SAR TEST REPORT

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

Equipment Under Test	Rugged Handheld Computer
Brand Name	Trimble
Model No.	121500
Company Name	Trimble Inc.
Company Address	345 SW Avery Ave, Corvallis, OR, United States
Standards	IEEE/ANSI C95.1-1992,IEEE 1528-2013, KDB865664D01v01r04,KDB865664D02v01r02, KDB447498D01v06,KDB248227D01v02r02, KDB941225D01v03r01,KDB941225D05v02r05, KDB941225D05Av01r02
FCC ID	S9E-EM7455
Date of Receipt	May. 09, 2018
Date of Test(s)	May. 23, 2018 ~ May. 25, 2018 May. 21, 2018 ~ May. 23, 2018
Date of Issue	Jun. 29, 2018

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

Clerk / Annie Chang	Asst. Supervisor / Afu Chen	Asst. Manager / John Yeh
Annie Chang	afu Chen	John Yeh

Date: Jun. 29, 2018

Revision History

Report Number	Revision	Description	Issue Date
EN/2018/50004	Rev.00	Initial creation of document	May. 31, 2018
EN/2018/50004	Rev.01	1st modification	Jun. 14, 2018
EN/2018/50004	Rev.02	2nd modification	Jun. 27, 2018
EN/2018/50004	Rev.03	3rd modification	Jun. 29, 2018

Contents

1. General Information

1.1 Testing Laboratory

SGS Taiwan Ltd. Electronics & Communication Laboratory	
1F, No. 8, Alley 15, Lane 120, Sec. 1, NeiHu Rd., NeiHu Dist., Taipei City, Taiwan, 11493.	
Tel	+886-2-2299-3279
Fax	+886-2-2298-0488
Internet	http://www.tw.sgs.com/

1.2 Details of Applicant

Company Name	Trimble Inc.
Company Address	345 SW Avery Ave, Corvallis, OR, United States

1.3 Description of EUT

Equipment Under Test	Rugged Handheld Computer		
Brand Name	Trimble		
Model No.	121500		
FCC ID	S9E-EM7455		
Mode of Operation	☒WCDMA ☒HSDPA ☒HSUPA ☒LTE FDD ☒LTE TDD ☒WLAN802.11 a/b/g/n(20M/40M)/ac(20M/40M/80M) ☒Bluetooth ☒HSPA+ ☒DC-HSDPA		
Duty Cycle	WCDMA	1	
	LTE FDD	1	
	LTE TDD	0.633	
	WLAN802.11 a/b/g/n(20M/40M)/ ac(20M/40M/80M)	1	
	Bluetooth	1	
TX Frequency Range (MHz)	WCDMA Band II	1850 –	1910
	WCDMA Band IV	1710 –	1755
	WCDMA Band V	824 –	849
	LTE FDD Band 2	1850 –	1910
	LTE FDD Band 4	1710 –	1755
	LTE FDD Band 5	824 –	849
	LTE FDD Band 7	2500 –	2570
	LTE FDD Band 12	699 –	716
	LTE FDD Band 13	777 –	787
	LTE FDD Band 25	1850 –	1915
	LTE FDD Band 26	814 –	849

TX Frequency Range (MHz)	LTE FDD Band 30	2305	–	2315
	LTE TDD Band 41	2496	–	2690
	WLAN802.11 b/g/n(20M)	2412	–	2462
	WLAN802.11 n(40M)	2422	–	2452
	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)	WCDMA Band II	9262	–	9538
	WCDMA Band IV	1312	–	1513
	WCDMA Band V	4132	–	4233
	LTE FDD Band 2	18607	–	19193
	LTE FDD Band 4	19957	–	20393
	LTE FDD Band 5	20407	–	20643
	LTE FDD Band 7	20775	–	21425
	LTE FDD Band 12	23017	–	23173
	LTE FDD Band 13	23205	–	23255

Channel Number (ARFCN)	LTE FDD Band 25	26047	–	26683
	LTE FDD Band 26	26697	–	27033
	LTE FDD Band 30	27685	–	27735
	LTE TDD Band 41	39675	–	41565
	WLAN802.11 b/g/n(20M)	1	–	11
	WLAN802.11 n(40M)	3	–	9
	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 (10g) (Unit: W/Kg)				
Band	Measured	Reported	Channel	Position
WCDMA Band II	2.57	3.24	9538	Right side
WCDMA Band IV	1.15	1.39	1513	Right side
WCDMA Band V	1.06	1.38	4132	Right side
LTE FDD Band 2	2.70	3.28	19100	Right side
LTE FDD Band 4	1.12	1.28	20300	Right side
LTE FDD Band 5	1.10	1.30	20525	Right side
LTE FDD Band 7	1.70	2.03	20850	Right side
LTE FDD Band 12	1.62	1.82	23130	Right side
LTE FDD Band 13	1.66	2.13	23230	Right side
LTE FDD Band 25	2.52	3.34	26590	Right side
LTE FDD Band 26	1.09	1.44	26825	Right side
LTE FDD Band 30	1.51	2.09	27710	Right side
LTE TDD Band 41	0.59	0.72	39750	Right side

Max. SAR (10g) (Unit: W/Kg)					
Antenna	Band	Measured	Reported	Channel	Position
Main	WLAN802.11 b	0.03	0.03	6	Bottom side
	Bluetooth (GFSK)	0.03	0.04	39	Left side
	WLAN 802.11a 5.2G	0.19	0.19	48	Back side
	WLAN802.11 a 5.3G	0.18	0.18	52	Back side
	WLAN802.11 a 5.6G	0.54	0.55	104	Left side
	WLAN802.11 a 5.8G	0.58	0.58	153	Back side
Aux	WLAN802.11 b	0.53	0.53	6	Right side
	WLAN 802.11a 5.2G	0.34	0.34	48	Right side
	WLAN802.11 a 5.3G	0.27	0.27	52	Right side
	WLAN802.11 a 5.6G	0.32	0.32	104	Right side
	WLAN802.11 a 5.8G	0.31	0.31	153	Right side

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

Unit: dBm

Band		WCDMA II		
TX Channel		9262	9400	9538
Frequency (MHz)		1852.4	1880	1907.6
Max. Rated Avg. Power+Max. Tolerance (dBm)		**24.00**		
3GPP Rel 99	RMC 12.2Kbps	23.44	23.10	23.00
3GPP Rel 5	HSDPA Subtest-1	22.40	22.06	21.98
	HSDPA Subtest-2	22.43	22.11	22.05
	HSDPA Subtest-3	21.89	21.58	21.52
	HSDPA Subtest-4	21.89	21.57	21.52
3GPP Rel 6	HSUPA Subtest-1	22.46	22.09	22.07
	HSUPA Subtest-2	21.89	21.53	21.50
	HSUPA Subtest-3	22.46	22.12	22.08
	HSUPA Subtest-4	22.41	22.07	21.98
	HSUPA Subtest-5	22.47	22.12	22.05
3GPP Rel 7	HSPA+ Subtest-1	22.43	22.11	22.01
3GPP Rel 8	DC-HSDPA Subtest-1	22.39	22.03	21.94
	DC-HSDPA Subtest-2	22.42	22.07	22.01
	DC-HSDPA Subtest-3	21.86	21.53	21.48
	DC-HSDPA Subtest-4	21.84	21.56	21.50

Band		WCDMA IV		
TX Channel		1312	1412	1513
Frequency (MHz)		1712.4	1732.4	1752.6
Max. Rated Avg. Power+Max. Tolerance (dBm)		**24.00**		
3GPP Rel 99	RMC 12.2Kbps	23.28	23.16	23.17
3GPP Rel 5	HSDPA Subtest-1	22.24	22.22	22.26
	HSDPA Subtest-2	22.26	22.28	22.30
	HSDPA Subtest-3	21.73	21.74	21.77
	HSDPA Subtest-4	21.71	21.73	21.76
3GPP Rel 6	HSUPA Subtest-1	22.31	22.33	22.32
	HSUPA Subtest-2	21.76	21.74	21.77
	HSUPA Subtest-3	22.32	22.33	22.36
	HSUPA Subtest-4	22.29	22.28	22.29
	HSUPA Subtest-5	22.32	22.34	22.35
3GPP Rel 7	HSPA+ Subtest-1	22.31	22.33	22.31
3GPP Rel 8	DC-HSDPA Subtest-1	22.20	22.20	22.25
	DC-HSDPA Subtest-2	22.24	22.27	22.26
	DC-HSDPA Subtest-3	21.71	21.71	21.75
	DC-HSDPA Subtest-4	21.68	21.70	21.73

Band		WCDMA V		
TX Channel		4132	4183	4233
Frequency (MHz)		826.4	836.6	846.6
Max. Rated Avg. Power+Max. Tolerance (dBm)		**24.00**		
3GPP Rel 99	RMC 12.2Kbps	22.86	22.83	22.88
3GPP Rel 5	HSDPA Subtest-1	21.85	21.78	21.81
	HSDPA Subtest-2	21.87	21.83	21.89
	HSDPA Subtest-3	21.30	21.30	21.36
	HSDPA Subtest-4	21.30	21.29	21.35
3GPP Rel 6	HSUPA Subtest-1	21.92	21.87	21.92
	HSUPA Subtest-2	21.36	21.30	21.34
	HSUPA Subtest-3	21.92	21.88	21.95
	HSUPA Subtest-4	21.89	21.82	21.85
	HSUPA Subtest-5	21.91	21.87	21.94
3GPP Rel 7	HSPA+ Subtest-1	21.87	21.86	21.92
3GPP Rel 8	DC-HSDPA Subtest-1	21.83	21.76	21.79
	DC-HSDPA Subtest-2	21.84	21.78	21.86
	DC-HSDPA Subtest-3	21.27	21.27	21.32
	DC-HSDPA Subtest-4	21.27	21.24	21.32

Sub-Test for 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

Sub-Test for 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 2 / Band 4 / Band 5 / Band 12 / Band 13 / Band 25 / Band 26 / Band 30 / 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	23.22	24	0
				1880	18900	23.19	24	0
				1900	19100	23.15	24	0
			50	1860	18700	23.19	24	0
				1880	18900	23.24	24	0
				1900	19100	23.16	24	0
			99	1860	18700	22.97	24	0
				1880	18900	23.03	24	0
				1900	19100	23.03	24	0
		50 RB	0	1860	18700	22.37	23	0-1
				1880	18900	22.13	23	0-1
				1900	19100	22.18	23	0-1
			25	1860	18700	22.28	23	0-1
				1880	18900	22.27	23	0-1
				1900	19100	22.22	23	0-1
			50	1860	18700	22.24	23	0-1
				1880	18900	22.23	23	0-1
				1900	19100	22.23	23	0-1
		100RB		1860	18700	22.22	23	0-1
				1880	18900	22.24	23	0-1
				1900	19100	22.23	23	0-1
	16-QAM	1 RB	0	1860	18700	22.33	23	0-1
				1880	18900	22.28	23	0-1
				1900	19100	22.24	23	0-1
			50	1860	18700	22.27	23	0-1
				1880	18900	22.16	23	0-1
				1900	19100	22.03	23	0-1
			99	1860	18700	22.21	23	0-1
				1880	18900	22.32	23	0-1
				1900	19100	22.34	23	0-1
		50 RB	0	1860	18700	21.32	22	0-2
				1880	18900	21.15	22	0-2
				1900	19100	21.13	22	0-2
			25	1860	18700	21.22	22	0-2
				1880	18900	21.31	22	0-2
				1900	19100	21.22	22	0-2
			50	1860	18700	21.12	22	0-2
				1880	18900	21.18	22	0-2
				1900	19100	21.27	22	0-2
		100RB		1860	18700	21.19	22	0-2
				1880	18900	21.21	22	0-2
				1900	19100	21.22	22	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	23.11	24	0
				1880	18900	23.06	24	0
				1902.5	19125	23.04	24	0
			36	1857.5	18675	22.98	24	0
				1880	18900	23.11	24	0
				1902.5	19125	22.99	24	0
			74	1857.5	18675	22.77	24	0
				1880	18900	22.81	24	0
				1902.5	19125	22.86	24	0
		36 RB	0	1857.5	18675	22.13	23	0-1
				1880	18900	21.92	23	0-1
				1902.5	19125	22.10	23	0-1
			18	1857.5	18675	22.10	23	0-1
				1880	18900	22.09	23	0-1
				1902.5	19125	22.12	23	0-1
			37	1857.5	18675	22.09	23	0-1
				1880	18900	22.07	23	0-1
				1902.5	19125	21.99	23	0-1
		75RB		1857.5	18675	22.05	23	0-1
				1880	18900	22.14	23	0-1
				1902.5	19125	22.02	23	0-1
	16-QAM	1 RB	0	1857.5	18675	22.18	23	0-1
				1880	18900	22.22	23	0-1
				1902.5	19125	22.11	23	0-1
			36	1857.5	18675	22.05	23	0-1
				1880	18900	21.96	23	0-1
				1902.5	19125	21.96	23	0-1
			74	1857.5	18675	22.12	23	0-1
				1880	18900	22.14	23	0-1
				1902.5	19125	22.23	23	0-1
		36 RB	0	1857.5	18675	21.14	22	0-2
				1880	18900	20.91	22	0-2
				1902.5	19125	21.00	22	0-2
			18	1857.5	18675	21.13	22	0-2
				1880	18900	21.15	22	0-2
				1902.5	19125	21.07	22	0-2
			37	1857.5	18675	21.02	22	0-2
				1880	18900	20.95	22	0-2
				1902.5	19125	21.03	22	0-2
		75RB		1857.5	18675	21.05	22	0-2
				1880	18900	21.16	22	0-2
				1902.5	19125	21.05	22	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	23.04	24	0
				1880	18900	22.87	24	0
				1905	19150	22.99	24	0
			25	1855	18650	22.93	24	0
				1880	18900	22.88	24	0
				1905	19150	22.76	24	0
			49	1855	18650	22.53	24	0
				1880	18900	22.59	24	0
				1905	19150	22.73	24	0
		25 RB	0	1855	18650	21.95	23	0-1
				1880	18900	21.84	23	0-1
				1905	19150	21.86	23	0-1
			12	1855	18650	21.93	23	0-1
				1880	18900	21.85	23	0-1
				1905	19150	21.91	23	0-1
			25	1855	18650	21.99	23	0-1
				1880	18900	21.87	23	0-1
				1905	19150	21.89	23	0-1
		50RB		1855	18650	21.96	23	0-1
				1880	18900	21.97	23	0-1
				1905	19150	21.97	23	0-1
	16-QAM	1 RB	0	1855	18650	22.07	23	0-1
				1880	18900	21.98	23	0-1
				1905	19150	22.00	23	0-1
			25	1855	18650	21.87	23	0-1
				1880	18900	21.82	23	0-1
				1905	19150	21.83	23	0-1
			49	1855	18650	21.93	23	0-1
				1880	18900	22.05	23	0-1
				1905	19150	22.15	23	0-1
		25 RB	0	1855	18650	21.09	22	0-2
				1880	18900	20.86	22	0-2
				1905	19150	20.78	22	0-2
			12	1855	18650	20.95	22	0-2
				1880	18900	21.08	22	0-2
				1905	19150	20.88	22	0-2
			25	1855	18650	20.85	22	0-2
				1880	18900	20.71	22	0-2
				1905	19150	20.90	22	0-2
		50RB		1855	18650	20.91	22	0-2
				1880	18900	21.02	22	0-2
				1905	19150	20.90	22	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	22.85	24	0
				1880	18900	22.66	24	0
				1907.5	19175	22.87	24	0
			12	1852.5	18625	22.78	24	0
				1880	18900	22.73	24	0
				1907.5	19175	22.63	24	0
			24	1852.5	18625	22.37	24	0
				1880	18900	22.46	24	0
				1907.5	19175	22.56	24	0
		12 RB	0	1852.5	18625	21.90	23	0-1
				1880	18900	21.64	23	0-1
				1907.5	19175	21.71	23	0-1
			6	1852.5	18625	21.70	23	0-1
				1880	18900	21.69	23	0-1
				1907.5	19175	21.79	23	0-1
			13	1852.5	18625	21.79	23	0-1
				1880	18900	21.67	23	0-1
				1907.5	19175	21.76	23	0-1
		25RB		1852.5	18625	21.87	23	0-1
				1880	18900	21.86	23	0-1
				1907.5	19175	21.80	23	0-1
	16-QAM	1 RB	0	1852.5	18625	21.90	23	0-1
				1880	18900	21.93	23	0-1
				1907.5	19175	21.91	23	0-1
			12	1852.5	18625	21.71	23	0-1
				1880	18900	21.63	23	0-1
				1907.5	19175	21.74	23	0-1
			24	1852.5	18625	21.70	23	0-1
				1880	18900	21.97	23	0-1
				1907.5	19175	22.03	23	0-1
		12 RB	0	1852.5	18625	21.02	22	0-2
				1880	18900	20.77	22	0-2
				1907.5	19175	20.72	22	0-2
			6	1852.5	18625	20.73	22	0-2
				1880	18900	20.87	22	0-2
				1907.5	19175	20.64	22	0-2
			13	1852.5	18625	20.75	22	0-2
				1880	18900	20.48	22	0-2
				1907.5	19175	20.73	22	0-2
		25RB		1852.5	18625	20.77	22	0-2
				1880	18900	20.93	22	0-2
				1907.5	19175	20.85	22	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	22.80	24	0
				1880	18900	22.45	24	0
				1908.5	19185	22.64	24	0
			7	1851.5	18615	22.63	24	0
				1880	18900	22.54	24	0
				1908.5	19185	22.56	24	0
			14	1851.5	18615	22.15	24	0
				1880	18900	22.25	24	0
				1908.5	19185	22.46	24	0
		8 RB	0	1851.5	18615	21.75	23	0-1
				1880	18900	21.42	23	0-1
				1908.5	19185	21.58	23	0-1
			4	1851.5	18615	21.58	23	0-1
				1880	18900	21.57	23	0-1
				1908.5	19185	21.55	23	0-1
			7	1851.5	18615	21.59	23	0-1
				1880	18900	21.49	23	0-1
				1908.5	19185	21.53	23	0-1
		15RB		1851.5	18615	21.82	23	0-1
				1880	18900	21.79	23	0-1
				1908.5	19185	21.67	23	0-1
	16-QAM	1 RB	0	1851.5	18615	21.67	23	0-1
				1880	18900	21.81	23	0-1
				1908.5	19185	21.75	23	0-1
			7	1851.5	18615	21.65	23	0-1
				1880	18900	21.49	23	0-1
				1908.5	19185	21.57	23	0-1
			14	1851.5	18615	21.58	23	0-1
				1880	18900	21.78	23	0-1
				1908.5	19185	21.98	23	0-1
		8 RB	0	1851.5	18615	20.94	22	0-2
				1880	18900	20.53	22	0-2
				1908.5	19185	20.67	22	0-2
			4	1851.5	18615	20.60	22	0-2
				1880	18900	20.81	22	0-2
				1908.5	19185	20.47	22	0-2
			7	1851.5	18615	20.54	22	0-2
				1880	18900	20.30	22	0-2
				1908.5	19185	20.58	22	0-2
		15RB		1851.5	18615	20.60	22	0-2
				1880	18900	20.86	22	0-2
				1908.5	19185	20.64	22	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	23.35	24	0
				1880	18900	23.11	24	0
				1909.3	19193	23.21	24	0
			2	1850.7	18607	23.27	24	0
				1880	18900	23.21	24	0
				1909.3	19193	23.35	24	0
			5	1850.7	18607	23.37	24	0
				1880	18900	23.19	24	0
				1909.3	19193	23.35	24	0
		3 RB	0	1850.7	18607	23.35	24	0
				1880	18900	23.15	24	0
				1909.3	19193	23.22	24	0
			2	1850.7	18607	23.42	24	0
				1880	18900	23.26	24	0
				1909.3	19193	23.32	24	0
			3	1850.7	18607	23.38	24	0
				1880	18900	23.17	24	0
				1909.3	19193	23.27	24	0
		6RB		1850.7	18607	22.33	23	0-1
				1880	18900	22.14	23	0-1
				1909.3	19193	22.17	23	0-1
	16-QAM	1 RB	0	1850.7	18607	22.72	23	0-1
				1880	18900	22.51	23	0-1
				1909.3	19193	22.53	23	0-1
			2	1850.7	18607	22.71	23	0-1
				1880	18900	22.46	23	0-1
				1909.3	19193	22.60	23	0-1
			5	1850.7	18607	22.60	23	0-1
				1880	18900	22.48	23	0-1
				1909.3	19193	22.51	23	0-1
		3 RB	0	1850.7	18607	22.40	23	0-1
				1880	18900	22.20	23	0-1
				1909.3	19193	22.27	23	0-1
			2	1850.7	18607	22.48	23	0-1
				1880	18900	22.30	23	0-1
				1909.3	19193	22.38	23	0-1
			3	1850.7	18607	22.41	23	0-1
				1880	18900	22.26	23	0-1
				1909.3	19193	22.35	23	0-1
		6RB		1850.7	18607	21.43	22	0-2
				1880	18900	21.22	22	0-2
				1909.3	19193	21.26	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)
20	QPSK	1 RB	0	1720	20050	23.38	24	0
				1732.5	20175	23.37	24	0
				1745	20300	23.24	24	0
			50	1720	20050	23.59	24	0
				1732.5	20175	23.32	24	0
				1745	20300	23.41	24	0
			99	1720	20050	23.36	24	0
				1732.5	20175	23.12	24	0
				1745	20300	23.12	24	0
		50 RB	0	1720	20050	22.54	23	0-1
				1732.5	20175	22.43	23	0-1
				1745	20300	22.43	23	0-1
			25	1720	20050	22.52	23	0-1
				1732.5	20175	22.49	23	0-1
				1745	20300	22.47	23	0-1
			50	1720	20050	22.43	23	0-1
				1732.5	20175	22.48	23	0-1
				1745	20300	22.45	23	0-1
		100RB		1720	20050	22.47	23	0-1
				1732.5	20175	22.40	23	0-1
				1745	20300	22.33	23	0-1
	16-QAM	1 RB	0	1720	20050	22.78	23	0-1
				1732.5	20175	22.58	23	0-1
				1745	20300	22.98	23	0-1
			50	1720	20050	22.75	23	0-1
				1732.5	20175	22.62	23	0-1
				1745	20300	22.67	23	0-1
			99	1720	20050	22.77	23	0-1
				1732.5	20175	22.06	23	0-1
				1745	20300	22.25	23	0-1
		50 RB	0	1720	20050	21.44	22	0-2
				1732.5	20175	21.44	22	0-2
				1745	20300	21.49	22	0-2
			25	1720	20050	21.54	22	0-2
				1732.5	20175	21.46	22	0-2
				1745	20300	21.51	22	0-2
			50	1720	20050	21.35	22	0-2
				1732.5	20175	21.38	22	0-2
				1745	20300	21.33	22	0-2
		100RB		1720	20050	21.48	22	0-2
				1732.5	20175	21.44	22	0-2
				1745	20300	21.38	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	23.25	24	0
				1732.5	20175	23.17	24	0
				1747.5	20325	23.06	24	0
			36	1717.5	20025	23.39	24	0
				1732.5	20175	23.17	24	0
				1747.5	20325	23.17	24	0
			74	1717.5	20025	23.13	24	0
				1732.5	20175	22.95	24	0
				1747.5	20325	22.97	24	0
		36 RB	0	1717.5	20025	22.35	23	0-1
				1732.5	20175	22.29	23	0-1
				1747.5	20325	22.38	23	0-1
			18	1717.5	20025	22.47	23	0-1
				1732.5	20175	22.42	23	0-1
				1747.5	20325	22.41	23	0-1
			37	1717.5	20025	22.35	23	0-1
				1732.5	20175	22.28	23	0-1
				1747.5	20325	22.28	23	0-1
		75RB		1717.5	20025	22.32	23	0-1
				1732.5	20175	22.35	23	0-1
				1747.5	20325	22.18	23	0-1
	16-QAM	1 RB	0	1717.5	20025	22.72	23	0-1
				1732.5	20175	22.47	23	0-1
				1747.5	20325	22.86	23	0-1
			36	1717.5	20025	22.56	23	0-1
				1732.5	20175	22.55	23	0-1
				1747.5	20325	22.46	23	0-1
			74	1717.5	20025	22.71	23	0-1
				1732.5	20175	21.95	23	0-1
				1747.5	20325	22.18	23	0-1
		36 RB	0	1717.5	20025	21.34	22	0-2
				1732.5	20175	21.29	22	0-2
				1747.5	20325	21.42	22	0-2
			18	1717.5	20025	21.45	22	0-2
				1732.5	20175	21.26	22	0-2
				1747.5	20325	21.44	22	0-2
			37	1717.5	20025	21.16	22	0-2
				1732.5	20175	21.25	22	0-2
				1747.5	20325	21.18	22	0-2
		75RB		1717.5	20025	21.29	22	0-2
				1732.5	20175	21.32	22	0-2
				1747.5	20325	21.33	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	23.16	24	0
				1732.5	20175	23.02	24	0
				1750	20350	22.97	24	0
			25	1715	20000	23.17	24	0
				1732.5	20175	22.95	24	0
				1750	20350	23.11	24	0
			49	1715	20000	23.03	24	0
				1732.5	20175	22.74	24	0
				1750	20350	22.92	24	0
		25 RB	0	1715	20000	22.28	23	0-1
				1732.5	20175	22.19	23	0-1
				1750	20350	22.14	23	0-1
			12	1715	20000	22.35	23	0-1
				1732.5	20175	22.25	23	0-1
				1750	20350	22.30	23	0-1
			25	1715	20000	22.24	23	0-1
				1732.5	20175	22.08	23	0-1
				1750	20350	22.17	23	0-1
		50RB		1715	20000	22.19	23	0-1
				1732.5	20175	22.21	23	0-1
				1750	20350	22.11	23	0-1
	16-QAM	1 RB	0	1715	20000	22.61	23	0-1
				1732.5	20175	22.42	23	0-1
				1750	20350	22.74	23	0-1
			25	1715	20000	22.43	23	0-1
				1732.5	20175	22.33	23	0-1
				1750	20350	22.29	23	0-1
			49	1715	20000	22.59	23	0-1
				1732.5	20175	21.82	23	0-1
				1750	20350	21.95	23	0-1
		25 RB	0	1715	20000	21.17	22	0-2
				1732.5	20175	21.24	22	0-2
				1750	20350	21.24	22	0-2
			12	1715	20000	21.24	22	0-2
				1732.5	20175	21.02	22	0-2
				1750	20350	21.26	22	0-2
			25	1715	20000	20.99	22	0-2
				1732.5	20175	21.15	22	0-2
				1750	20350	21.07	22	0-2
		50RB		1715	20000	21.10	22	0-2
				1732.5	20175	21.14	22	0-2
				1750	20350	21.10	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	22.94	24	0
				1732.5	20175	22.87	24	0
				1752.5	20375	22.78	24	0
			12	1712.5	19975	23.01	24	0
				1732.5	20175	22.86	24	0
				1752.5	20375	22.97	24	0
			24	1712.5	19975	22.97	24	0
				1732.5	20175	22.65	24	0
				1752.5	20375	22.70	24	0
		12 RB	0	1712.5	19975	22.17	23	0-1
				1732.5	20175	22.14	23	0-1
				1752.5	20375	22.02	23	0-1
			6	1712.5	19975	22.12	23	0-1
				1732.5	20175	22.02	23	0-1
				1752.5	20375	22.22	23	0-1
			13	1712.5	19975	22.13	23	0-1
				1732.5	20175	21.93	23	0-1
				1752.5	20375	22.00	23	0-1
		25RB		1712.5	19975	22.08	23	0-1
				1732.5	20175	22.12	23	0-1
				1752.5	20375	21.98	23	0-1
	16-QAM	1 RB	0	1712.5	19975	22.56	23	0-1
				1732.5	20175	22.20	23	0-1
				1752.5	20375	22.52	23	0-1
			12	1712.5	19975	22.36	23	0-1
				1732.5	20175	22.11	23	0-1
				1752.5	20375	22.09	23	0-1
			24	1712.5	19975	22.48	23	0-1
				1732.5	20175	21.77	23	0-1
				1752.5	20375	21.84	23	0-1
		12 RB	0	1712.5	19975	20.96	22	0-2
				1732.5	20175	21.06	22	0-2
				1752.5	20375	21.11	22	0-2
			6	1712.5	19975	21.16	22	0-2
				1732.5	20175	20.93	22	0-2
				1752.5	20375	21.02	22	0-2
			13	1712.5	19975	20.93	22	0-2
				1732.5	20175	20.91	22	0-2
				1752.5	20375	20.96	22	0-2
		25RB		1712.5	19975	20.89	22	0-2
				1732.5	20175	21.08	22	0-2
				1752.5	20375	21.04	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	22.71	24	0
				1732.5	20175	22.78	24	0
				1753.5	20385	22.60	24	0
			7	1711.5	19965	22.96	24	0
				1732.5	20175	22.66	24	0
				1753.5	20385	22.83	24	0
			14	1711.5	19965	22.85	24	0
				1732.5	20175	22.47	24	0
				1753.5	20385	22.50	24	0
		8 RB	0	1711.5	19965	21.93	23	0-1
				1732.5	20175	22.07	23	0-1
				1753.5	20385	21.94	23	0-1
			4	1711.5	19965	22.01	23	0-1
				1732.5	20175	21.86	23	0-1
				1753.5	20385	22.16	23	0-1
			7	1711.5	19965	22.02	23	0-1
				1732.5	20175	21.81	23	0-1
				1753.5	20385	21.79	23	0-1
		15RB		1711.5	19965	21.98	23	0-1
				1732.5	20175	21.95	23	0-1
				1753.5	20385	21.87	23	0-1
	16-QAM	1 RB	0	1711.5	19965	22.45	23	0-1
				1732.5	20175	21.98	23	0-1
				1753.5	20385	22.31	23	0-1
			7	1711.5	19965	22.26	23	0-1
				1732.5	20175	21.90	23	0-1
				1753.5	20385	21.90	23	0-1
			14	1711.5	19965	22.29	23	0-1
				1732.5	20175	21.56	23	0-1
				1753.5	20385	21.74	23	0-1
		8 RB	0	1711.5	19965	20.87	22	0-2
				1732.5	20175	21.01	22	0-2
				1753.5	20385	21.04	22	0-2
			4	1711.5	19965	20.96	22	0-2
				1732.5	20175	20.73	22	0-2
				1753.5	20385	20.92	22	0-2
			7	1711.5	19965	20.81	22	0-2
				1732.5	20175	20.67	22	0-2
				1753.5	20385	20.82	22	0-2
		15RB		1711.5	19965	20.66	22	0-2
				1732.5	20175	21.03	22	0-2
				1753.5	20385	20.94	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	23.24	24	0
				1732.5	20175	23.21	24	0
				1754.3	20393	23.28	24	0
			2	1710.7	19957	22.94	24	0
				1732.5	20175	23.12	24	0
				1754.3	20393	23.18	24	0
			5	1710.7	19957	23.26	24	0
				1732.5	20175	23.12	24	0
				1754.3	20393	23.00	24	0
		3 RB	0	1710.7	19957	23.08	24	0
				1732.5	20175	23.28	24	0
				1754.3	20393	23.32	24	0
			2	1710.7	19957	23.30	24	0
				1732.5	20175	23.19	24	0
				1754.3	20393	23.11	24	0
			3	1710.7	19957	23.12	24	0
				1732.5	20175	23.33	24	0
				1754.3	20393	23.27	24	0
		6RB		1710.7	19957	22.30	23	0-1
				1732.5	20175	22.27	23	0-1
				1754.3	20393	22.40	23	0-1
	16-QAM	1 RB	0	1710.7	19957	22.51	23	0-1
				1732.5	20175	22.81	23	0-1
				1754.3	20393	22.19	23	0-1
			2	1710.7	19957	22.56	23	0-1
				1732.5	20175	22.66	23	0-1
				1754.3	20393	22.27	23	0-1
			5	1710.7	19957	22.34	23	0-1
				1732.5	20175	22.89	23	0-1
				1754.3	20393	22.43	23	0-1
		3 RB	0	1710.7	19957	22.41	23	0-1
				1732.5	20175	22.33	23	0-1
				1754.3	20393	22.51	23	0-1
			2	1710.7	19957	22.70	23	0-1
				1732.5	20175	22.29	23	0-1
				1754.3	20393	22.47	23	0-1
			3	1710.7	19957	22.50	23	0-1
				1732.5	20175	22.44	23	0-1
				1754.3	20393	22.49	23	0-1
		6RB		1710.7	19957	21.40	22	0-2
				1732.5	20175	21.32	22	0-2
				1754.3	20393	21.39	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	23.10	24	0
				836.5	20525	23.05	24	0
				844	20600	23.04	24	0
			25	829	20450	23.14	24	0
				836.5	20525	23.27	24	0
				844	20600	23.20	24	0
			49	829	20450	22.90	24	0
				836.5	20525	23.12	24	0
				844	20600	23.09	24	0
		25 RB	0	829	20450	21.92	23	0-1
				836.5	20525	21.99	23	0-1
				844	20600	21.89	23	0-1
			12	829	20450	22.02	23	0-1
				836.5	20525	22.15	23	0-1
				844	20600	21.97	23	0-1
			25	829	20450	21.86	23	0-1
				836.5	20525	22.01	23	0-1
				844	20600	22.03	23	0-1
		50RB		829	20450	21.91	23	0-1
				836.5	20525	22.02	23	0-1
				844	20600	21.95	23	0-1
	16-QAM	1 RB	0	829	20450	22.46	23	0-1
				836.5	20525	22.35	23	0-1
				844	20600	22.40	23	0-1
			25	829	20450	22.33	23	0-1
				836.5	20525	22.53	23	0-1
				844	20600	22.46	23	0-1
			49	829	20450	22.13	23	0-1
				836.5	20525	22.36	23	0-1
				844	20600	22.28	23	0-1
		25 RB	0	829	20450	21.00	22	0-2
				836.5	20525	21.00	22	0-2
				844	20600	20.94	22	0-2
			12	829	20450	21.01	22	0-2
				836.5	20525	21.15	22	0-2
				844	20600	20.97	22	0-2
			25	829	20450	20.90	22	0-2
				836.5	20525	21.05	22	0-2
				844	20600	21.06	22	0-2
		500RB		829	20450	20.94	22	0-2
				836.5	20525	21.03	22	0-2
				844	20600	20.98	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	22.88	24	0
				836.5	20525	22.86	24	0
				846.5	20625	22.95	24	0
			12	826.5	20425	22.92	24	0
				836.5	20525	23.19	24	0
				846.5	20625	23.01	24	0
			24	826.5	20425	22.74	24	0
				836.5	20525	23.04	24	0
				846.5	20625	22.94	24	0
		12 RB	0	826.5	20425	21.69	23	0-1
				836.5	20525	21.93	23	0-1
				846.5	20625	21.80	23	0-1
			6	826.5	20425	21.84	23	0-1
				836.5	20525	21.98	23	0-1
				846.5	20625	21.81	23	0-1
			13	826.5	20425	21.62	23	0-1
				836.5	20525	21.93	23	0-1
				846.5	20625	21.87	23	0-1
		25RB		826.5	20425	21.84	23	0-1
				836.5	20525	21.95	23	0-1
				846.5	20625	21.83	23	0-1
	16-QAM	1 RB	0	826.5	20425	22.37	23	0-1
				836.5	20525	22.26	23	0-1
				846.5	20625	22.26	23	0-1
			12	826.5	20425	22.09	23	0-1
				836.5	20525	22.32	23	0-1
				846.5	20625	22.23	23	0-1
			24	826.5	20425	21.90	23	0-1
				836.5	20525	22.12	23	0-1
				846.5	20625	22.12	23	0-1
		12 RB	0	826.5	20425	20.89	22	0-2
				836.5	20525	20.90	22	0-2
				846.5	20625	20.80	22	0-2
			6	826.5	20425	20.93	22	0-2
				836.5	20525	21.04	22	0-2
				846.5	20625	20.75	22	0-2
			13	826.5	20425	20.82	22	0-2
				836.5	20525	20.96	22	0-2
				846.5	20625	20.83	22	0-2
		25RB		826.5	20425	20.71	22	0-2
				836.5	20525	20.94	22	0-2
				846.5	20625	20.92	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	22.64	24	0
				836.5	20525	22.63	24	0
				847.5	20635	22.81	24	0
			7	825.5	20415	22.81	24	0
				836.5	20525	23.07	24	0
				847.5	20635	22.79	24	0
			14	825.5	20415	22.64	24	0
				836.5	20525	22.86	24	0
				847.5	20635	22.87	24	0
		8 RB	0	825.5	20415	21.64	23	0-1
				836.5	20525	21.72	23	0-1
				847.5	20635	21.70	23	0-1
			4	825.5	20415	21.79	23	0-1
				836.5	20525	21.83	23	0-1
				847.5	20635	21.69	23	0-1
			7	825.5	20415	21.44	23	0-1
				836.5	20525	21.69	23	0-1
				847.5	20635	21.64	23	0-1
		15RB		825.5	20415	21.67	23	0-1
				836.5	20525	21.81	23	0-1
				847.5	20635	21.59	23	0-1
	16-QAM	1 RB	0	825.5	20415	22.26	23	0-1
				836.5	20525	22.02	23	0-1
				847.5	20635	22.11	23	0-1
			7	825.5	20415	21.93	23	0-1
				836.5	20525	22.27	23	0-1
				847.5	20635	22.07	23	0-1
			14	825.5	20415	21.76	23	0-1
				836.5	20525	21.92	23	0-1
				847.5	20635	22.01	23	0-1
		8 RB	0	825.5	20415	20.83	22	0-2
				836.5	20525	20.74	22	0-2
				847.5	20635	20.72	22	0-2
			4	825.5	20415	20.72	22	0-2
				836.5	20525	20.93	22	0-2
				847.5	20635	20.56	22	0-2
			7	825.5	20415	20.58	22	0-2
				836.5	20525	20.74	22	0-2
				847.5	20635	20.75	22	0-2
		15RB		825.5	20415	20.60	22	0-2
				836.5	20525	20.72	22	0-2
				847.5	20635	20.75	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	23.19	24	0
				836.5	20525	23.18	24	0
				848.3	20643	23.14	24	0
			2	824.7	20407	23.11	24	0
				836.5	20525	23.25	24	0
				848.3	20643	23.16	24	0
			5	824.7	20407	23.19	24	0
				836.5	20525	23.14	24	0
				848.3	20643	23.10	24	0
		3 RB	0	824.7	20407	23.17	24	0
				836.5	20525	23.04	24	0
				848.3	20643	23.06	24	0
			2	824.7	20407	23.21	24	0
				836.5	20525	23.19	24	0
				848.3	20643	23.14	24	0
			3	824.7	20407	23.17	24	0
				836.5	20525	23.06	24	0
				848.3	20643	23.11	24	0
		6RB		824.7	20407	22.04	23	0-1
				836.5	20525	22.02	23	0-1
				848.3	20643	22.00	23	0-1
	16-QAM	1 RB	0	824.7	20407	22.51	23	0-1
				836.5	20525	22.43	23	0-1
				848.3	20643	22.37	23	0-1
			2	824.7	20407	22.41	23	0-1
				836.5	20525	22.38	23	0-1
				848.3	20643	22.37	23	0-1
			5	824.7	20407	22.49	23	0-1
				836.5	20525	22.50	23	0-1
				848.3	20643	22.36	23	0-1
		3 RB	0	824.7	20407	22.15	23	0-1
				836.5	20525	22.04	23	0-1
				848.3	20643	22.05	23	0-1
			2	824.7	20407	22.24	23	0-1
				836.5	20525	22.17	23	0-1
				848.3	20643	22.20	23	0-1
			3	824.7	20407	22.17	23	0-1
				836.5	20525	22.09	23	0-1
				848.3	20643	22.11	23	0-1
		6RB		824.7	20407	21.17	22	0-2
				836.5	20525	21.14	22	0-2
				848.3	20643	21.12	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	21.87	23	0
				2535	21100	22.14	23	0
				2560	21350	21.87	23	0
			50	2510	20850	22.18	23	0
				2535	21100	22.40	23	0
				2560	21350	22.07	23	0
			99	2510	20850	22.22	23	0
				2535	21100	22.17	23	0
				2560	21350	22.01	23	0
		50 RB	0	2510	20850	21.21	22	0-1
				2535	21100	21.31	22	0-1
				2560	21350	20.86	22	0-1
			25	2510	20850	21.26	22	0-1
				2535	21100	21.38	22	0-1
				2560	21350	20.96	22	0-1
			50	2510	20850	21.32	22	0-1
				2535	21100	21.35	22	0-1
				2560	21350	21.03	22	0-1
		100RB		2510	20850	21.18	22	0-1
				2535	21100	21.30	22	0-1
				2560	21350	21.03	22	0-1
	16-QAM	1 RB	0	2510	20850	21.12	22	0-1
				2535	21100	21.63	22	0-1
				2560	21350	21.09	22	0-1
			50	2510	20850	21.60	22	0-1
				2535	21100	21.47	22	0-1
				2560	21350	21.14	22	0-1
			99	2510	20850	21.73	22	0-1
				2535	21100	21.44	22	0-1
				2560	21350	21.37	22	0-1
		50 RB	0	2510	20850	20.24	21	0-2
				2535	21100	20.29	21	0-2
				2560	21350	19.95	21	0-2
			25	2510	20850	20.26	21	0-2
				2535	21100	20.38	21	0-2
				2560	21350	20.03	21	0-2
			50	2510	20850	20.24	21	0-2
				2535	21100	20.38	21	0-2
				2560	21350	20.15	21	0-2
		100RB		2510	20850	20.20	21	0-2
				2535	21100	20.33	21	0-2
				2560	21350	20.12	21	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	21.77	23	0
				2535	21100	22.04	23	0
				2562.5	21375	21.63	23	0
			36	2507.5	20825	22.11	23	0
				2535	21100	22.23	23	0
				2562.5	21375	21.95	23	0
			74	2507.5	20825	22.15	23	0
				2535	21100	21.96	23	0
				2562.5	21375	21.86	23	0
		36 RB	0	2507.5	20825	21.03	22	0-1
				2535	21100	21.15	22	0-1
				2562.5	21375	20.65	22	0-1
			18	2507.5	20825	21.04	22	0-1
				2535	21100	21.21	22	0-1
				2562.5	21375	20.77	22	0-1
			37	2507.5	20825	21.11	22	0-1
				2535	21100	21.15	22	0-1
				2562.5	21375	20.81	22	0-1
		75RB		2507.5	20825	20.99	22	0-1
				2535	21100	21.14	22	0-1
				2562.5	21375	20.79	22	0-1
	16-QAM	1 RB	0	2507.5	20825	20.99	22	0-1
				2535	21100	21.47	22	0-1
				2562.5	21375	20.92	22	0-1
			36	2507.5	20825	21.35	22	0-1
				2535	21100	21.23	22	0-1
				2562.5	21375	20.90	22	0-1
			74	2507.5	20825	21.67	22	0-1
				2535	21100	21.20	22	0-1
				2562.5	21375	21.12	22	0-1
		36 RB	0	2507.5	20825	20.13	21	0-2
				2535	21100	20.09	21	0-2
				2562.5	21375	19.85	21	0-2
			18	2507.5	20825	20.01	21	0-2
				2535	21100	20.18	21	0-2
				2562.5	21375	19.89	21	0-2
			37	2507.5	20825	20.06	21	0-2
				2535	21100	20.21	21	0-2
				2562.5	21375	19.95	21	0-2
		75RB		2507.5	20825	19.99	21	0-2
				2535	21100	20.21	21	0-2
				2562.5	21375	20.05	21	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	21.70	23	0
				2535	21100	21.79	23	0
				2565	21400	21.39	23	0
			25	2505	20800	21.95	23	0
				2535	21100	22.04	23	0
				2565	21400	21.85	23	0
			49	2505	20800	21.95	23	0
				2535	21100	21.88	23	0
				2565	21400	21.73	23	0
		25 RB	0	2505	20800	20.84	22	0-1
				2535	21100	21.08	22	0-1
				2565	21400	20.51	22	0-1
			12	2505	20800	20.83	22	0-1
				2535	21100	21.13	22	0-1
				2565	21400	20.59	22	0-1
			25	2505	20800	20.88	22	0-1
				2535	21100	21.08	22	0-1
				2565	21400	20.64	22	0-1
		50RB		2505	20800	20.81	22	0-1
				2535	21100	20.98	22	0-1
				2565	21400	20.71	22	0-1
	16-QAM	1 RB	0	2505	20800	20.76	22	0-1
				2535	21100	21.24	22	0-1
				2565	21400	20.84	22	0-1
			25	2505	20800	21.12	22	0-1
				2535	21100	21.03	22	0-1
				2565	21400	20.75	22	0-1
			49	2505	20800	21.47	22	0-1
				2535	21100	21.04	22	0-1
				2565	21400	20.96	22	0-1
		25 RB	0	2505	20800	19.96	21	0-2
				2535	21100	19.87	21	0-2
				2565	21400	19.75	21	0-2
			12	2505	20800	19.89	21	0-2
				2535	21100	19.98	21	0-2
				2565	21400	19.82	21	0-2
			25	2505	20800	19.91	21	0-2
				2535	21100	19.99	21	0-2
				2565	21400	19.81	21	0-2
		50RB		2505	20800	19.91	21	0-2
				2535	21100	20.05	21	0-2
				2565	21400	19.89	21	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	21.48	23	0
				2535	21100	21.69	23	0
				2567.5	21425	21.24	23	0
			12	2502.5	20775	21.84	23	0
				2535	21100	21.95	23	0
				2567.5	21425	21.62	23	0
			24	2502.5	20775	21.72	23	0
				2535	21100	21.71	23	0
				2567.5	21425	21.50	23	0
		12 RB	0	2502.5	20775	20.73	22	0-1
				2535	21100	21.02	22	0-1
				2567.5	21425	20.29	22	0-1
			6	2502.5	20775	20.68	22	0-1
				2535	21100	20.93	22	0-1
				2567.5	21425	20.35	22	0-1
			13	2502.5	20775	20.69	22	0-1
				2535	21100	20.91	22	0-1
				2567.5	21425	20.39	22	0-1
		25RB		2502.5	20775	20.70	22	0-1
				2535	21100	20.79	22	0-1
				2567.5	21425	20.58	22	0-1
	16-QAM	1 RB	0	2502.5	20775	20.62	22	0-1
				2535	21100	21.11	22	0-1
				2567.5	21425	20.69	22	0-1
			12	2502.5	20775	21.03	22	0-1
				2535	21100	20.93	22	0-1
				2567.5	21425	20.62	22	0-1
			24	2502.5	20775	21.39	22	0-1
				2535	21100	20.87	22	0-1
				2567.5	21425	20.77	22	0-1
		12 RB	0	2502.5	20775	19.80	21	0-2
				2535	21100	19.69	21	0-2
				2567.5	21425	19.53	21	0-2
			6	2502.5	20775	19.81	21	0-2
				2535	21100	19.82	21	0-2
				2567.5	21425	19.69	21	0-2
			13	2502.5	20775	19.78	21	0-2
				2535	21100	19.76	21	0-2
				2567.5	21425	19.63	21	0-2
		25RB		2502.5	20775	19.77	21	0-2
				2535	21100	19.94	21	0-2
				2567.5	21425	19.80	21	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	23.64	24	0
				707.5	23095	23.45	24	0
				711	23130	23.42	24	0
			25	704	23060	23.76	24	0
				707.5	23095	23.60	24	0
				711	23130	23.49	24	0
			49	704	23060	23.50	24	0
				707.5	23095	23.51	24	0
				711	23130	23.18	24	0
		25 RB	0	704	23060	22.59	23	0-1
				707.5	23095	22.41	23	0-1
				711	23130	22.34	23	0-1
			12	704	23060	22.58	23	0-1
				707.5	23095	22.49	23	0-1
				711	23130	22.34	23	0-1
			25	704	23060	22.45	23	0-1
				707.5	23095	22.39	23	0-1
				711	23130	22.40	23	0-1
		50RB		704	23060	22.54	23	0-1
				707.5	23095	22.42	23	0-1
				711	23130	22.42	23	0-1
	16-QAM	1 RB	0	704	23060	22.79	23	0-1
				707.5	23095	22.81	23	0-1
				711	23130	22.69	23	0-1
			25	704	23060	22.98	23	0-1
				707.5	23095	22.96	23	0-1
				711	23130	22.74	23	0-1
			49	704	23060	22.81	23	0-1
				707.5	23095	22.71	23	0-1
				711	23130	22.48	23	0-1
		25 RB	0	704	23060	21.62	22	0-2
				707.5	23095	21.42	22	0-2
				711	23130	21.36	22	0-2
			12	704	23060	21.58	22	0-2
				707.5	23095	21.44	22	0-2
				711	23130	21.33	22	0-2
			25	704	23060	21.43	22	0-2
				707.5	23095	21.38	22	0-2
				711	23130	21.40	22	0-2
		50RB		704	23060	21.51	22	0-2
				707.5	23095	21.38	22	0-2
				711	23130	21.39	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	23.44	24	0
				707.5	23095	23.26	24	0
				713.5	23155	23.30	24	0
			12	701.5	23035	23.55	24	0
				707.5	23095	23.54	24	0
				713.5	23155	23.32	24	0
			24	701.5	23035	23.41	24	0
				707.5	23095	23.45	24	0
				713.5	23155	23.08	24	0
		12 RB	0	701.5	23035	22.43	23	0-1
				707.5	23095	22.21	23	0-1
				713.5	23155	22.09	23	0-1
			6	701.5	23035	22.40	23	0-1
				707.5	23095	22.39	23	0-1
				713.5	23155	22.27	23	0-1
			13	701.5	23035	22.30	23	0-1
				707.5	23095	22.29	23	0-1
				713.5	23155	22.31	23	0-1
		25RB		701.5	23035	22.33	23	0-1
				707.5	23095	22.22	23	0-1
				713.5	23155	22.32	23	0-1
	16-QAM	1 RB	0	701.5	23035	22.60	23	0-1
				707.5	23095	22.69	23	0-1
				713.5	23155	22.44	23	0-1
			12	701.5	23035	22.78	23	0-1
				707.5	23095	22.83	23	0-1
				713.5	23155	22.51	23	0-1
			24	701.5	23035	22.57	23	0-1
				707.5	23095	22.57	23	0-1
				713.5	23155	22.39	23	0-1
		12 RB	0	701.5	23035	21.39	22	0-2
				707.5	23095	21.34	22	0-2
				713.5	23155	21.22	22	0-2
			6	701.5	23035	21.45	22	0-2
				707.5	23095	21.27	22	0-2
				713.5	23155	21.11	22	0-2
			13	701.5	23035	21.26	22	0-2
				707.5	23095	21.16	22	0-2
				713.5	23155	21.17	22	0-2
		25RB		701.5	23035	21.34	22	0-2
				707.5	23095	21.24	22	0-2
				713.5	23155	21.33	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	23.27	24	0
				707.5	23095	23.10	24	0
				714.5	23165	23.22	24	0
			7	700.5	23025	23.49	24	0
				707.5	23095	23.38	24	0
				714.5	23165	23.22	24	0
			14	700.5	23025	23.22	24	0
				707.5	23095	23.33	24	0
				714.5	23165	22.85	24	0
		8 RB	0	700.5	23025	22.25	23	0-1
				707.5	23095	22.15	23	0-1
				714.5	23165	22.00	23	0-1
			4	700.5	23025	22.22	23	0-1
				707.5	23095	22.20	23	0-1
				714.5	23165	22.06	23	0-1
			7	700.5	23025	22.23	23	0-1
				707.5	23095	22.10	23	0-1
				714.5	23165	22.08	23	0-1
		15RB		700.5	23025	22.24	23	0-1
				707.5	23095	22.13	23	0-1
				714.5	23165	22.13	23	0-1
	16-QAM	1 RB	0	700.5	23025	22.53	23	0-1
				707.5	23095	22.48	23	0-1
				714.5	23165	22.20	23	0-1
			7	700.5	23025	22.68	23	0-1
				707.5	23095	22.75	23	0-1
				714.5	23165	22.27	23	0-1
			14	700.5	23025	22.44	23	0-1
				707.5	23095	22.44	23	0-1
				714.5	23165	22.33	23	0-1
		8 RB	0	700.5	23025	21.29	22	0-2
				707.5	23095	21.15	22	0-2
				714.5	23165	21.04	22	0-2
			4	700.5	23025	21.38	22	0-2
				707.5	23095	21.12	22	0-2
				714.5	23165	20.94	22	0-2
			7	700.5	23025	21.14	22	0-2
				707.5	23095	21.07	22	0-2
				714.5	23165	21.09	22	0-2
		15RB		700.5	23025	21.19	22	0-2
				707.5	23095	21.03	22	0-2
				714.5	23165	21.20	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	23.65	24	0
				707.5	23095	23.50	24	0
				715.3	23173	23.18	24	0
			2	699.7	23017	23.54	24	0
				707.5	23095	23.34	24	0
				715.3	23173	22.96	24	0
			5	699.7	23017	23.70	24	0
				707.5	23095	23.31	24	0
				715.3	23173	22.69	24	0
		3 RB	0	699.7	23017	23.55	24	0
				707.5	23095	23.35	24	0
				715.3	23173	23.04	24	0
			2	699.7	23017	23.65	24	0
				707.5	23095	23.42	24	0
				715.3	23173	22.91	24	0
			3	699.7	23017	23.58	24	0
				707.5	23095	23.17	24	0
				715.3	23173	22.80	24	0
		6RB		699.7	23017	22.56	23	0-1
				707.5	23095	22.23	23	0-1
				715.3	23173	22.02	23	0-1
	16-QAM	1 RB	0	699.7	23017	22.68	23	0-1
				707.5	23095	22.70	23	0-1
				715.3	23173	22.14	23	0-1
			2	699.7	23017	22.73	23	0-1
				707.5	23095	22.81	23	0-1
				715.3	23173	22.12	23	0-1
			5	699.7	23017	22.71	23	0-1
				707.5	23095	22.86	23	0-1
				715.3	23173	21.66	23	0-1
		3 RB	0	699.7	23017	22.67	23	0-1
				707.5	23095	22.42	23	0-1
				715.3	23173	22.17	23	0-1
			2	699.7	23017	22.65	23	0-1
				707.5	23095	22.29	23	0-1
				715.3	23173	22.04	23	0-1
			3	699.7	23017	22.73	23	0-1
				707.5	23095	22.35	23	0-1
				715.3	23173	21.78	23	0-1
		6RB		699.7	23017	21.49	22	0-2
				707.5	23095	21.25	22	0-2
				715.3	23173	21.11	22	0-2

FDD Band 13								
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	782	23230	22.92	24	0
			25	782	23230	22.80	24	0
			49	782	23230	22.59	24	0
		25 RB	0	782	23230	21.68	23	0-1
			12	782	23230	21.66	23	0-1
			25	782	23230	21.53	23	0-1
		50RB		782	23230	21.64	23	0-1
	16-QAM	1 RB	0	782	23230	22.09	23	0-1
			25	782	23230	22.02	23	0-1
			49	782	23230	21.72	23	0-1
		25 RB	0	782	23230	20.70	22	0-2
			12	782	23230	20.69	22	0-2
			25	782	23230	20.54	22	0-2
		50RB		782	23230	20.64	22	0-2

FDD Band 13								
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	779.5	23205	22.82	24	0
				782	23230	22.81	24	0
				784.5	23255	22.83	24	0
			12	779.5	23205	22.87	24	0
				782	23230	22.60	24	0
				784.5	23255	22.79	24	0
			24	779.5	23205	22.59	24	0
				782	23230	22.66	24	0
				784.5	23255	22.61	24	0
		12 RB	0	779.5	23205	21.71	23	0-1
				782	23230	21.74	23	0-1
				784.5	23255	21.74	23	0-1
			6	779.5	23205	21.79	23	0-1
				782	23230	21.73	23	0-1
				784.5	23255	21.71	23	0-1
			13	779.5	23205	21.70	23	0-1
				782	23230	21.64	23	0-1
				784.5	23255	21.80	23	0-1
		25RB		779.5	23205	21.74	23	0-1
				782	23230	21.67	23	0-1
				784.5	23255	21.76	23	0-1
	16-QAM	1 RB	0	779.5	23205	22.26	23	0-1
				782	23230	22.17	23	0-1
				784.5	23255	22.11	23	0-1
			12	779.5	23205	21.64	23	0-1
				782	23230	22.19	23	0-1
				784.5	23255	22.53	23	0-1
			24	779.5	23205	21.80	23	0-1
				782	23230	21.85	23	0-1
				784.5	23255	21.89	23	0-1
		12 RB	0	779.5	23205	20.73	22	0-2
				782	23230	20.74	22	0-2
				784.5	23255	20.76	22	0-2
			6	779.5	23205	20.77	22	0-2
				782	23230	20.68	22	0-2
				784.5	23255	20.85	22	0-2
			13	779.5	23205	20.67	22	0-2
				782	23230	20.69	22	0-2
				784.5	23255	20.69	22	0-2
		25RB		779.5	23205	20.93	22	0-2
				782	23230	20.73	22	0-2
				784.5	23255	20.76	22	0-2

FDD Band 25								
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	26140	22.81	24	0
				1882.5	26365	22.72	24	0
				1905	26590	22.57	24	0
			50	1860	26140	22.93	24	0
				1882.5	26365	22.85	24	0
				1905	26590	22.78	24	0
			99	1860	26140	22.65	24	0
				1882.5	26365	22.57	24	0
				1905	26590	22.59	24	0
		50 RB	0	1860	26140	21.87	23	0-1
				1882.5	26365	21.72	23	0-1
				1905	26590	21.72	23	0-1
			25	1860	26140	21.89	23	0-1
				1882.5	26365	21.80	23	0-1
				1905	26590	21.78	23	0-1
			50	1860	26140	21.88	23	0-1
				1882.5	26365	21.79	23	0-1
				1905	26590	21.77	23	0-1
		100RB		1860	26140	21.79	23	0-1
				1882.5	26365	21.76	23	0-1
				1905	26590	21.81	23	0-1
	16-QAM	1 RB	0	1860	26140	22.12	23	0-1
				1882.5	26365	22.01	23	0-1
				1905	26590	21.86	23	0-1
			50	1860	26140	22.22	23	0-1
				1882.5	26365	22.15	23	0-1
				1905	26590	22.12	23	0-1
			99	1860	26140	21.94	23	0-1
				1882.5	26365	21.87	23	0-1
				1905	26590	21.88	23	0-1
		50 RB	0	1860	26140	20.82	22	0-2
				1882.5	26365	20.72	22	0-2
				1905	26590	20.75	22	0-2
			25	1860	26140	20.89	22	0-2
				1882.5	26365	20.81	22	0-2
				1905	26590	20.80	22	0-2
			50	1860	26140	20.78	22	0-2
				1882.5	26365	20.82	22	0-2
				1905	26590	20.81	22	0-2
		100RB		1860	26140	20.82	22	0-2
				1882.5	26365	20.76	22	0-2
				1905	26590	20.84	22	0-2

FDD Band 25								
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	26115	22.66	24	0
				1882.5	26365	22.55	24	0
				1907.5	26615	22.44	24	0
			36	1857.5	26115	22.76	24	0
				1882.5	26365	22.77	24	0
				1907.5	26615	22.59	24	0
			74	1857.5	26115	22.40	24	0
				1882.5	26365	22.43	24	0
				1907.5	26615	22.43	24	0
		36 RB	0	1857.5	26115	21.80	23	0-1
				1882.5	26365	21.64	23	0-1
				1907.5	26615	21.54	23	0-1
			18	1857.5	26115	21.73	23	0-1
				1882.5	26365	21.73	23	0-1
				1907.5	26615	21.63	23	0-1
			37	1857.5	26115	21.65	23	0-1
				1882.5	26365	21.65	23	0-1
				1907.5	26615	21.63	23	0-1
		75RB		1857.5	26115	21.56	23	0-1
				1882.5	26365	21.58	23	0-1
				1907.5	26615	21.57	23	0-1
	16-QAM	1 RB	0	1857.5	26115	22.06	23	0-1
				1882.5	26365	21.90	23	0-1
				1907.5	26615	21.80	23	0-1
			36	1857.5	26115	22.09	23	0-1
				1882.5	26365	22.06	23	0-1
				1907.5	26615	22.05	23	0-1
			74	1857.5	26115	21.81	23	0-1
				1882.5	26365	21.69	23	0-1
				1907.5	26615	21.63	23	0-1
		36 RB	0	1857.5	26115	20.63	22	0-2
				1882.5	26365	20.61	22	0-2
				1907.5	26615	20.59	22	0-2
			18	1857.5	26115	20.68	22	0-2
				1882.5	26365	20.71	22	0-2
				1907.5	26615	20.70	22	0-2
			37	1857.5	26115	20.58	22	0-2
				1882.5	26365	20.76	22	0-2
				1907.5	26615	20.60	22	0-2
		75RB		1857.5	26115	20.58	22	0-2
				1882.5	26365	20.63	22	0-2
				1907.5	26615	20.68	22	0-2

FDD Band 25								
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	26090	22.50	24	0
				1882.5	26365	22.30	24	0
				1910	26640	22.35	24	0
			25	1855	26090	22.59	24	0
				1882.5	26365	22.60	24	0
				1910	26640	22.35	24	0
			49	1855	26090	22.17	24	0
				1882.5	26365	22.21	24	0
				1910	26640	22.26	24	0
		25 RB	0	1855	26090	21.73	23	0-1
				1882.5	26365	21.58	23	0-1
				1910	26640	21.29	23	0-1
			12	1855	26090	21.54	23	0-1
				1882.5	26365	21.64	23	0-1
				1910	26640	21.57	23	0-1
			25	1855	26090	21.46	23	0-1
				1882.5	26365	21.54	23	0-1
				1910	26640	21.53	23	0-1
		50RB		1855	26090	21.50	23	0-1
				1882.5	26365	21.40	23	0-1
				1910	26640	21.48	23	0-1
	16-QAM	1 RB	0	1855	26090	21.95	23	0-1
				1882.5	26365	21.77	23	0-1
				1910	26640	21.57	23	0-1
			25	1855	26090	21.89	23	0-1
				1882.5	26365	21.96	23	0-1
				1910	26640	21.98	23	0-1
			49	1855	26090	21.75	23	0-1
				1882.5	26365	21.59	23	0-1
				1910	26640	21.47	23	0-1
		25 RB	0	1855	26090	20.40	22	0-2
				1882.5	26365	20.55	22	0-2
				1910	26640	20.48	22	0-2
			12	1855	26090	20.54	22	0-2
				1882.5	26365	20.54	22	0-2
				1910	26640	20.55	22	0-2
			25	1855	26090	20.50	22	0-2
				1882.5	26365	20.62	22	0-2
				1910	26640	20.54	22	0-2
		50RB		1855	26090	20.46	22	0-2
				1882.5	26365	20.45	22	0-2
				1910	26640	20.57	22	0-2

FDD Band 25								
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	26065	22.44	24	0
				1882.5	26365	22.14	24	0
				1912.5	26665	22.17	24	0
			12	1852.5	26065	22.52	24	0
				1882.5	26365	22.51	24	0
				1912.5	26665	22.23	24	0
			24	1852.5	26065	22.53	24	0
				1882.5	26365	22.03	24	0
				1912.5	26665	22.12	24	0
		12 RB	0	1852.5	26065	21.48	23	0-1
				1882.5	26365	21.51	23	0-1
				1912.5	26665	21.20	23	0-1
			6	1852.5	26065	21.39	23	0-1
				1882.5	26365	21.52	23	0-1
				1912.5	26665	21.38	23	0-1
			13	1852.5	26065	21.31	23	0-1
				1882.5	26365	21.43	23	0-1
				1912.5	26665	21.29	23	0-1
		25RB		1852.5	26065	21.38	23	0-1
				1882.5	26365	21.18	23	0-1
				1912.5	26665	21.39	23	0-1
	16-QAM	1 RB	0	1852.5	26065	21.89	23	0-1
				1882.5	26365	21.66	23	0-1
				1912.5	26665	21.34	23	0-1
			12	1852.5	26065	21.67	23	0-1
				1882.5	26365	21.74	23	0-1
				1912.5	26665	21.86	23	0-1
			24	1852.5	26065	21.63	23	0-1
				1882.5	26365	21.39	23	0-1
				1912.5	26665	21.36	23	0-1
		12 RB	0	1852.5	26065	20.16	22	0-2
				1882.5	26365	20.34	22	0-2
				1912.5	26665	20.23	22	0-2
			6	1852.5	26065	20.40	22	0-2
				1882.5	26365	20.37	22	0-2
				1912.5	26665	20.47	22	0-2
			13	1852.5	26065	20.28	22	0-2
				1882.5	26365	20.53	22	0-2
				1912.5	26665	20.42	22	0-2
		25RB		1852.5	26065	20.38	22	0-2
				1882.5	26365	20.30	22	0-2
				1912.5	26665	20.33	22	0-2

FDD Band 25								
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	26055	22.35	24	0
				1882.5	26365	22.28	24	0
				1913.5	26675	22.11	24	0
			7	1851.5	26055	22.42	24	0
				1882.5	26365	22.31	24	0
				1913.5	26675	22.19	24	0
			14	1851.5	26055	22.23	24	0
				1882.5	26365	22.27	24	0
				1913.5	26675	22.21	24	0
		8 RB	0	1851.5	26055	21.25	23	0-1
				1882.5	26365	21.27	23	0-1
				1913.5	26675	21.02	23	0-1
			4	1851.5	26055	21.31	23	0-1
				1882.5	26365	21.32	23	0-1
				1913.5	26675	21.29	23	0-1
			7	1851.5	26055	21.11	23	0-1
				1882.5	26365	21.37	23	0-1
				1913.5	26675	21.23	23	0-1
		15RB		1851.5	26055	21.18	23	0-1
				1882.5	26365	21.96	23	0-1
				1913.5	26675	21.15	23	0-1
	16-QAM	1 RB	0	1851.5	26055	21.76	23	0-1
				1882.5	26365	21.50	23	0-1
				1913.5	26675	21.25	23	0-1
			7	1851.5	26055	21.46	23	0-1
				1882.5	26365	21.56	23	0-1
				1913.5	26675	21.80	23	0-1
			14	1851.5	26055	21.52	23	0-1
				1882.5	26365	21.25	23	0-1
				1913.5	26675	21.20	23	0-1
		8 RB	0	1851.5	26055	20.03	22	0-2
				1882.5	26365	20.25	22	0-2
				1913.5	26675	20.15	22	0-2
			4	1851.5	26055	20.30	22	0-2
				1882.5	26365	20.28	22	0-2
				1913.5	26675	20.40	22	0-2
			7	1851.5	26055	20.08	22	0-2
				1882.5	26365	20.40	22	0-2
				1913.5	26675	20.21	22	0-2
		15RB		1851.5	26055	20.21	22	0-2
				1882.5	26365	20.24	22	0-2
				1913.5	26675	20.09	22	0-2

FDD Band 25								
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	26047	22.81	24	0
				1882.5	26365	22.64	24	0
				1914.3	26683	22.68	24	0
			2	1850.7	26047	22.72	24	0
				1882.5	26365	22.76	24	0
				1914.3	26683	22.70	24	0
			5	1850.7	26047	22.79	24	0
				1882.5	26365	22.67	24	0
				1914.3	26683	22.57	24	0
		3 RB	0	1850.7	26047	22.76	24	0
				1882.5	26365	22.74	24	0
				1914.3	26683	22.65	24	0
			2	1850.7	26047	22.85	24	0
				1882.5	26365	22.72	24	0
				1914.3	26683	22.68	24	0
			3	1850.7	26047	22.80	24	0
				1882.5	26365	22.70	24	0
				1914.3	26683	22.79	24	0
		6RB		1850.7	26047	21.81	23	0-1
				1882.5	26365	21.61	23	0-1
				1914.3	26683	21.58	23	0-1
	16-QAM	1 RB	0	1850.7	26047	22.11	23	0-1
				1882.5	26365	21.99	23	0-1
				1914.3	26683	21.85	23	0-1
			2	1850.7	26047	22.17	23	0-1
				1882.5	26365	22.08	23	0-1
				1914.3	26683	21.90	23	0-1
			5	1850.7	26047	22.17	23	0-1
				1882.5	26365	21.99	23	0-1
				1914.3	26683	21.87	23	0-1
		3 RB	0	1850.7	26047	21.81	23	0-1
				1882.5	26365	21.75	23	0-1
				1914.3	26683	21.67	23	0-1
			2	1850.7	26047	21.89	23	0-1
				1882.5	26365	21.85	23	0-1
				1914.3	26683	21.75	23	0-1
			3	1850.7	26047	21.87	23	0-1
				1882.5	26365	21.74	23	0-1
				1914.3	26683	21.65	23	0-1
		6RB		1850.7	26047	20.97	22	0-2
				1882.5	26365	20.73	22	0-2
				1914.3	26683	20.69	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	22.79	24	0
				831.5	26865	22.61	24	0
				841.5	26965	22.58	24	0
			36	822.5	26825	22.74	24	0
				831.5	26865	22.69	24	0
				841.5	26965	22.60	24	0
			74	822.5	26825	22.50	24	0
				831.5	26865	22.62	24	0
				841.5	26965	22.56	24	0
		36 RB	0	822.5	26825	21.65	23	0-1
				831.5	26865	21.66	23	0-1
				841.5	26965	21.62	23	0-1
			18	822.5	26825	21.71	23	0-1
				831.5	26865	21.65	23	0-1
				841.5	26965	21.63	23	0-1
			37	822.5	26825	21.59	23	0-1
				831.5	26865	21.55	23	0-1
				841.5	26965	21.73	23	0-1
		75RB		822.5	26825	21.66	23	0-1
				831.5	26865	21.56	23	0-1
				841.5	26965	21.61	23	0-1
	16-QAM	1 RB	0	822.5	26825	21.94	23	0-1
				831.5	26865	21.85	23	0-1
				841.5	26965	21.80	23	0-1
			36	822.5	26825	22.05	23	0-1
				831.5	26865	21.86	23	0-1
				841.5	26965	21.94	23	0-1
			74	822.5	26825	21.74	23	0-1
				831.5	26865	21.86	23	0-1
				841.5	26965	21.82	23	0-1
		36 RB	0	822.5	26825	20.60	22	0-2
				831.5	26865	20.66	22	0-2
				841.5	26965	20.61	22	0-2
			18	822.5	26825	20.69	22	0-2
				831.5	26865	20.64	22	0-2
				841.5	26965	20.64	22	0-2
			37	822.5	26825	20.60	22	0-2
				831.5	26865	20.58	22	0-2
				841.5	26965	20.66	22	0-2
		75RB		822.5	26825	20.68	22	0-2
				831.5	26865	20.60	22	0-2
				841.5	26965	20.64	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	26800	22.63	24	0
				831.5	26865	22.59	24	0
				844	26990	22.54	24	0
			25	820	26800	22.68	24	0
				831.5	26865	22.60	24	0
				844	26990	22.43	24	0
			49	820	26800	22.39	24	0
				831.5	26865	22.44	24	0
				844	26990	22.39	24	0
		25 RB	0	820	26800	21.64	23	0-1
				831.5	26865	21.55	23	0-1
				844	26990	21.60	23	0-1
			12	820	26800	21.55	23	0-1
				831.5	26865	21.54	23	0-1
				844	26990	21.57	23	0-1
			25	820	26800	21.42	23	0-1
				831.5	26865	21.55	23	0-1
				844	26990	21.55	23	0-1
		50RB		820	26800	21.52	23	0-1
				831.5	26865	21.48	23	0-1
				844	26990	21.50	23	0-1
	16-QAM	1 RB	0	820	26800	21.83	23	0-1
				831.5	26865	21.72	23	0-1
				844	26990	21.65	23	0-1
			25	820	26800	21.88	23	0-1
				831.5	26865	21.81	23	0-1
				844	26990	21.88	23	0-1
			49	820	26800	21.69	23	0-1
				831.5	26865	21.71	23	0-1
				844	26990	21.82	23	0-1
		25 RB	0	820	26800	20.41	22	0-2
				831.5	26865	20.54	22	0-2
				844	26990	20.42	22	0-2
			12	820	26800	20.68	22	0-2
				831.5	26865	20.45	22	0-2
				844	26990	20.55	22	0-2
			25	820	26800	20.45	22	0-2
				831.5	26865	20.47	22	0-2
				844	26990	20.62	22	0-2
		50RB		820	26800	20.55	22	0-2
				831.5	26865	20.60	22	0-2
				844	26990	20.46	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	22.57	24	0
				831.5	26865	22.47	24	0
				846.5	27015	22.52	24	0
			12	816.5	26715	22.62	24	0
				831.5	26865	22.55	24	0
				846.5	27015	22.29	24	0
			24	816.5	26715	22.30	24	0
				831.5	26865	22.34	24	0
				846.5	27015	22.28	24	0
		12 RB	0	816.5	26715	21.57	23	0-1
				831.5	26865	21.46	23	0-1
				846.5	27015	21.41	23	0-1
			6	816.5	26715	21.51	23	0-1
				831.5	26865	21.52	23	0-1
				846.5	27015	21.43	23	0-1
			13	816.5	26715	21.40	23	0-1
				831.5	26865	21.43	23	0-1
				846.5	27015	21.43	23	0-1
		25RB		816.5	26715	21.33	23	0-1
				831.5	26865	21.38	23	0-1
				846.5	27015	21.42	23	0-1
	16-QAM	1 RB	0	816.5	26715	21.69	23	0-1
				831.5	26865	21.67	23	0-1
				846.5	27015	21.64	23	0-1
			12	816.5	26715	21.87	23	0-1
				831.5	26865	21.68	23	0-1
				846.5	27015	21.78	23	0-1
			24	816.5	26715	21.53	23	0-1
				831.5	26865	21.60	23	0-1
				846.5	27015	21.64	23	0-1
		12 RB	0	816.5	26715	20.32	22	0-2
				831.5	26865	20.44	22	0-2
				846.5	27015	20.37	22	0-2
			6	816.5	26715	20.56	22	0-2
				831.5	26865	20.37	22	0-2
				846.5	27015	20.40	22	0-2
			13	816.5	26715	20.28	22	0-2
				831.5	26865	20.45	22	0-2
				846.5	27015	20.58	22	0-2
		25RB		816.5	26715	20.47	22	0-2
				831.5	26865	20.59	22	0-2
				846.5	27015	20.45	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	22.53	24	0
				831.5	26865	22.47	24	0
				847.5	27025	22.47	24	0
			7	815.5	26705	22.51	24	0
				831.5	26865	22.37	24	0
				847.5	27025	22.11	24	0
			14	815.5	26705	22.24	24	0
				831.5	26865	22.24	24	0
				847.5	27025	22.13	24	0
		8 RB	0	815.5	26705	21.39	23	0-1
				831.5	26865	21.46	23	0-1
				847.5	27025	21.37	23	0-1
			4	815.5	26705	21.46	23	0-1
				831.5	26865	21.36	23	0-1
				847.5	27025	21.39	23	0-1
			7	815.5	26705	21.34	23	0-1
				831.5	26865	21.34	23	0-1
				847.5	27025	21.36	23	0-1
		15RB		815.5	26705	21.23	23	0-1
				831.5	26865	21.31	23	0-1
				847.5	27025	21.23	23	0-1
	16-QAM	1 RB	0	815.5	26705	21.60	23	0-1
				831.5	26865	21.60	23	0-1
				847.5	27025	21.47	23	0-1
			7	815.5	26705	21.76	23	0-1
				831.5	26865	21.57	23	0-1
				847.5	27025	21.66	23	0-1
			14	815.5	26705	21.39	23	0-1
				831.5	26865	21.57	23	0-1
				847.5	27025	21.63	23	0-1
		8 RB	0	815.5	26705	20.25	22	0-2
				831.5	26865	20.34	22	0-2
				847.5	27025	20.36	22	0-2
			4	815.5	26705	20.48	22	0-2
				831.5	26865	20.34	22	0-2
				847.5	27025	20.26	22	0-2
			7	815.5	26705	20.13	22	0-2
				831.5	26865	20.31	22	0-2
				847.5	27025	20.47	22	0-2
		15RB		815.5	26705	20.44	22	0-2
				831.5	26865	20.44	22	0-2
				847.5	27025	20.41	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	22.69	24	0
				831.5	26865	22.62	24	0
				848.3	27033	22.71	24	0
			2	814.7	26697	22.66	24	0
				831.5	26865	22.59	24	0
				848.3	27033	22.68	24	0
			5	814.7	26697	22.86	24	0
				831.5	26865	22.48	24	0
				848.3	27033	22.60	24	0
		3 RB	0	814.7	26697	22.77	24	0
				831.5	26865	22.39	24	0
				848.3	27033	22.58	24	0
			2	814.7	26697	22.83	24	0
				831.5	26865	22.49	24	0
				848.3	27033	22.65	24	0
			3	814.7	26697	22.83	24	0
				831.5	26865	22.45	24	0
				848.3	27033	22.56	24	0
		6RB		814.7	26697	21.82	23	0-1
				831.5	26865	21.61	23	0-1
				848.3	27033	21.78	23	0-1
	16-QAM	1 RB	0	814.7	26697	22.12	23	0-1
				831.5	26865	22.13	23	0-1
				848.3	27033	22.17	23	0-1
			2	814.7	26697	22.35	23	0-1
				831.5	26865	21.99	23	0-1
				848.3	27033	22.10	23	0-1
			5	814.7	26697	22.42	23	0-1
				831.5	26865	22.02	23	0-1
				848.3	27033	22.09	23	0-1
		3 RB	0	814.7	26697	22.03	23	0-1
				831.5	26865	21.63	23	0-1
				848.3	27033	21.80	23	0-1
			2	814.7	26697	22.17	23	0-1
				831.5	26865	21.70	23	0-1
				848.3	27033	21.98	23	0-1
			3	814.7	26697	22.14	23	0-1
				831.5	26865	21.68	23	0-1
				848.3	27033	21.90	23	0-1
		6RB		814.7	26697	21.13	22	0-2
				831.5	26865	20.67	22	0-2
				848.3	27033	20.80	22	0-2

FDD Band 30								
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	2310	27710	21.54	23	0
			25	2310	27710	21.59	23	0
			49	2310	27710	21.41	23	0
		25 RB	0	2310	27710	20.43	22	0-1
			12	2310	27710	20.55	22	0-1
			25	2310	27710	20.45	22	0-1
		50RB		2310	27710	20.42	22	0-1
	16-QAM	1 RB	0	2310	27710	20.92	22	0-1
			25	2310	27710	20.85	22	0-1
			49	2310	27710	20.69	22	0-1
		25 RB	0	2310	27710	19.37	21	0-2
			12	2310	27710	19.47	21	0-2
			25	2310	27710	19.31	21	0-2
		50RB		2310	27710	19.37	21	0-2

FDD Band 30								
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	2307.5	27685	21.53	23	0
				2310	27710	21.48	23	0
				2312.5	27735	21.33	23	0
			12	2307.5	27685	21.54	23	0
				2310	27710	21.64	23	0
				2312.5	27735	21.66	23	0
			24	2307.5	27685	21.53	23	0
				2310	27710	21.61	23	0
				2312.5	27735	21.27	23	0
		12 RB	0	2307.5	27685	20.39	22	0-1
				2310	27710	20.34	22	0-1
				2312.5	27735	20.41	22	0-1
			6	2307.5	27685	20.51	22	0-1
				2310	27710	20.35	22	0-1
				2312.5	27735	20.31	22	0-1
			13	2307.5	27685	20.40	22	0-1
				2310	27710	20.19	22	0-1
				2312.5	27735	20.33	22	0-1
		25RB		2307.5	27685	20.52	22	0-1
				2310	27710	20.28	22	0-1
				2312.5	27735	20.41	22	0-1
	16-QAM	1 RB	0	2307.5	27685	20.85	22	0-1
				2310	27710	20.91	22	0-1
				2312.5	27735	20.73	22	0-1
			12	2307.5	27685	21.01	22	0-1
				2310	27710	20.48	22	0-1
				2312.5	27735	21.01	22	0-1
			24	2307.5	27685	20.62	22	0-1
				2310	27710	20.47	22	0-1
				2312.5	27735	20.88	22	0-1
		12 RB	0	2307.5	27685	19.43	21	0-2
				2310	27710	19.45	21	0-2
				2312.5	27735	19.41	21	0-2
			6	2307.5	27685	19.51	21	0-2
				2310	27710	19.48	21	0-2
				2312.5	27735	19.46	21	0-2
			13	2307.5	27685	19.52	21	0-2
				2310	27710	19.36	21	0-2
				2312.5	27735	19.40	21	0-2
		25RB		2307.5	27685	19.43	21	0-2
				2310	27710	19.33	21	0-2
				2312.5	27735	19.33	21	0-2

LTE TDD Band 41 power table:

FDD 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	2506	39750	22.12	23	0
				2549.5	40185	21.97	23	0
				2593	40620	21.94	23	0
				2636.5	41055	21.79	23	0
				2680	41490	21.82	23	0
			50	2506	39750	22.10	23	0
				2549.5	40185	22.15	23	0
				2593	40620	22.31	23	0
				2636.5	41055	22.11	23	0
				2680	41490	21.23	23	0
			99	2506	39750	21.86	23	0
				2549.5	40185	21.67	23	0
				2593	40620	21.83	23	0
				2636.5	41055	21.79	23	0
				2680	41490	21.67	23	0
		50 RB	0	2506	39750	21.27	22	0-1
				2549.5	40185	20.95	22	0-1
				2593	40620	21.01	22	0-1
				2636.5	41055	20.84	22	0-1
				2680	41490	21.23	22	0-1
			25	2506	39750	21.28	22	0-1
				2549.5	40185	20.95	22	0-1
				2593	40620	21.28	22	0-1
				2636.5	41055	21.05	22	0-1
				2680	41490	20.73	22	0-1
			50	2506	39750	21.16	22	0-1
				2549.5	40185	20.97	22	0-1
				2593	40620	21.14	22	0-1
				2636.5	41055	20.93	22	0-1
				2680	41490	20.26	22	0-1
		100RB		2506	39750	21.14	22	0-1
				2549.5	40185	20.90	22	0-1
				2593	40620	21.15	22	0-1
				2636.5	41055	20.92	22	0-1
				2680	41490	20.63	22	0-1

FDD 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	16-QAM	1 RB	0	2506	39750	21.42	22	0-1
				2549.5	40185	21.46	22	0-1
				2593	40620	21.38	22	0-1
				2636.5	41055	21.12	22	0-1
				2680	41490	21.08	22	0-1
			50	2506	39750	21.37	22	0-1
				2549.5	40185	21.29	22	0-1
				2593	40620	21.78	22	0-1
				2636.5	41055	21.41	22	0-1
				2680	41490	20.50	22	0-1
			99	2506	39750	21.41	22	0-1
				2549.5	40185	20.95	22	0-1
				2593	40620	21.39	22	0-1
				2636.5	41055	20.99	22	0-1
				2680	41490	20.93	22	0-1
		50 RB	0	2506	39750	20.30	21	0-2
				2549.5	40185	20.03	21	0-2
				2593	40620	20.06	21	0-2
				2636.5	41055	19.98	21	0-2
				2680	41490	20.28	21	0-2
			25	2506	39750	20.42	21	0-2
				2549.5	40185	19.93	21	0-2
				2593	40620	20.24	21	0-2
				2636.5	41055	20.01	21	0-2
				2680	41490	19.76	21	0-2
			50	2506	39750	20.18	21	0-2
				2549.5	40185	19.93	21	0-2
				2593	40620	20.10	21	0-2
				2636.5	41055	19.99	21	0-2
				2680	41490	19.30	21	0-2
		100RB		2506	39750	20.38	21	0-2
				2549.5	40185	19.98	21	0-2
				2593	40620	20.20	21	0-2
				2636.5	41055	19.98	21	0-2
				2680	41490	19.67	21	0-2

FDD 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	2503.5	39725	22.03	23	0
				2548.3	40173	21.87	23	0
				2593	40620	21.82	23	0
				2637.8	41068	21.61	23	0
				2682.5	41515	21.63	23	0
			36	2503.5	39725	21.86	23	0
				2548.3	40173	22.05	23	0
				2593	40620	22.22	23	0
				2637.8	41068	22.04	23	0
				2682.5	41515	21.00	23	0
			74	2503.5	39725	21.70	23	0
				2548.3	40173	21.43	23	0
				2593	40620	21.64	23	0
				2637.8	41068	21.62	23	0
				2682.5	41515	21.43	23	0
		36 RB	0	2503.5	39725	21.04	22	0-1
				2548.3	40173	20.70	22	0-1
				2593	40620	20.92	22	0-1
				2637.8	41068	20.76	22	0-1
				2682.5	41515	21.07	22	0-1
			18	2503.5	39725	21.20	22	0-1
				2548.3	40173	20.89	22	0-1
				2593	40620	21.19	22	0-1
				2637.8	41068	20.83	22	0-1
				2682.5	41515	20.65	22	0-1
			37	2503.5	39725	21.10	22	0-1
				2548.3	40173	20.90	22	0-1
				2593	40620	20.94	22	0-1
				2637.8	41068	20.69	22	0-1
				2682.5	41515	20.13	22	0-1
		75RB		2503.5	39725	21.06	22	0-1
				2548.3	40173	20.79	22	0-1
				2593	40620	20.96	22	0-1
				2637.8	41068	20.75	22	0-1
				2682.5	41515	20.46	22	0-1

FDD 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	16-QAM	1 RB	0	2503.5	39725	21.36	22	0-1
				2548.3	40173	21.28	22	0-1
				2593	40620	21.28	22	0-1
				2637.8	41068	20.90	22	0-1
				2682.5	41515	20.86	22	0-1
			36	2503.5	39725	21.26	22	0-1
				2548.3	40173	21.05	22	0-1
				2593	40620	21.66	22	0-1
				2637.8	41068	21.23	22	0-1
				2682.5	41515	20.39	22	0-1
			74	2503.5	39725	21.33	22	0-1
				2548.3	40173	20.78	22	0-1
				2593	40620	21.15	22	0-1
				2637.8	41068	20.80	22	0-1
				2682.5	41515	20.70	22	0-1
		36 RB	0	2503.5	39725	20.08	21	0-2
				2548.3	40173	19.95	21	0-2
				2593	40620	19.97	21	0-2
				2637.8	41068	19.74	21	0-2
				2682.5	41515	20.22	21	0-2
			18	2503.5	39725	20.24	21	0-2
				2548.3	40173	19.85	21	0-2
				2593	40620	20.13	21	0-2
				2637.8	41068	19.90	21	0-2
				2682.5	41515	19.59	21	0-2
			37	2503.5	39725	20.03	21	0-2
				2548.3	40173	19.84	21	0-2
				2593	40620	19.95	21	0-2
				2637.8	41068	19.75	21	0-2
				2682.5	41515	19.22	21	0-2
		75RB		2503.5	39725	20.24	21	0-2
				2548.3	40173	19.74	21	0-2
				2593	40620	20.04	21	0-2
				2637.8	41068	19.80	21	0-2
				2682.5	41515	19.53	21	0-2

FDD 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	2501	39700	21.84	23	0
				2547	40160	21.63	23	0
				2593	40620	21.62	23	0
				2639	41080	21.45	23	0
				2685	41540	21.57	23	0
			25	2501	39700	21.65	23	0
				2547	40160	21.80	23	0
				2593	40620	22.08	23	0
				2639	41080	21.80	23	0
				2685	41540	21.78	23	0
			49	2501	39700	21.55	23	0
				2547	40160	21.22	23	0
				2593	40620	21.52	23	0
				2639	41080	21.45	23	0
				2685	41540	21.33	23	0
		25 RB	0	2501	39700	20.92	22	0-1
				2547	40160	20.51	22	0-1
				2593	40620	20.79	22	0-1
				2639	41080	20.57	22	0-1
				2685	41540	20.82	22	0-1
			12	2501	39700	21.02	22	0-1
				2547	40160	20.71	22	0-1
				2593	40620	21.01	22	0-1
				2639	41080	20.66	22	0-1
				2685	41540	20.50	22	0-1
			25	2501	39700	20.99	22	0-1
				2547	40160	20.79	22	0-1
				2593	40620	20.75	22	0-1
				2639	41080	20.44	22	0-1
				2685	41540	20.01	22	0-1
		50RB		2501	39700	20.86	22	0-1
				2547	40160	20.70	22	0-1
				2593	40620	20.75	22	0-1
				2639	41080	20.61	22	0-1
				2685	41540	20.36	22	0-1

FDD 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	16-QAM	1 RB	0	2501	39700	21.28	22	0-1
				2547	40160	21.04	22	0-1
				2593	40620	21.21	22	0-1
				2639	41080	20.79	22	0-1
				2685	41540	20.77	22	0-1
			25	2501	39700	21.17	22	0-1
				2547	40160	20.87	22	0-1
				2593	40620	21.53	22	0-1
				2639	41080	21.11	22	0-1
				2685	41540	20.30	22	0-1
			49	2501	39700	21.08	22	0-1
				2547	40160	20.53	22	0-1
				2593	40620	21.01	22	0-1
				2639	41080	20.61	22	0-1
				2685	41540	20.63	22	0-1
		25 RB	0	2501	39700	19.91	21	0-2
				2547	40160	19.87	21	0-2
				2593	40620	19.84	21	0-2
				2639	41080	19.50	21	0-2
				2685	41540	20.16	21	0-2
			12	2501	39700	20.10	21	0-2
				2547	40160	19.65	21	0-2
				2593	40620	19.92	21	0-2
				2639	41080	19.74	21	0-2
				2685	41540	19.34	21	0-2
			25	2501	39700	19.85	21	0-2
				2547	40160	19.69	21	0-2
				2593	40620	19.78	21	0-2
				2639	41080	19.58	21	0-2
				2685	41540	19.14	21	0-2
		50RB		2501	39700	20.04	21	0-2
				2547	40160	19.58	21	0-2
				2593	40620	19.92	21	0-2
				2639	41080	19.57	21	0-2
				2685	41540	19.41	21	0-2

FDD 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	2498.5	39675	21.65	23	0
				2547.8	40148	21.39	23	0
				2593	40620	21.41	23	0
				2640.3	41093	21.22	23	0
				2687.5	41565	21.32	23	0
			12	2498.5	39675	21.44	23	0
				2547.8	40148	21.73	23	0
				2593	40620	21.89	23	0
				2640.3	41093	21.66	23	0
				2687.5	41565	21.63	23	0
			24	2498.5	39675	21.30	23	0
				2547.8	40148	21.04	23	0
				2593	40620	21.41	23	0
				2640.3	41093	21.25	23	0
				2687.5	41565	21.08	23	0
		12 RB	0	2498.5	39675	20.82	22	0-1
				2547.8	40148	20.39	22	0-1
				2593	40620	20.64	22	0-1
				2640.3	41093	20.40	22	0-1
				2687.5	41565	20.60	22	0-1
			6	2498.5	39675	20.86	22	0-1
				2547.8	40148	20.48	22	0-1
				2593	40620	20.94	22	0-1
				2640.3	41093	20.52	22	0-1
				2687.5	41565	20.34	22	0-1
			13	2498.5	39675	20.81	22	0-1
				2547.8	40148	20.72	22	0-1
				2593	40620	20.54	22	0-1
				2640.3	41093	20.38	22	0-1
				2687.5	41565	20.79	22	0-1
		25RB		2498.5	39675	20.80	22	0-1
				2547.8	40148	20.48	22	0-1
				2593	40620	20.50	22	0-1
				2640.3	41093	20.44	22	0-1
				2687.5	41565	20.14	22	0-1

FDD 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	16-QAM	1 RB	0	2498.5	39675	21.06	22	0-1
				2547.8	40148	20.98	22	0-1
				2593	40620	21.04	22	0-1
				2640.3	41093	20.67	22	0-1
				2687.5	41565	20.57	22	0-1
			12	2498.5	39675	21.03	22	0-1
				2547.8	40148	20.74	22	0-1
				2593	40620	21.44	22	0-1
				2640.3	41093	21.04	22	0-1
				2687.5	41565	20.16	22	0-1
			24	2498.5	39675	20.96	22	0-1
				2547.8	40148	20.36	22	0-1
				2593	40620	20.80	22	0-1
				2640.3	41093	20.50	22	0-1
				2687.5	41565	20.46	22	0-1
		12 RB	0	2498.5	39675	19.80	21	0-2
				2547.8	40148	19.64	21	0-2
				2593	40620	19.64	21	0-2
				2640.3	41093	19.39	21	0-2
				2687.5	41565	19.93	21	0-2
			6	2498.5	39675	19.99	21	0-2
				2547.8	40148	19.55	21	0-2
				2593	40620	19.83	21	0-2
				2640.3	41093	19.51	21	0-2
				2687.5	41565	19.22	21	0-2
			13	2498.5	39675	19.79	21	0-2
				2547.8	40148	19.55	21	0-2
				2593	40620	19.64	21	0-2
				2640.3	41093	19.47	21	0-2
				2687.5	41565	19.92	21	0-2
		25RB		2498.5	39675	19.81	21	0-2
				2547.8	40148	19.48	21	0-2
				2593	40620	19.71	21	0-2
				2640.3	41093	19.48	21	0-2
				2687.5	41565	19.22	21	0-2

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

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

Main antenna						
Band	Mode	Channel	Frequency (MHz)	Data Rate	Max. Rated Avg. Power + Max. Tolerance	Average power (dBm)
2450 MHz	802.11b	1	2412	1Mbps	19.00	18.79
		6	2437		19.00	18.89
		11	2462		19.00	18.88
	802.11g	1	2412	6Mbps	14.00	13.71
		2	2417		18.50	18.50
		6	2437		18.50	18.45
		10	2457		18.50	18.18
		11	2462		14.00	13.97
	802.11n20-HT0	1	2412	MCS0	14.00	13.96
		2	2417		18.50	18.36
		6	2437		18.50	18.23
		10	2457		18.50	18.50
		11	2462		14.00	13.96
	802.11ac20-VHT0	1	2412	MCS0	14.00	13.92
		2	2417		18.50	18.18
		6	2437		18.50	18.16
		10	2457		18.50	18.38
		11	2462		14.00	13.78
	802.11n40-HT0	3	2422	MCS0	11.50	11.12
		4	2427		15.00	14.70
		6	2437		15.00	14.75
		8	2447		15.00	14.69
		9	2452		8.50	8.50
	802.11ac40-VHT0	3	2422	MCS0	11.50	11.50
		4	2427		15.00	14.73
		6	2437		15.00	14.65
		8	2447		15.00	15.00
		9	2452		8.50	8.48

Main antenna						
Band	Mode	Channel	Frequency (MHz)	Data Rate	Max. Rated Avg. Power + Max. Tolerance	Average power (dBm)
5.15-5.25 GHz	802.11a	36	5180	6Mbps	14.50	14.50
		40	5200		15.50	15.32
		44	5220		15.50	15.35
		48	5240		15.50	15.39
	802.11n20-HT0	36	5180	MCS0	14.50	14.18
		40	5200		15.50	15.24
		44	5220		15.50	15.27
		48	5240		15.50	15.33
	802.11ac20-VHT0	36	5180	MCS0	14.50	14.29
		40	5200		14.50	14.18
		44	5220		14.50	14.35
		48	5240		14.50	14.22
	802.11n40-HT0	38	5190	MCS0	10.50	10.50
		46	5230		13.50	13.40
	802.11ac40-VHT0	38	5190	MCS0	10.50	10.50
		46	5230		13.50	13.27
	802.11ac80-VHT0	42	5210	MCS0	10.00	9.73

Main antenna						
Band	Mode	Channel	Frequency (MHz)	Data Rate	Max. Rated Avg. Power + Max. Tolerance	Average power (dBm)
5.25-5.35 GHz	802.11a	52	5260	6Mbps	15.50	15.50
		56	5280		15.50	15.49
		60	5300		15.50	15.16
		64	5320		14.50	14.20
	802.11n20-HT0	52	5260	MCS0	15.50	15.50
		56	5280		15.50	15.50
		60	5300		15.50	15.38
		64	5320		14.50	14.50
	802.11ac20-VHT0	52	5260	MCS0	15.00	14.78
		56	5280		15.00	14.89
		60	5300		15.00	14.63
		64	5320		14.50	14.50
	802.11n40-HT0	54	5270	MCS0	14.00	14.00
		62	5310		11.00	10.83
	802.11ac40-VHT0	54	5270	MCS0	14.00	13.98
		62	5310		11.00	10.88
	802.11ac80-VHT0	58	5290	MCS0	9.50	9.49

Main antenna						
Band	Mode	Channel	Frequency (MHz)	Data Rate	Max. Rated Avg. Power + Max. Tolerance	Average power (dBm)
5600 MHz	802.11a	100	5500	6Mbps	14.50	14.49
		104	5520		15.50	15.45
		116	5580		15.50	15.37
		120	5600		15.50	15.39
		136	5680		15.50	15.43
		140	5700		13.50	13.50
		144	5720		11.00	10.71
	802.11n20-HT0	100	5500	MCS0	14.50	14.35
		104	5520		15.50	15.22
		116	5580		15.50	15.43
		120	5600		15.50	15.27
		136	5680		15.50	15.42
		140	5700		13.50	13.27
		144	5720		11.00	11.00
	802.11ac20-VHT0	100	5500	MCS0	14.00	13.82
		104	5520		14.50	14.50
		116	5580		14.50	14.50
		120	5600		14.50	14.50
		136	5680		14.50	14.31
		140	5700		13.50	13.50
		144	5720		10.00	9.81
	802.11n40-HT0	102	5510	MCS0	11.50	11.50
		110	5550		14.00	13.97
		118	5590		14.00	14.00
		134	5670		14.00	14.00
		142	5710		10.00	9.96
	802.11ac40-VHT0	102	5510	MCS0	11.50	11.29
		110	5550		14.00	13.94
		118	5590		14.00	13.88
		134	5670		14.00	14.00
		142	5710		10.00	9.76
	802.11ac80-VHT0	106	5530	MCS0	11.00	10.87
		122	5610		13.50	13.30
		138	5690		9.00	9.00

Main antenna						
Mode	Mode	Channel	Frequency (MHz)	Data Rate	Max. Rated Avg. Power + Max. Tolerance	Average power (dBm)
5800 MHz	802.11a	149	5745	6Mbps	14.00	14.00
		153	5765		15.50	15.49
		157	5785		15.50	15.48
		165	5825		15.50	15.17
	802.11n20-HT0	149	5745	MCS0	14.00	14.00
		153	5765		15.50	15.50
		157	5785		15.50	15.50
		165	5825		15.50	15.41
	802.11ac20-VHT0	149	5745	MCS0	14.00	13.73
		153	5765		14.50	14.50
		157	5785		14.50	14.35
		165	5825		15.00	14.64
	802.11n40-HT0	151	5755	MCS0	12.00	11.87
		159	5795		13.50	13.29
	802.11ac40-VHT0	151	5755	MCS0	12.00	11.77
		159	5795		13.50	13.42
	802.11ac80-VHT0	155	5775	MCS0	11.00	10.76

Aux antenna						
Band	Mode	Channel	Frequency (MHz)	Data Rate	Max. Rated Avg. Power + Max. Tolerance	Average power (dBm)
2450 MHz	802.11b	1	2412	1Mbps	19.00	18.87
		6	2437		19.00	19.00
		11	2462		19.00	18.81
	802.11g	1	2412	6Mbps	14.00	13.82
		2	2417		18.50	18.48
		6	2437		18.50	18.50
		10	2457		18.50	18.49
		11	2462		14.00	13.72
	802.11n20-HT0	1	2412	MCS0	14.00	13.89
		2	2417		18.50	18.50
		6	2437		18.50	18.45
		10	2457		18.50	18.49
		11	2462		14.00	13.76
	802.11ac20-VHT0	1	2412	MCS0	14.00	14.00
		2	2417		18.50	18.30
		6	2437		18.50	18.26
		10	2457		18.50	18.38
		11	2462		14.00	13.92
	802.11n40-HT0	3	2422	MCS0	11.50	11.36
		4	2427		15.00	15.00
		6	2437		15.00	14.83
		8	2447		15.00	14.89
		9	2452		8.50	8.29
	802.11ac40-VHT0	3	2422	MCS0	11.50	11.50
		4	2427		15.00	14.68
		6	2437		15.00	14.93
		8	2447		15.00	14.64
		9	2452		8.50	8.43

Aux antenna						
Band	Mode	Channel	Frequency (MHz)	Data Rate	Max. Rated Avg. Power + Max. Tolerance	Average power (dBm)
5.15-5.25 GHz	802.11a	36	5180	6Mbps	15.00	14.75
		40	5200		16.50	16.13
		44	5220		17.00	16.84
		48	5240		17.00	17.00
	802.11n20-HT0	36	5180	MCS0	15.00	14.83
		40	5200		16.50	16.50
		44	5220		17.00	16.95
		48	5240		17.00	17.00
	802.11ac20-VHT0	36	5180	MCS0	14.50	14.50
		40	5200		15.50	15.50
		44	5220		16.00	15.78
		48	5240		16.00	16.00
	802.11n40-HT0	38	5190	MCS0	10.50	10.32
		46	5230		14.50	14.50
	802.11ac40-VHT0	38	5190	MCS0	10.50	10.43
		46	5230		14.50	14.50
	802.11ac80-VHT0	42	5210	MCS0	10.00	9.82

Aux antenna						
Band	Mode	Channel	Frequency (MHz)	Data Rate	Max. Rated Avg. Power + Max. Tolerance	Average power (dBm)
5.25-5.35 GHz	802.11a	52	5260	6Mbps	16.50	16.47
		56	5280		16.50	16.29
		60	5300		16.00	15.80
		64	5320		14.50	14.21
	802.11n20-HT0	52	5260	MCS0	16.50	16.22
		56	5280		16.50	16.50
		60	5300		16.00	15.91
		64	5320		14.50	14.42
	802.11ac20-VHT0	52	5260	MCS0	15.50	15.39
		56	5280		15.50	15.29
		60	5300		15.00	15.00
		64	5320		14.50	14.39
	802.11n40-HT0	54	5270	MCS0	14.00	14.00
		62	5310		11.00	10.97
	802.11ac40-VHT0	54	5270	MCS0	14.00	13.69
		62	5310		11.00	11.00
	802.11ac80-VHT0	58	5290	MCS0	9.50	9.48

Aux antenna						
Band	Mode	Channel	Frequency (MHz)	Data Rate	Max. Rated Avg. Power + Max. Tolerance	Average power (dBm)
5600 MHz	802.11a	100	5500	6Mbps	14.00	14.00
		104	5520		15.50	15.49
		116	5580		15.50	15.40
		120	5600		15.50	15.42
		136	5680		15.50	15.47
		140	5700		13.50	13.29
		144	5720		11.50	11.50
	802.11n20-HT0	100	5500	MCS0	14.00	14.00
		104	5520		15.50	15.21
		116	5580		15.50	15.32
		120	5600		15.50	15.41
		136	5680		15.50	15.50
		140	5700		13.50	13.35
		144	5720		11.50	10.78
	802.11ac20-VHT0	100	5500	MCS0	13.50	13.31
		104	5520		14.50	14.29
		116	5580		14.50	14.31
		120	5600		14.50	14.50
		136	5680		14.50	14.17
		140	5700		13.50	13.50
		144	5720		10.00	9.92
	802.11n40-HT0	102	5510	MCS0	11.00	10.80
		110	5550		14.50	14.43
		118	5590		14.50	14.45
		134	5670		14.50	14.50
		142	5710		10.00	10.00
	802.11ac40-VHT0	102	5510	MCS0	11.00	11.00
		110	5550		14.50	14.50
		118	5590		14.50	14.50
		134	5670		14.50	14.23
		142	5710		10.00	9.86
	802.11ac80-VHT0	106	5530	MCS0	10.50	10.33
		122	5610		14.00	14.00
		138	5690		9.00	8.85

Aux antenna						
Mode	Mode	Channel	Frequency (MHz)	Data Rate	Max. Rated Avg. Power + Max. Tolerance	Average power (dBm)
5800 MHz	802.11a	149	5745	6Mbps	14.00	13.84
		153	5765		16.00	15.90
		157	5785		16.00	15.78
		165	5825		16.00	15.72
	802.11n20-HT0	149	5745	MCS0	14.00	13.90
		153	5765		16.00	15.93
		157	5785		16.00	15.80
		165	5825		16.00	15.79
	802.11ac20-VHT0	149	5745	MCS0	14.00	14.00
		153	5765		14.50	14.13
		157	5785		14.50	14.50
		165	5825		15.00	15.00
	802.11n40-HT0	151	5755	MCS0	12.00	12.00
		159	5795		13.50	13.28
	802.11ac40-VHT0	151	5755	MCS0	12.00	11.82
		159	5795		13.50	13.42
	802.11ac80-VHT0	155	5775	MCS0	11.00	10.73

Bluetooth conducted power table:

Mode	Channel	Frequency (MHz)	1Mbps		2Mbps		3Mbps	
			Max. Rated Avg. Power + Max. Tolerance (dBm)	Average power (dBm)	Max. Rated Avg. Power + Max. Tolerance (dBm)	Average power (dBm)	Max. Rated Avg. Power + Max. Tolerance (dBm)	Average power (dBm)
BR/EDR	CH 00	2402	12.00	10.67	6.50	5.02	6.50	5.21
	CH 39	2441		10.87		6.07		6.06
	CH 78	2480		10.63		6.39		6.38

Mode	Channel	Frequency (MHz)	GFSK	
			Max. Rated Avg.Power + Max. Tolerance (dBm)	Average Output Power (dBm)
LE	CH 00	2402	3	2.57
	CH 19	2440		2.81
	CH 39	2480		2.77

1.3.1 LTE Downlink CA specification

LTE Downlink 2CA conducted power table

Two Component Carrier Maximum Conducted Power															
PCC									SCC 1				Power		
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]	SCC (DL) Channel	SCC (DL) Frequency [MHz]	LTE Tx.Power with DL CA active (dBm)	LTE Tx.Power with DL CA inactive (dBm)	Configurations
LTE B2	20	18900	1880	QPSK	1	50	900	1960	LTE B5	10	2525	881.5	23.12	23.24	CA_2A-5A
LTE B5	10	20525	836.5	QPSK	1	25	2525	881.5	LTE B2	20	900	1960	22.97	23.27	CA_2A-5A
LTE B2	20	18900	1880	QPSK	1	50	900	1960	LTE B12	10	5095	737.5	23.15	23.24	CA_2A-12A
LTE B12	10	23060	704	QPSK	1	25	5060	734	LTE B2	20	900	1960	23.58	23.76	CA_2A-12A
LTE B2	20	18900	1880	QPSK	1	50	900	1960	LTE B13	10	5230	751	23.15	23.24	CA_2A-13A
LTE B13	10	23230	782	QPSK	1	0	5230	751	LTE B2	20	900	1960	22.58	22.92	CA_2A-13A
LTE B2	20	18900	1880	QPSK	1	50	900	1960	LTE B29	10	9715	722.5	23.01	23.24	CA_2A-29A
LTE B7	20	21100	2535	QPSK	1	50	3100	2655	LTE B3	20	1575	1842.5	22.20	22.40	CA_3A-7A
LTE B4	20	20050	1720	QPSK	1	50	2050	2120	LTE B5	10	2525	881.5	23.46	23.59	CA_4A-5A
LTE B5	10	20525	836.5	QPSK	1	25	2525	881.5	LTE B4	20	2175	1732.5	23.12	23.27	CA_4A-5A
LTE B4	20	20050	1720	QPSK	1	50	2050	2120	LTE B12	10	5095	737.5	23.45	23.59	CA_4A-12A
LTE B12	10	23060	704	QPSK	1	25	5060	734	LTE B4	20	2175	1732.5	23.71	23.76	CA_4A-12A
LTE B4	20	20050	1720	QPSK	1	50	2050	2120	LTE B13	10	5230	751	23.31	23.59	CA_4A-13A
LTE B13	10	23230	782	QPSK	1	0	5230	751	LTE B4	20	2175	1732.5	22.65	22.92	CA_4A-13A
LTE B4	20	20050	1720	QPSK	1	50	2050	2120	LTE B29	10	9715	722.5	23.39	23.59	CA_4A-29A
LTE B5	10	20525	836.5	QPSK	1	25	2525	881.5	LTE B30	10	9820	2355	23.11	23.27	CA_5A-30A
LTE B30	5	27735	2312.5	QPSK	1	12	9845	2357.5	LTE B5	10	2525	881.5	21.39	21.66	CA_5A-30A
LTE B7	20	21100	2535	QPSK	1	50	3100	2655	LTE B20	20	6300	806	22.06	22.40	CA_7A-20A
LTE B12	10	23060	704	QPSK	1	25	5060	734	LTE B30	10	9820	2355	23.61	23.76	CA_12A-30A
LTE B30	5	27735	2312.5	QPSK	1	12	9845	2357.5	LTE B12	10	5095	737.5	21.35	21.66	CA_12A-30A
LTE B7	20	20850	2510	QPSK	1	99	2850	2630	LTE B7	20	3048	2649.8	22.16	22.22	CA_7C
LTE B41	20	39750	2506	QPSK	1	0	39750	2506	LTE B41	20	39948	2525.8	21.90	22.12	CA_41C
LTE B2	20	18700	1860	QPSK	1	0	700	1940	LTE B2	20	1100	1980	22.88	23.22	CA_2A-2A
LTE B4	20	20050	1720	QPSK	1	0	2050	2120	LTE B4	20	2300	2145	23.19	23.38	CA_4A-4A
LTE B7	20	20850	2510	QPSK	1	99	2850	2630	LTE B7	20	3350	2680	22.09	22.22	CA_7A-7A
LTE B41	20	39750	2506	QPSK	1	0	39750	2506	LTE B41	20	41490	2680	21.85	22.12	CA_41A-41A

A) LTE information

The device supports downlink LTE Carrier Aggregation (CA) only. It supports a maximum of 2 carriers in the downlink. Other Release 10 features or higher 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 36.521-1 V14.3.0. The conducted power measurement results of downlink LTE CA are provided as above per 3GPP TS 36.521-1 V14.3.0. According to KDB 941225 D05A and RF exposure procedures in TCB workshop Nov. 2017, the downlink LTE CA SAR test is not required.

B) Downlink CA combination

i) Combinations supported for intra-band carrier aggregation.

1 band / 2CC contiguous
CA-7C (0)(1)
CA-41C (0)(1)

Intra-band contiguous CA combination

Table 1: intra-band contiguous CA

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_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			

1 band / 2CC non-contiguous
CA-2A-2A (0)
CA-4A-4A (0)
CA-7A-7A (0)
CA-41A-41A (0)(1)

Intra-band non-contiguous CA combination

Table 2: intra-band non-contiguous 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_2A-2A	5,10,15,20	5,10,15,20		40	0
CA_4A-4A	5,10,15,20	5,10,15,20		40	0
CA_7A-7A	5	15		40	0
	10	10,15			
	15	15,20			
	20	20			
CA_41A-41A	10,15,20	10,15,20		40	0
	5,10,15,20	5,10,15,20		40	1

ii) Combinations supported for inter-band carrier aggregation.

2 bands / 2CC
CA_2A-5A (0)
CA_2A-12A (0)(1)
CA_2A-13A (0)(1)
CA_2A-29A (0)(1)(2)
CA_3A-7A (0)
CA_4A-5A (0)(1)
CA_4A-12A (0)(1)(2)(3)(4)
CA_4A-13A (0)(1)
CA_4A-29A (0)(1)(2)
CA_5A-30A (0)
CA_7A-20A (0)(1)
CA_12A-30A (0)

Inter band CA combination

Table 3: 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_2A-5A	2			Yes	Yes	Yes	Yes	30	0
	5			Yes	Yes				
CA_2A-12A	2			Yes	Yes	Yes	Yes	30	0
	12			Yes	Yes				
	2			Yes	Yes	Yes	Yes	30	1
	12		Yes	Yes	Yes				
CA_2A-13A	2			Yes	Yes	Yes	Yes	30	0
	13				Yes				
	2			Yes	Yes			20	1
	13				Yes				
CA_2A-17A	2			Yes	Yes			20	0
	17			Yes	Yes				
CA_2A-29A	2			Yes	Yes			20	0
	29		Yes	Yes	Yes				
	2			Yes	Yes			20	1
	29			Yes	Yes				
	2			Yes	Yes	Yes	Yes	30	2
	29			Yes	Yes				
CA_3A-7A	3			Yes	Yes	Yes	Yes	40	0
	7				Yes	Yes	Yes		
CA_4A-5A	4			Yes	Yes			20	0
	5			Yes	Yes				
	4			Yes	Yes	Yes	Yes	30	1
	5			Yes	Yes				
CA_4A-12A	4	Yes	Yes	Yes	Yes			20	0
	12			Yes	Yes				
	4	Yes	Yes	Yes	Yes	Yes	Yes	30	1

	12			Yes	Yes				
	4			Yes	Yes	Yes	Yes	30	2
	12		Yes	Yes	Yes				
	4			Yes	Yes			20	3
	12			Yes	Yes				
	4			Yes	Yes	Yes	Yes	30	4
	12			Yes	Yes				
CA_4A-13A	4			Yes	Yes	Yes	Yes	30	0
	13				Yes				
	4			Yes	Yes			20	1
	13				Yes				
CA_4A-29A	4			Yes	Yes			20	0
	29		Yes	Yes	Yes				
	4			Yes	Yes			20	1
	29			Yes	Yes				
	4			Yes	Yes	Yes	Yes	30	2
	29			Yes	Yes				
CA_5A-30A	5			Yes	Yes			20	0
	30			Yes	Yes				
CA_7A-20A	7				Yes	Yes	Yes	30	0
	20			Yes	Yes				
	7				Yes	Yes	Yes	40	1
	20			Yes	Yes	Yes	Yes		
CA_12A-30A	12			Yes	Yes			20	0
	30			Yes	Yes				

Note:

1）For the inter-band CA combinations, except B29 can't be PCC, all 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 36.521-1 V14.3.0.

3) The reference test frequencies for Intra-band CA refers to 3GPP TS 36.508 V14.2.0

4) Testing is not required in bands or modes not intended/allowed for US operation.

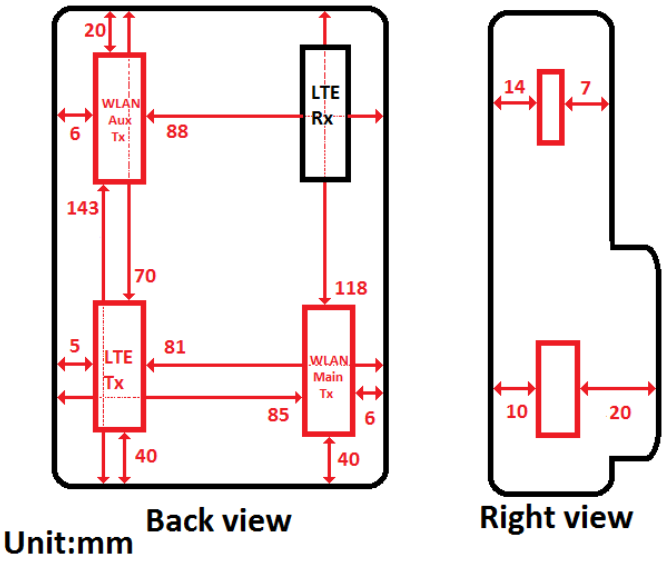
1.4 Test Environment

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

1.5 Operation Description

For WWAN, the EUT is controlled by using a Radio Communication Tester, and the communication between the EUT and the tester is established by air link.
For WLAN, using chipset specific software to control the EUT, and makes it transmit in maximum power. The EUT is set to maximum power level during all tests, and at the beginning of each test the battery is fully charged.
EUT was tested based on KDB inquiry
Extremity SAR (10g-SAR<4W/Kg)

Test it on all surfaces/edges with a transmitting antenna located at 25 mm from that surface / edge, at 0 mm test separation distance.



Antenna location (Back view & Right view)

Note:

1. 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.

2. 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).

3. 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).

4. The 3G SAR test reduction procedure is applied to HSPA+ 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+).

5. 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	Proces ses	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.		

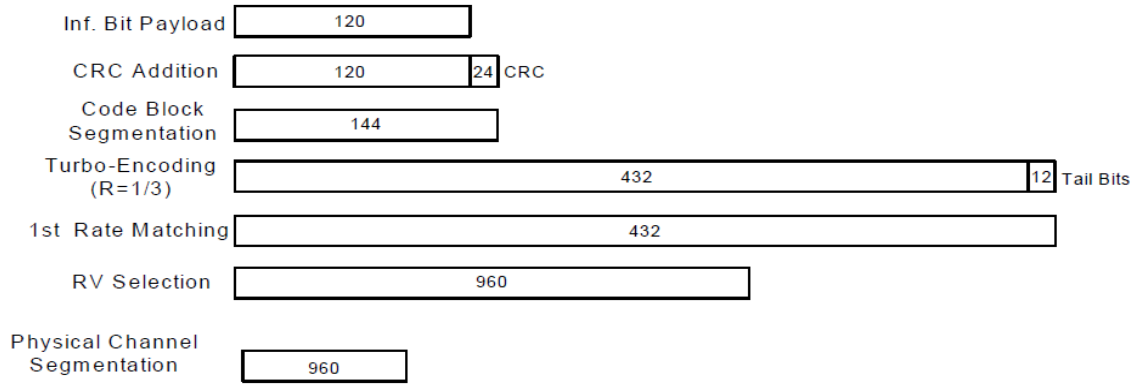


Figure C.8.19: Coding rate for Fixed reference Channel H-Set 12 (QPSK)

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_d/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: Δ_{ACK}, Δ_{NACK} and Δ_{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(TFI,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.							

6. 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)

7. 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.

8. 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.

9. 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.

10. 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.

802.11b DSSS SAR Test Requirements:

11. 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.

12. 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:

13. 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:

14. 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.

15. 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.

16. For WLAN Main/Aux antennas, 5.2a/5.3a/5.6a/5.8a is chosen to be the initial test configurations.

17. 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 configuration.

18. For SAR test reduction and exclusion, above thresholds should be multiplied by 2.5 since 10-g extremity SAR is considered for this case.

19. 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.(For SAR test reduction and exclusion, above thresholds should be multiplied by 2.5 since 10-g extremity SAR is considered for this case.)

20. 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).The same procedures should be adapted for measurements according to extremity exposure limits by applying a factor of 2.5 for extremity exposure to the corresponding SAR thresholds

21. The sample selected for test was prototype that representative to production product and was provided by manufacturer.

1.6 The SAR Measurement System

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

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

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 intissue simulating liquid. The probe is equipped with an optical surface detector system.
3. A data acquisition electronics (DAE) which performs the signal amplification, signal multiplexing, AD-conversion, offset measurements, mechanical surface detection, collision detection, etc. The unit is battery powered with standard or rechargeable batteries. The signal is optically transmitted to the EOC.

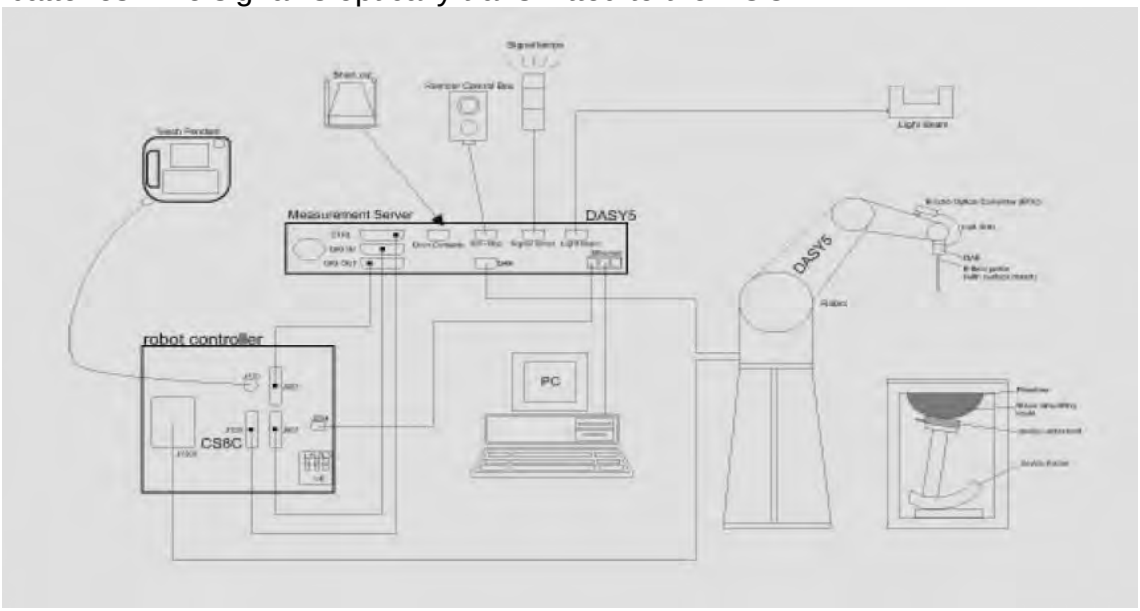


Fig. a The block diagram of SAR system

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 Windows 7.
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.

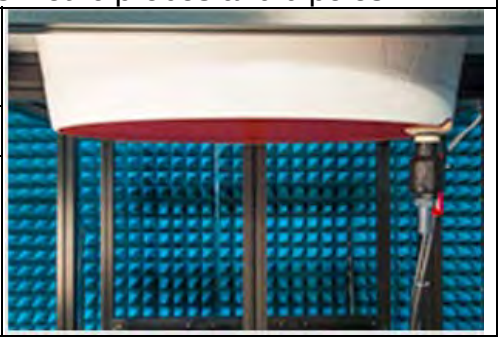
1.7 System Components

EX3DV4 E-Field Probe

Construction	Symmetrical design with triangular core Built-in shielding against static charges PEEK enclosure material (resistant to organic solvents, e.g., DGBE)	
Calibration	Basic Broad Band Calibration in air Conversion Factors (CF) for HSL 750/835/1750/1900/2300/2450/2600/5200/5300/5600/5800MHz Additional CF for other liquids and frequencies upon request	
Frequency	10 MHz to > 6 GHz	
Directivity	± 0.3 dB in HSL (rotation around probe axis) ± 0.5 dB in tissue material (rotation normal to probe axis)	
Dynamic Range	10 µW/g to > 100 mW/g Linearity: ± 0.2 dB (noise: typically < 1 µW/g)	
Dimensions	Tip diameter: 2.5 mm	
Application	High precision dosimetric measurements in any exposure scenario (e.g., very strong gradient fields). Only probe which enables compliance testing for frequencies up to 6 GHz with precision of better 30%.	

PHANTOM

Model	ELI
Construction	The ELI phantom is used for compliance testing of handheld and body-mounted wireless devices in the frequency range of 30 MHz to 6 GHz. ELI is fully compatible with the IEC 62209-2 standard and all known tissue simulating liquids. ELI has been optimized regarding its performance and can be integrated into our standard phantom tables. A cover prevents evaporation of the liquid. Reference markings on the phantom allow installation of the complete setup, including all predefined phantom positions and measurement grids, by teaching three points. The phantom is compatible with all SPEAG dosimetric probes and dipoles.
Shell Thickness	2 ± 0.2 mm
Filling Volume	Approx. 30 liters
Dimensions	Major axis: 600 mm Minor axis: 400 mm



DEVICE HOLDER

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

Device Holder

1.8 SAR System Verification

The microwave circuit arrangement for system verification is sketched in Fig. b. The daily system accuracy verification occurs within the flat section of the SAM phantom. A SAR measurement was performed to see if the measured SAR was within +/- 10% from the target SAR values. These tests were done at 750/835/1750/1900/2300/2450/ /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 (SAR values are normalized to 1W forward power delivered to the dipole). During the tests, the ambient temperature of the laboratory was 21.7°C, the relative humidity was 62% and the liquid depth above the ear reference points was ≥ 15 cm ± 5 mm (frequency ≤ 3 GHz) or ≥ 10 cm ± 5 mm (frequency > 3 G Hz) in all the cases. It is seen that the system is operating within its specification, as the results are within acceptable tolerance of the reference values.

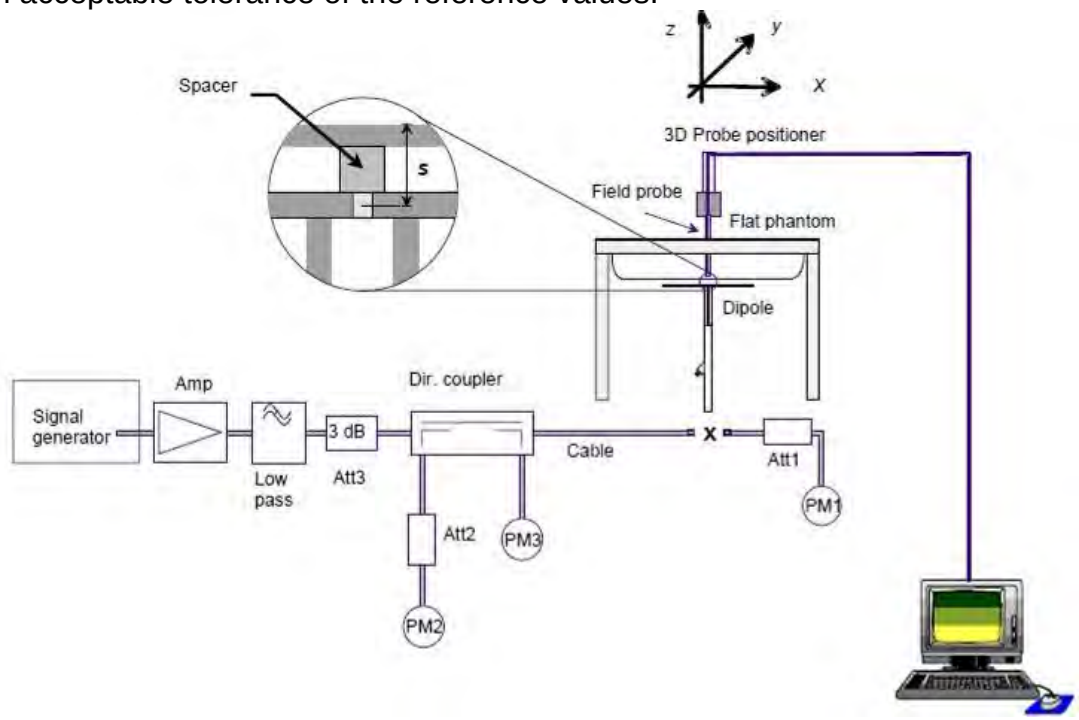


Fig. b The block diagram of system verification

Validation Kit	S/N	Frequency (MHz)		1W Target SAR-10g (mW/g)	Measured SAR-10g (mW/g)	Measured SAR-10g normalized to 1W (mW/g)	Deviation (%)	Measured Date
D750V3	1015	750	Body	5.76	1.45	5.80	0.69%	May. 21, 2018
D835V2	4d063	835	Body	6.28	1.58	6.32	0.64%	May. 21, 2018
D1750V2	1008	1750	Body	19.6	5.01	20.04	2.24%	May. 22, 2018
D1900V2	5d173	1900	Body	21.3	5.21	20.84	-2.16%	May. 22, 2018
D2300V2	1023	2300	Body	22.5	5.80	23.20	3.11%	May. 23, 2018
D2450V2	727	2450	Body	23.8	5.66	22.64	-4.87%	May. 23, 2018
D2600V2	1005	2600	Body	24.3	6.32	25.28	4.03%	May. 23, 2018
D5GHzV2	1023	5200	Body	19.8	2.02	20.20	2.02%	May. 24, 2018
		5300	Body	20.4	2.04	20.40	0.00%	May. 24, 2018
		5600	Body	21.7	2.19	21.90	0.92%	May. 25, 2018
		5800	Body	20.5	2.12	21.20	3.41%	May. 25, 2018

Table 1. Results of system verification

1.9 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 measured conductivity and permittivity are all within ± 5% of the target values.

Tissue Type	Measurement Date	Measured Frequency (MHz)	Target Dielectric Constant, εr	Target Conductivity, σ (S/m)	Measured Dielectric Constant, εr	Measured Conductivity, σ (S/m)	% dev εr	% dev σ
Body	May, 21. 2018	704.00	55.710	0.960	57.950	0.929	-4.02%	3.18%
		707.50	55.697	0.960	58.083	0.927	-4.28%	3.44%
		711.00	55.683	0.960	57.983	0.936	-4.13%	2.53%
		750.00	55.531	0.963	57.630	0.975	-3.78%	-1.21%
		782.00	55.406	0.966	57.349	0.987	-3.51%	-2.19%
		822.50	55.249	0.969	57.475	0.962	-4.03%	0.73%
		826.40	55.234	0.969	57.383	0.934	-3.89%	3.64%
		829.00	55.223	0.970	57.420	0.936	-3.98%	3.51%
		831.50	55.214	0.970	57.350	0.989	-3.87%	-1.99%
		835.00	55.200	0.970	57.325	0.966	-3.85%	0.41%
		836.50	55.195	0.972	57.385	0.944	-3.97%	2.87%
		836.60	55.195	0.972	57.356	0.945	-3.92%	2.77%
		841.50	55.180	0.978	57.280	0.978	-3.81%	0.04%
		844.00	55.172	0.981	57.252	0.951	-3.77%	3.07%
		846.60	55.164	0.984	57.220	0.953	-3.73%	3.18%
	May, 22. 2018	1712.40	53.531	1.465	51.394	1.434	3.99%	2.09%
		1720.00	53.511	1.469	51.362	1.443	4.02%	1.80%
		1732.40	53.478	1.477	51.296	1.478	4.08%	-0.05%
		1732.50	53.478	1.477	51.310	1.457	4.05%	1.38%
		1745.00	53.445	1.485	51.288	1.472	4.04%	0.89%
		1750.00	53.432	1.488	51.298	1.475	3.99%	0.90%
		1752.60	53.425	1.490	51.296	1.478	3.98%	0.81%
		1852.40	53.300	1.520	50.923	1.487	4.46%	2.17%
		1860.00	53.300	1.520	50.872	1.494	4.56%	1.71%
		1880.00	53.300	1.520	50.814	1.515	4.66%	0.33%
		1882.50	53.300	1.520	50.806	1.517	4.68%	0.20%
		1900.00	53.300	1.520	50.780	1.535	4.73%	-0.99%
		1905.00	53.300	1.520	50.718	1.544	4.84%	-1.58%
		1907.60	53.300	1.520	50.734	1.550	4.81%	-1.97%
	May, 23. 2018	2300.00	52.900	1.807	53.572	1.742	-1.27%	3.58%
		2310.00	52.887	1.816	53.545	1.754	-1.24%	3.43%

Tissue Type	Measurement Date	Measured Frequency (MHz)	Target Dielectric Constant, εr	Target Conductivity, σ (S/m)	Measured Dielectric Constant, εr	Measured Conductivity, σ (S/m)	% dev εr	% dev σ
Body	May, 23. 2018	2402	52.764	1.904	53.681	1.818	-1.74%	4.52%
		2412	52.751	1.914	53.672	1.834	-1.75%	4.18%
		2437	52.717	1.938	53.562	1.863	-1.60%	3.87%
		2441	52.712	1.941	53.548	1.875	-1.59%	3.40%
		2450	52.700	1.950	53.529	1.884	-1.57%	3.38%
		2462	52.685	1.967	53.502	1.899	-1.55%	3.46%
		2480	52.662	1.993	53.442	1.924	-1.48%	3.46%
	May, 23. 2018	2506.00	52.629	2.029	50.347	1.990	4.34%	1.94%
		2510.00	52.624	2.035	50.336	1.992	4.35%	2.12%
		2535.00	52.592	2.071	50.247	2.034	4.46%	1.77%
		2549.50	52.573	2.091	50.222	2.050	4.47%	1.97%
		2560.00	52.560	2.106	50.171	2.067	4.55%	1.85%
		2593.00	52.518	2.153	50.383	2.108	4.07%	2.08%
		2600.00	52.509	2.163	50.005	2.122	4.77%	1.88%
		2636.50	52.463	2.214	50.200	2.173	4.31%	1.84%
		2680.00	52.407	2.276	50.081	2.233	4.44%	1.90%
	May, 24. 2018	5180	49.041	5.276	49.243	5.065	-0.41%	4.00%
		5200	49.014	5.299	49.132	5.082	-0.24%	4.10%
		5220	48.987	5.323	49.077	5.104	-0.18%	4.11%
		5240	48.960	5.346	49.014	5.137	-0.11%	3.91%
		5260	48.933	5.369	48.908	5.185	0.05%	3.43%
		5280	48.906	5.393	48.892	5.207	0.03%	3.45%
		5300	48.879	5.416	48.841	5.249	0.08%	3.08%
		5320	48.851	5.439	48.746	5.265	0.21%	3.20%
	May, 25. 2018	5520	48.580	5.676	48.108	5.599	0.97%	1.36%
		5600	48.471	5.766	47.882	5.729	1.22%	0.64%
		5680	48.363	5.860	47.624	5.871	1.53%	-0.19%
		5765	48.248	5.959	47.302	5.989	1.96%	-0.50%
		5785	48.220	5.982	47.262	6.032	1.99%	-0.84%
		5800	48.200	6.000	47.240	6.058	1.99%	-0.97%
		5825	48.166	6.029	47.221	6.083	1.96%	-0.90%

Table 2. Dielectric Parameters of Tissue Simulant Fluid

The composition of the body tissue simulating liquid:

Frequency (MHz)	Mode	Ingredient						Total amount
		DGMBE	Water	Salt	Preventol D-7	Cellulose	Sugar	
750	Body	–	631.68 g	11.72 g	1.2 g	–	600 g	1.0L(Kg)
850	Body	–	631.68 g	11.72 g	1.2 g	–	600 g	1.0L(Kg)
1750	Body	300.67 g	716.56 g	4.0 g	–	–	–	1.0L(Kg)
1900	Body	300.67 g	716.56 g	4.0 g	–	–	–	1.0L(Kg)
2300	Body	301.7ml	698.3ml	–	–	–	–	1.0L(Kg)
2450	Body	301.7ml	698.3ml	–	–	–	–	1.0L(Kg)
2600	Body	301.7ml	698.3ml	–	–	–	–	1.0L(Kg)

Simulating Liquids for 5 GHz, Manufactured by SPEAG:

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

Table 3. Recipes for Tissue Simulating Liquid

1.10 Evaluation Procedures

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

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

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

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

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

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

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

1.11 Probe Calibration Procedures

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

1.11.1 Transfer Calibration with Temperature Probes

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

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

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

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

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].

1.11.2 Calibration with Analytical Fields

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

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

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.

1.12 Test Standards and Limits

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

1. Limits for Occupational/Controlled exposure: 0.4 W/kg as averaged over the whole-body and spatial peak SAR not exceeding 8 W/kg as averaged over any 1 gram of tissue (defined as a tissue volume in the shape of a cube). Exceptions are the hands, wrists, feet and ankles where the spatial peak SAR shall not exceed 20 W/kg, as averaged over an 10 grams of tissue (defined as a tissue volume in the shape of a cube).
2. Occupational/Controlled limits apply when persons are exposed as a consequence of their employment provided these persons are fully aware of and exercise control over their exposure. Awareness of exposure can be accomplished by use of warning labels or by specific training or education through appropriate means, such as an RF safety program in a work environment.
3. Limits for General Population/Uncontrolled exposure: 0.08 W/kg as averaged over the whole-body and spatial peak SAR not exceeding 1.6 W/kg as averaged over any 1 gram of tissue (defined as a tissue volume in the shape of a cube). Exceptions are the hands, wrists, feet and ankles where the

spatial peak SAR shall not exceed 4 W/kg, as averaged over any 10 grams of tissue (defined as a tissue volume in the shape of a cube). General Population/Uncontrolled limits apply when the general public may be exposed, or when persons that are exposed as a consequence of their employment may not be fully aware of the potential for exposure or do not exercise control over their exposure. Warning labels placed on consumer devices such as cellular telephones will not be sufficient reason to allow these devices to be evaluated subject to limits for occupational/controlled exposure in paragraph (d)(1) of this section. (Table 4.)

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

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

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 10g (W/kg)		Plot page
								Measured	Reported	
WCDMA Band II	Front side	0	9262	1852.4	24.00	23.44	13.76%	0.940	1.069	-
	Back side	0	9262	1852.4	24.00	23.44	13.76%	0.600	0.683	-
	Top side	0	9262	1852.4	24.00	23.44	13.76%	0.021	0.024	-
	Bottom side	0	9262	1852.4	24.00	23.44	13.76%	0.130	0.148	-
	Right side	0	9262	1852.4	24.00	23.44	13.76%	2.230	2.537	-
	Right side	0	9400	1880	24.00	23.10	23.03%	2.320	2.854	-
	Right side	0	9538	1907.6	24.00	23.00	25.89%	2.570	3.235	134
	Right side*	0	9538	1907.6	24.00	23.00	25.89%	2.520	3.172	-
	Left side	0	9262	1852.4	24.00	23.44	13.76%	0.060	0.068	-

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

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 10g (W/kg)		Plot page
								Measured	Reported	
WCDMA Band VI	Front side	0	1312	1712.4	24	23.28	18.03%	0.560	0.661	-
	Back side	0	1312	1712.4	24	23.28	18.03%	0.480	0.567	
	Top side	0	1312	1712.4	24	23.28	18.03%	0.021	0.025	-
	Bottom side	0	1312	1712.4	24	23.28	18.03%	0.030	0.035	-
	Right side	0	1312	1712.4	24	23.28	18.03%	0.830	0.980	-
	Right side	0	1412	1732.4	24	23.16	21.34%	0.920	1.116	-
	Right side	0	1513	1752.6	24	23.17	21.06%	1.150	1.392	135
	Left side	0	1312	1712.4	24	23.28	18.03%	0.030	0.035	-

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 10g (W/kg)		Plot page
								Measured	Reported	
WCDMA Band V	Front side	0	4233	846.6	24	22.88	29.42%	0.350	0.453	-
	Back side	0	4233	846.6	24	22.88	29.42%	0.810	1.048	-
	Top side	0	4233	846.6	24	22.88	29.42%	0.030	0.039	-
	Bottom side	0	4233	846.6	24	22.88	29.42%	0.020	0.026	-
	Right side	0	4132	826.4	24	22.86	30.02%	1.060	1.378	136
	Right side	0	4183	836.6	24	22.83	30.92%	1.010	1.322	-
	Right side	0	4233	846.6	24	22.88	29.42%	0.989	1.280	-
	Left side	0	4233	846.6	24	22.88	29.42%	0.040	0.052	-

LTE FDD Band 2

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 10g (W/kg)		Plot page
											Measured	Reported	
20MHz	QPSK	1 RB	0	Right side	0	18700	1860	24	23.32	16.95%	2.350	2.748	-
			50	Front side	0	18900	1880	24	23.24	19.12%	1.030	1.227	-
				Back side	0	18900	1880	24	23.24	19.12%	0.850	1.013	-
				Top side	0	18900	1880	24	23.24	19.12%	0.020	0.024	-
				Bottom side	0	18900	1880	24	23.24	19.12%	0.110	0.131	-
				Right side	0	18900	1880	24	23.24	19.12%	2.540	3.026	-
				Right side*	0	18900	1880	24	23.24	19.12%	2.650	3.157	-
				Right side	0	19100	1900	24	23.16	21.34%	2.700	3.276	137
				Left side	0	18900	1880	24	23.24	19.12%	0.050	0.060	-
		50 RB	0	Front side	0	18700	1860	23	22.37	15.61%	0.780	0.902	-
				Back side	0	18700	1860	23	22.37	15.61%	0.590	0.682	-
				Top side	0	18700	1860	23	22.37	15.61%	0.190	0.220	-
				Bottom side	0	18700	1860	23	22.37	15.61%	0.097	0.112	-
				Right side	0	18700	1860	23	22.37	15.61%	2.260	2.613	-
				Left side	0	18700	1860	23	22.37	15.61%	0.050	0.058	-
		100 RB		Front side	0	18900	1880	23	22.24	19.12%	0.800	0.953	-
				Back side	0	18900	1880	23	22.24	19.12%	0.620	0.739	-
				Top side	0	18900	1880	23	22.24	19.12%	0.180	0.214	-
				Bottom side	0	18900	1880	23	22.24	19.12%	0.090	0.107	-
				Right side	0	18900	1880	23	22.24	19.12%	2.210	2.633	-
				Left side	0	18900	1880	23	22.24	19.12%	0.040	0.048	-

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

LTE FDD Band 4

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 10g (W/kg)		Plot page
												Measured	Reported	
Body	20MHz	QPSK	1 RB	0	Right side	0	20175	1732.5	24	23.37	15.61%	1.020	1.179	-
				50	Front side	0	20050	1720	24	23.59	9.90%	0.640	0.703	-
					Back side	0	20050	1720	24	23.59	9.90%	0.500	0.550	-
					Top side	0	20050	1720	24	23.59	9.90%	0.020	0.022	-
					Bottom side	0	20050	1720	24	23.59	9.90%	0.040	0.044	-
					Right side	0	20050	1720	24	23.59	9.90%	1.090	1.198	-
					Right side		20300	1745	24	23.41	14.55%	1.120	1.283	138
					Left side	0	20050	1720	24	23.59	9.90%	0.030	0.033	-
			50 RB	0	Front side	0	20050	1720	23	22.54	11.17%	0.490	0.545	-
					Back side	0	20050	1720	23	22.54	11.17%	0.400	0.445	-
					Top side	0	20050	1720	23	22.54	11.17%	0.017	0.019	-
					Bottom side	0	20050	1720	23	22.54	11.17%	0.040	0.044	-
					Right side	0	20050	1720	23	22.54	11.17%	0.870	0.967	-
					Left side	0	20050	1720	23	22.54	11.17%	0.030	0.033	-
			100 RB		Front side	0	20050	1720	23	22.47	12.98%	0.500	0.565	-
					Back side	0	20050	1720	23	22.47	12.98%	0.400	0.452	-
					Top side	0	20050	1720	23	22.47	12.98%	0.013	0.015	-
					Bottom side	0	20050	1720	23	22.47	12.98%	0.030	0.034	-
					Right side	0	20050	1720	23	22.47	12.98%	0.890	1.006	-
					Left side	0	20300	1745	23	22.47	12.98%	0.030	0.034	-

LTE FDD Band 5

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 10g (W/kg)		Plot page
												Measured	Reported	
Body	10MHz	QPSK	1 RB	25	Front side	0	20525	836.5	24	23.27	18.30%	0.410	0.485	-
					Back side	0	20525	836.5	24	23.27	18.30%	0.910	1.077	-
					Top side	0	20525	836.5	24	23.27	18.30%	0.030	0.035	-
					Bottom side	0	20525	836.5	24	23.27	18.30%	0.036	0.043	-
					Right side	0	20450	829	24	23.14	21.90%	1.050	1.280	-
					Right side	0	20525	836.5	24	23.27	18.30%	1.100	1.301	139
					Right side	0	20600	844	24	23.20	20.23%	1.030	1.238	-
					Left side	0	20525	836.5	24	23.27	18.30%	0.030	0.035	-
			25 RB	12	Front side	0	20525	836.5	23	22.15	21.62%	0.310	0.377	-
					Back side	0	20525	836.5	23	22.15	21.62%	0.710	0.863	-
					Top side	0	20525	836.5	23	22.15	21.62%	0.027	0.033	-
					Bottom side	0	20525	836.5	23	22.15	21.62%	0.032	0.039	-
					Right side	0	20525	836.5	23	22.15	21.62%	0.871	1.059	-
					Left side	0	20525	836.5	23	22.15	21.62%	0.024	0.029	-
			50 RB		Front side	0	20525	836.5	23	22.02	25.31%	0.300	0.376	-
					Back side	0	20525	836.5	23	22.02	25.31%	0.690	0.865	-
					Top side	0	20525	836.5	23	22.02	25.31%	0.023	0.029	-
					Bottom side	0	20525	836.5	23	22.02	25.31%	0.037	0.046	-
					Right side	0	20525	836.5	23	22.02	25.31%	0.823	1.031	-
					Left side	0	20525	836.5	23	22.02	25.31%	0.020	0.025	-

LTE FDD Band 7

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 10g (W/kg)		Plot page
												Measured	Reported	
Body	20MHz	QPSK	1 RB	50	Front side	0	21100	2535	23	22.40	14.82%	0.550	0.631	-
					Back side	0	21100	2535	23	22.40	14.82%	0.760	0.873	-
					Top side	0	21100	2535	23	22.40	14.82%	0.014	0.016	-
					Bottom side	0	21100	2535	23	22.40	14.82%	0.095	0.109	-
					Right side	0	21100	2535	23	22.40	14.82%	1.630	1.871	-
					Right side	0	21350	2560	23	22.07	23.88%	1.560	1.933	-
					Left side	0	21100	2535	23	22.40	14.82%	0.031	0.036	-
				99	Right side	0	20850	2510	23	22.22	19.67%	1.700	2.034	140
					Right side*	0	20850	2510	23	22.22	19.67%	1.660	1.987	-
			50 RB	25	Front side	0	21100	2535	22	21.38	15.35%	0.450	0.519	-
					Back side	0	21100	2535	22	21.38	15.35%	0.640	0.738	-
					Top side	0	21100	2535	22	21.38	15.35%	0.013	0.015	
					Bottom side	0	21100	2535	22	21.38	15.35%	0.091	0.105	-
					Right side	0	21100	2535	22	21.38	15.35%	1.320	1.523	-
					Left side	0	21100	2535	22	21.38	15.35%	0.029	0.033	-
			100 RB		Back side	0	21100	2535	22	21.30	17.49%	0.420	0.493	-
					Top side	0	21100	2535	22	21.30	17.49%	0.620	0.728	-
					Bottom side	0	21100	2535	22	21.30	17.49%	0.010	0.012	-
					Right side	0	21100	2535	22	21.30	17.49%	0.086	0.101	-
					Left side	0	21100	2535	22	21.30	17.49%	1.300	1.527	-
					Left side	0	21100	2535	22	21.30	17.49%	0.027	0.032	-

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

LTE FDD Band 12

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 10g (W/kg)		Plot page
												Measured	Reported	
Body	10MHz	QPSK	1 RB	25	Front side	0	23060	704	24	23.76	5.68%	0.380	0.402	-
					Back side	0	23060	704	24	23.76	5.68%	0.440	0.465	-
					Top side	0	23060	704	24	23.76	5.68%	0.035	0.037	-
					Bottom side	0	23060	704	24	23.76	5.68%	0.039	0.041	-
					Right side	0	23060	704	24	23.76	5.68%	1.560	1.649	-
					Right side	0	23095	707.5	24	23.60	9.65%	1.580	1.732	-
					Right side	0	23130	711	24	23.49	12.46%	1.620	1.822	141
					Left side	0	23060	704	24	23.76	5.68%	0.050	0.053	-
			25 RB	0	Front side	0	23060	704	23	22.59	9.90%	0.280	0.308	-
					Back side	0	23060	704	23	22.59	9.90%	0.330	0.363	-
					Top side	0	23060	704	23	22.59	9.90%	0.024	0.026	-
					Bottom side	0	23060	704	23	22.59	9.90%	0.031	0.034	-
					Right side	0	23060	704	23	22.59	9.90%	1.240	1.363	-
					Left side	0	23060	704	23	22.59	9.90%	0.030	0.033	-
			50 RB		Front side	0	23060	704	23	22.54	11.17%	0.280	0.311	-
					Back side	0	23060	704	23	22.54	11.17%	0.330	0.367	-
					Top side	0	23060	704	23	22.54	11.17%	0.021	0.023	-
					Bottom side	0	23060	704	23	22.54	11.17%	0.026	0.029	-
					Right side	0	23060	704	23	22.54	11.17%	1.180	1.312	-
					Left side	0	23060	704	23	22.54	11.17%	0.030	0.033	-

LTE FDD Band 13

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 10g (W/kg)		Plot page
												Measured	Reported	
Body	10MHz	QPSK	1 RB	0	Front side	0	23230	782	24	22.92	28.23%	0.400	0.513	-
					Back side	0	23230	782	24	22.92	28.23%	0.830	1.064	-
					Top side	0	23230	782	24	22.92	28.23%	0.030	0.038	-
					Bottom side	0	23230	782	24	22.92	28.23%	0.012	0.015	-
					Right side	0	23230	782	24	22.92	28.23%	1.660	2.129	142
					Right side	0	23230	782	24	22.92	28.23%	1.610	2.065	-
					Left side	0	23230	782	24	22.92	28.23%	0.050	0.064	-
				25	Right side	0	23230	782	24	22.80	31.83%	1.600	2.109	-
				49	Right side	0	23230	782	24	22.59	38.36%	1.450	2.006	-
			25 RB	0	Front side	0	23230	782	23	21.68	35.52%	0.300	0.407	-
					Back side	0	23230	782	23	21.68	35.52%	0.640	0.867	-
					Top side	0	23230	782	23	21.68	35.52%	0.027	0.037	-
					Bottom side	0	23230	782	23	21.68	35.52%	0.010	0.014	-
					Right side	0	23230	782	23	21.68	35.52%	1.180	1.599	-
					Left side	0	23230	782	23	21.68	35.52%	0.030	0.041	-
			50 RB		Front side	0	23230	782	23	21.64	36.77%	0.300	0.410	-
					Back side	0	23230	782	23	21.64	36.77%	0.650	0.889	-
					Top side	0	23230	782	23	21.64	36.77%	0.024	0.033	-
					Bottom side	0	23230	782	23	21.64	36.77%	0.009	0.012	-
					Right side	0	23230	782	23	21.64	36.77%	1.150	1.573	-
					Left side	0	23230	782	23	21.64	36.77%	0.030	0.041	-

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

LTE FDD Band 25

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 10g (W/kg)		Plot page
												Measured	Reported	
Body	20MHz	QPSK	1 RB	50	Front side	0	26140	1860	24	22.93	27.94%	0.900	1.151	-
					Back side	0	26140	1860	24	22.93	27.94%	0.660	0.844	-
					Top side	0	26140	1860	24	22.93	27.94%	0.019	0.024	-
					Bottom side	0	26140	1860	24	22.93	27.94%	0.120	0.154	-
					Right side	0	26140	1860	24	22.93	27.94%	2.380	3.045	-
					Right side	0	26365	1882.5	24	22.85	30.32%	2.420	3.154	-
					Right side	0	26590	1905	24	22.78	32.43%	2.520	3.337	143
					Right side*	0	26590	1905	24	22.78	32.43%	2.490	3.298	-
					Left side	0	26140	1860	24	22.93	27.94%	0.050	0.064	-
			50 RB	25	Front side	0	26140	1860	23	21.89	29.12%	0.730	0.943	-
					Back side	0	26140	1860	23	21.89	29.12%	0.520	0.671	-
					Top side	0	26140	1860	23	21.89	29.12%	0.015	0.019	-
					Bottom side	0	26140	1860	23	21.89	29.12%	0.090	0.116	-
					Right side	0	26140	1860	23	21.89	29.12%	1.900	2.453	-
					Right side	0	26365	1882.5	23	21.80	31.83%	1.920	2.531	-
					Right side	0	26590	1905	23	21.78	32.43%	1.990	2.635	-
					Left side	0	26140	1860	23	21.89	29.12%	0.040	0.052	-
			100 RB		Front side	0	26590	1905	23	21.81	31.52%	0.710	0.934	-
					Back side	0	26590	1905	23	21.81	31.52%	0.520	0.684	-
					Top side	0	26590	1905	23	21.81	31.52%	0.014	0.018	-
					Bottom side	0	26590	1905	23	21.81	31.52%	0.090	0.118	-
					Right side	0	26140	1860	23	21.76	33.05%	1.890	2.515	-
					Right side	0	26365	1882.5	23	21.81	31.52%	1.830	2.407	-
					Right side	0	26590	1905	23	21.81	31.52%	1.860	2.446	-
					Left side	0	26590	1905	23	21.81	31.52%	0.040	0.053	-

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

LTE FDD Band 26

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 10g (W/kg)		Plot page
												Measured	Reported	
Body	15MHz	QPSK	1 RB	0	Front side	0	26825	822.5	24	22.79	32.13%	0.390	0.515	-
					Back side	0	26825	822.5	24	22.79	32.13%	0.830	1.097	-
					Top side	0	26825	822.5	24	22.79	32.13%	0.026	0.034	-
					Bottom side	0	26825	822.5	24	22.79	32.13%	0.032	0.042	-
					Right side	0	26825	822.5	24	22.79	32.13%	1.090	1.440	144
					Left side	0	26825	822.5	24	22.79	32.13%	0.040	0.053	-
				36	Right side	0	26865	831.5	24	22.69	35.21%	1.020	1.379	-
					Right side	0	26825	822.5	24	22.60	38.04%	0.996	1.375	-
			36 RB	37	Front side	0	26965	841.5	23	21.73	33.97%	0.270	0.362	-
					Back side	0	26965	841.5	23	21.73	33.97%	0.660	0.884	-
					Top side	0	26965	841.5	23	21.73	33.97%	0.024	0.032	-
					Bottom side	0	26965	841.5	23	21.73	33.97%	0.029	0.039	-
					Right side	0	26965	841.5	23	21.73	33.97%	0.872	1.168	-
					Left side	0	26965	841.5	23	21.73	33.97%	0.030	0.040	-
			75 RB		Front side	0	26825	822.5	23	21.66	36.14%	0.300	0.408	-
					Back side	0	26825	822.5	23	21.66	36.14%	0.640	0.871	-
					Top side	0	26825	822.5	23	21.66	36.14%	0.021	0.029	-
					Bottom side	0	26825	822.5	23	21.66	36.14%	0.024	0.033	-
					Right side	0	26825	822.5	23	21.66	36.14%	0.843	1.148	-
					Left side	0	26825	822.5	23	21.66	36.14%	0.020	0.027	-

LTE FDD Band 30

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 10g (W/kg)		Plot page
												Measured	Reported	
Body	10MHz	QPSK	1 RB	0	Right side	0	27710	2310	23	21.54	39.96%	1.480	2.071	-
				25	Front side	0	27710	2310	23	21.59	38.36%	0.310	0.429	-
					Back side	0	27710	2310	23	21.59	38.36%	0.950	1.314	-
					Top side	0	27710	2310	23	21.59	38.36%	0.020	0.028	-
					Bottom side	0	27710	2310	23	21.59	38.36%	0.035	0.048	-
					Right side	0	27710	2310	23	21.59	38.36%	1.510	2.089	145
					Right side*	0	27710	2310	23	21.59	38.36%	1.480	2.048	-
					Left side	0	27710	2310	23	21.59	38.36%	0.030	0.042	-
				49	Right side	0	27710	2310	23	21.41	44.21%	1.400	2.019	-
			25 RB	12	Front side	0	27710	2310	22	20.55	39.64%	0.250	0.349	-
					Back side	0	27710	2310	22	20.55	39.64%	0.750	1.047	-
					Top side	0	27710	2310	22	20.55	39.64%	0.016	0.022	-
					Bottom side	0	27710	2310	22	20.55	39.64%	0.020	0.028	-
					Right side	0	27710	2310	22	20.55	39.64%	1.200	1.676	-
					Left side	0	27710	2310	22	20.55	39.64%	0.029	0.040	-
			50 RB		Front side	0	27710	2310	22	20.42	43.88%	0.240	0.345	-
					Back side	0	27710	2310	22	20.42	43.88%	0.740	1.065	-
					Top side	0	27710	2310	22	20.42	43.88%	0.015	0.022	-
					Bottom side	0	27710	2310	22	20.42	43.88%	0.020	0.029	-
					Right side	0	27710	2310	22	20.42	43.88%	1.170	1.683	-
					Left side	0	27710	2310	22	20.42	43.88%	0.027	0.039	-

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

LTE TDD Band 41

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 10g (W/kg)		Plot page
												Measured	Reported	
Body	20MHz	QPSK	1 RB	0	Right side	0	39750	2506	23	22.12	22.46%	0.585	0.716	146
					Right side	0	41490	2680	23	21.82	31.22%	0.510	0.669	-
				50	Front side	0	40620	2593	23	22.31	17.22%	0.160	0.188	-
					Back side	0	40620	2593	23	22.31	17.22%	0.260	0.305	-
					Top side	0	40620	2593	23	22.31	17.22%	0.003	0.004	-
					Bottom side	0	40620	2593	23	22.31	17.22%	0.009	0.011	-
					Right side	0	40185	2549.5	23	22.15	21.62%	0.562	0.683	-
					Right side	0	40620	2593	23	22.31	17.22%	0.543	0.637	-
					Right side	0	41055	2636.5	23	22.11	22.74%	0.534	0.655	-
					Left side	0	40620	2593	23	22.31	17.22%	0.008	0.009	-
			50 RB	25	Front side	0	39750	2506	22	21.28	18.03%	0.127	0.150	-
					Back side	0	39750	2506	22	21.28	18.03%	0.207	0.244	-
					Top side	0	39750	2506	22	21.28	18.03%	0.002	0.002	-
					Bottom side	0	39750	2506	22	21.28	18.03%	0.008	0.009	-
					Right side	0	39750	2506	22	21.28	18.03%	0.430	0.508	-
					Left side	0	39750	2506	22	21.28	18.03%	0.006	0.007	-
			100 RB		Front side	0	40620	2593	22	21.15	21.62%	0.131	0.159	-
					Back side	0	40620	2593	22	21.15	21.62%	0.202	0.246	-
					Top side	0	40620	2593	22	21.15	21.62%	0.002	0.002	-
					Bottom side	0	40620	2593	22	21.15	21.62%	0.007	0.009	-
					Right side	0	40620	2593	22	21.15	21.62%	0.421	0.512	-
					Left side	0	40620	2593	22	21.15	21.62%	0.002	0.002	-

WLAN Main Antenna

Antenna	Mode	Position	Distance (mm)	CH	Freq. (MHz)	Max. Rated Avg. Power + Max. Tolerance (dBm)	Measured Avg. Power (dBm)	Scaling	Averaged SAR over 10g (W/kg)		Plot page
									Measured	Reported	
Main	WLAN 802.11b	Front side	0	6	2437	19	18.89	102.57%	0.070	0.072	-
		Back side	0	6	2437	19	18.89	102.57%	0.150	0.154	-
		Top side	0	6	2437	19	18.89	102.57%	0.030	0.031	-
		Bottom side	0	6	2437	19	18.89	102.57%	0.030	0.031	147
		Right side	0	6	2437	19	18.89	102.57%	0.020	0.021	-
		Leftt side	0	6	2437	19	18.89	102.57%	0.310	0.318	-
	Bluetooth (GFSK)	Front side	0	39	2441	12	10.87	129.72%	0.007	0.009	-
		Back side	0	39	2441	12	10.87	129.72%	0.016	0.021	-
		Top side	0	39	2441	12	10.87	129.72%	0.003	0.004	-
		Bottom side	0	39	2441	12	10.87	129.72%	0.003	0.004	-
		Right side	0	39	2441	12	10.87	129.72%	0.002	0.003	-
		Leftt side	0	0	2402	12	10.67	135.83%	0.024	0.033	-
		Leftt side	0	39	2441	12	10.87	129.72%	0.030	0.039	148
		Leftt side	0	78	2480	12	10.63	137.09%	0.027	0.037	-
	WLAN 802.11a 5.2G	Front side	0	48	5240	15.5	15.39	102.57%	0.130	0.133	-
		Back side	0	48	5240	15.5	15.39	102.57%	0.188	0.193	149
		Top side	0	48	5240	15.5	15.39	102.57%	0.002	0.002	-
		Bottom side	0	48	5240	15.5	15.39	102.57%	0.003	0.003	-
		Right side	0	48	5240	15.5	15.39	102.57%	0.001	0.001	-
		Leftt side	0	48	5240	15.5	15.39	102.57%	0.152	0.156	-
	WLAN 802.11a 5.3G	Front side	0	52	5260	15.5	15.50	100.00%	0.112	0.112	-
		Back side	0	52	5260	15.5	15.50	100.00%	0.181	0.181	150
		Top side	0	52	5260	15.5	15.50	100.00%	0.003	0.003	-
		Bottom side	0	52	5260	15.5	15.50	100.00%	0.003	0.003	-
		Right side	0	52	5260	15.5	15.50	100.00%	0.001	0.001	-
		Leftt side	0	52	5260	15.5	15.50	100.00%	0.162	0.162	-
	WLAN 802.11a 5.6G	Front side	0	104	5520	15.5	15.45	101.16%	0.151	0.153	-
		Back side	0	104	5520	15.5	15.45	101.16%	0.532	0.538	-
		Top side	0	104	5520	15.5	15.45	101.16%	0.002	0.002	-
		Bottom side	0	104	5520	15.5	15.45	101.16%	0.002	0.002	-
		Right side	0	104	5520	15.5	15.45	101.16%	0.001	0.001	-
		Leftt side	0	104	5520	15.5	15.45	101.16%	0.543	0.549	151
	WLAN 802.11a 5.8G	Front side	0	153	5765	15.5	15.49	100.23%	0.212	0.212	-
		Back side	0	153	5765	15.5	15.49	100.23%	0.582	0.583	152
		Top side	0	153	5765	15.5	15.49	100.23%	0.002	0.002	-
		Bottom side	0	153	5765	15.5	15.49	100.23%	0.003	0.003	-
		Right side	0	153	5765	15.5	15.49	100.23%	0.001	0.001	-
		Leftt side	0	153	5765	15.5	15.49	100.23%	0.567	0.568	-

WLAN Aux Antenna

Antenna	Mode	Position	Distance (mm)	CH	Freq. (MHz)	Max. Rated Avg. Power + Max. Tolerance (dBm)	Measured Avg. Power (dBm)	Scaling	Averaged SAR over 10g (W/kg)		Plot page
									Measured	Reported	
Aux	WLAN 802.11b	Front side	0	6	2437	19	19.00	100.00%	0.071	0.071	-
		Back side	0	6	2437	19	19.00	100.00%	0.121	0.121	-
		Top side	0	6	2437	19	19.00	100.00%	0.031	0.031	-
		Bottom side	0	6	2437	19	19.00	100.00%	0.001	0.001	-
		Right side	0	6	2437	19	19.00	100.00%	0.531	0.531	153
		Leftt side	0	6	2437	19	19.00	100.00%	0.002	0.002	-
	WLAN 802.11a 5.2G	Front side	0	48	5240	17	17.00	100.00%	0.131	0.131	-
		Back side	0	48	5240	17	17.00	100.00%	0.251	0.251	-
		Top side	0	48	5240	17	17.00	100.00%	0.001	0.001	-
		Bottom side	0	48	5240	17	17.00	100.00%	0.001	0.001	-
		Right side	0	48	5240	17	17.00	100.00%	0.336	0.336	154
		Leftt side	0	48	5240	17	17.00	100.00%	0.001	0.001	-
	WLAN 802.11a 5.3G	Front side	0	52	5260	16.5	16.47	100.69%	0.113	0.114	-
		Back side	0	52	5260	16.5	16.47	100.69%	0.246	0.248	-
		Top side	0	52	5260	16.5	16.47	100.69%	0.001	0.001	-
		Bottom side	0	52	5260	16.5	16.47	100.69%	0.002	0.002	-
		Right side	0	52	5260	16.5	16.47	100.69%	0.269	0.271	155
		Leftt side	0	52	5260	16.5	16.47	100.69%	0.001	0.001	-
	WLAN 802.11a .5.6G	Front side	0	104	5520	15.5	15.49	100.23%	0.154	0.154	-
		Back side	0	104	5520	15.5	15.49	100.23%	0.232	0.233	-
		Top side	0	104	5520	15.5	15.49	100.23%	0.002	0.002	-
		Bottom side	0	104	5520	15.5	15.49	100.23%	0.002	0.002	-
		Right side	0	104	5520	15.5	15.49	100.23%	0.318	0.319	156
		Leftt side	0	104	5520	15.5	15.49	100.23%	0.002	0.002	-
	WLAN 802.11a .5.8G	Front side	0	153	5765	16	15.90	102.33%	0.119	0.122	-
		Back side	0	153	5765	16	15.90	102.33%	0.211	0.216	-
		Top side	0	153	5765	16	15.90	102.33%	0.001	0.001	-
		Bottom side	0	153	5765	16	15.90	102.33%	0.002	0.002	-
		Right side	0	153	5765	16	15.90	102.33%	0.305	0.312	157
		Leftt side	0	153	5765	16	15.90	102.33%	0.002	0.002	-

Note:

Scaling = $\frac{\text{reported SAR}}{\text{measured SAR}} = \frac{P2(mW)}{P1(mW)} = 10^{\left(\frac{P2-P1}{10}\right)(dBm)}$

Reported SAR = measured SAR * (scaling)
Where P2 is maximum specified power, P1 is measured conducted power

3. Simultaneous Transmission Analysis

Simultaneous Transmission Scenarios:

NO.	Simultaneous Transmit Configurations	Body
1	UMTS + 2.4GHz WLAN Main / 2.4GHz WLAN Aux / 2.4GHz MIMO	YES
2	UMTS + 5GHz WLAN Main / 5GHz WLAN Aux / 5GHz MIMO	YES
3	UMTS + BT	YES
4	UMTS + 2.4/5GHz WLAN Aux + BT	YES
5	LTE + 2.4GHz WLAN Main / 2.4GHz WLAN Aux / 2.4GHz MIMO	YES
6	LTE + 5GHz WLAN Main / 5GHz WLAN Aux / 5GHz MIMO	YES
7	LTE + BT	YES
8	LTE + 2.4/5GHz WLAN Aux + BT	YES

Note :
1) WWAN and WLAN may transmit simultaneously.
2) Bluetooth and WLAN Main share the same antenna path.
3) Bluetooth can transmit with WLAN Aux simultaneously.
4) When the sum of SAR is larger than the limit, the simultaneous transmission SAR test exclusion is determined by the SAR to peak location separation ratio (SPLSR).

3.1 Estimated SAR calculation

According to KDB447498 D01 – 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.

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 ≤ 0.1 for all antenna pairs in the configuration to qualify for 10-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.

WCDMA Band II + 2.4 GHz WLAN Main + 2.4 GHz WLAN Aux

No.	Conditions	Position	Distance (mm)	Max. WWAN	Max. WLAN Main	Max. WLAN Aux	SAR Sum	SPLSR
1	WCDMA II + 2.4 GHz WLAN Main + 2.4 GHz WLAN Aux	Front side	0	1.069	0.072	0.071	1.212	ΣSAR<4.0, Not required
		Back side	0	0.683	0.154	0.121	0.958	ΣSAR<4.0, Not required
		Top side	0	0.024	0.031	0.031	0.086	ΣSAR<4.0, Not required
		Bottom side	0	0.148	0.031	0.001	0.180	ΣSAR<4.0, Not required
		Right side	0	3.235	0.021	0.531	3.787	ΣSAR<4.0, Not required
		Left side	0	0.068	0.318	0.002	0.388	ΣSAR<4.0, Not required

WCDMA Band IV + 2.4 GHz WLAN Main + 2.4 GHz WLAN Aux

No.	Conditions	Position	Distance (mm)	Max. WWAN	Max. WLAN Main	Max. WLAN Aux	SAR Sum	SPLSR
2	WCDMA IV + 2.4 GHz WLAN Main + 2.4 GHz WLAN Aux	Front side	0	0.661	0.072	0.071	0.804	ΣSAR<4.0, Not required
		Back side	0	0.567	0.154	0.121	0.842	ΣSAR<4.0, Not required
		Top side	0	0.025	0.031	0.031	0.087	ΣSAR<4.0, Not required
		Bottom side	0	0.035	0.031	0.001	0.067	ΣSAR<4.0, Not required
		Right side	0	1.392	0.021	0.531	1.944	ΣSAR<4.0, Not required
		Left side	0	0.035	0.318	0.002	0.355	ΣSAR<4.0, Not required

WCDMA Band V + 2.4 GHz WLAN Main + 2.4 GHz WLAN Aux

No.	Conditions	Position	Distance (mm)	Max. WWAN	Max. WLAN Main	Max. WLAN Aux	SAR Sum	SPLSR
3	WCDMA V + 2.4 GHz WLAN Main + 2.4 GHz WLAN Aux	Front side	0	0.453	0.072	0.071	0.596	ΣSAR<4.0, Not required
		Back side	0	1.048	0.154	0.121	1.323	ΣSAR<4.0, Not required
		Top side	0	0.039	0.031	0.031	0.101	ΣSAR<4.0, Not required
		Bottom side	0	0.026	0.031	0.001	0.058	ΣSAR<4.0, Not required
		Right side	0	1.378	0.021	0.531	1.930	ΣSAR<4.0, Not required
		Left side	0	0.052	0.318	0.002	0.372	ΣSAR<4.0, Not required

LTE FDD Band 2 + 2.4 GHz WLAN Main + 2.4 GHz WLAN Aux

No.	Conditions	Position	Distance (mm)	Max. WWAN	Max. WLAN Main	Max. WLAN Aux	SAR Sum	SPLSR
4	LTE B2 + 2.4 GHz WLAN Main + 2.4 GHz WLAN Aux	Front side	0	1.227	0.072	0.071	1.370	ΣSAR<4.0, Not required
		Back side	0	1.013	0.154	0.121	1.288	ΣSAR<4.0, Not required
		Top side	0	0.220	0.031	0.031	0.282	ΣSAR<4.0, Not required
		Bottom side	0	0.131	0.031	0.001	0.163	ΣSAR<4.0, Not required
		Right side	0	3.276	0.021	0.531	3.828	ΣSAR<4.0, Not required
		Left side	0	0.060	0.318	0.002	0.380	ΣSAR<4.0, Not required

LTE FDD Band 4 + 2.4 GHz WLAN Main + 2.4 GHz WLAN Aux

No.	Conditions	Position	Distance (mm)	Max. WWAN	Max. WLAN Main	Max. WLAN Aux	SAR Sum	SPLSR
5	LTE B4 + 2.4 GHz WLAN Main + 2.4 GHz WLAN Aux	Front side	0	0.703	0.072	0.071	0.846	ΣSAR<4.0, Not required
		Back side	0	0.550	0.154	0.121	0.825	ΣSAR<4.0, Not required
		Top side	0	0.022	0.031	0.031	0.084	ΣSAR<4.0, Not required
		Bottom side	0	0.044	0.031	0.001	0.076	ΣSAR<4.0, Not required
		Right side	0	1.283	0.021	0.531	1.835	ΣSAR<4.0, Not required
		Left side	0	0.034	0.318	0.002	0.354	ΣSAR<4.0, Not required

LTE FDD Band 5 + 2.4 GHz WLAN Main + 2.4 GHz WLAN Aux

No.	Conditions	Position	Distance (mm)	Max. WWAN	Max. WLAN Main	Max. WLAN Aux	SAR Sum	SPLSR
6	LTE B5 + 2.4 GHz WLAN Main + 2.4 GHz WLAN Aux	Front side	0	0.485	0.072	0.071	0.628	ΣSAR<4.0, Not required
		Back side	0	1.077	0.154	0.121	1.352	ΣSAR<4.0, Not required
		Top side	0	0.035	0.031	0.031	0.097	ΣSAR<4.0, Not required
		Bottom side	0	0.046	0.031	0.001	0.078	ΣSAR<4.0, Not required
		Right side	0	1.301	0.021	0.531	1.853	ΣSAR<4.0, Not required
		Left side	0	0.035	0.318	0.002	0.355	ΣSAR<4.0, Not required

LTE FDD Band 7+ 2.4 GHz WLAN Main + 2.4 GHz WLAN Aux

No.	Conditions	Position	Distance (mm)	Max. WWAN	Max. WLAN Main	Max. WLAN Aux	SAR Sum	SPLSR
7	LTE B7 + 2.4 GHz WLAN Main + 2.4 GHz WLAN Aux	Front side	0	0.631	0.072	0.071	0.774	ΣSAR<4.0, Not required
		Back side	0	0.873	0.154	0.121	1.148	ΣSAR<4.0, Not required
		Top side	0	0.016	0.031	0.031	0.078	ΣSAR<4.0, Not required
		Bottom side	0	0.109	0.031	0.001	0.141	ΣSAR<4.0, Not required
		Right side	0	2.034	0.021	0.531	2.586	ΣSAR<4.0, Not required
		Left side	0	0.036	0.318	0.002	0.356	ΣSAR<4.0, Not required

LTE FDD Band 12 + 2.4 GHz WLAN Main + 2.4 GHz WLAN Aux

No.	Conditions	Position	Distance (mm)	Max. WWAN	Max. WLAN Main	Max. WLAN Aux	SAR Sum	SPLSR
8	LTE B12 + 2.4 GHz WLAN Main + 2.4 GHz WLAN Aux	Front side	0	0.402	0.072	0.071	0.545	ΣSAR<4.0, Not required
		Back side	0	0.465	0.154	0.121	0.740	ΣSAR<4.0, Not required
		Top side	0	0.037	0.031	0.031	0.099	ΣSAR<4.0, Not required
		Bottom side	0	0.041	0.031	0.001	0.073	ΣSAR<4.0, Not required
		Right side	0	1.822	0.021	0.531	2.374	ΣSAR<4.0, Not required
		Left side	0	0.053	0.318	0.002	0.373	ΣSAR<4.0, Not required

LTE FDD Band 13 + 2.4 GHz WLAN Main + 2.4 GHz WLAN Aux

No.	Conditions	Position	Distance (mm)	Max. WWAN	Max. WLAN Main	Max. WLAN Aux	SAR Sum	SPLSR
9	LTE B13 + 2.4 GHz WLAN Main + 2.4 GHz WLAN Aux	Front side	0	0.513	0.072	0.071	0.656	ΣSAR<4.0, Not required
		Back side	0	1.064	0.154	0.121	1.339	ΣSAR<4.0, Not required
		Top side	0	0.038	0.031	0.031	0.100	ΣSAR<4.0, Not required
		Bottom side	0	0.015	0.031	0.001	0.047	ΣSAR<4.0, Not required
		Right side	0	2.129	0.021	0.531	2.681	ΣSAR<4.0, Not required
		Left side	0	0.064	0.318	0.002	0.384	ΣSAR<4.0, Not required

LTE FDD Band 25 + 2.4 GHz WLAN Main + 2.4 GHz WLAN Aux

No.	Conditions	Position	Distance (mm)	Max. WWAN	Max. WLAN Main	Max. WLAN Aux	SAR Sum	SPLSR
10	LTE B25 + 2.4 GHz WLAN Main + 2.4 GHz WLAN Aux	Front side	0	1.151	0.072	0.071	1.294	ΣSAR<4.0, Not required
		Back side	0	0.844	0.154	0.121	1.119	ΣSAR<4.0, Not required
		Top side	0	0.024	0.031	0.031	0.086	ΣSAR<4.0, Not required
		Bottom side	0	0.154	0.031	0.001	0.186	ΣSAR<4.0, Not required
		Right side	0	3.337	0.021	0.531	3.889	ΣSAR<4.0, Not required
		Left side	0	0.064	0.318	0.002	0.384	ΣSAR<4.0, Not required

LTE TDD Band 26 + 2.4 GHz WLAN Main + 2.4 GHz WLAN Aux

No.	Conditions	Position	Distance (mm)	Max. WWAN	Max. WLAN Main	Max. WLAN Aux	SAR Sum	SPLSR
11	LTE B26 + 2.4 GHz WLAN Main + 2.4 GHz WLAN Aux	Front side	0	0.515	0.072	0.071	0.658	ΣSAR<4.0, Not required
		Back side	0	1.097	0.154	0.121	1.372	ΣSAR<4.0, Not required
		Top side	0	0.034	0.031	0.031	0.096	ΣSAR<4.0, Not required
		Bottom side	0	0.042	0.031	0.001	0.074	ΣSAR<4.0, Not required
		Right side	0	1.440	0.021	0.531	1.992	ΣSAR<4.0, Not required
		Left side	0	0.053	0.318	0.002	0.373	ΣSAR<4.0, Not required

LTE TDD Band 30 + 2.4 GHz WLAN Main + 2.4 GHz WLAN Aux

No.	Conditions	Position	Distance (mm)	Max. WWAN	Max. WLAN Main	Max. WLAN Aux	SAR Sum	SPLSR
12	LTE B30 + 2.4 GHz WLAN Main + 2.4 GHz WLAN Aux	Front side	0	0.429	0.072	0.071	0.572	ΣSAR<4.0, Not required
		Back side	0	1.314	0.154	0.121	1.589	ΣSAR<4.0, Not required
		Top side	0	0.028	0.031	0.031	0.090	ΣSAR<4.0, Not required
		Bottom side	0	0.048	0.031	0.001	0.080	ΣSAR<4.0, Not required
		Right side	0	2.089	0.021	0.531	2.641	ΣSAR<4.0, Not required
		Left side	0	0.042	0.318	0.002	0.362	ΣSAR<4.0, Not required

LTE TDD Band 41 + 2.4 GHz WLAN Main + 2.4 GHz WLAN Aux

No.	Conditions	Position	Distance (mm)	Max. WWAN	Max. WLAN Main	Max. WLAN Aux	SAR Sum	SPLSR
13	LTE B41 + 2.4 GHz WLAN Main + 2.4 GHz WLAN Aux	Front side	0	0.188	0.072	0.071	0.331	ΣSAR<4.0, Not required
		Back side	0	0.305	0.154	0.121	0.580	ΣSAR<4.0, Not required
		Top side	0	0.004	0.031	0.031	0.066	ΣSAR<4.0, Not required
		Bottom side	0	0.011	0.031	0.001	0.043	ΣSAR<4.0, Not required
		Right side	0	0.716	0.021	0.531	1.268	ΣSAR<4.0, Not required
		Left side	0	0.009	0.318	0.002	0.329	ΣSAR<4.0, Not required

WCDMA Band II + 5 GHz WLAN Main + 5 GHz WLAN Aux

No.	Conditions	Position	Distance (mm)	Max. WWAN	Max. WLAN Main	Max. WLAN Aux	SAR Sum	SPLSR
14	WCDMA II + 5 GHz WLAN Main + 5 GHz WLAN Aux	Front side	0	1.069	0.212	0.154	1.435	ΣSAR<4.0, Not required
		Back side	0	0.683	0.583	0.251	1.517	ΣSAR<4.0, Not required
		Top side	0	0.024	0.003	0.002	0.029	ΣSAR<4.0, Not required
		Bottom side	0	0.148	0.003	0.002	0.153	ΣSAR<4.0, Not required
		Right side	0	3.235	0.001	0.336	3.572	ΣSAR<4.0, Not required
		Left side	0	0.068	0.568	0.002	0.638	ΣSAR<4.0, Not required

WCDMA Band IV + 5 GHz WLAN Main + 5 GHz WLAN Aux

No.	Conditions	Position	Distance (mm)	Max. WWAN	Max. WLAN Main	Max. WLAN Aux	SAR Sum	SPLSR
15	WCDMA IV + 5 GHz WLAN Main + 5 GHz WLAN Aux	Front side	0	0.661	0.212	0.154	1.027	ΣSAR<4.0, Not required
		Back side	0	0.567	0.583	0.251	1.401	ΣSAR<4.0, Not required
		Top side	0	0.025	0.003	0.002	0.030	ΣSAR<4.0, Not required
		Bottom side	0	0.035	0.003	0.002	0.040	ΣSAR<4.0, Not required
		Right side	0	1.392	0.001	0.336	1.729	ΣSAR<4.0, Not required
		Left side	0	0.035	0.568	0.002	0.605	ΣSAR<4.0, Not required

WCDMA Band V + 5 GHz WLAN Main + 5 GHz WLAN Aux

No.	Conditions	Position	Distance (mm)	Max. WWAN	Max. WLAN Main	Max. WLAN Aux	SAR Sum	SPLSR
16	WCDMA V + 5 GHz WLAN Main + 5 GHz WLAN Aux	Front side	0	0.453	0.212	0.154	0.819	ΣSAR<4.0, Not required
		Back side	0	1.048	0.193	0.251	1.492	ΣSAR<4.0, Not required
		Top side	0	0.039	0.003	0.002	0.044	ΣSAR<4.0, Not required
		Bottom side	0	0.026	0.003	0.002	0.031	ΣSAR<4.0, Not required
		Right side	0	1.378	0.001	0.336	1.715	ΣSAR<4.0, Not required
		Left side	0	0.052	0.568	0.002	0.622	ΣSAR<4.0, Not required

LTE FDD Band 2 + 5 GHz WLAN Main + 5 GHz WLAN Aux

No.	Conditions	Position	Distance (mm)	Max. WWAN	Max. WLAN Main	Max. WLAN Aux	SAR Sum	SPLSR
17	LTE B2 + 5 GHz WLAN Main + 5 GHz WLAN Aux	Front side	0	1.227	0.212	0.154	1.593	ΣSAR<4.0, Not required
		Back side	0	1.013	0.583	0.251	1.847	ΣSAR<4.0, Not required
		Top side	0	0.220	0.003	0.002	0.225	ΣSAR<4.0, Not required
		Bottom side	0	0.131	0.003	0.002	0.136	ΣSAR<4.0, Not required
		Right side	0	3.276	0.001	0.336	3.613	ΣSAR<4.0, Not required
		Left side	0	0.060	0.568	0.002	0.630	ΣSAR<4.0, Not required

LTE FDD Band 4 + 5 GHz WLAN Main + 5 GHz WLAN Aux

No.	Conditions	Position	Distance (mm)	Max. WWAN	Max. WLAN Main	Max. WLAN Aux	SAR Sum	SPLSR
18	LTE B4 + 5 GHz WLAN Main + 5 GHz WLAN Aux	Front side	0	0.703	0.212	0.154	1.069	ΣSAR<4.0, Not required
		Back side	0	0.550	0.583	0.251	1.384	ΣSAR<4.0, Not required
		Top side	0	0.022	0.003	0.002	0.027	ΣSAR<4.0, Not required
		Bottom side	0	0.044	0.003	0.002	0.049	ΣSAR<4.0, Not required
		Right side	0	1.283	0.001	0.336	1.620	ΣSAR<4.0, Not required
		Left side	0	0.034	0.568	0.002	0.604	ΣSAR<4.0, Not required

LTE FDD Band 5 + 5 GHz WLAN Main + 5 GHz WLAN Aux

No.	Conditions	Position	Distance (mm)	Max. WWAN	Max. WLAN Main	Max. WLAN Aux	SAR Sum	SPLSR
19	LTE B5 + 5 GHz WLAN Main + 5 GHz WLAN Aux	Front side	0	0.485	0.212	0.154	0.851	ΣSAR<4.0, Not required
		Back side	0	1.077	0.193	0.251	1.521	ΣSAR<4.0, Not required
		Top side	0	0.035	0.003	0.002	0.040	ΣSAR<4.0, Not required
		Bottom side	0	0.046	0.003	0.002	0.051	ΣSAR<4.0, Not required
		Right side	0	1.301	0.001	0.336	1.638	ΣSAR<4.0, Not required
		Left side	0	0.035	0.568	0.002	0.605	ΣSAR<4.0, Not required

LTE FDD Band 7+ 5 GHz WLAN Main + 5 GHz WLAN Aux

No.	Conditions	Position	Distance (mm)	Max. WWAN	Max. WLAN Main	Max. WLAN Aux	SAR Sum	SPLSR
20	LTE B7 + 5 GHz WLAN Main + 5 GHz WLAN Aux	Front side	0	0.631	0.212	0.154	0.997	ΣSAR<4.0, Not required
		Back side	0	0.873	0.583	0.251	1.707	ΣSAR<4.0, Not required
		Top side	0	0.016	0.003	0.002	0.021	ΣSAR<4.0, Not required
		Bottom side	0	0.109	0.003	0.002	0.114	ΣSAR<4.0, Not required
		Right side	0	2.034	0.001	0.336	2.371	ΣSAR<4.0, Not required
		Left side	0	0.036	0.568	0.002	0.606	ΣSAR<4.0, Not required

LTE FDD Band 12 + 5 GHz WLAN Main + 5 GHz WLAN Aux

No.	Conditions	Position	Distance (mm)	Max. WWAN	Max. WLAN Main	Max. WLAN Aux	SAR Sum	SPLSR
21	LTE B12 + 5 GHz WLAN Main + 5 GHz WLAN Aux	Front side	0	0.402	0.212	0.154	0.768	ΣSAR<4.0, Not required
		Back side	0	0.465	0.583	0.251	1.299	ΣSAR<4.0, Not required
		Top side	0	0.037	0.003	0.002	0.042	ΣSAR<4.0, Not required
		Bottom side	0	0.041	0.003	0.002	0.046	ΣSAR<4.0, Not required
		Right side	0	1.822	0.001	0.336	2.159	ΣSAR<4.0, Not required
		Left side	0	0.053	0.568	0.002	0.623	ΣSAR<4.0, Not required

LTE FDD Band 13 + 5 GHz WLAN Main + 5 GHz WLAN Aux

No.	Conditions	Position	Distance (mm)	Max. WWAN	Max. WLAN Main	Max. WLAN Aux	SAR Sum	SPLSR
22	LTE B13 + 5 GHz WLAN Main + 5 GHz WLAN Aux	Front side	0	0.513	0.212	0.154	0.879	ΣSAR<4.0, Not required
		Back side	0	1.064	0.193	0.251	1.508	ΣSAR<4.0, Not required
		Top side	0	0.038	0.003	0.002	0.043	ΣSAR<4.0, Not required
		Bottom side	0	0.015	0.003	0.002	0.020	ΣSAR<4.0, Not required
		Right side	0	2.129	0.001	0.336	2.466	ΣSAR<4.0, Not required
		Left side	0	0.064	0.568	0.002	0.634	ΣSAR<4.0, Not required

LTE FDD Band 25 + 5 GHz WLAN Main + 5 GHz WLAN Aux

No.	Conditions	Position	Distance (mm)	Max. WWAN	Max. WLAN Main	Max. WLAN Aux	SAR Sum	SPLSR
23	LTE B25 + 5 GHz WLAN Main + 5 GHz WLAN Aux	Front side	0	1.151	0.212	0.154	1.517	ΣSAR<4.0, Not required
		Back side	0	0.844	0.583	0.251	1.678	ΣSAR<4.0, Not required
		Top side	0	0.024	0.003	0.002	0.029	ΣSAR<4.0, Not required
		Bottom side	0	0.154	0.003	0.002	0.159	ΣSAR<4.0, Not required
		Right side	0	3.337	0.001	0.336	3.674	ΣSAR<4.0, Not required
		Left side	0	0.064	0.568	0.002	0.634	ΣSAR<4.0, Not required

LTE TDD Band 26 + 5 GHz WLAN Main + 5 GHz WLAN Aux

No.	Conditions	Position	Distance (mm)	Max. WWAN	Max. WLAN Main	Max. WLAN Aux	SAR Sum	SPLSR
24	LTE B26 + 5 GHz WLAN Main + 5 GHz WLAN Aux	Front side	0	0.515	0.212	0.154	0.881	ΣSAR<4.0, Not required
		Back side	0	1.097	0.583	0.251	1.931	ΣSAR<4.0, Not required
		Top side	0	0.034	0.003	0.002	0.039	ΣSAR<4.0, Not required
		Bottom side	0	0.042	0.003	0.002	0.047	ΣSAR<4.0, Not required
		Right side	0	1.440	0.001	0.336	1.777	ΣSAR<4.0, Not required
		Left side	0	0.053	0.568	0.002	0.623	ΣSAR<4.0, Not required

LTE TDD Band 30 + 5 GHz WLAN Main + 5 GHz WLAN Aux

No.	Conditions	Position	Distance (mm)	Max. WWAN	Max. WLAN Main	Max. WLAN Aux	SAR Sum	SPLSR
25	LTE B30 + 5 GHz WLAN Main + 5 GHz WLAN Aux	Front side	0	0.429	0.212	0.154	0.795	ΣSAR<4.0, Not required
		Back side	0	1.314	0.193	0.251	1.758	ΣSAR<4.0, Not required
		Top side	0	0.028	0.003	0.002	0.033	ΣSAR<4.0, Not required
		Bottom side	0	0.048	0.003	0.002	0.053	ΣSAR<4.0, Not required
		Right side	0	2.089	0.001	0.336	2.426	ΣSAR<4.0, Not required
		Left side	0	0.042	0.568	0.002	0.612	ΣSAR<4.0, Not required

LTE TDD Band 41 + 5 GHz WLAN Main + 5 GHz WLAN Aux

No.	Conditions	Position	Distance (mm)	Max. WWAN	Max. WLAN Main	Max. WLAN Aux	SAR Sum	SPLSR
26	LTE B41 + 5 GHz WLAN Main + 5 GHz WLAN Aux	Front side	0	0.188	0.212	0.154	0.554	ΣSAR<4.0, Not required
		Back side	0	0.305	0.583	0.251	1.139	ΣSAR<4.0, Not required
		Top side	0	0.004	0.003	0.002	0.009	ΣSAR<4.0, Not required
		Bottom side	0	0.011	0.003	0.002	0.016	ΣSAR<4.0, Not required
		Right side	0	0.716	0.001	0.336	1.053	ΣSAR<4.0, Not required
		Left side	0	0.009	0.568	0.002	0.579	ΣSAR<4.0, Not required

WCDMA Band II + BT + 2.4 GHz WLAN Aux

No.	Conditions	Position	Distance (mm)	Max. WWAN	BT	Max. WLAN Aux	SAR Sum	SPLSR
27	WCDMA II + BT + 2.4 GHz WLAN Aux	Front side	0	1.069	0.009	0.071	1.149	ΣSAR<4.0, Not required
		Back side	0	0.683	0.020	0.121	0.824	ΣSAR<4.0, Not required
		Top side	0	0.024	0.004	0.031	0.059	ΣSAR<4.0, Not required
		Bottom side	0	0.148	0.004	0.001	0.153	ΣSAR<4.0, Not required
		Right side	0	3.235	0.003	0.531	3.769	ΣSAR<4.0, Not required
		Left side	0	0.068	0.039	0.002	0.109	ΣSAR<4.0, Not required

WCDMA Band IV + BT + 2.4 GHz WLAN Aux

No.	Conditions	Position	Distance (mm)	Max. WWAN	BT	Max. WLAN Aux	SAR Sum	SPLSR
28	WCDMA IV + BT + 2.4 GHz WLAN Aux	Front side	0	0.453	0.009	0.071	0.533	ΣSAR<4.0, Not required
		Back side	0	1.048	0.020	0.121	1.189	ΣSAR<4.0, Not required
		Top side	0	0.039	0.004	0.031	0.074	ΣSAR<4.0, Not required
		Bottom side	0	0.026	0.004	0.001	0.031	ΣSAR<4.0, Not required
		Right side	0	1.378	0.003	0.531	1.912	ΣSAR<4.0, Not required
		Left side	0	0.052	0.039	0.002	0.093	ΣSAR<4.0, Not required

WCDMA Band V + BT + 2.4 GHz WLAN Aux

No.	Conditions	Position	Distance (mm)	Max. WWAN	BT	Max. WLAN Aux	SAR Sum	SPLSR
29	WCDMA V + BT + 2.4 GHz WLAN Aux	Front side	0	0.453	0.009	0.071	0.533	ΣSAR<4.0, Not required
		Back side	0	1.048	0.020	0.121	1.189	ΣSAR<4.0, Not required
		Top side	0	0.039	0.004	0.031	0.074	ΣSAR<4.0, Not required
		Bottom side	0	0.026	0.004	0.001	0.031	ΣSAR<4.0, Not required
		Right side	0	1.378	0.003	0.531	1.912	ΣSAR<4.0, Not required
		Left side	0	0.052	0.039	0.002	0.093	ΣSAR<4.0, Not required

LTE FDD Band 2 + BT + 2.4 GHz WLAN Aux

No.	Conditions	Position	Distance (mm)	Max. WWAN	BT	Max. WLAN Aux	SAR Sum	SPLSR
30	LTE B2 + BT + 2.4 GHz WLAN Aux	Front side	0	1.227	0.009	0.071	1.307	ΣSAR<4.0, Not required
		Back side	0	1.013	0.020	0.121	1.154	ΣSAR<4.0, Not required
		Top side	0	0.220	0.004	0.031	0.255	ΣSAR<4.0, Not required
		Bottom side	0	0.131	0.004	0.001	0.136	ΣSAR<4.0, Not required
		Right side	0	3.276	0.003	0.531	3.810	ΣSAR<4.0, Not required
		Left side	0	0.060	0.039	0.002	0.101	ΣSAR<4.0, Not required

LTE FDD Band 4 + BT + 2.4 GHz WLAN Aux

No.	Conditions	Position	Distance (mm)	Max. WWAN	BT	Max. WLAN Aux	SAR Sum	SPLSR
31	LTE B3 + BT + 2.4 GHz WLAN Aux	Front side	0	0.703	0.009	0.071	0.783	ΣSAR<4.0, Not required
		Back side	0	0.550	0.020	0.121	0.691	ΣSAR<4.0, Not required
		Top side	0	0.022	0.004	0.031	0.057	ΣSAR<4.0, Not required
		Bottom side	0	0.044	0.004	0.001	0.049	ΣSAR<4.0, Not required
		Right side	0	1.283	0.003	0.531	1.817	ΣSAR<4.0, Not required
		Left side	0	0.034	0.039	0.002	0.075	ΣSAR<4.0, Not required

LTE FDD Band 5 + BT + 2.4 GHz WLAN Aux

No.	Conditions	Position	Distance (mm)	Max. WWAN	BT	Max. WLAN Aux	SAR Sum	SPLSR
32	LTE B5 + BT + 2.4 GHz WLAN Aux	Front side	0	0.485	0.009	0.071	0.565	ΣSAR<4.0, Not required
		Back side	0	1.077	0.020	0.121	1.218	ΣSAR<4.0, Not required
		Top side	0	0.035	0.004	0.031	0.070	ΣSAR<4.0, Not required
		Bottom side	0	0.046	0.004	0.001	0.051	ΣSAR<4.0, Not required
		Right side	0	1.301	0.003	0.531	1.835	ΣSAR<4.0, Not required
		Left side	0	0.035	0.039	0.002	0.076	ΣSAR<4.0, Not required

LTE FDD Band 7 + BT + 2.4 GHz WLAN Aux

No.	Conditions	Position	Distance (mm)	Max. WWAN	BT	Max. WLAN Aux	SAR Sum	SPLSR
33	LTE B7 + BT + 2.4 GHz WLAN Aux	Front side	0	0.631	0.009	0.071	0.711	ΣSAR<4.0, Not required
		Back side	0	0.873	0.020	0.121	1.014	ΣSAR<4.0, Not required
		Top side	0	0.016	0.004	0.031	0.051	ΣSAR<4.0, Not required
		Bottom side	0	0.109	0.004	0.001	0.114	ΣSAR<4.0, Not required
		Right side	0	2.034	0.003	0.531	2.568	ΣSAR<4.0, Not required
		Left side	0	0.036	0.039	0.002	0.077	ΣSAR<4.0, Not required

LTE FDD Band 12 + BT + 2.4 GHz WLAN Aux

No.	Conditions	Position	Distance (mm)	Max. WWAN	BT	Max. WLAN Aux	SAR Sum	SPLSR
34	LTE B12 + BT + 2.4 GHz WLAN Aux	Front side	0	0.402	0.009	0.071	0.482	ΣSAR<4.0, Not required
		Back side	0	0.465	0.020	0.121	0.606	ΣSAR<4.0, Not required
		Top side	0	0.037	0.004	0.031	0.072	ΣSAR<4.0, Not required
		Bottom side	0	0.041	0.004	0.001	0.046	ΣSAR<4.0, Not required
		Right side	0	1.822	0.003	0.531	2.356	ΣSAR<4.0, Not required
		Left side	0	0.053	0.039	0.002	0.094	ΣSAR<4.0, Not required

LTE FDD Band 13 + BT + 2.4 GHz WLAN Aux

No.	Conditions	Position	Distance (mm)	Max. WWAN	BT	Max. WLAN Aux	SAR Sum	SPLSR
35	LTE B13 + BT + 2.4 GHz WLAN Aux	Front side	0	0.513	0.009	0.071	0.593	ΣSAR<4.0, Not required
		Back side	0	1.064	0.020	0.121	1.205	ΣSAR<4.0, Not required
		Top side	0	0.038	0.004	0.031	0.073	ΣSAR<4.0, Not required
		Bottom side	0	0.015	0.004	0.001	0.020	ΣSAR<4.0, Not required
		Right side	0	2.129	0.003	0.531	2.663	ΣSAR<4.0, Not required
		Left side	0	0.064	0.039	0.002	0.105	ΣSAR<4.0, Not required

LTE FDD Band 25 + BT + 2.4 GHz WLAN Aux

No.	Conditions	Position	Distance (mm)	Max. WWAN	BT	Max. WLAN Aux	SAR Sum	SPLSR
36	LTE B25 + BT + 2.4 GHz WLAN Aux	Front side	0	1.151	0.009	0.071	1.231	ΣSAR<4.0, Not required
		Back side	0	0.844	0.020	0.121	0.985	ΣSAR<4.0, Not required
		Top side	0	0.024	0.004	0.031	0.059	ΣSAR<4.0, Not required
		Bottom side	0	0.154	0.004	0.001	0.159	ΣSAR<4.0, Not required
		Right side	0	3.337	0.003	0.531	3.871	ΣSAR<4.0, Not required
		Left side	0	0.064	0.039	0.002	0.105	ΣSAR<4.0, Not required

LTE TDD Band 26 + BT + 2.4 GHz WLAN Aux

No.	Conditions	Position	Distance (mm)	Max. WWAN	BT	Max. WLAN Aux	SAR Sum	SPLSR
37	LTE B26 + BT + 2.4 GHz WLAN Aux	Front side	0	0.515	0.009	0.071	0.595	ΣSAR<4.0, Not required
		Back side	0	1.097	0.020	0.121	1.238	ΣSAR<4.0, Not required
		Top side	0	0.034	0.004	0.031	0.069	ΣSAR<4.0, Not required
		Bottom side	0	0.042	0.004	0.001	0.047	ΣSAR<4.0, Not required
		Right side	0	1.440	0.003	0.531	1.974	ΣSAR<4.0, Not required
		Left side	0	0.053	0.039	0.002	0.094	ΣSAR<4.0, Not required

LTE TDD Band 30 + BT + 2.4 GHz WLAN Aux

No.	Conditions	Position	Distance (mm)	Max. WWAN	BT	Max. WLAN Aux	SAR Sum	SPLSR
38	LTE B30 + BT + 2.4 GHz WLAN Aux	Front side	0	0.429	0.009	0.071	0.509	ΣSAR<4.0, Not required
		Back side	0	1.314	0.020	0.121	1.455	ΣSAR<4.0, Not required
		Top side	0	0.028	0.004	0.031	0.063	ΣSAR<4.0, Not required
		Bottom side	0	0.048	0.004	0.001	0.053	ΣSAR<4.0, Not required
		Right side	0	2.089	0.003	0.531	2.623	ΣSAR<4.0, Not required
		Left side	0	0.042	0.039	0.002	0.083	ΣSAR<4.0, Not required

LTE TDD Band 41 + BT + 2.4 GHz WLAN Aux

No.	Conditions	Position	Distance (mm)	Max. WWAN	BT	Max. WLAN Aux	SAR Sum	SPLSR
39	LTE B41 + BT + 2.4 GHz WLAN Aux	Front side	0	0.188	0.009	0.071	0.268	ΣSAR<4.0, Not required
		Back side	0	0.305	0.020	0.121	0.446	ΣSAR<4.0, Not required
		Top side	0	0.004	0.004	0.031	0.039	ΣSAR<4.0, Not required
		Bottom side	0	0.011	0.004	0.001	0.016	ΣSAR<4.0, Not required
		Right side	0	0.716	0.003	0.531	1.250	ΣSAR<4.0, Not required
		Left side	0	0.009	0.039	0.002	0.050	ΣSAR<4.0, Not required

WCDMA Band II + BT + 5 GHz WLAN Aux

No.	Conditions	Position	Distance (mm)	Max. WWAN	BT	Max. WLAN Aux	SAR Sum	SPLSR
40	WCDMA II + BT + 5 GHz WLAN Aux	Front side	0	1.069	0.009	0.154	1.232	ΣSAR<4.0, Not required
		Back side	0	0.683	0.020	0.251	0.954	ΣSAR<4.0, Not required
		Top side	0	0.024	0.004	0.002	0.030	ΣSAR<4.0, Not required
		Bottom side	0	0.148	0.004	0.002	0.154	ΣSAR<4.0, Not required
		Right side	0	3.235	0.003	0.336	3.574	ΣSAR<4.0, Not required
		Left side	0	0.068	0.039	0.002	0.109	ΣSAR<4.0, Not required

WCDMA Band IV + BT + 5 GHz WLAN Aux

No.	Conditions	Position	Distance (mm)	Max. WWAN	BT	Max. WLAN Aux	SAR Sum	SPLSR
41	WCDMA IV + BT + 5 GHz WLAN Aux	Front side	0	0.453	0.009	0.154	0.616	ΣSAR<4.0, Not required
		Back side	0	1.048	0.020	0.251	1.319	ΣSAR<4.0, Not required
		Top side	0	0.039	0.004	0.002	0.045	ΣSAR<4.0, Not required
		Bottom side	0	0.026	0.004	0.002	0.032	ΣSAR<4.0, Not required
		Right side	0	1.378	0.003	0.336	1.717	ΣSAR<4.0, Not required
		Left side	0	0.052	0.039	0.002	0.093	ΣSAR<4.0, Not required

WCDMA Band V + BT + 5 GHz WLAN Aux

No.	Conditions	Position	Distance (mm)	Max. WWAN	BT	Max. WLAN Aux	SAR Sum	SPLSR
42	WCDMA V + BT + 5 GHz WLAN Aux	Front side	0	0.453	0.009	0.154	0.616	ΣSAR<4.0, Not required
		Back side	0	1.048	0.020	0.251	1.319	ΣSAR<4.0, Not required
		Top side	0	0.039	0.004	0.002	0.045	ΣSAR<4.0, Not required
		Bottom side	0	0.026	0.004	0.002	0.032	ΣSAR<4.0, Not required
		Right side	0	1.378	0.003	0.336	1.717	ΣSAR<4.0, Not required
		Left side	0	0.052	0.039	0.002	0.093	ΣSAR<4.0, Not required

LTE FDD Band 2 + BT + 5 GHz WLAN Aux

No.	Conditions	Position	Distance (mm)	Max. WWAN	BT	Max. WLAN Aux	SAR Sum	SPLSR
43	LTE B2 + BT + 5 GHz WLAN Aux	Front side	0	1.227	0.009	0.071	1.307	ΣSAR<4.0, Not required
		Back side	0	1.013	0.020	0.121	1.154	ΣSAR<4.0, Not required
		Top side	0	0.220	0.004	0.031	0.255	ΣSAR<4.0, Not required
		Bottom side	0	0.131	0.004	0.001	0.136	ΣSAR<4.0, Not required
		Right side	0	3.276	0.003	0.531	3.810	ΣSAR<4.0, Not required
		Left side	0	0.060	0.039	0.002	0.101	ΣSAR<4.0, Not required

LTE FDD Band 4 + BT + 5 GHz WLAN Aux

No.	Conditions	Position	Distance (mm)	Max. WWAN	BT	Max. WLAN Aux	SAR Sum	SPLSR
44	LTE B3 + BT + 5 GHz WLAN Aux	Front side	0	0.703	0.009	0.154	0.866	ΣSAR<4.0, Not required
		Back side	0	0.550	0.020	0.251	0.821	ΣSAR<4.0, Not required
		Top side	0	0.022	0.004	0.002	0.028	ΣSAR<4.0, Not required
		Bottom side	0	0.044	0.004	0.002	0.050	ΣSAR<4.0, Not required
		Right side	0	1.283	0.003	0.336	1.622	ΣSAR<4.0, Not required
		Left side	0	0.034	0.039	0.002	0.075	ΣSAR<4.0, Not required

LTE FDD Band 5 + BT + 5 GHz WLAN Aux

No.	Conditions	Position	Distance (mm)	Max. WWAN	BT	Max. WLAN Aux	SAR Sum	SPLSR
45	LTE B5 + BT + 5 GHz WLAN Aux	Front side	0	0.485	0.009	0.154	0.648	ΣSAR<4.0, Not required
		Back side	0	1.077	0.020	0.251	1.348	ΣSAR<4.0, Not required
		Top side	0	0.035	0.004	0.002	0.041	ΣSAR<4.0, Not required
		Bottom side	0	0.046	0.004	0.002	0.052	ΣSAR<4.0, Not required
		Right side	0	1.301	0.003	0.336	1.640	ΣSAR<4.0, Not required
		Left side	0	0.035	0.039	0.002	0.076	ΣSAR<4.0, Not required

LTE FDD Band 7 + BT + 5 GHz WLAN Aux

No.	Conditions	Position	Distance (mm)	Max. WWAN	BT	Max. WLAN Aux	SAR Sum	SPLSR
46	LTE B7 + BT + 5 GHz WLAN Aux	Front side	0	0.631	0.009	0.154	0.794	ΣSAR<4.0, Not required
		Back side	0	0.873	0.020	0.251	1.144	ΣSAR<4.0, Not required
		Top side	0	0.016	0.004	0.002	0.022	ΣSAR<4.0, Not required
		Bottom side	0	0.109	0.004	0.002	0.115	ΣSAR<4.0, Not required
		Right side	0	2.034	0.003	0.336	2.373	ΣSAR<4.0, Not required
		Left side	0	0.036	0.039	0.002	0.077	ΣSAR<4.0, Not required

LTE FDD Band 12 + BT + 5 GHz WLAN Aux

No.	Conditions	Position	Distance (mm)	Max. WWAN	BT	Max. WLAN Aux	SAR Sum	SPLSR
47	LTE B12 + BT + 5 GHz WLAN Aux	Front side	0	0.402	0.009	0.154	0.565	ΣSAR<4.0, Not required
		Back side	0	0.465	0.020	0.251	0.736	ΣSAR<4.0, Not required
		Top side	0	0.037	0.004	0.002	0.043	ΣSAR<4.0, Not required
		Bottom side	0	0.041	0.004	0.002	0.047	ΣSAR<4.0, Not required
		Right side	0	1.822	0.003	0.336	2.161	ΣSAR<4.0, Not required
		Left side	0	0.053	0.039	0.002	0.094	ΣSAR<4.0, Not required

LTE FDD Band 13 + BT + 5 GHz WLAN Aux

No.	Conditions	Position	Distance (mm)	Max. WWAN	BT	Max. WLAN Aux	SAR Sum	SPLSR
48	LTE B13 + BT + 5 GHz WLAN Aux	Front side	0	0.513	0.009	0.154	0.676	ΣSAR<4.0, Not required
		Back side	0	1.064	0.020	0.251	1.335	ΣSAR<4.0, Not required
		Top side	0	0.038	0.004	0.002	0.044	ΣSAR<4.0, Not required
		Bottom side	0	0.015	0.004	0.002	0.021	ΣSAR<4.0, Not required
		Right side	0	2.129	0.003	0.336	2.468	ΣSAR<4.0, Not required
		Left side	0	0.064	0.039	0.002	0.105	ΣSAR<4.0, Not required

LTE FDD Band 25 + BT + 5 GHz WLAN Aux

No.	Conditions	Position	Distance (mm)	Max. WWAN	BT	Max. WLAN Aux	SAR Sum	SPLSR
49	LTE B25 + BT + 5 GHz WLAN Aux	Front side	0	1.151	0.009	0.071	1.231	ΣSAR<4.0, Not required
		Back side	0	0.844	0.020	0.121	0.985	ΣSAR<4.0, Not required
		Top side	0	0.024	0.004	0.031	0.059	ΣSAR<4.0, Not required
		Bottom side	0	0.154	0.004	0.001	0.159	ΣSAR<4.0, Not required
		Right side	0	3.337	0.003	0.531	3.871	ΣSAR<4.0, Not required
		Left side	0	0.064	0.039	0.002	0.105	ΣSAR<4.0, Not required

LTE TDD Band 26 + BT + 5 GHz WLAN Aux

No.	Conditions	Position	Distance (mm)	Max. WWAN	BT	Max. WLAN Aux	SAR Sum	SPLSR
50	LTE B26 + BT + 5 GHz WLAN Aux	Front side	0	0.515	0.009	0.154	0.678	ΣSAR<4.0, Not required
		Back side	0	1.097	0.020	0.251	1.368	ΣSAR<4.0, Not required
		Top side	0	0.034	0.004	0.002	0.040	ΣSAR<4.0, Not required
		Bottom side	0	0.042	0.004	0.002	0.048	ΣSAR<4.0, Not required
		Right side	0	1.440	0.003	0.336	1.779	ΣSAR<4.0, Not required
		Left side	0	0.053	0.039	0.002	0.094	ΣSAR<4.0, Not required

LTE TDD Band 30 + BT + 5 GHz WLAN Aux

No.	Conditions	Position	Distance (mm)	Max. WWAN	BT	Max. WLAN Aux	SAR Sum	SPLSR
51	LTE B30 + BT + 5 GHz WLAN Aux	Front side	0	0.429	0.009	0.154	0.592	ΣSAR<4.0, Not required
		Back side	0	1.314	0.020	0.251	1.585	ΣSAR<4.0, Not required
		Top side	0	0.028	0.004	0.002	0.034	ΣSAR<4.0, Not required
		Bottom side	0	0.048	0.004	0.002	0.054	ΣSAR<4.0, Not required
		Right side	0	2.089	0.003	0.336	2.428	ΣSAR<4.0, Not required
		Left side	0	0.042	0.039	0.002	0.083	ΣSAR<4.0, Not required

LTE TDD Band 41 + BT + 5 GHz WLAN Aux

No.	Conditions	Position	Distance (mm)	Max. WWAN	BT	Max. WLAN Aux	SAR Sum	SPLSR
52	LTE B41 + BT + 5 GHz WLAN Aux	Front side	0	0.188	0.009	0.154	0.351	ΣSAR<4.0, Not required
		Back side	0	0.305	0.020	0.251	0.576	ΣSAR<4.0, Not required
		Top side	0	0.004	0.004	0.002	0.010	ΣSAR<4.0, Not required
		Bottom side	0	0.011	0.004	0.002	0.017	ΣSAR<4.0, Not required
		Right side	0	0.716	0.003	0.336	1.055	ΣSAR<4.0, Not required
		Left side	0	0.009	0.039	0.002	0.050	ΣSAR<4.0, Not required

4. Instruments List

Manufacturer	Device	Type	Serial number	Date of last calibration	Date of next calibration
SPEAG	Dosimetric E-Field Probe	EX3DV4	3938	Sep.29,2017	Sep.28,2018
SPEAG	System Validation Dipole	D750V2	1015	Aug.21,2017	Aug.20,2018
		D835V2	4d063	Aug.21,2017	Aug.20,2018
		D1750V2	1008	Aug.21,2017	Aug.20,2018
		D1900V2	5d173	May.31,2017	May.30,2018
		D2300V2	1023	Aug.17,2017	Aug.16,2018
		D2450V2	727	Apr.24,2018	Apr.23,2019
		D2600V2	1005	Jun.17,2018	Jun.16,2019
		D5GHzV2	1023	Jan.25,2018	Jan.24,2019
SPEAG	Data acquisition Electronics	DAE4	1260	Sep.28,2017	Sep.29,2018
SPEAG	Software	DASY 52 V52.8.8	N/A	Calibration not required	Calibration not required
SPEAG	Phantom	ELI	N/A	Calibration not required	Calibration not required
Agilent	Network Analyzer	E5071C	MY46107530	Feb.26,2018	Feb.25,2019
Agilent	Dielectric Probe Kit	85070E	MY44300677	Calibration not required	Calibration not required
Agilent	Dual-directional coupler	772D	MY46151242	Jul.11,2017	Jul.10,2018
		778D	MY48220468	Aug.28,2017	Aug.27,2018
Agilent	RF Signal Generator	N5181A	MY50144143	Mar.15,2018	Mar.14,2019

Manufacturer	Device	Type	Serial number	Date of last calibration	Date of next calibration
Agilent	Power Meter	E4417A	MY52200003	Feb.01,2018	Jan.31,2019
Agilent	Power Sensor	E9301H	MY52200004	Feb.01,2018	Jan.31,2019
			MY52200004	Feb.01,2018	Jan.31,2019
TECPEL	Digital thermometer	DTM-303A	TP131515	May.26,2017	May.25,2018
Anritsu	Radio Communication Test	MT8820C	6201061049	Apr.08,2018	Apr.07,2019
R&S	Radio Communication Test	CMW 500	125470	Aug.22,2017	Aug.21,2018

5. Measurements

Date: 2018/5/22

WCDMA Band II_Body_Right side_CH 9538_0mm

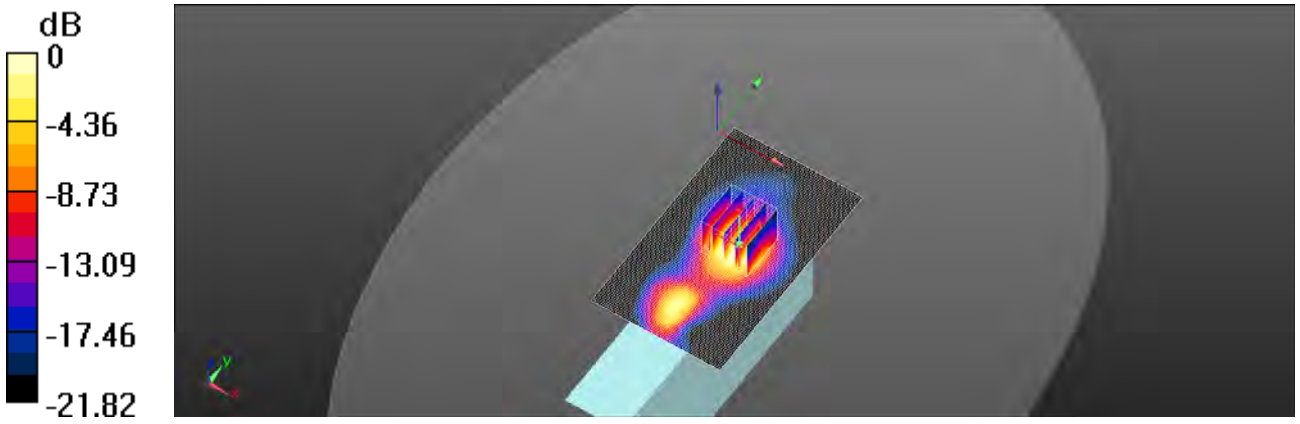
Communication System: WCDMA; Frequency: 1907.6 MHz; Duty Cycle: 1:1
Medium parameters used: f = 1908 MHz; σ = 1.55 S/m; ε_r = 50.734; ρ = 1000 kg/m^3
Phantom section: Flat Section
Ambient temperature: 22.1°C; Liquid temperature: 21.7°C

DASY5 Configuration:

- Probe: EX3DV4 - SN3938; ConvF(7.7, 7.7, 7.7); Calibrated: 2017/9/29;
- Sensor-Surface: 2mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn1260; Calibrated: 2017/9/28
- Phantom: Body
- DASY52 52.8.8(1258); SEMCAD X 14.6.10(7373)

Configuration/Body/Area Scan (61x101x1): Interpolated grid: dx=15 mm, dy=15 mm
Maximum value of SAR (interpolated) = 10.5 W/kg

Configuration/Body/Zoom Scan (5x5x7)/Cube 0: Measurement grid: dx=8mm, dy=8mm, dz=5mm
Reference Value = 7.457 V/m; Power Drift = 0.18 dB
Peak SAR (extrapolated) = 9.85 W/kg
SAR(1 g) = 5.28 W/kg; SAR(10 g) = 2.57 W/kg
Maximum value of SAR (measured) = 6.81 W/kg



0 dB = 6.81 W/kg = 8.33 dBW/kg

Date: 2018/5/22

WCDMA Band IV_Body_Right side_CH 1513_0mm

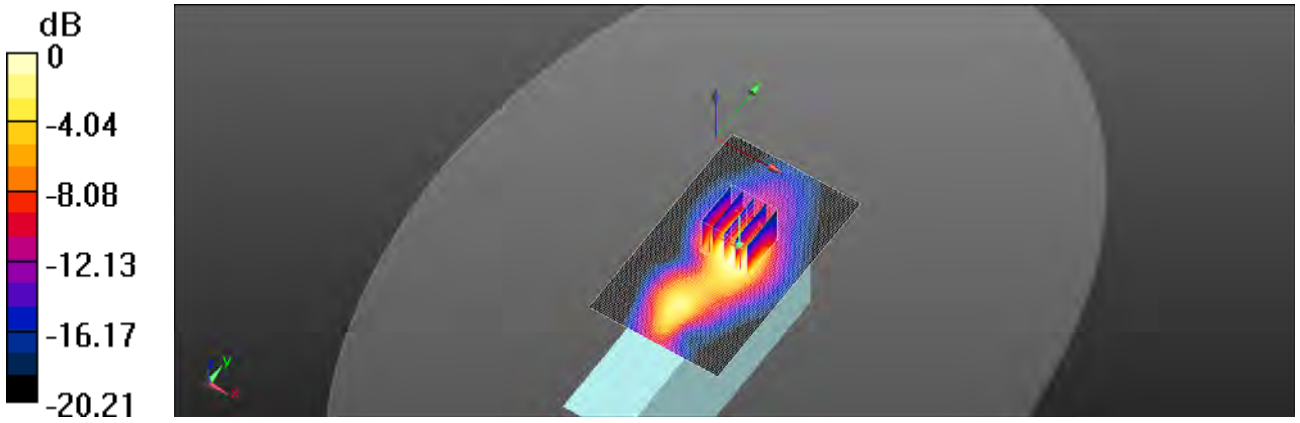
Communication System: WCDMA; Frequency: 1752.6 MHz; Duty Cycle: 1:1
Medium parameters used: f = 1753 MHz; σ = 1.478 S/m; ε_r = 51.296; ρ = 1000 kg/m^3
Phantom section: Flat Section
Ambient temperature: 21.5°C; Liquid temperature: 21.8°C

DASY5 Configuration:

- Probe: EX3DV4 - SN3938; ConvF(7.96, 7.96, 7.96); Calibrated: 2017/9/29;
- Sensor-Surface: 2mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn1260; Calibrated: 2017/9/28
- Phantom: Body
- DASY52 52.8.8(1258); SEMCAD X 14.6.10(7373)

Configuration/Body/Area Scan (61x101x1): Interpolated grid: dx=15 mm, dy=15 mm
Maximum value of SAR (interpolated) = 3.85 W/kg

Configuration/Body/Zoom Scan (5x5x7)/Cube 0: Measurement grid: dx=8mm, dy=8mm, dz=5mm
Reference Value = 11.88 V/m; Power Drift = 0.13 dB
Peak SAR (extrapolated) = 4.31 W/kg
SAR(1 g) = 2.24 W/kg; SAR(10 g) = 1.15 W/kg
Maximum value of SAR (measured) = 3.17 W/kg



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

Date: 2018/5/21

WCDMA Band V_Body_Right side_CH 4132_0mm

Communication System: WCDMA; Frequency: 826.4 MHz; Duty Cycle: 1:1
Medium parameters used: f = 826.4 MHz; σ = 0.934 S/m; ε_r = 57.383; ρ = 1000 kg/m^3
Phantom section: Flat Section
Ambient temperature: 22.2°C; Liquid temperature: 21.9°C

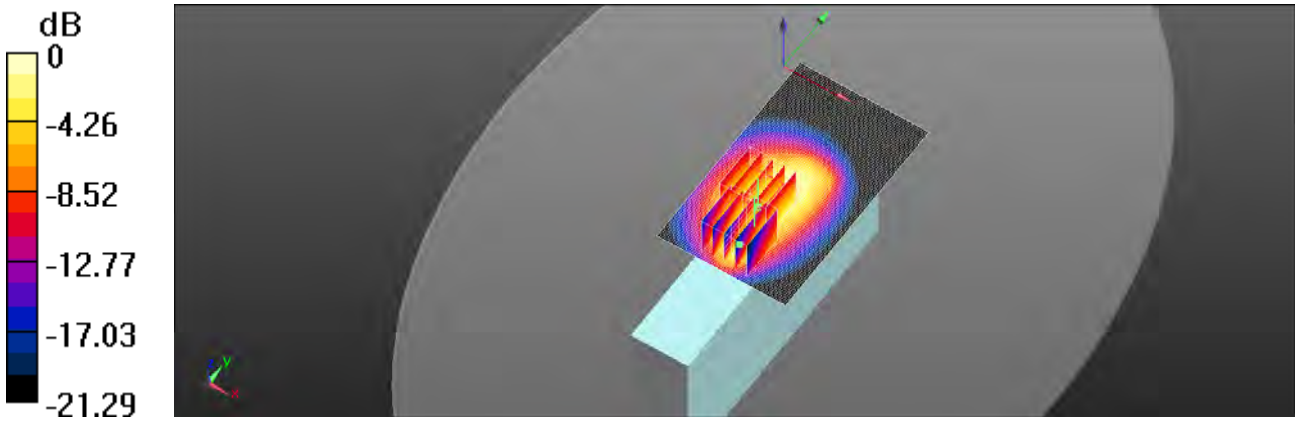
DASY5 Configuration:

- Probe: EX3DV4 - SN3938; ConvF(9.48, 9.48, 9.48); Calibrated: 2017/9/29;
- Sensor-Surface: 2mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn1260; Calibrated: 2017/9/28
- Phantom: Body
- DASY52 52.8.8(1258); SEMCAD X 14.6.10(7373)

Configuration/Body/Area Scan (61x101x1): Interpolated grid: dx=15 mm, dy=15 mm
Maximum value of SAR (interpolated) = 2.21 W/kg

Configuration/Body/Zoom Scan (5x5x7)/Cube 0: Measurement grid: dx=8mm, dy=8mm, dz=5mm
Reference Value = 14.76 V/m; Power Drift = 0.17 dB
Peak SAR (extrapolated) = 2.76 W/kg
SAR(1 g) = 1.74 W/kg; SAR(10 g) = 1.06 W/kg
Maximum value of SAR (measured) = 2.29 W/kg

Configuration/Body/Zoom Scan (5x5x7)/Cube 1: Measurement grid: dx=8mm, dy=8mm, dz=5mm
Reference Value = 14.76 V/m; Power Drift = 0.17 dB
Peak SAR (extrapolated) = 2.63 W/kg
SAR(1 g) = 1.4 W/kg; SAR(10 g) = 0.711 W/kg
Maximum value of SAR (measured) = 1.99 W/kg



0 dB = 1.99 W/kg = 2.99 dBW/kg

Date: 2018/5/22

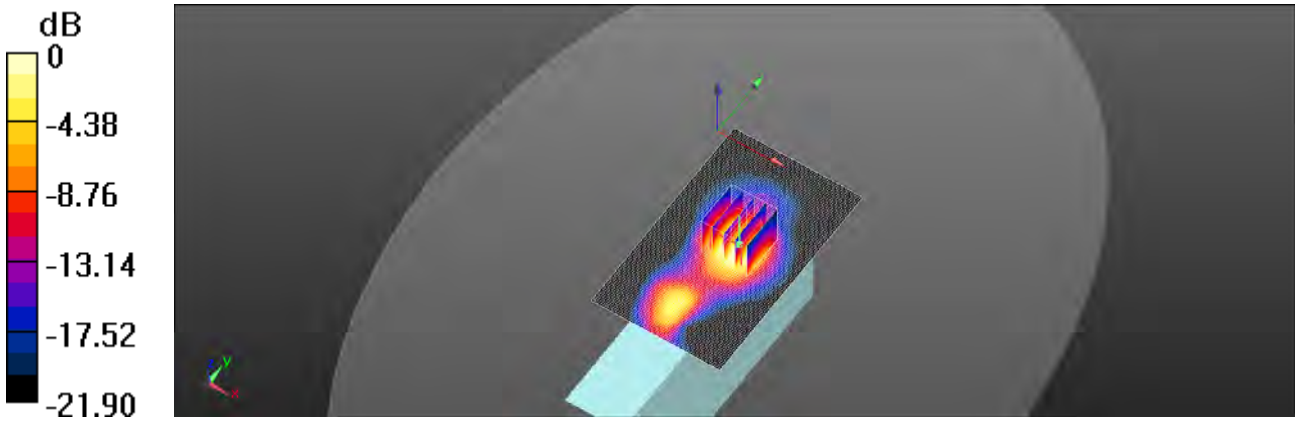
LTE Band 2 (20MHz)_Body_Right side_CH 19100_QPSK_1-50_0mm
Communication System: LTE; Frequency: 1900 MHz; Duty Cycle: 1:1
Medium parameters used: f = 1900 MHz; σ = 1.535 S/m; ε_r = 50.78; ρ = 1000 kg/m^3
Phantom section: Flat Section
Ambient temperature: 22.1°C; Liquid temperature: 21.7°C

DASY5 Configuration:

- Probe: EX3DV4 - SN3938; ConvF(7.7, 7.7, 7.7); Calibrated: 2017/9/29;
- Sensor-Surface: 2mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn1260; Calibrated: 2017/9/28
- Phantom: Body
- DASY52 52.8.8(1258); SEMCAD X 14.6.10(7373)

Configuration/Body/Area Scan (61x101x1): Interpolated grid: dx=15 mm, dy=15 mm
Maximum value of SAR (interpolated) = 10.7 W/kg

Configuration/Body/Zoom Scan (5x5x7)/Cube 0: Measurement grid: dx=8mm, dy=8mm, dz=5mm
Reference Value = 7.541 V/m; Power Drift = 0.09 dB
Peak SAR (extrapolated) = 10.0 W/kg
SAR(1 g) = 5.47 W/kg; SAR(10 g) = 2.7 W/kg
Maximum value of SAR (measured) = 7.00 W/kg



0 dB = 7.00 W/kg = 8.45 dBW/kg

Date: 2018/5/22

LTE Band 4 (20MHz)_Body_Right side_CH 20300_QPSK_1-50_0mm

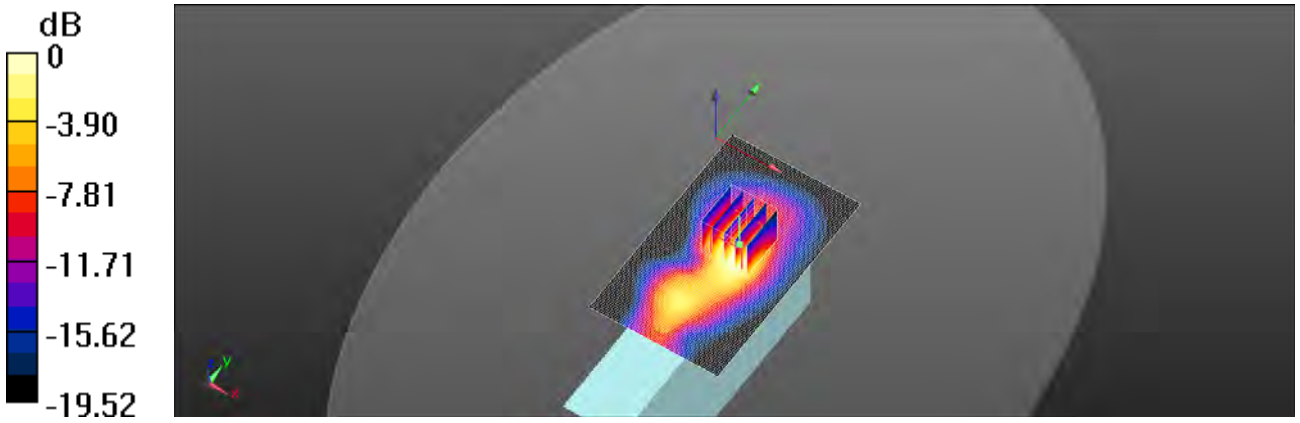
Communication System: LTE; Frequency: 1745 MHz; Duty Cycle: 1:1
Medium parameters used: f = 1745 MHz; σ = 1.472 S/m; ε_r = 51.288; ρ = 1000 kg/m^3
Phantom section: Flat Section
Ambient temperature: 21.5°C; Liquid temperature: 21.8°C

DASY5 Configuration:

- Probe: EX3DV4 - SN3938; ConvF(7.96, 7.96, 7.96); Calibrated: 2017/9/29;
- Sensor-Surface: 2mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn1260; Calibrated: 2017/9/28
- Phantom: Body
- DASY52 52.8.8(1258); SEMCAD X 14.6.10(7373)

Configuration/Body/Area Scan (61x101x1): Interpolated grid: dx=15 mm, dy=15 mm
Maximum value of SAR (interpolated) = 3.59 W/kg

Configuration/Body/Zoom Scan (5x5x7)/Cube 0: Measurement grid: dx=8mm, dy=8mm, dz=5mm
Reference Value = 12.51 V/m; Power Drift = -0.10 dB
Peak SAR (extrapolated) = 4.10 W/kg
SAR(1 g) = 2.14 W/kg; SAR(10 g) = 1.12 W/kg
Maximum value of SAR (measured) = 2.97 W/kg



0 dB = 2.97 W/kg = 4.73 dBW/kg

Date: 2018/5/21

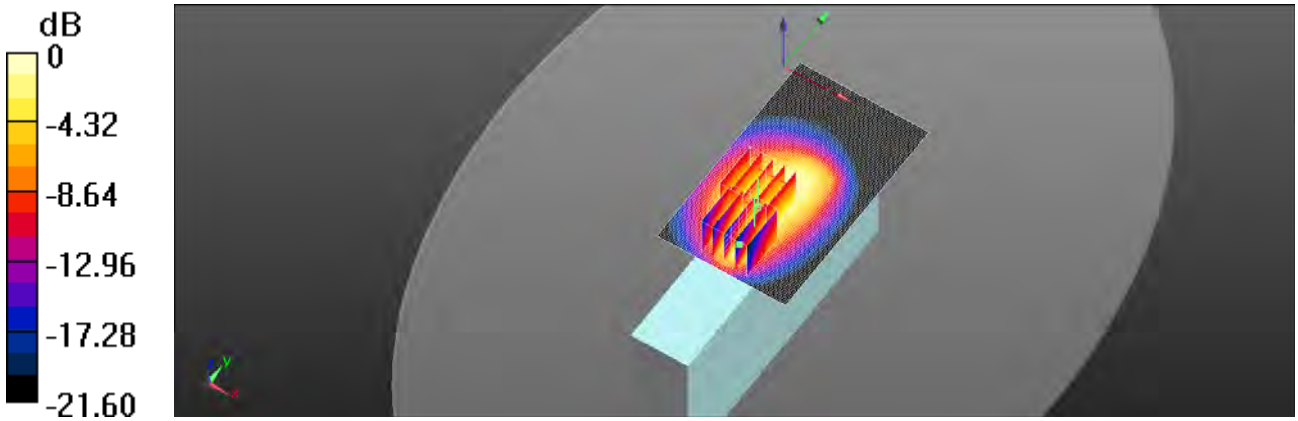
LTE Band 5 (10MHz)_Body_Right side_CH 20525_QPSK_1-25_0mm
Communication System: LTE; Frequency: 836.5 MHz; Duty Cycle: 1:1
Medium parameters used: f = 836.5 MHz; σ = 0.944 S/m; ε_r = 57.385; ρ = 1000 kg/m^3
Phantom section: Flat Section
Ambient temperature: 22.2°C; Liquid temperature: 21.9°C

DASY5 Configuration:

- Probe: EX3DV4 - SN3938; ConvF(9.48, 9.48, 9.48); Calibrated: 2017/9/29;
- Sensor-Surface: 2mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn1260; Calibrated: 2017/9/28
- Phantom: Body
- DASY52 52.8.8(1258); SEMCAD X 14.6.10(7373)

Configuration/Body/Area Scan (61x101x1): Interpolated grid: dx=15 mm, dy=15 mm
Maximum value of SAR (interpolated) = 2.35 W/kg

Configuration/Body/Zoom Scan (5x5x7)/Cube 0: Measurement grid: dx=8mm, dy=8mm, dz=5mm
Reference Value = 15.14 V/m; Power Drift = 0.12 dB
Peak SAR (extrapolated) = 2.87 W/kg
SAR(1 g) = 1.81 W/kg; SAR(10 g) = 1.1 W/kg
Maximum value of SAR (measured) = 2.40 W/kg
Configuration/Body/Zoom Scan (5x5x7)/Cube 1: Measurement grid: dx=8mm, dy=8mm, dz=5mm
Reference Value = 15.14 V/m; Power Drift = 0.12 dB
Peak SAR (extrapolated) = 2.74 W/kg
SAR(1 g) = 1.46 W/kg; SAR(10 g) = 0.736 W/kg
Maximum value of SAR (measured) = 2.06 W/kg



0 dB = 2.06 W/kg = 3.14 dBW/kg

Date: 2018/5/23

LTE Band 7 (20MHz)_Body_Right side_CH 20850_QPSK_1-99_0mm

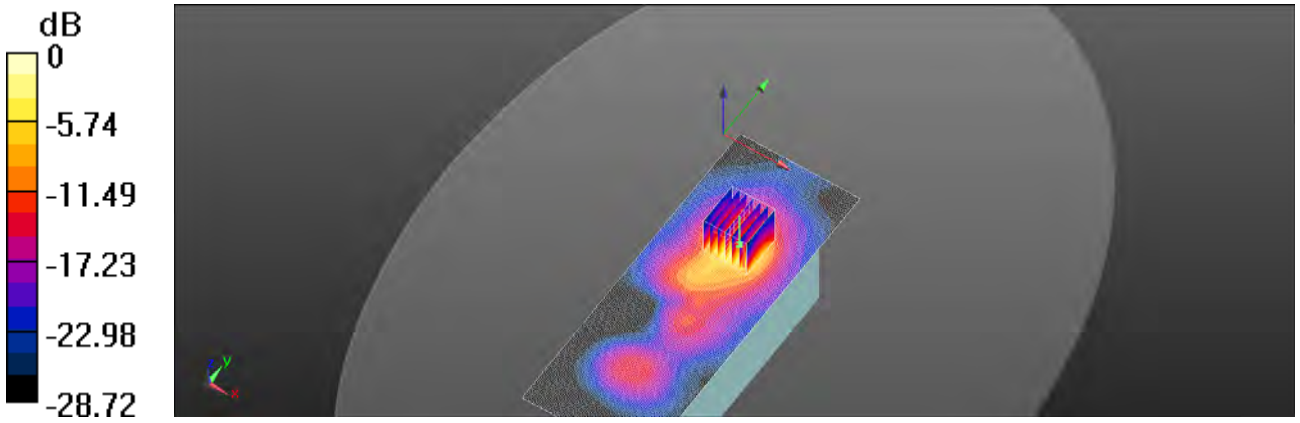
Communication System: LTE; Frequency: 2510 MHz; Duty Cycle: 1:1
Medium parameters used: f = 2510 MHz; σ = 1.992 S/m; ε_r = 50.336; ρ = 1000 kg/m^3
Phantom section: Flat Section
Ambient temperature: 21.7°C; Liquid temperature: 22.0°C

DASY5 Configuration:

- Probe: EX3DV4 - SN3938; ConvF(7.15, 7.15, 7.15); Calibrated: 2017/9/29;
- Sensor-Surface: 2mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn1260; Calibrated: 2017/9/28
- Phantom: Body
- DASY52 52.8.8(1258); SEMCAD X 14.6.10(7373)

Configuration/Body/Area Scan (71x191x1): Interpolated grid: dx=12 mm, dy=12 mm
Maximum value of SAR (interpolated) = 7.02 W/kg

Configuration/Body/Zoom Scan (7x7x7)/Cube 0: Measurement grid: dx=5mm, dy=5mm, dz=5mm
Reference Value = 8.159 V/m; Power Drift = 0.08 dB
Peak SAR (extrapolated) = 9.38 W/kg
SAR(1 g) = 4.26 W/kg; SAR(10 g) = 1.7 W/kg
Maximum value of SAR (measured) = 6.87 W/kg



0 dB = 6.87 W/kg = 8.37 dBW/kg

Date: 2018/5/21

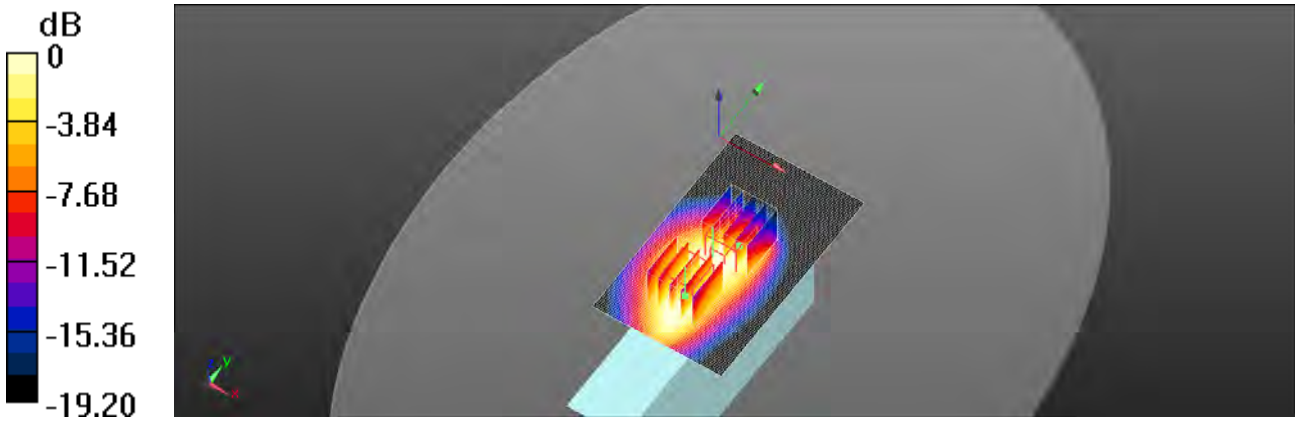
LTE Band 12 (10MHz)_Body_Right side_CH 23130_QPSK_1-25_0mm
Communication System: LTE; Frequency: 711 MHz; Duty Cycle: 1:1
Medium parameters used: f = 711 MHz; σ = 0.936 S/m; ε_r = 57.983; ρ = 1000 kg/m^3
Phantom section: Flat Section
Ambient temperature: 21.6°C; Liquid temperature: 22.0°C

DASY5 Configuration:

- Probe: EX3DV4 - SN3938; ConvF(9.62, 9.62, 9.62); Calibrated: 2017/9/29;
- Sensor-Surface: 2mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn1260; Calibrated: 2017/9/28
- Phantom: Body
- DASY52 52.8.8(1258); SEMCAD X 14.6.10(7373)

Configuration/Body/Area Scan (61x101x1): Interpolated grid: dx=15 mm, dy=15 mm
Maximum value of SAR (interpolated) = 3.30 W/kg

Configuration/Body/Zoom Scan (5x5x7)/Cube 0: Measurement grid: dx=8mm, dy=8mm, dz=5mm
Reference Value = 19.68 V/m; Power Drift = 0.10 dB
Peak SAR (extrapolated) = 4.20 W/kg
SAR(1 g) = 2.6 W/kg; SAR(10 g) = 1.62 W/kg
Maximum value of SAR (measured) = 3.40 W/kg
Configuration/Body/Zoom Scan (5x5x7)/Cube 1: Measurement grid: dx=8mm, dy=8mm, dz=5mm
Reference Value = 19.68 V/m; Power Drift = -0.10 dB
Peak SAR (extrapolated) = 3.32 W/kg
SAR(1 g) = 1.92 W/kg; SAR(10 g) = 1.09 W/kg
Maximum value of SAR (measured) = 2.75 W/kg



0 dB = 2.75 W/kg = 4.39 dBW/kg

Date: 2018/5/21

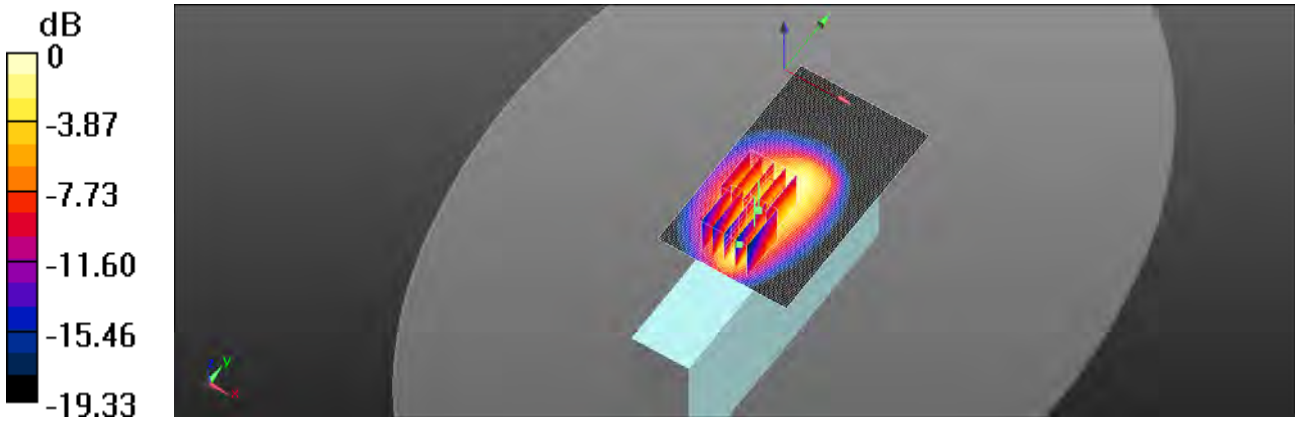
LTE Band 13 (10MHz)_Body_Right side_CH 23230_QPSK_1-0_0mm
Communication System: LTE; Frequency: 782 MHz; Duty Cycle: 1:1
Medium parameters used: f = 782 MHz; σ = 0.987 S/m; ε_r = 57.349; ρ = 1000 kg/m^3
Phantom section: Flat Section
Ambient temperature: 21.6°C; Liquid temperature: 22.0°C

DASY5 Configuration:

- Probe: EX3DV4 - SN3938; ConvF(9.62, 9.62, 9.62); Calibrated: 2017/9/29;
- Sensor-Surface: 2mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn1260; Calibrated: 2017/9/28
- Phantom: Body
- DASY52 52.8.8(1258); SEMCAD X 14.6.10(7373)

Configuration/Body/Area Scan (61x101x1): Interpolated grid: dx=15 mm, dy=15 mm
Maximum value of SAR (interpolated) = 3.35 W/kg

Configuration/Body/Zoom Scan (5x5x7)/Cube 0: Measurement grid: dx=8mm, dy=8mm, dz=5mm
Reference Value = 18.30 V/m; Power Drift = 0.04 dB
Peak SAR (extrapolated) = 4.16 W/kg
SAR(1 g) = 2.66 W/kg; SAR(10 g) = 1.66 W/kg
Maximum value of SAR (measured) = 3.48 W/kg
Configuration/Body/Zoom Scan (5x5x7)/Cube 1: Measurement grid: dx=8mm, dy=8mm, dz=5mm
Reference Value = 18.30 V/m; Power Drift = 0.04 dB
Peak SAR (extrapolated) = 4.24 W/kg
SAR(1 g) = 2.33 W/kg; SAR(10 g) = 1.23 W/kg
Maximum value of SAR (measured) = 3.36 W/kg



0 dB = 3.36 W/kg = 5.26 dBW/kg

Date: 2018/5/22

LTE Band 25 (20MHz)_Body_Right side_CH 26590_QPSK_1-50_0mm

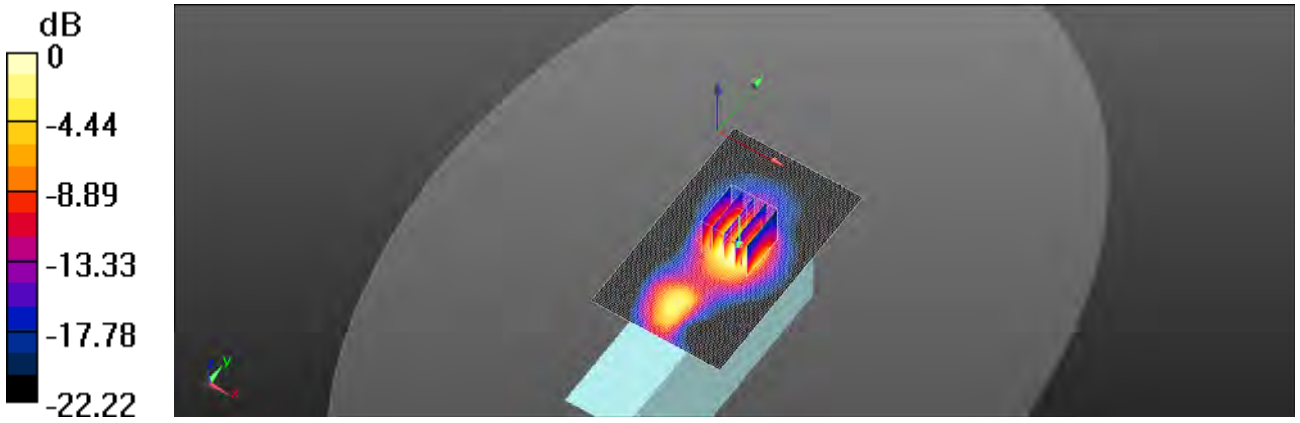
Communication System: LTE; Frequency: 1905 MHz; Duty Cycle: 1:1
Medium parameters used: f = 1905 MHz; σ = 1.544 S/m; ε_r = 50.718; ρ = 1000 kg/m^3
Phantom section: Flat Section
Ambient temperature: 22.1°C; Liquid temperature: 21.7°C

DASY5 Configuration:

- Probe: EX3DV4 - SN3938; ConvF(7.7, 7.7, 7.7); Calibrated: 2017/9/29;
- Sensor-Surface: 2mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn1260; Calibrated: 2017/9/28
- Phantom: Body
- DASY52 52.8.8(1258); SEMCAD X 14.6.10(7373)

Configuration/Body/Area Scan (61x101x1): Interpolated grid: dx=15 mm, dy=15 mm
Maximum value of SAR (interpolated) = 10.0 W/kg

Configuration/Body/Zoom Scan (5x5x7)/Cube 0: Measurement grid: dx=8mm, dy=8mm, dz=5mm
Reference Value = 7.128 V/m; Power Drift = -0.19 dB
Peak SAR (extrapolated) = 9.57 W/kg
SAR(1 g) = 5.16 W/kg; SAR(10 g) = 2.52 W/kg
Maximum value of SAR (measured) = 6.64 W/kg



0 dB = 6.64 W/kg = 8.22 dBW/kg

Date: 2018/5/21

LTE Band 26 (15MHz)_Body_Right side_CH 26825_QPSK_1-0_0mm

Communication System: LTE; Frequency: 822.5 MHz; Duty Cycle: 1:1
Medium parameters used: f = 822.5 MHz; σ = 0.962 S/m; ε_r = 57.475; ρ = 1000 kg/m^3
Phantom section: Flat Section
Ambient temperature: 22.2°C; Liquid temperature: 21.9°C

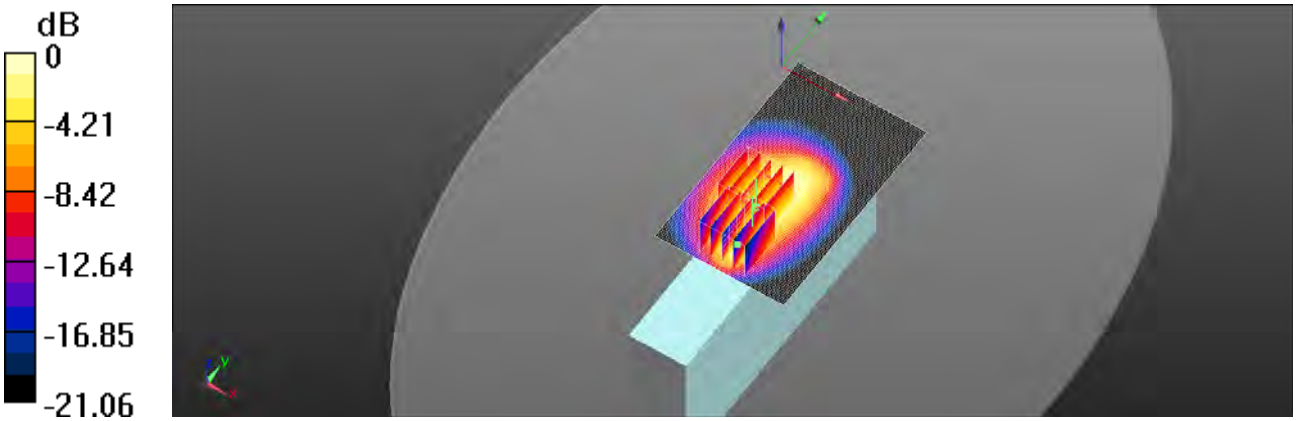
DASY5 Configuration:

- Probe: EX3DV4 - SN3938; ConvF(9.48, 9.48, 9.48); Calibrated: 2017/9/29;
- Sensor-Surface: 2mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn1260; Calibrated: 2017/9/28
- Phantom: Body
- DASY52 52.8.8(1258); SEMCAD X 14.6.10(7373)

Configuration/Body/Area Scan (61x101x1): Interpolated grid: dx=15 mm, dy=15 mm
Maximum value of SAR (interpolated) = 2.29 W/kg

Configuration/Body/Zoom Scan (5x5x7)/Cube 0: Measurement grid: dx=8mm, dy=8mm, dz=5mm
Reference Value = 15.16 V/m; Power Drift = -0.14 dB
Peak SAR (extrapolated) = 2.82 W/kg
SAR(1 g) = 1.78 W/kg; SAR(10 g) = 1.09 W/kg
Maximum value of SAR (measured) = 2.34 W/kg

Configuration/Body/Zoom Scan (5x5x7)/Cube 1: Measurement grid: dx=8mm, dy=8mm, dz=5mm
Reference Value = 15.16 V/m; Power Drift = -0.14 dB
Peak SAR (extrapolated) = 2.71 W/kg
SAR(1 g) = 1.46 W/kg; SAR(10 g) = 0.746 W/kg
Maximum value of SAR (measured) = 2.06 W/kg



0 dB = 2.06 W/kg = 3.14 dBW/kg

Date: 2018/5/23

LTE Band 30 (10MHz)_Body_Right side_CH 27710_QPSK_1-25_0mm

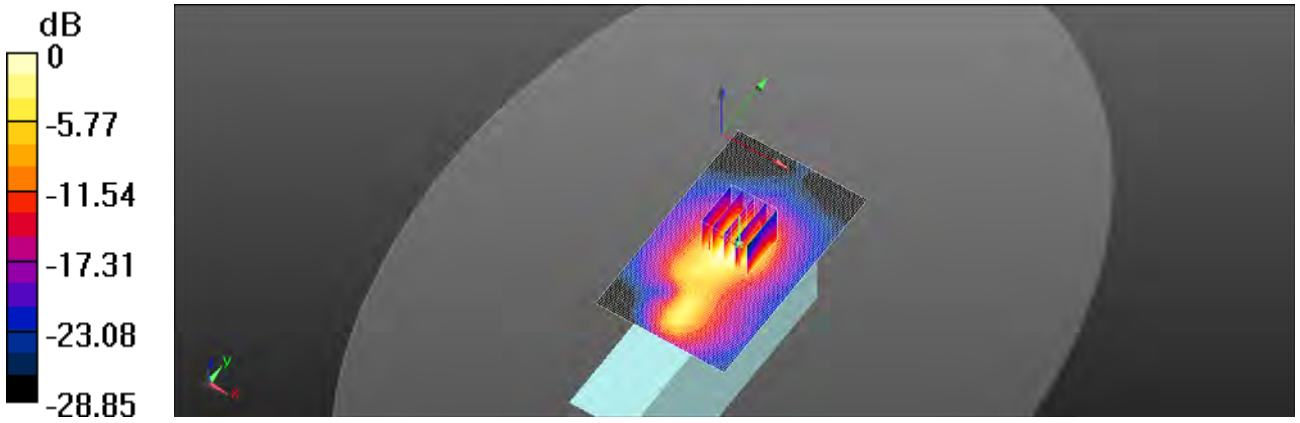
Communication System: LTE; Frequency: 2310 MHz; Duty Cycle: 1:1
Medium parameters used: f = 2310 MHz; σ = 1.754 S/m; ε_r = 53.545; ρ = 1000 kg/m^3
Phantom section: Flat Section
Ambient temperature: 22.1°C; Liquid temperature: 21.8°C

DASY5 Configuration:

- Probe: EX3DV4 - SN3938; ConvF(7.51, 7.51, 7.51); Calibrated: 2017/9/29;
- Sensor-Surface: 2mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn1260; Calibrated: 2017/9/28
- Phantom: Body
- DASY52 52.8.8(1258); SEMCAD X 14.6.10(7373)

Configuration/Body/Area Scan (61x101x1): Interpolated grid: dx=15 mm, dy=15 mm
Maximum value of SAR (interpolated) = 5.44 W/kg

Configuration/Body/Zoom Scan (5x5x7)/Cube 0: Measurement grid: dx=8mm, dy=8mm, dz=5mm
Reference Value = 11.67 V/m; Power Drift = 0.08 dB
Peak SAR (extrapolated) = 7.50 W/kg
SAR(1 g) = 3.59 W/kg; SAR(10 g) = 1.51 W/kg
Maximum value of SAR (measured) = 5.50 W/kg



0 dB = 5.50 W/kg = 7.40 dBW/kg

Date: 2018/5/23

LTE Band 41 (20MHz)_Body_Right side_CH 39750_QPSK_1-0_0mm

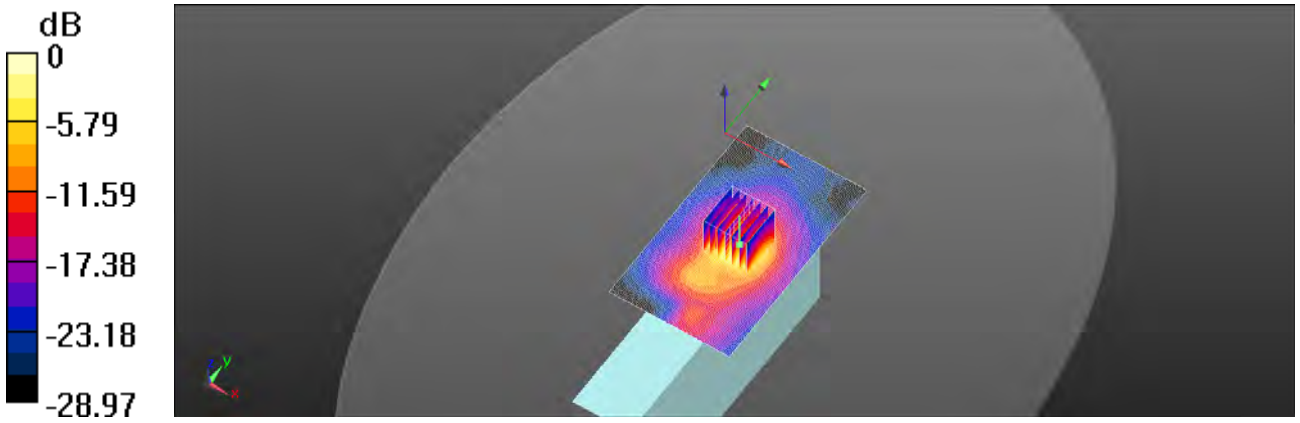
Communication System: LTE; Frequency: 2506 MHz; Duty Cycle: 1:0.633
Medium parameters used: f = 2506 MHz; σ = 1.99 S/m; ε_r = 50.347; ρ = 1000 kg/m^3
Phantom section: Flat Section
Ambient temperature: 21.7°C; Liquid temperature: 22.0°C

DASY5 Configuration:

- Probe: EX3DV4 - SN3938; ConvF(7.15, 7.15, 7.15); Calibrated: 2017/9/29;
- Sensor-Surface: 2mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn1260; Calibrated: 2017/9/28
- Phantom: Body
- DASY52 52.8.8(1258); SEMCAD X 14.6.10(7373)

Configuration/Body/Area Scan (71x121x1): Interpolated grid: dx=12 mm, dy=12 mm
Maximum value of SAR (interpolated) = 2.29 W/kg

Configuration/Body/Zoom Scan (7x7x7)/Cube 0: Measurement grid: dx=5mm, dy=5mm, dz=5mm
Reference Value = 5.166 V/m; Power Drift = -0.10 dB
Peak SAR (extrapolated) = 3.05 W/kg
SAR(1 g) = 1.44 W/kg; SAR(10 g) = 0.585 W/kg
Maximum value of SAR (measured) = 2.27 W/kg



0 dB = 2.27 W/kg = 3.56 dBW/kg

Date: 2018/5/23

WLAN 802.11b_Body_Left side_CH 6_Main_0mm

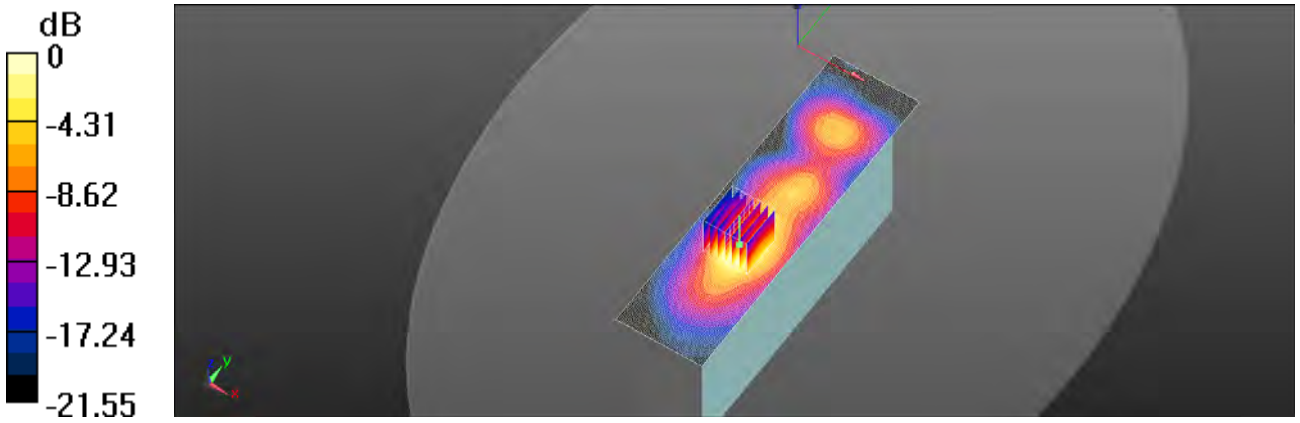
Communication System: WLAN 2.45G; Frequency: 2437 MHz; Duty Cycle: 1:1
Medium parameters used: f = 2437 MHz; σ = 1.863 S/m; ε_r = 53.562; ρ = 1000 kg/m^3
Phantom section: Flat Section
Ambient temperature: 21.8°C; Liquid temperature: 21.6°C

DASY5 Configuration:

- Probe: EX3DV4 - SN3938; ConvF(7.42, 7.42, 7.42); Calibrated: 2017/9/29;
- Sensor-Surface: 2mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn1260; Calibrated: 2017/9/28
- Phantom: Body
- DASY52 52.8.8(1258); SEMCAD X 14.6.10(7373)

Configuration/Body/Area Scan (51x191x1): Interpolated grid: dx=12 mm, dy=12 mm
Maximum value of SAR (interpolated) = 0.880 W/kg

Configuration/Body/Zoom Scan (7x7x7)/Cube 0: Measurement grid: dx=5mm, dy=5mm, dz=5mm
Reference Value = 6.596 V/m; Power Drift = 0.17 dB
Peak SAR (extrapolated) = 1.06 W/kg
SAR(1 g) = 0.591 W/kg; SAR(10 g) = 0.310 W/kg
Maximum value of SAR (measured) = 0.807 W/kg



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

Date: 2018/5/23

Bluetooth(GFSK)_Body_Left side_CH 39_Main_0mm

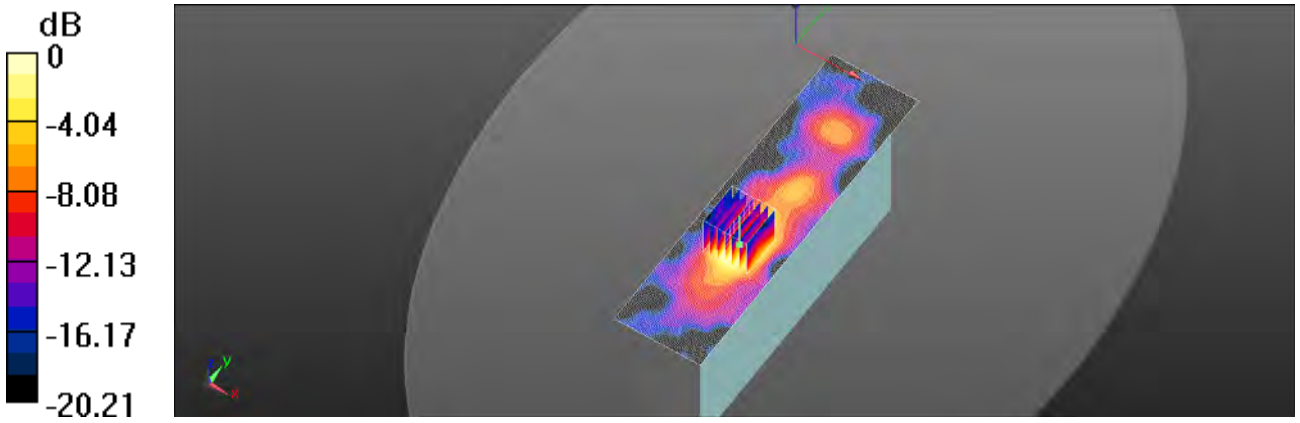
Communication System: Bluetooth; Frequency: 2441 MHz; Duty Cycle: 1:1
Medium parameters used: f = 2441 MHz; σ = 1.875 S/m; ε_r = 53.548; ρ = 1000 kg/m^3
Phantom section: Flat Section
Ambient temperature: 21.5°C; Liquid temperature: 21.3°C

DASY5 Configuration:

- Probe: EX3DV4 - SN3938; ConvF(7.42, 7.42, 7.42); Calibrated: 2017/9/29;
- Sensor-Surface: 2mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn1260; Calibrated: 2017/9/28
- Phantom: Body
- DASY52 52.8.8(1258); SEMCAD X 14.6.10(7373)

Configuration/Body/Area Scan (51x191x1): Interpolated grid: dx=12 mm, dy=12 mm
Maximum value of SAR (interpolated) = 0.0908 W/kg

Configuration/Body/Zoom Scan (7x7x7)/Cube 0: Measurement grid: dx=5mm, dy=5mm, dz=5mm
Reference Value = 2.950 V/m; Power Drift = 0.16 dB
Peak SAR (extrapolated) = 0.111 W/kg
SAR(1 g) = 0.059 W/kg; SAR(10 g) = 0.030 W/kg
Maximum value of SAR (measured) = 0.0833 W/kg



0 dB = 0.0833 W/kg = -10.79 dBW/kg

Date: 2018/5/24

WLAN 802.11a 5.2G_Body_Back side_CH 48_Main_0mm

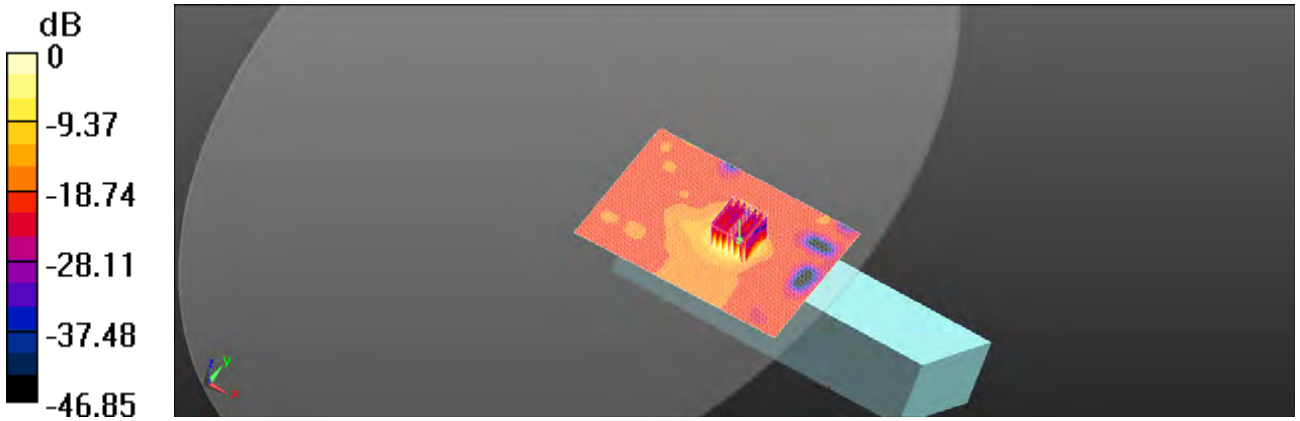
Communication System: WLAN 5G; Frequency: 5240 MHz; Duty Cycle: 1:1
Medium parameters used: f = 5240 MHz; σ = 5.137 S/m; ε_r = 49.014; ρ = 1000 kg/m^3
Phantom section: Flat Section
Ambient temperature: 21.9°C; Liquid temperature: 21.7°C

DASY5 Configuration:

- Probe: EX3DV4 - SN3938; ConvF(4.41, 4.41, 4.41); Calibrated: 2017/9/29;
- Sensor-Surface: 2mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn1260; Calibrated: 2017/9/28
- Phantom: Body
- DASY52 52.8.8(1258); SEMCAD X 14.6.10(7373)

Configuration/Body/Area Scan (141x91x1): Interpolated grid: dx=10 mm, dy=10 mm
Maximum value of SAR (interpolated) = 1.87 W/kg

Configuration/Body/Zoom Scan (7x7x12)/Cube 0: Measurement grid: dx=4mm, dy=4mm, dz=2mm
Reference Value = 2.782 V/m; Power Drift = -0.17 dB
Peak SAR (extrapolated) = 3.81 W/kg
SAR(1 g) = 0.779 W/kg; SAR(10 g) = 0.188 W/kg
Maximum value of SAR (measured) = 1.76 W/kg



0 dB = 1.76 W/kg = 2.46 dBW/kg

Date: 2018/5/24

WLAN 802.11a 5.3G_Body_Back side_CH 52_Main_0mm

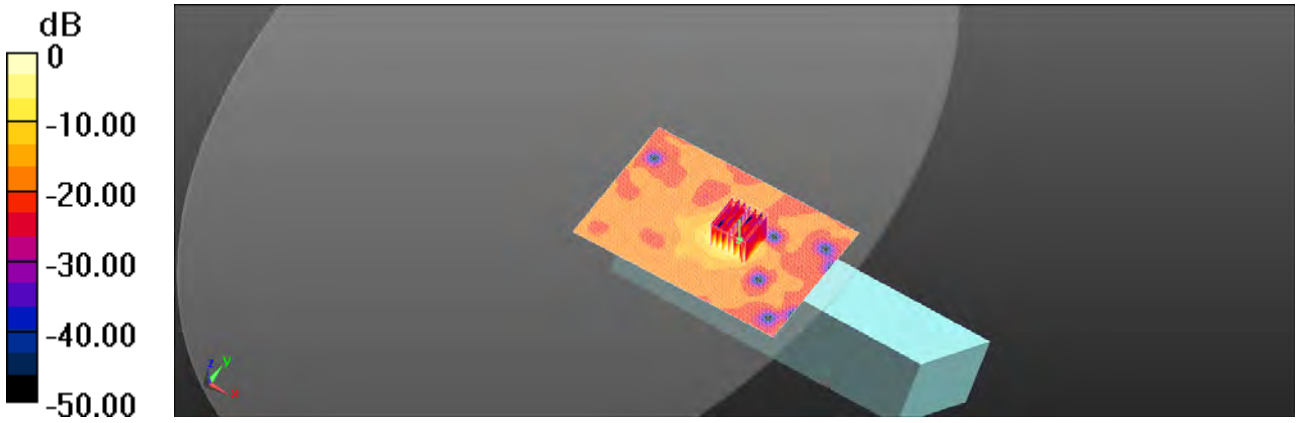
Communication System: WLAN 5G; Frequency: 5260 MHz; Duty Cycle: 1:1
Medium parameters used: f = 5260 MHz; σ = 5.185 S/m; ε_r = 48.908; ρ = 1000 kg/m^3
Phantom section: Flat Section
Ambient temperature: 21.8°C; Liquid temperature: 21.6°C

DASY5 Configuration:

- Probe: EX3DV4 - SN3938; ConvF(4.41, 4.41, 4.41); Calibrated: 2017/9/29;
- Sensor-Surface: 2mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn1260; Calibrated: 2017/9/28
- Phantom: Body
- DASY52 52.8.8(1258); SEMCAD X 14.6.10(7373)

Configuration/Body/Area Scan (141x91x1): Interpolated grid: dx=10 mm, dy=10 mm
Maximum value of SAR (interpolated) = 1.87 W/kg

Configuration/Body/Zoom Scan (7x7x12)/Cube 0: Measurement grid: dx=4mm, dy=4mm, dz=2mm
Reference Value = 2.237 V/m; Power Drift = -0.17 dB
Peak SAR (extrapolated) = 3.79 W/kg
SAR(1 g) = 0.755 W/kg; SAR(10 g) = 0.181 W/kg
Maximum value of SAR (measured) = 1.68 W/kg



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

Date: 2018/5/25

WLAN 802.11a 5.6G_Body_Left side_CH 104_Main_0mm

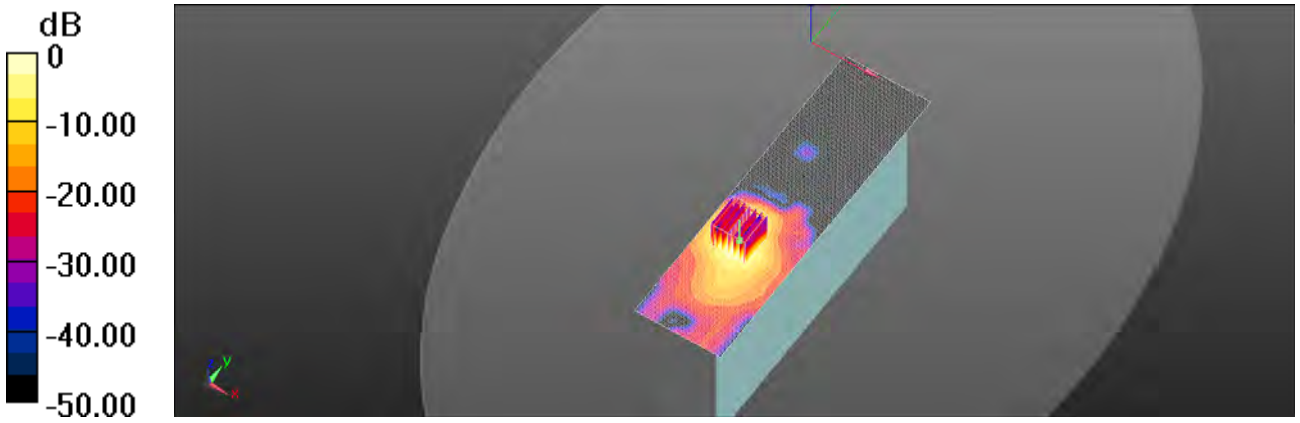
Communication System: WLAN 5G; Frequency: 5520 MHz; Duty Cycle: 1:1
Medium parameters used: f = 5520 MHz; σ = 5.599 S/m; ε_r = 48.108; ρ = 1000 kg/m^3
Phantom section: Flat Section
Ambient temperature: 21.4°C; Liquid temperature: 21.1°C

DASY5 Configuration:

- Probe: EX3DV4 - SN3938; ConvF(3.9, 3.9, 3.9); Calibrated: 2017/9/29;
- Sensor-Surface: 2mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn1260; Calibrated: 2017/9/28
- Phantom: Body
- DASY52 52.8.8(1258); SEMCAD X 14.6.10(7373)

Configuration/Body/Area Scan (61x221x1): Interpolated grid: dx=10 mm, dy=10 mm
Maximum value of SAR (interpolated) = 3.77 W/kg

Configuration/Body/Zoom Scan (7x7x12)/Cube 0: Measurement grid: dx=4mm, dy=4mm, dz=2mm
Reference Value = 2.363 V/m; Power Drift = -0.10 dB
Peak SAR (extrapolated) = 8.34 W/kg
SAR(1 g) = 1.84 W/kg; SAR(10 g) = 0.543 W/kg
Maximum value of SAR (measured) = 3.86 W/kg



0 dB = 3.86 W/kg = 5.87 dBW/kg

Date: 2018/5/25

WLAN 802.11a 5.8G_Body_Back side_CH 153_Main_0mm

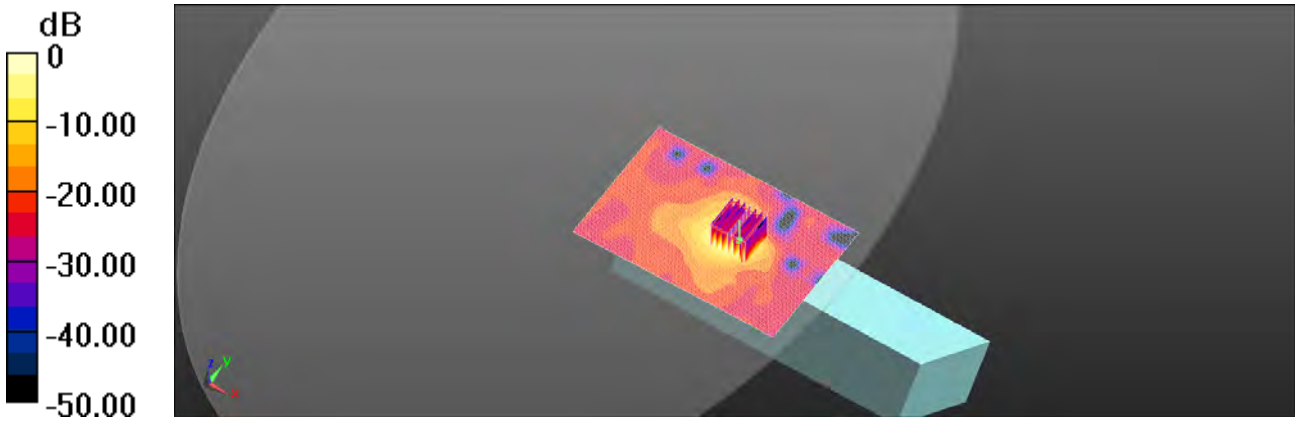
Communication System: WLAN 5G; Frequency: 5765 MHz; Duty Cycle: 1:1
Medium parameters used: f = 5765 MHz; σ = 5.989 S/m; ε_r = 47.302; ρ = 1000 kg/m^3
Phantom section: Flat Section
Ambient temperature: 21.5°C; Liquid temperature: 21.3°C

DASY5 Configuration:

- Probe: EX3DV4 - SN3938; ConvF(4.09, 4.09, 4.09); Calibrated: 2017/9/29;
- Sensor-Surface: 2mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn1260; Calibrated: 2017/9/28
- Phantom: Body
- DASY52 52.8.8(1258); SEMCAD X 14.6.10(7373)

Configuration/Body/Area Scan (141x91x1): Interpolated grid: dx=10 mm, dy=10 mm
Maximum value of SAR (interpolated) = 5.82 W/kg

Configuration/Body/Zoom Scan (7x7x12)/Cube 0: Measurement grid: dx=4mm, dy=4mm, dz=2mm
Reference Value = 2.931 V/m; Power Drift = -0.11 dB
Peak SAR (extrapolated) = 13.2 W/kg
SAR(1 g) = 2.42 W/kg; SAR(10 g) = 0.582 W/kg
Maximum value of SAR (measured) = 5.58 W/kg



0 dB = 5.58 W/kg = 7.47 dBW/kg

Date: 2018/5/23

WLAN 802.11b_Body_Right side_CH 6_Aux_0mm

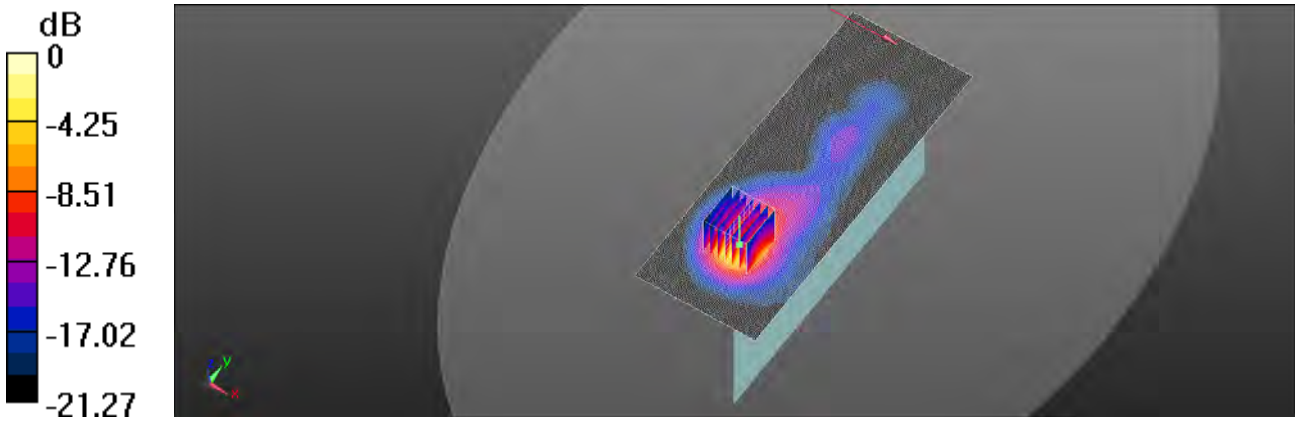
Communication System: WLAN 2.45G; Frequency: 2437 MHz; Duty Cycle: 1:1
Medium parameters used: f = 2437 MHz; σ = 1.863 S/m; ε_r = 53.562; ρ = 1000 kg/m^3
Phantom section: Flat Section
Ambient temperature: 21.7°C; Liquid temperature: 21.5°C

DASY5 Configuration:

- Probe: EX3DV4 - SN3938; ConvF(7.42, 7.42, 7.42); Calibrated: 2017/9/29;
- Sensor-Surface: 2mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn1260; Calibrated: 2017/9/28
- Phantom: Body
- DASY52 52.8.8(1258); SEMCAD X 14.6.10(7373)

Configuration/Body/Area Scan (71x191x1): Interpolated grid: dx=12 mm, dy=12 mm
Maximum value of SAR (interpolated) = 1.80 W/kg

Configuration/Body/Zoom Scan (7x7x7)/Cube 0: Measurement grid: dx=5mm, dy=5mm, dz=5mm
Reference Value = 4.529 V/m; Power Drift = 0.14 dB
Peak SAR (extrapolated) = 2.29 W/kg
SAR(1 g) = 1.15 W/kg; SAR(10 g) = 0.531 W/kg
Maximum value of SAR (measured) = 1.76 W/kg



0 dB = 1.76 W/kg = 2.46 dBW/kg

Date: 2018/5/24

WLAN 802.11a_5.2G_Body_Right side_CH 48_Aux_0mm

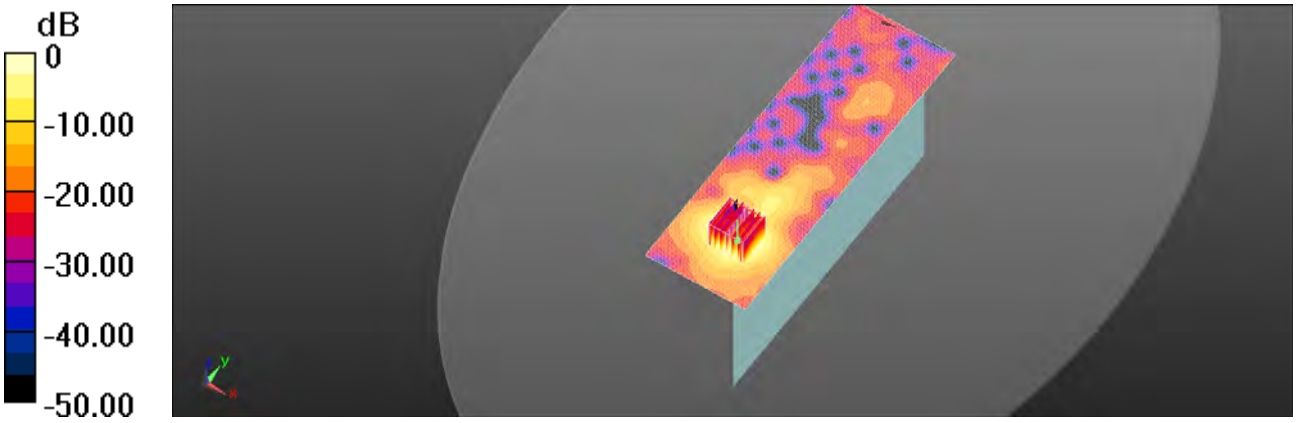
Communication System: WLAN 5G; Frequency: 5240 MHz; Duty Cycle: 1:1
Medium parameters used: f = 5240 MHz; σ = 5.137 S/m; ε_r = 49.014; ρ = 1000 kg/m^3
Phantom section: Flat Section
Ambient temperature: 21.7°C; Liquid temperature: 21.4°C

DASY5 Configuration:

- Probe: EX3DV4 - SN3938; ConvF(4.41, 4.41, 4.41); Calibrated: 2017/9/29;
- Sensor-Surface: 2mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn1260; Calibrated: 2017/9/28
- Phantom: Body
- DASY52 52.8.8(1258); SEMCAD X 14.6.10(7373)

Configuration/Body/Area Scan (71x221x1): Interpolated grid: dx=10 mm, dy=10 mm
Maximum value of SAR (interpolated) = 2.50 W/kg

Configuration/Body/Zoom Scan (7x7x12)/Cube 0: Measurement grid: dx=4mm, dy=4mm, dz=2mm
Reference Value = 2.159 V/m; Power Drift = -0.10 dB
Peak SAR (extrapolated) = 4.93 W/kg
SAR(1 g) = 1.15 W/kg; SAR(10 g) = 0.336 W/kg
Maximum value of SAR (measured) = 2.37 W/kg



0 dB = 2.37 W/kg = 3.75 dBW/kg

Date: 2018/5/24

WLAN 802.11a_5.3G_Body_Right side_CH 52_Aux_0mm

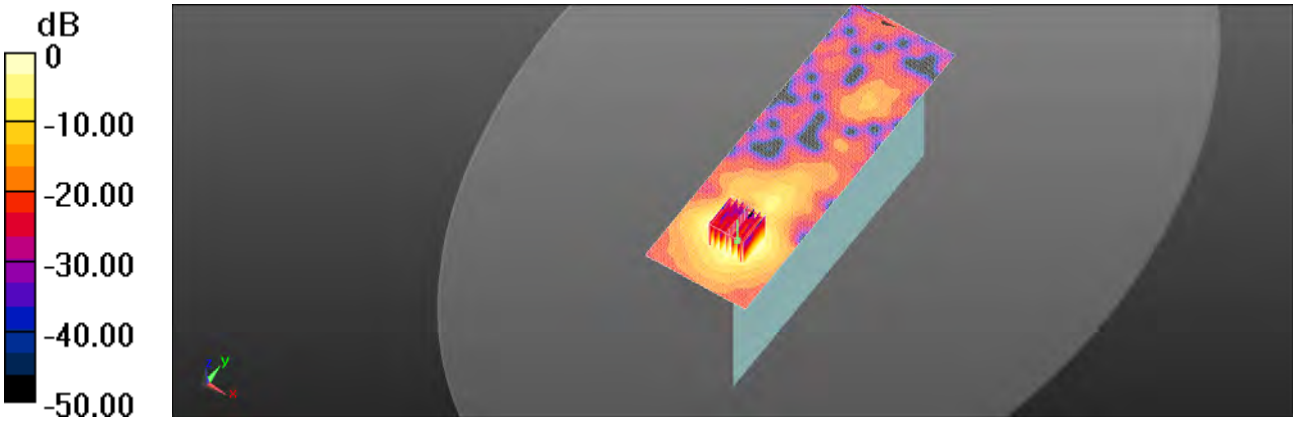
Communication System: WLAN 5G; Frequency: 5260 MHz; Duty Cycle: 1:1
Medium parameters used: f = 5260 MHz; σ = 5.185 S/m; ε_r = 48.908; ρ = 1000 kg/m^3
Phantom section: Flat Section
Ambient temperature: 21.6°C; Liquid temperature: 21.4°C

DASY5 Configuration:

- Probe: EX3DV4 - SN3938; ConvF(4.41, 4.41, 4.41); Calibrated: 2017/9/29;
- Sensor-Surface: 2mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn1260; Calibrated: 2017/9/28
- Phantom: Body
- DASY52 52.8.8(1258); SEMCAD X 14.6.10(7373)

Configuration/Body/Area Scan (71x221x1): Interpolated grid: dx=10 mm, dy=10 mm
Maximum value of SAR (interpolated) = 2.02 W/kg

Configuration/Body/Zoom Scan (7x7x12)/Cube 0: Measurement grid: dx=4mm, dy=4mm, dz=2mm
Reference Value = 2.176 V/m; Power Drift = 0.16 dB
Peak SAR (extrapolated) = 4.00 W/kg
SAR(1 g) = 0.923 W/kg; SAR(10 g) = 0.269 W/kg
Maximum value of SAR (measured) = 1.91 W/kg



0 dB = 1.91 W/kg = 2.81 dBW/kg

WLAN 802.11a 5.6G_Body_Right side_CH 104_Aux_0mm

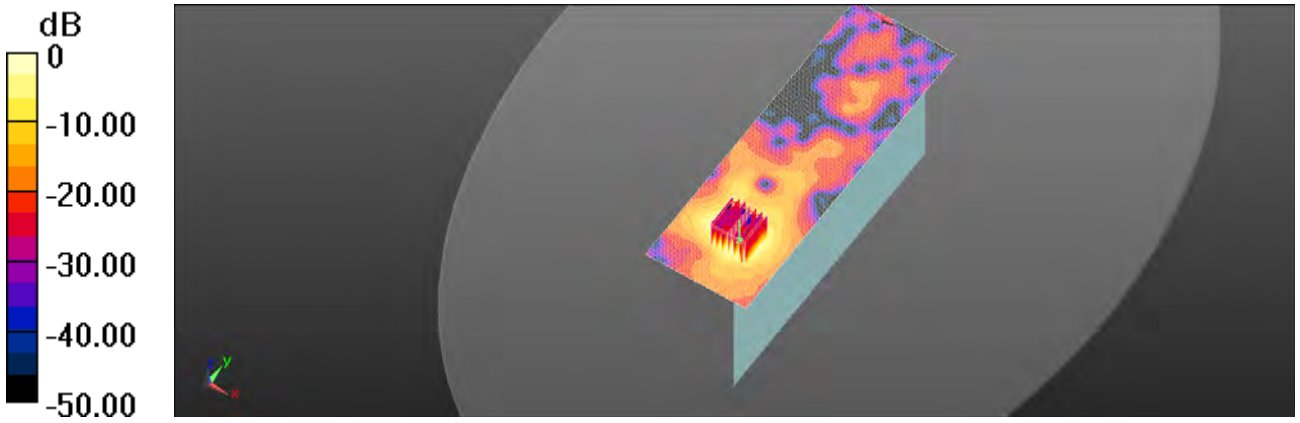
Communication System: WLAN 5G; Frequency: 5520 MHz; Duty Cycle: 1:1
Medium parameters used: f = 5520 MHz; σ = 5.599 S/m; ε_r = 48.108; ρ = 1000 kg/m^3
Phantom section: Flat Section
Ambient temperature: 21.7°C; Liquid temperature: 21.4°C

DASY5 Configuration:

- Probe: EX3DV4 - SN3938; ConvF(3.9, 3.9, 3.9); Calibrated: 2017/9/29;
- Sensor-Surface: 2mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn1260; Calibrated: 2017/9/28
- Phantom: Body
- DASY52 52.8.8(1258); SEMCAD X 14.6.10(7373)

Configuration/Body/Area Scan (71x221x1): Interpolated grid: dx=10 mm, dy=10 mm
Maximum value of SAR (interpolated) = 2.54 W/kg

Configuration/Body/Zoom Scan (7x7x12)/Cube 0: Measurement grid: dx=4mm, dy=4mm, dz=2mm
Reference Value = 2.616 V/m; Power Drift = -0.11 dB
Peak SAR (extrapolated) = 5.34 W/kg
SAR(1 g) = 1.14 W/kg; SAR(10 g) = 0.318 W/kg
Maximum value of SAR (measured) = 2.45 W/kg



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

Date: 2018/5/25

WLAN 802.11a 5.8G_Body_Right side_CH 153_Aux_0mm

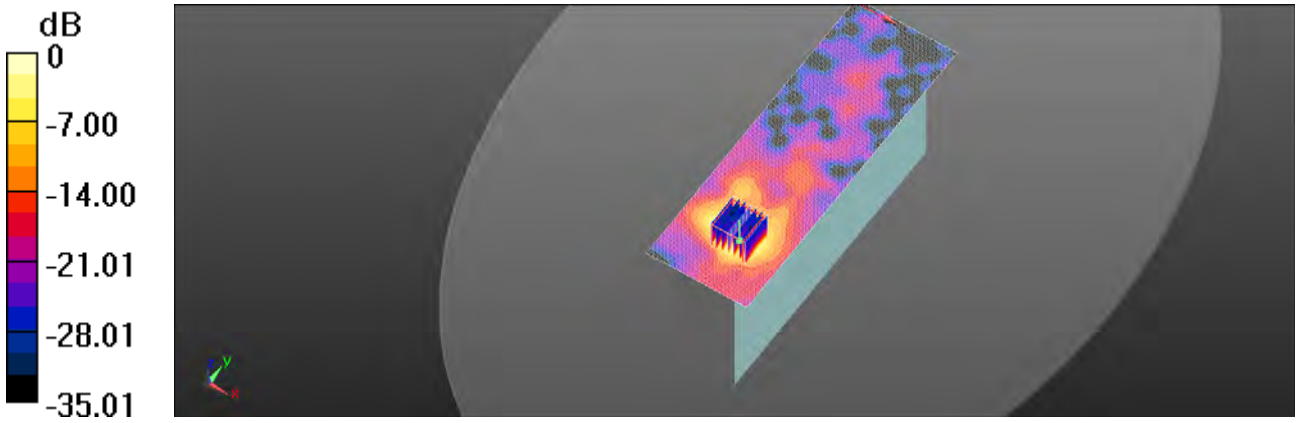
Communication System: WLAN 5G; Frequency: 5765 MHz; Duty Cycle: 1:1
Medium parameters used: f = 5765 MHz; σ = 5.989 S/m; ε_r = 47.302; ρ = 1000 kg/m^3
Phantom section: Flat Section
Ambient temperature: 21.5°C; Liquid temperature: 21.3°C

DASY5 Configuration:

- Probe: EX3DV4 - SN3938; ConvF(4.09, 4.09, 4.09); Calibrated: 2017/9/29;
- Sensor-Surface: 2mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn1260; Calibrated: 2017/9/28
- Phantom: Body
- DASY52 52.8.8(1258); SEMCAD X 14.6.10(7373)

Configuration/Body/Area Scan (71x221x1): Interpolated grid: dx=10 mm, dy=10 mm
Maximum value of SAR (interpolated) = 2.77 W/kg

Configuration/Body/Zoom Scan (7x7x12)/Cube 0: Measurement grid: dx=4mm, dy=4mm, dz=2mm
Reference Value = 2.518 V/m; Power Drift = 0.14 dB
Peak SAR (extrapolated) = 5.77 W/kg
SAR(1 g) = 1.16 W/kg; SAR(10 g) = 0.305 W/kg
Maximum value of SAR (measured) = 2.58 W/kg



0 dB = 2.58 W/kg = 4.12 dBW/kg

6. SAR System Performance Verification

Date: 2018/5/21

Dipole 750 MHz_SN:1015

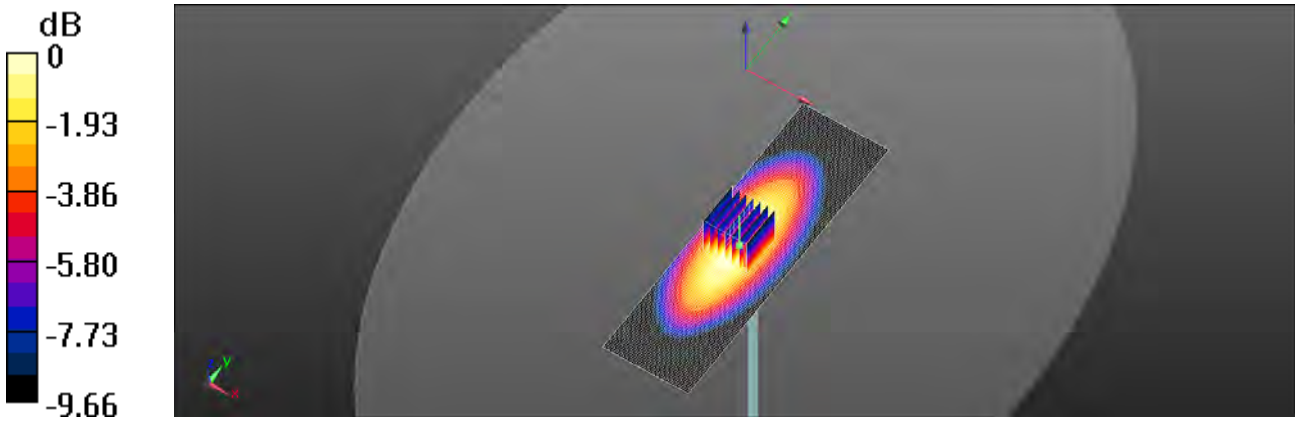
Communication System: CW; Frequency: 750 MHz; Duty Cycle: 1:1
Medium parameters used: f = 750 MHz; σ = 0.975 S/m; ε_r = 57.63; ρ = 1000 kg/m^3
Phantom section: Flat Section
Ambient temperature: 21.6°C; Liquid temperature: 22.0°C

DASY5 Configuration:

- Probe: EX3DV4 - SN3938; ConvF(9.62, 9.62, 9.62); Calibrated: 2017/9/29;
- Sensor-Surface: 2mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn1260; Calibrated: 2017/9/28
- Phantom: Body
- DASY52 52.8.8(1258); SEMCAD X 14.6.10(7373)

Configuration/Pin=250mW/Area Scan (41x141x1): Interpolated grid: dx=15 mm, dy=15 mm
Maximum value of SAR (interpolated) = 2.68 W/kg

Configuration/Pin=250mW/Zoom Scan (7x7x7)/Cube 0: Measurement grid: dx=5mm, dy=5mm, dz=5mm
Reference Value = 52.24 V/m; Power Drift = 0.02 dB
Peak SAR (extrapolated) = 3.18 W/kg
SAR(1 g) = 2.18 W/kg; SAR(10 g) = 1.45 W/kg
Maximum value of SAR (measured) = 2.73 W/kg



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

Date: 2018/5/21

Dipole 835 MHz_SN:4d063

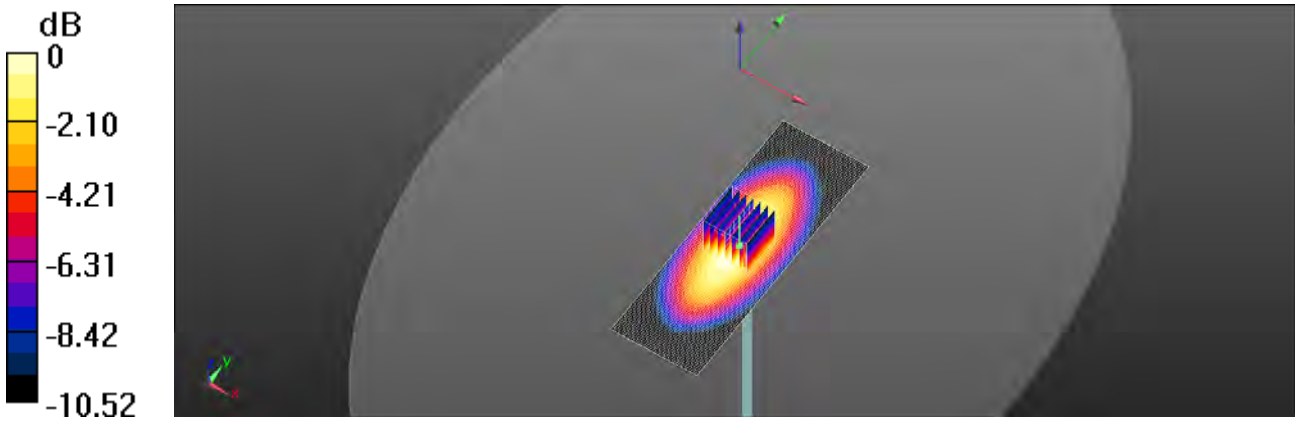
Communication System: CW; Frequency: 835 MHz; Duty Cycle: 1:1
Medium parameters used: f = 835 MHz; σ = 0.966 S/m; ε_r = 57.325; ρ = 1000 kg/m^3
Phantom section: Flat Section
Ambient temperature: 22.2°C; Liquid temperature: 21.9°C

DASY5 Configuration:

- Probe: EX3DV4 - SN3938; ConvF(9.48, 9.48, 9.48); Calibrated: 2017/9/29;
- Sensor-Surface: 2mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn1260; Calibrated: 2017/9/28
- Phantom: Body
- DASY52 52.8.8(1258); SEMCAD X 14.6.10(7373)

Configuration/Pin=250mW/Area Scan (41x121x1): Interpolated grid: dx=15 mm, dy=15 mm
Maximum value of SAR (interpolated) = 3.06 W/kg

Configuration/Pin=250mW/Zoom Scan (7x7x7)/Cube 0: Measurement grid: dx=5mm, dy=5mm, dz=5mm
Reference Value = 56.54 V/m; Power Drift = -0.01 dB
Peak SAR (extrapolated) = 3.60 W/kg
SAR(1 g) = 2.42 W/kg; SAR(10 g) = 1.58 W/kg
Maximum value of SAR (measured) = 3.06 W/kg



0 dB = 3.06 W/kg = 4.86 dBW/kg

Date: 2018/5/22

Dipole 1750 MHz_SN:1008

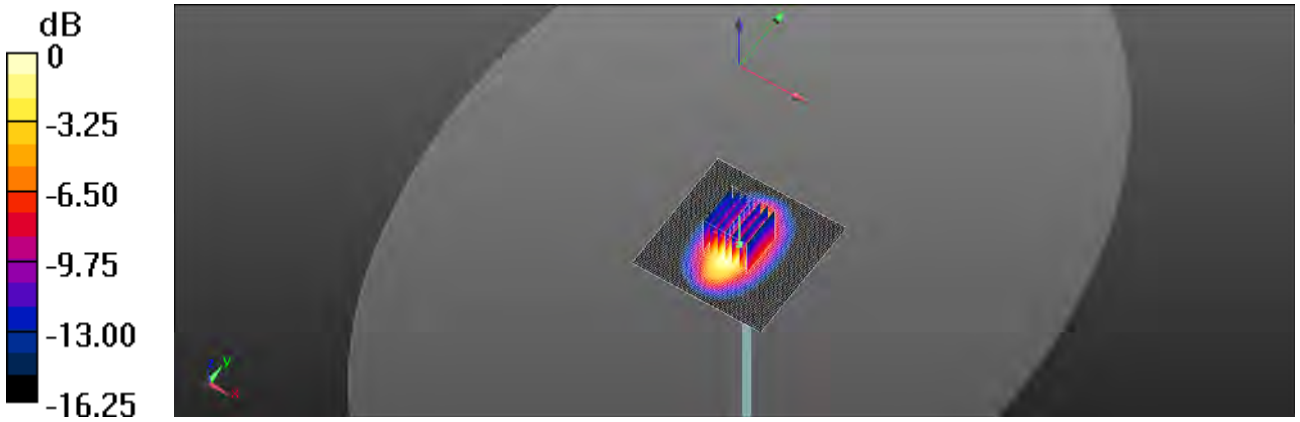
Communication System: CW; Frequency: 1750 MHz; Duty Cycle: 1:1
Medium parameters used: f = 1750 MHz; σ = 1.475 S/m; ε_r = 51.298; ρ = 1000 kg/m^3
Phantom section: Flat Section
Ambient temperature: 21.5°C; Liquid temperature: 21.8°C

DASY5 Configuration:

- Probe: EX3DV4 - SN3938; ConvF(7.96, 7.96, 7.96); Calibrated: 2017/9/29;
- Sensor-Surface: 2mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn1260; Calibrated: 2017/9/28
- Phantom: Body
- DASY52 52.8.8(1258); SEMCAD X 14.6.10(7373)

Configuration/Pin=250mW/Area Scan (61x61x1): Interpolated grid: dx=15 mm, dy=15 mm
Maximum value of SAR (interpolated) = 13.6 W/kg

Configuration/Pin=250mW/Zoom Scan (7x7x7)/Cube 0: Measurement grid: dx=5mm, dy=5mm, dz=5mm
Reference Value = 98.11 V/m; Power Drift = -0.07 dB
Peak SAR (extrapolated) = 17.0 W/kg
SAR(1 g) = 9.46 W/kg; SAR(10 g) = 5.01 W/kg
Maximum value of SAR (measured) = 13.5 W/kg



0 dB = 13.5 W/kg = 11.30 dBW/kg

Date: 2018/5/22

Dipole 1900 MHz_SN:5d173

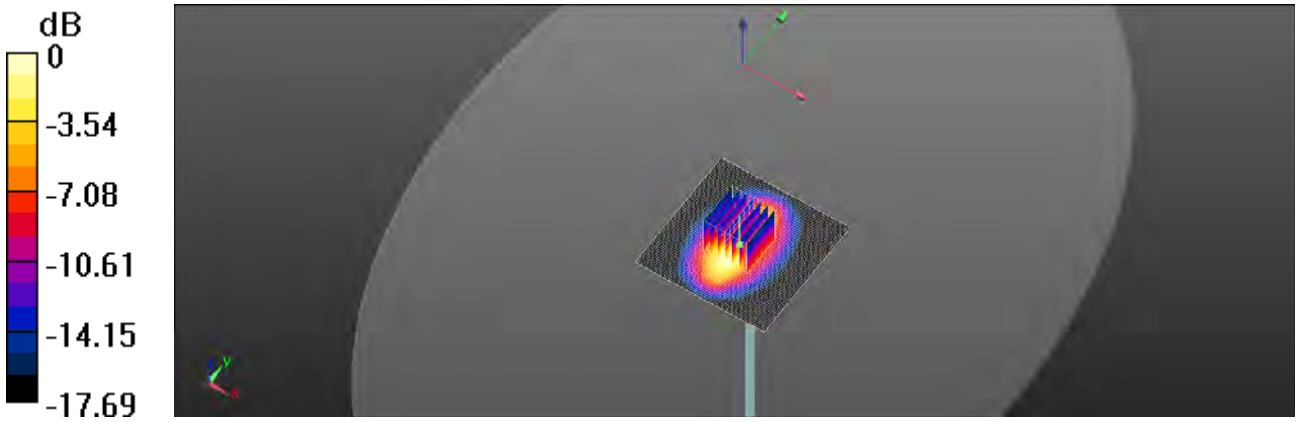
Communication System: CW; Frequency: 1900 MHz; Duty Cycle: 1:1
Medium parameters used: f = 1900 MHz; σ = 1.535 S/m; ε_r = 50.78; ρ = 1000 kg/m^3
Phantom section: Flat Section
Ambient temperature: 22.1°C; Liquid temperature: 21.7°C

DASY5 Configuration:

- Probe: EX3DV4 - SN3938; ConvF(7.7, 7.7, 7.7); Calibrated: 2017/9/29;
- Sensor-Surface: 2mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn1260; Calibrated: 2017/9/28
- Phantom: Body
- DASY52 52.8.8(1258); SEMCAD X 14.6.10(7373)

Configuration/Pin=250mW/Area Scan (61x61x1): Interpolated grid: dx=15 mm, dy=15 mm
Maximum value of SAR (interpolated) = 14.6 W/kg

Configuration/Pin=250mW/Zoom Scan (7x7x7)/Cube 0: Measurement grid: dx=5mm, dy=5mm, dz=5mm
Reference Value = 95.50 V/m; Power Drift = -0.00 dB
Peak SAR (extrapolated) = 18.6 W/kg
SAR(1 g) = 10.1 W/kg; SAR(10 g) = 5.21 W/kg
Maximum value of SAR (measured) = 14.6 W/kg



0 dB = 14.6 W/kg = 11.64 dBW/kg

Date: 2018/5/23

Dipole 2300 MHz_SN:1023

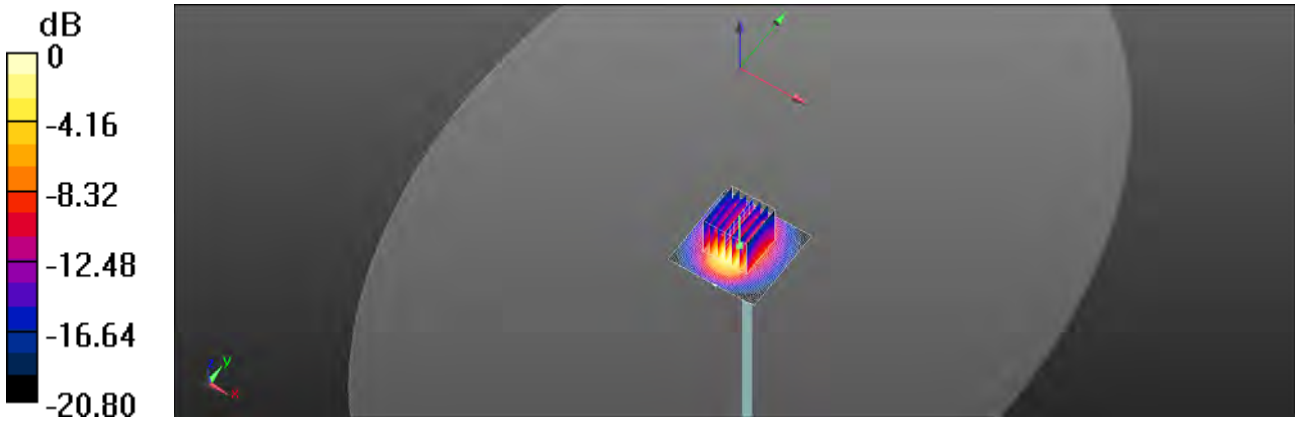
Communication System: CW; Frequency: 2300 MHz; Duty Cycle: 1:1
Medium parameters used: f = 2300 MHz; σ = 1.742 S/m; ε_r = 53.572; ρ = 1000 kg/m^3
Phantom section: Flat Section
Ambient temperature: 22.1°C; Liquid temperature: 21.8°C

DASY5 Configuration:

- Probe: EX3DV4 - SN3938; ConvF(7.51, 7.51, 7.51); Calibrated: 2017/9/29;
- Sensor-Surface: 2mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn1260; Calibrated: 2017/9/28
- Phantom: Body
- DASY52 52.8.8(1258); SEMCAD X 14.6.10(7373)

Configuration/Pin=250mW/Area Scan (51x51x1): Interpolated grid: dx=12 mm, dy=12 mm
Maximum value of SAR (interpolated) = 19.9 W/kg

Configuration/Pin=250mW/Zoom Scan (7x7x7)/Cube 0: Measurement grid: dx=5mm, dy=5mm, dz=5mm
Reference Value = 98.37 V/m; Power Drift = 0.04 dB
Peak SAR (extrapolated) = 25.2 W/kg
SAR(1 g) = 12.4 W/kg; SAR(10 g) = 5.8 W/kg
Maximum value of SAR (measured) = 19.0 W/kg



0 dB = 19.0 W/kg = 12.79 dBW/kg

Dipole 2450 MHz_SN:727

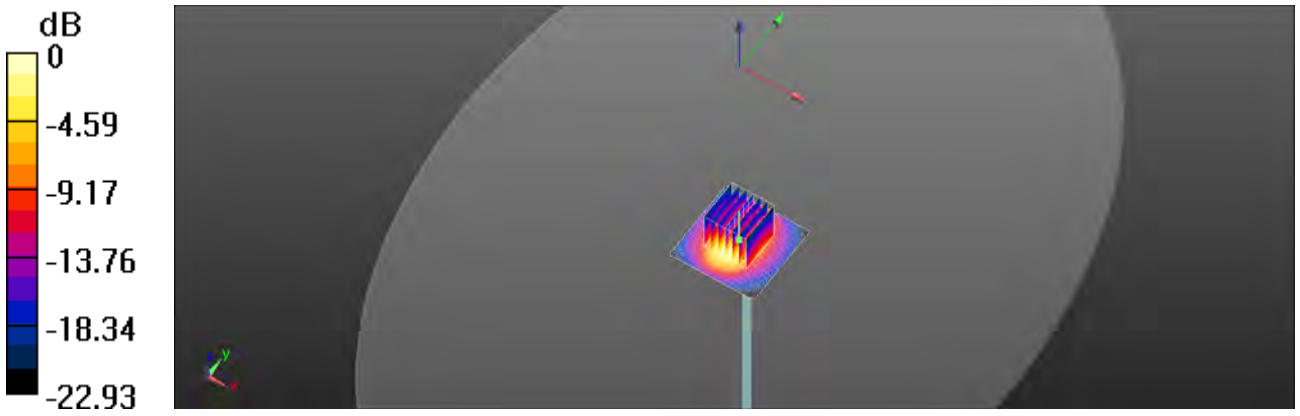
Communication System: CW; Frequency: 2450 MHz; Duty Cycle: 1:1
Medium parameters used: f = 2450 MHz; σ = 1.884 S/m; ε_r = 53.529; ρ = 1000 kg/m^3
Phantom section: Flat Section
Ambient temperature: 21.8°C; Liquid temperature: 21.6°C

DASY5 Configuration:

- Probe: EX3DV4 - SN3938; ConvF(7.42, 7.42, 7.42); Calibrated: 2017/9/29;
- Sensor-Surface: 2mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn1260; Calibrated: 2017/9/28
- Phantom: Body
- DASY52 52.8.8(1258); SEMCAD X 14.6.10(7373)

Configuration/Pin=250mW/Area Scan (51x51x1): Interpolated grid: dx=12 mm, dy=12 mm
Maximum value of SAR (interpolated) = 19.5 W/kg

Configuration/Pin=250mW/Zoom Scan (7x7x7)/Cube 0: Measurement grid: dx=5mm, dy=5mm, dz=5mm
Reference Value = 99.10 V/m; Power Drift = 0.03 dB
Peak SAR (extrapolated) = 25.6 W/kg
SAR(1 g) = 12.3 W/kg; SAR(10 g) = 5.66 W/kg
Maximum value of SAR (measured) = 18.6 W/kg



0 dB = 18.6 W/kg = 12.70 dBW/kg

Date: 2018/5/23

Dipole 2600 MHz_SN:1005

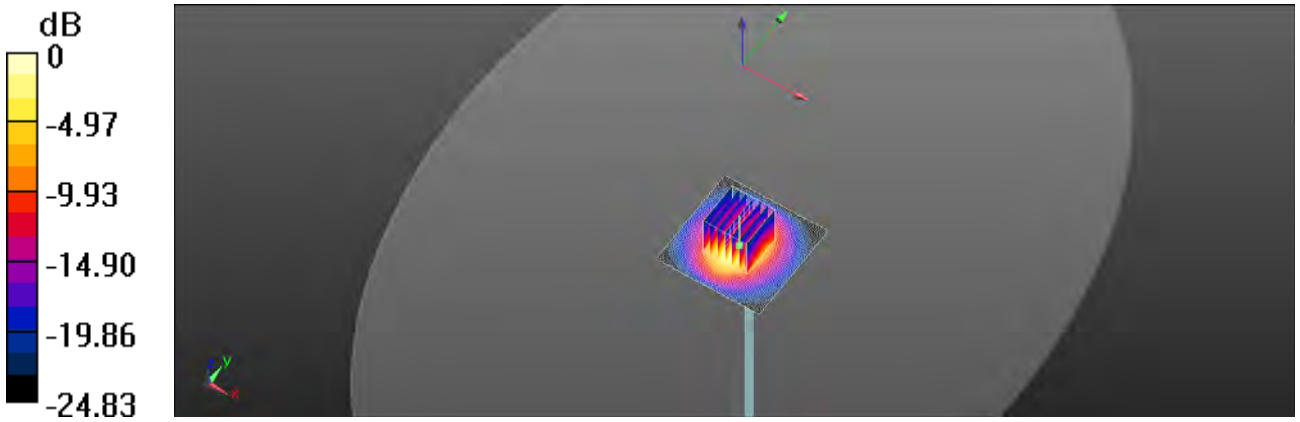
Communication System: CW; Frequency: 2600 MHz; Duty Cycle: 1:1
Medium parameters used: f = 2600 MHz; σ = 2.122 S/m; ε_r = 50.005; ρ = 1000 kg/m^3
Phantom section: Flat Section
Ambient temperature: 21.7°C; Liquid temperature: 22.0°C

DASY5 Configuration:

- Probe: EX3DV4 - SN3938; ConvF(7.15, 7.15, 7.15); Calibrated: 2017/9/29;
- Sensor-Surface: 2mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn1260; Calibrated: 2017/9/28
- Phantom: Body
- DASY52 52.8.8(1258); SEMCAD X 14.6.10(7373)

Configuration/Pin=250mW/Area Scan (61x61x1): Interpolated grid: dx=12 mm, dy=12 mm
Maximum value of SAR (interpolated) = 24.1 W/kg

Configuration/Pin=250mW/Zoom Scan (7x7x7)/Cube 0: Measurement grid: dx=5mm, dy=5mm, dz=5mm
Reference Value = 102.3 V/m; Power Drift = 0.04 dB
Peak SAR (extrapolated) = 34.2 W/kg
SAR(1 g) = 14.4 W/kg; SAR(10 g) = 6.32 W/kg
Maximum value of SAR (measured) = 24.2 W/kg



0 dB = 24.2 W/kg = 13.84 dBW/kg

Date: 2018/5/24

Dipole 5200 MHz_SN:1023

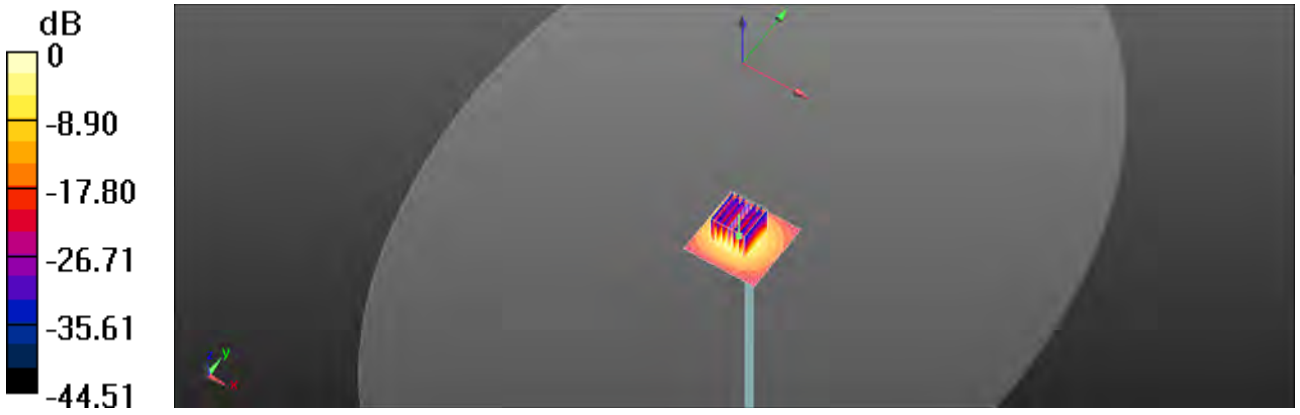
Communication System: CW; Frequency: 5200 MHz; Duty Cycle: 1:1
Medium parameters used: f = 5200 MHz; σ = 5.082 S/m; ε_r = 49.132; ρ = 1000 kg/m^3
Phantom section: Flat Section
Ambient temperature: 21.9°C; Liquid temperature: 21.7°C

DASY5 Configuration:

- Probe: EX3DV4 - SN3938; ConvF(4.41, 4.41, 4.41); Calibrated: 2017/9/29;
- Sensor-Surface: 2mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn1260; Calibrated: 2017/9/28
- Phantom: Body
- DASY52 52.8.8(1258); SEMCAD X 14.6.10(7373)

Configuration/Pin=100mW/Area Scan (51x51x1): Interpolated grid: dx=10 mm, dy=10 mm
Maximum value of SAR (interpolated) = 15.5 W/kg

Configuration/Pin=100mW/Zoom Scan (7x7x12)/Cube 0: Measurement grid: dx=4mm, dy=4mm, dz=2mm
Reference Value = 55.74 V/m; Power Drift = 0.14 dB
Peak SAR (extrapolated) = 33.6 W/kg
SAR(1 g) = 7.35 W/kg; SAR(10 g) = 2.02 W/kg
Maximum value of SAR (measured) = 15.7 W/kg



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

Date: 2018/5/24

Dipole 5300 MHz_SN:1023

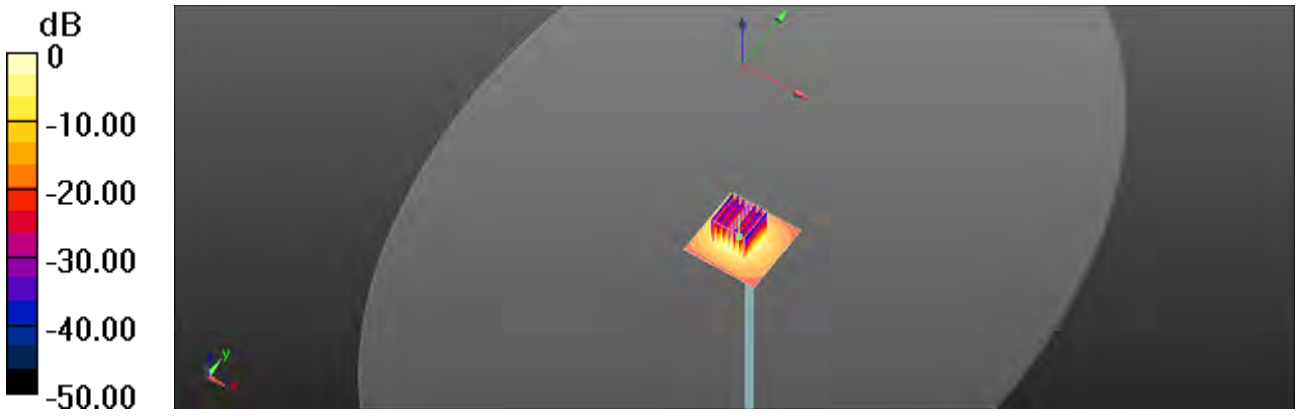
Communication System: CW; Frequency: 5300 MHz; Duty Cycle: 1:1
Medium parameters used: f = 5300 MHz; σ = 5.249 S/m; ε_r = 48.841; ρ = 1000 kg/m^3
Phantom section: Flat Section
Ambient temperature: 21.8°C; Liquid temperature: 21.6°C

DASY5 Configuration:

- Probe: EX3DV4 - SN3938; ConvF(4.41, 4.41, 4.41); Calibrated: 2017/9/29;
- Sensor-Surface: 2mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn1260; Calibrated: 2017/9/28
- Phantom: Body
- DASY52 52.8.8(1258); SEMCAD X 14.6.10(7373)

Configuration/Pin=100mW/Area Scan (51x51x1): Interpolated grid: dx=10 mm, dy=10 mm
Maximum value of SAR (interpolated) = 15.8 W/kg

Configuration/Pin=100mW/Zoom Scan (7x7x12)/Cube 0: Measurement grid: dx=4mm, dy=4mm, dz=2mm
Reference Value = 55.16 V/m; Power Drift = 0.06 dB
Peak SAR (extrapolated) = 35.3 W/kg
SAR(1 g) = 7.46 W/kg; SAR(10 g) = 2.04 W/kg
Maximum value of SAR (measured) = 16.1 W/kg



0 dB = 16.1 W/kg = 12.07 dBW/kg

Date: 2018/5/25

Dipole 5600 MHz_SN:1023

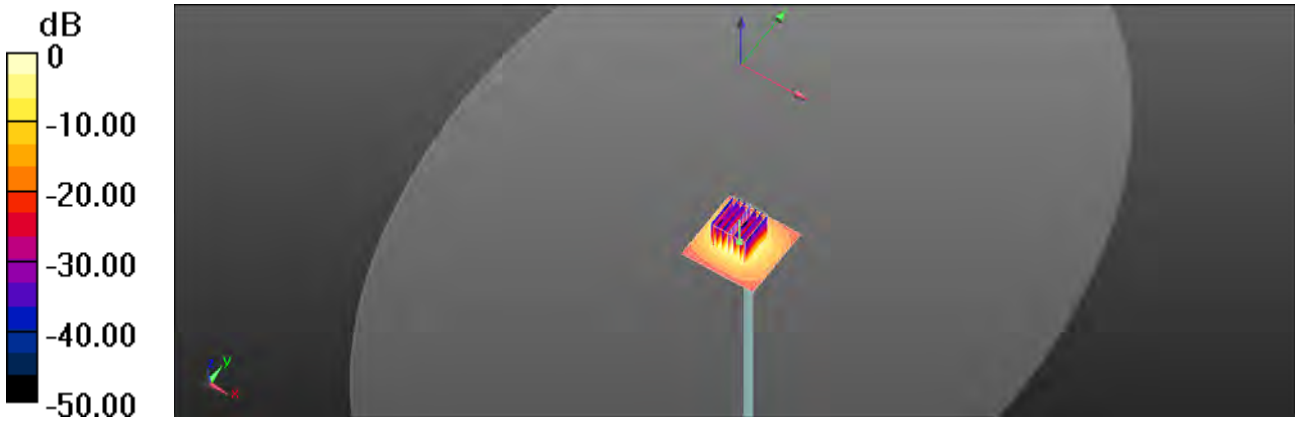
Communication System: CW; Frequency: 5600 MHz; Duty Cycle: 1:1
Medium parameters used: f = 5600 MHz; σ = 5.729 S/m; ε_r = 47.882; ρ = 1000 kg/m^3
Phantom section: Flat Section
Ambient temperature: 21.4°C; Liquid temperature: 21.1°C

DASY5 Configuration:

- Probe: EX3DV4 - SN3938; ConvF(3.9, 3.9, 3.9); Calibrated: 2017/9/29;
- Sensor-Surface: 2mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn1260; Calibrated: 2017/9/28
- Phantom: Body
- DASY52 52.8.8(1258); SEMCAD X 14.6.10(7373)

Configuration/Pin=100mW/Area Scan (51x51x1): Interpolated grid: dx=10 mm, dy=10 mm
Maximum value of SAR (interpolated) = 17.6 W/kg

Configuration/Pin=100mW/Zoom Scan (7x7x12)/Cube 0: Measurement grid: dx=4mm, dy=4mm, dz=2mm
Reference Value = 57.30 V/m; Power Drift = 0.06 dB
Peak SAR (extrapolated) = 40.7 W/kg
SAR(1 g) = 8.08 W/kg; SAR(10 g) = 2.19 W/kg
Maximum value of SAR (measured) = 17.8 W/kg



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

Date: 2018/5/25

Dipole 5800 MHz_SN:1023

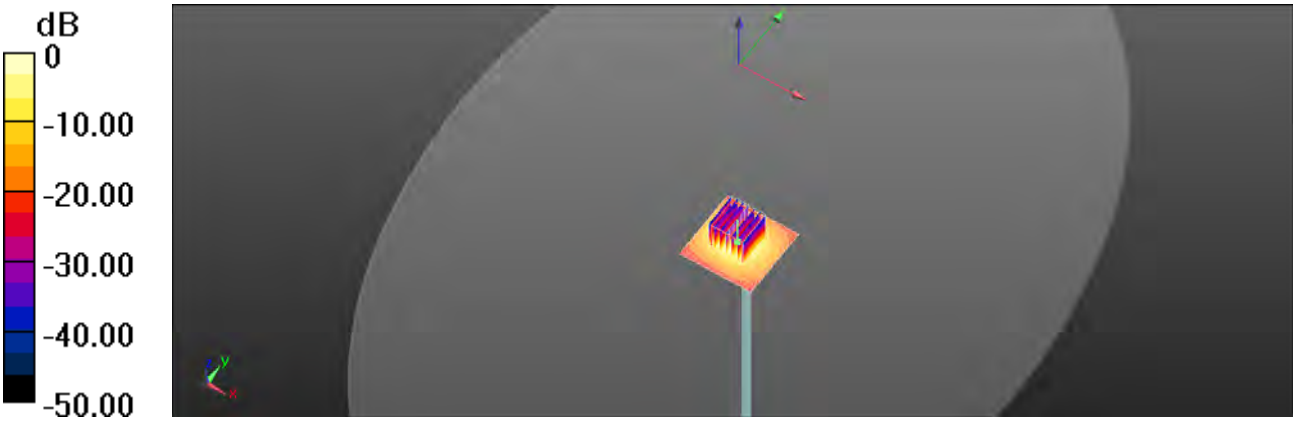
Communication System: CW; Frequency: 5800 MHz; Duty Cycle: 1:1
Medium parameters used: f = 5800 MHz; σ = 6.058 S/m; ε_r = 47.24; ρ = 1000 kg/m^3
Phantom section: Flat Section
Ambient temperature: 21.5°C; Liquid temperature: 21.3°C

DASY5 Configuration:

- Probe: EX3DV4 - SN3938; ConvF(4.09, 4.09, 4.09); Calibrated: 2017/9/29;
- Sensor-Surface: 2mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn1260; Calibrated: 2017/9/28
- Phantom: Body
- DASY52 52.8.8(1258); SEMCAD X 14.6.10(7373)

Configuration/Pin=100mW/Area Scan (51x51x1): Interpolated grid: dx=10 mm, dy=10 mm
Maximum value of SAR (interpolated) = 17.6 W/kg

Configuration/Pin=100mW/Zoom Scan (7x7x12)/Cube 0: Measurement grid: dx=4mm, dy=4mm, dz=2mm
Reference Value = 55.71 V/m; Power Drift = 0.15 dB
Peak SAR (extrapolated) = 39.8 W/kg
SAR(1 g) = 7.89 W/kg; SAR(10 g) = 2.12 W/kg
Maximum value of SAR (measured) = 17.5 W/kg



0 dB = 17.5 W/kg = 12.43 dBW/kg

7. DAE & Probe Calibration Certificate

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Accreditation No.: SCS 0108

Client SGS-TW (Auden)

Certificate No: DAE4-1260_Sep17

CALIBRATION CERTIFICATE

Object DAE4 - SD 000 D04 BM - SN: 1260

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

Calibration date: September 28, 2017

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

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

Calibration Equipment used (M&TE critical for calibration)

Primary Standards	ID #	Cal Date (Certificate No.)	Scheduled Calibration
Keithley Multimeter Type 2001	SN: 0810279	31-Aug-17 (No:21092)	Aug-18
Secondary Standards	**ID #**	**Check Date (in house)**	**Scheduled Check**
Auto DAE Calibration Unit	SE UWS 053 AA 1001	05-Jan-17 (in house check)	In house check: Jan-18
Calibrator Box V2.1	SE UMS 006 AA 1002	05-Jan-17 (in house check)	In house check: Jan-18

	Name	Function	Signature
Calibrated by:	Dominique Steffen	Laboratory Technician	
Approved by:	Sven Kühn	Deputy Manager	

Issued: September 28, 2017

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Certificate No: DAE4-1260_Sep17 Page 1 of 5

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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	405.082 ± 0.02% (k=2)	405.133 ± 0.02% (k=2)	404.970 ± 0.02% (k=2)
Low Range	3.98948 ± 1.50% (k=2)	3.95701 ± 1.50% (k=2)	3.98426 ± 1.50% (k=2)

Connector Angle

Connector Angle to be used in DASY system	341.5 ° ± 1 °

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t (886-2) 2299-3279 f (886-2) 2298-0488 www.tw.sgs.com
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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	200030.04	-3.23	-0.00
Channel X	+ Input	20005.05	0.72	0.00
Channel X	- Input	-20003.19	2.57	-0.01
Channel Y	+ Input	200031.04	-2.35	-0.00
Channel Y	+ Input	20004.17	-0.10	-0.00
Channel Y	- Input	-20006.05	-0.28	0.00
Channel Z	+ Input	200033.38	-0.04	-0.00
Channel Z	+ Input	20003.27	-0.97	-0.00
Channel Z	- Input	-20007.67	-1.85	0.01

Low Range		Reading (μV)	Difference (μV)	Error (%)
Channel X	+ Input	2000.34	-0.06	-0.00
Channel X	+ Input	201.28	0.95	0.47
Channel X	- Input	-198.35	1.25	-0.63
Channel Y	+ Input	2000.88	0.54	0.03
Channel Y	+ Input	199.53	-0.80	-0.40
Channel Y	- Input	-200.22	-0.64	0.32
Channel Z	+ Input	2000.27	0.04	0.00
Channel Z	+ Input	198.83	-1.41	-0.70
Channel Z	- Input	-200.94	-1.26	0.63

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	29.02	27.07
	- 200	-24.87	-27.14
Channel Y	200	-18.44	-18.59
	- 200	18.33	18.03
Channel Z	200	15.00	15.39
	- 200	-18.17	-18.23

3. Channel separation

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

	Input Voltage (mV)	Channel X (μV)	Channel Y (μV)	Channel Z (μV)
Channel X	200	-	-1.16	-4.49
Channel Y	200	7.88	-	1.01
Channel Z	200	10.65	4.72	-

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	16017	16757
Channel Y	15556	15598
Channel Z	15950	16735

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	0.90	-0.03	1.89	0.40
Channel Y	0.57	-0.29	1.84	0.37
Channel Z	-1.27	-2.75	0.35	0.59

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: EX3-3938_Sep17

CALIBRATION CERTIFICATE

Object EX3DV4 - SN:3938

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: September 29, 2017

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

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

Calibration Equipment used (M&TE critical for calibration)

Primary Standards	ID	Cal Date (Certificate No.)	Scheduled Calibration
Power meter NRP	SN: 104778	04-Apr-17 (No. 217-02521/02522)	Apr-18
Power sensor NRP-Z91	SN: 103244	04-Apr-17 (No. 217-02521)	Apr-18
Power sensor NRP-Z91	SN: 103245	04-Apr-17 (No. 217-02525)	Apr-18
Reference 20 dB Attenuator	SN: S5277 (20x)	07-Apr-17 (No. 217-02528)	Apr-18
Reference Probe ES3DV2	SN: 3013	31-Dec-16 (No. ES3-3013_Dec16)	Dec-17
DAE4	SN: 660	7-Dec-16 (No. DAE4-660_Dec16)	Dec-17
Secondary Standards	ID	Check Date (in house)	Scheduled Check
Power meter E4419B	SN: GB41293874	06-Apr-16 (in house check Jun-16)	In house check: Jun-18
Power sensor E4412A	SN: MY41498087	06-Apr-16 (in house check Jun-16)	In house check: Jun-18
Power sensor E4412A	SN: 000110210	06-Apr-16 (in house check Jun-16)	In house check: Jun-18
RF generator HP 8648C	SN: US3642U01700	04-Aug-99 (in house check Jun-16)	In house check: Jun-18
Network Analyzer HP 8753E	SN: US37390585	18-Oct-01 (in house check Oct-16)	In house check: Oct-17

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

Issued: October 2, 2017

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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, "", "Measurement procedure for the assessment of Specific Absorption Rate (SAR) from hand-held and body-mounted devices used next to the ear (frequency range of 300 MHz to 6 GHz)", July 2016
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:3938

Manufactured: May 2, 2013
Calibrated: September 29, 2017

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

DASY/EASY - Parameters of Probe: EX3DV4 - SN:3938

Basic Calibration Parameters

	Sensor X	Sensor Y	Sensor Z	Unc (k=2)
Norm ($\mu V/(V/m)^2$)[A]	0.51	0.57	0.33	± 10.1 %
DCP (mV)[B]	102.0	101.2	103.4	

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	139.3	±2.5 %
		Y	0.0	0.0	1.0		146.0	
		Z	0.0	0.0	1.0		131.9	

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

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

DASY/EASY - Parameters of Probe: EX3DV4 - SN:3938

Calibration Parameter Determined in Head Tissue Simulating Media

f (MHz) [C]	Relative Permittivity [F]	Conductivity (S/m) [F]	ConvF X	ConvF Y	ConvF Z	Alpha [G]	Depth [G] (mm)	Unc (k=2)
750	41.9	0.89	10.26	10.26	10.26	0.53	0.80	± 12.0 %
835	41.5	0.90	9.69	9.69	9.69	0.50	0.83	± 12.0 %
900	41.5	0.97	9.50	9.50	9.50	0.51	0.80	± 12.0 %
1450	40.5	1.20	8.49	8.49	8.49	0.45	0.80	± 12.0 %
1750	40.1	1.37	8.35	8.35	8.35	0.33	0.85	± 12.0 %
1900	40.0	1.40	8.07	8.07	8.07	0.36	0.84	± 12.0 %
2000	40.0	1.40	8.04	8.04	8.04	0.30	0.86	± 12.0 %
2300	39.5	1.67	7.66	7.66	7.66	0.32	0.84	± 12.0 %
2450	39.2	1.80	7.30	7.30	7.30	0.37	0.80	± 12.0 %
2600	39.0	1.96	7.14	7.14	7.14	0.33	0.86	± 12.0 %
5250	35.9	4.71	5.04	5.04	5.04	0.35	1.80	± 13.1 %
5600	35.5	5.07	4.70	4.70	4.70	0.40	1.80	± 13.1 %
5750	35.4	5.22	4.85	4.85	4.85	0.40	1.80	± 13.1 %

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

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

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

DASY/EASY - Parameters of Probe: EX3DV4 - SN:3938

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	9.62	9.62	9.62	0.51	0.80	± 12.0 %
835	55.2	0.97	9.48	9.48	9.48	0.50	0.83	± 12.0 %
900	55.0	1.05	9.35	9.35	9.35	0.55	0.80	± 12.0 %
1450	54.0	1.30	8.29	8.29	8.29	0.36	0.80	± 12.0 %
1750	53.4	1.49	7.96	7.96	7.96	0.45	0.80	± 12.0 %
1900	53.3	1.52	7.70	7.70	7.70	0.40	0.80	± 12.0 %
2000	53.3	1.52	7.87	7.87	7.87	0.38	0.86	± 12.0 %
2300	52.9	1.81	7.51	7.51	7.51	0.41	0.85	± 12.0 %
2450	52.7	1.95	7.42	7.42	7.42	0.39	0.80	± 12.0 %
2600	52.5	2.16	7.15	7.15	7.15	0.35	0.89	± 12.0 %
5250	48.9	5.36	4.41	4.41	4.41	0.40	1.90	± 13.1 %
5600	48.5	5.77	3.90	3.90	3.90	0.45	1.90	± 13.1 %
5750	48.3	5.94	4.09	4.09	4.09	0.45	1.90	± 13.1 %

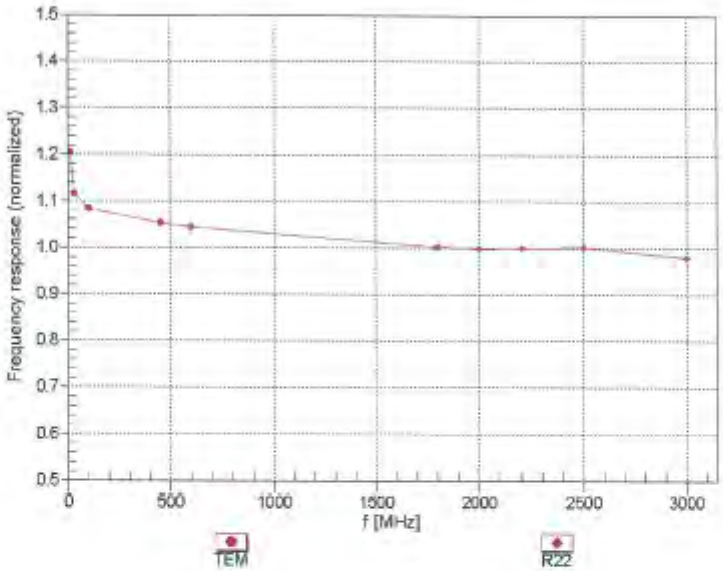
[C] Frequency validity above 300 MHz of ± 100 MHz only applies for DASY v4.4 and higher (see Page 2), else it is restricted to ± 50 MHz. The uncertainty is the RSS of the ConvF uncertainty at calibration frequency and the uncertainty for the indicated frequency band. Frequency validity below 300 MHz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

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

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

EX3DV4- SN:3938 September 29, 2017

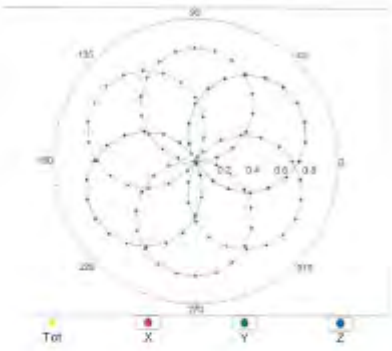
Frequency Response of E-Field
(TEM-Cell:ifi110 EXX, Waveguide: R22)



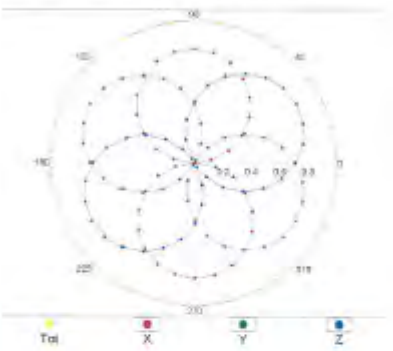
Uncertainty of Frequency Response of E-field: ± 6.3% (k=2)

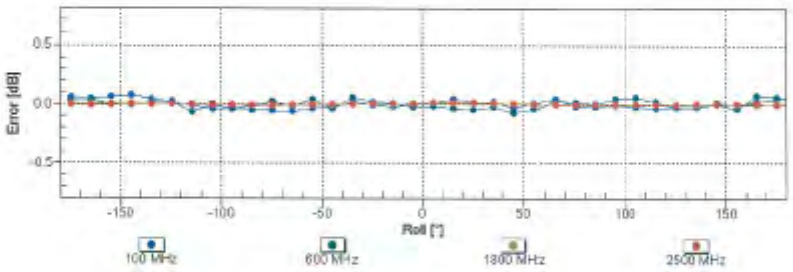
Receiving Pattern (ϕ), ϑ = 0°

f=600 MHz,TEM



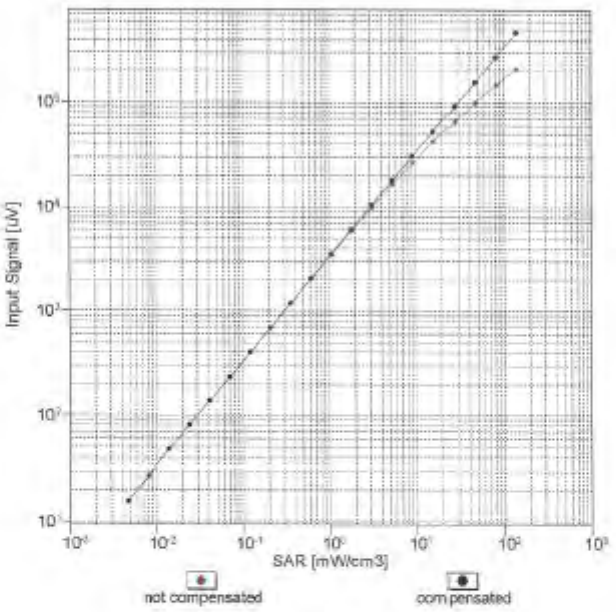
f=1800 MHz,R22

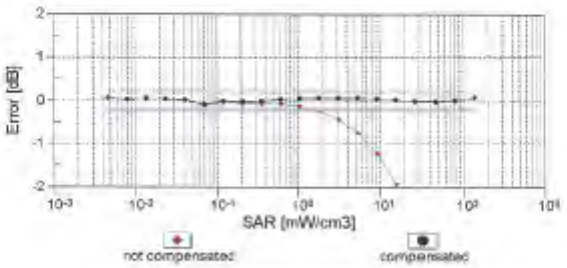




Uncertainty of Axial Isotropy Assessment: ± 0.5% (k=2)

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



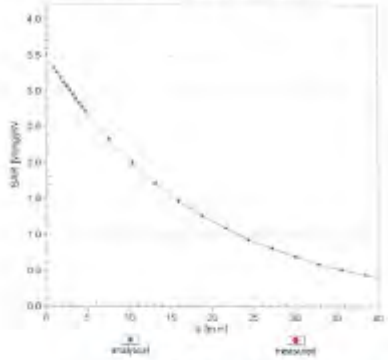


Uncertainty of Linearity Assessment: ± 0.6% (k=2)

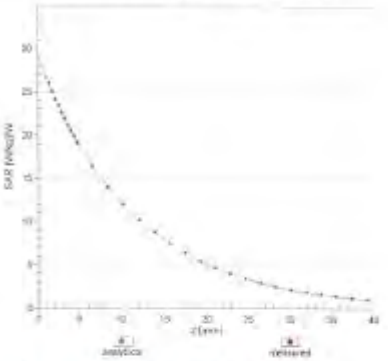
EX3DV4– SN:3938 September 29, 2017

Conversion Factor Assessment

f = 835 MHz,WGLS R9 (H_convF)

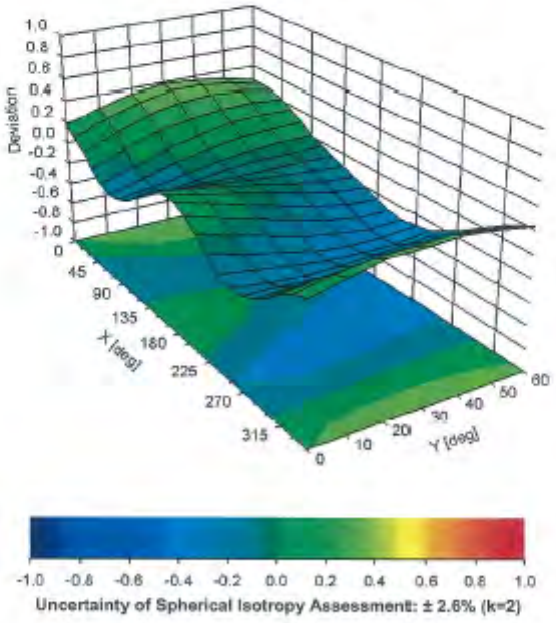


f = 1900 MHz,WGLS R22 (H_convF)



Deviation from Isotropy in Liquid

Error (ϕ, ϑ), f = 900 MHz



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

DASY/EASY - Parameters of Probe: EX3DV4 - SN:3938

Other Probe Parameters

Sensor Arrangement	Triangular
Connector Angle (°)	-24.6
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.)	1.99%	N	1	1	0.64	0.43	1.27%	0.86%	M
Liquid Conductivity (mea.)	4.11%	N	1	1	0.6	0.49	2.47%	2.01%	M
Combined standard uncertainty		RSS					12.04%	11.91%	
Expant uncertainty (95% confidence							24.08%	23.82%	

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.)	4.84%	N	1	1	0.64	0.43	3.10%	2.08%	M
Liquid Conductivity (mea.)	4.52%	N	1	1	0.6	0.49	2.71%	2.21%	M
Combined standard uncertainty		RSS					12.14%	11.81%	

9. System Validation from Original Equipment Supplier

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

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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_Aug17

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 21, 2017

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

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

Calibration Equipment used (M&TE critical for calibration)

Primary Standards	ID #	Cal Date (Certificate No.)	Scheduled Calibration
Power meter NRP	SN: 104778	04-Apr-17 (No. 217-02521/02522)	Apr-18
Power sensor NRP-Z91	SN: 103244	04-Apr-17 (No. 217-02521)	Apr-18
Power sensor NRP-Z91	SN: 103245	04-Apr-17 (No. 217-02522)	Apr-18
Reference 20 dB Attenuator	SN: 5058 (20k)	07-Apr-17 (No. 217-02528)	Apr-18
Type-N mismatch combination	SN: 5047.2 / 06327	07-Apr-17 (No. 217-02529)	Apr-18
Reference Probe EX3DV4	SN: 7349	31-May-17 (No. EX3-7349_May17)	May-18
DAE4	SN: 601	28-Mar-17 (No. DAE4-601_Mar17)	Mar-18

Secondary Standards	ID #	Check Date (in house)	Scheduled Check
Power meter EPM-442A	SN: GB37480704	07-Oct-15 (in house check Oct-16)	In house check: Oct-18
Power sensor HP 8481A	SN: US37292783	07-Oct-15 (in house check Oct-16)	In house check: Oct-18
Power sensor HP 8481A	SN: MY41092317	07-Oct-15 (in house check Oct-16)	In house check: Oct-18
RF generator R&S SMT-06	SN: 100972	15-Jun-15 (in house check Oct-16)	In house check: Oct-18
Network Analyzer HP 8753E	SN: US37390585	18-Oct-01 (in house check Oct-16)	In house check: Oct-17

	Name	Function	Signature
Calibrated by:	Claudio Leubler	Laboratory Technician	
Approved by:	Katja Pokovic	Technical Manager	

Issued: August 21, 2017

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

Certificate No: D750V3-1015_Aug17 Page 1 of 8

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

S Schweizerischer Kalibrierdienst
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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, "Measurement procedure for the assessment of Specific Absorption Rate (SAR) from hand-held and body-mounted devices used next to the ear (frequency range of 300 MHz to 6 GHz)", July 2016
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	V52.10.0
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	41.1 ± 6 %	0.90 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	2.09 W/kg
SAR for nominal Head TSL parameters	normalized to 1W	**8.25 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	**5.35 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	55.5 ± 6 %	0.96 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	**8.76 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	**5.76 W/kg ± 16.5 % (k=2)**

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t (886-2) 2299-3279 f (886-2) 2298-0488 www.tw.sgs.com
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Appendix (Additional assessments outside the scope of SCS 0108)

Antenna Parameters with Head TSL

Impedance, transformed to feed point	53.9 Ω + 0.3 jΩ
Return Loss	- 28.6 dB

Antenna Parameters with Body TSL

Impedance, transformed to feed point	48.6 Ω - 3.4 jΩ
Return Loss	- 28.4 dB

General Antenna Parameters and Design

Electrical Delay (one direction)	1.037 ns

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

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

Additional EUT Data

Manufactured by	SPEAG
Manufactured on	March 22, 2010

DASY5 Validation Report for Head TSL

Date: 18.08.2017

Test Laboratory: SPEAG, Zurich, Switzerland

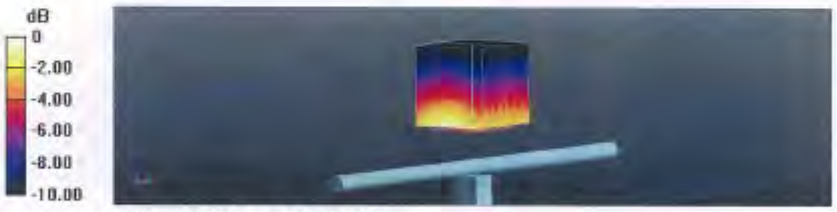
DUT: Dipole 750 MHz; Type: D750V3; Serial: D750V3 - SN:1015

Communication System: UID 0 - CW; Frequency: 750 MHz
Medium parameters used: f = 750 MHz; σ = 0.9 S/m; ε_r = 41.1; ρ = 1000 kg/m^3
Phantom section: Flat Section
Measurement Standard: DASY5 (IEEE/IEC/ANSI C63.19-2011)

DASY52 Configuration:

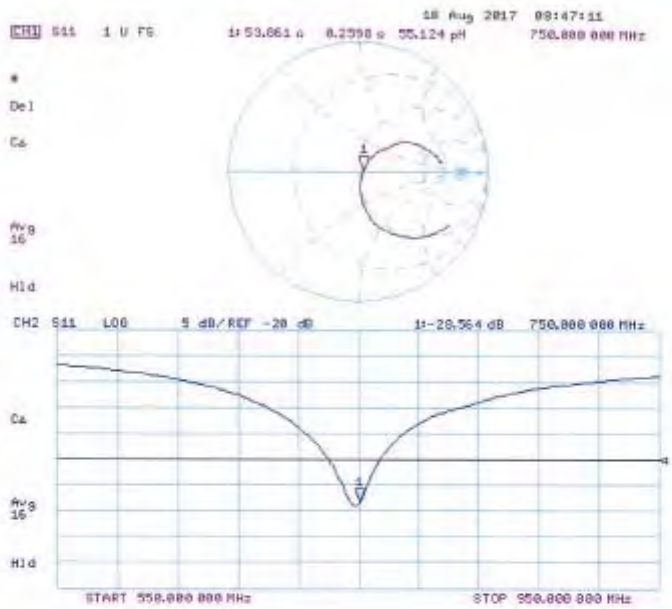
- Probe: EX3DV4 - SN7349; ConvF(10.49, 10.49, 10.49); Calibrated: 31.05.2017;
- Sensor-Surface: 1.4mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn601; Calibrated: 28.03.2017
- Phantom: Flat Phantom 4.9 (front); Type: QD 00L P49 AA; Serial: 1001
- DASY52 52.10.0(1446); SEMCAD X 14.6.10(7417)

Dipole Calibration for Head Tissue/Pin=250 mW, d=15mm/Zoom Scan (7x7x7)/Cube 0:
Measurement grid: dx=5mm, dy=5mm, dz=5mm
Reference Value = 58.52 V/m; Power Drift = 0.01 dB
Peak SAR (extrapolated) = 3.21 W/kg
SAR(1 g) = 2.09 W/kg; SAR(10 g) = 1.35 W/kg
Maximum value of SAR (measured) = 2.82 W/kg



0 dB = 2.82 W/kg = 4.50 dBW/kg

Impedance Measurement Plot for Head TSL



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t (886-2) 2299-3279 f (886-2) 2298-0488 www.tw.sgs.com
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DASY5 Validation Report for Body TSL

Date: 21.08.2017

Test Laboratory: SPEAG, Zurich, Switzerland

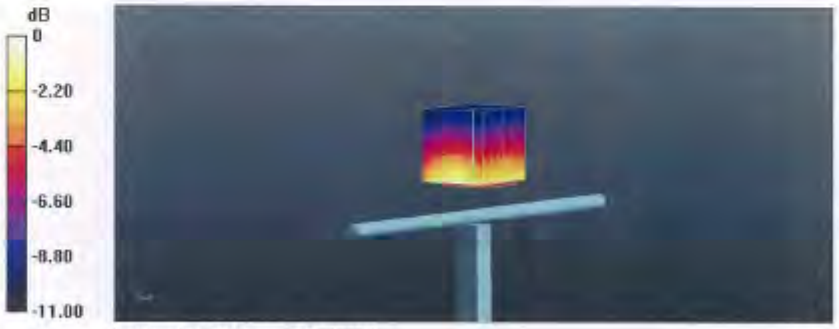
DUT: Dipole 750 MHz; Type: D750V3; Serial: D750V3 - SN:1015

Communication System: UID 0 - CW; Frequency: 750 MHz
Medium parameters used: f = 750 MHz; σ = 0.96 S/m; ε_r = 55.5; ρ = 1000 kg/m^3
Phantom section: Flat Section
Measurement Standard: DASY5 (IEEE/IEC/ANSI C63.19-2011)

DASY52 Configuration:

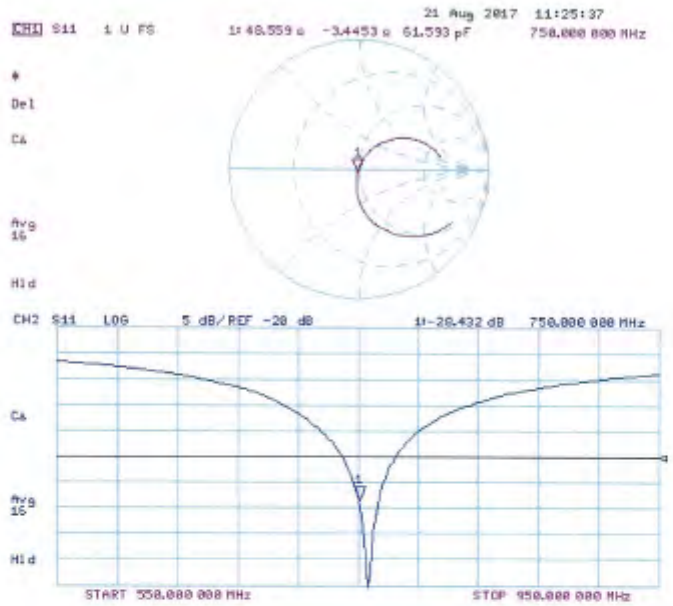
- Probe: EX3DV4 - SN7349; ConvF(10.35, 10.35, 10.35); Calibrated: 31.05.2017;
- Sensor-Surface: 1.4mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn601; Calibrated: 28.03.2017
- Phantom: Flat Phantom 4.9 (Back); Type: QD 00R P49 AA; Serial: 1005
- DASY52 52.10.0(1446); SEMCAD X 14.6.10(7417)

Dipole Calibration for Body Tissue/Pin=250 mW, d=15mm/Zoom Scan (7x7x7)/Cube 0:
Measurement grid: dx=5mm, dy=5mm, dz=5mm
Reference Value = 57.77 V/m; Power Drift = -0.00 dB
Peak SAR (extrapolated) = 3.27 W/kg
SAR(1 g) = 2.19 W/kg; SAR(10 g) = 1.44 W/kg
Maximum value of SAR (measured) = 2.89 W/kg



0 dB = 2.89 W/kg = 4.61 dBW/kg

Impedance Measurement Plot for Body TSL



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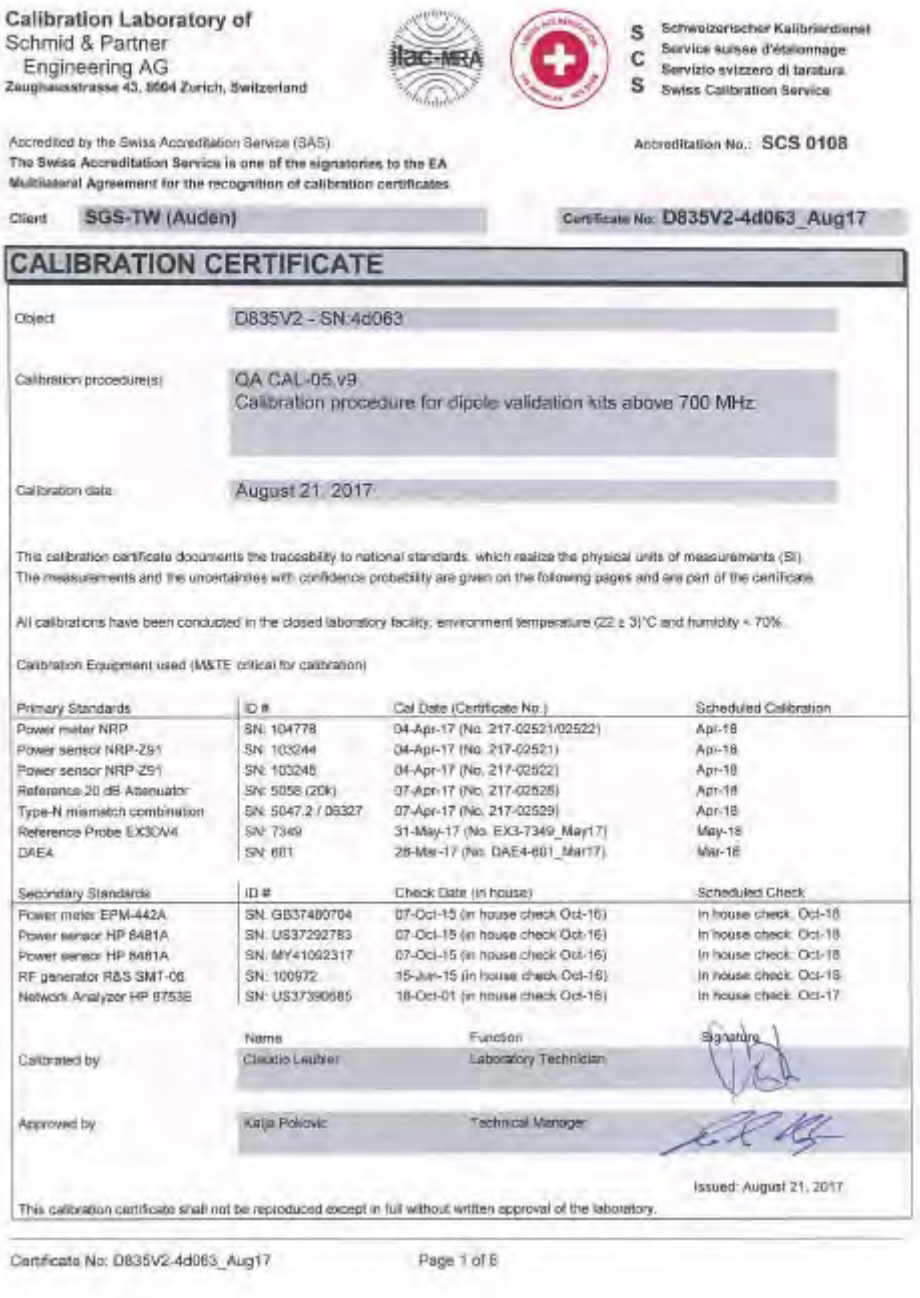

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Accreditation No.: SCS 0108

Client SGS-TW (Auden)

Certificate No: D835V2-4d063_Aug17

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 21, 2017

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

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

Calibration Equipment used (M&TE critical for calibration)

Primary Standards	ID #	Cal Date (Certificate No.)	Scheduled Calibration
Power meter NRP	SN: 104778	04-Apr-17 (No. 217-02521/02522)	Apr-18
Power sensor NRP-Z91	SN: 103244	04-Apr-17 (No. 217-02521)	Apr-18
Power sensor NRP-Z91	SN: 103245	04-Apr-17 (No. 217-02522)	Apr-18
Reference 20 dB Attenuator	SN: 5058 (20k)	07-Apr-17 (No. 217-02525)	Apr-18
Type-N mismatch combination	SN: 5047.2 / 06327	07-Apr-17 (No. 217-02529)	Apr-18
Reference Probe EX3DV4	SN: 7349	31-May-17 (No. EX3-7349_May17)	May-18
DAE4	SN: 601	28-Mar-17 (No. DAE4-601_Mar17)	Mar-18

Secondary Standards	ID #	Check Date (in house)	Scheduled Check
Power meter EPM-442A	SN: GB37480704	07-Oct-15 (in house check Oct-16)	In house check: Oct-18
Power sensor HP 8481A	SN: US37292783	07-Oct-15 (in house check Oct-16)	In house check: Oct-18
Power sensor HP 8481A	SN: MY41092317	07-Oct-15 (in house check Oct-16)	In house check: Oct-18
RF generator R&S SMT-06	SN: 100972	15-Jun-15 (in house check Oct-16)	In house check: Oct-18
Network Analyzer HP 8753E	SN: US37390585	18-Oct-01 (in house check Oct-16)	In house check: Oct-17

	Name	Function	Signature
Calibrated by	Claudio Leubler	Laboratory Technician	
Approved by	Katja Pokovic	Technical Manager	

Issued: August 21, 2017

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Certificate No: D835V2-4d063_Aug17 Page 1 of 8

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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, "Measurement procedure for the assessment of Specific Absorption Rate (SAR) from hand-held and body-mounted devices used next to the ear (frequency range of 300 MHz to 6 GHz)", July 2016
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	V52.10.0
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	40.9 ± 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	2.40 W/kg
SAR for nominal Head TSL parameters	normalized to 1W	**9.34 W/kg ± 17.0 % (k=2)**

SAR averaged over 10 cm³ (10 g) of Head TSL	condition	
SAR measured	250 mW input power	1.55 W/kg
SAR for nominal Head TSL parameters	normalized to 1W	**6.07 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	55.3 ± 6 %	0.98 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	2.41 W/kg
SAR for nominal Body TSL parameters	normalized to 1W	**9.57 W/kg ± 17.0 % (k=2)**

SAR averaged over 10 cm³ (10 g) of Body TSL	condition	
SAR measured	250 mW input power	1.58 W/kg
SAR for nominal Body TSL parameters	normalized to 1W	**6.28 W/kg ± 16.5 % (k=2)**

Appendix (Additional assessments outside the scope of SCS 0108)

Antenna Parameters with Head TSL

Impedance, transformed to feed point	51.1 Ω - 2.7 jΩ
Return Loss	- 30.8 dB

Antenna Parameters with Body TSL

Impedance, transformed to feed point	47.2 Ω - 5.2 jΩ
Return Loss	- 24.4 dB

General Antenna Parameters and Design

Electrical Delay (one direction)	1.387 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: 18.08.2017

Test Laboratory: SPEAG, Zurich, Switzerland

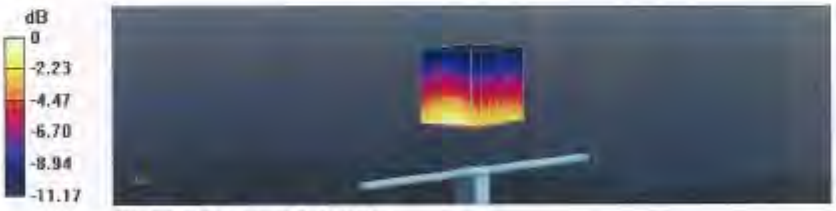
DUT: Dipole 835 MHz; Type: D835V2; Serial: D835V2 - SN:4d063

Communication System: UID 0 - CW; Frequency: 835 MHz
Medium parameters used: f = 835 MHz; σ = 0.93 S/m; ε_r = 40.9; ρ = 1000 kg/m^3
Phantom section: Flat Section
Measurement Standard: DASY5 (IEEE/IEC/ANSI C63.19-2011)

DASY52 Configuration:

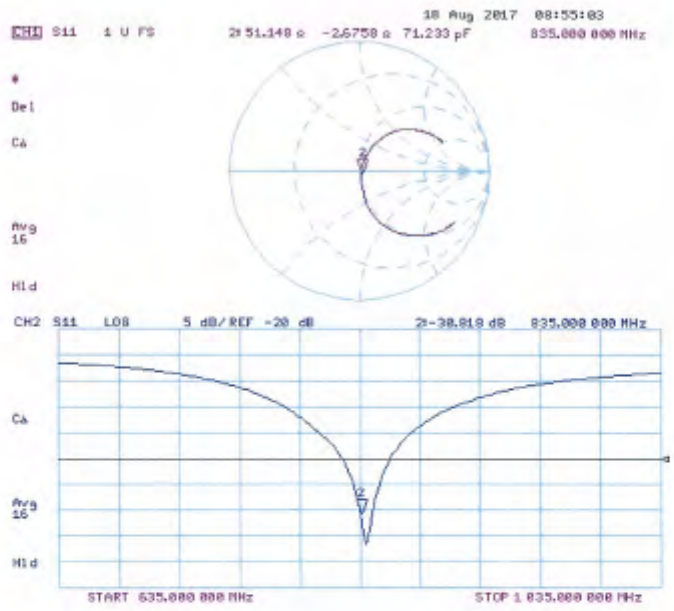
- Probe: EX3DV4 - SN7349; ConvF(10.07, 10.07, 10.07); Calibrated: 31.05.2017;
- Sensor-Surface: 1.4mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn601; Calibrated: 28.03.2017
- Phantom: Flat Phantom 4.9 (front); Type: QD 00L P49 AA; Serial: 1001
- DASY52 52.10.0(1446); SEMCAD X 14.6.10(7417)

Dipole Calibration for Head Tissue/Pin=250 mW, d=15mm/Zoom Scan (7x7x7)/Cube 0:
Measurement grid: dx=5mm, dy=5mm, dz=5mm
Reference Value = 61.74 V/m; Power Drift = 0.02 dB
Peak SAR (extrapolated) = 3.71 W/kg
SAR(1 g) = 2.4 W/kg; SAR(10 g) = 1.55 W/kg
Maximum value of SAR (measured) = 3.26 W/kg



0 dB = 3.26 W/kg = 5.13 dBW/kg

Impedance Measurement Plot for Head TSL



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DASY5 Validation Report for Body TSL

Date: 21.08.2017

Test Laboratory: SPEAG, Zurich, Switzerland

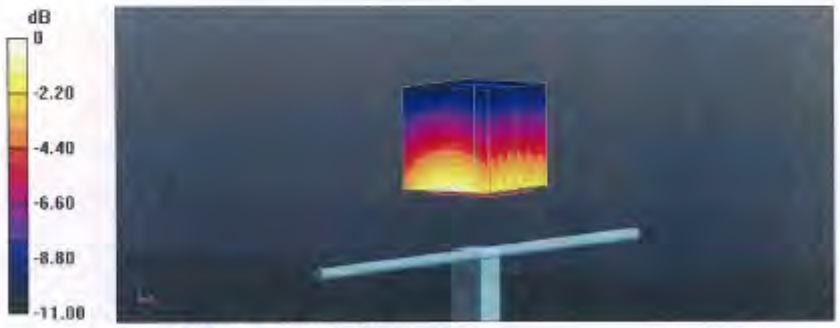
DUT: Dipole 835 MHz; Type: D835V2; Serial: D835V2 - SN:4d063

Communication System: UID 0 - CW; Frequency: 835 MHz
Medium parameters used: f = 835 MHz; σ = 0.98 S/m; ε_r = 55.3; ρ = 1000 kg/m^3
Phantom section: Flat Section
Measurement Standard: DASY5 (IEEE/IEC/ANSI C63.19-2011)

DASY52 Configuration:

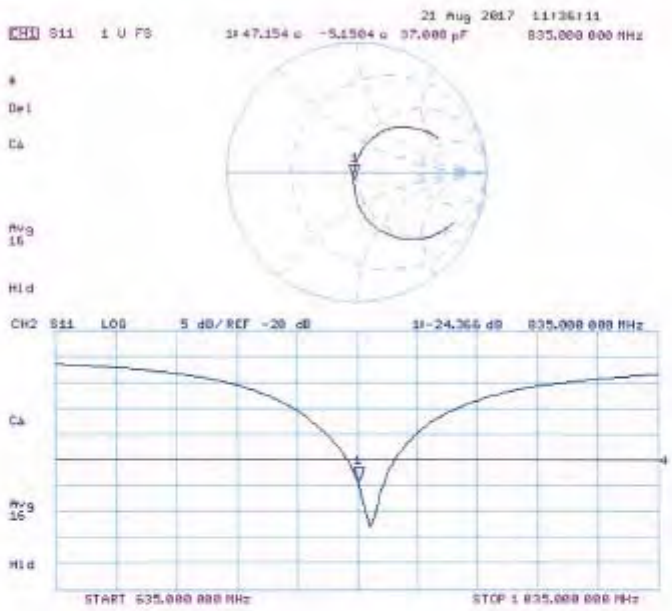
- Probe: EX3DV4 - SN7349; ConvF(10.2, 10.2, 10.2); Calibrated: 31.05.2017;
- Sensor-Surface: 1.4mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn601; Calibrated: 28.03.2017
- Phantom: Flat Phantom 4.9 (Back); Type: QD 00R P49 AA; Serial: 1005
- DASY52 52.10.0(1446); SEMCAD X 14.6.10(7417)

Dipole Calibration for Body Tissue/Pin=250 mW, d=15mm/Zoom Scan (7x7x7)/Cube 0:
Measurement grid: dx=5mm, dy=5mm, dz=5mm
Reference Value = 59.86 V/m; Power Drift = 0.01 dB
Peak SAR (extrapolated) = 3.64 W/kg
SAR(1 g) = 2.41 W/kg; SAR(10 g) = 1.58 W/kg
Maximum value of SAR (measured) = 3.20 W/kg



0 dB = 3.20 W/kg = 5.05 dBW/kg

Impedance Measurement Plot for Body TSL



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Accreditation No.: SCS 0108

Client SGS-TW (Auden) Certificate No: D1750V2-1008_Aug17

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 21, 2017

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

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

Calibration Equipment used (M&TE critical for calibration)

Primary Standards	ID #	Cal Date (Certificate No.)	Scheduled Calibration
Power meter NRP	SN: 104778	04-Apr-17 (No. 217-02521/02522)	Apr-18
Power sensor NRP-Z91	SN: 103244	04-Apr-17 (No. 217-02521)	Apr-18
Power sensor NRP-Z91	SN: 103245	04-Apr-17 (No. 217-02522)	Apr-18
Reference 20 dB Attenuator	SN: 5058 (20k)	07-Apr-17 (No. 217-02528)	Apr-18
Type-N mismatch combination	SN: 5047.2 / 06327	07-Apr-17 (No. 217-02528)	Apr-18
Reference Probe EX3DV4	SN: 7349	31-May-17 (No. EX3-7349_May17)	May-18
DAE4	SN: 601	28-Mar-17 (No. DAE4-601_Mar17)	Mar-18

Secondary Standards	ID #	Check Date (in house)	Scheduled Check
Power meter EPM-442A	SN: GB37480704	07-Oct-15 (in house check Oct-16)	In house check: Oct-18
Power sensor HP 8481A	SN: US37292783	07-Oct-15 (in house check Oct-16)	In house check: Oct-18
Power sensor HP 8481A	SN: MY41092317	07-Oct-15 (in house check Oct-16)	In house check: Oct-18
RF generator R&S SMT-06	SN: 100972	15-Jun-15 (in house check Oct-16)	In house check: Oct-18
Network Analyzer HP 8753E	SN: US37390585	18-Oct-01 (in house check Oct-16)	In house check: Oct-17

	Name	Function	Signature
Calibrated by:	Claudio Leubler	Laboratory Technician	
Approved by:	Katja Pokovic	Technical Manager	

Issued: August 21, 2017

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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, "Measurement procedure for the assessment of Specific Absorption Rate (SAR) from hand-held and body-mounted devices used next to the ear (frequency range of 300 MHz to 6 GHz)", July 2016
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	V52.10.0
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	39.1 ± 6 %	1.35 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	8.98 W/kg
SAR for nominal Head TSL parameters	normalized to 1W	**36.0 W/kg ± 17.0 % (k=2)**

SAR averaged over 10 cm³ (10 g) of Head TSL	condition	
SAR measured	250 mW input power	4.75 W/kg
SAR for nominal Head TSL parameters	normalized to 1W	**19.0 W/kg ± 16.5 % (k=2)**

Body TSL parameters

The following parameters and calculations were applied.

	Temperature	Permittivity	Conductivity
Nominal Body TSL parameters	22.0 °C	53.4	1.49 mho/m
Measured Body TSL parameters	(22.0 ± 0.2) °C	53.9 ± 6 %	1.47 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	9.09 W/kg
SAR for nominal Body TSL parameters	normalized to 1W	**36.7 W/kg ± 17.0 % (k=2)**

SAR averaged over 10 cm³ (10 g) of Body TSL	condition	
SAR measured	250 mW input power	4.87 W/kg
SAR for nominal Body TSL parameters	normalized to 1W	**19.6 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	49.9 Ω - 0.4 jΩ
Return Loss	- 46.7 dB

Antenna Parameters with Body TSL

Impedance, transformed to feed point	46.3 Ω - 1.4 jΩ
Return Loss	- 27.6 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

DASY5 Validation Report for Head TSL

Date: 21.08.2017

Test Laboratory: SPEAG, Zurich, Switzerland

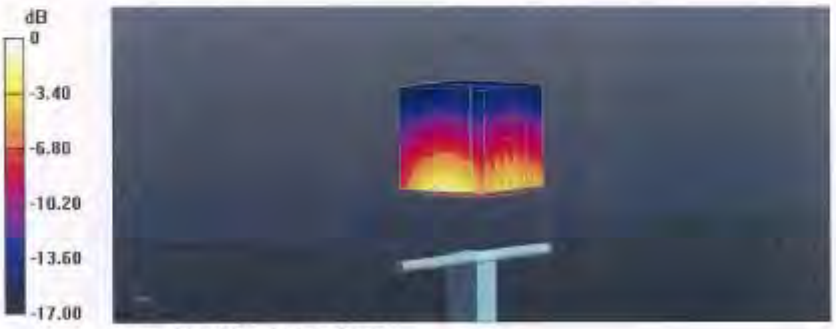
DUT: Dipole 1750 MHz; Type: D1750V2; Serial: D1750V2 - SN:1008

Communication System: UID 0 - CW; Frequency: 1750 MHz
Medium parameters used: f = 1750 MHz; σ = 1.35 S/m; ε_r = 39.1; ρ = 1000 kg/m^3
Phantom section: Flat Section
Measurement Standard: DASY5 (IEEE/IEC/ANSI C63.19-2011)

DASY52 Configuration:

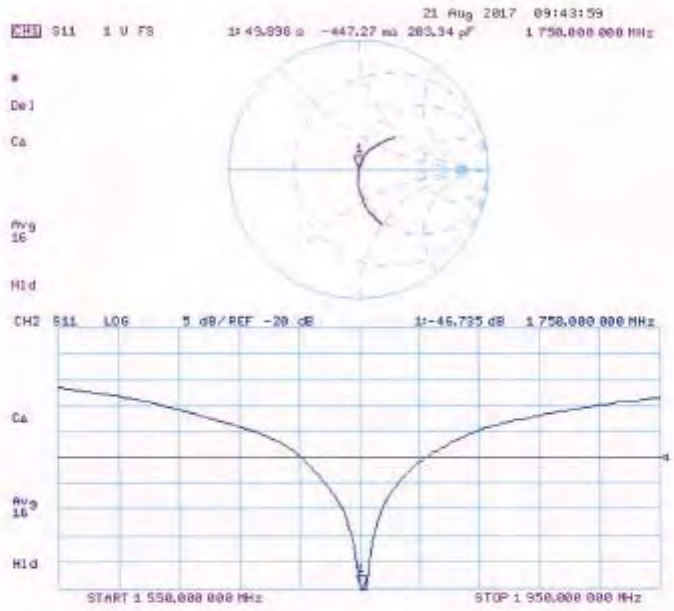
- Probe: EX3DV4 - SN7349; ConvF(8.73, 8.73, 8.73); Calibrated: 31.05.2017;
- Sensor-Surface: 1.4mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn601; Calibrated: 28.03.2017
- Phantom: Flat Phantom 5.0 (front); Type: QD 000 P50 AA; Serial: 1001
- DASY52 52.10.0(1446); SEMCAD X 14.6.10(7417)

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 = 104.0 V/m; Power Drift = -0.06 dB
Peak SAR (extrapolated) = 16.8 W/kg
SAR(1 g) = 8.98 W/kg; SAR(10 g) = 4.75 W/kg
Maximum value of SAR (measured) = 13.7 W/kg



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

Impedance Measurement Plot for Head TSL



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DASY5 Validation Report for Body TSL

Date: 18.08.2017

Test Laboratory: SPEAG, Zurich, Switzerland

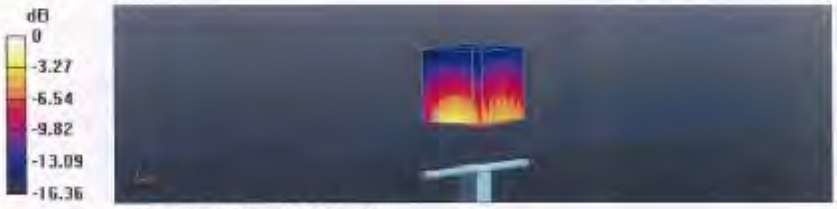
DUT: Dipole 1750 MHz; Type: D1750V2; Serial: D1750V2 - SN:1008

Communication System: UID 0 - CW; Frequency: 1750 MHz
Medium parameters used: f = 1750 MHz; σ = 1.47 S/m; ε_r = 53.9; ρ = 1000 kg/m^3
Phantom section: Flat Section
Measurement Standard: DASY5 (IEEE/IEC/ANSI C63.19-2011)

DASY52 Configuration:

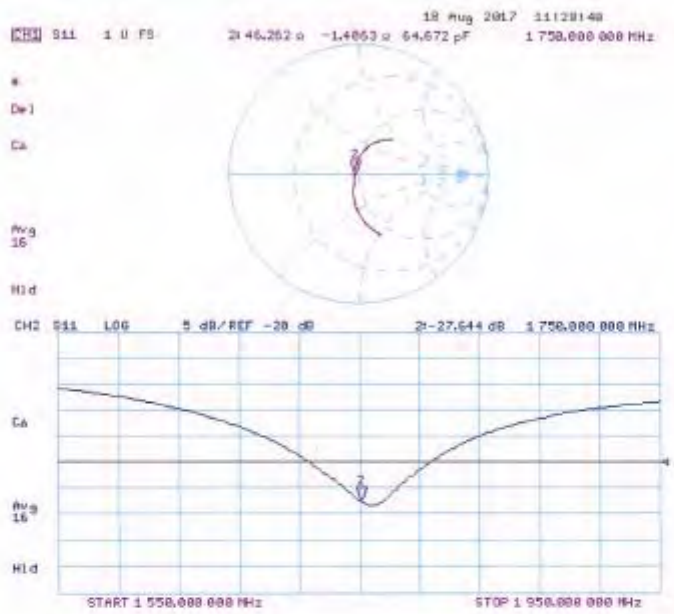
- Probe: EX3DV4 - SN7349; ConvF(8.46, 8.46, 8.46); Calibrated: 31.05.2017;
- Sensor-Surface: 1.4mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn601; Calibrated: 28.03.2017
- Phantom: Flat Phantom 5.0 (back); Type: QD 000 P50 AA; Serial: 1002
- DASY52 52.10.0(1446); SEMCAD X 14.6.10(7417)

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 = 99.85 V/m; Power Drift = -0.00 dB
Peak SAR (extrapolated) = 15.8 W/kg
SAR(1 g) = 9.09 W/kg; SAR(10 g) = 4.87 W/kg
Maximum value of SAR (measured) = 13.3 W/kg



0 dB = 13.3 W/kg = 11.24 dBW/kg

Impedance Measurement Plot for Body TSL



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Accreditation No.: SCS 0108

Client: SGS-TW (Auden)

Certificate No: D1900V2-5d173_May17

CALIBRATION CERTIFICATE

Object: D1900V2 - SN:5d173

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

Calibration date: May 31, 2017

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

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

Calibration Equipment used (M&TE critical for calibration)

Primary Standards	ID #	Cal Date (Certificate No.)	Scheduled Calibration
Power meter NRP	SN: 104778	04-Apr-17 (No. 217-02521/02522)	Apr-18
Power sensor NRP-Z91	SN: 103244	04-Apr-17 (No. 217-02521)	Apr-18
Power sensor NRP-Z91	SN: 103245	04-Apr-17 (No. 217-02522)	Apr-18
Reference 20 dB Attenuator	SN: 5058 (20k)	07-Apr-17 (No. 217-02528)	Apr-18
Type-N mismatch combination	SN: 5047.2 / 06327	07-Apr-17 (No. 217-02529)	Apr-18
Reference Probe EX3DV4	SN: 7460	19-May-17 (No. EX3-7460_May17)	May-18
DAE4	SN: 601	28-Mar-17 (No. DAE4-601_Mar17)	Mar-18

Secondary Standards	ID #	Check Date (in house)	Scheduled Check
Power meter EPM-442A	SN: GB37480704	07-Oct-15 (in house check Oct-16)	In house check: Oct-18
Power sensor HP 8481A	SN: US37292783	07-Oct-15 (in house check Oct-16)	In house check: Oct-18
Power sensor HP 8481A	SN: MY41092317	07-Oct-15 (in house check Oct-16)	In house check: Oct-18
RF generator R&S SMT-06	SN: 100972	15-Jun-15 (in house check Oct-16)	In house check: Oct-18
Network Analyzer HP 8753E	SN: US37390585	18-Oct-01 (in house check Oct-16)	In house check: Oct-17

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

Issued: May 31, 2017

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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	V52.10.0
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	41.3 ± 6 %	1.40 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	10.1 W/kg
SAR for nominal Head TSL parameters	normalized to 1W	**40.7 W/kg ± 17.0 % (k=2)**

SAR averaged over 10 cm³ (10 g) of Head TSL	condition	
SAR measured	250 mW input power	5.26 W/kg
SAR for nominal Head TSL parameters	normalized to 1W	**21.1 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	54.2 ± 6 %	1.51 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	9.96 W/kg
SAR for nominal Body TSL parameters	normalized to 1W	**40.2 W/kg ± 17.0 % (k=2)**

SAR averaged over 10 cm³ (10 g) of Body TSL	condition	
SAR measured	250 mW input power	5.30 W/kg
SAR for nominal Body TSL parameters	normalized to 1W	**21.3 W/kg ± 16.5 % (k=2)**

Appendix (Additional assessments outside the scope of SCS 0108)

Antenna Parameters with Head TSL

Impedance, transformed to feed point	51.3 Ω + 4.9 jΩ
Return Loss	- 26.1 dB

Antenna Parameters with Body TSL

Impedance, transformed to feed point	47.5 Ω + 6.0 jΩ
Return Loss	- 23.5 dB

General Antenna Parameters and Design

Electrical Delay (one direction)	1.199 ns

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

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

Additional EUT Data

Manufactured by	SPEAG
Manufactured on	June 06, 2012

DASY5 Validation Report for Head TSL

Date: 31.05.2017

Test Laboratory: SPEAG, Zurich, Switzerland

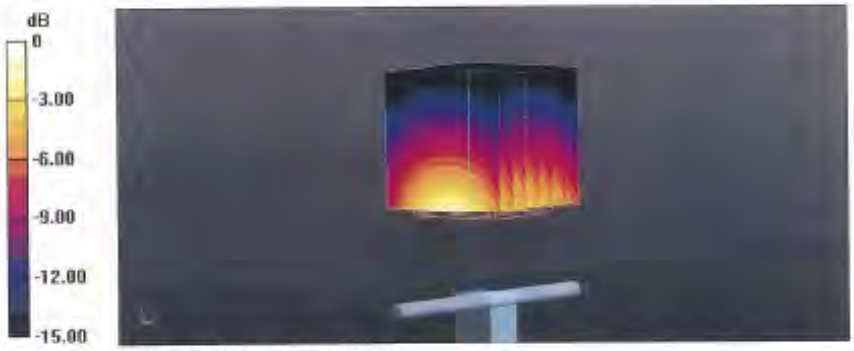
DUT: Dipole 1900 MHz; Type: D1900V2; Serial: D1900V2 - SN:5d173

Communication System: UID 0 - CW; Frequency: 1900 MHz
Medium parameters used: f = 1900 MHz; σ = 1.4 S/m; ε_r = 41.3; ρ = 1000 kg/m^3
Phantom section: Flat Section
Measurement Standard: DASY5 (IEEE/IEC/ANSI C63.19-2011)

DASY52 Configuration:

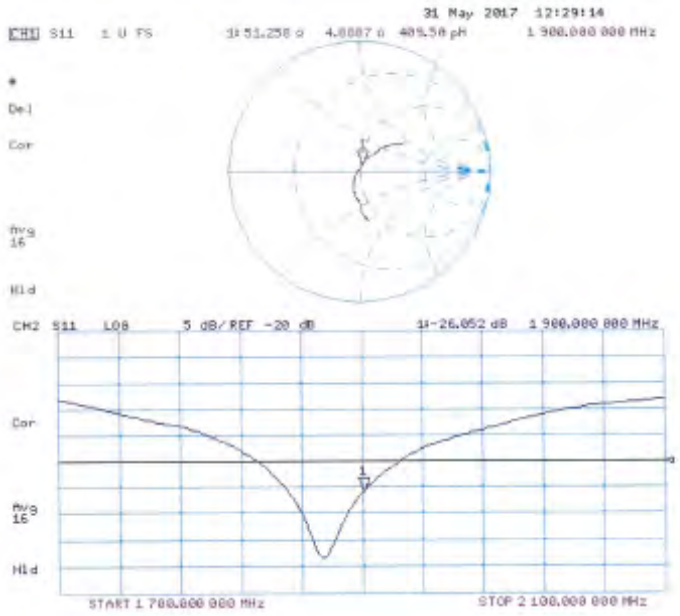
- Probe: EX3DV4 - SN7460; ConvF(7.98, 7.98, 7.98); Calibrated: 19.05.2017;
- Sensor-Surface: 1.4mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn601; Calibrated: 28.03.2017
- Phantom: Flat Phantom 5.0 (front); Type: QD 000 P50 AA; Serial: 1001
- DASY52 52.10.0(1446); SEMCAD X 14.6.10(7417)

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 = 107.7 V/m; Power Drift = 0.03 dB
Peak SAR (extrapolated) = 18.9 W/kg
SAR(1 g) = 10.1 W/kg; SAR(10 g) = 5.26 W/kg
Maximum value of SAR (measured) = 15.3 W/kg



0 dB = 15.3 W/kg = 11.85 dBW/kg

Impedance Measurement Plot for Head TSL



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DASY5 Validation Report for Body TSL

Date: 31.05.2017

Test Laboratory: SPEAG, Zurich, Switzerland

DUT: Dipole 1900 MHz; Type: D1900V2; Serial: D1900V2 - SN:5d173

Communication System: UID 0 - CW; Frequency: 1900 MHz
Medium parameters used: f = 1900 MHz; σ = 1.51 S/m; ε_r = 54.2; ρ = 1000 kg/m^3
Phantom section: Flat Section
Measurement Standard: DASY5 (IEEE/IEC/ANSI C63.19-2011)

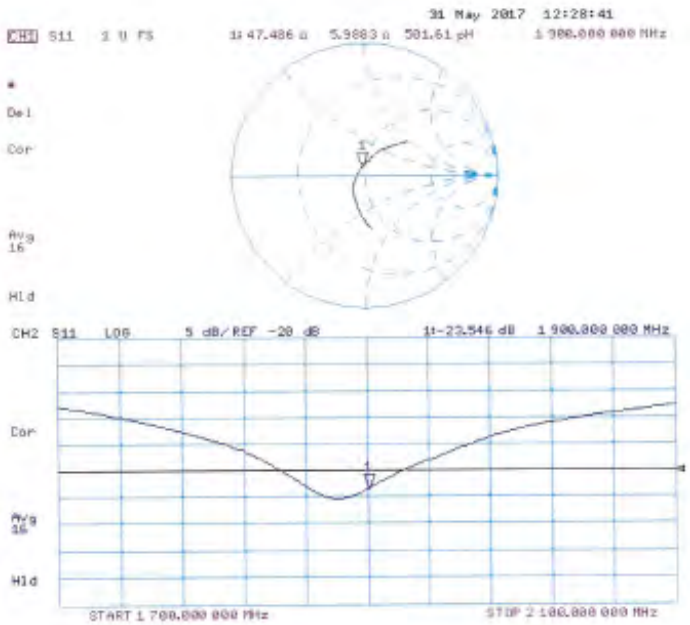
DASY52 Configuration:

- Probe: EX3DV4 - SN7460; ConvF(7.82, 7.82, 7.82); Calibrated: 19.05.2017;
- Sensor-Surface: 1.4mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn601; Calibrated: 28.03.2017
- Phantom: Flat Phantom 5.0 (back); Type: QD 000 P50 AA; Serial: 1002
- DASY52 52.10.0(1446); SEMCAD X 14.6.10(7417)

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 = 102.9 V/m; Power Drift = -0.08 dB
Peak SAR (extrapolated) = 17.5 W/kg
SAR(1 g) = 9.98 W/kg; SAR(10 g) = 5.3 W/kg
Maximum value of SAR (measured) = 14.3 W/kg

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

Impedance Measurement Plot for Body TSL



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Accreditation No.: SCS 0108

Client SGS-TW (Auden)

Certificate No: D2300V2-1023_Aug17

CALIBRATION CERTIFICATE

Object	D2300V2 - SN:1023
Calibration procedure(s)	QA CAL-05.v9 Calibration procedure for dipole validation kits above 700 MHz
Calibration date:	August 17, 2017

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

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

Calibration Equipment used (M&TE critical for calibration)

Primary Standards	ID #	Cal Date (Certificate No.)	Scheduled Calibration
Power meter NRP	SN: 104778	04-Apr-17 (No. 217-02521/02522)	Apr-18
Power sensor NRP-Z91	SN: 103244	04-Apr-17 (No. 217-02521)	Apr-18
Power sensor NRP-Z91	SN: 103245	04-Apr-17 (No. 217-02522)	Apr-18
Reference 20 dB Attenuator	SN: 5058 (20k)	07-Apr-17 (No. 217-02528)	Apr-18
Type-N mismatch combination	SN: 5047.2 / 06327	07-Apr-17 (No. 217-02529)	Apr-18
Reference Probe EX3DV4	SN: 7349	31-May-17 (No. EX3-7349_May17)	May-18
DAE4	SN: 601	28-Mar-17 (No. DAE4-601_Mar17)	Mar-18

Secondary Standards	ID #	Check Date (in house)	Scheduled Check
Power meter EPM-442A	SN: GB37480704	07-Oct-15 (in house check Oct-16)	In house check: Oct-18
Power sensor HP 8481A	SN: US37292783	07-Oct-15 (in house check Oct-16)	In house check: Oct-18
Power sensor HP 8481A	SN: MY41092317	07-Oct-15 (in house check Oct-16)	In house check: Oct-18
RF generator R&S SMT-06	SN: 100972	15-Jun-15 (in house check Oct-16)	In house check: Oct-18
Network Analyzer HP 8753E	SN: US37390585	18-Oct-01 (in house check Oct-16)	In house check: Oct-17

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

Issued: August 17, 2017

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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, "Measurement procedure for the assessment of Specific Absorption Rate (SAR) from hand-held and body-mounted devices used next to the ear (frequency range of 300 MHz to 6 GHz)", July 2016
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	V52.10.0
Extrapolation	Advanced Extrapolation	
Phantom	Modular Flat Phantom	
Distance Dipole Center - TSL	10 mm	with Spacer
Zoom Scan Resolution	dx, dy, dz = 5 mm	
Frequency	2300 MHz ± 1 MHz	

Head TSL parameters

The following parameters and calculations were applied.

	Temperature	**Permittivity**	**Conductivity**
Nominal Head TSL parameters	22.0 °C	39.5	1.67 mho/m
Measured Head TSL parameters	(22.0 ± 0.2) °C	38.3 ± 6 %	1.70 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	12.0 W/kg
SAR for nominal Head TSL parameters	normalized to 1W	**47.2 W/kg ± 17.0 % (k=2)**

SAR averaged over 10 cm³ (10 g) of Head TSL	condition	
SAR measured	250 mW input power	5.74 W/kg
SAR for nominal Head TSL parameters	normalized to 1W	**22.7 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	52.9	1.81 mho/m
Measured Body TSL parameters	(22.0 ± 0.2) °C	52.3 ± 6 %	1.86 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	11.8 W/kg
SAR for nominal Body TSL parameters	normalized to 1W	**46.4 W/kg ± 17.0 % (k=2)**

SAR averaged over 10 cm³ (10 g) of Body TSL	condition	
SAR measured	250 mW input power	5.68 W/kg
SAR for nominal Body TSL parameters	normalized to 1W	**22.5 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	48.4 Ω - 3.1 jΩ
Return Loss	- 29.0 dB

Antenna Parameters with Body TSL

Impedance, transformed to feed point	44.9 Ω - 2.2 jΩ
Return Loss	- 24.7 dB

General Antenna Parameters and Design

Electrical Delay (one direction)	1.171 ns

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

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

Additional EUT Data

Manufactured by	SPEAG
Manufactured on	March 30, 2009

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DASY5 Validation Report for Head TSL

Date: 17.08.2017

Test Laboratory: SPEAG, Zurich, Switzerland

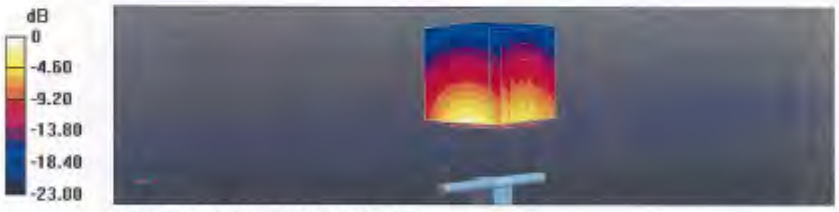
DUT: Dipole 2300 MHz; Type: D2300V2; Serial: D2300V2 - SN: 1023

Communication System: UID 0 - CW; Frequency: 2300 MHz
Medium parameters used: f = 2300 MHz; σ = 1.7 S/m; ε_r = 38.3; ρ = 1000 kg/m^3
Phantom section: Flat Section
Measurement Standard: DASY5 (IEEE/IEC/ANSI C63.19-2011)

DASY52 Configuration:

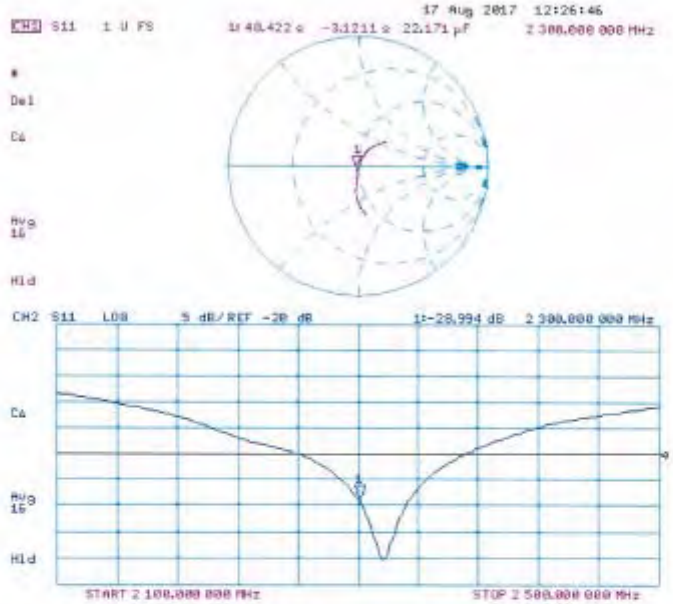
- Probe: EX3DV4 - SN7349; ConvF(8.31, 8.31, 8.31); Calibrated: 31.05.2017;
- Sensor-Surface: 1.4mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn601; Calibrated: 28.03.2017
- Phantom: Flat Phantom 5.0 (front); Type: QD 000 P50 AA; Serial: 1001
- DASY52 52.10.0(1446); SEMCAD X 14.6.10(7417)

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 = 109.5 V/m; Power Drift = -0.07 dB
Peak SAR (extrapolated) = 23.6 W/kg
SAR(1 g) = 12 W/kg; SAR(10 g) = 5.74 W/kg
Maximum value of SAR (measured) = 18.5 W/kg



0 dB = 18.5 W/kg = 12.67 dBW/kg

Impedance Measurement Plot for Head TSL



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DASY5 Validation Report for Body TSL

Date: 17.08.2017

Test Laboratory: SPEAG, Zurich, Switzerland

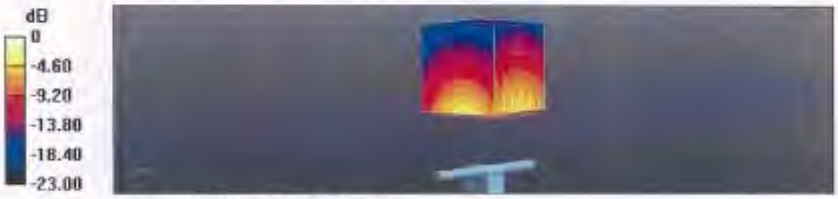
DUT: Dipole 2300 MHz; Type: D2300V2; Serial: D2300V2 - SN: 1023

Communication System: UID 0 - CW; Frequency: 2300 MHz
Medium parameters used: f = 2300 MHz; σ = 1.86 S/m; ε_r = 52.3; ρ = 1000 kg/m^3
Phantom section: Flat Section
Measurement Standard: DASY5 (IEEE/IEC/ANSI C63.19-2011)

DASY52 Configuration:

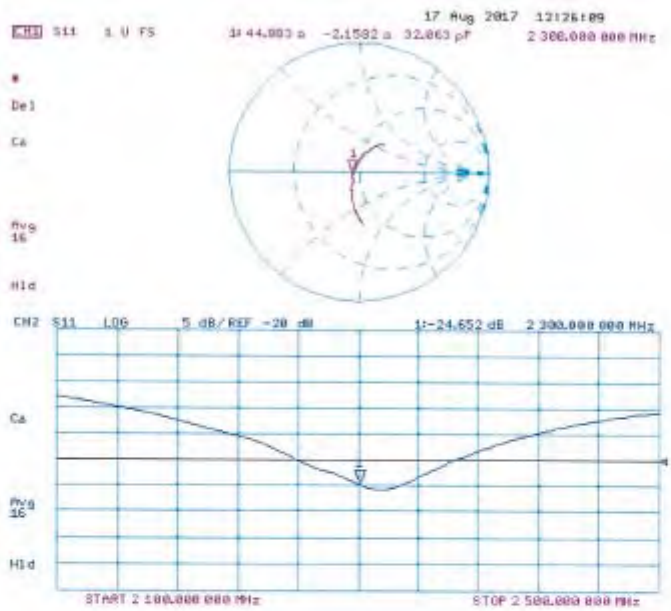
- Probe: EX3DV4 - SN7349; ConvF(8.22, 8.22, 8.22); Calibrated: 31.05.2017;
- Sensor-Surface: 1.4mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn601; Calibrated: 28.03.2017
- Phantom: Flat Phantom 5.0 (back); Type: QD 000 P50 AA; Serial: 1002
- DASY52 52.10.0(1446); SEMCAD X 14.6.10(7417)

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 = 102.2 V/m; Power Drift = -0.06 dB
Peak SAR (extrapolated) = 22.3 W/kg
SAR(1 g) = 11.8 W/kg; SAR(10 g) = 5.68 W/kg
Maximum value of SAR (measured) = 17.6 W/kg



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

Impedance Measurement Plot for Body TSL



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Schmid & Partner
Engineering AG
Zeughausstrasse 43, 8004 Zurich, Switzerland

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Accreditation No.: SCS 0108

Client SGS-TW (Auden)

Certificate No: D2450V2-727_Apr18

CALIBRATION CERTIFICATE

Object	D2450V2 - SN:727
Calibration procedure(s)	QA CAL-05.v10 Calibration procedure for dipole validation kits above 700 MHz
Calibration date:	April 24, 2018

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	04-Apr-18 (No. 217-02672/02673)	Apr-19
Power sensor NRP-Z91	SN: 103244	04-Apr-18 (No. 217-02672)	Apr-19
Power sensor NRP-Z91	SN: 103245	04-Apr-18 (No. 217-02673)	Apr-19
Reference 20 dB Attenuator	SN: 5058 (20k)	04-Apr-18 (No. 217-02682)	Apr-19
Type-N mismatch combination	SN: 5047.2 / 06327	04-Apr-18 (No. 217-02683)	Apr-19
Reference Probe EX3DV4	SN: 7349	30-Dec-17 (No. EX3-7349_Dec17)	Dec-18
DAE4	SN: 601	26-Oct-17 (No. DAE4-601_Oct17)	Oct-18

Secondary Standards	ID #	Check Date (in house)	Scheduled Check
Power meter EPM-442A	SN: GB37480704	07-Oct-15 (in house check Oct-16)	In house check: Oct-18
Power sensor HP 8481A	SN: US37292783	07-Oct-15 (in house check Oct-16)	In house check: Oct-18
Power sensor HP 8481A	SN: MY41092317	07-Oct-15 (in house check Oct-16)	In house check: Oct-18
RF generator R&S SMT-06	SN: 100972	15-Jun-15 (in house check Oct-16)	In house check: Oct-18
Network Analyzer HP 8753E	SN: US37390585	18-Oct-01 (in house check Oct-17)	In house check: Oct-18

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

Issued: April 25, 2018

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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, "Measurement procedure for the assessment of Specific Absorption Rate (SAR) from hand-held and body-mounted devices used next to the ear (frequency range of 300 MHz to 6 GHz)", July 2016
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	V52.10.0
Extrapolation	Advanced Extrapolation	
Phantom	Modular Flat Phantom	
Distance Dipole Center - TSL	10 mm	with Spacer
Zoom Scan Resolution	dx, dy, dz = 5 mm	
Frequency	2450 MHz ± 1 MHz	

Head TSL parameters

The following parameters and calculations were applied.

	Temperature	**Permittivity**	**Conductivity**
Nominal Head TSL parameters	22.0 °C	39.2	1.80 mho/m
Measured Head TSL parameters	(22.0 ± 0.2) °C	38.3 ± 6 %	1.86 mho/m ± 6 %
Head TSL temperature change during test	< 0.5 °C	—	—

SAR result with Head TSL

SAR averaged over 1 cm³ (1 g) of Head TSL	Condition	
SAR measured	250 mW input power	13.3 W/kg
SAR for nominal Head TSL parameters	normalized to 1W	**52.1 W/kg ± 17.0 % (k=2)**

SAR averaged over 10 cm³ (10 g) of Head TSL	condition	
SAR measured	250 mW input power	6.16 W/kg
SAR for nominal Head TSL parameters	normalized to 1W	**24.3 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	52.7	1.95 mho/m
Measured Body TSL parameters	(22.0 ± 0.2) °C	52.5 ± 6 %	2.01 mho/m ± 6 %
Body TSL temperature change during test	< 0.5 °C	—	—

SAR result with Body TSL

SAR averaged over 1 cm³ (1 g) of Body TSL	Condition	
SAR measured	250 mW input power	12.9 W/kg
SAR for nominal Body TSL parameters	normalized to 1W	**50.8 W/kg ± 17.0 % (k=2)**

SAR averaged over 10 cm³ (10 g) of Body TSL	condition	
SAR measured	250 mW input power	6.00 W/kg
SAR for nominal Body TSL parameters	normalized to 1W	**23.8 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	55.2 Ω + 2.7 jΩ
Return Loss	- 25.1 dB

Antenna Parameters with Body TSL

Impedance, transformed to feed point	51.2 Ω + 5.8 jΩ
Return Loss	- 25.0 dB

General Antenna Parameters and Design

Electrical Delay (one direction)	1.149 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: 24.04.2018

Test Laboratory: SPEAG, Zurich, Switzerland

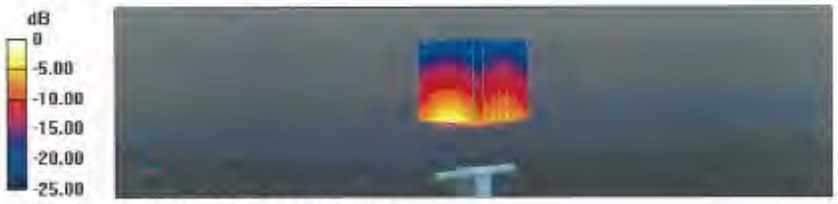
DUT: Dipole 2450 MHz; Type: D2450V2; Serial: D2450V2 - SN:727

Communication System: UID 0 - CW; Frequency: 2450 MHz
Medium parameters used: f = 2450 MHz; σ = 1.86 S/m; ε_r = 38.3; ρ = 1000 kg/m^3
Phantom section: Flat Section
Measurement Standard: DASY5 (IEEE/IEC/ANSI C63.19-2011)

DASY52 Configuration:

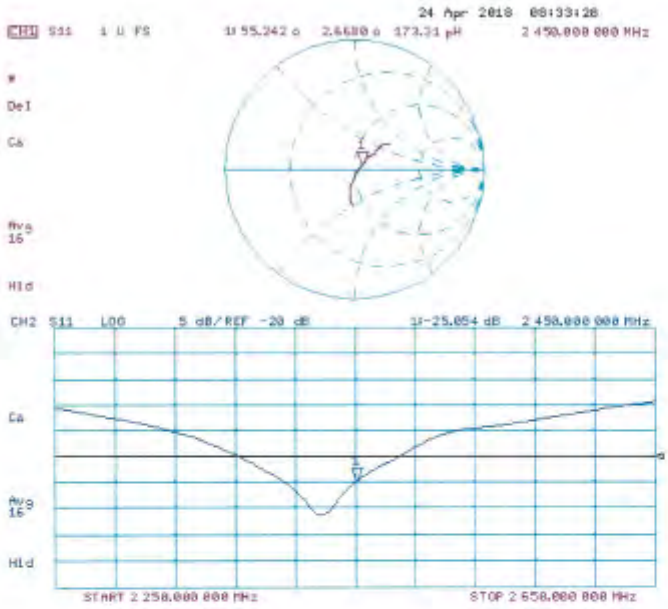
- Probe: EX3DV4 - SN7349; ConvF(7.88, 7.88, 7.88); Calibrated: 30.12.2017;
- Sensor-Surface: 1.4mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn601; Calibrated: 26.10.2017
- Phantom: Flat Phantom 5.0 (front); Type: QD 000 P50 AA; Serial: 1001
- DASY52 52.10.0(1446); SEMCAD X 14.6.10(7417)

Dipole Calibration for Head Tissue/Pin=250 mW, d=10mm/Zoom Scan (7x7x7)/Cube 0:
Measurement grid: dx=5mm, dy=5mm, dz=5mm
Reference Value = 116.0 V/m; Power Drift = -0.06 dB
Peak SAR (extrapolated) = 26.7 W/kg
SAR(1 g) = 13.3 W/kg; SAR(10 g) = 6.16 W/kg
Maximum value of SAR (measured) = 22.0 W/kg



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

Impedance Measurement Plot for Head TSL



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DASY5 Validation Report for Body TSL

Date: 24.04.2018

Test Laboratory: SPEAG, Zurich, Switzerland

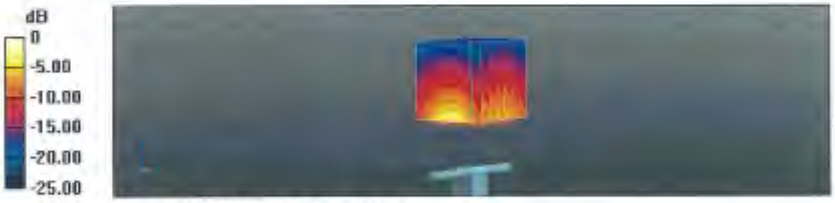
DUT: Dipole 2450 MHz; Type: D2450V2; Serial: D2450V2 - SN:727

Communication System: UID 0 - CW; Frequency: 2450 MHz
Medium parameters used: f = 2450 MHz; σ = 2.01 S/m; ε_r = 52.5; ρ = 1000 kg/m^3
Phantom section: Flat Section
Measurement Standard: DASY5 (IEEE/IEC/ANSI C63.19-2011)

DASY52 Configuration:

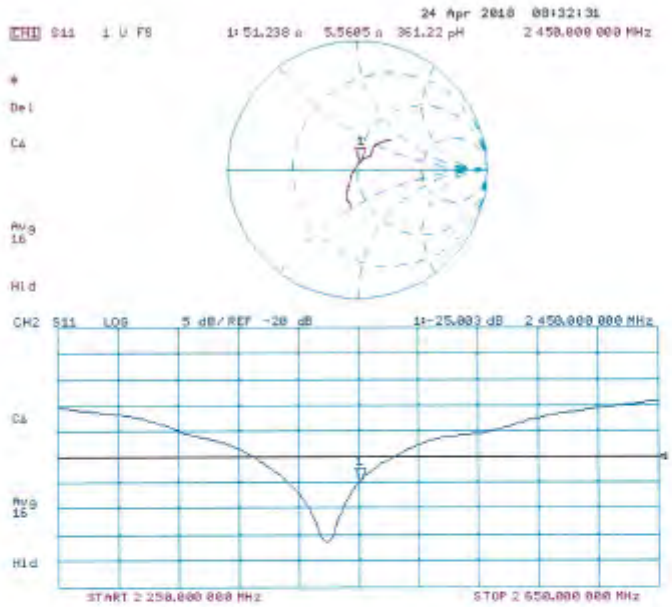
- Probe: EX3DV4 - SN7349; ConvF(8.01, 8.01, 8.01); Calibrated: 30.12.2017;
- Sensor-Surface: 1.4mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn601; Calibrated: 26.10.2017
- Phantom: Flat Phantom 5.0 (back); Type: QD 000 P50 AA; Serial: 1002
- DASY52 52.10.0(1446); SEMCAD X 14.6.10(7417)

Dipole Calibration for Body Tissue/Pin=250 mW, d=10mm/Zoom Scan (7x7x7)/Cube 0:
Measurement grid: dx=5mm, dy=5mm, dz=5mm
Reference Value = 108.4 V/m; Power Drift = -0.07 dB
Peak SAR (extrapolated) = 25.5 W/kg
SAR(1 g) = 12.9 W/kg; SAR(10 g) = 6 W/kg
Maximum value of SAR (measured) = 21.1 W/kg



0 dB = 21.1 W/kg = 13.24 dBW/kg

Impedance Measurement Plot for Body TSL



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Accreditation No.: SCS 0108

Client SGS-TW (Auden)

Certificate No: D2600V2-1005_Jan18

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 17, 2018

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	04-Apr-17 (No. 217-02521/02522)	Apr-18
Power sensor NRP-Z91	SN: 103244	04-Apr-17 (No. 217-02521)	Apr-18
Power sensor NRP-Z91	SN: 103245	04-Apr-17 (No. 217-02522)	Apr-18
Reference 20 dB Attenuator	SN: 5058 (20k)	07-Apr-17 (No. 217-02526)	Apr-18
Type-N mismatch combination	SN: 5047.2 / 06327	07-Apr-17 (No. 217-02529)	Apr-18
Reference Probe EX3DV4	SN: 7349	30-Dec-17 (No. EX3-7349_Dec17)	Dec-18
DAE4	SN: 601	26-Oct-17 (No. DAE4-601_Oct17)	Oct-18

Secondary Standards	ID #	Check Date (in house)	Scheduled Check
Power meter EPM-442A	SN: GB37480704	07-Oct-15 (in house check Oct-16)	In house check: Oct-18
Power sensor HP 8481A	SN: US37292783	07-Oct-15 (in house check Oct-16)	In house check: Oct-18
Power sensor HP 8481A	SN: MY41092317	07-Oct-15 (in house check Oct-16)	In house check: Oct-18
RF generator R&S SMT-06	SN: 100972	15-Jun-15 (in house check Oct-16)	In house check: Oct-18
Network Analyzer HP 8753E	SN: US37390585	18-Oct-01 (in house check Oct-17)	In house check: Oct-18

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

Issued: January 17, 2018

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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, "Measurement procedure for the assessment of Specific Absorption Rate (SAR) from hand-held and body-mounted devices used next to the ear (frequency range of 300 MHz to 6 GHz)", July 2016
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	V52.10.0
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	37.2 ± 6 %	2.04 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	14.6 W/kg
SAR for nominal Head TSL parameters	normalized to 1W	**56.8 W/kg ± 17.0 % (k=2)**

SAR averaged over 10 cm³ (10 g) of Head TSL	condition	
SAR measured	250 mW input power	6.49 W/kg
SAR for nominal Head TSL parameters	normalized to 1W	**25.5 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	51.1 ± 6 %	2.20 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	13.8 W/kg
SAR for nominal Body TSL parameters	normalized to 1W	**54.4 W/kg ± 17.0 % (k=2)**

SAR averaged over 10 cm³ (10 g) of Body TSL	condition	
SAR measured	250 mW input power	6.13 W/kg
SAR for nominal Body TSL parameters	normalized to 1W	**24.3 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	48.4 Ω - 4.7 jΩ
Return Loss	- 26.0 dB

Antenna Parameters with Body TSL

Impedance, transformed to feed point	46.2 Ω - 3.0 jΩ
Return Loss	- 25.9 dB

General Antenna Parameters and Design

Electrical Delay (one direction)	1.155 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

DASY5 Validation Report for Head TSL

Date: 17.01.2018

Test Laboratory: SPEAG, Zurich, Switzerland

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

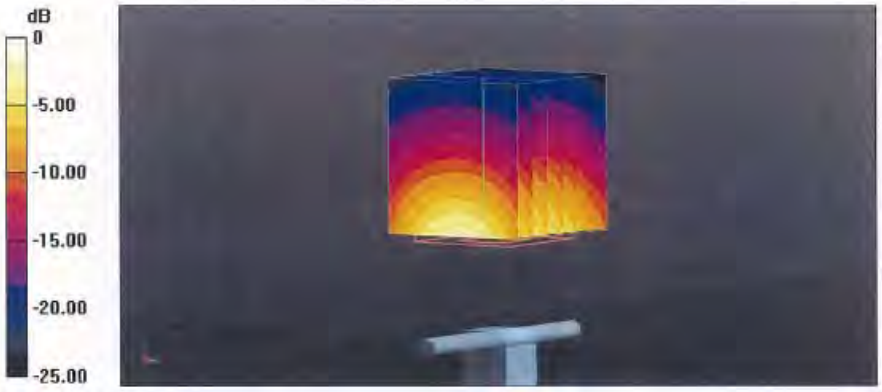
Communication System: UID 0 - CW; Frequency: 2600 MHz
Medium parameters used: f = 2600 MHz; σ = 2.04 S/m; ε_r = 37.2; ρ = 1000 kg/m^3
Phantom section: Flat Section
Measurement Standard: DASY5 (IEEE/IEC/ANSI C63.19-2011)

DASY52 Configuration:

- Probe: EX3DV4 - SN7349; ConvF(7.7, 7.7, 7.7); Calibrated: 30.12.2017;
- Sensor-Surface: 1.4mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn601; Calibrated: 26.10.2017
- Phantom: Flat Phantom 5.0 (front); Type: QD 000 P50 AA; Serial: 1001
- DASY52 52.10.0(1446); SEMCAD X 14.6.10(7417)

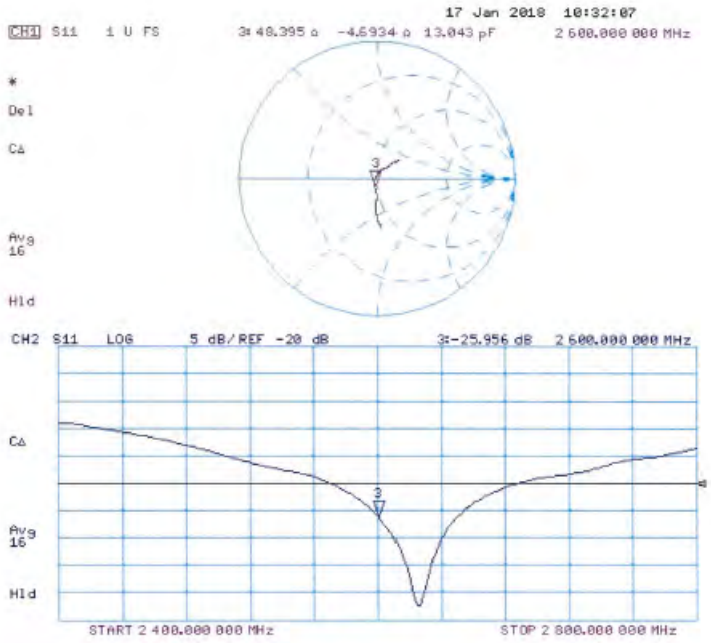
Dipole Calibration for Head Tissue/Pin=250 mW, d=10mm/Zoom Scan (7x7x7)/Cube 0:

Measurement grid: dx=5mm, dy=5mm, dz=5mm
Reference Value = 118.8 V/m; Power Drift = -0.08 dB
Peak SAR (extrapolated) = 29.8 W/kg
SAR(1 g) = 14.6 W/kg; SAR(10 g) = 6.49 W/kg
Maximum value of SAR (measured) = 24.1 W/kg



0 dB = 24.1 W/kg = 13.82 dBW/kg

Impedance Measurement Plot for Head TSL



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DASY5 Validation Report for Body TSL

Date: 17.01.2018

Test Laboratory: SPEAG, Zurich, Switzerland

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

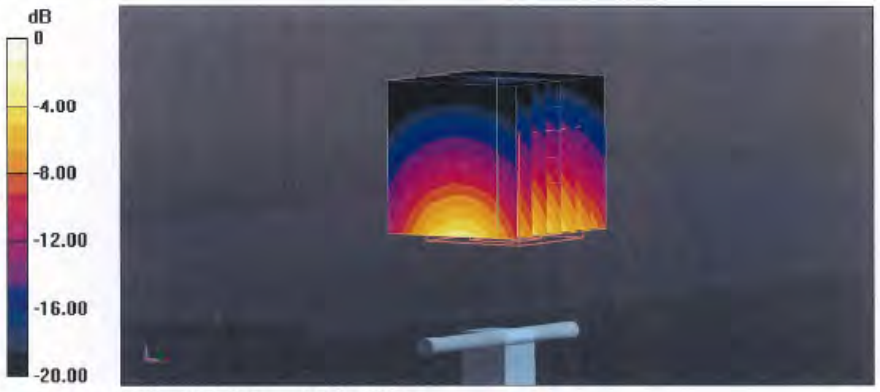
Communication System: UID 0 - CW; Frequency: 2600 MHz
Medium parameters used: f = 2600 MHz; σ = 2.2 S/m; ε_r = 51.1; ρ = 1000 kg/m^3
Phantom section: Flat Section
Measurement Standard: DASY5 (IEEE/IEC/ANSI C63.19-2011)

DASY52 Configuration:

- Probe: EX3DV4 - SN7349; ConvF(7.81, 7.81, 7.81); Calibrated: 30.12.2017;
- Sensor-Surface: 1.4mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn601; Calibrated: 26.10.2017
- Phantom: Flat Phantom 5.0 (back); Type: QD 000 P50 AA; Serial: 1002
- DASY52 52.10.0(1446); SEMCAD X 14.6.10(7417)

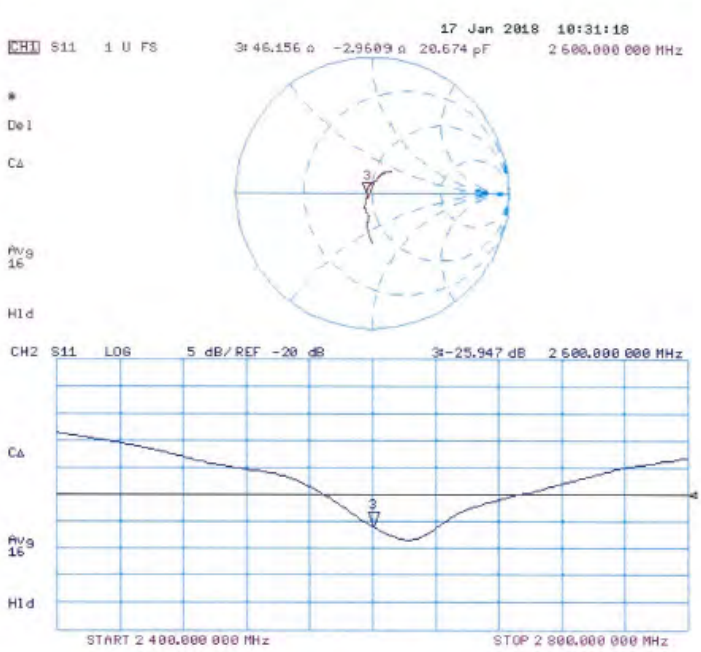
Dipole Calibration for Body Tissue/Pin=250 mW, d=10mm/Zoom Scan (7x7x7)/Cube 0:

Measurement grid: dx=5mm, dy=5mm, dz=5mm
Reference Value = 108.0 V/m; Power Drift = -0.06 dB
Peak SAR (extrapolated) = 28.6 W/kg
SAR(1 g) = 13.8 W/kg; SAR(10 g) = 6.13 W/kg
Maximum value of SAR (measured) = 22.6 W/kg



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

Impedance Measurement Plot for Body TSL



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

S Schweizerischer Kalibrierdienst
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S Swiss Calibration Service

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The Swiss Accreditation Service is one of the signatories to the EA Multilateral Agreement for the recognition of calibration certificates

Accreditation No.: SCS 0108

Client SGS-TW (Auden) Certificate No: D5GHzV2-1023_Jan18

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 25, 2018

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	04-Apr-17 (No. 217-02521/02522)	Apr-18
Power sensor NRP-Z91	SN: 103244	04-Apr-17 (No. 217-02521)	Apr-18
Power sensor NRP-Z91	SN: 103245	04-Apr-17 (No. 217-02522)	Apr-18
Reference 20 dB Attenuator	SN: 5058 (20k)	07-Apr-17 (No. 217-02528)	Apr-18
Type-N mismatch combination	SN: 5047.2 / 06327	07-Apr-17 (No. 217-02529)	Apr-18
Reference Probe EX3DV4	SN: 3503	30-Dec-17 (No. EX3-3503_Dec17)	Dec-18
DAE4	SN: 601	26-Oct-17 (No. DAE4-601_Oct17)	Oct-18

Secondary Standards	ID #	Check Date (in house)	Scheduled Check
Power meter EPM-442A	SN: GB37480704	07-Oct-15 (in house check Oct-16)	In house check: Oct-18
Power sensor HP 8481A	SN: US37292783	07-Oct-15 (in house check Oct-16)	In house check: Oct-18
Power sensor HP 8481A	SN: MY41092317	07-Oct-15 (in house check Oct-16)	In house check: Oct-18
RF generator R&S SMT-06	SN: 100972	15-Jun-15 (in house check Oct-16)	In house check: Oct-18
Network Analyzer HP 8753E	SN: US37390585	18-Oct-01 (in house check Oct-17)	In house check: Oct-18

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

Issued: January 25, 2018

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, "Measurement procedure for the assessment of Specific Absorption Rate (SAR) from hand-held and body-mounted devices used next to the ear (frequency range of 300 MHz to 6 GHz)", July 2016
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	V52.10.0
Extrapolation	Advanced Extrapolation	
Phantom	Modular Flat Phantom V5.0	
Distance Dipole Center - TSL	10 mm	with Spacer
Zoom Scan Resolution	dx, dy = 4.0 mm, dz = 1.4 mm	Graded Ratio = 1.4 (Z direction)
Frequency	5200 MHz ± 1 MHz 5300 MHz ± 1 MHz 5600 MHz ± 1 MHz 5800 MHz ± 1 MHz	

Head TSL parameters at 5200 MHz

The following parameters and calculations were applied.

	Temperature	Permittivity	Conductivity
Nominal Head TSL parameters	22.0 °C	36.0	4.66 mho/m
Measured Head TSL parameters	(22.0 ± 0.2) °C	36.3 ± 6 %	4.50 mho/m ± 6 %
Head TSL temperature change during test	< 0.5 °C	----	----

SAR result with Head TSL at 5200 MHz

SAR averaged over 1 cm^3 (1 g) of Head TSL	Condition	
SAR measured	100 mW input power	7.72 W/kg
SAR for nominal Head TSL parameters	normalized to 1W	**77.3 W/kg ± 19.9 % (k=2)**

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

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Head TSL parameters at 5300 MHz

The following parameters and calculations were applied.

	Temperature	Permittivity	Conductivity
Nominal Head TSL parameters	22.0 °C	35.9	4.76 mho/m
Measured Head TSL parameters	(22.0 ± 0.2) °C	36.2 ± 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	8.09 W/kg
SAR for nominal Head TSL parameters	normalized to 1W	**80.9 W / kg ± 19.9 % (k=2)**

SAR averaged over 10 cm³ (10 g) of Head TSL	condition	
SAR measured	100 mW input power	2.32 W/kg
SAR for nominal Head TSL parameters	normalized to 1W	**23.2 W/kg ± 19.5 % (k=2)**

Head TSL parameters at 5600 MHz

The following parameters and calculations were applied.

	Temperature	Permittivity	Conductivity
Nominal Head TSL parameters	22.0 °C	35.5	5.07 mho/m
Measured Head TSL parameters	(22.0 ± 0.2) °C	35.8 ± 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	8.19 W/kg
SAR for nominal Head TSL parameters	normalized to 1W	**81.9 W/kg ± 19.9 % (k=2)**

SAR averaged over 10 cm³ (10 g) of Head TSL	condition	
SAR measured	100 mW input power	2.34 W/kg
SAR for nominal Head TSL parameters	normalized to 1W	**23.4 W/kg ± 19.5 % (k=2)**

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Head TSL parameters at 5800 MHz

The following parameters and calculations were applied.

	Temperature	Permittivity	Conductivity
Nominal Head TSL parameters	22.0 °C	35.3	5.27 mho/m
Measured Head TSL parameters	(22.0 ± 0.2) °C	35.5 ± 6 %	5.11 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	7.90 W/kg
SAR for nominal Head TSL parameters	normalized to 1W	**79.0 W/kg ± 19.9 % (k=2)**

SAR averaged over 10 cm³ (10 g) of Head TSL	condition	
SAR measured	100 mW input power	2.25 W/kg
SAR for nominal Head TSL parameters	normalized to 1W	**22.5 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	47.3 ± 6 %	5.41 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	7.14 W/kg
SAR for nominal Body TSL parameters	normalized to 1W	**70.9 W/kg ± 19.9 % (k=2)**

SAR averaged over 10 cm³ (10 g) of Body TSL	condition	
SAR measured	100 mW input power	2.00 W/kg
SAR for nominal Body TSL parameters	normalized to 1W	**19.8 W/kg ± 19.5 % (k=2)**

Body TSL parameters at 5300 MHz

The following parameters and calculations were applied.

	Temperature	Permittivity	Conductivity
Nominal Body TSL parameters	22.0 °C	48.9	5.42 mho/m
Measured Body TSL parameters	(22.0 ± 0.2) °C	47.1 ± 6 %	5.54 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	7.34 W/kg
SAR for nominal Body TSL parameters	normalized to 1W	**72.9 W/kg ± 19.9 % (k=2)**

SAR averaged over 10 cm³ (10 g) of Body TSL	condition	
SAR measured	100 mW input power	2.06 W/kg
SAR for nominal Body TSL parameters	normalized to 1W	**20.4 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	46.6 ± 6 %	5.94 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	7.81 W/kg
SAR for nominal Body TSL parameters	normalized to 1W	**77.6 W/kg ± 19.9 % (k=2)**

SAR averaged over 10 cm³ (10 g) of Body TSL	condition	
SAR measured	100 mW input power	2.19 W/kg
SAR for nominal Body TSL parameters	normalized to 1W	**21.7 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	46.2 ± 6 %	6.22 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	7.46 W/kg
SAR for nominal Body TSL parameters	normalized to 1W	**74.1 W/kg ± 19.9 % (k=2)**

SAR averaged over 10 cm³ (10 g) of Body TSL	condition	
SAR measured	100 mW input power	2.07 W/kg
SAR for nominal Body TSL parameters	normalized to 1W	**20.5 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	50.1 Ω - 8.1 jΩ
Return Loss	- 21.9 dB

Antenna Parameters with Head TSL at 5300 MHz

Impedance, transformed to feed point	50.5 Ω - 2.3 jΩ
Return Loss	- 32.7 dB

Antenna Parameters with Head TSL at 5600 MHz

Impedance, transformed to feed point	53.9 Ω - 0.7 jΩ
Return Loss	- 28.4 dB

Antenna Parameters with Head TSL at 5800 MHz

Impedance, transformed to feed point	55.3 Ω + 2.6 jΩ
Return Loss	- 25.1 dB

Antenna Parameters with Body TSL at 5200 MHz

Impedance, transformed to feed point	49.8 Ω - 6.9 jΩ
Return Loss	- 23.2 dB

Antenna Parameters with Body TSL at 5300 MHz

Impedance, transformed to feed point	50.9 Ω - 0.9 jΩ
Return Loss	- 37.9 dB

Antenna Parameters with Body TSL at 5600 MHz

Impedance, transformed to feed point	56.0 Ω + 0.5 jΩ
Return Loss	- 24.9 dB

Antenna Parameters with Body TSL at 5800 MHz

Impedance, transformed to feed point	56.6 Ω + 2.3 jΩ
Return Loss	- 23.7 dB

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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: 25.01.2018

Test Laboratory: SPEAG, Zurich, Switzerland

DUT: Dipole D5GHzV2; Type: D5GHzV2; Serial: D5GHzV2 - SN:1023

Communication System: UID 0 - CW; Frequency: 5200 MHz, Frequency: 5300 MHz, Frequency: 5600 MHz, Frequency: 5800 MHz
Medium parameters used: f = 5200 MHz; σ = 4.5 S/m; ε_r = 36.3; ρ = 1000 kg/m^3 ,
Medium parameters used: f = 5300 MHz; σ = 4.6 S/m; ε_r = 36.2; ρ = 1000 kg/m^3 ,
Medium parameters used: f = 5600 MHz; σ = 4.9 S/m; ε_r = 35.8; ρ = 1000 kg/m^3 ,
Medium parameters used: f = 5800 MHz; σ = 5.11 S/m; ε_r = 35.5; ρ = 1000 kg/m^3
Phantom section: Flat Section
Measurement Standard: DASY5 (IEEE/IEC/ANSI C63.19-2011)

DASY52 Configuration:

- Probe: EX3DV4 - SN3503; ConvF(5.75, 5.75, 5.75); Calibrated: 30.12.2017, ConvF(5.5, 5.5, 5.5); Calibrated: 30.12.2017, ConvF(5.05, 5.05, 5.05); Calibrated: 30.12.2017, ConvF(4.96, 4.96, 4.96); Calibrated: 30.12.2017;
- Sensor-Surface: 1.4mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn601; Calibrated: 26.10.2017
- Phantom: Flat Phantom 5.0 (front); Type: QD 000 P50 AA; Serial: 1001
- DASY52 52.10.0(1446); SEMCAD X 14.6.10(7417)

Dipole Calibration for Head Tissue/Pin=100mW, dist=10mm, f=5200 MHz/Zoom Scan, dist=1.4mm (8x8x7)/Cube 0: Measurement grid: dx=4mm, dy=4mm, dz=1.4mm
Reference Value = 70.47 V/m; Power Drift = -0.04 dB
Peak SAR (extrapolated) = 27.5 W/kg
SAR(1 g) = 7.72 W/kg; SAR(10 g) = 2.22 W/kg
Maximum value of SAR (measured) = 17.7 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 = 74.63 V/m; Power Drift = -0.06 dB
Peak SAR (extrapolated) = 29.6 W/kg
SAR(1 g) = 8.09 W/kg; SAR(10 g) = 2.32 W/kg
Maximum value of SAR (measured) = 18.6 W/kg

Dipole Calibration for Head Tissue/Pin=100mW, dist=10mm, f=5600 MHz/Zoom Scan, dist=1.4mm (8x8x7)/Cube 0: Measurement grid: dx=4mm, dy=4mm, dz=1.4mm
Reference Value = 70.79 V/m; Power Drift = -0.05 dB
Peak SAR (extrapolated) = 31.5 W/kg
SAR(1 g) = 8.19 W/kg; SAR(10 g) = 2.34 W/kg
Maximum value of SAR (measured) = 19.6 W/kg

Dipole Calibration for Head Tissue/Pin=100mW, dist=10mm, f=5800 MHz/Zoom Scan, dist=1.4mm (8x8x7)/Cube 0: Measurement grid: dx=4mm, dy=4mm, dz=1.4mm
Reference Value = 69.22 V/m; Power Drift = -0.05 dB
Peak SAR (extrapolated) = 31.2 W/kg
SAR(1 g) = 7.9 W/kg; SAR(10 g) = 2.25 W/kg
Maximum value of SAR (measured) = 19.0 W/kg

0 dB = 17.7 W/kg = 12.48 dBW/kg

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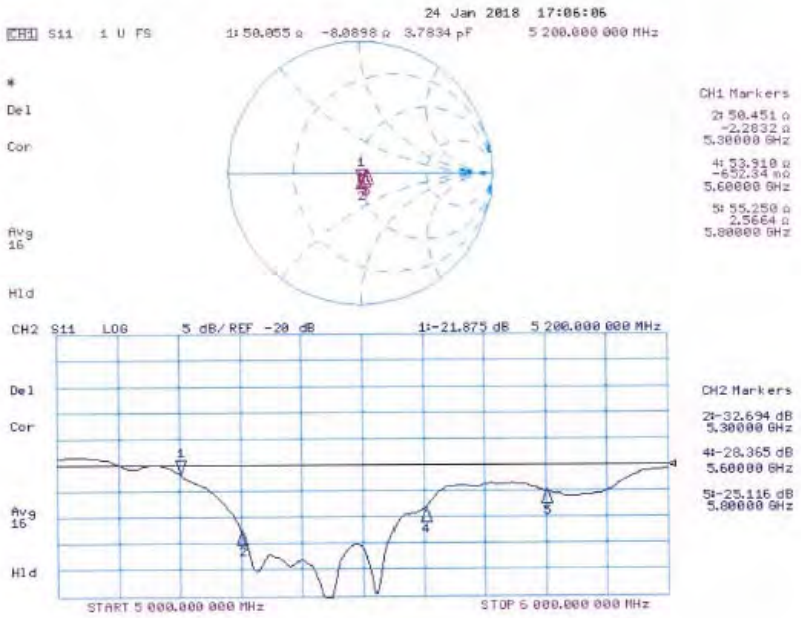
Impedance Measurement Plot for Head TSL



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DASY5 Validation Report for Body TSL

Date: 23.01.2018

Test Laboratory: SPEAG, Zurich, Switzerland

DUT: Dipole D5GHzV2; Type: D5GHzV2; Serial: D5GHzV2 - SN:1023

Communication System: UID 0 - CW; Frequency: 5200 MHz, Frequency: 5300 MHz, Frequency: 5600 MHz, Frequency: 5800 MHz
Medium parameters used: f = 5200 MHz; σ = 5.41 S/m; ε_r = 47.3; ρ = 1000 kg/m^3 ,
Medium parameters used: f = 5300 MHz; σ = 5.54 S/m; ε_r = 47.1; ρ = 1000 kg/m^3 ,
Medium parameters used: f = 5600 MHz; σ = 5.94 S/m; ε_r = 46.6; ρ = 1000 kg/m^3 ,
Medium parameters used: f = 5800 MHz; σ = 6.22 S/m; ε_r = 46.2; ρ = 1000 kg/m^3
Phantom section: Flat Section
Measurement Standard: DASY5 (IEEE/IEC/ANSI C63.19-2011)

DASY52 Configuration:

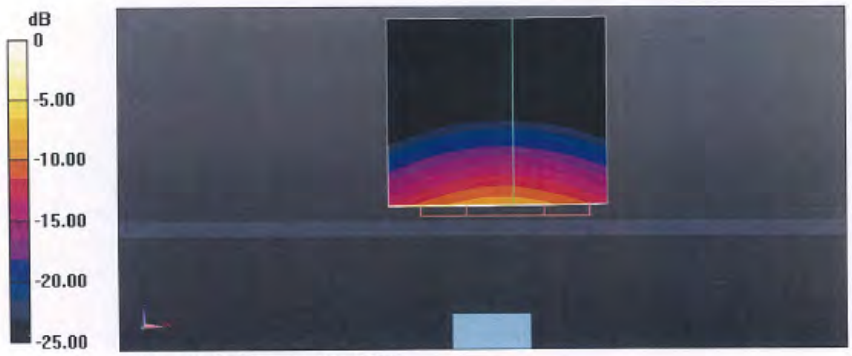
- Probe: EX3DV4 - SN3503; ConvF(5.35, 5.35, 5.35); Calibrated: 30.12.2017, ConvF(5.15, 5.15, 5.15); Calibrated: 30.12.2017, ConvF(4.65, 4.65, 4.65); Calibrated: 30.12.2017, ConvF(4.53, 4.53, 4.53); Calibrated: 30.12.2017;
- Sensor-Surface: 1.4mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn601; Calibrated: 26.10.2017
- Phantom: Flat Phantom 5.0 (back); Type: QD 000 P50 AA; Serial: 1002
- DASY52 52.10.0(1446); SEMCAD X 14.6.10(7417)

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 = 66.00 V/m; Power Drift = -0.05 dB
Peak SAR (extrapolated) = 26.4 W/kg
SAR(1 g) = 7.14 W/kg; SAR(10 g) = 2 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 = 65.19 V/m; Power Drift = -0.06 dB
Peak SAR (extrapolated) = 28.4 W/kg
SAR(1 g) = 7.34 W/kg; SAR(10 g) = 2.06 W/kg
Maximum value of SAR (measured) = 17.6 W/kg

Dipole Calibration for Body Tissue/Pin=100mW, dist=10mm, f=5600 MHz/Zoom Scan, dist=1.4mm (8x8x7)/Cube 0: Measurement grid: dx=4mm, dy=4mm, dz=1.4mm
Reference Value = 66.21 V/m; Power Drift = -0.09 dB
Peak SAR (extrapolated) = 32.8 W/kg
SAR(1 g) = 7.81 W/kg; SAR(10 g) = 2.19 W/kg
Maximum value of SAR (measured) = 19.1 W/kg

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 = 64.05 V/m; Power Drift = -0.05 dB
Peak SAR (extrapolated) = 32.3 W/kg
SAR(1 g) = 7.46 W/kg; SAR(10 g) = 2.07 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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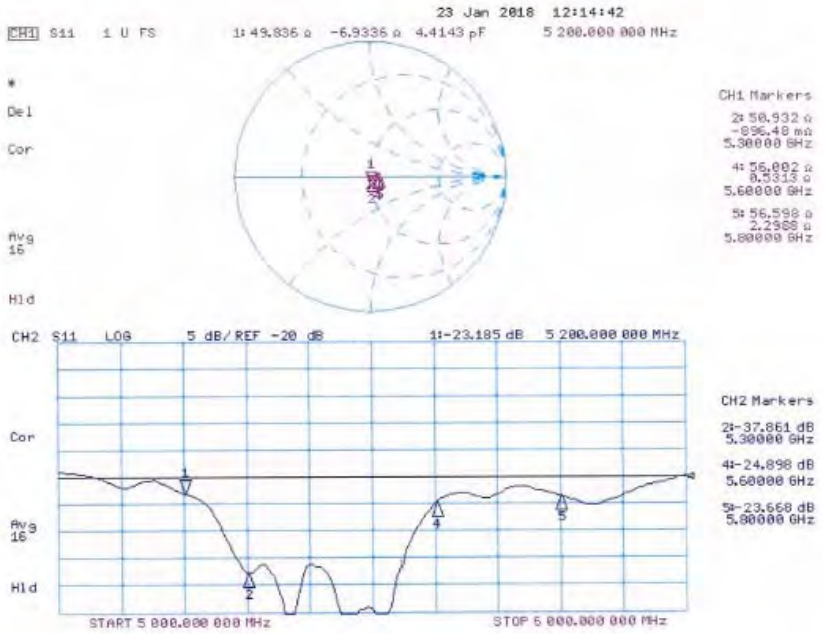
Impedance Measurement Plot for Body TSL



- End of report -

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