SAR TEST REPORT

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

Equipment Under Test	Smart Phone
Brand Name	HUAWEI
Model No.	HUAWEI MLA-L12,MLA-L12, HUAWEI MLA-L02,MLA-L02
Company Name	Huawei Technologies Co., Ltd
Company Address	Administration Building, Headquarters of Huawei Technologies Co., Ltd., Bantian, Longgang District, Shenzhen, 518129, P.R.C
Standards	IEEE/ANSI C95.1-1992, IEEE 1528-2013, KDB248227D01v02r02,KDB865664D01v01r04, KDB865664D02v01r02,KDB941225D01v03r01, KDB941225D05v02r05,KDB941225D06v02r01, KDB447498D01v06,KDB648474D04v01r03, KDB941225D05Av01r02
FCC ID	QISMLA-LX2
Date of Receipt	Jul. 20, 2016
Date of Test(s)	Jul. 30, 2016 ~ Aug. 06, 2016
Date of Issue	Aug. 10, 2016

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

Remarks:

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

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

Signed on behalf of SGS

Asst. Supervisor	**Supervisor**
Kevin Li Kevin Li	John Yeh **John Yeh**
Date: Aug. 10, 2016	**Date: Aug. 10, 2016**

Revision History

Report Number	Revision	Description	Issue Date
E5/2016/70026	Rev.00	Initial creation of document	Aug. 10, 2016

Contents

1. General Information

1.1 Testing Laboratory

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1.2 Details of Applicant

Company Name	Huawei Technologies Co., Ltd
Company Address	Administration Building, Headquarters of Huawei Technologies Co., Ltd., Bantian, Longgang District, Shenzhen, 518129, P.R.C

1.3 Description of EUT

EUT Name	Smart Phone	
Brand Name	HUAWEI	
Model No.	HUAWEI MLA-L12,MLA-L12, HUAWEI MLA-L02,MLA-L02	
Difference between MLA-L12 and MLA-L02	The only differences between the new model and the original model are: - Model HUAWEI MLA-L12, MLA-L12 is a smart phone with dual SIM. - Model HUAWEI MLA-L02, MLA-L02 is a smart phone with single SIM. - The difference of them is only for SIM CARD. HUAWEI MLA-L02, MLA-L02 delete one SIM by software.	
FCC ID	QISMLA-LX2	
Mode of Operation	☒GSM ☒GPRS ☒EDGE ☒WCDMA ☒HSDPA ☒HSUPA ☒DC-HSDPA ☒LTE FDD ☒WLAN802.11 b/g/n(20M) ☒Bluetooth	
Duty Cycle	GSM (DTM multi class B)	1/8.3
	GPRS (support multi class 12 max)	1/2 (1Dn4UP) 1/2.76 (1Dn3UP) 1/4.1 (1Dn2UP) 1/8.3 (1Dn1UP)
	EDGE (support multi class 12 max)	1/2 (1Dn4UP) 1/2.76 (1Dn3UP) 1/4.1 (1Dn2UP) 1/8.3 (1Dn1UP)
	LTE FDD (LTE Release Version: R10)	1
	LTE TDD	0.633
	WCDMA (HSDPA Category 24) (HSUPA Category 6)	1
	WLAN802.11 b/g/n(20M)	1
	Bluetooth	1

TX Frequency Range (MHz)	GSM850	824	–	849
	GSM1900	1850	–	1910
	WCDMA Band V	824	–	849
	LTE FDD Band V	824	–	849
	LTE FDD Band VII	2500	–	2570
	LTE TDD Band XXXVIII	2570	–	2620
	WLAN802.11 b/g/n(20M)	2412	–	2462
	Bluetooth	2402	–	2480
RX Frequency Range (MHz)	GSM850	869	–	894
	GSM1900	1930	–	1990
	WCDMA Band V	869	–	894
	LTE FDD Band V	869	–	894
	LTE FDD Band VII	2620	–	2690
	LTE TDD Band XXXVIII	2570	–	2620
	WLAN802.11 b/g/n(20M)	2412	–	2462
	Bluetooth	2402	–	2480
Channel Number (ARFCN)	GSM850	128	–	251
	GSM1900	512	–	810
	WCDMA Band V	4132	–	4233
	LTE FDD Band V	20407	–	20643
	LTE FDD Band VII	20775	–	21425
	LTE TDD Band XXXVIII	37775	–	38225
	WLAN802.11 b/g/n(20M)	1	–	11
	Bluetooth	0	–	78

Max. SAR (1 g) (Unit: W/Kg)					
Mode	Band	Distance	Measured	Reported	Position / Channel
Head	GSM 850	-	1.00	1.23	☐Left ☒Right ☒Cheek ☐Tilt 128 Channel
	GSM 1900	-	0.36	0.44	☐Left ☒Right ☐Cheek ☒Tilt 661 Channel
	WCDMA Band V	-	0.84	1.05	☐Left ☒Right ☒Cheek ☐Tilt 4132 Channel
	LTE FDD Band V	-	0.93	1.19	☐Left ☒Right ☒Cheek ☐Tilt 20450 Channel
	LTE FDD Band VII	-	0.79	0.83	☐Left ☒Right ☒Cheek ☐Tilt 21350 Channel
	LTE TDD Band XXXVIII	-	0.66	0.76	☐Left ☒Right ☒Cheek ☐Tilt 38000 Channel
	WLAN802.11 b	-	0.40	0.42	☒Left ☐Right ☐Cheek ☒Tilt 11 Channel

Max. SAR (1 g) (Unit: W/Kg)					
Mode	Band	Distance	Measured	Reported	Position / Channel
Body-worn	GSM 850	15mm	0.27	0.31	☐Front ☒Back 128 Channel
	GSM 1900	15mm	0.25	0.30	☐Front ☒Back 512 Channel
	WCDMA Band V	15mm	0.31	0.38	☐Front ☒Back 4233 Channel
	LTE FDD Band V	15mm	0.26	0.30	☐Front ☒Back 20600 Channel
	LTE FDD Band VII	15mm	0.26	0.27	☒Front ☐Back 21350 Channel
	LTE TDD Band XXXVIII	15mm	0.09	0.10	☒Front ☐Back 37850 Channel
	WLAN802.11 b	15mm	0.15	0.15	☐Front ☒Back 11 Channel

Max. SAR (1 g) (Unit: W/Kg)					
Mode	Band	Distance	Measured	Reported	Position / Channel
Hotspot mode	GPRS 850 (1Dn2UP)	10mm	0.62	0.67	☐Front ☒Back ☐Bottom ☐Top ☐Right ☐Left 190 Channel
	GPRS 1900 (1Dn2UP)	10mm	0.89	1.09	☐Front ☐Back ☒Bottom ☐Top ☐Right ☐Left 661 Channel
	WCDMA Band V	10mm	0.62	0.77	☐Front ☒Back ☐Bottom ☐Top ☐Right ☐Left 4233 Channel
	LTE FDD Band V	10mm	0.53	0.61	☐Front ☒Back ☐Bottom ☐Top ☐Right ☐Left 20600 Channel
	LTE FDD Band VII	10mm	1.00	1.05	☐Front ☐Back ☒Bottom ☐Top ☐Right ☐Left 21100 Channel
	LTE TDD Band XXXVIII	10mm	0.36	0.39	☐Front ☒Back ☐Bottom ☐Top ☐Right ☐Left 37850 Channel
	WLAN802.11 b	10mm	0.32	0.32	☐Front ☒Back ☐Bottom ☐Top ☐Right ☐Left 11 Channel

Name	Manufacturer
Battery 1	Harbin Coslight Power Co., Ltd
Battery 2	Sunwoda Electronic Co., Ltd
Battery 3	Huizhou Desay Battery Co., Ltd
Battery 4	SCUD (FUJIAN) Electronics Co., Ltd

Difference description

The differences between MLA-L12 and MLA-L13 are described as below.

The differences between HUAWEI MLA-L13 and HUAWEI MLA-L12 are shown in the following table. Other parts of the mobile phone are the same, including the appearance, the antenna, Chipset, Bluetooth mode, Wifi mode, Adapter, Battery, Mainboard and so on.

	MLA-L12	MLA-L13
GSM four bands	B2/B3/B5/B8	B2/B3/B5/B8
WCDMA bands	B1/ B5/B8	B1/B2/B4/B5/B8
LTE bands	B1/B3/B5/B7/B8/B28/B38/B40	B2/B4/B5/B7/B12/B17/B28
FCC bands	GSM850/1900 W850 LTE B5/B7/B38	GSM850/1900 W850/W1700/W1900 LTE B2/B4/B5/B7/B12/B17
SIM card	Two	Two
External camera	the same	the same
internal camera	the same	the same
FLASH	the same	the same
Mainboard	the same	the same
PCB layout	the same	the same
Appearance	the same	the same
Bluetooth mode	the same	the same
WLAN mode	the same	the same
BT/ WLAN antenna	the same	the same
GSM/ WCDMA /LTE antenna	the same	the same

Adapter	the same	the same
Battery	the same	the same
Chipset	the same	the same
Memory	the same	the same
RF Parameter	The same RF Parameter in the same band	The same RF Parameter in the same band
Dimension	the same	the same
Main Frequency NV	The same NV in the same band	The same NV in the same band

According to the difference description above, for the same frequency bands (GSM850/1900, UMTS Band V, LTE Band V/VII and WiFi 2.4G), MLA-L12 SAR is tested at the worst case of MLA-L13 (FCC ID: QISMLA-LX3). For the new bands (LTE Band XXXVIII), new full SAR test is performed on MLA-L12.

GSM/GPRS/EDGE conducted power table:

Main antenna + Hotspot Off

EUT mode	Frequency (MHz)	CH	Max. Rated Avg. Power + Max. Tolerance (dBm)	Burst average power	Source -based time average power
				Avg. (dBm)	Avg. (dBm)
GSM850 (GMSK)	824.2	128	33	32.12	23.09
	836.6	190	33	32.32	23.29
	848.8	251	33	32.46	23.43
The division factor compared to the number of TX time slot					
Division factor				1 TX time slot	
				-9.03	

Burst average power						
Max. Rated Avg. Power + Max. Tolerance (dBm)			33	30.5	27.5	26.5
			1Dn1UP	1Dn2UP	1Dn3UP	1Dn4UP
EUT mode	Frequency (MHz)	CH	Avg. (dBm)	Avg. (dBm)	Avg. (dBm)	Avg. (dBm)
GPRS 850	824.2	128	32.12	29.85	27.13	25.86
	836.6	190	32.32	30.00	27.18	26.12
	848.8	251	32.46	30.12	27.35	26.16
Source-based time average power						
GPRS 850	824.2	128	23.09	23.83	22.87	22.85
	836.6	190	23.29	23.98	22.92	23.11
	848.8	251	23.43	24.10	23.09	23.15
The division factor compared to the number of TX time slot						
Division factor			1 TX time slot	2 TX time slot	3 TX time slot	4 TX time slot
			-9.03	-6.02	-4.26	-3.01

Burst average power						
Max. Rated Avg. Power + Max. Tolerance (dBm)			27	27	26	24
			1Dn1UP	1Dn2UP	1Dn3UP	1Dn4UP
EUT mode	Frequency (MHz)	CH	Avg. (dBm)	Avg. (dBm)	Avg. (dBm)	Avg. (dBm)
EDGE 850 (MCS5)	824.2	128	26.15	26.07	24.12	23.14
	836.6	190	26.09	25.99	24.23	23.21
	848.8	251	26.14	26.04	24.19	23.00
Source-based time average power						
EDGE 850 (MCS5)	824.2	128	17.12	20.05	19.86	20.13
	836.6	190	17.06	19.97	19.97	20.20
	848.8	251	17.11	20.02	19.93	19.99
The division factor compared to the number of TX time slot						
Division factor			1 TX time slot	2 TX time slot	3 TX time slot	4 TX time slot
			-9.03	-6.02	-4.26	-3.01

EUT mode	Frequency (MHz)	CH	Max. Rated Avg. Power + Max. Tolerance (dBm)	Burst average power	Source-based time average power
				Avg. (dBm)	Avg. (dBm)
GSM1900 (GMSK)	1850.2	512	30	29.18	20.15
	1800	661	30	29.12	20.09
	1909.8	810	30	29.17	20.14
The division factor compared to the number of TX time slot					
Division factor				1 TX time slot	
				-9.03	

Burst average power						
Max. Rated Avg. Power + Max. Tolerance (dBm)			30	28	26	24
			1Dn1UP	1Dn2UP	1Dn3UP	1Dn4UP
EUT mode	Frequency (MHz)	CH	Avg. (dBm)	Avg. (dBm)	Avg. (dBm)	Avg. (dBm)
GPRS 1900	1850.2	512	29.18	27.34	24.80	23.88
	1880	661	29.12	27.30	24.73	23.80
	1909.8	810	29.17	27.36	24.93	23.86
Source-based time average power						
GPRS 1900	1850.2	512	20.15	21.32	20.54	20.87
	1880	661	20.09	21.28	20.47	20.79
	1909.8	810	20.14	21.34	20.67	20.85
The division factor compared to the number of TX time slot						
Division factor			1 TX time slot	2 TX time slot	3 TX time slot	4 TX time slot
			-9.03	-6.02	-4.26	-3.01

Burst average power						
Max. Rated Avg. Power + Max. Tolerance (dBm)			26	26	24	23
			1Dn1UP	1Dn2UP	1Dn3UP	1Dn4UP
EUT mode	Frequency (MHz)	CH	Avg. (dBm)	Avg. (dBm)	Avg. (dBm)	Avg. (dBm)
EDGE 1900 (MCS5)	1850.2	512	25.24	25.11	23.38	22.23
	1880	661	25.26	25.21	23.27	22.16
	1909.8	810	25.12	25.09	23.32	22.14
Source-based time average power						
EDGE 1900 (MCS5)	1850.2	512	16.21	19.09	19.12	19.22
	1880	661	16.23	19.19	19.01	19.15
	1909.8	810	16.09	19.07	19.06	19.13
The division factor compared to the number of TX time slot						
Division factor			1 TX time slot	2 TX time slot	3 TX time slot	4 TX time slot
			-9.03	-6.02	-4.26	-3.01

Main antenna + Hotspot On

EUT mode	Frequency (MHz)	CH	Max. Rated Avg. Power + Max. Tolerance (dBm)	Burst average power	Source -based time average power
				Avg. (dBm)	Avg. (dBm)
GSM850 (GMSK)	824.2	128	33	32.12	23.09
	836.6	190	33	32.32	23.29
	848.8	251	33	32.46	23.43
The division factor compared to the number of TX time slot					
Division factor				1 TX time slot	
				-9.03	

Burst average power						
Max. Rated Avg. Power + Max. Tolerance (dBm)			33	30.5	27.5	26.5
			1Dn1UP	1Dn2UP	1Dn3UP	1Dn4UP
EUT mode	Frequency (MHz)	CH	Avg. (dBm)	Avg. (dBm)	Avg. (dBm)	Avg. (dBm)
GPRS 850	824.2	128	32.12	29.85	27.13	25.86
	836.6	190	32.32	30.00	27.18	26.12
	848.8	251	32.46	30.12	27.35	26.16
Source-based time average power						
GPRS 850	824.2	128	23.09	23.83	22.87	22.85
	836.6	190	23.29	23.98	22.92	23.11
	848.8	251	23.43	24.10	23.09	23.15
The division factor compared to the number of TX time slot						
Division factor			1 TX time slot	2 TX time slot	3 TX time slot	4 TX time slot
			-9.03	-6.02	-4.26	-3.01

Burst average power						
Max. Rated Avg. Power + Max. Tolerance (dBm)			27	27	26	24
			1Dn1UP	1Dn2UP	1Dn3UP	1Dn4UP
EUT mode	Frequency (MHz)	CH	Avg. (dBm)	Avg. (dBm)	Avg. (dBm)	Avg. (dBm)
EDGE 850 (MCS5)	824.2	128	26.15	26.07	24.12	23.14
	836.6	190	26.09	25.99	24.23	23.21
	848.8	251	26.14	26.04	24.19	23.00
Source-based time average power						
EDGE 850 (MCS5)	824.2	128	17.12	20.05	19.86	20.13
	836.6	190	17.06	19.97	19.97	20.20
	848.8	251	17.11	20.02	19.93	19.99
The division factor compared to the number of TX time slot						
Division factor			1 TX time slot	2 TX time slot	3 TX time slot	4 TX time slot
			-9.03	-6.02	-4.26	-3.01

EUT mode	Frequency (MHz)	CH	Max. Rated Avg. Power + Max. Tolerance (dBm)	Burst average power	Source-based time average power
				Avg. (dBm)	Avg. (dBm)
GSM1900 (GMSK)	1850.2	512	27	25.33	16.3
	1800	661	27	25.29	16.26
	1909.8	810	27	25.34	16.31
The division factor compared to the number of TX time slot					
Division factor				1 TX time slot	
				-9.03	

Burst average power						
Max. Rated Avg. Power + Max. Tolerance (dBm)			27	28	26	24
			1Dn1UP	1Dn2UP	1Dn3UP	1Dn4UP
EUT mode	Frequency (MHz)	CH	Avg. (dBm)	Avg. (dBm)	Avg. (dBm)	Avg. (dBm)
GPRS 1900	1850.2	512	25.33	27.34	24.80	23.88
	1880	661	25.29	27.30	24.73	23.80
	1909.8	810	25.34	27.36	24.93	23.86
Source-based time average power						
GPRS 1900	1850.2	512	16.30	21.32	20.54	20.87
	1880	661	16.26	21.28	20.47	20.79
	1909.8	810	16.31	21.34	20.67	20.85
The division factor compared to the number of TX time slot						
Division factor			1 TX time slot	2 TX time slot	3 TX time slot	4 TX time slot
			-9.03	-6.02	-4.26	-3.01

Burst average power						
Max. Rated Avg. Power + Max. Tolerance (dBm)			26	26	24	23
			1Dn1UP	1Dn2UP	1Dn3UP	1Dn4UP
EUT mode	Frequency (MHz)	CH	Avg. (dBm)	Avg. (dBm)	Avg. (dBm)	Avg. (dBm)
EDGE 1900 (MCS5)	1850.2	512	25.24	25.11	23.38	22.23
	1880	661	25.26	25.21	23.27	22.16
	1909.8	810	25.12	25.09	23.32	22.14
Source-based time average power						
EDGE 1900 (MCS5)	1850.2	512	16.21	19.09	19.12	19.22
	1880	661	16.23	19.19	19.01	19.15
	1909.8	810	16.09	19.07	19.06	19.13
The division factor compared to the number of TX time slot						
Division factor			1 TX time slot	2 TX time slot	3 TX time slot	4 TX time slot
			-9.03	-6.02	-4.26	-3.01

Sub antenna + Sensor Off

EUT mode	Frequency (MHz)	CH	Max. Rated Avg. Power + Max. Tolerance (dBm)	Burst average power	Source -based time average power
				Avg. (dBm)	Avg. (dBm)
GSM850 (GMSK)	824.2	128	33	32.33	23.3
	836.6	190	33	32.44	23.41
	848.8	251	33	32.52	23.49
The division factor compared to the number of TX time slot					
Division factor				1 TX time slot	
				-9.03	

Burst average power						
Max. Rated Avg. Power + Max. Tolerance (dBm)			33	30.5	27.5	26.5
			1Dn1UP	1Dn2UP	1Dn3UP	1Dn4UP
EUT mode	Frequency (MHz)	CH	Avg. (dBm)	Avg. (dBm)	Avg. (dBm)	Avg. (dBm)
GPRS 850	824.2	128	32.33	29.89	27.15	25.84
	836.6	190	32.44	30.12	27.19	26.17
	848.8	251	32.52	30.19	27.39	26.26
Source-based time average power						
GPRS 850	824.2	128	23.30	23.87	22.89	22.83
	836.6	190	23.41	24.10	22.93	23.16
	848.8	251	23.49	24.17	23.13	23.25
The division factor compared to the number of TX time slot						
Division factor			1 TX time slot	2 TX time slot	3 TX time slot	4 TX time slot
			-9.03	-6.02	-4.26	-3.01

Burst average power						
Max. Rated Avg. Power + Max. Tolerance (dBm)			27	27	26	24
			1Dn1UP	1Dn2UP	1Dn3UP	1Dn4UP
EUT mode	Frequency (MHz)	CH	Avg. (dBm)	Avg. (dBm)	Avg. (dBm)	Avg. (dBm)
EDGE 850 (MCS5)	824.2	128	26.00	26.00	24.15	23.19
	836.6	190	26.12	26.11	24.25	23.22
	848.8	251	26.18	26.11	24.21	23.11
Source-based time average power						
EDGE 850 (MCS5)	824.2	128	16.97	19.98	19.89	20.18
	836.6	190	17.09	20.09	19.99	20.21
	848.8	251	17.15	20.09	19.95	20.10
The division factor compared to the number of TX time slot						
Division factor			1 TX time slot	2 TX time slot	3 TX time slot	4 TX time slot
			-9.03	-6.02	-4.26	-3.01

EUT mode	Frequency (MHz)	CH	Max. Rated Avg. Power + Max. Tolerance (dBm)	Burst average power	Source-based time average power
				Avg. (dBm)	Avg. (dBm)
GSM1900 (GMSK)	1850.2	512	30	28.85	19.82
	1800	661	30	28.75	19.72
	1909.8	810	30	28.72	19.69
The division factor compared to the number of TX time slot					
Division factor				1 TX time slot	
				-9.03	

Burst average power						
Max. Rated Avg. Power + Max. Tolerance (dBm)			30	28	26	24
			1Dn1UP	1Dn2UP	1Dn3UP	1Dn4UP
EUT mode	Frequency (MHz)	CH	Avg. (dBm)	Avg. (dBm)	Avg. (dBm)	Avg. (dBm)
GPRS 1900	1850.2	512	28.85	27.15	24.67	23.50
	1880	661	28.75	27.08	24.73	23.53
	1909.8	810	28.72	27.05	24.76	23.47
Source-based time average power						
GPRS 1900	1850.2	512	19.82	21.13	20.41	20.49
	1880	661	19.72	21.06	20.47	20.52
	1909.8	810	19.69	21.03	20.50	20.46
The division factor compared to the number of TX time slot						
Division factor			1 TX time slot	2 TX time slot	3 TX time slot	4 TX time slot
			-9.03	-6.02	-4.26	-3.01

Burst average power						
Max. Rated Avg. Power + Max. Tolerance (dBm)			26	26	24	23
			1Dn1UP	1Dn2UP	1Dn3UP	1Dn4UP
EUT mode	Frequency (MHz)	CH	Avg. (dBm)	Avg. (dBm)	Avg. (dBm)	Avg. (dBm)
EDGE 1900 (MCS5)	1850.2	512	25.00	24.99	23.39	22.19
	1880	661	25.11	25.04	23.38	22.19
	1909.8	810	25.28	25.21	23.31	22.19
Source-based time average power						
EDGE 1900 (MCS5)	1850.2	512	15.97	18.97	19.13	19.18
	1880	661	16.08	19.02	19.12	19.18
	1909.8	810	16.25	19.19	19.05	19.18
The division factor compared to the number of TX time slot						
Division factor			1 TX time slot	2 TX time slot	3 TX time slot	4 TX time slot
			-9.03	-6.02	-4.26	-3.01

Sub antenna + Sensor On

EUT mode	Frequency (MHz)	CH	Max. Rated Avg. Power + Max. Tolerance (dBm)	Burst average power	Source-based time average power
				Avg. (dBm)	Avg. (dBm)
GSM850 (GMSK)	824.2	128	30.5	29.62	20.59
	836.6	190	30.5	29.78	20.75
	848.8	251	30.5	29.87	20.84
The division factor compared to the number of TX time slot					
Division factor				1 TX time slot	
				-9.03	

Burst average power						
Max. Rated Avg. Power + Max. Tolerance (dBm)			30.5	30.5	27.5	26.5
			1Dn1UP	1Dn2UP	1Dn3UP	1Dn4UP
EUT mode	Frequency (MHz)	CH	Avg. (dBm)	Avg. (dBm)	Avg. (dBm)	Avg. (dBm)
GPRS 850	824.2	128	30.02	29.89	27.15	25.84
	836.6	190	30.18	30.12	27.19	26.17
	848.8	251	30.27	30.19	27.39	26.26
Source-based time average power						
GPRS 850	824.2	128	20.99	23.87	22.89	22.83
	836.6	190	21.15	24.10	22.93	23.16
	848.8	251	21.24	24.17	23.13	23.25
The division factor compared to the number of TX time slot						
Division factor			1 TX time slot	2 TX time slot	3 TX time slot	4 TX time slot
			-9.03	-6.02	-4.26	-3.01

Burst average power						
Max. Rated Avg. Power + Max. Tolerance (dBm)			27	27	26	24
			1Dn1UP	1Dn2UP	1Dn3UP	1Dn4UP
EUT mode	Frequency (MHz)	CH	Avg. (dBm)	Avg. (dBm)	Avg. (dBm)	Avg. (dBm)
EDGE 850 (MCS5)	824.2	128	26.00	26.00	24.15	23.19
	836.6	190	26.12	26.11	24.25	23.22
	848.8	251	26.18	26.11	24.21	23.11
Source-based time average power						
EDGE 850 (MCS5)	824.2	128	16.97	19.98	19.89	20.18
	836.6	190	17.09	20.09	19.99	20.21
	848.8	251	17.15	20.09	19.95	20.10
The division factor compared to the number of TX time slot						
Division factor			1 TX time slot	2 TX time slot	3 TX time slot	4 TX time slot
			-9.03	-6.02	-4.26	-3.01

EUT mode	Frequency (MHz)	CH	Max. Rated Avg. Power + Max. Tolerance (dBm)	Burst average power	Source-based time average power
				Avg. (dBm)	Avg. (dBm)
GSM1900 (GMSK)	1850.2	512	29	28.10	19.07
	1800	661	29	28.12	19.09
	1909.8	810	29	28.10	19.07
The division factor compared to the number of TX time slot					
Division factor				1 TX time slot	
				-9.03	

Burst average power						
Max. Rated Avg. Power + Max. Tolerance (dBm)			29	28	26	24
			1Dn1UP	1Dn2UP	1Dn3UP	1Dn4UP
EUT mode	Frequency (MHz)	CH	Avg. (dBm)	Avg. (dBm)	Avg. (dBm)	Avg. (dBm)
GPRS 1900	1850.2	512	28.10	27.15	24.67	23.50
	1880	661	28.12	27.08	24.73	23.53
	1909.8	810	28.10	27.05	24.76	23.47
Source-based time average power						
GPRS 1900	1850.2	512	19.07	21.13	20.41	20.49
	1880	661	19.09	21.06	20.47	20.52
	1909.8	810	19.07	21.03	20.50	20.46
The division factor compared to the number of TX time slot						
Division factor			1 TX time slot	2 TX time slot	3 TX time slot	4 TX time slot
			-9.03	-6.02	-4.26	-3.01

Burst average power						
Max. Rated Avg. Power + Max. Tolerance (dBm)			26	26	24	23
			1Dn1UP	1Dn2UP	1Dn3UP	1Dn4UP
EUT mode	Frequency (MHz)	CH	Avg. (dBm)	Avg. (dBm)	Avg. (dBm)	Avg. (dBm)
EDGE 1900 (MCS5)	1850.2	512	25.00	24.99	23.39	22.19
	1880	661	25.11	25.04	23.38	22.19
	1909.8	810	25.28	25.21	23.31	2.19
Source-based time average power						
EDGE 1900 (MCS5)	1850.2	512	15.97	18.97	19.13	19.18
	1880	661	16.08	19.02	19.12	19.18
	1909.8	810	16.25	19.19	19.05	-0.82
The division factor compared to the number of TX time slot						
Division factor			1 TX time slot	2 TX time slot	3 TX time slot	4 TX time slot
			-9.03	-6.02	-4.26	-3.01

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

Main antenna

Band		WCDMA V		
TX Channel		4132	4183	4233
Frequency (MHz)		826.4	836.6	846.6
Max. Rated Avg. Power+Max. Tolerance (dBm)		24.50		
3GPP Rel 99	RMC 12.2Kbps	23.65	23.67	23.56
3GPP Rel 5	HSDPA Subtest-1	22.68	22.72	22.53
	HSDPA Subtest-2	22.67	22.71	22.51
	HSDPA Subtest-3	22.09	22.23	22.04
	HSDPA Subtest-4	22.09	22.23	22.04
3GPP Rel 6	HSUPA Subtest-1	22.46	22.50	22.30
	HSUPA Subtest-2	21.98	21.99	21.87
	HSUPA Subtest-3	22.35	22.51	22.29
	HSUPA Subtest-4	22.47	22.47	22.34
	HSUPA Subtest-5	22.48	22.52	22.36
3GPP Rel 8	DC-HSDPA Subtest-1	22.61	22.66	22.43
	DC-HSDPA Subtest-2	22.56	22.64	22.41
	DC-HSDPA Subtest-3	22.01	22.14	21.95
	DC-HSDPA Subtest-4	21.94	22.15	21.94

Sub antenna

Band		WCDMA V		
TX Channel		4132	4183	4233
Frequency (MHz)		826.4	836.6	846.6
Max. Rated Avg. Power+Max. Tolerance (dBm)		21.50		
3GPP Rel 99	RMC 12.2Kbps	20.52	20.63	20.42
3GPP Rel 5	HSDPA Subtest-1	19.42	19.43	19.29
	HSDPA Subtest-2	19.41	19.53	19.27
	HSDPA Subtest-3	18.92	19.04	18.87
	HSDPA Subtest-4	19.01	19.02	18.87
3GPP Rel 6	HSUPA Subtest-1	19.37	19.59	19.30
	HSUPA Subtest-2	18.90	19.10	18.84
	HSUPA Subtest-3	19.46	19.48	19.28
	HSUPA Subtest-4	19.46	19.48	19.31
	HSUPA Subtest-5	19.48	19.49	19.33
3GPP Rel 8	DC-HSDPA Subtest-1	19.34	19.34	19.19
	DC-HSDPA Subtest-2	19.33	19.32	19.17
	DC-HSDPA Subtest-3	18.85	18.92	18.81
	DC-HSDPA Subtest-4	18.86	18.94	18.82

Sub-Test for HSDPA

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

Sub-Test for HSUPA

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

LTE FDD Band V / VII power table:

FDD Band 5 (Main antenna)								
BW(Mhz)	Modulation	RB Size	RB Offset	Frequency (MHz)	Channel	Conducted power (dBm)	Target Power + Max. Tolerance (dBm)	MPR Allowed per 3GPP(dB)
10	QPSK	1 RB	0	829	20450	22.79	24	0
				836.5	20525	22.74	24	0
				844	20600	22.93	24	0
			25	829	20450	23.35	24	0
				836.5	20525	23.17	24	0
				844	20600	23.35	24	0
			49	829	20450	22.85	24	0
				836.5	20525	22.90	24	0
				844	20600	22.73	24	0
		25 RB	0	829	20450	22.20	23	0-1
				836.5	20525	22.29	23	0-1
				844	20600	22.14	23	0-1
			12	829	20450	22.13	23	0-1
				836.5	20525	22.26	23	0-1
				844	20600	22.09	23	0-1
			25	829	20450	22.18	23	0-1
				836.5	20525	22.28	23	0-1
				844	20600	22.11	23	0-1
		50RB		829	20450	22.17	23	0-1
				836.5	20525	22.29	23	0-1
				844	20600	22.17	23	0-1
	16-QAM	1 RB	0	829	20450	21.91	23	0-1
				836.5	20525	21.64	23	0-1
				844	20600	21.84	23	0-1
			25	829	20450	22.03	23	0-1
				836.5	20525	22.40	23	0-1
				844	20600	22.05	23	0-1
			49	829	20450	21.90	23	0-1
				836.5	20525	22.20	23	0-1
				844	20600	21.94	23	0-1
		25 RB	0	829	20450	21.38	22	0-2
				836.5	20525	21.21	22	0-2
				844	20600	21.34	22	0-2
			12	829	20450	20.97	22	0-2
				836.5	20525	21.14	22	0-2
				844	20600	21.03	22	0-2
			25	829	20450	21.22	22	0-2
				836.5	20525	21.43	22	0-2
				844	20600	21.03	22	0-2
		50RB		829	20450	21.20	22	0-2
				836.5	20525	21.35	22	0-2
				844	20600	21.22	22	0-2

FDD Band 5 (Main antenna)								
BW(Mhz)	Modulation	RB Size	RB Offset	Frequency (MHz)	Channel	Conducted power (dBm)	Target Power + Max. Tolerance (dBm)	MPR Allowed per 3GPP(dB)
5	QPSK	1 RB	0	826.5	20425	22.82	24	0
				836.5	20525	22.80	24	0
				846.5	20625	22.87	24	0
			12	826.5	20425	22.92	24	0
				836.5	20525	22.97	24	0
				846.5	20625	23.23	24	0
			24	826.5	20425	22.70	24	0
				836.5	20525	22.64	24	0
				846.5	20625	22.59	24	0
		12 RB	0	826.5	20425	22.24	23	0-1
				836.5	20525	22.22	23	0-1
				846.5	20625	22.22	23	0-1
			6	826.5	20425	22.30	23	0-1
				836.5	20525	22.27	23	0-1
				846.5	20625	22.27	23	0-1
			13	826.5	20425	22.18	23	0-1
				836.5	20525	22.18	23	0-1
				846.5	20625	22.17	23	0-1
		25RB		826.5	20425	22.19	23	0-1
				836.5	20525	22.15	23	0-1
				846.5	20625	22.14	23	0-1
	16-QAM	1 RB	0	826.5	20425	21.67	23	0-1
				836.5	20525	21.91	23	0-1
				846.5	20625	22.16	23	0-1
			12	826.5	20425	22.25	23	0-1
				836.5	20525	21.60	23	0-1
				846.5	20625	22.07	23	0-1
			24	826.5	20425	21.85	23	0-1
				836.5	20525	21.82	23	0-1
				846.5	20625	21.64	23	0-1
		12 RB	0	826.5	20425	21.14	22	0-2
				836.5	20525	21.28	22	0-2
				846.5	20625	21.15	22	0-2
			6	826.5	20425	21.10	22	0-2
				836.5	20525	21.13	22	0-2
				846.5	20625	21.20	22	0-2
			13	826.5	20425	20.95	22	0-2
				836.5	20525	21.19	22	0-2
				846.5	20625	21.18	22	0-2
		25RB		826.5	20425	21.24	22	0-2
				836.5	20525	21.15	22	0-2
				846.5	20625	21.12	22	0-2

FDD Band 5 (Main antenna)								
BW(Mhz)	Modulation	RB Size	RB Offset	Frequency (MHz)	Channel	Conducted power (dBm)	Target Power + Max. Tolerance (dBm)	MPR Allowed per 3GPP(dB)
3	QPSK	1 RB	0	825.5	20415	23.25	24	0
				836.5	20525	23.07	24	0
				847.5	20635	23.22	24	0
			7	825.5	20415	23.24	24	0
				836.5	20525	22.98	24	0
				847.5	20635	23.18	24	0
			14	825.5	20415	23.10	24	0
				836.5	20525	23.12	24	0
				847.5	20635	23.11	24	0
		8 RB	0	825.5	20415	22.18	23	0-1
				836.5	20525	22.13	23	0-1
				847.5	20635	22.26	23	0-1
			4	825.5	20415	22.21	23	0-1
				836.5	20525	22.07	23	0-1
				847.5	20635	22.17	23	0-1
			7	825.5	20415	22.25	23	0-1
				836.5	20525	22.06	23	0-1
				847.5	20635	22.14	23	0-1
		15RB		825.5	20415	22.22	23	0-1
				836.5	20525	22.19	23	0-1
				847.5	20635	22.08	23	0-1
	16-QAM	1 RB	0	825.5	20415	22.38	23	0-1
				836.5	20525	21.83	23	0-1
				847.5	20635	22.09	23	0-1
			7	825.5	20415	22.00	23	0-1
				836.5	20525	22.14	23	0-1
				847.5	20635	22.22	23	0-1
			14	825.5	20415	21.84	23	0-1
				836.5	20525	21.97	23	0-1
				847.5	20635	22.11	23	0-1
		8 RB	0	825.5	20415	21.28	22	0-2
				836.5	20525	21.54	22	0-2
				847.5	20635	21.27	22	0-2
			4	825.5	20415	21.35	22	0-2
				836.5	20525	21.02	22	0-2
				847.5	20635	21.08	22	0-2
			7	825.5	20415	21.40	22	0-2
				836.5	20525	21.20	22	0-2
				847.5	20635	21.21	22	0-2
		15RB		825.5	20415	21.07	22	0-2
				836.5	20525	21.06	22	0-2
				847.5	20635	21.16	22	0-2

FDD Band 5 (Main antenna)								
BW(Mhz)	Modulation	RB Size	RB Offset	Frequency (MHz)	Channel	Conducted power (dBm)	Target Power + Max. Tolerance (dBm)	MPR Allowed per 3GPP(dB)
1.4	QPSK	1 RB	0	824.7	20407	23.11	24	0
				836.5	20525	22.82	24	0
				848.3	20643	23.03	24	0
			2	824.7	20407	23.18	24	0
				836.5	20525	22.83	24	0
				848.3	20643	23.31	24	0
			5	824.7	20407	23.11	24	0
				836.5	20525	22.81	24	0
				848.3	20643	23.19	24	0
		3 RB	0	824.7	20407	23.18	24	0
				836.5	20525	23.09	24	0
				848.3	20643	23.00	24	0
			2	824.7	20407	23.12	24	0
				836.5	20525	23.14	24	0
				848.3	20643	23.00	24	0
			3	824.7	20407	23.13	24	0
				836.5	20525	23.11	24	0
				848.3	20643	23.16	24	0
		6RB		824.7	20407	22.18	23	0-1
				836.5	20525	22.08	23	0-1
				848.3	20643	22.05	23	0-1
	16-QAM	1 RB	0	824.7	20407	22.03	23	0-1
				836.5	20525	22.02	23	0-1
				848.3	20643	22.01	23	0-1
			2	824.7	20407	21.97	23	0-1
				836.5	20525	21.88	23	0-1
				848.3	20643	21.92	23	0-1
			5	824.7	20407	22.26	23	0-1
				836.5	20525	21.87	23	0-1
				848.3	20643	22.13	23	0-1
		3 RB	0	824.7	20407	21.64	23	0-1
				836.5	20525	22.00	23	0-1
				848.3	20643	22.04	23	0-1
			2	824.7	20407	21.91	23	0-1
				836.5	20525	22.00	23	0-1
				848.3	20643	22.40	23	0-1
			3	824.7	20407	22.10	23	0-1
				836.5	20525	22.10	23	0-1
				848.3	20643	22.10	23	0-1
		6RB		824.7	20407	20.98	22	0-2
				836.5	20525	20.79	22	0-2
				848.3	20643	20.98	22	0-2

FDD Band 5 (Sub antenna)								
BW(Mhz)	Modulation	RB Size	RB Offset	Frequency (MHz)	Channel	Conducted power (dBm)	Target Power + Max. Tolerance (dBm)	MPR Allowed per 3GPP(dB)
10	QPSK	1 RB	0	829	20450	20.72	22	0
				836.5	20525	20.76	22	0
				844	20600	20.64	22	0
			25	829	20450	20.92	22	0
				836.5	20525	21.12	22	0
				844	20600	21.18	22	0
			49	829	20450	20.86	22	0
				836.5	20525	20.83	22	0
				844	20600	20.64	22	0
		25 RB	0	829	20450	20.09	21	0-1
				836.5	20525	20.08	21	0-1
				844	20600	20.11	21	0-1
			12	829	20450	20.06	21	0-1
				836.5	20525	20.16	21	0-1
				844	20600	20.15	21	0-1
			25	829	20450	20.00	21	0-1
				836.5	20525	20.12	21	0-1
				844	20600	20.07	21	0-1
		50RB		829	20450	20.05	21	0-1
				836.5	20525	20.10	21	0-1
				844	20600	20.16	21	0-1
	16-QAM	1 RB	0	829	20450	19.71	21	0-1
				836.5	20525	19.73	21	0-1
				844	20600	19.63	21	0-1
			25	829	20450	19.76	21	0-1
				836.5	20525	20.12	21	0-1
				844	20600	20.26	21	0-1
			49	829	20450	19.73	21	0-1
				836.5	20525	19.46	21	0-1
				844	20600	19.75	21	0-1
		25 RB	0	829	20450	19.04	20	0-2
				836.5	20525	19.05	20	0-2
				844	20600	19.01	20	0-2
			12	829	20450	18.94	20	0-2
				836.5	20525	19.24	20	0-2
				844	20600	19.00	20	0-2
			25	829	20450	19.10	20	0-2
				836.5	20525	19.03	20	0-2
				844	20600	18.93	20	0-2
		50RB		829	20450	19.11	20	0-2
				836.5	20525	19.21	20	0-2
				844	20600	19.00	20	0-2

FDD Band 5 (Sub antenna)								
BW(Mhz)	Modulation	RB Size	RB Offset	Frequency (MHz)	Channel	Conducted power (dBm)	Target Power + Max. Tolerance (dBm)	MPR Allowed per 3GPP(dB)
5	QPSK	1 RB	0	826.5	20425	20.64	22	0
				836.5	20525	20.63	22	0
				846.5	20625	20.86	22	0
			12	826.5	20425	21.15	22	0
				836.5	20525	21.24	22	0
				846.5	20625	21.22	22	0
			24	826.5	20425	20.56	22	0
				836.5	20525	20.71	22	0
				846.5	20625	20.67	22	0
		12 RB	0	826.5	20425	20.10	21	0-1
				836.5	20525	20.16	21	0-1
				846.5	20625	20.11	21	0-1
			6	826.5	20425	20.10	21	0-1
				836.5	20525	20.14	21	0-1
				846.5	20625	20.09	21	0-1
			13	826.5	20425	20.05	21	0-1
				836.5	20525	20.11	21	0-1
				846.5	20625	20.04	21	0-1
		25RB		826.5	20425	20.08	21	0-1
				836.5	20525	20.14	21	0-1
				846.5	20625	20.05	21	0-1
	16-QAM	1 RB	0	826.5	20425	19.60	21	0-1
				836.5	20525	19.68	21	0-1
				846.5	20625	19.44	21	0-1
			12	826.5	20425	20.24	21	0-1
				836.5	20525	20.14	21	0-1
				846.5	20625	20.41	21	0-1
			24	826.5	20425	19.78	21	0-1
				836.5	20525	19.50	21	0-1
				846.5	20625	19.96	21	0-1
		12 RB	0	826.5	20425	18.80	20	0-2
				836.5	20525	19.11	20	0-2
				846.5	20625	19.11	20	0-2
			6	826.5	20425	18.92	20	0-2
				836.5	20525	19.17	20	0-2
				846.5	20625	19.12	20	0-2
			13	826.5	20425	18.85	20	0-2
				836.5	20525	19.12	20	0-2
				846.5	20625	19.06	20	0-2
		25RB		826.5	20425	19.02	20	0-2
				836.5	20525	19.19	20	0-2
				846.5	20625	19.02	20	0-2

FDD Band 5 (Sub antenna)								
BW(Mhz)	Modulation	RB Size	RB Offset	Frequency (MHz)	Channel	Conducted power (dBm)	Target Power + Max. Tolerance (dBm)	MPR Allowed per 3GPP(dB)
3	QPSK	1 RB	0	825.5	20415	20.80	22	0
				836.5	20525	20.72	22	0
				847.5	20635	20.96	22	0
			7	825.5	20415	21.15	22	0
				836.5	20525	21.41	22	0
				847.5	20635	20.97	22	0
			14	825.5	20415	20.91	22	0
				836.5	20525	21.10	22	0
				847.5	20635	20.80	22	0
		8 RB	0	825.5	20415	20.07	21	0-1
				836.5	20525	20.10	21	0-1
				847.5	20635	20.09	21	0-1
			4	825.5	20415	20.16	21	0-1
				836.5	20525	20.13	21	0-1
				847.5	20635	20.02	21	0-1
			7	825.5	20415	19.95	21	0-1
				836.5	20525	20.16	21	0-1
				847.5	20635	20.15	21	0-1
		15RB		825.5	20415	20.04	21	0-1
				836.5	20525	20.05	21	0-1
				847.5	20635	20.02	21	0-1
	16-QAM	1 RB	0	825.5	20415	19.86	21	0-1
				836.5	20525	19.43	21	0-1
				847.5	20635	20.08	21	0-1
			7	825.5	20415	19.73	21	0-1
				836.5	20525	20.56	21	0-1
				847.5	20635	20.15	21	0-1
			14	825.5	20415	20.05	21	0-1
				836.5	20525	19.72	21	0-1
				847.5	20635	19.76	21	0-1
		8 RB	0	825.5	20415	19.24	20	0-2
				836.5	20525	18.89	20	0-2
				847.5	20635	18.70	20	0-2
			4	825.5	20415	19.01	20	0-2
				836.5	20525	19.14	20	0-2
				847.5	20635	18.97	20	0-2
			7	825.5	20415	19.04	20	0-2
				836.5	20525	19.21	20	0-2
				847.5	20635	18.87	20	0-2
		15RB		825.5	20415	18.83	20	0-2
				836.5	20525	18.90	20	0-2
				847.5	20635	18.86	20	0-2

FDD Band 5 (Sub antenna)								
BW(Mhz)	Modulation	RB Size	RB Offset	Frequency (MHz)	Channel	Conducted power (dBm)	Target Power + Max. Tolerance (dBm)	MPR Allowed per 3GPP(dB)
1.4	QPSK	1 RB	0	824.7	20407	21.10	22	0
				836.5	20525	21.04	22	0
				848.3	20643	20.98	22	0
			2	824.7	20407	21.16	22	0
				836.5	20525	21.15	22	0
				848.3	20643	21.10	22	0
			5	824.7	20407	20.95	22	0
				836.5	20525	21.08	22	0
				848.3	20643	21.11	22	0
		3 RB	0	824.7	20407	21.21	22	0
				836.5	20525	21.04	22	0
				848.3	20643	21.20	22	0
			2	824.7	20407	21.38	22	0
				836.5	20525	21.26	22	0
				848.3	20643	21.08	22	0
			3	824.7	20407	21.26	22	0
				836.5	20525	21.30	22	0
				848.3	20643	21.07	22	0
		6RB		824.7	20407	20.10	21	0-1
				836.5	20525	20.11	21	0-1
				848.3	20643	20.01	21	0-1
	16-QAM	1 RB	0	824.7	20407	19.74	21	0-1
				836.5	20525	19.81	21	0-1
				848.3	20643	19.83	21	0-1
			2	824.7	20407	19.80	21	0-1
				836.5	20525	20.51	21	0-1
				848.3	20643	19.77	21	0-1
			5	824.7	20407	20.08	21	0-1
				836.5	20525	20.45	21	0-1
				848.3	20643	20.03	21	0-1
		3 RB	0	824.7	20407	20.31	21	0-1
				836.5	20525	20.05	21	0-1
				848.3	20643	19.86	21	0-1
			2	824.7	20407	20.29	21	0-1
				836.5	20525	20.10	21	0-1
				848.3	20643	20.01	21	0-1
			3	824.7	20407	20.27	21	0-1
				836.5	20525	20.00	21	0-1
				848.3	20643	19.95	21	0-1
		6RB		824.7	20407	19.12	20	0-2
				836.5	20525	19.03	20	0-2
				848.3	20643	18.76	20	0-2

FDD Band 7 (Main antenna)								
BW(Mhz)	Modulation	RB Size	RB Offset	Frequency (MHz)	Channel	Conducted power (dBm)	Target Power + Max. Tolerance (dBm)	MPR Allowed per 3GPP(dB)
20	QPSK	1 RB	0	2510	20850	22.65	23.5	0
				2535	21100	22.81	23.5	0
				2560	21350	22.74	23.5	0
			50	2510	20850	23.26	23.5	0
				2535	21100	23.24	23.5	0
				2560	21350	23.44	23.5	0
			99	2510	20850	23.27	23.5	0
				2535	21100	23.09	23.5	0
				2560	21350	23.13	23.5	0
		50 RB	0	2510	20850	22.09	22.5	0-1
				2535	21100	21.90	22.5	0-1
				2560	21350	22.19	22.5	0-1
			25	2510	20850	22.01	22.5	0-1
				2535	21100	22.15	22.5	0-1
				2560	21350	22.28	22.5	0-1
			50	2510	20850	22.10	22.5	0-1
				2535	21100	22.07	22.5	0-1
				2560	21350	22.32	22.5	0-1
		100RB		2510	20850	22.03	22.5	0-1
				2535	21100	22.12	22.5	0-1
				2560	21350	22.35	22.5	0-1
	16-QAM	1 RB	0	2510	20850	21.92	22.5	0-1
				2535	21100	22.13	22.5	0-1
				2560	21350	22.23	22.5	0-1
			50	2510	20850	22.36	22.5	0-1
				2535	21100	22.13	22.5	0-1
				2560	21350	21.95	22.5	0-1
			99	2510	20850	21.74	22.5	0-1
				2535	21100	22.13	22.5	0-1
				2560	21350	22.36	22.5	0-1
		50 RB	0	2510	20850	21.13	21.5	0-2
				2535	21100	20.95	21.5	0-2
				2560	21350	21.25	21.5	0-2
			25	2510	20850	21.24	21.5	0-2
				2535	21100	21.24	21.5	0-2
				2560	21350	21.36	21.5	0-2
			50	2510	20850	21.18	21.5	0-2
				2535	21100	21.25	21.5	0-2
				2560	21350	21.32	21.5	0-2
		100RB		2510	20850	21.18	21.5	0-2
				2535	21100	21.18	21.5	0-2
				2560	21350	21.33	21.5	0-2

FDD Band 7 (Main antenna)								
BW(Mhz)	Modulation	RB Size	RB Offset	Frequency (MHz)	Channel	Conducted power (dBm)	Target Power + Max. Tolerance (dBm)	MPR Allowed per 3GPP(dB)
15	QPSK	1 RB	0	2507.5	20825	23.14	23.5	0
				2535	21100	22.93	23.5	0
				2562.5	21375	23.21	23.5	0
			36	2507.5	20825	23.42	23.5	0
				2535	21100	23.27	23.5	0
				2562.5	21375	23.29	23.5	0
			74	2507.5	20825	23.04	23.5	0
				2535	21100	22.96	23.5	0
				2562.5	21375	23.42	23.5	0
		36 RB	0	2507.5	20825	22.20	22.5	0-1
				2535	21100	21.99	22.5	0-1
				2562.5	21375	22.20	22.5	0-1
			18	2507.5	20825	22.23	22.5	0-1
				2535	21100	22.11	22.5	0-1
				2562.5	21375	22.48	22.5	0-1
			37	2507.5	20825	22.25	22.5	0-1
				2535	21100	22.19	22.5	0-1
				2562.5	21375	22.40	22.5	0-1
		75RB		2507.5	20825	22.16	22.5	0-1
				2535	21100	21.99	22.5	0-1
				2562.5	21375	22.33	22.5	0-1
	16-QAM	1 RB	0	2507.5	20825	22.05	22.5	0-1
				2535	21100	21.77	22.5	0-1
				2562.5	21375	21.87	22.5	0-1
			36	2507.5	20825	22.28	22.5	0-1
				2535	21100	21.89	22.5	0-1
				2562.5	21375	22.39	22.5	0-1
			74	2507.5	20825	22.07	22.5	0-1
				2535	21100	21.93	22.5	0-1
				2562.5	21375	22.47	22.5	0-1
		36 RB	0	2507.5	20825	21.28	21.5	0-2
				2535	21100	20.92	21.5	0-2
				2562.5	21375	21.19	21.5	0-2
			18	2507.5	20825	21.30	21.5	0-2
				2535	21100	21.18	21.5	0-2
				2562.5	21375	21.36	21.5	0-2
			37	2507.5	20825	21.35	21.5	0-2
				2535	21100	21.12	21.5	0-2
				2562.5	21375	21.43	21.5	0-2
		75RB		2507.5	20825	21.24	21.5	0-2
				2535	21100	21.14	21.5	0-2
				2562.5	21375	21.23	21.5	0-2

FDD Band 7 (Main antenna)								
BW(Mhz)	Modulation	RB Size	RB Offset	Frequency (MHz)	Channel	Conducted power (dBm)	Target Power + Max. Tolerance (dBm)	MPR Allowed per 3GPP(dB)
10	QPSK	1 RB	0	2505	20800	23.06	23.5	0
				2535	21100	22.56	23.5	0
				2565	21400	22.72	23.5	0
			25	2505	20800	23.34	23.5	0
				2535	21100	23.43	23.5	0
				2565	21400	23.43	23.5	0
			49	2505	20800	23.41	23.5	0
				2535	21100	22.89	23.5	0
				2565	21400	23.26	23.5	0
		25 RB	0	2505	20800	22.09	22.5	0-1
				2535	21100	21.98	22.5	0-1
				2565	21400	22.35	22.5	0-1
			12	2505	20800	22.30	22.5	0-1
				2535	21100	22.27	22.5	0-1
				2565	21400	22.39	22.5	0-1
			25	2505	20800	22.32	22.5	0-1
				2535	21100	22.13	22.5	0-1
				2565	21400	22.41	22.5	0-1
		50RB		2505	20800	22.26	22.5	0-1
				2535	21100	22.15	22.5	0-1
				2565	21400	22.44	22.5	0-1
	16-QAM	1 RB	0	2505	20800	22.47	22.5	0-1
				2535	21100	21.67	22.5	0-1
				2565	21400	22.00	22.5	0-1
			25	2505	20800	22.32	22.5	0-1
				2535	21100	22.41	22.5	0-1
				2565	21400	22.49	22.5	0-1
			49	2505	20800	22.12	22.5	0-1
				2535	21100	22.23	22.5	0-1
				2565	21400	22.39	22.5	0-1
		25 RB	0	2505	20800	21.41	21.5	0-2
				2535	21100	21.38	21.5	0-2
				2565	21400	21.46	21.5	0-2
			12	2505	20800	21.50	21.5	0-2
				2535	21100	21.46	21.5	0-2
				2565	21400	21.42	21.5	0-2
			25	2505	20800	21.48	21.5	0-2
				2535	21100	21.19	21.5	0-2
				2565	21400	21.45	21.5	0-2
		50RB		2505	20800	21.29	21.5	0-2
				2535	21100	21.31	21.5	0-2
				2565	21400	21.48	21.5	0-2

FDD Band 7 (Main antenna)								
BW(Mhz)	Modulation	RB Size	RB Offset	Frequency (MHz)	Channel	Conducted power (dBm)	Target Power + Max. Tolerance (dBm)	MPR Allowed per 3GPP(dB)
5	QPSK	1 RB	0	2502.5	20775	23.37	23.5	0
				2535	21100	22.78	23.5	0
				2567.5	21425	22.89	23.5	0
			12	2502.5	20775	23.25	23.5	0
				2535	21100	23.42	23.5	0
				2567.5	21425	23.43	23.5	0
			24	2502.5	20775	23.30	23.5	0
				2535	21100	22.81	23.5	0
				2567.5	21425	23.19	23.5	0
		12 RB	0	2502.5	20775	22.25	22.5	0-1
				2535	21100	22.17	22.5	0-1
				2567.5	21425	22.40	22.5	0-1
			6	2502.5	20775	22.34	22.5	0-1
				2535	21100	22.28	22.5	0-1
				2567.5	21425	22.45	22.5	0-1
			13	2502.5	20775	22.23	22.5	0-1
				2535	21100	22.17	22.5	0-1
				2567.5	21425	22.50	22.5	0-1
		25RB		2502.5	20775	22.34	22.5	0-1
				2535	21100	22.25	22.5	0-1
				2567.5	21425	22.41	22.5	0-1
	16-QAM	1 RB	0	2502.5	20775	22.40	22.5	0-1
				2535	21100	21.77	22.5	0-1
				2567.5	21425	22.22	22.5	0-1
			12	2502.5	20775	21.94	22.5	0-1
				2535	21100	22.27	22.5	0-1
				2567.5	21425	22.38	22.5	0-1
			24	2502.5	20775	22.20	22.5	0-1
				2535	21100	22.09	22.5	0-1
				2567.5	21425	22.20	22.5	0-1
		12 RB	0	2502.5	20775	21.46	21.5	0-2
				2535	21100	21.07	21.5	0-2
				2567.5	21425	21.39	21.5	0-2
			6	2502.5	20775	21.31	21.5	0-2
				2535	21100	21.15	21.5	0-2
				2567.5	21425	21.34	21.5	0-2
			13	2502.5	20775	21.18	21.5	0-2
				2535	21100	21.05	21.5	0-2
				2567.5	21425	21.44	21.5	0-2
		25RB		2502.5	20775	21.24	21.5	0-2
				2535	21100	21.33	21.5	0-2
				2567.5	21425	21.40	21.5	0-2

FDD Band 7 (Sub antenna)								
BW(Mhz)	Modulation	RB Size	RB Offset	Frequency (MHz)	Channel	Conducted power (dBm)	Target Power + Max. Tolerance (dBm)	MPR Allowed per 3GPP(dB)
20	QPSK	1 RB	0	2510	20850	16.78	17.5	0
				2535	21100	16.67	17.5	0
				2560	21350	16.77	17.5	0
			50	2510	20850	17.50	17.5	0
				2535	21100	17.31	17.5	0
				2560	21350	17.27	17.5	0
			99	2510	20850	16.90	17.5	0
				2535	21100	16.96	17.5	0
				2560	21350	17.29	17.5	0
		50 RB	0	2510	20850	16.10	16.5	0-1
				2535	21100	16.27	16.5	0-1
				2560	21350	16.04	16.5	0-1
			25	2510	20850	16.13	16.5	0-1
				2535	21100	16.17	16.5	0-1
				2560	21350	16.12	16.5	0-1
			50	2510	20850	16.13	16.5	0-1
				2535	21100	16.11	16.5	0-1
				2560	21350	16.26	16.5	0-1
		100RB		2510	20850	16.15	16.5	0-1
				2535	21100	16.22	16.5	0-1
				2560	21350	16.07	16.5	0-1
	16-QAM	1 RB	0	2510	20850	16.10	16.5	0-1
				2535	21100	16.07	16.5	0-1
				2560	21350	16.10	16.5	0-1
			50	2510	20850	16.41	16.5	0-1
				2535	21100	14.62	16.5	0-1
				2560	21350	15.94	16.5	0-1
			99	2510	20850	16.03	16.5	0-1
				2535	21100	15.79	16.5	0-1
				2560	21350	16.25	16.5	0-1
		50 RB	0	2510	20850	15.17	15.5	0-2
				2535	21100	15.14	15.5	0-2
				2560	21350	15.08	15.5	0-2
			25	2510	20850	15.25	15.5	0-2
				2535	21100	15.18	15.5	0-2
				2560	21350	15.22	15.5	0-2
			50	2510	20850	15.22	15.5	0-2
				2535	21100	15.21	15.5	0-2
				2560	21350	15.33	15.5	0-2
		100RB		2510	20850	15.14	15.5	0-2
				2535	21100	15.17	15.5	0-2
				2560	21350	15.11	15.5	0-2

FDD Band 7 (Sub antenna)								
BW(Mhz)	Modulation	RB Size	RB Offset	Frequency (MHz)	Channel	Conducted power (dBm)	Target Power + Max. Tolerance (dBm)	MPR Allowed per 3GPP(dB)
15	QPSK	1 RB	0	2507.5	20825	16.96	17.5	0
				2535	21100	16.86	17.5	0
				2562.5	21375	16.87	17.5	0
			36	2507.5	20825	17.31	17.5	0
				2535	21100	16.85	17.5	0
				2562.5	21375	17.34	17.5	0
			74	2507.5	20825	17.30	17.5	0
				2535	21100	17.21	17.5	0
				2562.5	21375	17.26	17.5	0
		36 RB	0	2507.5	20825	16.14	16.5	0-1
				2535	21100	16.21	16.5	0-1
				2562.5	21375	16.07	16.5	0-1
			18	2507.5	20825	16.13	16.5	0-1
				2535	21100	16.22	16.5	0-1
				2562.5	21375	16.25	16.5	0-1
			37	2507.5	20825	16.18	16.5	0-1
				2535	21100	16.27	16.5	0-1
				2562.5	21375	16.22	16.5	0-1
		75RB		2507.5	20825	16.17	16.5	0-1
				2535	21100	16.17	16.5	0-1
				2562.5	21375	16.13	16.5	0-1
	16-QAM	1 RB	0	2507.5	20825	16.17	16.5	0-1
				2535	21100	16.09	16.5	0-1
				2562.5	21375	15.85	16.5	0-1
			36	2507.5	20825	15.92	16.5	0-1
				2535	21100	16.18	16.5	0-1
				2562.5	21375	16.35	16.5	0-1
			74	2507.5	20825	15.73	16.5	0-1
				2535	21100	16.16	16.5	0-1
				2562.5	21375	16.38	16.5	0-1
		36 RB	0	2507.5	20825	15.14	15.5	0-2
				2535	21100	15.35	15.5	0-2
				2562.5	21375	15.11	15.5	0-2
			18	2507.5	20825	15.23	15.5	0-2
				2535	21100	15.18	15.5	0-2
				2562.5	21375	15.35	15.5	0-2
			37	2507.5	20825	15.31	15.5	0-2
				2535	21100	15.20	15.5	0-2
				2562.5	21375	15.21	15.5	0-2
		75RB		2507.5	20825	15.32	15.5	0-2
				2535	21100	15.24	15.5	0-2
				2562.5	21375	15.06	15.5	0-2

FDD Band 7 (Sub antenna)								
BW(Mhz)	Modulation	RB Size	RB Offset	Frequency (MHz)	Channel	Conducted power (dBm)	Target Power + Max. Tolerance (dBm)	MPR Allowed per 3GPP(dB)
10	QPSK	1 RB	0	2505	20800	16.85	17.5	0
				2535	21100	16.87	17.5	0
				2565	21400	16.93	17.5	0
			25	2505	20800	17.35	17.5	0
				2535	21100	17.04	17.5	0
				2565	21400	17.39	17.5	0
			49	2505	20800	17.27	17.5	0
				2535	21100	17.11	17.5	0
				2565	21400	17.26	17.5	0
		25 RB	0	2505	20800	16.12	16.5	0-1
				2535	21100	16.20	16.5	0-1
				2565	21400	16.23	16.5	0-1
			12	2505	20800	16.21	16.5	0-1
				2535	21100	16.20	16.5	0-1
				2565	21400	16.22	16.5	0-1
			25	2505	20800	16.24	16.5	0-1
				2535	21100	16.14	16.5	0-1
				2565	21400	16.38	16.5	0-1
		50RB		2505	20800	16.14	16.5	0-1
				2535	21100	16.20	16.5	0-1
				2565	21400	16.30	16.5	0-1
	16-QAM	1 RB	0	2505	20800	15.96	16.5	0-1
				2535	21100	15.98	16.5	0-1
				2565	21400	16.36	16.5	0-1
			25	2505	20800	15.93	16.5	0-1
				2535	21100	16.42	16.5	0-1
				2565	21400	16.47	16.5	0-1
			49	2505	20800	15.97	16.5	0-1
				2535	21100	16.28	16.5	0-1
				2565	21400	16.49	16.5	0-1
		25 RB	0	2505	20800	15.26	15.5	0-2
				2535	21100	15.13	15.5	0-2
				2565	21400	15.45	15.5	0-2
			12	2505	20800	15.39	15.5	0-2
				2535	21100	15.19	15.5	0-2
				2565	21400	15.27	15.5	0-2
			25	2505	20800	15.29	15.5	0-2
				2535	21100	15.12	15.5	0-2
				2565	21400	15.37	15.5	0-2
		50RB		2505	20800	15.21	15.5	0-2
				2535	21100	15.22	15.5	0-2
				2565	21400	15.35	15.5	0-2

FDD Band 7 (Sub antenna)								
BW(Mhz)	Modulation	RB Size	RB Offset	Frequency (MHz)	Channel	Conducted power (dBm)	Target Power + Max. Tolerance (dBm)	MPR Allowed per 3GPP(dB)
5	QPSK	1 RB	0	2502.5	20775	16.85	17.5	0
				2535	21100	16.78	17.5	0
				2567.5	21425	16.73	17.5	0
			12	2502.5	20775	17.19	17.5	0
				2535	21100	17.11	17.5	0
				2567.5	21425	17.44	17.5	0
			24	2502.5	20775	17.14	17.5	0
				2535	21100	16.96	17.5	0
				2567.5	21425	17.11	17.5	0
		12 RB	0	2502.5	20775	16.33	16.5	0-1
				2535	21100	16.18	16.5	0-1
				2567.5	21425	16.22	16.5	0-1
			6	2502.5	20775	16.32	16.5	0-1
				2535	21100	16.15	16.5	0-1
				2567.5	21425	16.34	16.5	0-1
			13	2502.5	20775	16.20	16.5	0-1
				2535	21100	16.14	16.5	0-1
				2567.5	21425	16.38	16.5	0-1
		25RB		2502.5	20775	16.21	16.5	0-1
				2535	21100	16.16	16.5	0-1
				2567.5	21425	16.25	16.5	0-1
	16-QAM	1 RB	0	2502.5	20775	16.33	16.5	0-1
				2535	21100	16.11	16.5	0-1
				2567.5	21425	15.96	16.5	0-1
			12	2502.5	20775	15.90	16.5	0-1
				2535	21100	15.88	16.5	0-1
				2567.5	21425	15.73	16.5	0-1
			24	2502.5	20775	15.89	16.5	0-1
				2535	21100	15.88	16.5	0-1
				2567.5	21425	16.45	16.5	0-1
		12 RB	0	2502.5	20775	15.40	15.5	0-2
				2535	21100	15.06	15.5	0-2
				2567.5	21425	15.29	15.5	0-2
			6	2502.5	20775	15.45	15.5	0-2
				2535	21100	15.32	15.5	0-2
				2567.5	21425	15.41	15.5	0-2
			13	2502.5	20775	15.26	15.5	0-2
				2535	21100	15.17	15.5	0-2
				2567.5	21425	15.40	15.5	0-2
		25RB		2502.5	20775	15.22	15.5	0-2
				2535	21100	15.18	15.5	0-2
				2567.5	21425	15.27	15.5	0-2

LTE TDD Band XXXVIII

TDD Band 38 (Main antenna)								
BW(Mhz)	Modulation	RB Size	RB Offset	Frequency (MHz)	Channel	Conducted power (dBm)	Target Power + Max. Tolerance (dBm)	MPR Allowed per 3GPP(dB)
20	QPSK	1 RB	0	2580	37850	22.86	23.5	0
				2595	38000	23.48	23.5	0
				2610	38150	23.47	23.5	0
			50	2580	37850	23.14	23.5	0
				2595	38000	22.98	23.5	0
				2610	38150	23.11	23.5	0
			99	2580	37850	22.81	23.5	0
				2595	38000	23.11	23.5	0
				2610	38150	22.98	23.5	0
		50 RB	0	2580	37850	22.20	22.5	0-1
				2595	38000	22.18	22.5	0-1
				2610	38150	22.18	22.5	0-1
			25	2580	37850	22.17	22.5	0-1
				2595	38000	22.15	22.5	0-1
				2610	38150	22.24	22.5	0-1
			50	2580	37850	22.17	22.5	0-1
				2595	38000	22.05	22.5	0-1
				2610	38150	22.27	22.5	0-1
		100RB		2580	37850	22.16	22.5	0-1
				2595	38000	22.11	22.5	0-1
				2610	38150	22.17	22.5	0-1
	16-QAM	1 RB	0	2580	37850	21.81	22.5	0-1
				2595	38000	21.85	22.5	0-1
				2610	38150	21.87	22.5	0-1
			50	2580	37850	22.00	22.5	0-1
				2595	38000	21.97	22.5	0-1
				2610	38150	22.18	22.5	0-1
			99	2580	37850	21.73	22.5	0-1
				2595	38000	21.73	22.5	0-1
				2610	38150	21.61	22.5	0-1
		50 RB	0	2580	37850	21.14	21.5	0-2
				2595	38000	20.91	21.5	0-2
				2610	38150	20.91	21.5	0-2
			25	2580	37850	21.23	21.5	0-2
				2595	38000	21.10	21.5	0-2
				2610	38150	21.03	21.5	0-2
			50	2580	37850	21.06	21.5	0-2
				2595	38000	20.96	21.5	0-2
				2610	38150	21.17	21.5	0-2
		100RB		2580	37850	21.07	21.5	0-2
				2595	38000	20.93	21.5	0-2
				2610	38150	21.07	21.5	0-2

TDD Band 38 (Main antenna)								
BW(Mhz)	Modulation	RB Size	RB Offset	Frequency (MHz)	Channel	Conducted power (dBm)	Target Power + Max. Tolerance (dBm)	MPR Allowed per 3GPP(dB)
15	QPSK	1 RB	0	2577.5	37825	23.04	23.5	0
				2595	38000	23.02	23.5	0
				2612.5	38175	23.12	23.5	0
			36	2577.5	37825	23.19	23.5	0
				2595	38000	23.07	23.5	0
				2612.5	38175	22.89	23.5	0
			74	2577.5	37825	23.10	23.5	0
				2595	38000	23.10	23.5	0
				2612.5	38175	23.01	23.5	0
		36 RB	0	2577.5	37825	22.28	22.5	0-1
				2595	38000	22.12	22.5	0-1
				2612.5	38175	22.27	22.5	0-1
			18	2577.5	37825	22.23	22.5	0-1
				2595	38000	22.12	22.5	0-1
				2612.5	38175	22.30	22.5	0-1
			37	2577.5	37825	22.11	22.5	0-1
				2595	38000	22.03	22.5	0-1
				2612.5	38175	22.19	22.5	0-1
		75RB		2577.5	37825	22.18	22.5	0-1
				2595	38000	22.15	22.5	0-1
				2612.5	38175	22.12	22.5	0-1
	16-QAM	1 RB	0	2577.5	37825	21.69	22.5	0-1
				2595	38000	21.84	22.5	0-1
				2612.5	38175	21.84	22.5	0-1
			36	2577.5	37825	21.84	22.5	0-1
				2595	38000	21.79	22.5	0-1
				2612.5	38175	21.88	22.5	0-1
			74	2577.5	37825	21.64	22.5	0-1
				2595	38000	21.75	22.5	0-1
				2612.5	38175	21.73	22.5	0-1
		36 RB	0	2577.5	37825	21.03	21.5	0-2
				2595	38000	20.98	21.5	0-2
				2612.5	38175	21.22	21.5	0-2
			18	2577.5	37825	21.10	21.5	0-2
				2595	38000	21.16	21.5	0-2
				2612.5	38175	21.08	21.5	0-2
			37	2577.5	37825	20.90	21.5	0-2
				2595	38000	20.93	21.5	0-2
				2612.5	38175	21.07	21.5	0-2
		75RB		2577.5	37825	21.10	21.5	0-2
				2595	38000	21.06	21.5	0-2
				2612.5	38175	21.11	21.5	0-2

TDD Band 38 (Main antenna)								
BW(Mhz)	Modulation	RB Size	RB Offset	Frequency (MHz)	Channel	Conducted power (dBm)	Target Power + Max. Tolerance (dBm)	MPR Allowed per 3GPP(dB)
10	QPSK	1 RB	0	2575	37800	23.13	23.5	0
				2595	38000	23.02	23.5	0
				2615	38200	23.07	23.5	0
			25	2575	37800	23.15	23.5	0
				2595	38000	22.90	23.5	0
				2615	38200	23.00	23.5	0
			49	2575	37800	23.07	23.5	0
				2595	38000	23.08	23.5	0
				2615	38200	23.04	23.5	0
		25 RB	0	2575	37800	22.13	22.5	0-1
				2595	38000	22.08	22.5	0-1
				2615	38200	22.11	22.5	0-1
			12	2575	37800	22.22	22.5	0-1
				2595	38000	22.07	22.5	0-1
				2615	38200	22.22	22.5	0-1
			25	2575	37800	22.07	22.5	0-1
				2595	38000	22.01	22.5	0-1
				2615	38200	22.17	22.5	0-1
		50RB		2575	37800	22.11	22.5	0-1
				2595	38000	22.10	22.5	0-1
				2615	38200	22.15	22.5	0-1
	16-QAM	1 RB	0	2575	37800	21.78	22.5	0-1
				2595	38000	21.75	22.5	0-1
				2615	38200	21.88	22.5	0-1
			25	2575	37800	22.05	22.5	0-1
				2595	38000	21.87	22.5	0-1
				2615	38200	22.03	22.5	0-1
			49	2575	37800	21.62	22.5	0-1
				2595	38000	21.79	22.5	0-1
				2615	38200	21.74	22.5	0-1
		25 RB	0	2575	37800	21.04	21.5	0-2
				2595	38000	20.93	21.5	0-2
				2615	38200	20.88	21.5	0-2
			12	2575	37800	21.06	21.5	0-2
				2595	38000	21.34	21.5	0-2
				2615	38200	21.41	21.5	0-2
			25	2575	37800	21.05	21.5	0-2
				2595	38000	21.28	21.5	0-2
				2615	38200	21.36	21.5	0-2
		50RB		2575	37800	21.08	21.5	0-2
				2595	38000	21.09	21.5	0-2
				2615	38200	20.89	21.5	0-2

TDD Band 38 (Main antenna)								
BW(Mhz)	Modulation	RB Size	RB Offset	Frequency (MHz)	Channel	Conducted power (dBm)	Target Power + Max. Tolerance (dBm)	MPR Allowed per 3GPP(dB)
5	QPSK	1 RB	0	2572.5	37775	23.16	23.5	0
				2595	38000	23.11	23.5	0
				2617.5	38225	23.22	23.5	0
			12	2572.5	37775	23.42	23.5	0
				2595	38000	23.40	23.5	0
				2617.5	38225	23.27	23.5	0
			24	2572.5	37775	23.09	23.5	0
				2595	38000	23.17	23.5	0
				2617.5	38225	23.02	23.5	0
		12 RB	0	2572.5	37775	22.35	22.5	0-1
				2595	38000	22.35	22.5	0-1
				2617.5	38225	22.45	22.5	0-1
			6	2572.5	37775	22.38	22.5	0-1
				2595	38000	22.27	22.5	0-1
				2617.5	38225	22.39	22.5	0-1
			13	2572.5	37775	22.35	22.5	0-1
				2595	38000	22.35	22.5	0-1
				2617.5	38225	22.33	22.5	0-1
		25RB		2572.5	37775	22.35	22.5	0-1
				2595	38000	22.34	22.5	0-1
				2617.5	38225	22.42	22.5	0-1
	16-QAM	1 RB	0	2572.5	37775	21.91	22.5	0-1
				2595	38000	21.90	22.5	0-1
				2617.5	38225	21.91	22.5	0-1
			12	2572.5	37775	22.05	22.5	0-1
				2595	38000	22.04	22.5	0-1
				2617.5	38225	22.13	22.5	0-1
			24	2572.5	37775	21.90	22.5	0-1
				2595	38000	21.80	22.5	0-1
				2617.5	38225	21.84	22.5	0-1
		12 RB	0	2572.5	37775	21.36	21.5	0-2
				2595	38000	21.15	21.5	0-2
				2617.5	38225	21.27	21.5	0-2
			6	2572.5	37775	21.18	21.5	0-2
				2595	38000	21.18	21.5	0-2
				2617.5	38225	21.27	21.5	0-2
			13	2572.5	37775	21.34	21.5	0-2
				2595	38000	21.42	21.5	0-2
				2617.5	38225	21.22	21.5	0-2
		25RB		2572.5	37775	21.19	21.5	0-2
				2595	38000	21.44	21.5	0-2
				2617.5	38225	21.42	21.5	0-2

TDD Band 38 (Sub antenna)								
BW(Mhz)	Modulation	RB Size	RB Offset	Frequency (MHz)	Channel	Conducted power (dBm)	Target Power + Max. Tolerance (dBm)	MPR Allowed per 3GPP(dB)
20	QPSK	1 RB	0	2580	37850	19.49	20.5	0
				2595	38000	19.94	20.5	0
				2610	38150	19.92	20.5	0
			50	2580	37850	19.91	20.5	0
				2595	38000	19.90	20.5	0
				2610	38150	20.12	20.5	0
			99	2580	37850	19.79	20.5	0
				2595	38000	19.82	20.5	0
				2610	38150	19.68	20.5	0
		50 RB	0	2580	37850	19.24	19.5	0-1
				2595	38000	19.13	19.5	0-1
				2610	38150	19.13	19.5	0-1
			25	2580	37850	19.18	19.5	0-1
				2595	38000	19.06	19.5	0-1
				2610	38150	19.14	19.5	0-1
			50	2580	37850	19.19	19.5	0-1
				2595	38000	19.08	19.5	0-1
				2610	38150	19.17	19.5	0-1
		100RB		2580	37850	19.18	19.5	0-1
				2595	38000	19.05	19.5	0-1
				2610	38150	19.10	19.5	0-1
	16-QAM	1 RB	0	2580	37850	18.80	19.5	0-1
				2595	38000	18.86	19.5	0-1
				2610	38150	18.75	19.5	0-1
			50	2580	37850	18.95	19.5	0-1
				2595	38000	18.92	19.5	0-1
				2610	38150	18.87	19.5	0-1
			99	2580	37850	18.72	19.5	0-1
				2595	38000	18.73	19.5	0-1
				2610	38150	18.66	19.5	0-1
		50 RB	0	2580	37850	18.33	18.5	0-2
				2595	38000	18.12	18.5	0-2
				2610	38150	18.13	18.5	0-2
			25	2580	37850	18.18	18.5	0-2
				2595	38000	18.15	18.5	0-2
				2610	38150	18.14	18.5	0-2
			50	2580	37850	18.11	18.5	0-2
				2595	38000	18.07	18.5	0-2
				2610	38150	18.26	18.5	0-2
		100RB		2580	37850	18.27	18.5	0-2
				2595	38000	18.14	18.5	0-2
				2610	38150	18.09	18.5	0-2

TDD Band 38 (Sub antenna)								
BW(Mhz)	Modulation	RB Size	RB Offset	Frequency (MHz)	Channel	Conducted power (dBm)	Target Power + Max. Tolerance (dBm)	MPR Allowed per 3GPP(dB)
15	QPSK	1 RB	0	2577.5	37825	20.03	20.5	0
				2595	38000	20.04	20.5	0
				2612.5	38175	20.07	20.5	0
			36	2577.5	37825	19.98	20.5	0
				2595	38000	19.85	20.5	0
				2612.5	38175	19.89	20.5	0
			74	2577.5	37825	19.88	20.5	0
				2595	38000	19.88	20.5	0
				2612.5	38175	19.94	20.5	0
		36 RB	0	2577.5	37825	19.26	19.5	0-1
				2595	38000	19.14	19.5	0-1
				2612.5	38175	19.27	19.5	0-1
			18	2577.5	37825	19.23	19.5	0-1
				2595	38000	19.09	19.5	0-1
				2612.5	38175	19.25	19.5	0-1
			37	2577.5	37825	19.13	19.5	0-1
				2595	38000	19.02	19.5	0-1
				2612.5	38175	19.22	19.5	0-1
		75RB		2577.5	37825	19.18	19.5	0-1
				2595	38000	19.16	19.5	0-1
				2612.5	38175	19.18	19.5	0-1
	16-QAM	1 RB	0	2577.5	37825	18.71	19.5	0-1
				2595	38000	18.85	19.5	0-1
				2612.5	38175	18.75	19.5	0-1
			36	2577.5	37825	18.76	19.5	0-1
				2595	38000	18.72	19.5	0-1
				2612.5	38175	18.66	19.5	0-1
			74	2577.5	37825	18.61	19.5	0-1
				2595	38000	18.75	19.5	0-1
				2612.5	38175	18.67	19.5	0-1
		36 RB	0	2577.5	37825	18.20	18.5	0-2
				2595	38000	18.17	18.5	0-2
				2612.5	38175	18.29	18.5	0-2
			18	2577.5	37825	18.16	18.5	0-2
				2595	38000	18.22	18.5	0-2
				2612.5	38175	18.29	18.5	0-2
			37	2577.5	37825	18.19	18.5	0-2
				2595	38000	17.99	18.5	0-2
				2612.5	38175	18.28	18.5	0-2
		75RB		2577.5	37825	18.26	18.5	0-2
				2595	38000	18.16	18.5	0-2
				2612.5	38175	18.17	18.5	0-2

TDD Band 38 (Sub antenna)								
BW(Mhz)	Modulation	RB Size	RB Offset	Frequency (MHz)	Channel	Conducted power (dBm)	Target Power + Max. Tolerance (dBm)	MPR Allowed per 3GPP(dB)
10	QPSK	1 RB	0	2575	37800	19.98	20.5	0
				2595	38000	20.01	20.5	0
				2615	38200	19.97	20.5	0
			25	2575	37800	19.97	20.5	0
				2595	38000	19.91	20.5	0
				2615	38200	20.01	20.5	0
			49	2575	37800	19.77	20.5	0
				2595	38000	19.79	20.5	0
				2615	38200	19.79	20.5	0
		25 RB	0	2575	37800	19.21	19.5	0-1
				2595	38000	19.12	19.5	0-1
				2615	38200	19.10	19.5	0-1
			12	2575	37800	19.24	19.5	0-1
				2595	38000	19.08	19.5	0-1
				2615	38200	19.17	19.5	0-1
			25	2575	37800	19.25	19.5	0-1
				2595	38000	19.03	19.5	0-1
				2615	38200	19.15	19.5	0-1
		50RB		2575	37800	19.28	19.5	0-1
				2595	38000	19.13	19.5	0-1
				2615	38200	19.13	19.5	0-1
	16-QAM	1 RB	0	2575	37800	18.83	19.5	0-1
				2595	38000	18.75	19.5	0-1
				2615	38200	18.88	19.5	0-1
			25	2575	37800	19.09	19.5	0-1
				2595	38000	18.84	19.5	0-1
				2615	38200	19.04	19.5	0-1
			49	2575	37800	18.70	19.5	0-1
				2595	38000	18.71	19.5	0-1
				2615	38200	18.69	19.5	0-1
		25 RB	0	2575	37800	18.12	18.5	0-2
				2595	38000	18.39	18.5	0-2
				2615	38200	18.11	18.5	0-2
			12	2575	37800	18.23	18.5	0-2
				2595	38000	18.46	18.5	0-2
				2615	38200	18.46	18.5	0-2
			25	2575	37800	18.17	18.5	0-2
				2595	38000	18.31	18.5	0-2
				2615	38200	18.43	18.5	0-2
		50RB		2575	37800	18.28	18.5	0-2
				2595	38000	18.11	18.5	0-2
				2615	38200	18.21	18.5	0-2

TDD Band 38 (Sub antenna)								
BW(Mhz)	Modulation	RB Size	RB Offset	Frequency (MHz)	Channel	Conducted power (dBm)	Target Power + Max. Tolerance (dBm)	MPR Allowed per 3GPP(dB)
5	QPSK	1 RB	0	2572.5	37775	19.79	20.5	0
				2595	38000	19.85	20.5	0
				2617.5	38225	19.91	20.5	0
			12	2572.5	37775	19.93	20.5	0
				2595	38000	20.05	20.5	0
				2617.5	38225	20.00	20.5	0
			24	2572.5	37775	19.80	20.5	0
				2595	38000	19.64	20.5	0
				2617.5	38225	19.71	20.5	0
		12 RB	0	2572.5	37775	19.16	19.5	0-1
				2595	38000	19.08	19.5	0-1
				2617.5	38225	19.13	19.5	0-1
			6	2572.5	37775	19.15	19.5	0-1
				2595	38000	19.10	19.5	0-1
				2617.5	38225	19.13	19.5	0-1
			13	2572.5	37775	19.06	19.5	0-1
				2595	38000	19.08	19.5	0-1
				2617.5	38225	19.09	19.5	0-1
		25RB		2572.5	37775	19.16	19.5	0-1
				2595	38000	19.08	19.5	0-1
				2617.5	38225	19.11	19.5	0-1
	16-QAM	1 RB	0	2572.5	37775	18.67	19.5	0-1
				2595	38000	18.57	19.5	0-1
				2617.5	38225	18.60	19.5	0-1
			12	2572.5	37775	18.88	19.5	0-1
				2595	38000	18.81	19.5	0-1
				2617.5	38225	18.75	19.5	0-1
			24	2572.5	37775	18.55	19.5	0-1
				2595	38000	18.59	19.5	0-1
				2617.5	38225	18.65	19.5	0-1
		12 RB	0	2572.5	37775	18.05	18.5	0-2
				2595	38000	18.17	18.5	0-2
				2617.5	38225	18.21	18.5	0-2
			6	2572.5	37775	18.05	18.5	0-2
				2595	38000	18.19	18.5	0-2
				2617.5	38225	18.30	18.5	0-2
			13	2572.5	37775	18.03	18.5	0-2
				2595	38000	18.16	18.5	0-2
				2617.5	38225	18.16	18.5	0-2
		25RB		2572.5	37775	18.06	18.5	0-2
				2595	38000	18.37	18.5	0-2
				2617.5	38225	18.11	18.5	0-2

LTE CA conducted power table:

Two Component Carrier Maximum Conducted Power																
PCC									SCC				Power		Configurations	Antenna
PCC Band	PCC Bandwidth [MHz]	PCC (UL) Channel	PCC (UL) Frequency [MHz]	Modulation	PCC UL# RB	PCC UL RB Offset	PCC (DL) Channel	PCC (DL) Frequency [MHz]	SCC Band	SCC Bandwidth [MHz]	PCC (DL) Channel	PCC (DL) Frequency [MHz]	LTE Rel 10 Tx.Power (dBm)	LTE Rel 8 Tx.Power (dBm)		
LTE B5	10	20450	829	QPSK	1	25	2450	874	LTE B3	20	1575	1842.5	22.14	23.35	5A+3A	Main
LTE B7	20	21350	2560	QPSK	1	50	3350	2680	LTE B3	20	1575	1842.5	23.01	23.44	7A+3A	
LTE B7	20	21350	2560	QPSK	1	50	3350	2680	LTE B28	15	9435	780.5	22.22	23.44	7A+28A	
LTE B7	20	21350	2560	QPSK	1	50	3350	2680	LTE B7	5	2775	2622.5	23.14	23.44	7A+7A	
LTE B7	20	20850	2510	QPSK	1	99	2850	2630	LTE B7	20	3048	2649.8	22.51	23.27	7C	
LTE B7	20	20850	2510	QPSK	1	99	2850	2630	LTE B7	15	3021	2647.1	22.92	23.27	7C	
LTE B7	20	21350	2560	QPSK	1	50	3350	2680	LTE B7	10	3206	2665.6	22.74	23.44	7C	
LTE B7	15	20825	2507.5	QPSK	1	36	2825	2627.5	LTE B7	15	2975	2642.5	22.62	23.42	7C	
LTE B7	15	21375	2562.5	QPSK	1	36	3375	2682.5	LTE B7	15	3225	2667.5	22.84	23.29	7C	
LTE B38	20	37850	2580	QPSK	1	50	37850	2580	LTE B38	20	38048	2599.8	22.32	23.14	38C	
LTE B38	20	38150	2610	QPSK	1	0	38150	2610	LTE B38	20	37952	2590.2	22.73	23.47	38C	
LTE B38	15	37825	2577.5	QPSK	1	36	37825	2577.5	LTE B38	15	37975	2592.5	22.58	23.19	38C	
LTE B7	20	20850	2510	QPSK	1	50	2850	2630	LTE B3	20	1575	1842.5	15.92	17.50	7A+3A	Sub
LTE B7	20	20850	2510	QPSK	1	50	2850	2630	LTE B28	15	9435	780.5	16.33	17.50	7A+28A	
LTE B7	20	20850	2510	QPSK	1	50	2850	2630	LTE B7	5	2775	2622.5	17.00	17.50	7A+7A	
LTE B7	20	20850	2510	QPSK	1	50	2850	2630	LTE B7	20	3048	2649.8	16.92	17.50	7C	
LTE B7	20	20850	2510	QPSK	1	50	2850	2630	LTE B7	15	3021	2647.1	16.45	17.50	7C	
LTE B7	20	21350	2560	QPSK	1	99	3350	2680	LTE B7	10	3206	2665.6	16.58	17.29	7C	
LTE B7	15	20825	2507.5	QPSK	1	36	2825	2627.5	LTE B7	15	2975	2642.5	16.32	17.31	7C	
LTE B7	15	21375	2562.5	QPSK	1	36	3375	2682.5	LTE B7	15	3225	2667.5	16.61	17.34	7C	
LTE B5	10	20600	844	QPSK	1	25	2600	889	LTE B3	20	1575	1842.5	20.44	21.18	5A+3A	
LTE B38	20	37850	2580	QPSK	1	50	37850	2580	LTE B38	20	38048	2599.8	19.11	19.91	38C	
LTE B38	20	38150	2610	QPSK	1	50	38150	2610	LTE B38	20	37952	2590.2	19.14	20.12	38C	
LTE B38	15	37825	2577.5	QPSK	1	0	37825	2577.5	LTE B38	15	37975	2592.5	18.54	20.03	38C	

LTE CA information

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

The possible downlink LTE CA combinations supported by this device are as below tables per 3GPP TS 36.101 V14.0.0. The conducted power measurement results of downlink LTE CA are provided in Section 7 of this report 3GPP TS 36.521-1 V13.2.0. According to KDB 941225 D05A, the downlink LTE CA SAR test is not required.

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

Table 1: contiguous intra-band CA

E-UTRA CA configuration / Bandwidth combination set						
E-UTRA CA configuration		**Component carriers in order of increasing carrier frequency**			**Maximum aggregated bandwidth [MHz]**	**Bandwidth combination set**
		Channel bandwidths for carrier [MHz]	**Channel bandwidths for carrier [MHz]**	**Channel bandwidths for carrier [MHz]**		
CA_7C		15	15		40	0
		20	20			
		10	20		40	1
		15	15, 20			
		20	10, 15, 20			
CA_38C		15	15		40	0
		20	20			

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

-UTRACA configuration	**Component carriers in order of increasing carrier frequency**			**Maximum aggregated bandwidth [MHz]**	**Bandwidth combination set**
	Channel bandwidths for carrier [MHz]	**Channel bandwidths for carrier [MHz]**	**Channel bandwidths for carrier [MHz]**		
CA_7A-7A	5	15		40	0
	10	10, 15			
	15	15, 20			
	20	20			
	5, 10, 15, 20	5, 10, 15, 20		40	1
	5, 10, 15, 20	5, 10		30	2

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

Table 2: inter-band CA (two bands) Table 2: inter-band CA (two bands)

E-UTRA CA Configuration	E-UTRA Bands	1.4 MHz	3 MHz	5 MHz	10 MHz	15 MHz	20 MHz	Maximum aggregated bandwidth [MHz]	Bandwidth combination set
CA_3A-5A	3				Yes	Yes	Yes	30	0
	5			Yes	Yes				
	3				Yes			20	1
	5			Yes	Yes				
	3			Yes	Yes	Yes	Yes	30	2
	5			Yes	Yes				
	3			Yes	Yes	Yes	Yes	30	3
	5		Yes	Yes	Yes				
CA_3A-7A	3			Yes	Yes	Yes	Yes	40	0
	7				Yes	Yes	Yes		
	3			Yes	Yes	Yes	Yes	40	1
	7			Yes	Yes	Yes	Yes		
CA_7A-28A	7			Yes	Yes	Yes	Yes	35	0
	28			Yes	Yes	Yes			

Note:

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

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

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

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

802.11 b		Max. Rated Avg. Power + Max. Tolerance (dBm)	Average conducted output power (dBm)
CH	Frequency (MHz)		Data Rate (Mbps)
			1
1	2412	19.5	19.43
6	2437	19.5	19.24
11	2462	19.5	19.48

802.11 g		Max. Rated Avg. Power + Max. Tolerance (dBm)	Average conducted output power (dBm)
CH	Frequency (MHz)		Data Rate (Mbps)
			6
1	2412	17.5	17.21
6	2437	17.5	17.33
11	2462	17.5	17.42

802.11 n(20M)		Max. Rated Avg. Power + Max. Tolerance (dBm)	Average conducted output power (dBm)
CH	Frequency (MHz)		Data Rate (Mbps)
			6.5
1	2412	15.5	15.43
6	2437	15.5	15.34
11	2462	15.5	15.22

WiFi station+Sensor On

802.11 b		Max. Rated Avg. Power + Max. Tolerance (dBm)	Average conducted output power (dBm)
CH	Frequency (MHz)		Data Rate (Mbps)
			1
1	2412	12.5	12.48
6	2437	12.5	12.33
11	2462	12.5	12.35

802.11 g		Max. Rated Avg. Power + Max. Tolerance (dBm)	Average conducted output power (dBm)
CH	Frequency (MHz)		Data Rate (Mbps)
			6
1	2412	12.5	12.45
6	2437	12.5	12.35
11	2462	12.5	12.32

802.11 n(20M)		Max. Rated Avg. Power + Max. Tolerance (dBm)	Average conducted output power (dBm)
CH	Frequency (MHz)		Data Rate (Mbps)
			6.5
1	2412	12.5	12.45
6	2437	12.5	12.33
11	2462	12.5	12.35

Bluetooth conducted power table:

Frequency (MHz)	Data Rate	Max. tune-up power	Average	
			dBm	mW
2402	1	11	10.20	10.471
2441	1	11	10.90	12.303
2480	1	11	10.50	11.220
2402	2	11	7.90	6.166
2441	2	11	8.90	7.762
2480	2	11	8.20	6.607
2402	3	11	7.90	6.166
2441	3	11	8.90	7.762
2480	3	11	8.20	6.607

Frequency (MHz)	BT4.0 Average	
	dBm	mW
2402	-0.33	0.927
2442	0.27	1.064
2480	-0.55	0.881

1.4 Test Environment

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

1.5 Operation Description

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

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

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

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

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

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

7. SAR test exclusion for DC-HSDPA
   The 3G SAR test reduction procedure is applied to DC-HSDPA with 12.2 kbps RMC as the primary mode. Power is measured for DC-HSDPA according to the

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

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

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

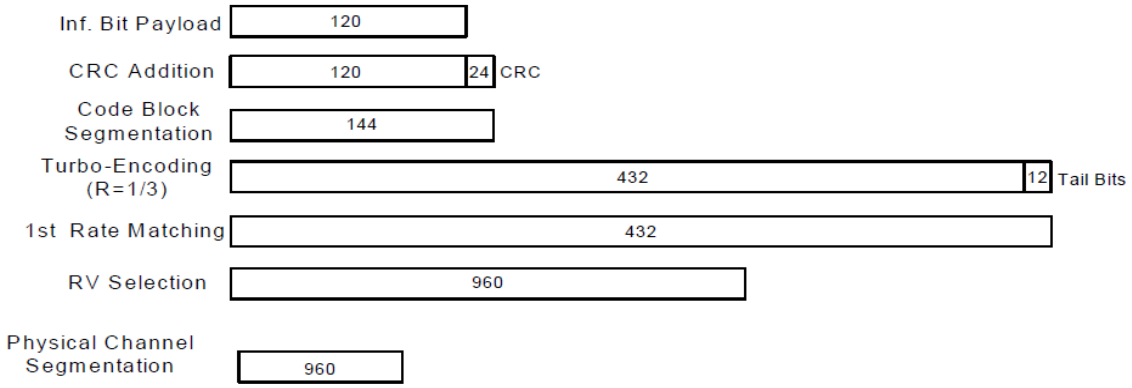


Figure C.8.19: Coding rate for Fixed reference Channel H-Set 12 (QPSK)

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

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

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

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

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

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

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

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

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

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

d. Per Section 5.2.4, Higher order modulations

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

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

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

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

LTE downlink CA (KDB942225 D05A)

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

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

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

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

WLAN

802.11b DSSS SAR Test Requirements:

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

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

802.11g/n OFDM SAR Test Exclusion Requirements:

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

Initial Test Configuration:

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

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

Other

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

19. There are two WWAN antennas (Main / Sub) but they can transmit simultaneously.

20. 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.

21. 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)

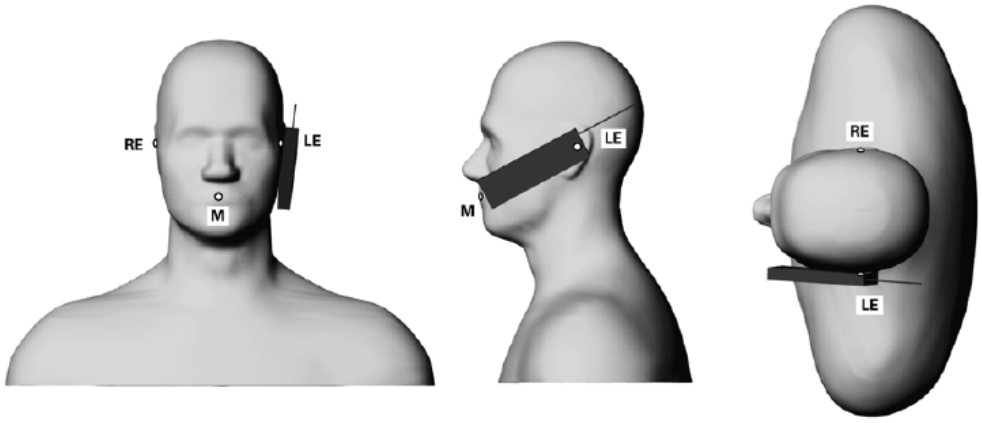
22. According to **KDB447498D01v06** – The 1-g and 10-g SAR test exclusion thresholds for 100 MHz to 6 GHz at test separation distances≤ 50 mm are determined by: [(max. power of channel, including tune-up tolerance, mW)/(min. test separation distance, mm)] · [√f(GHz)] ≤ 3.0 for 1-g SAR, and ≤ 7.5 for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

mode	position	max. power (dB)	max. power (mW)	f(GHz)	calculation	SAR exclusion threshold	SAR test exclusion
BT	body-worn	11	12.589	2.48	1.322	3	yes
BT	product specific 10-g SAR	11	12.589	2.48	3.965	7.5	yes

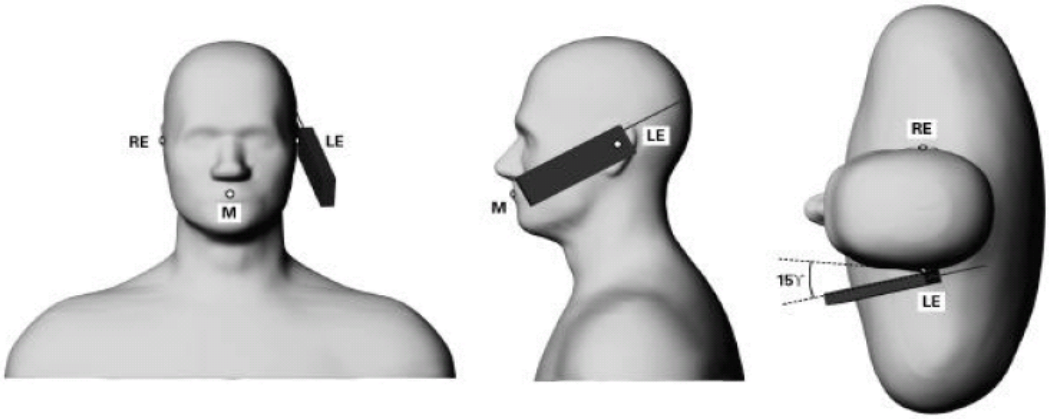
23. According to **KDB865664 D01v01r04** SAR measurement uncertainty analysis is required in SAR reports only when the highest measured SAR in a frequency band is ≥ 1.5 W/kg for 1-g SAR.

1.6 Positioning Procedure

Head SAR measurement statement



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



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

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

Body SAR measurement statement

1. Body-worn exposure: 15mm
   Body-worn accessory exposure is typically related to voice mode operations when handsets are carried in body-worn accessories. The body-worn accessory procedures in KDB Publication 447498 D01 should be used to test for body-worn accessory SAR compliance, without a headset connected to it. When the same wireless transmission configuration is used for testing body-worn accessory and hotspot mode SAR, respectively, in voice and data mode, SAR results for the most conservative test separation distance configuration may be used to support both SAR conditions. When the reported SAR for a body-worn accessory, measured without a headset connected to the handset, is > 1.2 W/kg, the highest reported SAR configuration for that wireless mode and frequency band should be repeated for the body-worn accessory with a headset attached to the handset.

2. Hotspot exposure: 10mm
   A test separation distance of 10 mm is required between the phantom and all surfaces and edges with a transmitting antenna located within 25 mm from that surface or edge when the form factor of a handset is larger than 9 cm × 5 cm,
   Test configurations of WWAN Main
   (1) Front side
   (2) Back side
   (3) Bottom side.
   (4) Right side.
   (5) Left side.
   Test configurations of WWAN Sub
   (1) Front side
   (2) Back side
   (3) Top side.
   (4) Left side.
   Test configurations of WLAN :
   (1) Front side
   (2) Back side
   (3) Top side.
   (4) Right side
3. Phablet SAR test consideration
   Since the device is a phablet (overall diagonal dimension > 16.0 cm), the UMPC mini-tablet procedures must also be applied to test the SAR of all surfaces and edges with an antenna located at ≤ 25 mm from that surface or edge, in direct contact with a flat phantom, for product specific 10-g SAR. When hotspot mode applies, product specific 10-g SAR is required only for the surfaces and edges with hotspot mode 1-g reported SAR > 1.2 W/kg; however, when power reduction applies to hotspot mode the measured SAR must be scaled to the maximum output power, including tolerance, allowed for phablet modes to compare with the 1.2 W/kg SAR test reduction threshold.

1.7 Power reduction information

This device uses a single fixed level of power reduction through static table look-up for SAR compliance.

1) Infrared proximity sensor

This device uses an infrared proximity sensor to facilitate triggering in typical user interactivity with the device. The proximity sensor locates on the front face of the device. Due to the operating configurations and exposure conditions required by the device, the proximity sensor is used to indicate when the phone is held close to a user's ear exposure condition. It utilizes the proximity sensor to reduce the output power of sub antenna and Wi-Fi antenna in held-to-ear scenario.

2) Hotspot on

A fixed level power reduction is applied for some frequency bands when hotspot mode becomes active. When the hotspot is disabled, the power value will be recovered.

The standalone SAR compliance still uses the standalone SAR results tested at the maximum output power level without any power reduction.

Table1~4 summarize the key power reduction information.

Table1: 2G&3G&4G sub ant + WiFi ant transmit simultaneously

Band	Power Reduction (dB)*	
	sub ant + WiFi station <sensor on>	sub ant + WiFi station <sensor off>
GSM 850(CS)	2.5	0
GSM1900(CS)	1	0

Table 2: 2G&3G&4G main ant + WiFi ant transmit simultaneously

Band	Power Reduction (dB)*	
	Main ant + WiFi <hotspot on>	Main ant + WiFi <hotspot off>
GSM1900 （CS&1slot）	3	0

Table 3: 2G&3G&4G sub ant only transmit

Band	Power Reduction (dB)*	
	sub ant + sensor on	sub ant + sensor off
GSM850(CS)	2.5	0
GSM1900(CS)	1	0

Table 4: 2G&3G&4G + WiFi ant transmit simultaneously

Band	Power Reduction (dB)*	
	sub ant / main ant +	sub ant / main ant +

	WiFi station <sensor on>	Wi-Fi station <sensor off>
WiFi 2.4G	7	0

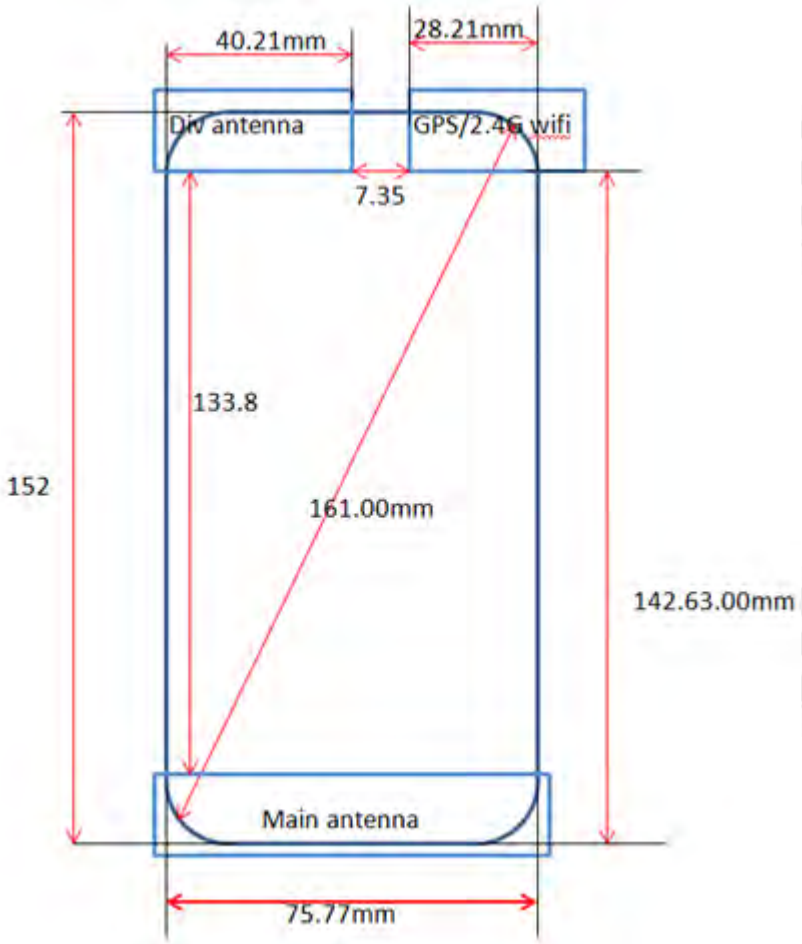
Note:
1)The device power reduction “implemented using a single fixed level of reduction through static table look-up for all exposure test configurations in a single wireless operating mode of a frequency band and it is triggered by a single event or operation” per PAG exclusion clause in KDB388624D02 itemII.C.1.k and II.C.1.m.
The following procedure is used to determine the triggering distances, coverage and tilt angle influences per FCC KDB 616217 D04 §6 and FCC guidance.

The specific device(s) covered by the KDB inquiry.

1.7.1 General proximity sensor implementation description

This device uses an infrared proximity sensor to facilitate triggering in typical user interactivity with the device. Due to the operating configurations and exposure conditions required by the device, the proximity sensor is used to indicate when the phone is held close to a user’s ear exposure condition. It utilizes the proximity sensor to reduce the output power of second antenna and Wi-Fi ant in held-to-ear scenario.

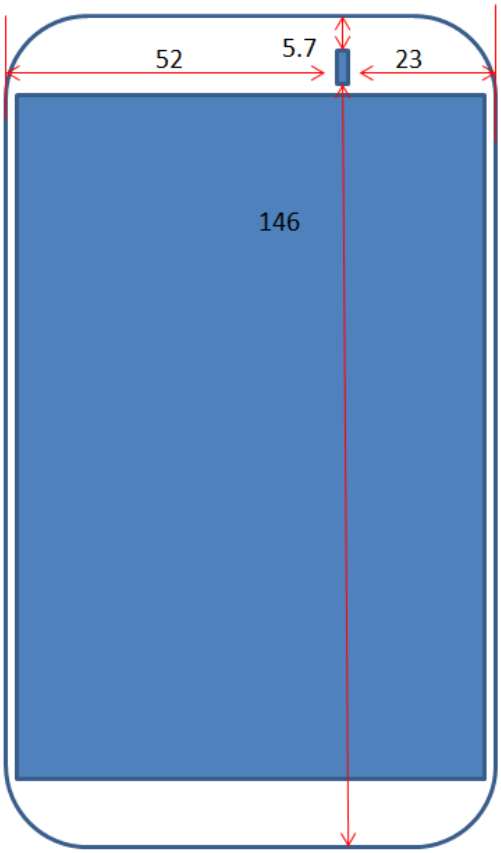
1.7.2 Antennas and sensor placement details



Figue1: The location of the antennas (Front View)

Note:

1) The device has two 2G/3G/4G Tx antennas (Main Antenna and Sub/Div Antenna). It can transmit from either Main Antenna or Sub/Div Antenna, but they can not transmit simultaneously.



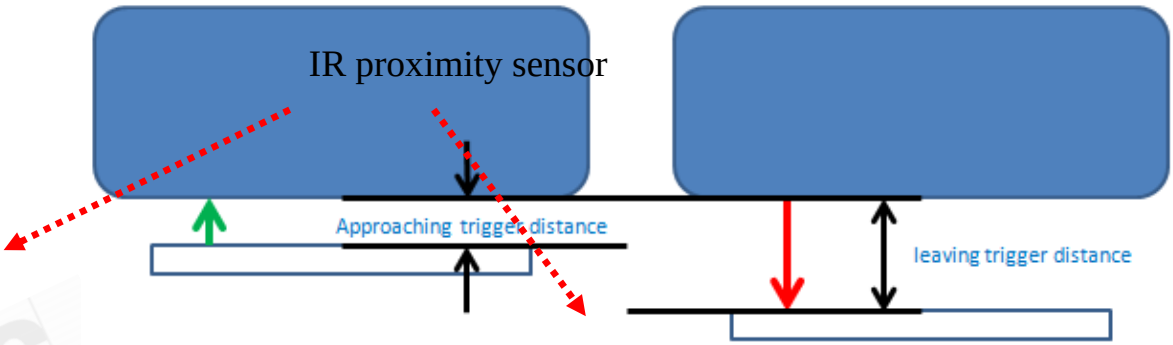
Figue2: The location of the IR proximity sensor (Front View)

Antenna and sensor distances (front view，unit:mm)						
Antenna	**Front side**	**Back side**	**Left side**	**Right side**	**Top side**	**Bottom side**
Sub Antenna(Div Antenna)	0	0	0	35	0	142
Main Antenna	0	0	0	0	146	0
2.4G/5G WiFi &BT Antenna	0	0	47	0	0	142
Proximity Sensor	0	0	52	23	5.7	146
The IR proximity sensor locates on the front face of the device and detects objects approaching only from the front side						

1.7.3 proximity sensor coverage, distance and angle

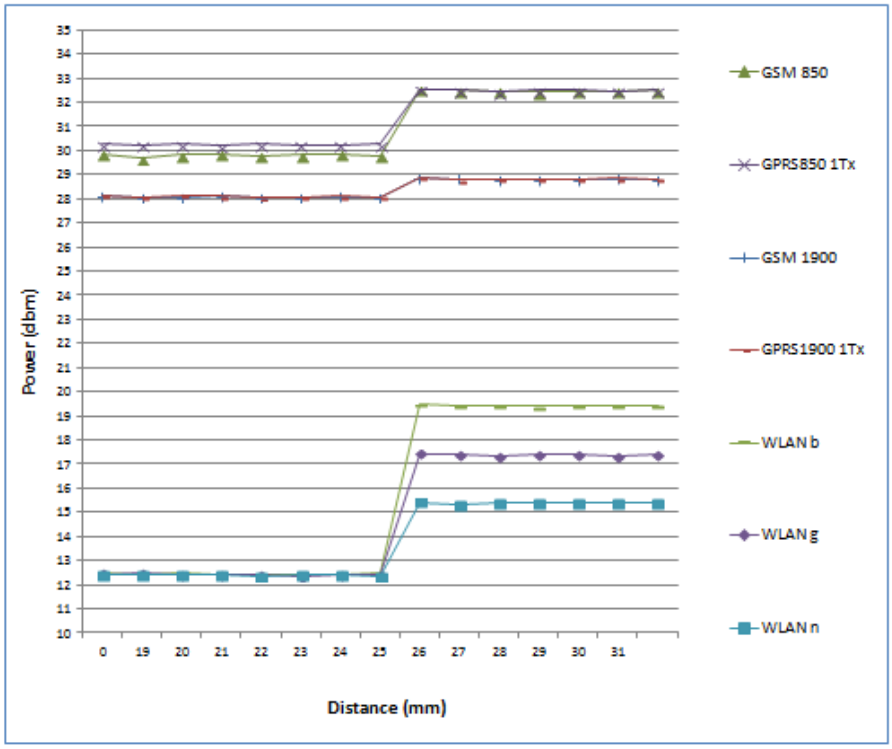
1.7.3.1 Procedures for determining proximity sensor triggering distances

Per FCC KDB 616217 D04v01§6.2, the following procedure is used to determine the triggering distances. As the proximity sensor locates on the front face of the device and detects objects approaching only from the front side, so triggering distance only need to be checked for the front side when 2G&3G&4G sub antenna transmit or Wi-Fi antenna and 2G&3G&4G antenna transmit simultaneously.



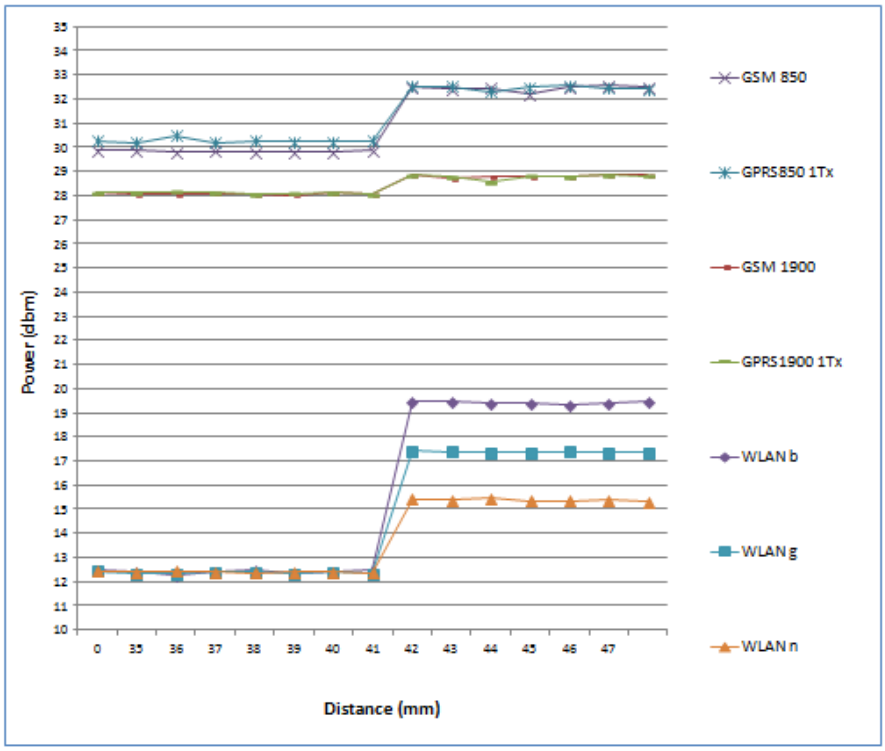
Picture: Proximity sensor triggering distances assessment (Front side)
the DUT is moved towards from the flat phantom

Distance between phantom to DUT in mm	50	45	40	35	30	25	20
Condition of Sensor in the front side of the device	off	off	off	off	off	on	on



the DUT is moved away from the flat phantom

Distance between phantom to DUT in mm	65	60	55	50	45	40	35
Condition of Sensor in the front side of the device	off	off	off	off	off	on	on



Conclusion: The Proximity sensor triggering distance is N mm (about 25-40mm), it can be ensured that the proximity sensor can be valid triggered in held-to-ear scenario.

1.7.3.2 Procedures for determining antenna and proximity sensor coverage

According to the location picture, proximity sensor is only applicable for the front side of DUT. As there is no spatial offset between the antenna and the proximity sensor element from the front view, so proximity sensor coverage does not need to be assessed.

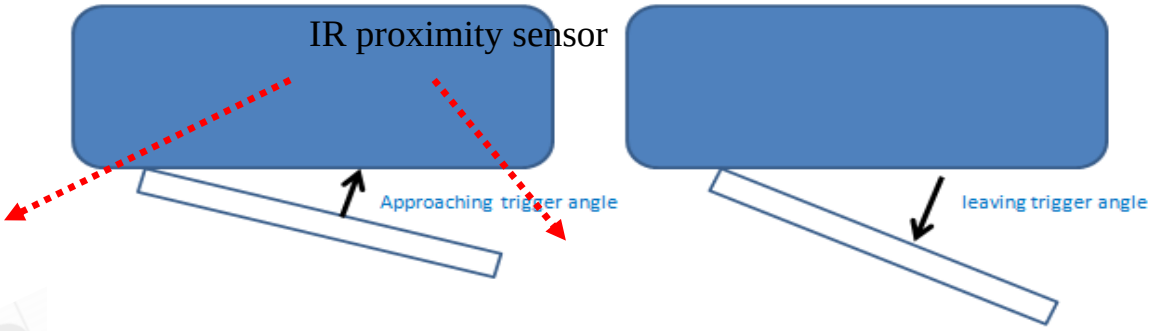
1.7.3.3 Procedures for determining device tilt angle influences to proximity sensor triggering

The following procedure is used to determine the triggering angle. Distance need to be check when device under voice mode so that sensor is working.

For Head exposure condition, device tilt angle influences to proximity sensor triggering is determined as below:

Firstly, the DUT was positioned directly touch the SAM phantom (Left&Right hand touch cheek position) for each band. Rotate the DUT around the ear reference point of the phantom in 5° increments until the DUT is 15° or more away from the touch cheek position at 0°

Then the DUT is positioned at 15° or more away from the touch cheek position and moved towards the phantom in 5°increments until the DUT directly touch the SAM phantom at 0°(Left & Right hand touch cheek position).



The DUT is moved towards and away from SAM phantom.

angle between phantom to DUT in degree	0	5	10	15	20	25
Condition of Sensor	on	on	on	on	on	on

Based on the validation results above, angle tilt coverage can ensure that the proximity sensor is triggered for all the Head test positions(Left/Right Hand Touched cheek, Left/Right Hand tiled 15 °)

1.7.4 Summary SAR test Plan for Proximity sensor power reduction

For Head SAR compliance: Head SAR for Sub ant and Wi-Fi antenna are evaluated at reduced power levels according to the real held-to-ear proximity sensor power reduction usage scenarios.

For Body SAR compliance, Standalone SAR compliance is still tested at the maximum output power level without any sensor power reduction. Additional Body SAR tests at reduced power levels in Wi-Fi and 2G&3G&4G antenna simultaneous transmission power reduction scenarios may be tested for some frequency bands and test positions, which are only used to ensure simultaneous transmission SAR test exclusion.

1.8 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.

1.9 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:

1.9.1 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].

1.9.2 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.

1.10 The SAR Measurement System

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

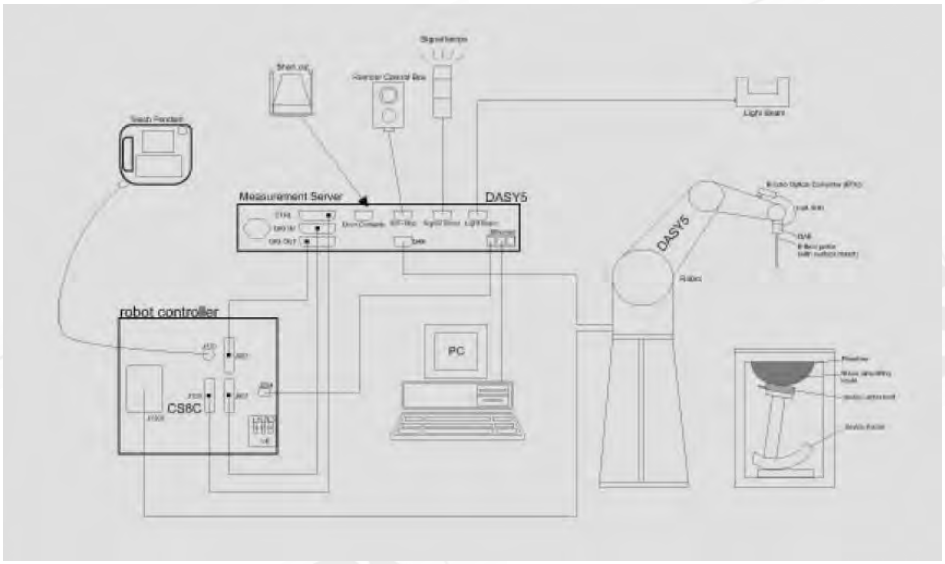


Fig. a A block diagram of the SAR measurement system

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

1. A standard high precision 6-axis robot (Staubli RX family) with controller, teach pendant and software. An arm extension is for accommodating the data acquisition electronics (DAE).
2. A dosimetric probe, i.e., an isotropic E-field probe optimized and calibrated for usage in tissue simulating liquid. The probe is equipped with an optical surface detector system.
3. Data acquisition electronics (DAE) which performs the signal amplification, signal multiplexing, AD-conversion, offset measurements, mechanical surface detection, collision detection, etc. The unit is battery powered with standard or rechargeable batteries. The signal is optically transmitted to the EOC.
4. The Electro-optical converter (EOC) performs the conversion between optical and electrical of the signals for the digital communication to the DAE and for the analog signal from the optical surface detection. The EOC is connected to the measurement server.
5. The function of the measurement server is to perform the time critical tasks such as signal filtering, control of the robot operation and fast movement interrupts.
6. A probe alignment unit which improves the (absolute) accuracy of the probe positioning.
7. A computer operating Windows7
8. DASY 5 software.
9. Remote control with teach pendant and additional circuitry for robot safety such as warning lamps, etc.
10. The SAM twin phantom enabling testing left-hand and right-hand usage.
11. The device holder for handheld mobile phones.
12. Tissue simulating liquid mixed according to the given recipes.
13. Validation dipole kits allowing to validate the proper functioning of the system.

1.11 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 HSL835/1900/2450/2600 MHz Additional CF for other liquids and frequencies upon request	
Frequency	10 MHz to > 6 GHz, Linearity: ± 0.6 dB	
Directivity	± 0.3 dB in HSL (rotation around probe axis) ± 0.5 dB in tissue material (rotation normal to probe axis)	
Dynamic Range	10 µW/g to > 100 mW/g Linearity: ± 0.2 dB (noise: typically < 1 µW/g)	
Dimensions	Tip diameter: 2.5 mm	
Application	High precision dosimetric measurements in any exposure scenario (e.g., very strong gradient fields). Only probe which enables compliance testing for frequencies up to 6 GHz with precision of better 30%.	

SAM PHANTOM V4.0C

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

DEVICE HOLDER

Construction	In combination with the Twin SAM Phantom V4.0/V4.0C or Twin SAM, the Mounting Device (made from POM) enables the rotation of the mounted transmitter in spherical coordinates, whereby the rotation point is the ear opening. The devices can be easily and accurately positioned according to IEC, IEEE, CENELEC, FCC or other specifications. The device holder can be locked at different phantom locations (left head, right head, flat phantom).	 Device Holder

1.12 SAR System Verification

The microwave circuit arrangement for system verification is sketched in Fig. b. The daily system accuracy verification occurs within the flat section of the SAM phantom. A SAR measurement was performed to see if the measured SAR was within +/- 10% (according to KDB865664D01v01r04) from the target SAR values.

These tests were done at 835/1900/2450/2600 MHz. The tests were conducted on the same days as the measurement of the DUT. The obtained results from the system accuracy verification are displayed in the table 1. During the tests, the ambient temperature of the laboratory was 21.7°C, the relative humidity was 62% and the liquid depth above the ear reference points was above 15 cm (≤3G) or 10 cm (>3G) in all the cases. It is seen that the system is operating within its specification, as the results are within acceptable tolerance of the reference values.

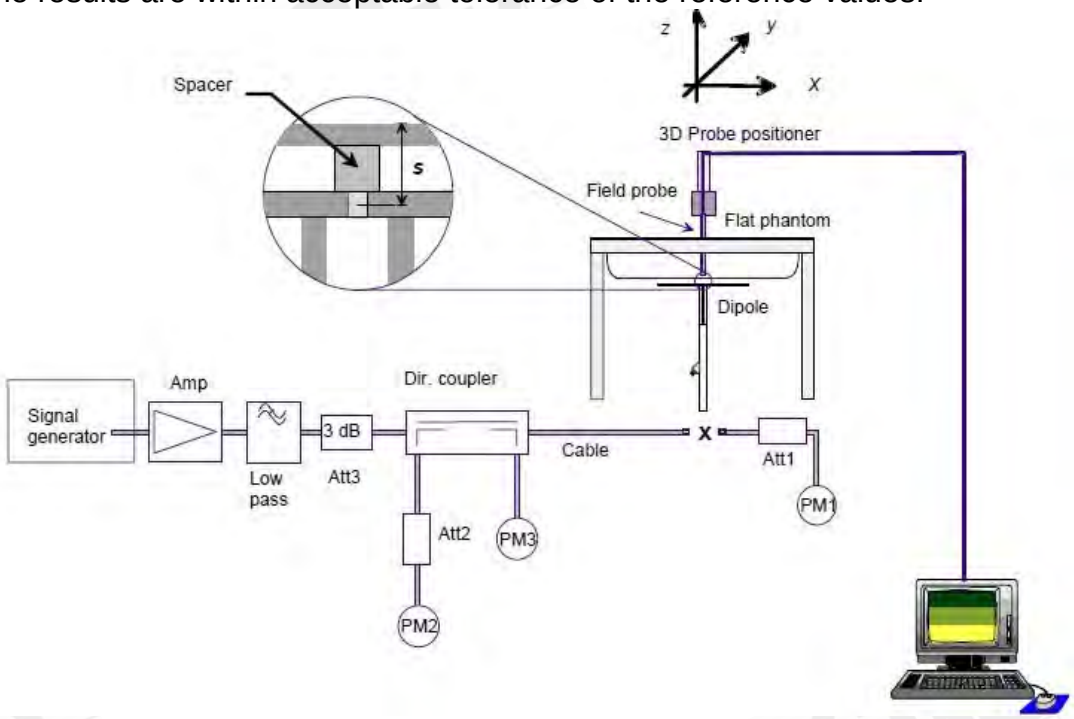


Fig. b The block diagram of system verification

Validation Kit	S/N	Frequency (MHz)		1W Target SAR-1g (mW/g)	Measured SAR-1g (mW/g)	Measured SAR-1g normalized to 1W (mW/g)	Deviation (%)	Measured Date
D835V2	4d063	835	Head	9.11	2.38	9.52	4.50%	Aug. 01, 2016
			Body	9.28	2.34	9.36	0.86%	Aug. 02, 2016
D1900V2	5d027	1900	Head	38.7	9.79	39.16	1.19%	Aug. 03, 2016
			Body	39.7	9.95	39.8	0.25%	Jul. 30, 2016
D2450V2	727	2450	Head	51	13.3	53.2	4.31%	Jul. 31, 2016
			Body	49.6	13	52	4.84%	Jul. 31, 2016
D2600V2	1005	2600	Head	55.2	14.4	57.6	4.35%	Aug. 04, 2016
			Body	53.9	14	56	3.90%	Aug. 05, 2016
				53.9	14	56	3.90%	Aug. 06, 2016

Table 1. Results of system validation

1.13 Tissue Simulant Fluid for the Frequency Band

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

Tissue Type	Measurement Date	Measured Frequency (MHz)	Target Dielectric Constant, εr	Target Conductivity, σ (S/m)	Measured Dielectric Constant, εr	Measured Conductivity, σ (S/m)	% dev εr	% dev σ
Head	2016/7/31	2450	39.200	1.800	40.583	1.831	-3.53%	-1.72%
		2462	39.185	1.813	40.552	1.844	-3.49%	-1.71%
	2016/8/1	824.2	41.556	0.899	41.833	0.912	-0.67%	-1.43%
		826.4	41.545	0.899	41.821	0.913	-0.67%	-1.52%
		829	41.531	0.900	41.805	0.916	-0.66%	-1.83%
		835	41.500	0.900	41.782	0.921	-0.68%	-2.33%
	2016/8/3	1850.2	40.000	1.400	41.366	1.367	-3.42%	2.36%
		1880	40.000	1.400	41.301	1.392	-3.25%	0.57%
		1900	40.000	1.400	41.252	1.414	-3.13%	-1.00%
	2016/8/4	2560	39.060	1.920	40.491	1.932	-3.66%	-0.63%
		2580	39.035	1.942	40.453	1.958	-3.63%	-0.82%
		2595	39.015	1.958	40.414	1.974	-3.59%	-0.82%
		2600	39.009	1.964	40.403	1.981	-3.57%	-0.88%
		2610	38.996	1.975	40.392	1.995	-3.58%	-1.01%

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	2016/7/30	1850.2	53.300	1.520	52.713	1.484	1.10%	2.37%
		1880	53.300	1.520	52.684	1.507	1.16%	0.86%
		1900	53.300	1.520	52.633	1.522	1.25%	-0.13%
		1909.8	53.300	1.520	52.601	1.529	1.31%	-0.59%
	2016/7/31	2450	52.700	1.950	51.233	1.982	2.78%	-1.64%
		2462	52.685	1.967	51.204	1.995	2.81%	-1.42%
	2016/8/2	824.2	55.242	0.969	54.844	0.973	0.72%	-0.40%
		826.4	55.234	0.969	54.821	0.974	0.75%	-0.48%
		829	55.223	0.970	54.813	0.979	0.74%	-0.98%
		835	55.200	0.970	54.800	0.984	0.72%	-1.44%
		836.6	55.195	0.972	54.792	0.985	0.73%	-1.34%
		844	55.172	0.981	54.763	0.994	0.74%	-1.32%
		846.6	55.164	0.984	54.752	0.996	0.75%	-1.19%
		848.8	55.158	0.987	54.741	0.999	0.76%	-1.22%
	2016/8/5	2535	52.592	2.071	52.244	2.134	0.66%	-3.06%
		2560	52.560	2.106	52.203	2.165	0.68%	-2.80%
		2580	52.535	2.134	52.177	2.189	0.68%	-2.58%
		2595	52.515	2.156	52.144	2.213	0.71%	-2.64%
		2600	52.509	2.163	52.135	2.221	0.71%	-2.69%
		2610	52.496	2.177	52.119	2.236	0.72%	-2.71%
	2016/8/6	2580	52.535	2.134	52.114	2.181	0.80%	-2.20%
		2595	52.515	2.156	52.074	2.215	0.84%	-2.74%
		2600	52.509	2.163	52.053	2.219	0.87%	-2.60%
		2610	52.496	2.177	52.042	2.229	0.86%	-2.39%

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	
850	Head	—	532.98 g	18.3 g	2.4 g	3.2 g	766 g	1.3L(Kg)
	Body	—	631.68 g	11.72 g	1.2 g	—	600 g	1.0L(Kg)
1900	Head	444.52 g	552.42 g	3.06 g	—	—	—	1.0L(Kg)
	Body	300.67 g	716.56 g	4.0 g	—	—	—	1.0L(Kg)
2450	Head	550ml	450ml	—	—	—	—	1.0L(Kg)
	Body	301.7ml	698.3ml	—	—	—	—	1.0L(Kg)
2600	Head	550ml	450ml	—	—	—	—	1.0L(Kg)
	Body	301.7ml	698.3ml	—	—	—	—	1.0L(Kg)

Table 3. Recipes for tissue simulating liquid

1.14 Test Standards and Limits

According to FCC 47CFR §2.1093(d) The limits to be used for evaluation are based generally on criteria published by the American National Standards Institute (ANSI) for localized specific absorption rate (‘‘SAR’’) in Section 4.2 of ‘‘IEEE Standard for Safety Levels with Respect to Human Exposure to Radio Frequency Electromagnetic Fields, 3 kHz to 300 GHz,’’ ANSI/IEEE C95.1, By the Institute of Electrical and Electronics Engineers, Inc., New York, New York 10017.

These criteria for SAR evaluation are similar to those recommended by the National Council on Radiation Protection and Measurements (NCRP) in ‘‘Biological Effects and Exposure Criteria for Radio frequency Electromagnetic Fields,’’ NCRP Report No. 86, Section 17.4.5. Copyright NCRP, 1986, Bethesda, Maryland 20814. SAR is a measure of the rate of energy absorption due to exposure to an RF transmitting source. SAR values have been related to threshold levels for potential biological hazards. The criteria to be used are specified in paragraphs (d)(1) and (d)(2) of this section and shall apply for portable devices transmitting in the frequency range from 100 kHz to 6 GHz. Portable devices that transmit at frequencies above 6 GHz are to be evaluated in terms of the MPE limits specified in § 1.1310 of this chapter.

Measurements and calculations to demonstrate compliance with MPE field strength or power density limits for devices operating above 6 GHz should be made at a minimum distance of 5 cm from the radiating source.

1. Limits for Occupational/Controlled exposure: 0.4 W/kg as averaged over the whole-body and spatial peak SAR not exceeding 8 W/kg as averaged over any 1 gram of tissue (defined as a tissue volume in the shape of a cube). Exceptions are the hands, wrists, feet and ankles where the spatial peak SAR shall not exceed 20 W/kg, as averaged over a 10 grams of tissue (defined as a tissue volume in the shape of a cube).

Occupational/Controlled limits apply when persons are exposed as a consequence of their employment provided these persons are fully aware of and exercise control over their exposure. Awareness of exposure can be accomplished by use of warning labels or by specific training or education through appropriate means, such as an RF safety program in a work environment.

2. Limits for General Population/Uncontrolled exposure: 0.08 W/kg as averaged over the whole-body and spatial peak SAR not exceeding 1.6 W/kg as averaged over any 1 gram of tissue (defined as a tissue volume in the shape of a cube).

Exceptions are the hands, wrists, feet and ankles where the spatial peak SAR shall not exceed 4 W/kg, as averaged over any 10 grams of tissue (defined as a tissue volume in the shape of a cube).
General Population/Uncontrolled limits apply when the general public may be exposed, or when persons that are exposed as a consequence of their employment may not be fully aware of the potential for exposure or do not exercise control over their exposure.
Warning labels placed on consumer devices such as cellular telephones will not be sufficient reason to allow these devices to be evaluated subject to limits for occupational/controlled exposure in paragraph (d)(1) of this section.(Table .6)

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

Table 4. RF exposure limits

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

2. Summary of Results

GSM 850 MHz

Main Antenna

The data of MLA-L13 and MLA-L03 from the SAR report of FCC ID: QISMLA-LX3

Mode	Position	Distance (mm)	CH	Freq. (MHz)	Battery	SIM	Max. Rated Avg. Power + Max. Tolerance (dBm)	Measured Avg. Power (dBm)	Scaling	Averaged SAR over 1g (W/kg)		Plot page
										Measured	Reported	
GSM850 (Head)	Re Cheek	-	251	848.8	1	1	33.00	32.46	113.24%	0.025	0.028	-
	Re Tilt	-	251	848.8	1	1	33.00	32.46	113.24%	0.007	0.008	-
	Le Cheek	-	128	824.2	1	1	33.00	32.12	122.46%	0.034	0.042	-
	Le Cheek	-	128	824.2	1	2	33.00	32.12	122.46%	0.033	0.040	-
	Le Cheek	-	128	824.2	2	1	33.00	32.12	122.46%	0.029	0.036	-
	Le Cheek	-	128	824.2	3	1	33.00	32.12	122.46%	0.033	0.040	-
	Le Cheek	-	128	824.2	4	1	33.00	32.12	122.46%	0.026	0.032	-
	Le Cheek	-	190	836.6	1	1	33.00	32.32	116.95%	0.026	0.030	-
	Le Cheek	-	251	848.8	1	1	33.00	32.46	113.24%	0.031	0.035	-
	Le Tilt	-	251	848.8	1	1	33.00	32.46	113.24%	0.007	0.008	-
GSM850 (Body-Worn)	Front side	15	128	824.2	1	1	33.00	32.12	122.46%	0.144	0.176	-
	Front side	15	190	836.6	1	1	33.00	32.32	116.95%	0.181	0.212	-
	Front side	15	251	848.8	1	1	33.00	32.46	113.24%	0.241	0.273	-
	Front side	15	251	848.8	1	2	33.00	32.46	113.24%	0.238	0.270	-
	Front side	15	251	848.8	2	1	33.00	32.46	113.24%	0.234	0.265	-
	Front side	15	251	848.8	3	1	33.00	32.46	113.24%	0.240	0.272	-
	Front side	15	251	848.8	4	1	33.00	32.46	113.24%	0.231	0.262	-
	Back side	15	251	848.8	1	1	33.00	32.46	113.24%	0.198	0.224	-
GPRS850 (Hotspot) (1Dn2Up)	Front side	10	251	848.8	1	1	30.50	30.12	109.14%	0.393	0.429	-
	Back side	10	128	824.2	1	1	30.50	29.85	116.14%	0.420	0.488	-
	Back side	10	190	836.6	1	1	30.50	30.00	112.20%	0.461	0.517	-
	Back side	10	251	848.8	1	1	30.50	30.12	109.14%	0.523	0.571	-
	Back side	10	251	848.8	1	2	30.50	30.12	109.14%	0.520	0.568	-
	Back side	10	251	848.8	2	1	30.50	30.12	109.14%	0.512	0.559	-
	Back side	10	251	848.8	3	1	30.50	30.12	109.14%	0.518	0.565	-
	Back side	10	251	848.8	4	1	30.50	30.12	109.14%	0.505	0.551	-
	Bottom side	10	251	848.8	1	1	30.50	30.12	109.14%	0.303	0.331	-
	Right side	10	251	848.8	1	1	30.50	30.12	109.14%	0.303	0.331	-
	Left side	10	251	848.8	1	1	30.50	30.12	109.14%	0.245	0.267	-

Tested MLA-L12 and MLA-L02 at the worst position with battery #1, #2, #3, #4.

Mode	Position	Distance (mm)	CH	Freq. (MHz)	Battery	SIM	Max. Rated Avg. Power + Max. Tolerance (dBm)	Measured Avg. Power (dBm)	Scaling	Averaged SAR over 1g (W/kg)		Plot page
										Measured	Reported	
GSM850 (Head)	Le Cheek	-	128	824.2	1	1	33.00	32.12	122.46%	0.024	0.029	-
	Le Cheek	-	128	824.2	2	1	33.00	32.12	122.46%	0.034	0.042	124
	Le Cheek	-	128	824.2	3	1	33.00	32.12	122.46%	0.030	0.037	-
	Le Cheek	-	128	824.2	4	1	33.00	32.12	122.46%	0.031	0.038	-
GSM850 (Body-Worn)	Front side	15	251	848.8	1	1	33.00	32.46	113.24%	0.213	0.241	-
	Front side	15	251	848.8	2	1	33.00	32.46	113.24%	0.231	0.262	-
	Front side	15	251	848.8	3	1	33.00	32.46	113.24%	0.224	0.254	-
	Front side	15	251	848.8	4	1	33.00	32.46	113.24%	0.235	0.266	125
GPRS850 (Hotspot) (1Dn2Up)	Back side	10	251	848.8	1	1	30.50	30.12	109.14%	0.481	0.525	-
	Back side	10	251	848.8	2	1	30.50	30.12	109.14%	0.576	0.629	-
	Back side	10	251	848.8	3	1	30.50	30.12	109.14%	0.520	0.568	-
	Back side	10	251	848.8	4	1	30.50	30.12	109.14%	0.580	0.633	126

Sub Antenna

The data of MLA-L13 and MLA-L03 from the SAR report of FCC ID: QISMLA-LX3

Mode	Position	Distance (mm)	CH	Freq. (MHz)	Battery	SIM	Max. Rated Avg. Power + Max. Tolerance (dBm)	Measured Avg. Power (dBm)	Scaling	Averaged SAR over 1g (W/kg)		Plot page
										Measured	Reported	
GSM850 (Head)	Re Cheek	-	128	824.2	1	1	30.50	29.62	122.46%	0.998	1.222	-
	Re Cheek*	-	128	824.2	1	1	30.50	29.62	122.46%	0.995	1.218	-
	Re Cheek	-	128	824.2	1	2	30.50	29.62	122.46%	0.995	1.218	-
	Re Cheek	-	128	824.2	2	1	30.50	29.62	122.46%	0.989	1.211	-
	Re Cheek	-	128	824.2	3	1	30.50	29.62	122.46%	0.968	1.185	-
	Re Cheek	-	128	824.2	4	1	30.50	29.62	122.46%	0.952	1.166	-
	Re Cheek	-	190	836.6	1	1	30.50	29.78	118.03%	0.948	1.119	-
	Re Cheek	-	251	848.8	1	1	30.50	29.87	115.61%	0.843	0.975	-
	Re Tilt	-	128	824.2	1	1	30.50	29.62	122.46%	0.845	1.035	-
	Re Tilt	-	190	836.6	1	1	30.50	29.78	118.03%	0.802	0.947	-
	Re Tilt	-	251	848.8	1	1	30.50	29.87	115.61%	0.708	0.819	-
	Le Cheek	-	251	848.8	1	1	30.50	29.87	115.61%	0.517	0.598	-
	Le Tilt	-	251	848.8	1	1	30.50	29.87	115.61%	0.519	0.600	-
GSM850 (Body-Worn)	Front side	15	251	848.8	1	1	33.00	32.52	111.69%	0.177	0.198	-
	Back side	15	128	824.2	1	1	33.00	32.33	116.68%	0.240	0.280	-
	Back side	15	128	824.2	1	2	33.00	32.33	116.68%	0.238	0.278	-
	Back side	15	128	824.2	2	1	33.00	32.33	116.68%	0.248	0.289	-
	Back side	15	128	824.2	3	1	33.00	32.33	116.68%	0.212	0.247	-
	Back side	15	128	824.2	4	1	33.00	32.33	116.68%	0.201	0.235	-
	Back side	15	190	836.6	1	1	33.00	32.44	113.76%	0.241	0.274	-
	Back side	15	251	848.8	1	1	33.00	32.52	111.69%	0.207	0.231	-
GPRS850 (Hotspot) (1Dn2Up)	Front side	10	251	848.8	1	1	30.50	30.19	107.40%	0.435	0.467	-
	Back side	10	128	824.2	1	1	30.50	29.89	115.08%	0.520	0.598	-
	Back side	10	190	836.6	1	1	30.50	30.12	109.14%	0.562	0.613	-
	Back side	10	190	836.6	1	2	30.50	30.12	109.14%	0.560	0.611	-
	Back side	10	190	836.6	2	1	30.50	30.12	109.14%	0.555	0.606	-
	Back side	10	190	836.6	3	1	30.50	30.12	109.14%	0.524	0.572	-
	Back side	10	190	836.6	4	1	30.50	30.12	109.14%	0.512	0.559	-
	Back side	10	251	848.8	1	1	30.50	30.19	107.40%	0.535	0.575	-
	Top side	10	251	848.8	1	1	30.50	30.19	107.40%	0.347	0.373	-
	Left side	10	251	848.8	1	1	30.50	30.19	107.40%	0.262	0.281	-

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

Tested MLA-L12 and MLA-L02 at the worst position with battery #1, #2, #3, #4.

Mode	Position	Distance (mm)	CH	Freq. (MHz)	Battery	SIM	Max. Rated Avg. Power + Max. Tolerance (dBm)	Measured Avg. Power (dBm)	Scaling	Averaged SAR over 1g (W/kg)		Plot page
										Measured	Reported	
GSM850 (Head)	Re Cheek	-	128	824.2	1	1	30.50	29.62	122.46%	0.944	1.156	-
	Re Cheek	-	128	824.2	2	1	30.50	29.62	122.46%	0.989	1.211	-
	Re Cheek	-	128	824.2	3	1	30.50	29.62	122.46%	0.966	1.183	-
	Re Cheek	-	128	824.2	4	1	30.50	29.62	122.46%	1.000	1.225	127
GSM850 (Body-Worn)	Back side	15	128	824.2	1	1	33.00	32.33	116.68%	0.213	0.249	-
	Back side	15	128	824.2	2	1	33.00	32.33	116.68%	0.251	0.293	-
	Back side	15	128	824.2	3	1	33.00	32.33	116.68%	0.268	0.313	128
	Back side	15	128	824.2	4	1	33.00	32.33	116.68%	0.259	0.302	-
GPRS850 (Hotspot) (1Dn2Up)	Back side	10	190	836.6	1	1	30.50	30.12	109.14%	0.551	0.601	-
	Back side	10	190	836.6	2	1	30.50	30.12	109.14%	0.615	0.671	129
	Back side	10	190	836.6	3	1	30.50	30.12	109.14%	0.566	0.618	-
	Back side	10	190	836.6	4	1	30.50	30.12	109.14%	0.585	0.638	-

GSM 1900 MHz

Main Antenna

The data of MLA-L13 and MLA-L03 from the SAR report of FCC ID: QISMLA-LX3

Mode	Position	Distance (mm)	CH	Freq. (MHz)	Battery	SIM	Max. Rated Avg. Power + Max. Tolerance (dBm)	Measured Avg. Power (dBm)	Scaling	Averaged SAR over 1g (W/kg)		Plot page
										Measured	Reported	
GSM1900 (Head)	Re Cheek	-	512	1850.2	1	1	30.00	29.18	120.78%	0.053	0.064	-
	Re Tilt	-	512	1850.2	1	1	30.00	29.18	120.78%	0.032	0.039	-
	Le Cheek	-	512	1850.2	1	1	30.00	29.18	120.78%	0.088	0.106	-
	Le Cheek	-	512	1850.2	1	2	30.00	29.18	120.78%	0.086	0.104	-
	Le Cheek	-	512	1850.2	2	1	30.00	29.18	120.78%	0.081	0.098	-
	Le Cheek	-	512	1850.2	3	1	30.00	29.18	120.78%	0.072	0.087	-
	Le Cheek	-	512	1850.2	4	1	30.00	29.18	120.78%	0.075	0.091	-
	Le Cheek	-	661	1880	1	1	30.00	29.12	122.46%	0.064	0.078	-
	Le Cheek	-	810	1909.8	1	1	30.00	29.17	121.06%	0.059	0.071	-
	Le Tilt	-	512	1850.2	1	1	30.00	29.18	120.78%	0.028	0.034	-
GSM1900 (Body-Worn)	Front side	15	512	1850.2	1	1	30.00	29.18	120.78%	0.196	0.237	-
	Back side	15	512	1850.2	1	1	30.00	29.18	120.78%	0.250	0.302	-
	Back side	15	512	1850.2	1	2	30.00	29.18	120.78%	0.248	0.300	-
	Back side	15	512	1850.2	2	1	30.00	29.18	120.78%	0.235	0.284	-
	Back side	15	512	1850.2	3	1	30.00	29.18	120.78%	0.245	0.296	-
	Back side	15	512	1850.2	4	1	30.00	29.18	120.78%	0.231	0.279	-
	Back side	15	661	1880	1	1	30.00	29.12	122.46%	0.240	0.294	-
	Back side	15	810	1909.8	1	1	30.00	29.17	121.06%	0.225	0.272	-
GPRS1900 (Hotspot) (1Dn2Up)	Front side	10	512	1850.2	1	1	30.00	29.18	120.78%	0.368	0.444	-
	Back side	10	512	1850.2	1	1	30.00	29.18	120.78%	0.435	0.525	-
	Bottom side	10	512	1850.2	1	1	30.00	29.18	120.78%	0.864	1.044	-
	Bottom side	10	661	1880	1	1	30.00	29.12	122.46%	0.887	1.086	-
	Bottom side*	10	661	1880	1	1	30.00	29.12	122.46%	0.882	1.080	-
	Bottom side	10	661	1880	1	2	30.00	29.12	122.46%	0.885	1.084	-
	Bottom side	10	661	1880	2	1	30.00	29.12	122.46%	0.842	1.031	-
	Bottom side	10	661	1880	3	1	30.00	29.12	122.46%	0.878	1.075	-
	Bottom side	10	661	1880	4	1	30.00	29.12	122.46%	0.835	1.023	-
	Bottom side	10	810	1909.8	1	1	30.00	29.17	121.06%	0.872	1.056	-
	Right side	10	512	1850.2	1	1	30.00	29.18	120.78%	0.017	0.021	-
	Left side	10	512	1850.2	1	1	30.00	29.18	120.78%	0.083	0.100	-

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

Tested MLA-L12 and MLA-L02 at the worst position with battery #1, #2, #3, #4.

Mode	Position	Distance (mm)	CH	Freq. (MHz)	Battery	SIM	Max. Rated Avg. Power + Max. Tolerance (dBm)	Measured Avg. Power (dBm)	Scaling	Averaged SAR over 1g (W/kg)		Plot page
										Measured	Reported	
GSM1900 (Head)	Le Cheek	-	512	1850.2	1	1	30.00	29.18	120.78%	0.048	0.058	-
	Le Cheek	-	512	1850.2	2	1	30.00	29.18	120.78%	0.076	0.092	130
	Le Cheek	-	512	1850.2	3	1	30.00	29.18	120.78%	0.074	0.089	-
	Le Cheek	-	512	1850.2	4	1	30.00	29.18	120.78%	0.063	0.076	-
GSM1900 (Body-Worn)	Back side	15	512	1850.2	1	1	30.00	29.18	120.78%	0.174	0.210	-
	Back side	15	512	1850.2	2	1	30.00	29.18	120.78%	0.219	0.265	131
	Back side	15	512	1850.2	3	1	30.00	29.18	120.78%	0.213	0.257	-
	Back side	15	512	1850.2	4	1	30.00	29.18	120.78%	0.192	0.232	-
GPRS1900 (Hotspot) (1Dn2Up)	Bottom side	10	661	1880	1	1	30.00	29.12	122.46%	0.563	0.689	-
	Bottom side	10	661	1880	2	1	30.00	29.12	122.46%	0.758	0.928	132
	Bottom side	10	661	1880	3	1	30.00	29.12	122.46%	0.742	0.909	-
	Bottom side	10	661	1880	4	1	30.00	29.12	122.46%	0.681	0.834	-

Sub Antenna

The data of MLA-L13 and MLA-L03 from the SAR report of FCC ID: QISMLA-LX3

Mode	Position	Distance (mm)	CH	Freq. (MHz)	Battery	SIM	Max. Rated Avg. Power + Max. Tolerance (dBm)	Measured Avg. Power (dBm)	Scaling	Averaged SAR over 1g (W/kg)		Plot page
										Measured	Reported	
GSM1900 (Head)	Re Cheek	-	661	1880	1	1	29.00	28.12	122.46%	0.353	0.432	-
	Re Tilt	-	512	1850.2	1	1	29.00	28.10	123.03%	0.328	0.404	-
	Re Tilt	-	661	1880	1	1	29.00	28.12	122.46%	0.355	0.435	-
	Re Tilt	-	661	1880	1	2	29.00	28.12	122.46%	0.351	0.430	-
	Re Tilt	-	661	1880	2	1	29.00	28.12	122.46%	0.342	0.419	-
	Re Tilt	-	661	1880	3	1	29.00	28.12	122.46%	0.313	0.383	-
	Re Tilt	-	661	1880	4	1	29.00	28.12	122.46%	0.350	0.429	-
	Re Tilt	-	810	1909.8	1	1	29.00	28.10	123.03%	0.317	0.390	-
	Le Cheek	-	661	1880	1	1	29.00	28.12	122.46%	0.124	0.152	-
	Le Tilt	-	661	1880	1	1	29.00	28.12	122.46%	0.162	0.198	-
GSM1900 (Body-Worn)	Front side	15	512	1850.2	1	1	30.00	28.85	130.32%	0.073	0.095	-
	Front side	15	661	1880	1	1	30.00	28.75	133.35%	0.077	0.103	-
	Front side	15	810	1909.8	1	1	30.00	28.72	134.28%	0.083	0.111	-
	Front side	15	810	1909.8	1	2	30.00	28.72	134.28%	0.081	0.109	-
	Front side	15	810	1909.8	2	1	30.00	28.72	134.28%	0.075	0.101	-
	Front side	15	810	1909.8	3	1	30.00	28.72	134.28%	0.064	0.086	-
	Front side	15	810	1909.8	4	1	30.00	28.72	134.28%	0.080	0.107	-
	Back side	15	512	1850.2	1	1	30.00	28.85	130.32%	0.072	0.094	-
GPRS1900 (Hotspot) (1Dn2Up)	Front side	10	512	1850.2	1	1	28.00	27.15	121.62%	0.231	0.281	-
	Back side	10	512	1850.2	1	1	28.00	27.15	121.62%	0.234	0.285	-
	Top side	10	512	1850.2	1	1	28.00	27.15	121.62%	0.273	0.332	-
	Top side	10	661	1880	1	1	28.00	27.08	123.59%	0.284	0.351	-
	Top side	10	661	1880	1	2	28.00	27.08	123.59%	0.281	0.347	-
	Top side	10	661	1880	2	1	28.00	27.08	123.59%	0.271	0.335	-
	Top side	10	661	1880	3	1	28.00	27.08	123.59%	0.242	0.299	-
	Top side	10	661	1880	4	1	28.00	27.08	123.59%	0.277	0.342	-
	Top side	10	810	1909.8	1	1	28.00	27.05	124.45%	0.275	0.342	-
	Left side	10	512	1850.2	1	1	28.00	27.15	121.62%	0.224	0.272	-

Tested MLA-L12 and MLA-L02 at the worst position with battery #1, #2, #3, #4.

Mode	Position	Distance (mm)	CH	Freq. (MHz)	Battery	SIM	Max. Rated Avg. Power + Max. Tolerance (dBm)	Measured Avg. Power (dBm)	Scaling	Averaged SAR over 1g (W/kg)		Plot page
										Measured	Reported	
GSM1900 (Head)	Re Tilt	-	661	1880	1	1	29.00	28.12	122.46%	0.174	0.213	-
	Re Tilt	-	661	1880	2	1	29.00	28.12	122.46%	0.353	0.432	133
	Re Tilt	-	661	1880	3	1	29.00	28.12	122.46%	0.346	0.424	-
	Re Tilt	-	661	1880	4	1	29.00	28.12	122.46%	0.315	0.386	-
GSM1900 (Body-Worn)	Front side	15	810	1909.8	1	1	30.00	28.72	134.28%	0.021	0.028	-
	Front side	15	810	1909.8	2	1	30.00	28.72	134.28%	0.083	0.111	134
	Front side	15	810	1909.8	3	1	30.00	28.72	134.28%	0.081	0.109	-
	Front side	15	810	1909.8	4	1	30.00	28.72	134.28%	0.069	0.093	-
GPRS1900 (Hotspot) (1Dn2Up)	Top side	10	661	1880	1	1	28.00	27.08	123.59%	0.123	0.152	-
	Top side	10	661	1880	2	1	28.00	27.08	123.59%	0.285	0.352	135
	Top side	10	661	1880	3	1	28.00	27.08	123.59%	0.262	0.324	-
	Top side	10	661	1880	4	1	28.00	27.08	123.59%	0.223	0.276	-

WCDMA Band V

Main Antenna

The data of MLA-L13 and MLA-L03 from the SAR report of FCC ID: QISMLA-LX3

Mode	Position	Distance (mm)	CH	Freq. (MHz)	Battery	SIM	Max. Rated Avg. Power + Max. Tolerance (dBm)	Measured Avg. Power (dBm)	Scaling	Averaged SAR over 1g (W/kg)		Plot page
										Measured	Reported	
R99 (Head)	Re Cheek	-	4183	836.6	1	1	24.50	23.67	121.06%	0.033	0.040	-
	Re Tilt	-	4183	836.6	1	1	24.50	23.67	121.06%	0.015	0.018	-
	Le Cheek	-	4132	826.4	1	1	24.50	23.65	121.62%	0.049	0.060	-
	Le Cheek	-	4132	826.4	1	2	24.50	23.65	121.62%	0.047	0.057	-
	Le Cheek	-	4132	826.4	2	1	24.50	23.65	121.62%	0.042	0.051	-
	Le Cheek	-	4132	826.4	3	1	24.50	23.65	121.62%	0.041	0.050	-
	Le Cheek	-	4132	826.4	4	1	24.50	23.65	121.62%	0.035	0.043	-
	Le Cheek	-	4183	836.6	1	1	24.50	23.67	121.06%	0.036	0.044	-
	Le Cheek	-	4233	846.6	1	1	24.50	23.56	124.17%	0.037	0.046	-
	Le Tilt	-	4183	836.6	1	1	24.50	23.67	121.06%	0.026	0.031	-
R99 (Body-Worn)	Front side	15	4183	836.6	1	1	24.50	23.67	121.06%	0.066	0.080	-
	Back side	15	4132	826.4	1	1	24.50	23.65	121.62%	0.202	0.246	-
	Back side	15	4183	836.6	1	1	24.50	23.67	121.06%	0.179	0.217	-
	Back side	15	4233	846.6	1	1	24.50	23.56	124.17%	0.216	0.268	-
	Back side	15	4233	846.6	1	2	24.50	23.56	124.17%	0.210	0.261	-
	Back side	15	4233	846.6	2	1	24.50	23.56	124.17%	0.200	0.248	-
	Back side	15	4233	846.6	3	1	24.50	23.56	124.17%	0.208	0.258	-
	Back side	15	4233	846.6	4	1	24.50	23.56	124.17%	0.191	0.237	-
R99 (Hotspot)	Front side	10	4183	836.6	1	1	24.50	23.67	121.06%	0.315	0.381	-
	Back side	10	4132	826.4	1	1	24.50	23.65	121.62%	0.357	0.434	-
	Back side	10	4183	836.6	1	1	24.50	23.67	121.06%	0.404	0.489	-
	Back side	10	4233	846.6	1	1	24.50	23.56	124.17%	0.504	0.626	-
	Back side	10	4233	846.6	2	1	24.50	23.56	124.17%	0.521	0.647	-
	Back side	10	4233	846.6	3	1	24.50	23.56	124.17%	0.493	0.612	-
	Back side	10	4233	846.6	4	1	24.50	23.56	124.17%	0.482	0.598	-
	Bottom side	10	4183	836.6	1	1	24.50	23.67	121.06%	0.177	0.214	-
	Right side	10	4183	836.6	1	1	24.50	23.67	121.06%	0.242	0.293	-
	Left side	10	4183	836.6	1	1	24.50	23.67	121.06%	0.086	0.104	-

Tested MLA-L12 and MLA-L02 at the worst position with battery #1, #2, #3, #4.

Mode	Position	Distance (mm)	CH	Freq. (MHz)	Battery	SIM	Max. Rated Avg. Power + Max. Tolerance (dBm)	Measured Avg. Power (dBm)	Scaling	Averaged SAR over 1g (W/kg)		Plot page
										Measured	Reported	
R99 (Head)	Le Cheek	-	4132	826.4	1	1	24.50	23.65	121.62%	0.052	0.063	-
	Le Cheek	-	4132	826.4	2	1	24.50	23.65	121.62%	0.053	0.064	-
	Le Cheek	-	4132	826.4	3	1	24.50	23.65	121.62%	0.061	0.074	-
	Le Cheek	-	4132	826.4	4	1	24.50	23.65	121.62%	0.067	0.081	136
R99 (Body-Worn)	Back side	15	4233	846.6	1	1	24.50	23.56	124.17%	0.283	0.351	-
	Back side	15	4233	846.6	2	1	24.50	23.56	124.17%	0.305	0.379	137
	Back side	15	4233	846.6	3	1	24.50	23.56	124.17%	0.295	0.366	-
	Back side	15	4233	846.6	4	1	24.50	23.56	124.17%	0.301	0.374	-
R99 (Hotspot)	Back side	10	4233	846.6	1	1	24.50	23.56	124.17%	0.592	0.735	-
	Back side	10	4233	846.6	2	1	24.50	23.56	124.17%	0.588	0.730	-
	Back side	10	4233	846.6	3	1	24.50	23.56	124.17%	0.613	0.761	-
	Back side	10	4233	846.6	4	1	24.50	23.56	124.17%	0.619	0.769	138

Sub Antenna

The data of MLA-L13 and MLA-L03 from the SAR report of FCC ID: QISMLA-LX3

Mode	Position	Distance (mm)	CH	Freq. (MHz)	Battery	SIM	Max. Rated Avg. Power + Max. Tolerance (dBm)	Measured Avg. Power (dBm)	Scaling	Averaged SAR over 1g (W/kg)		Plot page
										Measured	Reported	
R99 (Head)	Re Cheek	-	4132	826.4	1	1	21.50	20.52	125.31%	0.831	1.041	-
	Re Cheek	-	4132	826.4	1	2	21.50	20.52	125.31%	0.825	1.034	-
	Re Cheek	-	4132	826.4	2	1	21.50	20.52	125.31%	0.828	1.038	-
	Re Cheek	-	4132	826.4	3	1	21.50	20.52	125.31%	0.804	1.008	-
	Re Cheek	-	4132	826.4	4	1	21.50	20.52	125.31%	0.782	0.980	-
	Re Cheek	-	4183	836.6	1	1	21.50	20.63	122.18%	0.725	0.886	-
	Re Cheek	-	4233	846.6	1	1	21.50	20.42	128.23%	0.629	0.807	-
	Re Tilt	-	4183	836.6	1	1	21.50	20.63	122.18%	0.643	0.786	-
	Le Cheek	-	4183	836.6	1	1	21.50	20.63	122.18%	0.455	0.556	-
	Le Tilt	-	4183	836.6	1	1	21.50	20.63	122.18%	0.446	0.545	-
R99 (Body-Worn)	Front side	15	4183	836.6	1	1	21.50	20.63	122.18%	0.099	0.121	-
	Back side	15	4132	826.4	1	1	21.50	20.52	125.31%	0.112	0.140	-
	Back side	15	4183	836.6	1	1	21.50	20.63	122.18%	0.124	0.152	-
	Back side	15	4183	836.6	1	2	21.50	20.63	122.18%	0.123	0.150	-
	Back side	15	4183	836.6	2	1	21.50	20.63	122.18%	0.131	0.160	-
	Back side	15	4183	836.6	3	1	21.50	20.63	122.18%	0.112	0.137	-
	Back side	15	4183	836.6	4	1	21.50	20.63	122.18%	0.102	0.125	-
	Back side	15	4233	846.6	1	1	21.50	20.42	128.23%	0.091	0.117	-
R99 (Hotspot)	Front side	10	4183	836.6	1	1	21.50	20.63	122.18%	0.222	0.271	-
	Back side	10	4132	826.4	1	1	21.50	20.52	125.31%	0.291	0.365	-
	Back side	10	4132	826.4	2	1	21.50	20.52	125.31%	0.285	0.357	-
	Back side	10	4132	826.4	3	1	21.50	20.52	125.31%	0.273	0.342	-
	Back side	10	4132	826.4	4	1	21.50	20.52	125.31%	0.255	0.320	-
	Back side	10	4183	836.6	1	1	21.50	20.63	122.18%	0.273	0.334	-
	Back side	10	4233	846.6	1	1	21.50	20.42	128.23%	0.245	0.314	-
	Top side	10	4183	836.6	1	1	21.50	20.63	122.18%	0.188	0.230	-
	Left side	10	4183	836.6	1	1	21.50	20.63	122.18%	0.125	0.153	-

Tested MLA-L12 and MLA-L02 at the worst position with battery #1, #2, #3, #4.

Mode	Position	Distance (mm)	CH	Freq. (MHz)	Battery	SIM	Max. Rated Avg. Power + Max. Tolerance (dBm)	Measured Avg. Power (dBm)	Scaling	Averaged SAR over 1g (W/kg)		Plot page
										Measured	Reported	
R99 (Head)	Re Cheek	-	4132	826.4	1	1	21.50	20.52	125.31%	0.841	1.054	139
	Re Cheek	-	4132	826.4	2	1	21.50	20.52	125.31%	0.834	1.045	-
	Re Cheek	-	4132	826.4	3	1	21.50	20.52	125.31%	0.821	1.029	-
	Re Cheek	-	4132	826.4	4	1	21.50	20.52	125.31%	0.824	1.033	-
R99 (Body-Worn)	Back side	15	4183	836.6	1	1	21.50	20.63	122.18%	0.145	0.177	140
	Back side	15	4183	836.6	2	1	21.50	20.63	122.18%	0.141	0.172	-
	Back side	15	4183	836.6	3	1	21.50	20.63	122.18%	0.125	0.153	-
	Back side	15	4183	836.6	4	1	21.50	20.63	122.18%	0.133	0.162	-
R99 (Hotspot)	Back side	10	4132	826.4	1	1	21.50	20.52	125.31%	0.307	0.385	-
	Back side	10	4132	826.4	2	1	21.50	20.52	125.31%	0.298	0.373	-
	Back side	10	4132	826.4	3	1	21.50	20.52	125.31%	0.285	0.357	-
	Back side	10	4132	826.4	4	1	21.50	20.52	125.31%	0.317	0.397	141

LTE FDD Band V

Main Antenna

The data of MLA-L13 and MLA-L03 from the SAR report of FCC ID: QISMLA-LX3

Mode	Bandwidth (MHz)	Modulation	RB Size	RB start	Position	Distance (mm)	CH	Freq. (MHz)	Battery	SIM	Max. Rated Avg. Power + Max. Tolerance (dBm)	Measured Avg. Power (dBm)	Scaling	Averaged SAR over 1g (W/kg)		Plot page
														Measured	Reported	
LTE Band 5 (Head)	10MHz	QPSK	1 RB	25	RE Cheek	-	20450	829	1	1	24	23.35	116.14%	0.035	0.041	-
					RE Tilt	-	20450	829	1	1	24	23.35	116.14%	0.017	0.020	-
					LE Cheek	-	20450	829	1	1	24	23.35	116.14%	0.043	0.050	-
					LE Cheek	-	20450	829	2	1	24	23.35	116.14%	0.042	0.049	-
					LE Cheek	-	20450	829	3	1	24	23.35	116.14%	0.037	0.043	-
					LE Cheek	-	20450	829	4	1	24	23.35	116.14%	0.032	0.037	-
					LE Cheek	-	20525	836.5	1	1	24	23.17	121.06%	0.027	0.033	-
					LE Cheek	-	20600	844	1	1	24	23.35	116.14%	0.026	0.030	-
					LE Tilt	-	20450	829	1	1	24	23.35	116.14%	0.009	0.011	-
			25 RB	0	RE Cheek	-	20525	836.5	1	1	23	22.29	117.76%	0.025	0.029	-
					RE Tilt	-	20525	836.5	1	1	23	22.29	117.76%	0.012	0.014	-
					LE Cheek	-	20525	836.5	1	1	23	22.29	117.76%	0.022	0.026	-
					LE Tilt	-	20525	836.5	1	1	23	22.29	117.76%	0.007	0.008	-
			50 RB		RE Cheek	-	20525	836.5	1	1	23	22.29	117.76%	0.025	0.029	-
					RE Tilt	-	20525	836.5	1	1	23	22.29	117.76%	0.012	0.014	-
					LE Cheek	-	20525	836.5	1	1	23	22.29	117.76%	0.021	0.025	-
					LE Tilt	-	20525	836.5	1	1	23	22.29	117.76%	0.007	0.008	-
LTE Band 5 (Body-Worn)	10MHz	QPSK	1 RB	25	Front side	15	20450	829	1	1	24	23.35	116.14%	0.158	0.184	-
					Back side	15	20450	829	1	1	24	23.35	116.14%	0.176	0.204	-
					Back side	15	20525	836.5	1	1	24	23.17	121.06%	0.174	0.211	-
					Back side	15	20600	844	1	1	24	23.35	116.14%	0.201	0.233	-
					Back side	15	20600	844	2	1	24	23.35	116.14%	0.212	0.246	-
					Back side	15	20600	844	3	1	24	23.35	116.14%	0.184	0.214	-
					Back side	15	20600	844	4	1	24	23.35	116.14%	0.175	0.203	-
			25 RB	0	Front side	15	20525	836.5	1	1	23	22.29	117.76%	0.121	0.142	-
					Back side	15	20525	836.5	1	1	23	22.29	117.76%	0.135	0.159	-
			50 RB		Front side	15	20525	836.5	1	1	23	22.29	117.76%	0.121	0.142	-
					Back side	15	20525	836.5	1	1	23	22.29	117.76%	0.134	0.158	-
LTE Band 5 (Hotspot)	10MHz	QPSK	1 RB	25	Front side	10	20450	829	1	1	24	23.35	116.14%	0.246	0.286	-
					Back side	10	20450	829	1	1	24	23.35	116.14%	0.329	0.382	-
					Back side	10	20525	836.5	1	1	24	23.17	121.06%	0.380	0.460	-
					Back side	10	20600	844	1	1	24	23.35	116.14%	0.446	0.518	-
					Back side	10	20600	844	2	1	24	23.35	116.14%	0.462	0.537	-
					Back side	10	20600	844	3	1	24	23.35	116.14%	0.404	0.469	-
					Back side	10	20600	844	4	1	24	23.35	116.14%	0.423	0.491	-
					Bottom side	10	20450	829	1	1	24	23.35	116.14%	0.164	0.190	-
					Right side	10	20450	829	1	1	24	23.35	116.14%	0.206	0.239	-
					Left side	10	20450	829	1	1	24	23.35	116.14%	0.088	0.102	-
			25 RB	0	Front side	10	20525	836.5	1	1	23	22.29	117.76%	0.181	0.213	-
					Back side	10	20525	836.5	1	1	23	22.29	117.76%	0.254	0.299	-
					Bottom side	10	20525	836.5	1	1	23	22.29	117.76%	0.125	0.147	-
					Right side	10	20525	836.5	1	1	23	22.29	117.76%	0.164	0.193	-
					Left side	10	20525	836.5	1	1	23	22.29	117.76%	0.064	0.075	-
			50 RB		Front side	10	20525	836.5	1	1	23	22.29	117.76%	0.185	0.218	-
					Back side	10	20525	836.5	1	1	23	22.29	117.76%	0.256	0.301	-
					Bottom side	10	20525	836.5	1	1	23	22.29	117.76%	0.125	0.147	-
					Right side	10	20525	836.5	1	1	23	22.29	117.76%	0.165	0.194	-
					Left side	10	20525	836.5	1	1	23	22.29	117.76%	0.064	0.075	-

Tested MLA-L12 and MLA-L02 at the worst position with battery #1, #2, #3, #4.

Mode	Bandwidth (MHz)	Modulation	RB Size	RB start	Position	Distance (mm)	CH	Freq. (MHz)	Battery	SIM	Max. Rated Avg. Power + Max. Tolerance (dBm)	Measured Avg. Power (dBm)	Scaling	Averaged SAR over 1g (W/kg)		Plot page
														Measured	Reported	
LTE Band 5 (Head)	10MHz	QPSK	1 RB	25	LE Cheek	-	20450	829	1	1	24	23.35	116.14%	0.044	0.051	-
					LE Cheek	-	20450	829	2	1	24	23.35	116.14%	0.049	0.057	-
					LE Cheek	-	20450	829	3	1	24	23.35	116.14%	0.056	0.065	142
					LE Cheek	-	20450	829	4	1	24	23.35	116.14%	0.052	0.060	-
LTE Band 5 (Body-Worn)	10MHz	QPSK	1 RB	25	Back side	15	20600	844	1	1	24	23.35	116.14%	0.247	0.287	-
					Back side	15	20600	844	2	1	24	23.35	116.14%	0.254	0.295	-
					Back side	15	20600	844	3	1	24	23.35	116.14%	0.249	0.289	-
					Back side	15	20600	844	4	1	24	23.35	116.14%	0.260	0.302	143
LTE Band 5 (Hotspot)	10MHz	QPSK	1 RB	25	Back side	10	20600	844	1	1	24	23.35	116.14%	0.475	0.552	-
					Back side	10	20600	844	2	1	24	23.35	116.14%	0.518	0.602	-
					Back side	10	20600	844	3	1	24	23.35	116.14%	0.526	0.611	144
					Back side	10	20600	844	4	1	24	23.35	116.14%	0.523	0.607	-

Sub Antenna

The data of MLA-L13 and MLA-L03 from the SAR report of FCC ID: QISMLA-LX3

Mode	Bandwidth (MHz)	Modulation	RB Size	RB start	Position	Distance (mm)	CH	Freq. (MHz)	Battery	SIM	Max. Rated Avg. Power + Max. Tolerance (dBm)	Measured Avg. Power (dBm)	Scaling	Averaged SAR over 1g (W/kg)		Plot page
														Measured	Reported	
LTE Band 5 (Head)	10MHz	QPSK	1 RB	25	RE Cheek	-	20450	829	1	1	22	20.92	128.23%	0.930	1.193	-
					RE Cheek	-	20450	829	2	1	22	20.92	128.23%	0.925	1.186	-
					RE Cheek	-	20450	829	3	1	22	20.92	128.23%	0.902	1.157	-
					RE Cheek	-	20450	829	4	1	22	20.92	128.23%	0.884	1.134	-
					RE Cheek*	-	20450	829	1	1	22	20.92	128.23%	0.922	1.182	-
					RE Cheek	-	20525	836.5	1	1	22	21.12	122.46%	0.825	1.010	-
					RE Cheek	-	20600	844	1	1	22	21.18	120.78%	0.726	0.877	-
					RE Tilt	-	20600	844	1	1	22	21.18	120.78%	0.636	0.768	-
					LE Cheek	-	20600	844	1	1	22	21.18	120.78%	0.445	0.537	-
					LE Tilt	-	20600	844	1	1	22	21.18	120.78%	0.429	0.518	-
			25 RB	12	RE Cheek	-	20525	836.5	1	1	21	20.16	121.34%	0.653	0.792	-
					RE Tilt	-	20525	836.5	1	1	21	20.16	121.34%	0.525	0.637	-
					LE Cheek	-	20525	836.5	1	1	21	20.16	121.34%	0.394	0.478	-
					LE Tilt	-	20525	836.5	1	1	21	20.16	121.34%	0.388	0.471	-
			50 RB		RE Cheek	-	20600	844	1	1	21	20.16	121.34%	0.603	0.732	-
					RE Tilt	-	20600	844	1	1	21	20.16	121.34%	0.491	0.596	-
					LE Cheek	-	20600	844	1	1	21	20.16	121.34%	0.359	0.436	-
					LE Tilt	-	20600	844	1	1	21	20.16	121.34%	0.348	0.422	-
LTE Band 5 (Body-Worn)	10MHz	QPSK	1 RB	25	Front side	15	20600	844	1	1	22	21.18	120.78%	0.105	0.127	-
					Back side	15	20450	829	1	1	22	20.92	128.23%	0.139	0.178	-
					Back side	15	20450	829	2	1	22	20.92	128.23%	0.145	0.186	-
					Back side	15	20450	829	3	1	22	20.92	128.23%	0.128	0.164	-
					Back side	15	20450	829	4	1	22	20.92	128.23%	0.121	0.155	-
					Back side	15	20525	836.5	1	1	22	21.12	122.46%	0.136	0.167	-
					Back side	15	20600	844	1	1	22	21.18	120.78%	0.123	0.149	-
			25 RB	12	Front side	15	20525	836.5	1	1	21	20.16	121.34%	0.086	0.104	-
					Back side	15	20600	844	1	1	21	20.16	121.34%	0.102	0.124	-
			50 RB		Front side	15	20600	844	1	1	21	20.16	121.34%	0.081	0.098	-
					Back side	15	20600	844	1	1	21	20.16	121.34%	0.097	0.118	-
LTE Band 5 (Hotspot)	10MHz	QPSK	1 RB	25	Front side	10	20600	844	1	1	22	21.18	120.78%	0.215	0.260	-
					Back side	10	20450	829	1	1	22	20.92	128.23%	0.332	0.426	-
					Back side	10	20450	829	2	1	22	20.92	128.23%	0.328	0.421	-
					Back side	10	20450	829	3	1	22	20.92	128.23%	0.315	0.404	-
					Back side	10	20450	829	4	1	22	20.92	128.23%	0.304	0.390	-
					Back side	10	20525	836.5	1	1	22	21.12	122.46%	0.301	0.369	-
					Back side	10	20600	844	1	1	22	21.18	120.78%	0.279	0.337	-
					Top side	10	20600	844	1	1	22	21.18	120.78%	0.180	0.217	-
					Left side	10	20600	844	1	1	22	21.18	120.78%	0.169	0.204	-
			25 RB	12	Front side	10	20525	836.5	1	1	21	20.16	121.34%	0.172	0.209	-
					Back side	10	20525	836.5	1	1	21	20.16	121.34%	0.241	0.292	-
					Top side	10	20525	836.5	1	1	21	20.16	121.34%	0.154	0.187	-
					Left side	10	20525	836.5	1	1	21	20.16	121.34%	0.142	0.172	-
			50 RB		Front side	10	20600	844	1	1	21	20.16	121.34%	0.161	0.195	-
					Back side	10	20600	844	1	1	21	20.16	121.34%	0.215	0.261	-
					Top side	10	20600	844	1	1	21	20.16	121.34%	0.134	0.163	-
					Left side	10	20600	844	1	1	21	20.16	121.34%	0.127	0.154	-

Tested MLA-L12 and MLA-L02 at the worst position with battery #1, #2, #3, #4.

Mode	Bandwidth (MHz)	Modulation	RB Size	RB start	Position	Distance (mm)	CH	Freq. (MHz)	Battery	SIM	Max. Rated Avg. Power + Max. Tolerance (dBm)	Measured Avg. Power (dBm)	Scaling	Averaged SAR over 1g (W/kg)		Plot page
														Measured	Reported	
LTE Band 5 (Head)	10MHz	QPSK	1 RB	25	RE Cheek	-	20450	829	1	1	22	20.92	128.23%	0.900	1.154	145
					RE Cheek	-	20450	829	2	1	22	20.92	128.23%	0.842	1.080	-
					RE Cheek	-	20450	829	3	1	22	20.92	128.23%	0.863	1.107	-
					RE Cheek	-	20450	829	4	1	22	20.92	128.23%	0.895	1.148	-
LTE Band 5 (Body-Worn)	10MHz	QPSK	1 RB	25	Back side	15	20450	829	1	1	22	20.92	128.23%	0.141	0.181	-
					Back side	15	20450	829	2	1	22	20.92	128.23%	0.132	0.169	-
					Back side	15	20450	829	3	1	22	20.92	128.23%	0.139	0.178	-
					Back side	15	20450	829	4	1	22	20.92	128.23%	0.142	0.182	146
LTE Band 5 (Hotspot)	10MHz	QPSK	1 RB	25	Back side	10	20450	829	1	1	22	20.92	128.23%	0.331	0.424	147
					Back side	10	20450	829	2	1	22	20.92	128.23%	0.301	0.386	-
					Back side	10	20450	829	3	1	22	20.92	128.23%	0.297	0.381	-
					Back side	10	20450	829	4	1	22	20.92	128.23%	0.330	0.423	-

LTE FDD Band VII

Main Antenna

The data of MLA-L13 and MLA-L03 from the SAR report of FCC ID: QISMLA-LX3

Mode	Bandwidth (MHz)	Modulation	RB Size	RB start	Position	Distance (mm)	CH	Freq. (MHz)	Battery	SIM	Max. Rated Avg. Power + Max. Tolerance (dBm)	Measured Avg. Power (dBm)	Scaling	Averaged SAR over 1g (W/kg)		Plot page
														Measured	Reported	
LTE Band 7 (Head)	20MHz	QPSK	1 RB	50	RE Cheek	-	21100	2535	1	1	23.5	23.24	106.17%	0.028	0.030	-
					RE Cheek	-	21350	2560	1	1	23.5	23.44	101.39%	0.040	0.041	-
					RE Cheek	-	21350	2560	2	1	23.5	23.44	101.39%	0.035	0.035	-
					RE Cheek	-	21350	2560	3	1	23.5	23.44	101.39%	0.028	0.028	-
					RE Cheek	-	21350	2560	4	1	23.5	23.44	101.39%	0.026	0.026	-
					RE Tilt	-	21350	2560	1	1	23.5	23.44	101.39%	0.038	0.039	-
					LE Cheek	-	21350	2560	1	1	23.5	23.44	101.39%	0.025	0.025	-
					LE Tilt	-	21350	2560	1	1	23.5	23.44	101.39%	0.020	0.020	-
				99	RE Cheek	-	20850	2510	1	1	23.5	23.27	105.44%	0.015	0.016	-
			50 RB	50	RE Cheek	-	21350	2560	1	1	22.5	22.32	104.23%	0.029	0.030	-
					RE Tilt	-	21350	2560	1	1	22.5	22.32	104.23%	0.027	0.028	-
					LE Cheek	-	21350	2560	1	1	22.5	22.32	104.23%	0.017	0.018	-
					LE Tilt	-	21350	2560	1	1	22.5	22.32	104.23%	0.013	0.014	-
			100 RB		RE Cheek	-	21350	2560	1	1	22.5	22.35	103.51%	0.030	0.031	-
					RE Tilt	-	21350	2560	1	1	22.5	22.35	103.51%	0.025	0.026	-
					LE Cheek	-	21350	2560	1	1	22.5	22.35	103.51%	0.015	0.016	-
					LE Tilt	-	21350	2560	1	1	22.5	22.35	103.51%	0.013	0.013	-
LTE Band 7 (Body-Worn)	20MHz	QPSK	1 RB	50	Front side	15	21100	2535	1	1	23.5	23.24	106.17%	0.248	0.263	-
					Front side	15	21350	2560	1	1	23.5	23.44	101.39%	0.263	0.267	-
					Front side	15	21350	2560	2	1	23.5	23.44	101.39%	0.252	0.256	-
					Front side	15	21350	2560	3	1	23.5	23.44	101.39%	0.202	0.205	-
					Front side	15	21350	2560	4	1	23.5	23.44	101.39%	0.194	0.197	-
					Back side	15	21350	2560	1	1	23.5	23.44	101.39%	0.247	0.250	-
				99	Front side	15	20850	2510	1	1	23.5	23.27	105.44%	0.226	0.238	-
			50 RB	50	Front side	15	21350	2560	1	1	22.5	22.32	104.23%	0.208	0.217	-
					Back side	15	21350	2560	1	1	22.5	22.32	104.23%	0.195	0.203	-
			100 RB		Front side	15	21350	2560	1	1	22.5	22.35	103.51%	0.210	0.217	-
					Back side	15	21350	2560	1	1	22.5	22.35	103.51%	0.199	0.206	-
LTE Band 7 (Hotspot)	20MHz	QPSK	1 RB	50	Front side	10	21350	2560	1	1	23.5	23.44	101.39%	0.423	0.429	-
					Back side	10	21350	2560	1	1	23.5	23.44	101.39%	0.419	0.425	-
					Bottom side	10	21100	2535	1	1	23.5	23.24	106.17%	0.991	1.052	-
					Bottom side	10	21100	2535	2	1	23.5	23.24	106.17%	0.957	1.016	-
					Bottom side	10	21100	2535	3	1	23.5	23.24	106.17%	0.923	0.980	-
					Bottom side	10	21100	2535	4	1	23.5	23.24	106.17%	0.915	0.971	-
					Bottom side	10	21350	2560	1	1	23.5	23.44	101.39%	0.895	0.907	-
					Right side	10	21350	2560	1	1	23.5	23.44	101.39%	0.082	0.083	-
					Left side	10	21350	2560	1	1	23.5	23.44	101.39%	0.316	0.320	-
				99	Bottom side	10	20850	2510	1	1	23.5	23.27	105.44%	0.778	0.820	-
			50 RB	50	Front side	10	21350	2560	1	1	22.5	22.32	104.23%	0.328	0.342	-
					Back side	10	21350	2560	1	1	22.5	22.32	104.23%	0.321	0.335	-
					Bottom side	10	21350	2560	1	1	22.5	22.32	104.23%	0.684	0.713	-
					Right side	10	21350	2560	1	1	22.5	22.32	104.23%	0.065	0.068	-
					Left side	10	21350	2560	1	1	22.5	22.32	104.23%	0.250	0.261	-
			100 RB		Front side	10	21350	2560	1	1	22.5	22.35	103.51%	0.328	0.340	-
					Back side	10	21350	2560	1	1	22.5	22.35	103.51%	0.323	0.334	-
					Bottom side	10	21350	2560	1	1	22.5	22.35	103.51%	0.680	0.704	-
					Right side	10	21350	2560	1	1	22.5	22.35	103.51%	0.066	0.068	-
					Left side	10	21350	2560	1	1	22.5	22.35	103.51%	0.253	0.262	-

Tested MLA-L12 and MLA-L02 at the worst position with battery #1, #2, #3, #4.

Mode	Bandwidth (MHz)	Modulation	RB Size	RB start	Position	Distance (mm)	CH	Freq. (MHz)	Battery	SIM	Max. Rated Avg. Power + Max. Tolerance (dBm)	Measured Avg. Power (dBm)	Scaling	Averaged SAR over 1g (W/kg)		Plot page
														Measured	Reported	
LTE Band 7 (Head)	20MHz	QPSK	1 RB	50	RE Cheek	-	21350	2560	1	1	23.5	23.44	101.39%	0.026	0.026	-
					RE Cheek	-	21350	2560	2	1	23.5	23.44	101.39%	0.032	0.032	148
					RE Cheek	-	21350	2560	3	1	23.5	23.44	101.39%	0.021	0.021	-
					RE Cheek	-	21350	2560	4	1	23.5	23.44	101.39%	0.027	0.027	-
LTE Band 7 (Body-Worn)	20MHz	QPSK	1 RB	50	Front side	15	21350	2560	1	1	23.5	23.44	101.39%	0.152	0.154	-
					Front side	15	21350	2560	2	1	23.5	23.44	101.39%	0.216	0.219	149
					Front side	15	21350	2560	3	1	23.5	23.44	101.39%	0.127	0.129	-
					Front side	15	21350	2560	4	1	23.5	23.44	101.39%	0.162	0.164	-
LTE Band 7 (Hotspot)	20MHz	QPSK	1 RB	50	Bottom side	10	21100	2535	1	1	23.5	23.24	106.17%	0.635	0.674	-
					Bottom side	10	21100	2535	2	1	23.5	23.24	106.17%	0.829	0.880	150
					Bottom side	10	21100	2535	3	1	23.5	23.24	106.17%	0.532	0.565	-
					Bottom side	10	21100	2535	4	1	23.5	23.24	106.17%	0.649	0.689	-

Sub Antenna

The data of MLA-L13 and MLA-L03 from the SAR report of FCC ID: QISMLA-LX3

Mode	Bandwidth (MHz)	Modulation	RB Size	RB start	Position	Distance (mm)	CH	Freq. (MHz)	Battery	SIM	Max. Rated Avg. Power + Max. Tolerance (dBm)	Measured Avg. Power (dBm)	Scaling	Averaged SAR over 1g (W/kg)		Plot page
														Measured	Reported	
LTE Band 7 (Head)	20MHz	QPSK	1 RB	50	RE Cheek	-	20850	2510	1	1	17.5	17.50	100.00%	0.454	0.454	-
					RE Cheek	-	21100	2535	1	1	17.5	17.31	104.47%	0.514	0.537	-
					RE Tilt	-	20850	2510	1	1	17.5	17.50	100.00%	0.390	0.390	-
					LE Cheek	-	20850	2510	1	1	17.5	17.50	100.00%	0.166	0.166	-
					LE Tilt	-	20850	2510	1	1	17.5	17.50	100.00%	0.171	0.171	-
				99	RE Cheek	-	21350	2560	1	1	17.5	17.29	104.95%	0.558	0.586	-
					RE Cheek	-	21350	2560	2	1	17.5	17.29	104.95%	0.502	0.527	-
					RE Cheek	-	21350	2560	3	1	17.5	17.29	104.95%	0.515	0.541	-
					RE Cheek	-	21350	2560	4	1	17.5	17.29	104.95%	0.530	0.556	-
			50 RB	0	RE Cheek	-	21100	2535	1	1	16.5	16.27	105.44%	0.409	0.431	-
					RE Tilt	-	21100	2535	1	1	16.5	16.27	105.44%	0.337	0.355	-
					LE Cheek	-	21100	2535	1	1	16.5	16.27	105.44%	0.152	0.160	-
					LE Tilt	-	21100	2535	1	1	16.5	16.27	105.44%	0.156	0.164	-
			100 RB		RE Cheek	-	21100	2535	1	1	16.5	16.22	106.66%	0.404	0.431	-
					RE Tilt	-	21100	2535	1	1	16.5	16.22	106.66%	0.332	0.354	-
					LE Cheek	-	21100	2535	1	1	16.5	16.22	106.66%	0.150	0.160	-
					LE Tilt	-	21100	2535	1	1	16.5	16.22	106.66%	0.151	0.161	-
LTE Band 7 (Body-Worn)	20MHz	QPSK	1 RB	50	Front side	15	20850	2510	1	1	17.5	17.50	100.00%	0.046	0.046	-
					Front side	15	21100	2535	1	1	17.5	17.31	104.47%	0.057	0.060	-
					Front side	15	21100	2535	2	1	17.5	17.31	104.47%	0.041	0.043	-
					Front side	15	21100	2535	3	1	17.5	17.31	104.47%	0.044	0.046	-
					Front side	15	21100	2535	4	1	17.5	17.31	104.47%	0.051	0.053	-
					Back side	15	20850	2510	1	1	17.5	17.50	100.00%	0.044	0.044	-
				99	Front side	15	21350	2560	1	1	17.5	17.29	104.95%	0.056	0.059	-
			50 RB	0	Front side	15	21100	2535	1	1	16.5	16.27	105.44%	0.043	0.045	-
					Back side	15	21100	2535	1	1	16.5	16.27	105.44%	0.038	0.040	-
			100 RB		Front side	15	21100	2535	1	1	16.5	16.22	106.66%	0.041	0.044	-
					Back side	15	21100	2535	1	1	16.5	16.22	106.66%	0.035	0.037	-
LTE Band 7 (Hotspot)	20MHz	QPSK	1 RB	50	Front side	10	20850	2510	1	1	17.5	17.50	100.00%	0.092	0.092	-
					Front side	10	21100	2535	1	1	17.5	17.31	104.47%	0.119	0.124	-
					Back side	10	20850	2510	1	1	17.5	17.50	100.00%	0.080	0.080	-
					Top side	10	20850	2510	1	1	17.5	17.50	100.00%	0.053	0.053	-
					Left side	10	20850	2510	1	1	17.5	17.50	100.00%	0.084	0.084	-
				99	Front side	10	21350	2560	1	1	17.5	17.29	104.95%	0.122	0.128	-
					Front side	10	21350	2560	2	1	17.5	17.29	104.95%	0.095	0.100	-
					Front side	10	21350	2560	3	1	17.5	17.29	104.95%	0.105	0.110	-
					Front side	10	21350	2560	4	1	17.5	17.29	104.95%	0.114	0.120	-
			50 RB	0	Front side	10	21100	2535	1	1	16.5	16.27	105.44%	0.091	0.096	-
					Back side	10	21100	2535	1	1	16.5	16.27	105.44%	0.061	0.064	-
					Top side	10	21100	2535	1	1	16.5	16.27	105.44%	0.040	0.042	-
					Left side	10	21100	2535	1	1	16.5	16.27	105.44%	0.069	0.073	-
			100 RB		Front side	10	21100	2535	1	1	16.5	16.22	106.66%	0.087	0.093	-
					Back side	10	21100	2535	1	1	16.5	16.22	106.66%	0.058	0.062	-
					Top side	10	21100	2535	1	1	16.5	16.22	106.66%	0.037	0.039	-
					Left side	10	21100	2535	1	1	16.5	16.22	106.66%	0.061	0.065	-

Tested MLA-L12 and MLA-L02 at the worst position with battery #1, #2, #3, #4.

Mode	Bandwidth (MHz)	Modulation	RB Size	RB start	Position	Distance (mm)	CH	Freq. (MHz)	Battery	SIM	Max. Rated Avg. Power + Max. Tolerance (dBm)	Measured Avg. Power (dBm)	Scaling	Averaged SAR over 1g (W/kg)		Plot page
														Measured	Reported	
LTE Band 7 (Head)	20MHz	QPSK	1 RB	99	RE Cheek	-	21350	2560	1	1	17.5	17.29	104.95%	0.788	0.827	151
					RE Cheek	-	21350	2560	2	1	17.5	17.29	104.95%	0.785	0.824	-
					RE Cheek	-	21350	2560	3	1	17.5	17.29	104.95%	0.743	0.780	-
					RE Cheek	-	21350	2560	4	1	17.5	17.29	104.95%	0.722	0.758	-
LTE Band 7 (Body-Worn)	20MHz	QPSK	1 RB	50	Front side	15	21100	2535	1	1	17.5	17.31	104.47%	0.081	0.085	152
					Front side	15	21100	2535	2	1	17.5	17.31	104.47%	0.080	0.084	-
					Front side	15	21100	2535	3	1	17.5	17.31	104.47%	0.077	0.080	-
					Front side	15	21100	2535	4	1	17.5	17.31	104.47%	0.074	0.077	-
LTE Band 7 (Hotspot)	20MHz	QPSK	1 RB	99	Front side	10	21350	2560	1	1	17.5	17.29	104.95%	0.173	0.182	153
					Front side	10	21350	2560	2	1	17.5	17.29	104.95%	0.171	0.179	-
					Front side	10	21350	2560	3	1	17.5	17.29	104.95%	0.159	0.167	-
					Front side	10	21350	2560	4	1	17.5	17.29	104.95%	0.151	0.158	-

LTE TDD Band XXXVIII

Main Antenna

Mode	Bandwidth (MHz)	Modulation	RB Size	RB start	Position	Distance (mm)	CH	Freq. (MHz)	Battery	SIM	Max. Rated Avg. Power + Max. Tolerance (dBm)	Measured Avg. Power (dBm)	Scaling	Averaged SAR over 1g (W/kg)		Plot page
														Measured	Reported	
LTE Band 38 (Head)	20MHz	QPSK	1 RB	0	RE Cheek	-	38000	2595	1	1	23.5	23.48	100.46%	0.018	0.018	154
					RE Cheek	-	38150	2610	1	1	23.5	23.47	100.69%	0.017	0.017	-
					RE Tilt	-	38000	2595	1	1	23.5	23.48	100.46%	0.014	0.014	-
					LE Cheek	-	38000	2595	1	1	23.5	23.48	100.46%	0.013	0.013	-
					LE Tilt	-	38000	2595	1	1	23.5	23.48	100.46%	0.011	0.011	-
				50	RE Cheek	-	37850	2580	1	1	23.5	23.14	108.64%	0.017	0.018	-
					RE Cheek	-	37850	2580	2	1	23.5	23.14	108.64%	0.016	0.017	-
					RE Cheek	-	37850	2580	3	1	23.5	23.14	108.64%	0.016	0.017	-
					RE Cheek	-	37850	2580	4	1	23.5	23.14	108.64%	0.015	0.016	-
			50 RB	50	RE Cheek	-	38150	2610	1	1	22.5	22.27	105.44%	0.013	0.014	-
					RE Tilt	-	38150	2610	1	1	22.5	22.27	105.44%	0.011	0.012	-
					LE Cheek	-	38150	2610	1	1	22.5	22.27	105.44%	0.011	0.012	-
					LE Tilt	-	38150	2610	1	1	22.5	22.27	105.44%	0.008	0.008	-
			100 RB		RE Cheek	-	38150	2610	1	1	22.5	22.17	107.89%	0.013	0.014	-
					RE Tilt	-	38150	2610	1	1	22.5	22.17	107.89%	0.010	0.011	-
					LE Cheek	-	38150	2610	1	1	22.5	22.17	107.89%	0.011	0.012	-
					LE Tilt	-	38150	2610	1	1	22.5	22.17	107.89%	0.008	0.009	-
LTE Band 38 (Body-Worn)	20MHz	QPSK	1 RB	0	Front side	15	38000	2595	1	1	23.5	23.48	100.46%	0.090	0.090	155
					Front side	15	38150	2610	1	1	23.5	23.47	100.69%	0.087	0.088	-
					Back side	15	38000	2595	1	1	23.5	23.48	100.46%	0.089	0.089	-
				50	Front side	15	37850	2580	1	1	23.5	23.14	108.64%	0.088	0.096	-
					Front side	15	37850	2580	2	1	23.5	23.14	108.64%	0.084	0.091	-
					Front side	15	37850	2580	3	1	23.5	23.14	108.64%	0.085	0.092	-
					Front side	15	37850	2580	4	1	23.5	23.14	108.64%	0.081	0.088	-
			50 RB	50	Front side	15	38150	2610	1	1	22.5	22.27	105.44%	0.066	0.070	-
					Back side	15	38150	2610	1	1	22.5	22.27	105.44%	0.063	0.066	-
			100 RB		Front side	15	38150	2610	1	1	22.5	22.17	107.89%	0.065	0.070	-
					Back side	15	38150	2610	1	1	22.5	22.17	107.89%	0.065	0.070	-
LTE Band 38 (Hotspot)	20MHz	QPSK	1 RB	0	Front side	10	38000	2595	1	1	23.5	23.48	100.46%	0.168	0.169	-
					Back side	10	38000	2595	1	1	23.5	23.48	100.46%	0.165	0.166	-
					Bottom side	10	38000	2595	1	1	23.5	23.48	100.46%	0.366	0.368	-
					Bottom side	10	38150	2610	1	1	23.5	23.47	100.69%	0.367	0.370	156
					Right side	10	38000	2595	1	1	23.5	23.48	100.46%	0.025	0.025	-
					Left side	10	38000	2595	1	1	23.5	23.48	100.46%	0.082	0.082	-
				50	Bottom side	10	37850	2580	1	1	23.5	23.14	108.64%	0.362	0.393	-
					Bottom side	10	37850	2580	2	1	23.5	23.14	108.64%	0.302	0.328	-
					Bottom side	10	37850	2580	3	1	23.5	23.14	108.64%	0.334	0.363	-
					Bottom side	10	37850	2580	4	1	23.5	23.14	108.64%	0.300	0.326	-
			50 RB	50	Front side	10	38150	2610	1	1	22.5	22.27	105.44%	0.129	0.136	-
					Back side	10	38150	2610	1	1	22.5	22.27	105.44%	0.127	0.134	-
					Bottom side	10	38150	2610	1	1	22.5	22.27	105.44%	0.274	0.289	-
					Right side	10	38150	2610	1	1	22.5	22.27	105.44%	0.019	0.020	-
					Left side	10	38150	2610	1	1	22.5	22.27	105.44%	0.060	0.063	-
			100 RB		Front side	10	38150	2610	1	1	22.5	22.17	107.89%	0.128	0.138	-
					Back side	10	38150	2610	1	1	22.5	22.17	107.89%	0.127	0.137	-
					Bottom side	10	38150	2610	1	1	22.5	22.17	107.89%	0.278	0.300	-
					Right side	10	38150	2610	1	1	22.5	22.17	107.89%	0.019	0.020	-
					Left side	10	38150	2610	1	1	22.5	22.17	107.89%	0.060	0.065	-

Sub Antenna

Mode	Bandwidth (MHz)	Modulation	RB Size	RB start	Position	Distance (mm)	CH	Freq. (MHz)	Battery	SIM	Max. Rated Avg. Power + Max. Tolerance (dBm)	Measured Avg. Power (dBm)	Scaling	Averaged SAR over 1g (W/kg)		Plot page
														Measured	Reported	
LTE Band 38 (Head)	20MHz	QPSK	1 RB	0	RE Cheek	-	38000	2595	1	1	20.5	19.94	113.76%	0.664	0.755	-
					RE Cheek	-	38000	2595	2	1	20.5	19.94	113.76%	0.661	0.752	-
					RE Cheek	-	38000	2595	3	1	20.5	19.94	113.76%	0.633	0.720	-
					RE Cheek	-	38000	2595	4	1	20.5	19.94	113.76%	0.552	0.628	-
				50	RE Cheek	-	37850	2580	1	1	20.5	19.91	114.55%	0.644	0.738	-
					RE Cheek	-	38150	2610	1	1	20.5	20.12	109.14%	0.685	0.748	157
					RE Tilt	-	38150	2610	1	1	20.5	20.12	109.14%	0.646	0.705	-
					LE Cheek	-	38150	2610	1	1	20.5	20.12	109.14%	0.290	0.317	-
					LE Tilt	-	38150	2610	1	1	20.5	20.12	109.14%	0.272	0.297	-
			50 RB	0	RE Cheek	-	37850	2580	1	1	19.5	19.24	106.17%	0.548	0.582	-
					RE Tilt	-	37850	2580	1	1	19.5	19.24	106.17%	0.524	0.556	-
					LE Cheek	-	37850	2580	1	1	19.5	19.24	106.17%	0.234	0.248	-
					LE Tilt	-	37850	2580	1	1	19.5	19.24	106.17%	0.220	0.234	-
			100 RB		RE Cheek	-	37850	2580	1	1	19.5	19.18	107.65%	0.542	0.583	-
					RE Tilt	-	37850	2580	1	1	19.5	19.18	107.65%	0.521	0.561	-
					LE Cheek	-	37850	2580	1	1	19.5	19.18	107.65%	0.233	0.251	-
					LE Tilt	-	37850	2580	1	1	19.5	19.18	107.65%	0.217	0.234	-
LTE Band 38 (Body-Worn)	20MHz	QPSK	1 RB	0	Front side	15	38000	2595	1	1	20.5	19.94	113.76%	0.079	0.090	-
					Front side	15	38000	2595	2	1	20.5	19.94	113.76%	0.078	0.089	-
					Front side	15	38000	2595	3	1	20.5	19.94	113.76%	0.074	0.084	-
					Front side	15	38000	2595	4	1	20.5	19.94	113.76%	0.063	0.072	-
				50	Front side	15	37850	2580	1	1	20.5	19.91	114.55%	0.077	0.088	-
					Front side	15	38150	2610	1	1	20.5	20.12	109.14%	0.081	0.088	158
					Back side	15	38150	2610	1	1	20.5	20.12	109.14%	0.080	0.087	-
			50 RB	0	Front side	15	37850	2580	1	1	19.5	19.24	106.17%	0.065	0.069	-
					Back side	15	37850	2580	1	1	19.5	19.24	106.17%	0.064	0.068	-
			100 RB		Front side	15	37850	2580	1	1	19.5	19.18	107.65%	0.065	0.070	-
					Back side	15	37850	2580	1	1	19.5	19.18	107.65%	0.063	0.068	-
LTE Band 38 (Hotspot)	20MHz	QPSK	1 RB	0	Left side	10	38000	2595	1	1	20.5	19.94	113.76%	0.180	0.205	-
					Left side	10	38000	2595	2	1	20.5	19.94	113.76%	0.149	0.170	-
					Left side	10	38000	2595	3	1	20.5	19.94	113.76%	0.159	0.181	-
					Left side	10	38000	2595	4	1	20.5	19.94	113.76%	0.116	0.132	-
				50	Front side	10	38150	2610	1	1	20.5	20.12	109.14%	0.142	0.155	-
					Back side	10	38150	2610	1	1	20.5	20.12	109.14%	0.163	0.178	-
					Top side	10	38150	2610	1	1	20.5	20.12	109.14%	0.091	0.099	-
					Left side	10	37850	2580	1	1	20.5	19.91	114.55%	0.174	0.199	-
					Left side	10	38150	2610	1	1	20.5	20.12	109.14%	0.184	0.201	159
			50 RB	0	Front side	10	37850	2580	1	1	19.5	19.24	106.17%	0.123	0.131	-
					Back side	10	37850	2580	1	1	19.5	19.24	106.17%	0.126	0.134	-
					Top side	10	37850	2580	1	1	19.5	19.24	106.17%	0.072	0.076	-
					Left side	10	37850	2580	1	1	19.5	19.24	106.17%	0.138	0.147	-
			100 RB		Front side	10	37850	2580	1	1	19.5	19.18	107.65%	0.126	0.136	-
					Back side	10	37850	2580	1	1	19.5	19.18	107.65%	0.127	0.137	-
					Top side	10	37850	2580	1	1	19.5	19.18	107.65%	0.071	0.076	-
					Left side	10	37850	2580	1	1	19.5	19.18	107.65%	0.142	0.153	-

WLAN802.11 b

The data of MLA-L13 and MLA-L03 from the SAR report of FCC ID: QISMLA-LX3

Antenna	Mode	Position	Distance (mm)	CH	Freq. (MHz)	Battery	SIM	Max. Rated Avg. Power + Max. Tolerance (dBm)	Measured Avg. Power (dBm)	Scaling	Averaged SAR over 1g (W/kg)		Plot page
											Measured	Reported	
WLAN	WLAN 802.11 b (Head)	RE Cheek	-	1	2412	1	1	12.5	12.48	100.46%	0.108	0.108	-
		RE Tilt	-	1	2412	1	1	12.5	12.48	100.46%	0.117	0.118	-
		LE Cheek	-	1	2412	1	1	12.5	12.48	100.46%	0.287	0.288	-
		LE Tilt	-	1	2412	1	1	12.5	12.48	100.46%	0.312	0.313	-
		LE Tilt	-	6	2437	1	1	12.5	12.33	103.99%	0.301	0.313	-
		LE Tilt	-	11	2462	1	1	12.5	12.35	103.51%	0.404	0.418	-
		LE Tilt	-	11	2462	2	1	12.5	12.35	103.51%	0.302	0.313	-
		LE Tilt	-	11	2462	3	1	12.5	12.35	103.51%	0.325	0.336	-
		LE Tilt	-	11	2462	4	1	12.5	12.35	103.51%	0.367	0.380	-
	WLAN 802.11 b (Body-Worn)	Front side	15	11	2462	1	1	19.5	19.48	100.46%	0.137	0.138	-
		Back side	15	1	2412	1	1	19.5	19.43	101.62%	0.091	0.092	-
		Back side	15	6	2437	1	1	19.5	19.24	106.17%	0.100	0.106	-
		Back side	15	11	2462	1	1	19.5	19.48	100.46%	0.149	0.150	-
		Back side	15	11	2462	2	1	19.5	19.48	100.46%	0.094	0.094	-
		Back side	15	11	2462	3	1	19.5	19.48	100.46%	0.112	0.113	-
		Back side	15	11	2462	4	1	19.5	19.48	100.46%	0.123	0.124	-
	WLAN 802.11 b (Hotspot)	Front side	10	6	2437	1	1	19.5	19.24	106.17%	0.291	0.309	-
		Back side	10	1	2412	1	1	19.5	19.43	101.62%	0.274	0.278	-
		Back side	10	6	2437	1	1	19.5	19.24	106.17%	0.231	0.245	-
		Back side	10	11	2462	1	1	19.5	19.48	100.46%	0.323	0.324	-
		Back side	10	11	2462	2	1	19.5	19.48	100.46%	0.264	0.265	-
		Back side	10	11	2462	3	1	19.5	19.48	100.46%	0.283	0.284	-
		Back side	10	11	2462	4	1	19.5	19.48	100.46%	0.302	0.303	-
		Top side	10	11	2462	1	1	19.5	19.48	100.46%	0.277	0.278	-
		Right side	10	11	2462	1	1	19.5	19.48	100.46%	0.303	0.304	-

Tested MLA-L12 and MLA-L02 at the worst position with battery #1, #2, #3, #4.

Antenna	Mode	Position	Distance (mm)	CH	Freq. (MHz)	Battery	SIM	Max. Rated Avg. Power + Max. Tolerance (dBm)	Measured Avg. Power (dBm)	Scaling	Averaged SAR over 1g (W/kg)		Plot page
											Measured	Reported	
WLAN	WLAN 802.11 b (Head)	LE Tilt	-	11	2462	1	1	12.5	12.35	103.51%	0.392	0.406	-
		LE Tilt	-	11	2462	2	1	12.5	12.35	103.51%	0.381	0.394	-
		LE Tilt	-	11	2462	3	1	12.5	12.35	103.51%	0.398	0.412	160
		LE Tilt	-	11	2462	4	1	12.5	12.35	103.51%	0.382	0.395	-
	WLAN 802.11 b (Body-Worn)	Back side	15	11	2462	1	1	19.5	19.48	100.46%	0.141	0.142	-
		Back side	15	11	2462	2	1	19.5	19.48	100.46%	0.132	0.133	-
		Back side	15	11	2462	3	1	19.5	19.48	100.46%	0.145	0.146	161
		Back side	15	11	2462	4	1	19.5	19.48	100.46%	0.136	0.137	-
	WLAN 802.11 b (Hotspot)	Back side	10	11	2462	1	1	19.5	19.48	100.46%	0.302	0.303	-
		Back side	10	11	2462	2	1	19.5	19.48	100.46%	0.311	0.312	-
		Back side	10	11	2462	3	1	19.5	19.48	100.46%	0.294	0.295	-
		Back side	10	11	2462	4	1	19.5	19.48	100.46%	0.315	0.316	162

3. Simultaneous Transmission Analysis

Simultaneous Transmission Scenarios:

Simultaneous Transmit Configurations	Head	Body-Worn	Hotspot	Product specific 10-g SAR
Main_GSM + 2.4GHz Wi-Fi	Yes	Yes	No	Yes
Main_GPRS + 2.4GHz Wi-Fi	No	No	Yes	Yes
Main_WCDMA + 2.4GHz Wi-Fi	Yes	Yes	Yes	Yes
Main_LTE + 2.4GHz Wi-Fi	Yes	Yes	Yes	Yes
Main_GSM + BT	No	Yes	No	Yes
Main_GPR + BT	No	No	No	Yes
Main_WCDMA + BT	No	Yes	No	Yes
Main_LTE + BT	No	Yes	No	Yes
Sub_GSM + 2.4GHz Wi-Fi	Yes	Yes	No	Yes
Sub_GPRS + 2.4GHz Wi-Fi	No	No	Yes	Yes
Sub_WCDMA + 2.4GHz Wi-Fi	Yes	Yes	Yes	Yes
Sub_LTE + 2.4GHz Wi-Fi	Yes	Yes	Yes	Yes
Sub_GSM + BT	No	Yes	No	Yes
Sub_GPRS + BT	No	No	No	Yes
Sub_WCDMA + BT	No	Yes	No	Yes
Sub_LTE + BT	No	Yes	No	Yes

Notes:

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

3.1 Estimated SAR calculation

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

(max. power of channel, including tune-up tolerance, mW) / (min. test separation distance, mm)]·[√f(GHz)/x] W/kg for test separation distances ≤ 50 mm, where x = 7.5 for 1-g SAR and x = 18.75 for 10-g SAR.

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

mode	position	max. power (dB)	max. power (mW)	f(GHz)	distance (mm)	x	Estimated SAR
BT	body-worn	11	12.589	2.48	15	7.5	0.176 (1g)

3.2 SPLSR evaluation and analysis

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

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

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

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

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

Simultaneous Transmission Combination

Main Antenna

reported SAR WWAN and WLAN 2.4GHz, ΣSAR evaluation					
Frequency band	Position		reported SAR / W/kg		ΣSAR
			WWAN	WLAN	<1.6W/kg
GSM 850	Head	Right cheek	0.028	0.108	0.136
		Right tilt	0.008	0.118	0.126
		Left cheek	0.042	0.288	0.330
		Left tilt	0.008	0.418	0.426
	Body-worn	Front	0.273	0.146	0.419
		Back	0.224	0.316	0.540
GPRS 850 (1Dn2UP)	Hotspot	Front	0.429	0.309	0.738
		Back	0.633	0.324	0.957
		Top	-	0.278	-
		Bottom	0.331	-	-
		Right	0.331	0.304	0.635
		Left	0.267	-	-
GSM 1900	Head	Right cheek	0.064	0.108	0.172
		Right tilt	0.039	0.118	0.157
		Left cheek	0.106	0.288	0.394
		Left tilt	0.034	0.418	0.452
	Body-worn	Front	0.237	0.146	0.383
		Back	0.302	0.316	0.618
GPRS 1900 (1Dn2UP)	Hotspot	Front	0.444	0.309	0.753
		Back	0.525	0.324	0.849
		Top	-	0.278	-
		Bottom	1.086	-	-
		Right	0.021	0.304	0.325
		Left	0.100	-	-

reported SAR WWAN and WLAN 2.4GHz, ΣSAR evaluation					
Frequency band	Position		reported SAR / W/kg		ΣSAR
			WWAN	WLAN	<1.6W/kg
WCDMA Band V	Head	Right cheek	0.040	0.108	0.148
		Right tilt	0.018	0.118	0.136
		Left cheek	0.081	0.288	0.369
		Left tilt	0.031	0.418	0.449
	Body-worn	Front	0.080	0.146	0.226
		Back	0.379	0.316	0.695
	Hotspot	Front	0.381	0.309	0.690
		Back	0.769	0.324	1.093
		Top	-	0.278	-
		Bottom	0.214	-	-
		Right	0.293	0.304	0.597
		Left	0.104	-	-
LTE FDD Band V	Head	Right cheek	0.041	0.108	0.149
		Right tilt	0.020	0.118	0.138
		Left cheek	0.065	0.288	0.353
		Left tilt	0.011	0.418	0.429
	Body-worn	Front	0.184	0.146	0.330
		Back	0.302	0.316	0.618
	Hotspot	Front	0.286	0.309	0.595
		Back	0.611	0.324	0.935
		Top	-	0.278	-
		Bottom	0.190	-	-
		Right	0.239	0.304	0.543
		Left	0.102	-	-

reported SAR WWAN and WLAN 2.4GHz, ΣSAR evaluation					
Frequency band	Position		reported SAR / W/kg		ΣSAR
			WWAN	WLAN	<1.6W/kg
LTE FDD Band VII	Head	Right cheek	0.041	0.108	0.149
		Right tilt	0.039	0.118	0.157
		Left cheek	0.025	0.288	0.313
		Left tilt	0.020	0.418	0.438
	Body-worn	Front	0.267	0.146	0.413
		Back	0.250	0.316	0.566
	Hotspot	Front	0.429	0.309	0.738
		Back	0.425	0.324	0.749
		Top	-	0.278	-
		Bottom	1.052	-	-
		Right	0.083	0.304	0.387
		Left	0.320	-	-
LTE TDD Band XXXVIII	Head	Right cheek	0.018	0.108	0.126
		Right tilt	0.014	0.118	0.132
		Left cheek	0.013	0.288	0.301
		Left tilt	0.011	0.418	0.429
	Body-worn	Front	0.096	0.146	0.242
		Back	0.089	0.316	0.405
	Hotspot	Front	0.169	0.309	0.478
		Back	0.166	0.324	0.490
		Top	-	0.278	-
		Bottom	0.393	-	-
		Right	0.025	0.304	0.329
		Left	0.082	-	-

reported SAR WWAN and Bluetooth, ΣSAR evaluation					
Frequency band	Position		reported SAR / W/kg		ΣSAR
			WWAN	Bluetooth	<1.6W/kg
GSM 850	Body-worn	Front	0.273	0.176	0.449
		Back	0.224	0.176	0.400
GSM 1900	Body-worn	Front	0.237	0.176	0.413
		Back	0.302	0.176	0.478
WCDMA Band V	Body-worn	Front	0.080	0.176	0.256
		Back	0.379	0.176	0.555
LTE FDD Band V	Body-worn	Front	0.184	0.176	0.360
		Back	0.302	0.176	0.478
LTE FDD Band VII	Body-worn	Front	0.267	0.176	0.443
		Back	0.250	0.176	0.426
LTE TDD Band XXXVIII	Body-worn	Front	0.096	0.176	0.272
		Back	0.089	0.176	0.265

Sub Antenna

reported SAR WWAN and WLAN 2.4GHz, ΣSAR evaluation					
Frequency band	Position		reported SAR / W/kg		ΣSAR
			WWAN	WLAN	<1.6W/kg
GSM 850	Head	Right cheek	1.225	0.108	1.333
		Right tilt	1.035	0.118	1.153
		Left cheek	0.598	0.288	0.886
		Left tilt	0.600	0.418	1.018
	Body-worn	Front	0.198	0.146	0.344
		Back	0.313	0.316	0.629
GPRS 850 (1Dn2UP)	Hotspot	Front	0.467	0.309	0.776
		Back	0.671	0.324	0.995
		Top	0.373	0.278	0.651
		Bottom	-	-	-
		Right	-	0.304	-
		Left	0.281	-	-
GSM 1900	Head	Right cheek	0.432	0.108	0.540
		Right tilt	0.435	0.118	0.553
		Left cheek	0.152	0.288	0.440
		Left tilt	0.198	0.418	0.616
	Body-worn	Front	0.111	0.146	0.257
		Back	0.094	0.316	0.410
GPRS 1900 (1Dn2UP)	Hotspot	Front	0.281	0.309	0.590
		Back	0.285	0.324	0.609
		Top	0.352	0.278	0.630
		Bottom	-	-	-
		Right	-	0.304	-
		Left	0.272	-	-

reported SAR WWAN and WLAN 2.4GHz, ΣSAR evaluation					
Frequency band	Position		reported SAR / W/kg		ΣSAR
			WWAN	WLAN	<1.6W/kg
WCDMA Band V	Head	Right cheek	1.054	0.108	1.162
		Right tilt	0.786	0.118	0.904
		Left cheek	0.556	0.288	0.844
		Left tilt	0.545	0.418	0.963
	Body-worn	Front	0.121	0.146	0.267
		Back	0.177	0.316	0.493
	Hotspot	Front	0.271	0.309	0.580
		Back	0.397	0.324	0.721
		Top	0.230	0.278	0.508
		Bottom	-	-	-
		Right	-	0.304	-
		Left	0.153	-	-
LTE FDD Band V	Head	Right cheek	1.193	0.108	1.301
		Right tilt	0.768	0.118	0.886
		Left cheek	0.537	0.288	0.825
		Left tilt	0.518	0.418	0.936
	Body-worn	Front	0.127	0.146	0.273
		Back	0.186	0.316	0.502
	Hotspot	Front	0.260	0.309	0.569
		Back	0.426	0.324	0.750
		Top	0.217	0.278	0.495
		Bottom	-	-	-
		Right	-	0.304	-
		Left	0.204	-	-

reported SAR WWAN and WLAN 2.4GHz, ΣSAR evaluation					
Frequency band	Position		reported SAR / W/kg		ΣSAR
			WWAN	WLAN	<1.6W/kg
LTE FDD Band VII	Head	Right cheek	0.827	0.108	0.935
		Right tilt	0.390	0.118	0.508
		Left cheek	0.166	0.288	0.454
		Left tilt	0.171	0.418	0.589
	Body-worn	Front	0.085	0.146	0.231
		Back	0.044	0.316	0.360
	Hotspot	Front	0.182	0.309	0.491
		Back	0.080	0.324	0.404
		Top	0.053	0.278	0.331
		Bottom	-	-	-
		Right	-	0.304	-
		Left	0.084	-	-
LTE TDD Band XXXVIII	Head	Right cheek	0.755	0.108	0.863
		Right tilt	0.705	0.118	0.823
		Left cheek	0.317	0.288	0.605
		Left tilt	0.297	0.418	0.715
	Body-worn	Front	0.090	0.146	0.236
		Back	0.087	0.316	0.403
	Hotspot	Front	0.155	0.309	0.464
		Back	0.178	0.324	0.502
		Top	0.099	0.278	0.377
		Bottom	-	-	-
		Right	-	0.304	-
		Left	0.205	-	-

reported SAR WWAN and Bluetooth, ΣSAR evaluation					
Frequency band	Position		reported SAR / W/kg		ΣSAR
			WWAN	Bluetooth	<1.6W/kg
GSM 850	Body-worn	Front	0.198	0.176	0.374
		Back	0.313	0.176	0.489
GSM 1900	Body-worn	Front	0.111	0.176	0.287
		Back	0.094	0.176	0.270
WCDMA Band V	Body-worn	Front	0.121	0.176	0.297
		Back	0.177	0.176	0.353
LTE FDD Band V	Body-worn	Front	0.127	0.176	0.303
		Back	0.186	0.176	0.362
LTE FDD Band VII	Body-worn	Front	0.085	0.176	0.261
		Back	0.044	0.176	0.220
LTE TDD Band XXXVIII	Body-worn	Front	0.090	0.176	0.266
		Back	0.087	0.176	0.263

4. Instruments List

Manufacturer	Device	Type	Serial number	Date of last calibration	Date of next calibration
Schmid & Partner Engineering AG	Dosimetric E-Field Probe	EX3DV4	3923	Aug.27,2015	Aug.26,2016
			3938	Oct.01,2015	Sep.30,2016
Schmid & Partner Engineering AG	System Validation Dipole	D835V2	4d063	Aug.24,2015	Aug.23,2016
		D1900V2	5d027	Apr.25,2016	Apr.24,2017
		D2450V2	727	Apr.19,2016	Apr.18,2017
		D2600V2	1005	Jan.21,2016	Jan.20,2017
Schmid & Partner Engineering AG	Data acquisition Electronics	DAE4	1374	Oct.23,2015	Oct.22,2016
			1260	Sep.24,2015	Sep.23,2016
Schmid & Partner Engineering AG	Software	DASY 52 V52.8.8	N/A	Calibration not required	Calibration not required
Schmid & Partner Engineering AG	Phantom	SAM	N/A	Calibration not required	Calibration not required
Network Analyzer	Agilent	E5071C	MY46107530	Jan.07,2016	Jan.06,2017
Agilent	Dielectric Probe Kit	85070E	MY44300677	Calibration not required	Calibration not required
Agilent	Dual-directional coupler	772D	MY52180142	Apr.13,2016	Apr.12,2017
		778D	MY52180302	Apr.13,2016	Apr.12,2017

Manufacturer	Device	Type	Serial number	Date of last calibration	Date of next calibration
Agilent	RF Signal Generator	N5181A	MY50145142	Feb.19,2016	Feb.18,2017
Agilent	Power Meter	E4417A	MY51410006	Jan.07,2016	Jan.06,2017
Agilent	Power Sensor	E9301H	MY51470001	Jan.07,2016	Jan.06,2017
			MY51470002	Jan.07,2016	Jan.06,2017
TECPEL	Digital thermometer	DTM-303A	TP130073	Feb.26,2016	Feb.25,2017
Anritsu	Radio Communication Test	MT8820C	6201061014	Oct.07,2015	Oct.06,2016
R&S	Radio Communication Test	CMW 500	125470	Jul.09,2016	Jul.08,2017

5. Measurements

Date: 2016/8/1

GSM 850_Head_Le Cheek_CH 128

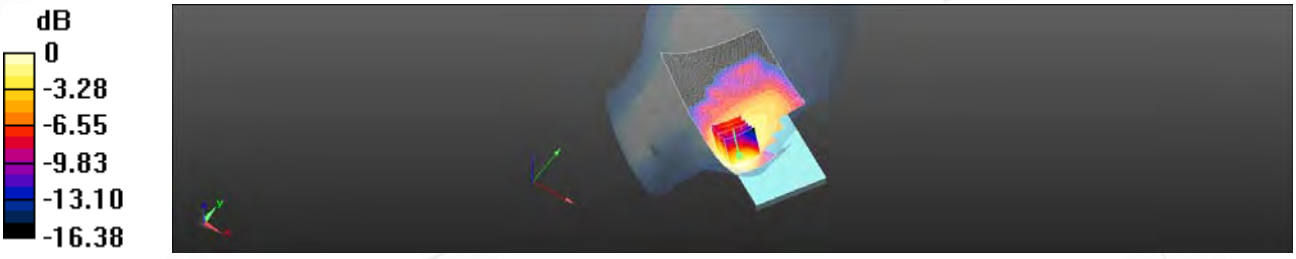
Communication System: GSM; Frequency: 824.2 MHz
Medium parameters used: f = 824.2 MHz; σ = 0.912 S/m; ε_r = 41.833; ρ = 1000 kg/m^3
Phantom section: Left Section

DASY5 Configuration:

- Probe: EX3DV4 - SN3938; ConvF(9.35, 9.35, 9.35); Calibrated: 2015/10/1;
- Sensor-Surface: 2mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn1260; Calibrated: 2015/9/24
- Phantom: Head
- DASY52 52.8.8(1222); SEMCAD X 14.6.10(7331)

Configuration/Head/Area Scan (71x131x1): Interpolated grid: dx=15 mm, dy=15 mm
Maximum value of SAR (interpolated) = 0.0378 W/kg

Configuration/Head/Zoom Scan (5x5x7)/Cube 0: Measurement grid: dx=8mm, dy=8mm, dz=5mm
Reference Value = 2.145 V/m; Power Drift = 0.12 dB
Peak SAR (extrapolated) = 0.0420 W/kg
SAR(1 g) = 0.034 W/kg; SAR(10 g) = 0.023 W/kg
Maximum value of SAR (measured) = 0.0369 W/kg



0 dB = 0.0369 W/kg = -14.32 dBW/kg

Date: 2016/8/2

GSM 850_Body-worn_Front side_CH 251_15mm

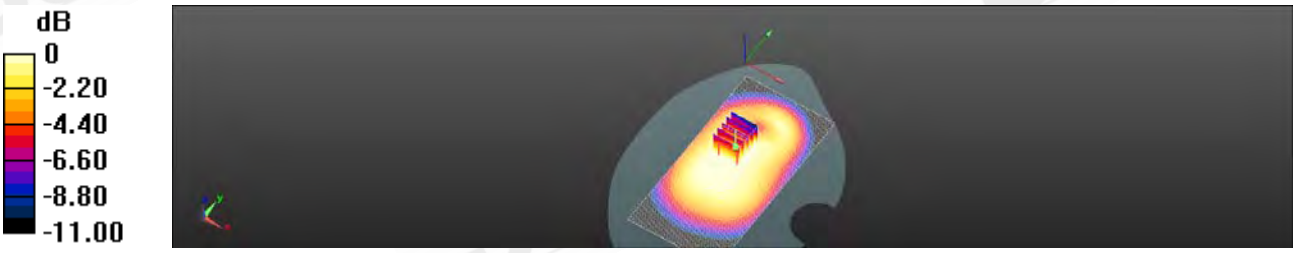
Communication System: GSM; Frequency: 848.8 MHz
Medium parameters used: f = 849 MHz; σ = 0.999 S/m; ε_r = 54.741; ρ = 1000 kg/m^3
Phantom section: Flat Section

DASY5 Configuration:

- Probe: EX3DV4 - SN3938; ConvF(9.3, 9.3, 9.3); Calibrated: 2015/10/1;
- Sensor-Surface: 2mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn1260; Calibrated: 2015/9/24
- Phantom: Head
- DASY52 52.8.8(1222); SEMCAD X 14.6.10(7331)

Configuration/Head/Area Scan (71x141x1): Interpolated grid: dx=15 mm, dy=15 mm
Maximum value of SAR (interpolated) = 0.269 W/kg

Configuration/Head/Zoom Scan (5x5x7)/Cube 0: Measurement grid: dx=8mm, dy=8mm, dz=5mm
Reference Value = 16.24 V/m; Power Drift = 0.04 dB
Peak SAR (extrapolated) = 0.292 W/kg
SAR(1 g) = 0.235 W/kg; SAR(10 g) = 0.177 W/kg
Maximum value of SAR (measured) = 0.265 W/kg



0 dB = 0.265 W/kg = -5.76 dBW/kg

Date: 2016/8/2

GPRS 850_Hotspot_Back side_CH 251_10mm

Communication System: GPRS(1Dn2Up); Frequency: 848.8 MHz
Medium parameters used: f = 849 MHz; σ = 0.999 S/m; ε_r = 54.741; ρ = 1000 kg/m^3
Phantom section: Flat Section

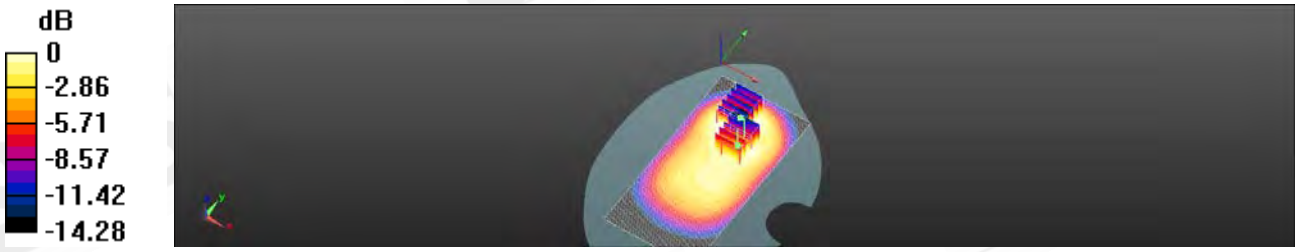
DASY5 Configuration:

- Probe: EX3DV4 - SN3938; ConvF(9.3, 9.3, 9.3); Calibrated: 2015/10/1;
- Sensor-Surface: 2mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn1260; Calibrated: 2015/9/24
- Phantom: Head
- DASY52 52.8.8(1222); SEMCAD X 14.6.10(7331)

Configuration/Head/Area Scan (71x141x1): Interpolated grid: dx=15 mm, dy=15 mm
Maximum value of SAR (interpolated) = 0.766 W/kg

Configuration/Head/Zoom Scan (5x5x7)/Cube 0: Measurement grid: dx=8mm, dy=8mm, dz=5mm
Reference Value = 21.38 V/m; Power Drift = -0.00 dB
Peak SAR (extrapolated) = 0.987 W/kg
SAR(1 g) = 0.580 W/kg; SAR(10 g) = 0.332 W/kg
Maximum value of SAR (measured) = 0.789 W/kg

Configuration/Head/Zoom Scan (5x5x7)/Cube 1: Measurement grid: dx=8mm, dy=8mm, dz=5mm
Reference Value = 21.38 V/m; Power Drift = -0.00 dB
Peak SAR (extrapolated) = 0.729 W/kg
SAR(1 g) = 0.516 W/kg; SAR(10 g) = 0.365 W/kg
Maximum value of SAR (measured) = 0.619 W/kg



0 dB = 0.619 W/kg = -2.08 dBW/kg

Date: 2016/8/1

GSM 850_Head_Re Cheek_CH 128

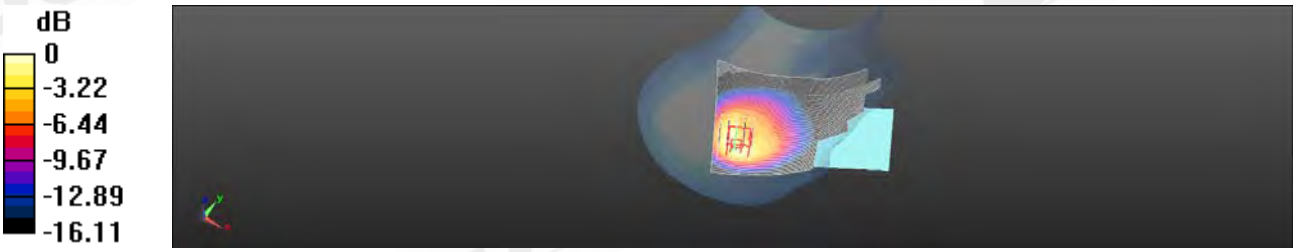
Communication System: GSM; Frequency: 824.2 MHz
Medium parameters used: f = 824.2 MHz; σ = 0.912 S/m; ε_r = 41.833; ρ = 1000 kg/m^3
Phantom section: Right Section

DASY5 Configuration:

- Probe: EX3DV4 - SN3938; ConvF(9.35, 9.35, 9.35); Calibrated: 2015/10/1;
- Sensor-Surface: 2mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn1260; Calibrated: 2015/9/24
- Phantom: Head
- DASY52 52.8.8(1222); SEMCAD X 14.6.10(7331)

Configuration/Head/Area Scan (81x121x1): Interpolated grid: dx=15 mm, dy=15 mm
Maximum value of SAR (interpolated) = 1.23 W/kg

Configuration/Head/Zoom Scan (5x5x7)/Cube 0: Measurement grid: dx=8mm, dy=8mm, dz=5mm
Reference Value = 22.74 V/m; Power Drift = 0.12 dB
Peak SAR (extrapolated) = 1.98 W/kg
SAR(1 g) = 1 W/kg; SAR(10 g) = 0.496 W/kg
Maximum value of SAR (measured) = 1.44 W/kg



0 dB = 1.44 W/kg = 1.58 dBW/kg

Date: 2016/8/2

GSM 850_Body-worn_Back side_CH 190_15mm

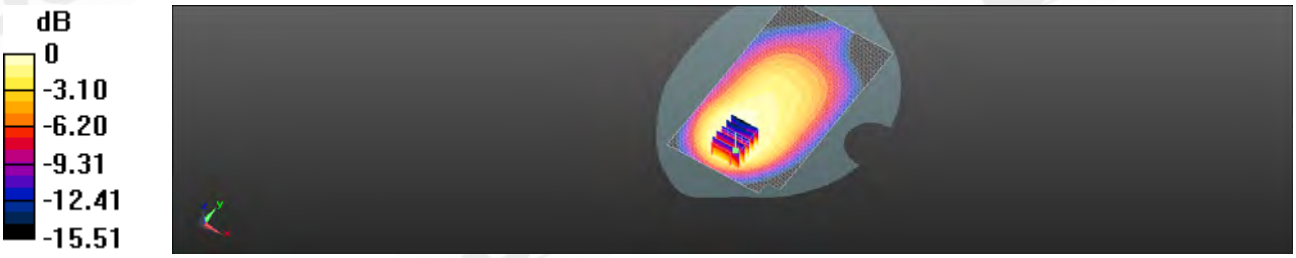
Communication System: GSM; Frequency: 824.2 MHz
Medium parameters used: f = 824.2 MHz; σ = 0.973 S/m; ε_r = 54.844; ρ = 1000 kg/m^3
Phantom section: Flat Section

DASY5 Configuration:

- Probe: EX3DV4 - SN3938; ConvF(9.3, 9.3, 9.3); Calibrated: 2015/10/1;
- Sensor-Surface: 2mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn1260; Calibrated: 2015/9/24
- Phantom: Head
- DASY52 52.8.8(1222); SEMCAD X 14.6.10(7331)

Configuration/Body/Area Scan (81x141x1): Interpolated grid: dx=15 mm, dy=15 mm
Maximum value of SAR (interpolated) = 0.331 W/kg

Configuration/Body/Zoom Scan (5x5x7)/Cube 0: Measurement grid: dx=8mm, dy=8mm, dz=5mm
Reference Value = 14.12 V/m; Power Drift = 0.11 dB
Peak SAR (extrapolated) = 0.427 W/kg
SAR(1 g) = 0.268 W/kg; SAR(10 g) = 0.155 W/kg
Maximum value of SAR (measured) = 0.340 W/kg



0 dB = 0.340 W/kg = -4.69 dBW/kg

Date: 2016/8/2

GPRS 850_Hotspot_Back side_CH 190_10mm

Communication System: GPRS(1Dn2Up); Frequency: 836.6 MHz
Medium parameters used: f = 837 MHz; σ = 0.985 S/m; ε_r = 54.792; ρ = 1000 kg/m^3
Phantom section: Flat Section

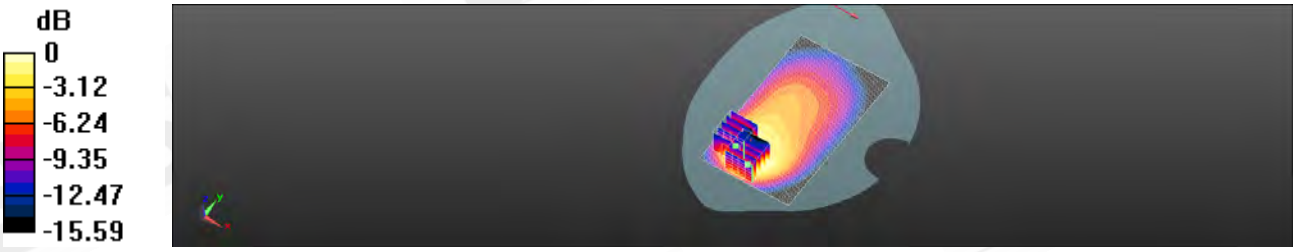
DASY5 Configuration:

- Probe: EX3DV4 - SN3938; ConvF(9.3, 9.3, 9.3); Calibrated: 2015/10/1;
- Sensor-Surface: 2mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn1260; Calibrated: 2015/9/24
- Phantom: Head
- DASY52 52.8.8(1222); SEMCAD X 14.6.10(7331)

Configuration/Head/Area Scan (71x121x1): Interpolated grid: dx=15 mm, dy=15 mm
Maximum value of SAR (interpolated) = 0.706 W/kg

Configuration/Head/Zoom Scan (5x5x7)/Cube 0: Measurement grid: dx=8mm, dy=8mm, dz=5mm
Reference Value = 15.43 V/m; Power Drift = 0.05 dB
Peak SAR (extrapolated) = 1.00 W/kg
SAR(1 g) = 0.615 W/kg; SAR(10 g) = 0.335 W/kg
Maximum value of SAR (measured) = 0.763 W/kg

Configuration/Head/Zoom Scan (5x5x7)/Cube 1: Measurement grid: dx=8mm, dy=8mm, dz=5mm
Reference Value = 15.43 V/m; Power Drift = 0.05 dB
Peak SAR (extrapolated) = 1.02 W/kg
SAR(1 g) = 0.538 W/kg; SAR(10 g) = 0.287 W/kg
Maximum value of SAR (measured) = 0.768 W/kg



0 dB = 0.768 W/kg = -1.15 dBW/kg

Date: 2016/8/3

GSM 1900_Head_Le Cheek_CH 512

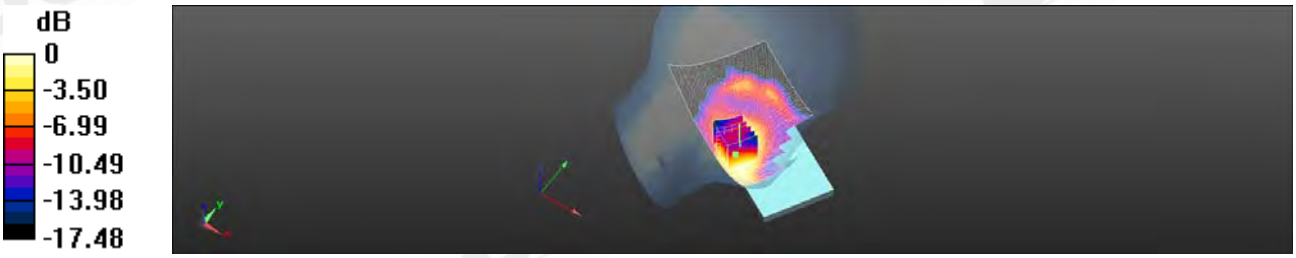
Communication System: GSM; Frequency: 1850.2 MHz
Medium parameters used: f = 1850.2 MHz; σ = 1.367 S/m; ε_r = 41.366; ρ = 1000 kg/m^3
Phantom section: Left Section

DASY5 Configuration:

- Probe: EX3DV4 - SN3923; ConvF(8.43, 8.43, 8.43); Calibrated: 2015/8/27;
- Sensor-Surface: 2mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn1374; Calibrated: 2015/10/23
- Phantom: Head
- DASY52 52.8.8(1222); SEMCAD X 14.6.10(7331)

Configuration/Head/Area Scan (71x131x1): Interpolated grid: dx=15 mm, dy=15 mm
Maximum value of SAR (interpolated) = 0.0817 W/kg

Configuration/Head/Zoom Scan (5x5x7)/Cube 0: Measurement grid: dx=8mm, dy=8mm, dz=5mm
Reference Value = 3.034 V/m; Power Drift = 0.11 dB
Peak SAR (extrapolated) = 0.0960 W/kg
SAR(1 g) = 0.076 W/kg; SAR(10 g) = 0.043 W/kg
Maximum value of SAR (measured) = 0.0795 W/kg



0 dB = 0.0795 W/kg = -10.99 dBW/kg

Date: 2016/7/30

GSM 1900_Body-worn_Back side_CH 512_15mm

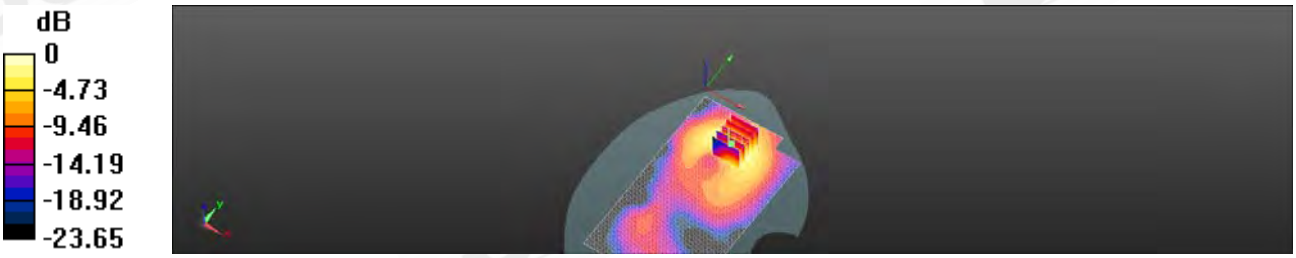
Communication System: GSM; Frequency: 1850.2 MHz
Medium parameters used: f = 1850.2 MHz; σ = 1.484 S/m; ε_r = 52.713; ρ = 1000 kg/m^3
Phantom section: Flat Section

DASY5 Configuration:

- Probe: EX3DV4 - SN3923; ConvF(8.11, 8.11, 8.11); Calibrated: 2015/8/27;
- Sensor-Surface: 2mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn1374; Calibrated: 2015/10/23
- Phantom: Head
- DASY52 52.8.8(1222); SEMCAD X 14.6.10(7331)

Configuration/Body/Area Scan (81x141x1): Interpolated grid: dx=15 mm, dy=15 mm
Maximum value of SAR (interpolated) = 0.206 W/kg

Configuration/Body/Zoom Scan (5x5x7)/Cube 0: Measurement grid: dx=8mm, dy=8mm, dz=5mm
Reference Value = 3.124 V/m; Power Drift = 0.03 dB
Peak SAR (extrapolated) = 0.369 W/kg
SAR(1 g) = 0.219 W/kg; SAR(10 g) = 0.121 W/kg
Maximum value of SAR (measured) = 0.290 W/kg



0 dB = 0.290 W/kg = -5.38 dBW/kg

Date: 2016/7/30

GPRS 1900_Hotspot_Bottom side_CH 661_10mm

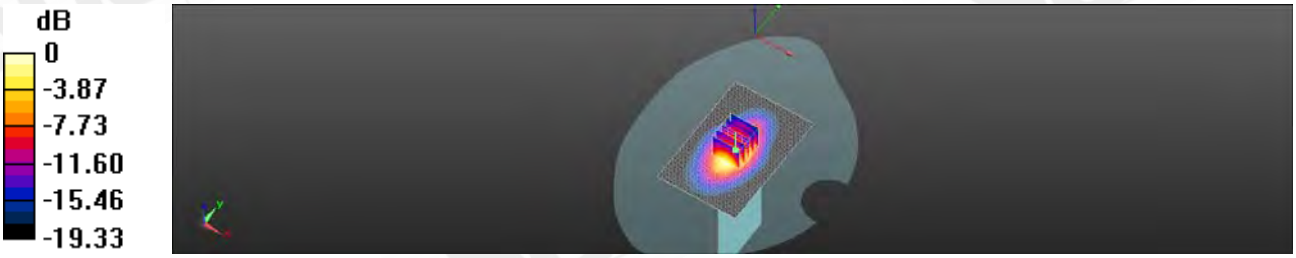
Communication System: GPRS (1Dn2Up); Frequency: 1880 MHz
Medium parameters used: f = 1880 MHz; σ = 1.507 S/m; ε_r = 52.684; ρ = 1000 kg/m^3
Phantom section: Flat Section

DASY5 Configuration:

- Probe: EX3DV4 - SN3923; ConvF(8.11, 8.11, 8.11); Calibrated: 2015/8/27;
- Sensor-Surface: 2mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn1374; Calibrated: 2015/10/23
- Phantom: Head
- DASY52 52.8.8(1222); SEMCAD X 14.6.10(7331)

Configuration/Body/Area Scan (61x91x1): Interpolated grid: dx=15 mm, dy=15 mm
Maximum value of SAR (interpolated) = 1.08 W/kg

Configuration/Body/Zoom Scan (5x5x7)/Cube 0: Measurement grid: dx=8mm, dy=8mm, dz=5mm
Reference Value = 24.23 V/m; Power Drift = -0.01 dB
Peak SAR (extrapolated) = 1.23 W/kg
SAR(1 g) = 0.758 W/kg; SAR(10 g) = 0.398 W/kg
Maximum value of SAR (measured) = 0.992 W/kg



0 dB = 0.992 W/kg = -0.04 dBW/kg

Date: 2016/8/3

GSM 1900_Head_Re Tilt_CH 661

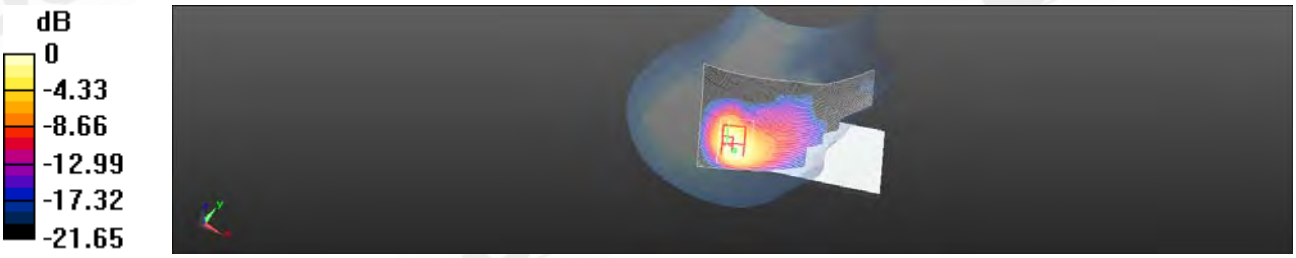
Communication System: GSM; Frequency: 1880 MHz
Medium parameters used: f = 1880 MHz; σ = 1.392 S/m; ε_r = 41.301; ρ = 1000 kg/m^3
Phantom section: Right Section

DASY5 Configuration:

- Probe: EX3DV4 - SN3923; ConvF(8.43, 8.43, 8.43); Calibrated: 2015/8/27;
- Sensor-Surface: 2mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn1374; Calibrated: 2015/10/23
- Phantom: Head
- DASY52 52.8.8(1222); SEMCAD X 14.6.10(7331)

Configuration/Head/Area Scan (71x131x1): Interpolated grid: dx=15 mm, dy=15 mm
Maximum value of SAR (interpolated) = 0.602 W/kg

Configuration/Head/Zoom Scan (5x5x7)/Cube 0: Measurement grid: dx=8mm, dy=8mm, dz=5mm
Reference Value = 12.01 V/m; Power Drift = -0.15 dB
Peak SAR (extrapolated) = 0.806 W/kg
SAR(1 g) = 0.353 W/kg; SAR(10 g) = 0.169 W/kg
Maximum value of SAR (measured) = 0.550 W/kg



0 dB = 0.550 W/kg = -2.60 dBW/kg

Date: 2016/7/30

GSM 1900_Body-worn_Front side_CH 810_15mm

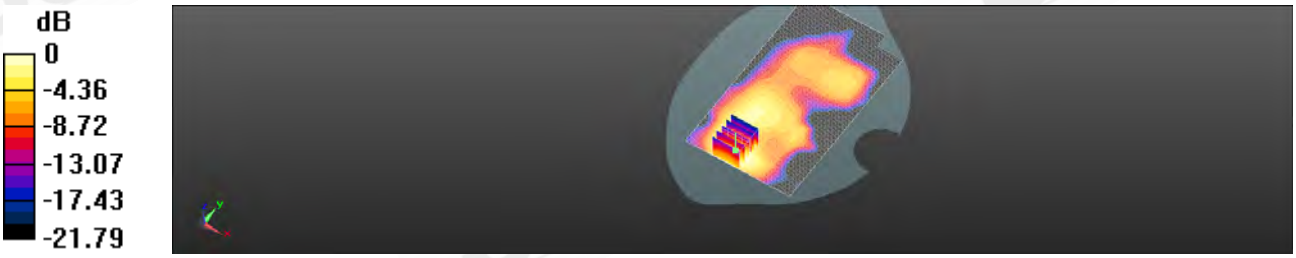
Communication System: GSM; Frequency: 1909.8 MHz
Medium parameters used: f = 1910 MHz; σ = 1.529 S/m; ε_r = 52.601; ρ = 1000 kg/m^3
Phantom section: Flat Section

DASY5 Configuration:

- Probe: EX3DV4 - SN3923; ConvF(8.11, 8.11, 8.11); Calibrated: 2015/8/27;
- Sensor-Surface: 2mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn1374; Calibrated: 2015/10/23
- Phantom: Head
- DASY52 52.8.8(1222); SEMCAD X 14.6.10(7331)

Configuration/Body/Area Scan (81x141x1): Interpolated grid: dx=15 mm, dy=15 mm
Maximum value of SAR (interpolated) = 0.115 W/kg

Configuration/Body/Zoom Scan (5x5x7)/Cube 0: Measurement grid: dx=8mm, dy=8mm, dz=5mm
Reference Value = 3.441 V/m; Power Drift = 0.18 dB
Peak SAR (extrapolated) = 0.143 W/kg
SAR(1 g) = 0.083 W/kg; SAR(10 g) = 0.045 W/kg
Maximum value of SAR (measured) = 0.113 W/kg



0 dB = 0.113 W/kg = -9.46 dBW/kg

Date: 2016/7/30

GPRS 1900_Hotspot_Top side_CH 661_10mm

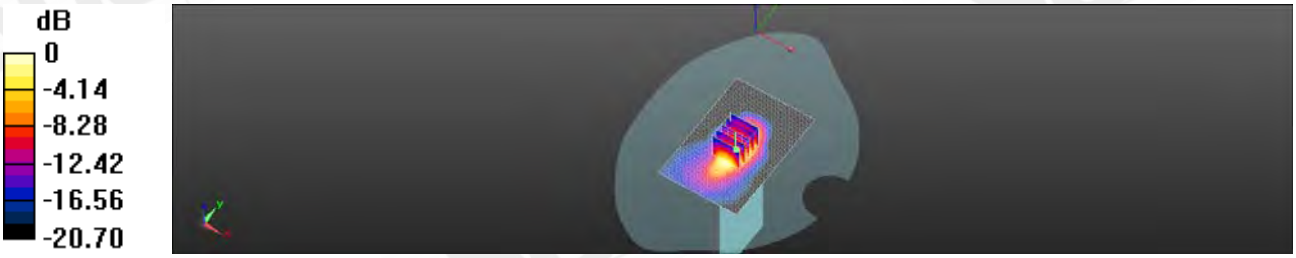
Communication System: GPRS (1Dn2Up); Frequency: 1880 MHz
Medium parameters used: f = 1880 MHz; σ = 1.507 S/m; ε_r = 52.684; ρ = 1000 kg/m^3
Phantom section: Flat Section

DASY5 Configuration:

- Probe: EX3DV4 - SN3923; ConvF(8.11, 8.11, 8.11); Calibrated: 2015/8/27;
- Sensor-Surface: 2mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn1374; Calibrated: 2015/10/23
- Phantom: Head
- DASY52 52.8.8(1222); SEMCAD X 14.6.10(7331)

Configuration/Body/Area Scan (61x91x1): Interpolated grid: dx=15 mm, dy=15 mm
Maximum value of SAR (interpolated) = 0.388 W/kg

Configuration/Body/Zoom Scan (5x5x7)/Cube 0: Measurement grid: dx=8mm, dy=8mm, dz=5mm
Reference Value = 14.74 V/m; Power Drift = 0.03 dB
Peak SAR (extrapolated) = 0.485 W/kg
SAR(1 g) = 0.285 W/kg; SAR(10 g) = 0.142 W/kg
Maximum value of SAR (measured) = 0.381 W/kg



0 dB = 0.381 W/kg = -4.19 dBW/kg

Date: 2016/8/1

WCDMA Band 5_Head_Le Cheek_CH 4132

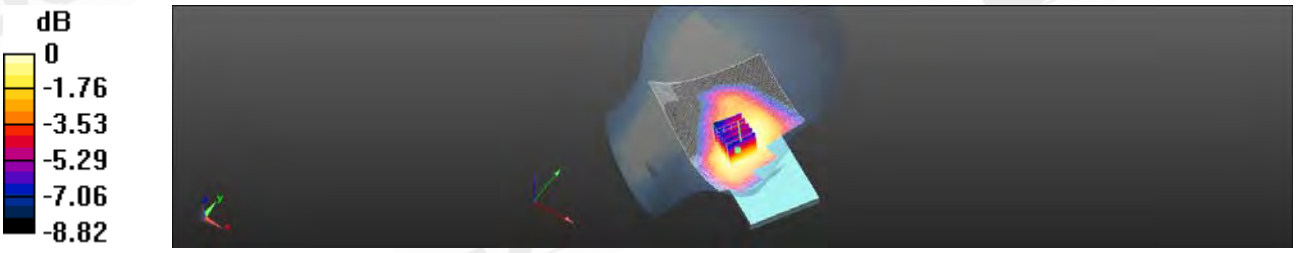
Communication System: WCDMA; Frequency: 826.4 MHz
Medium parameters used: f = 826.4 MHz; σ = 0.913 S/m; ε_r = 41.821; ρ = 1000 kg/m^3
Phantom section: Left Section

DASY5 Configuration:

- Probe: EX3DV4 - SN3938; ConvF(9.35, 9.35, 9.35); Calibrated: 2015/10/1;
- Sensor-Surface: 2mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn1260; Calibrated: 2015/9/24
- Phantom: Head
- DASY52 52.8.8(1222); SEMCAD X 14.6.10(7331)

Configuration/Head/Area Scan (81x121x1): Interpolated grid: dx=15 mm, dy=15 mm
Maximum value of SAR (interpolated) = 0.121 W/kg

Configuration/Head/Zoom Scan (5x5x7)/Cube 0: Measurement grid: dx=8mm, dy=8mm, dz=5mm
Reference Value = 8.058 V/m; Power Drift = -0.18 dB
Peak SAR (extrapolated) = 0.137 W/kg
SAR(1 g) = 0.067 W/kg; SAR(10 g) = 0.041 W/kg
Maximum value of SAR (measured) = 0.126 W/kg



0 dB = 0.126 W/kg = -9.01 dBW/kg

Date: 2016/8/2

WCDMA Band 5_Body-worn_Back side_CH 4233_15mm

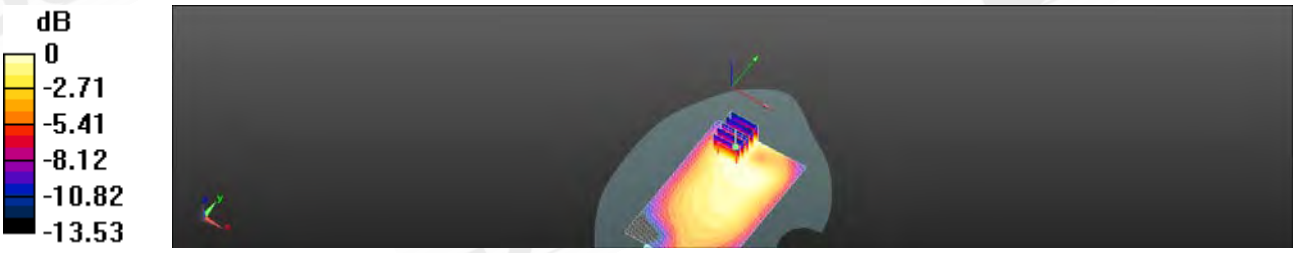
Communication System: WCDMA; Frequency: 846.6 MHz
Medium parameters used: f = 847 MHz; σ = 0.996 S/m; ε_r = 54.752; ρ = 1000 kg/m^3
Phantom section: Flat Section

DASY5 Configuration:

- Probe: EX3DV4 - SN3938; ConvF(9.3, 9.3, 9.3); Calibrated: 2015/10/1;
- Sensor-Surface: 2mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn1260; Calibrated: 2015/9/24
- Phantom: Head
- DASY52 52.8.8(1222); SEMCAD X 14.6.10(7331)

Configuration/Head/Area Scan (71x111x1): Interpolated grid: dx=15 mm, dy=15 mm
Maximum value of SAR (interpolated) = 0.410 W/kg

Configuration/Head/Zoom Scan (5x5x7)/Cube 0: Measurement grid: dx=8mm, dy=8mm, dz=5mm
Reference Value = 17.31 V/m; Power Drift = 0.01 dB
Peak SAR (extrapolated) = 0.480 W/kg
SAR(1 g) = 0.305 W/kg; SAR(10 g) = 0.194 W/kg
Maximum value of SAR (measured) = 0.395 W/kg



0 dB = 0.395 W/kg = -4.04 dBW/kg

Date: 2016/8/2

WCDMA Band 5_Hotspot_Back side_CH 4233_10mm

Communication System: WCDMA; Frequency: 846.6 MHz
Medium parameters used: f = 847 MHz; σ = 0.996 S/m; ε_r = 54.752; ρ = 1000 kg/m^3
Phantom section: Flat Section

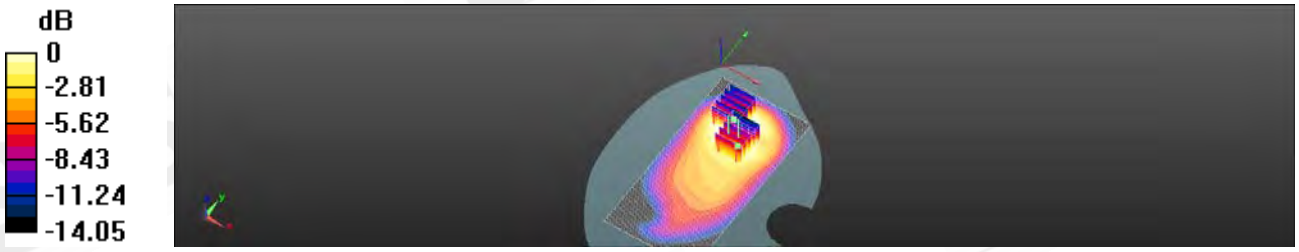
DASY5 Configuration:

- Probe: EX3DV4 - SN3938; ConvF(9.3, 9.3, 9.3); Calibrated: 2015/10/1;
- Sensor-Surface: 2mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn1260; Calibrated: 2015/9/24
- Phantom: Head
- DASY52 52.8.8(1222); SEMCAD X 14.6.10(7331)

Configuration/Head/Area Scan (71x141x1): Interpolated grid: dx=15 mm, dy=15 mm
Maximum value of SAR (interpolated) = 0.845 W/kg

Configuration/Head/Zoom Scan (5x5x7)/Cube 0: Measurement grid: dx=8mm, dy=8mm, dz=5mm
Reference Value = 18.40 V/m; Power Drift = -0.07 dB
Peak SAR (extrapolated) = 1.10 W/kg
SAR(1 g) = 0.619 W/kg; SAR(10 g) = 0.371 W/kg
Maximum value of SAR (measured) = 0.866 W/kg

Configuration/Head/Zoom Scan (5x5x7)/Cube 1: Measurement grid: dx=8mm, dy=8mm, dz=5mm
Reference Value = 18.40 V/m; Power Drift = -0.07 dB
Peak SAR (extrapolated) = 0.857 W/kg
SAR(1 g) = 0.523 W/kg; SAR(10 g) = 0.357 W/kg
Maximum value of SAR (measured) = 0.698 W/kg



0 dB = 0.698 W/kg = -1.56 dBW/kg

Date: 2016/8/1

WCDMA Band 5_Head_Re Cheek_CH 4132

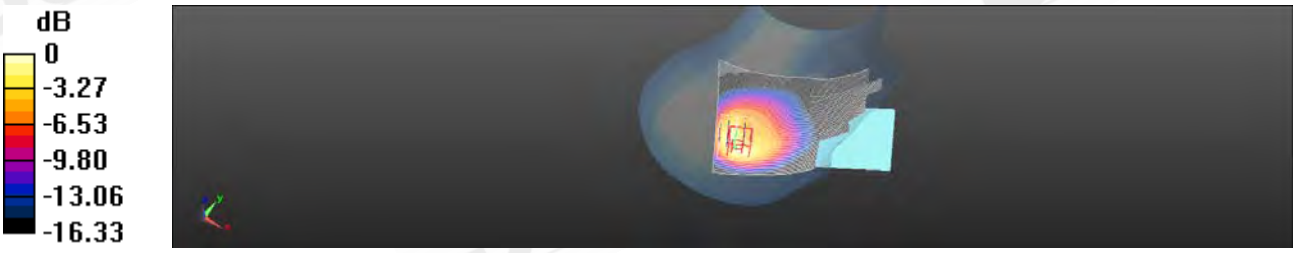
Communication System: WCDMA; Frequency: 826.4 MHz
Medium parameters used: f = 826.4 MHz; σ = 0.913 S/m; ε_r = 41.821; ρ = 1000 kg/m^3
Phantom section: Right Section

DASY5 Configuration:

- Probe: EX3DV4 - SN3938; ConvF(9.35, 9.35, 9.35); Calibrated: 2015/10/1;
- Sensor-Surface: 2mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn1260; Calibrated: 2015/9/24
- Phantom: Head
- DASY52 52.8.8(1222); SEMCAD X 14.6.10(7331)

Configuration/Head/Area Scan (81x121x1): Interpolated grid: dx=15 mm, dy=15 mm
Maximum value of SAR (interpolated) = 1.03 W/kg

Configuration/Head/Zoom Scan (5x5x7)/Cube 0: Measurement grid: dx=8mm, dy=8mm, dz=5mm
Reference Value = 20.64 V/m; Power Drift = 0.13 dB
Peak SAR (extrapolated) = 1.67 W/kg
SAR(1 g) = 0.841 W/kg; SAR(10 g) = 0.423 W/kg
Maximum value of SAR (measured) = 1.19 W/kg



0 dB = 1.19 W/kg = 0.74 dBW/kg

Date: 2016/8/2

WCDMA Band 5_Body-worn_Back side_CH 4183_15mm

Communication System: WCDMA; Frequency: 836.6 MHz
Medium parameters used: f = 837 MHz; σ = 0.985 S/m; ε_r = 54.792; ρ = 1000 kg/m^3
Phantom section: Flat Section

DASY5 Configuration:

- Probe: EX3DV4 - SN3938; ConvF(9.3, 9.3, 9.3); Calibrated: 2015/10/1;
- Sensor-Surface: 2mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn1260; Calibrated: 2015/9/24
- Phantom: Head
- DASY52 52.8.8(1222); SEMCAD X 14.6.10(7331)

Configuration/Head/Area Scan (71x141x1): Interpolated grid: dx=15 mm, dy=15 mm
Maximum value of SAR (interpolated) = 0.230 W/kg

Configuration/Head/Zoom Scan (5x5x7)/Cube 0: Measurement grid: dx=8mm, dy=8mm, dz=5mm
Reference Value = 9.371 V/m; Power Drift = 0.06 dB
Peak SAR (extrapolated) = 0.286 W/kg
SAR(1 g) = 0.145 W/kg; SAR(10 g) = 0.091 W/kg
Maximum value of SAR (measured) = 0.233 W/kg

0 dB = 0.233 W/kg = -6.34 dBW/kg

Date: 2016/8/2

WCDMA Band 5_Hotspot_Back side_CH 4132_10mm

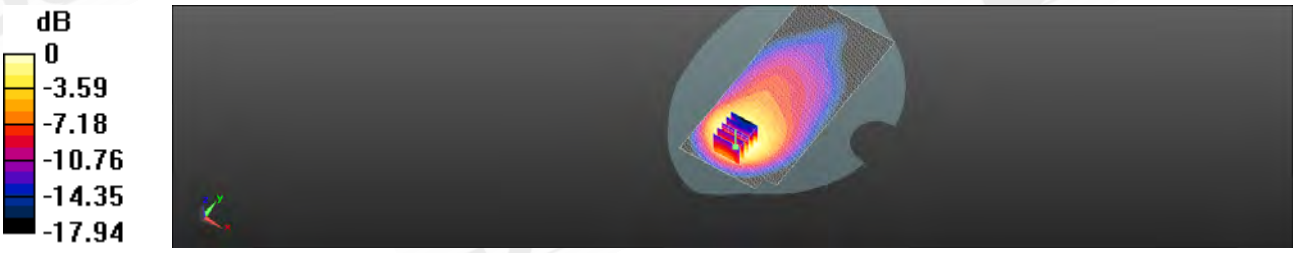
Communication System: WCDMA; Frequency: 826.4 MHz
Medium parameters used: f = 826.4 MHz; σ = 0.974 S/m; ε_r = 54.821; ρ = 1000 kg/m^3
Phantom section: Flat Section

DASY5 Configuration:

- Probe: EX3DV4 - SN3938; ConvF(9.3, 9.3, 9.3); Calibrated: 2015/10/1;
- Sensor-Surface: 2mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn1260; Calibrated: 2015/9/24
- Phantom: Head
- DASY52 52.8.8(1222); SEMCAD X 14.6.10(7331)

Configuration/Head/Area Scan (71x151x1): Interpolated grid: dx=15 mm, dy=15 mm
Maximum value of SAR (interpolated) = 0.570 W/kg

Configuration/Head/Zoom Scan (5x5x7)/Cube 0: Measurement grid: dx=8mm, dy=8mm, dz=5mm
Reference Value = 9.758 V/m; Power Drift = 0.05 dB
Peak SAR (extrapolated) = 0.786 W/kg
SAR(1 g) = 0.317 W/kg; SAR(10 g) = 0.232 W/kg
Maximum value of SAR (measured) = 0.599 W/kg



0 dB = 0.599 W/kg = -2.23 dBW/kg

Date: 2016/8/1

LTE Band 5 (10MHz)_Head_Le Cheek_CH 20450_QPSK_1-25

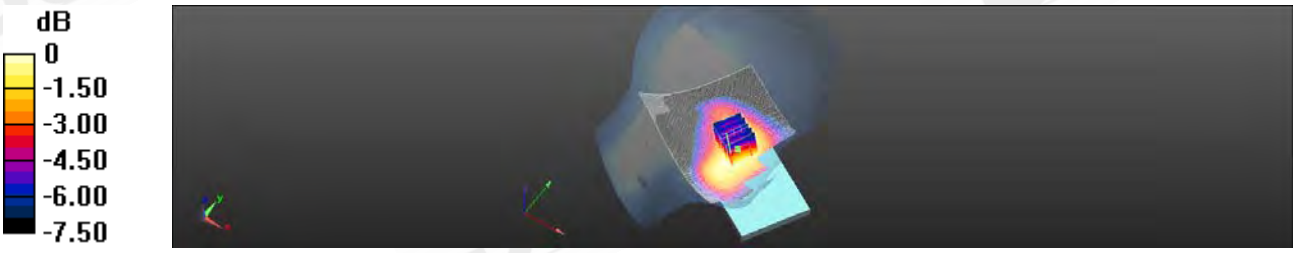
Communication System: LTE; Frequency: 829 MHz
Medium parameters used: f = 829 MHz; σ = 0.916 S/m; ε_r = 41.805; ρ = 1000 kg/m^3
Phantom section: Left Section

DASY5 Configuration:

- Probe: EX3DV4 - SN3938; ConvF(9.35, 9.35, 9.35); Calibrated: 2015/10/1;
- Sensor-Surface: 2mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn1260; Calibrated: 2015/9/24
- Phantom: Head
- DASY52 52.8.8(1222); SEMCAD X 14.6.10(7331)

Configuration/Head/Area Scan (81x121x1): Interpolated grid: dx=15 mm, dy=15 mm
Maximum value of SAR (interpolated) = 0.0611 W/kg

Configuration/Head/Zoom Scan (5x5x7)/Cube 0: Measurement grid: dx=8mm, dy=8mm, dz=5mm
Reference Value = 5.413 V/m; Power Drift = 0.11 dB
Peak SAR (extrapolated) = 0.0720 W/kg
SAR(1 g) = 0.056 W/kg; SAR(10 g) = 0.043 W/kg
Maximum value of SAR (measured) = 0.0651 W/kg



0 dB = 0.0651 W/kg = -11.87 dBW/kg

Date: 2016/8/2

LTE Band 5 (10MHz)_Body-worn_Back side_CH 20600_QPSK_1-25_15mm

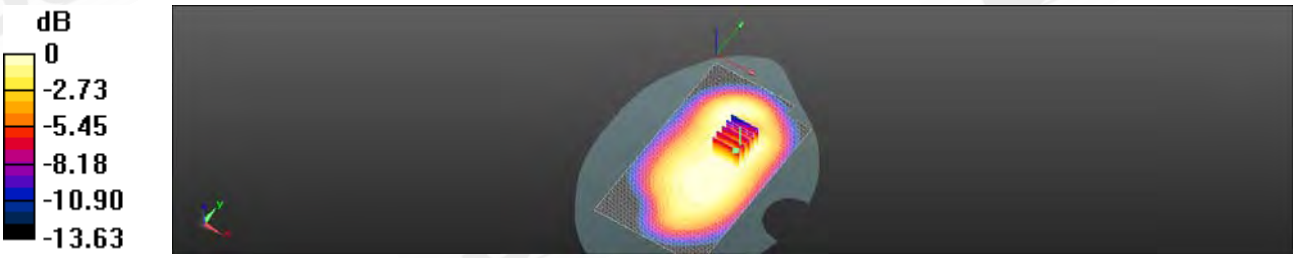
Communication System: LTE; Frequency: 844 MHz
Medium parameters used: f = 844 MHz; σ = 0.994 S/m; ε_r = 54.763; ρ = 1000 kg/m^3
Phantom section: Flat Section

DASY5 Configuration:

- Probe: EX3DV4 - SN3938; ConvF(9.3, 9.3, 9.3); Calibrated: 2015/10/1;
- Sensor-Surface: 2mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn1260; Calibrated: 2015/9/24
- Phantom: Head
- DASY52 52.8.8(1222); SEMCAD X 14.6.10(7331)

Configuration/Body/Area Scan (81x141x1): Interpolated grid: dx=15 mm, dy=15 mm
Maximum value of SAR (interpolated) = 0.261 W/kg

Configuration/Body/Zoom Scan (5x5x7)/Cube 0: Measurement grid: dx=8mm, dy=8mm, dz=5mm
Reference Value = 16.01 V/m; Power Drift = -0.01 dB
Peak SAR (extrapolated) = 0.299 W/kg
SAR(1 g) = 0.260 W/kg; SAR(10 g) = 0.169 W/kg
Maximum value of SAR (measured) = 0.266 W/kg



0 dB = 0.266 W/kg = -5.75 dBW/kg

Date: 2016/8/2

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

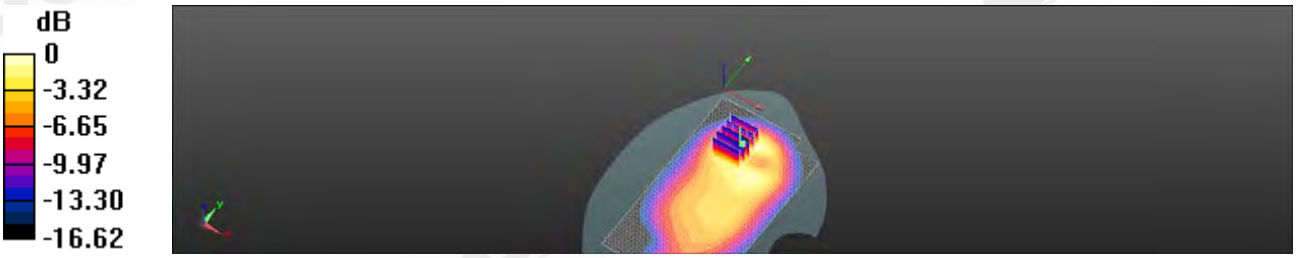
Communication System: LTE; Frequency: 844 MHz
Medium parameters used: f = 844 MHz; σ = 0.994 S/m; ε_r = 54.763; ρ = 1000 kg/m^3
Phantom section: Flat Section

DASY5 Configuration:

- Probe: EX3DV4 - SN3938; ConvF(9.3, 9.3, 9.3); Calibrated: 2015/10/1;
- Sensor-Surface: 2mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn1260; Calibrated: 2015/9/24
- Phantom: Head
- DASY52 52.8.8(1222); SEMCAD X 14.6.10(7331)

Configuration/Body/Area Scan (81x141x1): Interpolated grid: dx=15 mm, dy=15 mm
Maximum value of SAR (interpolated) = 0.662 W/kg

Configuration/Body/Zoom Scan (5x5x7)/Cube 0: Measurement grid: dx=8mm, dy=8mm, dz=5mm
Reference Value = 16.70 V/m; Power Drift = 0.19 dB
Peak SAR (extrapolated) = 0.918 W/kg
SAR(1 g) = 0.526 W/kg; SAR(10 g) = 0.293 W/kg
Maximum value of SAR (measured) = 0.699 W/kg



0 dB = 0.699 W/kg = -1.55 dBW/kg

Date: 2016/8/1

LTE Band 5 (10MHz)_Head_Re Cheek_CH 20450_QPSK_1-25

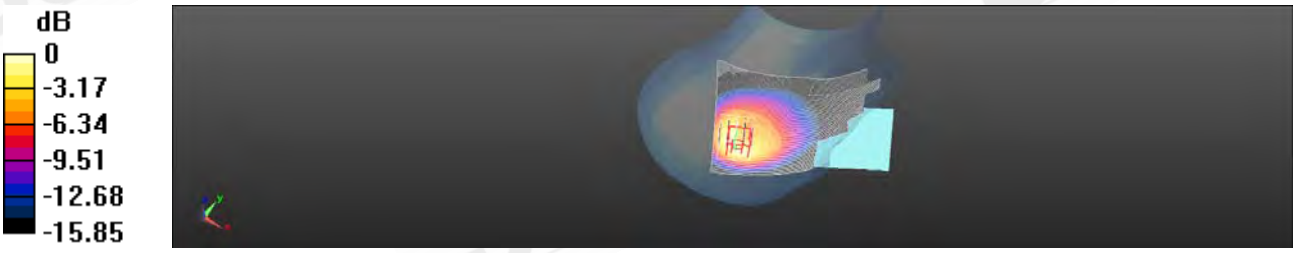
Communication System: LTE; Frequency: 829 MHz
Medium parameters used: f = 829 MHz; σ = 0.916 S/m; ε_r = 41.805; ρ = 1000 kg/m^3
Phantom section: Right Section

DASY5 Configuration:

- Probe: EX3DV4 - SN3938; ConvF(9.35, 9.35, 9.35); Calibrated: 2015/10/1;
- Sensor-Surface: 2mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn1260; Calibrated: 2015/9/24
- Phantom: Head
- DASY52 52.8.8(1222); SEMCAD X 14.6.10(7331)

Configuration/Head/Area Scan (81x121x1): Interpolated grid: dx=15 mm, dy=15 mm
Maximum value of SAR (interpolated) = 1.09 W/kg

Configuration/Head/Zoom Scan (5x5x7)/Cube 0: Measurement grid: dx=8mm, dy=8mm, dz=5mm
Reference Value = 20.70 V/m; Power Drift = 0.06 dB
Peak SAR (extrapolated) = 1.79 W/kg
SAR(1 g) = 0.900 W/kg; SAR(10 g) = 0.442 W/kg
Maximum value of SAR (measured) = 1.27 W/kg



0 dB = 1.27 W/kg = 1.05 dBW/kg

Date: 2016/8/2

LTE Band 5 (10MHz)_Body-worn_Back side_CH 20450_QPSK_1-25_15mm

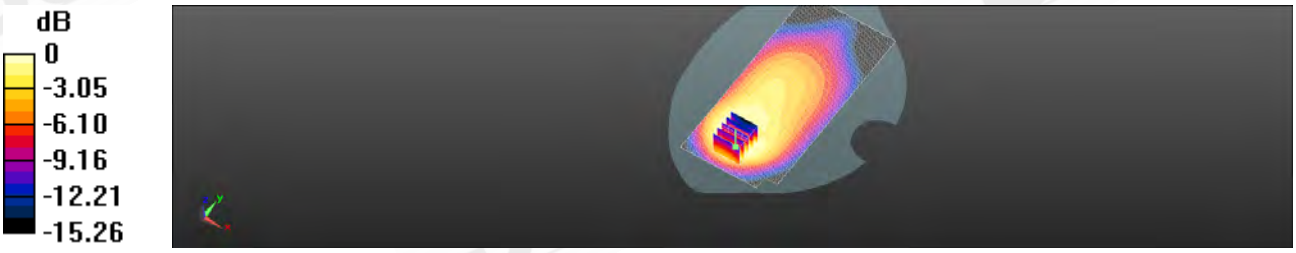
Communication System: LTE; Frequency: 829 MHz
Medium parameters used: f = 829 MHz; σ = 0.979 S/m; ε_r = 54.813; ρ = 1000 kg/m^3
Phantom section: Flat Section

DASY5 Configuration:

- Probe: EX3DV4 - SN3938; ConvF(9.3, 9.3, 9.3); Calibrated: 2015/10/1;
- Sensor-Surface: 2mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn1260; Calibrated: 2015/9/24
- Phantom: Head
- ASY52 52.8.8(1222); SEMCAD X 14.6.10(7331)

Configuration/Head/Area Scan (71x151x1): Interpolated grid: dx=15 mm, dy=15 mm
Maximum value of SAR (interpolated) = 0.203 W/kg

Configuration/Head/Zoom Scan (5x5x7)/Cube 0: Measurement grid: dx=8mm, dy=8mm, dz=5mm
Reference Value = 10.34 V/m; Power Drift = -0.04 dB
Peak SAR (extrapolated) = 0.251 W/kg
SAR(1 g) = 0.142 W/kg; SAR(10 g) = 0.089 W/kg
Maximum value of SAR (measured) = 0.205 W/kg



0 dB = 0.205 W/kg = -6.87 dBW/kg

Date: 2016/8/2

LTE Band 5 (10MHz)_Hotspot_Back side_CH 20450_QPSK_1-25_10mm

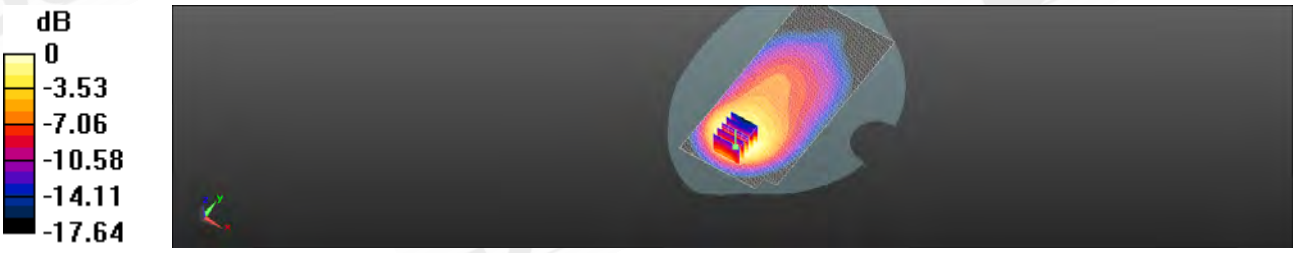
Communication System: LTE; Frequency: 829 MHz
Medium parameters used: f = 829 MHz; σ = 0.979 S/m; ε_r = 54.813; ρ = 1000 kg/m^3
Phantom section: Flat Section

DASY5 Configuration:

- Probe: EX3DV4 - SN3938; ConvF(9.3, 9.3, 9.3); Calibrated: 2015/10/1;
- Sensor-Surface: 2mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn1260; Calibrated: 2015/9/24
- Phantom: Head
- DASY52 52.8.8(1222); SEMCAD X 14.6.10(7331)

Configuration/Head/Area Scan (71x151x1): Interpolated grid: dx=15 mm, dy=15 mm
Maximum value of SAR (interpolated) = 0.504 W/kg

Configuration/Head/Zoom Scan (5x5x7)/Cube 0: Measurement grid: dx=8mm, dy=8mm, dz=5mm
Reference Value = 10.63 V/m; Power Drift = -0.03 dB
Peak SAR (extrapolated) = 0.718 W/kg
SAR(1 g) = 0.331 W/kg; SAR(10 g) = 0.202 W/kg
Maximum value of SAR (measured) = 0.536 W/kg



0 dB = 0.536 W/kg = -2.71 dBW/kg

Date: 2016/8/4

LTE Band 7 (20MHz)_Head_Re Cheek_CH 21350_QPSK_1-50

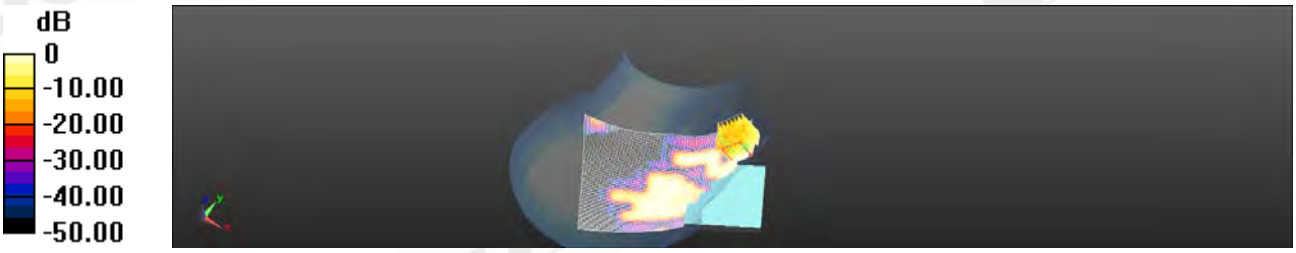
Communication System: LTE; Frequency: 2560 MHz
Medium parameters used: f = 2560 MHz; σ = 1.932 S/m; ε_r = 40.491; ρ = 1000 kg/m^3
Phantom section: Right Section

DASY5 Configuration:

- Probe: EX3DV4 - SN3938; ConvF(6.79, 6.79, 6.79); Calibrated: 2015/10/1;
- Sensor-Surface: 2mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn1260; Calibrated: 2015/9/24
- Phantom: Head
- DASY52 52.8.8(1222); SEMCAD X 14.6.10(7331)

Configuration/Head/Area Scan (101x161x1): Interpolated grid: dx=12 mm, dy=12 mm
Maximum value of SAR (interpolated) = 0.157 W/kg

Configuration/Head/Zoom Scan (7x7x7)/Cube 0: Measurement grid: dx=5mm, dy=5mm, dz=5mm
Reference Value = 1.345 V/m; Power Drift = 0.12 dB
Peak SAR (extrapolated) = 0.0570 W/kg
SAR(1 g) = 0.032 W/kg; SAR(10 g) = 0.018 W/kg
Maximum value of SAR (measured) = 0.0446 W/kg



0 dB = 0.0446 W/kg = -13.51 dBW/kg

Date: 2016/8/5

LTE Band 7 (20MHz)_Body-worn_Front side_CH 21350_QPSK_1-50_15mm_

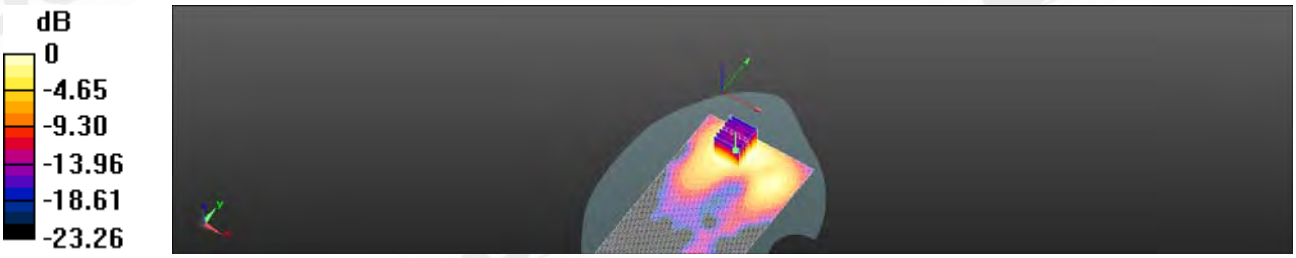
Communication System: LTE; Frequency: 2560 MHz
Medium parameters used: f = 2560 MHz; σ = 2.165 S/m; ε_r = 52.203; ρ = 1000 kg/m^3
Phantom section: Flat Section

DASY5 Configuration:

- Probe: EX3DV4 - SN3938; ConvF(6.89, 6.89, 6.89); Calibrated: 2015/10/1;
- Sensor-Surface: 2mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn1260; Calibrated: 2015/9/24
- Phantom: Head
- DASY52 52.8.8(1222); SEMCAD X 14.6.10(7331)

Configuration/Body/Area Scan (101x171x1): Interpolated grid: dx=12 mm, dy=12 mm
Maximum value of SAR (interpolated) = 0.269 W/kg

Configuration/Body/Zoom Scan (7x7x7)/Cube 0: Measurement grid: dx=5mm, dy=5mm, dz=5mm
Reference Value = 1.355 V/m; Power Drift = 0.12 dB
Peak SAR (extrapolated) = 0.342 W/kg
SAR(1 g) = 0.216 W/kg; SAR(10 g) = 0.126 W/kg
Maximum value of SAR (measured) = 0.268 W/kg



0 dB = 0.268 W/kg = -5.72 dBW/kg

Date: 2016/8/5

LTE Band 7 (20MHz)_Hotspot_Bottom side_CH 21100_QPSK_1-50_10mm_

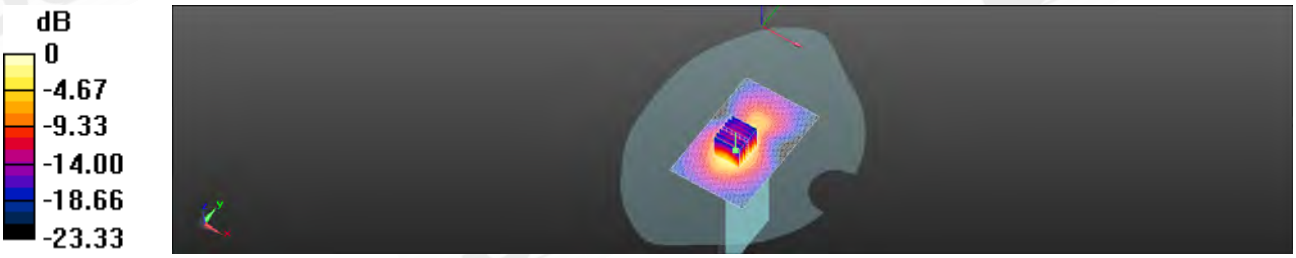
Communication System: LTE; Frequency: 2535 MHz
Medium parameters used: f = 2535 MHz; σ = 2.134 S/m; ε_r = 52.244; ρ = 1000 kg/m^3
Phantom section: Flat Section

DASY5 Configuration:

- Probe: EX3DV4 - SN3938; ConvF(6.89, 6.89, 6.89); Calibrated: 2015/10/1;
- Sensor-Surface: 2mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn1260; Calibrated: 2015/9/24
- Phantom: Head
- DASY52 52.8.8(1222); SEMCAD X 14.6.10(7331)

Configuration/Body/Area Scan (71x111x1): Interpolated grid: dx=12 mm, dy=12 mm
Maximum value of SAR (interpolated) = 1.14 W/kg

Configuration/Body/Zoom Scan (7x7x7)/Cube 0: Measurement grid: dx=5mm, dy=5mm, dz=5mm
Reference Value = 18.62 V/m; Power Drift = -0.05 dB
Peak SAR (extrapolated) = 1.55 W/kg
SAR(1 g) = 0.829 W/kg; SAR(10 g) = 0.403 W/kg
Maximum value of SAR (measured) = 1.19 W/kg



0 dB = 1.19 W/kg = 0.76 dBW/kg

Date: 2016/8/4

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

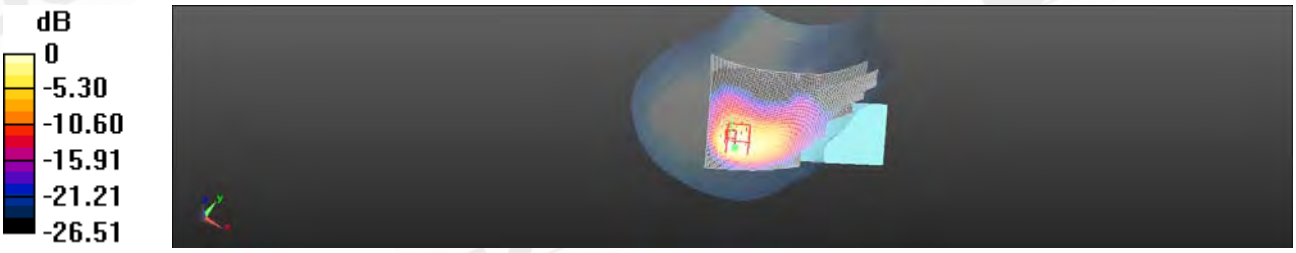
Communication System: LTE; Frequency: 2560 MHz
Medium parameters used: f = 2560 MHz; σ = 1.932 S/m; ε_r = 40.491; ρ = 1000 kg/m^3
Phantom section: Right Section

DASY5 Configuration:

- Probe: EX3DV4 - SN3938; ConvF(6.79, 6.79, 6.79); Calibrated: 2015/10/1;
- Sensor-Surface: 2mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn1260; Calibrated: 2015/9/24
- Phantom: Head
- DASY52 52.8.8(1222); SEMCAD X 14.6.10(7331)

Configuration/Head/Area Scan (101x151x1): Interpolated grid: dx=12 mm, dy=12 mm
Maximum value of SAR (interpolated) = 1.35 W/kg

Configuration/Head/Zoom Scan (7x7x7)/Cube 0: Measurement grid: dx=5mm, dy=5mm, dz=5mm
Reference Value = 11.76 V/m; Power Drift = -0.07 dB
Peak SAR (extrapolated) = 1.94 W/kg
SAR(1 g) = 0.788 W/kg; SAR(10 g) = 0.393 W/kg
Maximum value of SAR (measured) = 1.30 W/kg



0 dB = 1.30 W/kg = 1.14 dBW/kg

Date: 2016/8/5

LTE Band 7 (20MHz)_Body-worn_Front side_CH 21100_QPSK_1-50_15mm

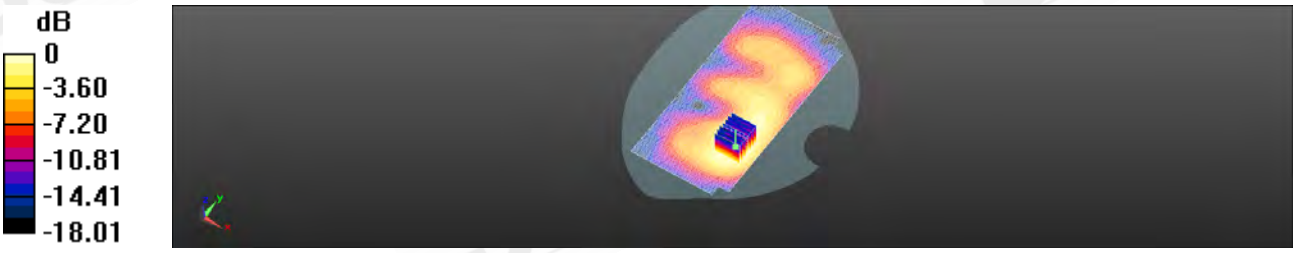
Communication System: LTE; Frequency: 2535 MHz
Medium parameters used: f = 2535 MHz; σ = 2.134 S/m; ε_r = 52.244; ρ = 1000 kg/m^3
Phantom section: Flat Section

DASY5 Configuration:

- Probe: EX3DV4 - SN3938; ConvF(6.89, 6.89, 6.89); Calibrated: 2015/10/1;
- Sensor-Surface: 2mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn1260; Calibrated: 2015/9/24
- Phantom: Head
- DASY52 52.8.8(1222); SEMCAD X 14.6.10(7331)

Configuration/Head/Area Scan (91x191x1): Interpolated grid: dx=12 mm, dy=12 mm
Maximum value of SAR (interpolated) = 0.108 W/kg

Configuration/Head/Zoom Scan (7x7x7)/Cube 0: Measurement grid: dx=5mm, dy=5mm, dz=5mm
Reference Value = 4.359 V/m; Power Drift = 0.06 dB
Peak SAR (extrapolated) = 0.139 W/kg
SAR(1 g) = 0.081 W/kg; SAR(10 g) = 0.044 W/kg
Maximum value of SAR (measured) = 0.105 W/kg



0 dB = 0.105 W/kg = -9.78 dBW/kg

Date: 2016/8/5

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

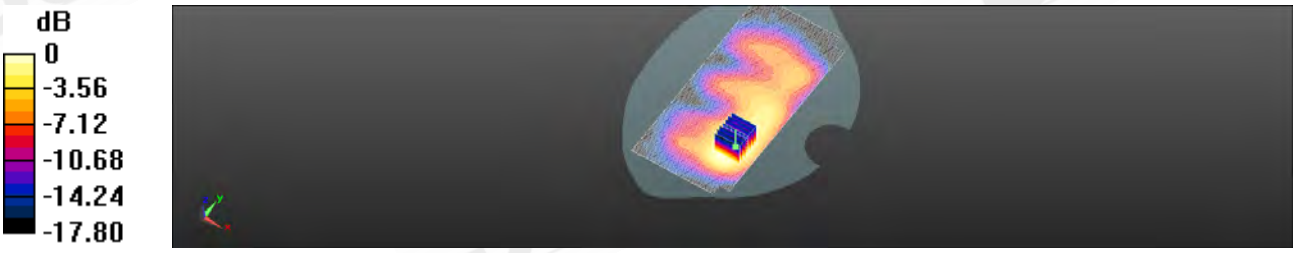
Communication System: LTE; Frequency: 2560 MHz
Medium parameters used: f = 2560 MHz; σ = 2.165 S/m; ε_r = 52.203; ρ = 1000 kg/m^3
Phantom section: Flat Section

DASY5 Configuration:

- Probe: EX3DV4 - SN3938; ConvF(6.89, 6.89, 6.89); Calibrated: 2015/10/1;
- Sensor-Surface: 2mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn1260; Calibrated: 2015/9/24
- Phantom: Head
- DASY52 52.8.8(1222); SEMCAD X 14.6.10(7331)

Configuration/Head/Area Scan (91x191x1): Interpolated grid: dx=12 mm, dy=12 mm
Maximum value of SAR (interpolated) = 0.222 W/kg

Configuration/Head/Zoom Scan (7x7x7)/Cube 0: Measurement grid: dx=5mm, dy=5mm, dz=5mm
Reference Value = 5.431 V/m; Power Drift = 0.10 dB
Peak SAR (extrapolated) = 0.288 W/kg
SAR(1 g) = 0.173 W/kg; SAR(10 g) = 0.089 W/kg
Maximum value of SAR (measured) = 0.217 W/kg



0 dB = 0.217 W/kg = -6.63 dBW/kg

Date: 2016/8/4

LTE Band 38 (20MHz)_Head_Re Cheek_CH 38000_QPSK_1-0

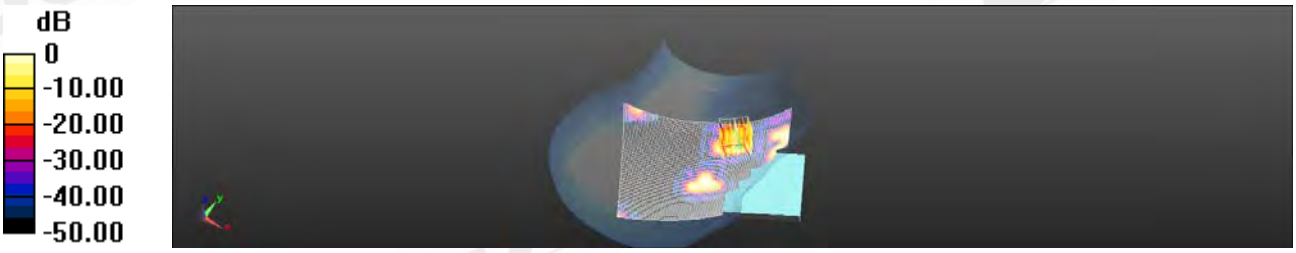
Communication System: LTE; Frequency: 2595 MHz
Medium parameters used: f = 2595 MHz; σ = 1.974 S/m; ε_r = 40.414; ρ = 1000 kg/m^3
Phantom section: Right Section

DASY5 Configuration:

- Probe: EX3DV4 - SN3938; ConvF(6.79, 6.79, 6.79); Calibrated: 2015/10/1;
- Sensor-Surface: 2mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn1260; Calibrated: 2015/9/24
- Phantom: Head
- DASY52 52.8.8(1222); SEMCAD X 14.6.10(7331)

Configuration/Head/Area Scan (101x161x1): Interpolated grid: dx=12 mm, dy=12 mm
Maximum value of SAR (interpolated) = 0.0248 W/kg

Configuration/Head/Zoom Scan (7x7x7)/Cube 0: Measurement grid: dx=5mm, dy=5mm, dz=5mm
Reference Value = 0.7980 V/m; Power Drift = 0.11 dB
Peak SAR (extrapolated) = 0.0330 W/kg
SAR(1 g) = 0.018 W/kg; SAR(10 g) = 0.00876 W/kg
Maximum value of SAR (measured) = 0.0261 W/kg



0 dB = 0.0261 W/kg = -15.83 dBW/kg

Date: 2016/8/5

LTE Band 38 (20MHz)_Hotspot_Front side_CH 38150_QPSK_1-0_15mm

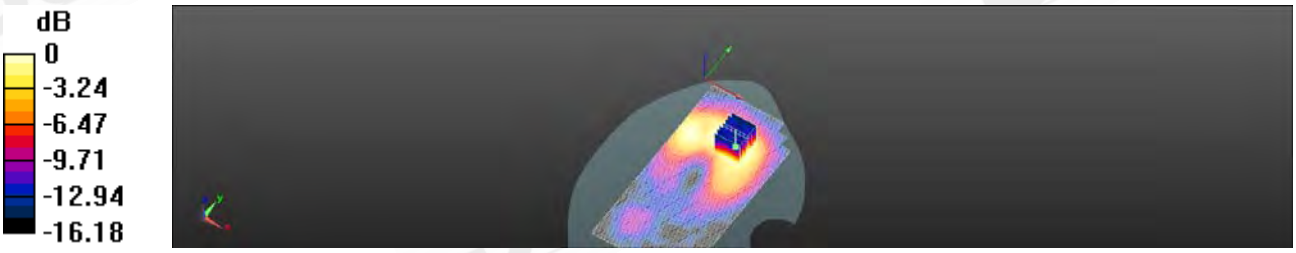
Communication System: LTE; Frequency: 2610 MHz
Medium parameters used: f = 2610 MHz; σ = 2.236 S/m; ε_r = 52.119; ρ = 1000 kg/m^3
Phantom section: Flat Section

DASY5 Configuration:

- Probe: EX3DV4 - SN3938; ConvF(6.89, 6.89, 6.89); Calibrated: 2015/10/1;
- Sensor-Surface: 2mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn1260; Calibrated: 2015/9/24
- Phantom: Head
- DASY52 52.8.8(1222); SEMCAD X 14.6.10(7331)

Configuration/Head/Area Scan (91x181x1): Interpolated grid: dx=12 mm, dy=12 mm
Maximum value of SAR (interpolated) = 0.108 W/kg

Configuration/Head/Zoom Scan (7x7x7)/Cube 0: Measurement grid: dx=5mm, dy=5mm, dz=5mm
Reference Value = 1.178 V/m; Power Drift = 0.15 dB
Peak SAR (extrapolated) = 0.136 W/kg
SAR(1 g) = 0.090 W/kg; SAR(10 g) = 0.053 W/kg
Maximum value of SAR (measured) = 0.102 W/kg



0 dB = 0.102 W/kg = -9.93 dBW/kg

Date: 2016/8/5

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

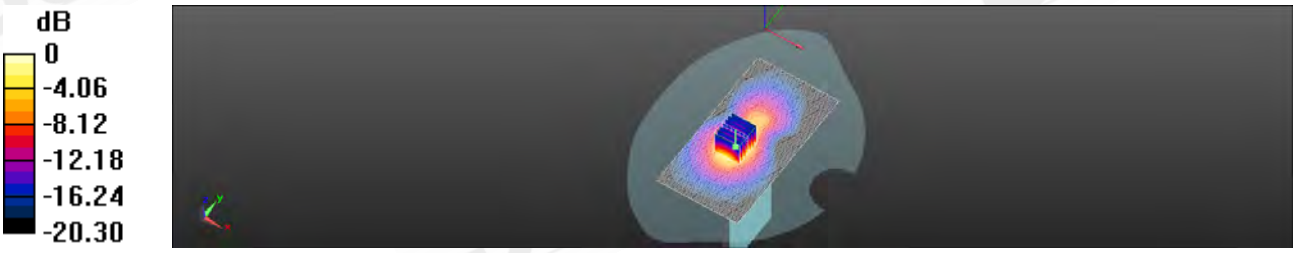
Communication System: LTE; Frequency: 2610 MHz
Medium parameters used: f = 2610 MHz; σ = 2.236 S/m; ε_r = 52.119; ρ = 1000 kg/m^3
Phantom section: Flat Section

DASY5 Configuration:

- Probe: EX3DV4 - SN3938; ConvF(6.89, 6.89, 6.89); Calibrated: 2015/10/1;
- Sensor-Surface: 2mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn1260; Calibrated: 2015/9/24
- Phantom: Head
- DASY52 52.8.8(1222); SEMCAD X 14.6.10(7331)

Configuration/Head/Area Scan (81x151x1): Interpolated grid: dx=12 mm, dy=12 mm
Maximum value of SAR (interpolated) = 0.481 W/kg

Configuration/Head/Zoom Scan (7x7x7)/Cube 0: Measurement grid: dx=5mm, dy=5mm, dz=5mm
Reference Value = 9.335 V/m; Power Drift = 0.34 dB
Peak SAR (extrapolated) = 0.649 W/kg
SAR(1 g) = 0.367 W/kg; SAR(10 g) = 0.164 W/kg
Maximum value of SAR (measured) = 0.488 W/kg



0 dB = 0.488 W/kg = -3.12 dBW/kg

Date: 2016/8/4

LTE Band 38 (20MHz)_Head_Re Cheek_CH 38150_QPSK_1-50

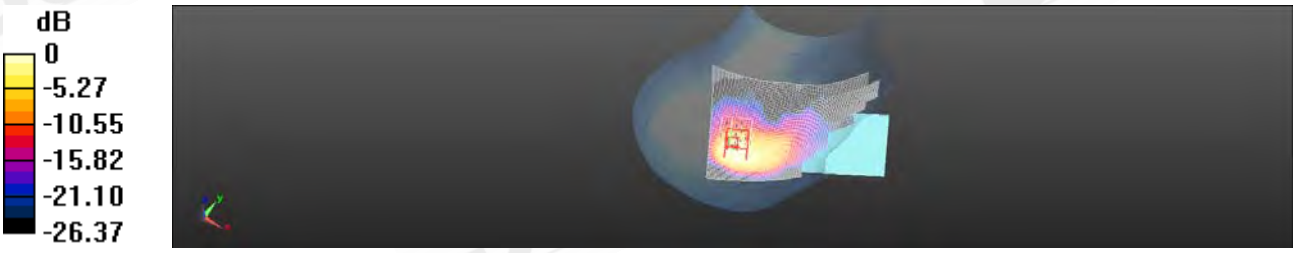
Communication System: LTE; Frequency: 2610 MHz
Medium parameters used: f = 2610 MHz; σ = 1.995 S/m; ε_r = 40.392; ρ = 1000 kg/m^3
Phantom section: Right Section

DASY5 Configuration:

- Probe: EX3DV4 - SN3938; ConvF(6.79, 6.79, 6.79); Calibrated: 2015/10/1;
- Sensor-Surface: 2mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn1260; Calibrated: 2015/9/24
- Phantom: Head
- DASY52 52.8.8(1222); SEMCAD X 14.6.10(7331)

Configuration/Head/Area Scan (101x151x1): Interpolated grid: dx=12 mm, dy=12 mm
Maximum value of SAR (interpolated) = 1.12 W/kg

Configuration/Head/Zoom Scan (7x7x7)/Cube 0: Measurement grid: dx=5mm, dy=5mm, dz=5mm
Reference Value = 10.38 V/m; Power Drift = 0.17 dB
Peak SAR (extrapolated) = 1.74 W/kg
SAR(1 g) = 0.685 W/kg; SAR(10 g) = 0.316 W/kg
Maximum value of SAR (measured) = 1.14 W/kg



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

Date: 2016/8/6

LTE Band 38 (20MHz)_Body-worn_Back side_CH 38150_QPSK_1-50_15mm

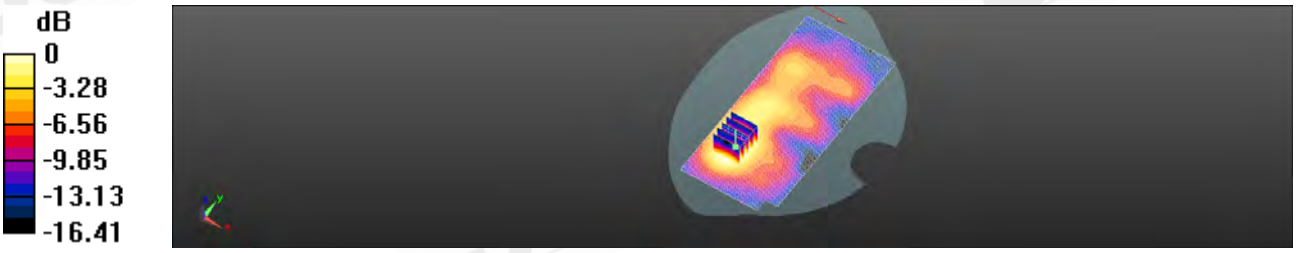
Communication System: LTE; Frequency: 2610 MHz
Medium parameters used: f = 2610 MHz; σ = 2.229 S/m; ε_r = 52.042; ρ = 1000 kg/m^3
Phantom section: Flat Section

DASY5 Configuration:

- Probe: EX3DV4 - SN3938; ConvF(6.89, 6.89, 6.89); Calibrated: 2015/10/1;
- Sensor-Surface: 2mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn1260; Calibrated: 2015/9/24
- Phantom: Head
- DASY52 52.8.8(1222); SEMCAD X 14.6.10(7331)

Configuration/Head/Area Scan (71x151x1): Interpolated grid: dx=15 mm, dy=15 mm
Maximum value of SAR (interpolated) = 0.101 W/kg

Configuration/Head/Zoom Scan (5x5x7)/Cube 0: Measurement grid: dx=8mm, dy=8mm, dz=5mm
Reference Value = 3.674 V/m; Power Drift = 0.06 dB
Peak SAR (extrapolated) = 0.130 W/kg
SAR(1 g) = 0.081 W/kg; SAR(10 g) = 0.042 W/kg
Maximum value of SAR (measured) = 0.0971 W/kg



0 dB = 0.0971 W/kg = -10.13 dBW/kg

Date: 2016/8/6

LTE Band 38 (20MHz)_Hotspot_Left side_CH 38150_QPSK_1-50_10mm

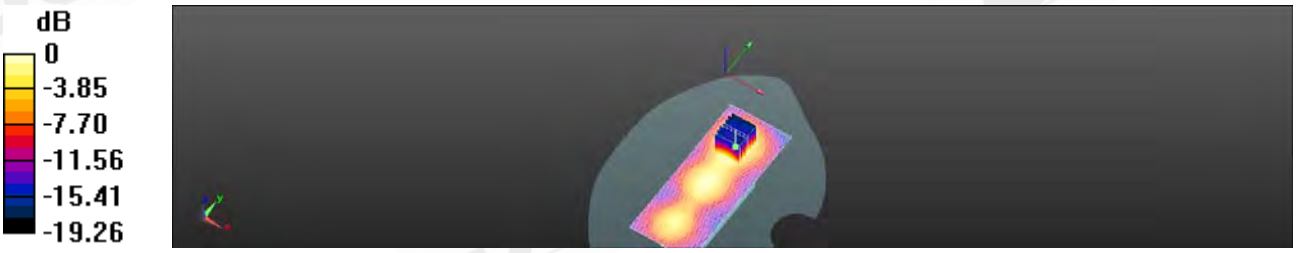
Communication System: LTE; Frequency: 2610 MHz
Medium parameters used: f = 2610 MHz; σ = 2.229 S/m; ε_r = 52.042; ρ = 1000 kg/m^3
Phantom section: Flat Section

DASY5 Configuration:

- Probe: EX3DV4 - SN3938; ConvF(6.89, 6.89, 6.89); Calibrated: 2015/10/1;
- Sensor-Surface: 2mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn1260; Calibrated: 2015/9/24
- Phantom: Head
- DASY52 52.8.8(1222); SEMCAD X 14.6.10(7331)

Configuration/Head/Area Scan (61x151x1): Interpolated grid: dx=12 mm, dy=12 mm
Maximum value of SAR (interpolated) = 0.211 W/kg

Configuration/Head/Zoom Scan (7x7x7)/Cube 0: Measurement grid: dx=5mm, dy=5mm, dz=5mm
Reference Value = 7.629 V/m; Power Drift = 0.10 dB
Peak SAR (extrapolated) = 0.287 W/kg
SAR(1 g) = 0.184 W/kg; SAR(10 g) = 0.091 W/kg
Maximum value of SAR (measured) = 0.214 W/kg



0 dB = 0.214 W/kg = -6.70 dBW/kg

Date: 2016/7/31

WLAN 802.11b_Head_Le Tilt_CH 11

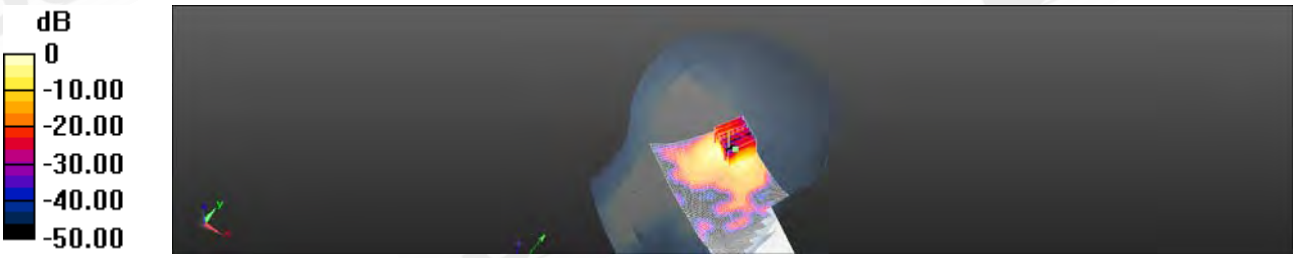
Communication System: WLAN 2.45G; Frequency: 2462 MHz
Medium parameters used: f = 2462 MHz; σ = 1.844 S/m; ε_r = 40.552; ρ = 1000 kg/m^3
Phantom section: Left Section

DASY5 Configuration:

- Probe: EX3DV4 - SN3923; ConvF(7.57, 7.57, 7.57); Calibrated: 2015/8/27;
- Sensor-Surface: 2mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn1374; Calibrated: 2015/10/23
- Phantom: Head
- DASY52 52.8.8(1222); SEMCAD X 14.6.10(7331)

Configuration/Head/Area Scan (81x161x1): Interpolated grid: dx=12 mm, dy=12 mm
Maximum value of SAR (interpolated) = 0.622 W/kg

Configuration/Head/Zoom Scan (7x7x7)/Cube 0: Measurement grid: dx=5mm, dy=5mm, dz=5mm
Reference Value = 7.102 V/m; Power Drift = 0.01 dB
Peak SAR (extrapolated) = 1.23 W/kg
SAR(1 g) = 0.398 W/kg; SAR(10 g) = 0.135 W/kg
Maximum value of SAR (measured) = 0.754 W/kg



0 dB = 0.754 W/kg = -1.23 dBW/kg

Date: 2016/7/31

WLAN 802.11b_Body-worn_Back side_CH 11_15mm

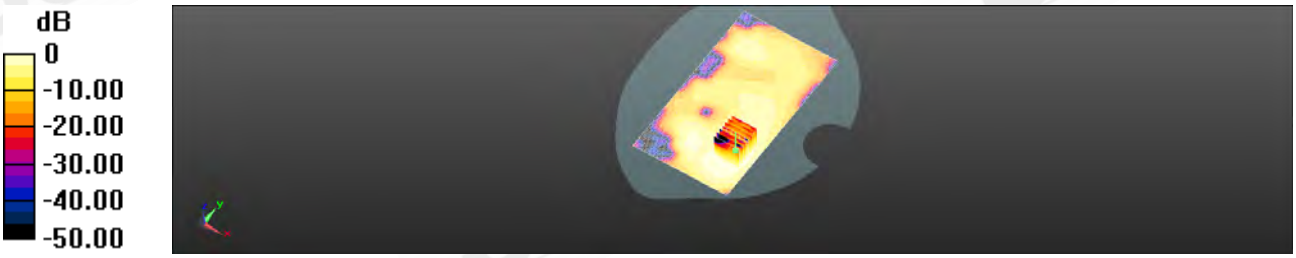
Communication System: WLAN 2.45G; Frequency: 2462 MHz
Medium parameters used: f = 2462 MHz; σ = 1.995 S/m; ε_r = 51.204; ρ = 1000 kg/m^3
Phantom section: Flat Section

DASY5 Configuration:

- Probe: EX3DV4 - SN3923; ConvF(7.63, 7.63, 7.63); Calibrated: 2015/8/27;
- Sensor-Surface: 2mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn1374; Calibrated: 2015/10/23
- Phantom: Head
- DASY52 52.8.8(1222); SEMCAD X 14.6.10(7331)

Configuration/Head/Area Scan (91x161x1): Interpolated grid: dx=12 mm, dy=12 mm
Maximum value of SAR (interpolated) = 0.185 W/kg

Configuration/Head/Zoom Scan (7x7x7)/Cube 0: Measurement grid: dx=5mm, dy=5mm, dz=5mm
Reference Value = 4.212 V/m; Power Drift = 0.04 dB
Peak SAR (extrapolated) = 0.245 W/kg
SAR(1 g) = 0.145 W/kg; SAR(10 g) = 0.072 W/kg
Maximum value of SAR (measured) = 0.180 W/kg



0 dB = 0.180 W/kg = -7.45 dBW/kg

Date: 2016/7/31

WLAN 802.11b_Hotspot_Back side_CH 11_10mm

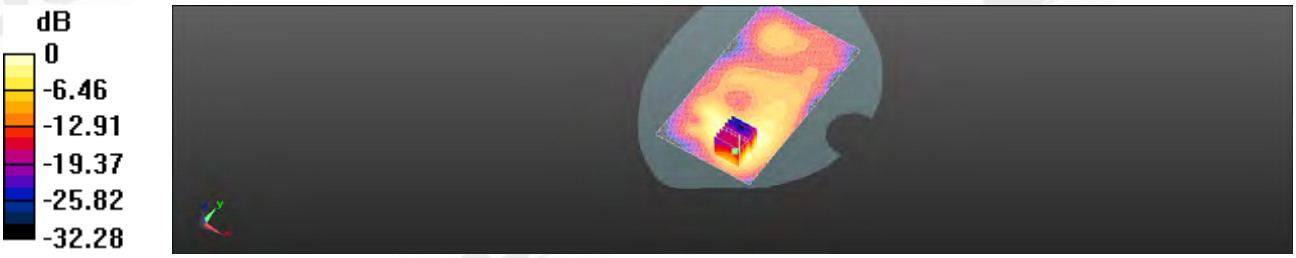
Communication System: WLAN 2.45G; Frequency: 2462 MHz
Medium parameters used: f = 2462 MHz; σ = 1.995 S/m; ε_r = 51.204; ρ = 1000 kg/m^3
Phantom section: Flat Section

DASY5 Configuration:

- Probe: EX3DV4 – SN3923; ConvF(7.63, 7.63, 7.63); Calibrated: 2015/8/27;
- Sensor-Surface: 2mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn1374; Calibrated: 2015/10/23
- Phantom: Head
- DASY52 52.8.8(1222); SEMCAD X 14.6.10(7331)

Configuration/Head/Area Scan (91x161x1): Interpolated grid: dx=12 mm, dy=12 mm
Maximum value of SAR (interpolated) = 0.500 W/kg

Configuration/Head/Zoom Scan (7x7x7)/Cube 0: Measurement grid: dx=5mm, dy=5mm, dz=5mm
Reference Value = 5.221 V/m; Power Drift = 0.04 dB
Peak SAR (extrapolated) = 0.820 W/kg
SAR(1 g) = 0.315 W/kg; SAR(10 g) = 0.138 W/kg
Maximum value of SAR (measured) = 0.557 W/kg



0 dB = 0.557 W/kg = -2.54 dBW/kg

6. SAR System Performance Verification

Date: 2016/8/1

Dipole 835 MHz_SN:4d063_Head

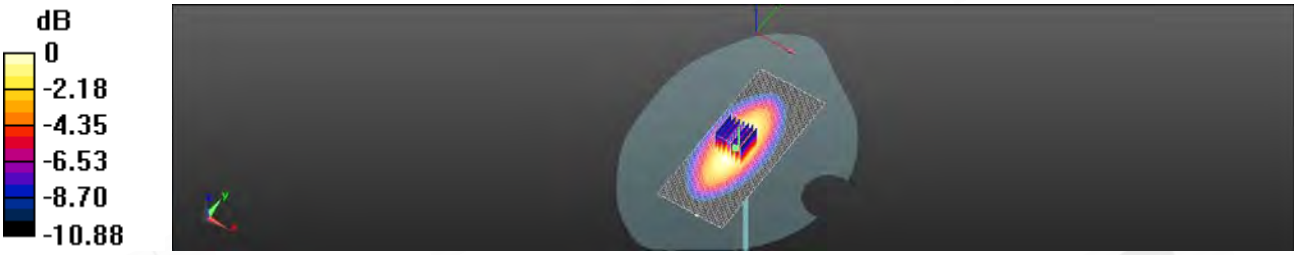
Communication System: CW; Frequency: 835 MHz
Medium parameters used: f = 835 MHz; σ = 0.921 S/m; ε_r = 41.782; ρ = 1000 kg/m^3
Phantom section: Flat Section

DASY5 Configuration:

- Probe: EX3DV4 - SN3938; ConvF(9.35, 9.35, 9.35); Calibrated: 2015/10/1;
- Sensor-Surface: 2mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn1260; Calibrated: 2015/9/24
- Phantom: Head
- DASY52 52.8.8(1222); SEMCAD X 14.6.10(7331)

Configuration/Pin=250mW/Area Scan (51x121x1): Interpolated grid: dx=15 mm, dy=15 mm
Maximum value of SAR (interpolated) = 3.06 W/kg

Configuration/Pin=250mW/Zoom Scan (7x7x7)/Cube 0: Measurement grid: dx=5mm, dy=5mm, dz=5mm
Reference Value = 55.72 V/m; Power Drift = -0.07 dB
Peak SAR (extrapolated) = 3.60 W/kg
SAR(1 g) = 2.38 W/kg; SAR(10 g) = 1.54 W/kg
Maximum value of SAR (measured) = 3.04 W/kg



0 dB = 3.04 W/kg = 4.83 dBW/kg

Date: 2016/8/2

Dipole 835 MHz_SN:4d063_Body

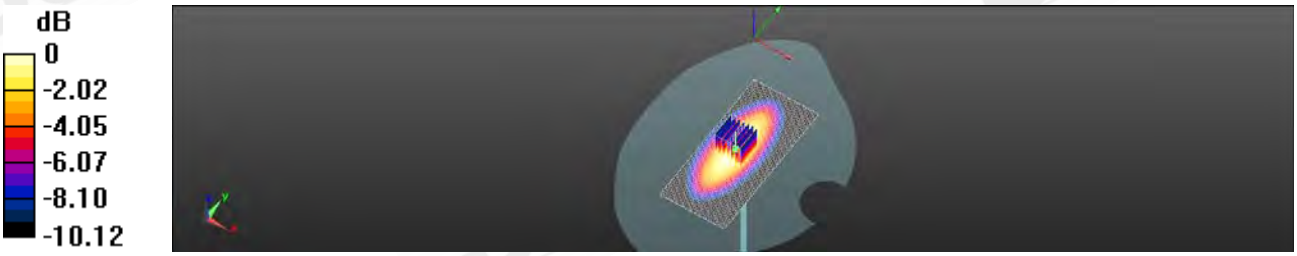
Communication System: CW; Frequency: 835 MHz
Medium parameters used: f = 835 MHz; σ = 0.984 S/m; ε_r = 54.8; ρ = 1000 kg/m^3
Phantom section: Flat Section

DASY5 Configuration:

- Probe: EX3DV4 - SN3938; ConvF(9.3, 9.3, 9.3); Calibrated: 2015/10/1;
- Sensor-Surface: 2mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn1260; Calibrated: 2015/9/24
- Phantom: Head
- DASY52 52.8.8(1222); SEMCAD X 14.6.10(7331)

Configuration/Pin=250mW/Area Scan (51x111x1): Interpolated grid: dx=15 mm, dy=15 mm
Maximum value of SAR (interpolated) = 2.88 W/kg

Configuration/Pin=250mW/Zoom Scan (7x7x7)/Cube 0: Measurement grid: dx=5mm, dy=5mm, dz=5mm
Reference Value = 54.23 V/m; Power Drift = 0.11 dB
Peak SAR (extrapolated) = 3.36 W/kg
SAR(1 g) = 2.34 W/kg; SAR(10 g) = 1.52 W/kg
Maximum value of SAR (measured) = 2.89 W/kg



0 dB = 2.89 W/kg = 4.60 dBW/kg

Date: 2016/8/3

Dipole 1900 MHz_SN:5d027_Head

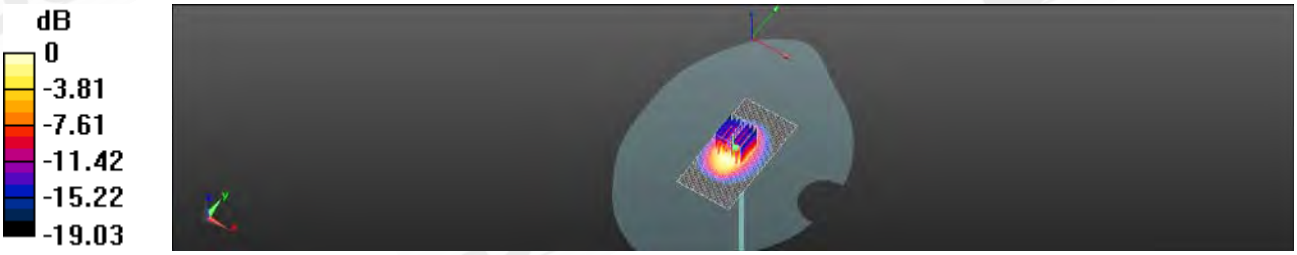
Communication System: CW; Frequency: 1900 MHz
Medium parameters used: f = 1900 MHz; σ = 1.414 S/m; ε_r = 41.252; ρ = 1000 kg/m^3
Phantom section: Flat Section

DASY5 Configuration:

- Probe: EX3DV4 - SN3923; ConvF(8.43, 8.43, 8.43); Calibrated: 2015/8/27;
- Sensor-Surface: 2mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn1374; Calibrated: 2015/10/23
- Phantom: Head
- DASY52 52.8.8(1222); SEMCAD X 14.6.10(7331)

Configuration/Pin=250mW/Area Scan (41x81x1): Interpolated grid: dx=15 mm, dy=15 mm
Maximum value of SAR (interpolated) = 14.5 W/kg

Configuration/Pin=250mW/Zoom Scan (7x7x7)/Cube 0: Measurement grid: dx=5mm, dy=5mm, dz=5mm
Reference Value = 98.35 V/m; Power Drift = 0.04 dB
Peak SAR (extrapolated) = 19.1 W/kg
SAR(1 g) = 9.79 W/kg; SAR(10 g) = 5.09 W/kg
Maximum value of SAR (measured) = 14.5 W/kg



0 dB = 14.5 W/kg = 11.61 dBW/kg

Date: 2016/7/30

Dipole 1900 MHz_SN:5d027_Body

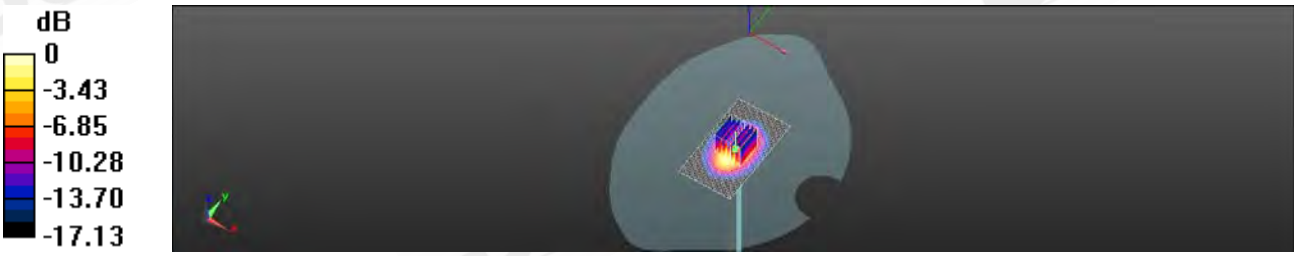
Communication System: CW; Frequency: 1900 MHz
Medium parameters used: f = 1900 MHz; σ = 1.522 S/m; ε_r = 52.633; ρ = 1000 kg/m^3
Phantom section: Flat Section

DASY5 Configuration:

- Probe: EX3DV4 - SN3923; ConvF(8.11, 8.11, 8.11); Calibrated: 2015/8/27;
- Sensor-Surface: 2mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn1374; Calibrated: 2015/10/23
- Phantom: Head
- DASY52 52.8.8(1222); SEMCAD X 14.6.10(7331)

Configuration/Pin=250mW/Area Scan (41x71x1): Interpolated grid: dx=15 mm, dy=15 mm
Maximum value of SAR (interpolated) = 15.3 W/kg

Configuration/Pin=250mW/Zoom Scan (7x7x7)/Cube 0: Measurement grid: dx=5mm, dy=5mm, dz=5mm
Reference Value = 95.99 V/m; Power Drift = -0.01 dB
Peak SAR (extrapolated) = 18.2 W/kg
SAR(1 g) = 9.95 W/kg; SAR(10 g) = 5.23 W/kg
Maximum value of SAR (measured) = 14.3 W/kg



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

Date: 2016/7/31

Dipole 2450 MHz_SN:727_Head

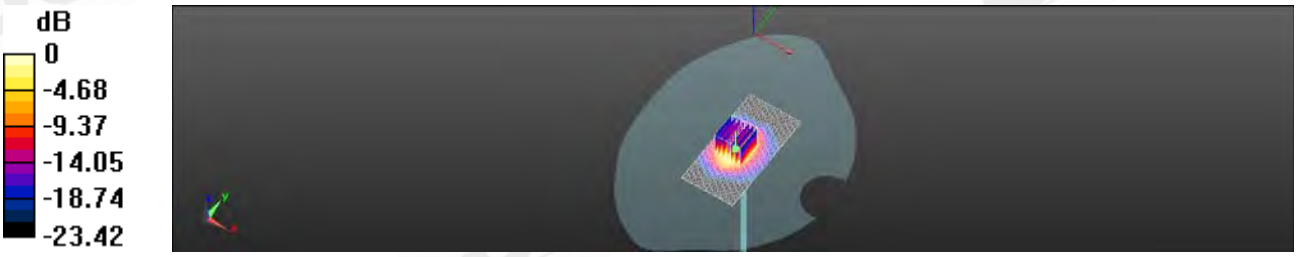
Communication System: CW; Frequency: 2450 MHz
Medium parameters used: f = 2450 MHz; σ = 1.831 S/m; ε_r = 40.583; ρ = 1000 kg/m^3
Phantom section: Flat Section

DASY5 Configuration:

- Probe: EX3DV4 - SN3923; ConvF(7.57, 7.57, 7.57); Calibrated: 2015/8/27;
- Sensor-Surface: 2mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn1374; Calibrated: 2015/10/23
- Phantom: Head
- DASY52 52.8.8(1222); SEMCAD X 14.6.10(7331)

Configuration/Pin=250mW/Area Scan (51x101x1): Interpolated grid: dx=12 mm, dy=12 mm
Maximum value of SAR (interpolated) = 21.4 W/kg

Configuration/Pin=250mW/Zoom Scan (7x7x7)/Cube 0: Measurement grid: dx=5mm, dy=5mm, dz=5mm
Reference Value = 103.7 V/m; Power Drift = 0.03 dB
Peak SAR (extrapolated) = 29.2 W/kg
SAR(1 g) = 13.3 W/kg; SAR(10 g) = 6.1 W/kg
Maximum value of SAR (measured) = 20.9 W/kg



0 dB = 20.9 W/kg = 13.21 dBW/kg

Date: 2016/7/31

Dipole 2450 MHz_SN:727_Body

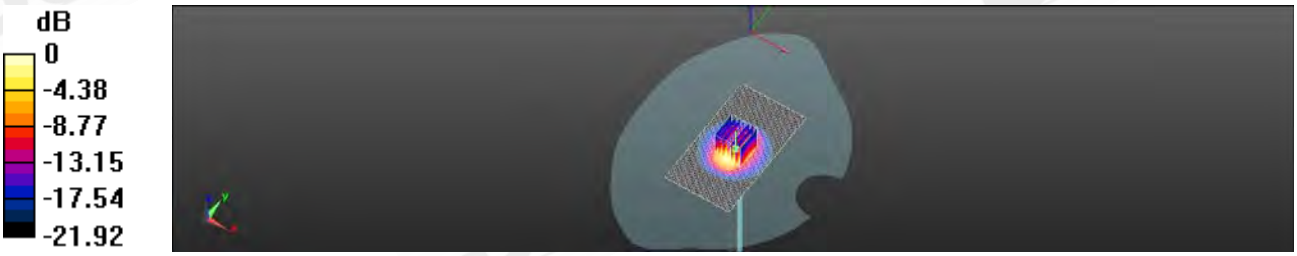
Communication System: CW; Frequency: 2450 MHz
Medium parameters used: f = 2450 MHz; σ = 1.982 S/m; ε_r = 51.233; ρ = 1000 kg/m^3
Phantom section: Flat Section

DASY5 Configuration:

- Probe: EX3DV4 - SN3923; ConvF(8.11, 8.11, 8.11); Calibrated: 2015/8/27;
- Sensor-Surface: 2mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn1374; Calibrated: 2015/10/23
- Phantom: Head
- DASY52 52.8.8(1222); SEMCAD X 14.6.10(7331)

Configuration/Pin=250mW/Area Scan (51x91x1): Interpolated grid: dx=15 mm, dy=15 mm
Maximum value of SAR (interpolated) = 23.1 W/kg

Configuration/Pin=250mW/Zoom Scan (7x7x7)/Cube 0: Measurement grid: dx=5mm, dy=5mm, dz=5mm
Reference Value = 100.5 V/m; Power Drift = -0.01 dB
Peak SAR (extrapolated) = 27.1 W/kg
SAR(1 g) = 13 W/kg; SAR(10 g) = 6.01 W/kg
Maximum value of SAR (measured) = 20.1 W/kg



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

Date: 2016/8/4

Dipole 2600 MHz_SN:1005_Head

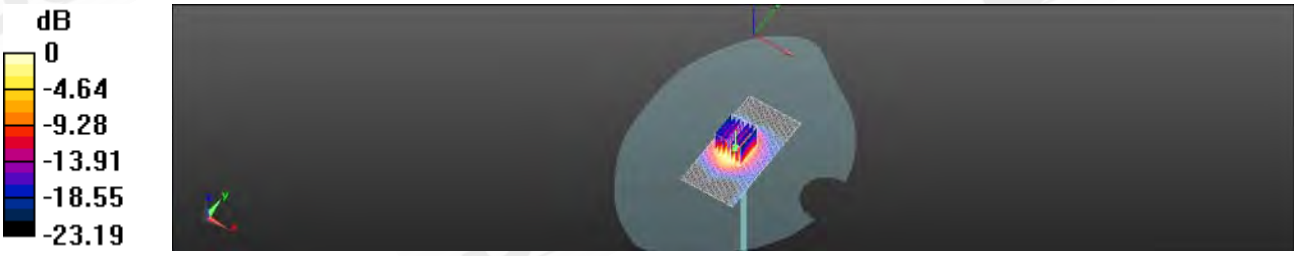
Communication System: CW; Frequency: 2600 MHz
Medium parameters used: f = 2600 MHz; σ = 1.981 S/m; ε_r = 40.403; ρ = 1000 kg/m^3
Phantom section: Flat Section

DASY5 Configuration:

- Probe: EX3DV4 - SN3938; ConvF(6.79, 6.79, 6.79); Calibrated: 2015/10/1;
- Sensor-Surface: 2mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn1260; Calibrated: 2015/9/24
- Phantom: Head
- DASY52 52.8.8(1222); SEMCAD X 14.6.10(7331)

Configuration/Pin=250mW/Area Scan (51x101x1): Interpolated grid: dx=12 mm, dy=12 mm
Maximum value of SAR (interpolated) = 23.1 W/kg

Configuration/Pin=250mW/Zoom Scan (7x7x7)/Cube 0: Measurement grid: dx=5mm, dy=5mm, dz=5mm
Reference Value = 100.4 V/m; Power Drift = -0.02 dB
Peak SAR (extrapolated) = 32.8 W/kg
SAR(1 g) = 14.4 W/kg; SAR(10 g) = 6.34 W/kg
Maximum value of SAR (measured) = 23.1 W/kg



0 dB = 23.1 W/kg = 13.64 dBW/kg

Date: 2016/8/5

Dipole 2600 MHz_SN:1005_Body

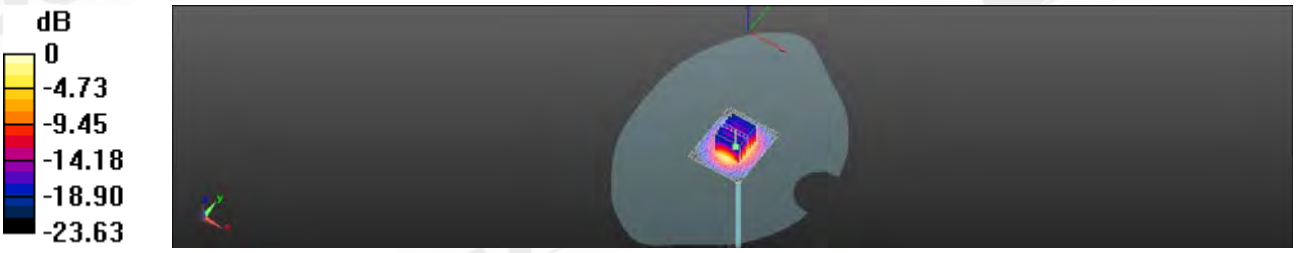
Communication System: CW; Frequency: 2600 MHz
Medium parameters used: f = 2600 MHz; σ = 2.221 S/m; ε_r = 52.135; ρ = 1000 kg/m^3
Phantom section: Flat Section

DASY5 Configuration:

- Probe: EX3DV4 - SN3938; ConvF(6.89, 6.89, 6.89); Calibrated: 2015/10/1;
- Sensor-Surface: 2mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn1260; Calibrated: 2015/9/24
- Phantom: Head
- DASY52 52.8.8(1222); SEMCAD X 14.6.10(7331)

Configuration/Pin=250mW/Area Scan (51x61x1): Interpolated grid: dx=12 mm, dy=12 mm
Maximum value of SAR (interpolated) = 22.7 W/kg

Configuration/Pin=250mW/Zoom Scan (7x7x7)/Cube 0: Measurement grid: dx=5mm, dy=5mm, dz=5mm
Reference Value = 98.55 V/m; Power Drift = -0.07 dB
Peak SAR (extrapolated) = 30.2 W/kg
SAR(1 g) = 14 W/kg; SAR(10 g) = 6.2 W/kg
Maximum value of SAR (measured) = 21.8 W/kg



0 dB = 21.8 W/kg = 13.38 dBW/kg

Date: 2016/8/6

Dipole 2600 MHz_SN:1005_Body

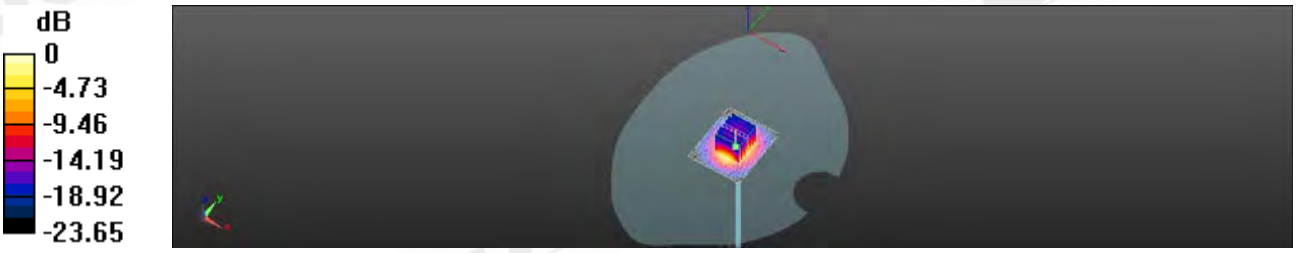
Communication System: CW; Frequency: 2600 MHz
Medium parameters used: f = 2600 MHz; σ = 2.219 S/m; ε_r = 52.053; ρ = 1000 kg/m^3
Phantom section: Flat Section

DASY5 Configuration:

- Probe: EX3DV4 - SN3938; ConvF(6.89, 6.89, 6.89); Calibrated: 2015/10/1;
- Sensor-Surface: 2mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn1260; Calibrated: 2015/9/24
- Phantom: Head
- DASY52 52.8.8(1222); SEMCAD X 14.6.10(7331)

Configuration/Pin=250mW/Area Scan (51x61x1): Interpolated grid: dx=12 mm, dy=12 mm
Maximum value of SAR (interpolated) = 22.7 W/kg

Configuration/Pin=250mW/Zoom Scan (7x7x7)/Cube 0: Measurement grid: dx=5mm, dy=5mm, dz=5mm
Reference Value = 96.27 V/m; Power Drift = -0.07 dB
Peak SAR (extrapolated) = 30.3 W/kg
SAR(1 g) = 14 W/kg; SAR(10 g) = 6.22 W/kg
Maximum value of SAR (measured) = 21.9 W/kg



0 dB = 21.9 W/kg = 13.40 dBW/kg

7. DAE & Probe Calibration Certificate

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

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

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

Accreditation No.: SCS 0108

Client SGS - TW (Auden)

Certificate No: DAE4-1374_Oct15

CALIBRATION CERTIFICATE

Object	DAE4 - SD 000 D04 BM - SN: 1374
Calibration procedure(s)	QA CAL-06.v29 Calibration procedure for the data acquisition electronics (DAE)
Calibration date	October 23, 2015

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

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

Calibration Equipment used (M&TE critical for calibration)

Primary Standards	ID #	Cal Date (Certificate No.)	Scheduled Calibration
Keithley Multimeter Type 2001	SN: 0810278	09-Sep-15 (No:17153)	Sep-16
Secondary Standards	**ID #**	**Check Date (in house)**	**Scheduled Check**
Auto DAE Calibration Unit	SE UWS 053 AA 1001	06-Jan-15 (in house check)	In house check: Jan-16
Calibrator Box V2.1	SE UMS 006 AA 1002	06-Jan-15 (in house check)	In house check: Jan-16

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

Issued: October 23, 2015

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

Certificate No: DAE4-1374_Oct15 Page 1 of 5

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

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

Accreditation No.: SCS 0108

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

Glossary

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

Methods Applied and Interpretation of Parameters

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

DC Voltage Measurement

A/D - Converter Resolution nominal

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

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

Calibration Factors	X	Y	Z
High Range	403.597 ± 0.02% (k=2)	403.842 ± 0.02% (k=2)	404.121 ± 0.02% (k=2)
Low Range	3.98111 ± 1.50% (k=2)	3.98638 ± 1.50% (k=2)	3.98936 ± 1.50% (k=2)

Connector Angle

Connector Angle to be used in DASY system	41.0 ° ± 1 °

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t (886-2) 2299-3279 f (886-2) 2298-0488 www.tw.sgs.com
Member of SGS Group

Appendix (Additional assessments outside the scope of SCS0108)

1. DC Voltage Linearity

High Range		Reading (µV)	Difference (µV)	Error (%)
Channel X	+ Input	200033.09	-0.21	-0.00
Channel X	+ Input	20006.43	2.25	0.01
Channel X	- Input	-20003.08	2.09	-0.01
Channel Y	+ Input	200033.11	-0.07	-0.00
Channel Y	+ Input	20001.24	-2.89	-0.01
Channel Y	- Input	-20006.12	-0.87	0.00
Channel Z	+ Input	200032.98	-0.38	-0.00
Channel Z	+ Input	20001.71	-2.35	-0.01
Channel Z	- Input	-20007.05	-1.72	0.01

Low Range		Reading (µV)	Difference (µV)	Error (%)
Channel X	+ Input	2000.72	0.10	0.00
Channel X	+ Input	200.90	0.07	0.04
Channel X	- Input	-198.32	0.99	-0.50
Channel Y	+ Input	2000.56	-0.00	-0.00
Channel Y	+ Input	199.67	-0.82	-0.41
Channel Y	- Input	-199.92	-0.51	0.26
Channel Z	+ Input	2000.72	0.21	0.01
Channel Z	+ Input	199.48	-1.11	-0.56
Channel Z	- Input	-200.66	-1.13	0.57

2. Common mode sensitivity

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

	Common mode Input Voltage (mV)	High Range Average Reading (µV)	Low Range Average Reading (µV)
Channel X	200	6.36	3.97
	- 200	-2.21	-4.56
Channel Y	200	7.13	6.98
	- 200	-8.29	-8.73
Channel Z	200	6.37	6.35
	- 200	-9.60	-9.25

3. Channel separation

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

	Input Voltage (mV)	Channel X (µV)	Channel Y (µV)	Channel Z (µV)
Channel X	200	-	-2.02	-1.56
Channel Y	200	4.68	-	-1.06
Channel Z	200	11.09	1.58	-

4. AD-Converter Values with inputs shorted

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

	High Range (LSB)	Low Range (LSB)
Channel X	15950	15957
Channel Y	16166	15762
Channel Z	16101	16123

5. Input Offset Measurement

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

	Average (μV)	min. Offset (μV)	max. Offset (μV)	Std. Deviation (μV)
Channel X	0.61	-0.78	1.59	0.44
Channel Y	-0.47	-2.13	0.46	0.39
Channel Z	-0.68	-1.72	0.64	0.41

6. Input Offset Current

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

7. Input Resistance (Typical values for information)

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

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

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

9. Power Consumption (Typical values for information)

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

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Accreditation No.: SCS 0108

Client SGS - TW (Auden)

Certificate No: DAE4-1260_Sep15

CALIBRATION CERTIFICATE

Object	DAE4 - SD 000 D04 BM - SN: 1260
Calibration procedure(s)	QA CAL-06.v29 Calibration procedure for the data acquisition electronics (DAE)
Calibration date:	September 24, 2015

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

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

Calibration Equipment used (M&TE critical for calibration)

Primary Standards	ID #	Cal Date (Certificate No.)	Scheduled Calibration
Keithley Multimeter Type 2001	SN: 0810278	09-Sep-15 (No:17153)	Sep-16
Secondary Standards	**ID #**	**Check Date (in house)**	**Scheduled Check**
Auto DAE Calibration Unit	SE UWS 053 AA 1001	06-Jan-15 (in house check)	In house check: Jan-16
Calibrator Box V2.1	SE UMS 006 AA 1002	06-Jan-15 (in house check)	In house check: Jan-16

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

Issued: September 24, 2015

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Certificate No: DAE4-1260_Sep15 Page 1 of 5

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Accreditation No.: SCS 0108

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Glossary

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

Methods Applied and Interpretation of Parameters

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

DC Voltage Measurement

A/D - Converter Resolution nominal

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

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

Calibration Factors	X	Y	Z
High Range	406.043 ± 0.02% (k=2)	405.010 ± 0.02% (k=2)	405.577 ± 0.02% (k=2)
Low Range	3.95755 ± 1.50% (k=2)	4.01958 ± 1.50% (k=2)	4.00483 ± 1.50% (k=2)

Connector Angle

Connector Angle to be used in DASY system	84.5 ° ± 1 °

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Appendix (Additional assessments outside the scope of SCS0108)

1. DC Voltage Linearity

High Range		Reading (µV)	Difference (µV)	Error (%)
Channel X	+ Input	199996.71	-0.71	-0.00
Channel X	+ Input	20003.42	1.97	0.01
Channel X	- Input	-19997.29	3.64	-0.02
Channel Y	+ Input	199997.03	-0.74	-0.00
Channel Y	+ Input	20002.19	0.75	0.00
Channel Y	- Input	-20000.85	-0.08	0.00
Channel Z	+ Input	199995.02	-2.52	-0.00
Channel Z	+ Input	20000.79	-0.63	-0.00
Channel Z	- Input	-20001.97	-1.09	0.01

Low Range		Reading (µV)	Difference (µV)	Error (%)
Channel X	+ Input	2001.31	0.02	0.00
Channel X	+ Input	201.74	0.05	0.03
Channel X	- Input	-197.79	0.49	-0.25
Channel Y	+ Input	2001.47	0.11	0.01
Channel Y	+ Input	201.57	-0.09	-0.04
Channel Y	- Input	-198.16	0.02	-0.01
Channel Z	+ Input	2001.06	-0.19	-0.01
Channel Z	+ Input	200.35	-1.16	-0.58
Channel Z	- Input	-199.72	-1.47	0.74

2. Common mode sensitivity

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

	Common mode Input Voltage (mV)	High Range Average Reading (µV)	Low Range Average Reading (µV)
Channel X	200	1.97	-0.02
	- 200	0.99	-1.30
Channel Y	200	13.29	13.11
	- 200	-13.69	-13.98
Channel Z	200	-0.48	-0.25
	- 200	-1.06	-1.87

3. Channel separation

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

	Input Voltage (mV)	Channel X (µV)	Channel Y (µV)	Channel Z (µV)
Channel X	200	-	5.95	-2.35
Channel Y	200	9.12	-	6.99
Channel Z	200	9.45	7.26	-

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4. AD-Converter Values with inputs shorted

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

	High Range (LSB)	Low Range (LSB)
Channel X	15911	14818
Channel Y	15818	16372
Channel Z	16044	16664

5. Input Offset Measurement

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

	Average (μV)	min. Offset (μV)	max. Offset (μV)	Std. Deviation (μV)
Channel X	-0.60	-1.69	0.60	0.44
Channel Y	-0.89	-3.18	0.27	0.50
Channel Z	-1.05	-1.97	0.26	0.49

6. Input Offset Current

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

7. Input Resistance (Typical values for information)

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

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

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

9. Power Consumption (Typical values for information)

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

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Accreditation No.: SCS 0108

Client SGS-TW (Auden)

Certificate No: EX3-3923_Aug15

CALIBRATION CERTIFICATE

Object: EX3DV4 - SN:3923

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

Calibration date: August 27, 2015

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

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

Calibration Equipment used (M&TE critical for calibration)

Primary Standards	ID	Cal Date (Certificate No.)	Scheduled Calibration
Power meter E4419B	GB41293874	01-Apr-15 (No. 217-02128)	Mar-16
Power sensor E4412A	MY41498087	01-Apr-15 (No. 217-02128)	Mar-16
Reference 3 dB Attenuator	SN: S5054 (3c)	01-Apr-15 (No. 217-02129)	Mar-16
Reference 20 dB Attenuator	SN: S5277 (20x)	01-Apr-15 (No. 217-02132)	Mar-16
Reference 30 dB Attenuator	SN: S5129 (30b)	01-Apr-15 (No. 217-02130)	Mar-16
Reference Probe ES3DV2	SN: 3013	30-Dec-14 (No. ES3-3013_Dec14)	Dec-15
DAE4	SN: 660	14-Jan-15 (No. DAE4-660_Jan15)	Jan-16
Secondary Standards	ID	Check Date (in house)	Scheduled Check
RF generator HP 8648C	US3642U01700	4-Aug-99 (in house check Apr-13)	In house check: Apr-16
Network Analyzer HP 8753E	US37390585	18-Oct-01 (in house check Oct-14)	In house check: Oct-15

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

Issued: August 27, 2015

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Glossary:

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

Calibration is Performed According to the Following Standards:

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

Methods Applied and Interpretation of Parameters:

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

Probe EX3DV4

SN:3923

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

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

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

Basic Calibration Parameters

	Sensor X	Sensor Y	Sensor Z	Unc (k=2)
Norm ($\mu V/(V/m)^2$)[A]	0.57	0.48	0.47	± 10.1 %
DCP (mV)[B]	103.6	96.4	101.3	

Modulation Calibration Parameters

UID	Communication System Name		A dB	B $dB\sqrt{\mu V}$	C	D dB	VR mV	Unc[E] (k=2)
0	CW	X	0.0	0.0	1.0	0.00	153.8	±3.3 %
		Y	0.0	0.0	1.0		155.6	
		Z	0.0	0.0	1.0		157.0	

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

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

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

Calibration Parameter Determined in Head Tissue Simulating Media

f (MHz) [C]	Relative Permittivity [F]	Conductivity (S/m) [F]	ConvF X	ConvF Y	ConvF Z	Alpha [G]	Depth [G] (mm)	Unc (k=2)
750	41.9	0.89	10.66	10.66	10.66	0.34	1.00	± 12.0 %
835	41.5	0.90	10.45	10.45	10.45	0.42	0.80	± 12.0 %
900	41.5	0.97	10.07	10.07	10.07	0.35	1.00	± 12.0 %
1750	40.1	1.37	8.71	8.71	8.71	0.19	1.12	± 12.0 %
1900	40.0	1.40	8.43	8.43	8.43	0.36	0.90	± 12.0 %
2000	40.0	1.40	8.48	8.48	8.48	0.35	0.80	± 12.0 %
2300	39.5	1.67	8.05	8.05	8.05	0.36	0.80	± 12.0 %
2450	39.2	1.80	7.57	7.57	7.57	0.40	0.80	± 12.0 %
2600	39.0	1.96	7.45	7.45	7.45	0.39	0.80	± 12.0 %
5250	35.9	4.71	5.22	5.22	5.22	0.35	1.80	± 13.1 %
5300	35.9	4.76	5.08	5.08	5.08	0.35	1.80	± 13.1 %
5600	35.5	5.07	4.78	4.78	4.78	0.40	1.80	± 13.1 %
5750	35.4	5.22	4.81	4.81	4.81	0.40	1.80	± 13.1 %

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

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

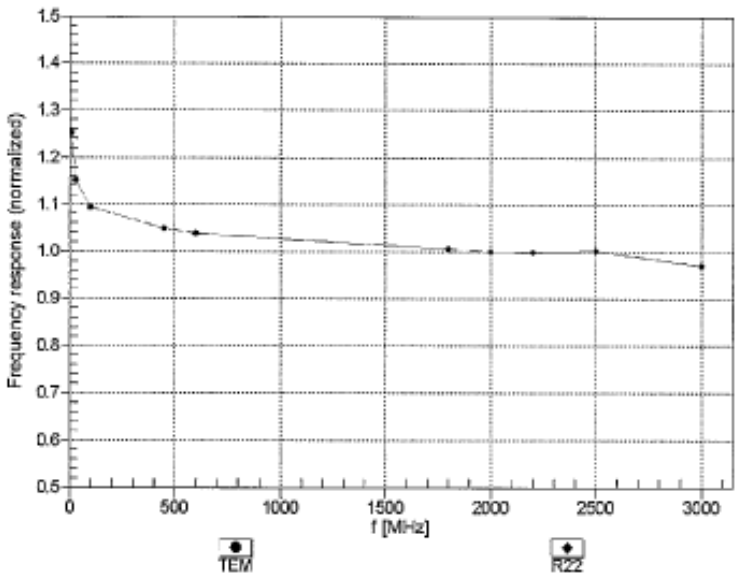
Calibration Parameter Determined in Body Tissue Simulating Media

f (MHz) [C]	Relative Permittivity [F]	Conductivity (S/m) [F]	ConvF X	ConvF Y	ConvF Z	Alpha [G]	Depth [G] (mm)	Unc (k=2)
750	55.5	0.96	10.50	10.50	10.50	0.43	0.86	± 12.0 %
835	55.2	0.97	10.48	10.48	10.48	0.21	1.42	± 12.0 %
900	55.0	1.05	10.33	10.33	10.33	0.30	1.08	± 12.0 %
1750	53.4	1.49	8.40	8.40	8.40	0.39	0.87	± 12.0 %
1900	53.3	1.52	8.11	8.11	8.11	0.41	0.80	± 12.0 %
2000	53.3	1.52	8.31	8.31	8.31	0.29	1.02	± 12.0 %
2300	52.9	1.81	7.90	7.90	7.90	0.30	0.91	± 12.0 %
2450	52.7	1.95	7.63	7.63	7.63	0.29	0.90	± 12.0 %
2600	52.5	2.16	7.49	7.49	7.49	0.25	0.95	± 12.0 %
5250	48.9	5.36	4.68	4.68	4.68	0.40	1.90	± 13.1 %
5300	48.9	5.42	4.56	4.56	4.56	0.40	1.90	± 13.1 %
5600	48.5	5.77	4.10	4.10	4.10	0.45	1.90	± 13.1 %
5750	48.3	5.94	4.30	4.30	4.30	0.45	1.90	± 13.1 %

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

EX3DV4– SN:3923 August 27, 2015

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



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

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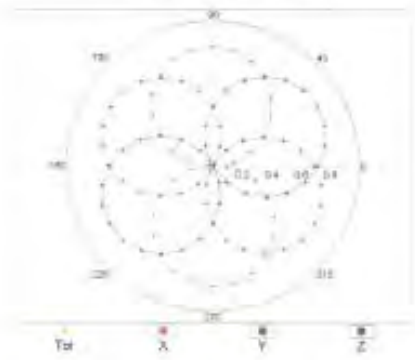
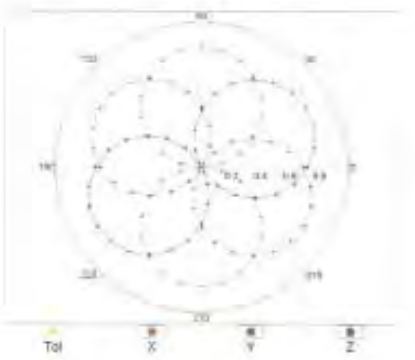
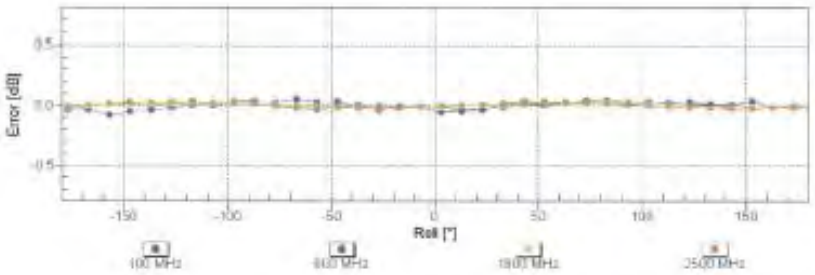
Receiving Pattern (ϕ), ϑ = 0°

f=600 MHz,TEM



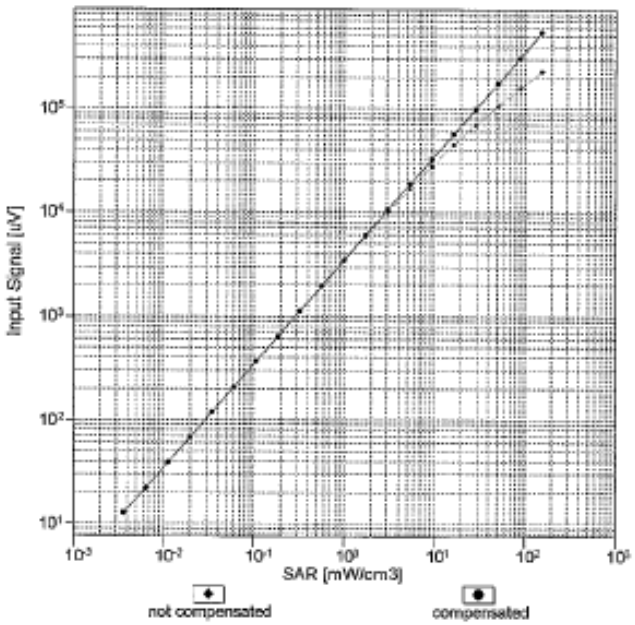
f=1800 MHz,R22

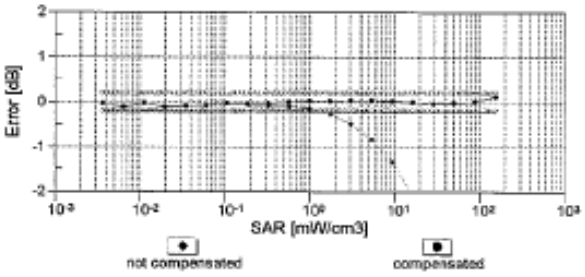




Uncertainty of Axial Isotropy Assessment: ± 0.5% (k=2)

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

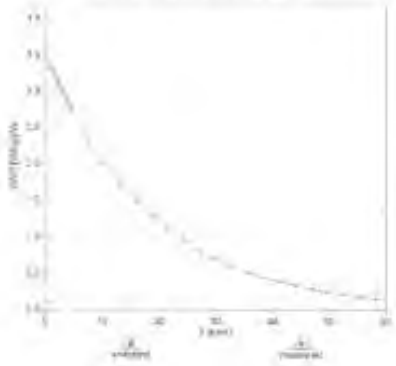




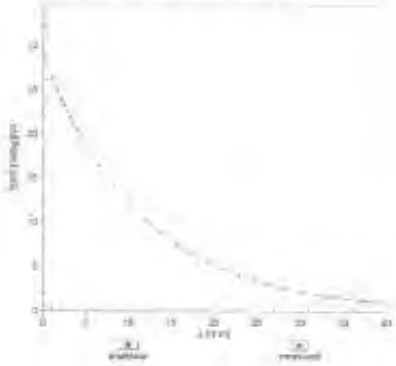
Uncertainty of Linearity Assessment: ± 0.6% (k=2)

Conversion Factor Assessment

f = 835 MHz,WGLS R9 (H_convF)

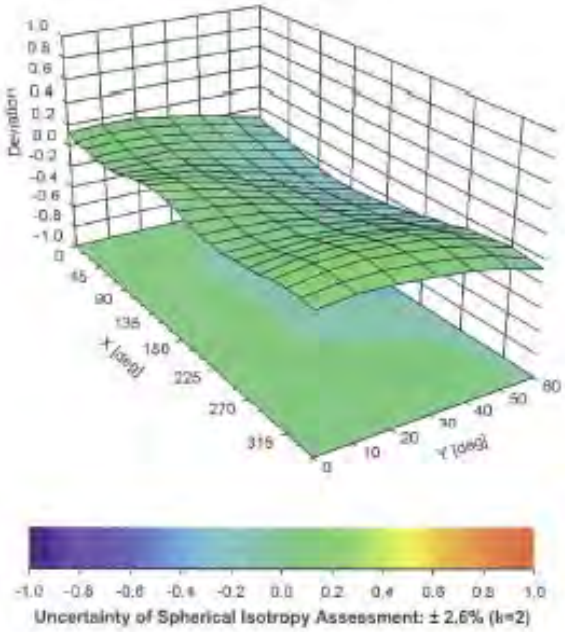


f = 1900 MHz,WGLS R22 (H_convF)



Deviation from Isotropy in Liquid

Error (φ, ϑ), f = 900 MHz



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

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

Other Probe Parameters

Sensor Arrangement	Triangular
Connector Angle (°)	123
Mechanical Surface Detection Mode	enabled
Optical Surface Detection Mode	disabled
Probe Overall Length	337 mm
Probe Body Diameter	10 mm
Tip Length	9 mm
Tip Diameter	2.5 mm
Probe Tip to Sensor X Calibration Point	1 mm
Probe Tip to Sensor Y Calibration Point	1 mm
Probe Tip to Sensor Z Calibration Point	1 mm
Recommended Measurement Distance from Surface	1.4 mm

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

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

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

Accreditation No.: SCS 0108

Client: SGS-TW (Auden)

Certificate No: EX3-3938_Oct15

CALIBRATION CERTIFICATE

Object: EX3DV4 - SN:3938

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

Calibration date: October 1, 2015

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

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

Calibration Equipment used (M&TE critical for calibration)

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

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

Issued: October 2, 2015

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

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

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

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

Accreditation No.: SCS 0108

Glossary:

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

Calibration is Performed According to the Following Standards:

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

Methods Applied and Interpretation of Parameters:

- *NORMx,y,z*: Assessed for E-field polarization ϑ = 0 (f ≤ 900 MHz in TEM-cell; f > 1800 MHz: R22 waveguide). NORMx,y,z are only intermediate values, i.e., the uncertainties of NORMx,y,z does not affect the E²-field uncertainty inside TSL (see below ConvF).
- *NORM(f)x,y,z = NORMx,y,z * frequency_response* (see Frequency Response Chart). This linearization is implemented in DASY4 software versions later than 4.2. The uncertainty of the frequency response is included in the stated uncertainty of *ConvF*.
- *DCPx,y,z*: DCP are numerical linearization parameters assessed based on the data of power sweep with CW signal (no uncertainty required). DCP does not depend on frequency nor media.
- *PAR*: PAR is the Peak to Average Ratio that is not calibrated but determined based on the signal characteristics
- *Ax,y,z; Bx,y,z; Cx,y,z; Dx,y,z; VRx,y,z*: *A, B, C, D* are numerical linearization parameters assessed based on the data of power sweep for specific modulation signal. The parameters do not depend on frequency nor media. *VR* is the maximum calibration range expressed in RMS voltage across the diode.
- *ConvF and Boundary Effect Parameters*: Assessed in flat phantom using E-field (or Temperature Transfer Standard for f ≤ 800 MHz) and inside waveguide using analytical field distributions based on power measurements for f > 800 MHz. The same setups are used for assessment of the parameters applied for boundary compensation (alpha, depth) of which typical uncertainty values are given. These parameters are used in DASY4 software to improve probe accuracy close to the boundary. The sensitivity in TSL corresponds to *NORMx,y,z * ConvF* whereby the uncertainty corresponds to that given for *ConvF*. A frequency dependent ConvF is used in DASY version 4.4 and higher which allows extending the validity from ± 50 MHz to ± 100 MHz.
- *Spherical isotropy (3D deviation from isotropy)*: in a field of low gradients realized using a flat phantom exposed by a patch antenna.
- *Sensor Offset*: The sensor offset corresponds to the offset of virtual measurement center from the probe tip (on probe axis). No tolerance required.
- *Connector Angle*: The angle is assessed using the information gained by determining the *NORMx* (no uncertainty required).

Probe EX3DV4

SN:3938

Manufactured: May 2, 2013
Calibrated: October 1, 2015

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

SGS Taiwan Ltd. 台灣檢驗科技股份有限公司 | No.134,Wu Kung Road, New Taipei Industrial Park, Wuku District, New Taipei City, Taiwan 24803/新北市五股區新北產業園區五工路134號
t (886-2) 2299-3279 f (886-2) 2298-0488 www.tw.sgs.com
Member of SGS Group

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

Basic Calibration Parameters

	Sensor X	Sensor Y	Sensor Z	Unc (k=2)
Norm (μV/(V/m)^2)^A	0.52	0.57	0.34	± 10.1 %
DCP (mV)^B	100.8	99.7	104.1	

Modulation Calibration Parameters

UID	Communication System Name		A dB	B dB√μV	C	D dB	VR mV	Unc^E (k=2)
0	CW	X	0.0	0.0	1.0	0.00	141.3	±2.7 %
		Y	0.0	0.0	1.0		147.2	
		Z	0.0	0.0	1.0		128.1	

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

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

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

Calibration Parameter Determined in Head Tissue Simulating Media

f (MHz) [C]	Relative Permittivity [F]	Conductivity (S/m) [F]	ConvF X	ConvF Y	ConvF Z	Alpha [G]	Depth [G] (mm)	Unc (k=2)
750	41.9	0.89	9.69	9.69	9.69	0.19	1.67	± 12.0 %
835	41.5	0.90	9.35	9.35	9.35	0.26	1.23	± 12.0 %
900	41.5	0.97	9.15	9.15	9.15	0.18	1.86	± 12.0 %
1450	40.5	1.20	7.86	7.86	7.86	0.13	2.63	± 12.0 %
1750	40.1	1.37	8.17	8.17	8.17	0.36	0.80	± 12.0 %
1900	40.0	1.40	7.89	7.89	7.89	0.32	0.80	± 12.0 %
2000	40.0	1.40	7.89	7.89	7.89	0.36	0.75	± 12.0 %
2300	39.5	1.67	7.46	7.46	7.46	0.34	0.88	± 12.0 %
2450	39.2	1.80	7.11	7.11	7.11	0.32	0.94	± 12.0 %
2600	39.0	1.96	6.79	6.79	6.79	0.24	1.23	± 12.0 %
5250	35.9	4.71	4.90	4.90	4.90	0.40	1.80	± 13.1 %
5300	35.9	4.76	4.81	4.81	4.81	0.40	1.80	± 13.1 %
5600	35.5	5.07	4.28	4.28	4.28	0.50	1.80	± 13.1 %
5750	35.4	5.22	4.41	4.41	4.41	0.50	1.80	± 13.1 %

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

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

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

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

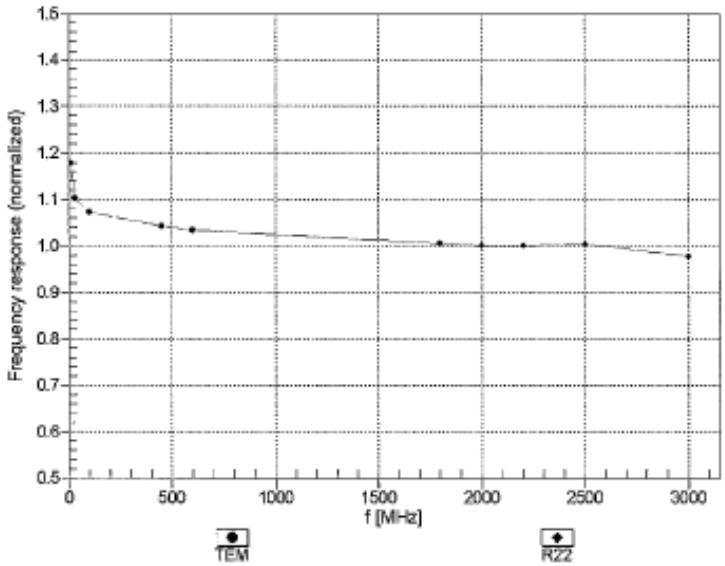
Calibration Parameter Determined in Body Tissue Simulating Media

f (MHz) [C]	Relative Permittivity [F]	Conductivity (S/m) [F]	ConvF X	ConvF Y	ConvF Z	Alpha [G]	Depth [G] (mm)	Unc (k=2)
750	55.5	0.96	9.50	9.50	9.50	0.31	1.13	± 12.0 %
835	55.2	0.97	9.30	9.30	9.30	0.28	1.26	± 12.0 %
900	55.0	1.05	9.22	9.22	9.22	0.34	1.05	± 12.0 %
1450	54.0	1.30	7.96	7.96	7.96	0.16	2.05	± 12.0 %
1750	53.4	1.49	7.73	7.73	7.73	0.42	0.80	± 12.0 %
1900	53.3	1.52	7.41	7.41	7.41	0.32	0.90	± 12.0 %
2000	53.3	1.52	7.55	7.55	7.55	0.26	1.05	± 12.0 %
2300	52.9	1.81	7.27	7.27	7.27	0.36	0.84	± 12.0 %
2450	52.7	1.95	7.17	7.17	7.17	0.37	0.85	± 12.0 %
2600	52.5	2.16	6.90	6.90	6.90	0.33	0.90	± 12.0 %
5250	48.9	5.36	4.19	4.19	4.19	0.50	1.90	± 13.1 %
5300	48.9	5.42	4.09	4.09	4.09	0.50	1.90	± 13.1 %
5600	48.5	5.77	3.66	3.66	3.66	0.55	1.90	± 13.1 %
5750	48.3	5.94	3.87	3.87	3.87	0.55	1.90	± 13.1 %

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

EX3DV4– SN:3938 October 1, 2015

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

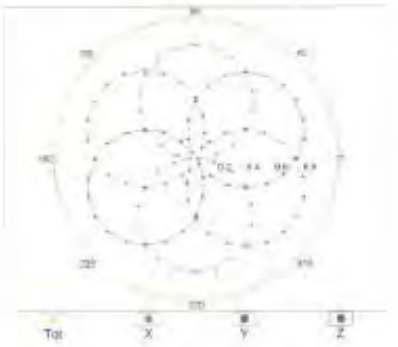


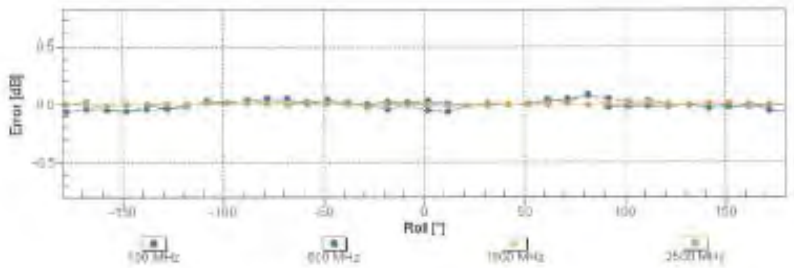
Uncertainty of Frequency Response of E-field: ± 6.3% (k=2)

Receiving Pattern (ϕ), ϑ = 0°

f=600 MHz,TEM

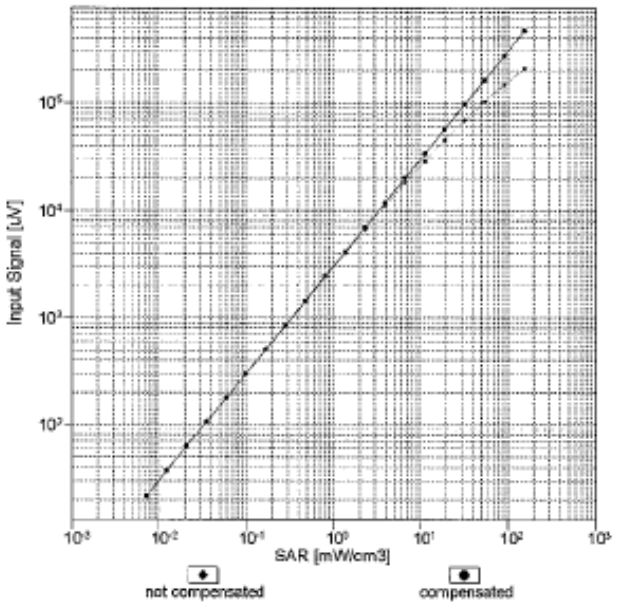
f=1800 MHz,R22

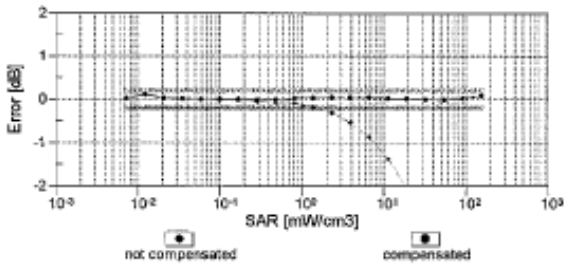




Uncertainty of Axial Isotropy Assessment: ± 0.5% (k=2)

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



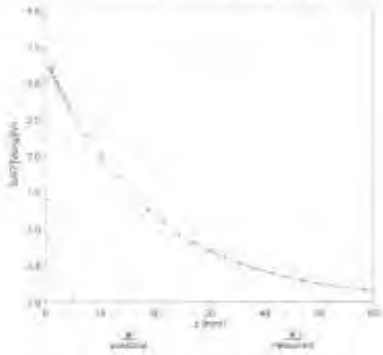


Uncertainty of Linearity Assessment: ± 0.6% (k=2)

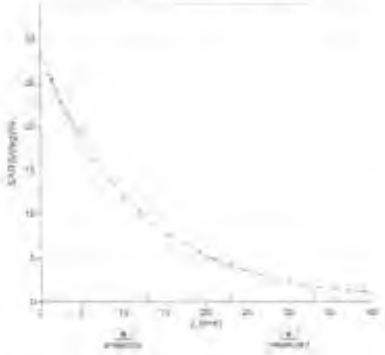
EX3DV4– SN:3938 October 1, 2015

Conversion Factor Assessment

f = 835 MHz,WGLS R9 (H_convF)

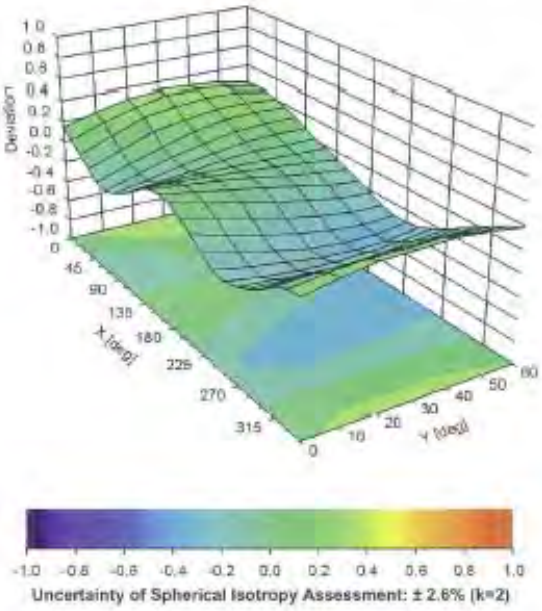


f = 1900 MHz,WGLS R22 (H_convF)



Deviation from Isotropy in Liquid

Error (φ, θ), f = 900 MHz



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

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

Other Probe Parameters

Sensor Arrangement	Triangular
Connector Angle (°)	-28.1
Mechanical Surface Detection Mode	enabled
Optical Surface Detection Mode	disabled
Probe Overall Length	337 mm
Probe Body Diameter	10 mm
Tip Length	9 mm
Tip Diameter	2.5 mm
Probe Tip to Sensor X Calibration Point	1 mm
Probe Tip to Sensor Y Calibration Point	1 mm
Probe Tip to Sensor Z Calibration Point	1 mm
Recommended Measurement Distance from Surface	1.4 mm

8. Phantom Description

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

s p e a g

Certificate of Conformity / First Article Inspection

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

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

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

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

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

Date 07.07.2005

Signature / Stamp

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

9. System Validation from Original Equipment Supplier

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

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

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

Accreditation No.: SCS 0108

Client SGS-TW (Auden)

Certificate No: D835V2-4d063_Aug15

CALIBRATION CERTIFICATE

Object: D835V2 - SN: 4d063

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

Calibration date: August 24, 2015

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

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

Calibration Equipment used (M&TE critical for calibration)

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

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

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

Issued: August 25, 2015

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Certificate No: D835V2-4d063_Aug15 Page 1 of 8

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Accreditation No.: SCS 0108

Glossary:

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

Calibration is Performed According to the Following Standards:

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

Additional Documentation:

e) DASY4/5 System Handbook

Methods Applied and Interpretation of Parameters:

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

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

Measurement Conditions

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

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

Head TSL parameters

The following parameters and calculations were applied.

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

SAR result with Head TSL

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

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

Body TSL parameters

The following parameters and calculations were applied.

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

SAR result with Body TSL

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

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

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Appendix (Additional assessments outside the scope of SCS 0108)

Antenna Parameters with Head TSL

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

Antenna Parameters with Body TSL

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

General Antenna Parameters and Design

Electrical Delay (one direction)	1.394 ns

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

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

Additional EUT Data

Manufactured by	SPEAG
Manufactured on	November 27, 2006

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DASY5 Validation Report for Head TSL

Date: 21.08.2015

Test Laboratory: SPEAG, Zurich, Switzerland

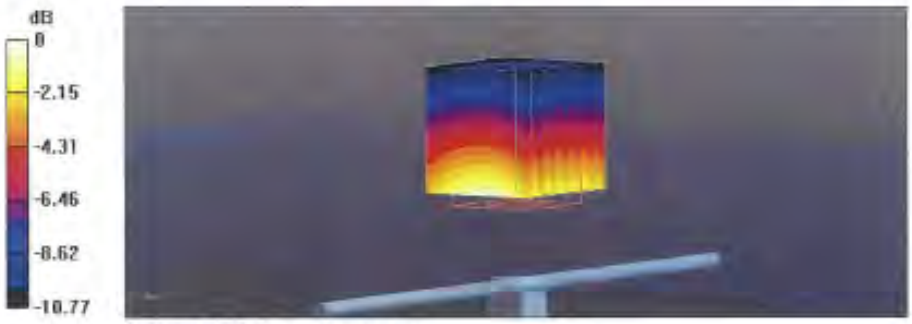
DUT: Dipole 835 MHz; Type: D835V2; Serial: D835V2 - SN: 4d063

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

DASY52 Configuration:

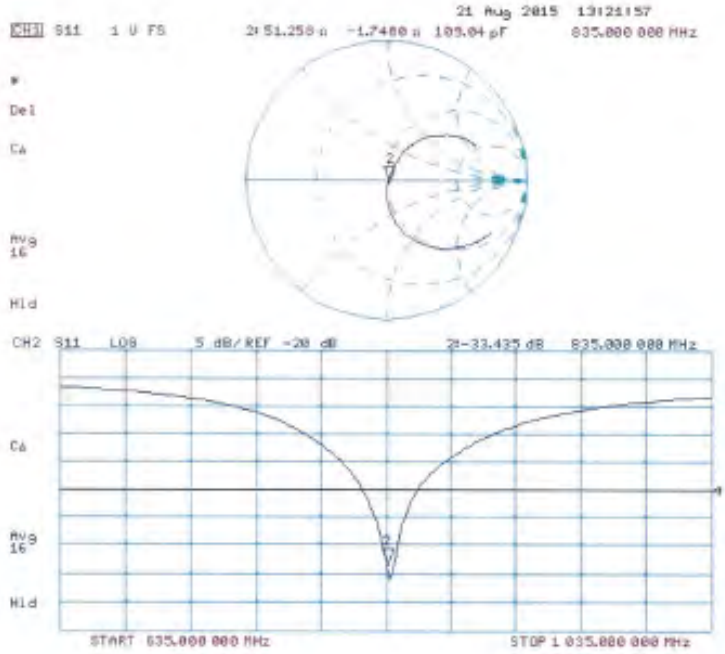
- Probe: ES3DV3 - SN3205; ConvF(6.2, 6.2, 6.2); Calibrated: 30.12.2014;
- Sensor-Surface: 3mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn601; Calibrated: 17.08.2015
- Phantom: Flat Phantom 4.9L; Type: QD000P49AA; Serial: 1001
- DASY52 52.8.8(1222); SEMCAD X 14.6.10(7331)

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



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

Impedance Measurement Plot for Head TSL



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DASY5 Validation Report for Body TSL

Date: 24.08.2015

Test Laboratory: SPEAG, Zurich, Switzerland

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

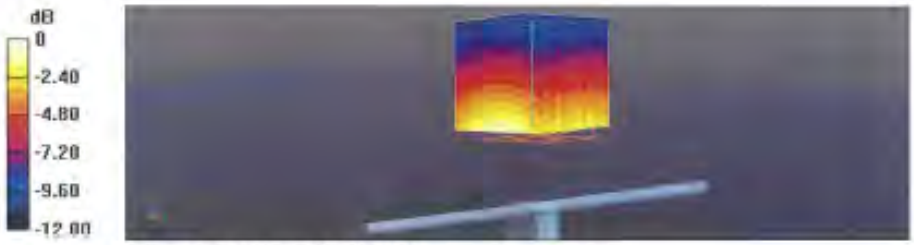
Communication System: UID 0 - CW; Frequency: 835 MHz
Medium parameters used: f = 835 MHz; σ = 1.02 S/m; ε_r = 56.1; ρ = 1000 kg/m^3
Phantom section: Flat Section
Measurement Standard: DASY5 (IEEE/IEC/ANSI C63.19-2011)

DASY52 Configuration:

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

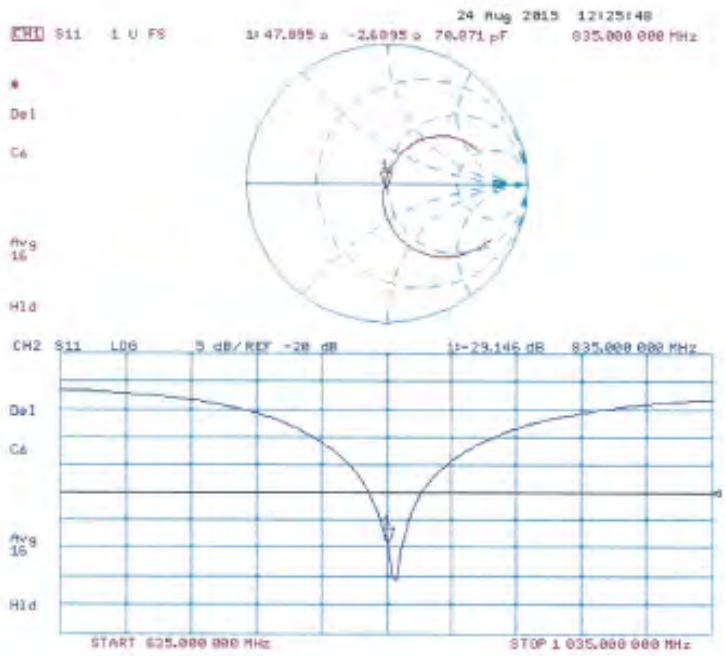
Dipole Calibration for Body Tissue/Pin=250 mW, d=15mm/Zoom Scan (7x7x7)/Cube 0:

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



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

Impedance Measurement Plot for Body TSL



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Accreditation No.: SCS 0108

Client SGS-TW (Auden)

Certificate No: D1900V2-5d027_Apr16

CALIBRATION CERTIFICATE

Object	D1900V2 - SN: 5d027
Calibration procedure(s)	QA CAL-05.v9 Calibration procedure for dipole validation kits above 700 MHz
Calibration date	April 25, 2016

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

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

Calibration Equipment used (M&TE critical for calibration)

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

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

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

Issued: April 26, 2016

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Accreditation No.: SCS 0108

Glossary:

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

Calibration is Performed According to the Following Standards:

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

Additional Documentation:

a) DASY4/5 System Handbook

Methods Applied and Interpretation of Parameters:

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

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

Measurement Conditions

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

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

Head TSL parameters

The following parameters and calculations were applied.

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

SAR result with Head TSL

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

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

Body TSL parameters

The following parameters and calculations were applied.

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

SAR result with Body TSL

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

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

Appendix (Additional assessments outside the scope of SCS 0108)

Antenna Parameters with Head TSL

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

Antenna Parameters with Body TSL

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

General Antenna Parameters and Design

Electrical Delay (one direction)	1.196 ns

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

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

Additional EUT Data

Manufactured by	SPEAG
Manufactured on	December 17, 2002

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DASY5 Validation Report for Head TSL

Date: 25.04.2016

Test Laboratory: SPEAG, Zurich, Switzerland

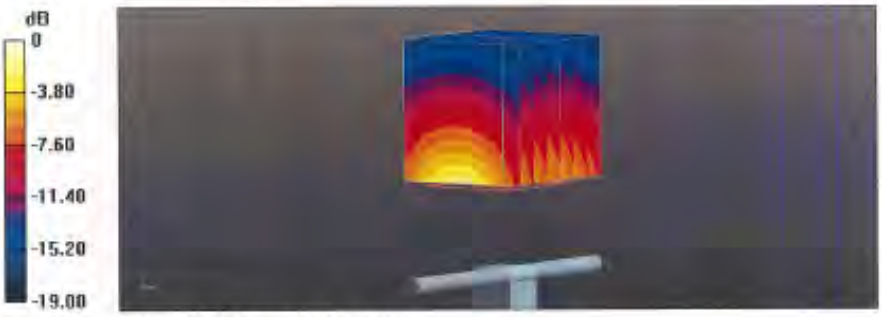
DUT: Dipole 1900 MHz; Type: D1900V2; Serial: D1900V2 - SN: 5d027

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

DASY52 Configuration:

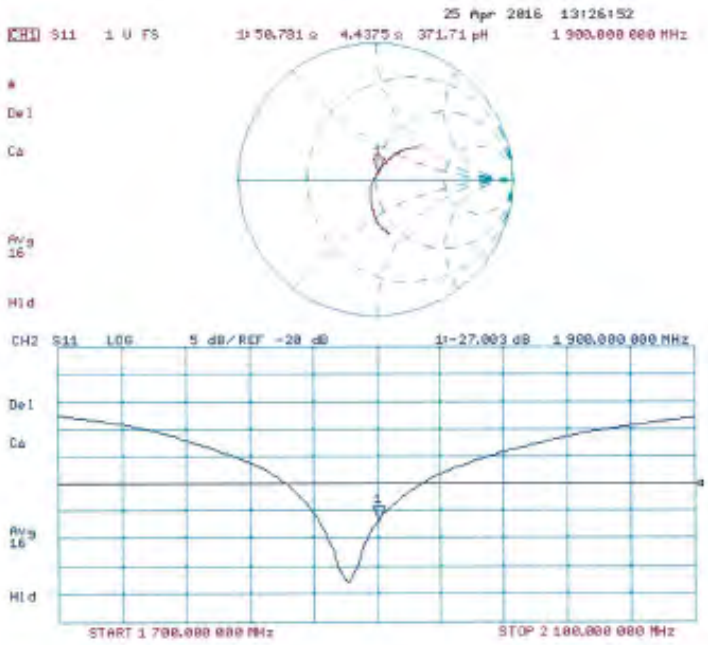
- Probe: EX3DV4 - SN7349; ConvF(8.2, 8.2, 8.2); Calibrated: 31.12.2015;
- Sensor-Surface: 1.4mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn601; Calibrated: 30.12.2015
- Phantom: Flat Phantom 5.0 (front); Type: QD000P50AA; Serial: 1001
- DASY52 52.8.8(1258); SEMCAD X 14.6.10(7372)

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



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

Impedance Measurement Plot for Head TSL



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DASY5 Validation Report for Body TSL

Date: 25.04.2016

Test Laboratory: SPEAG, Zurich, Switzerland

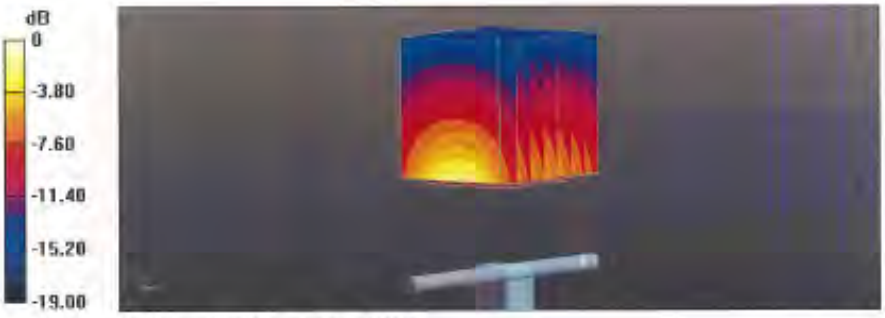
DUT: Dipole 1900 MHz; Type: D1900V2; Serial: D1900V2 - SN: 5d027

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

DASY52 Configuration:

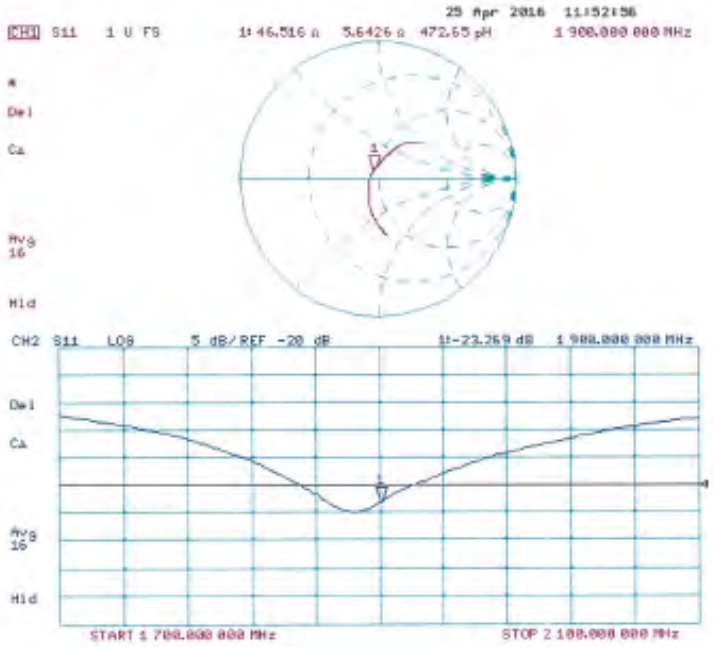
- Probe: EX3DV4 - SN7349; ConvF(8.03, 8.03, 8.03); Calibrated: 31.12.2015;
- Sensor-Surface: 1.4mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn601; Calibrated: 30.12.2015
- Phantom: Flat Phantom 5.0 (back); Type: QD000P50AA; Serial: 1002
- DASY52 52.8.8(1258); SEMCAD X 14.6.10(7372)

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



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

Impedance Measurement Plot for Body TSL



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Accreditation No.: SCS 0108

Client SGS-TW (Auden)

Certificate No: D2450V2-727_Apr16

CALIBRATION CERTIFICATE

Object D2450V2 - SN:727

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

Calibration date: April 19, 2016

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

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

Calibration Equipment used (M&TE critical for calibration)

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

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

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

Issued: April 20, 2016

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Certificate No: D2450V2-727_Apr16 Page 1 of 8

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Accreditation No.: SCS 0108

Glossary:

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

Calibration is Performed According to the Following Standards:

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

Additional Documentation:

e) DASY4/5 System Handbook

Methods Applied and Interpretation of Parameters:

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

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

Measurement Conditions

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

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

Head TSL parameters

The following parameters and calculations were applied.

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

SAR result with Head TSL

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

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

Body TSL parameters

The following parameters and calculations were applied.

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

SAR result with Body TSL

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

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

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Appendix (Additional assessments outside the scope of SCS 0108)

Antenna Parameters with Head TSL

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

Antenna Parameters with Body TSL

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

General Antenna Parameters and Design

Electrical Delay (one direction)	1.148 ns

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

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

Additional EUT Data

Manufactured by	SPEAG
Manufactured on	January 09, 2003

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DASY5 Validation Report for Head TSL

Date: 19.04.2016

Test Laboratory: SPEAG, Zurich, Switzerland

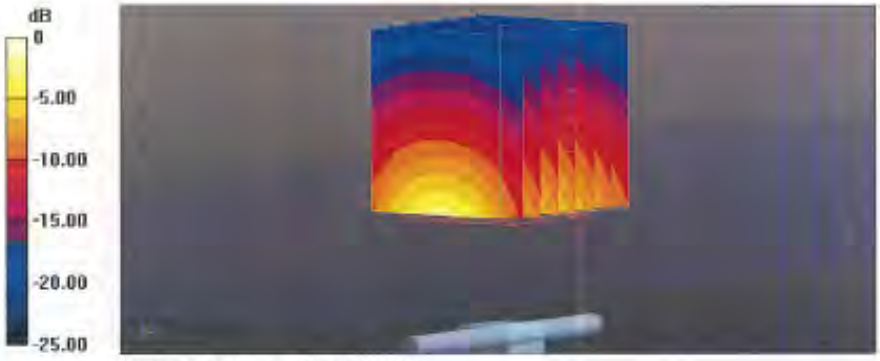
DUT: Dipole 2450 MHz; Type: D2450V2; Serial: D2450V2 - SN: 727

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

DASY52 Configuration:

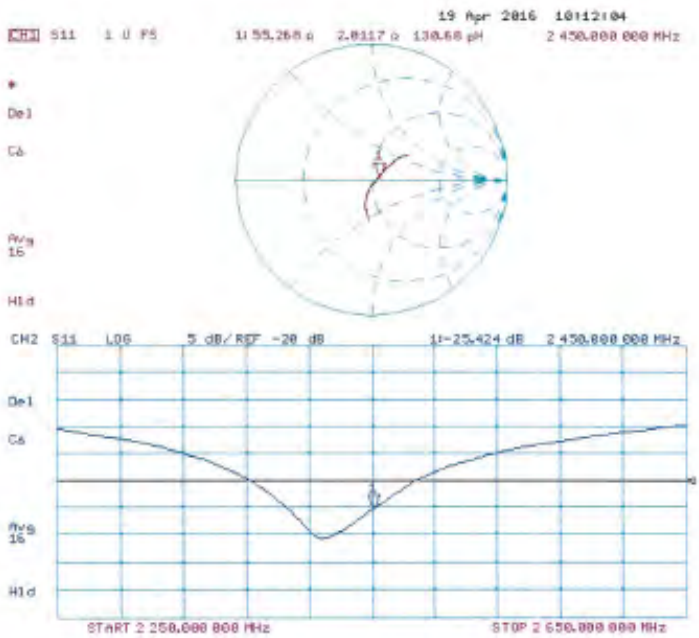
- Probe: EX3DV4 - SN7349; ConvF(7.76, 7.76, 7.76); Calibrated: 31.12.2015;
- Sensor-Surface: 1.4mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn601; Calibrated: 30.12.2015
- Phantom: Flat Phantom 5.0 (front); Type: QD000P50AA; Serial: 1001
- DASY52 52.8.8(1258); SEMCAD X 14.6.10(7372)

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



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

Impedance Measurement Plot for Head TSL



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Accreditation No.: SCS 0108

Client SGS-TW (Auden)

Certificate No: D2600V2-1005_Jan16

CALIBRATION CERTIFICATE

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

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

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

Calibration Equipment used (M&TE critical for calibration)

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

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

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

Issued: January 26, 2016

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Certificate No: D2600V2-1005_Jan16 Page 1 of 8

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Accreditation No.: SCS 0108

Glossary:

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

Calibration is Performed According to the Following Standards:

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

Additional Documentation:

e) DASY4/5 System Handbook

Methods Applied and Interpretation of Parameters:

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

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

Measurement Conditions

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

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

Head TSL parameters

The following parameters and calculations were applied.

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

SAR result with Head TSL

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

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

Body TSL parameters

The following parameters and calculations were applied.

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

SAR result with Body TSL

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

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

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Appendix (Additional assessments outside the scope of SCS 0108)

Antenna Parameters with Head TSL

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

Antenna Parameters with Body TSL

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

General Antenna Parameters and Design

Electrical Delay (one direction)	1.154 ns

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

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

Additional EUT Data

Manufactured by	SPEAG
Manufactured on	December 23, 2006

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DASY5 Validation Report for Head TSL

Date: 21.01.2016

Test Laboratory: SPEAG, Zurich, Switzerland

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

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

DASY52 Configuration:

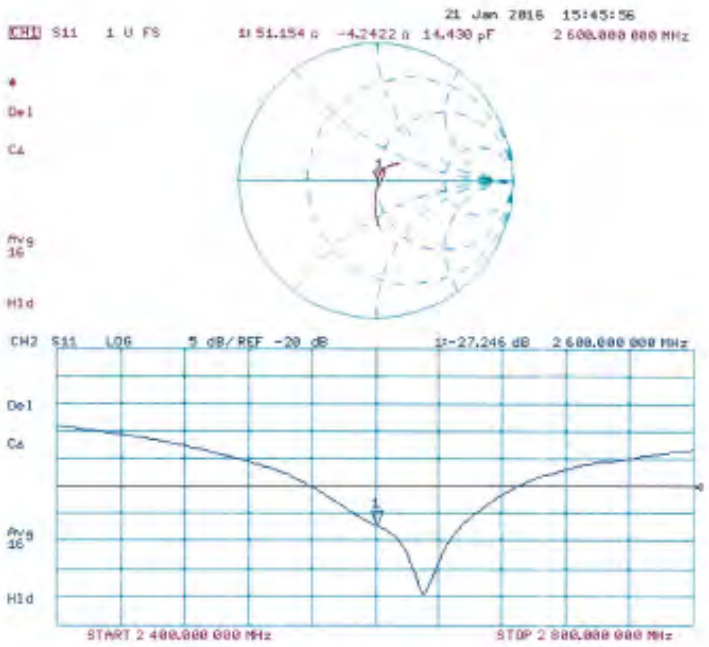
- Probe: EX3DV4 - SN7349; ConvF(7.49, 7.49, 7.49); Calibrated: 31.12.2015;
- Sensor-Surface: 1.4mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn601; Calibrated: 30.12.2015
- Phantom: Flat Phantom 5.0 (front); Type: QD000P50AA; Serial: 1001
- DASY52 52.8.8(1258); SEMCAD X 14.6.10(7372)

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

Measurement grid: dx=5mm, dy=5mm, dz=5mm
Reference Value = 114.8 V/m; Power Drift = 0.01 dB
Peak SAR (extrapolated) = 30.2 W/kg
SAR(1 g) = 14.2 W/kg; SAR(10 g) = 6.29 W/kg
Maximum value of SAR (measured) = 24.0 W/kg

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

Impedance Measurement Plot for Head TSL



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DASY5 Validation Report for Body TSL

Date: 21.01.2016

Test Laboratory: SPEAG, Zurich, Switzerland

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

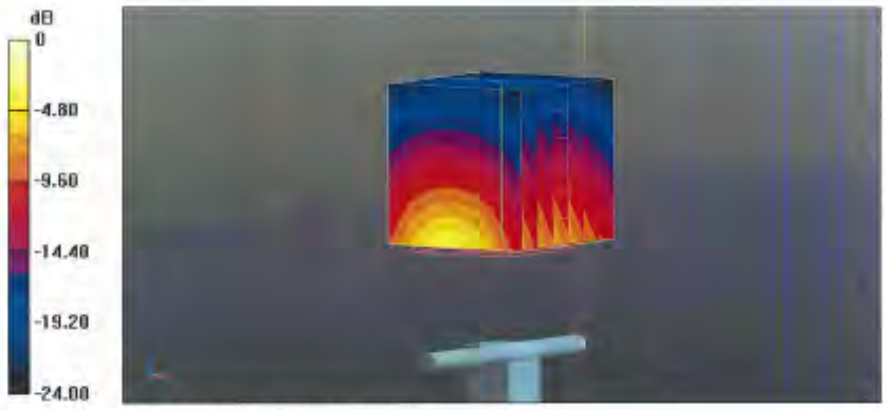
Communication System: UID 0 - CW; Frequency: 2600 MHz
Medium parameters used: f = 2600 MHz; σ = 2.22 S/m; ε_r = 51.6; ρ = 1000 kg/m^3
Phantom section: Flat Section
Measurement Standard: DASY5 (IEEE/IEC/ANSI C63.19-2011)

DASY52 Configuration:

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

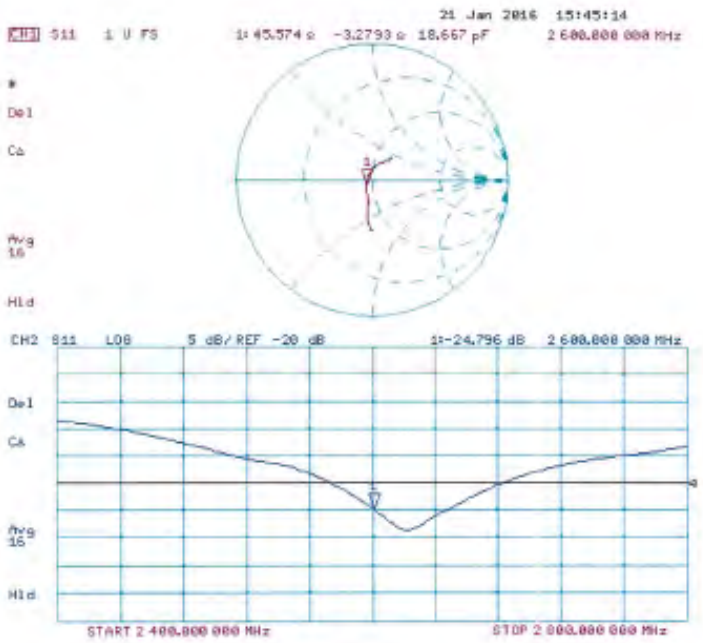
Dipole Calibration for Body Tissue/Pin=250 mW, d=10mm/Zoom Scan (7x7x7)/Cube 0:

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



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

Impedance Measurement Plot for Body TSL



- End of 1st part of report -

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