SAR TEST REPORT

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

Equipment Under Test	ASUS Phone
Brand Name	ASUS
Model No.	ASUS_Z01FD
Company Name	ASUSTeK COMPUTER INC.
Company Address	4F, No. 150, LI-TE Rd., PEITOU, TAIPÉI 112, TAIWÁN
Standards	IEEE/ANSI C95.1-1992, IEEE 1528-2013, KDB248227D01v02r02,KDB865664D01v01r04, KDB865664D02v01r02,KDB941225D01v03r01, KDB941225D05v02r05,KDB941225D06v02r01, KDB447498D01v06,KDB648474D04v01r03, KDB941225D05Av01r02
FCC ID	MSQZ01FD
Date of Receipt	Jun. 30, 2016
Date of Test(s)	Jul. 04, 2016 ~ Jul. 25, 2016
Date of Issue	Aug. 01, 2016

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	**Supervisor**
Matt Kuo	**John Yeh**
Date: Aug. 01, 2016	**Date: Aug. 01, 2016**

Revision History

Report Number	Revision	Description	Issue Date
E5/2016/60031	Rev.00	Initial creation of document	Aug. 01, 2016

Contents

1. General Information

1.1 Testing Laboratory

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1.2 Details of Applicant

Company Name	ASUSTeK COMPUTER INC.
Company Address	4F, No. 150, LI-TE Rd., PEITOU, TAIPÉI 112, TAIWÁN

1.3 Description of EUT

EUT Name	ASUS Phone		
Brand Name	ASUS		
Model No.	ASUS_Z01FD		
FCC ID	MSQZ01FD		
Mode of Operation	☒GSM ☒GPRS ☒EDGE ☒WCDMA ☒HSDPA ☒HSUPA ☒DC-HSDPA ☒LTE FDD ☒LTE TDD ☒WLAN802.11 a/b/g/n(20M/40M)/ac(20M/40M/80M) ☒Bluetooth		
Duty Cycle	GSM	1/8.3	
	GPRS	1/4.1 (1Dn2UP) 1/8.3 (1Dn1UP)	
	EDGE	1/4.1 (1Dn2UP) 1/8.3 (1Dn1UP)	
	LTE FDD	1	
	LTE TDD	0.633	
	WCDMA	1	
	WLAN802.11 a/b/g/n(20M/40M)/ ac(20M/40M/80M)	1	
	Bluetooth	1	
TX Frequency Range (MHz)	GSM850	824.2	– 848.8
	GSM1900	1850.2	– 1909.8
	WCDMA Band II	1852.4	– 1907.6
	WCDMA Band IV	1712.4	– 1752.6
	WCDMA Band V	826.4	– 846.6
	LTE FDD Band II	1850	– 1910
	LTE FDD Band IV	1710	– 1755
	LTE FDD Band V	824	– 849

TX Frequency Range (MHz)	LTE FDD Band VII	2500	–	2570
	LTE FDD Band XII	699	–	716
	LTE FDD Band XVII	704	–	716
	LTE FDD Band XXVI	815	–	849
	LTE TDD Band XXXVIII	2570	–	2620
	LTE TDD Band XLI	2545	–	2655
	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/ac(20M) 5.6G	5500	–	5720
	WLAN802.11 n/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	5710	–	5795
	WLAN802.11 ac(80M) 5.8G	5775		
	Bluetooth	2402	–	2480
Channel Number (ARFCN)	GSM850	128	–	251
	GSM1900	512	–	810
	WCDMA Band II	9262	–	9538
	WCDMA Band IV	1312	–	1513
	WCDMA Band V	4132	–	4233
	LTE FDD Band II	18607	–	19193
	LTE FDD Band IV	19957	–	20393
	LTE FDD Band V	20407	–	20643

Channel Number (ARFCN)	LTE FDD Band VII	20775	–	21425
	LTE FDD Band XII	23007	–	23173
	LTE FDD Band XVII	23755	–	23825
	LTE FDD Band XXVI	26697	–	27033
	LTE TDD Band XXXVIII	37775	–	38225
	LTE TDD Band XLI	40165	–	41215
	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/ac(20M) 5.6G	100	–	144
	WLAN802.11 n/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	142	–	159
	WLAN802.11 ac(80M) 5.8G		155	
	Bluetooth	0	–	78

Max. SAR (1 g) (Unit: W/Kg)				
Mode	Band	Measured	Reported	Position / Channel
Head	GSM 850	0.034	0.036	☒Left ☐Right ☒Cheek ☐Tilt 128 Channel
	GSM 1900	0.041	0.041	☐Left ☒Right ☒Cheek ☐Tilt 512 Channel
	WCDMA Band II	0.102	0.141	☐Left ☒Right ☒Cheek ☐Tilt 9262 Channel
	WCDMA Band IV	0.077	0.084	☐Left ☒Right ☒Cheek ☐Tilt 1513 Channel
	WCDMA Band V	0.039	0.040	☒Left ☐Right ☒Cheek ☐Tilt 4132 Channel
	LTE FDD Band II	0.078	0.101	☐Left ☒Right ☒Cheek ☐Tilt 18700 Channel
	LTE FDD Band IV	0.056	0.071	☐Left ☒Right ☒Cheek ☐Tilt 20175 Channel
	LTE FDD Band V	0.020	0.024	☒Left ☐Right ☒Cheek ☐Tilt 20450 Channel
	LTE FDD Band VII	0.050	0.061	☐Left ☒Right ☒Cheek ☐Tilt 21100 Channel
	LTE FDD Band XII	0.00322	0.004	☐Left ☒Right ☐Cheek ☒Tilt 23095 Channel
	LTE FDD Band XVII	0.021	0.026	☒Left ☐Right ☒Cheek ☐Tilt 23780 Channel

Max. SAR (1 g) (Unit: W/Kg)				
Mode	Band	Measured	Reported	Position / Channel
Head	LTE FDD Band XXVI	0.027	0.034	☒Left ☐Right ☒Cheek ☐Tilt 26865 Channel
	LTE TDD Band XXXVIII	0.037	0.044	☐Left ☒Right ☒Cheek ☐Tilt 38150 Channel
	LTE TDD Band XLI	0.044	0.052	☐Left ☒Right ☒Cheek ☐Tilt 40840 Channel
	WLAN802.11 b	0.856	1.110	☒Left ☐Right ☐Cheek ☒Tilt 6 Channel
	WLAN802.11 a 5.2G	0.505	0.692	☒Left ☐Right ☒Cheek ☐Tilt 40 Channel
	WLAN802.11 a 5.3G	0.621	0.791	☒Left ☐Right ☒Cheek ☐Tilt 64 Channel
	WLAN802.11 a 5.6G	0.221	0.284	☒Left ☐Right ☒Cheek ☐Tilt 140 Channel
	WLAN802.11 a 5.8G	0.227	0.290	☒Left ☐Right ☒Cheek ☐Tilt 149 Channel

Max. SAR (1 g) (Unit: W/Kg)				
Mode	Band	Measured	Reported	Position / Channel
Body-worn	GSM 850	0.421	0.451	☒Front ☐Back 190 Channel
	GSM 1900	0.5747	0.574	☒Front ☐Back 512 Channel
	WLAN802.11 a 5.2G	0.078	0.107	☒Front ☐Back 40 Channel
	WLAN802.11 a 5.3G	0.095	0.121	☒Front ☐Back 64 Channel
	WLAN802.11 a 5.6G	0.040	0.051	☒Front ☐Back 140 Channel
	WLAN802.11 a 5.8G	0.30	0.038	☐Front ☒Back 149 Channel

Max. SAR (1 g) (Unit: W/Kg)				
Mode	Band	Measured	Reported	Position / Channel
Hotspot mode	GPRS 850 (1Dn2UP)	0.776	0.871	☒Front ☐Back ☐Bottom ☐Right ☐Left 190 Channel
	GPRS 1900 (1Dn2UP)	1.090	1.168	☐Front ☐Back ☒Bottom ☐Right ☐Left 512 Channel
	WCDMA Band II	0.980	1.184	☐Front ☐Back ☒Bottom ☐Right ☐Left 9262 Channel
	WCDMA Band IV	0.987	1.080	☐Front ☐Back ☒Bottom ☐Right ☐Left 1513 Channel

Max. SAR (1 g) (Unit: W/Kg)				
Mode	Band	Measured	Reported	Position / Channel
Hotspot mode	WCDMA Band V	0.378	0.971	☒Front ☐Back ☐Bottom ☐Right ☐Left 4132 Channel
	LTE FDD Band II	0.860	1.110	☐Front ☐Back ☒Bottom ☐Right ☐Left 18700 Channel
	LTE FDD Band IV	0.985	1.176	☒Front ☐Back ☐Bottom ☐Right ☐Left 20300 Channel
	LTE FDD Band V	0.274	0.334	☒Front ☐Back ☐Bottom ☐Right ☐Left 20450 Channel
	LTE FDD Band VII	0.143	0.162	☒Front ☐Back ☐Bottom ☐Right ☐Left 21350 Channel
	LTE FDD Band XII	0.016	0.019	☒Front ☐Back ☐Bottom ☐Right ☐Left 23130 Channel
	LTE FDD Band VXII	0.158	0.202	☒Front ☐Back ☐Bottom ☐Right ☐Left 23800 Channel
	LTE FDD Band XXVI	0.295	0.371	☒Front ☐Back ☐Bottom ☐Right ☐Left 26825 Channel
	LTE TDD Band XXXVIII	0.068	0.080	☐Front ☐Back ☒Bottom ☐Right ☐Left 38150 Channel

Max. SAR (1 g) (Unit: W/Kg)				
Mode	Band	Measured	Reported	Position / Channel
Hotspot mode	LTE TDD Band XLI	0.118	0.139	☐Front ☐Back ☒Bottom ☐Right ☐Left 41140 Channel
	WLAN802.11 b	0.090	0.114	☒Front ☐Back ☐Bottom ☐Right ☐Left 1 Channel

Max. SAR (10 g) (Unit: W/Kg)				
Mode	Band	Measured	Reported	Position / Channel
product specific 10-g SAR	WLAN802.11 a 5.2G	0.323	0.443	☒Front ☐Back ☐Top ☐Right 40 Channel
	WLAN802.11 a 5.3G	0.352	0.448	☒Front ☐Back ☐Top ☐Right 64 Channel
	WLAN802.11 a 5.6G	0.166	0.213	☒Front ☐Back ☐Top ☐Right 140 Channel
	WLAN802.11 a 5.8G	0.136	0.174	☒Front ☐Back ☐Top ☐Right 149 Channel

GSM/GPRS/EDGE conducted power table:

EUT mode	Frequency (MHz)	CH	Max. Rated Avg. Power + Max. Tolerance (dBm)	Burst average power	Source -based time average power
				Avg. (dBm)	Avg. (dBm)
GSM850 (GMSK)	824.2	128	33.5	33.20	24.17
	836.6	190	33.5	33.20	24.17
	848.8	251	33.5	33.40	24.37
The division factor compared to the number of TX time slot					
Division factor				1 TX time slot	
				-9.03	

Burst average power				
Max. Rated Avg. Power + Max. Tolerance (dBm)			33.5	33.5
			1Dn1UP	1Dn2UP
EUT mode	Frequency (MHz)	CH	Avg. (dBm)	Avg. (dBm)
GPRS 850	824.2	128	33.20	33.10
	836.6	190	33.20	33.00
	848.8	251	33.40	33.20
Source-based time average power				
GPRS 850	824.2	128	24.17	27.08
	836.6	190	24.17	26.98
	848.8	251	24.37	27.18
The division factor compared to the number of TX time slot				
Division factor			1 TX time slot	2 TX time slot
			-9.03	-6.02

Burst average power				
Max. Rated Avg. Power + Max. Tolerance (dBm)			29	29
			1Dn1UP	1Dn2UP
EUT mode	Frequency (MHz)	CH	Avg. (dBm)	Avg. (dBm)
EDGE 850 (MCS5)	824.2	128	27.00	26.80
	836.6	190	27.10	26.90
	848.8	251	27.20	27.00
Source-based time average power				
EDGE 850 (MCS5)	824.2	128	17.97	20.78
	836.6	190	18.07	20.88
	848.8	251	18.17	20.98
The division factor compared to the number of TX time slot				
Division factor			1 TX time slot	2 TX time slot
			-9.03	-6.02

EUT mode	Frequency (MHz)	CH	Max. Rated Avg. Power + Max. Tolerance (dBm)	Burst average power	Source-based time average power
				Avg. (dBm)	Avg. (dBm)
GSM1900 (GMSK)	1850.2	512	30.5	30.50	21.47
	1800	661	30.5	30.40	21.37
	1909.8	810	30.5	30.30	21.27
The division factor compared to the number of TX time slot					
Division factor				1 TX time slot	
				-9.03	

Burst average power				
Max. Rated Avg. Power + Max. Tolerance (dBm)			30.5	30
			1Dn1UP	1Dn2UP
EUT mode	Frequency (MHz)	CH	Avg. (dBm)	Avg. (dBm)
GPRS 1900	1850.2	512	30.50	29.70
	1880	661	30.40	29.50
	1909.8	810	30.30	29.60
Source-based time average power				
GPRS 1900	1850.2	512	21.47	23.68
	1880	661	21.37	23.48
	1909.8	810	21.27	23.58
The division factor compared to the number of TX time slot				
Division factor			1 TX time slot	2 TX time slot
			-9.03	-6.02

Burst average power				
Max. Rated Avg. Power + Max. Tolerance (dBm)			28	28
			1Dn1UP	1Dn2UP
EUT mode	Frequency (MHz)	CH	Avg. (dBm)	Avg. (dBm)
EDGE 1900 (MCS5)	1850.2	512	25.80	25.80
	1880	661	25.80	25.60
	1909.8	810	25.70	25.70
Source-based time average power				
EDGE 1900 (MCS5)	1850.2	512	16.77	19.78
	1880	661	16.77	19.58
	1909.8	810	16.67	19.68
The division factor compared to the number of TX time slot				
Division factor			1 TX time slot	2 TX time slot
			-9.03	-6.02

WCDMA Band II / Band IV / Band V - HSDPA / HSUPA / HSPA+ conducted power table:

Band	CH	Max. Rated Avg. Power + Max. Tolerance (dBm)	Rel99 AV(dBm)	HSDPA mode AV(dBm)				HSUPA mode AV(dBm)					DC-HSDPA mode AV(dBm)			
				SUB-1	SUB-2	SUB-3	SUB-4	SUB-1	SUB-2	SUB-3	SUB-4	SUB-5	SUB-1	SUB-2	SUB-3	SUB-4
WCDMA Band II	9262	23	21.58	21.37	21.51	20.91	20.96	21.54	19.60	20.58	19.65	21.40	21.35	19.41	20.39	19.46
	9400	23	21.61	21.47	21.50	20.99	21.03	21.54	19.62	20.60	19.68	21.37	21.44	19.52	20.50	19.58
	9538	23	21.82	21.94	21.69	21.45	21.51	21.74	19.78	20.82	19.86	21.63	21.90	19.94	20.98	20.02
WCDMA Band IV	1312	23	22.58	22.37	22.51	21.91	21.96	22.54	20.60	21.58	20.65	22.40	22.35	20.41	21.39	20.46
	1412	23	22.78	22.64	22.67	22.16	22.2	22.71	20.79	21.77	20.85	22.54	22.51	20.69	21.67	20.75
	1513	23	22.61	22.73	22.48	22.24	22.3	22.53	20.57	21.61	20.65	22.42	22.59	20.73	21.77	20.81
WCDMA Band V	4132	24	23.85	23.64	23.78	23.18	23.23	23.81	21.87	22.85	21.92	23.67	23.62	21.68	22.66	21.73
	4183	24	23.52	23.38	23.41	22.9	22.94	23.45	21.53	22.51	21.59	23.28	23.35	21.43	22.41	21.49
	4233	24	23.72	23.84	23.59	23.35	23.41	23.64	21.68	22.72	21.76	23.53	23.70	21.84	22.88	21.92

HSDPA

SUB-TEST	β_c	β_d	β_d (SF)	β_c/β_d	β_{HS} (Note1, Note 2)	CM (dB) (Note 3)	MPR (dB) (Note 3)
1	2/15	15/15	64	2/15	4/15	0.0	0.0
2	12/15	15/15	64	12/15	24/15	1.0	0.0
3	15/15	8/15	64	15/8	30/15	1.5	0.5
4	15/15	4/15	64	15/4	30/15	1.5	0.5

HSUPA

SUB-TEST	β_c	β_d	β_d (SF)	β_c/β_d	β_{HS} (Note1)	β_{ec}	β_{ed} (Note 5) (Note 6)	β_{ed} (SF)	β_{ed} (Codes)	CM (dB) (Note 2)	MPR (dB) (Note 2)	AG Index (Note 6)	E-TFCI
1	11/15	15/15	64	11/15	22/15	209/225	1309/225	4	1	1.0	0.0	20	75
2	6/15	15/15	64	6/15	12/15	12/15	94/75	4	1	3.0	2.0	12	67
3	15/15	9/15	64	15/9	30/15	30/15	$\beta_{ed}1$: 47/15 $\beta_{ed}2$: 47/15	4 4	2	2.0	1.0	15	92
4	2/15	15/15	64	2/15	4/15	2/15	56/75	4	1	3.0	2.0	17	71
5	15/15	15/15	64	15/15	30/15	24/15	134/15	4	1	1.0	0.0	21	81

LTE FDD Band II / Band IV / Band V / Band VII / Band XII / Band XVII / Band XXVI & LTE TDD XXXVIII / XLI power table:

FDD Band 2								
BW(Mhz)	Modulation	RB Size	RB Offset	Frequency (MHz)	Channel	Conducted power (dBm)	Target Power + Max. Tolerance (dBm)	MPR Allowed per 3GPP(dB)
20	QPSK	1 RB	0	1860	18700	21.69	23	0
				1880	18900	21.48	23	0
				1900	19100	21.62	23	0
			50	1860	18700	21.89	23	0
				1880	18900	22.07	23	0
				1900	19100	22.17	23	0
			99	1860	18700	21.60	23	0
				1880	18900	21.94	23	0
				1900	19100	21.92	23	0
		50 RB	0	1860	18700	21.15	22	0-1
				1880	18900	21.01	22	0-1
				1900	19100	21.05	22	0-1
			25	1860	18700	21.16	22	0-1
				1880	18900	20.97	22	0-1
				1900	19100	20.77	22	0-1
			50	1860	18700	20.97	22	0-1
				1880	18900	21.08	22	0-1
				1900	19100	20.93	22	0-1
		100RB		1860	18700	20.99	22	0-1
				1880	18900	21.08	22	0-1
				1900	19100	20.95	22	0-1
	16-QAM	1 RB	0	1860	18700	20.80	22	0-1
				1880	18900	20.77	22	0-1
				1900	19100	21.09	22	0-1
			50	1860	18700	20.81	22	0-1
				1880	18900	21.31	22	0-1
				1900	19100	20.70	22	0-1
			99	1860	18700	20.41	22	0-1
				1880	18900	20.24	22	0-1
				1900	19100	20.87	22	0-1
		50 RB	0	1860	18700	20.15	21	0-2
				1880	18900	19.89	21	0-2
				1900	19100	20.07	21	0-2
			25	1860	18700	19.97	21	0-2
				1880	18900	19.98	21	0-2
				1900	19100	19.96	21	0-2
			50	1860	18700	19.84	21	0-2
				1880	18900	20.06	21	0-2
				1900	19100	19.97	21	0-2
		100RB		1860	18700	20.14	21	0-2
				1880	18900	20.00	21	0-2
				1900	19100	19.91	21	0-2

FDD Band 2								
BW(Mhz)	Modulation	RB Size	RB Offset	Frequency (MHz)	Channel	Conducted power (dBm)	Target Power + Max. Tolerance (dBm)	MPR Allowed per 3GPP(dB)
15	QPSK	1 RB	0	1857.5	18675	22.00	23	0
				1880	18900	21.54	23	0
				1902.5	19125	21.86	23	0
			36	1857.5	18675	21.98	23	0
				1880	18900	21.78	23	0
				1902.5	19125	21.61	23	0
			74	1857.5	18675	21.87	23	0
				1880	18900	21.85	23	0
				1902.5	19125	21.97	23	0
		36 RB	0	1857.5	18675	21.00	22	0-1
				1880	18900	20.80	22	0-1
				1902.5	19125	20.67	22	0-1
			18	1857.5	18675	21.08	22	0-1
				1880	18900	20.91	22	0-1
				1902.5	19125	20.56	22	0-1
			37	1857.5	18675	20.95	22	0-1
				1880	18900	20.87	22	0-1
				1902.5	19125	20.85	22	0-1
		75RB		1857.5	18675	21.03	22	0-1
				1880	18900	20.92	22	0-1
				1902.5	19125	20.79	22	0-1
	16-QAM	1 RB	0	1857.5	18675	21.08	22	0-1
				1880	18900	20.99	22	0-1
				1902.5	19125	20.90	22	0-1
			36	1857.5	18675	21.08	22	0-1
				1880	18900	20.93	22	0-1
				1902.5	19125	20.49	22	0-1
			74	1857.5	18675	21.03	22	0-1
				1880	18900	20.42	22	0-1
				1902.5	19125	20.87	22	0-1
		36 RB	0	1857.5	18675	20.01	21	0-2
				1880	18900	19.94	21	0-2
				1902.5	19125	19.79	21	0-2
			18	1857.5	18675	19.98	21	0-2
				1880	18900	19.96	21	0-2
				1902.5	19125	19.61	21	0-2
			37	1857.5	18675	19.94	21	0-2
				1880	18900	19.88	21	0-2
				1902.5	19125	19.80	21	0-2
		75RB		1857.5	18675	20.09	21	0-2
				1880	18900	19.89	21	0-2
				1902.5	19125	19.84	21	0-2

FDD Band 2								
BW(Mhz)	Modulation	RB Size	RB Offset	Frequency (MHz)	Channel	Conducted power (dBm)	Target Power + Max. Tolerance (dBm)	MPR Allowed per 3GPP(dB)
10	QPSK	1 RB	0	1855	18650	21.83	23	0
				1880	18900	21.83	23	0
				1905	19150	21.41	23	0
			25	1855	18650	21.86	23	0
				1880	18900	21.91	23	0
				1905	19150	21.93	23	0
			49	1855	18650	21.98	23	0
				1880	18900	21.83	23	0
				1905	19150	21.99	23	0
		25 RB	0	1855	18650	21.15	22	0-1
				1880	18900	20.87	22	0-1
				1905	19150	20.64	22	0-1
			12	1855	18650	21.02	22	0-1
				1880	18900	20.88	22	0-1
				1905	19150	20.79	22	0-1
			25	1855	18650	21.04	22	0-1
				1880	18900	20.94	22	0-1
				1905	19150	20.92	22	0-1
		50RB		1855	18650	21.01	22	0-1
				1880	18900	20.93	22	0-1
				1905	19150	20.82	22	0-1
	16-QAM	1 RB	0	1855	18650	21.09	22	0-1
				1880	18900	20.97	22	0-1
				1905	19150	20.08	22	0-1
			25	1855	18650	20.66	22	0-1
				1880	18900	20.80	22	0-1
				1905	19150	20.61	22	0-1
			49	1855	18650	21.04	22	0-1
				1880	18900	20.91	22	0-1
				1905	19150	20.61	22	0-1
		25 RB	0	1855	18650	20.20	21	0-2
				1880	18900	19.92	21	0-2
				1905	19150	19.92	21	0-2
			12	1855	18650	19.97	21	0-2
				1880	18900	19.99	21	0-2
				1905	19150	20.14	21	0-2
			25	1855	18650	20.27	21	0-2
				1880	18900	19.89	21	0-2
				1905	19150	19.89	21	0-2
		50RB		1855	18650	20.13	21	0-2
				1880	18900	20.01	21	0-2
				1905	19150	19.86	21	0-2

FDD Band 2								
BW(Mhz)	Modulation	RB Size	RB Offset	Frequency (MHz)	Channel	Conducted power (dBm)	Target Power + Max. Tolerance (dBm)	MPR Allowed per 3GPP(dB)
5	QPSK	1 RB	0	1852.5	18625	21.73	23	0
				1880	18900	21.52	23	0
				1907.5	19175	21.40	23	0
			12	1852.5	18625	22.02	23	0
				1880	18900	22.01	23	0
				1907.5	19175	21.79	23	0
			24	1852.5	18625	21.77	23	0
				1880	18900	21.80	23	0
				1907.5	19175	21.67	23	0
		12 RB	0	1852.5	18625	20.90	22	0-1
				1880	18900	20.84	22	0-1
				1907.5	19175	20.95	22	0-1
			6	1852.5	18625	21.16	22	0-1
				1880	18900	20.99	22	0-1
				1907.5	19175	20.98	22	0-1
			13	1852.5	18625	20.97	22	0-1
				1880	18900	20.96	22	0-1
				1907.5	19175	20.85	22	0-1
		25RB		1852.5	18625	21.00	22	0-1
				1880	18900	20.91	22	0-1
				1907.5	19175	20.92	22	0-1
	16-QAM	1 RB	0	1852.5	18625	20.71	22	0-1
				1880	18900	20.64	22	0-1
				1907.5	19175	20.47	22	0-1
			12	1852.5	18625	20.50	22	0-1
				1880	18900	20.54	22	0-1
				1907.5	19175	20.60	22	0-1
			24	1852.5	18625	20.89	22	0-1
				1880	18900	20.55	22	0-1
				1907.5	19175	20.79	22	0-1
		12 RB	0	1852.5	18625	20.06	21	0-2
				1880	18900	20.10	21	0-2
				1907.5	19175	19.90	21	0-2
			6	1852.5	18625	20.18	21	0-2
				1880	18900	20.02	21	0-2
				1907.5	19175	19.99	21	0-2
			13	1852.5	18625	20.12	21	0-2
				1880	18900	19.99	21	0-2
				1907.5	19175	19.88	21	0-2
		25RB		1852.5	18625	20.16	21	0-2
				1880	18900	20.17	21	0-2
				1907.5	19175	19.96	21	0-2

FDD Band 2								
BW(Mhz)	Modulation	RB Size	RB Offset	Frequency (MHz)	Channel	Conducted power (dBm)	Target Power + Max. Tolerance (dBm)	MPR Allowed per 3GPP(dB)
3	QPSK	1 RB	0	1851.5	18615	21.90	23	0
				1880	18900	21.61	23	0
				1908.5	19185	21.87	23	0
			7	1851.5	18615	22.08	23	0
				1880	18900	21.91	23	0
				1908.5	19185	21.95	23	0
			14	1851.5	18615	21.74	23	0
				1880	18900	21.73	23	0
				1908.5	19185	21.68	23	0
		8 RB	0	1851.5	18615	21.16	22	0-1
				1880	18900	20.81	22	0-1
				1908.5	19185	20.94	22	0-1
			4	1851.5	18615	20.98	22	0-1
				1880	18900	20.83	22	0-1
				1908.5	19185	20.78	22	0-1
			7	1851.5	18615	21.04	22	0-1
				1880	18900	20.91	22	0-1
				1908.5	19185	20.85	22	0-1
		15RB		1851.5	18615	20.96	22	0-1
				1880	18900	20.86	22	0-1
				1908.5	19185	20.81	22	0-1
	16-QAM	1 RB	0	1851.5	18615	20.53	22	0-1
				1880	18900	20.95	22	0-1
				1908.5	19185	21.14	22	0-1
			7	1851.5	18615	21.40	22	0-1
				1880	18900	20.39	22	0-1
				1908.5	19185	20.73	22	0-1
			14	1851.5	18615	20.81	22	0-1
				1880	18900	20.42	22	0-1
				1908.5	19185	20.33	22	0-1
		8 RB	0	1851.5	18615	19.94	21	0-2
				1880	18900	20.02	21	0-2
				1908.5	19185	20.04	21	0-2
			4	1851.5	18615	19.85	21	0-2
				1880	18900	20.25	21	0-2
				1908.5	19185	19.70	21	0-2
			7	1851.5	18615	20.00	21	0-2
				1880	18900	20.03	21	0-2
				1908.5	19185	19.75	21	0-2
		15RB		1851.5	18615	20.00	21	0-2
				1880	18900	19.89	21	0-2
				1908.5	19185	19.71	21	0-2

FDD Band 2								
BW(Mhz)	Modulation	RB Size	RB Offset	Frequency (MHz)	Channel	Conducted power (dBm)	Target Power + Max. Tolerance (dBm)	MPR Allowed per 3GPP(dB)
1.4	QPSK	1 RB	0	1850.7	18607	22.01	23	0
				1880	18900	21.60	23	0
				1909.3	19193	21.77	23	0
			2	1850.7	18607	22.01	23	0
				1880	18900	21.71	23	0
				1909.3	19193	21.84	23	0
			5	1850.7	18607	21.72	23	0
				1880	18900	21.77	23	0
				1909.3	19193	21.66	23	0
		3 RB	0	1850.7	18607	21.43	23	0
				1880	18900	21.34	23	0
				1909.3	19193	21.56	23	0
			2	1850.7	18607	21.77	23	0
				1880	18900	21.56	23	0
				1909.3	19193	21.32	23	0
			3	1850.7	18607	21.72	23	0
				1880	18900	21.14	23	0
				1909.3	19193	21.15	23	0
		6RB		1850.7	18607	21.17	22	0-1
				1880	18900	21.15	22	0-1
				1909.3	19193	21.11	22	0-1
	16-QAM	1 RB	0	1850.7	18607	20.52	22	0-1
				1880	18900	20.83	22	0-1
				1909.3	19193	21.18	22	0-1
			2	1850.7	18607	21.44	22	0-1
				1880	18900	20.32	22	0-1
				1909.3	19193	20.88	22	0-1
			5	1850.7	18607	21.02	22	0-1
				1880	18900	21.03	22	0-1
				1909.3	19193	20.76	22	0-1
		3 RB	0	1850.7	18607	20.87	22	0-1
				1880	18900	21.00	22	0-1
				1909.3	19193	20.46	22	0-1
			2	1850.7	18607	21.21	22	0-1
				1880	18900	20.44	22	0-1
				1909.3	19193	20.78	22	0-1
			3	1850.7	18607	20.71	22	0-1
				1880	18900	20.43	22	0-1
				1909.3	19193	20.43	22	0-1
		6RB		1850.7	18607	20.00	21	0-2
				1880	18900	19.82	21	0-2
				1909.3	19193	19.89	21	0-2

FDD Band 4								
BW(Mhz)	Modulation	RB Size	RB Offset	Frequency (MHz)	Channel	Conducted power (dBm)	Target Power + Max. Tolerance (dBm)	MPR Allowed per 3GPP(dB)
20	QPSK	1 RB	0	1720	20050	22.58	24	0
				1732.5	20175	22.68	24	0
				1745	20300	22.77	24	0
			50	1720	20050	23.30	24	0
				1732.5	20175	22.98	24	0
				1745	20300	23.23	24	0
			99	1720	20050	22.76	24	0
				1732.5	20175	22.70	24	0
				1745	20300	22.83	24	0
		50 RB	0	1720	20050	21.97	23	0-1
				1732.5	20175	21.93	23	0-1
				1745	20300	22.12	23	0-1
			25	1720	20050	21.95	23	0-1
				1732.5	20175	21.96	23	0-1
				1745	20300	22.07	23	0-1
			50	1720	20050	22.06	23	0-1
				1732.5	20175	21.86	23	0-1
				1745	20300	21.96	23	0-1
		100RB		1720	20050	22.04	23	0-1
				1732.5	20175	21.88	23	0-1
				1745	20300	22.08	23	0-1
	16-QAM	1 RB	0	1720	20050	21.49	23	0-1
				1732.5	20175	21.74	23	0-1
				1745	20300	21.82	23	0-1
			50	1720	20050	21.82	23	0-1
				1732.5	20175	21.72	23	0-1
				1745	20300	22.00	23	0-1
			99	1720	20050	21.95	23	0-1
				1732.5	20175	21.95	23	0-1
				1745	20300	21.94	23	0-1
		50 RB	0	1720	20050	21.23	22	0-2
				1732.5	20175	21.10	22	0-2
				1745	20300	21.33	22	0-2
			25	1720	20050	21.21	22	0-2
				1732.5	20175	21.08	22	0-2
				1745	20300	21.22	22	0-2
			50	1720	20050	21.06	22	0-2
				1732.5	20175	20.98	22	0-2
				1745	20300	21.14	22	0-2
		100RB		1720	20050	21.04	22	0-2
				1732.5	20175	21.03	22	0-2
				1745	20300	21.15	22	0-2

FDD Band 4								
BW(Mhz)	Modulation	RB Size	RB Offset	Frequency (MHz)	Channel	Conducted power (dBm)	Target Power + Max. Tolerance (dBm)	MPR Allowed per 3GPP(dB)
15	QPSK	1 RB	0	1717.5	20025	23.03	24	0
				1732.5	20175	22.80	24	0
				1747.5	20325	23.04	24	0
			36	1717.5	20025	23.00	24	0
				1732.5	20175	23.04	24	0
				1747.5	20325	22.94	24	0
			74	1717.5	20025	22.96	24	0
				1732.5	20175	22.90	24	0
				1747.5	20325	22.97	24	0
		36 RB	0	1717.5	20025	21.98	23	0-1
				1732.5	20175	22.02	23	0-1
				1747.5	20325	22.13	23	0-1
			18	1717.5	20025	21.92	23	0-1
				1732.5	20175	21.98	23	0-1
				1747.5	20325	22.04	23	0-1
			37	1717.5	20025	22.02	23	0-1
				1732.5	20175	22.04	23	0-1
				1747.5	20325	22.03	23	0-1
		75RB		1717.5	20025	22.15	23	0-1
				1732.5	20175	21.92	23	0-1
				1747.5	20325	22.07	23	0-1
	16-QAM	1 RB	0	1717.5	20025	21.41	23	0-1
				1732.5	20175	21.73	23	0-1
				1747.5	20325	22.14	23	0-1
			36	1717.5	20025	21.57	23	0-1
				1732.5	20175	21.42	23	0-1
				1747.5	20325	22.00	23	0-1
			74	1717.5	20025	21.70	23	0-1
				1732.5	20175	21.63	23	0-1
				1747.5	20325	22.04	23	0-1
		36 RB	0	1717.5	20025	21.01	22	0-2
				1732.5	20175	21.08	22	0-2
				1747.5	20325	21.19	22	0-2
			18	1717.5	20025	20.99	22	0-2
				1732.5	20175	21.06	22	0-2
				1747.5	20325	21.11	22	0-2
			37	1717.5	20025	21.08	22	0-2
				1732.5	20175	21.10	22	0-2
				1747.5	20325	21.09	22	0-2
		75RB		1717.5	20025	21.19	22	0-2
				1732.5	20175	21.11	22	0-2
				1747.5	20325	21.11	22	0-2

FDD Band 4								
BW(Mhz)	Modulation	RB Size	RB Offset	Frequency (MHz)	Channel	Conducted power (dBm)	Target Power + Max. Tolerance (dBm)	MPR Allowed per 3GPP(dB)
10	QPSK	1 RB	0	1715	20000	22.84	24	0
				1732.5	20175	22.80	24	0
				1750	20350	22.77	24	0
			25	1715	20000	23.15	24	0
				1732.5	20175	23.13	24	0
				1750	20350	23.12	24	0
			49	1715	20000	22.67	24	0
				1732.5	20175	22.70	24	0
				1750	20350	23.01	24	0
		25 RB	0	1715	20000	22.09	23	0-1
				1732.5	20175	21.97	23	0-1
				1750	20350	21.96	23	0-1
			12	1715	20000	21.94	23	0-1
				1732.5	20175	22.00	23	0-1
				1750	20350	22.05	23	0-1
			25	1715	20000	21.95	23	0-1
				1732.5	20175	21.97	23	0-1
				1750	20350	22.13	23	0-1
		50RB		1715	20000	22.10	23	0-1
				1732.5	20175	22.04	23	0-1
				1750	20350	22.11	23	0-1
	16-QAM	1 RB	0	1715	20000	22.06	23	0-1
				1732.5	20175	21.97	23	0-1
				1750	20350	21.75	23	0-1
			25	1715	20000	21.90	23	0-1
				1732.5	20175	22.00	23	0-1
				1750	20350	21.98	23	0-1
			49	1715	20000	21.97	23	0-1
				1732.5	20175	21.86	23	0-1
				1750	20350	21.39	23	0-1
		25 RB	0	1715	20000	21.16	22	0-2
				1732.5	20175	20.99	22	0-2
				1750	20350	21.36	22	0-2
			12	1715	20000	21.13	22	0-2
				1732.5	20175	21.19	22	0-2
				1750	20350	21.38	22	0-2
			25	1715	20000	21.06	22	0-2
				1732.5	20175	21.04	22	0-2
				1750	20350	21.32	22	0-2
		50RB		1715	20000	20.98	22	0-2
				1732.5	20175	21.14	22	0-2
				1750	20350	21.18	22	0-2

FDD Band 4								
BW(Mhz)	Modulation	RB Size	RB Offset	Frequency (MHz)	Channel	Conducted power (dBm)	Target Power + Max. Tolerance (dBm)	MPR Allowed per 3GPP(dB)
5	QPSK	1 RB	0	1712.5	19975	22.75	24	0
				1732.5	20175	22.79	24	0
				1752.5	20375	22.66	24	0
			12	1712.5	19975	23.32	24	0
				1732.5	20175	23.20	24	0
				1752.5	20375	23.04	24	0
			24	1712.5	19975	22.81	24	0
				1732.5	20175	22.95	24	0
				1752.5	20375	22.87	24	0
		12 RB	0	1712.5	19975	21.94	23	0-1
				1732.5	20175	21.99	23	0-1
				1752.5	20375	22.00	23	0-1
			6	1712.5	19975	21.94	23	0-1
				1732.5	20175	22.00	23	0-1
				1752.5	20375	22.22	23	0-1
			13	1712.5	19975	21.94	23	0-1
				1732.5	20175	21.92	23	0-1
				1752.5	20375	21.98	23	0-1
		25RB		1712.5	19975	22.03	23	0-1
				1732.5	20175	22.01	23	0-1
				1752.5	20375	22.06	23	0-1
	16-QAM	1 RB	0	1712.5	19975	21.74	23	0-1
				1732.5	20175	21.76	23	0-1
				1752.5	20375	21.50	23	0-1
			12	1712.5	19975	22.26	23	0-1
				1732.5	20175	21.63	23	0-1
				1752.5	20375	21.75	23	0-1
			24	1712.5	19975	21.55	23	0-1
				1732.5	20175	21.56	23	0-1
				1752.5	20375	21.59	23	0-1
		12 RB	0	1712.5	19975	20.95	22	0-2
				1732.5	20175	20.90	22	0-2
				1752.5	20375	21.19	22	0-2
			6	1712.5	19975	21.15	22	0-2
				1732.5	20175	21.12	22	0-2
				1752.5	20375	21.23	22	0-2
			13	1712.5	19975	20.96	22	0-2
				1732.5	20175	20.91	22	0-2
				1752.5	20375	21.10	22	0-2
		25RB		1712.5	19975	21.10	22	0-2
				1732.5	20175	21.08	22	0-2
				1752.5	20375	21.21	22	0-2

FDD Band 4								
BW(Mhz)	Modulation	RB Size	RB Offset	Frequency (MHz)	Channel	Conducted power (dBm)	Target Power + Max. Tolerance (dBm)	MPR Allowed per 3GPP(dB)
3	QPSK	1 RB	0	1711.5	19965	22.79	24	0
				1732.5	20175	22.61	24	0
				1753.5	20385	22.54	24	0
			7	1711.5	19965	23.02	24	0
				1732.5	20175	22.80	24	0
				1753.5	20385	22.80	24	0
			14	1711.5	19965	23.09	24	0
				1732.5	20175	22.99	24	0
				1753.5	20385	22.88	24	0
		8 RB	0	1711.5	19965	22.05	23	0-1
				1732.5	20175	22.02	23	0-1
				1753.5	20385	22.06	23	0-1
			4	1711.5	19965	22.04	23	0-1
				1732.5	20175	22.03	23	0-1
				1753.5	20385	21.99	23	0-1
			7	1711.5	19965	22.09	23	0-1
				1732.5	20175	21.99	23	0-1
				1753.5	20385	21.96	23	0-1
		15RB		1711.5	19965	21.96	23	0-1
				1732.5	20175	21.95	23	0-1
				1753.5	20385	21.93	23	0-1
	16-QAM	1 RB	0	1711.5	19965	22.12	23	0-1
				1732.5	20175	22.18	23	0-1
				1753.5	20385	22.00	23	0-1
			7	1711.5	19965	21.49	23	0-1
				1732.5	20175	21.98	23	0-1
				1753.5	20385	21.41	23	0-1
			14	1711.5	19965	21.83	23	0-1
				1732.5	20175	21.50	23	0-1
				1753.5	20385	21.72	23	0-1
		8 RB	0	1711.5	19965	21.18	22	0-2
				1732.5	20175	21.11	22	0-2
				1753.5	20385	21.11	22	0-2
			4	1711.5	19965	21.05	22	0-2
				1732.5	20175	21.19	22	0-2
				1753.5	20385	20.89	22	0-2
			7	1711.5	19965	21.24	22	0-2
				1732.5	20175	21.11	22	0-2
				1753.5	20385	21.07	22	0-2
		15RB		1711.5	19965	20.99	22	0-2
				1732.5	20175	21.07	22	0-2
				1753.5	20385	20.90	22	0-2

FDD Band 4								
BW(Mhz)	Modulation	RB Size	RB Offset	Frequency (MHz)	Channel	Conducted power (dBm)	Target Power + Max. Tolerance (dBm)	MPR Allowed per 3GPP(dB)
1.4	QPSK	1 RB	0	1710.7	19957	22.90	24	0
				1732.5	20175	22.85	24	0
				1754.3	20393	22.80	24	0
			2	1710.7	19957	22.91	24	0
				1732.5	20175	22.98	24	0
				1754.3	20393	22.95	24	0
			5	1710.7	19957	23.04	24	0
				1732.5	20175	23.13	24	0
				1754.3	20393	23.00	24	0
		3 RB	0	1710.7	19957	23.07	24	0
				1732.5	20175	23.10	24	0
				1754.3	20393	22.93	24	0
			2	1710.7	19957	23.03	24	0
				1732.5	20175	23.33	24	0
				1754.3	20393	23.03	24	0
			3	1710.7	19957	23.09	24	0
				1732.5	20175	23.02	24	0
				1754.3	20393	23.09	24	0
		6RB		1710.7	19957	22.02	23	0-1
				1732.5	20175	21.89	23	0-1
				1754.3	20393	21.84	23	0-1
	16-QAM	1 RB	0	1710.7	19957	22.31	23	0-1
				1732.5	20175	21.73	23	0-1
				1754.3	20393	21.72	23	0-1
			2	1710.7	19957	21.79	23	0-1
				1732.5	20175	22.09	23	0-1
				1754.3	20393	21.94	23	0-1
			5	1710.7	19957	22.09	23	0-1
				1732.5	20175	21.63	23	0-1
				1754.3	20393	21.86	23	0-1
		3 RB	0	1710.7	19957	21.78	23	0-1
				1732.5	20175	21.95	23	0-1
				1754.3	20393	21.79	23	0-1
			2	1710.7	19957	22.29	23	0-1
				1732.5	20175	22.32	23	0-1
				1754.3	20393	22.07	23	0-1
			3	1710.7	19957	22.24	23	0-1
				1732.5	20175	22.26	23	0-1
				1754.3	20393	22.03	23	0-1
		6RB		1710.7	19957	20.84	22	0-2
				1732.5	20175	21.18	22	0-2
				1754.3	20393	20.84	22	0-2

FDD Band 5								
BW(Mhz)	Modulation	RB Size	RB Offset	Frequency (MHz)	Channel	Conducted power (dBm)	Target Power + Max. Tolerance (dBm)	MPR Allowed per 3GPP(dB)
10	QPSK	1 RB	0	829	20450	22.72	24	0
				836.5	20525	22.69	24	0
				844	20600	22.91	24	0
			25	829	20450	22.91	24	0
				836.5	20525	23.48	24	0
				844	20600	23.02	24	0
			49	829	20450	23.14	24	0
				836.5	20525	22.65	24	0
				844	20600	22.97	24	0
		25 RB	0	829	20450	21.96	23	0-1
				836.5	20525	22.08	23	0-1
				844	20600	21.96	23	0-1
			12	829	20450	21.95	23	0-1
				836.5	20525	21.99	23	0-1
				844	20600	22.08	23	0-1
			25	829	20450	22.02	23	0-1
				836.5	20525	21.98	23	0-1
				844	20600	22.09	23	0-1
		50RB		829	20450	22.07	23	0-1
				836.5	20525	21.98	23	0-1
				844	20600	22.10	23	0-1
	16-QAM	1 RB	0	829	20450	21.63	23	0-1
				836.5	20525	21.86	23	0-1
				844	20600	21.58	23	0-1
			25	829	20450	22.13	23	0-1
				836.5	20525	22.17	23	0-1
				844	20600	22.06	23	0-1
			49	829	20450	22.26	23	0-1
				836.5	20525	22.00	23	0-1
				844	20600	21.76	23	0-1
		25 RB	0	829	20450	21.22	22	0-2
				836.5	20525	21.27	22	0-2
				844	20600	21.24	22	0-2
			12	829	20450	21.18	22	0-2
				836.5	20525	21.39	22	0-2
				844	20600	21.31	22	0-2
			25	829	20450	21.16	22	0-2
				836.5	20525	21.07	22	0-2
				844	20600	21.39	22	0-2
		50RB		829	20450	21.24	22	0-2
				836.5	20525	20.91	22	0-2
				844	20600	21.14	22	0-2

FDD Band 5								
BW(Mhz)	Modulation	RB Size	RB Offset	Frequency (MHz)	Channel	Conducted power (dBm)	Target Power + Max. Tolerance (dBm)	MPR Allowed per 3GPP(dB)
5	QPSK	1 RB	0	826.5	20425	22.56	24	0
				836.5	20525	22.81	24	0
				846.5	20625	22.80	24	0
			12	826.5	20425	23.06	24	0
				836.5	20525	23.13	24	0
				846.5	20625	23.43	24	0
			24	826.5	20425	22.89	24	0
				836.5	20525	22.69	24	0
				846.5	20625	22.73	24	0
		12 RB	0	826.5	20425	22.07	23	0-1
				836.5	20525	22.03	23	0-1
				846.5	20625	22.08	23	0-1
			6	826.5	20425	22.05	23	0-1
				836.5	20525	22.06	23	0-1
				846.5	20625	21.98	23	0-1
			13	826.5	20425	22.04	23	0-1
				836.5	20525	21.96	23	0-1
				846.5	20625	22.13	23	0-1
		25RB		826.5	20425	21.97	23	0-1
				836.5	20525	22.02	23	0-1
				846.5	20625	22.00	23	0-1
	16-QAM	1 RB	0	826.5	20425	21.47	23	0-1
				836.5	20525	21.66	23	0-1
				846.5	20625	22.12	23	0-1
			12	826.5	20425	21.96	23	0-1
				836.5	20525	21.67	23	0-1
				846.5	20625	21.77	23	0-1
			24	826.5	20425	21.56	23	0-1
				836.5	20525	21.85	23	0-1
				846.5	20625	21.86	23	0-1
		12 RB	0	826.5	20425	21.07	22	0-2
				836.5	20525	21.24	22	0-2
				846.5	20625	21.06	22	0-2
			6	826.5	20425	21.23	22	0-2
				836.5	20525	21.22	22	0-2
				846.5	20625	21.25	22	0-2
			13	826.5	20425	21.02	22	0-2
				836.5	20525	21.03	22	0-2
				846.5	20625	21.45	22	0-2
		25RB		826.5	20425	21.36	22	0-2
				836.5	20525	21.09	22	0-2
				846.5	20625	21.43	22	0-2

FDD Band 5								
BW(Mhz)	Modulation	RB Size	RB Offset	Frequency (MHz)	Channel	Conducted power (dBm)	Target Power + Max. Tolerance (dBm)	MPR Allowed per 3GPP(dB)
3	QPSK	1 RB	0	825.5	20415	23.00	24	0
				836.5	20525	22.91	24	0
				847.5	20635	22.93	24	0
			7	825.5	20415	23.23	24	0
				836.5	20525	23.27	24	0
				847.5	20635	23.41	24	0
			14	825.5	20415	22.96	24	0
				836.5	20525	22.76	24	0
				847.5	20635	22.72	24	0
		8 RB	0	825.5	20415	22.09	23	0-1
				836.5	20525	22.11	23	0-1
				847.5	20635	22.16	23	0-1
			4	825.5	20415	21.96	23	0-1
				836.5	20525	22.07	23	0-1
				847.5	20635	22.16	23	0-1
			7	825.5	20415	21.96	23	0-1
				836.5	20525	22.03	23	0-1
				847.5	20635	22.19	23	0-1
		15RB		825.5	20415	22.12	23	0-1
				836.5	20525	21.93	23	0-1
				847.5	20635	22.18	23	0-1
	16-QAM	1 RB	0	825.5	20415	21.53	23	0-1
				836.5	20525	22.20	23	0-1
				847.5	20635	22.56	23	0-1
			7	825.5	20415	21.78	23	0-1
				836.5	20525	22.47	23	0-1
				847.5	20635	22.39	23	0-1
			14	825.5	20415	21.80	23	0-1
				836.5	20525	21.97	23	0-1
				847.5	20635	21.86	23	0-1
		8 RB	0	825.5	20415	21.13	22	0-2
				836.5	20525	21.09	22	0-2
				847.5	20635	21.16	22	0-2
			4	825.5	20415	21.17	22	0-2
				836.5	20525	21.19	22	0-2
				847.5	20635	21.14	22	0-2
			7	825.5	20415	21.18	22	0-2
				836.5	20525	20.73	22	0-2
				847.5	20635	21.24	22	0-2
		15RB		825.5	20415	21.18	22	0-2
				836.5	20525	21.16	22	0-2
				847.5	20635	21.21	22	0-2

FDD Band 5								
BW(Mhz)	Modulation	RB Size	RB Offset	Frequency (MHz)	Channel	Conducted power (dBm)	Target Power + Max. Tolerance (dBm)	MPR Allowed per 3GPP(dB)
1.4	QPSK	1 RB	0	824.7	20407	22.89	24	0
				836.5	20525	22.94	24	0
				848.3	20643	23.12	24	0
			2	824.7	20407	23.14	24	0
				836.5	20525	23.15	24	0
				848.3	20643	23.21	24	0
			5	824.7	20407	22.95	24	0
				836.5	20525	23.07	24	0
				848.3	20643	23.10	24	0
		3 RB	0	824.7	20407	23.21	24	0
				836.5	20525	23.12	24	0
				848.3	20643	23.30	24	0
			2	824.7	20407	23.46	24	0
				836.5	20525	23.21	24	0
				848.3	20643	23.19	24	0
			3	824.7	20407	23.21	24	0
				836.5	20525	23.03	24	0
				848.3	20643	23.10	24	0
		6RB		824.7	20407	22.14	23	0-1
				836.5	20525	21.88	23	0-1
				848.3	20643	22.16	23	0-1
	16-QAM	1 RB	0	824.7	20407	22.31	23	0-1
				836.5	20525	21.91	23	0-1
				848.3	20643	21.59	23	0-1
			2	824.7	20407	22.13	23	0-1
				836.5	20525	22.02	23	0-1
				848.3	20643	22.18	23	0-1
			5	824.7	20407	21.44	23	0-1
				836.5	20525	21.71	23	0-1
				848.3	20643	21.84	23	0-1
		3 RB	0	824.7	20407	21.93	23	0-1
				836.5	20525	21.93	23	0-1
				848.3	20643	21.98	23	0-1
			2	824.7	20407	22.00	23	0-1
				836.5	20525	21.88	23	0-1
				848.3	20643	22.38	23	0-1
			3	824.7	20407	22.15	23	0-1
				836.5	20525	21.92	23	0-1
				848.3	20643	22.10	23	0-1
		6RB		824.7	20407	21.05	22	0-2
				836.5	20525	20.88	22	0-2
				848.3	20643	21.11	22	0-2

FDD Band 7								
BW(Mhz)	Modulation	RB Size	RB Offset	Frequency (MHz)	Channel	Conducted power (dBm)	Target Power + Max. Tolerance (dBm)	MPR Allowed per 3GPP(dB)
20	QPSK	1 RB	0	2510	20850	23.35	24	0
				2535	21100	23.04	24	0
				2560	21350	23.03	24	0
			50	2510	20850	23.30	24	0
				2535	21100	22.98	24	0
				2560	21350	23.46	24	0
			99	2510	20850	23.03	24	0
				2535	21100	23.11	24	0
				2560	21350	23.47	24	0
		50 RB	0	2510	20850	22.06	23	0-1
				2535	21100	22.02	23	0-1
				2560	21350	22.14	23	0-1
			25	2510	20850	22.37	23	0-1
				2535	21100	22.08	23	0-1
				2560	21350	21.87	23	0-1
			50	2510	20850	22.22	23	0-1
				2535	21100	22.12	23	0-1
				2560	21350	22.34	23	0-1
		100RB		2510	20850	21.74	23	0-1
				2535	21100	21.98	23	0-1
				2560	21350	22.27	23	0-1
	16-QAM	1 RB	0	2510	20850	22.07	23	0-1
				2535	21100	21.82	23	0-1
				2560	21350	21.94	23	0-1
			50	2510	20850	22.01	23	0-1
				2535	21100	22.15	23	0-1
				2560	21350	22.00	23	0-1
			99	2510	20850	22.04	23	0-1
				2535	21100	21.61	23	0-1
				2560	21350	22.13	23	0-1
		50 RB	0	2510	20850	21.23	22	0-2
				2535	21100	21.12	22	0-2
				2560	21350	21.14	22	0-2
			25	2510	20850	21.09	22	0-2
				2535	21100	21.15	22	0-2
				2560	21350	21.45	22	0-2
			50	2510	20850	21.38	22	0-2
				2535	21100	21.17	22	0-2
				2560	21350	21.48	22	0-2
		100RB		2510	20850	21.34	22	0-2
				2535	21100	21.26	22	0-2
				2560	21350	21.34	22	0-2

FDD Band 7								
BW(Mhz)	Modulation	RB Size	RB Offset	Frequency (MHz)	Channel	Conducted power (dBm)	Target Power + Max. Tolerance (dBm)	MPR Allowed per 3GPP(dB)
15	QPSK	1 RB	0	2507.5	20825	23.28	24	0
				2535	21100	23.13	24	0
				2562.5	21375	22.47	24	0
			36	2507.5	20825	22.84	24	0
				2535	21100	23.22	24	0
				2562.5	21375	22.77	24	0
			74	2507.5	20825	23.31	24	0
				2535	21100	23.23	24	0
				2562.5	21375	23.20	24	0
		36 RB	0	2507.5	20825	22.01	23	0-1
				2535	21100	21.95	23	0-1
				2562.5	21375	22.12	23	0-1
			18	2507.5	20825	21.93	23	0-1
				2535	21100	22.05	23	0-1
				2562.5	21375	22.23	23	0-1
			37	2507.5	20825	22.30	23	0-1
				2535	21100	22.17	23	0-1
				2562.5	21375	22.31	23	0-1
		75RB		2507.5	20825	22.21	23	0-1
				2535	21100	22.03	23	0-1
				2562.5	21375	22.24	23	0-1
	16-QAM	1 RB	0	2507.5	20825	22.03	23	0-1
				2535	21100	21.48	23	0-1
				2562.5	21375	22.01	23	0-1
			36	2507.5	20825	22.35	23	0-1
				2535	21100	22.32	23	0-1
				2562.5	21375	21.83	23	0-1
			74	2507.5	20825	21.40	23	0-1
				2535	21100	21.74	23	0-1
				2562.5	21375	22.72	23	0-1
		36 RB	0	2507.5	20825	21.20	22	0-2
				2535	21100	21.05	22	0-2
				2562.5	21375	21.29	22	0-2
			18	2507.5	20825	21.51	22	0-2
				2535	21100	21.15	22	0-2
				2562.5	21375	21.39	22	0-2
			37	2507.5	20825	21.02	22	0-2
				2535	21100	21.21	22	0-2
				2562.5	21375	21.55	22	0-2
		75RB		2507.5	20825	20.97	22	0-2
				2535	21100	21.16	22	0-2
				2562.5	21375	21.28	22	0-2

FDD Band 7								
BW(Mhz)	Modulation	RB Size	RB Offset	Frequency (MHz)	Channel	Conducted power (dBm)	Target Power + Max. Tolerance (dBm)	MPR Allowed per 3GPP(dB)
10	QPSK	1 RB	0	2505	20800	23.14	24	0
				2535	21100	22.84	24	0
				2565	21400	23.43	24	0
			25	2505	20800	23.33	24	0
				2535	21100	23.03	24	0
				2565	21400	23.24	24	0
			49	2505	20800	22.92	24	0
				2535	21100	22.96	24	0
				2565	21400	22.93	24	0
		25 RB	0	2505	20800	22.19	23	0-1
				2535	21100	21.95	23	0-1
				2565	21400	22.32	23	0-1
			12	2505	20800	21.91	23	0-1
				2535	21100	22.04	23	0-1
				2565	21400	22.07	23	0-1
			25	2505	20800	22.12	23	0-1
				2535	21100	22.07	23	0-1
				2565	21400	22.31	23	0-1
		50RB		2505	20800	22.15	23	0-1
				2535	21100	22.01	23	0-1
				2565	21400	22.25	23	0-1
	16-QAM	1 RB	0	2505	20800	22.27	23	0-1
				2535	21100	21.84	23	0-1
				2565	21400	22.16	23	0-1
			25	2505	20800	22.26	23	0-1
				2535	21100	21.98	23	0-1
				2565	21400	22.70	23	0-1
			49	2505	20800	22.31	23	0-1
				2535	21100	21.94	23	0-1
				2565	21400	22.43	23	0-1
		25 RB	0	2505	20800	21.35	22	0-2
				2535	21100	21.12	22	0-2
				2565	21400	21.43	22	0-2
			12	2505	20800	21.51	22	0-2
				2535	21100	21.33	22	0-2
				2565	21400	21.69	22	0-2
			25	2505	20800	21.26	22	0-2
				2535	21100	21.33	22	0-2
				2565	21400	21.49	22	0-2
		50RB		2505	20800	21.39	22	0-2
				2535	21100	21.05	22	0-2
				2565	21400	21.35	22	0-2

FDD Band 7								
BW(Mhz)	Modulation	RB Size	RB Offset	Frequency (MHz)	Channel	Conducted power (dBm)	Target Power + Max. Tolerance (dBm)	MPR Allowed per 3GPP(dB)
5	QPSK	1 RB	0	2502.5	20775	23.08	24	0
				2535	21100	22.95	24	0
				2567.5	21425	23.19	24	0
			12	2502.5	20775	23.37	24	0
				2535	21100	23.01	24	0
				2567.5	21425	23.19	24	0
			24	2502.5	20775	22.88	24	0
				2535	21100	22.72	24	0
				2567.5	21425	22.89	24	0
		12 RB	0	2502.5	20775	22.22	23	0-1
				2535	21100	22.07	23	0-1
				2567.5	21425	21.97	23	0-1
			6	2502.5	20775	22.40	23	0-1
				2535	21100	22.13	23	0-1
				2567.5	21425	22.18	23	0-1
			13	2502.5	20775	22.20	23	0-1
				2535	21100	22.03	23	0-1
				2567.5	21425	22.33	23	0-1
		25RB		2502.5	20775	21.84	23	0-1
				2535	21100	21.94	23	0-1
				2567.5	21425	21.94	23	0-1
	16-QAM	1 RB	0	2502.5	20775	22.23	23	0-1
				2535	21100	21.71	23	0-1
				2567.5	21425	21.86	23	0-1
			12	2502.5	20775	22.17	23	0-1
				2535	21100	21.84	23	0-1
				2567.5	21425	21.79	23	0-1
			24	2502.5	20775	21.97	23	0-1
				2535	21100	22.33	23	0-1
				2567.5	21425	22.09	23	0-1
		12 RB	0	2502.5	20775	21.00	22	0-2
				2535	21100	21.23	22	0-2
				2567.5	21425	21.60	22	0-2
			6	2502.5	20775	21.15	22	0-2
				2535	21100	21.13	22	0-2
				2567.5	21425	21.12	22	0-2
			13	2502.5	20775	21.46	22	0-2
				2535	21100	21.03	22	0-2
				2567.5	21425	21.09	22	0-2
		25RB		2502.5	20775	21.46	22	0-2
				2535	21100	21.17	22	0-2
				2567.5	21425	21.55	22	0-2

FDD Band 12								
BW(Mhz)	Modulation	RB Size	RB Offset	Frequency (MHz)	Channel	Conducted power (dBm)	Target Power + Max. Tolerance (dBm)	MPR Allowed per 3GPP(dB)
10	QPSK	1 RB	0	704	23060	22.27	24	0
				707.5	23095	22.72	24	0
				711	23130	22.74	24	0
			25	704	23060	23.09	24	0
				707.5	23095	23.06	24	0
				711	23130	23.16	24	0
			49	704	23060	22.78	24	0
				707.5	23095	22.75	24	0
				711	23130	22.68	24	0
		25 RB	0	704	23060	21.83	23	0-1
				707.5	23095	21.85	23	0-1
				711	23130	22.05	23	0-1
			12	704	23060	21.94	23	0-1
				707.5	23095	21.98	23	0-1
				711	23130	22.02	23	0-1
			25	704	23060	22.05	23	0-1
				707.5	23095	21.97	23	0-1
				711	23130	22.02	23	0-1
		50RB		704	23060	21.98	23	0-1
				707.5	23095	22.05	23	0-1
				711	23130	22.03	23	0-1
	16-QAM	1 RB	0	704	23060	21.01	23	0-1
				707.5	23095	22.24	23	0-1
				711	23130	21.96	23	0-1
			25	704	23060	21.87	23	0-1
				707.5	23095	22.27	23	0-1
				711	23130	21.60	23	0-1
			49	704	23060	21.44	23	0-1
				707.5	23095	21.66	23	0-1
				711	23130	21.78	23	0-1
		25 RB	0	704	23060	21.03	22	0-2
				707.5	23095	20.93	22	0-2
				711	23130	21.17	22	0-2
			12	704	23060	20.94	22	0-2
				707.5	23095	21.22	22	0-2
				711	23130	21.27	22	0-2
			25	704	23060	21.01	22	0-2
				707.5	23095	21.08	22	0-2
				711	23130	21.28	22	0-2
		50RB		704	23060	20.85	22	0-2
				707.5	23095	21.00	22	0-2
				711	23130	21.12	22	0-2

FDD Band 12								
BW(Mhz)	Modulation	RB Size	RB Offset	Frequency (MHz)	Channel	Conducted power (dBm)	Target Power + Max. Tolerance (dBm)	MPR Allowed per 3GPP(dB)
5	QPSK	1 RB	0	701.5	23035	22.64	24	0
				707.5	23095	22.67	24	0
				713.5	23155	22.82	24	0
			12	701.5	23035	23.35	24	0
				707.5	23095	23.02	24	0
				713.5	23155	23.28	24	0
			24	701.5	23035	23.06	24	0
				707.5	23095	22.79	24	0
				713.5	23155	22.62	24	0
		12 RB	0	701.5	23035	21.79	23	0-1
				707.5	23095	22.10	23	0-1
				713.5	23155	22.01	23	0-1
			6	701.5	23035	22.10	23	0-1
				707.5	23095	22.13	23	0-1
				713.5	23155	22.10	23	0-1
			13	701.5	23035	22.04	23	0-1
				707.5	23095	22.03	23	0-1
				713.5	23155	22.03	23	0-1
		25RB		701.5	23035	22.00	23	0-1
				707.5	23095	22.04	23	0-1
				713.5	23155	21.99	23	0-1
	16-QAM	1 RB	0	701.5	23035	21.54	23	0-1
				707.5	23095	21.79	23	0-1
				713.5	23155	21.89	23	0-1
			12	701.5	23035	21.71	23	0-1
				707.5	23095	22.28	23	0-1
				713.5	23155	22.18	23	0-1
			24	701.5	23035	22.01	23	0-1
				707.5	23095	21.63	23	0-1
				713.5	23155	21.34	23	0-1
		12 RB	0	701.5	23035	20.83	22	0-2
				707.5	23095	20.79	22	0-2
				713.5	23155	21.05	22	0-2
			6	701.5	23035	21.22	22	0-2
				707.5	23095	20.87	22	0-2
				713.5	23155	21.19	22	0-2
			13	701.5	23035	21.05	22	0-2
				707.5	23095	20.94	22	0-2
				713.5	23155	21.13	22	0-2
		25RB		701.5	23035	21.16	22	0-2
				707.5	23095	21.00	22	0-2
				713.5	23155	21.27	22	0-2

FDD Band 12								
BW(Mhz)	Modulation	RB Size	RB Offset	Frequency (MHz)	Channel	Conducted power (dBm)	Target Power + Max. Tolerance (dBm)	MPR Allowed per 3GPP(dB)
3	QPSK	1 RB	0	700.5	23025	22.86	24	0
				707.5	23095	22.95	24	0
				714.5	23165	22.96	24	0
			7	700.5	23025	23.12	24	0
				707.5	23095	23.09	24	0
				714.5	23165	23.01	24	0
			14	700.5	23025	23.11	24	0
				707.5	23095	22.70	24	0
				714.5	23165	22.74	24	0
		8 RB	0	700.5	23025	21.83	23	0-1
				707.5	23095	22.17	23	0-1
				714.5	23165	22.24	23	0-1
			4	700.5	23025	21.91	23	0-1
				707.5	23095	22.03	23	0-1
				714.5	23165	22.10	23	0-1
			7	700.5	23025	21.99	23	0-1
				707.5	23095	22.02	23	0-1
				714.5	23165	22.07	23	0-1
		15RB		700.5	23025	21.92	23	0-1
				707.5	23095	22.04	23	0-1
				714.5	23165	22.17	23	0-1
	16-QAM	1 RB	0	700.5	23025	21.61	23	0-1
				707.5	23095	22.13	23	0-1
				714.5	23165	21.96	23	0-1
			7	700.5	23025	21.91	23	0-1
				707.5	23095	21.70	23	0-1
				714.5	23165	21.87	23	0-1
			14	700.5	23025	21.63	23	0-1
				707.5	23095	21.62	23	0-1
				714.5	23165	21.91	23	0-1
		8 RB	0	700.5	23025	20.54	22	0-2
				707.5	23095	21.20	22	0-2
				714.5	23165	21.24	22	0-2
			4	700.5	23025	21.15	22	0-2
				707.5	23095	21.09	22	0-2
				714.5	23165	21.13	22	0-2
			7	700.5	23025	21.17	22	0-2
				707.5	23095	21.15	22	0-2
				714.5	23165	21.16	22	0-2
		15RB		700.5	23025	20.91	22	0-2
				707.5	23095	21.18	22	0-2
				714.5	23165	21.32	22	0-2

FDD Band 12								
BW(Mhz)	Modulation	RB Size	RB Offset	Frequency (MHz)	Channel	Conducted power (dBm)	Target Power + Max. Tolerance (dBm)	MPR Allowed per 3GPP(dB)
1.4	QPSK	1 RB	0	699.7	23017	23.00	24	0
				707.5	23095	23.02	24	0
				715.3	23173	23.06	24	0
			2	699.7	23017	23.00	24	0
				707.5	23095	23.13	24	0
				715.3	23173	23.17	24	0
			5	699.7	23017	22.95	24	0
				707.5	23095	23.25	24	0
				715.3	23173	22.88	24	0
		3 RB	0	699.7	23017	22.91	24	0
				707.5	23095	23.06	24	0
				715.3	23173	23.07	24	0
			2	699.7	23017	22.98	24	0
				707.5	23095	23.10	24	0
				715.3	23173	22.99	24	0
			3	699.7	23017	23.17	24	0
				707.5	23095	23.08	24	0
				715.3	23173	23.06	24	0
		6RB		699.7	23017	21.94	23	0-1
				707.5	23095	21.97	23	0-1
				715.3	23173	22.03	23	0-1
	16-QAM	1 RB	0	699.7	23017	21.54	23	0-1
				707.5	23095	22.19	23	0-1
				715.3	23173	21.95	23	0-1
			2	699.7	23017	22.40	23	0-1
				707.5	23095	21.78	23	0-1
				715.3	23173	21.82	23	0-1
			5	699.7	23017	21.58	23	0-1
				707.5	23095	22.07	23	0-1
				715.3	23173	22.11	23	0-1
		3 RB	0	699.7	23017	21.99	23	0-1
				707.5	23095	21.91	23	0-1
				715.3	23173	22.00	23	0-1
			2	699.7	23017	21.93	23	0-1
				707.5	23095	21.89	23	0-1
				715.3	23173	22.22	23	0-1
			3	699.7	23017	22.79	23	0-1
				707.5	23095	22.08	23	0-1
				715.3	23173	21.94	23	0-1
		6RB		699.7	23017	20.98	22	0-2
				707.5	23095	20.93	22	0-2
				715.3	23173	20.87	22	0-2

FDD Band 17								
BW(Mhz)	Modulation	RB Size	RB Offset	Frequency (MHz)	Channel	Conducted power (dBm)	Target Power + Max. Tolerance (dBm)	MPR Allowed per 3GPP(dB)
10	QPSK	1 RB	0	709	23780	22.92	24	0
				710	23790	22.72	24	0
				711	23800	22.56	24	0
			25	709	23780	23.08	24	0
				710	23790	23.04	24	0
				711	23800	22.94	24	0
			49	709	23780	22.83	24	0
				710	23790	22.80	24	0
				711	23800	22.76	24	0
		25 RB	0	709	23780	21.95	23	0-1
				710	23790	21.86	23	0-1
				711	23800	21.88	23	0-1
			12	709	23780	22.01	23	0-1
				710	23790	21.87	23	0-1
				711	23800	21.97	23	0-1
			25	709	23780	22.00	23	0-1
				710	23790	21.87	23	0-1
				711	23800	21.98	23	0-1
		50RB		709	23780	21.94	23	0-1
				710	23790	21.95	23	0-1
				711	23800	21.84	23	0-1
	16-QAM	1 RB	0	709	23780	21.82	23	0-1
				710	23790	21.62	23	0-1
				711	23800	21.52	23	0-1
			25	709	23780	21.66	23	0-1
				710	23790	21.63	23	0-1
				711	23800	21.63	23	0-1
			49	709	23780	21.68	23	0-1
				710	23790	21.62	23	0-1
				711	23800	21.26	23	0-1
		25 RB	0	709	23780	20.94	22	0-2
				710	23790	20.89	22	0-2
				711	23800	20.72	22	0-2
			12	709	23780	21.16	22	0-2
				710	23790	20.89	22	0-2
				711	23800	20.85	22	0-2
			25	709	23780	21.20	22	0-2
				710	23790	21.25	22	0-2
				711	23800	21.33	22	0-2
		50RB		709	23780	20.93	22	0-2
				710	23790	20.87	22	0-2
				711	23800	20.83	22	0-2

FDD Band 17								
BW(Mhz)	Modulation	RB Size	RB Offset	Frequency (MHz)	Channel	Conducted power (dBm)	Target Power + Max. Tolerance (dBm)	MPR Allowed per 3GPP(dB)
5	QPSK	1 RB	0	706.5	23755	22.59	24	0
				710	23790	22.41	24	0
				713.5	23825	22.51	24	0
			12	706.5	23755	23.05	24	0
				710	23790	22.97	24	0
				713.5	23825	23.19	24	0
			24	706.5	23755	22.41	24	0
				710	23790	22.60	24	0
				713.5	23825	22.80	24	0
		12 RB	0	706.5	23755	21.96	23	0-1
				710	23790	21.92	23	0-1
				713.5	23825	21.95	23	0-1
			6	706.5	23755	21.85	23	0-1
				710	23790	21.88	23	0-1
				713.5	23825	22.05	23	0-1
			13	706.5	23755	21.87	23	0-1
				710	23790	21.96	23	0-1
				713.5	23825	21.99	23	0-1
		25RB		706.5	23755	21.89	23	0-1
				710	23790	21.83	23	0-1
				713.5	23825	22.04	23	0-1
	16-QAM	1 RB	0	706.5	23755	21.82	23	0-1
				710	23790	21.55	23	0-1
				713.5	23825	21.60	23	0-1
			12	706.5	23755	21.84	23	0-1
				710	23790	21.91	23	0-1
				713.5	23825	21.60	23	0-1
			24	706.5	23755	21.45	23	0-1
				710	23790	21.92	23	0-1
				713.5	23825	21.93	23	0-1
		12 RB	0	706.5	23755	20.74	22	0-2
				710	23790	20.73	22	0-2
				713.5	23825	20.72	22	0-2
			6	706.5	23755	20.94	22	0-2
				710	23790	20.84	22	0-2
				713.5	23825	21.16	22	0-2
			13	706.5	23755	20.97	22	0-2
				710	23790	20.98	22	0-2
				713.5	23825	20.96	22	0-2
		25RB		706.5	23755	21.05	22	0-2
				710	23790	21.07	22	0-2
				713.5	23825	21.09	22	0-2

FDD Band 26								
BW(Mhz)	Modulation	RB Size	RB Offset	Frequency (MHz)	Channel	Conducted power (dBm)	Target Power + Max. Tolerance (dBm)	MPR Allowed per 3GPP(dB)
15	QPSK	1 RB	0	822.5	26825	22.84	24	0
				831.5	26865	22.72	24	0
				841.5	26965	22.59	24	0
			36	822.5	26825	22.89	24	0
				831.5	26865	22.94	24	0
				841.5	26965	22.96	24	0
			74	822.5	26825	23.01	24	0
				831.5	26865	22.84	24	0
				841.5	26965	22.81	24	0
		36 RB	0	822.5	26825	21.89	23	0-1
				831.5	26865	21.85	23	0-1
				841.5	26965	21.70	23	0-1
			18	822.5	26825	21.82	23	0-1
				831.5	26865	21.74	23	0-1
				841.5	26965	21.75	23	0-1
			37	822.5	26825	21.81	23	0-1
				831.5	26865	21.82	23	0-1
				841.5	26965	21.82	23	0-1
		75RB		822.5	26825	21.86	23	0-1
				831.5	26865	21.88	23	0-1
				841.5	26965	21.77	23	0-1
	16-QAM	1 RB	0	822.5	26825	21.89	23	0-1
				831.5	26865	21.88	23	0-1
				841.5	26965	21.91	23	0-1
			36	822.5	26825	21.57	23	0-1
				831.5	26865	21.93	23	0-1
				841.5	26965	21.49	23	0-1
			74	822.5	26825	21.70	23	0-1
				831.5	26865	21.38	23	0-1
				841.5	26965	21.26	23	0-1
		36 RB	0	822.5	26825	20.86	22	0-2
				831.5	26865	20.87	22	0-2
				841.5	26965	20.74	22	0-2
			18	822.5	26825	20.92	22	0-2
				831.5	26865	20.91	22	0-2
				841.5	26965	20.84	22	0-2
			37	822.5	26825	20.83	22	0-2
				831.5	26865	20.87	22	0-2
				841.5	26965	20.84	22	0-2
		75RB		822.5	26825	20.90	22	0-2
				831.5	26865	20.93	22	0-2
				841.5	26965	20.94	22	0-2

FDD Band 26								
BW(Mhz)	Modulation	RB Size	RB Offset	Frequency (MHz)	Channel	Conducted power (dBm)	Target Power + Max. Tolerance (dBm)	MPR Allowed per 3GPP(dB)
10	QPSK	1 RB	0	820	26750	22.67	24	0
				831.5	26865	22.62	24	0
				844	26990	22.63	24	0
			25	820	26750	22.80	24	0
				831.5	26865	23.08	24	0
				844	26990	22.92	24	0
			49	820	26750	22.90	24	0
				831.5	26865	22.98	24	0
				844	26990	22.92	24	0
		25 RB	0	820	26750	21.85	23	0-1
				831.5	26865	21.87	23	0-1
				844	26990	21.76	23	0-1
			12	820	26750	21.92	23	0-1
				831.5	26865	21.86	23	0-1
				844	26990	21.83	23	0-1
			25	820	26750	21.85	23	0-1
				831.5	26865	21.83	23	0-1
				844	26990	21.89	23	0-1
		50RB		820	26750	21.91	23	0-1
				831.5	26865	21.79	23	0-1
				844	26990	21.81	23	0-1
	16-QAM	1 RB	0	820	26750	21.60	23	0-1
				831.5	26865	21.51	23	0-1
				844	26990	21.74	23	0-1
			25	820	26750	21.73	23	0-1
				831.5	26865	21.66	23	0-1
				844	26990	21.64	23	0-1
			49	820	26750	21.57	23	0-1
				831.5	26865	21.59	23	0-1
				844	26990	21.92	23	0-1
		25 RB	0	820	26750	20.94	22	0-2
				831.5	26865	20.95	22	0-2
				844	26990	20.85	22	0-2
			12	820	26750	21.02	22	0-2
				831.5	26865	20.92	22	0-2
				844	26990	20.93	22	0-2
			25	820	26750	21.09	22	0-2
				831.5	26865	20.95	22	0-2
				844	26990	21.00	22	0-2
		50RB		820	26750	20.95	22	0-2
				831.5	26865	20.95	22	0-2
				844	26990	20.81	22	0-2

FDD Band 26								
BW(Mhz)	Modulation	RB Size	RB Offset	Frequency (MHz)	Channel	Conducted power (dBm)	Target Power + Max. Tolerance (dBm)	MPR Allowed per 3GPP(dB)
5	QPSK	1 RB	0	816.5	26715	22.44	24	0
				831.5	26865	22.46	24	0
				846.5	27015	22.49	24	0
			12	816.5	26715	23.26	24	0
				831.5	26865	23.16	24	0
				846.5	27015	23.32	24	0
			24	816.5	26715	22.43	24	0
				831.5	26865	22.75	24	0
				846.5	27015	22.61	24	0
		12 RB	0	816.5	26715	21.86	23	0-1
				831.5	26865	21.85	23	0-1
				846.5	27015	22.09	23	0-1
			6	816.5	26715	21.93	23	0-1
				831.5	26865	21.88	23	0-1
				846.5	27015	21.89	23	0-1
			13	816.5	26715	21.77	23	0-1
				831.5	26865	21.82	23	0-1
				846.5	27015	21.87	23	0-1
		25RB		816.5	26715	21.82	23	0-1
				831.5	26865	21.85	23	0-1
				846.5	27015	21.76	23	0-1
	16-QAM	1 RB	0	816.5	26715	21.80	23	0-1
				831.5	26865	21.44	23	0-1
				846.5	27015	21.69	23	0-1
			12	816.5	26715	21.66	23	0-1
				831.5	26865	21.83	23	0-1
				846.5	27015	22.26	23	0-1
			24	816.5	26715	21.24	23	0-1
				831.5	26865	21.58	23	0-1
				846.5	27015	21.45	23	0-1
		12 RB	0	816.5	26715	20.89	22	0-2
				831.5	26865	20.82	22	0-2
				846.5	27015	20.66	22	0-2
			6	816.5	26715	21.15	22	0-2
				831.5	26865	21.01	22	0-2
				846.5	27015	21.05	22	0-2
			13	816.5	26715	20.75	22	0-2
				831.5	26865	20.81	22	0-2
				846.5	27015	20.62	22	0-2
		25RB		816.5	26715	21.09	22	0-2
				831.5	26865	20.90	22	0-2
				846.5	27015	20.78	22	0-2

FDD Band 26								
BW(Mhz)	Modulation	RB Size	RB Offset	Frequency (MHz)	Channel	Conducted power (dBm)	Target Power + Max. Tolerance (dBm)	MPR Allowed per 3GPP(dB)
3	QPSK	1 RB	0	815.5	26705	22.84	24	0
				831.5	26865	22.92	24	0
				847.5	27025	22.57	24	0
			7	815.5	26705	22.97	24	0
				831.5	26865	23.30	24	0
				847.5	27025	22.81	24	0
			14	815.5	26705	22.93	24	0
				831.5	26865	22.77	24	0
				847.5	27025	22.60	24	0
		8 RB	0	815.5	26705	21.87	23	0-1
				831.5	26865	21.94	23	0-1
				847.5	27025	21.90	23	0-1
			4	815.5	26705	21.95	23	0-1
				831.5	26865	21.93	23	0-1
				847.5	27025	21.94	23	0-1
			7	815.5	26705	21.95	23	0-1
				831.5	26865	21.77	23	0-1
				847.5	27025	21.90	23	0-1
		15RB		815.5	26705	21.97	23	0-1
				831.5	26865	21.94	23	0-1
				847.5	27025	21.79	23	0-1
	16-QAM	1 RB	0	815.5	26705	21.81	23	0-1
				831.5	26865	21.41	23	0-1
				847.5	27025	21.83	23	0-1
			7	815.5	26705	21.29	23	0-1
				831.5	26865	21.86	23	0-1
				847.5	27025	21.72	23	0-1
			14	815.5	26705	21.91	23	0-1
				831.5	26865	21.63	23	0-1
				847.5	27025	21.04	23	0-1
		8 RB	0	815.5	26705	20.98	22	0-2
				831.5	26865	20.94	22	0-2
				847.5	27025	20.61	22	0-2
			4	815.5	26705	21.22	22	0-2
				831.5	26865	20.99	22	0-2
				847.5	27025	20.66	22	0-2
			7	815.5	26705	21.03	22	0-2
				831.5	26865	21.22	22	0-2
				847.5	27025	20.88	22	0-2
		15RB		815.5	26705	20.87	22	0-2
				831.5	26865	20.93	22	0-2
				847.5	27025	20.99	22	0-2

FDD Band 26								
BW(Mhz)	Modulation	RB Size	RB Offset	Frequency (MHz)	Channel	Conducted power (dBm)	Target Power + Max. Tolerance (dBm)	MPR Allowed per 3GPP(dB)
1.4	QPSK	1 RB	0	814.7	26697	22.78	24	0
				831.5	26865	22.74	24	0
				848.3	27033	22.74	24	0
			2	814.7	26697	22.98	24	0
				831.5	26865	22.91	24	0
				848.3	27033	22.94	24	0
			5	814.7	26697	22.96	24	0
				831.5	26865	22.62	24	0
				848.3	27033	22.78	24	0
		3 RB	0	814.7	26697	22.86	23	0-1
				831.5	26865	22.96	23	0-1
				848.3	27033	22.98	23	0-1
			2	814.7	26697	22.98	23	0-1
				831.5	26865	22.94	23	0-1
				848.3	27033	22.94	23	0-1
			3	814.7	26697	22.99	23	0-1
				831.5	26865	22.96	23	0-1
				848.3	27033	22.98	23	0-1
		6RB		814.7	26697	21.92	23	0-1
				831.5	26865	21.84	23	0-1
				848.3	27033	21.86	23	0-1
	16-QAM	1 RB	0	814.7	26697	21.92	23	0-1
				831.5	26865	21.71	23	0-1
				848.3	27033	21.36	23	0-1
			2	814.7	26697	21.68	23	0-1
				831.5	26865	21.29	23	0-1
				848.3	27033	21.94	23	0-1
			5	814.7	26697	21.51	23	0-1
				831.5	26865	21.99	23	0-1
				848.3	27033	21.46	23	0-1
		3 RB	0	814.7	26697	21.85	22	0-2
				831.5	26865	21.85	22	0-2
				848.3	27033	21.96	22	0-2
			2	814.7	26697	21.88	22	0-2
				831.5	26865	21.89	22	0-2
				848.3	27033	21.86	22	0-2
			3	814.7	26697	21.83	22	0-2
				831.5	26865	21.77	22	0-2
				848.3	27033	21.85	22	0-2
		6RB		814.7	26697	20.79	22	0-2
				831.5	26865	20.68	22	0-2
				848.3	27033	20.35	22	0-2

TDD Band 38								
BW(Mhz)	Modulation	RB Size	RB Offset	Frequency (MHz)	Channel	Conducted power (dBm)	Target Power + Max. Tolerance (dBm)	MPR Allowed per 3GPP(dB)
20	QPSK	1 RB	0	2580	37850	22.97	24	0
				2595	38000	23.13	24	0
				2610	38150	23.27	24	0
			50	2580	37850	23.21	24	0
				2595	38000	23.32	24	0
				2610	38150	23.06	24	0
			99	2580	37850	23.10	24	0
				2595	38000	23.16	24	0
				2610	38150	22.70	24	0
		50 RB	0	2580	37850	22.28	23	0-1
				2595	38000	22.37	23	0-1
				2610	38150	22.31	23	0-1
			25	2580	37850	22.26	23	0-1
				2595	38000	22.32	23	0-1
				2610	38150	22.29	23	0-1
			50	2580	37850	22.24	23	0-1
				2595	38000	22.55	23	0-1
				2610	38150	22.13	23	0-1
		100RB		2580	37850	22.31	23	0-1
				2595	38000	22.33	23	0-1
				2610	38150	22.26	23	0-1
	16-QAM	1 RB	0	2580	37850	21.81	23	0-1
				2595	38000	21.84	23	0-1
				2610	38150	22.13	23	0-1
			50	2580	37850	21.92	23	0-1
				2595	38000	22.21	23	0-1
				2610	38150	21.95	23	0-1
			99	2580	37850	21.78	23	0-1
				2595	38000	21.83	23	0-1
				2610	38150	21.67	23	0-1
		50 RB	0	2580	37850	21.18	22	0-2
				2595	38000	21.41	22	0-2
				2610	38150	21.28	22	0-2
			25	2580	37850	21.29	22	0-2
				2595	38000	21.38	22	0-2
				2610	38150	21.16	22	0-2
			50	2580	37850	21.05	22	0-2
				2595	38000	21.32	22	0-2
				2610	38150	21.01	22	0-2
		100RB		2580	37850	21.23	22	0-2
				2595	38000	21.38	22	0-2
				2610	38150	21.22	22	0-2

TDD Band 38								
BW(Mhz)	Modulation	RB Size	RB Offset	Frequency (MHz)	Channel	Conducted power (dBm)	Target Power + Max. Tolerance (dBm)	MPR Allowed per 3GPP(dB)
15	QPSK	1 RB	0	2577.5	37825	23.17	24	0
				2595	38000	23.28	24	0
				2612.5	38175	23.31	24	0
			36	2577.5	37825	23.05	24	0
				2595	38000	23.31	24	0
				2612.5	38175	23.24	24	0
			74	2577.5	37825	23.24	24	0
				2595	38000	23.28	24	0
				2612.5	38175	23.22	24	0
		36 RB	0	2577.5	37825	22.33	23	0-1
				2595	38000	22.29	23	0-1
				2612.5	38175	22.30	23	0-1
			18	2577.5	37825	22.20	23	0-1
				2595	38000	22.38	23	0-1
				2612.5	38175	22.21	23	0-1
			37	2577.5	37825	22.25	23	0-1
				2595	38000	22.37	23	0-1
				2612.5	38175	22.12	23	0-1
		75RB		2577.5	37825	22.34	23	0-1
				2595	38000	22.39	23	0-1
				2612.5	38175	22.23	23	0-1
	16-QAM	1 RB	0	2577.5	37825	21.75	23	0-1
				2595	38000	21.93	23	0-1
				2612.5	38175	22.04	23	0-1
			36	2577.5	37825	21.82	23	0-1
				2595	38000	21.94	23	0-1
				2612.5	38175	21.85	23	0-1
			74	2577.5	37825	21.88	23	0-1
				2595	38000	22.09	23	0-1
				2612.5	38175	21.70	23	0-1
		36 RB	0	2577.5	37825	21.40	22	0-2
				2595	38000	21.38	22	0-2
				2612.5	38175	21.10	22	0-2
			18	2577.5	37825	21.17	22	0-2
				2595	38000	21.47	22	0-2
				2612.5	38175	21.22	22	0-2
			37	2577.5	37825	21.36	22	0-2
				2595	38000	21.49	22	0-2
				2612.5	38175	20.96	22	0-2
		75RB		2577.5	37825	21.27	22	0-2
				2595	38000	21.32	22	0-2
				2612.5	38175	21.18	22	0-2

TDD Band 38								
BW(Mhz)	Modulation	RB Size	RB Offset	Frequency (MHz)	Channel	Conducted power (dBm)	Target Power + Max. Tolerance (dBm)	MPR Allowed per 3GPP(dB)
10	QPSK	1 RB	0	2575	37800	23.10	24	0
				2595	38000	23.13	24	0
				2615	38200	23.19	24	0
			25	2575	37800	23.07	24	0
				2595	38000	23.29	24	0
				2615	38200	23.21	24	0
			49	2575	37800	22.96	24	0
				2595	38000	23.05	24	0
				2615	38200	22.95	24	0
		25 RB	0	2575	37800	22.33	23	0-1
				2595	38000	22.34	23	0-1
				2615	38200	22.26	23	0-1
			12	2575	37800	22.40	23	0-1
				2595	38000	22.38	23	0-1
				2615	38200	22.23	23	0-1
			25	2575	37800	22.24	23	0-1
				2595	38000	22.40	23	0-1
				2615	38200	22.24	23	0-1
		50RB		2575	37800	22.27	23	0-1
				2595	38000	22.32	23	0-1
				2615	38200	22.18	23	0-1
	16-QAM	1 RB	0	2575	37800	21.85	23	0-1
				2595	38000	21.98	23	0-1
				2615	38200	21.88	23	0-1
			25	2575	37800	22.10	23	0-1
				2595	38000	22.08	23	0-1
				2615	38200	21.93	23	0-1
			49	2575	37800	21.86	23	0-1
				2595	38000	21.94	23	0-1
				2615	38200	21.72	23	0-1
		25 RB	0	2575	37800	21.59	22	0-2
				2595	38000	21.19	22	0-2
				2615	38200	21.13	22	0-2
			12	2575	37800	21.45	22	0-2
				2595	38000	21.35	22	0-2
				2615	38200	21.01	22	0-2
			25	2575	37800	21.49	22	0-2
				2595	38000	21.26	22	0-2
				2615	38200	20.99	22	0-2
		50RB		2575	37800	21.10	22	0-2
				2595	38000	21.28	22	0-2
				2615	38200	20.96	22	0-2

TDD Band 38								
BW(Mhz)	Modulation	RB Size	RB Offset	Frequency (MHz)	Channel	Conducted power (dBm)	Target Power + Max. Tolerance (dBm)	MPR Allowed per 3GPP(dB)
5	QPSK	1 RB	0	2572.5	37775	22.83	24	0
				2595	38000	22.99	24	0
				2617.5	38225	22.91	24	0
			12	2572.5	37775	23.08	24	0
				2595	38000	23.36	24	0
				2617.5	38225	23.19	24	0
			24	2572.5	37775	23.07	24	0
				2595	38000	23.10	24	0
				2617.5	38225	22.90	24	0
		12 RB	0	2572.5	37775	22.27	23	0-1
				2595	38000	22.31	23	0-1
				2617.5	38225	22.10	23	0-1
			6	2572.5	37775	22.26	23	0-1
				2595	38000	22.33	23	0-1
				2617.5	38225	22.15	23	0-1
			13	2572.5	37775	22.26	23	0-1
				2595	38000	22.39	23	0-1
				2617.5	38225	22.12	23	0-1
		25RB		2572.5	37775	22.25	23	0-1
				2595	38000	22.30	23	0-1
				2617.5	38225	22.18	23	0-1
	16-QAM	1 RB	0	2572.5	37775	21.59	23	0-1
				2595	38000	21.79	23	0-1
				2617.5	38225	21.56	23	0-1
			12	2572.5	37775	21.79	23	0-1
				2595	38000	21.96	23	0-1
				2617.5	38225	21.79	23	0-1
			24	2572.5	37775	21.75	23	0-1
				2595	38000	21.77	23	0-1
				2617.5	38225	21.68	23	0-1
		12 RB	0	2572.5	37775	21.29	22	0-2
				2595	38000	21.16	22	0-2
				2617.5	38225	20.97	22	0-2
			6	2572.5	37775	21.41	22	0-2
				2595	38000	21.38	22	0-2
				2617.5	38225	21.00	22	0-2
			13	2572.5	37775	21.41	22	0-2
				2595	38000	21.43	22	0-2
				2617.5	38225	21.04	22	0-2
		25RB		2572.5	37775	21.21	22	0-2
				2595	38000	21.46	22	0-2
				2617.5	38225	21.36	22	0-2

TDD Band 41								
BW(Mhz)	Modulation	RB Size	RB Offset	Frequency (MHz)	Channel	Conducted power (dBm)	Target Power + Max. Tolerance (dBm)	MPR Allowed per 3GPP(dB)
20	QPSK	1 RB	0	2555	40240	23.13	24	0
				2585	40540	23.04	24	0
				2615	40840	23.08	24	0
				2645	41140	23.15	24	0
			50	2555	40240	23.30	24	0
				2585	40540	23.35	24	0
				2615	40840	23.31	24	0
				2645	41140	23.29	24	0
			99	2555	40240	23.03	24	0
				2585	40540	23.16	24	0
				2615	40840	23.14	24	0
				2645	41140	23.10	24	0
		50 RB	0	2555	40240	22.34	23	0-1
				2585	40540	22.32	23	0-1
				2615	40840	22.31	23	0-1
				2645	41140	22.26	23	0-1
			25	2555	40240	22.39	23	0-1
				2585	40540	22.33	23	0-1
				2615	40840	22.31	23	0-1
				2645	41140	22.24	23	0-1
			50	2555	40240	22.33	23	0-1
				2585	40540	22.39	23	0-1
				2615	40840	22.31	23	0-1
				2645	41140	22.46	23	0-1
		100RB		2555	40240	22.34	23	0-1
				2585	40540	22.29	23	0-1
				2615	40840	22.25	23	0-1
				2645	41140	22.37	23	0-1
	16-QAM	1 RB	0	2555	40240	21.96	23	0-1
				2585	40540	21.80	23	0-1
				2615	40840	21.74	23	0-1
				2645	41140	22.38	23	0-1
			50	2555	40240	22.19	23	0-1
				2585	40540	22.18	23	0-1
				2615	40840	22.15	23	0-1
				2645	41140	22.08	23	0-1
			99	2555	40240	21.79	23	0-1
				2585	40540	21.69	23	0-1
				2615	40840	21.65	23	0-1
				2645	41140	22.04	23	0-1
		50 RB	0	2555	40240	21.18	22	0-2
				2585	40540	21.36	22	0-2
				2615	40840	21.35	22	0-2
				2645	41140	21.31	22	0-2
			25	2555	40240	21.28	22	0-2
				2585	40540	21.40	22	0-2
				2615	40840	21.38	22	0-2
				2645	41140	21.32	22	0-2
			50	2555	40240	21.20	22	0-2
				2585	40540	21.28	22	0-2
				2615	40840	21.25	22	0-2
				2645	41140	21.44	22	0-2
		100RB		2555	40240	21.29	22	0-2
				2585	40540	21.35	22	0-2
				2615	40840	21.33	22	0-2
				2645	41140	21.35	22	0-2

TDD Band 41								
BW(Mhz)	Modulation	RB Size	RB Offset	Frequency (MHz)	Channel	Conducted power (dBm)	Target Power + Max. Tolerance (dBm)	MPR Allowed per 3GPP(dB)
15	QPSK	1 RB	0	2552.5	40215	23.29	24	0
				2584.2	40532	23.26	24	0
				2615.8	40484	23.24	24	0
				2647.5	41165	23.14	24	0
			36	2552.5	40215	23.27	24	0
				2584.2	40532	23.19	24	0
				2615.8	40484	23.18	24	0
				2647.5	41165	23.32	24	0
			74	2552.5	40215	23.29	24	0
				2584.2	40532	23.33	24	0
				2615.8	40484	23.34	24	0
				2647.5	41165	23.33	24	0
		36 RB	0	2552.5	40215	22.38	23	0-1
				2584.2	40532	22.34	23	0-1
				2615.8	40484	22.31	23	0-1
				2647.5	41165	22.33	23	0-1
			18	2552.5	40215	22.40	23	0-1
				2584.2	40532	22.37	23	0-1
				2615.8	40484	22.35	23	0-1
				2647.5	41165	22.36	23	0-1
			37	2552.5	40215	22.29	23	0-1
				2584.2	40532	22.36	23	0-1
				2615.8	40484	22.35	23	0-1
				2647.5	41165	22.43	23	0-1
		75RB		2552.5	40215	22.37	23	0-1
				2584.2	40532	22.35	23	0-1
				2615.8	40484	22.34	23	0-1
				2647.5	41165	22.39	23	0-1
	16-QAM	1 RB	0	2552.5	40215	21.88	23	0-1
				2584.2	40532	21.90	23	0-1
				2615.8	40484	21.87	23	0-1
				2647.5	41165	21.89	23	0-1
			36	2552.5	40215	21.98	23	0-1
				2584.2	40532	21.96	23	0-1
				2615.8	40484	21.94	23	0-1
				2647.5	41165	22.02	23	0-1
			74	2552.5	40215	22.01	23	0-1
				2584.2	40532	21.88	23	0-1
				2615.8	40484	21.85	23	0-1
				2647.5	41165	22.09	23	0-1
		36 RB	0	2552.5	40215	21.36	22	0-2
				2584.2	40532	21.18	22	0-2
				2615.8	40484	21.15	22	0-2
				2647.5	41165	21.22	22	0-2
			18	2552.5	40215	21.23	22	0-2
				2584.2	40532	21.21	22	0-2
				2615.8	40484	21.19	22	0-2
				2647.5	41165	21.24	22	0-2
			37	2552.5	40215	21.31	22	0-2
				2584.2	40532	21.41	22	0-2
				2615.8	40484	21.39	22	0-2
				2647.5	41165	21.48	22	0-2
		75RB		2552.5	40215	21.42	22	0-2
				2584.2	40532	21.31	22	0-2
				2615.8	40484	21.29	22	0-2
				2647.5	41165	21.36	22	0-2

TDD Band 41								
BW(Mhz)	Modulation	RB Size	RB Offset	Frequency (MHz)	Channel	Conducted power (dBm)	Target Power + Max. Tolerance (dBm)	MPR Allowed per 3GPP(dB)
10	QPSK	1 RB	0	2550	40190	23.08	24	0
				2583.3	40523	23.16	24	0
				2616.7	40857	23.14	24	0
				2650	41190	23.25	24	0
			25	2550	40190	23.30	24	0
				2583.3	40523	23.34	24	0
				2616.7	40857	23.34	24	0
				2650	41190	23.34	24	0
			49	2550	40190	23.11	24	0
				2583.3	40523	23.33	24	0
				2616.7	40857	23.33	24	0
				2650	41190	23.15	24	0
		25 RB	0	2550	40190	22.26	23	0-1
				2583.3	40523	22.38	23	0-1
				2616.7	40857	22.31	23	0-1
				2650	41190	22.41	23	0-1
			12	2550	40190	22.32	23	0-1
				2583.3	40523	22.36	23	0-1
				2616.7	40857	22.34	23	0-1
				2650	41190	22.39	23	0-1
			25	2550	40190	22.36	23	0-1
				2583.3	40523	22.45	23	0-1
				2616.7	40857	22.41	23	0-1
				2650	41190	22.44	23	0-1
		50RB		2550	40190	22.36	23	0-1
				2583.3	40523	22.42	23	0-1
				2616.7	40857	22.41	23	0-1
				2650	41190	22.39	23	0-1
	16-QAM	1 RB	0	2550	40190	21.91	23	0-1
				2583.3	40523	21.90	23	0-1
				2616.7	40857	21.89	23	0-1
				2650	41190	21.91	23	0-1
			25	2550	40190	22.06	23	0-1
				2583.3	40523	22.09	23	0-1
				2616.7	40857	21.04	23	0-1
				2650	41190	22.27	23	0-1
			49	2550	40190	21.82	23	0-1
				2583.3	40523	21.84	23	0-1
				2616.7	40857	21.81	23	0-1
				2650	41190	22.08	23	0-1
		25 RB	0	2550	40190	21.20	22	0-2
				2583.3	40523	21.20	22	0-2
				2616.7	40857	21.15	22	0-2
				2650	41190	21.25	22	0-2
			12	2550	40190	21.25	22	0-2
				2583.3	40523	21.26	22	0-2
				2616.7	40857	21.21	22	0-2
				2650	41190	21.35	22	0-2
			25	2550	40190	21.32	22	0-2
				2583.3	40523	21.28	22	0-2
				2616.7	40857	21.24	22	0-2
				2650	41190	21.43	22	0-2
		50RB		2550	40190	21.31	22	0-2
				2583.3	40523	21.35	22	0-2
				2616.7	40857	21.31	22	0-2
				2650	41190	21.47	22	0-2

TDD Band 41								
BW(Mhz)	Modulation	RB Size	RB Offset	Frequency (MHz)	Channel	Conducted power (dBm)	Target Power + Max. Tolerance (dBm)	MPR Allowed per 3GPP(dB)
5	QPSK	1 RB	0	2547.5	40165	22.97	24	0
				2582.5	40515	23.17	24	0
				2617.5	40865	23.15	24	0
				2652.5	41215	23.16	24	0
			12	2547.5	40165	23.28	24	0
				2582.5	40515	23.28	24	0
				2617.5	40865	23.33	24	0
				2652.5	41215	23.31	24	0
			24	2547.5	40165	23.18	24	0
				2582.5	40515	23.10	24	0
				2617.5	40865	23.08	24	0
				2652.5	41215	23.20	24	0
		12 RB	0	2547.5	40165	22.23	23	0-1
				2582.5	40515	22.35	23	0-1
				2617.5	40865	22.31	23	0-1
				2652.5	41215	22.42	23	0-1
			6	2547.5	40165	22.26	23	0-1
				2582.5	40515	22.36	23	0-1
				2617.5	40865	22.35	23	0-1
				2652.5	41215	22.36	23	0-1
			13	2547.5	40165	22.33	23	0-1
				2582.5	40515	22.31	23	0-1
				2617.5	40865	22.27	23	0-1
				2652.5	41215	22.50	23	0-1
		25RB		2547.5	40165	22.33	23	0-1
				2582.5	40515	22.33	23	0-1
				2617.5	40865	22.31	23	0-1
				2652.5	41215	22.46	23	0-1
	16-QAM	1 RB	0	2547.5	40165	21.74	23	0-1
				2582.5	40515	21.78	23	0-1
				2617.5	40865	21.74	23	0-1
				2652.5	41215	21.92	23	0-1
			12	2547.5	40165	21.93	23	0-1
				2582.5	40515	22.13	23	0-1
				2617.5	40865	22.11	23	0-1
				2652.5	41215	22.19	23	0-1
			24	2547.5	40165	21.78	23	0-1
				2582.5	40515	21.88	23	0-1
				2617.5	40865	21.85	23	0-1
				2652.5	41215	21.99	23	0-1
		12 RB	0	2547.5	40165	21.06	22	0-2
				2582.5	40515	21.17	22	0-2
				2617.5	40865	21.15	22	0-2
				2652.5	41215	21.26	22	0-2
			6	2547.5	40165	21.19	22	0-2
				2582.5	40515	21.43	22	0-2
				2617.5	40865	21.41	22	0-2
				2652.5	41215	21.67	22	0-2
			13	2547.5	40165	21.17	22	0-2
				2582.5	40515	21.36	22	0-2
				2617.5	40865	21.33	22	0-2
				2652.5	41215	21.38	22	0-2
		25RB		2547.5	40165	21.59	22	0-2
				2582.5	40515	21.62	22	0-2
				2617.5	40865	21.61	22	0-2
				2652.5	41215	21.23	22	0-2

LTE FDD Band II / Band IV / Band VII / Band XII / Band XVII CA power table:

Two Component Carrier Maximum Conducted Power															
PCC									SCC				Power		CA Configurations
PCC Band	PCC Bandwidth [MHz]	PCC (UL) Channel	PCC (UL) Frequency [MHz]	Modulation	PCC UL# RB	PCC UL RB Offset	PCC (DL) Channel	PCC (DL) Frequency [MHz]	SCC Band	SCC Bandwidth [MHz]	PCC (DL) Channel	PCC (DL) Frequency [MHz]	LTE Rel 10 Tx.Power (dBm)	LTE Rel 8 Tx.Power (dBm)	
LTE B2	20	19100	1900	QPSK	1	50	1100	1980	LTE B12	10	5095	737.5	20.82	22.17	2A+12A
LTE B2	10	19150	1905	QPSK	1	49	1150	1985	LTE B17	10	5790	740	21.13	21.99	2A+17A
LTE B4	10	20000	1715	QPSK	1	25	2000	2115	LTE B12	10	5095	737.5	22.14	23.15	4A+12A
LTE B4	10	20000	1715	QPSK	1	25	2000	2115	LTE B17	10	5790	740	22.65	23.15	4A+17A
LTE B5	10	20525	836.5	QPSK	1	25	2525	881.5	LTE B5	5	2425	871.5	22.14	23.48	5A+5A
LTE B5	10	20525	836.5	QPSK	1	25	2525	881.5	LTE B5	5	2625	891.5	22.03	23.48	5A+5A
LTE B5	10	20525	836.5	QPSK	1	25	2525	881.5	LTE B5	5	2425	871.5	22.14	23.48	5B
LTE B5	10	20525	836.5	QPSK	1	25	2525	881.5	LTE B5	5	2625	891.5	22.03	23.48	5B
LTE B7	20	21350	2560	QPSK	1	99	3350	2680	LTE B7	5	2775	2622.5	23.05	23.47	7A+7A
LTE B7	20	21350	2560	QPSK	1	99	3350	2680	LTE B7	20	3100	2655	23.09	23.47	7C
LTE B7	20	21350	2560	QPSK	1	99	3350	2680	LTE B7	15	3100	2655	22.83	23.47	7C
LTE B7	20	21350	2560	QPSK	1	99	3350	2680	LTE B7	10	3100	2655	23.15	23.47	7C
LTE B41	20	40540	2585	QPSK	1	50	40540	2585	LTE B41	5	41215	2652.5	23.14	23.35	41A+41A
LTE B41	20	40540	2585	QPSK	1	50	40540	2585	LTE B41	20	40240	2555	23.02	23.35	41C

LTE CA information

A) The device supports downlink Release 10 LTE Carrier Aggregation (CA) only. It supports a maximum of 2 carriers in the downlink. Other Release 10 features are not supported, including Uplink Carrier Aggregation, Enhanced SC-FDMA and Uplink MIMO or other antenna diversity configurations etc. All uplink communications are identical to the Release 8 Specifications.

The possible downlink LTE CA combinations supported by this device are as below tables per 3GPP TS 36.101 V14.0.0. According to KDB 941225 D05A, the downlink LTE CA SAR test is not required.

B) i) Combinations supported for intra-band aggregation.

Table 1: contiguous intra-band CA

E-UTRA CA configuration / Bandwidth combination set					
E-UTRA CA configuration	Component carriers in order of increasing carrier frequency			Maximum aggregated bandwidth [MHz]	Bandwidth combination set
	Channel bandwidths for carrier [MHz]	Channel bandwidths for carrier [MHz]	Channel bandwidths for carrier [MHz]		
CA_7C	15	15		40	0
	20	20			
	10	20		40	1
	15	15, 20			
	20	10, 15, 20			
CA_5B	5,10	10		20	0
	10	5			
CA_41C	10	20		40	0
	15	15,20			
	20	10,15,20			
	5,10	20		40	1
	15	15,20			
	20	5,10,15,20			
	10	15,20		40	2
	15	10,15,20			
	20	10,15,20			

Table 2: non-contiguous intra-band CA (with two sub-blocks)

-UTRACA configuration	Component carriers in order of increasing carrier frequency			Maximum aggregated bandwidth [MHz]	Bandwidth combination set
	Channel bandwidths for carrier [MHz]	Channel bandwidths for carrier [MHz]	Channel bandwidths for carrier [MHz]		
CA_5A-5A	5, 10	5, 10		20	0
CA_7A-7A	5	15		40	0
	10	10, 15			
	15	15, 20			
	20	20			
	5, 10, 15, 20	5, 10, 15, 20		40	1
CA_41A-41A	10,15,20	10,15,20		40	0
	5,10,15,20	5,10,15,20		40	1

ii) The frequency band combinations supported for inter-band carrier aggregation.

Table 2: inter-band CA (two bands)

E-UTRA CA Configuration	E-UTRA Bands	1.4 MHz	3 MHz	5 MHz	10 MHz	15 MHz	20 MHz	Maximum aggregated bandwidth [MHz]	Bandwidth combination set
CA_4A-12A	4	Yes	Yes	Yes	Yes			20	0
	12			Yes	Yes				
CA_4A-17A	4			Yes	Yes			20	0
	17			Yes	Yes				
CA_2A-12A	2			Yes	Yes	Yes	Yes	30	0
	12			Yes	Yes				
CA_2A-17A	2			Yes	Yes			20	0
	17			Yes	Yes				

Note:

1）For the inter-band CA combinations, the listed bands above can be used as PCC or SCC.

2) The channel spacing and aggregated channel bandwidth for CA are identical to the associated specification in 3GPP TS 36.101 V14.0.0

3) The reference test frequencies for CA refers to 3GPP TS 36.521-1 V13.2.0

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

802.11 b		Max. Rated Avg. Power + Max. Tolerance (dBm)	Average conducted output power (dBm)
CH	Frequency (MHz)		Data Rate (Mbps)
			1
1	2412	16.5	15.49
6	2437	16.5	15.42
11	2462	16.5	15.37

802.11 g		Max. Rated Avg. Power + Max. Tolerance (dBm)	Average conducted output power (dBm)
CH	Frequency (MHz)		Data Rate (Mbps)
			6
1	2412	16	14.93
6	2437	16	14.84
11	2462	16	14.89

802.11 n(20M)		Max. Rated Avg. Power + Max. Tolerance (dBm)	Average conducted output power (dBm)
CH	Frequency (MHz)		Data Rate (Mbps)
			6.5
1	2412	15	13.72
6	2437	15	13.73
11	2462	15	13.91

802.11 a		Max. Rated Avg. Power + Max. Tolerance (dBm)	Average conducted output power(dBm)
5.2/5.3/5.6/5.8G			Data Rate (Mbps)
CH	Frequency (MHz)		6
36	5180	16	14.61
40	5200	16	14.63
44	5220	16	14.58
48	5240	16	14.55
52	5260	16	14.51
56	5280	16	14.64
60	5300	16	14.94
64	5320	16	14.95
100	5500	16	14.88
120	5600	16	14.87
140	5700	16	14.91
149	5745	16	14.93
157	5785	16	14.63
165	5825	16	14.86

802.11 n(20M) 5.2/5.3/5.6/5.8G		Max. Rated Avg. Power + Max. Tolerance (dBm)	Average conducted output power(dBm)
CH	Frequency (MHz)		Data Rate (Mbps)
			6.5
36	5180	15	13.97
40	5200	15	13.55
44	5220	15	13.98
48	5240	15	13.92
52	5260	15	13.96
56	5280	15	13.68
60	5300	15	13.95
64	5320	15	13.94
100	5500	15	13.89
120	5600	15	13.87
140	5700	15	13.88
149	5745	15	13.91
157	5785	15	13.96
165	5825	15	13.92

802.11 n(40M)		Max. Rated Avg. Power + Max. Tolerance (dBm)	Average conducted output power(dBm)
5.2/5.3/5.6/5.8G			Data Rate (Mbps)
CH	Frequency (MHz)		13.5
38	5190	15	13.92
46	5230	15	13.95
54	5270	15	13.99
62	5310	15	13.95
102	5510	15	13.91
118	5590	15	13.92
134	5670	15	13.85
151	5755	15	13.86
159	5795	15	13.61

802.11 ac(20M)		Max. Rated Avg. Power + Max. Tolerance (dBm)	Average conducted output power(dBm)
5.2/5.3/5.6/5.8G			Data Rate (Mbps)
CH	Frequency (MHz)		6.5
36	5180	13	11.71
40	5200	13	11.53
44	5220	13	11.81
48	5240	13	11.74
52	5260	13	11.85
56	5280	13	11.68
60	5300	13	11.83
64	5320	13	11.74
100	5500	13	11.68
120	5600	13	11.85
140	5700	13	11.79
149	5745	13	11.89
157	5785	13	11.91
165	5825	13	11.85

802.11 ac(40M) 5.2/5.3/5.6/5.8G		Max. Rated Avg. Power + Max. Tolerance (dBm)	Average conducted output power(dBm)
CH	Frequency (MHz)		Data Rate (Mbps)
			13.5
38	5190	13	11.87
46	5230	13	11.85
54	5270	13	11.89
62	5310	13	11.75
102	5510	13	11.62
118	5590	13	11.89
134	5670	13	11.77
151	5755	13	11.79
159	5795	13	11.59

802.11 ac(80M) 5.2/5.3/5.6/5.8G		Max. Rated Avg. Power + Max. Tolerance (dBm)	Average conducted output power(dBm)
CH	Frequency (MHz)		Data Rate (Mbps)
			29.3
42	5210	11	9.96
58	5290	11	9.95
106	5530	11	9.55
122	5610	11	9.71
138	5690	11	9.54
155	5775	11	9.57

Bluetooth conducted power table:

Frequency (MHz)	Data Rate	Max. tune-up power	Average	
			dBm	mW
2402	1	9	8.13	6.501
2441	1	9	8.51	7.096
2480	1	9	8.15	6.531
2402	2	9	6.24	4.207
2441	2	9	6.52	4.487
2480	2	9	6.11	4.083
2402	3	9	6.09	4.064
2441	3	9	6.54	4.508
2480	3	9	5.97	3.954

Frequency (MHz)	BT4.0 Average	
	dBm	mW
2402	-1.88	0.649
2442	-1.76	0.667
2480	-2.45	0.569

1.4 Test Environment

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

1.5 Operation Description

1. The EUT is controlled by using a Radio Communication Tester (Anritsu MT8820C / R&S CMW500), and the communication between the EUT and the tester is established by air link.

2. Measurements are performed respectively on the lowest, middle and highest channels of the operating band(s). The EUT is set to maximum power level during all tests, and at the beginning of each test the battery is fully charged.

3. During the SAR testing, the DASY 5 system checks power drift by comparing the e-field strength of one specific location measured at the beginning with that measured at the end of the SAR testing.

4. SAR test reduction for GPRS and EDGE modes is determined by the source-based time-averaged output power. The data mode with highest specified time-averaged output power should be tested for SAR compliance. The GMSK EDGE configurations are grouped with GPRS and considered with respect to time-averaged maximum output power to determine compliance. The 3G SAR test reduction procedure is applied to 8-PSK EDGE with GMSK GPRS/EDGE as the primary mode. Since the maximum output power in a secondary mode (8-PSK EDGE) is ≤ ¼ dB higher than the primary mode (GMSK GPRS/EDGE), SAR measurement is not required for the secondary mode (8-PSK EDGE).

5. The 3G SAR test reduction procedure is applied to HSDPA with 12.2 kbps RMC as the primary mode. Since the maximum output power in a secondary mode (HSDPA) is ≤ ¼ dB higher than the primary mode (WCDMA), SAR measurement is not required for the secondary mode (HSDPA).

6. The 3G SAR test reduction procedure is applied to HSPA (HSUPA/HSDPA with RMC) with 12.2 kbps RMC as the primary mode. Since the maximum output power in a secondary mode (HSPA) is ≤ ¼ dB higher than the primary mode (WCDMA), SAR measurement is not required for the secondary mode (HSPA).

7. SAR test exclusion for DC-HSDPA. The 3G SAR test reduction procedure is applied to DC-HSDPA with 12.2 kbps RMC as the primary mode. Power is measured for DC-HSDPA according to the H-Set 12, FRC configuration in Table C.8.1.12 of 3GPP TS 34.121-1 to determine SAR test reduction. A primary and a secondary serving HS-DSCH Cell are required to perform the power measurement and for the results to be acceptable. Since the maximum output power in a secondary mode (DC-HSDPA) is ≤ ¼ dB higher than the primary mode (WCDMA), SAR measurement is not required for the secondary mode (DC-HSDPA).

Table C.8.1.12: Fixed Reference Channel H-Set 12

Parameter	Unit	Value
Nominal Avg. Inf. Bit Rate	kbps	60
Inter-TTI Distance	TTI's	1
Number of HARQ Processes	Processes	6
Information Bit Payload (N_{INF})	Bits	120
Number Code Blocks	Blocks	1
Binary Channel Bits Per TTI	Bits	960
Total Available SML's in UE	SML's	19200
Number of SML's per HARQ Proc.	SML's	3200
Coding Rate		0.15
Number of Physical Channel Codes	Codes	1
Modulation		QPSK
Note 1: The RMC is intended to be used for DC-HSDPA mode and both cells shall transmit with identical parameters as listed in the table. Note 2: Maximum number of transmission is limited to 1, i.e., retransmission is not allowed. The redundancy and constellation version 0 shall be used.		

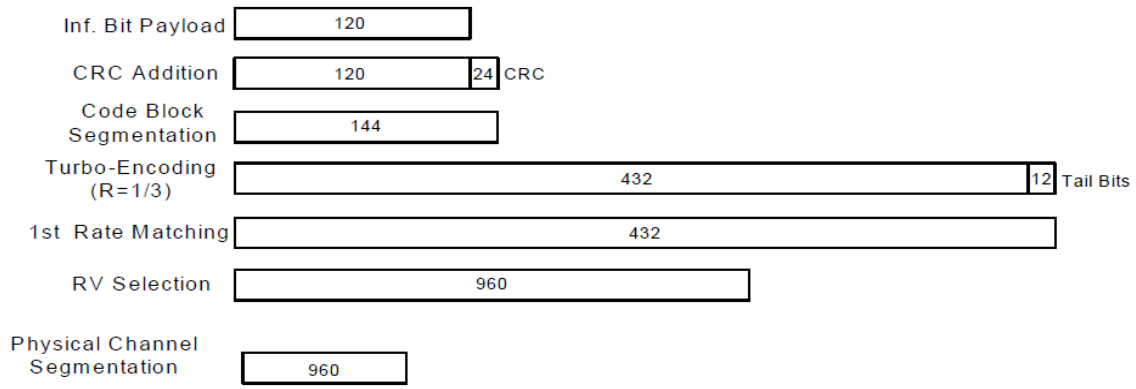


Figure C.8.19: Coding rate for Fixed reference Channel H-Set 12 (QPSK)

The following 4 sub-tests for HSDPA were completed according to Release 8 procedures in section 5.2 of 3GPP TS34.121. A summary of subtest settings are illustrated below:

Sub-set	β_c	β_d	β_d (SF)	β_c/β_d	β_{hs} (note 1, note 2)	CM(dB) (note 3)	MPR(dB)
1	2/15	15/15	64	2/15	4/15	0.0	0.0
2	12/15 (note 4)	15/15 (note 4)	64	12/15 (note 4)	24/15	1.0	0.0
3	15/15	8/15	64	15/8	30/15	1.5	0.5
4	15/15	4/15	64	15/4	30/15	1.5	0.5

Note1: $\triangle_{ACK}$, $\triangle_{NACK}$ and $\triangle_{CQI}$= 8⇔A_{hs} = β_{hs}/β_c=30/15⇔β_{hs}=30/15*β_c
Note2: CM=1 for β_c/β_d=12/15, β_{hs}/β_c=24/15.
Note3: For subtest 2 the $\beta_c\beta_d$ ratio of 12/15 for the TFC during the measurement period(TF1,TF0) is achieved by setting the signaled gain factors for the reference TFC (TFC1,TF1) to β_c=11/15 and β_d=15/15.

8. LTE modes test according to **KDB 941225D05v02r05.**

a. Per Section 5.2.1, the largest channel bandwidth and measure SAR for QPSK with 1 RB allocation.

- Using the RB offset and required test channel combination with the highest maximum output power for RB offsets at the upper edge, middle and lower edge of each required test channel.
- When the reported SAR is ≤ 0.8 W/kg, testing of the remaining RB offset configurations and required test channels is not required for 1 RB allocation; otherwise, SAR is required for the remaining required test channels and only for the RB offset configuration with the highest output power for that channel.
- When the reported SAR of a required test channel is > 1.45 W/kg, SAR is required for all three RB offset configurations for that required test channel.

b. Per Section 5.2.2, the largest channel bandwidth and measure SAR for QPSK with 50% RB allocation

- The procedures required for 1 RB allocation in 5.2.1 are applied to measure the SAR for QPSK with 50% RB allocation.

c. Per Section 5.2.3, the largest channel bandwidth and measure SAR for QPSK with 100% RB allocation

- For QPSK with 100% RB allocation, SAR is not required when the highest maximum output power for 100 % RB allocation is less than the highest maximum output power in 50% and 1 RB allocations and the highest reported SAR for 1 RB and 50% RB allocation in 5.2.1 and 5.2.2 are ≤ 0.8 W/kg.
- Otherwise, SAR is measured for the highest output power channel and if the reported SAR is > 1.45 W/kg, the remaining required test channels must also be tested.

d. Per Section 5.2.4, Higher order modulations

- For each modulation besides QPSK; e.g., 16-QAM, 64-QAM, apply the QPSK procedures in sections 5.2.1, 5.2.2 and 5.2.3 to determine the QAM configurations that may need SAR measurement. For each configuration identified as required for testing, SAR is required only when the highest maximum output power for the configuration in the higher order modulation is >

½ dB higher than the same configuration in QPSK or when the reported SAR for the QPSK configuration is > 1.45 W/kg.

e. Per Section 5.3, other channel bandwidth standalone SAR test requirements

- For the other channel bandwidths used by the device in a frequency band, apply all the procedures required for the largest channel bandwidth in section 5.2 to determine the channels and RB configurations that need SAR testing and only measure SAR when the highest maximum output power of a configuration requiring testing in the smaller channel bandwidth is > ½ dB higher than the equivalent channel configurations in the largest channel bandwidth configuration or the reported SAR of a configuration for the largest channel bandwidth is > 1.45 W/kg. The equivalent channel configuration for the RB allocation, RB offset and modulation etc. is determined for the smaller channel bandwidth according to the same number of RB allocated in the largest channel bandwidth.

TDD LTE was tested at highest duty factor using UL-DL configuration 0 with 6 UL subframes and 2 S subframes using extended cyclic prefix only and special subframe configuration 6. SAR tests were performed at maximum output power and worst-case transmission duty factor in extended cyclic prefix. Per 3GPP 36.211 Section 4, the duty factor for special subframe configuration 6 using extended cyclic prefix is 0.633.

LTE downlink CA (KDB942225 D05A)

9. The device supports a maximum of 2 carriers in the downlink. All uplink communications are identical to the Release 8 specifications. Uplink maximum output power is measured with downlink carrier aggregation active, only for the channel with highest measured maximum output power when downlink carrier aggregation is inactive, to confirm that when downlink carrier aggregation is active uplink maximum output power remains within the specified tune-up tolerance limits and not more than ¼ dB higher than the maximum output power measured when downlink carrier aggregation inactive.

10. The downlink channels selected to perform the uplink power measurement must satisfy 3GPP channel spacing (5.4.1A of 3GPP TS 36.521 or equivalent) and channel bandwidth (5.4.2A) requirements. The nominal channel spacing is determined by [BW1 + BW2 – 0.1*|BW1 – BW2|]/2 MHz, where BW1 and BW2 are the channel bandwidths of the CC in a 2-CC aggregation configuration.

11. The downlink PCC channel should be paired with the uplink channel according to normal configurations, as if there is no carrier aggregation. The downlink SCC should be adjacent to the PCC and remain within the downlink transmission band for contiguous intra-band CA. For non-contiguous intra-band CA, the SCC should be selected to provide maximum separation from the PCC and must remain fully within the downlink transmission band. For inter-band CA, the SCC should be

near the middle of its transmission band.

12. When downlink carrier aggregation is active uplink maximum output power remains within the specified tune-up tolerance limits and not more than ¼ dB higher than the maximum output power measured when downlink carrier aggregation inactive, so SAR evaluation is not required for downlink carrier aggregation.

WLAN

802.11b DSSS SAR Test Requirements:

13. SAR is measured for 2.4 GHz 802.11b DSSS mode using the highest measured maximum output power channel, when the reported SAR of the highest measured maximum output power channel for the exposure configuration is ≤ 0.8 W/kg, no further SAR testing is required for 802.11b DSSS in that exposure configuration.

14. When the reported SAR is > 0.8 W/kg, SAR is required for that exposure configuration using the next highest measured output power channel. When any reported SAR is > 1.2 W/kg, SAR is required for the third channel; i.e., all channels require testing.

802.11g/n OFDM SAR Test Exclusion Requirements:

15. SAR is not required for 802.11g/n since the highest reported SAR for DSSS is adjusted by the ratio of OFDM to DSSS specified maximum output power and the adjusted SAR is ≤ 1.2 W/kg.

Initial Test Configuration:

16. An initial test configuration is determined for OFDM transmission modes according to the channel bandwidth, modulation and data rate combination(s) with the highest maximum output power specified for production units in each standalone and aggregated frequency band.

17. SAR is measured using the highest measured maximum output power channel. When the reported SAR of the initial test configuration is > 0.8 W/kg, SAR measurement is required for the subsequent next highest measured output power channel(s) in the initial test configuration until the reported SAR is ≤ 1.2 W/kg or all required channels are tested.

18. For WLAN, 5.2a/5.3a/5.6a/5.8a is chosen to be the initial test configurations.

19. For WLAN, since the highest reported SAR for the initial test configuration is adjusted by the ratio of the subsequent test configuration to initial test

configuration specified maximum output power and the adjusted SAR is≦1.2 W/kg, SAR is not required for subsequent test configurations.

Other

20. BT and WLAN 2.4GHz use the same antenna path and Bluetooth can't transmit simultaneously with WLAN 2.4GHz.

21. According to **KDB447498D01v06**, 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 ≤ 100MHz.

22. According to **KDB865664D01v01r04**, 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)

23. According to **KDB447498D01v06** – The 1-g and 10-g SAR test exclusion thresholds for 100 MHz to 6 GHz at test separation distances≤ 50 mm are determined by: [(max. power of channel, including tune-up tolerance, mW)/(min. test separation distance, mm)] · [√f(GHz)] ≤ 3.0 for 1-g SAR, and ≤ 7.5 for product specific 10-g SAR.

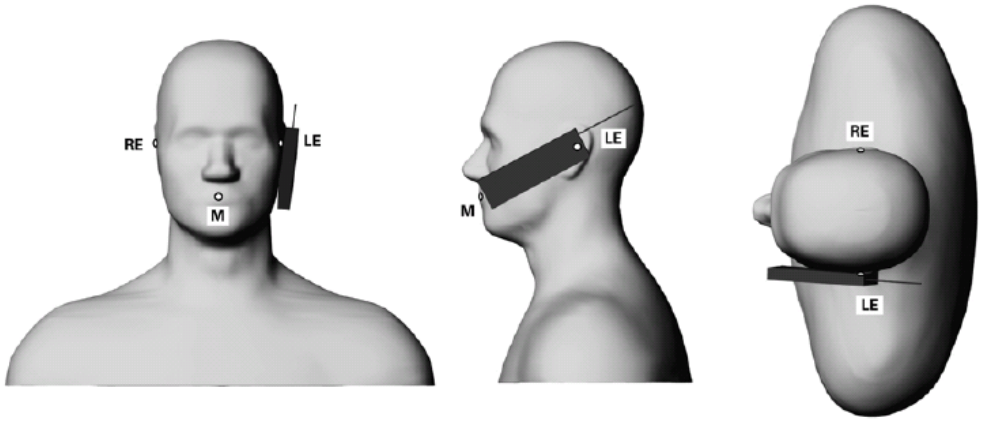
mode	position	max. power (dB)	max. power (mW)	f(GHz)	calculation	SAR exclusion threshold	SAR test exclusion
BT	body-worn	9	7.943	2.48	1.251	3	yes
BT	product specific 10-g SAR	9	7.943	2.48	2.502	7.5	yes

24. According to **KDB865664 D01v01r04** SAR measurement uncertainty analysis is required in SAR reports only when the highest measured SAR in a frequency band is ≥ 1.5 W/kg for 1-g SAR.

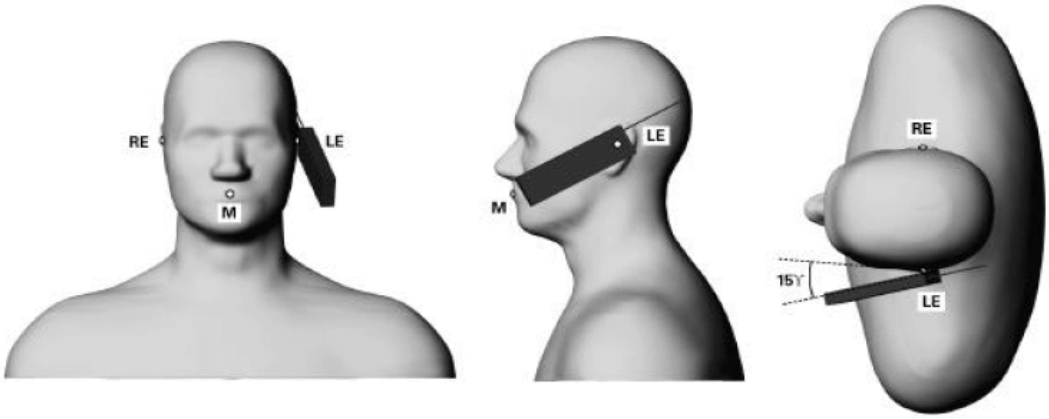
25. For LTE B41, based on **KDB447498D01v06** 4.1 g) and supported frequency range of the device, Nc is calculated as four, so the number of required test channels is four.

1.6 Positioning Procedure

Head SAR measurement statement



Phone position 1, “cheek” or “touch” position. The reference points for the right ear (RE), left ear (LE) and mouth (M), which define the reference plane for phone positioning.



Phone position 2, “tilted position.” The reference points for the right ear (RE), left ear (LE) and mouth (M), which define the reference plane for phone positioning.

Cheek/Touch Position:
The handset was brought toward the mouth of the head phantom by pivoting against the ear reference point until any point of the mouthpiece or keypad touched the phantom.
Ear/Tilt Position:
With the phone aligned in the Cheek/Touch position, the handset was tilted away from the mouth with respect to the test device reference point by 15 degrees.

Body SAR measurement statement

1. Body-worn exposure: 10mm
   Body-worn accessory exposure is typically related to voice mode operations when handsets are carried in body-worn accessories. The body-worn accessory procedures in KDB Publication 447498 D01 should be used to test for body-worn accessory SAR compliance, without a headset connected to it. When the same wireless transmission configuration is used for testing body-worn accessory and hotspot mode SAR, respectively, in voice and data mode, SAR results for the most conservative test separation distance configuration may be used to support both SAR conditions. When the reported SAR for a body-worn accessory, measured without a headset connected to the handset, is > 1.2 W/kg, the highest reported SAR configuration for that wireless mode and frequency band should be repeated for the body-worn accessory with a headset attached to the handset.

2. Hotspot exposure: 10mm
   A test separation distance of 10 mm is required between the phantom and all surfaces and edges with a transmitting antenna located within 25 mm from that surface or edge when the form factor of a handset is larger than 9 cm × 5 cm,
   Test configurations of WWAN
   (1) Front side
   (2) Back side
   (3) Bottom side.
   (4) Right side.
   (5) Left side.
   Test configurations of WLAN
   (1) Front side
   (2) Back side
   (3) Top side.
   (4) Right side

3. Phablet SAR test consideration

Since the device is a phablet (overall diagonal dimension > 16.0 cm), the UMPC mini-tablet procedures must also be applied to test the SAR of all surfaces and edges with an antenna located at ≤ 25 mm from that surface or edge, in direct contact with a flat phantom, for product specific 10-g SAR. When hotspot mode applies, product specific 10-g SAR is required only for the surfaces and edges with hotspot mode 1-g reported SAR > 1.2 W/kg; however, when power reduction applies to hotspot mode the measured SAR must be scaled to the maximum output power, including tolerance, allowed for phablet modes to compare with the 1.2 W/kg SAR test reduction threshold.

1.7 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.

1.8 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:

1.8.1 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:

1. 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.

2. 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.
3. 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%.
4. 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].

1.8.2 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:

1. The setup must enable accurate determination of the incident power.
2. The accuracy of the calculated field strength will depend on the assessment of the dielectric parameters of the liquid.
3. 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.

1.9 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). Model EX3DV4 field probes are 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.

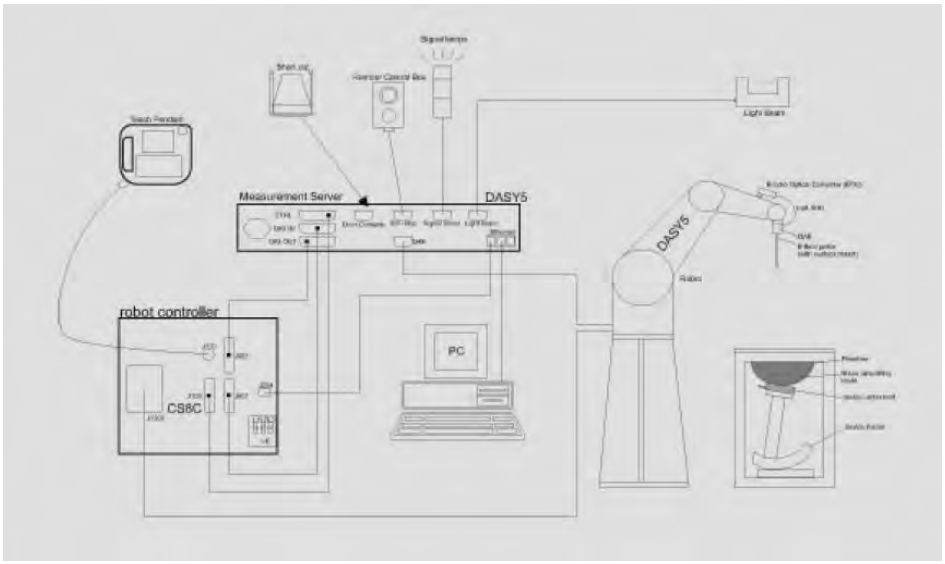


Fig. a A block diagram of the SAR measurement system

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

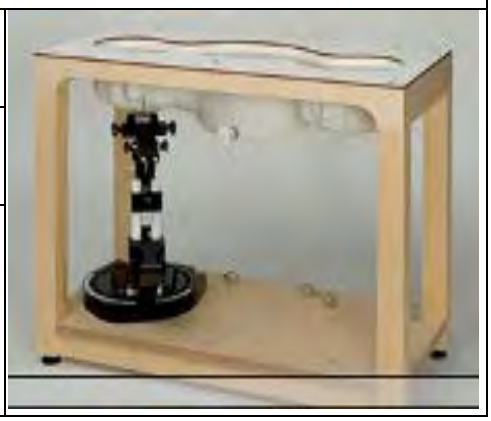
1. A standard high precision 6-axis robot (Staubli RX family) with controller, teach pendant and software. An arm extension is for accommodating the data acquisition electronics (DAE).
2. A dosimetric probe, i.e., an isotropic E-field probe optimized and calibrated for usage in tissue simulating liquid. The probe is equipped with an optical surface detector system.
3. 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.
4. 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.
5. 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.
6. A probe alignment unit which improves the (absolute) accuracy of the probe positioning.
7. A computer operating Windows7
8. DASY 5 software.
9. Remote control with teach pendant and additional circuitry for robot safety such as warning lamps, etc.
10. The SAM twin phantom enabling testing left-hand and right-hand usage.
11. The device holder for handheld mobile phones.
12. Tissue simulating liquid mixed according to the given recipes.
13. Validation dipole kits allowing to validate the proper functioning of the system.

1.10 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 HSL750/835/1750/1900/2450/2600/5200/5300/5600/5800 MHz Additional CF for other liquids and frequencies upon request	
Frequency	10 MHz to > 6 GHz, Linearity: ± 0.6 dB	
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 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	In combination with the Twin SAM Phantom V4.0/V4.0C or Twin SAM, the Mounting Device (made from POM) enables the rotation of the mounted transmitter in spherical coordinates, whereby the rotation point is the ear opening. The devices can be easily and accurately positioned according to IEC, IEEE, CENELEC, FCC or other specifications. The device holder can be locked at different phantom locations (left head, right head, flat phantom).	 Device Holder

1.11 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% (according to KDB865664D01v01r04) from the target SAR values.
These tests were done at 750/835/1750/1900/2450/2600/5200/5300/5600/5800 MHz. 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. 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 above 15 cm (≤3G) or 10 cm (>3G) 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.

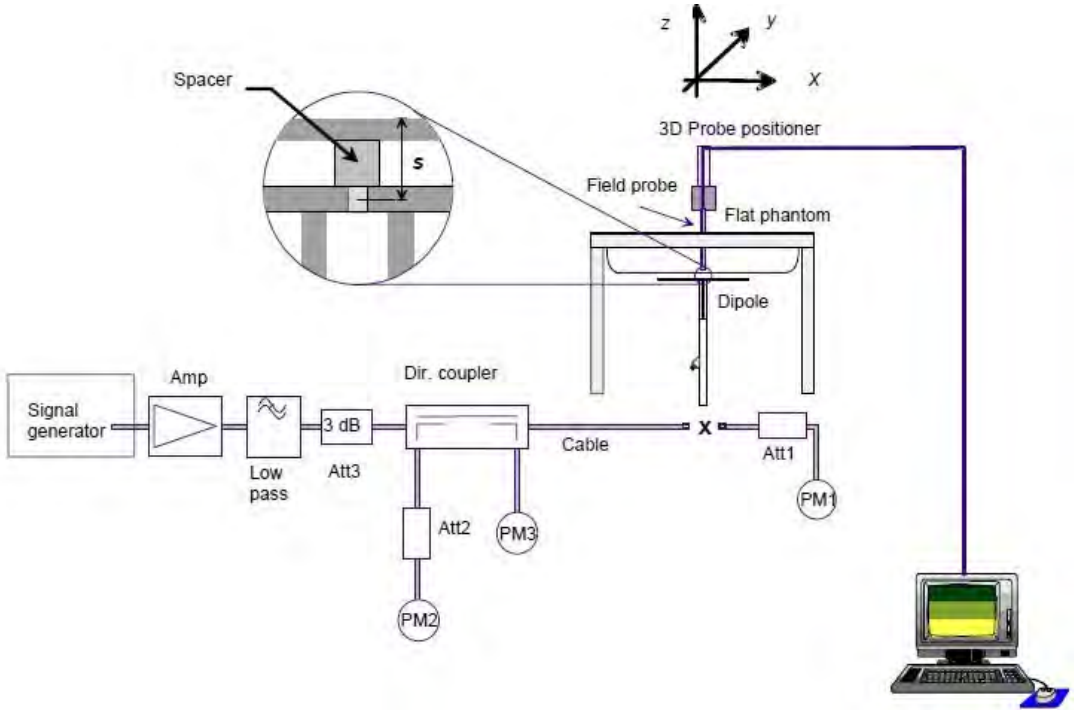


Fig. b The block diagram of system verification

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
D750V3	1015	750	Head	8.15	2.08	8.32	2.09%	Jul. 04, 2016
			Body	8.52	2.15	8.6	0.94%	Jul. 13, 2016
D835V2	4d063	835	Head	9.11	2.32	9.28	1.87%	Jul. 05, 2016
			Body	9.26	2.36	9.44	1.94%	Jul. 12, 2016
D1750V2	1008	1750	Head	36.6	9.05	36.2	-1.09%	Jul. 07, 2016
			Body	37.4	9.30	37.2	-0.53%	Jul. 14, 2016
D1900V2	5d027	1900	Head	38.7	9.97	39.88	3.05%	Jul. 06, 2016
			Body	39.7	9.76	39.04	-1.66%	Jul. 15, 2016
D2450V2	727	2450	Head	51	13.1	52.4	2.75%	Jul. 18, 2016
			Body	49.6	12.7	50.8	2.42%	Jul. 19, 2016
D2600V2	1005	2600	Head	55.2	14.1	56.4	2.17%	Jul. 11, 2016
			Body	53.9	14.1	56.4	4.64%	Jul. 16, 2016
D5GHzV2	1023	5200	Head	77	7.81	78.1	1.43%	Jul. 21, 2016
			Body	71.9	7.35	73.5	2.23%	Jul. 20, 2016
		5300	Head	79.9	8.04	80.4	0.63%	Jul. 21, 2016
			Body	75.1	7.54	75.4	0.40%	Jul. 20, 2016
		5600	Head	82.6	8.37	83.7	1.33%	Jul. 22, 2016
			Body	78.3	7.81	78.1	-0.26%	Jul. 20, 2016
		5800	Head	77.3	7.84	78.4	1.42%	Jul. 25, 2016
			Body	75.3	7.55	75.5	0.27%	Jul. 20, 2016

Table 1. Results of system validation

1.12 Tissue Simulant Fluid for the Frequency Band

The dielectric properties for this Head-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.
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 at least 15 cm (≤3G) or 10 cm (>3G) during all tests. (Appendix 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
Head	July. 4, 2016	704	42.181	0.890	41.77	0.861	0.97%	3.24%
		707.5	42.162	0.890	41.761	0.865	0.95%	2.82%
		709	42.155	0.890	41.736	0.868	0.99%	2.49%
		710	42.149	0.890	41.735	0.871	0.98%	2.16%
		711	42.144	0.890	41.726	0.873	0.99%	1.95%
		750	41.900	0.890	41.473	0.907	1.02%	-1.91%
	July. 5, 2016	822.5	41.565	0.899	42.907	0.917	-3.23%	-2.00%
		824.2	41.556	0.899	42.872	0.919	-3.17%	-2.21%
		826.4	41.545	0.899	42.843	0.921	-3.13%	-2.41%
		829	41.531	0.900	42.794	0.924	-3.04%	-2.72%
		831.5	41.518	0.900	42.751	0.926	-2.97%	-2.92%
		835	41.500	0.900	42.728	0.929	-2.96%	-3.22%
		836.5	41.500	0.902	42.687	0.93	-2.86%	-3.15%
		836.6	41.500	0.902	42.683	0.93	-2.85%	-3.14%
		841.5	41.500	0.907	42.658	0.935	-2.79%	-3.09%
		844	41.500	0.910	42.612	0.938	-2.68%	-3.11%
		846.6	41.500	0.912	42.562	0.941	-2.56%	-3.12%
		848.8	41.500	0.915	42.558	0.943	-2.55%	-3.08%
	July. 7, 2016	1712.4	40.138	1.349	40.552	1.393	-1.03%	-3.24%
		1720	40.126	1.354	40.54	1.397	-1.03%	-3.20%
		1732.4	40.107	1.361	40.515	1.404	-1.02%	-3.17%
		1732.5	40.107	1.361	40.512	1.407	-1.01%	-3.39%
		1745	40.087	1.368	40.5	1.412	-1.03%	-3.20%
		1750	40.079	1.371	40.449	1.415	-0.92%	-3.21%
		1752.6	40.075	1.373	40.441	1.426	-0.91%	-3.89%

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
Head	July. 6, 2016	1850.2	40.000	1.400	38.911	1.386	2.72%	1.00%
		1852.4	40.000	1.400	38.901	1.388	2.75%	0.86%
		1860	40.000	1.400	38.83	1.395	2.93%	0.36%
		1880	40.000	1.400	38.816	1.414	2.96%	-1.00%
		1900	40.000	1.400	38.804	1.433	2.99%	-2.36%
		1907.6	40.000	1.400	38.788	1.441	3.03%	-2.93%
		1909.8	40.000	1.400	38.788	1.443	3.03%	-3.07%
	July. 18, 2016	2412	39.268	1.766	38.541	1.806	1.85%	-2.25%
		2437	39.223	1.788	38.527	1.829	1.77%	-2.27%
		2450	39.200	1.800	38.475	1.84	1.85%	-2.22%
	July. 11, 2016	2510	39.124	1.865	40.685	1.932	-3.99%	-3.57%
		2535	39.092	1.893	40.644	1.961	-3.97%	-3.61%
		2555	39.066	1.915	40.637	1.983	-4.02%	-3.58%
		2560	39.060	1.920	40.636	1.989	-4.03%	-3.59%
		2580	39.035	1.942	40.596	2.012	-4.00%	-3.61%
		2585	39.028	1.947	40.578	2.017	-3.97%	-3.58%
		2595	39.015	1.958	40.576	2.028	-4.00%	-3.57%
		2600	39.009	1.964	40.558	2.035	-3.97%	-3.63%
		2610	38.996	1.975	40.534	2.048	-3.94%	-3.72%
		2615	38.990	1.980	40.532	2.053	-3.95%	-3.69%
		2645	38.952	2.013	40.487	2.086	-3.94%	-3.64%
	July. 21, 2016	5200	35.986	4.655	35.629	4.703	0.99%	-1.03%
	July. 21, 2016	5300	35.871	4.758	35.533	4.807	0.94%	-1.04%
		5320	35.849	4.778	35.508	4.827	0.95%	-1.03%
	July. 22, 2016	5600	35.529	5.065	34.985	5.145	1.53%	-1.58%
		5700	35.414	5.168	34.869	5.243	1.54%	-1.46%
	July. 25, 2016	5745	35.363	5.214	34.638	5.346	2.05%	-2.54%
		5800	35.300	5.270	34.598	5.401	1.99%	-2.49%

Tissue Type	Measurement Date	Measured Frequency (MHz)	Target Dielectric Constant, εr	Target Conductivity, σ (S/m)	Measured Dielectric Constant,	Measured Conductivity, σ (S/m)	% dev εr	% dev σ
Body	July. 13, 2016	704	55.710	0.960	56.674	0.926	-1.73%	3.52%
		707.5	55.697	0.960	56.671	0.929	-1.75%	3.24%
		709	55.691	0.960	56.666	0.931	-1.75%	3.04%
		710	55.687	0.960	56.654	0.932	-1.74%	2.94%
		711	55.683	0.960	56.64	0.933	-1.72%	2.85%
		750	55.531	0.963	56.47	0.971	-1.69%	-0.79%

Tissue Type	Measurement Date	Measured Frequency (MHz)	Target Dielectric Constant, εr	Target Conductivity, σ (S/m)	Measured Dielectric Constant.	Measured Conductivity, σ (S/m)	% dev εr	% dev σ
Body	July. 12, 2016	822.5	55.249	0.969	55.61	0.996	-0.65%	-2.78%
		824.2	55.242	0.969	55.601	0.998	-0.65%	-2.98%
		826.4	55.234	0.969	55.595	1.001	-0.65%	-3.27%
		829	55.223	0.970	55.584	1.004	-0.65%	-3.56%
		831.5	55.214	0.970	55.581	1.006	-0.67%	-3.74%
		835	55.200	0.970	55.577	1.009	-0.68%	-4.02%
		836.5	55.195	0.972	55.56	1.011	-0.66%	-4.03%
		836.6	55.195	0.972	55.556	1.011	-0.65%	-4.02%
		841.5	55.180	0.978	55.544	1.016	-0.66%	-3.89%
		844	55.172	0.981	55.533	1.019	-0.65%	-3.87%
		846.6	55.164	0.984	55.528	1.022	-0.66%	-3.83%
		848.8	55.158	0.987	55.499	1.024	-0.62%	-3.75%
	July. 14, 2016	1712.4	53.531	1.465	53.948	1.421	-0.78%	2.98%
		1720	53.511	1.469	53.939	1.427	-0.80%	2.89%
		1732.4	53.478	1.477	53.9	1.433	-0.79%	3.00%
		1732.5	53.478	1.477	53.889	1.434	-0.77%	2.94%
		1745	53.445	1.485	53.841	1.445	-0.74%	2.71%
		1750	53.432	1.488	53.827	1.451	-0.74%	2.51%
		1752.6	53.425	1.490	53.819	1.453	-0.74%	2.49%
	July. 15, 2016	1850.2	53.300	1.520	51.936	1.47	2.56%	3.29%
		1852.4	53.300	1.520	51.893	1.474	2.64%	3.03%
		1860	53.300	1.520	51.883	1.48	2.66%	2.63%
		1880	53.300	1.520	51.85	1.499	2.72%	1.38%
		1900	53.300	1.520	51.808	1.521	2.80%	-0.07%
		1907.6	53.300	1.520	51.76	1.528	2.89%	-0.53%
		1909.8	53.300	1.520	51.674	1.531	3.05%	-0.72%
	July. 19, 2016	2412	52.751	1.914	51.058	1.982	3.21%	-3.57%
		2437	52.717	1.938	51.03	2.01	3.20%	-3.74%
		2450	52.700	1.950	51.011	2.024	3.20%	-3.79%
	July. 16, 2016	2510	52.624	2.035	51.187	2.073	2.73%	-1.86%
		2535	52.592	2.071	51.172	2.101	2.70%	-1.47%
		2555	52.566	2.099	51.142	2.122	2.71%	-1.10%
		2560	52.560	2.106	51.119	2.13	2.74%	-1.14%
		2580	52.535	2.134	51.116	2.151	2.70%	-0.78%
		2585	52.528	2.141	51.094	2.156	2.73%	-0.68%
		2595	52.515	2.156	51.082	2.171	2.73%	-0.71%
		2600	52.509	2.163	51.061	2.177	2.76%	-0.66%
		2610	52.496	2.177	51.057	2.189	2.74%	-0.56%
		2615	52.490	2.184	51.044	2.196	2.75%	-0.55%
		2645	52.452	2.227	51.001	2.232	2.77%	-0.24%

Tissue Type	Measurement Date	Measured Frequency (MHz)	Target Dielectric Constant, εr	Target Conductivity, σ (S/m)	Measured Dielectric Constant,	Measured Conductivity, σ (S/m)	% dev εr	% dev σ
Body	July. 20, 2016	5200	49.014	5.299	50.167	5.105	-2.35%	3.67%
	July. 20, 2016	5300	48.879	5.416	50.042	5.22	-2.38%	3.62%
		5320	48.851	5.439	50.03	5.248	-2.41%	3.52%
	July. 20, 2016	5600	48.471	5.766	49.625	5.561	-2.38%	3.56%
		5700	48.336	5.883	49.496	5.668	-2.40%	3.66%
	July. 20, 2016	5745	48.275	5.936	49.421	5.723	-2.37%	3.58%
		5800	48.200	6.000	49.322	5.785	-2.33%	3.58%

Table 2. Dielectric Parameters of Tissue Simulant Fluid

The composition of the tissue simulating liquid:

Frequency (MHz)	Mode	Ingredient						Total amount
		DGMBE	Water	Salt	Preventol D-7	Cellulose	Sugar	
750	Head	—	532.98 g	18.3 g	2.4 g	3.2 g	766 g	1.3L(Kg)
	Body	—	631.68 g	11.72 g	1.2 g	—	600 g	1.0L(Kg)
850	Head	—	532.98 g	18.3 g	2.4 g	3.2 g	766 g	1.3L(Kg)
	Body	—	631.68 g	11.72 g	1.2 g	—	600 g	1.0L(Kg)
1750	Head	444.52 g	552.42 g	3.06 g	—	—	—	1.0L(Kg)
	Body	300.67 g	716.56 g	4.0 g	—	—	—	1.0L(Kg)
1900	Head	444.52 g	552.42 g	3.06 g	—	—	—	1.0L(Kg)
	Body	300.67 g	716.56 g	4.0 g	—	—	—	1.0L(Kg)
2450	Head	550ml	450ml	—	—	—	—	1.0L(Kg)
	Body	301.7ml	698.3ml	—	—	—	—	1.0L(Kg)
2600	Head	550ml	450ml	—	—	—	—	1.0L(Kg)
	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

1.13 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, 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 a 10 grams of tissue (defined as a tissue volume in the shape of a cube).

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.

2. 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 .6)

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

GSM 850 MHz

Mode	Position	Distance (mm)	CH	Freq. (MHz)	Max. Rated Avg. Power + Max. Tolerance (dBm)	Measured Avg. Power (dBm)	Scaling	Averaged SAR over 1g (W/kg)		Plot page
								Measured	Reported	
GSM850 (Head)	Re Cheek	-	251	848.8	33.50	33.40	102.33%	0.015	0.015	-
	Re Tilt	-	251	848.8	33.50	33.40	102.33%	0.00539	0.006	-
	Le Cheek	-	128	824.2	33.50	33.20	107.15%	0.034	0.036	123
	Le Cheek	-	190	836.6	33.50	33.20	107.15%	0.025	0.027	-
	Le Cheek	-	251	848.8	33.50	33.40	102.33%	0.019	0.019	-
	Le Tilt	-	251	848.8	33.50	33.40	102.33%	0.00463	0.005	-
GSM850 (Body-Worn)	Front side	10	128	824.2	33.50	33.20	107.15%	0.387	0.415	-
	Front side	10	190	836.6	33.50	33.20	107.15%	0.421	0.451	124
	Front side	10	251	848.8	33.50	33.40	102.33%	0.379	0.388	-
	Back side	10	251	848.8	33.50	33.40	102.33%	0.128	0.131	-
GPRS850 (Hotspot) (1Dn2UP)	Front side	10	128	824.2	33.50	33.10	109.65%	0.724	0.794	-
	Front side	10	190	836.6	33.50	33.00	112.20%	0.776	0.871	125
	Front side	10	251	848.8	33.50	33.20	107.15%	0.674	0.722	-
	Back side	10	251	848.8	33.50	33.20	107.15%	0.247	0.265	-
	Bottom side	10	251	848.8	33.50	33.20	107.15%	0.454	0.486	-
	Right side	10	251	848.8	33.50	33.20	107.15%	0.236	0.253	-
	Left side	10	251	848.8	33.50	33.20	107.15%	0.080	0.086	-

GSM 1900 MHz

Mode	Position	Distance (mm)	CH	Freq. (MHz)	Max. Rated Avg. Power + Max. Tolerance (dBm)	Measured Avg. Power (dBm)	Scaling	Averaged SAR over 1g (W/kg)		Plot page
								Measured	Reported	
GSM1900 (Head)	Re Cheek	-	512	1850.2	30.50	30.50	100.00%	0.041	0.041	126
	Re Cheek	-	661	1880	30.50	30.40	102.33%	0.039	0.040	-
	Re Cheek	-	810	1909.8	30.50	30.30	104.71%	0.036	0.038	-
	Re Tilt	-	512	1850.2	30.50	30.50	100.00%	0.022	0.022	-
	Le Cheek	-	512	1850.2	30.50	30.50	100.00%	0.027	0.027	-
	Le Tilt	-	512	1850.2	30.50	30.50	100.00%	0.031	0.031	-
GSM1900 (Body-Worn)	Front side	10	512	1850.2	30.50	30.50	100.00%	0.574	0.574	127
	Front side	10	661	1880	30.50	30.40	102.33%	0.465	0.476	-
	Front side	10	810	1909.8	30.50	30.30	104.71%	0.425	0.445	-
	Back side	10	512	1850.2	30.50	30.50	100.00%	0.115	0.115	-
GPRS1900 (Hotspot) (1Dn2UP)	Front side	10	512	1850.2	30.00	29.70	107.15%	0.979	1.049	-
	Front side	10	661	1880	30.00	29.50	112.20%	0.903	1.013	-
	Front side	10	810	1909.8	30.00	29.60	109.65%	0.819	0.898	-
	Back side	10	512	1850.2	30.00	29.70	107.15%	0.173	0.185	-
	Bottom side	10	512	1850.2	30.00	29.70	107.15%	1.090	1.168	128
	Bottom side	10	661	1880	30.00	29.50	112.20%	0.981	1.101	-
	Bottom side	10	810	1909.8	30.00	29.60	109.65%	0.951	1.043	-
	Right side	10	512	1850.2	30.00	29.70	107.15%	0.040	0.043	-
	Left side	10	512	1850.2	30.00	29.70	107.15%	0.173	0.185	-

WCDMA Band II

Mode	Position	Distance (mm)	CH	Freq. (MHz)	Max. Rated Avg. Power + Max. Tolerance (dBm)	Measured Avg. Power (dBm)	Scaling	Averaged SAR over 1g (W/kg)		Plot page
								Measured	Reported	
R99 (Head)	RE Cheek	-	9262	1852.4	23.00	21.58	138.68%	0.102	0.141	129
	RE Cheek	-	9400	1880	23.00	21.61	137.72%	0.082	0.113	-
	RE Cheek	-	9538	1907.6	23.00	21.82	131.22%	0.065	0.085	-
	RE Tilt	-	9538	1907.6	23.00	21.82	131.22%	0.026	0.034	-
	LE Cheek	-	9538	1907.6	23.00	21.82	131.22%	0.026	0.034	-
	LE Tilt	-	9538	1907.6	23.00	21.82	131.22%	0.024	0.031	-
Hotspot	Front side	10	9262	1852.4	23.00	22.18	120.78%	0.890	1.075	-
	Front side	10	9400	1880	23.00	22.21	119.95%	0.707	0.848	-
	Front side	10	9538	1907.6	23.00	22.42	114.29%	0.555	0.634	-
	Back side	10	9538	1907.6	23.00	22.42	114.29%	0.104	0.119	-
	Bottom side	10	9262	1852.4	23.00	22.18	120.78%	0.980	1.184	130
	Bottom side	10	9400	1880	23.00	22.21	119.95%	0.823	0.987	-
	Bottom side	10	9538	1907.6	23.00	22.42	114.29%	0.711	0.813	-
	Right side	10	9538	1907.6	23.00	22.42	114.29%	0.025	0.029	-
	Left side	10	9538	1907.6	23.00	22.42	114.29%	0.117	0.134	-

WCDMA Band IV

Mode	Position	Distance (mm)	CH	Freq. (MHz)	Max. Rated Avg. Power + Max. Tolerance (dBm)	Measured Avg. Power (dBm)	Scaling	Averaged SAR over 1g (W/kg)		Plot page
								Measured	Reported	
R99 (Head)	RE Cheek	-	1312	1712.4	23.00	22.58	110.15%	0.043	0.047	-
	RE Cheek	-	1412	1732.4	23.00	22.78	105.20%	0.054	0.057	-
	RE Cheek	-	1513	1752.6	23.00	22.61	109.40%	0.077	0.084	131
	RE Tilt	-	1412	1732.4	23.00	22.78	105.20%	0.021	0.022	-
	LE Cheek	-	1412	1732.4	23.00	22.78	105.20%	0.035	0.037	-
	LE Tilt	-	1412	1732.4	23.00	22.78	105.20%	0.026	0.027	-
Hotspot	Front side	10	1312	1712.4	23.00	22.58	110.15%	0.529	0.583	-
	Front side	10	1412	1732.4	23.00	22.78	105.20%	0.606	0.637	-
	Front side	10	1513	1752.6	23.00	22.61	109.40%	0.762	0.834	-
	Back side	10	1412	1732.4	23.00	22.78	105.20%	0.133	0.140	-
	Bottom side	10	1312	1712.4	23.00	22.58	110.15%	0.672	0.740	-
	Bottom side	10	1412	1732.4	23.00	22.78	105.20%	0.821	0.864	-
	Bottom side	10	1513	1752.6	23.00	22.61	109.40%	0.987	1.080	132
	Bottom side*	10	1513	1752.6	23.00	22.61	109.40%	0.981	1.073	-
	Right side	10	1412	1732.4	23.00	22.78	105.20%	0.033	0.035	-
	Left side	10	1412	1732.4	23.00	22.78	105.20%	0.086	0.090	-

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

WCDMA Band V

Mode	Position	Distance (mm)	CH	Freq. (MHz)	Max. Rated Avg. Power + Max. Tolerance (dBm)	Measured Avg. Power (dBm)	Scaling	Averaged SAR over 1g (W/kg)		Plot page
								Measured	Reported	
R99 (Head)	RE Cheek	-	4132	826.4	24.00	23.85	103.51%	0.034	0.035	-
	RE Tilt	-	4132	826.4	24.00	23.85	103.51%	0.00764	0.008	-
	LE Cheek	-	4132	826.4	24.00	23.85	103.51%	0.039	0.040	133
	LE Cheek	-	4183	836.6	24.00	23.52	111.69%	0.021	0.023	-
	LE Cheek	-	4233	846.6	24.00	23.72	106.66%	0.019	0.020	-
	LE Tilt	-	4132	826.4	24.00	23.85	103.51%	0.015	0.016	-
Hotspot	Front side	10	4132	826.4	24.00	23.85	103.51%	0.378	0.391	134
	Front side	10	4183	836.6	24.00	23.52	111.69%	0.279	0.312	-
	Front side	10	4233	846.6	24.00	23.72	106.66%	0.316	0.337	-
	Back side	10	4132	826.4	24.00	23.85	103.51%	0.147	0.152	-
	Bottom side	10	4132	826.4	24.00	23.85	103.51%	0.283	0.293	-
	Right side	10	4132	826.4	24.00	23.85	103.51%	0.177	0.183	-
	Left side	10	4132	826.4	24.00	23.85	103.51%	0.072	0.075	-

LTE FDD Band II

Mode	Bandwidth (MHz)	Modulation	RB Size	RB start	Position	Distance (mm)	CH	Freq. (MHz)	Max. Rated Avg. Power + Max. Tolerance (dBm)	Measured Avg. Power (dBm)	Scaling	Averaged SAR over 1g (W/kg)		Plot page
												Measured	Reported	
LTE Band 2 (Head)	20MHz	QPSK	1 RB	50	RE Cheek	-	18700	1860	23	21.89	129.12%	0.078	0.101	135
					RE Cheek	-	18900	1880	23	22.07	123.88%	0.072	0.089	-
					RE Cheek	-	19100	1900	23	22.17	121.06%	0.065	0.079	-
					RE Tilt	-	19100	1900	23	22.17	121.06%	0.021	0.025	-
					LE Cheek	-	19100	1900	23	22.17	121.06%	0.022	0.027	-
					LE Tilt	-	19100	1900	23	22.17	121.06%	0.017	0.021	-
			50 RB	50	RE Cheek	-	19100	1900	22	20.93	127.94%	0.048	0.061	-
					RE Tilt	-	19100	1900	22	20.93	127.94%	0.015	0.019	-
					LE Cheek	-	19100	1900	22	20.93	127.94%	0.017	0.022	-
					LE Tilt	-	19100	1900	22	20.93	127.94%	0.012	0.015	-
			100 RB		RE Cheek	-	18900	1880	22	21.08	123.59%	0.051	0.063	-
					RE Tilt	-	18900	1880	22	21.08	123.59%	0.016	0.020	-
					LE Cheek	-	18900	1880	22	21.08	123.59%	0.019	0.023	-
					LE Tilt	-	18900	1880	22	21.08	123.59%	0.013	0.016	-
LTE Band 2 (Hotspot)	20MHz	QPSK	1 RB	50	Front side	10	19100	1900	23	22.17	121.06%	0.527	0.638	-
					Back side	10	19100	1900	23	22.17	121.06%	0.096	0.116	-
					Bottom side	10	18700	1860	23	21.89	129.12%	0.860	1.110	136
					Bottom side*	10	18700	1860	23	21.89	129.12%	0.858	1.108	-
					Bottom side	10	18900	1880	23	22.07	123.88%	0.767	0.950	-
					Bottom side	10	19100	1900	23	22.17	121.06%	0.620	0.751	-
					Right side	10	19100	1900	23	22.17	121.06%	0.018	0.022	-
					Left side	10	19100	1900	23	22.17	121.06%	0.119	0.144	-
			50 RB	50	Front side	10	19100	1900	22	20.93	127.94%	0.391	0.500	-
					Back side	10	19100	1900	22	20.93	127.94%	0.07	0.090	-
					Bottom side	10	19100	1900	22	20.93	127.94%	0.457	0.585	-
					Right side	10	19100	1900	22	20.93	127.94%	0.014	0.018	-
					Left side	10	19100	1900	22	20.93	127.94%	0.100	0.128	-
			100 RB		Front side	10	18900	1880	21	21.08	98.17%	0.402	0.395	-
					Back side	10	18900	1880	21	21.08	98.17%	0.074	0.073	-
					Bottom side	10	18900	1880	21	21.08	98.17%	0.469	0.460	-
					Right side	10	18900	1880	21	21.08	98.17%	0.015	0.015	-
					Left side	10	18900	1880	21	21.08	98.17%	0.104	0.102	-

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

LTE FDD Band IV

Mode	Bandwidth (MHz)	Modulation	RB Size	RB start	Position	Distance (mm)	CH	Freq. (MHz)	Max. Rated Avg. Power + Max. Tolerance (dBm)	Measured Avg. Power (dBm)	Scaling	Averaged SAR over 1g (W/kg)		Plot page
												Measured	Reported	
LTE Band 4 (Head)	20MHz	QPSK	1 RB	50	RE Cheek	-	20050	1720	24	23.30	117.49%	0.049	0.058	-
					RE Cheek	-	20175	1732.5	24	22.98	126.47%	0.056	0.071	137
					RE Cheek	-	20300	1745	24	23.23	119.40%	0.054	0.064	-
					RE Tilt	-	20050	1720	24	23.30	117.49%	0.020	0.023	-
					LE Cheek	-	20050	1720	24	23.30	117.49%	0.018	0.021	-
					LE Tilt	-	20050	1720	24	23.30	117.49%	0.023	0.027	-
			50 RB	0	RE Cheek	-	20300	1745	23	22.12	122.46%	0.041	0.050	-
					RE Tilt	-	20300	1745	23	22.12	122.46%	0.017	0.021	-
					LE Cheek	-	20300	1745	23	22.12	122.46%	0.014	0.017	-
					LE Tilt	-	20300	1745	23	22.12	122.46%	0.019	0.023	-
			100 RB		RE Cheek	-	20300	1745	23	22.08	123.59%	0.040	0.049	-
					RE Tilt	-	20300	1745	23	22.08	123.59%	0.016	0.020	-
					LE Cheek	-	20300	1745	23	22.08	123.59%	0.013	0.016	-
					LE Tilt	-	20300	1745	23	22.08	123.59%	0.018	0.022	-
LTE Band 4 (Hotspot)	20MHz	QPSK	1 RB	50	Front side	10	20050	1720	24	23.30	117.49%	0.713	0.838	-
					Front side	10	20175	1732.5	24	22.98	126.47%	0.836	1.057	-
					Front side	10	20300	1745	24	23.23	119.40%	0.985	1.176	138
					Front side*	10	20300	1745	24	23.23	119.40%	0.981	1.171	-
					Back side	10	20050	1720	24	23.30	117.49%	0.172	0.202	-
					Bottom side	10	20050	1720	24	23.30	117.49%	0.800	0.940	-
					Bottom side	10	20175	1732.5	24	22.98	126.47%	0.878	1.110	-
					Bottom side	10	20300	1745	24	23.23	119.40%	0.973	1.162	-
					Right side	10	20050	1720	24	23.30	117.49%	0.050	0.059	-
					Left side	10	20050	1720	24	23.30	117.49%	0.095	0.112	-
			50 RB	0	Front side	10	20300	1745	23	22.12	122.46%	0.755	0.925	-
					Back side	10	20300	1745	23	22.12	122.46%	0.140	0.171	-
					Bottom side	10	20300	1745	23	22.12	122.46%	0.758	0.928	-
					Right side	10	20300	1745	23	22.12	122.46%	0.050	0.061	-
					Left side	10	20300	1745	23	22.12	122.46%	0.098	0.120	-
				25	Front side	10	20175	1732.5	23	21.96	127.06%	0.657	0.835	-
					Bottom side	10	20175	1732.5	23	21.96	127.06%	0.660	0.839	-
				50	Front side	10	20050	1720	23	22.06	124.17%	0.610	0.757	-
					Bottom side	10	20050	1720	23	22.06	124.17%	0.623	0.774	-
			100 RB		Front side	10	20050	1720	23	22.04	124.74%	0.599	0.747	-
					Front side	10	20175	1732.5	23	21.88	129.42%	0.656	0.849	-
					Front side	10	20300	1745	23	22.08	123.59%	0.768	0.949	-
					Back side	10	20300	1745	23	22.08	123.59%	0.141	0.174	-
					Bottom side	10	20050	1720	23	22.04	124.74%	0.627	0.782	-
					Bottom side	10	20175	1732.5	23	21.88	129.42%	0.667	0.863	-
					Bottom side	10	20300	1745	23	22.08	123.59%	0.767	0.948	-
					Right side	10	20300	1745	23	22.08	123.59%	0.050	0.062	-
					Left side	10	20300	1745	23	22.08	123.59%	0.101	0.125	-

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

LTE FDD Band V

Mode	Bandwidth (MHz)	Modulation	RB Size	RB start	Position	Distance (mm)	CH	Freq. (MHz)	Max. Rated Avg. Power + Max. Tolerance (dBm)	Measured Avg. Power (dBm)	Scaling	Averaged SAR over 1g (W/kg)		Plot page
												Measured	Reported	
LTE Band 5 (Head)	10MHz	QPSK	1 RB	25	RE Cheek	-	20525	836.5	24	23.48	112.72%	0.016	0.018	-
					RE Tilt	-	20525	836.5	24	23.48	112.72%	0.00617	0.007	-
					LE Cheek	-	20525	836.5	24	23.48	112.72%	0.019	0.021	-
					LE Cheek	-	20600	844	24	23.02	125.31%	0.016	0.020	-
					LE Tilt	-	20525	836.5	24	23.48	112.72%	0.00808	0.009	-
				49	LE Cheek	-	20450	829	24	23.14	121.90%	0.020	0.024	139
			25 RB	25	RE Cheek	-	20600	844	23	22.09	123.31%	0.012	0.015	-
					RE Tilt	-	20600	844	23	22.09	123.31%	0.00473	0.006	-
					LE Cheek	-	20600	844	23	22.09	123.31%	0.015	0.018	-
					LE Tilt	-	20600	844	23	22.09	123.31%	0.00621	0.008	-
			50 RB		RE Cheek	-	20600	844	23	22.10	123.03%	0.012	0.015	-
					RE Tilt	-	20600	844	23	22.10	123.03%	0.00465	0.006	-
					LE Cheek	-	20600	844	23	22.10	123.03%	0.015	0.018	-
					LE Tilt	-	20600	844	23	22.10	123.03%	0.006	0.007	-
LTE Band 5 (Hotspot)	10MHz	QPSK	1 RB	25	Front side	10	20525	836.5	24	23.48	112.72%	0.242	0.273	-
					Front side	10	20600	844	24	23.02	125.31%	0.239	0.300	-
					Back side	10	20525	836.5	24	23.48	112.72%	0.097	0.109	-
					Bottom side	10	20525	836.5	24	23.48	112.72%	0.176	0.198	-
					Right side	10	20525	836.5	24	23.48	112.72%	0.098	0.110	-
					Left side	10	20525	836.5	24	23.48	112.72%	0.030	0.034	-
				49	Front side	10	20450	829	24	23.14	121.90%	0.274	0.334	140
			25 RB	25	Front side	10	20600	844	23	22.09	123.31%	0.196	0.242	-
					Back side	10	20600	844	23	22.09	123.31%	0.071	0.088	-
					Bottom side	10	20600	844	23	22.09	123.31%	0.136	0.168	-
					Right side	10	20600	844	23	22.09	123.31%	0.070	0.086	-
					Left side	10	20600	844	23	22.09	123.31%	0.024	0.030	-
			50 RB		Front side	10	20600	844	23	22.10	123.03%	0.203	0.250	-
					Back side	10	20600	844	23	22.10	123.03%	0.074	0.091	-
					Bottom side	10	20600	844	23	22.10	123.03%	0.144	0.177	-
					Right side	10	20600	844	23	22.10	123.03%	0.072	0.089	-
					Left side	10	20600	844	23	22.10	123.03%	0.025	0.031	-

LTE FDD Band VII

Mode	Bandwidth (MHz)	Modulation	RB Size	RB start	Position	Distance (mm)	CH	Freq. (MHz)	Max. Rated Avg. Power + Max. Tolerance (dBm)	Measured Avg. Power (dBm)	Scaling	Averaged SAR over 1g (W/kg)		Plot page
												Measured	Reported	
LTE Band 7 (Head)	20MHz	QPSK	1 RB	0	RE Cheek	-	20850	2510	24	23.35	116.14%	0.040	0.046	-
				99	RE Cheek	-	21100	2535	24	23.11	122.74%	0.050	0.061	-
					RE Cheek	-	21350	2560	24	23.47	112.98%	0.053	0.060	141
					RE Tilt	-	21350	2560	24	23.47	112.98%	0.029	0.033	-
					LE Cheek	-	21350	2560	24	23.47	112.98%	0.052	0.059	-
					LE Tilt	-	21350	2560	24	23.47	112.98%	0.035	0.040	-
			50 RB	25	RE Cheek	-	20850	2510	23	22.37	115.61%	0.038	0.044	-
					RE Tilt	-	20850	2510	23	22.37	115.61%	0.020	0.023	-
					LE Cheek	-	20850	2510	23	22.37	115.61%	0.034	0.039	-
					LE Tilt	-	20850	2510	23	22.37	115.61%	0.022	0.025	-
			100 RB		RE Cheek	-	21350	2560	23	22.27	118.30%	0.040	0.047	-
					RE Tilt	-	21350	2560	23	22.27	118.30%	0.024	0.028	-
					LE Cheek	-	21350	2560	23	22.27	118.30%	0.041	0.049	-
					LE Tilt	-	21350	2560	23	22.27	118.30%	0.026	0.031	-
LTE Band 7 (Hotspot)	20MHz	QPSK	1 RB	0	Front side	10	20850	2510	24	23.35	116.14%	0.093	0.108	-
				99	Front side	10	21100	2535	24	23.11	122.74%	0.127	0.156	-
					Front side	10	21350	2560	24	23.47	112.98%	0.143	0.162	142
					Back side	10	21350	2560	24	23.47	112.98%	0.075	0.085	-
					Bottom side	10	21350	2560	24	23.47	112.98%	0.123	0.139	-
					Right side	10	21350	2560	24	23.47	112.98%	0.075	0.085	-
					Left side	10	21350	2560	24	23.47	112.98%	0.061	0.069	-
			50 RB	25	Front side	10	20850	2510	23	22.37	115.61%	0.068	0.079	-
					Back side	10	20850	2510	23	22.37	115.61%	0.042	0.049	-
					Bottom side	10	20850	2510	23	22.37	115.61%	0.061	0.071	-
					Right side	10	20850	2510	23	22.37	115.61%	0.037	0.043	-
					Left side	10	20850	2510	23	22.37	115.61%	0.048	0.055	-
			100 RB		Front side	10	21350	2560	23	22.27	118.30%	0.094	0.111	-
					Back side	10	21350	2560	23	22.27	118.30%	0.054	0.064	-
					Bottom side	10	21350	2560	23	22.27	118.30%	0.089	0.105	-
					Right side	10	21350	2560	23	22.27	118.30%	0.048	0.057	-
					Left side	10	21350	2560	23	22.27	118.30%	0.051	0.060	-

LTE FDD Band XII

Mode	Bandwidth (MHz)	Modulation	RB Size	RB start	Position	Distance (mm)	CH	Freq. (MHz)	Max. Rated Avg. Power + Max. Tolerance (dBm)	Measured Avg. Power (dBm)	Scaling	Averaged SAR over 1g (W/kg)		Plot page
												Measured	Reported	
LTE Band 12 (Head)	10MHz	QPSK	1 RB	25	RE Cheek	-	23130	711	24	23.16	121.34%	0.00245	0.003	-
					RE Tilt	-	23060	704	24	23.09	123.31%	0.00299	0.004	-
					RE Tilt	-	23095	707.5	24	23.06	124.17%	0.00322	0.004	143
					RE Tilt	-	23130	711	24	23.16	121.34%	0.00287	0.003	-
					LE Cheek	-	23130	711	24	23.16	121.34%	0.00285	0.003	-
					LE Tilt	-	23130	711	24	23.16	121.34%	0.00202	0.002	-
			25 RB	25	RE Cheek	-	23060	704	23	22.05	124.45%	0.00195	0.002	-
					RE Tilt	-	23060	704	23	22.05	124.45%	0.00211	0.003	-
					LE Cheek	-	23060	704	23	22.05	124.45%	0.00206	0.003	-
					LE Tilt	-	23060	704	23	22.05	124.45%	0.00144	0.002	-
			50 RB		RE Cheek	-	23095	707.5	23	22.05	124.45%	0.00191	0.002	-
					RE Tilt	-	23095	707.5	23	22.05	124.45%	0.00203	0.003	-
					LE Cheek	-	23095	707.5	23	22.05	124.45%	0.00201	0.003	-
					LE Tilt	-	23095	707.5	23	22.05	124.45%	0.00135	0.002	-
LTE Band 12 (Hotspot)	10MHz	QPSK	1 RB	25	Front side	10	23060	704	24	23.09	123.31%	0.013	0.016	-
					Front side	10	23095	707.5	24	23.06	124.17%	0.015	0.019	-
					Front side	10	23130	711	24	23.16	121.34%	0.016	0.019	144
					Back side	10	23130	711	24	23.16	121.34%	0.00314	0.004	-
					Bottom side	10	23130	711	24	23.16	121.34%	0.00777	0.009	-
					Right side	10	23130	711	24	23.16	121.34%	0.00802	0.010	-
					Left side	10	23130	711	24	23.16	121.34%	0.00731	0.009	-
			25 RB	25	Front side	10	23060	704	23	22.05	124.45%	0.012	0.015	-
					Back side	10	23060	704	23	22.05	124.45%	0.00233	0.003	-
					Bottom side	10	23060	704	23	22.05	124.45%	0.00614	0.008	-
					Right side	10	23060	704	23	22.05	124.45%	0.00633	0.008	-
					Left side	10	23060	704	23	22.05	124.45%	0.00542	0.007	-
			50 RB		Front side	10	23095	707.5	23	22.05	124.45%	0.012	0.015	-
					Back side	10	23095	707.5	23	22.05	124.45%	0.00231	0.003	-
					Bottom side	10	23095	707.5	23	22.05	124.45%	0.00602	0.007	-
					Right side	10	23095	707.5	23	22.05	124.45%	0.00615	0.008	-
					Left side	10	23095	707.5	23	22.05	124.45%	0.00522	0.006	-

LTE FDD Band XVII

Mode	Bandwidth (MHz)	Modulation	RB Size	RB start	Position	Distance (mm)	CH	Freq. (MHz)	Max. Rated Avg. Power + Max. Tolerance (dBm)	Measured Avg. Power (dBm)	Scaling	Averaged SAR over 1g (W/kg)		Plot page
												Measured	Reported	
LTE Band 17 (Head)	10MHz	QPSK	1 RB	25	RE Cheek	-	23780	709	24	23.08	123.59%	0.020	0.025	-
					RE Tilt	-	23780	709	24	23.08	123.59%	0.00989	0.012	-
					LE Cheek	-	23780	709	24	23.08	123.59%	0.021	0.026	145
					LE Cheek	-	23790	710	24	23.04	124.74%	0.017	0.021	-
					LE Cheek	-	23800	711	24	22.94	127.64%	0.018	0.023	-
					LE Tilt	-	23780	709	24	23.08	123.59%	0.00769	0.010	-
			25 RB	12	RE Cheek	-	23780	709	23	22.01	125.60%	0.014	0.018	-
					RE Tilt	-	23780	709	23	22.01	125.60%	0.00721	0.009	-
					LE Cheek	-	23780	709	23	22.01	125.60%	0.015	0.019	-
					LE Tilt	-	23780	709	23	22.01	125.60%	0.00572	0.007	-
			50 RB		RE Cheek	-	23790	710	23	21.95	127.35%	0.013	0.017	-
					RE Tilt	-	23790	710	23	21.95	127.35%	0.00705	0.009	-
					LE Cheek	-	23790	710	23	21.95	127.35%	0.014	0.018	-
					LE Tilt	-	23790	710	23	21.95	127.35%	0.00553	0.007	-
LTE Band 17 (Hotspot)	10MHz	QPSK	1 RB	25	Front side	10	23780	709	24	23.08	123.59%	0.157	0.194	-
					Front side	10	23790	710	24	23.04	124.74%	0.157	0.196	-
					Front side	10	23800	711	24	22.94	127.64%	0.158	0.202	146
					Back side	10	23780	709	24	23.08	123.59%	0.070	0.087	-
					Bottom side	10	23780	709	24	23.08	123.59%	0.103	0.127	-
					Right side	10	23780	709	24	23.08	123.59%	0.098	0.121	-
					Left side	10	23780	709	24	23.08	123.59%	0.058	0.072	-
			25 RB	12	Front side	10	23780	709	23	22.01	125.60%	0.124	0.156	-
					Back side	10	23780	709	23	22.01	125.60%	0.055	0.069	-
					Bottom side	10	23780	709	23	22.01	125.60%	0.081	0.102	-
					Right side	10	23780	709	23	22.01	125.60%	0.077	0.097	-
					Left side	10	23780	709	23	22.01	125.60%	0.046	0.058	-
			50 RB		Front side	10	23790	710	23	21.95	127.35%	0.121	0.154	-
					Back side	10	23790	710	23	21.95	127.35%	0.053	0.067	-
					Bottom side	10	23790	710	23	21.95	127.35%	0.078	0.099	-
					Right side	10	23790	710	23	21.95	127.35%	0.075	0.096	-
					Left side	10	23790	710	23	21.95	127.35%	0.046	0.059	-

LTE FDD Band XXVI

Mode	Bandwidth (MHz)	Modulation	RB Size	RB start	Position	Distance (mm)	CH	Freq. (MHz)	Max. Rated Avg. Power + Max. Tolerance (dBm)	Measured Avg. Power (dBm)	Scaling	Averaged SAR over 1g (W/kg)		Plot page
												Measured	Reported	
LTE Band 26 (Head)	15MHz	QPSK	1 RB	36	LE Cheek	-	26865	831.5	24	22.94	127.64%	0.027	0.034	147
					LE Cheek	-	26965	841.5	24	22.96	127.06%	0.023	0.029	-
				74	RE Cheek	-	26825	822.5	24	23.01	125.60%	0.017	0.021	-
					RE Tilt	-	26825	822.5	24	23.01	125.60%	0.00686	0.009	-
					LE Cheek	-	26825	822.5	24	23.01	125.60%	0.026	0.033	-
					LE Tilt	-	26825	822.5	24	23.01	125.60%	0.012	0.015	-
			36 RB	0	RE Cheek	-	26825	822.5	23	21.89	129.12%	0.013	0.017	-
					RE Tilt	-	26825	822.5	23	21.89	129.12%	0.00545	0.007	-
					LE Cheek	-	26825	822.5	23	21.89	129.12%	0.019	0.025	-
					LE Tilt	-	26825	822.5	23	21.89	129.12%	0.00944	0.012	-
			75 RB		RE Cheek	-	26865	831.5	23	21.88	129.42%	0.012	0.016	-
					RE Tilt	-	26865	831.5	23	21.88	129.42%	0.00502	0.006	-
					LE Cheek	-	26865	831.5	23	21.88	129.42%	0.019	0.025	-
					LE Tilt	-	26865	831.5	23	21.88	129.42%	0.00931	0.012	-
LTE Band 26 (Hotspot)	15MHz	QPSK	1 RB	36	Front side	10	26865	831.5	24	22.94	127.64%	0.270	0.345	-
					Front side	10	26956	841.5	24	22.96	127.06%	0.242	0.307	-
				74	Front side	10	26825	822.5	24	23.01	125.60%	0.295	0.371	148
					Back side	10	26825	822.5	24	23.01	125.60%	0.109	0.137	-
					Bottom side	10	26825	822.5	24	23.01	125.60%	0.173	0.217	-
					Right side	10	26825	822.5	24	23.01	125.60%	0.106	0.133	-
					Left side	10	26825	822.5	24	23.01	125.60%	0.044	0.055	-
			36 RB	0	Front side	10	26825	822.5	23	21.89	129.12%	0.203	0.262	-
					Back side	10	26825	822.5	23	21.89	129.12%	0.078	0.101	-
					Bottom side	10	26825	822.5	23	21.89	129.12%	0.145	0.187	-
					Right side	10	26825	822.5	23	21.89	129.12%	0.085	0.110	-
					Left side	10	26825	822.5	23	21.89	129.12%	0.032	0.041	-
			75 RB		Front side	10	26865	831.5	23	21.88	129.42%	0.209	0.270	-
					Back side	10	26865	831.5	23	21.88	129.42%	0.080	0.104	-
					Bottom side	10	26865	831.5	23	21.88	129.42%	0.138	0.179	-
					Right side	10	26865	831.5	23	21.88	129.42%	0.082	0.106	-
					Left side	10	26865	831.5	23	21.88	129.42%	0.031	0.040	-

LTE TDD Band XXXVIII

Mode	Bandwidth (MHz)	Modulation	RB Size	RB start	Position	Distance (mm)	CH	Freq. (MHz)	Max. Rated Avg. Power + Max. Tolerance (dBm)	Measured Avg. Power (dBm)	Scaling	Averaged SAR over 1g (W/kg)		Plot page
												Measured	Reported	
LTE Band 38 (Head)	20MHz	QPSK	1 RB	0	RE Cheek	-	38150	2610	24	23.27	118.30%	0.037	0.044	149
				50	RE Cheek	-	37850	2580	24	23.21	119.95%	0.032	0.038	-
					RE Cheek	-	38000	2595	24	23.32	116.95%	0.032	0.037	-
					RE Tilt	-	38000	2595	24	23.32	116.95%	0.011	0.013	-
					LE Cheek	-	38000	2595	24	23.32	116.95%	0.00232	0.003	-
					LE Tilt	-	38000	2595	24	23.32	116.95%	0.002	0.002	-
			50 RB	50	RE Cheek	-	38000	2595	23	22.55	110.92%	0.025	0.028	-
					RE Tilt	-	38000	2595	23	22.55	110.92%	0.00942	0.010	-
					LE Cheek	-	38000	2595	23	22.55	110.92%	0.00173	0.002	-
					LE Tilt	-	38000	2595	23	22.55	110.92%	0.00142	0.002	-
			100 RB		RE Cheek	-	38000	2595	23	22.33	116.68%	0.024	0.028	-
					RE Tilt	-	38000	2595	23	22.33	116.68%	0.00912	0.011	-
					LE Cheek	-	38000	2595	23	22.33	116.68%	0.00155	0.002	-
					LE Tilt	-	38000	2595	23	22.33	116.68%	0.00141	0.002	-
LTE Band 38 (Hotspot)	20MHz	QPSK	1 RB	0	Bottom side	10	38150	2610	24	23.27	118.30%	0.068	0.080	150
				50	Front side	10	38000	2590	24	23.32	116.95%	0.059	0.069	-
					Back side	10	38000	2590	24	23.32	116.95%	0.041	0.048	-
					Bottom side	10	37850	2580	24	23.21	119.95%	0.058	0.070	-
					Bottom side	10	38000	2590	24	23.32	116.95%	0.063	0.074	-
					Right side	10	38000	2590	24	23.32	116.95%	0.036	0.042	-
					Left side	10	38000	2590	24	23.32	116.95%	0.030	0.035	-
			50 RB	50	Front side	10	38000	2595	23	22.55	110.92%	0.050	0.055	-
					Back side	10	38000	2595	23	22.55	110.92%	0.030	0.033	-
					Bottom side	10	38000	2595	23	22.55	110.92%	0.053	0.059	-
					Right side	10	38000	2595	23	22.55	110.92%	0.029	0.032	-
					Left side	10	38000	2595	23	22.55	110.92%	0.025	0.028	-
			100 RB		Front side	10	38000	2595	23	22.33	116.68%	0.048	0.056	-
					Back side	10	38000	2595	23	22.33	116.68%	0.027	0.032	-
					Bottom side	10	38000	2595	23	22.33	116.68%	0.052	0.061	-
					Right side	10	38000	2595	23	22.33	116.68%	0.028	0.033	-
					Left side	10	38000	2595	23	22.33	116.68%	0.024	0.028	-

LTE TDD Band XLI

Mode	Bandwidth (MHz)	Modulation	RB Size	RB start	Position	Distance (mm)	CH	Freq. (MHz)	Max. Rated Avg. Power + Max. Tolerance (dBm)	Measured Avg. Power (dBm)	Scaling	Averaged SAR over 1g (W/kg)		Plot page
												Measured	Reported	
LTE Band 41 (Head)	20MHz	QPSK	1 RB	50	RE Cheek	-	40240	2555	24	23.30	117.49%	0.029	0.034	-
					RE Cheek	-	40540	2585	24	23.35	116.14%	0.031	0.036	-
					RE Cheek	-	40840	2615	24	23.31	117.22%	0.044	0.052	151
					RE Cheek	-	41140	2645	24	23.29	117.76%	0.037	0.044	-
					RE Tilt	-	40540	2585	24	23.35	116.14%	0.012	0.014	-
					LE Cheek	-	40540	2585	24	23.35	116.14%	0.017	0.020	-
					LE Tilt	-	40540	2585	24	23.35	116.14%	0.019	0.022	-
			50 RB	50	RE Cheek	-	41140	2645	23	22.46	113.24%	0.030	0.034	-
					RE Tilt	-	41140	2645	23	22.46	113.24%	0.00966	0.011	-
					LE Cheek	-	41140	2645	23	22.46	113.24%	0.013	0.015	-
					LE Tilt	-	41140	2645	23	22.46	113.24%	0.017	0.019	-
			100 RB		RE Cheek	-	41140	2645	23	22.37	115.61%	0.028	0.032	-
					RE Tilt	-	41140	2645	23	22.37	115.61%	0.00943	0.011	-
					LE Cheek	-	41140	2645	23	22.37	115.61%	0.013	0.015	-
					LE Tilt	-	41140	2645	23	22.37	115.61%	0.017	0.020	-
LTE Band 41 (Hotspot)	20MHz	QPSK	1 RB	50	Front side	10	40540	2585	24	23.35	116.14%	0.060	0.070	-
					Back side	10	40540	2585	24	23.35	116.14%	0.040	0.046	-
					Bottom side	10	40240	2555	24	23.30	117.49%	0.052	0.061	-
					Bottom side	10	40540	2585	24	23.35	116.14%	0.067	0.078	-
					Bottom side	10	40840	2615	24	23.31	117.22%	0.087	0.102	-
					Bottom side	10	41140	2645	24	23.29	117.76%	0.118	0.139	152
					Right side	10	40540	2585	24	23.35	116.14%	0.043	0.050	-
					Left side	10	40540	2585	24	23.35	116.14%	0.034	0.039	-
			50 RB	50	Front side	10	41140	2645	23	22.46	113.24%	0.085	0.096	-
					Back side	10	41140	2645	23	22.46	113.24%	0.064	0.072	-
					Bottom side	10	41140	2645	23	22.46	113.24%	0.098	0.111	-
					Right side	10	41140	2645	23	22.46	113.24%	0.078	0.088	-
					Left side	10	41140	2645	23	22.46	113.24%	0.057	0.065	-
			100 RB		Front side	10	41140	2645	23	22.37	115.61%	0.081	0.094	-
					Back side	10	41140	2645	23	22.37	115.61%	0.061	0.071	-
					Bottom side	10	41140	2645	23	22.37	115.61%	0.093	0.108	-
					Right side	10	41140	2645	23	22.37	115.61%	0.072	0.083	-
					Left side	10	41140	2645	23	22.37	115.61%	0.055	0.064	-

WLAN802.11 b

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	
WLAN 802.11 b (Head)	RE Cheek	-	1	2412	16.5	15.42	128.23%	0.357	0.458	-
	RE Tilt	-	1	2412	16.5	15.42	128.23%	0.344	0.441	-
	LE Cheek	-	1	2412	16.5	15.42	128.23%	0.720	0.923	-
	LE Cheek	-	6	2437	16.5	15.37	129.72%	0.799	1.036	-
	LE Tilt	-	1	2412	16.5	15.42	128.23%	0.778	0.998	-
	LE Tilt	-	6	2437	16.5	15.37	129.72%	0.856	1.110	153
	LE Tilt*	-	6	2437	16.5	15.37	129.72%	0.851	1.104	-
Hotspot	Front side	10	1	2412	16.5	15.49	126.18%	0.090	0.114	154
	Back side	10	1	2412	16.5	15.49	126.18%	0.054	0.068	-
	Top side	10	1	2412	16.5	15.49	126.18%	0.075	0.095	-
	Left side	10	1	2412	16.5	15.49	126.18%	0.036	0.045	-

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

WLAN802.11 a 5.2G

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	
WLAN 802.11 a 5.2G (Head)	RE Cheek	-	40	5200	16	14.63	137.09%	0.279	0.382	-
	RE Tilt	-	40	5200	16	14.63	137.09%	0.228	0.313	-
	LE Cheek	-	40	5200	16	14.63	137.09%	0.505	0.692	155
	LE Tilt	-	40	5200	16	14.63	137.09%	0.374	0.513	-
Body-worn	Front side	10	40	5200	16	14.63	137.09%	0.078	0.107	156
	Back side	10	40	5200	16	14.63	137.09%	0.026	0.036	-

Mode	Position	Distance (mm)	CH	Freq. (MHz)	Max. Rated Avg. Power + Max. Tolerance (dBm)	Measured Avg. Power (dBm)	Scaling	Averaged SAR over 10g (W/kg)		Plot page
								Measured	Reported	
WLAN 802.11 a 5.2G (product specific 10-g SAR)	Front side	0	40	5200	16	14.63	137.09%	0.323	0.443	157
	Back side	0	40	5200	16	14.63	137.09%	0.035	0.048	-
	Top side	0	40	5200	16	14.63	137.09%	0.060	0.082	-
	Right side	0	40	5200	16	14.63	137.09%	0.054	0.074	-

WLAN802.11 a 5.3G

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	
WLAN 802.11 a 5.3G (Head)	RE Cheek	-	64	5320	16	14.95	127.35%	0.247	0.315	-
	RE Tilt	-	64	5320	16	14.95	127.35%	0.206	0.262	-
	LE Cheek	-	64	5320	16	14.95	127.35%	0.621	0.791	158
	LE Tilt	-	64	5320	16	14.95	127.35%	0.325	0.414	-
Body-worn	Front side	10	64	5320	16	14.95	127.35%	0.095	0.121	159
	Back side	10	64	5320	16	14.95	127.35%	0.030	0.038	-

Mode	Position	Distance (mm)	CH	Freq. (MHz)	Max. Rated Avg. Power + Max. Tolerance (dBm)	Measured Avg. Power (dBm)	Scaling	Averaged SAR over 10g (W/kg)		Plot page
								Measured	Reported	
WLAN 802.11 a 5.3G (product specific 10-g	Front side	0	64	5320	16	14.95	127.35%	0.352	0.448	160
	Back side	0	64	5320	16	14.95	127.35%	0.044	0.056	-
	Top side	0	64	5320	16	14.95	127.35%	0.079	0.101	-
	Right side	0	64	5320	16	14.95	127.35%	0.077	0.098	-

WLAN802.11 a 5.6G

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	
WLAN 802.11 a 5.6G (Head)	RE Cheek	-	140	5700	16	14.91	128.53%	0.078	0.100	-
	RE Tilt	-	140	5700	16	14.91	128.53%	0.056	0.072	-
	LE Cheek	-	140	5700	16	14.91	128.53%	0.221	0.284	161
	LE Tilt	-	140	5700	16	14.91	128.53%	0.115	0.148	-
Body-worn	Front side	10	140	5700	16	14.91	128.53%	0.040	0.051	162
	Back side	10	140	5700	16	14.91	128.53%	0.021	0.027	-

Mode	Position	Distance (mm)	CH	Freq. (MHz)	Max. Rated Avg. Power + Max. Tolerance (dBm)	Measured Avg. Power (dBm)	Scaling	Averaged SAR over 10g (W/kg)		Plot page
								Measured	Reported	
WLAN 802.11 a 5.6G (product specific 10-g SAR)	Front side	0	140	5700	16	14.91	128.53%	0.166	0.213	163
	Back side	0	140	5700	16	14.91	128.53%	0.039	0.050	-
	Top side	0	140	5700	16	14.91	128.53%	0.056	0.072	-
	Right side	0	140	5700	16	14.91	128.53%	0.068	0.087	-

WLAN802.11 a 5.8G

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	
WLAN 802.11 a 5.8G (Head)	RE Cheek	-	149	5745	16	14.93	127.94%	0.065	0.083	-
	RE Tilt	-	149	5745	16	14.93	127.94%	0.049	0.063	-
	LE Cheek	-	149	5745	16	14.93	127.94%	0.227	0.290	164
	LE Tilt	-	149	5745	16	14.93	127.94%	0.105	0.134	-
Body-worn	Front side	10	149	5745	16	14.93	127.94%	0.025	0.032	-
	Back side	10	149	5745	16	14.93	127.94%	0.030	0.038	165

Mode	Position	Distance (mm)	CH	Freq. (MHz)	Max. Rated Avg. Power + Max. Tolerance (dBm)	Measured Avg. Power (dBm)	Scaling	Averaged SAR over 10g (W/kg)		Plot page
								Measured	Reported	
WLAN 802.11 a 5.8G (product specific 10-g SAR)	Front side	0	149	5745	16	14.93	127.94%	0.136	0.174	166
	Back side	0	149	5745	16	14.93	127.94%	0.036	0.046	-
	Top side	0	149	5745	16	14.93	127.94%	0.047	0.060	-
	Right side	0	149	5745	16	14.93	127.94%	0.069	0.088	-

3. Simultaneous Transmission Analysis

Simultaneous Transmission Scenarios:

Simultaneous Transmit Configurations	Head	Body-Worn	Hotspot	Product specific 10-g SAR
GSM + 2.4GHz Wi-Fi	Yes	Yes	No	Yes
GPRS + 2.4GHz Wi-Fi	No	No	Yes	Yes
WCDMA + 2.4GHz Wi-Fi	Yes	Yes	Yes	Yes
LTE + 2.4GHz Wi-Fi	Yes	Yes	Yes	Yes
GSM + 5GHz Wi-Fi	Yes	Yes	No	Yes
GPRS + 5GHz Wi-Fi	No	No	No	Yes
WCDMA + 5GHz Wi-Fi	Yes	Yes	No	Yes
LTE + 5GHz Wi-Fi	Yes	Yes	No	Yes
GSM + BT	No	Yes	No	Yes
GPRS + BT	No	No	No	Yes
WCDMA + BT	No	Yes	No	Yes
LTE + BT	No	Yes	No	Yes
GSM + + 5GHz Wi-Fi + BT	No	Yes	No	Yes
GPRS + + 5GHz Wi-Fi + BT	No	No	No	Yes
WCDMA + + 5GHz Wi-Fi + BT	No	Yes	No	Yes
LTE + + 5GHz Wi-Fi + BT	No	Yes	No	Yes

Notes:

1. WiFi 2.4G and BT can't transmit simultaneously.
2. The device does not support VoLTE.
3. The device does not support DTM function. Body-worn accessory testing is typically associated with voice operations. Therefore, GSM voice was evaluated for body-worn SAR.
4.Based on KDB447498D01 note 36, when SAR test exclusion is allowed by other published RF exposure KDB procedures, such as the 2.5 cm hotspot mode SAR test exclusion for an edge or surface, then estimated SAR is not required to determine simultaneous SAR test exclusion. Also, based on KDB648474D04 note 6, simultaneous transmission SAR for product specific 10-g SAR requires consideration only when standalone 10-g SAR is required.

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	position	max. power (dB)	max. power (mW)	f(GHz)	distance (mm)	x	Estimated SAR
BT	body-worn	9	7.943	2.48	10	7.5	0.167 (1g)
BT	product specific 10g-SAR	9	7.943	2.48	5	18.5	0.133 (10g)

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.

Simultaneous Transmission Combination

reported SAR WWAN and WLAN 2.4GHz, ΣSAR evaluation					
Frequency band	Position		reported SAR / W/kg		ΣSAR
			WWAN	WLAN	<1.6W/kg
GSM 850	Head	Right cheek	0.015	0.458	0.473
		Right tilt	0.006	0.441	0.447
		Left cheek	0.036	1.036	1.072
		Left tilt	0.005	1.110	1.115
GPRS 850 (1Dn2UP)	Hotspot	Front	0.871	0.114	0.985
		Back	0.265	0.068	0.333
		Top	-	0.095	-
		Bottom	0.486	-	-
		Right	0.253	-	-
		Left	0.086	0.045	0.131
GSM 1900	Head	Right cheek	0.041	0.458	0.499
		Right tilt	0.022	0.441	0.463
		Left cheek	0.027	1.036	1.063
		Left tilt	0.031	1.110	1.141
GPRS 1900 (1Dn2UP)	Hotspot	Front	1.049	0.114	1.163
		Back	0.185	0.068	0.253
		Top	-	0.095	-
		Bottom	1.168	-	-
		Right	0.043	-	-
		Left	0.185	0.045	0.230
WCDMA Band II	Head	Right cheek	0.141	0.458	0.599
		Right tilt	0.034	0.441	0.475
		Left cheek	0.034	1.036	1.070
		Left tilt	0.031	1.110	1.141
	Hotspot	Front	1.075	0.114	1.189
		Back	0.119	0.068	0.187
		Top	-	0.095	-
		Bottom	1.184	-	-
		Right	0.029	-	-
		Left	0.134	0.045	0.179

reported SAR WWAN and WLAN 2.4GHz, ΣSAR evaluation					
Frequency band	Position		reported SAR / W/kg		ΣSAR
			WWAN	WLAN	<1.6W/kg
WCDMA Band IV	Head	Right cheek	0.084	0.458	0.542
		Right tilt	0.022	0.441	0.463
		Left cheek	0.037	1.036	1.073
		Left tilt	0.027	1.110	1.137
	Hotspot	Front	0.834	0.114	0.948
		Back	0.140	0.068	0.208
		Top	-	0.095	-
		Bottom	1.080	-	-
		Right	0.035	-	-
		Left	0.090	0.045	0.135
WCDMA Band V	Head	Right cheek	0.035	0.458	0.493
		Right tilt	0.008	0.441	0.449
		Left cheek	0.040	1.036	1.076
		Left tilt	0.016	1.110	1.126
	Hotspot	Front	0.391	0.114	0.505
		Back	0.152	0.068	0.220
		Top	-	0.095	-
		Bottom	0.293	-	-
		Right	0.183	-	-
		Left	0.075	0.045	0.120
LTE FDD Band II	Head	Right cheek	0.101	0.458	0.559
		Right tilt	0.025	0.441	0.466
		Left cheek	0.027	1.036	1.063
		Left tilt	0.021	1.110	1.131
	Hotspot	Front	0.638	0.114	0.752
		Back	0.116	0.068	0.184
		Top	-	0.095	-
		Bottom	1.110	-	-
		Right	0.022	-	-
		Left	0.144	0.045	0.189

reported SAR WWAN and WLAN 2.4GHz, ΣSAR evaluation					
Frequency band	Position		reported SAR / W/kg		ΣSAR
			WWAN	WLAN	<1.6W/kg
LTE FDD Band IV	Head	Right cheek	0.071	0.458	0.529
		Right tilt	0.023	0.441	0.464
		Left cheek	0.021	1.036	1.057
		Left tilt	0.027	1.110	1.137
	Hotspot	Front	1.176	0.114	1.290
		Back	0.202	0.068	0.270
		Top	-	0.095	-
		Bottom	1.162	-	-
		Right	0.062	-	-
		Left	0.125	0.045	0.170
LTE FDD Band V	Head	Right cheek	0.018	0.458	0.476
		Right tilt	0.007	0.441	0.448
		Left cheek	0.024	1.036	1.060
		Left tilt	0.009	1.110	1.119
	Hotspot	Front	0.334	0.114	0.448
		Back	0.109	0.068	0.177
		Top	-	0.095	-
		Bottom	0.198	-	-
		Right	0.110	-	-
		Left	0.034	0.045	0.079
LTE FDD Band VII	Head	Right cheek	0.061	0.458	0.519
		Right tilt	0.033	0.441	0.474
		Left cheek	0.059	1.036	1.095
		Left tilt	0.040	1.110	1.150
	Hotspot	Front	0.162	0.114	0.276
		Back	0.085	0.068	0.153
		Top	-	0.095	-
		Bottom	0.139	-	-
		Right	0.085	-	-
		Left	0.069	0.045	0.114

reported SAR WWAN and WLAN 2.4GHz, ΣSAR evaluation					
Frequency band	Position		reported SAR / W/kg		ΣSAR
			WWAN	WLAN	<1.6W/kg
LTE FDD Band XII	Head	Right cheek	0.003	0.458	0.461
		Right tilt	0.004	0.441	0.445
		Left cheek	0.003	1.036	1.039
		Left tilt	0.002	1.110	1.112
	Hotspot	Front	0.019	0.114	0.133
		Back	0.004	0.068	0.072
		Top	-	0.095	-
		Bottom	0.009	-	-
		Right	0.010	-	-
		Left	0.009	0.045	0.054
LTE FDD Band XVII	Head	Right cheek	0.025	0.458	0.483
		Right tilt	0.012	0.441	0.453
		Left cheek	0.026	1.036	1.062
		Left tilt	0.010	1.110	1.120
	Hotspot	Front	0.202	0.114	0.316
		Back	0.087	0.068	0.155
		Top	-	0.095	-
		Bottom	0.127	-	-
		Right	0.121	-	-
		Left	0.072	0.045	0.117
LTE FDD Band XXVI	Head	Right cheek	0.021	0.458	0.479
		Right tilt	0.009	0.441	0.450
		Left cheek	0.034	1.036	1.070
		Left tilt	0.015	1.110	1.125
	Hotspot	Front	0.371	0.114	0.485
		Back	0.137	0.068	0.205
		Top	-	0.095	-
		Bottom	0.217	-	-
		Right	0.133	-	-
		Left	0.055	0.045	0.100

reported SAR WWAN and WLAN 2.4GHz, ΣSAR evaluation					
Frequency band	Position		reported SAR / W/kg		ΣSAR
			WWAN	WLAN	<1.6W/kg
LTE TDD Band XXVIII	Head	Right cheek	0.044	0.458	0.502
		Right tilt	0.013	0.441	0.454
		Left cheek	0.003	1.036	1.039
		Left tilt	0.002	1.110	1.112
	Hotspot	Front	0.069	0.114	0.183
		Back	0.048	0.068	0.116
		Top	-	0.095	-
		Bottom	0.080	-	-
		Right	0.042	-	-
		Left	0.035	0.045	0.080
LTE TDD Band XLI	Head	Right cheek	0.052	0.458	0.510
		Right tilt	0.014	0.441	0.455
		Left cheek	0.020	1.036	1.056
		Left tilt	0.022	1.110	1.132
	Hotspot	Front	0.096	0.114	0.210
		Back	0.072	0.068	0.140
		Top	-	0.095	-
		Bottom	0.139	-	-
		Right	0.088	-	-
		Left	0.065	0.045	0.110

reported SAR WWAN and WLAN 5GHz, ΣSAR evaluation					
Frequency band	Position		reported SAR / W/kg		ΣSAR
			WWAN	WLAN	<1.6W/kg
GSM 850	Head	Right cheek	0.015	0.382	0.397
		Right tilt	0.006	0.313	0.319
		Left cheek	0.036	0.791	0.827
		Left tilt	0.005	0.513	0.518
	Body-worn	Front	0.451	0.121	0.572
		Back	0.131	0.038	0.169
GSM 1900	Head	Right cheek	0.041	0.382	0.423
		Right tilt	0.022	0.313	0.335
		Left cheek	0.027	0.791	0.818
		Left tilt	0.031	0.513	0.544
	Body-worn	Front	0.574	0.121	0.695
		Back	0.115	0.038	0.153
WCDMA Band II	Head	Right cheek	0.141	0.382	0.523
		Right tilt	0.034	0.313	0.347
		Left cheek	0.034	0.791	0.825
		Left tilt	0.031	0.513	0.544
	Body-worn	Front	1.075	0.121	1.196
		Back	0.119	0.038	0.157
WCDMA Band IV	Head	Right cheek	0.084	0.382	0.466
		Right tilt	0.022	0.313	0.335
		Left cheek	0.037	0.791	0.828
		Left tilt	0.027	0.513	0.540
	Body-worn	Front	0.834	0.121	0.955
		Back	0.140	0.038	0.178
WCDMA Band V	Head	Right cheek	0.035	0.382	0.417
		Right tilt	0.008	0.313	0.321
		Left cheek	0.040	0.791	0.831
		Left tilt	0.016	0.513	0.529
	Body-worn	Front	0.391	0.121	0.512
		Back	0.152	0.038	0.190

reported SAR WWAN and WLAN 5GHz, ΣSAR evaluation					
Frequency band	Position		reported SAR / W/kg		ΣSAR
			WWAN	WLAN	<1.6W/kg
LTE FDD Band II	Head	Right cheek	0.101	0.382	0.483
		Right tilt	0.025	0.313	0.338
		Left cheek	0.027	0.791	0.818
		Left tilt	0.021	0.513	0.534
	Body-worn	Front	0.638	0.121	0.759
		Back	0.116	0.038	0.154
LTE FDD Band IV	Head	Right cheek	0.071	0.382	0.453
		Right tilt	0.023	0.313	0.336
		Left cheek	0.021	0.791	0.812
		Left tilt	0.027	0.513	0.540
	Body-worn	Front	1.176	0.121	1.297
		Back	0.202	0.038	0.240
LTE FDD Band V	Head	Right cheek	0.018	0.382	0.400
		Right tilt	0.007	0.313	0.320
		Left cheek	0.024	0.791	0.815
		Left tilt	0.009	0.513	0.522
	Body-worn	Front	0.334	0.121	0.455
		Back	0.109	0.038	0.147
LTE FDD Band VII	Head	Right cheek	0.061	0.382	0.443
		Right tilt	0.033	0.313	0.346
		Left cheek	0.059	0.791	0.850
		Left tilt	0.040	0.513	0.553
	Body-worn	Front	0.162	0.121	0.283
		Back	0.085	0.038	0.123
LTE FDD Band XII	Head	Right cheek	0.003	0.382	0.385
		Right tilt	0.004	0.313	0.317
		Left cheek	0.003	0.791	0.794
		Left tilt	0.002	0.513	0.515
	Body-worn	Front	0.019	0.121	0.140
		Back	0.004	0.038	0.042

reported SAR WWAN and WLAN 5GHz, ΣSAR evaluation					
Frequency band	Position		reported SAR / W/kg		ΣSAR
			WWAN	WLAN	<1.6W/kg
LTE FDD Band XVII	Head	Right cheek	0.025	0.382	0.407
		Right tilt	0.012	0.313	0.325
		Left cheek	0.026	0.791	0.817
		Left tilt	0.010	0.513	0.523
	Body-worn	Front	0.202	0.121	0.323
		Back	0.087	0.038	0.125
LTE FDD Band XXVI	Head	Right cheek	0.021	0.382	0.403
		Right tilt	0.009	0.313	0.322
		Left cheek	0.034	0.791	0.825
		Left tilt	0.015	0.513	0.528
	Body-worn	Front	0.371	0.121	0.492
		Back	0.137	0.038	0.175
LTE TDD Band XXVIII	Head	Right cheek	0.044	0.382	0.426
		Right tilt	0.013	0.313	0.326
		Left cheek	0.003	0.791	0.794
		Left tilt	0.002	0.513	0.515
	Body-worn	Front	0.069	0.121	0.190
		Back	0.048	0.038	0.086
LTE TDD Band XLI	Head	Right cheek	0.052	0.382	0.434
		Right tilt	0.014	0.313	0.327
		Left cheek	0.020	0.791	0.811
		Left tilt	0.022	0.513	0.535
	Body-worn	Front	0.096	0.121	0.217
		Back	0.072	0.038	0.110

reported SAR WWAN and Bluetooth, ΣSAR evaluation					
Frequency band	Position		reported SAR / W/kg		ΣSAR
			WWAN	Bluetooth	<1.6W/kg
GSM 850	Body-Worn	Front	0.451	0.167	0.618
		Back	0.131	0.167	0.298
GSM 1900	Body-Worn	Front	0.574	0.167	0.741
		Back	0.115	0.167	0.282
WCDMA Band II	Body-Worn	Front	1.075	0.167	1.242
		Back	0.119	0.167	0.286
WCDMA Band IV	Body-Worn	Front	0.834	0.167	1.001
		Back	0.140	0.167	0.307
WCDMA Band V	Body-Worn	Front	0.391	0.167	0.558
		Back	0.152	0.167	0.319
LTE FDD Band II	Body-Worn	Front	0.638	0.167	0.805
		Back	0.116	0.167	0.283
LTE FDD Band IV	Body-Worn	Front	1.176	0.167	1.343
		Back	0.202	0.167	0.369
LTE FDD Band V	Body-Worn	Front	0.334	0.167	0.501
		Back	0.109	0.167	0.276
LTE FDD Band VII	Body-Worn	Front	0.162	0.167	0.329
		Back	0.085	0.167	0.252
LTE FDD Band XII	Body-Worn	Front	0.019	0.167	0.186
		Back	0.004	0.167	0.171
LTE FDD Band XVII	Body-Worn	Front	0.202	0.167	0.369
		Back	0.087	0.167	0.254
LTE FDD Band XXVI	Body-Worn	Front	0.371	0.167	0.538
		Back	0.137	0.167	0.304
LTE TDD Band XXXVIII	Body-Worn	Front	0.069	0.167	0.236
		Back	0.048	0.167	0.215
LTE TDD Band XLI	Body-Worn	Front	0.096	0.167	0.263
		Back	0.072	0.167	0.239

reported SAR WWAN and WLAN 5G and Bluetooth, ΣSAR evaluation						
Frequency band	Position		reported SAR / W/kg			ΣSAR
			WWAN	WLAN 5G	Bluetooth	<1.6W/kg
GSM 850	Body-Worn	Front	0.451	0.121	0.167	0.739
		Back	0.131	0.038	0.167	0.336
GSM 1900	Body-Worn	Front	0.574	0.121	0.167	0.862
		Back	0.115	0.038	0.167	0.32
WCDMA Band II	Body-Worn	Front	1.075	0.121	0.167	1.363
		Back	0.119	0.038	0.167	0.324
WCDMA Band IV	Body-Worn	Front	0.834	0.121	0.167	1.122
		Back	0.140	0.038	0.167	0.345
WCDMA Band V	Body-Worn	Front	0.391	0.121	0.167	0.679
		Back	0.152	0.038	0.167	0.357
LTE FDD Band II	Body-Worn	Front	0.638	0.121	0.167	0.926
		Back	0.116	0.038	0.167	0.321
LTE FDD Band IV	Body-Worn	Front	1.176	0.121	0.167	1.464
		Back	0.202	0.038	0.167	0.407
LTE FDD Band V	Body-Worn	Front	0.334	0.121	0.167	0.622
		Back	0.109	0.038	0.167	0.314
LTE FDD Band VII	Body-Worn	Front	0.162	0.121	0.167	0.450
		Back	0.085	0.038	0.167	0.290
LTE FDD Band XII	Body-Worn	Front	0.019	0.121	0.167	0.307
		Back	0.004	0.038	0.167	0.209
LTE FDD Band XVII	Body-Worn	Front	0.202	0.121	0.167	0.49
		Back	0.087	0.038	0.167	0.292
LTE FDD Band XXVI	Body-Worn	Front	0.371	0.121	0.167	0.659
		Back	0.137	0.038	0.167	0.342
LTE TDD Band XXXVIII	Body-Worn	Front	0.069	0.121	0.167	0.357
		Back	0.048	0.038	0.167	0.253
LTE TDD Band XLI	Body-Worn	Front	0.096	0.121	0.167	0.384
		Back	0.072	0.038	0.167	0.277

reported SAR WWAN and WLAN 5G, ΣSAR evaluation					
Frequency band	Position		reported SAR / W/kg		ΣSAR
			WWAN	WLAN	<4.0W/kg
GSM 850	product specific 10-g SAR	Front	-	0.448	-
		Back	-	0.056	-
		Top	-	0.101	-
		Right	-	0.098	-
GPRS 850	product specific 10-g SAR	Front	-	0.448	-
		Back	-	0.056	-
		Top	-	0.101	-
		Right	-	0.098	-
GSM 1900	product specific 10-g SAR	Front	-	0.448	-
		Back	-	0.056	-
		Top	-	0.101	-
		Right	-	0.098	-
GPRS 1900	product specific 10-g SAR	Front	-	0.448	-
		Back	-	0.056	-
		Top	-	0.101	-
		Right	-	0.098	-
WCDMA Band II	product specific 10-g SAR	Front	-	0.448	-
		Back	-	0.056	-
		Top	-	0.101	-
		Right	-	0.098	-
WCDMA Band IV	product specific 10-g SAR	Front	-	0.448	-
		Back	-	0.056	-
		Top	-	0.101	-
		Right	-	0.098	-
WCDMA Band V	product specific 10-g SAR	Front	-	0.448	-
		Back	-	0.056	-
		Top	-	0.101	-
		Right	-	0.098	-
LTE FDD Band II	product specific 10-g SAR	Front	-	0.448	-
		Back	-	0.056	-
		Top	-	0.101	-
		Right	-	0.098	-

reported SAR WWAN and WLAN 5G, ΣSAR evaluation					
Frequency band	Position		reported SAR / W/kg		ΣSAR
			WWAN	WLAN	<4.0W/kg
LTE FDD Band IV	product specific 10-g SAR	Front	-	0.448	-
		Back	-	0.056	-
		Top	-	0.101	-
		Right	-	0.098	-
LTE FDD Band V	product specific 10-g SAR	Front	-	0.448	-
		Back	-	0.056	-
		Top	-	0.101	-
		Right	-	0.098	-
LTE FDD Band VII	product specific 10-g SAR	Front	-	0.448	-
		Back	-	0.056	-
		Top	-	0.101	-
		Right	-	0.098	-
LTE FDD Band XII	product specific 10-g SAR	Front	-	0.448	-
		Back	-	0.056	-
		Top	-	0.101	-
		Right	-	0.098	-
LTE FDD Band XVII	product specific 10-g SAR	Front	-	0.448	-
		Back	-	0.056	-
		Top	-	0.101	-
		Right	-	0.098	-
LTE FDD Band XXVI	product specific 10-g SAR	Front	-	0.448	-
		Back	-	0.056	-
		Top	-	0.101	-
		Right	-	0.098	-
LTE TDD Band XXXVIII	product specific 10-g SAR	Front	-	0.448	-
		Back	-	0.056	-
		Top	-	0.101	-
		Right	-	0.098	-
LTE TDD Band XLI	product specific 10-g SAR	Front	-	0.448	-
		Back	-	0.056	-
		Top	-	0.101	-
		Right	-	0.098	-

reported SAR WWAN and WLAN 5G and Bluetooth, ΣSAR evaluation						
Frequency band	Position		reported SAR / W/kg			ΣSAR
			WWAN	WLAN	Bluetooth	<4.0W/kg
GSM 850	product specific 10-g SAR	Front	-	0.448	0.133	-
		Back	-	0.056	0.133	-
		Top	-	0.101	0.133	-
		Right	-	0.098	0.133	-
GPRS 850	product specific 10-g SAR	Front	-	0.448	0.133	-
		Back	-	0.056	0.133	-
		Top	-	0.101	0.133	-
		Right	-	0.098	0.133	-
GSM 1900	product specific 10-g SAR	Front	-	0.448	0.133	-
		Back	-	0.056	0.133	-
		Top	-	0.101	0.133	-
		Right	-	0.098	0.133	-
GPRS 1900	product specific 10-g SAR	Front	-	0.448	0.133	-
		Back	-	0.056	0.133	-
		Top	-	0.101	0.133	-
		Right	-	0.098	0.133	-
WCDMA Band II	product specific 10-g SAR	Front	-	0.448	0.133	-
		Back	-	0.056	0.133	-
		Top	-	0.101	0.133	-
		Right	-	0.098	0.133	-
WCDMA Band IV	product specific 10-g SAR	Front	-	0.448	0.133	-
		Back	-	0.056	0.133	-
		Top	-	0.101	0.133	-
		Right	-	0.098	0.133	-
WCDMA Band V	product specific 10-g SAR	Front	-	0.448	0.133	-
		Back	-	0.056	0.133	-
		Top	-	0.101	0.133	-
		Right	-	0.098	0.133	-
LTE FDD Band II	product specific 10-g SAR	Front	-	0.448	0.133	-
		Back	-	0.056	0.133	-
		Top	-	0.101	0.133	-
		Right	-	0.098	0.133	-

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.27,2016	Jan.26,2017
Schmid & Partner Engineering AG	System Validation Dipole	D750V3	1015	Aug.24,2015	Aug.23,2016
		D835V2	4d063	Aug.24,2015	Aug.23,2016
		D1750V2	1008	Aug.20,2015	Aug.19,2016
		D1900V2	5d027	Apr.25,2016	Apr.24,2017
		D2450V2	727	Apr.19,2016	Apr.18,2017
		D2600V2	1005	Jan.21,2016	Jan.20,2017
		D5GHzV2	1023	Jan.26,2016	Jan.25,2017
Schmid & Partner Engineering AG	Data acquisition Electronics	DAE4	1336	Aug.26,2015	Aug.25,2016
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
Network Analyzer	Agilent	E5071C	MY46107530	Jan.07,2016	Jan.06,2017
Agilent	Dielectric Probe Kit	85070E	MY44300677	Calibration not required	Calibration not required
Agilent	Dual-directional coupler	772D	MY52180142	Apr.13,2016	Apr.12,2017
		778D	MY52180302	Apr.13,2016	Apr.12,2017

Manufacturer	Device	Type	Serial number	Date of last calibration	Date of next calibration
Agilent	RF Signal Generator	N5181A	MY50145142	Feb.19,2016	Feb.18,2017
Agilent	Power Meter	E4417A	MY51410006	Jan.07,2016	Jan.06,2017
Agilent	Power Sensor	E9301H	MY51470001	Jan.07,2016	Jan.06,2017
		E9301H	MY51470002	Jan.07,2016	Jan.06,2017
TECPEL	Digital thermometer	DTM-303A	TP130073	Feb.26,2016	Feb.25,2017
Anritsu	Radio Communication Test	MT8820C	6201061014	Oct.07,2015	Oct.06,2016
R&S	Radio Communication Test	CMW500	125470	Jul.09,2016	Jul.08,2017

5. Measurements

Date: 2016/7/5

GSM 850_Head_Le Cheek_CH 128

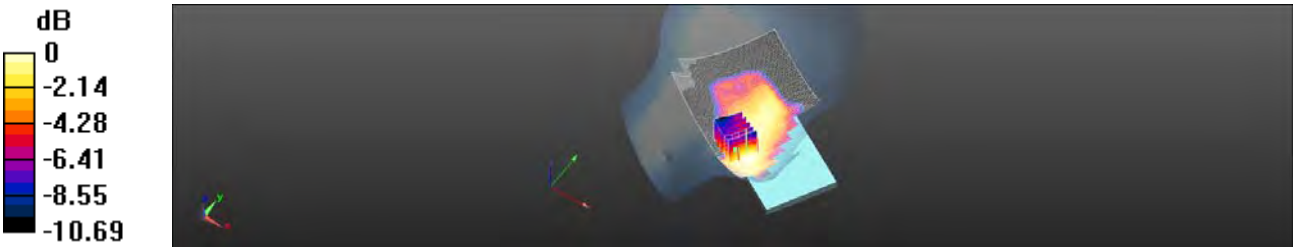
Communication System: GSM; Frequency: 824.2 MHz
Medium parameters used: f = 824.2 MHz; σ = 0.919 S/m; ε_r = 42.872; ρ = 1000 kg/m^3
Phantom section: Left Section
Ambient temperature: 22.3° C ; Liquid temperature: 21.9° C

DASY5 Configuration:

- Probe: EX3DV4 - SN3831; ConvF(8.84, 8.84, 8.84); Calibrated: 2016/1/27;
- Sensor-Surface: 2mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn1336; Calibrated: 2015/8/26
- Phantom: Head
- DASY52 52.8.8(1222); SEMCAD X 14.6.10(7331)

Configuration/Head/Area Scan (81x131x1): Interpolated grid: dx=15 mm, dy=15 mm
Maximum value of SAR (interpolated) = 0.0411 W/kg

Configuration/Head/Zoom Scan (5x5x7)/Cube 0: Measurement grid: dx=8mm, dy=8mm, dz=5mm
Reference Value = 3.123 V/m; Power Drift = 0.15 dB
Peak SAR (extrapolated) = 0.0430 W/kg
SAR(1 g) = 0.034 W/kg; SAR(10 g) = 0.025 W/kg
Maximum value of SAR (measured) = 0.0398 W/kg



0 dB = 0.0398 W/kg = -14.00 dBW/kg

Date: 2016/7/12

GSM 850_Body-worn_Front side _CH 190_10mm

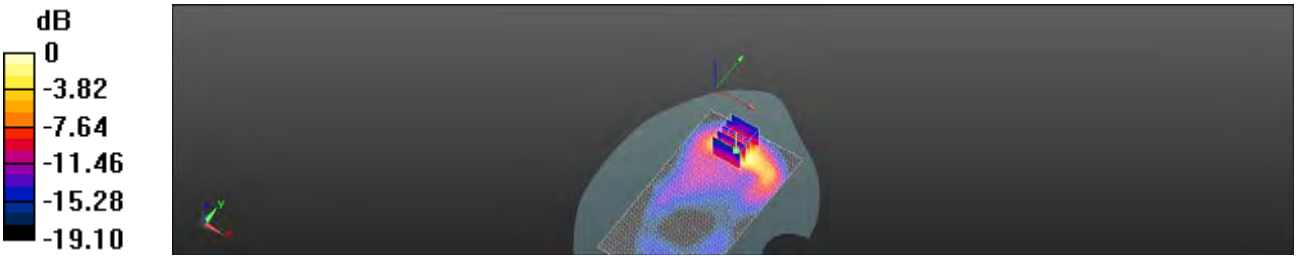
Communication System: GSM; Frequency: 836.6 MHz
Medium parameters used: f = 837 MHz; σ = 1.011 S/m; ε_r = 55.556; ρ = 1000 kg/m^3
Phantom section: Flat Section
Ambient temperature: 22.1° C ; Liquid temperature: 21.9° C

DASY5 Configuration:

- Probe: EX3DV4 - SN3831; ConvF(9.08, 9.08, 9.08); Calibrated: 2016/1/27;
- Sensor-Surface: 2mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn1336; Calibrated: 2015/8/26
- Phantom: Head
- DASY52 52.8.8(1222); SEMCAD X 14.6.10(7331)

Configuration/Head/Area Scan (71x131x1): Interpolated grid: dx=15 mm, dy=15 mm
Maximum value of SAR (interpolated) = 0.791 W/kg

Configuration/Head/Zoom Scan (5x5x7)/Cube 0: Measurement grid: dx=8mm, dy=8mm, dz=5mm
Reference Value = 3.456 V/m; Power Drift = 0.03 dB
Peak SAR (extrapolated) = 1.01 W/kg
SAR(1 g) = 0.421 W/kg; SAR(10 g) = 0.289 W/kg
Maximum value of SAR (measured) = 0.815 W/kg



0 dB = 0.815 W/kg = -0.89 dBW/kg

Date: 2016/7/12

GPRS 850_Hotspot_Front side _CH 190_10mm

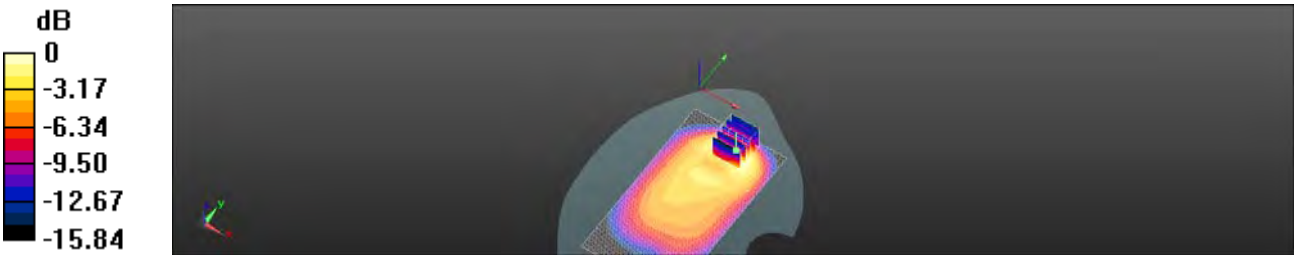
Communication System: GPRS (1Dn2Up); Frequency: 836.6 MHz
Medium parameters used: f = 837 MHz; σ = 1.011 S/m; ε_r = 55.556; ρ = 1000 kg/m^3
Phantom section: Flat Section
Ambient temperature: 22.1° C ; Liquid temperature: 21.9° C

DASY5 Configuration:

- Probe: EX3DV4 - SN3831; ConvF(9.08, 9.08, 9.08); Calibrated: 2016/1/27;
- Sensor-Surface: 2mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn1336; Calibrated: 2015/8/26
- Phantom: Head
- DASY52 52.8.8(1222); SEMCAD X 14.6.10(7331)

Configuration/Head/Area Scan (71x131x1): Interpolated grid: dx=15 mm, dy=15 mm
Maximum value of SAR (interpolated) = 1.05 W/kg

Configuration/Head/Zoom Scan (5x5x7)/Cube 0: Measurement grid: dx=8mm, dy=8mm, dz=5mm
Reference Value = 20.95 V/m; Power Drift = -0.11 dB
Peak SAR (extrapolated) = 1.62 W/kg
SAR(1 g) = 0.776 W/kg; SAR(10 g) = 0.445 W/kg
Maximum value of SAR (measured) = 1.14 W/kg



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

Date: 2016/7/6

GSM 1900_Head_Re Cheek_CH 512

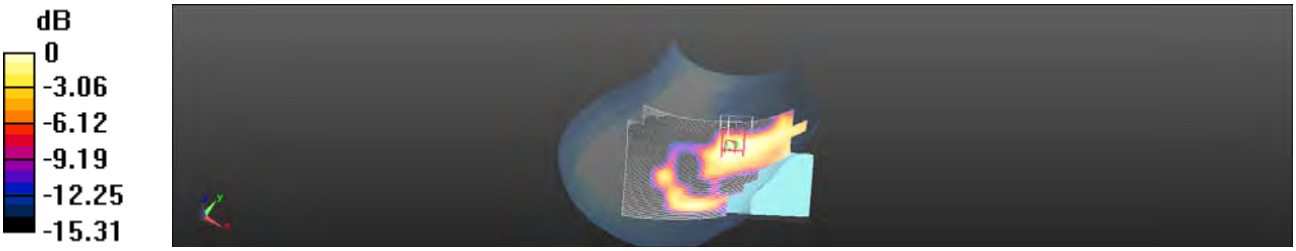
Communication System: GSM; Frequency: 1850.2 MHz
Medium parameters used: f = 1850.2 MHz; σ = 1.386 S/m; ε_r = 38.911; ρ = 1000 kg/m^3
Phantom section: Right Section
Ambient temperature: 22.2° C ; Liquid temperature: 21.8° C

DASY5 Configuration:

- Probe: EX3DV4 - SN3831; ConvF(7.66, 7.66, 7.66); Calibrated: 2016/1/27;
- Sensor-Surface: 2mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn1336; Calibrated: 2015/8/26
- Phantom: Head
- DASY52 52.8.8(1222); SEMCAD X 14.6.10(7331)

Configuration/Head/Area Scan (81x131x1): Interpolated grid: dx=15 mm, dy=15 mm
Maximum value of SAR (interpolated) = 0.0605 W/kg

Configuration/Head/Zoom Scan (5x5x7)/Cube 0: Measurement grid: dx=8mm, dy=8mm, dz=5mm
Reference Value = 3.563 V/m; Power Drift = -0.14 dB
Peak SAR (extrapolated) = 0.0600 W/kg
SAR(1 g) = 0.041 W/kg; SAR(10 g) = 0.025 W/kg
Maximum value of SAR (measured) = 0.0482 W/kg



0 dB = 0.0482 W/kg = -13.17 dBW/kg

Date: 2016/7/15

GSM 1900_Body-worn_Front side _CH 512_10mm

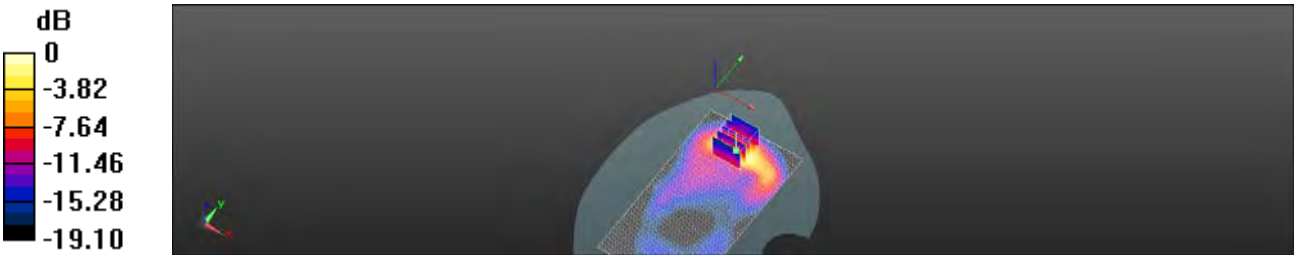
Communication System: GSM; Frequency: 1850.2 MHz
Medium parameters used: f = 1850.2 MHz; σ = 1.47 S/m; ε_r = 51.936; ρ = 1000 kg/m^3
Phantom section: Flat Section
Ambient temperature: 22.4° C ; Liquid temperature: 22.1° C

DASY5 Configuration:

- Probe: EX3DV4 - SN3831; ConvF(7.54, 7.54, 7.54); Calibrated: 2016/1/27;
- Sensor-Surface: 2mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn1336; Calibrated: 2015/8/26
- Phantom: Head
- DASY52 52.8.8(1222); SEMCAD X 14.6.10(7331)

Configuration/Head/Area Scan (71x131x1): Interpolated grid: dx=15 mm, dy=15 mm
Maximum value of SAR (interpolated) = 0.791 W/kg

Configuration/Head/Zoom Scan (5x5x7)/Cube 0: Measurement grid: dx=8mm, dy=8mm, dz=5mm
Reference Value = 3.456 V/m; Power Drift = 0.03 dB
Peak SAR (extrapolated) = 1.01 W/kg
SAR(1 g) = 0.574 W/kg; SAR(10 g) = 0.289 W/kg
Maximum value of SAR (measured) = 0.815 W/kg



0 dB = 0.815 W/kg = -0.89 dBW/kg

Date: 2016/7/15

GRRS 1900_Hotspot_Bottom side _CH 512_10mm

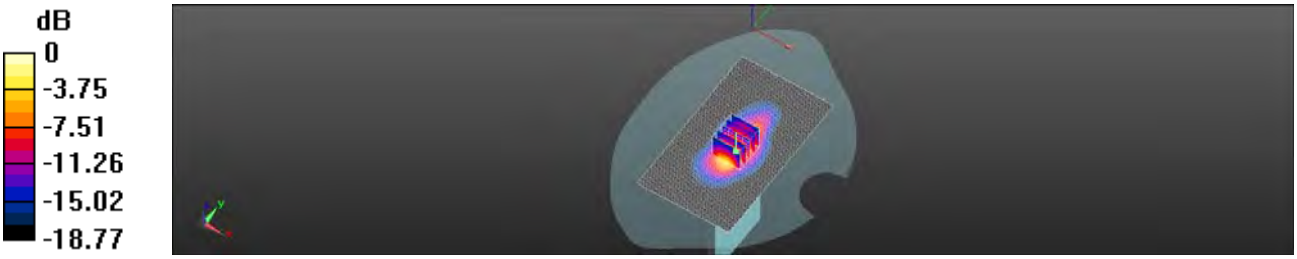
Communication System: GPRS (1Dn2Up); Frequency: 1850.2 MHz
Medium parameters used: f = 1850.2 MHz; σ = 1.47 S/m; ε_r = 51.936; ρ = 1000 kg/m^3
Phantom section: Flat Section
Ambient temperature: 22.4° C ; Liquid temperature: 22.1° C

DASY5 Configuration:

- Probe: EX3DV4 - SN3831; ConvF(7.54, 7.54, 7.54); Calibrated: 2016/1/27;
- Sensor-Surface: 2mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn1336; Calibrated: 2015/8/26
- Phantom: Head
- DASY52 52.8.8(1222); SEMCAD X 14.6.10(7331)

Configuration/Head/Area Scan (71x121x1): Interpolated grid: dx=15 mm, dy=15 mm
Maximum value of SAR (interpolated) = 1.81 W/kg

Configuration/Head/Zoom Scan (5x5x7)/Cube 0: Measurement grid: dx=8mm, dy=8mm, dz=5mm
Reference Value = 35.59 V/m; Power Drift = 0.17 dB
Peak SAR (extrapolated) = 2.41 W/kg
SAR(1 g) = 1.090 W/kg; SAR(10 g) = 0.673 W/kg
Maximum value of SAR (measured) = 1.89 W/kg



0 dB = 1.89 W/kg = 2.76 dBW/kg

Date: 2016/7/6

WCDMA Band 2_Head_Re Cheek_CH 9262

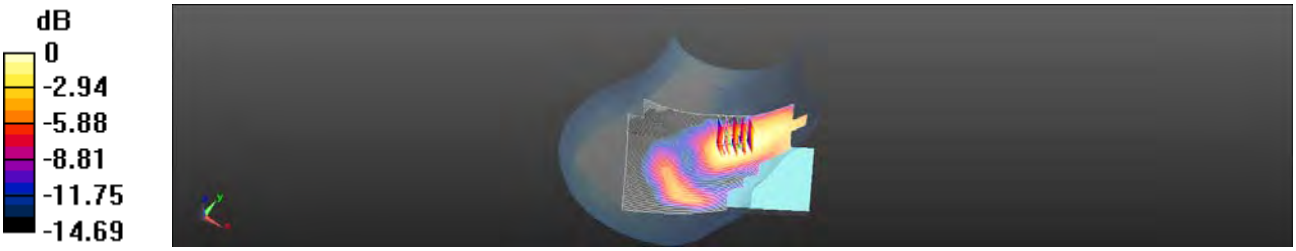
Communication System: WCDMA; Frequency: 1852.4 MHz
Medium parameters used: f = 1852.4 MHz; σ = 1.388 S/m; ε_r = 38.901; ρ = 1000 kg/m^3
Phantom section: Right Section
Ambient temperature: 22.2° C ; Liquid temperature: 21.8° C

DASY5 Configuration:

- Probe: EX3DV4 - SN3831; ConvF(7.66, 7.66, 7.66); Calibrated: 2016/1/27;
- Sensor-Surface: 2mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn1336; Calibrated: 2015/8/26
- Phantom: Head
- DASY52 52.8.8(1222); SEMCAD X 14.6.10(7331)

Configuration/Head/Area Scan (81x131x1): Interpolated grid: dx=15 mm, dy=15 mm
Maximum value of SAR (interpolated) = 0.133 W/kg

Configuration/Head/Zoom Scan (5x5x7)/Cube 0: Measurement grid: dx=8mm, dy=8mm, dz=5mm
Reference Value = 5.081 V/m; Power Drift = -0.17 dB
Peak SAR (extrapolated) = 0.149 W/kg
SAR(1 g) = 0.102 W/kg; SAR(10 g) = 0.066 W/kg
Maximum value of SAR (measured) = 0.121 W/kg



0 dB = 0.121 W/kg = -9.18 dBW/kg

Date: 2016/7/15

WCDMA Band 2_Hotspot_Bottom side _CH 9262_10mm

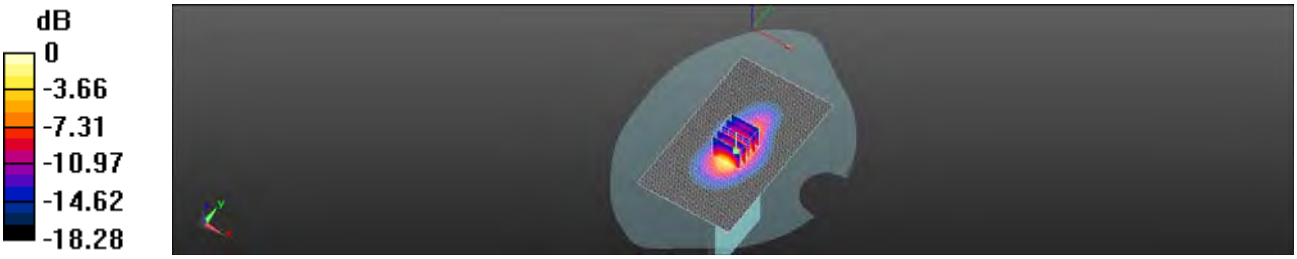
Communication System: WCDMA; Frequency: 1852.4 MHz
Medium parameters used: f = 1852.4 MHz; σ = 1.474 S/m; ε_r = 51.893; ρ = 1000 kg/m^3
Phantom section: Flat Section
Ambient temperature: 22.4° C ; Liquid temperature: 22.1° C

DASY5 Configuration:

- Probe: EX3DV4 - SN3831; ConvF(7.54, 7.54, 7.54); Calibrated: 2016/1/27;
- Sensor-Surface: 2mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn1336; Calibrated: 2015/8/26
- Phantom: Head
- DASY52 52.8.8(1222); SEMCAD X 14.6.10(7331)

Configuration/Head/Area Scan (71x121x1): Interpolated grid: dx=15 mm, dy=15 mm
Maximum value of SAR (interpolated) = 1.75 W/kg

Configuration/Head/Zoom Scan (5x5x7)/Cube 0: Measurement grid: dx=8mm, dy=8mm, dz=5mm
Reference Value = 34.31 V/m; Power Drift = -0.01 dB
Peak SAR (extrapolated) = 2.23 W/kg
SAR(1 g) = 0.980 W/kg; SAR(10 g) = 0.652 W/kg
Maximum value of SAR (measured) = 1.80 W/kg



0 dB = 1.80 W/kg = 2.56 dBW/kg

Date: 2016/7/7

WCDMA Band 4_Head_Re Cheek_CH 1513

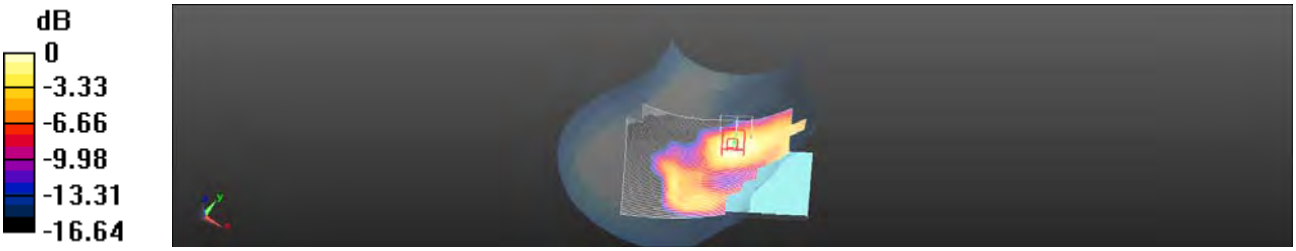
Communication System: WCDMA; Frequency: 1752.6 MHz
Medium parameters used: f = 1753 MHz; σ = 1.426 S/m; ε_r = 40.441; ρ = 1000 kg/m^3
Phantom section: Right Section
Ambient temperature: 22.1° C ; Liquid temperature: 21.6° C

DASY5 Configuration:

- Probe: EX3DV4 - SN3831; ConvF(7.92, 7.92, 7.92); Calibrated: 2016/1/27;
- Sensor-Surface: 2mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn1336; Calibrated: 2015/8/26
- Phantom: Head
- DASY52 52.8.8(1222); SEMCAD X 14.6.10(7331)

Configuration/Head/Area Scan (81x131x1): Interpolated grid: dx=15 mm, dy=15 mm
Maximum value of SAR (interpolated) = 0.0983 W/kg

Configuration/Head/Zoom Scan (5x5x7)/Cube 0: Measurement grid: dx=8mm, dy=8mm, dz=5mm
Reference Value = 4.514 V/m; Power Drift = 0.11 dB
Peak SAR (extrapolated) = 0.118 W/kg
SAR(1 g) = 0.077 W/kg; SAR(10 g) = 0.046 W/kg
Maximum value of SAR (measured) = 0.0984 W/kg



0 dB = 0.0984 W/kg = -10.07 dBW/kg

Date: 2016/7/14

WCDMA Band 4_Hotspot_Bottom side _CH 1513_10mm

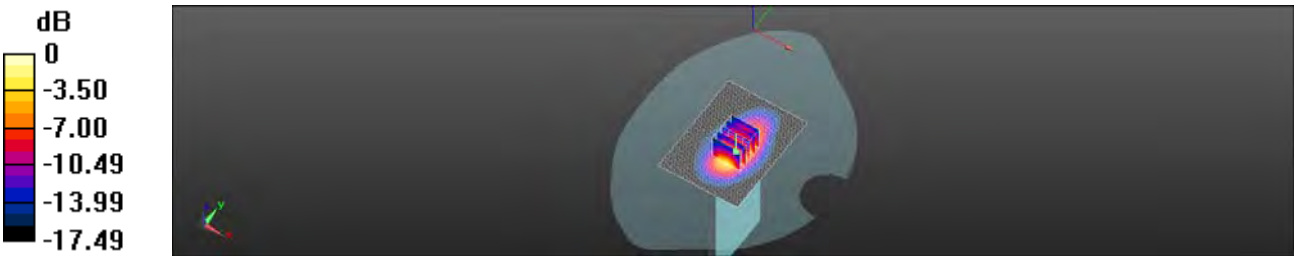
Communication System: WCDMA; Frequency: 1752.6 MHz
Medium parameters used: f = 1753 MHz; σ = 1.453 S/m; ε_r = 53.819; ρ = 1000 kg/m^3
Phantom section: Flat Section
Ambient temperature: 21.9° C ; Liquid temperature: 21.7° C

DASY5 Configuration:

- Probe: EX3DV4 - SN3831; ConvF(7.74, 7.74, 7.74); Calibrated: 2016/1/27;
- Sensor-Surface: 2mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn1336; Calibrated: 2015/8/26
- Phantom: Head
- DASY52 52.8.8(1222); SEMCAD X 14.6.10(7331)

Configuration/Head/Area Scan (61x81x1): Interpolated grid: dx=15 mm, dy=15 mm
Maximum value of SAR (interpolated) = 1.81 W/kg

Configuration/Head/Zoom Scan (5x5x7)/Cube 0: Measurement grid: dx=8mm, dy=8mm, dz=5mm
Reference Value = 34.72 V/m; Power Drift = 0.07 dB
Peak SAR (extrapolated) = 2.18 W/kg
SAR(1 g) = 0.987 W/kg; SAR(10 g) = 0.675 W/kg
Maximum value of SAR (measured) = 1.77 W/kg



0 dB = 1.77 W/kg = 2.49 dBW/kg

Date: 2016/7/5

WCDMA Band 5_Head_Le Cheek_CH 4132

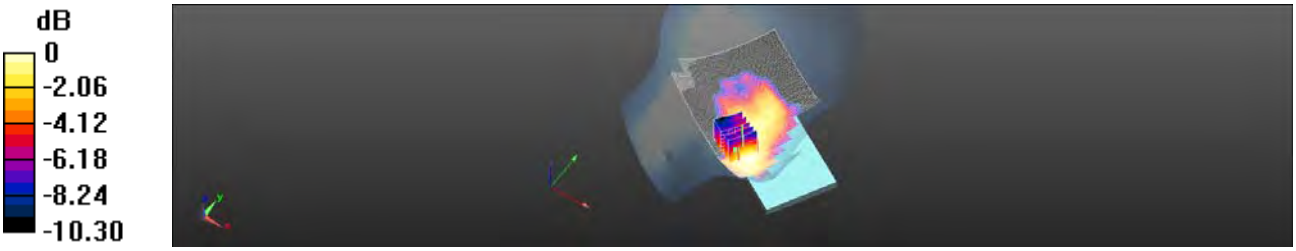
Communication System: WCDMA; Frequency: 826.4 MHz
Medium parameters used: f = 826.4 MHz; σ = 0.921 S/m; ε_r = 42.843; ρ = 1000 kg/m^3
Phantom section: Left Section
Ambient temperature: 22.3° C ; Liquid temperature: 21.9° C

DASY5 Configuration:

- Probe: EX3DV4 - SN3831; ConvF(8.84, 8.84, 8.84); Calibrated: 2016/1/27;
- Sensor-Surface: 2mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn1336; Calibrated: 2015/8/26
- Phantom: Head
- DASY52 52.8.8(1222); SEMCAD X 14.6.10(7331)

Configuration/Head/Area Scan (81x131x1): Interpolated grid: dx=15 mm, dy=15 mm
Maximum value of SAR (interpolated) = 0.0469 W/kg

Configuration/Head/Zoom Scan (5x5x7)/Cube 0: Measurement grid: dx=8mm, dy=8mm, dz=5mm
Reference Value = 2.894 V/m; Power Drift = 0.13 dB
Peak SAR (extrapolated) = 0.0490 W/kg
SAR(1 g) = 0.039 W/kg; SAR(10 g) = 0.028 W/kg
Maximum value of SAR (measured) = 0.0445 W/kg



0 dB = 0.0445 W/kg = -13.52 dBW/kg

Date: 2016/7/12

WCDMA Band 5_Hotspot_Front side _CH 4132_10mm

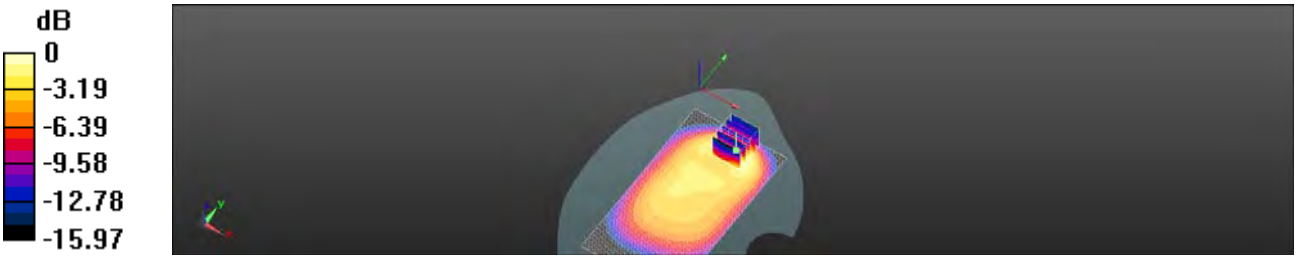
Communication System: WCDMA; Frequency: 826.4 MHz
Medium parameters used: f = 826.4 MHz; σ = 1.001 S/m; ε_r = 55.595; ρ = 1000 kg/m^3
Phantom section: Flat Section
Ambient temperature: 22.1° C ; Liquid temperature: 21.9° C

DASY5 Configuration:

- Probe: EX3DV4 - SN3831; ConvF(9.08, 9.08, 9.08); Calibrated: 2016/1/27;
- Sensor-Surface: 2mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn1336; Calibrated: 2015/8/26
- Phantom: Head
- DASY52 52.8.8(1222); SEMCAD X 14.6.10(7331)

Configuration/Head/Area Scan (71x131x1): Interpolated grid: dx=15 mm, dy=15 mm
Maximum value of SAR (interpolated) = 0.426 W/kg

Configuration/Head/Zoom Scan (5x5x7)/Cube 0: Measurement grid: dx=8mm, dy=8mm, dz=5mm
Reference Value = 14.63 V/m; Power Drift = -0.11 dB
Peak SAR (extrapolated) = 0.659 W/kg
SAR(1 g) = 0.378 W/kg; SAR(10 g) = 0.189 W/kg
Maximum value of SAR (measured) = 0.476 W/kg



0 dB = 0.476 W/kg = -3.22 dBW/kg

Date: 2016/7/6

LTE Band 2 (20MHz)_Head_Re Cheek_CH 18700_QPSK_1-50

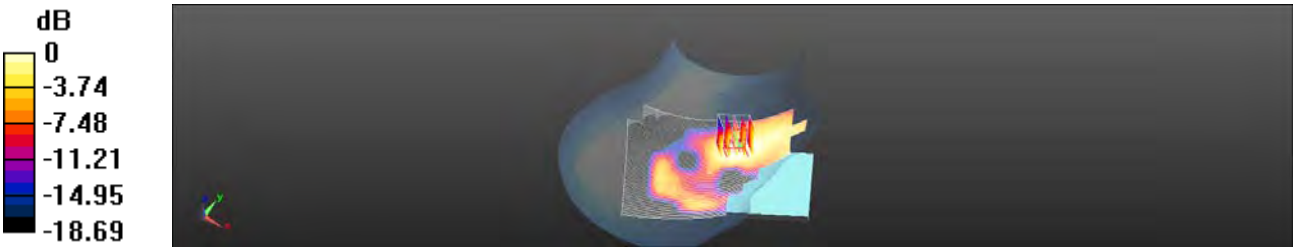
Communication System: LTE; Frequency: 1860 MHz
Medium parameters used: f = 1860 MHz; σ = 1.395 S/m; ε_r = 38.83; ρ = 1000 kg/m^3
Phantom section: Right Section
Ambient temperature: 22.2° C ; Liquid temperature: 21.8° C

DASY5 Configuration:

- Probe: EX3DV4 - SN3831; ConvF(7.66, 7.66, 7.66); Calibrated: 2016/1/27;
- Sensor-Surface: 2mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn1336; Calibrated: 2015/8/26
- Phantom: Head
- DASY52 52.8.8(1222); SEMCAD X 14.6.10(7331)

Configuration/Head/Area Scan (81x131x1): Interpolated grid: dx=15 mm, dy=15 mm
Maximum value of SAR (interpolated) = 0.112 W/kg

Configuration/Head/Zoom Scan (5x5x7)/Cube 0: Measurement grid: dx=8mm, dy=8mm, dz=5mm
Reference Value = 4.156 V/m; Power Drift = -0.15 dB
Peak SAR (extrapolated) = 0.117 W/kg
SAR(1 g) = 0.078 W/kg; SAR(10 g) = 0.049 W/kg
Maximum value of SAR (measured) = 0.0979 W/kg



0 dB = 0.0979 W/kg = -10.09 dBW/kg

Date: 2016/7/15

LTE Band 2 (20MHz)_Hotspot_Bottom side _CH 18700_QPSK_1-50_10mm

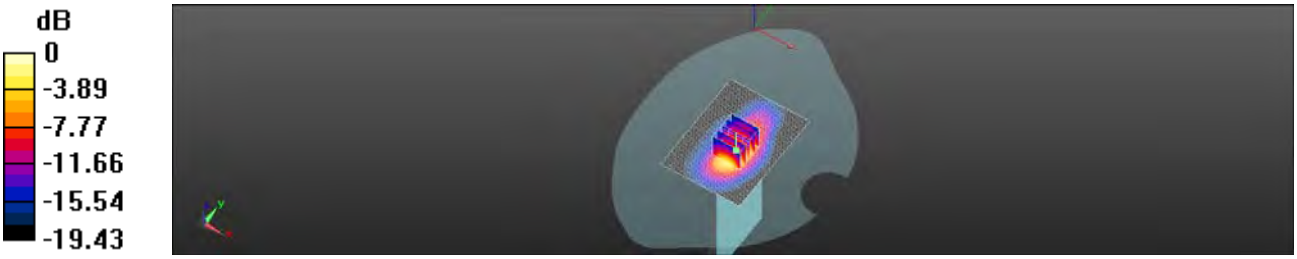
Communication System: LTE; Frequency: 1860 MHz
Medium parameters used: f = 1860 MHz; σ = 1.48 S/m; ε_r = 51.883; ρ = 1000 kg/m^3
Phantom section: Flat Section
Ambient temperature: 22.4° C ; Liquid temperature: 22.1° C

DASY5 Configuration:

- Probe: EX3DV4 - SN3831; ConvF(7.54, 7.54, 7.54); Calibrated: 2016/1/27;
- Sensor-Surface: 2mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn1336; Calibrated: 2015/8/26
- Phantom: Head
- DASY52 52.8.8(1222); SEMCAD X 14.6.10(7331)

Configuration/Head/Area Scan (61x81x1): Interpolated grid: dx=15 mm, dy=15 mm
Maximum value of SAR (interpolated) = 1.31 W/kg

Configuration/Head/Zoom Scan (5x5x7)/Cube 0: Measurement grid: dx=8mm, dy=8mm, dz=5mm
Reference Value = 27.20 V/m; Power Drift = -0.08 dB
Peak SAR (extrapolated) = 1.53 W/kg
SAR(1 g) = 0.860 W/kg; SAR(10 g) = 0.443 W/kg
Maximum value of SAR (measured) = 1.23 W/kg



0 dB = 1.23 W/kg = 0.89 dBW/kg

Date: 2016/7/7

LTE Band 4 (20MHz)_Head_Re Cheek_CH 20175_QPSK_1-50

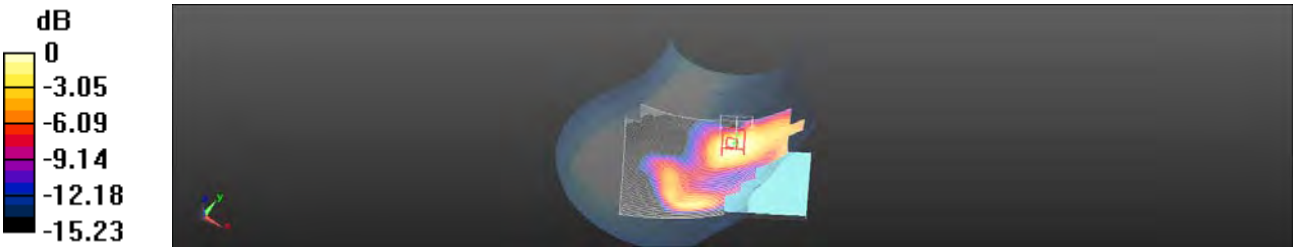
Communication System: LTE; Frequency: 1732.5 MHz
Medium parameters used: f = 1732.5 MHz; σ = 1.407 S/m; ε_r = 40.512; ρ = 1000 kg/m^3
Phantom section: Right Section
Ambient temperature: 22.1° C ; Liquid temperature: 21.6° C

DASY5 Configuration:

- Probe: EX3DV4 - SN3831; ConvF(7.92, 7.92, 7.92); Calibrated: 2016/1/27;
- Sensor-Surface: 2mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn1336; Calibrated: 2015/8/26
- Phantom: Head
- DASY52 52.8.8(1222); SEMCAD X 14.6.10(7331)

Configuration/Head/Area Scan (81x131x1): Interpolated grid: dx=15 mm, dy=15 mm
Maximum value of SAR (interpolated) = 0.0778 W/kg

Configuration/Head/Zoom Scan (5x5x7)/Cube 0: Measurement grid: dx=8mm, dy=8mm, dz=5mm
Reference Value = 4.148 V/m; Power Drift = 0.03 dB
Peak SAR (extrapolated) = 0.0880 W/kg
SAR(1 g) = 0.056 W/kg; SAR(10 g) = 0.034 W/kg
Maximum value of SAR (measured) = 0.0747 W/kg



0 dB = 0.0747 W/kg = -11.26 dBW/kg

Date: 2016/7/14

LTE Band 4 (20MHz)_Hotspot_Front side _CH 20300_QPSK_1-50_10mm

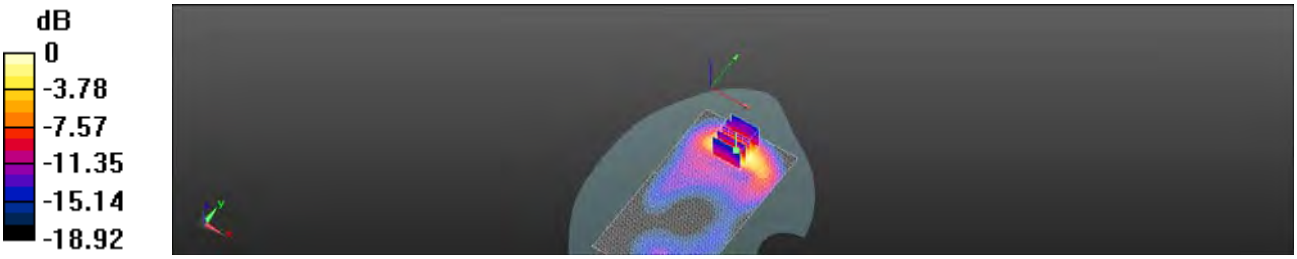
Communication System: LTE; Frequency: 1745 MHz
Medium parameters used: f = 1745 MHz; σ = 1.445 S/m; ε_r = 53.841; ρ = 1000 kg/m^3
Phantom section: Flat Section
Ambient temperature: 21.9° C ; Liquid temperature: 21.7° C

DASY5 Configuration:

- Probe: EX3DV4 - SN3831; ConvF(7.74, 7.74, 7.74); Calibrated: 2016/1/27;
- Sensor-Surface: 2mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn1336; Calibrated: 2015/8/26
- Phantom: Head
- DASY52 52.8.8(1222); SEMCAD X 14.6.10(7331)

Configuration/Head/Area Scan (71x131x1): Interpolated grid: dx=15 mm, dy=15 mm
Maximum value of SAR (interpolated) = 0.965 W/kg

Configuration/Head/Zoom Scan (5x5x7)/Cube 0: Measurement grid: dx=8mm, dy=8mm, dz=5mm
Reference Value = 2.532 V/m; Power Drift = 0.02 dB
Peak SAR (extrapolated) = 1.23 W/kg
SAR(1 g) = 0.985 W/kg; SAR(10 g) = 0.377 W/kg
Maximum value of SAR (measured) = 1.01 W/kg



0 dB = 1.01 W/kg = 0.02 dBW/kg

Date: 2016/7/5

LTE Band 5 (10MHz)_Head_Le Cheek_CH 20450_QPSK_1-49

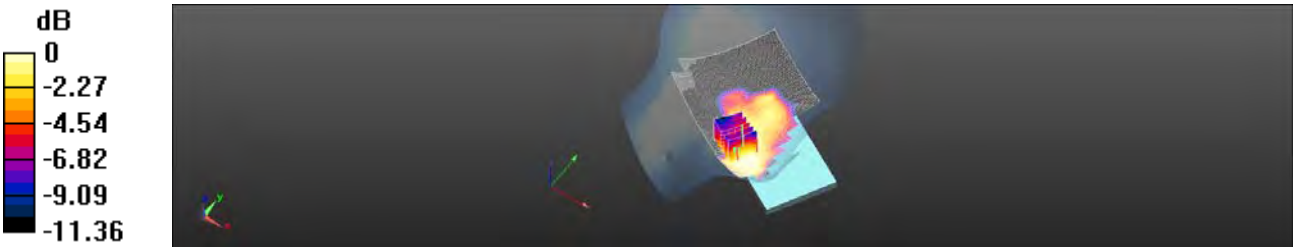
Communication System: LTE; Frequency: 829 MHz
Medium parameters used: f = 829 MHz; σ = 0.924 S/m; ε_r = 42.794; ρ = 1000 kg/m^3
Phantom section: Left Section
Ambient temperature: 22.3° C ; Liquid temperature: 21.9° C

DASY5 Configuration:

- Probe: EX3DV4 - SN3831; ConvF(8.84, 8.84, 8.84); Calibrated: 2016/1/27;
- Sensor-Surface: 2mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn1336; Calibrated: 2015/8/26
- Phantom: Head
- DASY52 52.8.8(1222); SEMCAD X 14.6.10(7331)

Configuration/Head/Area Scan (81x131x1): Interpolated grid: dx=15 mm, dy=15 mm
Maximum value of SAR (interpolated) = 0.0251 W/kg

Configuration/Head/Zoom Scan (5x5x7)/Cube 0: Measurement grid: dx=8mm, dy=8mm, dz=5mm
Reference Value = 1.989 V/m; Power Drift = 0.06 dB
Peak SAR (extrapolated) = 0.0250 W/kg
SAR(1 g) = 0.020 W/kg; SAR(10 g) = 0.014 W/kg
Maximum value of SAR (measured) = 0.0232 W/kg



0 dB = 0.0232 W/kg = -16.35 dBW/kg

Date: 2016/7/12

LTE Band 5 (10MHz)_Hotspot_Front side _CH 20450_QPSK_1-49_10mm

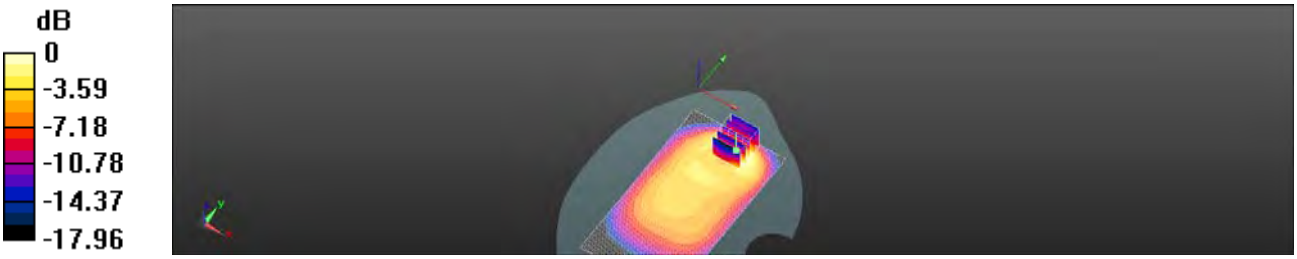
Communication System: LTE; Frequency: 829 MHz
Medium parameters used: f = 829 MHz; σ = 1.004 S/m; ε_r = 55.584; ρ = 1000 kg/m^3
Phantom section: Flat Section
Ambient temperature: 22.1° C ; Liquid temperature: 21.9° C

DASY5 Configuration:

- Probe: EX3DV4 - SN3831; ConvF(9.08, 9.08, 9.08); Calibrated: 2016/1/27;
- Sensor-Surface: 2mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn1336; Calibrated: 2015/8/26
- Phantom: Head
- DASY52 52.8.8(1222); SEMCAD X 14.6.10(7331)

Configuration/Head/Area Scan (71x131x1): Interpolated grid: dx=15 mm, dy=15 mm
Maximum value of SAR (interpolated) = 0.431 W/kg

Configuration/Head/Zoom Scan (5x5x7)/Cube 0: Measurement grid: dx=8mm, dy=8mm, dz=5mm
Reference Value = 13.11 V/m; Power Drift = 0.15 dB
Peak SAR (extrapolated) = 0.605 W/kg
SAR(1 g) = 0.274 W/kg; SAR(10 g) = 0.174 W/kg
Maximum value of SAR (measured) = 0.461 W/kg



0 dB = 0.461 W/kg = -3.36 dBW/kg

Date: 2016/7/11

LTE Band 7 (20MHz)_Head_Re Cheek_CH 21350_QPSK_1-99

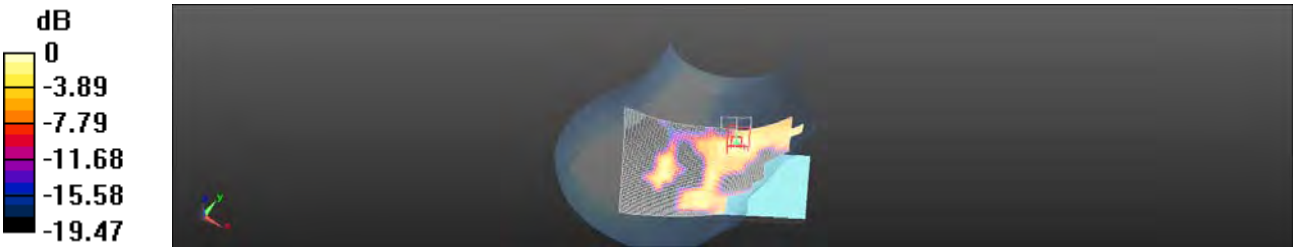
Communication System: LTE; Frequency: 2560 MHz
Medium parameters used: f = 2560 MHz; σ = 1.989 S/m; ε_r = 40.636; ρ = 1000 kg/m^3
Phantom section: Right Section
Ambient temperature: 22.3° C ; Liquid temperature: 22.2° C

DASY5 Configuration:

- Probe: EX3DV4 - SN3831; ConvF(6.71, 6.71, 6.71); Calibrated: 2016/1/27;
- Sensor-Surface: 2mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn1336; Calibrated: 2015/8/26
- Phantom: Head
- DASY52 52.8.8(1222); SEMCAD X 14.6.10(7331)

Configuration/Head/Area Scan (91x161x1): Interpolated grid: dx=12 mm, dy=12 mm
Maximum value of SAR (interpolated) = 0.0874 W/kg

Configuration/Head/Zoom Scan (7x7x7)/Cube 0: Measurement grid: dx=5mm, dy=5mm, dz=5mm
Reference Value = 4.394 V/m; Power Drift = 0.13 dB
Peak SAR (extrapolated) = 0.114 W/kg
SAR(1 g) = 0.053 W/kg; SAR(10 g) = 0.026 W/kg
Maximum value of SAR (measured) = 0.0885 W/kg



0 dB = 0.0885 W/kg = -10.53 dBW/kg

Date: 2016/7/16

LTE Band 7 (20MHz)_Hotspot_Front side _CH 21350_QPSK_1-99_10mm

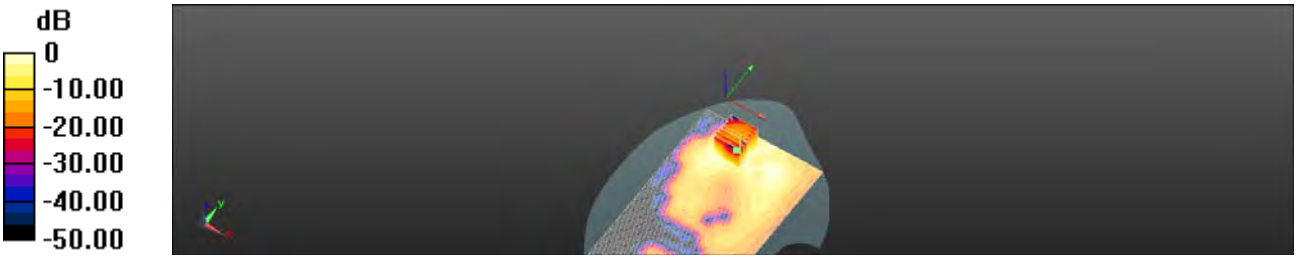
Communication System: LTE; Frequency: 2560 MHz
Medium parameters used: f = 2560 MHz; σ = 2.13 S/m; ε_r = 51.119; ρ = 1000 kg/m^3
Phantom section: Flat Section
Ambient temperature: 22.1° C ; Liquid temperature: 21.7° C

DASY5 Configuration:

- Probe: EX3DV4 - SN3831; ConvF(6.71, 6.71, 6.71); Calibrated: 2016/1/27;
- Sensor-Surface: 2mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn1336; Calibrated: 2015/8/26
- Phantom: Head
- DASY52 52.8.8(1222); SEMCAD X 14.6.10(7331)

Configuration/Head/Area Scan (111x171x1): Interpolated grid: dx=12 mm, dy=12 mm
Maximum value of SAR (interpolated) = 0.364 W/kg

Configuration/Head/Zoom Scan (7x7x7)/Cube 0: Measurement grid: dx=5mm, dy=5mm, dz=5mm
Reference Value = 1.426 V/m; Power Drift = 0.02 dB
Peak SAR (extrapolated) = 0.559 W/kg
SAR(1 g) = 0.143 W/kg; SAR(10 g) = 0.109 W/kg
Maximum value of SAR (measured) = 0.411 W/kg



0 dB = 0.411 W/kg = -3.86 dBW/kg

Date: 2016/7/4

LTE Band 12 (10MHz)_Head_Re Tilt_CH 23095_QPSK_1-25

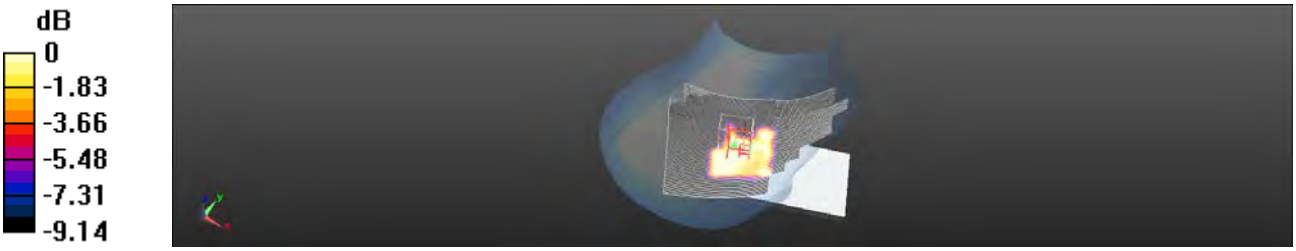
Communication System: LTE; Frequency: 707.5 MHz
Medium parameters used: f = 707.5 MHz; σ = 0.865 S/m; ε_r = 41.761; ρ = 1000 kg/m^3
Phantom section: Right Section
Ambient temperature: 22.4° C ; Liquid temperature: 22.2° C

DASY5 Configuration:

- Probe: EX3DV4 - SN3831; ConvF(9.38, 9.38, 9.38); Calibrated: 2016/1/27;
- Sensor-Surface: 2mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn1336; Calibrated: 2015/8/26
- Phantom: Head
- DASY52 52.8.8(1222); SEMCAD X 14.6.10(7331)

Configuration/Head/Area Scan (81x131x1): Interpolated grid: dx=15 mm, dy=15 mm
Maximum value of SAR (interpolated) = 0.00583 W/kg

Configuration/Head/Zoom Scan (5x5x7)/Cube 0: Measurement grid: dx=8mm, dy=8mm, dz=5mm
Reference Value = 1.036 V/m; Power Drift = 0.07 dB
Peak SAR (extrapolated) = 0.00391 W/kg
SAR(1 g) = 0.00322 W/kg; SAR(10 g) = 0.00265 W/kg
Maximum value of SAR (measured) = 0.00359 W/kg



0 dB = 0.00359 W/kg = -24.45 dBW/kg

Date: 2016/7/13

LTE Band 12 (10MHz)_Hotspot_Front side _CH 23130_QPSK_1-25_10mm

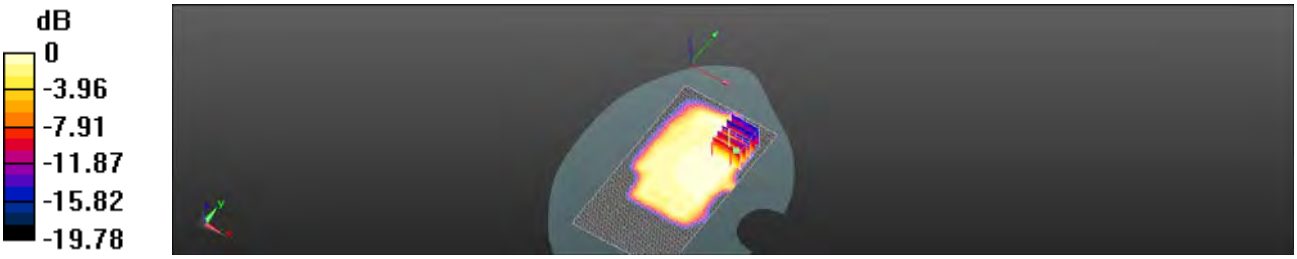
Communication System: LTE; Frequency: 711 MHz
Medium parameters used: f = 711 MHz; σ = 0.933 S/m; ε_r = 56.64; ρ = 1000 kg/m^3
Phantom section: Flat Section
Ambient temperature: 22.2° C ; Liquid temperature: 21.8° C

DASY5 Configuration:

- Probe: EX3DV4 - SN3831; ConvF(9.25, 9.25, 9.25); Calibrated: 2016/1/27;
- Sensor-Surface: 2mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn1336; Calibrated: 2015/8/26
- Phantom: Head
- DASY52 52.8.8(1222); SEMCAD X 14.6.10(7331)

Configuration/Head/Area Scan (71x131x1): Interpolated grid: dx=15 mm, dy=15 mm
Maximum value of SAR (interpolated) = 0.0265 W/kg

Configuration/Head/Zoom Scan (5x5x7)/Cube 0: Measurement grid: dx=8mm, dy=8mm, dz=5mm
Reference Value = 4.188 V/m; Power Drift = 0.04 dB
Peak SAR (extrapolated) = 0.0240 W/kg
SAR(1 g) = 0.016 W/kg; SAR(10 g) = 0.00968 W/kg
Maximum value of SAR (measured) = 0.0191 W/kg



0 dB = 0.0191 W/kg = -17.19 dBW/kg

Date: 2016/7/4

LTE Band 17 (10MHz)_Head_Le Cheek_CH 23780_QPSK_1-25

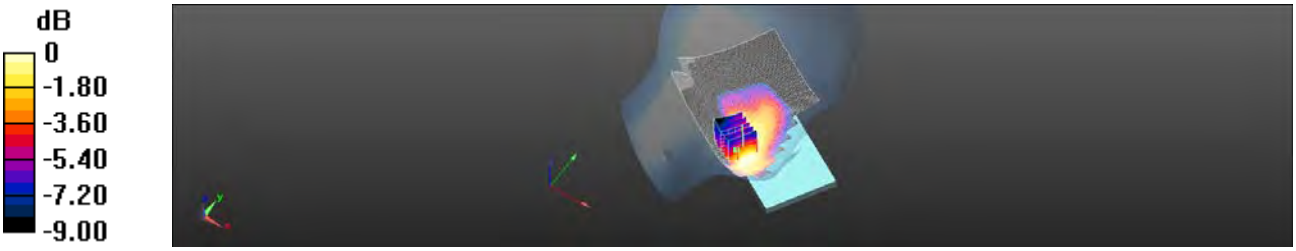
Communication System: LTE; Frequency: 709 MHz
Medium parameters used: f = 709 MHz; σ = 0.868 S/m; ε_r = 41.736; ρ = 1000 kg/m^3
Phantom section: Left Section
Ambient temperature: 22.4° C ; Liquid temperature: 22.2° C

DASY5 Configuration:

- Probe: EX3DV4 - SN3831; ConvF(9.38, 9.38, 9.38); Calibrated: 2016/1/27;
- Sensor-Surface: 2mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn1336; Calibrated: 2015/8/26
- Phantom: Head
- DASY52 52.8.8(1222); SEMCAD X 14.6.10(7331)

Configuration/Head/Area Scan (81x131x1): Interpolated grid: dx=15 mm, dy=15 mm
Maximum value of SAR (interpolated) = 0.0272 W/kg

Configuration/Head/Zoom Scan (5x5x7)/Cube 0: Measurement grid: dx=8mm, dy=8mm, dz=5mm
Reference Value = 1.979 V/m; Power Drift = 0.09 dB
Peak SAR (extrapolated) = 0.0260 W/kg
SAR(1 g) = 0.021 W/kg; SAR(10 g) = 0.015 W/kg
Maximum value of SAR (measured) = 0.0239 W/kg



0 dB = 0.0239 W/kg = -16.22 dBW/kg

Date: 2016/7/13

LTE Band 17 (10MHz)_Hotspot_Front side _CH 23800_QPSK_1-25_10mm

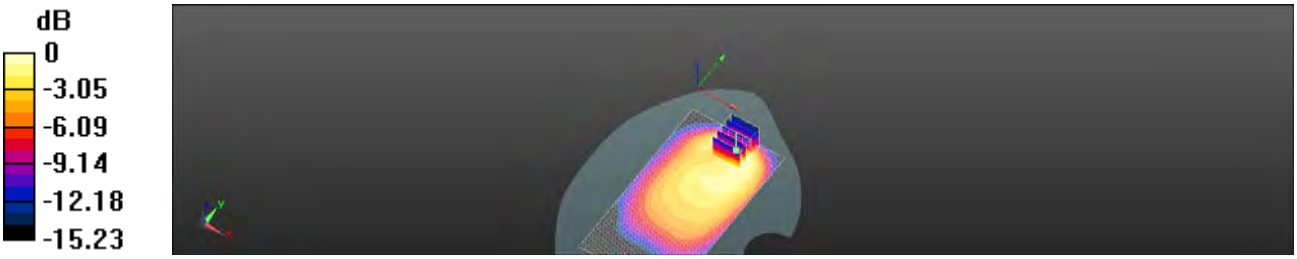
Communication System: LTE; Frequency: 711 MHz
Medium parameters used: f = 711 MHz; σ = 0.933 S/m; ε_r = 56.64; ρ = 1000 kg/m^3
Phantom section: Flat Section
Ambient temperature: 22.2° C ; Liquid temperature: 21.8° C

DASY5 Configuration:

- Probe: EX3DV4 - SN3831; ConvF(9.25, 9.25, 9.25); Calibrated: 2016/1/27;
- Sensor-Surface: 2mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn1336; Calibrated: 2015/8/26
- Phantom: Head
- DASY52 52.8.8(1222); SEMCAD X 14.6.10(7331)

Configuration/Head/Area Scan (71x131x1): Interpolated grid: dx=15 mm, dy=15 mm
Maximum value of SAR (interpolated) = 0.208 W/kg

Configuration/Head/Zoom Scan (5x5x7)/Cube 0: Measurement grid: dx=8mm, dy=8mm, dz=5mm
Reference Value = 11.21 V/m; Power Drift = -0.09 dB
Peak SAR (extrapolated) = 0.299 W/kg
SAR(1 g) = 0.158 W/kg; SAR(10 g) = 0.094 W/kg
Maximum value of SAR (measured) = 0.228 W/kg



0 dB = 0.228 W/kg = -6.42 dBW/kg

Date: 2016/7/5

LTE Band 26 (15MHz)_Head_Le Cheek_CH 26865_QPSK_1-36

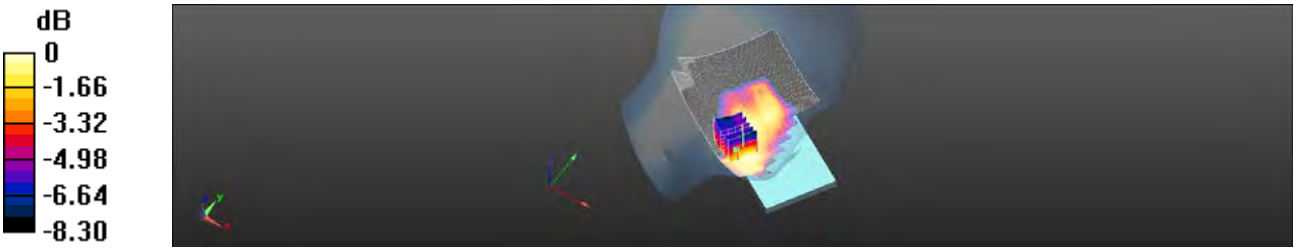
Communication System: LTE; Frequency: 822.5 MHz
Medium parameters used: f = 822.5 MHz; σ = 0.917 S/m; ε_r = 42.907; ρ = 1000 kg/m^3
Phantom section: Left Section
Ambient temperature: 22.3° C ; Liquid temperature: 21.9° C

DASY5 Configuration:

- Probe: EX3DV4 - SN3831; ConvF(8.84, 8.84, 8.84); Calibrated: 2016/1/27;
- Sensor-Surface: 2mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn1336; Calibrated: 2015/8/26
- Phantom: Head
- DASY52 52.8.8(1222); SEMCAD X 14.6.10(7331)

Configuration/Head/Area Scan (81x131x1): Interpolated grid: dx=15 mm, dy=15 mm
Maximum value of SAR (interpolated) = 0.0320 W/kg

Configuration/Head/Zoom Scan (5x5x7)/Cube 0: Measurement grid: dx=8mm, dy=8mm, dz=5mm
Reference Value = 2.705 V/m; Power Drift = 0.15 dB
Peak SAR (extrapolated) = 0.0330 W/kg
SAR(1 g) = 0.027 W/kg; SAR(10 g) = 0.019 W/kg
Maximum value of SAR (measured) = 0.0308 W/kg



0 dB = 0.0308 W/kg = -15.11 dBW/kg

Date: 2016/7/12

LTE Band 26 (15MHz)_Hotspot_Front side _CH 26825_QPSK_1-74_10mm

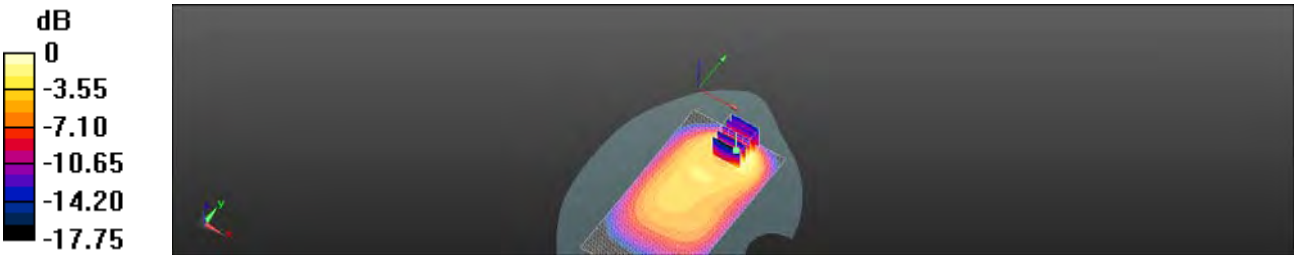
Communication System: LTE; Frequency: 822.5 MHz
Medium parameters used: f = 822.5 MHz; σ = 0.996 S/m; ε_r = 55.61; ρ = 1000 kg/m^3
Phantom section: Flat Section
Ambient temperature: 22.1° C ; Liquid temperature: 21.9° C

DASY5 Configuration:

- Probe: EX3DV4 - SN3831; ConvF(9.08, 9.08, 9.08); Calibrated: 2016/1/27;
- Sensor-Surface: 2mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn1336; Calibrated: 2015/8/26
- Phantom: Head
- DASY52 52.8.8(1222); SEMCAD X 14.6.10(7331)

Configuration/Head/Area Scan (71x131x1): Interpolated grid: dx=15 mm, dy=15 mm
Maximum value of SAR (interpolated) = 0.435 W/kg

Configuration/Head/Zoom Scan (5x5x7)/Cube 0: Measurement grid: dx=8mm, dy=8mm, dz=5mm
Reference Value = 13.12 V/m; Power Drift = 0.05 dB
Peak SAR (extrapolated) = 0.634 W/kg
SAR(1 g) = 0.295 W/kg; SAR(10 g) = 0.178 W/kg
Maximum value of SAR (measured) = 0.487 W/kg



0 dB = 0.487 W/kg = -3.12 dBW/kg

Date: 2016/7/11

LTE Band 38 (20MHz)_Head_Re Cheek_CH 38150_QPSK_1-0

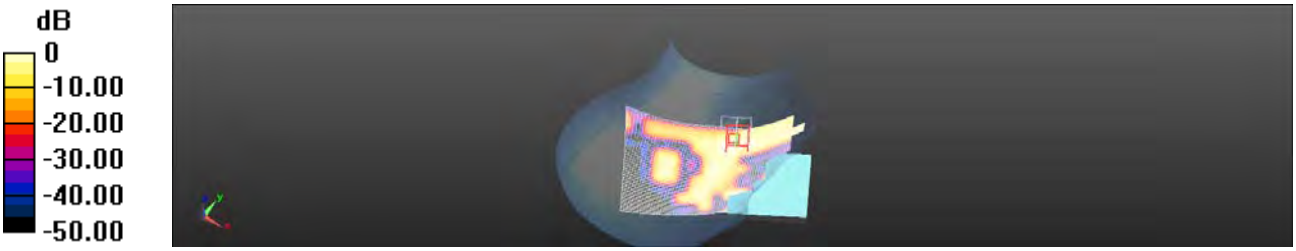
Communication System: LTE; Frequency: 2610 MHz
Medium parameters used: f = 2610 MHz; σ = 2.048 S/m; ε_r = 40.534; ρ = 1000 kg/m^3
Phantom section: Right Section
Ambient temperature: 22.3° C ; Liquid temperature: 22.2° C

DASY5 Configuration:

- Probe: EX3DV4 - SN3831; ConvF(6.71, 6.71, 6.71); Calibrated: 2016/1/27;
- Sensor-Surface: 2mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn1336; Calibrated: 2015/8/26
- Phantom: Head
- DASY52 52.8.8(1222); SEMCAD X 14.6.10(7331)

Configuration/Head/Area Scan (91x161x1): Interpolated grid: dx=12 mm, dy=12 mm
Maximum value of SAR (interpolated) = 0.0709 W/kg

Configuration/Head/Zoom Scan (7x7x7)/Cube 0: Measurement grid: dx=5mm, dy=5mm, dz=5mm
Reference Value = 2.819 V/m; Power Drift = 0.04 dB
Peak SAR (extrapolated) = 0.0820 W/kg
SAR(1 g) = 0.037 W/kg; SAR(10 g) = 0.017 W/kg
Maximum value of SAR (measured) = 0.0601 W/kg



0 dB = 0.0601 W/kg = -12.21 dBW/kg

Date: 2016/7/16

LTE Band 38 (20MHz)_Hotspot_Bottom side _CH 38150_QPSK_1-0_10mm

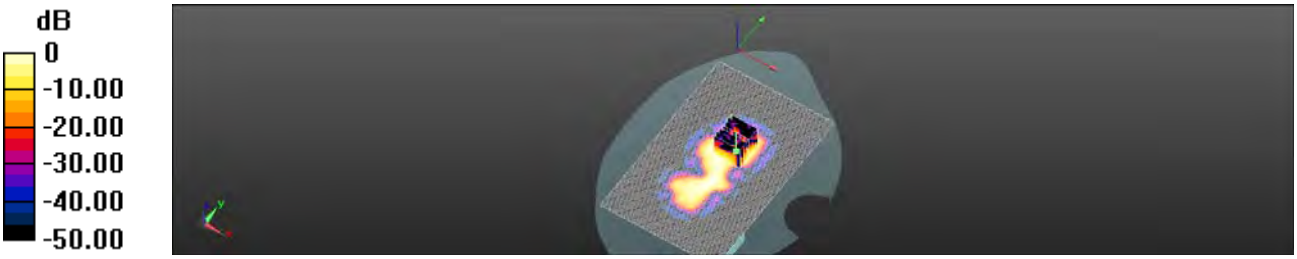
Communication System: LTE; Frequency: 2610 MHz
Medium parameters used: f = 2610 MHz; σ = 2.189 S/m; ε_r = 51.057; ρ = 1000 kg/m^3
Phantom section: Flat Section
Ambient temperature: 22.1° C ; Liquid temperature: 21.7° C

DASY5 Configuration:

- Probe: EX3DV4 - SN3831; ConvF(6.71, 6.71, 6.71); Calibrated: 2016/1/27;
- Sensor-Surface: 2mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn1336; Calibrated: 2015/8/26
- Phantom: Head
- DASY52 52.8.8(1222); SEMCAD X 14.6.10(7331)

Configuration/Head/Area Scan (111x171x1): Interpolated grid: dx=12 mm, dy=12 mm
Maximum value of SAR (interpolated) = 0.0750 W/kg

Configuration/Head/Zoom Scan (7x7x7)/Cube 0: Measurement grid: dx=5mm, dy=5mm, dz=5mm
Reference Value = 2.471 V/m; Power Drift = 0.12 dB
Peak SAR (extrapolated) = 0.0880 W/kg
SAR(1 g) = 0.068 W/kg; SAR(10 g) = 0.015 W/kg
Maximum value of SAR (measured) = 0.0633 W/kg



0 dB = 0.0633 W/kg = -11.98 dBW/kg

Date: 2016/7/11

LTE Band 41 (20MHz)_Head_Re Cheek_CH 40840_QPSK_1-50

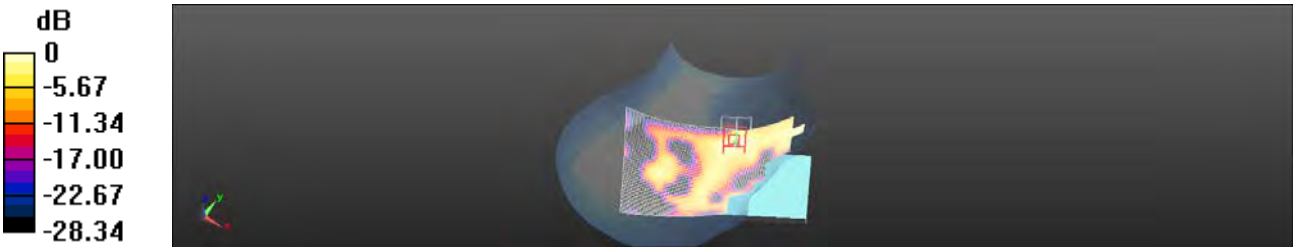
Communication System: LTE; Frequency: 2615 MHz
Medium parameters used: f = 2615 MHz; σ = 2.053 S/m; ε_r = 40.532; ρ = 1000 kg/m^3
Phantom section: Right Section
Ambient temperature: 22.3° C ; Liquid temperature: 22.2° C

DASY5 Configuration:

- Probe: EX3DV4 - SN3831; ConvF(6.71, 6.71, 6.71); Calibrated: 2016/1/27;
- Sensor-Surface: 2mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn1336; Calibrated: 2015/8/26
- Phantom: Head
- DASY52 52.8.8(1222); SEMCAD X 14.6.10(7331)

Configuration/Head/Area Scan (91x161x1): Interpolated grid: dx=12 mm, dy=12 mm
Maximum value of SAR (interpolated) = 0.0752 W/kg

Configuration/Head/Zoom Scan (7x7x7)/Cube 0: Measurement grid: dx=5mm, dy=5mm, dz=5mm
Reference Value = 3.312 V/m; Power Drift = -0.04 dB
Peak SAR (extrapolated) = 0.0960 W/kg
SAR(1 g) = 0.044 W/kg; SAR(10 g) = 0.021 W/kg
Maximum value of SAR (measured) = 0.0718 W/kg



0 dB = 0.0718 W/kg = -11.44 dBW/kg

Date: 2016/7/16

LTE Band 41 (20MHz)_Hotspot_Bottom side _CH 41140_QPSK_1-50_10mm

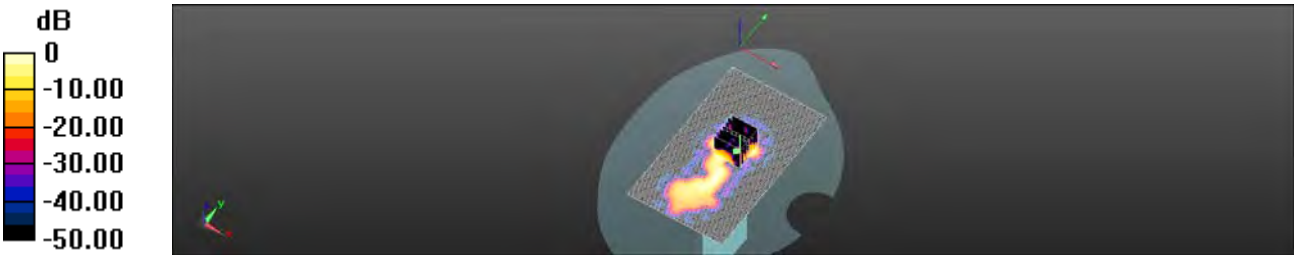
Communication System: LTE; Frequency: 2645 MHz
Medium parameters used: f = 2645 MHz; σ = 2.232 S/m; ε_r = 51.001; ρ = 1000 kg/m^3
Phantom section: Flat Section
Ambient temperature: 22.1° C ; Liquid temperature: 21.7° C

DASY5 Configuration:

- Probe: EX3DV4 - SN3831; ConvF(6.71, 6.71, 6.71); Calibrated: 2016/1/27;
- Sensor-Surface: 2mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn1336; Calibrated: 2015/8/26
- Phantom: Head
- DASY52 52.8.8(1222); SEMCAD X 14.6.10(7331)

Configuration/Head/Area Scan (91x151x1): Interpolated grid: dx=12 mm, dy=12 mm
Maximum value of SAR (interpolated) = 0.146 W/kg

Configuration/Head/Zoom Scan (7x7x7)/Cube 0: Measurement grid: dx=5mm, dy=5mm, dz=5mm
Reference Value = 2.584 V/m; Power Drift = -0.05 dB
Peak SAR (extrapolated) = 0.124 W/kg
SAR(1 g) = 0.118 W/kg; SAR(10 g) = 0.018 W/kg
Maximum value of SAR (measured) = 0.0880 W/kg



0 dB = 0.0880 W/kg = -10.56 dBW/kg

Date: 2016/7/18

WLAN 802.11b_Head_Le Tilt_CH 6

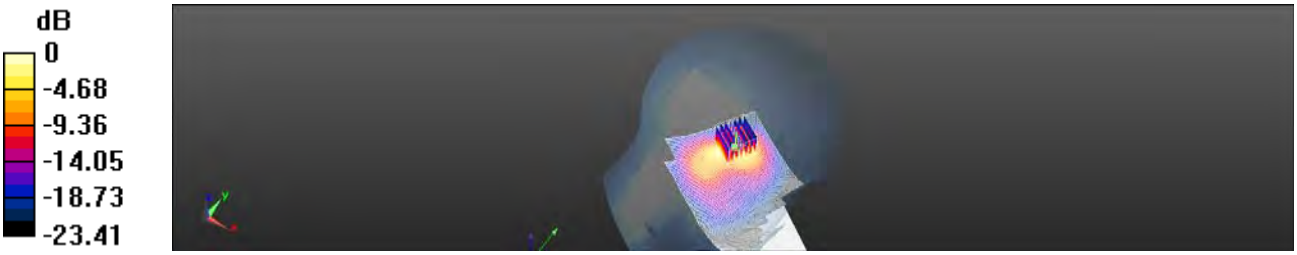
Communication System: WLAN(2.45G); Frequency: 2437 MHz
Medium parameters used: f = 2437 MHz; σ = 1.829 S/m; ε_r = 38.527; ρ = 1000 kg/m^3
Phantom section: Left Section
Ambient temperature: 22.5° C ; Liquid temperature: 22.1° C

DASY5 Configuration:

- Probe: EX3DV4 - SN3831; ConvF(6.92, 6.92, 6.92); Calibrated: 2016/1/27;
- Sensor-Surface: 2mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn1336; Calibrated: 2015/8/26
- Phantom: Head
- DASY52 52.8.8(1222); SEMCAD X 14.6.10(7331)

Configuration/Head/Area Scan (91x161x1): Interpolated grid: dx=12 mm, dy=12 mm
Maximum value of SAR (interpolated) = 1.76 W/kg

Configuration/Head/Zoom Scan (7x7x7)/Cube 0: Measurement grid: dx=5mm, dy=5mm, dz=5mm
Reference Value = 15.59 V/m; Power Drift = -0.04 dB
Peak SAR (extrapolated) = 2.22 W/kg
SAR(1 g) = 0.856 W/kg; SAR(10 g) = 0.346 W/kg
Maximum value of SAR (measured) = 1.39 W/kg



0 dB = 1.39 W/kg = 1.44 dBW/kg

Date: 2016/7/19

WLAN 802.11b_Hotspot_Front side_CH 1_10mm

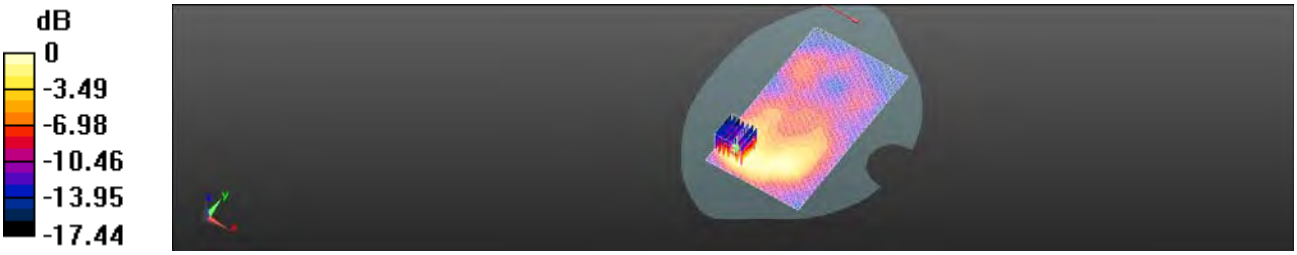
Communication System: WLAN(2.45G); Frequency: 2412 MHz
Medium parameters used: f = 2412 MHz; σ = 1.982 S/m; ε_r = 51.058; ρ = 1000 kg/m^3
Phantom section: Flat Section
Ambient temperature: 22.3° C ; Liquid temperature: 21.9° C

DASY5 Configuration:

- Probe: EX3DV4 - SN3831; ConvF(7.05, 7.05, 7.05); Calibrated: 2016/1/27;
- Sensor-Surface: 2mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn1336; Calibrated: 2015/8/26
- Phantom: Head
- DASY52 52.8.8(1222); SEMCAD X 14.6.10(7331)

Configuration/Head/Area Scan (91x161x1): Interpolated grid: dx=12 mm, dy=12 mm
Maximum value of SAR (interpolated) = 0.131 W/kg

Configuration/Head/Zoom Scan (7x7x7)/Cube 0: Measurement grid: dx=5mm, dy=5mm, dz=5mm
Reference Value = 3.039 V/m; Power Drift = -0.16 dB
Peak SAR (extrapolated) = 0.177 W/kg
SAR(1 g) = 0.090 W/kg; SAR(10 g) = 0.048 W/kg
Maximum value of SAR (measured) = 0.131 W/kg



0 dB = 0.131 W/kg = -8.84 dBW/kg

Date: 2016/7/21

WLAN 802.11a 5.2G_Head_Le Cheek_CH 40

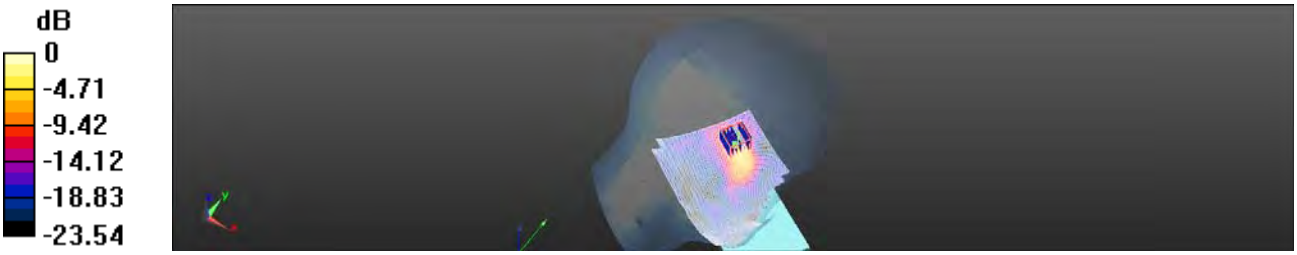
Communication System: WLAN(5G); Frequency: 5200 MHz
Medium parameters used: f = 5200 MHz; σ = 4.703 S/m; ε_r = 35.629; ρ = 1000 kg/m^3
Phantom section: Left Section
Ambient temperature: 22.1° C ; Liquid temperature: 22.5° C

DASY5 Configuration:

- Probe: EX3DV4 - SN3831; ConvF(4.76, 4.76, 4.76); Calibrated: 2016/1/27;
- Sensor-Surface: 2mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn1336; Calibrated: 2015/8/26
- Phantom: Head
- DASY52 52.8.8(1222); SEMCAD X 14.6.10(7331)

Configuration/Head/Area Scan (111x181x1): Interpolated grid: dx=10 mm, dy=10 mm
Maximum value of SAR (interpolated) = 0.737 W/kg

Configuration/Head/Zoom Scan (7x7x12)/Cube 0: Measurement grid: dx=4mm, dy=4mm, dz=2mm
Reference Value = 2.194 V/m; Power Drift = 0.18 dB
Peak SAR (extrapolated) = 2.94 W/kg
SAR(1 g) = 0.505 W/kg; SAR(10 g) = 0.148 W/kg
Maximum value of SAR (measured) = 1.18 W/kg



0 dB = 1.18 W/kg = 0.71 dBW/kg

Date: 2016/7/20

WLAN 802.11a 5.2G_Body-worn_Front side_CH 40_10mm

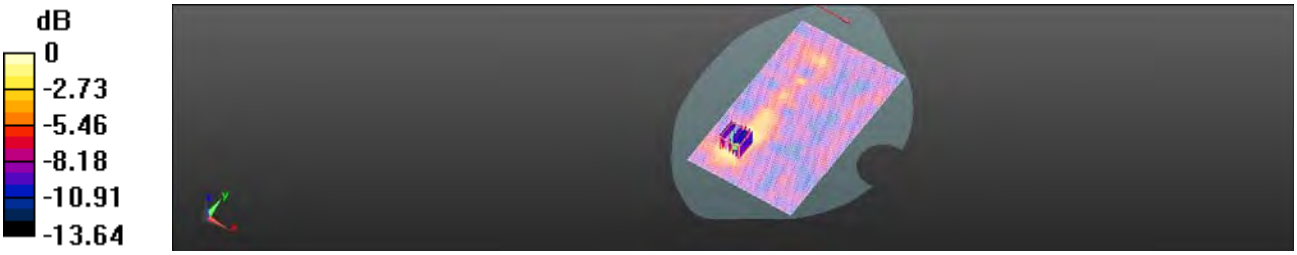
Communication System: WLAN(5G); Frequency: 5200 MHz
Medium parameters used: f = 5200 MHz; σ = 5.105 S/m; ε_r = 50.167; ρ = 1000 kg/m^3
Phantom section: Flat Section
Ambient temperature: 22.2° C ; Liquid temperature: 21.9° C

DASY5 Configuration:

- Probe: EX3DV4 - SN3831; ConvF(4.07, 4.07, 4.07); Calibrated: 2016/1/27;
- Sensor-Surface: 2mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn1336; Calibrated: 2015/8/26
- Phantom: Head
- DASY52 52.8.8(1222); SEMCAD X 14.6.10(7331)

Configuration/Head/Area Scan (121x201x1): Interpolated grid: dx=10 mm, dy=10 mm
Maximum value of SAR (interpolated) = 0.123 W/kg

Configuration/Head/Zoom Scan (7x7x12)/Cube 0: Measurement grid: dx=4mm, dy=4mm, dz=2mm
Reference Value = 1.386 V/m; Power Drift = -0.03 dB
Peak SAR (extrapolated) = 0.342 W/kg
SAR(1 g) = 0.078 W/kg; SAR(10 g) = 0.034 W/kg
Maximum value of SAR (measured) = 0.135 W/kg



0 dB = 0.135 W/kg = -8.68 dBW/kg

Date: 2016/7/20

WLAN 802.11a 5.2G_Hand_Front side_CH 40_0mm

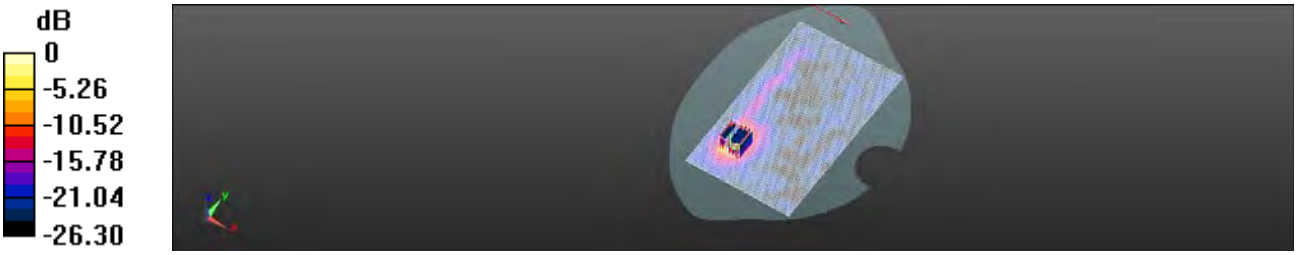
Communication System: WLAN(5G); Frequency: 5200 MHz
Medium parameters used: f = 5200 MHz; σ = 5.105 S/m; ε_r = 50.167; ρ = 1000 kg/m^3
Phantom section: Flat Section
Ambient temperature: 22.2° C ; Liquid temperature: 21.9° C

DASY5 Configuration:

- Probe: EX3DV4 - SN3831; ConvF(4.07, 4.07, 4.07); Calibrated: 2016/1/27;
- Sensor-Surface: 2mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn1336; Calibrated: 2015/8/26
- Phantom: Head
- DASY52 52.8.8(1222); SEMCAD X 14.6.10(7331)

Configuration/Head/Area Scan (121x201x1): Interpolated grid: dx=10 mm, dy=10 mm
Maximum value of SAR (interpolated) = 1.62 W/kg

Configuration/Head/Zoom Scan (7x7x12)/Cube 0: Measurement grid: dx=4mm, dy=4mm, dz=2mm
Reference Value = 0.4450 V/m; Power Drift = 0.19 dB
Peak SAR (extrapolated) = 12.0 W/kg
SAR(1 g) = 1.45 W/kg; SAR(10 g) = 0.323 W/kg
Maximum value of SAR (measured) = 3.72 W/kg



0 dB = 3.72 W/kg = 5.70 dBW/kg

Date: 2016/7/21

WLAN 802.11a 5.3G_Head_Le Cheek_CH 64

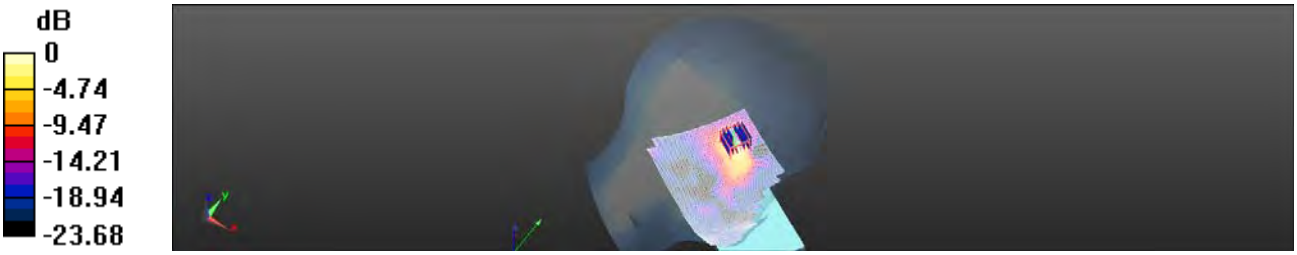
Communication System: WLAN(5G); Frequency: 5320 MHz
Medium parameters used: f = 5320 MHz; σ = 4.827 S/m; ε_r = 35.508; ρ = 1000 kg/m^3
Phantom section: Left Section
Ambient temperature: 22.1° C ; Liquid temperature: 22.5° C

DASY5 Configuration:

- Probe: EX3DV4 - SN3831; ConvF(4.46, 4.46, 4.46); Calibrated: 2016/1/27;
- Sensor-Surface: 2mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn1336; Calibrated: 2015/8/26
- Phantom: Head
- DASY52 52.8.8(1222); SEMCAD X 14.6.10(7331)

Configuration/Head/Area Scan (111x181x1): Interpolated grid: dx=10 mm, dy=10 mm
Maximum value of SAR (interpolated) = 1.08 W/kg

Configuration/Head/Zoom Scan (7x7x12)/Cube 0: Measurement grid: dx=4mm, dy=4mm, dz=2mm
Reference Value = 3.788 V/m; Power Drift = -0.17 dB
Peak SAR (extrapolated) = 3.24 W/kg
SAR(1 g) = 0.621 W/kg; SAR(10 g) = 0.190 W/kg
Maximum value of SAR (measured) = 1.33 W/kg



0 dB = 1.33 W/kg = 1.24 dBW/kg

Date: 2016/7/20

WLAN 802.11a 5.3G_Body-worn_Front side_CH 64_10mm

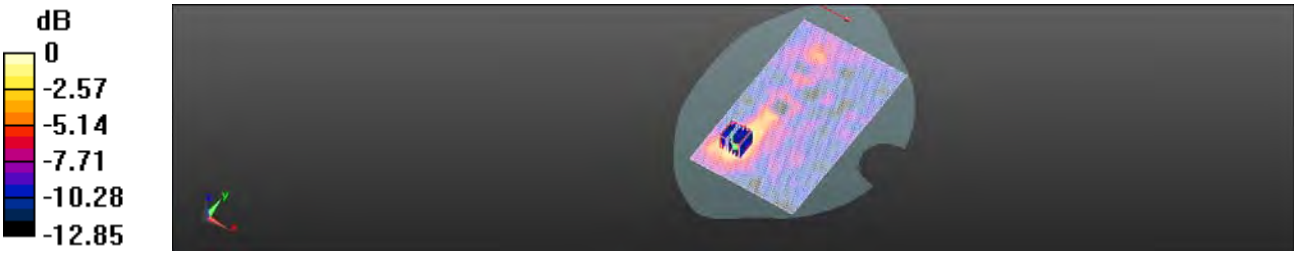
Communication System: WLAN(5G); Frequency: 5320 MHz
Medium parameters used: f = 5320 MHz; σ = 5.248 S/m; ε_r = 50.03; ρ = 1000 kg/m^3
Phantom section: Flat Section
Ambient temperature: 22.2° C ; Liquid temperature: 21.9° C

DASY5 Configuration:

- Probe: EX3DV4 - SN3831; ConvF(3.81, 3.81, 3.81); Calibrated: 2016/1/27;
- Sensor-Surface: 2mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn1336; Calibrated: 2015/8/26
- Phantom: Head
- DASY52 52.8.8(1222); SEMCAD X 14.6.10(7331)

Configuration/Head/Area Scan (121x201x1): Interpolated grid: dx=10 mm, dy=10 mm
Maximum value of SAR (interpolated) = 0.166 W/kg

Configuration/Head/Zoom Scan (7x7x12)/Cube 0: Measurement grid: dx=4mm, dy=4mm, dz=2mm
Reference Value = 1.208 V/m; Power Drift = 0.03 dB
Peak SAR (extrapolated) = 0.327 W/kg
SAR(1 g) = 0.095 W/kg; SAR(10 g) = 0.044 W/kg
Maximum value of SAR (measured) = 0.179 W/kg



0 dB = 0.179 W/kg = -7.47 dBW/kg

Date: 2016/7/20

WLAN 802.11a 5.3G_Hand_Front side_CH 64_0mm

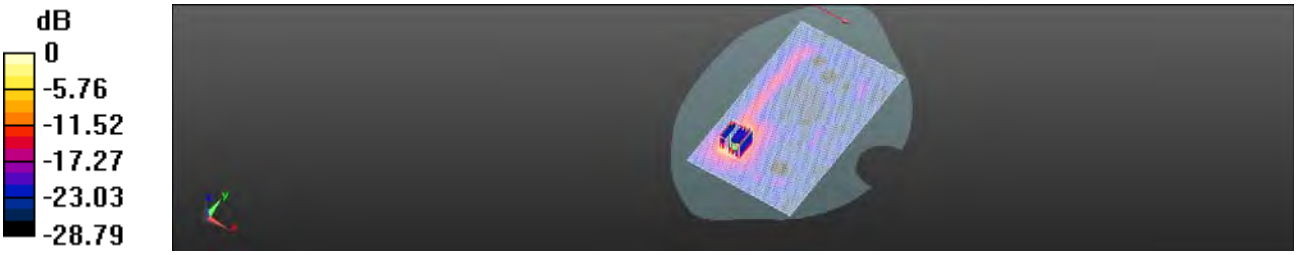
Communication System: WLAN(5G); Frequency: 5320 MHz
Medium parameters used: f = 5320 MHz; σ = 5.248 S/m; ε_r = 50.03; ρ = 1000 kg/m^3
Phantom section: Flat Section
Ambient temperature: 22.2° C ; Liquid temperature: 21.9° C

DASY5 Configuration:

- Probe: EX3DV4 - SN3831; ConvF(3.81, 3.81, 3.81); Calibrated: 2016/1/27;
- Sensor-Surface: 2mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn1336; Calibrated: 2015/8/26
- Phantom: Head
- DASY52 52.8.8(1222); SEMCAD X 14.6.10(7331)

Configuration/Head/Area Scan (121x201x1): Interpolated grid: dx=10 mm, dy=10 mm
Maximum value of SAR (interpolated) = 1.70 W/kg

Configuration/Head/Zoom Scan (7x7x12)/Cube 0: Measurement grid: dx=4mm, dy=4mm, dz=2mm
Reference Value = 1.128 V/m; Power Drift = -0.09 dB
Peak SAR (extrapolated) = 11.5 W/kg
SAR(1 g) = 1.51 W/kg; SAR(10 g) = 0.352 W/kg
Maximum value of SAR (measured) = 4.25 W/kg



0 dB = 4.25 W/kg = 6.28 dBW/kg

Date: 2016/7/22

WLAN 802.11a 5.6G_Head_Le Cheek_CH 140

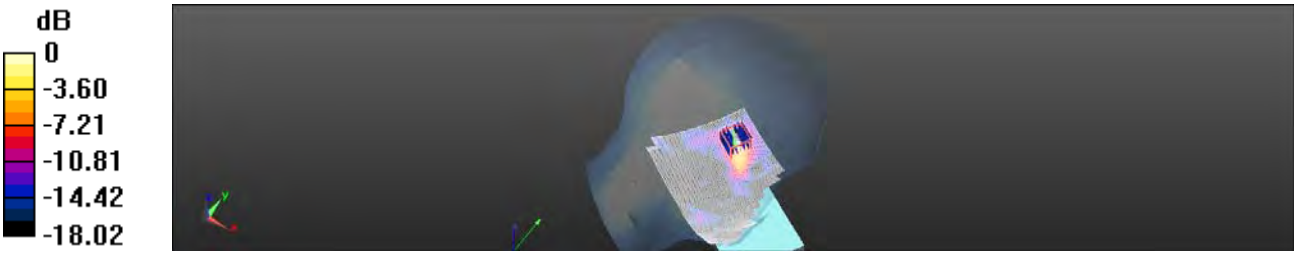
Communication System: WLAN(5G); Frequency: 5700 MHz
Medium parameters used: f = 5700 MHz; σ = 5.243 S/m; ε_r = 34.869; ρ = 1000 kg/m^3
Phantom section: Left Section
Ambient temperature: 22.2° C ; Liquid temperature: 22.4° C

DASY5 Configuration:

- Probe: EX3DV4 - SN3831; ConvF(4.08, 4.08, 4.08); Calibrated: 2016/1/27;
- Sensor-Surface: 2mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn1336; Calibrated: 2015/8/26
- Phantom: Head
- DASY52 52.8.8(1222); SEMCAD X 14.6.10(7331)

Configuration/Head/Area Scan (111x181x1): Interpolated grid: dx=10 mm, dy=10 mm
Maximum value of SAR (interpolated) = 0.358 W/kg

Configuration/Head/Zoom Scan (7x7x12)/Cube 0: Measurement grid: dx=4mm, dy=4mm, dz=2mm
Reference Value = 0.6160 V/m; Power Drift = 0.14 dB
Peak SAR (extrapolated) = 1.56 W/kg
SAR(1 g) = 0.221 W/kg; SAR(10 g) = 0.069 W/kg
Maximum value of SAR (measured) = 0.531 W/kg



0 dB = 0.531 W/kg = -2.75 dBW/kg

Date: 2016/7/20

WLAN 802.11a 5.6G_Body-worn_Front side_CH 140_10mm

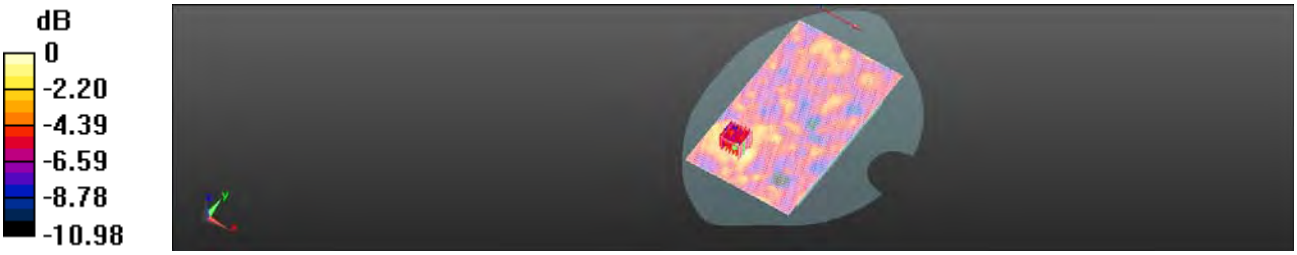
Communication System: WLAN(5G); Frequency: 5700 MHz
Medium parameters used: f = 5700 MHz; σ = 5.668 S/m; ε_r = 49.496; ρ = 1000 kg/m^3
Phantom section: Flat Section
Ambient temperature: 22.2° C ; Liquid temperature: 21.9° C

DASY5 Configuration:

- Probe: EX3DV4 - SN3831; ConvF(3.47, 3.47, 3.47); Calibrated: 2016/1/27;
- Sensor-Surface: 2mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn1336; Calibrated: 2015/8/26
- Phantom: Head
- DASY52 52.8.8(1222); SEMCAD X 14.6.10(7331)

Configuration/Head/Area Scan (121x201x1): Interpolated grid: dx=10 mm, dy=10 mm
Maximum value of SAR (interpolated) = 0.0638 W/kg

Configuration/Head/Zoom Scan (7x7x12)/Cube 0: Measurement grid: dx=4mm, dy=4mm, dz=2mm
Reference Value = 0.3980 V/m; Power Drift = 0.03 dB
Peak SAR (extrapolated) = 0.181 W/kg
SAR(1 g) = 0.040 W/kg; SAR(10 g) = 0.027 W/kg
Maximum value of SAR (measured) = 0.0763 W/kg



0 dB = 0.0763 W/kg = -11.17 dBW/kg

Date: 2016/7/20

WLAN 802.11a 5.6G_Hand_Front side_CH 140_0mm

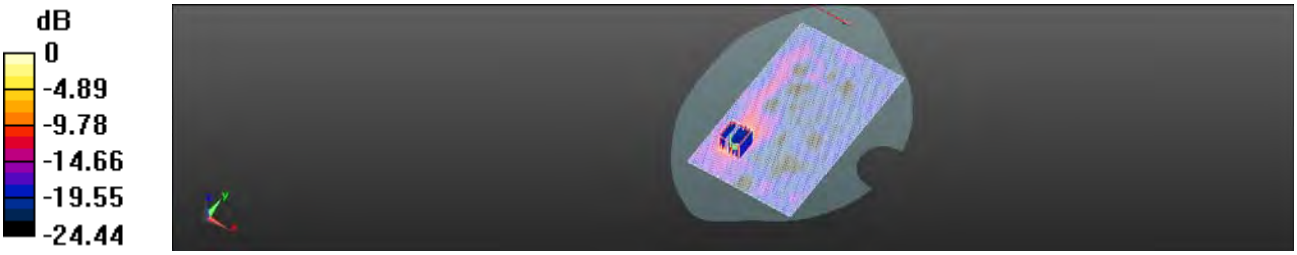
Communication System: WLAN(5G); Frequency: 5700 MHz
Medium parameters used: f = 5700 MHz; σ = 5.668 S/m; ε_r = 49.496; ρ = 1000 kg/m^3
Phantom section: Flat Section
Ambient temperature: 22.2° C ; Liquid temperature: 21.9° C

DASY5 Configuration:

- Probe: EX3DV4 - SN3831; ConvF(3.47, 3.47, 3.47); Calibrated: 2016/1/27;
- Sensor-Surface: 2mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn1336; Calibrated: 2015/8/26
- Phantom: Head
- DASY52 52.8.8(1222); SEMCAD X 14.6.10(7331)

Configuration/Head/Area Scan (121x201x1): Interpolated grid: dx=10 mm, dy=10 mm
Maximum value of SAR (interpolated) = 0.984 W/kg

Configuration/Head/Zoom Scan (7x7x12)/Cube 0: Measurement grid: dx=4mm, dy=4mm, dz=2mm
Reference Value = 0.8970 V/m; Power Drift = -0.15 dB
Peak SAR (extrapolated) = 6.49 W/kg
SAR(1 g) = 0.728 W/kg; SAR(10 g) = 0.166 W/kg
Maximum value of SAR (measured) = 2.02 W/kg



0 dB = 2.02 W/kg = 3.06 dBW/kg

Date: 2016/7/25

WLAN 802.11a 5.8G_Head_Le Cheek_CH 149

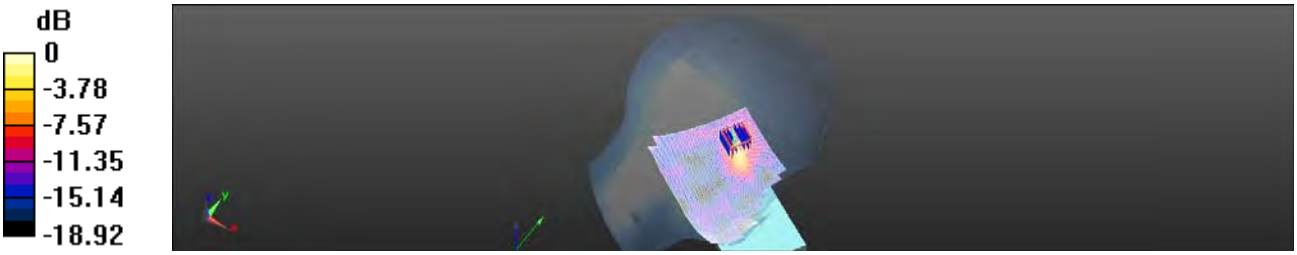
Communication System: WLAN(5G); Frequency: 5745 MHz
Medium parameters used: f = 5745 MHz; σ = 5.346 S/m; ε_r = 34.638; ρ = 1000 kg/m^3
Phantom section: Left Section
Ambient temperature: 22.1° C ; Liquid temperature: 21.7° C

DASY5 Configuration:

- Probe: EX3DV4 - SN3831; ConvF(4.1, 4.1, 4.1); Calibrated: 2016/1/27;
- Sensor-Surface: 2mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn1336; Calibrated: 2015/8/26
- Phantom: Head
- DASY52 52.8.8(1222); SEMCAD X 14.6.10(7331)

Configuration/Head/Area Scan (111x181x1): Interpolated grid: dx=10 mm, dy=10 mm
Maximum value of SAR (interpolated) = 0.370 W/kg

Configuration/Head/Zoom Scan (7x7x12)/Cube 0: Measurement grid: dx=4mm, dy=4mm, dz=2mm
Reference Value = 0.7170 V/m; Power Drift = 0.13 dB
Peak SAR (extrapolated) = 1.94 W/kg
SAR(1 g) = 0.227 W/kg; SAR(10 g) = 0.072 W/kg
Maximum value of SAR (measured) = 0.469 W/kg



0 dB = 0.469 W/kg = -3.29 dBW/kg

Date: 2016/7/20

WLAN 802.11a 5.8G_Body-worn_Back side_CH 149_10mm

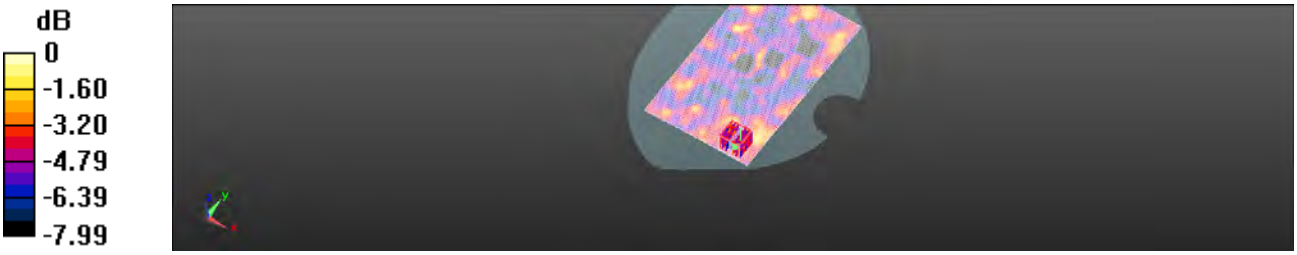
Communication System: WLAN(5G); Frequency: 5745 MHz
Medium parameters used: f = 5745 MHz; σ = 5.723 S/m; ε_r = 49.421; ρ = 1000 kg/m^3
Phantom section: Flat Section
Ambient temperature: 22.2° C ; Liquid temperature: 21.9° C

DASY5 Configuration:

- Probe: EX3DV4 - SN3831; ConvF(3.52, 3.52, 3.52); Calibrated: 2016/1/27;
- Sensor-Surface: 2mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn1336; Calibrated: 2015/8/26
- Phantom: Head
- DASY52 52.8.8(1222); SEMCAD X 14.6.10(7331)

Configuration/Head/Area Scan (121x201x1): Interpolated grid: dx=10 mm, dy=10 mm
Maximum value of SAR (interpolated) = 0.0431 W/kg

Configuration/Head/Zoom Scan (7x7x12)/Cube 0: Measurement grid: dx=4mm, dy=4mm, dz=2mm
Reference Value = 0.5890 V/m; Power Drift = -0.09 dB
Peak SAR (extrapolated) = 0.169 W/kg
SAR(1 g) = 0.030 W/kg; SAR(10 g) = 0.021 W/kg
Maximum value of SAR (measured) = 0.0517 W/kg



0 dB = 0.0517 W/kg = -12.86 dBW/kg

Date: 2016/7/20

WLAN 802.11a 5.8G_Hand_Front side_CH 149_0mm

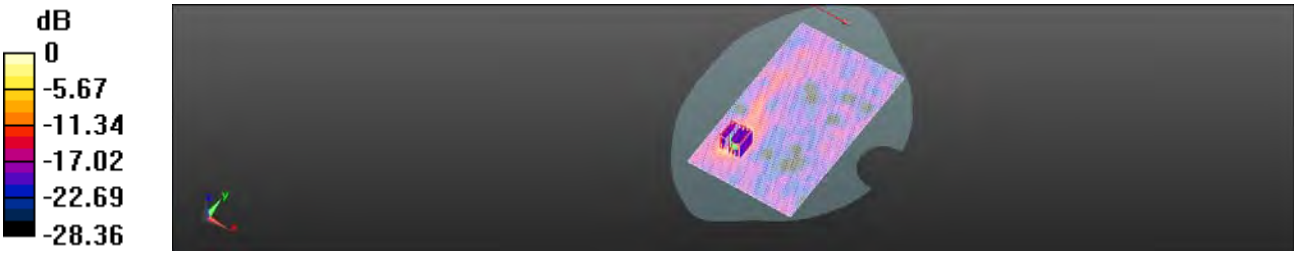
Communication System: WLAN(5G); Frequency: 5745 MHz
Medium parameters used: f = 5745 MHz; σ = 5.723 S/m; ε_r = 49.421; ρ = 1000 kg/m^3
Phantom section: Flat Section
Ambient temperature: 22.2° C ; Liquid temperature: 21.9° C

DASY5 Configuration:

- Probe: EX3DV4 - SN3831; ConvF(3.52, 3.52, 3.52); Calibrated: 2016/1/27;
- Sensor-Surface: 2mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn1336; Calibrated: 2015/8/26
- Phantom: Head
- DASY52 52.8.8(1222); SEMCAD X 14.6.10(7331)

Configuration/Head/Area Scan (121x201x1): Interpolated grid: dx=10 mm, dy=10 mm
Maximum value of SAR (interpolated) = 0.868 W/kg

Configuration/Head/Zoom Scan (7x7x12)/Cube 0: Measurement grid: dx=4mm, dy=4mm, dz=2mm
Reference Value = 0.6870 V/m; Power Drift = 0.16 dB
Peak SAR (extrapolated) = 5.73 W/kg
SAR(1 g) = 0.595 W/kg; SAR(10 g) = 0.136 W/kg
Maximum value of SAR (measured) = 1.67 W/kg



0 dB = 1.67 W/kg = 2.22 dBW/kg

6. SAR System Performance Verification

Date: 2016/7/4

Dipole 750 MHz_SN:1015_Head

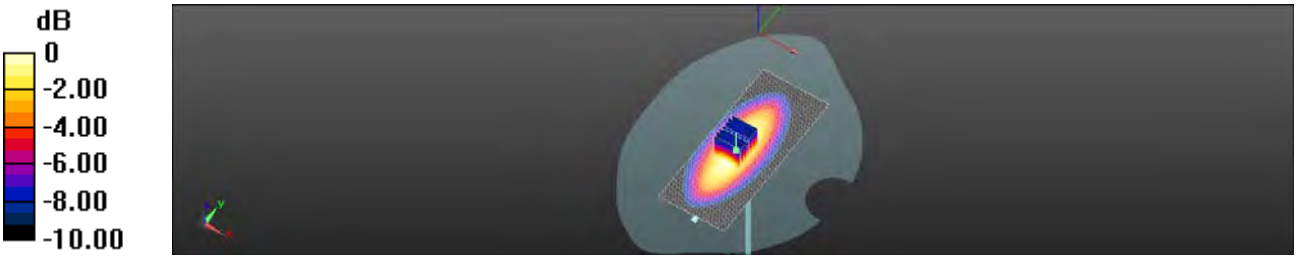
Communication System: CW; Frequency: 750 MHz
Medium parameters used: f = 750 MHz; σ = 0.907 S/m; ε_r = 41.473; ρ = 1000 kg/m^3
Phantom section: Flat Section
Ambient temperature: 22.4° C ; Liquid temperature: 22.2° C

DASY5 Configuration:

- Probe: EX3DV4 - SN3831; ConvF(9.38, 9.38, 9.38); Calibrated: 2016/1/27;
- Sensor-Surface: 2mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn1336; Calibrated: 2015/8/26
- Phantom: Head
- DASY52 52.8.8(1222); SEMCAD X 14.6.10(7331)

Configuration/Pin=250mW/Area Scan (51x121x1): Interpolated grid: dx=15 mm, dy=15 mm
Maximum value of SAR (interpolated) = 2.60 W/kg

Configuration/Pin=250mW/Zoom Scan (7x7x7)/Cube 0: Measurement grid: dx=5mm, dy=5mm, dz=5mm
Reference Value = 52.96 V/m; Power Drift = -0.02 dB
Peak SAR (extrapolated) = 3.05 W/kg
SAR(1 g) = 2.08 W/kg; SAR(10 g) = 1.38 W/kg
Maximum value of SAR (measured) = 2.61 W/kg



0 dB = 2.61 W/kg = 4.17 dBW/kg

Date: 2016/7/13

Dipole 750 MHz_SN:1015_Body

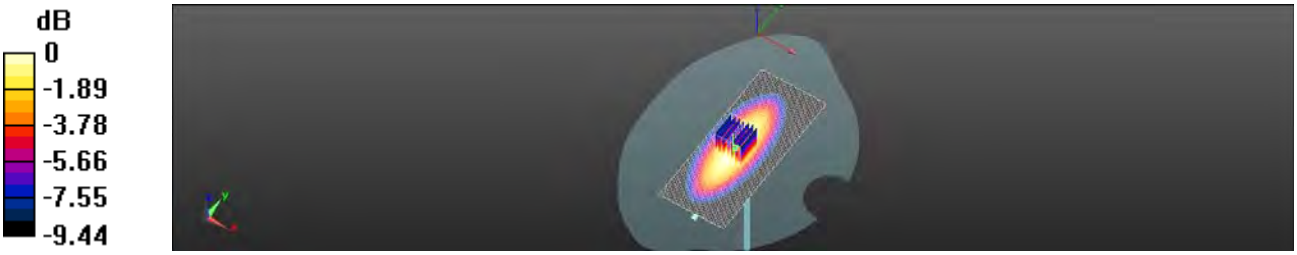
Communication System: CW; Frequency: 750 MHz
Medium parameters used: f = 750 MHz; σ = 0.971 S/m; ε_r = 56.47; ρ = 1000 kg/m^3
Phantom section: Flat Section
Ambient temperature: 22.2° C ; Liquid temperature: 21.8° C

DASY5 Configuration:

- Probe: EX3DV4 - SN3831; ConvF(9.25, 9.25, 9.25); Calibrated: 2016/1/27;
- Sensor-Surface: 2mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn1336; Calibrated: 2015/8/26
- Phantom: Head
- DASY52 52.8.8(1222); SEMCAD X 14.6.10(7331)

Configuration/Pin=250mW/Area Scan (51x121x1): Interpolated grid: dx=15 mm, dy=15 mm
Maximum value of SAR (interpolated) = 2.69 W/kg

Configuration/Pin=250mW/Zoom Scan (7x7x7)/Cube 0: Measurement grid: dx=5mm, dy=5mm, dz=5mm
Reference Value = 53.58 V/m; Power Drift = 0.10 dB
Peak SAR (extrapolated) = 3.10 W/kg
SAR(1 g) = 2.15 W/kg; SAR(10 g) = 1.46 W/kg
Maximum value of SAR (measured) = 2.68 W/kg



0 dB = 2.68 W/kg = 4.27 dBW/kg

Date: 2016/7/5

Dipole 835 MHz_SN:4d063_Head

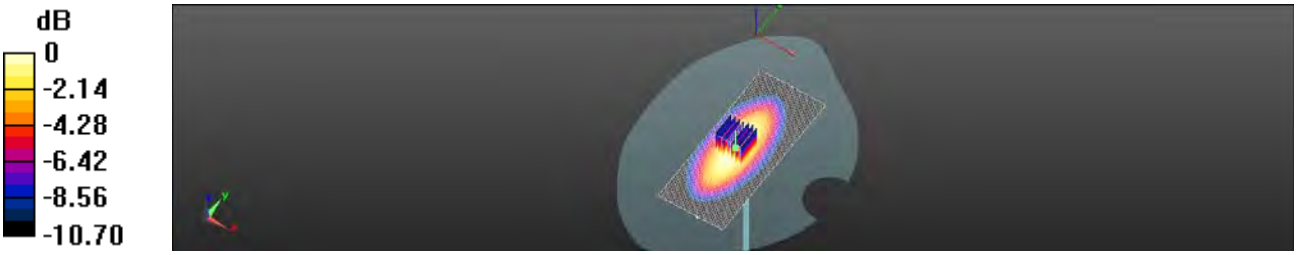
Communication System: CW; Frequency: 835 MHz
Medium parameters used: f = 835 MHz; σ = 0.929 S/m; ε_r = 42.728; ρ = 1000 kg/m^3
Phantom section: Flat Section
Ambient temperature: 22.3° C ; Liquid temperature: 21.9° C

DASY5 Configuration:

- Probe: EX3DV4 - SN3831; ConvF(8.84, 8.84, 8.84); Calibrated: 2016/1/27;
- Sensor-Surface: 2mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn1336; Calibrated: 2015/8/26
- Phantom: Head
- DASY52 52.8.8(1222); SEMCAD X 14.6.10(7331)

Configuration/Pin=250mW/Area Scan (51x121x1): Interpolated grid: dx=15 mm, dy=15 mm
Maximum value of SAR (interpolated) = 2.96 W/kg

Configuration/Pin=250mW/Zoom Scan (7x7x7)/Cube 0: Measurement grid: dx=5mm, dy=5mm, dz=5mm
Reference Value = 54.04 V/m; Power Drift = -0.02 dB
Peak SAR (extrapolated) = 3.51 W/kg
SAR(1 g) = 2.32 W/kg; SAR(10 g) = 1.51 W/kg
Maximum value of SAR (measured) = 2.96 W/kg



0 dB = 2.96 W/kg = 4.71 dBW/kg

Date: 2016/7/12

Dipole 835 MHz_SN:4d063_Body

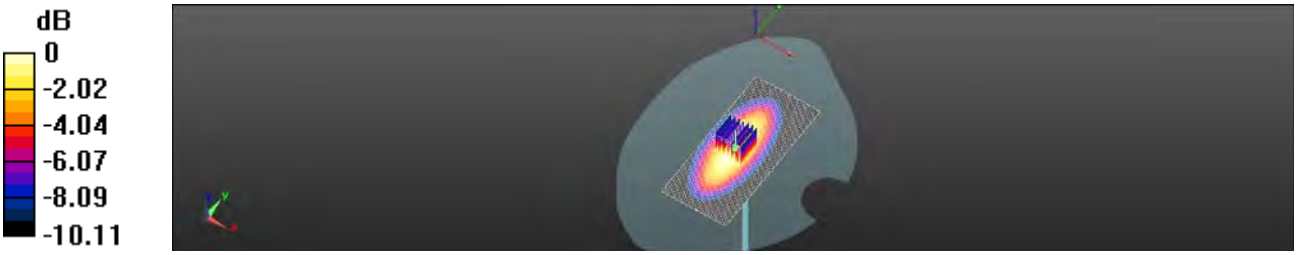
Communication System: CW; Frequency: 835 MHz
Medium parameters used: f = 835 MHz; σ = 1.009 S/m; ε_r = 55.577; ρ = 1000 kg/m^3
Phantom section: Flat Section
Ambient temperature: 22.1° C ; Liquid temperature: 21.9° C

DASY5 Configuration:

- Probe: EX3DV4 - SN3831; ConvF(9.08, 9.08, 9.08); Calibrated: 2016/1/27;
- Sensor-Surface: 2mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn1336; Calibrated: 2015/8/26
- Phantom: Head
- DASY52 52.8.8(1222); SEMCAD X 14.6.10(7331)

Configuration/Pin=250mW/Area Scan (51x111x1): Interpolated grid: dx=15 mm, dy=15 mm
Maximum value of SAR (interpolated) = 2.97 W/kg

Configuration/Pin=250mW/Zoom Scan (7x7x7)/Cube 0: Measurement grid: dx=5mm, dy=5mm, dz=5mm
Reference Value = 52.77 V/m; Power Drift = -0.10 dB
Peak SAR (extrapolated) = 3.42 W/kg
SAR(1 g) = 2.36 W/kg; SAR(10 g) = 1.57 W/kg
Maximum value of SAR (measured) = 2.96 W/kg



0 dB = 2.96 W/kg = 4.72 dBW/kg

Date: 2016/7/7

Dipole 1750 MHz_SN:1008_Head

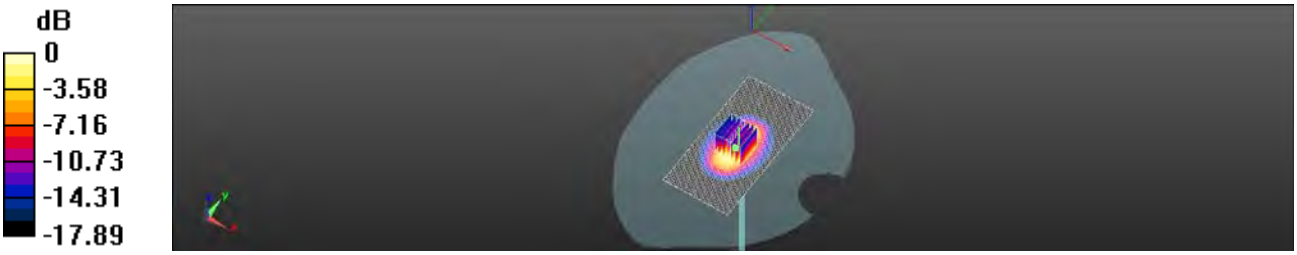
Communication System: CW; Frequency: 1750 MHz
Medium parameters used: f = 1750 MHz; σ = 1.415 S/m; ε_r = 40.449; ρ = 1000 kg/m^3
Phantom section: Flat Section
Ambient temperature: 22.1° C ; Liquid temperature: 21.6° C

DASY5 Configuration:

- Probe: EX3DV4 - SN3831; ConvF(7.92, 7.92, 7.92); Calibrated: 2016/1/27;
- Sensor-Surface: 2mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn1336; Calibrated: 2015/8/26
- Phantom: Head
- DASY52 52.8.8(1222); SEMCAD X 14.6.10(7331)

Configuration/Pin=250mW/Area Scan (51x101x1): Interpolated grid: dx=15 mm, dy=15 mm
Maximum value of SAR (interpolated) = 13.0 W/kg

Configuration/Pin=250mW/Zoom Scan (7x7x7)/Cube 0: Measurement grid: dx=5mm, dy=5mm, dz=5mm
Reference Value = 97.20 V/m; Power Drift = -0.15 dB
Peak SAR (extrapolated) = 15.9 W/kg
SAR(1 g) = 9.05 W/kg; SAR(10 g) = 4.75 W/kg
Maximum value of SAR (measured) = 12.4 W/kg



0 dB = 12.4 W/kg = 10.94 dBW/kg

Date: 2016/7/14

Dipole 1750 MHz_SN:1008_Body

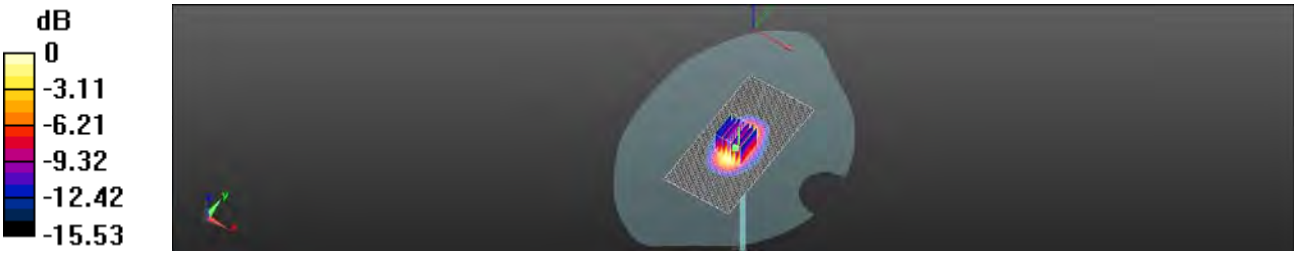
Communication System: CW; Frequency: 1750 MHz
Medium parameters used: f = 1750 MHz; σ = 1.451 S/m; ε_r = 53.827; ρ = 1000 kg/m^3
Phantom section: Flat Section
Ambient temperature: 21.9° C ; Liquid temperature: 21.7° C

DASY5 Configuration:

- Probe: EX3DV4 - SN3831; ConvF(7.74, 7.74, 7.74); Calibrated: 2016/1/27;
- Sensor-Surface: 2mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn1336; Calibrated: 2015/8/26
- Phantom: Head
- DASY52 52.8.8(1222); SEMCAD X 14.6.10(7331)

Configuration/Pin=250mW/Area Scan (51x101x1): Interpolated grid: dx=15 mm, dy=15 mm
Maximum value of SAR (interpolated) = 14.9 W/kg

Configuration/Pin=250mW/Zoom Scan (7x7x7)/Cube 0: Measurement grid: dx=5mm, dy=5mm, dz=5mm
Reference Value = 96.54 V/m; Power Drift = -0.08 dB
Peak SAR (extrapolated) = 16.1 W/kg
SAR(1 g) = 9.3 W/kg; SAR(10 g) = 5.07 W/kg
Maximum value of SAR (measured) = 12.9 W/kg



0 dB = 12.9 W/kg = 11.11 dBW/kg

Date: 2016/7/6

Dipole 1900 MHz_SN:5d027_Head

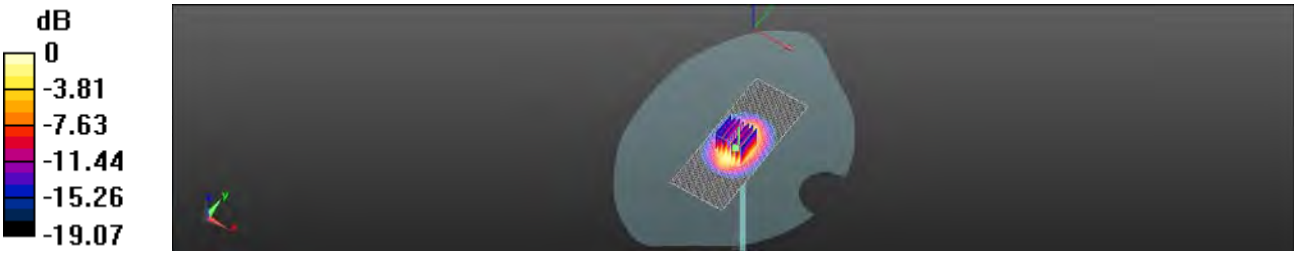
Communication System: CW; Frequency: 1900 MHz
Medium parameters used: f = 1900 MHz; σ = 1.433 S/m; ε_r = 38.804; ρ = 1000 kg/m^3
Phantom section: Flat Section
Ambient temperature: 22.2° C ; Liquid temperature: 21.8° C

DASY5 Configuration:

- Probe: EX3DV4 - SN3831; ConvF(7.66, 7.66, 7.66); Calibrated: 2016/1/27;
- Sensor-Surface: 2mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn1336; Calibrated: 2015/8/26
- Phantom: Head
- DASY52 52.8.8(1222); SEMCAD X 14.6.10(7331)

Configuration/Pin=250mW/Area Scan (41x101x1): Interpolated grid: dx=15 mm, dy=15 mm
Maximum value of SAR (interpolated) = 14.2 W/kg

Configuration/Pin=250mW/Zoom Scan (7x7x7)/Cube 0: Measurement grid: dx=5mm, dy=5mm, dz=5mm
Reference Value = 100.8 V/m; Power Drift = -0.04 dB
Peak SAR (extrapolated) = 17.8 W/kg
SAR(1 g) = 9.97 W/kg; SAR(10 g) = 5.24 W/kg
Maximum value of SAR (measured) = 14.0 W/kg



0 dB = 14.0 W/kg = 11.45 dBW/kg

Date: 2016/7/15

Dipole 1900 MHz_SN:5d027_Body

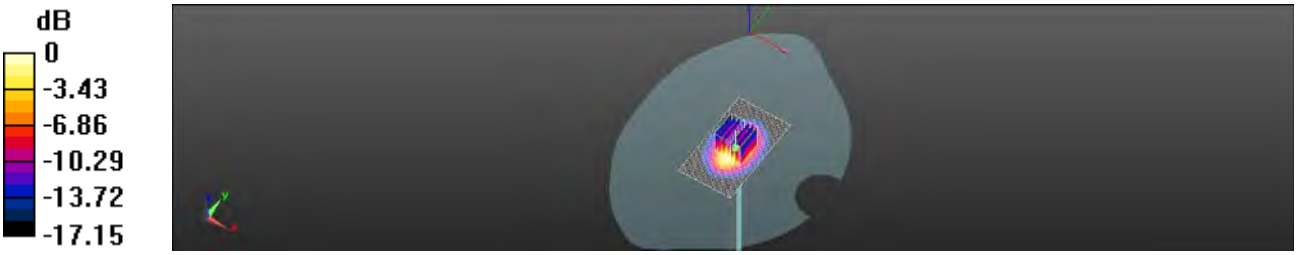
Communication System: CW; Frequency: 1900 MHz
Medium parameters used: f = 1900 MHz; σ = 1.521 S/m; ε_r = 51.808; ρ = 1000 kg/m^3
Phantom section: Flat Section
Ambient temperature: 22.4° C ; Liquid temperature: 22.1° C

DASY5 Configuration:

- Probe: EX3DV4 - SN3831; ConvF(7.54, 7.54, 7.54); Calibrated: 2016/1/27;
- Sensor-Surface: 2mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn1336; Calibrated: 2015/8/26
- Phantom: Head
- DASY52 52.8.8(1222); SEMCAD X 14.6.10(7331)

Configuration/Pin=250mW/Area Scan (41x71x1): Interpolated grid: dx=15 mm, dy=15 mm
Maximum value of SAR (interpolated) = 15.4 W/kg

Configuration/Pin=250mW/Zoom Scan (7x7x7)/Cube 0: Measurement grid: dx=5mm, dy=5mm, dz=5mm
Reference Value = 96.08 V/m; Power Drift = -0.01 dB
Peak SAR (extrapolated) = 18.2 W/kg
SAR(1 g) = 9.76 W/kg; SAR(10 g) = 5.17 W/kg
Maximum value of SAR (measured) = 14.3 W/kg



0 dB = 14.3 W/kg = 11.57 dBW/kg

Date: 2016/7/18

Dipole 2450 MHz_SN:727_Head

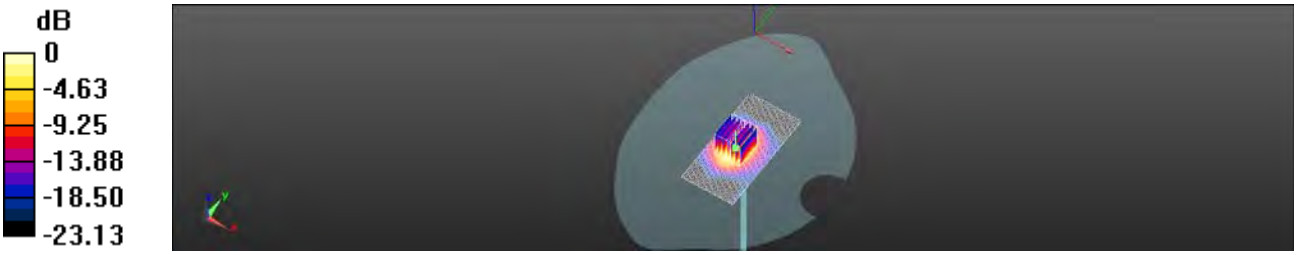
Communication System: CW; Frequency: 2450 MHz
Medium parameters used: f = 2450 MHz; σ = 1.84 S/m; ε_r = 38.475; ρ = 1000 kg/m^3
Phantom section: Flat Section
Ambient temperature: 22.5° C ; Liquid temperature: 22.1° C

DASY5 Configuration:

- Probe: EX3DV4 - SN3831; ConvF(6.92, 6.92, 6.92); Calibrated: 2016/1/27;
- Sensor-Surface: 2mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn1336; Calibrated: 2015/8/26
- Phantom: Head
- DASY52 52.8.8(1222); SEMCAD X 14.6.10(7331)

Configuration/Pin=250mW/Area Scan (51x101x1): Interpolated grid: dx=12 mm, dy=12 mm
Maximum value of SAR (interpolated) = 21.5 W/kg

Configuration/Pin=250mW/Zoom Scan (7x7x7)/Cube 0: Measurement grid: dx=5mm, dy=5mm, dz=5mm
Reference Value = 104.3 V/m; Power Drift = -0.16 dB
Peak SAR (extrapolated) = 29.4 W/kg
SAR(1 g) = 13.1 W/kg; SAR(10 g) = 6.02 W/kg
Maximum value of SAR (measured) = 21.0 W/kg



0 dB = 21.0 W/kg = 13.22 dBW/kg

Date: 2016/7/19

Dipole 2450 MHz_SN:727_Body

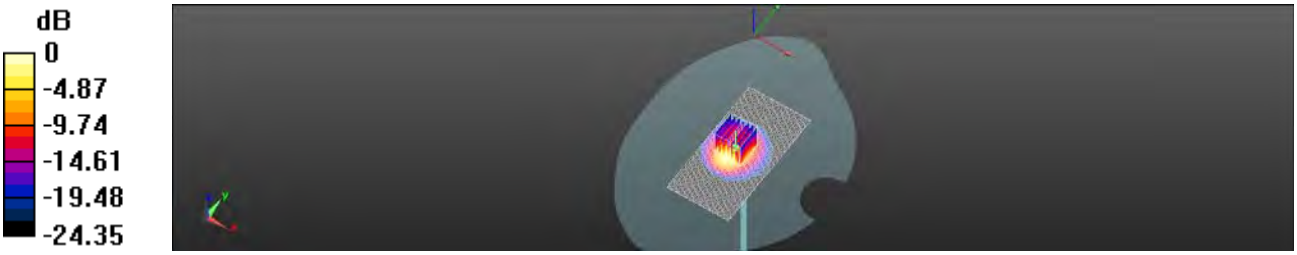
Communication System: CW; Frequency: 2450 MHz
Medium parameters used: f = 2450 MHz; σ = 2.024 S/m; ε_r = 51.011; ρ = 1000 kg/m^3
Phantom section: Flat Section
Ambient temperature: 22.3° C ; Liquid temperature: 21.9° C

DASY5 Configuration:

- Probe: EX3DV4 - SN3831; ConvF(7.05, 7.05, 7.05); Calibrated: 2016/1/27;
- Sensor-Surface: 2mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn1336; Calibrated: 2015/8/26
- Phantom: Head
- DASY52 52.8.8(1222); SEMCAD X 14.6.10(7331)

Configuration/Pin=250mW/Area Scan (61x121x1): Interpolated grid: dx=12 mm, dy=12 mm
Maximum value of SAR (interpolated) = 19.0 W/kg

Configuration/Pin=250mW/Zoom Scan (7x7x7)/Cube 0: Measurement grid: dx=5mm, dy=5mm, dz=5mm
Reference Value = 91.05 V/m; Power Drift = 0.14 dB
Peak SAR (extrapolated) = 26.2 W/kg
SAR(1 g) = 12.7 W/kg; SAR(10 g) = 5.9 W/kg
Maximum value of SAR (measured) = 19.1 W/kg



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

Date: 2016/7/11

Dipole 2600 MHz_SN:1005_Head

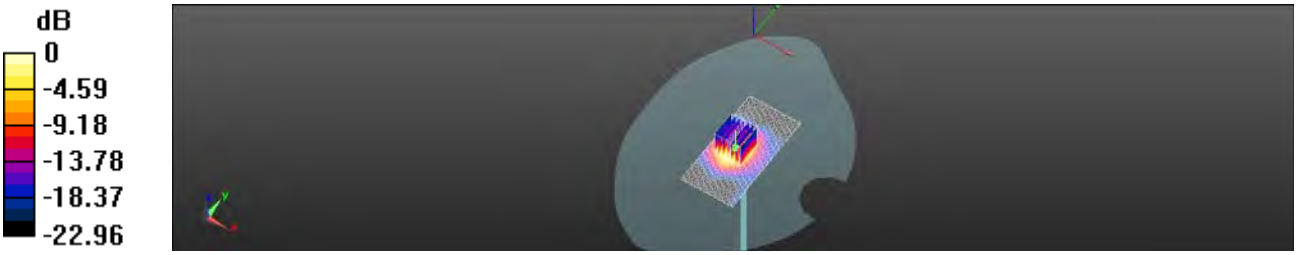
Communication System: CW; Frequency: 2600 MHz
Medium parameters used: f = 2600 MHz; σ = 2.035 S/m; ε_r = 40.558; ρ = 1000 kg/m^3
Phantom section: Flat Section
Ambient temperature: 22.3° C ; Liquid temperature: 22.2° C

DASY5 Configuration:

- Probe: EX3DV4 - SN3831; ConvF(6.71, 6.71, 6.71); Calibrated: 2016/1/27;
- Sensor-Surface: 2mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn1336; Calibrated: 2015/8/26
- Phantom: Head
- DASY52 52.8.8(1222); SEMCAD X 14.6.10(7331)

Configuration/Pin=250mW/Area Scan (51x101x1): Interpolated grid: dx=12 mm, dy=12 mm
Maximum value of SAR (interpolated) = 23.0 W/kg

Configuration/Pin=250mW/Zoom Scan (7x7x7)/Cube 0: Measurement grid: dx=5mm, dy=5mm, dz=5mm
Reference Value = 100.5 V/m; Power Drift = -0.18 dB
Peak SAR (extrapolated) = 32.1 W/kg
SAR(1 g) = 14.1 W/kg; SAR(10 g) = 6.25 W/kg
Maximum value of SAR (measured) = 22.6 W/kg



0 dB = 22.6 W/kg = 13.54 dBW/kg

Date: 2016/7/16

Dipole 2600 MHz_SN:1005_Body

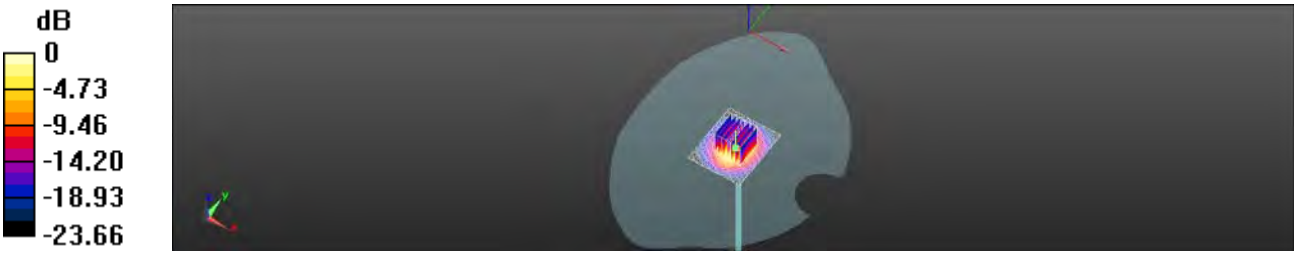
Communication System: CW; Frequency: 2600 MHz
Medium parameters used: f = 2600 MHz; σ = 2.177 S/m; ε_r = 51.061; ρ = 1000 kg/m^3
Phantom section: Flat Section
Ambient temperature: 22.1° C ; Liquid temperature: 21.7° C

DASY5 Configuration:

- Probe: EX3DV4 - SN3831; ConvF(6.71, 6.71, 6.71); Calibrated: 2016/1/27;
- Sensor-Surface: 2mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn1336; Calibrated: 2015/8/26
- Phantom: Head
- DASY52 52.8.8(1222); SEMCAD X 14.6.10(7331)

Configuration/Pin=250mW/Area Scan (51x61x1): Interpolated grid: dx=12 mm, dy=12 mm
Maximum value of SAR (interpolated) = 22.9 W/kg

Configuration/Pin=250mW/Zoom Scan (7x7x7)/Cube 0: Measurement grid: dx=5mm, dy=5mm, dz=5mm
Reference Value = 96.95 V/m; Power Drift = -0.07 dB
Peak SAR (extrapolated) = 30.5 W/kg
SAR(1 g) = 14.1 W/kg; SAR(10 g) = 6.25 W/kg
Maximum value of SAR (measured) = 22.0 W/kg



0 dB = 22.0 W/kg = 13.42 dBW/kg

Date: 2016/7/21

Dipole 5200 MHz_SN:1023_Head

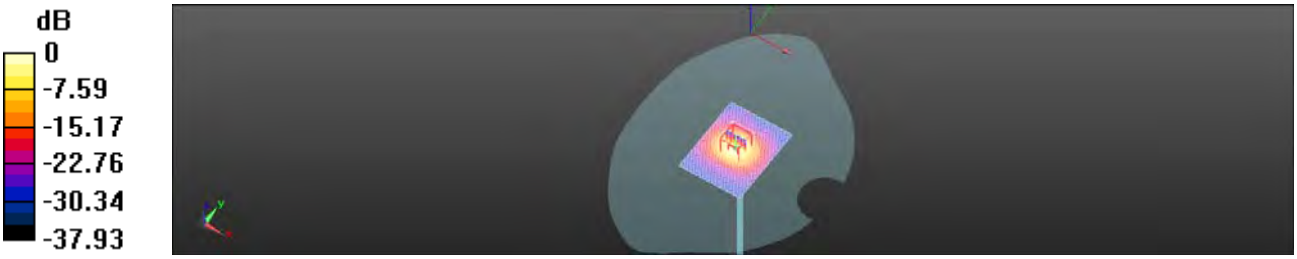
Communication System: CW; Frequency: 5200 MHz
Medium parameters used: f = 5200 MHz; σ = 4.703 S/m; ε_r = 35.629; ρ = 1000 kg/m^3
Phantom section: Flat Section
Ambient temperature: 22.1° C ; Liquid temperature: 22.5° C

DASY5 Configuration:

- Probe: EX3DV4 - SN3831; ConvF(4.76, 4.76, 4.76); Calibrated: 2016/1/27;
- Sensor-Surface: 2mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn1336; Calibrated: 2015/8/26
- Phantom: Head
- DASY52 52.8.8(1222); SEMCAD X 14.6.10(7331)

Configuration/Pin=100mW/Area Scan (71x91x1): Interpolated grid: dx=10 mm, dy=10 mm
Maximum value of SAR (interpolated) = 17.2 W/kg

Configuration/Pin=100mW/Zoom Scan (7x7x12)/Cube 0: Measurement grid: dx=4mm, dy=4mm, dz=2mm
Reference Value = 62.25 V/m; Power Drift = -0.12 dB
Peak SAR (extrapolated) = 32.7 W/kg
SAR(1 g) = 7.81 W/kg; SAR(10 g) = 2.31 W/kg
Maximum value of SAR (measured) = 17.0 W/kg



0 dB = 17.0 W/kg = 12.31 dBW/kg

Date: 2016/7/20

Dipole 5200 MHz_SN:1023_Body

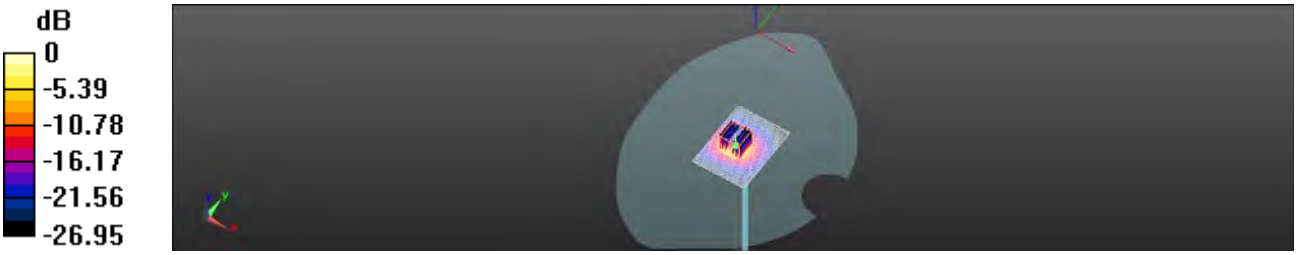
Communication System: CW; Frequency: 5200 MHz
Medium parameters used: f = 5200 MHz; σ = 5.105 S/m; ε_r = 50.167; ρ = 1000 kg/m^3
Phantom section: Flat Section
Ambient temperature: 22.2° C ; Liquid temperature: 21.9° C

DASY5 Configuration:

- Probe: EX3DV4 - SN3831; ConvF(4.07, 4.07, 4.07); Calibrated: 2016/1/27;
- Sensor-Surface: 2mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn1336; Calibrated: 2015/8/26
- Phantom: Head
- DASY52 52.8.8(1222); SEMCAD X 14.6.10(7331)

Configuration/Pin=100mW/Area Scan (61x81x1): Interpolated grid: dx=10 mm, dy=10 mm
Maximum value of SAR (interpolated) = 15.0 W/kg

Configuration/Pin=100mW/Zoom Scan (7x7x12)/Cube 0: Measurement grid: dx=4mm, dy=4mm, dz=2mm
Reference Value = 47.06 V/m; Power Drift = -0.11 dB
Peak SAR (extrapolated) = 27.3 W/kg
SAR(1 g) = 7.35 W/kg; SAR(10 g) = 2.08 W/kg
Maximum value of SAR (measured) = 15.3 W/kg



0 dB = 15.3 W/kg = 11.83 dBW/kg

Date: 2016/7/21

Dipole 5300 MHz_SN:1023_Head

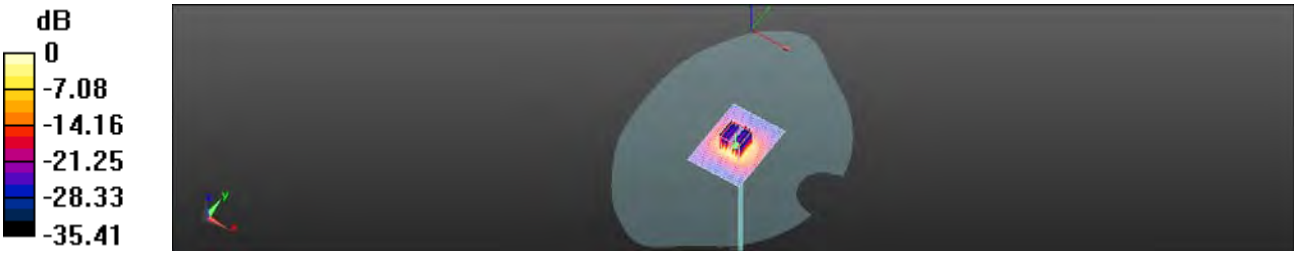
Communication System: CW; Frequency: 5300 MHz
Medium parameters used: f = 5300 MHz; σ = 4.807 S/m; ε_r = 35.533; ρ = 1000 kg/m^3
Phantom section: Flat Section
Ambient temperature: 22.1° C ; Liquid temperature: 22.5° C

DASY5 Configuration:

- Probe: EX3DV4 - SN3831; ConvF(4.46, 4.46, 4.46); Calibrated: 2016/1/27;
- Sensor-Surface: 2mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn1336; Calibrated: 2015/8/26
- Phantom: Head
- DASY52 52.8.8(1222); SEMCAD X 14.6.10(7331)

Configuration/Pin=100mW/Area Scan (61x81x1): Interpolated grid: dx=10 mm, dy=10 mm
Maximum value of SAR (interpolated) = 16.9 W/kg

Configuration/Pin=100mW/Zoom Scan (7x7x12)/Cube 0: Measurement grid: dx=4mm, dy=4mm, dz=2mm
Reference Value = 62.43 V/m; Power Drift = 0.01 dB
Peak SAR (extrapolated) = 35.8 W/kg
SAR(1 g) = 8.04 W/kg; SAR(10 g) = 2.32 W/kg
Maximum value of SAR (measured) = 17.2 W/kg



0 dB = 17.2 W/kg = 12.35 dBW/kg

Date: 2016/7/20

Dipole 5300 MHz_SN:1023_Body

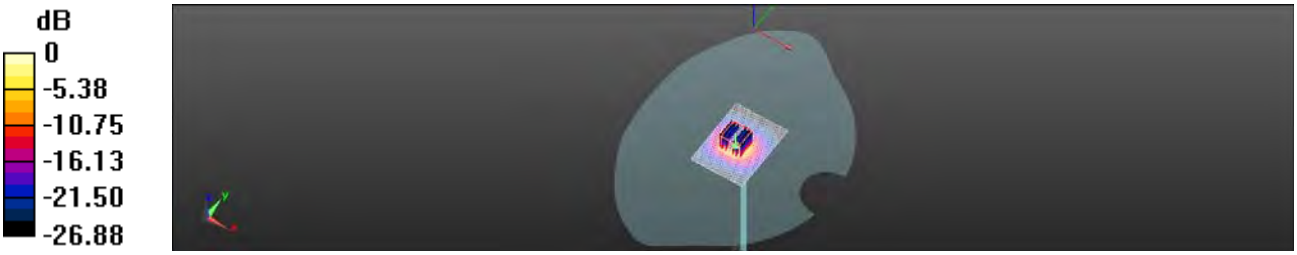
Communication System: CW; Frequency: 5300 MHz
Medium parameters used: f = 5300 MHz; σ = 5.22 S/m; ε_r = 50.042; ρ = 1000 kg/m^3
Phantom section: Flat Section
Ambient temperature: 22.2° C ; Liquid temperature: 21.9° C

DASY5 Configuration:

- Probe: EX3DV4 - SN3831; ConvF(3.81, 3.81, 3.81); Calibrated: 2016/1/27;
- Sensor-Surface: 2mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn1336; Calibrated: 2015/8/26
- Phantom: Head
- DASY52 52.8.8(1222); SEMCAD X 14.6.10(7331)

Configuration/Pin=100mW/Area Scan (61x81x1): Interpolated grid: dx=10 mm, dy=10 mm
Maximum value of SAR (interpolated) = 14.8 W/kg

Configuration/Pin=100mW/Zoom Scan (7x7x12)/Cube 0: Measurement grid: dx=4mm, dy=4mm, dz=2mm
Reference Value = 52.53 V/m; Power Drift = -0.02 dB
Peak SAR (extrapolated) = 27.7 W/kg
SAR(1 g) = 7.54 W/kg; SAR(10 g) = 2.09 W/kg
Maximum value of SAR (measured) = 14.8 W/kg



0 dB = 14.8 W/kg = 11.71 dBW/kg

Date: 2016/7/22

Dipole 5600 MHz_SN:1023_Head

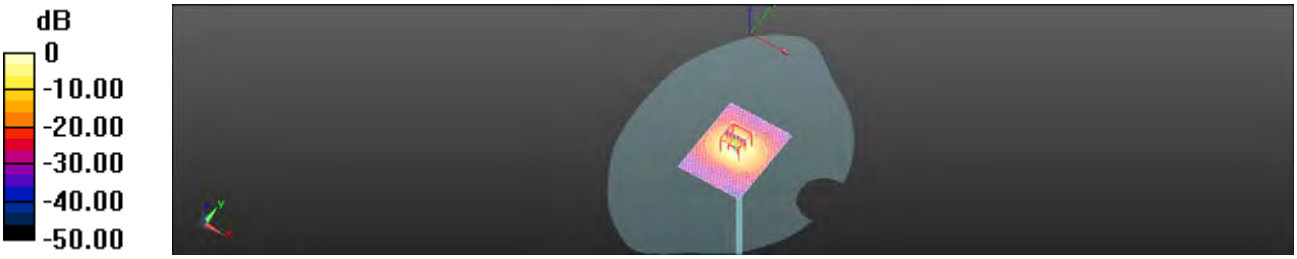
Communication System: CW; Frequency: 5600 MHz
Medium parameters used: f = 5600 MHz; σ = 5.145 S/m; ε_r = 34.985; ρ = 1000 kg/m^3
Phantom section: Flat Section
Ambient temperature: 22.2° C ; Liquid temperature: 22.4° C

DASY5 Configuration:

- Probe: EX3DV4 - SN3831; ConvF(4.08, 4.08, 4.08); Calibrated: 2016/1/27;
- Sensor-Surface: 2mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn1336; Calibrated: 2015/8/26
- Phantom: Head
- DASY52 52.8.8(1222); SEMCAD X 14.6.10(7331)

Configuration/Pin=100mW/Area Scan (71x91x1): Interpolated grid: dx=10 mm, dy=10 mm
Maximum value of SAR (interpolated) = 18.0 W/kg

Configuration/Pin=100mW/Zoom Scan (7x7x12)/Cube 0: Measurement grid: dx=4mm, dy=4mm, dz=2mm
Reference Value = 58.63 V/m; Power Drift = -0.06 dB
Peak SAR (extrapolated) = 36.7 W/kg
SAR(1 g) = 8.37 W/kg; SAR(10 g) = 2.41 W/kg
Maximum value of SAR (measured) = 18.0 W/kg



0 dB = 18.0 W/kg = 12.55 dBW/kg

Date: 2016/7/20

Dipole 5600 MHz_SN:1023_Body

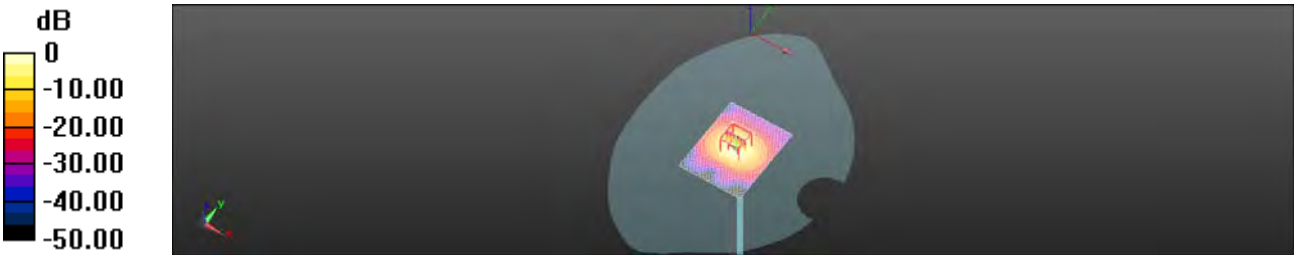
Communication System: CW; Frequency: 5600 MHz
Medium parameters used: f = 5600 MHz; σ = 5.561 S/m; ε_r = 49.625; ρ = 1000 kg/m^3
Phantom section: Flat Section
Ambient temperature: 22.2° C ; Liquid temperature: 21.9° C

DASY5 Configuration:

- Probe: EX3DV4 - SN3831; ConvF(3.47, 3.47, 3.47); Calibrated: 2016/1/27;
- Sensor-Surface: 2mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn1336; Calibrated: 2015/8/26
- Phantom: Head
- DASY52 52.8.8(1222); SEMCAD X 14.6.10(7331)

Configuration/Pin=100mW/Area Scan (71x91x1): Interpolated grid: dx=10 mm, dy=10 mm
Maximum value of SAR (interpolated) = 16.8 W/kg

Configuration/Pin=100mW/Zoom Scan (7x7x12)/Cube 0: Measurement grid: dx=4mm, dy=4mm, dz=2mm
Reference Value = 54.26 V/m; Power Drift = -0.14 dB
Peak SAR (extrapolated) = 33.3 W/kg
SAR(1 g) = 7.81 W/kg; SAR(10 g) = 2.17 W/kg
Maximum value of SAR (measured) = 16.8 W/kg



0 dB = 16.8 W/kg = 12.25 dBW/kg

Date: 2016/7/25

Dipole 5800 MHz_SN:1023_Head

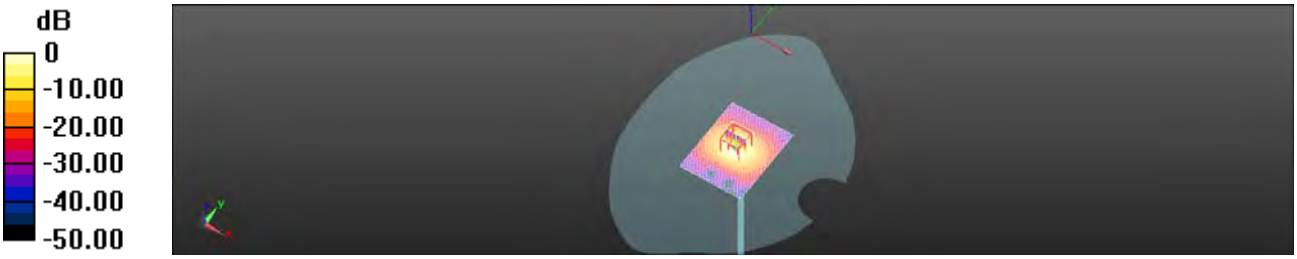
Communication System: CW; Frequency: 5800 MHz
Medium parameters used: f = 5800 MHz; σ = 5.401 S/m; ε_r = 34.598; ρ = 1000 kg/m^3
Phantom section: Flat Section
Ambient temperature: 22.1° C ; Liquid temperature: 21.7° C

DASY5 Configuration:

- Probe: EX3DV4 - SN3831; ConvF(4.1, 4.1, 4.1); Calibrated: 2016/1/27;
- Sensor-Surface: 2mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn1336; Calibrated: 2015/8/26
- Phantom: Head
- DASY52 52.8.8(1222); SEMCAD X 14.6.10(7331)

Configuration/Pin=100mW/Area Scan (71x91x1): Interpolated grid: dx=10 mm, dy=10 mm
Maximum value of SAR (interpolated) = 18.0 W/kg

Configuration/Pin=100mW/Zoom Scan (7x7x12)/Cube 0: Measurement grid: dx=4mm, dy=4mm, dz=2mm
Reference Value = 59.20 V/m; Power Drift = -0.16 dB
Peak SAR (extrapolated) = 37.5 W/kg
SAR(1 g) = 7.84 W/kg; SAR(10 g) = 2.31 W/kg
Maximum value of SAR (measured) = 17.6 W/kg



0 dB = 17.6 W/kg = 12.46 dBW/kg

Date: 2016/7/20

Dipole 5800 MHz_SN:1023_Body

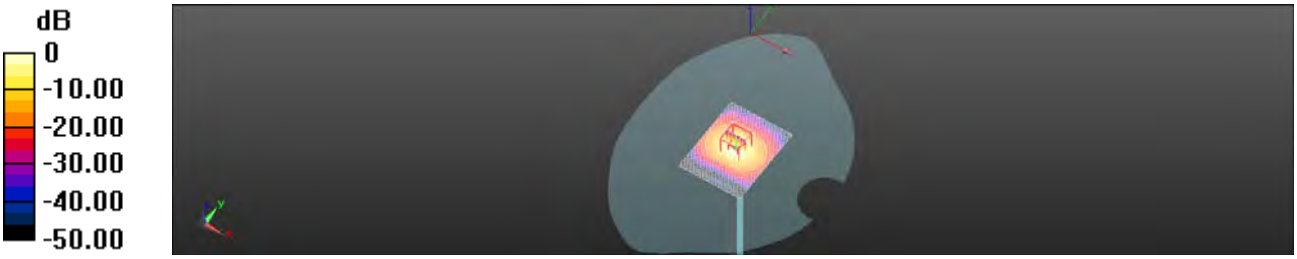
Communication System: CW; Frequency: 5800 MHz
Medium parameters used: f = 5800 MHz; σ = 5.785 S/m; ε_r = 49.322; ρ = 1000 kg/m^3
Phantom section: Flat Section
Ambient temperature: 22.2° C ; Liquid temperature: 21.9° C

DASY5 Configuration:

- Probe: EX3DV4 - SN3831; ConvF(3.52, 3.52, 3.52); Calibrated: 2016/1/27;
- Sensor-Surface: 2mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn1336; Calibrated: 2015/8/26
- Phantom: Head
- DASY52 52.8.8(1222); SEMCAD X 14.6.10(7331)

Configuration/Pin=100mW/Area Scan (71x91x1): Interpolated grid: dx=10 mm, dy=10 mm
Maximum value of SAR (interpolated) = 15.1 W/kg

Configuration/Pin=100mW/Zoom Scan (7x7x12)/Cube 0: Measurement grid: dx=4mm, dy=4mm, dz=2mm
Reference Value = 52.71 V/m; Power Drift = -0.15 dB
Peak SAR (extrapolated) = 27.7 W/kg
SAR(1 g) = 7.55 W/kg; SAR(10 g) = 2.11 W/kg
Maximum value of SAR (measured) = 15.1 W/kg



0 dB = 15.1 W/kg = 11.79 dBW/kg

7. DAE & Probe Calibration Certificate

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Accreditation No.: SCS 0108

Client: SGS - TW (Auden)

Certificate No: DAE4-1336_Aug15

CALIBRATION CERTIFICATE

Object: DAE4 - SD 000 D04 BM - SN: 1336

Calibration procedure(s): QA CAL-06.v29
Calibration procedure for the data acquisition electronics (DAE)

Calibration date: August 26, 2015

This calibration certificate documents the traceability to national standards, which realize the physical units of measurements (SI). The measurements and the uncertainties with confidence probability are given on the following pages and are part of the certificate.

All calibrations have been conducted in the closed laboratory facility: environment temperature (22 ± 3)°C and humidity < 70%.

Calibration Equipment used (M&TE critical for calibration)

Primary Standards	ID #	Cal Date (Certificate No.)	Scheduled Calibration
Keithley Multimeter Type 2001	SN: 0810278	03-Oct-14 (No:15573)	Oct-15
Secondary Standards	**ID #**	**Check Date (in house)**	**Scheduled Check**
Auto DAE Calibration Unit	SE UWS 053 AA 1001	06-Jan-15 (In house check)	In house check: Jan-16
Calibrator Box V2.1	SE UMS 006 AA 1002	06-Jan-15 (In house check)	In house check: Jan-16

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

Issued: August 26, 2015

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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	403.276 ± 0.02% (k=2)	403.573 ± 0.02% (k=2)	403.056 ± 0.02% (k=2)
Low Range	3.95163 ± 1.50% (k=2)	3.98593 ± 1.50% (k=2)	3.99669 ± 1.50% (k=2)

Connector Angle

Connector Angle to be used in DASY system	121.0 ° ± 1 °

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Appendix (Additional assessments outside the scope of SCS0108)

1. DC Voltage Linearity

High Range		Reading (μV)	Difference (μV)	Error (%)
Channel X	+ Input	200039.73	3.06	0.00
Channel X	+ Input	20005.75	1.87	0.01
Channel X	- Input	-20006.63	0.10	-0.00
Channel Y	+ Input	200040.44	3.89	0.00
Channel Y	+ Input	20002.50	-1.26	-0.01
Channel Y	- Input	-20009.40	-2.57	0.01
Channel Z	+ Input	200042.26	5.60	0.00
Channel Z	+ Input	20002.80	-0.91	-0.00
Channel Z	- Input	-20009.67	-2.80	0.01

Low Range		Reading (μV)	Difference (μV)	Error (%)
Channel X	+ Input	2000.27	0.19	0.01
Channel X	+ Input	199.51	-0.49	-0.24
Channel X	- Input	-200.10	-0.12	0.06
Channel Y	+ Input	1999.75	-0.24	-0.01
Channel Y	+ Input	199.19	-0.66	-0.33
Channel Y	- Input	-200.95	-0.99	0.49
Channel Z	+ Input	2000.22	0.38	0.02
Channel Z	+ Input	198.50	-1.33	-0.66
Channel Z	- Input	-201.27	-1.23	0.61

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	5.53	4.41
	- 200	-3.35	-4.87
Channel Y	200	-3.56	-3.80
	- 200	3.14	2.36
Channel Z	200	20.99	21.07
	- 200	-24.35	-24.58

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	-	5.96	-1.54
Channel Y	200	8.46	-	7.20
Channel Z	200	8.25	6.18	-

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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	15667	16258
Channel Y	15914	16000
Channel Z	15866	16245

5. Input Offset Measurement

DASY measurement parameters: Auto Zero Time: 3 sec; Measuring time: 3 sec
Input 10MΩ

	Average (μV)	min. Offset (μV)	max. Offset (μV)	Std. Deviation (μV)
Channel X	0.23	-0.56	1.25	0.37
Channel Y	0.11	-0.69	1.02	0.34
Channel Z	-1.22	-2.26	0.20	0.41

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_Jan16

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 27, 2016

This calibration certificate documents the traceability to national standards, which realize the physical units of measurements (SI).
The measurements and the uncertainties with confidence probability are given on the following pages and are part of the certificate.

All calibrations have been conducted in the closed laboratory facility: environment temperature (22 ± 3)°C and humidity < 70%.

Calibration Equipment used (M&TE critical for calibration)

Primary Standards	ID	Cal Date (Certificate No.)	Scheduled Calibration
Power meter E4419B	GB41293874	01-Apr-15 (No. 217-02128)	Mar-16
Power sensor E4412A	MY41498087	01-Apr-15 (No. 217-02128)	Mar-16
Reference 3 dB Attenuator	SN: S5054 (3c)	01-Apr-15 (No. 217-02129)	Mar-16
Reference 20 dB Attenuator	SN: S5277 (20x)	01-Apr-15 (No. 217-02132)	Mar-16
Reference 30 dB Attenuator	SN: S5129 (30b)	01-Apr-15 (No. 217-02133)	Mar-16
Reference Probe ES3DV2	SN: 3013	31-Dec-15 (No. ES3-3013_Dec15)	Dec-16
DAE4	SN: 660	23-Dec-15 (No. DAE4-660_Dec15)	Dec-16
Secondary Standards	ID	Check Date (in house)	Scheduled Check
RF generator HP 8648C	US3642U01700	4-Aug-99 (in house check Apr-15)	In house check: Apr-16
Network Analyzer HP 8753E	US37390585	18-Oct-01 (in house check Oct-15)	In house check: Oct-16

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

Issued: January 28, 2016

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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
c) IEC 62209-2, "Procedure to determine the Specific Absorption Rate (SAR) for wireless communication devices used in close proximity to the human body (frequency range of 30 MHz to 6 GHz)", March 2010
d) KDB 865664, "SAR Measurement Requirements for 100 MHz to 6 GHz"

Methods Applied and Interpretation of Parameters:

- *NORMx,y,z*: Assessed for E-field polarization ϑ = 0 (f ≤ 900 MHz in TEM-cell; f > 1800 MHz: R22 waveguide). NORMx,y,z are only intermediate values, i.e., the uncertainties of NORMx,y,z does not affect the E^2-field uncertainty inside TSL (see below *ConvF*).
- *NORM(f)x,y,z = NORMx,y,z * frequency_response* (see Frequency Response Chart). This linearization is implemented in DASY4 software versions later than 4.2. The uncertainty of the frequency response is included in the stated uncertainty of *ConvF*.
- *DCPx,y,z*: DCP are numerical linearization parameters assessed based on the data of power sweep with CW signal (no uncertainty required). DCP does not depend on frequency nor media.
- *PAR*: PAR is the Peak to Average Ratio that is not calibrated but determined based on the signal characteristics
- *Ax,y,z; Bx,y,z; Cx,y,z; Dx,y,z; VRx,y,z*: A, B, C, D are numerical linearization parameters assessed based on the data of power sweep for specific modulation signal. The parameters do not depend on frequency nor media. *VR* is the maximum calibration range expressed in RMS voltage across the diode.
- *ConvF and Boundary Effect Parameters*: Assessed in flat phantom using E-field (or Temperature Transfer Standard for f ≤ 800 MHz) and inside waveguide using analytical field distributions based on power measurements for f > 800 MHz. The same setups are used for assessment of the parameters applied for boundary compensation (alpha, depth) of which typical uncertainty values are given. These parameters are used in DASY4 software to improve probe accuracy close to the boundary. The sensitivity in TSL corresponds to *NORMx,y,z * ConvF* whereby the uncertainty corresponds to that given for *ConvF*. A frequency dependent *ConvF* is used in DASY version 4.4 and higher which allows extending the validity from ± 50 MHz to ± 100 MHz.
- *Spherical isotropy (3D deviation from isotropy)*: in a field of low gradients realized using a flat phantom exposed by a patch antenna.
- *Sensor Offset*: The sensor offset corresponds to the offset of virtual measurement center from the probe tip (on probe axis). No tolerance required.
- *Connector Angle*: The angle is assessed using the information gained by determining the *NORMx* (no uncertainty required).

Probe EX3DV4

SN:3831

Manufactured: September 6, 2011
Calibrated: January 27, 2016

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

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

Basic Calibration Parameters

	Sensor X	Sensor Y	Sensor Z	Unc (k=2)
Norm (μV/(V/m)^2)^A	0.45	0.42	0.43	± 10.1 %
DCP (mV)^B	100.7	102.6	99.9	

Modulation Calibration Parameters

UID	Communication System Name		A dB	B dB√μV	C	D dB	VR mV	Unc^E (k=2)
0	CW	X	0.0	0.0	1.0	0.00	153.7	±3.3 %
		Y	0.0	0.0	1.0		139.5	
		Z	0.0	0.0	1.0		143.5	

The reported uncertainty of measurement is stated as the standard uncertainty of measurement multiplied by the coverage factor k=2, which for a normal distribution corresponds to a coverage probability of approximately 95%.

^{A} The uncertainties of Norm X,Y,Z do not affect the E^2-field uncertainty inside TSL (see Pages 5 and 6).
^{B} Numerical linearization parameter: uncertainty not required.
^{E} Uncertainty is determined using the max. deviation from linear response applying rectangular distribution and is expressed for the square of the field value.

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)	Unc (k=2)
750	41.9	0.89	9.38	9.38	9.38	0.23	1.35	± 12.0 %
835	41.5	0.90	8.84	8.84	8.84	0.19	1.62	± 12.0 %
900	41.5	0.97	8.77	8.77	8.77	0.20	1.51	± 12.0 %
1450	40.5	1.20	8.17	8.17	8.17	0.28	0.97	± 12.0 %
1750	40.1	1.37	7.92	7.92	7.92	0.41	0.80	± 12.0 %
1900	40.0	1.40	7.66	7.66	7.66	0.37	0.80	± 12.0 %
2000	40.0	1.40	7.61	7.61	7.61	0.32	0.80	± 12.0 %
2300	39.5	1.67	7.33	7.33	7.33	0.31	0.96	± 12.0 %
2450	39.2	1.80	6.92	6.92	6.92	0.27	1.09	± 12.0 %
2600	39.0	1.96	6.71	6.71	6.71	0.40	0.89	± 12.0 %
3500	37.9	2.91	6.41	6.41	6.41	0.42	1.03	± 13.1 %
5200	36.0	4.66	4.76	4.76	4.76	0.35	1.80	± 13.1 %
5300	35.9	4.76	4.46	4.46	4.46	0.40	1.80	± 13.1 %
5600	35.5	5.07	4.08	4.08	4.08	0.50	1.80	± 13.1 %
5800	35.3	5.27	4.10	4.10	4.10	0.50	1.80	± 13.1 %

[C] Frequency validity above 300 MHz of ± 100 MHz only applies for DASY v4.4 and higher (see Page 2), else it is restricted to ± 50 MHz. The uncertainty is the RSS of the ConvF uncertainty at calibration frequency and the uncertainty for the indicated frequency band. Frequency validity below 300 MHz is ± 10, 25, 40, 50 and 70 MHz for ConvF assessments at 30, 64, 128, 150 and 220 MHz respectively. Above 5 GHz frequency validity can be extended to ± 110 MHz.

[F] At frequencies below 3 GHz, the validity of tissue parameters (ε and σ) can be relaxed to ± 10% if liquid compensation formula is applied to measured SAR values. At frequencies above 3 GHz, the validity of tissue parameters (ε and σ) is restricted to ± 5%. The uncertainty is the RSS of the ConvF uncertainty for indicated target tissue parameters.

[G] Alpha/Depth are determined during calibration. SPEAG warrants that the remaining deviation due to the boundary effect after compensation is always less than ± 1% for frequencies below 3 GHz and below ± 2% for frequencies between 3-6 GHz at any distance larger than half the probe tip diameter from the boundary.

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)	Unc (k=2)
750	55.5	0.96	9.25	9.25	9.25	0.26	1.29	± 12.0 %
835	55.2	0.97	9.08	9.08	9.08	0.35	1.04	± 12.0 %
900	55.0	1.05	9.05	9.05	9.05	0.30	1.12	± 12.0 %
1750	53.4	1.49	7.74	7.74	7.74	0.27	1.01	± 12.0 %
1900	53.3	1.52	7.54	7.54	7.54	0.35	0.85	± 12.0 %
2000	53.3	1.52	7.62	7.62	7.62	0.37	0.84	± 12.0 %
2300	52.9	1.81	7.06	7.06	7.06	0.35	0.80	± 12.0 %
2450	52.7	1.95	7.05	7.05	7.05	0.34	0.80	± 12.0 %
2600	52.5	2.16	6.71	6.71	6.71	0.37	0.80	± 12.0 %
5200	49.0	5.30	4.07	4.07	4.07	0.50	1.90	± 13.1 %
5300	48.9	5.42	3.81	3.81	3.81	0.55	1.90	± 13.1 %
5600	48.5	5.77	3.47	3.47	3.47	0.55	1.90	± 13.1 %
5800	48.2	6.00	3.52	3.52	3.52	0.60	1.90	± 13.1 %

[C] Frequency validity above 300 MHz of ± 100 MHz only applies for DASY v4.4 and higher (see Page 2), else it is restricted to ± 50 MHz. The uncertainty is the RSS of the ConvF uncertainty at calibration frequency and the uncertainty for the indicated frequency band. Frequency validity below 300 MHz is ± 10, 25, 40, 50 and 70 MHz for ConvF assessments at 30, 64, 128, 150 and 220 MHz respectively. Above 5 GHz frequency validity can be extended to ± 110 MHz.
[F] At frequencies below 3 GHz, the validity of tissue parameters (ε and σ) can be relaxed to ± 10% if liquid compensation formula is applied to measured SAR values. At frequencies above 3 GHz, the validity of tissue parameters (ε and σ) is restricted to ± 5%. The uncertainty is the RSS of the ConvF uncertainty for indicated target tissue parameters.
[G] Alpha/Depth are determined during calibration. SPEAG warrants that the remaining deviation due to the boundary effect after compensation is always less than ± 1% for frequencies below 3 GHz and below ± 2% for frequencies between 3-6 GHz at any distance larger than half the probe tip diameter from the boundary.

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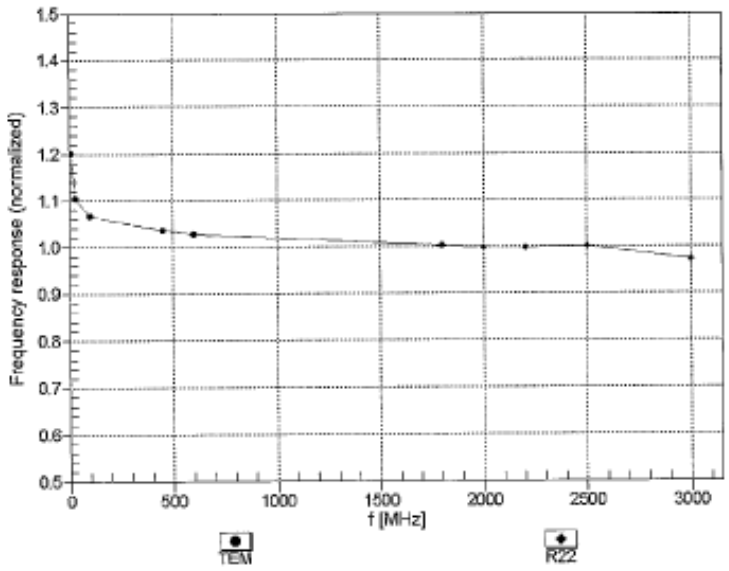
EX3DV4– SN:3831 January 27, 2016

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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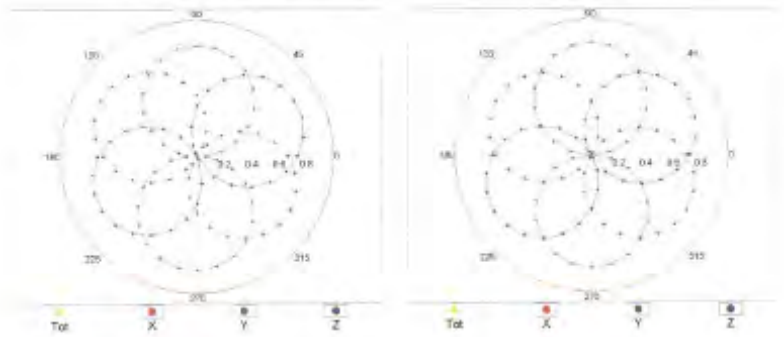
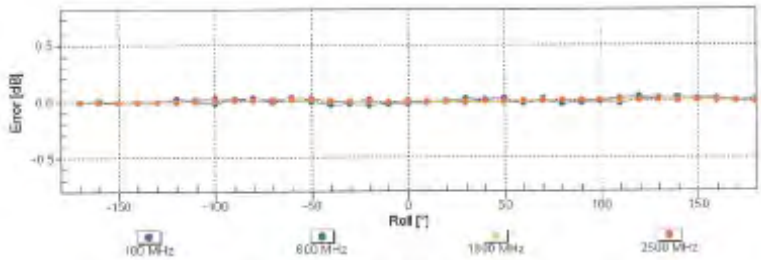
EX3DV4- SN:3831 January 27, 2016

Receiving Pattern (ϕ), ϑ = 0°

f=600 MHz,TEM f=1800 MHz,R22





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

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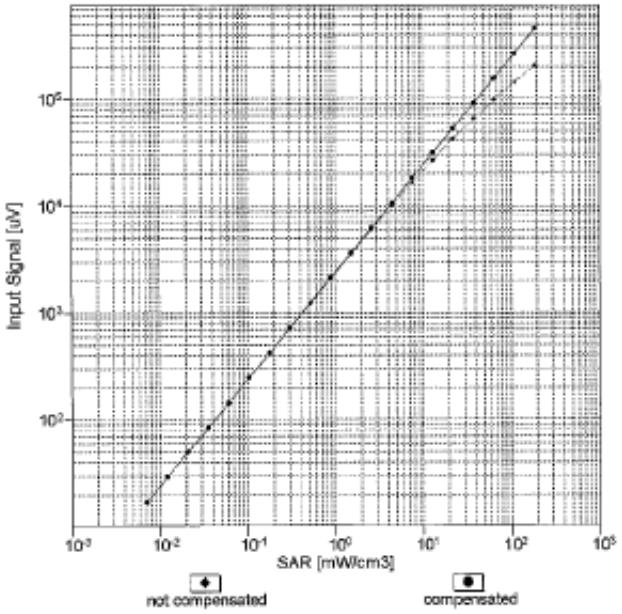
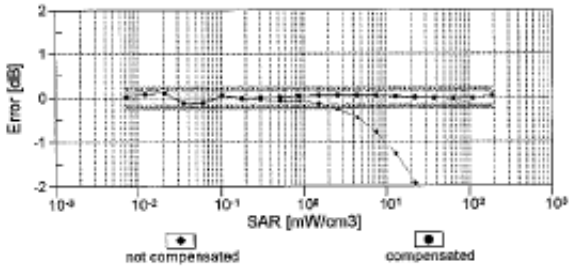
Dynamic Range f(SAR$_{head}$)
(TEM cell , f_{eval}= 1900 MHz)





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

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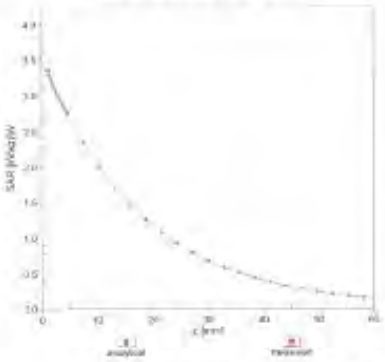
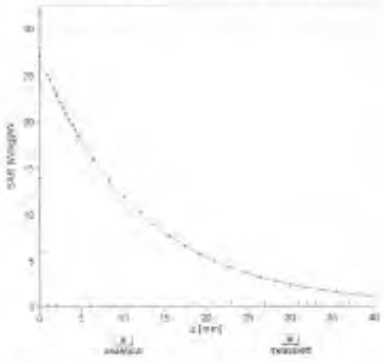
Conversion Factor Assessment

f = 900 MHz,WGLS R9 (H_convF)

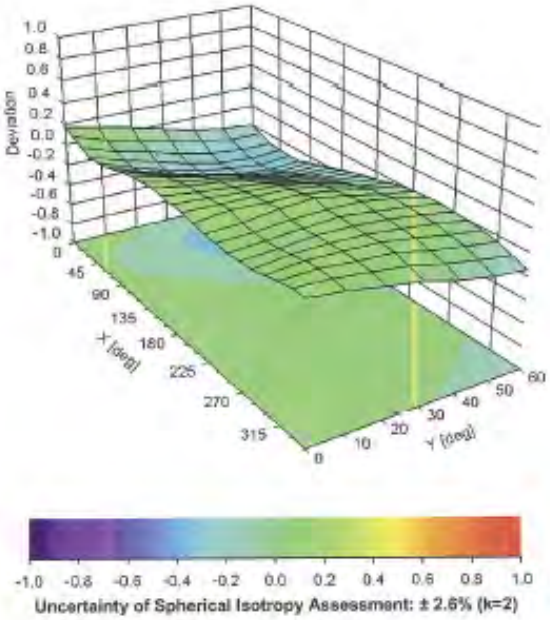


f = 1750 MHz,WGLS R22 (H_convF)



Deviation from Isotropy in Liquid

Error (φ, ϑ), f = 900 MHz



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

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

Other Probe Parameters

Sensor Arrangement	Triangular
Connector Angle (°)	-20.3
Mechanical Surface Detection Mode	enabled
Optical Surface Detection Mode	disabled
Probe Overall Length	337 mm
Probe Body Diameter	10 mm
Tip Length	9 mm
Tip Diameter	2.5 mm
Probe Tip to Sensor X Calibration Point	1 mm
Probe Tip to Sensor Y Calibration Point	1 mm
Probe Tip to Sensor Z Calibration Point	1 mm
Recommended Measurement Distance from Surface	1.4 mm

8. Uncertainty Budget

Measurement Uncertainty evaluation template for DUT SAR test (3-6G)

A	c	D	e		f	g	h=c * f / e	i=c * g / e	k
Source of Uncertainty	Tolerance/ Uncertainty	Probability	Div	Div Value	ci (1g)	ci (10g)	Standard uncertainty	Standard uncertainty	vi, or Veff
Measurement system									
Probe calibration	6.55%	N	1	1	1	1	6.55%	6.55%	∞
Isotropy , Axial	3.50%	R	√3	1.732	1	1	2.02%	2.02%	∞
Isotropy, Hemispherical	9.60%	R	√3	1.732	1	1	5.54%	5.54%	∞
Modulation Response	2.40%	R	√3	1.732	1	1	1.40%	1.40%	∞
Boundary Effect	1.00%	R	√3	1.732	1	1	0.58%	0.58%	∞
Linearity	4.70%	R	√3	1.732	1	1	2.71%	2.71%	∞
Detection Limits	1.00%	R	√3	1.732	1	1	0.58%	0.58%	∞
Readout Electronics	0.30%	N	1	1	1	1	0.30%	0.30%	∞
Response time	0.80%	R	√3	1.732	1	1	0.46%	0.46%	∞
Integration Time	2.60%	R	√3	1.732	1	1	1.50%	1.50%	∞
Measurement drift (class A evaluation)	1.75%	R	√3	1.732	1	1	1.01%	1.01%	∞
RF ambient condition - noise	3.00%	R	√3	1.732	1	1	1.73%	1.73%	∞
RF ambient conditions - reflections	3.00%	R	√3	1.732	1	1	1.73%	1.73%	∞
Probe positioner Mechanical restrictions	0.40%	R	√3	1.732	1	1	0.23%	0.23%	∞
Probe Positioning with respect to phantom	2.90%	R	√3	1.732	1	1	1.67%	1.67%	∞
Post-processing	1.00%	R	√3	1.732	1	1	0.58%	0.58%	∞
Max SAR Eval	1.00%	R	√3	1.732	1	1	0.58%	0.58%	∞
Test Sample related									
Test sample positioning	2.90%	N	1	1	1	1	2.90%	2.90%	M-1
Device Holder Uncertainty	3.60%	N	1	1	1	1	3.60%	3.60%	M-1
Drift of output power	5.00%	R	√3	1.732	1	1	2.89%	2.89%	∞
Phantom and Setup									
Phantom Uncertainty	4.00%	R	√3	1.732	1	1	2.31%	2.31%	∞
Liquid permittivity (mea.)	2.41%	N	1	1	0.64	0.43	1.54%	1.04%	M
Liquid Conductivity (mea.)	3.67%	N	1	1	0.6	0.49	2.20%	1.80%	M
Combined standard uncertainty		RSS					12.02%	11.89%	
Expant uncertainty (95% confidence							24.04%	23.78%	

Measurement Uncertainty evaluation template for DUT SAR test (0.3-3G)

A	c	D	e		f	g	h=c * f / e	i=c * g / e	k
Source of Uncertainty	Tolerance/ Uncertainty	Probability	Div	Div Value	ci (1g)	ci (10g)	Standard uncertainty	Standard uncertainty	vi, or Veff
Measurement system									
Probe calibration	6.00%	N	1	1	1	1	6.00%	6.00%	∞
Isotropy , Axial	3.50%	R	√3	1.732	1	1	2.02%	2.02%	∞
Isotropy, Hemispherical	9.60%	R	√3	1.732	1	1	5.54%	5.54%	∞
Modulation Response	2.40%	R	√3	1.732	1	1	1.40%	1.40%	∞
Boundary Effect	1.00%	R	√3	1.732	1	1	0.58%	0.58%	∞
Linearity	4.70%	R	√3	1.732	1	1	2.71%	2.71%	∞
Detection Limits	1.00%	R	√3	1.732	1	1	0.58%	0.58%	∞
Readout Electronics	0.30%	N	1	1	1	1	0.30%	0.30%	∞
Response time	0.80%	R	√3	1.732	1	1	0.46%	0.46%	∞
Integration Time	2.60%	R	√3	1.732	1	1	1.50%	1.50%	∞
Measurement drift (class A evaluation)	1.75%	R	√3	1.732	1	1	1.01%	1.01%	∞
RF ambient condition - noise	3.00%	R	√3	1.732	1	1	1.73%	1.73%	∞
RF ambient conditions - reflections	3.00%	R	√3	1.732	1	1	1.73%	1.73%	∞
Probe positioner Mechanical restrictions	0.40%	R	√3	1.732	1	1	0.23%	0.23%	∞
Probe Positioning with respect to phantom	2.90%	R	√3	1.732	1	1	1.67%	1.67%	∞
Post-processing	1.00%	R	√3	1.732	1	1	0.58%	0.58%	∞
Max SAR Eval	1.00%	R	√3	1.732	1	1	0.58%	0.58%	∞
Test Sample related									
Test sample positioning	2.90%	N	1	1	1	1	2.90%	2.90%	M-1
Device Holder Uncertainty	3.60%	N	1	1	1	1	3.60%	3.60%	M-1
Drift of output power	5.00%	R	√3	1.732	1	1	2.89%	2.89%	∞
Phantom and Setup									
Phantom Uncertainty	4.00%	R	√3	1.732	1	1	2.31%	2.31%	∞
Liquid permittivity (mea.)	4.03%	N	1	1	0.64	0.43	2.58%	1.73%	M
Liquid Conductivity (mea.)	4.03%	N	1	1	0.6	0.49	2.42%	1.97%	M
Combined standard uncertainty		RSS					11.95%	11.71%	
Expant uncertainty (95% confidence							23.90%	23.41%	

9. Phantom Description

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Zeughausstrasse 43, 8004 Zurich, Switzerland
Phone +41 1 245 9700, Fax +41 1 245 9779
info@speag.com, http://www.speag.com

Certificate of Conformity / First Article Inspection

Item	SAM Twin Phantom V4.0
Type No	QD 000 P40 C
Series No	TP-1150 and higher
Manufacturer	SPEAG 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 CUT 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

Schmid & Partner Engineering AG
Zeughausstrasse 43, 8004 Zurich, Switzerland
Phone +41 1 245 9700, Fax +41 1 245 9779
info@speag.com, http://www.speag.com

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 0108

Client SGS-TW (Auden)

Certificate No: D750V3-1015_Aug15

CALIBRATION CERTIFICATE

Object D750V3 - SN: 1015

Calibration procedure(s) QA CAL-05.v9
Calibration procedure for dipole validation kits above 700 MHz

Calibration date: August 24, 2015

This calibration certificate documents the traceability to national standards, which realize the physical units of measurements (SI).
The measurements and the uncertainties with confidence probability are given on the following pages and are part of the certificate.

All calibrations have been conducted in the closed laboratory facility: environment temperature (22 ± 3)°C and humidity < 70%.

Calibration Equipment used (M&TE critical for calibration)

Primary Standards	ID #	Cal Date (Certificate No.)	Scheduled Calibration
Power meter EPM-442A	GB37480704	07-Oct-14 (No. 217-02020)	Oct-15
Power sensor HP 8481A	US37292783	07-Oct-14 (No. 217-02020)	Oct-15
Power sensor HP 8481A	MY41092317	07-Oct-14 (No. 217-02021)	Oct-15
Reference 20 dB Attenuator	SN: 5058 (20k)	01-Apr-15 (No. 217-02131)	Mar-16
Type-N mismatch combination	SN: 5047.2 / 06327	01-Apr-15 (No. 217-02134)	Mar-16
Reference Probe ES3DV3	SN: 3205	30-Dec-14 (No. ES3-3205_Dec14)	Dec-15
DAE4	SN: 601	17-Aug-15 (No. DAE4-601_Aug15)	Aug-16

Secondary Standards	ID #	Check Date (in house)	Scheduled Check
RF generator R&S SMT-06	100005	04-Aug-99 (in house check Oct-13)	In house check: Oct-16
Network Analyzer HP 8753E	US37390585 S4206	18-Oct-01 (in house check Oct-14)	In house check: Oct-15

	Name	Function	Signature
Calibrated by:	Michael Weber	Laboratory Technician	
Approved by:	Katja Pokovic	Technical Manager	

Issued: August 24, 2015

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

Certificate No: D750V3-1015_Aug15 Page 1 of 8

Calibration Laboratory of
Schmid & Partner
Engineering AG
Zeughausstrasse 43, 8004 Zurich, Switzerland

S Schweizerischer Kalibrierdienst
C Service suisse d'étalonnage
S Servizio svizzero di taratura
S Swiss Calibration Service

Accredited by the Swiss Accreditation Service (SAS)
The Swiss Accreditation Service is one of the signatories to the EA Multilateral Agreement for the recognition of calibration certificates

Accreditation No.: SCS 0108

Glossary:

TSL	tissue simulating liquid
ConvF	sensitivity in TSL / NORM x,y,z
N/A	not applicable or not measured

Calibration is Performed According to the Following Standards:

a) IEEE Std 1528-2013, "IEEE Recommended Practice for Determining the Peak Spatial-Averaged Specific Absorption Rate (SAR) in the Human Head from Wireless Communications Devices: Measurement Techniques", June 2013
b) IEC 62209-1, "Procedure to measure the Specific Absorption Rate (SAR) for hand-held devices used in close proximity to the ear (frequency range of 300 MHz to 3 GHz)", February 2005
c) IEC 62209-2, "Procedure to determine the Specific Absorption Rate (SAR) for wireless communication devices used in close proximity to the human body (frequency range of 30 MHz to 6 GHz)", March 2010
d) KDB 865664, "SAR Measurement Requirements for 100 MHz to 6 GHz"

Additional Documentation:

e) DASY4/5 System Handbook

Methods Applied and Interpretation of Parameters:

- *Measurement Conditions:* Further details are available from the Validation Report at the end of the certificate. All figures stated in the certificate are valid at the frequency indicated.
- *Antenna Parameters with TSL:* The dipole is mounted with the spacer to position its feed point exactly below the center marking of the flat phantom section, with the arms oriented parallel to the body axis.
- *Feed Point Impedance and Return Loss:* These parameters are measured with the dipole positioned under the liquid filled phantom. The impedance stated is transformed from the measurement at the SMA connector to the feed point. The Return Loss ensures low reflected power. No uncertainty required.
- *Electrical Delay:* One-way delay between the SMA connector and the antenna feed point. No uncertainty required.
- *SAR measured:* SAR measured at the stated antenna input power.
- *SAR normalized:* SAR as measured, normalized to an input power of 1 W at the antenna connector.
- *SAR for nominal TSL parameters:* The measured TSL parameters are used to calculate the nominal SAR result.

The reported uncertainty of measurement is stated as the standard uncertainty of measurement multiplied by the coverage factor k=2, which for a normal distribution corresponds to a coverage probability of approximately 95%.

Measurement Conditions

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

DASY Version	DASY5	V52.8.8
Extrapolation	Advanced Extrapolation	
Phantom	Modular Flat Phantom	
Distance Dipole Center - TSL	15 mm	with Spacer
Zoom Scan Resolution	dx, dy, dz = 5 mm	
Frequency	750 MHz ± 1 MHz	

Head TSL parameters

The following parameters and calculations were applied.

	Temperature	**Permittivity**	**Conductivity**
Nominal Head TSL parameters	22.0 °C	41.9	0.89 mho/m
Measured Head TSL parameters	(22.0 ± 0.2) °C	42.1 ± 6 %	0.91 mho/m ± 6 %
Head TSL temperature change during test	< 0.5 °C	----	----

SAR result with Head TSL

SAR averaged over 1 cm³ (1 g) of Head TSL	Condition	
SAR measured	250 mW input power	2.07 W/kg
SAR for nominal Head TSL parameters	normalized to 1W	**8.15 W/kg ± 17.0 % (k=2)**

SAR averaged over 10 cm³ (10 g) of Head TSL	condition	
SAR measured	250 mW input power	1.35 W/kg
SAR for nominal Head TSL parameters	normalized to 1W	**5.33 W/kg ± 16.5 % (k=2)**

Body TSL parameters

The following parameters and calculations were applied.

	Temperature	**Permittivity**	**Conductivity**
Nominal Body TSL parameters	22.0 °C	55.5	0.96 mho/m
Measured Body TSL parameters	(22.0 ± 0.2) °C	56.3 ± 6 %	1.00 mho/m ± 6 %
Body TSL temperature change during test	< 0.5 °C	----	----

SAR result with Body TSL

SAR averaged over 1 cm³ (1 g) of Body TSL	Condition	
SAR measured	250 mW input power	2.19 W/kg
SAR for nominal Body TSL parameters	normalized to 1W	**8.52 W/kg ± 17.0 % (k=2)**

SAR averaged over 10 cm³ (10 g) of Body TSL	condition	
SAR measured	250 mW input power	1.44 W/kg
SAR for nominal Body TSL parameters	normalized to 1W	**5.63 W/kg ± 16.5 % (k=2)**

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Appendix (Additional assessments outside the scope of SCS 0108)

Antenna Parameters with Head TSL

Impedance, transformed to feed point	52.2 Ω - 1.1 jΩ
Return Loss	- 32.5 dB

Antenna Parameters with Body TSL

Impedance, transformed to feed point	48.5 Ω - 2.4 jΩ
Return Loss	- 30.9 dB

General Antenna Parameters and Design

Electrical Delay (one direction)	1.036 ns

After long term use with 100W radiated power, only a slight warming of the dipole near the feedpoint can be measured.

The dipole is made of standard semirigid coaxial cable. The center conductor of the feeding line is directly connected to the second arm of the dipole. The antenna is therefore short-circuited for DC-signals. On some of the dipoles, small end caps are added to the dipole arms in order to improve matching when loaded according to the position as explained in the "Measurement Conditions" paragraph. The SAR data are not affected by this change. The overall dipole length is still according to the Standard.
No excessive force must be applied to the dipole arms, because they might bend or the soldered connections near the feedpoint may be damaged.

Additional EUT Data

Manufactured by	SPEAG
Manufactured on	March 22, 2010

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DASY5 Validation Report for Head TSL

Date: 21.08.2015

Test Laboratory: SPEAG, Zurich, Switzerland

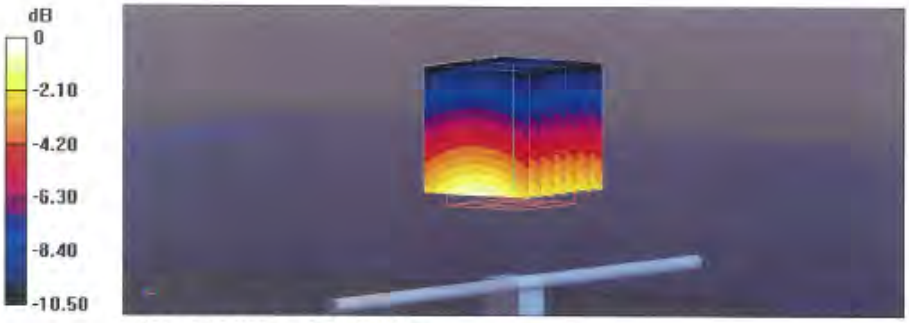
DUT: Dipole 750 MHz; Type: D750V3; Serial: D750V3 - SN: 1015

Communication System: UID 0 - CW; Frequency: 750 MHz
Medium parameters used: f = 750 MHz; $\sigma = 0.91$ S/m; $\varepsilon_r = 42.1$; $\rho = 1000$ kg/m^3
Phantom section: Flat Section
Measurement Standard: DASY5 (IEEE/IEC/ANSI C63.19-2011)

DASY52 Configuration:

- Probe: ES3DV3 - SN3205; ConvF(6.44, 6.44, 6.44); Calibrated: 30.12.2014;
- Sensor-Surface: 3mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn601; Calibrated: 17.08.2015
- Phantom: Flat Phantom 4.9L; Type: QD000P49AA; Serial: 1001
- DASY52 52.8.8(1222); SEMCAD X 14.6.10(7331)

Dipole Calibration for Head Tissue/Pin=250 mW, d=15mm/Zoom Scan (7x7x7)/Cube 0:
Measurement grid: dx=5mm, dy=5mm, dz=5mm
Reference Value = 53.39 V/m; Power Drift = 0.01 dB
Peak SAR (extrapolated) = 3.07 W/kg
SAR(1 g) = 2.07 W/kg; SAR(10 g) = 1.35 W/kg
Maximum value of SAR (measured) = 2.43 W/kg



0 dB = 2.43 W/kg = 3.86 dBW/kg

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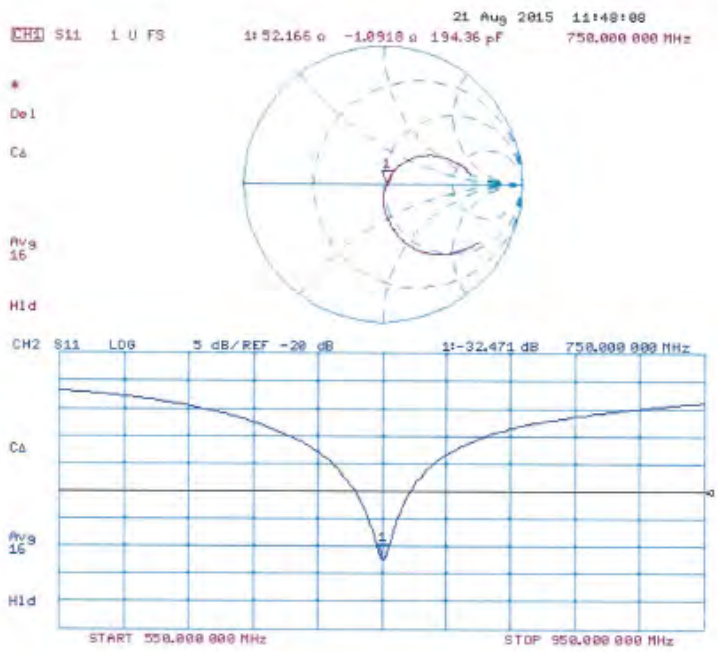
Impedance Measurement Plot for Head TSL



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DASY5 Validation Report for Body TSL

Date: 24.08.2015

Test Laboratory: SPEAG, Zurich, Switzerland

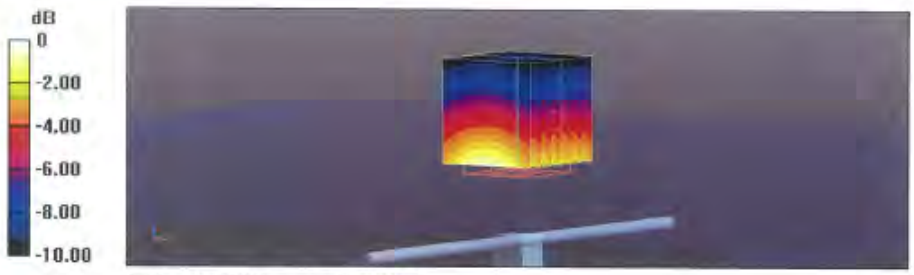
DUT: Dipole 750 MHz; Type: D750V3; Serial: D750V3 - SN: 1015

Communication System: UID 0 - CW; Frequency: 750 MHz
Medium parameters used: f = 750 MHz; σ = 1 S/m; ε_r = 56.3; ρ = 1000 kg/m^3
Phantom section: Flat Section
Measurement Standard: DASY5 (IEEE/IEC/ANSI C63.19-2011)

DASY52 Configuration:

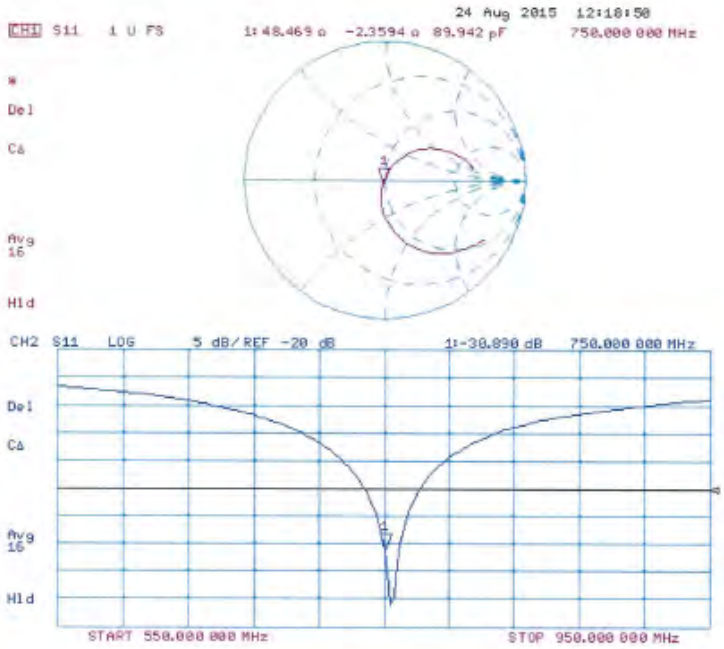
- Probe: ES3DV3 - SN3205; ConvF(6.21, 6.21, 6.21); Calibrated: 30.12.2014;
- Sensor-Surface: 3mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn601; Calibrated: 17.08.2015
- Phantom: Flat Phantom 4.9L; Type: QD000P49AA; Serial: 1001
- DASY52 52.8.8(1222); SEMCAD X 14.6.10(7331)

Dipole Calibration for Body Tissue/Pin=250 mW, d=15mm/Zoom Scan (7x7x7)/Cube 0:
Measurement grid: dx=5mm, dy=5mm, dz=5mm
Reference Value = 52.22 V/m; Power Drift = 0.02 dB
Peak SAR (extrapolated) = 3.19 W/kg
SAR(1 g) = 2.19 W/kg; SAR(10 g) = 1.44 W/kg
Maximum value of SAR (measured) = 2.56 W/kg



0 dB = 2.56 W/kg = 4.08 dBW/kg

Impedance Measurement Plot for Body TSL



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Accreditation No.: SCS 0108

Client SGS-TW (Auden)

Certificate No: D835V2-4d063_Aug15

CALIBRATION CERTIFICATE

Object: D835V2 - SN: 4d063

Calibration procedure(s): QA CAL-05.v9
Calibration procedure for dipole validation kits above 700 MHz

Calibration date: August 24, 2015

This calibration certificate documents the traceability to national standards, which realize the physical units of measurements (SI).
The measurements and the uncertainties with confidence probability are given on the following pages and are part of the certificate.

All calibrations have been conducted in the closed laboratory facility: environment temperature (22 ± 3)°C and humidity < 70%.

Calibration Equipment used (M&TE critical for calibration)

Primary Standards	ID #	Cal Date (Certificate No.)	Scheduled Calibration
Power meter EPM-442A	GB37480704	07-Oct-14 (No. 217-02020)	Oct-15
Power sensor HP 8481A	US37292783	07-Oct-14 (No. 217-02020)	Oct-15
Power sensor HP 8481A	MY41092317	07-Oct-14 (No. 217-02021)	Oct-15
Reference 20 dB Attenuator	SN: 5058 (20k)	01-Apr-15 (No. 217-02131)	Mar-16
Type-N mismatch combination	SN: 3047.2 / 06327	01-Apr-15 (No. 217-02134)	Mar-16
Reference Probe ES3DV3	SN: 3205	30-Dec-14 (No. ES3-3205_Dec14)	Dec-15
DAE4	SN: 601	17-Aug-15 (No. DAE4-601_Aug15)	Aug-16

Secondary Standards	ID #	Check Date (in house)	Scheduled Check
RF generator R&S SMT-06	100005	04-Aug-99 (in house check Oct-13)	In house check: Oct-16
Network Analyzer HP 8753E	US37390585 S4206	18-Oct-01 (in house check Oct-14)	In house check: Oct-15

	Name	Function	Signature
Calibrated by:	Michael Weber	Laboratory Technician	
Approved by:	Katja Pokovic	Technical Manager	

Issued: August 25, 2015

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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) IEEE Std 1528-2013, "IEEE Recommended Practice for Determining the Peak Spatial-Averaged Specific Absorption Rate (SAR) in the Human Head from Wireless Communications Devices: Measurement Techniques", June 2013
b) IEC 62209-1, "Procedure to measure the Specific Absorption Rate (SAR) for hand-held devices used in close proximity to the ear (frequency range of 300 MHz to 3 GHz)", February 2005
c) IEC 62209-2, "Procedure to determine the Specific Absorption Rate (SAR) for wireless communication devices used in close proximity to the human body (frequency range of 30 MHz to 6 GHz)", March 2010
d) KDB 865664, "SAR Measurement Requirements for 100 MHz to 6 GHz"

Additional Documentation:

e) DASY4/5 System Handbook

Methods Applied and Interpretation of Parameters:

- *Measurement Conditions:* Further details are available from the Validation Report at the end of the certificate. All figures stated in the certificate are valid at the frequency indicated.
- *Antenna Parameters with TSL:* The dipole is mounted with the spacer to position its feed point exactly below the center marking of the flat phantom section, with the arms oriented parallel to the body axis.
- *Feed Point Impedance and Return Loss:* These parameters are measured with the dipole positioned under the liquid filled phantom. The impedance stated is transformed from the measurement at the SMA connector to the feed point. The Return Loss ensures low reflected power. No uncertainty required.
- *Electrical Delay:* One-way delay between the SMA connector and the antenna feed point. No uncertainty required.
- *SAR measured:* SAR measured at the stated antenna input power.
- *SAR normalized:* SAR as measured, normalized to an input power of 1 W at the antenna connector.
- *SAR for nominal TSL parameters:* The measured TSL parameters are used to calculate the nominal SAR result.

The reported uncertainty of measurement is stated as the standard uncertainty of measurement multiplied by the coverage factor k=2, which for a normal distribution corresponds to a coverage probability of approximately 95%.

Measurement Conditions

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

DASY Version	DASY5	V52.8.8
Extrapolation	Advanced Extrapolation	
Phantom	Modular Flat Phantom	
Distance Dipole Center - TSL	15 mm	with Spacer
Zoom Scan Resolution	dx, dy, dz = 5 mm	
Frequency	835 MHz ± 1 MHz	

Head TSL parameters

The following parameters and calculations were applied.

	Temperature	**Permittivity**	**Conductivity**
Nominal Head TSL parameters	22.0 °C	41.5	0.90 mho/m
Measured Head TSL parameters	(22.0 ± 0.2) °C	41.9 ± 6 %	0.93 mho/m ± 6 %
Head TSL temperature change during test	< 0.5 °C	----	----

SAR result with Head TSL

SAR averaged over 1 cm³ (1 g) of Head TSL	Condition	
SAR measured	250 mW input power	2.33 W/kg
SAR for nominal Head TSL parameters	normalized to 1W	**9.11 W/kg ± 17.0 % (k=2)**

SAR averaged over 10 cm³ (10 g) of Head TSL	condition	
SAR measured	250 mW input power	1.52 W/kg
SAR for nominal Head TSL parameters	normalized to 1W	**5.97 W/kg ± 16.5 % (k=2)**

Body TSL parameters

The following parameters and calculations were applied.

	Temperature	**Permittivity**	**Conductivity**
Nominal Body TSL parameters	22.0 °C	55.2	0.97 mho/m
Measured Body TSL parameters	(22.0 ± 0.2) °C	56.1 ± 6 %	1.02 mho/m ± 6 %
Body TSL temperature change during test	< 0.5 °C	----	----

SAR result with Body TSL

SAR averaged over 1 cm³ (1 g) of Body TSL	Condition	
SAR measured	250 mW input power	2.40 W/kg
SAR for nominal Body TSL parameters	normalized to 1W	**9.28 W/kg ± 17.0 % (k=2)**

SAR averaged over 10 cm³ (10 g) of Body TSL	condition	
SAR measured	250 mW input power	1.57 W/kg
SAR for nominal Body TSL parameters	normalized to 1W	**6.11 W/kg ± 16.5 % (k=2)**

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Appendix (Additional assessments outside the scope of SCS 0108)

Antenna Parameters with Head TSL

Impedance, transformed to feed point	51.3 Ω - 1.7 jΩ
Return Loss	- 33.4 dB

Antenna Parameters with Body TSL

Impedance, transformed to feed point	47.9 Ω - 2.7 jΩ
Return Loss	- 29.1 dB

General Antenna Parameters and Design

Electrical Delay (one direction)	1.394 ns

After long term use with 100W radiated power, only a slight warming of the dipole near the feedpoint can be measured.

The dipole is made of standard semirigid coaxial cable. The center conductor of the feeding line is directly connected to the second arm of the dipole. The antenna is therefore short-circuited for DC-signals. On some of the dipoles, small end caps are added to the dipole arms in order to improve matching when loaded according to the position as explained in the "Measurement Conditions" paragraph. The SAR data are not affected by this change. The overall dipole length is still according to the Standard.
No excessive force must be applied to the dipole arms, because they might bend or the soldered connections near the feedpoint may be damaged.

Additional EUT Data

Manufactured by	SPEAG
Manufactured on	November 27, 2006

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DASY5 Validation Report for Head TSL

Date: 21.08.2015

Test Laboratory: SPEAG, Zurich, Switzerland

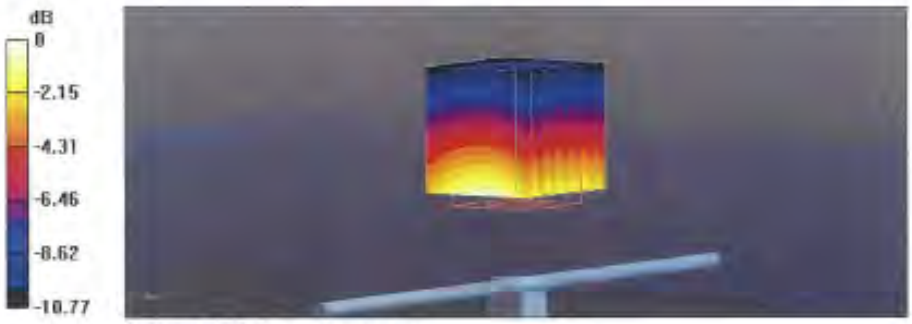
DUT: Dipole 835 MHz; Type: D835V2; Serial: D835V2 - SN: 4d063

Communication System: UID 0 - CW; Frequency: 835 MHz
Medium parameters used: f = 835 MHz; $\sigma = 0.93$ S/m; $\varepsilon_r = 41.9$; $\rho = 1000$ kg/m^3
Phantom section: Flat Section
Measurement Standard: DASY5 (IEEE/IEC/ANSI C63.19-2011)

DASY52 Configuration:

- Probe: ES3DV3 - SN3205; ConvF(6.2, 6.2, 6.2); Calibrated: 30.12.2014;
- Sensor-Surface: 3mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn601; Calibrated: 17.08.2015
- Phantom: Flat Phantom 4.9L; Type: QD000P49AA; Serial: 1001
- DASY52 52.8.8(1222); SEMCAD X 14.6.10(7331)

Dipole Calibration for Head Tissue/Pin=250 mW, d=15mm/Zoom Scan (7x7x7)/Cube 0:
Measurement grid: dx=5mm, dy=5mm, dz=5mm
Reference Value = 55.92 V/m; Power Drift = -0.02 dB
Peak SAR (extrapolated) = 3.44 W/kg
SAR(1 g) = 2.33 W/kg; SAR(10 g) = 1.52 W/kg
Maximum value of SAR (measured) = 2.73 W/kg



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

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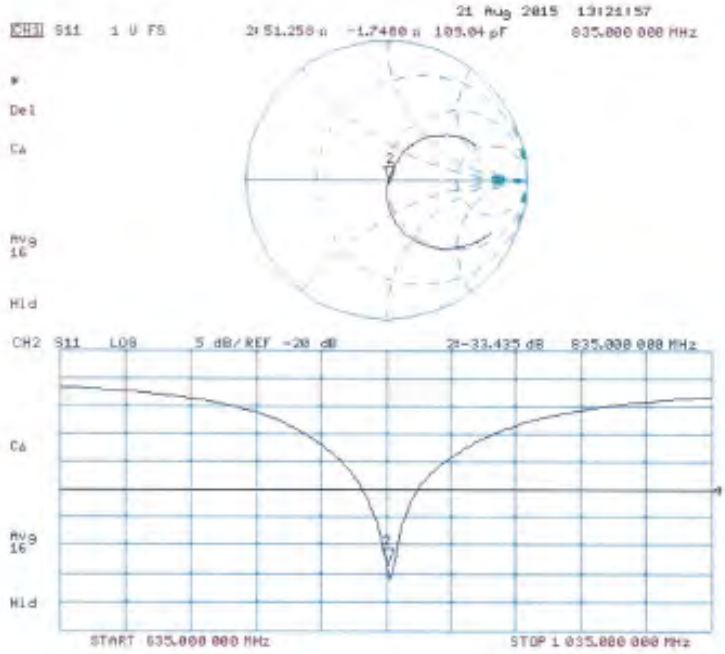
Impedance Measurement Plot for Head TSL



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DASY5 Validation Report for Body TSL

Date: 24.08.2015

Test Laboratory: SPEAG, Zurich, Switzerland

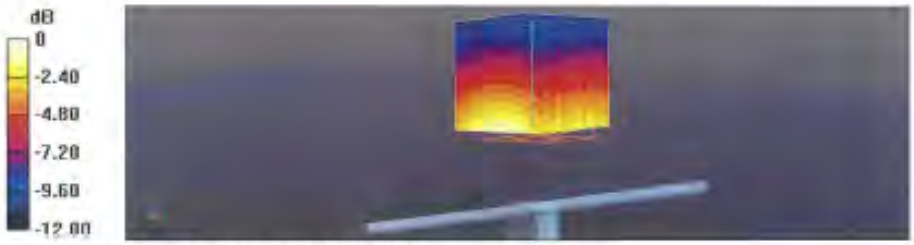
DUT: Dipole 835 MHz; Type: D835V2; Serial: D835V2 - SN: 4d063

Communication System: UID 0 - CW; Frequency: 835 MHz
Medium parameters used: f = 835 MHz; σ = 1.02 S/m; ε_r = 56.1; ρ = 1000 kg/m^3
Phantom section: Flat Section
Measurement Standard: DASY5 (IEEE/IEC/ANSI C63.19-2011)

DASY52 Configuration:

- Probe: ES3DV3 - SN3205; ConvF(6.17, 6.17, 6.17); Calibrated: 30.12.2014;
- Sensor-Surface: 3mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn601; Calibrated: 17.08.2015
- Phantom: Flat Phantom 4.9L; Type: QD000P49AA; Serial: 1001
- DASY52 52.8.8(1222); SEMCAD X 14.6.10(7331)

Dipole Calibration for Body Tissue/Pin=250 mW, d=15mm/Zoom Scan (7x7x7)/Cube 0:
Measurement grid: dx=5mm, dy=5mm, dz=5mm
Reference Value = 54.07 V/m; Power Drift = -0.02 dB
Peak SAR (extrapolated) = 3.52 W/kg
SAR(1 g) = 2.4 W/kg; SAR(10 g) = 1.57 W/kg
Maximum value of SAR (measured) = 2.81 W/kg



0 dB = 2.81 W/kg = 4.49 dBW/kg

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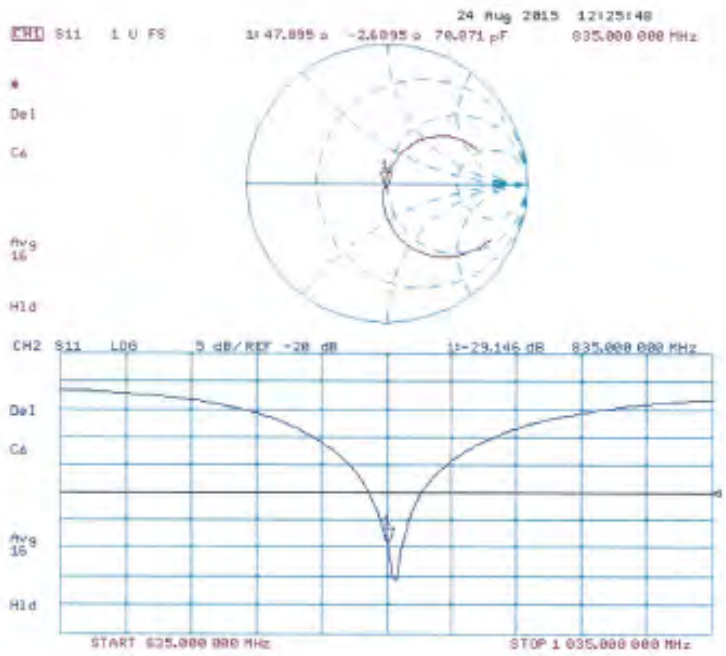
Impedance Measurement Plot for Body TSL



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Accreditation No.: SCS 0108

Client SGS-TW (Auden)

Certificate No: D1750V2-1008_Aug15

CALIBRATION CERTIFICATE

Object	D1750V2 - SN: 1008
Calibration procedure(s)	QA CAL-05.v9 Calibration procedure for dipole validation kits above 700 MHz
Calibration date:	August 20, 2015

This calibration certificate documents the traceability to national standards, which realize the physical units of measurements (SI).
The measurements and the uncertainties with confidence probability are given on the following pages and are part of the certificate.

All calibrations have been conducted in the closed laboratory facility: environment temperature (22 ± 3)°C and humidity < 70%.

Calibration Equipment used (M&TE critical for calibration)

Primary Standards	ID #	Cal Date (Certificate No.)	Scheduled Calibration
Power meter EPM-442A	GB37480704	07-Oct-14 (No. 217-02020)	Oct-15
Power sensor HP 8481A	US37292783	07-Oct-14 (No. 217-02020)	Oct-15
Power sensor HP 8481A	MY41092317	07-Oct-14 (No. 217-02021)	Oct-15
Reference 20 dB Attenuator	SN: 5058 (20k)	01-Apr-15 (No. 217-02131)	Mar-16
Type-N mismatch combination	SN: 5047.2 / 06327	01-Apr-15 (No. 217-02134)	Mar-16
Reference Probe ES3DV3	SN: 3205	30-Dec-14 (No. ES3-3205_Dec14)	Dec-15
DAE4	SN: 601	17-Aug-15 (No. DAE4-601_Aug15)	Aug-16

Secondary Standards	ID #	Check Date (in house)	Scheduled Check
RF generator R&S SMT-06	100005	04-Aug-99 (in house check Oct-13)	In house check: Oct-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: August 21, 2015

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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) IEEE Std 1528-2013, "IEEE Recommended Practice for Determining the Peak Spatial-Averaged Specific Absorption Rate (SAR) in the Human Head from Wireless Communications Devices: Measurement Techniques", June 2013
b) IEC 62209-1, "Procedure to measure the Specific Absorption Rate (SAR) for hand-held devices used in close proximity to the ear (frequency range of 300 MHz to 3 GHz)", February 2005
c) IEC 62209-2, "Procedure to determine the Specific Absorption Rate (SAR) for wireless communication devices used in close proximity to the human body (frequency range of 30 MHz to 6 GHz)", March 2010
d) KDB 865664, "SAR Measurement Requirements for 100 MHz to 6 GHz"

Additional Documentation:

e) DASY4/5 System Handbook

Methods Applied and Interpretation of Parameters:

- *Measurement Conditions:* Further details are available from the Validation Report at the end of the certificate. All figures stated in the certificate are valid at the frequency indicated.
- *Antenna Parameters with TSL:* The dipole is mounted with the spacer to position its feed point exactly below the center marking of the flat phantom section, with the arms oriented parallel to the body axis.
- *Feed Point Impedance and Return Loss:* These parameters are measured with the dipole positioned under the liquid filled phantom. The impedance stated is transformed from the measurement at the SMA connector to the feed point. The Return Loss ensures low reflected power. No uncertainty required.
- *Electrical Delay:* One-way delay between the SMA connector and the antenna feed point. No uncertainty required.
- *SAR measured:* SAR measured at the stated antenna input power.
- *SAR normalized:* SAR as measured, normalized to an input power of 1 W at the antenna connector.
- *SAR for nominal TSL parameters:* The measured TSL parameters are used to calculate the nominal SAR result.

The reported uncertainty of measurement is stated as the standard uncertainty of measurement multiplied by the coverage factor k=2, which for a normal distribution corresponds to a coverage probability of approximately 95%.

Measurement Conditions

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

DASY Version	DASY5	V52.8.8
Extrapolation	Advanced Extrapolation	
Phantom	Modular Flat Phantom	
Distance Dipole Center - TSL	10 mm	with Spacer
Zoom Scan Resolution	dx, dy, dz = 5 mm	
Frequency	1750 MHz ± 1 MHz	

Head TSL parameters

The following parameters and calculations were applied.

	Temperature	Permittivity	Conductivity
Nominal Head TSL parameters	22.0 °C	40.1	1.37 mho/m
Measured Head TSL parameters	(22.0 ± 0.2) °C	39.8 ± 6 %	1.36 mho/m ± 6 %
Head TSL temperature change during test	< 0.5 °C	----	----

SAR result with Head TSL

SAR averaged over 1 cm³ (1 g) of Head TSL	Condition	
SAR measured	250 mW input power	9.12 W/kg
SAR for nominal Head TSL parameters	normalized to 1W	**36.6 W/kg ± 17.0 % (k=2)**

SAR averaged over 10 cm³ (10 g) of Head TSL	condition	
SAR measured	250 mW input power	4.85 W/kg
SAR for nominal Head TSL parameters	normalized to 1W	**19.4 W/kg ± 16.5 % (k=2)**

Body TSL parameters

The following parameters and calculations were applied.

	Temperature	Permittivity	Conductivity
Nominal Body TSL parameters	22.0 °C	53.4	1.49 mho/m
Measured Body TSL parameters	(22.0 ± 0.2) °C	52.1 ± 6 %	1.48 mho/m ± 6 %
Body TSL temperature change during test	< 0.5 °C	----	----

SAR result with Body TSL

SAR averaged over 1 cm³ (1 g) of Body TSL	Condition	
SAR measured	250 mW input power	9.36 W/kg
SAR for nominal Body TSL parameters	normalized to 1W	**37.4 W/kg ± 17.0 % (k=2)**

SAR averaged over 10 cm³ (10 g) of Body TSL	condition	
SAR measured	250 mW input power	5.05 W/kg
SAR for nominal Body TSL parameters	normalized to 1W	**20.2 W/kg ± 16.5 % (k=2)**

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Appendix (Additional assessments outside the scope of SCS 0108)

Antenna Parameters with Head TSL

Impedance, transformed to feed point	50.5 Ω + 1.1 jΩ
Return Loss	- 38.7 dB

Antenna Parameters with Body TSL

Impedance, transformed to feed point	46.9 Ω + 1.0 jΩ
Return Loss	- 29.5 dB

General Antenna Parameters and Design

Electrical Delay (one direction)	1.221 ns

After long term use with 100W radiated power, only a slight warming of the dipole near the feedpoint can be measured.

The dipole is made of standard semirigid coaxial cable. The center conductor of the feeding line is directly connected to the second arm of the dipole. The antenna is therefore short-circuited for DC-signals. On some of the dipoles, small end caps are added to the dipole arms in order to improve matching when loaded according to the position as explained in the "Measurement Conditions" paragraph. The SAR data are not affected by this change. The overall dipole length is still according to the Standard.
No excessive force must be applied to the dipole arms, because they might bend or the soldered connections near the feedpoint may be damaged.

Additional EUT Data

Manufactured by	SPEAG
Manufactured on	February 11, 2009

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DASY5 Validation Report for Head TSL

Date: 20.08.2015

Test Laboratory: SPEAG, Zurich, Switzerland

DUT: Dipole 1750 MHz; Type: D1750V2; Serial: D1750V2 - SN: 1008

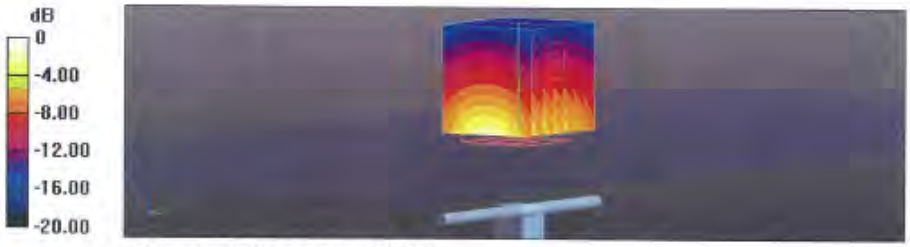
Communication System: UID 0 - CW; Frequency: 1750 MHz
Medium parameters used: f = 1750 MHz; σ = 1.36 S/m; ε_r = 39.8; ρ = 1000 kg/m^3
Phantom section: Flat Section
Measurement Standard: DASY5 (IEEE/IEC/ANSI C63.19-2011)

DASY52 Configuration:

- Probe: ES3DV3 - SN3205; ConvF(5.2, 5.2, 5.2); Calibrated: 30.12.2014;
- Sensor-Surface: 3mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn601; Calibrated: 17.08.2015
- Phantom: Flat Phantom 5.0 (front); Type: QD000P50AA; Serial: 1001
- DASY52 52.8.8(1222); SEMCAD X 14.6.10(7331)

Dipole Calibration for Head Tissue/Pin=250 mW, d=10mm/Zoom Scan (7x7x7)/Cube 0:

Measurement grid: dx=5mm, dy=5mm, dz=5mm
Reference Value = 95.15 V/m; Power Drift = 0.04 dB
Peak SAR (extrapolated) = 16.3 W/kg
SAR(1 g) = 9.12 W/kg; SAR(10 g) = 4.85 W/kg
Maximum value of SAR (measured) = 11.5 W/kg



0 dB = 11.5 W/kg = 10.61 dBW/kg

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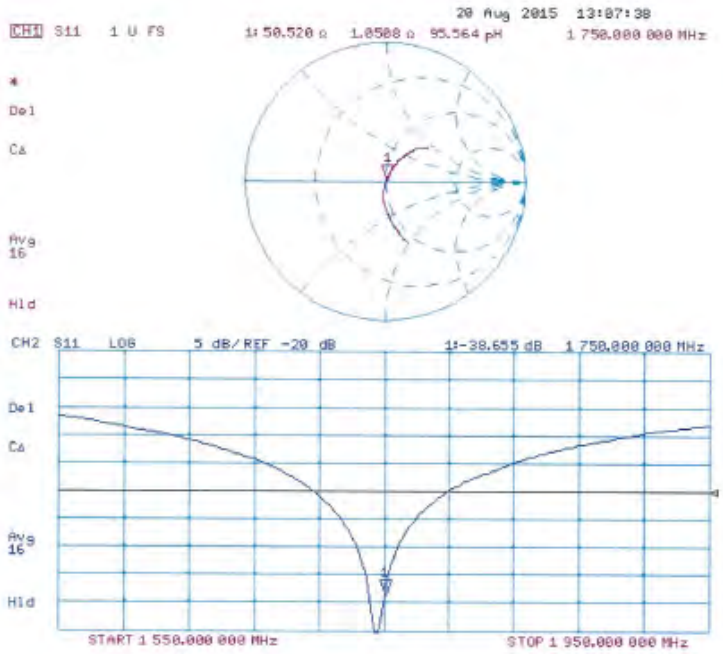
Impedance Measurement Plot for Head TSL



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DASY5 Validation Report for Body TSL

Date: 20.08.2015

Test Laboratory: SPEAG, Zurich, Switzerland

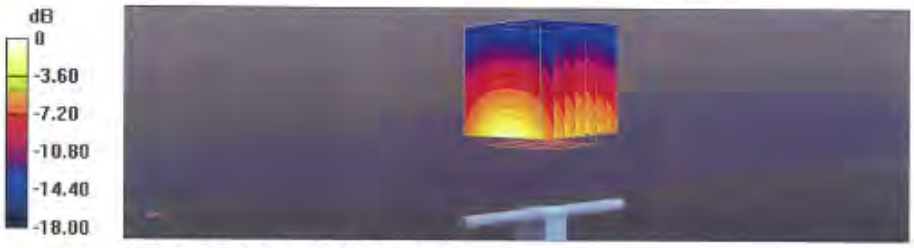
DUT: Dipole 1750 MHz; Type: D1750V2; Serial: D1750V2 - SN: 1008

Communication System: UID 0 - CW; Frequency: 1750 MHz
Medium parameters used: f = 1750 MHz; σ = 1.48 S/m; ε_r = 52.1; ρ = 1000 kg/m^3
Phantom section: Flat Section
Measurement Standard: DASY5 (IEEE/IEC/ANSI C63.19-2011)

DASY52 Configuration:

- Probe: ES3DV3 - SN3205; ConvF(4.88, 4.88, 4.88); Calibrated: 30.12.2014;
- Sensor-Surface: 3mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn601; Calibrated: 17.08.2015
- Phantom: Flat Phantom 5.0 (back); Type: QD000P50AA; Serial: 1002
- DASY52 52.8.8(1222); SEMCAD X 14.6.10(7331)

Dipole Calibration for Body Tissue/Pin=250 mW, d=10mm/Zoom Scan (7x7x7)/Cube 0:
Measurement grid: dx=5mm, dy=5mm, dz=5mm
Reference Value = 93.12 V/m; Power Drift = 0.01 dB
Peak SAR (extrapolated) = 16.1 W/kg
SAR(1 g) = 9.36 W/kg; SAR(10 g) = 5.05 W/kg
Maximum value of SAR (measured) = 11.8 W/kg



0 dB = 11.8 W/kg = 10.72 dBW/kg

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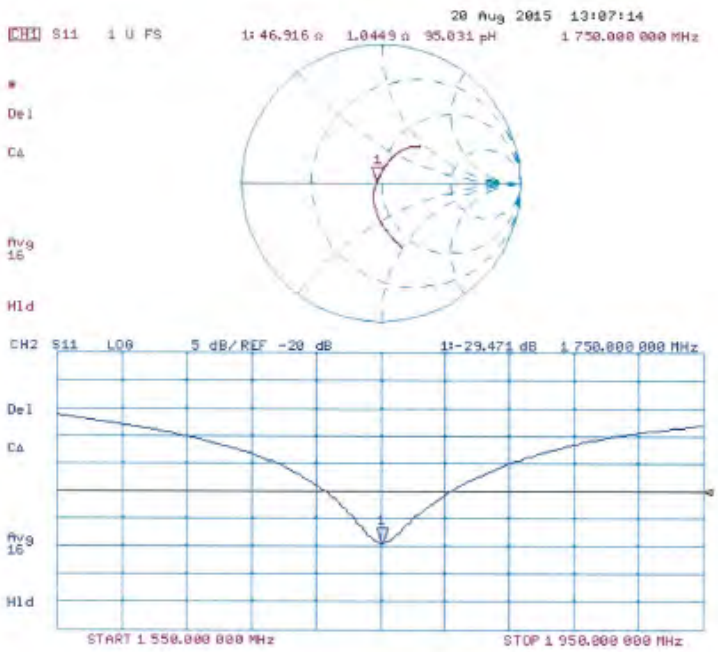
Impedance Measurement Plot for Body TSL



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Engineering AG
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Accreditation No.: SCS 0108

Client SGS-TW (Auden)

Certificate No: D1900V2-5d027_Apr16

CALIBRATION CERTIFICATE

Object D1900V2 - SN: 5d027

Calibration procedure(s) QA CAL-05.v9
Calibration procedure for dipole validation kits above 700 MHz

Calibration date April 25, 2016

This calibration certificate documents the traceability to national standards, which realize the physical units of measurements (SI).
The measurements and the uncertainties with confidence probability are given on the following pages and are part of the certificate.

All calibrations have been conducted in the closed laboratory facility: environment temperature (22 ± 3)°C and humidity < 70%.

Calibration Equipment used (M&TE critical for calibration)

Primary Standards	ID #	Cal Date (Certificate No.)	Scheduled Calibration
Power meter NRP	SN: 104778	06-Apr-16 (No. 217-02288/02289)	Apr-17
Power sensor NRP-Z91	SN: 103244	06-Apr-16 (No. 217-02288)	Apr-17
Power sensor NRP-Z91	SN: 103245	06-Apr-16 (No. 217-02289)	Apr-17
Reference 20 dB Attenuator	SN: 5058 (20k)	05-Apr-16 (No. 217-02292)	Apr-17
Type-N mismatch combination	SN: 3047.2 / 06327	05-Apr-16 (No. 217-02295)	Apr-17
Reference Probe EX3DV4	SN: 7349	31-Dec-15 (No. EX3-7349_Dec15)	Dec-16
DAE4	SN: 601	30-Dec-15 (No. DAE4-601_Dec15)	Dec-16

Secondary Standards	ID #	Check Date (in house)	Scheduled Check
Power meter EPM-442A	SN: GB37480704	07-Oct-15 (No. 217-02222)	In house check: Oct-16
Power sensor HP 8481A	SN: US37292783	07-Oct-15 (No. 217-02222)	In house check: Oct-16
Power sensor HP 8481A	SN: MY41092317	07-Oct-15 (No. 217-02223)	In house check: Oct-16
RF generator R&S SMT-06	SN: 100972	15-Jun-15 (in house check Jun-15)	In house check: Oct-16
Network Analyzer HP 8753E	SN: US37390585	18-Oct-01 (in house check Oct-15)	In house check: Oct-16

	Name	Function	Signature
Calibrated by:	Michael Weber	Laboratory Technician	
Approved by:	Katja Pokovic	Technical Manager	

Issued: April 26, 2016

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

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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) IEEE Std 1528-2013, "IEEE Recommended Practice for Determining the Peak Spatial-Averaged Specific Absorption Rate (SAR) in the Human Head from Wireless Communications Devices: Measurement Techniques", June 2013
b) IEC 62209-1, "Procedure to measure the Specific Absorption Rate (SAR) for hand-held devices used in close proximity to the ear (frequency range of 300 MHz to 3 GHz)", February 2005
c) IEC 62209-2, "Procedure to determine the Specific Absorption Rate (SAR) for wireless communication devices used in close proximity to the human body (frequency range of 30 MHz to 6 GHz)", March 2010
d) KDB 865664, "SAR Measurement Requirements for 100 MHz to 6 GHz"

Additional Documentation:

a) DASY4/5 System Handbook

Methods Applied and Interpretation of Parameters:

- *Measurement Conditions:* Further details are available from the Validation Report at the end of the certificate. All figures stated in the certificate are valid at the frequency indicated.
- *Antenna Parameters with TSL:* The dipole is mounted with the spacer to position its feed point exactly below the center marking of the flat phantom section, with the arms oriented parallel to the body axis.
- *Feed Point Impedance and Return Loss:* These parameters are measured with the dipole positioned under the liquid filled phantom. The impedance stated is transformed from the measurement at the SMA connector to the feed point. The Return Loss ensures low reflected power. No uncertainty required.
- *Electrical Delay:* One-way delay between the SMA connector and the antenna feed point. No uncertainty required.
- *SAR measured:* SAR measured at the stated antenna input power.
- *SAR normalized:* SAR as measured, normalized to an input power of 1 W at the antenna connector.
- *SAR for nominal TSL parameters:* The measured TSL parameters are used to calculate the nominal SAR result.

The reported uncertainty of measurement is stated as the standard uncertainty of measurement multiplied by the coverage factor k=2, which for a normal distribution corresponds to a coverage probability of approximately 95%.

Measurement Conditions

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

DASY Version	DASY5	V52.8.8
Extrapolation	Advanced Extrapolation	
Phantom	Modular Flat Phantom	
Distance Dipole Center - TSL	10 mm	with Spacer
Zoom Scan Resolution	dx, dy, dz = 5 mm	
Frequency	1900 MHz ± 1 MHz	

Head TSL parameters

The following parameters and calculations were applied.

	Temperature	Permittivity	Conductivity
Nominal Head TSL parameters	22.0 °C	40.0	1.40 mho/m
Measured Head TSL parameters	(22.0 ± 0.2) °C	40.0 ± 6 %	1.37 mho/m ± 6 %
Head TSL temperature change during test	< 0.5 °C	---	---

SAR result with Head TSL

SAR averaged over 1 cm³ (1 g) of Head TSL	Condition	
SAR measured	250 mW input power	9.55 W/kg
SAR for nominal Head TSL parameters	normalized to 1W	**38.7 W/kg ± 17.0 % (k=2)**

SAR averaged over 10 cm³ (10 g) of Head TSL	condition	
SAR measured	250 mW input power	5.03 W/kg
SAR for nominal Head TSL parameters	normalized to 1W	**20.3 W/kg ± 16.5 % (k=2)**

Body TSL parameters

The following parameters and calculations were applied.

	Temperature	Permittivity	Conductivity
Nominal Body TSL parameters	22.0 °C	53.3	1.52 mho/m
Measured Body TSL parameters	(22.0 ± 0.2) °C	52.9 ± 6 %	1.49 mho/m ± 6 %
Body TSL temperature change during test	< 0.5 °C	---	---

SAR result with Body TSL

SAR averaged over 1 cm³ (1 g) of Body TSL	Condition	
SAR measured	250 mW input power	9.83 W/kg
SAR for nominal Body TSL parameters	normalized to 1W	**39.7 W/kg ± 17.0 % (k=2)**

SAR averaged over 10 cm³ (10 g) of Body TSL	condition	
SAR measured	250 mW input power	5.21 W/kg
SAR for nominal Body TSL parameters	normalized to 1W	**21.0 W/kg ± 16.5 % (k=2)**

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Appendix (Additional assessments outside the scope of SCS 0108)

Antenna Parameters with Head TSL

Impedance, transformed to feed point	50.8 Ω + 4.4 jΩ
Return Loss	- 27.0 dB

Antenna Parameters with Body TSL

Impedance, transformed to feed point	46.5 Ω + 5.6 jΩ
Return Loss	- 23.3 dB

General Antenna Parameters and Design

Electrical Delay (one direction)	1.196 ns

After long term use with 100W radiated power, only a slight warming of the dipole near the feedpoint can be measured.

The dipole is made of standard semirigid coaxial cable. The center conductor of the feeding line is directly connected to the second arm of the dipole. The antenna is therefore short-circuited for DC-signals. On some of the dipoles, small end caps are added to the dipole arms in order to improve matching when loaded according to the position as explained in the "Measurement Conditions" paragraph. The SAR data are not affected by this change. The overall dipole length is still according to the Standard.
No excessive force must be applied to the dipole arms, because they might bend or the soldered connections near the feedpoint may be damaged.

Additional EUT Data

Manufactured by	SPEAG
Manufactured on	December 17, 2002

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DASY5 Validation Report for Head TSL

Date: 25.04.2016

Test Laboratory: SPEAG, Zurich, Switzerland

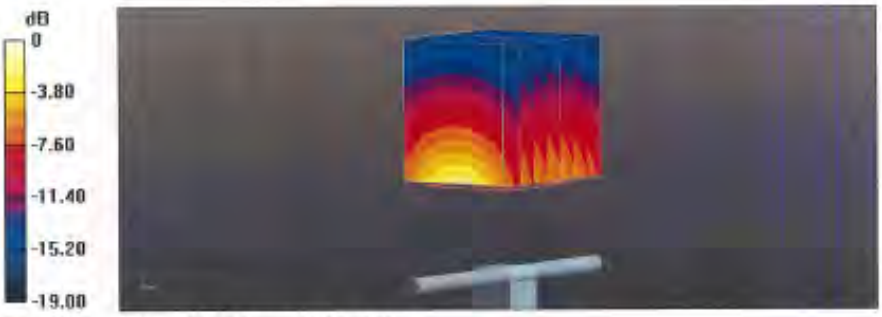
DUT: Dipole 1900 MHz; Type: D1900V2; Serial: D1900V2 - SN: 5d027

Communication System: UID 0 - CW; Frequency: 1900 MHz
Medium parameters used: f = 1900 MHz; σ = 1.37 S/m; ε_r = 40; ρ = 1000 kg/m^3
Phantom section: Flat Section
Measurement Standard: DASY5 (IEEE/IEC/ANSI C63.19-2011)

DASY52 Configuration:

- Probe: EX3DV4 - SN7349; ConvF(8.2, 8.2, 8.2); Calibrated: 31.12.2015;
- Sensor-Surface: 1.4mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn601; Calibrated: 30.12.2015
- Phantom: Flat Phantom 5.0 (front); Type: QD000P50AA; Serial: 1001
- DASY52 52.8.8(1258); SEMCAD X 14.6.10(7372)

Dipole Calibration for Head Tissue/Pin=250 mW, d=10mm/Zoom Scan (7x7x7)/Cube 0:
Measurement grid: dx=5mm, dy=5mm, dz=5mm
Reference Value = 106.9 V/m; Power Drift = 0.02 dB
Peak SAR (extrapolated) = 17.2 W/kg
SAR(1 g) = 9.55 W/kg; SAR(10 g) = 5.03 W/kg
Maximum value of SAR (measured) = 14.3 W/kg



0 dB = 14.3 W/kg = 11.55 dBW/kg

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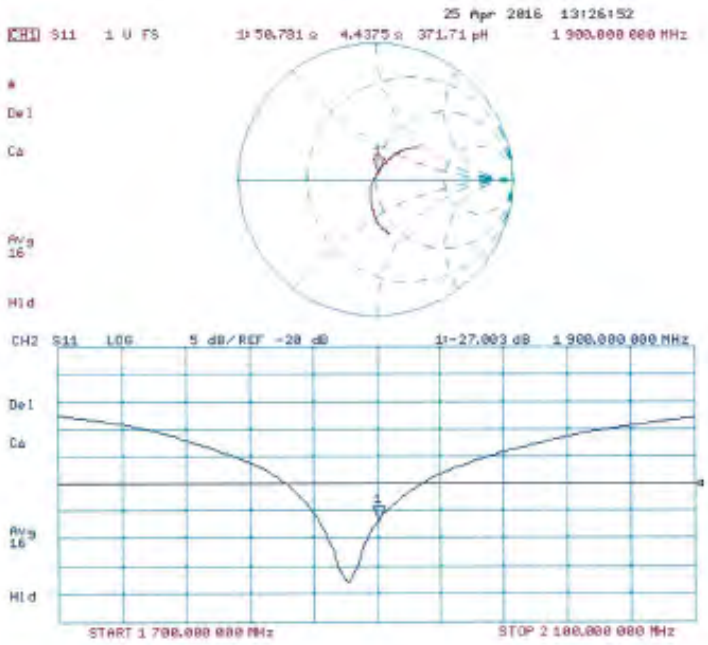
Impedance Measurement Plot for Head TSL



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DASY5 Validation Report for Body TSL

Date: 25.04.2016

Test Laboratory: SPEAG, Zurich, Switzerland

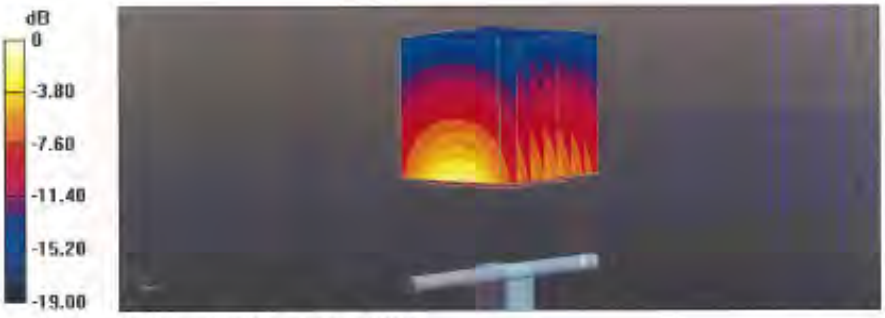
DUT: Dipole 1900 MHz; Type: D1900V2; Serial: D1900V2 - SN: 5d027

Communication System: UID 0 - CW; Frequency: 1900 MHz
Medium parameters used: f = 1900 MHz; σ = 1.49 S/m; ε_r = 52.9; ρ = 1000 kg/m^3
Phantom section: Flat Section
Measurement Standard: DASY5 (IEEE/IEC/ANSI C63.19-2011)

DASY52 Configuration:

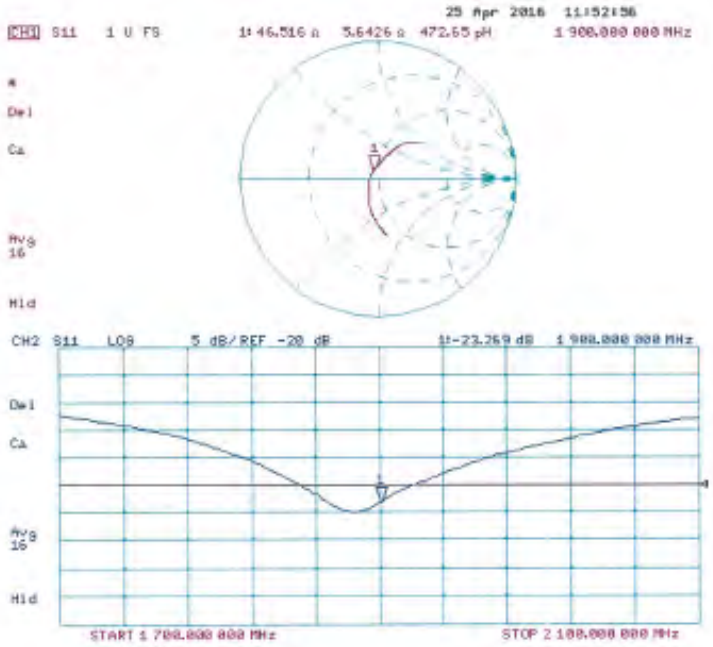
- Probe: EX3DV4 - SN7349; ConvF(8.03, 8.03, 8.03); Calibrated: 31.12.2015;
- Sensor-Surface: 1.4mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn601; Calibrated: 30.12.2015
- Phantom: Flat Phantom 5.0 (back); Type: QD000P50AA; Serial: 1002
- DASY52 52.8.8(1258); SEMCAD X 14.6.10(7372)

Dipole Calibration for Body Tissue/Pin=250 mW, d=10mm/Zoom Scan (7x7x7)/Cube 0:
Measurement grid: dx=5mm, dy=5mm, dz=5mm
Reference Value = 104.2 V/m; Power Drift = 0.02 dB
Peak SAR (extrapolated) = 17.2 W/kg
SAR(1 g) = 9.83 W/kg; SAR(10 g) = 5.21 W/kg
Maximum value of SAR (measured) = 14.7 W/kg



0 dB = 14.7 W/kg = 11.67 dBW/kg

Impedance Measurement Plot for Body TSL



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Accreditation No.: SCS 0108

Client SGS-TW (Auden)

Certificate No: D2450V2-727_Apr16

CALIBRATION CERTIFICATE

Object D2450V2 - SN:727

Calibration procedure(s) QA CAL-05.v9
Calibration procedure for dipole validation kits above 700 MHz

Calibration date: April 19, 2016

This calibration certificate documents the traceability to national standards, which realize the physical units of measurements (SI).
The measurements and the uncertainties with confidence probability are given on the following pages and are part of the certificate.

All calibrations have been conducted in the closed laboratory facility: environment temperature (22 ± 3)°C and humidity < 70%.

Calibration Equipment used (M&TE critical for calibration)

Primary Standards	ID #	Cal Date (Certificate No.)	Scheduled Calibration
Power meter NRP	SN: 104778	06-Apr-16 (No. 217-02288/02289)	Apr-17
Power sensor NRP-Z91	SN: 103244	06-Apr-16 (No. 217-02288)	Apr-17
Power sensor NRP-Z91	SN: 103245	06-Apr-16 (No. 217-02289)	Apr-17
Reference 20 dB Attenuator	SN: 5058 (20k)	05-Apr-16 (No. 217-02292)	Apr-17
Type-N mismatch combination	SN: 5047.2 / 06327	05-Apr-16 (No. 217-02295)	Apr-17
Reference Probe EX3DV4	SN: 7349	31-Dec-15 (No. EX3-7349_Dec15)	Dec-16
DAE4	SN: 601	30-Dec-15 (No. DAE4-601_Dec15)	Dec-16

Secondary Standards	ID #	Check Date (in house)	Scheduled Check
Power meter EPM-442A	SN: GB37480704	07-Oct-15 (No. 217-02222)	In house check: Oct-16
Power sensor HP 8481A	SN: US37292783	07-Oct-15 (No. 217-02222)	In house check: Oct-16
Power sensor HP 8481A	SN: MY41092317	07-Oct-15 (No. 217-02223)	In house check: Oct-16
RF generator R&S SMT-06	SN: 100972	15-Jun-15 (in house check Jun-15)	In house check: Oct-16
Network Analyzer HP 8753E	SN: US37390585	18-Oct-01 (in house check Oct-15)	In house check: Oct-16

	Name	Function	Signature
Calibrated by:	Michael Weber	Laboratory Technician	
Approved by:	Katja Pokovic	Technical Manager	

Issued: April 20, 2016

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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) IEEE Std 1528-2013, "IEEE Recommended Practice for Determining the Peak Spatial-Averaged Specific Absorption Rate (SAR) in the Human Head from Wireless Communications Devices: Measurement Techniques", June 2013
b) IEC 62209-1, "Procedure to measure the Specific Absorption Rate (SAR) for hand-held devices used in close proximity to the ear (frequency range of 300 MHz to 3 GHz)", February 2005
c) IEC 62209-2, "Procedure to determine the Specific Absorption Rate (SAR) for wireless communication devices used in close proximity to the human body (frequency range of 30 MHz to 6 GHz)", March 2010
d) KDB 865664, "SAR Measurement Requirements for 100 MHz to 6 GHz"

Additional Documentation:

e) DASY4/5 System Handbook

Methods Applied and Interpretation of Parameters:

- *Measurement Conditions:* Further details are available from the Validation Report at the end of the certificate. All figures stated in the certificate are valid at the frequency indicated.
- *Antenna Parameters with TSL:* The dipole is mounted with the spacer to position its feed point exactly below the center marking of the flat phantom section, with the arms oriented parallel to the body axis.
- *Feed Point Impedance and Return Loss:* These parameters are measured with the dipole positioned under the liquid filled phantom. The impedance stated is transformed from the measurement at the SMA connector to the feed point. The Return Loss ensures low reflected power. No uncertainty required.
- *Electrical Delay:* One-way delay between the SMA connector and the antenna feed point. No uncertainty required.
- *SAR measured:* SAR measured at the stated antenna input power.
- *SAR normalized:* SAR as measured, normalized to an input power of 1 W at the antenna connector.
- *SAR for nominal TSL parameters:* The measured TSL parameters are used to calculate the nominal SAR result.

The reported uncertainty of measurement is stated as the standard uncertainty of measurement multiplied by the coverage factor k=2, which for a normal distribution corresponds to a coverage probability of approximately 95%.

Measurement Conditions

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

DASY Version	DASY5	V52.8.8
Extrapolation	Advanced Extrapolation	
Phantom	Modular Flat Phantom	
Distance Dipole Center - TSL	10 mm	with Spacer
Zoom Scan Resolution	dx, dy, dz = 5 mm	
Frequency	2450 MHz ± 1 MHz	

Head TSL parameters

The following parameters and calculations were applied.

	Temperature	Permittivity	Conductivity
Nominal Head TSL parameters	22.0 °C	39.2	1.80 mho/m
Measured Head TSL parameters	(22.0 ± 0.2) °C	40.0 ± 6 %	1.83 mho/m ± 6 %
Head TSL temperature change during test	< 0.5 °C	----	----

SAR result with Head TSL

SAR averaged over 1 cm³ (1 g) of Head TSL	Condition	
SAR measured	250 mW input power	12.8 W/kg
SAR for nominal Head TSL parameters	normalized to 1W	**51.0 W/kg ± 17.0 % (k=2)**

SAR averaged over 10 cm³ (10 g) of Head TSL	condition	
SAR measured	250 mW input power	5.93 W/kg
SAR for nominal Head TSL parameters	normalized to 1W	**23.7 W/kg ± 16.5 % (k=2)**

Body TSL parameters

The following parameters and calculations were applied.

	Temperature	Permittivity	Conductivity
Nominal Body TSL parameters	22.0 °C	52.7	1.95 mho/m
Measured Body TSL parameters	(22.0 ± 0.2) °C	52.7 ± 6 %	1.98 mho/m ± 6 %
Body TSL temperature change during test	< 0.5 °C	----	----

SAR result with Body TSL

SAR averaged over 1 cm³ (1 g) of Body TSL	Condition	
SAR measured	250 mW input power	12.5 W/kg
SAR for nominal Body TSL parameters	normalized to 1W	**49.6 W/kg ± 17.0 % (k=2)**

SAR averaged over 10 cm³ (10 g) of Body TSL	condition	
SAR measured	250 mW input power	5.86 W/kg
SAR for nominal Body TSL parameters	normalized to 1W	**23.3 W/kg ± 16.5 % (k=2)**

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Appendix (Additional assessments outside the scope of SCS 0108)

Antenna Parameters with Head TSL

Impedance, transformed to feed point	55.3 Ω + 2.0 jΩ
Return Loss	- 25.4 dB

Antenna Parameters with Body TSL

Impedance, transformed to feed point	52.1 Ω + 4.8 jΩ
Return Loss	- 25.9 dB

General Antenna Parameters and Design

Electrical Delay (one direction)	1.148 ns

After long term use with 100W radiated power, only a slight warming of the dipole near the feedpoint can be measured.

The dipole is made of standard semirigid coaxial cable. The center conductor of the feeding line is directly connected to the second arm of the dipole. The antenna is therefore short-circuited for DC-signals. On some of the dipoles, small end caps are added to the dipole arms in order to improve matching when loaded according to the position as explained in the "Measurement Conditions" paragraph. The SAR data are not affected by this change. The overall dipole length is still according to the Standard.
No excessive force must be applied to the dipole arms, because they might bend or the soldered connections near the feedpoint may be damaged.

Additional EUT Data

Manufactured by	SPEAG
Manufactured on	January 09, 2003

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DASY5 Validation Report for Head TSL

Date: 19.04.2016

Test Laboratory: SPEAG, Zurich, Switzerland

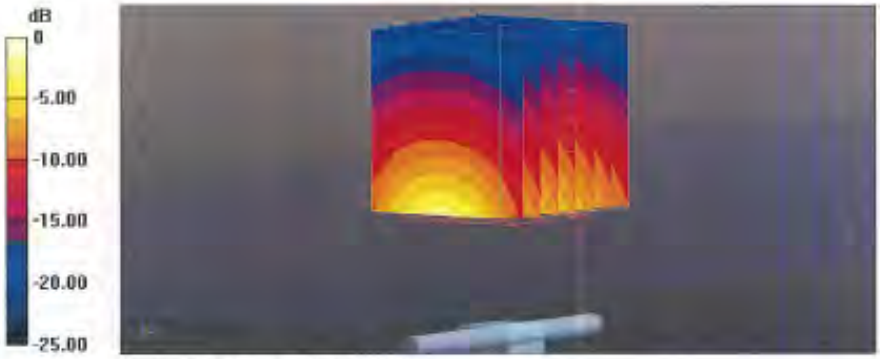
DUT: Dipole 2450 MHz; Type: D2450V2; Serial: D2450V2 - SN: 727

Communication System: UID 0 - CW; Frequency: 2450 MHz
Medium parameters used: f = 2450 MHz; σ = 1.83 S/m; ε_r = 40; ρ = 1000 kg/m^3
Phantom section: Flat Section
Measurement Standard: DASY5 (IEEE/IEC/ANSI C63.19-2011)

DASY52 Configuration:

- Probe: EX3DV4 - SN7349; ConvF(7.76, 7.76, 7.76); Calibrated: 31.12.2015;
- Sensor-Surface: 1.4mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn601; Calibrated: 30.12.2015
- Phantom: Flat Phantom 5.0 (front); Type: QD000P50AA; Serial: 1001
- DASY52 52.8.8(1258); SEMCAD X 14.6.10(7372)

Dipole Calibration for Head Tissue/Pin=250 mW, d=10mm/Zoom Scan (7x7x7)/Cube 0:
Measurement grid: dx=5mm, dy=5mm, dz=5mm
Reference Value = 112.1 V/m; Power Drift = 0.05 dB
Peak SAR (extrapolated) = 25.7 W/kg
SAR(1 g) = 12.8 W/kg; SAR(10 g) = 5.93 W/kg
Maximum value of SAR (measured) = 20.8 W/kg



0 dB = 20.8 W/kg = 13.18 dBW/kg

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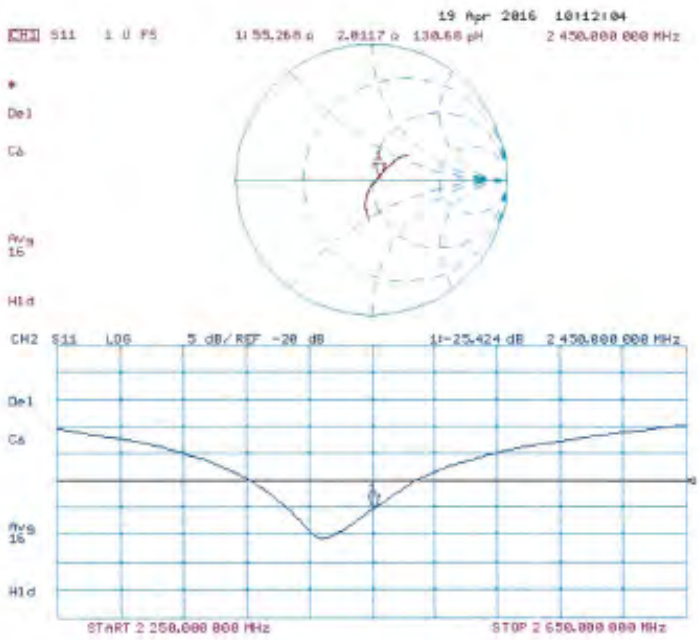
Impedance Measurement Plot for Head TSL



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Accreditation No.: SCS 0108

Client SGS-TW (Auden)

Certificate No: D2600V2-1005_Jan16

CALIBRATION CERTIFICATE

Object	D2600V2 - SN: 1005
Calibration procedure(s)	QA CAL-05.v9 Calibration procedure for dipole validation kits above 700 MHz
Calibration date	January 21, 2016

This calibration certificate documents the traceability to national standards, which realize the physical units of measurements (SI).
The measurements and the uncertainties with confidence probability are given on the following pages and are part of the certificate.

All calibrations have been conducted in the closed laboratory facility: environment temperature (22 ± 3)°C and humidity < 70%.

Calibration Equipment used (M&TE critical for calibration)

Primary Standards	ID #	Cal Date (Certificate No.)	Scheduled Calibration
Power meter EPM-442A	GB37480704	07-Oct-15 (No. 217-02222)	Oct-16
Power sensor HP 8481A	US37292783	07-Oct-15 (No. 217-02222)	Oct-16
Power sensor HP 8481A	MY41092317	07-Oct-15 (No. 217-02223)	Oct-16
Reference 20 dB Attenuator	SN: 5058 (20k)	01-Apr-15 (No. 217-02131)	Mar-16
Type-N mismatch combination	SN: 5047.2 / 06327	01-Apr-15 (No. 217-02134)	Mar-16
Reference Probe EX3DV4	SN: 7349	31-Dec-15 (No. EX3-7349_Dec15)	Dec-16
DAE4	SN: 601	30-Dec-15 (No. DAE4-601_Dec15)	Dec-16

Secondary Standards	ID #	Check Date (in house)	Scheduled Check
RF generator R&S SMT-06	100972	15-Jun-15 (in house check Jun-15)	In house check: Jun-18
Network Analyzer HP 8753E	US37390585 S4206	18-Oct-01 (in house check Oct-15)	In house check: Oct-16

	Name	Function	Signature
Calibrated by:	Leif Klysner	Laboratory Technician	
Approved by:	Katja Pokovic	Technical Manager	

Issued: January 26, 2016

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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) IEEE Std 1528-2013, "IEEE Recommended Practice for Determining the Peak Spatial-Averaged Specific Absorption Rate (SAR) in the Human Head from Wireless Communications Devices: Measurement Techniques", June 2013
b) IEC 62209-1, "Procedure to measure the Specific Absorption Rate (SAR) for hand-held devices used in close proximity to the ear (frequency range of 300 MHz to 3 GHz)", February 2005
c) IEC 62209-2, "Procedure to determine the Specific Absorption Rate (SAR) for wireless communication devices used in close proximity to the human body (frequency range of 30 MHz to 6 GHz)", March 2010
d) KDB 865664, "SAR Measurement Requirements for 100 MHz to 6 GHz"

Additional Documentation:

e) DASY4/5 System Handbook

Methods Applied and Interpretation of Parameters:

- *Measurement Conditions:* Further details are available from the Validation Report at the end of the certificate. All figures stated in the certificate are valid at the frequency indicated.
- *Antenna Parameters with TSL:* The dipole is mounted with the spacer to position its feed point exactly below the center marking of the flat phantom section, with the arms oriented parallel to the body axis.
- *Feed Point Impedance and Return Loss:* These parameters are measured with the dipole positioned under the liquid filled phantom. The impedance stated is transformed from the measurement at the SMA connector to the feed point. The Return Loss ensures low reflected power. No uncertainty required.
- *Electrical Delay:* One-way delay between the SMA connector and the antenna feed point. No uncertainty required.
- *SAR measured:* SAR measured at the stated antenna input power.
- *SAR normalized:* SAR as measured, normalized to an input power of 1 W at the antenna connector.
- *SAR for nominal TSL parameters:* The measured TSL parameters are used to calculate the nominal SAR result.

The reported uncertainty of measurement is stated as the standard uncertainty of measurement multiplied by the coverage factor k=2, which for a normal distribution corresponds to a coverage probability of approximately 95%.

Measurement Conditions

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

DASY Version	DASY5	V52.8.8
Extrapolation	Advanced Extrapolation	
Phantom	Modular Flat Phantom	
Distance Dipole Center - TSL	10 mm	with Spacer
Zoom Scan Resolution	dx, dy, dz = 5 mm	
Frequency	2600 MHz ± 1 MHz	

Head TSL parameters

The following parameters and calculations were applied.

	Temperature	Permittivity	Conductivity
Nominal Head TSL parameters	22.0 °C	39.0	1.96 mho/m
Measured Head TSL parameters	(22.0 ± 0.2) °C	37.3 ± 6 %	2.04 mho/m ± 6 %
Head TSL temperature change during test	< 0.5 °C	----	----

SAR result with Head TSL

SAR averaged over 1 cm^3 (1 g) of Head TSL	Condition	
SAR measured	250 mW input power	14.2 W/kg
SAR for nominal Head TSL parameters	normalized to 1W	**55.2 W/kg ± 17.0 % (k=2)**

SAR averaged over 10 cm^3 (10 g) of Head TSL	condition	
SAR measured	250 mW input power	6.29 W/kg
SAR for nominal Head TSL parameters	normalized to 1W	**24.7 W/kg ± 16.5 % (k=2)**

Body TSL parameters

The following parameters and calculations were applied.

	Temperature	Permittivity	Conductivity
Nominal Body TSL parameters	22.0 °C	52.5	2.16 mho/m
Measured Body TSL parameters	(22.0 ± 0.2) °C	51.6 ± 6 %	2.22 mho/m ± 6 %
Body TSL temperature change during test	< 0.5 °C	----	----

SAR result with Body TSL

SAR averaged over 1 cm^3 (1 g) of Body TSL	Condition	
SAR measured	250 mW input power	13.7 W/kg
SAR for nominal Body TSL parameters	normalized to 1W	**53.9 W/kg ± 17.0 % (k=2)**

SAR averaged over 10 cm^3 (10 g) of Body TSL	condition	
SAR measured	250 mW input power	6.10 W/kg
SAR for nominal Body TSL parameters	normalized to 1W	**24.2 W/kg ± 16.5 % (k=2)**

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Appendix (Additional assessments outside the scope of SCS 0108)

Antenna Parameters with Head TSL

Impedance, transformed to feed point	51.2 Ω - 4.2 jΩ
Return Loss	- 27.2 dB

Antenna Parameters with Body TSL

Impedance, transformed to feed point	45.6 Ω - 3.3 jΩ
Return Loss	- 24.8 dB

General Antenna Parameters and Design

Electrical Delay (one direction)	1.154 ns

After long term use with 100W radiated power, only a slight warming of the dipole near the feedpoint can be measured.

The dipole is made of standard semirigid coaxial cable. The center conductor of the feeding line is directly connected to the second arm of the dipole. The antenna is therefore short-circuited for DC-signals. On some of the dipoles, small end caps are added to the dipole arms in order to improve matching when loaded according to the position as explained in the "Measurement Conditions" paragraph. The SAR data are not affected by this change. The overall dipole length is still according to the Standard.
No excessive force must be applied to the dipole arms, because they might bend or the soldered connections near the feedpoint may be damaged.

Additional EUT Data

Manufactured by	SPEAG
Manufactured on	December 23, 2006

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DASY5 Validation Report for Head TSL

Date: 21.01.2016

Test Laboratory: SPEAG, Zurich, Switzerland

DUT: Dipole 2600 MHz; Type: D2600V2; Serial: D2600V2 - SN: 1005

Communication System: UID 0 - CW; Frequency: 2600 MHz
Medium parameters used: f = 2600 MHz; σ = 2.04 S/m; ε_r = 37.3; ρ = 1000 kg/m^3
Phantom section: Flat Section
Measurement Standard: DASY5 (IEEE/IEC/ANSI C63.19-2011)

DASY52 Configuration:

- Probe: EX3DV4 - SN7349; ConvF(7.49, 7.49, 7.49); Calibrated: 31.12.2015;
- Sensor-Surface: 1.4mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn601; Calibrated: 30.12.2015
- Phantom: Flat Phantom 5.0 (front); Type: QD000P50AA; Serial: 1001
- DASY52 52.8.8(1258); SEMCAD X 14.6.10(7372)

Dipole Calibration for Head Tissue/Pin=250 mW, d=10mm/Zoom Scan (7x7x7)/Cube 0:
Measurement grid: dx=5mm, dy=5mm, dz=5mm
Reference Value = 114.8 V/m; Power Drift = 0.01 dB
Peak SAR (extrapolated) = 30.2 W/kg
SAR(1 g) = 14.2 W/kg; SAR(10 g) = 6.29 W/kg
Maximum value of SAR (measured) = 24.0 W/kg

0 dB = 24.0 W/kg = 13.80 dBW/kg

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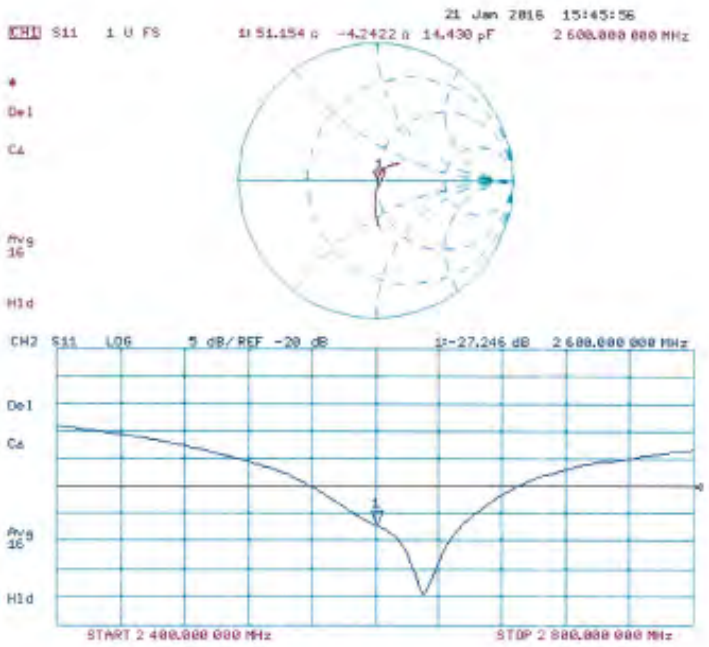
Impedance Measurement Plot for Head TSL



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DASY5 Validation Report for Body TSL

Date: 21.01.2016

Test Laboratory: SPEAG, Zurich, Switzerland

DUT: Dipole 2600 MHz; Type: D2600V2; Serial: D2600V2 - SN: 1005

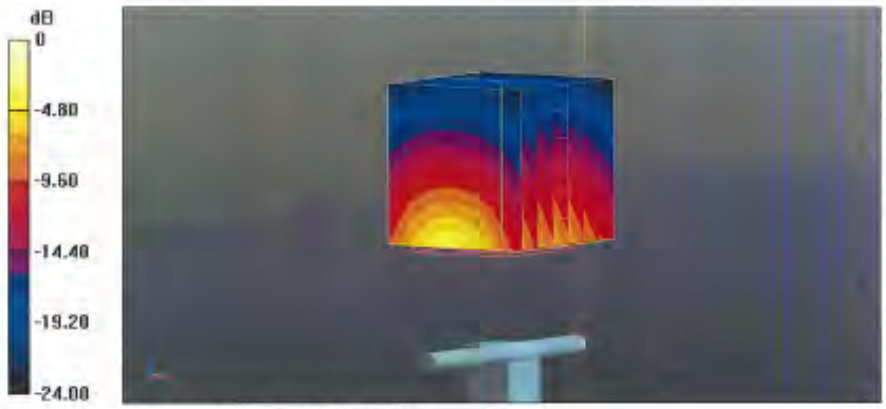
Communication System: UID 0 - CW; Frequency: 2600 MHz
Medium parameters used: f = 2600 MHz; σ = 2.22 S/m; ε_r = 51.6; ρ = 1000 kg/m^3
Phantom section: Flat Section
Measurement Standard: DASY5 (IEEE/IEC/ANSI C63.19-2011)

DASY52 Configuration:

- Probe: EX3DV4 - SN7349; ConvF(7.6, 7.6, 7.6); Calibrated: 31.12.2015;
- Sensor-Surface: 1.4mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn601; Calibrated: 30.12.2015
- Phantom: Flat Phantom 5.0 (back); Type: QD000P50AA; Serial: 1002
- DASY52 52.8.8(1258); SEMCAD X 14.6.10(7372)

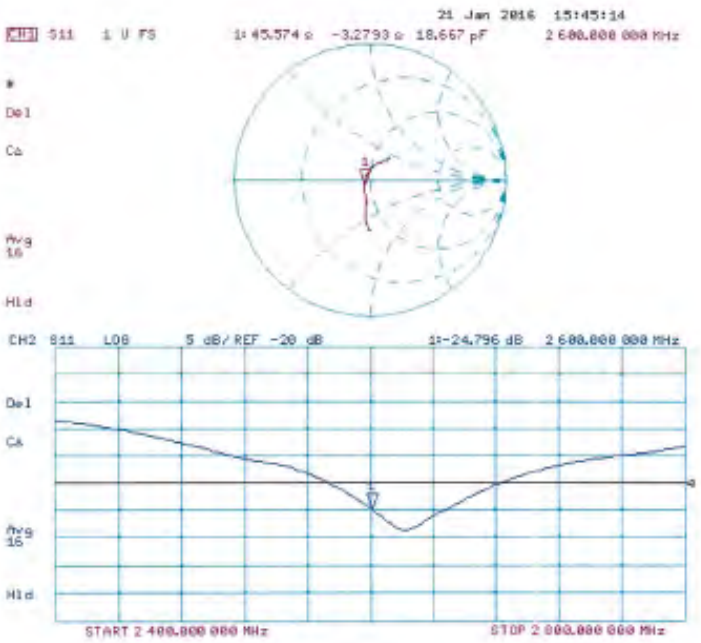
Dipole Calibration for Body Tissue/Pin=250 mW, d=10mm/Zoom Scan (7x7x7)/Cube 0:

Measurement grid: dx=5mm, dy=5mm, dz=5mm
Reference Value = 106.7 V/m; Power Drift = 0.02 dB
Peak SAR (extrapolated) = 28.4 W/kg
SAR(1 g) = 13.7 W/kg; SAR(10 g) = 6.1 W/kg
Maximum value of SAR (measured) = 22.8 W/kg



0 dB = 22.8 W/kg = 13.58 dBW/kg

Impedance Measurement Plot for Body TSL



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Accreditation No.: SCS 0108

Client SGS-TW (Auden)

Certificate No: D5GHzV2-1023_Jan16

CALIBRATION CERTIFICATE

Object	D5GHzV2 - SN: 1023
Calibration procedure(s)	QA CAL-22.v2 Calibration procedure for dipole validation kits between 3-6 GHz
Calibration date:	January 26, 2016

This calibration certificate documents the traceability to national standards, which realize the physical units of measurements (SI).
The measurements and the uncertainties with confidence probability are given on the following pages and are part of the certificate.

All calibrations have been conducted in the closed laboratory facility: environment temperature (22 ± 3)°C and humidity < 70%.

Calibration Equipment used (M&TE critical for calibration)

Primary Standards	ID #	Cal Date (Certificate No.)	Scheduled Calibration
Power meter EPM-442A	GB37480704	07-Oct-15 (No. 217-02222)	Oct-16
Power sensor HP 8481A	US37292783	07-Oct-15 (No. 217-02222)	Oct-16
Power sensor HP 8481A	MY41092317	07-Oct-15 (No. 217-02223)	Oct-16
Reference 20 dB Attenuator	SN: 5058 (20k)	01-Apr-15 (No. 217-02151)	Mar-16
Type-N mismatch combination	SN: 5047.2 / 06327	01-Apr-15 (No. 217-02154)	Mar-16
Reference Probe EX3DV4	SN: 3503	31-Dec-15 (No. EX3-3503_Dec15)	Dec-16
DAE4	SN: 601	30-Dec-15 (No. DAE4-601_Dec15)	Dec-16

Secondary Standards	ID #	Check Date (in house)	Scheduled Check
RF generator R&S SMT-06	100972	15-Jun-15 (in house check Jun-15)	In house check: Jun-18
Network Analyzer HP 8753E	US37390585 S4206	18-Oct-01 (in house check Oct-15)	In house check: Oct-16

	Name	Function	Signature
Calibrated by:	Michael Weber	Laboratory Technician	
Approved by:	Katja Pokovic	Technical Manager	

Issued: January 28, 2016

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

Calibration Laboratory of
Schmid & Partner
Engineering AG
Zeughausstrasse 43, 8004 Zurich, Switzerland

S Schweizerischer Kalibrierdienst
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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 0108

Glossary:

TSL	tissue simulating liquid
ConvF	sensitivity in TSL / NORM x,y,z
N/A	not applicable or not measured

Calibration is Performed According to the Following Standards:

a) IEEE Std 1528-2013, "IEEE Recommended Practice for Determining the Peak Spatial-Averaged Specific Absorption Rate (SAR) in the Human Head from Wireless Communications Devices: Measurement Techniques", June 2013
b) IEC 62209-2, "Procedure to determine the Specific Absorption Rate (SAR) for wireless communication devices used in close proximity to the human body (frequency range of 30 MHz to 6 GHz)", March 2010
c) KDB 865664, "SAR Measurement Requirements for 100 MHz to 6 GHz"

Additional Documentation:

d) DASY4/5 System Handbook

Methods Applied and Interpretation of Parameters:

- *Measurement Conditions:* Further details are available from the Validation Report at the end of the certificate. All figures stated in the certificate are valid at the frequency indicated.
- *Antenna Parameters with TSL:* The dipole is mounted with the spacer to position its feed point exactly below the center marking of the flat phantom section, with the arms oriented parallel to the body axis.
- *Feed Point Impedance and Return Loss:* These parameters are measured with the dipole positioned under the liquid filled phantom. The impedance stated is transformed from the measurement at the SMA connector to the feed point. The Return Loss ensures low reflected power. No uncertainty required.
- *Electrical Delay:* One-way delay between the SMA connector and the antenna feed point. No uncertainty required.
- *SAR measured:* SAR measured at the stated antenna input power.
- *SAR normalized:* SAR as measured, normalized to an input power of 1 W at the antenna connector.
- *SAR for nominal TSL parameters:* The measured TSL parameters are used to calculate the nominal SAR result.

The reported uncertainty of measurement is stated as the standard uncertainty of measurement multiplied by the coverage factor k=2, which for a normal distribution corresponds to a coverage probability of approximately 95%.

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	35.2 ± 6 %	4.51 mho/m ± 6 %
Head TSL temperature change during test	< 0.5 °C	----	----

SAR result with Head TSL at 5200 MHz

SAR averaged over 1 cm³ (1 g) of Head TSL	Condition	
SAR measured	100 mW input power	7.74 W/kg
SAR for nominal Head TSL parameters	normalized to 1W	**77.0 W/kg ± 19.9 % (k=2)**

SAR averaged over 10 cm³ (10 g) of Head TSL	condition	
SAR measured	100 mW input power	2.23 W/kg
SAR for nominal Head TSL parameters	normalized to 1W	**22.1 W/kg ± 19.5 % (k=2)**

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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	35.1 ± 6 %	4.60 mho/m ± 6 %
Head TSL temperature change during test	< 0.5 °C	----	----

SAR result with Head TSL at 5300 MHz

SAR averaged over 1 cm³ (1 g) of Head TSL	Condition	
SAR measured	100 mW input power	8.03 W/kg
SAR for nominal Head TSL parameters	normalized to 1W	**79.9 W / kg ± 19.9 % (k=2)**

SAR averaged over 10 cm³ (10 g) of Head TSL	condition	
SAR measured	100 mW input power	2.33 W/kg
SAR for nominal Head TSL parameters	normalized to 1W	**23.1 W/kg ± 19.5 % (k=2)**

Head TSL parameters at 5600 MHz

The following parameters and calculations were applied.

	Temperature	Permittivity	Conductivity
Nominal Head TSL parameters	22.0 °C	35.5	5.07 mho/m
Measured Head TSL parameters	(22.0 ± 0.2) °C	34.7 ± 6 %	4.90 mho/m ± 6 %
Head TSL temperature change during test	< 0.5 °C	----	----

SAR result with Head TSL at 5600 MHz

SAR averaged over 1 cm³ (1 g) of Head TSL	Condition	
SAR measured	100 mW input power	8.31 W/kg
SAR for nominal Head TSL parameters	normalized to 1W	**82.6 W/kg ± 19.9 % (k=2)**

SAR averaged over 10 cm³ (10 g) of Head TSL	condition	
SAR measured	100 mW input power	2.38 W/kg
SAR for nominal Head TSL parameters	normalized to 1W	**23.6 W/kg ± 19.5 % (k=2)**

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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	34.4 ± 6 %	5.10 mho/m ± 6 %
Head TSL temperature change during test	< 0.5 °C	----	----

SAR result with Head TSL at 5800 MHz

SAR averaged over 1 cm³ (1 g) of Head TSL	Condition	
SAR measured	100 mW input power	7.78 W/kg
SAR for nominal Head TSL parameters	normalized to 1W	**77.3 W/kg ± 19.9 % (k=2)**

SAR averaged over 10 cm³ (10 g) of Head TSL	condition	
SAR measured	100 mW input power	2.22 W/kg
SAR for nominal Head TSL parameters	normalized to 1W	**22.0 W/kg ± 19.5 % (k=2)**

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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	47.1 ± 6 %	5.37 mho/m ± 6 %
Body TSL temperature change during test	< 0.5 °C	----	----

SAR result with Body TSL at 5200 MHz

SAR averaged over 1 cm³ (1 g) of Body TSL	Condition	
SAR measured	100 mW input power	7.25 W/kg
SAR for nominal Body TSL parameters	normalized to 1W	**71.9 W/kg ± 19.9 % (k=2)**

SAR averaged over 10 cm³ (10 g) of Body TSL	condition	
SAR measured	100 mW input power	2.05 W/kg
SAR for nominal Body TSL parameters	normalized to 1W	**20.3 W/kg ± 19.5 % (k=2)**

Body TSL parameters at 5300 MHz

The following parameters and calculations were applied.

	Temperature	Permittivity	Conductivity
Nominal Body TSL parameters	22.0 °C	48.9	5.42 mho/m
Measured Body TSL parameters	(22.0 ± 0.2) °C	46.9 ± 6 %	5.50 mho/m ± 6 %
Body TSL temperature change during test	< 0.5 °C	----	----

SAR result with Body TSL at 5300 MHz

SAR averaged over 1 cm³ (1 g) of Body TSL	Condition	
SAR measured	100 mW input power	7.57 W/kg
SAR for nominal Body TSL parameters	normalized to 1W	**75.1 W/kg ± 19.9 % (k=2)**

SAR averaged over 10 cm³ (10 g) of Body TSL	condition	
SAR measured	100 mW input power	2.14 W/kg
SAR for nominal Body TSL parameters	normalized to 1W	**21.2 W/kg ± 19.5 % (k=2)**

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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	46.4 ± 6 %	5.91 mho/m ± 6 %
Body TSL temperature change during test	< 0.5 °C	----	----

SAR result with Body TSL at 5600 MHz

SAR averaged over 1 cm³ (1 g) of Body TSL	Condition	
SAR measured	100 mW input power	7.89 W/kg
SAR for nominal Body TSL parameters	normalized to 1W	**78.3 W/kg ± 19.9 % (k=2)**

SAR averaged over 10 cm³ (10 g) of Body TSL	condition	
SAR measured	100 mW input power	2.23 W/kg
SAR for nominal Body TSL parameters	normalized to 1W	**22.1 W/kg ± 19.5 % (k=2)**

Body TSL parameters at 5800 MHz

The following parameters and calculations were applied.

	Temperature	Permittivity	Conductivity
Nominal Body TSL parameters	22.0 °C	48.2	6.00 mho/m
Measured Body TSL parameters	(22.0 ± 0.2) °C	46.0 ± 6 %	6.19 mho/m ± 6 %
Body TSL temperature change during test	< 0.5 °C	----	----

SAR result with Body TSL at 5800 MHz

SAR averaged over 1 cm³ (1 g) of Body TSL	Condition	
SAR measured	100 mW input power	7.59 W/kg
SAR for nominal Body TSL parameters	normalized to 1W	**75.3 W/kg ± 19.9 % (k=2)**

SAR averaged over 10 cm³ (10 g) of Body TSL	condition	
SAR measured	100 mW input power	2.13 W/kg
SAR for nominal Body TSL parameters	normalized to 1W	**21.1 W/kg ± 19.5 % (k=2)**

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Appendix (Additional assessments outside the scope of SCS 0108)

Antenna Parameters with Head TSL at 5200 MHz

Impedance, transformed to feed point	49.1 Ω - 8.4 jΩ
Return Loss	- 21.4 dB

Antenna Parameters with Head TSL at 5300 MHz

Impedance, transformed to feed point	49.6 Ω - 4.2 jΩ
Return Loss	- 27.4 dB

Antenna Parameters with Head TSL at 5600 MHz

Impedance, transformed to feed point	54.9 Ω - 1.4 jΩ
Return Loss	- 26.3 dB

Antenna Parameters with Head TSL at 5800 MHz

Impedance, transformed to feed point	55.9 Ω + 2.2 jΩ
Return Loss	- 24.5 dB

Antenna Parameters with Body TSL at 5200 MHz

Impedance, transformed to feed point	49.4 Ω - 6.8 jΩ
Return Loss	- 23.3 dB

Antenna Parameters with Body TSL at 5300 MHz

Impedance, transformed to feed point	50.9 Ω - 2.4 jΩ
Return Loss	- 31.6 dB

Antenna Parameters with Body TSL at 5600 MHz

Impedance, transformed to feed point	56.0 Ω - 0.1 jΩ
Return Loss	- 25.0 dB

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Antenna Parameters with Body TSL at 5800 MHz

Impedance, transformed to feed point	56.4 Ω + 2.4 jΩ
Return Loss	- 23.8 dB

General Antenna Parameters and Design

Electrical Delay (one direction)	1.199 ns

After long term use with 100W radiated power, only a slight warming of the dipole near the feedpoint can be measured.

The dipole is made of standard semirigid coaxial cable. The center conductor of the feeding line is directly connected to the second arm of the dipole. The antenna is therefore short-circuited for DC-signals. On some of the dipoles, small end caps are added to the dipole arms in order to improve matching when loaded according to the position as explained in the "Measurement Conditions" paragraph. The SAR data are not affected by this change. The overall dipole length is still according to the Standard.
No excessive force must be applied to the dipole arms, because they might bend or the soldered connections near the feedpoint may be damaged.

Additional EUT Data

Manufactured by	SPEAG
Manufactured on	February 05, 2004

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DASY5 Validation Report for Head TSL

Date: 26.01.2016

Test Laboratory: SPEAG, Zurich, Switzerland

DUT: Dipole D5GHzV2; Type: D5GHzV2; Serial: D5GHzV2 - SN: 1023

Communication System: UID 0 - CW; Frequency: 5200 MHz, Frequency: 5300 MHz, Frequency: 5600 MHz, Frequency: 5800 MHz
Medium parameters used: f = 5200 MHz; $\sigma = 4.51$ S/m; $\varepsilon_r = 35.2$; $\rho = 1000$ kg/m^3 , Medium parameters used: f = 5300 MHz; $\sigma = 4.6$ S/m; $\varepsilon_r = 35.1$; $\rho = 1000$ kg/m^3 , Medium parameters used: f = 5600 MHz; $\sigma = 4.9$ S/m; $\varepsilon_r = 34.7$; $\rho = 1000$ kg/m^3 , Medium parameters used: f = 5800 MHz; $\sigma = 5.1$ S/m; $\varepsilon_r = 34.4$; $\rho = 1000$ kg/m^3
Phantom section: Flat Section
Measurement Standard: DASY5 (IEEE/IEC/ANSI C63.19-2011)

DASY52 Configuration:

- Probe: EX3DV4 - SN3503; ConvF(5.59, 5.59, 5.59); Calibrated: 31.12.2015, ConvF(5.25, 5.25, 5.25); Calibrated: 31.12.2015, ConvF(4.99, 4.99, 4.99); Calibrated: 31.12.2015, ConvF(4.95, 4.95, 4.95); Calibrated: 31.12.2015;
- Sensor-Surface: 1.4mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn601; Calibrated: 30.12.2015
- Phantom: Flat Phantom 5.0 (front); Type: QD000P50AA; Serial: 1001
- DASY52 52.8.8(1258); SEMCAD X 14.6.10(7372)

Dipole Calibration for Head Tissue/Pin=100mW, dist=10mm, f=5200 MHz/Zoom Scan, dist=1.4mm (8x8x7)/Cube 0: Measurement grid: dx=4mm, dy=4mm, dz=1.4mm
Reference Value = 72.68 V/m; Power Drift = 0.07 dB
Peak SAR (extrapolated) = 28.1 W/kg
SAR(1 g) = 7.74 W/kg; SAR(10 g) = 2.23 W/kg
Maximum value of SAR (measured) = 17.8 W/kg

Dipole Calibration for Head Tissue/Pin=100mW, dist=10mm, f=5300 MHz/Zoom Scan, dist=1.4mm (8x8x7)/Cube 0: Measurement grid: dx=4mm, dy=4mm, dz=1.4mm
Reference Value = 73.14 V/m; Power Drift = 0.04 dB
Peak SAR (extrapolated) = 30.0 W/kg
SAR(1 g) = 8.03 W/kg; SAR(10 g) = 2.33 W/kg
Maximum value of SAR (measured) = 18.7 W/kg

Dipole Calibration for Head Tissue/Pin=100mW, dist=10mm, f=5600 MHz/Zoom Scan, dist=1.4mm (8x8x7)/Cube 0: Measurement grid: dx=4mm, dy=4mm, dz=1.4mm
Reference Value = 73.32 V/m; Power Drift = 0.08 dB
Peak SAR (extrapolated) = 32.6 W/kg
SAR(1 g) = 8.31 W/kg; SAR(10 g) = 2.38 W/kg
Maximum value of SAR (measured) = 19.8 W/kg

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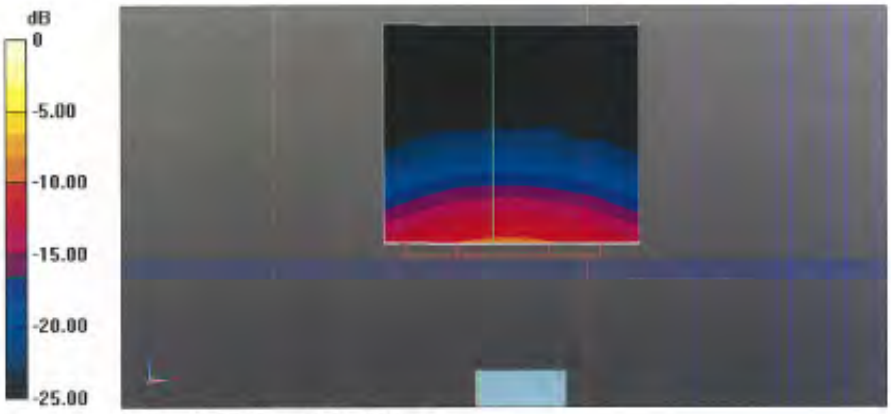
Dipole Calibration for Head Tissue/Pin=100mW, dist=10mm, f=5800 MHz/Zoom Scan, dist=1.4mm (8x8x7)/Cube 0: Measurement grid: dx=4mm, dy=4mm, dz=1.4mm
Reference Value = 70.15 V/m; Power Drift = 0.04 dB
Peak SAR (extrapolated) = 32.0 W/kg
SAR(1 g) = 7.78 W/kg; SAR(10 g) = 2.22 W/kg
Maximum value of SAR (measured) = 18.8 W/kg



0 dB = 18.8 W/kg = 12.74 dBW/kg

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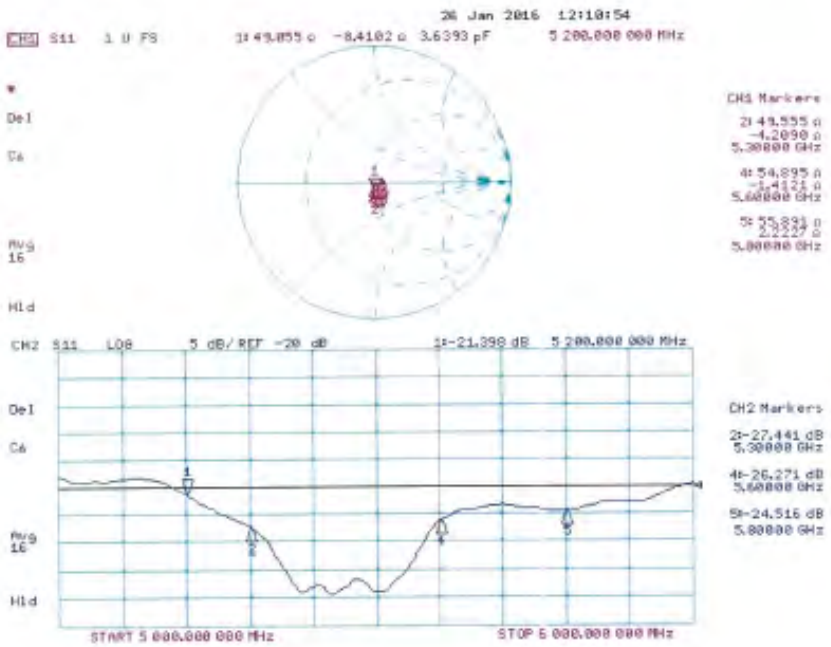
Impedance Measurement Plot for Head TSL



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DASY5 Validation Report for Body TSL

Date: 25.01.2016

Test Laboratory: SPEAG, Zurich, Switzerland

DUT: Dipole 5GHz; Type: D5GHzV2; Serial: D5GHzV2 - SN: 1023

Communication System: UID 0 - CW; Frequency: 5200 MHz, Frequency: 5300 MHz, Frequency: 5600 MHz, Frequency: 5800 MHz
Medium parameters used: f = 5200 MHz; σ = 5.37 S/m; ε_r = 47.1; ρ = 1000 kg/m^3 , Medium parameters used: f = 5300 MHz; σ = 5.5 S/m; ε_r = 46.9; ρ = 1000 kg/m^3 , Medium parameters used: f = 5600 MHz; σ = 5.91 S/m; ε_r = 46.4; ρ = 1000 kg/m^3 , Medium parameters used: f = 5800 MHz; σ = 6.19 S/m; ε_r = 46; ρ = 1000 kg/m^3
Phantom section: Flat Section
Measurement Standard: DASY5 (IEEE/IEC/ANSI C63.19-2011)

DASY52 Configuration:

- Probe: EX3DV4 - SN3503; ConvF(4.99, 4.99, 4.99); Calibrated: 31.12.2015, ConvF(4.75, 4.75, 4.75); Calibrated: 31.12.2015, ConvF(4.35, 4.35, 4.35); Calibrated: 31.12.2015, ConvF(4.27, 4.27, 4.27); Calibrated: 31.12.2015;
- Sensor-Surface: 1.4mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn601; Calibrated: 30.12.2015
- Phantom: Flat Phantom 5.0 (back); Type: QD000P50AA; Serial: 1002
- DASY52 52.8.8(1258); SEMCAD X 14.6.10(7372)

Dipole Calibration for Body Tissue/Pin=100mW, dist=10mm, f=5200 MHz/Zoom Scan, dist=1.4mm (8x8x7)/Cube 0: Measurement grid: dx=4mm, dy=4mm, dz=1.4mm
Reference Value = 66.72 V/m; Power Drift = -0.01 dB
Peak SAR (extrapolated) = 27.1 W/kg
SAR(1 g) = 7.25 W/kg; SAR(10 g) = 2.05 W/kg
Maximum value of SAR (measured) = 16.8 W/kg

Dipole Calibration for Body Tissue/Pin=100mW, dist=10mm, f=5300 MHz/Zoom Scan, dist=1.4mm (8x8x7)/Cube 0: Measurement grid: dx=4mm, dy=4mm, dz=1.4mm
Reference Value = 67.43 V/m; Power Drift = 0.02 dB
Peak SAR (extrapolated) = 29.1 W/kg
SAR(1 g) = 7.57 W/kg; SAR(10 g) = 2.14 W/kg
Maximum value of SAR (measured) = 17.7 W/kg

Dipole Calibration for Body Tissue/Pin=100mW, dist=10mm, f=5600 MHz/Zoom Scan, dist=1.4mm (8x8x7)/Cube 0: Measurement grid: dx=4mm, dy=4mm, dz=1.4mm
Reference Value = 67.67 V/m; Power Drift = -0.01 dB
Peak SAR (extrapolated) = 32.6 W/kg
SAR(1 g) = 7.89 W/kg; SAR(10 g) = 2.23 W/kg
Maximum value of SAR (measured) = 19.1 W/kg

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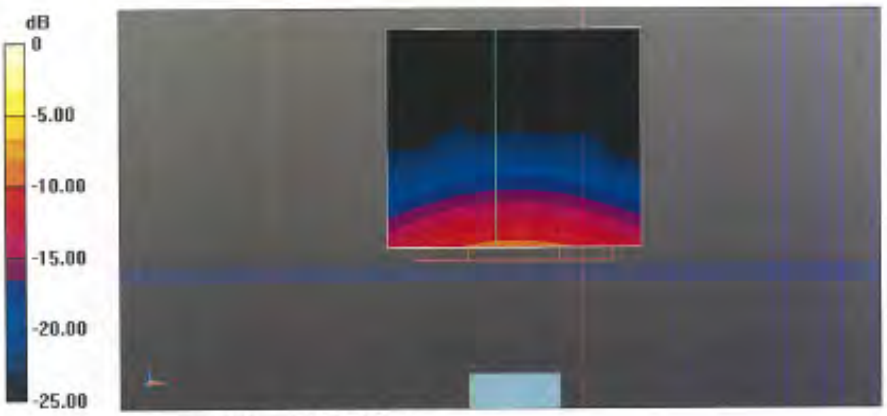
Dipole Calibration for Body Tissue/Pin=100mW, dist=10mm, f=5800 MHz/Zoom Scan, dist=1.4mm (8x8x7)/Cube 0: Measurement grid: dx=4mm, dy=4mm, dz=1.4mm
Reference Value = 65.76 V/m; Power Drift = -0.02 dB
Peak SAR (extrapolated) = 33.0 W/kg
SAR(1 g) = 7.59 W/kg; SAR(10 g) = 2.13 W/kg
Maximum value of SAR (measured) = 18.5 W/kg



0 dB = 18.5 W/kg = 12.67 dBW/kg

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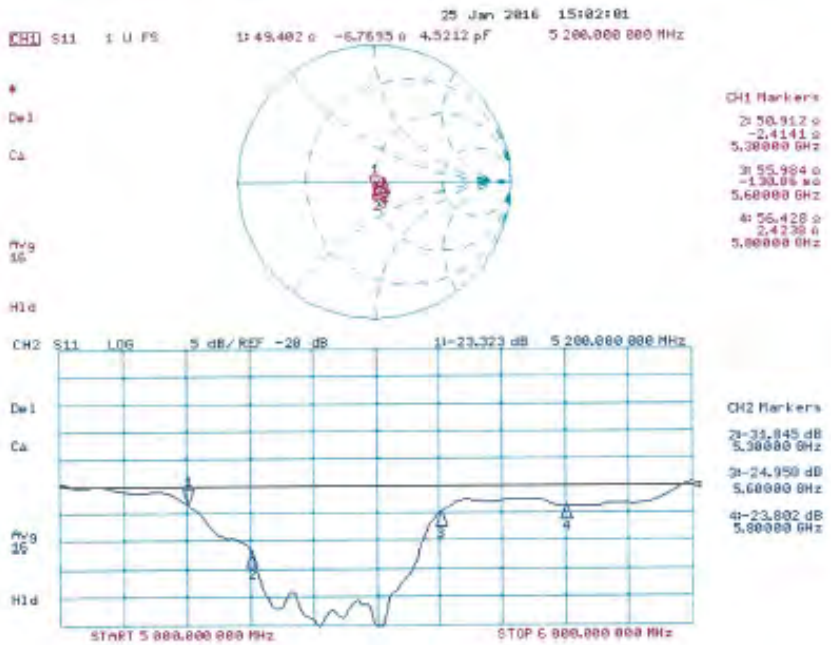
Impedance Measurement Plot for Body TSL



- End of 1st part of report -

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