

MEASUREMENT 3

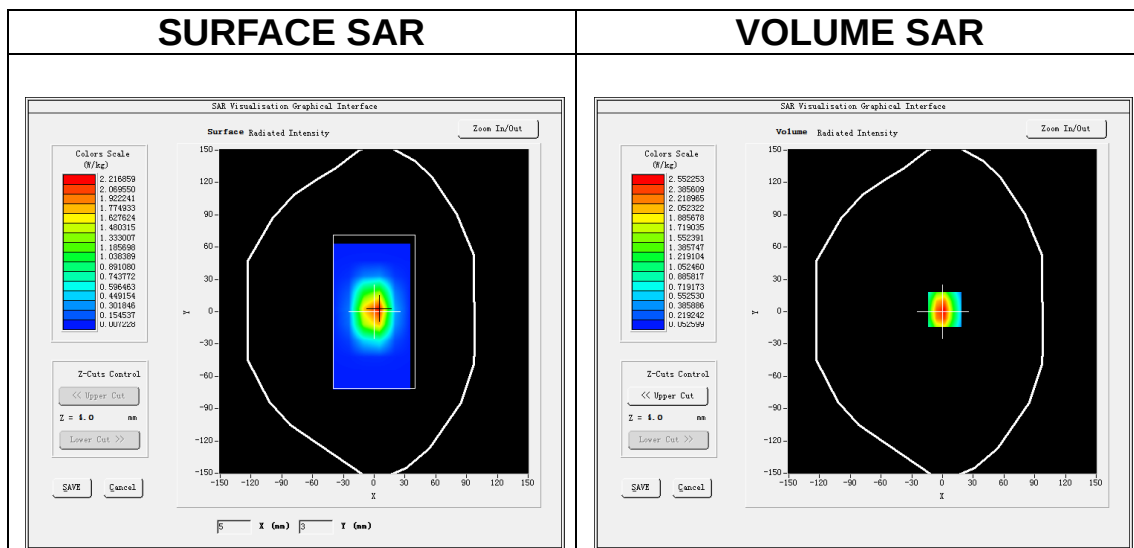
Date of measurement: 10/10/2024

A. Experimental conditions.

<u>Area Scan</u>	<u>dx=15mm dy=15mm, h= 5.00 mm</u>
<u>ZoomScan</u>	<u>5x5x7,dx=8mm dy=8mm dz=5mm</u>
<u>Phantom</u>	<u>Validation plane</u>
<u>Device Position</u>	<u>Dipole</u>
<u>Band</u>	<u>CW1800</u>
<u>Channels</u>	<u>Middle</u>
<u>Signal</u>	<u>CW (Crest factor: 1.0)</u>
<u>ConvF</u>	<u>2.51</u>

B. SAR Measurement Results

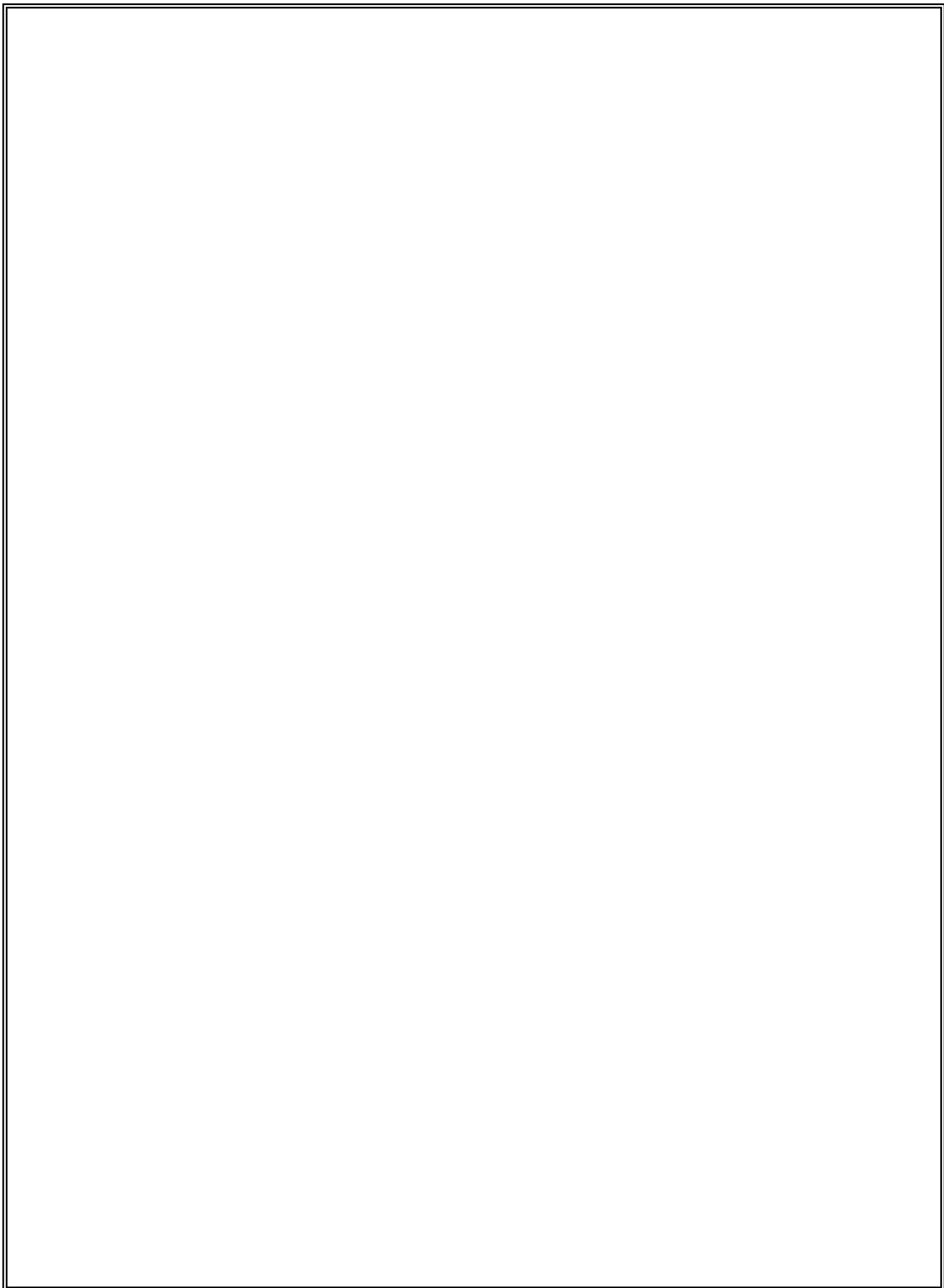
Frequency (MHz)	1800.000000
Relative permittivity (real part)	39.382928
Relative permittivity (imaginary part)	13.813047
Conductivity (S/m)	1.381307
Variation (%)	-0.410000

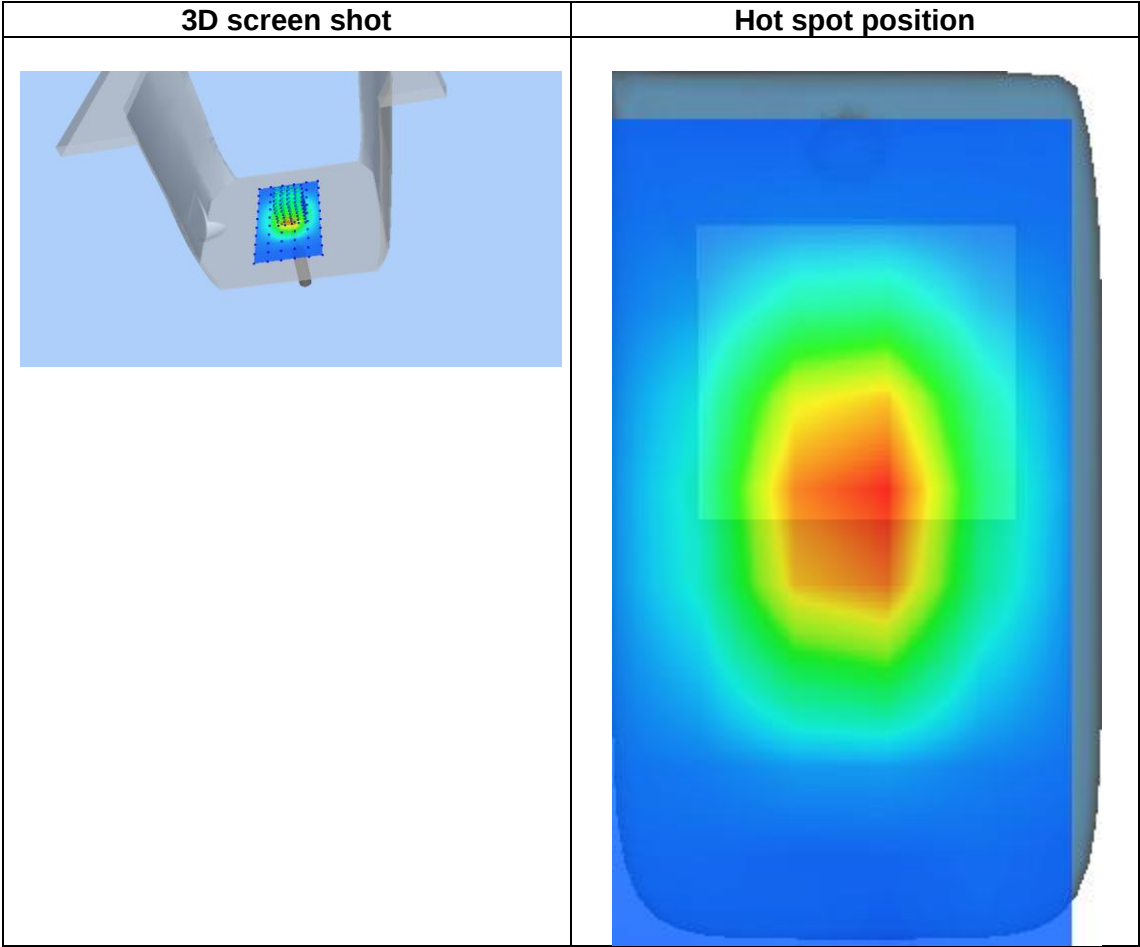
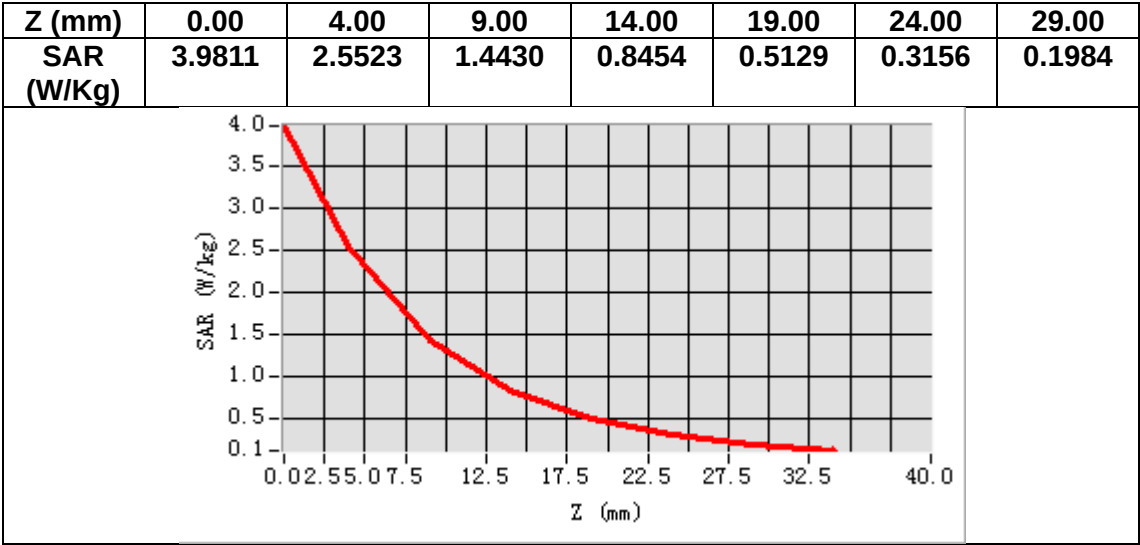


Maximum location: X=2.00, Y=2.00

SAR Peak: 4.13 W/kg

SAR 10g (W/Kg)	1.279505
SAR 1g (W/Kg)	2.479522





MEASUREMENT 4

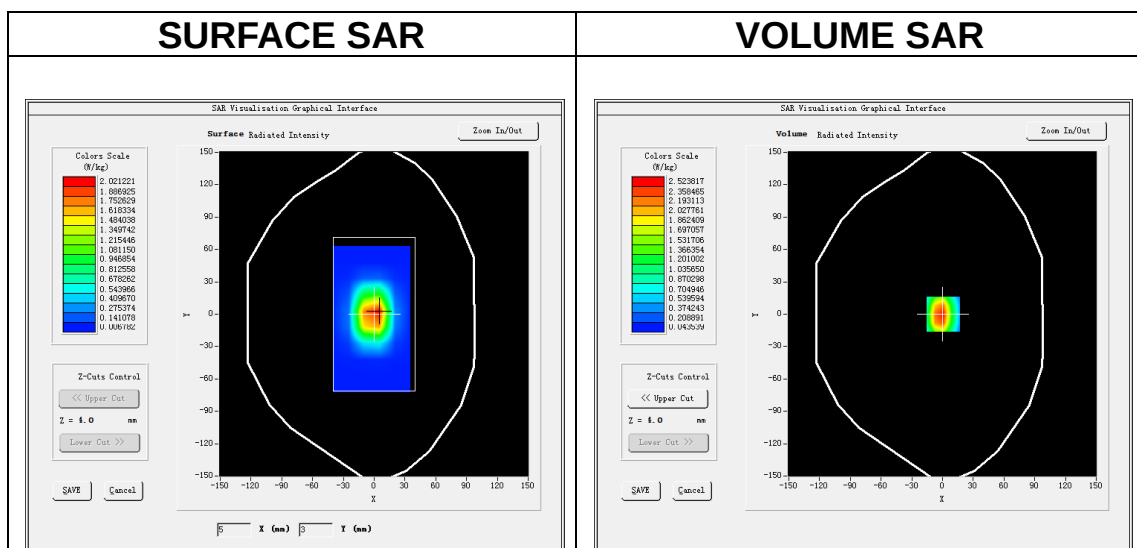
Date of measurement: 16/10/2024

A. Experimental conditions.

<u>Area Scan</u>	<u>dx=15mm dy=15mm, h= 5.00 mm</u>
<u>ZoomScan</u>	<u>5x5x7,dx=8mm dy=8mm dz=5mm</u>
<u>Phantom</u>	<u>Validation plane</u>
<u>Device Position</u>	<u>Dipole</u>
<u>Band</u>	<u>CW1900</u>
<u>Channels</u>	<u>Middle</u>
<u>Signal</u>	<u>CW (Crest factor: 1.0)</u>
<u>ConvF</u>	<u>2.57</u>

B. SAR Measurement Results

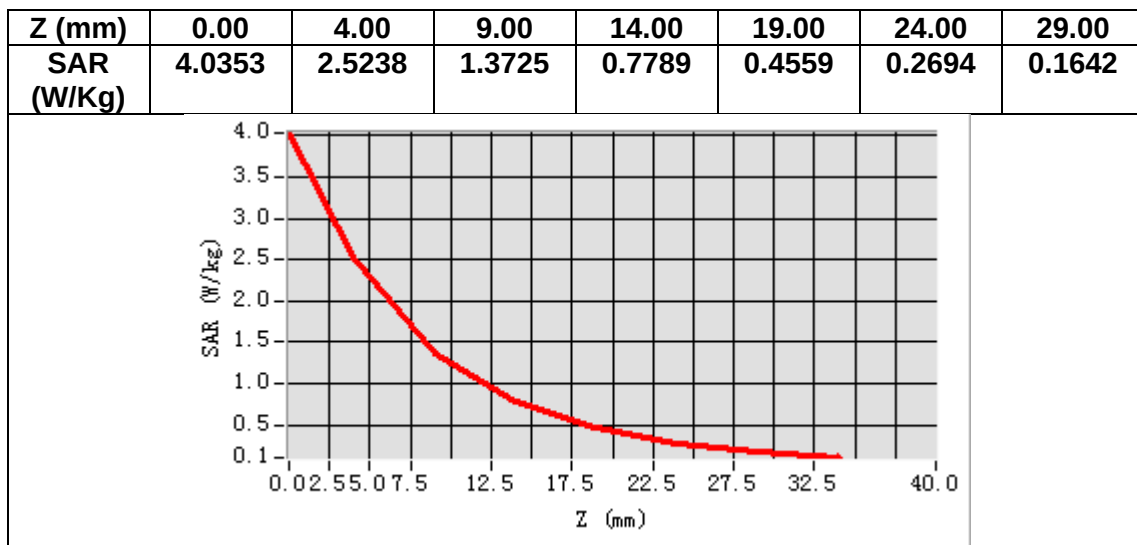
Frequency (MHz)	1900.000000
Relative permittivity (real part)	38.570754
Relative permittivity (imaginary part)	13.854547
Conductivity (S/m)	1.462424
Variation (%)	-0.230000



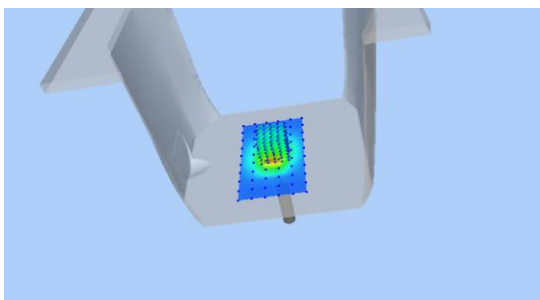
Maximum location: X=1.00, Y=0.00

SAR Peak: 4.17 W/kg

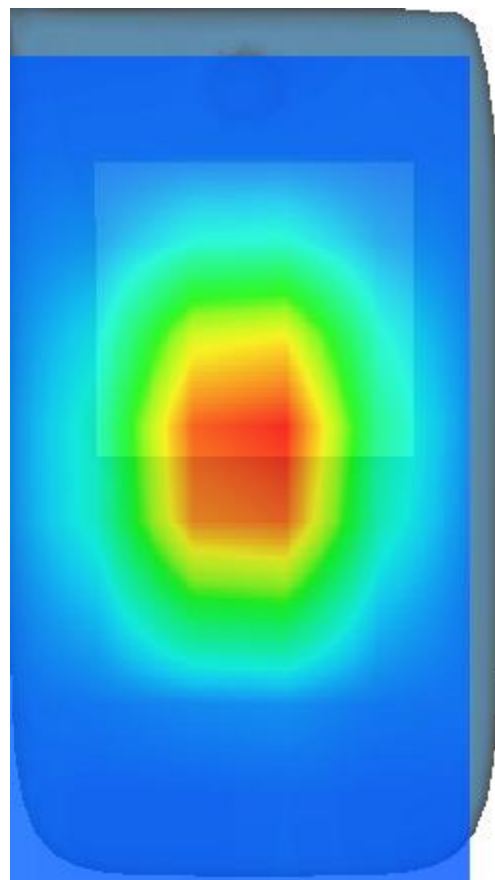
SAR 10g (W/Kg)	1.242750
SAR 1g (W/Kg)	2.526869



3D screen shot



Hot spot position



MEASUREMENT 5

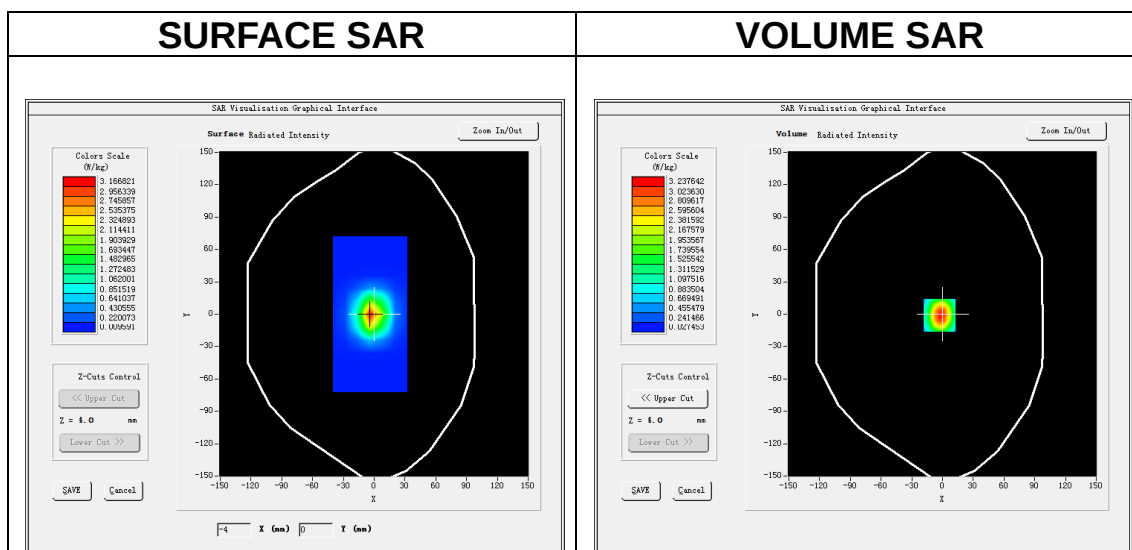
Date of measurement: 9/10/2024

A. Experimental conditions.

<u>Area Scan</u>	<u>dx=12mm dy=12mm, h= 5.00 mm</u>
<u>ZoomScan</u>	<u>7x7x7,dx=5mm dy=5mm dz=5mm</u>
<u>Phantom</u>	<u>Validation plane</u>
<u>Device Position</u>	<u>Dipole</u>
<u>Band</u>	<u>CW2450</u>
<u>Channels</u>	<u>Middle</u>
<u>Signal</u>	<u>CW (Crest factor: 1.0)</u>
<u>ConvF</u>	<u>2.74</u>

B. SAR Measurement Results

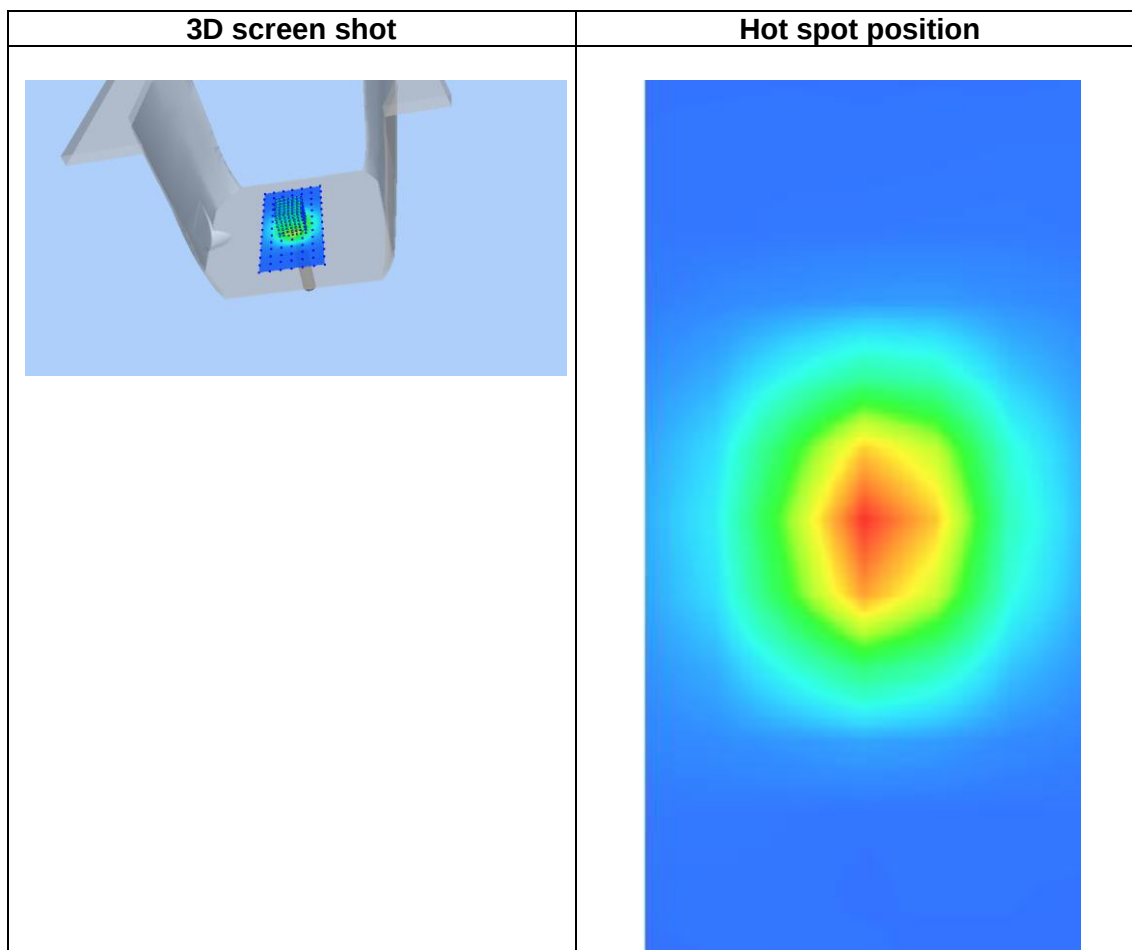
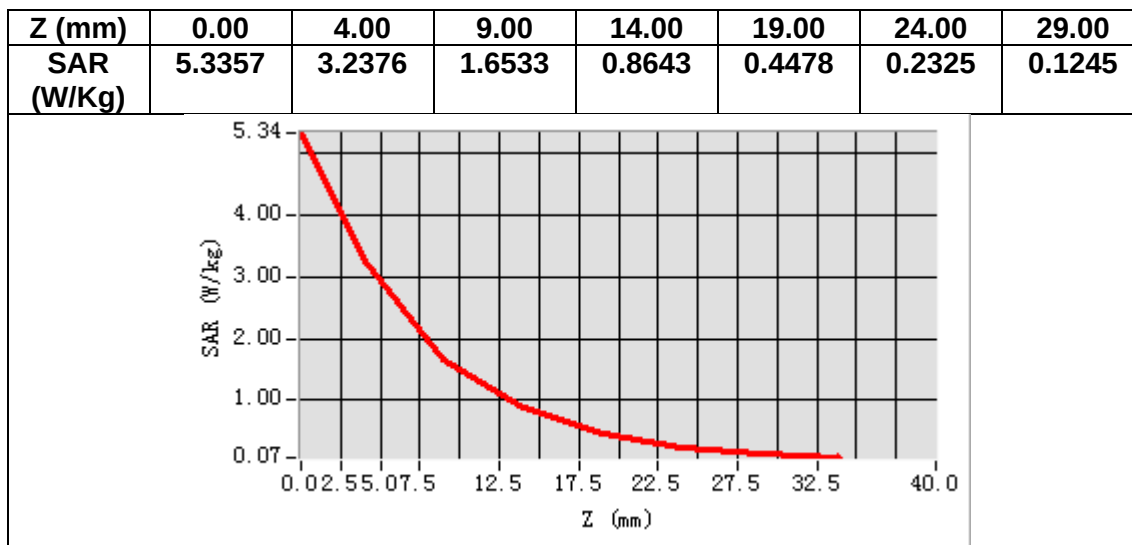
Frequency (MHz)	2450.000000
Relative permittivity (real part)	39.963391
Relative permittivity (imaginary part)	13.313991
Conductivity (S/m)	1.812182
Variation (%)	3.070000



Maximum location: X=-3.00, Y=-1.00

SAR Peak: 5.31 W/kg

SAR 10g (W/Kg)	1.426492
SAR 1g (W/Kg)	2.989452



MEASUREMENT 6

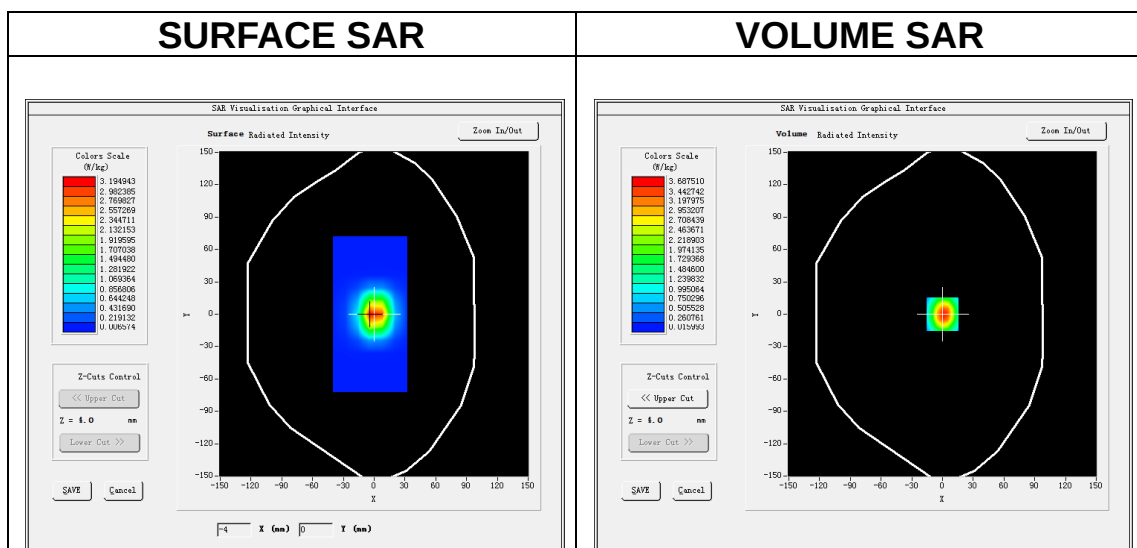
Date of measurement: 17/10/2024

A. Experimental conditions.

<u>Area Scan</u>	<u>dx=12mm dy=12mm, h= 5.00 mm</u>
<u>ZoomScan</u>	<u>7x7x7,dx=5mm dy=5mm dz=5mm</u>
<u>Phantom</u>	<u>Validation plane</u>
<u>Device Position</u>	<u>Dipole</u>
<u>Band</u>	<u>CW2600</u>
<u>Channels</u>	<u>Middle</u>
<u>Signal</u>	<u>CW (Crest factor: 1.0)</u>
<u>ConvF</u>	<u>2.51</u>

B. SAR Measurement Results

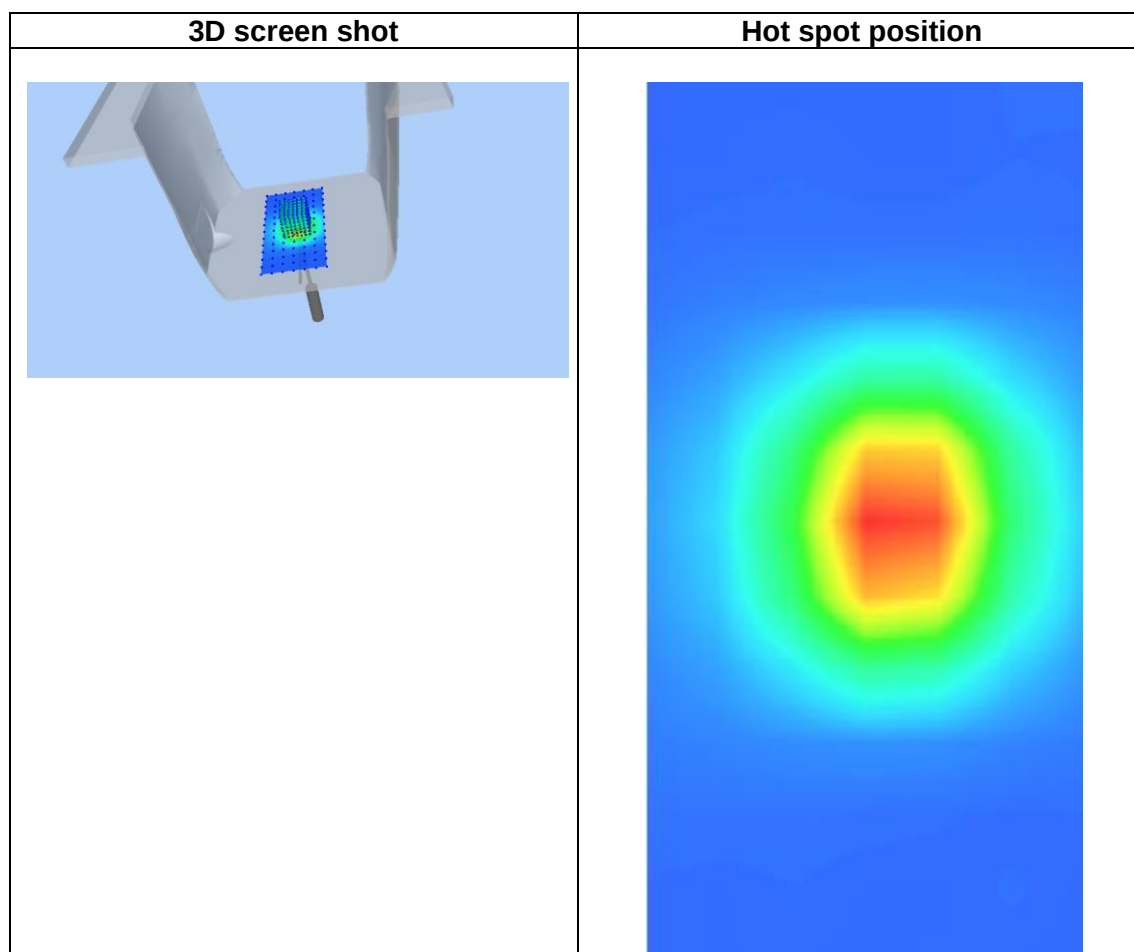
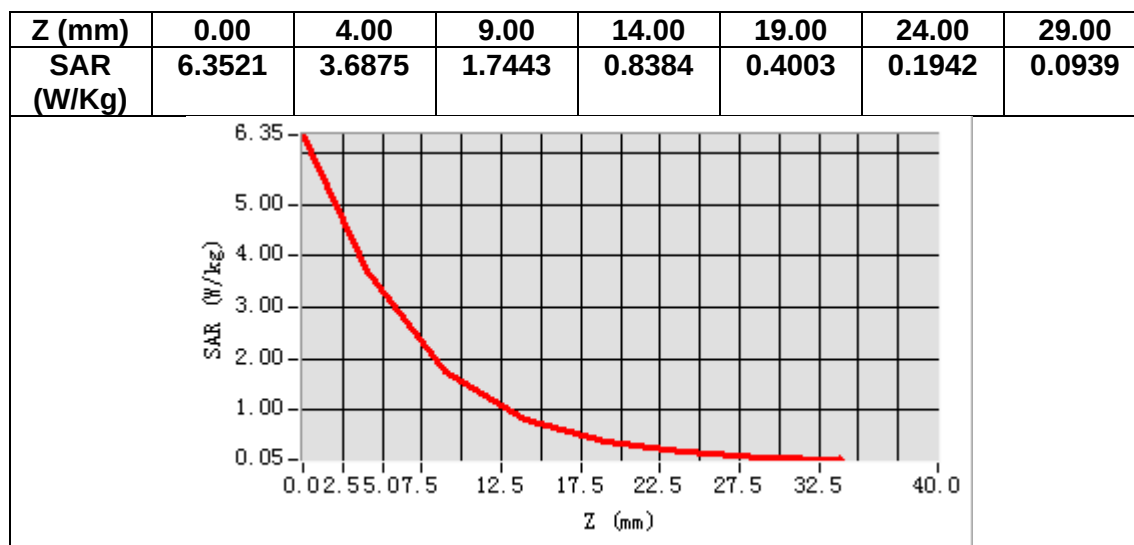
Frequency (MHz)	2600.000000
Relative permittivity (real part)	38.910442
Relative permittivity (imaginary part)	13.999088
Conductivity (S/m)	2.02209
Variation (%)	-1.660000



Maximum location: X=0.00, Y=0.00

SAR Peak: 6.32 W/kg

SAR 10g (W/Kg)	1.557075
SAR 1g (W/Kg)	3.451560



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MEASUREMENT 32 LTE Band 26B Body
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MEASUREMENT 1

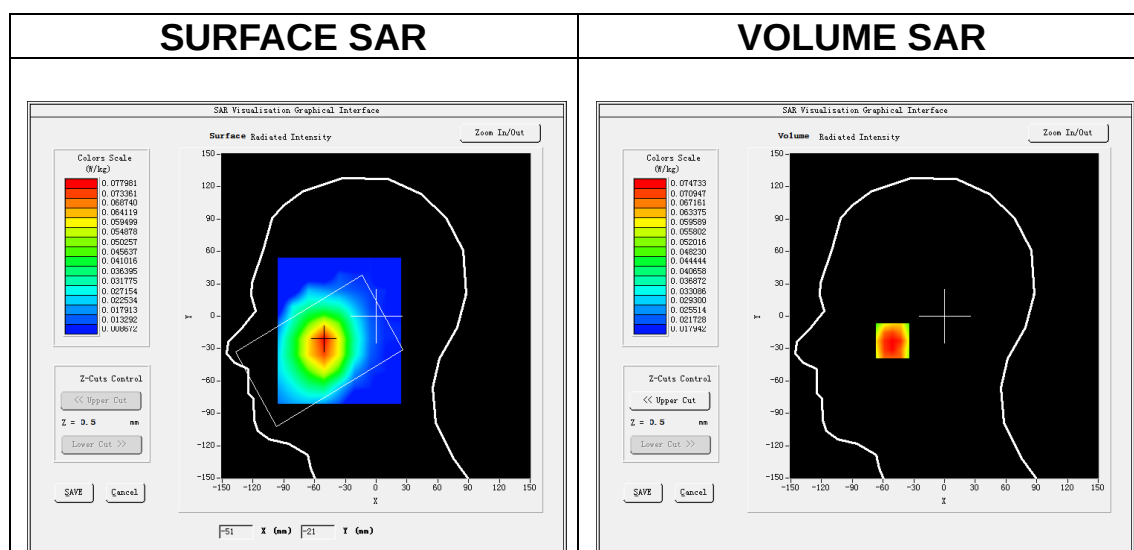
Date of measurement: 15/10/2024

A. Experimental conditions.

<u>Area Scan</u>	<u>dx=15mm dy=15mm, h= 5.00 mm</u>
<u>ZoomScan</u>	<u>5x5x7,dx=8mm dy=8mm dz=5mm</u>
<u>Phantom</u>	<u>Left head</u>
<u>Device Position</u>	<u>Cheek</u>
<u>Band</u>	<u>GSM850</u>
<u>Channels</u>	<u>Middle</u>
<u>Signal</u>	<u>TDMA (Crest factor: 8.0)</u>
<u>ConvF</u>	<u>2.34</u>

B. SAR Measurement Results

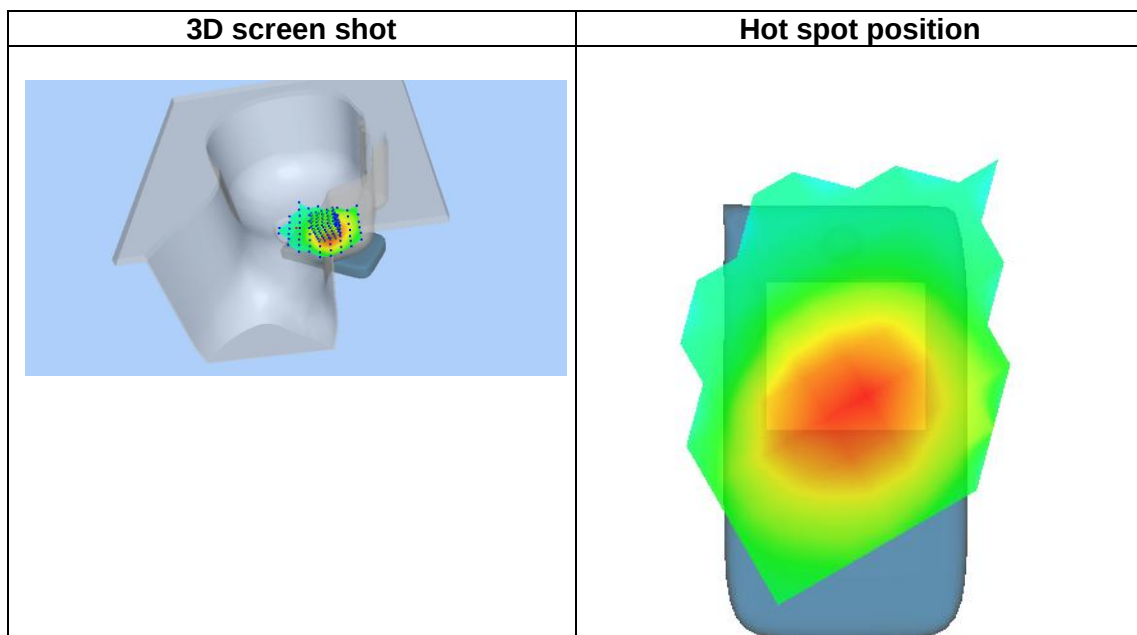
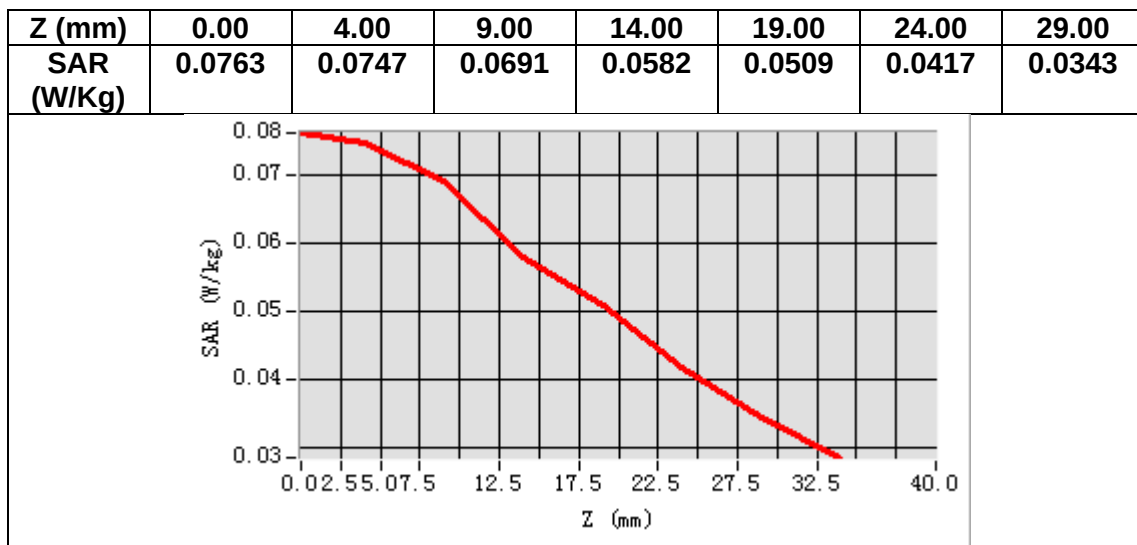
Frequency (MHz)	836.400000
Relative permittivity (real part)	41.878227
Relative permittivity (imaginary part)	19.731071
Conductivity (S/m)	0.916837
Variation (%)	0.750000



Maximum location: X=-51.00, Y=-23.00

SAR Peak: 0.09 W/kg

SAR 10g (W/Kg)	0.060524
SAR 1g (W/Kg)	0.074644



MEASUREMENT 2

Date of measurement: 15/10/2024

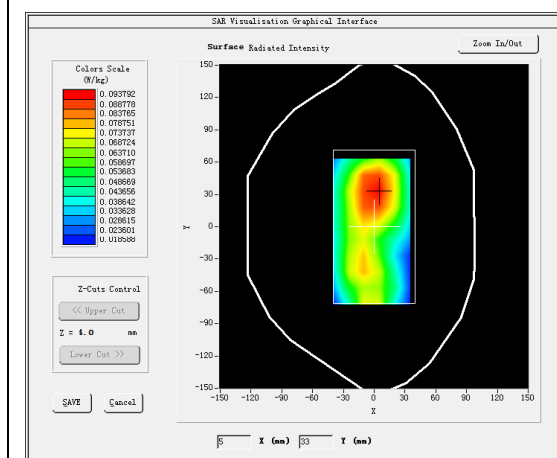
A. Experimental conditions.

<u>Area Scan</u>	<u>dx=15mm dy=15mm, h= 5.00 mm</u>
<u>ZoomScan</u>	<u>5x5x7,dx=8mm dy=8mm dz=5mm</u>
<u>Phantom</u>	<u>Validation plane</u>
<u>Device Position</u>	<u>Body</u>
<u>Band</u>	<u>GSM850</u>
<u>Channels</u>	<u>Middle</u>
<u>Signal</u>	<u>TDMA (Crest factor: 8.0)</u>
<u>ConvF</u>	<u>2.34</u>

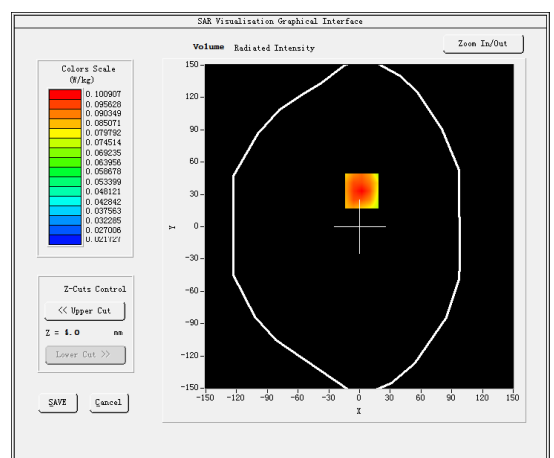
B. SAR Measurement Results

Frequency (MHz)	836.400000
Relative permittivity (real part)	41.878227
Relative permittivity (imaginary part)	19.731071
Conductivity (S/m)	0.916837
Variation (%)	4.770000

SURFACE SAR



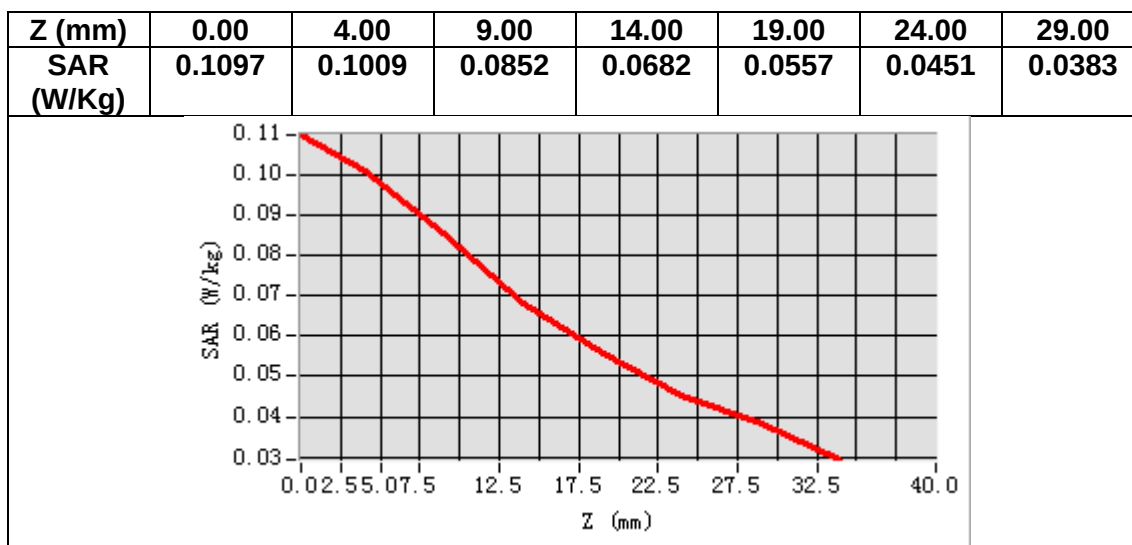
VOLUME SAR



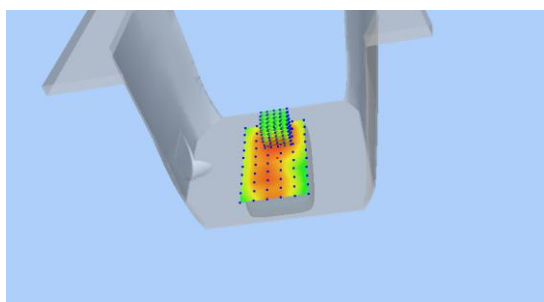
Maximum location: X=2.00, Y=33.00

SAR Peak: 0.11 W/kg

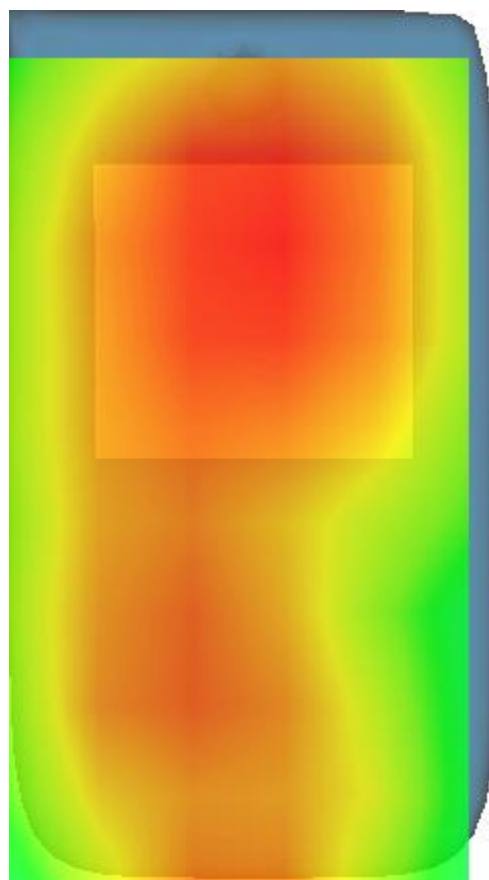
SAR 10g (W/Kg)	0.076114
SAR 1g (W/Kg)	0.096335



3D screen shot



Hot spot position



MEASUREMENT 3

Date of measurement: 16/10/2024

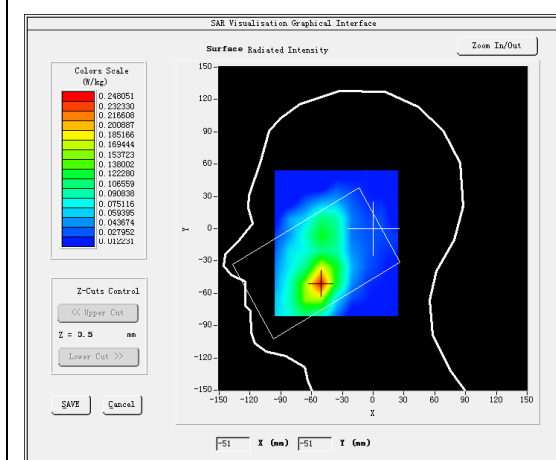
A. Experimental conditions.

<u>Area Scan</u>	<u>dx=15mm dy=15mm, h= 5.00 mm</u>
<u>ZoomScan</u>	<u>5x5x7,dx=8mm dy=8mm dz=5mm</u>
<u>Phantom</u>	<u>Left head</u>
<u>Device Position</u>	<u>Cheek</u>
<u>Band</u>	<u>GSM1900</u>
<u>Channels</u>	<u>Middle</u>
<u>Signal</u>	<u>TDMA (Crest factor: 8.0)</u>
<u>ConvF</u>	<u>2.57</u>

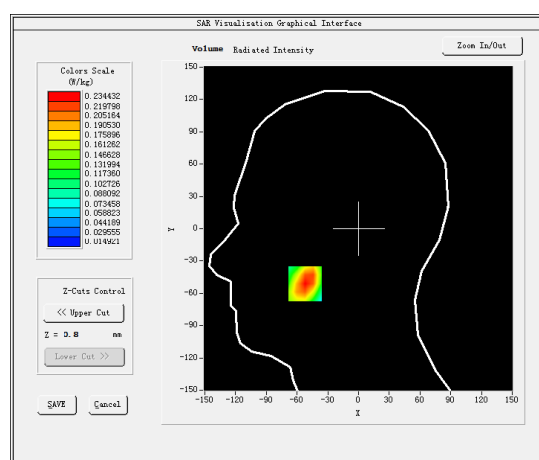
B. SAR Measurement Results

Frequency (MHz)	1880.000000
Relative permittivity (real part)	38.657154
Relative permittivity (imaginary part)	13.872347
Conductivity (S/m)	1.448890
Variation (%)	-2.060000

SURFACE SAR



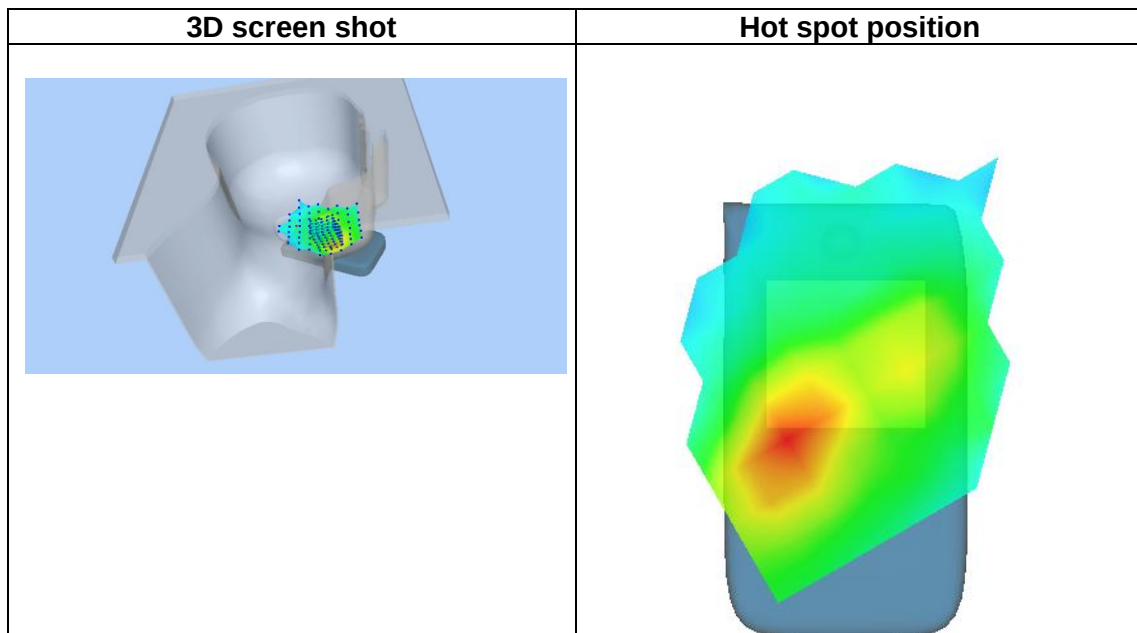
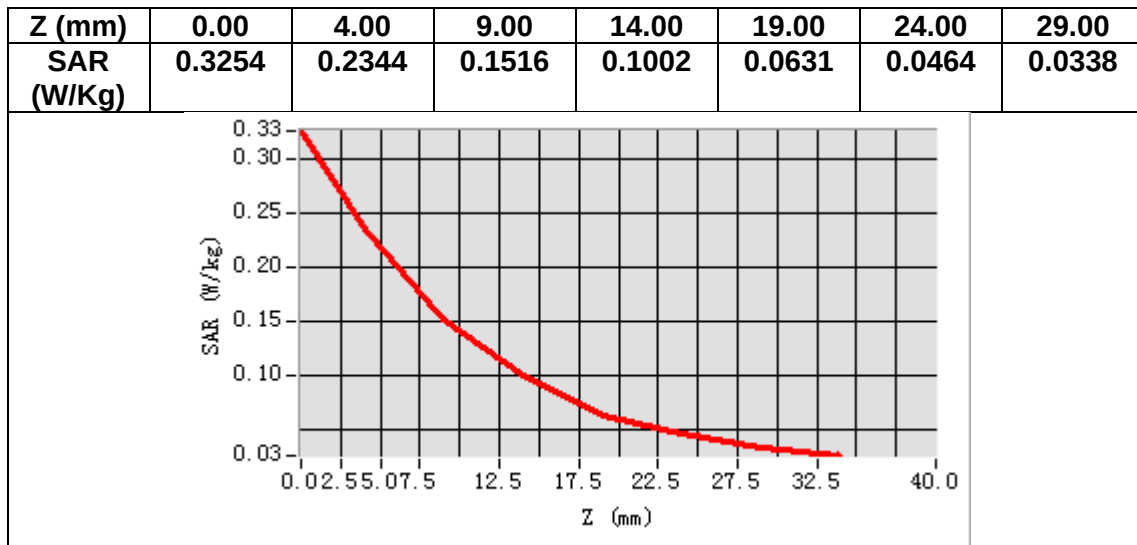
VOLUME SAR



Maximum location: X=-52.00, Y=-51.00

SAR Peak: 0.37 W/kg

SAR 10g (W/Kg)	0.133412
SAR 1g (W/Kg)	0.230959



MEASUREMENT 4

Date of measurement: 16/10/2024

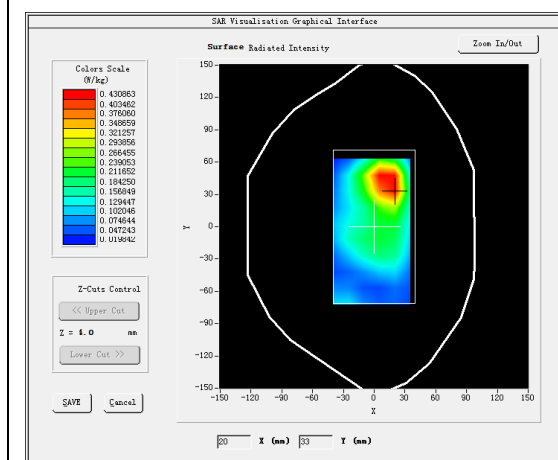
A. Experimental conditions.

<u>Area Scan</u>	<u>dx=15mm dy=15mm, h= 5.00 mm</u>
<u>ZoomScan</u>	<u>5x5x7,dx=8mm dy=8mm dz=5mm</u>
<u>Phantom</u>	<u>Validation plane</u>
<u>Device Position</u>	<u>Body</u>
<u>Band</u>	<u>GSM1900</u>
<u>Channels</u>	<u>Middle</u>
<u>Signal</u>	<u>TDMA (Crest factor: 8.0)</u>
<u>ConvF</u>	<u>2.57</u>

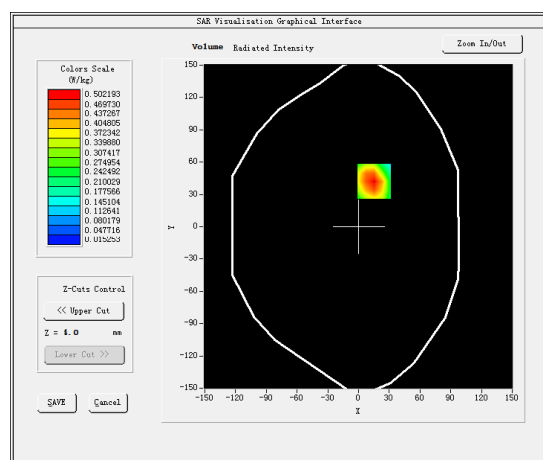
B. SAR Measurement Results

Frequency (MHz)	1880.000000
Relative permittivity (real part)	38.657154
Relative permittivity (imaginary part)	13.872347
Conductivity (S/m)	1.448890
Variation (%)	-2.010000

SURFACE SAR



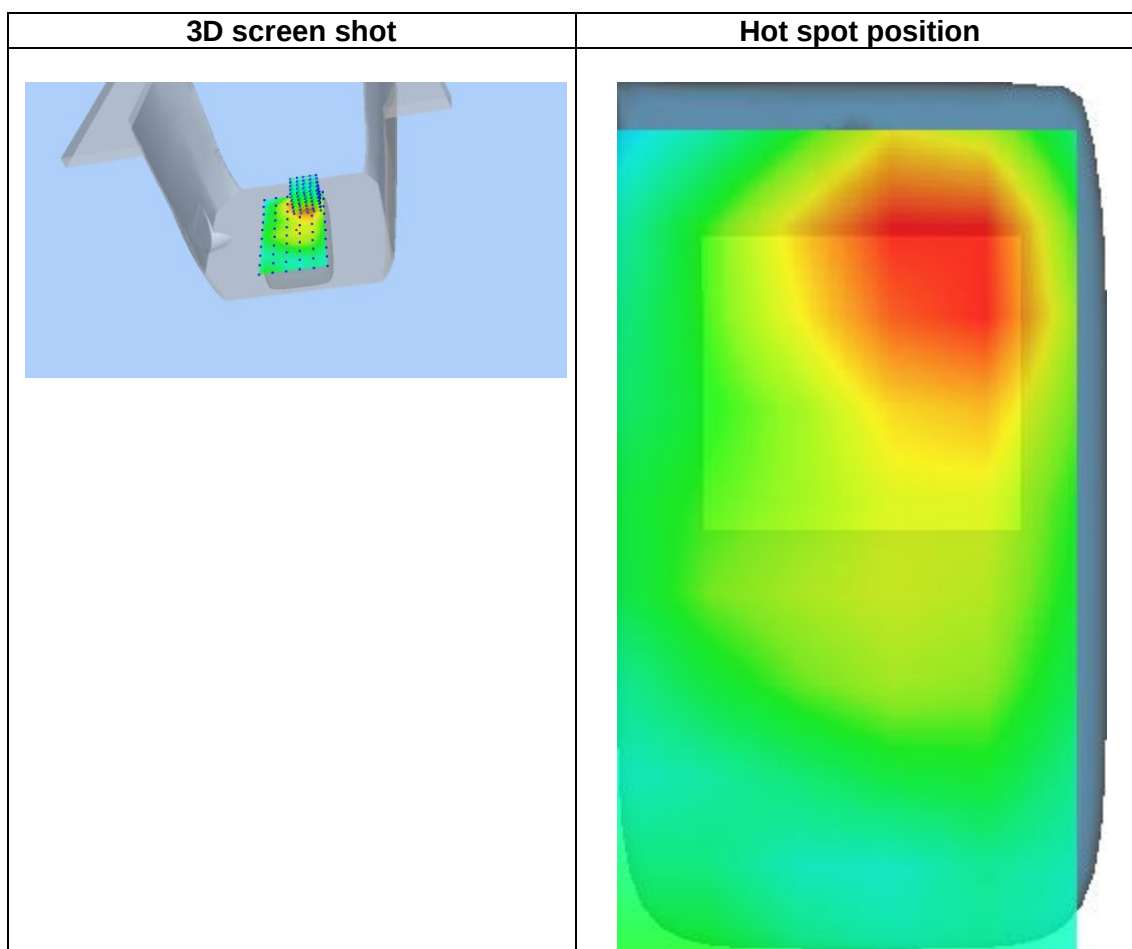
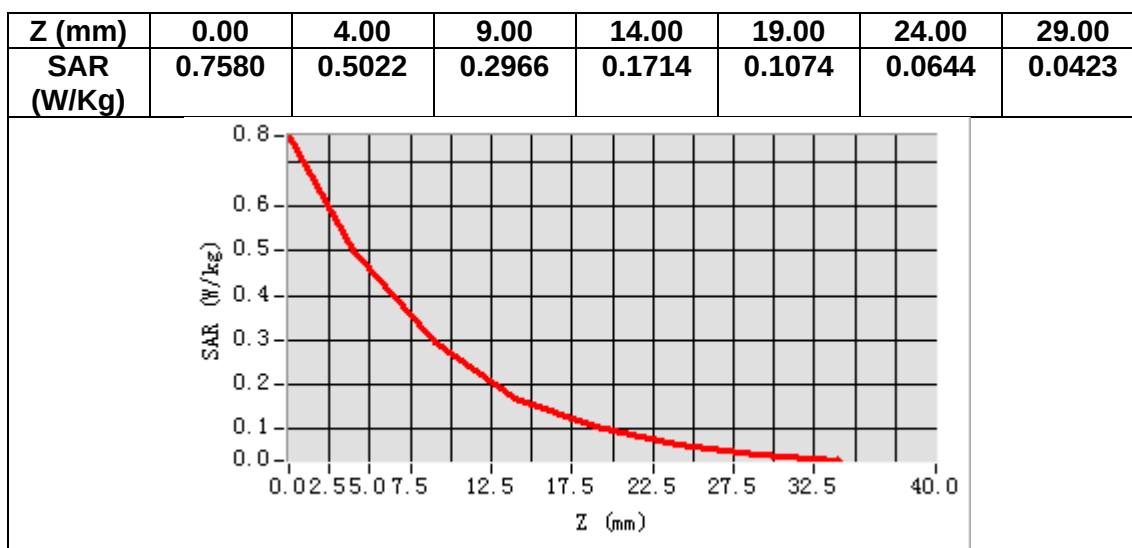
VOLUME SAR



Maximum location: X=15.00, Y=42.00

SAR Peak: 0.76 W/kg

SAR 10g (W/Kg)	0.277716
SAR 1g (W/Kg)	0.490504



MEASUREMENT 5

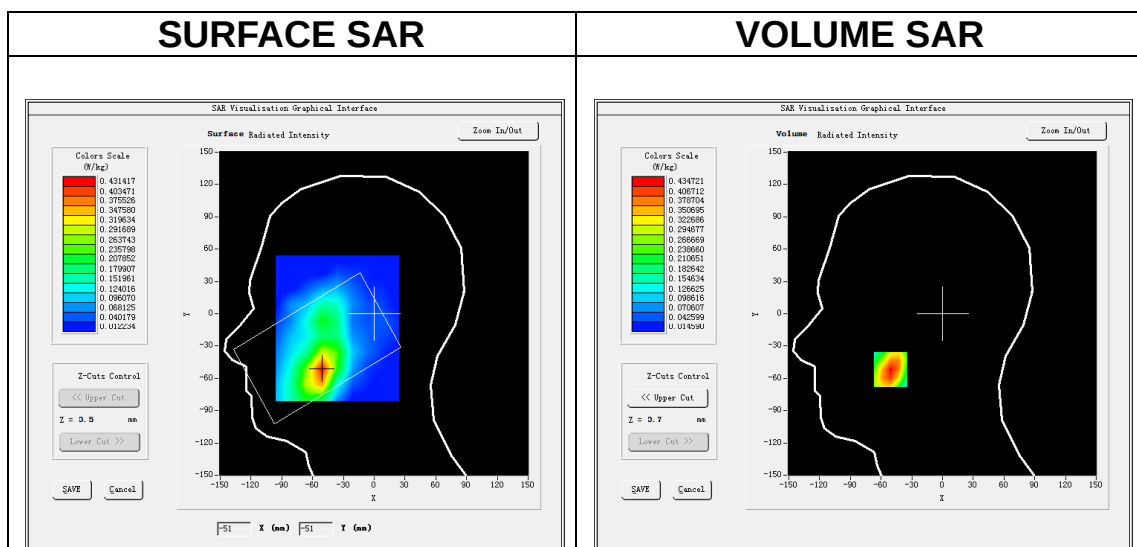
Date of measurement: 16/10/2024

A. Experimental conditions.

<u>Area Scan</u>	<u>dx=15mm dy=15mm, h= 5.00 mm</u>
<u>ZoomScan</u>	<u>5x5x7,dx=8mm dy=8mm dz=5mm</u>
<u>Phantom</u>	<u>Left head</u>
<u>Device Position</u>	<u>Cheek</u>
<u>Band</u>	<u>Band2 WCDMA1900</u>
<u>Channels</u>	<u>Middle</u>
<u>Signal</u>	<u>WCDMA (Crest factor: 1.0)</u>
<u>ConvF</u>	<u>2.57</u>

B. SAR Measurement Results

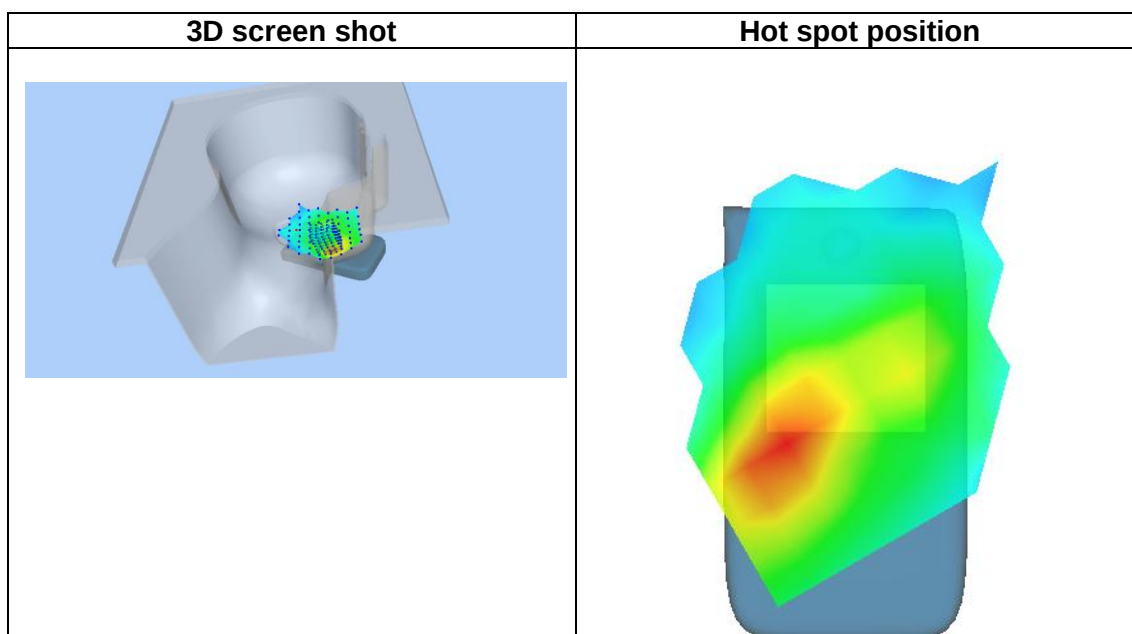
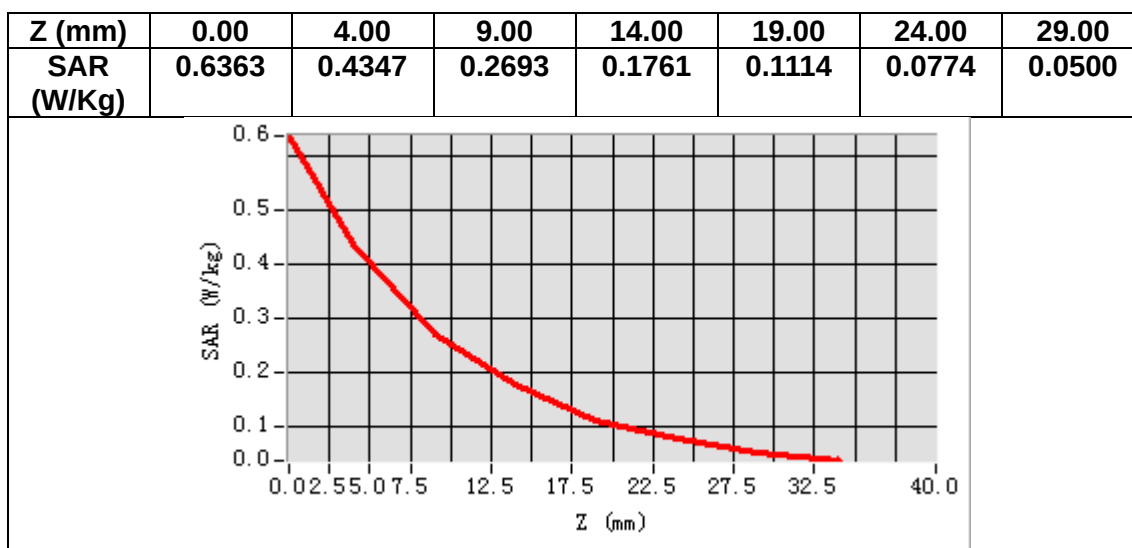
Frequency (MHz)	1880.000000
Relative permittivity (real part)	38.657154
Relative permittivity (imaginary part)	13.872347
Conductivity (S/m)	1.448890
Variation (%)	1.330000



Maximum location: X=-51.00, Y=-52.00

SAR Peak: 0.65 W/kg

SAR 10g (W/Kg)	0.245891
SAR 1g (W/Kg)	0.426851



MEASUREMENT 6

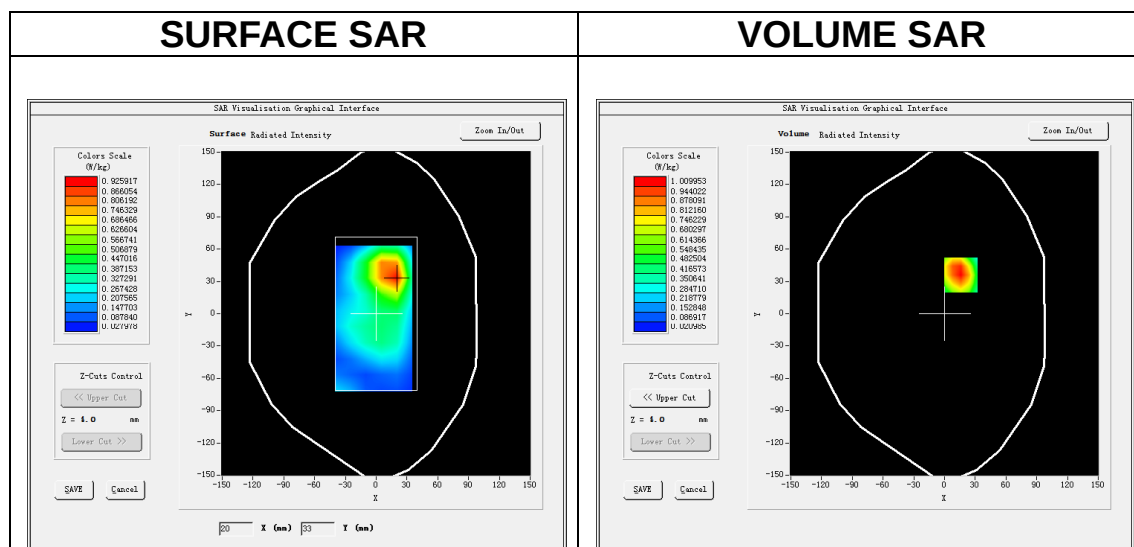
Date of measurement: 16/10/2024

A. Experimental conditions.

<u>Area Scan</u>	<u>dx=15mm dy=15mm, h= 5.00 mm</u>
<u>ZoomScan</u>	<u>5x5x7,dx=8mm dy=8mm dz=5mm</u>
<u>Phantom</u>	<u>Validation plane</u>
<u>Device Position</u>	<u>Body</u>
<u>Band</u>	<u>Band2 WCDMA1900</u>
<u>Channels</u>	<u>High</u>
<u>Signal</u>	<u>WCDMA (Crest factor: 1.0)</u>
<u>ConvF</u>	<u>2.57</u>

B. SAR Measurement Results

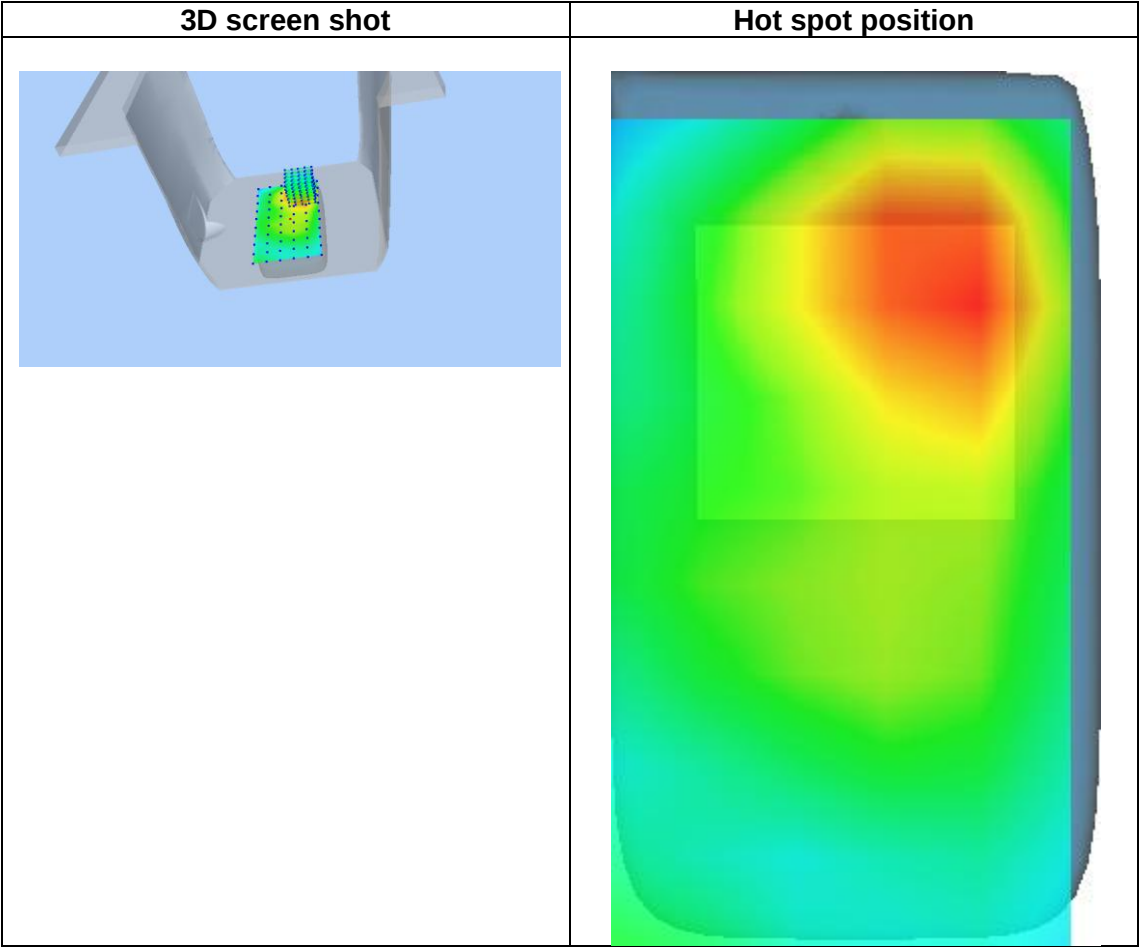
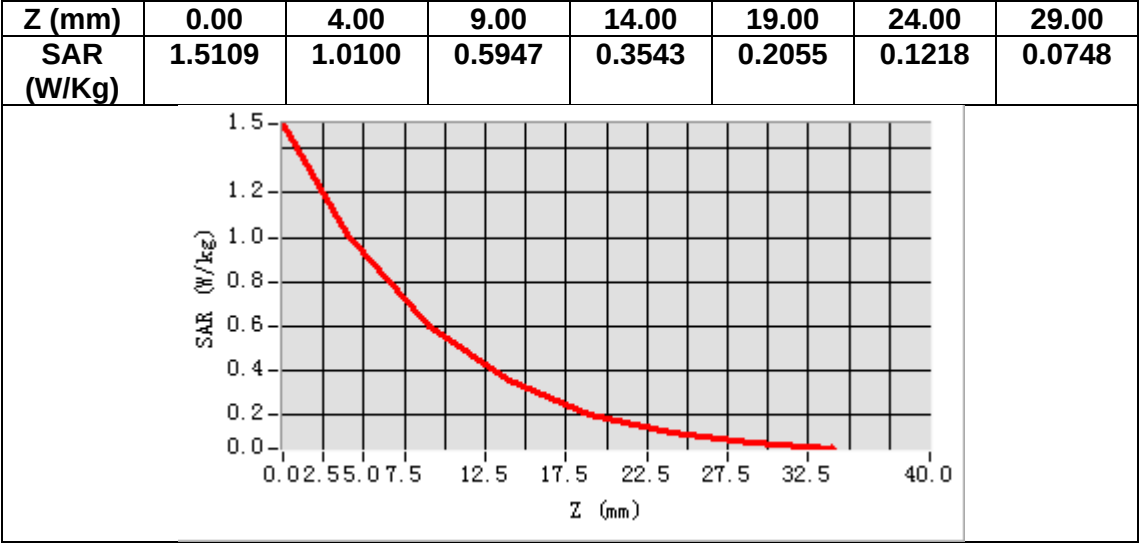
Frequency (MHz)	1907.600000
Relative permittivity (real part)	38.543514
Relative permittivity (imaginary part)	13.808847
Conductivity (S/m)	1.463431
Variation (%)	0.750000



Maximum location: X=16.00, Y=36.00

SAR Peak: 1.56 W/kg

SAR 10g (W/Kg)	0.553958
SAR 1g (W/Kg)	0.999648



MEASUREMENT 7

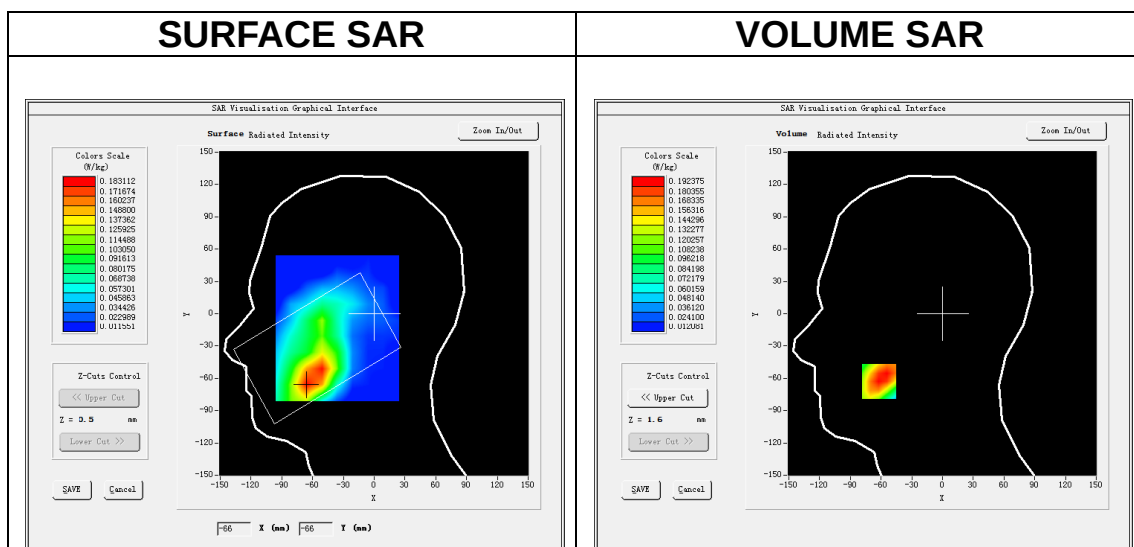
Date of measurement: 10/10/2024

A. Experimental conditions.

<u>Area Scan</u>	<u>dx=15mm dy=15mm, h= 5.00 mm</u>
<u>ZoomScan</u>	<u>5x5x7,dx=8mm dy=8mm dz=5mm</u>
<u>Phantom</u>	<u>Left head</u>
<u>Device Position</u>	<u>Cheek</u>
<u>Band</u>	<u>Band4 WCDMA1700</u>
<u>Channels</u>	<u>Middle</u>
<u>Signal</u>	<u>WCDMA (Crest factor: 1.0)</u>
<u>ConvF</u>	<u>2.51</u>

B. SAR Measurement Results

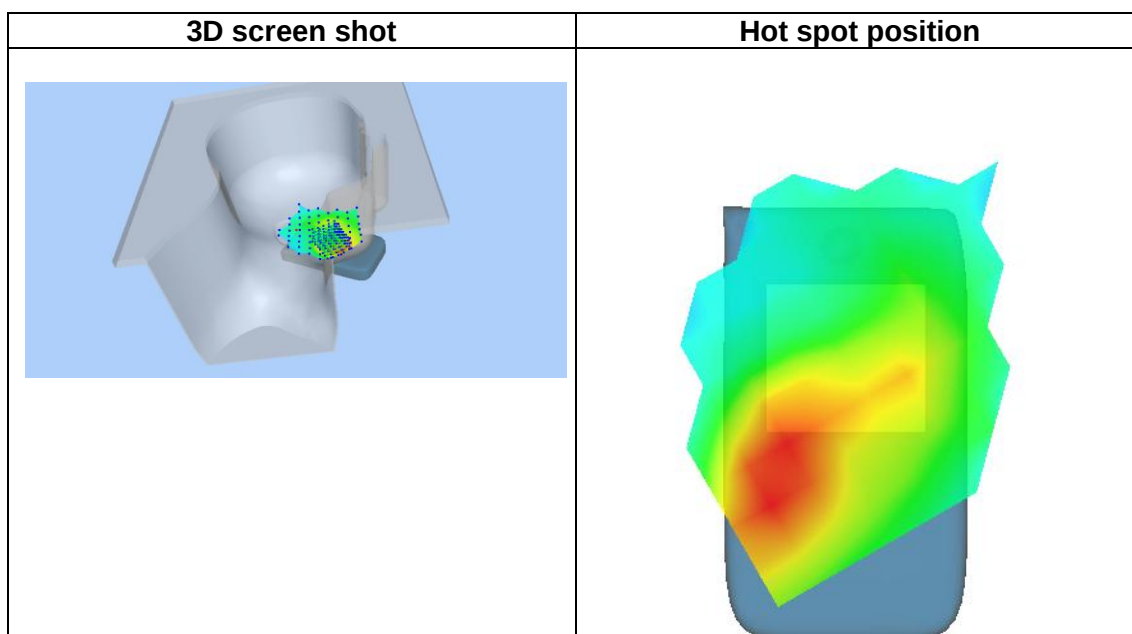
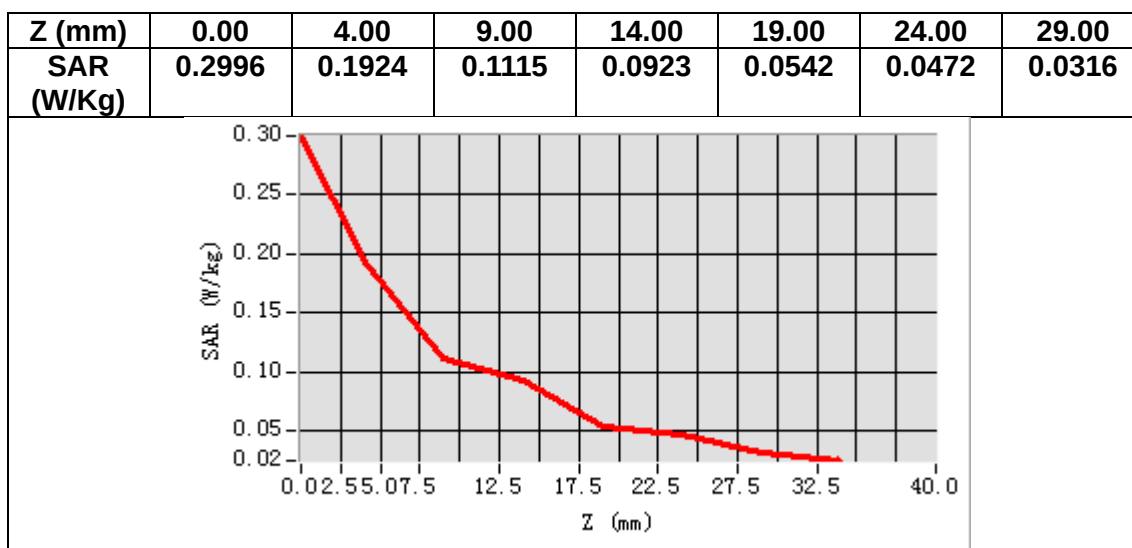
Frequency (MHz)	1732.600000
Relative permittivity (real part)	39.673954
Relative permittivity (imaginary part)	13.621547
Conductivity (S/m)	1.310696
Variation (%)	-3.490000



Maximum location: X=-62.00, Y=-63.00

SAR Peak: 0.28 W/kg

SAR 10g (W/Kg)	0.119101
SAR 1g (W/Kg)	0.187377



MEASUREMENT 8

Date of measurement: 10/10/2024

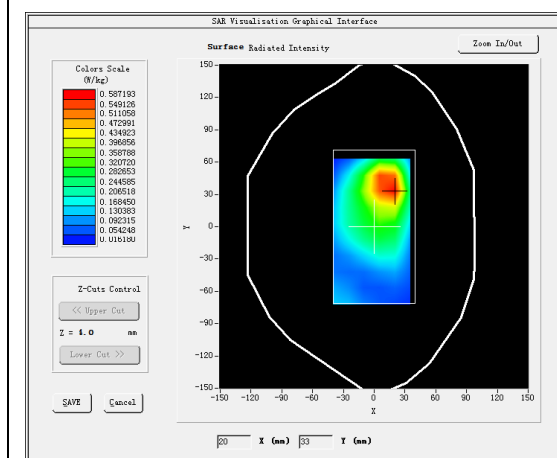
A. Experimental conditions.

<u>Area Scan</u>	<u>dx=15mm dy=15mm, h= 5.00 mm</u>
<u>ZoomScan</u>	<u>5x5x7,dx=8mm dy=8mm dz=5mm</u>
<u>Phantom</u>	<u>Validation plane</u>
<u>Device Position</u>	<u>Body</u>
<u>Band</u>	<u>Band4 WCDMA1700</u>
<u>Channels</u>	<u>Middle</u>
<u>Signal</u>	<u>WCDMA (Crest factor: 1.0)</u>
<u>ConvF</u>	<u>2.51</u>

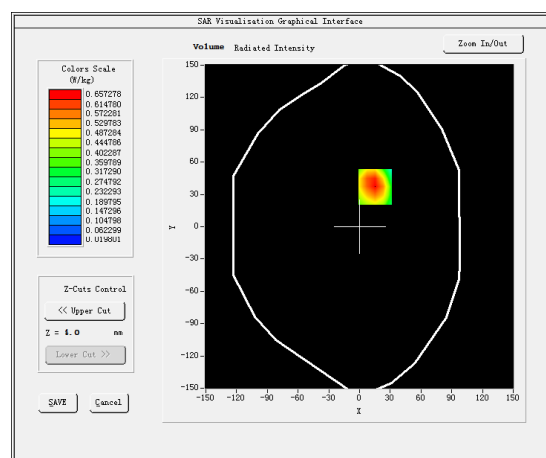
B. SAR Measurement Results

Frequency (MHz)	1732.600000
Relative permittivity (real part)	39.673954
Relative permittivity (imaginary part)	13.621547
Conductivity (S/m)	1.310696
Variation (%)	0.000000

SURFACE SAR



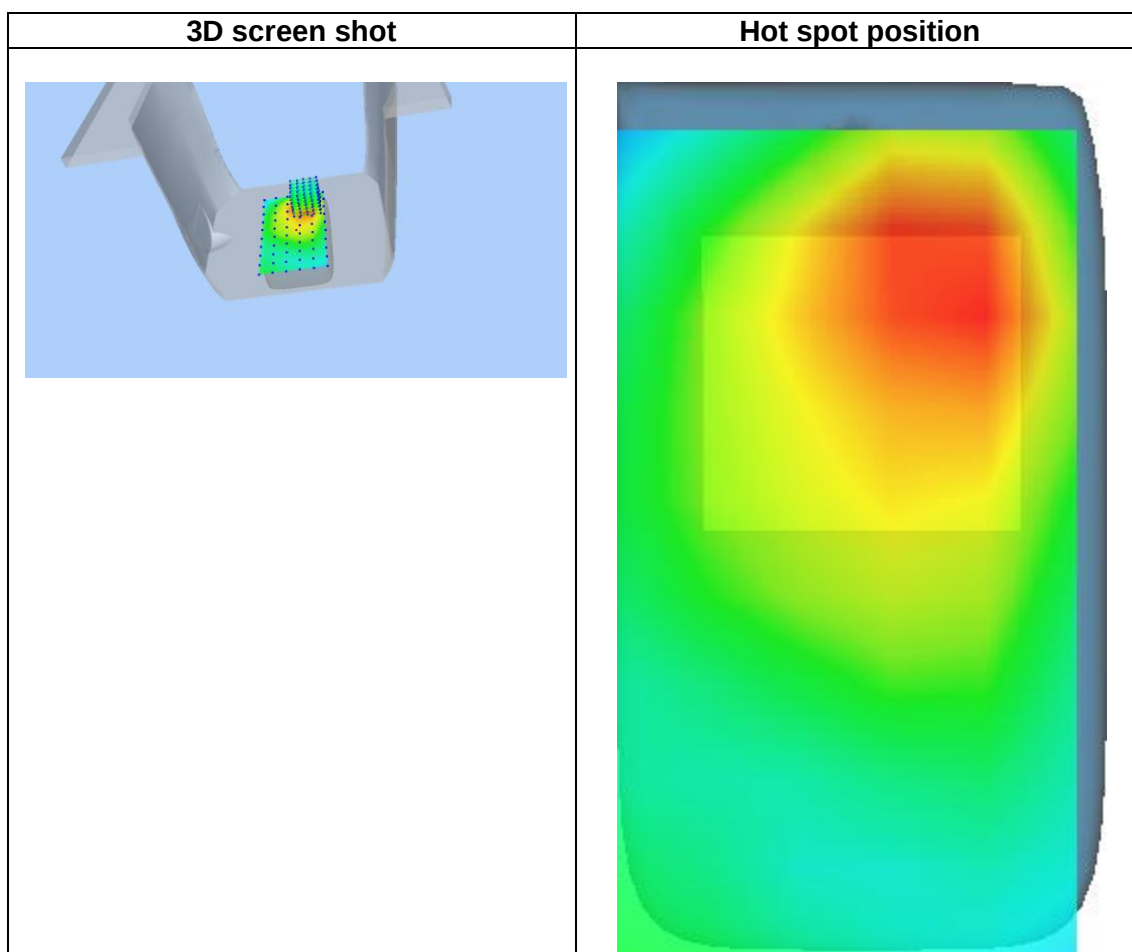
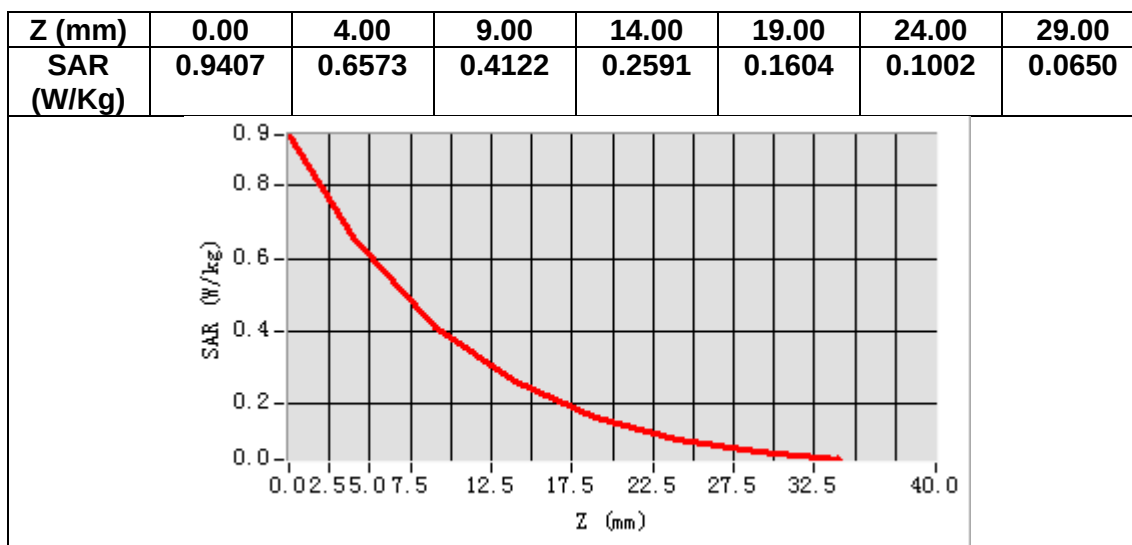
VOLUME SAR



Maximum location: X=15.00, Y=37.00

SAR Peak: 0.97 W/kg

SAR 10g (W/Kg)	0.372196
SAR 1g (W/Kg)	0.629495



MEASUREMENT 9

Date of measurement: 15/10/2024

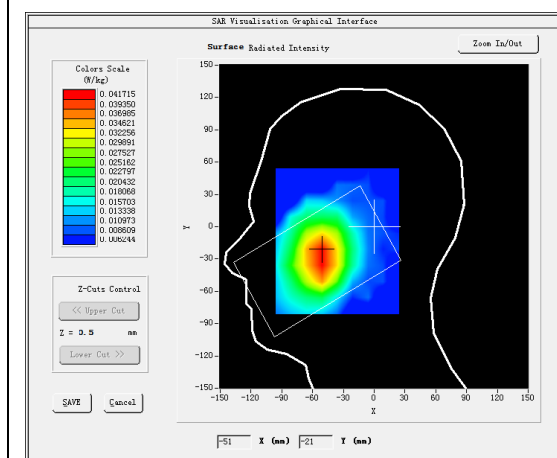
A. Experimental conditions.

<u>Area Scan</u>	<u>dx=15mm dy=15mm, h= 5.00 mm</u>
<u>ZoomScan</u>	<u>5x5x7,dx=8mm dy=8mm dz=5mm</u>
<u>Phantom</u>	<u>Left head</u>
<u>Device Position</u>	<u>Cheek</u>
<u>Band</u>	<u>Band5 WCDMA850</u>
<u>Channels</u>	<u>Middle</u>
<u>Signal</u>	<u>WCDMA (Crest factor: 1.0)</u>
<u>ConvF</u>	<u>2.34</u>

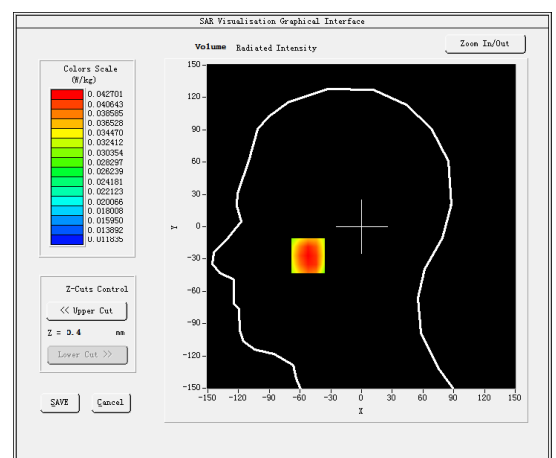
B. SAR Measurement Results

Frequency (MHz)	836.400000
Relative permittivity (real part)	41.878227
Relative permittivity (imaginary part)	19.731071
Conductivity (S/m)	0.916837
Variation (%)	4.640000

SURFACE SAR



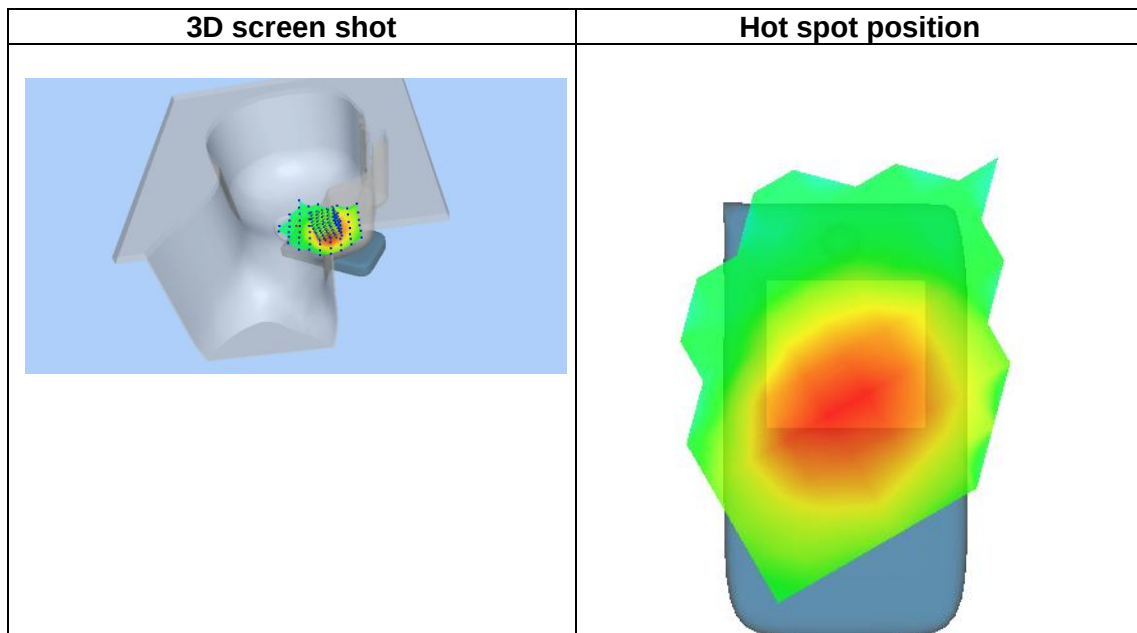
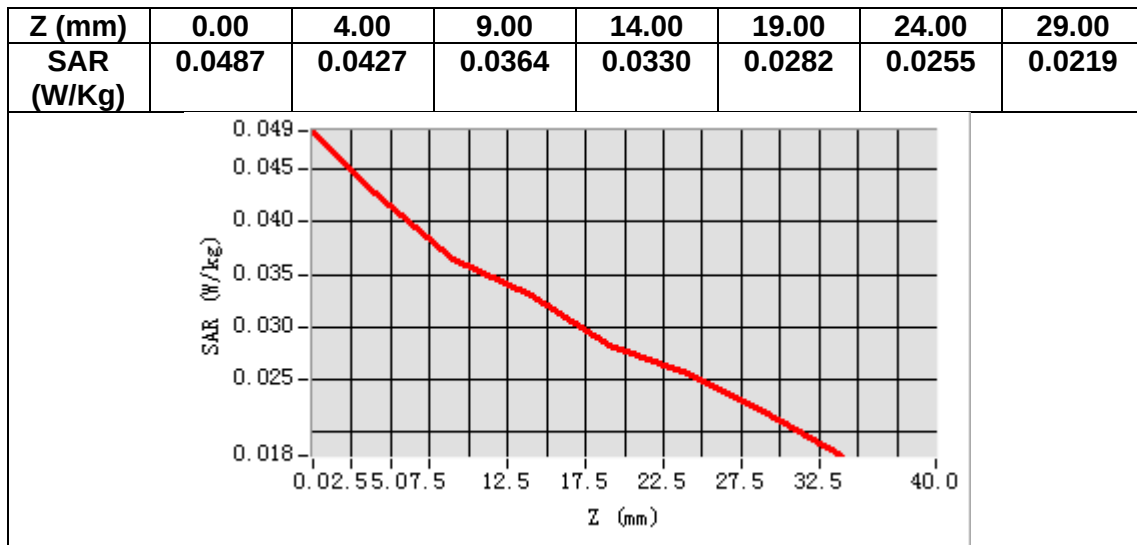
VOLUME SAR



Maximum location: X=-52.00, Y=-27.00

SAR Peak: 0.05 W/kg

SAR 10g (W/Kg)	0.034143
SAR 1g (W/Kg)	0.043108



MEASUREMENT 10

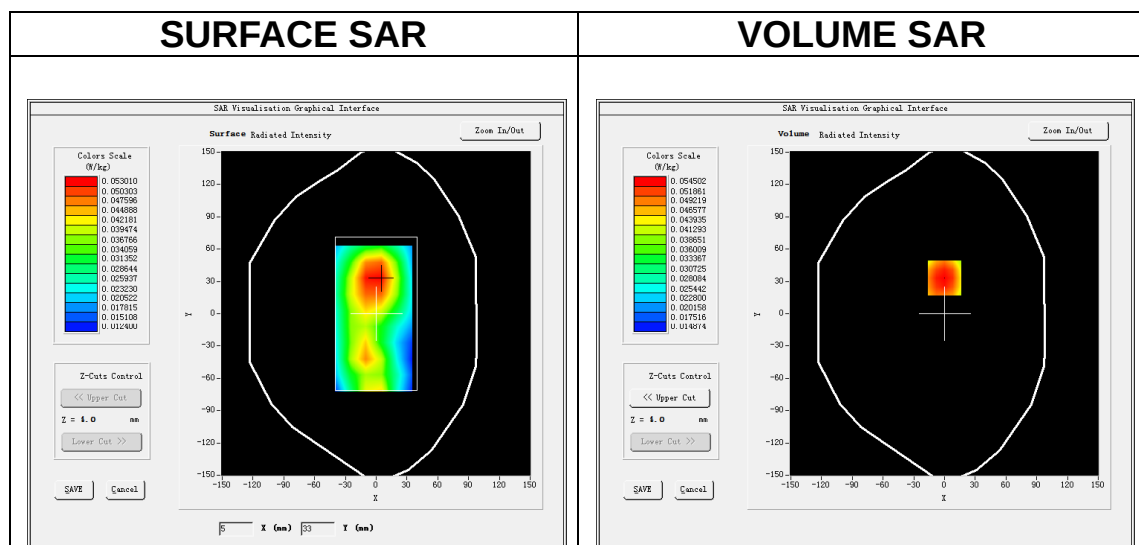
Date of measurement: 15/10/2024

A. Experimental conditions.

<u>Area Scan</u>	<u>dx=15mm dy=15mm, h= 5.00 mm</u>
<u>ZoomScan</u>	<u>5x5x7,dx=8mm dy=8mm dz=5mm</u>
<u>Phantom</u>	<u>Validation plane</u>
<u>Device Position</u>	<u>Body</u>
<u>Band</u>	<u>Band5 WCDMA850</u>
<u>Channels</u>	<u>Middle</u>
<u>Signal</u>	<u>WCDMA (Crest factor: 1.0)</u>
<u>ConvF</u>	<u>2.34</u>

B. SAR Measurement Results

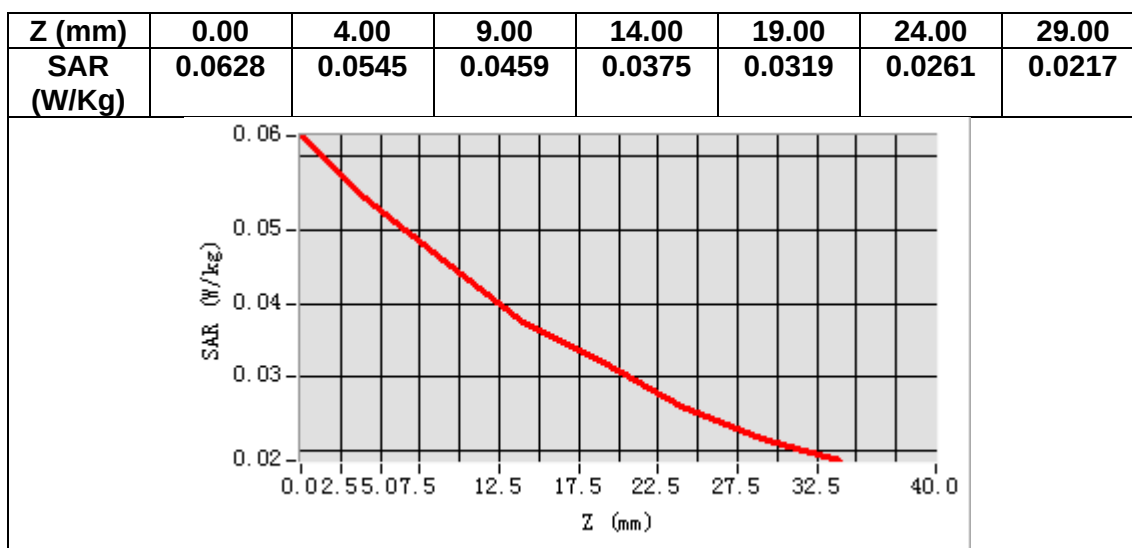
Frequency (MHz)	836.400000
Relative permittivity (real part)	41.878227
Relative permittivity (imaginary part)	19.731071
Conductivity (S/m)	0.916837
Variation (%)	-0.800000



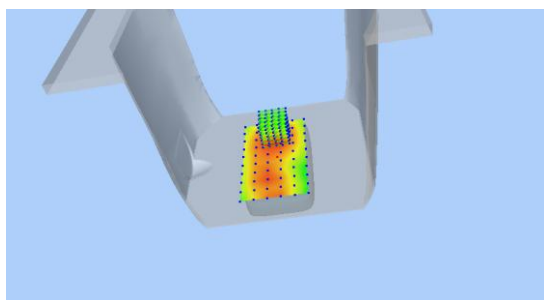
Maximum location: X=0.00, Y=33.00

SAR Peak: 0.07 W/kg

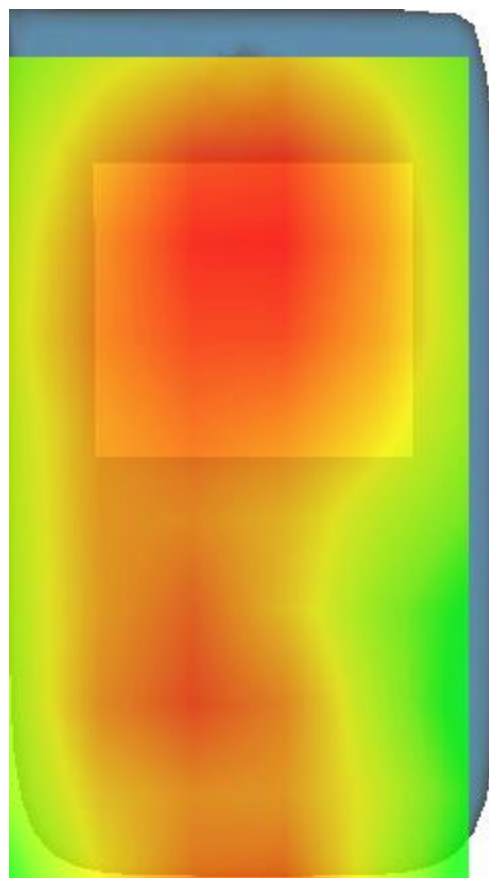
SAR 10g (W/Kg)	0.041959
SAR 1g (W/Kg)	0.053455



3D screen shot



Hot spot position



MEASUREMENT 11

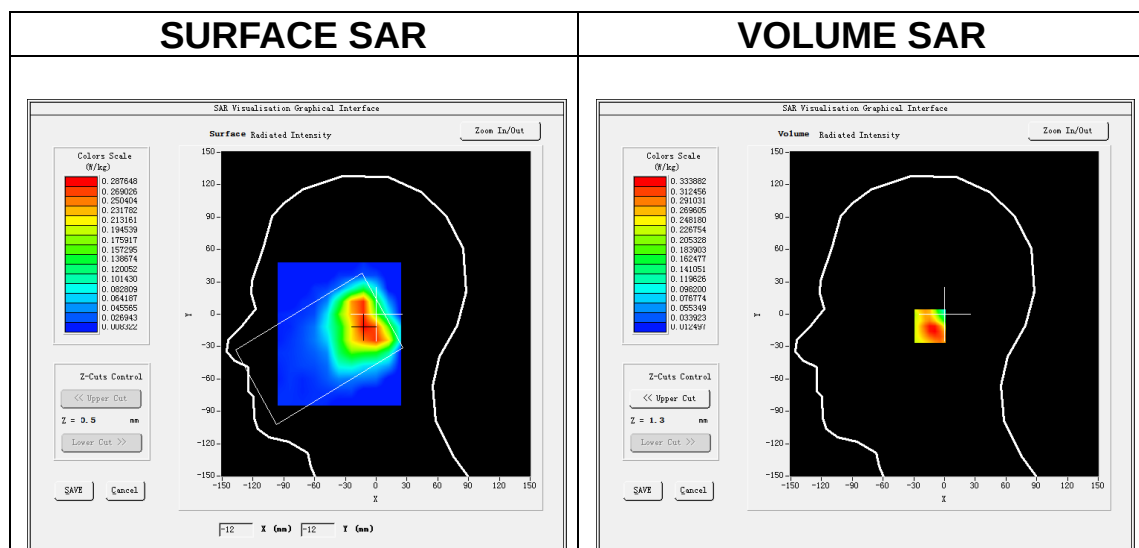
Date of measurement: 9/10/2024

A. Experimental conditions.

<u>Area Scan</u>	<u>dx=12mm dy=12mm, h= 5.00 mm</u>
<u>ZoomScan</u>	<u>7x7x7,dx=5mm dy=5mm dz=5mm</u>
<u>Phantom</u>	<u>Left head</u>
<u>Device Position</u>	<u>Cheek</u>
<u>Band</u>	<u>IEEE 802.11b ISM</u>
<u>Channels</u>	<u>High</u>
<u>Signal</u>	<u>IEEE802.11b (Crest factor: 1.0)</u>
<u>ConvF</u>	<u>2.74</u>

B. SAR Measurement Results

Frequency (MHz)	2462.000000
Relative permittivity (real part)	40.015491
Relative permittivity (imaginary part)	13.232491
Conductivity (S/m)	1.791532
Variation (%)	-0.950000



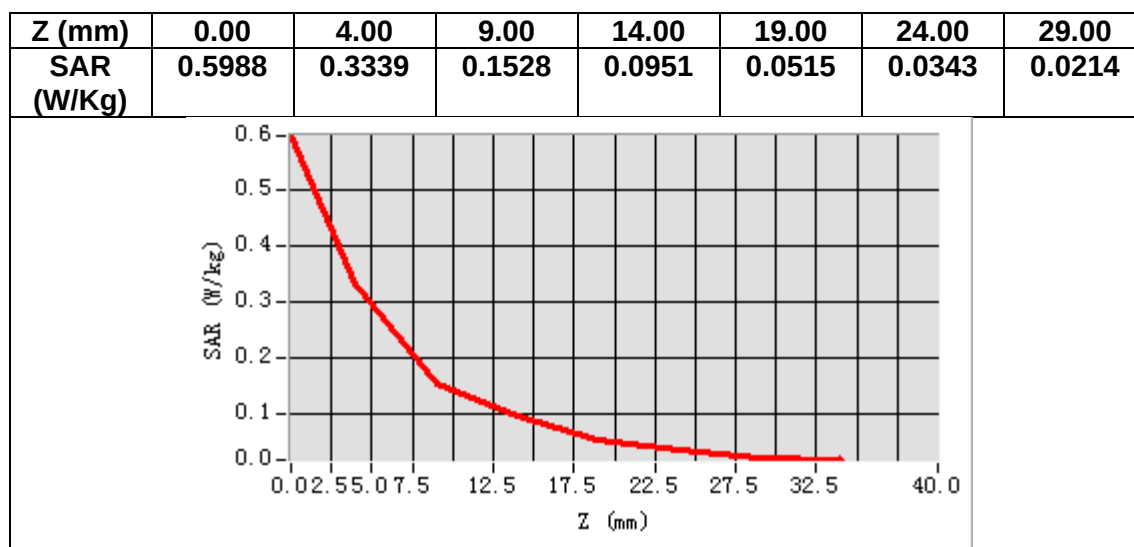
Maximum location: X=-10.00, Y=-11.00

SAR Peak: 0.58 W/kg

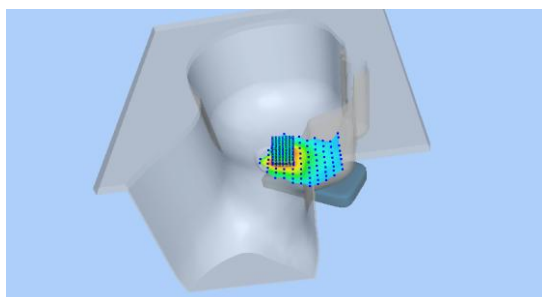
SAR 10g (W/Kg)	0.170458
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SAR 1g (W/Kg)

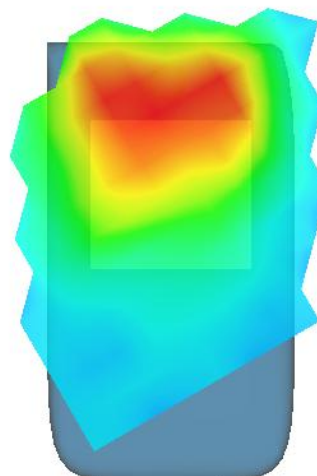
0.323363



3D screen shot



Hot spot position



MEASUREMENT 12

Date of measurement: 9/10/2024

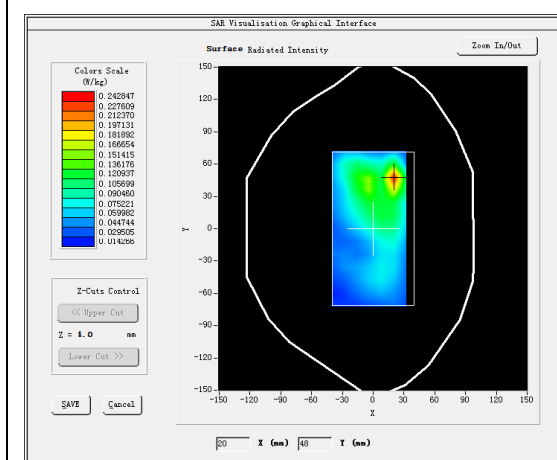
A. Experimental conditions.

<u>Area Scan</u>	<u>dx=12mm dy=12mm, h= 5.00 mm</u>
<u>ZoomScan</u>	<u>7x7x7,dx=5mm dy=5mm dz=5mm</u>
<u>Phantom</u>	<u>Validation plane</u>
<u>Device Position</u>	<u>Body</u>
<u>Band</u>	<u>IEEE 802.11b ISM</u>
<u>Channels</u>	<u>High</u>
<u>Signal</u>	<u>IEEE802.11b (Crest factor: 1.0)</u>
<u>ConvF</u>	<u>2.74</u>

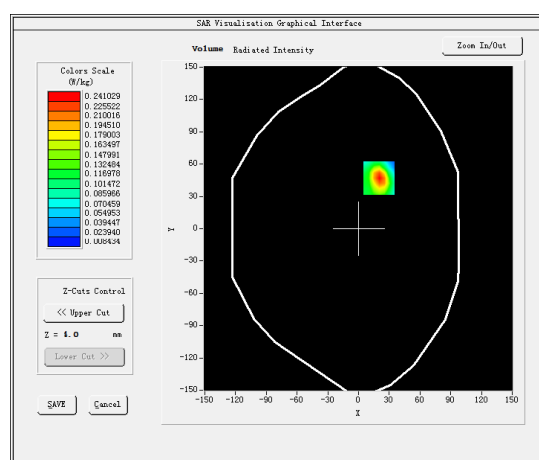
B. SAR Measurement Results

Frequency (MHz)	2462.000000
Relative permittivity (real part)	40.015491
Relative permittivity (imaginary part)	13.232491
Conductivity (S/m)	1.791532
Variation (%)	4.020000

SURFACE SAR



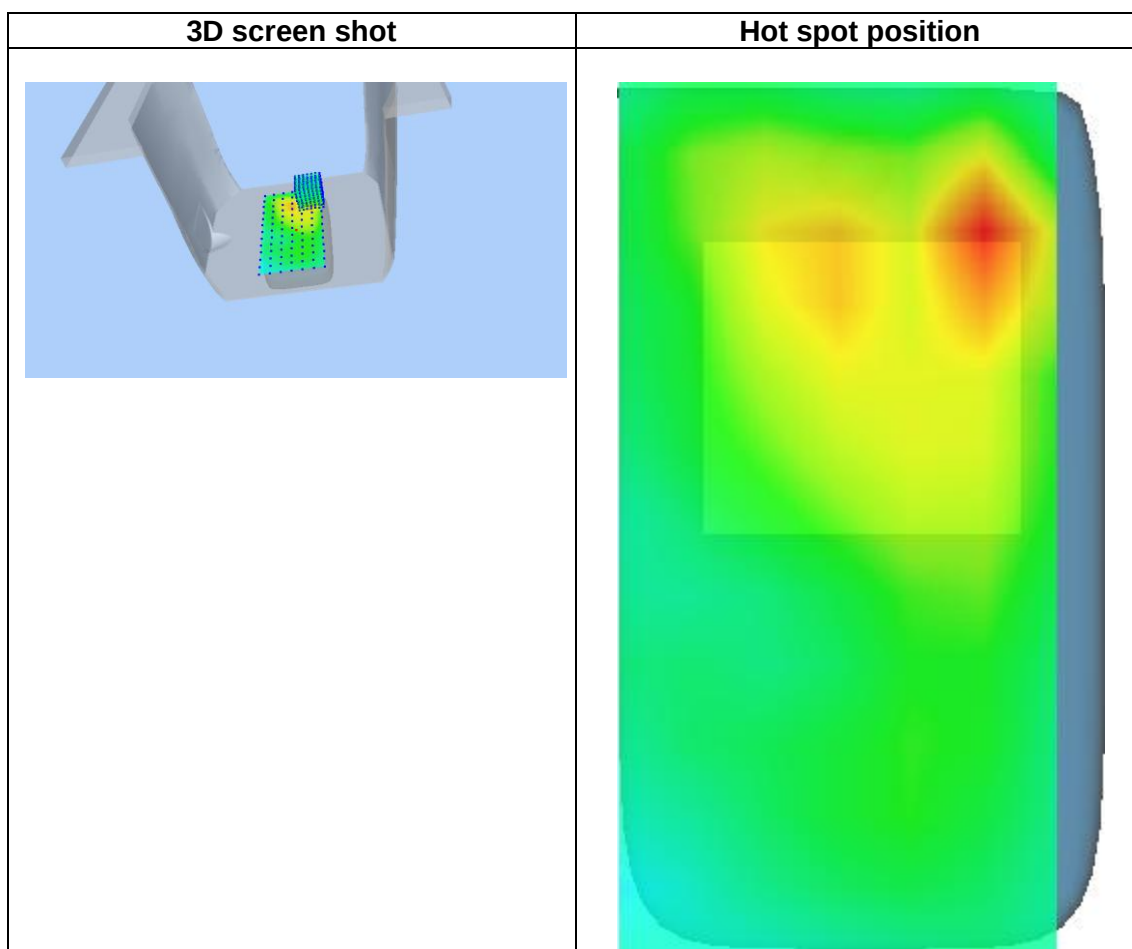
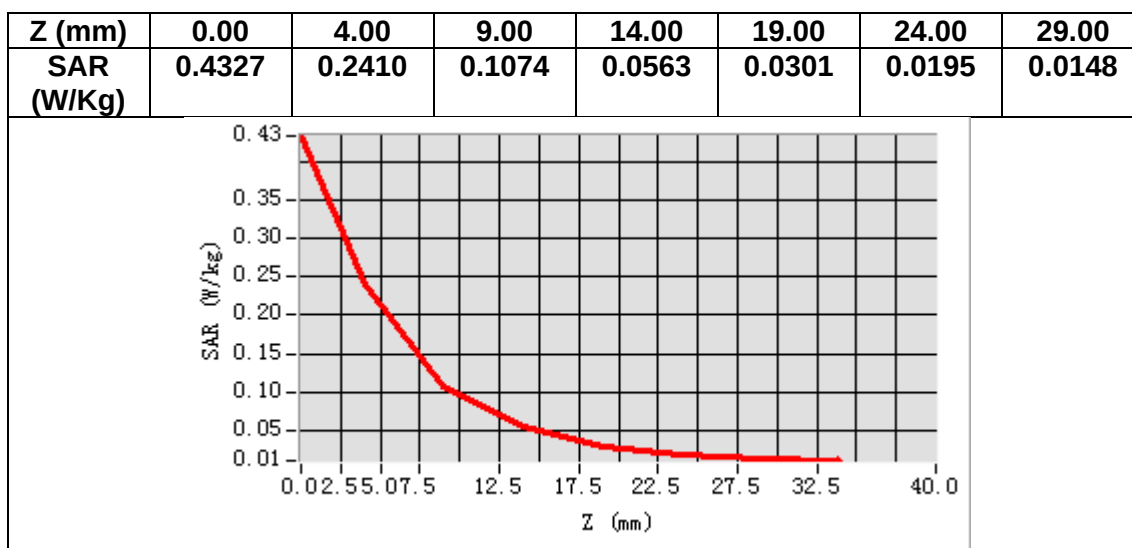
VOLUME SAR



Maximum location: X=20.00, Y=47.00

SAR Peak: 0.43 W/kg

SAR 10g (W/Kg)	0.099682
SAR 1g (W/Kg)	0.220271



MEASUREMENT 13

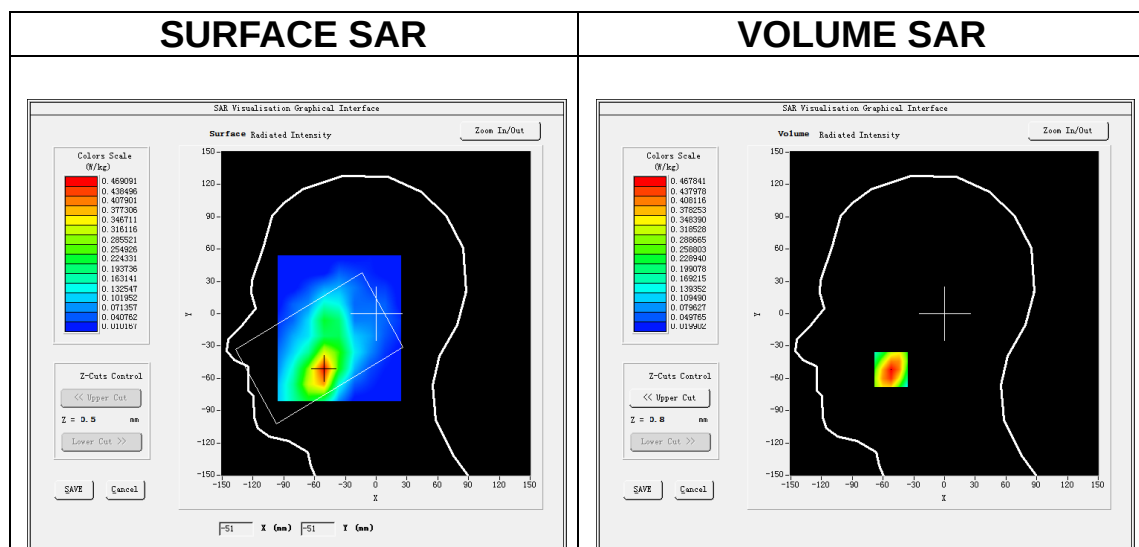
Date of measurement: 16/10/2024

A. Experimental conditions.

<u>Area Scan</u>	<u>dx=15mm dy=15mm, h= 5.00 mm</u>
<u>ZoomScan</u>	<u>5x5x7,dx=8mm dy=8mm dz=5mm</u>
<u>Phantom</u>	<u>Left head</u>
<u>Device Position</u>	<u>Cheek</u>
<u>Band</u>	<u>LTE band 2</u>
<u>Channels</u>	<u>Middle</u>
<u>Signal</u>	<u>LTE (Crest factor: 1.0)</u>
<u>ConvF</u>	<u>2.57</u>

B. SAR Measurement Results

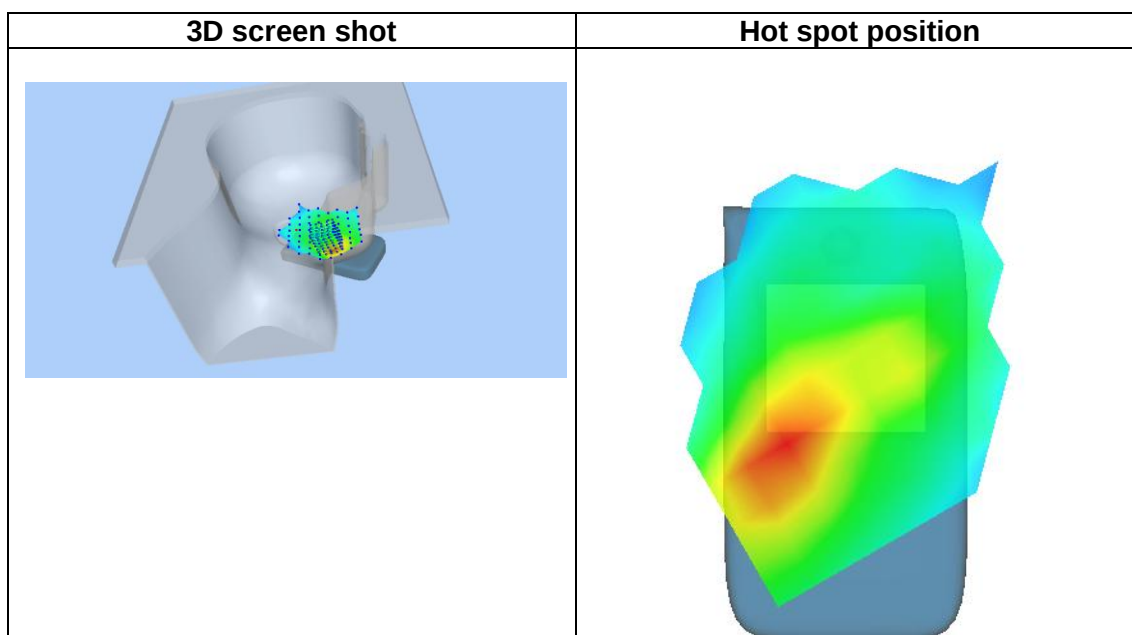
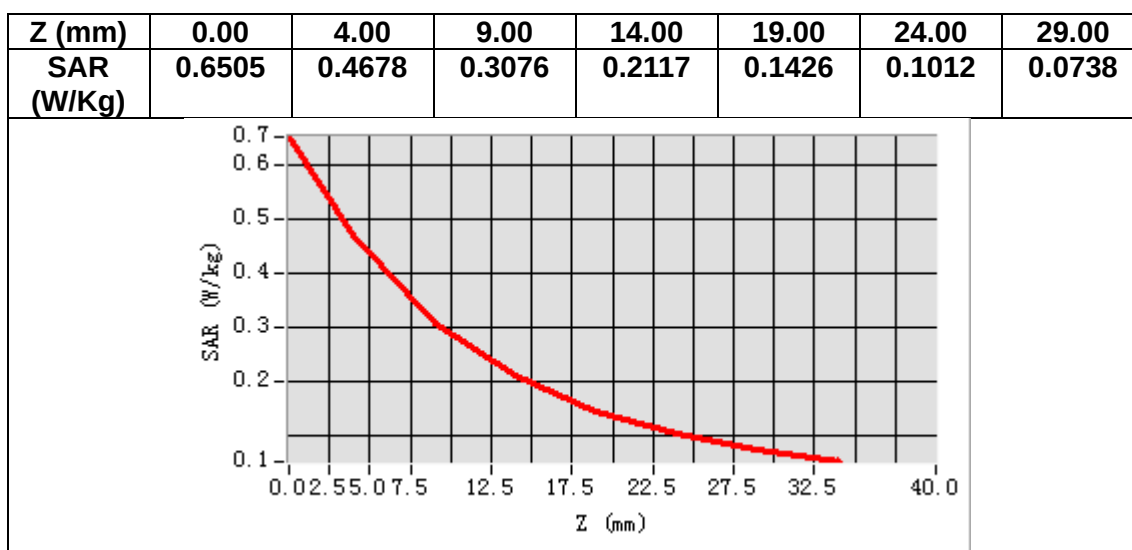
Frequency (MHz)	1880.000000
Relative permittivity (real part)	38.657154
Relative permittivity (imaginary part)	13.872347
Conductivity (S/m)	1.448890
Variation (%)	-0.150000



Maximum location: X=-52.00, Y=-52.00

SAR Peak: 0.68 W/kg

SAR 10g (W/Kg)	0.276953
SAR 1g (W/Kg)	0.459424



MEASUREMENT 14

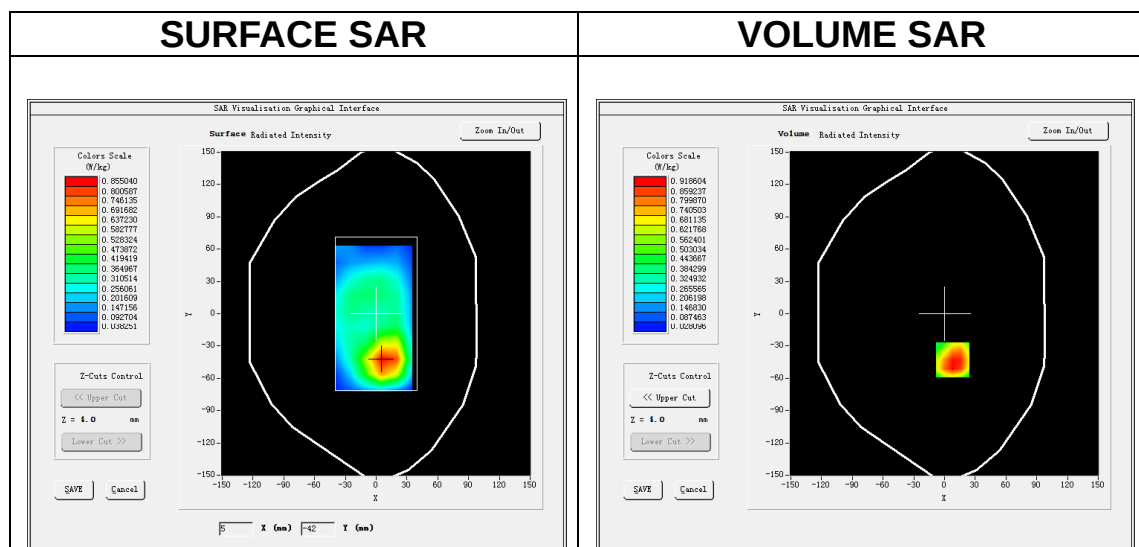
Date of measurement: 16/10/2024

A. Experimental conditions.

<u>Area Scan</u>	<u>dx=15mm dy=15mm, h= 5.00 mm</u>
<u>ZoomScan</u>	<u>5x5x7,dx=8mm dy=8mm dz=5mm</u>
<u>Phantom</u>	<u>Validation plane</u>
<u>Device Position</u>	<u>Body</u>
<u>Band</u>	<u>LTE band 2</u>
<u>Channels</u>	<u>Middle</u>
<u>Signal</u>	<u>LTE (Crest factor: 1.0)</u>
<u>ConvF</u>	<u>2.57</u>

B. SAR Measurement Results

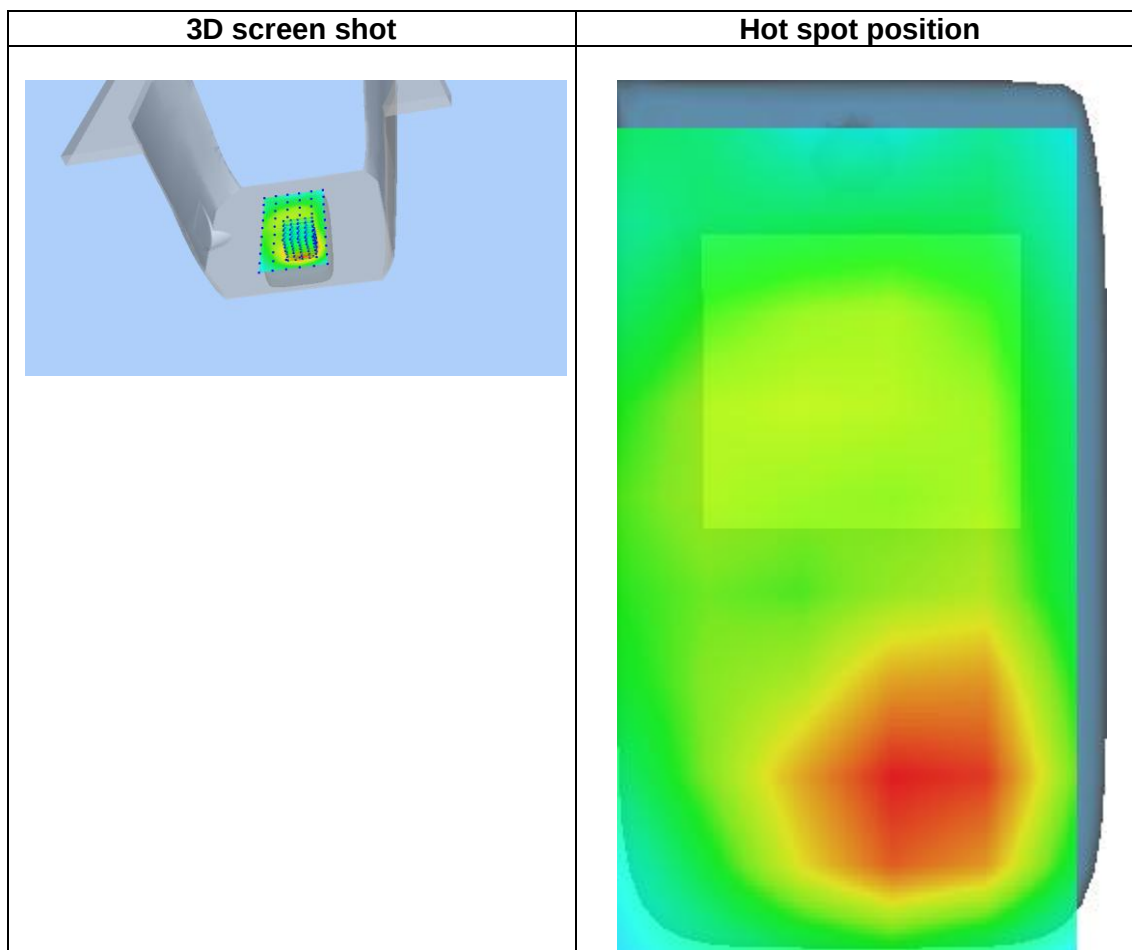
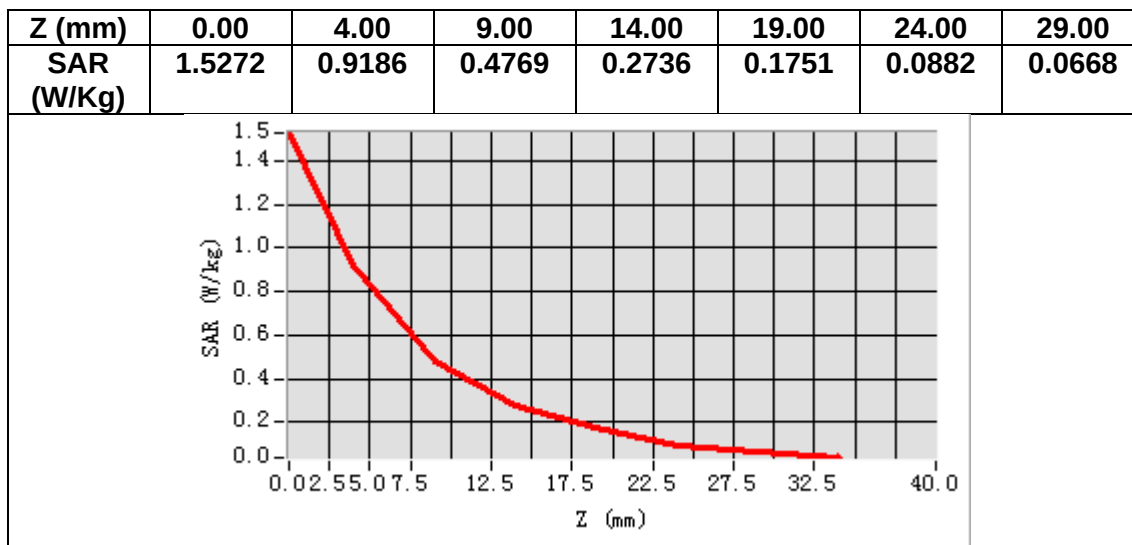
Frequency (MHz)	1880.000000
Relative permittivity (real part)	38.657154
Relative permittivity (imaginary part)	13.872347
Conductivity (S/m)	1.448890
Variation (%)	-1.290000



Maximum location: X=8.00, Y=-43.00

SAR Peak: 1.55 W/kg

SAR 10g (W/Kg)	0.502079
SAR 1g (W/Kg)	0.937503



MEASUREMENT 15

Date of measurement: 10/10/2024

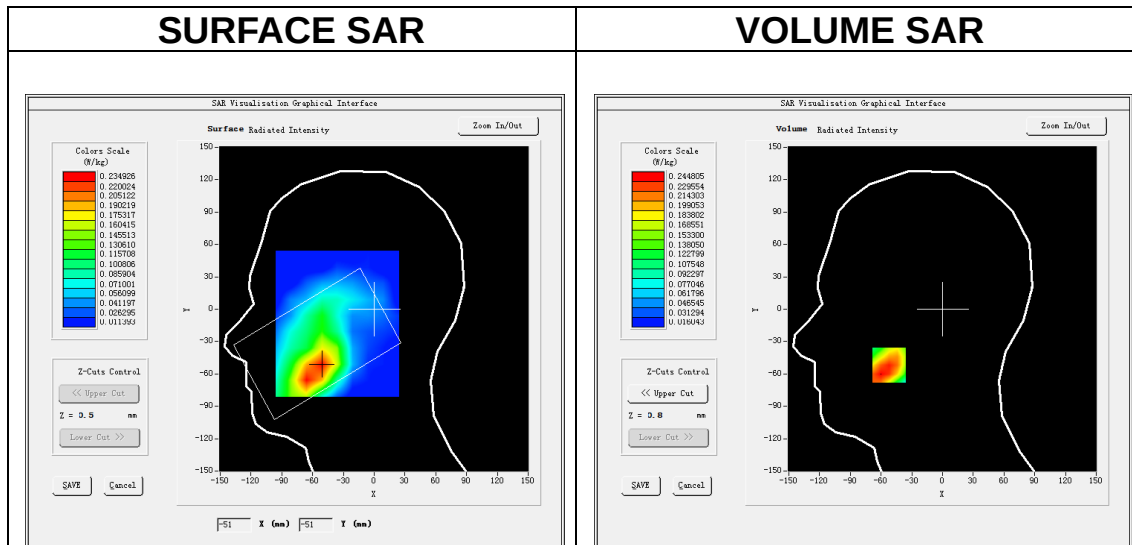
A. Experimental conditions.

<u>Area Scan</u>	<u>dx=15mm dy=15mm, h= 5.00 mm</u>
<u>ZoomScan</u>	<u>5x5x7,dx=8mm dy=8mm dz=5mm</u>
<u>Phantom</u>	<u>Left head</u>
<u>Device Position</u>	<u>Cheek</u>
<u>Band</u>	<u>LTE band 4</u>
<u>Channels</u>	<u>Middle</u>
<u>Signal</u>	<u>LTE (Crest factor: 1.0)</u>
<u>ConvF</u>	<u>2.51</u>

B. SAR Measurement Results

Frequency (MHz)	1732.500000
Relative permittivity (real part)	39.850529
Relative permittivity (imaginary part)	13.750197
Conductivity (S/m)	1.323456
Variation (%)	0.240000

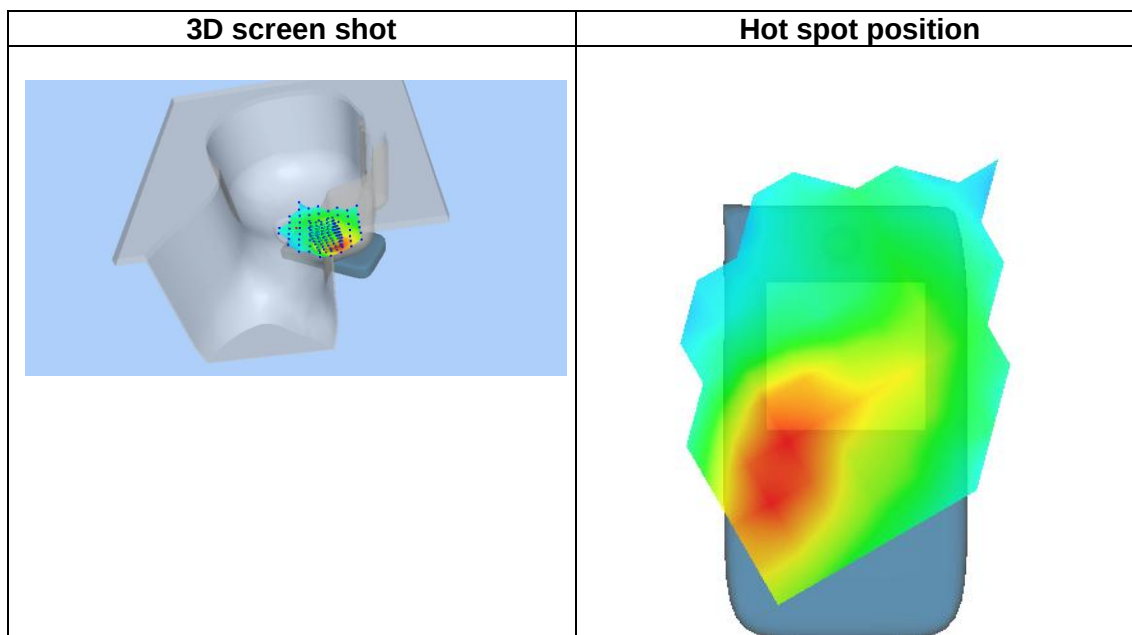
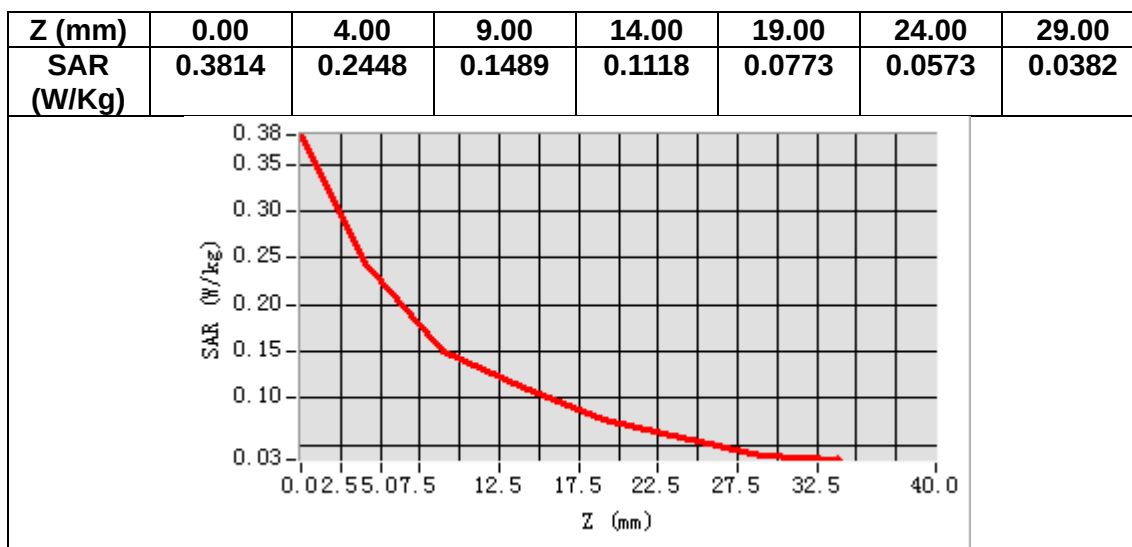
SURFACE SAR



Maximum location: X=-52.00, Y=-52.00

SAR Peak: 0.35 W/kg

SAR 10g (W/Kg)	0.150755
SAR 1g (W/Kg)	0.236726



MEASUREMENT 16

Date of measurement: 10/10/2024

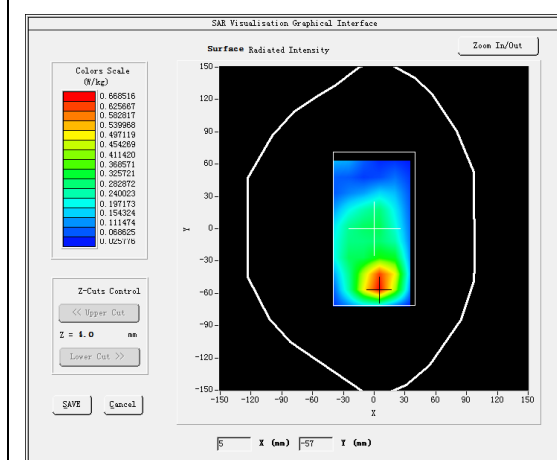
A. Experimental conditions.

<u>Area Scan</u>	<u>dx=15mm dy=15mm, h= 5.00 mm</u>
<u>ZoomScan</u>	<u>5x5x7,dx=8mm dy=8mm dz=5mm</u>
<u>Phantom</u>	<u>Validation plane</u>
<u>Device Position</u>	<u>Body</u>
<u>Band</u>	<u>LTE band 4</u>
<u>Channels</u>	<u>Middle</u>
<u>Signal</u>	<u>LTE (Crest factor: 1.0)</u>
<u>ConvF</u>	<u>2.51</u>

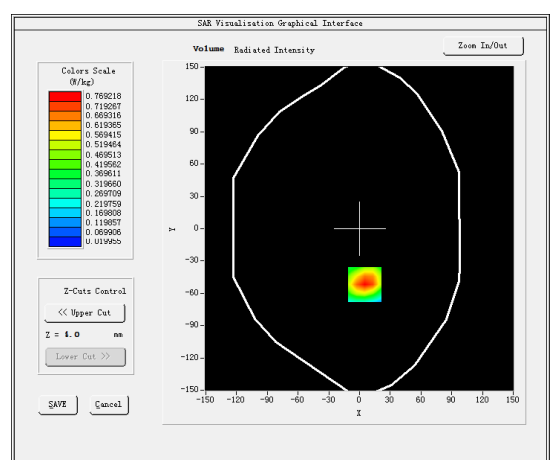
B. SAR Measurement Results

Frequency (MHz)	1732.500000
Relative permittivity (real part)	39.850529
Relative permittivity (imaginary part)	13.750197
Conductivity (S/m)	1.323456
Variation (%)	-2.190000

SURFACE SAR



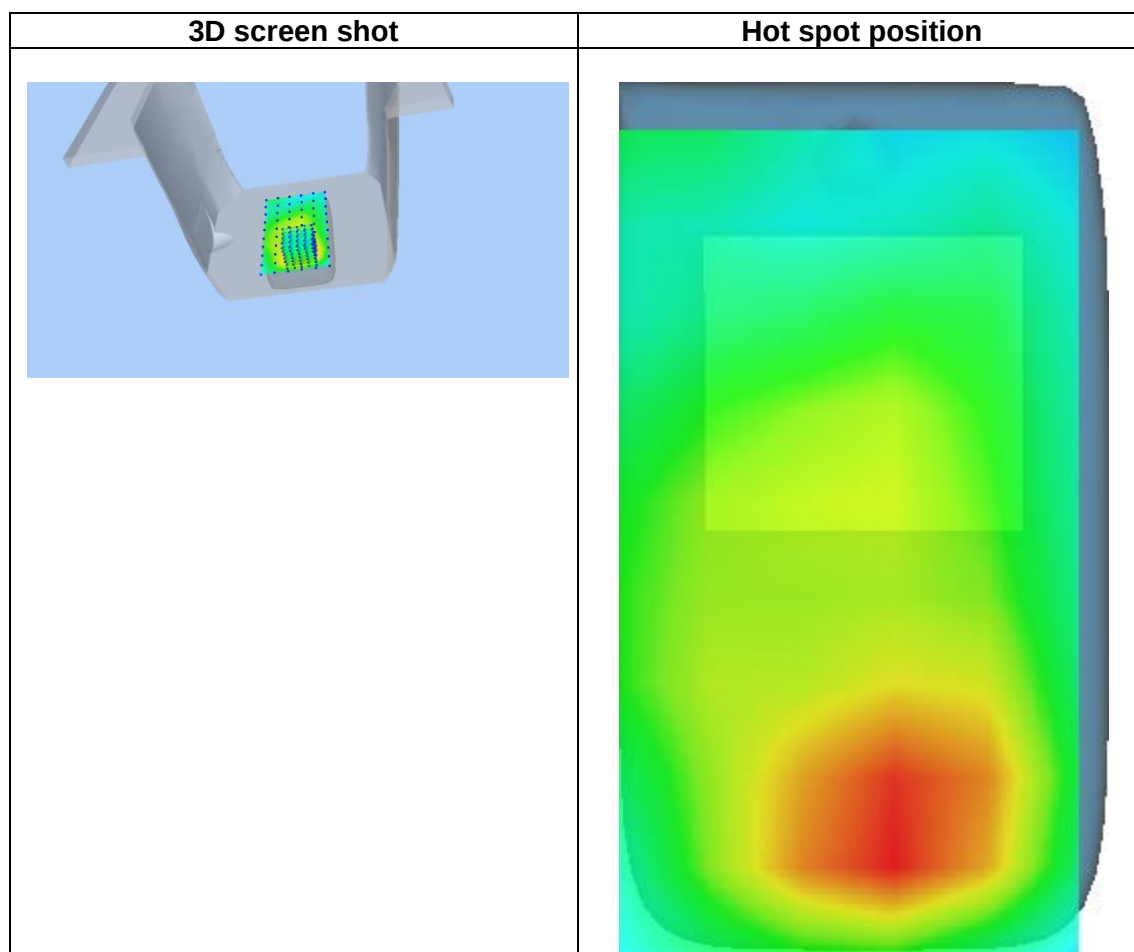
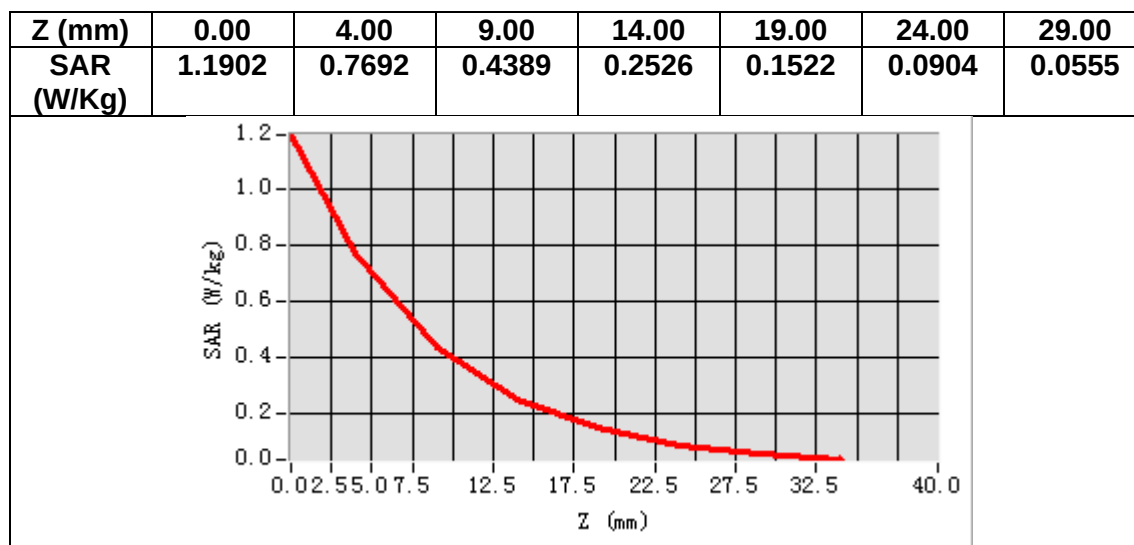
VOLUME SAR



Maximum location: X=5.00, Y=-52.00

SAR Peak: 1.23 W/kg

SAR 10g (W/Kg)	0.391682
SAR 1g (W/Kg)	0.732545



MEASUREMENT 17

Date of measurement: 15/10/2024

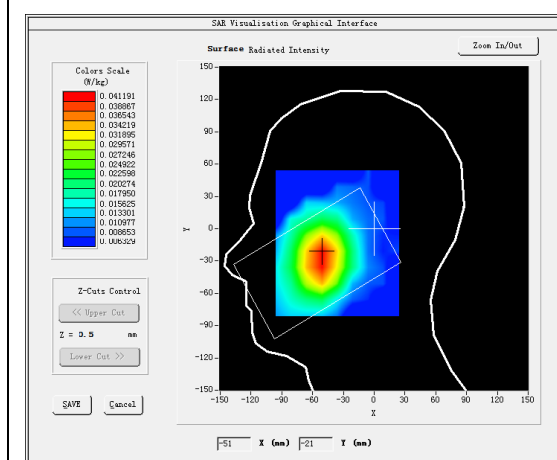
A. Experimental conditions.

<u>Area Scan</u>	<u>dx=15mm dy=15mm, h= 5.00 mm</u>
<u>ZoomScan</u>	<u>5x5x7,dx=8mm dy=8mm dz=5mm</u>
<u>Phantom</u>	<u>Left head</u>
<u>Device Position</u>	<u>Cheek</u>
<u>Band</u>	<u>LTE band 5</u>
<u>Channels</u>	<u>Middle</u>
<u>Signal</u>	<u>LTE (Crest factor: 1.0)</u>
<u>ConvF</u>	<u>2.34</u>

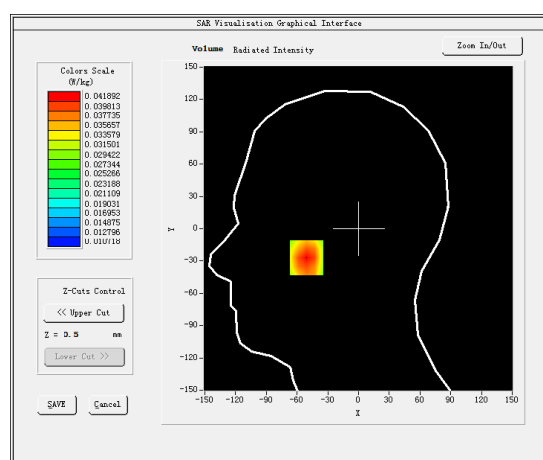
B. SAR Measurement Results

Frequency (MHz)	836.500000
Relative permittivity (real part)	41.880817
Relative permittivity (imaginary part)	19.729731
Conductivity (S/m)	0.916884
Variation (%)	0.280000

SURFACE SAR



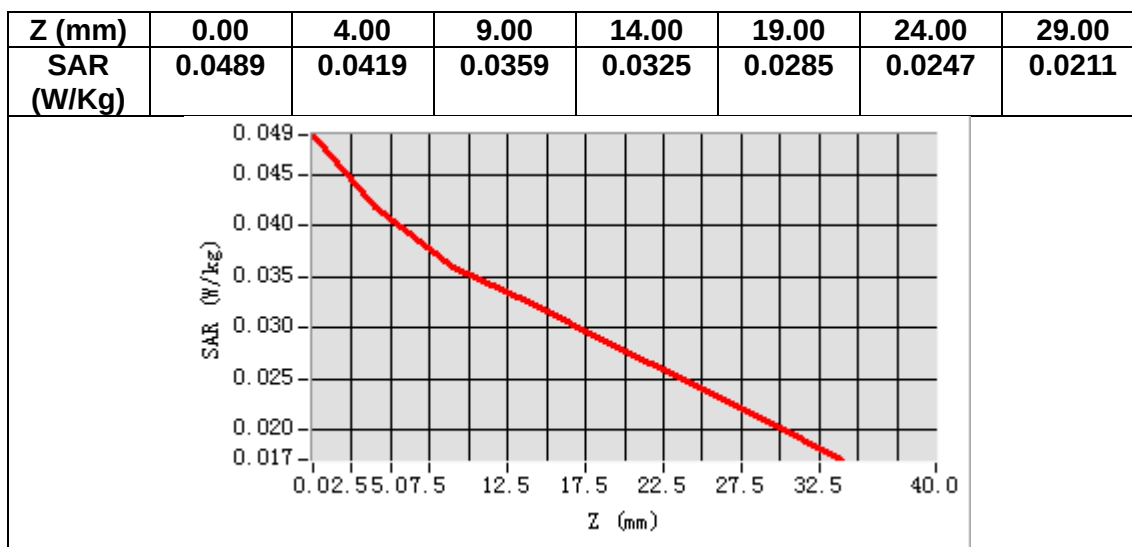
VOLUME SAR



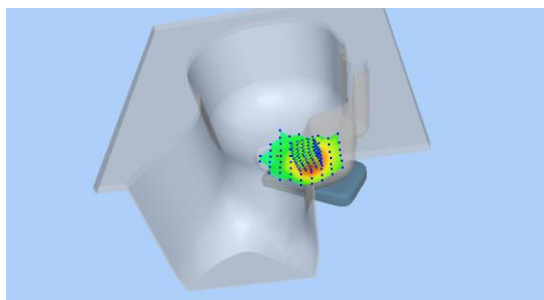
Maximum location: X=-51.00, Y=-27.00

SAR Peak: 0.05 W/kg

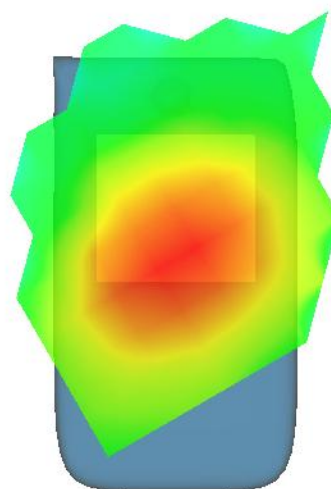
SAR 10g (W/Kg)	0.033594
SAR 1g (W/Kg)	0.041396



3D screen shot



Hot spot position



MEASUREMENT 18

Date of measurement: 15/10/2024

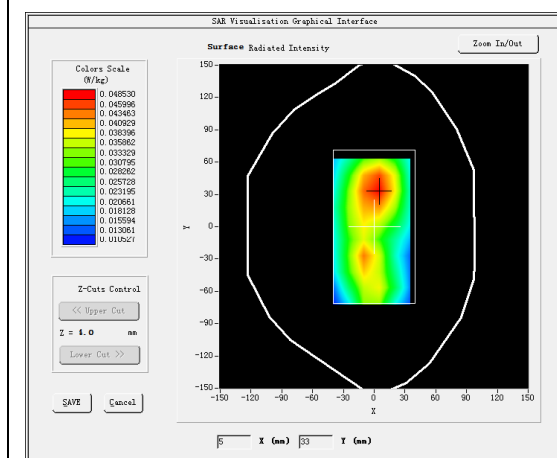
A. Experimental conditions.

<u>Area Scan</u>	<u>dx=15mm dy=15mm, h= 5.00 mm</u>
<u>ZoomScan</u>	<u>5x5x7,dx=8mm dy=8mm dz=5mm</u>
<u>Phantom</u>	<u>Validation plane</u>
<u>Device Position</u>	<u>Body</u>
<u>Band</u>	<u>LTE band 5</u>
<u>Channels</u>	<u>Middle</u>
<u>Signal</u>	<u>LTE (Crest factor: 1.0)</u>
<u>ConvF</u>	<u>2.34</u>

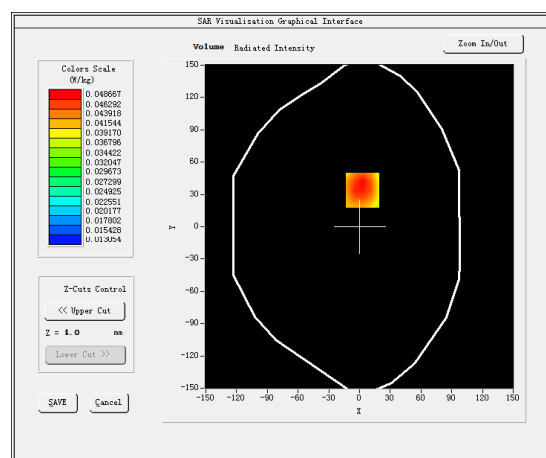
B. SAR Measurement Results

Frequency (MHz)	836.500000
Relative permittivity (real part)	41.880817
Relative permittivity (imaginary part)	19.729731
Conductivity (S/m)	0.916884
Variation (%)	1.480000

SURFACE SAR



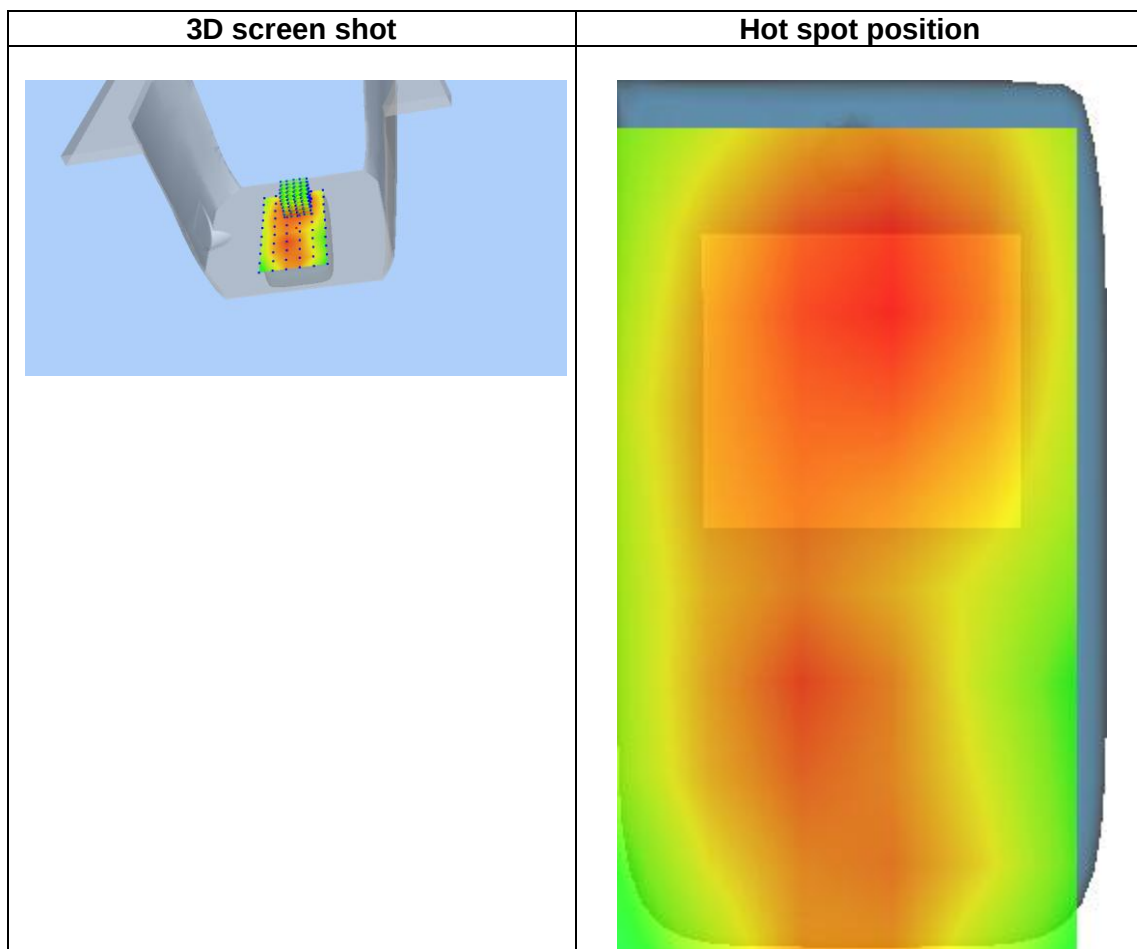
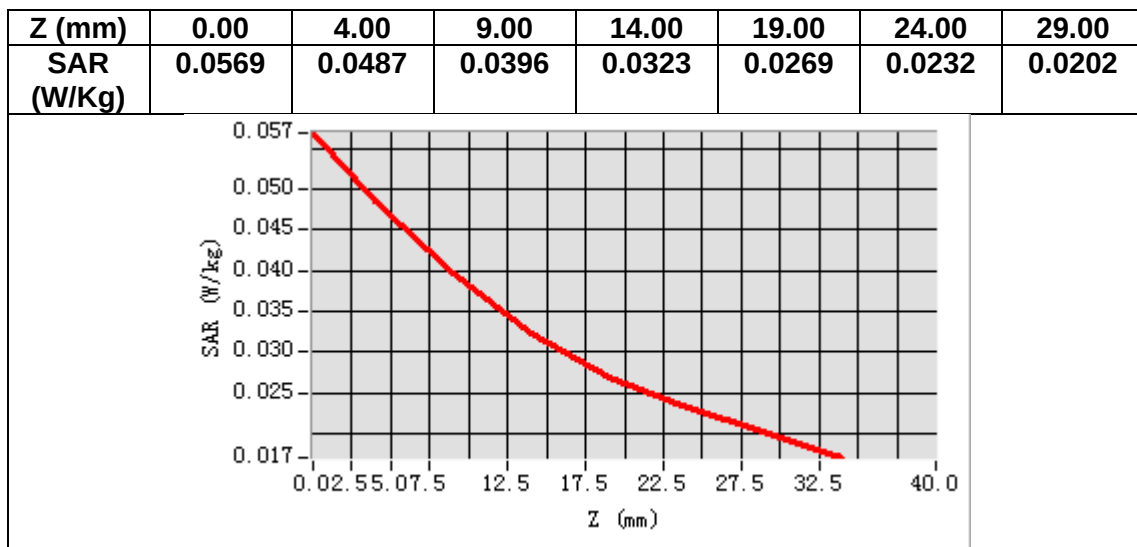
VOLUME SAR



Maximum location: X=3.00, Y=34.00

SAR Peak: 0.06 W/kg

SAR 10g (W/Kg)	0.037714
SAR 1g (W/Kg)	0.048239



MEASUREMENT 19

Date of measurement: 17/10/2024

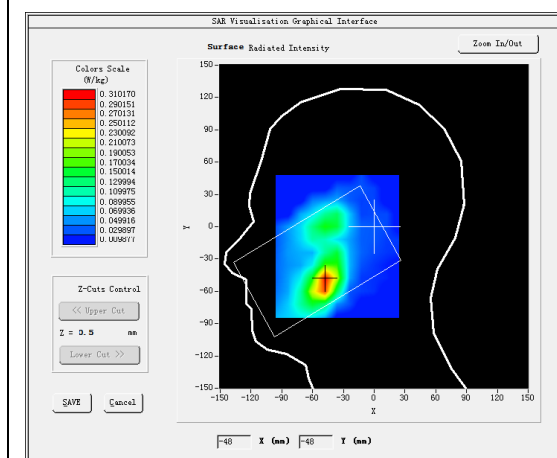
A. Experimental conditions.

<u>Area Scan</u>	<u>dx=12mm dy=12mm, h= 5.00 mm</u>
<u>ZoomScan</u>	<u>7x7x7,dx=5mm dy=5mm dz=5mm</u>
<u>Phantom</u>	<u>Left head</u>
<u>Device Position</u>	<u>Cheek</u>
<u>Band</u>	<u>LTE band 7</u>
<u>Channels</u>	<u>Middle</u>
<u>Signal</u>	<u>LTE (Crest factor: 1.0)</u>
<u>ConvF</u>	<u>2.51</u>

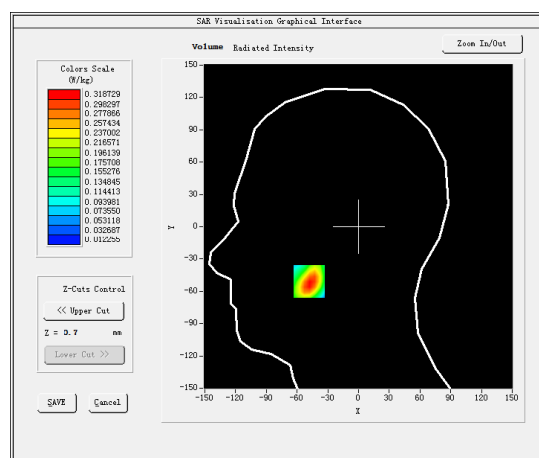
B. SAR Measurement Results

Frequency (MHz)	2535.000000
Relative permittivity (real part)	39.245743
Relative permittivity (imaginary part)	13.866988
Conductivity (S/m)	1.952934
Variation (%)	-0.340000

SURFACE SAR



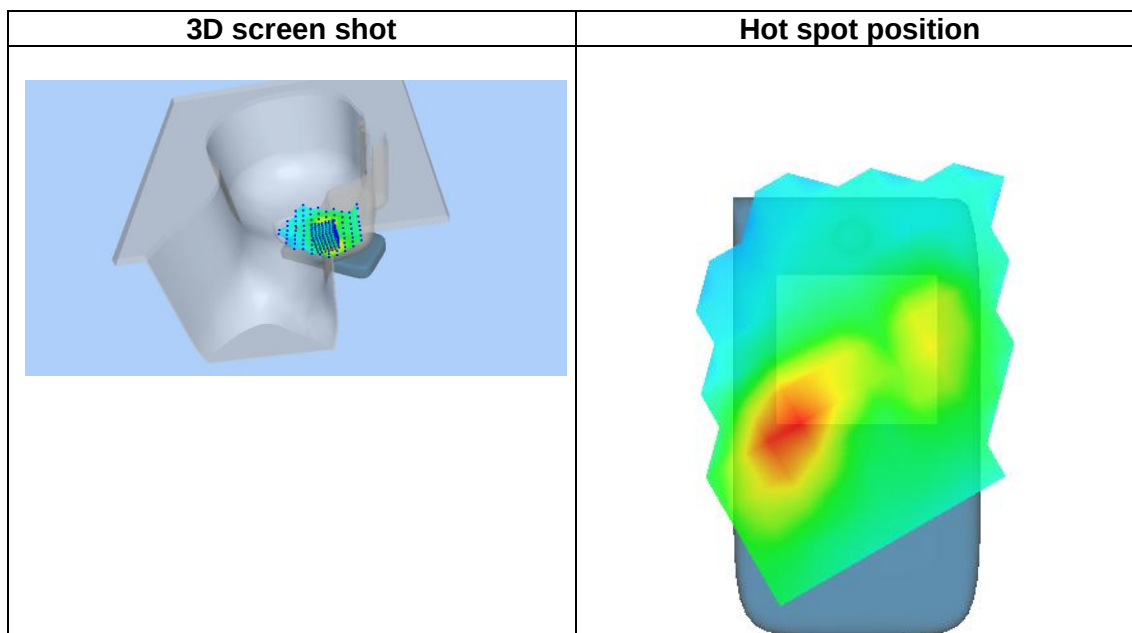
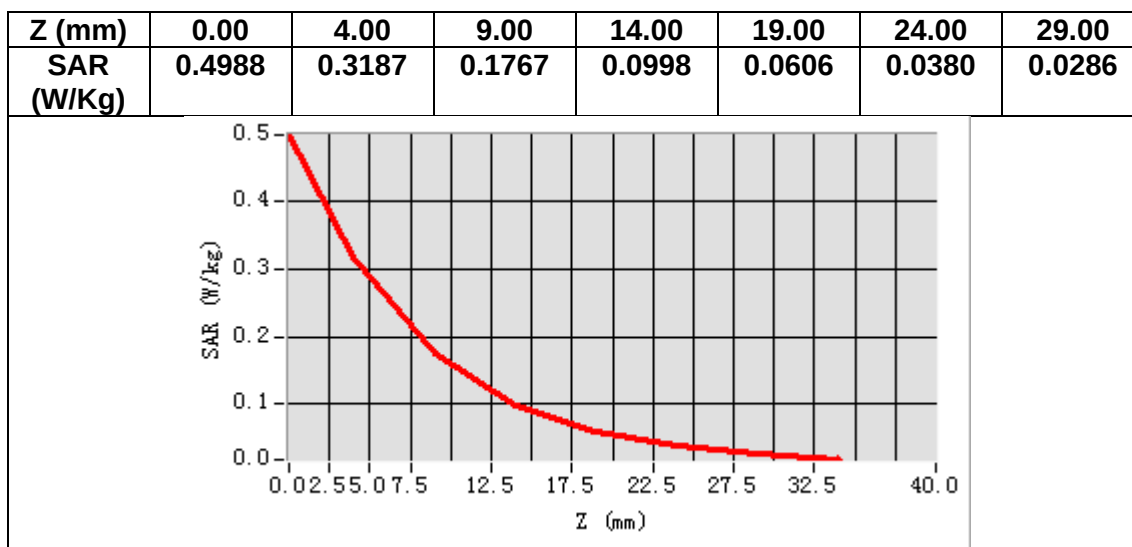
VOLUME SAR



Maximum location: X=-48.00, Y=-51.00

SAR Peak: 0.51 W/kg

SAR 10g (W/Kg)	0.155518
SAR 1g (W/Kg)	0.301981



MEASUREMENT 20

Date of measurement: 17/10/2024

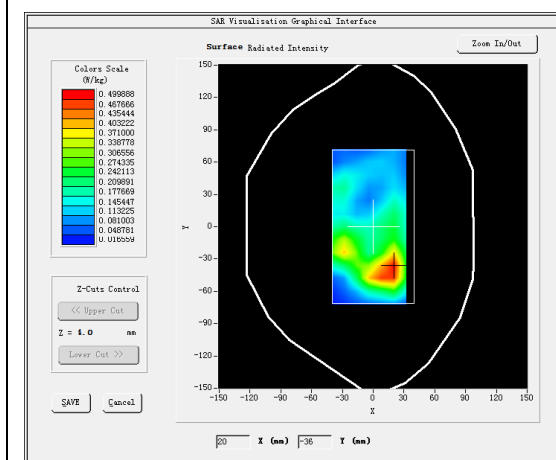
A. Experimental conditions.

<u>Area Scan</u>	<u>dx=12mm dy=12mm, h= 5.00 mm</u>
<u>ZoomScan</u>	<u>7x7x7,dx=5mm dy=5mm dz=5mm</u>
<u>Phantom</u>	<u>Validation plane</u>
<u>Device Position</u>	<u>Body</u>
<u>Band</u>	<u>LTE band 7</u>
<u>Channels</u>	<u>Middle</u>
<u>Signal</u>	<u>LTE (Crest factor: 1.0)</u>
<u>ConvF</u>	<u>2.51</u>

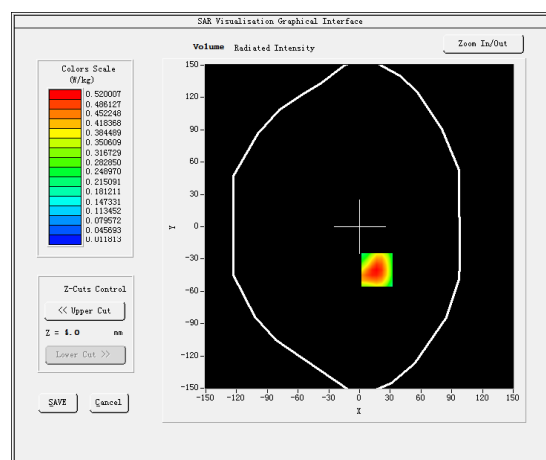
B. SAR Measurement Results

Frequency (MHz)	2535.000000
Relative permittivity (real part)	39.245743
Relative permittivity (imaginary part)	13.866988
Conductivity (S/m)	1.952934
Variation (%)	0.540000

SURFACE SAR



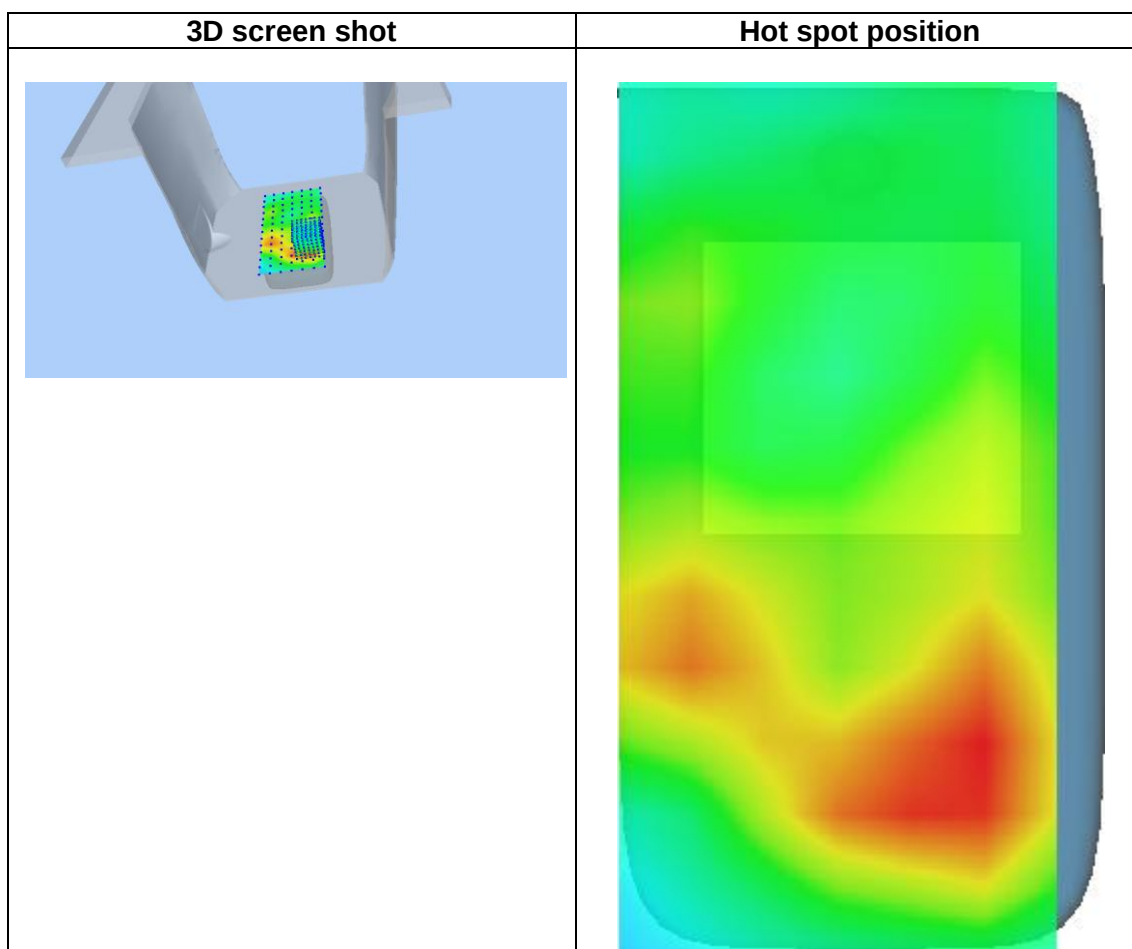
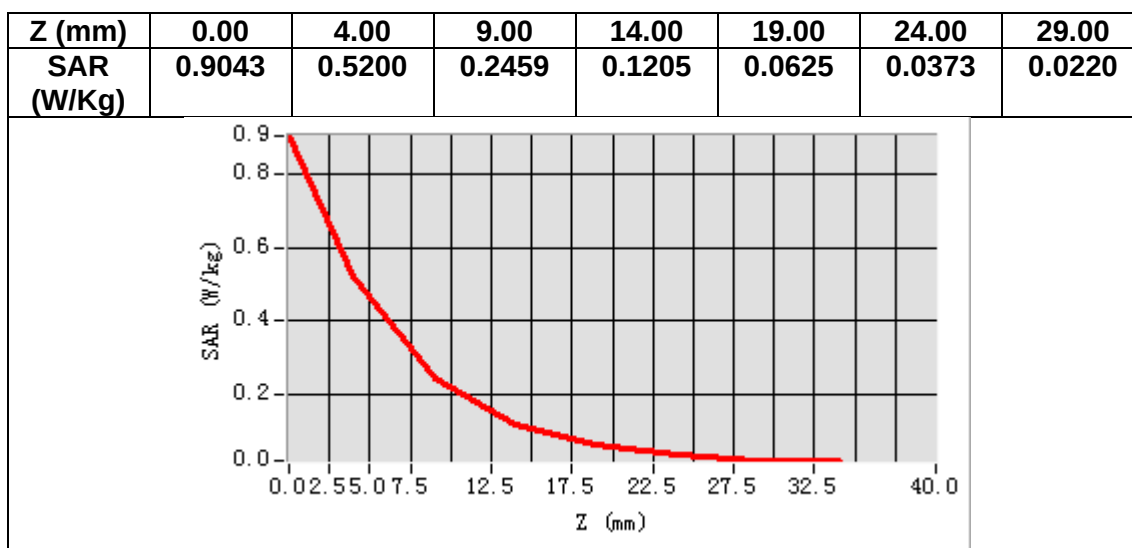
VOLUME SAR



Maximum location: X=17.00, Y=-40.00

SAR Peak: 0.90 W/kg

SAR 10g (W/Kg)	0.258655
SAR 1g (W/Kg)	0.506250



MEASUREMENT 21

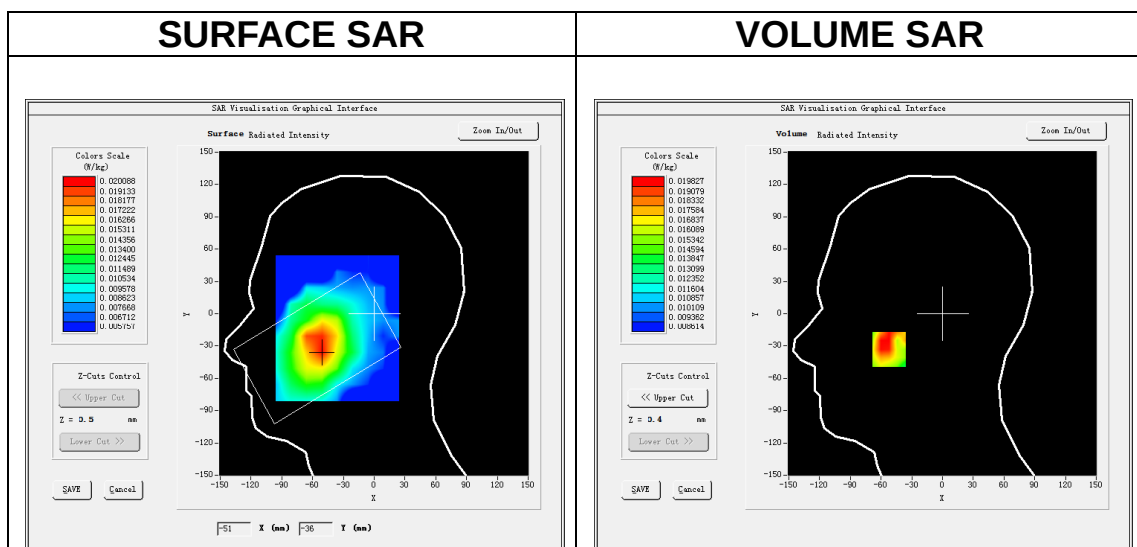
Date of measurement: 14/10/2024

A. Experimental conditions.

<u>Area Scan</u>	<u>dx=15mm dy=15mm, h= 5.00 mm</u>
<u>ZoomScan</u>	<u>5x5x7,dx=8mm dy=8mm dz=5mm</u>
<u>Phantom</u>	<u>Left head</u>
<u>Device Position</u>	<u>Cheek</u>
<u>Band</u>	<u>LTE band 12</u>
<u>Channels</u>	<u>Middle</u>
<u>Signal</u>	<u>LTE (Crest factor: 1.0)</u>
<u>ConvF</u>	<u>2.42</u>

B. SAR Measurement Results

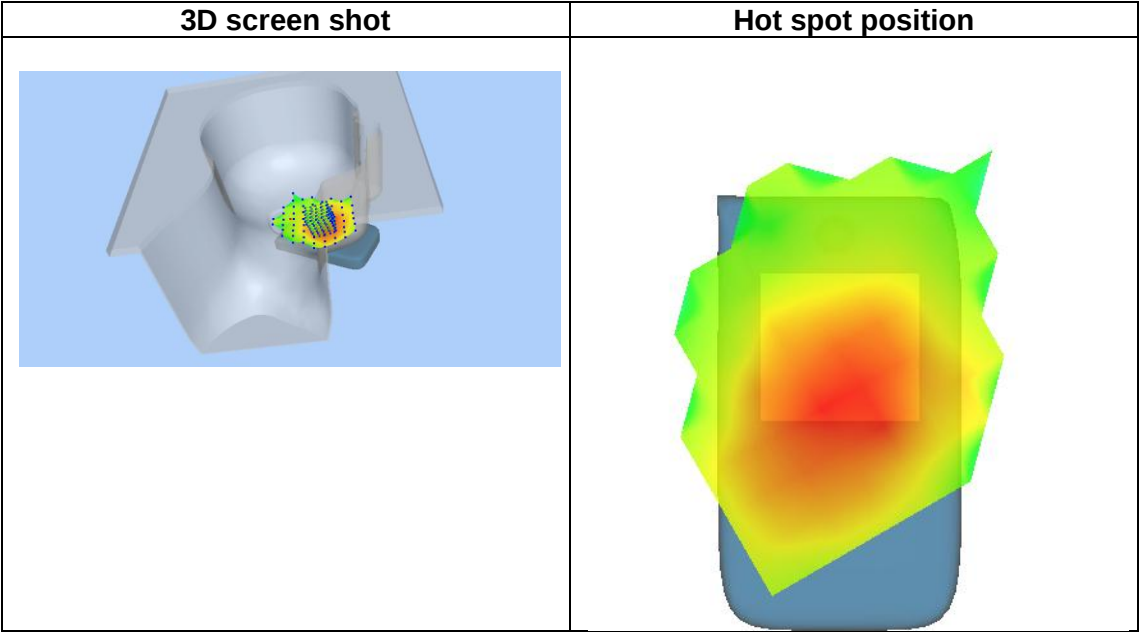
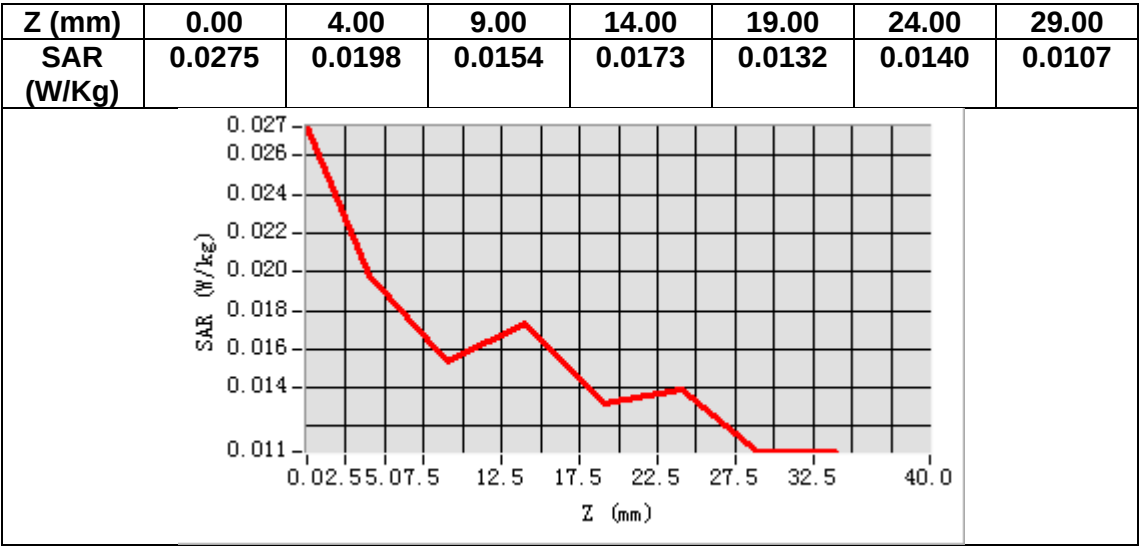
Frequency (MHz)	707.500000
Relative permittivity (real part)	41.079533
Relative permittivity (imaginary part)	21.855495
Conductivity (S/m)	0.859042
Variation (%)	1.930000



Maximum location: X=-52.00, Y=-33.00

SAR Peak: 0.03 W/kg

SAR 10g (W/Kg)	0.016662
SAR 1g (W/Kg)	0.020520



MEASUREMENT 22

Date of measurement: 14/10/2024

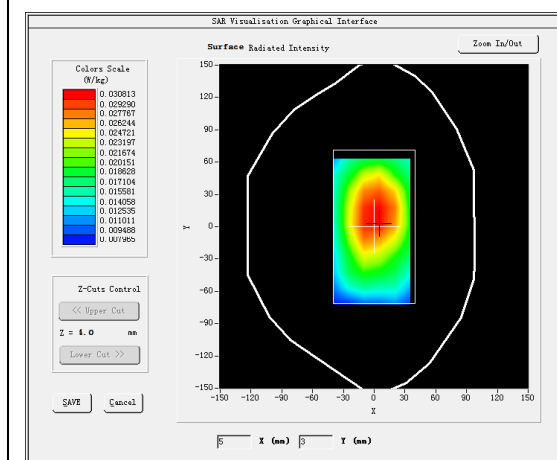
A. Experimental conditions.

<u>Area Scan</u>	<u>dx=15mm dy=15mm, h= 5.00 mm</u>
<u>ZoomScan</u>	<u>5x5x7,dx=8mm dy=8mm dz=5mm</u>
<u>Phantom</u>	<u>Validation plane</u>
<u>Device Position</u>	<u>Body</u>
<u>Band</u>	<u>LTE band 12</u>
<u>Channels</u>	<u>Middle</u>
<u>Signal</u>	<u>LTE (Crest factor: 1.0)</u>
<u>ConvF</u>	<u>2.42</u>

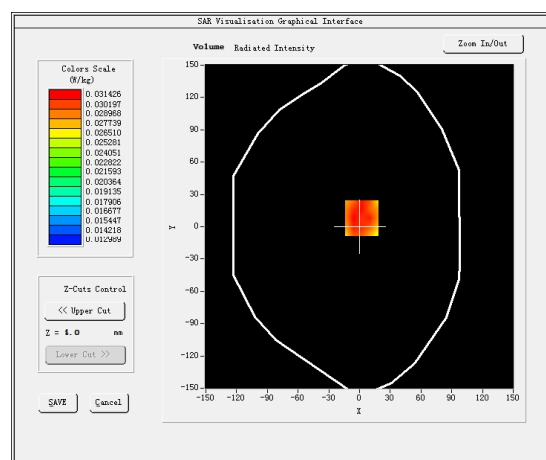
B. SAR Measurement Results

Frequency (MHz)	707.500000
Relative permittivity (real part)	41.079533
Relative permittivity (imaginary part)	21.855495
Conductivity (S/m)	0.859042
Variation (%)	0.590000

SURFACE SAR



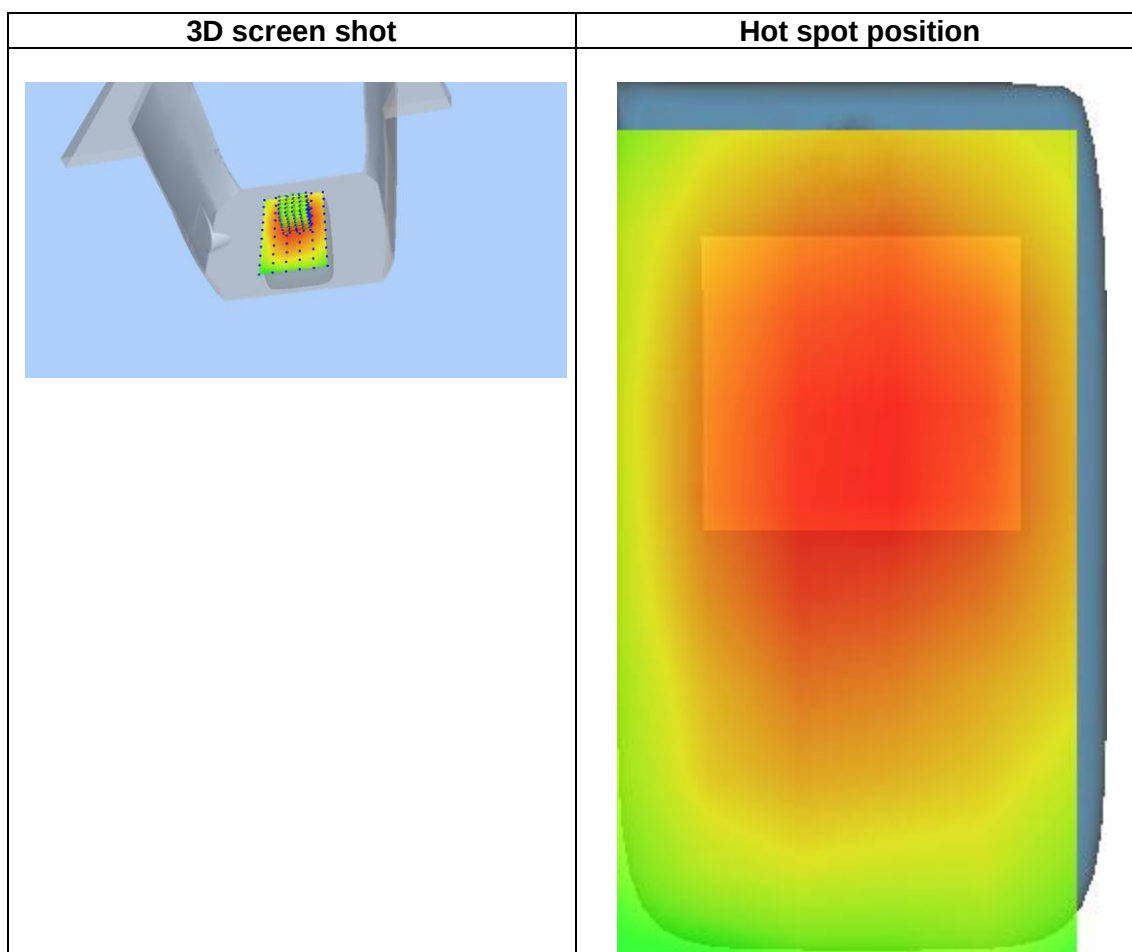
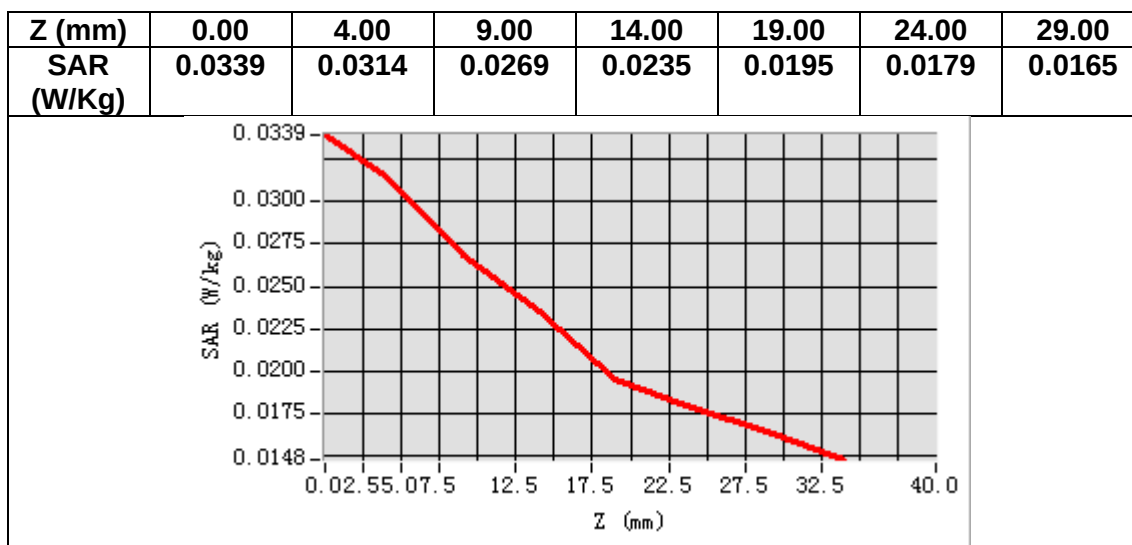
VOLUME SAR



Maximum location: X=2.00, Y=8.00

SAR Peak: 0.04 W/kg

SAR 10g (W/Kg)	0.025436
SAR 1g (W/Kg)	0.030575



MEASUREMENT 23

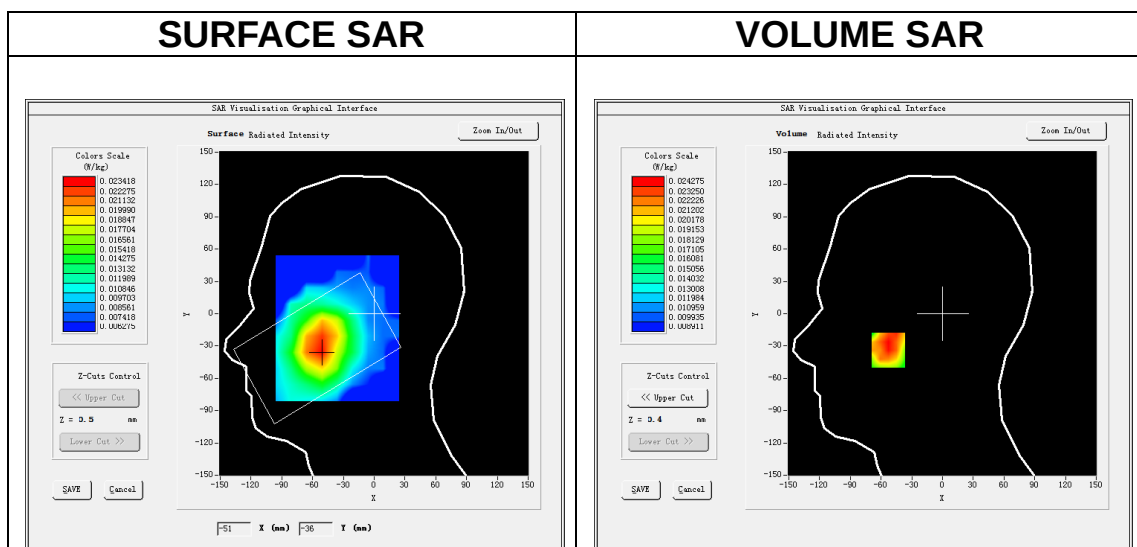
Date of measurement: 14/10/2024

A. Experimental conditions.

<u>Area Scan</u>	<u>dx=15mm dy=15mm, h= 5.00 mm</u>
<u>ZoomScan</u>	<u>5x5x7,dx=8mm dy=8mm dz=5mm</u>
<u>Phantom</u>	<u>Left head</u>
<u>Device Position</u>	<u>Cheek</u>
<u>Band</u>	<u>LTE band 13</u>
<u>Channels</u>	<u>Middle</u>
<u>Signal</u>	<u>LTE (Crest factor: 1.0)</u>
<u>ConvF</u>	<u>2.42</u>

B. SAR Measurement Results

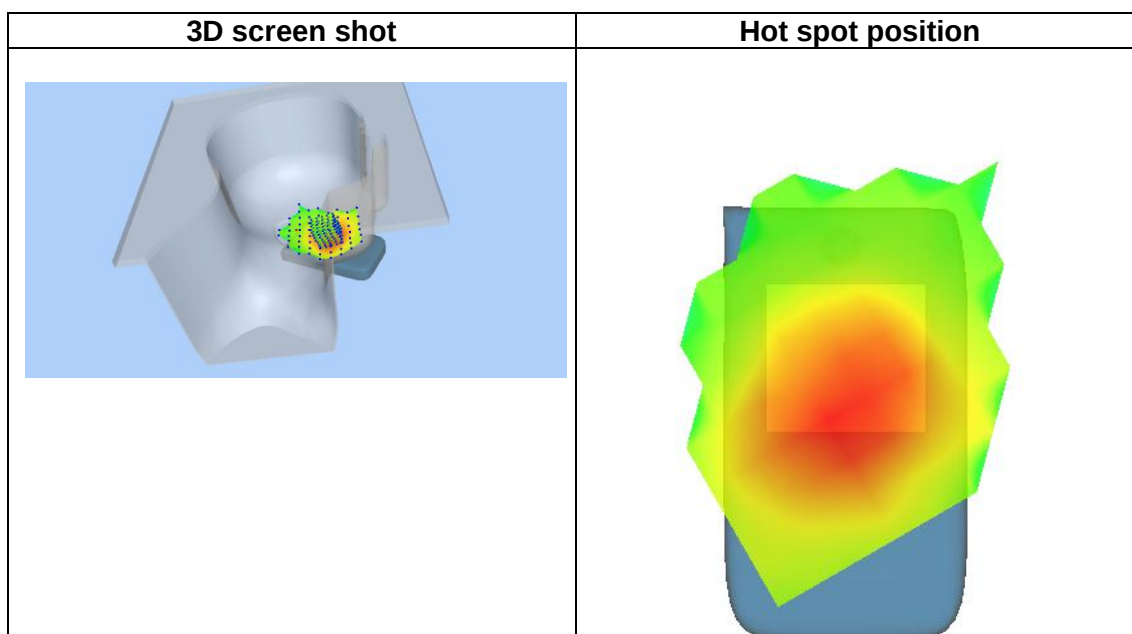
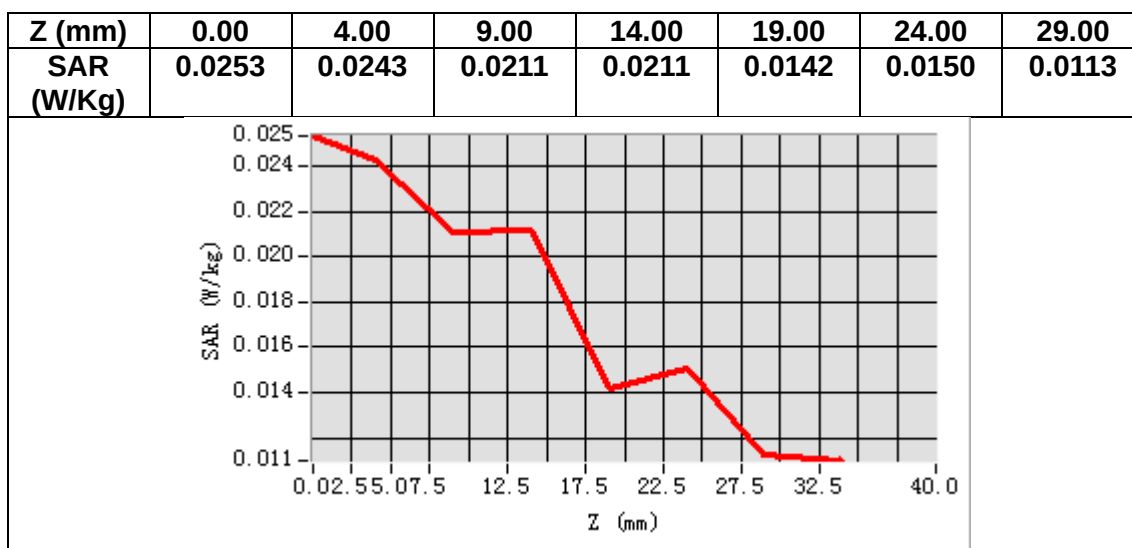
Frequency (MHz)	782.000000
Relative permittivity (real part)	40.191882
Relative permittivity (imaginary part)	21.113046
Conductivity (S/m)	0.917245
Variation (%)	2.250000



Maximum location: X=-53.00, Y=-34.00

SAR Peak: 0.03 W/kg

SAR 10g (W/Kg)	0.019760
SAR 1g (W/Kg)	0.023432



MEASUREMENT 24

Date of measurement: 14/10/2024

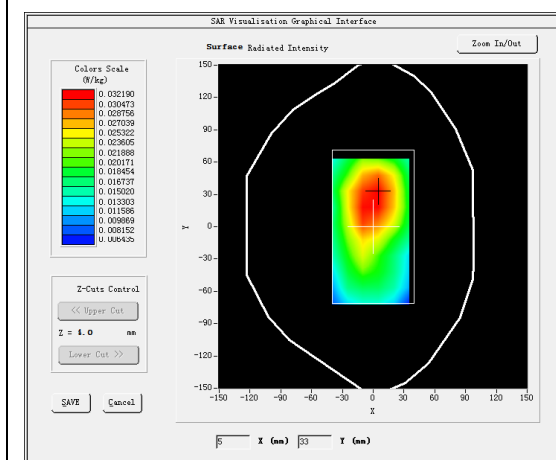
A. Experimental conditions.

<u>Area Scan</u>	<u>dx=15mm dy=15mm, h= 5.00 mm</u>
<u>ZoomScan</u>	<u>5x5x7,dx=8mm dy=8mm dz=5mm</u>
<u>Phantom</u>	<u>Validation plane</u>
<u>Device Position</u>	<u>Body</u>
<u>Band</u>	<u>LTE band 13</u>
<u>Channels</u>	<u>Middle</u>
<u>Signal</u>	<u>LTE (Crest factor: 1.0)</u>
<u>ConvF</u>	<u>2.42</u>

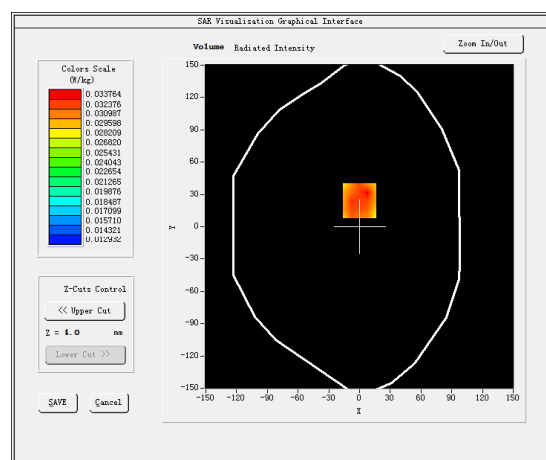
B. SAR Measurement Results

Frequency (MHz)	782.000000
Relative permittivity (real part)	40.191882
Relative permittivity (imaginary part)	21.113046
Conductivity (S/m)	0.917245
Variation (%)	3.640000

SURFACE SAR



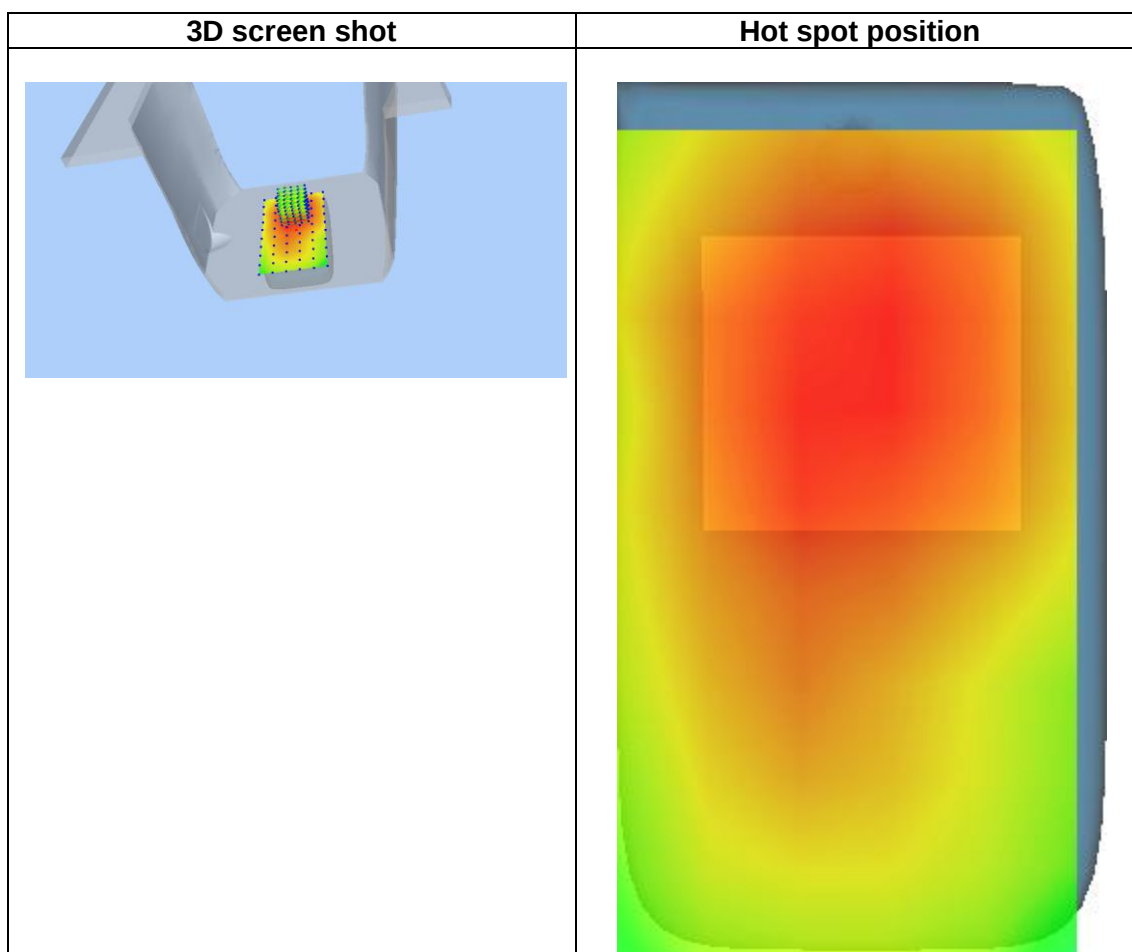
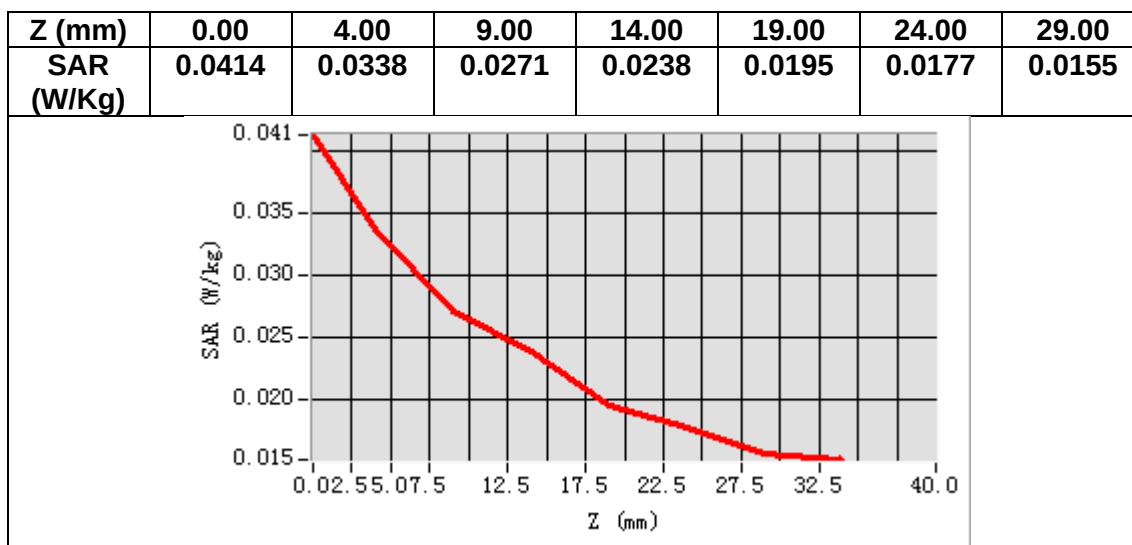
VOLUME SAR



Maximum location: X=0.00, Y=24.00

SAR Peak: 0.04 W/kg

SAR 10g (W/Kg)	0.026435
SAR 1g (W/Kg)	0.032289



MEASUREMENT 25

Date of measurement: 14/10/2024

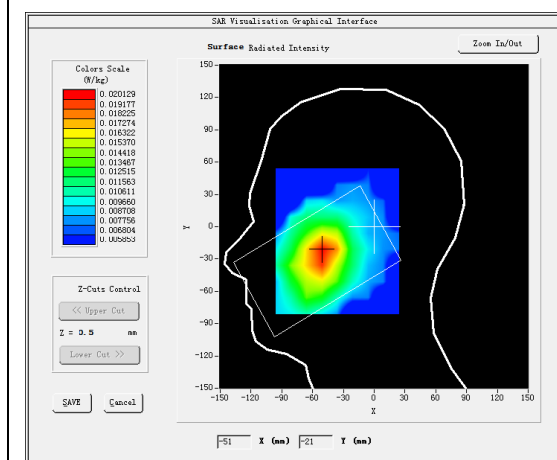
A. Experimental conditions.

<u>Area Scan</u>	<u>dx=15mm dy=15mm, h= 5.00 mm</u>
<u>ZoomScan</u>	<u>5x5x7,dx=8mm dy=8mm dz=5mm</u>
<u>Phantom</u>	<u>Left head</u>
<u>Device Position</u>	<u>Cheek</u>
<u>Band</u>	<u>LTE band 17</u>
<u>Channels</u>	<u>Middle</u>
<u>Signal</u>	<u>LTE (Crest factor: 1.0)</u>
<u>ConvF</u>	<u>2.42</u>

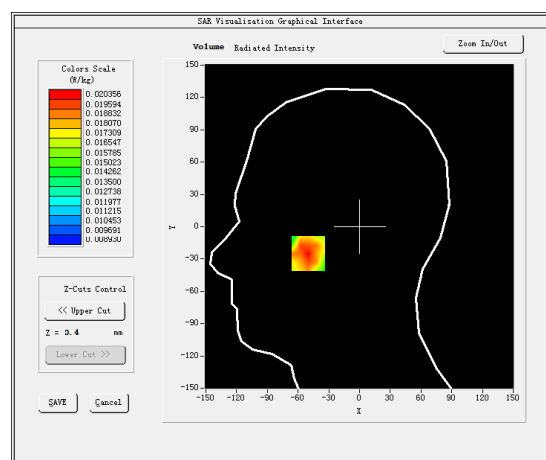
B. SAR Measurement Results

Frequency (MHz)	710.000000
Relative permittivity (real part)	41.064182
Relative permittivity (imaginary part)	21.795946
Conductivity (S/m)	0.859729
Variation (%)	3.660000

SURFACE SAR



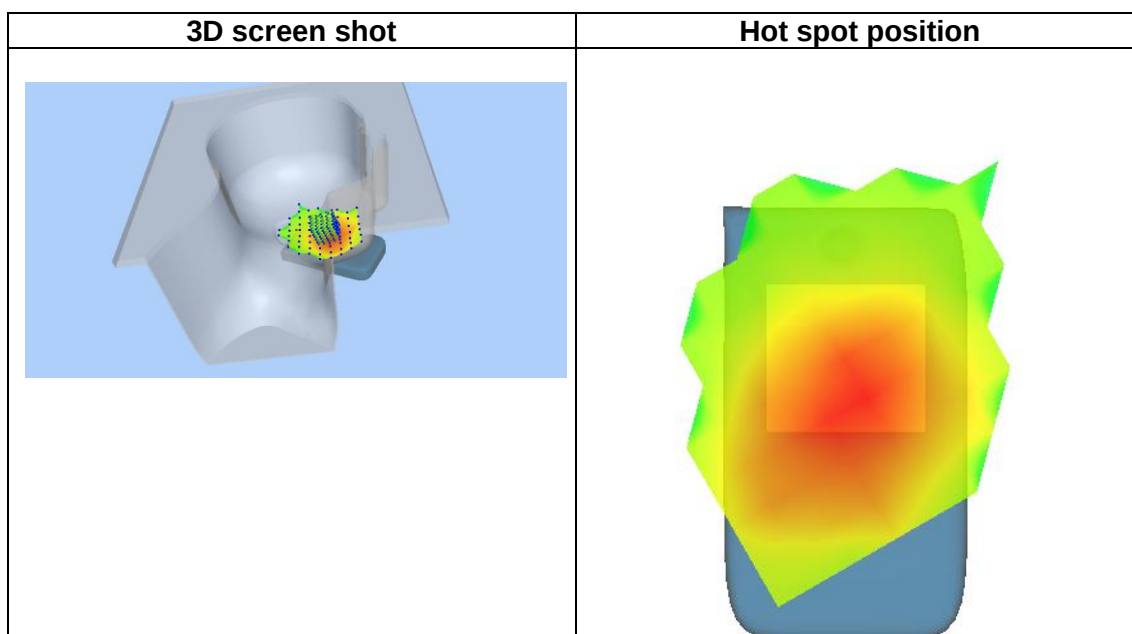
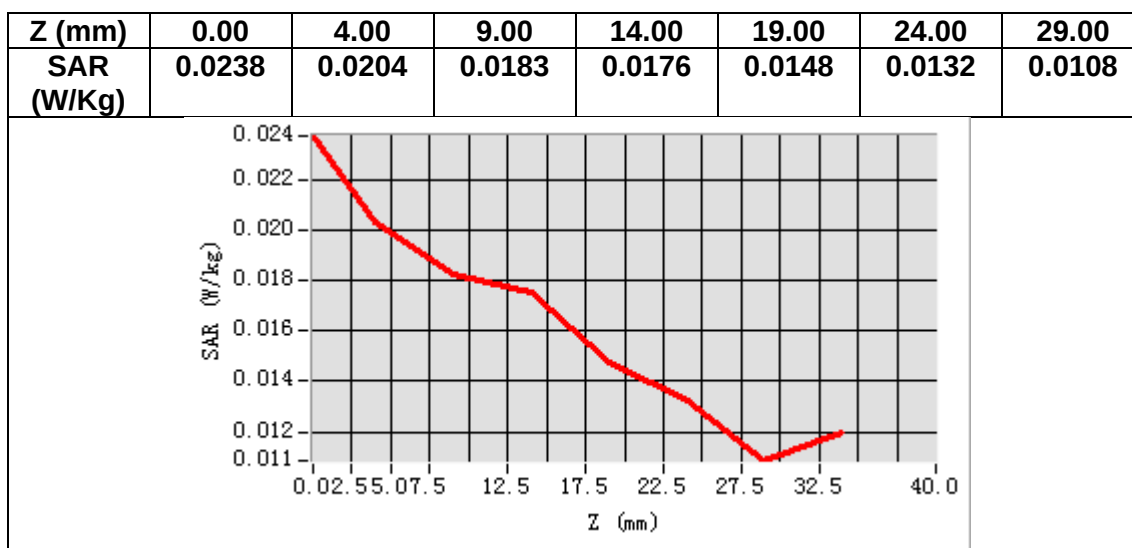
VOLUME SAR



Maximum location: X=-50.00, Y=-25.00

SAR Peak: 0.02 W/kg

SAR 10g (W/Kg)	0.016690
SAR 1g (W/Kg)	0.019984



MEASUREMENT 26

Date of measurement: 14/10/2024

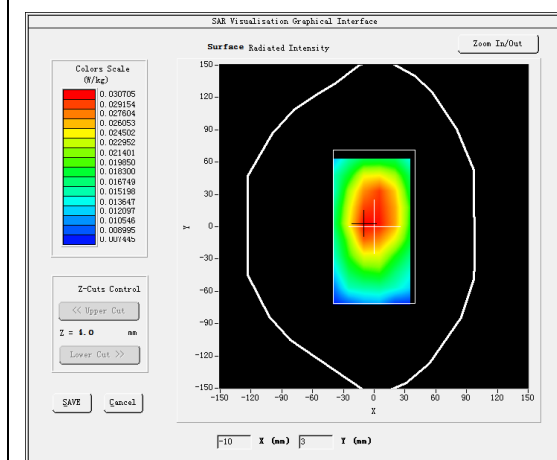
A. Experimental conditions.

<u>Area Scan</u>	<u>dx=15mm dy=15mm, h= 5.00 mm</u>
<u>ZoomScan</u>	<u>5x5x7,dx=8mm dy=8mm dz=5mm</u>
<u>Phantom</u>	<u>Validation plane</u>
<u>Device Position</u>	<u>Body</u>
<u>Band</u>	<u>LTE band 17</u>
<u>Channels</u>	<u>Middle</u>
<u>Signal</u>	<u>LTE (Crest factor: 1.0)</u>
<u>ConvF</u>	<u>2.42</u>

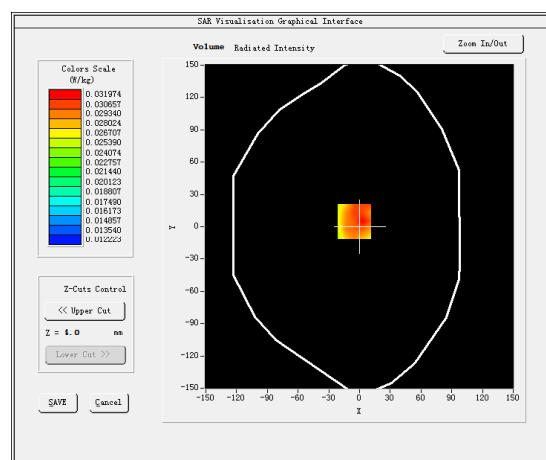
B. SAR Measurement Results

Frequency (MHz)	710.000000
Relative permittivity (real part)	41.064182
Relative permittivity (imaginary part)	21.795946
Conductivity (S/m)	0.859729
Variation (%)	0.100000

SURFACE SAR



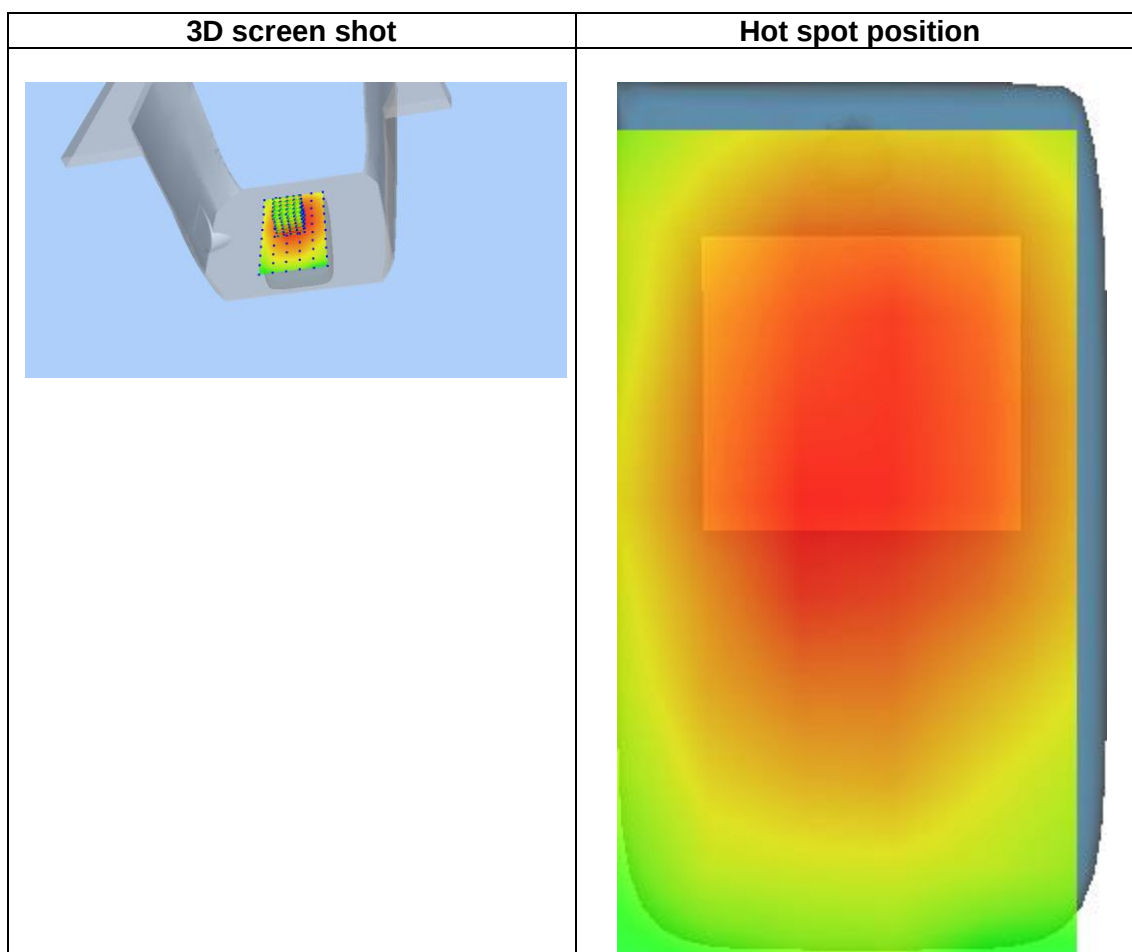
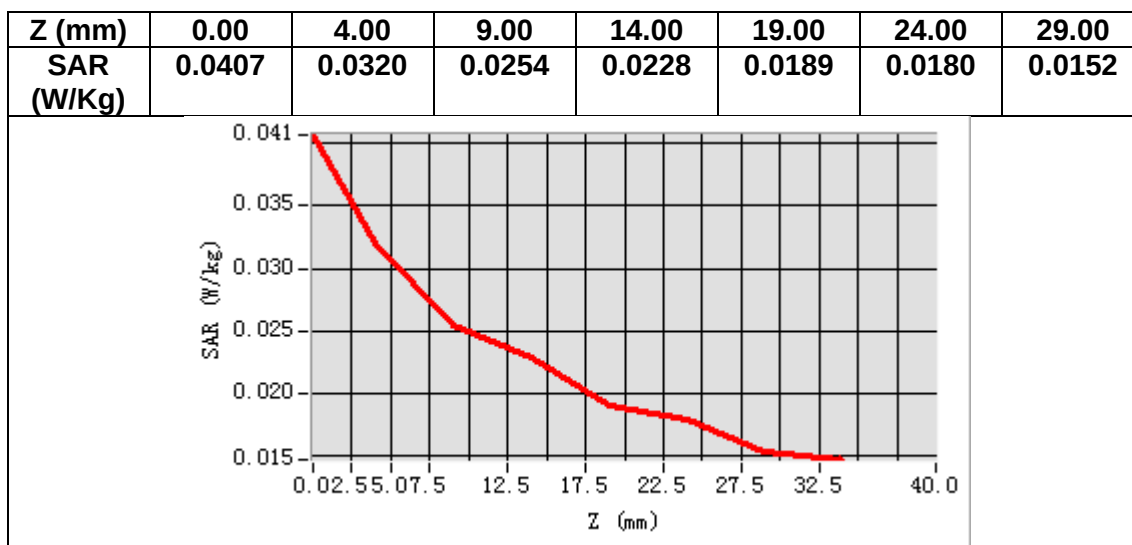
VOLUME SAR



Maximum location: X=-5.00, Y=5.00

SAR Peak: 0.04 W/kg

SAR 10g (W/Kg)	0.025326
SAR 1g (W/Kg)	0.030664



MEASUREMENT 27

Date of measurement: 17/10/2024

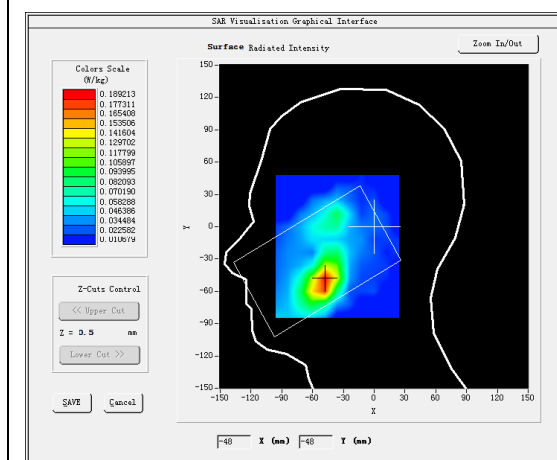
A. Experimental conditions.

<u>Area Scan</u>	<u>dx=12mm dy=12mm, h= 5.00 mm</u>
<u>ZoomScan</u>	<u>7x7x7,dx=5mm dy=5mm dz=5mm</u>
<u>Phantom</u>	<u>Left head</u>
<u>Device Position</u>	<u>Cheek</u>
<u>Band</u>	<u>LTE band 38</u>
<u>Channels</u>	<u>Middle</u>
<u>Signal</u>	<u>LTE (Crest factor: 1.6)</u>
<u>ConvF</u>	<u>2.51</u>

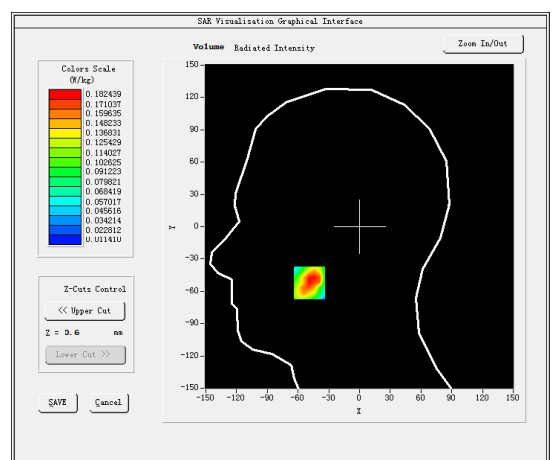
B. SAR Measurement Results

Frequency (MHz)	2595.000000
Relative permittivity (real part)	38.877842
Relative permittivity (imaginary part)	14.080788
Conductivity (S/m)	2.029980
Variation (%)	3.750000

SURFACE SAR



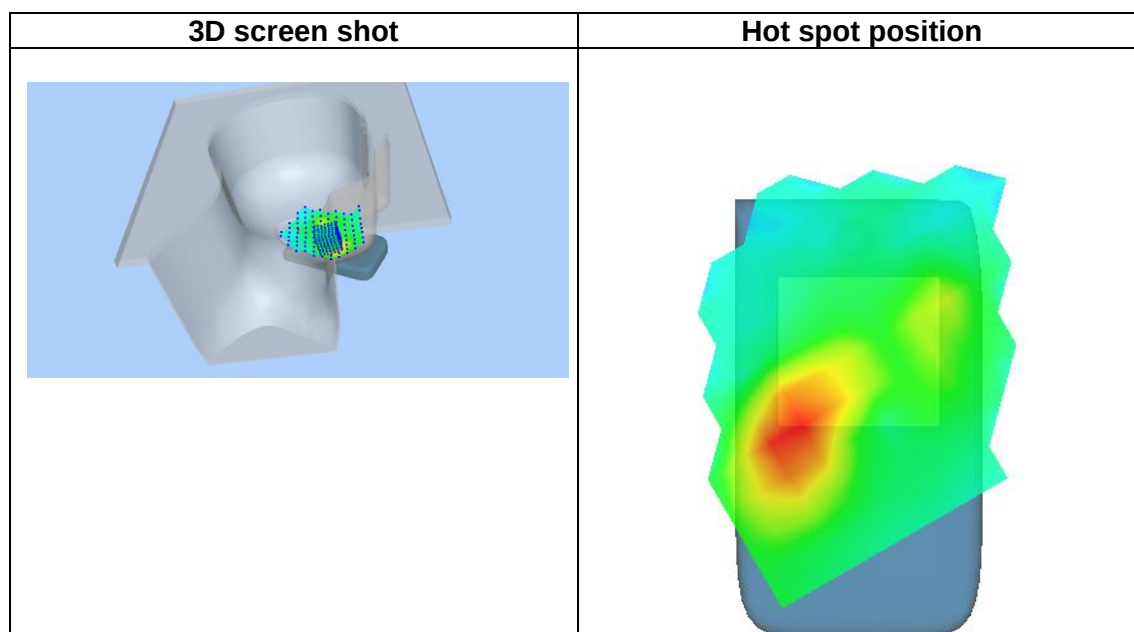
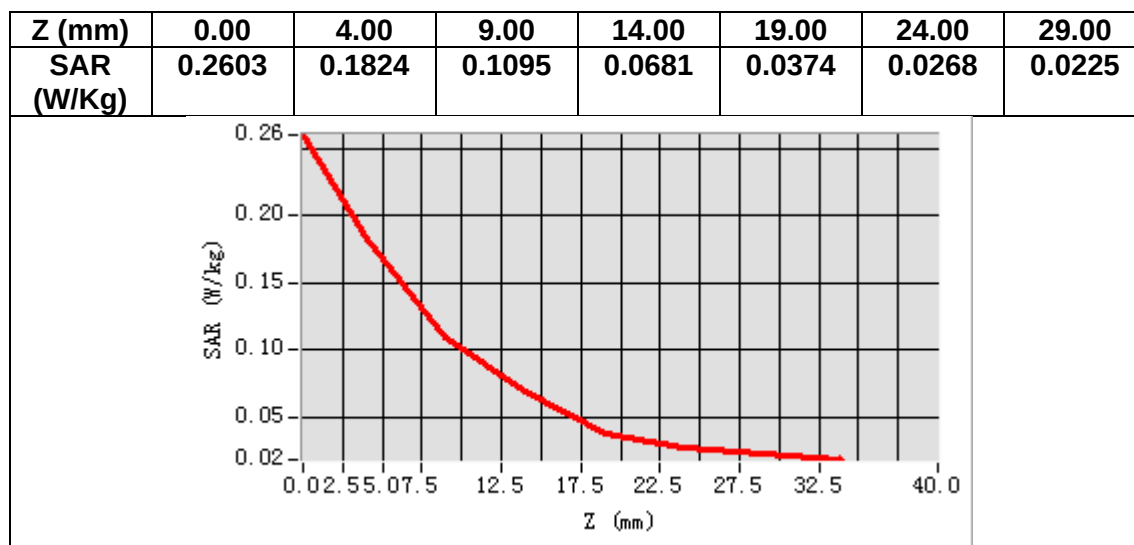
VOLUME SAR



Maximum location: X=-49.00, Y=-52.00

SAR Peak: 0.32 W/kg

SAR 10g (W/Kg)	0.091810
SAR 1g (W/Kg)	0.163654



MEASUREMENT 28

Date of measurement: 17/10/2024

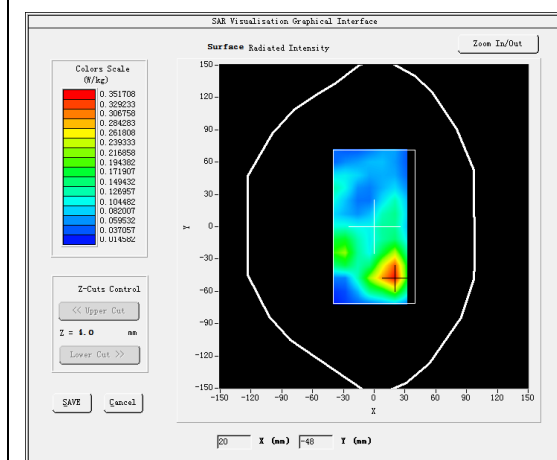
A. Experimental conditions.

<u>Area Scan</u>	<u>dx=12mm dy=12mm, h= 5.00 mm</u>
<u>ZoomScan</u>	<u>7x7x7,dx=5mm dy=5mm dz=5mm</u>
<u>Phantom</u>	<u>Validation plane</u>
<u>Device Position</u>	<u>Body</u>
<u>Band</u>	<u>LTE band 38</u>
<u>Channels</u>	<u>Middle</u>
<u>Signal</u>	<u>LTE (Crest factor: 1.6)</u>
<u>ConvF</u>	<u>2.51</u>

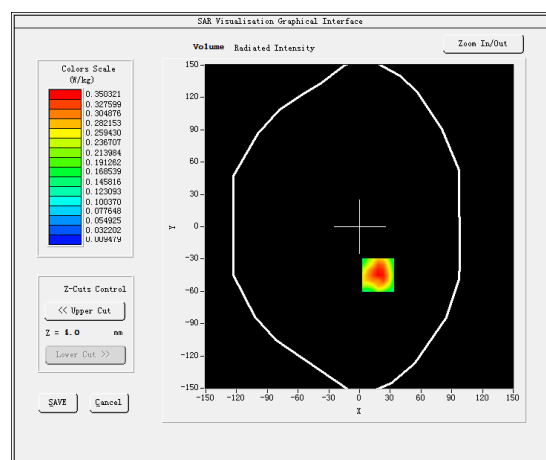
B. SAR Measurement Results

Frequency (MHz)	2595.000000
Relative permittivity (real part)	38.877842
Relative permittivity (imaginary part)	14.080788
Conductivity (S/m)	2.029980
Variation (%)	-1.930000

SURFACE SAR



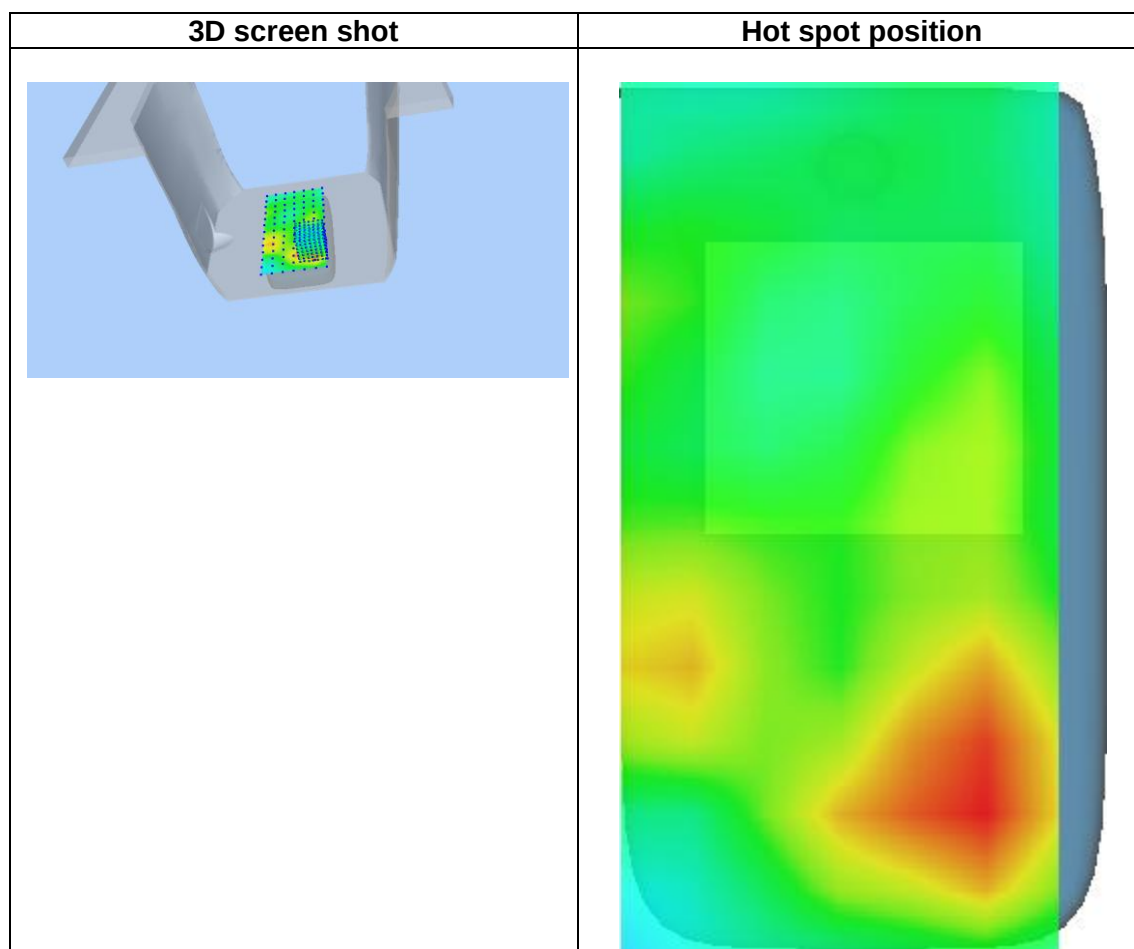
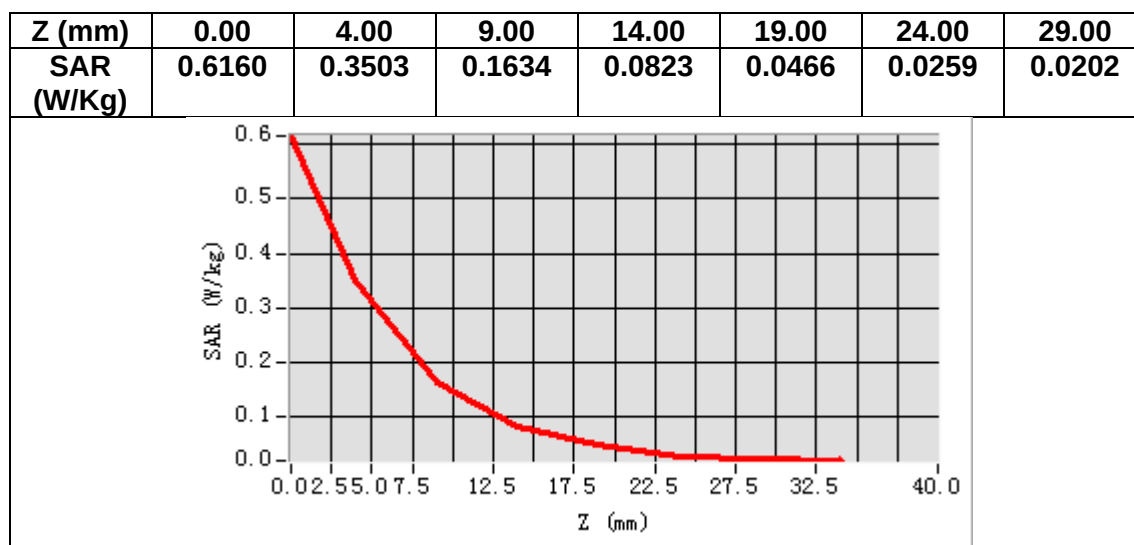
VOLUME SAR



Maximum location: X=18.00, Y=-45.00

SAR Peak: 0.62 W/kg

SAR 10g (W/Kg)	0.173377
SAR 1g (W/Kg)	0.342789



MEASUREMENT 29

Date of measurement: 15/10/2024

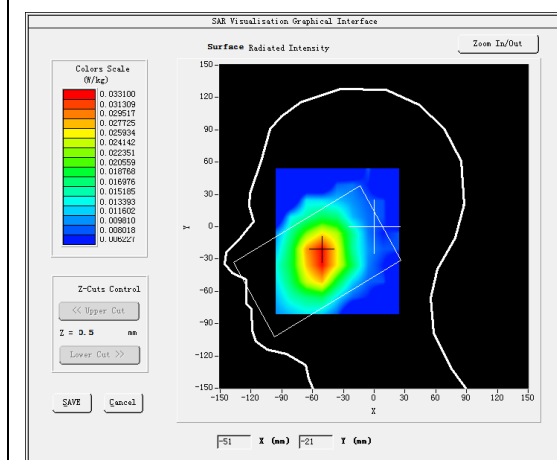
A. Experimental conditions.

<u>Area Scan</u>	<u>dx=15mm dy=15mm, h= 5.00 mm</u>
<u>ZoomScan</u>	<u>5x5x7,dx=8mm dy=8mm dz=5mm</u>
<u>Phantom</u>	<u>Left head</u>
<u>Device Position</u>	<u>Cheek</u>
<u>Band</u>	<u>FDDBand26A</u>
<u>Channels</u>	<u>Middle</u>
<u>Signal</u>	<u>(Crest factor: 1.0)</u>
<u>ConvF</u>	<u>2.34</u>

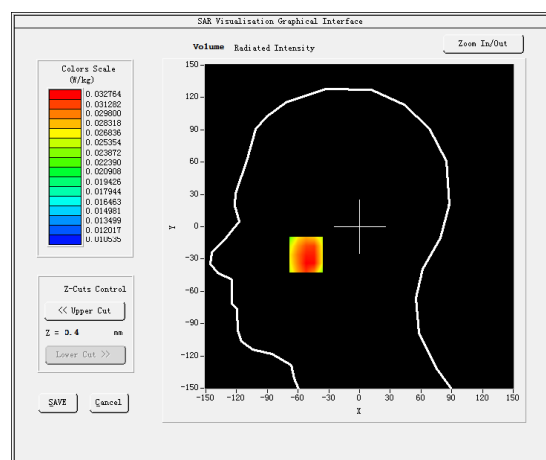
B. SAR Measurement Results

Frequency (MHz)	819.000000
Relative permittivity (real part)	42.147469
Relative permittivity (imaginary part)	19.713531
Conductivity (S/m)	0.896966
Variation (%)	1.150000

SURFACE SAR



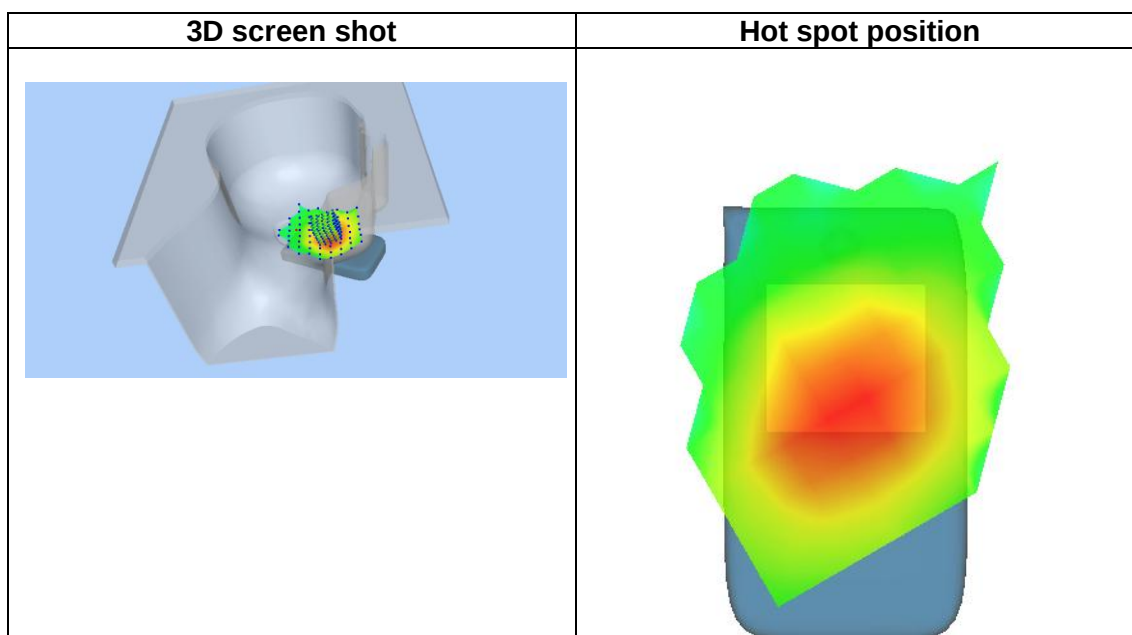
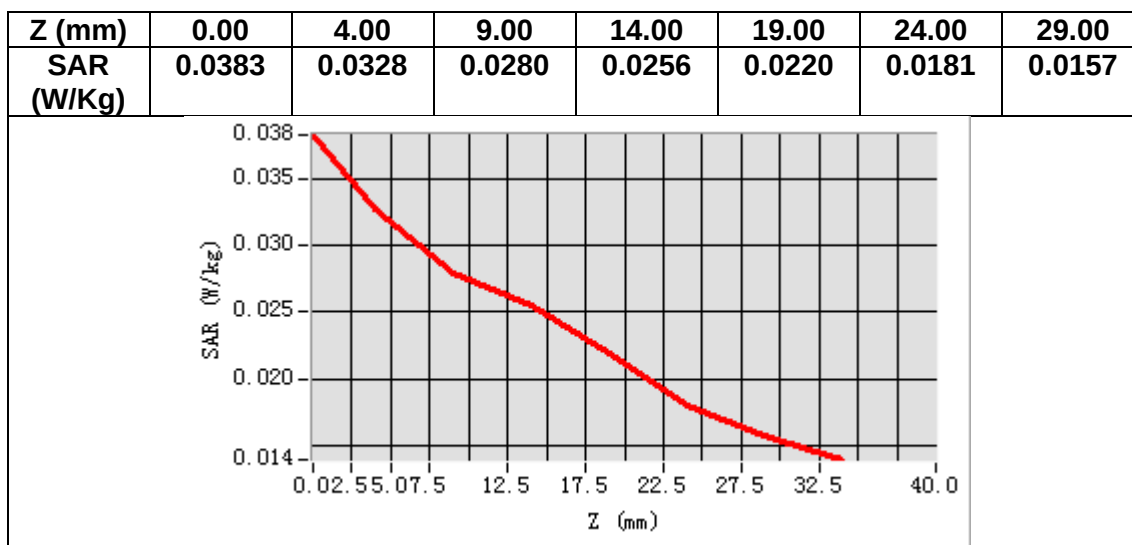
VOLUME SAR



Maximum location: X=-52.00, Y=-26.00

SAR Peak: 0.04 W/kg

SAR 10g (W/Kg)	0.026757
SAR 1g (W/Kg)	0.032713



MEASUREMENT 30

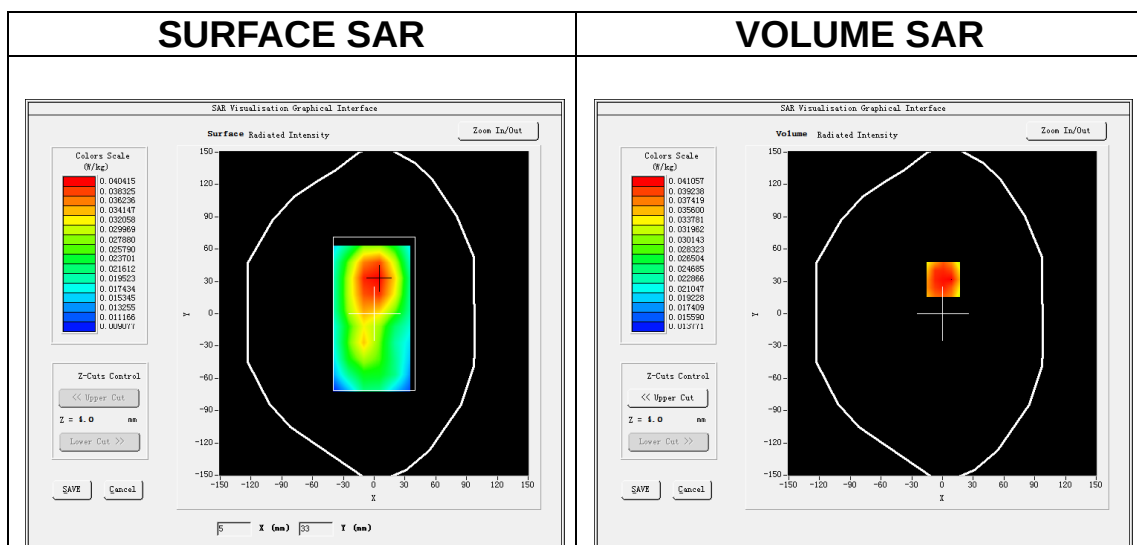
Date of measurement: 15/10/2024

A. Experimental conditions.

<u>Area Scan</u>	<u>dx=15mm dy=15mm, h= 5.00 mm</u>
<u>ZoomScan</u>	<u>5x5x7,dx=8mm dy=8mm dz=5mm</u>
<u>Phantom</u>	<u>Validation plane</u>
<u>Device Position</u>	<u>Body</u>
<u>Band</u>	<u>FDDBand26A</u>
<u>Channels</u>	<u>Middle</u>
<u>Signal</u>	<u>(Crest factor: 1.0)</u>
<u>ConvF</u>	<u>2.34</u>

B. SAR Measurement Results

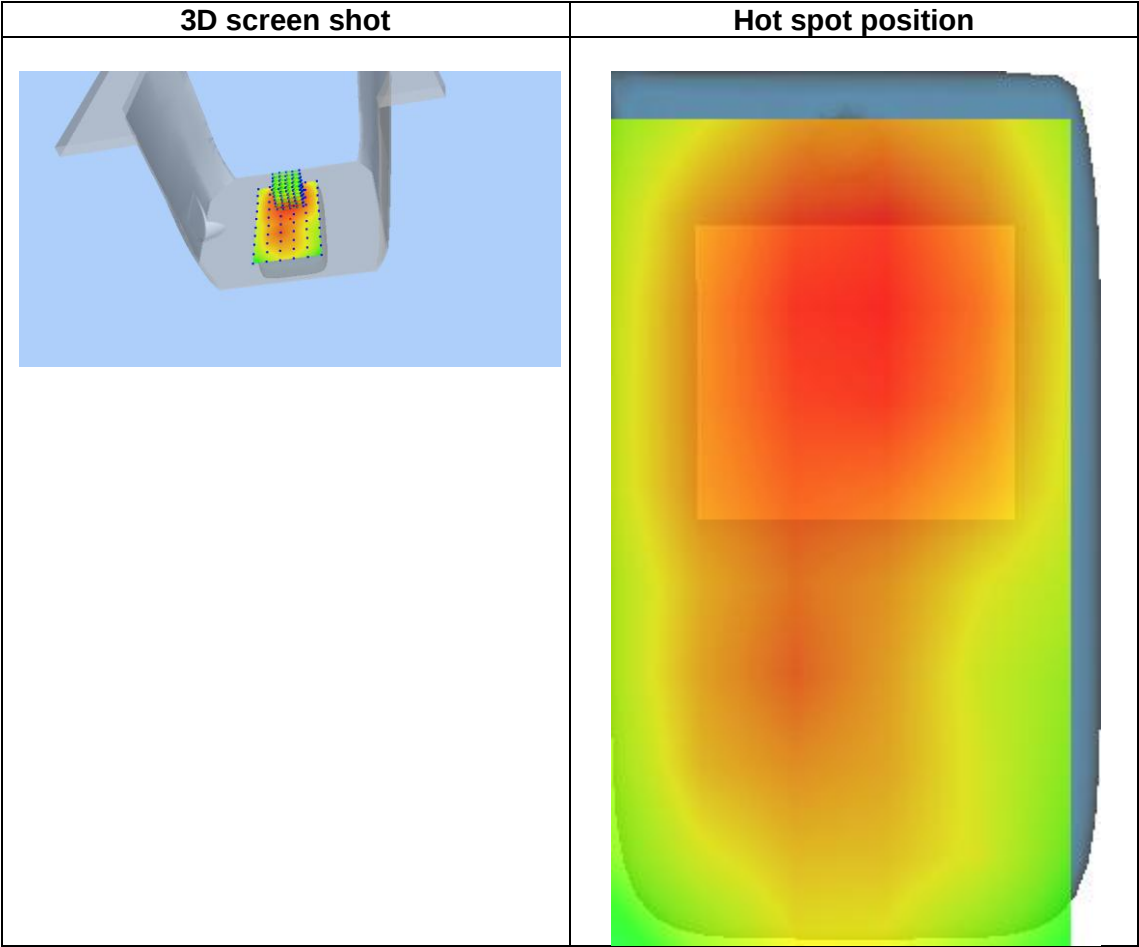
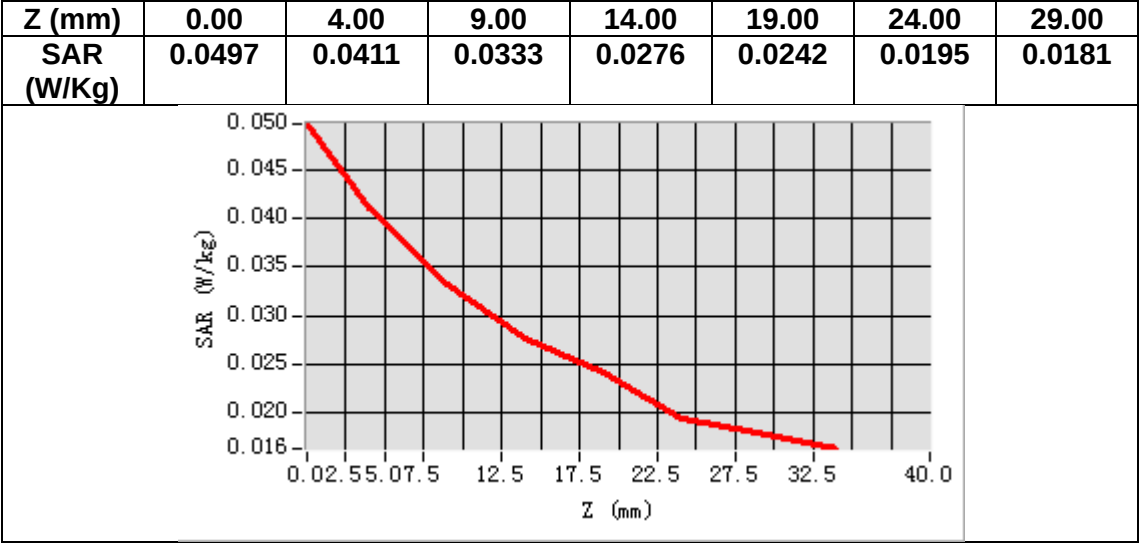
Frequency (MHz)	819.000000
Relative permittivity (real part)	42.147469
Relative permittivity (imaginary part)	19.713531
Conductivity (S/m)	0.896966
Variation (%)	0.800000



Maximum location: X=1.00, Y=32.00

SAR Peak: 0.05 W/kg

SAR 10g (W/Kg)	0.031877
SAR 1g (W/Kg)	0.040454



MEASUREMENT 31

Date of measurement: 15/10/2024

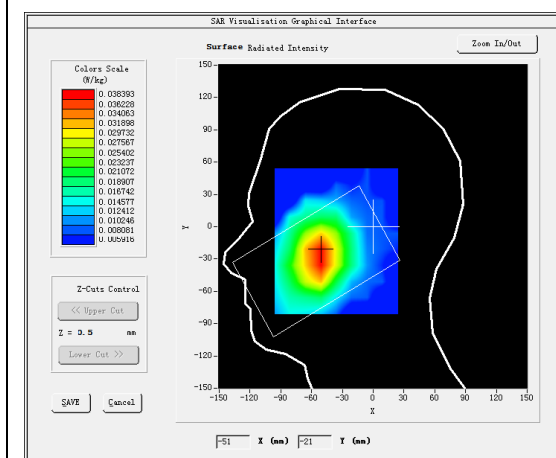
A. Experimental conditions.

<u>Area Scan</u>	<u>dx=15mm dy=15mm, h= 5.00 mm</u>
<u>ZoomScan</u>	<u>5x5x7,dx=8mm dy=8mm dz=5mm</u>
<u>Phantom</u>	<u>Left head</u>
<u>Device Position</u>	<u>Cheek</u>
<u>Band</u>	<u>FDDBand26B</u>
<u>Channels</u>	<u>Middle</u>
<u>Signal</u>	<u>(Crest factor: 1.0)</u>
<u>ConvF</u>	<u>2.34</u>

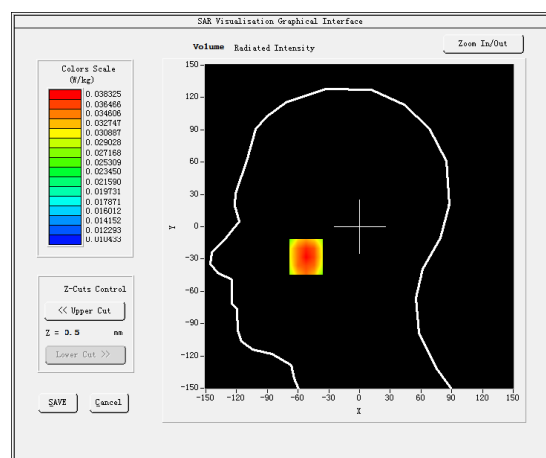
B. SAR Measurement Results

Frequency (MHz)	831.500000
Relative permittivity (real part)	41.931519
Relative permittivity (imaginary part)	19.719481
Conductivity (S/m)	0.910930
Variation (%)	2.620000

SURFACE SAR



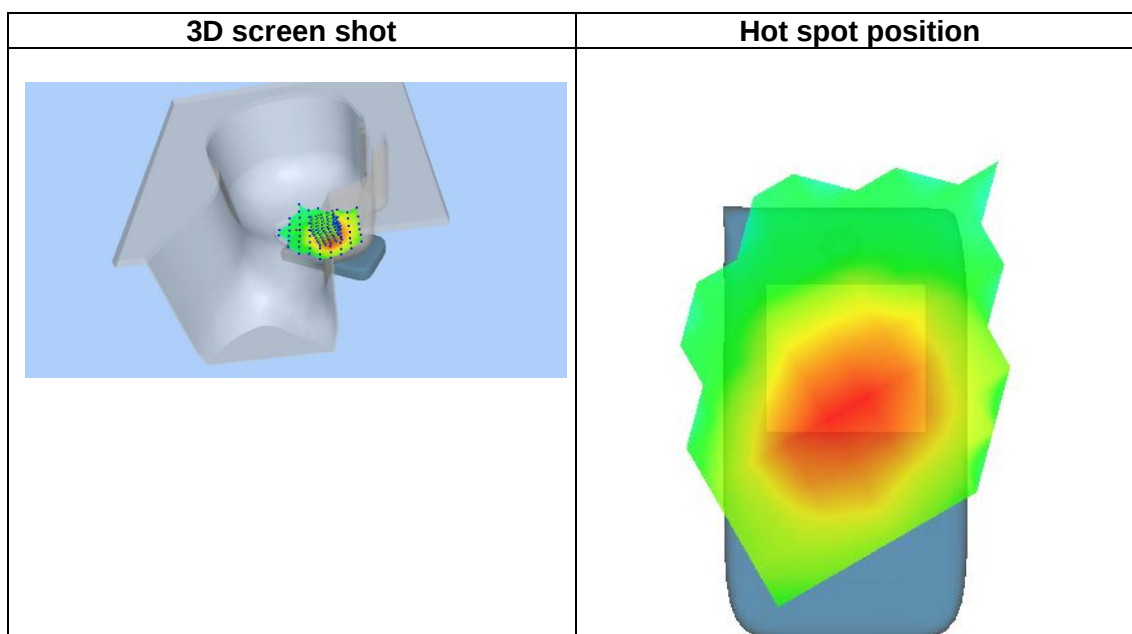
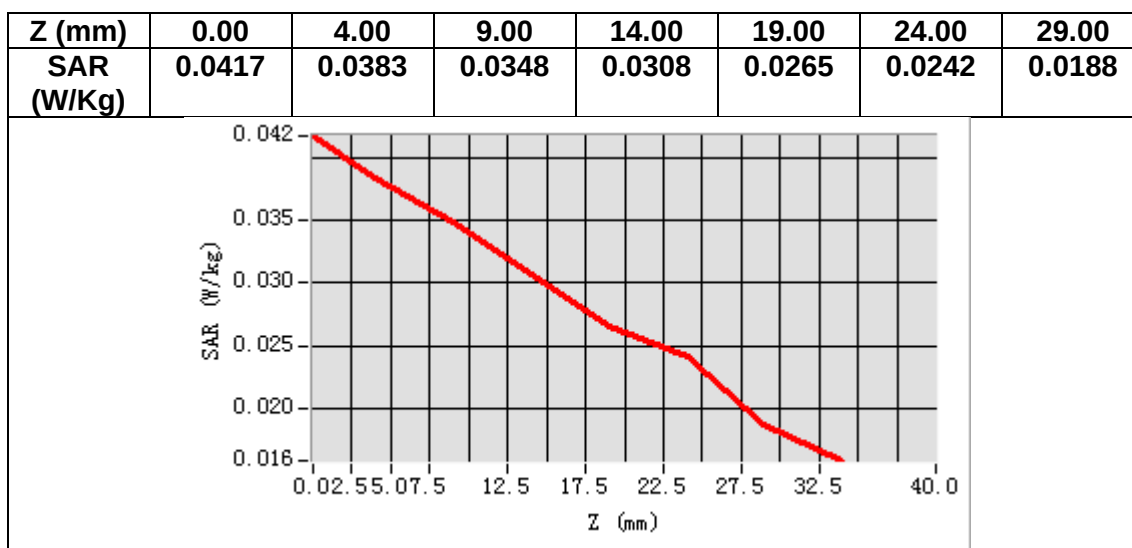
VOLUME SAR



Maximum location: X=-52.00, Y=-28.00

SAR Peak: 0.04 W/kg

SAR 10g (W/Kg)	0.031435
SAR 1g (W/Kg)	0.037939



MEASUREMENT 32

Date of measurement: 15/10/2024

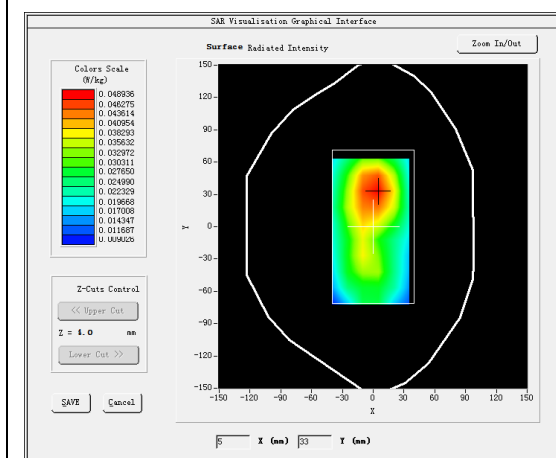
A. Experimental conditions.

<u>Area Scan</u>	<u>dx=15mm dy=15mm, h= 5.00 mm</u>
<u>ZoomScan</u>	<u>5x5x7,dx=8mm dy=8mm dz=5mm</u>
<u>Phantom</u>	<u>Validation plane</u>
<u>Device Position</u>	<u>Body</u>
<u>Band</u>	<u>FDDBand26B</u>
<u>Channels</u>	<u>Middle</u>
<u>Signal</u>	<u>(Crest factor: 1.0)</u>
<u>ConvF</u>	<u>2.34</u>

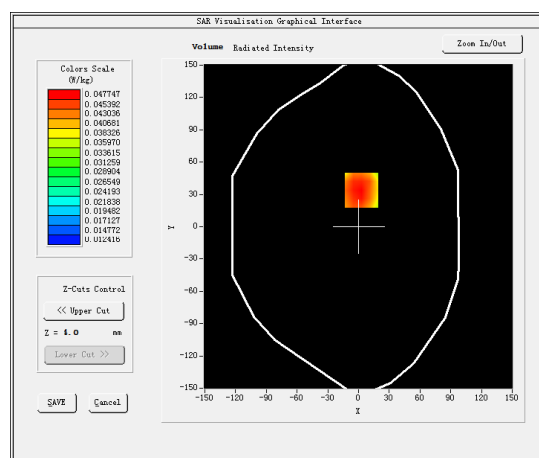
B. SAR Measurement Results

Frequency (MHz)	831.500000
Relative permittivity (real part)	41.931519
Relative permittivity (imaginary part)	19.719481
Conductivity (S/m)	0.910930
Variation (%)	-3.390000

SURFACE SAR



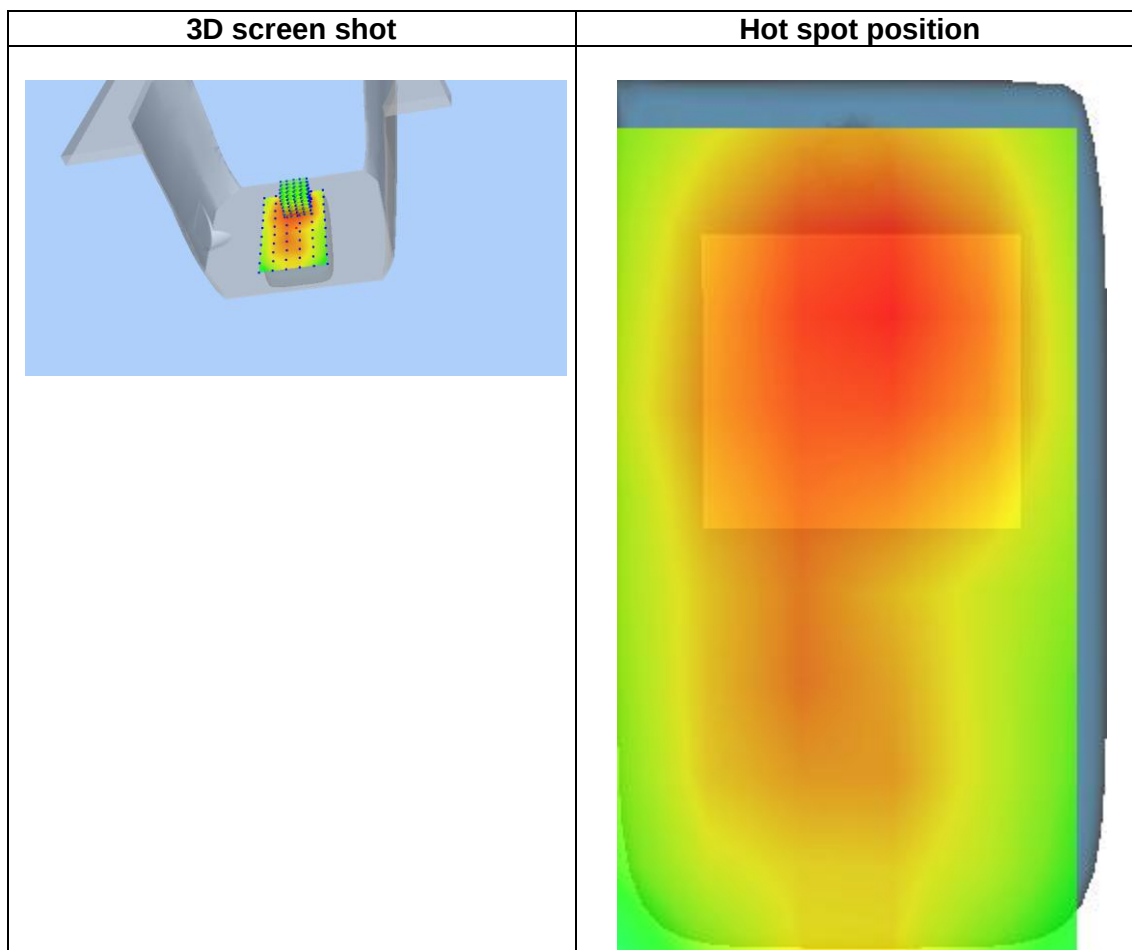
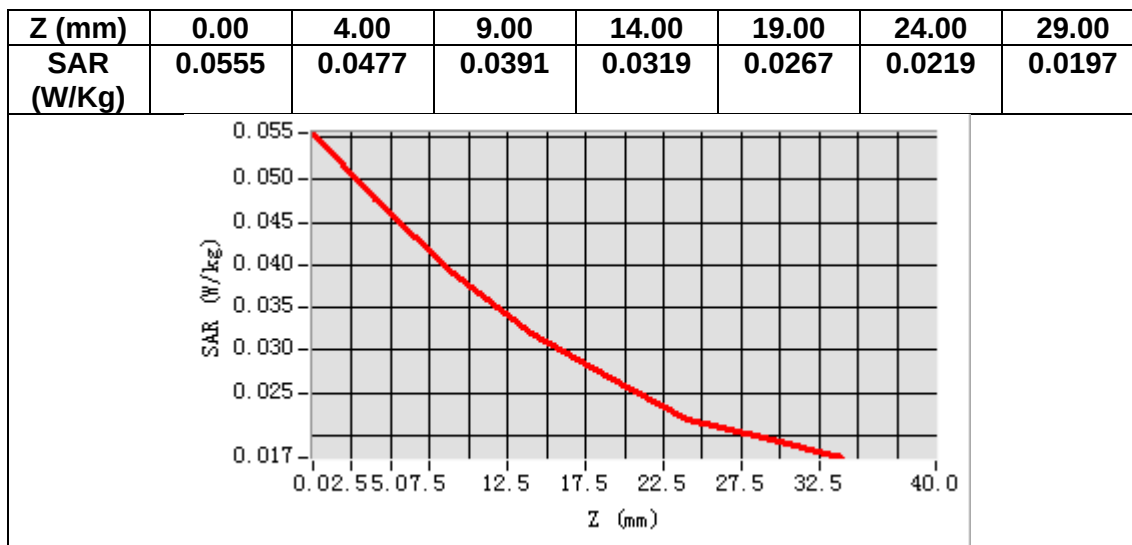
VOLUME SAR



Maximum location: X=3.00, Y=34.00

SAR Peak: 0.06 W/kg

SAR 10g (W/Kg)	0.036558
SAR 1g (W/Kg)	0.046786



MEASUREMENT 33

Date of measurement: 10/10/2024

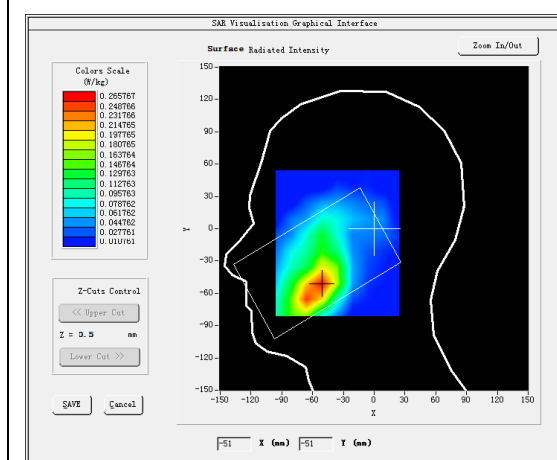
A. Experimental conditions.

<u>Area Scan</u>	<u>dx=15mm dy=15mm, h= 5.00 mm</u>
<u>ZoomScan</u>	<u>5x5x7,dx=8mm dy=8mm dz=5mm</u>
<u>Phantom</u>	<u>Left head</u>
<u>Device Position</u>	<u>Cheek</u>
<u>Band</u>	<u>FDDBand66</u>
<u>Channels</u>	<u>Middle</u>
<u>Signal</u>	<u>(Crest factor: 1.0)</u>
<u>ConvF</u>	<u>2.51</u>

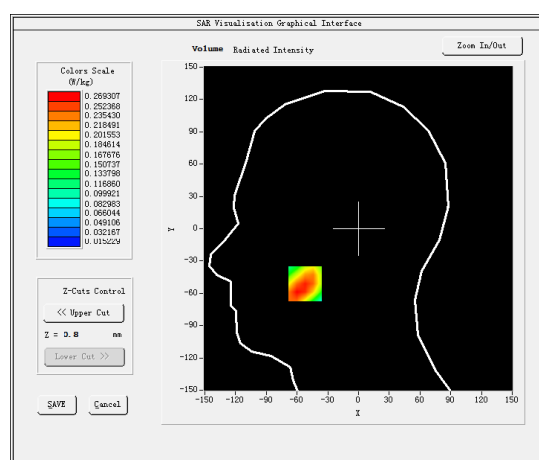
B. SAR Measurement Results

Frequency (MHz)	1745.000000
Relative permittivity (real part)	39.778728
Relative permittivity (imaginary part)	13.747747
Conductivity (S/m)	1.332768
Variation (%)	-3.780000

SURFACE SAR



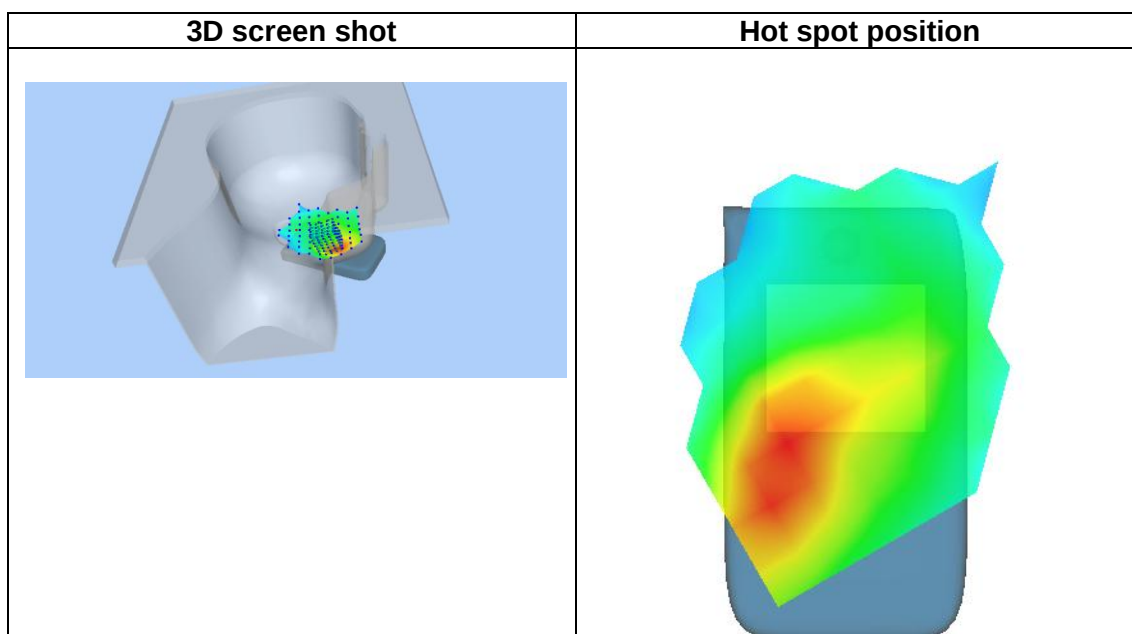
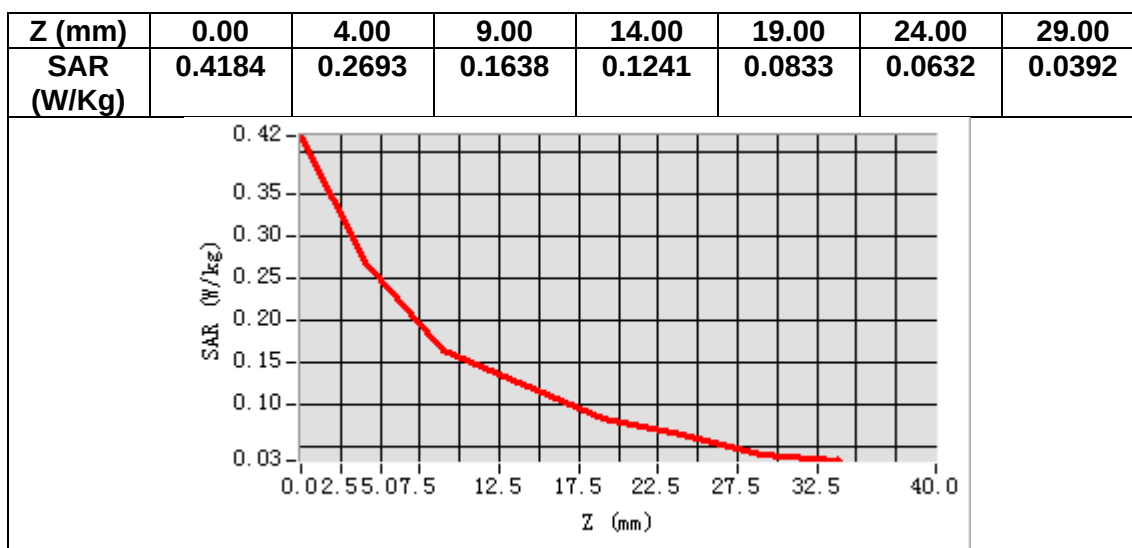
VOLUME SAR



Maximum location: X=-52.00, Y=-51.00

SAR Peak: 0.39 W/kg

SAR 10g (W/Kg)	0.163928
SAR 1g (W/Kg)	0.260604



MEASUREMENT 34

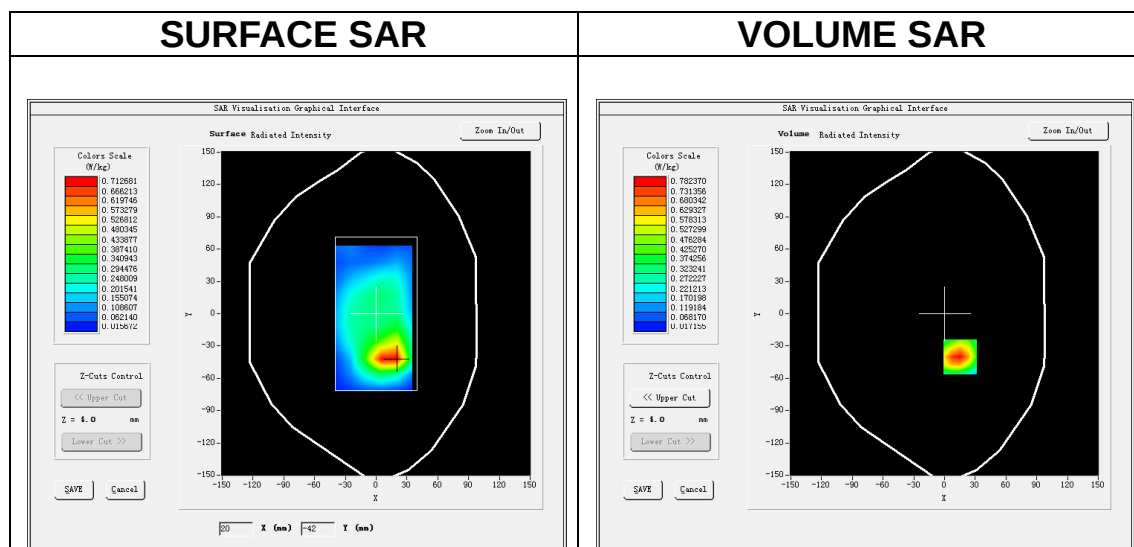
Date of measurement: 10/10/2024

A. Experimental conditions.

<u>Area Scan</u>	<u>dx=15mm dy=15mm, h= 5.00 mm</u>
<u>ZoomScan</u>	<u>5x5x7,dx=8mm dy=8mm dz=5mm</u>
<u>Phantom</u>	<u>Validation plane</u>
<u>Device Position</u>	<u>Body</u>
<u>Band</u>	<u>FDDBand66</u>
<u>Channels</u>	<u>Middle</u>
<u>Signal</u>	<u>(Crest factor: 1.0)</u>
<u>ConvF</u>	<u>2.51</u>

B. SAR Measurement Results

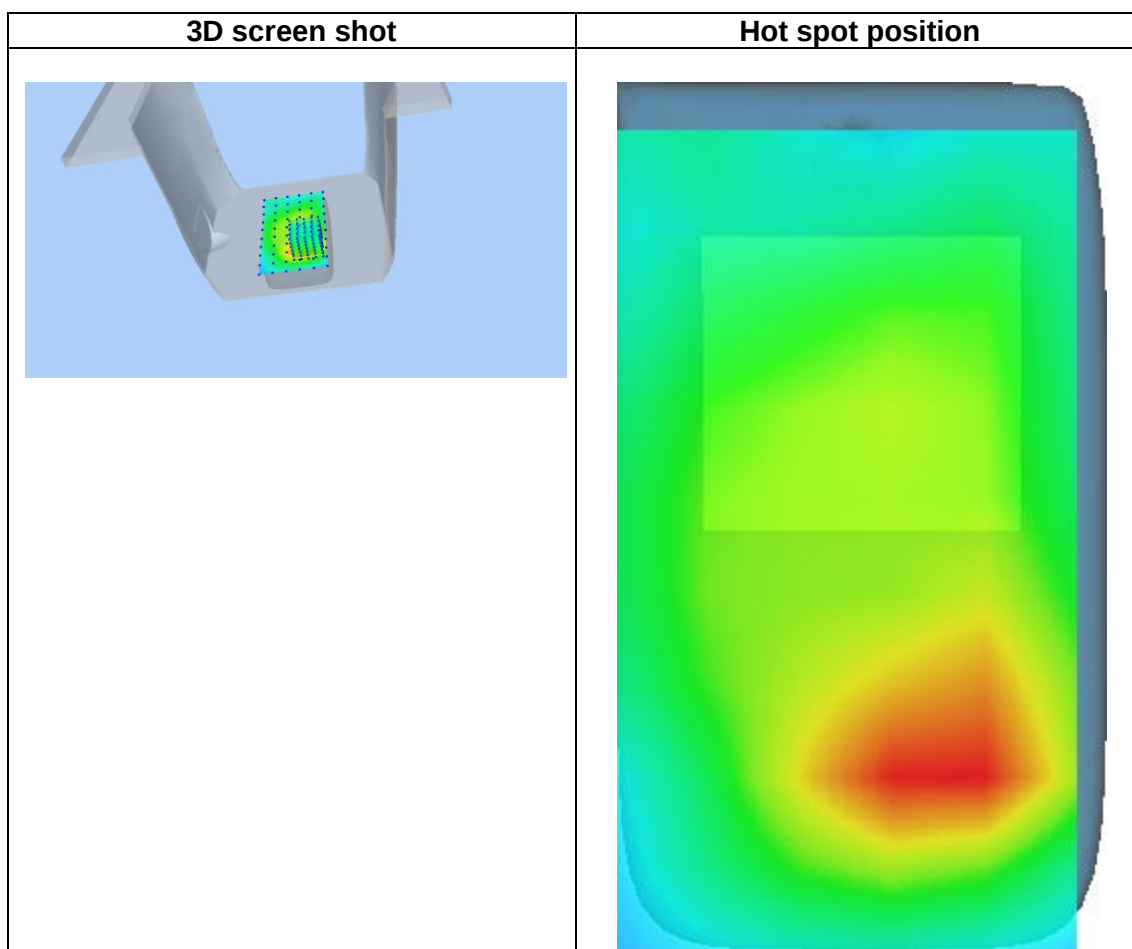
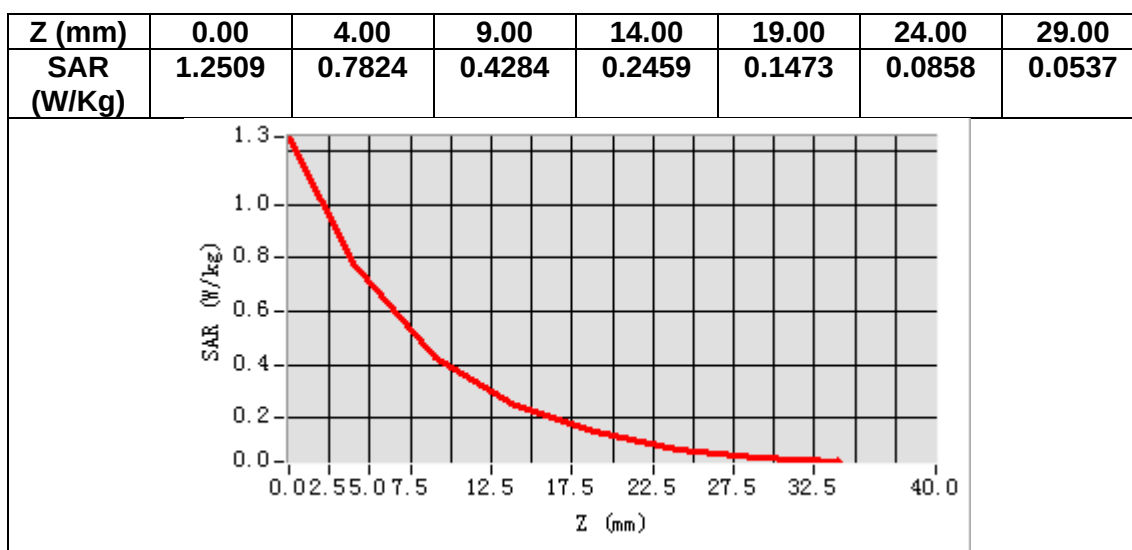
Frequency (MHz)	1745.000000
Relative permittivity (real part)	39.778728
Relative permittivity (imaginary part)	13.747747
Conductivity (S/m)	1.332768
Variation (%)	1.210000



Maximum location: X=15.00, Y=-40.00

SAR Peak: 1.24 W/kg

SAR 10g (W/Kg)	0.395311
SAR 1g (W/Kg)	0.746430



14. Appendix D. Calibration Certificate

Table of contents
E Field Probe - 4024-EPGO-442
750 MHz Dipole - SN 03/15 DIP 0G750-355
835 MHz Dipole - SN 03/15 DIP 0G835-347
1800 MHz Dipole - SN 03/15 DIP 1G800-349
1900 MHz Dipole - SN 03/15 DIP 1G900-350
2450 MHz Dipole - SN 03/15 DIP 2G450-352
2600 MHz Dipole - SN 03/15 DIP 2G600-356

DocuSign Envelope ID: 223C1A7C-4751-4B95-8502-1618DC0951E3



COMOSAR E-Field Probe Calibration Report

Ref : ACR.278.12.24.BES.A

SHENZHEN NTEK TESTING TECHNOLOGY CO., LTD.

BUILDING E, FENDA SCIENCE PARK, SANWEI
COMMUNITY, XIXIANG STREET,
BAO'AN DISTRICT, SHENZHEN GUANGDONG, CHINA
MVG COMOSAR DOSIMETRIC E-FIELD PROBE
SERIAL NO.: 4024-EPGO-442

Calibrated at MVG

Z.I. de la pointe du diable

Technopôle Brest Iroise – 295 avenue Alexis de Rochon
29280 PLOUZANE - FRANCE

Calibration date: 10/04/2024



Accreditations #2-6789
Scope available on www.cofrac.fr

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Summary:

This document presents the method and results from an accredited COMOSAR Dosimetric E-Field Probe calibration performed at MVG, using the CALIPROBE test bench, for use with a MVG COMOSAR system only. The test results covered by accreditation are traceable to the International System of Units (SI).

DocuSign Envelope ID: 223C1A7C-4751-4B95-8502-1618DC0951E3



COMOSAR E-FIELD PROBE CALIBRATION REPORT

Ref: ACR.278.12.24.BES.A

	Name	Function	Date	Signature
Prepared by :	Cyrille ONNEE	Measurement Responsible	10/4/2024	
Checked & approved by:	Pedro Ruiz	Technical Manager	10/4/2024	
Authorized by:	Pedro Ruiz	Laboratory Director	10/4/2024	

Assinado por:

Pedro RUIZ

29093B31C46F428...

	Customer Name
Distribution :	SHENZHEN NTEK TESTING TECHNOLOGY CO., LTD.

Issue	Name	Date	Modifications
A	Cyrille ONNEE	10/4/2024	Initial release

Docusign Envelope ID: 223C1A7C-4751-4B95-8502-1618DC0951E3



COMOSAR E-FIELD PROBE CALIBRATION REPORT

Ref: ACR.278.12.24.BES.A

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COMOSAR E-FIELD PROBE CALIBRATION REPORT

Ref: ACR.278.12.24.BES.A

1 DEVICE UNDER TEST

Device Under Test	
Device Type	COMOSAR DOSIMETRIC E FIELD PROBE
Manufacturer	MVG
Model	SSE2
Serial Number	4024-EPGO-442
Product Condition (new / used)	New
Frequency Range of Probe	0.15 GHz-7.5GHz
Resistance of Three Dipoles at Connector	Dipole 1: R1=0.206 MΩ Dipole 2: R2=0.223 MΩ Dipole 3: R3=0.235 MΩ

2 PRODUCT DESCRIPTION

2.1 GENERAL INFORMATION

MVG's COMOSAR E field Probes are built in accordance to the IEC/IEEE 62209-1528 and FCC KDB865664 D01 standards.



Figure 1 – MVG COMOSAR Dosimetric E field Probe

Probe Length	330 mm
Length of Individual Dipoles	2 mm
Maximum external diameter	8 mm
Probe Tip External Diameter	2.5 mm
Distance between dipoles / probe extremity	1 mm

3 MEASUREMENT METHOD

The IEC/IEEE 62209-1528 and FCC KDB865664 D01 standards provide recommended practices for the probe calibrations, including the performance characteristics of interest and methods by which to assess their effect. All calibrations / measurements performed meet the fore-mentioned standards.

3.1 SENSITIVITY

The sensitivity factors of the three dipoles were determined using a two step calibration method (air and tissue simulating liquid) using waveguides as outlined in the standards for frequency range 600-7500MHz and using the calorimeter cell method (transfer method) as outlined in the standards for frequency 150-450 MHz.

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3.2 LINEARITY

The evaluation of the linearity was done in free space using the waveguide, performing a power sweep to cover the SAR range 0.01W/kg to 100W/kg.

3.3 ISOTROPY

The axial isotropy was evaluated by exposing the probe to a reference wave from a standard dipole with the dipole mounted under the flat phantom in the test configuration suggested for system validations and checks. The probe was rotated along its main axis from 0 to 360 degrees in 15-degree steps. The hemispherical isotropy is determined by inserting the probe in a thin plastic box filled with tissue-equivalent liquid, with the plastic box illuminated with the fields from a half wave dipole. The dipole is rotated about its axis (0°–180°) in 15° increments. At each step the probe is rotated about its axis (0°–360°).

3.4 BOUNDARY EFFECT

The boundary effect is defined as the deviation between the SAR measured data and the expected exponential decay in the liquid when the probe is oriented normal to the interface. To evaluate this effect, the liquid filled flat phantom is exposed to fields from either a reference dipole or waveguide. With the probe normal to the phantom surface, the peak spatial average SAR is measured and compared to the analytical value at the surface.

The boundary effect uncertainty can be estimated according to the following uncertainty approximation formula based on linear and exponential extrapolations between the surface and $d_{be} + d_{step}$ along lines that are approximately normal to the surface:

$$SAR_{uncertainty} [\%] = \Delta SAR_{be} \frac{(d_{be} + d_{step})^2}{2d_{step}} \frac{(e^{-d_{be}/(\delta/2)})}{\delta/2} \quad \text{for } (d_{be} + d_{step}) < 10 \text{ mm}$$

where

$SAR_{uncertainty}$ is the uncertainty in percent of the probe boundary effect

d_{be} is the distance between the surface and the closest *zoom-scan* measurement point, in millimetre

Δ_{step} is the separation distance between the first and second measurement points that are closest to the phantom surface, in millimetre, assuming the boundary effect at the second location is negligible

δ is the minimum penetration depth in millimetres of the head tissue-equivalent liquids defined in this standard, i.e., $\delta \approx 14$ mm at 3 GHz;

ΔSAR_{be} in percent of SAR is the deviation between the measured SAR value, at the distance d_{be} from the boundary, and the analytical SAR value.

The measured worst case boundary effect SARuncertainty[%] for scanning distances larger than 4mm is 1.0% Limit, 2%).

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3.5 PROBE MODULATION RESPONSE

MVG's probe were evaluated experimentally with various modulated signal and the deviation from CW response were found neglectable in the used power range of the probe. So the correction to taking into account the linearization parameters for different modulation is null, therefore the CW factor given in this report can be used whatever the measured modulation

4 MEASUREMENT UNCERTAINTY

The guidelines outlined in the IEC/IEEE 62209-1528 and FCC KDB865664 D01 standards were followed to generate the measurement uncertainty associated with a SAR probe calibration using the waveguide or calorimetric cell technique depending on the frequency.

The estimated expanded uncertainty (k=2) in calibration for SAR (W/kg) is +/-11% for the frequency range 150-450MHz.

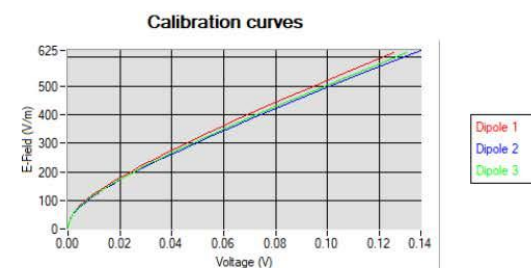
The estimated expanded uncertainty (k=2) in calibration for SAR (W/kg) is +/-14% for the frequency range 600-7500MHz.

5 CALIBRATION RESULTS

Ambient condition	
Liquid Temperature	20 +/- 1 °C
Lab Temperature	20 +/- 1 °C
Lab Humidity	30-70 %

5.1 CALIBRATION IN AIR

The following curve represents the measurement in waveguide of the voltage picked up by the probe toward the E-field generated inside the waveguide.



From this curve, the sensitivity in air is calculated using the below formula.

$$E^2 = \sum_{i=1}^3 \frac{V_i (1 + V_i / DCP_i)}{Norm_i}$$

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where

V_i =voltage readings on the 3 channels of the probe

DCPi=diode compression point given below for the 3 channels of the probe

Normi=dipole sensitivity given below for the 3 channels of the probe

Normx dipole 1 ($\mu\text{V}/(\text{V}/\text{m})^2$)	Normy dipole 2 ($\mu\text{V}/(\text{V}/\text{m})^2$)	Normz dipole 3 ($\mu\text{V}/(\text{V}/\text{m})^2$)
0.73	0.79	0.78

DCP dipole 1 (mV)	DCP dipole 2 (mV)	DCP dipole 3 (mV)
105	109	103

5.2 CALIBRATION IN LIQUID

The calorimeter cell or the waveguide is used to determine the calibration in liquid using the formula below.

$$\text{ConvF} = \frac{E_{\text{liquid}}^2}{E_{\text{air}}^2}$$

The E-field in the liquid is determined from the SAR measurement according to the below formula.

$$E_{\text{liquid}}^2 = \frac{\rho \text{ SAR}}{\sigma}$$

where

σ =the conductivity of the liquid

ρ =the volumetric density of the liquid

SAR=the SAR measured from the formula that depends on the setup used. The SAR formulas are given below

For the calorimeter cell (150-450 MHz), the formula is:

$$\text{SAR} = c \frac{dT}{dt}$$

where

c =the specific heat for the liquid

dT/dt =the temperature rises over the time

For the waveguide setup (600-75000 MHz), the formula is:

$$\text{SAR} = \frac{4P_W}{ab\delta} e^{-\frac{2z}{\delta}}$$

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