SAR TEST REPORT

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

Equipment Under Test	LTE Tablet PC
Model No.	AQT100
Company Name	Quanta Microsystems, Inc.
Company Address	No.188, Wenhua 2nd Rd., Guishan Dist., Taoyuan City 33377, Taiwan
Standards	IEEE /ANSI C95.1 , C95.3, IEEE 1528 2003, KDB248227D01v02r01, KDB616217D04v01r01, KDB865664D01v01r04, KDB865664D02v01r01, KDB941225D05v02r03, KDB447498D01v05r02
FCC ID	T5UAQT100
Date of Receipt	Sep. 14, 2015
Date of Test(s)	Sep. 25, 2015 ~ Oct. 05, 2015
Date of Issue	Oct. 12, 2015

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

Remarks:

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

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

Signed on behalf of SGS

Sr. Engineer	**Sr. Engineer**
Bond Tsai Bond Tsai	**John Yeh** John Yeh
Date: Oct. 12, 2015	**Date: Oct. 12, 2015**

Version

Report Number	Revision	Date	Memo
E5/2015/90007	00	2015/10/12	Initial creation of test report.

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

Contents

1. General Information

1.1 Testing Laboratory

SGS Taiwan Ltd. Electronics & Communication Laboratory	
No.134, Wu Kung Road, New Taipei Industrial Park, Wuku District, New Taipei City, Taiwan	
Tel	+886-2-2299-3279
Fax	+886-2-2298-0488
Internet	http://www.tw.sgs.com/

1.2 Details of Applicant

Company Name	Quanta Microsystems, Inc.
Company Address	No.188, Wenhua 2nd Rd., Guishan Dist., Taoyuan City 33377, Taiwan

1.3 Description of EUT

Equipment Under Test	LTE Tablet PC			
Model No.	AQT100			
FCC ID	T5UAQT100			
Mode of Operation	☒LTE FDD ☒LTE TDD ☒WLAN802.11 b/g/n(20M/40M) ☒Bluetooth			
Duty Cycle	LTE FDD	1		
	LTE TDD	0.633		
	WLAN802.11 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 V	824	–	849
	LTE FDD Band XII	698.7	–	711
	LTE FDD Band XXV	1850	–	1915
	LTE FDD Band XXVI	814.7	–	848.3
	LTE TDD Band XLI	2498.5		2687.5
	WLAN802.11 b/g/n(20M)	2412	–	2462
	WLAN802.11 n(40M)	2422	–	2452
	Bluetooth	2402	–	2480

Channel Number (ARFCN)	LTE FDD Band II	18607	—	19193
	LTE FDD Band IV	19957	—	20393
	LTE FDD Band V	20407	—	20600
	LTE FDD Band XII	23007	—	23130
	LTE FDD Band XXV	26047	—	26683
	LTE FDD Band XXVI	26697	—	27033
	LTE TDD Band XLI	39675	—	41565
	WLAN802.11 b/g/n(20M)	1	—	11
	WLAN802.11 n(40M)	3	—	9
	Bluetooth	0	—	78

Max. SAR (1 g) (Unit: W/Kg)				
Band	Measured	Reported	Channel	Position
LTE FDD Band II	1.110	1.220	18700	Back side
LTE FDD Band IV	0.959	1.052	20050	Back side
LTE FDD Band V	0.901	0.981	20600	Back side
LTE FDD Band XII	0.475	0.484	23130	Back side
LTE FDD Band XXV	1.160	1.252	26590	Back side
LTE FDD Band XXVI	0.795	0.945	26825	Back side
LTE TDD Band XLI	0.450	0.451	41490	Back side
WLAN802.11 b	1.120	1.268	6	Back side
WLAN802.11 n(40M)	0.701	0.711	6	Back side

LTE FDD Band II / Band IV / Band V / Band XII / Band XXV / Band XXVI / and TDD Band XLI 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	22.65	23	0
				1880	18900	22.77	23	0
				1900	19100	22.63	23	0
			50	1860	18700	23.00	23	0
				1880	18900	22.70	23	0
				1900	19100	22.72	23	0
			99	1860	18700	22.54	23	0
				1880	18900	22.74	23	0
				1900	19100	22.64	23	0
		50 RB	0	1860	18700	21.77	22	0-1
				1880	18900	21.82	22	0-1
				1900	19100	21.85	22	0-1
			25	1860	18700	21.69	22	0-1
				1880	18900	21.80	22	0-1
				1900	19100	21.71	22	0-1
			50	1860	18700	21.71	22	0-1
				1880	18900	21.69	22	0-1
				1900	19100	21.75	22	0-1
		100RB		1860	18700	21.67	22	0-1
				1880	18900	21.85	22	0-1
				1900	19100	21.80	22	0-1
	16-QAM	1 RB	0	1860	18700	21.22	22	0-1
				1880	18900	21.88	22	0-1
				1900	19100	21.40	22	0-1
			50	1860	18700	21.40	22	0-1
				1880	18900	21.77	22	0-1
				1900	19100	21.99	22	0-1
			99	1860	18700	21.90	22	0-1
				1880	18900	21.54	22	0-1
				1900	19100	21.81	22	0-1
		50 RB	0	1860	18700	20.64	21	0-2
				1880	18900	20.63	21	0-2
				1900	19100	20.69	21	0-2
			25	1860	18700	20.43	21	0-2
				1880	18900	20.61	21	0-2
				1900	19100	20.63	21	0-2
			50	1860	18700	20.35	21	0-2
				1880	18900	20.66	21	0-2
				1900	19100	20.65	21	0-2
		100RB		1860	18700	20.53	21	0-2
				1880	18900	20.59	21	0-2
				1900	19100	20.56	21	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	22.56	23	0
				1880	18900	22.59	23	0
				1902.5	19125	22.54	23	0
			36	1857.5	18675	22.38	23	0
				1880	18900	22.50	23	0
				1902.5	19125	22.45	23	0
			74	1857.5	18675	22.38	23	0
				1880	18900	22.49	23	0
				1902.5	19125	22.32	23	0
		36 RB	0	1857.5	18675	21.52	22	0-1
				1880	18900	21.59	22	0-1
				1902.5	19125	21.57	22	0-1
			18	1857.5	18675	21.48	22	0-1
				1880	18900	21.57	22	0-1
				1902.5	19125	21.61	22	0-1
			37	1857.5	18675	21.47	22	0-1
				1880	18900	21.51	22	0-1
				1902.5	19125	21.56	22	0-1
		75RB		1857.5	18675	21.45	22	0-1
				1880	18900	21.56	22	0-1
				1902.5	19125	21.60	22	0-1
	16-QAM	1 RB	0	1857.5	18675	21.15	22	0-1
				1880	18900	21.45	22	0-1
				1902.5	19125	22.16	22	0-1
			36	1857.5	18675	21.33	22	0-1
				1880	18900	21.45	22	0-1
				1902.5	19125	22.04	22	0-1
			74	1857.5	18675	21.20	22	0-1
				1880	18900	21.88	22	0-1
				1902.5	19125	21.61	22	0-1
		36 RB	0	1857.5	18675	20.55	21	0-2
				1880	18900	20.62	21	0-2
				1902.5	19125	20.62	21	0-2
			18	1857.5	18675	20.40	21	0-2
				1880	18900	20.71	21	0-2
				1902.5	19125	20.55	21	0-2
			37	1857.5	18675	20.40	21	0-2
				1880	18900	20.54	21	0-2
				1902.5	19125	20.66	21	0-2
		75RB		1857.5	18675	20.37	21	0-2
				1880	18900	20.60	21	0-2
				1902.5	19125	20.63	21	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	22.46	23	0
				1880	18900	22.53	23	0
				1905	19150	22.56	23	0
			25	1855	18650	22.50	23	0
				1880	18900	22.58	23	0
				1905	19150	22.78	23	0
			49	1855	18650	22.62	23	0
				1880	18900	22.52	23	0
				1905	19150	22.49	23	0
		25 RB	0	1855	18650	21.63	22	0-1
				1880	18900	21.59	22	0-1
				1905	19150	21.71	22	0-1
			12	1855	18650	21.45	22	0-1
				1880	18900	21.62	22	0-1
				1905	19150	21.72	22	0-1
			25	1855	18650	21.43	22	0-1
				1880	18900	21.59	22	0-1
				1905	19150	21.52	22	0-1
		50RB		1855	18650	21.47	22	0-1
				1880	18900	21.55	22	0-1
				1905	19150	21.58	22	0-1
	16-QAM	1 RB	0	1855	18650	21.71	22	0-1
				1880	18900	21.87	22	0-1
				1905	19150	21.64	22	0-1
			25	1855	18650	21.85	22	0-1
				1880	18900	21.94	22	0-1
				1905	19150	21.88	22	0-1
			49	1855	18650	21.70	22	0-1
				1880	18900	21.96	22	0-1
				1905	19150	21.73	22	0-1
		25 RB	0	1855	18650	20.66	21	0-2
				1880	18900	20.65	21	0-2
				1905	19150	20.83	21	0-2
			12	1855	18650	20.36	21	0-2
				1880	18900	20.69	21	0-2
				1905	19150	20.69	21	0-2
			25	1855	18650	20.61	21	0-2
				1880	18900	20.71	21	0-2
				1905	19150	20.65	21	0-2
		50RB		1855	18650	20.60	21	0-2
				1880	18900	20.48	21	0-2
				1905	19150	20.63	21	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	22.39	23	0
				1880	18900	22.33	23	0
				1907.5	19175	22.56	23	0
			12	1852.5	18625	22.75	23	0
				1880	18900	22.76	23	0
				1907.5	19175	22.77	23	0
			24	1852.5	18625	22.23	23	0
				1880	18900	22.34	23	0
				1907.5	19175	22.27	23	0
		12 RB	0	1852.5	18625	21.48	22	0-1
				1880	18900	21.58	22	0-1
				1907.5	19175	21.54	22	0-1
			6	1852.5	18625	21.49	22	0-1
				1880	18900	21.56	22	0-1
				1907.5	19175	21.48	22	0-1
			13	1852.5	18625	21.42	22	0-1
				1880	18900	21.57	22	0-1
				1907.5	19175	21.57	22	0-1
		25RB		1852.5	18625	21.56	22	0-1
				1880	18900	21.52	22	0-1
				1907.5	19175	21.55	22	0-1
	16-QAM	1 RB	0	1852.5	18625	21.60	22	0-1
				1880	18900	21.78	22	0-1
				1907.5	19175	21.94	22	0-1
			12	1852.5	18625	21.52	22	0-1
				1880	18900	21.73	22	0-1
				1907.5	19175	21.81	22	0-1
			24	1852.5	18625	21.99	22	0-1
				1880	18900	21.95	22	0-1
				1907.5	19175	21.66	22	0-1
		12 RB	0	1852.5	18625	20.59	21	0-2
				1880	18900	20.79	21	0-2
				1907.5	19175	20.52	21	0-2
			6	1852.5	18625	20.58	21	0-2
				1880	18900	20.50	21	0-2
				1907.5	19175	20.61	21	0-2
			13	1852.5	18625	20.66	21	0-2
				1880	18900	20.58	21	0-2
				1907.5	19175	20.51	21	0-2
		25RB		1852.5	18625	20.62	21	0-2
				1880	18900	20.51	21	0-2
				1907.5	19175	20.64	21	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	22.73	23	0
				1880	18900	22.49	23	0
				1908.5	19185	22.62	23	0
			7	1851.5	18615	22.79	23	0
				1880	18900	22.65	23	0
				1908.5	19185	22.71	23	0
			14	1851.5	18615	22.63	23	0
				1880	18900	22.65	23	0
				1908.5	19185	22.32	23	0
		8 RB	0	1851.5	18615	21.37	22	0-1
				1880	18900	21.58	22	0-1
				1908.5	19185	21.52	22	0-1
			4	1851.5	18615	21.51	22	0-1
				1880	18900	21.65	22	0-1
				1908.5	19185	21.54	22	0-1
			7	1851.5	18615	21.48	22	0-1
				1880	18900	21.54	22	0-1
				1908.5	19185	21.47	22	0-1
		15RB		1851.5	18615	21.48	22	0-1
				1880	18900	21.54	22	0-1
				1908.5	19185	21.56	22	0-1
	16-QAM	1 RB	0	1851.5	18615	21.17	22	0-1
				1880	18900	22.00	22	0-1
				1908.5	19185	21.83	22	0-1
			7	1851.5	18615	22.00	22	0-1
				1880	18900	21.59	22	0-1
				1908.5	19185	21.64	22	0-1
			14	1851.5	18615	21.70	22	0-1
				1880	18900	21.89	22	0-1
				1908.5	19185	21.58	22	0-1
		8 RB	0	1851.5	18615	20.38	21	0-2
				1880	18900	20.46	21	0-2
				1908.5	19185	20.63	21	0-2
			4	1851.5	18615	20.69	21	0-2
				1880	18900	20.51	21	0-2
				1908.5	19185	20.21	21	0-2
			7	1851.5	18615	20.79	21	0-2
				1880	18900	20.59	21	0-2
				1908.5	19185	20.75	21	0-2
		15RB		1851.5	18615	20.64	21	0-2
				1880	18900	20.29	21	0-2
				1908.5	19185	20.47	21	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	22.30	23	0
				1880	18900	22.33	23	0
				1909.3	19193	22.33	23	0
			2	1850.7	18607	22.54	23	0
				1880	18900	22.41	23	0
				1909.3	19193	22.36	23	0
			5	1850.7	18607	22.39	23	0
				1880	18900	22.28	23	0
				1909.3	19193	22.26	23	0
		3 RB	0	1850.7	18607	21.31	22	0-1
				1880	18900	21.40	22	0-1
				1909.3	19193	21.30	22	0-1
			2	1850.7	18607	21.38	22	0-1
				1880	18900	21.39	22	0-1
				1909.3	19193	21.42	22	0-1
			3	1850.7	18607	21.53	22	0-1
				1880	18900	21.36	22	0-1
				1909.3	19193	21.54	22	0-1
		6RB		1850.7	18607	21.44	22	0-1
				1880	18900	21.61	22	0-1
				1909.3	19193	21.61	22	0-1
	16-QAM	1 RB	0	1850.7	18607	21.27	22	0-1
				1880	18900	21.47	22	0-1
				1909.3	19193	21.84	22	0-1
			2	1850.7	18607	21.44	22	0-1
				1880	18900	21.80	22	0-1
				1909.3	19193	21.56	22	0-1
			5	1850.7	18607	21.54	22	0-1
				1880	18900	21.26	22	0-1
				1909.3	19193	21.56	22	0-1
		3 RB	0	1850.7	18607	20.28	21	0-2
				1880	18900	20.79	21	0-2
				1909.3	19193	20.88	21	0-2
			2	1850.7	18607	20.75	21	0-2
				1880	18900	20.71	21	0-2
				1909.3	19193	20.85	21	0-2
			3	1850.7	18607	20.73	21	0-2
				1880	18900	20.75	21	0-2
				1909.3	19193	20.83	21	0-2
		6RB		1850.7	18607	20.12	21	0-2
				1880	18900	20.42	21	0-2
				1909.3	19193	20.54	21	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	15.59	16	0
				1880	18900	15.64	16	0
				1900	19100	15.71	16	0
			50	1860	18700	15.51	16	0
				1880	18900	15.65	16	0
				1900	19100	15.72	16	0
			99	1860	18700	15.52	16	0
				1880	18900	15.47	16	0
				1900	19100	15.46	16	0
		50 RB	0	1860	18700	14.65	15	0-1
				1880	18900	14.71	15	0-1
				1900	19100	14.63	15	0-1
			25	1860	18700	14.77	15	0-1
				1880	18900	14.56	15	0-1
				1900	19100	14.64	15	0-1
			50	1860	18700	14.60	15	0-1
				1880	18900	14.61	15	0-1
				1900	19100	14.57	15	0-1
		100RB		1860	18700	14.67	15	0-1
				1880	18900	14.54	15	0-1
				1900	19100	14.49	15	0-1
	16-QAM	1 RB	0	1860	18700	14.54	15	0-1
				1880	18900	14.92	15	0-1
				1900	19100	14.44	15	0-1
			50	1860	18700	14.64	15	0-1
				1880	18900	14.91	15	0-1
				1900	19100	14.79	15	0-1
			99	1860	18700	14.90	15	0-1
				1880	18900	14.45	15	0-1
				1900	19100	14.10	15	0-1
		50 RB	0	1860	18700	13.63	14	0-2
				1880	18900	13.43	14	0-2
				1900	19100	13.45	14	0-2
			25	1860	18700	13.73	14	0-2
				1880	18900	13.53	14	0-2
				1900	19100	13.59	14	0-2
			50	1860	18700	13.64	14	0-2
				1880	18900	13.64	14	0-2
				1900	19100	13.43	14	0-2
		100RB		1860	18700	13.69	14	0-2
				1880	18900	13.43	14	0-2
				1900	19100	13.44	14	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)
15	QPSK	1 RB	0	1857.5	18675	15.51	16	0
				1880	18900	15.49	16	0
				1902.5	19125	15.63	16	0
			36	1857.5	18675	15.46	16	0
				1880	18900	15.52	16	0
				1902.5	19125	15.50	16	0
			74	1857.5	18675	15.39	16	0
				1880	18900	15.58	16	0
				1902.5	19125	15.49	16	0
		36 RB	0	1857.5	18675	14.54	15	0-1
				1880	18900	14.58	15	0-1
				1902.5	19125	14.51	15	0-1
			18	1857.5	18675	14.56	15	0-1
				1880	18900	14.59	15	0-1
				1902.5	19125	14.61	15	0-1
			37	1857.5	18675	14.56	15	0-1
				1880	18900	14.61	15	0-1
				1902.5	19125	14.44	15	0-1
		75RB		1857.5	18675	14.50	15	0-1
				1880	18900	14.50	15	0-1
				1902.5	19125	14.57	15	0-1
	16-QAM	1 RB	0	1857.5	18675	14.71	15	0-1
				1880	18900	14.45	15	0-1
				1902.5	19125	14.82	15	0-1
			36	1857.5	18675	14.96	15	0-1
				1880	18900	14.79	15	0-1
				1902.5	19125	14.72	15	0-1
			74	1857.5	18675	14.59	15	0-1
				1880	18900	14.72	15	0-1
				1902.5	19125	14.77	15	0-1
		36 RB	0	1857.5	18675	13.54	14	0-2
				1880	18900	13.37	14	0-2
				1902.5	19125	13.46	14	0-2
			18	1857.5	18675	13.64	14	0-2
				1880	18900	13.50	14	0-2
				1902.5	19125	13.55	14	0-2
			37	1857.5	18675	13.62	14	0-2
				1880	18900	13.59	14	0-2
				1902.5	19125	13.47	14	0-2
		75RB		1857.5	18675	13.65	14	0-2
				1880	18900	13.49	14	0-2
				1902.5	19125	13.53	14	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)
10	QPSK	1 RB	0	1855	18650	15.52	16	0
				1880	18900	15.59	16	0
				1905	19150	15.47	16	0
			25	1855	18650	15.47	16	0
				1880	18900	15.68	16	0
				1905	19150	15.49	16	0
			49	1855	18650	15.34	16	0
				1880	18900	15.31	16	0
				1905	19150	15.46	16	0
		25 RB	0	1855	18650	14.52	15	0-1
				1880	18900	14.55	15	0-1
				1905	19150	14.54	15	0-1
			12	1855	18650	14.46	15	0-1
				1880	18900	14.59	15	0-1
				1905	19150	14.49	15	0-1
			25	1855	18650	14.49	15	0-1
				1880	18900	14.57	15	0-1
				1905	19150	14.43	15	0-1
		50RB		1855	18650	14.39	15	0-1
				1880	18900	14.59	15	0-1
				1905	19150	14.56	15	0-1
	16-QAM	1 RB	0	1855	18650	14.91	15	0-1
				1880	18900	14.56	15	0-1
				1905	19150	14.19	15	0-1
			25	1855	18650	14.82	15	0-1
				1880	18900	14.92	15	0-1
				1905	19150	14.65	15	0-1
			49	1855	18650	14.56	15	0-1
				1880	18900	14.69	15	0-1
				1905	19150	14.29	15	0-1
		25 RB	0	1855	18650	13.44	14	0-2
				1880	18900	13.22	14	0-2
				1905	19150	13.34	14	0-2
			12	1855	18650	13.42	14	0-2
				1880	18900	13.36	14	0-2
				1905	19150	13.32	14	0-2
			25	1855	18650	13.45	14	0-2
				1880	18900	13.34	14	0-2
				1905	19150	13.21	14	0-2
		50RB		1855	18650	13.38	14	0-2
				1880	18900	13.34	14	0-2
				1905	19150	13.14	14	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)
5	QPSK	1 RB	0	1852.5	18625	15.14	16	0
				1880	18900	15.59	16	0
				1907.5	19175	15.65	16	0
			12	1852.5	18625	15.40	16	0
				1880	18900	15.54	16	0
				1907.5	19175	15.48	16	0
			24	1852.5	18625	15.42	16	0
				1880	18900	15.46	16	0
				1907.5	19175	15.52	16	0
		12 RB	0	1852.5	18625	14.39	15	0-1
				1880	18900	14.52	15	0-1
				1907.5	19175	14.37	15	0-1
			6	1852.5	18625	14.51	15	0-1
				1880	18900	14.53	15	0-1
				1907.5	19175	14.33	15	0-1
			13	1852.5	18625	14.51	15	0-1
				1880	18900	14.54	15	0-1
				1907.5	19175	14.30	15	0-1
		25RB		1852.5	18625	14.47	15	0-1
				1880	18900	14.57	15	0-1
				1907.5	19175	14.39	15	0-1
	16-QAM	1 RB	0	1852.5	18625	14.48	15	0-1
				1880	18900	14.69	15	0-1
				1907.5	19175	14.64	15	0-1
			12	1852.5	18625	14.35	15	0-1
				1880	18900	14.56	15	0-1
				1907.5	19175	14.49	15	0-1
			24	1852.5	18625	14.89	15	0-1
				1880	18900	15.00	15	0-1
				1907.5	19175	14.74	15	0-1
		12 RB	0	1852.5	18625	13.36	14	0-2
				1880	18900	13.40	14	0-2
				1907.5	19175	13.41	14	0-2
			6	1852.5	18625	13.55	14	0-2
				1880	18900	13.45	14	0-2
				1907.5	19175	13.32	14	0-2
			13	1852.5	18625	13.58	14	0-2
				1880	18900	13.60	14	0-2
				1907.5	19175	13.34	14	0-2
		25RB		1852.5	18625	13.63	14	0-2
				1880	18900	13.51	14	0-2
				1907.5	19175	13.45	14	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)
3	QPSK	1 RB	0	1851.5	18615	15.41	16	0
				1880	18900	15.37	16	0
				1908.5	19185	15.43	16	0
			7	1851.5	18615	15.49	16	0
				1880	18900	15.61	16	0
				1908.5	19185	15.68	16	0
			14	1851.5	18615	15.57	16	0
				1880	18900	15.68	16	0
				1908.5	19185	15.64	16	0
		8 RB	0	1851.5	18615	14.34	15	0-1
				1880	18900	14.59	15	0-1
				1908.5	19185	14.43	15	0-1
			4	1851.5	18615	14.39	15	0-1
				1880	18900	14.63	15	0-1
				1908.5	19185	14.50	15	0-1
			7	1851.5	18615	14.45	15	0-1
				1880	18900	14.54	15	0-1
				1908.5	19185	14.46	15	0-1
		15RB		1851.5	18615	14.35	15	0-1
				1880	18900	14.52	15	0-1
				1908.5	19185	14.40	15	0-1
	16-QAM	1 RB	0	1851.5	18615	14.63	15	0-1
				1880	18900	14.74	15	0-1
				1908.5	19185	14.48	15	0-1
			7	1851.5	18615	14.34	15	0-1
				1880	18900	14.60	15	0-1
				1908.5	19185	14.56	15	0-1
			14	1851.5	18615	14.91	15	0-1
				1880	18900	14.90	15	0-1
				1908.5	19185	14.20	15	0-1
		8 RB	0	1851.5	18615	13.20	14	0-2
				1880	18900	13.45	14	0-2
				1908.5	19185	13.35	14	0-2
			4	1851.5	18615	13.40	14	0-2
				1880	18900	13.44	14	0-2
				1908.5	19185	13.33	14	0-2
			7	1851.5	18615	13.58	14	0-2
				1880	18900	13.54	14	0-2
				1908.5	19185	13.26	14	0-2
		15RB		1851.5	18615	13.48	14	0-2
				1880	18900	13.42	14	0-2
				1908.5	19185	13.20	14	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)
1.4	QPSK	1 RB	0	1850.7	18607	15.32	16	0
				1880	18900	15.36	16	0
				1909.3	19193	15.29	16	0
			2	1850.7	18607	15.56	16	0
				1880	18900	15.47	16	0
				1909.3	19193	15.40	16	0
			5	1850.7	18607	15.46	16	0
				1880	18900	15.43	16	0
				1909.3	19193	15.22	16	0
		3 RB	0	1850.7	18607	14.18	15	0-1
				1880	18900	14.48	15	0-1
				1909.3	19193	14.22	15	0-1
			2	1850.7	18607	14.39	15	0-1
				1880	18900	14.59	15	0-1
				1909.3	19193	14.27	15	0-1
			3	1850.7	18607	14.39	15	0-1
				1880	18900	14.54	15	0-1
				1909.3	19193	14.38	15	0-1
		6RB		1850.7	18607	14.32	15	0-1
				1880	18900	14.59	15	0-1
				1909.3	19193	14.37	15	0-1
	16-QAM	1 RB	0	1850.7	18607	14.44	15	0-1
				1880	18900	14.35	15	0-1
				1909.3	19193	14.89	15	0-1
			2	1850.7	18607	13.90	15	0-1
				1880	18900	14.91	15	0-1
				1909.3	19193	14.56	15	0-1
			5	1850.7	18607	14.87	15	0-1
				1880	18900	14.47	15	0-1
				1909.3	19193	14.84	15	0-1
		3 RB	0	1850.7	18607	13.52	14	0-2
				1880	18900	13.51	14	0-2
				1909.3	19193	13.48	14	0-2
			2	1850.7	18607	13.03	14	0-2
				1880	18900	13.63	14	0-2
				1909.3	19193	13.66	14	0-2
			3	1850.7	18607	13.43	14	0-2
				1880	18900	13.44	14	0-2
				1909.3	19193	13.59	14	0-2
		6RB		1850.7	18607	13.23	14	0-2
				1880	18900	13.50	14	0-2
				1909.3	19193	13.23	14	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)
20	QPSK	1 RB	0	1720	20050	22.88	23	0
				1732.5	20175	22.83	23	0
				1745	20300	22.80	23	0
			50	1720	20050	22.48	23	0
				1732.5	20175	22.64	23	0
				1745	20300	22.54	23	0
			99	1720	20050	22.63	23	0
				1732.5	20175	22.65	23	0
				1745	20300	22.59	23	0
		50 RB	0	1720	20050	21.76	22	0-1
				1732.5	20175	21.80	22	0-1
				1745	20300	21.93	22	0-1
			25	1720	20050	21.59	22	0-1
				1732.5	20175	21.70	22	0-1
				1745	20300	21.84	22	0-1
			50	1720	20050	21.59	22	0-1
				1732.5	20175	21.78	22	0-1
				1745	20300	21.66	22	0-1
		100RB		1720	20050	21.68	22	0-1
				1732.5	20175	21.68	22	0-1
				1745	20300	21.75	22	0-1
	16-QAM	1 RB	0	1720	20050	21.89	22	0-1
				1732.5	20175	21.42	22	0-1
				1745	20300	21.79	22	0-1
			50	1720	20050	21.63	22	0-1
				1732.5	20175	21.68	22	0-1
				1745	20300	21.73	22	0-1
			99	1720	20050	21.40	22	0-1
				1732.5	20175	21.66	22	0-1
				1745	20300	21.15	22	0-1
		50 RB	0	1720	20050	20.58	21	0-2
				1732.5	20175	20.48	21	0-2
				1745	20300	20.55	21	0-2
			25	1720	20050	20.41	21	0-2
				1732.5	20175	20.61	21	0-2
				1745	20300	20.46	21	0-2
			50	1720	20050	20.33	21	0-2
				1732.5	20175	20.58	21	0-2
				1745	20300	20.43	21	0-2
		100RB		1720	20050	20.44	21	0-2
				1732.5	20175	20.55	21	0-2
				1745	20300	20.57	21	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	22.58	23	0
				1732.5	20175	22.44	23	0
				1747.5	20325	22.66	23	0
			36	1717.5	20025	22.27	23	0
				1732.5	20175	22.40	23	0
				1747.5	20325	22.43	23	0
			74	1717.5	20025	22.27	23	0
				1732.5	20175	22.51	23	0
				1747.5	20325	22.58	23	0
		36 RB	0	1717.5	20025	21.54	22	0-1
				1732.5	20175	21.59	22	0-1
				1747.5	20325	21.67	22	0-1
			18	1717.5	20025	21.43	22	0-1
				1732.5	20175	21.59	22	0-1
				1747.5	20325	21.50	22	0-1
			37	1717.5	20025	21.39	22	0-1
				1732.5	20175	21.39	22	0-1
				1747.5	20325	21.58	22	0-1
		75RB		1717.5	20025	21.47	22	0-1
				1732.5	20175	21.50	22	0-1
				1747.5	20325	21.57	22	0-1
	16-QAM	1 RB	0	1717.5	20025	21.56	22	0-1
				1732.5	20175	21.51	22	0-1
				1747.5	20325	21.71	22	0-1
			36	1717.5	20025	21.11	22	0-1
				1732.5	20175	21.58	22	0-1
				1747.5	20325	21.79	22	0-1
			74	1717.5	20025	21.48	22	0-1
				1732.5	20175	21.40	22	0-1
				1747.5	20325	21.37	22	0-1
		36 RB	0	1717.5	20025	20.47	21	0-2
				1732.5	20175	20.49	21	0-2
				1747.5	20325	20.68	21	0-2
			18	1717.5	20025	20.42	21	0-2
				1732.5	20175	20.50	21	0-2
				1747.5	20325	20.38	21	0-2
			37	1717.5	20025	20.46	21	0-2
				1732.5	20175	20.40	21	0-2
				1747.5	20325	20.54	21	0-2
		75RB		1717.5	20025	20.35	21	0-2
				1732.5	20175	20.53	21	0-2
				1747.5	20325	20.65	21	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	22.44	23	0
				1732.5	20175	22.67	23	0
				1750	20350	22.54	23	0
			25	1715	20000	22.66	23	0
				1732.5	20175	22.68	23	0
				1750	20350	22.55	23	0
			49	1715	20000	22.36	23	0
				1732.5	20175	22.40	23	0
				1750	20350	22.40	23	0
		25 RB	0	1715	20000	21.44	22	0-1
				1732.5	20175	21.53	22	0-1
				1750	20350	21.61	22	0-1
			12	1715	20000	21.47	22	0-1
				1732.5	20175	21.58	22	0-1
				1750	20350	21.55	22	0-1
			25	1715	20000	21.38	22	0-1
				1732.5	20175	21.47	22	0-1
				1750	20350	21.42	22	0-1
		50RB		1715	20000	21.50	22	0-1
				1732.5	20175	21.54	22	0-1
				1750	20350	21.52	22	0-1
	16-QAM	1 RB	0	1715	20000	21.00	22	0-1
				1732.5	20175	21.88	22	0-1
				1750	20350	22.00	22	0-1
			25	1715	20000	21.41	22	0-1
				1732.5	20175	21.84	22	0-1
				1750	20350	22.00	22	0-1
			49	1715	20000	20.80	22	0-1
				1732.5	20175	21.81	22	0-1
				1750	20350	21.56	22	0-1
		25 RB	0	1715	20000	20.63	21	0-2
				1732.5	20175	20.78	21	0-2
				1750	20350	20.66	21	0-2
			12	1715	20000	20.40	21	0-2
				1732.5	20175	20.68	21	0-2
				1750	20350	20.60	21	0-2
			25	1715	20000	20.31	21	0-2
				1732.5	20175	20.58	21	0-2
				1750	20350	20.41	21	0-2
		50RB		1715	20000	20.40	21	0-2
				1732.5	20175	20.57	21	0-2
				1750	20350	20.49	21	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	22.26	23	0
				1732.5	20175	22.45	23	0
				1752.5	20375	22.34	23	0
			12	1712.5	19975	22.10	23	0
				1732.5	20175	22.58	23	0
				1752.5	20375	22.43	23	0
			24	1712.5	19975	22.27	23	0
				1732.5	20175	22.29	23	0
				1752.5	20375	22.24	23	0
		12 RB	0	1712.5	19975	21.31	22	0-1
				1732.5	20175	21.46	22	0-1
				1752.5	20375	21.43	22	0-1
			6	1712.5	19975	21.41	22	0-1
				1732.5	20175	21.54	22	0-1
				1752.5	20375	21.39	22	0-1
			13	1712.5	19975	21.35	22	0-1
				1732.5	20175	21.49	22	0-1
				1752.5	20375	21.44	22	0-1
		25RB		1712.5	19975	21.37	22	0-1
				1732.5	20175	21.41	22	0-1
				1752.5	20375	21.45	22	0-1
	16-QAM	1 RB	0	1712.5	19975	21.98	22	0-1
				1732.5	20175	21.94	22	0-1
				1752.5	20375	21.95	22	0-1
			12	1712.5	19975	21.37	22	0-1
				1732.5	20175	21.88	22	0-1
				1752.5	20375	21.62	22	0-1
			24	1712.5	19975	21.81	22	0-1
				1732.5	20175	21.56	22	0-1
				1752.5	20375	21.67	22	0-1
		12 RB	0	1712.5	19975	20.28	21	0-2
				1732.5	20175	20.53	21	0-2
				1752.5	20375	20.40	21	0-2
			6	1712.5	19975	20.28	21	0-2
				1732.5	20175	20.29	21	0-2
				1752.5	20375	20.26	21	0-2
			13	1712.5	19975	20.26	21	0-2
				1732.5	20175	20.41	21	0-2
				1752.5	20375	20.47	21	0-2
		25RB		1712.5	19975	20.32	21	0-2
				1732.5	20175	20.26	21	0-2
				1752.5	20375	20.47	21	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	22.35	23	0
				1732.5	20175	22.43	23	0
				1753.5	20385	22.33	23	0
			7	1711.5	19965	22.26	23	0
				1732.5	20175	22.65	23	0
				1753.5	20385	22.61	23	0
			14	1711.5	19965	22.26	23	0
				1732.5	20175	22.31	23	0
				1753.5	20385	22.27	23	0
		8 RB	0	1711.5	19965	21.54	22	0-1
				1732.5	20175	21.46	22	0-1
				1753.5	20385	21.49	22	0-1
			4	1711.5	19965	21.41	22	0-1
				1732.5	20175	21.41	22	0-1
				1753.5	20385	21.60	22	0-1
			7	1711.5	19965	21.34	22	0-1
				1732.5	20175	21.51	22	0-1
				1753.5	20385	21.55	22	0-1
		15RB		1711.5	19965	21.39	22	0-1
				1732.5	20175	21.44	22	0-1
				1753.5	20385	21.49	22	0-1
	16-QAM	1 RB	0	1711.5	19965	21.44	22	0-1
				1732.5	20175	21.85	22	0-1
				1753.5	20385	21.07	22	0-1
			7	1711.5	19965	21.85	22	0-1
				1732.5	20175	21.73	22	0-1
				1753.5	20385	21.71	22	0-1
			14	1711.5	19965	21.70	22	0-1
				1732.5	20175	21.25	22	0-1
				1753.5	20385	21.47	22	0-1
		8 RB	0	1711.5	19965	20.63	21	0-2
				1732.5	20175	20.65	21	0-2
				1753.5	20385	20.68	21	0-2
			4	1711.5	19965	20.32	21	0-2
				1732.5	20175	20.43	21	0-2
				1753.5	20385	20.48	21	0-2
			7	1711.5	19965	20.50	21	0-2
				1732.5	20175	20.56	21	0-2
				1753.5	20385	20.45	21	0-2
		15RB		1711.5	19965	20.39	21	0-2
				1732.5	20175	20.28	21	0-2
				1753.5	20385	20.16	21	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	22.32	23	0
				1732.5	20175	22.53	23	0
				1754.3	20393	22.27	23	0
			2	1710.7	19957	22.28	23	0
				1732.5	20175	22.50	23	0
				1754.3	20393	22.51	23	0
			5	1710.7	19957	22.42	23	0
				1732.5	20175	22.48	23	0
				1754.3	20393	22.38	23	0
		3 RB	0	1710.7	19957	21.39	22	0-1
				1732.5	20175	21.51	22	0-1
				1754.3	20393	21.42	22	0-1
			2	1710.7	19957	21.51	22	0-1
				1732.5	20175	21.50	22	0-1
				1754.3	20393	21.42	22	0-1
			3	1710.7	19957	21.36	22	0-1
				1732.5	20175	21.56	22	0-1
				1754.3	20393	21.39	22	0-1
		6RB		1710.7	19957	21.39	22	0-1
				1732.5	20175	21.51	22	0-1
				1754.3	20393	21.64	22	0-1
	16-QAM	1 RB	0	1710.7	19957	21.38	22	0-1
				1732.5	20175	21.95	22	0-1
				1754.3	20393	21.91	22	0-1
			2	1710.7	19957	21.83	22	0-1
				1732.5	20175	21.57	22	0-1
				1754.3	20393	21.30	22	0-1
			5	1710.7	19957	21.28	22	0-1
				1732.5	20175	21.86	22	0-1
				1754.3	20393	21.54	22	0-1
		3 RB	0	1710.7	19957	20.15	21	0-2
				1732.5	20175	20.62	21	0-2
				1754.3	20393	20.78	21	0-2
			2	1710.7	19957	20.27	21	0-2
				1732.5	20175	20.73	21	0-2
				1754.3	20393	20.84	21	0-2
			3	1710.7	19957	20.56	21	0-2
				1732.5	20175	20.78	21	0-2
				1754.3	20393	20.83	21	0-2
		6RB		1710.7	19957	20.29	21	0-2
				1732.5	20175	20.21	21	0-2
				1754.3	20393	20.61	21	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	15.60	16	0
				1732.5	20175	15.63	16	0
				1745	20300	15.65	16	0
			50	1720	20050	15.38	16	0
				1732.5	20175	15.68	16	0
				1745	20300	15.73	16	0
			99	1720	20050	15.43	16	0
				1732.5	20175	15.29	16	0
				1745	20300	15.24	16	0
		50 RB	0	1720	20050	14.42	15	0-1
				1732.5	20175	14.50	15	0-1
				1745	20300	14.54	15	0-1
			25	1720	20050	14.34	15	0-1
				1732.5	20175	14.38	15	0-1
				1745	20300	14.50	15	0-1
			50	1720	20050	14.25	15	0-1
				1732.5	20175	14.26	15	0-1
				1745	20300	14.41	15	0-1
		100RB		1720	20050	14.35	15	0-1
				1732.5	20175	14.38	15	0-1
				1745	20300	14.46	15	0-1
	16-QAM	1 RB	0	1720	20050	14.30	15	0-1
				1732.5	20175	14.77	15	0-1
				1745	20300	14.73	15	0-1
			50	1720	20050	14.12	15	0-1
				1732.5	20175	14.54	15	0-1
				1745	20300	15.15	15	0-1
			99	1720	20050	14.27	15	0-1
				1732.5	20175	14.20	15	0-1
				1745	20300	14.52	15	0-1
		50 RB	0	1720	20050	13.02	14	0-2
				1732.5	20175	12.68	14	0-2
				1745	20300	12.88	14	0-2
			25	1720	20050	12.95	14	0-2
				1732.5	20175	12.75	14	0-2
				1745	20300	12.87	14	0-2
			50	1720	20050	12.65	14	0-2
				1732.5	20175	12.51	14	0-2
				1745	20300	12.70	14	0-2
		100RB		1720	20050	12.85	14	0-2
				1732.5	20175	12.65	14	0-2
				1745	20300	12.81	14	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)
15	QPSK	1 RB	0	1717.5	20025	15.49	16	0
				1732.5	20175	15.57	16	0
				1747.5	20325	15.45	16	0
			36	1717.5	20025	15.26	16	0
				1732.5	20175	15.27	16	0
				1747.5	20325	15.29	16	0
			74	1717.5	20025	15.26	16	0
				1732.5	20175	15.22	16	0
				1747.5	20325	15.31	16	0
		36 RB	0	1717.5	20025	14.41	15	0-1
				1732.5	20175	14.43	15	0-1
				1747.5	20325	14.49	15	0-1
			18	1717.5	20025	14.28	15	0-1
				1732.5	20175	14.39	15	0-1
				1747.5	20325	14.44	15	0-1
			37	1717.5	20025	14.34	15	0-1
				1732.5	20175	14.40	15	0-1
				1747.5	20325	14.37	15	0-1
		75RB		1717.5	20025	14.34	15	0-1
				1732.5	20175	14.40	15	0-1
				1747.5	20325	14.33	15	0-1
	16-QAM	1 RB	0	1717.5	20025	14.46	15	0-1
				1732.5	20175	14.78	15	0-1
				1747.5	20325	14.40	15	0-1
			36	1717.5	20025	14.32	15	0-1
				1732.5	20175	14.83	15	0-1
				1747.5	20325	14.30	15	0-1
			74	1717.5	20025	14.31	15	0-1
				1732.5	20175	14.53	15	0-1
				1747.5	20325	13.88	15	0-1
		36 RB	0	1717.5	20025	13.09	14	0-2
				1732.5	20175	12.73	14	0-2
				1747.5	20325	13.02	14	0-2
			18	1717.5	20025	12.88	14	0-2
				1732.5	20175	12.77	14	0-2
				1747.5	20325	12.94	14	0-2
			37	1717.5	20025	12.76	14	0-2
				1732.5	20175	12.71	14	0-2
				1747.5	20325	12.87	14	0-2
		75RB		1717.5	20025	12.92	14	0-2
				1732.5	20175	12.75	14	0-2
				1747.5	20325	12.94	14	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)
10	QPSK	1 RB	0	1715	20000	15.59	16	0
				1732.5	20175	15.48	16	0
				1750	20350	15.63	16	0
			25	1715	20000	15.53	16	0
				1732.5	20175	15.51	16	0
				1750	20350	15.55	16	0
			49	1715	20000	15.24	16	0
				1732.5	20175	15.28	16	0
				1750	20350	15.23	16	0
		25 RB	0	1715	20000	14.40	15	0-1
				1732.5	20175	14.45	15	0-1
				1750	20350	14.56	15	0-1
			12	1715	20000	14.32	15	0-1
				1732.5	20175	14.44	15	0-1
				1750	20350	14.43	15	0-1
			25	1715	20000	14.25	15	0-1
				1732.5	20175	14.35	15	0-1
				1750	20350	14.31	15	0-1
		50RB		1715	20000	14.32	15	0-1
				1732.5	20175	14.35	15	0-1
				1750	20350	14.35	15	0-1
	16-QAM	1 RB	0	1715	20000	14.53	15	0-1
				1732.5	20175	14.47	15	0-1
				1750	20350	14.72	15	0-1
			25	1715	20000	14.93	15	0-1
				1732.5	20175	14.37	15	0-1
				1750	20350	14.82	15	0-1
			49	1715	20000	14.23	15	0-1
				1732.5	20175	14.65	15	0-1
				1750	20350	14.37	15	0-1
		25 RB	0	1715	20000	12.87	14	0-2
				1732.5	20175	13.40	14	0-2
				1750	20350	12.75	14	0-2
			12	1715	20000	12.98	14	0-2
				1732.5	20175	12.64	14	0-2
				1750	20350	12.91	14	0-2
			25	1715	20000	12.69	14	0-2
				1732.5	20175	12.53	14	0-2
				1750	20350	12.91	14	0-2
		50RB		1715	20000	12.75	14	0-2
				1732.5	20175	12.50	14	0-2
				1750	20350	12.72	14	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)
5	QPSK	1 RB	0	1712.5	19975	15.39	16	0
				1732.5	20175	15.07	16	0
				1752.5	20375	15.30	16	0
			12	1712.5	19975	15.44	16	0
				1732.5	20175	15.54	16	0
				1752.5	20375	15.38	16	0
			24	1712.5	19975	15.29	16	0
				1732.5	20175	15.37	16	0
				1752.5	20375	15.32	16	0
		12 RB	0	1712.5	19975	14.28	15	0-1
				1732.5	20175	14.26	15	0-1
				1752.5	20375	14.34	15	0-1
			6	1712.5	19975	14.20	15	0-1
				1732.5	20175	14.29	15	0-1
				1752.5	20375	14.26	15	0-1
			13	1712.5	19975	14.31	15	0-1
				1732.5	20175	14.32	15	0-1
				1752.5	20375	14.24	15	0-1
		25RB		1712.5	19975	14.23	15	0-1
				1732.5	20175	14.34	15	0-1
				1752.5	20375	14.29	15	0-1
	16-QAM	1 RB	0	1712.5	19975	14.54	15	0-1
				1732.5	20175	14.46	15	0-1
				1752.5	20375	14.73	15	0-1
			12	1712.5	19975	14.73	15	0-1
				1732.5	20175	14.21	15	0-1
				1752.5	20375	14.61	15	0-1
			24	1712.5	19975	14.43	15	0-1
				1732.5	20175	14.46	15	0-1
				1752.5	20375	14.25	15	0-1
		12 RB	0	1712.5	19975	13.06	14	0-2
				1732.5	20175	12.86	14	0-2
				1752.5	20375	13.15	14	0-2
			6	1712.5	19975	12.91	14	0-2
				1732.5	20175	12.79	14	0-2
				1752.5	20375	13.11	14	0-2
			13	1712.5	19975	13.03	14	0-2
				1732.5	20175	12.83	14	0-2
				1752.5	20375	13.04	14	0-2
		25RB		1712.5	19975	12.97	14	0-2
				1732.5	20175	12.73	14	0-2
				1752.5	20375	13.09	14	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)
3	QPSK	1 RB	0	1711.5	19965	15.47	16	0
				1732.5	20175	15.49	16	0
				1753.5	20385	15.32	16	0
			7	1711.5	19965	15.45	16	0
				1732.5	20175	15.46	16	0
				1753.5	20385	15.31	16	0
			14	1711.5	19965	15.35	16	0
				1732.5	20175	15.39	16	0
				1753.5	20385	15.44	16	0
		8 RB	0	1711.5	19965	14.31	15	0-1
				1732.5	20175	14.37	15	0-1
				1753.5	20385	14.29	15	0-1
			4	1711.5	19965	14.35	15	0-1
				1732.5	20175	14.34	15	0-1
				1753.5	20385	14.36	15	0-1
			7	1711.5	19965	14.43	15	0-1
				1732.5	20175	14.34	15	0-1
				1753.5	20385	14.43	15	0-1
		15RB		1711.5	19965	14.35	15	0-1
				1732.5	20175	14.34	15	0-1
				1753.5	20385	14.31	15	0-1
	16-QAM	1 RB	0	1711.5	19965	14.91	15	0-1
				1732.5	20175	14.83	15	0-1
				1753.5	20385	14.47	15	0-1
			7	1711.5	19965	14.50	15	0-1
				1732.5	20175	14.49	15	0-1
				1753.5	20385	14.22	15	0-1
			14	1711.5	19965	14.56	15	0-1
				1732.5	20175	14.87	15	0-1
				1753.5	20385	14.80	15	0-1
		8 RB	0	1711.5	19965	12.98	14	0-2
				1732.5	20175	12.77	14	0-2
				1753.5	20385	13.09	14	0-2
			4	1711.5	19965	13.14	14	0-2
				1732.5	20175	12.80	14	0-2
				1753.5	20385	13.16	14	0-2
			7	1711.5	19965	13.06	14	0-2
				1732.5	20175	12.82	14	0-2
				1753.5	20385	13.11	14	0-2
		15RB		1711.5	19965	12.98	14	0-2
				1732.5	20175	12.61	14	0-2
				1753.5	20385	13.03	14	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)
1.4	QPSK	1 RB	0	1710.7	19957	15.19	16	0
				1732.5	20175	15.18	16	0
				1754.3	20393	15.13	16	0
			2	1710.7	19957	15.38	16	0
				1732.5	20175	15.22	16	0
				1754.3	20393	15.13	16	0
			5	1710.7	19957	15.15	16	0
				1732.5	20175	15.12	16	0
				1754.3	20393	15.07	16	0
		3 RB	0	1710.7	19957	14.31	15	0-1
				1732.5	20175	14.21	15	0-1
				1754.3	20393	14.26	15	0-1
			2	1710.7	19957	14.32	15	0-1
				1732.5	20175	14.21	15	0-1
				1754.3	20393	14.23	15	0-1
			3	1710.7	19957	14.28	15	0-1
				1732.5	20175	14.20	15	0-1
				1754.3	20393	14.25	15	0-1
		6RB		1710.7	19957	14.56	15	0-1
				1732.5	20175	14.28	15	0-1
				1754.3	20393	14.24	15	0-1
	16-QAM	1 RB	0	1710.7	19957	14.96	15	0-1
				1732.5	20175	14.76	15	0-1
				1754.3	20393	14.48	15	0-1
			2	1710.7	19957	14.90	15	0-1
				1732.5	20175	14.59	15	0-1
				1754.3	20393	14.24	15	0-1
			5	1710.7	19957	14.40	15	0-1
				1732.5	20175	14.48	15	0-1
				1754.3	20393	14.08	15	0-1
		3 RB	0	1710.7	19957	13.26	14	0-2
				1732.5	20175	13.58	14	0-2
				1754.3	20393	13.11	14	0-2
			2	1710.7	19957	13.60	14	0-2
				1732.5	20175	13.65	14	0-2
				1754.3	20393	13.13	14	0-2
			3	1710.7	19957	13.50	14	0-2
				1732.5	20175	13.57	14	0-2
				1754.3	20393	13.42	14	0-2
		6RB		1710.7	19957	13.11	14	0-2
				1732.5	20175	12.66	14	0-2
				1754.3	20393	13.02	14	0-2

FDD Band 5 (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	829	20450	22.58	23	0
				836.5	20525	22.62	23	0
				844	20600	22.57	23	0
			25	829	20450	22.48	23	0
				836.5	20525	22.61	23	0
				844	20600	22.63	23	0
			49	829	20450	22.34	23	0
				836.5	20525	22.68	23	0
				844	20600	22.56	23	0
		25 RB	0	829	20450	21.55	22	0-1
				836.5	20525	21.58	22	0-1
				844	20600	21.67	22	0-1
			12	829	20450	21.59	22	0-1
				836.5	20525	21.60	22	0-1
				844	20600	21.60	22	0-1
			25	829	20450	21.54	22	0-1
				836.5	20525	21.52	22	0-1
				844	20600	21.49	22	0-1
		50RB		829	20450	21.65	22	0-1
				836.5	20525	21.62	22	0-1
				844	20600	21.53	22	0-1
	16-QAM	1 RB	0	829	20450	21.22	22	0-1
				836.5	20525	21.60	22	0-1
				844	20600	21.89	22	0-1
			25	829	20450	21.06	22	0-1
				836.5	20525	21.62	22	0-1
				844	20600	22.00	22	0-1
			49	829	20450	21.29	22	0-1
				836.5	20525	21.50	22	0-1
				844	20600	21.67	22	0-1
		25 RB	0	829	20450	20.22	21	0-2
				836.5	20525	20.43	21	0-2
				844	20600	20.45	21	0-2
			12	829	20450	20.30	21	0-2
				836.5	20525	20.33	21	0-2
				844	20600	20.17	21	0-2
			25	829	20450	20.39	21	0-2
				836.5	20525	20.22	21	0-2
				844	20600	20.27	21	0-2
		50RB		829	20450	20.14	21	0-2
				836.5	20525	20.21	21	0-2
				844	20600	20.34	21	0-2

FDD Band 5 (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	826.5	20425	22.41	23	0
				836.5	20525	22.45	23	0
				846.5	20625	22.22	23	0
			12	826.5	20425	22.36	23	0
				836.5	20525	22.35	23	0
				846.5	20625	22.50	23	0
			24	826.5	20425	22.31	23	0
				836.5	20525	22.26	23	0
				846.5	20625	22.26	23	0
		12 RB	0	826.5	20425	21.34	22	0-1
				836.5	20525	21.41	22	0-1
				846.5	20625	21.36	22	0-1
			6	826.5	20425	21.32	22	0-1
				836.5	20525	21.43	22	0-1
				846.5	20625	21.32	22	0-1
			13	826.5	20425	21.30	22	0-1
				836.5	20525	21.27	22	0-1
				846.5	20625	21.33	22	0-1
		25RB		826.5	20425	21.32	22	0-1
				836.5	20525	21.29	22	0-1
				846.5	20625	21.34	22	0-1
	16-QAM	1 RB	0	826.5	20425	21.98	22	0-1
				836.5	20525	21.44	22	0-1
				846.5	20625	21.58	22	0-1
			12	826.5	20425	21.63	22	0-1
				836.5	20525	21.44	22	0-1
				846.5	20625	21.42	22	0-1
			24	826.5	20425	21.27	22	0-1
				836.5	20525	21.30	22	0-1
				846.5	20625	21.84	22	0-1
		12 RB	0	826.5	20425	20.25	21	0-2
				836.5	20525	20.30	21	0-2
				846.5	20625	20.52	21	0-2
			6	826.5	20425	20.21	21	0-2
				836.5	20525	20.27	21	0-2
				846.5	20625	20.21	21	0-2
			13	826.5	20425	20.20	21	0-2
				836.5	20525	20.00	21	0-2
				846.5	20625	20.20	21	0-2
		25RB		826.5	20425	20.25	21	0-2
				836.5	20525	20.36	21	0-2
				846.5	20625	20.22	21	0-2

FDD Band 5 (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	825.5	20415	22.46	23	0
				836.5	20525	22.39	23	0
				847.5	20635	22.25	23	0
			7	825.5	20415	22.43	23	0
				836.5	20525	22.59	23	0
				847.5	20635	22.56	23	0
			14	825.5	20415	22.24	23	0
				836.5	20525	22.32	23	0
				847.5	20635	22.22	23	0
		8 RB	0	825.5	20415	21.35	22	0-1
				836.5	20525	21.38	22	0-1
				847.5	20635	21.43	22	0-1
			4	825.5	20415	21.34	22	0-1
				836.5	20525	21.48	22	0-1
				847.5	20635	21.41	22	0-1
			7	825.5	20415	21.29	22	0-1
				836.5	20525	21.44	22	0-1
				847.5	20635	21.47	22	0-1
		15RB		825.5	20415	21.33	22	0-1
				836.5	20525	21.31	22	0-1
				847.5	20635	21.32	22	0-1
	16-QAM	1 RB	0	825.5	20415	21.45	22	0-1
				836.5	20525	21.98	22	0-1
				847.5	20635	21.50	22	0-1
			7	825.5	20415	20.95	22	0-1
				836.5	20525	21.39	22	0-1
				847.5	20635	21.49	22	0-1
			14	825.5	20415	21.00	22	0-1
				836.5	20525	21.54	22	0-1
				847.5	20635	21.63	22	0-1
		8 RB	0	825.5	20415	20.24	21	0-2
				836.5	20525	20.37	21	0-2
				847.5	20635	20.47	21	0-2
			4	825.5	20415	20.30	21	0-2
				836.5	20525	20.36	21	0-2
				847.5	20635	20.33	21	0-2
			7	825.5	20415	20.39	21	0-2
				836.5	20525	20.12	21	0-2
				847.5	20635	20.44	21	0-2
		15RB		825.5	20415	20.28	21	0-2
				836.5	20525	20.31	21	0-2
				847.5	20635	20.54	21	0-2

FDD Band 5 (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	824.7	20407	22.16	23	0
				836.5	20525	22.24	23	0
				848.3	20643	22.36	23	0
			2	824.7	20407	22.21	23	0
				836.5	20525	22.30	23	0
				848.3	20643	22.27	23	0
			5	824.7	20407	22.04	23	0
				836.5	20525	22.21	23	0
				848.3	20643	22.12	23	0
		3 RB	0	824.7	20407	21.22	22	0-1
				836.5	20525	21.33	22	0-1
				848.3	20643	21.47	22	0-1
			2	824.7	20407	21.35	22	0-1
				836.5	20525	21.16	22	0-1
				848.3	20643	21.26	22	0-1
			3	824.7	20407	21.17	22	0-1
				836.5	20525	21.24	22	0-1
				848.3	20643	21.27	22	0-1
		6RB		824.7	20407	21.24	22	0-1
				836.5	20525	21.35	22	0-1
				848.3	20643	21.31	22	0-1
	16-QAM	1 RB	0	824.7	20407	21.56	22	0-1
				836.5	20525	21.27	22	0-1
				848.3	20643	21.84	22	0-1
			2	824.7	20407	21.42	22	0-1
				836.5	20525	21.73	22	0-1
				848.3	20643	21.49	22	0-1
			5	824.7	20407	20.60	22	0-1
				836.5	20525	21.48	22	0-1
				848.3	20643	21.78	22	0-1
		3 RB	0	824.7	20407	20.49	21	0-2
				836.5	20525	20.57	21	0-2
				848.3	20643	20.62	21	0-2
			2	824.7	20407	20.37	21	0-2
				836.5	20525	20.18	21	0-2
				848.3	20643	20.35	21	0-2
			3	824.7	20407	19.93	21	0-2
				836.5	20525	20.29	21	0-2
				848.3	20643	20.60	21	0-2
		6RB		824.7	20407	19.86	21	0-2
				836.5	20525	19.86	21	0-2
				848.3	20643	20.38	21	0-2

FDD Band 5 (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	829	20450	14.67	15	0
				836.5	20525	14.64	15	0
				844	20600	14.80	15	0
			25	829	20450	14.63	15	0
				836.5	20525	14.56	15	0
				844	20600	14.70	15	0
			49	829	20450	14.85	15	0
				836.5	20525	14.64	15	0
				844	20600	14.79	15	0
		25 RB	0	829	20450	14.55	15	0-1
				836.5	20525	14.83	15	0-1
				844	20600	14.72	15	0-1
			12	829	20450	14.43	15	0-1
				836.5	20525	14.73	15	0-1
				844	20600	14.72	15	0-1
			25	829	20450	14.66	15	0-1
				836.5	20525	14.75	15	0-1
				844	20600	14.65	15	0-1
		50RB		829	20450	14.66	15	0-1
				836.5	20525	14.70	15	0-1
				844	20600	14.79	15	0-1
	16-QAM	1 RB	0	829	20450	14.57	15	0-1
				836.5	20525	14.74	15	0-1
				844	20600	14.74	15	0-1
			25	829	20450	14.50	15	0-1
				836.5	20525	14.53	15	0-1
				844	20600	14.77	15	0-1
			49	829	20450	14.73	15	0-1
				836.5	20525	14.65	15	0-1
				844	20600	14.72	15	0-1
		25 RB	0	829	20450	13.71	15	0-2
				836.5	20525	13.91	15	0-2
				844	20600	13.88	15	0-2
			12	829	20450	13.69	15	0-2
				836.5	20525	13.73	15	0-2
				844	20600	13.73	15	0-2
			25	829	20450	13.72	15	0-2
				836.5	20525	13.90	15	0-2
				844	20600	13.66	15	0-2
		50RB		829	20450	13.61	15	0-2
				836.5	20525	13.66	15	0-2
				844	20600	13.86	15	0-2

FDD Band 5 (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	826.5	20425	14.72	15	0
				836.5	20525	14.71	15	0
				846.5	20625	14.62	15	0
			12	826.5	20425	14.68	15	0
				836.5	20525	14.56	15	0
				846.5	20625	14.65	15	0
			24	826.5	20425	14.45	15	0
				836.5	20525	14.55	15	0
				846.5	20625	14.59	15	0
		12 RB	0	826.5	20425	14.53	15	0-1
				836.5	20525	14.70	15	0-1
				846.5	20625	14.62	15	0-1
			6	826.5	20425	14.58	15	0-1
				836.5	20525	14.60	15	0-1
				846.5	20625	14.56	15	0-1
			13	826.5	20425	14.45	15	0-1
				836.5	20525	14.59	15	0-1
				846.5	20625	14.73	15	0-1
		25RB		826.5	20425	14.49	15	0-1
				836.5	20525	14.64	15	0-1
				846.5	20625	14.66	15	0-1
	16-QAM	1 RB	0	826.5	20425	14.25	15	0-1
				836.5	20525	14.47	15	0-1
				846.5	20625	14.04	15	0-1
			12	826.5	20425	14.16	15	0-1
				836.5	20525	14.61	15	0-1
				846.5	20625	14.06	15	0-1
			24	826.5	20425	14.14	15	0-1
				836.5	20525	14.61	15	0-1
				846.5	20625	14.12	15	0-1
		12 RB	0	826.5	20425	13.52	15	0-2
				836.5	20525	13.58	15	0-2
				846.5	20625	13.67	15	0-2
			6	826.5	20425	13.32	15	0-2
				836.5	20525	13.50	15	0-2
				846.5	20625	13.56	15	0-2
			13	826.5	20425	13.16	15	0-2
				836.5	20525	13.49	15	0-2
				846.5	20625	13.64	15	0-2
		25RB		826.5	20425	13.46	15	0-2
				836.5	20525	13.72	15	0-2
				846.5	20625	13.57	15	0-2

FDD Band 5 (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	825.5	20415	14.67	15	0
				836.5	20525	14.58	15	0
				847.5	20635	14.71	15	0
			7	825.5	20415	14.63	15	0
				836.5	20525	14.59	15	0
				847.5	20635	14.76	15	0
			14	825.5	20415	14.60	15	0
				836.5	20525	14.49	15	0
				847.5	20635	14.63	15	0
		8 RB	0	825.5	20415	14.64	15	0-1
				836.5	20525	14.76	15	0-1
				847.5	20635	14.73	15	0-1
			4	825.5	20415	14.57	15	0-1
				836.5	20525	14.64	15	0-1
				847.5	20635	14.64	15	0-1
			7	825.5	20415	14.59	15	0-1
				836.5	20525	14.59	15	0-1
				847.5	20635	14.72	15	0-1
		15RB		825.5	20415	14.55	15	0-1
				836.5	20525	14.68	15	0-1
				847.5	20635	14.60	15	0-1
	16-QAM	1 RB	0	825.5	20415	14.59	15	0-1
				836.5	20525	14.49	15	0-1
				847.5	20635	14.57	15	0-1
			7	825.5	20415	14.53	15	0-1
				836.5	20525	14.46	15	0-1
				847.5	20635	14.51	15	0-1
			14	825.5	20415	14.62	15	0-1
				836.5	20525	14.49	15	0-1
				847.5	20635	14.52	15	0-1
		8 RB	0	825.5	20415	13.42	15	0-2
				836.5	20525	13.58	15	0-2
				847.5	20635	13.60	15	0-2
			4	825.5	20415	13.35	15	0-2
				836.5	20525	13.71	15	0-2
				847.5	20635	13.79	15	0-2
			7	825.5	20415	13.41	15	0-2
				836.5	20525	13.58	15	0-2
				847.5	20635	13.58	15	0-2
		15RB		825.5	20415	13.35	15	0-2
				836.5	20525	13.40	15	0-2
				847.5	20635	13.40	15	0-2

FDD Band 5 (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	824.7	20407	14.49	15	0
				836.5	20525	14.54	15	0
				848.3	20643	14.80	15	0
			2	824.7	20407	14.49	15	0
				836.5	20525	14.50	15	0
				848.3	20643	14.73	15	0
			5	824.7	20407	14.35	15	0
				836.5	20525	14.35	15	0
				848.3	20643	14.49	15	0
		3 RB	0	824.7	20407	14.47	15	0-1
				836.5	20525	14.61	15	0-1
				848.3	20643	14.67	15	0-1
			2	824.7	20407	14.57	15	0-1
				836.5	20525	14.61	15	0-1
				848.3	20643	14.58	15	0-1
			3	824.7	20407	14.48	15	0-1
				836.5	20525	14.63	15	0-1
				848.3	20643	14.59	15	0-1
		6RB		824.7	20407	14.52	15	0-1
				836.5	20525	14.67	15	0-1
				848.3	20643	14.76	15	0-1
	16-QAM	1 RB	0	824.7	20407	14.53	15	0-1
				836.5	20525	14.64	15	0-1
				848.3	20643	14.62	15	0-1
			2	824.7	20407	14.32	15	0-1
				836.5	20525	14.17	15	0-1
				848.3	20643	14.45	15	0-1
			5	824.7	20407	14.41	15	0-1
				836.5	20525	14.05	15	0-1
				848.3	20643	14.51	15	0-1
		3 RB	0	824.7	20407	13.49	15	0-2
				836.5	20525	13.30	15	0-2
				848.3	20643	13.68	15	0-2
			2	824.7	20407	13.46	15	0-2
				836.5	20525	13.64	15	0-2
				848.3	20643	13.61	15	0-2
			3	824.7	20407	13.31	15	0-2
				836.5	20525	13.71	15	0-2
				848.3	20643	13.58	15	0-2
		6RB		824.7	20407	13.68	15	0-2
				836.5	20525	13.33	15	0-2
				848.3	20643	13.73	15	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)
10	QPSK	1 RB	0	704	23060	22.28	23	0
				707.5	23095	22.41	23	0
				711	23130	22.55	23	0
			25	704	23060	22.60	23	0
				707.5	23095	22.49	23	0
				711	23130	22.52	23	0
			49	704	23060	22.57	23	0
				707.5	23095	22.47	23	0
				711	23130	22.64	23	0
		25 RB	0	704	23060	21.53	22	0-1
				707.5	23095	21.59	22	0-1
				711	23130	21.78	22	0-1
			12	704	23060	21.55	22	0-1
				707.5	23095	21.55	22	0-1
				711	23130	21.73	22	0-1
			25	704	23060	21.57	22	0-1
				707.5	23095	21.51	22	0-1
				711	23130	21.76	22	0-1
		50RB		704	23060	21.57	22	0-1
				707.5	23095	21.59	22	0-1
				711	23130	21.67	22	0-1
	16-QAM	1 RB	0	704	23060	21.82	22	0-1
				707.5	23095	21.81	22	0-1
				711	23130	21.95	22	0-1
			25	704	23060	21.66	22	0-1
				707.5	23095	22.00	22	0-1
				711	23130	21.94	22	0-1
			49	704	23060	21.78	22	0-1
				707.5	23095	21.89	22	0-1
				711	23130	21.83	22	0-1
		25 RB	0	704	23060	20.36	21	0-2
				707.5	23095	20.45	21	0-2
				711	23130	20.36	21	0-2
			12	704	23060	20.34	21	0-2
				707.5	23095	20.44	21	0-2
				711	23130	20.51	21	0-2
			25	704	23060	20.37	21	0-2
				707.5	23095	20.38	21	0-2
				711	23130	20.63	21	0-2
		50RB		704	23060	20.29	21	0-2
				707.5	23095	20.36	21	0-2
				711	23130	20.39	21	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	22.31	23	0
				707.5	23095	22.49	23	0
				713.5	23155	22.36	23	0
			12	701.5	23035	22.37	23	0
				707.5	23095	22.54	23	0
				713.5	23155	22.52	23	0
			24	701.5	23035	22.25	23	0
				707.5	23095	22.39	23	0
				713.5	23155	22.36	23	0
		12 RB	0	701.5	23035	21.14	22	0-1
				707.5	23095	21.29	22	0-1
				713.5	23155	21.31	22	0-1
			6	701.5	23035	21.32	22	0-1
				707.5	23095	21.38	22	0-1
				713.5	23155	21.40	22	0-1
			13	701.5	23035	21.42	22	0-1
				707.5	23095	21.43	22	0-1
				713.5	23155	21.46	22	0-1
		25RB		701.5	23035	21.30	22	0-1
				707.5	23095	21.35	22	0-1
				713.5	23155	21.41	22	0-1
	16-QAM	1 RB	0	701.5	23035	21.59	22	0-1
				707.5	23095	21.39	22	0-1
				713.5	23155	21.50	22	0-1
			12	701.5	23035	21.44	22	0-1
				707.5	23095	21.73	22	0-1
				713.5	23155	21.62	22	0-1
			24	701.5	23035	21.28	22	0-1
				707.5	23095	21.44	22	0-1
				713.5	23155	21.76	22	0-1
		12 RB	0	701.5	23035	20.27	21	0-2
				707.5	23095	20.37	21	0-2
				713.5	23155	20.39	21	0-2
			6	701.5	23035	20.22	21	0-2
				707.5	23095	20.37	21	0-2
				713.5	23155	20.29	21	0-2
			13	701.5	23035	20.38	21	0-2
				707.5	23095	20.40	21	0-2
				713.5	23155	20.27	21	0-2
		25RB		701.5	23035	20.45	21	0-2
				707.5	23095	20.33	21	0-2
				713.5	23155	20.37	21	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	22.44	23	0
				707.5	23095	22.32	23	0
				714.5	23165	22.29	23	0
			7	700.5	23025	22.09	23	0
				707.5	23095	22.56	23	0
				714.5	23165	22.55	23	0
			14	700.5	23025	22.34	23	0
				707.5	23095	22.29	23	0
				714.5	23165	22.52	23	0
		8 RB	0	700.5	23025	21.32	22	0-1
				707.5	23095	21.40	22	0-1
				714.5	23165	21.36	22	0-1
			4	700.5	23025	21.36	22	0-1
				707.5	23095	21.39	22	0-1
				714.5	23165	21.35	22	0-1
			7	700.5	23025	21.32	22	0-1
				707.5	23095	21.43	22	0-1
				714.5	23165	21.47	22	0-1
		15RB		700.5	23025	21.36	22	0-1
				707.5	23095	21.35	22	0-1
				714.5	23165	21.43	22	0-1
	16-QAM	1 RB	0	700.5	23025	21.51	22	0-1
				707.5	23095	21.94	22	0-1
				714.5	23165	21.59	22	0-1
			7	700.5	23025	21.83	22	0-1
				707.5	23095	21.91	22	0-1
				714.5	23165	21.74	22	0-1
			14	700.5	23025	21.34	22	0-1
				707.5	23095	21.64	22	0-1
				714.5	23165	21.74	22	0-1
		8 RB	0	700.5	23025	20.36	21	0-2
				707.5	23095	20.42	21	0-2
				714.5	23165	20.58	21	0-2
			4	700.5	23025	20.22	21	0-2
				707.5	23095	20.52	21	0-2
				714.5	23165	20.46	21	0-2
			7	700.5	23025	20.37	21	0-2
				707.5	23095	20.41	21	0-2
				714.5	23165	20.40	21	0-2
		15RB		700.5	23025	20.28	21	0-2
				707.5	23095	20.27	21	0-2
				714.5	23165	20.27	21	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	22.19	23	0
				707.5	23095	22.11	23	0
				715.3	23173	22.21	23	0
			2	699.7	23017	22.37	23	0
				707.5	23095	22.34	23	0
				715.3	23173	22.34	23	0
			5	699.7	23017	22.16	23	0
				707.5	23095	22.26	23	0
				715.3	23173	22.28	23	0
		3 RB	0	699.7	23017	21.25	22	0-1
				707.5	23095	21.23	22	0-1
				715.3	23173	21.33	22	0-1
			2	699.7	23017	21.30	22	0-1
				707.5	23095	21.31	22	0-1
				715.3	23173	21.45	22	0-1
			3	699.7	23017	21.13	22	0-1
				707.5	23095	21.32	22	0-1
				715.3	23173	21.45	22	0-1
		6RB		699.7	23017	21.32	22	0-1
				707.5	23095	21.22	22	0-1
				715.3	23173	21.42	22	0-1
	16-QAM	1 RB	0	699.7	23017	21.10	22	0-1
				707.5	23095	21.51	22	0-1
				715.3	23173	21.52	22	0-1
			2	699.7	23017	21.31	22	0-1
				707.5	23095	21.80	22	0-1
				715.3	23173	21.88	22	0-1
			5	699.7	23017	21.81	22	0-1
				707.5	23095	21.31	22	0-1
				715.3	23173	21.68	22	0-1
		3 RB	0	699.7	23017	20.27	21	0-2
				707.5	23095	20.64	21	0-2
				715.3	23173	20.78	21	0-2
			2	699.7	23017	20.45	21	0-2
				707.5	23095	20.73	21	0-2
				715.3	23173	20.65	21	0-2
			3	699.7	23017	20.62	21	0-2
				707.5	23095	20.68	21	0-2
				715.3	23173	20.56	21	0-2
		6RB		699.7	23017	20.17	21	0-2
				707.5	23095	20.35	21	0-2
				715.3	23173	20.26	21	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	14.74	15	0
				707.5	23095	14.34	15	0
				711	23130	14.79	15	0
			25	704	23060	14.90	15	0
				707.5	23095	14.74	15	0
				711	23130	14.92	15	0
			49	704	23060	14.85	15	0
				707.5	23095	14.68	15	0
				711	23130	14.75	15	0
		25 RB	0	704	23060	13.76	14	0-1
				707.5	23095	13.71	14	0-1
				711	23130	13.76	14	0-1
			12	704	23060	13.73	14	0-1
				707.5	23095	13.70	14	0-1
				711	23130	13.83	14	0-1
			25	704	23060	13.75	14	0-1
				707.5	23095	13.63	14	0-1
				711	23130	13.82	14	0-1
		50RB		704	23060	13.72	14	0-1
				707.5	23095	13.63	14	0-1
				711	23130	13.75	14	0-1
	16-QAM	1 RB	0	704	23060	13.81	14	0-1
				707.5	23095	13.81	14	0-1
				711	23130	13.72	14	0-1
			25	704	23060	13.88	14	0-1
				707.5	23095	13.80	14	0-1
				711	23130	13.68	14	0-1
			49	704	23060	13.85	14	0-1
				707.5	23095	13.27	14	0-1
				711	23130	13.63	14	0-1
		25 RB	0	704	23060	12.20	13	0-2
				707.5	23095	12.18	13	0-2
				711	23130	12.25	13	0-2
			12	704	23060	12.28	13	0-2
				707.5	23095	12.33	13	0-2
				711	23130	12.32	13	0-2
			25	704	23060	12.24	13	0-2
				707.5	23095	12.38	13	0-2
				711	23130	12.29	13	0-2
		50RB		704	23060	12.23	13	0-2
				707.5	23095	12.26	13	0-2
				711	23130	12.29	13	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)
5	QPSK	1 RB	0	701.5	23035	14.77	15	0
				707.5	23095	14.69	15	0
				713.5	23155	14.69	15	0
			12	701.5	23035	14.76	15	0
				707.5	23095	14.59	15	0
				713.5	23155	14.64	15	0
			24	701.5	23035	14.42	15	0
				707.5	23095	14.59	15	0
				713.5	23155	14.71	15	0
		12 RB	0	701.5	23035	13.72	14	0-1
				707.5	23095	13.59	14	0-1
				713.5	23155	13.62	14	0-1
			6	701.5	23035	13.75	14	0-1
				707.5	23095	13.54	14	0-1
				713.5	23155	13.64	14	0-1
			13	701.5	23035	13.63	14	0-1
				707.5	23095	13.64	14	0-1
				713.5	23155	13.64	14	0-1
		25RB		701.5	23035	13.73	14	0-1
				707.5	23095	13.66	14	0-1
				713.5	23155	13.68	14	0-1
	16-QAM	1 RB	0	701.5	23035	13.63	14	0-1
				707.5	23095	13.54	14	0-1
				713.5	23155	13.66	14	0-1
			12	701.5	23035	13.73	14	0-1
				707.5	23095	13.71	14	0-1
				713.5	23155	13.71	14	0-1
			24	701.5	23035	13.24	14	0-1
				707.5	23095	13.72	14	0-1
				713.5	23155	13.66	14	0-1
		12 RB	0	701.5	23035	12.32	13	0-2
				707.5	23095	12.52	13	0-2
				713.5	23155	12.45	13	0-2
			6	701.5	23035	12.33	13	0-2
				707.5	23095	12.39	13	0-2
				713.5	23155	12.39	13	0-2
			13	701.5	23035	12.48	13	0-2
				707.5	23095	12.61	13	0-2
				713.5	23155	12.52	13	0-2
		25RB		701.5	23035	12.44	13	0-2
				707.5	23095	12.61	13	0-2
				713.5	23155	12.44	13	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)
3	QPSK	1 RB	0	700.5	23025	14.81	15	0
				707.5	23095	14.78	15	0
				714.5	23165	14.52	15	0
			7	700.5	23025	14.85	15	0
				707.5	23095	14.46	15	0
				714.5	23165	14.60	15	0
			14	700.5	23025	14.59	15	0
				707.5	23095	14.43	15	0
				714.5	23165	14.71	15	0
		8 RB	0	700.5	23025	13.80	14	0-1
				707.5	23095	13.60	14	0-1
				714.5	23165	13.61	14	0-1
			4	700.5	23025	13.84	14	0-1
				707.5	23095	13.57	14	0-1
				714.5	23165	13.61	14	0-1
			7	700.5	23025	13.81	14	0-1
				707.5	23095	13.61	14	0-1
				714.5	23165	13.64	14	0-1
		15RB		700.5	23025	13.73	14	0-1
				707.5	23095	13.61	14	0-1
				714.5	23165	13.58	14	0-1
	16-QAM	1 RB	0	700.5	23025	13.81	14	0-1
				707.5	23095	13.91	14	0-1
				714.5	23165	13.75	14	0-1
			7	700.5	23025	13.71	14	0-1
				707.5	23095	13.54	14	0-1
				714.5	23165	13.75	14	0-1
			14	700.5	23025	13.64	14	0-1
				707.5	23095	13.58	14	0-1
				714.5	23165	13.52	14	0-1
		8 RB	0	700.5	23025	12.24	13	0-2
				707.5	23095	12.38	13	0-2
				714.5	23165	12.55	13	0-2
			4	700.5	23025	12.35	13	0-2
				707.5	23095	12.45	13	0-2
				714.5	23165	12.35	13	0-2
			7	700.5	23025	12.33	13	0-2
				707.5	23095	12.40	13	0-2
				714.5	23165	12.37	13	0-2
		15RB		700.5	23025	12.31	13	0-2
				707.5	23095	12.50	13	0-2
				714.5	23165	12.36	13	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)
1.4	QPSK	1 RB	0	699.7	23017	14.72	15	0
				707.5	23095	14.42	15	0
				715.3	23173	14.49	15	0
			2	699.7	23017	14.71	15	0
				707.5	23095	14.49	15	0
				715.3	23173	14.49	15	0
			5	699.7	23017	14.75	15	0
				707.5	23095	14.61	15	0
				715.3	23173	14.58	15	0
		3 RB	0	699.7	23017	13.88	14	0-1
				707.5	23095	13.57	14	0-1
				715.3	23173	13.60	14	0-1
			2	699.7	23017	13.82	14	0-1
				707.5	23095	13.58	14	0-1
				715.3	23173	13.69	14	0-1
			3	699.7	23017	13.78	14	0-1
				707.5	23095	13.58	14	0-1
				715.3	23173	13.62	14	0-1
		6RB		699.7	23017	13.80	14	0-1
				707.5	23095	13.62	14	0-1
				715.3	23173	13.73	14	0-1
	16-QAM	1 RB	0	699.7	23017	13.85	14	0-1
				707.5	23095	13.04	14	0-1
				715.3	23173	13.27	14	0-1
			2	699.7	23017	13.57	14	0-1
				707.5	23095	13.32	14	0-1
				715.3	23173	13.67	14	0-1
			5	699.7	23017	13.31	14	0-1
				707.5	23095	13.46	14	0-1
				715.3	23173	13.67	14	0-1
		3 RB	0	699.7	23017	12.15	13	0-2
				707.5	23095	12.59	13	0-2
				715.3	23173	12.60	13	0-2
			2	699.7	23017	12.66	13	0-2
				707.5	23095	12.54	13	0-2
				715.3	23173	12.63	13	0-2
			3	699.7	23017	12.76	13	0-2
				707.5	23095	12.89	13	0-2
				715.3	23173	12.71	13	0-2
		6RB		699.7	23017	12.31	13	0-2
				707.5	23095	12.41	13	0-2
				715.3	23173	12.26	13	0-2

FDD Band 25 (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	26140	22.43	23	0
				1882.5	26365	22.69	23	0
				1905	26590	22.57	23	0
			50	1860	26140	22.26	23	0
				1882.5	26365	22.66	23	0
				1905	26590	22.52	23	0
			99	1860	26140	22.44	23	0
				1882.5	26365	22.37	23	0
				1905	26590	22.58	23	0
		50 RB	0	1860	26140	21.57	22	0-1
				1882.5	26365	21.68	22	0-1
				1905	26590	21.69	22	0-1
			25	1860	26140	21.39	22	0-1
				1882.5	26365	21.53	22	0-1
				1905	26590	21.65	22	0-1
			50	1860	26140	21.39	22	0-1
				1882.5	26365	21.55	22	0-1
				1905	26590	21.65	22	0-1
		100RB		1860	26140	21.36	22	0-1
				1882.5	26365	21.66	22	0-1
				1905	26590	21.60	22	0-1
	16-QAM	1 RB	0	1860	26140	21.65	22	0-1
				1882.5	26365	21.92	22	0-1
				1905	26590	21.64	22	0-1
			50	1860	26140	21.16	22	0-1
				1882.5	26365	21.53	22	0-1
				1905	26590	21.61	22	0-1
			99	1860	26140	21.08	22	0-1
				1882.5	26365	21.41	22	0-1
				1905	26590	21.35	22	0-1
		50 RB	0	1860	26140	20.17	21	0-2
				1882.5	26365	20.51	21	0-2
				1905	26590	20.33	21	0-2
			25	1860	26140	20.06	21	0-2
				1882.5	26365	20.37	21	0-2
				1905	26590	20.46	21	0-2
			50	1860	26140	20.05	21	0-2
				1882.5	26365	20.28	21	0-2
				1905	26590	20.49	21	0-2
		100RB		1860	26140	20.18	21	0-2
				1882.5	26365	20.50	21	0-2
				1905	26590	20.33	21	0-2

FDD Band 25 (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	26115	22.40	23	0
				1882.5	26365	22.51	23	0
				1907.5	26615	22.45	23	0
			36	1857.5	26115	22.15	23	0
				1882.5	26365	22.26	23	0
				1907.5	26615	22.24	23	0
			74	1857.5	26115	22.08	23	0
				1882.5	26365	22.11	23	0
				1907.5	26615	22.34	23	0
		36 RB	0	1857.5	26115	21.30	22	0-1
				1882.5	26365	21.41	22	0-1
				1907.5	26615	21.57	22	0-1
			18	1857.5	26115	21.17	22	0-1
				1882.5	26365	21.36	22	0-1
				1907.5	26615	21.35	22	0-1
			37	1857.5	26115	21.16	22	0-1
				1882.5	26365	21.37	22	0-1
				1907.5	26615	21.45	22	0-1
		75RB		1857.5	26115	21.21	22	0-1
				1882.5	26365	21.45	22	0-1
				1907.5	26615	21.52	22	0-1
	16-QAM	1 RB	0	1857.5	26115	21.93	22	0-1
				1882.5	26365	21.82	22	0-1
				1907.5	26615	21.92	22	0-1
			36	1857.5	26115	21.38	22	0-1
				1882.5	26365	21.68	22	0-1
				1907.5	26615	21.72	22	0-1
			74	1857.5	26115	20.70	22	0-1
				1882.5	26365	21.74	22	0-1
				1907.5	26615	21.89	22	0-1
		36 RB	0	1857.5	26115	20.34	21	0-2
				1882.5	26365	20.51	21	0-2
				1907.5	26615	20.64	21	0-2
			18	1857.5	26115	20.22	21	0-2
				1882.5	26365	20.52	21	0-2
				1907.5	26615	20.45	21	0-2
			37	1857.5	26115	20.09	21	0-2
				1882.5	26365	20.33	21	0-2
				1907.5	26615	20.57	21	0-2
		75RB		1857.5	26115	20.16	21	0-2
				1882.5	26365	20.30	21	0-2
				1907.5	26615	20.41	21	0-2

FDD Band 25 (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	26090	22.32	23	0
				1882.5	26365	22.27	23	0
				1910	26640	22.39	23	0
			25	1855	26090	22.12	23	0
				1882.5	26365	22.61	23	0
				1910	26640	22.58	23	0
			49	1855	26090	22.16	23	0
				1882.5	26365	22.27	23	0
				1910	26640	22.44	23	0
		25 RB	0	1855	26090	21.25	22	0-1
				1882.5	26365	21.39	22	0-1
				1910	26640	21.46	22	0-1
			12	1855	26090	21.28	22	0-1
				1882.5	26365	21.41	22	0-1
				1910	26640	21.48	22	0-1
			25	1855	26090	21.13	22	0-1
				1882.5	26365	21.36	22	0-1
				1910	26640	21.44	22	0-1
		50RB		1855	26090	21.31	22	0-1
				1882.5	26365	21.38	22	0-1
				1910	26640	21.44	22	0-1
	16-QAM	1 RB	0	1855	26090	21.58	22	0-1
				1882.5	26365	21.49	22	0-1
				1910	26640	21.70	22	0-1
			25	1855	26090	21.44	22	0-1
				1882.5	26365	21.42	22	0-1
				1910	26640	22.00	22	0-1
			49	1855	26090	21.40	22	0-1
				1882.5	26365	21.02	22	0-1
				1910	26640	21.77	22	0-1
		25 RB	0	1855	26090	20.27	21	0-2
				1882.5	26365	20.28	21	0-2
				1910	26640	20.54	21	0-2
			12	1855	26090	20.32	21	0-2
				1882.5	26365	20.54	21	0-2
				1910	26640	20.43	21	0-2
			25	1855	26090	20.14	21	0-2
				1882.5	26365	20.38	21	0-2
				1910	26640	20.49	21	0-2
		50RB		1855	26090	20.16	21	0-2
				1882.5	26365	20.21	21	0-2
				1910	26640	20.35	21	0-2

FDD Band 25 (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	26065	22.32	23	0
				1882.5	26365	22.43	23	0
				1912.5	26665	22.52	23	0
			12	1852.5	26065	22.24	23	0
				1882.5	26365	22.58	23	0
				1912.5	26665	22.54	23	0
			24	1852.5	26065	22.22	23	0
				1882.5	26365	22.52	23	0
				1912.5	26665	22.26	23	0
		12 RB	0	1852.5	26065	21.29	22	0-1
				1882.5	26365	21.35	22	0-1
				1912.5	26665	21.48	22	0-1
			6	1852.5	26065	21.26	22	0-1
				1882.5	26365	21.41	22	0-1
				1912.5	26665	21.51	22	0-1
			13	1852.5	26065	21.18	22	0-1
				1882.5	26365	21.45	22	0-1
				1912.5	26665	21.51	22	0-1
		25RB		1852.5	26065	21.31	22	0-1
				1882.5	26365	21.38	22	0-1
				1912.5	26665	21.50	22	0-1
	16-QAM	1 RB	0	1852.5	26065	21.40	22	0-1
				1882.5	26365	21.89	22	0-1
				1912.5	26665	21.94	22	0-1
			12	1852.5	26065	21.39	22	0-1
				1882.5	26365	21.58	22	0-1
				1912.5	26665	21.68	22	0-1
			24	1852.5	26065	21.34	22	0-1
				1882.5	26365	21.93	22	0-1
				1912.5	26665	21.93	22	0-1
		12 RB	0	1852.5	26065	20.47	21	0-2
				1882.5	26365	20.34	21	0-2
				1912.5	26665	20.42	21	0-2
			6	1852.5	26065	20.32	21	0-2
				1882.5	26365	20.21	21	0-2
				1912.5	26665	20.40	21	0-2
			13	1852.5	26065	20.08	21	0-2
				1882.5	26365	20.38	21	0-2
				1912.5	26665	20.45	21	0-2
		25RB		1852.5	26065	20.36	21	0-2
				1882.5	26365	20.67	21	0-2
				1912.5	26665	20.48	21	0-2

FDD Band 25 (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	26055	22.44	23	0
				1882.5	26365	22.39	23	0
				1913.5	26675	22.59	23	0
			7	1851.5	26055	22.25	23	0
				1882.5	26365	22.71	23	0
				1913.5	26675	22.49	23	0
			14	1851.5	26055	22.42	23	0
				1882.5	26365	22.36	23	0
				1913.5	26675	22.39	23	0
		8 RB	0	1851.5	26055	21.33	22	0-1
				1882.5	26365	21.48	22	0-1
				1913.5	26675	21.53	22	0-1
			4	1851.5	26055	21.43	22	0-1
				1882.5	26365	21.43	22	0-1
				1913.5	26675	21.60	22	0-1
			7	1851.5	26055	21.36	22	0-1
				1882.5	26365	21.48	22	0-1
				1913.5	26675	21.41	22	0-1
		15RB		1851.5	26055	21.37	22	0-1
				1882.5	26365	21.40	22	0-1
				1913.5	26675	21.46	22	0-1
	16-QAM	1 RB	0	1851.5	26055	21.84	22	0-1
				1882.5	26365	21.78	22	0-1
				1913.5	26675	21.84	22	0-1
			7	1851.5	26055	21.85	22	0-1
				1882.5	26365	21.68	22	0-1
				1913.5	26675	21.89	22	0-1
			14	1851.5	26055	21.94	22	0-1
				1882.5	26365	21.92	22	0-1
				1913.5	26675	21.70	22	0-1
		8 RB	0	1851.5	26055	20.27	21	0-2
				1882.5	26365	20.54	21	0-2
				1913.5	26675	20.66	21	0-2
			4	1851.5	26055	20.25	21	0-2
				1882.5	26365	20.56	21	0-2
				1913.5	26675	20.39	21	0-2
			7	1851.5	26055	20.16	21	0-2
				1882.5	26365	20.56	21	0-2
				1913.5	26675	20.56	21	0-2
		15RB		1851.5	26055	20.24	21	0-2
				1882.5	26365	20.24	21	0-2
				1913.5	26675	20.54	21	0-2

FDD Band 25 (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	26047	22.26	23	0
				1882.5	26365	22.30	23	0
				1914.3	26683	22.32	23	0
			2	1850.7	26047	22.23	23	0
				1882.5	26365	22.43	23	0
				1914.3	26683	22.51	23	0
			5	1850.7	26047	22.28	23	0
				1882.5	26365	22.20	23	0
				1914.3	26683	22.43	23	0
		3 RB	0	1850.7	26047	21.40	22	0-1
				1882.5	26365	21.32	22	0-1
				1914.3	26683	21.41	22	0-1
			2	1850.7	26047	21.31	22	0-1
				1882.5	26365	21.38	22	0-1
				1914.3	26683	21.48	22	0-1
			3	1850.7	26047	21.30	22	0-1
				1882.5	26365	21.33	22	0-1
				1914.3	26683	21.41	22	0-1
		6RB		1850.7	26047	21.24	22	0-1
				1882.5	26365	21.63	22	0-1
				1914.3	26683	21.38	22	0-1
	16-QAM	1 RB	0	1850.7	26047	21.61	22	0-1
				1882.5	26365	21.74	22	0-1
				1914.3	26683	21.90	22	0-1
			2	1850.7	26047	21.39	22	0-1
				1882.5	26365	21.90	22	0-1
				1914.3	26683	21.48	22	0-1
			5	1850.7	26047	21.57	22	0-1
				1882.5	26365	21.61	22	0-1
				1914.3	26683	21.82	22	0-1
		3 RB	0	1850.7	26047	20.64	21	0-2
				1882.5	26365	20.77	21	0-2
				1914.3	26683	20.64	21	0-2
			2	1850.7	26047	20.60	21	0-2
				1882.5	26365	20.56	21	0-2
				1914.3	26683	20.70	21	0-2
			3	1850.7	26047	20.65	21	0-2
				1882.5	26365	20.56	21	0-2
				1914.3	26683	20.65	21	0-2
		6RB		1850.7	26047	20.32	21	0-2
				1882.5	26365	20.26	21	0-2
				1914.3	26683	20.47	21	0-2

FDD Band 25 (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	26140	15.60	16	0
				1882.5	26365	15.88	16	0
				1905	26590	15.43	16	0
			50	1860	26140	15.77	16	0
				1882.5	26365	15.73	16	0
				1905	26590	15.67	16	0
			99	1860	26140	15.38	16	0
				1882.5	26365	15.53	16	0
				1905	26590	15.52	16	0
		50 RB	0	1860	26140	14.56	15	0-1
				1882.5	26365	14.58	15	0-1
				1905	26590	14.69	15	0-1
			25	1860	26140	14.48	15	0-1
				1882.5	26365	14.51	15	0-1
				1905	26590	14.58	15	0-1
			50	1860	26140	14.43	15	0-1
				1882.5	26365	14.50	15	0-1
				1905	26590	14.63	15	0-1
		100RB		1860	26140	14.48	15	0-1
				1882.5	26365	14.54	15	0-1
				1905	26590	14.61	15	0-1
	16-QAM	1 RB	0	1860	26140	14.72	15	0-1
				1882.5	26365	14.75	15	0-1
				1905	26590	14.72	15	0-1
			50	1860	26140	14.31	15	0-1
				1882.5	26365	14.65	15	0-1
				1905	26590	14.71	15	0-1
			99	1860	26140	14.82	15	0-1
				1882.5	26365	14.31	15	0-1
				1905	26590	14.60	15	0-1
		50 RB	0	1860	26140	13.32	14	0-2
				1882.5	26365	12.92	14	0-2
				1905	26590	13.14	14	0-2
			25	1860	26140	13.41	14	0-2
				1882.5	26365	13.19	14	0-2
				1905	26590	13.29	14	0-2
			50	1860	26140	13.26	14	0-2
				1882.5	26365	13.24	14	0-2
				1905	26590	13.26	14	0-2
		100RB		1860	26140	13.15	14	0-2
				1882.5	26365	13.14	14	0-2
				1905	26590	13.17	14	0-2

FDD Band 25 (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	26115	15.50	16	0
				1882.5	26365	15.73	16	0
				1907.5	26615	15.50	16	0
			36	1857.5	26115	15.39	16	0
				1882.5	26365	15.45	16	0
				1907.5	26615	15.47	16	0
			74	1857.5	26115	15.42	16	0
				1882.5	26365	15.52	16	0
				1907.5	26615	15.50	16	0
		36 RB	0	1857.5	26115	14.48	15	0-1
				1882.5	26365	14.55	15	0-1
				1907.5	26615	14.58	15	0-1
			18	1857.5	26115	14.49	15	0-1
				1882.5	26365	14.55	15	0-1
				1907.5	26615	14.56	15	0-1
			37	1857.5	26115	14.57	15	0-1
				1882.5	26365	14.50	15	0-1
				1907.5	26615	14.62	15	0-1
		75RB		1857.5	26115	14.47	15	0-1
				1882.5	26365	14.56	15	0-1
				1907.5	26615	14.57	15	0-1
	16-QAM	1 RB	0	1857.5	26115	14.15	15	0-1
				1882.5	26365	14.24	15	0-1
				1907.5	26615	14.53	15	0-1
			36	1857.5	26115	14.29	15	0-1
				1882.5	26365	14.29	15	0-1
				1907.5	26615	14.64	15	0-1
			74	1857.5	26115	14.48	15	0-1
				1882.5	26365	14.81	15	0-1
				1907.5	26615	14.82	15	0-1
		36 RB	0	1857.5	26115	13.37	14	0-2
				1882.5	26365	13.13	14	0-2
				1907.5	26615	13.29	14	0-2
			18	1857.5	26115	13.41	14	0-2
				1882.5	26365	13.21	14	0-2
				1907.5	26615	13.37	14	0-2
			37	1857.5	26115	13.36	14	0-2
				1882.5	26365	13.31	14	0-2
				1907.5	26615	13.44	14	0-2
		75RB		1857.5	26115	13.36	14	0-2
				1882.5	26365	13.26	14	0-2
				1907.5	26615	13.37	14	0-2

FDD Band 25 (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	26090	15.78	16	0
				1882.5	26365	15.69	16	0
				1910	26640	15.57	16	0
			25	1855	26090	15.54	16	0
				1882.5	26365	15.65	16	0
				1910	26640	15.63	16	0
			49	1855	26090	15.57	16	0
				1882.5	26365	15.54	16	0
				1910	26640	15.64	16	0
		25 RB	0	1855	26090	14.47	15	0-1
				1882.5	26365	14.60	15	0-1
				1910	26640	14.61	15	0-1
			12	1855	26090	14.45	15	0-1
				1882.5	26365	14.50	15	0-1
				1910	26640	14.64	15	0-1
			25	1855	26090	14.47	15	0-1
				1882.5	26365	14.50	15	0-1
				1910	26640	14.64	15	0-1
		50RB		1855	26090	14.53	15	0-1
				1882.5	26365	14.50	15	0-1
				1910	26640	14.67	15	0-1
	16-QAM	1 RB	0	1855	26090	14.28	15	0-1
				1882.5	26365	14.56	15	0-1
				1910	26640	14.75	15	0-1
			25	1855	26090	14.47	15	0-1
				1882.5	26365	14.87	15	0-1
				1910	26640	14.67	15	0-1
			49	1855	26090	14.65	15	0-1
				1882.5	26365	14.78	15	0-1
				1910	26640	14.82	15	0-1
		25 RB	0	1855	26090	13.20	14	0-2
				1882.5	26365	12.93	14	0-2
				1910	26640	13.28	14	0-2
			12	1855	26090	13.28	14	0-2
				1882.5	26365	13.23	14	0-2
				1910	26640	13.36	14	0-2
			25	1855	26090	13.47	14	0-2
				1882.5	26365	13.16	14	0-2
				1910	26640	13.19	14	0-2
		50RB		1855	26090	13.23	14	0-2
				1882.5	26365	13.13	14	0-2
				1910	26640	13.18	14	0-2

FDD Band 25 (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	26065	15.42	16	0
				1882.5	26365	15.49	16	0
				1912.5	26665	15.56	16	0
			12	1852.5	26065	15.40	16	0
				1882.5	26365	15.57	16	0
				1912.5	26665	15.51	16	0
			24	1852.5	26065	15.43	16	0
				1882.5	26365	15.56	16	0
				1912.5	26665	15.41	16	0
		12 RB	0	1852.5	26065	14.51	15	0-1
				1882.5	26365	14.48	15	0-1
				1912.5	26665	14.56	15	0-1
			6	1852.5	26065	14.43	15	0-1
				1882.5	26365	14.44	15	0-1
				1912.5	26665	14.55	15	0-1
			13	1852.5	26065	14.38	15	0-1
				1882.5	26365	14.47	15	0-1
				1912.5	26665	14.54	15	0-1
		25RB		1852.5	26065	14.39	15	0-1
				1882.5	26365	14.42	15	0-1
				1912.5	26665	14.60	15	0-1
	16-QAM	1 RB	0	1852.5	26065	14.85	15	0-1
				1882.5	26365	14.52	15	0-1
				1912.5	26665	14.55	15	0-1
			12	1852.5	26065	14.31	15	0-1
				1882.5	26365	14.52	15	0-1
				1912.5	26665	14.82	15	0-1
			24	1852.5	26065	14.74	15	0-1
				1882.5	26365	14.72	15	0-1
				1912.5	26665	14.71	15	0-1
		12 RB	0	1852.5	26065	13.54	14	0-2
				1882.5	26365	13.24	14	0-2
				1912.5	26665	13.38	14	0-2
			6	1852.5	26065	13.48	14	0-2
				1882.5	26365	13.22	14	0-2
				1912.5	26665	13.38	14	0-2
			13	1852.5	26065	13.52	14	0-2
				1882.5	26365	13.36	14	0-2
				1912.5	26665	13.44	14	0-2
		25RB		1852.5	26065	13.55	14	0-2
				1882.5	26365	13.33	14	0-2
				1912.5	26665	13.46	14	0-2

FDD Band 25 (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	26055	15.58	16	0
				1882.5	26365	15.66	16	0
				1913.5	26675	15.45	16	0
			7	1851.5	26055	15.72	16	0
				1882.5	26365	15.58	16	0
				1913.5	26675	15.66	16	0
			14	1851.5	26055	15.63	16	0
				1882.5	26365	15.59	16	0
				1913.5	26675	15.48	16	0
		8 RB	0	1851.5	26055	14.50	15	0-1
				1882.5	26365	14.49	15	0-1
				1913.5	26675	14.55	15	0-1
			4	1851.5	26055	14.42	15	0-1
				1882.5	26365	14.52	15	0-1
				1913.5	26675	14.54	15	0-1
			7	1851.5	26055	14.50	15	0-1
				1882.5	26365	14.57	15	0-1
				1913.5	26675	14.62	15	0-1
		15RB		1851.5	26055	14.40	15	0-1
				1882.5	26365	14.43	15	0-1
				1913.5	26675	14.54	15	0-1
	16-QAM	1 RB	0	1851.5	26055	14.66	15	0-1
				1882.5	26365	14.57	15	0-1
				1913.5	26675	14.55	15	0-1
			7	1851.5	26055	14.55	15	0-1
				1882.5	26365	14.44	15	0-1
				1913.5	26675	14.66	15	0-1
			14	1851.5	26055	14.71	15	0-1
				1882.5	26365	14.49	15	0-1
				1913.5	26675	14.65	15	0-1
		8 RB	0	1851.5	26055	13.46	14	0-2
				1882.5	26365	13.36	14	0-2
				1913.5	26675	13.47	14	0-2
			4	1851.5	26055	13.58	14	0-2
				1882.5	26365	13.34	14	0-2
				1913.5	26675	13.42	14	0-2
			7	1851.5	26055	13.55	14	0-2
				1882.5	26365	13.49	14	0-2
				1913.5	26675	13.45	14	0-2
		15RB		1851.5	26055	13.51	14	0-2
				1882.5	26365	13.35	14	0-2
				1913.5	26675	13.43	14	0-2

FDD Band 25 (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	26047	15.36	16	0
				1882.5	26365	15.44	16	0
				1914.3	26683	15.60	16	0
			2	1850.7	26047	15.55	16	0
				1882.5	26365	15.58	16	0
				1914.3	26683	15.61	16	0
			5	1850.7	26047	15.54	16	0
				1882.5	26365	15.31	16	0
				1914.3	26683	15.46	16	0
		3 RB	0	1850.7	26047	14.44	15	0-1
				1882.5	26365	14.44	15	0-1
				1914.3	26683	14.38	15	0-1
			2	1850.7	26047	14.55	15	0-1
				1882.5	26365	14.40	15	0-1
				1914.3	26683	14.48	15	0-1
			3	1850.7	26047	14.48	15	0-1
				1882.5	26365	14.46	15	0-1
				1914.3	26683	14.40	15	0-1
		6RB		1850.7	26047	14.43	15	0-1
				1882.5	26365	14.45	15	0-1
				1914.3	26683	14.60	15	0-1
	16-QAM	1 RB	0	1850.7	26047	14.51	15	0-1
				1882.5	26365	14.78	15	0-1
				1914.3	26683	14.51	15	0-1
			2	1850.7	26047	14.77	15	0-1
				1882.5	26365	14.44	15	0-1
				1914.3	26683	14.15	15	0-1
			5	1850.7	26047	14.65	15	0-1
				1882.5	26365	14.57	15	0-1
				1914.3	26683	14.27	15	0-1
		3 RB	0	1850.7	26047	13.55	14	0-2
				1882.5	26365	13.81	14	0-2
				1914.3	26683	13.31	14	0-2
			2	1850.7	26047	13.45	14	0-2
				1882.5	26365	13.48	14	0-2
				1914.3	26683	13.14	14	0-2
			3	1850.7	26047	13.19	14	0-2
				1882.5	26365	13.12	14	0-2
				1914.3	26683	13.11	14	0-2
		6RB		1850.7	26047	13.43	14	0-2
				1882.5	26365	13.26	14	0-2
				1914.3	26683	13.46	14	0-2

FDD Band 26 (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	822.5	26825	22.25	23	0
				831.5	26865	22.48	23	0
				841.5	26965	22.57	23	0
			36	822.5	26825	22.24	23	0
				831.5	26865	22.22	23	0
				841.5	26965	22.35	23	0
			74	822.5	26825	22.23	23	0
				831.5	26865	22.28	23	0
				841.5	26965	22.19	23	0
		36 RB	0	822.5	26825	21.46	22	0-1
				831.5	26865	21.50	22	0-1
				841.5	26965	21.49	22	0-1
			18	822.5	26825	21.34	22	0-1
				831.5	26865	21.41	22	0-1
				841.5	26965	21.39	22	0-1
			37	822.5	26825	21.34	22	0-1
				831.5	26865	21.33	22	0-1
				841.5	26965	21.33	22	0-1
		75RB		822.5	26825	21.37	22	0-1
				831.5	26865	21.36	22	0-1
				841.5	26965	21.33	22	0-1
	16-QAM	1 RB	0	822.5	26825	21.58	22	0-1
				831.5	26865	21.84	22	0-1
				841.5	26965	21.84	22	0-1
			36	822.5	26825	21.19	22	0-1
				831.5	26865	20.91	22	0-1
				841.5	26965	21.62	22	0-1
			74	822.5	26825	20.98	22	0-1
				831.5	26865	21.19	22	0-1
				841.5	26965	21.15	22	0-1
		36 RB	0	822.5	26825	20.30	21	0-2
				831.5	26865	20.34	21	0-2
				841.5	26965	20.33	21	0-2
			18	822.5	26825	20.17	21	0-2
				831.5	26865	20.29	21	0-2
				841.5	26965	20.20	21	0-2
			37	822.5	26825	20.26	21	0-2
				831.5	26865	20.16	21	0-2
				841.5	26965	20.02	21	0-2
		75RB		822.5	26825	20.24	21	0-2
				831.5	26865	20.03	21	0-2
				841.5	26965	20.08	21	0-2

FDD Band 26 (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	820	26800	22.14	23	0
				831.5	26865	22.02	23	0
				844	26990	22.09	23	0
			25	820	26800	22.19	23	0
				831.5	26865	21.97	23	0
				844	26990	22.11	23	0
			49	820	26800	21.95	23	0
				831.5	26865	22.11	23	0
				844	26990	22.05	23	0
		25 RB	0	820	26800	21.29	22	0-1
				831.5	26865	21.24	22	0-1
				844	26990	21.22	22	0-1
			12	820	26800	21.21	22	0-1
				831.5	26865	21.23	22	0-1
				844	26990	21.24	22	0-1
			25	820	26800	21.08	22	0-1
				831.5	26865	21.16	22	0-1
				844	26990	21.11	22	0-1
		50RB		820	26800	21.16	22	0-1
				831.5	26865	21.18	22	0-1
				844	26990	21.02	22	0-1
	16-QAM	1 RB	0	820	26800	21.67	22	0-1
				831.5	26865	21.58	22	0-1
				844	26990	21.19	22	0-1
			25	820	26800	21.43	22	0-1
				831.5	26865	21.38	22	0-1
				844	26990	21.48	22	0-1
			49	820	26800	21.18	22	0-1
				831.5	26865	20.97	22	0-1
				844	26990	21.46	22	0-1
		25 RB	0	820	26800	20.21	21	0-2
				831.5	26865	20.19	21	0-2
				844	26990	20.20	21	0-2
			12	820	26800	20.27	21	0-2
				831.5	26865	20.13	21	0-2
				844	26990	20.13	21	0-2
			25	820	26800	20.03	21	0-2
				831.5	26865	19.98	21	0-2
				844	26990	20.27	21	0-2
		50RB		820	26800	20.00	21	0-2
				831.5	26865	20.03	21	0-2
				844	26990	20.12	21	0-2

FDD Band 26 (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	816.5	26715	22.18	23	0
				831.5	26865	22.41	23	0
				846.5	27015	22.39	23	0
			12	816.5	26715	22.15	23	0
				831.5	26865	22.23	23	0
				846.5	27015	22.38	23	0
			24	816.5	26715	22.18	23	0
				831.5	26865	22.33	23	0
				846.5	27015	22.16	23	0
		12 RB	0	816.5	26715	21.02	22	0-1
				831.5	26865	21.20	22	0-1
				846.5	27015	21.28	22	0-1
			6	816.5	26715	21.17	22	0-1
				831.5	26865	21.14	22	0-1
				846.5	27015	21.15	22	0-1
			13	816.5	26715	21.15	22	0-1
				831.5	26865	21.12	22	0-1
				846.5	27015	21.04	22	0-1
		25RB		816.5	26715	21.31	22	0-1
				831.5	26865	21.23	22	0-1
				846.5	27015	21.14	22	0-1
	16-QAM	1 RB	0	816.5	26715	21.00	22	0-1
				831.5	26865	21.78	22	0-1
				846.5	27015	21.50	22	0-1
			12	816.5	26715	21.35	22	0-1
				831.5	26865	21.11	22	0-1
				846.5	27015	21.04	22	0-1
			24	816.5	26715	21.23	22	0-1
				831.5	26865	21.25	22	0-1
				846.5	27015	21.57	22	0-1
		12 RB	0	816.5	26715	20.01	21	0-2
				831.5	26865	20.22	21	0-2
				846.5	27015	20.29	21	0-2
			6	816.5	26715	19.93	21	0-2
				831.5	26865	20.09	21	0-2
				846.5	27015	19.97	21	0-2
			13	816.5	26715	20.39	21	0-2
				831.5	26865	20.11	21	0-2
				846.5	27015	19.90	21	0-2
		25RB		816.5	26715	20.40	21	0-2
				831.5	26865	20.17	21	0-2
				846.5	27015	20.31	21	0-2

FDD Band 26 (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	815.5	26705	22.05	23	0
				831.5	26865	21.95	23	0
				847.5	27025	22.34	23	0
			7	815.5	26705	22.36	23	0
				831.5	26865	22.07	23	0
				847.5	27025	22.32	23	0
			14	815.5	26705	22.26	23	0
				831.5	26865	21.98	23	0
				847.5	27025	22.03	23	0
		8 RB	0	815.5	26705	21.02	22	0-1
				831.5	26865	21.17	22	0-1
				847.5	27025	21.20	22	0-1
			4	815.5	26705	21.17	22	0-1
				831.5	26865	21.05	22	0-1
				847.5	27025	21.05	22	0-1
			7	815.5	26705	21.18	22	0-1
				831.5	26865	21.12	22	0-1
				847.5	27025	21.13	22	0-1
		15RB		815.5	26705	20.98	22	0-1
				831.5	26865	21.12	22	0-1
				847.5	27025	21.08	22	0-1
	16-QAM	1 RB	0	815.5	26705	21.30	22	0-1
				831.5	26865	21.61	22	0-1
				847.5	27025	21.82	22	0-1
			7	815.5	26705	21.44	22	0-1
				831.5	26865	21.30	22	0-1
				847.5	27025	21.46	22	0-1
			14	815.5	26705	21.42	22	0-1
				831.5	26865	21.30	22	0-1
				847.5	27025	21.21	22	0-1
		8 RB	0	815.5	26705	20.00	21	0-2
				831.5	26865	20.26	21	0-2
				847.5	27025	20.25	21	0-2
			4	815.5	26705	19.99	21	0-2
				831.5	26865	20.25	21	0-2
				847.5	27025	20.04	21	0-2
			7	815.5	26705	20.24	21	0-2
				831.5	26865	20.21	21	0-2
				847.5	27025	20.16	21	0-2
		15RB		815.5	26705	19.85	21	0-2
				831.5	26865	20.26	21	0-2
				847.5	27025	19.98	21	0-2

FDD Band 26 (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	814.7	26697	21.87	23	0
				831.5	26865	22.09	23	0
				848.3	27033	22.22	23	0
			2	814.7	26697	21.83	23	0
				831.5	26865	22.07	23	0
				848.3	27033	22.11	23	0
			5	814.7	26697	21.80	23	0
				831.5	26865	22.03	23	0
				848.3	27033	21.87	23	0
		3 RB	0	814.7	26697	21.00	22	0-1
				831.5	26865	21.12	22	0-1
				848.3	27033	21.22	22	0-1
			2	814.7	26697	21.01	22	0-1
				831.5	26865	21.23	22	0-1
				848.3	27033	21.05	22	0-1
			3	814.7	26697	20.96	22	0-1
				831.5	26865	21.22	22	0-1
				848.3	27033	20.95	22	0-1
		6RB		814.7	26697	21.01	22	0-1
				831.5	26865	21.17	22	0-1
				848.3	27033	20.99	22	0-1
	16-QAM	1 RB	0	814.7	26697	21.23	22	0-1
				831.5	26865	21.32	22	0-1
				848.3	27033	21.64	22	0-1
			2	814.7	26697	21.31	22	0-1
				831.5	26865	21.65	22	0-1
				848.3	27033	20.96	22	0-1
			5	814.7	26697	21.05	22	0-1
				831.5	26865	21.35	22	0-1
				848.3	27033	21.44	22	0-1
		3 RB	0	814.7	26697	20.28	21	0-2
				831.5	26865	20.28	21	0-2
				848.3	27033	20.41	21	0-2
			2	814.7	26697	20.39	21	0-2
				831.5	26865	20.38	21	0-2
				848.3	27033	20.42	21	0-2
			3	814.7	26697	19.95	21	0-2
				831.5	26865	20.23	21	0-2
				848.3	27033	20.28	21	0-2
		6RB		814.7	26697	20.10	21	0-2
				831.5	26865	20.09	21	0-2
				848.3	27033	20.02	21	0-2

FDD Band 26 (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	822.5	26825	14.88	15	0
				831.5	26865	14.98	15	0
				841.5	26965	14.87	15	0
			36	822.5	26825	14.52	15	0
				831.5	26865	14.78	15	0
				841.5	26965	14.69	15	0
			74	822.5	26825	14.63	15	0
				831.5	26865	14.83	15	0
				841.5	26965	14.69	15	0
		36 RB	0	822.5	26825	13.96	14	0-1
				831.5	26865	13.94	14	0-1
				841.5	26965	13.87	14	0-1
			18	822.5	26825	13.80	14	0-1
				831.5	26865	13.89	14	0-1
				841.5	26965	13.89	14	0-1
			37	822.5	26825	13.82	14	0-1
				831.5	26865	13.77	14	0-1
				841.5	26965	13.95	14	0-1
		75RB		822.5	26825	13.89	14	0-1
				831.5	26865	13.83	14	0-1
				841.5	26965	13.78	14	0-1
	16-QAM	1 RB	0	822.5	26825	13.85	14	0-1
				831.5	26865	13.65	14	0-1
				841.5	26965	13.65	14	0-1
			36	822.5	26825	13.73	14	0-1
				831.5	26865	13.83	14	0-1
				841.5	26965	13.61	14	0-1
			74	822.5	26825	13.72	14	0-1
				831.5	26865	13.72	14	0-1
				841.5	26965	13.59	14	0-1
		36 RB	0	822.5	26825	12.84	13	0-2
				831.5	26865	12.67	13	0-2
				841.5	26965	12.72	13	0-2
			18	822.5	26825	12.56	13	0-2
				831.5	26865	12.56	13	0-2
				841.5	26965	12.64	13	0-2
			37	822.5	26825	12.29	13	0-2
				831.5	26865	12.34	13	0-2
				841.5	26965	12.27	13	0-2
		75RB		822.5	26825	12.50	13	0-2
				831.5	26865	12.56	13	0-2
				841.5	26965	12.45	13	0-2

FDD Band 26 (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	820	26800	14.65	15	0
				831.5	26865	14.97	15	0
				844	26990	14.84	15	0
			25	820	26800	14.82	15	0
				831.5	26865	14.64	15	0
				844	26990	14.80	15	0
			49	820	26800	14.73	15	0
				831.5	26865	14.74	15	0
				844	26990	14.88	15	0
		25 RB	0	820	26800	13.93	14	0-1
				831.5	26865	13.92	14	0-1
				844	26990	13.78	14	0-1
			12	820	26800	13.94	14	0-1
				831.5	26865	13.86	14	0-1
				844	26990	13.94	14	0-1
			25	820	26800	13.83	14	0-1
				831.5	26865	13.87	14	0-1
				844	26990	13.81	14	0-1
		50RB		820	26800	13.84	14	0-1
				831.5	26865	13.85	14	0-1
				844	26990	13.89	14	0-1
	16-QAM	1 RB	0	820	26800	13.61	14	0-1
				831.5	26865	13.62	14	0-1
				844	26990	13.60	14	0-1
			25	820	26800	13.82	14	0-1
				831.5	26865	13.91	14	0-1
				844	26990	13.33	14	0-1
			49	820	26800	13.27	14	0-1
				831.5	26865	13.24	14	0-1
				844	26990	13.26	14	0-1
		25 RB	0	820	26800	12.71	13	0-2
				831.5	26865	12.56	13	0-2
				844	26990	12.80	13	0-2
			12	820	26800	12.52	13	0-2
				831.5	26865	12.47	13	0-2
				844	26990	12.70	13	0-2
			25	820	26800	12.16	13	0-2
				831.5	26865	12.24	13	0-2
				844	26990	11.93	13	0-2
		50RB		820	26800	12.40	13	0-2
				831.5	26865	12.47	13	0-2
				844	26990	12.31	13	0-2

FDD Band 26 (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	816.5	26715	14.69	15	0
				831.5	26865	14.76	15	0
				846.5	27015	14.90	15	0
			12	816.5	26715	14.95	15	0
				831.5	26865	14.91	15	0
				846.5	27015	14.82	15	0
			24	816.5	26715	14.65	15	0
				831.5	26865	14.66	15	0
				846.5	27015	14.66	15	0
		12 RB	0	816.5	26715	13.79	14	0-1
				831.5	26865	13.81	14	0-1
				846.5	27015	13.83	14	0-1
			6	816.5	26715	13.74	14	0-1
				831.5	26865	13.76	14	0-1
				846.5	27015	13.81	14	0-1
			13	816.5	26715	13.78	14	0-1
				831.5	26865	13.78	14	0-1
				846.5	27015	13.75	14	0-1
		25RB		816.5	26715	13.86	14	0-1
				831.5	26865	13.82	14	0-1
				846.5	27015	13.79	14	0-1
	16-QAM	1 RB	0	816.5	26715	13.89	14	0-1
				831.5	26865	13.77	14	0-1
				846.5	27015	13.72	14	0-1
			12	816.5	26715	13.89	14	0-1
				831.5	26865	13.77	14	0-1
				846.5	27015	13.84	14	0-1
			24	816.5	26715	13.76	14	0-1
				831.5	26865	13.82	14	0-1
				846.5	27015	13.49	14	0-1
		12 RB	0	816.5	26715	12.68	13	0-2
				831.5	26865	12.67	13	0-2
				846.5	27015	12.79	13	0-2
			6	816.5	26715	12.43	13	0-2
				831.5	26865	12.55	13	0-2
				846.5	27015	12.14	13	0-2
			13	816.5	26715	12.36	13	0-2
				831.5	26865	12.40	13	0-2
				846.5	27015	11.31	13	0-2
		25RB		816.5	26715	12.56	13	0-2
				831.5	26865	12.57	13	0-2
				846.5	27015	12.05	13	0-2

FDD Band 26 (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	815.5	26705	14.83	15	0
				831.5	26865	14.83	15	0
				847.5	27025	14.89	15	0
			7	815.5	26705	14.84	15	0
				831.5	26865	14.72	15	0
				847.5	27025	14.72	15	0
			14	815.5	26705	14.72	15	0
				831.5	26865	14.87	15	0
				847.5	27025	14.61	15	0
		8 RB	0	815.5	26705	13.84	14	0-1
				831.5	26865	13.81	14	0-1
				847.5	27025	13.72	14	0-1
			4	815.5	26705	13.78	14	0-1
				831.5	26865	13.76	14	0-1
				847.5	27025	13.92	14	0-1
			7	815.5	26705	13.85	14	0-1
				831.5	26865	13.86	14	0-1
				847.5	27025	13.78	14	0-1
		15RB		815.5	26705	13.84	14	0-1
				831.5	26865	13.83	14	0-1
				847.5	27025	13.88	14	0-1
	16-QAM	1 RB	0	815.5	26705	13.52	14	0-1
				831.5	26865	13.56	14	0-1
				847.5	27025	13.90	14	0-1
			7	815.5	26705	13.62	14	0-1
				831.5	26865	13.72	14	0-1
				847.5	27025	13.49	14	0-1
			14	815.5	26705	12.90	14	0-1
				831.5	26865	13.48	14	0-1
				847.5	27025	13.49	14	0-1
		8 RB	0	815.5	26705	12.24	13	0-2
				831.5	26865	12.57	13	0-2
				847.5	27025	11.95	13	0-2
			4	815.5	26705	12.30	13	0-2
				831.5	26865	12.45	13	0-2
				847.5	27025	11.40	13	0-2
			7	815.5	26705	12.34	13	0-2
				831.5	26865	12.52	13	0-2
				847.5	27025	11.01	13	0-2
		15RB		815.5	26705	12.47	13	0-2
				831.5	26865	12.46	13	0-2
				847.5	27025	11.49	13	0-2

FDD Band 26 (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	814.7	26697	14.72	15	0
				831.5	26865	14.60	15	0
				848.3	27033	14.86	15	0
			2	814.7	26697	14.75	15	0
				831.5	26865	14.85	15	0
				848.3	27033	14.72	15	0
			5	814.7	26697	14.61	15	0
				831.5	26865	14.58	15	0
				848.3	27033	14.60	15	0
		3 RB	0	814.7	26697	13.71	14	0-1
				831.5	26865	13.65	14	0-1
				848.3	27033	13.87	14	0-1
			2	814.7	26697	13.71	14	0-1
				831.5	26865	13.75	14	0-1
				848.3	27033	13.59	14	0-1
			3	814.7	26697	13.70	14	0-1
				831.5	26865	13.67	14	0-1
				848.3	27033	13.88	14	0-1
		6RB		814.7	26697	13.84	14	0-1
				831.5	26865	13.84	14	0-1
				848.3	27033	13.87	14	0-1
	16-QAM	1 RB	0	814.7	26697	13.72	14	0-1
				831.5	26865	13.46	14	0-1
				848.3	27033	13.72	14	0-1
			2	814.7	26697	13.68	14	0-1
				831.5	26865	13.53	14	0-1
				848.3	27033	13.87	14	0-1
			5	814.7	26697	13.81	14	0-1
				831.5	26865	13.63	14	0-1
				848.3	27033	13.74	14	0-1
		3 RB	0	814.7	26697	12.54	13	0-2
				831.5	26865	12.39	13	0-2
				848.3	27033	12.96	13	0-2
			2	814.7	26697	12.83	13	0-2
				831.5	26865	12.46	13	0-2
				848.3	27033	12.87	13	0-2
			3	814.7	26697	12.51	13	0-2
				831.5	26865	12.58	13	0-2
				848.3	27033	12.59	13	0-2
		6RB		814.7	26697	12.04	13	0-2
				831.5	26865	12.54	13	0-2
				848.3	27033	12.61	13	0-2

TDD Band 41 (Full power)								
BW(Mhz)	Modulation	RB	RB start	Frequency (MHz)	Channel	Conducted power (dBm)	Target Power + Max. Tolerance (dBm))	MPR Target(dB)
20	QPSK	1 RB	0	2506	39750	22.62	23	0
				2549.5	40185	22.54	23	0
				2593	40620	22.67	23	0
				2636.5	41055	22.51	23	0
				2680	41490	22.56	23	0
			50	2506	39750	22.41	23	0
				2549.5	40185	22.32	23	0
				2593	40620	22.35	23	0
				2636.5	41055	22.34	23	0
				2680	41490	22.34	23	0
			99	2506	39750	22.39	23	0
				2549.5	40185	22.24	23	0
				2593	40620	22.37	23	0
				2636.5	41055	22.21	23	0
				2680	41490	22.31	23	0
		50 RB	0	2506	39750	21.56	22	0-1
				2549.5	40185	21.44	22	0-1
				2593	40620	21.55	22	0-1
				2636.5	41055	21.33	22	0-1
				2680	41490	21.53	22	0-1
			25	2506	39750	21.38	22	0-1
				2549.5	40185	21.47	22	0-1
				2593	40620	21.37	22	0-1
				2636.5	41055	21.47	22	0-1
				2680	41490	21.28	22	0-1
			50	2506	39750	21.24	22	0-1
				2549.5	40185	21.43	22	0-1
				2593	40620	21.47	22	0-1
				2636.5	41055	21.39	22	0-1
				2680	41490	21.39	22	0-1
		100RB		2506	39750	21.32	22	0-1
				2549.5	40185	21.33	22	0-1
				2593	40620	21.47	22	0-1
				2636.5	41055	21.35	22	0-1
				2680	41490	21.41	22	0-1
	16-QAM	1 RB	0	2506	39750	21.29	22	0-1
				2549.5	40185	21.21	22	0-1
				2593	40620	21.52	22	0-1
				2636.5	41055	21.32	22	0-1
				2680	41490	21.43	22	0-1
			50	2506	39750	21.42	22	0-1
				2549.5	40185	21.15	22	0-1
				2593	40620	21.64	22	0-1
				2636.5	41055	21.42	22	0-1
				2680	41490	21.68	22	0-1
			99	2506	39750	21.44	22	0-1
				2549.5	40185	21.35	22	0-1
				2593	40620	21.27	22	0-1
				2636.5	41055	21.37	22	0-1
				2680	41490	21.27	22	0-1
		50 RB	0	2506	39750	20.08	21	0-2
				2549.5	40185	20.12	21	0-2
				2593	40620	20.24	21	0-2
				2636.5	41055	20.23	21	0-2
				2680	41490	20.27	21	0-2
			25	2506	39750	20.33	21	0-2
				2549.5	40185	20.27	21	0-2
				2593	40620	20.11	21	0-2
				2636.5	41055	20.26	21	0-2
				2680	41490	20.12	21	0-2
			50	2506	39750	20.17	21	0-2
				2549.5	40185	20.11	21	0-2
				2593	40620	20.12	21	0-2
				2636.5	41055	20.14	21	0-2
				2680	41490	20.11	21	0-2
		100RB		2506	39750	20.16	21	0-2
				2549.5	40185	20.15	21	0-2
				2593	40620	20.27	21	0-2
				2636.5	41055	20.16	21	0-2
				2680	41490	20.24	21	0-2

TDD Band 41 (Full power)								
BW(Mhz)	Modulation	RB	RB start	Frequency (MHz)	Channel	Conducted power (dBm)	Target Power + Max. Tolerance (dBm))	MPR Target(dB)
15	QPSK	1 RB	0	2503.5	39725	22.56	23	0
				2548.3	40173	22.49	23	0
				2593	40620	22.55	23	0
				2637.8	41068	22.39	23	0
				2682.5	41515	22.34	23	0
			36	2503.5	39725	22.27	23	0
				2548.3	40173	22.41	23	0
				2593	40620	22.41	23	0
				2637.8	41068	22.37	23	0
				2682.5	41515	22.18	23	0
			74	2503.5	39725	22.42	23	0
				2548.3	40173	22.35	23	0
				2593	40620	22.42	23	0
				2637.8	41068	22.31	23	0
				2682.5	41515	22.35	23	0
		36 RB	0	2503.5	39725	21.17	22	0-1
				2548.3	40173	21.18	22	0-1
				2593	40620	21.23	22	0-1
				2637.8	41068	21.16	22	0-1
				2682.5	41515	21.22	22	0-1
			18	2503.5	39725	21.17	22	0-1
				2548.3	40173	21.14	22	0-1
				2593	40620	21.18	22	0-1
				2637.8	41068	21.16	22	0-1
				2682.5	41515	21.21	22	0-1
			37	2503.5	39725	21.13	22	0-1
				2548.3	40173	21.19	22	0-1
				2593	40620	21.25	22	0-1
				2637.8	41068	21.17	22	0-1
				2682.5	41515	21.11	22	0-1
		75RB		2503.5	39725	21.11	22	0-1
				2548.3	40173	21.09	22	0-1
				2593	40620	21.19	22	0-1
				2637.8	41068	21.16	22	0-1
				2682.5	41515	21.22	22	0-1
	16-QAM	1 RB	0	2503.5	39725	20.88	22	0-1
				2548.3	40173	20.97	22	0-1
				2593	40620	21.05	22	0-1
				2637.8	41068	21.24	22	0-1
				2682.5	41515	21.37	22	0-1
			36	2503.5	39725	20.74	22	0-1
				2548.3	40173	20.97	22	0-1
				2593	40620	21.11	22	0-1
				2637.8	41068	21.17	22	0-1
				2682.5	41515	21.22	22	0-1
			74	2503.5	39725	20.73	22	0-1
				2548.3	40173	20.77	22	0-1
				2593	40620	20.87	22	0-1
				2637.8	41068	20.99	22	0-1
				2682.5	41515	21.08	22	0-1
		36 RB	0	2503.5	39725	20.23	21	0-2
				2548.3	40173	20.31	21	0-2
				2593	40620	20.25	21	0-2
				2637.8	41068	20.21	21	0-2
				2682.5	41515	19.96	21	0-2
			18	2503.5	39725	19.97	21	0-2
				2548.3	40173	20.05	21	0-2
				2593	40620	20.23	21	0-2
				2637.8	41068	19.99	21	0-2
				2682.5	41515	19.96	21	0-2
			37	2503.5	39725	19.89	21	0-2
				2548.3	40173	20.17	21	0-2
				2593	40620	20.19	21	0-2
				2637.8	41068	20.14	21	0-2
				2682.5	41515	19.88	21	0-2
		75RB		2503.5	39725	20.08	21	0-2
				2548.3	40173	20.04	21	0-2
				2593	40620	20.22	21	0-2
				2637.8	41068	20.21	21	0-2
				2682.5	41515	20.33	21	0-2

TDD Band 41 (Full power)								
BW(Mhz)	Modulation	RB	RB start	Frequency (MHz)	Channel	Conducted power (dBm)	Target Power + Max. Tolerance (dBm))	MPR Target(dB)
10	QPSK	1 RB	0	2501	39700	22.40	23	0
				2547	40160	22.37	23	0
				2593	40620	22.47	23	0
				2639	41080	22.41	23	0
				2685	41540	22.55	23	0
			25	2501	39700	22.37	23	0
				2547	40160	22.32	23	0
				2593	40620	22.42	23	0
				2639	41080	22.31	23	0
				2685	41540	22.25	23	0
			49	2501	39700	22.48	23	0
				2547	40160	22.37	23	0
				2593	40620	22.39	23	0
				2639	41080	22.25	23	0
				2685	41540	22.41	23	0
		25 RB	0	2501	39700	21.23	22	0-1
				2547	40160	21.14	22	0-1
				2593	40620	21.20	22	0-1
				2639	41080	21.15	22	0-1
				2685	41540	21.30	22	0-1
			12	2501	39700	21.11	22	0-1
				2547	40160	21.19	22	0-1
				2593	40620	21.19	22	0-1
				2639	41080	21.23	22	0-1
				2685	41540	21.20	22	0-1
			25	2501	39700	20.98	22	0-1
				2547	40160	21.04	22	0-1
				2593	40620	21.14	22	0-1
				2639	41080	21.09	22	0-1
				2685	41540	21.17	22	0-1
		50RB		2501	39700	21.13	22	0-1
				2547	40160	21.04	22	0-1
				2593	40620	21.08	22	0-1
				2639	41080	21.01	22	0-1
				2685	41540	21.05	22	0-1
	16-QAM	1 RB	0	2501	39700	20.95	22	0-1
				2547	40160	21.21	22	0-1
				2593	40620	21.52	22	0-1
				2639	41080	21.16	22	0-1
				2685	41540	21.39	22	0-1
			25	2501	39700	21.31	22	0-1
				2547	40160	21.31	22	0-1
				2593	40620	21.73	22	0-1
				2639	41080	21.16	22	0-1
				2685	41540	21.47	22	0-1
			49	2501	39700	21.30	22	0-1
				2547	40160	21.15	22	0-1
				2593	40620	21.34	22	0-1
				2639	41080	21.19	22	0-1
				2685	41540	21.45	22	0-1
		25 RB	0	2501	39700	20.15	21	0-2
				2547	40160	20.05	21	0-2
				2593	40620	20.46	21	0-2
				2639	41080	20.44	21	0-2
				2685	41540	20.26	21	0-2
			12	2501	39700	20.40	21	0-2
				2547	40160	20.19	21	0-2
				2593	40620	20.46	21	0-2
				2639	41080	20.25	21	0-2
				2685	41540	20.15	21	0-2
			25	2501	39700	20.00	21	0-2
				2547	40160	20.18	21	0-2
				2593	40620	20.31	21	0-2
				2639	41080	20.16	21	0-2
				2685	41540	20.21	21	0-2
		50RB		2501	39700	20.25	21	0-2
				2547	40160	20.14	21	0-2
				2593	40620	20.25	21	0-2
				2639	41080	20.17	21	0-2
				2685	41540	20.22	21	0-2

TDD Band 41 (Full power)								
BW(Mhz)	Modulation	RB	RB start	Frequency (MHz)	Channel	Conducted power (dBm)	Target Power + Max. Tolerance (dBm))	MPR Target(dB)
5	QPSK	1 RB	0	2498.5	39675	22.06	23	0
				2547.8	40148	22.06	23	0
				2593	40620	22.39	23	0
				2640.3	41093	22.17	23	0
				2687.5	41565	22.37	23	0
			12	2498.5	39675	22.42	23	0
				2547.8	40148	22.34	23	0
				2593	40620	22.27	23	0
				2640.3	41093	22.25	23	0
				2687.5	41565	22.55	23	0
			24	2498.5	39675	22.27	23	0
				2547.8	40148	22.31	23	0
				2593	40620	22.32	23	0
				2640.3	41093	22.39	23	0
				2687.5	41565	22.29	23	0
		12 RB	0	2498.5	39675	21.00	22	0-1
				2547.8	40148	21.04	22	0-1
				2593	40620	21.13	22	0-1
				2640.3	41093	21.03	22	0-1
				2687.5	41565	21.11	22	0-1
			6	2498.5	39675	20.97	22	0-1
				2547.8	40148	20.87	22	0-1
				2593	40620	21.18	22	0-1
				2640.3	41093	21.08	22	0-1
				2687.5	41565	21.15	22	0-1
			13	2498.5	39675	21.03	22	0-1
				2547.8	40148	21.05	22	0-1
				2593	40620	21.11	22	0-1
				2640.3	41093	21.11	22	0-1
				2687.5	41565	21.07	22	0-1
		25RB		2498.5	39675	21.20	22	0-1
				2547.8	40148	21.14	22	0-1
				2593	40620	21.16	22	0-1
				2640.3	41093	21.09	22	0-1
				2687.5	41565	21.11	22	0-1
	16-QAM	1 RB	0	2498.5	39675	21.05	22	0-1
				2547.8	40148	21.07	22	0-1
				2593	40620	21.22	22	0-1
				2640.3	41093	21.14	22	0-1
				2687.5	41565	21.16	22	0-1
			12	2498.5	39675	20.93	22	0-1
				2547.8	40148	20.99	22	0-1
				2593	40620	21.06	22	0-1
				2640.3	41093	21.01	22	0-1
				2687.5	41565	21.03	22	0-1
			24	2498.5	39675	21.17	22	0-1
				2547.8	40148	20.98	22	0-1
				2593	40620	21.18	22	0-1
				2640.3	41093	20.99	22	0-1
				2687.5	41565	20.96	22	0-1
		12 RB	0	2498.5	39675	19.87	21	0-2
				2547.8	40148	19.65	21	0-2
				2593	40620	19.91	21	0-2
				2640.3	41093	19.87	21	0-2
				2687.5	41565	20.24	21	0-2
			6	2498.5	39675	20.11	21	0-2
				2547.8	40148	20.01	21	0-2
				2593	40620	19.95	21	0-2
				2640.3	41093	19.98	21	0-2
				2687.5	41565	20.26	21	0-2
			13	2498.5	39675	20.23	21	0-2
				2547.8	40148	20.21	21	0-2
				2593	40620	19.90	21	0-2
				2640.3	41093	21.00	21	0-2
				2687.5	41565	20.29	21	0-2
		25RB		2498.5	39675	20.30	21	0-2
				2547.8	40148	20.00	21	0-2
				2593	40620	20.38	21	0-2
				2640.3	41093	20.22	21	0-2
				2687.5	41565	20.23	21	0-2

TDD Band 41 (Reduce power)								
BW(Mhz)	Modulation	RB	RB start	Frequency (MHz)	Channel	Conducted power (dBm)	Target Power + Max. Tolerance (dBm))	MPR Target(dB)
20	QPSK	1 RB	0	2506	39750	12.59	14	0
				2549.5	40185	13.02	14	0
				2593	40620	13.13	14	0
				2636.5	41055	13.44	14	0
				2680	41490	13.98	14	0
			50	2506	39750	12.91	14	0
				2549.5	40185	13.11	14	0
				2593	40620	13.55	14	0
				2636.5	41055	13.66	14	0
				2680	41490	13.99	14	0
			99	2506	39750	12.42	14	0
				2549.5	40185	12.87	14	0
				2593	40620	13.28	14	0
				2636.5	41055	13.44	14	0
				2680	41490	13.65	14	0
		50 RB	0	2506	39750	11.72	13	0-1
				2549.5	40185	22.89	13	0-1
				2593	40620	12.51	13	0-1
				2636.5	41055	12.66	13	0-1
				2680	41490	12.97	13	0-1
			25	2506	39750	11.74	13	0-1
				2549.5	40185	11.95	13	0-1
				2593	40620	12.56	13	0-1
				2636.5	41055	12.77	13	0-1
				2680	41490	12.89	13	0-1
			50	2506	39750	11.48	13	0-1
				2549.5	40185	11.92	13	0-1
				2593	40620	12.52	13	0-1
				2636.5	41055	12.66	13	0-1
				2680	41490	12.86	13	0-1
		100RB		2506	39750	11.58	13	0-1
				2549.5	40185	11.89	13	0-1
				2593	40620	12.45	13	0-1
				2636.5	41055	12.65	13	0-1
				2680	41490	12.85	13	0-1
	16-QAM	1 RB	0	2506	39750	11.71	13	0-1
				2549.5	40185	12.01	13	0-1
				2593	40620	12.32	13	0-1
				2636.5	41055	12.65	13	0-1
				2680	41490	12.98	13	0-1
			50	2506	39750	12.04	13	0-1
				2549.5	40185	12.45	13	0-1
				2593	40620	12.75	13	0-1
				2636.5	41055	12.86	13	0-1
				2680	41490	12.97	13	0-1
			99	2506	39750	11.60	13	0-1
				2549.5	40185	11.82	13	0-1
				2593	40620	12.45	13	0-1
				2636.5	41055	12.65	13	0-1
				2680	41490	12.86	13	0-1
		50 RB	0	2506	39750	10.74	12	0-2
				2549.5	40185	11.21	12	0-2
				2593	40620	11.57	12	0-2
				2636.5	41055	11.73	12	0-2
				2680	41490	11.89	12	0-2
			25	2506	39750	10.71	12	0-2
				2549.5	40185	10.99	12	0-2
				2593	40620	11.58	12	0-2
				2636.5	41055	11.65	12	0-2
				2680	41490	11.71	12	0-2
			50	2506	39750	10.46	12	0-2
				2549.5	40185	11.17	12	0-2
				2593	40620	11.53	12	0-2
				2636.5	41055	11.65	12	0-2
				2680	41490	11.72	12	0-2
		100RB		2506	39750	10.59	12	0-2
				2549.5	40185	10.94	12	0-2
				2593	40620	11.46	12	0-2
				2636.5	41055	11.68	12	0-2
				2680	41490	11.86	12	0-2

TDD Band 41 (Reduce power)								
BW(Mhz)	Modulation	RB	RB start	Frequency (MHz)	Channel	Conducted power (dBm)	Target Power + Max. Tolerance (dBm))	MPR Target(dB)
15	QPSK	1 RB	0	2503.5	39725	13.05	14	0
				2548.3	40173	13.31	14	0
				2593	40620	13.64	14	0
				2637.8	41068	13.71	14	0
				2682.5	41515	13.98	14	0
			36	2503.5	39725	13.01	14	0
				2548.3	40173	13.24	14	0
				2593	40620	13.54	14	0
				2637.8	41068	13.67	14	0
				2682.5	41515	13.86	14	0
			74	2503.5	39725	12.88	14	0
				2548.3	40173	13.21	14	0
				2593	40620	13.65	14	0
				2637.8	41068	13.77	14	0
				2682.5	41515	13.92	14	0
		36 RB	0	2503.5	39725	11.89	13	0-1
				2548.3	40173	12.05	13	0-1
				2593	40620	12.58	13	0-1
				2637.8	41068	12.72	13	0-1
				2682.5	41515	12.99	13	0-1
			18	2503.5	39725	11.95	13	0-1
				2548.3	40173	12.09	13	0-1
				2593	40620	12.61	13	0-1
				2637.8	41068	12.44	13	0-1
				2682.5	41515	12.96	13	0-1
			37	2503.5	39725	11.81	13	0-1
				2548.3	40173	12.37	13	0-1
				2593	40620	12.66	13	0-1
				2637.8	41068	12.78	13	0-1
				2682.5	41515	12.96	13	0-1
		75RB		2503.5	39725	11.69	13	0-1
				2548.3	40173	11.74	13	0-1
				2593	40620	12.59	13	0-1
				2637.8	41068	12.75	13	0-1
				2682.5	41515	12.97	13	0-1
	16-QAM	1 RB	0	2503.5	39725	12.35	13	0-1
				2548.3	40173	12.45	13	0-1
				2593	40620	12.79	13	0-1
				2637.8	41068	12.82	13	0-1
				2682.5	41515	12.97	13	0-1
			36	2503.5	39725	12.08	13	0-1
				2548.3	40173	12.34	13	0-1
				2593	40620	12.71	13	0-1
				2637.8	41068	12.83	13	0-1
				2682.5	41515	12.95	13	0-1
			74	2503.5	39725	11.99	13	0-1
				2548.3	40173	12.36	13	0-1
				2593	40620	12.83	13	0-1
				2637.8	41068	12.88	13	0-1
				2682.5	41515	12.94	13	0-1
		36 RB	0	2503.5	39725	10.92	12	0-2
				2548.3	40173	11.19	12	0-2
				2593	40620	11.55	12	0-2
				2637.8	41068	11.67	12	0-2
				2682.5	41515	11.97	12	0-2
			18	2503.5	39725	10.87	12	0-2
				2548.3	40173	11.34	12	0-2
				2593	40620	11.57	12	0-2
				2637.8	41068	11.67	12	0-2
				2682.5	41515	11.96	12	0-2
			37	2503.5	39725	10.74	12	0-2
				2548.3	40173	10.97	12	0-2
				2593	40620	11.66	12	0-2
				2637.8	41068	11.78	12	0-2
				2682.5	41515	11.94	12	0-2
		75RB		2503.5	39725	10.69	12	0-2
				2548.3	40173	11.21	12	0-2
				2593	40620	11.61	12	0-2
				2637.8	41068	11.82	12	0-2
				2682.5	41515	11.96	12	0-2

TDD Band 41 (Reduce power)								
BW(Mhz)	Modulation	RB	RB start	Frequency (MHz)	Channel	Conducted power (dBm)	Target Power + Max. Tolerance (dBm))	MPR Target(dB)
10	QPSK	1 RB	0	2501	39700	12.41	14	0
				2547	40160	12.67	14	0
				2593	40620	12.94	14	0
				2639	41080	13.54	14	0
				2685	41540	13.92	14	0
			25	2501	39700	12.91	14	0
				2547	40160	13.14	14	0
				2593	40620	13.47	14	0
				2639	41080	13.76	14	0
				2685	41540	13.92	14	0
			49	2501	39700	12.53	14	0
				2547	40160	12.89	14	0
				2593	40620	13.12	14	0
				2639	41080	13.45	14	0
				2685	41540	13.57	14	0
		25 RB	0	2501	39700	11.67	13	0-1
				2547	40160	11.97	13	0-1
				2593	40620	12.40	13	0-1
				2639	41080	12.66	13	0-1
				2685	41540	12.95	13	0-1
			12	2501	39700	11.81	13	0-1
				2547	40160	12.23	13	0-1
				2593	40620	12.53	13	0-1
				2639	41080	12.72	13	0-1
				2685	41540	12.88	13	0-1
			25	2501	39700	11.62	13	0-1
				2547	40160	11.92	13	0-1
				2593	40620	12.46	13	0-1
				2639	41080	12.67	13	0-1
				2685	41540	12.86	13	0-1
		50RB		2501	39700	11.61	13	0-1
				2547	40160	11.76	13	0-1
				2593	40620	12.41	13	0-1
				2639	41080	12.81	13	0-1
				2685	41540	12.97	13	0-1
	16-QAM	1 RB	0	2501	39700	11.85	13	0-1
				2547	40160	12.01	13	0-1
				2593	40620	12.24	13	0-1
				2639	41080	12.66	13	0-1
				2685	41540	12.84	13	0-1
			25	2501	39700	12.05	13	0-1
				2547	40160	12.56	13	0-1
				2593	40620	12.77	13	0-1
				2639	41080	12.81	13	0-1
				2685	41540	12.97	13	0-1
			49	2501	39700	11.69	13	0-1
				2547	40160	12.01	13	0-1
				2593	40620	12.37	13	0-1
				2639	41080	12.65	13	0-1
				2685	41540	12.99	13	0-1
		25 RB	0	2501	39700	10.77	12	0-2
				2547	40160	11.11	12	0-2
				2593	40620	11.46	12	0-2
				2639	41080	11.78	12	0-2
				2685	41540	11.99	12	0-2
			12	2501	39700	11.04	12	0-2
				2547	40160	11.37	12	0-2
				2593	40620	11.55	12	0-2
				2639	41080	11.72	12	0-2
				2685	41540	11.89	12	0-2
			25	2501	39700	10.84	12	0-2
				2547	40160	11.11	12	0-2
				2593	40620	11.49	12	0-2
				2639	41080	11.67	12	0-2
				2685	41540	11.98	12	0-2
		50RB		2501	39700	10.82	12	0-2
				2547	40160	11.04	12	0-2
				2593	40620	11.43	12	0-2
				2639	41080	11.71	12	0-2
				2685	41540	11.94	12	0-2

TDD Band 41 (Reduce power)								
BW(Mhz)	Modulation	RB	RB start	Frequency (MHz)	Channel	Conducted power (dBm)	Target Power + Max. Tolerance (dBm))	MPR Target(dB)
5	QPSK	1 RB	0	2498.5	39675	13.37	14	0
				2547.8	40148	13.67	14	0
				2593	40620	13.79	14	0
				2640.3	41093	13.82	14	0
				2687.5	41565	13.91	14	0
			12	2498.5	39675	12.81	14	0
				2547.8	40148	13.05	14	0
				2593	40620	13.47	14	0
				2640.3	41093	13.64	14	0
				2687.5	41565	13.94	14	0
			24	2498.5	39675	13.13	14	0
				2547.8	40148	13.43	14	0
				2593	40620	13.79	14	0
				2640.3	41093	13.87	14	0
				2687.5	41565	13.95	14	0
		12 RB	0	2498.5	39675	12.01	13	0-1
				2547.8	40148	12.21	13	0-1
				2593	40620	12.55	13	0-1
				2640.3	41093	12.76	13	0-1
				2687.5	41565	12.95	13	0-1
			6	2498.5	39675	11.82	13	0-1
				2547.8	40148	12.21	13	0-1
				2593	40620	12.51	13	0-1
				2640.3	41093	12.76	13	0-1
				2687.5	41565	12.92	13	0-1
			13	2498.5	39675	11.91	13	0-1
				2547.8	40148	12.56	13	0-1
				2593	40620	12.95	13	0-1
				2640.3	41093	12.88	13	0-1
				2687.5	41565	12.92	13	0-1
		25RB		2498.5	39675	11.89	13	0-1
				2547.8	40148	12.09	13	0-1
				2593	40620	12.58	13	0-1
				2640.3	41093	12.65	13	0-1
				2687.5	41565	12.99	13	0-1
	16-QAM	1 RB	0	2498.5	39675	12.51	13	0-1
				2547.8	40148	12.78	13	0-1
				2593	40620	12.85	13	0-1
				2640.3	41093	12.91	13	0-1
				2687.5	41565	12.98	13	0-1
			12	2498.5	39675	11.99	13	0-1
				2547.8	40148	12.05	13	0-1
				2593	40620	12.69	13	0-1
				2640.3	41093	12.13	13	0-1
				2687.5	41565	12.98	13	0-1
			24	2498.5	39675	12.33	13	0-1
				2547.8	40148	12.21	13	0-1
				2593	40620	12.75	13	0-1
				2640.3	41093	12.72	13	0-1
				2687.5	41565	12.99	13	0-1
		12 RB	0	2498.5	39675	11.05	12	0-2
				2547.8	40148	11.03	12	0-2
				2593	40620	11.53	12	0-2
				2640.3	41093	11.31	12	0-2
				2687.5	41565	11.92	12	0-2
			6	2498.5	39675	10.87	12	0-2
				2547.8	40148	10.78	12	0-2
				2593	40620	11.62	12	0-2
				2640.3	41093	11.01	12	0-2
				2687.5	41565	11.87	12	0-2
			13	2498.5	39675	10.97	12	0-2
				2547.8	40148	11.21	12	0-2
				2593	40620	11.71	12	0-2
				2640.3	41093	11.23	12	0-2
				2687.5	41565	11.95	12	0-2
		25RB		2498.5	39675	10.96	12	0-2
				2547.8	40148	11.31	12	0-2
				2593	40620	11.69	12	0-2
				2640.3	41093	11.78	12	0-2
				2687.5	41565	11.95	12	0-2

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

802.11 b		Max. Rated Avg. Power + Max. Tolerance (dBm)	Average Power Output (dBm)
CH	Frequency (MHz)		Data Rate (Mbps)
			1
1	2412	15.5	15.47
6	2437	15.5	14.96
11	2462	15.5	14.82

802.11 g		Max. Rated Avg. Power + Max. Tolerance (dBm)	Average Power Output (dBm)
CH	Frequency (MHz)		Data Rate (Mbps)
			6
1	2412	15.5	15.39
6	2437	15.5	14.96
11	2462	13	12.84

802.11 n(20M)		Max. Rated Avg. Power + Max. Tolerance (dBm)	Average Power Output (dBm)
CH	Frequency (MHz)		Data Rate (Mbps)
			6.5
1	2412	15.5	15.48
6	2437	15.5	14.93
11	2462	13	12.36

802.11 n(40M)		Max. Rated Avg. Power + Max. Tolerance (dBm)	Average Power Output (dBm)
CH	Frequency (MHz)		Data Rate (Mbps)
			13.5
3	2422	15.5	15.28
6	2437	15.5	15.44
9	2452	13	12.81

#. Bluetooth maximum power table:

Frequency (MHz)	Avg. (dBm)
2402	7.5
2442	
2480	

1.4 Test Environment

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

1.5 Operation Description

1. WWAN (LTE):

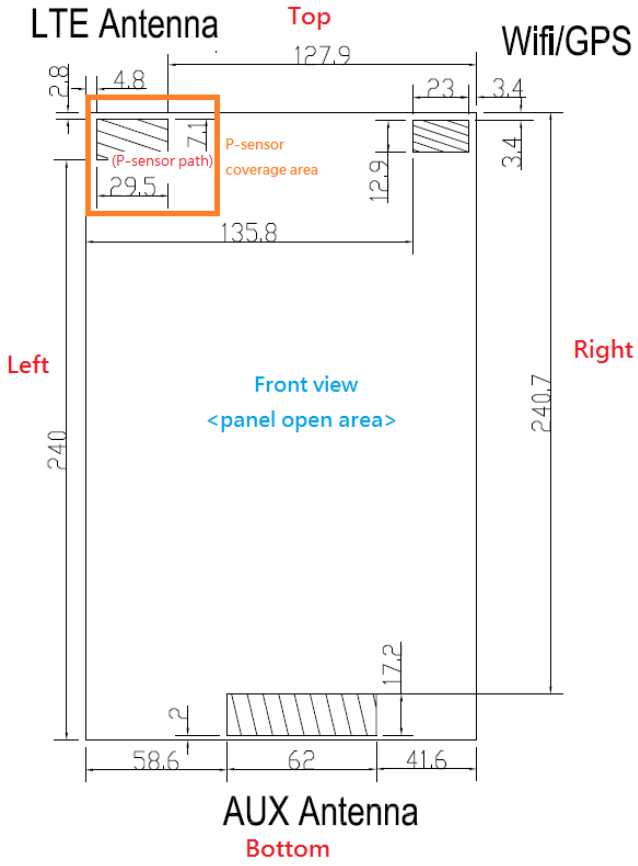
The EUT is controlled by using Radio Communication Tester(Anritsu MT8820C), and the communication between the EUT and the tester is established by air link. The EUT was tested in the following configuration.

Configuration: Back/top/left side_0mm. (SAR measurement for the other sides can be excluded based on KDB447498 D01)

2. WLAN (802.11b/g/n):

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

Configurations: Back/top/right side_0mm. (SAR measurement for the other sides can be excluded based on KDB447498 D01)



Antenna position plot(Front view)

Note:

1. LTE modes test according to **FCC KDB 941225 D05v02r03.**

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.

2. TDD LTE was tested at highest duty factor using UL-DL configuration 0 with 6 UL subframes and 2 S subframes using extended cyclic prefix only and special subframe configuration 6. SAR tests were performed at maximum output power and worst-case transmission duty factor in extended cyclic prefix. Per 3GPP 36.211 Section 4, the duty factor for special subframe configuration 6 using extended cyclic prefix is 0.633. FCC's guidance on how device is configured in TD environment is sought, and detailed with agreeable condition of setting on UE's configuration of transmission mode, and SAR test system in KDB inquiry (tracking number: 806089).

802.11b DSSS SAR Test Requirements:

3. 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.
4. 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:

5. SAR is not required for 802.11g/n when 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:

6. 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.
7. 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.
8. For WLAN 802.11g/n, the largest channel bandwidth configuration(WLAN 802.11n(40)) is selected to be the initial test configuration among the multiple configurations in a frequency band with the same specified maximum output power.
9. BT and WLAN use the same antenna path and Bluetooth can't transmit simultaneously with WLAN.

10. 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($\frac{\text{f(MHz)}}{160}$)](mW),

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

Mode	Max. tune-up power(dBm)	Max. tune-up power(mW)	Top side			Right side			Left side		
			Ant. to surface (mm)	Exclusion threshold (mW)	Require SAR testing?	Ant. to surface (mm)	Exclusion threshold (mW)	Require SAR testing?	Ant. to surface (mm)	Exclusion threshold (mW)	Require SAR testing?
LTE Band 2	23	199.526	less than 5	55.140	YES	127.9	784.514	NO	less than 5	55.140	YES
LTE Band 4	23	199.526	less than 5	52.854	YES	127.9	784.285	NO	less than 5	52.854	YES
LTE Band 5	23	199.526	less than 5	36.754	YES	127.9	444.226	NO	less than 5	36.754	YES
LTE Band 12	23	199.526	less than 5	33.750	YES	127.9	374.854	NO	less than 5	33.750	YES
LTE Band 25	23	199.526	less than 5	55.212	YES	127.9	784.521	NO	less than 5	55.212	YES
LTE Band 26	23	199.526	less than 5	36.754	YES	127.9	444.226	NO	less than 5	36.754	YES
LTE Band 41	23	199.526	less than 5	65.419	YES	127.9	785.542	NO	less than 5	65.419	YES
WLAN 2.45GHz	15.5	35.481	less than 5	11.135	YES	less than 5	11.135	YES	135.8	859.113	NO
BT	7.5	5.623	less than 5	1.771	NO	less than 5	1.771	NO	135.8	858.177	NO

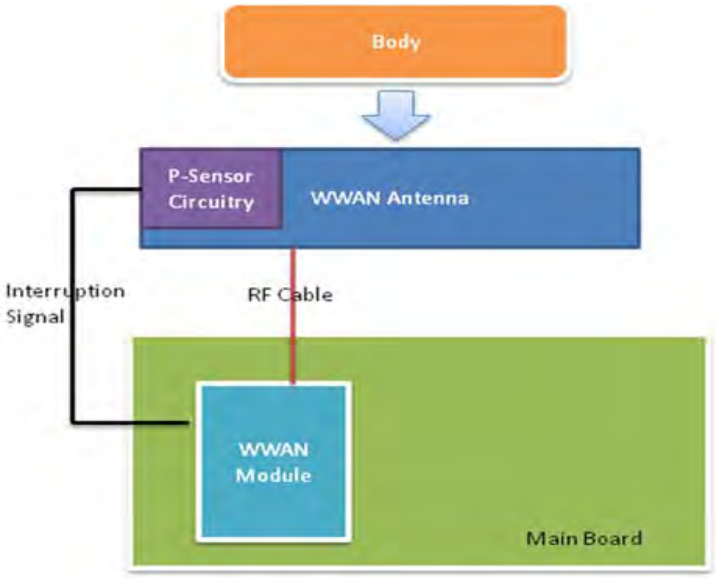
Mode	Max. tune-up power(dBm)	Max. tune-up power(mW)	Bottom side			Back side		
			Ant. to surface (mm)	Exclusion threshold (mW)	Require SAR testing?	Ant. to surface (mm)	Exclusion threshold (mW)	Require SAR testing?
LTE Band 2	23	199.526	240	Over 200mm	NO	less than 5	55.140	YES
LTE Band 4	23	199.526	240	Over 200mm	NO	less than 5	52.854	YES
LTE Band 5	23	199.526	240	Over 200mm	NO	less than 5	36.754	YES
LTE Band 12	23	199.526	240	Over 200mm	NO	less than 5	33.750	YES
LTE Band 25	23	199.526	240	Over 200mm	NO	less than 5	55.212	YES
LTE Band 26	23	199.526	240	Over 200mm	NO	less than 5	36.754	YES
LTE Band 41	23	199.526	240	Over 200mm	NO	less than 5	65.419	YES
WLAN 2.45GHz	15.5	35.481	240	Over 200mm	NO	less than 5	11.135	YES
BT	7.5	5.623	240	Over 200mm	NO	less than 5	1.771	NO

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

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

1.6 Proximity sensor operation description

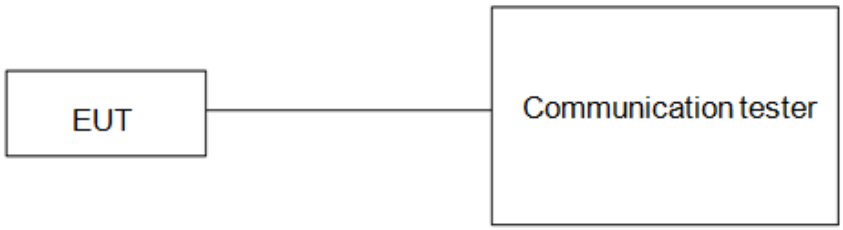
The P-sensor being used to reduce output power is capacitive in which when the object such as human body, metal or plastic is being approached, the sensing capacitance would be increased with the antenna pad. Once the capacitance is accumulated, and reached over the threshold as set in MCU of the microchip, 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 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 11mm.

10) For top side, the trigger distance of proximity sensor is 7mm, 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 7-1=6mm, is the sensor triggering distance for tablet tilt coverage. The smallest separation distance minus 1 mm(6-1=5mm) 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.

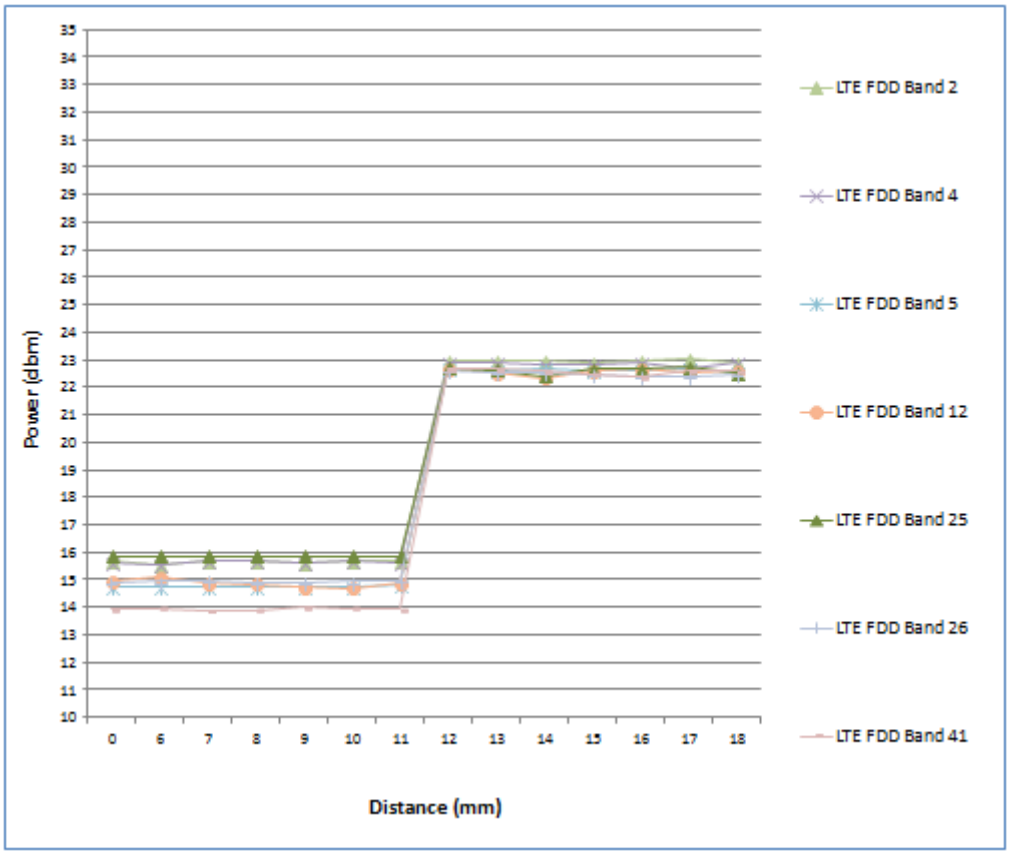
4) The process is then repeated from the other direction, at the opposite end of maximum antenna and sensor offset, by rotating the tablet 180 degrees.

1.6.5 Results

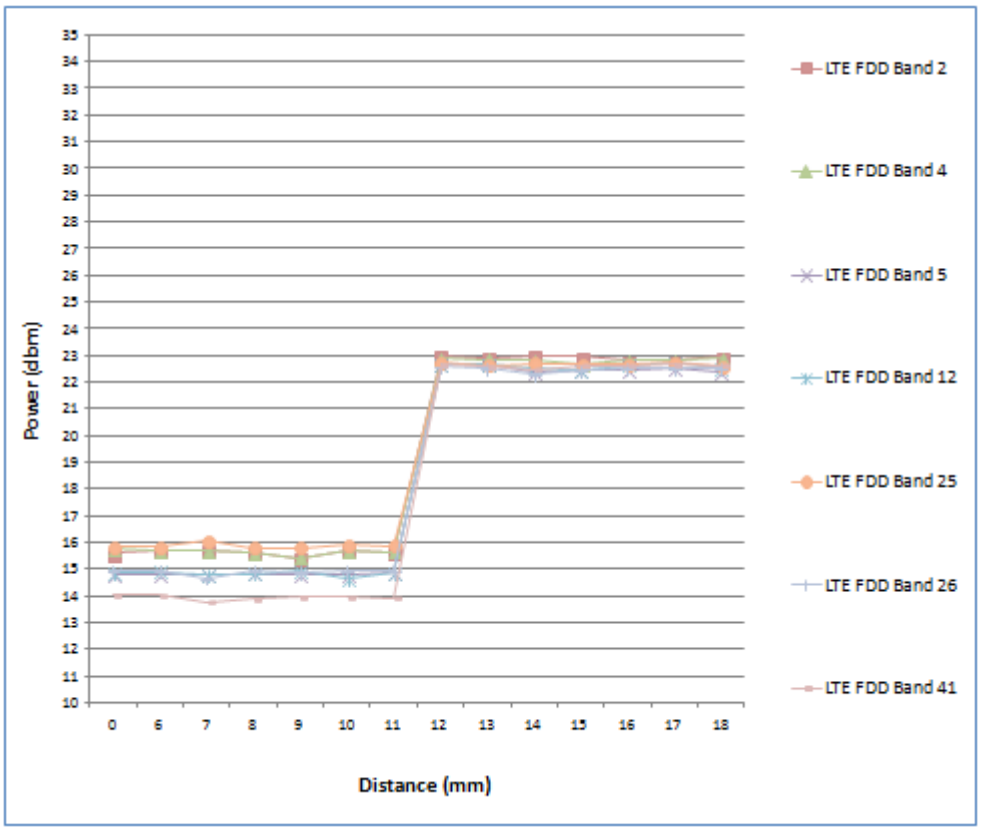
The measured output power within ± 5 mm of the triggering points, or until the tablet is touching the phantom, for movements to and from the phantom is tabulated in the following.

Back side

Moving device toward the phantom



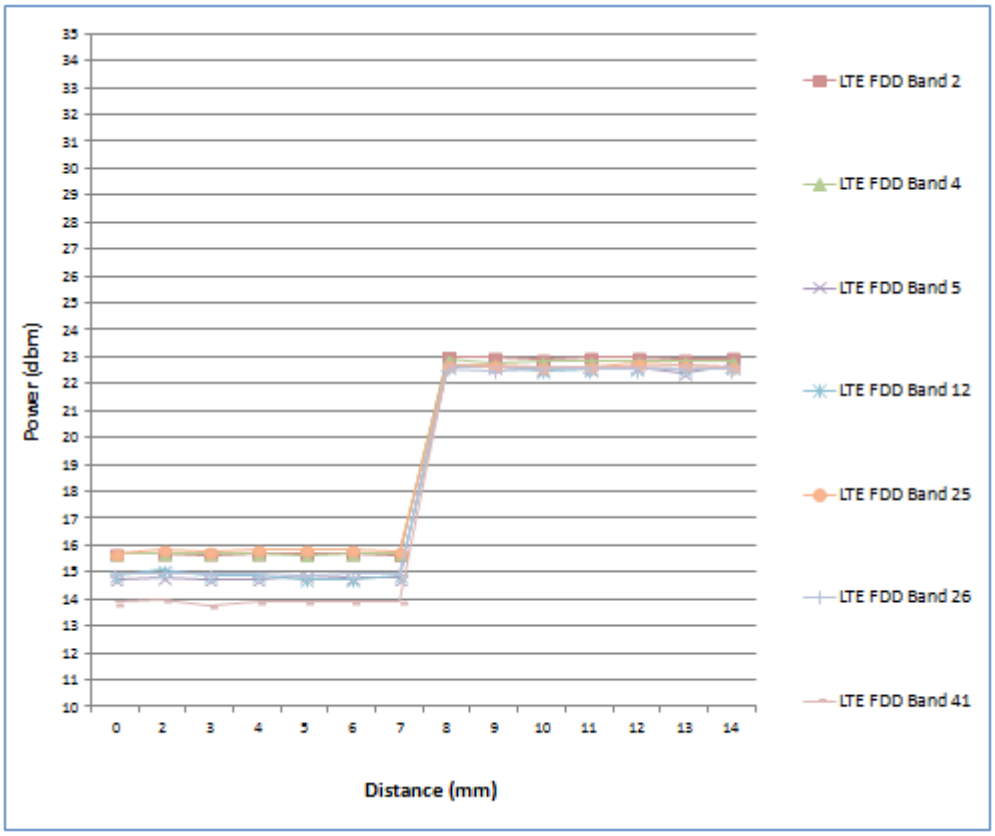
Moving device away from the phantom



For back side, the worst trigger distance of proximity sensor is 11mm, thus we test back side SAR in 10mm without power reduction and 0mm with power reduction.

Top side

Moving device toward the phantom



Moving device away from the phantom

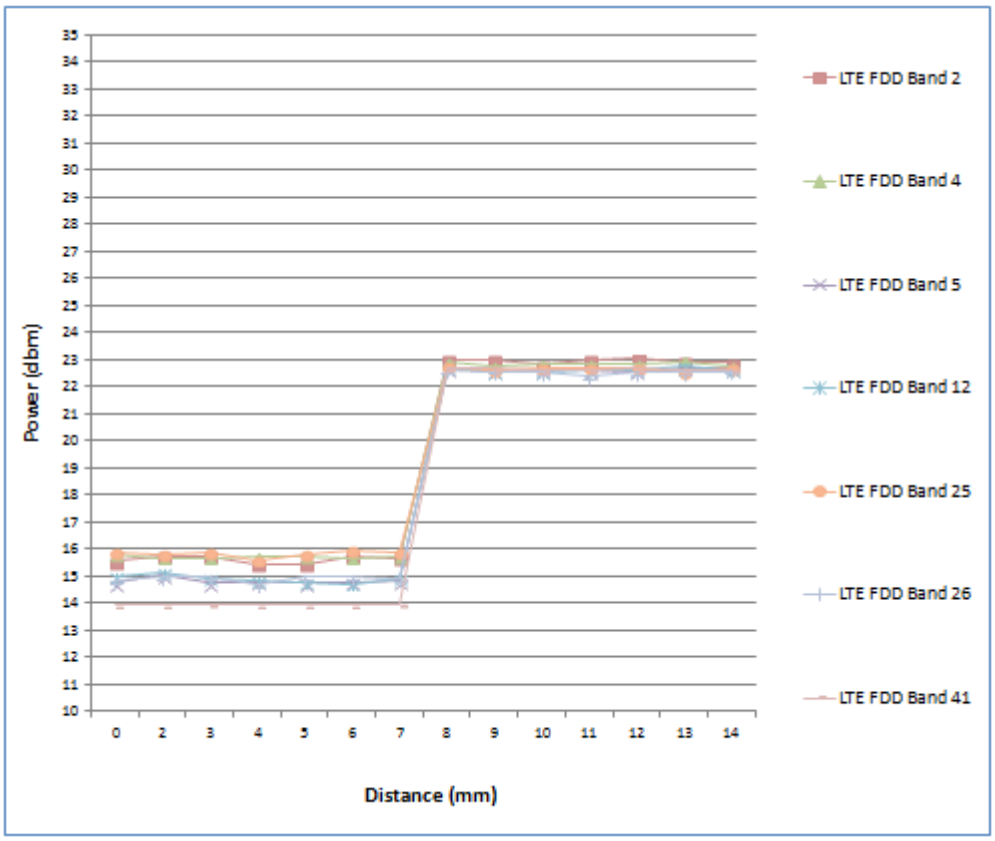


Table 1.6.5 Tilt angle test results for top side

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
7mm	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 7mm, so 7-1=6mm, is the sensor triggering distance for tablet tilt coverage. The smallest separation distance minus 1 mm(6-1=5mm) should be used in the SAR measurements for top 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 B2/4/5/12/25/26/41	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	16
LTE B4	All	16
LTE B5	All	15
LTE B12	All	15
LTE B25	All	16
LTE B26	All	15
LTE B41	All	14

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:

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

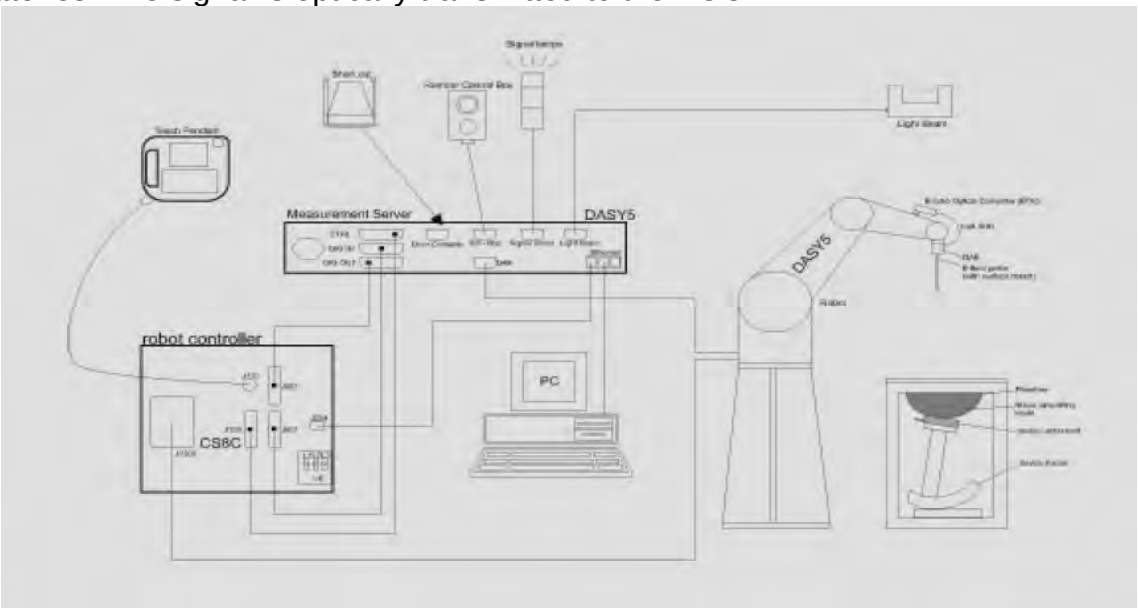


Fig. a The block diagram of SAR system

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

1.8 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 750/835/ 1750/1900/2450/2600 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 750/835/1750/1900/2450/2600 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.

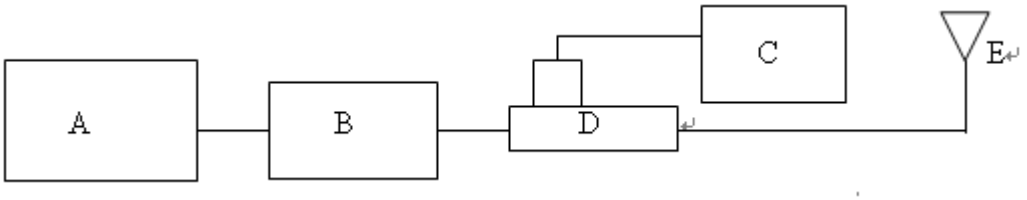


Fig. b The block diagram of system verification

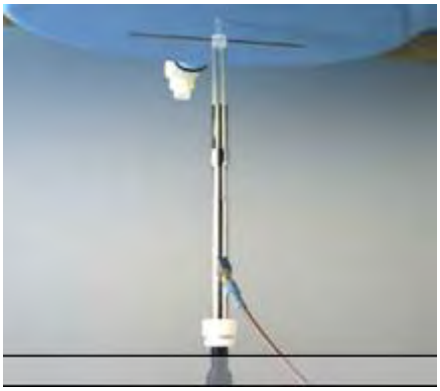
A. Signal generator

B. Amplifier

C. Power meter

D. Dual directional coupling

E. Reference dipole antenna



Photograph of the dipole Antenna

Validation Kit	S/N	Frequency (MHz)		1W Target SAR-1g (mW/g)	Measured SAR-1g (mW/g)	Measured SAR-1g normalized to 1W	Deviation (%)	Measured Date
D750V2	1015	750	Body	8.52	2.16	8.64	1.41%	Oct. 01, 2015
D835V2	4d063	835	Body	9.28	2.41	9.64	3.88%	Oct. 02, 2015
D1750V2	1008	1750	Body	37.4	9.42	37.68	0.75%	Sep. 29, 2015
D1900V2	5d027	1900	Body	39.3	9.85	39.4	0.25%	Oct. 05, 2015
D2450V2	727	2450	Body	51	13.1	52.4	2.75%	Sep. 26, 2015
D2600V2	1005	2600	Body	55.1	14.1	56.4	2.36%	Sep. 25, 2015

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. 01, 2015	711	55.683	0.960	54.274	0.979	2.53%	-2.02%
		750	55.531	0.963	54.104	0.984	2.57%	-2.15%
	Oct. 02, 2015	822.5	55.249	0.969	53.757	0.990	2.70%	-2.19%
		829	55.223	0.970	53.688	0.992	2.78%	-2.29%
		831.5	55.214	0.970	53.629	0.993	2.87%	-2.41%
		835	55.200	0.970	53.561	0.994	2.97%	-2.49%
		836.5	55.195	0.972	53.462	0.997	3.14%	-2.62%
		841.5	55.180	0.978	53.398	1.004	3.23%	-2.65%
		844	55.172	0.981	53.357	1.009	3.29%	-2.83%
	Sep. 29, 2015	1720	53.511	1.469	51.906	1.506	3.00%	-2.49%
		1732.5	53.478	1.477	51.884	1.514	2.98%	-2.52%
		1745	53.445	1.485	51.852	1.523	2.98%	-2.54%
		1750	53.432	1.488	51.845	1.526	2.97%	-2.55%
	Oct. 05, 2015	1860	53.300	1.520	51.717	1.551	2.97%	-2.04%
		1880	53.300	1.520	51.701	1.554	3.00%	-2.24%
		1882.5	53.300	1.520	51.690	1.556	3.02%	-2.37%
		1900	53.300	1.520	51.688	1.558	3.02%	-2.50%
		1905	53.300	1.520	51.680	1.559	3.04%	-2.57%
	Sep. 26, 2015	2412	52.751	1.914	51.368	1.953	2.62%	-2.04%
		2437	52.717	1.932	51.277	1.966	2.73%	-1.75%
		2450	52.700	1.950	51.262	1.984	2.73%	-1.75%
		2462	52.685	1.967	51.147	1.996	2.92%	-1.48%
	Sep. 25, 2015	2506	52.629	2.029	50.841	2.066	3.40%	-1.82%
		2593	52.518	2.153	50.685	2.174	3.49%	-0.98%
		2600	52.509	2.163	50.682	2.184	3.48%	-0.96%
		2680	52.407	2.276	50.594	2.299	3.46%	-1.02%

Table 2. Dielectric Parameters of Tissue Simulant Fluid

The composition of the body tissue simulating liquid:

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

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.

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

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

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

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

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

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

1.12.2 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 m W/g	8.00 m W/g
Spatial Average SAR (Whole Body)	0.08 m W/g	0.40 m W/g
Spatial Peak SAR (Hands/Feet/Ankle/Wrist)	4.00 m W/g	20.00 m W/g

Table 4. RF exposure limits

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

2. Summary of Results

LTE FDD Band II (Full power)

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	Top side	5mm	18900	1880	23	22.77	5.44%	0.988	1.042	132
					Left side	0mm	18900	1880	23	22.77	5.44%	0.872	0.919	-
				50	Back side	10mm	18700	1860	23	23.00	0.00%	0.737	0.737	-
					Top side	5mm	18700	1860	23	23.00	0.00%	0.930	0.930	-
					Top side	5mm	19100	1900	23	22.72	6.66%	0.840	0.896	-
					Left side	0mm	18700	1860	23	23.00	0.00%	0.880	0.880	-
					Left side	0mm	19100	1900	23	22.72	6.66%	0.742	0.791	-
			50 RB	0	Back side	10mm	19100	1900	22	21.85	3.51%	0.551	0.570	-
					Top side	5mm	19100	1900	22	21.85	3.51%	0.744	0.770	-
					Left side	0mm	19100	1900	22	21.85	3.51%	0.671	0.695	-
			100 RB		Back side	10mm	18900	1880	22	21.85	3.51%	0.548	0.567	-
					Top side	5mm	18900	1880	22	21.85	3.51%	0.741	0.767	-
					Left side	0mm	18900	1880	22	21.85	3.51%	0.669	0.693	-

LTE FDD Band II (Reduced power)

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	0mm	18700	1860	16	15.59	9.90%	1.110	1.220	133
					Back side*	0mm	18700	1860	16	15.59	9.90%	1.070	1.176	-
				50	Back side	0mm	18900	1880	16	15.65	8.39%	1.100	1.192	-
					Back side	0mm	19100	1900	16	15.72	6.66%	1.090	1.163	-
					Top side	0mm	19100	1900	16	15.72	6.66%	0.539	0.575	-
			50 RB	0	Back side	0mm	18900	1880	15	14.71	6.91%	0.905	0.967	-
				25	Back side	0mm	18700	1860	15	14.77	5.44%	0.912	0.962	-
					Back side	0mm	19100	1900	15	14.64	8.64%	0.889	0.966	-
					Top side	0mm	18700	1860	15	14.77	5.44%	0.435	0.459	-
			100 RB		Back side	0mm	18700	1860	15	14.67	7.89%	0.896	0.967	-
					Back side	0mm	18900	1880	15	14.54	11.17%	0.863	0.959	-
					Back side	0mm	19100	1900	15	14.49	12.46%	0.849	0.955	-
					Top side	0mm	18700	1860	15	14.67	7.89%	0.425	0.459	-

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

LTE FDD Band IV (Full power)

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	0	Back side	10mm	20050	1720	23	22.88	2.80%	0.578	0.594	-
					Top side	5mm	20050	1720	23	22.88	2.80%	0.740	0.761	134
					Left side	0mm	20050	1720	23	22.88	2.80%	0.614	0.631	-
			50 RB	0	Back side	10mm	20300	1745	22	21.93	1.62%	0.451	0.458	-
					Top side	5mm	20300	1745	22	21.93	1.62%	0.581	0.590	-
					Left side	0mm	20300	1745	22	21.93	1.62%	0.486	0.494	-
			100 RB		Back side	10mm	20300	1745	22	21.75	5.93%	0.423	0.448	-
					Top side	5mm	20300	1745	22	21.75	5.93%	0.572	0.606	-
					Left side	0mm	20300	1745	22	21.75	5.93%	0.475	0.503	-

LTE FDD Band IV (Reduced power)

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	0	Back side	0mm	20050	1720	16	15.60	9.65%	0.959	1.052	-
				50	Back side	0mm	20175	1732.5	16	15.68	7.65%	0.952	1.025	-
					Back side	0mm	20300	1745	16	15.73	6.41%	0.961	1.023	135
					Back side*	0mm	20300	1745	16	15.73	6.41%	0.916	0.975	-
					Top side	0mm	20300	1745	16	15.73	6.41%	0.507	0.540	-
			50 RB	0	Back side	0mm	20300	1745	15	14.54	11.17%	0.711	0.790	-
					Top side	0mm	20300	1745	15	14.54	11.17%	0.371	0.412	-
			100 RB		Back side	0mm	20300	1745	15	14.46	13.24%	0.699	0.792	-
					Top side	0mm	20300	1745	15	14.46	13.24%	0.359	0.407	-

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

LTE FDD Band V (Full power)

Mode	Bandwidth (MHz)	Modulation	RB Size	RB start	Position	Distance (mm)	CH	Freq. (MHz)	Max. Rated Avg. Power + Max. Tolerance (dBm)	Measured Avg. Power (dBm)	Scaling	Averaged SAR over 1g (W/kg)		Plot page
												Measured	Reported	
LTE Band 5	10MHz	QPSK	1 RB	0	Back side	10mm	20450	829	23	22.58	10.15%	0.809	0.891	-
				25	Back side	10mm	20600	844	23	22.63	8.89%	0.901	0.981	136
					Back side*	10mm	20600	844	23	22.63	8.89%	0.884	0.963	-
				49	Back side	10mm	20525	836.5	23	22.68	7.65%	0.822	0.885	-
					Top side	5mm	20525	836.5	23	22.68	7.65%	0.264	0.284	-
					Left side	0mm	20525	836.5	23	22.68	7.65%	0.514	0.553	-
			25 RB	0	Back side	10mm	20600	844	22	21.67	7.89%	0.714	0.770	-
					Top side	5mm	20600	844	22	21.67	7.89%	0.215	0.232	-
					Left side	0mm	20600	844	22	21.67	7.89%	0.407	0.439	-
			50 RB		Back side	10mm	20450	829	22	21.65	8.39%	0.711	0.771	-
					Top side	5mm	20450	829	22	21.65	8.39%	0.211	0.229	-
					Left side	0mm	20450	829	22	21.65	8.39%	0.404	0.438	-

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

LTE FDD Band V (Reduced power)

Mode	Bandwidth (MHz)	Modulation	RB Size	RB start	Position	Distance (mm)	CH	Freq. (MHz)	Max. Rated Avg. Power + Max. Tolerance (dBm)	Measured Avg. Power (dBm)	Scaling	Averaged SAR over 1g (W/kg)		Plot page
												Measured	Reported	
LTE Band 5	10MHz	QPSK	1 RB	49	Back side	0mm	20450	829	15	14.85	3.51%	0.649	0.672	137
					Top side	0mm	20450	829	15	14.85	3.51%	0.069	0.071	-
			25 RB	0	Back side	0mm	20525	836.5	15	14.83	3.99%	0.635	0.660	-
					Top side	0mm	20525	836.5	15	14.83	3.99%	0.063	0.066	-
			50 RB		Back side	0mm	20600	844	15	14.79	4.95%	0.628	0.659	-
					Top side	0mm	20600	844	15	14.79	4.95%	0.062	0.065	-

LTE FDD Band XII (Full power)

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	49	Back side	10mm	23130	711	23	22.64	8.64%	0.393	0.427	138
					Top side	5mm	23130	711	23	22.64	8.64%	0.179	0.194	-
					Left side	0mm	23130	711	23	22.64	8.64%	0.200	0.217	-
			25 RB	0	Back side	10mm	23130	711	22	21.78	5.20%	0.302	0.318	-
					Top side	5mm	23130	711	22	21.78	5.20%	0.141	0.148	-
					Left side	0mm	23130	711	22	21.78	5.20%	0.158	0.166	-
			50 RB		Back side	10mm	23130	711	22	21.67	7.89%	0.293	0.316	-
					Top side	5mm	23130	711	22	21.67	7.89%	0.139	0.150	-
					Left side	0mm	23130	711	22	21.67	7.89%	0.157	0.169	-

LTE FDD Band XII (Reduced power)

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	0mm	23130	711	15	14.92	1.86%	0.475	0.484	139
					Top side	0mm	23130	711	15	14.92	1.86%	0.077	0.078	-
			25 RB	12	Back side	0mm	23130	711	14	13.83	3.99%	0.362	0.376	-
					Top side	0mm	23130	711	14	13.83	3.99%	0.055	0.057	-
			50 RB		Back side	0mm	23130	711	14	13.75	5.93%	0.351	0.372	-
					Top side	0mm	23130	711	14	13.75	5.93%	0.052	0.055	-

LTE FDD Band XXV (Full power)

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 25	20MHz	QPSK	1 RB	0	Back side	10mm	26365	1882.5	23	22.69	7.40%	0.793	0.852	-
					Top side	5mm	26365	1882.5	23	22.69	7.40%	0.740	0.795	-
					Left side	0mm	26365	1882.5	23	22.69	7.40%	0.742	0.797	-
				99	Back side	10mm	26140	1860	23	22.44	13.76%	0.731	0.832	-
					Back side	10mm	26590	1905	23	22.58	10.15%	0.842	0.927	140
			50 RB	0	Back side	10mm	26590	1905	22	21.69	7.40%	0.677	0.727	-
					Top side	5mm	26590	1905	22	21.69	7.40%	0.592	0.636	-
					Left side	0mm	26590	1905	22	21.69	7.40%	0.589	0.633	-
			100 RB		Back side	10mm	26365	1882.5	22	21.66	8.14%	0.671	0.726	-
					Top side	5mm	26365	1882.5	22	21.66	8.14%	0.585	0.633	-
					Left side	0mm	26365	1882.5	22	21.66	8.14%	0.584	0.632	-

LTE FDD Band XXV (Reduced power)

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 25	20MHz	QPSK	1 RB	0	Back side	0mm	26365	1882.5	16	15.88	2.80%	1.180	1.213	-
					Back side*	0mm	26365	1882.5	16	15.88	2.80%	1.190	1.223	141
					Top side	0mm	26365	1882.5	16	15.88	2.80%	0.515	0.529	-
				50	Back side	0mm	26140	1860	16	15.77	5.44%	1.090	1.149	-
					Back side	0mm	26590	1905	16	15.67	7.89%	1.160	1.252	-
			50 RB	0	Back side	0mm	26140	1860	15	14.56	10.66%	0.844	0.934	-
					Back side	0mm	26365	1882.5	15	14.58	10.15%	0.841	0.926	-
					Back side	0mm	26590	1905	15	14.69	7.40%	0.861	0.925	-
					Top side	0mm	26590	1905	15	14.69	7.40%	0.385	0.413	-
			100 RB		Back side	0mm	26140	1860	15	14.48	12.72%	0.819	0.923	-
					Back side	0mm	16365	1882.5	15	14.54	11.17%	0.824	0.916	-
					Back side	0mm	26590	1905	15	14.61	9.40%	0.842	0.921	-
					Top side	0mm	26590	1905	15	14.61	9.40%	0.371	0.406	-

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

LTE FDD Band XXVI (Full power)

Mode	Bandwidth (MHz)	Modulation	RB Size	RB start	Position	Distance (mm)	CH	Freq. (MHz)	Max. Rated Avg. Power + Max. Tolerance (dBm)	Measured Avg. Power (dBm)	Scaling	Averaged SAR over 1g (W/kg)		Plot page
												Measured	Reported	
LTE Band 26	15MHz	QPSK	1 RB	0	Back side	10mm	26825	822.5	23	22.25	18.85%	0.795	0.945	-
					Back side	10mm	26865	831.5	23	22.48	12.72%	0.834	0.940	142
					Back side*	10mm	26865	831.5	23	22.48	12.72%	0.831	0.937	-
					Back side	10mm	26965	841.5	23	22.57	10.41%	0.831	0.917	-
					Top side	5mm	26965	841.5	23	22.57	10.41%	0.260	0.287	-
					Left side	0mm	26965	841.5	23	22.57	10.41%	0.502	0.554	-
			36 RB	0	Back side	10mm	26865	831.5	22	21.50	12.20%	0.652	0.732	-
					Top side	5mm	26865	831.5	22	21.50	12.20%	0.196	0.220	-
					Left side	0mm	26865	831.5	22	21.50	12.20%	0.381	0.427	-
			75 RB		Back side	10mm	26825	822.5	22	21.37	15.61%	0.641	0.741	-
					Top side	5mm	26825	822.5	22	21.37	15.61%	0.189	0.219	-
					Left side	0mm	26825	822.5	22	21.37	15.61%	0.372	0.430	-

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

LTE FDD Band XXVI (Reduced power)

Mode	Bandwidth (MHz)	Modulation	RB Size	RB start	Position	Distance (mm)	CH	Freq. (MHz)	Max. Rated Avg. Power + Max. Tolerance (dBm)	Measured Avg. Power (dBm)	Scaling	Averaged SAR over 1g (W/kg)		Plot page
												Measured	Reported	
LTE Band 26	15MHz	QPSK	1 RB	0	Back side	0mm	26865	831.5	15	14.98	0.46%	0.533	0.535	143
					Top side	0mm	26865	831.5	15	14.98	0.46%	0.065	0.065	-
			36 RB	0	Back side	0mm	26825	822.5	14	13.96	0.93%	0.415	0.419	-
					Top side	0mm	26825	822.5	14	13.96	0.93%	0.048	0.048	-
			75 RB		Back side	0mm	26825	822.5	14	13.89	2.57%	0.403	0.413	-
					Top side	0mm	26825	822.5	14	13.89	2.57%	0.044	0.045	-

LTE FDD Band XLI (Full power)

Mode	Bandwidth (MHz)	Modulation	RB Size	RB start	Position	Distance (mm)	CH	Freq. (MHz)	Max. Rated Avg. Power + Max. Tolerance (dBm)	Measured Avg. Power (dBm)	Scaling	Averaged SAR over 1g (W/kg)		Plot page
												Measured	Reported	
LTE Band 41	20MHz	QPSK	1 RB	0	Back side	10mm	40620	2593	23	22.67	7.89%	0.300	0.324	144
					Top side	5mm	40620	2593	23	22.67	7.89%	0.180	0.194	-
					Left side	0mm	40620	2593	23	22.67	7.89%	0.237	0.256	-
			50 RB	0	Back side	10mm	39750	2506	22	21.56	10.66%	0.221	0.245	-
					Top side	5mm	39750	2506	22	21.56	10.66%	0.127	0.141	-
					Left side	0mm	39750	2506	22	21.56	10.66%	0.179	0.198	-
			100 RB		Back side	10mm	40620	2593	22	21.47	12.98%	0.209	0.236	-
					Top side	5mm	40620	2593	22	21.47	12.98%	0.119	0.134	-
					Left side	0mm	40620	2593	22	21.47	12.98%	0.171	0.193	-

LTE FDD Band XLI (Reduced power)

Mode	Bandwidth (MHz)	Modulation	RB Size	RB start	Position	Distance (mm)	CH	Freq. (MHz)	Max. Rated Avg. Power + Max. Tolerance (dBm)	Measured Avg. Power (dBm)	Scaling	Averaged SAR over 1g (W/kg)		Plot page
												Measured	Reported	
LTE Band 41	20MHz	QPSK	1 RB	50	Back side	0mm	41490	2680	14	13.99	0.23%	0.450	0.451	145
					Top side	0mm	41490	2680	14	13.99	0.23%	0.065	0.065	-
			50 RB	0	Back side	0mm	41490	2680	13	12.97	0.69%	0.344	0.346	-
					Top side	0mm	41490	2680	13	12.97	0.69%	0.048	0.048	-
			100 RB		Back side	0mm	41490	2680	13	12.85	3.51%	0.325	0.336	-
					Top side	0mm	41490	2680	13	12.85	3.51%	0.041	0.042	-

WLAN802.11

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	1	2412	15.5	15.47	0.69%	0.903	0.909	-
	Back side	0	6	2437	15.5	14.96	13.24%	1.120	1.268	146
	Back side	0	11	2462	15.5	14.82	16.95%	0.861	1.007	-
	Back side*	0	6	2437	15.5	14.96	13.24%	1.100	1.246	-
	Top side	0	1	2412	15.5	15.47	0.69%	0.475	0.478	-
	Right side	0	1	2412	15.5	15.47	0.69%	0.257	0.259	-
WLAN802.11 n(40M)	Back side	0	6	2437	15.5	15.44	1.39%	0.701	0.711	147
	Top side	0	6	2437	15.5	15.44	1.39%	0.402	0.408	-
	Right side	0	6	2437	15.5	15.44	1.39%	0.198	0.201	-

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

3. Simultaneous Transmission Analysis

Simultaneous Transmission Scenarios:

Simultaneous Transmit Configurations	Body
LTE B2/4/5/12/25/26/41 + 2.4GHz WLAN	Yes
LTE B2/4/5/12/25/26/41 + BT	Yes

Note:
1. WWAN and WLAN may transmit simultaneously.
2. Bluetooth and WLAN share the same antenna path, and BT can't transmit with WLAN simultaneously.

3.1 Estimated SAR calculation

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

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

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

Mode / Band	frequency (GHz)	Maximum power(dBm)	Test position	test separation distance(mm)	Estimated SAR(W/kg)
BT / 2.4G	2.48	7.5	back/top/right	5	0.236
BT / 2.4G	2.48	7.5	left	> 50	0.4

Mode / Band	frequency (GHz)	Maximum power(dBm)	Test position	test separation distance(mm)	Estimated SAR(W/kg)
WLAN	2.462	15.5	left	> 50	0.4

Mode / Band	Maximum power(dBm)	Test position	test separation distance(mm)	Estimated SAR(W/kg)
WWAN	23	right	> 50	0.4

3.2 SPLSR evaluation and analysis

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

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

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

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

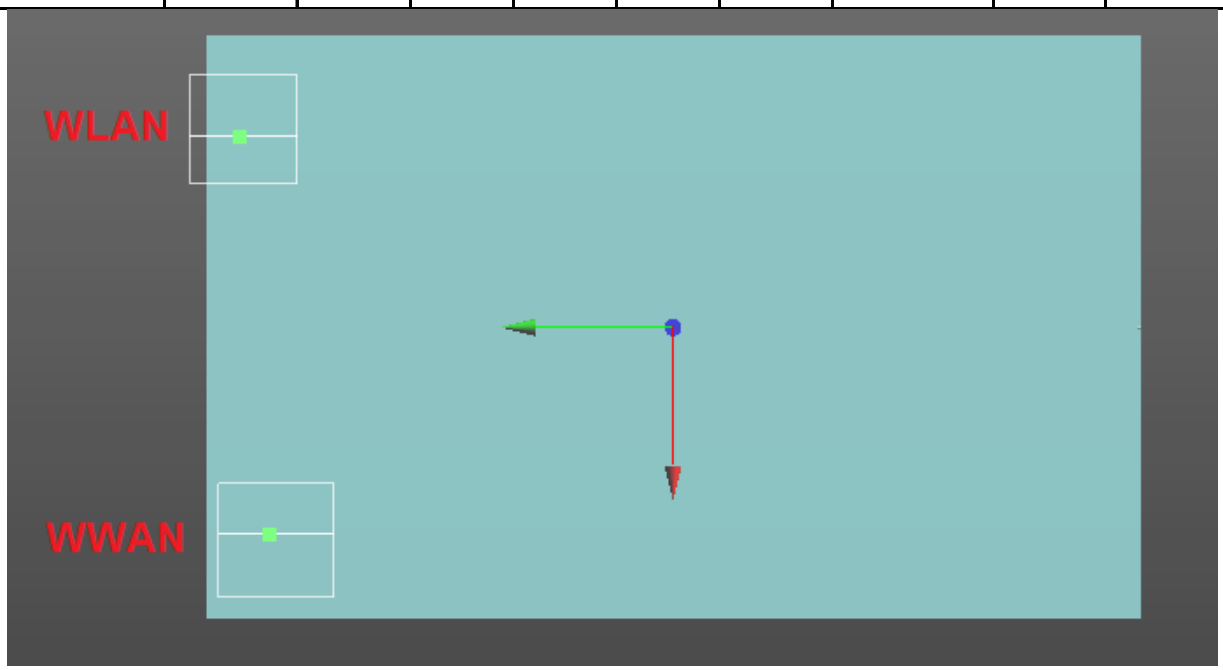
When standalone test exclusion applies, SAR is estimated; the peak location is assumed to be at the feed-point or geometric center of the antenna.

LTE FDD Band II + 2.4GHz WLAN

No.	Conditions	Position	Distance (mm)	Max. WWAN	Max. WLAN	SAR Sum	SPLSR
1	LTE B2	Back side	0	1.22	1.268	**2.488**	Analyzed as below
		Left side	0	0.919	0.4	1.319	ΣSAR<1.6, Not required
		Top side	0	0.575	0.478	1.053	ΣSAR<1.6, Not required
		Right side	0	0.4	0.259	0.659	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 2	Back side	1.22	5.74	11.21	-0.20	2.488	111	0.035	SPLSR<0.04, Not required
WLAN		1.268	-5.32	12.06	-0.29				

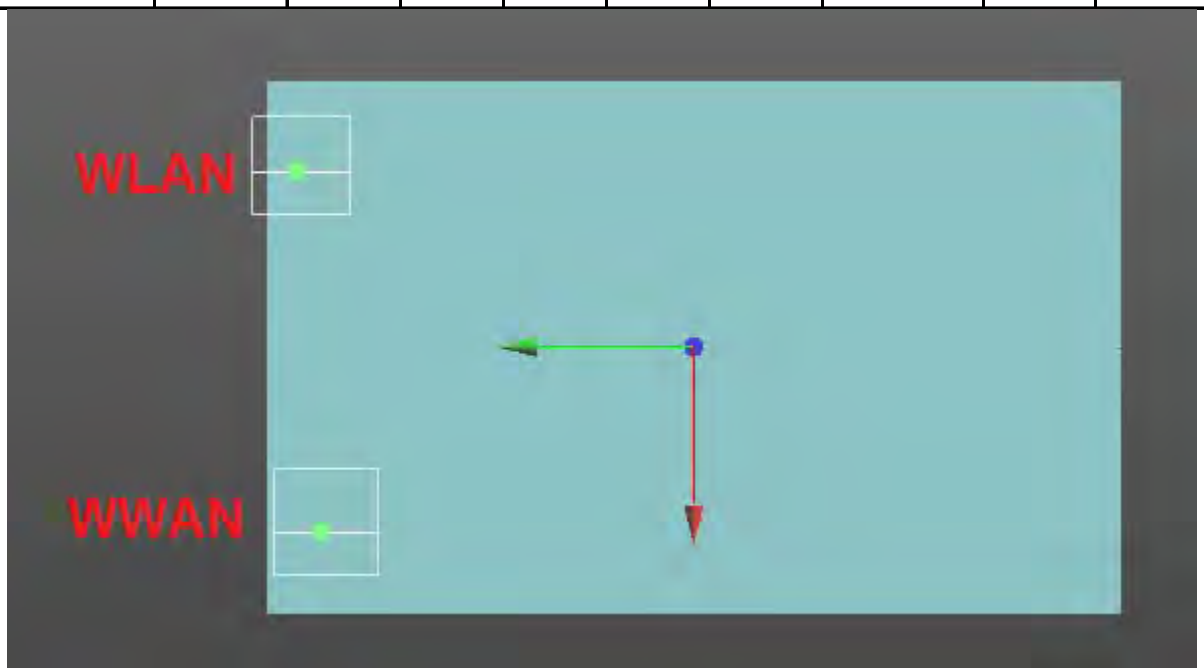


LTE FDD Band IV + 2.4GHz WLAN

No.	Conditions	Position	Distance (mm)	Max. WWAN	Max. WLAN	SAR Sum	SPLSR
2	LTE B4	Back side	0	1.052	1.268	**2.32**	Analyzed as below
		Left side	0	0.631	0.4	1.031	ΣSAR<1.6, Not required
		Top side	0	0.54	0.478	1.018	ΣSAR<1.6, Not required
		Right side	0	0.4	0.259	0.659	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 4	Back side	1.052	5.62	11.36	-0.20	2.32	109.6	0.032	SPLSR<0.04, Not required
WLAN		1.268	-5.32	12.06	-0.29				

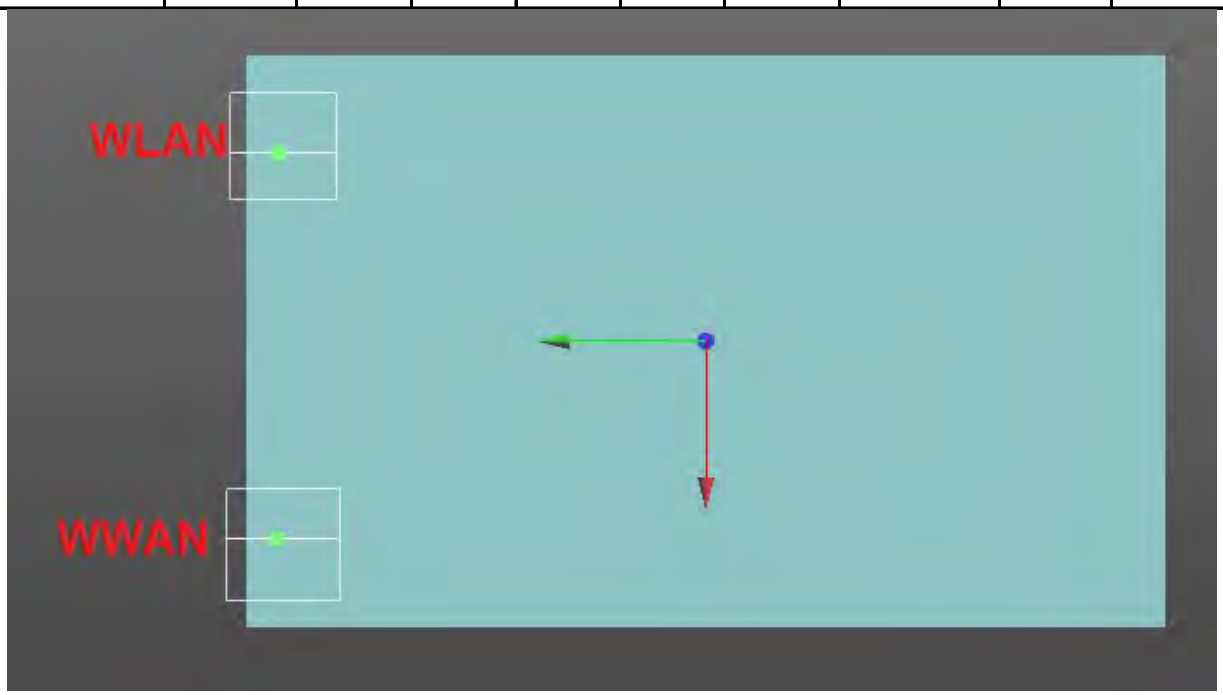


LTE FDD Band V + 2.4GHz WLAN

No.	Conditions	Position	Distance (mm)	Max. WWAN	Max. WLAN	SAR Sum	SPLSR
3	LTE B5	Back side	0	0.672	1.268	**1.94**	Analyzed as below
		Left side	0	0.553	0.4	0.953	ΣSAR<1.6, Not required
		Top side	0	0.071	0.478	0.549	ΣSAR<1.6, Not required
		Right side	0	0.4	0.259	0.659	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 5	Back side	0.672	5.59	12.11	-0.26	1.94	109.1	0.025	SPLSR<0.04, Not required
WLAN		1.268	-5.32	12.06	-0.29				

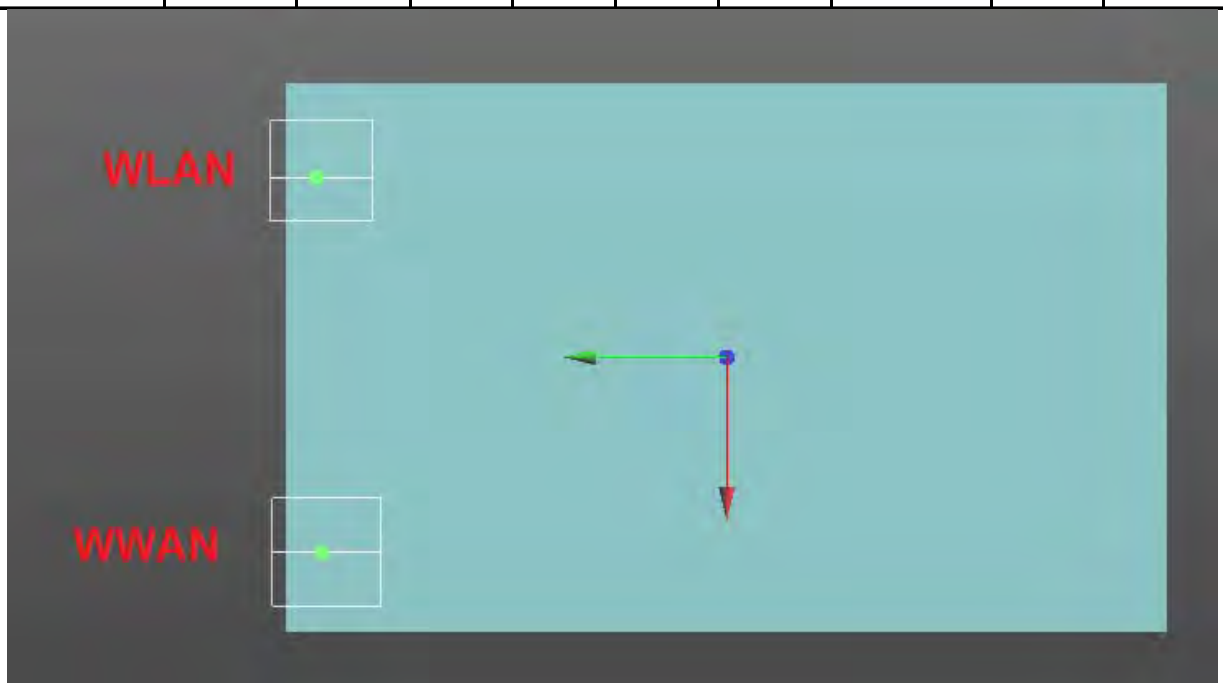


LTE FDD Band XII + 2.4GHz WLAN

No.	Conditions	Position	Distance (mm)	Max. WWAN	Max. WLAN	SAR Sum	SPLSR
4	LTE B12	Back side	0	0.484	1.268	**1.752**	Analyzed as below
		Left side	0	0.217	0.4	0.617	ΣSAR<1.6, Not required
		Top side	0	0.078	0.478	0.556	ΣSAR<1.6, Not required
		Right side	0	0.4	0.259	0.659	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 12	Back side	0.484	5.75	11.96	-0.29	1.752	110.7	0.021	SPLSR<0.04, Not required
WLAN		1.268	-5.32	12.06	-0.29				

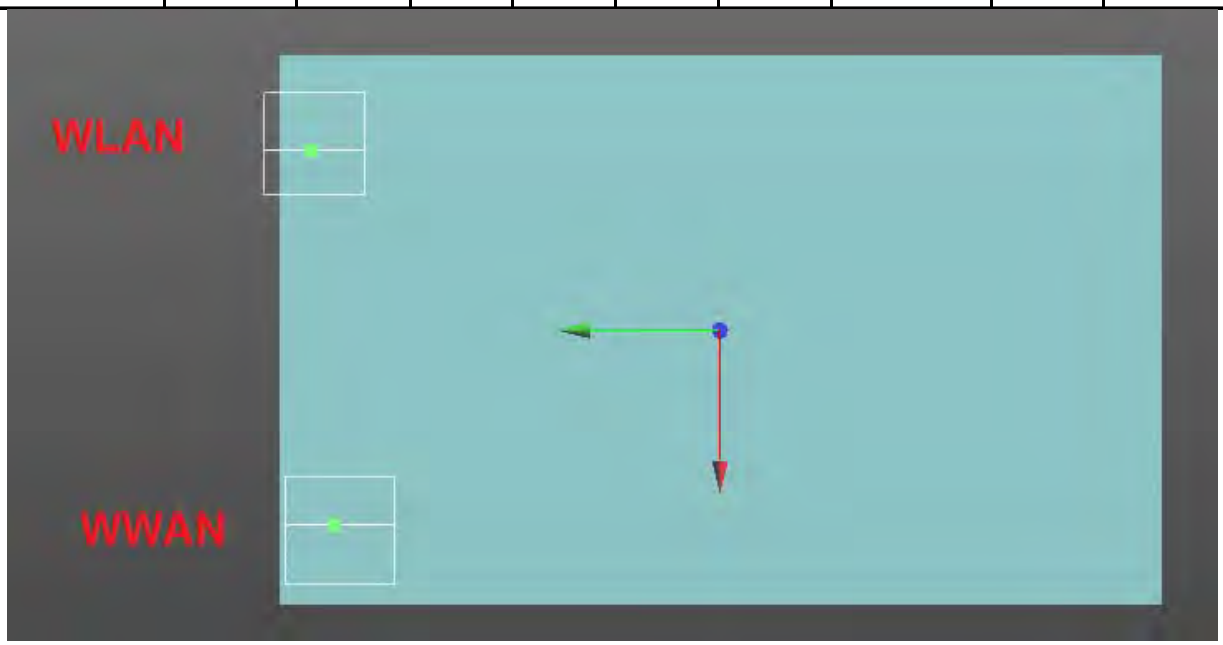


LTE FDD Band XXV + 2.4GHz WLAN

No.	Conditions	Position	Distance (mm)	Max. WWAN	Max. WLAN	SAR Sum	SPLSR
5	LTE B25	Back side	0	1.252	1.268	**2.52**	Analyzed as below
		Left side	0	0.797	0.4	1.197	ΣSAR<1.6, Not required
		Top side	0	0.529	0.478	1.007	ΣSAR<1.6, Not required
		Right side	0	0.4	0.259	0.659	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 25	Back side	1.252	5.74	11.36	-0.20	2.52	110.8	0.036	SPLSR<0.04, Not required
WLAN		1.268	-5.32	12.06	-0.29				

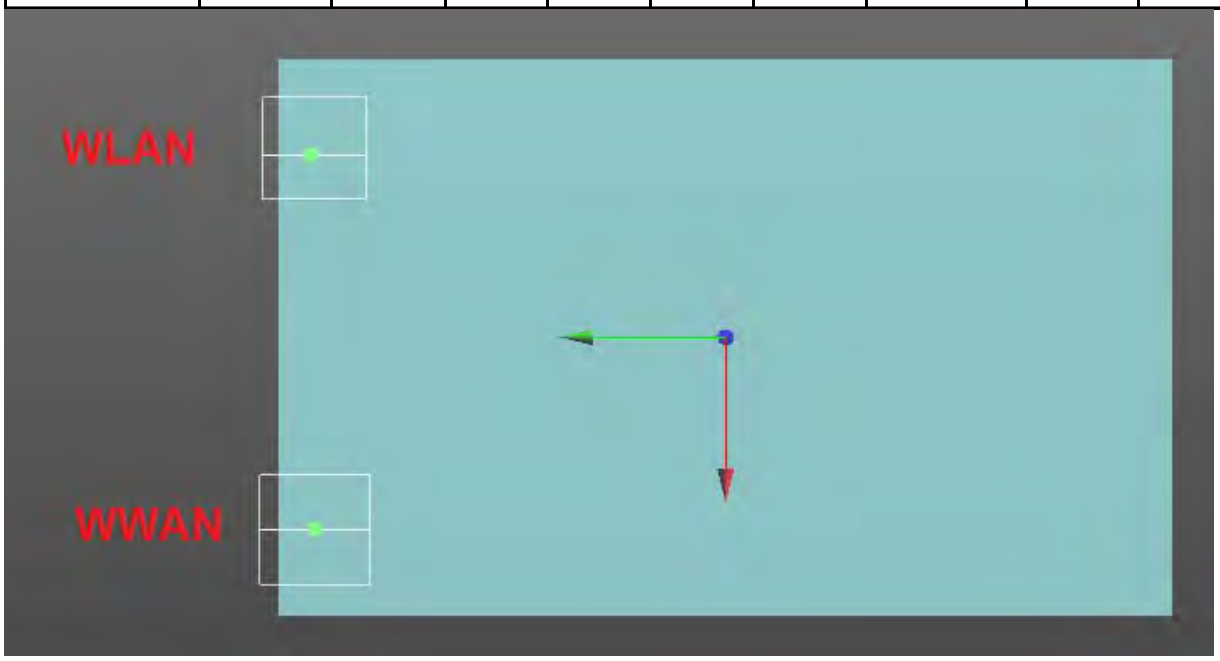


LTE FDD Band XXVI + 2.4GHz WLAN

No.	Conditions	Position	Distance (mm)	Max. WWAN	Max. WLAN	SAR Sum	SPLSR
6	LTE B26	Back side	0	0.535	1.268	**1.803**	Analyzed as below
		Left side	0	0.554	0.4	0.954	ΣSAR<1.6, Not required
		Top side	0	0.065	0.478	0.543	ΣSAR<1.6, Not required
		Right side	0	0.4	0.259	0.659	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 26	Back side	0.535	5.60	11.95	-0.31	1.803	109.2	0.022	SPLSR<0.04, Not required
WLAN		1.268	-5.32	12.06	-0.29				

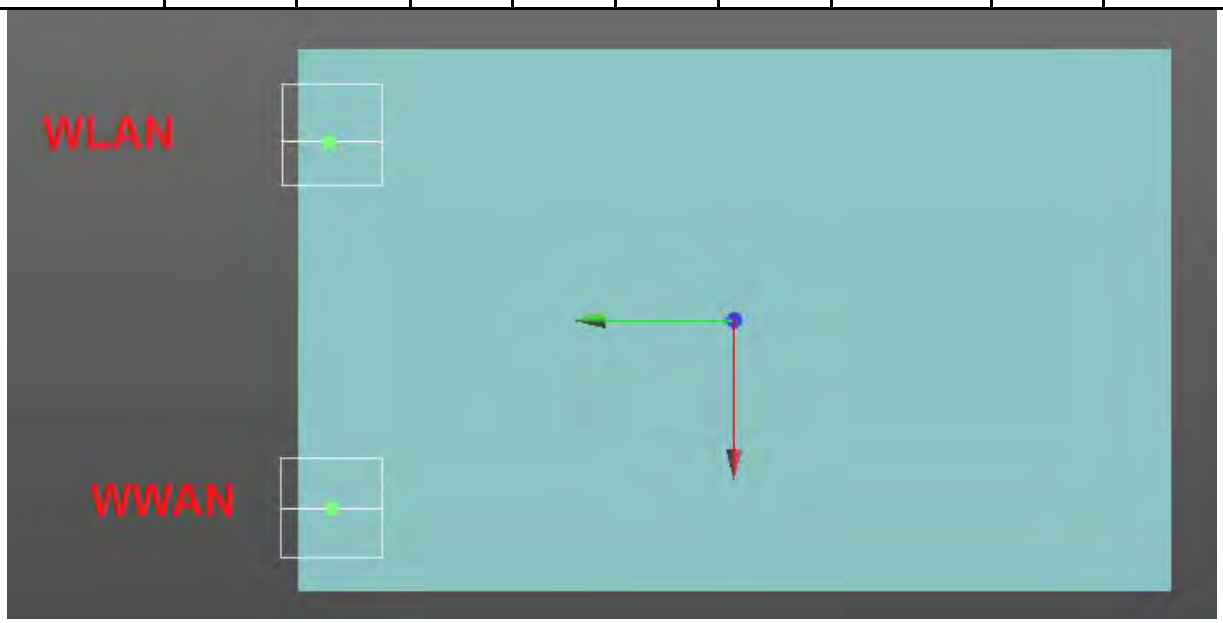


LTE TDD Band XLI + 2.4GHz WLAN

No.	Conditions	Position	Distance (mm)	Max. WWAN	Max. WLAN	SAR Sum	SPLSR
7	LTE B41	Back side	0	0.451	1.268	**1.719**	Analyzed as below
		Left side	0	0.256	0.4	0.656	ΣSAR<1.6, Not required
		Top side	0	0.065	0.478	0.543	ΣSAR<1.6, Not required
		Right side	0	0.4	0.259	0.659	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 41	Back side	0.451	5.60	11.98	-0.13	1.719	109.2	0.021	SPLSR<0.04, Not required
WLAN		1.268	-5.32	12.06	-0.29				



LTE FDD Band II + BT

No.	Conditions	Position	Distance (mm)	Max. WWAN	BT	SAR Sum	SPLSR
8	LTE B2	Back side	0	1.22	0.236	1.456	ΣSAR<1.6, Not required
		Left side	0	0.919	0.4	1.319	ΣSAR<1.6, Not required
		Top side	0	0.575	0.236	0.811	ΣSAR<1.6, Not required
		Right side	0	0.4	0.236	0.636	ΣSAR<1.6, Not required

LTE FDD Band IV + BT

No.	Conditions	Position	Distance (mm)	Max. WWAN	BT	SAR Sum	SPLSR
9	LTE B4	Back side	0	1.052	0.236	1.288	ΣSAR<1.6, Not required
		Left side	0	0.631	0.4	1.031	ΣSAR<1.6, Not required
		Top side	0	0.54	0.236	0.776	ΣSAR<1.6, Not required
		Right side	0	0.4	0.236	0.636	ΣSAR<1.6, Not required

LTE FDD Band V + BT

No.	Conditions	Position	Distance (mm)	Max. WWAN	BT	SAR Sum	SPLSR
10	LTE B5	Back side	0	0.672	0.236	0.908	ΣSAR<1.6, Not required
		Left side	0	0.553	0.4	0.953	ΣSAR<1.6, Not required
		Top side	0	0.071	0.236	0.307	ΣSAR<1.6, Not required
		Right side	0	0.4	0.236	0.636	ΣSAR<1.6, Not required

LTE FDD Band XII + BT

No.	Conditions	Position	Distance (mm)	Max. WWAN	BT	SAR Sum	SPLSR
11	LTE B12	Back side	0	0.484	0.236	0.72	ΣSAR<1.6, Not required
		Left side	0	0.217	0.4	0.617	ΣSAR<1.6, Not required
		Top side	0	0.078	0.236	0.314	ΣSAR<1.6, Not required
		Right side	0	0.4	0.236	0.636	ΣSAR<1.6, Not required

LTE FDD Band XXV + BT

No.	Conditions	Position	Distance (mm)	Max. WWAN	BT	SAR Sum	SPLSR
12	LTE B25	Back side	0	1.252	0.236	1.488	ΣSAR<1.6, Not required
		Left side	0	0.797	0.4	1.197	ΣSAR<1.6, Not required
		Top side	0	0.529	0.236	0.765	ΣSAR<1.6, Not required
		Right side	0	0.4	0.236	0.636	ΣSAR<1.6, Not required

LTE FDD Band XXVI + BT

No.	Conditions	Position	Distance (mm)	Max. WWAN	BT	SAR Sum	SPLSR
13	LTE B26	Back side	0	0.535	0.236	0.771	ΣSAR<1.6, Not required
		Left side	0	0.554	0.4	0.954	ΣSAR<1.6, Not required
		Top side	0	0.065	0.236	0.301	ΣSAR<1.6, Not required
		Right side	0	0.4	0.236	0.636	ΣSAR<1.6, Not required

LTE FDD Band XLI + BT

No.	Conditions	Position	Distance (mm)	Max. WWAN	BT	SAR Sum	SPLSR
14	LTE B41	Back side	0	0.451	0.236	0.687	ΣSAR<1.6, Not required
		Left side	0	0.256	0.4	0.656	ΣSAR<1.6, Not required
		Top side	0	0.065	0.236	0.301	ΣSAR<1.6, Not required
		Right side	0	0.4	0.236	0.636	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	Aug.27,2015	Aug.26,2016
Schmid & Partner Engineering AG	System Validation Dipole	D750V2	1015	Aug.24,2015	Aug.23,2016
		D835V2	4d063	Aug.24,2015	Aug.23,2016
		D1750V2	1008	Aug.20,2015	Aug.19,2016
		D1900V2	5d027	Apr.29,2015	Apr.28,2016
		D2450V2	727	Apr.22,2015	Apr.21,2016
		D2600V2	1005	Jan.27,2015	Jan.26,2016
Schmid & Partner Engineering AG	Data acquisition Electronics	DAE4	917	Dec.14,2014	Dec.13,2015
Schmid & Partner Engineering AG	Software	DASY 52 V52.8.8	N/A	Calibration not required	Calibration not required
Schmid & Partner Engineering AG	Phantom	SAM	N/A	Calibration not required	Calibration not required
HP	Network Analyzer	8753D	3410A05547	May.21,2015	May.20,2016

Manufacturer	Device	Type	Serial number	Date of last calibration	Date of next calibration
Agilent	Dielectric Probe Kit	85070E	MY44300677	Calibration not required	Calibration not required
Agilent	Dual-directional coupler	772D	MY52180142	Feb.11,2015	Feb.10,2016
		778D	MY52180302	Feb.05,2015	Feb.04,2016
Agilent	RF Signal Generator	N5181A	MY50145142	Feb.06.2015	Feb.05.2016
Agilent	Power Meter	E4417A	MY51410006	Oct.25,2013	Oct.24,2015
Agilent	Power Sensor	E9301H	MY51470001	Dec.11,2014	Dec.10,2015
TECPEL	Digital thermometer	DTM-303A	TP130078	Mar.30,2015	Mar.29,2016
Anritsu	Radio Communication Test	MT8820C	6201061049	Feb.02,2015	Feb.01,2016

5. Measurements

Date: 2015/10/5

LTE Band 2 (20MHz)_Body-worn_Top side_CH 18900_QPSK_1-0_5mm

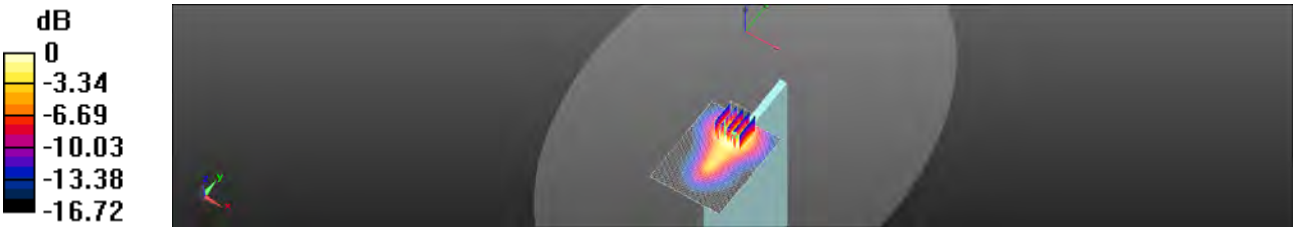
Communication System: LTE; Frequency: 1880 MHz
Medium parameters used: f = 1880 MHz; σ = 1.554 S/m; ε_r = 51.701; ρ = 1000 kg/m^3
Phantom section: Flat Section

DASY5 Configuration:

- Probe: EX3DV4 - SN3923; ConvF(8.11, 8.11, 8.11); Calibrated: 2015/8/27;
- Sensor-Surface: 2mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn917; Calibrated: 2014/12/29
- Phantom: Body
- DASY52 52.8.8(1222); SEMCAD X 14.6.10(7331)

Configuration/BODY/Area Scan (61x81x1): Interpolated grid: dx=15 mm, dy=15 mm
Maximum value of SAR (interpolated) = 1.32 W/kg

Configuration/BODY/Zoom Scan (5x5x7)/Cube 0: Measurement grid: dx=8mm, dy=8mm, dz=5mm
Reference Value = 22.38 V/m; Power Drift = 0.16 dB
Peak SAR (extrapolated) = 1.54 W/kg
SAR(1 g) = 0.988 W/kg; SAR(10 g) = 0.580 W/kg
Maximum value of SAR (measured) = 1.28 W/kg



0 dB = 1.28 W/kg = 1.07 dBW/kg

Date: 2015/10/5

LTE Band 2 (20MHz)_Body-worn_Back side_CH 18700_QPSK_1-0_0mm

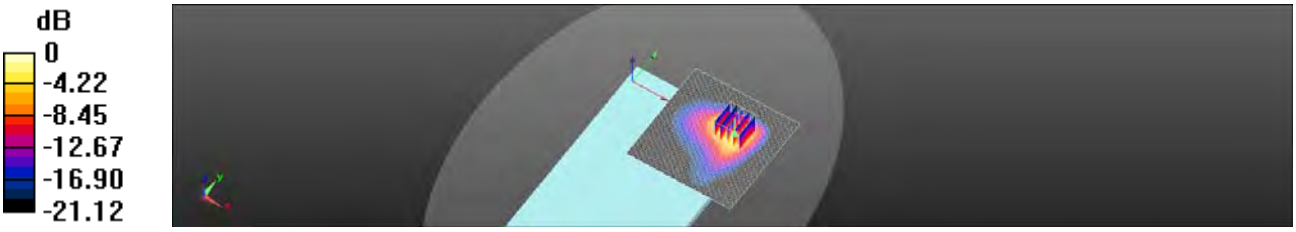
Communication System: LTE; Frequency: 1860 MHz
Medium parameters used: f = 1860 MHz; σ = 1.551 S/m; ε_r = 51.717; ρ = 1000 kg/m^3
Phantom section: Flat Section

DASY5 Configuration:

- Probe: EX3DV4 - SN3923; ConvF(8.11, 8.11, 8.11); Calibrated: 2015/8/27;
- Sensor-Surface: 2mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn917; Calibrated: 2014/12/29
- Phantom: Body
- DASY52 52.8.8(1222); SEMCAD X 14.6.10(7331)

Configuration/BODY/Area Scan (91x91x1): Interpolated grid: dx=15 mm, dy=15 mm
Maximum value of SAR (interpolated) = 1.24 W/kg

Configuration/BODY/Zoom Scan (5x5x7)/Cube 0: Measurement grid: dx=8mm, dy=8mm, dz=5mm
Reference Value = 0.9240 V/m; Power Drift = 0.14 dB
Peak SAR (extrapolated) = 2.59 W/kg
SAR(1 g) = 1.11 W/kg; SAR(10 g) = 0.508 W/kg
Maximum value of SAR (measured) = 1.88 W/kg



0 dB = 1.88 W/kg = 2.75 dBW/kg

Date: 2015/9/29

LTE Band 4 (20MHz)_Body-worn_Top side_CH 20050_QPSK_1-0_5mm

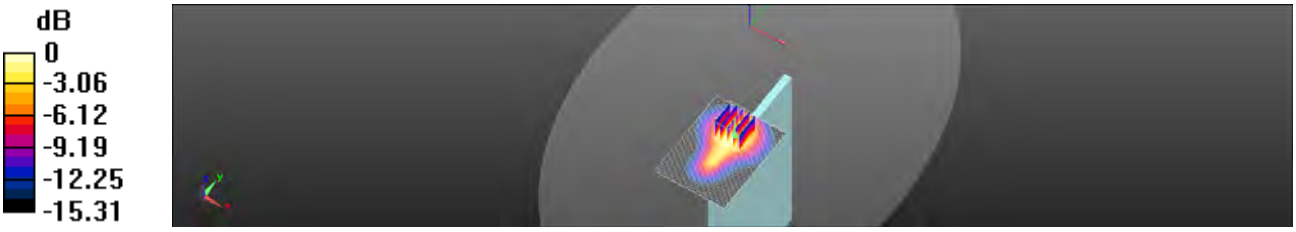
Communication System: LTE; Frequency: 1720 MHz
Medium parameters used: f = 1720.05 MHz; σ = 1.506 S/m; ε_r = 51.906; ρ = 1000 kg/m^3
Phantom section: Flat Section

DASY5 Configuration:

- Probe: EX3DV4 - SN3923; ConvF(8.4, 8.4, 8.4); Calibrated: 2015/8/27;
- Sensor-Surface: 2mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn917; Calibrated: 2014/12/29
- Phantom: Body
- DASY52 52.8.8(1222); SEMCAD X 14.6.10(7331)

Configuration/BODY/Area Scan (61x81x1): Interpolated grid: dx=15 mm, dy=15 mm
Maximum value of SAR (interpolated) = 0.941 W/kg

Configuration/BODY/Zoom Scan (5x5x7)/Cube 0: Measurement grid: dx=8mm, dy=8mm, dz=5mm
Reference Value = 17.36 V/m; Power Drift = 0.18 dB
Peak SAR (extrapolated) = 1.13 W/kg
SAR(1 g) = 0.740 W/kg; SAR(10 g) = 0.439 W/kg
Maximum value of SAR (measured) = 0.965 W/kg



0 dB = 0.965 W/kg = -0.16 dBW/kg

Date: 2015/9/29

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

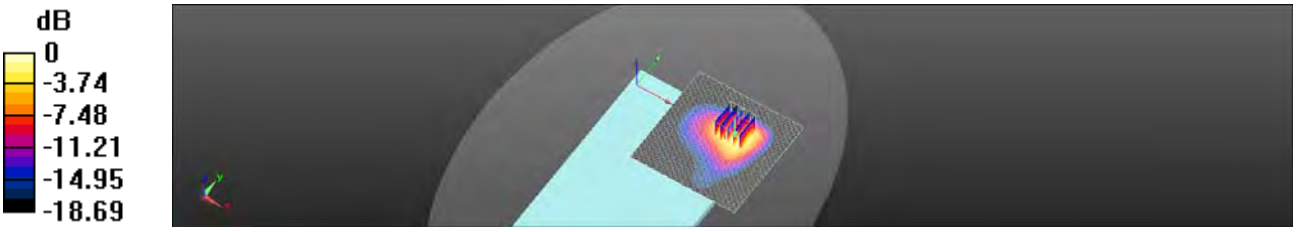
Communication System: LTE; Frequency: 1745 MHz
Medium parameters used: f = 1745.18 MHz; σ = 1.523 S/m; ε_r = 51.852; ρ = 1000 kg/m^3
Phantom section: Flat Section

DASY5 Configuration:

- Probe: EX3DV4 - SN3923; ConvF(8.4, 8.4, 8.4); Calibrated: 2015/8/27;
- Sensor-Surface: 2mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn917; Calibrated: 2014/12/29
- Phantom: Body
- DASY52 52.8.8(1222); SEMCAD X 14.6.10(7331)

Configuration/BODY/Area Scan (91x91x1): Interpolated grid: dx=15 mm, dy=15 mm
Maximum value of SAR (interpolated) = 1.20 W/kg

Configuration/BODY/Zoom Scan (5x5x7)/Cube 0: Measurement grid: dx=8mm, dy=8mm, dz=5mm
Reference Value = 1.553 V/m; Power Drift = -0.16 dB
Peak SAR (extrapolated) = 2.05 W/kg
SAR(1 g) = 0.961 W/kg; SAR(10 g) = 0.482 W/kg
Maximum value of SAR (measured) = 1.38 W/kg



0 dB = 1.38 W/kg = 1.40 dBW/kg

Date: 2015/10/2

LTE Band 5 (10MHz)_Body-worn_Back side_CH 20600_QPSK_1-25_10mm

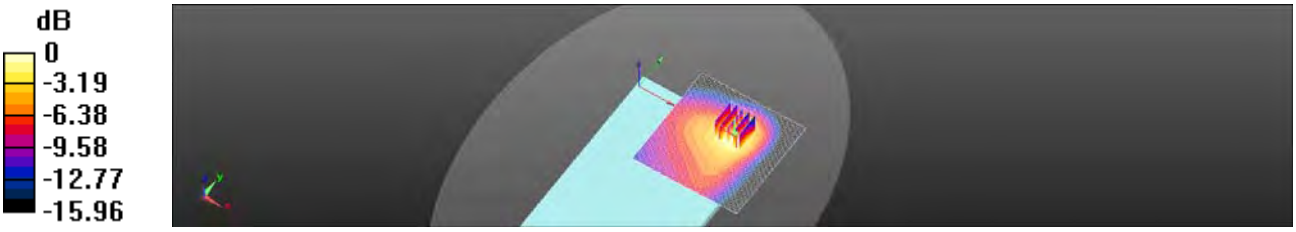
Communication System: LTE; Frequency: 844 MHz
Medium parameters used: f = 844 MHz; σ = 1.009 S/m; ε_r = 53.357; ρ = 1000 kg/m^3
Phantom section: Flat Section

DASY5 Configuration:

- Probe: EX3DV4 - SN3923; ConvF(10.48, 10.48, 10.48); Calibrated: 2015/8/27;
- Sensor-Surface: 2mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn917; Calibrated: 2014/12/29
- Phantom: Body
- DASY52 52.8.8(1222); SEMCAD X 14.6.10(7331)

Configuration/BODY/Area Scan (91x91x1): Interpolated grid: dx=15 mm, dy=15 mm
Maximum value of SAR (interpolated) = 1.19 W/kg

Configuration/BODY/Zoom Scan (5x5x7)/Cube 0: Measurement grid: dx=8mm, dy=8mm, dz=5mm
Reference Value = 7.510 V/m; Power Drift = 0.11 dB
Peak SAR (extrapolated) = 1.44 W/kg
SAR(1 g) = 0.901 W/kg; SAR(10 g) = 0.552 W/kg
Maximum value of SAR (measured) = 1.20 W/kg



0 dB = 1.20 W/kg = 0.78 dBW/kg

Date: 2015/10/2

LTE Band 5 (10MHz)_Body-worn_Back side_CH 20450_QPSK_1-49_0mm

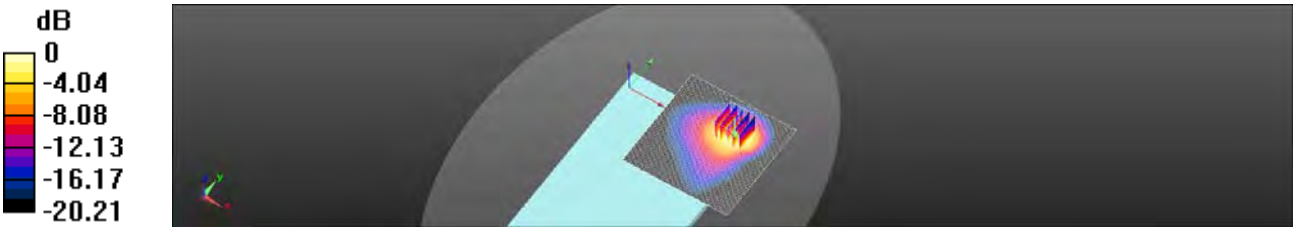
Communication System: LTE; Frequency: 829 MHz
Medium parameters used: f = 829 MHz; σ = 0.992 S/m; ε_r = 53.688; ρ = 1000 kg/m^3
Phantom section: Flat Section

DASY5 Configuration:

- Probe: EX3DV4 - SN3923; ConvF(10.48, 10.48, 10.48); Calibrated: 2015/8/27;
- Sensor-Surface: 2mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn917; Calibrated: 2014/12/29
- Phantom: Body
- DASY52 52.8.8(1222); SEMCAD X 14.6.10(7331)

Configuration/BODY/Area Scan (91x91x1): Interpolated grid: dx=15 mm, dy=15 mm
Maximum value of SAR (interpolated) = 0.925 W/kg

Configuration/BODY/Zoom Scan (5x5x7)/Cube 0: Measurement grid: dx=8mm, dy=8mm, dz=5mm
Reference Value = 0.2010 V/m; Power Drift = 0.16 dB
Peak SAR (extrapolated) = 1.39 W/kg
SAR(1 g) = 0.649 W/kg; SAR(10 g) = 0.333 W/kg
Maximum value of SAR (measured) = 0.951 W/kg



0 dB = 0.951 W/kg = -0.22 dBW/kg

Date: 2015/10/1

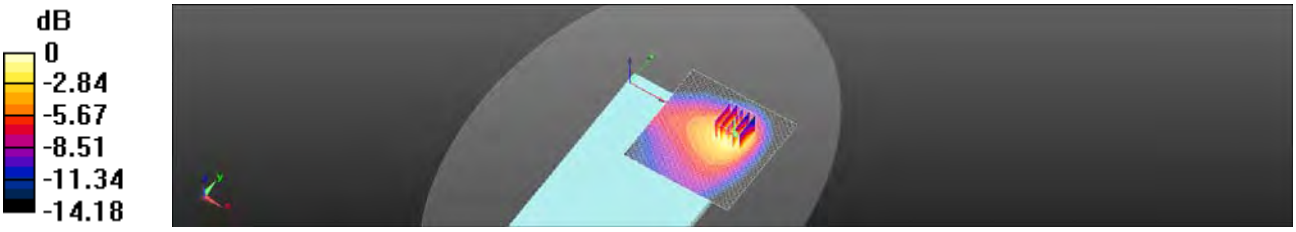
LTE Band 12 (10MHz)_Body-worn_Back side_CH 23130_QPSK_1-49_10mm
Communication System: LTE; Frequency: 711 MHz
Medium parameters used: f = 711 MHz; σ = 0.979 S/m; ε_r = 54.274; ρ = 1000 kg/m^3
Phantom section: Flat Section

DASY5 Configuration:

- Probe: EX3DV4 - SN3923; ConvF(10.5, 10.5, 10.5); Calibrated: 2015/8/27;
- Sensor-Surface: 2mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn917; Calibrated: 2014/12/29
- Phantom: Body
- DASY52 52.8.8(1222); SEMCAD X 14.6.10(7331)

Configuration/BODY/Area Scan (91x91x1): Interpolated grid: dx=15 mm, dy=15 mm
Maximum value of SAR (interpolated) = 0.498 W/kg

Configuration/BODY/Zoom Scan (5x5x7)/Cube 0: Measurement grid: dx=8mm, dy=8mm, dz=5mm
Reference Value = 6.077 V/m; Power Drift = 0.06 dB
Peak SAR (extrapolated) = 0.584 W/kg
SAR(1 g) = 0.393 W/kg; SAR(10 g) = 0.255 W/kg
Maximum value of SAR (measured) = 0.496 W/kg



0 dB = 0.496 W/kg = -3.05 dBW/kg

Date: 2015/10/1

LTE Band 12 (10MHz)_Body-worn_Back side_CH 23130_QPSK_1-25_0mm

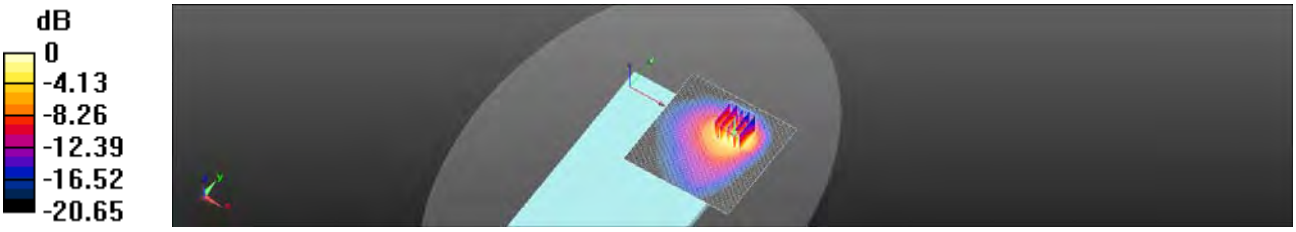
Communication System: LTE; Frequency: 711 MHz
Medium parameters used: f = 711 MHz; σ = 0.979 S/m; ε_r = 54.274; ρ = 1000 kg/m^3
Phantom section: Flat Section

DASY5 Configuration:

- Probe: EX3DV4 - SN3923; ConvF(10.5, 10.5, 10.5); Calibrated: 2015/8/27;
- Sensor-Surface: 2mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn917; Calibrated: 2014/12/29
- Phantom: Body
- DASY52 52.8.8(1222); SEMCAD X 14.6.10(7331)

Configuration/BODY/Area Scan (91x91x1): Interpolated grid: dx=15 mm, dy=15 mm
Maximum value of SAR (interpolated) = 0.632 W/kg

Configuration/BODY/Zoom Scan (5x5x7)/Cube 0: Measurement grid: dx=8mm, dy=8mm, dz=5mm
Reference Value = 1.639 V/m; Power Drift = -0.19 dB
Peak SAR (extrapolated) = 0.996 W/kg
SAR(1 g) = 0.475 W/kg; SAR(10 g) = 0.250 W/kg
Maximum value of SAR (measured) = 0.723 W/kg



0 dB = 0.723 W/kg = -1.41 dBW/kg

Date: 2015/10/5

LTE Band 25 (20MHz)_Body-worn_Back side_CH 26590_QPSK_1-99_10mm

Communication System: LTE; Frequency: 1905 MHz
Medium parameters used: f = 1905 MHz; σ = 1.559 S/m; ε_r = 51.68; ρ = 1000 kg/m^3
Phantom section: Flat Section

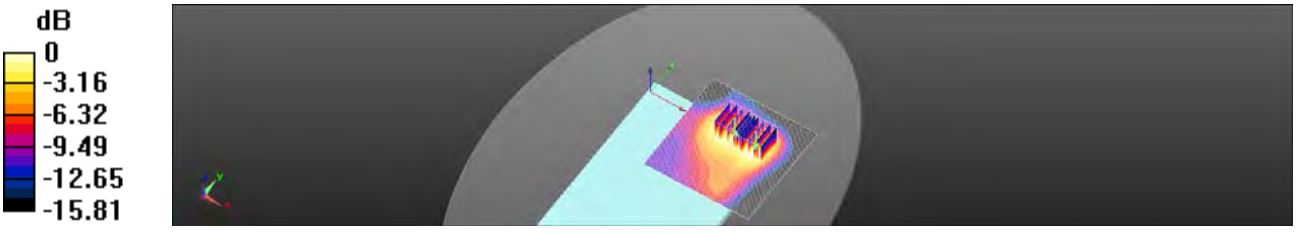
DASY5 Configuration:

- Probe: EX3DV4 - SN3923; ConvF(8.11, 8.11, 8.11); Calibrated: 2015/8/27;
- Sensor-Surface: 2mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn917; Calibrated: 2014/12/29
- Phantom: Body
- DASY52 52.8.8(1222); SEMCAD X 14.6.10(7331)

Configuration/BODY/Area Scan (91x91x1): Interpolated grid: dx=15 mm, dy=15 mm
Maximum value of SAR (interpolated) = 1.17 W/kg

Configuration/BODY/Zoom Scan (5x5x7)/Cube 0: Measurement grid: dx=8mm, dy=8mm, dz=5mm
Reference Value = 5.619 V/m; Power Drift = 0.07 dB
Peak SAR (extrapolated) = 1.48 W/kg
SAR(1 g) = 0.842 W/kg; SAR(10 g) = 0.465 W/kg
Maximum value of SAR (measured) = 1.17 W/kg

Configuration/BODY/Zoom Scan (5x5x7)/Cube 1: Measurement grid: dx=8mm, dy=8mm, dz=5mm
Reference Value = 5.619 V/m; Power Drift = 0.07 dB
Peak SAR (extrapolated) = 1.15 W/kg
SAR(1 g) = 0.724 W/kg; SAR(10 g) = 0.430 W/kg
Maximum value of SAR (measured) = 0.967 W/kg



0 dB = 0.967 W/kg = -0.15 dBW/kg

Date: 2015/10/5

LTE Band 25 (20MHz)_Body-worn_Back side_CH 26365_QPSK_1-0_0mm_Repeat SAR test at the highest SAR measurement

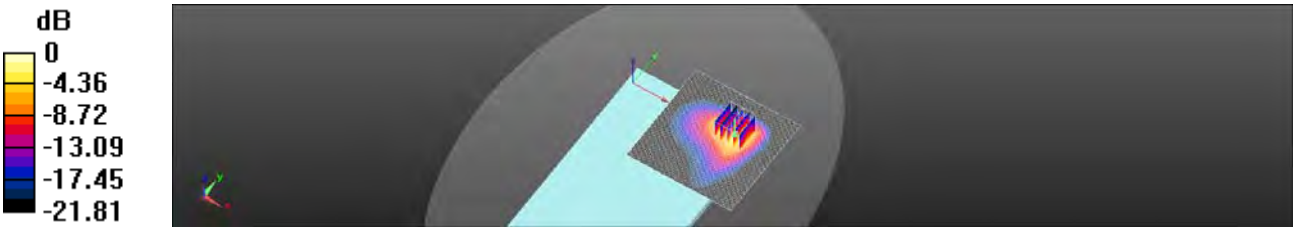
Communication System: LTE; Frequency: 1882.5 MHz
Medium parameters used: f = 1882.86 MHz; σ = 1.556 S/m; ε_r = 51.69; ρ = 1000 kg/m^3
Phantom section: Flat Section

DASY5 Configuration:

- Probe: EX3DV4 - SN3923; ConvF(8.11, 8.11, 8.11); Calibrated: 2015/8/27;
- Sensor-Surface: 2mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn917; Calibrated: 2014/12/29
- Phantom: Body
- DASY52 52.8.8(1222); SEMCAD X 14.6.10(7331)

Configuration/BODY/Area Scan (91x91x1): Interpolated grid: dx=15 mm, dy=15 mm
Maximum value of SAR (interpolated) = 1.30 W/kg

Configuration/BODY/Zoom Scan (5x5x7)/Cube 0: Measurement grid: dx=8mm, dy=8mm, dz=5mm
Reference Value = 0.8770 V/m; Power Drift = -0.03 dB
Peak SAR (extrapolated) = 2.95 W/kg
SAR(1 g) = 1.19 W/kg; SAR(10 g) = 0.527 W/kg
Maximum value of SAR (measured) = 2.17 W/kg



0 dB = 2.17 W/kg = 3.36 dBW/kg

Date: 2015/10/2

LTE Band 26 (15MHz)_Body-worn_Back side_CH 26865_QPSK_1-0_10mm

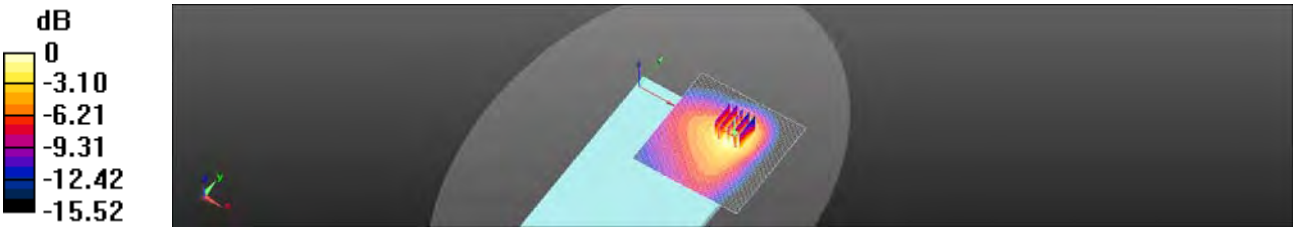
Communication System: LTE; Frequency: 831.5 MHz
Medium parameters used: f = 831.5 MHz; σ = 0.993 S/m; ε_r = 53.629; ρ = 1000 kg/m^3
Phantom section: Flat Section

DASY5 Configuration:

- Probe: EX3DV4 - SN3923; ConvF(10.48, 10.48, 10.48); Calibrated: 2015/8/27;
- Sensor-Surface: 2mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn917; Calibrated: 2014/12/29
- Phantom: Body
- DASY52 52.8.8(1222); SEMCAD X 14.6.10(7331)

Configuration/BODY/Area Scan (91x91x1): Interpolated grid: dx=15 mm, dy=15 mm
Maximum value of SAR (interpolated) = 1.13 W/kg

Configuration/BODY/Zoom Scan (5x5x7)/Cube 0: Measurement grid: dx=8mm, dy=8mm, dz=5mm
Reference Value = 6.421 V/m; Power Drift = -0.19 dB
Peak SAR (extrapolated) = 1.30 W/kg
SAR(1 g) = 0.834 W/kg; SAR(10 g) = 0.527 W/kg
Maximum value of SAR (measured) = 1.09 W/kg



0 dB = 1.09 W/kg = 0.38 dBW/kg

Date: 2015/10/2

LTE Band 26 (15MHz)_Body-worn_Back side_CH 26865_QPSK_1-0_0mm

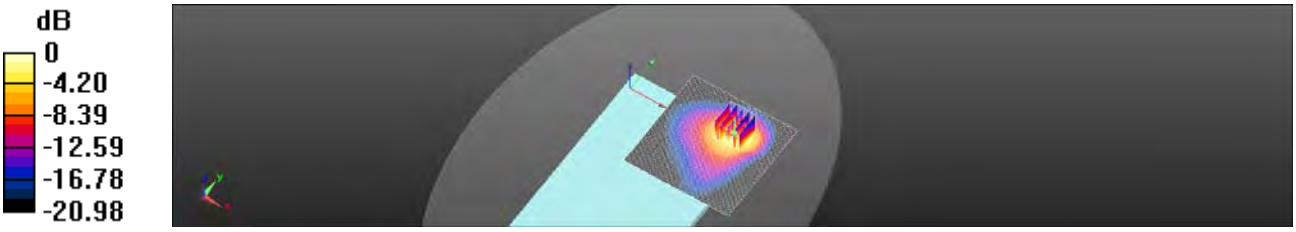
Communication System: LTE; Frequency: 831.5 MHz
Medium parameters used: f = 831.5 MHz; σ = 0.993 S/m; ε_r = 53.629; ρ = 1000 kg/m^3
Phantom section: Flat Section

DASY5 Configuration:

- Probe: EX3DV4 - SN3923; ConvF(10.48, 10.48, 10.48); Calibrated: 2015/8/27;
- Sensor-Surface: 2mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn917; Calibrated: 2014/12/29
- Phantom: Body
- DASY52 52.8.8(1222); SEMCAD X 14.6.10(7331)

Configuration/BODY/Area Scan (91x91x1): Interpolated grid: dx=15 mm, dy=15 mm
Maximum value of SAR (interpolated) = 0.747 W/kg

Configuration/BODY/Zoom Scan (5x5x7)/Cube 0: Measurement grid: dx=8mm, dy=8mm, dz=5mm
Reference Value = 0.1790 V/m; Power Drift = 0.11 dB
Peak SAR (extrapolated) = 1.14 W/kg
SAR(1 g) = 0.533 W/kg; SAR(10 g) = 0.276 W/kg
Maximum value of SAR (measured) = 0.818 W/kg



0 dB = 0.818 W/kg = -0.87 dBW/kg

Date: 2015/9/25

LTE Band 41 (20MHz)_Body-worn_Back side_CH 40620_QPSK_1-0_10mm

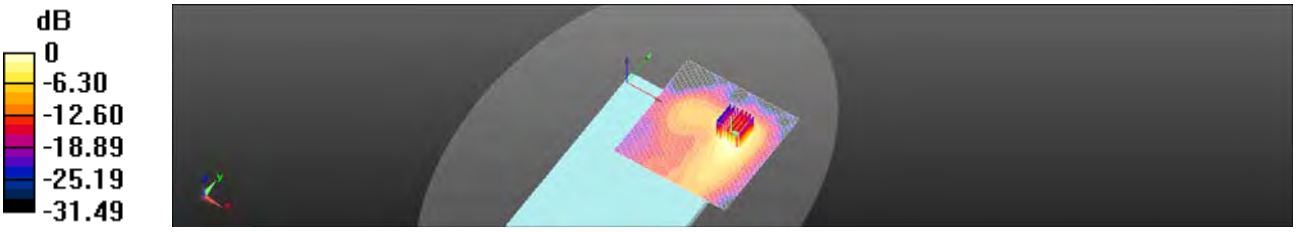
Communication System: LTE; Frequency: 2593 MHz
Medium parameters used: f = 2593 MHz; σ = 2.174 S/m; ε_r = 50.685; ρ = 1000 kg/m^3
Phantom section: Flat Section

DASY5 Configuration:

- Probe: EX3DV4 - SN3923; ConvF(7.49, 7.49, 7.49); Calibrated: 2015/8/27;
- Sensor-Surface: 2mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn917; Calibrated: 2014/12/29
- Phantom: Body
- DASY52 52.8.8(1222); SEMCAD X 14.6.10(7331)

Configuration/BODY/Area Scan (121x121x1): Interpolated grid: dx=12 mm, dy=12 mm
Maximum value of SAR (interpolated) = 0.454 W/kg

Configuration/BODY/Zoom Scan (7x7x7)/Cube 0: Measurement grid: dx=5mm, dy=5mm, dz=5mm
Reference Value = 2.269 V/m; Power Drift = -0.18 dB
Peak SAR (extrapolated) = 0.632 W/kg
SAR(1 g) = 0.300 W/kg; SAR(10 g) = 0.147 W/kg
Maximum value of SAR (measured) = 0.448 W/kg



0 dB = 0.448 W/kg = -3.49 dBW/kg

Date: 2015/9/25

LTE Band 41 (20MHz)_Body-worn_Back side_CH 41490_QPSK_1-50_0mm

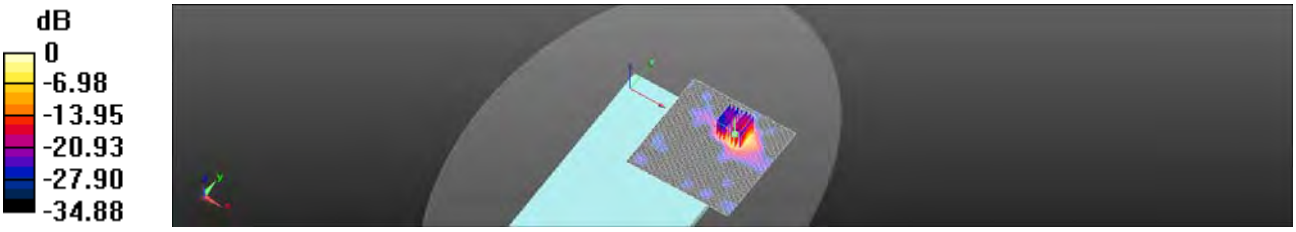
Communication System: LTE; Frequency: 2593 MHz
Medium parameters used: f = 2593 MHz; σ = 2.174 S/m; ε_r = 50.685; ρ = 1000 kg/m^3
Phantom section: Flat Section

DASY5 Configuration:

- Probe: EX3DV4 - SN3923; ConvF(7.49, 7.49, 7.49); Calibrated: 2015/8/27;
- Sensor-Surface: 2mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn917; Calibrated: 2014/12/29
- Phantom: Body
- DASY52 52.8.8(1222); SEMCAD X 14.6.10(7331)

Configuration/BODY/Area Scan (111x111x1): Interpolated grid: dx=12 mm, dy=12 mm
Maximum value of SAR (interpolated) = 0.608 W/kg

Configuration/BODY/Zoom Scan (7x7x7)/Cube 0: Measurement grid: dx=5mm, dy=5mm, dz=5mm
Reference Value = 0.7790 V/m; Power Drift = -0.16 dB
Peak SAR (extrapolated) = 1.53 W/kg
SAR(1 g) = 0.450 W/kg; SAR(10 g) = 0.146 W/kg
Maximum value of SAR (measured) = 0.951 W/kg



0 dB = 0.951 W/kg = -0.22 dBW/kg

Date: 2015/9/26

WLAN 802.11b_Body-worn_Back side_CH 6

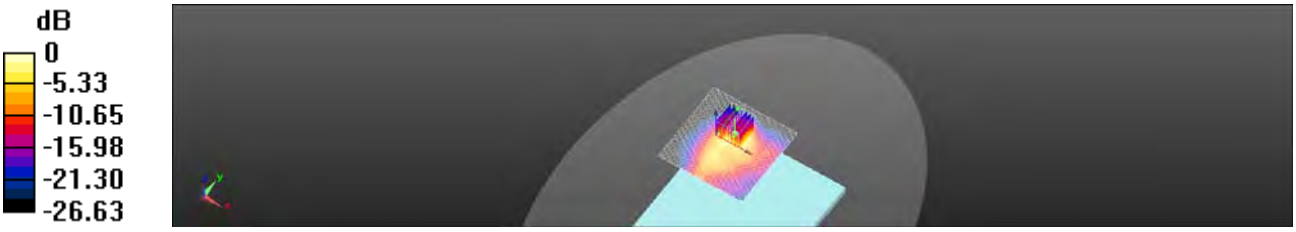
Communication System: WLAN(2.45G); Frequency: 2437 MHz
Medium parameters used: f = 2437 MHz; σ = 1.966 S/m; ε_r = 51.277; ρ = 1000 kg/m^3
Phantom section: Flat Section

DASY5 Configuration:

- Probe: EX3DV4 - SN3923; ConvF(7.63, 7.63, 7.63); Calibrated: 2015/8/27;
- Sensor-Surface: 2mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn917; Calibrated: 2014/12/29
- Phantom: Body
- DASY52 52.8.8(1222); SEMCAD X 14.6.10(7331)

Configuration/BODY/Area Scan (91x91x1): Interpolated grid: dx=12 mm, dy=12 mm
Maximum value of SAR (interpolated) = 1.82 W/kg

Configuration/BODY/Zoom Scan (7x7x7)/Cube 0: Measurement grid: dx=5mm, dy=5mm, dz=5mm
Reference Value = 1.338 V/m; Power Drift = 0.13 dB
Peak SAR (extrapolated) = 2.67 W/kg
SAR(1 g) = 1.12 W/kg; SAR(10 g) = 0.508 W/kg
Maximum value of SAR (measured) = 1.80 W/kg



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

Date: 2015/9/26

WLAN 802.11n(40M)_Body-worn_Back side_CH 6

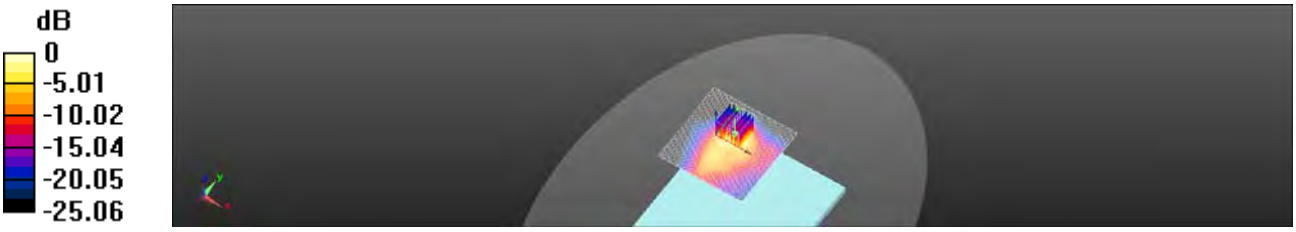
Communication System: WLAN(2.45G); Frequency: 2437 MHz
Medium parameters used: f = 2437 MHz; σ = 1.966 S/m; ε_r = 51.277; ρ = 1000 kg/m^3
Phantom section: Flat Section

DASY5 Configuration:

- Probe: EX3DV4 - SN3923; ConvF(7.63, 7.63, 7.63); Calibrated: 2015/8/27;
- Sensor-Surface: 2mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn917; Calibrated: 2014/12/29
- Phantom: Body
- DASY52 52.8.8(1222); SEMCAD X 14.6.10(7331)

Configuration/BODY/Area Scan (91x91x1): Interpolated grid: dx= 12 mm, dy= 12 mm
Maximum value of SAR (interpolated) = 1.14 W/kg

Configuration/BODY/Zoom Scan (7x7x7)/Cube 0: Measurement grid: dx=5mm, dy=5mm, dz=5mm
Reference Value = 1.465 V/m; Power Drift = -0.15 dB
Peak SAR (extrapolated) = 1.69 W/kg
SAR(1 g) = 0.701 W/kg; SAR(10 g) = 0.319 W/kg
Maximum value of SAR (measured) = 1.13 W/kg



0 dB = 1.13 W/kg = 0.52 dBW/kg

6. SAR System Performance Verification

Date: 2015/10/1

Dipole 750 MHz_SN:1015

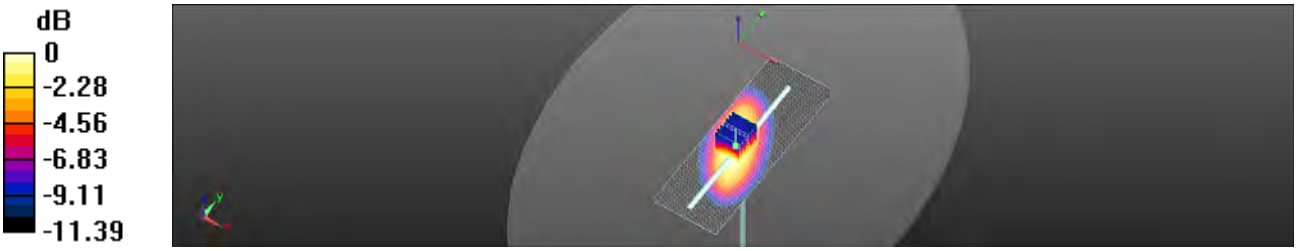
Communication System: CW; Frequency: 750 MHz
Medium parameters used: f = 750 MHz; σ = 0.984 S/m; ε_r = 54.104; ρ = 1000 kg/m^3
Phantom section: Flat Section

DASY5 Configuration:

- Probe: EX3DV4 - SN3923; ConvF(10.5, 10.5, 10.5); Calibrated: 2015/8/27;
- Sensor-Surface: 2mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn917; Calibrated: 2014/12/29
- Phantom: Body
- DASY52 52.8.8(1222); SEMCAD X 14.6.10(7331)

Configuration/Pin=250mW/Area Scan (51x141x1): Interpolated grid: dx=15 mm, dy=15 mm
Maximum value of SAR (interpolated) = 2.87 W/kg

Configuration/Pin=250mW/Zoom Scan (7x7x7)/Cube 0: Measurement grid: dx=5mm, dy=5mm, dz=5mm
Reference Value = 53.21 V/m; Power Drift = 0.02 dB
Peak SAR (extrapolated) = 3.45 W/kg
SAR(1 g) = 2.16 W/kg; SAR(10 g) = 1.36 W/kg
Maximum value of SAR (measured) = 2.90 W/kg



0 dB = 2.90 W/kg = 4.62 dBW/kg

Date: 2015/10/2

Dipole 835 MHz_SN:4d063

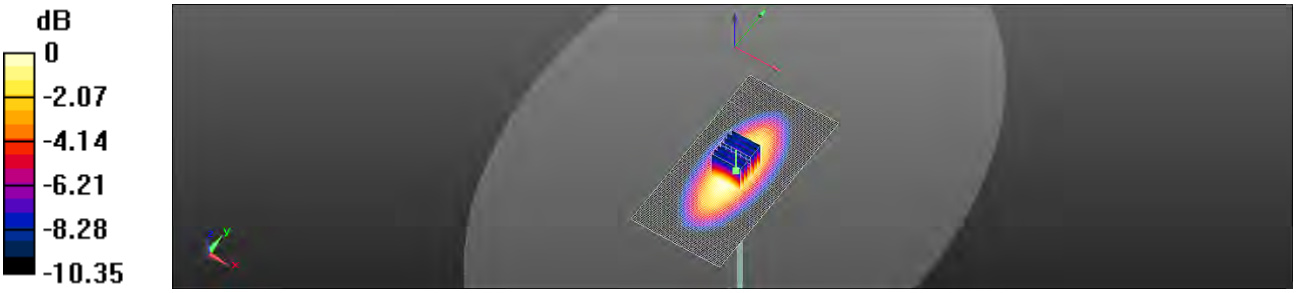
Communication System: CW; Frequency: 835 MHz
Medium parameters used: f = 835 MHz; σ = 0.994 S/m; ε_r = 53.561; ρ = 1000 kg/m^3
Phantom section: Flat Section

DASY5 Configuration:

- Probe: EX3DV4 - SN3923; ConvF(10.48,10.48, 10.48); Calibrated: 2015/8/27;
- Sensor-Surface: 2mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn917; Calibrated: 2014/12/29
- Phantom: Body
- DASY52 52.8.8(1222); SEMCAD X 14.6.10(7331)

Configuration/Pin=250mW/Area Scan (61x121x1): Interpolated grid: dx=15 mm, dy=15 mm
Maximum value of SAR (interpolated) = 3.05 W/kg

Configuration/Pin=250mW/Zoom Scan (7x7x7)/Cube 0: Measurement grid: dx=5mm, dy=5mm, dz=5mm
Reference Value = 56.17 V/m; Power Drift = -0.02 dB
Peak SAR (extrapolated) = 3.59 W/kg
SAR(1 g) = 2.41 W/kg; SAR(10 g) = 1.59 W/kg
Maximum value of SAR (measured) = 3.05 W/kg



0 dB = 3.05 W/kg = 4.84 dBW/kg

Date: 2015/9/29

Dipole 1750 MHz_SN:1008

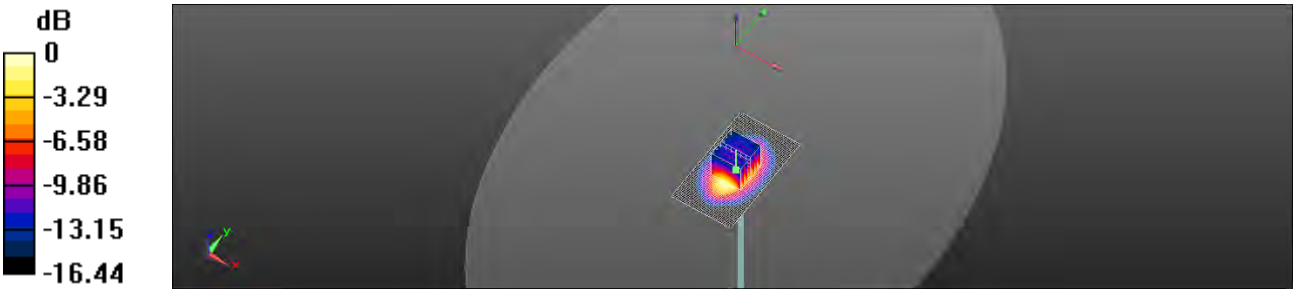
Communication System: CW; Frequency: 1750 MHz
Medium parameters used: f = 1750 MHz; σ = 1.526 S/m; ε_r = 51.845; ρ = 1000 kg/m^3
Phantom section: Flat Section

DASY5 Configuration:

- Probe: EX3DV4 - SN3923; ConvF(8.4, 8.4, 8.4); Calibrated: 2015/8/27;
- Sensor-Surface: 2mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn917; Calibrated: 2014/12/29
- Phantom: Body
- DASY52 52.8.8(1222); SEMCAD X 14.6.10(7331)

Configuration/Pin=250mW/Area Scan (41x71x1): Interpolated grid: dx=15 mm, dy=15 mm
Maximum value of SAR (interpolated) = 14.2 W/kg

Configuration/Pin=250mW/Zoom Scan (7x7x7)/Cube 0: Measurement grid: dx=5mm, dy=5mm, dz=5mm
Reference Value = 95.40 V/m; Power Drift = -0.02 dB
Peak SAR (extrapolated) = 16.9 W/kg
SAR(1 g) = 9.42 W/kg; SAR(10 g) = 5.01 W/kg
Maximum value of SAR (measured) = 13.5 W/kg



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

Date: 2015/10/5

Dipole 1900 MHz_SN:5d027

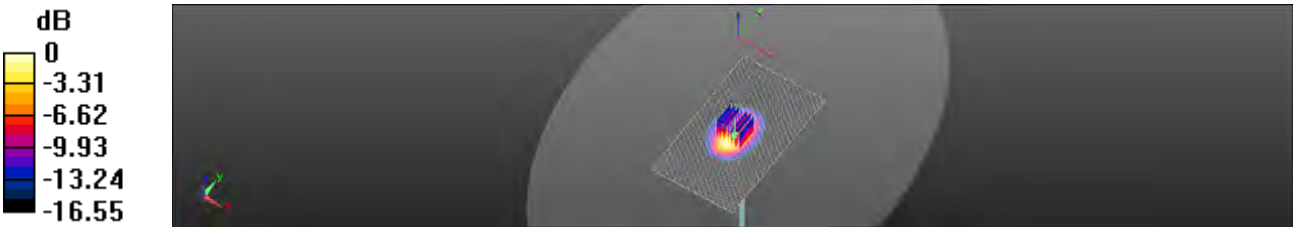
Communication System: CW; Frequency: 1900 MHz
Medium parameters used: f = 1900 MHz; σ = 1.558 S/m; ε_r = 51.688; ρ = 1000 kg/m^3
Phantom section: Flat Section

DASY5 Configuration:

- Probe: EX3DV4 - SN3923; ConvF(8.11, 8.11, 8.11); Calibrated: 2015/8/27;
- Sensor-Surface: 2mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn917; Calibrated: 2014/12/29
- Phantom: Body
- DASY52 52.8.8(1222); SEMCAD X 14.6.10(7331)

Configuration/Pin=250mW/Area Scan (71x121x1): Interpolated grid: dx=15 mm, dy=15 mm
Maximum value of SAR (interpolated) = 13.6 W/kg

Configuration/Pin=250mW/Zoom Scan (7x7x7)/Cube 0: Measurement grid: dx=5mm, dy=5mm, dz=5mm
Reference Value = 92.66 V/m; Power Drift = -0.01 dB
Peak SAR (extrapolated) = 17.2 W/kg
SAR(1 g) = 9.85 W/kg; SAR(10 g) = 5.24 W/kg
Maximum value of SAR (measured) = 13.9 W/kg



0 dB = 13.9 W/kg = 11.44 dBW/kg

Date: 2015/9/26

Dipole 2450 MHz_SN:727

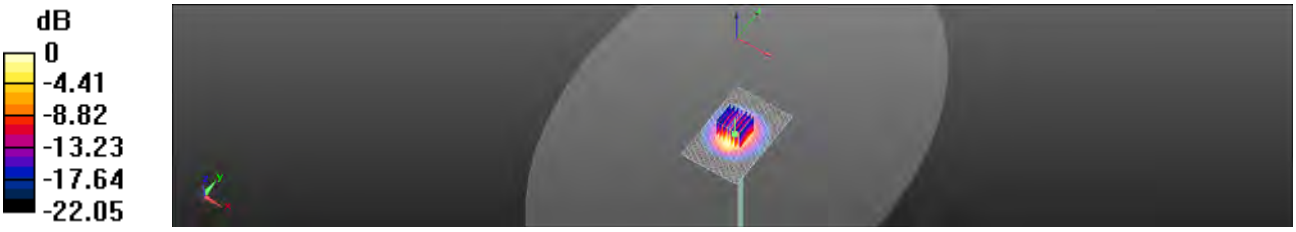
Communication System: CW; Frequency: 2450 MHz
Medium parameters used: f = 2450 MHz; σ = 1.984 S/m; ε_r = 51.262; ρ = 1000 kg/m^3
Phantom section: Flat Section

DASY5 Configuration:

- Probe: EX3DV4 - SN3923; ConvF(7.63, 7.63, 7.63); Calibrated: 2015/8/27;
- Sensor-Surface: 2mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn917; Calibrated: 2014/12/29
- Phantom: Body
- DASY52 52.8.8(1222); SEMCAD X 14.6.10(7331)

Configuration/Pin=250mW/Area Scan (61x91x1): Interpolated grid: dx=12 mm, dy=12 mm
Maximum value of SAR (interpolated) = 20.7 W/kg

Configuration/Pin=250mW/Zoom Scan (7x7x7)/Cube 0: Measurement grid: dx=5mm, dy=5mm, dz=5mm
Reference Value = 99.92 V/m; Power Drift = -0.11 dB
Peak SAR (extrapolated) = 26.7 W/kg
SAR(1 g) = 13.1 W/kg; SAR(10 g) = 6.07 W/kg
Maximum value of SAR (measured) = 19.9 W/kg



0 dB = 19.9 W/kg = 12.99 dBW/kg

Date: 2015/9/25

Dipole 2600 MHz_SN:1005

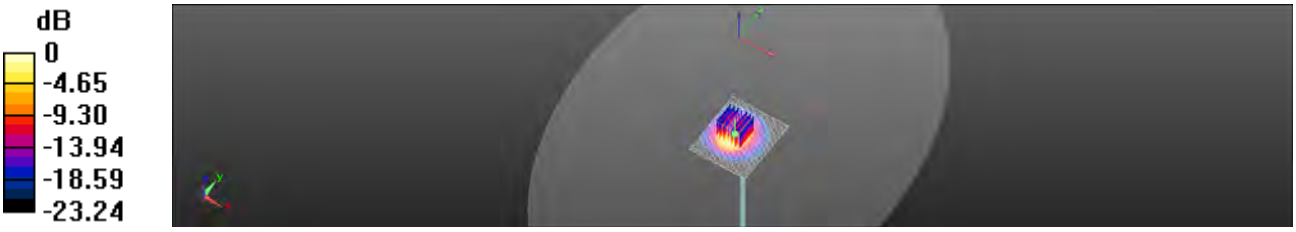
Communication System: CW; Frequency: 2600 MHz
Medium parameters used: f = 2600 MHz; σ = 2.184 S/m; ε_r = 50.682; ρ = 1000 kg/m^3
Phantom section: Flat Section

DASY5 Configuration:

- Probe: EX3DV4 - SN3923; ConvF(7.49, 7.49, 7.49); Calibrated: 2015/8/27;
- Sensor-Surface: 2mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn917; Calibrated: 2014/12/29
- Phantom: Body
- DASY52 52.8.8(1222); SEMCAD X 14.6.10(7331)

Configuration/Pin=250mW/Area Scan (61x71x1): Interpolated grid: dx=12 mm, dy=12 mm
Maximum value of SAR (interpolated) = 23.7 W/kg

Configuration/Pin=250mW/Zoom Scan (7x7x7)/Cube 0: Measurement grid: dx=5mm, dy=5mm, dz=5mm
Reference Value = 96.45 V/m; Power Drift = -0.11 dB
Peak SAR (extrapolated) = 29.4 W/kg
SAR(1 g) = 14.1 W/kg; SAR(10 g) = 6.3 W/kg
Maximum value of SAR (measured) = 21.7 W/kg



0 dB = 21.7 W/kg = 13.37 dBW/kg

7. DAE & Probe Calibration Certificate

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Accreditation No.: SCS 108

Client Auden

Certificate No: DAE4-917_Dec14

CALIBRATION CERTIFICATE

Object: DAE4 - SD 000 D04 BK - SN: 917

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

Calibration date: December 29, 2014

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

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

Calibration Equipment used (M&TE critical for calibration)

Primary Standards	ID #	Cal Date (Certificate No.)	Scheduled Calibration
Keithley Multimeter Type 2001	SN: 0810278	03-Oct-14 (No:15573)	Oct-15
Secondary Standards	**ID #**	**Check Date (in house)**	**Scheduled Check**
Auto DAE Calibration Unit	SE UWS 053 AA 1001	07-Jan-14 (in house check)	In house check: Jan-15
Calibrator Box V2.1	SE UMS 006 AA 1002	07-Jan-14 (in house check)	In house check: Jan-15

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

Issued: December 29, 2014

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Certificate No: DAE4-917_Dec14 Page 1 of 8

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Accreditation No.: SCS 108

Glossary

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

Methods Applied and Interpretation of Parameters

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

DC Voltage Measurement

A/D - Converter Resolution nominal

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

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

Calibration Factors	X	Y	Z
High Range	404.193 ± 0.02% (k=2)	404.193 ± 0.02% (k=2)	404.207 ± 0.02% (k=2)
Low Range	3.98475 ± 1.50% (k=2)	4.01007 ± 1.50% (k=2)	4.00901 ± 1.50% (k=2)

Connector Angle

Connector Angle to be used in DASY system	33.0 ° ± 1 °

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Appendix (Additional assessments outside the scope of SCS108)

1. DC Voltage Linearity

High Range		Reading (μV)	Difference (μV)	Error (%)
Channel X	+ Input	199992.91	-0.25	-0.00
Channel X	+ Input	20000.85	0.32	0.00
Channel X	- Input	-20000.18	0.78	-0.00
Channel Y	+ Input	199990.98	-1.99	-0.00
Channel Y	+ Input	19997.97	-2.51	-0.01
Channel Y	- Input	-20003.10	-2.09	0.01
Channel Z	+ Input	199993.02	-0.06	-0.00
Channel Z	+ Input	19997.19	-3.23	-0.02
Channel Z	- Input	-20002.85	-1.79	0.01

Low Range		Reading (μV)	Difference (μV)	Error (%)
Channel X	+ Input	2000.29	-0.24	-0.01
Channel X	+ Input	201.12	0.13	0.06
Channel X	- Input	-198.72	0.10	-0.05
Channel Y	+ Input	2000.89	0.15	0.01
Channel Y	+ Input	199.73	-1.32	-0.66
Channel Y	- Input	-199.30	-0.53	0.27
Channel Z	+ Input	2000.77	0.29	0.01
Channel Z	+ Input	199.95	-1.00	-0.50
Channel Z	- Input	-200.12	-1.20	0.61

2. Common mode sensitivity

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

	Common mode Input Voltage (mV)	High Range Average Reading (μV)	Low Range Average Reading (μV)
Channel X	200	-4.90	-6.97
	- 200	7.84	6.06
Channel Y	200	5.08	4.48
	- 200	-5.97	-6.52
Channel Z	200	-13.88	-14.29
	- 200	11.78	12.21

3. Channel separation

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

	Input Voltage (mV)	Channel X (μV)	Channel Y (μV)	Channel Z (μV)
Channel X	200	-	-1.66	-3.24
Channel Y	200	5.38	-	-1.05
Channel Z	200	10.50	3.17	-

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4. AD-Converter Values with inputs shorted

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

	High Range (LSB)	Low Range (LSB)
Channel X	16051	16402
Channel Y	16151	16546
Channel Z	15929	17057

5. Input Offset Measurement

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

	Average (μV)	min. Offset (μV)	max. Offset (μV)	Std. Deviation (μV)
Channel X	0.30	-0.62	3.64	0.49
Channel Y	-0.60	-2.28	1.76	0.67
Channel Z	-0.60	-1.64	1.17	0.45

6. Input Offset Current

Nominal Input circuitry offset current on all channels: <25fA

7. Input Resistance (Typical values for information)

	Zeroing (kOhm)	Measuring (MOhm)
Channel X	200	200
Channel Y	200	200
Channel Z	200	200

8. Low Battery Alarm Voltage (Typical values for information)

Typical values	Alarm Level (VDC)
Supply (+ Vcc)	+7.9
Supply (- Vcc)	-7.6

9. Power Consumption (Typical values for information)

Typical values	Switched off (mA)	Stand by (mA)	Transmitting (mA)
Supply (+ Vcc)	+0.01	+6	+14
Supply (- Vcc)	-0.01	-8	-9

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Accreditation No.: SCS 0108

Client SGS-TW (Auden)

Certificate No: EX3-3923_Aug15

CALIBRATION CERTIFICATE

Object EX3DV4 - SN:3923

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

Calibration date August 27, 2015

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

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

Calibration Equipment used (M&TE critical for calibration)

Primary Standards	ID	Cal Date (Certificate No.)	Scheduled Calibration
Power meter E4419B	GB41293874	01-Apr-15 (No. 217-02125)	Mar-16
Power sensor E4412A	MY41498087	01-Apr-15 (No. 217-02128)	Mar-16
Reference 3 dB Attenuator	SN: S5054 (3c)	01-Apr-15 (No. 217-02129)	Mar-16
Reference 20 dB Attenuator	SN: S5277 (20x)	01-Apr-15 (No. 217-02132)	Mar-16
Reference 30 dB Attenuator	SN: S5129 (30b)	01-Apr-15 (No. 217-02133)	Mar-16
Reference Probe ES3DV2	SN: 3013	30-Dec-14 (No. ES3-3013_Dec14)	Dec-15
DAE4	SN: 660	14-Jan-15 (No. DAE4-660_Jan15)	Jan-16
Secondary Standards	ID	Check Date (in house)	Scheduled Check
RF generator HP 8648C	US3642U01700	4-Aug-99 (in house check Apr-13)	In house check: Apr-16
Network Analyzer HP 8753E	US37390585	18-Oct-01 (in house check Oct-14)	In house check: Oct-15

	Name	Function	Signature
Calibrated by	Israel Efrenaig	Laboratory Technician	
Approved by	Katja Pokovic	Technical Manager	

Issued: August 27, 2015

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Glossary:

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

Calibration is Performed According to the Following Standards:

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

Methods Applied and Interpretation of Parameters:

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

Probe EX3DV4

SN:3923

Manufactured: March 8, 2013
Calibrated: August 27, 2015

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

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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]	0.57	0.48	0.47	± 10.1 %
DCP (mV)[B]	103.6	96.4	101.3	

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	153.8	±3.3 %
		Y	0.0	0.0	1.0		155.6	
		Z	0.0	0.0	1.0		157.0	

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.

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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	10.66	10.66	10.66	0.34	1.00	± 12.0 %
835	41.5	0.90	10.45	10.45	10.45	0.42	0.80	± 12.0 %
900	41.5	0.97	10.07	10.07	10.07	0.35	1.00	± 12.0 %
1750	40.1	1.37	8.71	8.71	8.71	0.19	1.12	± 12.0 %
1900	40.0	1.40	8.43	8.43	8.43	0.36	0.90	± 12.0 %
2000	40.0	1.40	8.48	8.48	8.48	0.35	0.80	± 12.0 %
2300	39.5	1.67	8.05	8.05	8.05	0.36	0.80	± 12.0 %
2450	39.2	1.80	7.57	7.57	7.57	0.40	0.80	± 12.0 %
2600	39.0	1.96	7.45	7.45	7.45	0.39	0.80	± 12.0 %
5250	35.9	4.71	5.22	5.22	5.22	0.35	1.80	± 13.1 %
5300	35.9	4.76	5.08	5.08	5.08	0.35	1.80	± 13.1 %
5600	35.5	5.07	4.78	4.78	4.78	0.40	1.80	± 13.1 %
5750	35.4	5.22	4.81	4.81	4.81	0.40	1.80	± 13.1 %

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

DASY/EASY - Parameters of Probe: EX3DV4 - SN: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	10.50	10.50	10.50	0.43	0.86	± 12.0 %
835	55.2	0.97	10.48	10.48	10.48	0.21	1.42	± 12.0 %
900	55.0	1.05	10.33	10.33	10.33	0.30	1.08	± 12.0 %
1750	53.4	1.49	8.40	8.40	8.40	0.39	0.87	± 12.0 %
1900	53.3	1.52	8.11	8.11	8.11	0.41	0.80	± 12.0 %
2000	53.3	1.52	8.31	8.31	8.31	0.29	1.02	± 12.0 %
2300	52.9	1.81	7.90	7.90	7.90	0.30	0.91	± 12.0 %
2450	52.7	1.95	7.63	7.63	7.63	0.29	0.90	± 12.0 %
2600	52.5	2.16	7.49	7.49	7.49	0.25	0.95	± 12.0 %
5250	48.9	5.36	4.68	4.68	4.68	0.40	1.90	± 13.1 %
5300	48.9	5.42	4.56	4.56	4.56	0.40	1.90	± 13.1 %
5600	48.5	5.77	4.10	4.10	4.10	0.45	1.90	± 13.1 %
5750	48.3	5.94	4.30	4.30	4.30	0.45	1.90	± 13.1 %

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

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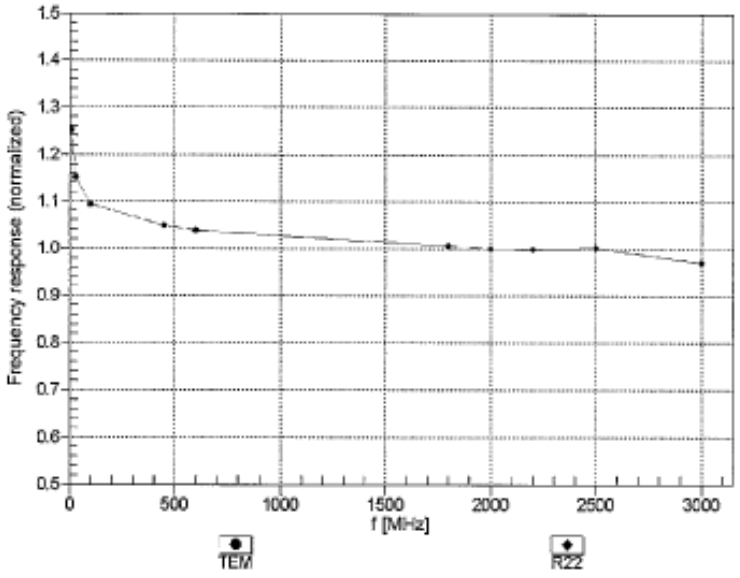
EX3DV4– SN:3923 August 27, 2015

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



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

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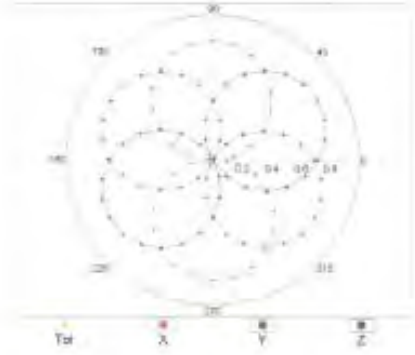
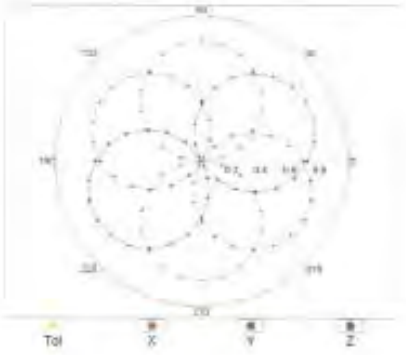
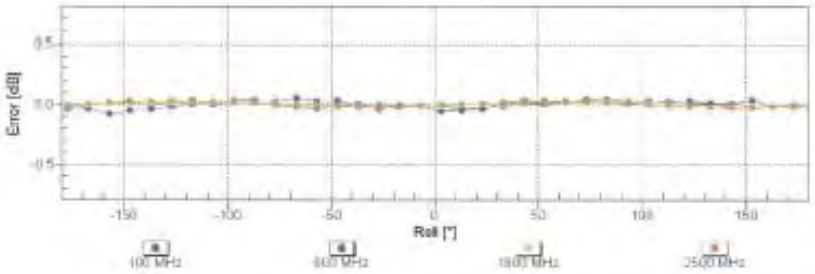
Receiving Pattern (ϕ), ϑ = 0°

f=600 MHz,TEM



f=1800 MHz,R22





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

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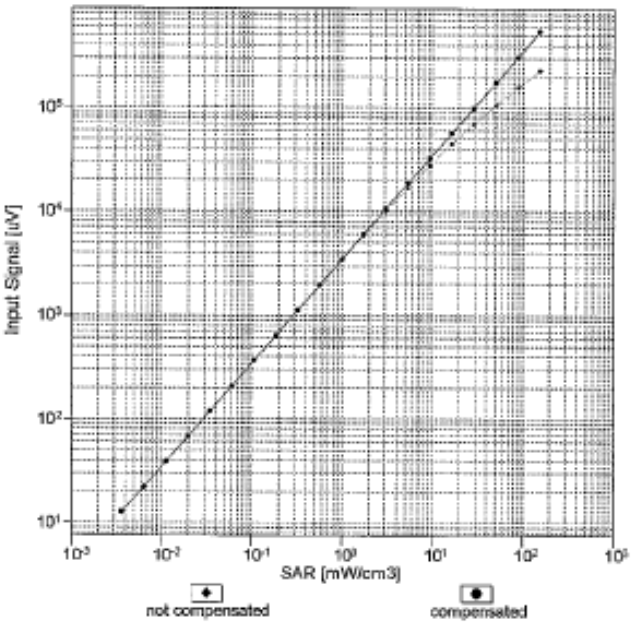
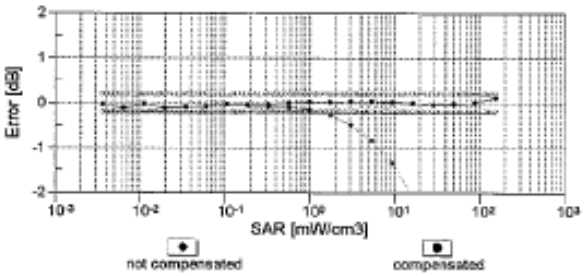
Dynamic Range f(SAR$_{head}$)
(TEM cell , f_{eval}= 1900 MHz)





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

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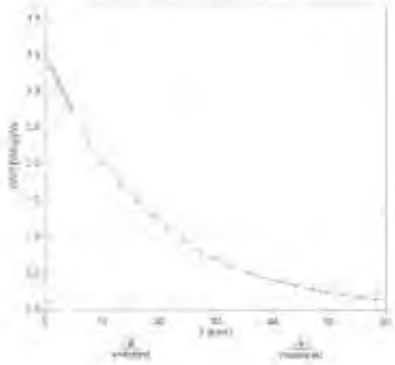
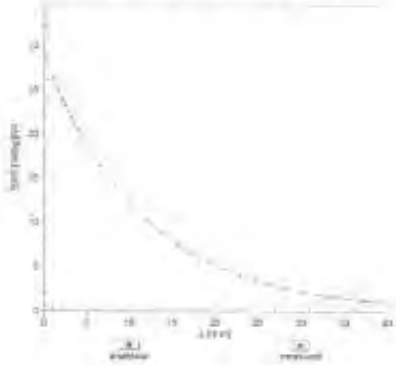
Conversion Factor Assessment

f = 835 MHz,WGLS R9 (H_convF)

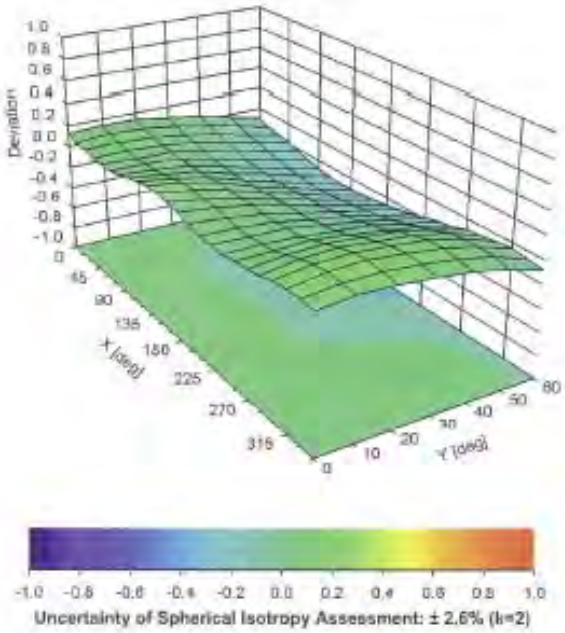


f = 1900 MHz,WGLS R22 (H_convF)



Deviation from Isotropy in Liquid

Error (φ, ϑ), f = 900 MHz



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

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

Other Probe Parameters

Sensor Arrangement	Triangular
Connector Angle (°)	123
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

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8. Uncertainty Budget

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%	∞
Boundary Effect	1.00%	R	√3	1.732	1	1	0.58%	0.58%	∞
Linearity	4.70%	R	√3	1.732	1	1	2.71%	2.71%	∞
Detection Limits	1.00%	R	√3	1.732	1	1	0.58%	0.58%	∞
Readout Electronics	0.30%	N	1	1	1	1	0.30%	0.30%	∞
Response time	0.80%	R	√3	1.732	1	1	0.46%	0.46%	∞
Integration Time	2.60%	R	√3	1.732	1	1	1.50%	1.50%	∞
Measurement drift (class A evaluation)	1.75%	R	√3	1.732	1	1	1.01%	1.01%	∞
RF ambient condition - noise	3.00%	R	√3	1.732	1	1	1.73%	1.73%	∞
RF ambient conditions - reflections	3.00%	R	√3	1.732	1	1	1.73%	1.73%	∞
Probe positioner Mechanical restrictions	0.40%	R	√3	1.732	1	1	0.23%	0.23%	∞
Probe Positioning with respect to phantom	2.90%	R	√3	1.732	1	1	1.67%	1.67%	∞
Post-processing	1.00%	R	√3	1.732	1	1	0.58%	0.58%	∞
Max SAR Eval	1.00%	R	√3	1.732	1	1	0.58%	0.58%	∞
Test Sample related									
Test sample positioning	2.90%	N	1	1	1	1	2.90%	2.90%	M-1
Device Holder Uncertainty	3.60%	N	1	1	1	1	3.60%	3.60%	M-1
Drift of output power	5.00%	R	√3	1.732	1	1	2.89%	2.89%	∞
Phantom and Setup									
Phantom Uncertainty	4.00%	R	√3	1.732	1	1	2.31%	2.31%	∞
Deviation from reference liquid target ε 'r(Body)	3.49%	N	1	1	0.64	0.43	2.23%	1.50%	M
Deviation from reference liquid target σ (Body)	2.83%	N	1	1	0.6	0.49	1.70%	1.39%	M
Combined standard uncertainty		RSS					11.67%	11.50%	
Expant uncertainty (95% confidence							23.35%	23.01%	

9. Phantom Description

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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 < 0.6% if filled with 155mm of HSL900 and without OUT 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

10. System Validation from Original Equipment Supplier

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

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

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

Accreditation No.: SCS 0108

Client SGS-TW (Auden)

Certificate No: D750V3-1015_Aug15

CALIBRATION CERTIFICATE

Object	D750V3 - SN: 1015
Calibration procedure(s)	QA CAL-05.v9 Calibration procedure for dipole validation kits above 700 MHz
Calibration date:	August 24, 2015

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

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

Calibration Equipment used (M&TE critical for calibration)

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

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

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

Issued: August 24, 2015

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

Certificate No: D750V3-1015_Aug15 Page 1 of 8

Calibration Laboratory of
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Engineering AG
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S Schweizerischer Kalibrierdienst
C Service suisse d'étalonnage
S Servizio svizzero di taratura
S Swiss Calibration Service

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

Accreditation No.: SCS 0108

Glossary:

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

Calibration is Performed According to the Following Standards:

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

Additional Documentation:

e) DASY4/5 System Handbook

Methods Applied and Interpretation of Parameters:

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

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

Measurement Conditions

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

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

Head TSL parameters

The following parameters and calculations were applied.

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

SAR result with Head TSL

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

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

Body TSL parameters

The following parameters and calculations were applied.

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

SAR result with Body TSL

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

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

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Appendix (Additional assessments outside the scope of SCS 0108)

Antenna Parameters with Head TSL

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

Antenna Parameters with Body TSL

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

General Antenna Parameters and Design

Electrical Delay (one direction)	1.036 ns

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

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

Additional EUT Data

Manufactured by	SPEAG
Manufactured on	March 22, 2010

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DASY5 Validation Report for Head TSL

Date: 21.08.2015

Test Laboratory: SPEAG, Zurich, Switzerland

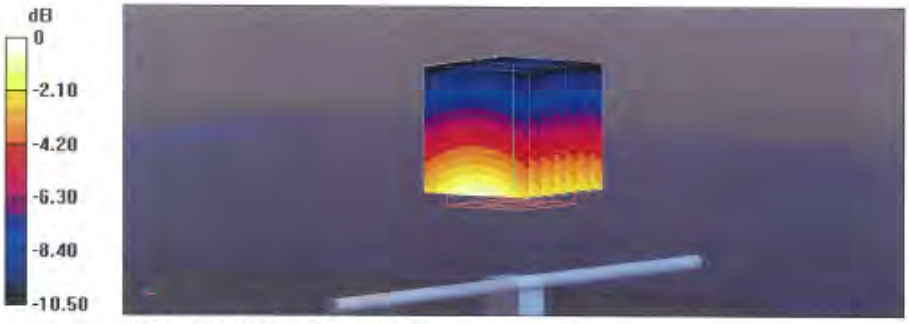
DUT: Dipole 750 MHz; Type: D750V3; Serial: D750V3 - SN: 1015

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

DASY52 Configuration:

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

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



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

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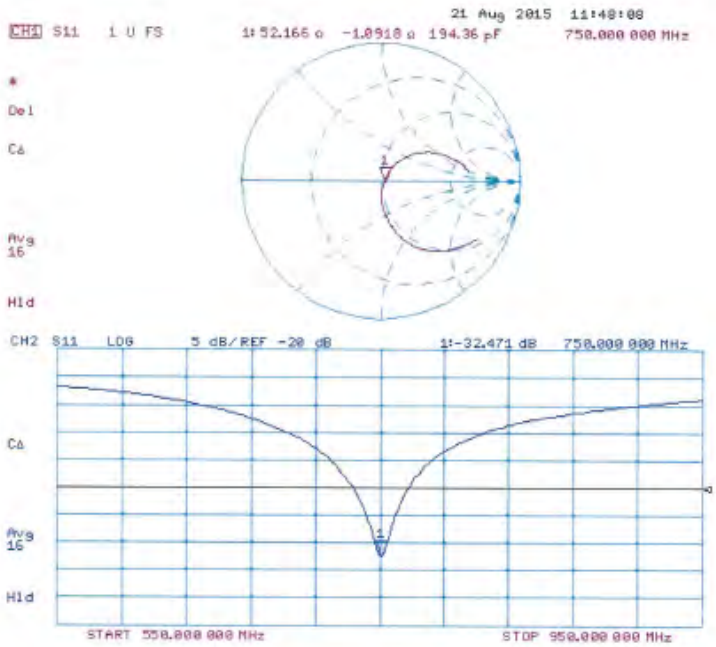
Impedance Measurement Plot for Head TSL



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DASY5 Validation Report for Body TSL

Date: 24.08.2015

Test Laboratory: SPEAG, Zurich, Switzerland

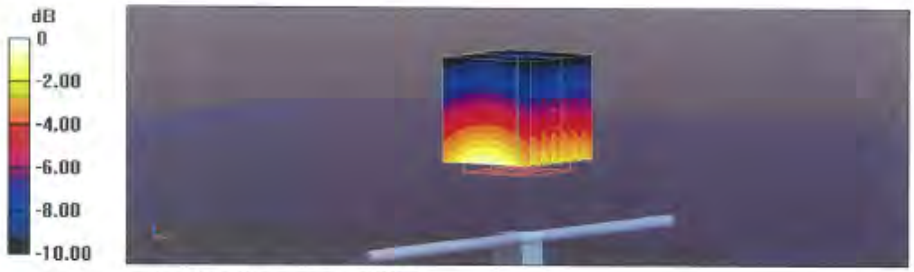
DUT: Dipole 750 MHz; Type: D750V3; Serial: D750V3 - SN: 1015

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

DASY52 Configuration:

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

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



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

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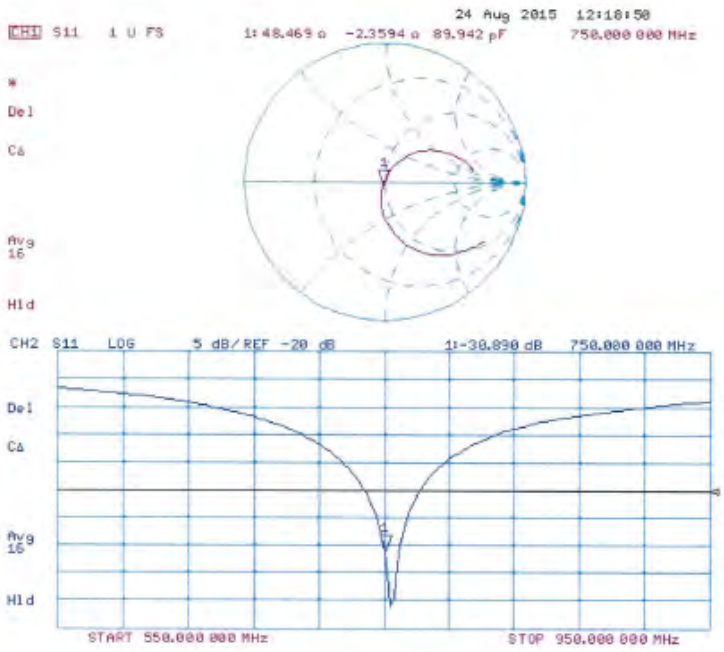
Impedance Measurement Plot for Body TSL



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Accreditation No.: SCS 0108

Client SGS-TW (Auden)

Certificate No: D835V2-4d063_Aug15

CALIBRATION CERTIFICATE

Object	D835V2 - SN: 4d063
Calibration procedure(s)	QA CAL-05.v9 Calibration procedure for dipole validation kits above 700 MHz
Calibration date:	August 24, 2015

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

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

Calibration Equipment used (M&TE critical for calibration)

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

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

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

Issued: August 25, 2015

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:

e) DASY4/5 System Handbook

Methods Applied and Interpretation of Parameters:

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

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

Measurement Conditions

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

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

Head TSL parameters

The following parameters and calculations were applied.

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

SAR result with Head TSL

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

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

Body TSL parameters

The following parameters and calculations were applied.

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

SAR result with Body TSL

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

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

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Appendix (Additional assessments outside the scope of SCS 0108)

Antenna Parameters with Head TSL

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

Antenna Parameters with Body TSL

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

General Antenna Parameters and Design

Electrical Delay (one direction)	1.394 ns

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

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

Additional EUT Data

Manufactured by	SPEAG
Manufactured on	November 27, 2006

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DASY5 Validation Report for Head TSL

Date: 21.08.2015

Test Laboratory: SPEAG, Zurich, Switzerland

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

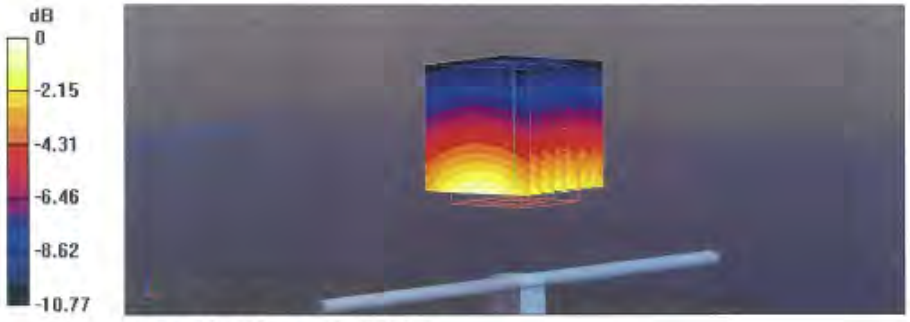
Communication System: UID 0 - CW; Frequency: 835 MHz
Medium parameters used: f = 835 MHz; σ = 0.93 S/m; ε_r = 41.9; ρ = 1000 kg/m^3
Phantom section: Flat Section
Measurement Standard: DASY5 (IEEE/IEC/ANSI C63.19-2011)

DASY52 Configuration:

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

Dipole Calibration for Head Tissue/Pin=250 mW, d=15mm/Zoom Scan (7x7x7)/Cube 0:

Measurement grid: dx=5mm, dy=5mm, dz=5mm
Reference Value = 55.92 V/m; Power Drift = -0.02 dB
Peak SAR (extrapolated) = 3.44 W/kg
SAR(1 g) = 2.33 W/kg; SAR(10 g) = 1.52 W/kg
Maximum value of SAR (measured) = 2.73 W/kg



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

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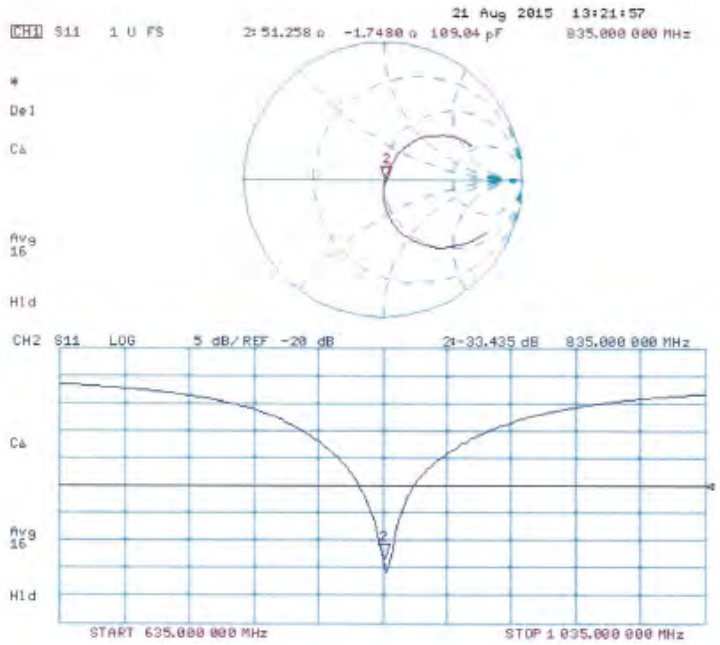
Impedance Measurement Plot for Head TSL



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DASY5 Validation Report for Body TSL

Date: 24.08.2015

Test Laboratory: SPEAG, Zurich, Switzerland

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

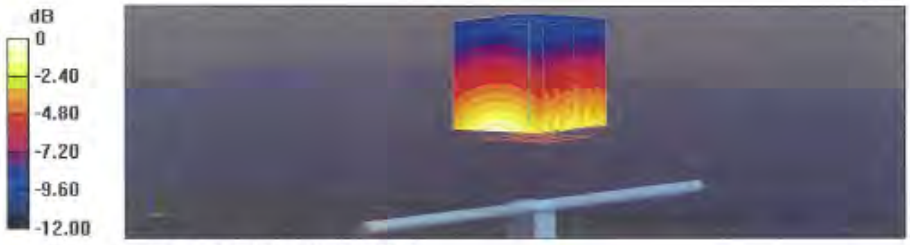
Communication System: UID 0 - CW; Frequency: 835 MHz
Medium parameters used: f = 835 MHz; σ = 1.02 S/m; ε_r = 56.1; ρ = 1000 kg/m^3
Phantom section: Flat Section
Measurement Standard: DASY5 (IEEE/IEC/ANSI C63.19-2011)

DASY52 Configuration:

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

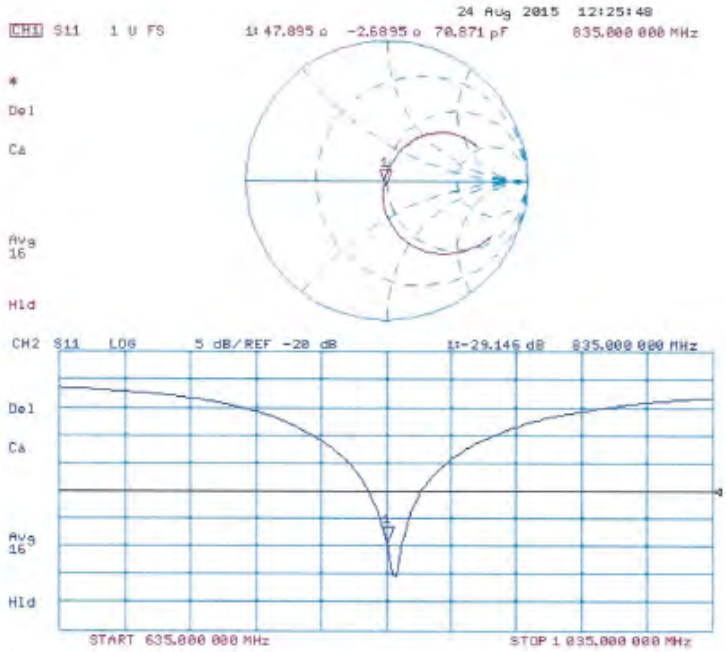
Dipole Calibration for Body Tissue/Pin=250 mW, d=15mm/Zoom Scan (7x7x7)/Cube 0:

Measurement grid: dx=5mm, dy=5mm, dz=5mm
Reference Value = 54.07 V/m; Power Drift = -0.02 dB
Peak SAR (extrapolated) = 3.52 W/kg
SAR(1 g) = 2.4 W/kg; SAR(10 g) = 1.57 W/kg
Maximum value of SAR (measured) = 2.81 W/kg



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

Impedance Measurement Plot for Body TSL



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Accreditation No.: SCS 0108

Client SGS-TW (Auden)

Certificate No: D1750V2-1008_Aug15

CALIBRATION CERTIFICATE

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

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

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

Calibration Equipment used (M&TE critical for calibration)

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

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

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

Issued: August 21, 2015

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Accreditation No.: SCS 0108

Glossary:

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

Calibration is Performed According to the Following Standards:

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

Additional Documentation:

e) DASY4/5 System Handbook

Methods Applied and Interpretation of Parameters:

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

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

Measurement Conditions

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

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

Head TSL parameters

The following parameters and calculations were applied.

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

SAR result with Head TSL

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

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

Body TSL parameters

The following parameters and calculations were applied.

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

SAR result with Body TSL

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

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

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Appendix (Additional assessments outside the scope of SCS 0108)

Antenna Parameters with Head TSL

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

Antenna Parameters with Body TSL

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

General Antenna Parameters and Design

Electrical Delay (one direction)	1.221 ns

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

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

Additional EUT Data

Manufactured by	SPEAG
Manufactured on	February 11, 2009

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DASY5 Validation Report for Head TSL

Date: 20.08.2015

Test Laboratory: SPEAG, Zurich, Switzerland

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

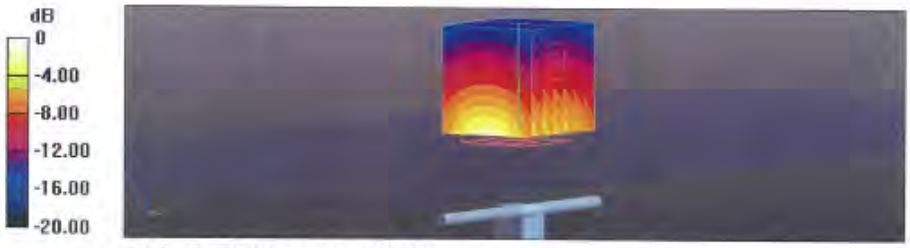
Communication System: UID 0 - CW; Frequency: 1750 MHz
Medium parameters used: f = 1750 MHz; σ = 1.36 S/m; ε_r = 39.8; ρ = 1000 kg/m^3
Phantom section: Flat Section
Measurement Standard: DASY5 (IEEE/IEC/ANSI C63.19-2011)

DASY52 Configuration:

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

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

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



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

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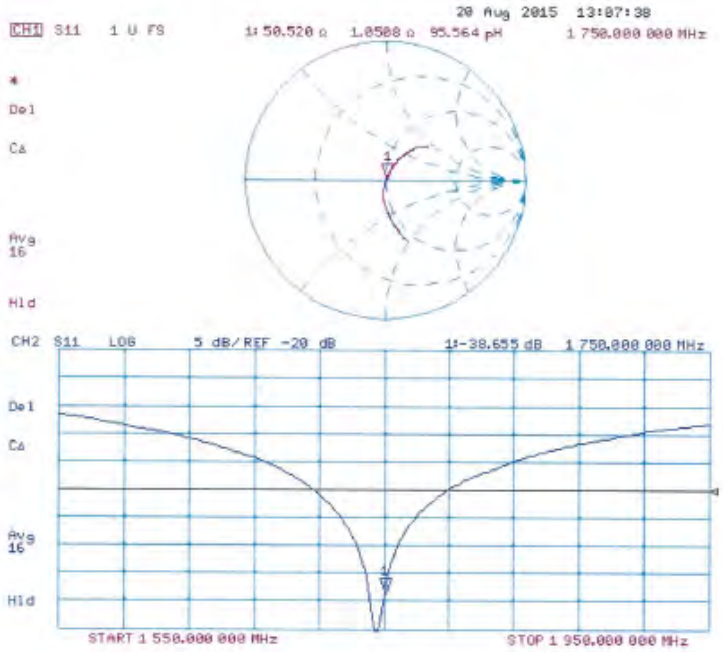
Impedance Measurement Plot for Head TSL



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DASY5 Validation Report for Body TSL

Date: 20.08.2015

Test Laboratory: SPEAG, Zurich, Switzerland

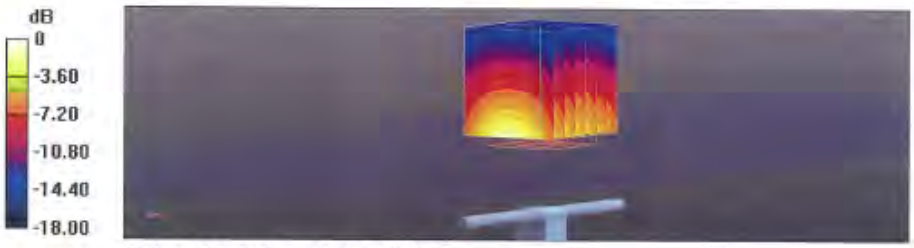
DUT: Dipole 1750 MHz; Type: D1750V2; Serial: D1750V2 - SN: 1008

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

DASY52 Configuration:

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

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



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

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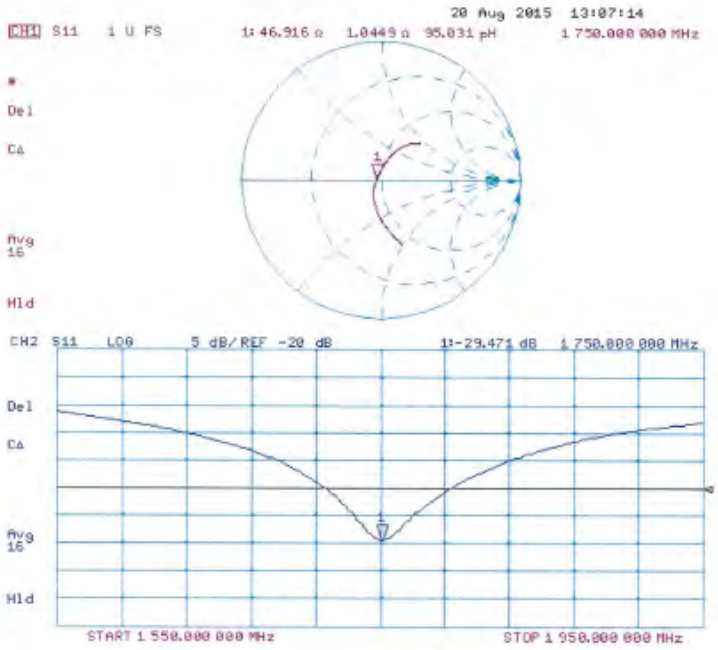
Impedance Measurement Plot for Body TSL



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Accreditation No.: SCS 0108

Client SGS-TW (Auden) **Certificate No: D1900V2-5d027_Apr15**

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 29, 2015

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

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

Calibration Equipment used (M&TE critical for calibration)

Primary Standards	ID #	Cal Date (Certificate No.)	Scheduled Calibration
Power meter EPM-442A	GB37480704	07-Oct-14 (No. 217-02020)	Oct-15
Power sensor HP 8481A	US37292783	07-Oct-14 (No. 217-02020)	Oct-15
Power sensor HP 8481A	MY41092317	07-Oct-14 (No. 217-02021)	Oct-15
Reference 20 dB Attenuator	SN: 5058 (20k)	01-Apr-15 (No. 217-02131)	Mar-16
Type-N mismatch combination	SN: 5047.2 / 06327	01-Apr-15 (No. 217-02134)	Mar-16
Reference Probe ES3DV3	SN: 3205	30-Dec-14 (No. ES3-3205_Dec14)	Dec-15
DAE4	SN: 601	18-Aug-14 (No. DAE4-601_Aug14)	Aug-15

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

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

Issued: April 29, 2015

Calibration Laboratory of
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Accreditation No.: SCS 0108

Glossary:

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

Calibration is Performed According to the Following Standards:

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

Additional Documentation:

d) DASY4/5 System Handbook

Methods Applied and Interpretation of Parameters:

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

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

Measurement Conditions

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

DASY Version	DASY5	V52.8.8
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	38.6 ± 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	10.1 W/kg
SAR for nominal Head TSL parameters	normalized to 1W	**40.6 W/kg ± 17.0 % (k=2)**

SAR averaged over 10 cm³ (10 g) of Head TSL	condition	
SAR measured	250 mW input power	5.30 W/kg
SAR for nominal Head TSL parameters	normalized to 1W	**21.3 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	52.8 ± 6 %	1.50 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	9.78 W/kg
SAR for nominal Body TSL parameters	normalized to 1W	**39.3 W/kg ± 17.0 % (k=2)**

SAR averaged over 10 cm³ (10 g) of Body TSL	condition	
SAR measured	250 mW input power	5.20 W/kg
SAR for nominal Body TSL parameters	normalized to 1W	**20.9 W/kg ± 16.5 % (k=2)**

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Appendix (Additional assessments outside the scope of SCS 0108)

Antenna Parameters with Head TSL

Impedance, transformed to feed point	50.2 Ω + 2.5 jΩ
Return Loss	- 32.2 dB

Antenna Parameters with Body TSL

Impedance, transformed to feed point	46.5 Ω + 2.5 jΩ
Return Loss	- 27.0 dB

General Antenna Parameters and Design

Electrical Delay (one direction)	1.197 ns

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

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

Additional EUT Data

Manufactured by	SPEAG
Manufactured on	December 17, 2002

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DASY5 Validation Report for Head TSL

Date: 29.04.2015

Test Laboratory: SPEAG, Zurich, Switzerland

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

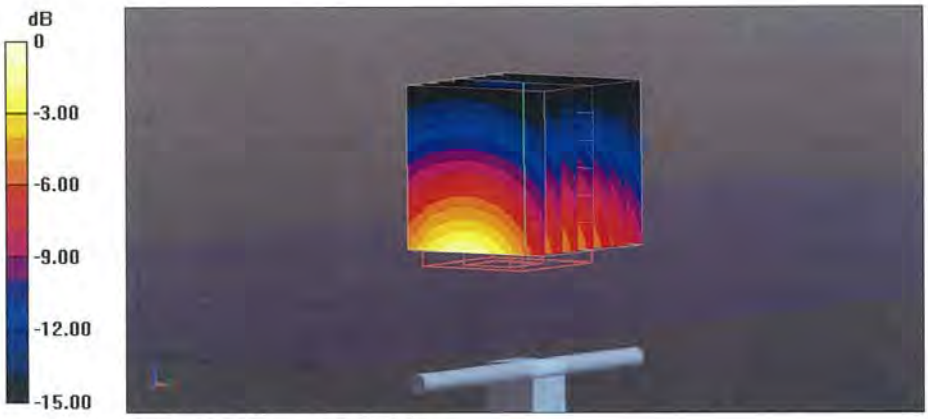
Communication System: UID 0 - CW; Frequency: 1900 MHz
Medium parameters used: f = 1900 MHz; σ = 1.37 S/m; ε_r = 38.6; ρ = 1000 kg/m^3
Phantom section: Flat Section
Measurement Standard: DASY5 (IEEE/IEC/ANSI C63.19-2011)

DASY52 Configuration:

- Probe: ES3DV3 - SN3205; ConvF(5, 5, 5); Calibrated: 30.12.2014;
- Sensor-Surface: 3mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn601; Calibrated: 18.08.2014
- Phantom: Flat Phantom 5.0 (front); Type: QD000P50AA; Serial: 1001
- DASY52 52.8.8(1222); SEMCAD X 14.6.10(7331)

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

Measurement grid: dx=5mm, dy=5mm, dz=5mm
Reference Value = 97.71 V/m; Power Drift = 0.03 dB
Peak SAR (extrapolated) = 18.5 W/kg
SAR(1 g) = 10.1 W/kg; SAR(10 g) = 5.3 W/kg
Maximum value of SAR (measured) = 12.3 W/kg



0 dB = 12.3 W/kg = 10.90 dBW/kg

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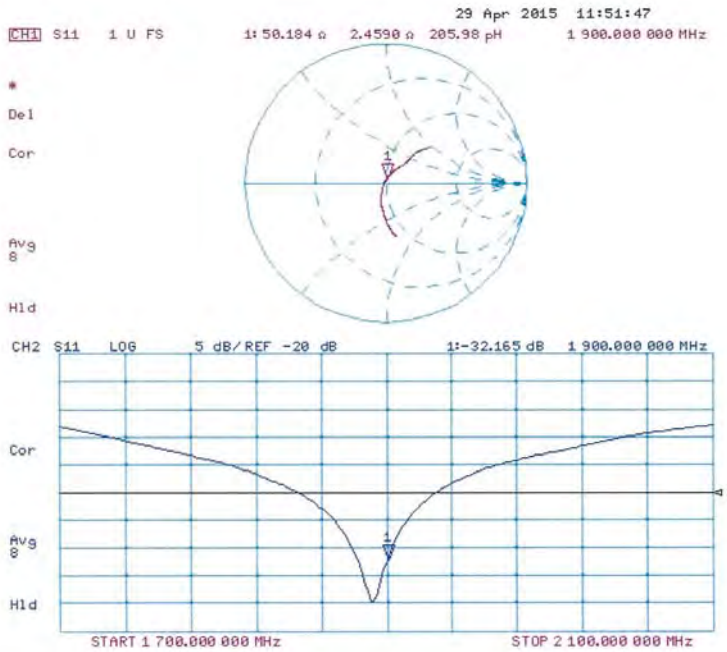
Impedance Measurement Plot for Head TSL



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DASY5 Validation Report for Body TSL

Date: 29.04.2015

Test Laboratory: SPEAG, Zurich, Switzerland

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

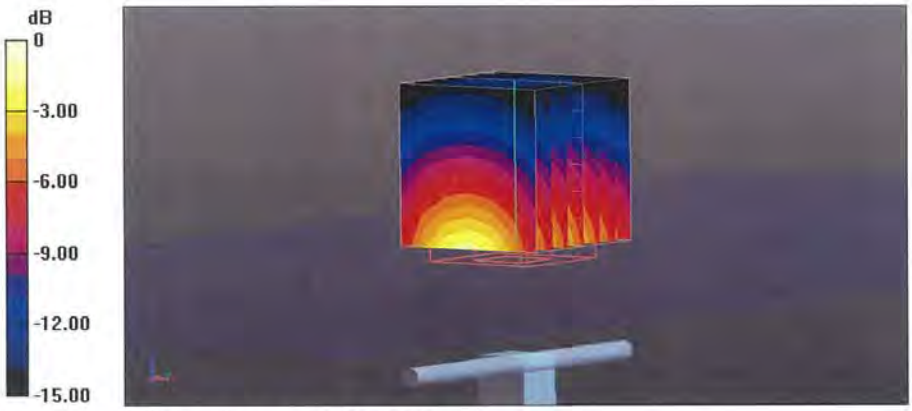
Communication System: UID 0 - CW; Frequency: 1900 MHz
Medium parameters used: f = 1900 MHz; σ = 1.5 S/m; ε_r = 52.8; ρ = 1000 kg/m^3
Phantom section: Flat Section
Measurement Standard: DASY5 (IEEE/IEC/ANSI C63.19-2011)

DASY52 Configuration:

- Probe: ES3DV3 - SN3205; ConvF(4.65, 4.65, 4.65); Calibrated: 30.12.2014;
- Sensor-Surface: 3mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn601; Calibrated: 18.08.2014
- Phantom: Flat Phantom 5.0 (back); Type: QD000P50AA; Serial: 1002
- DASY52 52.8.8(1222); SEMCAD X 14.6.10(7331)

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

Measurement grid: dx=5mm, dy=5mm, dz=5mm
Reference Value = 94.63 V/m; Power Drift = 0.06 dB
Peak SAR (extrapolated) = 16.7 W/kg
SAR(1 g) = 9.78 W/kg; SAR(10 g) = 5.2 W/kg
Maximum value of SAR (measured) = 12.4 W/kg



0 dB = 12.4 W/kg = 10.93 dBW/kg

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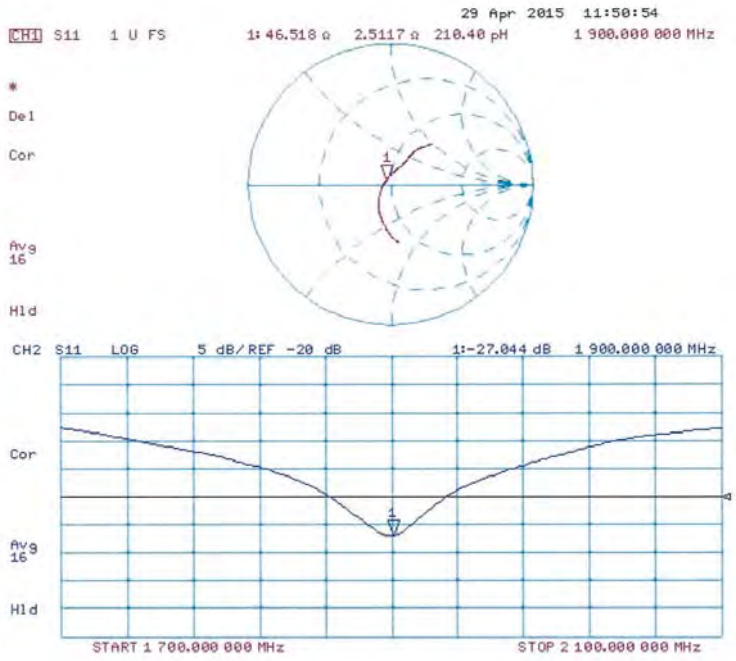
Impedance Measurement Plot for Body TSL



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Accreditation No.: SCS 0108

Client SGS-TW (Auden)

Certificate No: D2450V2-727_Apr15

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 22, 2015

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

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

Calibration Equipment used (M&TE critical for calibration)

Primary Standards	ID #	Cal Date (Certificate No.)	Scheduled Calibration
Power meter EPM-442A	GB37480704	07-Oct-14 (No. 217-02020)	Oct-15
Power sensor HP 8481A	US37292783	07-Oct-14 (No. 217-02020)	Oct-15
Power sensor HP 8481A	MY41092317	07-Oct-14 (No. 217-02021)	Oct-15
Reference 20 dB Attenuator	SN: 5058 (20k)	01-Apr-15 (No. 217-02131)	Mar-16
Type-N mismatch combination	SN: 5047.2 / 06327	01-Apr-15 (No. 217-02134)	Mar-16
Reference Probe ES3DV3	SN: 3205	30-Dec-14 (No. ES3-3205_Dec14)	Dec-15
DAE4	SN: 601	18-Aug-14 (No. DAE4-601_Aug14)	Aug-15

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

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

Issued: April 23, 2015

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

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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) 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	
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	37.6 ± 6 %	1.82 mho/m ± 6 %
Head TSL temperature change during test	< 0.5 °C	----	----

SAR result with Head TSL

SAR averaged over 1 cm³ (1 g) of Head TSL	Condition	
SAR measured	250 mW input power	13.2 W/kg
SAR for nominal Head TSL parameters	normalized to 1W	**52.0 W/kg ± 17.0 % (k=2)**

SAR averaged over 10 cm³ (10 g) of Head TSL	condition	
SAR measured	250 mW input power	6.10 W/kg
SAR for nominal Head TSL parameters	normalized to 1W	**24.2 W/kg ± 16.5 % (k=2)**

Body TSL parameters

The following parameters and calculations were applied.

	Temperature	Permittivity	Conductivity
Nominal Body TSL parameters	22.0 °C	52.7	1.95 mho/m
Measured Body TSL parameters	(22.0 ± 0.2) °C	50.6 ± 6 %	2.02 mho/m ± 6 %
Body TSL temperature change during test	< 0.5 °C	----	----

SAR result with Body TSL

SAR averaged over 1 cm³ (1 g) of Body TSL	Condition	
SAR measured	250 mW input power	13.1 W/kg
SAR for nominal Body TSL parameters	normalized to 1W	**51.0 W/kg ± 17.0 % (k=2)**

SAR averaged over 10 cm³ (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	**24.0 W/kg ± 16.5 % (k=2)**

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Appendix (Additional assessments outside the scope of SCS 0108)

Antenna Parameters with Head TSL

Impedance, transformed to feed point	56.2 Ω + 1.3 jΩ
Return Loss	- 24.6 dB

Antenna Parameters with Body TSL

Impedance, transformed to feed point	51.8 Ω + 3.3 jΩ
Return Loss	- 28.6 dB

General Antenna Parameters and Design

Electrical Delay (one direction)	1.149 ns

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

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

Additional EUT Data

Manufactured by	SPEAG
Manufactured on	January 09, 2003

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DASY5 Validation Report for Head TSL

Date: 22.04.2015

Test Laboratory: SPEAG, Zurich, Switzerland

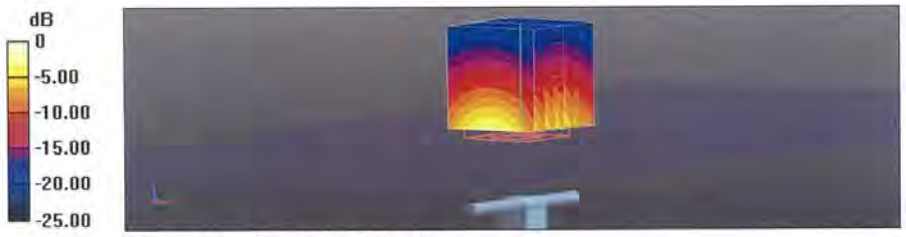
DUT: Dipole 2450 MHz; Type: D2450V2; Serial: D2450V2 - SN: 727

Communication System: UID 0 - CW; Frequency: 2450 MHz
Medium parameters used: f = 2450 MHz; σ = 1.82 S/m; ε_r = 37.6; ρ = 1000 kg/m^3
Phantom section: Flat Section
Measurement Standard: DASY5 (IEEE/IEC/ANSI C63.19-2011)

DASY52 Configuration:

- Probe: ES3DV3 - SN3205; ConvF(4.54, 4.54, 4.54); Calibrated: 30.12.2014;
- Sensor-Surface: 3mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn601; Calibrated: 18.08.2014
- Phantom: Flat Phantom 5.0 (front); Type: QD000P50AA; Serial: 1001
- DASY52 52.8.8(1222); SEMCAD X 14.6.10(7331)

Dipole Calibration for Head Tissue/Pin=250 mW, d=10mm/Zoom Scan (7x7x7)/Cube 0:
Measurement grid: dx=5mm, dy=5mm, dz=5mm
Reference Value = 101.5 V/m; Power Drift = 0.01 dB
Peak SAR (extrapolated) = 27.4 W/kg
SAR(1 g) = 13.2 W/kg; SAR(10 g) = 6.1 W/kg
Maximum value of SAR (measured) = 17.5 W/kg



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

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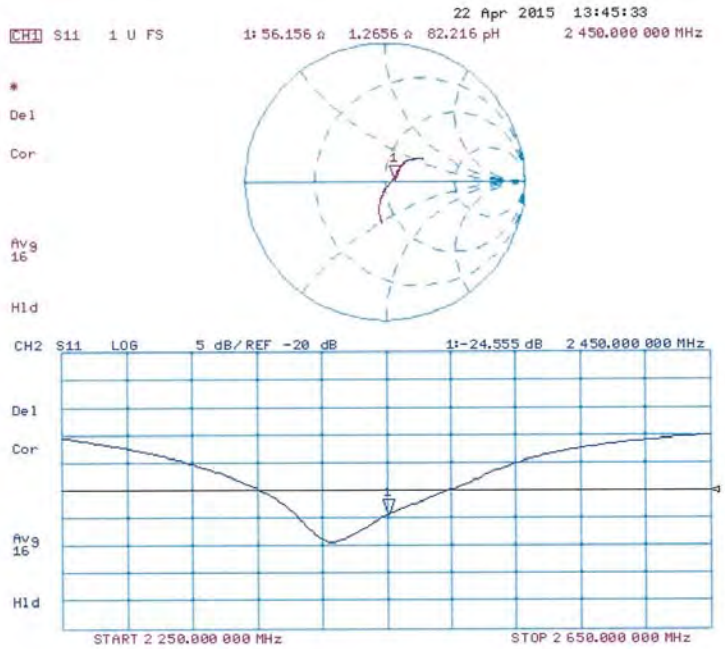
Impedance Measurement Plot for Head TSL



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DASY5 Validation Report for Body TSL

Date: 22.04.2015

Test Laboratory: SPEAG, Zurich, Switzerland

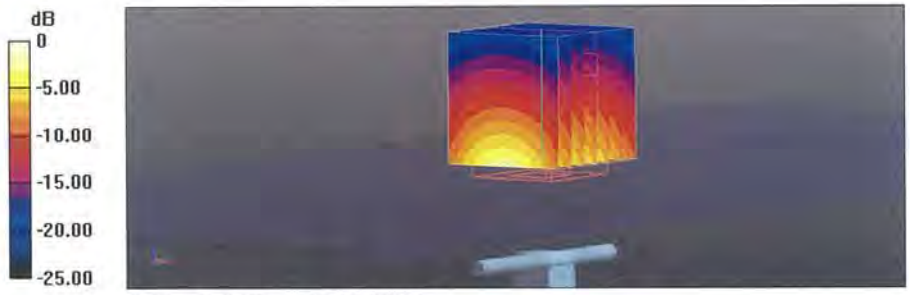
DUT: Dipole 2450 MHz; Type: D2450V2; Serial: D2450V2 - SN: 727

Communication System: UID 0 - CW; Frequency: 2450 MHz
Medium parameters used: f = 2450 MHz; σ = 2.02 S/m; ε_r = 50.6; ρ = 1000 kg/m^3
Phantom section: Flat Section
Measurement Standard: DASY5 (IEEE/IEC/ANSI C63.19-2011)

DASY52 Configuration:

- Probe: ES3DV3 - SN3205; ConvF(4.32, 4.32, 4.32); Calibrated: 30.12.2014;
- Sensor-Surface: 3mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn601; Calibrated: 18.08.2014
- Phantom: Flat Phantom 5.0 (back); Type: QD000P50AA; Serial: 1002
- DASY52 52.8.8(1222); SEMCAD X 14.6.10(7331)

Dipole Calibration for Body Tissue/Pin=250 mW, d=10mm/Zoom Scan (7x7x7)/Cube 0:
Measurement grid: dx=5mm, dy=5mm, dz=5mm
Reference Value = 95.54 V/m; Power Drift = -0.01 dB
Peak SAR (extrapolated) = 27.2 W/kg
SAR(1 g) = 13.1 W/kg; SAR(10 g) = 6.1 W/kg
Maximum value of SAR (measured) = 17.4 W/kg



0 dB = 17.4 W/kg = 12.41 dBW/kg

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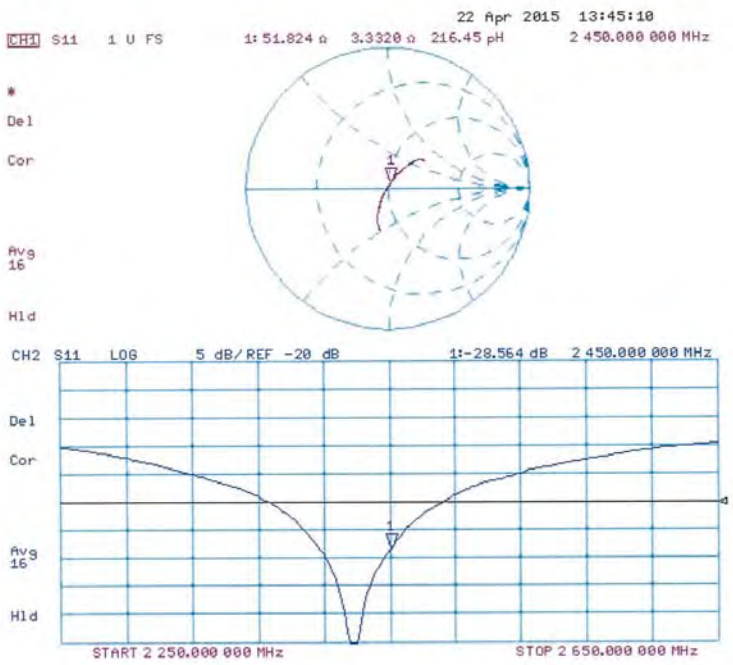
Impedance Measurement Plot for Body TSL



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Accreditation No.: SCS 0108

Client SGS-TW (Auden)

Certificate No: D2600V2-1005_Jan15

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 27, 2015

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

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

Calibration Equipment used (M&TE critical for calibration)

Primary Standards	ID #	Cal Date (Certificate No.)	Scheduled Calibration
Power meter EPM-442A	GB37480704	07-Oct-14 (No. 217-02020)	Oct-15
Power sensor HP 8481A	US37292783	07-Oct-14 (No. 217-02020)	Oct-15
Power sensor HP 8481A	MY41092317	07-Oct-14 (No. 217-02021)	Oct-15
Reference 20 dB Attenuator	SN: 5058 (20k)	03-Apr-14 (No. 217-01916)	Apr-15
Type-N mismatch combination	SN: 5047.2 / 06327	03-Apr-14 (No. 217-01921)	Apr-15
Reference Probe ES3DV3	SN: 3205	30-Dec-14 (No. ES3-3205_Dec14)	Dec-15
DAE4	SN: 601	18-Aug-14 (No. DAE4-601_Aug14)	Aug-15

Secondary Standards	ID #	Check Date (in house)	Scheduled Check
RF generator R&S SMT-06	100005	05-Aug-05 (in house check Oct-13)	In house check: Oct-15
Network Analyzer HP 8753E	US37390585 S4206	18-Oct-01 (in house check Oct-14)	In house check: Oct-15

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

Issued: January 27, 2015

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) 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	
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	38.6 ± 6 %	2.05 mho/m ± 6 %
Head TSL temperature change during test	< 0.5 °C	—	—

SAR result with Head TSL

SAR averaged over 1 cm³ (1 g) of Head TSL	Condition	
SAR measured	250 mW input power	14.5 W/kg
SAR for nominal Head TSL parameters	normalized to 1W	**56.8 W/kg ± 17.0 % (k=2)**

SAR averaged over 10 cm³ (10 g) of Head TSL	condition	
SAR measured	250 mW input power	6.42 W/kg
SAR for nominal Head TSL parameters	normalized to 1W	**25.4 W/kg ± 16.5 % (k=2)**

Body TSL parameters

The following parameters and calculations were applied.

	Temperature	Permittivity	Conductivity
Nominal Body TSL parameters	22.0 °C	52.5	2.16 mho/m
Measured Body TSL parameters	(22.0 ± 0.2) °C	51.1 ± 6 %	2.21 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	14.0 W/kg
SAR for nominal Body TSL parameters	normalized to 1W	**55.1 W/kg ± 17.0 % (k=2)**

SAR averaged over 10 cm³ (10 g) of Body TSL	condition	
SAR measured	250 mW input power	6.20 W/kg
SAR for nominal Body TSL parameters	normalized to 1W	**24.6 W/kg ± 16.5 % (k=2)**

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Appendix (Additional assessments outside the scope of SCS0108)

Antenna Parameters with Head TSL

Impedance, transformed to feed point	49.4 Ω - 3.3 jΩ
Return Loss	- 29.3 dB

Antenna Parameters with Body TSL

Impedance, transformed to feed point	46.8 Ω - 2.5 jΩ
Return Loss	- 27.6 dB

General Antenna Parameters and Design

Electrical Delay (one direction)	1.134 ns

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

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

Additional EUT Data

Manufactured by	SPEAG
Manufactured on	December 23, 2006

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DASY5 Validation Report for Head TSL

Date: 27.01.2015

Test Laboratory: SPEAG, Zurich, Switzerland

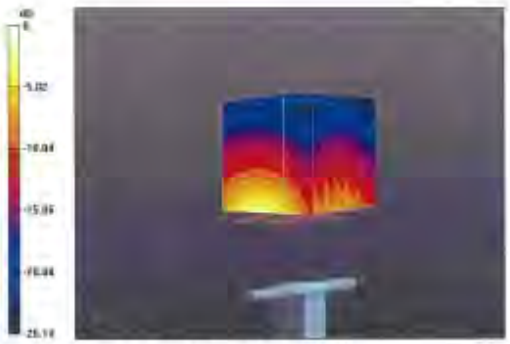
DUT: Dipole 2600 MHz; Type: D2600V2; Serial: D2600V2 - SN: 1005

Communication System: UID 0 - CW; Frequency: 2600 MHz
Medium parameters used: f = 2600 MHz; σ = 2.05 S/m; ε_r = 38.8; ρ = 1000 kg/m^3
Phantom section: Flat Section
Measurement Standard: DASY5 (IEEE/IEC/ANSI C63.19-2011)

DASY52 Configuration:

- Probe: ES3DV3 - SN3205; ConvF(4.49, 4.49, 4.49); Calibrated: 30.12.2014;
- Sensor-Surface: 3mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn601; Calibrated: 18.08.2014
- Phantom: Flat Phantom 5.0 (front); Type: QD000P50AA; Serial: 1001
- DASY52 52.8.8(1222); SEMCAD X 14.6.10(7331)

Dipole Calibration for Head Tissue/Pin=250 mW, d=10mm/Zoom Scan (7x7x7)/Cube 0:
Measurement grid: dx=5mm, dy=5mm, dz=5mm
Reference Value = 98.94 V/m; Power Drift = 0.09 dB
Peak SAR (extrapolated) = 30.6 W/kg
SAR(1 g) = 14.5 W/kg; SAR(10 g) = 6.42 W/kg
Maximum value of SAR (measured) = 18.6 W/kg



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

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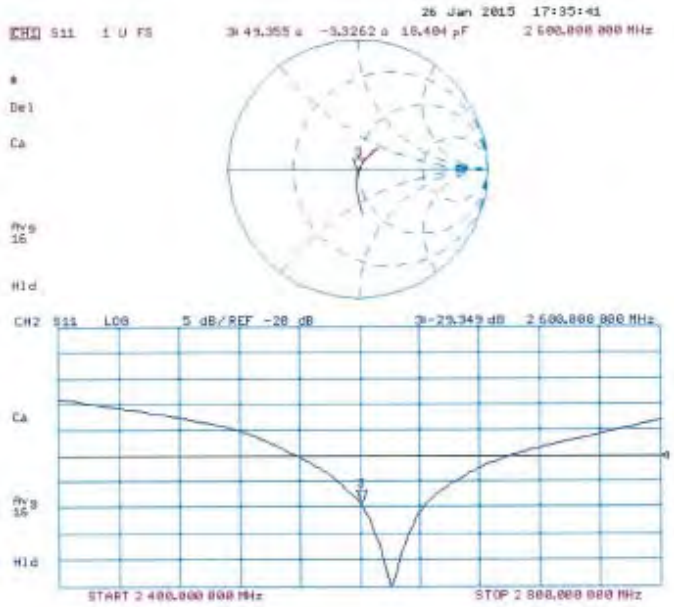
Impedance Measurement Plot for Head TSL



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DASY5 Validation Report for Body TSL

Date: 27.01.2015

Test Laboratory: SPEAG, Zurich, Switzerland

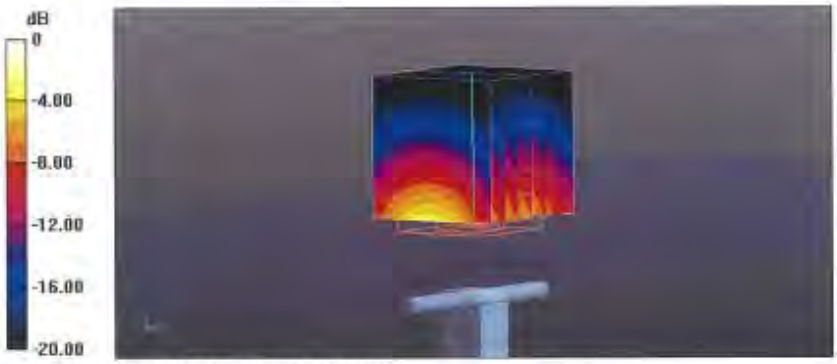
DUT: Dipole 2600 MHz; Type: D2600V2; Serial: D2600V2 - SN: 1005

Communication System: UID 0 - CW; Frequency: 2600 MHz
Medium parameters used: f = 2600 MHz; σ = 2.21 S/m; ε_r = 51.1; ρ = 1000 kg/m^3
Phantom section: Flat Section
Measurement Standard: DASY5 (IEEE/IEC/ANSI C63.19-2011)

DASY52 Configuration:

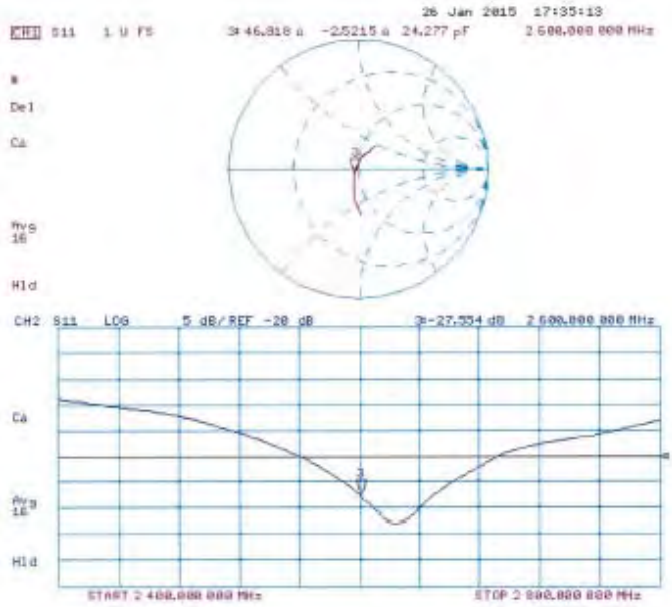
- Probe: ES3DV3 - SN3205; ConvF(4.13, 4.13, 4.13); Calibrated: 30.12.2014;
- Sensor-Surface: 3mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn601; Calibrated: 18.08.2014
- Phantom: Flat Phantom 5.0 (back); Type: QD000P50AA; Serial: 1002
- DASY52 52.8.8(1222); SEMCAD X 14.6.10(7331)

Dipole Calibration for Body Tissue/Pin=250 mW, d=10mm/Zoom Scan (7x7x7)/Cube 0:
Measurement grid: dx=5mm, dy=5mm, dz=5mm
Reference Value = 96.04 V/m; Power Drift = 0.02 dB
Peak SAR (extrapolated) = 29.6 W/kg
SAR(1 g) = 14 W/kg; SAR(10 g) = 6.2 W/kg
Maximum value of SAR (measured) = 18.7 W/kg



0 dB = 18.7 W/kg = 12.72 dBW/kg

Impedance Measurement Plot for Body TSL



- End of 1st part of report -

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