SAR TEST REPORT

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

Equipment Under Test	Personal Tracker
Brand Name	GlobalSat
Model No.	MD4
Series Model No.	GP-300M, GP-301M, MD4L, MD4X (X can be any alphanumeric character for marketing purpose)
Model difference	Marketing difference.
Company Name	GlobalSat WorldCom Corporation
Company Address	16F., No.186, Jian 1st Rd., Zhonghe Dist., New Taipei City, Taiwan
Standards	IEEE/ANSI C95.1-1992, IEEE 1528-2013, KDB865664D01v01r04,KDB865664D02v01r02, KDB941225D01v03r01,KDB941225D05v02r05, KDB447498D01v06.
FCC ID	UDV-201709
Date of Receipt	Oct. 15, 2019
Date of Test(s)	Nov. 05, 2019 ~ Nov. 08, 2019
Date of Issue	Nov. 20, 2019

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

Remarks:

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

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

Signed on behalf of SGS

Clerk / Ruby Ou	Engineer / Jay Tseng	Asst. Manager / John Yeh
Ruby Ou	Jay Tseng	John Yeh

Date: Nov. 20, 2019

Revision History

Revision	Description	Issue Date
Rev.00	Initial creation of document	Nov. 20, 2019

Contents

1. General Information

1.1 Testing Laboratory

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1.2 Details of Applicant

Company Name	GlobalSat WorldCom Corporation
Company Address	16F., No.186, Jian 1st Rd., Zhonghe Dist., New Taipei City, Taiwan

1.3 Description of EUT

Equipment Under Test	Personal Tracker			
Brand Name	GlobalSat			
Model No.	MD4			
Series Model No.	GP-300M, GP-301M, MD4L, MD4X (X can be any alphanumeric character for marketing purpose)			
HW Version (Product)	GS-EC-TR350-01-V04			
SW Version (Product)	F-1TR-02-1910081.c16			
FCC ID	UDV-201709			
Mode of Operation	☒WCDMA ☒HSDPA ☒HSUPA ☒LTE FDD			
Duty Cycle	WCDMA	1		
	LTE FDD	1		
TX Frequency Range (MHz)	WCDMA Band II	1850	–	1910
	WCDMA Band V	824	–	849
	LTE FDD Band 2	1850	–	1910
	LTE FDD Band 4	1710	–	1755
	LTE FDD Band 12	699	–	716
Channel Number (ARFCN)	WCDMA Band II	9262	–	9538
	WCDMA Band V	4132	–	4233
	LTE FDD Band 2	18607	–	19193
	LTE FDD Band 4	19957	–	20393
	LTE FDD Band 12	23017	–	23173

Distance: 5mm (Face exposure)

Max. SAR (1 g) (Unit: W/Kg)				
Band	Measured	Reported	Channel	Position
WCDMA Band II	0.27	0.37	9400	Front side
WCDMA Band V	0.05	0.05	4183	Front side
LTE FDD Band 2	0.48	0.53	18700	Front side
LTE FDD Band 4	0.31	0.34	20300	Front side
LTE FDD Band 12	0.02	0.02	23130	Front side

Distance: 0mm (Body exposure)

Max. SAR (1 g) (Unit: W/Kg)				
Band	Measured	Reported	Channel	Position
WCDMA Band II	1.01	1.34	9400	Back side
WCDMA Band V	0.03	0.04	4183	Back side
LTE FDD Band 2	1.07	1.21	18900	Back side
LTE FDD Band 4	0.70	0.76	20300	Back side
LTE FDD Band 12	0.02	0.02	23130	Back side

Distance: 0mm (Extremity exposure)

Max. SAR (10 g) (Unit: W/Kg)				
Band	Measured	Reported	Channel	Position
WCDMA Band II	0.69	0.90	9262	Right side
WCDMA Band V	0.02	0.02	4183	Right side
LTE FDD Band 2	0.46	0.51	18700	Right side
LTE FDD Band 4	0.39	0.43	20300	Right side
LTE FDD Band 12	0.00	0.00	23130	Right side

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

Unit: dBm

Band		WCDMA II		
TX Channel		9262	9400	9538
Frequency (MHz)		1852.4	1880	1907.6
Max. Rated Avg. Power+Max. Tolerance (dBm)		**25.00**		
3GPP Rel 99	RMC 12.2Kbps	23.85	23.76	23.46
3GPP Rel 5	HSDPA Subtest-1	22.45	22.37	22.00
	HSDPA Subtest-2	22.36	22.41	22.03
	HSDPA Subtest-3	21.85	21.89	21.52
	HSDPA Subtest-4	21.85	21.77	21.53
3GPP Rel 6	HSUPA Subtest-1	22.31	22.18	21.74
	HSUPA Subtest-2	21.75	21.59	21.16
	HSUPA Subtest-3	22.21	22.22	21.77
	HSUPA Subtest-4	22.24	22.13	21.67
	HSUPA Subtest-5	22.30	22.20	21.73

Band		WCDMA V		
TX Channel		4132	4183	4233
Frequency (MHz)		826.4	836.6	846.6
Max. Rated Avg. Power+Max. Tolerance (dBm)		**25.00**		
3GPP Rel 99	RMC 12.2Kbps	24.55	24.58	24.52
3GPP Rel 5	HSDPA Subtest-1	23.58	23.65	23.50
	HSDPA Subtest-2	23.95	23.64	23.75
	HSDPA Subtest-3	23.56	23.17	23.24
	HSDPA Subtest-4	23.46	23.15	23.35
3GPP Rel 6	HSUPA Subtest-1	23.90	23.69	23.78
	HSUPA Subtest-2	23.44	23.22	23.18
	HSUPA Subtest-3	23.99	23.52	23.77
	HSUPA Subtest-4	23.52	23.62	23.56
	HSUPA Subtest-5	24.08	23.57	23.86

LTE FDD Band 2 / Band 4 / Band 12 power table :

FDD Band 2								
BW(Mhz)	Modulation	RB Size	RB Offset	Frequency (MHz)	Channel	Conducted power (dBm)	Target Power + Max. Tolerance (dBm)	MPR Allowed per 3GPP(dB)
20	QPSK	1 RB	0	1860	18700	23.15	24	0
				1880	18900	23.16	24	0
				1900	19100	23.05	24	0
			50	1860	18700	23.11	24	0
				1880	18900	23.46	24	0
				1900	19100	22.89	24	0
			99	1860	18700	23.56	24	0
				1880	18900	23.21	24	0
				1900	19100	22.52	24	0
		50 RB	0	1860	18700	22.86	23	0-1
				1880	18900	22.82	23	0-1
				1900	19100	22.85	23	0-1
			25	1860	18700	22.95	23	0-1
				1880	18900	22.82	23	0-1
				1900	19100	22.85	23	0-1
			50	1860	18700	22.94	23	0-1
				1880	18900	22.92	23	0-1
				1900	19100	22.97	23	0-1
		100RB		1860	18700	22.91	23	0-1
				1880	18900	22.84	23	0-1
				1900	19100	22.97	23	0-1
	16-QAM	1 RB	0	1860	18700	22.99	23	0-1
				1880	18900	22.82	23	0-1
				1900	19100	23.00	23	0-1
			50	1860	18700	22.85	23	0-1
				1880	18900	22.87	23	0-1
				1900	19100	22.86	23	0-1
			99	1860	18700	22.87	23	0-1
				1880	18900	22.86	23	0-1
				1900	19100	22.89	23	0-1
		50 RB	0	1860	18700	21.84	22	0-2
				1880	18900	21.88	22	0-2
				1900	19100	21.93	22	0-2
			25	1860	18700	21.82	22	0-2
				1880	18900	21.99	22	0-2
				1900	19100	21.97	22	0-2
			50	1860	18700	21.93	22	0-2
				1880	18900	21.97	22	0-2
				1900	19100	21.98	22	0-2
		100RB		1860	18700	21.97	22	0-2
				1880	18900	21.87	22	0-2
				1900	19100	21.81	22	0-2

FDD Band 2								
BW(Mhz)	Modulation	RB Size	RB Offset	Frequency (MHz)	Channel	Conducted power (dBm)	Target Power + Max. Tolerance (dBm)	MPR Allowed per 3GPP(dB)
20	64-QAM	1 RB	0	1860	18700	21.85	22	0-2
				1880	18900	21.82	22	0-2
				1900	19100	21.86	22	0-2
			50	1860	18700	21.83	22	0-2
				1880	18900	21.90	22	0-2
				1900	19100	21.89	22	0-2
			99	1860	18700	22.00	22	0-2
				1880	18900	21.81	22	0-2
				1900	19100	21.81	22	0-2
		50 RB	0	1860	18700	20.90	21	0-3
				1880	18900	20.98	21	0-3
				1900	19100	20.81	21	0-3
			25	1860	18700	20.90	21	0-3
				1880	18900	20.95	21	0-3
				1900	19100	20.92	21	0-3
			50	1860	18700	20.95	21	0-3
				1880	18900	20.97	21	0-3
				1900	19100	20.92	21	0-3
		100RB		1860	18700	20.99	21	0-3
				1880	18900	20.94	21	0-3
				1900	19100	20.82	21	0-3

FDD Band 2								
BW(Mhz)	Modulation	RB Size	RB Offset	Frequency (MHz)	Channel	Conducted power (dBm)	Target Power + Max. Tolerance (dBm)	MPR Allowed per 3GPP(dB)
15	QPSK	1 RB	0	1857.5	18675	23.32	24	0
				1880	18900	23.49	24	0
				1902.5	19125	23.32	24	0
			36	1857.5	18675	23.46	24	0
				1880	18900	23.42	24	0
				1902.5	19125	23.44	24	0
			74	1857.5	18675	23.48	24	0
				1880	18900	23.33	24	0
				1902.5	19125	23.45	24	0
		36 RB	0	1857.5	18675	22.92	23	0-1
				1880	18900	22.94	23	0-1
				1902.5	19125	22.88	23	0-1
			18	1857.5	18675	22.95	23	0-1
				1880	18900	22.95	23	0-1
				1902.5	19125	22.96	23	0-1
			37	1857.5	18675	22.85	23	0-1
				1880	18900	22.99	23	0-1
				1902.5	19125	22.92	23	0-1
		75RB		1857.5	18675	22.92	23	0-1
				1880	18900	22.84	23	0-1
				1902.5	19125	22.84	23	0-1
	16-QAM	1 RB	0	1857.5	18675	22.90	23	0-1
				1880	18900	22.81	23	0-1
				1902.5	19125	22.86	23	0-1
			36	1857.5	18675	22.94	23	0-1
				1880	18900	22.83	23	0-1
				1902.5	19125	22.94	23	0-1
			74	1857.5	18675	22.97	23	0-1
				1880	18900	22.96	23	0-1
				1902.5	19125	22.96	23	0-1
		36 RB	0	1857.5	18675	21.81	22	0-2
				1880	18900	21.96	22	0-2
				1902.5	19125	21.83	22	0-2
			18	1857.5	18675	21.83	22	0-2
				1880	18900	21.99	22	0-2
				1902.5	19125	21.84	22	0-2
			37	1857.5	18675	21.95	22	0-2
				1880	18900	21.82	22	0-2
				1902.5	19125	21.98	22	0-2
		75RB		1857.5	18675	21.85	22	0-2
				1880	18900	21.88	22	0-2
				1902.5	19125	21.92	22	0-2

FDD Band 2								
BW(Mhz)	Modulation	RB Size	RB Offset	Frequency (MHz)	Channel	Conducted power (dBm)	Target Power + Max. Tolerance (dBm)	MPR Allowed per 3GPP(dB)
15	64-QAM	1 RB	0	1857.5	18675	21.85	22	0-2
				1880	18900	21.98	22	0-2
				1902.5	19125	21.84	22	0-2
			36	1857.5	18675	21.97	22	0-2
				1880	18900	21.85	22	0-2
				1902.5	19125	21.97	22	0-2
			74	1857.5	18675	21.85	22	0-2
				1880	18900	21.98	22	0-2
				1902.5	19125	21.82	22	0-2
		36 RB	0	1857.5	18675	20.85	21	0-3
				1880	18900	20.81	21	0-3
				1902.5	19125	20.92	21	0-3
			18	1857.5	18675	21.00	21	0-3
				1880	18900	20.86	21	0-3
				1902.5	19125	20.82	21	0-3
			37	1857.5	18675	20.85	21	0-3
				1880	18900	20.91	21	0-3
				1902.5	19125	20.86	21	0-3
		75RB		1857.5	18675	21.00	21	0-3
				1880	18900	20.91	21	0-3
				1902.5	19125	20.86	21	0-3

FDD Band 2								
BW(Mhz)	Modulation	RB Size	RB Offset	Frequency (MHz)	Channel	Conducted power (dBm)	Target Power + Max. Tolerance (dBm)	MPR Allowed per 3GPP(dB)
10	QPSK	1 RB	0	1855	18650	23.35	24	0
				1880	18900	23.40	24	0
				1905	19150	23.38	24	0
			25	1855	18650	23.43	24	0
				1880	18900	23.41	24	0
				1905	19150	23.33	24	0
			49	1855	18650	23.42	24	0
				1880	18900	23.30	24	0
				1905	19150	23.47	24	0
		25 RB	0	1855	18650	22.97	23	0-1
				1880	18900	22.92	23	0-1
				1905	19150	22.87	23	0-1
			12	1855	18650	22.94	23	0-1
				1880	18900	23.00	23	0-1
				1905	19150	22.82	23	0-1
			25	1855	18650	22.85	23	0-1
				1880	18900	22.98	23	0-1
				1905	19150	22.88	23	0-1
		50RB		1855	18650	22.94	23	0-1
				1880	18900	22.85	23	0-1
				1905	19150	22.99	23	0-1
	16-QAM	1 RB	0	1855	18650	22.88	23	0-1
				1880	18900	22.99	23	0-1
				1905	19150	22.82	23	0-1
			25	1855	18650	22.81	23	0-1
				1880	18900	22.97	23	0-1
				1905	19150	22.84	23	0-1
			49	1855	18650	22.96	23	0-1
				1880	18900	22.87	23	0-1
				1905	19150	22.81	23	0-1
		25 RB	0	1855	18650	21.95	22	0-2
				1880	18900	21.88	22	0-2
				1905	19150	21.86	22	0-2
			12	1855	18650	21.92	22	0-2
				1880	18900	21.94	22	0-2
				1905	19150	21.81	22	0-2
			25	1855	18650	21.88	22	0-2
				1880	18900	21.91	22	0-2
				1905	19150	21.98	22	0-2
		50RB		1855	18650	21.98	22	0-2
				1880	18900	21.86	22	0-2
				1905	19150	21.82	22	0-2

FDD Band 2								
BW(Mhz)	Modulation	RB Size	RB Offset	Frequency (MHz)	Channel	Conducted power (dBm)	Target Power + Max. Tolerance (dBm)	MPR Allowed per 3GPP(dB)
10	64-QAM	1 RB	0	1855	18650	21.87	22	0-2
				1880	18900	21.94	22	0-2
				1905	19150	21.84	22	0-2
			25	1855	18650	21.85	22	0-2
				1880	18900	21.99	22	0-2
				1905	19150	21.92	22	0-2
			49	1855	18650	21.92	22	0-2
				1880	18900	21.87	22	0-2
				1905	19150	21.99	22	0-2
		25 RB	0	1855	18650	20.97	21	0-3
				1880	18900	20.86	21	0-3
				1905	19150	20.94	21	0-3
			12	1855	18650	20.85	21	0-3
				1880	18900	20.93	21	0-3
				1905	19150	20.92	21	0-3
			25	1855	18650	20.95	21	0-3
				1880	18900	20.84	21	0-3
				1905	19150	20.86	21	0-3
		50RB		1855	18650	20.94	21	0-3
				1880	18900	20.89	21	0-3
				1905	19150	20.83	21	0-3

FDD Band 2								
BW(Mhz)	Modulation	RB Size	RB Offset	Frequency (MHz)	Channel	Conducted power (dBm)	Target Power + Max. Tolerance (dBm)	MPR Allowed per 3GPP(dB)
5	QPSK	1 RB	0	1852.5	18625	23.37	24	0
				1880	18900	23.44	24	0
				1907.5	19175	23.36	24	0
			12	1852.5	18625	23.35	24	0
				1880	18900	23.44	24	0
				1907.5	19175	23.41	24	0
			24	1852.5	18625	23.35	24	0
				1880	18900	23.36	24	0
				1907.5	19175	23.30	24	0
		12 RB	0	1852.5	18625	22.90	23	0-1
				1880	18900	22.82	23	0-1
				1907.5	19175	22.96	23	0-1
			6	1852.5	18625	22.82	23	0-1
				1880	18900	22.92	23	0-1
				1907.5	19175	22.86	23	0-1
			13	1852.5	18625	22.93	23	0-1
				1880	18900	22.91	23	0-1
				1907.5	19175	22.86	23	0-1
		25RB		1852.5	18625	22.97	23	0-1
				1880	18900	22.89	23	0-1
				1907.5	19175	22.88	23	0-1
	16-QAM	1 RB	0	1852.5	18625	22.97	23	0-1
				1880	18900	22.97	23	0-1
				1907.5	19175	22.87	23	0-1
			12	1852.5	18625	22.95	23	0-1
				1880	18900	22.83	23	0-1
				1907.5	19175	22.90	23	0-1
			24	1852.5	18625	22.97	23	0-1
				1880	18900	22.95	23	0-1
				1907.5	19175	22.98	23	0-1
		12 RB	0	1852.5	18625	21.92	22	0-2
				1880	18900	21.90	22	0-2
				1907.5	19175	21.94	22	0-2
			6	1852.5	18625	21.95	22	0-2
				1880	18900	21.95	22	0-2
				1907.5	19175	21.99	22	0-2
			13	1852.5	18625	21.84	22	0-2
				1880	18900	21.83	22	0-2
				1907.5	19175	21.85	22	0-2
		25RB		1852.5	18625	22.00	22	0-2
				1880	18900	21.88	22	0-2
				1907.5	19175	21.86	22	0-2

FDD Band 2								
BW(Mhz)	Modulation	RB Size	RB Offset	Frequency (MHz)	Channel	Conducted power (dBm)	Target Power + Max. Tolerance (dBm)	MPR Allowed per 3GPP(dB)
5	64-QAM	1 RB	0	1852.5	18625	21.83	22	0-2
				1880	18900	21.84	22	0-2
				1907.5	19175	21.87	22	0-2
			12	1852.5	18625	21.83	22	0-2
				1880	18900	21.83	22	0-2
				1907.5	19175	21.95	22	0-2
			24	1852.5	18625	21.88	22	0-2
				1880	18900	21.92	22	0-2
				1907.5	19175	21.82	22	0-2
		12 RB	0	1852.5	18625	20.96	21	0-3
				1880	18900	20.98	21	0-3
				1907.5	19175	20.86	21	0-3
			6	1852.5	18625	20.96	21	0-3
				1880	18900	20.85	21	0-3
				1907.5	19175	20.98	21	0-3
			13	1852.5	18625	20.96	21	0-3
				1880	18900	20.97	21	0-3
				1907.5	19175	20.95	21	0-3
		25RB		1852.5	18625	20.81	21	0-3
				1880	18900	20.85	21	0-3
				1907.5	19175	20.94	21	0-3

FDD Band 2								
BW(Mhz)	Modulation	RB Size	RB Offset	Frequency (MHz)	Channel	Conducted power (dBm)	Target Power + Max. Tolerance (dBm)	MPR Allowed per 3GPP(dB)
3	QPSK	1 RB	0	1851.5	18615	23.30	24	0
				1880	18900	23.25	24	0
				1908.5	19185	23.32	24	0
			7	1851.5	18615	23.33	24	0
				1880	18900	23.26	24	0
				1908.5	19185	23.20	24	0
			14	1851.5	18615	23.19	24	0
				1880	18900	23.19	24	0
				1908.5	19185	23.27	24	0
		8 RB	0	1851.5	18615	22.93	23	0-1
				1880	18900	22.82	23	0-1
				1908.5	19185	22.82	23	0-1
			4	1851.5	18615	23.00	23	0-1
				1880	18900	22.85	23	0-1
				1908.5	19185	22.99	23	0-1
			7	1851.5	18615	22.84	23	0-1
				1880	18900	22.91	23	0-1
				1908.5	19185	22.90	23	0-1
		15RB		1851.5	18615	22.95	23	0-1
				1880	18900	22.97	23	0-1
				1908.5	19185	22.85	23	0-1
	16-QAM	1 RB	0	1851.5	18615	22.81	23	0-1
				1880	18900	22.95	23	0-1
				1908.5	19185	22.95	23	0-1
			7	1851.5	18615	22.97	23	0-1
				1880	18900	22.98	23	0-1
				1908.5	19185	22.81	23	0-1
			14	1851.5	18615	22.86	23	0-1
				1880	18900	22.95	23	0-1
				1908.5	19185	22.86	23	0-1
		8 RB	0	1851.5	18615	21.85	22	0-2
				1880	18900	21.81	22	0-2
				1908.5	19185	21.95	22	0-2
			4	1851.5	18615	21.94	22	0-2
				1880	18900	21.84	22	0-2
				1908.5	19185	21.89	22	0-2
			7	1851.5	18615	21.94	22	0-2
				1880	18900	21.98	22	0-2
				1908.5	19185	21.94	22	0-2
		15RB		1851.5	18615	21.86	22	0-2
				1880	18900	21.85	22	0-2
				1908.5	19185	21.95	22	0-2

FDD Band 2								
BW(Mhz)	Modulation	RB Size	RB Offset	Frequency (MHz)	Channel	Conducted power (dBm)	Target Power + Max. Tolerance (dBm)	MPR Allowed per 3GPP(dB)
3	64-QAM	1 RB	0	1851.5	18615	21.86	22	0-2
				1880	18900	21.98	22	0-2
				1908.5	19185	21.98	22	0-2
			7	1851.5	18615	21.97	22	0-2
				1880	18900	21.90	22	0-2
				1908.5	19185	21.94	22	0-2
			14	1851.5	18615	21.89	22	0-2
				1880	18900	21.94	22	0-2
				1908.5	19185	21.89	22	0-2
		8 RB	0	1851.5	18615	20.84	21	0-3
				1880	18900	20.88	21	0-3
				1908.5	19185	20.97	21	0-3
			4	1851.5	18615	20.86	21	0-3
				1880	18900	21.00	21	0-3
				1908.5	19185	20.98	21	0-3
			7	1851.5	18615	20.81	21	0-3
				1880	18900	20.81	21	0-3
				1908.5	19185	20.89	21	0-3
		15RB		1851.5	18615	20.86	21	0-3
				1880	18900	20.88	21	0-3
				1908.5	19185	20.98	21	0-3

FDD Band 2								
BW(Mhz)	Modulation	RB Size	RB Offset	Frequency (MHz)	Channel	Conducted power (dBm)	Target Power + Max. Tolerance (dBm)	MPR Allowed per 3GPP(dB)
1.4	QPSK	1 RB	0	1850.7	18607	23.28	24	0
				1880	18900	23.29	24	0
				1909.3	19193	23.27	24	0
			2	1850.7	18607	23.35	24	0
				1880	18900	23.31	24	0
				1909.3	19193	23.33	24	0
			5	1850.7	18607	23.33	24	0
				1880	18900	23.29	24	0
				1909.3	19193	23.37	24	0
		3 RB	0	1850.7	18607	22.93	23	0-1
				1880	18900	22.95	23	0-1
				1909.3	19193	22.91	23	0-1
			2	1850.7	18607	22.82	23	0-1
				1880	18900	23.00	23	0-1
				1909.3	19193	22.83	23	0-1
			3	1850.7	18607	22.99	23	0-1
				1880	18900	22.97	23	0-1
				1909.3	19193	22.91	23	0-1
		6RB		1850.7	18607	22.93	23	0-1
				1880	18900	22.81	23	0-1
				1909.3	19193	22.89	23	0-1
	16-QAM	1 RB	0	1850.7	18607	22.88	23	0-1
				1880	18900	22.88	23	0-1
				1909.3	19193	22.89	23	0-1
			2	1850.7	18607	22.83	23	0-1
				1880	18900	22.86	23	0-1
				1909.3	19193	22.82	23	0-1
			5	1850.7	18607	22.89	23	0-1
				1880	18900	22.81	23	0-1
				1909.3	19193	22.89	23	0-1
		3 RB	0	1850.7	18607	21.93	22	0-1
				1880	18900	21.92	22	0-1
				1909.3	19193	21.99	22	0-1
			2	1850.7	18607	21.82	22	0-1
				1880	18900	21.97	22	0-1
				1909.3	19193	21.89	22	0-1
			3	1850.7	18607	21.89	22	0-1
				1880	18900	21.81	22	0-1
				1909.3	19193	21.96	22	0-1
		6RB		1850.7	18607	21.84	22	0-2
				1880	18900	21.88	22	0-2
				1909.3	19193	21.86	22	0-2

FDD Band 2								
BW(Mhz)	Modulation	RB Size	RB Offset	Frequency (MHz)	Channel	Conducted power (dBm)	Target Power + Max. Tolerance (dBm)	MPR Allowed per 3GPP(dB)
1.4	64-QAM	1 RB	0	1850.7	18607	21.91	22	0-2
				1880	18900	22.00	22	0-2
				1909.3	19193	21.88	22	0-2
			2	1850.7	18607	21.92	22	0-2
				1880	18900	21.81	22	0-2
				1909.3	19193	21.94	22	0-2
			5	1850.7	18607	21.97	22	0-2
				1880	18900	21.89	22	0-2
				1909.3	19193	21.93	22	0-2
		3 RB	0	1850.7	18607	20.83	21	0-2
				1880	18900	20.84	21	0-2
				1909.3	19193	20.86	21	0-2
			2	1850.7	18607	20.91	21	0-2
				1880	18900	20.86	21	0-2
				1909.3	19193	20.84	21	0-2
			3	1850.7	18607	20.97	21	0-2
				1880	18900	20.96	21	0-2
				1909.3	19193	20.96	21	0-2
		6RB		1850.7	18607	21.00	21	0-3
				1880	18900	20.89	21	0-3
				1909.3	19193	20.99	21	0-3

FDD Band 4								
BW(Mhz)	Modulation	RB Size	RB Offset	Frequency (MHz)	Channel	Conducted power (dBm)	Target Power + Max. Tolerance (dBm)	MPR Allowed per 3GPP(dB)
20	QPSK	1 RB	0	1720	20050	23.51	24	0
				1732.5	20175	22.99	24	0
				1745	20300	22.69	24	0
			50	1720	20050	22.67	24	0
				1732.5	20175	22.75	24	0
				1745	20300	23.65	24	0
			99	1720	20050	23.21	24	0
				1732.5	20175	22.97	24	0
				1745	20300	22.43	24	0
		50 RB	0	1720	20050	22.90	23	0-1
				1732.5	20175	22.85	23	0-1
				1745	20300	22.89	23	0-1
			25	1720	20050	22.84	23	0-1
				1732.5	20175	22.83	23	0-1
				1745	20300	23.00	23	0-1
			50	1720	20050	22.98	23	0-1
				1732.5	20175	22.90	23	0-1
				1745	20300	22.88	23	0-1
		100RB		1720	20050	22.90	23	0-1
				1732.5	20175	22.91	23	0-1
				1745	20300	22.83	23	0-1
	16-QAM	1 RB	0	1720	20050	22.83	23	0-1
				1732.5	20175	22.96	23	0-1
				1745	20300	22.99	23	0-1
			50	1720	20050	22.83	23	0-1
				1732.5	20175	22.99	23	0-1
				1745	20300	22.85	23	0-1
			99	1720	20050	22.98	23	0-1
				1732.5	20175	22.92	23	0-1
				1745	20300	22.94	23	0-1
		50 RB	0	1720	20050	21.93	22	0-2
				1732.5	20175	21.98	22	0-2
				1745	20300	21.93	22	0-2
			25	1720	20050	21.82	22	0-2
				1732.5	20175	21.99	22	0-2
				1745	20300	21.82	22	0-2
			50	1720	20050	21.89	22	0-2
				1732.5	20175	21.88	22	0-2
				1745	20300	21.82	22	0-2
		100RB		1720	20050	22.00	22	0-2
				1732.5	20175	21.88	22	0-2
				1745	20300	21.99	22	0-2

FDD Band 4								
BW(Mhz)	Modulation	RB Size	RB Offset	Frequency (MHz)	Channel	Conducted power (dBm)	Target Power + Max. Tolerance (dBm)	MPR Allowed per 3GPP(dB)
20	64-QAM	1 RB	0	1720	20050	21.95	22	0-2
				1732.5	20175	21.96	22	0-2
				1745	20300	21.98	22	0-2
			50	1720	20050	21.97	22	0-2
				1732.5	20175	21.99	22	0-2
				1745	20300	21.81	22	0-2
			99	1720	20050	21.90	22	0-2
				1732.5	20175	21.96	22	0-2
				1745	20300	21.93	22	0-2
		50 RB	0	1720	20050	20.81	21	0-3
				1732.5	20175	20.97	21	0-3
				1745	20300	20.96	21	0-3
			25	1720	20050	20.99	21	0-3
				1732.5	20175	20.99	21	0-3
				1745	20300	20.86	21	0-3
			50	1720	20050	20.84	21	0-3
				1732.5	20175	20.84	21	0-3
				1745	20300	20.90	21	0-3
		100RB		1720	20050	20.81	21	0-3
				1732.5	20175	21.00	21	0-3
				1745	20300	20.92	21	0-3

FDD Band 4								
BW(Mhz)	Modulation	RB Size	RB Offset	Frequency (MHz)	Channel	Conducted power (dBm)	Target Power + Max. Tolerance (dBm)	MPR Allowed per 3GPP(dB)
15	QPSK	1 RB	0	1717.5	20025	23.59	24	0
				1732.5	20175	23.45	24	0
				1747.5	20325	23.54	24	0
			36	1717.5	20025	23.49	24	0
				1732.5	20175	23.62	24	0
				1747.5	20325	23.44	24	0
			74	1717.5	20025	23.52	24	0
				1732.5	20175	23.58	24	0
				1747.5	20325	23.58	24	0
		36 RB	0	1717.5	20025	22.88	23	0-1
				1732.5	20175	23.00	23	0-1
				1747.5	20325	22.90	23	0-1
			18	1717.5	20025	22.91	23	0-1
				1732.5	20175	22.97	23	0-1
				1747.5	20325	22.86	23	0-1
			37	1717.5	20025	22.97	23	0-1
				1732.5	20175	22.97	23	0-1
				1747.5	20325	22.86	23	0-1
		75RB		1717.5	20025	22.82	23	0-1
				1732.5	20175	22.91	23	0-1
				1747.5	20325	22.91	23	0-1
	16-QAM	1 RB	0	1717.5	20025	22.98	23	0-1
				1732.5	20175	22.90	23	0-1
				1747.5	20325	22.91	23	0-1
			36	1717.5	20025	22.85	23	0-1
				1732.5	20175	22.91	23	0-1
				1747.5	20325	23.00	23	0-1
			74	1717.5	20025	22.89	23	0-1
				1732.5	20175	22.95	23	0-1
				1747.5	20325	22.81	23	0-1
		36 RB	0	1717.5	20025	21.91	22	0-2
				1732.5	20175	21.88	22	0-2
				1747.5	20325	21.96	22	0-2
			18	1717.5	20025	21.85	22	0-2
				1732.5	20175	21.91	22	0-2
				1747.5	20325	21.86	22	0-2
			37	1717.5	20025	21.93	22	0-2
				1732.5	20175	21.87	22	0-2
				1747.5	20325	21.85	22	0-2
		75RB		1717.5	20025	22.00	22	0-2
				1732.5	20175	22.00	22	0-2
				1747.5	20325	21.85	22	0-2

FDD Band 4								
BW(Mhz)	Modulation	RB Size	RB Offset	Frequency (MHz)	Channel	Conducted power (dBm)	Target Power + Max. Tolerance (dBm)	MPR Allowed per 3GPP(dB)
15	64-QAM	1 RB	0	1717.5	20025	21.84	22	0-2
				1732.5	20175	22.00	22	0-2
				1747.5	20325	21.84	22	0-2
			36	1717.5	20025	21.82	22	0-2
				1732.5	20175	21.89	22	0-2
				1747.5	20325	21.97	22	0-2
			74	1717.5	20025	22.00	22	0-2
				1732.5	20175	21.84	22	0-2
				1747.5	20325	21.98	22	0-2
		36 RB	0	1717.5	20025	20.91	21	0-3
				1732.5	20175	20.86	21	0-3
				1747.5	20325	20.95	21	0-3
			18	1717.5	20025	20.96	21	0-3
				1732.5	20175	20.95	21	0-3
				1747.5	20325	20.94	21	0-3
			37	1717.5	20025	20.85	21	0-3
				1732.5	20175	20.95	21	0-3
				1747.5	20325	20.89	21	0-3
		75RB		1717.5	20025	20.97	21	0-3
				1732.5	20175	20.98	21	0-3
				1747.5	20325	20.95	21	0-3

FDD Band 4								
BW(Mhz)	Modulation	RB Size	RB Offset	Frequency (MHz)	Channel	Conducted power (dBm)	Target Power + Max. Tolerance (dBm)	MPR Allowed per 3GPP(dB)
10	QPSK	1 RB	0	1715	20000	23.48	24	0
				1732.5	20175	23.47	24	0
				1750	20350	23.39	24	0
			25	1715	20000	23.30	24	0
				1732.5	20175	23.31	24	0
				1750	20350	23.35	24	0
			49	1715	20000	23.34	24	0
				1732.5	20175	23.29	24	0
				1750	20350	23.45	24	0
		25 RB	0	1715	20000	22.90	23	0-1
				1732.5	20175	22.83	23	0-1
				1750	20350	22.83	23	0-1
			12	1715	20000	22.86	23	0-1
				1732.5	20175	22.92	23	0-1
				1750	20350	22.92	23	0-1
			25	1715	20000	22.86	23	0-1
				1732.5	20175	22.95	23	0-1
				1750	20350	22.95	23	0-1
		50RB		1715	20000	22.83	23	0-1
				1732.5	20175	22.91	23	0-1
				1750	20350	22.95	23	0-1
	16-QAM	1 RB	0	1715	20000	22.95	23	0-1
				1732.5	20175	22.94	23	0-1
				1750	20350	22.88	23	0-1
			25	1715	20000	22.84	23	0-1
				1732.5	20175	22.83	23	0-1
				1750	20350	22.99	23	0-1
			49	1715	20000	22.97	23	0-1
				1732.5	20175	22.91	23	0-1
				1750	20350	22.97	23	0-1
		25 RB	0	1715	20000	21.85	22	0-2
				1732.5	20175	21.94	22	0-2
				1750	20350	21.84	22	0-2
			12	1715	20000	22.00	22	0-2
				1732.5	20175	21.83	22	0-2
				1750	20350	21.85	22	0-2
			25	1715	20000	21.83	22	0-2
				1732.5	20175	21.95	22	0-2
				1750	20350	21.90	22	0-2
		50RB		1715	20000	21.94	22	0-2
				1732.5	20175	21.92	22	0-2
				1750	20350	21.89	22	0-2

FDD Band 4								
BW(Mhz)	Modulation	RB Size	RB Offset	Frequency (MHz)	Channel	Conducted power (dBm)	Target Power + Max. Tolerance (dBm)	MPR Allowed per 3GPP(dB)
10	64-QAM	1 RB	0	1715	20000	21.81	22	0-2
				1732.5	20175	21.84	22	0-2
				1750	20350	21.97	22	0-2
			25	1715	20000	21.85	22	0-2
				1732.5	20175	21.97	22	0-2
				1750	20350	21.84	22	0-2
			49	1715	20000	21.86	22	0-2
				1732.5	20175	21.81	22	0-2
				1750	20350	21.83	22	0-2
		25 RB	0	1715	20000	20.93	21	0-3
				1732.5	20175	20.98	21	0-3
				1750	20350	20.88	21	0-3
			12	1715	20000	20.96	21	0-3
				1732.5	20175	20.97	21	0-3
				1750	20350	20.90	21	0-3
			25	1715	20000	20.85	21	0-3
				1732.5	20175	20.97	21	0-3
				1750	20350	20.85	21	0-3
		50RB		1715	20000	20.81	21	0-3
				1732.5	20175	20.85	21	0-3
				1750	20350	20.87	21	0-3

FDD Band 4								
BW(Mhz)	Modulation	RB Size	RB Offset	Frequency (MHz)	Channel	Conducted power (dBm)	Target Power + Max. Tolerance (dBm)	MPR Allowed per 3GPP(dB)
5	QPSK	1 RB	0	1712.5	19975	23.36	24	0
				1732.5	20175	23.43	24	0
				1752.5	20375	23.28	24	0
			12	1712.5	19975	23.40	24	0
				1732.5	20175	23.34	24	0
				1752.5	20375	23.44	24	0
			24	1712.5	19975	23.44	24	0
				1732.5	20175	23.31	24	0
				1752.5	20375	23.34	24	0
		12 RB	0	1712.5	19975	22.83	23	0-1
				1732.5	20175	22.85	23	0-1
				1752.5	20375	22.98	23	0-1
			6	1712.5	19975	22.81	23	0-1
				1732.5	20175	22.82	23	0-1
				1752.5	20375	22.99	23	0-1
			13	1712.5	19975	22.91	23	0-1
				1732.5	20175	22.97	23	0-1
				1752.5	20375	22.83	23	0-1
		25RB		1712.5	19975	22.85	23	0-1
				1732.5	20175	23.00	23	0-1
				1752.5	20375	22.88	23	0-1
	16-QAM	1 RB	0	1712.5	19975	23.00	23	0-1
				1732.5	20175	22.81	23	0-1
				1752.5	20375	22.87	23	0-1
			12	1712.5	19975	22.84	23	0-1
				1732.5	20175	22.92	23	0-1
				1752.5	20375	22.98	23	0-1
			24	1712.5	19975	22.95	23	0-1
				1732.5	20175	22.82	23	0-1
				1752.5	20375	22.87	23	0-1
		12 RB	0	1712.5	19975	21.83	22	0-2
				1732.5	20175	21.83	22	0-2
				1752.5	20375	21.88	22	0-2
			6	1712.5	19975	21.83	22	0-2
				1732.5	20175	21.93	22	0-2
				1752.5	20375	21.91	22	0-2
			13	1712.5	19975	21.89	22	0-2
				1732.5	20175	21.82	22	0-2
				1752.5	20375	21.96	22	0-2
		25RB		1712.5	19975	21.88	22	0-2
				1732.5	20175	21.81	22	0-2
				1752.5	20375	21.91	22	0-2

FDD Band 4								
BW(Mhz)	Modulation	RB Size	RB Offset	Frequency (MHz)	Channel	Conducted power (dBm)	Target Power + Max. Tolerance (dBm)	MPR Allowed per 3GPP(dB)
5	64-QAM	1 RB	0	1712.5	19975	21.99	22	0-2
				1732.5	20175	21.92	22	0-2
				1752.5	20375	21.94	22	0-2
			12	1712.5	19975	21.94	22	0-2
				1732.5	20175	21.84	22	0-2
				1752.5	20375	21.87	22	0-2
			24	1712.5	19975	21.99	22	0-2
				1732.5	20175	21.92	22	0-2
				1752.5	20375	21.94	22	0-2
		12 RB	0	1712.5	19975	20.96	21	0-3
				1732.5	20175	20.96	21	0-3
				1752.5	20375	20.93	21	0-3
			6	1712.5	19975	20.94	21	0-3
				1732.5	20175	20.90	21	0-3
				1752.5	20375	20.98	21	0-3
			13	1712.5	19975	20.94	21	0-3
				1732.5	20175	20.84	21	0-3
				1752.5	20375	20.83	21	0-3
		25RB		1712.5	19975	20.92	21	0-3
				1732.5	20175	20.99	21	0-3
				1752.5	20375	20.81	21	0-3

FDD Band 4								
BW(Mhz)	Modulation	RB Size	RB Offset	Frequency (MHz)	Channel	Conducted power (dBm)	Target Power + Max. Tolerance (dBm)	MPR Allowed per 3GPP(dB)
3	QPSK	1 RB	0	1711.5	19965	23.32	24	0
				1732.5	20175	23.23	24	0
				1753.5	20385	23.32	24	0
			7	1711.5	19965	23.31	24	0
				1732.5	20175	23.29	24	0
				1753.5	20385	23.24	24	0
			14	1711.5	19965	23.39	24	0
				1732.5	20175	23.39	24	0
				1753.5	20385	23.20	24	0
		8 RB	0	1711.5	19965	22.94	23	0-1
				1732.5	20175	23.00	23	0-1
				1753.5	20385	22.86	23	0-1
			4	1711.5	19965	22.85	23	0-1
				1732.5	20175	22.96	23	0-1
				1753.5	20385	22.98	23	0-1
			7	1711.5	19965	22.99	23	0-1
				1732.5	20175	22.87	23	0-1
				1753.5	20385	22.90	23	0-1
		15RB		1711.5	19965	22.87	23	0-1
				1732.5	20175	22.86	23	0-1
				1753.5	20385	22.91	23	0-1
	16-QAM	1 RB	0	1711.5	19965	22.92	23	0-1
				1732.5	20175	22.84	23	0-1
				1753.5	20385	22.99	23	0-1
			7	1711.5	19965	22.89	23	0-1
				1732.5	20175	22.92	23	0-1
				1753.5	20385	22.95	23	0-1
			14	1711.5	19965	22.86	23	0-1
				1732.5	20175	22.92	23	0-1
				1753.5	20385	22.89	23	0-1
		8 RB	0	1711.5	19965	21.82	22	0-2
				1732.5	20175	21.93	22	0-2
				1753.5	20385	21.83	22	0-2
			4	1711.5	19965	21.91	22	0-2
				1732.5	20175	22.00	22	0-2
				1753.5	20385	21.97	22	0-2
			7	1711.5	19965	21.94	22	0-2
				1732.5	20175	21.83	22	0-2
				1753.5	20385	21.98	22	0-2
		15RB		1711.5	19965	21.99	22	0-2
				1732.5	20175	21.93	22	0-2
				1753.5	20385	21.97	22	0-2

FDD Band 4								
BW(Mhz)	Modulation	RB Size	RB Offset	Frequency (MHz)	Channel	Conducted power (dBm)	Target Power + Max. Tolerance (dBm)	MPR Allowed per 3GPP(dB)
3	64-QAM	1 RB	0	1711.5	19965	21.98	22	0-2
				1732.5	20175	21.87	22	0-2
				1753.5	20385	21.90	22	0-2
			7	1711.5	19965	21.89	22	0-2
				1732.5	20175	21.98	22	0-2
				1753.5	20385	21.95	22	0-2
			14	1711.5	19965	21.96	22	0-2
				1732.5	20175	21.82	22	0-2
				1753.5	20385	21.83	22	0-2
		8 RB	0	1711.5	19965	21.00	21	0-3
				1732.5	20175	20.88	21	0-3
				1753.5	20385	20.95	21	0-3
			4	1711.5	19965	21.00	21	0-3
				1732.5	20175	20.89	21	0-3
				1753.5	20385	20.97	21	0-3
			7	1711.5	19965	20.84	21	0-3
				1732.5	20175	20.83	21	0-3
				1753.5	20385	20.87	21	0-3
		15RB		1711.5	19965	20.83	21	0-3
				1732.5	20175	20.85	21	0-3
				1753.5	20385	20.98	21	0-3

FDD Band 4								
BW(Mhz)	Modulation	RB Size	RB Offset	Frequency (MHz)	Channel	Conducted power (dBm)	Target Power + Max. Tolerance (dBm)	MPR Allowed per 3GPP(dB)
1.4	QPSK	1 RB	0	1710.7	19957	23.48	24	0
				1732.5	20175	23.32	24	0
				1754.3	20393	23.50	24	0
			2	1710.7	19957	23.37	24	0
				1732.5	20175	23.33	24	0
				1754.3	20393	23.32	24	0
			5	1710.7	19957	23.36	24	0
				1732.5	20175	23.45	24	0
				1754.3	20393	23.50	24	0
		3 RB	0	1710.7	19957	22.86	23	0-1
				1732.5	20175	22.82	23	0-1
				1754.3	20393	22.89	23	0-1
			2	1710.7	19957	22.94	23	0-1
				1732.5	20175	22.89	23	0-1
				1754.3	20393	22.85	23	0-1
			3	1710.7	19957	22.86	23	0-1
				1732.5	20175	22.84	23	0-1
				1754.3	20393	22.96	23	0-1
		6RB		1710.7	19957	22.94	23	0-1
				1732.5	20175	22.92	23	0-1
				1754.3	20393	22.98	23	0-1
	16-QAM	1 RB	0	1710.7	19957	22.94	23	0-1
				1732.5	20175	22.83	23	0-1
				1754.3	20393	22.85	23	0-1
			2	1710.7	19957	22.89	23	0-1
				1732.5	20175	22.88	23	0-1
				1754.3	20393	22.89	23	0-1
			5	1710.7	19957	22.92	23	0-1
				1732.5	20175	22.89	23	0-1
				1754.3	20393	22.96	23	0-1
		3 RB	0	1710.7	19957	21.83	22	0-1
				1732.5	20175	21.81	22	0-1
				1754.3	20393	21.88	22	0-1
			2	1710.7	19957	21.99	22	0-1
				1732.5	20175	21.90	22	0-1
				1754.3	20393	22.00	22	0-1
			3	1710.7	19957	21.88	22	0-1
				1732.5	20175	21.87	22	0-1
				1754.3	20393	21.85	22	0-1
		6RB		1710.7	19957	21.93	22	0-2
				1732.5	20175	21.92	22	0-2
				1754.3	20393	21.97	22	0-2

FDD Band 4								
BW(Mhz)	Modulation	RB Size	RB Offset	Frequency (MHz)	Channel	Conducted power (dBm)	Target Power + Max. Tolerance (dBm)	MPR Allowed per 3GPP(dB)
1.4	64-QAM	1 RB	0	1710.7	19957	21.89	22	0-2
				1732.5	20175	21.94	22	0-2
				1754.3	20393	21.83	22	0-2
			2	1710.7	19957	21.88	22	0-2
				1732.5	20175	21.94	22	0-2
				1754.3	20393	21.92	22	0-2
			5	1710.7	19957	21.85	22	0-2
				1732.5	20175	21.98	22	0-2
				1754.3	20393	21.89	22	0-2
		3 RB	0	1710.7	19957	20.93	21	0-2
				1732.5	20175	20.99	21	0-2
				1754.3	20393	20.90	21	0-2
			2	1710.7	19957	20.96	21	0-2
				1732.5	20175	20.96	21	0-2
				1754.3	20393	20.98	21	0-2
			3	1710.7	19957	20.96	21	0-2
				1732.5	20175	20.95	21	0-2
				1754.3	20393	20.96	21	0-2
		6RB		1710.7	19957	20.89	21	0-3
				1732.5	20175	20.89	21	0-3
				1754.3	20393	20.92	21	0-3

FDD Band 12								
BW(Mhz)	Modulation	RB Size	RB Offset	Frequency (MHz)	Channel	Conducted power (dBm)	Target Power + Max. Tolerance (dBm)	MPR Allowed per 3GPP(dB)
10	QPSK	1 RB	0	704	23060	22.91	24	0
				707.5	23095	22.44	24	0
				711	23130	23.44	24	0
			25	704	23060	22.68	24	0
				707.5	23095	22.39	24	0
				711	23130	23.33	24	0
			49	704	23060	22.71	24	0
				707.5	23095	22.59	24	0
				711	23130	22.46	24	0
		25 RB	0	704	23060	22.92	23	0-1
				707.5	23095	22.90	23	0-1
				711	23130	22.81	23	0-1
			12	704	23060	23.00	23	0-1
				707.5	23095	22.99	23	0-1
				711	23130	22.84	23	0-1
			25	704	23060	22.99	23	0-1
				707.5	23095	22.93	23	0-1
				711	23130	22.96	23	0-1
		50RB		704	23060	22.96	23	0-1
				707.5	23095	22.87	23	0-1
				711	23130	22.90	23	0-1
	16-QAM	1 RB	0	704	23060	22.89	23	0-1
				707.5	23095	22.83	23	0-1
				711	23130	22.94	23	0-1
			25	704	23060	22.98	23	0-1
				707.5	23095	22.87	23	0-1
				711	23130	22.88	23	0-1
			49	704	23060	22.82	23	0-1
				707.5	23095	22.88	23	0-1
				711	23130	22.96	23	0-1
		25 RB	0	704	23060	21.95	22	0-2
				707.5	23095	21.90	22	0-2
				711	23130	21.95	22	0-2
			12	704	23060	21.92	22	0-2
				707.5	23095	21.93	22	0-2
				711	23130	21.82	22	0-2
			25	704	23060	21.92	22	0-2
				707.5	23095	21.94	22	0-2
				711	23130	21.87	22	0-2
		500RB		704	23060	21.98	22	0-2
				707.5	23095	21.90	22	0-2
				711	23130	21.87	22	0-2

FDD Band 12								
BW(Mhz)	Modulation	RB Size	RB Offset	Frequency (MHz)	Channel	Conducted power (dBm)	Target Power + Max. Tolerance (dBm)	MPR Allowed per 3GPP(dB)
10	64-QAM	1 RB	0	704	23060	21.95	22	0-2
				707.5	23095	22.00	22	0-2
				711	23130	21.85	22	0-2
			25	704	23060	21.86	22	0-2
				707.5	23095	21.98	22	0-2
				711	23130	21.98	22	0-2
			49	704	23060	21.84	22	0-2
				707.5	23095	21.86	22	0-2
				711	23130	21.98	22	0-2
		25 RB	0	704	23060	20.99	21	0-3
				707.5	23095	20.89	21	0-3
				711	23130	20.94	21	0-3
			12	704	23060	20.84	21	0-3
				707.5	23095	20.95	21	0-3
				711	23130	20.83	21	0-3
			25	704	23060	20.96	21	0-3
				707.5	23095	20.95	21	0-3
				711	23130	20.86	21	0-3
		50RB		704	23060	20.95	21	0-3
				707.5	23095	20.97	21	0-3
				711	23130	20.84	21	0-3

FDD Band 12								
BW(Mhz)	Modulation	RB Size	RB Offset	Frequency (MHz)	Channel	Conducted power (dBm)	Target Power + Max. Tolerance (dBm)	MPR Allowed per 3GPP(dB)
5	QPSK	1 RB	0	701.5	23035	23.31	24	0
				707.5	23095	23.20	24	0
				713.5	23155	23.23	24	0
			12	701.5	23035	23.31	24	0
				707.5	23095	23.14	24	0
				713.5	23155	23.14	24	0
			24	701.5	23035	23.24	24	0
				707.5	23095	23.13	24	0
				713.5	23155	23.20	24	0
		12 RB	0	701.5	23035	22.83	23	0-1
				707.5	23095	22.99	23	0-1
				713.5	23155	22.84	23	0-1
			6	701.5	23035	22.85	23	0-1
				707.5	23095	22.97	23	0-1
				713.5	23155	22.84	23	0-1
			13	701.5	23035	22.85	23	0-1
				707.5	23095	22.99	23	0-1
				713.5	23155	22.95	23	0-1
		25RB		701.5	23035	22.87	23	0-1
				707.5	23095	22.91	23	0-1
				713.5	23155	22.92	23	0-1
	16-QAM	1 RB	0	701.5	23035	22.89	23	0-1
				707.5	23095	22.93	23	0-1
				713.5	23155	22.92	23	0-1
			12	701.5	23035	22.90	23	0-1
				707.5	23095	22.84	23	0-1
				713.5	23155	22.87	23	0-1
			24	701.5	23035	22.96	23	0-1
				707.5	23095	22.82	23	0-1
				713.5	23155	22.83	23	0-1
		12 RB	0	701.5	23035	21.98	22	0-2
				707.5	23095	21.97	22	0-2
				713.5	23155	21.86	22	0-2
			6	701.5	23035	21.92	22	0-2
				707.5	23095	21.87	22	0-2
				713.5	23155	21.99	22	0-2
			13	701.5	23035	21.98	22	0-2
				707.5	23095	21.91	22	0-2
				713.5	23155	21.86	22	0-2
		25RB		701.5	23035	21.93	22	0-2
				707.5	23095	21.90	22	0-2
				713.5	23155	21.94	22	0-2

FDD Band 12								
BW(Mhz)	Modulation	RB Size	RB Offset	Frequency (MHz)	Channel	Conducted power (dBm)	Target Power + Max. Tolerance (dBm)	MPR Allowed per 3GPP(dB)
5	64-QAM	1 RB	0	701.5	23035	21.91	22	0-2
				707.5	23095	21.82	22	0-2
				713.5	23155	21.87	22	0-2
			12	701.5	23035	21.81	22	0-2
				707.5	23095	21.88	22	0-2
				713.5	23155	21.87	22	0-2
			24	701.5	23035	21.95	22	0-2
				707.5	23095	21.88	22	0-2
				713.5	23155	21.96	22	0-2
		12 RB	0	701.5	23035	20.86	21	0-3
				707.5	23095	20.97	21	0-3
				713.5	23155	20.91	21	0-3
			6	701.5	23035	20.98	21	0-3
				707.5	23095	20.81	21	0-3
				713.5	23155	20.88	21	0-3
			13	701.5	23035	20.87	21	0-3
				707.5	23095	20.81	21	0-3
				713.5	23155	20.97	21	0-3
		25RB		701.5	23035	20.91	21	0-3
				707.5	23095	20.95	21	0-3
				713.5	23155	20.98	21	0-3

FDD Band 12								
BW(Mhz)	Modulation	RB Size	RB Offset	Frequency (MHz)	Channel	Conducted power (dBm)	Target Power + Max. Tolerance (dBm)	MPR Allowed per 3GPP(dB)
3	QPSK	1 RB	0	700.5	23025	23.05	24	0
				707.5	23095	23.07	24	0
				714.5	23165	23.06	24	0
			7	700.5	23025	23.10	24	0
				707.5	23095	23.20	24	0
				714.5	23165	23.15	24	0
			14	700.5	23025	23.05	24	0
				707.5	23095	23.08	24	0
				714.5	23165	23.05	24	0
		8 RB	0	700.5	23025	23.00	23	0-1
				707.5	23095	22.92	23	0-1
				714.5	23165	22.97	23	0-1
			4	700.5	23025	22.93	23	0-1
				707.5	23095	22.98	23	0-1
				714.5	23165	22.93	23	0-1
			7	700.5	23025	22.84	23	0-1
				707.5	23095	22.92	23	0-1
				714.5	23165	22.91	23	0-1
		15RB		700.5	23025	22.95	23	0-1
				707.5	23095	22.95	23	0-1
				714.5	23165	22.92	23	0-1
	16-QAM	1 RB	0	700.5	23025	22.82	23	0-1
				707.5	23095	22.98	23	0-1
				714.5	23165	22.90	23	0-1
			7	700.5	23025	22.99	23	0-1
				707.5	23095	22.90	23	0-1
				714.5	23165	22.90	23	0-1
			14	700.5	23025	22.95	23	0-1
				707.5	23095	22.82	23	0-1
				714.5	23165	22.93	23	0-1
		8 RB	0	700.5	23025	21.95	22	0-2
				707.5	23095	21.84	22	0-2
				714.5	23165	21.85	22	0-2
			4	700.5	23025	21.86	22	0-2
				707.5	23095	21.98	22	0-2
				714.5	23165	21.91	22	0-2
			7	700.5	23025	21.97	22	0-2
				707.5	23095	21.95	22	0-2
				714.5	23165	21.87	22	0-2
		15RB		700.5	23025	21.94	22	0-2
				707.5	23095	21.93	22	0-2
				714.5	23165	21.85	22	0-2

FDD Band 12								
BW(Mhz)	Modulation	RB Size	RB Offset	Frequency (MHz)	Channel	Conducted power (dBm)	Target Power + Max. Tolerance (dBm)	MPR Allowed per 3GPP(dB)
3	64-QAM	1 RB	0	700.5	23025	21.88	22	0-2
				707.5	23095	21.82	22	0-2
				714.5	23165	21.98	22	0-2
			7	700.5	23025	21.84	22	0-2
				707.5	23095	21.91	22	0-2
				714.5	23165	21.86	22	0-2
			14	700.5	23025	21.95	22	0-2
				707.5	23095	21.82	22	0-2
				714.5	23165	21.93	22	0-2
		8 RB	0	700.5	23025	20.84	21	0-3
				707.5	23095	20.84	21	0-3
				714.5	23165	20.98	21	0-3
			4	700.5	23025	20.93	21	0-3
				707.5	23095	20.93	21	0-3
				714.5	23165	20.96	21	0-3
			7	700.5	23025	20.94	21	0-3
				707.5	23095	20.83	21	0-3
				714.5	23165	20.97	21	0-3
		15RB		700.5	23025	20.89	21	0-3
				707.5	23095	20.82	21	0-3
				714.5	23165	20.87	21	0-3

FDD Band 12								
BW(Mhz)	Modulation	RB Size	RB Offset	Frequency (MHz)	Channel	Conducted power (dBm)	Target Power + Max. Tolerance (dBm)	MPR Allowed per 3GPP(dB)
1.4	QPSK	1 RB	0	699.7	23017	23.15	24	0
				707.5	23095	23.18	24	0
				715.3	23173	23.09	24	0
			2	699.7	23017	23.04	24	0
				707.5	23095	23.11	24	0
				715.3	23173	23.08	24	0
			5	699.7	23017	23.06	24	0
				707.5	23095	23.17	24	0
				715.3	23173	23.10	24	0
		3 RB	0	699.7	23017	22.81	23	0-1
				707.5	23095	22.97	23	0-1
				715.3	23173	22.96	23	0-1
			2	699.7	23017	22.82	23	0-1
				707.5	23095	22.86	23	0-1
				715.3	23173	22.92	23	0-1
			3	699.7	23017	22.90	23	0-1
				707.5	23095	22.97	23	0-1
				715.3	23173	22.94	23	0-1
		6RB		699.7	23017	22.83	23	0-1
				707.5	23095	22.81	23	0-1
				715.3	23173	22.94	23	0-1
	16-QAM	1 RB	0	699.7	23017	22.97	23	0-1
				707.5	23095	22.89	23	0-1
				715.3	23173	22.98	23	0-1
			2	699.7	23017	22.99	23	0-1
				707.5	23095	22.97	23	0-1
				715.3	23173	22.94	23	0-1
			5	699.7	23017	22.95	23	0-1
				707.5	23095	23.00	23	0-1
				715.3	23173	22.91	23	0-1
		3 RB	0	699.7	23017	21.96	22	0-1
				707.5	23095	21.82	22	0-1
				715.3	23173	21.92	22	0-1
			2	699.7	23017	21.94	22	0-1
				707.5	23095	21.84	22	0-1
				715.3	23173	21.99	22	0-1
			3	699.7	23017	21.91	22	0-1
				707.5	23095	21.90	22	0-1
				715.3	23173	21.89	22	0-1
		6RB		699.7	23017	21.92	22	0-2
				707.5	23095	21.83	22	0-2
				715.3	23173	21.93	22	0-2

FDD Band 12								
BW(Mhz)	Modulation	RB Size	RB Offset	Frequency (MHz)	Channel	Conducted power (dBm)	Target Power + Max. Tolerance (dBm)	MPR Allowed per 3GPP(dB)
1.4	64-QAM	1 RB	0	699.7	23017	21.81	22	0-2
				707.5	23095	21.88	22	0-2
				715.3	23173	21.89	22	0-2
			2	699.7	23017	21.99	22	0-2
				707.5	23095	21.90	22	0-2
				715.3	23173	21.81	22	0-2
			5	699.7	23017	21.91	22	0-2
				707.5	23095	21.81	22	0-2
				715.3	23173	21.87	22	0-2
		3 RB	0	699.7	23017	20.82	21	0-2
				707.5	23095	20.82	21	0-2
				715.3	23173	20.94	21	0-2
			2	699.7	23017	20.89	21	0-2
				707.5	23095	20.82	21	0-2
				715.3	23173	20.92	21	0-2
			3	699.7	23017	20.90	21	0-2
				707.5	23095	20.99	21	0-2
				715.3	23173	20.94	21	0-2
		6RB		699.7	23017	20.81	21	0-3
				707.5	23095	20.99	21	0-3
				715.3	23173	20.98	21	0-3

1.4 Test Environment

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

1.5 Operation Description

For WWAN, the EUT is controlled by using a Radio Communication Tester, and the communication between the EUT and the tester is established by air link.

Per FCC guidance, the device was tested as below.

Body SAR (1g-SAR<1.6W/Kg)

Test the back of the device in direct contact with the flat phantom using body tissue.

Extremity SAR (10g-SAR<4.0W/Kg)

Test top/right/bottom/left sides in direct contact with the flat phantom using body tissue.

Face SAR (1g-SAR<1.6W/Kg)

Test the front of the device with a 5mm gap to the flat phantom using head tissue.

Note:

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

2. The 3G SAR test reduction procedure is applied to HSDPA with 12.2 kbps RMC as the primary mode. Since the maximum output power in a secondary mode (HSDPA) is ≤ ¼ dB higher than the primary mode (WCDMA), SAR measurement is not required for the secondary mode (HSDPA). The following 4 sub-tests were completed according to Release 5 procedures in section 5.2 of 3GPP TS 34.121. A summary of these setting are illustrated below:

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

Note 1: Δ_{ACK}, Δ_{NACK} and Δ_{CQI} = 30/15 with β_{HS} = 30/15 * β_c.
Note 2: For the HS-DPCCH power mask requirement test in clause 5.2C, 5.7A, and the Error Vector Magnitude (EVM) with HS-DPCCH test in clause 5.13.1A, and HSDPA EVM with phase discontinuity in clause 5.13.1AA, Δ_{ACK} and Δ_{NACK} = 30/15 with β_{HS} = 30/15 * β_c, and Δ_{CQI} = 24/15 with β_{HS} = 24/15 * β_c.
Note 3: CM = 1 for β_c/β_d = 12/15, β_{HS}/β_c = 24/15. For all other combinations of DPDCH, DPCCH and HS-DPCCH the MPR is based on the relative CM difference. This is applicable for only UEs that support HSDPA in release 6 and later releases.
Note 4: For subtest 2 the β_c/β_d ratio of 12/15 for the TFC during the measurement period (TF1, TF0) is achieved by setting the signalled gain factors for the reference TFC (TF1, TF1) to β_c = 11/15 and β_d = 15/15.

3. The 3G SAR test reduction procedure is applied to HSPA (HSUPA/HSDPA with RMC) with 12.2 kbps RMC as the primary mode. Since the maximum output power in a secondary mode (HSPA) is ≤ ¼ dB higher than the primary mode (WCDMA), SAR measurement is not required for the secondary mode (HSPA). The following 5 sub-tests were completed according to Release 6 procedures in section 5.2 of 3GPP TS 34.121. A summary of these setting are illustrated below:

Sub-test	β_c	β_d	β_d (SF)	β_c / β_d	β_{HS} (1)	β_{ec}	β_{ed} (4)(5)	β_{ed} (SF)	β_{ed} (Codes)	CM (2) (dB)	MPR (2)(6) (dB)	AG (5) Index	E-TFCI
1	11/15 (3)	15/15 (3)	64	11/15 (3)	22/15	209/225	1309/225	4	1	1.0	0.0	20	75
2	6/15	15/15	64	6/15	12/15	12/15	94/75	4	1	3.0	2.0	12	67
3	15/15	9/15	64	15/9	30/15	30/15	β_{ed}1: 47/15 β_{ed}2: 47/15	4 4	2	2.0	1.0	15	92
4	2/15	15/15	64	2/15	4/15	2/15	56/75	4	1	3.0	2.0	17	71
5	15/15	0	-	-	5/15	5/15	47/15	4	1	1.0	0.0	12	67

Note 1: For sub-test 1 to 4, Δ_{ACK}, Δ_{NACK} and Δ_{CQI} = 30/15 with β_{HS} = 30/15 * β_c. For sub-test 5, Δ_{ACK}, Δ_{NACK} and Δ_{CQI} = 5/15 with β_{HS} = 5/15 * β_c.
Note 2: CM = 1 for β_c/β_d = 12/15, β_{HS}/β_c = 24/15. For all other combinations of DPDCH, DPCCH, HS-DPCCH, E-DPDCH and E-DPCCH the MPR is based on the relative CM difference.
Note 3: For subtest 1 the β_c/β_d ratio of 11/15 for the TFC during the measurement period (TF1, TF0) is achieved by setting the signalled gain factors for the reference TFC (TF1, TF1) to β_c = 10/15 and β_d = 15/15.
Note 4: In case of testing by UE using E-DPDCH Physical Layer category 1, Sub-test 3 is omitted according to TS25.306 Table 5.1g.
Note 5: β_{ed} can not be set directly; it is set by Absolute Grant Value.
Note 6: For subtests 2, 3 and 4, UE may perform E-DPDCH power scaling at max power which could results in slightly smaller MPR values.

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

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

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

the RB offset configuration with the highest output power for that channel.

- When the reported SAR of a required test channel is > 1.45 W/kg, SAR is required for all three RB offset configurations for that required test channel.

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

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

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

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

d. Per Section 5.2.4, Higher order modulations

- For each modulation besides QPSK; e.g., 16-QAM, 64-QAM, apply the QPSK procedures in sections 5.2.1, 5.2.2 and 5.2.3 to determine the QAM configurations that may need SAR measurement. For each configuration identified as required for testing, SAR is required only when the highest maximum output power for the configuration in the higher order modulation is > ½ dB higher than the same configuration in QPSK or when the reported SAR for the QPSK configuration is > 1.45 W/kg.

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

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

modulation etc. is determined for the smaller channel bandwidth according to the same number of RB allocated in the largest channel bandwidth.

5. According to KDB447498D01v06, testing of other required channels is not required when the reported 1-g SAR for the highest output channel is ≤ 0.8 W/kg, when the transmission band is ≤ 100 MHz.

6. According to KDB865664D01v01r04, SAR measurement variability must be assessed for each frequency band. When the original highest measured SAR is ≥ 0.8 W/kg, repeated that measurement once. Perform a second repeated measurement only if the ratio of largest to smallest SAR for the original and first repeated measurements is > 1.20 or when the original or repeated measurement is ≥ 1.45 W/kg (~ 10% from the 1-g SAR limit)

1.6 The SAR Measurement System

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

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

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

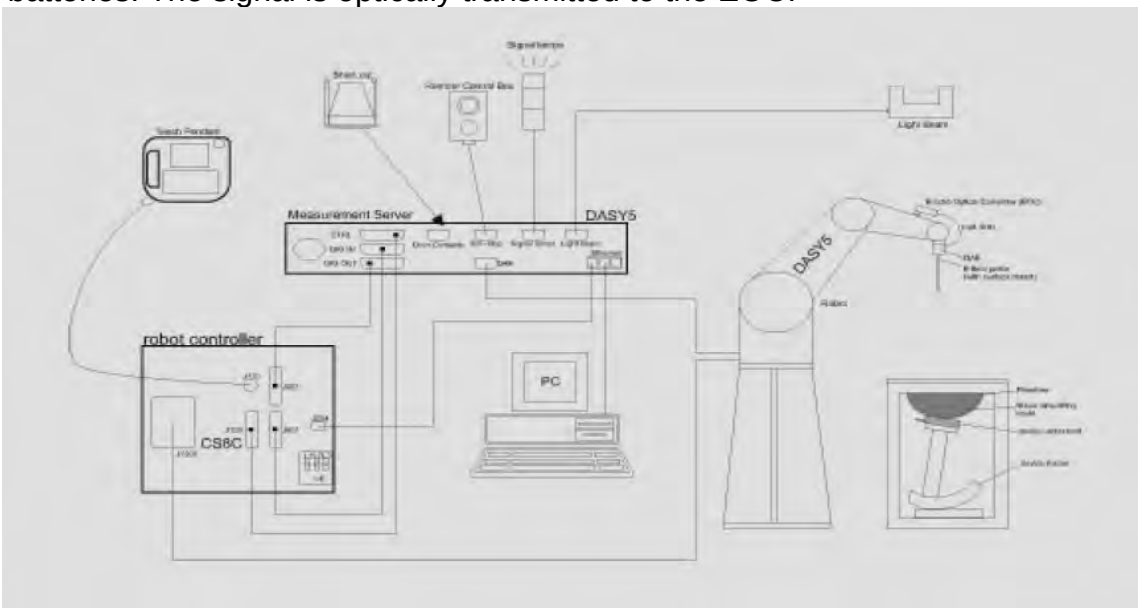


Fig. a The block diagram of SAR system

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

1.7 System Components

EX3DV4 E-Field Probe

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

PHANTOM

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

DEVICE HOLDER

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

1.8 SAR System Verification

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

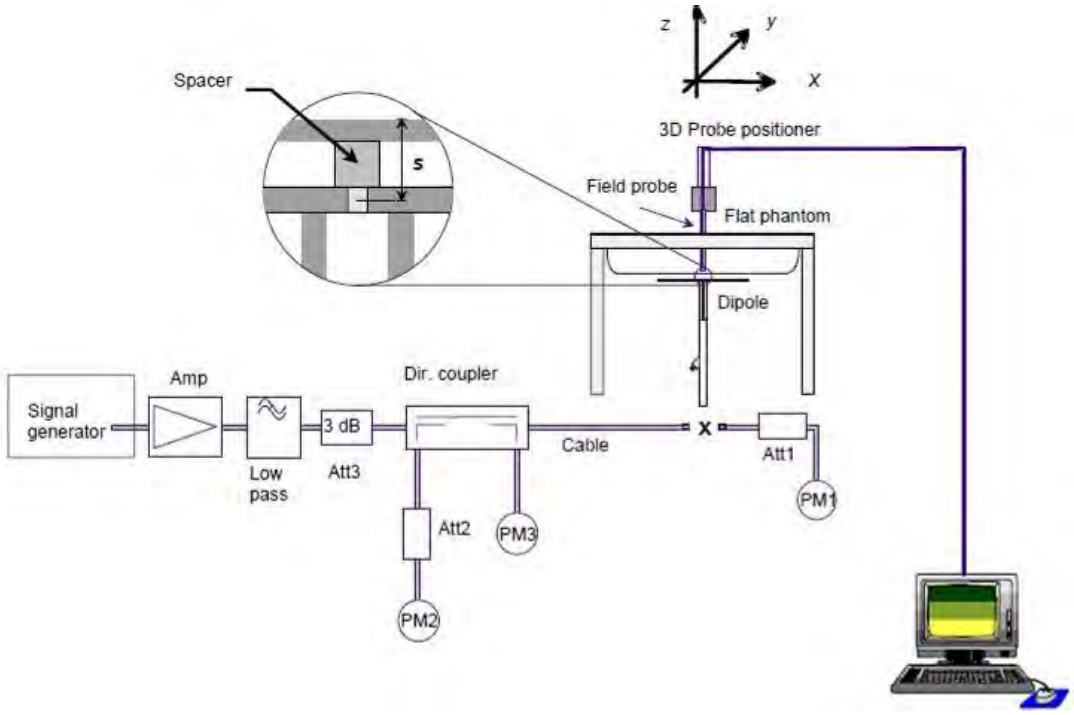


Fig. b The block diagram of system verification

Validation Kit	S/N	Frequency (MHz)		1W Target SAR-1g (mW/g)	pin=250mW Measured SAR-1g (mW/g)	Measured SAR-1g normalized to 1W (mW/g)	Deviation (%)	Measured Date
D750V3	1015	750	Head	8.6	2.18	8.72	1.40%	Nov, 08, 2019
D835V2	4d063	835	Head	9.57	2.19	8.76	-8.46%	Nov, 06, 2019
D1750V2	1008	1750	Head	36.8	8.66	34.64	-5.87%	Nov, 07, 2019
D1900V2	5d173	1900	Head	40.2	9.61	38.44	-4.38%	Nov, 05, 2019
Validation Kit	S/N	Frequency (MHz)		1W Target SAR-1g (mW/g)	pin=250mW Measured SAR-1g (mW/g)	Measured SAR-1g normalized to 1W (mW/g)	Deviation (%)	Measured Date
D750V3	1078	750	Body	8.64	2.18	8.72	0.93%	Nov, 08, 2019
D835V2	4d092	835	Body	9.57	2.36	9.44	-1.36%	Nov, 06, 2019
D1750V2	1023	1750	Body	37.5	9.11	36.44	-2.83%	Nov, 07, 2019
D1900V2	5d142	1900	Body	39.8	9.86	39.44	-0.90%	Nov, 05, 2019
Validation Kit	S/N	Frequency (MHz)		1W Target SAR-10g (mW/g)	pin=250mW Measured SAR-10g (mW/g)	Measured SAR-10g normalized to 1W (mW/g)	Deviation (%)	Measured Date
D750V3	1078	750	Body	5.68	1.46	5.84	2.82%	Nov, 08, 2019
D835V2	4d092	835	Body	6.24	1.54	6.16	-1.28%	Nov, 06, 2019
D1750V2	1023	1750	Body	19.8	4.84	19.36	-2.22%	Nov, 07, 2019
D1900V2	5d142	1900	Body	20.9	5.28	21.12	1.05%	Nov, 05, 2019

Table 1. Results of system verification

1.9 Tissue Simulant Fluid for the Frequency Band

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

All dielectric parameters of tissue simulates were measured within 24 hours of SAR measurements. The measured conductivity and permittivity are all within ± 5% of the target values.

Tissue Type	Measurement Date	Measured Frequency (MHz)	Target Dielectric Constant, εr	Target Conductivity, σ (S/m)	Measured Dielectric Constant, εr	Measured Conductivity, σ (S/m)	% dev εr	% dev σ
Head	Nov, 08. 2019	704.00	42.181	0.890	43.640	0.860	3.46%	-3.35%
		707.50	42.162	0.890	43.460	0.865	3.08%	-2.82%
		711.00	42.144	0.890	43.449	0.867	3.10%	-2.62%
		750.00	41.942	0.893	43.045	0.872	2.63%	-2.39%
	Nov, 06. 2019	826.40	41.545	0.899	42.975	0.876	3.44%	-2.59%
		835.00	41.500	0.900	42.813	0.884	3.16%	-1.78%
		836.50	41.492	0.900	42.807	0.888	3.17%	-1.35%
		847.00	41.500	0.912	42.738	0.899	2.98%	-1.48%
	Nov, 07. 2019	1720.00	40.126	1.354	40.723	1.317	1.49%	-2.71%
		1732.50	40.107	1.361	40.656	1.322	1.37%	-2.86%
		1745.00	40.087	1.368	40.634	1.332	1.36%	-2.64%
		1750.00	40.079	1.371	40.625	1.336	1.36%	-2.56%
	Nov, 05. 2019	1852.40	40.000	1.400	40.289	1.417	0.72%	1.21%
		1860.00	40.000	1.400	40.240	1.426	0.60%	1.86%
		1880.00	40.000	1.400	40.193	1.437	0.48%	2.64%
		1900.00	40.000	1.400	40.113	1.450	0.28%	3.57%
		1907.60	40.000	1.400	40.060	1.459	0.15%	4.21%

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	Nov, 08. 2019	704.00	55.710	0.960	57.852	0.922	3.84%	-3.96%
		707.50	55.697	0.960	57.847	0.925	3.86%	-3.65%
		711.00	55.683	0.960	57.841	0.931	3.88%	-3.02%
		750.00	55.531	0.963	57.820	0.934	4.12%	-3.02%
	Nov, 06. 2019	826.40	55.234	0.969	57.443	0.981	4.00%	1.24%
		835.00	55.200	0.970	57.332	0.986	3.86%	1.65%
		836.60	55.195	0.972	57.210	0.997	3.65%	2.57%
		847.00	55.194	0.972	57.168	1.003	3.58%	3.19%
	Nov, 07. 2019	1720.00	53.511	1.470	51.488	1.401	-3.78%	-4.69%
		1732.50	53.479	1.477	51.461	1.413	-3.77%	-4.33%
		1745.00	53.445	1.485	51.432	1.430	-3.77%	-3.70%
		1750.00	53.432	1.488	51.422	1.438	-3.76%	-3.36%
	Nov, 05. 2019	1852.40	53.300	1.520	51.052	1.546	-4.22%	1.71%
		1860.00	53.300	1.520	50.993	1.553	-4.33%	2.17%
		1880.00	53.300	1.520	50.954	1.578	-4.40%	3.82%
		1900.00	53.300	1.520	50.913	1.584	-4.48%	4.21%
		1907.60	53.300	1.520	50.901	1.591	-4.50%	4.67%

Table 2. Dielectric Parameters of Tissue Simulant Fluid

The composition of the tissue simulating liquid:

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

Table 3. Recipes for Tissue Simulating Liquid

1.10 Evaluation Procedures

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

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

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

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

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

The measured volume of 30x30x30mm contains about 30g of tissue.
The first procedure is an extrapolation (incl. Boundary correction) to get the points between the lowest measured plane and the surface. The next step uses 3D interpolation to get all points within the measured volume. In the last step, a 1g cube is placed numerically into the volume and its averaged SAR is calculated. This cube is the moved around until the highest averaged SAR is found. If the highest SAR is found at the edge of the measured volume, the system will issue a warning: higher SAR values might be found outside of the measured volume. In that case the cube measurement can be repeated, using the new interpolated maximum as the center.

1.11 Probe Calibration Procedures

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

1.11.1 Transfer Calibration with Temperature Probes

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

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

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

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

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

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

1.11.2 Calibration with Analytical Fields

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

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

assessment of the dielectric parameters of the liquid.

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

References

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

1.12 Test Standards and Limits

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

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

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

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

Table 4. RF exposure limits

Notes:

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

2. Summary of Results

2.1 Decision rules

Reported measurement data comply with IEEE 1528-2013:

Determining compliance shall be based on the results of the compliance measurement, not taking into account measurement instrumentation uncertainty.

2.2 Summary of Results

Face exposure

WCDMA Band II

Mode	Position	Distance (mm)	CH	Freq. (MHz)	Max. Rated Avg. Power + Max. Tolerance (dBm)	Measured Avg. Power (dBm)	Scaling	Averaged SAR over 1g (W/kg)		Plot page
								Measured	Reported	
WCDMA Band II	Front side	5	9262	1852.4	25	23.85	30.32%	0.271	0.353	-
	Front side	5	9400	1880	25	23.76	33.05%	0.274	0.365	67
	Front side	5	9538	1907.6	25	23.46	42.56%	0.255	0.364	-

WCDMA Band V

Mode	Position	Distance (mm)	CH	Freq. (MHz)	Max. Rated Avg. Power + Max. Tolerance (dBm)	Measured Avg. Power (dBm)	Scaling	Averaged SAR over 1g (W/kg)		Plot page
								Measured	Reported	
WCDMA Band V	Front side	5	4132	826.4	25	24.55	10.92%	0.046	0.051	-
	Front side	5	4183	836.6	25	24.58	10.15%	0.048	0.053	68
	Front side	5	4233	846.6	25	24.52	11.69%	0.044	0.049	-

LTE FDD Band 2

Bandwidth (MHz)	Modulation	RB Size	RB start	Position	Distance (mm)	CH	Freq. (MHz)	Max. Rated Avg.Power + Max. Tolerance (dBm)	Measured Avg. Power (dBm)	Scaling	Averaged SAR over 1g (W/kg)		Plot page
											Measured	Reported	
20MHz	QPSK	1 RB	0	Front side	5	19100	1900	24	23.05	24.45%	0.422	0.525	-
			50	Front side	5	18900	1880	24	23.46	13.24%	0.453	0.513	-
			99	Front side	5	18700	1860	24	23.56	10.66%	0.477	0.528	69
		50 RB	50	Front side	5	19100	1900	23	22.97	0.69%	0.341	0.343	-
		100 RB		Front side	5	19100	1900	23	22.97	0.69%	0.344	0.346	-

LTE FDD Band 4

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	
20MHz	QPSK	1 RB	0	Front side	5	20050	1720	24	23.51	11.94%	0.299	0.335	-
				Front side	5	20175	1732.5	24	22.99	26.18%	0.254	0.321	-
			50	Front side	5	20300	1745	24	23.65	8.39%	0.310	0.336	70
		50 RB	25	Front side	5	20300	1745	23	23.00	0.00%	0.263	0.263	-
		100 RB		Front side	5	20175	1732.5	23	22.91	2.09%	0.257	0.262	-

LTE FDD Band 12

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	
10MHz	QPSK	1 RB	0	Front side	5	23060	704	24	22.91	28.53%	0.011	0.014	-
				Front side	5	23130	711	24	23.44	13.76%	0.016	0.018	71
			49	Front side	5	23095	707.5	24	22.59	38.36%	0.012	0.017	-
		25 RB	12	Front side	5	23060	704	23	23.00	0.00%	0.005	0.005	-
		50 RB		Front side	5	23060	704	23	22.96	0.93%	0.006	0.006	-

Body exposure

WCDMA Band II

Mode	Position	Distance (mm)	CH	Freq. (MHz)	Max. Rated Avg. Power + Max. Tolerance (dBm)	Measured Avg. Power (dBm)	Scaling	Averaged SAR over 1g (W/kg)		Plot page
								Measured	Reported	
WCDMA Band II	Back side	0	9262	1852.4	25	23.85	30.32%	0.964	1.256	-
	Back side	0	9400	1880	25	23.76	33.05%	1.010	1.344	72
	Back side*	0	9400	1880	25	23.76	33.05%	0.998	1.328	-
	Back side	0	9538	1907.6	25	23.46	42.56%	0.637	0.908	-

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

WCDMA Band V

Mode	Position	Distance (mm)	CH	Freq. (MHz)	Max. Rated Avg. Power + Max. Tolerance (dBm)	Measured Avg. Power (dBm)	Scaling	Averaged SAR over 1g (W/kg)		Plot page
								Measured	Reported	
WCDMA Band V	Back side	0	4132	826.4	25	24.55	10.92%	0.017	0.019	-
	Back side	0	4183	836.6	25	24.58	10.15%	0.033	0.036	73
	Back side	0	4233	846.6	25	24.52	11.69%	0.024	0.027	-

LTE FDD Band 2

Bandwidth (MHz)	Modulation	RB Size	RB start	Position	Distance (mm)	CH	Freq. (MHz)	Max. Rated Avg.Power + Max. Tolerance (dBm)	Measured Avg. Power (dBm)	Scaling	Averaged SAR over 1g (W/kg)		Plot page
											Measured	Reported	
20MHz	QPSK	1 RB	0	Back side	0	19100	1900	24	23.05	24.45%	0.647	0.805	-
			50	Back side	0	18900	1880	24	23.46	13.24%	1.070	1.212	74
				Back side*	0	18900	1880	24	23.46	13.24%	1.030	1.166	-
			99	Back side	0	18700	1860	24	23.56	10.66%	1.010	1.118	-
		50 RB	50	Back side	0	19100	1900	23	22.97	0.69%	0.490	0.493	-
		100 RB		Back side	0	19100	1900	23	22.97	0.69%	0.494	0.497	-

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

LTE FDD Band 4

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	
20MHz	QPSK	1 RB	0	Back side	0	20050	1720	24	23.51	11.94%	0.668	0.748	-
				Back side	0	20175	1732.5	24	22.99	26.18%	0.603	0.761	-
			50	Back side	0	20300	1745	24	23.65	8.39%	0.704	0.763	75
		50 RB	25	Back side	0	20300	1745	23	23.00	0.00%	0.693	0.693	-
		100 RB		Back side	0	20175	1732.5	23	22.91	2.09%	0.684	0.698	-

LTE FDD Band 12

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	
10MHz	QPSK	1 RB	0	Back side	0	23060	704	24	22.91	28.53%	0.013	0.017	-
				Back side	0	23130	711	24	23.44	13.76%	0.018	0.020	76
			49	Back side	0	23095	707.5	24	22.59	38.36%	0.011	0.015	-
		25 RB	12	Back side	0	23060	704	23	23.00	0.00%	0.012	0.012	-
		50 RB		Back side	0	23060	704	23	22.96	0.93%	0.010	0.010	-

Extremity exposure

WCDMA Band II

Mode	Position	Distance (mm)	CH	Freq. (MHz)	Max. Rated Avg. Power + Max. Tolerance (dBm)	Measured Avg. Power (dBm)	Scaling	Averaged SAR over 10g (W/kg)		Plot page
								Measured	Reported	
WCDMA Band II	Right side	0	9262	1852.4	25	23.85	30.32%	0.689	0.898	77
	Right side	0	9400	1880	25	23.76	33.05%	0.663	0.882	-
	Right side	0	9538	1907.6	25	23.46	42.56%	0.613	0.874	-
	Left side	0	9262	1852.4	25	23.85	30.32%	0.272	0.354	-
	Top side	0	9262	1852.4	25	23.85	30.32%	0.036	0.047	-
	Bottom side	0	9262	1852.4	25	23.85	30.32%	0.066	0.086	-

WCDMA Band V

Mode	Position	Distance (mm)	CH	Freq. (MHz)	Max. Rated Avg. Power + Max. Tolerance (dBm)	Measured Avg. Power (dBm)	Scaling	Averaged SAR over 10g (W/kg)		Plot page
								Measured	Reported	
WCDMA Band V	Right side	0	4132	826.4	25	24.55	10.92%	0.011	0.012	-
	Right side	0	4183	836.6	25	24.58	10.15%	0.015	0.017	78
	Right side	0	4233	846.6	25	24.52	11.69%	0.013	0.015	-
	Left side	0	4183	836.6	25	24.58	10.15%	0.003	0.003	-
	Top side	0	4183	836.6	25	24.58	10.15%	0.001	0.001	-
	Bottom side	0	4183	836.6	25	24.58	10.15%	0.002	0.002	-

LTE FDD Band 2

Bandwidth (MHz)	Modulation	RB Size	RB start	Position	Distance (mm)	CH	Freq. (MHz)	Max. Rated Avg.Power + Max. Tolerance (dBm)	Measured Avg. Power (dBm)	Scaling	Averaged SAR over 10g (W/kg)		Plot page
											Measured	Reported	
20MHz	QPSK	1 RB	0	Right side	0	19100	1900	24	23.05	24.45%	0.401	0.499	-
			50	Right side	0	18900	1880	24	23.46	13.24%	0.443	0.502	-
			99	Right side	0	18700	1860	24	23.56	10.66%	0.462	0.511	79
				Left side	0	18700	1860	24	23.56	10.66%	0.269	0.298	-
				Top side	0	18700	1860	24	23.56	10.66%	0.032	0.035	-
				Bottom side	0	18700	1860	24	23.56	10.66%	0.061	0.068	-
		50 RB	50	Right side	0	19100	1900	23	22.97	0.69%	0.280	0.282	-
				Left side	0	19100	1900	23	22.97	0.69%	0.246	0.248	-
				Top side	0	19100	1900	23	22.97	0.69%	0.028	0.028	-
				Bottom side	0	19100	1900	23	22.97	0.69%	0.055	0.055	-
		100 RB		Right side	0	19100	1900	23	22.97	0.69%	0.275	0.277	-
				Left side	0	19100	1900	23	22.97	0.69%	0.241	0.243	-
				Top side	0	19100	1900	23	22.97	0.69%	0.026	0.026	-
				Bottom side	0	19100	1900	23	22.97	0.69%	0.051	0.051	-

LTE FDD Band 4

Bandwidth (MHz)	Modulation	RB Size	RB start	Position	Distance (mm)	CH	Freq. (MHz)	Max. Rated Avg.Power + Max. Tolerance (dBm)	Measured Avg. Power (dBm)	Scaling	Averaged SAR over 10g (W/kg)		Plot page
											Measured	Reported	
20MHz	QPSK	1 RB	0	Right side	0	20050	1720	24	23.51	11.94%	0.373	0.418	-
				Right side	0	20175	1732.5	24	22.99	26.18%	0.311	0.392	-
			50	Right side	0	20300	1745	24	23.65	8.39%	0.393	0.426	80
				Left side	0	20300	1745	24	23.65	8.39%	0.259	0.281	-
				Top side	0	20300	1745	24	23.65	8.39%	0.024	0.026	-
				Bottom side	0	20300	1745	24	23.65	8.39%	0.056	0.061	-
		50 RB	25	Right side	0	20300	1745	23	23.00	0.00%	0.266	0.266	-
				Left side	0	20300	1745	23	23.00	0.00%	0.241	0.241	-
				Top side	0	20300	1745	23	23.00	0.00%	0.017	0.017	-
				Bottom side	0	20300	1745	23	23.00	0.00%	0.049	0.049	-
		100 RB		Right side	0	20175	1732.5	23	22.91	2.09%	0.236	0.241	-
				Left side	0	20175	1732.5	23	22.91	2.09%	0.233	0.238	-
				Top side	0	20175	1732.5	23	22.91	2.09%	0.015	0.015	-
				Bottom side	0	20175	1732.5	23	22.91	2.09%	0.046	0.047	-

LTE FDD Band 12

Bandwidth (MHz)	Modulation	RB Size	RB start	Position	Distance (mm)	CH	Freq. (MHz)	Max. Rated Avg.Power + Max. Tolerance (dBm)	Measured Avg. Power (dBm)	Scaling	Averaged SAR over 10g (W/kg)		Plot page
											Measured	Reported	
10MHz	QPSK	1 RB	0	Right side	0	23060	704	24	22.91	28.53%	0.002	0.003	-
				Right side	0	23130	711	24	23.44	13.76%	0.003	0.004	81
				Left side	0	23130	711	24	23.44	13.76%	0.002	0.002	-
				Top side	0	23130	711	24	23.44	13.76%	0.000	0.000	-
				Bottom side	0	23130	711	24	23.44	13.76%	0.000	0.001	-
			49	Right side	0	23095	707.5	24	22.59	38.36%	0.002	0.003	-
		25 RB	12	Right side	0	23060	704	23	23.00	0.00%	0.001	0.001	-
				Left side	0	23060	704	23	23.00	0.00%	0.001	0.001	-
				Top side	0	23060	704	23	23.00	0.00%	0.000	0.000	-
				Bottom side	0	23060	704	23	23.00	0.00%	0.001	0.001	-
		50 RB		Right side	0	23060	704	23	22.96	0.93%	0.001	0.001	-
				Left side	0	23060	704	23	22.96	0.93%	0.000	0.000	-
				Top side	0	23060	704	23	22.96	0.93%	0.000	0.000	-
				Bottom side	0	23060	704	23	22.96	0.93%	0.000	0.000	-

Note:

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

Reported SAR = measured SAR * (scaling)

Where P2 is maximum specified power, P1 is measured conducted power

2.3 Reporting statements of conformity

The conformity statement in this report is based solely on the test results, measurement uncertainty is excluded.

3. Instruments List

Manufacturer	Device	Type	Serial number	Date of last calibration	Date of next calibration
SPEAG	Dosimetric E-Field Probe	EX3DV4	3770	Apr.29,2019	Apr.28,2020
SPEAG	System Validation Dipole	D750V3	1015	Aug.23,2019	Aug.22,2020
		D750V3	1078	Jun.27,2019	Jun.26,2020
		D835V2	4d063	Aug.23,2019	Aug.22,2020
		D835V2	4d092	Jun.20,2019	Jun.19,2020
		D1750V2	1008	Aug.23,2019	Aug.22,2020
		D1750V2	1023	Jun.20,2019	Jun.19,2020
		D1900V2	5d173	Apr.23,2019	Apr.22,2020
		D1900V2	5d142	Jul.26,2019	Jul.25,2020
SPEAG	Data acquisition Electronics	DAE4	1260	Sep.11,2019	Sep.10,2020
SPEAG	Software	DASY 52 V52.10.2	N/A	Calibration not required	Calibration not required
SPEAG	Phantom	ELI	N/A	Calibration not required	Calibration not required
Agilent	Network Analyzer	E5071C	MY46107530	Feb.23,2019	Feb.22,2020
Agilent	Dielectric Probe Kit	85070E	MY44300677	Calibration not required	Calibration not required
Agilent	Dual-directional coupler	772D	MY46151242	Jul.30,2019	Jul.29,2020
		778D	MY48220468	Jul.30,2019	Jul.29,2020
Agilent	RF Signal Generator	N5181A	MY50141235	Apr.22,2019	Apr.21,2020
Agilent	Power Meter	E4417A	MY51410006	Feb.19,2019	Feb.18,2020
Agilent	Power Sensor	E9301H	MY51470001	Feb.19,2019	Feb.18,2020
			MY51470002	Feb.19,2019	Feb.18,2020

Manufacturer	Device	Type	Serial number	Date of last calibration	Date of next calibration
TECPEL	Digital thermometer	DTM-303A	TP130074	Mar.26,2019	Mar.25,2020
Anritsu	Radio Communication Test	MT8820C	6201061049	Dec.27,2018	Dec.26,2019

4. Measurements

Date: 2019/11/5

WCDMA Band II_ Front _CH 9400_5mm

Communication System: WCDMA; Frequency: 1860 MHz; Duty Cycle: 1:1

Medium parameters used: f = 1860 MHz; σ = 1.426 S/m; ε_r = 40.24; ρ = 1000 kg/m^3

Phantom section: Flat Section

Ambient temperature: 21.8°C; Liquid temperature: 21.4°C

DASY5 Configuration:

- Probe: EX3DV4 - SN3770;ConvF(8.23, 8.23, 8.23);Calibrated: 2019/4/29
- Sensor-Surface: 2mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn1260; Calibrated: 2019/9/11
- Phantom: ELI
- DASY52 52.10.2(1495); SEMCAD X 14.6.12(7463)

Area Scan (71x81x1): Interpolated grid: dx=15 mm, dy=15 mm

Maximum value of SAR (interpolated) = 0.388 W/kg

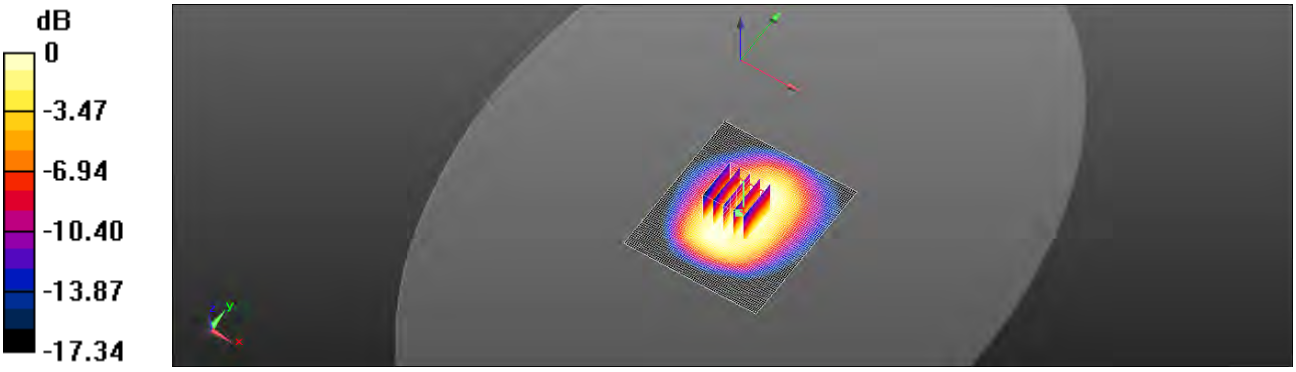
Zoom Scan (5x5x7)/Cube 0: Measurement grid: dx=8mm, dy=8mm, dz=5mm

Reference Value = 20.93 V/m; Power Drift = -0.05 dB

Peak SAR (extrapolated) = 0.421 W/kg

SAR(1 g) = 0.274 W/kg; SAR(10 g) = 0.170 W/kg

Maximum value of SAR (measured) = 0.347 W/kg



0 dB = 0.347 W/kg = -4.60 dBW/kg

Date: 2019/11/6

WCDMA Band V_ Front _CH 4183_5mm

Communication System: WCDMA; Frequency: 836.6 MHz; Duty Cycle: 1:1

Medium parameters used: f = 837 MHz; σ = 0.888 S/m; ε_r = 42.807; ρ = 1000 kg/m^3

Phantom section: Flat Section

Ambient temperature: 22.2°C; Liquid temperature: 21.7°C

DASY5 Configuration:

- Probe: EX3DV4 - SN3770;ConvF(9.44, 9.44, 9.44);Calibrated: 2019/4/29
- Sensor-Surface: 2mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn1260; Calibrated: 2019/9/11
- Phantom: ELI
- DASY52 52.10.2(1495); SEMCAD X 14.6.12(7463)

Area Scan (71x81x1): Interpolated grid: dx=15 mm, dy=15 mm

Maximum value of SAR (interpolated) = 0.0606 W/kg

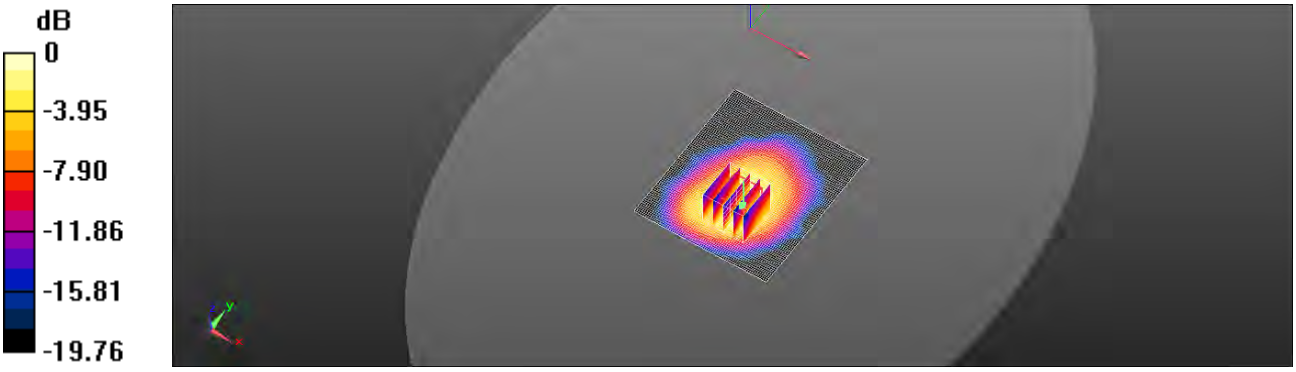
Zoom Scan (5x5x7)/Cube 0: Measurement grid: dx=8mm, dy=8mm, dz=5mm

Reference Value = 3.148 V/m; Power Drift = 0.07 dB

Peak SAR (extrapolated) = 0.0870 W/kg

SAR(1 g) = 0.048 W/kg; SAR(10 g) = 0.026 W/kg

Maximum value of SAR (measured) = 0.0639 W/kg



0 dB = 0.0639 W/kg = -11.94 dBW/kg

Date: 2019/11/5

LTE Band 2 (20MHz)_ Front _CH 18700_QPSK_1-99_5mm

Communication System: LTE; Frequency: 1860 MHz; Duty Cycle: 1:1

Medium parameters used: f = 1860 MHz; σ = 1.426 S/m; ε_r = 40.24; ρ = 1000 kg/m^3

Phantom section: Flat Section

Ambient temperature: 21.8°C; Liquid temperature: 21.4°C

DASY5 Configuration:

- Probe: EX3DV4 - SN3770;ConvF(8.23, 8.23, 8.23);Calibrated: 2019/4/29
- Sensor-Surface: 2mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn1260; Calibrated: 2019/9/11
- Phantom: ELI
- DASY52 52.10.2(1495); SEMCAD X 14.6.12(7463)

Area Scan (71x81x1): Interpolated grid: dx=15 mm, dy=15 mm

Maximum value of SAR (interpolated) = 0.613 W/kg

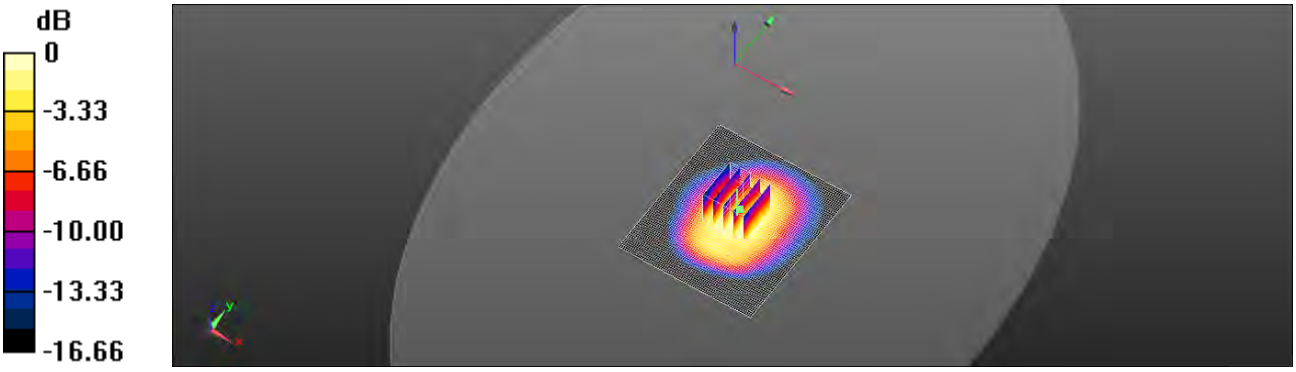
Zoom Scan (5x5x7)/Cube 0: Measurement grid: dx=8mm, dy=8mm, dz=5mm

Reference Value = 19.79 V/m; Power Drift = 0.04 dB

Peak SAR (extrapolated) = 0.750 W/kg

SAR(1 g) = 0.477 W/kg; SAR(10 g) = 0.293 W/kg

Maximum value of SAR (measured) = 0.613 W/kg



0 dB = 0.613 W/kg = -2.13 dBW/kg

Date: 2019/11/7

LTE Band 4 (20MHz)_Front _CH 20300_QPSK_1-50_5mm

Communication System: LTE; Frequency: 1745 MHz; Duty Cycle: 1:1

Medium parameters used: f = 1745 MHz; σ = 1.332 S/m; ε_r = 40.634; ρ = 1000 kg/m^3

Phantom section: Flat Section

Ambient temperature: 21.9°C; Liquid temperature: 22.2°C

DASY5 Configuration:

- Probe: EX3DV4 - SN3770;ConvF(8.44, 8.44, 8.44);Calibrated: 2019/4/29
- Sensor-Surface: 2mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn1260; Calibrated: 2019/9/11
- Phantom: ELI
- DASY52 52.10.2(1495); SEMCAD X 14.6.12(7463)

Area Scan (71x81x1): Interpolated grid: dx=15 mm, dy=15 mm

Maximum value of SAR (interpolated) = 0.438 W/kg

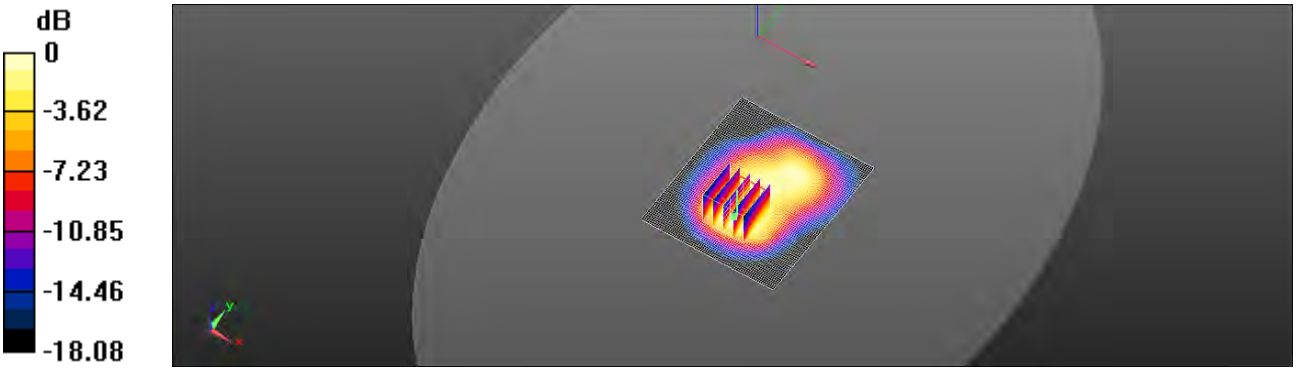
Zoom Scan (5x5x7)/Cube 0: Measurement grid: dx=8mm, dy=8mm, dz=5mm

Reference Value = 15.37 V/m; Power Drift = 0.05 dB

Peak SAR (extrapolated) = 0.531 W/kg

SAR(1 g) = 0.310 W/kg; SAR(10 g) = 0.189 W/kg

Maximum value of SAR (measured) = 0.422 W/kg



0 dB = 0.422 W/kg = -3.75 dBW/kg

Date: 2019/11/8

LTE Band 12 (10MHz)_Front _CH 23130_QPSK_1-0_5mm

Communication System: LTE; Frequency: 711 MHz; Duty Cycle: 1:1

Medium parameters used: f = 711 MHz; σ = 0.867 S/m; ε_r = 43.449; ρ = 1000 kg/m^3

Phantom section: Flat Section

Ambient temperature: 21.4°C; Liquid temperature: 21.9°C

DASY5 Configuration:

- Probe: EX3DV4 - SN3770;ConvF(9.68, 9.68, 9.68);Calibrated: 2019/4/29
- Sensor-Surface: 2mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn1260; Calibrated: 2019/9/11
- Phantom: ELI
- DASY52 52.10.2(1495); SEMCAD X 14.6.12(7463)

Area Scan (71x81x1): Interpolated grid: dx=15 mm, dy=15 mm

Maximum value of SAR (interpolated) = 0.0215 W/kg

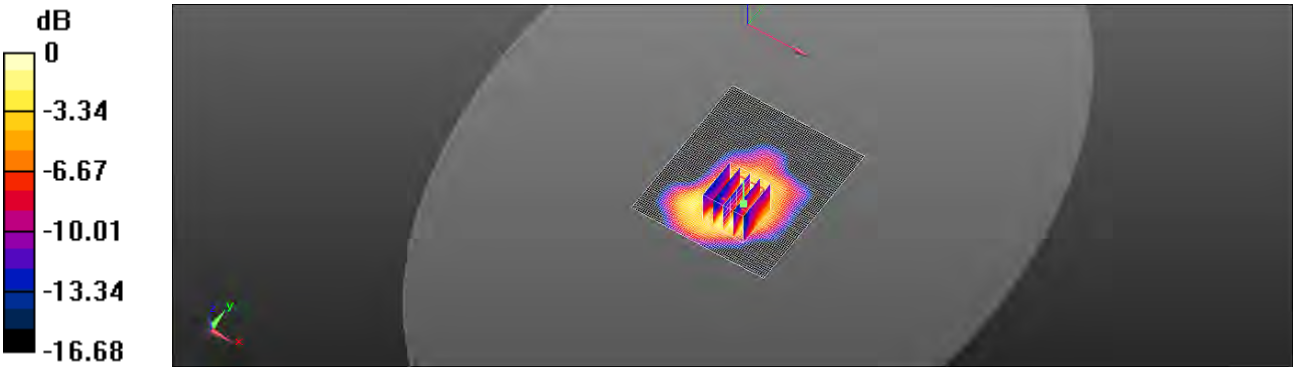
Zoom Scan (5x5x7)/Cube 0: Measurement grid: dx=8mm, dy=8mm, dz=5mm

Reference Value = 3.805 V/m; Power Drift = 0.12 dB

Peak SAR (extrapolated) = 0.0340 W/kg

SAR(1 g) = 0.016 W/kg; SAR(10 g) = 0.00865 W/kg

Maximum value of SAR (measured) = 0.0223 W/kg



0 dB = 0.0223 W/kg = -16.52 dBW/kg

Date: 2019/11/5

WCDMA Band II_Body_Back side_CH 9400_0mm

Communication System: WCDMA; Frequency: 1880 MHz; Duty Cycle: 1:1

Medium parameters used: f = 1880 MHz; σ = 1.578 S/m; ε_r = 50.954; ρ = 1000 kg/m^3

Phantom section: Flat Section

Ambient temperature: 22.1°C; Liquid temperature: 21.7°C

DASY5 Configuration:

- Probe: EX3DV4 - SN3770;ConvF(7.82, 7.82, 7.82);Calibrated: 2019/4/29
- Sensor-Surface: 2mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn1260; Calibrated: 2019/9/11
- Phantom: ELI
- DASY52 52.10.2(1495); SEMCAD X 14.6.12(7463)

Area Scan (71x81x1): Interpolated grid: dx=15 mm, dy=15 mm

Maximum value of SAR (interpolated) = 1.37 W/kg

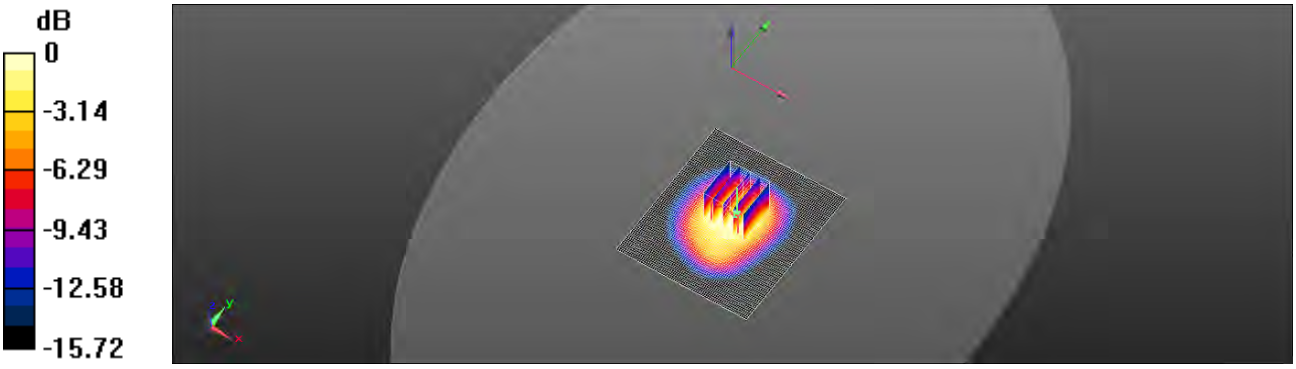
Zoom Scan (5x5x7)/Cube 0: Measurement grid: dx=8mm, dy=8mm, dz=0mm

Reference Value = 2.612 V/m; Power Drift = 0.07 dB

Peak SAR (extrapolated) = 1.50 W/kg

SAR(1 g) = 1.01 W/kg; SAR(10 g) = 0.635 W/kg

Maximum value of SAR (measured) = 1.27 W/kg



0 dB = 1.27 W/kg = 1.04 dBW/kg

Date: 2019/11/6

WCDMA Band V_Body_Back side_CH 4183_0mm

Communication System: WCDMA; Frequency: 836.6 MHz; Duty Cycle: 1:1

Medium parameters used: f = 837 MHz; σ = 0.997 S/m; ε_r = 57.21; ρ = 1000 kg/m^3

Phantom section: Flat Section

Ambient temperature: 21.9°C; Liquid temperature: 22.1°C

DASY5 Configuration:

- Probe: EX3DV4 - SN3770;ConvF(9.6, 9.6, 9.6);Calibrated: 2019/4/29
- Sensor-Surface: 2mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn1260; Calibrated: 2019/9/11
- Phantom: ELI
- DASY52 52.10.2(1495); SEMCAD X 14.6.12(7463)

Area Scan (71x81x1): Interpolated grid: dx=15 mm, dy=15 mm

Maximum value of SAR (interpolated) = 0.0456 W/kg

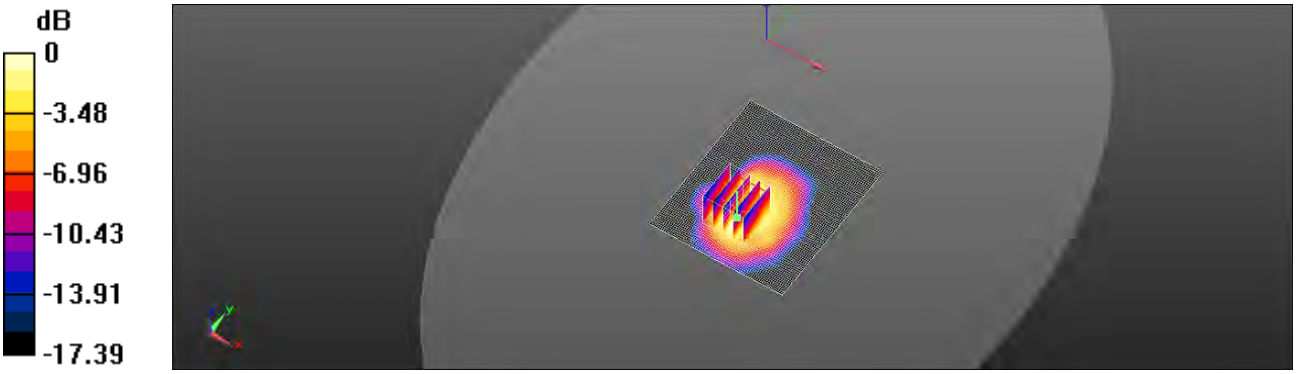
Zoom Scan (5x5x7)/Cube 0: Measurement grid: dx=8mm, dy=8mm, dz=0mm

Reference Value = 3.143 V/m; Power Drift = -0.03 dB

Peak SAR (extrapolated) = 0.0600 W/kg

SAR(1 g) = 0.033 W/kg; SAR(10 g) = 0.019 W/kg

Maximum value of SAR (measured) = 0.0447 W/kg



0 dB = 0.0447 W/kg = -13.50 dBW/kg

Date: 2019/11/5

LTE Band 2 (20MHz)_Body-worn_Back side_CH 18900_QPSK_1-50_0mm

Communication System: LTE; Frequency: 1880 MHz; Duty Cycle: 1:1

Medium parameters used: f = 1880 MHz; σ = 1.578 S/m; ε_r = 50.954; ρ = 1000 kg/m^3

Phantom section: Flat Section

Ambient temperature: 22.1°C; Liquid temperature: 21.7°C

DASY5 Configuration:

- Probe: EX3DV4 - SN3770;ConvF(7.82, 7.82, 7.82);Calibrated: 2019/4/29
- Sensor-Surface: 2mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn1260; Calibrated: 2019/9/11
- Phantom: ELI
- DASY52 52.10.2(1495); SEMCAD X 14.6.12(7463)

Area Scan (71x81x1): Interpolated grid: dx=15 mm, dy=15 mm

Maximum value of SAR (interpolated) = 1.13 W/kg

Zoom Scan (5x5x7)/Cube 0: Measurement grid: dx=8mm, dy=8mm, dz=0mm

Reference Value = 1.597 V/m; Power Drift = 0.02 dB

Peak SAR (extrapolated) = 1.59 W/kg

SAR(1 g) = 1.07 W/kg; SAR(10 g) = 0.659 W/kg

Maximum value of SAR (measured) = 1.31 W/kg

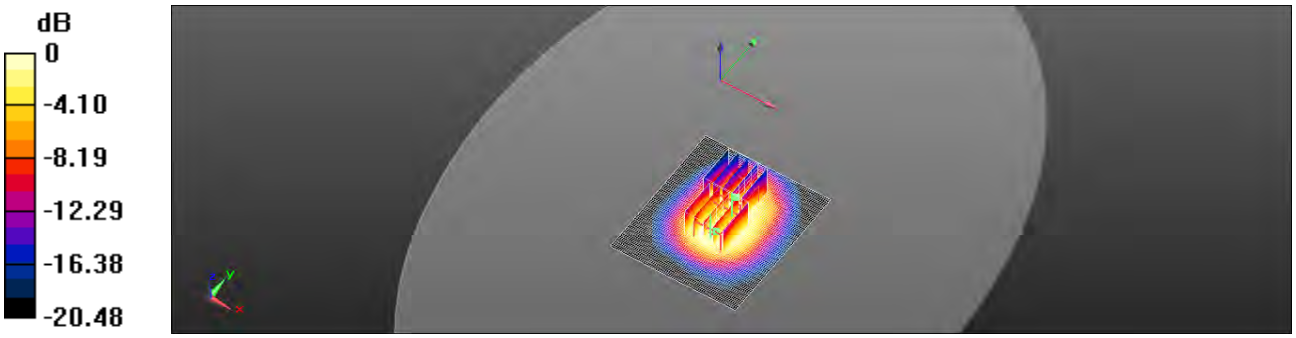
Zoom Scan (5x5x7)/Cube 1: Measurement grid: dx=8mm, dy=8mm, dz=0mm

Reference Value = 1.597 V/m; Power Drift = 0.02 dB

Peak SAR (extrapolated) = 1.02 W/kg

SAR(1 g) = 0.602 W/kg; SAR(10 g) = 0.341 W/kg

Maximum value of SAR (measured) = 0.861 W/kg



0 dB = 0.861 W/kg = -0.65 dBW/kg

Date: 2019/11/7

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

Communication System: LTE; Frequency: 1745 MHz; Duty Cycle: 1:1

Medium parameters used: f = 1745 MHz; σ = 1.43 S/m; ε_r = 51.432; ρ = 1000 kg/m^3

Phantom section: Flat Section

Ambient temperature: 21.5°C; Liquid temperature: 21.9°C

DASY5 Configuration:

- Probe: EX3DV4 - SN3770;ConvF(8.09, 8.09, 8.09);Calibrated: 2019/4/29
- Sensor-Surface: 2mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn1260; Calibrated: 2019/9/11
- Phantom: ELI
- DASY52 52.10.2(1495); SEMCAD X 14.6.12(7463)

Area Scan (71x81x1): Interpolated grid: dx=15 mm, dy=15 mm

Maximum value of SAR (interpolated) = 0.969 W/kg

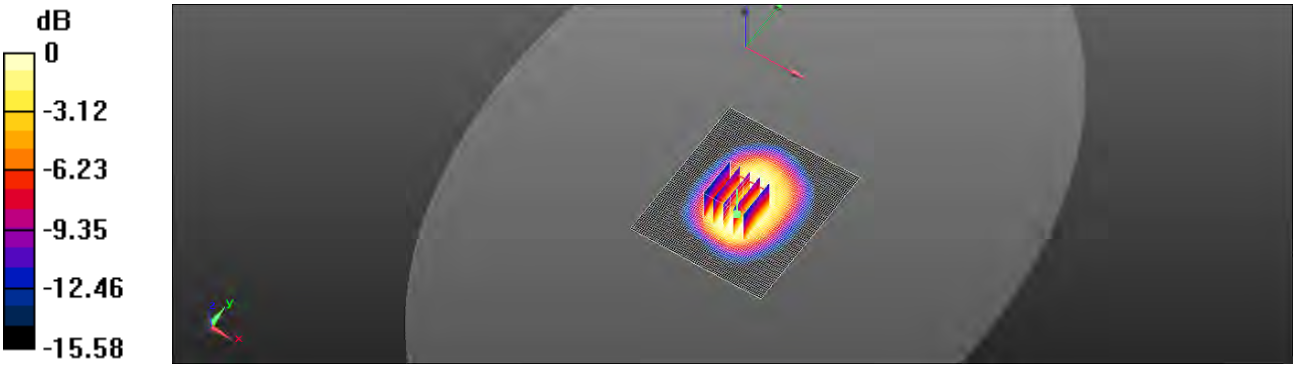
Zoom Scan (5x5x7)/Cube 0: Measurement grid: dx=8mm, dy=8mm, dz=0mm

Reference Value = 2.747 V/m; Power Drift = 0.14 dB

Peak SAR (extrapolated) = 0.986 W/kg

SAR(1 g) = 0.704 W/kg; SAR(10 g) = 0.455 W/kg

Maximum value of SAR (measured) = 0.842 W/kg



0 dB = 0.842 W/kg = -0.75 dBW/kg

Date: 2019/11/8

LTE Band 12 (10MHz)_Body-worn_Back side_CH 23130_QPSK_1-0_0mm

Communication System: LTE; Frequency: 711 MHz; Duty Cycle: 1:1

Medium parameters used: f = 711 MHz; σ = 0.931 S/m; ε_r = 57.841; ρ = 1000 kg/m^3

Phantom section: Flat Section

Ambient temperature: 21.7°C; Liquid temperature: 22.2°C

DASY5 Configuration:

- Probe: EX3DV4 - SN3770;ConvF(10.02, 10.02, 10.02);Calibrated: 2019/4/29
- Sensor-Surface: 2mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn1260; Calibrated: 2019/9/11
- Phantom: ELI
- DASY52 52.10.2(1495); SEMCAD X 14.6.12(7463)

Area Scan (51x81x1): Interpolated grid: dx=15 mm, dy=15 mm

Maximum value of SAR (interpolated) = 0.0238 W/kg

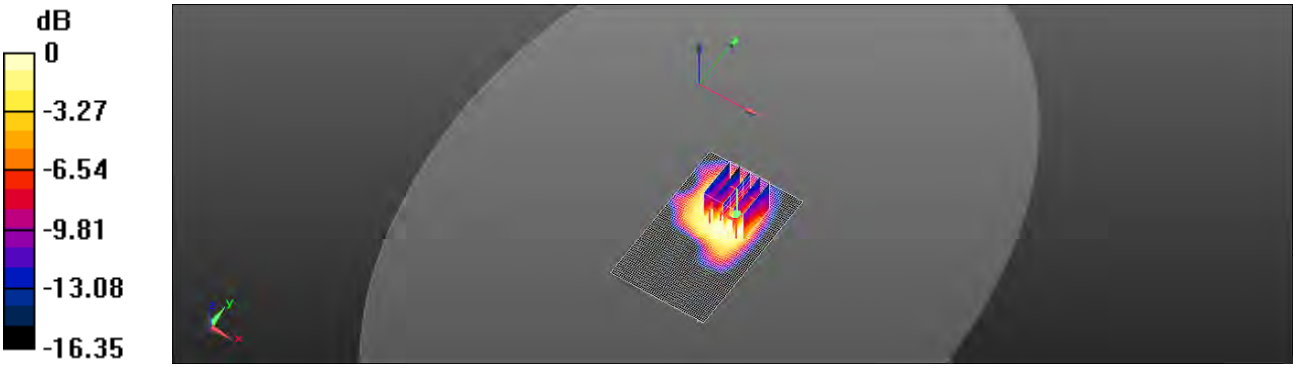
Zoom Scan (5x5x7)/Cube 0: Measurement grid: dx=8mm, dy=8mm, dz=0mm

Reference Value = 3.101 V/m; Power Drift = 0.12 dB

Peak SAR (extrapolated) = 0.0380 W/kg

SAR(1 g) = 0.018 W/kg; SAR(10 g) = 0.00979 W/kg

Maximum value of SAR (measured) = 0.0252 W/kg



0 dB = 0.0252 W/kg = -15.99 dBW/kg

Date: 2019/11/5

WCDMA Band II_Handheld_Right side_CH 9262_0mm

Communication System: WCDMA; Frequency: 1852.4 MHz; Duty Cycle: 1:1

Medium parameters used: f = 1852.4 MHz; σ = 1.546 S/m; ε_r = 51.052; ρ = 1000 kg/m^3

Phantom section: Flat Section

Ambient temperature: 22.1°C; Liquid temperature: 21.7°C

DASY5 Configuration:

- Probe: EX3DV4 - SN3770;ConvF(7.82, 7.82, 7.82);Calibrated: 2019/4/29
- Sensor-Surface: 2mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn1260; Calibrated: 2019/9/11
- Phantom: ELI
- DASY52 52.10.2(1495); SEMCAD X 14.6.12(7463)

Area Scan (71x81x1): Interpolated grid: dx=15 mm, dy=15 mm

Maximum value of SAR (interpolated) = 1.91 W/kg

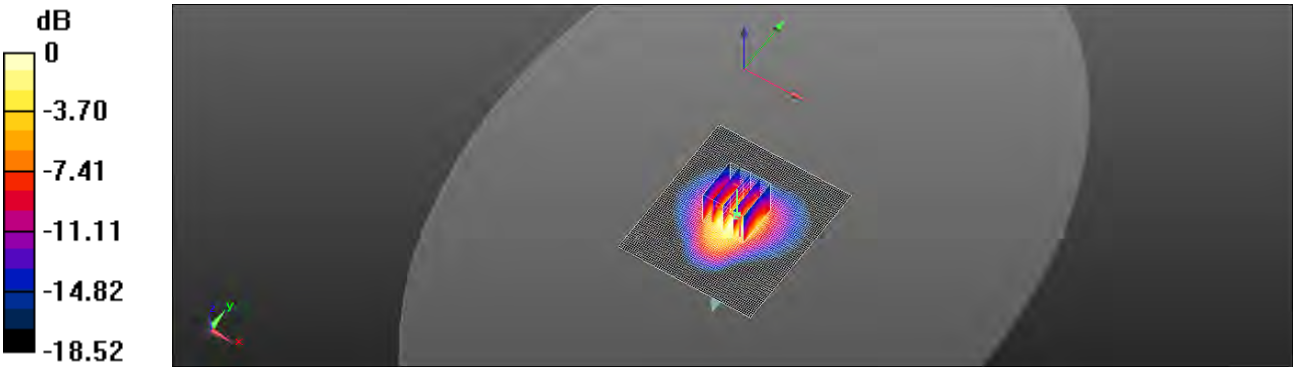
Zoom Scan (5x5x7)/Cube 0: Measurement grid: dx=8mm, dy=8mm, dz=5mm

Reference Value = 29.56 V/m; Power Drift = -0.01 dB

Peak SAR (extrapolated) = 2.20 W/kg

SAR(1 g) = 1.29 W/kg; SAR(10 g) = 0.689 W/kg

Maximum value of SAR (measured) = 1.77 W/kg



0 dB = 1.77 W/kg = 2.48 dBW/kg

Date: 2019/11/6

WCDMA Band V_Handheld_Right side_CH 4183_0mm

Communication System: WCDMA; Frequency: 836.6 MHz; Duty Cycle: 1:1

Medium parameters used: f = 837 MHz; σ = 0.997 S/m; ε_r = 57.21; ρ = 1000 kg/m^3

Phantom section: Flat Section

Ambient temperature: 21.9°C; Liquid temperature: 22.1°C

DASY5 Configuration:

- Probe: EX3DV4 - SN3770;ConvF(9.6, 9.6, 9.6);Calibrated: 2019/4/29
- Sensor-Surface: 2mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn1260; Calibrated: 2019/9/11
- Phantom: ELI
- DASY52 52.10.2(1495); SEMCAD X 14.6.12(7463)

Area Scan (71x81x1): Interpolated grid: dx=15 mm, dy=15 mm

Maximum value of SAR (interpolated) = 0.0340 W/kg

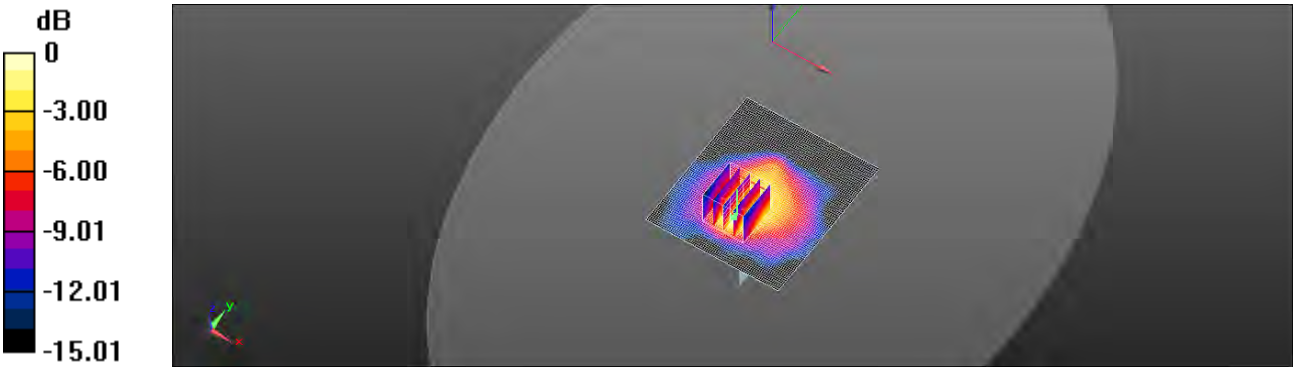
Zoom Scan (5x5x7)/Cube 0: Measurement grid: dx=8mm, dy=8mm, dz=5mm

Reference Value = 2.503 V/m; Power Drift = 0.06 dB

Peak SAR (extrapolated) = 0.0470 W/kg

SAR(1 g) = 0.025 W/kg; SAR(10 g) = 0.015 W/kg

Maximum value of SAR (measured) = 0.0374 W/kg



0 dB = 0.0374 W/kg = -14.27 dBW/kg

Date: 2019/11/5

LTE Band 2 (20MHz)_Handheld_Right side_CH 18700_QPSK_1-99_0mm

Communication System: LTE; Frequency: 1860 MHz; Duty Cycle: 1:1

Medium parameters used: f = 1860 MHz; σ = 1.553 S/m; ε_r = 50.993; ρ = 1000 kg/m^3

Phantom section: Flat Section

Ambient temperature: 22.1°C; Liquid temperature: 21.7°C

DASY5 Configuration:

- Probe: EX3DV4 - SN3770;ConvF(7.82, 7.82, 7.82);Calibrated: 2019/4/29
- Sensor-Surface: 2mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn1260; Calibrated: 2019/9/11
- Phantom: ELI
- DASY52 52.10.2(1495); SEMCAD X 14.6.12(7463)

Area Scan (71x81x1): Interpolated grid: dx=15 mm, dy=15 mm

Maximum value of SAR (interpolated) = 1.45 W/kg

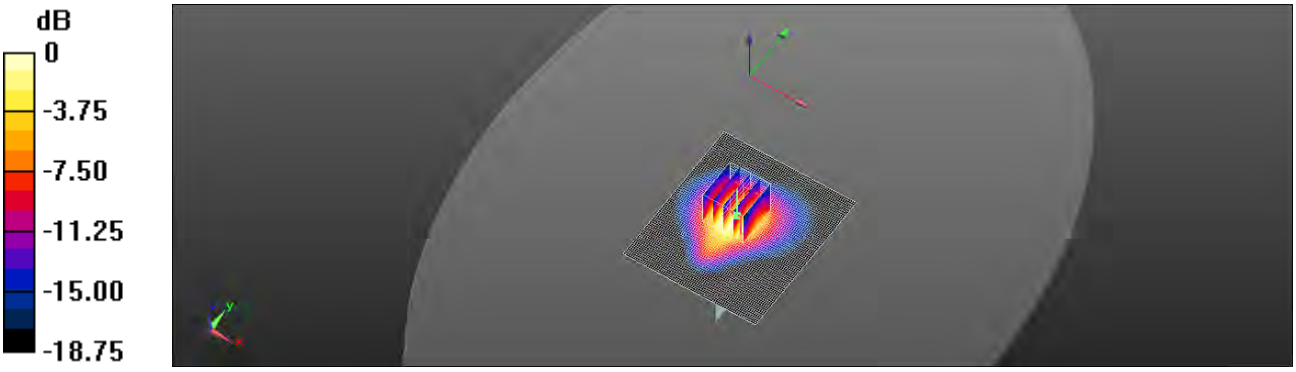
Zoom Scan (5x5x7)/Cube 0: Measurement grid: dx=8mm, dy=8mm, dz=5mm

Reference Value = 15.82 V/m; Power Drift = -0.05 dB

Peak SAR (extrapolated) = 1.49 W/kg

SAR(1 g) = 0.876 W/kg; SAR(10 g) = 0.462 W/kg

Maximum value of SAR (measured) = 1.21 W/kg



0 dB = 1.21 W/kg = 0.83 dBW/kg

Date: 2019/11/7

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

Communication System: LTE; Frequency: 1745 MHz; Duty Cycle: 1:1

Medium parameters used: f = 1745 MHz; σ = 1.43 S/m; ε_r = 51.432; ρ = 1000 kg/m^3

Phantom section: Flat Section

Ambient temperature: 21.5°C; Liquid temperature: 21.9°C

DASY5 Configuration:

- Probe: EX3DV4 - SN3770;ConvF(8.09, 8.09, 8.09);Calibrated: 2019/4/29
- Sensor-Surface: 2mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn1260; Calibrated: 2019/9/11
- Phantom: ELI
- DASY52 52.10.2(1495); SEMCAD X 14.6.12(7463)

Area Scan (71x81x1): Interpolated grid: dx=15 mm, dy=15 mm

Maximum value of SAR (interpolated) = 0.918 W/kg

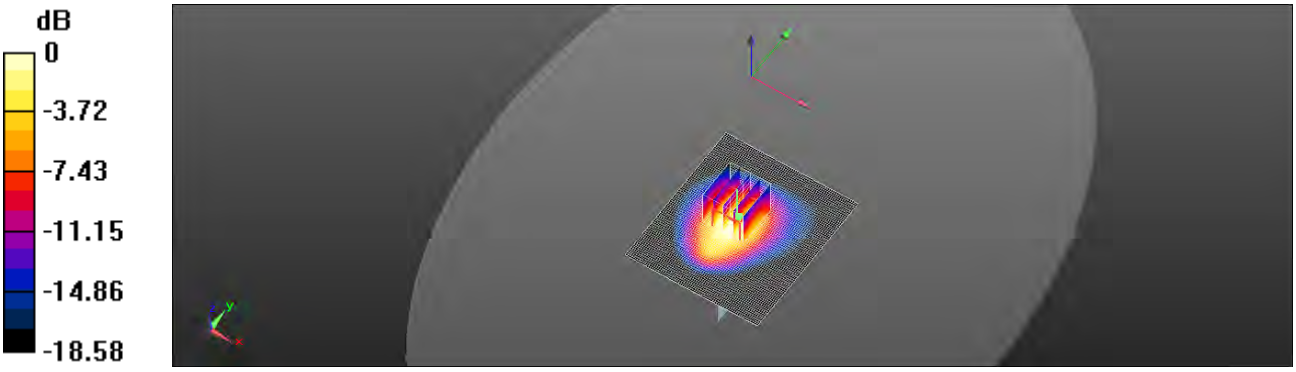
Zoom Scan (5x5x7)/Cube 0: Measurement grid: dx=8mm, dy=8mm, dz=5mm

Reference Value = 15.50 V/m; Power Drift = 0.08 dB

Peak SAR (extrapolated) = 1.18 W/kg

SAR(1 g) = 0.709 W/kg; SAR(10 g) = 0.393 W/kg

Maximum value of SAR (measured) = 0.921 W/kg



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

Date: 2019/11/8

LTE Band 12 (10MHz)_Body-worn_Right side_CH 23130_QPSK_1-0_0mm

Communication System: LTE; Frequency: 711 MHz; Duty Cycle: 1:1

Medium parameters used: f = 711 MHz; σ = 0.931 S/m; ε_r = 57.841; ρ = 1000 kg/m^3

Phantom section: Flat Section

Ambient temperature: 21.7°C; Liquid temperature: 22.2°C

DASY5 Configuration:

- Probe: EX3DV4 - SN3770;ConvF(10.02, 10.02, 10.02);Calibrated: 2019/4/29
- Sensor-Surface: 2mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn1260; Calibrated: 2019/9/11
- Phantom: ELI
- DASY52 52.10.2(1495); SEMCAD X 14.6.12(7463)

Area Scan (71x81x1): Interpolated grid: dx=15 mm, dy=15 mm

Maximum value of SAR (interpolated) = 0.0154 W/kg

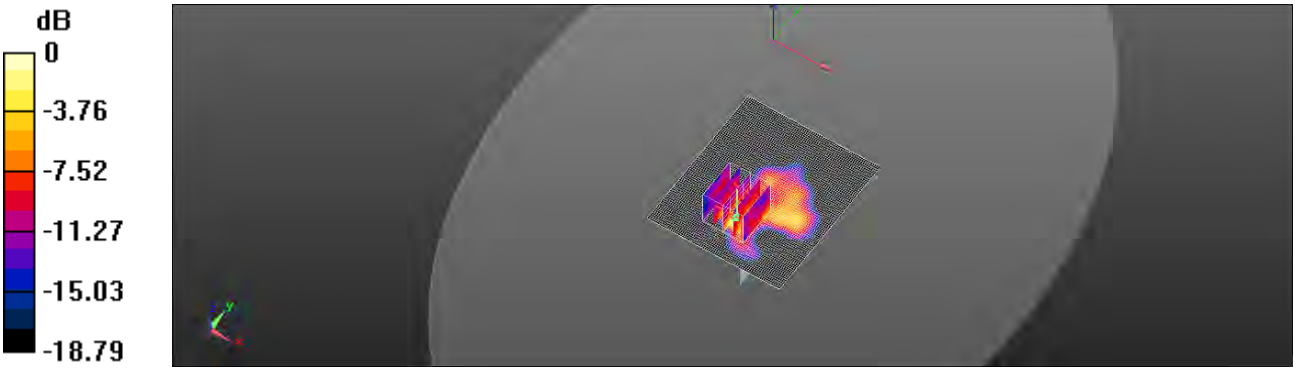
Zoom Scan (5x5x7)/Cube 0: Measurement grid: dx=8mm, dy=8mm, dz=5mm

Reference Value = 1.925 V/m; Power Drift = 0.08 dB

Peak SAR (extrapolated) = 0.0180 W/kg

SAR(1 g) = 0.00732 W/kg; SAR(10 g) = 0.00323 W/kg

Maximum value of SAR (measured) = 0.0129 W/kg



0 dB = 0.0129 W/kg = -18.89 dBW/kg

5. SAR System Performance Verification

Date: 2019/11/8

Dipole 750 MHz_SN:1015

Communication System: CW; Frequency: 750 MHz

Medium parameters used: f = 750 MHz; σ = 0.872 S/m; ε_r = 43.045; ρ = 1000 kg/m^3

Phantom section: Flat Section

Ambient temperature: 21.4°C; Liquid temperature: 21.9°C

DASY5 Configuration:

- Probe: EX3DV4 - SN3770;ConvF(9.68, 9.68, 9.68);Calibrated: 2019/4/29
- Sensor-Surface: 2mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn1260; Calibrated: 2019/9/11
- Phantom: ELI
- DASY52 52.10.2(1495); SEMCAD X 14.6.12(7463)

Pin=250mW/Area Scan (51x71x1): Interpolated grid: dx=15 mm, dy=15 mm

Maximum value of SAR (interpolated) = 2.69 W/kg

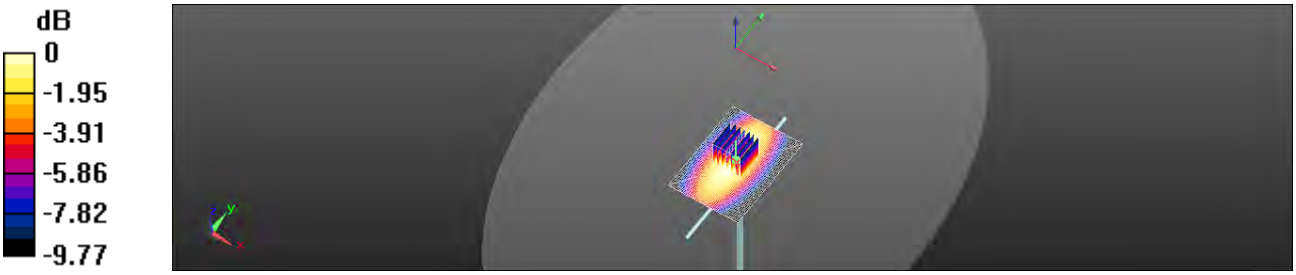
Pin=250mW/Zoom Scan (7x7x7)/Cube 0: Measurement grid: dx=5mm, dy=5mm, dz=5mm

Reference Value = 54.99 V/m; Power Drift = 0.04 dB

Peak SAR (extrapolated) = 3.19 W/kg

SAR(1 g) = 2.18 W/kg; SAR(10 g) = 1.46 W/kg

Maximum value of SAR (measured) = 2.73 W/kg



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

Date: 2019/11/8

Dipole 750 MHz_SN:1078

Communication System: CW; Frequency: 750 MHz

Medium parameters used: f = 750 MHz; σ = 0.934 S/m; ε_r = 57.82; ρ = 1000 kg/m^3

Phantom section: Flat Section

Ambient temperature: 21.7°C; Liquid temperature: 22.2°C

DASY5 Configuration:

- Probe: EX3DV4 - SN3770;ConvF(10.02, 10.02, 10.02)4;Calibrated: 2019/4/29
- Sensor-Surface: 2mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn1260; Calibrated: 2019/9/11
- Phantom: ELI
- DASY52 52.10.2(1495); SEMCAD X 14.6.12(7463)

Pin=250mW/Area Scan (41x141x1): Interpolated grid: dx=15 mm, dy=15 mm

Maximum value of SAR (interpolated) = 2.72 W/kg

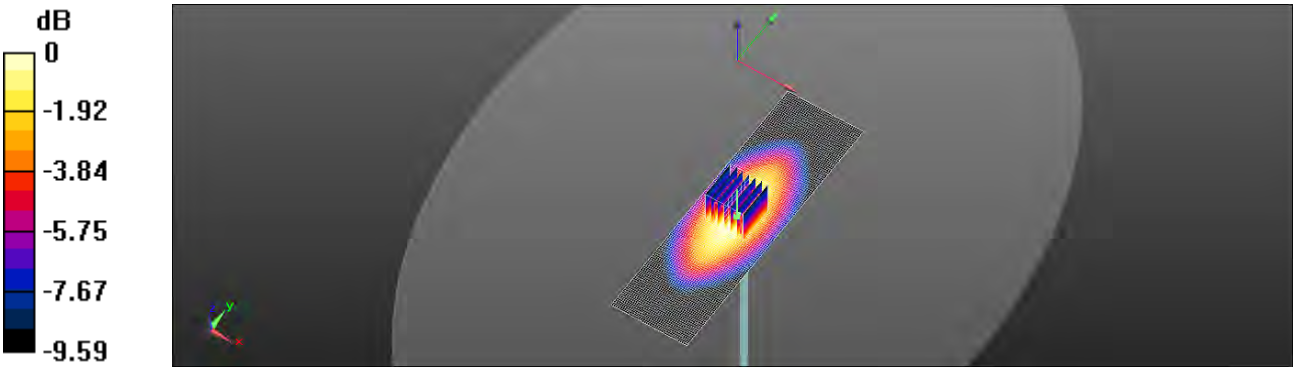
Pin=250mW/Zoom Scan (7x7x7)/Cube 0: Measurement grid: dx=5mm, dy=5mm, dz=5mm

Reference Value = 53.86 V/m; Power Drift = -0.01 dB

Peak SAR (extrapolated) = 3.14 W/kg

SAR(1 g) = 2.18 W/kg; SAR(10 g) = 1.46 W/kg

Maximum value of SAR (measured) = 2.73 W/kg



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

Date: 2019/11/6

Dipole 835 MHz_SN:4d063

Communication System: CW; Frequency: 835 MHz

Medium parameters used: f = 835 MHz; σ = 0.884 S/m; ε_r = 42.813; ρ = 1000 kg/m^3

Phantom section: Flat Section

Ambient temperature: 22.2°C; Liquid temperature: 21.7°C

DASY5 Configuration:

- Probe: EX3DV4 - SN3770;ConvF(9.44, 9.44, 9.44);Calibrated: 2019/4/29
- Sensor-Surface: 2mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn1260; Calibrated: 2019/9/11
- Phantom: ELI
- DASY52 52.10.2(1495); SEMCAD X 14.6.12(7463)

Pin=250mW/Area Scan (51x71x1): Interpolated grid: dx=15 mm, dy=15 mm

Maximum value of SAR (interpolated) = 2.74 W/kg

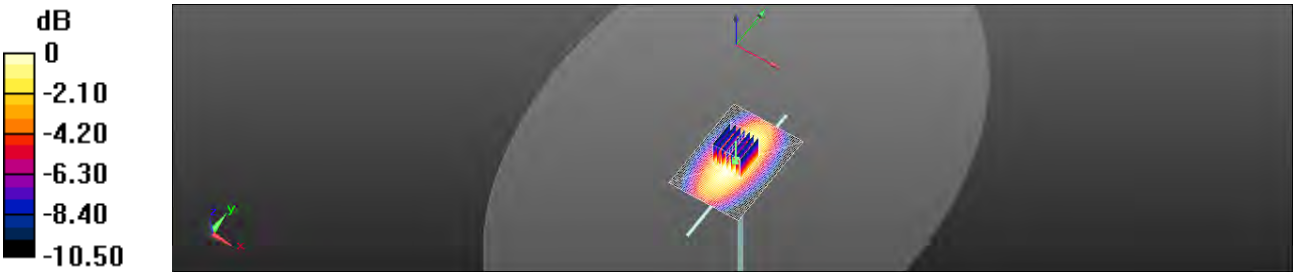
Pin=250mW/Zoom Scan (7x7x7)/Cube 0: Measurement grid: dx=5mm, dy=5mm, dz=5mm

Reference Value = 56.90 V/m; Power Drift = 0.01 dB

Peak SAR (extrapolated) = 3.27 W/kg

SAR(1 g) = 2.37 W/kg; SAR(10 g) = 1.44 W/kg

Maximum value of SAR (measured) = 2.78 W/kg



0 dB = 2.78 W/kg = 4.44 dBW/kg

Date: 2019/11/6

Dipole 835 MHz_SN:4d092

Communication System: CW; Frequency: 835 MHz

Medium parameters used: f = 835 MHz; σ = 0.986 S/m; ε_r = 57.332; ρ = 1000 kg/m^3

Phantom section: Flat Section

Ambient temperature: 21.9°C; Liquid temperature: 22.1°C

DASY5 Configuration:

- Probe: EX3DV4 - SN3770;ConvF(9.6, 9.6, 9.6);Calibrated: 2019/4/29
- Sensor-Surface: 2mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn1260; Calibrated: 2019/9/11
- Phantom: ELI
- DASY52 52.10.2(1495); SEMCAD X 14.6.12(7463)

Pin=250mW/Area Scan (41x121x1): Interpolated grid: dx=15 mm, dy=15 mm

Maximum value of SAR (interpolated) = 3.00 W/kg

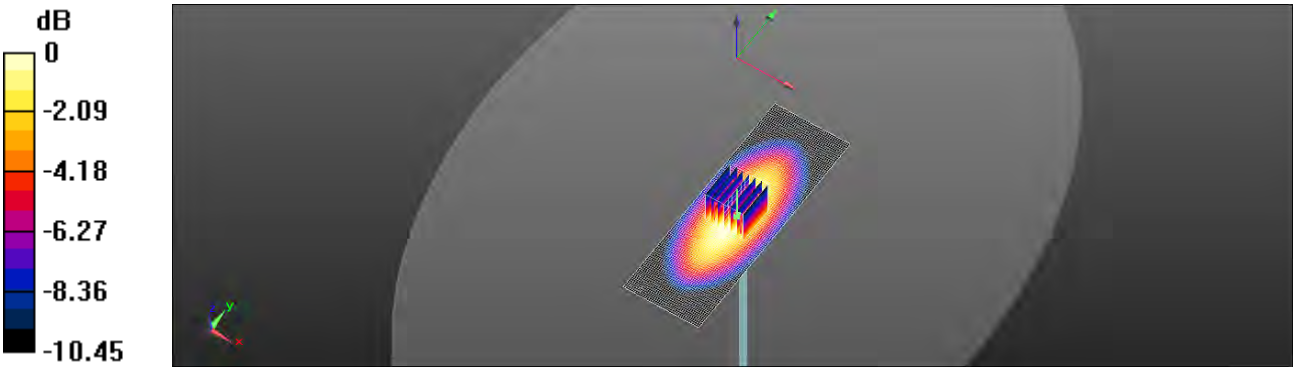
Pin=250mW/Zoom Scan (7x7x7)/Cube 0: Measurement grid: dx=5mm, dy=5mm, dz=5mm

Reference Value = 55.51 V/m; Power Drift = -0.01 dB

Peak SAR (extrapolated) = 3.50 W/kg

SAR(1 g) = 2.36 W/kg; SAR(10 g) = 1.54 W/kg

Maximum value of SAR (measured) = 2.99 W/kg



0 dB = 2.99 W/kg = 4.76 dBW/kg

Date: 2019/11/7

Dipole 1750 MHz_SN:1008

Communication System: CW; Frequency: 1750 MHz

Medium parameters used: f = 1750 MHz; σ = 1.336 S/m; ε_r = 40.625; ρ = 1000 kg/m^3

Phantom section: Flat Section

Ambient temperature: 21.9°C; Liquid temperature: 22.2°C

DASY5 Configuration:

- Probe: EX3DV4 - SN3770;ConvF(8.44, 8.44, 8.44);Calibrated: 2019/4/29
- Sensor-Surface: 2mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn1260; Calibrated: 2019/9/11
- Phantom: ELI
- DASY52 52.10.2(1495); SEMCAD X 14.6.12(7463)

Pin=250mW/Area Scan (51x81x1): Interpolated grid: dx=15 mm, dy=15 mm

Maximum value of SAR (interpolated) = 12.7 W/kg

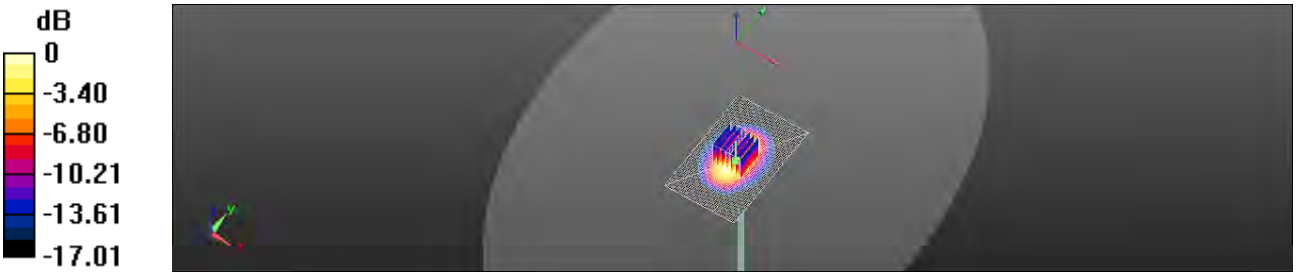
Pin=250mW/Zoom Scan (7x7x7)/Cube 0: Measurement grid: dx=5mm, dy=5mm, dz=5mm

Reference Value = 97.42 V/m; Power Drift = 0.00 dB

Peak SAR (extrapolated) = 15.9 W/kg

SAR(1 g) = 8.77 W/kg; SAR(10 g) = 4.59 W/kg

Maximum value of SAR (measured) = 12.4 W/kg



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

Date: 2019/11/7

Dipole 1750 MHz_SN:1023

Communication System: CW; Frequency: 1750 MHz

Medium parameters used: f = 1750 MHz; σ = 1.438 S/m; ε_r = 51.442; ρ = 1000 kg/m^3

Phantom section: Flat Section

Ambient temperature: 21.5°C; Liquid temperature: 21.9°C

DASY5 Configuration:

- Probe: EX3DV4 - SN3770;ConvF(8.09, 8.09, 8.09);Calibrated: 2019/4/29
- Sensor-Surface: 2mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn1260; Calibrated: 2019/9/11
- Phantom: ELI V5.0 (20deg probe tilt)
- DASY52 52.10.2(1495); SEMCAD X 14.6.12(7463)

Pin=250mW/Area Scan (61x61x1): Interpolated grid: dx=15 mm, dy=15 mm

Maximum value of SAR (interpolated) = 13.2 W/kg

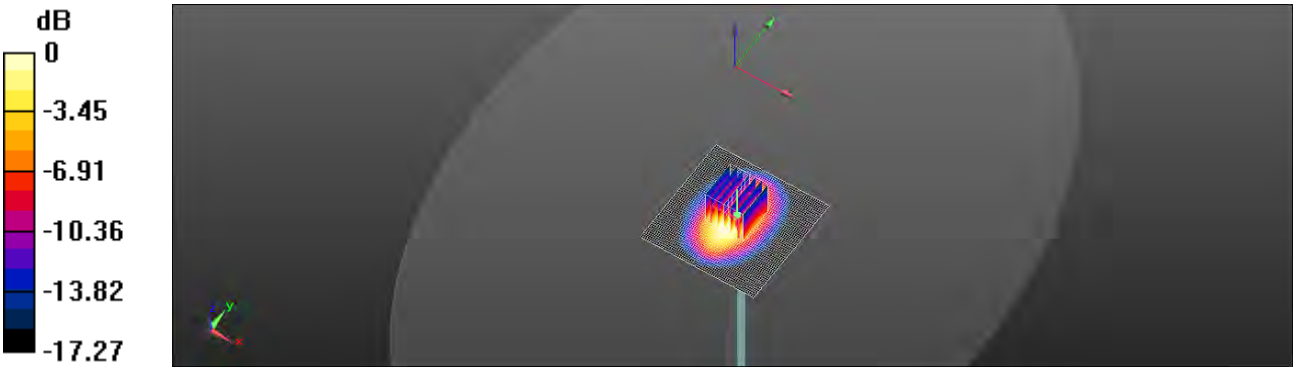
Pin=250mW/Zoom Scan (7x7x7)/Cube 0: Measurement grid: dx=5mm, dy=5mm, dz=5mm

Reference Value = 96.04 V/m; Power Drift = 0.02 dB

Peak SAR (extrapolated) = 16.6 W/kg

SAR(1 g) = 9.11 W/kg; SAR(10 g) = 4.84 W/kg

Maximum value of SAR (measured) = 12.9 W/kg



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

Date: 2019/11/5

Dipole 1900 MHz_SN:5d173

Communication System: CW; Frequency: 1900 MHz

Medium parameters used: f = 1900 MHz; σ = 1.45 S/m; ε_r = 40.113; ρ = 1000 kg/m^3

Phantom section: Flat Section

Ambient temperature: 21.8°C; Liquid temperature: 21.4°C

DASY5 Configuration:

- Probe: EX3DV4 - SN3770;ConvF(8.23, 8.23, 8.23);Calibrated: 2019/4/29
- Sensor-Surface: 2mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn1260; Calibrated: 2019/9/11
- Phantom: ELI
- DASY52 52.10.2(1495); SEMCAD X 14.6.12(7463)

Pin=250mW/Area Scan (61x61x1): Interpolated grid: dx=15 mm, dy=15 mm

Maximum value of SAR (interpolated) = 13.8 W/kg

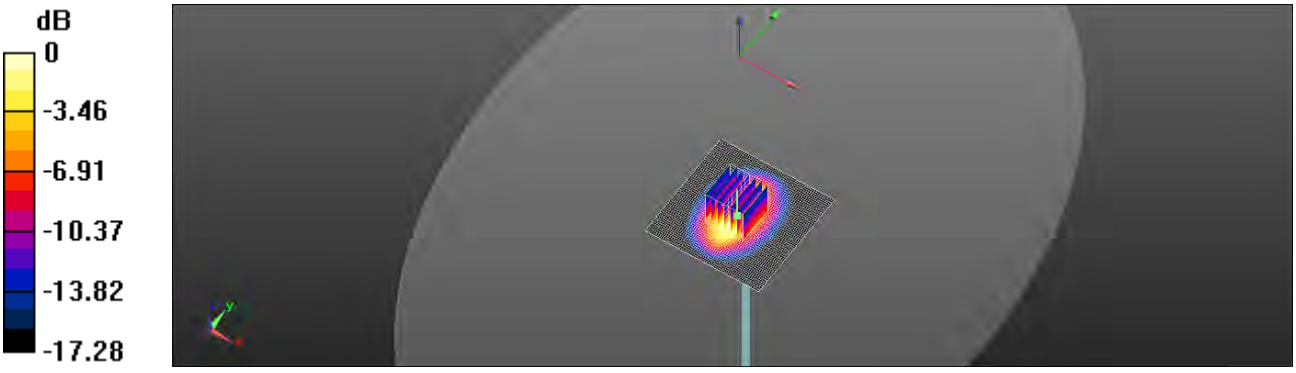
Pin=250mW/Zoom Scan (7x7x7)/Cube 0: Measurement grid: dx=5mm, dy=5mm, dz=5mm

Reference Value = 100.1 V/m; Power Drift = -0.01 dB

Peak SAR (extrapolated) = 17.7 W/kg

SAR(1 g) = 9.61 W/kg; SAR(10 g) = 5.01 W/kg

Maximum value of SAR (measured) = 13.8 W/kg



0 dB = 13.8 W/kg = 11.40 dBW/kg

Date: 2019/11/5

Dipole 1900 MHz_SN:5d142

Communication System: CW; Frequency: 1900 MHz

Medium parameters used: f = 1900 MHz; σ = 1.591 S/m; ε_r = 50.913; ρ = 1000 kg/m^3

Phantom section: Flat Section

Ambient temperature: 22.1°C; Liquid temperature: 21.7°C

DASY5 Configuration:

- Probe: EX3DV4 - SN3770;ConvF(7.82, 7.82, 7.82);Calibrated: 2019/4/29
- Sensor-Surface: 2mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn1260; Calibrated: 2019/9/11
- Phantom: ELI V5.0 (20deg probe tilt)
- DASY52 52.10.2(1495); SEMCAD X 14.6.12(7463)

Pin=250mW/Area Scan (61x61x1): Interpolated grid: dx=15 mm, dy=15 mm

Maximum value of SAR (interpolated) = 13.7 W/kg

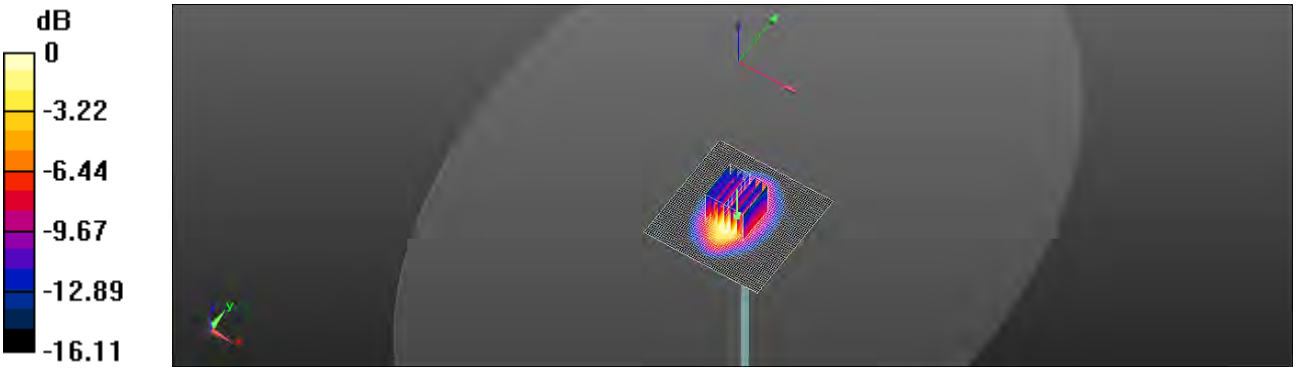
Pin=250mW/Zoom Scan (7x7x7)/Cube 0: Measurement grid: dx=5mm, dy=5mm, dz=5mm

Reference Value = 94.02 V/m; Power Drift = 0.07 dB

Peak SAR (extrapolated) = 17.1 W/kg

SAR(1 g) = 9.86 W/kg; SAR(10 g) = 5.28 W/kg

Maximum value of SAR (measured) = 13.8 W/kg



0 dB = 13.8 W/kg = 11.40 dBW/kg

6. 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%	∞
Modulation Response	2.40%	R	√3	1.732	1	1	1.40%	1.40%	∞
Boundary Effect	1.00%	R	√3	1.732	1	1	0.58%	0.58%	∞
Linearity	4.70%	R	√3	1.732	1	1	2.71%	2.71%	∞
Detection Limits	1.00%	R	√3	1.732	1	1	0.58%	0.58%	∞
Readout Electronics	0.30%	N	1	1	1	1	0.30%	0.30%	∞
Response time	0.80%	R	√3	1.732	1	1	0.46%	0.46%	∞
Integration Time	2.60%	R	√3	1.732	1	1	1.50%	1.50%	∞
Measurement drift (class A evaluation)	1.75%	R	√3	1.732	1	1	1.01%	1.01%	∞
RF ambient condition - noise	3.00%	R	√3	1.732	1	1	1.73%	1.73%	∞
RF ambient conditions - reflections	3.00%	R	√3	1.732	1	1	1.73%	1.73%	∞
Probe positioner Mechanical restrictions	0.40%	R	√3	1.732	1	1	0.23%	0.23%	∞
Probe Positioning with respect to phantom	2.90%	R	√3	1.732	1	1	1.67%	1.67%	∞
Post-processing	1.00%	R	√3	1.732	1	1	0.58%	0.58%	∞
Max SAR Eval	1.00%	R	√3	1.732	1	1	0.58%	0.58%	∞
Test Sample related									
Test sample positioning	2.90%	N	1	1	1	1	2.90%	2.90%	M-1
Device Holder Uncertainty	3.60%	N	1	1	1	1	3.60%	3.60%	M-1
Drift of output power	5.00%	R	√3	1.732	1	1	2.89%	2.89%	∞
Phantom and Setup									
Phantom Uncertainty	4.00%	R	√3	1.732	1	1	2.31%	2.31%	∞
Liquid permittivity (mea.)	4.50%	N	1	1	0.64	0.43	2.88%	1.94%	M
Liquid Conductivity (mea.)	4.69%	N	1	1	0.6	0.49	2.81%	2.30%	M
Combined standard uncertainty		RSS					12.11%	11.80%	
Expant uncertainty (95% confidence							24.21%	23.59%	

Appendixes

Refer to separated files for the following appendixes.

ES2019A0006 SAR_Appendix A Photographs

ES2019A0006 SAR_Appendix B DAE & Probe Cal. Certificate

ES2019A0006 SAR_Appendix C Phantom Description & Dipole Cal. Certificate

- End of Report -