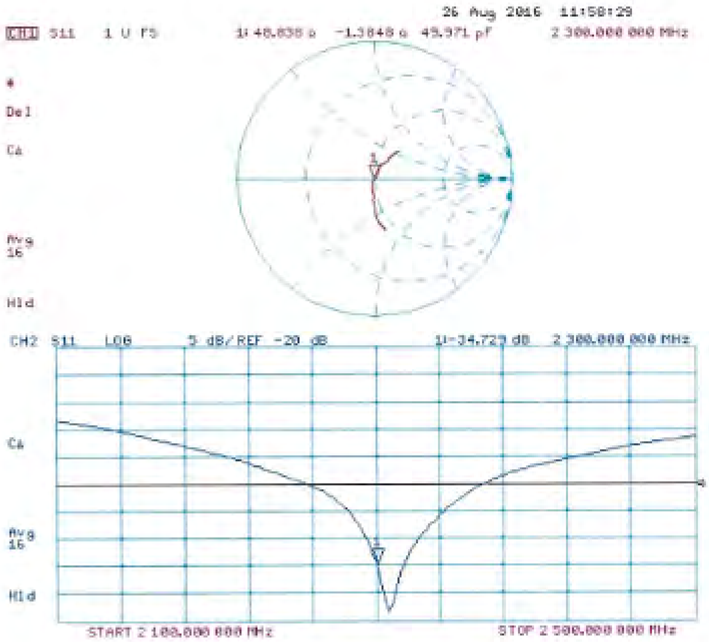
0 dB = 20.4 W/kg = 13.10 dBW/kg





SGS Taiwan Ltd. No.134,Wu Kung Road, New Taipei Industrial Park, Wuku District, New Taipei City, Taiwan 24803/新北市五股區新北產業園區五工路134號
台灣檢驗科技股份有限公司 t (886-2) 2299-3279 f (886-2) 2298-0488 www.tw.sgs.com
Member of SGS Group

## Impedance Measurement Plot for Head TSL








SGS Taiwan Ltd. No.134,Wu Kung Road, New Taipei Industrial Park, Wuku District, New Taipei City, Taiwan 24803/新北市五股區新北產業園區五工路134號
台灣檢驗科技股份有限公司 t (886-2) 2299-3279 f (886-2) 2298-0488 www.tw.sgs.com
Member of SGS Group

**DASY5 Validation Report for Body TSL**

Date: 24.08.2016

Test Laboratory: SPEAG, Zurich, Switzerland

**DUT: Dipole 2300 MHz; Type: D2300V2; Serial: D2300V2 - SN:1023**

Communication System: UID 0 - CW; Frequency: 2300 MHz
Medium parameters used: f = 2300 MHz; $\sigma$ = 1.85 S/m; $\varepsilon_r$ = 52.3; $\rho$ = 1000 kg/m$^3$
Phantom section: Flat Section
Measurement Standard: DASY5 (IEEE/IEC/ANSI C63.19-2011)

DASY52 Configuration:

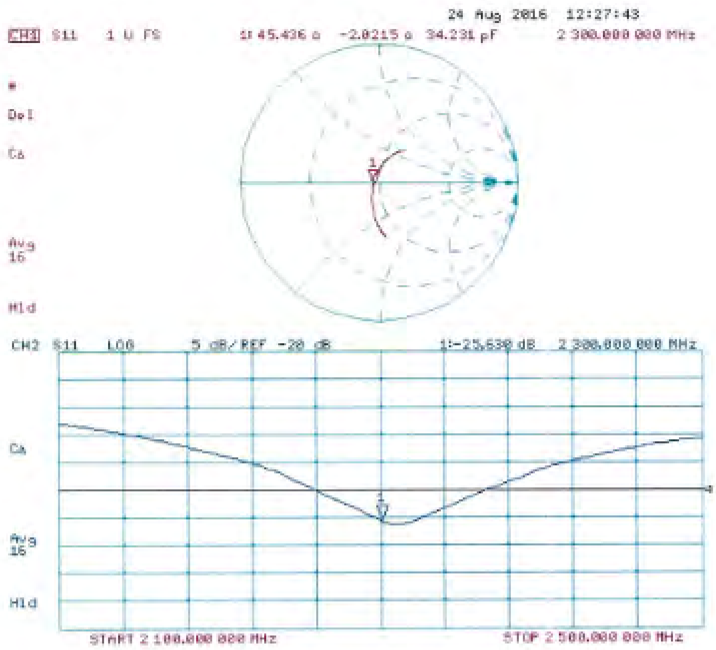
- Probe: EX3DV4 - SN7349; ConvF(7.79, 7.79, 7.79); Calibrated: 15.06.2016;
- Sensor-Surface: 1.4mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn601; Calibrated: 30.12.2015
- Phantom: Flat Phantom 5.0 (back); Type: QD000P50AA; Serial: 1002
- DASY52 52.8.8(1258); SEMCAD X 14.6.10(7372)

**Dipole Calibration for Body Tissue/Pin=250 mW, d=10mm/Zoom Scan (7x7x7)/Cube 0:**
Measurement grid: dx=5mm, dy=5mm, dz=5mm
Reference Value = 106.5 V/m; Power Drift = -0.02 dB
Peak SAR (extrapolated) = 23.7 W/kg
**SAR(1 g) = 12.2 W/kg; SAR(10 g) = 5.87 W/kg**
Maximum value of SAR (measured) = 19.5 W/kg

0 dB = 19.5 W/kg = 12.90 dBW/kg

Certificate No: D2300V2-1023_Aug16 Page 7 of 8

Impedance Measurement Plot for Body TSL








SGS Taiwan Ltd. No.134,Wu Kung Road, New Taipei Industrial Park, Wuku District, New Taipei City, Taiwan 24803/新北市五股區新北產業園區五工路134號
台灣檢驗科技股份有限公司 t (886-2) 2299-3279 f (886-2) 2298-0488 www.tw.sgs.com
Member of SGS Group

Calibration Laboratory of
Schmid & Partner
Engineering AG
Zeughausstrasse 43, 8004 Zurich, Switzerland

ilac-MRA

S Schweizerischer Kalibrierdienst
C Service suisse d'étalonnage
S Servizio svizzero di taratura
S Swiss Calibration Service

Accredited by the Swiss Accreditation Service (SAS)
The Swiss Accreditation Service is one of the signatories to the EA
Multilateral Agreement for the recognition of calibration certificates

Accreditation No.: SCS 0108

Client SGS-TW (Auden)

Certificate No: D2450V2-727_Apr16

# CALIBRATION CERTIFICATE

Object: D2450V2 - SN:727

Calibration procedure(s): QA CAL-05.v9
Calibration procedure for dipole validation kits above 700 MHz

Calibration date: April 19, 2016

This calibration certificate documents the traceability to national standards, which realize the physical units of measurements (SI).
The measurements and the uncertainties with confidence probability are given on the following pages and are part of the certificate.

All calibrations have been conducted in the closed laboratory facility: environment temperature (22 ± 3)°C and humidity < 70%.

Calibration Equipment used (M&TE critical for calibration)

| Primary Standards | ID # | Cal Date (Certificate No.) | Scheduled Calibration |
|---|---|---|---|
| Power meter NRP | SN: 104778 | 06-Apr-16 (No. 217-02288/02289) | Apr-17 |
| Power sensor NRP-Z91 | SN: 103244 | 06-Apr-16 (No. 217-02288) | Apr-17 |
| Power sensor NRP-Z91 | SN: 103245 | 06-Apr-16 (No. 217-02289) | Apr-17 |
| Reference 20 dB Attenuator | SN: 5058 (20k) | 05-Apr-16 (No. 217-02292) | Apr-17 |
| Type-N mismatch combination | SN: 5047.2 / 06327 | 05-Apr-16 (No. 217-02295) | Apr-17 |
| Reference Probe EX3DV4 | SN: 7349 | 31-Dec-15 (No. EX3-7349_Dec15) | Dec-16 |
| DAE4 | SN: 601 | 30-Dec-15 (No. DAE4-601_Dec15) | Dec-16 |

| Secondary Standards | ID # | Check Date (in house) | Scheduled Check |
|---|---|---|---|
| Power meter EPM-442A | SN: GB37480704 | 07-Oct-15 (No. 217-02222) | In house check: Oct-16 |
| Power sensor HP 8481A | SN: US37292783 | 07-Oct-15 (No. 217-02222) | In house check: Oct-16 |
| Power sensor HP 8481A | SN: MY41092317 | 07-Oct-15 (No. 217-02223) | In house check: Oct-16 |
| RF generator R&S SMT-06 | SN: 100972 | 15-Jun-15 (in house check Jun-15) | In house check: Oct-16 |
| Network Analyzer HP 8753E | SN: US37390585 | 18-Oct-01 (in house check Oct-15) | In house check: Oct-16 |

| | Name | Function | Signature |
|---|---|---|---|
| Calibrated by: | Michael Weber | Laboratory Technician | M.Weber |
| Approved by: | Katja Pokovic | Technical Manager | |

Issued: April 20, 2016

This calibration certificate shall not be reproduced except in full without written approval of the laboratory.





SGS Taiwan Ltd. No.134,Wu Kung Road, New Taipei Industrial Park, Wuku District, New Taipei City, Taiwan 24803/新北市五股區新北產業園區五工路134號
台灣檢驗科技股份有限公司 t (886-2) 2299-3279 f (886-2) 2298-0488 www.tw.sgs.com
Member of SGS Group

**Calibration Laboratory of**
Schmid & Partner
Engineering AG
Zeughausstrasse 43, 8004 Zurich, Switzerland

S Schweizerischer Kalibrierdienst
C Service suisse d'étalonnage
S Servizio svizzero di taratura
S Swiss Calibration Service

Accredited by the Swiss Accreditation Service (SAS)
The Swiss Accreditation Service is one of the signatories to the EA
Multilateral Agreement for the recognition of calibration certificates

Accreditation No.: SCS 0108

**Glossary:**

| | |
|---|---|
| TSL | tissue simulating liquid |
| ConvF | sensitivity in TSL / NORM x,y,z |
| N/A | not applicable or not measured |

**Calibration is Performed According to the Following Standards:**

a) IEEE Std 1528-2013, "IEEE Recommended Practice for Determining the Peak Spatial-Averaged Specific Absorption Rate (SAR) in the Human Head from Wireless Communications Devices: Measurement Techniques", June 2013
b) IEC 62209-1, "Procedure to measure the Specific Absorption Rate (SAR) for hand-held devices used in close proximity to the ear (frequency range of 300 MHz to 3 GHz)", February 2005
c) IEC 62209-2, "Procedure to determine the Specific Absorption Rate (SAR) for wireless communication devices used in close proximity to the human body (frequency range of 30 MHz to 6 GHz)", March 2010
d) KDB 865664, "SAR Measurement Requirements for 100 MHz to 6 GHz"

**Additional Documentation:**

e) DASY4/5 System Handbook

**Methods Applied and Interpretation of Parameters:**

- *Measurement Conditions:* Further details are available from the Validation Report at the end of the certificate. All figures stated in the certificate are valid at the frequency indicated.
- *Antenna Parameters with TSL:* The dipole is mounted with the spacer to position its feed point exactly below the center marking of the flat phantom section, with the arms oriented parallel to the body axis.
- *Feed Point Impedance and Return Loss:* These parameters are measured with the dipole positioned under the liquid filled phantom. The impedance stated is transformed from the measurement at the SMA connector to the feed point. The Return Loss ensures low reflected power. No uncertainty required.
- *Electrical Delay:* One-way delay between the SMA connector and the antenna feed point. No uncertainty required.
- *SAR measured:* SAR measured at the stated antenna input power.
- *SAR normalized:* SAR as measured, normalized to an input power of 1 W at the antenna connector.
- *SAR for nominal TSL parameters:* The measured TSL parameters are used to calculate the nominal SAR result.

The reported uncertainty of measurement is stated as the standard uncertainty of measurement multiplied by the coverage factor k=2, which for a normal distribution corresponds to a coverage probability of approximately 95%.





SGS Taiwan Ltd. No.134,Wu Kung Road, New Taipei Industrial Park, Wuku District, New Taipei City, Taiwan 24803/新北市五股區新北產業園區五工路134號
台灣檢驗科技股份有限公司 t (886-2) 2299-3279 f (886-2) 2298-0488 www.tw.sgs.com
Member of SGS Group

## Measurement Conditions

DASY system configuration, as far as not given on page 1.

| | | |
|---|---|---|
| **DASY Version** | DASY5 | V52.8.8 |
| **Extrapolation** | Advanced Extrapolation | |
| **Phantom** | Modular Flat Phantom | |
| **Distance Dipole Center - TSL** | 10 mm | with Spacer |
| **Zoom Scan Resolution** | dx, dy, dz = 5 mm | |
| **Frequency** | 2450 MHz ± 1 MHz | |

## Head TSL parameters

The following parameters and calculations were applied.

| | **Temperature** | **Permittivity** | **Conductivity** |
|---|---|---|---|
| **Nominal Head TSL parameters** | 22.0 °C | 39.2 | 1.80 mho/m |
| **Measured Head TSL parameters** | (22.0 ± 0.2) °C | 40.0 ± 6 % | 1.83 mho/m ± 6 % |
| **Head TSL temperature change during test** | < 0.5 °C | ---- | ---- |

## SAR result with Head TSL

| **SAR averaged over 1 $cm^3$ (1 g) of Head TSL** | Condition | |
|---|---|---|
| SAR measured | 250 mW input power | 12.8 W/kg |
| SAR for nominal Head TSL parameters | normalized to 1W | **51.0 W/kg ± 17.0 % (k=2)** |

| **SAR averaged over 10 $cm^3$ (10 g) of Head TSL** | condition | |
|---|---|---|
| SAR measured | 250 mW input power | 5.93 W/kg |
| SAR for nominal Head TSL parameters | normalized to 1W | **23.7 W/kg ± 16.5 % (k=2)** |

## Body TSL parameters

The following parameters and calculations were applied.

| | **Temperature** | **Permittivity** | **Conductivity** |
|---|---|---|---|
| **Nominal Body TSL parameters** | 22.0 °C | 52.7 | 1.95 mho/m |
| **Measured Body TSL parameters** | (22.0 ± 0.2) °C | 52.7 ± 6 % | 1.98 mho/m ± 6 % |
| **Body TSL temperature change during test** | < 0.5 °C | ---- | ---- |

## SAR result with Body TSL

| **SAR averaged over 1 $cm^3$ (1 g) of Body TSL** | Condition | |
|---|---|---|
| SAR measured | 250 mW input power | 12.5 W/kg |
| SAR for nominal Body TSL parameters | normalized to 1W | **49.6 W/kg ± 17.0 % (k=2)** |

| **SAR averaged over 10 $cm^3$ (10 g) of Body TSL** | condition | |
|---|---|---|
| SAR measured | 250 mW input power | 5.86 W/kg |
| SAR for nominal Body TSL parameters | normalized to 1W | **23.3 W/kg ± 16.5 % (k=2)** |





SGS Taiwan Ltd. No.134,Wu Kung Road, New Taipei Industrial Park, Wuku District, New Taipei City, Taiwan 24803/新北市五股區新北產業園區五工路134號
台灣檢驗科技股份有限公司 t (886-2) 2299-3279 f (886-2) 2298-0488 www.tw.sgs.com
Member of SGS Group

## Appendix (Additional assessments outside the scope of SCS 0108)

### Antenna Parameters with Head TSL

| | |
|---|---|
| Impedance, transformed to feed point | 55.3 Ω + 2.0 jΩ |
| Return Loss | - 25.4 dB |

### Antenna Parameters with Body TSL

| | |
|---|---|
| Impedance, transformed to feed point | 52.1 Ω + 4.8 jΩ |
| Return Loss | - 25.9 dB |

### General Antenna Parameters and Design

| | |
|---|---|
| Electrical Delay (one direction) | 1.148 ns |

After long term use with 100W radiated power, only a slight warming of the dipole near the feedpoint can be measured.

The dipole is made of standard semirigid coaxial cable. The center conductor of the feeding line is directly connected to the second arm of the dipole. The antenna is therefore short-circuited for DC-signals. On some of the dipoles, small end caps are added to the dipole arms in order to improve matching when loaded according to the position as explained in the "Measurement Conditions" paragraph. The SAR data are not affected by this change. The overall dipole length is still according to the Standard.
No excessive force must be applied to the dipole arms, because they might bend or the soldered connections near the feedpoint may be damaged.

### Additional EUT Data

| | |
|---|---|
| Manufactured by | SPEAG |
| Manufactured on | January 09, 2003 |




SGS Taiwan Ltd. No.134,Wu Kung Road, New Taipei Industrial Park, Wuku District, New Taipei City, Taiwan 24803/新北市五股區新北產業園區五工路134號
台灣檢驗科技股份有限公司 t (886-2) 2299-3279 f (886-2) 2298-0488 www.tw.sgs.com
Member of SGS Group

**DASY5 Validation Report for Head TSL**

Date: 19.04.2016

Test Laboratory: SPEAG, Zurich, Switzerland

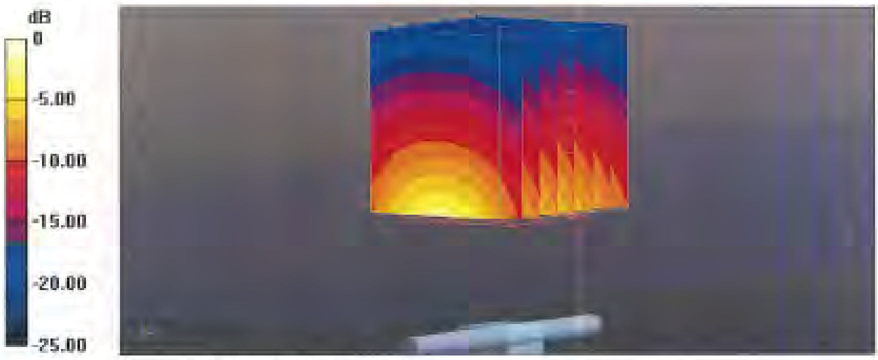
**DUT: Dipole 2450 MHz; Type: D2450V2; Serial: D2450V2 - SN: 727**

Communication System: UID 0 - CW; Frequency: 2450 MHz
Medium parameters used: f = 2450 MHz; $\sigma$ = 1.83 S/m; $\varepsilon_r$ = 40; $\rho$ = 1000 kg/m$^3$
Phantom section: Flat Section
Measurement Standard: DASY5 (IEEE/IEC/ANSI C63.19-2011)

DASY52 Configuration:

- Probe: EX3DV4 - SN7349; ConvF(7.76, 7.76, 7.76); Calibrated: 31.12.2015;
- Sensor-Surface: 1.4mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn601; Calibrated: 30.12.2015
- Phantom: Flat Phantom 5.0 (front); Type: QD000P50AA; Serial: 1001
- DASY52 52.8.8(1258); SEMCAD X 14.6.10(7372)

**Dipole Calibration for Head Tissue/Pin=250 mW, d=10mm/Zoom Scan (7x7x7)/Cube 0:**
Measurement grid: dx=5mm, dy=5mm, dz=5mm
Reference Value = 112.1 V/m; Power Drift = 0.05 dB
Peak SAR (extrapolated) = 25.7 W/kg
**SAR(1 g) = 12.8 W/kg; SAR(10 g) = 5.93 W/kg**
Maximum value of SAR (measured) = 20.8 W/kg



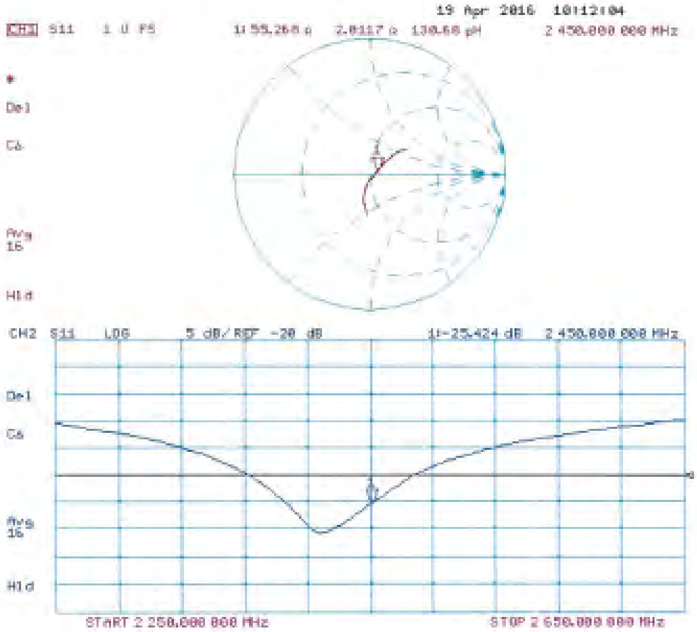

0 dB = 20.8 W/kg = 13.18 dBW/kg





SGS Taiwan Ltd. 台灣檢驗科技股份有限公司
No.134,Wu Kung Road, New Taipei Industrial Park, Wuku District, New Taipei City, Taiwan 24803/新北市五股區新北產業園區五工路134號
t (886-2) 2299-3279 f (886-2) 2298-0488 www.tw.sgs.com
Member of SGS Group

**Impedance Measurement Plot for Head TSL**








SGS Taiwan Ltd. No.134,Wu Kung Road, New Taipei Industrial Park, Wuku District, New Taipei City, Taiwan 24803/新北市五股區新北產業園區五工路134號
台灣檢驗科技股份有限公司 t (886-2) 2299-3279 f (886-2) 2298-0488 www.tw.sgs.com
Member of SGS Group

**Calibration Laboratory of**
Schmid & Partner
Engineering AG
Zeughausstrasse 43, 8004 Zurich, Switzerland

S Schweizerischer Kalibrierdienst
C Service suisse d'étalonnage
S Servizio svizzero di taratura
S Swiss Calibration Service

Accredited by the Swiss Accreditation Service (SAS)
The Swiss Accreditation Service is one of the signatories to the EA Multilateral Agreement for the recognition of calibration certificates

Accreditation No.: **SCS 0108**

Client **SGS-TW (Auden)**

Certificate No: **D2600V2-1005_Jan16**

# CALIBRATION CERTIFICATE

| | |
|---|---|
| Object | D2600V2 - SN: 1005 |
| Calibration procedure(s) | QA CAL-05.v9<br>Calibration procedure for dipole validation kits above 700 MHz |
| Calibration date: | January 21, 2016 |

This calibration certificate documents the traceability to national standards, which realize the physical units of measurements (SI).
The measurements and the uncertainties with confidence probability are given on the following pages and are part of the certificate.

All calibrations have been conducted in the closed laboratory facility: environment temperature (22 ± 3)°C and humidity < 70%.

Calibration Equipment used (M&TE critical for calibration)

| Primary Standards | ID # | Cal Date (Certificate No.) | Scheduled Calibration |
|---|---|---|---|
| Power meter EPM-442A | GB37480704 | 07-Oct-15 (No. 217-02222) | Oct-16 |
| Power sensor HP 8481A | US37292783 | 07-Oct-15 (No. 217-02222) | Oct-16 |
| Power sensor HP 8481A | MY41092317 | 07-Oct-15 (No. 217-02223) | Oct-16 |
| Reference 20 dB Attenuator | SN: 5058 (20k) | 01-Apr-15 (No. 217-02131) | Mar-16 |
| Type-N mismatch combination | SN: 5047.2 / 06327 | 01-Apr-15 (No. 217-02134) | Mar-16 |
| Reference Probe EX3DV4 | SN: 7349 | 31-Dec-15 (No. EX3-7349_Dec15) | Dec-16 |
| DAE4 | SN: 601 | 30-Dec-15 (No. DAE4-601_Dec15) | Dec-16 |

| Secondary Standards | ID # | Check Date (in house) | Scheduled Check |
|---|---|---|---|
| RF generator R&S SMT-06 | 100972 | 15-Jun-15 (in house check Jun-15) | In house check: Jun-18 |
| Network Analyzer HP 8753E | US37390585 S4206 | 18-Oct-01 (in house check Oct-15) | In house check: Oct-16 |

| | Name | Function | Signature |
|---|---|---|---|
| Calibrated by: | Leif Klysner | Laboratory Technician | Leif Klysner |
| Approved by: | Katja Pokovic | Technical Manager | |

Issued: January 26, 2016

This calibration certificate shall not be reproduced except in full without written approval of the laboratory.





SGS Taiwan Ltd. No.134,Wu Kung Road, New Taipei Industrial Park, Wuku District, New Taipei City, Taiwan 24803/新北市五股區新北產業園區五工路134號
台灣檢驗科技股份有限公司 t (886-2) 2299-3279 f (886-2) 2298-0488 www.tw.sgs.com
Member of SGS Group

**Calibration Laboratory of**
Schmid & Partner
Engineering AG
Zeughausstrasse 43, 8004 Zurich, Switzerland

S Schweizerischer Kalibrierdienst
C Service suisse d'étalonnage
S Servizio svizzero di taratura
S Swiss Calibration Service

Accredited by the Swiss Accreditation Service (SAS)
The Swiss Accreditation Service is one of the signatories to the EA
Multilateral Agreement for the recognition of calibration certificates

Accreditation No.: **SCS 0108**

**Glossary:**

| | |
|---|---|
| TSL | tissue simulating liquid |
| ConvF | sensitivity in TSL / NORM x,y,z |
| N/A | not applicable or not measured |

**Calibration is Performed According to the Following Standards:**

a) IEEE Std 1528-2013, "IEEE Recommended Practice for Determining the Peak Spatial-Averaged Specific Absorption Rate (SAR) in the Human Head from Wireless Communications Devices: Measurement Techniques", June 2013
b) IEC 62209-1, "Procedure to measure the Specific Absorption Rate (SAR) for hand-held devices used in close proximity to the ear (frequency range of 300 MHz to 3 GHz)", February 2005
c) IEC 62209-2, "Procedure to determine the Specific Absorption Rate (SAR) for wireless communication devices used in close proximity to the human body (frequency range of 30 MHz to 6 GHz)", March 2010
d) KDB 865664, "SAR Measurement Requirements for 100 MHz to 6 GHz"

**Additional Documentation:**

e) DASY4/5 System Handbook

**Methods Applied and Interpretation of Parameters:**

- *Measurement Conditions:* Further details are available from the Validation Report at the end of the certificate. All figures stated in the certificate are valid at the frequency indicated.
- *Antenna Parameters with TSL:* The dipole is mounted with the spacer to position its feed point exactly below the center marking of the flat phantom section, with the arms oriented parallel to the body axis.
- *Feed Point Impedance and Return Loss:* These parameters are measured with the dipole positioned under the liquid filled phantom. The impedance stated is transformed from the measurement at the SMA connector to the feed point. The Return Loss ensures low reflected power. No uncertainty required.
- *Electrical Delay:* One-way delay between the SMA connector and the antenna feed point. No uncertainty required.
- *SAR measured:* SAR measured at the stated antenna input power.
- *SAR normalized:* SAR as measured, normalized to an input power of 1 W at the antenna connector.
- *SAR for nominal TSL parameters:* The measured TSL parameters are used to calculate the nominal SAR result.

The reported uncertainty of measurement is stated as the standard uncertainty of measurement multiplied by the coverage factor k=2, which for a normal distribution corresponds to a coverage probability of approximately 95%.





SGS Taiwan Ltd. No.134,Wu Kung Road, New Taipei Industrial Park, Wuku District, New Taipei City, Taiwan 24803/新北市五股區新北產業園區五工路134號
台灣檢驗科技股份有限公司 t (886-2) 2299-3279 f (886-2) 2298-0488 www.tw.sgs.com
Member of SGS Group

## Measurement Conditions

DASY system configuration, as far as not given on page 1.

| | | |
|---|---|---|
| **DASY Version** | DASY5 | V52.8.8 |
| **Extrapolation** | Advanced Extrapolation | |
| **Phantom** | Modular Flat Phantom | |
| **Distance Dipole Center - TSL** | 10 mm | with Spacer |
| **Zoom Scan Resolution** | dx, dy, dz = 5 mm | |
| **Frequency** | 2600 MHz ± 1 MHz | |

## Head TSL parameters

The following parameters and calculations were applied.

| | **Temperature** | **Permittivity** | **Conductivity** |
|---|---|---|---|
| **Nominal Head TSL parameters** | 22.0 °C | 39.0 | 1.96 mho/m |
| **Measured Head TSL parameters** | (22.0 ± 0.2) °C | 37.3 ± 6 % | 2.04 mho/m ± 6 % |
| **Head TSL temperature change during test** | < 0.5 °C | ---- | ---- |

## SAR result with Head TSL

| **SAR averaged over 1 $cm^3$ (1 g) of Head TSL** | Condition | |
|---|---|---|
| SAR measured | 250 mW input power | 14.2 W/kg |
| SAR for nominal Head TSL parameters | normalized to 1W | **55.2 W/kg ± 17.0 % (k=2)** |

| **SAR averaged over 10 $cm^3$ (10 g) of Head TSL** | condition | |
|---|---|---|
| SAR measured | 250 mW input power | 6.29 W/kg |
| SAR for nominal Head TSL parameters | normalized to 1W | **24.7 W/kg ± 16.5 % (k=2)** |

## Body TSL parameters

The following parameters and calculations were applied.

| | **Temperature** | **Permittivity** | **Conductivity** |
|---|---|---|---|
| **Nominal Body TSL parameters** | 22.0 °C | 52.5 | 2.16 mho/m |
| **Measured Body TSL parameters** | (22.0 ± 0.2) °C | 51.6 ± 6 % | 2.22 mho/m ± 6 % |
| **Body TSL temperature change during test** | < 0.5 °C | ---- | ---- |

## SAR result with Body TSL

| **SAR averaged over 1 $cm^3$ (1 g) of Body TSL** | Condition | |
|---|---|---|
| SAR measured | 250 mW input power | 13.7 W/kg |
| SAR for nominal Body TSL parameters | normalized to 1W | **53.9 W/kg ± 17.0 % (k=2)** |

| **SAR averaged over 10 $cm^3$ (10 g) of Body TSL** | condition | |
|---|---|---|
| SAR measured | 250 mW input power | 6.10 W/kg |
| SAR for nominal Body TSL parameters | normalized to 1W | **24.2 W/kg ± 16.5 % (k=2)** |





SGS Taiwan Ltd. No.134,Wu Kung Road, New Taipei Industrial Park, Wuku District, New Taipei City, Taiwan 24803/新北市五股區新北產業園區五工路134號
台灣檢驗科技股份有限公司 t (886-2) 2299-3279 f (886-2) 2298-0488 www.tw.sgs.com
Member of SGS Group

## Appendix (Additional assessments outside the scope of SCS 0108)

### Antenna Parameters with Head TSL

| | |
|---|---|
| Impedance, transformed to feed point | 51.2 Ω - 4.2 jΩ |
| Return Loss | - 27.2 dB |

### Antenna Parameters with Body TSL

| | |
|---|---|
| Impedance, transformed to feed point | 45.6 Ω - 3.3 jΩ |
| Return Loss | - 24.8 dB |

### General Antenna Parameters and Design

| | |
|---|---|
| Electrical Delay (one direction) | 1.154 ns |

After long term use with 100W radiated power, only a slight warming of the dipole near the feedpoint can be measured.

The dipole is made of standard semirigid coaxial cable. The center conductor of the feeding line is directly connected to the second arm of the dipole. The antenna is therefore short-circuited for DC-signals. On some of the dipoles, small end caps are added to the dipole arms in order to improve matching when loaded according to the position as explained in the "Measurement Conditions" paragraph. The SAR data are not affected by this change. The overall dipole length is still according to the Standard.
No excessive force must be applied to the dipole arms, because they might bend or the soldered connections near the feedpoint may be damaged.

### Additional EUT Data

| | |
|---|---|
| Manufactured by | SPEAG |
| Manufactured on | December 23, 2006 |




SGS Taiwan Ltd. No.134,Wu Kung Road, New Taipei Industrial Park, Wuku District, New Taipei City, Taiwan 24803/新北市五股區新北產業園區五工路134號
台灣檢驗科技股份有限公司 t (886-2) 2299-3279 f (886-2) 2298-0488 www.tw.sgs.com
Member of SGS Group

## DASY5 Validation Report for Head TSL

Date: 21.01.2016

Test Laboratory: SPEAG, Zurich, Switzerland

**DUT: Dipole 2600 MHz; Type: D2600V2; Serial: D2600V2 - SN: 1005**

Communication System: UID 0 - CW; Frequency: 2600 MHz
Medium parameters used: f = 2600 MHz; $\sigma = 2.04$ S/m; $\varepsilon_r = 37.3$; $\rho = 1000$ kg/m$^3$
Phantom section: Flat Section
Measurement Standard: DASY5 (IEEE/IEC/ANSI C63.19-2011)

DASY52 Configuration:

- Probe: EX3DV4 - SN7349; ConvF(7.49, 7.49, 7.49); Calibrated: 31.12.2015;
- Sensor-Surface: 1.4mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn601; Calibrated: 30.12.2015
- Phantom: Flat Phantom 5.0 (front); Type: QD000P50AA; Serial: 1001
- DASY52 52.8.8(1258); SEMCAD X 14.6.10(7372)

**Dipole Calibration for Head Tissue/Pin=250 mW, d=10mm/Zoom Scan (7x7x7)/Cube 0:**
Measurement grid: dx=5mm, dy=5mm, dz=5mm
Reference Value = 114.8 V/m; Power Drift = 0.01 dB
Peak SAR (extrapolated) = 30.2 W/kg
**SAR(1 g) = 14.2 W/kg; SAR(10 g) = 6.29 W/kg**
Maximum value of SAR (measured) = 24.0 W/kg

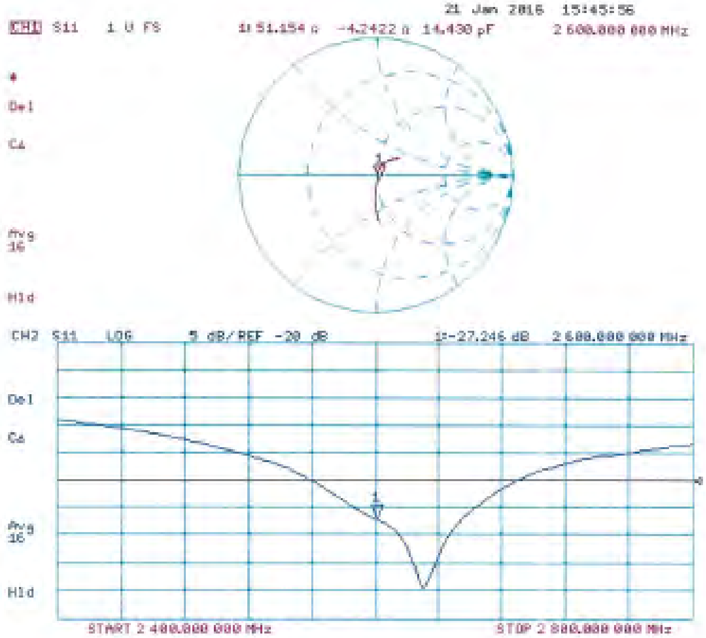

0 dB = 24.0 W/kg = 13.80 dBW/kg





SGS Taiwan Ltd. No.134,Wu Kung Road, New Taipei Industrial Park, Wuku District, New Taipei City, Taiwan 24803/新北市五股區新北產業園區五工路134號
台灣檢驗科技股份有限公司 t (886-2) 2299-3279 f (886-2) 2298-0488 www.tw.sgs.com
Member of SGS Group

Impedance Measurement Plot for Head TSL




Certificate No: D2600V2-1005_Jan16 Page 6 of 8


SGS Taiwan Ltd. No.134,Wu Kung Road, New Taipei Industrial Park, Wuku District, New Taipei City, Taiwan 24803/新北市五股區新北產業園區五工路134號
台灣檢驗科技股份有限公司 t (886-2) 2299-3279 f (886-2) 2298-0488 www.tw.sgs.com
Member of SGS Group

## DASY5 Validation Report for Body TSL

Date: 21.01.2016

Test Laboratory: SPEAG, Zurich, Switzerland

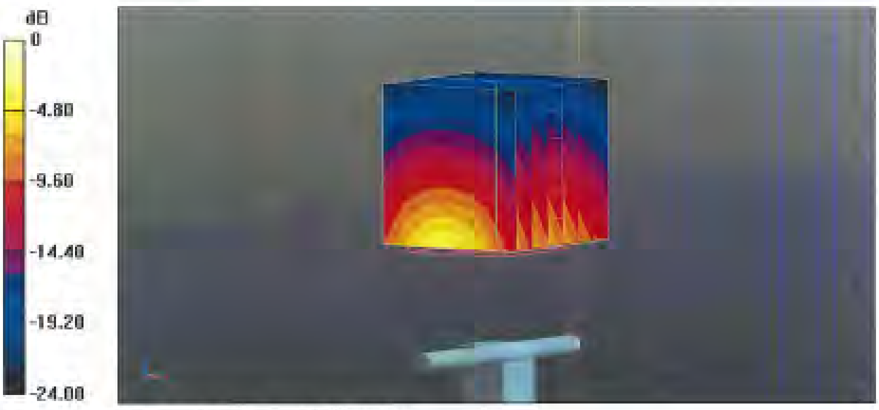
**DUT: Dipole 2600 MHz; Type: D2600V2; Serial: D2600V2 - SN: 1005**

Communication System: UID 0 - CW; Frequency: 2600 MHz
Medium parameters used: f = 2600 MHz; $\sigma$ = 2.22 S/m; $\varepsilon_r$ = 51.6; $\rho$ = 1000 kg/m$^3$
Phantom section: Flat Section
Measurement Standard: DASY5 (IEEE/IEC/ANSI C63.19-2011)

DASY52 Configuration:

- Probe: EX3DV4 - SN7349; ConvF(7.6, 7.6, 7.6); Calibrated: 31.12.2015;
- Sensor-Surface: 1.4mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn601; Calibrated: 30.12.2015
- Phantom: Flat Phantom 5.0 (back); Type: QD000P50AA; Serial: 1002
- DASY52 52.8.8(1258); SEMCAD X 14.6.10(7372)

**Dipole Calibration for Body Tissue/Pin=250 mW, d=10mm/Zoom Scan (7x7x7)/Cube 0:**
Measurement grid: dx=5mm, dy=5mm, dz=5mm
Reference Value = 106.7 V/m; Power Drift = 0.02 dB
Peak SAR (extrapolated) = 28.4 W/kg
**SAR(1 g) = 13.7 W/kg; SAR(10 g) = 6.1 W/kg**
Maximum value of SAR (measured) = 22.8 W/kg



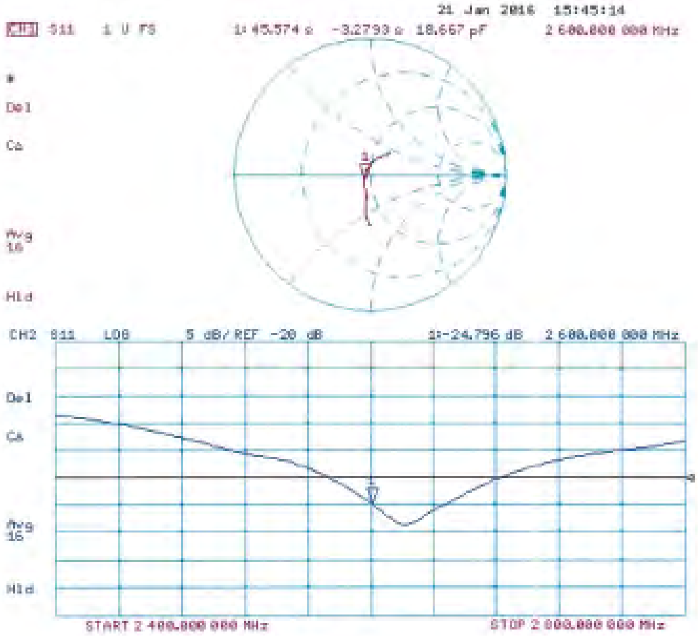

0 dB = 22.8 W/kg = 13.58 dBW/kg





SGS Taiwan Ltd. No.134,Wu Kung Road, New Taipei Industrial Park, Wuku District, New Taipei City, Taiwan 24803/新北市五股區新北產業園區五工路134號
台灣檢驗科技股份有限公司 t (886-2) 2299-3279 f (886-2) 2298-0488 www.tw.sgs.com
Member of SGS Group

Impedance Measurement Plot for Body TSL




Certificate No: D2600V2-1005_Jan16 Page 8 of 8



SGS Taiwan Ltd. No.134,Wu Kung Road, New Taipei Industrial Park, Wuku District, New Taipei City, Taiwan 24803/新北市五股區新北產業園區五工路134號
台灣檢驗科技股份有限公司 t (886-2) 2299-3279 f (886-2) 2298-0488 www.tw.sgs.com
Member of SGS Group

**Calibration Laboratory of**
Schmid & Partner
Engineering AG
Zeughausstrasse 43, 8004 Zurich, Switzerland

S Schweizerischer Kalibrierdienst
C Service suisse d'étalonnage
S Servizio svizzero di taratura
S Swiss Calibration Service

Accredited by the Swiss Accreditation Service (SAS)
The Swiss Accreditation Service is one of the signatories to the EA
Multilateral Agreement for the recognition of calibration certificates

Accreditation No.: **SCS 0108**

Client **SGS-TW (Auden)**

Certificate No: **D2600V2-1005_Jan17**

# CALIBRATION CERTIFICATE

| | |
|---|---|
| Object | D2600V2 - SN:1005 |
| Calibration procedure(s) | QA CAL-05.v9<br>Calibration procedure for dipole validation kits above 700 MHz |
| Calibration date: | January 25, 2017 |

This calibration certificate documents the traceability to national standards, which realize the physical units of measurements (SI).
The measurements and the uncertainties with confidence probability are given on the following pages and are part of the certificate.

All calibrations have been conducted in the closed laboratory facility: environment temperature (22 ± 3)°C and humidity < 70%

Calibration Equipment used (M&TE critical for calibration)

| Primary Standards | ID # | Cal Date (Certificate No.) | Scheduled Calibration |
|---|---|---|---|
| Power meter NRP | SN: 104778 | 06-Apr-16 (No. 217-02288/02289) | Apr-17 |
| Power sensor NRP-Z91 | SN: 103244 | 06-Apr-16 (No. 217-02288) | Apr-17 |
| Power sensor NRP-Z91 | SN: 103245 | 06-Apr-16 (No. 217-02289) | Apr-17 |
| Reference 20 dB Attenuator | SN: 5058 (20k) | 05-Apr-16 (No. 217-02292) | Apr-17 |
| Type-N mismatch combination | SN: 5047.2 / 06327 | 05-Apr-16 (No. 217-02295) | Apr-17 |
| Reference Probe EX3DV4 | SN: 7349 | 31-Dec-16 (No. EX3-7349_Dec16) | Dec-17 |
| DAE4 | SN: 601 | 04-Jan-17 (No. DAE4-601_Jan17) | Jan-18 |

| Secondary Standards | ID # | Check Date (in house) | Scheduled Check |
|---|---|---|---|
| Power meter EPM-442A | SN: GB37480704 | 07-Oct-15 (in house check Oct-16) | In house check: Oct-18 |
| Power sensor HP 8481A | SN: US37292783 | 07-Oct-15 (in house check Oct-16) | In house check: Oct-18 |
| Power sensor HP 8481A | SN: MY41092317 | 07-Oct-15 (in house check Oct-16) | In house check: Oct-18 |
| RF generator R&S SMT-06 | SN: 100972 | 15-Jun-15 (in house check Oct-16) | In house check: Oct-18 |
| Network Analyzer HP 8753E | SN: US37390585 | 18-Oct-01 (in house check Oct-16) | In house check: Oct-17 |

| | Name | Function | Signature |
|---|---|---|---|
| Calibrated by: | Johannes Kurikka | Laboratory Technician | |
| Approved by: | Katja Pokovic | Technical Manager | |

Issued: January 25, 2017

This calibration certificate shall not be reproduced except in full without written approval of the laboratory.





SGS Taiwan Ltd. No.134,Wu Kung Road, New Taipei Industrial Park, Wuku District, New Taipei City, Taiwan 24803/新北市五股區新北產業園區五工路134號
台灣檢驗科技股份有限公司 t (886-2) 2299-3279 f (886-2) 2298-0488 www.tw.sgs.com
Member of SGS Group

**Calibration Laboratory of**
Schmid & Partner
Engineering AG
Zeughausstrasse 43, 8004 Zurich, Switzerland

S Schweizerischer Kalibrierdienst
C Service suisse d'étalonnage
S Servizio svizzero di taratura
S Swiss Calibration Service

Accredited by the Swiss Accreditation Service (SAS)
The Swiss Accreditation Service is one of the signatories to the EA
Multilateral Agreement for the recognition of calibration certificates

Accreditation No.: SCS 0108

**Glossary:**

| | |
|---|---|
| TSL | tissue simulating liquid |
| ConvF | sensitivity in TSL / NORM x,y,z |
| N/A | not applicable or not measured |

**Calibration is Performed According to the Following Standards:**

a) IEEE Std 1528-2013, "IEEE Recommended Practice for Determining the Peak Spatial-Averaged Specific Absorption Rate (SAR) in the Human Head from Wireless Communications Devices: Measurement Techniques", June 2013
b) IEC 62209-1, "Procedure to measure the Specific Absorption Rate (SAR) for hand-held devices used in close proximity to the ear (frequency range of 300 MHz to 3 GHz)", February 2005
c) IEC 62209-2, "Procedure to determine the Specific Absorption Rate (SAR) for wireless communication devices used in close proximity to the human body (frequency range of 30 MHz to 6 GHz)", March 2010
d) KDB 865664, "SAR Measurement Requirements for 100 MHz to 6 GHz"

**Additional Documentation:**

e) DASY4/5 System Handbook

**Methods Applied and Interpretation of Parameters:**

- *Measurement Conditions:* Further details are available from the Validation Report at the end of the certificate. All figures stated in the certificate are valid at the frequency indicated.
- *Antenna Parameters with TSL:* The dipole is mounted with the spacer to position its feed point exactly below the center marking of the flat phantom section, with the arms oriented parallel to the body axis.
- *Feed Point Impedance and Return Loss:* These parameters are measured with the dipole positioned under the liquid filled phantom. The impedance stated is transformed from the measurement at the SMA connector to the feed point. The Return Loss ensures low reflected power. No uncertainty required.
- *Electrical Delay:* One-way delay between the SMA connector and the antenna feed point. No uncertainty required.
- *SAR measured:* SAR measured at the stated antenna input power.
- *SAR normalized:* SAR as measured, normalized to an input power of 1 W at the antenna connector.
- *SAR for nominal TSL parameters:* The measured TSL parameters are used to calculate the nominal SAR result.

The reported uncertainty of measurement is stated as the standard uncertainty of measurement multiplied by the coverage factor k=2, which for a normal distribution corresponds to a coverage probability of approximately 95%.





SGS Taiwan Ltd. No.134,Wu Kung Road, New Taipei Industrial Park, Wuku District, New Taipei City, Taiwan 24803/新北市五股區新北產業園區五工路134號
台灣檢驗科技股份有限公司 t (886-2) 2299-3279 f (886-2) 2298-0488 www.tw.sgs.com
Member of SGS Group

## Measurement Conditions

DASY system configuration, as far as not given on page 1.

| | | |
|---|---|---|
| **DASY Version** | DASY5 | V52.8.8 |
| **Extrapolation** | Advanced Extrapolation | |
| **Phantom** | Modular Flat Phantom | |
| **Distance Dipole Center - TSL** | 10 mm | with Spacer |
| **Zoom Scan Resolution** | dx, dy, dz = 5 mm | |
| **Frequency** | 2600 MHz ± 1 MHz | |

## Head TSL parameters

The following parameters and calculations were applied.

| | Temperature | Permittivity | Conductivity |
|---|---|---|---|
| **Nominal Head TSL parameters** | 22.0 °C | 39.0 | 1.96 mho/m |
| **Measured Head TSL parameters** | (22.0 ± 0.2) °C | 37.4 ± 6 % | 2.05 mho/m ± 6 % |
| **Head TSL temperature change during test** | < 0.5 °C | ---- | ---- |

## SAR result with Head TSL

| **SAR averaged over 1 $cm^3$ (1 g) of Head TSL** | Condition | |
|---|---|---|
| SAR measured | 250 mW input power | 14.3 W/kg |
| SAR for nominal Head TSL parameters | normalized to 1W | **55.5 W/kg ± 17.0 % (k=2)** |

| **SAR averaged over 10 $cm^3$ (10 g) of Head TSL** | condition | |
|---|---|---|
| SAR measured | 250 mW input power | 6.32 W/kg |
| SAR for nominal Head TSL parameters | normalized to 1W | **24.8 W/kg ± 16.5 % (k=2)** |

## Body TSL parameters

The following parameters and calculations were applied.

| | Temperature | Permittivity | Conductivity |
|---|---|---|---|
| **Nominal Body TSL parameters** | 22.0 °C | 52.5 | 2.16 mho/m |
| **Measured Body TSL parameters** | (22.0 ± 0.2) °C | 52.3 ± 6 % | 2.20 mho/m ± 6 % |
| **Body TSL temperature change during test** | < 0.5 °C | ---- | ---- |

## SAR result with Body TSL

| **SAR averaged over 1 $cm^3$ (1 g) of Body TSL** | Condition | |
|---|---|---|
| SAR measured | 250 mW input power | 13.9 W/kg |
| SAR for nominal Body TSL parameters | normalized to 1W | **55.1 W/kg ± 17.0 % (k=2)** |

| **SAR averaged over 10 $cm^3$ (10 g) of Body TSL** | condition | |
|---|---|---|
| SAR measured | 250 mW input power | 6.20 W/kg |
| SAR for nominal Body TSL parameters | normalized to 1W | **24.7 W/kg ± 16.5 % (k=2)** |





SGS Taiwan Ltd. No.134,Wu Kung Road, New Taipei Industrial Park, Wuku District, New Taipei City, Taiwan 24803/新北市五股區新北產業園區五工路134號
台灣檢驗科技股份有限公司 t (886-2) 2299-3279 f (886-2) 2298-0488 www.tw.sgs.com
Member of SGS Group

## Appendix (Additional assessments outside the scope of SCS 0108)

### Antenna Parameters with Head TSL

| | |
|---|---|
| Impedance, transformed to feed point | 49.3 Ω - 4.7 jΩ |
| Return Loss | - 26.5 dB |

### Antenna Parameters with Body TSL

| | |
|---|---|
| Impedance, transformed to feed point | 44.7 Ω - 3.2 jΩ |
| Return Loss | - 23.7 dB |

### General Antenna Parameters and Design

| | |
|---|---|
| Electrical Delay (one direction) | 1.154 ns |

After long term use with 100W radiated power, only a slight warming of the dipole near the feedpoint can be measured.

The dipole is made of standard semirigid coaxial cable. The center conductor of the feeding line is directly connected to the second arm of the dipole. The antenna is therefore short-circuited for DC-signals. On some of the dipoles, small end caps are added to the dipole arms in order to improve matching when loaded according to the position as explained in the "Measurement Conditions" paragraph. The SAR data are not affected by this change. The overall dipole length is still according to the Standard.
No excessive force must be applied to the dipole arms, because they might bend or the soldered connections near the feedpoint may be damaged.

### Additional EUT Data

| | |
|---|---|
| Manufactured by | SPEAG |
| Manufactured on | December 23, 2006 |





SGS Taiwan Ltd. No.134,Wu Kung Road, New Taipei Industrial Park, Wuku District, New Taipei City, Taiwan 24803/新北市五股區新北產業園區五工路134號
台灣檢驗科技股份有限公司 t (886-2) 2299-3279 f (886-2) 2298-0488 www.tw.sgs.com
Member of SGS Group

**DASY5 Validation Report for Head TSL**

Date: 25.01.2017

Test Laboratory: SPEAG, Zurich, Switzerland

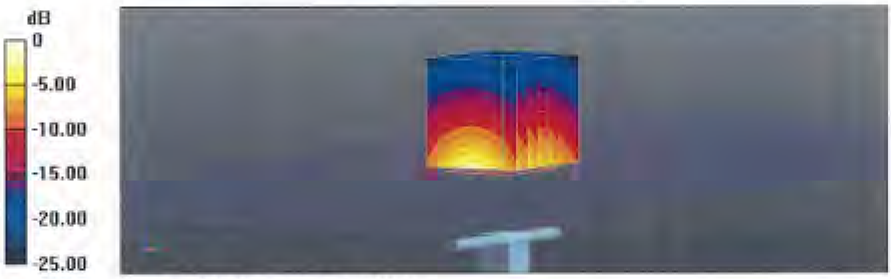
**DUT: Dipole 2600 MHz; Type: D2600V2; Serial: D2600V2 - SN:1005**

Communication System: UID 0 - CW; Frequency: 2600 MHz
Medium parameters used: f = 2600 MHz; $\sigma$ = 2.05 S/m; $\varepsilon_r$ = 37.4; $\rho$ = 1000 kg/m$^3$
Phantom section: Flat Section
Measurement Standard: DASY5 (IEEE/IEC/ANSI C63.19-2011)

DASY52 Configuration:

- Probe: EX3DV4 - SN7349; ConvF(7.56, 7.56, 7.56); Calibrated: 31.12.2016;
- Sensor-Surface: 1.4mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn601; Calibrated: 04.01.2017
- Phantom: Flat Phantom 5.0 (front); Type: QD 000 P50 AA; Serial: 1001
- DASY52 52.8.8(1258); SEMCAD X 14.6.10(7372)

**Dipole Calibration for Head Tissue/Pin=250 mW, d=10mm/Zoom Scan (7x7x7)/Cube 0:**
Measurement grid: dx=5mm, dy=5mm, dz=5mm
Reference Value = 116.2 V/m; Power Drift = -0.07 dB
Peak SAR (extrapolated) = 30.5 W/kg
**SAR(1 g) = 14.3 W/kg; SAR(10 g) = 6.32 W/kg**
Maximum value of SAR (measured) = 24.2 W/kg

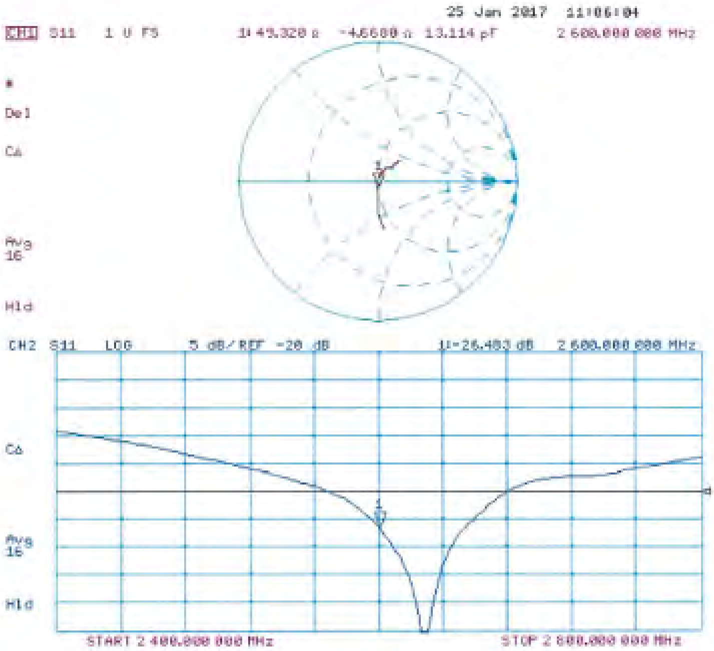



0 dB = 25.2 W/kg = 13.84 dBW/kg




SGS Taiwan Ltd. No.134,Wu Kung Road, New Taipei Industrial Park, Wuku District, New Taipei City, Taiwan 24803/新北市五股區新北產業園區五工路134號
台灣檢驗科技股份有限公司 t (886-2) 2299-3279 f (886-2) 2298-0488 www.tw.sgs.com
Member of SGS Group

## Impedance Measurement Plot for Head TSL








SGS Taiwan Ltd. No.134,Wu Kung Road, New Taipei Industrial Park, Wuku District, New Taipei City, Taiwan 24803/新北市五股區新北產業園區五工路134號
台灣檢驗科技股份有限公司 t (886-2) 2299-3279 f (886-2) 2298-0488 www.tw.sgs.com
Member of SGS Group

**DASY5 Validation Report for Body TSL**

Date: 18.01.2017

Test Laboratory: SPEAG, Zurich, Switzerland

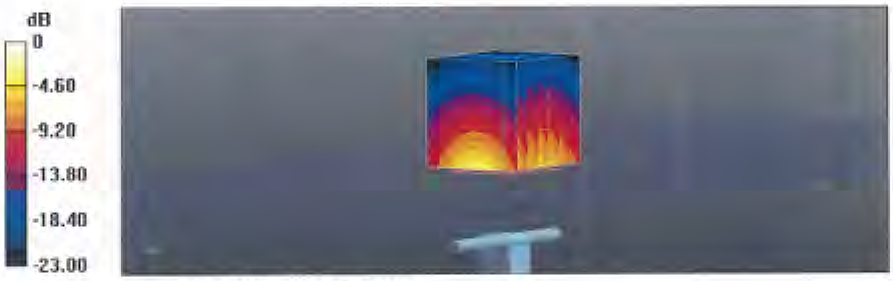
**DUT: Dipole 2600 MHz; Type: D2600V2; Serial: D2600V2 - SN:1005**

Communication System: UID 0 - CW; Frequency: 2600 MHz
Medium parameters used: f = 2600 MHz; $\sigma$ = 2.2 S/m; $\varepsilon_r$ = 52.3; $\rho$ = 1000 kg/m$^3$
Phantom section: Flat Section
Measurement Standard: DASY5 (IEEE/IEC/ANSI C63.19-2011)

DASY52 Configuration:

- Probe: EX3DV4 - SN7349; ConvF(7.48, 7.48, 7.48); Calibrated: 31.12.2016;
- Sensor-Surface: 1.4mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn601; Calibrated: 04.01.2017
- Phantom: Flat Phantom 5.0 (back); Type: QD 000 P50 AA; Serial: 1002
- DASY52 52.8.8(1258); SEMCAD X 14.6.10(7372)

**Dipole Calibration for Body Tissue/Pin=250 mW, d=10mm/Zoom Scan (7x7x7)/Cube 0:**
Measurement grid: dx=5mm, dy=5mm, dz=5mm
Reference Value = 108.8 V/m; Power Drift = -0.04 dB
Peak SAR (extrapolated) = 28.8 W/kg
**SAR(1 g) = 13.9 W/kg; SAR(10 g) = 6.2 W/kg**
Maximum value of SAR (measured) = 23.3 W/kg

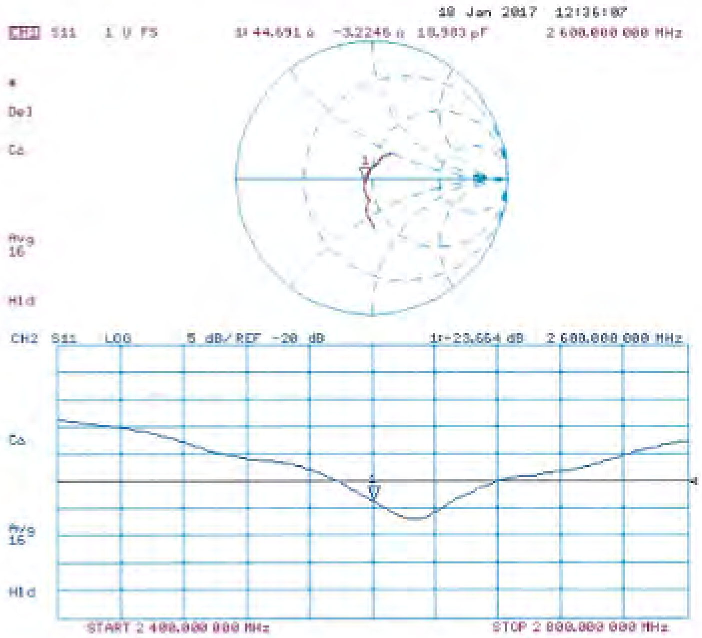



0 dB = 23.3 W/kg = 13.67 dBW/kg




SGS Taiwan Ltd. No.134,Wu Kung Road, New Taipei Industrial Park, Wuku District, New Taipei City, Taiwan 24803/新北市五股區新北產業園區五工路134號
台灣檢驗科技股份有限公司 t (886-2) 2299-3279 f (886-2) 2298-0488 www.tw.sgs.com
Member of SGS Group

## Impedance Measurement Plot for Body TSL








SGS Taiwan Ltd. No.134,Wu Kung Road, New Taipei Industrial Park, Wuku District, New Taipei City, Taiwan 24803/新北市五股區新北產業園區五工路134號
台灣檢驗科技股份有限公司 t (886-2) 2299-3279 f (886-2) 2298-0488 www.tw.sgs.com
Member of SGS Group

**Calibration Laboratory of**
Schmid & Partner
Engineering AG
Zeughausstrasse 43, 8004 Zurich, Switzerland

**S** Schweizerischer Kalibrierdienst
**C** Service suisse d'étalonnage
**S** Servizio svizzero di taratura
Swiss Calibration Service

Accredited by the Swiss Accreditation Service (SAS)
**The Swiss Accreditation Service is one of the signatories to the EA Multilateral Agreement for the recognition of calibration certificates**

Accreditation No.: **SCS 0108**

Client **SGS-TW (Auden)**

Certificate No: **D5GHzV2-1023_Jan16**

# CALIBRATION CERTIFICATE

| | |
|---|---|
| Object | D5GHzV2 - SN: 1023 |
| Calibration procedure(s) | QA CAL-22.v2<br>Calibration procedure for dipole validation kits between 3-6 GHz |
| Calibration date: | January 26, 2016 |

This calibration certificate documents the traceability to national standards, which realize the physical units of measurements (SI).
The measurements and the uncertainties with confidence probability are given on the following pages and are part of the certificate.

All calibrations have been conducted in the closed laboratory facility: environment temperature (22 ± 3)°C and humidity < 70%.

Calibration Equipment used (M&TE critical for calibration)

| Primary Standards | ID # | Cal Date (Certificate No.) | Scheduled Calibration |
|---|---|---|---|
| Power meter EPM-442A | GB37480704 | 07-Oct-15 (No. 217-02222) | Oct-16 |
| Power sensor HP 8481A | US37292783 | 07-Oct-15 (No. 217-02222) | Oct-16 |
| Power sensor HP 8481A | MY41092317 | 07-Oct-15 (No. 217-02223) | Oct-16 |
| Reference 20 dB Attenuator | SN: 5058 (20k) | 01-Apr-15 (No. 217-02131) | Mar-16 |
| Type-N mismatch combination | SN: 5047.2 / 06327 | 01-Apr-15 (No. 217-02134) | Mar-16 |
| Reference Probe EX3DV4 | SN: 3503 | 31-Dec-15 (No. EX3-3503_Dec15) | Dec-16 |
| DAE4 | SN: 601 | 30-Dec-15 (No. DAE4-601_Dec15) | Dec-16 |

| Secondary Standards | ID # | Check Date (in house) | Scheduled Check |
|---|---|---|---|
| RF generator R&S SMT-06 | 100972 | 15-Jun-15 (in house check Jun-15) | In house check: Jun-18 |
| Network Analyzer HP 8753E | US37390585 S4206 | 18-Oct-01 (in house check Oct-15) | In house check: Oct-16 |

| | Name | Function | Signature |
|---|---|---|---|
| Calibrated by: | Michael Weber | Laboratory Technician | M.Weber |
| Approved by: | Katja Pokovic | Technical Manager | |

Issued: January 28, 2016

This calibration certificate shall not be reproduced except in full without written approval of the laboratory.





SGS Taiwan Ltd. No.134,Wu Kung Road, New Taipei Industrial Park, Wuku District, New Taipei City, Taiwan 24803/新北市五股區新北產業園區五工路134號
台灣檢驗科技股份有限公司 t (886-2) 2299-3279 f (886-2) 2298-0488 www.tw.sgs.com
Member of SGS Group

**Calibration Laboratory of**
Schmid & Partner
Engineering AG
Zeughausstrasse 43, 8004 Zurich, Switzerland

S Schweizerischer Kalibrierdienst
C Service suisse d'étalonnage
S Servizio svizzero di taratura
S Swiss Calibration Service

Accredited by the Swiss Accreditation Service (SAS)
The Swiss Accreditation Service is one of the signatories to the EA Multilateral Agreement for the recognition of calibration certificates

Accreditation No.: **SCS 0108**

**Glossary:**

| | |
|---|---|
| TSL | tissue simulating liquid |
| ConvF | sensitivity in TSL / NORM x,y,z |
| N/A | not applicable or not measured |

**Calibration is Performed According to the Following Standards:**

a) IEEE Std 1528-2013, "IEEE Recommended Practice for Determining the Peak Spatial-Averaged Specific Absorption Rate (SAR) in the Human Head from Wireless Communications Devices: Measurement Techniques", June 2013
b) IEC 62209-2, "Procedure to determine the Specific Absorption Rate (SAR) for wireless communication devices used in close proximity to the human body (frequency range of 30 MHz to 6 GHz)", March 2010
c) KDB 865664, "SAR Measurement Requirements for 100 MHz to 6 GHz"

**Additional Documentation:**

d) DASY4/5 System Handbook

**Methods Applied and Interpretation of Parameters:**

- *Measurement Conditions:* Further details are available from the Validation Report at the end of the certificate. All figures stated in the certificate are valid at the frequency indicated.
- *Antenna Parameters with TSL:* The dipole is mounted with the spacer to position its feed point exactly below the center marking of the flat phantom section, with the arms oriented parallel to the body axis.
- *Feed Point Impedance and Return Loss:* These parameters are measured with the dipole positioned under the liquid filled phantom. The impedance stated is transformed from the measurement at the SMA connector to the feed point. The Return Loss ensures low reflected power. No uncertainty required.
- *Electrical Delay:* One-way delay between the SMA connector and the antenna feed point. No uncertainty required.
- *SAR measured:* SAR measured at the stated antenna input power.
- *SAR normalized:* SAR as measured, normalized to an input power of 1 W at the antenna connector.
- *SAR for nominal TSL parameters:* The measured TSL parameters are used to calculate the nominal SAR result.

The reported uncertainty of measurement is stated as the standard uncertainty of measurement multiplied by the coverage factor k=2, which for a normal distribution corresponds to a coverage probability of approximately 95%.





SGS Taiwan Ltd. No.134,Wu Kung Road, New Taipei Industrial Park, Wuku District, New Taipei City, Taiwan 24803/新北市五股區新北產業園區五工路134號
台灣檢驗科技股份有限公司 t (886-2) 2299-3279 f (886-2) 2298-0488 www.tw.sgs.com
Member of SGS Group

## Measurement Conditions

DASY system configuration, as far as not given on page 1.

| | | |
|---|---|---|
| **DASY Version** | DASY5 | V52.8.8 |
| **Extrapolation** | Advanced Extrapolation | |
| **Phantom** | Modular Flat Phantom V5.0 | |
| **Distance Dipole Center - TSL** | 10 mm | with Spacer |
| **Zoom Scan Resolution** | dx, dy = 4.0 mm, dz = 1.4 mm | Graded Ratio = 1.4 (Z direction) |
| **Frequency** | 5200 MHz ± 1 MHz<br>5300 MHz ± 1 MHz<br>5600 MHz ± 1 MHz<br>5800 MHz ± 1 MHz | |

## Head TSL parameters at 5200 MHz

The following parameters and calculations were applied.

| | Temperature | Permittivity | Conductivity |
|---|---|---|---|
| **Nominal Head TSL parameters** | 22.0 °C | 36.0 | 4.66 mho/m |
| **Measured Head TSL parameters** | (22.0 ± 0.2) °C | 35.2 ± 6 % | 4.51 mho/m ± 6 % |
| **Head TSL temperature change during test** | < 0.5 °C | ---- | ---- |

## SAR result with Head TSL at 5200 MHz

| **SAR averaged over 1 $cm^3$ (1 g) of Head TSL** | Condition | |
|---|---|---|
| SAR measured | 100 mW input power | 7.74 W/kg |
| SAR for nominal Head TSL parameters | normalized to 1W | **77.0 W/kg ± 19.9 % (k=2)** |

| **SAR averaged over 10 $cm^3$ (10 g) of Head TSL** | condition | |
|---|---|---|
| SAR measured | 100 mW input power | 2.23 W/kg |
| SAR for nominal Head TSL parameters | normalized to 1W | **22.1 W/kg ± 19.5 % (k=2)** |





SGS Taiwan Ltd. No.134,Wu Kung Road, New Taipei Industrial Park, Wuku District, New Taipei City, Taiwan 24803/新北市五股區新北產業園區五工路134號
台灣檢驗科技股份有限公司 t (886-2) 2299-3279 f (886-2) 2298-0488 www.tw.sgs.com
Member of SGS Group

## Head TSL parameters at 5300 MHz

The following parameters and calculations were applied.

| | Temperature | Permittivity | Conductivity |
|---|---|---|---|
| **Nominal Head TSL parameters** | 22.0 °C | 35.9 | 4.76 mho/m |
| **Measured Head TSL parameters** | (22.0 ± 0.2) °C | 35.1 ± 6 % | 4.60 mho/m ± 6 % |
| **Head TSL temperature change during test** | < 0.5 °C | ---- | ---- |

## SAR result with Head TSL at 5300 MHz

| **SAR averaged over 1 $cm^3$ (1 g) of Head TSL** | Condition | |
|---|---|---|
| SAR measured | 100 mW input power | 8.03 W/kg |
| SAR for nominal Head TSL parameters | normalized to 1W | **79.9 W / kg ± 19.9 % (k=2)** |

| **SAR averaged over 10 $cm^3$ (10 g) of Head TSL** | condition | |
|---|---|---|
| SAR measured | 100 mW input power | 2.33 W/kg |
| SAR for nominal Head TSL parameters | normalized to 1W | **23.1 W/kg ± 19.5 % (k=2)** |

## Head TSL parameters at 5600 MHz

The following parameters and calculations were applied.

| | Temperature | Permittivity | Conductivity |
|---|---|---|---|
| **Nominal Head TSL parameters** | 22.0 °C | 35.5 | 5.07 mho/m |
| **Measured Head TSL parameters** | (22.0 ± 0.2) °C | 34.7 ± 6 % | 4.90 mho/m ± 6 % |
| **Head TSL temperature change during test** | < 0.5 °C | ---- | ---- |

## SAR result with Head TSL at 5600 MHz

| **SAR averaged over 1 $cm^3$ (1 g) of Head TSL** | Condition | |
|---|---|---|
| SAR measured | 100 mW input power | 8.31 W/kg |
| SAR for nominal Head TSL parameters | normalized to 1W | **82.6 W/kg ± 19.9 % (k=2)** |

| **SAR averaged over 10 $cm^3$ (10 g) of Head TSL** | condition | |
|---|---|---|
| SAR measured | 100 mW input power | 2.38 W/kg |
| SAR for nominal Head TSL parameters | normalized to 1W | **23.6 W/kg ± 19.5 % (k=2)** |





SGS Taiwan Ltd. No.134,Wu Kung Road, New Taipei Industrial Park, Wuku District, New Taipei City, Taiwan 24803/新北市五股區新北產業園區五工路134號
台灣檢驗科技股份有限公司 t (886-2) 2299-3279 f (886-2) 2298-0488 www.tw.sgs.com
Member of SGS Group

### Head TSL parameters at 5800 MHz

The following parameters and calculations were applied.

| | Temperature | Permittivity | Conductivity |
|---|---|---|---|
| **Nominal Head TSL parameters** | 22.0 °C | 35.3 | 5.27 mho/m |
| **Measured Head TSL parameters** | (22.0 ± 0.2) °C | 34.4 ± 6 % | 5.10 mho/m ± 6 % |
| **Head TSL temperature change during test** | < 0.5 °C | ---- | ---- |

### SAR result with Head TSL at 5800 MHz

| **SAR averaged over 1 $cm^3$ (1 g) of Head TSL** | Condition | |
|---|---|---|
| SAR measured | 100 mW input power | 7.78 W/kg |
| SAR for nominal Head TSL parameters | normalized to 1W | **77.3 W/kg ± 19.9 % (k=2)** |

| **SAR averaged over 10 $cm^3$ (10 g) of Head TSL** | condition | |
|---|---|---|
| SAR measured | 100 mW input power | 2.22 W/kg |
| SAR for nominal Head TSL parameters | normalized to 1W | **22.0 W/kg ± 19.5 % (k=2)** |





SGS Taiwan Ltd. No.134,Wu Kung Road, New Taipei Industrial Park, Wuku District, New Taipei City, Taiwan 24803/新北市五股區新北產業園區五工路134號
台灣檢驗科技股份有限公司 t (886-2) 2299-3279 f (886-2) 2298-0488 www.tw.sgs.com
Member of SGS Group

**Body TSL parameters at 5200 MHz**

The following parameters and calculations were applied.

| | Temperature | Permittivity | Conductivity |
|---|---|---|---|
| **Nominal Body TSL parameters** | 22.0 °C | 49.0 | 5.30 mho/m |
| **Measured Body TSL parameters** | (22.0 ± 0.2) °C | 47.1 ± 6 % | 5.37 mho/m ± 6 % |
| **Body TSL temperature change during test** | < 0.5 °C | ---- | ---- |

**SAR result with Body TSL at 5200 MHz**

| **SAR averaged over 1 $cm^3$ (1 g) of Body TSL** | Condition | |
|---|---|---|
| SAR measured | 100 mW input power | 7.25 W/kg |
| SAR for nominal Body TSL parameters | normalized to 1W | **71.9 W/kg ± 19.9 % (k=2)** |

| **SAR averaged over 10 $cm^3$ (10 g) of Body TSL** | condition | |
|---|---|---|
| SAR measured | 100 mW input power | 2.05 W/kg |
| SAR for nominal Body TSL parameters | normalized to 1W | **20.3 W/kg ± 19.5 % (k=2)** |

**Body TSL parameters at 5300 MHz**

The following parameters and calculations were applied.

| | Temperature | Permittivity | Conductivity |
|---|---|---|---|
| **Nominal Body TSL parameters** | 22.0 °C | 48.9 | 5.42 mho/m |
| **Measured Body TSL parameters** | (22.0 ± 0.2) °C | 46.9 ± 6 % | 5.50 mho/m ± 6 % |
| **Body TSL temperature change during test** | < 0.5 °C | ---- | ---- |

**SAR result with Body TSL at 5300 MHz**

| **SAR averaged over 1 $cm^3$ (1 g) of Body TSL** | Condition | |
|---|---|---|
| SAR measured | 100 mW input power | 7.57 W/kg |
| SAR for nominal Body TSL parameters | normalized to 1W | **75.1 W/kg ± 19.9 % (k=2)** |

| **SAR averaged over 10 $cm^3$ (10 g) of Body TSL** | condition | |
|---|---|---|
| SAR measured | 100 mW input power | 2.14 W/kg |
| SAR for nominal Body TSL parameters | normalized to 1W | **21.2 W/kg ± 19.5 % (k=2)** |




SGS Taiwan Ltd. No.134,Wu Kung Road, New Taipei Industrial Park, Wuku District, New Taipei City, Taiwan 24803/新北市五股區新北產業園區五工路134號
台灣檢驗科技股份有限公司 t (886-2) 2299-3279 f (886-2) 2298-0488 www.tw.sgs.com
Member of SGS Group

**Body TSL parameters at 5600 MHz**

The following parameters and calculations were applied.

| | Temperature | Permittivity | Conductivity |
|---|---|---|---|
| Nominal Body TSL parameters | 22.0 °C | 48.5 | 5.77 mho/m |
| Measured Body TSL parameters | (22.0 ± 0.2) °C | 46.4 ± 6 % | 5.91 mho/m ± 6 % |
| Body TSL temperature change during test | < 0.5 °C | ---- | ---- |

**SAR result with Body TSL at 5600 MHz**

| SAR averaged over 1 $cm^3$ (1 g) of Body TSL | Condition | |
|---|---|---|
| SAR measured | 100 mW input power | 7.89 W/kg |
| SAR for nominal Body TSL parameters | normalized to 1W | **78.3 W/kg ± 19.9 % (k=2)** |

| SAR averaged over 10 $cm^3$ (10 g) of Body TSL | condition | |
|---|---|---|
| SAR measured | 100 mW input power | 2.23 W/kg |
| SAR for nominal Body TSL parameters | normalized to 1W | **22.1 W/kg ± 19.5 % (k=2)** |

**Body TSL parameters at 5800 MHz**

The following parameters and calculations were applied.

| | Temperature | Permittivity | Conductivity |
|---|---|---|---|
| Nominal Body TSL parameters | 22.0 °C | 48.2 | 6.00 mho/m |
| Measured Body TSL parameters | (22.0 ± 0.2) °C | 46.0 ± 6 % | 6.19 mho/m ± 6 % |
| Body TSL temperature change during test | < 0.5 °C | ---- | ---- |

**SAR result with Body TSL at 5800 MHz**

| SAR averaged over 1 $cm^3$ (1 g) of Body TSL | Condition | |
|---|---|---|
| SAR measured | 100 mW input power | 7.59 W/kg |
| SAR for nominal Body TSL parameters | normalized to 1W | **75.3 W/kg ± 19.9 % (k=2)** |

| SAR averaged over 10 $cm^3$ (10 g) of Body TSL | condition | |
|---|---|---|
| SAR measured | 100 mW input power | 2.13 W/kg |
| SAR for nominal Body TSL parameters | normalized to 1W | **21.1 W/kg ± 19.5 % (k=2)** |





SGS Taiwan Ltd. 台灣檢驗科技股份有限公司 | No.134,Wu Kung Road, New Taipei Industrial Park, Wuku District, New Taipei City, Taiwan 24803/新北市五股區新北產業園區五工路134號
t (886-2) 2299-3279 f (886-2) 2298-0488 www.tw.sgs.com
Member of SGS Group

**Appendix (Additional assessments outside the scope of SCS 0108)**

**Antenna Parameters with Head TSL at 5200 MHz**

| | |
|---|---|
| Impedance, transformed to feed point | 49.1 Ω - 8.4 jΩ |
| Return Loss | - 21.4 dB |

**Antenna Parameters with Head TSL at 5300 MHz**

| | |
|---|---|
| Impedance, transformed to feed point | 49.6 Ω - 4.2 jΩ |
| Return Loss | - 27.4 dB |

**Antenna Parameters with Head TSL at 5600 MHz**

| | |
|---|---|
| Impedance, transformed to feed point | 54.9 Ω - 1.4 jΩ |
| Return Loss | - 26.3 dB |

**Antenna Parameters with Head TSL at 5800 MHz**

| | |
|---|---|
| Impedance, transformed to feed point | 55.9 Ω + 2.2 jΩ |
| Return Loss | - 24.5 dB |

**Antenna Parameters with Body TSL at 5200 MHz**

| | |
|---|---|
| Impedance, transformed to feed point | 49.4 Ω - 6.8 jΩ |
| Return Loss | - 23.3 dB |

**Antenna Parameters with Body TSL at 5300 MHz**

| | |
|---|---|
| Impedance, transformed to feed point | 50.9 Ω - 2.4 jΩ |
| Return Loss | - 31.8 dB |

**Antenna Parameters with Body TSL at 5600 MHz**

| | |
|---|---|
| Impedance, transformed to feed point | 56.0 Ω - 0.1 jΩ |
| Return Loss | - 25.0 dB |




SGS Taiwan Ltd. No.134,Wu Kung Road, New Taipei Industrial Park, Wuku District, New Taipei City, Taiwan 24803/新北市五股區新北產業園區五工路134號
台灣檢驗科技股份有限公司 t (886-2) 2299-3279 f (886-2) 2298-0488 www.tw.sgs.com
Member of SGS Group

### Antenna Parameters with Body TSL at 5800 MHz

| | |
|---|---|
| Impedance, transformed to feed point | 56.4 Ω + 2.4 jΩ |
| Return Loss | - 23.8 dB |

### General Antenna Parameters and Design

| | |
|---|---|
| Electrical Delay (one direction) | 1.199 ns |

After long term use with 100W radiated power, only a slight warming of the dipole near the feedpoint can be measured.

The dipole is made of standard semirigid coaxial cable. The center conductor of the feeding line is directly connected to the second arm of the dipole. The antenna is therefore short-circuited for DC-signals. On some of the dipoles, small end caps are added to the dipole arms in order to improve matching when loaded according to the position as explained in the "Measurement Conditions" paragraph. The SAR data are not affected by this change. The overall dipole length is still according to the Standard.
No excessive force must be applied to the dipole arms, because they might bend or the soldered connections near the feedpoint may be damaged.

### Additional EUT Data

| | |
|---|---|
| Manufactured by | SPEAG |
| Manufactured on | February 05, 2004 |




SGS Taiwan Ltd. No.134,Wu Kung Road, New Taipei Industrial Park, Wuku District, New Taipei City, Taiwan 24803/新北市五股區新北產業園區五工路134號
台灣檢驗科技股份有限公司 t (886-2) 2299-3279 f (886-2) 2298-0488 www.tw.sgs.com
Member of SGS Group

**DASY5 Validation Report for Head TSL**

Date: 26.01.2016

Test Laboratory: SPEAG, Zurich, Switzerland

**DUT: Dipole D5GHzV2; Type: D5GHzV2; Serial: D5GHzV2 - SN: 1023**

Communication System: UID 0 - CW; Frequency: 5200 MHz, Frequency: 5300 MHz, Frequency: 5600 MHz, Frequency: 5800 MHz
Medium parameters used: f = 5200 MHz; $\sigma$ = 4.51 S/m; $\varepsilon_r$ = 35.2; $\rho$ = 1000 kg/m$^3$ , Medium parameters used: f = 5300 MHz; $\sigma$ = 4.6 S/m; $\varepsilon_r$ = 35.1; $\rho$ = 1000 kg/m$^3$ , Medium parameters used: f = 5600 MHz; $\sigma$ = 4.9 S/m; $\varepsilon_r$ = 34.7; $\rho$ = 1000 kg/m$^3$ , Medium parameters used: f = 5800 MHz; $\sigma$ = 5.1 S/m; $\varepsilon_r$ = 34.4; $\rho$ = 1000 kg/m$^3$
Phantom section: Flat Section
Measurement Standard: DASY5 (IEEE/IEC/ANSI C63.19-2011)

DASY52 Configuration:

- Probe: EX3DV4 - SN3503; ConvF(5.59, 5.59, 5.59); Calibrated: 31.12.2015, ConvF(5.25, 5.25, 5.25); Calibrated: 31.12.2015, ConvF(4.99, 4.99, 4.99); Calibrated: 31.12.2015, ConvF(4.95, 4.95, 4.95); Calibrated: 31.12.2015;
- Sensor-Surface: 1.4mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn601; Calibrated: 30.12.2015
- Phantom: Flat Phantom 5.0 (front); Type: QD000P50AA; Serial: 1001
- DASY52 52.8.8(1258); SEMCAD X 14.6.10(7372)

**Dipole Calibration for Head Tissue/Pin=100mW, dist=10mm, f=5200 MHz/Zoom Scan, dist=1.4mm (8x8x7)/Cube 0:** Measurement grid: dx=4mm, dy=4mm, dz=1.4mm
Reference Value = 72.68 V/m; Power Drift = 0.07 dB
Peak SAR (extrapolated) = 28.1 W/kg
**SAR(1 g) = 7.74 W/kg; SAR(10 g) = 2.23 W/kg**
Maximum value of SAR (measured) = 17.8 W/kg

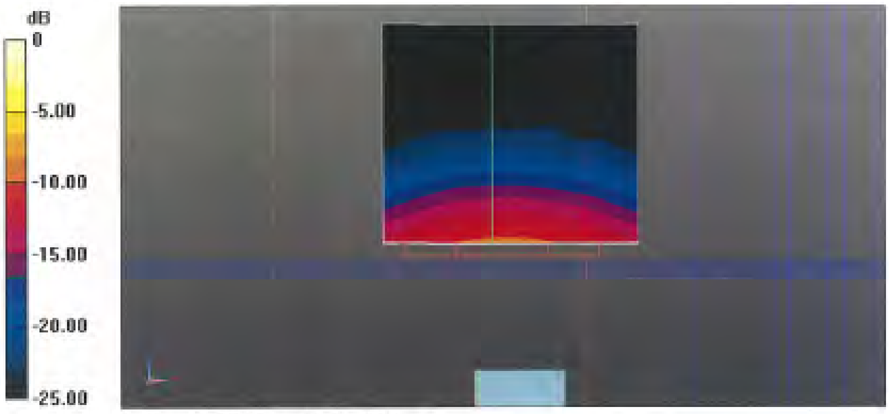
**Dipole Calibration for Head Tissue/Pin=100mW, dist=10mm, f=5300 MHz/Zoom Scan, dist=1.4mm (8x8x7)/Cube 0:** Measurement grid: dx=4mm, dy=4mm, dz=1.4mm
Reference Value = 73.14 V/m; Power Drift = 0.04 dB
Peak SAR (extrapolated) = 30.0 W/kg
**SAR(1 g) = 8.03 W/kg; SAR(10 g) = 2.33 W/kg**
Maximum value of SAR (measured) = 18.7 W/kg

**Dipole Calibration for Head Tissue/Pin=100mW, dist=10mm, f=5600 MHz/Zoom Scan, dist=1.4mm (8x8x7)/Cube 0:** Measurement grid: dx=4mm, dy=4mm, dz=1.4mm
Reference Value = 73.32 V/m; Power Drift = 0.08 dB
Peak SAR (extrapolated) = 32.6 W/kg
**SAR(1 g) = 8.31 W/kg; SAR(10 g) = 2.38 W/kg**
Maximum value of SAR (measured) = 19.8 W/kg




SGS Taiwan Ltd. No.134,Wu Kung Road, New Taipei Industrial Park, Wuku District, New Taipei City, Taiwan 24803/新北市五股區新北產業園區五工路134號
台灣檢驗科技股份有限公司 t (886-2) 2299-3279 f (886-2) 2298-0488 www.tw.sgs.com
Member of SGS Group

**Dipole Calibration for Head Tissue/Pin=100mW, dist=10mm, f=5800 MHz/Zoom Scan, dist=1.4mm (8x8x7)/Cube 0:** Measurement grid: dx=4mm, dy=4mm, dz=1.4mm
Reference Value = 70.15 V/m; Power Drift = 0.04 dB
Peak SAR (extrapolated) = 32.0 W/kg
**SAR(1 g) = 7.78 W/kg; SAR(10 g) = 2.22 W/kg**
Maximum value of SAR (measured) = 18.8 W/kg



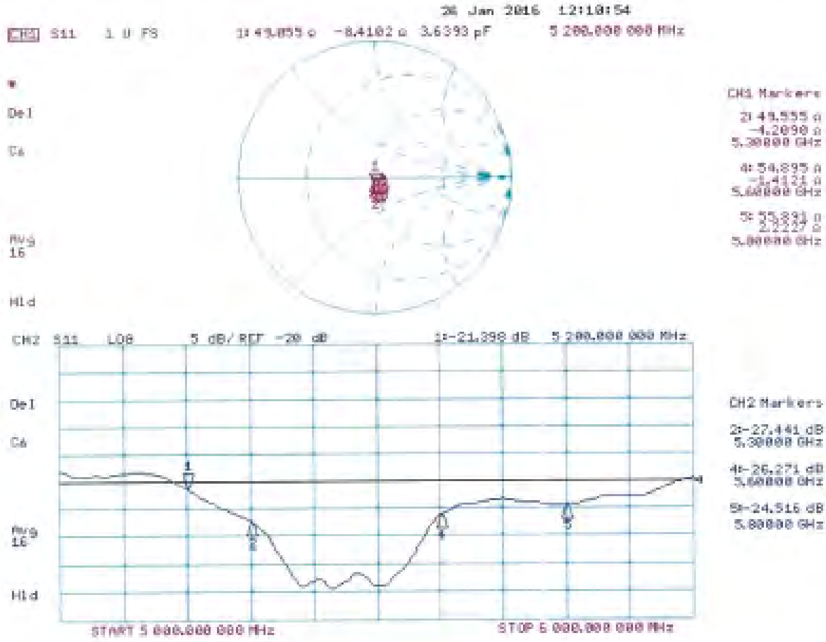

0 dB = 18.8 W/kg = 12.74 dBW/kg





SGS Taiwan Ltd. No.134,Wu Kung Road, New Taipei Industrial Park, Wuku District, New Taipei City, Taiwan 24803/新北市五股區新北產業園區五工路134號
台灣檢驗科技股份有限公司 t (886-2) 2299-3279 f (886-2) 2298-0488 www.tw.sgs.com
Member of SGS Group

## Impedance Measurement Plot for Head TSL








SGS Taiwan Ltd. No.134,Wu Kung Road, New Taipei Industrial Park, Wuku District, New Taipei City, Taiwan 24803/新北市五股區新北產業園區五工路134號
台灣檢驗科技股份有限公司 t (886-2) 2299-3279 f (886-2) 2298-0488 www.tw.sgs.com
Member of SGS Group

**DASY5 Validation Report for Body TSL**

Date: 25.01.2016

Test Laboratory: SPEAG, Zurich, Switzerland

**DUT: Dipole 5GHz; Type: D5GHzV2; Serial: D5GHzV2 - SN: 1023**

Communication System: UID 0 - CW; Frequency: 5200 MHz, Frequency: 5300 MHz, Frequency: 5600 MHz, Frequency: 5800 MHz
Medium parameters used: f = 5200 MHz; $\sigma$ = 5.37 S/m; $\varepsilon_r$ = 47.1; $\rho$ = 1000 kg/m$^3$ , Medium parameters used: f = 5300 MHz; $\sigma$ = 5.5 S/m; $\varepsilon_r$ = 46.9; $\rho$ = 1000 kg/m$^3$ , Medium parameters used: f = 5600 MHz; $\sigma$ = 5.91 S/m; $\varepsilon_r$ = 46.4; $\rho$ = 1000 kg/m$^3$ , Medium parameters used: f = 5800 MHz; $\sigma$ = 6.19 S/m; $\varepsilon_r$ = 46; $\rho$ = 1000 kg/m$^3$
Phantom section: Flat Section
Measurement Standard: DASY5 (IEEE/IEC/ANSI C63.19-2011)

DASY52 Configuration:

- Probe: EX3DV4 - SN3503; ConvF(4.99, 4.99, 4.99); Calibrated: 31.12.2015, ConvF(4.75, 4.75, 4.75); Calibrated: 31.12.2015, ConvF(4.35, 4.35, 4.35); Calibrated: 31.12.2015, ConvF(4.27, 4.27, 4.27); Calibrated: 31.12.2015;
- Sensor-Surface: 1.4mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn601; Calibrated: 30.12.2015
- Phantom: Flat Phantom 5.0 (back); Type: QD000P50AA; Serial: 1002
- DASY52 52.8.8(1258); SEMCAD X 14.6.10(7372)

**Dipole Calibration for Body Tissue/Pin=100mW, dist=10mm, f=5200 MHz/Zoom Scan, dist=1.4mm (8x8x7)/Cube 0:** Measurement grid: dx=4mm, dy=4mm, dz=1.4mm
Reference Value = 66.72 V/m; Power Drift = -0.01 dB
Peak SAR (extrapolated) = 27.1 W/kg
**SAR(1 g) = 7.25 W/kg; SAR(10 g) = 2.05 W/kg**
Maximum value of SAR (measured) = 16.8 W/kg

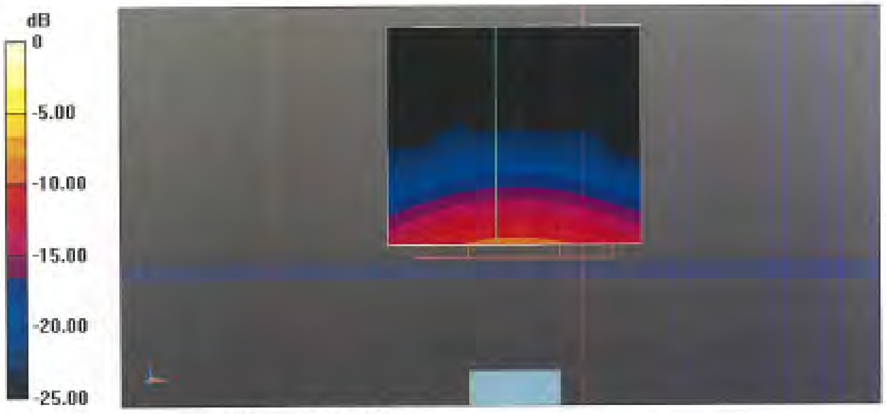
**Dipole Calibration for Body Tissue/Pin=100mW, dist=10mm, f=5300 MHz/Zoom Scan, dist=1.4mm (8x8x7)/Cube 0:** Measurement grid: dx=4mm, dy=4mm, dz=1.4mm
Reference Value = 67.43 V/m; Power Drift = 0.02 dB
Peak SAR (extrapolated) = 29.1 W/kg
**SAR(1 g) = 7.57 W/kg; SAR(10 g) = 2.14 W/kg**
Maximum value of SAR (measured) = 17.7 W/kg

**Dipole Calibration for Body Tissue/Pin=100mW, dist=10mm, f=5600 MHz/Zoom Scan, dist=1.4mm (8x8x7)/Cube 0:** Measurement grid: dx=4mm, dy=4mm, dz=1.4mm
Reference Value = 67.67 V/m; Power Drift = -0.01 dB
Peak SAR (extrapolated) = 32.6 W/kg
**SAR(1 g) = 7.89 W/kg; SAR(10 g) = 2.23 W/kg**
Maximum value of SAR (measured) = 19.1 W/kg




SGS Taiwan Ltd. No.134,Wu Kung Road, New Taipei Industrial Park, Wuku District, New Taipei City, Taiwan 24803/新北市五股區新北產業園區五工路134號
台灣檢驗科技股份有限公司 t (886-2) 2299-3279 f (886-2) 2298-0488 www.tw.sgs.com
Member of SGS Group

**Dipole Calibration for Body Tissue/Pin=100mW, dist=10mm, f=5800 MHz/Zoom Scan, dist=1.4mm (8x8x7)/Cube 0:** Measurement grid: dx=4mm, dy=4mm, dz=1.4mm
Reference Value = 65.76 V/m; Power Drift = -0.02 dB
Peak SAR (extrapolated) = 33.0 W/kg
**SAR(1 g) = 7.59 W/kg; SAR(10 g) = 2.13 W/kg**
Maximum value of SAR (measured) = 18.5 W/kg



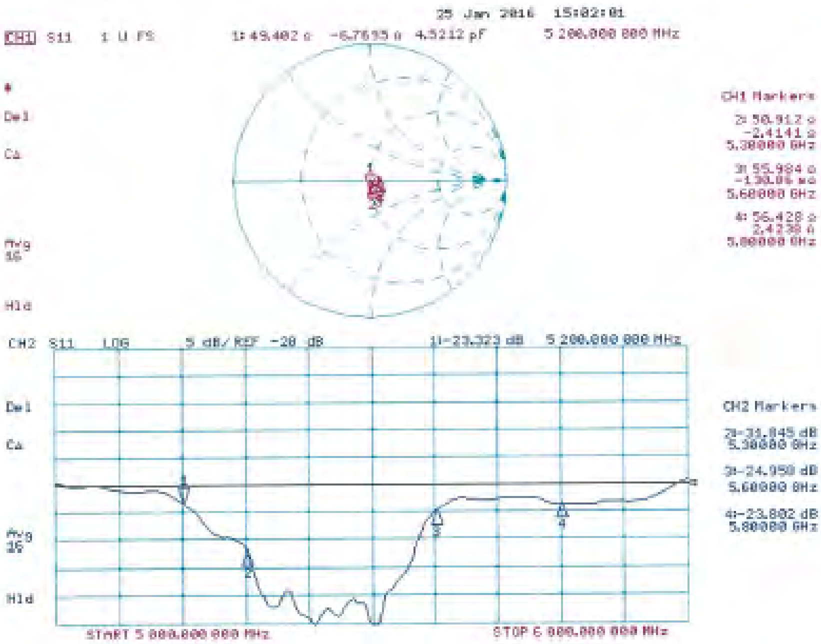

0 dB = 18.5 W/kg = 12.67 dBW/kg





SGS Taiwan Ltd. No.134,Wu Kung Road, New Taipei Industrial Park, Wuku District, New Taipei City, Taiwan 24803/新北市五股區新北產業園區五工路134號
台灣檢驗科技股份有限公司 t (886-2) 2299-3279 f (886-2) 2298-0488 www.tw.sgs.com
Member of SGS Group

Impedance Measurement Plot for Body TSL




Certificate No: D5GHzV2-1023_Jan16 Page 15 of 15



SGS Taiwan Ltd. No.134,Wu Kung Road, New Taipei Industrial Park, Wuku District, New Taipei City, Taiwan 24803/新北市五股區新北產業園區五工路134號
台灣檢驗科技股份有限公司 t (886-2) 2299-3279 f (886-2) 2298-0488 www.tw.sgs.com
Member of SGS Group

**Calibration Laboratory of**
Schmid & Partner
Engineering AG
Zeughausstrasse 43, 8004 Zurich, Switzerland

S Schweizerischer Kalibrierdienst
C Service suisse d'étalonnage
S Servizio svizzero di taratura
S Swiss Calibration Service

Accredited by the Swiss Accreditation Service (SAS)
The Swiss Accreditation Service is one of the signatories to the EA
Multilateral Agreement for the recognition of calibration certificates

Accreditation No.: **SCS 0108**

Client **SGS-TW (Auden)**

Certificate No: **D5GHzV2-1023_Jan17**

# CALIBRATION CERTIFICATE

| | |
|---|---|
| Object | D5GHzV2 - SN:1023 |
| Calibration procedure(s) | QA CAL-22.v2<br>Calibration procedure for dipole validation kits between 3-6 GHz |
| Calibration date: | January 20, 2017 |

This calibration certificate documents the traceability to national standards, which realize the physical units of measurements (SI).
The measurements and the uncertainties with confidence probability are given on the following pages and are part of the certificate.

All calibrations have been conducted in the closed laboratory facility: environment temperature (22 ± 3)°C and humidity < 70%.

Calibration Equipment used (M&TE critical for calibration)

| Primary Standards | ID # | Cal Date (Certificate No.) | Scheduled Calibration |
|---|---|---|---|
| Power meter NRP | SN: 104778 | 06-Apr-16 (No. 217-02288/02289) | Apr-17 |
| Power sensor NRP-Z91 | SN: 103244 | 06-Apr-16 (No. 217-02288) | Apr-17 |
| Power sensor NRP-Z91 | SN: 103245 | 06-Apr-16 (No. 217-02289) | Apr-17 |
| Reference 20 dB Attenuator | SN: 5058 (20k) | 05-Apr-16 (No. 217-02292) | Apr-17 |
| Type-N mismatch combination | SN: 5047.2 / 06327 | 05-Apr-16 (No. 217-02295) | Apr-17 |
| Reference Probe EX3DV4 | SN: 3503 | 31-Dec-16 (No. EX3-3503_Dec16) | Dec-17 |
| DAE4 | SN: 601 | 04-Jan-17 (No. DAE4-601_Jan17) | Jan-18 |

| Secondary Standards | ID # | Check Date (in house) | Scheduled Check |
|---|---|---|---|
| Power meter EPM-442A | SN: GB37480704 | 07-Oct-15 (in house check Oct-16) | In house check: Oct-18 |
| Power sensor HP 8481A | SN: US37292783 | 07-Oct-15 (in house check Oct-16) | In house check: Oct-18 |
| Power sensor HP 8481A | SN: MY41092317 | 07-Oct-15 (in house check Oct-16) | In house check: Oct-18 |
| RF generator R&S SMT-06 | SN: 100972 | 15-Jun-15 (in house check Oct-16) | In house check: Oct-18 |
| Network Analyzer HP 8753E | SN: US37390585 | 18-Oct-01 (in house check Oct-16) | In house check: Oct-17 |

| | Name | Function | Signature |
|---|---|---|---|
| Calibrated by: | Jeton Kastrati | Laboratory Technician | |
| Approved by: | Katja Pokovic | Technical Manager | |

Issued: January 24, 2017







SGS Taiwan Ltd. No.134,Wu Kung Road, New Taipei Industrial Park, Wuku District, New Taipei City, Taiwan 24803/新北市五股區新北產業園區五工路134號
台灣檢驗科技股份有限公司 t (886-2) 2299-3279 f (886-2) 2298-0488 www.tw.sgs.com
Member of SGS Group

**Calibration Laboratory of**
Schmid & Partner
Engineering AG
Zeughausstrasse 43, 8004 Zurich, Switzerland

S Schweizerischer Kalibrierdienst
C Service suisse d'étalonnage
S Servizio svizzero di taratura
S Swiss Calibration Service

Accredited by the Swiss Accreditation Service (SAS)
The Swiss Accreditation Service is one of the signatories to the EA
Multilateral Agreement for the recognition of calibration certificates

Accreditation No.: **SCS 0108**

**Glossary:**

| | |
|---|---|
| TSL | tissue simulating liquid |
| ConvF | sensitivity in TSL / NORM x,y,z |
| N/A | not applicable or not measured |

**Calibration is Performed According to the Following Standards:**

a) IEEE Std 1528-2013, "IEEE Recommended Practice for Determining the Peak Spatial-Averaged Specific Absorption Rate (SAR) in the Human Head from Wireless Communications Devices: Measurement Techniques", June 2013
b) IEC 62209-2, "Procedure to determine the Specific Absorption Rate (SAR) for wireless communication devices used in close proximity to the human body (frequency range of 30 MHz to 6 GHz)", March 2010
c) KDB 865664, "SAR Measurement Requirements for 100 MHz to 6 GHz"

**Additional Documentation:**

d) DASY4/5 System Handbook

**Methods Applied and Interpretation of Parameters:**

- *Measurement Conditions:* Further details are available from the Validation Report at the end of the certificate. All figures stated in the certificate are valid at the frequency indicated.
- *Antenna Parameters with TSL:* The dipole is mounted with the spacer to position its feed point exactly below the center marking of the flat phantom section, with the arms oriented parallel to the body axis.
- *Feed Point Impedance and Return Loss:* These parameters are measured with the dipole positioned under the liquid filled phantom. The impedance stated is transformed from the measurement at the SMA connector to the feed point. The Return Loss ensures low reflected power. No uncertainty required.
- *Electrical Delay:* One-way delay between the SMA connector and the antenna feed point. No uncertainty required.
- *SAR measured:* SAR measured at the stated antenna input power.
- *SAR normalized:* SAR as measured, normalized to an input power of 1 W at the antenna connector.
- *SAR for nominal TSL parameters:* The measured TSL parameters are used to calculate the nominal SAR result.

The reported uncertainty of measurement is stated as the standard uncertainty of measurement multiplied by the coverage factor k=2, which for a normal distribution corresponds to a coverage probability of approximately 95%.





SGS Taiwan Ltd. No.134,Wu Kung Road, New Taipei Industrial Park, Wuku District, New Taipei City, Taiwan 24803/新北市五股區新北產業園區五工路134號
台灣檢驗科技股份有限公司 t (886-2) 2299-3279 f (886-2) 2298-0488 www.tw.sgs.com
Member of SGS Group

## Measurement Conditions

DASY system configuration, as far as not given on page 1.

| | | |
|---|---|---|
| **DASY Version** | DASY5 | V52.8.8 |
| **Extrapolation** | Advanced Extrapolation | |
| **Phantom** | Modular Flat Phantom V5.0 | |
| **Distance Dipole Center - TSL** | 10 mm | with Spacer |
| **Zoom Scan Resolution** | dx, dy = 4.0 mm, dz = 1.4 mm | Graded Ratio = 1.4 (Z direction) |
| **Frequency** | 5200 MHz ± 1 MHz<br>5300 MHz ± 1 MHz<br>5600 MHz ± 1 MHz<br>5800 MHz ± 1 MHz | |

## Head TSL parameters at 5200 MHz

The following parameters and calculations were applied.

| | Temperature | Permittivity | Conductivity |
|---|---|---|---|
| **Nominal Head TSL parameters** | 22.0 °C | 36.0 | 4.66 mho/m |
| **Measured Head TSL parameters** | (22.0 ± 0.2) °C | 35.4 ± 6 % | 4.45 mho/m ± 6 % |
| **Head TSL temperature change during test** | < 0.5 °C | ---- | ---- |

## SAR result with Head TSL at 5200 MHz

| **SAR averaged over 1 $cm^3$ (1 g) of Head TSL** | Condition | |
|---|---|---|
| SAR measured | 100 mW input power | 7.55 W/kg |
| SAR for nominal Head TSL parameters | normalized to 1W | **75.2 W/kg ± 19.9 % (k=2)** |

| **SAR averaged over 10 $cm^3$ (10 g) of Head TSL** | condition | |
|---|---|---|
| SAR measured | 100 mW input power | 2.16 W/kg |
| SAR for nominal Head TSL parameters | normalized to 1W | **21.5 W/kg ± 19.5 % (k=2)** |





SGS Taiwan Ltd. No.134,Wu Kung Road, New Taipei Industrial Park, Wuku District, New Taipei City, Taiwan 24803/新北市五股區新北產業園區五工路134號
台灣檢驗科技股份有限公司 t (886-2) 2299-3279 f (886-2) 2298-0488 www.tw.sgs.com
Member of SGS Group

## Head TSL parameters at 5300 MHz

The following parameters and calculations were applied.

| | Temperature | Permittivity | Conductivity |
|---|---|---|---|
| **Nominal Head TSL parameters** | 22.0 °C | 35.9 | 4.76 mho/m |
| **Measured Head TSL parameters** | (22.0 ± 0.2) °C | 35.2 ± 6 % | 4.55 mho/m ± 6 % |
| **Head TSL temperature change during test** | < 0.5 °C | ---- | ---- |

## SAR result with Head TSL at 5300 MHz

| **SAR averaged over 1 $cm^3$ (1 g) of Head TSL** | Condition | |
|---|---|---|
| SAR measured | 100 mW input power | 8.22 W/kg |
| SAR for nominal Head TSL parameters | normalized to 1W | **81.8 W / kg ± 19.9 % (k=2)** |

| **SAR averaged over 10 $cm^3$ (10 g) of Head TSL** | condition | |
|---|---|---|
| SAR measured | 100 mW input power | 2.35 W/kg |
| SAR for nominal Head TSL parameters | normalized to 1W | **23.3 W/kg ± 19.5 % (k=2)** |

## Head TSL parameters at 5600 MHz

The following parameters and calculations were applied.

| | Temperature | Permittivity | Conductivity |
|---|---|---|---|
| **Nominal Head TSL parameters** | 22.0 °C | 35.5 | 5.07 mho/m |
| **Measured Head TSL parameters** | (22.0 ± 0.2) °C | 34.7 ± 6 % | 4.85 mho/m ± 6 % |
| **Head TSL temperature change during test** | < 0.5 °C | ---- | ---- |

## SAR result with Head TSL at 5600 MHz

| **SAR averaged over 1 $cm^3$ (1 g) of Head TSL** | Condition | |
|---|---|---|
| SAR measured | 100 mW input power | 8.22 W/kg |
| SAR for nominal Head TSL parameters | normalized to 1W | **81.7 W/kg ± 19.9 % (k=2)** |

| **SAR averaged over 10 $cm^3$ (10 g) of Head TSL** | condition | |
|---|---|---|
| SAR measured | 100 mW input power | 2.33 W/kg |
| SAR for nominal Head TSL parameters | normalized to 1W | **23.1 W/kg ± 19.5 % (k=2)** |





SGS Taiwan Ltd. No.134,Wu Kung Road, New Taipei Industrial Park, Wuku District, New Taipei City, Taiwan 24803/新北市五股區新北產業園區五工路134號
台灣檢驗科技股份有限公司 t (886-2) 2299-3279 f (886-2) 2298-0488 www.tw.sgs.com
Member of SGS Group

## Head TSL parameters at 5800 MHz

The following parameters and calculations were applied.

| | Temperature | Permittivity | Conductivity |
|---|---|---|---|
| **Nominal Head TSL parameters** | 22.0 °C | 35.3 | 5.27 mho/m |
| **Measured Head TSL parameters** | (22.0 ± 0.2) °C | 34.4 ± 6 % | 5.05 mho/m ± 6 % |
| **Head TSL temperature change during test** | < 0.5 °C | ---- | ---- |

## SAR result with Head TSL at 5800 MHz

| **SAR averaged over 1 $cm^3$ (1 g) of Head TSL** | Condition | |
|---|---|---|
| SAR measured | 100 mW input power | 7.82 W/kg |
| SAR for nominal Head TSL parameters | normalized to 1W | **77.6 W/kg ± 19.9 % (k=2)** |

| **SAR averaged over 10 $cm^3$ (10 g) of Head TSL** | condition | |
|---|---|---|
| SAR measured | 100 mW input power | 2.22 W/kg |
| SAR for nominal Head TSL parameters | normalized to 1W | **22.0 W/kg ± 19.5 % (k=2)** |





SGS Taiwan Ltd. No.134,Wu Kung Road, New Taipei Industrial Park, Wuku District, New Taipei City, Taiwan 24803/新北市五股區新北產業園區五工路134號
台灣檢驗科技股份有限公司 t (886-2) 2299-3279 f (886-2) 2298-0488 www.tw.sgs.com
Member of SGS Group

**Body TSL parameters at 5200 MHz**

The following parameters and calculations were applied.

| | Temperature | Permittivity | Conductivity |
|---|---|---|---|
| Nominal Body TSL parameters | 22.0 °C | 49.0 | 5.30 mho/m |
| Measured Body TSL parameters | (22.0 ± 0.2) °C | 47.5 ± 6 % | 5.38 mho/m ± 6 % |
| Body TSL temperature change during test | < 0.5 °C | ---- | ---- |

**SAR result with Body TSL at 5200 MHz**

| SAR averaged over 1 $cm^3$ (1 g) of Body TSL | Condition | |
|---|---|---|
| SAR measured | 100 mW input power | 7.32 W/kg |
| SAR for nominal Body TSL parameters | normalized to 1W | **72.8 W/kg ± 19.9 % (k=2)** |

| SAR averaged over 10 $cm^3$ (10 g) of Body TSL | condition | |
|---|---|---|
| SAR measured | 100 mW input power | 2.05 W/kg |
| SAR for nominal Body TSL parameters | normalized to 1W | **20.3 W/kg ± 19.5 % (k=2)** |

**Body TSL parameters at 5300 MHz**

The following parameters and calculations were applied.

| | Temperature | Permittivity | Conductivity |
|---|---|---|---|
| Nominal Body TSL parameters | 22.0 °C | 48.9 | 5.42 mho/m |
| Measured Body TSL parameters | (22.0 ± 0.2) °C | 47.3 ± 6 % | 5.50 mho/m ± 6 % |
| Body TSL temperature change during test | < 0.5 °C | ---- | ---- |

**SAR result with Body TSL at 5300 MHz**

| SAR averaged over 1 $cm^3$ (1 g) of Body TSL | Condition | |
|---|---|---|
| SAR measured | 100 mW input power | 7.66 W/kg |
| SAR for nominal Body TSL parameters | normalized to 1W | **76.1 W/kg ± 19.9 % (k=2)** |

| SAR averaged over 10 $cm^3$ (10 g) of Body TSL | condition | |
|---|---|---|
| SAR measured | 100 mW input power | 2.15 W/kg |
| SAR for nominal Body TSL parameters | normalized to 1W | **21.3 W/kg ± 19.5 % (k=2)** |





SGS Taiwan Ltd. No.134,Wu Kung Road, New Taipei Industrial Park, Wuku District, New Taipei City, Taiwan 24803/新北市五股區新北產業園區五工路134號
台灣檢驗科技股份有限公司 t (886-2) 2299-3279 f (886-2) 2298-0488 www.tw.sgs.com
Member of SGS Group

**Body TSL parameters at 5600 MHz**

The following parameters and calculations were applied.

| | Temperature | Permittivity | Conductivity |
|---|---|---|---|
| Nominal Body TSL parameters | 22.0 °C | 48.5 | 5.77 mho/m |
| Measured Body TSL parameters | (22.0 ± 0.2) °C | 46.6 ± 6 % | 5.90 mho/m ± 6 % |
| Body TSL temperature change during test | < 0.5 °C | ---- | ---- |

**SAR result with Body TSL at 5600 MHz**

| SAR averaged over 1 $cm^3$ (1 g) of Body TSL | Condition | |
|---|---|---|
| SAR measured | 100 mW input power | 8.02 W/kg |
| SAR for nominal Body TSL parameters | normalized to 1W | **79.6 W/kg ± 19.9 % (k=2)** |

| SAR averaged over 10 $cm^3$ (10 g) of Body TSL | condition | |
|---|---|---|
| SAR measured | 100 mW input power | 2.26 W/kg |
| SAR for nominal Body TSL parameters | normalized to 1W | **22.4 W/kg ± 19.5 % (k=2)** |

**Body TSL parameters at 5800 MHz**

The following parameters and calculations were applied.

| | Temperature | Permittivity | Conductivity |
|---|---|---|---|
| Nominal Body TSL parameters | 22.0 °C | 48.2 | 6.00 mho/m |
| Measured Body TSL parameters | (22.0 ± 0.2) °C | 46.3 ± 6 % | 6.17 mho/m ± 6 % |
| Body TSL temperature change during test | < 0.5 °C | ---- | ---- |

**SAR result with Body TSL at 5800 MHz**

| SAR averaged over 1 $cm^3$ (1 g) of Body TSL | Condition | |
|---|---|---|
| SAR measured | 100 mW input power | 7.64 W/kg |
| SAR for nominal Body TSL parameters | normalized to 1W | **75.9 W/kg ± 19.9 % (k=2)** |

| SAR averaged over 10 $cm^3$ (10 g) of Body TSL | condition | |
|---|---|---|
| SAR measured | 100 mW input power | 2.13 W/kg |
| SAR for nominal Body TSL parameters | normalized to 1W | **21.1 W/kg ± 19.5 % (k=2)** |





SGS Taiwan Ltd. No.134,Wu Kung Road, New Taipei Industrial Park, Wuku District, New Taipei City, Taiwan 24803/新北市五股區新北產業園區五工路134號
台灣檢驗科技股份有限公司 t (886-2) 2299-3279 f (886-2) 2298-0488 www.tw.sgs.com
Member of SGS Group

## Appendix (Additional assessments outside the scope of SCS 0108)

### Antenna Parameters with Head TSL at 5200 MHz

| | |
|---|---|
| Impedance, transformed to feed point | 49.6 Ω - 6.7 jΩ |
| Return Loss | - 23.4 dB |

### Antenna Parameters with Head TSL at 5300 MHz

| | |
|---|---|
| Impedance, transformed to feed point | 49.0 Ω - 1.8 jΩ |
| Return Loss | - 33.5 dB |

### Antenna Parameters with Head TSL at 5600 MHz

| | |
|---|---|
| Impedance, transformed to feed point | 54.1 Ω - 0.2 jΩ |
| Return Loss | - 26.2 dB |

### Antenna Parameters with Head TSL at 5800 MHz

| | |
|---|---|
| Impedance, transformed to feed point | 55.4 Ω + 2.8 jΩ |
| Return Loss | - 24.8 dB |

### Antenna Parameters with Body TSL at 5200 MHz

| | |
|---|---|
| Impedance, transformed to feed point | 48.9 Ω - 7.0 jΩ |
| Return Loss | - 22.9 dB |

### Antenna Parameters with Body TSL at 5300 MHz

| | |
|---|---|
| Impedance, transformed to feed point | 51.0 Ω - 1.0 jΩ |
| Return Loss | - 37.0 dB |

### Antenna Parameters with Body TSL at 5600 MHz

| | |
|---|---|
| Impedance, transformed to feed point | 55.6 Ω + 1.5 jΩ |
| Return Loss | - 25.2 dB |

### Antenna Parameters with Body TSL at 5800 MHz

| | |
|---|---|
| Impedance, transformed to feed point | 56.6 Ω + 2.7 jΩ |
| Return Loss | - 23.6 dB |





SGS Taiwan Ltd. No.134,Wu Kung Road, New Taipei Industrial Park, Wuku District, New Taipei City, Taiwan 24803/新北市五股區新北產業園區五工路134號
台灣檢驗科技股份有限公司 t (886-2) 2299-3279 f (886-2) 2298-0488 www.tw.sgs.com
Member of SGS Group

## General Antenna Parameters and Design

| | |
|---|---|
| Electrical Delay (one direction) | 1.199 ns |

After long term use with 100W radiated power, only a slight warming of the dipole near the feedpoint can be measured.

The dipole is made of standard semirigid coaxial cable. The center conductor of the feeding line is directly connected to the second arm of the dipole. The antenna is therefore short-circuited for DC-signals. On some of the dipoles, small end caps are added to the dipole arms in order to improve matching when loaded according to the position as explained in the "Measurement Conditions" paragraph. The SAR data are not affected by this change. The overall dipole length is still according to the Standard.
No excessive force must be applied to the dipole arms, because they might bend or the soldered connections near the feedpoint may be damaged.

## Additional EUT Data

| | |
|---|---|
| Manufactured by | SPEAG |
| Manufactured on | February 05, 2004 |




SGS Taiwan Ltd. No.134,Wu Kung Road, New Taipei Industrial Park, Wuku District, New Taipei City, Taiwan 24803/新北市五股區新北產業園區五工路134號
台灣檢驗科技股份有限公司 t (886-2) 2299-3279 f (886-2) 2298-0488 www.tw.sgs.com
Member of SGS Group

**DASY5 Validation Report for Head TSL**

Date: 20.01.2017

Test Laboratory: SPEAG, Zurich, Switzerland

**DUT: Dipole D5GHzV2; Type: D5GHzV2; Serial: D5GHzV2 - SN:1023**

Communication System: UID 0 - CW;
Frequency: 5200 MHz, Frequency: 5300 MHz, Frequency: 5600 MHz, Frequency: 5800 MHz
Medium parameters used: f = 5200 MHz; σ = 4.45 S/m; $\varepsilon_r$ = 35.4; ρ = 1000 kg/m$^3$ ,
Medium parameters used: f = 5300 MHz; σ = 4.55 S/m; $\varepsilon_r$ = 35.2; ρ = 1000 kg/m$^3$ ,
Medium parameters used: f = 5600 MHz; σ = 4.85 S/m; $\varepsilon_r$ = 34.7; ρ = 1000 kg/m$^3$ ,
Medium parameters used: f = 5800 MHz; σ = 5.05 S/m; $\varepsilon_r$ = 34.4; ρ = 1000 kg/m$^3$
Phantom section: Flat Section
Measurement Standard: DASY5 (IEEE/IEC/ANSI C63.19-2011)

DASY52 Configuration:

- Probe: EX3DV4 - SN3503; ConvF(5.76, 5.76, 5.76); Calibrated: 31.12.2016, ConvF(5.35, 5.35, 5.35); Calibrated: 31.12.2016, ConvF(5.09, 5.09, 5.09); Calibrated: 31.12.2016, ConvF(5.01, 5.01, 5.01); Calibrated: 31.12.2016;
- Sensor-Surface: 1.4mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn601; Calibrated: 04.01.2017
- Phantom: Flat Phantom 5.0 (front); Type: QD 000 P50 AA; Serial: 1001
- DASY52 52.8.8(1258); SEMCAD X 14.6.10(7372)

**Dipole Calibration for Head Tissue/Pin=100mW, dist=10mm, f=5200 MHz/Zoom Scan, dist=1.4mm (8x8x7)/Cube 0:** Measurement grid: dx=4mm, dy=4mm, dz=1.4mm
Reference Value = 70.58 V/m; Power Drift = -0.08 dB
Peak SAR (extrapolated) = 27.6 W/kg
**SAR(1 g) = 7.55 W/kg; SAR(10 g) = 2.16 W/kg**
Maximum value of SAR (measured) = 17.4 W/kg

**Dipole Calibration for Head Tissue/Pin=100mW, dist=10mm, f=5300 MHz/Zoom Scan, dist=1.4mm (8x8x7)/Cube 0:** Measurement grid: dx=4mm, dy=4mm, dz=1.4mm
Reference Value = 73.01 V/m; Power Drift = -0.05 dB
Peak SAR (extrapolated) = 31.6 W/kg
**SAR(1 g) = 8.22 W/kg; SAR(10 g) = 2.35 W/kg**
Maximum value of SAR (measured) = 19.3 W/kg

**Dipole Calibration for Head Tissue/Pin=100mW, dist=10mm, f=5600 MHz/Zoom Scan, dist=1.4mm (8x8x7)/Cube 0:** Measurement grid: dx=4mm, dy=4mm, dz=1.4mm
Reference Value = 71.94 V/m; Power Drift = -0.04 dB
Peak SAR (extrapolated) = 33.2 W/kg
**SAR(1 g) = 8.22 W/kg; SAR(10 g) = 2.33 W/kg**
Maximum value of SAR (measured) = 19.8 W/kg




SGS Taiwan Ltd. No.134,Wu Kung Road, New Taipei Industrial Park, Wuku District, New Taipei City, Taiwan 24803/新北市五股區新北產業園區五工路134號
台灣檢驗科技股份有限公司 t (886-2) 2299-3279 f (886-2) 2298-0488 www.tw.sgs.com
Member of SGS Group

**Dipole Calibration for Head Tissue/Pin=100mW, dist=10mm, f=5800 MHz/Zoom Scan, dist=1.4mm (8x8x7)/Cube 0:** Measurement grid: dx=4mm, dy=4mm, dz=1.4mm
Reference Value = 69.84 V/m; Power Drift = -0.08 dB
Peak SAR (extrapolated) = 32.7 W/kg
**SAR(1 g) = 7.82 W/kg; SAR(10 g) = 2.22 W/kg**
Maximum value of SAR (measured) = 19.5 W/kg


0 dB = 17.4 W/kg = 12.41 dBW/kg





SGS Taiwan Ltd. No.134,Wu Kung Road, New Taipei Industrial Park, Wuku District, New Taipei City, Taiwan 24803/新北市五股區新北產業園區五工路134號
台灣檢驗科技股份有限公司 t (886-2) 2299-3279 f (886-2) 2298-0488 www.tw.sgs.com
Member of SGS Group

## DASY5 Validation Report for Body TSL

Date: 19.01.2017

Test Laboratory: SPEAG, Zurich, Switzerland

**DUT: Dipole D5GHzV2; Type: D5GHzV2; Serial: D5GHzV2 - SN:1023**

Communication System: UID 0 - CW;
Frequency: 5200 MHz, Frequency: 5300 MHz, Frequency: 5600 MHz, Frequency: 5800 MHz
Medium parameters used: f = 5200 MHz; $\sigma$ = 5.36 S/m; $\varepsilon_r$ = 47.5; $\rho$ = 1000 kg/m$^3$ ,
Medium parameters used: f = 5300 MHz; $\sigma$ = 5.5 S/m; $\varepsilon_r$ = 47.3; $\rho$ = 1000 kg/m$^3$ ,
Medium parameters used: f = 5600 MHz; $\sigma$ = 5.9 S/m; $\varepsilon_r$ = 46.6; $\rho$ = 1000 kg/m$^3$ ,
Medium parameters used: f = 5800 MHz; $\sigma$ = 6.17 S/m; $\varepsilon_r$ = 46.3; $\rho$ = 1000 kg/m$^3$
Phantom section: Flat Section
Measurement Standard: DASY5 (IEEE/IEC/ANSI C63.19-2011)

DASY52 Configuration:

- Probe: EX3DV4 - SN3503; ConvF(5.29, 5.29, 5.29); Calibrated: 31.12.2016, ConvF(5.04, 5.04, 5.04); Calibrated: 31.12.2016, ConvF(4.57, 4.57, 4.57); Calibrated: 31.12.2016, ConvF(4.48, 4.48, 4.48); Calibrated: 31.12.2016;
- Sensor-Surface: 1.4mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn601; Calibrated: 04.01.2017
- Phantom: Flat Phantom 5.0 (back); Type: QD 000 P50 AA; Serial: 1002
- DASY52 52.8.8(1258); SEMCAD X 14.6.10(7372)

**Dipole Calibration for Body Tissue/Pin=100mW, dist=10mm, f=5200 MHz/Zoom Scan, dist=1.4mm (8x8x7)/Cube 0:** Measurement grid: dx=4mm, dy=4mm, dz=1.4mm
Reference Value = 65.54 V/m; Power Drift = -0.06 dB
Peak SAR (extrapolated) = 28.1 W/kg
**SAR(1 g) = 7.32 W/kg; SAR(10 g) = 2.05 W/kg**
Maximum value of SAR (measured) = 16.6 W/kg

**Dipole Calibration for Body Tissue/Pin=100mW, dist=10mm, f=5300 MHz/Zoom Scan, dist=1.4mm (8x8x7)/Cube 0:** Measurement grid: dx=4mm, dy=4mm, dz=1.4mm
Reference Value = 66.93 V/m; Power Drift = -0.07 dB
Peak SAR (extrapolated) = 30.1 W/kg
**SAR(1 g) = 7.66 W/kg; SAR(10 g) = 2.15 W/kg**
Maximum value of SAR (measured) = 17.6 W/kg

**Dipole Calibration for Body Tissue/Pin=100mW, dist=10mm, f=5600 MHz/Zoom Scan, dist=1.4mm (8x8x7)/Cube 0:** Measurement grid: dx=4mm, dy=4mm, dz=1.4mm
Reference Value = 67.09 V/m; Power Drift = -0.07 dB
Peak SAR (extrapolated) = 33.7 W/kg
**SAR(1 g) = 8.02 W/kg; SAR(10 g) = 2.26 W/kg**
Maximum value of SAR (measured) = 18.9 W/kg





SGS Taiwan Ltd. No.134,Wu Kung Road, New Taipei Industrial Park, Wuku District, New Taipei City, Taiwan 24803/新北市五股區新北產業園區五工路134號
台灣檢驗科技股份有限公司 t (886-2) 2299-3279 f (886-2) 2298-0488 www.tw.sgs.com
Member of SGS Group

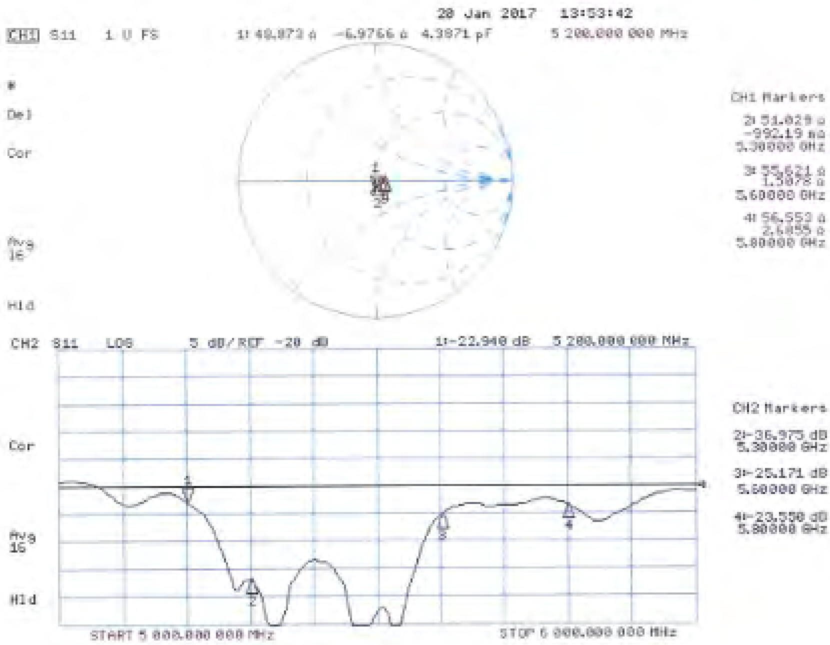
**Dipole Calibration for Body Tissue/Pin=100mW, dist=10mm, f=5800 MHz/Zoom Scan, dist=1.4mm (8x8x7)/Cube 0:** Measurement grid: dx=4mm, dy=4mm, dz=1.4mm
Reference Value = 65.14 V/m; Power Drift = -0.06 dB
Peak SAR (extrapolated) = 34.0 W/kg
**SAR(1 g) = 7.64 W/kg; SAR(10 g) = 2.13 W/kg**
Maximum value of SAR (measured) = 18.3 W/kg


0 dB = 16.6 W/kg = 12.20 dBW/kg




SGS Taiwan Ltd. No.134,Wu Kung Road, New Taipei Industrial Park, Wuku District, New Taipei City, Taiwan 24803/新北市五股區新北產業園區五工路134號
台灣檢驗科技股份有限公司 t (886-2) 2299-3279 f (886-2) 2298-0488 www.tw.sgs.com
Member of SGS Group

### Impedance Measurement Plot for Body TSL




Certificate No: D5GHzV2-1023_Jan17 Page 15 of 15

## - End of 1st part of report -


SGS Taiwan Ltd. No.134,Wu Kung Road, New Taipei Industrial Park, Wuku District, New Taipei City, Taiwan 24803/新北市五股區新北產業園區五工路134號
台灣檢驗科技股份有限公司 t (886-2) 2299-3279 f (886-2) 2298-0488 www.tw.sgs.com
Member of SGS Group