SAR TEST REPORT

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

Equipment Under Test	Tablet Computer
Marketing Name	GP8
Brand Name	acer
Model No.	A6201
Company Name	Acer Incorporated
Company Address	8F., No. 88, Sec. 1, Xintai 5th Rd., Xizhi, New Taipei City 22181, Taiwan (R.O.C)
Standards	IEEE/ANSI C95.1-1992, IEEE 1528-2013, KDB248227D01v02r02,KDB865664D01v01r04, KDB865664D02v01r02,KDB447498D01v06, KDB616217D04v01r02, KDB941225D05v02r05
FCC ID	HLZA6201
Date of Receipt	Oct. 07, 2016
Date of Test(s)	Oct. 17, 2016 ~ Nov. 01, 2016
Date of Issue	Nov. 09, 2016

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

Remarks:

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

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

Signed on behalf of SGS

Engineer	**Supervisor**
Matt Kuo	John Yeh
Matt Kuo	**John Yeh**
Date: Nov. 09, 2016	**Date: Nov. 09, 2016**

Revision History

Report Number	Revision	Description	Issue Date
E5/2016/A0007	Rev.00	Initial creation of document	Nov. 09, 2016

Contents

1. General Information

1.1 Testing Laboratory

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1.2 Details of Applicant

Company Name	Acer Incorporated
Company Address	8F., No. 88, Sec. 1, Xintai 5th Rd., Xizhi, New Taipei City 22181, Taiwan (R.O.C)

1.3 Description of EUT

Equipment Under Test	Tablet Computer			
Marketing Name	GP8			
Brand Name	acer			
Model No.	A6201			
FCC ID	HLZA6201			
Mode of Operation	☒LTE ☒WLAN802.11 a/b/g/n(20M/40M) ☒Bluetooth			
Duty Cycle	LTE	1		
	WLAN802.11 a/b/g/n(20M/40M)	1		
	Bluetooth	1		
TX Frequency Range (MHz)	LTE FDD Band II	1850	—	1910
	LTE FDD Band IV	1710	—	1755
	LTE FDD Band VII	2500	—	2570
	LTE FDD Band XII	699	—	716
	LTE FDD Band XIII	777	—	787
	LTE FDD Band XVII	704	—	716
	WLAN802.11 b/g/n(20M)	2412	—	2462
	WLAN802.11 n(40M)	2422	—	2452
	WLAN802.11 a/n(20M) 5.2G	5180	—	5240
	WLAN802.11 n(40M) 5.2G	5190	—	5230
	WLAN802.11 a/n(20M) 5.3G	5260	—	5320
	WLAN802.11 n(40M) 5.3G	5270	—	5310
	WLAN802.11 a/n(20M) 5.6G	5500	—	5720

TX Frequency Range (MHz)	WLAN802.11 n(40M) 5.6G	5510	—	5710
	WLAN802.11 a/n(20M) 5.8G	5745	—	5825
	WLAN802.11 n(40M) 5.8G	5710	—	5795
	Bluetooth	2402	—	2480
Channel Number (ARFCN)	LTE FDD Band II	18607	—	19193
	LTE FDD Band IV	19957	—	20393
	LTE FDD Band VII	20775	—	21425
	LTE FDD Band XII	23007	—	23173
	LTE FDD Band XIII	23205	—	23255
	LTE FDD Band XVII	23755	—	23825
	WLAN802.11 b/g/n(20M)	1	—	11
	WLAN802.11 n(40M)	3	—	9
	WLAN802.11 a/n(20M) 5.2G	36	—	48
	WLAN802.11 n(40M) 5.2G	38	—	46
	WLAN802.11 a/n(20M) 5.3G	52	—	64
	WLAN802.11 n(40M) 5.3G	54	—	62
	WLAN802.11 a/n(20M) 5.6G	100	—	144
	WLAN802.11 n(40M) 5.6G	102	—	142
	WLAN802.11 a/n(20M) 5.8G	149	—	165
	WLAN802.11 n(40M) 5.8G	142	—	159
	Bluetooth	0	—	78

Max. SAR (1 g) (Unit: W/Kg)				
Band	Measured	Reported	Channel	Position
LTE FDD Band II	1.010	1.295	18900	Back side
LTE FDD Band IV	0.959	1.288	20175	Back side
LTE FDD Band VII	0.888	1.209	20850	Back side
LTE FDD Band XII	0.826	1.007	23130	Back side
LTE FDD Band XIII	0.956	1.048	23230	Back side
LTE FDD Band XVII	0.711	0.959	23790	Back side
WLAN802.11b	1.010	1.085	6	Back side
WLAN802.11 a 5.2G	1.060	1.080	40	Back side
WLAN802.11 a 5.3G	1.070	1.080	52	Back side
WLAN802.11 a 5.6G	1.270	1.276	100	Back side
WLAN802.11 n(20M) 5.6G	1.120	1.167	100	Back side
WLAN802.11 a 5.8G	1.150	1.171	165	Back side

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

FDD Band 2 (Full Power)								
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	22.47	23.5	0
				1880	18900	22.58	23.5	0
				1900	19100	22.54	23.5	0
			50	1860	18700	23.46	23.5	0
				1880	18900	23.38	23.5	0
				1900	19100	23.49	23.5	0
			99	1860	18700	22.98	23.5	0
				1880	18900	22.65	23.5	0
				1900	19100	22.92	23.5	0
		50 RB	0	1860	18700	22.00	22.5	0-1
				1880	18900	21.91	22.5	0-1
				1900	19100	22.11	22.5	0-1
			25	1860	18700	21.89	22.5	0-1
				1880	18900	21.89	22.5	0-1
				1900	19100	22.03	22.5	0-1
			50	1860	18700	21.90	22.5	0-1
				1880	18900	21.98	22.5	0-1
				1900	19100	22.13	22.5	0-1
		100RB		1860	18700	21.97	22.5	0-1
				1880	18900	21.97	22.5	0-1
				1900	19100	21.95	22.5	0-1
	16-QAM	1 RB	0	1860	18700	21.17	22.5	0-1
				1880	18900	21.57	22.5	0-1
				1900	19100	21.66	22.5	0-1
			50	1860	18700	21.78	22.5	0-1
				1880	18900	22.13	22.5	0-1
				1900	19100	22.15	22.5	0-1
			99	1860	18700	21.86	22.5	0-1
				1880	18900	21.98	22.5	0-1
				1900	19100	21.81	22.5	0-1
		50 RB	0	1860	18700	21.10	21.5	0-2
				1880	18900	20.81	21.5	0-2
				1900	19100	21.14	21.5	0-2
			25	1860	18700	21.00	21.5	0-2
				1880	18900	21.12	21.5	0-2
				1900	19100	20.95	21.5	0-2
			50	1860	18700	21.07	21.5	0-2
				1880	18900	20.84	21.5	0-2
				1900	19100	21.20	21.5	0-2
		100RB		1860	18700	21.05	21.5	0-2
				1880	18900	20.96	21.5	0-2
				1900	19100	21.04	21.5	0-2

FDD Band 2 (Full Power)								
BW(Mhz)	Modulation	RB Size	RB Offset	Frequency (MHz)	Channel	Conducted power (dBm)	Target Power + Max. Tolerance (dBm)	MPR Allowed per 3GPP(dB)
15	QPSK	1 RB	0	1857.5	18675	22.75	23.5	0
				1880	18900	22.65	23.5	0
				1902.5	19125	22.92	23.5	0
			36	1857.5	18675	23.02	23.5	0
				1880	18900	22.72	23.5	0
				1902.5	19125	23.35	23.5	0
			74	1857.5	18675	22.95	23.5	0
				1880	18900	22.72	23.5	0
				1902.5	19125	23.22	23.5	0
		36 RB	0	1857.5	18675	21.97	22.5	0-1
				1880	18900	21.94	22.5	0-1
				1902.5	19125	21.98	22.5	0-1
			18	1857.5	18675	21.94	22.5	0-1
				1880	18900	21.95	22.5	0-1
				1902.5	19125	22.03	22.5	0-1
			37	1857.5	18675	21.94	22.5	0-1
				1880	18900	21.94	22.5	0-1
				1902.5	19125	22.10	22.5	0-1
		75RB		1857.5	18675	21.98	22.5	0-1
				1880	18900	21.93	22.5	0-1
				1902.5	19125	22.01	22.5	0-1
	16-QAM	1 RB	0	1857.5	18675	21.74	22.5	0-1
				1880	18900	21.44	22.5	0-1
				1902.5	19125	21.58	22.5	0-1
			36	1857.5	18675	21.91	22.5	0-1
				1880	18900	21.70	22.5	0-1
				1902.5	19125	21.70	22.5	0-1
			74	1857.5	18675	21.82	22.5	0-1
				1880	18900	21.84	22.5	0-1
				1902.5	19125	21.70	22.5	0-1
		36 RB	0	1857.5	18675	21.04	21.5	0-2
				1880	18900	20.78	21.5	0-2
				1902.5	19125	21.07	21.5	0-2
			18	1857.5	18675	20.90	21.5	0-2
				1880	18900	20.87	21.5	0-2
				1902.5	19125	21.08	21.5	0-2
			37	1857.5	18675	20.90	21.5	0-2
				1880	18900	20.95	21.5	0-2
				1902.5	19125	21.14	21.5	0-2
		75RB		1857.5	18675	21.02	21.5	0-2
				1880	18900	20.83	21.5	0-2
				1902.5	19125	21.10	21.5	0-2

FDD Band 2 (Full Power)								
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	22.32	23.5	0
				1880	18900	22.49	23.5	0
				1905	19150	22.75	23.5	0
			25	1855	18650	22.62	23.5	0
				1880	18900	22.80	23.5	0
				1905	19150	23.17	23.5	0
			49	1855	18650	22.97	23.5	0
				1880	18900	22.65	23.5	0
				1905	19150	23.08	23.5	0
		25 RB	0	1855	18650	22.02	22.5	0-1
				1880	18900	21.89	22.5	0-1
				1905	19150	22.07	22.5	0-1
			12	1855	18650	21.93	22.5	0-1
				1880	18900	21.99	22.5	0-1
				1905	19150	22.02	22.5	0-1
			25	1855	18650	21.89	22.5	0-1
				1880	18900	21.90	22.5	0-1
				1905	19150	22.09	22.5	0-1
		50RB		1855	18650	21.97	22.5	0-1
				1880	18900	21.92	22.5	0-1
				1905	19150	22.07	22.5	0-1
	16-QAM	1 RB	0	1855	18650	21.93	22.5	0-1
				1880	18900	21.97	22.5	0-1
				1905	19150	22.01	22.5	0-1
			25	1855	18650	22.16	22.5	0-1
				1880	18900	22.26	22.5	0-1
				1905	19150	22.23	22.5	0-1
			49	1855	18650	21.81	22.5	0-1
				1880	18900	21.63	22.5	0-1
				1905	19150	21.88	22.5	0-1
		25 RB	0	1855	18650	20.82	21.5	0-2
				1880	18900	21.09	21.5	0-2
				1905	19150	21.05	21.5	0-2
			12	1855	18650	21.22	21.5	0-2
				1880	18900	21.02	21.5	0-2
				1905	19150	21.14	21.5	0-2
			25	1855	18650	21.21	21.5	0-2
				1880	18900	20.92	21.5	0-2
				1905	19150	21.45	21.5	0-2
		50RB		1855	18650	20.91	21.5	0-2
				1880	18900	20.77	21.5	0-2
				1905	19150	21.13	21.5	0-2

FDD Band 2 (Full Power)								
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	22.35	23.5	0
				1880	18900	22.85	23.5	0
				1907.5	19175	22.56	23.5	0
			12	1852.5	18625	22.98	23.5	0
				1880	18900	22.99	23.5	0
				1907.5	19175	23.47	23.5	0
			24	1852.5	18625	22.46	23.5	0
				1880	18900	22.65	23.5	0
				1907.5	19175	22.72	23.5	0
		12 RB	0	1852.5	18625	21.79	22.5	0-1
				1880	18900	21.92	22.5	0-1
				1907.5	19175	22.09	22.5	0-1
			6	1852.5	18625	21.89	22.5	0-1
				1880	18900	21.87	22.5	0-1
				1907.5	19175	22.13	22.5	0-1
			13	1852.5	18625	21.88	22.5	0-1
				1880	18900	21.99	22.5	0-1
				1907.5	19175	22.01	22.5	0-1
		25RB		1852.5	18625	21.91	22.5	0-1
				1880	18900	21.85	22.5	0-1
				1907.5	19175	22.04	22.5	0-1
	16-QAM	1 RB	0	1852.5	18625	21.44	22.5	0-1
				1880	18900	21.87	22.5	0-1
				1907.5	19175	21.34	22.5	0-1
			12	1852.5	18625	21.86	22.5	0-1
				1880	18900	21.45	22.5	0-1
				1907.5	19175	22.31	22.5	0-1
			24	1852.5	18625	21.50	22.5	0-1
				1880	18900	21.56	22.5	0-1
				1907.5	19175	21.94	22.5	0-1
		12 RB	0	1852.5	18625	21.11	21.5	0-2
				1880	18900	20.91	21.5	0-2
				1907.5	19175	21.06	21.5	0-2
			6	1852.5	18625	21.00	21.5	0-2
				1880	18900	20.92	21.5	0-2
				1907.5	19175	21.17	21.5	0-2
			13	1852.5	18625	21.08	21.5	0-2
				1880	18900	20.99	21.5	0-2
				1907.5	19175	21.18	21.5	0-2
		25RB		1852.5	18625	20.93	21.5	0-2
				1880	18900	21.04	21.5	0-2
				1907.5	19175	21.19	21.5	0-2

FDD Band 2 (Full Power)								
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	22.64	23.5	0
				1880	18900	22.78	23.5	0
				1908.5	19185	22.68	23.5	0
			7	1851.5	18615	23.00	23.5	0
				1880	18900	23.03	23.5	0
				1908.5	19185	23.07	23.5	0
			14	1851.5	18615	22.81	23.5	0
				1880	18900	22.73	23.5	0
				1908.5	19185	22.77	23.5	0
		8 RB	0	1851.5	18615	21.74	22.5	0-1
				1880	18900	22.05	22.5	0-1
				1908.5	19185	22.25	22.5	0-1
			4	1851.5	18615	21.79	22.5	0-1
				1880	18900	21.87	22.5	0-1
				1908.5	19185	22.05	22.5	0-1
			7	1851.5	18615	21.74	22.5	0-1
				1880	18900	21.87	22.5	0-1
				1908.5	19185	22.09	22.5	0-1
		15RB		1851.5	18615	21.85	22.5	0-1
				1880	18900	21.92	22.5	0-1
				1908.5	19185	22.04	22.5	0-1
	16-QAM	1 RB	0	1851.5	18615	21.56	22.5	0-1
				1880	18900	21.63	22.5	0-1
				1908.5	19185	21.71	22.5	0-1
			7	1851.5	18615	21.80	22.5	0-1
				1880	18900	21.84	22.5	0-1
				1908.5	19185	21.66	22.5	0-1
			14	1851.5	18615	21.42	22.5	0-1
				1880	18900	21.58	22.5	0-1
				1908.5	19185	22.14	22.5	0-1
		8 RB	0	1851.5	18615	20.98	21.5	0-2
				1880	18900	21.07	21.5	0-2
				1908.5	19185	21.07	21.5	0-2
			4	1851.5	18615	21.03	21.5	0-2
				1880	18900	20.92	21.5	0-2
				1908.5	19185	21.18	21.5	0-2
			7	1851.5	18615	20.83	21.5	0-2
				1880	18900	20.81	21.5	0-2
				1908.5	19185	21.16	21.5	0-2
		15RB		1851.5	18615	20.75	21.5	0-2
				1880	18900	21.13	21.5	0-2
				1908.5	19185	21.07	21.5	0-2

FDD Band 2 (Full Power)								
BW(Mhz)	Modulation	RB Size	RB Offset	Frequency (MHz)	Channel	Conducted power (dBm)	Target Power + Max. Tolerance (dBm)	MPR Allowed per 3GPP(dB)
1.4	QPSK	1 RB	0	1850.7	18607	22.56	23.5	0
				1880	18900	22.86	23.5	0
				1909.3	19193	22.88	23.5	0
			2	1850.7	18607	23.06	23.5	0
				1880	18900	22.86	23.5	0
				1909.3	19193	22.91	23.5	0
			5	1850.7	18607	22.65	23.5	0
				1880	18900	22.90	23.5	0
				1909.3	19193	22.83	23.5	0
		3 RB	0	1850.7	18607	22.75	23.5	0
				1880	18900	22.84	23.5	0
				1909.3	19193	23.25	23.5	0
			2	1850.7	18607	22.91	23.5	0
				1880	18900	23.15	23.5	0
				1909.3	19193	23.14	23.5	0
			3	1850.7	18607	22.86	23.5	0
				1880	18900	23.07	23.5	0
				1909.3	19193	23.18	23.5	0
		6RB		1850.7	18607	21.95	22.5	0-1
				1880	18900	21.73	22.5	0-1
				1909.3	19193	22.07	22.5	0-1
	16-QAM	1 RB	0	1850.7	18607	21.55	22.5	0-1
				1880	18900	21.42	22.5	0-1
				1909.3	19193	21.69	22.5	0-1
			2	1850.7	18607	22.01	22.5	0-1
				1880	18900	22.47	22.5	0-1
				1909.3	19193	22.10	22.5	0-1
			5	1850.7	18607	21.81	22.5	0-1
				1880	18900	21.68	22.5	0-1
				1909.3	19193	22.11	22.5	0-1
		3 RB	0	1850.7	18607	21.82	22.5	0-1
				1880	18900	22.15	22.5	0-1
				1909.3	19193	22.05	22.5	0-1
			2	1850.7	18607	22.34	22.5	0-1
				1880	18900	22.03	22.5	0-1
				1909.3	19193	22.09	22.5	0-1
			3	1850.7	18607	22.31	22.5	0-1
				1880	18900	22.16	22.5	0-1
				1909.3	19193	22.08	22.5	0-1
		6RB		1850.7	18607	20.85	21.5	0-2
				1880	18900	20.93	21.5	0-2
				1909.3	19193	20.85	21.5	0-2

FDD Band 2 (Reduced Power)								
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	15.06	15.5	0
				1880	18900	15.26	15.5	0
				1900	19100	14.92	15.5	0
			50	1860	18700	15.09	15.5	0
				1880	18900	15.09	15.5	0
				1900	19100	15.26	15.5	0
			99	1860	18700	15.02	15.5	0
				1880	18900	14.76	15.5	0
				1900	19100	14.98	15.5	0
		50 RB	0	1860	18700	14.29	15.5	0
				1880	18900	14.42	15.5	0
				1900	19100	14.15	15.5	0
			25	1860	18700	14.45	15.5	0
				1880	18900	14.18	15.5	0
				1900	19100	14.09	15.5	0
			50	1860	18700	14.77	15.5	0
				1880	18900	14.00	15.5	0
				1900	19100	14.09	15.5	0
		100RB		1860	18700	14.49	15.5	0
				1880	18900	14.03	15.5	0
				1900	19100	14.04	15.5	0
	16-QAM	1 RB	0	1860	18700	14.45	15.5	0
				1880	18900	14.36	15.5	0
				1900	19100	14.17	15.5	0
			50	1860	18700	14.94	15.5	0
				1880	18900	14.62	15.5	0
				1900	19100	13.93	15.5	0
			99	1860	18700	14.55	15.5	0
				1880	18900	13.78	15.5	0
				1900	19100	13.76	15.5	0
		50 RB	0	1860	18700	13.36	15.5	0
				1880	18900	13.44	15.5	0
				1900	19100	13.55	15.5	0
			25	1860	18700	13.46	15.5	0
				1880	18900	13.55	15.5	0
				1900	19100	13.92	15.5	0
			50	1860	18700	13.78	15.5	0
				1880	18900	13.58	15.5	0
				1900	19100	13.54	15.5	0
		100RB		1860	18700	13.52	15.5	0
				1880	18900	13.04	15.5	0
				1900	19100	13.15	15.5	0

FDD Band 2 (Reduced Power)								
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	14.76	15.5	0
				1880	18900	15.09	15.5	0
				1902.5	19125	15.07	15.5	0
			36	1857.5	18675	14.90	15.5	0
				1880	18900	15.06	15.5	0
				1902.5	19125	15.01	15.5	0
			74	1857.5	18675	15.06	15.5	0
				1880	18900	15.12	15.5	0
				1902.5	19125	15.09	15.5	0
		36 RB	0	1857.5	18675	14.26	15.5	0
				1880	18900	14.39	15.5	0
				1902.5	19125	14.02	15.5	0
			18	1857.5	18675	14.17	15.5	0
				1880	18900	14.13	15.5	0
				1902.5	19125	13.89	15.5	0
			37	1857.5	18675	14.24	15.5	0
				1880	18900	14.05	15.5	0
				1902.5	19125	14.45	15.5	0
		75RB		1857.5	18675	14.25	15.5	0
				1880	18900	14.04	15.5	0
				1902.5	19125	13.96	15.5	0
	16-QAM	1 RB	0	1857.5	18675	14.37	15.5	0
				1880	18900	14.52	15.5	0
				1902.5	19125	13.84	15.5	0
			36	1857.5	18675	14.27	15.5	0
				1880	18900	14.20	15.5	0
				1902.5	19125	14.12	15.5	0
			74	1857.5	18675	14.87	15.5	0
				1880	18900	14.09	15.5	0
				1902.5	19125	14.19	15.5	0
		36 RB	0	1857.5	18675	13.27	15.5	0
				1880	18900	13.45	15.5	0
				1902.5	19125	11.64	15.5	0
			18	1857.5	18675	13.23	15.5	0
				1880	18900	13.16	15.5	0
				1902.5	19125	11.68	15.5	0
			37	1857.5	18675	13.29	15.5	0
				1880	18900	13.11	15.5	0
				1902.5	19125	12.39	15.5	0
		75RB		1857.5	18675	13.28	15.5	0
				1880	18900	13.05	15.5	0
				1902.5	19125	12.09	15.5	0

FDD Band 2 (Reduced Power)								
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	15.29	15.5	0
				1880	18900	14.79	15.5	0
				1905	19150	14.87	15.5	0
			25	1855	18650	15.06	15.5	0
				1880	18900	14.94	15.5	0
				1905	19150	15.21	15.5	0
			49	1855	18650	14.74	15.5	0
				1880	18900	14.98	15.5	0
				1905	19150	15.03	15.5	0
		25 RB	0	1855	18650	14.41	15.5	0
				1880	18900	14.14	15.5	0
				1905	19150	13.94	15.5	0
			12	1855	18650	14.30	15.5	0
				1880	18900	14.11	15.5	0
				1905	19150	13.75	15.5	0
			25	1855	18650	14.09	15.5	0
				1880	18900	14.13	15.5	0
				1905	19150	13.82	15.5	0
		50RB		1855	18650	14.30	15.5	0
				1880	18900	14.06	15.5	0
				1905	19150	13.97	15.5	0
	16-QAM	1 RB	0	1855	18650	14.78	15.5	0
				1880	18900	14.72	15.5	0
				1905	19150	13.58	15.5	0
			25	1855	18650	14.43	15.5	0
				1880	18900	14.11	15.5	0
				1905	19150	13.60	15.5	0
			49	1855	18650	14.35	15.5	0
				1880	18900	14.30	15.5	0
				1905	19150	13.99	15.5	0
		25 RB	0	1855	18650	13.45	15.5	0
				1880	18900	13.21	15.5	0
				1905	19150	11.80	15.5	0
			12	1855	18650	13.39	15.5	0
				1880	18900	13.21	15.5	0
				1905	19150	12.07	15.5	0
			25	1855	18650	13.07	15.5	0
				1880	18900	13.18	15.5	0
				1905	19150	12.86	15.5	0
		50RB		1855	18650	13.34	15.5	0
				1880	18900	13.06	15.5	0
				1905	19150	12.32	15.5	0

FDD Band 2 (Reduced Power)								
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	14.77	15.5	0
				1880	18900	14.96	15.5	0
				1907.5	19175	14.70	15.5	0
			12	1852.5	18625	14.93	15.5	0
				1880	18900	15.49	15.5	0
				1907.5	19175	15.25	15.5	0
			24	1852.5	18625	14.86	15.5	0
				1880	18900	14.61	15.5	0
				1907.5	19175	14.83	15.5	0
		12 RB	0	1852.5	18625	14.40	15.5	0
				1880	18900	14.17	15.5	0
				1907.5	19175	13.61	15.5	0
			6	1852.5	18625	14.34	15.5	0
				1880	18900	13.94	15.5	0
				1907.5	19175	13.84	15.5	0
			13	1852.5	18625	14.25	15.5	0
				1880	18900	13.98	15.5	0
				1907.5	19175	13.97	15.5	0
		25RB		1852.5	18625	14.38	15.5	0
				1880	18900	13.98	15.5	0
				1907.5	19175	13.85	15.5	0
	16-QAM	1 RB	0	1852.5	18625	14.60	15.5	0
				1880	18900	14.36	15.5	0
				1907.5	19175	13.37	15.5	0
			12	1852.5	18625	15.01	15.5	0
				1880	18900	14.48	15.5	0
				1907.5	19175	14.39	15.5	0
			24	1852.5	18625	14.36	15.5	0
				1880	18900	14.30	15.5	0
				1907.5	19175	14.30	15.5	0
		12 RB	0	1852.5	18625	13.39	15.5	0
				1880	18900	13.27	15.5	0
				1907.5	19175	12.62	15.5	0
			6	1852.5	18625	13.40	15.5	0
				1880	18900	13.05	15.5	0
				1907.5	19175	12.86	15.5	0
			13	1852.5	18625	13.24	15.5	0
				1880	18900	12.96	15.5	0
				1907.5	19175	13.09	15.5	0
		25RB		1852.5	18625	13.41	15.5	0
				1880	18900	12.97	15.5	0
				1907.5	19175	12.96	15.5	0

FDD Band 2 (Reduced Power)								
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	14.70	15.5	0
				1880	18900	14.74	15.5	0
				1908.5	19185	14.85	15.5	0
			7	1851.5	18615	14.65	15.5	0
				1880	18900	14.89	15.5	0
				1908.5	19185	14.82	15.5	0
			14	1851.5	18615	14.63	15.5	0
				1880	18900	14.66	15.5	0
				1908.5	19185	14.76	15.5	0
		8 RB	0	1851.5	18615	14.32	15.5	0
				1880	18900	13.69	15.5	0
				1908.5	19185	13.92	15.5	0
			4	1851.5	18615	14.26	15.5	0
				1880	18900	13.78	15.5	0
				1908.5	19185	14.06	15.5	0
			7	1851.5	18615	14.27	15.5	0
				1880	18900	13.69	15.5	0
				1908.5	19185	14.00	15.5	0
		15RB		1851.5	18615	14.30	15.5	0
				1880	18900	13.70	15.5	0
				1908.5	19185	13.96	15.5	0
	16-QAM	1 RB	0	1851.5	18615	14.98	15.5	0
				1880	18900	14.45	15.5	0
				1908.5	19185	14.36	15.5	0
			7	1851.5	18615	14.54	15.5	0
				1880	18900	13.93	15.5	0
				1908.5	19185	14.14	15.5	0
			14	1851.5	18615	14.96	15.5	0
				1880	18900	14.61	15.5	0
				1908.5	19185	14.47	15.5	0
		8 RB	0	1851.5	18615	13.40	15.5	0
				1880	18900	12.80	15.5	0
				1908.5	19185	13.02	15.5	0
			4	1851.5	18615	13.44	15.5	0
				1880	18900	12.82	15.5	0
				1908.5	19185	13.09	15.5	0
			7	1851.5	18615	13.35	15.5	0
				1880	18900	12.84	15.5	0
				1908.5	19185	13.04	15.5	0
		15RB		1851.5	18615	13.35	15.5	0
				1880	18900	12.79	15.5	0
				1908.5	19185	13.02	15.5	0

FDD Band 2 (Reduced Power)								
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	14.56	15.5	0
				1880	18900	14.70	15.5	0
				1909.3	19193	14.83	15.5	0
			2	1850.7	18607	14.78	15.5	0
				1880	18900	14.85	15.5	0
				1909.3	19193	14.83	15.5	0
			5	1850.7	18607	14.65	15.5	0
				1880	18900	14.51	15.5	0
				1909.3	19193	14.79	15.5	0
		3 RB	0	1850.7	18607	14.67	15.5	0
				1880	18900	14.81	15.5	0
				1909.3	19193	14.90	15.5	0
			2	1850.7	18607	14.74	15.5	0
				1880	18900	14.77	15.5	0
				1909.3	19193	14.91	15.5	0
			3	1850.7	18607	14.79	15.5	0
				1880	18900	14.81	15.5	0
				1909.3	19193	14.95	15.5	0
		6RB		1850.7	18607	14.23	15.5	0
				1880	18900	13.68	15.5	0
				1909.3	19193	13.95	15.5	0
	16-QAM	1 RB	0	1850.7	18607	14.37	15.5	0
				1880	18900	14.07	15.5	0
				1909.3	19193	14.24	15.5	0
			2	1850.7	18607	14.98	15.5	0
				1880	18900	14.29	15.5	0
				1909.3	19193	14.46	15.5	0
			5	1850.7	18607	14.38	15.5	0
				1880	18900	13.86	15.5	0
				1909.3	19193	13.91	15.5	0
		3 RB	0	1850.7	18607	14.25	15.5	0
				1880	18900	13.62	15.5	0
				1909.3	19193	13.97	15.5	0
			2	1850.7	18607	14.55	15.5	0
				1880	18900	13.68	15.5	0
				1909.3	19193	14.04	15.5	0
			3	1850.7	18607	14.24	15.5	0
				1880	18900	13.77	15.5	0
				1909.3	19193	13.99	15.5	0
		6RB		1850.7	18607	13.29	15.5	0
				1880	18900	12.80	15.5	0
				1909.3	19193	13.21	15.5	0

FDD Band 4 (Full Power)								
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	23.63	24	0
				1732.5	20175	23.69	24	0
				1745	20300	23.53	24	0
			50	1720	20050	23.91	24	0
				1732.5	20175	23.99	24	0
				1745	20300	23.95	24	0
			99	1720	20050	23.35	24	0
				1732.5	20175	23.74	24	0
				1745	20300	23.45	24	0
		50 RB	0	1720	20050	22.80	23	0-1
				1732.5	20175	22.75	23	0-1
				1745	20300	23.00	23	0-1
			25	1720	20050	22.78	23	0-1
				1732.5	20175	22.72	23	0-1
				1745	20300	22.94	23	0-1
			50	1720	20050	22.83	23	0-1
				1732.5	20175	22.72	23	0-1
				1745	20300	22.92	23	0-1
		100RB		1720	20050	22.82	23	0-1
				1732.5	20175	22.72	23	0-1
				1745	20300	22.95	23	0-1
	16-QAM	1 RB	0	1720	20050	22.37	23	0-1
				1732.5	20175	22.55	23	0-1
				1745	20300	22.68	23	0-1
			50	1720	20050	22.57	23	0-1
				1732.5	20175	22.52	23	0-1
				1745	20300	22.68	23	0-1
			99	1720	20050	22.32	23	0-1
				1732.5	20175	22.77	23	0-1
				1745	20300	22.16	23	0-1
		50 RB	0	1720	20050	21.86	22	0-2
				1732.5	20175	21.60	22	0-2
				1745	20300	21.88	22	0-2
			25	1720	20050	21.92	22	0-2
				1732.5	20175	21.57	22	0-2
				1745	20300	22.00	22	0-2
			50	1720	20050	21.74	22	0-2
				1732.5	20175	21.78	22	0-2
				1745	20300	21.82	22	0-2
		100RB		1720	20050	21.85	22	0-2
				1732.5	20175	21.60	22	0-2
				1745	20300	21.98	22	0-2

FDD Band 4 (Full Power)								
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	23.70	24	0
				1732.5	20175	23.57	24	0
				1747.5	20325	23.95	24	0
			36	1717.5	20025	23.95	24	0
				1732.5	20175	23.62	24	0
				1747.5	20325	23.72	24	0
			74	1717.5	20025	23.52	24	0
				1732.5	20175	23.90	24	0
				1747.5	20325	23.86	24	0
		36 RB	0	1717.5	20025	22.75	23	0-1
				1732.5	20175	22.80	23	0-1
				1747.5	20325	23.00	23	0-1
			18	1717.5	20025	22.75	23	0-1
				1732.5	20175	22.72	23	0-1
				1747.5	20325	22.88	23	0-1
			37	1717.5	20025	22.80	23	0-1
				1732.5	20175	22.77	23	0-1
				1747.5	20325	22.90	23	0-1
		75RB		1717.5	20025	22.81	23	0-1
				1732.5	20175	22.73	23	0-1
				1747.5	20325	22.96	23	0-1
	16-QAM	1 RB	0	1717.5	20025	22.24	23	0-1
				1732.5	20175	22.52	23	0-1
				1747.5	20325	22.61	23	0-1
			36	1717.5	20025	22.28	23	0-1
				1732.5	20175	22.56	23	0-1
				1747.5	20325	22.49	23	0-1
			74	1717.5	20025	22.57	23	0-1
				1732.5	20175	22.63	23	0-1
				1747.5	20325	22.54	23	0-1
		36 RB	0	1717.5	20025	21.79	22	0-2
				1732.5	20175	21.63	22	0-2
				1747.5	20325	21.77	22	0-2
			18	1717.5	20025	21.71	22	0-2
				1732.5	20175	21.71	22	0-2
				1747.5	20325	21.88	22	0-2
			37	1717.5	20025	21.75	22	0-2
				1732.5	20175	21.78	22	0-2
				1747.5	20325	21.83	22	0-2
		75RB		1717.5	20025	21.70	22	0-2
				1732.5	20175	21.75	22	0-2
				1747.5	20325	21.91	22	0-2

FDD Band 4 (Full Power)								
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	23.83	24	0
				1732.5	20175	23.76	24	0
				1750	20350	23.86	24	0
			25	1715	20000	23.87	24	0
				1732.5	20175	23.61	24	0
				1750	20350	23.55	24	0
			49	1715	20000	23.56	24	0
				1732.5	20175	23.36	24	0
				1750	20350	23.44	24	0
		25 RB	0	1715	20000	22.77	23	0-1
				1732.5	20175	22.66	23	0-1
				1750	20350	22.87	23	0-1
			12	1715	20000	22.82	23	0-1
				1732.5	20175	22.74	23	0-1
				1750	20350	22.96	23	0-1
			25	1715	20000	22.83	23	0-1
				1732.5	20175	22.73	23	0-1
				1750	20350	22.91	23	0-1
		50RB		1715	20000	22.77	23	0-1
				1732.5	20175	22.72	23	0-1
				1750	20350	22.92	23	0-1
	16-QAM	1 RB	0	1715	20000	22.45	23	0-1
				1732.5	20175	22.66	23	0-1
				1750	20350	22.46	23	0-1
			25	1715	20000	22.64	23	0-1
				1732.5	20175	22.74	23	0-1
				1750	20350	22.71	23	0-1
			49	1715	20000	22.26	23	0-1
				1732.5	20175	22.53	23	0-1
				1750	20350	22.92	23	0-1
		25 RB	0	1715	20000	21.85	22	0-2
				1732.5	20175	21.79	22	0-2
				1750	20350	21.93	22	0-2
			12	1715	20000	21.73	22	0-2
				1732.5	20175	21.60	22	0-2
				1750	20350	22.00	22	0-2
			25	1715	20000	21.71	22	0-2
				1732.5	20175	21.45	22	0-2
				1750	20350	21.93	22	0-2
		50RB		1715	20000	21.72	22	0-2
				1732.5	20175	21.56	22	0-2
				1750	20350	21.85	22	0-2

FDD Band 4 (Full Power)								
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	23.43	24	0
				1732.5	20175	23.32	24	0
				1752.5	20375	23.55	24	0
			12	1712.5	19975	23.70	24	0
				1732.5	20175	23.60	24	0
				1752.5	20375	23.84	24	0
			24	1712.5	19975	23.60	24	0
				1732.5	20175	23.72	24	0
				1752.5	20375	23.47	24	0
		12 RB	0	1712.5	19975	22.77	23	0-1
				1732.5	20175	22.73	23	0-1
				1752.5	20375	22.93	23	0-1
			6	1712.5	19975	22.69	23	0-1
				1732.5	20175	22.79	23	0-1
				1752.5	20375	23.00	23	0-1
			13	1712.5	19975	22.69	23	0-1
				1732.5	20175	22.66	23	0-1
				1752.5	20375	22.83	23	0-1
		25RB		1712.5	19975	22.74	23	0-1
				1732.5	20175	22.72	23	0-1
				1752.5	20375	22.91	23	0-1
	16-QAM	1 RB	0	1712.5	19975	22.26	23	0-1
				1732.5	20175	22.30	23	0-1
				1752.5	20375	22.93	23	0-1
			12	1712.5	19975	22.59	23	0-1
				1732.5	20175	22.63	23	0-1
				1752.5	20375	22.84	23	0-1
			24	1712.5	19975	22.50	23	0-1
				1732.5	20175	22.58	23	0-1
				1752.5	20375	22.71	23	0-1
		12 RB	0	1712.5	19975	21.70	22	0-2
				1732.5	20175	21.74	22	0-2
				1752.5	20375	21.63	22	0-2
			6	1712.5	19975	21.71	22	0-2
				1732.5	20175	21.75	22	0-2
				1752.5	20375	21.68	22	0-2
			13	1712.5	19975	21.68	22	0-2
				1732.5	20175	21.78	22	0-2
				1752.5	20375	21.77	22	0-2
		25RB		1712.5	19975	21.69	22	0-2
				1732.5	20175	21.70	22	0-2
				1752.5	20375	21.89	22	0-2

FDD Band 4 (Full Power)								
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	23.90	24	0
				1732.5	20175	23.80	24	0
				1753.5	20385	23.60	24	0
			7	1711.5	19965	23.99	24	0
				1732.5	20175	23.88	24	0
				1753.5	20385	23.73	24	0
			14	1711.5	19965	23.50	24	0
				1732.5	20175	23.50	24	0
				1753.5	20385	23.38	24	0
		8 RB	0	1711.5	19965	22.70	23	0-1
				1732.5	20175	22.84	23	0-1
				1753.5	20385	22.71	23	0-1
			4	1711.5	19965	22.73	23	0-1
				1732.5	20175	22.79	23	0-1
				1753.5	20385	22.63	23	0-1
			7	1711.5	19965	22.63	23	0-1
				1732.5	20175	22.69	23	0-1
				1753.5	20385	22.80	23	0-1
		15RB		1711.5	19965	22.74	23	0-1
				1732.5	20175	22.71	23	0-1
				1753.5	20385	22.66	23	0-1
	16-QAM	1 RB	0	1711.5	19965	22.58	23	0-1
				1732.5	20175	22.92	23	0-1
				1753.5	20385	22.77	23	0-1
			7	1711.5	19965	22.51	23	0-1
				1732.5	20175	22.69	23	0-1
				1753.5	20385	22.31	23	0-1
			14	1711.5	19965	22.14	23	0-1
				1732.5	20175	22.55	23	0-1
				1753.5	20385	22.29	23	0-1
		8 RB	0	1711.5	19965	21.67	22	0-2
				1732.5	20175	21.34	22	0-2
				1753.5	20385	21.76	22	0-2
			4	1711.5	19965	21.72	22	0-2
				1732.5	20175	21.55	22	0-2
				1753.5	20385	21.80	22	0-2
			7	1711.5	19965	21.79	22	0-2
				1732.5	20175	21.45	22	0-2
				1753.5	20385	21.54	22	0-2
		15RB		1711.5	19965	21.49	22	0-2
				1732.5	20175	21.50	22	0-2
				1753.5	20385	21.63	22	0-2

FDD Band 4 (Full Power)								
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	23.63	24	0
				1732.5	20175	23.36	24	0
				1754.3	20393	23.66	24	0
			2	1710.7	19957	23.75	24	0
				1732.5	20175	23.46	24	0
				1754.3	20393	23.71	24	0
			5	1710.7	19957	23.60	24	0
				1732.5	20175	23.72	24	0
				1754.3	20393	23.72	24	0
		3 RB	0	1710.7	19957	23.60	24	0
				1732.5	20175	23.73	24	0
				1754.3	20393	23.78	24	0
			2	1710.7	19957	23.71	24	0
				1732.5	20175	23.85	24	0
				1754.3	20393	23.73	24	0
			3	1710.7	19957	23.74	24	0
				1732.5	20175	23.76	24	0
				1754.3	20393	23.71	24	0
		6RB		1710.7	19957	22.72	23	0-1
				1732.5	20175	22.81	23	0-1
				1754.3	20393	22.75	23	0-1
	16-QAM	1 RB	0	1710.7	19957	22.37	23	0-1
				1732.5	20175	22.81	23	0-1
				1754.3	20393	22.19	23	0-1
			2	1710.7	19957	22.30	23	0-1
				1732.5	20175	22.76	23	0-1
				1754.3	20393	22.88	23	0-1
			5	1710.7	19957	22.35	23	0-1
				1732.5	20175	22.64	23	0-1
				1754.3	20393	22.26	23	0-1
		3 RB	0	1710.7	19957	22.77	23	0-1
				1732.5	20175	22.36	23	0-1
				1754.3	20393	22.84	23	0-1
			2	1710.7	19957	22.82	23	0-1
				1732.5	20175	22.50	23	0-1
				1754.3	20393	22.89	23	0-1
			3	1710.7	19957	22.83	23	0-1
				1732.5	20175	22.60	23	0-1
				1754.3	20393	22.90	23	0-1
		6RB		1710.7	19957	21.63	22	0-2
				1732.5	20175	21.70	22	0-2
				1754.3	20393	21.44	22	0-2

FDD Band 4 (Reduced Power)								
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	15.04	15.5	0
				1732.5	20175	14.56	15.5	0
				1745	20300	14.57	15.5	0
			50	1720	20050	15.45	15.5	0
				1732.5	20175	15.19	15.5	0
				1745	20300	15.50	15.5	0
			99	1720	20050	14.75	15.5	0
				1732.5	20175	14.72	15.5	0
				1745	20300	14.52	15.5	0
		50 RB	0	1720	20050	15.19	15.5	0
				1732.5	20175	13.81	15.5	0
				1745	20300	14.53	15.5	0
			25	1720	20050	15.07	15.5	0
				1732.5	20175	13.84	15.5	0
				1745	20300	14.80	15.5	0
			50	1720	20050	14.26	15.5	0
				1732.5	20175	14.22	15.5	0
				1745	20300	14.49	15.5	0
		100RB		1720	20050	14.82	15.5	0
				1732.5	20175	13.97	15.5	0
				1745	20300	14.42	15.5	0
	16-QAM	1 RB	0	1720	20050	15.07	15.5	0
				1732.5	20175	14.04	15.5	0
				1745	20300	14.23	15.5	0
			50	1720	20050	15.35	15.5	0
				1732.5	20175	14.09	15.5	0
				1745	20300	14.90	15.5	0
			99	1720	20050	13.67	15.5	0
				1732.5	20175	14.32	15.5	0
				1745	20300	13.54	15.5	0
		50 RB	0	1720	20050	14.22	15.5	0
				1732.5	20175	13.80	15.5	0
				1745	20300	13.53	15.5	0
			25	1720	20050	14.07	15.5	0
				1732.5	20175	13.84	15.5	0
				1745	20300	13.87	15.5	0
			50	1720	20050	13.54	15.5	0
				1732.5	20175	13.56	15.5	0
				1745	20300	13.57	15.5	0
		100RB		1720	20050	13.83	15.5	0
				1732.5	20175	13.51	15.5	0
				1745	20300	13.52	15.5	0

FDD Band 4 (Reduced Power)								
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	14.87	15.5	0
				1732.5	20175	14.87	15.5	0
				1747.5	20325	14.87	15.5	0
			36	1717.5	20025	15.45	15.5	0
				1732.5	20175	14.81	15.5	0
				1747.5	20325	15.46	15.5	0
			74	1717.5	20025	14.74	15.5	0
				1732.5	20175	14.83	15.5	0
				1747.5	20325	14.79	15.5	0
		36 RB	0	1717.5	20025	15.21	15.5	0
				1732.5	20175	13.64	15.5	0
				1747.5	20325	14.77	15.5	0
			18	1717.5	20025	15.38	15.5	0
				1732.5	20175	13.81	15.5	0
				1747.5	20325	14.86	15.5	0
			37	1717.5	20025	14.90	15.5	0
				1732.5	20175	14.08	15.5	0
				1747.5	20325	14.24	15.5	0
		75RB		1717.5	20025	15.05	15.5	0
				1732.5	20175	13.84	15.5	0
				1747.5	20325	14.54	15.5	0
	16-QAM	1 RB	0	1717.5	20025	14.74	15.5	0
				1732.5	20175	14.23	15.5	0
				1747.5	20325	14.76	15.5	0
			36	1717.5	20025	15.38	15.5	0
				1732.5	20175	14.26	15.5	0
				1747.5	20325	15.41	15.5	0
			74	1717.5	20025	14.46	15.5	0
				1732.5	20175	14.46	15.5	0
				1747.5	20325	14.41	15.5	0
		36 RB	0	1717.5	20025	14.20	15.5	0
				1732.5	20175	13.59	15.5	0
				1747.5	20325	13.76	15.5	0
			18	1717.5	20025	14.40	15.5	0
				1732.5	20175	13.83	15.5	0
				1747.5	20325	13.90	15.5	0
			37	1717.5	20025	13.96	15.5	0
				1732.5	20175	13.57	15.5	0
				1747.5	20325	13.62	15.5	0
		75RB		1717.5	20025	14.09	15.5	0
				1732.5	20175	13.68	15.5	0
				1747.5	20325	13.59	15.5	0

FDD Band 4 (Reduced Power)								
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	15.08	15.5	0
				1732.5	20175	14.72	15.5	0
				1750	20350	15.12	15.5	0
			25	1715	20000	15.49	15.5	0
				1732.5	20175	14.70	15.5	0
				1750	20350	15.07	15.5	0
			49	1715	20000	15.49	15.5	0
				1732.5	20175	14.54	15.5	0
				1750	20350	14.50	15.5	0
		25 RB	0	1715	20000	15.24	15.5	0
				1732.5	20175	13.65	15.5	0
				1750	20350	14.84	15.5	0
			12	1715	20000	15.44	15.5	0
				1732.5	20175	13.79	15.5	0
				1750	20350	14.55	15.5	0
			25	1715	20000	15.37	15.5	0
				1732.5	20175	14.01	15.5	0
				1750	20350	13.93	15.5	0
		50RB		1715	20000	15.27	15.5	0
				1732.5	20175	13.88	15.5	0
				1750	20350	14.41	15.5	0
	16-QAM	1 RB	0	1715	20000	15.42	15.5	0
				1732.5	20175	13.86	15.5	0
				1750	20350	14.93	15.5	0
			25	1715	20000	14.31	15.5	0
				1732.5	20175	13.93	15.5	0
				1750	20350	15.00	15.5	0
			49	1715	20000	15.49	15.5	0
				1732.5	20175	14.07	15.5	0
				1750	20350	13.89	15.5	0
		25 RB	0	1715	20000	14.29	15.5	0
				1732.5	20175	13.77	15.5	0
				1750	20350	13.84	15.5	0
			12	1715	20000	14.47	15.5	0
				1732.5	20175	13.83	15.5	0
				1750	20350	13.52	15.5	0
			25	1715	20000	14.46	15.5	0
				1732.5	20175	13.97	15.5	0
				1750	20350	13.97	15.5	0
		50RB		1715	20000	14.33	15.5	0
				1732.5	20175	13.88	15.5	0
				1750	20350	13.95	15.5	0

FDD Band 4 (Reduced Power)								
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	15.10	15.5	0
				1732.5	20175	14.40	15.5	0
				1752.5	20375	14.65	15.5	0
			12	1712.5	19975	15.36	15.5	0
				1732.5	20175	14.76	15.5	0
				1752.5	20375	14.98	15.5	0
			24	1712.5	19975	15.47	15.5	0
				1732.5	20175	14.57	15.5	0
				1752.5	20375	14.45	15.5	0
		12 RB	0	1712.5	19975	15.01	15.5	0
				1732.5	20175	13.55	15.5	0
				1752.5	20375	14.20	15.5	0
			6	1712.5	19975	15.23	15.5	0
				1732.5	20175	13.71	15.5	0
				1752.5	20375	13.94	15.5	0
			13	1712.5	19975	15.34	15.5	0
				1732.5	20175	13.90	15.5	0
				1752.5	20375	13.60	15.5	0
		25RB		1712.5	19975	15.19	15.5	0
				1732.5	20175	13.64	15.5	0
				1752.5	20375	13.80	15.5	0
	16-QAM	1 RB	0	1712.5	19975	15.13	15.5	0
				1732.5	20175	13.99	15.5	0
				1752.5	20375	14.29	15.5	0
			12	1712.5	19975	14.73	15.5	0
				1732.5	20175	14.06	15.5	0
				1752.5	20375	13.97	15.5	0
			24	1712.5	19975	15.45	15.5	0
				1732.5	20175	14.38	15.5	0
				1752.5	20375	13.82	15.5	0
		12 RB	0	1712.5	19975	14.09	15.5	0
				1732.5	20175	13.62	15.5	0
				1752.5	20375	13.63	15.5	0
			6	1712.5	19975	14.24	15.5	0
				1732.5	20175	13.71	15.5	0
				1752.5	20375	13.89	15.5	0
			13	1712.5	19975	14.34	15.5	0
				1732.5	20175	13.97	15.5	0
				1752.5	20375	13.66	15.5	0
		25RB		1712.5	19975	14.22	15.5	0
				1732.5	20175	13.75	15.5	0
				1752.5	20375	13.61	15.5	0

FDD Band 4 (Reduced Power)								
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	15.33	15.5	0
				1732.5	20175	14.56	15.5	0
				1753.5	20385	14.62	15.5	0
			7	1711.5	19965	15.26	15.5	0
				1732.5	20175	14.73	15.5	0
				1753.5	20385	14.62	15.5	0
			14	1711.5	19965	14.77	15.5	0
				1732.5	20175	14.69	15.5	0
				1753.5	20385	14.74	15.5	0
		8 RB	0	1711.5	19965	15.07	15.5	0
				1732.5	20175	13.64	15.5	0
				1753.5	20385	13.75	15.5	0
			4	1711.5	19965	15.13	15.5	0
				1732.5	20175	13.70	15.5	0
				1753.5	20385	13.68	15.5	0
			7	1711.5	19965	15.13	15.5	0
				1732.5	20175	13.75	15.5	0
				1753.5	20385	13.55	15.5	0
		15RB		1711.5	19965	15.05	15.5	0
				1732.5	20175	13.73	15.5	0
				1753.5	20385	13.71	15.5	0
	16-QAM	1 RB	0	1711.5	19965	15.19	15.5	0
				1732.5	20175	13.85	15.5	0
				1753.5	20385	14.12	15.5	0
			7	1711.5	19965	15.33	15.5	0
				1732.5	20175	14.00	15.5	0
				1753.5	20385	13.89	15.5	0
			14	1711.5	19965	13.86	15.5	0
				1732.5	20175	14.17	15.5	0
				1753.5	20385	14.02	15.5	0
		8 RB	0	1711.5	19965	14.18	15.5	0
				1732.5	20175	13.74	15.5	0
				1753.5	20385	13.85	15.5	0
			4	1711.5	19965	14.21	15.5	0
				1732.5	20175	13.80	15.5	0
				1753.5	20385	13.87	15.5	0
			7	1711.5	19965	14.09	15.5	0
				1732.5	20175	13.85	15.5	0
				1753.5	20385	13.69	15.5	0
		15RB		1711.5	19965	14.12	15.5	0
				1732.5	20175	13.70	15.5	0
				1753.5	20385	13.80	15.5	0

FDD Band 4 (Reduced Power)								
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	15.08	15.5	0
				1732.5	20175	14.67	15.5	0
				1754.3	20393	14.67	15.5	0
			2	1710.7	19957	15.46	15.5	0
				1732.5	20175	14.69	15.5	0
				1754.3	20393	14.81	15.5	0
			5	1710.7	19957	15.38	15.5	0
				1732.5	20175	14.98	15.5	0
				1754.3	20393	14.66	15.5	0
		3 RB	0	1710.7	19957	15.38	15.5	0
				1732.5	20175	14.79	15.5	0
				1754.3	20393	14.97	15.5	0
			2	1710.7	19957	15.49	15.5	0
				1732.5	20175	14.94	15.5	0
				1754.3	20393	14.87	15.5	0
			3	1710.7	19957	15.48	15.5	0
				1732.5	20175	14.87	15.5	0
				1754.3	20393	14.76	15.5	0
		6RB		1710.7	19957	14.99	15.5	0
				1732.5	20175	13.62	15.5	0
				1754.3	20393	13.57	15.5	0
	16-QAM	1 RB	0	1710.7	19957	15.02	15.5	0
				1732.5	20175	13.52	15.5	0
				1754.3	20393	13.95	15.5	0
			2	1710.7	19957	15.45	15.5	0
				1732.5	20175	14.27	15.5	0
				1754.3	20393	13.79	15.5	0
			5	1710.7	19957	15.23	15.5	0
				1732.5	20175	13.88	15.5	0
				1754.3	20393	13.53	15.5	0
		3 RB	0	1710.7	19957	15.00	15.5	0
				1732.5	20175	13.75	15.5	0
				1754.3	20393	13.67	15.5	0
			2	1710.7	19957	15.10	15.5	0
				1732.5	20175	13.91	15.5	0
				1754.3	20393	13.67	15.5	0
			3	1710.7	19957	15.07	15.5	0
				1732.5	20175	13.87	15.5	0
				1754.3	20393	13.61	15.5	0
		6RB		1710.7	19957	13.94	15.5	0
				1732.5	20175	13.79	15.5	0
				1754.3	20393	13.82	15.5	0

FDD Band 7 (Full Power)								
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	22.30	24	0
				2535	21100	22.63	24	0
				2560	21350	22.69	24	0
			50	2510	20850	23.21	24	0
				2535	21100	23.01	24	0
				2560	21350	23.36	24	0
			99	2510	20850	23.23	24	0
				2535	21100	22.79	24	0
				2560	21350	23.05	24	0
		50 RB	0	2510	20850	21.94	23	0-1
				2535	21100	22.10	23	0-1
				2560	21350	22.07	23	0-1
			25	2510	20850	22.03	23	0-1
				2535	21100	22.11	23	0-1
				2560	21350	22.08	23	0-1
			50	2510	20850	22.04	23	0-1
				2535	21100	22.08	23	0-1
				2560	21350	22.23	23	0-1
		100RB		2510	20850	22.03	23	0-1
				2535	21100	22.11	23	0-1
				2560	21350	22.16	23	0-1
	16-QAM	1 RB	0	2510	20850	21.79	23	0-1
				2535	21100	21.35	23	0-1
				2560	21350	21.88	23	0-1
			50	2510	20850	21.97	23	0-1
				2535	21100	21.88	23	0-1
				2560	21350	22.06	23	0-1
			99	2510	20850	21.72	23	0-1
				2535	21100	22.20	23	0-1
				2560	21350	21.57	23	0-1
		50 RB	0	2510	20850	20.92	22	0-2
				2535	21100	21.09	22	0-2
				2560	21350	20.89	22	0-2
			25	2510	20850	21.03	22	0-2
				2535	21100	21.06	22	0-2
				2560	21350	21.23	22	0-2
			50	2510	20850	21.05	22	0-2
				2535	21100	21.19	22	0-2
				2560	21350	21.18	22	0-2
		100RB		2510	20850	21.04	22	0-2
				2535	21100	21.07	22	0-2
				2560	21350	21.09	22	0-2

FDD Band 7 (Full Power)								
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	22.81	24	0
				2535	21100	22.87	24	0
				2562.5	21375	22.74	24	0
			36	2507.5	20825	22.85	24	0
				2535	21100	23.02	24	0
				2562.5	21375	22.92	24	0
			74	2507.5	20825	23.06	24	0
				2535	21100	23.18	24	0
				2562.5	21375	23.24	24	0
		36 RB	0	2507.5	20825	21.94	23	0-1
				2535	21100	22.10	23	0-1
				2562.5	21375	22.22	23	0-1
			18	2507.5	20825	21.97	23	0-1
				2535	21100	22.08	23	0-1
				2562.5	21375	22.23	23	0-1
			37	2507.5	20825	22.11	23	0-1
				2535	21100	22.19	23	0-1
				2562.5	21375	22.16	23	0-1
		75RB		2507.5	20825	21.99	23	0-1
				2535	21100	22.12	23	0-1
				2562.5	21375	22.19	23	0-1
	16-QAM	1 RB	0	2507.5	20825	21.87	23	0-1
				2535	21100	21.68	23	0-1
				2562.5	21375	22.00	23	0-1
			36	2507.5	20825	22.00	23	0-1
				2535	21100	21.75	23	0-1
				2562.5	21375	22.05	23	0-1
			74	2507.5	20825	22.15	23	0-1
				2535	21100	22.13	23	0-1
				2562.5	21375	22.18	23	0-1
		36 RB	0	2507.5	20825	21.08	22	0-2
				2535	21100	21.06	22	0-2
				2562.5	21375	21.21	22	0-2
			18	2507.5	20825	20.92	22	0-2
				2535	21100	20.97	22	0-2
				2562.5	21375	21.05	22	0-2
			37	2507.5	20825	21.11	22	0-2
				2535	21100	21.07	22	0-2
				2562.5	21375	21.18	22	0-2
		75RB		2507.5	20825	21.04	22	0-2
				2535	21100	21.16	22	0-2
				2562.5	21375	21.14	22	0-2

FDD Band 7 (Full Power)								
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	22.74	24	0
				2535	21100	22.70	24	0
				2565	21400	22.88	24	0
			25	2505	20800	22.90	24	0
				2535	21100	22.99	24	0
				2565	21400	23.12	24	0
			49	2505	20800	22.89	24	0
				2535	21100	22.77	24	0
				2565	21400	22.94	24	0
		25 RB	0	2505	20800	21.98	23	0-1
				2535	21100	22.11	23	0-1
				2565	21400	22.20	23	0-1
			12	2505	20800	21.97	23	0-1
				2535	21100	22.12	23	0-1
				2565	21400	22.21	23	0-1
			25	2505	20800	21.98	23	0-1
				2535	21100	22.12	23	0-1
				2565	21400	22.15	23	0-1
		50RB		2505	20800	22.04	23	0-1
				2535	21100	22.09	23	0-1
				2565	21400	22.25	23	0-1
	16-QAM	1 RB	0	2505	20800	21.98	23	0-1
				2535	21100	21.88	23	0-1
				2565	21400	21.91	23	0-1
			25	2505	20800	21.91	23	0-1
				2535	21100	22.28	23	0-1
				2565	21400	21.83	23	0-1
			49	2505	20800	22.11	23	0-1
				2535	21100	22.16	23	0-1
				2565	21400	21.94	23	0-1
		25 RB	0	2505	20800	21.00	22	0-2
				2535	21100	21.24	22	0-2
				2565	21400	21.13	22	0-2
			12	2505	20800	21.03	22	0-2
				2535	21100	21.21	22	0-2
				2565	21400	21.09	22	0-2
			25	2505	20800	21.02	22	0-2
				2535	21100	21.24	22	0-2
				2565	21400	21.21	22	0-2
		50RB		2505	20800	20.97	22	0-2
				2535	21100	21.11	22	0-2
				2565	21400	21.07	22	0-2

FDD Band 7 (Full Power)								
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	22.34	24	0
				2535	21100	22.62	24	0
				2567.5	21425	22.78	24	0
			12	2502.5	20775	23.00	24	0
				2535	21100	23.16	24	0
				2567.5	21425	22.98	24	0
			24	2502.5	20775	22.80	24	0
				2535	21100	22.81	24	0
				2567.5	21425	22.76	24	0
		12 RB	0	2502.5	20775	21.96	23	0-1
				2535	21100	22.04	23	0-1
				2567.5	21425	22.11	23	0-1
			6	2502.5	20775	21.96	23	0-1
				2535	21100	22.01	23	0-1
				2567.5	21425	22.20	23	0-1
			13	2502.5	20775	21.95	23	0-1
				2535	21100	22.03	23	0-1
				2567.5	21425	22.08	23	0-1
		25RB		2502.5	20775	21.98	23	0-1
				2535	21100	22.11	23	0-1
				2567.5	21425	22.07	23	0-1
	16-QAM	1 RB	0	2502.5	20775	22.24	23	0-1
				2535	21100	21.70	23	0-1
				2567.5	21425	22.06	23	0-1
			12	2502.5	20775	21.57	23	0-1
				2535	21100	21.54	23	0-1
				2567.5	21425	21.44	23	0-1
			24	2502.5	20775	21.58	23	0-1
				2535	21100	21.73	23	0-1
				2567.5	21425	21.79	23	0-1
		12 RB	0	2502.5	20775	20.95	22	0-2
				2535	21100	21.07	22	0-2
				2567.5	21425	21.06	22	0-2
			6	2502.5	20775	21.04	22	0-2
				2535	21100	20.96	22	0-2
				2567.5	21425	21.06	22	0-2
			13	2502.5	20775	21.01	22	0-2
				2535	21100	21.14	22	0-2
				2567.5	21425	21.10	22	0-2
		25RB		2502.5	20775	21.15	22	0-2
				2535	21100	20.98	22	0-2
				2567.5	21425	21.23	22	0-2

FDD Band 7 (Reduced Power)								
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	14.81	15.5	0
				2535	21100	14.89	15.5	0
				2560	21350	14.78	15.5	0
			50	2510	20850	15.15	15.5	0
				2535	21100	15.39	15.5	0
				2560	21350	15.30	15.5	0
			99	2510	20850	15.19	15.5	0
				2535	21100	15.17	15.5	0
				2560	21350	15.24	15.5	0
		50 RB	0	2510	20850	14.00	15.5	0
				2535	21100	14.34	15.5	0
				2560	21350	14.17	15.5	0
			25	2510	20850	14.16	15.5	0
				2535	21100	14.33	15.5	0
				2560	21350	14.48	15.5	0
			50	2510	20850	14.14	15.5	0
				2535	21100	14.26	15.5	0
				2560	21350	14.48	15.5	0
		100RB		2510	20850	14.17	15.5	0
				2535	21100	14.23	15.5	0
				2560	21350	14.32	15.5	0
	16-QAM	1 RB	0	2510	20850	14.14	15.5	0
				2535	21100	14.12	15.5	0
				2560	21350	14.07	15.5	0
			50	2510	20850	14.05	15.5	0
				2535	21100	14.08	15.5	0
				2560	21350	14.00	15.5	0
			99	2510	20850	13.98	15.5	0
				2535	21100	13.47	15.5	0
				2560	21350	13.73	15.5	0
		50 RB	0	2510	20850	13.04	15.5	0
				2535	21100	13.42	15.5	0
				2560	21350	13.18	15.5	0
			25	2510	20850	13.16	15.5	0
				2535	21100	13.34	15.5	0
				2560	21350	13.50	15.5	0
			50	2510	20850	13.21	15.5	0
				2535	21100	13.28	15.5	0
				2560	21350	13.54	15.5	0
		100RB		2510	20850	13.17	15.5	0
				2535	21100	13.23	15.5	0
				2560	21350	13.35	15.5	0

FDD Band 7 (Reduced Power)								
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	15.21	15.5	0
				2535	21100	15.14	15.5	0
				2562.5	21375	15.22	15.5	0
			36	2507.5	20825	15.24	15.5	0
				2535	21100	15.23	15.5	0
				2562.5	21375	15.15	15.5	0
			74	2507.5	20825	15.14	15.5	0
				2535	21100	15.30	15.5	0
				2562.5	21375	15.22	15.5	0
		36 RB	0	2507.5	20825	14.96	15.5	0
				2535	21100	14.43	15.5	0
				2562.5	21375	14.40	15.5	0
			18	2507.5	20825	14.21	15.5	0
				2535	21100	14.31	15.5	0
				2562.5	21375	14.60	15.5	0
			37	2507.5	20825	14.26	15.5	0
				2535	21100	14.29	15.5	0
				2562.5	21375	14.57	15.5	0
		75RB		2507.5	20825	14.12	15.5	0
				2535	21100	14.33	15.5	0
				2562.5	21375	14.53	15.5	0
	16-QAM	1 RB	0	2507.5	20825	14.36	15.5	0
				2535	21100	14.89	15.5	0
				2562.5	21375	14.48	15.5	0
			36	2507.5	20825	14.01	15.5	0
				2535	21100	14.50	15.5	0
				2562.5	21375	14.75	15.5	0
			74	2507.5	20825	14.73	15.5	0
				2535	21100	14.38	15.5	0
				2562.5	21375	14.50	15.5	0
		36 RB	0	2507.5	20825	12.99	15.5	0
				2535	21100	13.52	15.5	0
				2562.5	21375	13.40	15.5	0
			18	2507.5	20825	13.21	15.5	0
				2535	21100	13.33	15.5	0
				2562.5	21375	13.67	15.5	0
			37	2507.5	20825	13.26	15.5	0
				2535	21100	13.36	15.5	0
				2562.5	21375	13.60	15.5	0
		75RB		2507.5	20825	13.13	15.5	0
				2535	21100	13.32	15.5	0
				2562.5	21375	13.57	15.5	0

FDD Band 7 (Reduced Power)								
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	15.00	15.5	0
				2535	21100	14.97	15.5	0
				2565	21400	15.06	15.5	0
			25	2505	20800	14.89	15.5	0
				2535	21100	15.08	15.5	0
				2565	21400	15.30	15.5	0
			49	2505	20800	14.92	15.5	0
				2535	21100	15.08	15.5	0
				2565	21400	14.92	15.5	0
		25 RB	0	2505	20800	14.01	15.5	0
				2535	21100	14.44	15.5	0
				2565	21400	14.53	15.5	0
			12	2505	20800	14.07	15.5	0
				2535	21100	14.26	15.5	0
				2565	21400	14.55	15.5	0
			25	2505	20800	14.59	15.5	0
				2535	21100	14.28	15.5	0
				2565	21400	14.48	15.5	0
		50RB		2505	20800	14.06	15.5	0
				2535	21100	14.34	15.5	0
				2565	21400	14.51	15.5	0
	16-QAM	1 RB	0	2505	20800	14.10	15.5	0
				2535	21100	14.54	15.5	0
				2565	21400	14.45	15.5	0
			25	2505	20800	14.59	15.5	0
				2535	21100	14.81	15.5	0
				2565	21400	14.72	15.5	0
			49	2505	20800	13.91	15.5	0
				2535	21100	14.74	15.5	0
				2565	21400	14.35	15.5	0
		25 RB	0	2505	20800	13.03	15.5	0
				2535	21100	13.53	15.5	0
				2565	21400	13.50	15.5	0
			12	2505	20800	13.03	15.5	0
				2535	21100	13.32	15.5	0
				2565	21400	13.59	15.5	0
			25	2505	20800	13.09	15.5	0
				2535	21100	13.38	15.5	0
				2565	21400	13.51	15.5	0
		50RB		2505	20800	13.11	15.5	0
				2535	21100	13.34	15.5	0
				2565	21400	13.58	15.5	0

FDD Band 7 (Reduced Power)								
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	14.82	15.5	0
				2535	21100	15.03	15.5	0
				2567.5	21425	14.77	15.5	0
			12	2502.5	20775	14.82	15.5	0
				2535	21100	15.25	15.5	0
				2567.5	21425	15.00	15.5	0
			24	2502.5	20775	14.86	15.5	0
				2535	21100	15.09	15.5	0
				2567.5	21425	14.93	15.5	0
		12 RB	0	2502.5	20775	14.01	15.5	0
				2535	21100	14.28	15.5	0
				2567.5	21425	14.46	15.5	0
			6	2502.5	20775	14.03	15.5	0
				2535	21100	14.26	15.5	0
				2567.5	21425	14.51	15.5	0
			13	2502.5	20775	14.08	15.5	0
				2535	21100	14.19	15.5	0
				2567.5	21425	14.33	15.5	0
		25RB		2502.5	20775	14.14	15.5	0
				2535	21100	14.24	15.5	0
				2567.5	21425	14.39	15.5	0
	16-QAM	1 RB	0	2502.5	20775	14.18	15.5	0
				2535	21100	14.19	15.5	0
				2567.5	21425	14.26	15.5	0
			12	2502.5	20775	14.17	15.5	0
				2535	21100	14.53	15.5	0
				2567.5	21425	14.53	15.5	0
			24	2502.5	20775	14.11	15.5	0
				2535	21100	14.06	15.5	0
				2567.5	21425	13.91	15.5	0
		12 RB	0	2502.5	20775	13.02	15.5	0
				2535	21100	13.36	15.5	0
				2567.5	21425	13.52	15.5	0
			6	2502.5	20775	13.04	15.5	0
				2535	21100	13.35	15.5	0
				2567.5	21425	13.53	15.5	0
			13	2502.5	20775	12.94	15.5	0
				2535	21100	13.24	15.5	0
				2567.5	21425	13.30	15.5	0
		25RB		2502.5	20775	12.97	15.5	0
				2535	21100	13.30	15.5	0
				2567.5	21425	13.44	15.5	0

FDD Band 12 (Full Power)								
BW(Mhz)	Modulation	RB Size	RB Offset	Frequency (MHz)	Channel	Conducted power (dBm)	Target Power + Max. Tolerance (dBm)	MPR Allowed per 3GPP(dB)
10	QPSK	1 RB	0	704	23060	22.63	24	0
				707.5	23095	22.72	24	0
				711	23130	22.93	24	0
			25	704	23060	23.39	24	0
				707.5	23095	23.52	24	0
				711	23130	23.42	24	0
			49	704	23060	23.04	24	0
				707.5	23095	22.96	24	0
				711	23130	22.79	24	0
		25 RB	0	704	23060	22.15	23	0-1
				707.5	23095	22.09	23	0-1
				711	23130	22.28	23	0-1
			12	704	23060	22.17	23	0-1
				707.5	23095	22.27	23	0-1
				711	23130	22.26	23	0-1
			25	704	23060	22.32	23	0-1
				707.5	23095	22.21	23	0-1
				711	23130	22.27	23	0-1
		50RB		704	23060	22.30	23	0-1
				707.5	23095	22.24	23	0-1
				711	23130	22.24	23	0-1
	16-QAM	1 RB	0	704	23060	21.60	23	0-1
				707.5	23095	21.95	23	0-1
				711	23130	22.12	23	0-1
			25	704	23060	22.24	23	0-1
				707.5	23095	21.94	23	0-1
				711	23130	22.19	23	0-1
			49	704	23060	21.79	23	0-1
				707.5	23095	21.90	23	0-1
				711	23130	21.79	23	0-1
		25 RB	0	704	23060	21.34	22	0-2
				707.5	23095	21.09	22	0-2
				711	23130	21.50	22	0-2
			12	704	23060	21.15	22	0-2
				707.5	23095	21.23	22	0-2
				711	23130	21.30	22	0-2
			25	704	23060	21.35	22	0-2
				707.5	23095	21.14	22	0-2
				711	23130	21.14	22	0-2
		50RB		704	23060	21.16	22	0-2
				707.5	23095	21.20	22	0-2
				711	23130	21.25	22	0-2

FDD Band 12 (Full Power)								
BW(Mhz)	Modulation	RB Size	RB Offset	Frequency (MHz)	Channel	Conducted power (dBm)	Target Power + Max. Tolerance (dBm)	MPR Allowed per 3GPP(dB)
5	QPSK	1 RB	0	701.5	23035	22.64	24	0
				707.5	23095	22.92	24	0
				713.5	23155	22.76	24	0
			12	701.5	23035	23.16	24	0
				707.5	23095	23.60	24	0
				713.5	23155	23.47	24	0
			24	701.5	23035	22.87	24	0
				707.5	23095	22.86	24	0
				713.5	23155	22.82	24	0
		12 RB	0	701.5	23035	22.18	23	0-1
				707.5	23095	22.26	23	0-1
				713.5	23155	22.18	23	0-1
			6	701.5	23035	22.35	23	0-1
				707.5	23095	22.35	23	0-1
				713.5	23155	22.25	23	0-1
			13	701.5	23035	22.20	23	0-1
				707.5	23095	22.24	23	0-1
				713.5	23155	22.16	23	0-1
		25RB		701.5	23035	22.17	23	0-1
				707.5	23095	22.27	23	0-1
				713.5	23155	22.14	23	0-1
	16-QAM	1 RB	0	701.5	23035	21.56	23	0-1
				707.5	23095	22.07	23	0-1
				713.5	23155	21.79	23	0-1
			12	701.5	23035	21.57	23	0-1
				707.5	23095	21.93	23	0-1
				713.5	23155	21.63	23	0-1
			24	701.5	23035	21.77	23	0-1
				707.5	23095	21.79	23	0-1
				713.5	23155	21.71	23	0-1
		12 RB	0	701.5	23035	21.07	22	0-2
				707.5	23095	21.30	22	0-2
				713.5	23155	21.27	22	0-2
			6	701.5	23035	21.31	22	0-2
				707.5	23095	21.20	22	0-2
				713.5	23155	21.27	22	0-2
			13	701.5	23035	21.16	22	0-2
				707.5	23095	21.23	22	0-2
				713.5	23155	21.18	22	0-2
		25RB		701.5	23035	21.31	22	0-2
				707.5	23095	21.38	22	0-2
				713.5	23155	21.15	22	0-2

FDD Band 12 (Full Power)								
BW(Mhz)	Modulation	RB Size	RB Offset	Frequency (MHz)	Channel	Conducted power (dBm)	Target Power + Max. Tolerance (dBm)	MPR Allowed per 3GPP(dB)
3	QPSK	1 RB	0	700.5	23025	22.76	24	0
				707.5	23095	23.00	24	0
				714.5	23165	23.17	24	0
			7	700.5	23025	23.07	24	0
				707.5	23095	23.18	24	0
				714.5	23165	23.36	24	0
			14	700.5	23025	23.01	24	0
				707.5	23095	23.05	24	0
				714.5	23165	22.98	24	0
		8 RB	0	700.5	23025	22.08	23	0-1
				707.5	23095	22.28	23	0-1
				714.5	23165	22.25	23	0-1
			4	700.5	23025	22.14	23	0-1
				707.5	23095	22.18	23	0-1
				714.5	23165	22.18	23	0-1
			7	700.5	23025	22.03	23	0-1
				707.5	23095	22.28	23	0-1
				714.5	23165	22.14	23	0-1
		15RB		700.5	23025	21.99	23	0-1
				707.5	23095	22.17	23	0-1
				714.5	23165	22.19	23	0-1
	16-QAM	1 RB	0	700.5	23025	21.68	23	0-1
				707.5	23095	21.95	23	0-1
				714.5	23165	21.64	23	0-1
			7	700.5	23025	21.74	23	0-1
				707.5	23095	22.17	23	0-1
				714.5	23165	22.14	23	0-1
			14	700.5	23025	22.01	23	0-1
				707.5	23095	22.10	23	0-1
				714.5	23165	22.12	23	0-1
		8 RB	0	700.5	23025	21.07	22	0-2
				707.5	23095	21.22	22	0-2
				714.5	23165	21.15	22	0-2
			4	700.5	23025	21.06	22	0-2
				707.5	23095	21.19	22	0-2
				714.5	23165	21.30	22	0-2
			7	700.5	23025	21.19	22	0-2
				707.5	23095	21.17	22	0-2
				714.5	23165	21.19	22	0-2
		15RB		700.5	23025	21.04	22	0-2
				707.5	23095	21.28	22	0-2
				714.5	23165	21.09	22	0-2

FDD Band 12 (Full Power)								
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	22.85	24	0
				707.5	23095	23.17	24	0
				715.3	23173	23.08	24	0
			2	699.7	23017	23.01	24	0
				707.5	23095	23.29	24	0
				715.3	23173	23.16	24	0
			5	699.7	23017	23.00	24	0
				707.5	23095	22.96	24	0
				715.3	23173	23.09	24	0
		3 RB	0	699.7	23017	22.99	24	0
				707.5	23095	23.25	24	0
				715.3	23173	23.32	24	0
			2	699.7	23017	23.06	24	0
				707.5	23095	23.13	24	0
				715.3	23173	23.24	24	0
			3	699.7	23017	23.18	24	0
				707.5	23095	23.22	24	0
				715.3	23173	23.23	24	0
		6RB		699.7	23017	22.06	23	0-1
				707.5	23095	22.17	23	0-1
				715.3	23173	22.17	23	0-1
	16-QAM	1 RB	0	699.7	23017	21.48	23	0-1
				707.5	23095	22.08	23	0-1
				715.3	23173	21.76	23	0-1
			2	699.7	23017	21.83	23	0-1
				707.5	23095	21.85	23	0-1
				715.3	23173	22.17	23	0-1
			5	699.7	23017	21.71	23	0-1
				707.5	23095	22.16	23	0-1
				715.3	23173	21.85	23	0-1
		3 RB	0	699.7	23017	22.14	23	0-1
				707.5	23095	21.99	23	0-1
				715.3	23173	22.07	23	0-1
			2	699.7	23017	22.32	23	0-1
				707.5	23095	21.98	23	0-1
				715.3	23173	22.17	23	0-1
			3	699.7	23017	22.16	23	0-1
				707.5	23095	21.88	23	0-1
				715.3	23173	22.28	23	0-1
		6RB		699.7	23017	20.81	22	0-2
				707.5	23095	20.90	22	0-2
				715.3	23173	21.16	22	0-2

FDD Band 12 (Reduced Power)								
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	17.82	18	0
				707.5	23095	17.78	18	0
				711	23130	17.81	18	0
			25	704	23060	17.99	18	0
				707.5	23095	17.89	18	0
				711	23130	17.87	18	0
			49	704	23060	17.95	18	0
				707.5	23095	17.70	18	0
				711	23130	17.96	18	0
		25 RB	0	704	23060	17.23	18	0
				707.5	23095	17.23	18	0
				711	23130	17.23	18	0
			12	704	23060	17.20	18	0
				707.5	23095	17.14	18	0
				711	23130	17.12	18	0
			25	704	23060	17.25	18	0
				707.5	23095	17.16	18	0
				711	23130	17.10	18	0
		50RB		704	23060	17.18	18	0
				707.5	23095	17.17	18	0
				711	23130	17.14	18	0
	16-QAM	1 RB	0	704	23060	16.80	18	0
				707.5	23095	17.12	18	0
				711	23130	16.79	18	0
			25	704	23060	16.98	18	0
				707.5	23095	17.07	18	0
				711	23130	17.15	18	0
			49	704	23060	16.53	18	0
				707.5	23095	16.97	18	0
				711	23130	16.71	18	0
		25 RB	0	704	23060	16.09	18	0
				707.5	23095	16.01	18	0
				711	23130	16.47	18	0
			12	704	23060	16.12	18	0
				707.5	23095	16.02	18	0
				711	23130	16.22	18	0
			25	704	23060	16.22	18	0
				707.5	23095	16.17	18	0
				711	23130	16.03	18	0
		50RB		704	23060	16.22	18	0
				707.5	23095	16.12	18	0
				711	23130	16.10	18	0

FDD Band 12 (Reduced Power)								
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	17.73	18	0
				707.5	23095	17.91	18	0
				713.5	23155	17.51	18	0
			12	701.5	23035	17.92	18	0
				707.5	23095	17.94	18	0
				713.5	23155	17.88	18	0
			24	701.5	23035	17.94	18	0
				707.5	23095	17.76	18	0
				713.5	23155	17.55	18	0
		12 RB	0	701.5	23035	17.28	18	0
				707.5	23095	17.18	18	0
				713.5	23155	17.01	18	0
			6	701.5	23035	17.34	18	0
				707.5	23095	17.23	18	0
				713.5	23155	17.09	18	0
			13	701.5	23035	17.24	18	0
				707.5	23095	17.17	18	0
				713.5	23155	16.87	18	0
		25RB		701.5	23035	17.25	18	0
				707.5	23095	17.19	18	0
				713.5	23155	16.96	18	0
	16-QAM	1 RB	0	701.5	23035	16.96	18	0
				707.5	23095	16.45	18	0
				713.5	23155	17.04	18	0
			12	701.5	23035	16.96	18	0
				707.5	23095	17.52	18	0
				713.5	23155	16.93	18	0
			24	701.5	23035	17.26	18	0
				707.5	23095	16.97	18	0
				713.5	23155	16.78	18	0
		12 RB	0	701.5	23035	16.17	18	0
				707.5	23095	16.22	18	0
				713.5	23155	16.05	18	0
			6	701.5	23035	16.31	18	0
				707.5	23095	16.26	18	0
				713.5	23155	16.07	18	0
			13	701.5	23035	16.17	18	0
				707.5	23095	16.19	18	0
				713.5	23155	16.09	18	0
		25RB		701.5	23035	16.14	18	0
				707.5	23095	16.28	18	0
				713.5	23155	16.01	18	0

FDD Band 12 (Reduced Power)								
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	17.83	18	0
				707.5	23095	17.78	18	0
				714.5	23165	17.92	18	0
			7	700.5	23025	17.96	18	0
				707.5	23095	17.92	18	0
				714.5	23165	17.85	18	0
			14	700.5	23025	17.88	18	0
				707.5	23095	17.74	18	0
				714.5	23165	17.86	18	0
		8 RB	0	700.5	23025	17.16	18	0
				707.5	23095	17.29	18	0
				714.5	23165	17.19	18	0
			4	700.5	23025	17.25	18	0
				707.5	23095	17.17	18	0
				714.5	23165	16.99	18	0
			7	700.5	23025	17.16	18	0
				707.5	23095	17.18	18	0
				714.5	23165	16.95	18	0
		15RB		700.5	23025	17.23	18	0
				707.5	23095	17.09	18	0
				714.5	23165	16.92	18	0
	16-QAM	1 RB	0	700.5	23025	16.92	18	0
				707.5	23095	16.87	18	0
				714.5	23165	16.57	18	0
			7	700.5	23025	16.91	18	0
				707.5	23095	17.17	18	0
				714.5	23165	16.83	18	0
			14	700.5	23025	17.60	18	0
				707.5	23095	17.00	18	0
				714.5	23165	16.95	18	0
		8 RB	0	700.5	23025	16.18	18	0
				707.5	23095	16.31	18	0
				714.5	23165	16.33	18	0
			4	700.5	23025	16.14	18	0
				707.5	23095	16.25	18	0
				714.5	23165	16.09	18	0
			7	700.5	23025	16.27	18	0
				707.5	23095	16.26	18	0
				714.5	23165	16.22	18	0
		15RB		700.5	23025	16.21	18	0
				707.5	23095	16.07	18	0
				714.5	23165	16.10	18	0

FDD Band 12 (Reduced Power)								
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	18.00	18	0
				707.5	23095	17.92	18	0
				715.3	23173	17.90	18	0
			2	699.7	23017	17.88	18	0
				707.5	23095	17.81	18	0
				715.3	23173	17.97	18	0
			5	699.7	23017	17.86	18	0
				707.5	23095	17.92	18	0
				715.3	23173	17.88	18	0
		3 RB	0	699.7	23017	17.84	18	0
				707.5	23095	17.84	18	0
				715.3	23173	17.96	18	0
			2	699.7	23017	17.81	18	0
				707.5	23095	17.93	18	0
				715.3	23173	17.91	18	0
			3	699.7	23017	17.77	18	0
				707.5	23095	17.66	18	0
				715.3	23173	17.94	18	0
		6RB		699.7	23017	17.13	18	0
				707.5	23095	17.10	18	0
				715.3	23173	16.95	18	0
	16-QAM	1 RB	0	699.7	23017	17.11	18	0
				707.5	23095	17.10	18	0
				715.3	23173	16.99	18	0
			2	699.7	23017	16.94	18	0
				707.5	23095	16.82	18	0
				715.3	23173	16.94	18	0
			5	699.7	23017	17.28	18	0
				707.5	23095	17.04	18	0
				715.3	23173	16.35	18	0
		3 RB	0	699.7	23017	17.28	18	0
				707.5	23095	17.07	18	0
				715.3	23173	16.79	18	0
			2	699.7	23017	16.96	18	0
				707.5	23095	17.16	18	0
				715.3	23173	16.95	18	0
			3	699.7	23017	17.48	18	0
				707.5	23095	17.15	18	0
				715.3	23173	16.96	18	0
		6RB		699.7	23017	16.32	18	0
				707.5	23095	16.13	18	0
				715.3	23173	16.09	18	0

FDD Band 13 (Full Power)								
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	22.89	24	0
			25	782	23230	23.22	24	0
			49	782	23230	23.13	24	0
		25 RB	0	782	23230	22.28	23	0-1
			12	782	23230	22.19	23	0-1
			25	782	23230	22.17	23	0-1
		50RB		782	23230	22.18	23	0-1
	16-QAM	1 RB	0	782	23230	21.53	23	0-1
			25	782	23230	21.64	23	0-1
			49	782	23230	22.12	23	0-1
		25 RB	0	782	23230	21.18	22	0-2
			12	782	23230	21.28	22	0-2
			25	782	23230	21.27	22	0-2
		50RB		782	23230	20.94	22	0-2

FDD Band 13 (Full Power)								
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	22.61	24	0
				782	23230	23.05	24	0
				784.5	23255	22.77	24	0
			12	779.5	23205	23.27	24	0
				782	23230	23.43	24	0
				784.5	23255	23.36	24	0
			24	779.5	23205	22.79	24	0
				782	23230	22.90	24	0
				784.5	23255	22.70	24	0
		12 RB	0	779.5	23205	22.21	23	0-1
				782	23230	22.30	23	0-1
				784.5	23255	22.28	23	0-1
			6	779.5	23205	22.26	23	0-1
				782	23230	22.30	23	0-1
				784.5	23255	22.29	23	0-1
			13	779.5	23205	22.22	23	0-1
				782	23230	22.25	23	0-1
				784.5	23255	22.16	23	0-1
		25RB		779.5	23205	22.21	23	0-1
				782	23230	22.28	23	0-1
				784.5	23255	22.24	23	0-1
	16-QAM	1 RB	0	779.5	23205	21.67	23	0-1
				782	23230	21.75	23	0-1
				784.5	23255	22.22	23	0-1
			12	779.5	23205	21.97	23	0-1
				782	23230	22.43	23	0-1
				784.5	23255	21.88	23	0-1
			24	779.5	23205	21.73	23	0-1
				782	23230	21.86	23	0-1
				784.5	23255	21.82	23	0-1
		12 RB	0	779.5	23205	21.26	22	0-2
				782	23230	21.16	22	0-2
				784.5	23255	21.08	22	0-2
			6	779.5	23205	21.19	22	0-2
				782	23230	21.27	22	0-2
				784.5	23255	21.34	22	0-2
			13	779.5	23205	20.92	22	0-2
				782	23230	21.29	22	0-2
				784.5	23255	21.15	22	0-2
		25RB		779.5	23205	21.21	22	0-2
				782	23230	21.15	22	0-2
				784.5	23255	21.34	22	0-2

FDD Band 13 (Reduced Power)								
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	17.63	18	0
			25	782	23230	17.89	18	0
			49	782	23230	17.60	18	0
		25 RB	0	782	23230	16.80	18	0
			12	782	23230	16.74	18	0
			25	782	23230	16.82	18	0
		50RB		782	23230	16.86	18	0
	16-QAM	1 RB	0	782	23230	16.49	18	0
			25	782	23230	16.81	18	0
			49	782	23230	16.53	18	0
		25 RB	0	782	23230	16.05	18	0
			12	782	23230	16.08	18	0
			25	782	23230	16.08	18	0
		50RB		782	23230	16.11	18	0

FDD Band 13 (Reduced Power)								
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	17.48	18	0
				782	23230	17.48	18	0
				784.5	23255	17.38	18	0
			12	779.5	23205	17.92	18	0
				782	23230	17.76	18	0
				784.5	23255	17.89	18	0
			24	779.5	23205	17.41	18	0
				782	23230	17.45	18	0
				784.5	23255	17.50	18	0
		12 RB	0	779.5	23205	17.02	18	0
				782	23230	16.88	18	0
				784.5	23255	16.78	18	0
			6	779.5	23205	16.83	18	0
				782	23230	16.78	18	0
				784.5	23255	16.97	18	0
			13	779.5	23205	16.75	18	0
				782	23230	16.72	18	0
				784.5	23255	16.82	18	0
		25RB		779.5	23205	16.80	18	0
				782	23230	16.85	18	0
				784.5	23255	16.81	18	0
	16-QAM	1 RB	0	779.5	23205	16.55	18	0
				782	23230	16.74	18	0
				784.5	23255	16.41	18	0
			12	779.5	23205	16.55	18	0
				782	23230	16.73	18	0
				784.5	23255	16.28	18	0
			24	779.5	23205	16.68	18	0
				782	23230	16.33	18	0
				784.5	23255	16.89	18	0
		12 RB	0	779.5	23205	16.09	18	0
				782	23230	16.20	18	0
				784.5	23255	16.02	18	0
			6	779.5	23205	16.14	18	0
				782	23230	16.14	18	0
				784.5	23255	16.28	18	0
			13	779.5	23205	16.14	18	0
				782	23230	16.06	18	0
				784.5	23255	16.08	18	0
		25RB		779.5	23205	16.26	18	0
				782	23230	16.12	18	0
				784.5	23255	16.02	18	0

FDD Band 17 (Full Power)								
BW(Mhz)	Modulation	RB Size	RB Offset	Frequency (MHz)	Channel	Conducted power (dBm)	Target Power + Max. Tolerance (dBm)	MPR Allowed per 3GPP(dB)
10	QPSK	1 RB	0	709	23780	22.83	24	0
				710	23790	22.77	24	0
				711	23800	22.84	24	0
			25	709	23780	23.01	24	0
				710	23790	23.11	24	0
				711	23800	23.02	24	0
			49	709	23780	23.13	24	0
				710	23790	23.16	24	0
				711	23800	22.97	24	0
		25 RB	0	709	23780	22.03	23	0-1
				710	23790	21.93	23	0-1
				711	23800	21.97	23	0-1
			12	709	23780	22.02	23	0-1
				710	23790	21.95	23	0-1
				711	23800	21.97	23	0-1
			25	709	23780	22.00	23	0-1
				710	23790	21.96	23	0-1
				711	23800	22.06	23	0-1
		50RB		709	23780	22.06	23	0-1
				710	23790	21.99	23	0-1
				711	23800	22.05	23	0-1
	16-QAM	1 RB	0	709	23780	21.56	23	0-1
				710	23790	21.62	23	0-1
				711	23800	21.83	23	0-1
			25	709	23780	21.86	23	0-1
				710	23790	22.02	23	0-1
				711	23800	21.93	23	0-1
			49	709	23780	22.20	23	0-1
				710	23790	21.59	23	0-1
				711	23800	21.92	23	0-1
		25 RB	0	709	23780	20.94	22	0-2
				710	23790	20.91	22	0-2
				711	23800	20.92	22	0-2
			12	709	23780	20.97	22	0-2
				710	23790	20.94	22	0-2
				711	23800	21.08	22	0-2
			25	709	23780	21.04	22	0-2
				710	23790	20.86	22	0-2
				711	23800	21.06	22	0-2
		50RB		709	23780	21.15	22	0-2
				710	23790	20.88	22	0-2
				711	23800	20.97	22	0-2

FDD Band 17 (Full Power)								
BW(Mhz)	Modulation	RB Size	RB Offset	Frequency (MHz)	Channel	Conducted power (dBm)	Target Power + Max. Tolerance (dBm)	MPR Allowed per 3GPP(dB)
5	QPSK	1 RB	0	706.5	23755	22.92	24	0
				710	23790	22.65	24	0
				713.5	23825	22.54	24	0
			12	706.5	23755	23.30	24	0
				710	23790	23.49	24	0
				713.5	23825	22.81	24	0
			24	706.5	23755	22.66	24	0
				710	23790	22.97	24	0
				713.5	23825	22.85	24	0
		12 RB	0	706.5	23755	21.97	23	0-1
				710	23790	21.84	23	0-1
				713.5	23825	21.98	23	0-1
			6	706.5	23755	21.91	23	0-1
				710	23790	21.96	23	0-1
				713.5	23825	22.06	23	0-1
			13	706.5	23755	22.00	23	0-1
				710	23790	21.96	23	0-1
				713.5	23825	22.03	23	0-1
		25RB		706.5	23755	21.96	23	0-1
				710	23790	21.95	23	0-1
				713.5	23825	22.01	23	0-1
	16-QAM	1 RB	0	706.5	23755	21.59	23	0-1
				710	23790	21.96	23	0-1
				713.5	23825	21.38	23	0-1
			12	706.5	23755	21.91	23	0-1
				710	23790	21.63	23	0-1
				713.5	23825	22.53	23	0-1
			24	706.5	23755	21.92	23	0-1
				710	23790	21.61	23	0-1
				713.5	23825	22.05	23	0-1
		12 RB	0	706.5	23755	20.96	22	0-2
				710	23790	20.97	22	0-2
				713.5	23825	21.07	22	0-2
			6	706.5	23755	20.99	22	0-2
				710	23790	21.10	22	0-2
				713.5	23825	21.19	22	0-2
			13	706.5	23755	20.83	22	0-2
				710	23790	20.98	22	0-2
				713.5	23825	20.98	22	0-2
		25RB		706.5	23755	21.22	22	0-2
				710	23790	21.12	22	0-2
				713.5	23825	20.87	22	0-2

FDD Band 17 (Reduced Power)								
BW(Mhz)	Modulation	RB Size	RB Offset	Frequency (MHz)	Channel	Conducted power (dBm)	Target Power + Max. Tolerance (dBm)	MPR Allowed per 3GPP(dB)
10	QPSK	1 RB	0	709	23780	17.54	18	0
				710	23790	17.86	18	0
				711	23800	17.58	18	0
			25	709	23780	17.68	18	0
				710	23790	17.93	18	0
				711	23800	17.90	18	0
			49	709	23780	17.96	18	0
				710	23790	17.84	18	0
				711	23800	17.81	18	0
		25 RB	0	709	23780	16.82	18	0
				710	23790	16.70	18	0
				711	23800	16.68	18	0
			12	709	23780	16.77	18	0
				710	23790	16.77	18	0
				711	23800	16.71	18	0
			25	709	23780	16.82	18	0
				710	23790	16.74	18	0
				711	23800	16.91	18	0
		50RB		709	23780	16.83	18	0
				710	23790	16.70	18	0
				711	23800	16.74	18	0
	16-QAM	1 RB	0	709	23780	16.63	18	0
				710	23790	16.06	18	0
				711	23800	16.65	18	0
			25	709	23780	16.68	18	0
				710	23790	16.66	18	0
				711	23800	16.53	18	0
			49	709	23780	16.74	18	0
				710	23790	16.32	18	0
				711	23800	16.37	18	0
		25 RB	0	709	23780	16.07	18	0
				710	23790	16.19	18	0
				711	23800	16.01	18	0
			12	709	23780	16.19	18	0
				710	23790	16.01	18	0
				711	23800	16.17	18	0
			25	709	23780	16.11	18	0
				710	23790	16.06	18	0
				711	23800	16.14	18	0
		50RB		709	23780	16.22	18	0
				710	23790	16.08	18	0
				711	23800	16.08	18	0

FDD Band 17 (Reduced Power)								
BW(Mhz)	Modulation	RB Size	RB Offset	Frequency (MHz)	Channel	Conducted power (dBm)	Target Power + Max. Tolerance (dBm)	MPR Allowed per 3GPP(dB)
5	QPSK	1 RB	0	706.5	23755	17.64	18	0
				710	23790	17.63	18	0
				713.5	23825	17.14	18	0
			12	706.5	23755	17.99	18	0
				710	23790	18.00	18	0
				713.5	23825	17.98	18	0
			24	706.5	23755	17.21	18	0
				710	23790	17.65	18	0
				713.5	23825	17.61	18	0
		12 RB	0	706.5	23755	16.70	18	0
				710	23790	16.68	18	0
				713.5	23825	16.74	18	0
			6	706.5	23755	16.73	18	0
				710	23790	16.79	18	0
				713.5	23825	16.87	18	0
			13	706.5	23755	16.70	18	0
				710	23790	16.74	18	0
				713.5	23825	16.88	18	0
		25RB		706.5	23755	16.66	18	0
				710	23790	16.72	18	0
				713.5	23825	16.83	18	0
	16-QAM	1 RB	0	706.5	23755	16.69	18	0
				710	23790	16.11	18	0
				713.5	23825	16.66	18	0
			12	706.5	23755	16.60	18	0
				710	23790	16.75	18	0
				713.5	23825	16.70	18	0
			24	706.5	23755	16.33	18	0
				710	23790	16.81	18	0
				713.5	23825	16.56	18	0
		12 RB	0	706.5	23755	16.01	18	0
				710	23790	16.13	18	0
				713.5	23825	16.04	18	0
			6	706.5	23755	16.15	18	0
				710	23790	16.15	18	0
				713.5	23825	16.12	18	0
			13	706.5	23755	16.23	18	0
				710	23790	16.04	18	0
				713.5	23825	16.08	18	0
		25RB		706.5	23755	16.09	18	0
				710	23790	16.02	18	0
				713.5	23825	16.06	18	0

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

802.11 b		Max. Rated Avg. Power + Max. Tolerance (dBm)	Average conducted output power (dBm)
CH	Frequency (MHz)		Data Rate (Mbps)
			1
1	2412	16	15.66
6	2437	16	15.69
11	2462	16	15.95

802.11 g		Max. Rated Avg. Power + Max. Tolerance (dBm)	Average conducted output power (dBm)
CH	Frequency (MHz)		Data Rate (Mbps)
			6
1	2412	16	15.78
6	2437	16	15.98
11	2462	16	15.87

802.11 n(20M)		Max. Rated Avg. Power + Max. Tolerance (dBm)	Average conducted output power (dBm)
CH	Frequency (MHz)		Data Rate (Mbps)
			6.5
1	2412	14	13.82
6	2437	14	13.97
11	2462	14	13.81

802.11 n(40M)		Max. Rated Avg. Power + Max. Tolerance (dBm)	Average conducted output power (dBm)
CH	Frequency (MHz)		Data Rate (Mbps)
			13.5
3	2422	13	12.97
6	2437	13	12.99
9	2452	13	12.83

802.11 a		Max. Rated Avg. Power + Max. Tolerance (dBm)	Average conducted output power (dBm)
5.2/5.3/5.6/5.8G			Data Rate (Mbps)
CH	Frequency (MHz)		6
36	5180	15.5	15.36
40	5200	15.5	15.42
44	5220	15.5	15.41
48	5240	15.5	15.38
52	5260	15.5	15.46
56	5280	15.5	15.38
60	5300	15.5	15.19
64	5320	15.5	15.24
100	5500	15.5	15.48
120	5600	15.5	15.47
140	5700	15.5	15.47
149	5745	15.5	15.39
157	5785	15.5	15.33
165	5825	15.5	15.42

802.11 n(20M)		Max. Rated Avg. Power + Max. Tolerance (dBm)	Average conducted output power (dBm)
5.2/5.3/5.6/5.8G			Data Rate (Mbps)
CH	Frequency (MHz)		6.5
36	5180	15.5	15.34
40	5200	15.5	15.35
44	5220	15.5	15.34
48	5240	15.5	15.32
52	5260	15.5	15.33
56	5280	15.5	15.29
60	5300	15.5	15.40
64	5320	15.5	15.46
100	5500	15.5	15.32
120	5600	15.5	15.28
140	5700	15.5	15.41
149	5745	15.5	15.43
157	5785	15.5	15.44
165	5825	15.5	15.36

802.11 n(40M)		Max. Rated Avg. Power + Max. Tolerance (dBm)	Average conducted output power (dBm)
5.2/5.3/5.6/5.8G			Data Rate (Mbps)
CH	Frequency (MHz)		13.5
38	5190	13	12.98
46	5230	13	12.96
54	5270	13	12.95
62	5310	13	12.76
102	5510	13	12.77
118	5590	13	12.94
134	5670	13	12.70
151	5755	13	12.79
159	5795	13	12.93

Bluetooth conducted power table:

Frequency (MHz)	Data Rate	Max. power(dBm)	Avg.	
			dBm	mW
2402	1	8	6.81	4.797
2441	1	8	7.64	5.808
2480	1	8	7.36	5.445
2402	2	8	5.04	3.192
2441	2	8	5.68	3.698
2480	2	8	5.05	3.199
2402	3	8	4.68	2.938
2441	3	8	5.57	3.606
2480	3	8	4.97	3.141

Frequency (MHz)	Max. power(dBm)	Avg.	
		BT4.0	
		dBm	mW
2402	-1	-0.03	0.993
2442	-1	-3.21	0.478
2480	-1	-3.53	0.444

1.4 Test Environment

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

1.5 Operation Description

1. WWAN

The EUT is controlled by using Radio Communication Tester (Anritsu MT8820C), and the communication between the EUT and the tester is established by air link. The EUT was tested in the following configurations:

Configuration 1: Back / top / left sides_0mm with power reduction

Configuration 2: Backside_17mm without power reduction.

Configuration 3: Top side_13mm without power reduction.

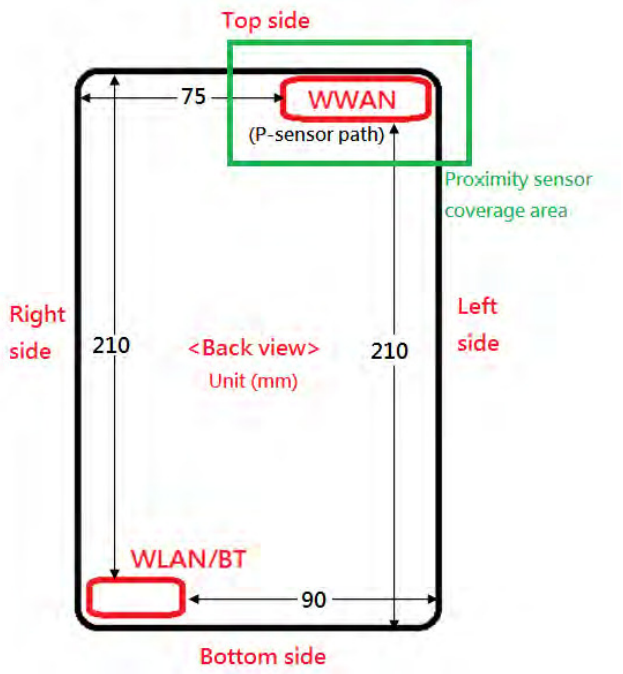
Configuration 4: Left side_15mm without power reduction.

Configuration 5: Bottom/right sides_0mm without power reduction.

2. WLAN

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

Configurations: Back/top/left/right/bottom sides_0mm.



Back view of tablet
(The p-sensor is colocated with WWAN antenna)

Note:

802.11b DSSS SAR Test Requirements:

1. 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.
2. 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:

3. 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:

4. 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.

5. 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.

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

7. For 5.2a/5.3a/5.8a, 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.

8. For 5.6a, 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 required for subsequent test configuration.

9. For WLAN antenna, 5.6 n(20) was chosen to be the subsequent test configuration.

10. BT and WLAN use the same antenna path and Bluetooth may transmit simultaneously with WWAN.

11. 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.

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

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

14. Based on KDB447498D01,

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

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

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

(2) For test separation distances > 50 mm, and the frequency at 100 MHz to 1500MHz, the SAR test exclusion threshold is determined according to the following, and as illustrated in Appendix B of KDB447498 D01.
[(Threshold at 50mm in step1) + (test separation distance-50mm)x($\frac{\text{f(MHz)}}{150}$)](mW),

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

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

Mode	Max. tune-up power(dBm)	Max. tune-up power(mW)	Top side			Right side			Left side		
			Test separation distance (mm)	Calculation value	Require SAR testing?	Test separation distance (mm)	Calculation value	Require SAR testing?	Test separation distance (mm)	Calculation value	Require SAR testing?
LTE Band 2	23.5	223.872	less than 5	61.717	YES	75	256.172	No	less than 5	61.717	YES
LTE Band 4	24	251.189	less than 5	66.540	YES	75	256.654	No	less than 5	66.540	YES
LTE Band 7	24	251.189	less than 5	80.498	YES	75	258.050	No	less than 5	80.498	YES
LTE Band 12	24	251.189	less than 5	42.489	YES	75	123.466	No	less than 5	42.489	YES
LTE Band 13	24	251.189	less than 5	44.497	YES	75	135.200	No	less than 5	44.497	YES
LTE Band 17	24	251.189	less than 5	42.435	YES	75	123.160	No	less than 5	42.435	YES

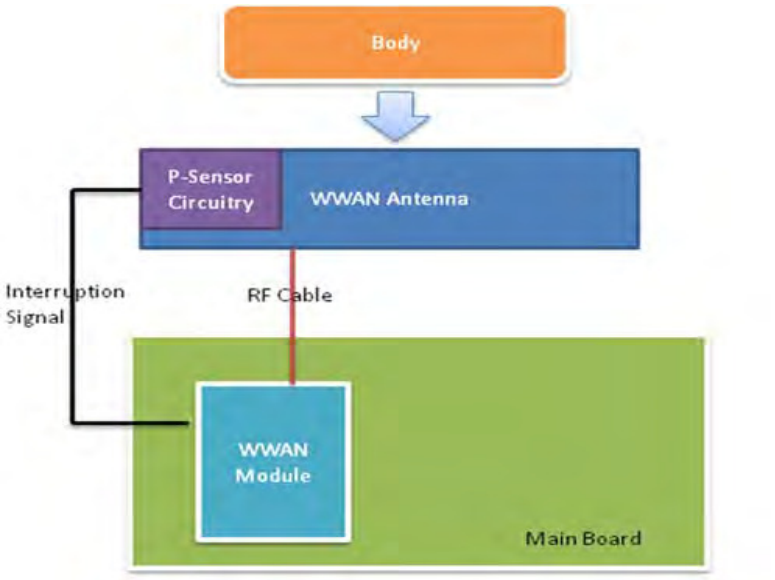
Mode	Max. tune-up power(dBm)	Max. tune-up power(mW)	Bottom side			Back side		
			Test separation distance (mm)	>20cm	Require SAR testing?	Test separation distance (mm)	Calculation value	Require SAR testing?
LTE Band 2	23.5	223.872	210	YES	No	less than 5	61.717	YES
LTE Band 4	24	251.189	210	YES	No	less than 5	66.540	YES
LTE Band 7	24	251.189	210	YES	No	less than 5	80.498	YES
LTE Band 12	24	251.189	210	YES	No	less than 5	42.489	YES
LTE Band 13	24	251.189	210	YES	No	less than 5	44.497	YES
LTE Band 17	24	251.189	210	YES	No	less than 5	42.435	YES

Mode	Max. tune-up power(dBm)	Max. tune-up power(mW)	Top side			Right side			Left side		
			Test separation distance (mm)	>20cm	Require SAR testing?	Test separation distance (mm)	Calculation value	Require SAR testing?	Test separation distance (mm)	Calculation value	Require SAR testing?
WLAN Main 2.45GHz	13.5	22.387	210	YES	No	less than 5	7.025	YES	90	400.703	No
WLAN Main 5GHz	9.5	8.913	210	YES	No	less than 5	4.302	YES	90	400.430	No
BT	8	6.310	210	YES	NO	less than 5	1.987	NO	90	400.199	NO

Mode	Max. tune-up power(dBm)	Max. tune-up power(mW)	Bottom side			Back side		
			Test separation distance (mm)	Calculation value	Require SAR testing?	Test separation distance (mm)	Calculation value	Require SAR testing?
WLAN Main 2.45GHz	13.5	22.387	less than 5	7.025	YES	less than 5	7.025	YES
WLAN Main 5GHz	9.5	8.913	less than 5	4.302	YES	less than 5	4.302	YES
WLAN Main 2.45GHz	13.5	22.387	less than 5	7.025	YES	less than 5	7.025	YES

1.6 Proximity sensor operation description

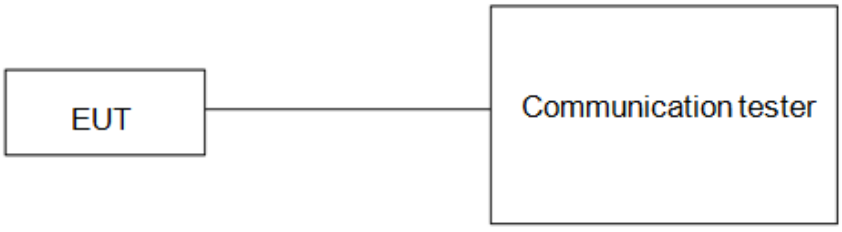
The P-sensor being used to reduce output power is capacitive in which when the object such as human body, metal or plastic is being approached, the sensing capacitance would be increased with the antenna pad. Once the capacitance is accumulated, and reached over the threshold as set in MCU of the microchip, the interruption signal is pulled low (High state without trigger) and further inform modem module of the transmitter to make power reduction.



1.6.1 Proximity sensor measurement procedure

1. The proximity sensor is collocated with WWAN antenna.

2. Output power is measured, and monitored by using the communication tester. A RF cables with sufficient length was being attached from the antenna port of the module, and used for the measurement. The appropriate loss attenuated from cable is compensated in the communication tester.



1.6.2 Trigger distances for back/top/left side

Test procedure:

1. The entire back surface or edge of the tablet is positioned below a flat phantom filled with the required tissue equivalent medium and positioned at least 20 mm further than the distance that triggers power reduction.

2. The back surface or edge is moved toward the phantom in 3 mm steps until the sensor triggers.

3. The back surface or edge is then moved back (further away) from the phantom until maximum output power is returned to the normal maximum level.

4. The back surface or edge is again moved toward the phantom, but in 1 mm steps, until it is at least 5 mm past the triggering point or touching the phantom

5. If the tablet is not touching the phantom, it is moved in 3 mm steps until it touches the phantom to confirm that the sensor remains triggered and the maximum power stays reduced.

6. The process is then reversed by moving the tablet away from the phantom to determine triggering release, until it is at least 10 mm beyond the point that triggers the return of normal maximum power.

7. The measured output power within ± 5 mm of the triggering points, or until the tablet is touching the phantom, for movements to and from the phantom should be tabulated.

8. To ensure all production units are compliant, it is generally necessary to reduce the triggering distance determined from the triggering tests by 1 mm, or more if it is necessary, and use the smallest distance for movements to and from the phantom, minus 1 mm, as the sensor triggering distance for determining the SAR measurement distance.

9. For back side, the trigger distance of proximity sensor is 18mm.

10. For top side, the trigger distance of proximity sensor is 17mm, and we perform the 1.6.3 tilt angle testing in next step.

11. For left side, the trigger distance of proximity sensor is 17mm, and we perform the 1.6.3 tilt angle testing in next step.

1.6.3 Tilt angle testing

Test procedure:

1. The influence of table tilt angles to proximity sensor triggering is determined by positioning each tablet edge that contains a transmitting antenna, perpendicular to the flat phantom, at the smallest sensor triggering test distance determined in sections 1.6.2 by rotating the tablet around the edge next to the phantom in ≤ 10 deg increments until the tablet is +/- 45deg or more from the vertical position at 0 deg.

2. If sensor triggering is released and normal maximum output power is restored within the +/- 45deg range, the procedures in step 1) should be repeated by reducing the tablet to phantom separation distance by 1 mm until the proximity sensor no longer releases triggering, and maximum output power remains in the reduced mode.

3. The smallest separation distance determined in steps 1) and 2), minus 1 mm, is the sensor triggering distance for tablet tilt coverage. The smallest separation distance determined in sections 1.6.2, 1.6.3 minus 1 mm should be used in the SAR measurements.

4. The influence of tablet tilt angles to proximity sensor triggering is determined by positioning top and right sides, please refer to table 1.6.5 and 1.6.6.

5. After the tilt angle testing for top side, the sensor is not released during +/- 45deg, so 15-1=14mm, is the sensor triggering distance for tablet tilt coverage. The smallest separation distance minus 1 mm(14-1=13mm) should be used in the SAR measurements.

6. After the tilt angle testing for left side, the sensor is not released during +/- 45deg, so 17-1=16mm, is the sensor triggering distance for tablet tilt coverage. The smallest separation distance minus 1 mm(16-1=15mm) should be used in the SAR measurements.

1.6.4 Proximity sensor coverage

The following procedures do not apply and are not required for configurations where the antenna and sensor are collocated and the peak SAR location is overlapping with the sensor.

Test procedure:

1. The back surface or edges of the tablet is positioned at a test separation distance less than or equal to the distance required for back surface or edge triggering, with both the antenna and sensor pad located at least 20 mm laterally outside the edge (boundary) of the phantom, along the direction of maximum antenna and sensor offset.

2. The similar sequence of steps applied to determine sensor triggering distance in section 1.6.2 are used to verify back surface and edge sensor coverage by moving the tablet (sensor and antenna) horizontally toward the phantom while maintaining the same vertical separation between the back surface or edge and the phantom.

3. After the exact location where triggering of power reduction is determined, with respect to the sensor and antenna, the tablet movement should be continued, in 3 mm increments, until both the sensor and antenna(s) are fully under the phantom and at least 20 mm inside the phantom edge.

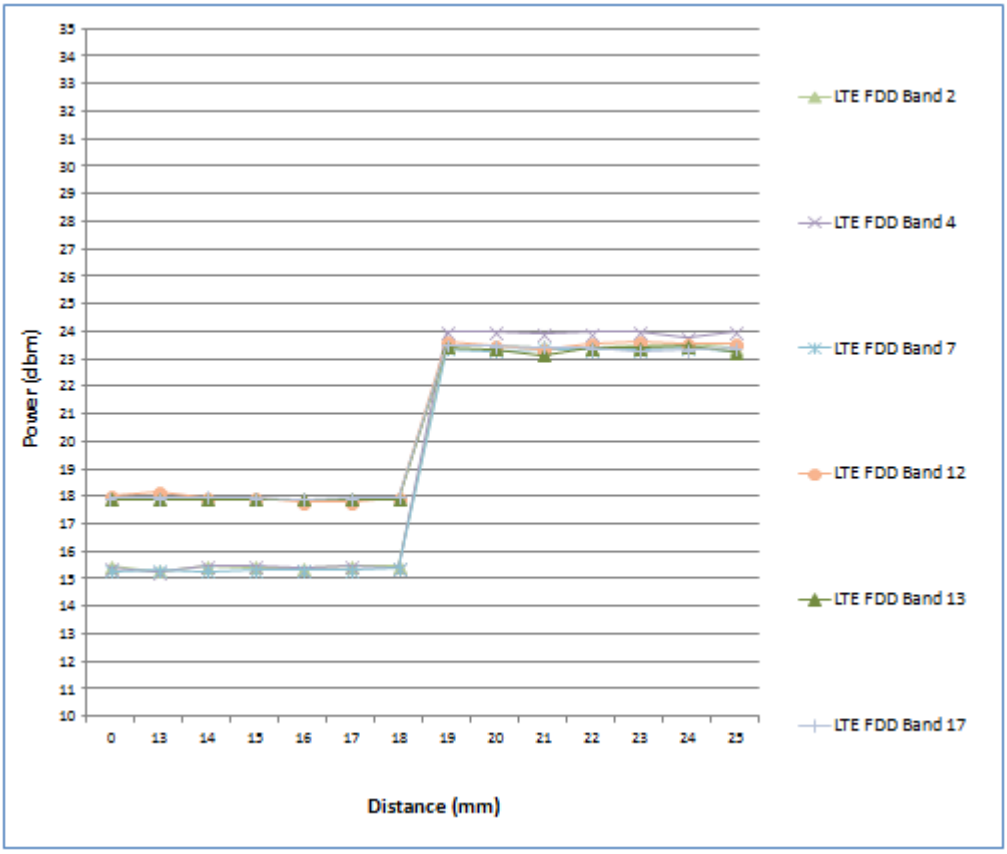
4. The process is then repeated from the other direction, at the opposite end of maximum antenna and sensor offset, by rotating the tablet 180 degrees.

1.6.5 Results

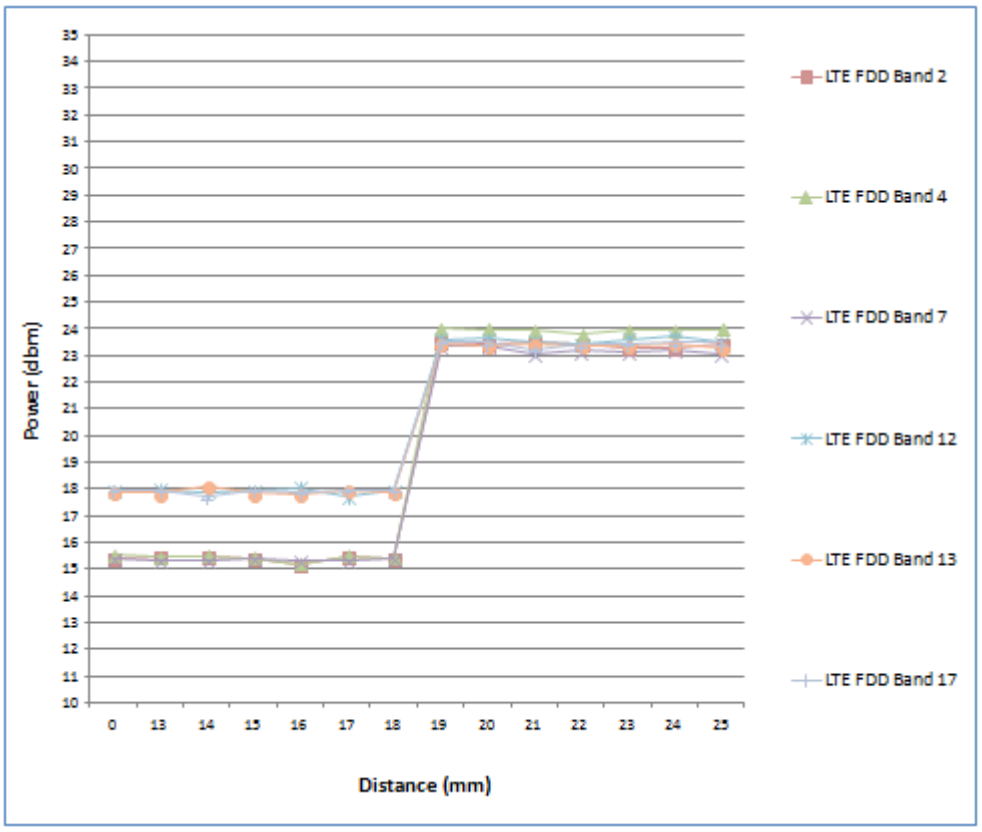
The measured output power within ± 5 mm of the triggering points, or until the tablet is touching the phantom, for movements to and from the phantom is tabulated in the following.

Back side

Moving device toward the phantom



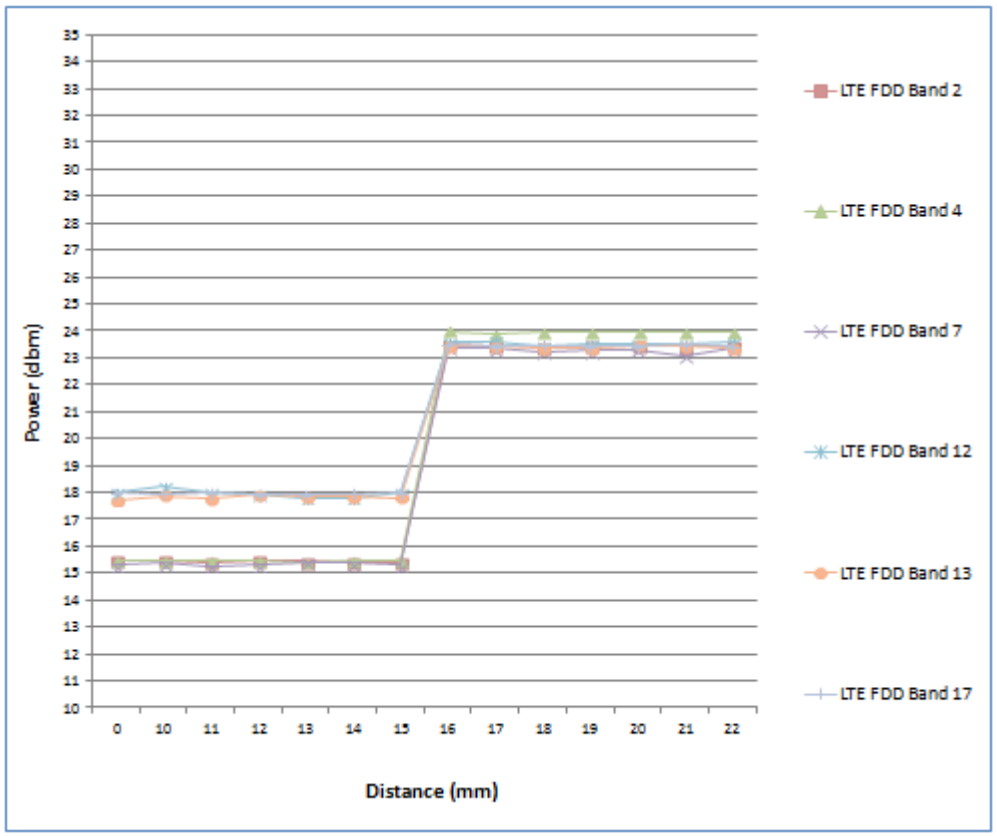
Moving device away from the phantom



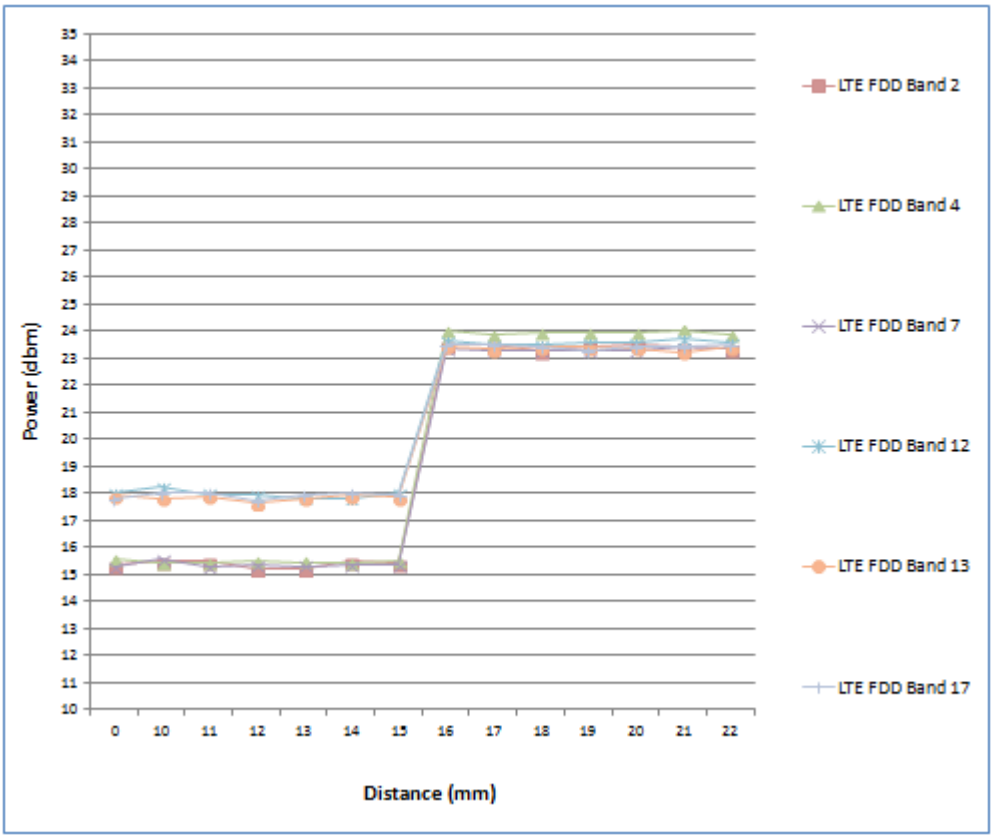
For back side, the worst trigger distance of proximity sensor is 18mm, thus we test back side SAR in 17mm without power reduction and 0mm with power reduction.

Top side

Moving device toward the phantom

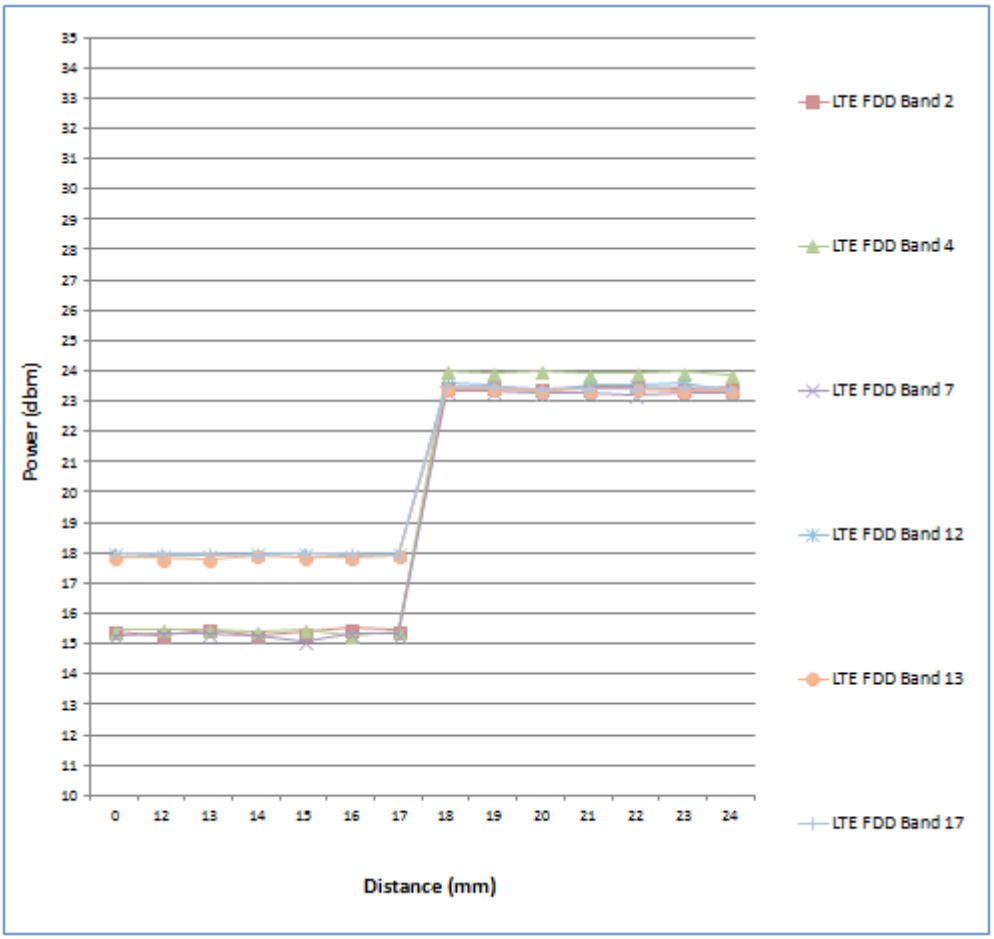


Moving device away from the phantom



Left side

Moving device toward the phantom



Moving device away from the phantom

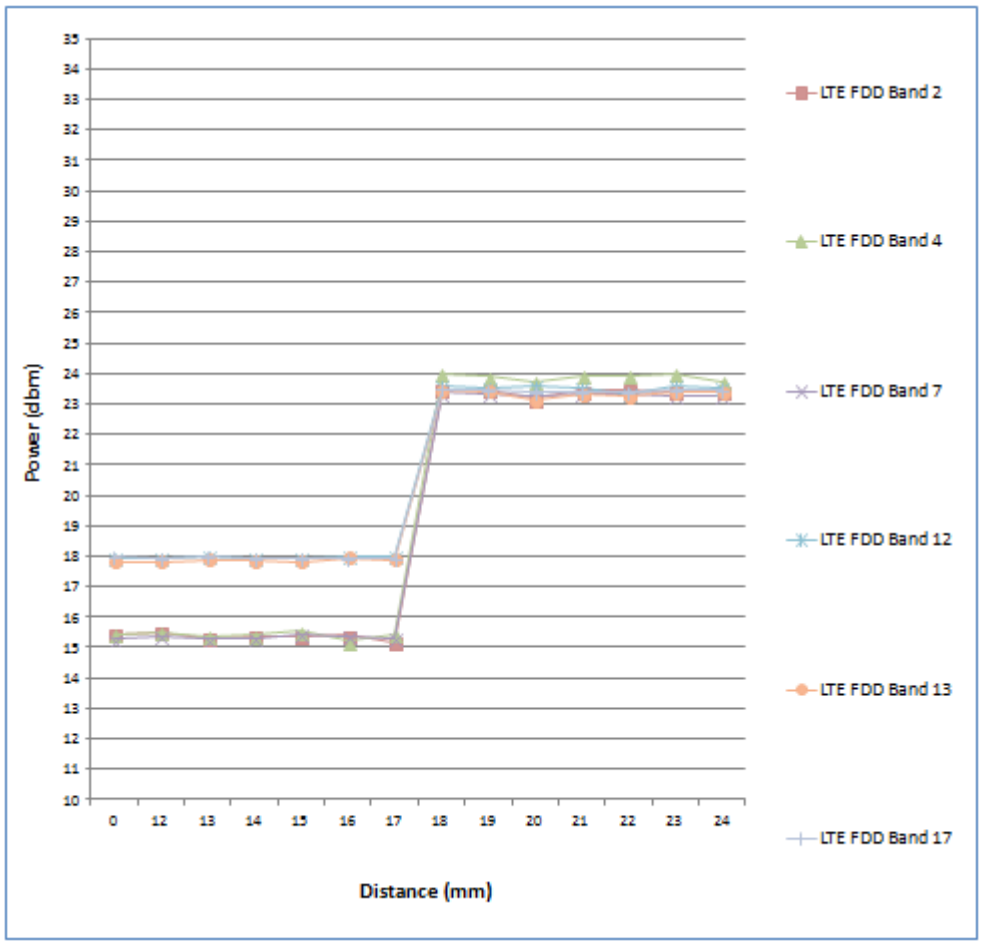


Table 1.6.5 Tilt angle test results for top side

P-sensor ON/OFF	-50 deg	-45 deg	-40 deg	-30 deg	-20 deg	-10 deg	0 deg	10 deg	20 deg	30 deg	40 deg	45 deg	50 deg
15mm	ON	ON	ON	ON	ON	ON	ON	ON	ON	ON	ON	ON	ON

During the tilt angle testing for top side, the sensor is not released in 15mm, so 15-1=14mm, is the sensor triggering distance for tablet tilt coverage. The smallest separation distance minus 1 mm (14-1=13mm) should be used in the SAR measurements for top side.

Table 1.6.6 Tilt angle test results for left side

P-sensor ON/OFF	-50 deg	-45 deg	-40 deg	-30 deg	-20 deg	-10 deg	0 deg	10 deg	20 deg	30 deg	40 deg	45 deg	50 deg
17mm	ON	ON	ON	ON	ON	ON	ON	ON	ON	ON	ON	ON	ON

During the tilt angle testing for left side, the sensor is not released in 17mm, so 17-1=16mm, is the sensor triggering distance for tablet tilt coverage. The smallest separation distance minus 1 mm(16-1=15mm) should be used in the SAR measurements for left side.

Note:

1. The triggering variations and hysteresis effect has been evaluated separately according to the tissue-equivalent medium required for each frequency band, and sensor triggering does not change with different tissue-equivalent media.

2. The default power level for sensor failure and malfunctioning, including all compliance concerns, has been addressed in the client's operation description (1.6.6) for the proximity sensor implementation to be acceptable.

3. Conducted power is monitored qualitatively to identify the general triggering characteristics and recorded quantitatively, versus spacing.

1.6.6 Operation description for P-sensor

Power Reduction Design Specification (for P-sensor)
The mechanism of power reduction is used only for WWAN, not for Wi-Fi and Bluetooth. The reduced power for each technology/band is defined in Table1-1. With P-sensor mechanism, the LTE default power when P-sensor failure or malfunction are show in Table1-2 as below.

Table1-1：The power reduction scenario table

Band	Power Reduction
LTE B2/4/7/12/13/17	YES
WLAN	NO
BT	NO

Table1-2：The default maximum power when p-sensor failure or malfunction

Technology / Band	Mode	Default Maximum Power (dBm)
LTE B2	All	15.5
LTE B4	All	15.5
LTE B7	All	15.5
LTE B12	All	18
LTE B13	All	18
LTE B17	All	18

1.7 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.

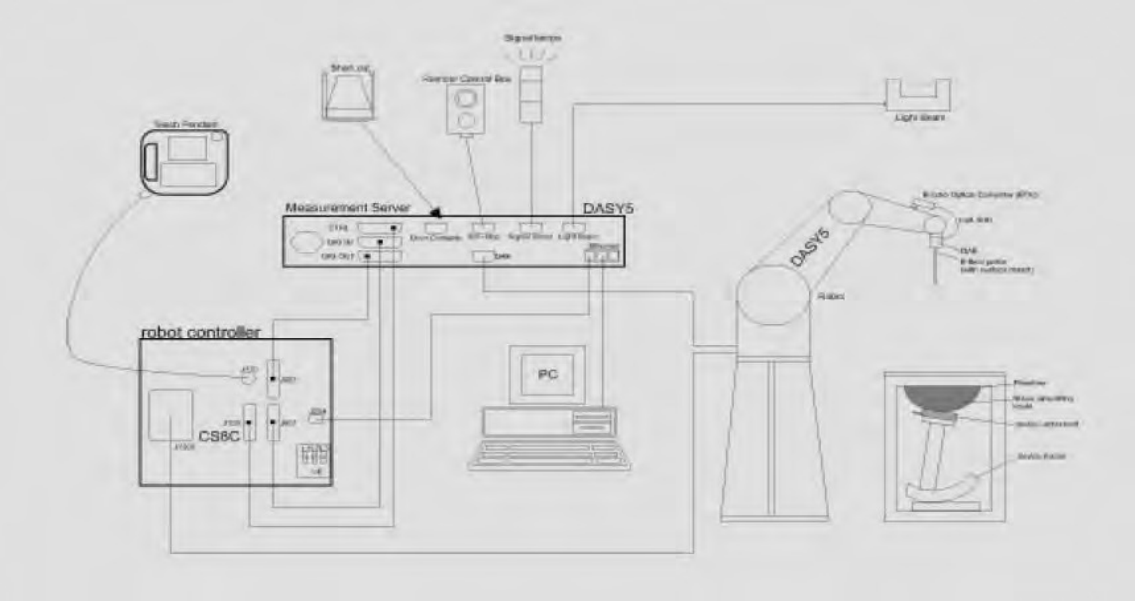


Fig. a The block diagram of SAR system

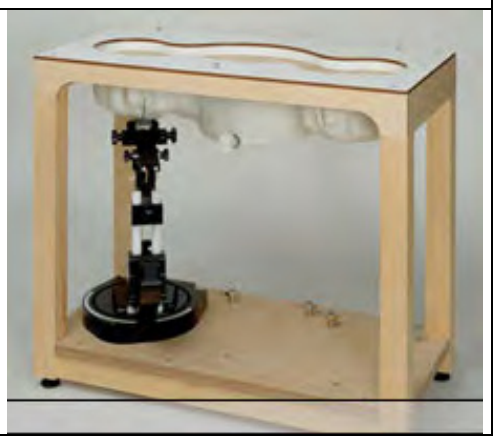
4. The Electro-optical converter (EOC) performs the conversion between optical and electrical of the signals for the digital communication to the DAE and for the analog signal from the optical surface detection. The EOC is connected to the measurement server.
5. The function of the measurement server 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.

1.8 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 750/1750/1900/2450/2600/5200/ 5300/5600/5800 MHz Additional CF for other liquids and frequencies upon request	
Frequency	10 MHz to > 6 GHz	
Directivity	± 0.3 dB in HSL (rotation around probe axis) ± 0.5 dB in tissue material (rotation normal to probe axis)	
Dynamic Range	10 µW/g to > 100 mW/g Linearity: ± 0.2 dB (noise: typically < 1 µW/g)	
Dimensions	Tip diameter: 2.5 mm	
Application	High precision dosimetric measurements in any exposure scenario (e.g., very strong gradient fields). Only probe which enables compliance testing for frequencies up to 6 GHz with precision of better 30%.	

SAM PHANTOM V4.0C

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

DEVICE HOLDER

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

1.9 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 750/1750/1900/2450/2600/5200/5300/5600/5800 MHz. The tests were conducted on the same days as the measurement of the DUT. The obtained results from the system accuracy verification are displayed in the table 1 (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.

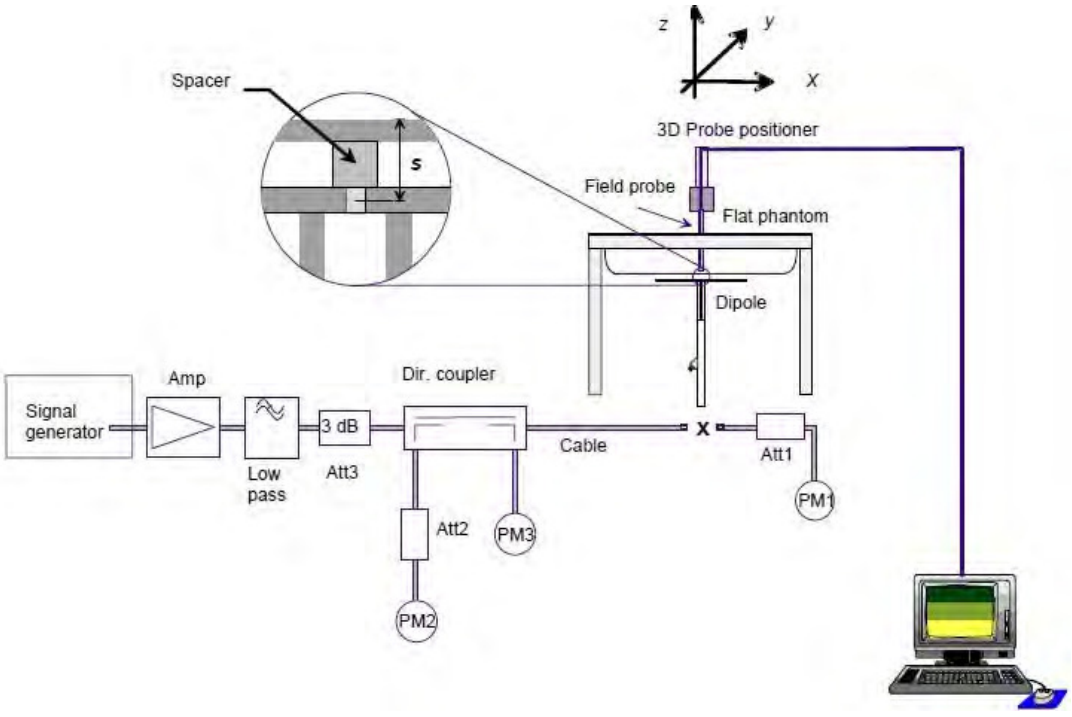


Fig. b The block diagram of system verification

Validation Kit	S/N	Frequency (MHz)		1W Target SAR-1g (mW/g)	Measured SAR-1g (mW/g)	Measured SAR-1g normalized to 1W (mW/g)	Deviation (%)	Measured Date
D750V2	1015	750	Body	8.77	2.24	8.96	2.17%	Oct. 24, 2016
D750V2	1015	750	Body	8.77	2.23	8.92	1.71%	Oct. 25, 2016
D1750V2	1008	1750	Body	37.3	8.99	35.96	-3.59%	Oct. 26, 2016
D1900V2	5d027	1900	Body	39.7	9.55	38.2	-3.78%	Oct. 27, 2016
D2450V2	727	2450	Body	49.6	12.9	51.6	4.03%	Oct. 17, 2016
D2600V2	1005	2600	Body	53.9	14.1	56.4	4.64%	Oct. 28, 2016
D5GHzV2	1023	5200	Body	71.9	7.52	75.2	4.59%	Oct. 31, 2016
		5300	Body	75.1	7.82	78.2	4.13%	Oct. 31, 2016
		5600	Body	78.3	8.11	81.1	3.58%	Nov. 01, 2016
		5800	Body	75.3	7.44	74.4	-1.20%	Oct. 23, 2016

Table 1. Results of system validation

1.10 Tissue Simulant Fluid for the Frequency Band

The dielectric properties for this body-simulant fluid were measured by using the Agilent Model 85070E Dielectric Probe (rates frequency band 200 MHz to 20 GHz) in conjunction with Network Analyzer (30 KHz-6000 MHz).
All dielectric parameters of tissue simulates were measured within 24 hours of SAR measurements. The depth of the tissue simulant in the flat section of the phantom was ≥ 15 cm ± 5 mm (Frequency ≤3G) or ≥ 10 cm ± 5 mm (Frequency >3G) during all tests. (Fig. 2)

Tissue Type	Measurement Date	Measured Frequency (MHz)	Target Dielectric Constant, εr	Target Conductivity, σ (S/m)	Measured Dielectric Constant, εr	Measured Conductivity, σ (S/m)	% dev εr	% dev σ
Body	Oct. 24, 2016	704	55.710	0.960	56.916	0.919	-2.16%	4.25%
		707.5	55.697	0.960	56.894	0.923	-2.15%	3.86%
		711	55.683	0.960	56.865	0.928	-2.12%	3.37%
		750	55.531	0.963	56.593	0.966	-1.91%	-0.27%
		782	55.406	0.966	56.336	0.995	-1.68%	-3.02%
	Oct. 25, 2016	709	55.691	0.960	56.864	0.925	-2.11%	3.66%
		710	55.687	0.960	56.856	0.927	-2.10%	3.46%
		711	55.683	0.960	56.848	0.929	-2.09%	3.26%
		750	55.531	0.963	56.539	0.969	-1.81%	-0.58%
	Oct. 26, 2016	1720	53.511	1.469	53.901	1.415	-0.73%	3.71%
		1732.5	53.478	1.477	53.793	1.427	-0.59%	3.41%
		1745	53.445	1.485	53.679	1.441	-0.44%	2.98%
		1750	53.432	1.488	53.634	1.447	-0.38%	2.78%
	Oct. 27, 2016	1860	53.300	1.520	52.644	1.559	1.23%	-2.57%
		1880	53.300	1.520	52.461	1.578	1.57%	-3.82%
		1900	53.300	1.520	52.253	1.528	1.96%	-0.53%
	Oct. 17, 2016	2437	52.717	1.938	51.721	1.983	1.89%	-2.34%
		2450	52.700	1.950	51.692	1.999	1.91%	-2.51%
		2462	52.685	1.967	51.669	2.012	1.93%	-2.29%
	Oct. 28, 2016	2510	52.624	2.035	51.572	2.061	2.00%	-1.27%
		2535	52.592	2.071	51.521	2.082	2.04%	-0.55%
		2560	52.560	2.106	51.843	2.149	1.36%	-2.04%
		2600	52.509	2.163	51.71	2.24	1.52%	-3.57%

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	Oct. 31, 2016	5200	49.014	5.299	47.506	5.124	3.08%	3.31%
		5220	48.987	5.323	47.387	5.225	3.27%	1.83%
		5260	48.933	5.369	47.148	5.426	3.65%	-1.05%
		5280	48.906	5.393	47.029	5.529	3.84%	-2.53%
		5300	48.879	5.416	46.944	5.614	3.96%	-3.65%
	Nov. 1, 2016	5500	48.607	5.650	46.79	5.822	3.74%	-3.05%
		5600	48.471	5.766	47.499	5.988	2.01%	-3.84%
		5700	48.336	5.883	47.198	6.087	2.35%	-3.46%
	Oct. 23, 2016	5785	48.220	5.982	46.941	6.167	2.65%	-3.08%
		5800	48.200	6.000	46.894	6.23	2.71%	-3.83%
		5825	48.166	6.029	46.823	6.256	2.79%	-3.76%

Table 2. Dielectric Parameters of Tissue Simulant Fluid

The composition of the tissue simulating liquid:

Frequency (MHz)	Mode	Ingredient						Total amount
		DGMBE	Water	Salt	Preventol D-7	Cellulose	Sugar	
750	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)
2450	Body	301.7ml	698.3ml	—	—	—	—	1.0L(Kg)
2600	Body	301.7ml	698.3ml	—	—	—	—	1.0L(Kg)

Body 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

1.11 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.

1.12 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:

1.12.1 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.

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

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

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

- The temperature gradient is not directly measurable but must be evaluated from temperature measurements at different time steps. Special precaution is necessary to avoid measurement errors caused by temperature gradients due to energy equalizing effects or convection currents in the liquid. Such effects cannot be completely avoided, as the measured field itself destroys the thermal equilibrium in the liquid. With a careful setup these errors can be kept small.
- The measured volume around the temperature probe is not well defined. It is difficult to calculate the energy transfer from a surrounding gradient temperature field into the probe. These effects must be considered, since temperature probes are calibrated in liquid with homogeneous temperatures. There is no traceable standard for temperature rise measurements.
- The calibration depends on the assessment of the specific density, the heat capacity and the conductivity of the medium. While the specific density and heat capacity can be measured accurately with standardized procedures (~ 2% for c; much better for ρ) , there is no standard for the measurement of the conductivity. Depending on the method and liquid, the error can well exceed ±5%.
- Temperature rise measurements are not very sensitive and therefore are often performed at a higher power level than the E-field measurements. The nonlinearities in the system (e.g., power measurements, different components, etc.) must be considered.

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

1.12.2 Calibration with Analytical Fields

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

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

- Due to the small wavelength in liquids with high permittivity, even small setups might be above the resonant cutoff frequencies. The field distribution in the setup must be carefully checked for conformity with the theoretical field distribution.

References

1. N. Kuster, Q. Balzano, and J.C. Lin, Eds., *Mobile Communications Safety*, Chapman & Hall, London, 1997.
2. K. Meier, M. Burkhardt, T. Schmid, and N. Kuster, \Broadband calibration of E-field probes in lossy media", *IEEE Transactions on Microwave Theory and Techniques*, vol. 44, no. 10, pp. 1954{1962, Oct. 1996.
3. K. Jokela, P. Hyysalo, and L. Puranen, \Calibration of specific absorption rate (SAR) probes in waveguide at 900 MHz", *IEEE Transactions on Instrumentation and Measurements*, vol. 47, no. 2, pp. 432{438, Apr. 1998.

1.13 Test Standards and Limits

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

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

LTE FDD Band II (without power reduction)

Mode	Bandwidth (MHz)	Modulation	RB Size	RB start	Position	Distance (mm)	CH	Freq. (MHz)	Max. Rated Avg. Power + Max. Tolerance (dBm)	Measured Avg. Power (dBm)	Scaling	Averaged SAR over 1g (W/kg)		Plot page
												Measured	Reported	
LTE Band 2	20MHz	QPSK	1 RB	50	Back side	17	19100	1900	23.5	23.49	0.23%	0.476	0.477	-
					Top side	13	19100	1900	23.5	23.49	0.23%	0.263	0.264	-
					Bottom side	0	19100	1900	23.5	23.49	0.23%	0.120	0.120	-
					Right side	0	19100	1900	23.5	23.49	0.23%	0.219	0.220	-
					Left side	15	19100	1900	23.5	23.49	0.23%	0.049	0.049	-
			50 RB	50	Back side	17	19100	1900	22.5	22.13	8.89%	0.385	0.419	-
					Top side	13	19100	1900	22.5	22.13	8.89%	0.216	0.235	-
					Bottom side	0	19100	1900	22.5	22.13	8.89%	0.094	0.102	-
					Right side	0	19100	1900	22.5	22.13	8.89%	0.162	0.176	-
					Left side	15	19100	1900	22.5	22.13	8.89%	0.039	0.042	-
			100 RB		Back side	17	18900	1880	22.5	21.97	12.98%	0.348	0.393	-
					Top side	13	18900	1880	22.5	21.97	12.98%	0.180	0.203	-
					Bottom side	0	18900	1880	22.5	21.97	12.98%	0.083	0.094	-
					Right side	0	18900	1880	22.5	21.97	12.98%	0.217	0.245	-
					Left side	15	18900	1880	22.5	21.97	12.98%	0.040	0.045	-

LTE FDD Band II (with power reduction)

Mode	Bandwidth (MHz)	Modulation	RB Size	RB start	Position	Distance (mm)	CH	Freq. (MHz)	Max. Rated Avg. Power + Max. Tolerance (dBm)	Measured Avg. Power (dBm)	Scaling	Averaged SAR over 1g (W/kg)		Plot page
												Measured	Reported	
LTE Band 2	20MHz	QPSK	1 RB	0	Back side	0	18900	1880	15.5	15.26	5.68%	1.110	1.173	-
					Top side	0	18900	1880	15.5	15.26	5.68%	0.308	0.325	-
					Left side	0	18900	1880	15.5	15.26	5.68%	0.049	0.052	-
				50	Back side	0	18700	1860	15.5	15.09	9.90%	1.080	1.187	-
					Back side	0	19100	1900	15.5	15.26	5.68%	1.160	1.226	122
					Back side*	0	19100	1900	15.5	15.26	5.68%	1.150	1.215	-
			50 RB	0	Back side	0	18900	1880	15.5	14.42	28.23%	1.010	1.295	-
					Back side	0	19100	1900	15.5	14.15	36.46%	0.620	0.846	-
				50	Back side	0	18700	1860	15.5	14.77	18.30%	1.020	1.207	-
					Top side	0	18700	1860	15.5	14.77	18.30%	0.277	0.328	-
					Left side	0	18700	1860	15.5	14.77	18.30%	0.039	0.046	-
			100 RB		Back side	0	18700	1860	15.5	14.49	26.18%	0.922	1.163	-
					Back side	0	18900	1880	15.5	14.03	40.28%	0.862	1.209	-
					Back side	0	19100	1900	15.5	14.04	39.96%	0.639	0.894	-
					Top side	0	18700	1860	15.5	14.49	26.18%	0.254	0.321	-
					Left side	0	18700	1860	15.5	14.49	26.18%	0.034	0.043	-

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

LTE FDD Band IV (without power reduction)

Mode	Bandwidth (MHz)	Modulation	RB Size	RB start	Position	Distance (mm)	CH	Freq. (MHz)	Max. Rated Avg. Power + Max. Tolerance (dBm)	Measured Avg. Power (dBm)	Scaling	Averaged SAR over 1g (W/kg)		Plot page
												Measured	Reported	
LTE Band 4	20MHz	QPSK	1 RB	50	Back side	17	20175	1732.5	24	23.99	0.23%	0.491	0.492	-
					Top side	13	20175	1732.5	24	23.99	0.23%	0.308	0.309	-
					Bottom side	0	20175	1732.5	24	23.99	0.23%	0.029	0.029	-
					Right side	0	20175	1732.5	24	23.99	0.23%	0.436	0.437	-
					Left side	15	20175	1732.5	24	23.99	0.23%	0.043	0.043	-
			50 RB	0	Back side	17	20300	1745	23	23.00	0.00%	0.422	0.422	-
					Top side	13	20300	1745	23	23.00	0.00%	0.263	0.263	-
					Bottom side	0	20300	1745	23	23.00	0.00%	0.028	0.028	-
					Right side	0	20300	1745	23	23.00	0.00%	0.371	0.371	-
					Left side	15	20300	1745	23	23.00	0.00%	0.036	0.036	-
			100 RB		Back side	17	20300	1745	23	22.95	1.16%	0.420	0.425	-
					Top side	13	20300	1745	23	22.95	1.16%	0.265	0.268	-
					Bottom side	0	20300	1745	23	22.95	1.16%	0.029	0.029	-
					Right side	0	20300	1745	23	22.95	1.16%	0.374	0.378	-
					Left side	15	20300	1745	23	22.95	1.16%	0.036	0.036	-

LTE FDD Band IV (with power reduction)

Mode	Bandwidth (MHz)	Modulation	RB Size	RB start	Position	Distance (mm)	CH	Freq. (MHz)	Max. Rated Avg. Power + Max. Tolerance (dBm)	Measured Avg. Power (dBm)	Scaling	Averaged SAR over 1g (W/kg)		Plot page
												Measured	Reported	
LTE Band 4	20MHz	QPSK	1 RB	50	Back side	0	20050	1720	15.5	15.45	1.16%	1.240	1.254	123
					Back side*	0	20050	1720	15.5	15.45	1.16%	1.220	1.234	-
					Back side	0	20175	1732.5	15.5	15.19	7.40%	1.090	1.171	-
					Back side	0	20300	1745	15.5	15.50	0.00%	1.080	1.080	-
					Top side	0	20300	1745	15.5	15.50	0.00%	0.329	0.329	-
					Left side	0	20300	1745	15.5	15.50	0.00%	0.023	0.023	-
			50 RB	0	Back side	0	20050	1720	15.5	15.19	7.40%	1.050	1.128	-
					Top side	0	20050	1720	15.5	15.19	7.40%	0.246	0.264	-
					Left side	0	20050	1720	15.5	15.19	7.40%	0.035	0.038	-
				25	Back side	0	20300	1745	15.5	14.80	17.49%	0.957	1.124	-
				50	Back side	0	20175	1732.5	15.5	14.22	34.28%	0.959	1.288	-
			100 RB		Back side	0	20050	1720	15.5	14.82	16.95%	1.060	1.240	-
					Back side	0	20175	1732.5	15.5	13.97	42.23%	0.842	1.198	-
					Back side	0	20300	1745	15.5	14.42	28.23%	0.929	1.191	-
					Top side	0	20050	1720	15.5	14.82	16.95%	0.241	0.282	-
					Left side	0	20050	1720	15.5	14.82	16.95%	0.032	0.037	-

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

LTE FDD Band VII (without power reduction)

Mode	Bandwidth (MHz)	Modulation	RB Size	RB start	Position	Distance (mm)	CH	Freq. (MHz)	Max. Rated Avg. Power + Max. Tolerance (dBm)	Measured Avg. Power (dBm)	Scaling	Averaged SAR over 1g (W/kg)		Plot page
												Measured	Reported	
LTE Band 7	20MHz	QPSK	1 RB	50	Back side	17	21350	2560	24	23.36	15.88%	0.384	0.445	-
					Top side	13	21350	2560	24	23.36	15.88%	0.570	0.661	-
					Bottom side	0	21350	2560	24	23.36	15.88%	0.097	0.112	-
					Right side	0	21350	2560	24	23.36	15.88%	0.260	0.301	-
					Left side	15	21350	2560	24	23.36	15.88%	0.210	0.243	-
			50 RB	50	Back side	17	21350	2560	23	22.23	19.40%	0.316	0.377	-
					Top side	13	21350	2560	23	22.23	19.40%	0.454	0.542	-
					Bottom side	0	21350	2560	23	22.23	19.40%	0.073	0.087	-
					Right side	0	21350	2560	23	22.23	19.40%	0.203	0.242	-
					Left side	15	21350	2560	23	22.23	19.40%	0.158	0.189	-
			100 RB		Back side	17	21350	2560	23	22.16	21.34%	0.319	0.387	-
					Top side	13	21350	2560	23	22.16	21.34%	0.457	0.555	-
					Bottom side	0	21350	2560	23	22.16	21.34%	0.075	0.091	-
					Right side	0	21350	2560	23	22.16	21.34%	0.204	0.248	-
					Left side	15	21350	2560	23	22.16	21.34%	0.169	0.205	-

LTE FDD Band VII (with power reduction)

Mode	Bandwidth (MHz)	Modulation	RB Size	RB start	Position	Distance (mm)	CH	Freq. (MHz)	Max. Rated Avg. Power + Max. Tolerance (dBm)	Measured Avg. Power (dBm)	Scaling	Averaged SAR over 1g (W/kg)		Plot page
												Measured	Reported	
LTE Band 7	20MHz	QPSK	1 RB	50	Back side	0	21100	2535	15.5	15.39	2.57%	0.946	0.970	-
					Back side	0	21350	2560	15.5	15.30	4.71%	0.961	1.006	124
					Back side*	0	21350	2560	15.5	15.30	4.71%	0.960	1.005	-
					Top side	0	21100	2535	15.5	15.39	2.57%	0.268	0.275	-
					Left side	0	21100	2535	15.5	15.39	2.57%	0.349	0.358	-
				99	Back side	0	20850	2510	15.5	15.19	7.40%	0.778	0.836	-
			50 RB	0	Back side	0	21100	2535	15.5	14.34	30.62%	0.882	1.152	-
				25	Back side	0	20850	2510	15.5	14.16	36.14%	0.888	1.209	-
				50	Back side	0	21350	2560	15.5	14.48	26.47%	0.834	1.055	-
					Top side	0	21350	2560	15.5	14.48	26.47%	0.261	0.330	-
					Left side	0	21350	2560	15.5	14.48	26.47%	0.234	0.296	-
			100 RB		Back side	0	20850	2510	15.5	14.17	35.83%	0.733	0.996	-
					Back side	0	21100	2535	15.5	14.23	33.97%	0.891	1.194	-
					Back side	0	21350	2560	15.5	14.32	31.22%	0.723	0.949	-
					Top side	0	21350	2560	15.5	14.32	31.22%	0.230	0.302	-
					Left side	0	21350	2560	15.5	14.32	31.22%	0.205	0.269	-

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

LTE FDD Band XII (without power reduction)

Mode	Bandwidth (MHz)	Modulation	RB Size	RB start	Position	Distance (mm)	CH	Freq. (MHz)	Max. Rated Avg. Power + Max. Tolerance (dBm)	Measured Avg. Power (dBm)	Scaling	Averaged SAR over 1g (W/kg)		Plot page
												Measured	Reported	
LTE Band 12	10MHz	QPSK	1 RB	25	Back side	17	23095	707.5	24	23.52	11.69%	0.289	0.323	-
					Top side	13	23095	707.5	24	23.52	11.69%	0.162	0.181	-
					Bottom side	0	23095	707.5	24	23.52	11.69%	0.022	0.025	-
					Right side	0	23095	707.5	24	23.52	11.69%	0.102	0.114	-
					Left side	15	23095	707.5	24	23.52	11.69%	0.039	0.044	-
			25 RB	25	Back side	17	23060	704	23	22.32	16.95%	0.228	0.267	-
					Top side	13	23060	704	23	22.32	16.95%	0.127	0.149	-
					Bottom side	0	23060	704	23	22.32	16.95%	0.017	0.020	-
					Right side	0	23060	704	23	22.32	16.95%	0.080	0.094	-
					Left side	15	23060	704	23	22.32	16.95%	0.030	0.035	-
			50 RB		Back side	17	23060	704	23	22.30	17.49%	0.218	0.256	-
					Top side	13	23060	704	23	22.30	17.49%	0.124	0.146	-
					Bottom side	0	23060	704	23	22.30	17.49%	0.017	0.020	-
					Right side	0	23060	704	23	22.30	17.49%	0.077	0.090	-
					Left side	15	23060	704	23	22.30	17.49%	0.030	0.035	-

LTE FDD Band XII (with power reduction)

Mode	Bandwidth (MHz)	Modulation	RB Size	RB start	Position	Distance (mm)	CH	Freq. (MHz)	Max. Rated Avg. Power + Max. Tolerance (dBm)	Measured Avg. Power (dBm)	Scaling	Averaged SAR over 1g (W/kg)		Plot page
												Measured	Reported	
LTE Band 12	10MHz	QPSK	1 RB	25	Back side	0	23060	704	18	17.99	0.23%	0.945	0.947	-
					Back side	0	23095	707.5	18	17.89	2.57%	0.953	0.977	125
					Back side*	0	23095	707.5	18	17.89	2.57%	0.950	0.974	-
					Top side	0	23060	704	18	17.99	0.23%	0.258	0.259	-
					Left side	0	23060	704	18	17.99	0.23%	0.049	0.049	-
				49	Back side	0	23130	711	18	17.96	0.93%	0.883	0.891	-
			25 RB	0	Back side	0	23095	707.5	18	17.23	19.40%	0.823	0.983	-
					Back side	0	23130	711	18	17.23	19.40%	0.811	0.968	-
				25	Back side	0	23060	704	18	17.25	18.85%	0.782	0.929	-
					Top side	0	23060	704	18	17.25	18.85%	0.204	0.242	-
					Left side	0	23060	704	18	17.25	18.85%	0.042	0.050	-
			50 RB		Back side	0	23060	704	18	17.18	20.78%	0.776	0.937	-
					Back side	0	23095	707.5	18	17.17	21.06%	0.820	0.993	-
					Back side	0	23130	711	18	17.14	21.90%	0.826	1.007	-
					Top side	0	23060	704	18	17.18	20.78%	0.205	0.248	-
					Left side	0	23060	704	18	17.18	20.78%	0.040	0.048	-

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

LTE FDD Band XIII (without power reduction)

Mode	Bandwidth (MHz)	Modulation	RB Size	RB start	Position	Distance (mm)	CH	Freq. (MHz)	Max. Rated Avg. Power + Max. Tolerance (dBm)	Measured Avg. Power (dBm)	Scaling	Averaged SAR over 1g (W/kg)		Plot page
												Measured	Reported	
LTE Band 13	10MHz	QPSK	1 RB	25	Back side	17	23230	782	24	23.22	19.67%	0.497	0.595	-
					Top side	13	23230	782	24	23.22	19.67%	0.250	0.299	-
					Bottom side	0	23230	782	24	23.22	19.67%	0.035	0.042	-
					Right side	0	23230	782	24	23.22	19.67%	0.101	0.121	-
					Left side	15	23230	782	24	23.22	19.67%	0.092	0.110	-
			25 RB	0	Back side	17	23230	782	23	22.28	18.03%	0.404	0.477	-
					Top side	13	23230	782	23	22.28	18.03%	0.206	0.243	-
					Bottom side	0	23230	782	23	22.28	18.03%	0.029	0.034	-
					Right side	0	23230	782	23	22.28	18.03%	0.085	0.100	-
					Left side	15	23230	782	23	22.28	18.03%	0.071	0.084	-
			50 RB		Back side	17	23230	782	23	22.18	20.78%	0.396	0.478	-
					Top side	13	23230	782	23	22.18	20.78%	0.200	0.242	-
					Bottom side	0	23230	782	23	22.18	20.78%	0.029	0.035	-
					Right side	0	23230	782	23	22.18	20.78%	0.079	0.095	-
					Left side	15	23230	782	23	22.18	20.78%	0.072	0.087	-

LTE FDD Band XIII (with power reduction)

Mode	Bandwidth (MHz)	Modulation	RB Size	RB start	Position	Distance (mm)	CH	Freq. (MHz)	Max. Rated Avg. Power + Max. Tolerance (dBm)	Measured Avg. Power (dBm)	Scaling	Averaged SAR over 1g (W/kg)		Plot page
												Measured	Reported	
LTE Band 13	10MHz	QPSK	1 RB	0	Back side	0	23230	782	18	17.63	8.89%	0.937	1.020	-
				25	Back side	0	23230	782	18	17.89	2.57%	0.921	0.945	-
					Top side	0	23230	782	18	17.89	2.57%	0.187	0.192	-
					Left side	0	23230	782	18	17.89	2.57%	0.155	0.159	-
				49	Back side	0	23230	782	18	17.60	9.65%	0.956	1.048	126
					Back side*	0	23230	782	18	17.60	9.65%	0.951	1.043	-
			25 RB	0	Back side	0	23230	782	18	16.80	31.83%	0.736	0.970	-
				12	Back side	0	23230	782	18	16.74	33.66%	0.725	0.969	-
				25	Back side	0	23230	782	18	16.82	31.22%	0.744	0.976	-
					Top side	0	23230	782	18	16.82	31.22%	0.144	0.189	-
					Left side	0	23230	782	18	16.82	31.22%	0.124	0.163	-
			50 RB		Back side	0	23230	782	18	16.86	30.02%	0.735	0.956	-
					Top side	0	23230	782	18	16.86	30.02%	0.147	0.191	-
					Left side	0	23230	782	18	16.86	30.02%	0.125	0.163	-

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

LTE FDD Band XVII (without power reduction)

Mode	Bandwidth (MHz)	Modulation	RB Size	RB start	Position	Distance (mm)	CH	Freq. (MHz)	Max. Rated Avg. Power + Max. Tolerance (dBm)	Measured Avg. Power (dBm)	Scaling	Averaged SAR over 1g (W/kg)		Plot page
												Measured	Reported	
LTE Band 17	10MHz	QPSK	1 RB	49	Back side	17	23790	710	24	23.16	21.34%	0.297	0.360	-
					Top side	13	23790	710	24	23.16	21.34%	0.150	0.182	-
					Bottom side	0	23790	710	24	23.16	21.34%	0.020	0.024	-
					Right side	0	23790	710	24	23.16	21.34%	0.107	0.130	-
					Left side	15	23790	710	24	23.16	21.34%	0.270	0.328	-
			25 RB	25	Back side	17	23800	711	23	22.06	24.17%	0.238	0.296	-
					Top side	13	23800	711	23	22.06	24.17%	0.123	0.153	-
					Bottom side	0	23800	711	23	22.06	24.17%	0.016	0.020	-
					Right side	0	23800	711	23	22.06	24.17%	0.083	0.103	-
					Left side	15	23800	711	23	22.06	24.17%	0.208	0.258	-
			50 RB		Back side	17	23780	709	23	22.06	24.17%	0.228	0.283	-
					Top side	13	23780	709	23	22.06	24.17%	0.123	0.153	-
					Bottom side	0	23780	709	23	22.06	24.17%	0.016	0.020	-
					Right side	0	23780	709	23	22.06	24.17%	0.078	0.097	-
					Left side	15	23780	709	23	22.06	24.17%	0.192	0.238	-

LTE FDD Band XVII (with power reduction)

Mode	Bandwidth (MHz)	Modulation	RB Size	RB start	Position	Distance (mm)	CH	Freq. (MHz)	Max. Rated Avg. Power + Max. Tolerance (dBm)	Measured Avg. Power (dBm)	Scaling	Averaged SAR over 1g (W/kg)		Plot page
												Measured	Reported	
LTE Band 17	10MHz	QPSK	1 RB	25	Back side	0	23790	710	18	17.93	1.62%	0.906	0.921	-
					Back side	0	23800	711	18	17.90	2.33%	0.909	0.930	-
				49	Back side	0	23780	709	18	17.96	0.93%	0.913	0.921	127
					Back side*	0	23780	709	18	17.96	0.93%	0.903	0.911	-
					Top side	0	23780	709	18	17.96	0.93%	0.243	0.245	-
					Left side	0	23780	709	18	17.96	0.93%	0.057	0.058	-
			25 RB	0	Back side	0	23780	709	18	16.82	31.22%	0.719	0.943	-
				12	Back side	0	23790	710	18	16.77	32.74%	0.700	0.929	-
				25	Back side	0	23780	709	18	16.82	31.22%	0.705	0.925	-
					Back side	0	23800	711	18	16.91	28.53%	0.714	0.918	-
					Top side	0	23800	711	18	16.91	28.53%	0.188	0.242	-
					Left side	0	23800	711	18	16.91	28.53%	0.043	0.055	-
			50 RB		Back side	0	23780	709	18	16.83	30.92%	0.726	0.950	-
					Back side	0	23790	710	18	16.70	34.90%	0.711	0.959	-
					Back side	0	23800	711	18	16.74	33.66%	0.701	0.937	-
					Top side	0	23780	709	18	16.83	30.92%	0.190	0.249	-
					Top side	0	23780	709	18	16.83	30.92%	0.041	0.054	-

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

WLAN Antenna

Mode	Position	Distance (mm)	CH	Freq. (MHz)	Max. Rated Avg. Power + Max. Tolerance (dBm)	Measured Avg. Power (dBm)	Scaling	Averaged SAR over 1g (W/kg)		Plot page
								Measured	Reported	
WLAN802.11 b	Back side	0	6	2437	16	15.69	107.40%	1.010	1.085	128
	Back side*	0	6	2437	16	15.69	107.40%	1.000	1.074	-
	Back side	0	11	2462	16	15.95	101.16%	0.987	0.998	-
	Top side	0	11	2462	16	15.95	101.16%	0.009	0.009	-
	Bottom side	0	11	2462	16	15.95	101.16%	0.390	0.395	-
	Left side	0	11	2462	16	15.95	101.16%	0.003	0.003	-
	Right side	0	11	2462	16	15.95	101.16%	0.107	0.108	-
WLAN802.11 a 5.2G	Back side	0	40	5200	15.5	15.42	101.86%	1.060	1.080	129
	Back side*	0	40	5200	15.5	15.42	101.86%	1.040	1.059	-
	Back side	0	44	5220	15.5	15.41	102.09%	0.862	0.880	-
	Top side	0	40	5200	15.5	15.42	101.86%	0.006	0.006	-
	Bottom side	0	40	5200	15.5	15.42	101.86%	0.366	0.373	-
	Left side	0	40	5200	15.5	15.42	101.86%	0.025	0.025	-
	Right side	0	40	5200	15.5	15.42	101.86%	0.093	0.095	-
WLAN802.11 a 5.3G	Back side	0	52	5260	15.5	15.46	100.93%	1.070	1.080	130
	Back side*	0	52	5260	15.5	15.46	100.93%	1.050	1.060	-
	Back side	0	56	5280	15.5	15.38	102.80%	0.862	0.886	-
	Top side	0	52	5260	15.5	15.46	100.93%	0.006	0.006	-
	Bottom side	0	52	5260	15.5	15.46	100.93%	0.376	0.379	-
	Left side	0	52	5260	15.5	15.46	100.93%	0.032	0.032	-
	Right side	0	52	5260	15.5	15.46	100.93%	0.102	0.103	-
WLAN802.11 a 5.6G	Back side	0	100	5500	15.5	15.48	100.46%	1.270	1.276	131
	Back side*	0	100	5500	15.5	15.48	100.46%	1.260	1.266	-
	Back side	0	120	5600	15.5	15.47	100.69%	1.250	1.259	-
	Back side	0	140	5700	15.5	15.47	100.69%	1.150	1.158	-
	Top side	0	100	5500	15.5	15.48	100.46%	0.002	0.002	-
	Bottom side	0	100	5500	15.5	15.48	100.46%	0.625	0.628	-
	Left side	0	100	5500	15.5	15.48	100.46%	0.026	0.026	-
	Right side	0	100	5500	15.5	15.48	100.46%	0.134	0.135	-
WLAN802.11 n(20M) 5.6G	Back side	0	100	5500	15.5	15.32	104.23%	1.120	1.167	132
	Back side*	0	100	5500	15.5	15.32	104.23%	1.000	1.042	-
	Back side	0	140	5700	15.5	15.41	102.09%	1.030	1.052	-
	Top side	0	140	5700	15.5	15.41	102.09%	0.006	0.006	-
	Bottom side	0	140	5700	15.5	15.41	102.09%	0.547	0.558	-
	Left side	0	140	5700	15.5	15.41	102.09%	0.026	0.027	-
	Right side	0	140	5700	15.5	15.41	102.09%	0.092	0.094	-
WLAN802.11 a 5.8G	Back side	0	157	5785	15.5	15.33	103.99%	0.850	0.884	-
	Back side	0	165	5825	15.5	15.42	101.86%	1.150	1.171	133
	Back side*	0	165	5825	15.5	15.42	101.86%	1.140	1.161	-
	Top side	0	165	5825	15.5	15.42	101.86%	0.007	0.007	-
	Bottom side	0	165	5825	15.5	15.42	101.86%	0.542	0.552	-
	Left side	0	165	5825	15.5	15.42	101.86%	0.021	0.021	-
	Right side	0	165	5825	15.5	15.42	101.86%	0.090	0.092	-

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

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:

Simultaneous Transmit Configurations	Body
LTE + 2.4/5GHz WLAN	Yes
LTE + BT	Yes

3.1 Estimated SAR calculation

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

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

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

Mode	Test position	antenna to user separation distance	Estimated SAR(W/kg)
BT	right / bottom / back	< 5mm	0.265
BT	top / left	> 50mm	0.4

3.1 SPLSR evaluation and analysis

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

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

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

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

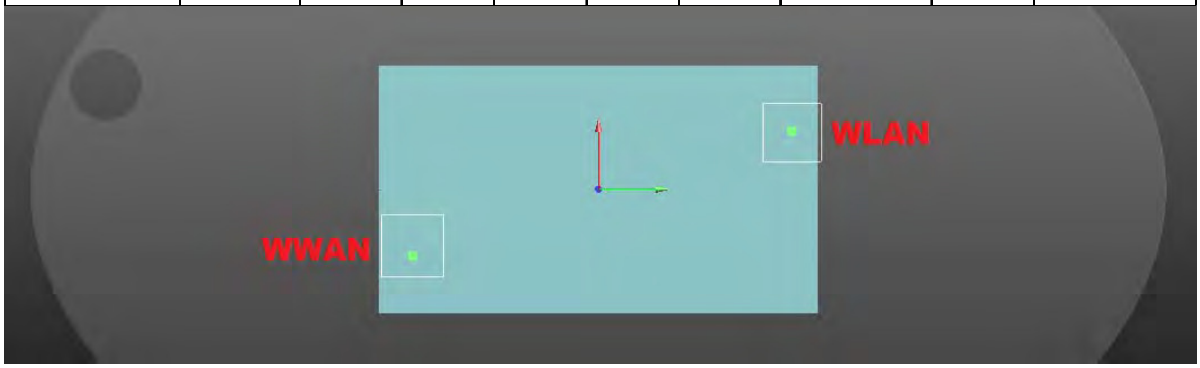
When standalone test exclusion applies, SAR is estimated; the peak location is assumed to be at the feed-point or geometric center of the antenna.

LTE FDD Band II + 2.4 GHz WLAN

No.	Conditions	Position	Distance (mm)	Max. WWAN	Max. WLAN	SAR Sum	SPLSR
1	LTE Band II	Back side	0	1.295	1.085	**2.380**	Analyzed as below
		Top side	0	0.328	0.009	0.337	ΣSAR<1.6, Not required
		Bottom side	0	0.12	0.395	0.515	ΣSAR<1.6, Not required
		Right side	0	0.245	0.108	0.353	ΣSAR<1.6, Not required
		Left side	0	0.052	0.003	0.055	ΣSAR<1.6, Not required

WWAN & WLAN

Conditions	Position	SAR Value (W/kg)	Coordinates (cm)			ΣSAR (W/kg)	Peak Location Separation Distance (mm)	SPLSR	Simultaneous Transmission SAR Test
			x	y	z				
LTE Band II	Back side	1.295	-3.43	-9.60	-0.32	2.38	206.72	0.018	SPLSR<0.04, Not required
2.4 GHz WLAN		1.085	3.02	10.04	-0.35				

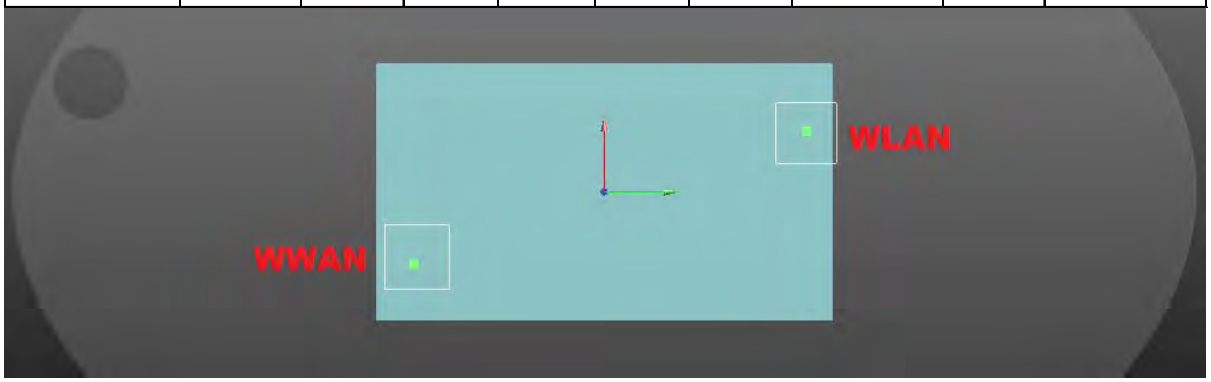


LTE FDD Band IV + 2.4 GHz WLAN

No.	Conditions	Position	Distance (mm)	Max. WWAN	Max. WLAN	SAR Sum	SPLSR
2	LTE Band IV	Back side	0	1.288	1.085	**2.373**	Analyzed as below
		Top side	0	0.329	0.009	0.338	ΣSAR<1.6, Not required
		Bottom side	0	0.029	0.395	0.424	ΣSAR<1.6, Not required
		Right side	0	0.437	0.108	0.545	ΣSAR<1.6, Not required
		Left side	0	0.038	0.003	0.041	ΣSAR<1.6, Not required

WWAN & WLAN

Conditions	Position	SAR Value (W/kg)	Coordinates (cm)			ΣSAR (W/kg)	Peak Location Separation Distance (mm)	SPLSR	Simultaneous Transmission SAR Test
			x	y	z				
LTE Band IV	Back side	1.288	-3.57	-9.46	-0.34	2.373	205.83	0.018	SPLSR<0.04, Not required
2.4 GHz WLAN		1.085	3.02	10.04	-0.35				

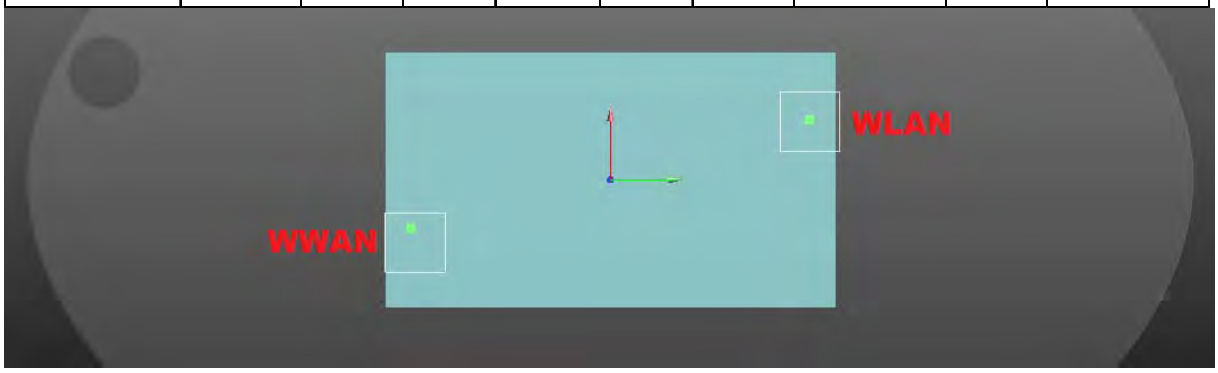


LTE FDD Band VII + 2.4 GHz WLAN

No.	Conditions	Position	Distance (mm)	Max. WWAN	Max. WLAN	SAR Sum	SPLSR
3	LTE Band VII	Back side	0	1.209	1.085	**2.294**	Analyzed as below
		Top side	0	0.330	0.009	0.339	ΣSAR<1.6, Not required
		Bottom side	0	0.112	0.395	0.507	ΣSAR<1.6, Not required
		Right side	0	0.301	0.108	0.409	ΣSAR<1.6, Not required
		Left side	0	0.358	0.003	0.361	ΣSAR<1.6, Not required

WWAN & WLAN

Conditions	Position	SAR Value (W/kg)	Coordinates (cm)			ΣSAR (W/kg)	Peak Location Separation Distance (mm)	SPLSR	Simultaneous Transmission SAR Test
			x	y	z				
LTE Band VII	Back side	1.209	-2.46	-10.04	-0.28	2.294	208.14	0.017	SPLSR<0.04, Not required
2.4 GHz WLAN		1.085	3.02	10.04	-0.35				

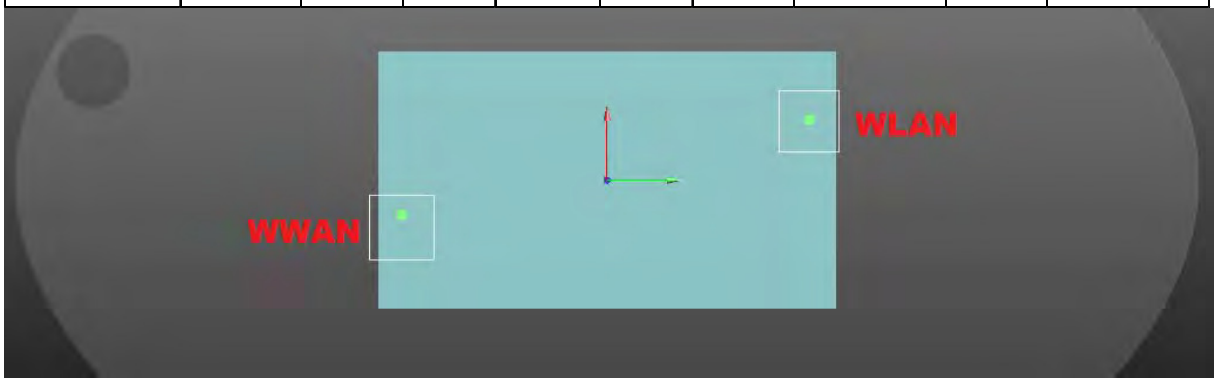


LTE FDD Band XII + 2.4 GHz WLAN

No.	Conditions	Position	Distance (mm)	Max. WWAN	Max. WLAN	SAR Sum	SPLSR
4	LTE Band XII	Back side	0	1.007	1.085	**2.092**	Analyzed as below
		Top side	0	0.259	0.009	0.268	ΣSAR<1.6, Not required
		Bottom side	0	0.025	0.395	0.420	ΣSAR<1.6, Not required
		Right side	0	0.114	0.108	0.222	ΣSAR<1.6, Not required
		Left side	0	0.050	0.003	0.053	ΣSAR<1.6, Not required

WWAN & WLAN

Conditions	Position	SAR Value (W/kg)	Coordinates (cm)			ΣSAR (W/kg)	Peak Location Separation Distance (mm)	SPLSR	Simultaneous Transmission SAR Test
			x	y	z				
LTE Band XII	Back side	1.007	-1.71	-10.20	-0.41	2.092	207.85	0.015	SPLSR<0.04, Not required
2.4 GHz WLAN		1.085	3.02	10.04	-0.35				

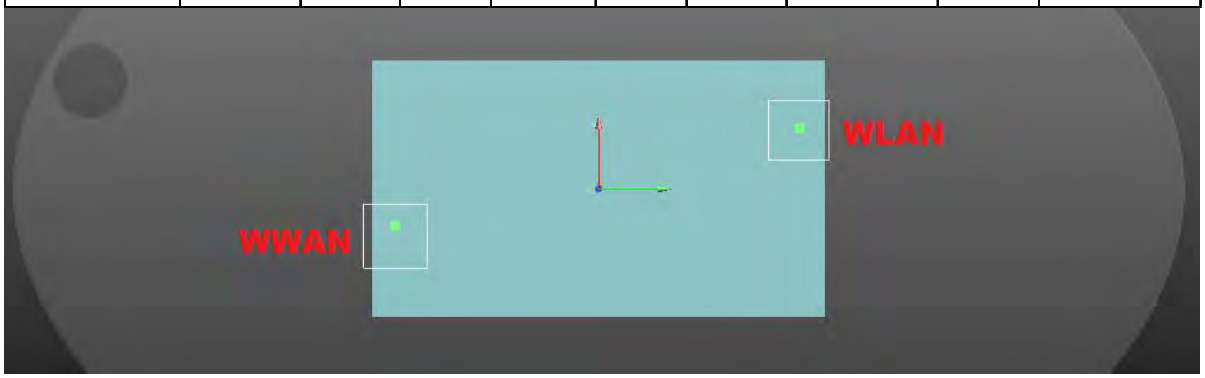


LTE FDD Band XIII + 2.4 GHz WLAN

No.	Conditions	Position	Distance (mm)	Max. WWAN	Max. WLAN	SAR Sum	SPLSR
5	LTE Band XIII	Back side	0	1.048	1.085	**2.133**	Analyzed as below
		Top side	0	0.192	0.009	0.201	ΣSAR<1.6, Not required
		Bottom side	0	0.042	0.395	0.437	ΣSAR<1.6, Not required
		Right side	0	0.121	0.108	0.229	ΣSAR<1.6, Not required
		Left side	0	0.163	0.003	0.166	ΣSAR<1.6, Not required

WWAN & WLAN

Conditions	Position	SAR Value (W/kg)	Coordinates (cm)			ΣSAR (W/kg)	Peak Location Separation Distance (mm)	SPLSR	Simultaneous Transmission SAR Test
			x	y	z				
LTE Band XIII	Back side	1.048	-1.87	-10.20	-0.35	2.133	208.22	0.015	SPLSR<0.04, Not required
2.4 GHz WLAN		1.085	3.02	10.04	-0.35				

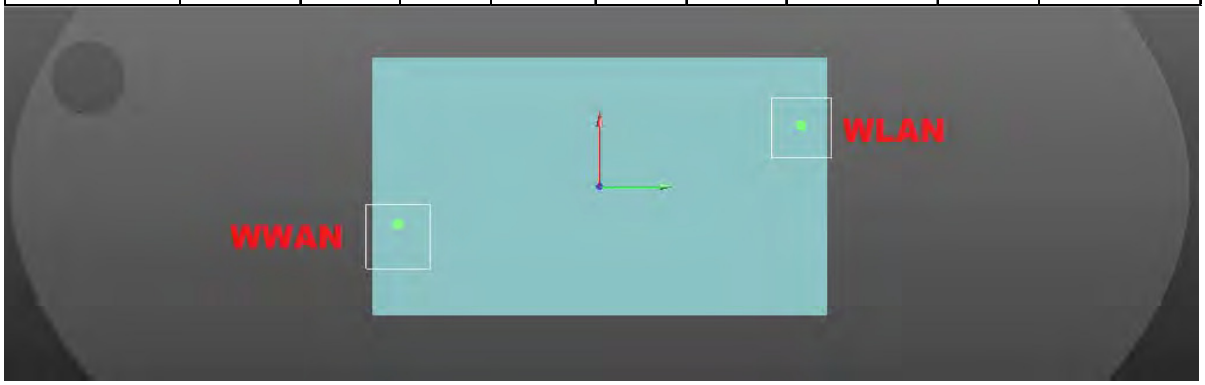


LTE FDD Band XVII + 2.4 GHz WLAN

No.	Conditions	Position	Distance (mm)	Max. WWAN	Max. WLAN	SAR Sum	SPLSR
6	LTE Band XVII	Back side	0	0.959	1.085	**2.044**	Analyzed as below
		Top side	0	0.249	0.009	0.258	ΣSAR<1.6, Not required
		Bottom side	0	0.024	0.395	0.419	ΣSAR<1.6, Not required
		Right side	0	0.130	0.108	0.238	ΣSAR<1.6, Not required
		Left side	0	0.058	0.003	0.061	ΣSAR<1.6, Not required

WWAN & WLAN

Conditions	Position	SAR Value (W/kg)	Coordinates (cm)			ΣSAR (W/kg)	Peak Location Separation Distance (mm)	SPLSR	Simultaneous Transmission SAR Test
			x	y	z				
LTE Band XVII	Back side	0.959	-1.86	-10.50	-0.42	2.044	206.74	0.014	SPLSR<0.04, Not required
2.4 GHz WLAN		1.085	3.02	10.04	-0.35				

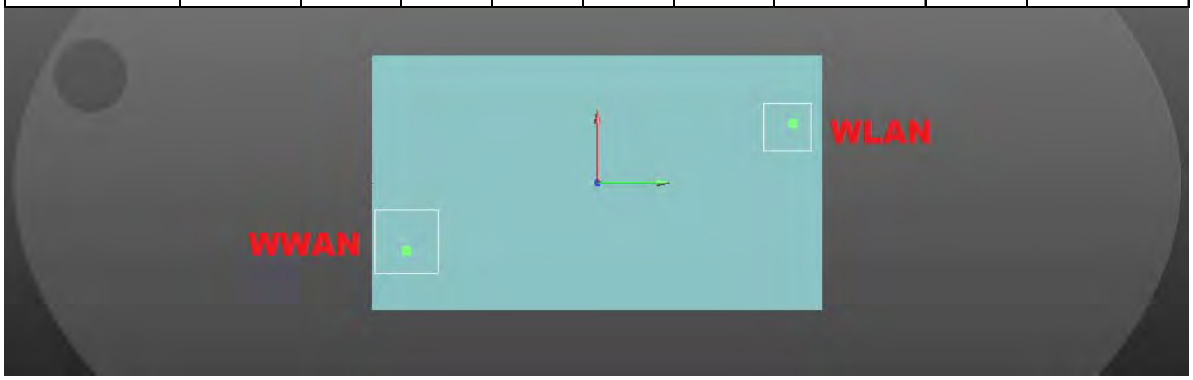


LTE FDD Band II + 5 GHz WLAN

No.	Conditions	Position	Distance (mm)	Max. WWAN	Max. WLAN	SAR Sum	SPLSR
7	LTE Band II	Back side	0	1.295	1.276	**2.571**	Analyzed as below
		Top side	0	0.328	0.007	0.335	ΣSAR<1.6, Not required
		Bottom side	0	0.12	0.628	0.748	ΣSAR<1.6, Not required
		Right side	0	0.245	0.135	0.380	ΣSAR<1.6, Not required
		Left side	0	0.052	0.032	0.084	ΣSAR<1.6, Not required

WWAN & WLAN

Conditions	Position	SAR Value (W/kg)	Coordinates (cm)			ΣSAR (W/kg)	Peak Location Separation Distance (mm)	SPLSR	Simultaneous Transmission SAR Test
			x	y	z				
LTE Band II	Back side	1.295	-3.43	-9.60	-0.32	2.571	204.63	0.020	SPLSR<0.04, Not required
5 GHz WLAN		1.276	2.96	9.84	-0.36				



LTE FDD Band IV + 5 GHz WLAN

No.	Conditions	Position	Distance (mm)	Max. WWAN	Max. WLAN	SAR Sum	SPLSR
8	LTE Band IV	Back side	0	1.288	1.276	**2.564**	Analyzed as below
		Top side	0	0.329	0.007	0.336	ΣSAR<1.6, Not required
		Bottom side	0	0.029	0.628	0.657	ΣSAR<1.6, Not required
		Right side	0	0.437	0.135	0.572	ΣSAR<1.6, Not required
		Left side	0	0.038	0.032	0.070	ΣSAR<1.6, Not required

WWAN & WLAN

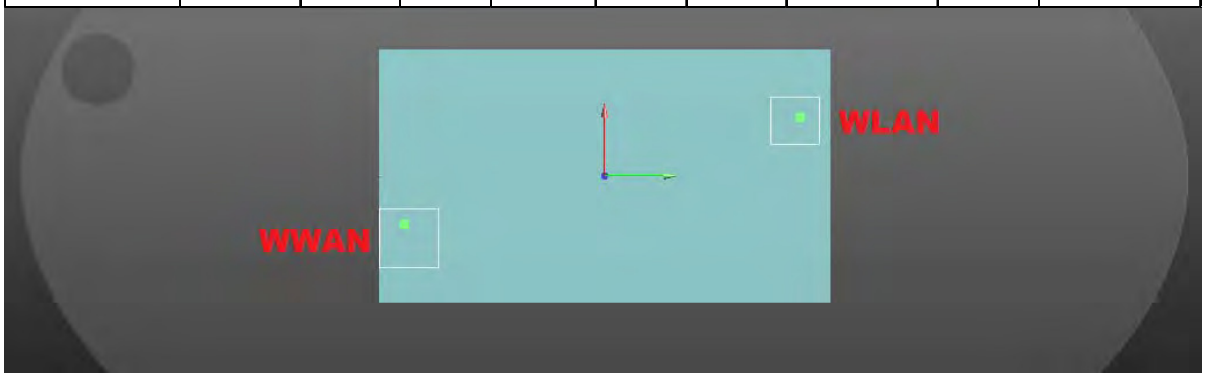
Conditions	Position	SAR Value (W/kg)	Coordinates (cm)			ΣSAR (W/kg)	Peak Location Separation Distance (mm)	SPLSR	Simultaneous Transmission SAR Test
			x	y	z				
LTE Band IV	Back side	1.288	-3.57	-9.46	0.34	2.564	203.75	0.020	SPLSR<0.04, Not required
5 GHz WLAN		1.276	2.96	9.84	-0.36				

LTE FDD Band VII + 5 GHz WLAN

No.	Conditions	Position	Distance (mm)	Max. WWAN	Max. WLAN	SAR Sum	SPLSR
9	LTE Band VII	Back side	0	1.209	1.276	**2.485**	Analyzed as below
		Top side	0	0.330	0.007	0.337	ΣSAR<1.6, Not required
		Bottom side	0	0.112	0.628	0.740	ΣSAR<1.6, Not required
		Right side	0	0.301	0.135	0.436	ΣSAR<1.6, Not required
		Left side	0	0.358	0.032	0.390	ΣSAR<1.6, Not required

WWAN & WLAN

Conditions	Position	SAR Value (W/kg)	Coordinates (cm)			ΣSAR (W/kg)	Peak Location Separation Distance (mm)	SPLSR	Simultaneous Transmission SAR Test
			x	y	z				
LTE Band VII	Back side	1.209	-2.46	-10.04	-0.28	2.485	206.06	0.019	SPLSR<0.04, Not required
5 GHz WLAN		1.276	2.96	9.84	-0.36				

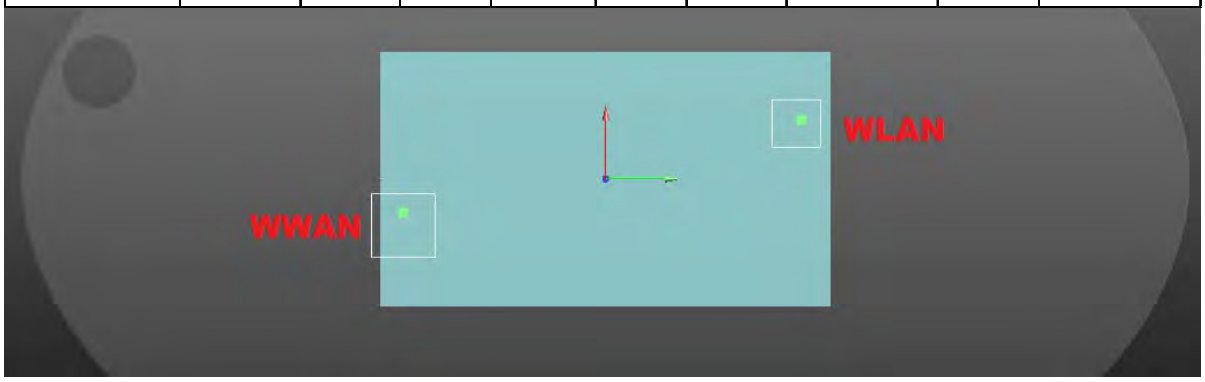


LTE FDD Band XII + 5 GHz WLAN

No.	Conditions	Position	Distance (mm)	Max. WWAN	Max. WLAN	SAR Sum	SPLSR
10	LTE Band XII	Back side	0	1.007	1.276	**2.283**	Analyzed as below
		Top side	0	0.259	0.007	0.266	ΣSAR<1.6, Not required
		Bottom side	0	0.025	0.628	0.653	ΣSAR<1.6, Not required
		Right side	0	0.114	0.135	0.249	ΣSAR<1.6, Not required
		Left side	0	0.050	0.032	0.082	ΣSAR<1.6, Not required

WWAN & WLAN

Conditions	Position	SAR Value (W/kg)	Coordinates (cm)			ΣSAR (W/kg)	Peak Location Separation Distance (mm)	SPLSR	Simultaneous Transmission SAR Test
			x	y	z				
LTE Band XII	Back side	1.007	-1.71	-10.20	-0.41	2.283	205.77	0.017	SPLSR<0.04, Not required
5 GHz WLAN		1.276	2.96	9.84	-0.36				

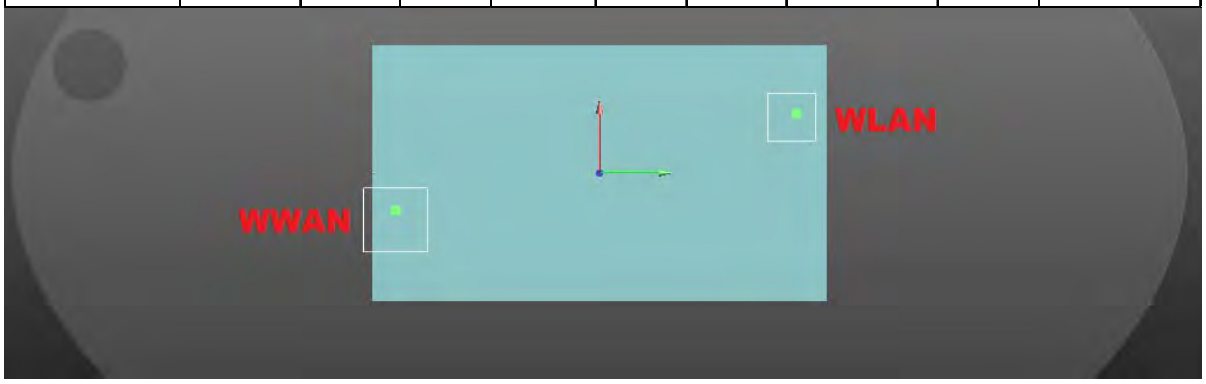


LTE FDD Band XIII + 5 GHz WLAN

No.	Conditions	Position	Distance (mm)	Max. WWAN	Max. WLAN	SAR Sum	SPLSR
11	LTE Band XIII	Back side	0	1.048	1.276	**2.324**	Analyzed as below
		Top side	0	0.192	0.007	0.199	ΣSAR<1.6, Not required
		Bottom side	0	0.042	0.628	0.670	ΣSAR<1.6, Not required
		Right side	0	0.121	0.135	0.256	ΣSAR<1.6, Not required
		Left side	0	0.163	0.032	0.195	ΣSAR<1.6, Not required

WWAN & WLAN

Conditions	Position	SAR Value (W/kg)	Coordinates (cm)			ΣSAR (W/kg)	Peak Location Separation Distance (mm)	SPLSR	Simultaneous Transmission SAR Test
			x	y	z				
LTE Band XIII	Back side	1.048	-1.87	-10.20	-0.35	2.324	206.14	0.017	SPLSR<0.04, Not required
5 GHz WLAN		1.276	2.96	9.84	-0.36				

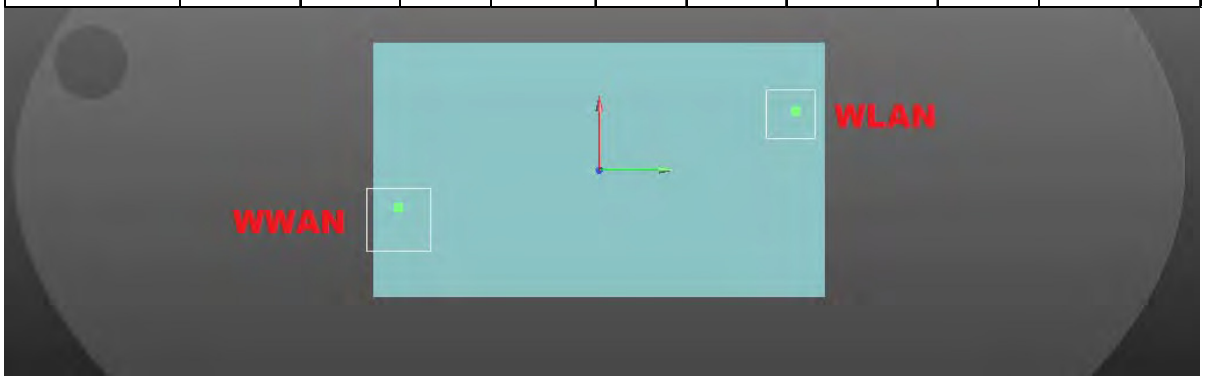


LTE FDD Band XVII + 5 GHz WLAN

No.	Conditions	Position	Distance (mm)	Max. WWAN	Max. WLAN	SAR Sum	SPLSR
12	LTE Band XVII	Back side	0	0.959	1.276	**2.235**	Analyzed as below
		Top side	0	0.249	0.007	0.256	ΣSAR<1.6, Not required
		Bottom side	0	0.024	0.628	0.652	ΣSAR<1.6, Not required
		Right side	0	0.130	0.135	0.265	ΣSAR<1.6, Not required
		Left side	0	0.058	0.032	0.090	ΣSAR<1.6, Not required

WWAN & WLAN

Conditions	Position	SAR Value (W/kg)	Coordinates (cm)			ΣSAR (W/kg)	Peak Location Separation Distance (mm)	SPLSR	Simultaneous Transmission SAR Test
			x	y	z				
LTE Band XVII	Back side	0.959	-1.86	-10.05	-0.42	2.235	204.66	0.016	SPLSR<0.04, Not required
5 GHz WLAN		1.276	2.96	9.84	-0.36				



LTE FDD Band II + BT

No.	Conditions	Position	Distance (mm)	Max. WWAN	BT	SAR Sum	SPLSR
13	LTE Band II	Back side	0	1.295	0.265	1.560	ΣSAR<1.6, Not required
		Top side	0	0.328	0.400	0.728	ΣSAR<1.6, Not required
		Bottom side	0	0.12	0.265	0.385	ΣSAR<1.6, Not required
		Right side	0	0.245	0.265	0.510	ΣSAR<1.6, Not required
		Left side	0	0.052	0.400	0.452	ΣSAR<1.6, Not required

LTE FDD Band IV + BT

No.	Conditions	Position	Distance (mm)	Max. WWAN	BT	SAR Sum	SPLSR
14	LTE Band IV	Back side	0	1.288	0.265	1.553	ΣSAR<1.6, Not required
		Top side	0	0.329	0.400	0.729	ΣSAR<1.6, Not required
		Bottom side	0	0.029	0.265	0.294	ΣSAR<1.6, Not required
		Right side	0	0.437	0.265	0.702	ΣSAR<1.6, Not required
		Left side	0	0.038	0.400	0.438	ΣSAR<1.6, Not required

LTE FDD Band VII + BT

No.	Conditions	Position	Distance (mm)	Max. WWAN	BT	SAR Sum	SPLSR
15	LTE Band VII	Back side	0	1.209	0.265	1.474	ΣSAR<1.6, Not required
		Top side	0	0.330	0.400	0.730	ΣSAR<1.6, Not required
		Bottom side	0	0.112	0.265	0.377	ΣSAR<1.6, Not required
		Right side	0	0.301	0.265	0.566	ΣSAR<1.6, Not required
		Left side	0	0.358	0.400	0.758	ΣSAR<1.6, Not required

LTE FDD Band XII + BT

No.	Conditions	Position	Distance (mm)	Max. WWAN	BT	SAR Sum	SPLSR
16	LTE Band XII	Back side	0	1.007	0.265	1.272	ΣSAR<1.6, Not required
		Top side	0	0.259	0.400	0.659	ΣSAR<1.6, Not required
		Bottom side	0	0.025	0.265	0.290	ΣSAR<1.6, Not required
		Right side	0	0.114	0.265	0.379	ΣSAR<1.6, Not required
		Left side	0	0.050	0.400	0.450	ΣSAR<1.6, Not required

LTE FDD Band XIII + BT

No.	Conditions	Position	Distance (mm)	Max. WWAN	BT	SAR Sum	SPLSR
17	LTE Band XIII	Back side	0	1.048	0.265	1.313	ΣSAR<1.6, Not required
		Top side	0	0.192	0.400	0.592	ΣSAR<1.6, Not required
		Bottom side	0	0.042	0.265	0.307	ΣSAR<1.6, Not required
		Right side	0	0.121	0.265	0.386	ΣSAR<1.6, Not required
		Left side	0	0.163	0.400	0.563	ΣSAR<1.6, Not required

LTE FDD Band XVII + BT

No.	Conditions	Position	Distance (mm)	Max. WWAN	BT	SAR Sum	SPLSR
18	LTE Band XVII	Back side	0	0.959	0.265	1.224	ΣSAR<1.6, Not required
		Top side	0	0.249	0.400	0.649	ΣSAR<1.6, Not required
		Bottom side	0	0.024	0.265	0.289	ΣSAR<1.6, Not required
		Right side	0	0.130	0.265	0.395	ΣSAR<1.6, Not required
		Left side	0	0.058	0.400	0.458	ΣSAR<1.6, Not required

4. Instruments List

Manufacturer	Device	Type	Serial number	Date of last calibration	Date of next calibration
Schmid & Partner Engineering AG	Dosimetric E-Field Probe	EX3DV4	3923	Sep.02,2016	Sep.01,2017
Schmid & Partner Engineering AG	System Validation Dipole	D750V2	1015	Aug.30,2016	Aug.29,2017
		D1750V2	1008	Aug.31,2016	Aug.30,2017
		D1900V2	5d027	Apr.25,2016	Apr.24,2017
		D2450V2	727	Apr.19,2016	Apr.18,2017
		D2600V2	1005	Jan.21,2016	Jan.20,2017
		D5GHzV2	1023	Jan.26,2016	Jan.25,2017
Schmid & Partner Engineering AG	Data acquisition Electronics	DAE4	1374	Aug.23,2016	Aug.22,2017
Schmid & Partner Engineering AG	Software	DASY 52 V52.8.8	N/A	Calibration not required	Calibration not required
Schmid & Partner Engineering AG	Phantom	SAM	N/A	Calibration not required	Calibration not required
Agilent	Network Analyzer	E5071C	MY46107530	Jan.07,2016	Jan.06,2017
Agilent	Dielectric Probe Kit	85070E	MY44300677	Calibration not required	Calibration not required
Agilent	Dual-directional coupler	772D	MY46151242	Jul.11,2016	Jul.10,2017
		778D	MY48220468	Jul.06,2016	Jul.05,2017
Agilent	RF Signal Generator	N5181A	MY50141235	Dec.24,2013	Dec.23,2016
Agilent	Power Meter	E4417A	MY51410006	Jan.07,2016	Jan.06,2017

Manufacturer	Device	Type	Serial number	Date of last calibration	Date of next calibration
Agilent	Power Sensor	E9301H	MY51470001	Jan.07,2016	Jan.06,2017
			MY51470002	Jan.07,2016	Jan.06,2017
TECPEL	Digital thermometer	DTM-303A	TP130073	Feb.26,2016	Feb.25,2017
Anritsu	Radio Communication Test	MT8820C	6201061049	Apr.08,2016	Apr.07,2017
R&S	Radio Communication Test	CMW 500	125470	Jul.09,2016	Jul.08,2017

5. Measurements

Date: 2016/10/27

LTE Band 2 (20MHz)_Body_Back side_CH 19100_QPSK_1-50_0mm

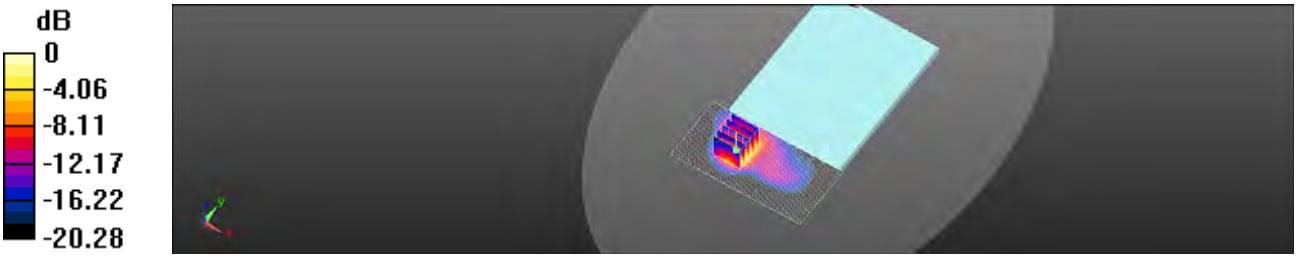
Communication System: LTE; Frequency: 1900 MHz
Medium parameters used: f = 1900 MHz; σ = 1.528 S/m; ε_r = 52.253; ρ = 1000 kg/m^3
Phantom section: Flat Section

DASY5 Configuration:

- Probe: EX3DV4 - SN3923; ConvF(8.47, 8.47, 8.47); Calibrated: 2016/9/2;
- Sensor-Surface: 2mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn1374; Calibrated: 2016/8/23
- Phantom: Body
- DASY52 52.8.8(1258); SEMCAD X 14.6.10(7373)

Configuration/Head/Area Scan (101x51x1): Interpolated grid: dx=15 mm, dy=15 mm
Maximum value of SAR (interpolated) = 1.88 W/kg

Configuration/Head/Zoom Scan (5x5x7)/Cube 0: Measurement grid: dx=8mm, dy=8mm, dz=5mm
Reference Value = 1.368 V/m; Power Drift = 0.13 dB
Peak SAR (extrapolated) = 2.32 W/kg
SAR(1 g) = 1.16 W/kg; SAR(10 g) = 0.570 W/kg
Maximum value of SAR (measured) = 1.55 W/kg



0 dB = 1.55 W/kg = 1.91 dBW/kg

Date: 2016/10/26

LTE Band 4 (20MHz)_Body_Back side_CH 20050_QPSK_1-50_0mm

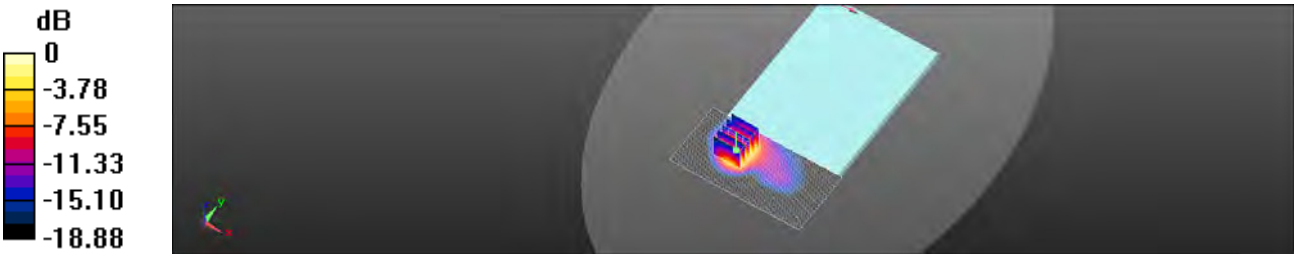
Communication System: LTE; Frequency: 1720 MHz
Medium parameters used: f = 1720 MHz; σ = 1.415 S/m; ε_r = 53.901; ρ = 1000 kg/m^3
Phantom section: Flat Section

DASY5 Configuration:

- Probe: EX3DV4 - SN3923; ConvF(8.78, 8.78, 8.78); Calibrated: 2016/9/2;
- Sensor-Surface: 2mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn1374; Calibrated: 2016/8/23
- Phantom: Body
- DASY52 52.8.8(1258); SEMCAD X 14.6.10(7373)

Configuration/Head/Area Scan (101x51x1): Interpolated grid: dx=15 mm, dy=15 mm
Maximum value of SAR (interpolated) = 1.84 W/kg

Configuration/Head/Zoom Scan (5x5x7)/Cube 0: Measurement grid: dx=8mm, dy=8mm, dz=5mm
Reference Value = 1.393 V/m; Power Drift = -0.15 dB
Peak SAR (extrapolated) = 2.33 W/kg
SAR(1 g) = 1.24 W/kg; SAR(10 g) = 0.601 W/kg
Maximum value of SAR (measured) = 1.71 W/kg



0 dB = 1.71 W/kg = 2.34 dBW/kg

Date: 2016/10/28

LTE Band 7 (20MHz)_Body_Back side_CH 21350_QPSK_1-50_0mm

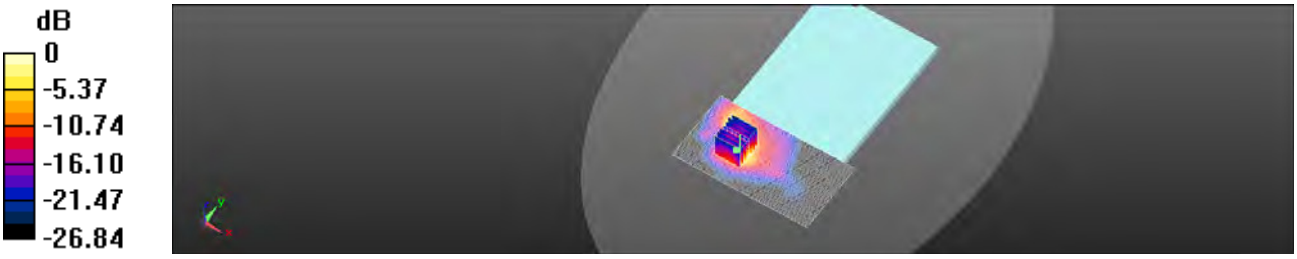
Communication System: LTE; Frequency: 2560 MHz
Medium parameters used: f = 2560 MHz; σ = 2.149 S/m; ε_r = 51.843; ρ = 1000 kg/m^3
Phantom section: Flat Section

DASY5 Configuration:

- Probe: EX3DV4 - SN3923; ConvF(7.84, 7.84, 7.84); Calibrated: 2016/9/2;
- Sensor-Surface: 2mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn1374; Calibrated: 2016/8/23
- Phantom: Body
- DASY52 52.8.8(1258); SEMCAD X 14.6.10(7373)

Configuration/Head/Area Scan (131x71x1): Interpolated grid: dx=12 mm, dy=12 mm
Maximum value of SAR (interpolated) = 1.64 W/kg

Configuration/Head/Zoom Scan (7x7x7)/Cube 0: Measurement grid: dx=5mm, dy=5mm, dz=5mm
Reference Value = 1.204 V/m; Power Drift = -0.17 dB
Peak SAR (extrapolated) = 2.46 W/kg
SAR(1 g) = 0.961 W/kg; SAR(10 g) = 0.371 W/kg
Maximum value of SAR (measured) = 1.67 W/kg



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

Date: 2016/10/24

LTE Band 12 (10MHz)_Body_Back side_CH 23095_QPSK_1-25_0mm

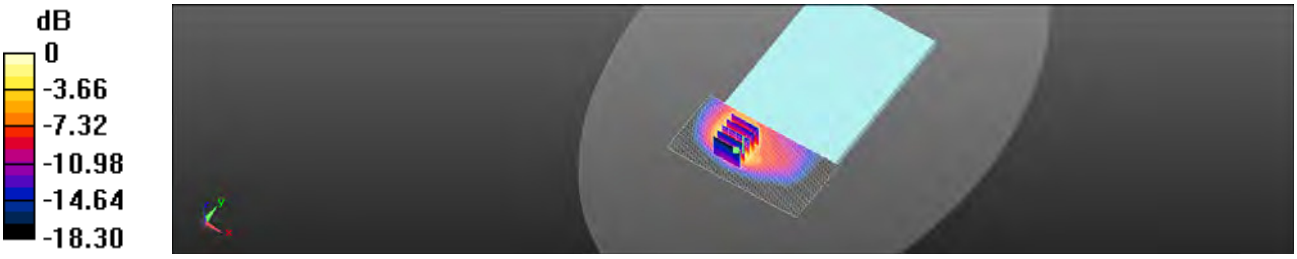
Communication System: LTE; Frequency: 707.5 MHz
Medium parameters used: f = 707.5 MHz; σ = 0.923 S/m; ε_r = 56.894; ρ = 1000 kg/m^3
Phantom section: Flat Section

DASY5 Configuration:

- Probe: EX3DV4 - SN3923; ConvF(10.83, 10.83, 10.83); Calibrated: 2016/9/2;
- Sensor-Surface: 2mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn1374; Calibrated: 2016/8/23
- Phantom: Body
- DASY52 52.8.8(1258); SEMCAD X 14.6.10(7373)

Configuration/Head/Area Scan (101x51x1): Interpolated grid: dx=15 mm, dy=15 mm
Maximum value of SAR (interpolated) = 1.35 W/kg

Configuration/Head/Zoom Scan (5x5x7)/Cube 0: Measurement grid: dx=8mm, dy=8mm, dz=5mm
Reference Value = 3.263 V/m; Power Drift = 0.11 dB
Peak SAR (extrapolated) = 2.16 W/kg
SAR(1 g) = 0.953 W/kg; SAR(10 g) = 0.491 W/kg
Maximum value of SAR (measured) = 1.39 W/kg



0 dB = 1.39 W/kg = 1.43 dBW/kg

Date: 2016/10/24

LTE Band 13 (10MHz)_Body_Back side_CH 23230_QPSK_1-49_0mm

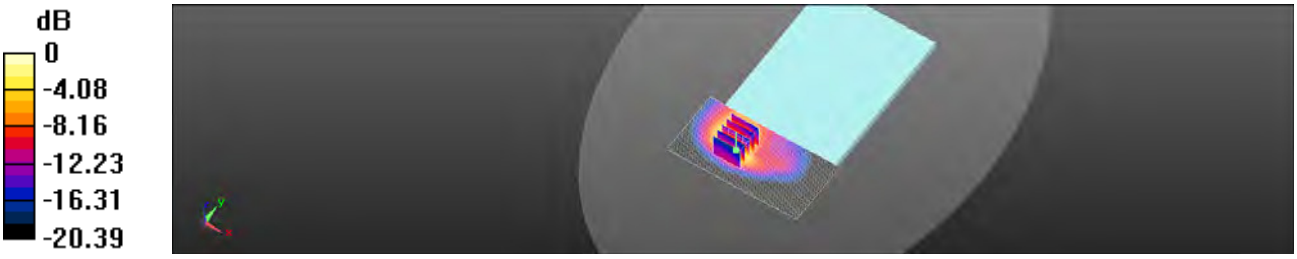
Communication System: LTE; Frequency: 782 MHz
Medium parameters used: f = 782 MHz; σ = 0.995 S/m; ε_r = 56.336; ρ = 1000 kg/m^3
Phantom section: Flat Section

DASY5 Configuration:

- Probe: EX3DV4 - SN3923; ConvF(10.83, 10.83, 10.83); Calibrated: 2016/9/2;
- Sensor-Surface: 2mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn1374; Calibrated: 2016/8/23
- Phantom: Body
- DASY52 52.8.8(1258); SEMCAD X 14.6.10(7373)

Configuration/Head/Area Scan (101x51x1): Interpolated grid: dx=15 mm, dy=15 mm
Maximum value of SAR (interpolated) = 1.17 W/kg

Configuration/Head/Zoom Scan (5x5x7)/Cube 0: Measurement grid: dx=8mm, dy=8mm, dz=5mm
Reference Value = 2.772 V/m; Power Drift = 0.14 dB
Peak SAR (extrapolated) = 2.19 W/kg
SAR(1 g) = 0.956 W/kg; SAR(10 g) = 0.486 W/kg
Maximum value of SAR (measured) = 1.47 W/kg



0 dB = 1.47 W/kg = 1.69 dBW/kg

Date: 2016/10/25

LTE Band 17 (10MHz)_Body_Back side_CH 23780_QPSK_1-49_0mm

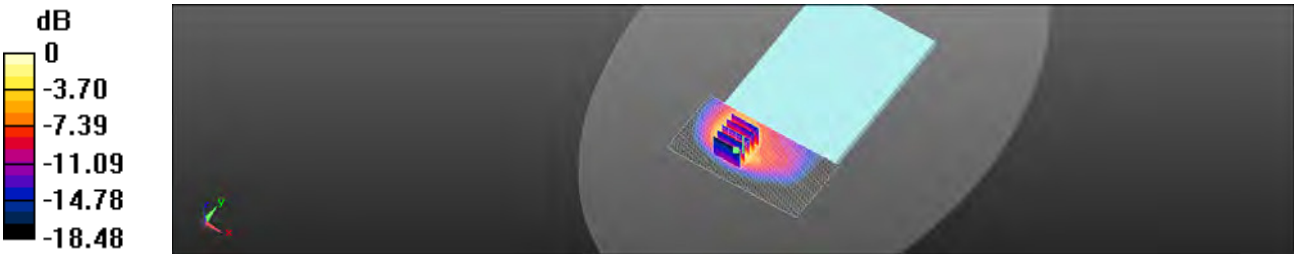
Communication System: LTE; Frequency: 709 MHz
Medium parameters used: f = 709 MHz; σ = 0.925 S/m; ε_r = 56.864; ρ = 1000 kg/m^3
Phantom section: Flat Section

DASY5 Configuration:

- Probe: EX3DV4 - SN3923; ConvF(10.83, 10.83, 10.83); Calibrated: 2016/9/2;
- Sensor-Surface: 2mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn1374; Calibrated: 2016/8/23
- Phantom: Body
- DASY52 52.8.8(1258); SEMCAD X 14.6.10(7373)

Configuration/Head/Area Scan (101x51x1): Interpolated grid: dx=15 mm, dy=15 mm
Maximum value of SAR (interpolated) = 1.28 W/kg

Configuration/Head/Zoom Scan (5x5x7)/Cube 0: Measurement grid: dx=8mm, dy=8mm, dz=5mm
Reference Value = 3.276 V/m; Power Drift = 0.13 dB
Peak SAR (extrapolated) = 2.10 W/kg
SAR(1 g) = 0.913 W/kg; SAR(10 g) = 0.476 W/kg
Maximum value of SAR (measured) = 1.35 W/kg



0 dB = 1.35 W/kg = 1.30 dBW/kg

Date: 2016/10/17

WLAN 802.11b_Body_Back side_CH 6_0mm

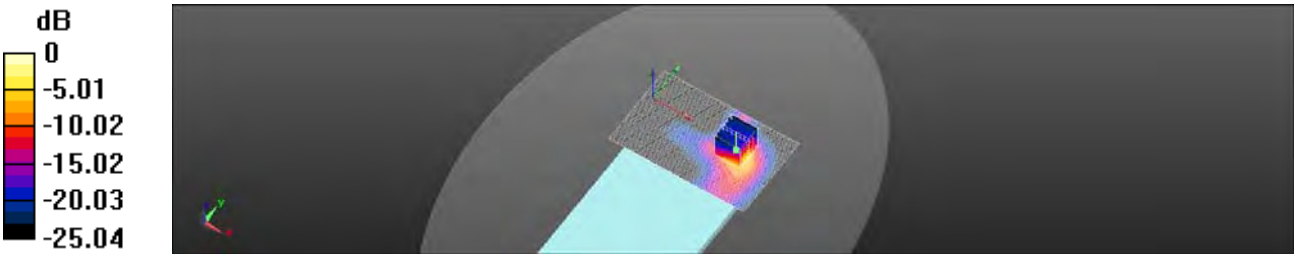
Communication System: WLAN 2.45G; Frequency: 2437 MHz
Medium parameters used: f = 2437 MHz; σ = 1.983 S/m; ε_r = 51.721; ρ = 1000 kg/m^3
Phantom section: Flat Section

DASY5 Configuration:

- Probe: EX3DV4 - SN3923; ConvF(8.06, 8.06, 8.06); Calibrated: 2016/9/2;
- Sensor-Surface: 2mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn1374; Calibrated: 2016/8/23
- Phantom: Body
- DASY52 52.8.8(1258); SEMCAD X 14.6.10(7373)

Configuration/Head/Area Scan (131x81x1): Interpolated grid: dx=12 mm, dy=12 mm
Maximum value of SAR (interpolated) = 1.73 W/kg

Configuration/Head/Zoom Scan (7x7x7)/Cube 0: Measurement grid: dx=5mm, dy=5mm, dz=5mm
Reference Value = 0.8190 V/m; Power Drift = 0.17 dB
Peak SAR (extrapolated) = 2.96 W/kg
SAR(1 g) = 1.01 W/kg; SAR(10 g) = 0.383 W/kg
Maximum value of SAR (measured) = 1.89 W/kg



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

Date: 2016/10/31

WLAN 802.11a 5.2G_Body_Back side_CH 40

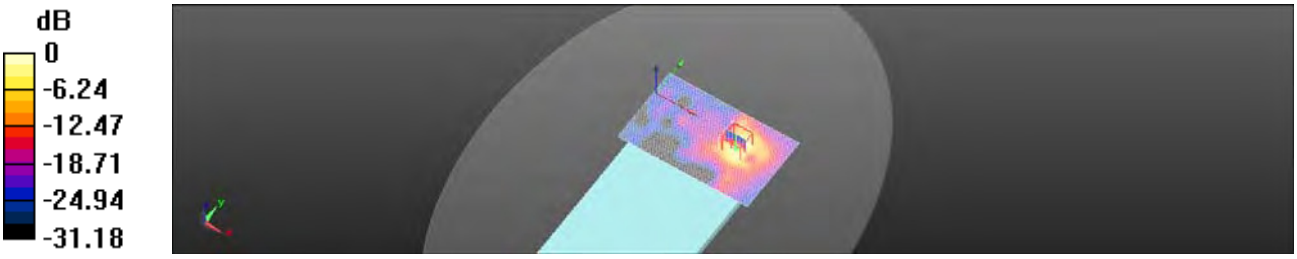
Communication System: WLAN 5G; Frequency: 5200 MHz
Medium parameters used: f = 5200 MHz; σ = 5.124 S/m; ε_r = 47.506; ρ = 1000 kg/m^3
Phantom section: Flat Section

DASY5 Configuration:

- Probe: EX3DV4 - SN3923; ConvF(4.58, 4.58, 4.58); Calibrated: 2016/9/2;
- Sensor-Surface: 2mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn1374; Calibrated: 2016/8/23
- Phantom: Body
- DASY52 52.8.8(1258); SEMCAD X 14.6.10(7373)

Configuration/Head/Area Scan (151x91x1): Interpolated grid: dx=10 mm, dy=10 mm
Maximum value of SAR (interpolated) = 1.60 W/kg

Configuration/Head/Zoom Scan (7x7x12)/Cube 0: Measurement grid: dx=4mm, dy=4mm, dz=2mm
Reference Value = 0.4010 V/m; Power Drift = 0.19 dB
Peak SAR (extrapolated) = 6.65 W/kg
SAR(1 g) = 1.06 W/kg; SAR(10 g) = 0.256 W/kg
Maximum value of SAR (measured) = 2.47 W/kg



0 dB = 2.47 W/kg = 3.92 dBW/kg

Date: 2016/10/31

WLAN 802.11a 5.3G_Body_Back side_CH 52

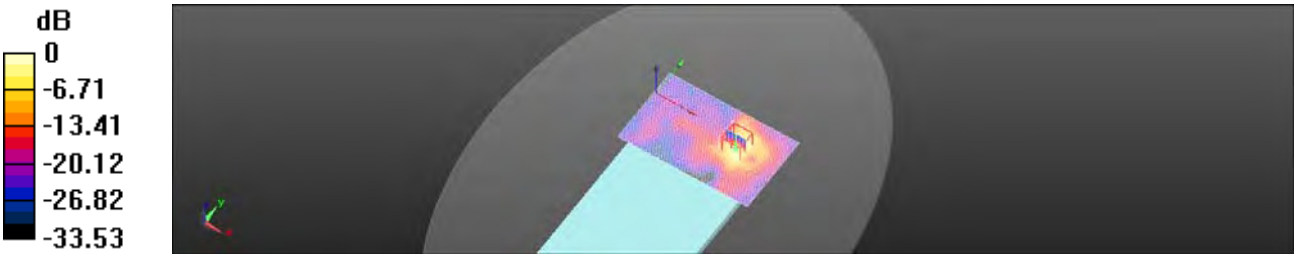
Communication System: WLAN 5G; Frequency: 5260 MHz
Medium parameters used: f = 5260 MHz; σ = 5.426 S/m; ε_r = 47.148; ρ = 1000 kg/m^3
Phantom section: Flat Section

DASY5 Configuration:

- Probe: EX3DV4 - SN3923; ConvF(4.58, 4.58, 4.58); Calibrated: 2016/9/2;
- Sensor-Surface: 2mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn1374; Calibrated: 2016/8/23
- Phantom: Body
- DASY52 52.8.8(1258); SEMCAD X 14.6.10(7373)

Configuration/Head/Area Scan (151x91x1): Interpolated grid: dx=10 mm, dy=10 mm
Maximum value of SAR (interpolated) = 1.67 W/kg

Configuration/Head/Zoom Scan (7x7x12)/Cube 0: Measurement grid: dx=4mm, dy=4mm, dz=2mm
Reference Value = 0.5450 V/m; Power Drift = 0.16 dB
Peak SAR (extrapolated) = 6.84 W/kg
SAR(1 g) = 1.07 W/kg; SAR(10 g) = 0.259 W/kg
Maximum value of SAR (measured) = 2.50 W/kg



0 dB = 2.50 W/kg = 3.99 dBW/kg

Date: 2016/11/1

WLAN 802.11a 5.6G_Body_Back side_CH 100

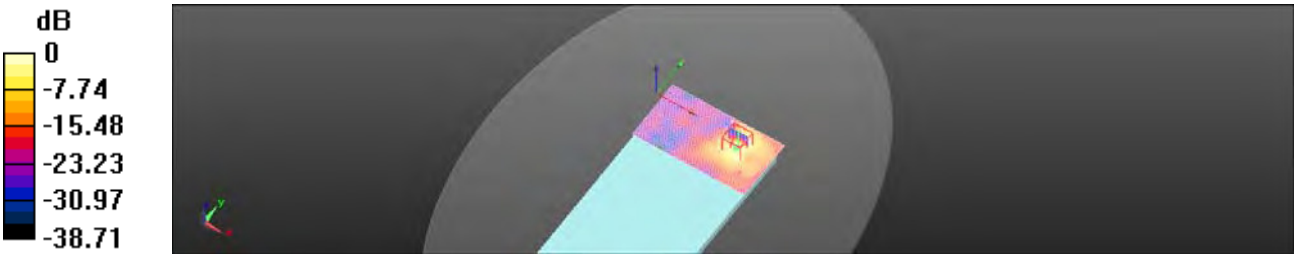
Communication System: WLAN 5G; Frequency: 5500 MHz
Medium parameters used: f = 5500 MHz; σ = 5.822 S/m; ε_r = 46.79; ρ = 1000 kg/m^3
Phantom section: Flat Section

DASY5 Configuration:

- Probe: EX3DV4 - SN3923; ConvF(4, 4, 4); Calibrated: 2016/9/2;
- Sensor-Surface: 2mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn1374; Calibrated: 2016/8/23
- Phantom: Body
- DASY52 52.8.8(1258); SEMCAD X 14.6.10(7373)

Configuration/Head/Area Scan (131x71x1): Interpolated grid: dx=10 mm, dy=10 mm
Maximum value of SAR (interpolated) = 1.82 W/kg

Configuration/Head/Zoom Scan (7x7x12)/Cube 0: Measurement grid: dx=4mm, dy=4mm, dz=2mm
Reference Value = 0.2050 V/m; Power Drift = 0.17 dB
Peak SAR (extrapolated) = 8.33 W/kg
SAR(1 g) = 1.27 W/kg; SAR(10 g) = 0.291 W/kg
Maximum value of SAR (measured) = 3.19 W/kg



0 dB = 3.19 W/kg = 5.04 dBW/kg

Date: 2016/11/1

WLAN 802.11n(20M) 5.6G_Body_Back side_CH 100

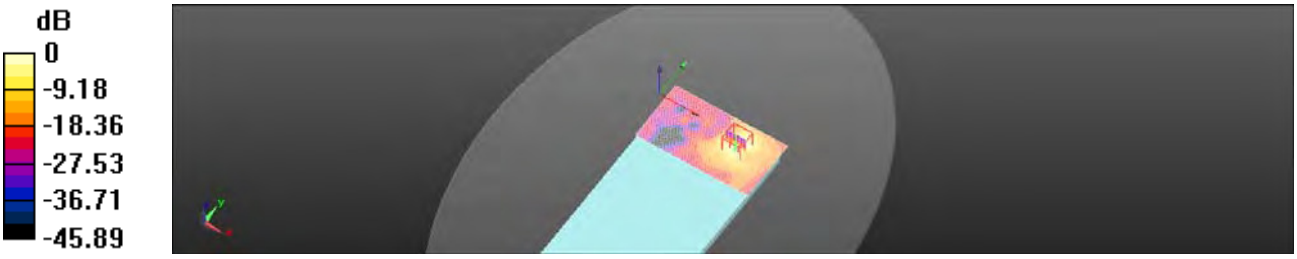
Communication System: WLAN 5G; Frequency: 5500 MHz
Medium parameters used: f = 5500 MHz; σ = 5.822 S/m; ε_r = 46.79; ρ = 1000 kg/m^3
Phantom section: Flat Section

DASY5 Configuration:

- Probe: EX3DV4 - SN3923; ConvF(4, 4, 4); Calibrated: 2016/9/2;
- Sensor-Surface: 2mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn1374; Calibrated: 2016/8/23
- Phantom: Body
- DASY52 52.8.8(1258); SEMCAD X 14.6.10(7373)

Configuration/Head/Area Scan (131x71x1): Interpolated grid: dx=10 mm, dy=10 mm
Maximum value of SAR (interpolated) = 2.66 W/kg

Configuration/Head/Zoom Scan (7x7x12)/Cube 0: Measurement grid: dx=4mm, dy=4mm, dz=2mm
Reference Value = 0.3671 V/m; Power Drift = 0.19 dB
Peak SAR (extrapolated) = 7.37 W/kg
SAR(1 g) = 1.12 W/kg; SAR(10 g) = 0.266 W/kg
Maximum value of SAR (measured) = 3.09 W/kg



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

Date: 2016/10/23

WLAN 802.11a 5.8G_Body_Back side_CH 165

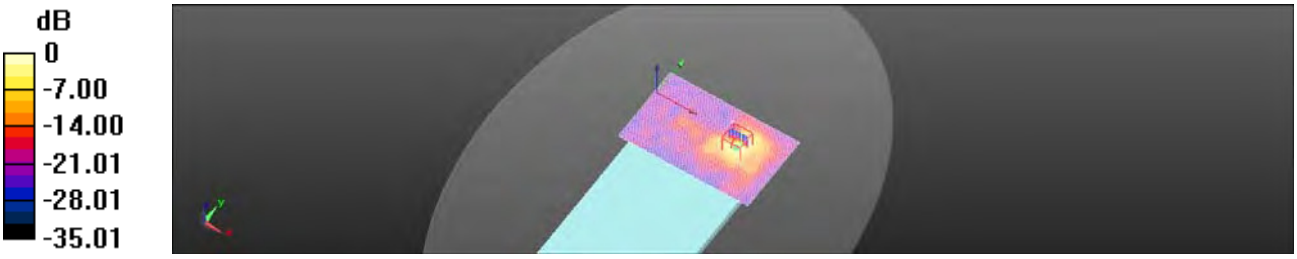
Communication System: WLAN 5G; Frequency: 5825 MHz
Medium parameters used: f = 5825 MHz; σ = 6.256 S/m; ε_r = 46.823; ρ = 1000 kg/m^3
Phantom section: Flat Section

DASY5 Configuration:

- Probe: EX3DV4 - SN3923; ConvF(4.19, 4.19, 4.19); Calibrated: 2016/9/2;
- Sensor-Surface: 2mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn1374; Calibrated: 2016/8/23
- Phantom: Body
- DASY52 52.8.8(1258); SEMCAD X 14.6.10(7373)

Configuration/Head/Area Scan (151x91x1): Interpolated grid: dx=10 mm, dy=10 mm
Maximum value of SAR (interpolated) = 2.05 W/kg

Configuration/Head/Zoom Scan (7x7x12)/Cube 0: Measurement grid: dx=4mm, dy=4mm, dz=2mm
Reference Value = 0.2560 V/m; Power Drift = 0.12 dB
Peak SAR (extrapolated) = 7.57 W/kg
SAR(1 g) = 1.15 W/kg; SAR(10 g) = 0.264 W/kg
Maximum value of SAR (measured) = 2.69 W/kg



0 dB = 2.69 W/kg = 4.29 dBW/kg

6. SAR System Performance Verification

Date: 2016/10/24

Dipole 750 MHz_SN:1015

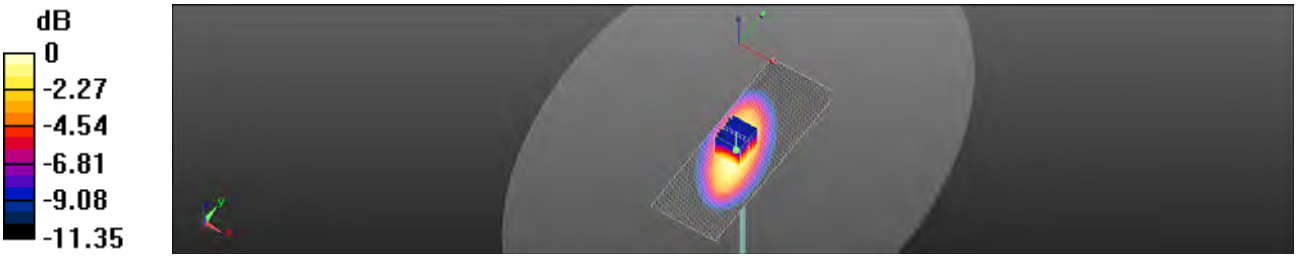
Communication System: CW; Frequency: 750 MHz
Medium parameters used: f = 750 MHz; σ = 0.966 S/m; ε_r = 56.593; ρ = 1000 kg/m^3
Phantom section: Flat Section

DASY5 Configuration:

- Probe: EX3DV4 - SN3923; ConvF(10.83, 10.83, 10.83); Calibrated: 2016/9/2;
- Sensor-Surface: 2mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn1374; Calibrated: 2016/8/23
- Phantom: Body
- DASY52 52.8.8(1258); SEMCAD X 14.6.10(7373)

Configuration/Pin=250mW/Area Scan (51x141x1): Interpolated grid: dx=15 mm, dy=15 mm
Maximum value of SAR (interpolated) = 2.58 W/kg

Configuration/Pin=250mW/Zoom Scan (7x7x7)/Cube 0: Measurement grid: dx=5mm, dy=5mm, dz=5mm
Reference Value = 55.43 V/m; Power Drift = -0.17 dB
Peak SAR (extrapolated) = 3.27 W/kg
SAR(1 g) = 2.24 W/kg; SAR(10 g) = 1.44 W/kg
Maximum value of SAR (measured) = 2.75 W/kg



0 dB = 2.75 W/kg = 4.40 dBW/kg

Date: 2016/10/25

Dipole 750 MHz_SN:1015

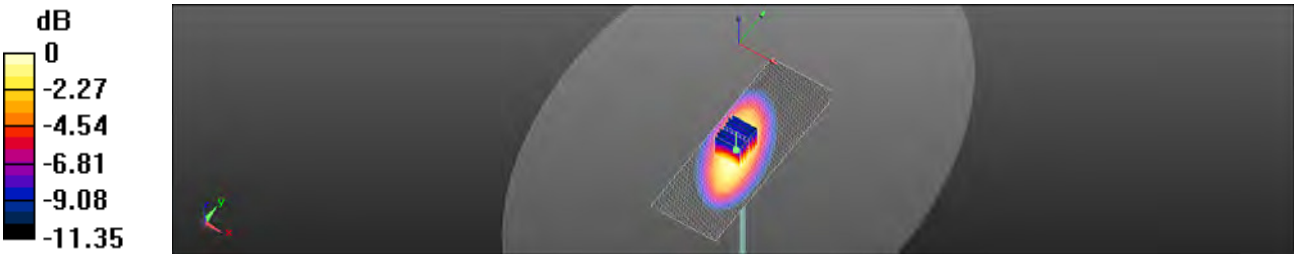
Communication System: CW; Frequency: 750 MHz
Medium parameters used: f = 750 MHz; σ = 0.969 S/m; ε_r = 56.539; ρ = 1000 kg/m^3
Phantom section: Flat Section

DASY5 Configuration:

- Probe: EX3DV4 - SN3923; ConvF(10.83, 10.83, 10.83); Calibrated: 2016/9/2;
- Sensor-Surface: 2mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn1374; Calibrated: 2016/8/23
- Phantom: Body
- DASY52 52.8.8(1258); SEMCAD X 14.6.10(7373)

Configuration/Pin=250mW/Area Scan (51x141x1): Interpolated grid: dx=15 mm, dy=15 mm
Maximum value of SAR (interpolated) = 2.49 W/kg

Configuration/Pin=250mW/Zoom Scan (7x7x7)/Cube 0: Measurement grid: dx=5mm, dy=5mm, dz=5mm
Reference Value = 54.47 V/m; Power Drift = -0.18 dB
Peak SAR (extrapolated) = 3.17 W/kg
SAR(1 g) = 2.23 W/kg; SAR(10 g) = 1.46 W/kg
Maximum value of SAR (measured) = 2.75 W/kg



0 dB = 2.65 W/kg = 4.38 dBW/kg

Date: 2016/10/26

Dipole 1750 MHz_SN:1008

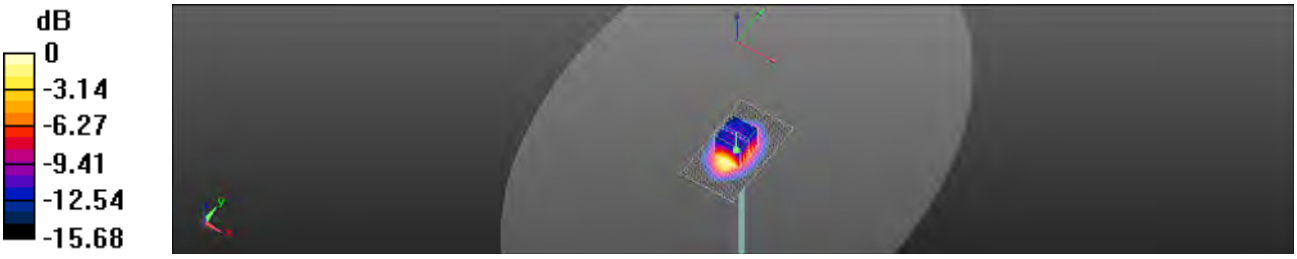
Communication System: CW; Frequency: 1750 MHz
Medium parameters used: f = 1750 MHz; σ = 1.447 S/m; ε_r = 53.634; ρ = 1000 kg/m^3
Phantom section: Flat Section

DASY5 Configuration:

- Probe: EX3DV4 - SN3923; ConvF(8.78, 8.78, 8.78); Calibrated: 2016/9/2;
- Sensor-Surface: 2mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn1374; Calibrated: 2016/8/23
- Phantom: Body
- DASY52 52.8.8(1258); SEMCAD X 14.6.10(7373)

Configuration/Pin=250mW/Area Scan (41x71x1): Interpolated grid: dx=15 mm, dy=15 mm
Maximum value of SAR (interpolated) = 12.9 W/kg

Configuration/Pin=250mW/Zoom Scan (7x7x7)/Cube 0: Measurement grid: dx=5mm, dy=5mm, dz=5mm
Reference Value = 92.62 V/m; Power Drift = 0.01 dB
Peak SAR (extrapolated) = 15.2 W/kg
SAR(1 g) = 8.99 W/kg; SAR(10 g) = 4.72 W/kg
Maximum value of SAR (measured) = 12.2 W/kg



0 dB = 12.2 W/kg = 10.87 dBW/kg

Date: 2016/10/27

Dipole 1900 MHz_SN:5d027

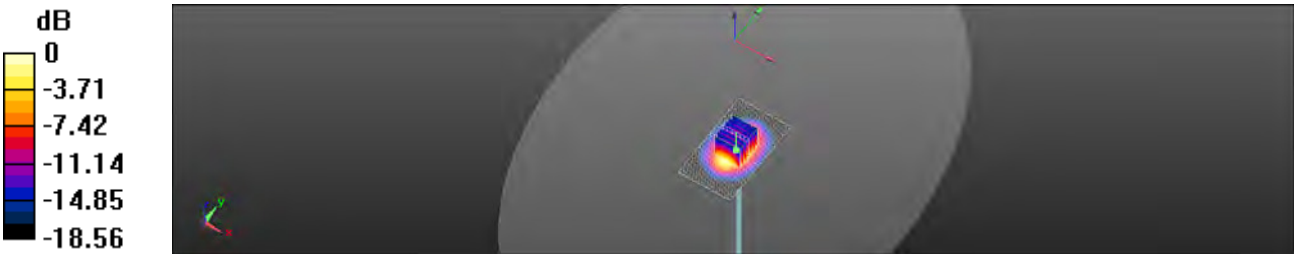
Communication System: CW; Frequency: 1900 MHz
Medium parameters used: f = 1900 MHz; σ = 1.528 S/m; ε_r = 52.253; ρ = 1000 kg/m^3
Phantom section: Flat Section

DASY5 Configuration:

- Probe: EX3DV4 - SN3923; ConvF(8.47, 8.47, 8.47); Calibrated: 2016/9/2;
- Sensor-Surface: 2mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn1374; Calibrated: 2016/8/23
- Phantom: Body
- DASY52 52.8.8(1258); SEMCAD X 14.6.10(7373)

Configuration/Pin=250mW/Area Scan (41x71x1): Interpolated grid: dx=15 mm, dy=15 mm
Maximum value of SAR (interpolated) = 13.9 W/kg

Configuration/Pin=250mW/Zoom Scan (7x7x7)/Cube 0: Measurement grid: dx=5mm, dy=5mm, dz=5mm
Reference Value = 95.13 V/m; Power Drift = 0.07 dB
Peak SAR (extrapolated) = 17.1 W/kg
SAR(1 g) = 9.55 W/kg; SAR(10 g) = 5.02 W/kg
Maximum value of SAR (measured) = 13.2 W/kg



0 dB = 13.2 W/kg = 11.21 dBW/kg

Date: 2016/10/17

Dipole 2450 MHz_SN:727

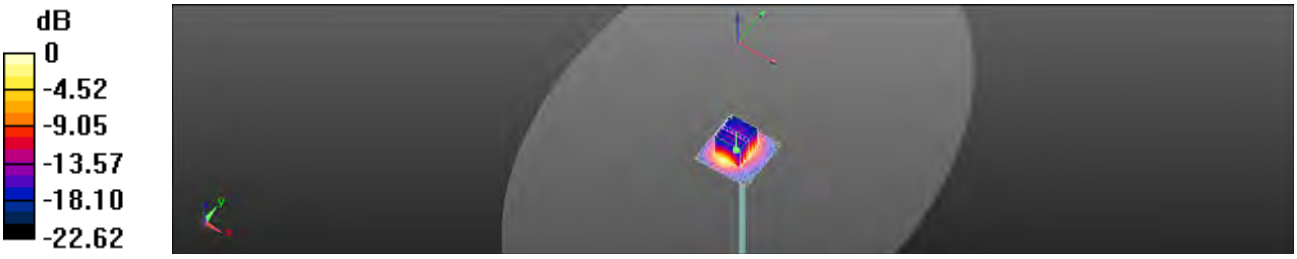
Communication System: CW; Frequency: 2450 MHz
Medium parameters used: f = 2450 MHz; σ = 1.999 S/m; ε_r = 51.692; ρ = 1000 kg/m^3
Phantom section: Flat Section

DASY5 Configuration:

- Probe: EX3DV4 - SN3923; ConvF(8.06, 8.06, 8.06); Calibrated: 2016/9/2;
- Sensor-Surface: 2mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn1374; Calibrated: 2016/8/23
- 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) = 20.9 W/kg

Configuration/Pin=250mW/Zoom Scan (7x7x7) (7x7x7)/Cube 0: Measurement grid: dx=5mm, dy=5mm, dz=5mm
Reference Value = 98.43 V/m; Power Drift = 0.05 dB
Peak SAR (extrapolated) = 26.8 W/kg
SAR(1 g) = 12.9 W/kg; SAR(10 g) = 5.98 W/kg
Maximum value of SAR (measured) = 20.1 W/kg



0 dB = 20.1 W/kg = 13.03 dBW/kg

Date: 2016/10/28

Dipole 2600 MHz_SN:1005

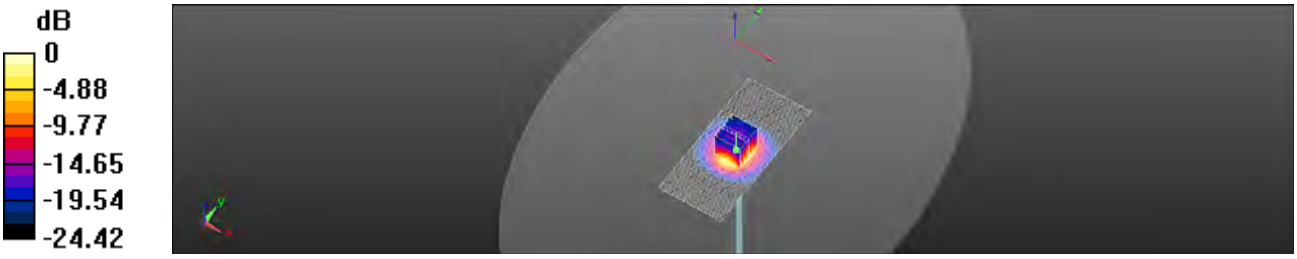
Communication System: CW; Frequency: 2600 MHz
Medium parameters used: f = 2600 MHz; σ = 2.24 S/m; ε_r = 51.71; ρ = 1000 kg/m^3
Phantom section: Flat Section

DASY5 Configuration:

- Probe: EX3DV4 - SN3923; ConvF(7.84, 7.84, 7.84); Calibrated: 2016/9/2;
- Sensor-Surface: 2mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn1374; Calibrated: 2016/8/23
- Phantom: Body
- DASY52 52.8.8(1258); SEMCAD X 14.6.10(7373)

Configuration/Pin=250mW/Area Scan (61x131x1): Interpolated grid: dx=12 mm, dy=12 mm
Maximum value of SAR (interpolated) = 24.8 W/kg

Configuration/Pin=250mW/Zoom Scan (7x7x7)/Cube 0: Measurement grid: dx=5mm, dy=5mm, dz=5mm
Reference Value = 101.8 V/m; Power Drift = -0.05 dB
Peak SAR (extrapolated) = 32.6 W/kg
SAR(1 g) = 14.1 W/kg; SAR(10 g) = 6.25 W/kg
Maximum value of SAR (measured) = 23.4 W/kg



0 dB = 23.4 W/kg = 13.69 dBW/kg

Date: 2016/10/31

Dipole 5200 MHz_SN:1023

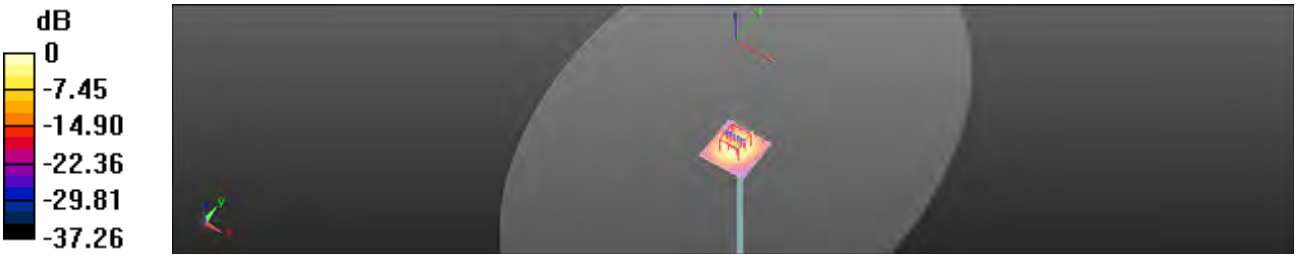
Communication System: CW; Frequency: 5200 MHz
Medium parameters used: f = 5200 MHz; σ = 5.124 S/m; ε_r = 47.506; ρ = 1000 kg/m^3
Phantom section: Flat Section

DASY5 Configuration:

- Probe: EX3DV4 - SN3923; ConvF(4.58, 4.58, 4.58); Calibrated: 2016/9/2;
- Sensor-Surface: 2mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn1374; Calibrated: 2016/8/23
- 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) = 15.2 W/kg

Configuration/Pin=100mW/Zoom Scan (7x7x12)/Cube 0: Measurement grid: dx=4mm, dy=4mm, dz=2mm
Reference Value = 58.28 V/m; Power Drift = 0.02 dB
Peak SAR (extrapolated) = 30.8 W/kg
SAR(1 g) = 7.52 W/kg; SAR(10 g) = 2.02 W/kg
Maximum value of SAR (measured) = 15.5 W/kg



0 dB = 15.5 W/kg = 11.91 dBW/kg

Date: 2016/10/31

Dipole 5300 MHz_SN:1023

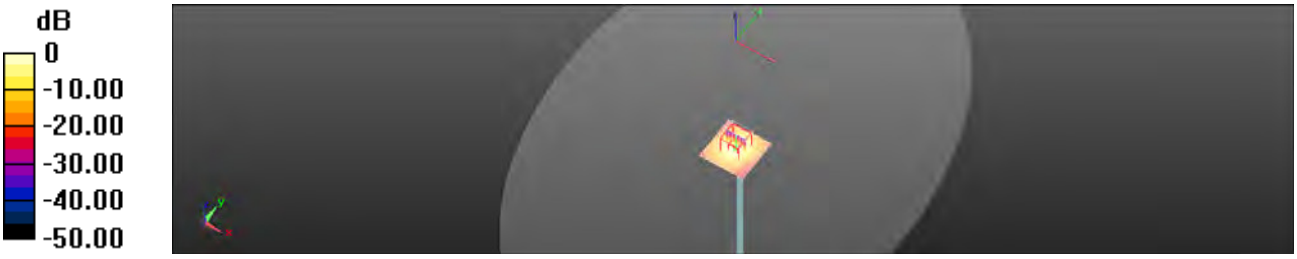
Communication System: CW; Frequency: 5300 MHz
Medium parameters used: f = 5300 MHz; σ = 5.614 S/m; ε_r = 46.944; ρ = 1000 kg/m^3
Phantom section: Flat Section

DASY5 Configuration:

- Probe: EX3DV4 - SN3923; ConvF(4.58, 4.58, 4.58); Calibrated: 2016/9/2;
- Sensor-Surface: 2mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn1374; Calibrated: 2016/8/23
- 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) = 16.7 W/kg

Configuration/Pin=100mW/Zoom Scan (7x7x12)/Cube 0: Measurement grid: dx=4mm, dy=4mm, dz=2mm
Reference Value = 59.06 V/m; Power Drift = 0.05 dB
Peak SAR (extrapolated) = 34.1 W/kg
SAR(1 g) = 7.82 W/kg; SAR(10 g) = 2.21 W/kg
Maximum value of SAR (measured) = 17.2 W/kg



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

Date: 2016/11/1

Dipole 5600 MHz_SN:1023

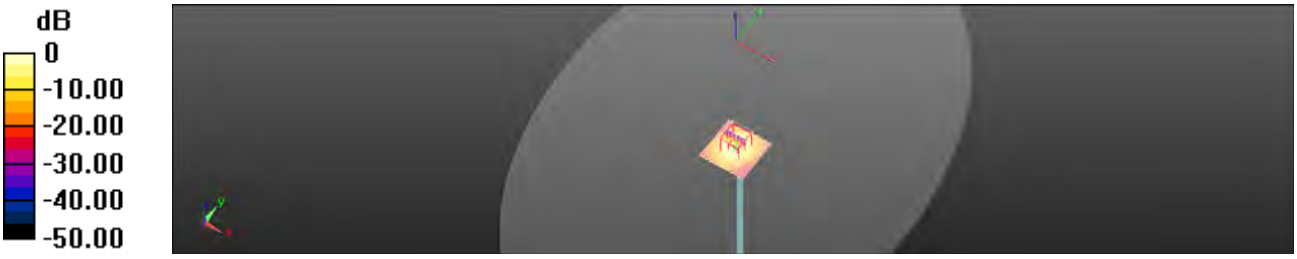
Communication System: CW; Frequency: 5600 MHz
Medium parameters used: f = 5600 MHz; σ = 5.988 S/m; ε_r = 47.499; ρ = 1000 kg/m^3
Phantom section: Flat Section

DASY5 Configuration:

- Probe: EX3DV4 - SN3923; ConvF(4, 4, 4); Calibrated: 2016/9/2;
- Sensor-Surface: 2mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn1374; Calibrated: 2016/8/23
- 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) = 18.0 W/kg

Configuration/Pin=100mW/Zoom Scan (7x7x12)/Cube 0: Measurement grid: dx=4mm, dy=4mm, dz=2mm
Reference Value = 59.54 V/m; Power Drift = 0.10 dB
Peak SAR (extrapolated) = 37.5 W/kg
SAR(1 g) = 8.11 W/kg; SAR(10 g) = 2.29 W/kg
Maximum value of SAR (measured) = 18.3 W/kg



0 dB = 18.3 W/kg = 12.63 dBW/kg

Date: 2016/10/23

Dipole 5800 MHz_SN:1023

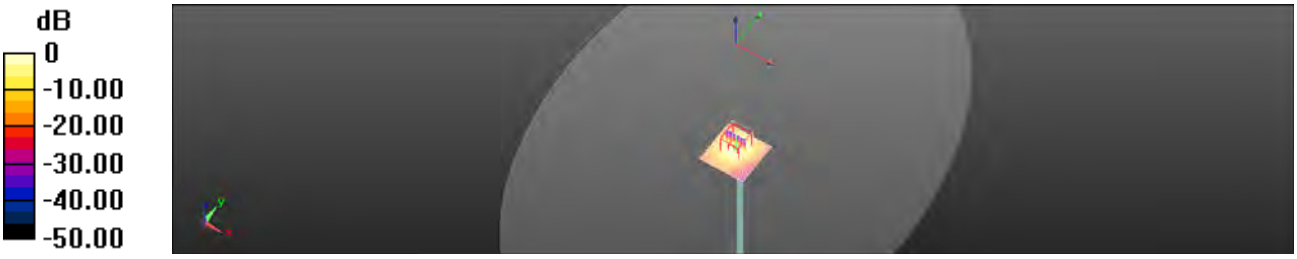
Communication System: CW; Frequency: 5800 MHz
Medium parameters used: f = 5800 MHz; σ = 6.23 S/m; ε_r = 46.849; ρ = 1000 kg/m^3
Phantom section: Flat Section

DASY5 Configuration:

- Probe: EX3DV4 - SN3923; ConvF(4.19, 4.19, 4.19); Calibrated: 2016/9/2;
- Sensor-Surface: 2mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn1374; Calibrated: 2016/8/23
- 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) = 15.2 W/kg

Configuration/Pin=100mW/Zoom Scan (7x7x12)/Cube 0: Measurement grid: dx=4mm, dy=4mm, dz=2mm
Reference Value = 45.41 V/m; Power Drift = -0.01 dB
Peak SAR (extrapolated) = 33.5 W/kg
SAR(1 g) = 7.44 W/kg; SAR(10 g) = 2.09 W/kg
Maximum value of SAR (measured) = 15.5 W/kg



0 dB = 15.5 W/kg = 11.91 dBW/kg

7. DAE & Probe Calibration Certificate

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

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Accreditation No.: SCS 0108

Client SGS-TW (Auden)

Certificate No: DAE4-1374_Aug16

CALIBRATION CERTIFICATE

Object DAE4 - SD 000 D04 BM - SN: 1374

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

Calibration date: August 23, 2016

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

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

Calibration Equipment used (M&TE critical for calibration)

Primary Standards	ID #	Cal Date (Certificate No.)	Scheduled Calibration
Keithley Multimeter Type 2001	SN: 0810278	09-Sep-15 (No:17153)	Sep-16
Secondary Standards	**ID #**	**Check Date (in house)**	**Scheduled Check**
Auto DAE Calibration Unit	SE UWS 053 AA 1001	05-Jan-16 (in house check)	In house check: Jan-17
Calibrator Box V2.1	SE UMS 006 AA 1002	05-Jan-16 (in house check)	In house check: Jan-17

	Name	Function	Signature
Calibrated by:	Dominique Steffen	Technician	
Approved by:	Fin Bomholt	Deputy Technical Manager	

Issued: August 23, 2016

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

Certificate No: DAE4-1374_Aug16 Page 1 of 5

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Accreditation No.: SCS 0108

Glossary

DAE	data acquisition electronics
Connector angle	information used in DASY system to align probe sensor X to the robot coordinate system.

Methods Applied and Interpretation of Parameters

- *DC Voltage Measurement:* Calibration Factor assessed for use in DASY system by comparison with a calibrated instrument traceable to national standards. The figure given corresponds to the full scale range of the voltmeter in the respective range
- *Connector angle:* The angle of the connector is assessed measuring the angle mechanically by a tool inserted. Uncertainty is not required.
- The following parameters as documented in the Appendix contain technical information as a result from the performance test and require no uncertainty.
  - *DC Voltage Measurement Linearity:* Verification of the Linearity at +10% and -10% of the nominal calibration voltage. Influence of offset voltage is included in this measurement.
  - *Common mode sensitivity:* Influence of a positive or negative common mode voltage on the differential measurement.
  - *Channel separation:* Influence of a voltage on the neighbor channels not subject to an input voltage.
  - *AD Converter Values with inputs shorted:* Values on the internal AD converter corresponding to zero input voltage
  - *Input Offset Measurement:* Output voltage and statistical results over a large number of zero voltage measurements.
  - *Input Offset Current:* Typical value for information; Maximum channel input offset current, not considering the input resistance.
  - *Input resistance:* Typical value for information: DAE input resistance at the connector, during internal auto-zeroing and during measurement.
  - *Low Battery Alarm Voltage:* Typical value for information. Below this voltage, a battery alarm signal is generated.
  - *Power consumption:* Typical value for information. Supply currents in various operating modes.

DC Voltage Measurement

A/D - Converter Resolution nominal

High Range:	1LSB =	6.1μV ,	full range =	-100...+300 mV
Low Range:	1LSB =	61nV ,	full range =	-1.....+3mV

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

Calibration Factors	X	Y	Z
High Range	403.637 ± 0.02% (k=2)	403.886 ± 0.02% (k=2)	404.160 ± 0.02% (k=2)
Low Range	3.96275 ± 1.50% (k=2)	3.96719 ± 1.50% (k=2)	3.99036 ± 1.50% (k=2)

Connector Angle

Connector Angle to be used in DASY system	42.5 ° ± 1 °

Appendix (Additional assessments outside the scope of SCS0108)

1. DC Voltage Linearity

High Range		Reading (μV)	Difference (μV)	Error (%)
Channel X	+ Input	200039.11	0.18	0.00
Channel X	+ Input	20005.23	0.57	0.00
Channel X	- Input	-20004.46	1.52	-0.01
Channel Y	+ Input	200041.10	3.98	0.00
Channel Y	+ Input	20002.96	-1.76	-0.01
Channel Y	- Input	-20007.46	-1.33	0.01
Channel Z	+ Input	200039.71	2.56	0.00
Channel Z	+ Input	20002.57	-2.04	-0.01
Channel Z	- Input	-20008.39	-2.20	0.01

Low Range		Reading (μV)	Difference (μV)	Error (%)
Channel X	+ Input	2001.14	0.37	0.02
Channel X	+ Input	200.90	0.07	0.03
Channel X	- Input	-198.75	0.41	-0.20
Channel Y	+ Input	2000.82	0.06	0.00
Channel Y	+ Input	200.17	-0.51	-0.25
Channel Y	- Input	-199.47	-0.29	0.15
Channel Z	+ Input	2000.50	-0.29	-0.01
Channel Z	+ Input	199.36	-1.24	-0.62
Channel Z	- Input	-200.79	-1.45	0.73

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	6.08	3.93
	-200	-2.69	-4.73
Channel Y	200	7.56	7.12
	200	-8.69	-8.88
Channel Z	200	5.83	5.08
	-200	-8.94	-9.16

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	-	-2.29	-1.91
Channel Y	200	4.65	-	-1.13
Channel Z	200	10.99	2.02	-

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	15938	14709
Channel Y	16155	14846
Channel Z	16095	15566

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	1.17	0.20	1.90	0.33
Channel Y	0.61	-0.17	1.24	0.30
Channel Z	-1.30	-2.42	-0.33	0.37

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	-6	-8

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Accreditation No.: SCS 0108

Client: SGS-TW (Auden) Certificate No: EX3-3923_Sep16

CALIBRATION CERTIFICATE

Object: EX3DV4 - SN:3923

Calibration procedure(s): QA CAL-01.v8, QA CAL-14.v4, QA CAL-23.v5, QA CAL-25.v6
Calibration procedure for dosimetric E-field probes

Calibration date: September 2, 2016

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

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

Calibration Equipment used (M&TE critical for calibration)

Primary Standards	ID	Cal Date (Certificate No.)	Scheduled Calibration
Power meter NRP	SN: 104778	06-Apr-16 (No. 217-02288/02289)	Apr-17
Power sensor NRP-Z91	SN: 103244	06-Apr-16 (No. 217-02288)	Apr-17
Power sensor NRP-Z91	SN: 103245	06-Apr-16 (No. 217-02289)	Apr-17
Reference 20 dB Attenuator	SN: S5277 (20x)	06-Apr-16 (No. 217-02292)	Apr-17
Reference Probe ES3DV2	SN: 3013	31-Dec-15 (No. ES3-3013_Dec15)	Dec-16
DAE4	SN: 660	23-Dec-15 (No. DAE4-660_Dec15)	Dec-16
Secondary Standards	ID	Check Date (in house)	Scheduled Check
Power meter E4419B	SN: GB41293874	06-Apr-16 (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-15)	In house check: Oct-16

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

Issued: September 2, 2016

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Accreditation No.: SCS 0108

Glossary:

TSL	tissue simulating liquid
NORMx,y,z	sensitivity in free space
ConvF	sensitivity in TSL / NORMx,y,z
DCP	diode compression point
CF	crest factor (1/duty_cycle) of the RF signal
A, B, C, D	modulation dependent linearization parameters
Polarization φ	φ rotation around probe axis
Polarization ϑ	ϑ rotation around an axis that is in the plane normal to probe axis (at measurement center), i.e., ϑ = 0 is normal to probe axis
Connector Angle	information used in DASY system to align probe sensor X to the robot coordinate system

Calibration is Performed According to the Following Standards:

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

Methods Applied and Interpretation of Parameters:

- *NORMx,y,z*: Assessed for E-field polarization ϑ = 0 (f ≤ 900 MHz in TEM-cell; f > 1800 MHz: R22 waveguide). NORMx,y,z are only intermediate values, i.e., the uncertainties of NORMx,y,z does not affect the E^2-field uncertainty inside TSL (see below ConvF).
- *NORM(f)x,y,z = NORMx,y,z * frequency_response* (see Frequency Response Chart). This linearization is implemented in DASY4 software versions later than 4.2. The uncertainty of the frequency response is included in the stated uncertainty of *ConvF*.
- *DCPx,y,z*: DCP are numerical linearization parameters assessed based on the data of power sweep with CW signal (no uncertainty required). DCP does not depend on frequency nor media.
- *PAR*: PAR = 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:3923

Manufactured:	March 8, 2013
Repaired:	August 30, 2016
Calibrated:	September 2, 2016

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

DASY/EASY - Parameters of Probe: EX3DV4 - SN:3923

Basic Calibration Parameters

	Sensor X	Sensor Y	Sensor Z	Unc (k=2)
Norm ($\mu V/(V/m)^2$)[A]	0.55	0.46	0.45	± 10.1 %
DCP (mV)[B]	101.5	102.8	106.7	

Modulation Calibration Parameters

UID	Communication System Name		A dB	B dB$\sqrt{\mu V}$	C	D dB	VR mV	Unc[E] (k=2)
0	CW	X	0.0	0.0	1.0	0.00	150.8	±3.0 %
		Y	0.0	0.0	1.0		149.7	
		Z	0.0	0.0	1.0		151.5	

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

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

DASY/EASY - Parameters of Probe: EX3DV4 - SN:3923

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	11.01	11.01	11.01	0.53	0.80	± 12.0 %
835	41.5	0.90	10.66	10.66	10.66	0.47	0.80	± 12.0 %
900	41.5	0.97	10.40	10.40	10.40	0.36	0.93	± 12.0 %
1750	40.1	1.37	9.27	9.27	9.27	0.29	0.80	± 12.0 %
1900	40.0	1.40	8.90	8.90	8.90	0.30	0.80	± 12.0 %
2000	40.0	1.40	8.92	8.92	8.92	0.34	0.80	± 12.0 %
2450	39.2	1.80	7.95	7.95	7.95	0.33	0.85	± 12.0 %
2600	39.0	1.96	7.77	7.77	7.77	0.33	0.80	± 12.0 %
5250	35.9	4.71	5.36	5.36	5.36	0.30	1.80	± 13.1 %
5600	35.5	5.07	4.94	4.94	4.94	0.40	1.80	± 13.1 %
5750	35.4	5.22	4.96	4.96	4.96	0.40	1.80	± 13.1 %

[F] 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:3923

Calibration Parameter Determined in Body Tissue Simulating Media

f (MHz) [C]	Relative Permittivity [F]	Conductivity (S/m) [F]	ConvF X	ConvF Y	ConvF Z	Alpha [G]	Depth [G] (mm)	Unc (k=2)
750	55.5	0.96	10.83	10.83	10.83	0.32	0.98	± 12.0 %
835	55.2	0.97	10.67	10.67	10.67	0.37	0.96	± 12.0 %
900	55.0	1.05	10.52	10.52	10.52	0.44	0.80	± 12.0 %
1750	53.4	1.49	8.78	8.78	8.78	0.39	0.81	± 12.0 %
1900	53.3	1.52	8.47	8.47	8.47	0.37	0.80	± 12.0 %
2000	53.3	1.52	8.68	8.68	8.68	0.38	0.80	± 12.0 %
2450	52.7	1.95	8.06	8.06	8.06	0.30	0.80	± 12.0 %
2600	52.5	2.16	7.84	7.84	7.84	0.27	0.80	± 12.0 %
5250	48.9	5.36	4.58	4.58	4.58	0.50	1.90	± 13.1 %
5600	48.5	5.77	4.00	4.00	4.00	0.55	1.90	± 13.1 %
5750	48.3	5.94	4.19	4.19	4.19	0.55	1.90	± 13.1 %

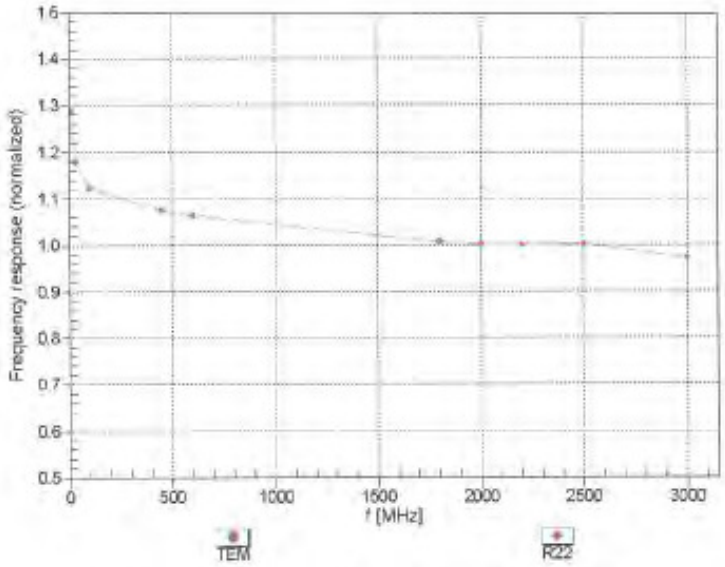
[C] Frequency validity above 300 MHz of ± 100 MHz only applies for DASY v4.4 and higher (see Page 2), else it is restricted to ± 50 MHz. The uncertainty is the RSS of the ConvF uncertainty at calibration frequency and the uncertainty for the indicated frequency band. Frequency validity below 300 MHz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

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

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

EX3DV4- SN:3923 September 2, 2016

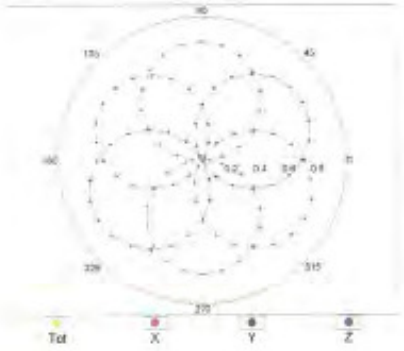
Frequency Response of E-Field
(TEM-Cell:ifi110 EXX, Waveguide: R22)



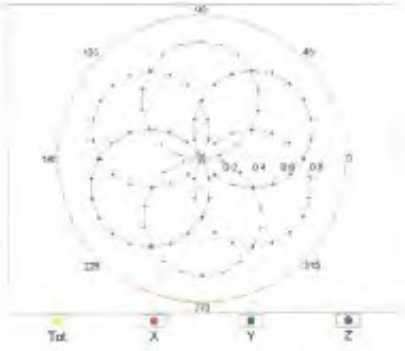
Uncertainty of Frequency Response of E-field: ± 6.3% (k=2)

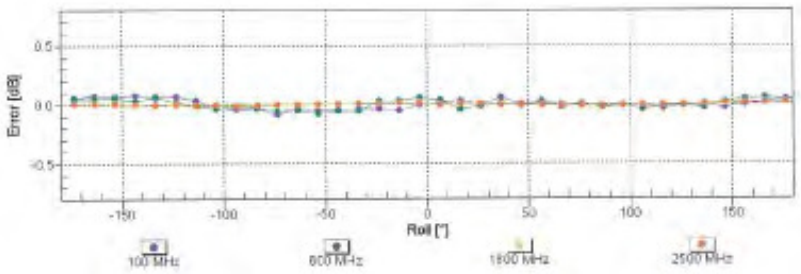
Receiving Pattern (ϕ), ϑ = 0°

f=600 MHz,TEM



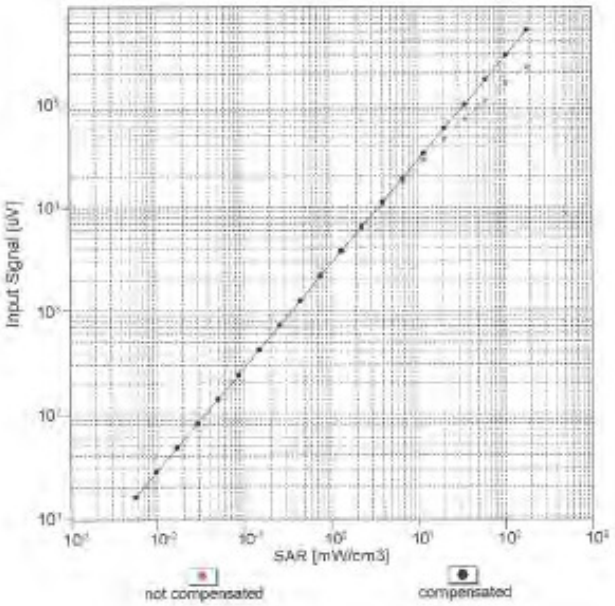
f=1800 MHz,R22

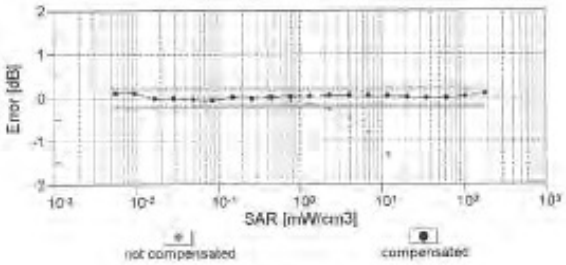




Uncertainty of Axial Isotropy Assessment: ± 0.5% (k=2)

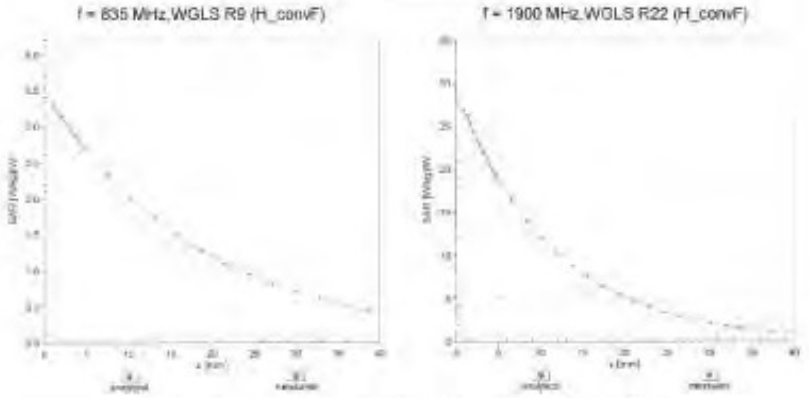
Dynamic Range f(SAR$_{head}$)
(TEM cell , f_{eval}= 1900 MHz)





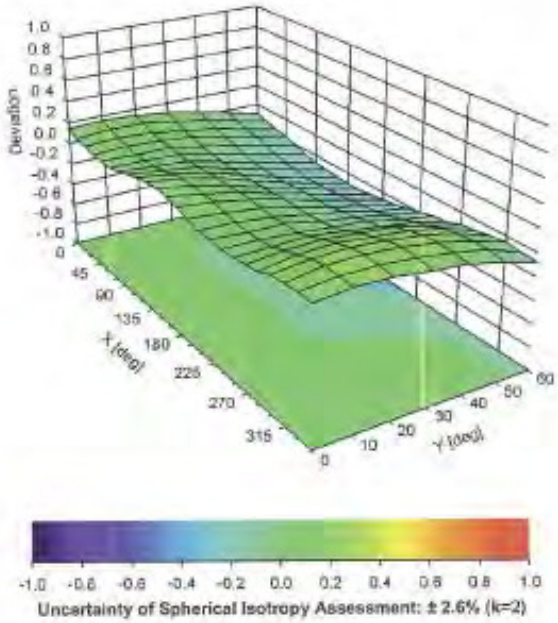
Uncertainty of Linearity Assessment: ± 0.6% (k=2)

Conversion Factor Assessment



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:3923

Other Probe Parameters

Sensor Arrangement	Triangular
Connector Angle (°)	26.4
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.)	3.96%	N	1	1	0.64	0.43	2.53%	1.70%	M
Liquid Conductivity (mea.)	3.84%	N	1	1	0.6	0.49	2.30%	1.88%	M
Combined standard uncertainty		RSS					12.21%	11.98%	
Expant uncertainty (95% confidence							24.41%	23.96%	

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.)	2.16%	N	1	1	0.64	0.43	1.38%	0.93%	M
Liquid Conductivity (mea.)	4.25%	N	1	1	0.6	0.49	2.55%	2.08%	M
Combined standard uncertainty		RSS					11.78%	11.63%	
Expant uncertainty (95% confidence							23.56%	23.27%	

9. Phantom Description

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

Certificate of Conformity / First Article Inspection

Item	SAM Twin Phantom V4.0
Type No	QD 000 P40 C
Series No	TP-1150 and higher
Manufacturer	SPEAG Zeughausstrasse 43 CH-8004 Zürich Switzerland

Tests
The series production process used allows the limitation to test of first articles.
Complete tests were made on the pre-series Type No. QD 000 P40 AA, Serial No. TP-1001 and on the series first article Type No. QD 000 P40 BA, Serial No. TP-1006. Certain parameters have been retested using further series items (called samples) or are tested at each item.

Test	Requirement	Details	Units tested
Dimensions	Compliant with the geometry according to the CAD model	IT'IS CAD File (*)	First article, Samples
Material thickness of shell	Compliant with the requirements according to the standards	2mm +/- 0.2mm in flat and specific areas of head section	First article, Samples, TP-1314 ff.
Material thickness at ERP	Compliant with the requirements according to the standards	6mm +/- 0.2mm at ERP	First article, All items
Material parameters	Dielectric parameters for required frequencies	300 MHz – 6 GHz: Relative permittivity < 5, Loss tangent < 0.05	Material samples
Material resistivity	The material has been tested to be compatible with the liquids defined in the standards if handled and cleaned according to the instructions. Observe technical Note for material compatibility.	DEGMBE based simulating liquids	Pre-series, First article, Material samples
Sagging	Compliant with the requirements according to the standards. Sagging of the flat section when filled with tissue simulating liquid	< 1% typical < 0.8% if filled with 155mm of HSL900 and without DUT below	Prototypes, Sample testing

Standards
[1] CENELEC EN 50361
[2] IEEE Std 1528-2003
[3] IEC 62209 Part I
[4] FCC OET Bulletin 65, Supplement C, Edition 01-01
(*) The IT'IS CAD file is derived from [2] and is also within the tolerance requirements of the shapes of the other documents.

Conformity
Based on the sample tests above, we certify that this item is in compliance with the uncertainty requirements of SAR measurements specified in standards [1] to [4].

Date 07.07.2005

Signature / Stamp

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info@speag.com, http://www.speag.com

Doc No 881 – QD 000 P40 C – F Page 1 (1)

10. System Validation from Original Equipment Supplier

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

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

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Accreditation No.: SCS 0108

Client SGS-TW (Auden)

Certificate No: D750V3-1015_Aug16

CALIBRATION CERTIFICATE

Object D750V3 - SN: 1015

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

Calibration date: August 30, 2016

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

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

Calibration Equipment used (M&TE critical for calibration)

Primary Standards	ID #	Cal Date (Certificate No.)	Scheduled Calibration
Power meter NRP	SN: 104778	06-Apr-16 (No. 217-02288/02289)	Apr-17
Power sensor NRP-Z91	SN: 103244	06-Apr-16 (No. 217-02288)	Apr-17
Power sensor NRP-Z91	SN: 103245	06-Apr-16 (No. 217-02289)	Apr-17
Reference 20 dB Attenuator	SN: 5058 (20k)	05-Apr-16 (No. 217-02292)	Apr-17
Type-N mismatch combination	SN: 5047.2 / 06327	05-Apr-16 (No. 217-02295)	Apr-17
Reference Probe EX3DV4	SN: 7349	15-Jun-16 (No. EX3-7349_Jun16)	Jun-17
DAE4	SN: 601	30-Dec-15 (No. DAE4-601_Dec15)	Dec-16

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

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

Issued: August 30, 2016

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

Certificate No: D750V3-1015_Aug16 Page 1 of 8

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S Swiss Calibration Service

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

Accreditation No.: SCS 0108

Glossary:

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

Calibration is Performed According to the Following Standards:

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

Additional Documentation:

e) DASY4/5 System Handbook

Methods Applied and Interpretation of Parameters:

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

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

Measurement Conditions

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

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

Head TSL parameters

The following parameters and calculations were applied.

	Temperature	Permittivity	Conductivity
Nominal Head TSL parameters	22.0 °C	41.9	0.89 mho/m
Measured Head TSL parameters	(22.0 ± 0.2) °C	42.4 ± 6 %	0.91 mho/m ± 6 %
Head TSL temperature change during test	< 0.5 °C	—	—

SAR result with Head TSL

SAR averaged over 1 cm³ (1 g) of Head TSL	Condition	
SAR measured	250 mW input power	2.11 W/kg
SAR for nominal Head TSL parameters	normalized to 1W	**8.32 W/kg ± 17.0 % (k=2)**

SAR averaged over 10 cm³ (10 g) of Head TSL	condition	
SAR measured	250 mW input power	1.36 W/kg
SAR for nominal Head TSL parameters	normalized to 1W	**5.45 W/kg ± 16.5 % (k=2)**

Body TSL parameters

The following parameters and calculations were applied.

	Temperature	Permittivity	Conductivity
Nominal Body TSL parameters	22.0 °C	55.5	0.96 mho/m
Measured Body TSL parameters	(22.0 ± 0.2) °C	54.9 ± 6 %	0.99 mho/m ± 6 %
Body TSL temperature change during test	< 0.5 °C	—	—

SAR result with Body TSL

SAR averaged over 1 cm³ (1 g) of Body TSL	Condition	
SAR measured	250 mW input power	2.25 W/kg
SAR for nominal Body TSL parameters	normalized to 1W	**8.77 W/kg ± 17.0 % (k=2)**

SAR averaged over 10 cm³ (10 g) of Body TSL	condition	
SAR measured	250 mW input power	1.47 W/kg
SAR for nominal Body TSL parameters	normalized to 1W	**5.76 W/kg ± 16.5 % (k=2)**

Appendix (Additional assessments outside the scope of SCS 0108)

Antenna Parameters with Head TSL

Impedance, transformed to feed point	53.1 Ω - 0.2 jΩ
Return Loss	-30.5 dB

Antenna Parameters with Body TSL

Impedance, transformed to feed point	49.0 Ω - 2.8 jΩ
Return Loss	-30.8 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: 30.08.2016

Test Laboratory: SPEAG, Zurich, Switzerland

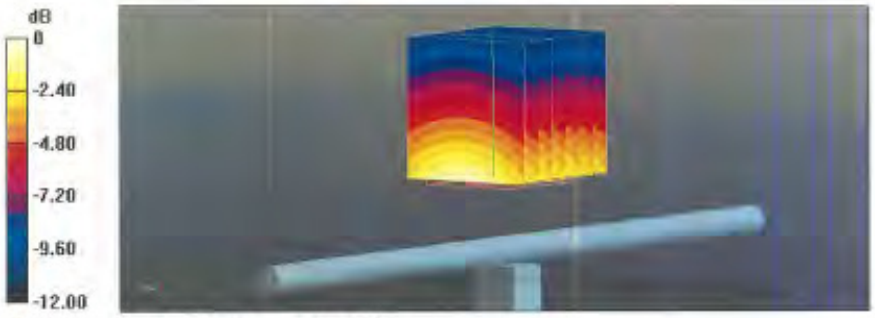
DUT: Dipole 750 MHz; Type: D750V3; Serial: D750V3 - SN: 1015

Communication System: UID 0 - CW; Frequency: 750 MHz
Medium parameters used: f = 750 MHz, σ = 0.91 S/m; ε_r = 42.4; 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: 15.06.2016;
- Sensor-Surface: 1.4mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn601; Calibrated: 30.12.2015
- Phantom: Flat Phantom 4.9L; Type: QD000P49AA; Serial: 1001
- DASY52 52.8.8(1258); SEMCAD X 14.6.10(7372)

Dipole Calibration for Head Tissue/Pin=250 mW, d=15mm/Zoom Scan (7x7x7)/Cube 0:
Measurement grid: dx=5mm, dy=5mm, dz=5mm
Reference Value = 58.26 V/m; Power Drift = 0.02 dB
Peak SAR (extrapolated) = 3.16 W/kg
SAR(1 g) = 2.11 W/kg; SAR(10 g) = 1.38 W/kg
Maximum value of SAR (measured) = 2.81 W/kg



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

DASY5 Validation Report for Body TSL

Date: 30.08.2016

Test Laboratory: SPEAG, Zurich, Switzerland

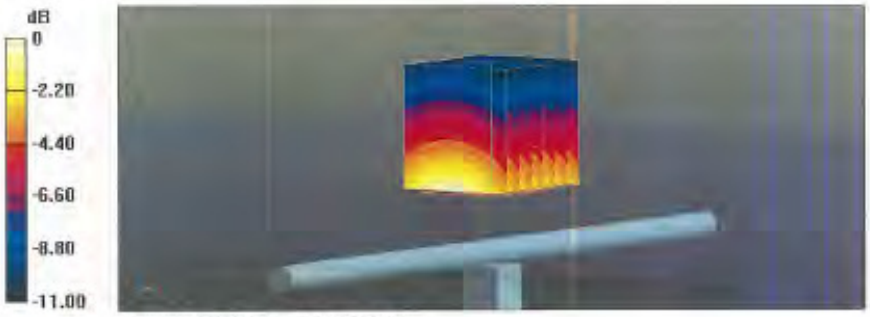
DUT: Dipole 750 MHz; Type: D750V3; Serial: D750V3 - SN: 1015

Communication System: UID 0 - CW; Frequency: 750 MHz
Medium parameters used: f = 750 MHz; σ = 0.99 S/m; ε_r = 54.9; ρ = 1000 kg/m^3
Phantom section: Flat Section
Measurement Standard: DASY5 (IEEE/IEC/ANSI C63.19-2011)

DASY52 Configuration:

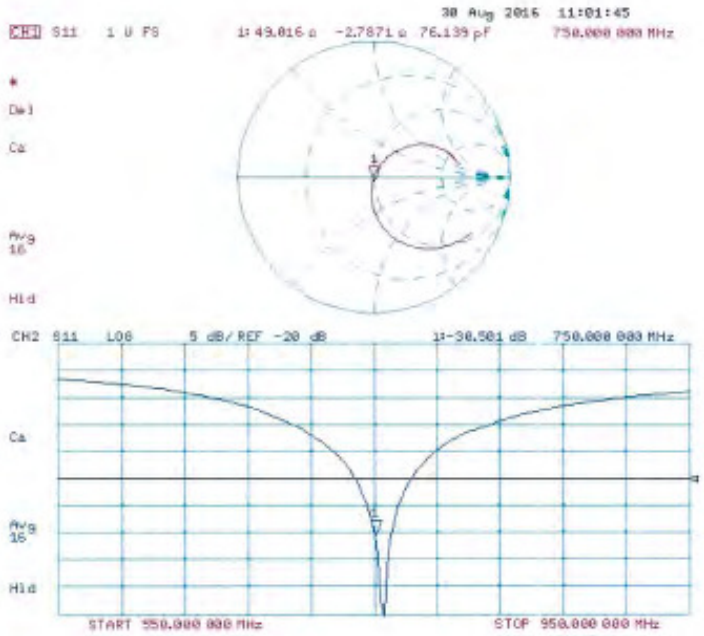
- Probe: EX3DV4 - SN7349; ConvF(9.99, 9.99, 9.99); Calibrated: 15.06.2016;
- Sensor-Surface: 1.4mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn601; Calibrated: 30.12.2015
- Phantom: Flat Phantom 4.9L; Type: QD000P49AA; Serial: 1001
- DASY52 52.8.8(1258); SEMCAD X 14.6.10(7372)

Dipole Calibration for Body Tissue/Pin=250 mW, d=15mm/Zoom Scan (7x7x7)/Cube 0:
Measurement grid: dx=5mm, dy=5mm, dz=5mm
Reference Value = 57.47 V/m; Power Drift = -0.01 dB
Peak SAR (extrapolated) = 3.39 W/kg
SAR(1 g) = 2.25 W/kg; SAR(10 g) = 1.47 W/kg
Maximum value of SAR (measured) = 2.97 W/kg



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

Impedance Measurement Plot for Body TSL



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Accreditation No.: SCS 0108

Client SGS-TW (Auden)

Certificate No: D1750V2-1008_Aug16

CALIBRATION CERTIFICATE

Object D1750V2 - SN:1008

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

Calibration date: August 31, 2016

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

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

Calibration Equipment used (M&TE critical for calibration)

Primary Standards	ID #	Cal Date (Certificate No.)	Scheduled Calibration
Power meter NRP	SN: 104778	06-Apr-16 (No. 217-02288/02289)	Apr-17
Power sensor NRP-Z91	SN: 103244	06-Apr-16 (No. 217-02288)	Apr-17
Power sensor NRP-Z91	SN: 103245	06-Apr-16 (No. 217-02289)	Apr-17
Reference 20 dB Attenuator	SN: 5058 (20k)	05-Apr-16 (No. 217-02292)	Apr-17
Type-N mismatch combination	SN: 5047.2 / 06327	05-Apr-16 (No. 217-02295)	Apr-17
Reference Probe EX3DV4	SN: 7349	15-Jun-16 (No. EX3-7349_Jun16)	Jun-17
DAE4	SN: 601	30-Dec-15 (No. DAE4-601_Dec15)	Dec-16

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

	Name	Function	Signature
Calibrated by:	Johannes Kumka	Laboratory Technician	
Approved by:	Katja Pokovic	Technical Manager	

Issued: August 31, 2016

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Accreditation No.: SCS 0108

Glossary:

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

Calibration is Performed According to the Following Standards:

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

Additional Documentation:

e) DASY4/5 System Handbook

Methods Applied and Interpretation of Parameters:

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

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

Measurement Conditions

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

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

Head TSL parameters

The following parameters and calculations were applied.

	Temperature	Permittivity	Conductivity
Nominal Head TSL parameters	22.0 °C	40.1	1.37 mho/m
Measured Head TSL parameters	(22.0 ± 0.2) °C	40.3 ± 6 %	1.37 mho/m ± 6 %
Head TSL temperature change during test	< 0.5 °C	—	—

SAR result with Head TSL

SAR averaged over 1 cm³ (1 g) of Head TSL	Condition	
SAR measured	250 mW input power	9.28 W/kg
SAR for nominal Head TSL parameters	normalized to 1W	**37.2 W/kg ± 17.0 % (k=2)**

SAR averaged over 10 cm³ (10 g) of Head TSL	condition	
SAR measured	250 mW input power	4.90 W/kg
SAR for nominal Head TSL parameters	normalized to 1W	**19.6 W/kg ± 16.5 % (k=2)**

Body TSL parameters

The following parameters and calculations were applied.

	Temperature	Permittivity	Conductivity
Nominal Body TSL parameters	22.0 °C	53.4	1.49 mho/m
Measured Body TSL parameters	(22.0 ± 0.2) °C	53.1 ± 6 %	1.49 mho/m ± 6 %
Body TSL temperature change during test	< 0.5 °C	—	—

SAR result with Body TSL

SAR averaged over 1 cm³ (1 g) of Body TSL	Condition	
SAR measured	250 mW input power	9.34 W/kg
SAR for nominal Body TSL parameters	normalized to 1W	**37.3 W/kg ± 17.0 % (k=2)**

SAR averaged over 10 cm³ (10 g) of Body TSL	condition	
SAR measured	250 mW input power	4.96 W/kg
SAR for nominal Body TSL parameters	normalized to 1W	**19.9 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	51.0 Ω - 0.2 jΩ
Return Loss	- 40.1 dB

Antenna Parameters with Body TSL

Impedance, transformed to feed point	46.7 Ω - 0.5 jΩ
Return Loss	- 29.3 dB

General Antenna Parameters and Design

Electrical Delay (one direction)	1.221 ns

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

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

Additional EUT Data

Manufactured by	SPEAG
Manufactured on	May 27, 2003

DASY5 Validation Report for Head TSL

Date: 24.08.2016

Test Laboratory: SPEAG, Zurich, Switzerland

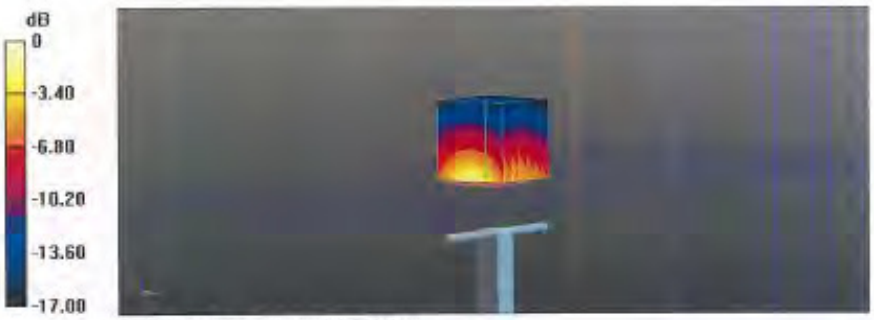
DUT: Dipole 1750 MHz; Type: D1750V2; Serial: D1750V2 - SN:1008

Communication System: UID 0 - CW; Frequency: 1750 MHz
Medium parameters used: f = 1750 MHz; σ = 1.37 S/m; ε_r = 40.3; ρ = 1000 kg/m^3
Phantom section: Flat Section
Measurement Standard: DASY5 (IEEE/IEC/ANSI C63.19-2011)

DASY52 Configuration:

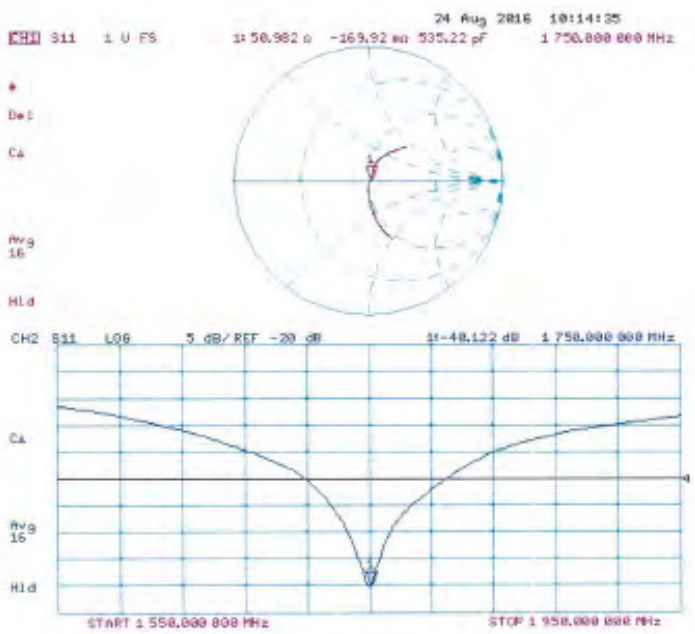
- Probe: EX3DV4 - SN7349; ConvF(8.46, 8.46, 8.46); Calibrated: 15.06.2016;
- Sensor-Surface: 1.4mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn601; Calibrated: 30.12.2015
- Phantom: Flat Phantom 5.0 (front); Type: QD000P50AA; Serial: 1001
- DASY52 52.8.8(1258); SEMCAD X 14.6.10(7372)

Dipole Calibration for Head Tissue/Pin=250 mW, d=10mm/Zoom Scan (7x7x7)/Cube 0:
Measurement grid: dx=5mm, dy=5mm, dz=5mm
Reference Value = 105.8 V/m; Power Drift = 0.03 dB
Peak SAR (extrapolated) = 17.2 W/kg
SAR(1 g) = 9.28 W/kg; SAR(10 g) = 4.9 W/kg
Maximum value of SAR (measured) = 14.3 W/kg



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

Impedance Measurement Plot for Head TSL



DASY5 Validation Report for Body TSL

Date: 31.08.2016

Test Laboratory: SPEAG, Zurich, Switzerland

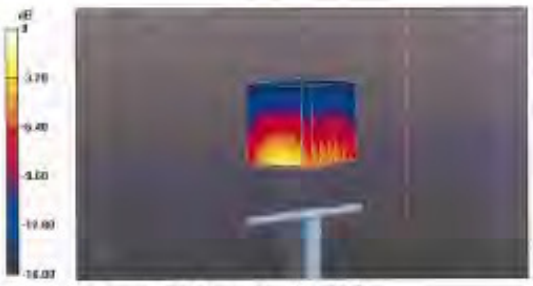
DUT: Dipole 1750 MHz; Type: D1750V2; Serial: D1750V2 - SN:1008

Communication System: UID 0 - CW; Frequency: 1750 MHz
Medium parameters used: f = 1750 MHz; σ = 1.49 S/m; ε_r = 53.1; ρ = 1000 kg/m^3
Phantom section: Flat Section
Measurement Standard: DASY5 (IEEE/IEC/ANSI C63.19-2011)

DASY52 Configuration:

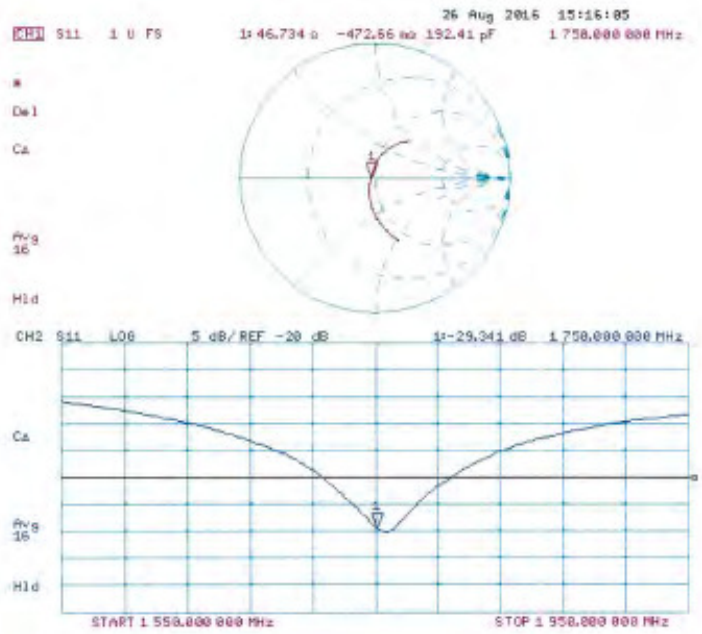
- Probe: EX3DV4 - SN7349; ConvF(8.25, 8.25, 8.25); Calibrated: 15.06.2016;
- Sensor-Surface: 1.4mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn601; Calibrated: 30.12.2015
- Phantom: Flat Phantom 5.0 (back); Type: QD000P50AA; Serial: 1002
- DASY52 52.8.8(1258); SEMCAD X 14.6.10(7372)

Dipole Calibration for Body Tissue/Pin=250 mW, d=10mm/Zoom Scan (7x7x7)/Cube 0:
Measurement grid: dx=5mm, dy=5mm, dz=5mm
Reference Value = 100.8 V/m; Power Drift = -0.02 dB
Peak SAR (extrapolated) = 16.4 W/kg
SAR(1 g) = 9.34 W/kg; SAR(10 g) = 4.98 W/kg
Maximum value of SAR (measured) = 13.9 W/kg



0 dB = 13.9 W/kg = 11.43 dBW/kg

Impedance Measurement Plot for Body TSL



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Accreditation No.: SCS 0108

Client SGS-TW (Auden)

Certificate No: D1900V2-5d027_Apr16

CALIBRATION CERTIFICATE

Object D1900V2 - SN: 5d027

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

Calibration date April 25, 2016

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

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

Calibration Equipment used (M&TE critical for calibration)

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

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

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

Issued: April 26, 2016

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

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Accreditation No.: SCS 0108

Glossary:

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

Calibration is Performed According to the Following Standards:

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

Additional Documentation:

a) DASY4/5 System Handbook

Methods Applied and Interpretation of Parameters:

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

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

Measurement Conditions

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

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

Head TSL parameters

The following parameters and calculations were applied.

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

SAR result with Head TSL

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

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

Body TSL parameters

The following parameters and calculations were applied.

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

SAR result with Body TSL

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

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

Appendix (Additional assessments outside the scope of SCS 0108)

Antenna Parameters with Head TSL

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

Antenna Parameters with Body TSL

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

General Antenna Parameters and Design

Electrical Delay (one direction)	1.196 ns

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

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

Additional EUT Data

Manufactured by	SPEAG
Manufactured on	December 17, 2002

DASY5 Validation Report for Head TSL

Date: 25.04.2016

Test Laboratory: SPEAG, Zurich, Switzerland

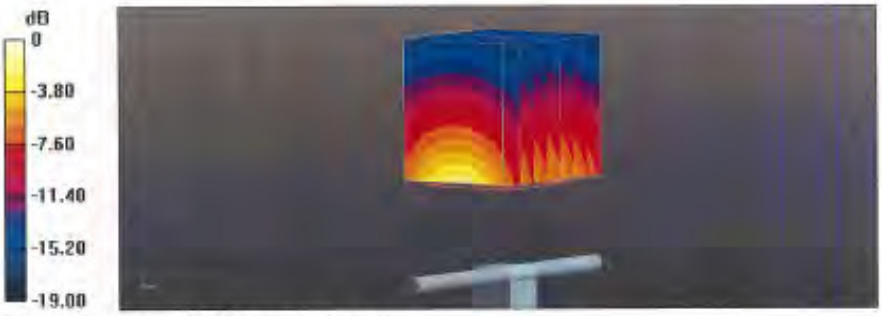
DUT: Dipole 1900 MHz; Type: D1900V2; Serial: D1900V2 - SN: 5d027

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

DASY52 Configuration:

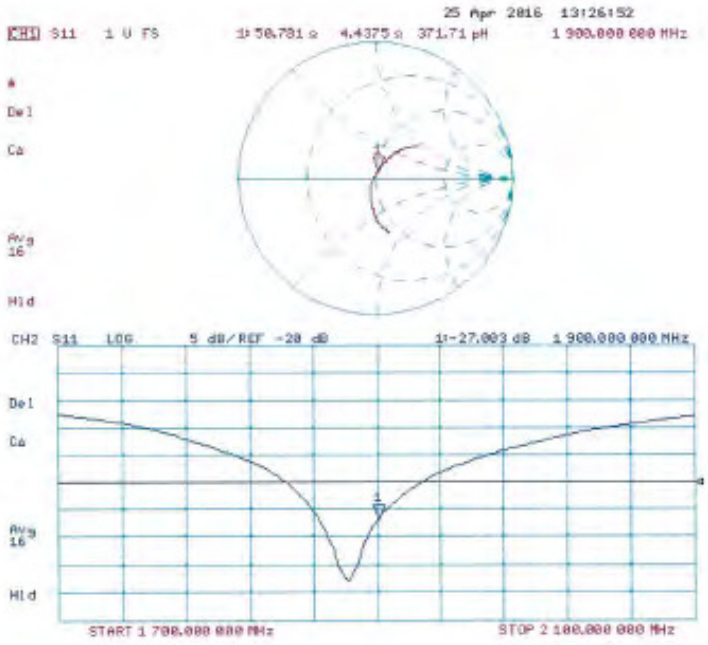
- Probe: EX3DV4 - SN7349; ConvF(8.2, 8.2, 8.2); Calibrated: 31.12.2015;
- Sensor-Surface: 1.4mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn601; Calibrated: 30.12.2015
- Phantom: Flat Phantom 5.0 (front); Type: QD000P50AA; Serial: 1001
- DASY52 52.8.8(1258); SEMCAD X 14.6.10(7372)

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



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

Impedance Measurement Plot for Head TSL



DASY5 Validation Report for Body TSL

Date: 25.04.2016

Test Laboratory: SPEAG, Zurich, Switzerland

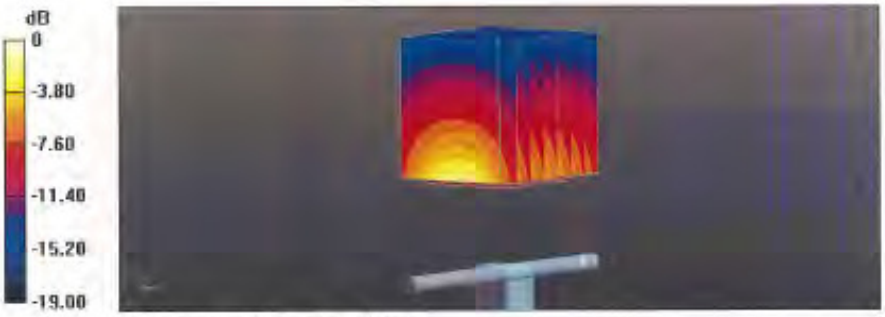
DUT: Dipole 1900 MHz; Type: D1900V2; Serial: D1900V2 - SN: 5d027

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

DASY52 Configuration:

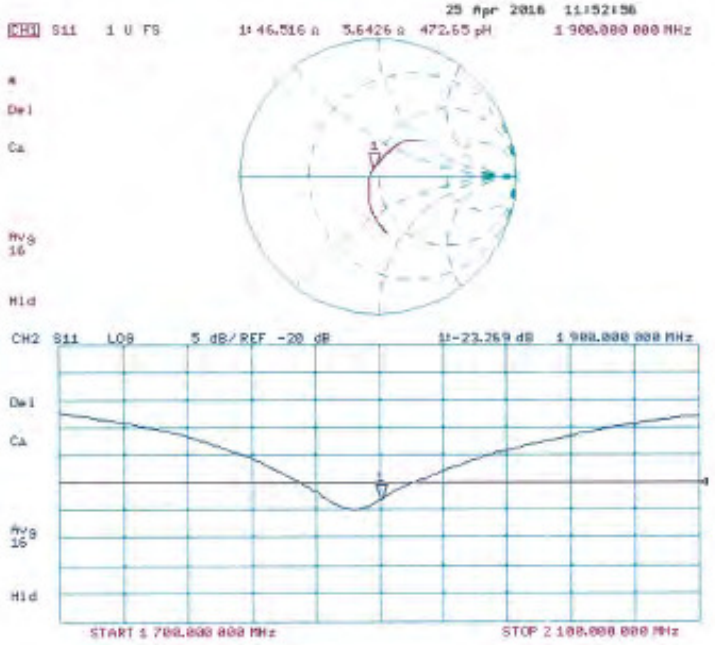
- Probe: EX3DV4 - SN7349; ConvF(8.03, 8.03, 8.03); Calibrated: 31.12.2015;
- Sensor-Surface: 1.4mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn601; Calibrated: 30.12.2015
- Phantom: Flat Phantom 5.0 (back); Type: QD000P50AA; Serial: 1002
- DASY52 52.8.8(1258); SEMCAD X 14.6.10(7372)

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



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

Impedance Measurement Plot for Body TSL



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Accreditation No.: **SCS 0108**

Client **SGS-TW (Auden)** Certificate No: **D2450V2-727_Apr16**

CALIBRATION CERTIFICATE

Object	D2450V2 - SN:727
Calibration procedure(s)	QA CAL-05.v9 Calibration procedure for dipole validation kits above 700 MHz
Calibration date:	April 19, 2016

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

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

Calibration Equipment used (M&TE critical for calibration)

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

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

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

Issued: April 20, 2016

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Accreditation No.: SCS 0108

Glossary:

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

Calibration is Performed According to the Following Standards:

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

Additional Documentation:

e) DASY4/5 System Handbook

Methods Applied and Interpretation of Parameters:

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

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

Measurement Conditions

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

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

Head TSL parameters

The following parameters and calculations were applied.

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

SAR result with Head TSL

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

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

Body TSL parameters

The following parameters and calculations were applied.

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

SAR result with Body TSL

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

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

Appendix (Additional assessments outside the scope of SCS 0108)

Antenna Parameters with Head TSL

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

Antenna Parameters with Body TSL

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

General Antenna Parameters and Design

Electrical Delay (one direction)	1.148 ns

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

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

Additional EUT Data

Manufactured by	SPEAG
Manufactured on	January 09, 2003

DASY5 Validation Report for Head TSL

Date: 19.04.2016

Test Laboratory: SPEAG, Zurich, Switzerland

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

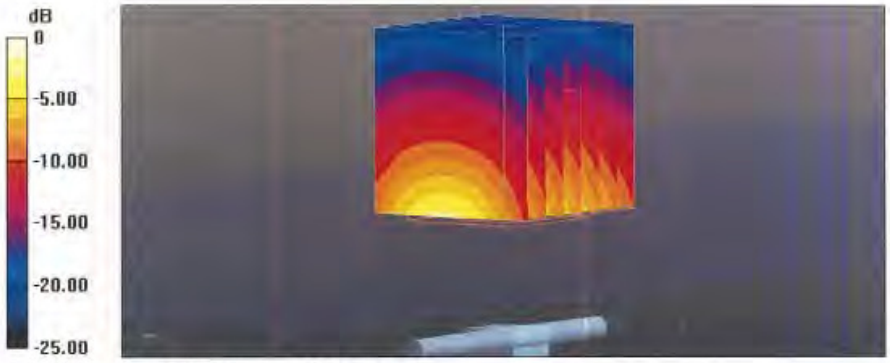
Communication System: UID 0 - CW; Frequency: 2450 MHz
Medium parameters used: f = 2450 MHz; σ = 1.83 S/m; ε_r = 40; ρ = 1000 kg/m^3
Phantom section: Flat Section
Measurement Standard: DASY5 (IEEE/IEC/ANSI C63.19-2011)

DASY52 Configuration:

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

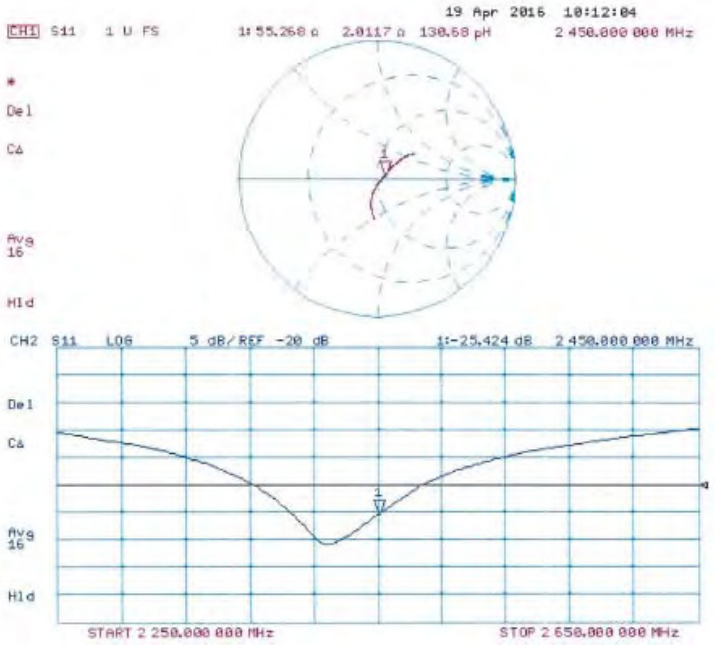
Dipole Calibration for Head Tissue/Pin=250 mW, d=10mm/Zoom Scan (7x7x7)/Cube 0:

Measurement grid: dx=5mm, dy=5mm, dz=5mm
Reference Value = 112.1 V/m; Power Drift = 0.05 dB
Peak SAR (extrapolated) = 25.7 W/kg
SAR(1 g) = 12.8 W/kg; SAR(10 g) = 5.93 W/kg
Maximum value of SAR (measured) = 20.8 W/kg



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

Impedance Measurement Plot for Head TSL



DASY5 Validation Report for Body TSL

Date: 19.04.2016

Test Laboratory: SPEAG, Zurich, Switzerland

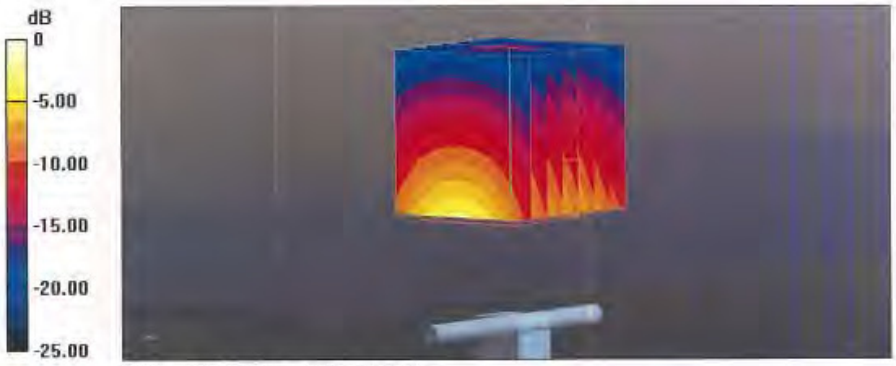
DUT: Dipole 2450 MHz; Type: D2450V2; Serial: D2450V2 - SN: 727

Communication System: UID 0 - CW; Frequency: 2450 MHz
Medium parameters used: f = 2450 MHz; σ = 1.98 S/m; ε_r = 52.7; ρ = 1000 kg/m^3
Phantom section: Flat Section
Measurement Standard: DASY5 (IEEE/IEC/ANSI C63.19-2011)

DASY52 Configuration:

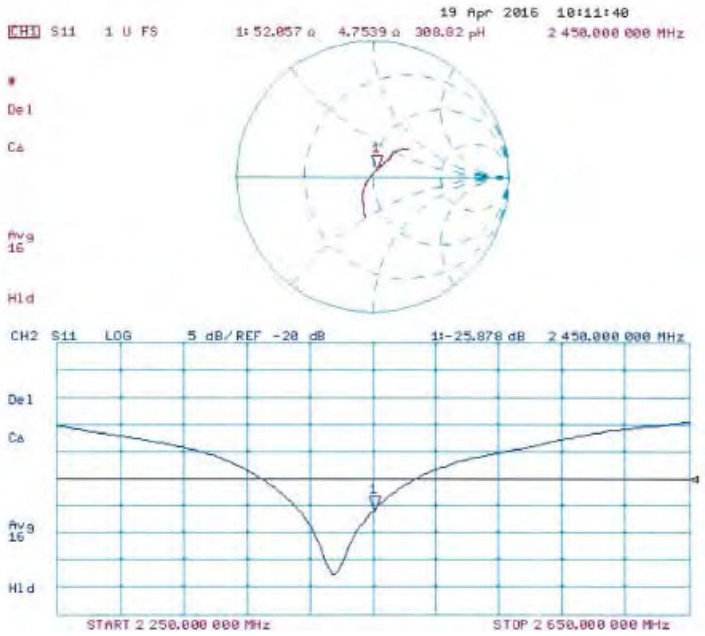
- Probe: EX3DV4 - SN7349; ConvF(7.79, 7.79, 7.79); Calibrated: 31.12.2015;
- Sensor-Surface: 1.4mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn601; Calibrated: 30.12.2015
- Phantom: Flat Phantom 5.0 (back); Type: QD000P50AA; Serial: 1002
- DASY52 52.8.8(1258); SEMCAD X 14.6.10(7372)

Dipole Calibration for Body Tissue/Pin=250 mW, d=10mm/Zoom Scan (7x7x7)/Cube 0:
Measurement grid: dx=5mm, dy=5mm, dz=5mm
Reference Value = 105.0 V/m; Power Drift = 0.04 dB
Peak SAR (extrapolated) = 24.9 W/kg
SAR(1 g) = 12.5 W/kg; SAR(10 g) = 5.86 W/kg
Maximum value of SAR (measured) = 20.2 W/kg



0 dB = 20.2 W/kg = 13.05 dBW/kg

Impedance Measurement Plot for Body TSL



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Accreditation No.: SCS 0108

Client SGS-TW (Auden)

Certificate No: D2600V2-1005_Jan16

CALIBRATION CERTIFICATE

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

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

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

Calibration Equipment used (M&TE critical for calibration)

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

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

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

Issued: January 26, 2016

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Accreditation No.: SCS 0108

Glossary:

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

Calibration is Performed According to the Following Standards:

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

Additional Documentation:

e) DASY4/5 System Handbook

Methods Applied and Interpretation of Parameters:

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

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

Measurement Conditions

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

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

Head TSL parameters

The following parameters and calculations were applied.

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

SAR result with Head TSL

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

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

Body TSL parameters

The following parameters and calculations were applied.

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

SAR result with Body TSL

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

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

Appendix (Additional assessments outside the scope of SCS 0108)

Antenna Parameters with Head TSL

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

Antenna Parameters with Body TSL

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

General Antenna Parameters and Design

Electrical Delay (one direction)	1.154 ns

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

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

Additional EUT Data

Manufactured by	SPEAG
Manufactured on	December 23, 2006

DASY5 Validation Report for Head TSL

Date: 21.01.2016

Test Laboratory: SPEAG, Zurich, Switzerland

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

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

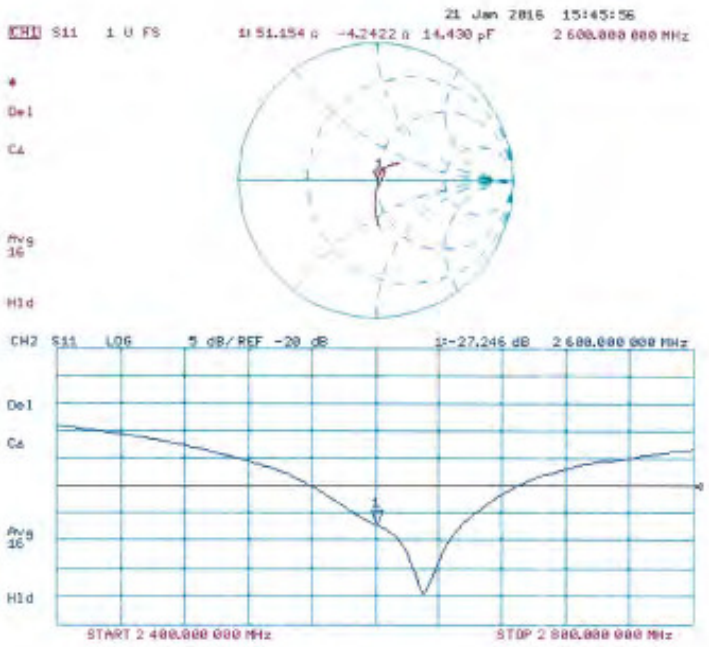
DASY52 Configuration:

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

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

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

Impedance Measurement Plot for Head TSL



DASY5 Validation Report for Body TSL

Date: 21.01.2016

Test Laboratory: SPEAG, Zurich, Switzerland

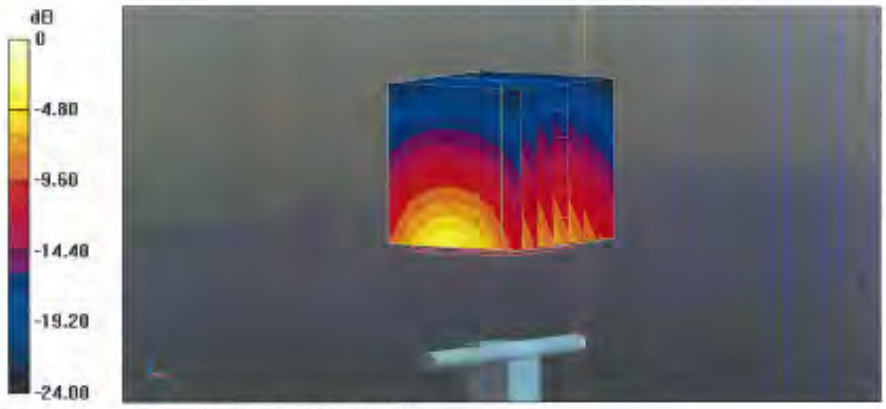
DUT: Dipole 2600 MHz; Type: D2600V2; Serial: D2600V2 - SN: 1005

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

DASY52 Configuration:

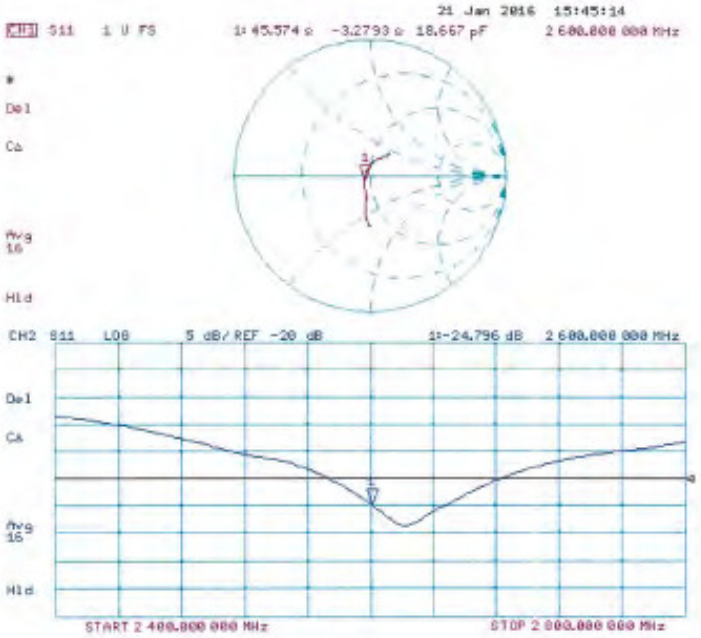
- Probe: EX3DV4 - SN7349; ConvF(7.6, 7.6, 7.6); Calibrated: 31.12.2015;
- Sensor-Surface: 1.4mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn601; Calibrated: 30.12.2015
- Phantom: Flat Phantom 5.0 (back); Type: QD000P50AA; Serial: 1002
- DASY52 52.8.8(1258); SEMCAD X 14.6.10(7372)

Dipole Calibration for Body Tissue/Pin=250 mW, d=10mm/Zoom Scan (7x7x7)/Cube 0:
Measurement grid: dx=5mm, dy=5mm, dz=5mm
Reference Value = 106.7 V/m; Power Drift = 0.02 dB
Peak SAR (extrapolated) = 28.4 W/kg
SAR(1 g) = 13.7 W/kg; SAR(10 g) = 6.1 W/kg
Maximum value of SAR (measured) = 22.8 W/kg



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

Impedance Measurement Plot for Body TSL



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Accreditation No.: SCS 0108

Client SGS-TW (Auden)

Certificate No: D5GHzV2-1023_Jan16

CALIBRATION CERTIFICATE

Object D5GHzV2 - SN: 1023

Calibration procedure(s) QA CAL-22.v2
Calibration procedure for dipole validation kits between 3-6 GHz

Calibration date: January 26, 2016

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

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

Calibration Equipment used (M&TE critical for calibration)

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

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

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

Issued: January 28, 2016

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

Additional Documentation:

d) DASY4/5 System Handbook

Methods Applied and Interpretation of Parameters:

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

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

Measurement Conditions

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

DASY Version	DASY5	V52.8.8
Extrapolation	Advanced Extrapolation	
Phantom	Modular Flat Phantom V5.0	
Distance Dipole Center - TSL	10 mm	with Spacer
Zoom Scan Resolution	dx, dy = 4.0 mm, dz = 1.4 mm	Graded Ratio = 1.4 (Z direction)
Frequency	5200 MHz ± 1 MHz 5300 MHz ± 1 MHz 5600 MHz ± 1 MHz 5800 MHz ± 1 MHz	

Head TSL parameters at 5200 MHz

The following parameters and calculations were applied.

	Temperature	**Permittivity**	**Conductivity**
Nominal Head TSL parameters	22.0 °C	36.0	4.66 mho/m
Measured Head TSL parameters	(22.0 ± 0.2) °C	35.2 ± 6 %	4.51 mho/m ± 6 %
Head TSL temperature change during test	< 0.5 °C	----	----

SAR result with Head TSL at 5200 MHz

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

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

Head TSL parameters at 5300 MHz

The following parameters and calculations were applied.

	Temperature	Permittivity	Conductivity
Nominal Head TSL parameters	22.0 °C	35.9	4.76 mho/m
Measured Head TSL parameters	(22.0 ± 0.2) °C	35.1 ± 6 %	4.60 mho/m ± 6 %
Head TSL temperature change during test	< 0.5 °C	----	----

SAR result with Head TSL at 5300 MHz

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

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

Head TSL parameters at 5600 MHz

The following parameters and calculations were applied.

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

SAR result with Head TSL at 5600 MHz

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

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

Head TSL parameters at 5800 MHz

The following parameters and calculations were applied.

	Temperature	Permittivity	Conductivity
Nominal Head TSL parameters	22.0 °C	35.3	5.27 mho/m
Measured Head TSL parameters	(22.0 ± 0.2) °C	34.4 ± 6 %	5.10 mho/m ± 6 %
Head TSL temperature change during test	< 0.5 °C	----	----

SAR result with Head TSL at 5800 MHz

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

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

Body TSL parameters at 5200 MHz

The following parameters and calculations were applied.

	Temperature	Permittivity	Conductivity
Nominal Body TSL parameters	22.0 °C	49.0	5.30 mho/m
Measured Body TSL parameters	(22.0 ± 0.2) °C	47.1 ± 6 %	5.37 mho/m ± 6 %
Body TSL temperature change during test	< 0.5 °C	----	----

SAR result with Body TSL at 5200 MHz

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

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

Body TSL parameters at 5300 MHz

The following parameters and calculations were applied.

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

SAR result with Body TSL at 5300 MHz

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

SAR averaged over 10 cm³ (10 g) of Body TSL	condition	
SAR measured	100 mW input power	2.14 W/kg
SAR for nominal Body TSL parameters	normalized to 1W	**21.2 W/kg ± 19.5 % (k=2)**

Body TSL parameters at 5600 MHz

The following parameters and calculations were applied.

	Temperature	Permittivity	Conductivity
Nominal Body TSL parameters	22.0 °C	48.5	5.77 mho/m
Measured Body TSL parameters	(22.0 ± 0.2) °C	46.4 ± 6 %	5.91 mho/m ± 6 %
Body TSL temperature change during test	< 0.5 °C	----	----

SAR result with Body TSL at 5600 MHz

SAR averaged over 1 cm³ (1 g) of Body TSL	Condition	
SAR measured	100 mW input power	7.89 W/kg
SAR for nominal Body TSL parameters	normalized to 1W	**78.3 W/kg ± 19.9 % (k=2)**

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

Body TSL parameters at 5800 MHz

The following parameters and calculations were applied.

	Temperature	Permittivity	Conductivity
Nominal Body TSL parameters	22.0 °C	48.2	6.00 mho/m
Measured Body TSL parameters	(22.0 ± 0.2) °C	46.0 ± 6 %	6.19 mho/m ± 6 %
Body TSL temperature change during test	< 0.5 °C	----	----

SAR result with Body TSL at 5800 MHz

SAR averaged over 1 cm³ (1 g) of Body TSL	Condition	
SAR measured	100 mW input power	7.59 W/kg
SAR for nominal Body TSL parameters	normalized to 1W	**75.3 W/kg ± 19.9 % (k=2)**

SAR averaged over 10 cm³ (10 g) of Body TSL	condition	
SAR measured	100 mW input power	2.13 W/kg
SAR for nominal Body TSL parameters	normalized to 1W	**21.1 W/kg ± 19.5 % (k=2)**

Appendix (Additional assessments outside the scope of SCS 0108)

Antenna Parameters with Head TSL at 5200 MHz

Impedance, transformed to feed point	49.1 Ω - 8.4 jΩ
Return Loss	- 21.4 dB

Antenna Parameters with Head TSL at 5300 MHz

Impedance, transformed to feed point	49.6 Ω - 4.2 jΩ
Return Loss	- 27.4 dB

Antenna Parameters with Head TSL at 5600 MHz

Impedance, transformed to feed point	54.9 Ω - 1.4 jΩ
Return Loss	- 26.3 dB

Antenna Parameters with Head TSL at 5800 MHz

Impedance, transformed to feed point	55.9 Ω + 2.2 jΩ
Return Loss	- 24.5 dB

Antenna Parameters with Body TSL at 5200 MHz

Impedance, transformed to feed point	49.4 Ω - 6.8 jΩ
Return Loss	- 23.3 dB

Antenna Parameters with Body TSL at 5300 MHz

Impedance, transformed to feed point	50.9 Ω - 2.4 jΩ
Return Loss	- 31.8 dB

Antenna Parameters with Body TSL at 5600 MHz

Impedance, transformed to feed point	56.0 Ω - 0.1 jΩ
Return Loss	- 25.0 dB

Antenna Parameters with Body TSL at 5800 MHz

Impedance, transformed to feed point	56.4 Ω + 2.4 jΩ
Return Loss	- 23.8 dB

General Antenna Parameters and Design

Electrical Delay (one direction)	1.199 ns

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

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

Additional EUT Data

Manufactured by	SPEAG
Manufactured on	February 05, 2004

DASY5 Validation Report for Head TSL

Date: 26.01.2016

Test Laboratory: SPEAG, Zurich, Switzerland

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

Communication System: UID 0 - CW; Frequency: 5200 MHz, Frequency: 5300 MHz, Frequency: 5600 MHz, Frequency: 5800 MHz
Medium parameters used: f = 5200 MHz; σ = 4.51 S/m; ε_r = 35.2; ρ = 1000 kg/m^3 , Medium parameters used: f = 5300 MHz; σ = 4.6 S/m; ε_r = 35.1; ρ = 1000 kg/m^3 , Medium parameters used: f = 5600 MHz; σ = 4.9 S/m; ε_r = 34.7; ρ = 1000 kg/m^3 , Medium parameters used: f = 5800 MHz; σ = 5.1 S/m; ε_r = 34.4; ρ = 1000 kg/m^3
Phantom section: Flat Section
Measurement Standard: DASY5 (IEEE/IEC/ANSI C63.19-2011)

DASY52 Configuration:

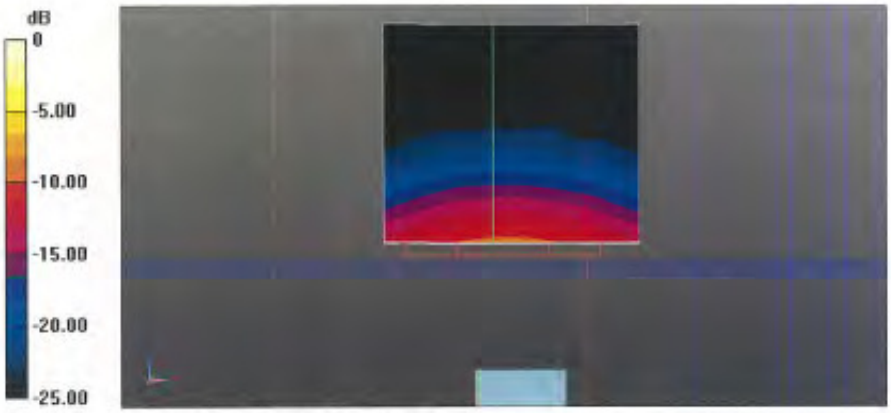
- Probe: EX3DV4 - SN3503; ConvF(5.59, 5.59, 5.59); Calibrated: 31.12.2015, ConvF(5.25, 5.25, 5.25); Calibrated: 31.12.2015, ConvF(4.99, 4.99, 4.99); Calibrated: 31.12.2015, ConvF(4.95, 4.95, 4.95); Calibrated: 31.12.2015;
- Sensor-Surface: 1.4mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn601; Calibrated: 30.12.2015
- Phantom: Flat Phantom 5.0 (front); Type: QD000P50AA; Serial: 1001
- DASY52 52.8.8(1258); SEMCAD X 14.6.10(7372)

Dipole Calibration for Head Tissue/Pin=100mW, dist=10mm, f=5200 MHz/Zoom Scan, dist=1.4mm (8x8x7)/Cube 0: Measurement grid: dx=4mm, dy=4mm, dz=1.4mm
Reference Value = 72.68 V/m; Power Drift = 0.07 dB
Peak SAR (extrapolated) = 28.1 W/kg
SAR(1 g) = 7.74 W/kg; SAR(10 g) = 2.23 W/kg
Maximum value of SAR (measured) = 17.8 W/kg

Dipole Calibration for Head Tissue/Pin=100mW, dist=10mm, f=5300 MHz/Zoom Scan, dist=1.4mm (8x8x7)/Cube 0: Measurement grid: dx=4mm, dy=4mm, dz=1.4mm
Reference Value = 73.14 V/m; Power Drift = 0.04 dB
Peak SAR (extrapolated) = 30.0 W/kg
SAR(1 g) = 8.03 W/kg; SAR(10 g) = 2.33 W/kg
Maximum value of SAR (measured) = 18.7 W/kg

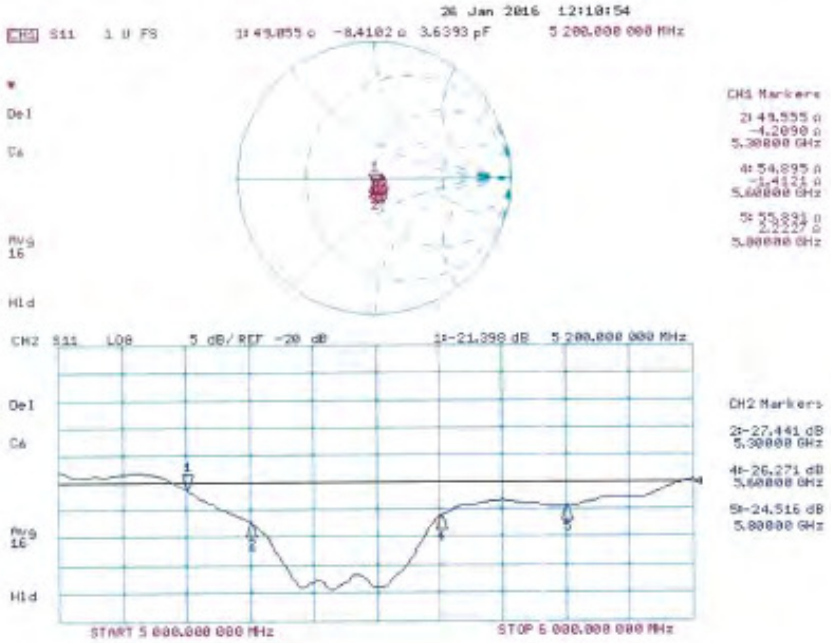
Dipole Calibration for Head Tissue/Pin=100mW, dist=10mm, f=5600 MHz/Zoom Scan, dist=1.4mm (8x8x7)/Cube 0: Measurement grid: dx=4mm, dy=4mm, dz=1.4mm
Reference Value = 73.32 V/m; Power Drift = 0.08 dB
Peak SAR (extrapolated) = 32.6 W/kg
SAR(1 g) = 8.31 W/kg; SAR(10 g) = 2.38 W/kg
Maximum value of SAR (measured) = 19.8 W/kg

Dipole Calibration for Head Tissue/Pin=100mW, dist=10mm, f=5800 MHz/Zoom Scan, dist=1.4mm (8x8x7)/Cube 0: Measurement grid: dx=4mm, dy=4mm, dz=1.4mm
Reference Value = 70.15 V/m; Power Drift = 0.04 dB
Peak SAR (extrapolated) = 32.0 W/kg
SAR(1 g) = 7.78 W/kg; SAR(10 g) = 2.22 W/kg
Maximum value of SAR (measured) = 18.8 W/kg



0 dB = 18.8 W/kg = 12.74 dBW/kg

Impedance Measurement Plot for Head TSL



DASY5 Validation Report for Body TSL

Date: 25.01.2016

Test Laboratory: SPEAG, Zurich, Switzerland

DUT: Dipole 5GHz; Type: D5GHzV2; Serial: D5GHzV2 - SN: 1023

Communication System: UID 0 - CW; Frequency: 5200 MHz, Frequency: 5300 MHz, Frequency: 5600 MHz, Frequency: 5800 MHz
Medium parameters used: f = 5200 MHz; σ = 5.37 S/m; ε_r = 47.1; ρ = 1000 kg/m^3 , Medium parameters used: f = 5300 MHz; σ = 5.5 S/m; ε_r = 46.9; ρ = 1000 kg/m^3 , Medium parameters used: f = 5600 MHz; σ = 5.91 S/m; ε_r = 46.4; ρ = 1000 kg/m^3 , Medium parameters used: f = 5800 MHz; σ = 6.19 S/m; ε_r = 46; ρ = 1000 kg/m^3
Phantom section: Flat Section
Measurement Standard: DASY5 (IEEE/IEC/ANSI C63.19-2011)

DASY52 Configuration:

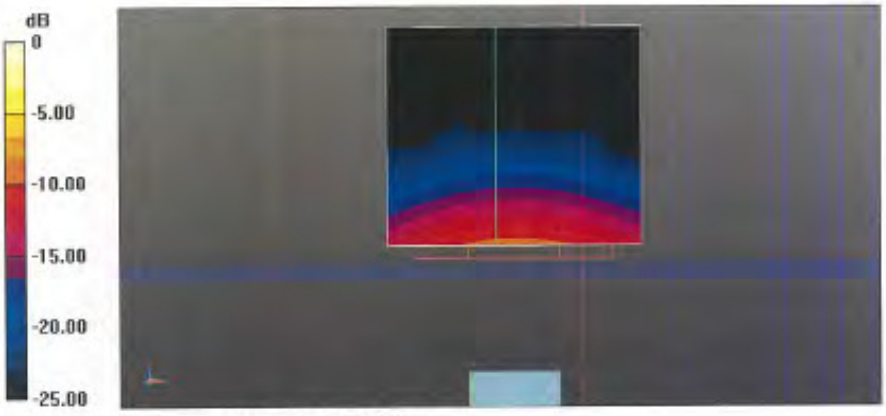
- Probe: EX3DV4 - SN3503; ConvF(4.99, 4.99, 4.99); Calibrated: 31.12.2015, ConvF(4.75, 4.75, 4.75); Calibrated: 31.12.2015, ConvF(4.35, 4.35, 4.35); Calibrated: 31.12.2015, ConvF(4.27, 4.27, 4.27); Calibrated: 31.12.2015;
- Sensor-Surface: 1.4mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn601; Calibrated: 30.12.2015
- Phantom: Flat Phantom 5.0 (back); Type: QD000P50AA; Serial: 1002
- DASY52 52.8.8(1258); SEMCAD X 14.6.10(7372)

Dipole Calibration for Body Tissue/Pin=100mW, dist=10mm, f=5200 MHz/Zoom Scan, dist=1.4mm (8x8x7)/Cube 0: Measurement grid: dx=4mm, dy=4mm, dz=1.4mm
Reference Value = 66.72 V/m; Power Drift = -0.01 dB
Peak SAR (extrapolated) = 27.1 W/kg
SAR(1 g) = 7.25 W/kg; SAR(10 g) = 2.05 W/kg
Maximum value of SAR (measured) = 16.8 W/kg

Dipole Calibration for Body Tissue/Pin=100mW, dist=10mm, f=5300 MHz/Zoom Scan, dist=1.4mm (8x8x7)/Cube 0: Measurement grid: dx=4mm, dy=4mm, dz=1.4mm
Reference Value = 67.43 V/m; Power Drift = 0.02 dB
Peak SAR (extrapolated) = 29.1 W/kg
SAR(1 g) = 7.57 W/kg; SAR(10 g) = 2.14 W/kg
Maximum value of SAR (measured) = 17.7 W/kg

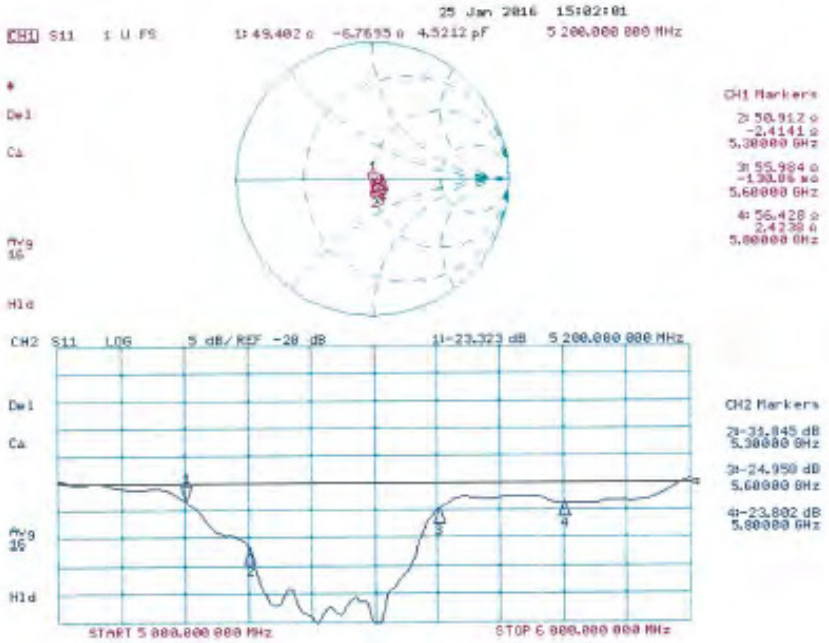
Dipole Calibration for Body Tissue/Pin=100mW, dist=10mm, f=5600 MHz/Zoom Scan, dist=1.4mm (8x8x7)/Cube 0: Measurement grid: dx=4mm, dy=4mm, dz=1.4mm
Reference Value = 67.67 V/m; Power Drift = -0.01 dB
Peak SAR (extrapolated) = 32.6 W/kg
SAR(1 g) = 7.89 W/kg; SAR(10 g) = 2.23 W/kg
Maximum value of SAR (measured) = 19.1 W/kg

Dipole Calibration for Body Tissue/Pin=100mW, dist=10mm, f=5800 MHz/Zoom Scan, dist=1.4mm (8x8x7)/Cube 0: Measurement grid: dx=4mm, dy=4mm, dz=1.4mm
Reference Value = 65.76 V/m; Power Drift = -0.02 dB
Peak SAR (extrapolated) = 33.0 W/kg
SAR(1 g) = 7.59 W/kg; SAR(10 g) = 2.13 W/kg
Maximum value of SAR (measured) = 18.5 W/kg



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

Impedance Measurement Plot for Body TSL



- End of 1st part of report -