SAR TEST REPORT

The following samples were submitted and identified on behalf of the client as:

Equipment Under Test	Tablet PC
Brand Name	hp
Model No.	HSTNN-Q93C
Company Name	Hewlett-Packard Company
Company Address	1501 Page Mill Road M/S1419 Palo Alto, CA 94304 United States
Standards	IEEE /ANSI C95.1 ,C95.3, IEEE 1528 2003, KDB248227D01v01r02, KDB616217D04v01r01, KDB865664D01v01r03, KDB865664D02v01r01, KDB447498D01v05r02
FCC ID	B94HNQ93CSPN
Date of Receipt	Mar. 16, 2015
Date of Test(s)	Apr. 03, 2015 ~ Apr. 07, 2015
Date of Issue	Apr. 28, 2015

In the configuration tested, the EUT complied with the standards specified above.

Remarks:

This report details the results of the testing carried out on one sample, the results contained in this test report do not relate to other samples of the same product. The manufacturer should ensure that all products in series production are in conformity with the product sample detailed in this report.

This report may only be reproduced and distributed in full. If the product in this report is used in any configuration other than that detailed in the report, the manufacturer must ensure the new system complies with all relevant standards. Any mention of SGS Taiwan Electronic & Communication Laboratory or testing done by SGS Taiwan Electronic & Communication Laboratory in connection with distribution or use of the product described in this report must be approved by SGS Taiwan Electronic & Communication Laboratory in writing.

Signed on behalf of SGS

Engineer	**Sr. Engineer**
Matt Kuo Matt Kuo	**John Yeh** John Yeh
Date: Apr. 28, 2015	**Date: Apr. 28, 2015**

Version

Report Number	Revision	Date	Memo
E5/2015/30009	00	2015/04/28	Initial creation of test report.

This test report contains a reference to the previous version test report that it replaces.

Contents

1. General Information

1.1 Testing Laboratory

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1.2 Details of Applicant

Company Name	Hewlett-Packard Company
Company Address	1501 Page Mill Road M/S1419 Palo Alto, CA 94304 United States

1.3 Description of EUT

Equipment Under Test	Tablet PC			
Brand Name	hp			
Model No.	HSTNN-Q93C			
FCC ID	B94HNQ93CSPN			
Mode of Operation	☒WLAN802.11 a/b/g/n(20M/40M)/ac(20M/40M/80M) ☒Bluetooth			
Duty Cycle	WLAN802.11 a/b/g/n(20M/40M)/ ac(20M/40M/80M)	1		
	Bluetooth	1		
TX Frequency Range (MHz)	WLAN802.11 b/g/n(20M)	2412	—	2462
	WLAN802.11 a/n(20M)/ac(20M) 5.2G	5180	—	5240
	WLAN802.11 n(40M)/ac(40M) 5.2G	5190	—	5230
	WLAN802.11 ac(80M) 5.2G	5210		
	WLAN802.11 a/n(20M)/ac(20M) 5.3G	5260	—	5320
	WLAN802.11 n(40M)/ac(40M) 5.3G	5270	—	5310
	WLAN802.11 ac(80M) 5.3G	5290		
	WLAN802.11 a/n(20M) 5.6G	5500	—	5700
	WLAN802.11 ac(20M) 5.6G	5500	—	5720
	WLAN802.11 n(40M) 5.6G	5510	—	5670
	WLAN802.11 ac(40M) 5.6G	5510	—	5710
	WLAN802.11 ac(80M) 5.6G	5530	—	5690
	WLAN802.11 a/n(20M)/ac(20M) 5.8G	5745	—	5825
	WLAN802.11 n(40M)/ac(40M) 5.8G	5755	—	5795
	WLAN802.11 ac(80M) 5.8G	5775		
	Bluetooth	2402	—	2480

Channel Number (ARFCN)	WLAN802.11 b/g/n(20M)	1	—	11
	WLAN802.11 a/n(20M)/ac(20M) 5.2G	36	—	48
	WLAN802.11 n(40M)/ac(40M) 5.2G	38	—	46
	WLAN802.11 ac(80M) 5.2G		42	
	WLAN802.11 a/n(20M)/ac(20M) 5.3G	52	—	64
	WLAN802.11 n(40M)/ac(40M) 5.3G	54	—	62
	WLAN802.11 ac(80M) 5.3G		58	
	WLAN802.11 a/n(20M) 5.6G	100	—	140
	WLAN802.11 ac(20M) 5.6G	100	—	144
	WLAN802.11 n(40M) 5.6G	102	—	134
	WLAN802.11 ac(40M) 5.6G	102	—	142
	WLAN802.11 ac(80M) 5.6G	106	—	138
	WLAN802.11 a/n(20M)/ac(20M) 5.8G	149	—	165
	WLAN802.11 n(40M)/ac(40M) 5.8G	151	—	159
	WLAN802.11 ac(80M) 5.8G		155	
	Bluetooth	0	—	78

Max. SAR (1 g) (Unit: W/Kg)					
Antenna	Band	Measured	Reported	Channel	Position
Main	WLAN802.11 b	0.705	0.737	11	Back side
	WLAN802.11 g	0.61	0.636	6	Back side
	WLAN802.11 n(20M) _2nd battery	0.763	0.814	6	Back side
	WLAN802.11 n(40M)	0.746	0.787	6	Back side
	WLAN802.11 a 5.2G_2nd battery	0.536	0.56	44	Back side
	WLAN802.11 n(40M) 5.2G	0.558	0.591	46	Back side
	WLAN802.11 ac(40M) 5.2G	0.52	0.545	46	Back side
	WLAN802.11 ac(80M) 5.2G	0.511	0.554	42	Back side
	WLAN802.11 a 5.3G_2nd battery	0.644	0.67	60	Back side
	WLAN802.11 n(40M) 5.3G	0.572	0.607	62	Back side
	WLAN802.11 ac(40M) 5.3G	0.483	0.503	54	Back side
	WLAN802.11 ac(80M) 5.3G	0.593	0.659	58	Back side
	WLAN802.11 a 5.6G	0.738	0.771	140	Back side
	WLAN802.11 n(40M) 5.6G	0.692	0.731	134	Back side
	WLAN802.11 ac(20M) 5.6G	0.704	0.763	144	Back side
	WLAN802.11 ac(40M) 5.6G	0.68	0.725	102	Back side
	WLAN802.11 ac(80M) 5.6G	0.644	0.716	138	Back side
	WLAN802.11 a 5.8G	0.712	0.732	153	Back side
	WLAN802.11 n(40M) 5.8G	0.669	0.705	151	Back side
	WLAN802.11 ac(40M) 5.8G	0.674	0.691	151	Back side
	WLAN802.11 ac(80M) 5.8G	0.661	0.721	155	Back side

Max. SAR (1 g) (Unit: W/Kg)					
Antenna	Band	Measured	Reported	Channel	Position
Aux	WLAN802.11 b	0.771	0.843	6	Back side
	WLAN802.11 g	0.993	1.069	6	Back side
	WLAN802.11 n(20M)	0.923	1.003	6	Back side
	WLAN802.11 n(40M)	0.918	0.995	6	Back side
	WLAN802.11 a 5.2G	0.902	0.921	44	Back side
	WLAN802.11 n(40M) 5.2G	0.822	0.859	46	Back side
	WLAN802.11 ac(40M) 5.2G	0.805	0.835	46	Back side
	WLAN802.11 ac(80M) 5.2G	0.819	0.874	42	Back side
	WLAN802.11 a 5.3G	1.01	1.031	60	Back side
	WLAN802.11 n(40M) 5.3G	0.937	0.993	62	Back side
	WLAN802.11 ac(40M) 5.3G	0.7	0.723	54	Back side
	WLAN802.11 ac(80M) 5.3G	0.768	0.817	58	Back side
	WLAN802.11 a 5.6G	1.32	1.354	140	Back side
	WLAN802.11 n(40M) 5.6G	1.23	1.256	134	Back side
	WLAN802.11 ac(20M) 5.6G	1.27	1.348	144	Back side
	WLAN802.11 ac(40M) 5.6G	1.31	1.337	134	Back side
	WLAN802.11 ac(80M) 5.6G	1.25	1.342	138	Back side
	WLAN802.11 a 5.8G	1.46	1.477	157	Back side
	WLAN802.11 n(40M) 5.8G	1.43	1.47	151	Back side
	WLAN802.11 ac(40M) 5.8G	1.29	1.323	159	Back side
	WLAN802.11 ac(80M) 5.8G	1.38	1.432	155	Back side

#. WLAN802.11 a/b/g/n(20M/40M)/ac(20M/40M/80M) conducted power table:

Band \ Antenna	SISO		MIMO
	Chain 0	Chain 1	Chain0+1
WLAN802.11b	V	V	—
WLAN802.11g	V	V	—
WLAN802.11n(20M)	V	V	V
WLAN802.11n(40M)	V	V	V
WLAN802.11a	V	V	—
WLAN802.11n(20M) 5G	V	V	V
WLAN802.11n(40M) 5G	V	V	V
WLAN802.11ac(20M) 5G	V	V	V
WLAN802.11ac(40M) 5G	V	V	V
WLAN802.11ac(80M) 5G	V	V	V

Main Antenna (CH0)

802.11 b		Max. Rated Avg. Power + Max. Tolerance (dBm)	Average Power Output (dBm)
CH	Frequency (MHz)		Data Rate (Mbps)
			5.5
1	2412	16	15.95
6	2437	16	15.67
11	2462	16	15.81

802.11 g		Max. Rated Avg. Power + Max. Tolerance (dBm)	Average Power Output (dBm)
CH	Frequency (MHz)		Data Rate (Mbps)
			6
1	2412	14	13.95
2	2417	15.5	15.44
6	2437	16.5	16.32
10	2457	15.5	15.41
11	2462	12.5	12.22

Main Antenna (CH0)

802.11 n(20M)		Max. Rated Avg. Power + Max. Tolerance (dBm)	Average Power Output (dBm)
CH	Frequency (MHz)		Data Rate (Mbps)
			6.5
1	2412	14	13.86
2	2417	15.5	15.41
6	2437	16.5	16.22
10	2457	15.5	15.37
11	2462	12.5	12.14

802.11 n(40M)		Max. Rated Avg. Power + Max. Tolerance (dBm)	Average Power Output (dBm)
CH	Frequency (MHz)		Data Rate (Mbps)
			6.5
3	2422	13.5	13.37
4	2427	14.5	14.24
6	2437	16.5	16.27
8	2447	13.5	13.42
9	2452	12.5	12.22

Main Antenna (CH0)

802.11 a 5.2/5.3/5.6/5.8G		Max. Rated Avg. Power + Max. Tolerance (dBm)	Average Power Output(dBm)
			Data Rate (Mbps)
CH	Frequency (MHz)		6
36	5180	12.5	12.24
40	5200	12.5	12.28
44	5220	12.5	12.31
48	5240	12.5	12.27
52	5260	12.5	12.26
56	5280	12.5	12.25
60	5300	12.5	12.33
64	5320	12.5	12.13
100	5500	12.5	12.18
104	5520	12.5	12.28
108	5540	12.5	12.29
112	5560	12.5	12.26
116	5580	12.5	12.17
132	5660	12.5	12.21
136	5680	12.5	12.14
140	5700	12.5	12.31
149	5745	12.5	12.32
153	5765	12.5	12.38
157	5785	12.5	12.37
161	5805	12.5	12.28
165	5825	12.5	12.34

Main Antenna (CH0)

802.11 n(20M) 5.2/5.3/5.6/5.8G		Max. Rated Avg. Power + Max. Tolerance (dBm)	Average Power Output(dBm)
			Data Rate (Mbps)
CH	Frequency (MHz)		6.5
36	5180	12.5	12.12
40	5200	12.5	12.08
44	5220	12.5	12.03
48	5240	12.5	12.34
52	5260	12.5	12.13
56	5280	12.5	12.04
60	5300	12.5	12.02
64	5320	12.5	12.03
100	5500	12.5	12.01
104	5520	12.5	12.05
108	5540	12.5	12.08
112	5560	12.5	12.03
116	5580	12.5	12.22
132	5660	12.5	12.06
136	5680	12.5	12.24
140	5700	12.5	12.07
149	5745	12.5	12.14
153	5765	12.5	12.00
157	5785	12.5	12.01
161	5805	12.5	12.00
165	5825	12.5	12.16

Main Antenna (CH0)

802.11 n(40M) 5.2/5.3/5.6/5.8G		Max. Rated Avg. Power + Max. Tolerance (dBm)	Average Power Output(dBm)
			Data Rate (Mbps)
CH	Frequency (MHz)		13.5
38	5190	12	11.93
46	5230	12.5	12.25
54	5270	12.5	12.24
62	5310	12.5	12.14
102	5510	12.5	12.22
110	5550	12.5	12.33
134	5670	12.5	12.26
151	5755	12.5	12.27
159	5795	12.5	12.20

Main Antenna (CH0)

802.11 ac(20M) 5.2/5.3/5.6/5.8G		Max. Rated Avg. Power + Max. Tolerance (dBm)	Average Power Output(dBm)
			Data Rate (Mbps)
CH	Frequency (MHz)		6.5
36	5180	12.5	12.19
40	5200	12.5	12.39
44	5220	12.5	12.34
48	5240	12.5	12.18
52	5260	12.5	12.10
56	5280	12.5	12.09
60	5300	12.5	12.08
64	5320	12.5	12.07
100	5500	12.5	12.11
104	5520	12.5	12.05
108	5540	12.5	12.04
112	5560	12.5	12.27
116	5580	12.5	12.23
132	5660	12.5	12.04
136	5680	12.5	12.17
140	5700	12.5	12.01
144	5720	12.5	12.15
149	5745	12.5	12.03
153	5765	12.5	12.35
157	5785	12.5	12.24
161	5805	12.5	12.16
165	5825	12.5	12.30

Main Antenna (CH0)

802.11 ac(40M) 5.2/5.3/5.6/5.8G		Max. Rated Avg. Power + Max. Tolerance (dBm)	Average Power Output(dBm)
CH	Frequency (MHz)		Data Rate (Mbps)
			13.5
38	5190	12	11.95
46	5230	12.5	12.30
54	5270	12.5	12.32
62	5310	12.5	12.28
102	5510	12.5	12.32
110	5550	12.5	12.44
134	5670	12.5	12.43
142	5710	12.5	12.14
151	5755	12.5	12.39
159	5795	12.5	12.36

802.11 ac(80M) 5.2/5.3/5.6/5.8G		Max. Rated Avg. Power + Max. Tolerance (dBm)	Average Power Output(dBm)
CH	Frequency (MHz)		Data Rate (Mbps)
			29.3
42	5210	12.5	12.15
58	5290	12.5	12.04
106	5530	12.5	12.02
138	5690	12.5	12.04
155	5775	12.5	12.12

#. Per FCC KDB443999, transmission on channels which overlap the 5600-5650 MHz is prohibited as a client.

Aux Antenna (CH1)

802.11 b		Max. Rated Avg. Power + Max. Tolerance (dBm)	Average Power Output (dBm)
CH	Frequency (MHz)		Data Rate (Mbps)
			5.5
1	2412	16	15.78
6	2437	16	15.61
11	2462	16	15.71

802.11 g		Max. Rated Avg. Power + Max. Tolerance (dBm)	Average Power Output (dBm)
CH	Frequency (MHz)		Data Rate (Mbps)
			6
1	2412	14.5	13.92
2	2417	15.5	15.37
6	2437	16.5	16.18
10	2457	15.5	15.36
11	2462	12.5	12.12

802.11 n(20M)		Max. Rated Avg. Power + Max. Tolerance (dBm)	Average Power Output (dBm)
CH	Frequency (MHz)		Data Rate (Mbps)
			6.5
1	2412	14.5	13.81
2	2417	15.5	15.21
6	2437	16.5	16.14
10	2457	15.5	15.34
11	2462	12.5	12.11

Aux Antenna (CH1)

802.11 n(40M)		Max. Rated Avg. Power + Max. Tolerance (dBm)	Average Power Output (dBm)
CH	Frequency (MHz)		Data Rate (Mbps)
			6.5
3	2422	13.5	13.24
4	2427	14.5	14.21
6	2437	16.5	16.15
8	2447	12.5	12.13
9	2452	11.5	11.33

Aux Antenna (CH1)

802.11 a 5.2/5.3/5.6/5.8G		Max. Rated Avg. Power + Max. Tolerance (dBm)	Average Power Output(dBm)
			Data Rate (Mbps)
CH	Frequency (MHz)		6
36	5180	12.5	12.33
40	5200	12.5	12.40
44	5220	12.5	12.41
48	5240	12.5	12.36
52	5260	12.5	12.36
56	5280	12.5	12.33
60	5300	12.5	12.41
64	5320	12.5	12.21
100	5500	12.5	12.29
104	5520	12.5	12.40
108	5540	12.5	12.39
112	5560	12.5	12.35
116	5580	12.5	12.28
132	5660	12.5	12.31
136	5680	12.5	12.24
140	5700	12.5	12.39
149	5745	12.5	12.39
153	5765	12.5	12.47
157	5785	12.5	12.45
161	5805	12.5	12.39
165	5825	12.5	12.42

Aux Antenna (CH1)

802.11 n(20M) 5.2/5.3/5.6/5.8G		Max. Rated Avg. Power + Max. Tolerance (dBm)	Average Power Output(dBm)
			Data Rate (Mbps)
CH	Frequency (MHz)		6.5
36	5180	12.5	12.24
40	5200	12.5	12.18
44	5220	12.5	12.24
48	5240	12.5	12.43
52	5260	12.5	12.23
56	5280	12.5	12.14
60	5300	12.5	12.12
64	5320	12.5	12.18
100	5500	12.5	12.17
104	5520	12.5	12.12
108	5540	12.5	12.15
112	5560	12.5	12.10
116	5580	12.5	12.42
132	5660	12.5	12.11
136	5680	12.5	12.34
140	5700	12.5	12.17
149	5745	12.5	12.23
153	5765	12.5	12.12
157	5785	12.5	12.05
161	5805	12.5	12.04
165	5825	12.5	12.43

Aux Antenna (CH1)

802.11 n(40M) 5.2/5.3/5.6/5.8G		Max. Rated Avg. Power + Max. Tolerance (dBm)	Average Power Output(dBm)
			Data Rate (Mbps)
CH	Frequency (MHz)		13.5
38	5190	12.5	12.32
46	5230	12.5	12.31
54	5270	12.5	12.31
62	5310	12.5	12.25
102	5510	12.5	12.29
110	5550	12.5	12.42
134	5670	12.5	12.41
151	5755	12.5	12.38
159	5795	12.5	12.33

Aux Antenna (CH1)

802.11 ac(20M) 5.2/5.3/5.6/5.8G		Max. Rated Avg. Power + Max. Tolerance (dBm)	Average Power Output(dBm)
			Data Rate (Mbps)
CH	Frequency (MHz)		6.5
36	5180	12.5	12.35
40	5200	12.5	12.42
44	5220	12.5	12.37
48	5240	12.5	12.35
52	5260	12.5	12.34
56	5280	12.5	12.33
60	5300	12.5	12.41
64	5320	12.5	12.22
100	5500	12.5	12.31
104	5520	12.5	12.38
108	5540	12.5	12.40
112	5560	12.5	12.36
116	5580	12.5	12.27
132	5660	12.5	12.32
136	5680	12.5	12.21
140	5700	12.5	12.39
144	5720	12.5	12.24
149	5745	12.5	12.38
153	5765	12.5	12.46
157	5785	12.5	12.45
161	5805	12.5	12.37
165	5825	12.5	12.40

Aux Antenna (CH1)

802.11 ac(40M) 5.2/5.3/5.6/5.8G		Max. Rated Avg. Power + Max. Tolerance (dBm)	Average Power Output(dBm)
CH	Frequency (MHz)		Data Rate (Mbps)
			13.5
38	5190	12.5	12.37
46	5230	12.5	12.34
54	5270	12.5	12.36
62	5310	12.5	12.32
102	5510	12.5	12.34
110	5550	12.5	12.46
134	5670	12.5	12.45
142	5710	12.5	12.23
151	5755	12.5	12.44
159	5795	12.5	12.39

802.11 ac(80M) 5.2/5.3/5.6/5.8G		Max. Rated Avg. Power + Max. Tolerance (dBm)	Average Power Output(dBm)
CH	Frequency (MHz)		Data Rate (Mbps)
			29.3
42	5210	12.5	12.22
58	5290	12.5	12.23
106	5530	12.5	12.26
138	5690	12.5	12.19
155	5775	12.5	12.34

#. Per FCC KDB443999, transmission on channels which overlap the 5600-5650 MHz is prohibited as a client.

MIMO (CH0 + CH1)

802.11 n(20M)		Max. Rated Avg. Power + Max. Tolerance (dBm)	Average Power Output (dBm)
CH	Frequency (MHz)		Data Rate (Mbps)
			6.5
1	2412	12	11.98
2	2417	13.5	13.26
6	2437	13.5	13.35
10	2457	13.5	13.28
11	2462	12	11.89

802.11 n(40M)		Max. Rated Avg. Power + Max. Tolerance (dBm)	Average Power Output (dBm)
CH	Frequency (MHz)		Data Rate (Mbps)
			13.5
3	2422	9.5	9.47
4	2427	12	11.92
6	2437	13.5	13.32
8	2447	11.5	11.02
9	2452	9.5	9.43

MIMO (CH0 + CH1)

802.11 n(20M) 5.2/5.3/5.6/5.8G		Max. Rated Avg. Power + Max. Tolerance (dBm)	Average Power Output(dBm)
			Data Rate (Mbps)
CH	Frequency (MHz)		6.5
36	5180	10.5	10.19
40	5200	10.5	10.22
44	5220	10.5	10.15
48	5240	10.5	10.08
52	5260	10.5	9.94
56	5280	10.5	10.02
60	5300	10.5	10.05
64	5320	10.5	10.11
100	5500	10.5	10.18
104	5520	10.5	10.15
108	5540	10.5	10.15
112	5560	10.5	10.15
116	5580	10.5	10.11
132	5660	10.5	10.10
136	5680	10.5	10.04
140	5700	10.5	10.02
149	5745	10.5	10.06
153	5765	10.5	10.14
157	5785	10.5	10.12
161	5805	10.5	10.08
165	5825	10.5	10.02

MIMO (CH0+CH1)

802.11 n(40M) 5.2/5.3/5.6/5.8G		Max. Rated Avg. Power + Max. Tolerance (dBm)	Average Power Output(dBm)
			Data Rate (Mbps)
CH	Frequency (MHz)		13.5
38	5190	10	9.68
46	5230	10.5	10.08
54	5270	10.5	9.94
62	5310	10.5	10.03
102	5510	10.5	10.08
110	5550	10.5	10.17
134	5670	10.5	10.17
151	5755	10.5	10.14
159	5795	10.5	10.10

MIMO (CH0+CH1)

802.11 ac(20M) 5.2/5.3/5.6/5.8G		Max. Rated Avg. Power + Max. Tolerance (dBm)	Average Power Output(dBm)
CH	Frequency (MHz)		Data Rate (Mbps)
			6.5
36	5180	10.5	10.23
40	5200	10.5	10.28
44	5220	10.5	10.19
48	5240	10.5	10.14
52	5260	10.5	10.00
56	5280	10.5	10.07
60	5300	10.5	10.10
64	5320	10.5	10.15
100	5500	10.5	10.24
104	5520	10.5	10.20
108	5540	10.5	10.21
112	5560	10.5	10.20
116	5580	10.5	10.16
132	5660	10.5	10.16
136	5680	10.5	10.10
140	5700	10.5	10.07
144	5720	10.5	10.48
149	5745	10.5	10.12
153	5765	10.5	10.20
157	5785	10.5	10.18
161	5805	10.5	10.13
165	5825	10.5	10.08

MIMO (CH0+CH1)

802.11 ac(40M) 5.2/5.3/5.6/5.8G		Max. Rated Avg. Power + Max. Tolerance (dBm)	Average Power Output(dBm)
CH	Frequency (MHz)		Data Rate (Mbps)
			13.5
38	5190	10	9.76
46	5230	10.5	10.16
54	5270	10.5	10.01
62	5310	10.5	10.10
102	5510	10.5	10.15
110	5550	10.5	10.24
134	5670	10.5	10.24
142	5710	10.5	10.42
151	5755	10.5	10.21
159	5795	10.5	10.18

802.11 ac(80M) 5.2/5.3/5.6/5.8G		Max. Rated Avg. Power + Max. Tolerance (dBm)	Average Power Output(dBm)
CH	Frequency (MHz)		Data Rate (Mbps)
			29.3
42	5210	10.5	10.28
58	5290	10.5	10.38
106	5530	10.5	10.35
138	5690	10.5	10.29
155	5775	10.5	10.30

#. Per FCC KDB443999, transmission on channels which overlap the 5600-5650 MHz is prohibited as a client.

#. Bluetooth conducted power table:

Frequency (MHz)	Data Rate	Peak	
		dBm	mW
2402	1	4.41	2.761
2441	1	4.37	2.735
2480	1	4.31	2.698
2402	2	2.91	1.954
2441	2	2.86	1.932
2480	2	2.8	1.905
2402	3	2	1.585
2441	3	1.99	1.581
2480	3	1.96	1.570

Frequency (MHz)	Avg. (dBm)
	BT4.0
2402	1.01
2442	1.27
2480	0.71

1.4 Test Environment

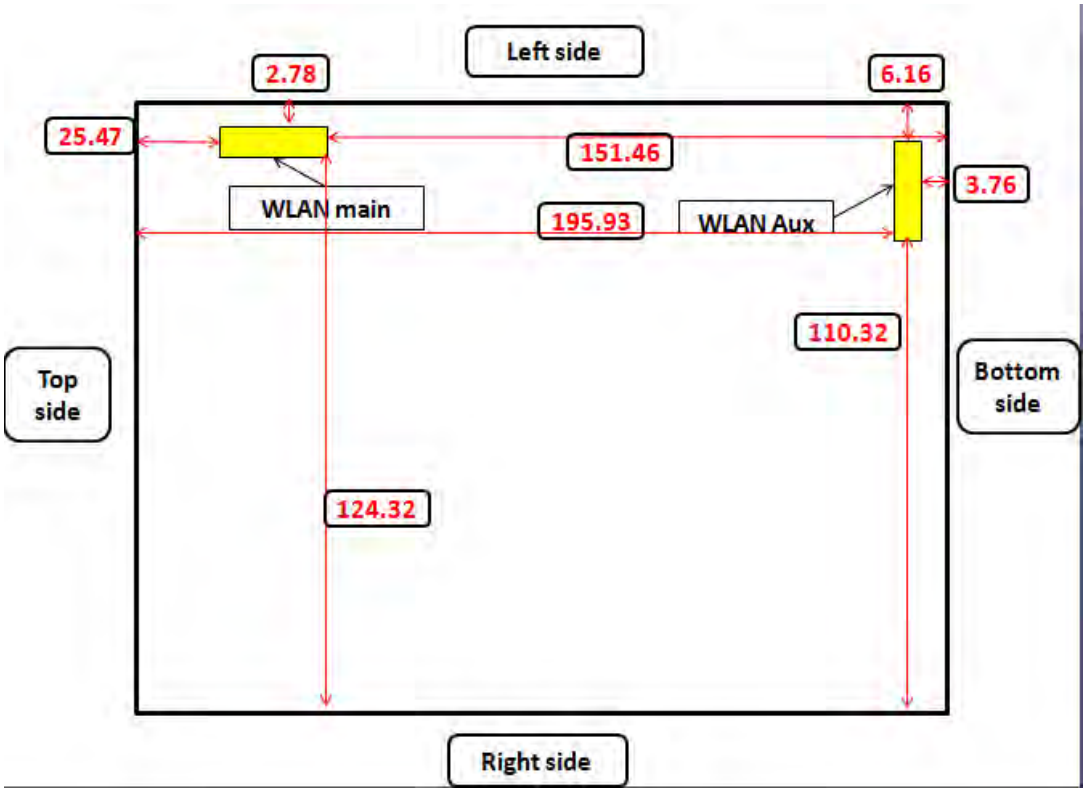
Ambient Temperature: 22±2° C
Tissue Simulating Liquid: 22±2° C

1.5 Operation Description

WLAN (802.11 a/b/g/n/ac):

Use chipset specific software to control the EUT, and makes it transmit in maximum power. The EUT was tested in five configurations:

Configurations: Back/Bottom/Left sides_0mm.



Back view of the tablet

Note:

1. The SAR measurement is required for 802.11g/n since its maximum output power is higher than 1/4 dB higher than 802.11b.

2. For IEEE802.11n/ac, SAR testing can be conducted on channel with the highest output power when taking into consideration tune-up tolerance for same test configuration that was identified during SAR evaluations for IEEE802.11b/g and IEEE802.11a (as applicable) provided bandwidth and test position are the same.

3. For IEEE802.11n/ac with multiple channel BW configurations, highest channel BW configuration with highest output power limit was tested.

4. Testing of lower BW configurations is not required when the maximum average output of the default test channels in each lower BW configuration is less than 1/4dB higher than the default test channel in the highest BW configuration.

5. Testing at higher data rates is not required since the maximum output power is less than 1/4 dB higher than those measured at the lowest data rate.

6. BT and WLAN Main share the same antenna path and BT may transmit simultaneously with WLAN Aux antenna.

7. For 2.4/5GHz WLAN Main and Aux antennas, the maximum output power of each antenna during simultaneous transmission (for 802.11n/ac) is much less than that used in standalone transmission (802.11a/b/g/n/ac), so it is more conservative to use the sum of 1-g SAR provision in KDB447498D01 to exclude the SAR measurement for 802.11n MIMO.

8. According to KDB447498 D01,

   (1) The SAR test exclusion thresholds for 100 MHz to 6 GHz at test separation distances≤ 50 mm are determined by:

$$\frac{\text{Max. tune up power(mW)}}{\text{Min. test separation distance(mm)}} \times \sqrt{f(\text{GHz})} \leq 3$$

   When the minimum test separation distance is < 5mm, 5mm is applied to determine SAR test exclusion.

   (2) For test separation distances > 50 mm, and the frequency at 100 MHz to 1500MHz, the SAR test exclusion threshold is determined according to the following, and as illustrated in Appendix B of KDB447498 D01.
   [(Threshold at 50mm in step1) + (test separation distance-50mm)x($\frac{f(MHz)}{160}$)](mW),

(3) For test separation distances > 50 mm, and the frequency at >1500MHz to 6GHz, the SAR test exclusion threshold is determined according to the following, and as illustrated in Appendix B of KDB447498 D01.

[(Threshold at 50mm in step1) + (test separation distance-50mm)x10](mW),

Mode	Max. tune-up power(dBm)	Max. tune-up power(mW)	Top side			Right side			Left side		
			Ant. to surface (mm)	Exclusion threshold (mW)	Require SAR testing?	Ant. to surface (mm)	Exclusion threshold (mW)	Require SAR testing?	Ant. to surface (mm)	Exclusion threshold (mW)	Require SAR testing?
WLAN Main 2.45GHz	16.5	44.668	25.47	2.752	NO	124.32	744.602	NO	less than 5	14.018	YES
WLAN Main 5GHz	12.5	17.783	25.47	1.685	NO	124.32	744.058	NO	less than 5	8.584	YES
WLAN Aux 2.45GHz	16.5	44.668	195.93	1460.702	NO	110.32	604.602	NO	6.16	11.378	YES
WLAN Aux 5GHz	12.5	17.783	195.93	1460.158	NO	110.32	604.058	NO	6.16	6.967	YES

Mode	Max. tune-up power(dBm)	Max. tune-up power(mW)	Bottom side			Back side		
			Ant. to surface(mm)	Exclusion threshold (mW)	Require SAR testing?	Ant. to surface(mm)	Exclusion threshold (mW)	Require SAR testing?
WLAN Main 2.45GHz	16.5	44.668	151.46	1016.002	NO	less than 5	14.018	YES
WLAN Main 5GHz	12.5	17.783	151.46	1015.458	NO	less than 5	8.584	YES
WLAN Aux 2.45GHz	16.5	44.668	less than 5	14.018	YES	less than 5	14.018	YES
WLAN Aux 5GHz	12.5	17.783	less than 5	8.584	YES	less than 5	8.584	YES

Mode	Maximum power (dBm)	Maximum power (mW)	Top side			Right side			Left side		
			Ant. to surface (mm)	Exclusion threshold (mW)	Require SAR testing?	Ant. to surface (mm)	Exclusion threshold (mW)	Require SAR testing?	Ant. to surface (mm)	Exclusion threshold (mW)	Require SAR testing?
BT	4.41	2.761	25.47	0.171	NO	124.32	743.287	NO	less than 5	0.869	NO

Mode	Maximum power (dBm)	Maximum power (mW)	Bottom side			Back side		
			Ant. to surface(mm)	Exclusion threshold (mW)	Require SAR testing?	Ant. to surface(mm)	Exclusion threshold (mW)	Require SAR testing?
BT	4.41	2.761	151.46	1014.687	NO	less than 5	0.869	NO

9. According to KDB447498 D01, testing of other required channels is not required when the reported 1-g SAR for the highest output channel is ≤ 0.8 W/kg, when the transmission band is ≤ 100 MHz.

10. According to KDB447498 D01, testing of other required channels is not required when the reported 1-g SAR for the highest output channel is ≤ 0.6 W/kg, when the transmission band is between 100 MHz and 200MHz.

11. According to KDB447498 D01, testing of other required channels is not required when the reported 1-g SAR for the highest output channel is ≤ 0.4 W/kg, when the transmission band is ≥ 200MHz.

12. According to KDB865664 D01, SAR measurement variability must be assessed for each frequency band. When the original highest measured SAR is ≥ 0.8 W/kg, repeated that measurement once. Perform a second repeated measurement only if the ratio of largest to smallest SAR for the original and first repeated measurements is > 1.20 or when the original or repeated measurement is ≥ 1.45 W/kg (~ 10% from the 1-g SAR limit)

13. There is a 2nd battery, so we do the worst case check in each band to make sure the device installed the 2nd battery can comply with the SAR limit.

1.6 The SAR Measurement System

A block diagram of the SAR measurement System is given in Fig. a. This SAR Measurement System uses a Computer-controlled 3-D stepper motor system (SPEAG DASY 5 professional system). The model EX3DV4 field probe is used to determine the internal electric fields. The SAR can be obtained from the equation SAR= σ ($|Ei|^2$)/ ρ where σ and ρ are the conductivity and mass density of the tissue-simulant.

The DASY 5 system for performing compliance tests consists of the following items:

- A standard high precision 6-axis robot (Staubli RX family) with controller, teach pendant and software. An arm extension is for accommodating the data acquisition electronics (DAE).
- A dosimetric probe, i.e., an isotropic E-field probe optimized and calibrated for usage intissue simulating liquid. The probe is equipped with an optical surface detector system.
- A data acquisition electronics (DAE) which performs the signal amplification, signal multiplexing, AD-conversion, offset measurements, mechanical surface detection, collision detection, etc. The unit is battery powered with standard or rechargeable batteries. The signal is optically transmitted to the EOC.

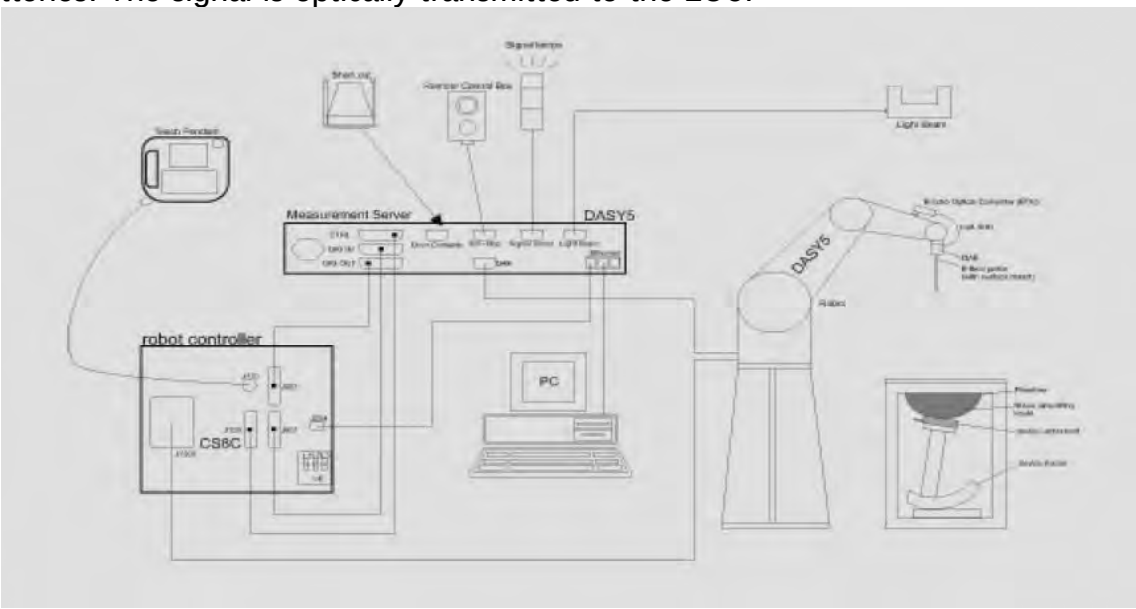


Fig. a The block diagram of SAR system

- The Electro-optical converter (EOC) performs the conversion between optical and electrical of the signals for the digital communication to the DAE and for the analog signal from the optical surface detection. The EOC is connected to the measurement server.
- The function of the measurement server is to perform the time critical tasks such as signal filtering, control of the robot operation and fast movement interrupts.
- A probe alignment unit which improves the (absolute) accuracy of the probe positioning.
- A computer operating Windows 7.
- DASY 5 software.
- Remote control with teach pendant and additional circuitry for robot safety such as warning lamps, etc.
- The SAM twin phantom enabling testing left-hand and right-hand usage.
- The device holder for handheld mobile phones.
- Tissue simulating liquid mixed according to the given recipes.
- Validation dipole kits allowing to validate the proper functioning of the system.

1.7 System Components

EX3DV4 E-Field Probe

Construction	Symmetrical design with triangular core Built-in shielding against static charges PEEK enclosure material (resistant to organic solvents, e.g., DGBE)	
Calibration	Basic Broad Band Calibration in air Conversion Factors (CF) for HSL 2450/5200/5300/5600/5800 MHz Additional CF for other liquids and frequencies upon request	
Frequency	10 MHz to > 6 GHz	
Directivity	± 0.3 dB in HSL (rotation around probe axis) ± 0.5 dB in tissue material (rotation normal to probe axis)	
Dynamic Range	10 µW/g to > 100 mW/g Linearity: ± 0.2 dB (noise: typically < 1 µW/g)	
Dimensions	Tip diameter: 2.5 mm	
Application	High precision dosimetric measurements in any exposure scenario (e.g., very strong gradient fields). Only probe which enables compliance testing for frequencies up to 6 GHz with precision of better 30%.	

SAM PHANTOM V4.0C

Construction	The shell corresponds to the specifications of the Specific Anthropomorphic Mannequin (SAM) phantom defined in IEEE 1528-200X and IEC 62209. It enables the dosimetric evaluation of left and right hand phone usage as well as body mounted usage at the flat phantom region. A cover prevents evaporation of the liquid. Reference markings on the phantom allow the complete setup of all predefined phantom positions and measurement grids by manually teaching three points with the robot.	
Shell Thickness	2 ± 0.2 mm	
Filling Volume	Approx. 25 liters	
Dimensions	Height: 850 mm; Length: 1000 mm; Width: 500 mm	

DEVICE HOLDER

Construction	The device holder (Supporter) for Notebook is made by POM (polyoxymethylene resin) , which is non-metal and non-conductive. The height can be adjusted to fit varies kind of notebooks.	 Device Holder

1.8 SAR System Verification

The microwave circuit arrangement for system verification is sketched in Fig. b. The daily system accuracy verification occurs within the flat section of the SAM phantom. A SAR measurement was performed to see if the measured SAR was within +/- 10% from the target SAR values. These tests were done at 2450/5200/5300/5600/5800MHz. The tests were conducted on the same days as the measurement of the DUT. The obtained results from the system accuracy verification are displayed in the table 1 (SAR values are normalized to 1W forward power delivered to the dipole). During the tests, the ambient temperature of the laboratory was 21.7°C, the relative humidity was 62% and the liquid depth above the ear reference points was ≥ 15 cm ± 5 mm (frequency ≤ 3 GHz) or ≥ 10 cm ± 5 mm (frequency > 3 G Hz) in all the cases. It is seen that the system is operating within its specification, as the results are within acceptable tolerance of the reference values.

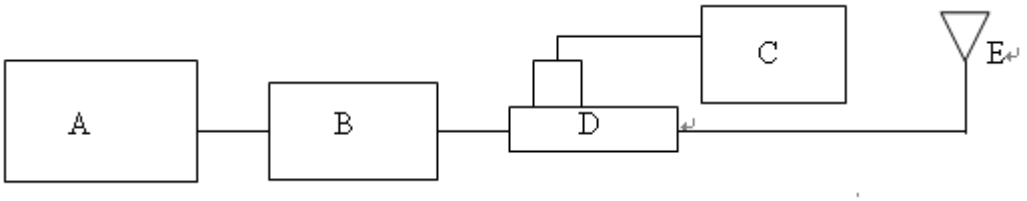


Fig. b The block diagram of system verification

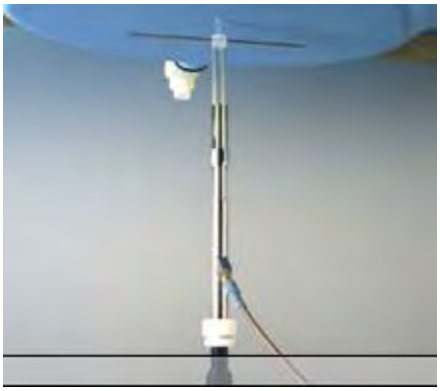
A. Signal generator

B. Amplifier

C. Power meter

D. Dual directional coupling

E. Reference dipole antenna



Photograph of the dipole Antenna

Validation Kit	S/N	Frequency (MHz)		1W Target SAR-1g (mW/g)	Measured SAR-1g (mW/g)	Measured SAR-1g normalized to 1W (mW/g)	Deviation (%)	Measured Date
D2450V2	727	2450	Body	50	12.6	50.4	0.80%	Apr. 03, 2015
D5GHzV2	1023	5200	Body	73.5	7.48	74.8	1.77%	Apr. 04, 2015
D5GHzV2		5300	Body	74.6	7.49	74.9	0.40%	Apr. 05, 2015
D5GHzV2		5600	Body	77.9	7.81	78.1	0.26%	Apr. 06, 2015
D5GHzV2		5800	Body	75.6	7.64	76.4	1.06%	Apr. 07, 2015

Table 1. Results of system validation

1.9 Tissue Simulant Fluid for the Frequency Band

The dielectric properties for this body-simulant fluid were measured by using the Agilent Model 85070E Dielectric Probe (rates frequency band 200 MHz to 20 GHz) in conjunction with Network Analyzer (30 KHz-6000 MHz).

All dielectric parameters of tissue simulates were measured within 24 hours of SAR measurements. The depth of the tissue simulant in the flat section of the phantom was ≥ 15 cm ± 5 mm (Frequency ≤3G) or ≥ 10 cm ± 5 mm (Frequency >3G) during all tests. (Fig. 2)

Tissue Type	Measurement Date	Measured Frequency (MHz)	Target Dielectric Constant, εr	Target Conductivity, σ (S/m)	Measured Dielectric Constant, εr	Measured Conductivity, σ (S/m)	% dev εr	% dev σ
Body	Apr. 3, 2015	2412	52.751	1.914	53.638	1.847	-1.68%	3.50%
		2417	52.744	1.918	53.621	1.852	-1.66%	3.44%
		2427	52.731	1.928	53.603	1.863	-1.65%	3.37%
		2437	52.717	1.938	53.592	1.872	-1.66%	3.38%
		2447	52.704	1.946	53.579	1.884	-1.66%	3.19%
		2450	52.700	1.950	53.568	1.888	-1.65%	3.18%
		2457	52.691	1.960	53.563	1.895	-1.65%	3.32%
		2462	52.685	1.967	53.551	1.901	-1.64%	3.36%
	Apr. 4, 2015	5190	49.028	5.288	48.191	5.222	1.71%	1.25%
		5200	49.014	5.299	48.181	5.231	1.70%	1.28%
		5210	49.001	5.311	48.168	5.243	1.70%	1.28%
		5220	48.987	5.323	48.161	5.254	1.69%	1.30%
		5230	48.974	5.334	48.143	5.266	1.70%	1.27%
	Apr. 5, 2015	5260	48.933	5.369	48.111	5.297	1.68%	1.34%
		5270	48.919	5.381	47.992	5.309	1.89%	1.34%
		5290	48.892	5.404	47.971	5.327	1.88%	1.42%
		5300	48.879	5.416	47.965	5.339	1.87%	1.42%
		5310	48.865	5.428	47.944	5.347	1.88%	1.49%
	Apr. 6, 2015	5510	48.594	5.661	47.759	5.613	1.72%	0.85%
		5520	48.580	5.673	47.741	5.624	1.73%	0.86%
		5530	48.566	5.685	47.719	5.637	1.74%	0.84%
		5540	48.553	5.696	47.705	5.649	1.75%	0.83%
		5550	48.540	5.708	47.674	5.661	1.78%	0.82%
		5560	48.526	5.720	47.644	5.669	1.82%	0.89%
		5600	48.471	5.766	47.589	5.712	1.82%	0.94%
		5670	48.376	5.848	47.537	5.785	1.74%	1.08%
		5690	48.349	5.872	47.505	5.809	1.75%	1.07%
		5700	48.336	5.883	47.481	5.818	1.77%	1.10%
		5710	48.322	5.895	47.463	5.832	1.78%	1.07%
		5720	48.309	5.907	47.434	5.844	1.81%	1.07%

Tissue Type	Measurement Date	Measured Frequency (MHz)	Target Dielectric Constant, εr	Target Conductivity, σ (S/m)	Measured Dielectric Constant, εr	Measured Conductivity, σ (S/m)	% dev εr	% dev σ
Body	Apr. 7, 2015	5755	48.261	5.947	47.352	5.892	1.88%	0.93%
		5765	48.248	5.959	47.331	5.904	1.90%	0.92%
		5775	48.234	5.971	47.314	5.917	1.91%	0.90%
		5785	48.220	5.982	47.302	5.931	1.90%	0.85%
		5795	48.207	5.994	47.272	5.942	1.94%	0.87%
		5800	48.200	6.000	47.261	5.949	1.95%	0.85%
		5825	48.166	6.029	47.204	5.979	2.00%	0.83%

Table 2. Dielectric Parameters of Tissue Simulant Fluid

The composition of the body tissue simulating liquid:

Frequency (MHz)	Mode	Ingredient						Total amount
		DGMBE	Water	Salt	Preventol D-7	Cellulose	Sugar	
2450	Body	301.7ml	698.3ml	—	—	—	—	1.0L(Kg)

Simulating Liquids for 5 GHz, Manufactured by SPEAG:

Ingredients	Water	Esters, Emulsifiers, Inhibitors	Sodium and Salt
(% by weight)	60-80	20-40	0-1.5

Table 3. Recipes for Tissue Simulating Liquid

1.10 Evaluation Procedures

The entire evaluation of the spatial peak values is performed within the Post-processing engine (SEMCAD). The system always gives the maximum values for the 1 g and 10 g cubes. The algorithm to find the cube with highest averaged SAR is divided into the following stages:

1. The extraction of the measured data (grid and values) from the Zoom Scan.
2. The calculation of the SAR value at every measurement point based on all stored data (A/D values and measurement parameters)
3. The generation of a high-resolution mesh within the measured volume
4. The interpolation of all measured values from the measurement grid to the high-resolution grid
5. The extrapolation of the entire 3-D field distribution to the phantom surface over the distance from sensor to surface
6. The calculation of the averaged SAR within masses of 1g and 10g.

The probe is calibrated at the center of the dipole sensors that is located 1 to 2.7mm away from the probe tip. During measurements, the probe stops shortly above the phantom surface, depending on the probe and the surface detecting system. Both distances are included as parameters in the probe configuration file. The software always knows exactly how far away the measured point is from the surface. As the probe cannot directly measure at the surface, the values between the deepest measured point and the surface must be extrapolated. The angle between the probe axis and the surface normal line is less than 30 degree.

In the Area Scan, the gradient of the interpolation function is evaluated to find all the extreme of the SAR distribution. The uncertainty on the locations of the extreme is less than 1/20 of the grid size. Only local maximum within –2 dB of the global maximum are searched and passed for the Cube Scan measurement. In the Cube Scan, the interpolation function is used to extrapolate the Peak SAR from the lowest measurement points to the inner phantom surface (the extrapolation distance). The uncertainty increases with the extrapolation distance. To keep the uncertainty within 1% for the 1 g and 10 g cubes, the extrapolation distance should not be larger than 5mm.

The maximum search is automatically performed after each area scan measurement. It is based on splines in two or three dimensions. The procedure can find the maximum for most SAR distributions even with relatively large grid spacing. After the area scanning measurement, the probe is automatically moved to a position at the interpolated maximum. The following scan can directly use this position for reference, e.g., for a finer resolution grid or the cube evaluations. The 1g and 10g peak evaluations are only available for the predefined cube 7x7x7 scans. The routines are verified and optimized for the grid dimensions used in these cube measurements.

The measured volume of 30x30x30mm contains about 30g of tissue.

The first procedure is an extrapolation (incl. Boundary correction) to get the points between the lowest measured plane and the surface. The next step uses 3D interpolation to get all points within the measured volume. In the last step, a 1g cube is placed numerically into the volume and its averaged SAR is calculated. This cube is the moved around until the highest averaged SAR is found. If the highest SAR is found at the edge of the measured volume, the system will issue a warning: higher SAR values might be found outside of the measured volume. In that case the cube measurement can be repeated, using the new interpolated maximum as the center.

1.11 Probe Calibration Procedures

For the calibration of E-field probes in lossy liquids, an electric field with an accurately known field strength must be produced within the measured liquid. For standardization purposes it would be desirable if all measurements which are necessary to assess the correct field strength would be traceable to standardized measurement procedures. In the following two different calibration techniques are summarized:

1.11.1 Transfer Calibration with Temperature Probes

In lossy liquids the specific absorption rate (SAR) is related both to the electric field (E) and the temperature gradient ($\delta T / \delta t$) in the liquid.

$$SAR = \frac{\sigma}{\rho}|E|^2 = c\frac{\delta T}{\delta t}$$

whereby σ is the conductivity, ρ the density and c the heat capacity of the liquid.

Hence, the electric field in lossy liquid can be measured indirectly by measuring the temperature gradient in the liquid. Non-disturbing temperature probes (optical probes or thermistor probes with resistive lines) with high spatial resolution (<1-2 mm) and fast reaction time (<1 s) are available and can be easily calibrated with high precision [1]. The setup and the exciting source have no influence on the calibration; only the relative positioning uncertainties of the standard temperature probe and the E-field probe to be calibrated must be considered. However, several problems limit the available accuracy of probe calibrations with temperature probes:

- The temperature gradient is not directly measurable but must be evaluated from temperature measurements at different time steps. Special precaution is necessary to avoid measurement errors caused by temperature gradients due to energy equalizing effects or convection currents in the liquid. Such effects cannot be completely avoided, as the measured field itself destroys the thermal equilibrium in the liquid. With a careful setup these errors can be kept small.

- The measured volume around the temperature probe is not well defined. It is difficult to calculate the energy transfer from a surrounding gradient temperature field into the probe. These effects must be considered, since temperature probes are calibrated in liquid with homogeneous temperatures. There is no traceable standard for temperature rise measurements.
- The calibration depends on the assessment of the specific density, the heat capacity and the conductivity of the medium. While the specific density and heat capacity can be measured accurately with standardized procedures (~ 2% for c; much better for ρ) , there is no standard for the measurement of the conductivity. Depending on the method and liquid, the error can well exceed ±5%.
- Temperature rise measurements are not very sensitive and therefore are often performed at a higher power level than the E-field measurements. The nonlinearities in the system (e.g., power measurements, different components, etc.) must be considered.

Considering these problems, the possible accuracy of the calibration of E-field probes with temperature gradient measurements in a carefully designed setup is about ±10% (RSS) [2]. Recently, a setup which is a combination of the waveguide techniques and the thermal measurements was presented in [3]. The estimated uncertainty of the setup is ±5% (RSS) when the same liquid is used for the calibration and for actual measurements and ±7-9% (RSS) when not, which is in good agreement with the estimates given in [2].

1.11.2 Calibration with Analytical Fields

In this method a technical setup is used in which the field can be calculated analytically from measurements of other physical magnitudes (e.g., input power). This corresponds to the standard field method for probe calibration in air; however, there is no standard defined for fields in lossy liquids.

When using calculated fields in lossy liquids for probe calibration, several points must be considered in the assessment of the uncertainty:

- The setup must enable accurate determination of the incident power.
- The accuracy of the calculated field strength will depend on the assessment of the dielectric parameters of the liquid.
- Due to the small wavelength in liquids with high permittivity, even small setups might be above the resonant cutoff frequencies. The field distribution in the setup must be carefully checked for conformity with the theoretical field distribution.

References

[1] N. Kuster, Q. Balzano, and J.C. Lin, Eds., *Mobile Communications Safety*, Chapman & Hall, London, 1997.

[2] K. Meier, M. Burkhardt, T. Schmid, and N. Kuster, \Broadband calibration of E-field probes in lossy media", *IEEE Transactions on Microwave Theory and Techniques*, vol. 44, no. 10, pp. 1954{1962, Oct. 1996.

[3] K. Jokela, P. Hyysalo, and L. Puranen, \Calibration of specific absorption rate (SAR) probes in waveguide at 900 MHz", *IEEE Transactions on Instrumentation and Measurements*, vol. 47, no. 2, pp. 432{438, Apr. 1998.

1.12 Test Standards and Limits

According to FCC 47CFR §2.1093(d) The limits to be used for evaluation are based generally on criteria published by the American National Standards Institute (ANSI) for localized specific absorption rate (“SAR”) in Section 4.2 of “IEEE Standard for Safety Levels with Respect to Human Exposure to Radio Frequency Electromagnetic Fields, 3 kHz to 300 GHz,” ANSI/IEEE C95.1–1992, Copyright 1992 by the Institute of Electrical and Electronics Engineers, Inc., New York, New York 10017. These criteria for SAR evaluation are similar to those recommended by the National Council on Radiation Protection and Measurements (NCRP) in “Biological Effects and Exposure Criteria for Radio frequency Electromagnetic Fields,” NCRP Report No. 86, Section 17.4.5. Copyright NCRP, 1986, Bethesda, Maryland 20814. SAR is a measure of the rate of energy absorption due to exposure to an RF transmitting source. SAR values have been related to threshold levels for potential biological hazards. The criteria to be used are specified in paragraphs (d)(1) and (d)(2) of this section and shall apply for portable devices transmitting in the frequency range from 100 kHz to 6 GHz. Portable devices that transmit at frequencies above 6 GHz are to be evaluated in terms of the MPE limits specified in § 1.1310 of this chapter. Measurements and calculations to demonstrate compliance with MPE field strength or power density limits for devices operating above 6 GHz should be made at a minimum distance of 5 cm from the radiating source.

(1) Limits for Occupational/Controlled exposure: 0.4 W/kg as averaged over the whole-body and spatial peak SAR not exceeding 8 W/kg as averaged over any 1 gram of tissue (defined as a tissue volume in the shape of a cube). Exceptions are the hands, wrists, feet and ankles where the spatial peak SAR shall not exceed 20 W/kg, as averaged over an 10 grams of tissue (defined as a tissue volume in the shape of a cube).

(2) Occupational/Controlled limits apply when persons are exposed as a consequence of their employment provided these persons are fully aware of and exercise control over their exposure. Awareness of exposure can be accomplished by use of warning labels or by specific training or education through appropriate means, such as an RF safety program in a work environment.

(3) Limits for General Population/Uncontrolled exposure: 0.08 W/kg as averaged over the whole-body and spatial peak SAR not exceeding 1.6 W/kg as averaged over any 1 gram of tissue (defined as a tissue volume in the shape of a cube). Exceptions are the hands, wrists, feet and ankles where the spatial peak SAR shall not exceed 4 W/kg, as averaged over any 10 grams of tissue (defined as a tissue volume in the shape of a cube). General Population/Uncontrolled limits apply when the general public may be exposed, or when persons that are exposed as a consequence of their employment may not be fully aware of the potential for exposure or do not exercise control over their exposure. Warning labels placed on consumer devices such as cellular telephones will not be sufficient reason to allow these devices to be evaluated subject to limits for occupational/controlled exposure in paragraph (d)(1)

of this section. (Table 4.)

Human Exposure	Uncontrolled Environment General Population	Controlled Environment Occupational
Spatial Peak SAR (Brain)	1.60 m W/g	8.00 m W/g
Spatial Average SAR (Whole Body)	0.08 m W/g	0.40 m W/g
Spatial Peak SAR (Hands/Feet/Ankle/Wrist)	4.00 m W/g	20.00 m W/g

Table 4. RF exposure limits

Notes:
1. Uncontrolled environments are defined as locations where there is potential exposure of individuals who have no knowledge or control of their potential exposure.
2. Controlled environments are defined as locations where there is potential exposure of individuals who have knowledge of their potential exposure and can exercise control over their exposure.

2. Summary of Results

WLAN802.11 Main Antenna

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	WLAN802.11 b	Back side	-	1	2412	16.00	15.95	1.16%	0.52	0.526	-
		Back side	-	6	2437	16.00	15.67	7.89%	0.631	0.681	-
		Back side	-	11	2462	16.00	15.81	4.47%	0.705	0.737	59
		Left side	-	1	2412	16.00	15.95	1.16%	0.175	0.177	-
	WLAN802.11 g	Back side	-	2	2417	15.50	15.44	1.39%	0.412	0.418	-
		Back side	-	6	2437	16.50	16.32	4.23%	0.61	0.636	60
		Back side	-	10	2457	15.50	15.41	2.09%	0.549	0.560	-
		Left side	-	6	2437	16.50	16.32	4.23%	0.21	0.219	-
	WLAN802.11 n (20M)	Back side	-	2	2417	15.50	15.41	2.09%	0.519	0.530	-
		Back side	-	6	2437	16.50	16.22	6.66%	0.742	0.791	61
		Back side	-	10	2457	15.5	15.37	3.04%	0.527	0.543	-
		Left side	-	6	2437	16.50	16.22	6.66%	0.262	0.279	-
	WLAN802.11 n (40M)	Back side	-	4	2427	14.50	14.24	6.17%	0.38	0.403	-
		Back side	-	6	2437	16.50	16.27	5.44%	0.746	0.787	62
		Back side	-	8	2447	13.50	13.42	1.86%	0.35	0.357	-
		Left side	-	6	2437	16.50	16.27	5.44%	0.234	0.247	-
	WLAN802.11 a 5.2G	Back side	-	40	5200	12.50	12.28	5.20%	0.492	0.518	-
		Back side	-	44	5220	12.50	12.31	4.47%	0.532	0.556	63
		Left side	-	44	5220	12.50	12.31	4.47%	0.253	0.264	-
	WLAN802.11 n(40M) 5.2G	Back side	-	46	5230	12.50	12.25	5.93%	0.558	0.591	64
	WLAN802.11 ac(40M) 5.2G	Back side	-	46	5230	12.50	12.30	4.71%	0.52	0.545	65
	WLAN802.11 ac(80M) 5.2G	Back side	-	42	5210	12.50	12.15	8.39%	0.511	0.554	66
	WLAN802.11 a 5.3G	Back side	-	52	5260	12.50	12.26	5.68%	0.622	0.657	-
		Back side	-	60	5300	12.50	12.33	3.99%	0.64	0.666	67
		Left side	-	60	5300	12.50	12.33	3.99%	0.287	0.298	-
	WLAN802.11 n(40M) 5.3G	Back side	-	54	5270	12.50	12.24	6.17%	0.495	0.526	-
		Back side	-	62	5310	12.50	12.24	6.17%	0.572	0.607	68
	WLAN802.11 ac(40M) 5.3G	Back side	-	54	5270	12.50	12.32	4.23%	0.483	0.503	69
	WLAN802.11 ac(80M) 5.3G	Back side	-	58	5290	12.50	12.04	11.17%	0.593	0.659	70
	WLAN802.11 a 5.6G	Back side	-	108	5540	12.50	12.29	4.95%	0.571	0.599	-
		Back side	-	112	5560	12.50	12.26	5.68%	0.548	0.579	-
		Back side	-	140	5700	12.50	12.31	4.47%	0.738	0.771	71
		Left side	-	140	5700	12.50	12.31	4.47%	0.28	0.293	-

* - repeated at the highest SAR measurement according to the KDB 865664 D01

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	WLAN802.11 n(40M) 5.6G	Back side	-	102	5510	12.50	12.22	6.66%	0.614	0.655	-
		Back side	-	110	5550	12.50	12.33	3.99%	0.613	0.637	-
		Back side	-	134	5670	12.50	12.26	5.68%	0.692	0.731	72
	WLAN802.11 ac(20M) 5.6G	Back side	-	144	5720	12.50	12.15	8.39%	0.704	0.763	73
		Left side	-	144	5720	12.50	12.15	8.39%	0.269	0.292	-
	WLAN802.11 ac(40M) 5.6G	Back side	-	102	5510	12.50	12.22	6.66%	0.68	0.725	74
		Back side	-	110	5550	12.50	12.33	3.99%	0.652	0.678	-
		Back side	-	134	5670	12.50	12.26	5.68%	0.676	0.714	-
		Back side	-	142	5710	12.50	12.15	8.39%	0.593	0.643	-
		Left side	-	142	5710	12.50	12.15	8.39%	0.28	0.303	-
	WLAN802.11 ac(80M) 5.6G	Back side	-	106	5530	12.50	12.02	11.69%	0.476	0.532	-
		Back side	-	138	5690	12.50	12.04	11.17%	0.644	0.716	75
	WLAN802.11 a 5.8G	Back side	-	153	5765	12.50	12.38	2.80%	0.712	0.732	76
		Back side	-	157	5785	12.50	12.37	3.04%	0.646	0.666	-
		Back side	-	165	5825	12.50	12.34	3.75%	0.627	0.651	-
		Left side	-	153	5765	12.50	12.38	2.80%	0.262	0.269	-
	WLAN802.11 n(40M) 5.8G	Back side	-	151	5755	12.50	12.27	5.44%	0.669	0.705	77
	WLAN802.11 ac(40M) 5.8G	Back side	-	151	5755	12.50	12.39	2.57%	0.674	0.691	78
	WLAN802.11 ac(80M) 5.8G	Back side	-	155	5775	12.50	12.12	9.14%	0.661	0.721	79

* - repeated at the highest SAR measurement according to the KDB 865664 D01

WLAN802.11 Main Antenna_2nd battery spot check

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	WLAN802.11 n (20M)	Back side	-	6	2437	16.50	16.22	6.66%	0.763	0.814	80
	WLAN802.11 a 5.2G	Back side	-	44	5220	12.50	12.31	4.47%	0.536	0.560	81
	WLAN802.11 a 5.3G	Back side	-	60	5300	12.50	12.33	3.99%	0.644	0.670	82
	WLAN802.11 a 5.6G	Back side	-	140	5700	12.50	12.31	4.47%	0.693	0.724	83
	WLAN802.11 a 5.8G	Back side	-	153	5765	12.50	12.38	2.80%	0.702	0.722	84

WLAN802.11 Aux Antenna

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	WLAN802.11 b	Back side	-	1	2412	16.00	15.78	5.20%	0.765	0.805	-
		Back side	-	6	2437	16.00	15.61	9.40%	0.771	0.843	85
		Back side	-	11	2462	16.00	15.71	6.91%	0.707	0.756	-
		Bottom side	-	1	2412	16.00	15.78	5.20%	0.04	0.042	-
		Left side	-	1	2412	16.00	15.78	5.20%	0.00954	0.010	-
	WLAN802.11 g	Back side	-	2	2417	15.50	15.37	3.04%	0.811	0.836	-
		Back side	-	6	2437	16.50	16.18	7.65%	0.993	1.069	86
		Back side	-	10	2457	15.50	15.36	3.28%	0.691	0.714	-
		Back side*	-	6	2437	16.50	16.18	7.65%	0.878	0.945	-
		Bottom side	-	6	2437	16.50	16.18	7.65%	0.048	0.052	-
		Left side	-	6	2437	16.50	16.18	7.65%	0.013	0.014	-
	WLAN802.11 n (20M)	Back side	-	2	2417	15.50	15.21	6.91%	0.621	0.664	-
		Back side	-	6	2437	16.50	16.14	8.64%	0.923	1.003	87
		Back side	-	10	2457	15.5	15.34	3.75%	0.728	0.755	-
		Bottom side	-	6	2437	16.50	16.14	8.64%	0.233	0.253	-
		Left side	-	6	2437	16.50	16.14	8.64%	0.182	0.198	-
	WLAN802.11 n (40M)	Back side	-	4	2427	14.50	14.21	6.91%	0.642	0.686	-
		Back side	-	6	2437	16.50	16.15	8.39%	0.918	0.995	88
		Back side	-	8	2447	12.50	12.13	8.89%	0.396	0.431	-
		Bottom side	-	6	2437	16.50	16.15	8.39%	0.228	0.247	-
		Left side	-	6	2437	16.50	16.15	8.39%	0.192	0.208	-
	WLAN802.11 a 5.2G	Back side	-	40	5200	12.50	12.4	2.33%	0.72	0.737	-
		Back side	-	44	5220	12.50	12.41	2.09%	0.902	0.921	89
		Back side*	-	44	5220	12.50	12.41	2.09%	0.857	0.875	-
		Bottom side	-	44	5220	12.50	12.41	2.09%	0.24	0.245	-
		Left side	-	44	5220	12.50	12.41	2.09%	0.194	0.198	-
	WLAN802.11 n(40M) 5.2G	Back side	-	38	5190	12.50	12.32	4.23%	0.775	0.808	-
		Back side	-	46	5230	12.50	12.31	4.47%	0.822	0.859	90
	WLAN802.11 ac(40M) 5.2G	Back side	-	38	5190	12.50	12.37	3.04%	0.783	0.807	-
		Back side	-	46	5230	12.50	12.34	3.75%	0.805	0.835	91
	WLAN802.11 ac(80M) 5.2G	Back side	-	42	5210	12.50	12.22	6.66%	0.819	0.874	92
	WLAN802.11 a 5.3G	Back side	-	52	5260	12.50	12.36	3.28%	0.826	0.853	-
		Back side	-	60	5300	12.50	12.41	2.09%	1.01	1.031	93
		Back side*	-	60	5300	12.50	12.41	2.09%	0.884	0.903	-
		Bottom side	-	60	5300	12.50	12.41	2.09%	0.267	0.273	-
		Left side	-	60	5300	12.50	12.41	2.09%	0.264	0.270	-
	WLAN802.11 n(40M) 5.3G	Back side	-	54	5270	12.50	12.31	4.47%	0.8	0.836	-
		Back side	-	62	5310	12.50	12.25	5.93%	0.937	0.993	94

* - repeated at the highest SAR measurement according to the KDB 865664 D01

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	WLAN802.11 ac(40M) 5.3G	Back side	-	54	5270	12.50	12.36	3.28%	0.7	0.723	95
	WLAN802.11 ac(80M) 5.3G	Back side	-	58	5290	12.50	12.23	6.41%	0.768	0.817	96
	WLAN802.11 a 5.6G	Back side	-	104	5520	12.50	12.40	2.33%	1.3	1.330	-
		Back side	-	116	5580	12.50	12.35	3.51%	1.24	1.284	-
		Back side	-	140	5700	12.50	12.39	2.57%	1.32	1.354	97
		Back side*	-	140	5700	12.50	12.39	2.57%	1.3	1.333	-
		Bottom side	-	104	5520	12.50	12.40	2.33%	0.28	0.287	-
		Left side	-	104	5520	12.50	12.40	2.33%	0.264	0.270	-
	WLAN802.11 n(40M) 5.6G	Back side	-	102	5510	12.50	12.29	4.95%	0.929	0.975	-
		Back side	-	110	5550	12.50	12.42	1.86%	1.12	1.141	-
		Back side	-	134	5670	12.50	12.41	2.09%	1.23	1.256	98
	WLAN802.11 ac(20M) 5.6G	Back side	-	144	5720	12.50	12.24	6.17%	1.27	1.348	99
		Bottom side	-	144	5720	12.50	12.24	6.17%	0.235	0.249	-
		Left side	-	144	5720	12.50	12.24	6.17%	0.163	0.173	-
	WLAN802.11 ac(40M) 5.6G	Back side	-	102	5510	12.50	12.29	4.95%	0.97	1.018	-
		Back side	-	110	5550	12.50	12.42	1.86%	0.991	1.009	-
		Back side	-	134	5670	12.50	12.41	2.09%	1.31	1.337	100
		Back side	-	142	5710	12.50	12.23	6.41%	1.19	1.266	-
		Bottom side	-	142	5710	12.50	12.23	6.41%	0.261	0.278	-
		Left side	-	142	5710	12.50	12.23	6.41%	0.112	0.119	-
	WLAN802.11 ac(80M) 5.6G	Back side	-	106	5530	12.50	12.26	5.68%	1.08	1.141	-
		Back side	-	138	5690	12.50	12.19	7.40%	1.25	1.342	101
	WLAN802.11 a 5.8G	Back side	-	153	5765	12.50	12.47	0.69%	1.31	1.319	-
		Back side	-	157	5785	12.50	12.45	1.16%	1.46	1.477	102
		Back side	-	165	5825	12.50	12.42	1.86%	1.34	1.365	-
		Back side*	-	157	5785	12.50	12.45	1.16%	1.31	1.325	-
		Bottom side	-	153	5765	12.50	12.47	0.69%	0.248	0.250	-
		Left side	-	153	5765	12.50	12.47	0.69%	0.195	0.196	-
	WLAN802.11 n(40M) 5.8G	Back side	-	151	5755	12.50	12.38	2.80%	1.43	1.470	103
		Back side	-	159	5795	12.50	12.33	3.99%	1.37	1.425	-
	WLAN802.11 ac(40M) 5.8G	Back side	-	151	5755	12.50	12.44	1.39%	1.17	1.186	-
		Back side	-	159	5795	12.50	12.39	2.57%	1.29	1.323	104
	WLAN802.11 ac(80M) 5.8G	Back side	-	155	5775	12.50	12.34	3.75%	1.38	1.432	105

* - repeated at the highest SAR measurement according to the KDB 865664 D01

WLAN802.11 Aux Antenna_2nd battery spot check

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	WLAN802.11 g	Back side	-	6	2437	16.50	16.18	7.65%	0.97	1.044	106
	WLAN802.11 a 5.2G	Back side	-	44	5220	12.50	12.41	2.09%	0.813	0.830	107
	WLAN802.11 a 5.3G	Back side	-	60	5300	12.50	12.41	2.09%	0.921	0.940	108
	WLAN802.11 a 5.6G	Back side	-	140	5700	12.50	12.39	2.57%	1.29	1.323	109
	WLAN802.11 a 5.8G	Back side	-	157	5785	12.50	12.45	1.16%	1.41	1.426	110

3. Simultaneous Transmission Analysis

Simultaneous Transmission Scenarios:

Simultaneous Transmit Configurations	Body
2.4GHz WLAN MIMO	Yes
5GHz WLAN MIMO	Yes
BT + 2.4GHz WLAN Aux	Yes
BT + 5GHz WLAN Aux	Yes

Note:
1. Bluetooth and WLAN Main share the same antenna path, and BT may transmit with WLAN Aux simultaneously.
2. For 2.4/5GHz WLAN Main and Aux antennas, the maximum output power of each antenna during simultaneous transmission (for 802.11n/ac) is much less than that used in standalone transmission (for 802.11a/b/g/n/ac), so it is more conservative to use the sum of 1-g SAR provision in KDB447498D01 to exclude the SAR measurement for 802.11n/ac MIMO.

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:

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

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.

Mode / Band	frequency(GHz)	Max. tune-up power(dBm)	Test position	test separation distance(mm)	Estimated SAR(W/kg)
WLAN Main	2.462	16.5	Top side	25.47	0.367
WLAN Main	5.825	12.5	Top side	25.47	0.225
WLAN Main	2.462	16.5	Right / Bottom side	124.32/151.46	0.4
WLAN Main	5.825	12.5	Right / Bottom side	124.32/151.46	0.4
WLAN Aux	2.462	16.5	Top / Right side	195.93 / 110.32	0.4
WLAN Aux	5.825	12.5	Top / Right side	195.93 / 110.32	0.4

Mode / Band	frequency(GHz)	Maximum power(dBm)	Test position	test separation distance(mm)	Estimated SAR(W/kg)
BT	2.48	4.41	Top side	25.47	0.023
BT	2.48	4.41	Left / Back side	Less than 5	0.116
BT	2.48	4.41	Right / Bottom sides	Larger than 50	0.4

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.

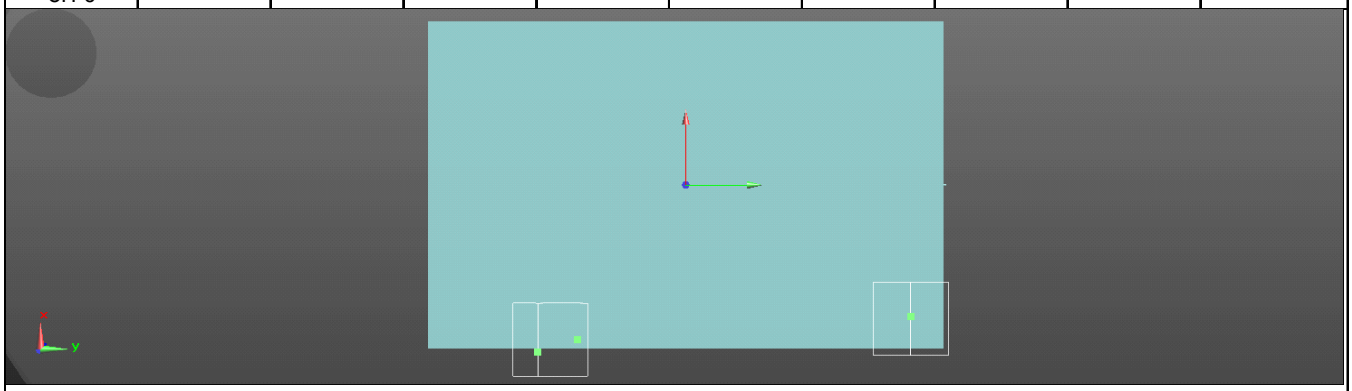
When standalone test exclusion applies, SAR is estimated; the peak location is assumed to be at the feed-point or geometric center of the antenna.

2.4GHz WLAN Main + Aux

No.	Conditions	Position	Distance (mm)	Max. WLAN Main	Max. WLAN Aux	SAR Sum	SPLSR
1	2.4GHz WLAN Main + Aux	Back side	0	0.814	1.069	**1.883**	Analyzed as below
		Top side	0	0.367	0.4	0.767	ΣSAR<1.6, Not required
		Bottom side	0	0.4	0.253	0.653	ΣSAR<1.6, Not required
		Left side	0	0.279	0.208	0.487	ΣSAR<1.6, Not required
		Right side	0	0.4	0.4	0.8	ΣSAR<1.6, Not required

SPLSR WLAN Main & WLAN Aux

Conditions	Position	SAR Value (W/kg)	Coordinates (cm)			ΣSAR (W/kg)	Peak Location Separation Distance (mm)	SPLSR	Simultaneous Transmission SAR Test
			x	y	z				
802.11 n(20M)CH 6	Back side	0.814	-6.84	-5.94	-0.19	1.883	150.5	0.017	SPLSR<0.04, Not required
802.11g CH 6		1.069	-5.38	9.04	-0.13				



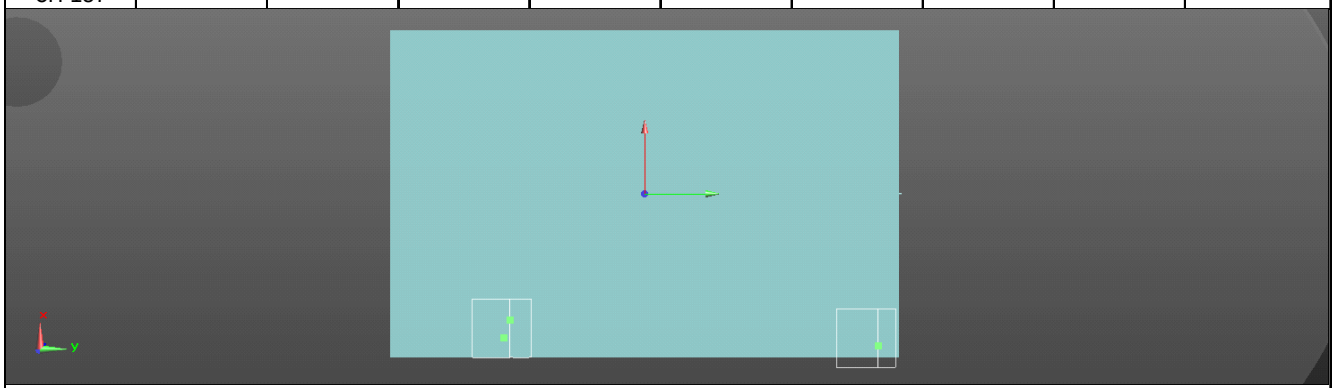
WLAN Main **WLAN Aux**

5GHz WLAN MIMO

No.	Conditions	Position	Distance (mm)	Max. WLAN Main	Max. WLAN Aux	SAR Sum	SPLSR
2	5GHz WLAN Main + Aux	Back side	0	0.771	1.477	**2.248**	Analyzed as below
		Top side	0	0.225	0.4	0.625	ΣSAR<1.6, Not required
		Bottom side	0	0.4	0.287	0.687	ΣSAR<1.6, Not required
		Left side	0	0.303	0.27	0.573	ΣSAR<1.6, Not required
		Right side	0	0.4	0.4	0.8	ΣSAR<1.6, Not required

SPLSR WLAN Main & WLAN Aux

Conditions	Position	SAR Value (W/kg)	Coordinates (cm)			ΣSAR (W/kg)	Peak Location Separation Distance (mm)	SPLSR	Simultaneous Transmission SAR Test
			x	y	z				
802.11a CH 140	Back side	0.771	-5.18	-5.48	-0.23	2.248	150	0.022	SPLSR<0.04, Not required
802.11a CH 157		1.477	-6.22	9.48	-0.16				



WLAN Main **WLAN Aux**

BT+ 2.4GHz WLAN Aux

No.	Conditions	Position	Distance (mm)	Max. BT	Max. WLAN Aux	SAR Sum	SPLSR
3	BT + 2.4GHz WLAN Aux	Back side	0	0.116	1.069	1.185	ΣSAR<1.6, Not required
		Top side	0	0.023	0.4	0.423	ΣSAR<1.6, Not required
		Bottom side	0	0.4	0.253	0.653	ΣSAR<1.6, Not required
		Left side	0	0.116	0.208	0.324	ΣSAR<1.6, Not required
		Right side	0	0.4	0.4	0.8	ΣSAR<1.6, Not required

BT+ 5GHz WLAN Aux

No.	Conditions	Position	Distance (mm)	Max. BT	Max. WLAN Aux	SAR Sum	SPLSR
4	BT + 5GHz WLAN Aux	Back side	0	0.116	1.477	1.593	ΣSAR<1.6, Not required
		Top side	0	0.023	0.4	0.423	ΣSAR<1.6, Not required
		Bottom side	0	0.4	0.287	0.687	ΣSAR<1.6, Not required
		Left side	0	0.116	0.27	0.386	ΣSAR<1.6, Not required
		Right side	0	0.4	0.4	0.8	ΣSAR<1.6, Not required

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	3831	Jan.29,2015	Jan,28,2016
Schmid & Partner Engineering AG	System Validation Dipole	D2450V2	727	Apr.23,2014	Apr.22,2015
		D5GHzV2	1023	Jan.29,2015	Jan.28,2016
Schmid & Partner Engineering AG	Data acquisition Electronics	DAE4	916	Dec.29,2014	Dec,28,2015
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
HP	Network Analyzer	8753D	3410A05547	May.15,2014	May.14,2015
Agilent	Dielectric Probe Kit	85070E	MY44300677	Calibration not required	Calibration not required
Agilent	Dual-directional coupler	772D	MY46151242	Jul.14,2014	Jul.13,2015
		778D	50313	Aug.07,2014	Aug.06,2015
Agilent	RF Signal Generator	N5181A	MY50144143	Jun.25.2014	Jun.24.2015
Agilent	Power Meter	E4417A	MY51410006	Oct.25,2013	Oct.24,2015
Agilent	Power Sensor	E9301H	MY51470001	Dec.11,2014	Dec.10,2015
TECPEL	Digital thermometer	DTM-303A	TP130078	Mar.30,2015	Mar.29,2016
R&S	Radio Communication Test	CMU200	113505	May.08,2014	May.07,2015

5. Measurements

Date: 2015/4/3

WLAN802.11b_Body-worn_Back side_CH 11_Main_0mm

Communication System: WLAN(2.45G); Frequency: 2462 MHz
Medium parameters used: f = 2462 MHz; σ = 1.901 S/m; ε_r = 53.551; ρ = 1000 kg/m^3
Phantom section: Flat Section

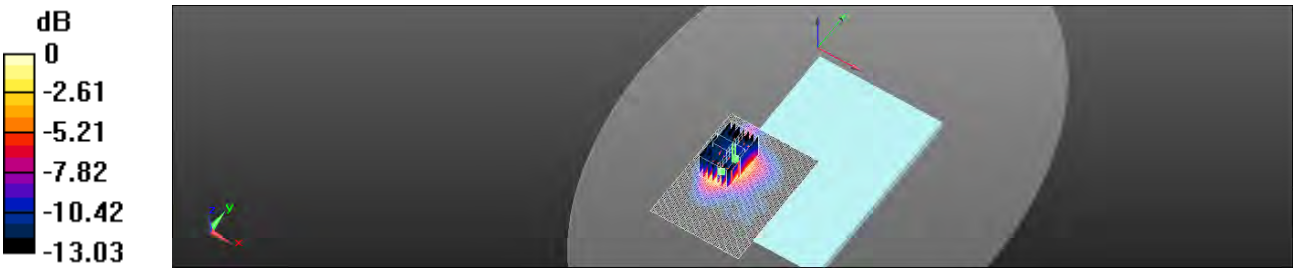
DASY5 Configuration:

- Probe: EX3DV4 - SN3831; ConvF(6.81, 6.81, 6.81); Calibrated: 2015/1/29;
- Sensor-Surface: 2mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn916; Calibrated: 2014/12/29
- Phantom: Body
- DASY52 52.8.8(1222); SEMCAD X 14.6.10(7331)

Configuration/BODY/Area Scan (81x111x1): Interpolated grid: dx=12 mm, dy=12 mm
Maximum value of SAR (interpolated) = 1.27 W/kg

Configuration/BODY/Zoom Scan (7x7x7)/Cube 0: Measurement grid: dx=5mm, dy=5mm, dz=5mm
Reference Value = 4.313 V/m; Power Drift = 0.03 dB
Peak SAR (extrapolated) = 1.43 W/kg
SAR(1 g) = 0.670 W/kg; SAR(10 g) = 0.354 W/kg
Maximum value of SAR (measured) = 1.02 W/kg

Configuration/BODY/Zoom Scan (7x7x7)/Cube 1: Measurement grid: dx=5mm, dy=5mm, dz=5mm
Reference Value = 4.313 V/m; Power Drift = 0.03 dB
Peak SAR (extrapolated) = 1.42 W/kg
SAR(1 g) = 0.705 W/kg; SAR(10 g) = 0.355 W/kg
Maximum value of SAR (measured) = 1.04 W/kg



0 dB = 1.04 W/kg = 0.19 dBW/kg

Date: 2015/4/3

WLAN802.11g_Body-worn_Back side_CH 6_Main_0mm

Communication System: WLAN(2.45G); Frequency: 2437 MHz
Medium parameters used: f = 2437 MHz; σ = 1.872 S/m; ε_r = 53.592; ρ = 1000 kg/m^3
Phantom section: Flat Section

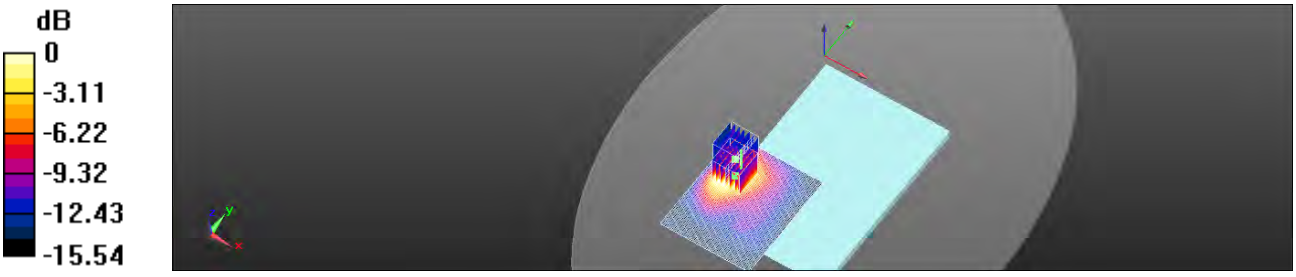
DASY5 Configuration:

- Probe: EX3DV4 - SN3831; ConvF(6.81, 6.81, 6.81); Calibrated: 2015/1/29;
- Sensor-Surface: 2mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn916; Calibrated: 2014/12/29
- Phantom: Body
- DASY52 52.8.8(1222); SEMCAD X 14.6.10(7331)

Configuration/BODY/Area Scan (81x101x1): Interpolated grid: dx=12 mm, dy=12 mm
Maximum value of SAR (interpolated) = 0.851 W/kg

Configuration/BODY/Zoom Scan (7x7x7)/Cube 0: Measurement grid: dx=5mm, dy=5mm, dz=5mm
Reference Value = 4.111 V/m; Power Drift = -0.09 dB
Peak SAR (extrapolated) = 1.24 W/kg
SAR(1 g) = 0.604 W/kg; SAR(10 g) = 0.326 W/kg
Maximum value of SAR (measured) = 0.865 W/kg

Configuration/BODY/Zoom Scan (7x7x7)/Cube 1: Measurement grid: dx=5mm, dy=5mm, dz=5mm
Reference Value = 4.111 V/m; Power Drift = -0.09 dB
Peak SAR (extrapolated) = 1.17 W/kg
SAR(1 g) = 0.610 W/kg; SAR(10 g) = 0.259 W/kg
Maximum value of SAR (measured) = 0.859 W/kg



0 dB = 0.859 W/kg = -0.66 dBW/kg

Date: 2015/4/3

WLAN802.11n(20M)_Body-worn_Back side_CH 6_Main_0mm

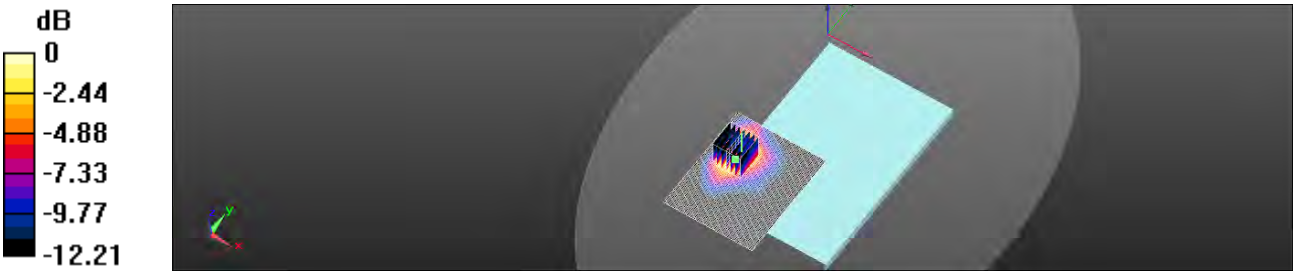
Communication System: WLAN(2.45G); Frequency: 2437 MHz
Medium parameters used: f = 2437 MHz; σ = 1.872 S/m; ε_r = 53.592; ρ = 1000 kg/m^3
Phantom section: Flat Section

DASY5 Configuration:

- Probe: EX3DV4 - SN3831; ConvF(6.81, 6.81, 6.81); Calibrated: 2015/1/29;
- Sensor-Surface: 2mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn916; Calibrated: 2014/12/29
- Phantom: Body
- DASY52 52.8.8(1222); SEMCAD X 14.6.10(7331)

Configuration/BODY/Area Scan (81x101x1): Interpolated grid: dx=12 mm, dy=12 mm
Maximum value of SAR (interpolated) = 1.21 W/kg

Configuration/BODY/Zoom Scan (7x7x7)/Cube 0: Measurement grid: dx=5mm, dy=5mm, dz=5mm
Reference Value = 4.573 V/m; Power Drift = 0.07 dB
Peak SAR (extrapolated) = 1.53 W/kg
SAR(1 g) = 0.742 W/kg; SAR(10 g) = 0.393 W/kg
Maximum value of SAR (measured) = 1.13 W/kg



0 dB = 1.13 W/kg = 0.54 dBW/kg

Date: 2015/4/3

WLAN802.11n(40M)_Body-worn_Back side_CH 6_Main_0mm

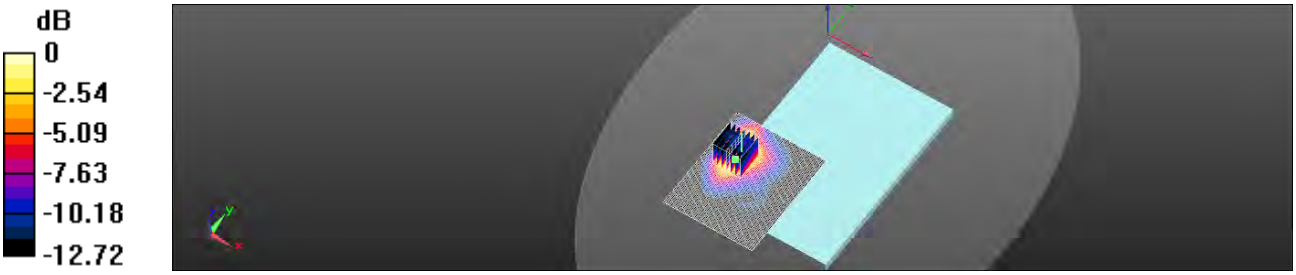
Communication System: WLAN(2.45G); Frequency: 2437 MHz
Medium parameters used: f = 2437 MHz; σ = 1.872 S/m; ε_r = 53.592; ρ = 1000 kg/m^3
Phantom section: Flat Section

DASY5 Configuration:

- Probe: EX3DV4 - SN3831; ConvF(6.81, 6.81, 6.81); Calibrated: 2015/1/29;
- Sensor-Surface: 2mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn916; Calibrated: 2014/12/29
- Phantom: Body
- DASY52 52.8.8(1222); SEMCAD X 14.6.10(7331)

Configuration/BODY/Area Scan (81x101x1): Interpolated grid: dx=12 mm, dy=12 mm
Maximum value of SAR (interpolated) = 1.26 W/kg

Configuration/BODY/Zoom Scan (7x7x7)/Cube 0: Measurement grid: dx=5mm, dy=5mm, dz=5mm
Reference Value = 4.391 V/m; Power Drift = 0.11 dB
Peak SAR (extrapolated) = 1.53 W/kg
SAR(1 g) = 0.746 W/kg; SAR(10 g) = 0.393 W/kg
Maximum value of SAR (measured) = 1.12 W/kg



0 dB = 1.12 W/kg = 0.47 dBW/kg

Date: 2015/4/4

WLAN802.11a 5.2G_Body-worn_Back side_CH 44_Main_0mm

Communication System: WLAN(5G); Frequency: 5220 MHz
Medium parameters used: f = 5220 MHz; σ = 5.254 S/m; ε_r = 48.161; ρ = 1000 kg/m^3
Phantom section: Flat Section

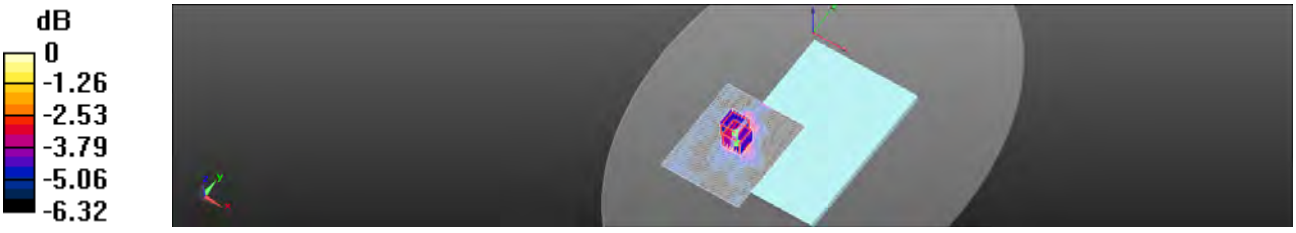
DASY5 Configuration:

- Probe: EX3DV4 - SN3831; ConvF(3.92, 3.92, 3.92); Calibrated: 2015/1/29;
- Sensor-Surface: 2mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn916; Calibrated: 2014/12/29
- Phantom: Body
- DASY52 52.8.8(1222); SEMCAD X 14.6.10(7331)

Configuration/BODY/Area Scan (101x131x1): Interpolated grid: dx=10 mm, dy=10 mm
Maximum value of SAR (interpolated) = 0.811 W/kg

Configuration/BODY/Zoom Scan (7x7x12)/Cube 0: Measurement grid: dx=4mm, dy=4mm, dz=2mm
Reference Value = 5.844 V/m; Power Drift = -0.09 dB
Peak SAR (extrapolated) = 1.68 W/kg
SAR(1 g) = 0.532 W/kg; SAR(10 g) = 0.361 W/kg
Maximum value of SAR (measured) = 0.790 W/kg

Configuration/BODY/Zoom Scan (7x7x12)/Cube 1: Measurement grid: dx=4mm, dy=4mm, dz=2mm
Reference Value = 5.844 V/m; Power Drift = -0.09 dB
Peak SAR (extrapolated) = 1.86 W/kg
SAR(1 g) = 0.483 W/kg; SAR(10 g) = 0.311 W/kg
Maximum value of SAR (measured) = 0.786 W/kg



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

Date: 2015/4/4

WLAN802.11n(40M) 5.2G_Body-worn_Back side_CH 46_Main_0mm

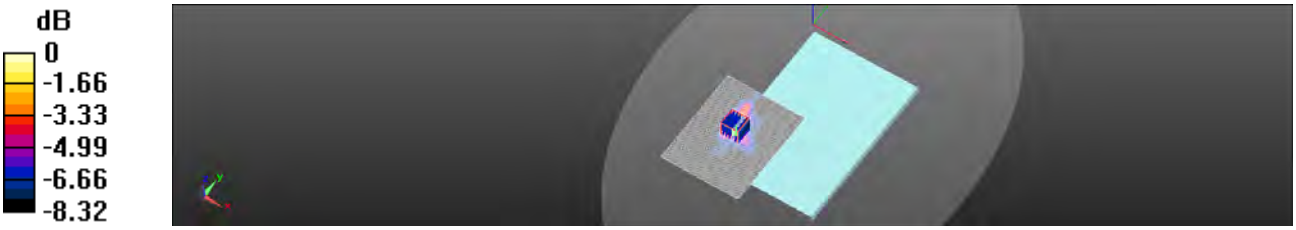
Communication System: WLAN(5G); Frequency: 5230 MHz
Medium parameters used: f = 5230 MHz; σ = 5.266 S/m; ε_r = 48.143; ρ = 1000 kg/m^3
Phantom section: Flat Section

DASY5 Configuration:

- Probe: EX3DV4 - SN3831; ConvF(3.92, 3.92, 3.92); Calibrated: 2015/1/29;
- Sensor-Surface: 2mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn916; Calibrated: 2014/12/29
- Phantom: Body
- DASY52 52.8.8(1222); SEMCAD X 14.6.10(7331)

Configuration/BODY/Area Scan (101x131x1): Interpolated grid: dx=10 mm, dy=10 mm
Maximum value of SAR (interpolated) = 0.668 W/kg

Configuration/BODY/Zoom Scan (7x7x12)/Cube 0: Measurement grid: dx=4mm, dy=4mm, dz=2mm
Reference Value = 4.433 V/m; Power Drift = 0.12 dB
Peak SAR (extrapolated) = 4.57 W/kg
SAR(1 g) = 0.558 W/kg; SAR(10 g) = 0.299 W/kg
Maximum value of SAR (measured) = 0.986 W/kg



0 dB = 0.986 W/kg = -0.06 dBW/kg

Date: 2015/4/4

WLAN802.11ac(40M) 5.2G_Body-worn_Back side_CH 46_Main_0mm

Communication System: WLAN(5G); Frequency: 5230 MHz
Medium parameters used: f = 5230 MHz; σ = 5.266 S/m; ε_r = 48.143; ρ = 1000 kg/m^3
Phantom section: Flat Section

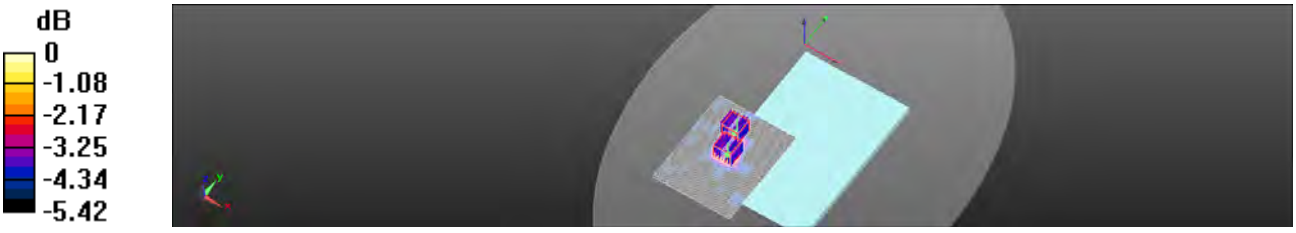
DASY5 Configuration:

- Probe: EX3DV4 - SN3831; ConvF(3.92, 3.92, 3.92); Calibrated: 2015/1/29;
- Sensor-Surface: 2mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn916; Calibrated: 2014/12/29
- Phantom: Body
- DASY52 52.8.8(1222); SEMCAD X 14.6.10(7331)

Configuration/BODY/Area Scan (101x131x1): Interpolated grid: dx=10 mm, dy=10 mm
Maximum value of SAR (interpolated) = 0.801 W/kg

Configuration/BODY/Zoom Scan (7x7x12)/Cube 0: Measurement grid: dx=4mm, dy=4mm, dz=2mm
Reference Value = 4.290 V/m; Power Drift = 0.11 dB
Peak SAR (extrapolated) = 3.67 W/kg
SAR(1 g) = 0.520 W/kg; SAR(10 g) = 0.302 W/kg
Maximum value of SAR (measured) = 0.994 W/kg

Configuration/BODY/Zoom Scan (7x7x12)/Cube 1: Measurement grid: dx=4mm, dy=4mm, dz=2mm
Reference Value = 4.290 V/m; Power Drift = 0.11 dB
Peak SAR (extrapolated) = 1.24 W/kg
SAR(1 g) = 0.362 W/kg; SAR(10 g) = 0.260 W/kg
Maximum value of SAR (measured) = 0.556 W/kg



0 dB = 0.556 W/kg = -2.55 dBW/kg

Date: 2015/4/4

WLAN802.11ac(80M) 5.2G_Body-worn_Back side_CH 42_Main_0mm

Communication System: WLAN(5G); Frequency: 5210 MHz
Medium parameters used: f = 5210 MHz; σ = 5.243 S/m; ε_r = 48.168; ρ = 1000 kg/m^3
Phantom section: Flat Section

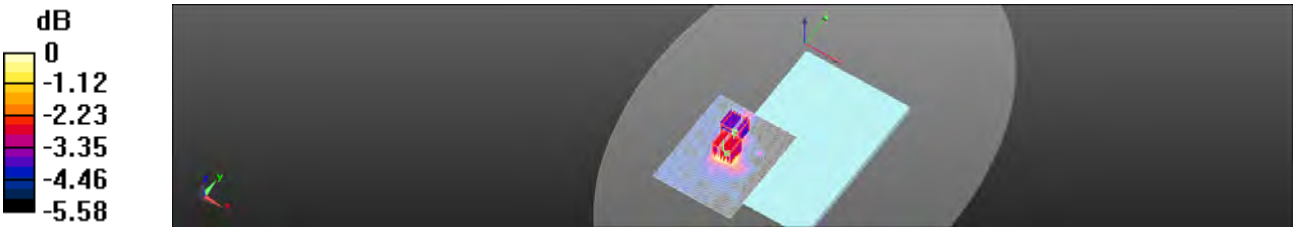
DASY5 Configuration:

- Probe: EX3DV4 - SN3831; ConvF(3.92, 3.92, 3.92); Calibrated: 2015/1/29;
- Sensor-Surface: 2mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn916; Calibrated: 2014/12/29
- Phantom: Body
- DASY52 52.8.8(1222); SEMCAD X 14.6.10(7331)

Configuration/BODY/Area Scan (101x131x1): Interpolated grid: dx=10 mm, dy=10 mm
Maximum value of SAR (interpolated) = 0.791 W/kg

Configuration/BODY/Zoom Scan (7x7x12)/Cube 0: Measurement grid: dx=4mm, dy=4mm, dz=2mm
Reference Value = 5.573 V/m; Power Drift = 0.02 dB
Peak SAR (extrapolated) = 1.81 W/kg
SAR(1 g) = 0.511 W/kg; SAR(10 g) = 0.350 W/kg
Maximum value of SAR (measured) = 0.844 W/kg

Configuration/BODY/Zoom Scan (7x7x12)/Cube 1: Measurement grid: dx=4mm, dy=4mm, dz=2mm
Reference Value = 5.573 V/m; Power Drift = 0.02 dB
Peak SAR (extrapolated) = 0.876 W/kg
SAR(1 g) = 0.366 W/kg; SAR(10 g) = 0.263 W/kg
Maximum value of SAR (measured) = 0.550 W/kg



0 dB = 0.550 W/kg = -2.60 dBW/kg

Date: 2015/4/5

WLAN802.11a 5.3G_Body-worn_Back side_CH 60_Main_0mm

Communication System: WLAN(5G); Frequency: 5300 MHz
Medium parameters used: f = 5300 MHz; σ = 5.339 S/m; ε_r = 47.965; ρ = 1000 kg/m^3
Phantom section: Flat Section

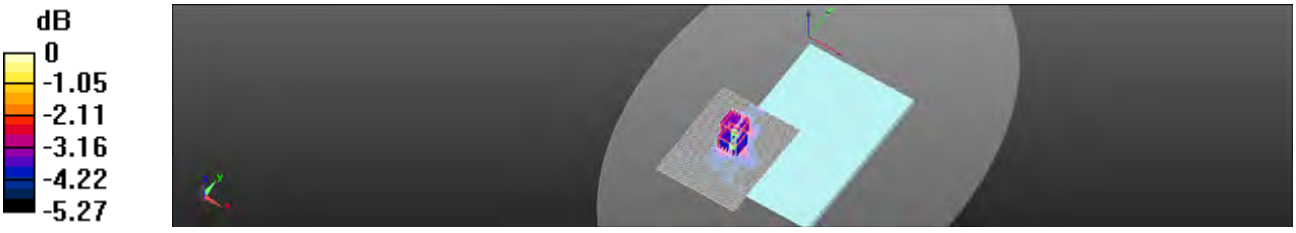
DASY5 Configuration:

- Probe: EX3DV4 - SN3831; ConvF(3.92, 3.92, 3.92); Calibrated: 2015/1/29;
- Sensor-Surface: 2mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn916; Calibrated: 2014/12/29
- Phantom: Body
- DASY52 52.8.8(1222); SEMCAD X 14.6.10(7331)

Configuration/BODY/Area Scan (101x131x1): Interpolated grid: dx=10 mm, dy=10 mm
Maximum value of SAR (interpolated) = 0.928 W/kg

Configuration/BODY/Zoom Scan (7x7x12)/Cube 0: Measurement grid: dx=4mm, dy=4mm, dz=2mm
Reference Value = 5.775 V/m; Power Drift = 0.15 dB
Peak SAR (extrapolated) = 4.27 W/kg
SAR(1 g) = 0.640 W/kg; SAR(10 g) = 0.420 W/kg
Maximum value of SAR (measured) = 1.10 W/kg

Configuration/BODY/Zoom Scan (7x7x12)/Cube 1: Measurement grid: dx=4mm, dy=4mm, dz=2mm
Reference Value = 5.775 V/m; Power Drift = 0.15 dB
Peak SAR (extrapolated) = 1.89 W/kg
SAR(1 g) = 0.532 W/kg; SAR(10 g) = 0.418 W/kg
Maximum value of SAR (measured) = 0.859 W/kg



0 dB = 0.859 W/kg = -0.66 dBW/kg

Date: 2015/4/5

WLAN802.11n(40M) 5.3G_Body-worn_Back side_CH 62_Main_0mm

Communication System: WLAN(5G); Frequency: 5310 MHz
Medium parameters used: f = 5310 MHz; σ = 5.347 S/m; ε_r = 47.944; ρ = 1000 kg/m^3
Phantom section: Flat Section

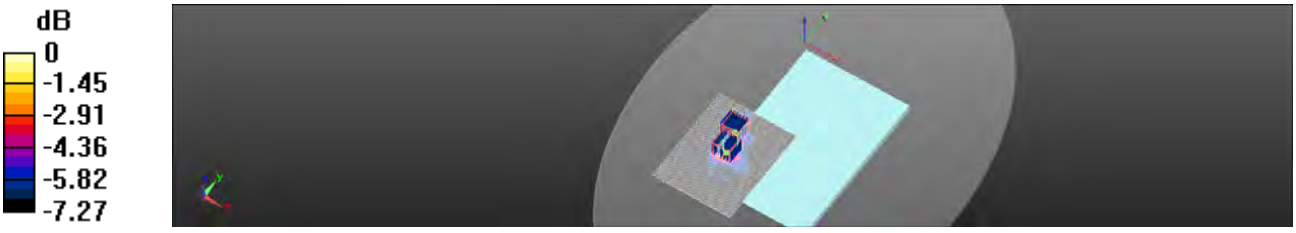
DASY5 Configuration:

- Probe: EX3DV4 - SN3831; ConvF(3.92, 3.92, 3.92); Calibrated: 2015/1/29;
- Sensor-Surface: 2mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn916; Calibrated: 2014/12/29
- Phantom: Body
- DASY52 52.8.8(1222); SEMCAD X 14.6.10(7331)

Configuration/BODY/Area Scan (101x131x1): Interpolated grid: dx=10 mm, dy=10 mm
Maximum value of SAR (interpolated) = 0.884 W/kg

Configuration/BODY/Zoom Scan (7x7x12)/Cube 0: Measurement grid: dx=4mm, dy=4mm, dz=2mm
Reference Value = 4.906 V/m; Power Drift = 0.08 dB
Peak SAR (extrapolated) = 1.87 W/kg
SAR(1 g) = 0.572 W/kg; SAR(10 g) = 0.311 W/kg
Maximum value of SAR (measured) = 0.958 W/kg

Configuration/BODY/Zoom Scan (7x7x12)/Cube 1: Measurement grid: dx=4mm, dy=4mm, dz=2mm
Reference Value = 4.906 V/m; Power Drift = 0.08 dB
Peak SAR (extrapolated) = 1.66 W/kg
SAR(1 g) = 0.395 W/kg; SAR(10 g) = 0.265 W/kg
Maximum value of SAR (measured) = 0.921 W/kg



0 dB = 0.921 W/kg = -0.36 dBW/kg

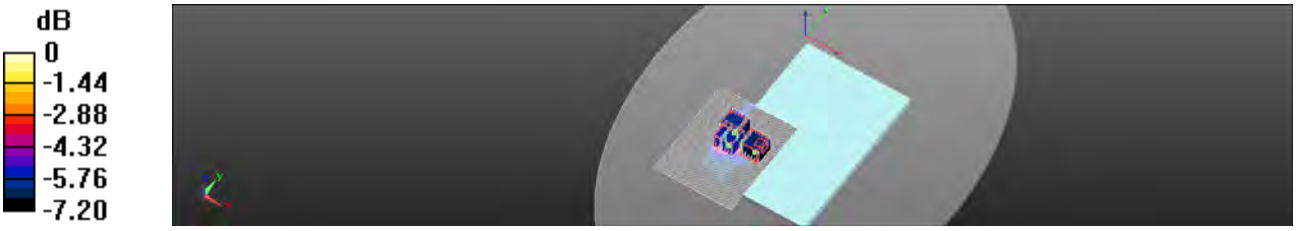
Date: 2015/4/5

WLAN802.11ac(40M) 5.3G_Body-worn_Back side_CH 54_Main_0mm

Communication System: WLAN(5G); Frequency: 5270 MHz
Medium parameters used: f = 5270 MHz; σ = 5.309 S/m; ε_r = 47.992; ρ = 1000 kg/m^3
Phantom section: Flat Section
DASY5 Configuration:

- Probe: EX3DV4 - SN3831; ConvF(3.92, 3.92, 3.92); Calibrated: 2015/1/29;
- Sensor-Surface: 2mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn916; Calibrated: 2014/12/29
- Phantom: Body
- DASY52 52.8.8(1222); SEMCAD X 14.6.10(7331)

Configuration/BODY/Area Scan (101x131x1): Interpolated grid: dx=10 mm, dy=10 mm
Maximum value of SAR (interpolated) = 0.709 W/kg
Configuration/BODY/Zoom Scan (7x7x12)/Cube 0: Measurement grid: dx=4mm, dy=4mm, dz=2mm
Reference Value = 4.962 V/m; Power Drift = 0.11 dB
Peak SAR (extrapolated) = 1.82 W/kg
SAR(1 g) = 0.483 W/kg; SAR(10 g) = 0.288 W/kg
Maximum value of SAR (measured) = 0.749 W/kg
Configuration/BODY/Zoom Scan (7x7x12)/Cube 1: Measurement grid: dx=4mm, dy=4mm, dz=2mm
Reference Value = 4.962 V/m; Power Drift = 0.11 dB
Peak SAR (extrapolated) = 0.505 W/kg
SAR(1 g) = 0.209 W/kg; SAR(10 g) = 0.190 W/kg
Maximum value of SAR (measured) = 0.324 W/kg
Configuration/BODY/Zoom Scan (7x7x12)/Cube 2: Measurement grid: dx=4mm, dy=4mm, dz=2mm
Reference Value = 4.962 V/m; Power Drift = 0.11 dB
Peak SAR (extrapolated) = 2.21 W/kg
SAR(1 g) = 0.370 W/kg; SAR(10 g) = 0.256 W/kg
Maximum value of SAR (measured) = 0.865 W/kg



0 dB = 0.865 W/kg = -0.63 dBW/kg

Date: 2015/4/5

WLAN802.11ac(80M) 5.3G_Body-worn_Back side_CH 58_Main_0mm

Communication System: WLAN(5G); Frequency: 5290 MHz
Medium parameters used: f = 5290 MHz; σ = 5.327 S/m; ε_r = 47.971; ρ = 1000 kg/m^3
Phantom section: Flat Section

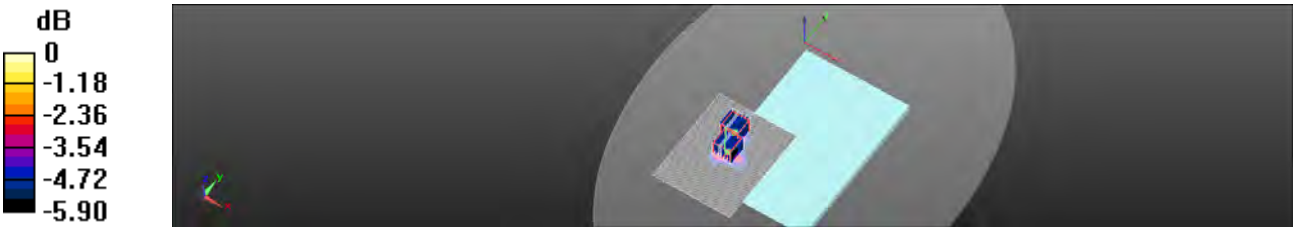
DASY5 Configuration:

- Probe: EX3DV4 - SN3831; ConvF(3.92, 3.92, 3.92); Calibrated: 2015/1/29;
- Sensor-Surface: 2mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn916; Calibrated: 2014/12/29
- Phantom: Body
- DASY52 52.8.8(1222); SEMCAD X 14.6.10(7331)

Configuration/BODY/Area Scan (101x131x1): Interpolated grid: dx=10 mm, dy=10 mm
Maximum value of SAR (interpolated) = 0.944 W/kg

Configuration/BODY/Zoom Scan (7x7x12)/Cube 0: Measurement grid: dx=4mm, dy=4mm, dz=2mm
Reference Value = 5.047 V/m; Power Drift = 0.14 dB
Peak SAR (extrapolated) = 2.02 W/kg
SAR(1 g) = 0.593 W/kg; SAR(10 g) = 0.349 W/kg
Maximum value of SAR (measured) = 0.959 W/kg

Configuration/BODY/Zoom Scan (7x7x12)/Cube 1: Measurement grid: dx=4mm, dy=4mm, dz=2mm
Reference Value = 5.047 V/m; Power Drift = 0.14 dB
Peak SAR (extrapolated) = 1.91 W/kg
SAR(1 g) = 0.433 W/kg; SAR(10 g) = 0.299 W/kg
Maximum value of SAR (measured) = 0.807 W/kg



0 dB = 0.807 W/kg = -0.93 dBW/kg

Date: 2015/4/6

WLAN802.11a 5.6G_Body-worn_Back side_CH 140_Main_0mm

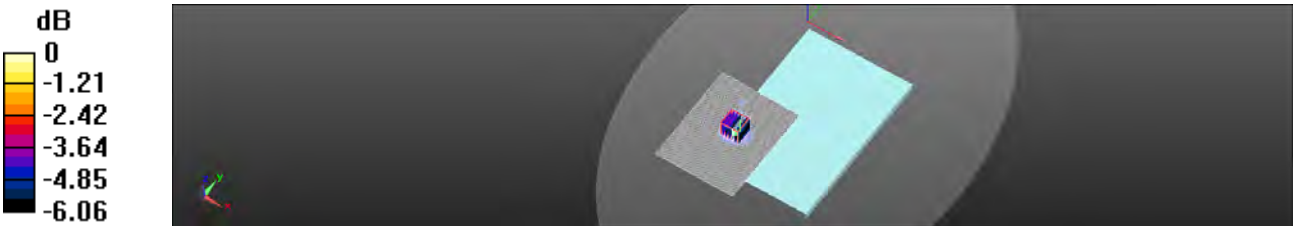
Communication System: WLAN(5G); Frequency: 5700 MHz
Medium parameters used: f = 5700 MHz; σ = 5.818 S/m; ε_r = 47.481; ρ = 1000 kg/m^3
Phantom section: Flat Section

DASY5 Configuration:

- Probe: EX3DV4 - SN3831; ConvF(3.49, 3.49, 3.49); Calibrated: 2015/1/29;
- Sensor-Surface: 2mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn916; Calibrated: 2014/12/29
- Phantom: Body
- DASY52 52.8.8(1222); SEMCAD X 14.6.10(7331)

Configuration/BODY/Area Scan (101x131x1): Interpolated grid: dx=10 mm, dy=10 mm
Maximum value of SAR (interpolated) = 1.29 W/kg

Configuration/BODY/Zoom Scan (7x7x12)/Cube 0: Measurement grid: dx=4mm, dy=4mm, dz=2mm
Reference Value = 6.535 V/m; Power Drift = 0.07 dB
Peak SAR (extrapolated) = 1.84 W/kg
SAR(1 g) = 0.738 W/kg; SAR(10 g) = 0.476 W/kg
Maximum value of SAR (measured) = 1.22 W/kg



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

Date: 2015/4/6

WLAN802.11n(40M) 5.6G_Body-worn_Back side_CH 134_Main_0mm

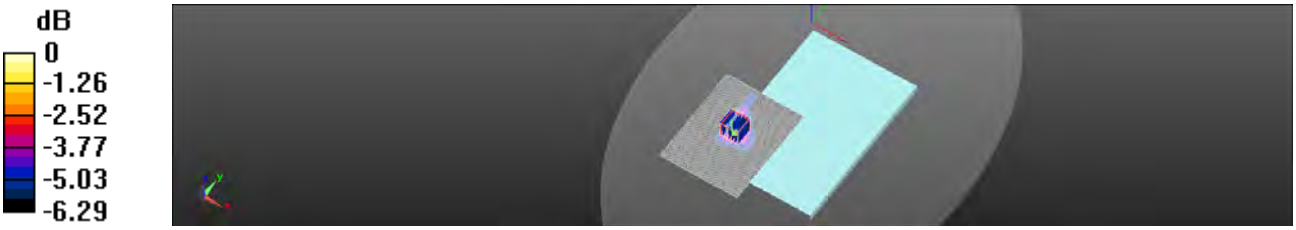
Communication System: WLAN(5G); Frequency: 5670 MHz
Medium parameters used: f = 5670 MHz; σ = 5.785 S/m; ε_r = 47.537; ρ = 1000 kg/m^3
Phantom section: Flat Section

DASY5 Configuration:

- Probe: EX3DV4 - SN3831; ConvF(3.49, 3.49, 3.49); Calibrated: 2015/1/29;
- Sensor-Surface: 2mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn916; Calibrated: 2014/12/29
- Phantom: Body
- DASY52 52.8.8(1222); SEMCAD X 14.6.10(7331)

Configuration/BODY/Area Scan (101x131x1): Interpolated grid: dx=10 mm, dy=10 mm
Maximum value of SAR (interpolated) = 1.05 W/kg

Configuration/BODY/Zoom Scan (7x7x12)/Cube 0: Measurement grid: dx=4mm, dy=4mm, dz=2mm
Reference Value = 5.357 V/m; Power Drift = 0.05 dB
Peak SAR (extrapolated) = 2.42 W/kg
SAR(1 g) = 0.692 W/kg; SAR(10 g) = 0.410 W/kg
Maximum value of SAR (measured) = 1.06 W/kg



0 dB = 1.06 W/kg = 0.24 dBW/kg

Date: 2015/4/6

WLAN802.11ac(20M) 5.6G_Body-worn_Back side_CH 144_Main_0mm

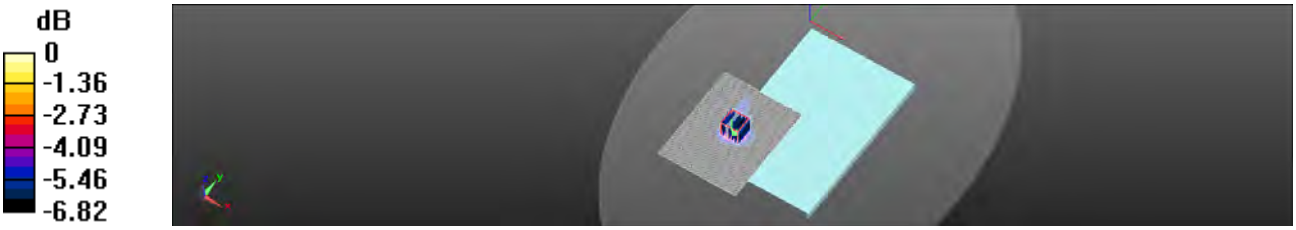
Communication System: WLAN(5G); Frequency: 5720 MHz
Medium parameters used: f = 5720 MHz; σ = 5.844 S/m; ε_r = 47.434; ρ = 1000 kg/m^3
Phantom section: Flat Section

DASY5 Configuration:

- Probe: EX3DV4 - SN3831; ConvF(3.49, 3.49, 3.49); Calibrated: 2015/1/29;
- Sensor-Surface: 2mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn916; Calibrated: 2014/12/29
- Phantom: Body
- DASY52 52.8.8(1222); SEMCAD X 14.6.10(7331)

Configuration/BODY/Area Scan (101x131x1): Interpolated grid: dx=10 mm, dy=10 mm
Maximum value of SAR (interpolated) = 1.20 W/kg

Configuration/BODY/Zoom Scan (7x7x12)/Cube 0: Measurement grid: dx=4mm, dy=4mm, dz=2mm
Reference Value = 6.268 V/m; Power Drift = 0.12 dB
Peak SAR (extrapolated) = 3.58 W/kg
SAR(1 g) = 0.704 W/kg; SAR(10 g) = 0.423 W/kg
Maximum value of SAR (measured) = 1.30 W/kg



0 dB = 1.30 W/kg = 1.15 dBW/kg

Date: 2015/4/6

WLAN802.11ac(40M) 5.6G_Body-worn_Back side_CH 102_Main_0mm

Communication System: WLAN(5G); Frequency: 5510 MHz
Medium parameters used: f = 5510 MHz; σ = 5.613 S/m; ε_r = 47.759; ρ = 1000 kg/m^3
Phantom section: Flat Section

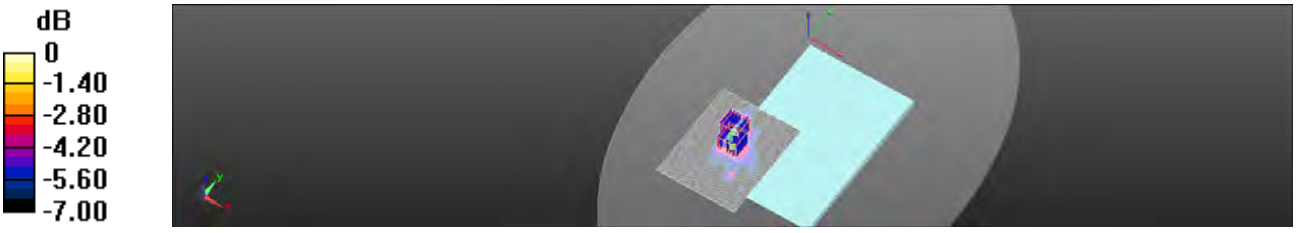
DASY5 Configuration:

- Probe: EX3DV4 - SN3831; ConvF(3.49, 3.49, 3.49); Calibrated: 2015/1/29;
- Sensor-Surface: 2mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn916; Calibrated: 2014/12/29
- Phantom: Body
- DASY52 52.8.8(1222); SEMCAD X 14.6.10(7331)

Configuration/BODY/Area Scan (101x131x1): Interpolated grid: dx=10 mm, dy=10 mm
Maximum value of SAR (interpolated) = 1.07 W/kg

Configuration/BODY/Zoom Scan (7x7x12)/Cube 0: Measurement grid: dx=4mm, dy=4mm, dz=2mm
Reference Value = 5.423 V/m; Power Drift = 0.02 dB
Peak SAR (extrapolated) = 2.16 W/kg
SAR(1 g) = 0.680 W/kg; SAR(10 g) = 0.384 W/kg
Maximum value of SAR (measured) = 1.11 W/kg

Configuration/BODY/Zoom Scan (7x7x12)/Cube 1: Measurement grid: dx=4mm, dy=4mm, dz=2mm
Reference Value = 5.423 V/m; Power Drift = 0.02 dB
Peak SAR (extrapolated) = 1.72 W/kg
SAR(1 g) = 0.467 W/kg; SAR(10 g) = 0.333 W/kg
Maximum value of SAR (measured) = 0.942 W/kg



0 dB = 0.942 W/kg = -0.26 dBW/kg

Date: 2015/4/6

WLAN802.11ac(80M) 5.6G_Body-worn_Back side_CH 138_Main_0mm

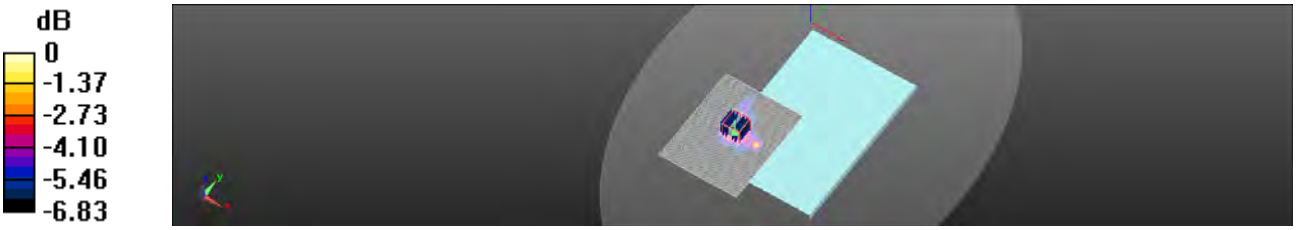
Communication System: WLAN(5G); Frequency: 5690 MHz
Medium parameters used: f = 5690 MHz; σ = 5.809 S/m; ε_r = 47.505; ρ = 1000 kg/m^3
Phantom section: Flat Section

DASY5 Configuration:

- Probe: EX3DV4 - SN3831; ConvF(3.49, 3.49, 3.49); Calibrated: 2015/1/29;
- Sensor-Surface: 2mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn916; Calibrated: 2014/12/29
- Phantom: Body
- DASY52 52.8.8(1222); SEMCAD X 14.6.10(7331)

Configuration/BODY/Area Scan (101x131x1): Interpolated grid: dx=10 mm, dy=10 mm
Maximum value of SAR (interpolated) = 1.20 W/kg

Configuration/BODY/Zoom Scan (7x7x12)/Cube 0: Measurement grid: dx=4mm, dy=4mm, dz=2mm
Reference Value = 5.144 V/m; Power Drift = 0.03 dB
Peak SAR (extrapolated) = 2.01 W/kg
SAR(1 g) = 0.644 W/kg; SAR(10 g) = 0.363 W/kg
Maximum value of SAR (measured) = 1.05 W/kg



0 dB = 1.05 W/kg = 0.21 dBW/kg

Date: 2015/4/7

WLAN802.11a 5.8G_Body-worn_Back side_CH 153_Main_0mm

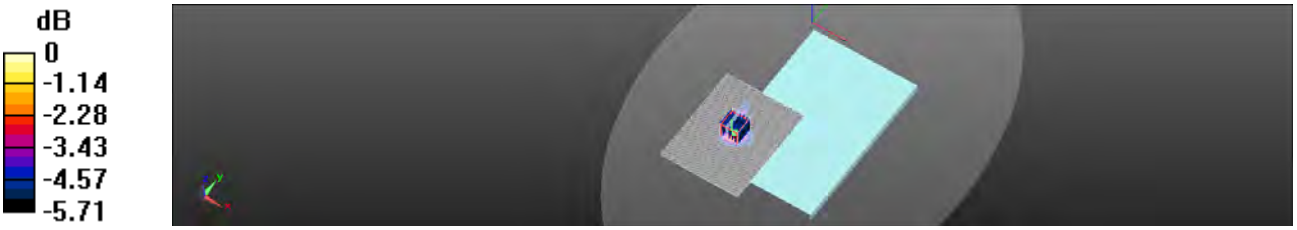
Communication System: WLAN(5G); Frequency: 5765 MHz
Medium parameters used: f = 5765 MHz; σ = 5.904 S/m; ε_r = 47.331; ρ = 1000 kg/m^3
Phantom section: Flat Section

DASY5 Configuration:

- Probe: EX3DV4 - SN3831; ConvF(3.7, 3.7, 3.7); Calibrated: 2015/1/29;
- Sensor-Surface: 2mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn916; Calibrated: 2014/12/29
- Phantom: Body
- DASY52 52.8.8(1222); SEMCAD X 14.6.10(7331)

Configuration/BODY/Area Scan (101x131x1): Interpolated grid: Bodydx=10 mm, dy=10 mm
Maximum value of SAR (interpolated) = 0.989 W/kg

Configuration/BODY/Zoom Scan (7x7x12)/Cube 0: Measurement grid: dx=4mm, dy=4mm, dz=2mm
Reference Value = 5.941 V/m; Power Drift = 0.01 dB
Peak SAR (extrapolated) = 2.65 W/kg
SAR(1 g) = 0.712 W/kg; SAR(10 g) = 0.401 W/kg
Maximum value of SAR (measured) = 0.995 W/kg



0 dB = 0.995 W/kg = -0.02 dBW/kg

Date: 2015/4/7

WLAN802.11n(40M) 5.8G_Body-worn_Back side_CH 151_Main_0mm

Communication System: WLAN(5G); Frequency: 5755 MHz
Medium parameters used: f = 5755 MHz; σ = 5.892 S/m; ε_r = 47.352; ρ = 1000 kg/m^3
Phantom section: Flat Section

DASY5 Configuration:

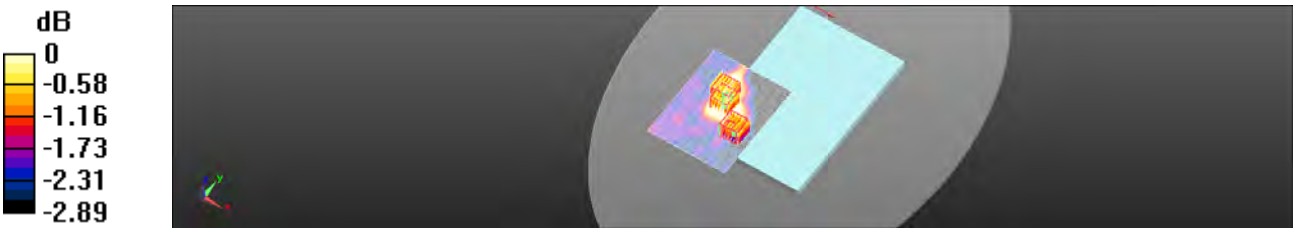
- Probe: EX3DV4 - SN3831; ConvF(3.7, 3.7, 3.7); Calibrated: 2015/1/29;
- Sensor-Surface: 2mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn916; Calibrated: 2014/12/29
- Phantom: Body
- DASY52 52.8.8(1222); SEMCAD X 14.6.10(7331)

Configuration/BODY/Area Scan (101x131x1): Interpolated grid: Bodydx=10 mm, dy=10 mm
Maximum value of SAR (interpolated) = 1.02 W/kg

Configuration/BODY/Zoom Scan (7x7x12)/Cube 0: Measurement grid: dx=4mm, dy=4mm, dz=2mm
Reference Value = 5.832 V/m; Power Drift = 0.11 dB
Peak SAR (extrapolated) = 1.79 W/kg
SAR(1 g) = 0.669 W/kg; SAR(10 g) = 0.401 W/kg
Maximum value of SAR (measured) = 1.14 W/kg

Configuration/BODY/Zoom Scan (7x7x12)/Cube 1: Measurement grid: dx=4mm, dy=4mm, dz=2mm
Reference Value = 5.832 V/m; Power Drift = 0.11 dB
Peak SAR (extrapolated) = 1.83 W/kg
SAR(1 g) = 0.598 W/kg; SAR(10 g) = 0.355 W/kg
Maximum value of SAR (measured) = 1.11 W/kg

Configuration/BODY/Zoom Scan (7x7x12)/Cube 2: Measurement grid: dx=4mm, dy=4mm, dz=2mm
Reference Value = 5.832 V/m; Power Drift = 0.11 dB
Peak SAR (extrapolated) = 0.356 W/kg
SAR(1 g) = 0.305 W/kg; SAR(10 g) = 0.275 W/kg
Maximum value of SAR (measured) = 0.356 W/kg



0 dB = 0.356 W/kg = -4.48 dBW/kg

Date: 2015/4/7

WLAN802.11ac(40M) 5.8G_Body-worn_Back side_CH 151_Main_0mm

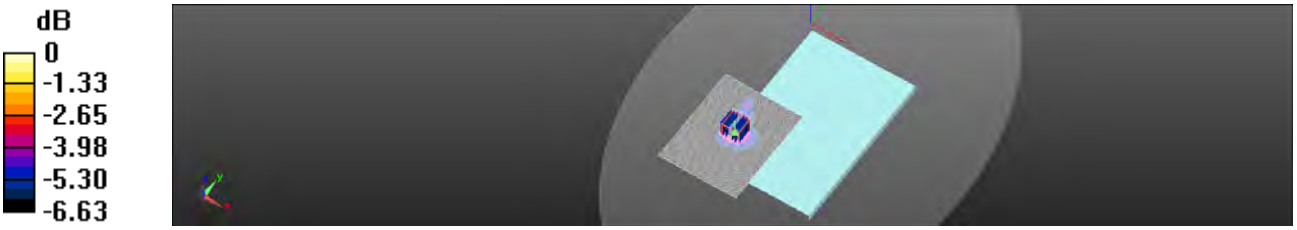
Communication System: WLAN(5G); Frequency: 5755 MHz
Medium parameters used: f = 5755 MHz; σ = 5.892 S/m; ε_r = 47.352; ρ = 1000 kg/m^3
Phantom section: Flat Section

DASY5 Configuration:

- Probe: EX3DV4 - SN3831; ConvF(3.7, 3.7, 3.7); Calibrated: 2015/1/29;
- Sensor-Surface: 2mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn916; Calibrated: 2014/12/29
- Phantom: Body
- DASY52 52.8.8(1222); SEMCAD X 14.6.10(7331)

Configuration/BODY/Area Scan (101x131x1): Interpolated grid: Bodydx=10 mm, dy=10 mm
Maximum value of SAR (interpolated) = 1.14 W/kg

Configuration/BODY/Zoom Scan (7x7x12)/Cube 0: Measurement grid: dx=4mm, dy=4mm, dz=2mm
Reference Value = 5.488 V/m; Power Drift = -0.12 dB
Peak SAR (extrapolated) = 2.33 W/kg
SAR(1 g) = 0.674 W/kg; SAR(10 g) = 0.392 W/kg
Maximum value of SAR (measured) = 1.07 W/kg



0 dB = 1.07 W/kg = 0.29 dBW/kg

Date: 2015/4/7

WLAN802.11ac(80M) 5.8G_Body-worn_Back side_CH 155_Main_0mm

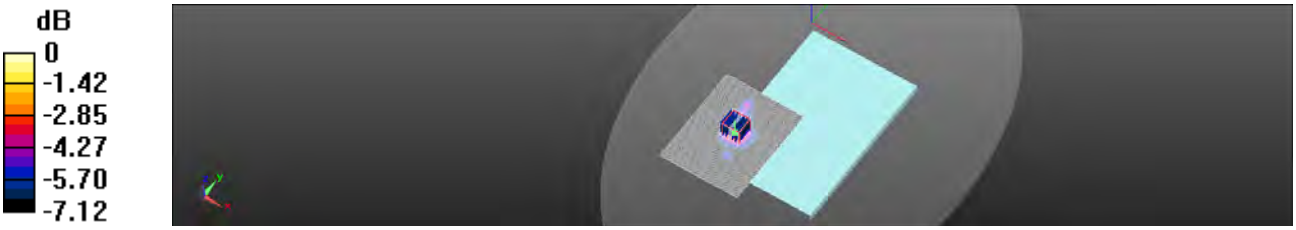
Communication System: WLAN(5G); Frequency: 5775 MHz
Medium parameters used: f = 5775 MHz; σ = 5.917 S/m; ε_r = 47.314; ρ = 1000 kg/m^3
Phantom section: Flat Section

DASY5 Configuration:

- Probe: EX3DV4 - SN3831; ConvF(3.7, 3.7, 3.7); Calibrated: 2015/1/29;
- Sensor-Surface: 2mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn916; Calibrated: 2014/12/29
- Phantom: Body
- DASY52 52.8.8(1222); SEMCAD X 14.6.10(7331)

Configuration/BODY/Area Scan (101x131x1): Interpolated grid: Bodydx=10 mm, dy=10 mm
Maximum value of SAR (interpolated) = 1.29 W/kg

Configuration/BODY/Zoom Scan (7x7x12)/Cube 0: Measurement grid: dx=4mm, dy=4mm, dz=2mm
Reference Value = 5.494 V/m; Power Drift = 0.15 dB
Peak SAR (extrapolated) = 2.63 W/kg
SAR(1 g) = 0.661 W/kg; SAR(10 g) = 0.392 W/kg
Maximum value of SAR (measured) = 1.25 W/kg



0 dB = 1.25 W/kg = 0.97 dBW/kg

Date: 2015/4/3

WLAN802.11n(20M)_Body-worn_Lap-held_CH 6_Main_0mm_repeated with 2nd battery

Communication System: WLAN(2.45G); Frequency: 2437 MHz
Medium parameters used: f = 2437 MHz; σ = 1.872 S/m; ε_r = 53.592; ρ = 1000 kg/m^3
Phantom section: Flat Section

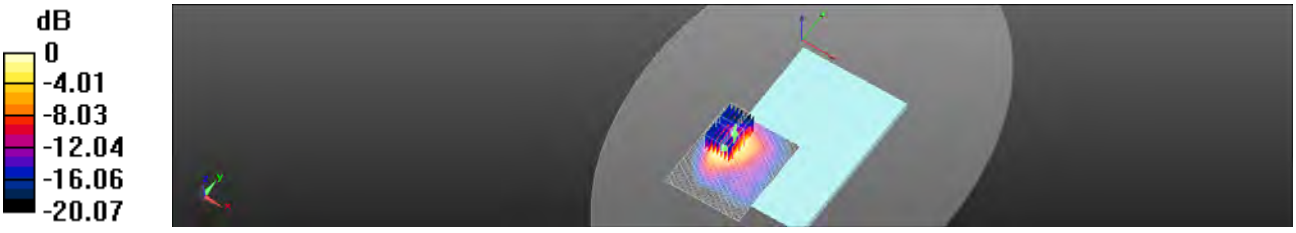
DASY5 Configuration:

- Probe: EX3DV4 - SN3831; ConvF(6.81, 6.81, 6.81); Calibrated: 2015/1/29;
- Sensor-Surface: 2mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn916; Calibrated: 2014/12/29
- Phantom: Body
- DASY52 52.8.8(1222); SEMCAD X 14.6.10(7331)

Configuration/BODY/Area Scan (81x101x1): Interpolated grid: dx=12 mm, dy=12 mm
Maximum value of SAR (interpolated) = 1.27 W/kg

Configuration/BODY/Zoom Scan (7x7x7)/Cube 0: Measurement grid: dx=5mm, dy=5mm, dz=5mm
Reference Value = 2.322 V/m; Power Drift = -0.07 dB
Peak SAR (extrapolated) = 1.58 W/kg
SAR(1 g) = 0.749 W/kg; SAR(10 g) = 0.371 W/kg
Maximum value of SAR (measured) = 1.17 W/kg

Configuration/BODY/Zoom Scan (7x7x7)/Cube 1: Measurement grid: dx=5mm, dy=5mm, dz=5mm
Reference Value = 2.322 V/m; Power Drift = -0.07 dB
Peak SAR (extrapolated) = 1.58 W/kg
SAR(1 g) = 0.763 W/kg; SAR(10 g) = 0.327 W/kg
Maximum value of SAR (measured) = 1.14 W/kg



0 dB = 1.14 W/kg = 0.57 dBW/kg

Date: 2015/4/4

WLAN802.11a 5.2G_Body-worn_Lap-held_CH 44_Main_0mm_repeated with 2nd battery

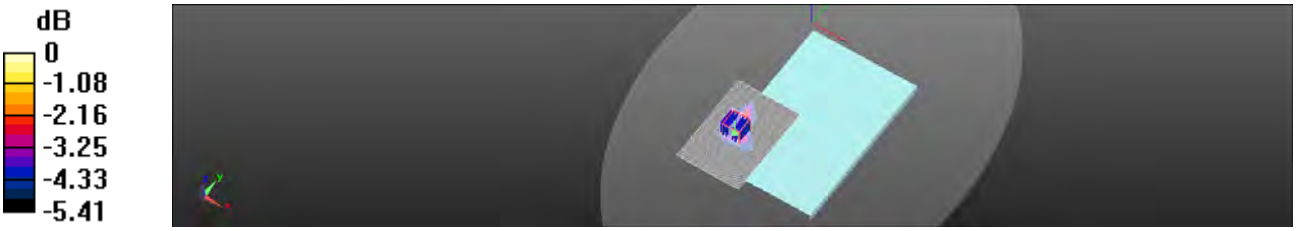
Communication System: WLAN(5G); Frequency: 5220 MHz
Medium parameters used: f = 5220 MHz; σ = 5.254 S/m; ε_r = 48.161; ρ = 1000 kg/m^3
Phantom section: Flat Section

DASY5 Configuration:

- Probe: EX3DV4 - SN3831; ConvF(3.92, 3.92, 3.92); Calibrated: 2015/1/29;
- Sensor-Surface: 2mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn916; Calibrated: 2014/12/29
- Phantom: Body
- DASY52 52.8.8(1222); SEMCAD X 14.6.10(7331)

Configuration/BODY/Area Scan (81x121x1): Interpolated grid: dx=10 mm, dy=10 mm
Maximum value of SAR (interpolated) = 0.662 W/kg

Configuration/BODY/Zoom Scan (7x7x12)/Cube 0: Measurement grid: dx=4mm, dy=4mm, dz=2mm
Reference Value = 5.386 V/m; Power Drift = 0.13 dB
Peak SAR (extrapolated) = 1.73 W/kg
SAR(1 g) = 0.536 W/kg; SAR(10 g) = 0.356 W/kg
Maximum value of SAR (measured) = 0.794 W/kg



0 dB = 0.794 W/kg = -1.00 dBW/kg

Date: 2015/4/5

WLAN802.11a 5.3G_Body-worn_Lap-held_CH 60_Main_0mm_repeated with 2nd battery

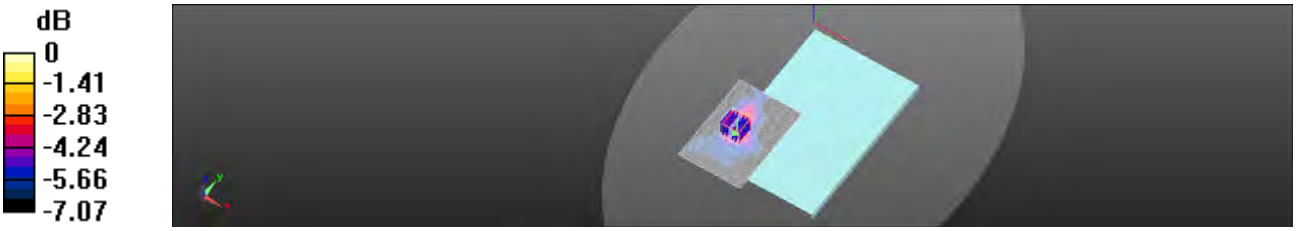
Communication System: WLAN(5G); Frequency: 5300 MHz
Medium parameters used: f = 5300 MHz; σ = 5.339 S/m; ε_r = 47.965; ρ = 1000 kg/m^3
Phantom section: Flat Section

DASY5 Configuration:

- Probe: EX3DV4 - SN3831; ConvF(3.92, 3.92, 3.92); Calibrated: 2015/1/29;
- Sensor-Surface: 2mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn916; Calibrated: 2014/12/29
- Phantom: Body
- DASY52 52.8.8(1222); SEMCAD X 14.6.10(7331)

Configuration/BODY/Area Scan (81x121x1): Interpolated grid: dx=10 mm, dy=10 mm
Maximum value of SAR (interpolated) = 0.854 W/kg

Configuration/BODY/Zoom Scan (7x7x12)/Cube 0: Measurement grid: dx=4mm, dy=4mm, dz=2mm
Reference Value = 6.131 V/m; Power Drift = 0.10 dB
Peak SAR (extrapolated) = 2.19 W/kg
SAR(1 g) = 0.644 W/kg; SAR(10 g) = 0.399 W/kg
Maximum value of SAR (measured) = 1.05 W/kg



0 dB = 1.05 W/kg = 0.21 dBW/kg

Date: 2015/4/6

WLAN802.11a 5.6G_Body-worn_Lap-held_CH 140_Main_0mm_repeated with 2nd battery

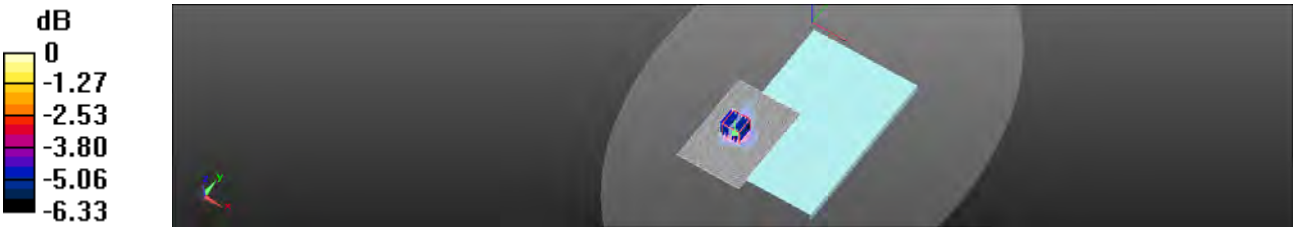
Communication System: WLAN(5G); Frequency: 5700 MHz
Medium parameters used: f = 5700 MHz; σ = 5.818 S/m; ε_r = 47.481; ρ = 1000 kg/m^3
Phantom section: Flat Section

DASY5 Configuration:

- Probe: EX3DV4 - SN3831; ConvF(3.49, 3.49, 3.49); Calibrated: 2015/1/29;
- Sensor-Surface: 2mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn916; Calibrated: 2014/12/29
- Phantom: Body
- DASY52 52.8.8(1222); SEMCAD X 14.6.10(7331)

Configuration/BODY/Area Scan (81x121x1): Interpolated grid: dx=10 mm, dy=10 mm
Maximum value of SAR (interpolated) = 1.03 W/kg

Configuration/BODY/Zoom Scan (7x7x12)/Cube 0: Measurement grid: dx=4mm, dy=4mm, dz=2mm
Reference Value = 5.821 V/m; Power Drift = 0.14 dB
Peak SAR (extrapolated) = 2.19 W/kg
SAR(1 g) = 0.693 W/kg; SAR(10 g) = 0.424 W/kg
Maximum value of SAR (measured) = 1.12 W/kg



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

Date: 2015/4/7

WLAN802.11a 5.8G_Body-worn_Lap-held_CH 153_Main_0mm_repeated with 2nd battery

Communication System: WLAN(5G); Frequency: 5765 MHz
Medium parameters used: f = 5765 MHz; σ = 5.904 S/m; ε_r = 47.331; ρ = 1000 kg/m^3
Phantom section: Flat Section

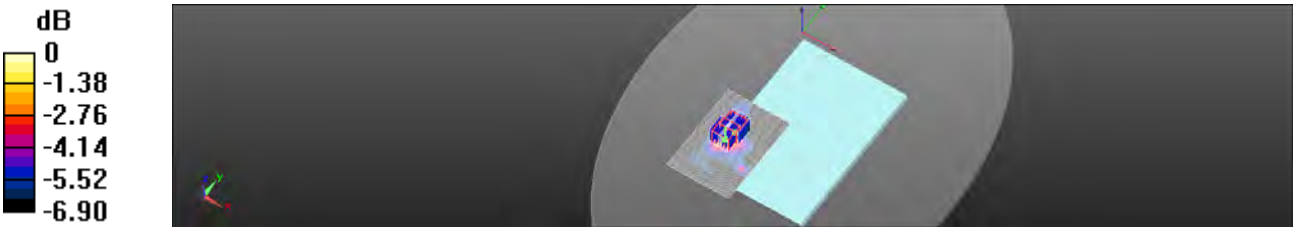
DASY5 Configuration:

- Probe: EX3DV4 - SN3831; ConvF(3.7, 3.7, 3.7); Calibrated: 2015/1/29;
- Sensor-Surface: 2mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn916; Calibrated: 2014/12/29
- Phantom: Body
- DASY52 52.8.8(1222); SEMCAD X 14.6.10(7331)

Configuration/BODY/Area Scan (81x121x1): Interpolated grid: dx=10 mm, dy=10 mm
Maximum value of SAR (interpolated) = 1.13 W/kg

Configuration/BODY/Zoom Scan (7x7x12)/Cube 0: Measurement grid: dx=4mm, dy=4mm, dz=2mm
Reference Value = 5.742 V/m; Power Drift = 0.13 dB
Peak SAR (extrapolated) = 2.23 W/kg
SAR(1 g) = 0.702 W/kg; SAR(10 g) = 0.416 W/kg
Maximum value of SAR (measured) = 1.14 W/kg

Configuration/BODY/Zoom Scan (7x7x12)/Cube 1: Measurement grid: dx=4mm, dy=4mm, dz=2mm
Reference Value = 5.742 V/m; Power Drift = 0.13 dB
Peak SAR (extrapolated) = 4.19 W/kg
SAR(1 g) = 0.625 W/kg; SAR(10 g) = 0.367 W/kg
Maximum value of SAR (measured) = 1.07 W/kg



0 dB = 1.07 W/kg = 0.29 dBW/kg

Date: 2015/4/3

WLAN802.11b_Body-worn_Back side_CH 6_Aux_0mm

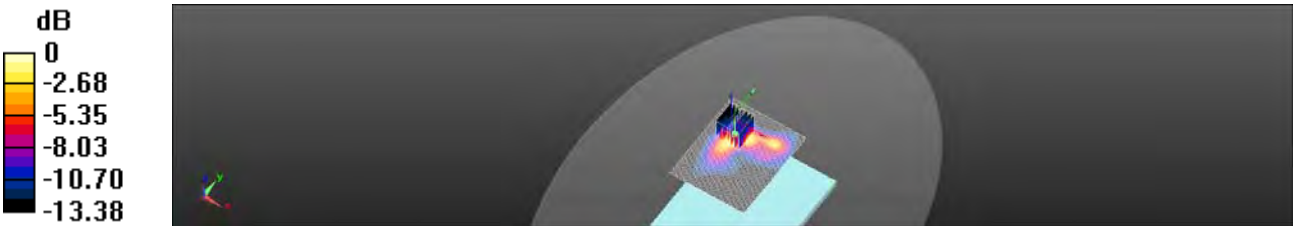
Communication System: WLAN(2.45G); Frequency: 2437 MHz
Medium parameters used: f = 2437 MHz; σ = 1.872 S/m; ε_r = 53.592; ρ = 1000 kg/m^3
Phantom section: Flat Section

DASY5 Configuration:

- Probe: EX3DV4 - SN3831; ConvF(6.81, 6.81, 6.81); Calibrated: 2015/1/29;
- Sensor-Surface: 2mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn916; Calibrated: 2014/12/29
- Phantom: Body
- DASY52 52.8.8(1222); SEMCAD X 14.6.10(7331)

Configuration/BODY/Area Scan (81x101x1): Interpolated grid: dx=12 mm, dy=12 mm
Maximum value of SAR (interpolated) = 1.21 W/kg

Configuration/BODY/Zoom Scan (7x7x7)/Cube 0: Measurement grid: dx=5mm, dy=5mm, dz=5mm
Reference Value = 4.025 V/m; Power Drift = 0.04 dB
Peak SAR (extrapolated) = 1.46 W/kg
SAR(1 g) = 0.771 W/kg; SAR(10 g) = 0.372 W/kg
Maximum value of SAR (measured) = 1.10 W/kg



0 dB = 1.10 W/kg = 0.43 dBW/kg

Date: 2015/4/3

WLAN802.11g_Body-worn_Back side_CH 6_Aux_0mm

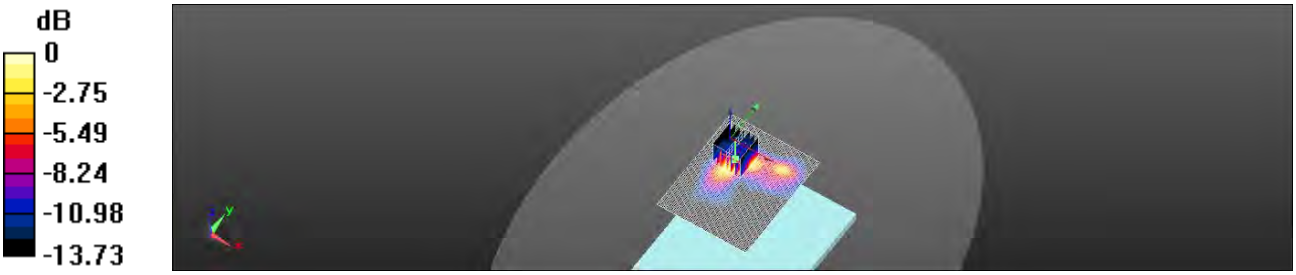
Communication System: WLAN(2.45G); Frequency: 2437 MHz
Medium parameters used: f = 2437 MHz; σ = 1.872 S/m; ε_r = 53.592; ρ = 1000 kg/m^3
Phantom section: Flat Section

DASY5 Configuration:

- Probe: EX3DV4 - SN3831; ConvF(6.81, 6.81, 6.81); Calibrated: 2015/1/29;
- Sensor-Surface: 2mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn916; Calibrated: 2014/12/29
- Phantom: Body
- DASY52 52.8.8(1222); SEMCAD X 14.6.10(7331)

Configuration/BODY/Area Scan (81x101x1): Interpolated grid: dx=12 mm, dy=12 mm
Maximum value of SAR (interpolated) = 1.52 W/kg

Configuration/BODY/Zoom Scan (7x7x7)/Cube 0: Measurement grid: dx=5mm, dy=5mm, dz=5mm
Reference Value = 4.424 V/m; Power Drift = 0.10 dB
Peak SAR (extrapolated) = 1.97 W/kg
SAR(1 g) = 0.993 W/kg; SAR(10 g) = 0.473 W/kg
Maximum value of SAR (measured) = 1.51 W/kg



0 dB = 1.51 W/kg = 1.79 dBW/kg

Date: 2015/4/3

WLAN802.11n(20M)_Body-worn_Back side_CH 6_Aux_0mm

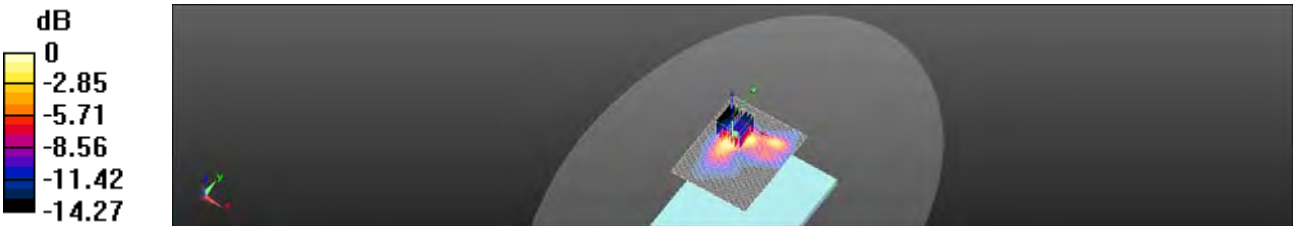
Communication System: WLAN(2.45G); Frequency: 2437 MHz
Medium parameters used: f = 2437 MHz; σ = 1.872 S/m; ε_r = 53.592; ρ = 1000 kg/m^3
Phantom section: Flat Section

DASY5 Configuration:

- Probe: EX3DV4 - SN3831; ConvF(6.81, 6.81, 6.81); Calibrated: 2015/1/29;
- Sensor-Surface: 2mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn916; Calibrated: 2014/12/29
- Phantom: Body
- DASY52 52.8.8(1222); SEMCAD X 14.6.10(7331)

Configuration/BODY/Area Scan (81x101x1): Interpolated grid: dx=12 mm, dy=12 mm
Maximum value of SAR (interpolated) = 1.39 W/kg

Configuration/BODY/Zoom Scan (7x7x7)/Cube 0: Measurement grid: dx=5mm, dy=5mm, dz=5mm
Reference Value = 4.411 V/m; Power Drift = -0.08 dB
Peak SAR (extrapolated) = 1.75 W/kg
SAR(1 g) = 0.923 W/kg; SAR(10 g) = 0.442 W/kg
Maximum value of SAR (measured) = 1.32 W/kg



0 dB = 1.32 W/kg = 1.20 dBW/kg

Date: 2015/4/3

WLAN802.11n(40M)_Body-worn_Back side_CH 6_Aux_0mm

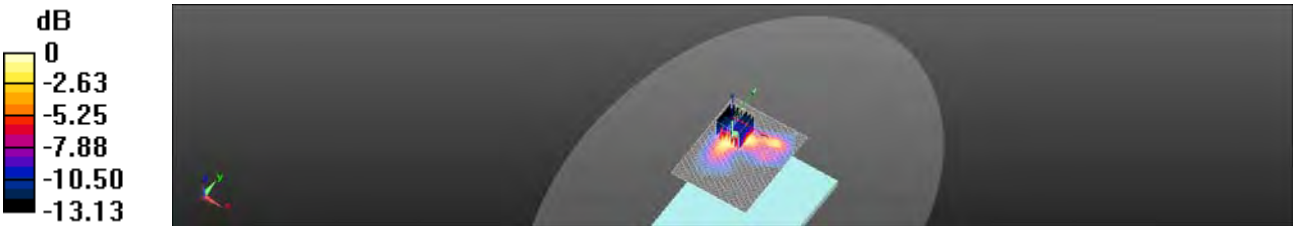
Communication System: WLAN(2.45G); Frequency: 2437 MHz
Medium parameters used: f = 2437 MHz; σ = 1.872 S/m; ε_r = 53.592; ρ = 1000 kg/m^3
Phantom section: Flat Section

DASY5 Configuration:

- Probe: EX3DV4 - SN3831; ConvF(6.81, 6.81, 6.81); Calibrated: 2015/1/29;
- Sensor-Surface: 2mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn916; Calibrated: 2014/12/29
- Phantom: Body
- DASY52 52.8.8(1222); SEMCAD X 14.6.10(7331)

Configuration/BODY/Area Scan (81x101x1): Interpolated grid: dx=12 mm, dy=12 mm
Maximum value of SAR (interpolated) = 1.42 W/kg

Configuration/BODY/Zoom Scan (7x7x7)/Cube 0: Measurement grid: dx=5mm, dy=5mm, dz=5mm
Reference Value = 4.657 V/m; Power Drift = 0.15 dB
Peak SAR (extrapolated) = 1.75 W/kg
SAR(1 g) = 0.918 W/kg; SAR(10 g) = 0.441 W/kg
Maximum value of SAR (measured) = 1.32 W/kg



0 dB = 1.32 W/kg = 1.22 dBW/kg

Date: 2015/4/4

WLAN802.11a 5.2G_Body-worn_Back side_CH 44_Aux_0mm

Communication System: WLAN(5G); Frequency: 5220 MHz
Medium parameters used: f = 5220 MHz; σ = 5.254 S/m; ε_r = 48.161; ρ = 1000 kg/m^3
Phantom section: Flat Section

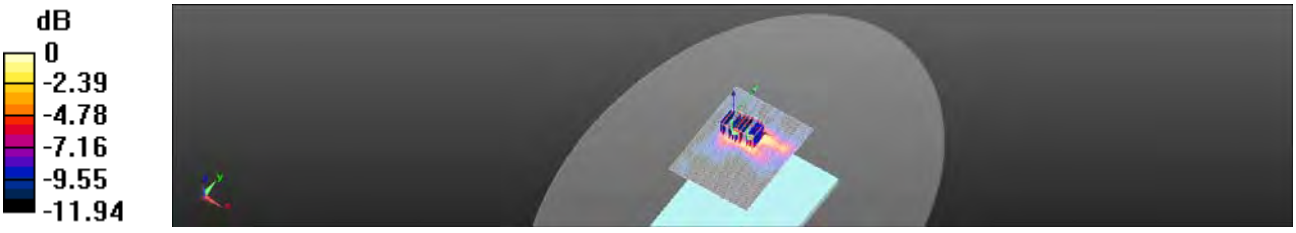
DASY5 Configuration:

- Probe: EX3DV4 - SN3831; ConvF(3.92, 3.92, 3.92); Calibrated: 2015/1/29;
- Sensor-Surface: 2mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn916; Calibrated: 2014/12/29
- Phantom: Body
- DASY52 52.8.8(1222); SEMCAD X 14.6.10(7331)

Configuration/BODY/Area Scan (101x131x1): Interpolated grid: dx=10 mm, dy=10 mm
Maximum value of SAR (interpolated) = 1.61 W/kg

Configuration/BODY/Zoom Scan (7x7x12)/Cube 0: Measurement grid: dx=4mm, dy=4mm, dz=2mm
Reference Value = 4.544 V/m; Power Drift = -0.09 dB
Peak SAR (extrapolated) = 3.65 W/kg
SAR(1 g) = 0.902 W/kg; SAR(10 g) = 0.438 W/kg
Maximum value of SAR (measured) = 1.62 W/kg

Configuration/BODY/Zoom Scan (7x7x12)/Cube 1: Measurement grid: dx=4mm, dy=4mm, dz=2mm
Reference Value = 4.544 V/m; Power Drift = -0.09 dB
Peak SAR (extrapolated) = 4.42 W/kg
SAR(1 g) = 0.876 W/kg; SAR(10 g) = 0.372 W/kg
Maximum value of SAR (measured) = 1.63 W/kg



0 dB = 1.63 W/kg = 2.13 dBW/kg

Date: 2015/4/4

WLAN802.11n(40M) 5.2G_Body-worn_Back side_CH 46_Aux_0mm

Communication System: WLAN(5G); Frequency: 5230 MHz
Medium parameters used: f = 5230 MHz; σ = 5.266 S/m; ε_r = 49.143; ρ = 1000 kg/m^3
Phantom section: Flat Section

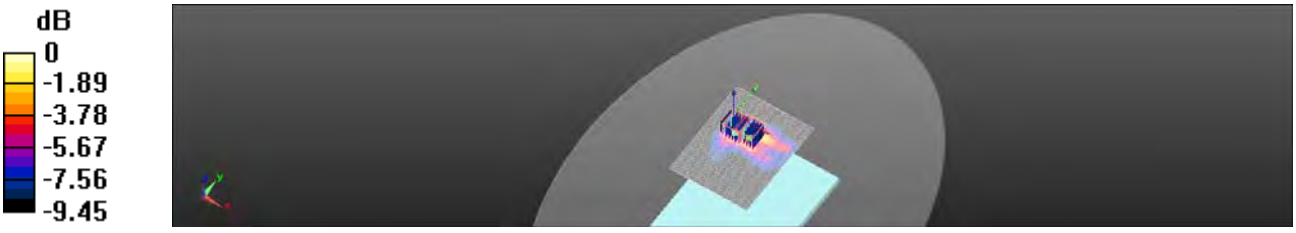
DASY5 Configuration:

- Probe: EX3DV4 - SN3831; ConvF(3.92, 3.92, 3.92); Calibrated: 2015/1/29;
- Sensor-Surface: 2mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn916; Calibrated: 2014/12/29
- Phantom: Body
- DASY52 52.8.8(1222); SEMCAD X 14.6.10(7331)

Configuration/BODY/Area Scan (101x131x1): Interpolated grid: dx=10 mm, dy=10 mm
Maximum value of SAR (interpolated) = 1.29 W/kg

Configuration/BODY/Zoom Scan (7x7x12)/Cube 0: Measurement grid: dx=4mm, dy=4mm, dz=2mm
Reference Value = 4.674 V/m; Power Drift = 0.08 dB
Peak SAR (extrapolated) = 2.87 W/kg
SAR(1 g) = 0.765 W/kg; SAR(10 g) = 0.409 W/kg
Maximum value of SAR (measured) = 1.28 W/kg

Configuration/BODY/Zoom Scan (7x7x12)/Cube 1: Measurement grid: dx=4mm, dy=4mm, dz=2mm
Reference Value = 4.674 V/m; Power Drift = 0.08 dB
Peak SAR (extrapolated) = 3.82 W/kg
SAR(1 g) = 0.822 W/kg; SAR(10 g) = 0.396 W/kg
Maximum value of SAR (measured) = 1.45 W/kg



0 dB = 1.45 W/kg = 1.61 dBW/kg

Date: 2015/4/4

WLAN802.11ac(40M) 5.2G_Body-worn_Back side_CH 46_Aux_0mm

Communication System: WLAN(5G); Frequency: 5230 MHz
Medium parameters used: f = 5230 MHz; σ = 5.266 S/m; ε_r = 48.143; ρ = 1000 kg/m^3
Phantom section: Flat Section

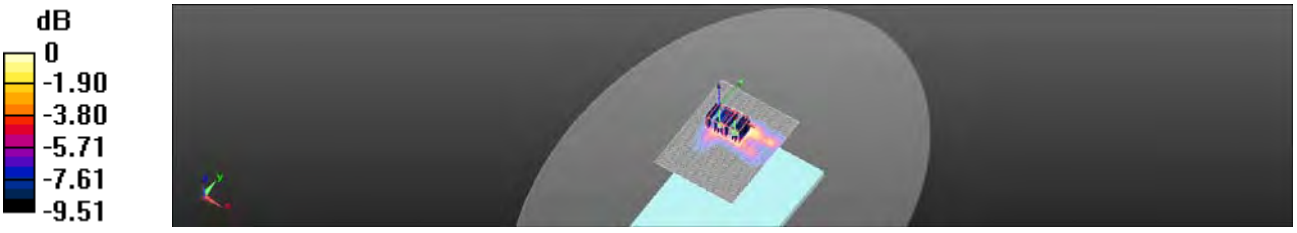
DASY5 Configuration:

- Probe: EX3DV4 - SN3831; ConvF(3.92, 3.92, 3.92); Calibrated: 2015/1/29;
- Sensor-Surface: 2mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn916; Calibrated: 2014/12/29
- Phantom: Body
- DASY52 52.8.8(1222); SEMCAD X 14.6.10(7331)

Configuration/BODY/Area Scan (101x131x1): Interpolated grid: dx=10 mm, dy=10 mm
Maximum value of SAR (interpolated) = 1.38 W/kg

Configuration/BODY/Zoom Scan (7x7x12)/Cube 0: Measurement grid: dx=4mm, dy=4mm, dz=2mm
Reference Value = 4.628 V/m; Power Drift = -0.15 dB
Peak SAR (extrapolated) = 3.61 W/kg
SAR(1 g) = 0.805 W/kg; SAR(10 g) = 0.370 W/kg
Maximum value of SAR (measured) = 1.56 W/kg

Configuration/BODY/Zoom Scan (7x7x12)/Cube 1: Measurement grid: dx=4mm, dy=4mm, dz=2mm
Reference Value = 4.628 V/m; Power Drift = -0.15 dB
Peak SAR (extrapolated) = 2.73 W/kg
SAR(1 g) = 0.757 W/kg; SAR(10 g) = 0.375 W/kg
Maximum value of SAR (measured) = 1.25 W/kg



0 dB = 1.25 W/kg = 0.97 dBW/kg

Date: 2015/4/4

WLAN802.11ac(80M) 5.2G_Body-worn_Back side_CH 42_Aux_0mm

Communication System: WLAN(5G); Frequency: 5210 MHz
Medium parameters used: f = 5210 MHz; σ = 5.243 S/m; ε_r = 48.168; ρ = 1000 kg/m^3
Phantom section: Flat Section

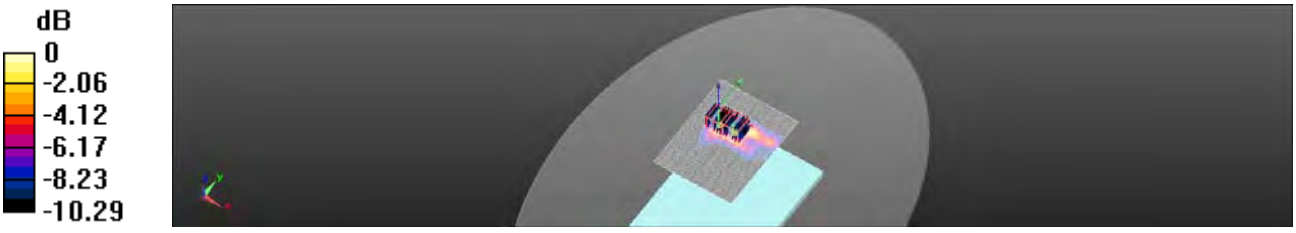
DASY5 Configuration:

- Probe: EX3DV4 - SN3831; ConvF(3.92, 3.92, 3.92); Calibrated: 2015/1/29;
- Sensor-Surface: 2mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn916; Calibrated: 2014/12/29
- Phantom: Body
- DASY52 52.8.8(1222); SEMCAD X 14.6.10(7331)

Configuration/BODY/Area Scan (101x131x1): Interpolated grid: dx=10 mm, dy=10 mm
Maximum value of SAR (interpolated) = 1.54 W/kg

Configuration/BODY/Zoom Scan (7x7x12)/Cube 0: Measurement grid: dx=4mm, dy=4mm, dz=2mm
Reference Value = 3.868 V/m; Power Drift = 0.08 dB
Peak SAR (extrapolated) = 3.77 W/kg
SAR(1 g) = 0.819 W/kg; SAR(10 g) = 0.349 W/kg
Maximum value of SAR (measured) = 1.65 W/kg

Configuration/BODY/Zoom Scan (7x7x12)/Cube 1: Measurement grid: dx=4mm, dy=4mm, dz=2mm
Reference Value = 3.868 V/m; Power Drift = 0.08 dB
Peak SAR (extrapolated) = 2.95 W/kg
SAR(1 g) = 0.816 W/kg; SAR(10 g) = 0.397 W/kg
Maximum value of SAR (measured) = 1.40 W/kg



0 dB = 1.40 W/kg = 1.45 dBW/kg

Date: 2015/4/5

WLAN802.11a 5.3G_Body-worn_Back side_CH 60_Aux_0mm

Communication System: WLAN(5G); Frequency: 5300 MHz
Medium parameters used: f = 5300 MHz; σ = 5.339 S/m; ε_r = 47.965; ρ = 1000 kg/m^3
Phantom section: Flat Section

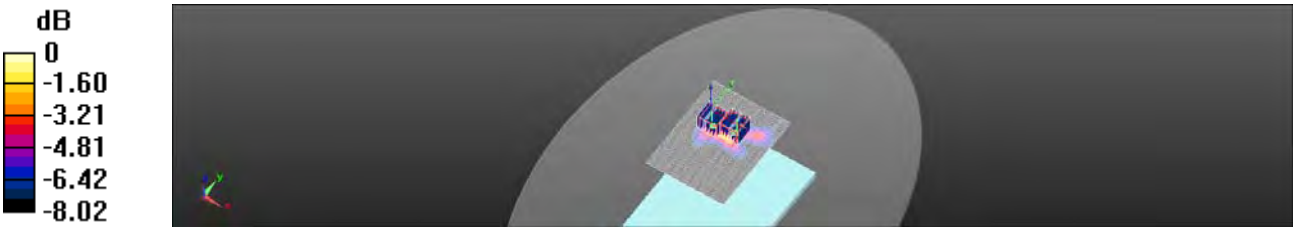
DASY5 Configuration:

- Probe: EX3DV4 - SN3831; ConvF(3.92, 3.92, 3.92); Calibrated: 2015/1/29;
- Sensor-Surface: 2mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn916; Calibrated: 2014/12/29
- Phantom: Body
- DASY52 52.8.8(1222); SEMCAD X 14.6.10(7331)

Configuration/BODY/Area Scan (101x131x1): Interpolated grid: dx=10 mm, dy=10 mm
Maximum value of SAR (interpolated) = 1.69 W/kg

Configuration/BODY/Zoom Scan (7x7x12)/Cube 0: Measurement grid: dx=4mm, dy=4mm, dz=2mm
Reference Value = 5.617 V/m; Power Drift = 0.16 dB
Peak SAR (extrapolated) = 4.44 W/kg
SAR(1 g) = 1.01 W/kg; SAR(10 g) = 0.506 W/kg
Maximum value of SAR (measured) = 1.92 W/kg

Configuration/BODY/Zoom Scan (7x7x12)/Cube 1: Measurement grid: dx=4mm, dy=4mm, dz=2mm
Reference Value = 5.617 V/m; Power Drift = 0.16 dB
Peak SAR (extrapolated) = 4.03 W/kg
SAR(1 g) = 0.887 W/kg; SAR(10 g) = 0.502 W/kg
Maximum value of SAR (measured) = 1.58 W/kg



0 dB = 1.58 W/kg = 1.99 dBW/kg

Date: 2015/4/5

WLAN802.11n(40M) 5.3G_Body-worn_Back side_CH 62_Aux_0mm

Communication System: WLAN(5G); Frequency: 5310 MHz
Medium parameters used: f = 5310 MHz; σ = 5.347 S/m; ε_r = 47.944; ρ = 1000 kg/m^3
Phantom section: Flat Section

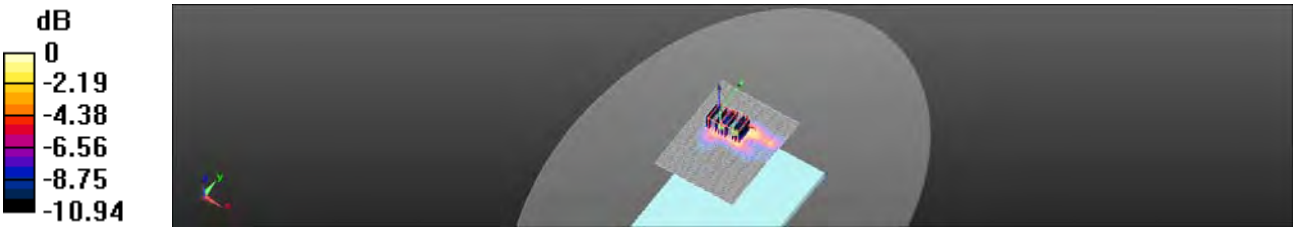
DASY5 Configuration:

- Probe: EX3DV4 - SN3831; ConvF(3.92, 3.92, 3.92); Calibrated: 2015/1/29;
- Sensor-Surface: 2mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn916; Calibrated: 2014/12/29
- Phantom: Body
- DASY52 52.8.8(1222); SEMCAD X 14.6.10(7331)

Configuration/BODY/Area Scan (101x131x1): Interpolated grid: dx=10 mm, dy=10 mm
Maximum value of SAR (interpolated) = 1.53 W/kg

Configuration/BODY/Zoom Scan (7x7x12)/Cube 0: Measurement grid: dx=4mm, dy=4mm, dz=2mm
Reference Value = 3.694 V/m; Power Drift = 0.09 dB
Peak SAR (extrapolated) = 4.75 W/kg
SAR(1 g) = 0.937 W/kg; SAR(10 g) = 0.359 W/kg
Maximum value of SAR (measured) = 1.88 W/kg

Configuration/BODY/Zoom Scan (7x7x12)/Cube 1: Measurement grid: dx=4mm, dy=4mm, dz=2mm
Reference Value = 3.694 V/m; Power Drift = 0.09 dB
Peak SAR (extrapolated) = 2.80 W/kg
SAR(1 g) = 0.808 W/kg; SAR(10 g) = 0.378 W/kg
Maximum value of SAR (measured) = 1.45 W/kg



0 dB = 1.45 W/kg = 1.60 dBW/kg

Date: 2015/4/5

WLAN802.11ac(40M) 5.3G_Body-worn_Back side_CH 54_Aux_0mm

Communication System: WLAN(5G); Frequency: 5270 MHz
Medium parameters used: f = 5270 MHz; σ = 5.309 S/m; ε_r = 47.992; ρ = 1000 kg/m^3
Phantom section: Flat Section

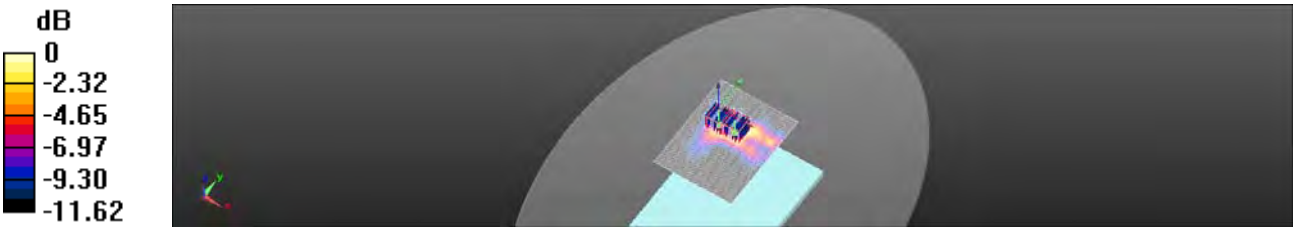
DASY5 Configuration:

- Probe: EX3DV4 - SN3831; ConvF(3.92, 3.92, 3.92); Calibrated: 2015/1/29;
- Sensor-Surface: 2mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn916; Calibrated: 2014/12/29
- Phantom: Body
- DASY52 52.8.8(1222); SEMCAD X 14.6.10(7331)

Configuration/BODY/Area Scan (101x131x1): Interpolated grid: dx=10 mm, dy=10 mm
Maximum value of SAR (interpolated) = 1.30 W/kg

Configuration/BODY/Zoom Scan (7x7x12)/Cube 0: Measurement grid: dx=4mm, dy=4mm, dz=2mm
Reference Value = 3.089 V/m; Power Drift = 0.18 dB
Peak SAR (extrapolated) = 3.08 W/kg
SAR(1 g) = 0.700 W/kg; SAR(10 g) = 0.287 W/kg
Maximum value of SAR (measured) = 1.40 W/kg

Configuration/BODY/Zoom Scan (7x7x12)/Cube 1: Measurement grid: dx=4mm, dy=4mm, dz=2mm
Reference Value = 3.089 V/m; Power Drift = 0.18 dB
Peak SAR (extrapolated) = 2.26 W/kg
SAR(1 g) = 0.635 W/kg; SAR(10 g) = 0.294 W/kg
Maximum value of SAR (measured) = 1.11 W/kg



0 dB = 1.11 W/kg = 0.46 dBW/kg

Date: 2015/4/5

WLAN802.11ac(80M) 5.3G_Body-worn_Back side_CH 58_Aux_0mm

Communication System: WLAN(5G); Frequency: 5290 MHz
Medium parameters used: f = 5290 MHz; σ = 5.327 S/m; ε_r = 47.971; ρ = 1000 kg/m^3
Phantom section: Flat Section

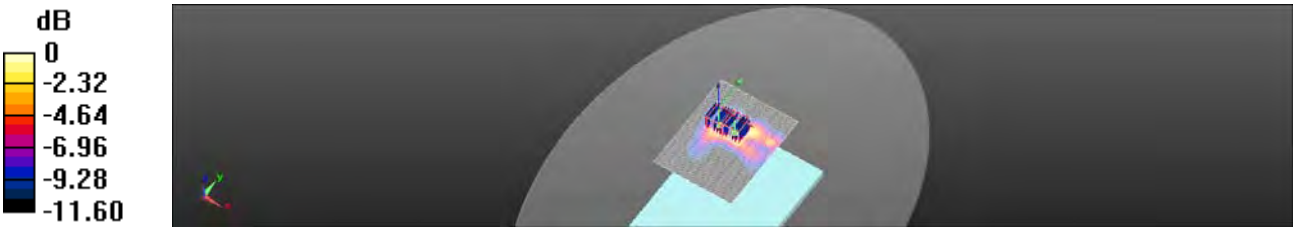
DASY5 Configuration:

- Probe: EX3DV4 - SN3831; ConvF(3.92, 3.92, 3.92); Calibrated: 2015/1/29;
- Sensor-Surface: 2mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn916; Calibrated: 2014/12/29
- Phantom: Body
- DASY52 52.8.8(1222); SEMCAD X 14.6.10(7331)

Configuration/BODY/Area Scan (101x131x1): Interpolated grid: dx=10 mm, dy=10 mm
Maximum value of SAR (interpolated) = 1.42 W/kg

Configuration/BODY/Zoom Scan (7x7x12)/Cube 0: Measurement grid: dx=4mm, dy=4mm, dz=2mm
Reference Value = 3.601 V/m; Power Drift = -0.06 dB
Peak SAR (extrapolated) = 3.57 W/kg
SAR(1 g) = 0.768 W/kg; SAR(10 g) = 0.306 W/kg
Maximum value of SAR (measured) = 1.59 W/kg

Configuration/BODY/Zoom Scan (7x7x12)/Cube 1: Measurement grid: dx=4mm, dy=4mm, dz=2mm
Reference Value = 3.601 V/m; Power Drift = -0.06 dB
Peak SAR (extrapolated) = 2.76 W/kg
SAR(1 g) = 0.680 W/kg; SAR(10 g) = 0.312 W/kg
Maximum value of SAR (measured) = 1.15 W/kg



0 dB = 1.15 W/kg = 0.61 dBW/kg

Date: 2015/4/6

WLAN802.11a 5.6G_Body-worn_Back side_CH 140_Aux_0mm

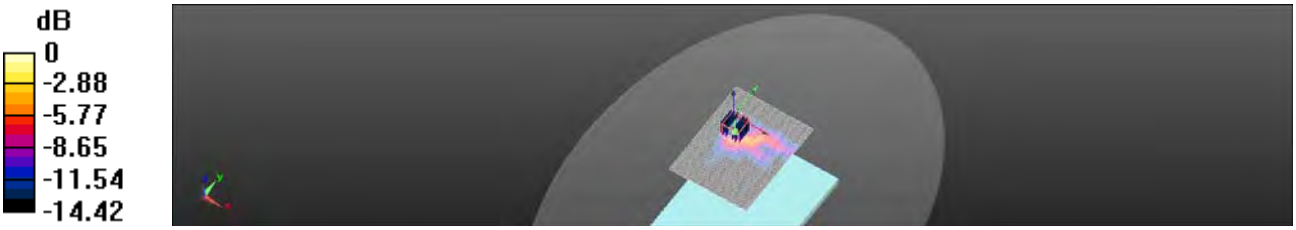
Communication System: WLAN(5G); Frequency: 5700 MHz
Medium parameters used: f = 5700 MHz; σ = 5.818 S/m; ε_r = 47.481; ρ = 1000 kg/m^3
Phantom section: Flat Section

DASY5 Configuration:

- Probe: EX3DV4 - SN3831; ConvF(3.49, 3.49, 3.49); Calibrated: 2015/1/29;
- Sensor-Surface: 2mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn916; Calibrated: 2014/12/29
- Phantom: Body
- DASY52 52.8.8(1222); SEMCAD X 14.6.10(7331)

Configuration/BODY/Area Scan (101x131x1): Interpolated grid: dx=10 mm, dy=10 mm
Maximum value of SAR (interpolated) = 3.04 W/kg

Configuration/BODY/Zoom Scan (7x7x12)/Cube 0: Measurement grid: dx=4mm, dy=4mm, dz=2mm
Reference Value = 3.166 V/m; Power Drift = 0.09 dB
Peak SAR (extrapolated) = 6.50 W/kg
SAR(1 g) = 1.32 W/kg; SAR(10 g) = 0.406 W/kg
Maximum value of SAR (measured) = 2.66 W/kg



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

Date: 2015/4/6

WLAN802.11n(40M) 5.6G_Body-worn_Back side_CH 134_Aux_0mm

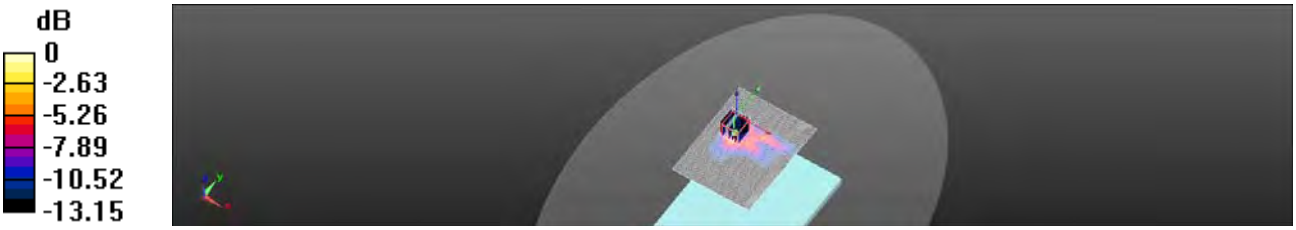
Communication System: WLAN(5G); Frequency: 5670 MHz
Medium parameters used: f = 5670 MHz; σ = 5.785 S/m; ε_r = 47.537; ρ = 1000 kg/m^3
Phantom section: Flat Section

DASY5 Configuration:

- Probe: EX3DV4 - SN3831; ConvF(3.49, 3.49, 3.49); Calibrated: 2015/1/29;
- Sensor-Surface: 2mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn916; Calibrated: 2014/12/29
- Phantom: Body
- DASY52 52.8.8(1222); SEMCAD X 14.6.10(7331)

Configuration/BODY/Area Scan (101x131x1): Interpolated grid: dx=10 mm, dy=10 mm
Maximum value of SAR (interpolated) = 1.90 W/kg

Configuration/BODY/Zoom Scan (7x7x12)/Cube 0: Measurement grid: dx=4mm, dy=4mm, dz=2mm
Reference Value = 4.004 V/m; Power Drift = 0.07 dB
Peak SAR (extrapolated) = 5.94 W/kg
SAR(1 g) = 1.23 W/kg; SAR(10 g) = 0.400 W/kg
Maximum value of SAR (measured) = 2.45 W/kg



0 dB = 2.45 W/kg = 3.90 dBW/kg

Date: 2015/4/6

WLAN802.11ac(20M) 5.6G_Body-worn_Back side_CH 144_Aux_0mm

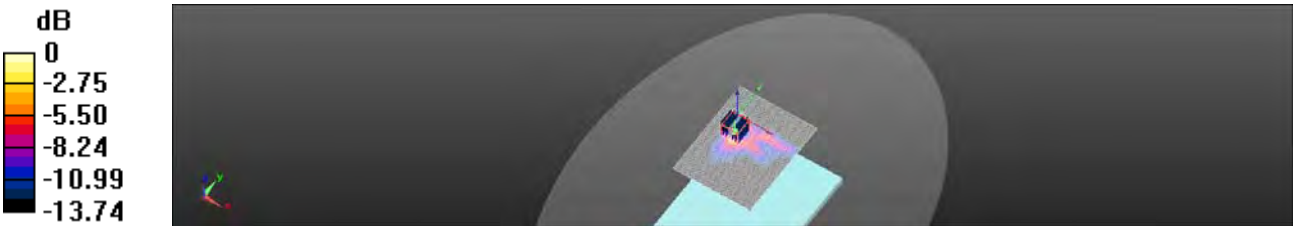
Communication System: WLAN(5G); Frequency: 5720 MHz
Medium parameters used: f = 5720 MHz; σ = 5.844 S/m; ε_r = 47.434; ρ = 1000 kg/m^3
Phantom section: Flat Section

DASY5 Configuration:

- Probe: EX3DV4 - SN3831; ConvF(3.49, 3.49, 3.49); Calibrated: 2015/1/29;
- Sensor-Surface: 2mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn916; Calibrated: 2014/12/29
- Phantom: Body
- DASY52 52.8.8(1222); SEMCAD X 14.6.10(7331)

Configuration/BODY/Area Scan (101x131x1): Interpolated grid: dx=10 mm, dy=10 mm
Maximum value of SAR (interpolated) = 2.05 W/kg

Configuration/BODY/Zoom Scan (7x7x12)/Cube 0: Measurement grid: dx=4mm, dy=4mm, dz=2mm
Reference Value = 3.519 V/m; Power Drift = 0.11 dB
Peak SAR (extrapolated) = 6.61 W/kg
SAR(1 g) = 1.27 W/kg; SAR(10 g) = 0.411 W/kg
Maximum value of SAR (measured) = 2.58 W/kg



0 dB = 2.58 W/kg = 4.11 dBW/kg

Date: 2015/4/6

WLAN802.11ac(40M) 5.6G_Body-worn_Back side_CH 134_Aux_0mm

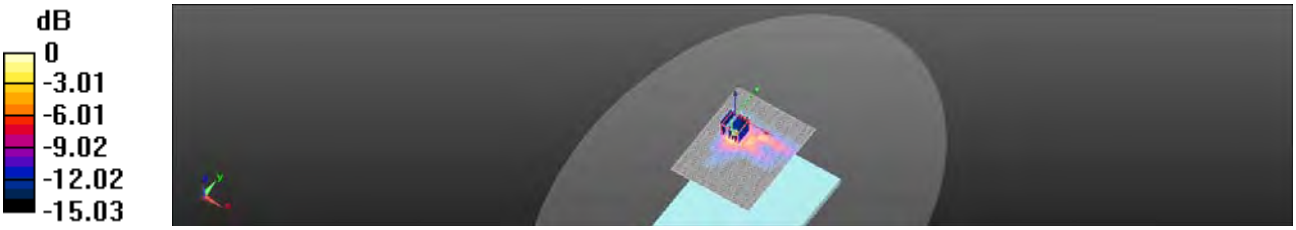
Communication System: WLAN(5G); Frequency: 5670 MHz
Medium parameters used: f = 5670 MHz; σ = 5.785 S/m; ε_r = 47.537; ρ = 1000 kg/m^3
Phantom section: Flat Section

DASY5 Configuration:

- Probe: EX3DV4 - SN3831; ConvF(3.49, 3.49, 3.49); Calibrated: 2015/1/29;
- Sensor-Surface: 2mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn916; Calibrated: 2014/12/29
- Phantom: Body
- DASY52 52.8.8(1222); SEMCAD X 14.6.10(7331)

Configuration/BODY/Area Scan (101x131x1): Interpolated grid: dx=10 mm, dy=10 mm
Maximum value of SAR (interpolated) = 2.46 W/kg

Configuration/BODY/Zoom Scan (7x7x12)/Cube 0: Measurement grid: dx=4mm, dy=4mm, dz=2mm
Reference Value = 2.940 V/m; Power Drift = 0.12 dB
Peak SAR (extrapolated) = 6.36 W/kg
SAR(1 g) = 1.31 W/kg; SAR(10 g) = 0.406 W/kg
Maximum value of SAR (measured) = 2.66 W/kg



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

Date: 2015/4/6

WLAN802.11ac(80M) 5.6G_Body-worn_Back side_CH 138_Aux_0mm

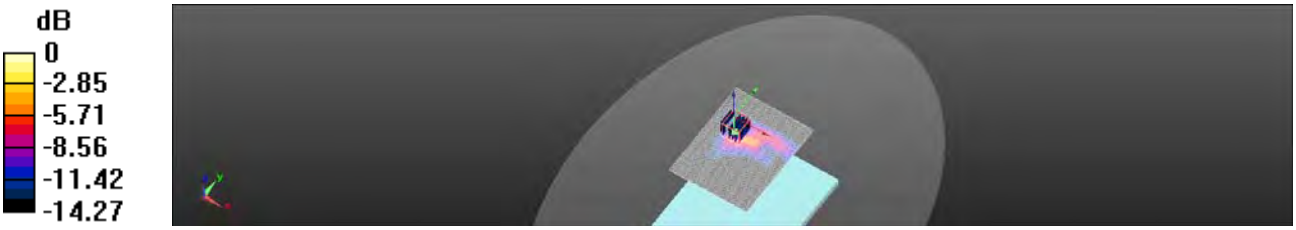
Communication System: WLAN(5G); Frequency: 5690 MHz
Medium parameters used: f = 5690 MHz; σ = 5.809 S/m; ε_r = 47.505; ρ = 1000 kg/m^3
Phantom section: Flat Section

DASY5 Configuration:

- Probe: EX3DV4 - SN3831; ConvF(3.49, 3.49, 3.49); Calibrated: 2015/1/29;
- Sensor-Surface: 2mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn916; Calibrated: 2014/12/29
- Phantom: Body
- DASY52 52.8.8(1222); SEMCAD X 14.6.10(7331)

Configuration/BODY/Area Scan (101x131x1): Interpolated grid: dx=10 mm, dy=10 mm
Maximum value of SAR (interpolated) = 2.52 W/kg

Configuration/BODY/Zoom Scan (7x7x12)/Cube 0: Measurement grid: dx=4mm, dy=4mm, dz=2mm
Reference Value = 3.169 V/m; Power Drift =0.13 dB
Peak SAR (extrapolated) = 6.56 W/kg
SAR(1 g) = 1.25 W/kg; SAR(10 g) = 0.407 W/kg
Maximum value of SAR (measured) = 2.73 W/kg



0 dB = 2.73 W/kg = 4.36 dBW/kg

Date: 2015/4/7

WLAN802.11a 5.8G_Body-worn_Back side_CH 157_Aux_0mm

Communication System: WLAN(5G); Frequency: 5785 MHz
Medium parameters used: f = 5785 MHz; σ = 5.931 S/m; ε_r = 47.302; ρ = 1000 kg/m^3
Phantom section: Flat Section

DASY5 Configuration:

- Probe: EX3DV4 - SN3831; ConvF(3.7, 3.7, 3.7); Calibrated: 2015/1/29;
- Sensor-Surface: 2mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn916; Calibrated: 2014/12/29
- Phantom: Body
- DASY52 52.8.8(1222); SEMCAD X 14.6.10(7331)

Configuration/BODY/Area Scan (101x131x1): Interpolated grid: Bodydx=10 mm, dy=10 mm
Maximum value of SAR (interpolated) = 2.83 W/kg

Configuration/BODY/Zoom Scan (7x7x12)/Cube 0: Measurement grid: dx=4mm, dy=4mm, dz=2mm
Reference Value = 6.394 V/m; Power Drift = -0.09 dB
Peak SAR (extrapolated) = 8.40 W/kg
SAR(1 g) = 1.46 W/kg; SAR(10 g) = 0.573 W/kg
Maximum value of SAR (measured) = 2.76 W/kg

0 dB = 2.76 W/kg = 4.42 dBW/kg

Date: 2015/4/7

WLAN802.11n(40M) 5.8G_Body-worn_Back side_CH 151_Aux_0mm

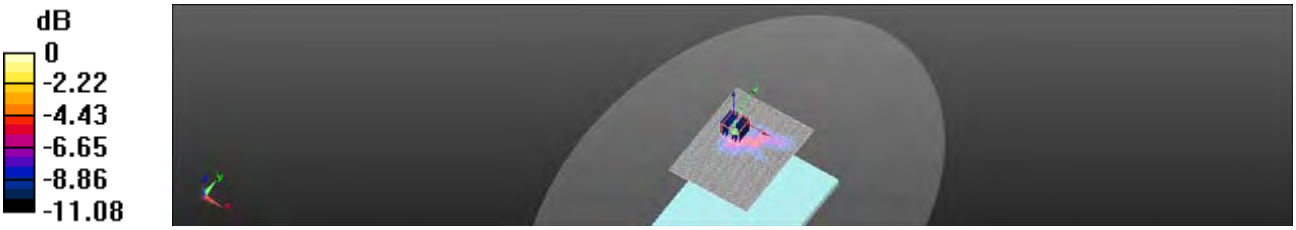
Communication System: WLAN(5G); Frequency: 5755 MHz
Medium parameters used: f = 5755 MHz; σ = 5.892 S/m; ε_r = 47.352; ρ = 1000 kg/m^3
Phantom section: Flat Section

DASY5 Configuration:

- Probe: EX3DV4 - SN3831; ConvF(3.7, 3.7, 3.7); Calibrated: 2015/1/29;
- Sensor-Surface: 2mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn916; Calibrated: 2014/12/29
- Phantom: Body
- DASY52 52.8.8(1222); SEMCAD X 14.6.10(7331)

Configuration/BODY/Area Scan (101x131x1): Interpolated grid: Bodydx=10 mm, dy=10 mm
Maximum value of SAR (interpolated) = 2.71 W/kg

Configuration/BODY/Zoom Scan (7x7x12)/Cube 0: Measurement grid: dx=4mm, dy=4mm, dz=2mm
Reference Value = 5.046 V/m; Power Drift = 0.02 dB
Peak SAR (extrapolated) = 7.26 W/kg
SAR(1 g) = 1.43 W/kg; SAR(10 g) = 0.532 W/kg
Maximum value of SAR (measured) = 2.80 W/kg



0 dB = 2.80 W/kg = 4.47 dBW/kg

Date: 2015/4/7

WLAN802.11ac(40M) 5.8G_Body-worn_Back side_CH 159_Aux_0mm

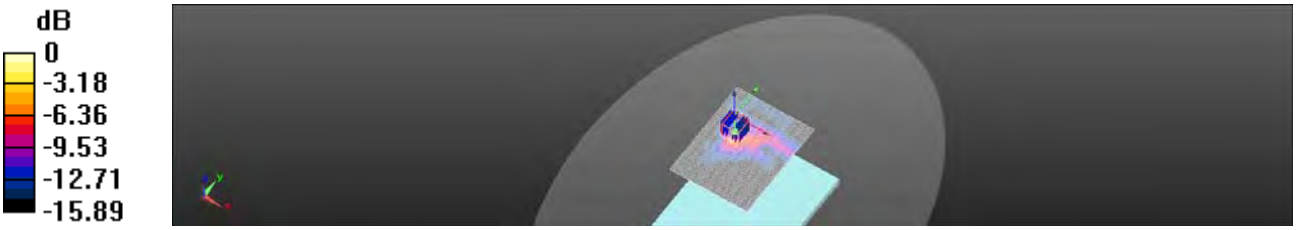
Communication System: WLAN(5G); Frequency: 5795 MHz
Medium parameters used: f = 5795 MHz; σ = 5.942 S/m; ε_r = 47.272; ρ = 1000 kg/m^3
Phantom section: Flat Section

DASY5 Configuration:

- Probe: EX3DV4 - SN3831; ConvF(3.7, 3.7, 3.7); Calibrated: 2015/1/29;
- Sensor-Surface: 2mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn916; Calibrated: 2014/12/29
- Phantom: Body
- DASY52 52.8.8(1222); SEMCAD X 14.6.10(7331)

Configuration/BODY/Area Scan (101x131x1): Interpolated grid: Bodydx=10 mm, dy=10 mm
Maximum value of SAR (interpolated) = 2.79 W/kg

Configuration/BODY/Zoom Scan (7x7x12)/Cube 0: Measurement grid: dx=4mm, dy=4mm, dz=2mm
Reference Value = 2.784 V/m; Power Drift = 0.17 dB
Peak SAR (extrapolated) = 6.70 W/kg
SAR(1 g) = 1.29 W/kg; SAR(10 g) = 0.393 W/kg
Maximum value of SAR (measured) = 2.65 W/kg



0 dB = 2.65 W/kg = 4.23 dBW/kg

Date: 2015/4/7

WLAN802.11ac(80M) 5.8G_Body-worn_Back side_CH 155_Aux_0mm

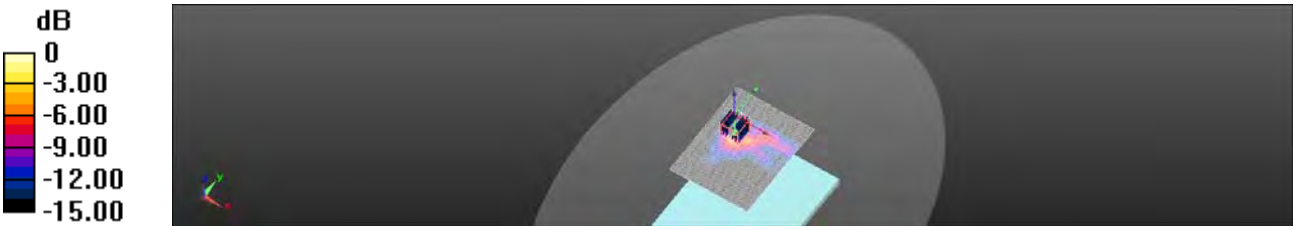
Communication System: WLAN(5G); Frequency: 5775 MHz
Medium parameters used: f = 5775 MHz; σ = 5.917 S/m; ε_r = 47.314; ρ = 1000 kg/m^3
Phantom section: Flat Section

DASY5 Configuration:

- Probe: EX3DV4 - SN3831; ConvF(3.7, 3.7, 3.7); Calibrated: 2015/1/29;
- Sensor-Surface: 2mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn916; Calibrated: 2014/12/29
- Phantom: Body
- DASY52 52.8.8(1222); SEMCAD X 14.6.10(7331)

Configuration/BODY/Area Scan (101x131x1): Interpolated grid: Bodydx=10 mm, dy=10 mm
Maximum value of SAR (interpolated) = 3.12 W/kg

Configuration/BODY/Zoom Scan (7x7x12)/Cube 0: Measurement grid: dx=4mm, dy=4mm, dz=2mm
Reference Value = 2.779 V/m; Power Drift = 0.12 dB
Peak SAR (extrapolated) = 6.73 W/kg
SAR(1 g) = 1.38 W/kg; SAR(10 g) = 0.415 W/kg
Maximum value of SAR (measured) = 2.80 W/kg



0 dB = 2.80 W/kg = 4.47 dBW/kg

Date: 2015/4/3

WLAN802.11g_Body-worn_Lap-held_CH 6_Aux_0mm_repeated with 2nd battery

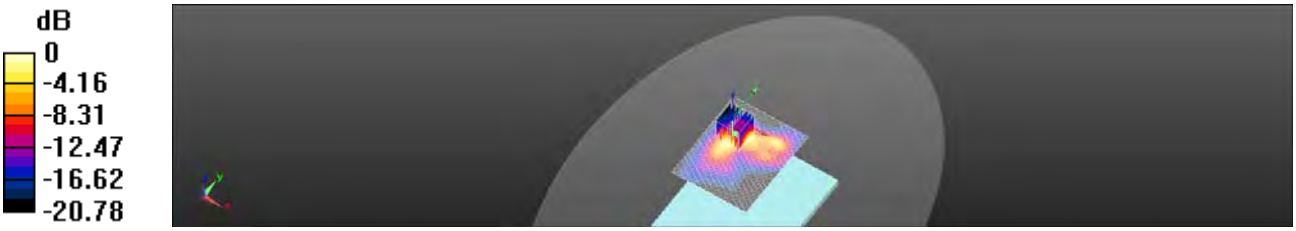
Communication System: WLAN(2.45G); Frequency: 2437 MHz
Medium parameters used: f = 2437 MHz; σ = 1.872 S/m; ε_r = 53.592; ρ = 1000 kg/m^3
Phantom section: Flat Section

DASY5 Configuration:

- Probe: EX3DV4 - SN3831; ConvF(6.81, 6.81, 6.81); Calibrated: 2015/1/29;
- Sensor-Surface: 2mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn916; Calibrated: 2014/12/29
- Phantom: Body
- DASY52 52.8.8(1222); SEMCAD X 14.6.10(7331)

Configuration/BODY/Area Scan (81x101x1): Interpolated grid: dx=12 mm, dy=12 mm
Maximum value of SAR (interpolated) = 1.47 W/kg

Configuration/BODY/Zoom Scan (7x7x7)/Cube 0: Measurement grid: dx=5mm, dy=5mm, dz=5mm
Reference Value = 1.819 V/m; Power Drift = 0.11 dB
Peak SAR (extrapolated) = 1.90 W/kg
SAR(1 g) = 0.970 W/kg; SAR(10 g) = 0.436 W/kg
Maximum value of SAR (measured) = 1.41 W/kg



0 dB = 1.41 W/kg = 1.49 dBW/kg

Date: 2015/4/4

WLAN802.11a 5.2G_Body-worn_Lap-held_CH 44_Aux_0mm_repeated with 2nd battery

Communication System: WLAN(5G); Frequency: 5220 MHz
Medium parameters used: f = 5220 MHz; σ = 5.254 S/m; ε_r = 48.161; ρ = 1000 kg/m^3
Phantom section: Flat Section

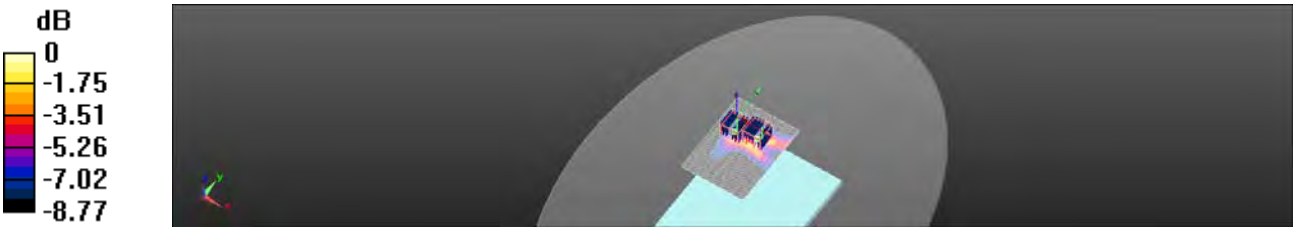
DASY5 Configuration:

- Probe: EX3DV4 - SN3831; ConvF(3.92, 3.92, 3.92); Calibrated: 2015/1/29;
- Sensor-Surface: 2mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn916; Calibrated: 2014/12/29
- Phantom: Body
- DASY52 52.8.8(1222); SEMCAD X 14.6.10(7331)

Configuration/BODY/Area Scan (81x111x1): Interpolated grid: dx=10 mm, dy=10 mm
Maximum value of SAR (interpolated) = 1.39 W/kg

Configuration/BODY/Zoom Scan (7x7x12)/Cube 0: Measurement grid: dx=4mm, dy=4mm, dz=2mm
Reference Value = 5.047 V/m; Power Drift = 0.04 dB
Peak SAR (extrapolated) = 2.87 W/kg
SAR(1 g) = 0.813 W/kg; SAR(10 g) = 0.402 W/kg
Maximum value of SAR (measured) = 1.33 W/kg

Configuration/BODY/Zoom Scan (7x7x12)/Cube 1: Measurement grid: dx=4mm, dy=4mm, dz=2mm
Reference Value = 5.047 V/m; Power Drift = 0.04 dB
Peak SAR (extrapolated) = 3.11 W/kg
SAR(1 g) = 0.729 W/kg; SAR(10 g) = 0.346 W/kg
Maximum value of SAR (measured) = 1.32 W/kg



0 dB = 1.32 W/kg = 1.22 dBW/kg

Date: 2015/4/5

WLAN802.11a 5.3G_Body-worn_Lap-held_CH 60_Aux_0mm_repeated with 2nd battery

Communication System: WLAN(5G); Frequency: 5300 MHz
Medium parameters used: f = 5300 MHz; σ = 5.339 S/m; ε_r = 47.965; ρ = 1000 kg/m^3
Phantom section: Flat Section

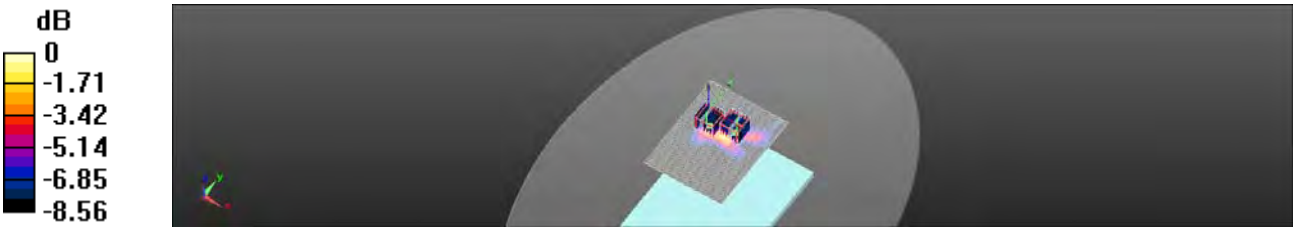
DASY5 Configuration:

- Probe: EX3DV4 - SN3831; ConvF(3.92, 3.92, 3.92); Calibrated: 2015/1/29;
- Sensor-Surface: 2mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn916; Calibrated: 2014/12/29
- Phantom: Body
- DASY52 52.8.8(1222); SEMCAD X 14.6.10(7331)

Configuration/BODY/Area Scan (101x131x1): Interpolated grid: dx=10 mm, dy=10 mm
Maximum value of SAR (interpolated) = 1.65 W/kg

Configuration/BODY/Zoom Scan (7x7x12)/Cube 0: Measurement grid: dx=4mm, dy=4mm, dz=2mm
Reference Value = 5.147 V/m; Power Drift = 0.12 dB
Peak SAR (extrapolated) = 3.58 W/kg
SAR(1 g) = 0.921 W/kg; SAR(10 g) = 0.415 W/kg
Maximum value of SAR (measured) = 1.48 W/kg

Configuration/BODY/Zoom Scan (7x7x12)/Cube 1: Measurement grid: dx=4mm, dy=4mm, dz=2mm
Reference Value = 5.147 V/m; Power Drift = 0.12 dB
Peak SAR (extrapolated) = 3.59 W/kg
SAR(1 g) = 0.813 W/kg; SAR(10 g) = 0.426 W/kg
Maximum value of SAR (measured) = 1.52 W/kg



0 dB = 1.52 W/kg = 1.82 dBW/kg

Date: 2015/4/6

WLAN802.11a 5.6G_Body-worn_Lap-held_CH 140_Aux_0mm_repeated with 2nd battery

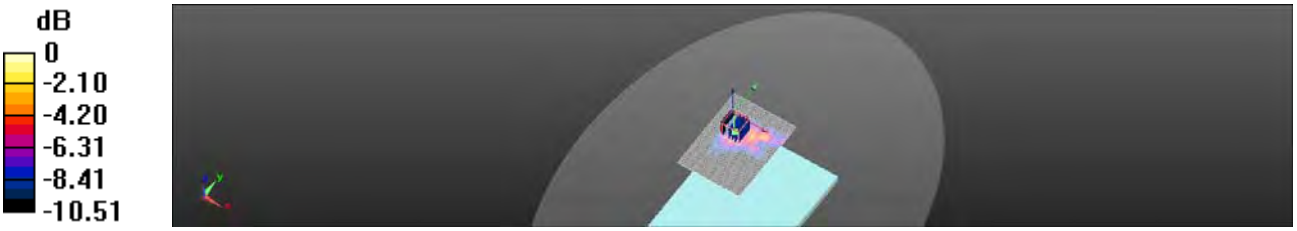
Communication System: WLAN(5G); Frequency: 5700 MHz
Medium parameters used: f = 5700 MHz; σ = 5.818 S/m; ε_r = 47.481; ρ = 1000 kg/m^3
Phantom section: Flat Section

DASY5 Configuration:

- Probe: EX3DV4 - SN3831; ConvF(3.49, 3.49, 3.49); Calibrated: 2015/1/29;
- Sensor-Surface: 2mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn916; Calibrated: 2014/12/29
- Phantom: Body
- DASY52 52.8.8(1222); SEMCAD X 14.6.10(7331)

Configuration/BODY/Area Scan (81x111x1): Interpolated grid: dx=10 mm, dy=10 mm
Maximum value of SAR (interpolated) = 2.23 W/kg

Configuration/BODY/Zoom Scan (7x7x12)/Cube 0: Measurement grid: dx=4mm, dy=4mm, dz=2mm
Reference Value = 5.815 V/m; Power Drift = -0.09 dB
Peak SAR (extrapolated) = 7.31 W/kg
SAR(1 g) = 1.29 W/kg; SAR(10 g) = 0.523 W/kg
Maximum value of SAR (measured) = 2.66 W/kg



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

Date: 2015/4/7

WLAN802.11a 5.8G_Body-worn_Lap-held_CH 157_Aux_0mm_repeated with 2nd battery

Communication System: WLAN(5G); Frequency: 5785 MHz
Medium parameters used: f = 5785 MHz; σ = 5.931 S/m; ε_r = 47.302; ρ = 1000 kg/m^3
Phantom section: Flat Section

DASY5 Configuration:

- Probe: EX3DV4 - SN3831; ConvF(3.7, 3.7, 3.7); Calibrated: 2015/1/29;
- Sensor-Surface: 2mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn916; Calibrated: 2014/12/29
- Phantom: Body
- DASY52 52.8.8(1222); SEMCAD X 14.6.10(7331)

Configuration/BODY/Area Scan (101x131x1): Interpolated grid: dx=10 mm, dy=10 mm
Maximum value of SAR (interpolated) = 2.68 W/kg

Configuration/BODY/Zoom Scan (7x7x12)/Cube 0: Measurement grid: dx=4mm, dy=4mm, dz=2mm
Reference Value = 5.357 V/m; Power Drift = 0.10 dB
Peak SAR (extrapolated) = 7.63 W/kg
SAR(1 g) = 1.41 W/kg; SAR(10 g) = 0.536 W/kg
Maximum value of SAR (measured) = 2.83 W/kg

0 dB = 2.83 W/kg = 4.52 dBW/kg

6. SAR System Performance Verification

Date: 2015/4/3

Dipole 2450 MHz_SN:727

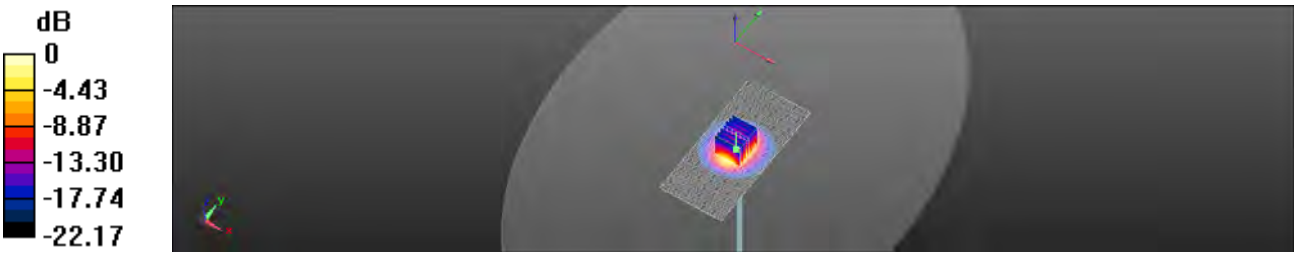
Communication System: CW; Frequency: 2450 MHz
Medium parameters used: f = 2450 MHz; σ = 1.888 S/m; ε_r = 53.568; ρ = 1000 kg/m^3
Phantom section: Flat Section

DASY5 Configuration:

- Probe: EX3DV4 - SN3831; ConvF(6.81, 6.81, 6.81); Calibrated: 2015/1/29;
- Sensor-Surface: 2mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn916; Calibrated: 2014/12/29
- Phantom: Body
- DASY52 52.8.8(1222); SEMCAD X 14.6.10(7331)

Configuration/Pin=250mW/Area Scan (61x131x1): Interpolated grid: dx=12 mm, dy=12 mm
Maximum value of SAR (interpolated) = 20.0 W/kg

Configuration/Pin=250mW/Zoom Scan (7x7x7)/Cube 0: Measurement grid: dx=5mm, dy=5mm, dz=5mm
Reference Value = 95.20 V/m; Power Drift = -0.03 dB
Peak SAR (extrapolated) = 25.9 W/kg
SAR(1 g) = 12.6 W/kg; SAR(10 g) = 5.82 W/kg
Maximum value of SAR (measured) = 19.1 W/kg



0 dB = 19.1 W/kg = 12.82 dBW/kg

Date: 2015/4/4

Dipole 5GHz_SN:1023

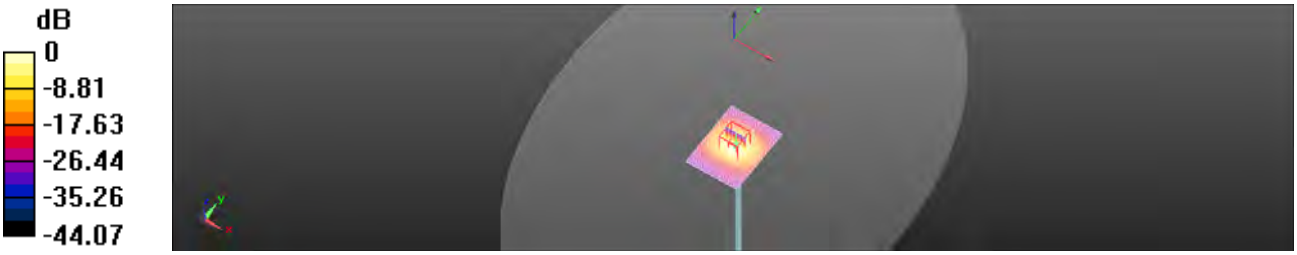
Communication System: CW; Frequency: 5200 MHz
Medium parameters used: f = 5200 MHz; σ = 5.231 S/m; ε_r = 48.181; ρ = 1000 kg/m^3
Phantom section: Flat Section

DASY5 Configuration:

- Probe: EX3DV4 - SN3831; ConvF(3.92, 3.92, 3.92); Calibrated: 2015/1/29;
- Sensor-Surface: 2mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn916; Calibrated: 2014/12/29
- Phantom: Body
- DASY52 52.8.8(1222); SEMCAD X 14.6.10(7331)

Configuration/Pin=250mW/Area Scan (61x81x1): Interpolated grid: dx=10 mm, dy=10 mm
Maximum value of SAR (interpolated) = 16.0 W/kg

Configuration/Pin=250mW/Zoom Scan (7x7x12)/Cube 0: Measurement grid: dx=4mm, dy=4mm, dz=2mm
Reference Value = 57.32 V/m; Power Drift = 0.04 dB
Peak SAR (extrapolated) = 32.5 W/kg
SAR(1 g) = 7.48 W/kg; SAR(10 g) = 2.11 W/kg
Maximum value of SAR (measured) = 15.7 W/kg



0 dB = 15.7 W/kg = 11.96 dBW/kg

Date: 2015/4/5

Dipole 5GHz_SN:1023

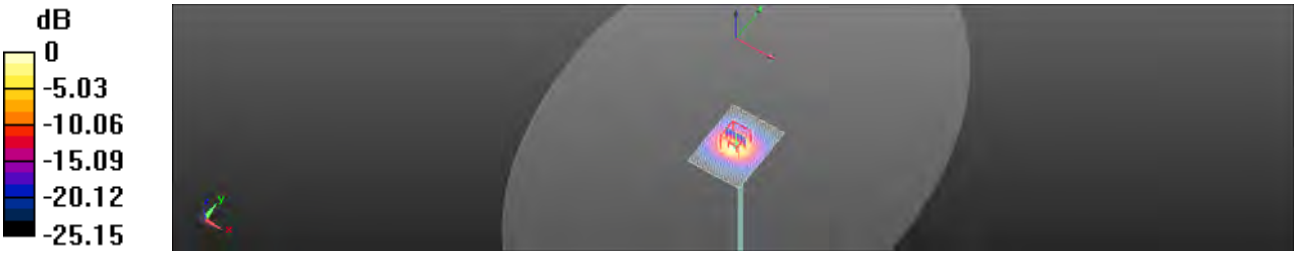
Communication System: CW; Frequency: 5300 MHz
Medium parameters used: f = 5300 MHz; σ = 5.339 S/m; ε_r = 47.965; ρ = 1000 kg/m^3
Phantom section: Flat Section

DASY5 Configuration:

- Probe: EX3DV4 - SN3831; ConvF(3.92, 3.92, 3.92); Calibrated: 2015/1/29;
- Sensor-Surface: 2mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn916; Calibrated: 2014/12/29
- Phantom: Body
- DASY52 52.8.8(1222); SEMCAD X 14.6.10(7331)

Configuration/Pin=250mW/Area Scan (61x81x1): Interpolated grid: dx=10 mm, dy=10 mm
Maximum value of SAR (interpolated) = 14.9 W/kg

Configuration/Pin=250mW/Zoom Scan (7x7x12)/Cube 0: Measurement grid: dx=4mm, dy=4mm, dz=2mm
Reference Value = 56.33 V/m; Power Drift = 0.01 dB
Peak SAR (extrapolated) = 28.4 W/kg
SAR(1 g) = 7.49 W/kg; SAR(10 g) = 2.15 W/kg
Maximum value of SAR (measured) = 14.7 W/kg



0 dB = 14.7 W/kg = 11.68 dBW/kg

Date: 2015/4/6

Dipole 5GHz_SN:1023

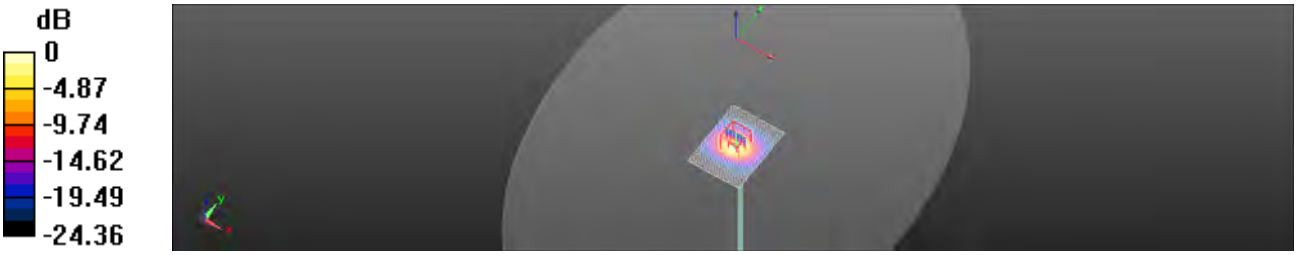
Communication System: CW; Frequency: 5600 MHz
Medium parameters used: f = 5600 MHz; σ = 5.712 S/m; ε_r = 47.589; ρ = 1000 kg/m^3
Phantom section: Flat Section

DASY5 Configuration:

- Probe: EX3DV4 - SN3831; ConvF(3.49, 3.49, 3.49); Calibrated: 2015/1/29;
- Sensor-Surface: 2mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn916; Calibrated: 2014/12/29
- Phantom: Body
- DASY52 52.8.8(1222); SEMCAD X 14.6.10(7331)

Configuration/Pin=250mW/Area Scan (61x81x1): Interpolated grid: dx=10 mm, dy=10 mm
Maximum value of SAR (interpolated) = 16.0 W/kg

Configuration/Pin=250mW/Zoom Scan (7x7x12)/Cube 0: Measurement grid: dx=4mm, dy=4mm, dz=2mm
Reference Value = 55.88 V/m; Power Drift = 0.04 dB
Peak SAR (extrapolated) = 32.2 W/kg
SAR(1 g) = 7.81 W/kg; SAR(10 g) = 2.19 W/kg
Maximum value of SAR (measured) = 15.6 W/kg



0 dB = 15.6 W/kg = 11.94 dBW/kg

Date: 2015/4/7

Dipole 5GHz_SN:1023

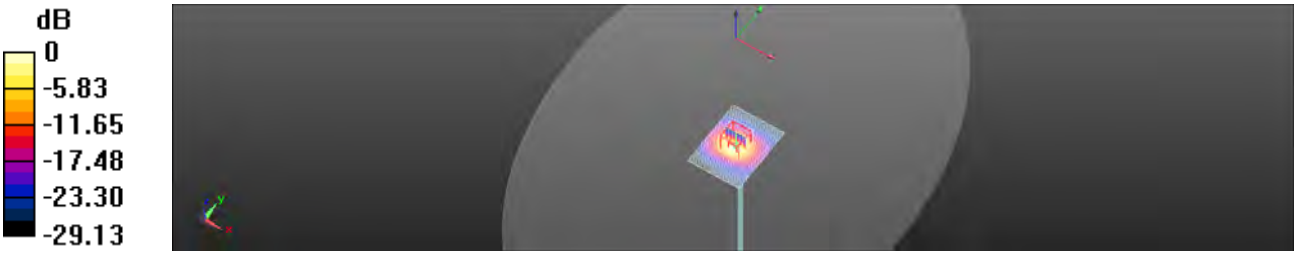
Communication System: CW; Frequency: 5800 MHz
Medium parameters used: f = 5800 MHz; σ = 5.949 S/m; ε_r = 47.261; ρ = 1000 kg/m^3
Phantom section: Flat Section

DASY5 Configuration:

- Probe: EX3DV4 - SN3831; ConvF(3.7, 3.7, 3.7); Calibrated: 2015/1/29;
- Sensor-Surface: 2mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn916; Calibrated: 2014/12/29
- Phantom: Body
- DASY52 52.8.8(1222); SEMCAD X 14.6.10(7331)

Configuration/Pin=250mW/Area Scan (61x81x1): Interpolated grid: dx=10 mm, dy=10 mm
Maximum value of SAR (interpolated) = 16.2 W/kg

Configuration/Pin=250mW/Zoom Scan (7x7x12)/Cube 0: Measurement grid: dx=4mm, dy=4mm, dz=2mm
Reference Value = 55.98 V/m; Power Drift = 0.02 dB
Peak SAR (extrapolated) = 33.2 W/kg
SAR(1 g) = 7.64 W/kg; SAR(10 g) = 2.18 W/kg
Maximum value of SAR (measured) = 16.0 W/kg



0 dB = 16.0 W/kg = 12.03 dBW/kg

7. DAE & Probe Calibration Certificate

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Accreditation No.: SCS 108

Client Auden

Certificate No: DAE4-916_Dec14

CALIBRATION CERTIFICATE

Object DAE4 - SD 000 D04 BK - SN: 916

Calibration procedure(s) QA CAL-06.v28
Calibration procedure for the data acquisition electronics (DAE)

Calibration date December 29, 2014

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-Oct-14 (No: 15572)	Oct-15
Secondary Standards	**ID #**	**Check Date (in house)**	**Scheduled Check**
Auto DAE Calibration Unit	SE UWS 053 AA 1001	07-Jan-14 (in house check)	In house check: Jan-15
Calibrator Box V2.1	SE UMS 006 AA 1002	07-Jan-14 (in house check)	In house check: Jan-15

	Name	Function	Signature
Calibrated by	Eric Hainfeld	Technician	
Approved by	Fin Bomholt	Deputy Technical Manager	

Issued: December 30, 2014

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Certificate No: DAE4-916_Dec14 Page 1 of 3

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Accreditation No.: SCS 108

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.

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	403.866 ± 0.02% (k=2)	403.645 ± 0.02% (k=2)	403.774 ± 0.02% (k=2)
Low Range	3.97181 ± 1.50% (k=2)	3.98512 ± 1.50% (k=2)	3.97923 ± 1.50% (k=2)

Connector Angle

Connector Angle to be used in DASY system	237.5 ° ± 1 °

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Appendix (Additional assessments outside the scope of SCS108)

1. DC Voltage Linearity

High Range		Reading (μV)	Difference (μV)	Error (%)
Channel X	+ Input	200034.91	2.19	0.00
Channel X	+ Input	20006.79	2.97	0.01
Channel X	- Input	-20004.07	1.40	-0.01
Channel Y	+ Input	200032.01	-0.73	-0.00
Channel Y	+ Input	20004.86	1.08	0.01
Channel Y	- Input	-20005.09	0.65	-0.00
Channel Z	+ Input	200033.57	1.38	0.00
Channel Z	+ Input	20003.86	0.07	0.00
Channel Z	- Input	-20006.07	-0.32	0.00

Low Range		Reading (μV)	Difference (μV)	Error (%)
Channel X	+ Input	2000.47	0.20	0.01
Channel X	+ Input	200.81	0.26	0.13
Channel X	- Input	-199.20	0.49	-0.24
Channel Y	+ Input	2000.38	0.20	0.01
Channel Y	+ Input	199.92	-0.40	-0.20
Channel Y	- Input	-200.35	-0.59	0.29
Channel Z	+ Input	2000.88	0.57	0.03
Channel Z	+ Input	199.14	-1.05	-0.53
Channel Z	- Input	-200.71	-0.93	0.47

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	4.06	2.59
	-200	-1.79	-3.18
Channel Y	200	-16.69	-16.92
	-200	15.81	15.97
Channel Z	200	-23.06	-23.30
	-200	21.33	20.90

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	-	-1.06	-2.63
Channel Y	200	5.12	-	0.63
Channel Z	200	8.47	3.58	-

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	15890	15851
Channel Y	16106	16659
Channel Z	15964	15963

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	-0.30	-1.01	0.44	0.32
Channel Y	0.03	-0.92	0.97	0.33
Channel Z	-0.74	-1.66	0.57	0.42

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

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Accreditation No.: SCS 0108

Client: SGS-TW (Auden)

Certificate No: EX3-3831_Jan15

CALIBRATION CERTIFICATE

Object: EX3DV4 - SN:3831

Calibration procedure(s): QA CAL-01.v9, QA CAL-14.v4, QA CAL-23.v5, QA CAL-25.v6
Calibration procedure for dosimetric E-field probes

Calibration date: January 29, 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	03-Apr-14 (No. 217-01911)	Apr-15
Power sensor E4412A	MY41498087	03-Apr-14 (No. 217-01911)	Apr-15
Reference 3 dB Attenuator	SN: S5054 (3c)	03-Apr-14 (No. 217-01915)	Apr-15
Reference 20 dB Attenuator	SN: S5277 (20x)	03-Apr-14 (No. 217-01919)	Apr-15
Reference 30 dB Attenuator	SN: S5129 (30b)	03-Apr-14 (No. 217-01920)	Apr-15
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:	Jeton Kastrati	Laboratory Technician	
Approved by:	Katja Pokovic	Technical Manager	

Issued: January 29, 2015

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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

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).

Probe EX3DV4

SN:3831

Manufactured: September 6, 2011
Calibrated: January 29, 2015

Calibrated for DASY/EASY Systems
(Note: non-compatible with DASY2 system!)

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DASY/EASY - Parameters of Probe: EX3DV4 - SN:3831

Basic Calibration Parameters

	Sensor X	Sensor Y	Sensor Z	Unc (k=2)
Norm ($\mu V/(V/m)^2$)[A]	0.45	0.42	0.43	± 10.1 %
DCP (mV)[B]	99.7	101.1	100.8	

Modulation Calibration Parameters

UID	Communication System Name		A dB	B dB$\sqrt{\mu V}$	C	D dB	VR mV	Unc[E] (k=2)
0	CW	X	0.0	0.0	1.0	0.00	152.6	±3.5 %
		Y	0.0	0.0	1.0		143.5	
		Z	0.0	0.0	1.0		145.4	

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 NormX,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.

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DASY/EASY - Parameters of Probe: EX3DV4 - SN:3831

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)	Unct. (k=2)
750	41.9	0.89	9.28	9.28	9.28	0.31	0.99	± 12.0 %
835	41.5	0.90	8.95	8.95	8.95	0.28	1.17	± 12.0 %
900	41.5	0.97	8.76	8.76	8.76	0.25	1.23	± 12.0 %
1450	40.5	1.20	7.92	7.92	7.92	0.13	1.92	± 12.0 %
1750	40.1	1.37	7.75	7.75	7.75	0.32	0.89	± 12.0 %
1900	40.0	1.40	7.58	7.58	7.58	0.63	0.65	± 12.0 %
2000	40.0	1.40	7.48	7.48	7.48	0.80	0.57	± 12.0 %
2300	39.5	1.67	7.09	7.09	7.09	0.27	0.99	± 12.0 %
2450	39.2	1.80	6.81	6.81	6.81	0.51	0.68	± 12.0 %
2600	39.0	1.96	6.54	6.54	6.54	0.28	1.01	± 12.0 %
5250	35.9	4.71	4.60	4.60	4.60	0.40	1.80	± 13.1 %
5600	35.5	5.07	4.14	4.14	4.14	0.45	1.80	± 13.1 %
5750	35.4	5.22	4.41	4.41	4.41	0.45	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.

DASY/EASY - Parameters of Probe: EX3DV4 - SN:3831

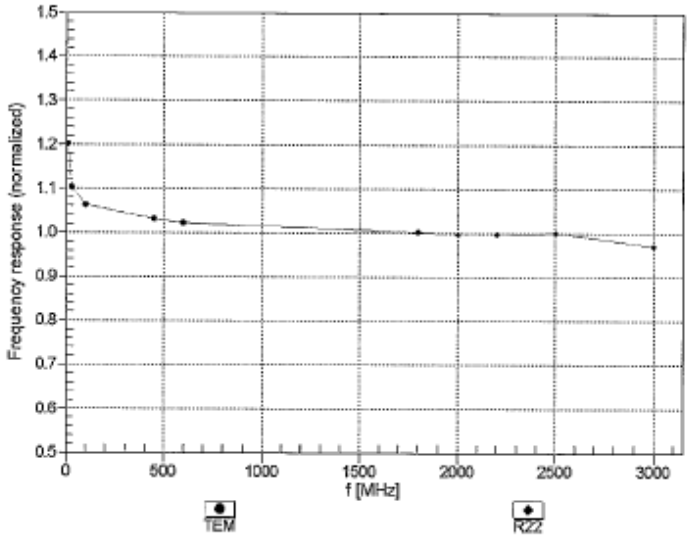
Calibration Parameter Determined in Body Tissue Simulating Media

f (MHz) [C]	Relative Permittivity [F]	Conductivity (S/m) [F]	ConvF X	ConvF Y	ConvF Z	Alpha [G]	Depth [G] (mm)	Unct. (k=2)
750	55.5	0.96	9.07	9.07	9.07	0.20	1.58	± 12.0 %
835	55.2	0.97	9.00	9.00	9.00	0.25	1.30	± 12.0 %
900	55.0	1.05	8.87	8.87	8.87	0.33	1.00	± 12.0 %
1450	54.0	1.30	7.68	7.68	7.68	0.19	1.44	± 12.0 %
1750	53.4	1.49	7.50	7.50	7.50	0.40	0.89	± 12.0 %
1900	53.3	1.52	7.34	7.34	7.34	0.31	1.06	± 12.0 %
2000	53.3	1.52	7.41	7.41	7.41	0.33	0.98	± 12.0 %
2300	52.9	1.81	7.08	7.08	7.08	0.40	0.89	± 12.0 %
2450	52.7	1.95	6.81	6.81	6.81	0.44	0.80	± 12.0 %
2600	52.5	2.16	6.65	6.65	6.65	0.80	0.58	± 12.0 %
5250	48.9	5.36	3.92	3.92	3.92	0.50	1.90	± 13.1 %
5600	48.5	5.77	3.49	3.49	3.49	0.55	1.90	± 13.1 %
5750	48.3	5.94	3.70	3.70	3.70	0.55	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.

EX3DV4- SN:3831 January 29, 2015

Frequency Response of E-Field
(TEM-Cell:ifi110 EXX, Waveguide: R22)



Uncertainty of Frequency Response of E-field: ± 6.3% (k=2)

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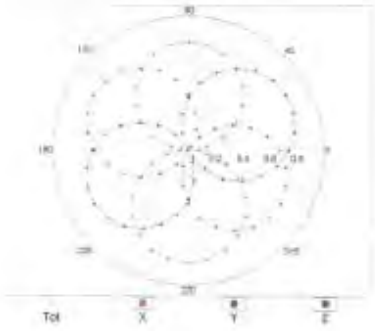
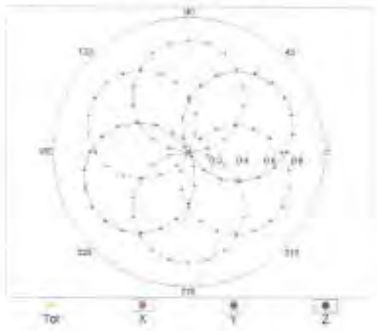
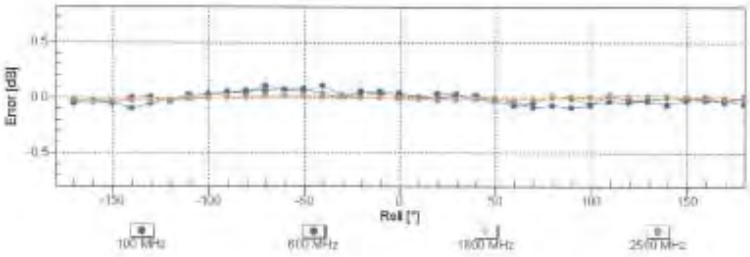
Receiving Pattern (ϕ), ϑ = 0°

f=600 MHz,TEM



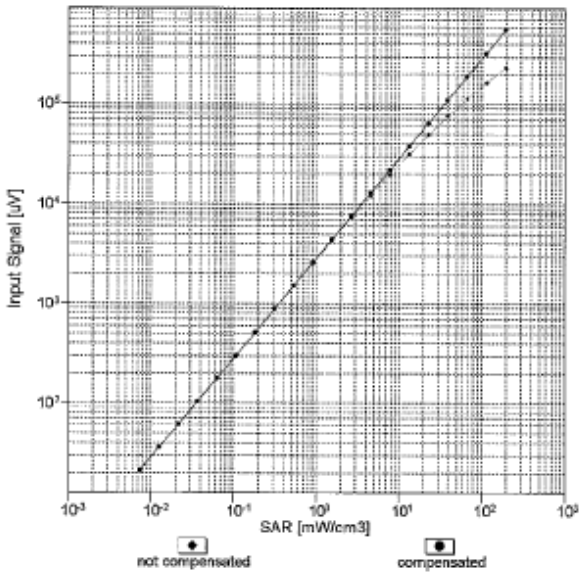
f=1800 MHz,R22

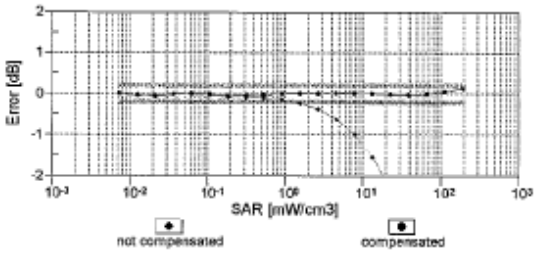




Uncertainty of Axial Isotropy Assessment: ± 0.5% (k=2)

Dynamic Range f(SAR$_{head}$)
(TEM cell , f_{eval}= 1900 MHz)





Uncertainty of Linearity Assessment: ± 0.6% (k=2)

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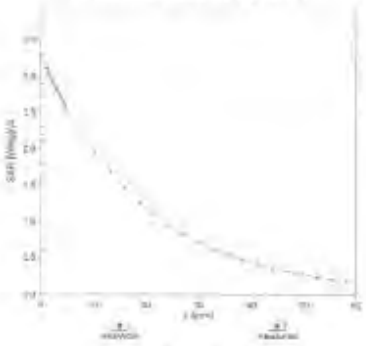
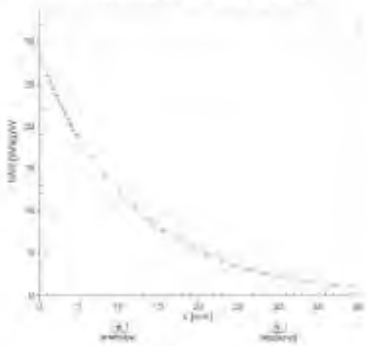
EX3DV4- SN:3831 January 29, 2015

Conversion Factor Assessment

f = 835 MHz,WGLS R9 (H_convF)

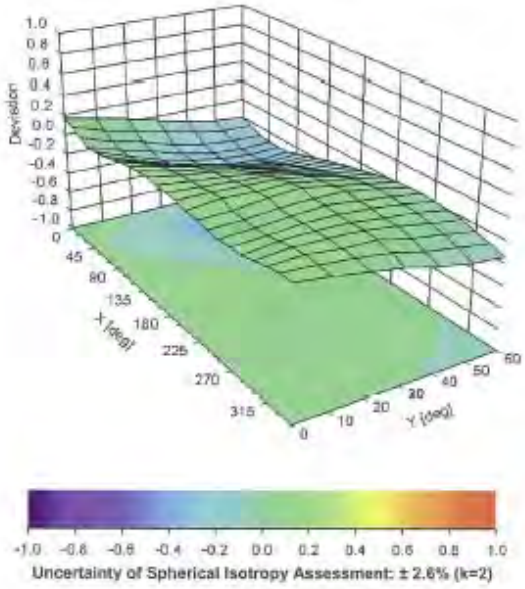


f = 1900 MHz,WGLS R22 (H_convF)



Deviation from Isotropy in Liquid

Error (ϕ, ϑ), f = 900 MHz



Uncertainty of Spherical Isotropy Assessment: ± 2.6% (k=2)

Certificate No: EX3-3831_Jan15 Page 10 of 11

DASY/EASY - Parameters of Probe: EX3DV4 - SN:3831

Other Probe Parameters

Sensor Arrangement	Triangular
Connector Angle (°)	-20.5
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

8. Uncertainty Budget

Measurement Uncertainty evaluation template for DUT SAR test
IEEE 1528

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%	∞
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%	∞
Deviation from reference	2.00%	N	1	1	0.64	0.43	1.28%	0.86%	M
Deviation from reference	3.50%	N	1	1	0.6	0.49	2.10%	1.72%	M
Liquid conductivity σ – temperature uncertainty	2.60%	R	√3	1.732	0.78	0.71	1.17%	1.07%	∞
Liquid permittivity ε – temperature uncertainty	1.80%	R	√3	1.732	0.23	0.26	0.24%	0.27%	∞
Combined standard uncertainty		RSS					11.89%	11.78%	
Expant uncertainty (95% confidence							23.78%	23.56%	

9. Phantom Description

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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 Zeughausstrasse 43 CH-8004 Zürich 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
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info@speag.com, http://www.speag.com

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
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 108

Client SGS-TW (Auden)

Certificate No: D2450V2-727_Apr14

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 23, 2014

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	09-Oct-13 (No. 217-01827)	Oct-14
Power sensor HP 8481A	US37292783	09-Oct-13 (No. 217-01827)	Oct-14
Power sensor HP 8481A	MY41092317	09-Oct-13 (No. 217-01828)	Oct-14
Reference 20 dB Attenuator	SN: 5058 (20k)	03-Apr-14 (No. 217-01918)	Apr-15
Type-N mismatch combination	SN: 5047.2 / 06327	03-Apr-14 (No. 217-01921)	Apr-15
Reference Probe ES3DV3	SN: 3205	30-Dec-13 (No. ES3-3205_Dec13)	Dec-14
DAE4	SN: 601	25-Apr-13 (No. DAE4-601_Apr13)	Apr-14

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-13)	In house check: Oct-14

	Name	Function	Signature
Calibrated by	Jeton Kastrati	Laboratory Technician	
Approved by	Katja Pokovic	Technical Manager	

Issued: April 23, 2014

This calibration certificate shall not be reproduced except in full without written approval of the laboratory.

Certificate No: D2450V2-727_Apr14 Page 1 of 8

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Engineering AG
Zeughausstrasse 43, 8004 Zurich, Switzerland

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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 108

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) 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%.

Measurement Conditions

DASY system configuration, as far as not given on page 1.

DASY Version	DASY5	V52.8.7
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	38.2 ± 6 %	1.81 mho/m ± 6 %
Head TSL temperature change during test	< 0.5 °C	---	---

SAR result with Head TSL

SAR averaged over 1 cm³ (1 g) of Head TSL	Condition	
SAR measured	250 mW input power	13.1 W/kg
SAR for nominal Head TSL parameters	normalized to 1W	**52.0 W/kg ± 17.0 % (k=2)**

SAR averaged over 10 cm³ (10 g) of Head TSL	condition	
SAR measured	250 mW input power	6.09 W/kg
SAR for nominal Head TSL parameters	normalized to 1W	**24.2 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	50.6 ± 6 %	2.01 mho/m ± 6 %
Body TSL temperature change during test	< 0.5 °C	---	---

SAR result with Body TSL

SAR averaged over 1 cm³ (1 g) of Body TSL	Condition	
SAR measured	250 mW input power	12.8 W/kg
SAR for nominal Body TSL parameters	normalized to 1W	**50.0 W/kg ± 17.0 % (k=2)**

SAR averaged over 10 cm³ (10 g) of Body TSL	condition	
SAR measured	250 mW input power	5.90 W/kg
SAR for nominal Body TSL parameters	normalized to 1W	**23.3 W/kg ± 16.5 % (k=2)**

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Appendix

Antenna Parameters with Head TSL

Impedance, transformed to feed point	54.6 Ω + 1.9 jΩ
Return Loss	- 26.5 dB

Antenna Parameters with Body TSL

Impedance, transformed to feed point	51.1 Ω + 3.5 jΩ
Return Loss	- 28.7 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

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DASY5 Validation Report for Head TSL

Date: 23.04.2014

Test Laboratory: SPEAG, Zurich, Switzerland

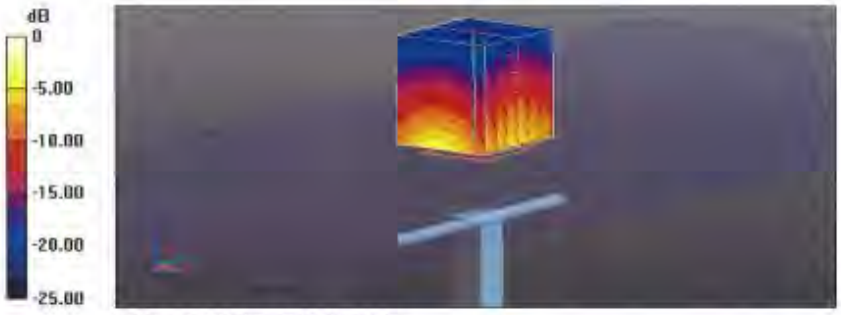
DUT: Dipole 2450 MHz; Type: D2450V2; Serial: D2450V2 - SN: 727

Communication System: UID 0 - CW; Frequency: 2450 MHz
Medium parameters used: f = 2450 MHz; σ = 1.81 S/m; ε_r = 38.2; ρ = 1000 kg/m^3
Phantom section: Flat Section
Measurement Standard: DASY5 (IEEE/IEC/ANSI C63.19-2007)

DASY52 Configuration:

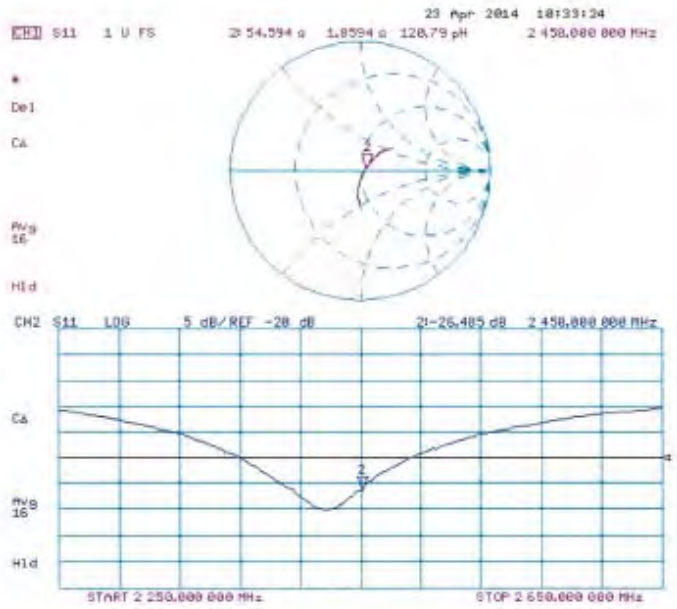
- Probe: ES3DV3 - SN3205; ConvF(4.53, 4.53, 4.53); Calibrated: 30.12.2013;
- Sensor-Surface: 3mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn601; Calibrated: 25.04.2013
- Phantom: Flat Phantom 5.0 (front); Type: QD000P50AA; Serial: 1001
- DASY52 52.8.7(1137); SEMCAD X 14.6.10(7164)

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 = 100.01 V/m; Power Drift = 0.03 dB
Peak SAR (extrapolated) = 27.0 W/kg
SAR(1 g) = 13.1 W/kg; SAR(10 g) = 6.09 W/kg
Maximum value of SAR (measured) = 17.1 W/kg



0 dB = 17.1 W/kg = 12.33 dBW/kg

Impedance Measurement Plot for Head TSL



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DASY5 Validation Report for Body TSL

Date: 23.04.2014

Test Laboratory: SPEAG, Zurich, Switzerland

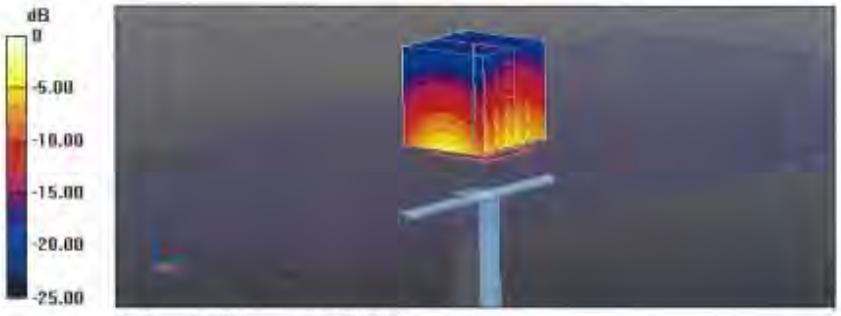
DUT: Dipole 2450 MHz; Type: D2450V2; Serial: D2450V2 - SN: 727

Communication System: UID 0 - CW; Frequency: 2450 MHz
Medium parameters used: f = 2450 MHz; σ = 2.01 S/m; ε_r = 50.6; ρ = 1000 kg/m^3
Phantom section: Flat Section
Measurement Standard: DASY5 (IEEE/IEC/ANSI C63.19-2007)

DASY52 Configuration:

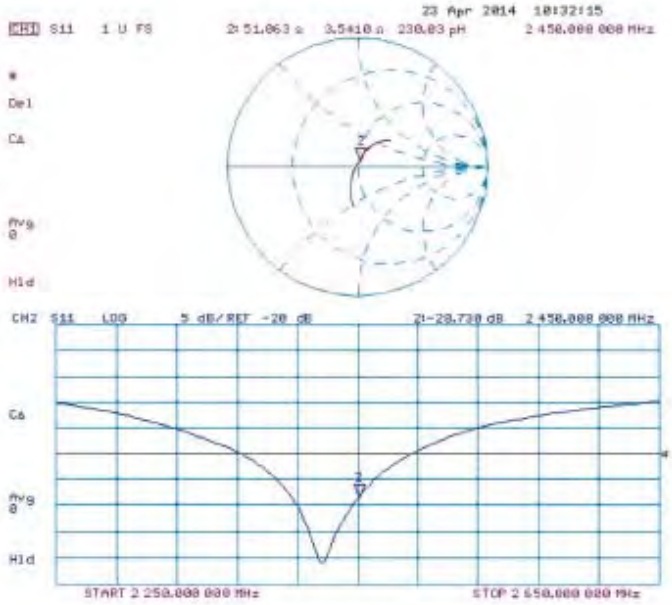
- Probe: ES3DV3 - SN3205; ConvF(4.35, 4.35, 4.35); Calibrated: 30.12.2013;
- Sensor-Surface: 3mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn601; Calibrated: 25.04.2013
- Phantom: Flat Phantom 5.0 (back); Type: QD000P50AA; Serial: 1002
- DASY52 52.8.7(1137); SEMCAD X 14.6.10(7164)

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 = 94.356 V/m; Power Drift = -0.07 dB
Peak SAR (extrapolated) = 26.9 W/kg
SAR(1 g) = 12.8 W/kg; SAR(10 g) = 5.9 W/kg
Maximum value of SAR (measured) = 16.7 W/kg



0 dB = 16.7 W/kg = 12.23 dBW/kg

Impedance Measurement Plot for Body TSL



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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_Jan15

CALIBRATION CERTIFICATE

Object	D5GHzV2 - SN:1023
Calibration procedure(s)	QA CAL-22.v2 Calibration procedure for dipole validation kits between 3-6 GHz
Calibration date:	January 29, 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)	03-Apr-14 (No. 217-01916)	Apr-15
Type-N mismatch combination	SN: 5047.2 / 06327	03-Apr-14 (No. 217-01921)	Apr-15
Reference Probe EX3DV4	SN: 3503	30-Dec-14 (No. EX3-3503_Dec14)	Dec-15
DAE4	SN: 601	18-Aug-14 (No. DAE4-601_Aug14)	Aug-15

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-15
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: January 29, 2015

This calibration certificate shall not be reproduced except in full without written approval of the laboratory.

Certificate No: D5GHzV2-1023_Jan15 Page 1 of 15

Calibration Laboratory of
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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) IEC 62209-2, "Evaluation of Human Exposure to Radio Frequency Fields from Handheld and Body-Mounted Wireless Communication Devices in the Frequency Range of 30 MHz to 6 GHz: Human models, Instrumentation, and Procedures": Part 2: "Procedure to determine the Specific Absorption Rate (SAR) for including accessories and multiple transmitters", March 2010
b) KDB 865664, "SAR Measurement Requirements for 100 MHz to 6 GHz"
c) 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

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%.

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 5300 MHz ± 1 MHz 5600 MHz ± 1 MHz 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	36.3 ± 6 %	4.56 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	7.78 W/kg
SAR for nominal Head TSL parameters	normalized to 1W	**77.9 W/kg ± 19.9 % (k=2)**

SAR averaged over 10 cm^3 (10 g) of Head TSL	condition	
SAR measured	100 mW input power	2.22 W/kg
SAR for nominal Head TSL parameters	normalized to 1W	**22.2 W/kg ± 19.5 % (k=2)**

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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	36.1 ± 6 %	4.66 mho/m ± 6 %
Head TSL temperature change during test	< 0.5 °C	—	—

SAR result with Head TSL at 5300 MHz

SAR averaged over 1 cm³ (1 g) of Head TSL	Condition	
SAR measured	100 mW input power	8.17 W/kg
SAR for nominal Head TSL parameters	normalized to 1W	**81.7 W / kg ± 19.9 % (k=2)**

SAR averaged over 10 cm³ (10 g) of Head TSL	condition	
SAR measured	100 mW input power	2.34 W/kg
SAR for nominal Head TSL parameters	normalized to 1W	**23.4 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	35.7 ± 6 %	4.97 mho/m ± 6 %
Head TSL temperature change during test	< 0.5 °C	—	—

SAR result with Head TSL at 5600 MHz

SAR averaged over 1 cm³ (1 g) of Head TSL	Condition	
SAR measured	100 mW input power	8.14 W/kg
SAR for nominal Head TSL parameters	normalized to 1W	**81.4 W/kg ± 19.9 % (k=2)**

SAR averaged over 10 cm³ (10 g) of Head TSL	condition	
SAR measured	100 mW input power	2.31 W/kg
SAR for nominal Head TSL parameters	normalized to 1W	**23.1 W/kg ± 19.5 % (k=2)**

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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	35.4 ± 6 %	5.18 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	**78.2 W/kg ± 19.9 % (k=2)**

SAR averaged over 10 cm^3 (10 g) of Head TSL	condition	
SAR measured	100 mW input power	2.23 W/kg
SAR for nominal Head TSL parameters	normalized to 1W	**22.3 W/kg ± 19.5 % (k=2)**

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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	49.4 ± 6 %	5.42 mho/m ± 6 %
Body TSL temperature change during test	< 0.5 °C	—	—

SAR result with Body TSL at 5200 MHz

SAR averaged over 1 cm³ (1 g) of Body TSL	Condition	
SAR measured	100 mW input power	7.33 W/kg
SAR for nominal Body TSL parameters	normalized to 1W	**73.5 W/kg ± 19.9 % (k=2)**

SAR averaged over 10 cm³ (10 g) of Body TSL	condition	
SAR measured	100 mW input power	2.04 W/kg
SAR for nominal Body TSL parameters	normalized to 1W	**20.5 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	49.2 ± 6 %	5.55 mho/m ± 6 %
Body TSL temperature change during test	< 0.5 °C	—	—

SAR result with Body TSL at 5300 MHz

SAR averaged over 1 cm³ (1 g) of Body TSL	Condition	
SAR measured	100 mW input power	7.45 W/kg
SAR for nominal Body TSL parameters	normalized to 1W	**74.6 W/kg ± 19.9 % (k=2)**

SAR averaged over 10 cm³ (10 g) of Body TSL	condition	
SAR measured	100 mW input power	2.07 W/kg
SAR for nominal Body TSL parameters	normalized to 1W	**20.8 W/kg ± 19.5 % (k=2)**

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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	48.7 ± 6 %	5.96 mho/m ± 6 %
Body TSL temperature change during test	< 0.5 °C	---	---

SAR result with Body TSL at 5600 MHz

SAR averaged over 1 cm³ (1 g) of Body TSL	Condition	
SAR measured	100 mW input power	7.77 W/kg
SAR for nominal Body TSL parameters	normalized to 1W	**77.9 W/kg ± 19.9 % (k=2)**

SAR averaged over 10 cm³ (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	**21.6 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	48.4 ± 6 %	6.25 mho/m ± 6 %
Body TSL temperature change during test	< 0.5 °C	---	---

SAR result with Body TSL at 5800 MHz

SAR averaged over 1 cm³ (1 g) of Body TSL	Condition	
SAR measured	100 mW input power	7.54 W/kg
SAR for nominal Body TSL parameters	normalized to 1W	**75.6 W/kg ± 19.9 % (k=2)**

SAR averaged over 10 cm³ (10 g) of Body TSL	condition	
SAR measured	100 mW input power	2.07 W/kg
SAR for nominal Body TSL parameters	normalized to 1W	**20.7 W/kg ± 19.5 % (k=2)**

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Appendix (Additional assessments outside the scope of SCS0108)

Antenna Parameters with Head TSL at 5200 MHz

Impedance, transformed to feed point	49.2 Ω - 8.5 jΩ
Return Loss	-21.4 dB

Antenna Parameters with Head TSL at 5300 MHz

Impedance, transformed to feed point	51.0 Ω - 3.8 jΩ
Return Loss	-28.2 dB

Antenna Parameters with Head TSL at 5600 MHz

Impedance, transformed to feed point	53.4 Ω - 2.7 jΩ
Return Loss	-27.5 dB

Antenna Parameters with Head TSL at 5800 MHz

Impedance, transformed to feed point	55.6 Ω + 1.0 jΩ
Return Loss	-25.4 dB

Antenna Parameters with Body TSL at 5200 MHz

Impedance, transformed to feed point	49.0 Ω - 7.1 jΩ
Return Loss	-22.8 dB

Antenna Parameters with Body TSL at 5300 MHz

Impedance, transformed to feed point	51.5 Ω - 2.2 jΩ
Return Loss	-31.7 dB

Antenna Parameters with Body TSL at 5600 MHz

Impedance, transformed to feed point	54.6 Ω - 1.5 jΩ
Return Loss	-26.8 dB

Antenna Parameters with Body TSL at 5800 MHz

Impedance, transformed to feed point	55.8 Ω + 2.8 jΩ
Return Loss	- 24.5 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

DASY5 Validation Report for Head TSL

Date: 28.01.2015

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; σ = 4.56 S/m; ε_r = 36.3; ρ = 1000 kg/m^3, Medium parameters used: f = 5300 MHz; σ = 4.66 S/m; ε_r = 36.1; ρ = 1000 kg/m^3, Medium parameters used: f = 5600 MHz; σ = 4.97 S/m; ε_r = 35.7; ρ = 1000 kg/m^3, Medium parameters used: f = 5800 MHz; σ = 5.18 S/m; ε_r = 35.4; ρ = 1000 kg/m^3
Phantom section: Flat Section
Measurement Standard: DASY5 (IEEE/IEC/ANSI C63.19-2011)

DASY52 Configuration:

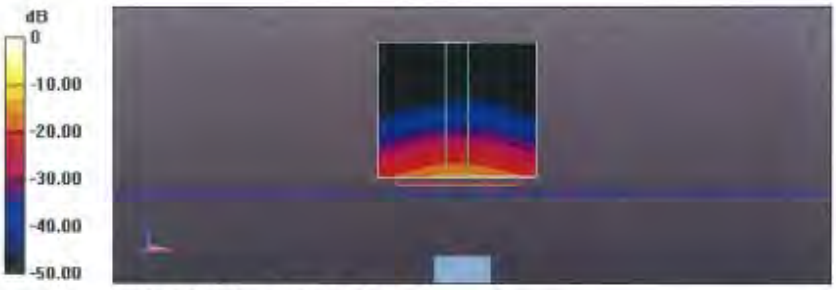
- Probe: EX3DV4 - SN3503; ConvF(5.51, 5.51, 5.51); Calibrated: 30.12.2014, ConvF(5.21, 5.21, 5.21); Calibrated: 30.12.2014, ConvF(4.92, 4.92, 4.92); Calibrated: 30.12.2014, ConvF(4.9, 4.9, 4.9); Calibrated: 30.12.2014;
- Sensor-Surface: 1.4mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn601; Calibrated: 18.08.2014
- 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=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 = 64.14 V/m; Power Drift = 0.07 dB
Peak SAR (extrapolated) = 28.3 W/kg
SAR(1 g) = 7.78 W/kg; SAR(10 g) = 2.22 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 = 65.47 V/m; Power Drift = 0.05 dB
Peak SAR (extrapolated) = 30.7 W/kg
SAR(1 g) = 8.17 W/kg; SAR(10 g) = 2.34 W/kg
Maximum value of SAR (measured) = 18.6 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 = 63.68 V/m; Power Drift = 0.08 dB
Peak SAR (extrapolated) = 32.2 W/kg
SAR(1 g) = 8.14 W/kg; SAR(10 g) = 2.31 W/kg
Maximum value of SAR (measured) = 18.9 W/kg

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 = 61.76 V/m; Power Drift = 0.06 dB
Peak SAR (extrapolated) = 32.0 W/kg
SAR(1 g) = 7.82 W/kg; SAR(10 g) = 2.23 W/kg
Maximum value of SAR (measured) = 18.4 W/kg



0 dB = 17.8 W/kg = 12.50 dBW/kg

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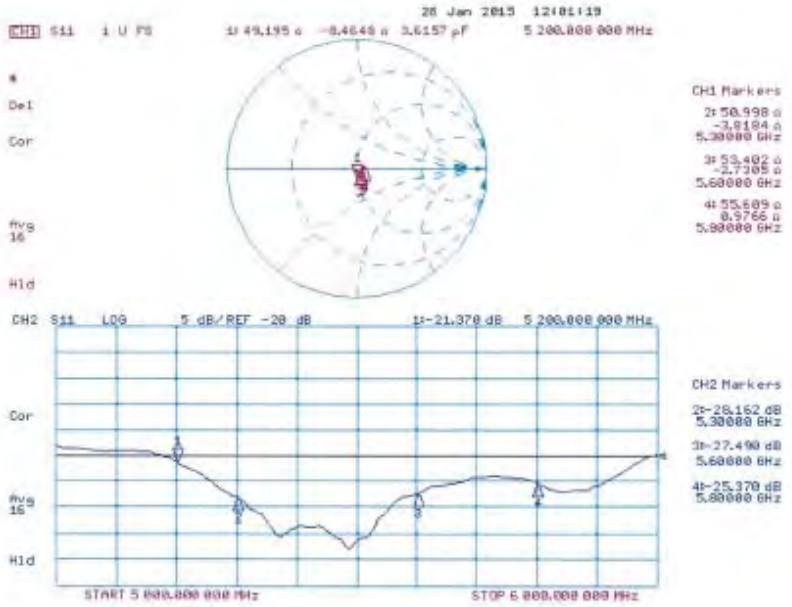
Impedance Measurement Plot for Head TSL



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DASY5 Validation Report for Body TSL

Date: 29.01.2015

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; σ = 5.42 S/m; ε_r = 49.4; ρ = 1000 kg/m^3 , Medium parameters used: f = 5300 MHz; σ = 5.55 S/m; ε_r = 49.2; ρ = 1000 kg/m^3 , Medium parameters used: f = 5600 MHz; σ = 5.96 S/m; ε_r = 48.7; ρ = 1000 kg/m^3 , Medium parameters used: f = 5800 MHz; σ = 6.25 S/m; ε_r = 48.4; ρ = 1000 kg/m^3
Phantom section: Flat Section
Measurement Standard: DASY5 (IEEE/IEC/ANSI C63.19-2011)

DASY52 Configuration:

- Probe: EX3DV4 - SN3503; ConvF(4.95, 4.95, 4.95); Calibrated: 30.12.2014, ConvF(4.78, 4.78, 4.78); Calibrated: 30.12.2014, ConvF(4.35, 4.35, 4.35); Calibrated: 30.12.2014, ConvF(4.32, 4.32, 4.32); Calibrated: 30.12.2014;
- Sensor-Surface: 1.4mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn601; Calibrated: 18.08.2014
- 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=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 = 57.97 V/m; Power Drift = -0.02 dB
Peak SAR (extrapolated) = 28.6 W/kg
SAR(1 g) = 7.33 W/kg; SAR(10 g) = 2.04 W/kg
Maximum value of SAR (measured) = 17.3 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 = 57.58 V/m; Power Drift = -0.06 dB
Peak SAR (extrapolated) = 30.0 W/kg
SAR(1 g) = 7.45 W/kg; SAR(10 g) = 2.07 W/kg
Maximum value of SAR (measured) = 17.8 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 = 56.88 V/m; Power Drift = 0.06 dB
Peak SAR (extrapolated) = 34.4 W/kg
SAR(1 g) = 7.77 W/kg; SAR(10 g) = 2.15 W/kg
Maximum value of SAR (measured) = 19.3 W/kg

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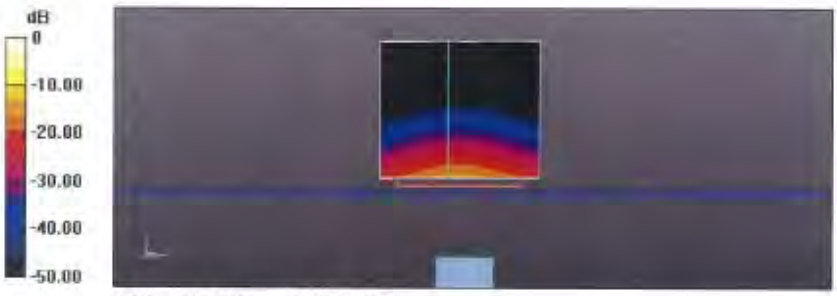
Dipole Calibration for Body Tissue/Pin=100mW, dist=10mm, f=5800 MHz/Zoom Scan, dist=1.4mm (8x8x7)/Cube 0: Measurement grid: dx=4mm, dy=4mm, dz=1.4mm
Reference Value = 55.10 V/m; Power Drift = 0.05 dB
Peak SAR (extrapolated) = 35.2 W/kg
SAR(1 g) = 7.54 W/kg; SAR(10 g) = 2.07 W/kg
Maximum value of SAR (measured) = 19.1 W/kg



0 dB = 17.3 W/kg = 12.38 dBW/kg

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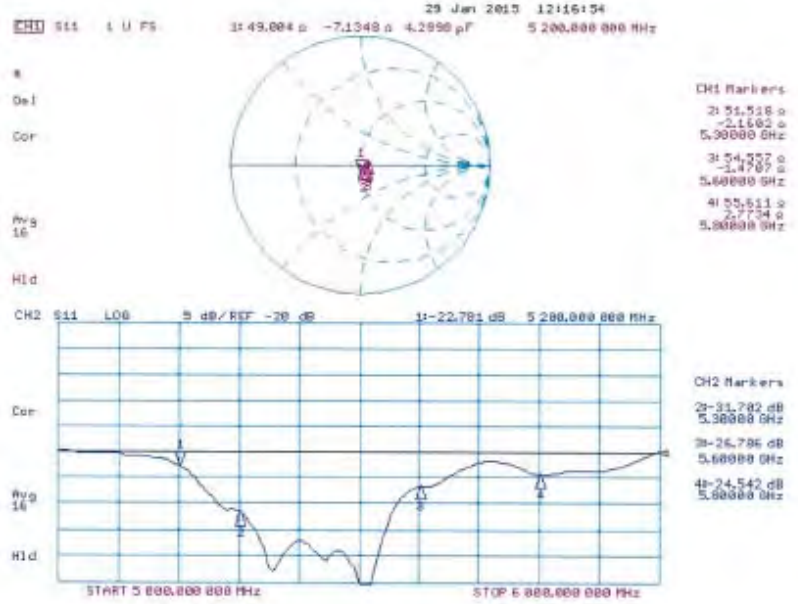
Impedance Measurement Plot for Body TSL



- End of 1st part of report -

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