SAR TEST REPORT

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

Equipment Under Test	PDA Phone
Brand Name	Sony
Type No.	PM-0731-BV
Company Name	Sony Mobile Communications AB
Company Address	Nya Vattentornet 22188 Lund/Sweden
Standards	OET 65 supplement C, IEEE /ANSI C95.1 , C95.3, IEEE 1528
FCC ID	PY7PM-0731
FCC KDB inquiry tracking	955034
Date of Receipt	Jan. 21 , 2014
Date of Test(s)	Jan. 30, 2014 ~ Feb. 22, 2014
Date of Issue	Apr. 18, 2014

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

Remarks:

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

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

Signed on behalf of SGS

Engineer	**Asst. Manager**
Mason Wu	Kelly Tsai
Mason Wu	**Kelly Tsai**
Date: Apr. 18, 2014	**Date: Apr. 18, 2014**

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Version

Report Number	Revision	Description	Issue Date
ES/2014/10005	00	Initial Version	Apr. 18, 2014

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

Contents

1. General Information

1.1 Testing Laboratory

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1.2 Details of Applicant

Company Name	Sony Mobile Communications AB
Company Address	Nya Vattentornet 22188 Lund/Sweden

1.3 Description of EUT

EUT Name	PDA Phone	
Brand Name	Sony	
Type No.	PM-0731-BV	
HW Version	A	
SW Version	18.1.A.0.9	
Serial No.	2G/3G: YT910MAPFF LTE: YT910MAPHZ WLAN: YT910MAPJ0	
IMEI Code	2G/3G: 00440245-203638-1 LTE: 00440245-203680-3 WLAN: 00440245-203677-9	
FCC ID	PY7PM-0731	
Mode of Operation	☒GSM ☒GPRS ☒EDGE ☒WCDMA ☒HSDPA ☒HSUPA ☒LTE FDD ☒WLAN802.11 a/b/g/n (20M/40M) ☒Bluetooth	
Duty Cycle	GSM	1/8.3
	GPRS (Multislot class:33 Max 4 Uplink Slots)	1/2 (1Dn4UP) 1/2.76 (1Dn3UP) 1/4.1 (1Dn2UP) 1/8.3 (1Dn1UP)
	EDGE (Multislot class:33 Max 4 Uplink Slots)	1/2 (1Dn4UP) 1/2.76 (1Dn3UP) 1/4.1 (1Dn2UP) 1/8.3 (1Dn1UP)
	WCDMA	1
	LTE	1
	WLAN 802.11 a/b/g/n(20M/40M)	1
	Bluetooth	1

TX Frequency Range (MHz)	GSM850	824.2	—	848.8
	GSM1900	1850.2	—	1909.8
	WCDMA Band II	1852.4	—	1907.6
	WCDMA Band IV	1712.4	—	1752.6
	WCDMA Band V	826.4	—	846.6
	LTE FDD Band IV	1710	—	1755
	LTE FDD Band VII	2500	—	2570
	LTE FDD Band XVII	704	—	716
	WLAN 802.11 b/g/n(20M)	2412	—	2462
	WLAN802.11 a/n(20M) 5.2G	5180	—	5240
	WLAN802.11 a/n(20M) 5.3G	5260	—	5320
	WLAN802.11 a/n(20M) 5.5G	5500	—	5700
	WLAN802.11 a/n(20M) 5.8G	5745	—	5825
	WLAN802.11 n(40M) 5.2G	5190	—	5230
	WLAN802.11 n(40M) 5.3G	5270	—	5310
	WLAN802.11 n(40M) 5.5G	5510	—	5670
	WLAN802.11 n(40M) 5.8G	5755	—	5795
	Bluetooth	2402	—	2480

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Channel Number (ARFCN)	GSM850	128	—	251
	GSM1900	512	—	810
	WCDMA Band II	9262	—	9538
	WCDMA Band IV	1312	—	1513
	WCDMA Band V	4132	—	4233
	LTE FDD Band IV	19957	—	20393
	LTE FDD Band VII	20775	—	21425
	LTE FDD Band XVII	23755	—	23825
	WLAN 802.11 b/g/n(20M)	1	—	11
	WLAN802.11 a/n(20M) 5.2G	36	—	48
	WLAN802.11 a/n(20M) 5.3G	52	—	64
	WLAN802.11 a/n(20M)5.6G	100	—	140
	WLAN802.11 a/n(20M)5.8G	149	—	165
	WLAN802.11 n(40M) 5.2G	38	—	46
	WLAN802.11 n(40M) 5.3G	54	—	62
	WLAN802.11 n(40M) 5.6G	102	—	134
	WLAN802.11 n(40M) 5.8G	151	—	159
	Bluetooth	0	—	78

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Max. SAR (1 g) (Unit: W/Kg)				
Mode	Band	Measured	Reported	Position / Channel
Head	GSM 850	0.46	0.471	☐Left ☒Right ☒Cheek ☐Tilt 251 Channel (DTM)
	GSM 1900	0.171	0.179	☐Left ☒Right ☒Cheek ☐Tilt 661 Channel (DTM)
	WCDMA Band II	0.202	0.218	☐Left ☒Right ☒Cheek ☐Tilt 9538 Channel
	WCDMA Band IV	0.167	0.178	☐Left ☒Right ☒Cheek ☐Tilt 1312 Channel
	WCDMA Band V	0.429	0.453	☐Left ☒Right ☒Cheek ☐Tilt 4233 Channel
	LTE FDD Band IV	0.172	0.175	☐Left ☒Right ☒Cheek ☐Tilt 20175 Channel
	LTE FDD Band VII	0.132	0.139	☐Left ☒Right ☒Cheek ☐Tilt 20850 Channel
	LTE FDD Band XVII	0.128	0.129	☒Left ☐Right ☒Cheek ☐Tilt 23800 Channel
	WLAN802.11 b	0.341	0.358	☒Left ☐Right ☒Cheek ☐Tilt 1 Channel - with memory card
	WLAN802.11a 5.2G	0.149	0.154	☒Left ☐Right ☒Cheek ☐Tilt 44 Channel
	WLAN802.11a 5.3G	0.175	0.178	☒Left ☐Right ☒Cheek ☐Tilt 56 Channel

Max. SAR (1 g) (Unit: W/Kg)				
Mode	Band	Measured	Reported	Position / Channel
Head	WLAN802.11a 5.6G	0.095	0.095	☒Left ☐Right ☒Cheek ☐Tilt 132 Channel
	WLAN802.11a 5.8G	0.058	0.060	☒Left ☐Right ☒Cheek ☐Tilt 161 Channel
Body worn (speech mode)	GSM 850	0.419	0.459	☐Front ☒Back 128 Channel - with headset
	GSM 1900	1.12	1.146	☒Front ☐Back 512 Channel (DTM) - with headset
	WCDMA Band II	1.13	1.191	☒Front ☐Back 9262 Channel - with headset
	WCDMA Band IV	1.14	1.175	☒Front ☐Back 1513 Channel - with headset
	WCDMA Band V	0.408	0.427	☒Front ☐Back 4132 Channel - with headset
	LTE FDD Band IV	1.26	1.280	☒Front ☐Back 20175 Channel
	LTE FDD Band VII	0.771	0.830	☐Front ☒Back 20850 Channel
	LTE FDD Band XVII	0.244	0.245	☒Front ☐Back 23800 Channel
	WLAN802.11a 5.2G	0.068	0.070	☐Front ☒Back 44 Channel
	WLAN802.11a 5.3G	0.112	0.115	☐Front ☒Back 60 Channel

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Max. SAR (1 g) (Unit: W/Kg)				
Mode	Band	Measured	Reported	Position / Channel
Body worn (speech mode)	WLAN802.11a 5.6G	0.909	0.913	☐Front ☒Back 132 Channel - with memory card (repeat with worse case)
	WLAN802.11a 5.8G	0.204	0.213	☐Front ☒Back 153 Channel

Max. SAR (1 g) (Unit: W/Kg)				
Mode	Band	Measured	Reported	Position / Channel
Hotspot mode	GPRS 850 (1Dn4UP)	0.552	0.605	☒Front ☐Back ☐Bottom ☐Right ☐Left 251 Channel
	GPRS 1900 (1Dn4UP)	1.01	1.010	☐Front ☐Back ☒Bottom ☐Right ☐Left 512 Channel
	WCDMA Band II	0.88	0.930	☐Front ☐Back ☒Bottom ☐Right ☐Left 9262 Channel -repeat with worse case
	WCDMA Band IV	1.08	1.085	☐Front ☐Back ☒Bottom ☐Right ☐Left 1513 Channel
	WCDMA Band V	0.508	0.549	☐Front ☐Back ☐Bottom ☐Right ☒Left 4183 Channel
	LTE FDD Band IV	1.29	1.348	☐Front ☐Back ☒Bottom ☐Right ☐Left 20300 Channel
	LTE FDD Band VII	0.904	1.065	☐Front ☒Back ☐Bottom ☐Right ☐Left 20850 Channel
	LTE FDD Band XVII	0.233	0.274	☐Front ☐Back ☐Bottom ☐Right ☒Left 23780 Channel
	WLAN802.11b	0.161	0.169	☐Front ☒Back 1 Channel

Max. SAR (10 g) (Unit: W/Kg)				
Mode	**Band**	**Measured**	**Reported**	**Position / Channel**
Hand	GPRS 1900	1.04	1.040	☒Front ☐Back ☐Bottom ☐Right ☐Left 661 Channel
	WCDMA Band II	0.985	1.046	☒Front ☐Back ☐Bottom ☐Right ☐Left 9400 Channel
	WCDMA Band IV	1.25	1.291	☒Front ☐Back ☐Bottom ☐Right ☐Left 1412 Channel
	LTE FDD Band IV	1.5	1.563	☒Front ☐Back ☐Bottom ☐Right ☐Left 20300 Channel
	LTE FDD Band VII	2.01	2.345	☒Front ☐Back ☐Bottom ☐Right ☐Left 21350 Channel

Max. reported SAR WWAN and WLAN DTS 2.4GHz, ΣSAR evaluation							
Frequency band	Position		reported SAR / W/kg		ΣSAR	Calculated distance (mm)	SPLSR (≦0.04)
			WWAN	WLAN	<1.6W/kg		
GSM 850	Head	LE cheek	0.423	0.358	0.781	-	-
GPRS 850 (1Dn4UP)	Hotspot	Back	0.508	0.169	0.677	-	-
GSM 1900	Head	LE cheek	0.089	0.358	0.447	-	-
GPRS 1900 (1Dn4UP)	Hotspot	Front	0.612	0.045	0.657	-	-
WCDMA Band II	Head	LE cheek	0.083	0.358	0.441	-	-
	Hotspot	Front	0.603	0.045	0.648	-	-
WCDMA Band IV	Head	LE cheek	0.122	0.358	0.480	-	-
	Hotspot	Front	0.909	0.045	0.954	-	-
WCDMA Band V	Head	LE cheek	0.407	0.358	0.765	-	-
	Hotspot	Back	0.544	0.169	0.713	-	-
LTE FDD Band IV	Head	LE cheek	0.139	0.358	0.497	-	-
	Hotspot	Front	1.087	0.045	1.132	-	-
LTE FDD Band VII	Head	LE cheek	0.108	0.358	0.466	-	-
	Hotspot	Back	1.065	0.169	1.234	-	-
LTE FDD Band XVII	Head	LE cheek	0.129	0.358	0.487	-	-
	Hotspot	Back	0.189	0.169	0.358	-	-

Max. reported SAR WWAN and WLAN DTS 5.8 GHz, ΣSAR evaluation							
Frequency band	Position		reported SAR / W/kg		ΣSAR	Calculated distance (mm)	SPLSR (≦0.04)
			WWAN	WLAN	<1.6W/kg		
GSM 850	Head	RE cheek	0.471	0.021	0.492	-	-
	Body-	Back	0.459	0.213	0.672	-	-
GSM 1900	Head	RE cheek	0.179	0.021	0.2	-	-
	Body-	Front	1.146	0.011	1.157	-	-
WCDMA Band II	Head	RE cheek	0.218	0.021	0.239	-	-
	Body-	Front	1.191	0.011	1.202	-	-
WCDMA Band IV	Head	RE cheek	0.178	0.021	0.199	-	-
	Body-	Front	1.175	0.011	1.186	-	-
WCDMA Band V	Head	RE cheek	0.453	0.021	0.474	-	-
	Body-	Back	0.424	0.213	0.637	-	-
LTE FDD Band IV	Head	LE cheek	0.139	0.06	0.199	-	-
	Body-	Front	1.28	0.011	1.291	-	-
LTE FDD Band VII	Head	LE cheek	0.108	0.06	0.168	-	-
	Body-	Back	0.83	0.213	1.043	-	-
LTE FDD Band XVII	Head	LE cheek	0.129	0.06	0.189	-	-
	Body-	Back	0.236	0.213	0.449	-	-

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Max. reported SAR WWAN and WLAN DTS 5 GHz, ΣSAR evaluation							
Frequency band	Position		reported SAR / W/kg		ΣSAR	Calculated distance (mm)	SPLSR (≦0.04)
			WWAN	WLAN	<1.6W/kg		
GSM 850	Head	LE cheek	0.423	0.178	0.601	-	-
	Body-	Back	0.459	0.913	1.372	-	-
GSM 1900	Head	LE cheek	0.089	0.178	0.267	-	-
	Body-	Back	0.804	0.913	1.717	133.5	0.017
WCDMA Band II	Head	RE cheek	0.218	0.05	0.268	-	-
	Body-	Back	0.829	0.913	1.742	133.5	0.017
WCDMA Band IV	Head	RE cheek	0.178	0.05	0.228	-	-
	Body-	Back	0.776	0.913	1.689	135.8	0.016
WCDMA Band V	Head	LE cheek	0.407	0.178	0.585	-	-
	Body-	Back	0.424	0.913	1.337	-	-
LTE FDD Band IV	Head	LE cheek	0.139	0.178	0.317	-	-
	Body-	Back	0.861	0.913	1.774	138.2	0.017
LTE FDD Band VII	Head	LE cheek	0.108	0.178	0.286	-	-
	Body-	Back	0.83	0.913	1.743	125.7	0.018
LTE FDD Band XVII	Head	LE cheek	0.129	0.178	0.307	-	-
	Body-	Back	0.236	0.913	1.149	-	-

Note:
We calculate the peak location separation ratio of simultaneous transmitting antenna pair, the SPLSR value is less than 0.04. According to KDB447498 D01v05 simultaneous transmission SAR evaluation is not required.

Max. reported SAR WWAN and Bluetooth, ΣSAR evaluation							
Frequency band	Position		reported SAR / W/kg		ΣSAR	Calculated distance (mm)	SPLSR (≦0.04)
			WWAN	Bluetooth	<1.6W/kg		
GSM 850	Body-	Back	0.459	0.087	0.546	-	-
GPRS 850 (1Dn4UP)	Hotspot	Front	0.605	0.130	0.735	-	-
GSM 1900	Body-	Front	1.146	0.087	1.233	-	-
GPRS 1900	Hotspot	Front	0.612	0.130	0.742	-	-
WCDMA Band II	Body-	Front	1.191	0.087	1.278	-	-
	Hotspot	Front	0.603	0.130	0.733	-	-
WCDMA Band IV	Body-	Front	1.175	0.087	1.262	-	-
	Hotspot	Front	0.909	0.130	1.039	-	-
WCDMA Band V	Body-	Front	0.427	0.087	0.514	-	-
	Hotspot	Back	0.544	0.130	0.674	-	-
LTE FDD Band IV	Body-	Front	1.28	0.087	1.367	-	-
	Hotspot	Front	1.087	0.130	1.217	-	-
LTE FDD Band VII	Body-	Back	0.83	0.087	0.917	-	-
	Hotspot	Back	1.065	0.130	1.195	-	-
LTE FDD Band XVII	Body-	Front	0.245	0.087	0.332	-	-
	Hotspot	Front	0.207	0.130	0.337	-	-

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Max. reported SAR WWAN and WLAN DTS 2.4GHz, ΣSAR(10g) evaluation					
Frequency band	Position		reported SAR / W/kg		ΣSAR(10g)
			WWAN	WLAN	<4W/kg
GPRS 1900 (1Dn4UP)	Hand	Front	1.04	1.051	2.091
WCDMA Band II	Hand	Front	1.046	1.051	2.097
WCDMA Band IV	Hand	Front	1.291	1.051	2.342
LTE FDD Band IV	Hand	Front	1.563	1.051	2.614
LTE FDD Band VII	Hand	Front	2.345	1.051	3.396

Max. reported SAR WWAN and Bluetooth, ΣSAR(10g) evaluation					
Frequency band	Position		reported SAR / W/kg		ΣSAR(10g)
			WWAN	Bluetooth	<4W/kg
GPRS 1900 (1Dn4UP)	Hand	Front	1.04	0.104	1.144
WCDMA Band II	Hand	Front	1.046	0.104	1.15
WCDMA Band IV	Hand	Front	1.291	0.104	1.395
LTE FDD Band IV	Hand	Front	1.563	0.104	1.667
LTE FDD Band VII	Hand	Front	2.345	0.104	2.449

#. Conducted power table:

There is power reduction for GPRS/EGPRS 1900, WCDMA Band II/ Band IV and LTE FDD band IV / Band VII / Band XVII mode (hotspot on).

There is no power reduction for GPRS/EGPRS 850, WCDMA Band V and WLAN mode.

GSM / GPRS / EDGE / DTM conducted power table:

EUT mode	Frequency (MHz)	CH	Max. Rated Avg. Power + Max. Tolerance (dBm)	Burst average power	Source-based time average power
				Avg.(dBm)	Avg.(dBm)
GSM 850 (GMSK)	824.2	128	33.5	33.10	24.07
	836.6	190	33.5	33.10	24.07
	848.8	251	33.5	33.00	23.97
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)			33.5	30	28.5	28
			1Dn1UP	1Dn2UP	1Dn3UP	1Dn4UP
EUT mode	Frequency (MHz)	CH	Avg. (dBm)	Avg. (dBm)	Avg. (dBm)	Avg. (dBm)
GPRS 850 (GMSK)	824.2	128	33.10	29.60	28.10	27.80
	836.6	190	33.10	29.50	28.10	27.70
	848.8	251	33.10	29.60	28.30	27.60
Source-based time average power						
GPRS 850 (GMSK)	824.2	128	24.07	23.58	23.84	24.79
	836.6	190	24.07	23.48	23.84	24.69
	848.8	251	24.07	23.58	24.04	24.59
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	26	26	25
			1Dn1UP	1Dn2UP	1Dn3UP	1Dn4UP
EUT mode	Frequency (MHz)	CH	Avg. (dBm)	Avg. (dBm)	Avg. (dBm)	Avg. (dBm)
EDGE 850 (MCS 5)	824.2	128	26.70	25.80	25.60	24.80
	836.6	190	26.70	25.80	25.60	24.70
	848.8	251	26.70	25.80	25.60	24.80
Source-based time average power						
EDGE 850 (MCS 5)	824.2	128	17.67	19.78	21.34	21.79
	836.6	190	17.67	19.78	21.34	21.69
	848.8	251	17.67	19.78	21.34	21.79
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)			33.5	30	28.5	28
			1Dn1UP	1Dn2UP	1Dn3UP	1Dn4UP
EUT mode	Frequency (MHz)	CH	Avg. (dBm)	Avg. (dBm)	Avg. (dBm)	Avg. (dBm)
EDGE 850 (MCS 4)	824.2	128	33.00	29.50	28.00	27.70
	836.6	190	33.00	29.80	28.00	27.70
	848.8	251	33.00	29.70	28.30	27.60
Source-based time average power						
EDGE 850 (MCS 4)	824.2	128	23.97	23.48	23.74	24.69
	836.6	190	23.97	23.78	23.74	24.69
	848.8	251	23.97	23.68	24.04	24.59
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	26	26	25
			1Dn1UP	1Dn2UP	1Dn3UP	1Dn4UP
EUT mode	Frequency (MHz)	CH	Avg. (dBm)	Avg. (dBm)	Avg. (dBm)	Avg. (dBm)
EDGE 850 (MCS 9)	824.2	128	26.80	25.80	25.60	24.70
	836.6	190	26.80	25.80	25.60	24.70
	848.8	251	26.80	25.60	25.60	24.80
Source-based time average power						
EDGE 850 (MCS 9)	824.2	128	17.77	19.78	21.34	21.69
	836.6	190	17.77	19.78	21.34	21.69
	848.8	251	17.77	19.58	21.34	21.79
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)			29.5	28
			1Dn2UP	1Dn3UP
EUT mode	Frequency (MHz)	CH	Avg. (dBm)	Avg. (dBm)
GSM+GPRS 850 (DTM)	824.2	128	29.40	27.90
	836.6	190	29.20	27.90
	848.8	251	29.20	27.90
Source-based time average power				
GSM+GPRS 850 (DTM)	824.2	128	23.38	23.64
	836.6	190	23.18	23.64
	848.8	251	23.18	23.64
The division factor compared to the number of TX time slot				
Division factor			2 TX time slot	3 TX time slot
			-6.02	-4.26

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Burst average power				
Max. Rated Avg. Power + Max. Tolerance (dBm)			25.5	25.5
			1Dn2UP	1Dn3UP
EUT mode	Frequency (MHz)	CH	Avg. (dBm)	Avg. (dBm)
GSM+EDGE 850 (DTM)	824.2	128	25.30	25.20
	836.6	190	25.20	25.20
	848.8	251	25.30	25.20
Source-based time average power				
GSM+EDGE 850 (DTM)	824.2	128	19.28	20.94
	836.6	190	19.18	20.94
	848.8	251	19.28	20.94
The division factor compared to the number of TX time slot				
Division factor			2 TX time slot	3 TX time slot
			-6.02	-4.26

EUT mode	Frequency (MHz)	CH	Max. Rated Avg. Power + Max. Tolerance (dBm)	Burst average power	Source-based time average power
				Avg.(dBm)	Avg.(dBm)
GSM 1900 (GMSK)	1850.2	512	31	30.80	21.77
	1880	661	31	30.60	21.57
	1909.8	810	31	30.50	21.47
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)			31	29	28	27.5
			1Dn1UP	1Dn2UP	1Dn3UP	1Dn4UP
EUT mode	Frequency (MHz)	CH	Avg. (dBm)	Avg. (dBm)	Avg. (dBm)	Avg. (dBm)
GPRS 1900 (GMSK)	1850.2	512	30.80	29.00	27.80	27.50
	1880	661	30.60	28.80	27.70	27.40
	1909.8	810	30.50	28.90	27.90	27.40
Source-based time average power						
GPRS 1900 (GMSK)	1850.2	512	21.77	22.98	23.54	24.49
	1880	661	21.57	22.78	23.44	24.39
	1909.8	810	21.47	22.88	23.64	24.39
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

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Burst average power						
Max. Rated Avg. Power + Max. Tolerance (dBm)			26	26	26	25
			1Dn1UP	1Dn2UP	1Dn3UP	1Dn4UP
EUT mode	Frequency (MHz)	CH	Avg. (dBm)	Avg. (dBm)	Avg. (dBm)	Avg. (dBm)
EDGE 1900 (MCS 5)	1850.2	512	26.00	25.90	26.00	24.90
	1880	661	25.90	25.90	25.90	24.90
	1909.8	810	25.90	25.80	25.90	24.90
Source-based time average power						
EDGE 1900 (MCS 5)	1850.2	512	16.97	19.88	21.74	21.89
	1880	661	16.87	19.88	21.64	21.89
	1909.8	810	16.87	19.78	21.64	21.89
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)			31	29	28	27.5
			1Dn1UP	1Dn2UP	1Dn3UP	1Dn4UP
EUT mode	Frequency (MHz)	CH	Avg. (dBm)	Avg. (dBm)	Avg. (dBm)	Avg. (dBm)
EDGE 1900 (MCS 4)	1850.2	512	30.70	29.00	27.80	27.40
	1880	661	30.70	28.80	27.80	27.40
	1909.8	810	30.50	28.80	27.90	27.40
Source-based time average power						
EDGE 1900 (MCS 4)	1850.2	512	21.67	22.98	23.54	24.39
	1880	661	21.67	22.78	23.54	24.39
	1909.8	810	21.47	22.78	23.64	24.39
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

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Burst average power						
Max. Rated Avg. Power + Max. Tolerance (dBm)			26	26	26	25
			1Dn1UP	1Dn2UP	1Dn3UP	1Dn4UP
EUT mode	Frequency (MHz)	CH	Avg. (dBm)	Avg. (dBm)	Avg. (dBm)	Avg. (dBm)
EDGE 1900 (MCS 9)	1850.2	512	25.90	25.70	25.80	24.90
	1880	661	25.90	25.70	25.90	24.80
	1909.8	810	26.00	25.60	25.90	24.70
Source-based time average power						
EDGE 1900 (MCS 9)	1850.2	512	16.87	19.68	21.54	21.89
	1880	661	16.87	19.68	21.64	21.79
	1909.8	810	16.97	19.58	21.64	21.69
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)			29	28
			1Dn2UP	1Dn3UP
EUT mode	Frequency (MHz)	CH	Avg. (dBm)	Avg. (dBm)
GSM+GPRS 1900 (DTM)	1850.2	512	28.90	27.90
	1880	661	29.00	27.80
	1909.8	810	28.90	27.90
Source-based time average power				
GSM+GPRS 1900 (DTM)	1850.2	512	22.88	23.64
	1880	661	22.98	23.54
	1909.8	810	22.88	23.64
The division factor compared to the number of TX time slot				
Division factor			2 TX time slot	3 TX time slot
			-6.02	-4.26

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Burst average power				
Max. Rated Avg. Power + Max. Tolerance (dBm)			26	26
			1Dn2UP	1Dn3UP
EUT mode	Frequency (MHz)	CH	Avg. (dBm)	Avg. (dBm)
GSM+EDGE 1900 (DTM)	1850.2	512	25.90	26.00
	1880	661	25.90	26.00
	1909.8	810	25.80	26.00
Source-based time average power				
GSM+EDGE 1900 (DTM)	1850.2	512	19.88	21.74
	1880	661	19.88	21.74
	1909.8	810	19.78	21.74
The division factor compared to the number of TX time slot				
Division factor			2 TX time slot	3 TX time slot
			-6.02	-4.26

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GPRS / EGPRS / DTM 1900 Hotspot on (Reduced power):

Burst average power						
Max. Rated Avg. Power + Max. Tolerance (dBm)			26	23	21.5	21
			1Dn1UP	1Dn2UP	1Dn3UP	1Dn4UP
EUT mode	Frequency (MHz)	CH	Avg. (dBm)	Avg. (dBm)	Avg. (dBm)	Avg. (dBm)
GPRS 1900 (GMSK)	1850.2	512	25.90	22.90	21.50	21.00
	1880	661	25.90	22.80	21.40	21.00
	1909.8	810	26.00	22.90	21.50	21.00
Source-based time average power						
GPRS 1900 (GMSK)	1850.2	512	16.87	16.88	17.24	17.99
	1880	661	16.87	16.78	17.14	17.99
	1909.8	810	16.97	16.88	17.24	17.99
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

Burst average power						
Max. Rated Avg. Power + Max. Tolerance (dBm)			23	20	20	20
			1Dn1UP	1Dn2UP	1Dn3UP	1Dn4UP
EUT mode	Frequency (MHz)	CH	Avg. (dBm)	Avg. (dBm)	Avg. (dBm)	Avg. (dBm)
EDGE 1900 (MCS 5)	1850.2	512	22.90	20.00	19.90	20.00
	1880	661	22.80	20.00	20.00	20.00
	1909.8	810	22.90	20.00	20.00	20.00
Source-based time average power						
EDGE 1900 (MCS 5)	1850.2	512	13.87	13.98	15.64	16.99
	1880	661	13.77	13.98	15.74	16.99
	1909.8	810	13.87	13.98	15.74	16.99
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

Burst average power						
Max. Rated Avg. Power + Max. Tolerance (dBm)			26	23	21.5	21
			1Dn1UP	1Dn2UP	1Dn3UP	1Dn4UP
EUT mode	Frequency (MHz)	CH	Avg. (dBm)	Avg. (dBm)	Avg. (dBm)	Avg. (dBm)
EDGE 1900 (MCS 4)	1850.2	512	25.90	22.90	21.40	20.90
	1880	661	25.90	22.80	21.40	21.00
	1909.8	810	25.70	22.70	21.50	21.00
Source-based time average power						
EDGE 1900 (MCS 4)	1850.2	512	16.87	16.88	17.14	17.89
	1880	661	16.87	16.78	17.14	17.99
	1909.8	810	16.67	16.68	17.24	17.99
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

Burst average power						
Max. Rated Avg. Power + Max. Tolerance (dBm)			23	20	20	20
			1Dn1UP	1Dn2UP	1Dn3UP	1Dn4UP
EUT mode	Frequency (MHz)	CH	Avg. (dBm)	Avg. (dBm)	Avg. (dBm)	Avg. (dBm)
EDGE 1900 (MCS 9)	1850.2	512	22.90	20.00	19.90	20.00
	1880	661	22.80	20.00	20.00	20.00
	1909.8	810	22.90	20.00	19.90	19.90
Source-based time average power						
EDGE 1900 (MCS 9)	1850.2	512	13.87	13.98	15.64	16.99
	1880	661	13.77	13.98	15.74	16.99
	1909.8	810	13.87	13.98	15.64	16.89
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

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Burst average power				
Max. Rated Avg. Power + Max. Tolerance (dBm)			23	21.5
			1Dn2UP	1Dn3UP
EUT mode	Frequency (MHz)	CH	Avg. (dBm)	Avg. (dBm)
GSM+GPRS 1900 (DTM)	1850.2	512	22.80	21.50
	1880	661	22.80	21.50
	1909.8	810	22.80	21.50
Source-based time average power				
GSM+GPRS 1900 (DTM)	1850.2	512	16.78	17.24
	1880	661	16.78	17.24
	1909.8	810	16.78	17.24
The division factor compared to the number of TX time slot				
Division factor			2 TX time slot	3 TX time slot
			-6.02	-4.26

Burst average power				
Max. Rated Avg. Power + Max. Tolerance (dBm)			20	20
			1Dn2UP	1Dn3UP
EUT mode	Frequency (MHz)	CH	Avg. (dBm)	Avg. (dBm)
GSM+EDGE 1900 (DTM)	1850.2	512	19.80	19.80
	1880	661	19.80	19.80
	1909.8	810	19.80	19.80
Source-based time average power				
GSM+EDGE 1900 (DTM)	1850.2	512	13.78	15.54
	1880	661	13.78	15.54
	1909.8	810	13.78	15.54
The division factor compared to the number of TX time slot				
Division factor			2 TX time slot	3 TX time slot
			-6.02	-4.26

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

Band	CH	Max. Rated Avg. Power + Max. Tolerance (dBm)	Rel99 AV (dBm)	HSDPA mode AV(dBm)				HSUPA mode AV(dBm)					DC-HSDPA mode AV(dBm)			
				SUB-1	SUB-2	SUB-3	SUB-4	SUB-1	SUB-2	SUB-3	SUB-4	SUB-5	SUB-1	SUB-2	SUB-3	SUB-4
WCDMA Band II Rel 8	9262	24	23.77	23.94	23.65	23.46	23.53	23.69	21.74	22.75	21.87	23.58	23.62	23.65	23.17	23.15
	9400	24	23.74	23.63	23.60	23.18	23.19	23.72	21.79	22.74	21.84	23.58	23.60	23.62	23.08	23.07
	9538	24	23.67	23.53	23.52	23	23.12	23.61	21.65	22.69	21.69	23.52	23.51	23.49	22.84	22.96
WCDMA Band IV Rel 8	1312	22.3	22.02	21.73	21.90	21.25	21.32	21.94	19.99	21	20.12	21.83	21.75	21.89	21.26	21.32
	1412	22.3	21.95	22.05	21.81	21.6	21.61	21.93	20	20.95	20.05	21.79	22.07	21.81	21.61	21.61
	1513	22.3	22.17	22.01	22.02	21.48	21.6	22.11	20.15	21.19	20.19	22.02	22.02	22.03	21.50	21.62
WCDMA Band V Rel 8	4132	24.5	24.30	24.09	24.23	23.63	23.68	24.26	22.32	23.3	22.37	24.12	24.13	24.19	23.62	23.57
	4183	24.5	24.16	24.02	24.05	23.54	23.58	24.09	22.17	23.15	22.23	23.92	24.09	23.90	23.41	23.52
	4233	24.5	24.26	24.38	24.13	23.89	23.95	24.18	22.22	23.26	22.3	24.07	24.25	23.99	23.76	23.65

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

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	β_{ed}1: 47/15 β_{ed}2: 47/15	4 4	2	2.0	1.0	15	92
4	2/15	15/15	64	2/15	4/15	2/15	56/75	4	1	3.0	2.0	17	71
5	15/15	15/15	64	15/15	30/15	24/15	134/15	4	1	1.0	0.0	21	81

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WCDMA Band II / Band IV - HSDPA / HSUPA / DC-HSDPA_Hotspot on (Reduced power) :

Band	CH	Max. Rated Avg. Power + Max. Tolerance	Rel99 AV (dBm)	HSDPA mode AV(dBm)				HSUPA mode AV(dBm)					DC-HSDPA mode AV(dBm)			
				SUB-1	SUB-2	SUB-3	SUB-4	SUB-1	SUB-2	SUB-3	SUB-4	SUB-5	SUB-1	SUB-2	SUB-3	SUB-4
WCDMA Band II Rel 8	9262	18	17.76	17.93	17.64	17.45	17.52	17.68	15.73	16.74	15.86	17.57	17.61	17.64	17.16	17.14
	9400	18	17.74	17.63	17.60	17.18	17.19	17.72	15.79	16.74	15.84	17.58	17.60	17.62	17.08	17.07
	9538	18	17.71	17.57	17.56	17.04	17.16	17.65	15.69	16.73	15.73	17.56	17.55	17.53	16.88	17.00
WCDMA Band IV Rel 8	1312	18	17.92	17.63	17.80	17.15	17.22	17.84	15.89	16.9	16.02	17.73	17.65	17.79	17.16	17.22
	1412	18	17.86	17.96	17.72	17.51	17.52	17.84	15.91	16.86	15.96	17.7	17.98	17.72	17.52	17.52
	1513	18	17.98	17.82	17.83	17.29	17.41	17.92	15.96	17	16	17.83	17.83	17.84	17.31	17.43

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

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	β_{ed}1: 47/15 β_{ed}2: 47/15	4 4	2	2.0	1.0	15	92
4	2/15	15/15	64	2/15	4/15	2/15	56/75	4	1	3.0	2.0	17	71
5	15/15	15/15	64	15/15	30/15	24/15	134/15	4	1	1.0	0.0	21	81

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LTE FDD Band IV / Band VII / Band XVII power table:

FDD Band IV (Full power)								
BW(Mhz)	Modulation	RB Size	RB Offset	Frequency (MHz)	Channel	Conducted power (dBm)	Target Power + Max. Tolerance (dBm)	MPR Allowed per 3GPP(dB)
20	QPSK	1 RB	0	1720	20050	22.29	22.5	0
				1732.5	20175	22.43	22.5	0
				1745	20300	22.43	22.5	0
			50	1720	20050	22.25	22.5	0
				1732.5	20175	22.27	22.5	0
				1745	20300	22.31	22.5	0
			99	1720	20050	22.20	22.5	0
				1732.5	20175	22.30	22.5	0
				1745	20300	22.33	22.5	0
		50 RB	0	1720	20050	21.38	22.0	0-1
				1732.5	20175	21.47	22	0-1
				1745	20300	21.45	22	0-1
			25	1720	20050	21.33	22.0	0-1
				1732.5	20175	21.31	22.0	0-1
				1745	20300	21.34	22.0	0-1
			50	1720	20050	21.35	22.0	0-1
				1732.5	20175	21.34	22.0	0-1
				1745	20300	21.37	22.0	0-1
		100RB		1720	20050	21.35	21.5	0-1
				1732.5	20175	21.33	21.5	0-1
				1745	20300	21.38	21.5	0-1
	16-QAM	1 RB	0	1720	20050	21.26	21.5	0-1
				1732.5	20175	21.40	21.5	0-1
				1745	20300	21.38	21.5	0-1
			50	1720	20050	21.23	21.5	0-1
				1732.5	20175	21.24	21.5	0-1
				1745	20300	21.24	21.5	0-1
			99	1720	20050	21.17	21.5	0-1
				1732.5	20175	21.23	21.5	0-1
				1745	20300	21.19	21.5	0-1
		50 RB	0	1720	20050	20.41	21	0-2
				1732.5	20175	20.50	21	0-2
				1745	20300	20.48	21	0-2
			25	1720	20050	20.33	21	0-2
				1732.5	20175	20.34	21	0-2
				1745	20300	20.40	21	0-2
			50	1720	20050	20.37	21	0-2
				1732.5	20175	20.34	21	0-2
				1745	20300	20.40	21	0-2
		100RB		1720	20050	20.36	20.5	0-2
				1732.5	20175	20.43	20.5	0-2
				1745	20300	20.38	20.5	0-2

FDD Band IV (Full power)								
BW(Mhz)	Modulation	RB Size	RB Offset	Frequency (MHz)	Channel	Conducted power (dBm)	Target Power + Max. Tolerance (dBm)	MPR Allowed per 3GPP(dB)
15	QPSK	1 RB	0	1717.5	20025	22.13	22.5	0
				1732.5	20175	22.37	22.5	0
				1747.5	20325	22.35	22.5	0
			36	1717.5	20025	22.08	22.5	0
				1732.5	20175	22.17	22.5	0
				1747.5	20325	22.38	22.5	0
			74	1717.5	20025	22.16	22.5	0
				1732.5	20175	22.20	22.5	0
				1747.5	20325	22.29	22.5	0
		36 RB	0	1717.5	20025	21.14	22	0-1
				1732.5	20175	21.32	22	0-1
				1747.5	20325	21.33	22	0-1
			18	1717.5	20025	21.20	22	0-1
				1732.5	20175	21.27	22	0-1
				1747.5	20325	21.30	22	0-1
			37	1717.5	20025	21.30	22	0-1
				1732.5	20175	21.19	22	0-1
				1747.5	20325	21.36	22	0-1
		75RB		1717.5	20025	21.22	21.5	0-1
				1732.5	20175	21.27	21.5	0-1
				1747.5	20325	21.26	21.5	0-1
	16-QAM	1 RB	0	1717.5	20025	21.07	21.5	0-1
				1732.5	20175	21.22	21.5	0-1
				1747.5	20325	21.50	21.5	0-1
			36	1717.5	20025	20.97	21.5	0-1
				1732.5	20175	20.98	21.5	0-1
				1747.5	20325	21.34	21.5	0-1
			74	1717.5	20025	21.08	21.5	0-1
				1732.5	20175	21.30	21.5	0-1
				1747.5	20325	21.33	21.5	0-1
		36 RB	0	1717.5	20025	20.33	21	0-2
				1732.5	20175	20.28	21	0-2
				1747.5	20325	20.29	21	0-2
			18	1717.5	20025	20.23	21	0-2
				1732.5	20175	20.26	21	0-2
				1747.5	20325	20.36	21	0-2
			37	1717.5	20025	20.02	21	0-2
				1732.5	20175	20.13	21	0-2
				1747.5	20325	20.31	21	0-2
		75RB		1717.5	20025	20.26	20.5	0-2
				1732.5	20175	20.26	20.5	0-2
				1747.5	20325	20.33	20.5	0-2

FDD Band IV (Full power)								
BW(Mhz)	Modulation	RB Size	RB Offset	Frequency (MHz)	Channel	Conducted power (dBm)	Target Power + Max. Tolerance (dBm)	MPR Allowed per 3GPP(dB)
10	QPSK	1 RB	0	1715	20000	22.11	22.5	0
				1732.5	20175	22.17	22.5	0
				1750	20350	22.24	22.5	0
			25	1715	20000	21.99	22.5	0
				1732.5	20175	22.04	22.5	0
				1750	20350	22.17	22.5	0
			49	1715	20000	22.09	22.5	0
				1732.5	20175	22.12	22.5	0
				1750	20350	22.21	22.5	0
		25 RB	0	1715	20000	21.07	22.0	0-1
				1732.5	20175	21.31	22	0-1
				1750	20350	21.34	22	0-1
			12	1715	20000	21.06	22.0	0-1
				1732.5	20175	21.17	22.0	0-1
				1750	20350	21.28	22.0	0-1
			25	1715	20000	21.15	22.0	0-1
				1732.5	20175	21.16	22.0	0-1
				1750	20350	21.20	22.0	0-1
		50RB		1715	20000	21.08	21.5	0-1
				1732.5	20175	21.25	21.5	0-1
				1750	20350	21.37	21.5	0-1
	16-QAM	1 RB	0	1715	20000	21.07	21.5	0-1
				1732.5	20175	21.08	21.5	0-1
				1750	20350	21.07	21.5	0-1
			25	1715	20000	21.10	21.5	0-1
				1732.5	20175	21.21	21.5	0-1
				1750	20350	21.15	21.5	0-1
			49	1715	20000	21.15	21.5	0-1
				1732.5	20175	21.20	21.5	0-1
				1750	20350	21.13	21.5	0-1
		25 RB	0	1715	20000	20.27	21	0-2
				1732.5	20175	20.43	21	0-2
				1750	20350	20.48	21	0-2
			12	1715	20000	20.86	21	0-2
				1732.5	20175	20.28	21	0-2
				1750	20350	20.44	21	0-2
			25	1715	20000	20.23	21	0-2
				1732.5	20175	20.26	21	0-2
				1750	20350	20.49	21	0-2
		50RB		1715	20000	20.13	20.5	0-2
				1732.5	20175	20.31	20.5	0-2
				1750	20350	20.40	20.5	0-2

FDD Band IV (Full power)								
BW(Mhz)	Modulation	RB Size	RB Offset	Frequency (MHz)	Channel	Conducted power (dBm)	Target Power + Max. Tolerance (dBm)	MPR Allowed per 3GPP(dB)
5	QPSK	1 RB	0	1712.5	19975	22.32	22.5	0
				1732.5	20175	22.50	22.5	0
				1752.5	20375	22.13	22.5	0
			12	1712.5	19975	22.23	22.5	0
				1732.5	20175	22.39	22.5	0
				1752.5	20375	22.26	22.5	0
			24	1712.5	19975	22.44	22.5	0
				1732.5	20175	22.22	22.5	0
				1752.5	20375	22.24	22.5	0
		12 RB	0	1712.5	19975	21.36	22.0	0-1
				1732.5	20175	21.35	22	0-1
				1752.5	20375	21.21	22	0-1
			6	1712.5	19975	21.26	22.0	0-1
				1732.5	20175	21.22	22.0	0-1
				1752.5	20375	21.26	22.0	0-1
			13	1712.5	19975	21.35	22.0	0-1
				1732.5	20175	21.21	22.0	0-1
				1752.5	20375	21.14	22.0	0-1
		25RB		1712.5	19975	21.03	21.5	0-1
				1732.5	20175	21.17	21.5	0-1
				1752.5	20375	21.23	21.5	0-1
	16-QAM	1 RB	0	1712.5	19975	20.96	21.5	0-1
				1732.5	20175	21.00	21.5	0-1
				1752.5	20375	21.42	21.5	0-1
			12	1712.5	19975	21.17	21.5	0-1
				1732.5	20175	20.94	21.5	0-1
				1752.5	20375	21.39	21.5	0-1
			24	1712.5	19975	21.00	21.5	0-1
				1732.5	20175	21.41	21.5	0-1
				1752.5	20375	21.40	21.5	0-1
		12 RB	0	1712.5	19975	20.37	21	0-2
				1732.5	20175	20.31	21	0-2
				1752.5	20375	20.20	21	0-2
			6	1712.5	19975	20.45	21	0-2
				1732.5	20175	20.29	21	0-2
				1752.5	20375	20.25	21	0-2
			13	1712.5	19975	20.44	21	0-2
				1732.5	20175	20.38	21	0-2
				1752.5	20375	20.42	21	0-2
		25RB		1712.5	19975	20.45	20.5	0-2
				1732.5	20175	20.24	20.5	0-2
				1752.5	20375	20.42	20.5	0-2

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FDD Band IV (Full power)								
BW(Mhz)	Modulation	RB Size	RB Offset	Frequency (MHz)	Channel	Conducted power (dBm)	Target Power + Max. Tolerance (dBm)	MPR Allowed per 3GPP(dB)
3	QPSK	1 RB	0	1711.5	19965	22.24	22.5	0
				1732.5	20175	22.37	22.5	0
				1753.5	20385	22.20	22.5	0
			7	1711.5	19965	22.24	22.5	0
				1732.5	20175	22.40	22.5	0
				1753.5	20385	22.21	22.5	0
			14	1711.5	19965	22.26	22.5	0
				1732.5	20175	22.16	22.5	0
				1753.5	20385	22.30	22.5	0
		8 RB	0	1711.5	19965	21.30	22.0	0-1
				1732.5	20175	21.21	22	0-1
				1753.5	20385	21.16	22	0-1
			4	1711.5	19965	21.01	22.0	0-1
				1732.5	20175	21.18	22.0	0-1
				1753.5	20385	21.14	22.0	0-1
			7	1711.5	19965	21.28	22.0	0-1
				1732.5	20175	21.20	22.0	0-1
				1753.5	20385	21.01	22.0	0-1
		15RB		1711.5	19965	21.29	21.5	0-1
				1732.5	20175	21.15	21.5	0-1
				1753.5	20385	21.16	21.5	0-1
	16-QAM	1 RB	0	1711.5	19965	21.23	21.5	0-1
				1732.5	20175	21.25	21.5	0-1
				1753.5	20385	21.29	21.5	0-1
			7	1711.5	19965	21.25	21.5	0-1
				1732.5	20175	21.26	21.5	0-1
				1753.5	20385	21.19	21.5	0-1
			14	1711.5	19965	21.20	21.5	0-1
				1732.5	20175	21.20	21.5	0-1
				1753.5	20385	21.14	21.5	0-1
		8 RB	0	1711.5	19965	20.37	21	0-2
				1732.5	20175	20.31	21	0-2
				1753.5	20385	20.46	21	0-2
			4	1711.5	19965	20.37	21	0-2
				1732.5	20175	20.25	21	0-2
				1753.5	20385	20.42	21	0-2
			7	1711.5	19965	20.27	21	0-2
				1732.5	20175	20.27	21	0-2
				1753.5	20385	20.47	21	0-2
		15RB		1711.5	19965	20.21	20.5	0-2
				1732.5	20175	20.27	20.5	0-2
				1753.5	20385	20.38	20.5	0-2

FDD Band IV (Full power)								
BW(Mhz)	Modulation	RB Size	RB Offset	Frequency (MHz)	Channel	Conducted power (dBm)	Target Power + Max. Tolerance (dBm)	MPR Allowed per 3GPP(dB)
1.4	QPSK	1 RB	0	1710.7	19957	22.02	22.5	0
				1732.5	20175	22.17	22.5	0
				1754.3	20393	22.21	22.5	0
			2	1710.7	19957	22.16	22.5	0
				1732.5	20175	22.27	22.5	0
				1754.3	20393	22.35	22.5	0
			5	1710.7	19957	22.05	22.5	0
				1732.5	20175	22.20	22.5	0
				1754.3	20393	22.25	22.5	0
		3 RB	0	1710.7	19957	21.88	22.0	0-1
				1732.5	20175	21.96	22	0-1
				1754.3	20393	21.97	22	0-1
			2	1710.7	19957	21.85	22.0	0-1
				1732.5	20175	21.96	22.0	0-1
				1754.3	20393	21.98	22.0	0-1
			3	1710.7	19957	21.86	22.0	0-1
				1732.5	20175	21.95	22.0	0-1
				1754.3	20393	21.96	22.0	0-1
		6RB		1710.7	19957	21.10	21.5	0-1
				1732.5	20175	21.30	21.5	0-1
				1754.3	20393	21.38	21.5	0-1
	16-QAM	1 RB	0	1710.7	19957	20.81	21.5	0-1
				1732.5	20175	20.71	21.5	0-1
				1754.3	20393	21.12	21.5	0-1
			2	1710.7	19957	20.67	21.5	0-1
				1732.5	20175	20.74	21.5	0-1
				1754.3	20393	21.24	21.5	0-1
			5	1710.7	19957	20.88	21.5	0-1
				1732.5	20175	21.03	21.5	0-1
				1754.3	20393	21.21	21.5	0-1
		3 RB	0	1710.7	19957	20.76	21	0-2
				1732.5	20175	20.92	21	0-2
				1754.3	20393	20.96	21	0-2
			2	1710.7	19957	20.78	21	0-2
				1732.5	20175	20.93	21	0-2
				1754.3	20393	20.97	21	0-2
			3	1710.7	19957	20.8	21	0-2
				1732.5	20175	20.92	21	0-2
				1754.3	20393	20.99	21	0-2
		6RB		1710.7	19957	20.00	20.5	0-2
				1732.5	20175	20.11	20.5	0-2
				1754.3	20393	20.20	20.5	0-2

FDD Band IV Hotspot on (Reduced power)								
BW(Mhz)	Modulation	RB Size	RB Offset	Frequency (MHz)	Channel	Conducted power (dBm)	Target Power + Max. Tolerance (dBm)	MPR Allowed per 3GPP(dB)
20	QPSK	1 RB	0	1720	20050	18.88	19	0
				1732.5	20175	18.92	19	0
				1745	20300	18.85	19	0
			50	1720	20050	18.84	19	0
				1732.5	20175	18.83	19	0
				1745	20300	18.75	19	0
			99	1720	20050	18.85	19	0
				1732.5	20175	18.9	19	0
				1745	20300	18.77	19	0
		50 RB	0	1720	20050	18.93	19	0-1
				1732.5	20175	18.87	19	0-1
				1745	20300	18.82	19	0-1
			25	1720	20050	18.88	19	0-1
				1732.5	20175	18.87	19	0-1
				1745	20300	18.76	19	0-1
			50	1720	20050	18.83	19	0-1
				1732.5	20175	18.89	19	0-1
				1745	20300	18.66	19	0-1
		100RB		1720	20050	18.89	19	0-1
				1732.5	20175	18.78	19	0-1
				1745	20300	18.81	19	0-1
	16-QAM	1 RB	0	1720	20050	18.42	19	0-1
				1732.5	20175	18.56	19	0-1
				1745	20300	18.61	19	0-1
			50	1720	20050	18.41	19	0-1
				1732.5	20175	18.27	19	0-1
				1745	20300	18.38	19	0-1
			99	1720	20050	18.33	19	0-1
				1732.5	20175	18.31	19	0-1
				1745	20300	18.31	19	0-1
		50 RB	0	1720	20050	18.55	19	0-2
				1732.5	20175	18.62	19	0-2
				1745	20300	18.66	19	0-2
			25	1720	20050	18.5	19	0-2
				1732.5	20175	18.5	19	0-2
				1745	20300	18.49	19	0-2
			50	1720	20050	18.55	19	0-2
				1732.5	20175	18.48	19	0-2
				1745	20300	18.54	19	0-2
		100RB		1720	20050	18.53	19	0-2
				1732.5	20175	18.55	19	0-2
				1745	20300	18.53	19	0-2

FDD Band IV Hotspot on (Reduced power)								
BW(Mhz)	Modulation	RB Size	RB Offset	Frequency (MHz)	Channel	Conducted power (dBm)	Target Power + Max. Tolerance (dBm)	MPR Allowed per 3GPP(dB)
15	QPSK	1 RB	0	1717.5	20025	18.41	19	0
				1732.5	20175	18.65	19	0
				1747.5	20325	18.72	19	0
			36	1717.5	20025	18.34	19	0
				1732.5	20175	18.61	19	0
				1747.5	20325	18.58	19	0
			74	1717.5	20025	18.45	19	0
				1732.5	20175	18.49	19	0
				1747.5	20325	18.38	19	0
		36 RB	0	1717.5	20025	18.26	19	0-1
				1732.5	20175	18.47	19	0-1
				1747.5	20325	18.38	19	0-1
			18	1717.5	20025	18.34	19	0-1
				1732.5	20175	18.48	19	0-1
				1747.5	20325	18.53	19	0-1
			37	1717.5	20025	18.35	19	0-1
				1732.5	20175	18.45	19	0-1
				1747.5	20325	18.39	19	0-1
		75RB		1717.5	20025	18.46	19	0-1
				1732.5	20175	18.36	19	0-1
				1747.5	20325	18.59	19	0-1
	16-QAM	1 RB	0	1717.5	20025	18.52	19	0-1
				1732.5	20175	18.74	19	0-1
				1747.5	20325	18.74	19	0-1
			36	1717.5	20025	18.22	19	0-1
				1732.5	20175	18.47	19	0-1
				1747.5	20325	18.77	19	0-1
			74	1717.5	20025	18.49	19	0-1
				1732.5	20175	18.49	19	0-1
				1747.5	20325	18.5	19	0-1
		36 RB	0	1717.5	20025	18.54	19	0-2
				1732.5	20175	18.46	19	0-2
				1747.5	20325	18.51	19	0-2
			18	1717.5	20025	18.6	19	0-2
				1732.5	20175	18.47	19	0-2
				1747.5	20325	18.7	19	0-2
			37	1717.5	20025	18.56	19	0-2
				1732.5	20175	18.31	19	0-2
				1747.5	20325	18.56	19	0-2
		75RB		1717.5	20025	18.49	19	0-2
				1732.5	20175	18.35	19	0-2
				1747.5	20325	18.52	19	0-2

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FDD Band IV Hotspot on (Reduced power)								
BW(Mhz)	Modulation	RB Size	RB Offset	Frequency (MHz)	Channel	Conducted power (dBm)	Target Power + Max. Tolerance (dBm)	MPR Allowed per 3GPP(dB)
10	QPSK	1 RB	0	1715	20000	18.31	19	0
				1732.5	20175	18.67	19	0
				1750	20350	18.58	19	0
			25	1715	20000	18.52	19	0
				1732.5	20175	18.58	19	0
				1750	20350	18.6	19	0
			49	1715	20000	18.45	19	0
				1732.5	20175	18.45	19	0
				1750	20350	18.48	19	0
		25 RB	0	1715	20000	18.43	19	0-1
				1732.5	20175	18.48	19	0-1
				1750	20350	18.54	19	0-1
			12	1715	20000	18.22	19	0-1
				1732.5	20175	18.43	19	0-1
				1750	20350	18.69	19	0-1
			25	1715	20000	18.31	19	0-1
				1732.5	20175	18.48	19	0-1
				1750	20350	18.7	19	0-1
		50RB		1715	20000	18.34	19	0-1
				1732.5	20175	18.5	19	0-1
				1750	20350	18.65	19	0-1
	16-QAM	1 RB	0	1715	20000	18.49	19	0-1
				1732.5	20175	18.66	19	0-1
				1750	20350	18.73	19	0-1
			25	1715	20000	18.52	19	0-1
				1732.5	20175	18.57	19	0-1
				1750	20350	18.61	19	0-1
			49	1715	20000	18.54	19	0-1
				1732.5	20175	18.67	19	0-1
				1750	20350	18.7	19	0-1
		25 RB	0	1715	20000	18.45	19	0-2
				1732.5	20175	18.52	19	0-2
				1750	20350	18.72	19	0-2
			12	1715	20000	18.46	19	0-2
				1732.5	20175	18.57	19	0-2
				1750	20350	18.63	19	0-2
			25	1715	20000	18.6	19	0-2
				1732.5	20175	18.52	19	0-2
				1750	20350	18.63	19	0-2
		50RB		1715	20000	18.56	19	0-2
				1732.5	20175	18.52	19	0-2
				1750	20350	18.67	19	0-2

FDD Band IV Hotspot on (Reduced power)								
BW(Mhz)	Modulation	RB Size	RB Offset	Frequency (MHz)	Channel	Conducted power (dBm)	Target Power + Max. Tolerance (dBm)	MPR Allowed per 3GPP(dB)
5	QPSK	1 RB	0	1712.5	19975	18.39	19	0
				1732.5	20175	18.71	19	0
				1752.5	20375	18.59	19	0
			12	1712.5	19975	18.35	19	0
				1732.5	20175	18.6	19	0
				1752.5	20375	18.5	19	0
			24	1712.5	19975	18.35	19	0
				1732.5	20175	18.56	19	0
				1752.5	20375	18.62	19	0
		12 RB	0	1712.5	19975	18.49	19	0-1
				1732.5	20175	18.58	19	0-1
				1752.5	20375	18.62	19	0-1
			6	1712.5	19975	18.46	19	0-1
				1732.5	20175	18.42	19	0-1
				1752.5	20375	18.7	19	0-1
			13	1712.5	19975	18.47	19	0-1
				1732.5	20175	18.49	19	0-1
				1752.5	20375	18.66	19	0-1
		25RB		1712.5	19975	18.35	19	0-1
				1732.5	20175	18.49	19	0-1
				1752.5	20375	18.67	19	0-1
	16-QAM	1 RB	0	1712.5	19975	18.1	19	0-1
				1732.5	20175	18.17	19	0-1
				1752.5	20375	18.44	19	0-1
			12	1712.5	19975	18.16	19	0-1
				1732.5	20175	18.08	19	0-1
				1752.5	20375	18.39	19	0-1
			24	1712.5	19975	18.28	19	0-1
				1732.5	20175	18.06	19	0-1
				1752.5	20375	18.34	19	0-1
		12 RB	0	1712.5	19975	18.62	19	0-2
				1732.5	20175	18.61	19	0-2
				1752.5	20375	18.75	19	0-2
			6	1712.5	19975	18.64	19	0-2
				1732.5	20175	18.58	19	0-2
				1752.5	20375	18.62	19	0-2
			13	1712.5	19975	18.62	19	0-2
				1732.5	20175	18.55	19	0-2
				1752.5	20375	18.72	19	0-2
		25RB		1712.5	19975	18.6	19	0-2
				1732.5	20175	18.48	19	0-2
				1752.5	20375	18.76	19	0-2

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FDD Band IV Hotspot on (Reduced power)								
BW(Mhz)	Modulation	RB Size	RB Offset	Frequency (MHz)	Channel	Conducted power (dBm)	Target Power + Max. Tolerance (dBm)	MPR Allowed per 3GPP(dB)
3	QPSK	1 RB	0	1711.5	19965	18.5	19	0
				1732.5	20175	18.78	19	0
				1753.5	20385	18.64	19	0
			7	1711.5	19965	18.43	19	0
				1732.5	20175	18.61	19	0
				1753.5	20385	18.58	19	0
			14	1711.5	19965	18.44	19	0
				1732.5	20175	18.61	19	0
				1753.5	20385	18.7	19	0
		8 RB	0	1711.5	19965	18.43	19	0-1
				1732.5	20175	18.65	19	0-1
				1753.5	20385	18.73	19	0-1
			4	1711.5	19965	18.56	19	0-1
				1732.5	20175	18.57	19	0-1
				1753.5	20385	18.66	19	0-1
			7	1711.5	19965	18.57	19	0-1
				1732.5	20175	18.57	19	0-1
				1753.5	20385	18.7	19	0-1
		15RB		1711.5	19965	18.57	19	0-1
				1732.5	20175	18.56	19	0-1
				1753.5	20385	18.75	19	0-1
	16-QAM	1 RB	0	1711.5	19965	18.15	19	0-1
				1732.5	20175	18.26	19	0-1
				1753.5	20385	18.48	19	0-1
			7	1711.5	19965	18.26	19	0-1
				1732.5	20175	18.24	19	0-1
				1753.5	20385	18.44	19	0-1
			14	1711.5	19965	18.16	19	0-1
				1732.5	20175	18.4	19	0-1
				1753.5	20385	18.36	19	0-1
		8 RB	0	1711.5	19965	18.57	19	0-2
				1732.5	20175	18.72	19	0-2
				1753.5	20385	18.78	19	0-2
			4	1711.5	19965	18.64	19	0-2
				1732.5	20175	18.54	19	0-2
				1753.5	20385	18.73	19	0-2
			7	1711.5	19965	18.68	19	0-2
				1732.5	20175	18.78	19	0-2
				1753.5	20385	18.73	19	0-2
		15RB		1711.5	19965	18.66	19	0-2
				1732.5	20175	18.7	19	0-2
				1753.5	20385	18.79	19	0-2

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FDD Band IV Hotspot on (Reduced power)								
BW(Mhz)	Modulation	RB Size	RB Offset	Frequency (MHz)	Channel	Conducted power (dBm)	Target Power + Max. Tolerance (dBm)	MPR Allowed per 3GPP(dB)
1.4	QPSK	1 RB	0	1710.7	19957	18.35	19	0
				1732.5	20175	18.37	19	0
				1754.3	20393	18.56	19	0
			2	1710.7	19957	18.31	19	0
				1732.5	20175	18.4	19	0
				1754.3	20393	18.7	19	0
			5	1710.7	19957	18.19	19	0
				1732.5	20175	18.49	19	0
				1754.3	20393	18.57	19	0
		3 RB	0	1710.7	19957	18.24	19	0-1
				1732.5	20175	18.5	19	0-1
				1754.3	20393	18.4	19	0-1
			2	1710.7	19957	18.34	19	0-1
				1732.5	20175	18.39	19	0-1
				1754.3	20393	18.61	19	0-1
			3	1710.7	19957	18.34	19	0-1
				1732.5	20175	18.39	19	0-1
				1754.3	20393	18.65	19	0-1
		6RB		1710.7	19957	18.31	19	0-1
				1732.5	20175	18.37	19	0-1
				1754.3	20393	18.62	19	0-1
	16-QAM	1 RB	0	1710.7	19957	18.46	19	0-1
				1732.5	20175	18.43	19	0-1
				1754.3	20393	18.73	19	0-1
			2	1710.7	19957	18.39	19	0-1
				1732.5	20175	18.4	19	0-1
				1754.3	20393	18.84	19	0-1
			5	1710.7	19957	18.24	19	0-1
				1732.5	20175	18.43	19	0-1
				1754.3	20393	18.7	19	0-1
		3 RB	0	1710.7	19957	18.29	19	0-2
				1732.5	20175	18.21	19	0-2
				1754.3	20393	18.49	19	0-2
			2	1710.7	19957	18.23	19	0-2
				1732.5	20175	18.2	19	0-2
				1754.3	20393	18.47	19	0-2
			3	1710.7	19957	18.3	19	0-2
				1732.5	20175	18.27	19	0-2
				1754.3	20393	18.55	19	0-2
		6RB		1710.7	19957	18.2	19	0-2
				1732.5	20175	18.43	19	0-2
				1754.3	20393	18.7	19	0-2

FDD Band VII (Full power)								
BW(Mhz)	Modulation	RB Size	RB Offset	Frequency (MHz)	Channel	Conducted power (dBm)	Target Power + Max. Tolerance (dBm)	MPR Allowed per 3GPP(dB)
20	QPSK	1 RB	0	2510	20850	22.66	23	0
				2535	21100	22.5	23	0
				2560	21350	22.57	23	0
			50	2510	20850	22.67	23	0
				2535	21100	22.48	23	0
				2560	21350	22.66	23	0
			99	2510	20850	22.68	23	0
				2535	21100	22.6	23	0
				2560	21350	22.96	23	0
		50 RB	0	2510	20850	21.78	22.5	0-1
				2535	21100	21.64	22.5	0-1
				2560	21350	21.76	22.5	0-1
			25	2510	20850	21.78	22.5	0-1
				2535	21100	21.63	22.5	0-1
				2560	21350	21.89	22.5	0-1
			50	2510	20850	21.82	22.5	0-1
				2535	21100	21.62	22.5	0-1
				2560	21350	21.97	22.5	0-1
		100RB		2510	20850	21.78	22	0-1
				2535	21100	21.67	22	0-1
				2560	21350	21.87	22	0-1
	16-QAM	1 RB	0	2510	20850	21.76	22	0-1
				2535	21100	21.69	22	0-1
				2560	21350	21.75	22	0-1
			50	2510	20850	21.84	22	0-1
				2535	21100	21.62	22	0-1
				2560	21350	21.86	22	0-1
			99	2510	20850	21.78	22	0-1
				2535	21100	21.82	22	0-1
				2560	21350	21.98	22	0-1
		50 RB	0	2510	20850	21.17	21.5	0-2
				2535	21100	21.08	21.5	0-2
				2560	21350	21.19	21.5	0-2
			25	2510	20850	20.23	21.5	0-2
				2535	21100	21.09	21.5	0-2
				2560	21350	21.24	21.5	0-2
			50	2510	20850	21.22	21.5	0-2
				2535	21100	21.18	21.5	0-2
				2560	21350	21.25	21.5	0-2
		100RB		2510	20850	21.23	21.5	0-2
				2535	21100	21.14	21.5	0-2
				2560	21350	21.27	21.5	0-2

FDD Band VII (Full power)								
BW(Mhz)	Modulation	RB Size	RB Offset	Frequency (MHz)	Channel	Conducted power (dBm)	Target Power + Max. Tolerance (dBm)	MPR Allowed per 3GPP(dB)
15	QPSK	1 RB	0	2507.5	20825	22.53	23	0
				2535	21100	22.41	23	0
				2562.5	21375	22.58	23	0
			36	2507.5	20825	22.64	23	0
				2535	21100	22.39	23	0
				2562.5	21375	22.73	23	0
			74	2507.5	20825	22.7	23	0
				2535	21100	22.45	23	0
				2562.5	21375	22.95	23	0
		36 RB	0	2507.5	20825	21.55	22.5	0-1
				2535	21100	21.51	22.5	0-1
				2562.5	21375	21.77	22.5	0-1
			18	2507.5	20825	21.61	22.5	0-1
				2535	21100	21.53	22.5	0-1
				2562.5	21375	21.85	22.5	0-1
			37	2507.5	20825	21.66	22.5	0-1
				2535	21100	21.5	22.5	0-1
				2562.5	21375	21.89	22.5	0-1
		75RB		2507.5	20825	21.62	22	0-1
				2535	21100	21.48	22	0-1
				2562.5	21375	21.83	22	0-1
	16-QAM	1 RB	0	2507.5	20825	21.77	22	0-1
				2535	21100	21.63	22	0-1
				2562.5	21375	21.8	22	0-1
			36	2507.5	20825	21.79	22	0-1
				2535	21100	21.52	22	0-1
				2562.5	21375	21.95	22	0-1
			74	2507.5	20825	21.88	22	0-1
				2535	21100	21.69	22	0-1
				2562.5	21375	21.93	22	0-1
		36 RB	0	2507.5	20825	20.81	21.5	0-2
				2535	21100	20.63	21.5	0-2
				2562.5	21375	20.95	21.5	0-2
			18	2507.5	20825	20.93	21.5	0-2
				2535	21100	20.75	21.5	0-2
				2562.5	21375	21.02	21.5	0-2
			37	2507.5	20825	20.97	21.5	0-2
				2535	21100	20.66	21.5	0-2
				2562.5	21375	21.12	21.5	0-2
		75RB		2507.5	20825	20.94	21.5	0-2
				2535	21100	20.68	21.5	0-2
				2562.5	21375	21.09	21.5	0-2

FDD Band VII (Full power)								
BW(Mhz)	Modulation	RB Size	RB Offset	Frequency (MHz)	Channel	Conducted power (dBm)	Target Power + Max. Tolerance (dBm)	MPR Allowed per 3GPP(dB)
10	QPSK	1 RB	0	2505	20800	22.67	23	0
				2535	21100	22.5	23	0
				2565	21400	22.71	23	0
			25	2505	20800	22.72	23	0
				2535	21100	22.54	23	0
				2565	21400	22.83	23	0
			49	2505	20800	22.83	23	0
				2535	21100	22.58	23	0
				2565	21400	22.92	23	0
		25 RB	0	2505	20800	21.75	22.5	0-1
				2535	21100	21.59	22.5	0-1
				2565	21400	21.89	22.5	0-1
			12	2505	20800	21.8	22.5	0-1
				2535	21100	21.58	22.5	0-1
				2565	21400	21.91	22.5	0-1
			25	2505	20800	21.86	22.5	0-1
				2535	21100	21.51	22.5	0-1
				2565	21400	21.93	22.5	0-1
		50RB		2505	20800	21.69	22	0-1
				2535	21100	21.59	22	0-1
				2565	21400	21.82	22	0-1
	16-QAM	1 RB	0	2505	20800	21.73	22	0-1
				2535	21100	21.62	22	0-1
				2565	21400	21.91	22	0-1
			25	2505	20800	21.74	22	0-1
				2535	21100	21.55	22	0-1
				2565	21400	21.83	22	0-1
			49	2505	20800	21.83	22	0-1
				2535	21100	21.68	22	0-1
				2565	21400	21.98	22	0-1
		25 RB	0	2505	20800	20.81	21.5	0-2
				2535	21100	20.75	21.5	0-2
				2565	21400	21.03	21.5	0-2
			12	2505	20800	20.93	21.5	0-2
				2535	21100	20.73	21.5	0-2
				2565	21400	21.14	21.5	0-2
			25	2505	20800	20.95	21.5	0-2
				2535	21100	20.68	21.5	0-2
				2565	21400	21.18	21.5	0-2
		50RB		2505	20800	20.9	21.5	0-2
				2535	21100	20.63	21.5	0-2
				2565	21400	21.13	21.5	0-2

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FDD Band VII (Full power)								
BW(Mhz)	Modulation	RB Size	RB Offset	Frequency (MHz)	Channel	Conducted power (dBm)	Target Power + Max. Tolerance (dBm)	MPR Allowed per 3GPP(dB)
5	QPSK	1 RB	0	2502.5	20775	22.72	23	0
				2535	21100	22.5	23	0
				2567.5	21425	22.84	23	0
			12	2502.5	20775	22.5	23	0
				2535	21100	22.52	23	0
				2567.5	21425	22.86	23	0
			24	2502.5	20775	22.58	23	0
				2535	21100	22.48	23	0
				2567.5	21425	22.94	23	0
		12 RB	0	2502.5	20775	21.68	22.5	0-1
				2535	21100	21.63	22.5	0-1
				2567.5	21425	22.01	22.5	0-1
			6	2502.5	20775	21.65	22.5	0-1
				2535	21100	21.62	22.5	0-1
				2567.5	21425	21.95	22.5	0-1
			13	2502.5	20775	21.67	22.5	0-1
				2535	21100	21.54	22.5	0-1
				2567.5	21425	21.94	22.5	0-1
		25RB		2502.5	20775	21.68	22	0-1
				2535	21100	21.56	22	0-1
				2567.5	21425	21.85	22	0-1
	16-QAM	1 RB	0	2502.5	20775	21.65	22	0-1
				2535	21100	21.51	22	0-1
				2567.5	21425	21.92	22	0-1
			12	2502.5	20775	21.66	22	0-1
				2535	21100	21.55	22	0-1
				2567.5	21425	21.98	22	0-1
			24	2502.5	20775	21.69	22	0-1
				2535	21100	21.5	22	0-1
				2567.5	21425	21.99	22	0-1
		12 RB	0	2502.5	20775	20.86	21.5	0-2
				2535	21100	20.69	21.5	0-2
				2567.5	21425	21.15	21.5	0-2
			6	2502.5	20775	20.78	21.5	0-2
				2535	21100	20.7	21.5	0-2
				2567.5	21425	21.16	21.5	0-2
			13	2502.5	20775	20.84	21.5	0-2
				2535	21100	20.69	21.5	0-2
				2567.5	21425	21.23	21.5	0-2
		25RB		2502.5	20775	20.72	21.5	0-2
				2535	21100	20.68	21.5	0-2
				2567.5	21425	21.18	21.5	0-2

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FDD Band VII Hotspot on (Reduced power)								
BW(Mhz)	Modulation	RB Size	RB Offset	Frequency (MHz)	Channel	Conducted power (dBm)	Target Power + Max. Tolerance (dBm)	MPR Allowed per 3GPP(dB)
20	QPSK	1 RB	0	2510	20850	19.38	20	0
				2535	21100	19.27	20	0
				2560	21350	19.3	20	0
			50	2510	20850	19.51	20	0
				2535	21100	19.13	20	0
				2560	21350	19.43	20	0
			99	2510	20850	19.45	20	0
				2535	21100	19.34	20	0
				2560	21350	19.83	20	0
		50 RB	0	2510	20850	19.28	20	0-1
				2535	21100	19.07	20	0-1
				2560	21350	19.21	20	0-1
			25	2510	20850	19.36	20	0-1
				2535	21100	19.01	20	0-1
				2560	21350	19.33	20	0-1
			50	2510	20850	19.39	20	0-1
				2535	21100	19.04	20	0-1
				2560	21350	19.49	20	0-1
		100RB		2510	20850	19.29	20	0-1
				2535	21100	19.06	20	0-1
				2560	21350	19.33	20	0-1
	16-QAM	1 RB	0	2510	20850	19.7	20	0-1
				2535	21100	19.55	20	0-1
				2560	21350	19.58	20	0-1
			50	2510	20850	19.74	20	0-1
				2535	21100	19.51	20	0-1
				2560	21350	19.68	20	0-1
			99	2510	20850	19.66	20	0-1
				2535	21100	19.64	20	0-1
				2560	21350	19.71	20	0-1
		50 RB	0	2510	20850	19.75	20	0-2
				2535	21100	19.53	20	0-2
				2560	21350	19.64	20	0-2
			25	2510	20850	19.82	20	0-2
				2535	21100	19.48	20	0-2
				2560	21350	19.83	20	0-2
			50	2510	20850	19.78	20	0-2
				2535	21100	19.54	20	0-2
				2560	21350	19.9	20	0-2
		100RB		2510	20850	19.79	20	0-2
				2535	21100	19.48	20	0-2
				2560	21350	19.81	20	0-2

FDD Band VII Hotspot on (Reduced power)								
BW(Mhz)	Modulation	RB Size	RB Offset	Frequency (MHz)	Channel	Conducted power (dBm)	Target Power + Max. Tolerance (dBm)	MPR Allowed per 3GPP(dB)
15	QPSK	1 RB	0	2507.5	20825	19.62	20	0
				2535	21100	19.37	20	0
				2562.5	21375	19.27	20	0
			36	2507.5	20825	19.65	20	0
				2535	21100	19.26	20	0
				2562.5	21375	19.37	20	0
			74	2507.5	20825	19.75	20	0
				2535	21100	19.31	20	0
				2562.5	21375	19.56	20	0
		36 RB	0	2507.5	20825	19.61	20	0-1
				2535	21100	19.26	20	0-1
				2562.5	21375	19.36	20	0-1
			18	2507.5	20825	19.6	20	0-1
				2535	21100	19.22	20	0-1
				2562.5	21375	19.41	20	0-1
			37	2507.5	20825	19.77	20	0-1
				2535	21100	19.21	20	0-1
				2562.5	21375	19.56	20	0-1
		75RB		2507.5	20825	19.66	20	0-1
				2535	21100	19.36	20	0-1
				2562.5	21375	19.45	20	0-1
	16-QAM	1 RB	0	2507.5	20825	19.77	20	0-1
				2535	21100	19.43	20	0-1
				2562.5	21375	19.66	20	0-1
			36	2507.5	20825	19.74	20	0-1
				2535	21100	19.47	20	0-1
				2562.5	21375	19.79	20	0-1
			74	2507.5	20825	19.81	20	0-1
				2535	21100	19.53	20	0-1
				2562.5	21375	19.93	20	0-1
		36 RB	0	2507.5	20825	19.77	20	0-2
				2535	21100	19.47	20	0-2
				2562.5	21375	19.73	20	0-2
			18	2507.5	20825	19.79	20	0-2
				2535	21100	19.52	20	0-2
				2562.5	21375	19.91	20	0-2
			37	2507.5	20825	19.82	20	0-2
				2535	21100	19.46	20	0-2
				2562.5	21375	19.88	20	0-2
		75RB		2507.5	20825	19.82	20	0-2
				2535	21100	19.53	20	0-2
				2562.5	21375	19.81	20	0-2

FDD Band VII Hotspot on (Reduced power)								
BW(Mhz)	Modulation	RB Size	RB Offset	Frequency (MHz)	Channel	Conducted power (dBm)	Target Power + Max. Tolerance (dBm)	MPR Allowed per 3GPP(dB)
10	QPSK	1 RB	0	2505	20800	19.25	20	0
				2535	21100	19.19	20	0
				2565	21400	19.43	20	0
			25	2505	20800	19.46	20	0
				2535	21100	19.17	20	0
				2565	21400	19.54	20	0
			49	2505	20800	19.54	20	0
				2535	21100	19.24	20	0
				2565	21400	19.66	20	0
		25 RB	0	2505	20800	19.3	20	0-1
				2535	21100	19.23	20	0-1
				2565	21400	19.36	20	0-1
			12	2505	20800	19.42	20	0-1
				2535	21100	19.18	20	0-1
				2565	21400	19.47	20	0-1
			25	2505	20800	19.53	20	0-1
				2535	21100	19.1	20	0-1
				2565	21400	19.61	20	0-1
		50RB		2505	20800	19.37	20	0-1
				2535	21100	19.17	20	0-1
				2565	21400	19.47	20	0-1
	16-QAM	1 RB	0	2505	20800	19.7	20	0-1
				2535	21100	19.42	20	0-1
				2565	21400	19.75	20	0-1
			25	2505	20800	19.69	20	0-1
				2535	21100	19.46	20	0-1
				2565	21400	19.77	20	0-1
			49	2505	20800	19.78	20	0-1
				2535	21100	19.5	20	0-1
				2565	21400	19.97	20	0-1
		25 RB	0	2505	20800	19.73	20	0-2
				2535	21100	19.42	20	0-2
				2565	21400	19.91	20	0-2
			12	2505	20800	19.72	20	0-2
				2535	21100	19.48	20	0-2
				2565	21400	19.92	20	0-2
			25	2505	20800	19.83	20	0-2
				2535	21100	19.45	20	0-2
				2565	21400	19.95	20	0-2
		50RB		2505	20800	19.73	20	0-2
				2535	21100	19.49	20	0-2
				2565	21400	19.81	20	0-2

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FDD Band VII Hotspot on (Reduced power)								
BW(Mhz)	Modulation	RB Size	RB Offset	Frequency (MHz)	Channel	Conducted power (dBm)	Target Power + Max. Tolerance (dBm)	MPR Allowed per 3GPP(dB)
5	QPSK	1 RB	0	2502.5	20775	19.59	20	0
				2535	21100	19.25	20	0
				2567.5	21425	19.55	20	0
			12	2502.5	20775	19.56	20	0
				2535	21100	19.22	20	0
				2567.5	21425	19.53	20	0
			24	2502.5	20775	19.57	20	0
				2535	21100	19.19	20	0
				2567.5	21425	19.62	20	0
		12 RB	0	2502.5	20775	19.53	20	0-1
				2535	21100	19.22	20	0-1
				2567.5	21425	19.62	20	0-1
			6	2502.5	20775	19.47	20	0-1
				2535	21100	19.17	20	0-1
				2567.5	21425	19.62	20	0-1
			13	2502.5	20775	19.53	20	0-1
				2535	21100	19.16	20	0-1
				2567.5	21425	19.69	20	0-1
		25RB		2502.5	20775	19.5	20	0-1
				2535	21100	19.32	20	0-1
				2567.5	21425	19.53	20	0-1
	16-QAM	1 RB	0	2502.5	20775	19.22	20	0-1
				2535	21100	19.07	20	0-1
				2567.5	21425	19.48	20	0-1
			12	2502.5	20775	19.26	20	0-1
				2535	21100	19.1	20	0-1
				2567.5	21425	19.49	20	0-1
			24	2502.5	20775	19.3	20	0-1
				2535	21100	19.03	20	0-1
				2567.5	21425	19.51	20	0-1
		12 RB	0	2502.5	20775	19.43	20	0-2
				2535	21100	19.28	20	0-2
				2567.5	21425	19.51	20	0-2
			6	2502.5	20775	19.4	20	0-2
				2535	21100	19.23	20	0-2
				2567.5	21425	19.52	20	0-2
			13	2502.5	20775	19.41	20	0-2
				2535	21100	19.23	20	0-2
				2567.5	21425	19.51	20	0-2
		25RB		2502.5	20775	19.38	20	0-2
				2535	21100	19.26	20	0-2
				2567.5	21425	19.58	20	0-2

FDD Band XVII (Full power)								
BW(Mhz)	Modulation	RB Size	RB Offset	Frequency (MHz)	Channel	Conducted power (dBm)	Target Power + Max. Tolerance (dBm)	MPR Allowed per 3GPP(dB)
10	QPSK	1 RB	0	709	23780	24.66	25	0
				710	23790	24.68	25	0
				711	23800	24.72	25	0
			25	709	23780	24.82	25	0
				710	23790	24.89	25	0
				711	23800	24.91	25	0
			49	709	23780	24.95	25	0
				710	23790	24.97	25	0
				711	23800	24.98	25	0
		25 RB	0	709	23780	24.06	24.5	0-1
				710	23790	24.07	24.5	0-1
				711	23800	24.09	24.5	0-1
			12	709	23780	24.12	24.5	0-1
				710	23790	24.07	24.5	0-1
				711	23800	24.08	24.5	0-1
			25	709	23780	24.08	24.5	0-1
				710	23790	24.13	24.5	0-1
				711	23800	24.08	24.5	0-1
		50RB		709	23780	24.12	24.5	0-1
				710	23790	24.09	24.5	0-1
				711	23800	24.06	24.5	0-1
	16-QAM	1 RB	0	709	23780	23.96	24	0-1
				710	23790	23.65	24	0-1
				711	23800	23.85	24	0-1
			25	709	23780	23.82	24	0-1
				710	23790	23.74	24	0-1
				711	23800	23.77	24	0-1
			49	709	23780	23.89	24	0-1
				710	23790	23.78	24	0-1
				711	23800	23.92	24	0-1
		25 RB	0	709	23780	23.08	23.5	0-2
				710	23790	23.12	23.5	0-2
				711	23800	23.18	23.5	0-2
			12	709	23780	23.06	23.5	0-2
				710	23790	23.04	23.5	0-2
				711	23800	23.11	23.5	0-2
			25	709	23780	23.11	23.5	0-2
				710	23790	23.09	23.5	0-2
				711	23800	23.16	23.5	0-2
		50RB		709	23780	23.07	23.5	0-2
				710	23790	23.03	23.5	0-2
				711	23800	23.09	23.5	0-2

FDD Band XVII (Full power)								
BW(Mhz)	Modulation	RB Size	RB Offset	Frequency (MHz)	Channel	Conducted power (dBm)	Target Power + Max. Tolerance (dBm)	MPR Allowed per 3GPP(dB)
5	QPSK	1 RB	0	706.5	23755	24.51	25	0
				710	23790	24.5	25	0
				713.5	23825	24.38	25	0
			12	706.5	23755	24.31	25	0
				710	23790	24.39	25	0
				713.5	23825	24.38	25	0
			24	706.5	23755	24.36	25	0
				710	23790	24.46	25	0
				713.5	23825	24.6	25	0
		12 RB	0	706.5	23755	23.71	24.5	0-1
				710	23790	23.67	24.5	0-1
				713.5	23825	23.58	24.5	0-1
			6	706.5	23755	23.61	24.5	0-1
				710	23790	23.58	24.5	0-1
				713.5	23825	23.64	24.5	0-1
			13	706.5	23755	23.67	24.5	0-1
				710	23790	23.61	24.5	0-1
				713.5	23825	23.7	24.5	0-1
		25RB		706.5	23755	23.63	24.5	0-1
				710	23790	23.62	24.5	0-1
				713.5	23825	23.69	24.5	0-1
	16-QAM	1 RB	0	706.5	23755	23.79	24	0-1
				710	23790	23.56	24	0-1
				713.5	23825	23.57	24	0-1
			12	706.5	23755	23.76	24	0-1
				710	23790	23.57	24	0-1
				713.5	23825	23.49	24	0-1
			24	706.5	23755	23.77	24	0-1
				710	23790	23.76	24	0-1
				713.5	23825	23.54	24	0-1
		12 RB	0	706.5	23755	22.88	23.5	0-2
				710	23790	22.65	23.5	0-2
				713.5	23825	22.6	23.5	0-2
			6	706.5	23755	22.82	23.5	0-2
				710	23790	22.75	23.5	0-2
				713.5	23825	22.79	23.5	0-2
			13	706.5	23755	22.82	23.5	0-2
				710	23790	22.69	23.5	0-2
				713.5	23825	22.62	23.5	0-2
		25RB		706.5	23755	22.73	23.5	0-2
				710	23790	22.69	23.5	0-2
				713.5	23825	22.57	23.5	0-2

FDD Band XVII Hotspot on (Reduced power)								
BW(Mhz)	Modulation	RB Size	RB Offset	Frequency (MHz)	Channel	Conducted power (dBm)	Target Power + Max. Tolerance (dBm)	MPR Allowed per 3GPP(dB)
10	QPSK	1 RB	0	709	23780	24.15	25	0
				710	23790	24.18	25	0
				711	23800	24.21	25	0
			25	709	23780	24.28	25	0
				710	23790	24.21	25	0
				711	23800	24.25	25	0
			49	709	23780	24.29	25	0
				710	23790	24.32	25	0
				711	23800	24.31	25	0
		25 RB	0	709	23780	23.72	24.5	0-1
				710	23790	23.82	24.5	0-1
				711	23800	23.86	24.5	0-1
			12	709	23780	23.81	24.5	0-1
				710	23790	23.78	24.5	0-1
				711	23800	23.89	24.5	0-1
			25	709	23780	23.77	24.5	0-1
				710	23790	23.87	24.5	0-1
				711	23800	23.91	24.5	0-1
		50RB		709	23780	23.86	24.5	0-1
				710	23790	23.78	24.5	0-1
				711	23800	23.89	24.5	0-1
	16-QAM	1 RB	0	709	23780	23.61	24	0-1
				710	23790	23.33	24	0-1
				711	23800	23.55	24	0-1
			25	709	23780	23.65	24	0-1
				710	23790	23.54	24	0-1
				711	23800	23.43	24	0-1
			49	709	23780	23.71	24	0-1
				710	23790	23.63	24	0-1
				711	23800	23.48	24	0-1
		25 RB	0	709	23780	22.6	23.5	0-2
				710	23790	22.59	23.5	0-2
				711	23800	22.54	23.5	0-2
			12	709	23780	22.68	23.5	0-2
				710	23790	22.56	23.5	0-2
				711	23800	22.5	23.5	0-2
			25	709	23780	22.74	23.5	0-2
				710	23790	22.56	23.5	0-2
				711	23800	22.5	23.5	0-2
		50RB		709	23780	22.68	23.5	0-2
				710	23790	22.63	23.5	0-2
				711	23800	22.53	23.5	0-2

FDD Band XVII Hotspot on (Reduced power)								
BW(Mhz)	Modulation	RB Size	RB Offset	Frequency (MHz)	Channel	Conducted power (dBm)	Target Power + Max. Tolerance (dBm)	MPR Allowed per 3GPP(dB)
5	QPSK	1 RB	0	706.5	23755	24.07	25	0
				710	23790	24.04	25	0
				713.5	23825	24.02	25	0
			12	706.5	23755	24.14	25	0
				710	23790	24.02	25	0
				713.5	23825	23.99	25	0
			24	706.5	23755	24.2	25	0
				710	23790	24.06	25	0
				713.5	23825	24.07	25	0
		12 RB	0	706.5	23755	23.38	24.5	0-1
				710	23790	23.52	24.5	0-1
				713.5	23825	23.47	24.5	0-1
			6	706.5	23755	23.49	24.5	0-1
				710	23790	23.43	24.5	0-1
				713.5	23825	23.51	24.5	0-1
			13	706.5	23755	23.5	24.5	0-1
				710	23790	23.51	24.5	0-1
				713.5	23825	23.65	24.5	0-1
		25RB		706.5	23755	23.52	24.5	0-1
				710	23790	23.49	24.5	0-1
				713.5	23825	23.45	24.5	0-1
	16-QAM	1 RB	0	706.5	23755	23.48	24	0-1
				710	23790	23.45	24	0-1
				713.5	23825	23.34	24	0-1
			12	706.5	23755	23.54	24	0-1
				710	23790	23.31	24	0-1
				713.5	23825	23.32	24	0-1
			24	706.5	23755	23.48	24	0-1
				710	23790	23.33	24	0-1
				713.5	23825	23.35	24	0-1
		12 RB	0	706.5	23755	22.61	23.5	0-2
				710	23790	22.52	23.5	0-2
				713.5	23825	22.51	23.5	0-2
			6	706.5	23755	22.63	23.5	0-2
				710	23790	22.52	23.5	0-2
				713.5	23825	22.51	23.5	0-2
			13	706.5	23755	22.65	23.5	0-2
				710	23790	22.51	23.5	0-2
				713.5	23825	22.52	23.5	0-2
		25RB		706.5	23755	22.62	23.5	0-2
				710	23790	22.52	23.5	0-2
				713.5	23825	22.51	23.5	0-2

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

802.11b		Max. Rated Avg. Power + Max. Tolerance (dBm)	Average Power Output (dBm)			
			Data Rate (Mbps)			
CH	Frequency (MHz)		1	2	5.5	11
1	2412	18.00	17.79	17.74	17.68	17.67
6	2437	18.00	17.77	17.71	17.65	17.55
11	2462	18.00	17.98	17.93	17.79	17.72

802.11g		Max. Rated Avg. Power + Max. Tolerance (dBm)	Average Power Output(dBm)							
			Data Rate (Mbps)							
CH	Frequency (MHz)		6	9	12	18	24	36	48	54
1	2412	12.00	11.96	11.91	11.84	11.79	11.74	11.68	11.61	11.54
6	2437	15.00	14.99	14.96	14.94	14.88	14.76	14.71	14.68	14.64
11	2462	13.00	12.99	12.91	12.83	12.74	12.66	12.59	12.42	12.37

802.11n (20M)		Max. Rated Avg. Power + Max. Tolerance (dBm)	Average Power Output(dBm)							
			Data Rate (Mbps)							
CH	Frequency (MHz)		mcs0	mcs1	mcs2	mcs3	mcs4	mcs5	mcs6	mcs7
1	2412	12.00	11.91	11.80	11.72	11.66	11.59	11.51	11.44	11.38
6	2437	13.00	12.87	12.78	12.67	12.64	12.54	12.42	12.35	12.25
11	2462	11.00	10.78	10.69	10.61	10.56	10.49	10.42	10.37	10.33

802.11a 5.2G/5.3G/5.5G/5.8G		Max. Rated Avg. Power + Max. Tolerance (dBm)	Average Power (dBm)							
			Data Rate (Mbps)							
CH	Frequency (MHz)		6	9	12	18	24	36	48	54
36	5180	14.00	13.89	13.80	13.74	13.62	13.52	13.45	13.42	13.40
40	5200	14.00	13.86	13.83	13.77	13.72	13.69	13.55	13.48	13.43
44	5220	14.00	13.85	13.74	13.60	13.58	13.44	13.42	13.32	13.25
48	5240	14.00	13.79	13.74	13.67	13.61	13.57	13.44	13.36	13.30
52	5260	14.00	13.88	13.82	13.72	13.58	13.52	13.43	13.33	13.31
56	5280	14.00	13.93	13.81	13.67	13.65	13.62	13.50	13.40	13.33
60	5300	14.00	13.89	13.88	13.84	13.72	13.62	13.55	13.47	13.35
64	5320	14.00	13.84	13.78	13.69	13.66	13.61	13.57	13.48	13.34
100	5500	14.00	13.73	13.72	13.68	13.55	13.51	13.45	13.35	13.26
104	5520	14.00	13.71	13.59	13.50	13.39	13.35	13.33	13.27	13.23
108	5540	14.00	13.79	13.76	13.74	13.68	13.66	13.53	13.40	13.34
112	5560	14.00	13.82	13.68	13.59	13.47	13.35	13.24	13.12	13.02
116	5580	14.00	13.79	13.76	13.69	13.61	13.57	13.48	13.41	13.28
132	5660	14.00	13.98	13.96	13.85	13.78	13.68	13.63	13.49	13.40
136	5680	14.00	13.96	13.87	13.77	13.75	13.66	13.61	13.52	13.46
140	5700	11.00	10.97	10.94	10.88	10.83	10.76	10.71	10.66	10.61
149	5745	14.00	13.81	13.72	13.60	13.50	13.43	13.39	13.28	13.20
153	5765	14.00	13.82	13.73	13.59	13.46	13.38	13.35	13.28	13.19
157	5785	14.00	13.87	13.76	13.71	13.64	13.51	13.41	13.35	13.24
161	5805	14.00	13.86	13.82	13.68	13.65	13.56	13.47	13.44	13.38
165	5825	14.00	13.83	13.70	13.65	13.59	13.53	13.48	13.34	13.23

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802.11n(20M)		Max. Rated Avg. Power + Max. Tolerance (dBm)	Average Power (dBm)							
5.2G/5.3G/5.5G/5.8G			Data Rate (Mbps)							
CH	Frequency (MHz)		mcs0	mcs1	mcs2	mcs3	mcs4	mcs5	mcs6	mcs7
36	5180	11.50	11.47	11.40	11.29	11.19	11.11	11.09	11.07	11.00
40	5200	11.50	11.48	11.43	11.31	11.20	11.08	10.99	10.90	10.86
44	5220	11.50	11.49	11.43	11.39	11.28	11.21	11.19	11.17	11.09
48	5240	11.50	11.43	11.35	11.22	11.11	11.06	10.96	10.85	10.71
52	5260	11.50	11.46	11.34	11.22	11.10	11.02	10.97	10.93	10.83
56	5280	11.50	11.47	11.41	11.30	11.26	11.14	11.00	10.87	10.75
60	5300	11.50	11.49	11.45	11.36	11.24	11.12	11.09	10.95	10.82
64	5320	11.50	11.45	11.39	11.28	11.23	11.20	11.11	11.09	11.00
100	5500	11.50	11.33	11.22	11.13	11.03	11.00	10.94	10.91	10.84
104	5520	11.50	11.31	11.29	11.25	11.20	11.11	11.08	10.98	10.87
108	5540	11.50	11.40	11.34	11.30	11.23	11.13	11.04	10.92	10.88
112	5560	11.50	11.47	11.45	11.41	11.28	11.24	11.16	11.08	10.96
116	5580	11.50	11.44	11.39	11.36	11.26	11.21	11.18	11.11	11.03
132	5660	11.50	11.38	11.30	11.27	11.22	11.11	11.05	10.96	10.83
136	5680	11.50	11.41	11.32	11.23	11.13	11.05	10.97	10.87	10.75
140	5700	8.50	8.46	8.41	8.36	8.31	8.22	8.14	8.08	8.01
149	5745	11.50	11.47	11.40	11.34	11.23	11.17	11.09	11.04	10.99
153	5765	11.50	11.49	11.46	11.32	11.26	11.18	11.13	10.99	10.97
157	5785	11.50	11.49	11.41	11.34	11.26	11.17	11.15	11.11	10.99
161	5805	11.50	11.47	11.37	11.23	11.11	10.99	10.89	10.82	10.74
165	5825	11.50	11.48	11.37	11.27	11.15	11.08	11.01	10.88	10.85

802.11n(40M) 5.2G/5.3G/5.5G/5.8G		Max. Rated Avg. Power + Max. Tolerance (dBm)	Average Power (dBm)							
			Data Rate (Mbps)							
CH	Frequency (MHz)		mcs0	mcs1	mcs2	mcs3	mcs4	mcs5	mcs6	mcs7
38	5190	10.50	10.45	10.31	10.22	10.10	10.00	9.98	9.95	9.87
46	5230	10.50	10.46	10.40	10.31	10.24	10.16	10.13	10.07	10.05
54	5270	10.50	10.49	10.42	10.36	10.32	10.18	10.10	10.04	9.97
62	5310	10.50	10.47	10.37	10.24	10.10	10.03	9.91	9.82	9.69
102	5510	10.50	10.29	10.18	10.11	10.08	9.96	9.86	9.74	9.62
110	5550	10.50	10.46	10.44	10.32	10.24	10.19	10.14	10.03	9.98
118	5590	10.50	10.49	10.38	10.28	10.26	10.18	10.04	9.98	9.91
134	5670	10.50	10.34	10.23	10.20	10.18	10.16	10.05	9.97	9.83
151	5755	10.50	10.48	10.44	10.40	10.34	10.28	10.19	10.09	10.06
159	5795	10.50	10.46	10.44	10.31	10.29	10.18	10.16	10.07	10.01

#. Bluetooth conducted power table:

Frequency (MHz)	Avg. (dBm)		
	BDR	4DPSK	8DPSK
2402	5.31	4.11	4.02
2441	7.96	6.27	6.26
2480	6.01	4.28	4.51

Frequency (MHz)	Avg. (dBm)
	BT4.0
2402	-2.48
2442	-0.37
2480	-2.02

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1.4 Test Environment

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

1.5 Operation Description

General:

1. The EUT is controlled by using a Radio Communication Tester (R&S CMU200 & Anritsu MT8820C), 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. Testing head SAR at lowest, middle and highest channel for all bands with Left Tilt /Left Cheek/Right Tilt/Right Cheek conditions.
5. Testing body-worn speech mode SAR (with headset)by separating the EUT and the phantom **15mm** distance when performing GSM850, GSM1900,WCDMA Band II/IV/V. (Both front side & back side)
   Testing body-worn SAR by separating the EUT and the phantom **15mm** distance when performing LTE FDD band IV/VII/XVII and WiFi 5G. (Both front side & back side)
6. Testing hotspot mode SAR by separating the EUT and the phantom **10mm** distance.
   #. The SAR testing for portable devices with wireless router capability is refered as test guidance of **KDB 941225 D06v01** (SAR Evaluation Procedures for Portable Devices with Wireless Router Capabilities).
   #. The following procedures are applicable when the overall device length and width are ≥9 cm x 5 cm respectively. A test separation of 10 mm is required. SAR must be measured for all sides and surfaces with a transmitting antenna located within

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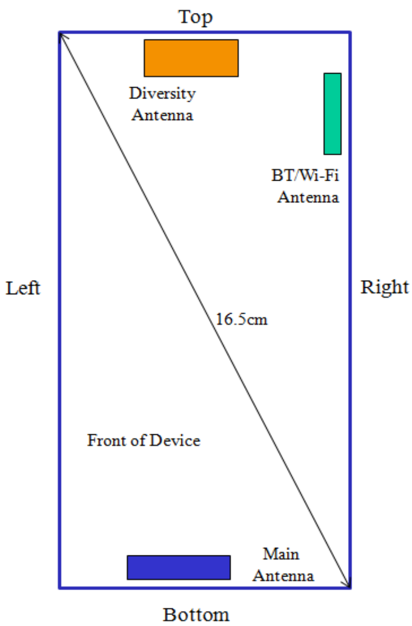
25 mm from that surface or edge, for the data modes, wireless technologies and frequency bands supporting hotspot mode.

\# For WiFi 2.4G (15mm separation): the testing device support mobile hotspot function, the separation distance is **10mm (No need to perform SAR testing with Body worn accessory (15mm separation distance) due to the hotspot mode(10mm separation distance) is more conservative than Body worn accessory mode.).**

Test configurations:

(1) Front side
(2) Back side
(3) Top side.(WWAN antenna to edge distance >25mm_ No SAR measurement is necessary for this configuration)
(4) Bottom side. (WLAN antenna to edge distance >25mm_ No SAR measurement is necessary for this configuration)
(5) Right side. (WWAN antenna to edge distance >25mm_ No SAR measurement is necessary for this configuration)
(6) Left side. (WLAN antenna to edge distance >25mm_ No SAR measurement is necessary for this configuration)



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7. According to **KDB447498 D01v05** – The 1-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, SAR evaluation is not required. **(Max power of Bluetooth = 7.96dBm)**

   When SAR evaluation is not required to be measured, per FCC KDB447498 D01v05, the following equation must be used to estimate the 1g SAR for simultaneous transmission assessment involving that transmitter.

   Estimated SAR = [√f(GHz)/7.5] · [(max. power of channel, mW)/(min. test separation distance, mm)]

   Estimated 10g SAR = [√f(GHz)/18.75] · [(max. power of channel, mW)/(min. test separation distance, mm)]

Mode	Frequency (MHz)	Maximum Power (dBm)	Separation Distance (Body) (mm)	Estimated SAR 1g (Body) (W/kg)
Bluetooth	2441	7.96	15	0.087
Bluetooth	2441	7.96	10	0.130

Mode	Frequency (MHz)	Maximum Power (dBm)	Separation Distance (Body) (mm)	Estimated SAR 10g (Hand) (W/kg)
WiFi b	2462	17.98	5	1.051
Bluetooth	2441	7.96	5	0.104

8. According to **KDB248227 D01v01**-SAR is not required for 802.11 g/HT20/HT40 channels when the maximum average output power is higher than that measured on the corresponding 802.11b channels but increase less than 1/4 dB.
9. According to FCC KDB248227 and October 10, 2012 TCB Workshop, SAR is not required for 802.11 n(20M)/n(40M) channels when the maximum average output power is less than 1/4 dB higher than that measured on the corresponding 802.11a channels.

10. Using **KDB941225 D01v02** to exclude SAR test requirements for HSPA modes due to the maximum average output power of HSPA active is higher than that measured without HSPA using 12.2kbps RMC but increase less than 1/4 dB.
11. LTE modes test according to **FCC KDB 941225 D05v02.**

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

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

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

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

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

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

d. Per Section 5.2.4, Higher order modulations

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

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

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

12. Per **KDB 648474 D04v01**, the device is considered a “phablet’ since its overall diagonal distance is greater than 160mm. Therefore hand SAR tests are required when 1g hotspot SAR scaled up to the maximum output power tolerances is >1.2W/kg. Hand SAR test distance is 0mm.

Response to Inquiry to FCC (Tracking Number 601846):

As stated in FCC KDB Publication 648474, “When hotspot mode applies, 10-g extremity 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.” Hence, if employing power reduction, you should scale to the maximum output power including tolerance for comparison. If the 1-g reported SAR > 1.2 W/kg; then 10-g extremity SAR is required. **If the device has power reduction in hotspot mode and 10-g extremity SAR is required, the power reduction should be used during those SAR tests.** After completing the tests, scaling for reported SAR and simultaneous transmission considerations may be necessary

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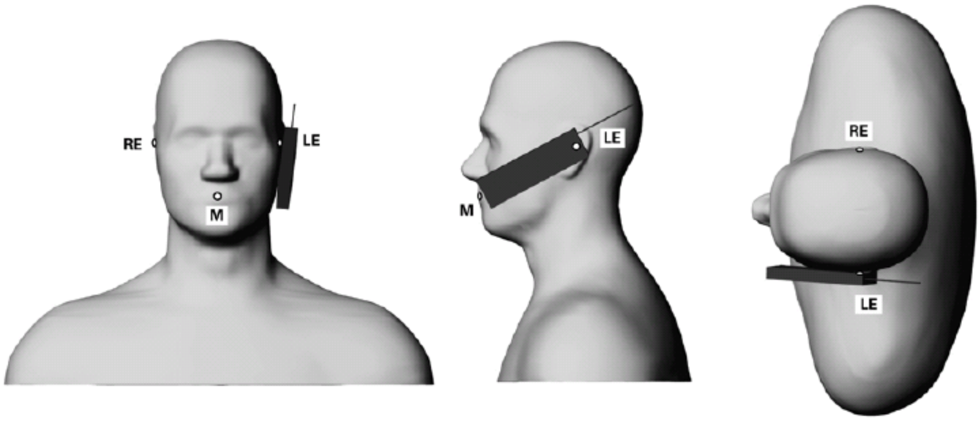
Additional configuration (Head):

13. For highest SAR configuration in this band repeated with external Memory card inside.

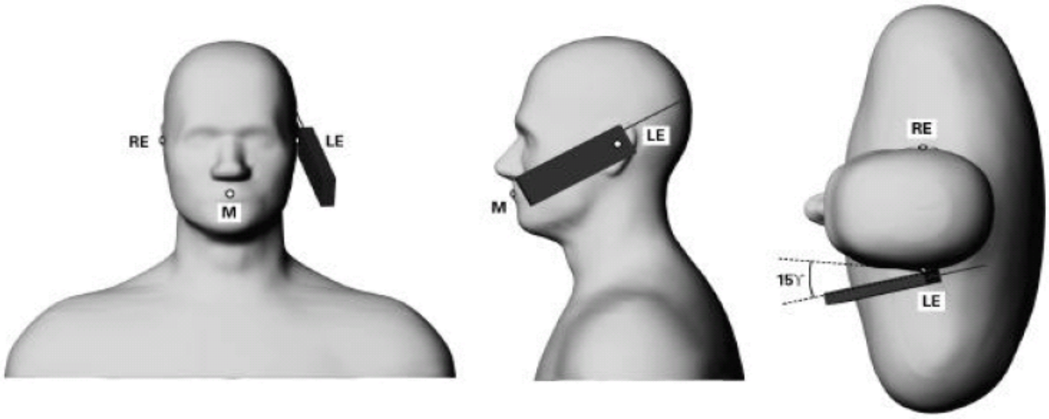
Additional configuration (Body):

14. For highest SAR configuration in this band repeated with external Memory card inside.
15. For highest SAR configuration in this band repeated with Headset (MH410C).

1.6 Positioning Procedure



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.

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1.7 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

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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.

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1.8 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:

1.8.1 Transfer Calibration with Temperature Probes

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

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

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

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

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

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

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

1.8.2 Calibration with Analytical Fields

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

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

- The setup must enable accurate determination of the incident power.

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- The accuracy of the calculated field strength will depend on the assessment of the dielectric parameters of the liquid.
- Due to the small wavelength in liquids with high permittivity, even small setups might be above the resonant cutoff frequencies. The field distribution in the setup must be carefully checked for conformity with the theoretical field distribution.

References

[1] N. Kuster, Q. Balzano, and J.C. Lin, Eds., *Mobile Communications Safety*, Chapman & Hall, London, 1997.

[2] K. Meier, M. Burkhardt, T. Schmid, and N. Kuster, \Broadband calibration of E-field probes in lossy media", *IEEE Transactions on Microwave Theory and Techniques*, vol. 44, no. 10, pp. 1954{1962, Oct. 1996.

[3] K. Jokela, P. Hyysalo, and L. Puranen, \Calibration of specific absorption rate (SAR) probes in waveguide at 900 MHz", *IEEE Transactions on Instrumentation and Measurements*, vol. 47, no. 2, pp. 432{438, Apr. 1998.

1.9 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 $SAR= \sigma (|Ei|^2)/ \rho$ where σ and ρ are the conductivity and mass density of the tissue-simulant.

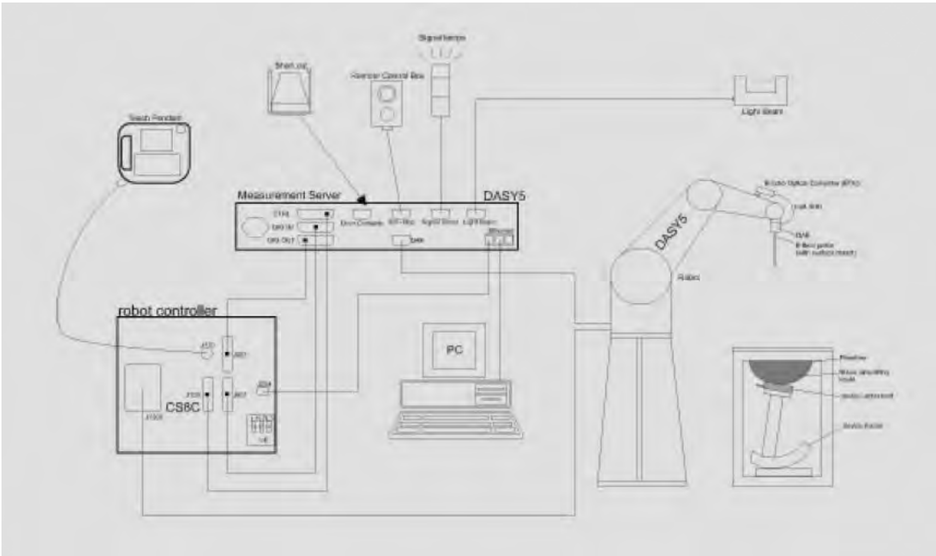

Fig. a A block diagram of the SAR measurement system

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

- A standard high precision 6-axis robot (Staubli RX family) with controller, teach pendant and software. An arm extension is for accommodating the data acquisition electronics (DAE).
- A dosimetric probe, i.e., an isotropic E-field probe optimized and calibrated for usage in tissue simulating liquid. The probe is equipped with an optical surface detector system.
- 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.

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

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1.10 System Components

EX3DV4 E-Field Probe

Construction	Symmetrical design with triangular core Built-in shielding against static charges PEEK enclosure material (resistant to organic solvents, e.g., DGBE)	
Calibration	Basic Broad Band Calibration in air Conversion Factors (CF) for HSL 750/835/1750 /1900/2450/2600/5200/5300/5600/5800 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%.	

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SAM PHANTOM V4.0C

Construction:	The shell corresponds to the specifications of the Specific Anthropomorphic Mannequin (SAM) phantom defined in IEEE 1528-200X, CENELEC 50361 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: 210 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

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1.11 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 KDB865664 D01) from the target SAR values.

These tests were done at 750/835/1750/1900/2450/2600/5200/5300/5600/5800 MHz. The tests were conducted on the same days as the measurement of the DUT. The obtained results from the system accuracy verification are displayed in the table 1. 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.

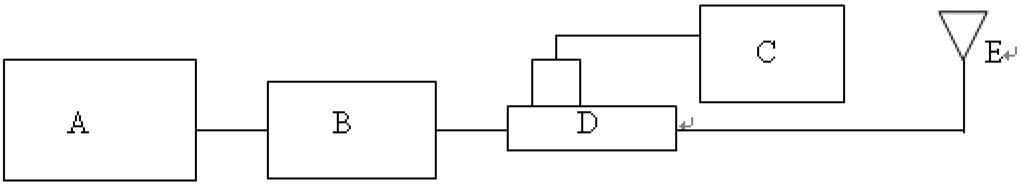
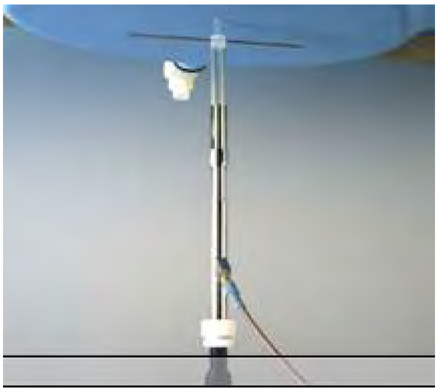


Fig. b The block diagram of system verification

A. Signal Generator
B. Amplifier
C. Power Sensor
D. Dual Directional Coupling
E. Reference Dipole Antenna



Photograph of the Dipole Antenna

Validation Kit	S/N	Frequency (MHz)		Target SAR (1g) (Pin=250mW) (mW/g)	Measured SAR (1g)(mW/g)	Deviation (%)	Measured Date
D750V2	1015	750	Head	2.14	2.01	6.07%	Feb. 05,2014
			Body	2.23	2.1	5.83%	Feb. 15,2014
D835V2	4d156	835	Head	2.48	2.5	-0.81%	Jan. 30,2014
			Body	2.46	2.45	0.41%	Jan. 31,2014
D1750V2	1095	1750	Head	9.01	8.78	2.55%	Feb. 01,2014
			Body	9.5	9.82	-3.37%	
	1008	1750	Head	9.04	8.46	6.42%	Feb. 16,2014
			Body	9.46	9.16	3.17%	Feb. 17,2014
				9.46	9.14	3.38%	Feb. 18,2014
				9.46	8.9	5.92%	Feb. 19,2014
D1900V2	5d173	1900	Head	9.82	9.83	-0.10%	Feb. 04,2014
			Body	10.1	9.98	1.19%	Feb. 05,2014
D2450V2	912	2450	Head	13.5	13.3	1.48%	Feb. 12,2014
			Body	13.2	13.5	-2.27%	
D2600V2	1005	2600	Head	14.7	14.5	1.36%	Feb. 20,2014
			Body	14.3	14.3	0.00%	Feb. 21,2014
					14.4	-0.70%	Feb. 22,2014
D5GHzV2	1104	5200	Head	8.27	8.11	1.93%	Feb. 13,2014
			Body	7.64	7.53	1.44%	
		5300	Head	8.51	8.72	-2.47%	
			Body	7.77	7.72	0.64%	
		5600	Head	8.62	8.49	1.51%	
			Body	8.25	8.23	0.24%	
		5800	Head	8.09	7.95	1.73%	
			Body	7.6	7.56	0.53%	

Table 1. System validation (follow manufacture target value)

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1.12 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 conjuncation 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)

Measured Frequency (MHz)	Tissue Type	Target Dielectric Constant, εr	Target Conductivity, σ (S/m)	Measured Dielectric Constant, εr	Measured Conductivity, σ (S/m)	% dev εr	% dev σ	Measurement Date
709	Head	42.155	0.890	43.981	0.858	-4.33%	3.60%	Feb. 5,2014
710		42.149	0.890	43.788	0.861	-3.89%	3.26%	
711		42.144	0.890	43.722	0.867	-3.74%	2.58%	
750		41.942	0.893	43.374	0.873	-3.41%	2.24%	
709	Body	55.691	0.960	54.683	0.924	1.81%	3.75%	Feb. 15,2014
710		55.687	0.960	54.604	0.925	1.94%	3.65%	
711		55.683	0.960	54.538	0.927	2.06%	3.44%	
750		55.531	0.963	54.444	0.957	1.96%	0.62%	
824.2	Head	41.556	0.899	42.082	0.874	-1.27%	2.80%	Jan. 30,2014
826.4		41.545	0.899	42.057	0.876	-1.23%	2.56%	
835		41.500	0.900	41.947	0.885	-1.08%	1.67%	
836.6		41.500	0.902	40.919	0.887	1.40%	1.66%	
846.6		41.500	0.912	41.798	0.897	-0.72%	1.64%	
848.8		41.500	0.915	41.773	0.899	-0.66%	1.75%	
824.2	Body	55.242	0.969	53.674	0.995	2.84%	-2.67%	Jan. 31,2014
826.4		55.234	0.969	53.656	0.997	2.86%	-2.89%	
835		55.2	0.97	53.585	1.006	2.93%	-3.71%	
836.6		55.195	0.972	53.568	1.009	2.95%	-3.81%	
846.6		55.164	0.984	53.49	1.019	3.03%	-3.56%	
848.8		55.158	0.987	53.473	1.021	3.05%	-3.44%	

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Measured Frequency (MHz)	Tissue Type	Target Dielectric Constant, εr	Target Conductivity, σ (S/m)	Measured Dielectric Constant, εr	Measured Conductivity, σ (S/m)	% dev εr	% dev σ	Measurement Date
1712.4	Head	40.138	1.349	41.248	1.339	-2.77%	0.74%	Feb. 1,2014
1732.4		40.107	1.361	41.158	1.357	-2.62%	0.29%	
1750		40.079	1.371	41.094	1.374	-2.53%	-0.22%	
1752.6		40.075	1.373	41.081	1.377	-2.51%	-0.29%	
1712.4	Body	53.531	1.465	54.244	1.395	-1.33%	4.78%	
1732.4		53.478	1.477	54.197	1.418	-1.34%	3.99%	
1750		53.432	1.488	54.16	1.436	-1.36%	3.49%	
1752.6		53.425	1.49	54.143	1.439	-1.34%	3.42%	
1720	Head	40.126	1.354	38.886	1.363	3.09%	-0.66%	Feb. 16,2014
1732.5		40.107	1.361	38.76	1.372	3.36%	-0.81%	
1745		40.187	1.368	38.711	1.38	3.67%	-0.88%	
1750		40.079	1.371	38.645	1.391	3.58%	-1.46%	
1720	Body	53.511	1.469	55.58	1.424	-3.87%	3.06%	Feb. 17,2014
1732.5		53.478	1.477	55.435	1.454	-3.66%	1.56%	
1745		53.445	1.485	55.411	1.459	-3.68%	1.75%	
1750		53.432	1.488	55.384	1.467	-3.65%	1.41%	
1720		53.511	1.469	55.522	1.426	-3.76%	2.93%	Feb. 18,2014
1732.5		53.478	1.477	55.403	1.455	-3.60%	1.49%	
1745		53.445	1.485	55.275	1.463	-3.42%	1.48%	
1750		53.432	1.488	55.219	1.466	-3.34%	1.48%	
1720		53.511	1.469	55.583	1.423	-3.87%	3.13%	Feb. 19,2014
1732.5		53.478	1.477	55.441	1.452	-3.67%	1.69%	
1745		53.445	1.485	55.416	1.461	-3.69%	1.62%	
1750		53.432	1.488	55.302	1.463	-3.50%	1.68%	

Measured Frequency (MHz)	Tissue Type	Target Dielectric Constant, εr	Target Conductivity, σ (S/m)	Measured Dielectric Constant, εr	Measured Conductivity, σ (S/m)	% dev εr	% dev σ	Measurement Date
1850.2	Head	40.000	1.400	39.137	1.332	2.16%	4.86%	Feb. 4,2014
1852.4		40.000	1.400	39.127	1.334	2.18%	4.71%	
1880		40.000	1.400	39.019	1.36	2.45%	2.86%	
1900		40.000	1.400	38.931	1.38	2.67%	1.43%	
1907.6		40.000	1.400	38.898	1.388	2.75%	0.86%	
1909.8		40.000	1.400	38.891	1.389	2.77%	0.79%	
1850.2	Body	53.300	1.520	54.23	1.476	-1.74%	2.89%	Feb. 5,2014
1852.4		53.300	1.520	54.222	1.479	-1.73%	2.70%	
1880		53.300	1.520	54.138	1.509	-1.57%	0.72%	
1900		53.300	1.520	54.067	1.532	-1.44%	-0.79%	
1907.6		53.300	1.520	54.041	1.541	-1.39%	-1.38%	
1909.8		53.300	1.520	54.036	1.544	-1.38%	-1.58%	
2412	Head	39.268	1.766	39.73	1.802	-1.18%	-2.04%	Feb. 12,2014
2437		39.223	1.788	39.63	1.832	-1.04%	-2.46%	
2450		39.200	1.800	39.586	1.849	-0.98%	-2.72%	
2462		39.185	1.813	39.541	1.863	-0.91%	-2.76%	
2412	Body	52.751	1.914	51.136	1.935	3.06%	-1.10%	Feb. 12,2014
2437		52.717	1.938	51.076	1.972	3.11%	-1.75%	
2450		52.700	1.950	51.052	1.99	3.13%	-2.05%	
2462		52.685	1.967	51.01	2.005	3.18%	-1.93%	
2510	Head	39.124	1.865	40.164	1.886	-2.66%	-1.13%	Feb. 20,2014
2535		39.092	1.893	40.059	1.906	-2.47%	-0.69%	
2560		39.060	1.920	39.999	1.948	-2.40%	-1.46%	
2600		39.009	1.964	39.635	2.003	-1.60%	-1.99%	
2510	Body	52.624	2.035	51.072	2.12	2.95%	-4.18%	Feb. 21,2014
2535		52.592	2.071	50.928	2.148	3.16%	-3.72%	
2560		52.560	2.106	50.8	2.163	3.35%	-2.71%	
2600		52.509	2.163	50.622	2.224	3.59%	-2.82%	
2510	Body	52.624	2.035	51.022	2.101	3.04%	-3.24%	Feb. 22,2014
2535		52.592	2.071	50.898	2.144	3.22%	-3.52%	
2560		52.560	2.106	50.787	2.161	3.37%	-2.61%	
2600		52.509	2.163	50.662	2.234	3.52%	-3.28%	

Measured Frequency (MHz)	Tissue Type	Target Dielectric Constant, εr	Target Conductivity, σ (S/m)	Measured Dielectric Constant, εr	Measured Conductivity, σ (S/m)	% dev εr	% dev σ	Measurement Date
5180	Head	36.009	4.635	36.151	4.582	-0.40%	1.13%	Feb. 13,2014
5200		35.986	4.655	36.097	4.612	-0.31%	0.92%	
5220		35.963	4.676	36.083	4.647	-0.33%	0.61%	
5280		35.894	4.737	35.914	4.698	-0.05%	0.82%	
5300		35.871	4.758	35.85	4.726	0.06%	0.66%	
5180	Body	49.041	5.276	48.476	5.144	1.15%	2.50%	Feb. 13,2014
5200		49.014	5.299	48.422	5.167	1.21%	2.50%	
5220		48.987	5.323	48.357	5.202	1.29%	2.27%	
5280		48.906	5.393	48.207	5.291	1.43%	1.89%	
5300		48.879	5.416	48.156	5.314	1.48%	1.88%	
5540	Head	35.597	5.004	35.316	5.012	0.79%	-0.16%	Feb. 13,2014
5560		35.574	5.024	35.284	5.031	0.82%	-0.14%	
5600		35.529	5.065	35.164	5.075	1.03%	-0.20%	
5660		35.460	5.127	35.063	5.147	1.12%	-0.39%	
5540	Body	48.553	5.696	47.532	5.67	2.10%	0.46%	
5560		48.526	5.720	47.477	5.699	2.16%	0.37%	
5600		48.471	5.766	47.391	5.754	2.23%	0.21%	
5660		48.390	5.837	47.232	5.845	2.39%	-0.14%	
5765	Head	35.340	5.234	34.788	5.27	1.56%	-0.69%	
5785		35.317	5.255	34.751	5.298	1.60%	-0.83%	
5800		35.3	5.27	34.725	5.309	1.63%	-0.74%	
5805		35.294	5.275	34.702	5.315	1.68%	-0.76%	
5765	Body	48.248	5.959	46.968	6	2.65%	-0.69%	
5785		48.220	5.982	46.926	6.031	2.68%	-0.81%	
5800		48.2	6	46.896	6.046	2.71%	-0.77%	
5805		48.193	6.006	46.878	6.054	2.73%	-0.80%	

Table 2. Dielectric Parameters of Tissue Simulant Fluid

The composition of the brain tissue simulating liquid:

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

Simulating Liquids for 5 GHz, Manufactured by SPEAG:

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

Table 3. Recipes for tissue simulating liquid

1.13 Test Standards and Limits

According to FCC 47CFR §2.1093(d) The limits to be used for evaluation are based generally on criteria published by the American National Standards Institute (ANSI) for localized specific absorption rate (“SAR”) in Section 4.2 of “IEEE Standard for Safety Levels with Respect to Human Exposure to Radio Frequency Electromagnetic Fields, 3 kHz to 300 GHz,” ANSI/IEEE C95.1–1992, Copyright 1992 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.

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(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.

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2. Summary of Results

GSM 850 MHz

Mode	Position	Distance (mm)	CH	Freq. (MHz)	Max. Rated Avg. Power + Max. Tolerance (dBm)	Measured Avg. Power (dBm)	Scaling	Averaged SAR over 1g (W/kg)		Plot page
								Measured	Reported	
GSM (Head)	RE Cheek	-	128	824.2	33.5	33.1	9.65%	0.323	0.354	-
	RE Cheek	-	190	836.6	33.5	33.1	9.65%	0.411	0.451	-
	RE Cheek	-	251	848.8	33.5	33	12.20%	0.405	0.454	-
	RE Tilt	-	190	836.6	33.5	33.1	9.65%	0.282	0.309	-
	LE Cheek	-	190	836.6	33.5	33.1	9.65%	0.386	0.423	-
	LE Tilt	-	190	836.6	33.5	33.1	9.65%	0.254	0.279	-
GSM+GPRS DTM_3up (Head)	RE Cheek	-	128	824.2	28	27.9	2.33%	0.3	0.307	-
	RE Cheek	-	190	836.6	28	27.9	2.33%	0.391	0.400	-
	RE Cheek	-	251	848.8	28	27.9	2.33%	0.46	0.471	118
	RE Cheek –With Memory Card	-	251	848.8	28	27.9	2.33%	0.419	0.429	-
	RE Tilt	-	190	836.6	28	27.9	2.33%	0.244	0.250	-
	LE Cheek	-	190	836.6	28	27.9	2.33%	0.349	0.357	-
	LE Tilt	-	190	836.6	28	27.9	2.33%	0.226	0.231	-
GSM (Body-Worn speech mode)	Front side	15mm	190	836.6	33.5	33.1	9.65%	0.264	0.289	-
	Back side	15mm	128	824.2	33.5	33.1	9.65%	0.419	0.459	120
	Back side	15mm	190	836.6	33.5	33.1	9.65%	0.403	0.442	-
	Back side	15mm	251	848.8	33.5	33	12.20%	0.408	0.458	-
GSM+GPRS DTM_3up (Body-Worn speech mode)	Front side	15mm	190	836.6	28	27.9	2.33%	0.373	0.382	-
	Back side	15mm	128	824.2	28	27.9	2.33%	0.37	0.379	-
	Back side	15mm	190	836.6	28	27.9	2.33%	0.408	0.418	-
	Back side	15mm	251	848.8	28	27.9	2.33%	0.447	0.457	-
GPRS (Hotspot) (1Dn4UP)	Front side	10mm	128	824.2	28	27.8	4.71%	0.457	0.479	-
	Front side	10mm	190	836.6	28	27.7	7.15%	0.523	0.560	-
	Front side	10mm	251	848.8	28	27.6	9.65%	0.552	0.605	121
	Back side	10mm	190	836.6	28	27.7	7.15%	0.474	0.508	-
	Bottom side	10mm	190	836.6	28	27.7	7.15%	0.161	0.173	-
	Left side	10mm	190	836.6	28	27.7	7.15%	0.502	0.538	-

Using KDB941225 D03v01 and KDB941225 D04v01 to exclude SAR test requirements for EDGE modes due to the source-based time-averaged output power for EDGE mode is lower than that in the GPRS mode.

According to KDB447498 D01v05 the 1-g SAR for the highest output channel is less than 0.8 W/kg, where the transmission band corresponding to all channels is ≤ 100 MHz, testing for the other channels is not required.

GSM 1900 MHz

Mode	Position	Distance (mm)	CH	Freq. (MHz)	Max. Rated Avg. Power + Max. Tolerance	Measured Avg. Power (dBm)	Scaling	Averaged SAR over 1g (W/kg)		Plot page
								Measured	Reported	
GSM (Head)	RE Cheek	-	512	1850.2	31	30.8	4.71%	0.098	0.103	-
	RE Cheek	-	661	1880	31	30.6	9.65%	0.106	0.116	-
	RE Cheek	-	810	1909.8	31	30.5	12.20%	0.126	0.141	-
	RE Tilt	-	661	1880	31	30.6	9.65%	0.026	0.029	-
	LE Cheek	-	661	1880	31	30.6	9.65%	0.081	0.089	-
	LE Tilt	-	661	1880	31	30.6	9.65%	0.028	0.031	-
GSM+GPRS DTM_3up (Head)	RE Cheek	-	512	1850.2	28	27.9	2.33%	0.164	0.168	-
	RE Cheek	-	661	1880	28	27.8	4.71%	0.171	0.179	122
	RE Cheek	-	810	1909.8	28	27.9	2.33%	0.158	0.162	-
	RE Tilt	-	661	1880	28	27.8	4.71%	0.034	0.036	-
	LE Cheek	-	661	1880	28	27.8	4.71%	0.081	0.085	-
	LE Tilt	-	661	1880	28	27.8	4.71%	0.04	0.042	-
GSM (Body-worn speech mode)	Front side	15mm	512	1850.2	31	30.8	4.71%	0.596	0.624	-
	Front side	15mm	661	1880	31	30.6	9.65%	0.574	0.629	-
	Front side	15mm	810	1909.8	31	30.5	12.20%	0.665	0.746	-
	Back side	15mm	661	1880	31	30.6	9.65%	0.453	0.497	-
GSM+GPRS DTM_3up (Body-worn speech mode)	Front side	15mm	512	1850.2	28	27.9	2.33%	1.12	1.146	123
	Front side	15mm	661	1880	28	27.8	4.71%	1.06	1.110	-
	Front side	15mm	810	1909.8	28	27.9	2.33%	0.92	0.941	-
	Front side*	15mm	512	1850.2	28	27.9	2.33%	1.1	1.126	-
	Back side	15mm	512	1850.2	28	27.9	2.33%	0.775	0.793	-
	Back side	15mm	661	1880	28	27.8	4.71%	0.768	0.804	-
	Back side	15mm	810	1909.8	28	27.9	2.33%	0.706	0.722	-
GPRS (Hotspot) (1Dn4UP)	Front side	10mm	661	1880	21	21	0.00%	0.612	0.612	-
	Back side	10mm	661	1880	21	21	0.00%	0.412	0.412	-
	Bottom side	10mm	512	1850.2	21	21	0.00%	1.01	1.010	124
	Bottom side	10mm	661	1880	21	21	0.00%	0.918	0.918	-
	Bottom side	10mm	810	1909.8	21	21	0.00%	0.77	0.770	-
	Bottom side*	10mm	512	1850.2	21	21	0.00%	1.01	1.010	125
	Left side	10mm	661	1880	21	21	0.00%	0.017	0.017	-

* - repeated at the highest SAR measurement according to the FCC KDB 865664 D01v01

Mode	Position	Distance (mm)	CH	Freq. (MHz)	Max. Rated Avg. Power + Max. Tolerance (dBm)	Measured Avg. Power (dBm)	Scaling	Averaged SAR over 10g (W/kg)		Plot page
								Measured	Reported	
GPRS (Hand) (1Dn4UP)	Front side	0mm	661	1880	21	21	0.00%	1.04	1.040	126
	Back side	0mm	661	1880	21	21	0.00%	0.473	0.473	-
	Bottom side	0mm	512	1850.2	21	21	0.00%	0.631	0.631	-
	Bottom side	0mm	661	1880	21	21	0.00%	0.638	0.638	-
	Bottom side	0mm	810	1909.8	21	21	0.00%	0.679	0.679	-

Using KDB941225 D03v01 and KDB941225 D04v01 to exclude SAR test requirements for EDGE modes due to the source-based time-averaged output power for EDGE mode is lower than that in the GPRS mode.

According to KDB447498 D01v05 the 1-g SAR for the highest output channel is less than 0.8 W/kg, where the transmission band corresponding to all channels is ≤ 100 MHz, testing for the other channels is not required.

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WCDMA Band II

Mode	Position	Distance (mm)	CH	Freq. (MHz)	Max. Rated Avg. Power + Max. Tolerance (dBm)	Measured Avg. Power (dBm)	Scaling	Averaged SAR over 1g (W/kg)		Plot page
								Measured	Reported	
R99 (Head)	RE Cheek	-	9262	1852.4	24	23.77	5.44%	0.17	0.179	-
	RE Cheek	-	9400	1880	24	23.74	6.17%	0.187	0.199	-
	RE Cheek	-	9538	1907.6	24	23.67	7.89%	0.202	0.218	127
	RE Tilt	-	9400	1880	24	23.74	6.17%	0.03	0.032	-
	LE Cheek	-	9400	1880	24	23.74	6.17%	0.078	0.083	-
	LE Tilt	-	9400	1880	24	23.74	6.17%	0.044	0.047	-
Body-worn (speech mode)	Front side	15mm	9262	1852.4	24	23.77	5.44%	1.13	1.191	128
	Front side	15mm	9400	1880	24	23.74	6.17%	1.07	1.136	-
	Front side	15mm	9538	1907.6	24	23.67	7.89%	1.01	1.090	-
	Front side*	15mm	9262	1852.4	24	23.77	5.44%	1.11	1.170	-
	Back side	15mm	9262	1852.4	24	23.77	5.44%	0.786	0.829	-
	Back side	15mm	9400	1880	24	23.74	6.17%	0.775	0.823	-
	Back side	15mm	9538	1907.6	24	23.67	7.89%	0.706	0.762	-
Hotspot	Front side	10mm	9400	1880	18	17.74	6.17%	0.568	0.603	-
	Back side	10mm	9400	1880	18	17.74	6.17%	0.341	0.362	-
	Bottom side	10mm	9262	1852.4	18	17.76	5.68%	0.865	0.914	-
	Bottom side	10mm	9400	1880	18	17.74	6.17%	0.782	0.830	-
	Bottom side	10mm	9538	1907.6	18	17.71	6.91%	0.738	0.789	-
	Bottom side*	10mm	9262	1852.4	18	17.76	5.68%	0.88	0.930	129
	Left side	10mm	9400	1880	18	17.74	6.17%	0.02	0.021	-

* - repeated at the highest SAR measurement according to the KDB 865664 D01v01

Mode	Position	Distance (mm)	CH	Freq. (MHz)	Max. Rated Avg. Power + Max. Tolerance (dBm)	Measured Avg. Power (dBm)	Scaling	Averaged SAR over 10g (W/kg)		Plot page
								Measured	Reported	
R99 (Hand)	Front side	0mm	9400	1880	18	17.74	6.17%	0.985	1.046	130
	Back side	0mm	9400	1880	18	17.74	6.17%	0.406	0.431	-
	Bottom side	0mm	9262	1852.4	18	17.76	5.68%	0.585	0.618	-
	Bottom side	0mm	9400	1880	18	17.74	6.17%	0.664	0.705	-
	Bottom side	0mm	9538	1907.6	18	17.71	6.91%	0.796	0.851	-

Using KDB941225 D01v02 to exclude SAR test requirements for HSPA modes due to the maximum average output power of HSPA active is higher than that measured without HSPA using 12.2kbps RMC but increase less than 1/4 dB.

According to KDB447498 D01v05 the 1-g SAR for the highest output channel is less than 0.8 W/kg, where the transmission band corresponding to all channels is ≤ 100 MHz, testing for the other channels is not required.

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WCDMA Band IV

Mode	Position	Distance (mm)	CH	Freq. (MHz)	Max. Rated Avg. Power + Max. Tolerance (dBm)	Measured Avg. Power (dBm)	Scaling	Averaged SAR over 1g (W/kg)		Plot page
								Measured	Reported	
R99 (Head)	RE Cheek	-	1312	1712.4	22.3	22.02	6.66%	0.167	0.178	131
	RE Cheek	-	1412	1732.4	22.3	21.95	8.39%	0.154	0.167	-
	RE Cheek	-	1513	1752.6	22.3	22.17	3.04%	0.147	0.151	-
	RE Tilt	-	1412	1732.4	22.3	21.95	8.39%	0.058	0.063	-
	LE Cheek	-	1412	1732.4	22.3	21.95	8.39%	0.113	0.122	-
	LE Tilt	-	1412	1732.4	22.3	21.95	8.39%	0.028	0.030	-
Body-worn (speech mode)	Front side	15mm	1312	1712.4	22.3	22.02	6.66%	0.995	1.061	-
	Front side	15mm	1412	1732.4	22.3	21.95	8.39%	1.07	1.160	-
	Front side	15mm	1513	1752.6	22.3	22.17	3.04%	1.14	1.175	132
	Front side*	15mm	1513	1752.6	22.3	22.17	3.04%	1.14	1.175	133
	Back side	15mm	1412	1732.4	22.3	21.95	8.39%	0.716	0.776	-
Hotspot	Front side	10mm	1312	1712.4	18	17.92	1.86%	0.75	0.764	-
	Front side	10mm	1412	1732.4	18	17.86	3.28%	0.817	0.844	-
	Front side	10mm	1513	1752.6	18	17.98	0.46%	0.905	0.909	-
	Back side	10mm	1412	1732.4	18	17.86	3.28%	0.536	0.554	-
	Bottom side	10mm	1312	1712.4	18	17.92	1.86%	0.796	0.811	-
	Bottom side	10mm	1412	1732.4	18	17.86	3.28%	0.92	0.950	-
	Bottom side	10mm	1513	1752.6	18	17.98	0.46%	1.08	1.085	134
	Bottom side*	10mm	1513	1752.6	18	17.98	0.46%	1.08	1.085	135
	Left side	10mm	1412	1732.4	18	17.86	3.28%	0.072	0.074	-

* - repeated at the highest SAR measurement according to the KDB 865664 D01v01

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Mode	Position	Distance (mm)	CH	Freq. (MHz)	Max. Rated Avg. Power + Max. Tolerance (dBm)	Measured Avg. Power (dBm)	Scaling	Averaged SAR over 10g (W/kg)		Plot page
								Measured	Reported	
R99 (Hand)	Front side	0mm	1312	1712.4	18	17.92	1.86%	1.24	1.263	-
	Front side	0mm	1412	1732.4	18	17.86	3.28%	1.25	1.291	136
	Front side	0mm	1513	1752.6	18	17.98	0.46%	1.28	1.286	-
	Back side	0mm	1412	1732.4	18	17.86	3.28%	0.557	0.575	-
	Bottom side	0mm	1312	1712.4	18	17.92	1.86%	0.454	0.462	-
	Bottom side	0mm	1412	1732.4	18	17.86	3.28%	0.456	0.471	-
	Bottom side	0mm	1513	1752.6	18	17.98	0.46%	0.494	0.496	-

Using KDB941225 D01v02 to exclude SAR test requirements for HSPA modes due to the maximum average output power of HSPA active is higher than that measured without HSPA using 12.2kbps RMC but increase less than 1/4 dB.

According to KDB447498 D01v05 the 1-g SAR for the highest output channel is less than 0.8 W/kg, where the transmission band corresponding to all channels is ≤ 100 MHz, testing for the other channels is not required.

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WCDMA Band V

Mode	Position	Distance (mm)	CH	Freq. (MHz)	Max. Rated Avg. Power + Max. Tolerance (dBm)	Measured Avg. Power (dBm)	Scaling	Averaged SAR over 1g (W/kg)		Plot page
								Measured	Reported	
R99 (Head)	RE Cheek	-	4132	826.4	24.5	24.30	4.71%	0.399	0.418	-
	RE Cheek	-	4183	836.6	24.5	24.16	8.14%	0.406	0.439	-
	RE Cheek	-	4233	846.6	24.5	24.26	5.68%	0.429	0.453	137
	RE Tilt	-	4183	836.6	24.5	24.16	8.14%	0.292	0.316	-
	LE Cheek	-	4183	836.6	24.5	24.16	8.14%	0.376	0.407	-
	LE Tilt	-	4183	836.6	24.5	24.16	8.14%	0.273	0.295	-
Body-worn (speech mode)	Front side	15mm	4132	826.4	24.5	24.30	4.71%	0.408	0.427	138
	Front side	15mm	4183	836.6	24.5	24.16	8.14%	0.394	0.426	-
	Front side	15mm	4233	846.6	24.5	24.26	5.68%	0.367	0.388	-
	Back side	15mm	4183	836.6	24.5	24.16	8.14%	0.392	0.424	-
Hotspot	Front side	10mm	4183	836.6	24.5	24.16	8.14%	0.484	0.523	-
	Back side	10mm	4183	836.6	24.5	24.16	8.14%	0.503	0.544	-
	Bottom side	10mm	4183	836.6	24.5	24.16	8.14%	0.091	0.098	-
	Left side	10mm	4132	826.4	24.5	24.30	4.71%	0.513	0.537	-
	Left side	10mm	4183	836.6	24.5	24.16	8.14%	0.508	0.549	139
	Left side	10mm	4233	846.6	24.5	24.26	5.68%	0.489	0.517	-

* - repeated at the highest SAR measurement according to the FCC KDB 865664 D01v01

\# Using KDB941225 D01v02 to exclude SAR test requirements for HSPA modes due to the maximum average output power of HSPA active is higher than that measured without HSPA using 12.2kbps RMC but increase less than 1/4 dB.

\# According to KDB447498 D01v05 the 1-g SAR for the highest output channel is less than 0.8 W/kg, where the transmission band corresponding to all channels is ≤ 100 MHz, testing for the other channels is not required.

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LTE FDD Band IV

Mode	Bandwidth (MHz)	Modulation	RB Size	RB start	Position	Distance (mm)	CH	Freq. (MHz)	Max. Rated Avg. Power + Max. Tolerance (dBm)	Measured Avg. Power (dBm)	Scaling	Averaged SAR over 1g (W/kg)		Plot page
												Measured	Reported	
LTE Band 4 (Head)	20MHz	QPSK	1 RB	0	RE Cheek	-	20050	1720	22.5	22.29	4.95%	0.152	0.160	-
					RE Cheek	-	20175	1732.5	22.5	22.43	1.62%	0.172	0.175	140
					RE Cheek	-	20300	1745	22.5	22.43	1.62%	0.169	0.172	-
					RE Tilt	-	20175	1732.5	22.5	22.43	1.62%	0.041	0.042	-
					RE Tilt	-	20300	1745	22.5	22.43	1.62%	0.053	0.054	-
					LE Cheek	-	20175	1732.5	22.5	22.43	1.62%	0.137	0.139	-
					LE Cheek	-	20300	1745	22.5	22.43	1.62%	0.122	0.124	-
					LE Tilt	-	20175	1732.5	22.5	22.43	1.62%	0.028	0.028	-
					LE Tilt	-	20300	1745	22.5	22.43	1.62%	0.03	0.030	-
			50 RB	0	RE Cheek	-	20175	1732.5	22	21.47	12.98%	0.135	0.153	-
					RE Tilt	-	20175	1732.5	22	21.47	12.98%	0.035	0.040	-
					LE Cheek	-	20175	1732.5	22	21.47	12.98%	0.105	0.119	-
					LE Tilt	-	20175	1732.5	22	21.47	12.98%	0.022	0.025	-
			100 RB		RE Cheek	-	20300	1745	21.5	21.38	2.80%	0.124	0.127	-
					RE Tilt	-	20300	1745	21.5	21.38	2.80%	0.04	0.041	-
					LE Cheek	-	20300	1745	21.5	21.38	2.80%	0.088	0.090	-
					LE Tilt	-	20300	1745	21.5	21.38	2.80%	0.021	0.022	-
LTE Band 4 (Body-Worn)	20MHz	QPSK	1 RB	0	Front side	15mm	20050	1720	22.5	22.29	4.95%	1.03	1.081	-
					Front side	15mm	20175	1732.5	22.5	22.43	1.62%	1.26	1.280	141
					Front side	15mm	20300	1745	22.5	22.43	1.62%	1.22	1.240	-
					Front side -with memory card	15mm	20175	1732.5	22.5	22.43	1.62%	1.17	1.189	-
					Front side -with headset	15mm	20175	1732.5	22.5	22.43	1.62%	1.09	1.108	-
					Front side*	15mm	20175	1732.5	22.5	22.43	1.62%	1.25	1.270	-
					Back side	15mm	20050	1720	22.5	22.29	4.95%	0.732	0.768	-
					Back side	15mm	20175	1732.5	22.5	22.43	1.62%	0.831	0.845	-
					Back side	15mm	20300	1745	22.5	22.43	1.62%	0.847	0.861	-
			50 RB	0	Front side	15mm	20050	1720	22	21.38	15.35%	0.851	0.982	-
					Front side	15mm	20175	1732.5	22	21.47	12.98%	0.967	1.093	-
					Front side	15mm	20300	1745	22	21.45	13.50%	0.903	1.025	-
					Back side	15mm	20175	1732.5	22	21.47	12.98%	0.652	0.737	-
			100 RB		Front side	15mm	20050	1720	21.5	21.35	3.51%	0.836	0.865	-
					Front side	15mm	20175	1732.5	21.5	21.33	3.99%	0.92	0.957	-
					Front side	15mm	20300	1745	21.5	21.38	2.80%	0.91	0.935	-
					Back side	15mm	20300	1745	21.5	21.38	2.80%	0.638	0.656	-

Mode	Bandwidth (MHz)	Modulation	RB Size	RB start	Position	Distance (mm)	CH	Freq. (MHz)	Max. Rated Avg. Power + Max. Tolerance (dBm)	Measured Avg. Power (dBm)	Scaling	Averaged SAR over 1g (W/kg)		Plot page
												Measured	Reported	
LTE Band 4 (Hotspot)	20MHz	QPSK	1 RB	99	Front side	10mm	20050	1720	19	18.88	2.80%	0.868	0.892	-
					Front side	10mm	20175	1732.5	19	18.92	1.86%	0.964	0.982	-
					Front side	10mm	20300	1745	19	18.85	3.51%	1.01	1.045	-
					Back side	10mm	20175	1732.5	19	18.92	1.86%	0.609	0.620	-
					Bottom side	10mm	20050	1720	19	18.88	2.80%	1.01	1.038	-
					Bottom side	10mm	20175	1732.5	19	18.92	1.86%	1.14	1.161	-
					Bottom side	10mm	20300	1745	19	18.85	3.51%	1.2	1.242	-
					Left side	10mm	20175	1732.5	19	18.92	1.86%	0.097	0.099	-
			50 RB	0	Front side	10mm	20050	1720	19	18.93	1.62%	0.914	0.929	-
					Front side	10mm	20300	1745	19	18.82	4.23%	1.04	1.084	-
					Back side	10mm	20050	1720	19	18.93	1.62%	0.581	0.590	-
					Bottom side	10mm	20050	1720	19	18.93	1.62%	1.08	1.098	-
					Bottom side	10mm	20300	1745	19	18.82	4.23%	1.26	1.313	-
					Left side	10mm	20050	1720	19	18.93	1.62%	0.093	0.095	-
				50	Front side	10mm	20175	1732.5	19	18.89	2.57%	1.02	1.046	-
					Bottom side	10mm	20175	1732.5	19	18.89	2.57%	1.15	1.179	-
			100 RB		Front side	10mm	20050	1720	19	18.89	2.57%	0.937	0.961	-
					Front side	10mm	20175	1732.5	19	18.78	5.20%	0.99	1.041	-
					Front side	10mm	20300	1745	19	18.81	4.47%	1.04	1.087	-
					Back side	10mm	20050	1720	19	18.89	2.57%	0.583	0.598	-
					Bottom side	10mm	20050	1720	19	18.89	2.57%	1.12	1.149	-
					Bottom side	10mm	20175	1732.5	19	18.78	5.20%	1.18	1.241	-
					Bottom side	10mm	20300	1745	19	18.81	4.47%	1.29	1.348	142
					Bottom side -with memory card	10mm	20300	1745	19	18.81	4.47%	1.24	1.295	-
					Bottom side -with headset	10mm	20300	1745	19	18.81	4.47%	1.26	1.316	-
					Bottom side*	10mm	20300	1745	19	18.81	4.47%	1.28	1.337	-
					Left side	10mm	20050	1720	19	18.89	2.57%	0.095	0.097	-

* - repeated at the highest SAR measurement according to the FCC KDB 865664 D01v01

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Mode	Bandwidth (MHz)	Modulation	RB Size	RB start	Position	Distance (mm)	CH	Freq. (MHz)	Max. Rated Avg. Power + Max. Tolerance (dBm)	Measured Avg. Power (dBm)	Scaling	Averaged SAR over 10g (W/kg) Measured	Averaged SAR over 10g (W/kg) Reported	Plot page
LTE Band 4 (Hand)	20MHz	QPSK	1 RB	0	Front side	-	20050	1720	19	18.88	2.80%	1.4	1.439	-
					Front side	-	20175	1732.5	19	18.92	1.86%	1.44	1.467	-
					Front side	-	20300	1745	19	18.85	3.51%	1.44	1.491	-
					Back side	-	20175	1732.5	19	18.92	1.86%	0.772	0.786	-
					Bottom side	-	20050	1720	19	18.88	2.80%	0.647	0.665	-
					Bottom side	-	20175	1732.5	19	18.92	1.86%	0.705	0.718	-
					Bottom side	-	20300	1745	19	18.85	3.51%	0.75	0.776	-
			50 RB	0	Front side	-	20050	1720	19	18.93	1.62%	1.46	1.484	-
					Front side	-	20300	1745	19	18.82	4.23%	1.5	1.563	143
					Back side	-	20050	1720	19	18.93	1.62%	0.747	0.759	-
					Bottom side	-	20050	1720	19	18.93	1.62%	0.697	0.708	-
					Bottom side	-	20300	1745	19	18.82	4.23%	0.732	0.763	-
				50	Front side	-	20175	1732.5	19	18.89	2.57%	1.47	1.508	-
					Bottom side	-	20175	1732.5	19	18.89	2.57%	0.657	0.674	-
			100 RB		Front side	-	20050	1720	19	18.89	2.57%	1.45	1.487	-
					Front side	-	20175	1732.5	19	18.78	5.20%	1.46	1.536	-
					Front side	-	20300	1745	19	18.81	4.47%	1.45	1.515	-
					Back side	-	20050	1720	19	18.89	2.57%	0.748	0.767	-
					Bottom side	-	20050	1720	19	18.89	2.57%	0.686	0.704	-
					Bottom side	-	20175	1732.5	19	18.78	5.20%	0.648	0.682	-
					Bottom side	-	20300	1745	19	18.81	4.47%	0.69	0.721	-

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LTE FDD Band VII

Mode	Bandwidth (MHz)	Modulation	RB Size	RB start	Position	Distance (mm)	CH	Freq. (MHz)	Max. Rated Avg. Power + Max. Tolerance (dBm)	Measured Avg. Power (dBm)	Scaling	Averaged SAR over 1g (W/kg)		Plot page
												Measured	Reported	
LTE Band 7 (Head)	20MHz	QPSK	1 RB	99	RE Cheek	-	21350	2560	23	22.96	0.93%	0.119	0.120	-
					RE Tilt	-	21350	2560	23	22.96	0.93%	0.027	0.027	-
					LE Cheek	-	21350	2560	23	22.96	0.93%	0.107	0.108	-
					LE Tilt	-	21350	2560	23	22.96	0.93%	0.05	0.050	-
			50 RB	50	RE Cheek	-	21350	2560	22.5	21.97	12.98%	0.096	0.108	-
					RE Tilt	-	21350	2560	22.5	21.97	12.98%	0.023	0.026	-
					LE Cheek	-	21350	2560	22.5	21.97	12.98%	0.089	0.101	-
					LE Tilt	-	21350	2560	22.5	21.97	12.98%	0.042	0.047	-
			100 RB		RE Cheek	-	20850	2510	22	21.78	5.20%	0.132	0.139	144
					RE Cheek	-	21100	2535	22	21.67	7.89%	0.114	0.123	-
					RE Cheek	-	21350	2560	22	21.87	3.04%	0.098	0.101	-
					RE Tilt	-	21350	2560	22	21.87	3.04%	0.025	0.026	-
					LE Cheek	-	21350	2560	22	21.87	3.04%	0.093	0.096	-
					LE Tilt	-	21350	2560	22	21.87	3.04%	0.044	0.045	-
LTE Band 7 (Body-Worn)	20MHz	QPSK	1 RB	99	Front side	15mm	21350	2560	23	22.96	0.93%	0.496	0.501	-
					Back side	15mm	20850	2510	23	22.68	7.65%	0.771	0.830	145
					Back side	15mm	21100	2535	23	22.6	9.65%	0.611	0.670	-
					Back side	15mm	21350	2560	23	22.96	0.93%	0.568	0.573	-
					Back side*	15mm	20850	2510	23	22.68	7.65%	0.747	0.804	-
			50 RB	50	Front side	15mm	21350	2560	22.5	21.97	12.98%	0.42	0.475	-
					Back side	15mm	21350	2560	22.5	21.97	12.98%	0.481	0.543	-
			100 RB		Front side	15mm	21350	2560	22	21.87	3.04%	0.436	0.449	-
					Back side	15mm	21350	2560	22	21.87	3.04%	0.494	0.509	-
LTE Band 7 (Hotspot)	20MHz	QPSK	1 RB	99	Front side	10mm	21350	2560	20	19.83	3.99%	0.519	0.540	-
					Back side	10mm	21350	2560	20	19.83	3.99%	0.553	0.575	-
					Bottom side	10mm	21350	2560	20	19.83	3.99%	0.467	0.486	-
					Left side	10mm	21350	2560	20	19.83	3.99%	0.06	0.062	-
			50 RB	50	Front side	10mm	21350	2560	20	19.49	12.46%	0.539	0.606	-
					Back side	10mm	21350	2560	20	19.49	12.46%	0.574	0.646	-
					Bottom side	10mm	21350	2560	20	19.49	12.46%	0.494	0.556	-
					Left side	10mm	21350	2560	20	19.49	12.46%	0.06	0.067	-
			100 RB		Front side	10mm	21350	2560	20	19.33	16.68%	0.533	0.622	-
					Back side	10mm	20850	2510	20	19.29	17.76%	0.904	1.065	146
					Back side	10mm	21100	2535	20	19.06	24.17%	0.733	0.910	-
					Back side	10mm	21350	2560	20	19.33	16.68%	0.584	0.681	-
					Back side*	10mm	20850	2510	20	19.29	17.76%	0.889	1.047	-
					Bottom side	10mm	21350	2560	20	19.33	16.68%	0.503	0.587	-
					Left side	10mm	21350	2560	20	19.33	16.68%	0.06	0.070	-

* - repeated at the highest SAR measurement according to the FCC KDB 865664 D01v01

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Mode	Bandwidth (MHz)	Modulation	RB Size	RB start	Position	Distance (mm)	CH	Freq. (MHz)	Max. Rated Avg. Power + Max. Tolerance (dBm)	Measured Avg. Power (dBm)	Scaling	Averaged SAR over 10g (W/kg)		Plot page
												Measured	Reported	
LTE Band 7 (Hand)	20MHz	QPSK	50 RB	50	Front side	10mm	21350	2560	20	19.49	12.46%	2.03	2.283	-
					Back side	10mm	21350	2560	20	19.49	12.46%	1.14	1.282	-
			100 RB		Front side	10mm	21350	2560	20	19.33	16.68%	2.01	2.345	147
					Back side	10mm	20850	2510	20	19.29	17.76%	1.52	1.790	-
					Back side	10mm	21100	2535	20	19.06	24.17%	1.28	1.589	-
					Back side	10mm	21350	2560	20	19.33	16.68%	1.16	1.353	-

LTE FDD Band XVII

Mode	Bandwidth (MHz)	Modulation	RB Size	RB start	Position	Distance (mm)	CH	Freq. (MHz)	Max. Rated Avg. Power + Max. Tolerance (dBm)	Measured Avg. Power (dBm)	Scaling	Averaged SAR over 1g (W/kg)		Plot page
												Measured	Reported	
LTE Band 17 (Head)	10MHz	QPSK	1 RB	49	RE Cheek	-	23800	711	25	24.98	0.46%	0.114	0.115	-
					RE Tilt	-	23800	711	25	24.98	0.46%	0.085	0.085	-
					LE Cheek	-	23780	709	25	24.95	1.16%	0.123	0.124	-
					LE Cheek	-	23790	710	25	24.97	0.69%	0.125	0.126	-
					LE Cheek	-	23800	711	25	24.98	0.46%	0.128	0.129	148
					LE Tilt	-	23800	711	25	24.98	0.46%	0.085	0.085	-
			25 RB	25	RE Cheek	-	23790	710	24.5	24.13	8.89%	0.085	0.093	-
					RE Tilt	-	23790	710	24.5	24.13	8.89%	0.06	0.065	-
					LE Cheek	-	23790	710	24.5	24.13	8.89%	0.103	0.112	-
					LE Tilt	-	23790	710	24.5	24.13	8.89%	0.062	0.068	-
			50 RB		RE Cheek	-	23780	709	24.5	24.12	9.14%	0.082	0.089	-
					RE Tilt	-	23780	709	24.5	24.12	9.14%	0.047	0.051	-
					LE Cheek	-	23780	709	24.5	24.12	9.14%	0.093	0.102	-
					LE Tilt	-	23780	709	24.5	24.12	9.14%	0.059	0.064	-
LTE Band 17 (Body-Worn)	10MHz	QPSK	1 RB	49	Front side	15mm	23780	709	25	24.95	1.16%	0.238	0.241	-
					Front side	15mm	23790	710	25	24.97	0.69%	0.242	0.244	-
					Front side	15mm	23800	711	25	24.98	0.46%	0.244	0.245	149
					Back side	15mm	23800	711	25	24.98	0.46%	0.235	0.236	-
			25 RB	25	Front side	15mm	23790	710	24.5	24.13	8.89%	0.187	0.204	-
					Back side	15mm	23790	710	24.5	24.13	8.89%	0.186	0.203	-
			50 RB		Front side	15mm	23780	709	24.5	24.12	9.14%	0.183	0.200	-
					Back side	15mm	23780	709	24.5	24.12	9.14%	0.18	0.196	-
LTE Band 17 (Hotspot)	10MHz	QPSK	1 RB	49	Front side	10mm	23790	710	25	24.32	16.95%	0.177	0.207	-
					Back side	10mm	23790	710	25	24.32	16.95%	0.162	0.189	-
					Bottom side	10mm	23790	710	25	24.32	16.95%	0.034	0.040	-
					Left side	10mm	23780	709	25	24.29	17.76%	0.233	0.274	150
					Left side	10mm	23790	710	25	24.32	16.95%	0.233	0.272	-
					Left side	10mm	23800	711	24.5	24.31	4.47%	0.246	0.257	-
			25 RB	25	Front side	10mm	23800	711	24.5	23.91	14.55%	0.154	0.176	-
					Back side	10mm	23800	711	24.5	23.91	14.55%	0.139	0.159	-
					Bottom side	10mm	23800	711	24.5	23.91	14.55%	0.031	0.036	-
					Left side	10mm	23800	711	24.5	23.91	14.55%	0.203	0.233	-
			50 RB		Front side	10mm	23800	711	24.5	23.89	15.08%	0.15	0.173	-
					Back side	10mm	23800	711	24.5	23.89	15.08%	0.135	0.155	-
					Bottom side	10mm	23800	711	24.5	23.89	15.08%	0.03	0.035	-
					Left side	10mm	23800	711	24.5	23.89	15.08%	0.195	0.224	-

* - repeated at the highest SAR measurement according to the FCC KDB 865664 D01v01

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WLAN802.11 b

Mode	Position	Distance (mm)	CH	Freq. (MHz)	Max. Rated Avg. Power + Max.	Measured Avg. Power	Scaling	Averaged SAR over 1g (W/kg)		Plot page
								Measured	Reported	
Head	RE Cheek	-	11	2462	18	17.98	0.46%	0.115	0.116	-
	RE Tilt	-	11	2462	18	17.98	0.46%	0.111	0.112	-
	LE Cheek	-	1	2412	18	17.79	4.95%	0.324	0.340	-
	LE Cheek	-	6	2437	18	17.77	5.44%	0.274	0.289	-
	LE Cheek	-	11	2462	18	17.98	0.46%	0.316	0.317	-
	LE Cheek -with Memory card	-	1	2412	18	17.79	4.95%	0.341	0.358	151
	LE Tilt	-	11	2462	18	17.98	0.46%	0.211	0.212	-
Hotspot	Front side	10mm	11	2462	18	17.98	0.46%	0.045	0.045	-
	Back side	10mm	1	2412	18	17.79	4.95%	0.161	0.169	153
	Back side	10mm	6	2437	18	17.77	5.44%	0.152	0.160	-
	Back side	10mm	11	2462	18	17.98	0.46%	0.146	0.147	-
	Top side	10mm	11	2462	18	17.98	0.46%	0.088	0.088	-
	Right side	10mm	11	2462	18	17.98	0.46%	0.059	0.059	-

Using KDB248227 D01v01-SAR is not required for 802.11 g/HT20 channels when the maximum average output power is higher than that measured on the corresponding 802.11b channels but increase less than 1/4 dB.

According to KDB447498 D01v05 the 1-g SAR for the highest output channel is less than 0.8 W/kg, where the transmission band corresponding to all channels is ≤ 100 MHz, testing for the other channels is not required.

WLAN802.11 a 5.2G

Mode	Position	Distance (mm)	CH	Freq. (MHz)	Max. Rated Avg. Power + Max. Tolerance (dBm)	Measured Avg. Power (dBm)	Scaling	Averaged SAR over 1g (W/kg)		Plot page
								Measured	Reported	
Head	RE Cheek	-	36	5180	14	13.89	2.57%	0.02	0.021	-
	RE Tilt	-	36	5180	14	13.89	2.57%	0.018	0.018	-
	LE Cheek	-	36	5180	14	13.89	2.57%	0.072	0.074	-
	LE Cheek	-	44	5220	14	13.85	3.51%	0.149	0.154	154
	LE Tilt	-	36	5180	14	13.89	2.57%	0.035	0.036	-
Body-worn	Front side	15mm	36	5180	14	13.89	2.57%	0.015	0.015	-
	Back side	15mm	36	5180	14	13.89	2.57%	0.058	0.059	-
	Back side	15mm	44	5220	14	13.85	3.51%	0.068	0.070	155

As per KDB248227 D01v01, when SAR at default channel where maximum power occurs is less than 0.8W/kg, SAR tests on other default channel is option.

As per KDB248227 D01v01, when the maximum average output channel in each frequency band is not include in the "default test channels", the maximum channel should be tested instead of an adjacent "default test channels".

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WLAN802.11 a 5.3G

Mode	Position	Distance (mm)	CH	Freq. (MHz)	Max. Rated Avg. Power + Max. Tolerance (dBm)	Measured Avg. Power (dBm)	Scaling	Averaged SAR over 1g (W/kg)		Plot page
								Measured	Reported	
Head	RE Cheek	-	56	5280	14	13.93	1.62%	0.049	0.050	-
	RE Tilt	-	56	5280	14	13.93	1.62%	0.032	0.033	-
	LE Cheek	-	56	5280	14	13.93	1.62%	0.175	0.178	156
	LE Cheek	-	60	5300	14	13.89	2.57%	0.114	0.117	-
	LE Tilt	-	56	5280	14	13.93	1.62%	0.072	0.073	-
Body-worn	Front side	15mm	56	5280	14	13.93	1.62%	0.02	0.020	-
	Back side	15mm	56	5280	14	13.93	1.62%	0.1	0.102	-
	Back side	15mm	60	5300	14	13.89	2.57%	0.112	0.115	157

As per KDB248227 D01v01, when SAR at default channel where maximum power occurs is less than 0.8W/kg, SAR tests on other default channel is option.

As per KDB248227 D01v01, when the maximum average output channel in each frequency band is not include in the "default test channels", the maximum channel should be tested instead of an adjacent "default test channels".

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WLAN802.11 a 5.6G

Mode	Position	Distance (mm)	CH	Freq. (MHz)	Max. Rated Avg. Power + Max. Tolerance (dBm)	Measured Avg. Power (dBm)	Scaling	Averaged SAR over 1g (W/kg)		Plot page
								Measured	Reported	
Head	RE Cheek	-	132	5660	14	13.98	0.46%	0.031	0.031	-
	RE Tilt	-	132	5660	14	13.98	0.46%	0.015	0.015	-
	LE Cheek	-	108	5540	14	13.79	4.95%	0.058	0.061	-
	LE Cheek	-	112	5560	14	13.82	4.23%	0.065	0.068	-
	LE Cheek	-	132	5660	14	13.98	0.46%	0.095	0.095	158
	LE Tilt	-	132	5660	14	13.98	0.46%	0.039	0.039	-
Body-Worn	Front side	15mm	132	5660	14	13.98	0.46%	0.023	0.023	-
	Back side	15mm	108	5540	14	13.79	4.95%	0.327	0.343	-
	Back side	15mm	112	5560	14	13.82	4.23%	0.436	0.454	-
	Back side	15mm	132	5660	14	13.98	0.46%	0.855	0.859	-
	Back side - with headset	15mm	132	5660	14	13.98	0.46%	0.868	0.872	-
	Back side - with Memory Card	15mm	132	5660	14	13.98	0.46%	0.892	0.896	-
	Back side* - with Memory Card	15mm	132	5660	14	13.98	0.46%	0.909	0.913	159

* - repeated at the highest SAR measurement according to the FCC KDB 865664 D01v01

As per KDB248227 D01v01, when SAR at default channel where maximum power occurs is less than 0.8W/kg, SAR tests on other default channel is option.

As per KDB248227 D01v01, when the maximum average output channel in each frequency band is not include in the "default test channels", the maximum channel should be tested instead of an adjacent "default test channels".

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WLAN802.11 a 5.8G

Mode	Position	Distance (mm)	CH	Freq. (MHz)	Max. Rated Avg. Power + Max. Tolerance (dBm)	Measured Avg. Power (dBm)	Scaling	Averaged SAR over 1g (W/kg)		Plot page
								Measured	Reported	
Head	RE Cheek	-	157	5785	14	13.87	3.04%	0.02	0.021	-
	RE Tilt	-	157	5785	14	13.87	3.04%	0.011	0.011	-
	LE Cheek	-	153	5765	14	13.82	4.23%	0.057	0.059	-
	LE Cheek	-	157	5785	14	13.87	3.04%	0.052	0.054	-
	LE Cheek	-	161	5805	14	13.86	3.28%	0.058	0.060	161
	LE Tilt	-	157	5785	14	13.87	3.04%	0.025	0.026	-
Body-worn	Front side	15mm	157	5785	14	13.87	3.04%	0.011	0.011	-
	Back side	15mm	153	5765	14	13.82	4.23%	0.204	0.213	162
	Back side	15mm	157	5785	14	13.87	3.04%	0.173	0.178	-
	Back side	15mm	161	5805	14	13.86	3.28%	0.182	0.188	-

As per KDB248227 D01v01, when SAR at default channel where maximum power occurs is less than 0.8W/kg, SAR tests on other default channel is option.

As per KDB248227 D01v01, when the maximum average output channel in each frequency band is not include in the "default test channels", the maximum channel should be tested instead of an adjacent "default test channels".

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3. Simultaneous Transmission Analysis

Simultaneous Transmission Scenarios:

Simultaneous Transmit Configurations	Head	Body-Worn	Hot Spot	Hand
GSM850/1900 Voice + 2.4GHz Wi-Fi	Yes	No	No	No
UMTS B2/B4/B5 Voice + 2.4GHz Wi-Fi	Yes	No	No	No
LTE FDD B4 / B7 / B17 + 2.4GHz Wi-Fi	Yes	No	No	No
GSM850/1900 Voice + 5GHz Wi-Fi	Yes	Yes	No	No
UMTS B2/B4/B5 Voice + 5GHz Wi-Fi	Yes	Yes	No	No
LTE FDD B4 / B7 / B17 + 5GHz Wi-Fi	Yes	Yes	No	No
GPRS850/1900 Data + 2.4GHz Wi-Fi	No	No	Yes	Yes
UMTS B2/B4/B5 Data + 2.4GHz Wi-Fi	No	No	Yes	Yes
LTE FDD B4 / B7 / B17 + 2.4GHz Wi-Fi	No	No	Yes	Yes
GSM850/1900 Voice + 2.4GHz Bluetooth	No	Yes	No	No
GPRS850/1900 Data + 2.4GHz Bluetooth	No	No	Yes	Yes
UMTS B2/B4/B5 Voice + 2.4GHz Bluetooth	No	Yes	No	No
UMTS B2/B4/B5 Data + 2.4GHz Bluetooth	No	No	Yes	Yes
LTE FDD B4 / B7 / B17 + 2.4GHz	No	Yes	Yes	Yes

Notes:
1. GSM & WCDMA & LTE share the same antenna path and cannot transmit simultaneously
2. Bluetooth, 5GHz WiFi, and 2.4GHz WiFi share the same antenna path and cannot transmit

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Simultaneous Transmission Combination

reported SAR WWAN and WLAN DTS 2.4GHz, ΣSAR evaluation							
Frequency band	Position		reported SAR / W/kg		ΣSAR	Calculated distance (mm)	SPLSR (≦0.04)
			WWAN	WLAN	<1.6W/kg		
GSM 850	Head	RE cheek	0.471	0.116	0.587	-	-
		RE tilt	0.309	0.112	0.421	-	-
		LE cheek	0.423	0.358	0.781	-	-
		LE tilt	0.279	0.212	0.491	-	-
GPRS 850 (1Dn4UP)	Hotspot	Front	0.605	0.045	0.650	-	-
		Back	0.508	0.169	0.677	-	-
		Top	-	0.088	-	-	-
		Bottom	0.173	-	-	-	-
		Right	-	0.059	-	-	-
		Left	0.538	-	-	-	-
GSM 1900	Head	RE cheek	0.179	0.116	0.295	-	-
		RE tilt	0.036	0.112	0.148	-	-
		LE cheek	0.089	0.358	0.447	-	-
		LE tilt	0.042	0.212	0.254	-	-
GPRS 1900 (1Dn4UP)	Hotspot	Front	0.612	0.045	0.657	-	-
		Back	0.412	0.169	0.581	-	-
		Top	-	0.088	-	-	-
		Bottom	1.01	-	-	-	-
		Right	-	0.059	-	-	-
		Left	0.017	-	-	-	-

reported SAR WWAN and WLAN DTS 2.4GHz, ΣSAR evaluation							
Frequency band	Position		reported SAR / W/kg		ΣSAR	Calculated distance (mm)	SPLSR (≦0.04)
			WWAN	WLAN	<1.6W/kg		
WCDMA Band II	Head	RE cheek	0.218	0.116	0.334	-	-
		RE tilt	0.032	0.112	0.144	-	-
		LE cheek	0.083	0.358	0.441	-	-
		LE tilt	0.047	0.212	0.259	-	-
	Hotspot	Front	0.603	0.045	0.648	-	-
		Back	0.362	0.169	0.531	-	-
		Top	-	0.088	-	-	-
		Bottom	0.93	-	-	-	-
		Right	-	0.059	-	-	-
		Left	0.021	-	-	-	-
WCDMA Band IV	Head	RE cheek	0.178	0.116	0.294	-	-
		RE tilt	0.063	0.112	0.175	-	-
		LE cheek	0.122	0.358	0.480	-	-
		LE tilt	0.03	0.212	0.242	-	-
	Hotspot	Front	0.909	0.045	0.954	-	-
		Back	0.554	0.169	0.723	-	-
		Top	-	0.088	-	-	-
		Bottom	1.085	-	-	-	-
		Right	-	0.059	-	-	-
		Left	0.074	-	-	-	-
WCDMA Band V	Head	RE cheek	0.453	0.116	0.569	-	-
		RE tilt	0.316	0.112	0.428	-	-
		LE cheek	0.407	0.358	0.765	-	-
		LE tilt	0.295	0.212	0.507	-	-
	Hotspot	Front	0.523	0.045	0.568	-	-
		Back	0.544	0.169	0.713	-	-
		Top	-	0.088	-	-	-
		Bottom	0.098	-	-	-	-
		Right	-	0.059	-	-	-
		Left	0.549	-	-	-	-

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reported SAR WWAN and WLAN DTS 2.4GHz, ΣSAR evaluation							
Frequency band	Position		reported SAR / W/kg		ΣSAR	Calculated distance (mm)	SPLSR (≦0.04)
			WWAN	WLAN	<1.6W/kg		
LTE FDD Band IV	Head	RE cheek	0.175	0.116	0.291	-	-
		RE tilt	0.054	0.112	0.166	-	-
		LE cheek	0.139	0.358	0.497	-	-
		LE tilt	0.03	0.212	0.242	-	-
	Hotspot	Front	1.087	0.045	1.132	-	-
		Back	0.62	0.169	0.789	-	-
		Top	-	0.088	-	-	-
		Bottom	1.348	-	-	-	-
		Right	-	0.059	-	-	-
		Left	0.099	-	-	-	-
LTE FDD Band VII	Head	RE cheek	0.139	0.116	0.255	-	-
		RE tilt	0.027	0.112	0.139	-	-
		LE cheek	0.108	0.358	0.466	-	-
		LE tilt	0.05	0.212	0.262	-	-
	Hotspot	Front	0.622	0.045	0.667	-	-
		Back	1.065	0.169	1.234	-	-
		Top	-	0.088	-	-	-
		Bottom	0.587	-	-	-	-
		Right	-	0.059	-	-	-
		Left	0.07	-	-	-	-
LTE FDD Band XVII	Head	RE cheek	0.115	0.116	0.231	-	-
		RE tilt	0.085	0.112	0.197	-	-
		LE cheek	0.129	0.358	0.487	-	-
		LE tilt	0.085	0.212	0.297	-	-
	Hotspot	Front	0.207	0.045	0.252	-	-
		Back	0.189	0.169	0.358	-	-
		Top	-	0.088	-	-	-
		Bottom	0.04	-	-	-	-
		Right	-	0.059	-	-	-
		Left	0.274	-	-	-	-

reported SAR WWAN and WLAN DTS 5.8 GHz, ΣSAR evaluation							
Frequency band	Position		reported SAR / W/kg		ΣSAR	Calculated distance (mm)	SPLSR (≦0.04)
			WWAN	WLAN	<1.6W/kg		
GSM 850	Head	RE cheek	0.471	0.021	0.492	-	-
		RE tilt	0.309	0.011	0.32	-	-
		LE cheek	0.423	0.06	0.483	-	-
		LE tilt	0.279	0.026	0.305	-	-
	Body-Worn	Front	0.382	0.011	0.393	-	-
		Back	0.459	0.213	0.672	-	-
GSM 1900	Head	RE cheek	0.179	0.021	0.2	-	-
		RE tilt	0.036	0.011	0.047	-	-
		LE cheek	0.089	0.06	0.149	-	-
		LE tilt	0.042	0.026	0.068	-	-
	Body-Worn	Front	1.146	0.011	1.157	-	-
		Back	0.804	0.213	1.017	-	-
WCDMA Band II	Head	RE cheek	0.218	0.021	0.239	-	-
		RE tilt	0.032	0.011	0.043	-	-
		LE cheek	0.083	0.06	0.143	-	-
		LE tilt	0.047	0.026	0.073	-	-
	Body-Worn	Front	1.191	0.011	1.202	-	-
		Back	0.829	0.213	1.042	-	-
WCDMA Band IV	Head	RE cheek	0.178	0.021	0.199	-	-
		RE tilt	0.063	0.011	0.074	-	-
		LE cheek	0.122	0.06	0.182	-	-
		LE tilt	0.03	0.026	0.056	-	-
	Body-Worn	Front	1.175	0.011	1.186	-	-
		Back	0.776	0.213	0.989	-	-

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reported SAR WWAN and WLAN DTS 5.8 GHz, ΣSAR evaluation							
Frequency band	Position		reported SAR / W/kg		ΣSAR	Calculated distance (mm)	SPLSR (≦0.04)
			WWAN	WLAN	<1.6W/kg		
WCDMA Band V	Head	RE cheek	0.453	0.021	0.474	-	-
		RE tilt	0.316	0.011	0.327	-	-
		LE cheek	0.407	0.06	0.467	-	-
		LE tilt	0.295	0.026	0.321	-	-
	Body-Worn	Front	0.427	0.011	0.438	-	-
		Back	0.424	0.213	0.637	-	-
LTE FDD Band IV	Head	RE cheek	0.175	0.021	0.196	-	-
		RE tilt	0.054	0.011	0.065	-	-
		LE cheek	0.139	0.06	0.199	-	-
		LE tilt	0.03	0.026	0.056	-	-
	Body-Worn	Front	1.28	0.011	1.291	-	-
		Back	0.861	0.213	1.074	-	-
LTE FDD Band VII	Head	RE cheek	0.139	0.021	0.16	-	-
		RE tilt	0.027	0.011	0.038	-	-
		LE cheek	0.108	0.06	0.168	-	-
		LE tilt	0.05	0.026	0.076	-	-
	Body-Worn	Front	0.501	0.011	0.512	-	-
		Back	0.83	0.213	1.043	-	-
LTE FDD Band XVII	Head	RE cheek	0.115	0.021	0.136	-	-
		RE tilt	0.085	0.011	0.096	-	-
		LE cheek	0.129	0.06	0.189	-	-
		LE tilt	0.085	0.026	0.111	-	-
	Body-Worn	Front	0.245	0.011	0.256	-	-
		Back	0.236	0.213	0.449	-	-

reported SAR WWAN and WLAN DTS 5 GHz, ΣSAR evaluation							
Frequency band	Position		reported SAR / W/kg		ΣSAR	Calculated distance (mm)	SPLSR (≦0.04)
			WWAN	WLAN	<1.6W/kg		
GSM 850	Head	RE cheek	0.471	0.05	0.521	-	-
		RE tilt	0.309	0.033	0.342	-	-
		LE cheek	0.423	0.178	0.601	-	-
		LE tilt	0.279	0.073	0.352	-	-
	Body-Worn	Front	0.382	0.023	0.405	-	-
		Back	0.459	0.913	1.372	-	-
GSM 1900	Head	RE cheek	0.179	0.05	0.229	-	-
		RE tilt	0.036	0.033	0.069	-	-
		LE cheek	0.089	0.178	0.267	-	-
		LE tilt	0.042	0.073	0.115	-	-
	Body-Worn	Front	1.146	0.023	1.169	-	-
		Back	0.804	0.913	**1.717**	133.5	0.017
WCDMA Band II	Head	RE cheek	0.218	0.05	0.268	-	-
		RE tilt	0.032	0.033	0.065	-	-
		LE cheek	0.083	0.178	0.261	-	-
		LE tilt	0.047	0.073	0.12	-	-
	Body-Worn	Front	1.191	0.023	1.214	-	-
		Back	0.829	0.913	**1.742**	133.5	0.017
WCDMA Band IV	Head	RE cheek	0.178	0.05	0.228	-	-
		RE tilt	0.063	0.033	0.096	-	-
		LE cheek	0.122	0.178	0.3	-	-
		LE tilt	0.03	0.073	0.103	-	-
	Body-Worn	Front	1.175	0.023	1.198	-	-
		Back	0.776	0.913	**1.689**	135.8	0.016

Note:
We calculate the peak location separation ratio of simultaneous transmitting antenna pair, the SPLSR value is less than 0.04. According to KDB447498 D01v05 simultaneous transmission SAR evaluation is not required.

reported SAR WWAN and WLAN DTS 5 GHz, ΣSAR evaluation							
Frequency band	Position		reported SAR / W/kg		ΣSAR	Calculated distance (mm)	SPLSR (≦0.04)
			WWAN	WLAN	<1.6W/kg		
WCDMA Band V	Head	RE cheek	0.453	0.05	0.503	-	-
		RE tilt	0.316	0.033	0.349	-	-
		LE cheek	0.407	0.178	0.585	-	-
		LE tilt	0.295	0.073	0.368	-	-
	Body-Worn	Front	0.427	0.023	0.45	-	-
		Back	0.424	0.913	1.337	-	-
LTE FDD Band IV	Head	RE cheek	0.175	0.05	0.225	-	-
		RE tilt	0.054	0.033	0.087	-	-
		LE cheek	0.139	0.178	0.317	-	-
		LE tilt	0.03	0.073	0.103	-	-
	Body-Worn	Front	1.28	0.023	1.303	-	-
		Back	0.861	0.913	**1.774**	138.2	0.017
LTE FDD Band VII	Head	RE cheek	0.139	0.05	0.189	-	-
		RE tilt	0.027	0.033	0.06	-	-
		LE cheek	0.108	0.178	0.286	-	-
		LE tilt	0.05	0.073	0.123	-	-
	Body-Worn	Front	0.501	0.023	0.524	-	-
		Back	0.83	0.913	**1.743**	125.7	0.018
LTE FDD Band XVII	Head	RE cheek	0.115	0.05	0.165	-	-
		RE tilt	0.085	0.033	0.118	-	-
		LE cheek	0.129	0.178	0.307	-	-
		LE tilt	0.085	0.073	0.158	-	-
	Body-Worn	Front	0.245	0.023	0.268	-	-
		Back	0.236	0.913	1.149	-	-

Note:
We calculate the peak location separation ratio of simultaneous transmitting antenna pair, the SPLSR value is less than 0.04. According to KDB447498 D01v05 simultaneous transmission SAR evaluation is not required.

reported SAR WWAN and Bluetooth, ΣSAR evaluation							
Frequency band	Position		reported SAR / W/kg		ΣSAR	Calculated distance (mm)	SPLSR (≦0.04)
			WWAN	Bluetooth	<1.6W/kg		
GSM 850	Body-Worn	Front	0.382	0.087	0.469	-	-
		Back	0.459	0.087	0.546	-	-
GPRS 850 (1Dn4UP)	Hotspot	Front	0.605	0.130	0.735	-	-
		Back	0.508	0.130	0.638	-	-
		Top	-	0.130	-	-	-
		Bottom	0.173	-	-	-	-
		Right	-	0.130	-	-	-
		Left	0.538	-	-	-	-
GSM 1900	Body-Worn	Front	1.146	0.087	1.233	-	-
		Back	0.804	0.087	0.891	-	-
GPRS 1900 (1Dn4UP)	Hotspot	Front	0.612	0.130	0.742	-	-
		Back	0.412	0.130	0.542	-	-
		Top	-	0.130	-	-	-
		Bottom	1.01	-	-	-	-
		Right	-	0.130	-	-	-
		Left	0.017	-	-	-	-
WCDMA Band II	Body-Worn	Front	1.191	0.087	1.278	-	-
		Back	0.829	0.087	0.916	-	-
	Hotspot	Front	0.603	0.130	0.733	-	-
		Back	0.362	0.130	0.492	-	-
		Top	-	0.130	-	-	-
		Bottom	0.93	-	-	-	-
		Right	-	0.130	-	-	-
		Left	0.021	-	-	-	-

reported SAR WWAN and Bluetooth, ΣSAR evaluation							
Frequency band	Position		reported SAR / W/kg		ΣSAR	Calculated distance (mm)	SPLSR (≦0.04)
			WWAN	Bluetooth	<1.6W/kg		
WCDMA Band IV	Body-Worn	Front	1.175	0.087	1.262	-	-
		Back	0.776	0.087	0.863	-	-
	Hotspot	Front	0.909	0.130	1.039	-	-
		Back	0.554	0.130	0.684	-	-
		Top	-	0.130	-	-	-
		Bottom	1.085	-	-	-	-
		Right	-	0.130	-	-	-
		Left	0.074	-	-	-	-
WCDMA Band V	Body-Worn	Front	0.427	0.087	0.514	-	-
		Back	0.424	0.087	0.511	-	-
	Hotspot	Front	0.523	0.130	0.653	-	-
		Back	0.544	0.130	0.674	-	-
		Top	-	0.130	-	-	-
		Bottom	0.098	-	-	-	-
		Right	-	0.130	-	-	-
		Left	0.549	-	-	-	-
LTE FDD Band IV	Body-Worn	Front	1.28	0.087	1.367	-	-
		Back	0.861	0.087	0.948	-	-
	Hotspot	Front	1.087	0.130	1.217	-	-
		Back	0.62	0.130	0.75	-	-
		Top	-	0.130	-	-	-
		Bottom	1.348	-	-	-	-
		Right	-	0.130	-	-	-
		Left	0.099	-	-	-	-

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reported SAR WWAN and Bluetooth, ΣSAR evaluation							
Frequency band	Position		reported SAR / W/kg		ΣSAR	Calculated distance (mm)	SPLSR (≦0.04)
			WWAN	Bluetooth	<1.6W/kg		
LTE FDD Band VII	Body-Worn	Front	0.501	0.087	0.588	-	-
		Back	0.83	0.087	0.917	-	-
	Hotspot	Front	0.622	0.130	0.752	-	-
		Back	1.065	0.130	1.195	-	-
		Top	-	0.130	-	-	-
		Bottom	0.587	-	-	-	-
		Right	-	0.130	-	-	-
		Left	0.07	-	-	-	-
LTE FDD Band XVII	Body-Worn	Front	0.245	0.087	0.332	-	-
		Back	0.236	0.087	0.323	-	-
	Hotspot	Front	0.207	0.130	0.337	-	-
		Back	0.189	0.130	0.319	-	-
		Top	-	0.130	-	-	-
		Bottom	0.04	-	-	-	-
		Right	-	0.130	-	-	-
		Left	0.274	-	-	-	-

<table>
<tr><th colspan="6">reported SAR WWAN and WLAN DTS 2.4GHz, ΣSAR(10g) evaluation</th></tr>
<tr><th rowspan="2">Frequency band</th><th rowspan="2" colspan="2">Position</th><th colspan="2">reported SAR / W/kg</th><th>ΣSAR(10g)</th></tr>
<tr><th>WWAN</th><th>WLAN</th><th><4W/kg</th></tr>
<tr><td rowspan="6">GPRS 1900 (1Dn4UP)</td><td rowspan="6">Hand</td><td>Front</td><td>1.04</td><td>1.051</td><td>2.091</td></tr>
<tr><td>Back</td><td>0.473</td><td>1.051</td><td>1.524</td></tr>
<tr><td>Top</td><td>-</td><td>1.051</td><td>-</td></tr>
<tr><td>Bottom</td><td>0.679</td><td>-</td><td>-</td></tr>
<tr><td>Right</td><td>-</td><td>1.051</td><td>-</td></tr>
<tr><td>Left</td><td>-</td><td>-</td><td>-</td></tr>
<tr><td rowspan="6">WCDMA Band II</td><td rowspan="6">Hand</td><td>Front</td><td>1.046</td><td>1.051</td><td>2.097</td></tr>
<tr><td>Back</td><td>0.431</td><td>1.051</td><td>1.482</td></tr>
<tr><td>Top</td><td>-</td><td>1.051</td><td>-</td></tr>
<tr><td>Bottom</td><td>0.851</td><td>-</td><td>-</td></tr>
<tr><td>Right</td><td>-</td><td>1.051</td><td>-</td></tr>
<tr><td>Left</td><td>-</td><td>-</td><td>-</td></tr>
<tr><td rowspan="6">WCDMA Band IV</td><td rowspan="6">Hand</td><td>Front</td><td>1.291</td><td>1.051</td><td>2.342</td></tr>
<tr><td>Back</td><td>0.575</td><td>1.051</td><td>1.626</td></tr>
<tr><td>Top</td><td>-</td><td>1.051</td><td>-</td></tr>
<tr><td>Bottom</td><td>0.496</td><td>-</td><td>-</td></tr>
<tr><td>Right</td><td>-</td><td>1.051</td><td>-</td></tr>
<tr><td>Left</td><td>-</td><td>-</td><td>-</td></tr>
<tr><td rowspan="6">LTE FDD Band IV</td><td rowspan="6">Hand</td><td>Front</td><td>1.563</td><td>1.051</td><td>2.614</td></tr>
<tr><td>Back</td><td>0.786</td><td>1.051</td><td>1.837</td></tr>
<tr><td>Top</td><td>-</td><td>1.051</td><td>-</td></tr>
<tr><td>Bottom</td><td>0.776</td><td>-</td><td>-</td></tr>
<tr><td>Right</td><td>-</td><td>1.051</td><td>-</td></tr>
<tr><td>Left</td><td>-</td><td>-</td><td>-</td></tr>
<tr><td rowspan="6">LTE FDD Band VII</td><td rowspan="6">Hand</td><td>Front</td><td>2.345</td><td>1.051</td><td>3.396</td></tr>
<tr><td>Back</td><td>1.79</td><td>1.051</td><td>2.841</td></tr>
<tr><td>Top</td><td>-</td><td>1.051</td><td>-</td></tr>
<tr><td>Bottom</td><td>-</td><td>-</td><td>-</td></tr>
<tr><td>Right</td><td>-</td><td>1.051</td><td>-</td></tr>
<tr><td>Left</td><td>-</td><td>-</td><td>-</td></tr>
</table>

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reported SAR WWAN and Bluetooth, ΣSAR(10g) evaluation					
Frequency band	Position		reported SAR / W/kg		ΣSAR(10g)
			WWAN	Bluetooth	<4W/kg
GPRS 1900 (1Dn4UP)	Hand	Front	1.04	0.104	1.144
		Back	0.473	0.104	0.577
		Top	-	0.104	-
		Bottom	0.679	-	-
		Right	-	0.104	-
		Left	-	-	-
WCDMA Band II	Hand	Front	1.046	0.104	1.15
		Back	0.431	0.104	0.535
		Top	-	0.104	-
		Bottom	0.851	-	-
		Right	-	0.104	-
		Left	-	-	-
WCDMA Band IV	Hand	Front	1.291	0.104	1.395
		Back	0.575	0.104	0.679
		Top	-	0.104	-
		Bottom	0.496	-	-
		Right	-	0.104	-
		Left	-	-	-
LTE FDD Band IV	Hand	Front	1.563	0.104	1.667
		Back	0.786	0.104	0.890
		Top	-	0.104	-
		Bottom	0.776	-	-
		Right	-	0.104	-
		Left	-	-	-
LTE FDD Band VII	Hand	Front	2.345	0.104	2.449
		Back	1.79	0.104	1.894
		Top	-	0.104	-
		Bottom	-	-	-
		Right	-	0.104	-
		Left	-	-	-

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4. Instruments List

Device	Manufacturer	Type	Serial number	Date of last calibration	Date of next calibration
Dosimetric E-Field Probe	Schmid & Partner Engineering AG	EX3DV4	3770	Apr.30,2013	Apr.29,2014
			3923	Jun.12,2013	Jun.11,2014
			3831	Jan.31,2014	Jan.30,2015
			3578	Jun.20,2013	Jun.19,2014
750/835/1750/1900/ 2450/2600/5G System Validation Dipole	Schmid & Partner Engineering AG	D750V2	1015	Aug.26,2013	Aug.25,2014
		D835V2	4d156	Jun.06,2013	Jun.05,2014
		D1750V2	1095	Jun.06,2013	Jun.05,2014
			1008	May 29,2013	May 28,2014
		D1900V2	5d173	Jun.10,2013	Jun.09,2014
		D2450V2	912	Jun.07,2013	Jun.06,2014
		D2600V2	1005	Jan.28,2014	Jan.27,2015
		D5GHzV2	1104	May 07,2013	May 06,2014
Data acquisition Electronics	Schmid & Partner Engineering AG	DAE4	856	May 23,2013	May 22,2014
			1260	May 03,2013	May 02,2014
			547	Mar.19,2013	Mar.18,2014
Software	Schmid & Partner Engineering AG	DASY 52 V52.8.7	N/A	Calibration not required	Calibration not required
Phantom	Schmid & Partner Engineering AG	SAM	N/A	Calibration not required	Calibration not required
Network Analyzer	Agilent	E5071C	MY46108212	Apr.01,2013	Mar.31,2014
Dielectric Probe Kit	Agilent	85070E	MY44300677	Calibration not required	Calibration not required
Dual-directional coupler	Agilent	772D	MY46151242	Jul.04,2013	Jul.03,2014
		778D	MY48220468	Mar.29,2013	Mar.28,2014
RF Signal Generator	Agilent	N5181A	MY50141235	Dec.14,2013	Dec.13,2016
Power Meter	Agilent	E4417A	MY51410006	Oct.25,2013	Oct.24,2015
Power Sensor	Agilent	E9301H	MY51470001	Dec.16,2013	Dec.15,2014

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Device	Manufacturer	Type	Serial number	Date of last calibration	Date of next calibration
Radio Communication Test	R&S	CMU200	113505	May 14,2013	May 13,2014
Radio Communication Test	Anritsu	MT8820C	6201061014	May.21,2013	May.20,2014
TECPEL	Digital thermometer	DTM-303A	TP130074	Mar.20,2014	Mar.19,2015
Spectrum Analyzer	Agilent	E4446A	MY51100003	May 30,2013	May 29,2014
Spectrum Analyzer	Agilent	E4440A	MY45304525	Mar.05,2014	Mar.04,2015
Power Sensor	Anritsu	MA2490A	32910	May 30,2013	May 29,2014
Power Meter	Anritsu	ML2487A	6K00003260	May 30,2013	May 29,2014
Power Meter	Anritsu	ML2495A	1005007	Jan.13,2014	Jan.12,2015
Power Sensor	Anritsu	MA2411B	917032	Jan.13,2014	Jan.12,2015

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5. Measurements

Date: 1/30/2014

GSM 850_Head_RE Cheek_CH 251_DTM

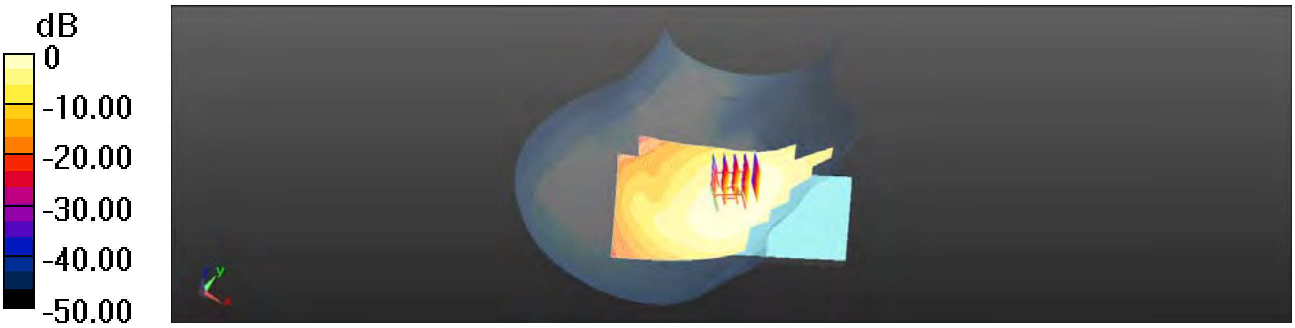
Communication System: GSM ; Frequency: 848.8 MHz
Medium parameters used: f = 849 MHz; σ = 0.899 S/m; εr = 41.773; ρ = 1000 kg/m^3
Phantom section: Right Section

DASY 5 Configuration:

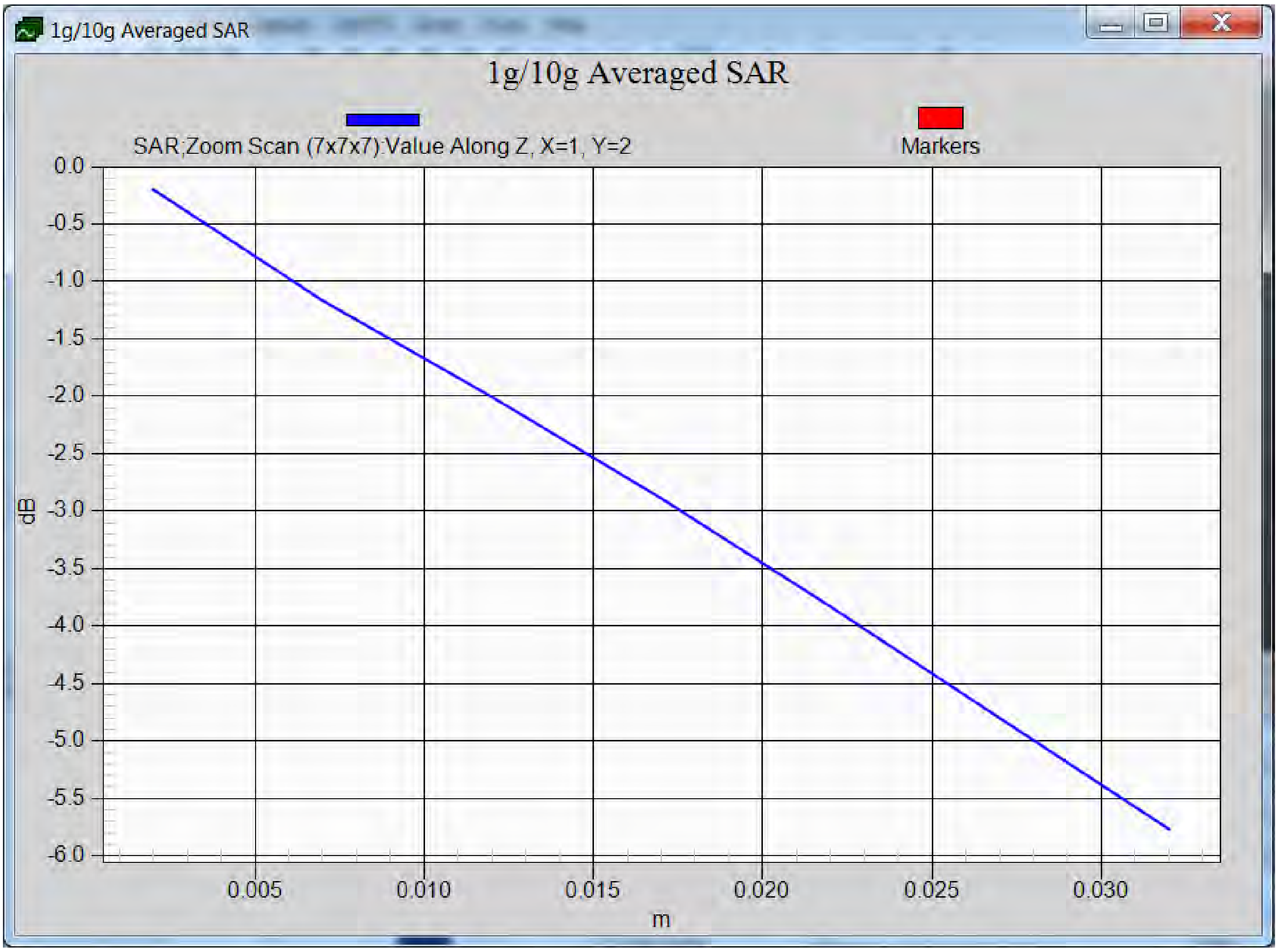
- Probe: EX3DV4 - SN3770; ConvF(9.83, 9.83, 9.83); Calibrated: 4/30/2013;
- Sensor-Surface: 2mm (Mechanical Surface Detection),
- Electronics: DAE4 Sn856; Calibrated: 5/23/2013
- Phantom: SAM2;
- DASY52 52.8.7; SEMCAD X 14.6.10

Configuration/RE Cheek/Area Scan (71x131x1): Interpolated grid: dx=15 mm, dy=15 mm
Maximum value of SAR (interpolated) = 0.523 W/kg

Configuration/RE Cheek/Zoom Scan (5x5x7)/Cube 0: Measurement grid: dx=8mm, dy=8mm, dz=5mm
Reference Value = 8.598 V/m; Power Drift = 0.04 dB
Peak SAR (extrapolated) = 0.588 W/kg
SAR(1 g) = 0.460 W/kg; SAR(10 g) = 0.351 W/kg
Maximum value of SAR (measured) = 0.526 W/kg



0 dB = 0.523 W/kg = -2.81 dBW/kg


1g/10g Averaged SAR
1g/10g Averaged SAR
SAR;Zoom Scan (7x7x7):Value Along Z, X=1, Y=2
Markers
0.0
-0.5
-1.0
-1.5
-2.0
-2.5
-3.0
-3.5
-4.0
-4.5
-5.0
-5.5
-6.0
dB
0.005
0.010
0.015
0.020
0.025
0.030
m

Date: 1/31/2014

GSM 850_Speech mode_Back side_CH 128

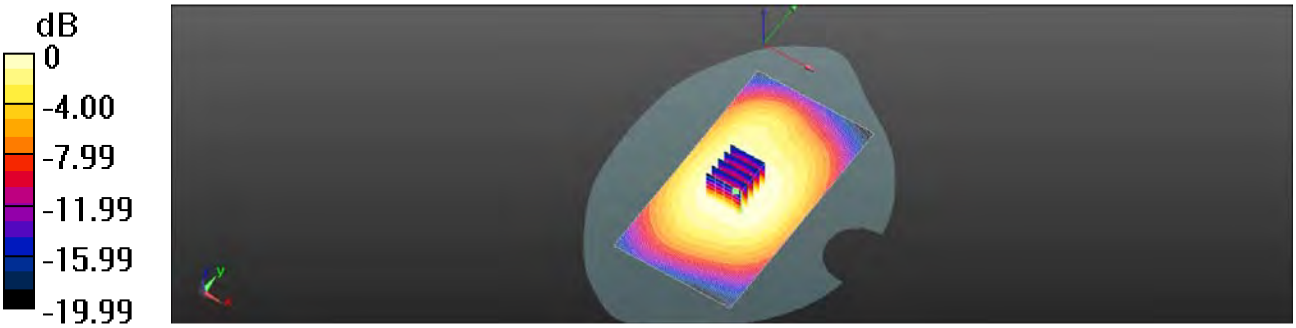
Communication System: GSM; Frequency: 824.2 MHz
Medium parameters used: f = 824.2 MHz; σ = 0.995 S/m; ε_r = 53.674; ρ = 1000 kg/m^3
Phantom section: Flat Section

DASY 5 Configuration:

- Probe: EX3DV4 - SN3770; ConvF(9.62, 9.62, 9.62); Calibrated: 4/30/2013;
- Sensor-Surface: 2mm (Mechanical Surface Detection),
- Electronics: DAE4 Sn856; Calibrated: 5/23/2013
- Phantom: SAM2;
- DASY52 52.8.7; SEMCAD X 14.6.10

Configuration/Speech mode/Area Scan (71x131x1): Interpolated grid: dx=15 mm, dy=15 mm
Maximum value of SAR (interpolated) = 0.458 W/kg

Configuration/Speech mode/Zoom Scan (5x5x7)/Cube 0: Measurement grid: dx=8mm, dy=8mm, dz=5mm
Reference Value = 21.727 V/m; Power Drift = 0.05 dB
Peak SAR (extrapolated) = 0.546 W/kg
SAR(1 g) = 0.419 W/kg; SAR(10 g) = 0.317 W/kg
Maximum value of SAR (measured) = 0.487 W/kg



0 dB = 0.458 W/kg = -3.39 dBW/kg

GPRS 850_Hotspot_Front side_CH 251

Communication System: GPRS(1Dn4Up); Frequency: 848.8 MHz
Medium parameters used: f = 849 MHz; σ = 1.021 S/m; ε_r = 53.473; ρ = 1000 kg/m^3
Phantom section: Flat Section

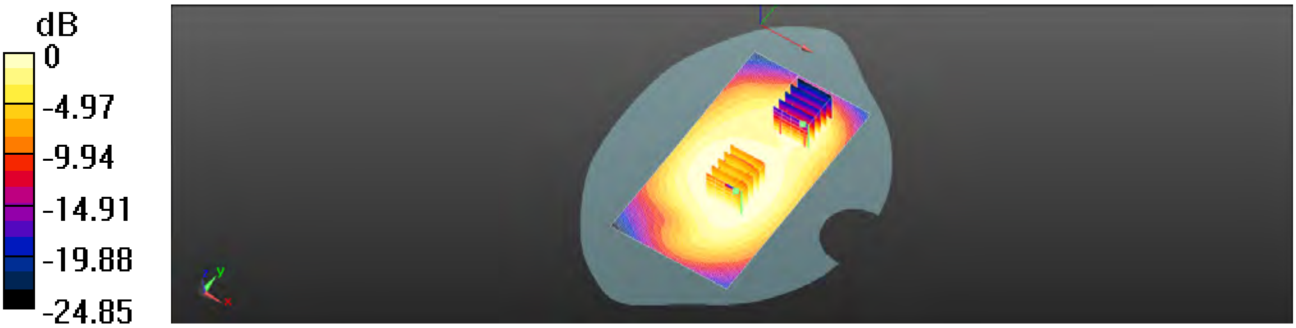
DASY 5 Configuration:

- Probe: EX3DV4 - SN3770; ConvF(9.62, 9.62, 9.62); Calibrated: 4/30/2013;
- Sensor-Surface: 2mm (Mechanical Surface Detection),
- Electronics: DAE4 Sn856; Calibrated: 5/23/2013
- Phantom: SAM2;
- DASY52 52.8.7; SEMCAD X 14.6.10

Configuration/Hotspot/Area Scan (71x131x1): Interpolated grid: dx=15 mm, dy=15 mm
Maximum value of SAR (interpolated) = 0.646 W/kg

Configuration/Hotspot/Zoom Scan (5x5x7)/Cube 0: Measurement grid: dx=8mm, dy=8mm, dz=5mm
Reference Value = 25.066 V/m; Power Drift = 0.01 dB
Peak SAR (extrapolated) = 0.759 W/kg
SAR(1 g) = 0.448 W/kg; SAR(10 g) = 0.284 W/kg
Maximum value of SAR (measured) = 0.601 W/kg

Configuration/Hotspot/Zoom Scan (5x5x7)/Cube 1: Measurement grid: dx=8mm, dy=8mm, dz=5mm
Reference Value = 25.066 V/m; Power Drift = 0.01 dB
Peak SAR (extrapolated) = 0.723 W/kg
SAR(1 g) = 0.552 W/kg; SAR(10 g) = 0.423 W/kg
Maximum value of SAR (measured) = 0.639 W/kg



0 dB = 0.646 W/kg = -1.90 dBW/kg

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Date: 2/4/2014

GSM 1900_Head_RE Cheek_CH 661_DTM

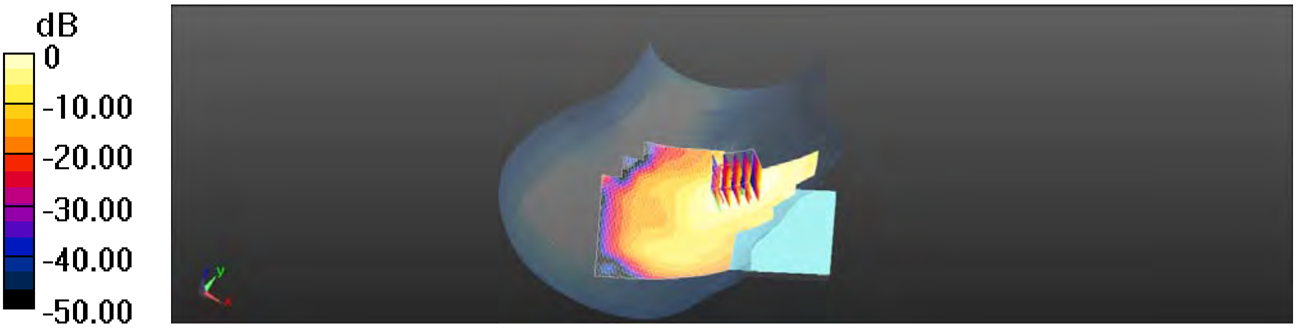
Communication System: GSM; Frequency: 1880 MHz
Medium parameters used: f = 1880 MHz; σ = 1.36 S/m; ε_r = 39.019; ρ = 1000 kg/m^3
Phantom section: Right Section

DASY 5 Configuration:

- Probe: EX3DV4 - SN3770; ConvF(7.98, 7.98, 7.98); Calibrated: 4/30/2013;
- Sensor-Surface: 2mm (Mechanical Surface Detection),
- Electronics: DAE4 Sn856; Calibrated: 5/23/2013
- Phantom: SAM2;
- DASY52 52.8.7; SEMCAD X 14.6.10

Configuration/RE Cheek/Area Scan (81x131x1): Interpolated grid: dx=15 mm, dy=15 mm
Maximum value of SAR (interpolated) = 0.227 W/kg

Configuration/RE Cheek/Zoom Scan (5x5x7)/Cube 0: Measurement grid: dx=8mm, dy=8mm, dz=5mm
Reference Value = 2.294 V/m; Power Drift = 0.06 dB
Peak SAR (extrapolated) = 0.272 W/kg
SAR(1 g) = 0.171 W/kg; SAR(10 g) = 0.104 W/kg
Maximum value of SAR (measured) = 0.207 W/kg



0 dB = 0.227 W/kg = -6.45 dBW/kg

Date: 2/5/2014

GSM 1900_Speech mode_Front side_CH 512_DTM

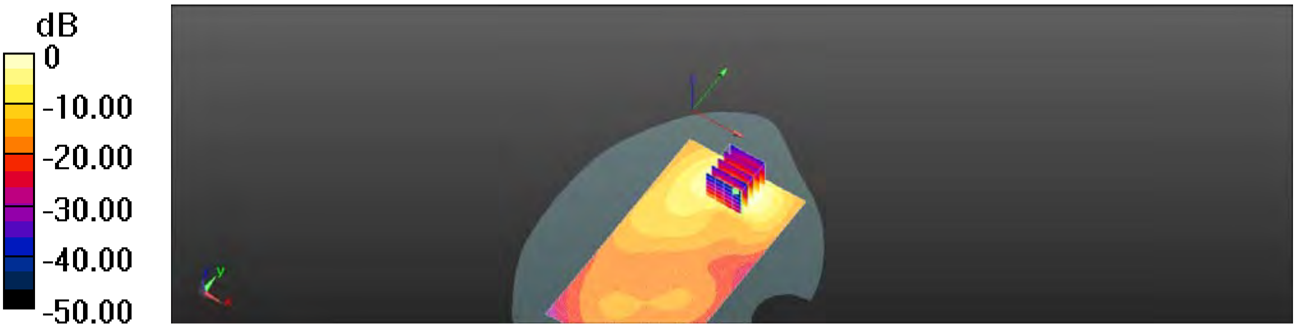
Communication System: GSM; Frequency: 1850.2 MHz
Medium parameters used: f = 1850.2 MHz; σ = 1.476 S/m; ε_r = 54.23; ρ = 1000 kg/m^3
Phantom section: Flat Section

DASY 5 Configuration:

- Probe: EX3DV4 - SN3770; ConvF(7.63, 7.63, 7.63); Calibrated: 4/30/2013;
- Sensor-Surface: 2mm (Mechanical Surface Detection),
- Electronics: DAE4 Sn856; Calibrated: 5/23/2013
- Phantom: SAM2;
- DASY52 52.8.7; SEMCAD X 14.6.10

Configuration/Speech mode/Area Scan (71x131x1): Interpolated grid: dx=15 mm, dy=15 mm
Maximum value of SAR (interpolated) = 1.50 W/kg

Configuration/Speech mode/Zoom Scan (5x5x7)/Cube 0: Measurement grid: dx=8mm, dy=8mm, dz=5mm
Reference Value = 3.929 V/m; Power Drift = 0.02 dB
Peak SAR (extrapolated) = 1.90 W/kg
SAR(1 g) = 1.12 W/kg; SAR(10 g) = 0.615 W/kg
Maximum value of SAR (measured) = 1.51 W/kg



0 dB = 1.50 W/kg = 1.76 dBW/kg

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Date: 2/5/2014

GPRS 1900_Hotspot_Bottom side_CH 512

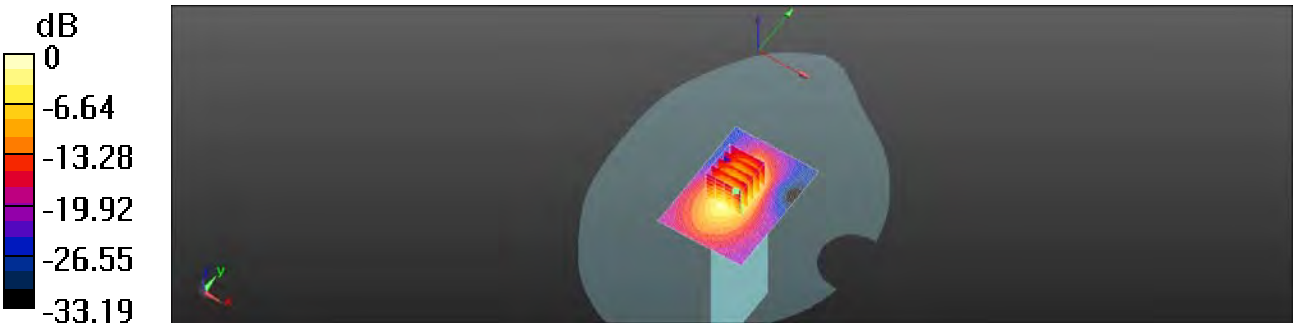
Communication System: GPRS(1Dn4Up); Frequency: 1850.2 MHz
Medium parameters used: f = 1850.2 MHz; σ = 1.476 S/m; ε_r = 54.23; ρ = 1000 kg/m^3
Phantom section: Flat Section

DASY 5 Configuration:

- Probe: EX3DV4 - SN3770; ConvF(7.63, 7.63, 7.63); Calibrated: 4/30/2013;
- Sensor-Surface: 2mm (Mechanical Surface Detection),
- Electronics: DAE4 Sn856; Calibrated: 5/23/2013
- Phantom: SAM2;
- DASY52 52.8.7; SEMCAD X 14.6.10

Configuration/Hotspot/Area Scan (51x71x1): Interpolated grid: dx=15 mm, dy=15 mm
Maximum value of SAR (interpolated) = 1.58 W/kg

Configuration/Hotspot/Zoom Scan (5x5x7)/Cube 0: Measurement grid: dx=8mm, dy=8mm, dz=5mm
Reference Value = 25.531 V/m; Power Drift = 0.05 dB
Peak SAR (extrapolated) = 1.80 W/kg
SAR(1 g) = 1.01 W/kg; SAR(10 g) = 0.509 W/kg
Maximum value of SAR (measured) = 1.44 W/kg



0 dB = 1.58 W/kg = 1.98 dBW/kg

Date: 2/5/2014

GPRS 1900_Hotspot_Bottom side_CH 512_repeat sar test at the highest sar measurement

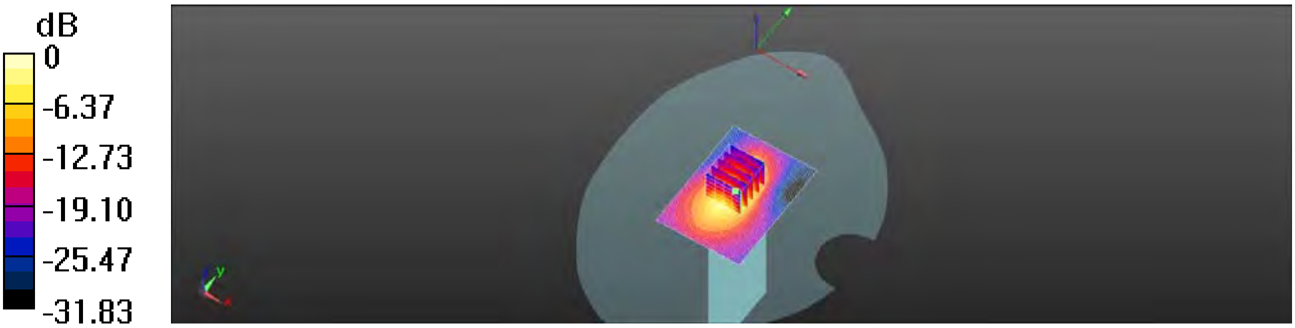
Communication System: GPRS(1Dn4Up); Frequency: 1850.2 MHz
Medium parameters used: f = 1850.2 MHz; σ = 1.476 S/m; ε_r = 54.23; ρ = 1000 kg/m^3
Phantom section: Flat Section

DASY 5 Configuration:

- Probe: EX3DV4 - SN3770; ConvF(7.63, 7.63, 7.63); Calibrated: 4/30/2013;
- Sensor-Surface: 2mm (Mechanical Surface Detection),
- Electronics: DAE4 Sn856; Calibrated: 5/23/2013
- Phantom: SAM2;
- DASY52 52.8.7; SEMCAD X 14.6.10

Configuration/Hotspot/Area Scan (51x71x1): Interpolated grid: dx=15 mm, dy=15 mm
Maximum value of SAR (interpolated) = 1.56 W/kg

Configuration/Hotspot/Zoom Scan (5x5x7)/Cube 0: Measurement grid: dx=8mm, dy=8mm, dz=5mm
Reference Value = 24.851 V/m; Power Drift = 0.03 dB
Peak SAR (extrapolated) = 1.80 W/kg
SAR(1 g) = 1.01 W/kg; SAR(10 g) = 0.504 W/kg
Maximum value of SAR (measured) = 1.43 W/kg



0 dB = 1.56 W/kg = 1.92 dBW/kg

Date: 2/5/2014

GPRS 1900_Hand_Front side_CH 661

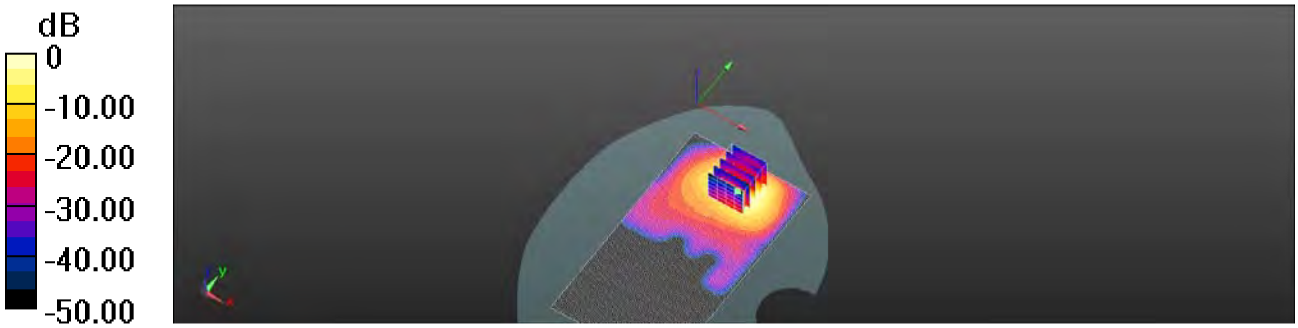
Communication System: GPRS(1Dn4Up); Frequency: 1880 MHz
Medium parameters used: f = 1880 MHz; σ = 1.509 S/m; ε_r = 54.138; ρ = 1000 kg/m^3
Phantom section: Flat Section

DASY 5 Configuration:

- Probe: EX3DV4 - SN3770; ConvF(7.63, 7.63, 7.63); Calibrated: 4/30/2013;
- Sensor-Surface: 2mm (Mechanical Surface Detection),
- Electronics: DAE4 Sn856; Calibrated: 5/23/2013
- Phantom: SAM2;
- DASY52 52.8.7; SEMCAD X 14.6.10

Configuration/Hand/Area Scan (71x131x1): Interpolated grid: dx=15 mm, dy=15 mm
Maximum value of SAR (interpolated) = 3.44 W/kg

Configuration/Hand/Zoom Scan (5x5x7)/Cube 0: Measurement grid: dx=8mm, dy=8mm, dz=5mm
Reference Value = 0.571 V/m; Power Drift = 0.09 dB
Peak SAR (extrapolated) = 5.32 W/kg
SAR(1 g) = 2.39 W/kg; SAR(10 g) = 1.04 W/kg
Maximum value of SAR (measured) = 3.76 W/kg



0 dB = 3.44 W/kg = 5.37 dBW/kg

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Date: 2/4/2014

WCDMA Band 2_Head_RE Cheek_CH 9538

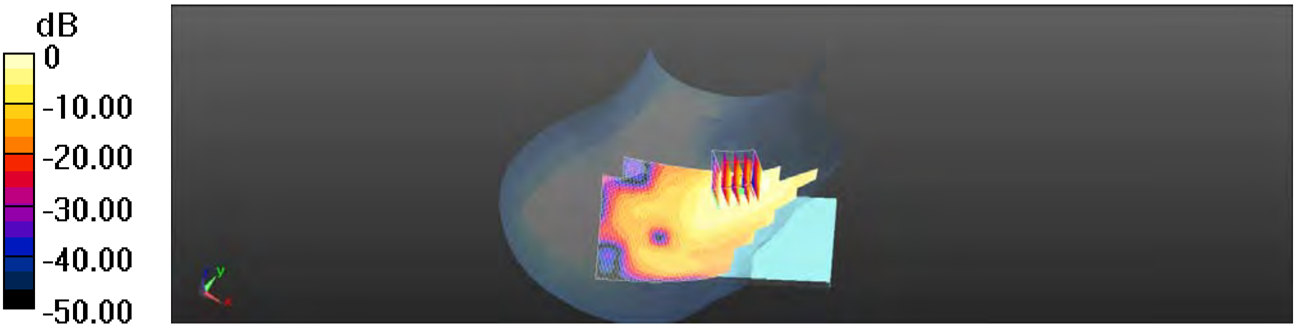
Communication System: WCDMA; Frequency: 1907.6 MHz
Medium parameters used: f = 1908 MHz; σ = 1.388 S/m; ε_r = 38.898; ρ = 1000 kg/m^3
Phantom section: Right Section

DASY 5 Configuration:

- Probe: EX3DV4 - SN3770; ConvF(7.98, 7.98, 7.98); Calibrated: 4/30/2013;
- Sensor-Surface: 2mm (Mechanical Surface Detection),
- Electronics: DAE4 Sn856; Calibrated: 5/23/2013
- Phantom: SAM2;
- DASY52 52.8.7; SEMCAD X 14.6.10

Configuration/RE Cheek/Area Scan (71x131x1): Interpolated grid: dx=15 mm, dy=15 mm
Maximum value of SAR (interpolated) = 0.238 W/kg

Configuration/RE Cheek/Zoom Scan (5x5x7)/Cube 0: Measurement grid: dx=8mm, dy=8mm, dz=5mm
Reference Value = 2.916 V/m; Power Drift = 0.07 dB
Peak SAR (extrapolated) = 0.334 W/kg
SAR(1 g) = 0.202 W/kg; SAR(10 g) = 0.113 W/kg
Maximum value of SAR (measured) = 0.254 W/kg



0 dB = 0.238 W/kg = -6.24 dBW/kg

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Date: 2/5/2014

WCDMA Band 2_Speech mode_Front side_CH 9262

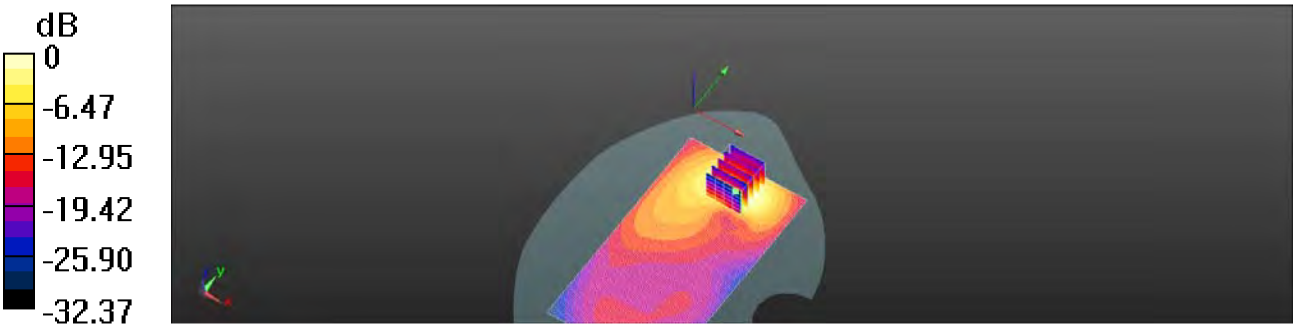
Communication System: WCDMA;Frequency: 1852.4 MHz
Medium parameters used: f = 1852.4 MHz; σ = 1.479 S/m; ε_r = 54.222; ρ = 1000 kg/m^3
Phantom section: Flat Section

DASY 5 Configuration:

- Probe: EX3DV4 - SN3770; ConvF(7.63, 7.63, 7.63); Calibrated: 4/30/2013;
- Sensor-Surface: 2mm (Mechanical Surface Detection),
- Electronics: DAE4 Sn856; Calibrated: 5/23/2013
- Phantom: SAM2;
- DASY52 52.8.7; SEMCAD X 14.6.10

Configuration/Speech mode/Area Scan (71x131x1): Interpolated grid: dx=15 mm, dy=15 mm
Maximum value of SAR (interpolated) = 1.56 W/kg

Configuration/Speech mode/Zoom Scan (5x5x7)/Cube 0: Measurement grid: dx=8mm, dy=8mm, dz=5mm
Reference Value = 5.022 V/m; Power Drift = 0.05 dB
Peak SAR (extrapolated) = 1.85 W/kg
SAR(1 g) = 1.13 W/kg; SAR(10 g) = 0.634 W/kg
Maximum value of SAR (measured) = 1.51 W/kg



0 dB = 1.56 W/kg = 1.92 dBW/kg

Date: 2/5/2014

WCDMA Band 2_Hotspot_Bottom side_CH 9262_repeat sar test at the highest sar measurement

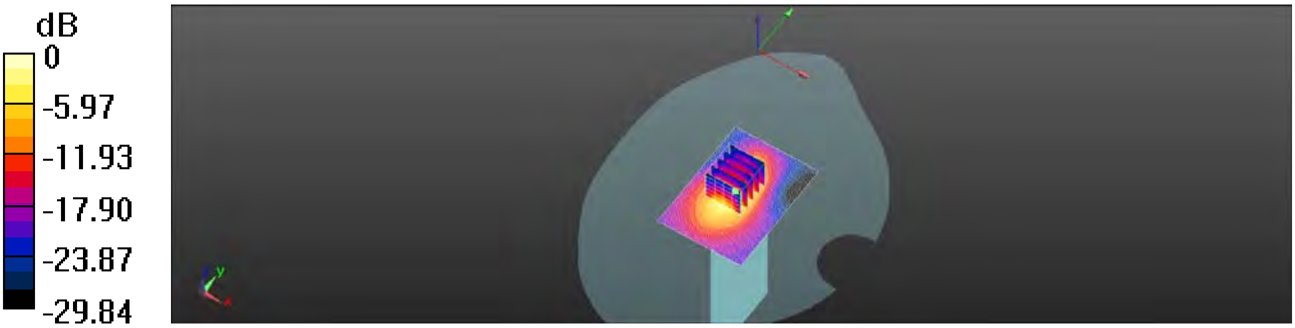
Communication System: WCDMA ;Frequency: 1852.4 MHz
Medium parameters used: f = 1852.4 MHz; σ = 1.479 S/m; ε_r = 54.222; ρ = 1000 kg/m^3
Phantom section: Flat Section

DASY 5 Configuration:

- Probe: EX3DV4 - SN3770; ConvF(7.63, 7.63, 7.63); Calibrated: 4/30/2013;
- Sensor-Surface: 2mm (Mechanical Surface Detection),
- Electronics: DAE4 Sn856; Calibrated: 5/23/2013
- Phantom: SAM2;
- DASY52 52.8.7; SEMCAD X 14.6.10

Configuration/Hotspot/Area Scan (51x71x1): Interpolated grid: dx=15 mm, dy=15 mm
Maximum value of SAR (interpolated) = 1.33 W/kg

Configuration/Hotspot/Zoom Scan (5x5x7)/Cube 0: Measurement grid: dx=8mm, dy=8mm, dz=5mm
Reference Value = 22.180 V/m; Power Drift = 0.01 dB
Peak SAR (extrapolated) = 1.58 W/kg
SAR(1 g) = 0.880 W/kg; SAR(10 g) = 0.443 W/kg
Maximum value of SAR (measured) = 1.23 W/kg



0 dB = 1.33 W/kg = 1.23 dBW/kg

Date: 2/5/2014

WCDMA Band 2_Hand_Front side_CH 9400

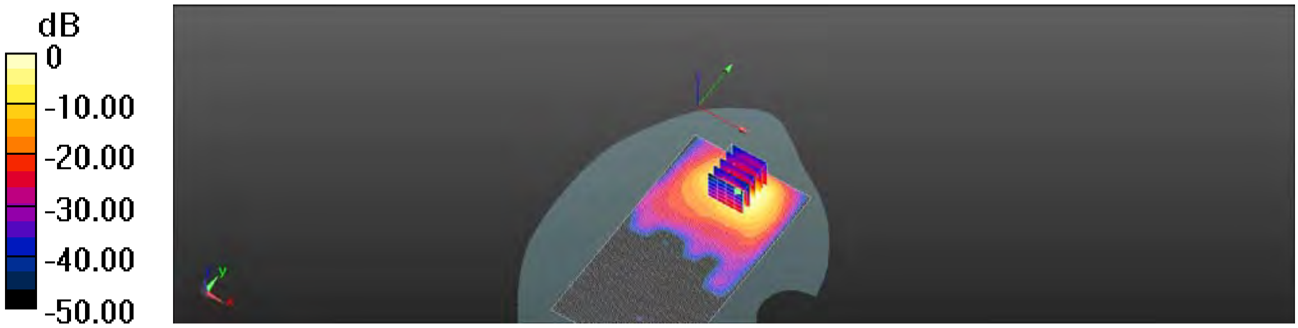
Communication System: WCDMA; Frequency: 1880 MHz
Medium parameters used: f = 1880 MHz; σ = 1.509 S/m; ε_r = 54.138; ρ = 1000 kg/m^3
Phantom section: Flat Section

DASY 5 Configuration:

- Probe: EX3DV4 - SN3770; ConvF(7.63, 7.63, 7.63); Calibrated: 4/30/2013;
- Sensor-Surface: 2mm (Mechanical Surface Detection),
- Electronics: DAE4 Sn856; Calibrated: 5/23/2013
- Phantom: SAM2;
- DASY52 52.8.7; SEMCAD X 14.6.10

Configuration/Hand/Area Scan (71x131x1): Interpolated grid: dx=15 mm, dy=15 mm
Maximum value of SAR (interpolated) = 3.25 W/kg

Configuration/Hand/Zoom Scan (5x5x7)/Cube 0: Measurement grid: dx=8mm, dy=8mm, dz=5mm
Reference Value = 0.174 V/m; Power Drift = 0.03 dB
Peak SAR (extrapolated) = 4.99 W/kg
SAR(1 g) = 2.23 W/kg; SAR(10 g) = 0.985 W/kg
Maximum value of SAR (measured) = 3.67 W/kg



0 dB = 3.25 W/kg = 5.12 dBW/kg

Date: 2/1/2014

WCDMA Band 4_Head_RE Cheek_CH 1312

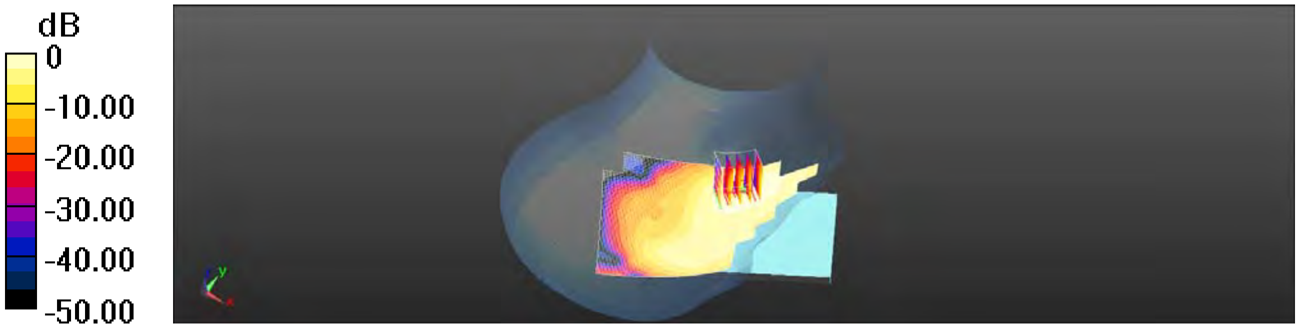
Communication System: WCDMA; Frequency: 1712.4 MHz
Medium parameters used: f = 1712.4 MHz; σ = 1.339 S/m; ε_r = 41.248; ρ = 1000 kg/m^3
Phantom section: Right Section

DASY 5 Configuration:

- Probe: EX3DV4 - SN3770; ConvF(8.29, 8.29, 8.29); Calibrated: 4/30/2013;
- Sensor-Surface: 2mm (Mechanical Surface Detection),
- Electronics: DAE4 Sn856; Calibrated: 5/23/2013
- Phantom: SAM2;
- DASY52 52.8.7; SEMCAD X 14.6.10

Configuration/RE Cheek/Area Scan (71x131x1): Interpolated grid: dx=15 mm, dy=15 mm
Maximum value of SAR (interpolated) = 0.233 W/kg

Configuration/RE Cheek/Zoom Scan (5x5x7)/Cube 0: Measurement grid: dx=8mm, dy=8mm, dz=5mm
Reference Value = 3.523 V/m; Power Drift = -0.07 dB
Peak SAR (extrapolated) = 0.250 W/kg
SAR(1 g) = 0.167 W/kg; SAR(10 g) = 0.105 W/kg
Maximum value of SAR (measured) = 0.214 W/kg



0 dB = 0.233 W/kg = -6.33 dBW/kg

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Date: 2/1/2014

WCDMA Band 4_Speech mode_Front side_CH 1513

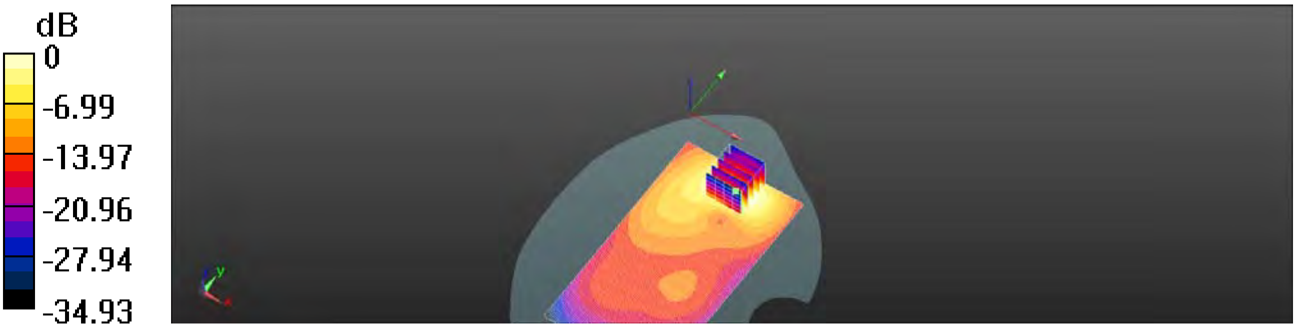
Communication System: WCDMA; Frequency: 1752.6 MHz
Medium parameters used: f = 1753 MHz; σ = 1.439 S/m; ε_r = 54.143; ρ = 1000 kg/m^3
Phantom section: Flat Section

DASY 5 Configuration:

- Probe: EX3DV4 - SN3770; ConvF(7.85, 7.85, 7.85); Calibrated: 4/30/2013;
- Sensor-Surface: 2mm (Mechanical Surface Detection),
- Electronics: DAE4 Sn856; Calibrated: 5/23/2013
- Phantom: SAM2;
- DASY52 52.8.7; SEMCAD X 14.6.10

Configuration/Speech mode/Area Scan (71x131x1): Interpolated grid: dx=15 mm, dy=15 mm
Maximum value of SAR (interpolated) = 1.47 W/kg

Configuration/Speech mode/Zoom Scan (5x5x7)/Cube 0: Measurement grid: dx=8mm, dy=8mm, dz=5mm
Reference Value = 6.440 V/m; Power Drift = 0.05 dB
Peak SAR (extrapolated) = 1.86 W/kg
SAR(1 g) = 1.14 W/kg; SAR(10 g) = 0.636 W/kg
Maximum value of SAR (measured) = 1.50 W/kg



0 dB = 1.47 W/kg = 1.66 dBW/kg

Date: 2/1/2014

WCDMA Band 4_Speech mode_Front side_CH 1513_repeat sar test at the highest sar measurement

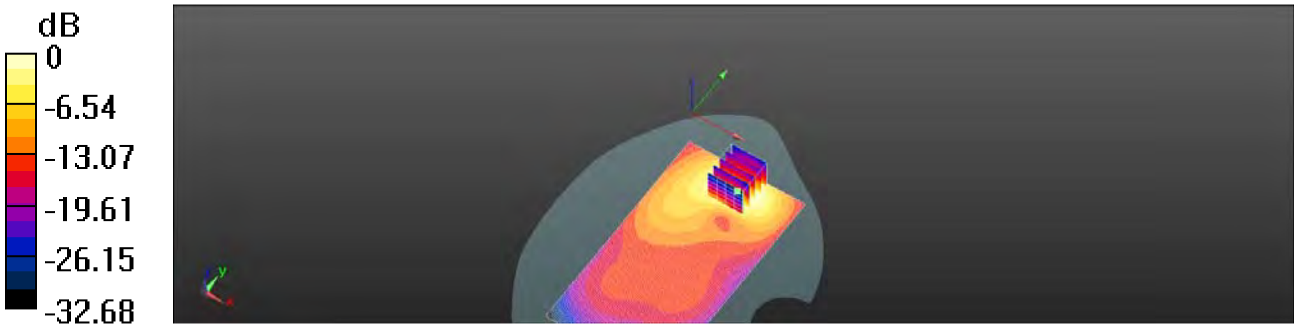
Communication System: WCDMA; Frequency: 1752.6 MHz
Medium parameters used: f = 1753 MHz; σ = 1.439 S/m; ε_r = 54.143; ρ = 1000 kg/m^3
Phantom section: Flat Section

DASY 5 Configuration:

- Probe: EX3DV4 - SN3770; ConvF(7.85, 7.85, 7.85); Calibrated: 4/30/2013;
- Sensor-Surface: 2mm (Mechanical Surface Detection),
- Electronics: DAE4 Sn856; Calibrated: 5/23/2013
- Phantom: SAM2;
- DASY52 52.8.7; SEMCAD X 14.6.10

Configuration/Speech mode/Area Scan (71x131x1): Interpolated grid: dx=15 mm, dy=15 mm
Maximum value of SAR (interpolated) = 1.46 W/kg

Configuration/Speech mode/Zoom Scan (5x5x7)/Cube 0: Measurement grid: dx=8mm, dy=8mm, dz=5mm
Reference Value = 6.562 V/m; Power Drift = -0.01 dB
Peak SAR (extrapolated) = 1.87 W/kg
SAR(1 g) = 1.14 W/kg; SAR(10 g) = 0.638 W/kg
Maximum value of SAR (measured) = 1.51 W/kg



0 dB = 1.46 W/kg = 1.64 dBW/kg

Date: 2/1/2014

WCDMA Band 4_Hotspot_Bottom side_CH 1513

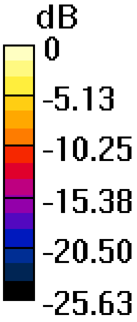
Communication System: WCDMA ; Frequency: 1752.6 MHz
Medium parameters used: f = 1753 MHz; σ = 1.439 S/m; ε_r = 54.143; ρ = 1000 kg/m^3
Phantom section: Flat Section

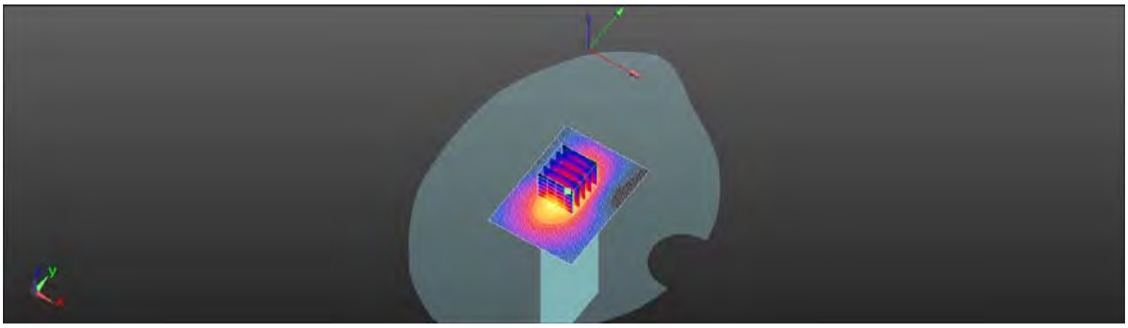
DASY 5 Configuration:

- Probe: EX3DV4 - SN3770; ConvF(7.85, 7.85, 7.85); Calibrated: 4/30/2013;
- Sensor-Surface: 2mm (Mechanical Surface Detection),
- Electronics: DAE4 Sn856; Calibrated: 5/23/2013
- Phantom: SAM2;
- DASY52 52.8.7; SEMCAD X 14.6.10

Configuration/Hotspot/Area Scan (51x71x1): Interpolated grid: dx=15 mm, dy=15 mm
Maximum value of SAR (interpolated) = 1.69 W/kg

Configuration/Hotspot/Zoom Scan (5x5x7)/Cube 0: Measurement grid: dx=8mm, dy=8mm, dz=5mm
Reference Value = 27.474 V/m; Power Drift = -0.09 dB
Peak SAR (extrapolated) = 1.93 W/kg
SAR(1 g) = 1.08 W/kg; SAR(10 g) = 0.541 W/kg
Maximum value of SAR (measured) = 1.53 W/kg





0 dB = 1.69 W/kg = 2.28 dBW/kg

Date: 2/1/2014

WCDMA Band 4_Hotspot_Bottom side_CH 1513_ repeat sar test at the highest sar measurement

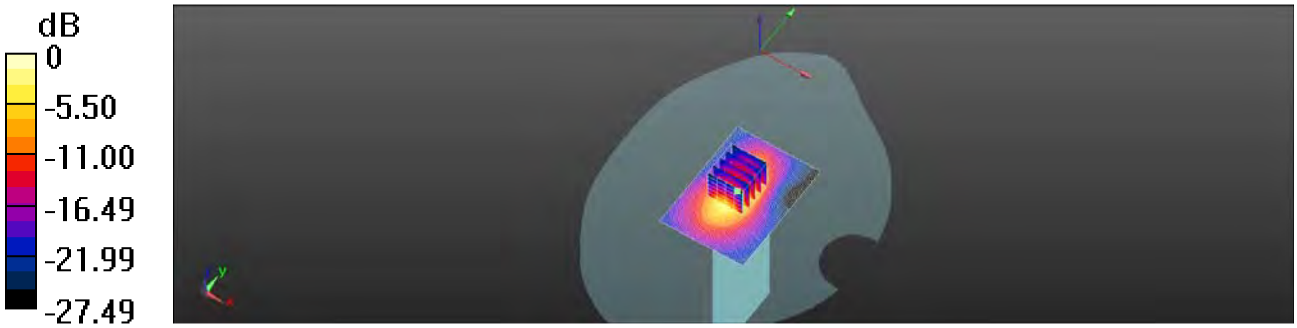
Communication System: WCDMA ;Frequency: 1752.6 MHz
Medium parameters used: f = 1753 MHz; σ = 1.439 S/m; ε_r = 54.143; ρ = 1000 kg/m^3
Phantom section: Flat Section

DASY 5 Configuration:

- Probe: EX3DV4 - SN3770; ConvF(7.85, 7.85, 7.85); Calibrated: 4/30/2013;
- Sensor-Surface: 2mm (Mechanical Surface Detection),
- Electronics: DAE4 Sn856; Calibrated: 5/23/2013
- Phantom: SAM2;
- DASY52 52.8.7; SEMCAD X 14.6.10

Configuration/Hotspot/Area Scan (51x71x1): Interpolated grid: dx=15 mm, dy=15 mm
Maximum value of SAR (interpolated) = 1.70 W/kg

Configuration/Hotspot/Zoom Scan (5x5x7)/Cube 0: Measurement grid: dx=8mm, dy=8mm, dz=5mm
Reference Value = 25.565 V/m; Power Drift = -0.03 dB
Peak SAR (extrapolated) = 1.97 W/kg
SAR(1 g) = 1.08 W/kg; SAR(10 g) = 0.540 W/kg
Maximum value of SAR (measured) = 1.54 W/kg



0 dB = 1.70 W/kg = 2.30 dBW/kg

Date: 2/1/2014

WCDMA Band 4_Hand_Front side_CH 1412

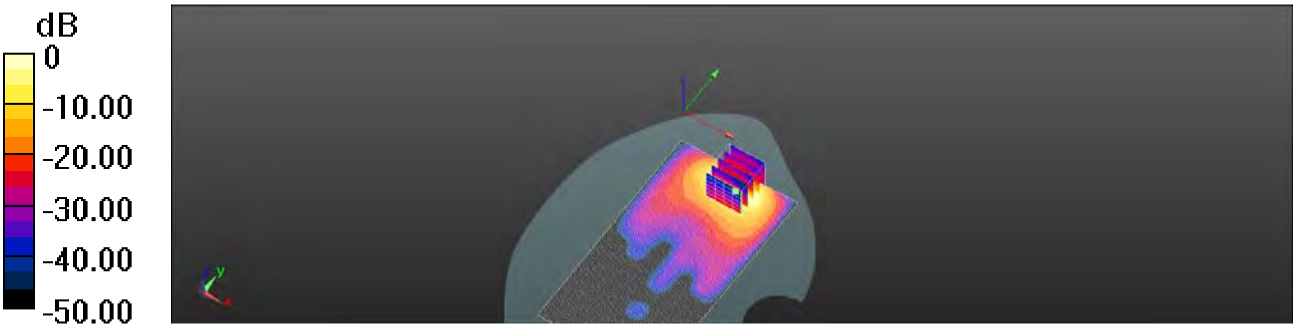
Communication System: WCDMA;Frequency: 1732.4 MHz
Medium parameters used: f = 1732.4 MHz; σ = 1.418 S/m; ε_r = 54.197; ρ = 1000 kg/m^3
Phantom section: Flat Section

DASY 5 Configuration:

- Probe: EX3DV4 - SN3770; ConvF(7.85, 7.85, 7.85); Calibrated: 4/30/2013;
- Sensor-Surface: 2mm (Mechanical Surface Detection),
- Electronics: DAE4 Sn856; Calibrated: 5/23/2013
- Phantom: SAM2;
- DASY52 52.8.7; SEMCAD X 14.6.10

Configuration/Hand/Area Scan (71x131x1): Interpolated grid: dx=15 mm, dy=15 mm
Maximum value of SAR (interpolated) = 5.12 W/kg

Configuration/Hand/Zoom Scan (5x5x7)/Cube 0: Measurement grid: dx=8mm, dy=8mm, dz=5mm
Reference Value = 1.229 V/m; Power Drift = 0.02 dB
Peak SAR (extrapolated) = 6.85 W/kg
SAR(1 g) = 2.93 W/kg; SAR(10 g) = 1.25 W/kg
Maximum value of SAR (measured) = 5.08 W/kg



0 dB = 5.12 W/kg = 7.09 dBW/kg

Date: 1/30/2014

WCDMA Band 5_Head_RE Cheek_CH 4233

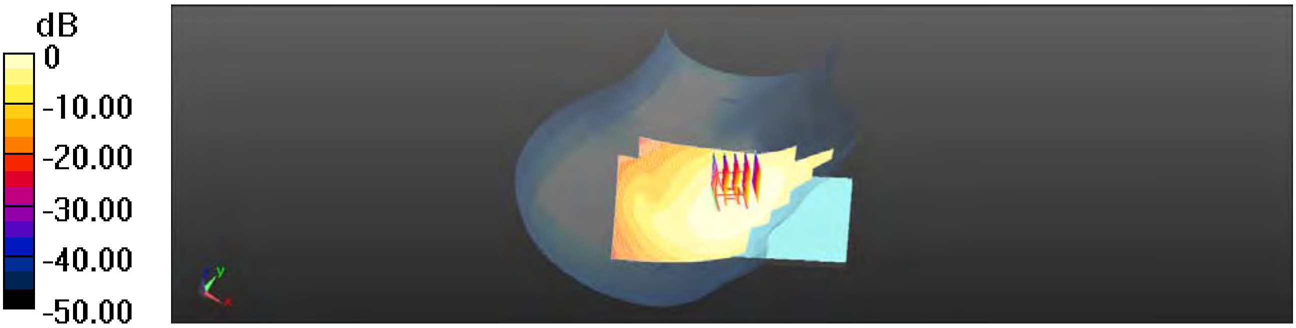
Communication System: WCDMA; Frequency: 846.6 MHz
Medium parameters used: f = 847 MHz; σ = 0.897 S/m; εr = 41.798; ρ = 1000 kg/m^3
Phantom section: Right Section

DASY 5 Configuration:

- Probe: EX3DV4 - SN3770; ConvF(9.83, 9.83, 9.83); Calibrated: 4/30/2013;
- Sensor-Surface: 2mm (Mechanical Surface Detection),
- Electronics: DAE4 Sn856; Calibrated: 5/23/2013
- Phantom: SAM2;
- DASY52 52.8.7; SEMCAD X 14.6.10

Configuration/RE Cheek/Area Scan (71x131x1): Interpolated grid: dx=15 mm, dy=15 mm
Maximum value of SAR (interpolated) = 0.490 W/kg

Configuration/RE Cheek/Zoom Scan (5x5x7)/Cube 0: Measurement grid: dx=8mm, dy=8mm, dz=5mm
Reference Value = 8.491 V/m; Power Drift = 0.02 dB
Peak SAR (extrapolated) = 0.542 W/kg
SAR(1 g) = 0.429 W/kg; SAR(10 g) = 0.329 W/kg
Maximum value of SAR (measured) = 0.487 W/kg



0 dB = 0.490 W/kg = -3.10 dBW/kg

Date: 1/31/2014

WCDMA Band 5_Speech mode_Front side_CH 4132

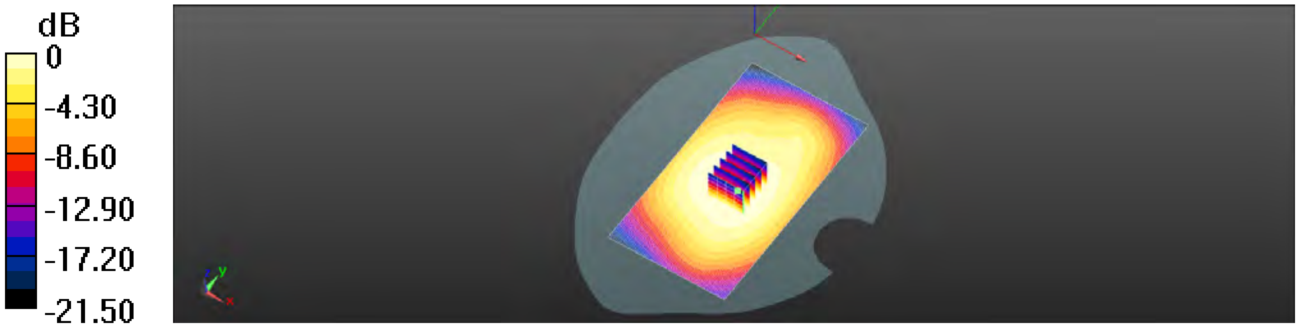
Communication System: WCDMA;Frequency: 826.4 MHz
Medium parameters used: f = 826.4 MHz; σ = 0.997 S/m; ε_r = 53.656; ρ = 1000 kg/m^3
Phantom section: Flat Section

DASY 5 Configuration:

- Probe: EX3DV4 - SN3770; ConvF(9.62, 9.62, 9.62); Calibrated: 4/30/2013;
- Sensor-Surface: 2mm (Mechanical Surface Detection),
- Electronics: DAE4 Sn856; Calibrated: 5/23/2013
- Phantom: SAM2;
- DASY52 52.8.7; SEMCAD X 14.6.10

Configuration/Speech mode/Area Scan (71x131x1): Interpolated grid: dx=15 mm, dy=15 mm
Maximum value of SAR (interpolated) = 0.478 W/kg

Configuration/Speech mode/Zoom Scan (5x5x7)/Cube 0: Measurement grid: dx=8mm, dy=8mm, dz=5mm
Reference Value = 21.915 V/m; Power Drift = 0.06 dB
Peak SAR (extrapolated) = 0.531 W/kg
SAR(1 g) = 0.408 W/kg; SAR(10 g) = 0.312 W/kg
Maximum value of SAR (measured) = 0.475 W/kg



0 dB = 0.478 W/kg = -3.21 dBW/kg

Date: 1/31/2014

WCDMA Band 5_Hotspot_Left side_CH 4183

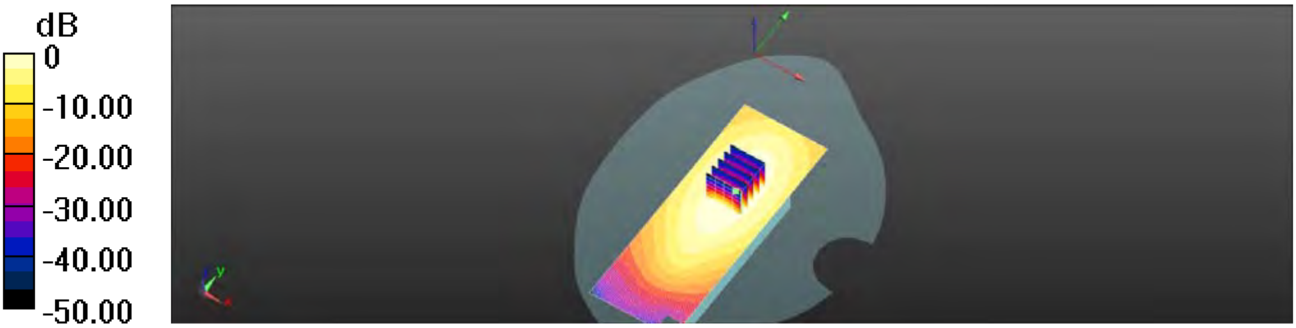
Communication System: WCDMA ; Frequency: 836.6 MHz
Medium parameters used: f = 837 MHz; σ = 1.009 S/m; ε_r = 53.568; ρ = 1000 kg/m^3
Phantom section: Flat Section

DASY 5 Configuration:

- Probe: EX3DV4 - SN3770; ConvF(9.62, 9.62, 9.62); Calibrated: 4/30/2013;
- Sensor-Surface: 2mm (Mechanical Surface Detection),
- Electronics: DAE4 Sn856; Calibrated: 5/23/2013
- Phantom: SAM2;
- DASY52 52.8.7; SEMCAD X 14.6.10

Configuration/Hotspot/Area Scan (51x141x1): Interpolated grid: dx=15 mm, dy=15 mm
Maximum value of SAR (interpolated) = 0.632 W/kg

Configuration/Hotspot/Zoom Scan (5x5x7)/Cube 0: Measurement grid: dx=8mm, dy=8mm, dz=5mm
Reference Value = 23.997 V/m; Power Drift = 0.02 dB
Peak SAR (extrapolated) = 0.747 W/kg
SAR(1 g) = 0.508 W/kg; SAR(10 g) = 0.345 W/kg
Maximum value of SAR (measured) = 0.634 W/kg



0 dB = 0.632 W/kg = -1.99 dBW/kg

Date: 2014/2/16

LTE Band 4_Head_Re Cheek_CH 20175_QPSK_1-0

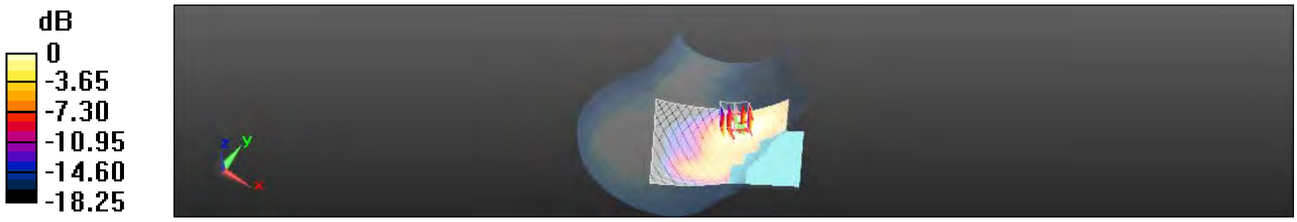
Communication System: LTE; Frequency: 1732.5 MHz
Medium parameters used (interpolated): f = 1732.5 MHz; σ = 1.372 S/m; ε_r = 38.76; ρ = 1000 kg/m^3
Phantom section: Right Section

DASY5 Configuration:

- Probe: EX3DV4 - SN3831; ConvF(8, 8, 8); Calibrated: 2014/1/31;
- Sensor-Surface: 2mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn1260; Calibrated: 2013/5/3
- Phantom: Head;
- DASY52 52.8.5; SEMCAD X 14.6.10

Configuration/Head/Area Scan (71x121x1): Interpolated grid: dx=1.500 mm, dy=1.500 mm
Maximum value of SAR (interpolated) = 0.227 W/kg

Configuration/Head/Zoom Scan (5x5x7)/Cube 0: Measurement grid: dx=8mm, dy=8mm, dz=5mm
Reference Value = 3.145 V/m; Power Drift = -0.19 dB
Peak SAR (extrapolated) = 0.257 W/kg
SAR(1 g) = 0.172 W/kg; SAR(10 g) = 0.110 W/kg
Maximum value of SAR (measured) = 0.216 W/kg



0 dB = 0.216 W/kg = -6.65 dBW/kg

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Date: 2014/2/17

LTE Band 4_Body-worn_Front_CH 20175_QPSK_1-0_15mm

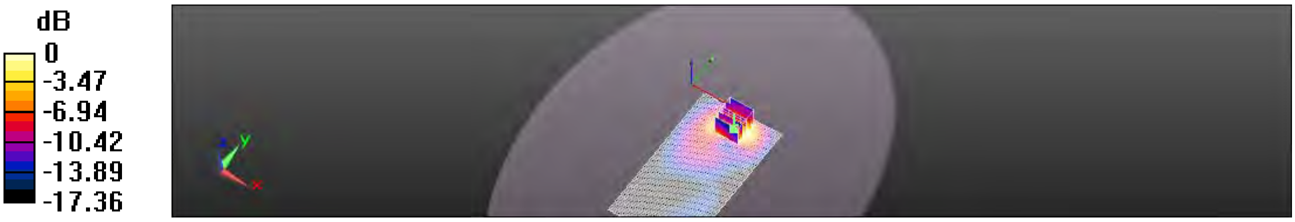
Communication System: LTE; Frequency: 1732.5 MHz
Medium parameters used (interpolated): f = 1732.5 MHz; σ = 1.454 S/m; ε_r = 55.435; ρ = 1000 kg/m^3
Phantom section: Flat Section

DASY5 Configuration:

- Probe: EX3DV4 - SN3831; ConvF(7.63, 7.63, 7.63); Calibrated: 2014/1/31;
- Sensor-Surface: 2mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn1260; Calibrated: 2013/5/3
- Phantom: Body;
- DASY52 52.8.7; SEMCAD X 14.6.10

Configuration/Body/Area Scan (71x131x1): Interpolated grid: dx=1.500 mm, dy=1.500 mm
Maximum value of SAR (interpolated) = 1.55 W/kg

Configuration/Body/Zoom Scan (5x5x7)/Cube 0: Measurement grid: dx=8mm, dy=8mm, dz=5mm
Reference Value = 5.972 V/m; Power Drift = 0.16 dB
Peak SAR (extrapolated) = 1.98 W/kg
SAR(1 g) = 1.26 W/kg; SAR(10 g) = 0.715 W/kg
Maximum value of SAR (measured) = 1.64 W/kg



0 dB = 1.64 W/kg = 2.16 dBW/kg

Date: 2014/2/18

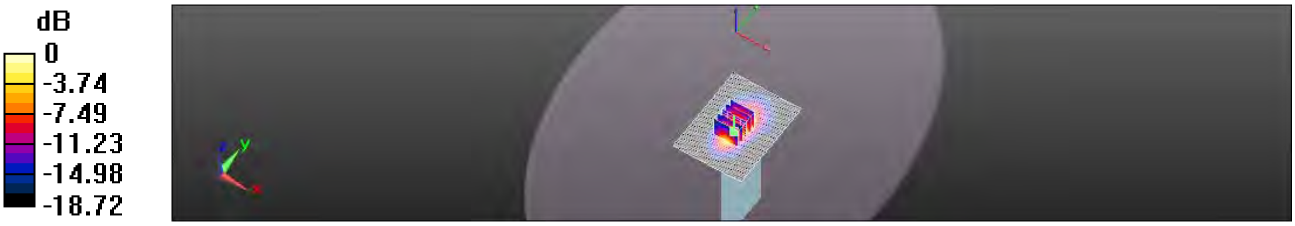
LTE Band 4_Hotspot_Bottom_CH 20300_QPSK_100-0_10mm
Communication System: LTE; Frequency: 1745 MHz
Medium parameters used: f = 1745 MHz; σ = 1.463 S/m; ε_r = 55.275; ρ = 1000 kg/m^3
Phantom section: Flat Section

DASY5 Configuration:

- Probe: EX3DV4 - SN3831; ConvF(7.63, 7.63, 7.63); Calibrated: 2014/1/31;
- Sensor-Surface: 2mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn1260; Calibrated: 2013/5/3
- Phantom: Body;
- DASY52 52.8.7; SEMCAD X 14.6.10

Configuration/Body/Area Scan (61x81x1): Interpolated grid: dx=1.500 mm, dy=1.500 mm
Maximum value of SAR (interpolated) = 1.81 W/kg

Configuration/Body/Zoom Scan (5x5x7)/Cube 0: Measurement grid: dx=8mm, dy=8mm, dz=5mm
Reference Value = 35.587 V/m; Power Drift = -0.07 dB
Peak SAR (extrapolated) = 2.25 W/kg
SAR(1 g) = 1.29 W/kg; SAR(10 g) = 0.655 W/kg
Maximum value of SAR (measured) = 1.77 W/kg



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

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Date: 2014/2/19

LTE Band 4_Hand_Front_CH 20300_QPSK_50-0_0mm

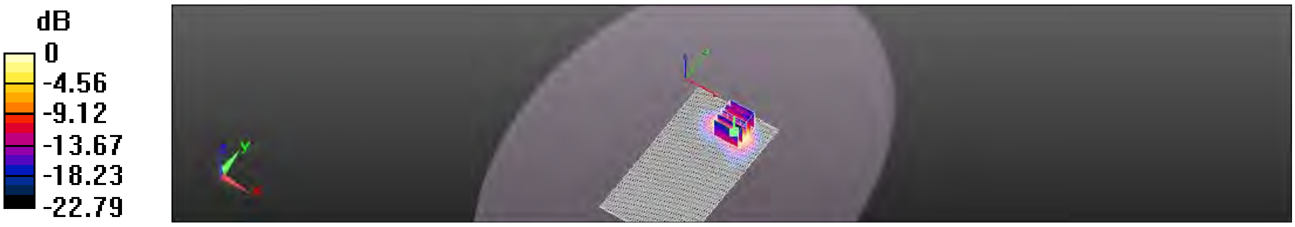
Communication System: LTE; Frequency: 1745 MHz
Medium parameters used: f = 1745 MHz; σ = 1.461 S/m; ε_r = 55.416; ρ = 1000 kg/m^3
Phantom section: Flat Section

DASY5 Configuration:

- Probe: EX3DV4 - SN3831; ConvF(7.63, 7.63, 7.63); Calibrated: 2014/1/31;
- Sensor-Surface: 2mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn1260; Calibrated: 2013/5/3
- Phantom: Body;
- DASY52 52.8.7; SEMCAD X 14.6.10

Configuration/Body/Area Scan (71x131x1): Interpolated grid: dx=1.500 mm, dy=1.500 mm
Maximum value of SAR (interpolated) = 5.39 W/kg

Configuration/Body/Zoom Scan (5x5x7)/Cube 0: Measurement grid: dx=8mm, dy=8mm, dz=5mm
Reference Value = 0.921 V/m; Power Drift = 0.12 dB
Peak SAR (extrapolated) = 8.03 W/kg
SAR(1 g) = 3.47 W/kg; SAR(10 g) = 1.5 W/kg
Maximum value of SAR (measured) = 5.51 W/kg



0 dB = 5.51 W/kg = 7.41 dBW/kg

Date: 2014/2/20

LTE Band 7_Head_Re Cheek_CH 20850_QPSK_100-0

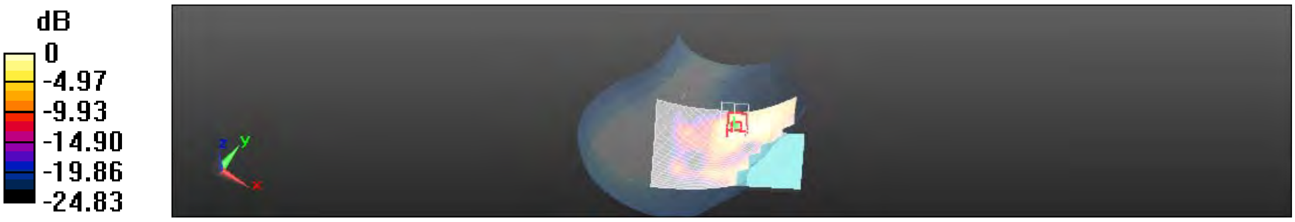
Communication System: LTE; Frequency: 2510 MHz
Medium parameters used: f = 2510 MHz; σ = 1.886 S/m; ε_r = 40.164; ρ = 1000 kg/m^3
Phantom section: Right Section

DASY5 Configuration:

- Probe: EX3DV4 - SN3923; ConvF(7.44, 7.44, 7.44); Calibrated: 2013/6/12;
- Sensor-Surface: 2mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn1260; Calibrated: 2013/5/3
- Phantom: Head;
- DASY52 52.8.7; SEMCAD X 14.6.8(7028)

Configuration/Head/Area Scan (91x151x1): Interpolated grid: dx=12 mm, dy=12 mm
Maximum value of SAR (interpolated) = 0.204 W/kg

Configuration/Head/Zoom Scan (7x7x7)/Cube 0: Measurement grid: dx=5mm, dy=5mm, dz=5mm
Reference Value = 1.512 V/m; Power Drift = -0.18 dB
Peak SAR (extrapolated) = 0.259 W/kg
SAR(1 g) = 0.132 W/kg; SAR(10 g) = 0.067 W/kg
Maximum value of SAR (measured) = 0.198 W/kg



0 dB = 0.198 W/kg = -7.03 dBW/kg

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Date: 2014/2/21

LTE Band 7_Body-worn_Back_CH 20850_QPSK_1-99_15mm

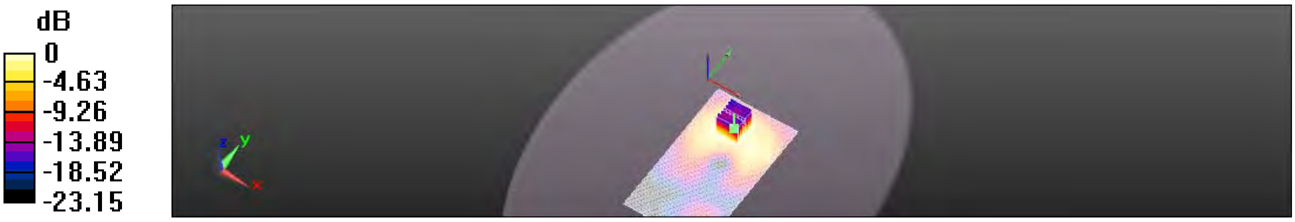
Communication System: LTE; Frequency: 2510 MHz
Medium parameters used: f = 2510 MHz; σ = 2.12 S/m; ε_r = 51.072; ρ = 1000 kg/m^3
Phantom section: Flat Section

DASY5 Configuration:

- Probe: EX3DV4 - SN3923; ConvF(7.37, 7.37, 7.37); Calibrated: 2013/6/12;
- Sensor-Surface: 2mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn1260; Calibrated: 2013/5/3
- Phantom: Body;
- DASY52 52.8.5; SEMCAD X 14.6.8(7028)

Configuration/Body/Area Scan (91x161x1): Interpolated grid: dx=12 mm, dy=12 mm
Maximum value of SAR (interpolated) = 1.13 W/kg

Configuration/Body/Zoom Scan (7x7x7)/Cube 0: Measurement grid: dx=5mm, dy=5mm, dz=5mm
Reference Value = 3.389 V/m; Power Drift = 0.17 dB
Peak SAR (extrapolated) = 1.51 W/kg
SAR(1 g) = 0.771 W/kg; SAR(10 g) = 0.409 W/kg
Maximum value of SAR (measured) = 1.12 W/kg



0 dB = 1.12 W/kg = 0.47 dBW/kg

Date: 2014/2/21

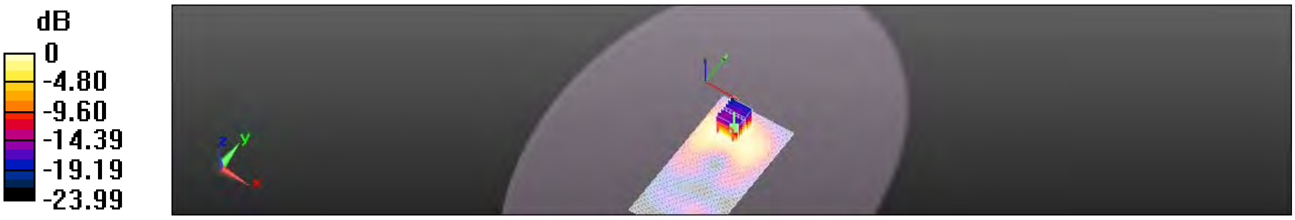
LTE Band 7_Hotspot_Back_CH 20850_QPSK_100-0_10mm
Communication System: LTE; Frequency: 2510 MHz
Medium parameters used: f = 2510 MHz; σ = 2.12 S/m; ε_r = 51.072; ρ = 1000 kg/m^3
Phantom section: Flat Section

DASY5 Configuration:

- Probe: EX3DV4 - SN3923; ConvF(7.37, 7.37, 7.37); Calibrated: 2013/6/12;
- Sensor-Surface: 2mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn1260; Calibrated: 2013/5/3
- Phantom: Body;
- DASY52 52.8.7; SEMCAD X 14.6.8(7028)

Configuration/Body/Area Scan (81x161x1): Interpolated grid: dx=12 mm, dy=12 mm
Maximum value of SAR (interpolated) = 1.34 W/kg

Configuration/Body/Zoom Scan (7x7x7)/Cube 0: Measurement grid: dx=5mm, dy=5mm, dz=5mm
Reference Value = 3.437 V/m; Power Drift = -0.04 dB
Peak SAR (extrapolated) = 1.89 W/kg
SAR(1 g) = 0.904 W/kg; SAR(10 g) = 0.446 W/kg
Maximum value of SAR (measured) = 1.34 W/kg



0 dB = 1.34 W/kg = 1.28 dBW/kg

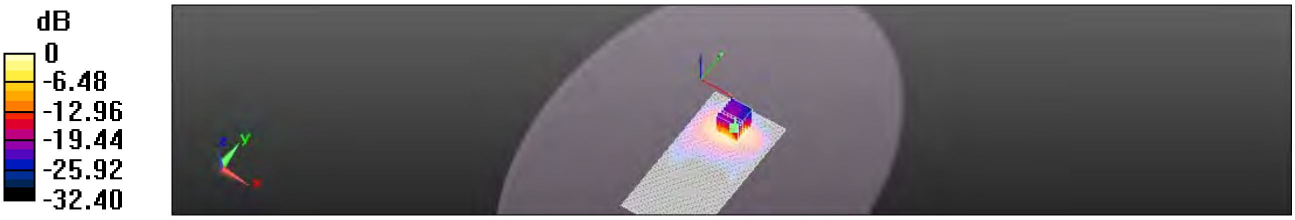
Date: 2014/2/22

LTE Band 7_Hand_Front_CH 21350_QPSK_100-0_0mm
Communication System: LTE; Frequency: 2560 MHz
Medium parameters used: f = 2560 MHz; σ = 2.161 S/m; ε_r = 50.787; ρ = 1000 kg/m^3
Phantom section: Flat Section

DASY5 Configuration:
- Probe: EX3DV4 - SN3923; ConvF(7.37, 7.37, 7.37); Calibrated: 2013/6/12;
- Sensor-Surface: 2mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn1260; Calibrated: 2013/5/3
- Phantom: Body;
- DASY52 52.8.7; SEMCAD X 14.6.8(7028)

Configuration/Body/Area Scan (81x161x1): Interpolated grid: dx=12 mm, dy=12 mm
Maximum value of SAR (interpolated) = 10.1 W/kg

Configuration/Body/Zoom Scan (7x7x7)/Cube 0: Measurement grid: dx=5mm, dy=5mm, dz=5mm
Reference Value = 0.711 V/m; Power Drift = 0.20 dB
Peak SAR (extrapolated) = 17.8 W/kg
SAR(1 g) = 5.58 W/kg; SAR(10 g) = 2.01 W/kg
Maximum value of SAR (measured) = 10.1 W/kg



0 dB = 10.1 W/kg = 10.05 dBW/kg

Date: 2014/2/5

LTE Band 17_Head_Le Cheek_CH 23800_QPSK_1-49

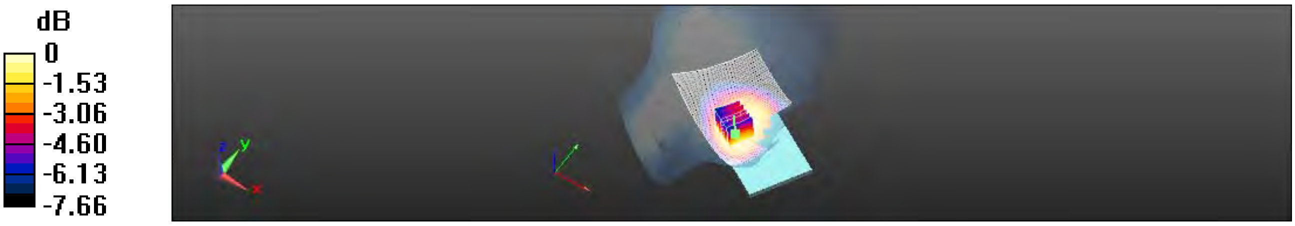
Communication System: LTE; Frequency: 711 MHz
Medium parameters used: f = 711 MHz; σ = 0.867 S/m; εr = 43.722; ρ = 1000 kg/m^3
Phantom section: Left Section

DASY5 Configuration:

- Probe: EX3DV4 - SN3578; ConvF(8.85, 8.85, 8.85); Calibrated: 2013/6/20;
- Sensor-Surface: 2mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn547; Calibrated: 2013/3/19
- Phantom: Head;
- DASY52 52.8.7; SEMCAD X 14.6.10

Configuration/Head/Area Scan (71x121x1): Interpolated grid: dx=15 mm, dy=15 mm
Maximum value of SAR (interpolated) = 0.146 W/kg

Configuration/Head/Zoom Scan (5x5x7)/Cube 0: Measurement grid: dx=8mm, dy=8mm, dz=5mm
Reference Value = 5.331 V/m; Power Drift = -0.08 dB
Peak SAR (extrapolated) = 0.155 W/kg
SAR(1 g) = 0.128 W/kg; SAR(10 g) = 0.103 W/kg
Maximum value of SAR (measured) = 0.143 W/kg



0 dB = 0.143 W/kg = -8.45 dBW/kg

Date: 2014/2/15

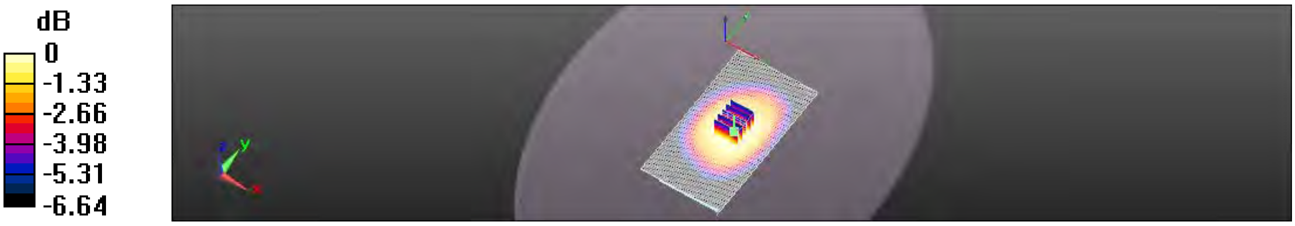
LTE Band 17_Body-worn_Front_CH 23800_QPSK_1-49_15mm
Communication System: LTE; Frequency: 711 MHz
Medium parameters used: f = 711 MHz; σ = 0.927 S/m; ε_r = 54.538; ρ = 1000 kg/m^3
Phantom section: Flat Section

DASY5 Configuration:

- Probe: EX3DV4 - SN3578; ConvF(8.68, 8.68, 8.68); Calibrated: 2013/6/20;
- Sensor-Surface: 2mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn547; Calibrated: 2013/3/19
- Phantom: Body;
- DASY52 52.8.5; SEMCAD X 14.6.10

Configuration/Body/Area Scan (71x131x1): Interpolated grid: dx=15 mm, dy=15 mm
Maximum value of SAR (interpolated) = 0.268 W/kg

Configuration/Body/Zoom Scan (5x5x7)/Cube 0: Measurement grid: dx=8mm, dy=8mm, dz=5mm
Reference Value = 17.885 V/m; Power Drift = 0.07 dB
Peak SAR (extrapolated) = 0.297 W/kg
SAR(1 g) = 0.244 W/kg; SAR(10 g) = 0.194 W/kg
Maximum value of SAR (measured) = 0.275 W/kg



0 dB = 0.275 W/kg = -5.61 dBW/kg

Date: 2014/2/15

LTE Band 17_Hotspot_Left_CH 23780_QPSK_1-49_10mm

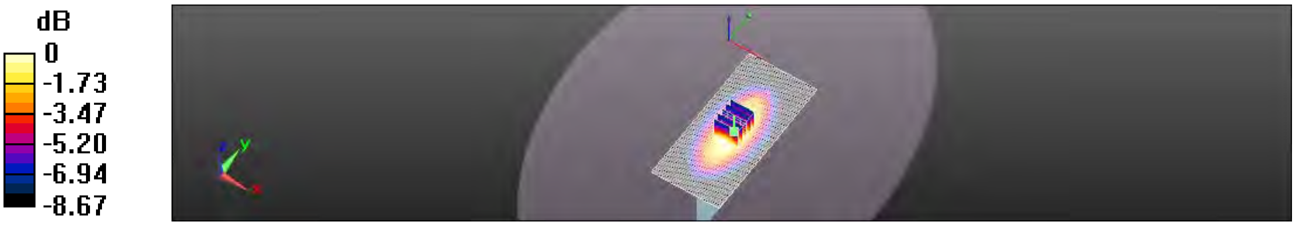
Communication System: LTE; Frequency: 709 MHz
Medium parameters used: f = 709 MHz; σ = 0.924 S/m; ε_r = 54.683; ρ = 1000 kg/m^3
Phantom section: Flat Section

DASY5 Configuration:

- Probe: EX3DV4 - SN3578; ConvF(8.68, 8.68, 8.68); Calibrated: 2013/6/20;
- Sensor-Surface: 2mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn547; Calibrated: 2013/3/19
- Phantom: Body;
- DASY52 52.8.5; SEMCAD X 14.6.10

Configuration/Body/Area Scan (61x131x1): Interpolated grid: dx=15 mm, dy=15 mm
Maximum value of SAR (interpolated) = 0.282 W/kg

Configuration/Body/Zoom Scan (5x5x7)/Cube 0: Measurement grid: dx=8mm, dy=8mm, dz=5mm
Reference Value = 18.123 V/m; Power Drift = 0.05 dB
Peak SAR (extrapolated) = 0.325 W/kg
SAR(1 g) = 0.233 W/kg; SAR(10 g) = 0.165 W/kg
Maximum value of SAR (measured) = 0.284 W/kg



0 dB = 0.284 W/kg = -5.47 dBW/kg

Date: 2/12/2014

WLAN802.11b_Head_LE Cheek_CH 1_repeated with external Memory card inside

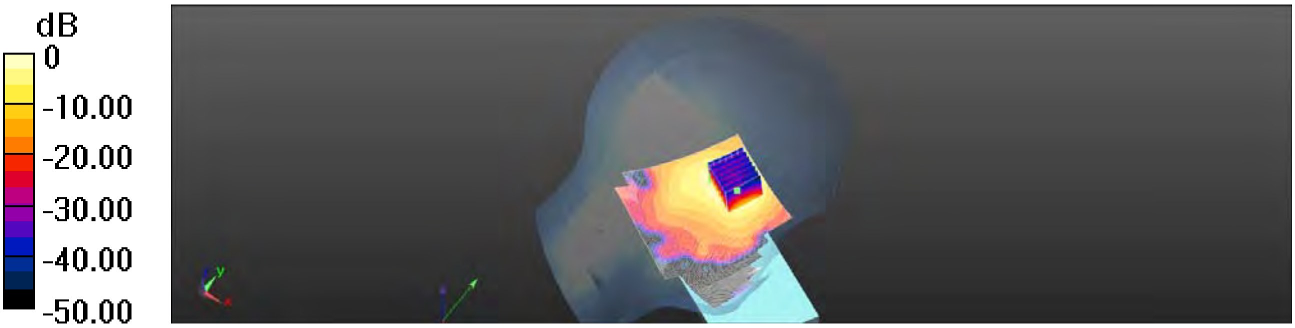
Communication System: WLAN802.11 b & g & n(20M)(40M); Frequency: 2412 MHz
Medium parameters used: f = 2412 MHz; σ = 1.802 S/m; ε_r = 39.73; ρ = 1000 kg/m^3
Phantom section: Left Section

DASY 5 Configuration:

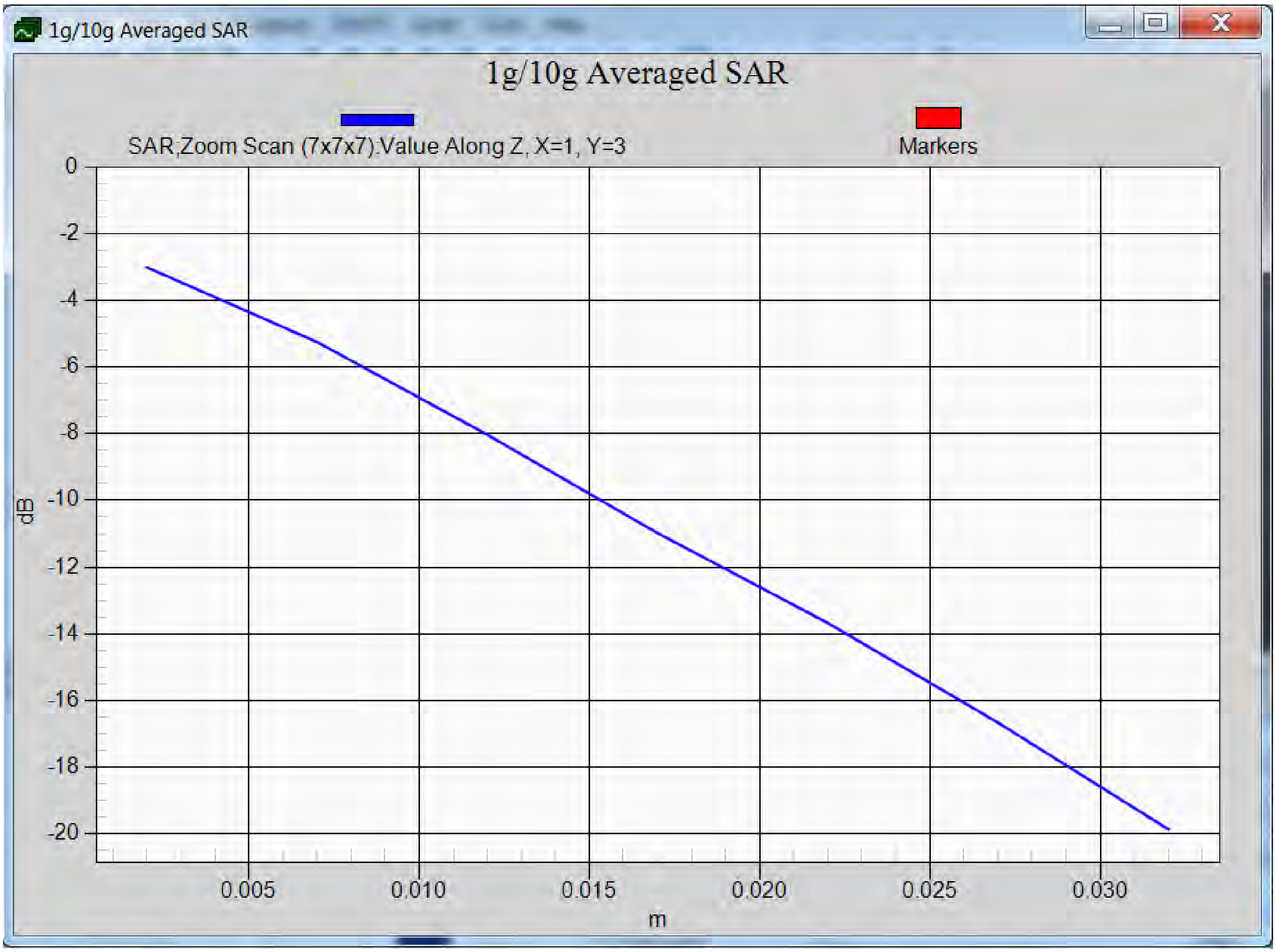
- Probe: EX3DV4 - SN3770; ConvF(7.12, 7.12, 7.12); Calibrated: 4/30/2013;
- Sensor-Surface: 2mm (Mechanical Surface Detection),
- Electronics: DAE4 Sn856; Calibrated: 5/23/2013
- Phantom: SAM2;
- DASY52 52.8.7; SEMCAD X 14.6.10

Configuration/LE Cheek/Area Scan (91x161x1): Interpolated grid: dx=12 mm, dy=12 mm
Maximum value of SAR (interpolated) = 0.515 W/kg

Configuration/LE Cheek/Zoom Scan (7x7x7)/Cube 0: Measurement grid: dx=5mm, dy=5mm, dz=5mm
Reference Value = 5.587 V/m; Power Drift = 0.03 dB
Peak SAR (extrapolated) = 0.805 W/kg
SAR(1 g) = 0.341 W/kg; SAR(10 g) = 0.155 W/kg
Maximum value of SAR (measured) = 0.550 W/kg



0 dB = 0.515 W/kg = -2.88 dBW/kg


1g/10g Averaged SAR
1g/10g Averaged SAR
SAR,Zoom Scan (7x7x7):Value Along Z, X=1, Y=3
Markers
dB
0
-2
-4
-6
-8
-10
-12
-14
-16
-18
-20
0.005
0.010
0.015
0.020
0.025
0.030
m

Date: 2/12/2014

WLAN802.11b_Hotspot_Back side_CH 1

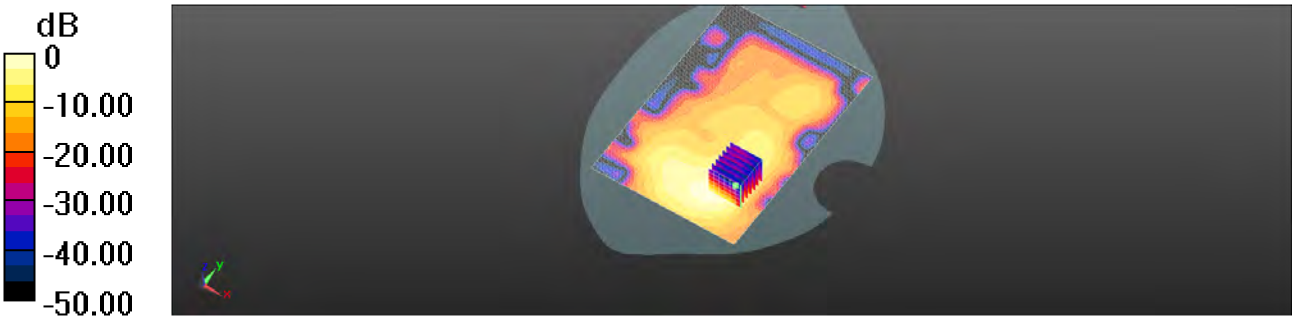
Communication System: WLAN802.11 b & g & n(20M)(40M); Frequency: 2412 MHz
Medium parameters used: f = 2412 MHz; σ = 1.935 S/m; ε_r = 51.136; ρ = 1000 kg/m^3
Phantom section: Flat Section

DASY 5 Configuration:

- Probe: EX3DV4 - SN3770; ConvF(7.21, 7.21, 7.21); Calibrated: 4/30/2013;
- Sensor-Surface: 2mm (Mechanical Surface Detection),
- Electronics: DAE4 Sn856; Calibrated: 5/23/2013
- Phantom: SAM2;
- DASY52 52.8.7; SEMCAD X 14.6.10

Configuration/Hotspot/Area Scan (111x161x1): Interpolated grid: dx=12 mm, dy=12 mm
Maximum value of SAR (interpolated) = 0.254 W/kg

Configuration/Hotspot/Zoom Scan (7x7x7)/Cube 0: Measurement grid: dx=5mm, dy=5mm, dz=5mm
Reference Value = 3.036 V/m; Power Drift = 0.01 dB
Peak SAR (extrapolated) = 0.368 W/kg
SAR(1 g) = 0.161 W/kg; SAR(10 g) = 0.074 W/kg
Maximum value of SAR (measured) = 0.250 W/kg



0 dB = 0.254 W/kg = -5.94 dBW/kg

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Date: 2/13/2014

WLAN802.11a 5.2G_Head_LE Cheek_CH 44

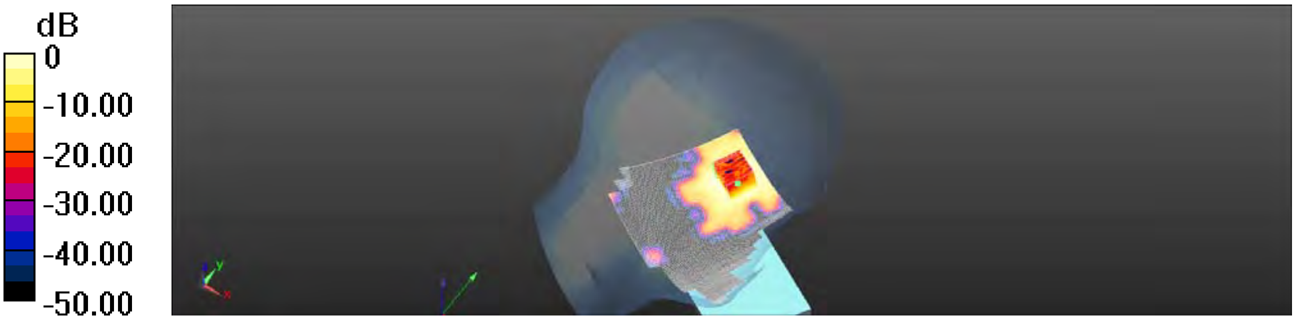
Communication System: WLAN 802.11n/a(5G) FCC ;Frequency: 5220 MHz
Medium parameters used: f = 5220 MHz; σ = 4.647 S/m; ε_r = 36.083; ρ = 1000 kg/m^3
Phantom section: Left Section

DASY 5 Configuration:

- Probe: EX3DV4 - SN3770; ConvF(5.15, 5.15, 5.15); Calibrated: 4/30/2013;
- Sensor-Surface: 2mm (Mechanical Surface Detection),
- Electronics: DAE4 Sn856; Calibrated: 5/23/2013
- Phantom: SAM2;
- DASY52 52.8.7; SEMCAD X 14.6.10

Configuration/LE Cheek/Area Scan (121x191x1): Interpolated grid: dx=10 mm, dy=10 mm
Maximum value of SAR (interpolated) = 0.276 W/kg

Configuration/LE Cheek/Zoom Scan(7x7x12)/Cube 0: Measurement grid: dx=4mm, dy=4mm, dz=2mm
Reference Value = 1.298 V/m; Power Drift = -0.09 dB
Peak SAR (extrapolated) = 0.509 W/kg
SAR(1 g) = 0.149 W/kg; SAR(10 g) = 0.057 W/kg.
Maximum value of SAR (measured) = 0.278 W/kg



0 dB = 0.278 W/kg = -5.56 dBW/kg

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Date: 2/13/2014

WLAN802.11a 5.2G_Body-worn_Back side_CH 44

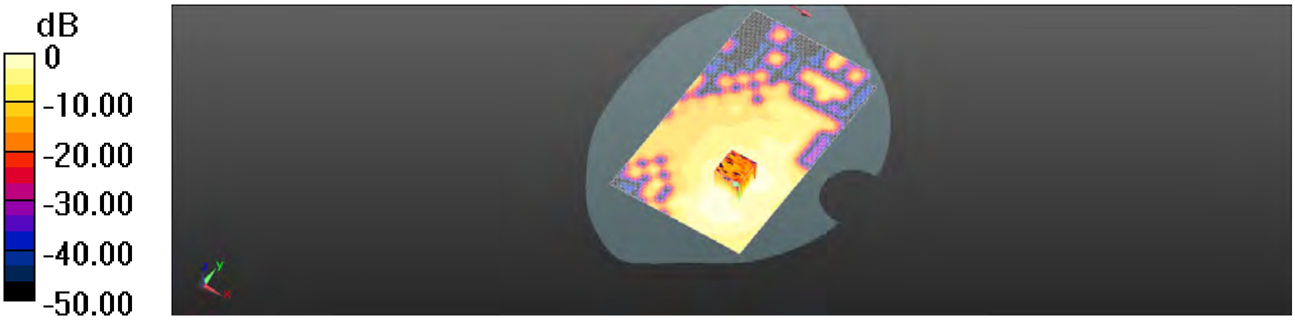
Communication System: WLAN 802.11n/a(5G) FCC ; Frequency: 5220 MHz
Medium parameters used: f = 5220 MHz; σ = 5.202 S/m; ε_r = 48.357; ρ = 1000 kg/m^3
Phantom section: Flat Section

DASY 5 Configuration:

- Probe: EX3DV4 - SN3770; ConvF(4.71, 4.71, 4.71); Calibrated: 4/30/2013;
- Sensor-Surface: 2mm (Mechanical Surface Detection),
- Electronics: DAE4 Sn856; Calibrated: 5/23/2013
- Phantom: SAM2;
- DASY52 52.8.7; SEMCAD X 14.6.10

Configuration/Body-worn/Area Scan (121x201x1): Interpolated grid: dx=10 mm, dy=10 mm
Maximum value of SAR (interpolated) = 0.110 W/kg

Configuration/Body-worn/Zoom Scan (7x7x12)/Cube 0: Measurement grid: dx=4mm, dy=4mm, dz=2mm
Reference Value = 2.227 V/m; Power Drift = -0.13 dB
Peak SAR (extrapolated) = 0.172 W/kg
SAR(1 g) = 0.068 W/kg; SAR(10 g) = 0.028 W/kg
Maximum value of SAR (measured) = 0.114 W/kg



0 dB = 0.114 W/kg = -9.43 dBW/kg

Date: 2/13/2014

WLAN802.11a 5.3G_Head_LE Cheek_CH 56

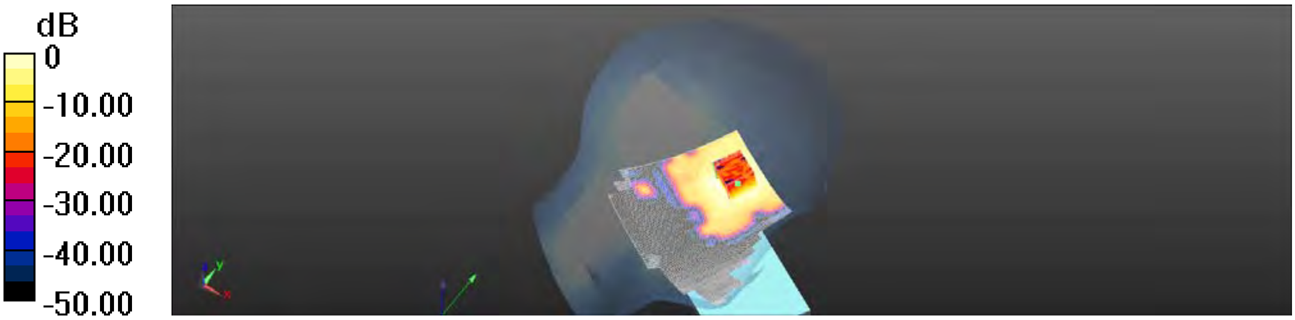
Communication System: WLAN 802.11n/a(5G) FCC ;Frequency: 5280 MHz
Medium parameters used: f = 5280 MHz; σ = 4.698 S/m; ε_r = 35.914; ρ = 1000 kg/m^3
Phantom section: Left Section

DASY 5 Configuration:

- Probe: EX3DV4 - SN3770; ConvF(4.95, 4.95, 4.95); Calibrated: 4/30/2013;
- Sensor-Surface: 2mm (Mechanical Surface Detection),
- Electronics: DAE4 Sn856; Calibrated: 5/23/2013
- Phantom: SAM2;
- DASY52 52.8.7; SEMCAD X 14.6.10

Configuration/LE Cheek/Area Scan (121x191x1): Interpolated grid: dx=10 mm, dy=10 mm
Maximum value of SAR (interpolated) = 0.322 W/kg

Configuration/LE Cheek/Zoom Scan(7x7x12)/Cube 0: Measurement grid: dx=4mm, dy=4mm, dz=2mm
Reference Value = 1.854 V/m; Power Drift = -0.01 dB
Peak SAR (extrapolated) = 0.580 W/kg
SAR(1 g) = 0.175 W/kg; SAR(10 g) = 0.069 W/kg
Maximum value of SAR (measured) = 0.322 W/kg



0 dB = 0.322 W/kg = -4.92 dBW/kg

Date: 2/13/2014

WLAN802.11a 5.3G_Body-worn_Back side_CH 60

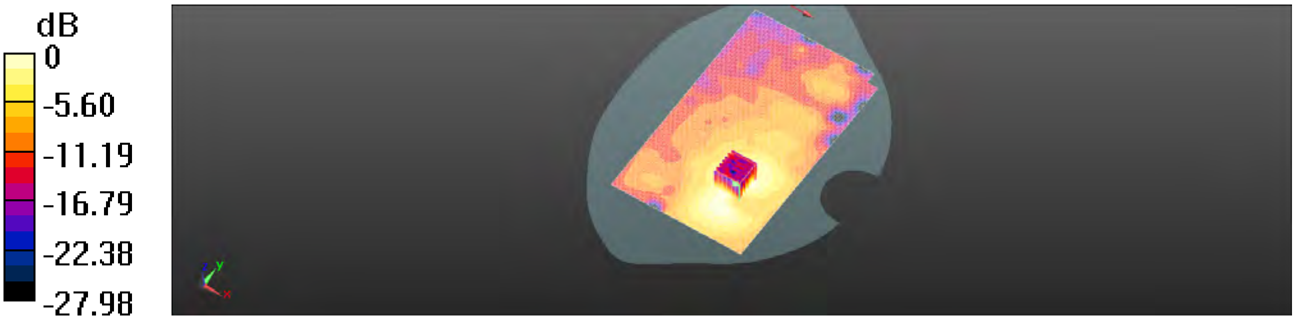
Communication System: WLAN 802.11n/a(5G) FCC ; Frequency: 5300 MHz
Medium parameters used: f = 5300 MHz; σ = 5.314 S/m; ε_r = 48.156; ρ = 1000 kg/m^3
Phantom section: Flat Section

DASY 5 Configuration:

- Probe: EX3DV4 - SN3770; ConvF(4.42, 4.42, 4.42); Calibrated: 4/30/2013;
- Sensor-Surface: 2mm (Mechanical Surface Detection),
- Electronics: DAE4 Sn856; Calibrated: 5/23/2013
- Phantom: SAM2;
- DASY52 52.8.7; SEMCAD X 14.6.10

Configuration/Body-worn/Area Scan (121x201x1): Interpolated grid: dx=10 mm, dy=10 mm
Maximum value of SAR (interpolated) = 0.182 W/kg

Configuration/Body-worn/Zoom Scan (7x7x12)/Cube 0: Measurement grid: dx=4mm, dy=4mm, dz=2mm
Reference Value = 2.486 V/m; Power Drift = 0.08 dB
Peak SAR (extrapolated) = 0.306 W/kg
SAR(1 g) = 0.112 W/kg; SAR(10 g) = 0.048 W/kg
Maximum value of SAR (measured) = 0.184 W/kg



0 dB = 0.184 W/kg = -7.35 dBW/kg

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Date: 2/13/2014

WLAN802.11a 5.6G_Head_LE Cheek_CH 132

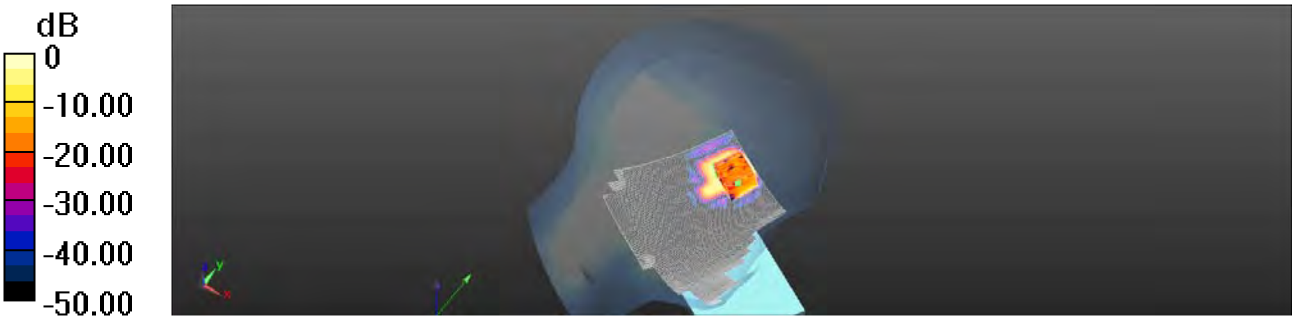
Communication System: WLAN 802.11n/a(5G) FCC ;Frequency: 5660 MHz
Medium parameters used: f = 5660 MHz; σ = 5.147 S/m; ε_r = 35.063; ρ = 1000 kg/m^3
Phantom section: Left Section

DASY 5 Configuration:

- Probe: EX3DV4 - SN3770; ConvF(4.49, 4.49, 4.49); Calibrated: 4/30/2013;
- Sensor-Surface: 2mm (Mechanical Surface Detection),
- Electronics: DAE4 Sn856; Calibrated: 5/23/2013
- Phantom: SAM2;
- DASY52 52.8.7; SEMCAD X 14.6.10

Configuration/LE Cheek/Area Scan (121x191x1): Interpolated grid: dx=10 mm, dy=10 mm
Maximum value of SAR (interpolated) = 0.264 W/kg

Configuration/LE Cheek/Zoom Scan(7x7x12)/Cube 0: Measurement grid: dx=4mm, dy=4mm, dz=2mm
Reference Value = 0.1437 V/m; Power Drift = 0.05 dB
Peak SAR (extrapolated) = 0.497 W/kg
SAR(1 g) = 0.095 W/kg; SAR(10 g) = 0.026 W/kg
Maximum value of SAR (measured) = 0.187 W/kg



0 dB = 0.187 W/kg = -7.28 dBW/kg

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Date: 2/13/2014

WLAN802.11a 5.6G_Body-worn_Back side_CH 132_repeated with external Memory card inside_repeat sar test at the highest sar measurement

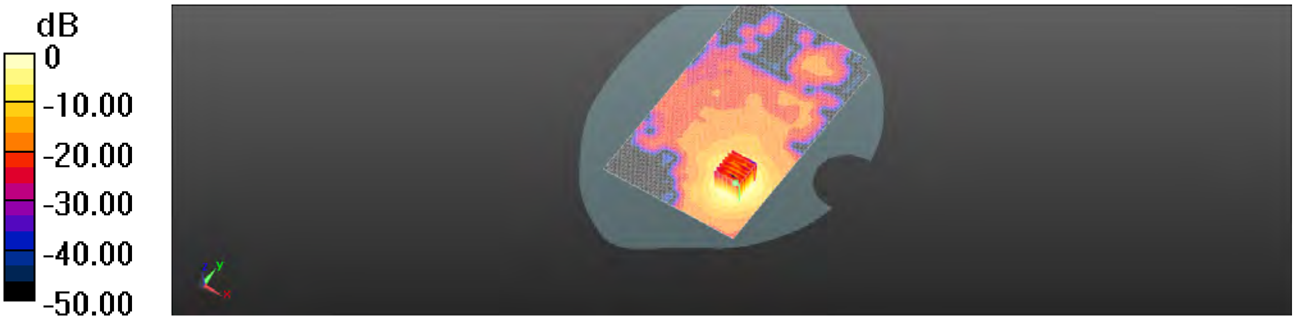
Communication System: WLAN 802.11n/a(5G) FCC ; Frequency: 5660 MHz
Medium parameters used: f = 5660 MHz; σ = 5.845 S/m; ε_r = 47.232; ρ = 1000 kg/m^3
Phantom section: Flat Section

DASY 5 Configuration:

- Probe: EX3DV4 - SN3770; ConvF(4.01, 4.01, 4.01); Calibrated: 4/30/2013;
- Sensor-Surface: 2mm (Mechanical Surface Detection),
- Electronics: DAE4 Sn856; Calibrated: 5/23/2013
- Phantom: SAM2;
- DASY52 52.8.7; SEMCAD X 14.6.10

Configuration/Body-worn/Area Scan (121x201x1): Interpolated grid: dx=10 mm, dy=10 mm
Maximum value of SAR (interpolated) = 1.65 W/kg

Configuration/Body-worn/Zoom Scan (7x7x12)/Cube 0: Measurement grid: dx=4mm, dy=4mm, dz=2mm
Reference Value = 2.347 V/m; Power Drift = -0.09 dB
Peak SAR (extrapolated) = 2.91 W/kg
SAR(1 g) = 0.909 W/kg; SAR(10 g) = 0.324 W/kg
Maximum value of SAR (measured) = 1.63 W/kg



0 dB = 1.63 W/kg = 2.12 dBW/kg

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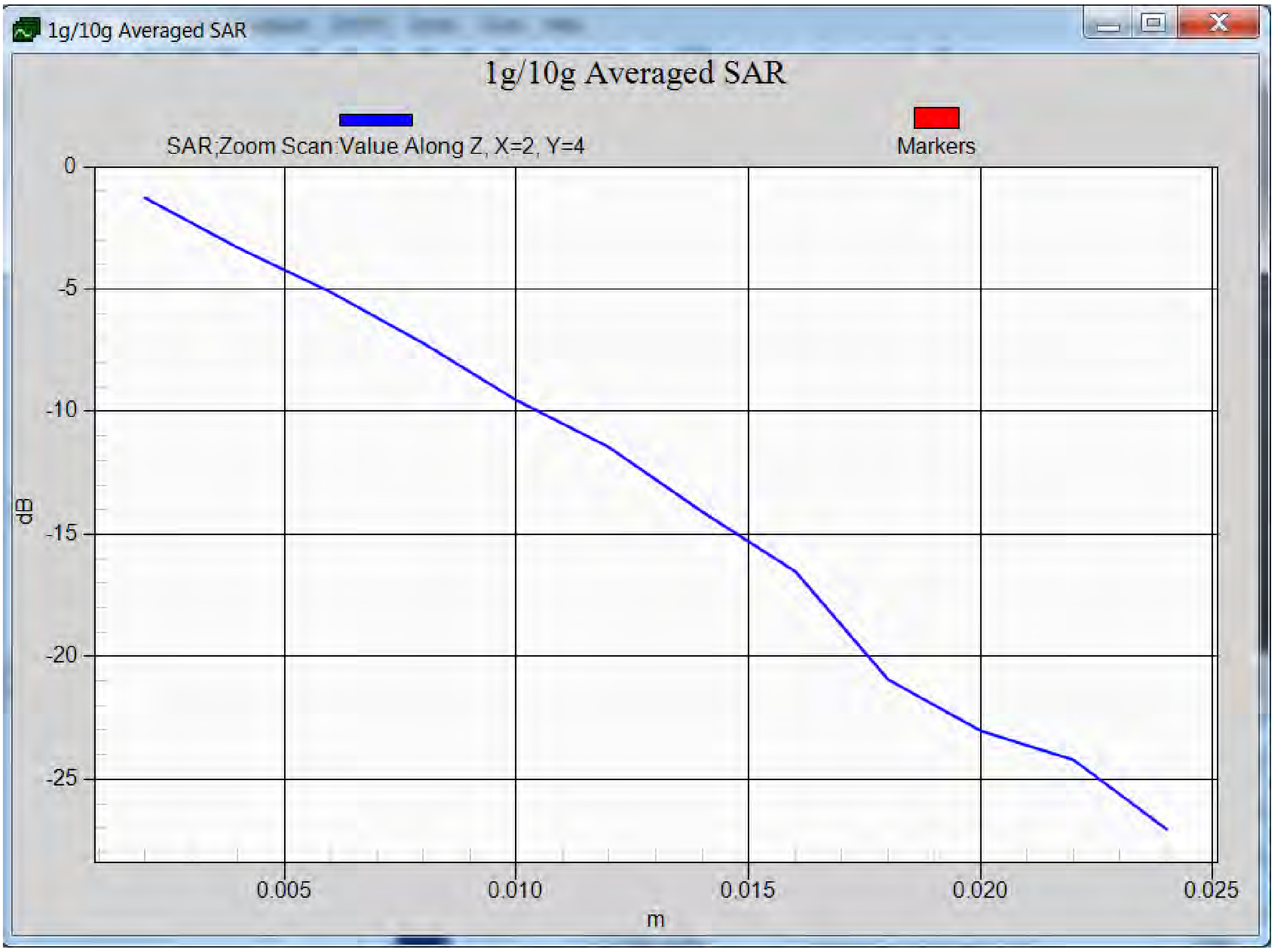

1g/10g Averaged SAR
1g/10g Averaged SAR
SAR;Zoom Scan:Value Along Z, X=2, Y=4
Markers
0
-5
-10
-15
-20
-25
dB
0.005
0.010
0.015
0.020
0.025
m

Date: 2/13/2014

WLAN802.11a 5.8G_Head_LE Cheek_CH 161

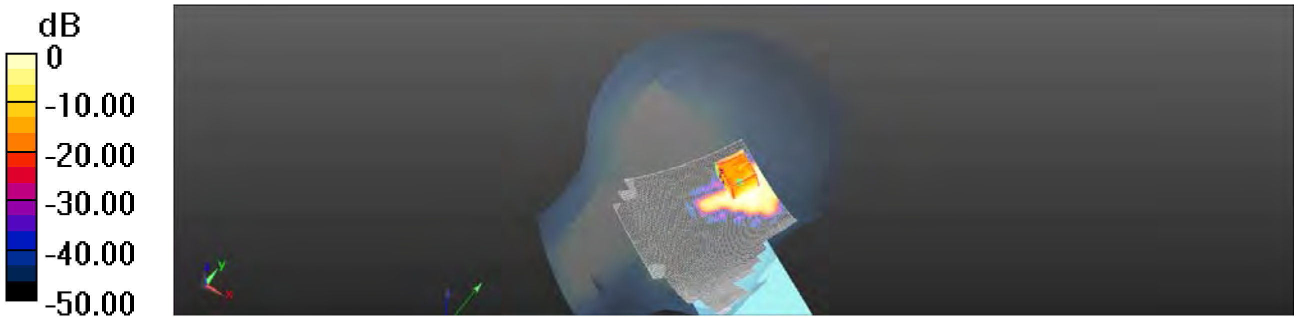
Communication System: WLAN 802.11n/a(5G) FCC ;Frequency: 5805 MHz
Medium parameters used: f = 5805 MHz; σ = 5.315 S/m; ε_r = 34.702; ρ = 1000 kg/m^3
Phantom section: Left Section

DASY 5 Configuration:

- Probe: EX3DV4 - SN3770; ConvF(4.66, 4.66, 4.66); Calibrated: 4/30/2013;
- Sensor-Surface: 2mm (Mechanical Surface Detection),
- Electronics: DAE4 Sn856; Calibrated: 5/23/2013
- Phantom: SAM2;
- DASY52 52.8.7; SEMCAD X 14.6.10

Configuration/LE Cheek/Area Scan (121x191x1): Interpolated grid: dx=10 mm, dy=10 mm
Maximum value of SAR (interpolated) = 0.261 W/kg

Configuration/LE Cheek/Zoom Scan(7x7x12)/Cube 0: Measurement grid: dx=4mm, dy=4mm, dz=2mm
Reference Value = 0.940 V/m; Power Drift = -0.01 dB
Peak SAR (extrapolated) = 0.205 W/kg
SAR(1 g) = 0.058 W/kg; SAR(10 g) = 0.021 W/kg
Maximum value of SAR (measured) = 0.110 W/kg



0 dB = 0.110 W/kg = -9.59 dBW/kg

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Date: 2/13/2014

WLAN802.11a 5.8G_Body-worn_Back side_CH 153

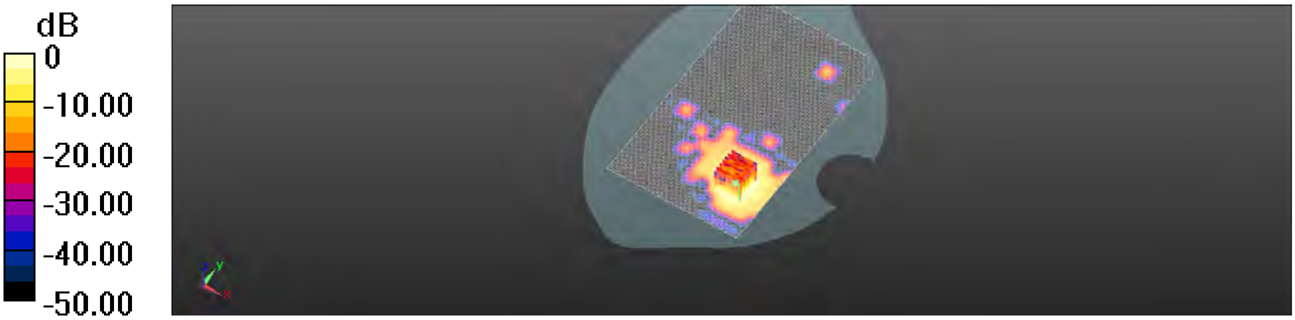
Communication System: WLAN 802.11n/a(5G) FCC ; Frequency: 5765 MHz
Medium parameters used: f = 5765 MHz; σ = 6 S/m; ε_r = 46.968; ρ = 1000 kg/m^3
Phantom section: Flat Section

DASY 5 Configuration:

- Probe: EX3DV4 - SN3770; ConvF(4.29, 4.29, 4.29); Calibrated: 4/30/2013;
- Sensor-Surface: 2mm (Mechanical Surface Detection),
- Electronics: DAE4 Sn856; Calibrated: 5/23/2013
- Phantom: SAM2;
- DASY52 52.8.7; SEMCAD X 14.6.10

Configuration/Body-worn/Area Scan (121x201x1): Interpolated grid: dx=10 mm, dy=10 mm
Maximum value of SAR (interpolated) = 0.377 W/kg

Configuration/Body-worn/Zoom Scan (7x7x12)/Cube 0: Measurement grid: dx=4mm, dy=4mm, dz=2mm
Reference Value = 0.892 V/m; Power Drift = -0.03 dB
Peak SAR (extrapolated) = 0.652 W/kg
SAR(1 g) = 0.204 W/kg; SAR(10 g) = 0.071 W/kg
Maximum value of SAR (measured) = 0.362 W/kg



0 dB = 0.362 W/kg = -4.41 dBW/kg

6. System Verification

Date: 2014/2/5

Dipole 750 MHz_SN:1015_Head

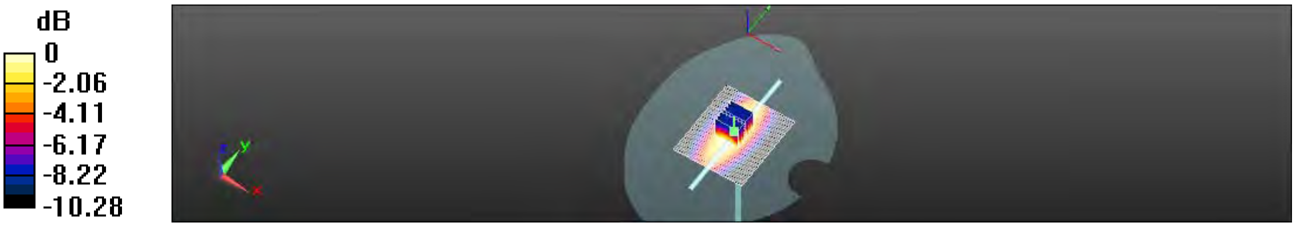
Communication System: CW; Frequency: 750 MHz
Medium parameters used: f = 750 MHz; σ = 0.873 S/m; ε_r = 43.374; ρ = 1000 kg/m^3
Phantom section: Flat Section

DASY5 Configuration:

- Probe: EX3DV4 - SN3578; ConvF(8.85, 8.85, 8.85); Calibrated: 2013/6/20;
- Sensor-Surface: 2mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn547; Calibrated: 2013/3/19
- Phantom: Head;
- DASY52 52.8.7; SEMCAD X 14.6.10

Configuration/Pin=250mW/Area Scan (61x71x1): Interpolated grid: dx=15 mm, dy=15 mm
Maximum value of SAR (interpolated) = 2.56 W/kg

Configuration/Pin=250mW/Zoom Scan (7x7x7)/Cube 0: Measurement grid: dx=5mm, dy=5mm, dz=5mm
Reference Value = 56.050 V/m; Power Drift = 0.02 dB
Peak SAR (extrapolated) = 3.09 W/kg
SAR(1 g) = 2.01 W/kg; SAR(10 g) = 1.32 W/kg
Maximum value of SAR (measured) = 2.58 W/kg



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

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Date: 2014/2/15

Dipole 750 MHz_SN:1015_Body

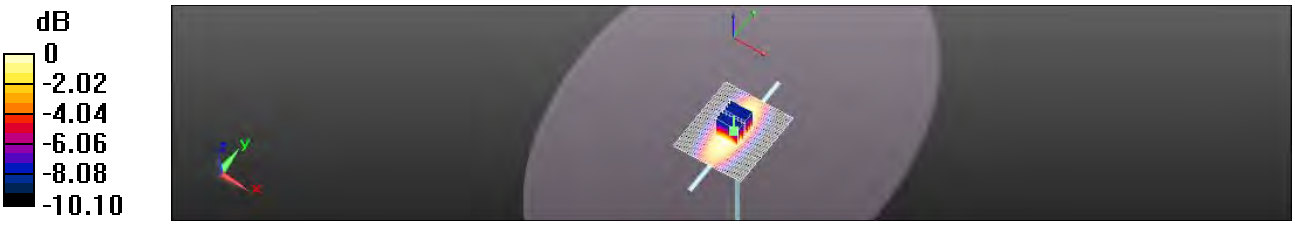
Communication System: CW; Frequency: 750 MHz
Medium parameters used: f = 750 MHz; σ = 0.957 S/m; ε_r = 54.444; ρ = 1000 kg/m^3
Phantom section: Flat Section

DASY5 Configuration:

- Probe: EX3DV4 - SN3578; ConvF(8.68, 8.68, 8.68); Calibrated: 2013/6/20;
- Sensor-Surface: 2mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn547; Calibrated: 2013/3/19
- Phantom: Body;
- DASY52 52.8.5; SEMCAD X 14.6.10

Configuration/Pin=250mW/Area Scan (61x71x1): Interpolated grid: dx=15 mm, dy=15 mm
Maximum value of SAR (interpolated) = 2.67 W/kg

Configuration/Pin=250mW/Zoom Scan (7x7x7)/Cube 0: Measurement grid: dx=5mm, dy=5mm, dz=5mm
Reference Value = 55.859 V/m; Power Drift = -0.00 dB
Peak SAR (extrapolated) = 3.18 W/kg
SAR(1 g) = 2.1 W/kg; SAR(10 g) = 1.38 W/kg
Maximum value of SAR (measured) = 2.68 W/kg



0 dB = 2.68 W/kg = 4.28 dBW/kg

Date: 1/30/2014

Dipole 835 MHz_SN:4d156_Head

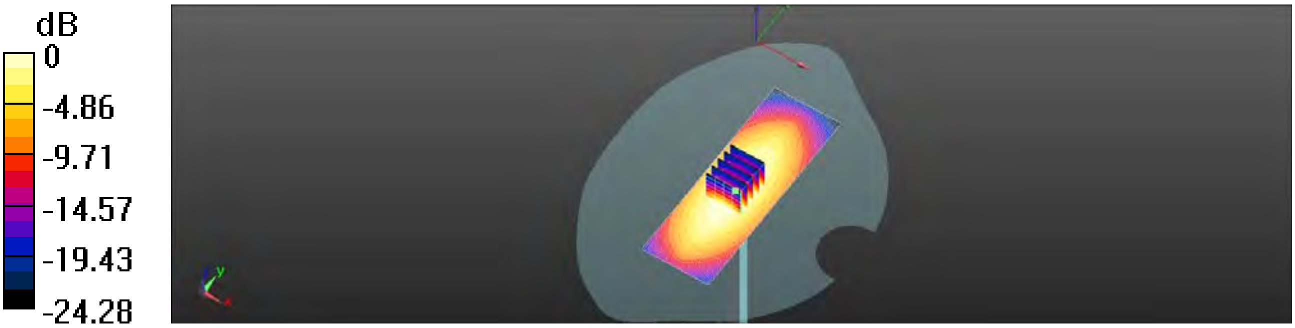
Communication System: CW; Frequency: 835 MHz
Medium parameters used: f = 835 MHz; σ = 0.885 S/m; ε_r = 41.947; ρ = 1000 kg/m^3
Phantom section: Flat Section

DASY 5 Configuration:

- Probe: EX3DV4 - SN3770; ConvF(9.83, 9.83, 9.83); Calibrated: 4/30/2013;
- Sensor-Surface: 2mm (Mechanical Surface Detection),
- Electronics: DAE4 Sn856; Calibrated: 5/23/2013
- Phantom: SAM2;
- DASY52 52.8.7; SEMCAD X 14.6.10

Configuration/d=15mm, Pin=250mW, dist=2mm: Interpolated grid: dx=15 mm, dy=15 mm
Maximum value of SAR (interpolated) = 3.18 W/kg

Configuration/d=15mm, Pin=250mW, dist=2mm: Measurement grid: dx=5mm, dy=5mm, dz=5mm
Reference Value = 60.727 V/m; Power Drift = -0.03 dB
Peak SAR (extrapolated) = 3.83 W/kg
SAR(1 g) = 2.5 W/kg; SAR(10 g) = 1.63 W/kg
Maximum value of SAR (measured) = 3.20 W/kg



0 dB = 3.18 W/kg = 5.03 dBW/kg

Dipole 835 MHz_SN:4d156_Body

Communication System: CW; Frequency: 835 MHz

Medium parameters used: f = 835 MHz; σ = 1.006 S/m; ε_r = 53.585; ρ = 1000 kg/m^3

Phantom section: Flat Section

DASY 5 Configuration:

- Probe: EX3DV4 - SN3770; ConvF(9.62, 9.62, 9.62); Calibrated: 4/30/2013;
- Sensor-Surface: 2mm (Mechanical Surface Detection),
- Electronics: DAE4 Sn856; Calibrated: 5/23/2013
- Phantom: SAM2;
- DASY52 52.8.7; SEMCAD X 14.6.10

Configuration/d=15mm, Pin=250mW, dist=2mm: Interpolated grid: dx=15 mm, dy=15 mm

Maximum value of SAR (interpolated) = 3.11 W/kg

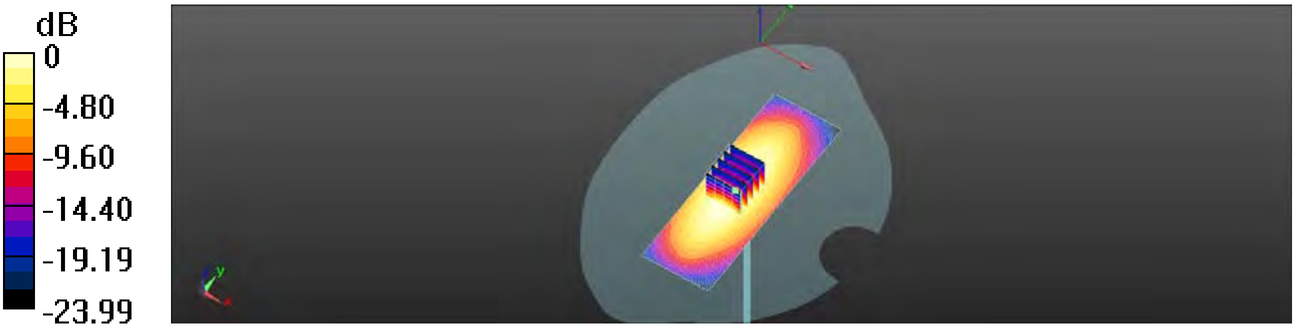
Configuration/d=15mm, Pin=250mW, dist=2mm: Measurement grid: dx=5mm, dy=5mm, dz=5mm

Reference Value = 54.924 V/m; Power Drift = -0.01 dB

Peak SAR (extrapolated) = 3.76 W/kg

SAR(1 g) = 2.45 W/kg; SAR(10 g) = 1.59 W/kg

Maximum value of SAR (measured) = 3.15 W/kg



0 dB = 3.11 W/kg = 4.92 dBW/kg

Dipole 1750 MHz_SN:1095_Head

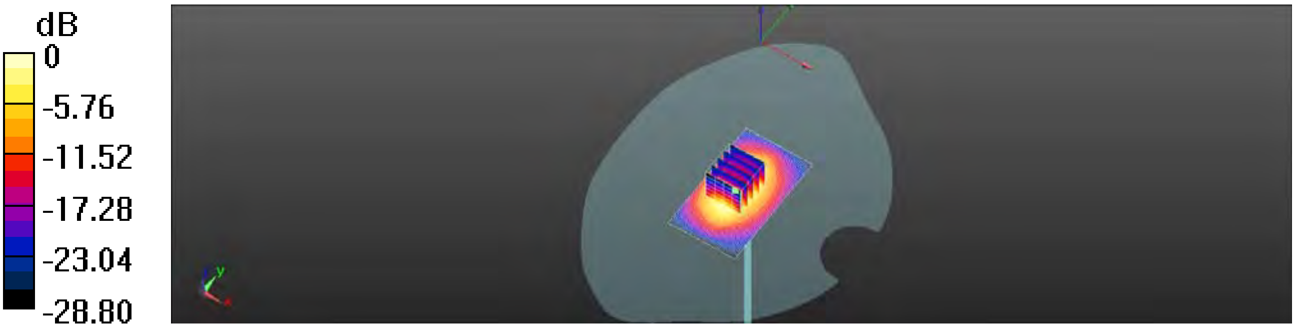
Communication System: CW; Frequency: 1750 MHz
Medium parameters used: f = 1750 MHz; σ = 1.374 S/m; ε_r = 41.094; ρ = 1000 kg/m^3
Phantom section: Flat Section

DASY 5 Configuration:

- Probe: EX3DV4 - SN3770; ConvF(8.29, 8.29, 8.29); Calibrated: 4/30/2013;
- Sensor-Surface: 2mm (Mechanical Surface Detection),
- Electronics: DAE4 Sn856; Calibrated: 5/23/2013
- Phantom: SAM2;
- DASY52 52.8.7; SEMCAD X 14.6.10

Configuration/d=10mm, Pin=250mW, dist=2mm: Interpolated grid: dx=15 mm, dy=15 mm
Maximum value of SAR (interpolated) = 13.0 W/kg

Configuration/d=10mm, Pin=250mW, dist=2mm: Measurement grid: dx=5mm, dy=5mm, dz=5mm
Reference Value = 92.482 V/m; Power Drift = 0.01 dB
Peak SAR (extrapolated) = 16.4 W/kg
SAR(1 g) = 8.78 W/kg; SAR(10 g) = 4.58 W/kg
Maximum value of SAR (measured) = 12.7 W/kg



0 dB = 13.0 W/kg = 11.15 dBW/kg

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Dipole 1750 MHz_SN:1095_Body

Communication System: CW; Frequency: 1750 MHz
Medium parameters used: f = 1750 MHz; σ = 1.436 S/m; ε_r = 54.16; ρ = 1000 kg/m^3
Phantom section: Flat Section

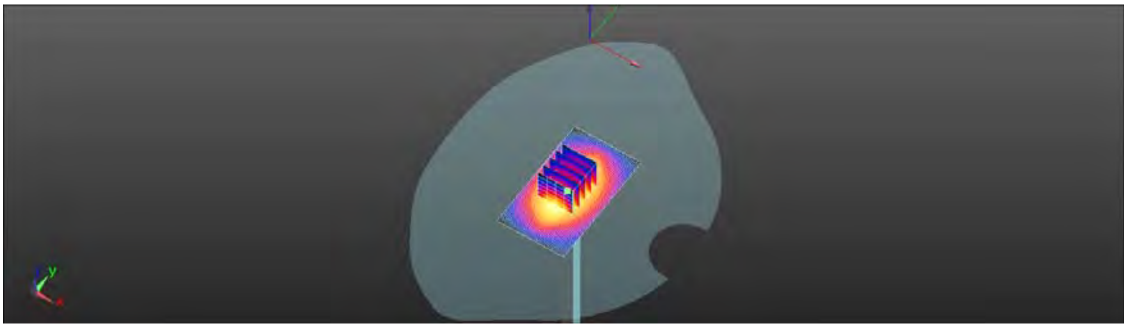
DASY 5 Configuration:

- Probe: EX3DV4 - SN3770; ConvF(7.85, 7.85, 7.85); Calibrated: 4/30/2013;
- Sensor-Surface: 2mm (Mechanical Surface Detection),
- Electronics: DAE4 Sn856; Calibrated: 5/23/2013
- Phantom: SAM2;
- DASY52 52.8.7; SEMCAD X 14.6.10

Configuration/d=10mm, Pin=250mW, dist=2mm: Interpolated grid: dx=15 mm, dy=15 mm
Maximum value of SAR (interpolated) = 14.6 W/kg

Configuration/d=10mm, Pin=250mW, dist=2mm: Measurement grid: dx=5mm, dy=5mm, dz=5mm
Reference Value = 99.964 V/m; Power Drift = -0.03 dB
Peak SAR (extrapolated) = 17.4 W/kg
SAR(1 g) = 9.82 W/kg; SAR(10 g) = 5.23 W/kg
Maximum value of SAR (measured) = 14.0 W/kg

dB
0
-5.50
-11.01
-16.51
-22.01
-27.51



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

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Date: 2014/2/16

Dipole 1750 MHz_SN:1008_Head

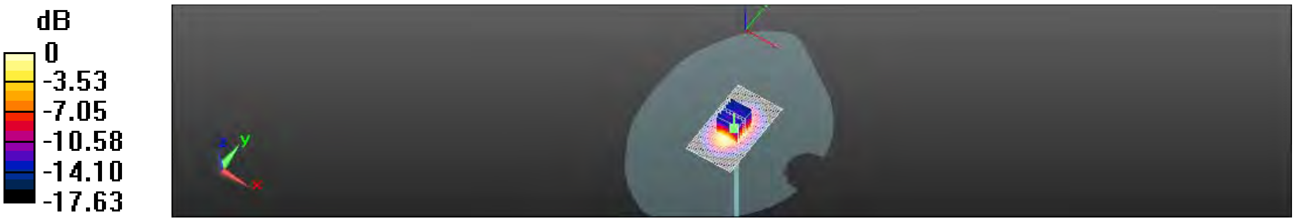
Communication System: CW; Frequency: 1750 MHz
Medium parameters used: f = 1750 MHz; σ = 1.391 S/m; ε_r = 38.645; ρ = 1000 kg/m^3
Phantom section: Flat Section

DASY5 Configuration:

- Probe: EX3DV4 - SN3831; ConvF(8, 8, 8); Calibrated: 2014/1/31;
- Sensor-Surface: 2mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn1260; Calibrated: 2013/5/3
- Phantom: Head;
- DASY52 52.8.7; SEMCAD X 14.6.10

Configuration/Pin=250mW/Area Scan (41x71x1): Interpolated grid: dx=15 mm, dy=15 mm
Maximum value of SAR (interpolated) = 12.7 W/kg

Configuration/Pin=250mW/Zoom Scan (7x7x7)/Cube 0: Measurement grid: dx=5mm, dy=5mm, dz=5mm
Reference Value = 95.375 V/m; Power Drift = 0.02 dB
Peak SAR (extrapolated) = 15.7 W/kg
SAR(1 g) = 8.46 W/kg; SAR(10 g) = 4.4 W/kg
Maximum value of SAR (measured) = 12.2 W/kg



0 dB = 12.2 W/kg = 10.86 dBW/kg

Dipole 1750 MHz_SN:1008_Body

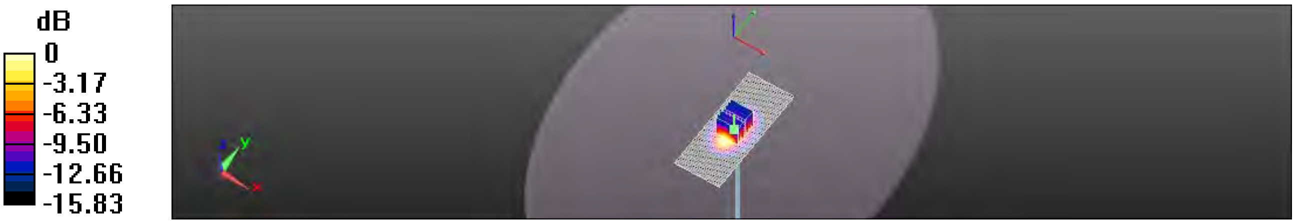
Communication System: CW; Frequency: 1750 MHz
Medium parameters used: f = 1750 MHz; σ = 1.467 S/m; ε_r = 55.384; ρ = 1000 kg/m^3
Phantom section: Flat Section

DASY5 Configuration:

- Probe: EX3DV4 - SN3831; ConvF(7.63, 7.63, 7.63); Calibrated: 2014/1/31;
- Sensor-Surface: 2mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn1260; Calibrated: 2013/5/3
- Phantom: Body;
- DASY52 52.8.5; SEMCAD X 14.6.10

Configuration/Pin=250mW/Area Scan (41x101x1): Interpolated grid: dx=15 mm, dy=15 mm
Maximum value of SAR (interpolated) = 12.9 W/kg

Configuration/Pin=250mW/Zoom Scan (7x7x7)/Cube 0: Measurement grid: dx=5mm, dy=5mm, dz=5mm
Reference Value = 98.200 V/m; Power Drift = 0.00 dB
Peak SAR (extrapolated) = 16.0 W/kg
SAR(1 g) = 9.16 W/kg; SAR(10 g) = 4.92 W/kg
Maximum value of SAR (measured) = 12.9 W/kg



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

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Member of SGS Group

Date: 2014/2/18

Dipole 1750 MHz_SN:1008_Body

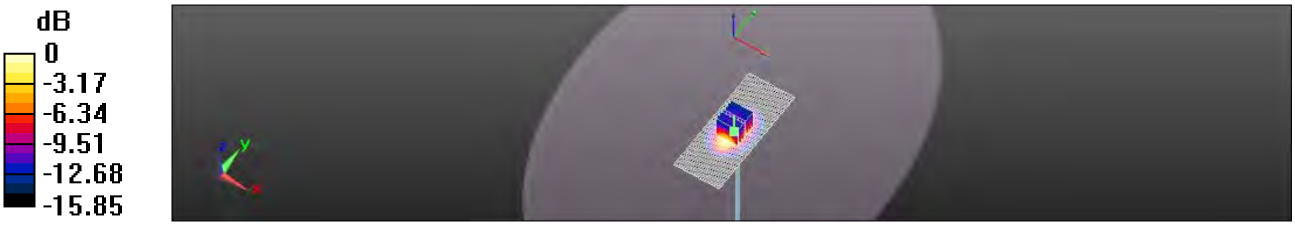
Communication System: CW; Frequency: 1750 MHz
Medium parameters used: f = 1750 MHz; σ = 1.466 S/m; ε_r = 55.219; ρ = 1000 kg/m^3
Phantom section: Flat Section

DASY5 Configuration:

- Probe: EX3DV4 - SN3831; ConvF(7.63, 7.63, 7.63); Calibrated: 2014/1/31;
- Sensor-Surface: 2mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn1260; Calibrated: 2013/5/3
- Phantom: Body;
- DASY52 52.8.7; SEMCAD X 14.6.10

Configuration/Pin=250mW/Area Scan (41x101x1): Interpolated grid: dx=15 mm, dy=15 mm
Maximum value of SAR (interpolated) = 12.9 W/kg

Configuration/Pin=250mW/Zoom Scan (7x7x7)/Cube 0: Measurement grid: dx=5mm, dy=5mm, dz=5mm
Reference Value = 98.360 V/m; Power Drift = -0.00 dB
Peak SAR (extrapolated) = 16.0 W/kg
SAR(1 g) = 9.14 W/kg; SAR(10 g) = 4.89 W/kg
Maximum value of SAR (measured) = 12.9 W/kg



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

Date: 2014/2/19

Dipole 1750 MHz_SN:1008_Body

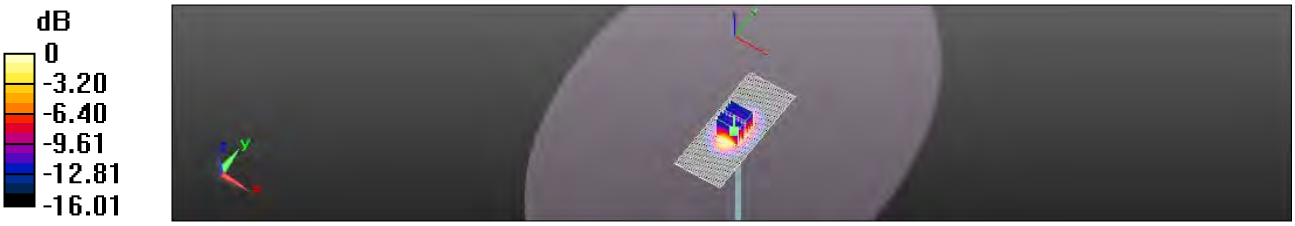
Communication System: CW; Frequency: 1750 MHz
Medium parameters used: f = 1750 MHz; σ = 1.463 S/m; ε_r = 55.302; ρ = 1000 kg/m^3
Phantom section: Flat Section

DASY5 Configuration:

- Probe: EX3DV4 - SN3831; ConvF(7.63, 7.63, 7.63); Calibrated: 2014/1/31;
- Sensor-Surface: 2mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn1260; Calibrated: 2013/5/3
- Phantom: Body;
- DASY52 52.8.7; SEMCAD X 14.6.10

Configuration/Pin=250mW/Area Scan (41x101x1): Interpolated grid: dx=15 mm, dy=15 mm
Maximum value of SAR (interpolated) = 12.5 W/kg

Configuration/Pin=250mW/Zoom Scan (7x7x7)/Cube 0: Measurement grid: dx=5mm, dy=5mm, dz=5mm
Reference Value = 97.169 V/m; Power Drift = -0.01 dB
Peak SAR (extrapolated) = 15.5 W/kg
SAR(1 g) = 8.9 W/kg; SAR(10 g) = 4.79 W/kg
Maximum value of SAR (measured) = 12.5 W/kg



0 dB = 12.5 W/kg = 10.97 dBW/kg

Date: 2/4/2014

Dipole 1900 MHz_SN:5d173_Head

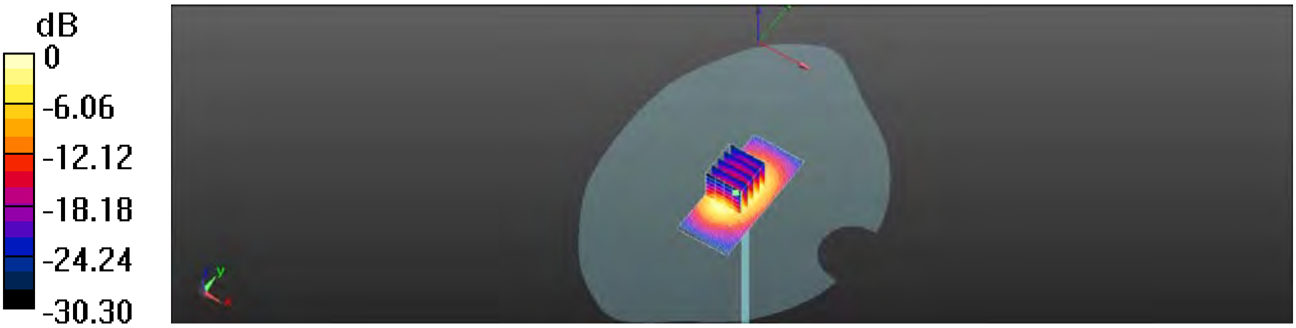
Communication System: CW; Frequency: 1900 MHz
Medium parameters used: f = 1900 MHz; σ = 1.38 S/m; ε_r = 38.931; ρ = 1000 kg/m^3
Phantom section: Flat Section

DASY 5 Configuration:

- Probe: EX3DV4 - SN3770; ConvF(7.98, 7.98, 7.98); Calibrated: 4/30/2013;
- Sensor-Surface: 2mm (Mechanical Surface Detection), Sensor-Surface: 4mm (Mechanical Surface Detection),
- Electronics: DAE4 Sn856; Calibrated: 5/23/2013
- Phantom: SAM2;
- DASY52 52.8.7; SEMCAD X 14.6.10

Configuration/d=10mm, Pin=250mW, dist=2mm: Interpolated grid: dx=15 mm, dy=15 mm
Maximum value of SAR (interpolated) = 15.0 W/kg

Configuration/d=10mm, Pin=250mW, dist=2mm: Measurement grid: dx=5mm, dy=5mm, dz=5mm
Reference Value = 103.4 V/m; Power Drift = -0.03 dB
Peak SAR (extrapolated) = 18.8 W/kg
SAR(1 g) = 9.83 W/kg; SAR(10 g) = 5.02 W/kg
Maximum value of SAR (measured) = 11.0 W/kg



0 dB = 15.0 W/kg = 11.76 dBW/kg

Date: 2/5/2014

Dipole 1900 MHz_SN:5d173_Body

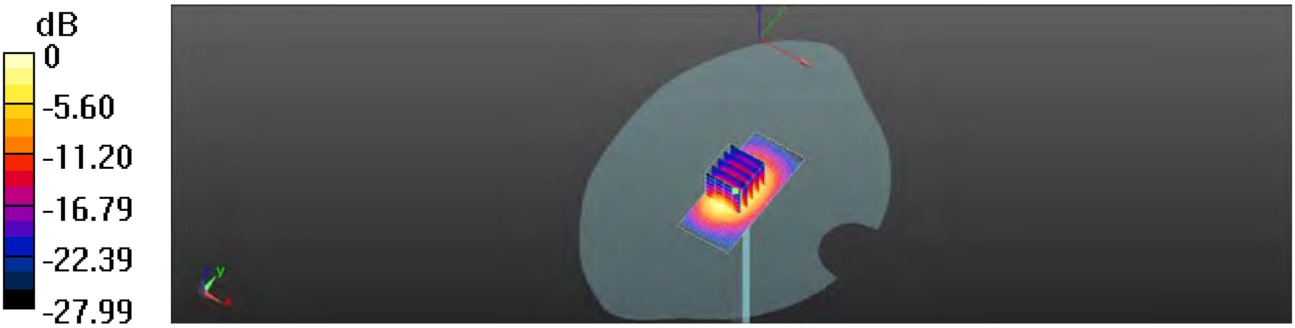
Communication System: CW; Frequency: 1900 MHz
Medium parameters used: f = 1900 MHz; σ = 1.532 S/m; ε_r = 54.067; ρ = 1000 kg/m^3
Phantom section: Flat Section

DASY 5 Configuration:

- Probe: EX3DV4 - SN3770; ConvF(7.63, 7.63, 7.63); Calibrated: 4/30/2013;
- Sensor-Surface: 2mm (Mechanical Surface Detection),
- Electronics: DAE4 Sn856; Calibrated: 5/23/2013
- Phantom: SAM2;
- DASY52 52.8.7; SEMCAD X 14.6.10

Configuration/d=10mm, Pin=250mW, dist=2mm: Interpolated grid: dx=15 mm, dy=15 mm
Maximum value of SAR (interpolated) = 15.1 W/kg

Configuration/d=10mm, Pin=250mW, dist=2mm: Measurement grid: dx=5mm, dy=5mm, dz=5mm
Reference Value = 96.919 V/m; Power Drift = -0.01 dB
Peak SAR (extrapolated) = 17.8 W/kg
SAR(1 g) = 9.98 W/kg; SAR(10 g) = 5.2 W/kg
Maximum value of SAR (measured) = 14.3 W/kg



0 dB = 15.1 W/kg = 11.78 dBW/kg

Date: 2/12/2014

Dipole 2450 MHz_SN:912_Head

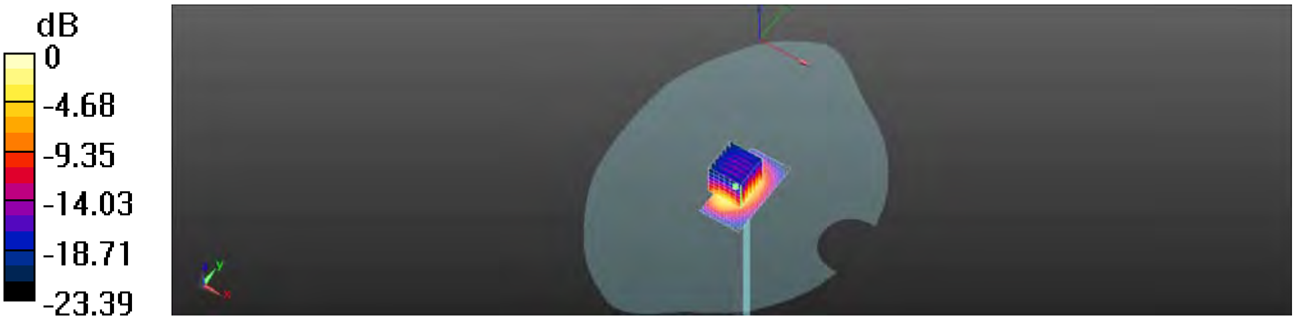
Communication System: CW; Frequency: 2450 MHz
Medium parameters used: f = 2450 MHz; σ = 1.849 S/m; ε_r = 39.586; ρ = 1000 kg/m^3
Phantom section: Flat Section

DASY 5 Configuration:

- Probe: EX3DV4 - SN3770; ConvF(7.12, 7.12, 7.12); Calibrated: 4/30/2013;
- Sensor-Surface: 2mm (Mechanical Surface Detection),
- Electronics: DAE4 Sn856; Calibrated: 5/23/2013
- Phantom: SAM2;
- DASY52 52.8.7; SEMCAD X 14.6.10

Configuration/d=10mm, Pin=250mW, dist=2mm: Interpolated grid: dx=12 mm, dy=12 mm
Maximum value of SAR (interpolated) = 21.0 W/kg

Configuration/d=10mm, Pin=250mW, dist=2mm: Measurement grid: dx=5mm, dy=5mm, dz=5mm
Reference Value = 105.5 V/m; Power Drift = 0.02 dB
Peak SAR (extrapolated) = 29.0 W/kg
SAR(1 g) = 13.3 W/kg; SAR(10 g) = 5.96 W/kg
Maximum value of SAR (measured) = 20.7 W/kg



0 dB = 21.0 W/kg = 13.21 dBW/kg

Date: 2/12/2014

Dipole 2450 MHz_SN:912_Body

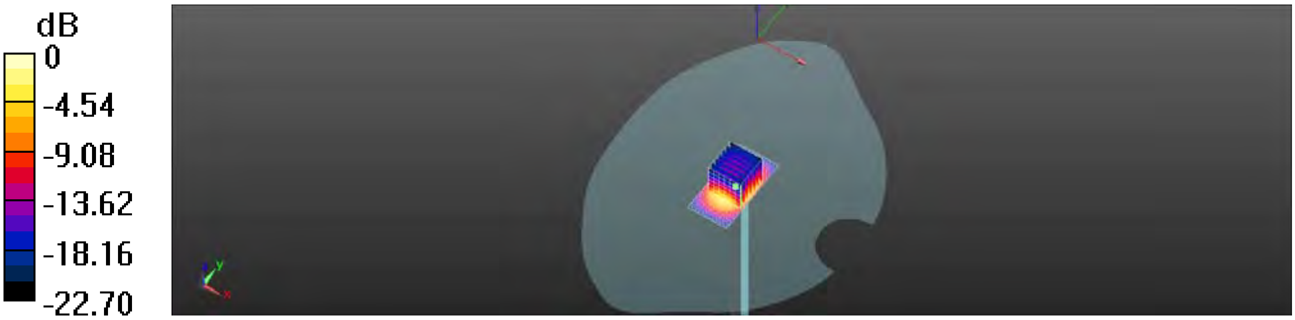
Communication System: CW; Frequency: 2450 MHz
Medium parameters used: f = 2450 MHz; σ = 1.99 S/m; ε_r = 51.052; ρ = 1000 kg/m^3
Phantom section: Flat Section

DASY 5 Configuration:

- Probe: EX3DV4 - SN3770; ConvF(7.21, 7.21, 7.21); Calibrated: 4/30/2013;
- Sensor-Surface: 2mm (Mechanical Surface Detection),
- Electronics: DAE4 Sn856; Calibrated: 5/23/2013
- Phantom: SAM2;
- DASY52 52.8.7; SEMCAD X 14.6.10

Configuration/d=10mm, Pin=250mW, dist=2mm: Interpolated grid: dx=12 mm, dy=12 mm
Maximum value of SAR (interpolated) = 21.5 W/kg

Configuration/d=10mm, Pin=250mW, dist=2mm: Measurement grid: dx=5mm, dy=5mm, dz=5mm
Reference Value = 101 V/m; Power Drift = -0.03 dB
Peak SAR (extrapolated) = 29.0 W/kg
SAR(1 g) = 13.5 W/kg; SAR(10 g) = 6.14 W/kg
Maximum value of SAR (measured) = 21.0 W/kg



0 dB = 21.5 W/kg = 13.32 dBW/kg

Dipole 2600 MHz_SN:1005_Head

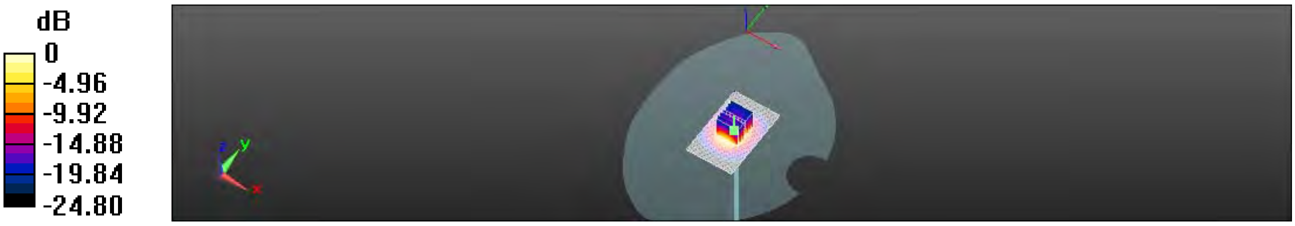
Communication System: CW; Frequency: 2600 MHz
Medium parameters used: f = 2600 MHz; σ = 2.003 S/m; ε_r = 39.635; ρ = 1000 kg/m^3
Phantom section: Flat Section

DASY5 Configuration:

- Probe: EX3DV4 - SN3923; ConvF(7.44, 7.44, 7.44); Calibrated: 2013/6/12;
- Sensor-Surface: 2mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn1260; Calibrated: 2013/5/3
- Phantom: Head;
- DASY52 52.8.7; SEMCAD X 14.6.10

Configuration/Pin=250mW/Area Scan (51x81x1): Interpolated grid: dx=12 mm, dy=12 mm
Maximum value of SAR (interpolated) = 23.7 W/kg

Configuration/Pin=250mW/Zoom Scan (7x7x7)/Cube 0: Measurement grid: dx=5mm, dy=5mm, dz=5mm
Reference Value = 105.9 V/m; Power Drift = 0.01 dB
Peak SAR (extrapolated) = 31.7 W/kg
SAR(1 g) = 14.5 W/kg; SAR(10 g) = 6.41 W/kg
Maximum value of SAR (measured) = 22.8 W/kg



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

Date: 2014/2/21

Dipole 2600 MHz_SN:1005_Body

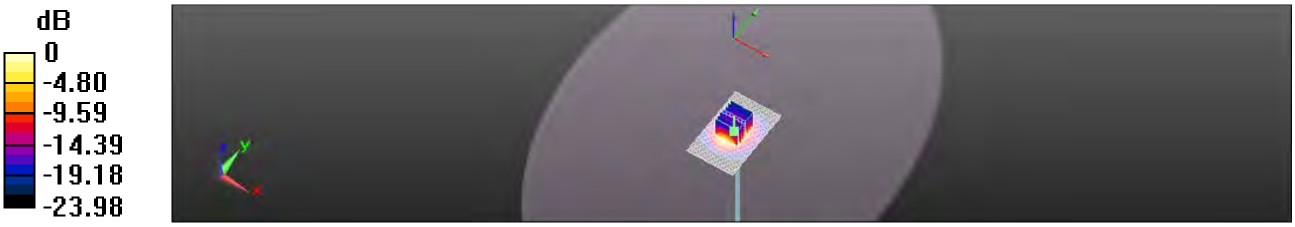
Communication System: CW; Frequency: 2600 MHz
Medium parameters used: f = 2600 MHz; σ = 2.224 S/m; ε_r = 50.622; ρ = 1000 kg/m^3
Phantom section: Flat Section

DASY5 Configuration:

- Probe: EX3DV4 - SN3923; ConvF(7.37, 7.37, 7.37); Calibrated: 2013/6/12;
- Sensor-Surface: 2mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn1260; Calibrated: 2013/5/3
- Phantom: Body;
- DASY52 52.8.7; SEMCAD X 14.6.10

Configuration/Pin=250mW/Area Scan (51x81x1): Interpolated grid: dx=12 mm, dy=12 mm
Maximum value of SAR (interpolated) = 23.8 W/kg

Configuration/Pin=250mW/Zoom Scan (7x7x7)/Cube 0: Measurement grid: dx=5mm, dy=5mm, dz=5mm
Reference Value = 100.6 V/m; Power Drift = 0.07 dB
Peak SAR (extrapolated) = 32.0 W/kg
SAR(1 g) = 14.3 W/kg; SAR(10 g) = 6.34 W/kg
Maximum value of SAR (measured) = 22.9 W/kg



0 dB = 22.9 W/kg = 13.60 dBW/kg

Date: 2014/2/22

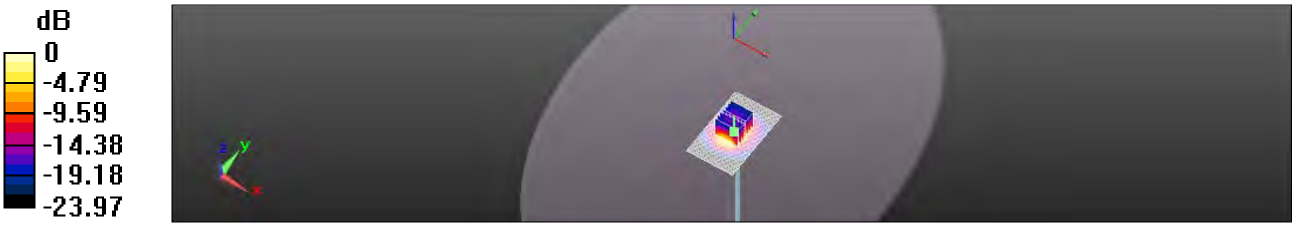
Dipole 2600 MHz_SN:1005_Body
Communication System: CW; Frequency: 2600 MHz
Medium parameters used: f = 2600 MHz; σ = 2.234 S/m; ε_r = 50.662; ρ = 1000 kg/m^3
Phantom section: Flat Section

DASY5 Configuration:

- Probe: EX3DV4 - SN3923; ConvF(7.37, 7.37, 7.37); Calibrated: 2013/6/12;
- Sensor-Surface: 2mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn1260; Calibrated: 2013/5/3
- Phantom: Body;
- DASY52 52.8.7; SEMCAD X 14.6.10

Configuration/Pin=250mW/Area Scan (51x81x1): Interpolated grid: dx=12 mm, dy=12 mm
Maximum value of SAR (interpolated) = 24.0 W/kg

Configuration/Pin=250mW/Zoom Scan (7x7x7)/Cube 0: Measurement grid: dx=5mm, dy=5mm, dz=5mm
Reference Value = 100.8 V/m; Power Drift = 0.05 dB
Peak SAR (extrapolated) = 32.3 W/kg
SAR(1 g) = 14.4 W/kg; SAR(10 g) = 6.38 W/kg
Maximum value of SAR (measured) = 23.1 W/kg



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

Date: 2/13/2014

Dipole 5200 MHz_SN:1104_Head

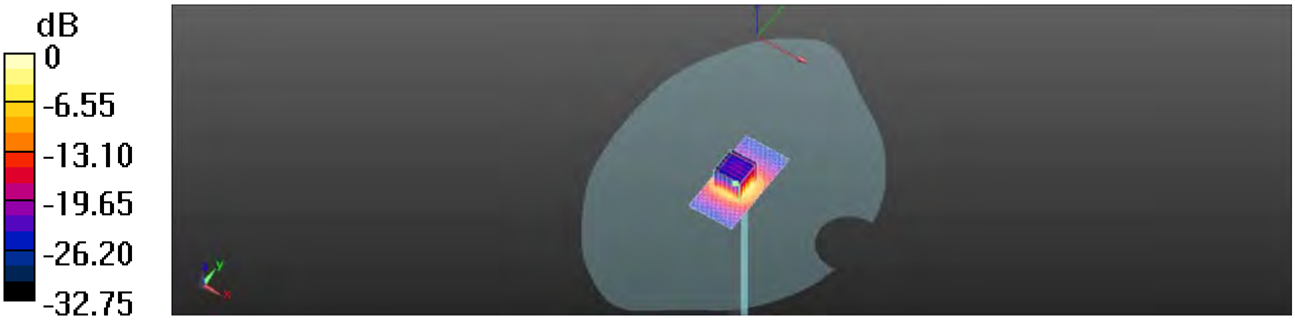
Communication System: CW; Frequency: 5200 MHz
Medium parameters used: f = 5200 MHz; σ = 4.612 S/m; ε_r = 36.097; ρ = 1000 kg/m^3
Phantom section: Flat Section

DASY 5 Configuration:

- Probe: EX3DV4 - SN3770; ConvF(5.15, 5.15, 5.15); Calibrated: 4/30/2013;
- Sensor-Surface: 2mm (Mechanical Surface Detection),
- Electronics: DAE4 Sn856; Calibrated: 5/23/2013
- Phantom: SAM2;
- DASY52 52.8.7; SEMCAD X 14.6.10

Configuration/d=10mm, Pin=100mW, dist=2mm: Interpolated grid: dx=10 mm, dy=10 mm
Maximum value of SAR (interpolated) = 18.7 W/kg

Configuration/d=10mm, Pin=100mW, dist=2mm: Measurement grid: dx=4mm, dy=4mm, dz=1.4mm
Reference Value = 65.731 V/m; Power Drift = -0.06 dB
Peak SAR (extrapolated) = 28.3 W/kg
SAR(1 g) = 8.11 W/kg; SAR(10 g) = 2.42 W/kg
Maximum value of SAR (measured) = 16.2 W/kg



0 dB = 16.2 W/kg = 12.10 dBW/kg

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Member of SGS Group

Date: 2/13/2014

Dipole 5200 MHz_SN:1104_Body

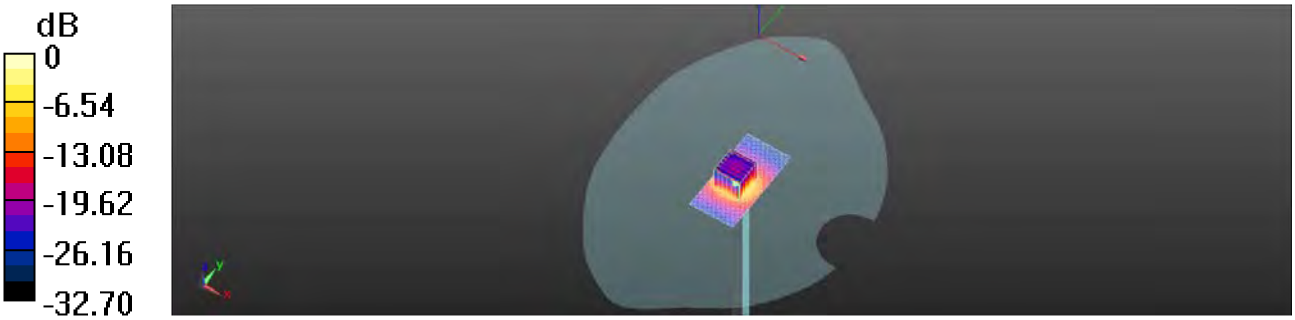
Communication System: CW; Frequency: 5200 MHz
Medium parameters used: f = 5200 MHz; σ = 5.167 S/m; ε_r = 48.422; ρ = 1000 kg/m^3
Phantom section: Flat Section

DASY 5 Configuration:

- Probe: EX3DV4 - SN3770; ConvF(4.71, 4.71, 4.71); Calibrated: 4/30/2013;
- Sensor-Surface: 2mm (Mechanical Surface Detection),
- Electronics: DAE4 Sn856; Calibrated: 5/23/2013
- Phantom: SAM2;
- DASY52 52.8.7; SEMCAD X 14.6.10

Configuration/d=10mm, Pin=100mW, dist=2mm: Interpolated grid: dx=10 mm, dy=10 mm
Maximum value of SAR (interpolated) = 14.7 W/kg

Configuration/d=10mm, Pin=100mW, dist=2mm: Measurement grid: dx=4mm, dy=4mm, dz=1.4mm
Reference Value = 51.348 V/m; Power Drift = -0.09 dB
Peak SAR (extrapolated) = 25.3 W/kg
SAR(1 g) = 7.53 W/kg; SAR(10 g) = 2.16 W/kg
Maximum value of SAR (measured) = 14.1 W/kg



0 dB = 14.1 W/kg = 11.49 dBW/kg

Date: 2/13/2014

Dipole 5300 MHz_SN:1104_Head

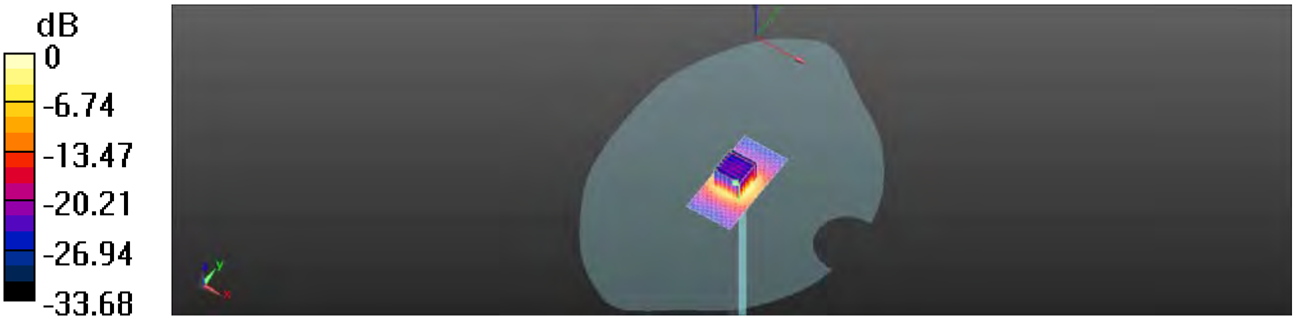
Communication System: CW; Frequency: 5300 MHz
Medium parameters used: f = 5300 MHz; σ = 4.726 S/m; ε_r = 35.85; ρ = 1000 kg/m^3
Phantom section: Flat Section

DASY 5 Configuration:

- Probe: EX3DV4 - SN3770; ConvF(4.95, 4.95, 4.95); Calibrated: 4/30/2013;
- Sensor-Surface: 2mm (Mechanical Surface Detection),
- Electronics: DAE4 Sn856; Calibrated: 5/23/2013
- Phantom: SAM2;
- DASY52 52.8.7; SEMCAD X 14.6.10

Configuration/d=10mm, Pin=100mW, dist=2mm: Interpolated grid: dx=10 mm, dy=10 mm
Maximum value of SAR (interpolated) = 22.9 W/kg

Configuration/d=10mm, Pin=100mW, dist=2mm: Measurement grid: dx=4mm, dy=4mm, dz=1.4mm
Reference Value = 73.631 V/m; Power Drift = -0.11 dB
Peak SAR (extrapolated) = 30.4 W/kg
SAR(1 g) = 8.72 W/kg; SAR(10 g) = 2.5 W/kg
Maximum value of SAR (measured) = 17.5 W/kg



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

Date: 2/13/2014

Dipole 5300 MHz_SN:1104_Body

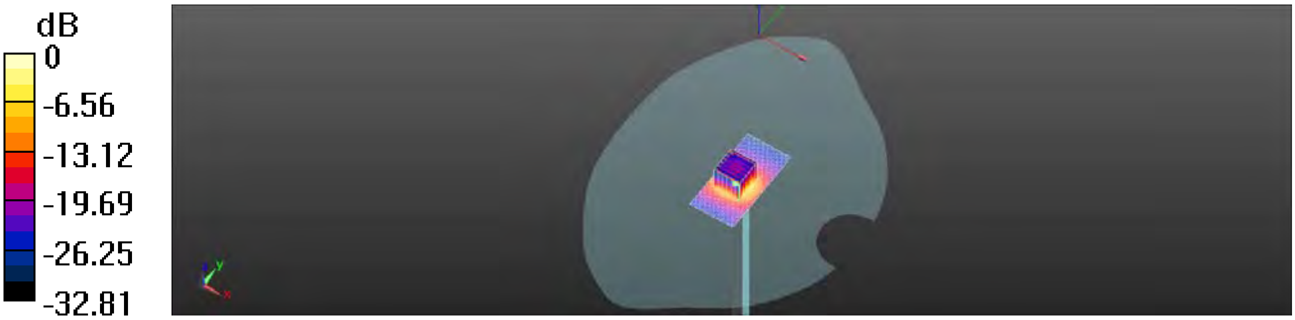
Communication System: CW; Frequency: 5300 MHz
Medium parameters used: f = 5300 MHz; σ = 5.314 S/m; ε_r = 48.156; ρ = 1000 kg/m^3
Phantom section: Flat Section

DASY 5 Configuration:

- Probe: EX3DV4 - SN3770; ConvF(4.42, 4.42, 4.42); Calibrated: 4/30/2013;
- Sensor-Surface: 2mm (Mechanical Surface Detection),
- Electronics: DAE4 Sn856; Calibrated: 5/23/2013
- Phantom: SAM2;
- DASY52 52.8.7; SEMCAD X 14.6.10

Configuration/d=10mm, Pin=100mW, dist=2mm: Interpolated grid: dx=10 mm, dy=10 mm
Maximum value of SAR (interpolated) = 15.8 W/kg

Configuration/d=10mm, Pin=100mW, dist=2mm: Measurement grid: dx=4mm, dy=4mm, dz=1.4mm
Reference Value = 52.610 V/m; Power Drift = -0.06 dB
Peak SAR (extrapolated) = 26.9 W/kg
SAR(1 g) = 7.72 W/kg; SAR(10 g) = 2.17 W/kg
Maximum value of SAR (measured) = 15.2 W/kg



0 dB = 15.2 W/kg = 11.82 dBW/kg

Date: 2/13/2014

Dipole 5600 MHz_SN:1104_Head

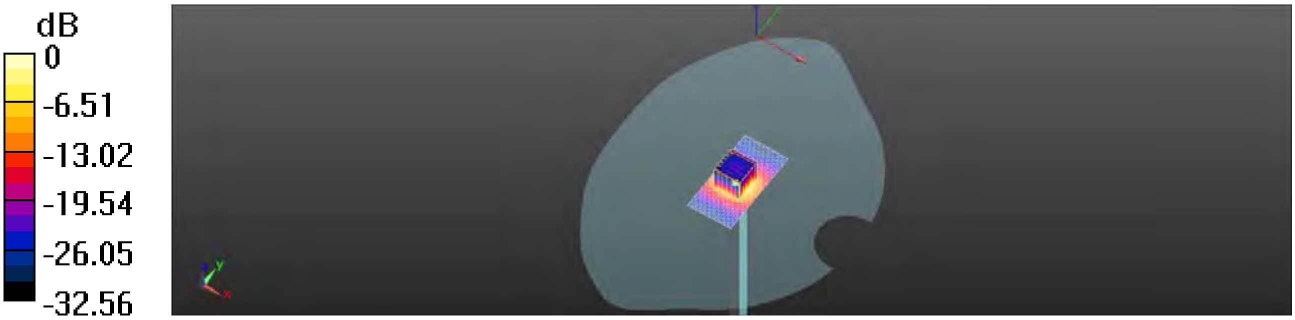
Communication System: CW; Frequency: 5600 MHz
Medium parameters used: f = 5600 MHz; σ = 5.075 S/m; ε_r = 35.164; ρ = 1000 kg/m^3
Phantom section: Flat Section

DASY 5 Configuration:

- Probe: EX3DV4 - SN3770; ConvF(4.49, 4.49, 4.49); Calibrated: 4/30/2013;
- Sensor-Surface: 2mm (Mechanical Surface Detection),
- Electronics: DAE4 Sn856; Calibrated: 5/23/2013
- Phantom: SAM2;
- DASY52 52.8.7; SEMCAD X 14.6.10

Configuration/d=10mm, Pin=100mW, dist=2mm: Interpolated grid: dx=10 mm, dy=10 mm
Maximum value of SAR (interpolated) = 17.0 W/kg

Configuration/d=10mm, Pin=100mW, dist=2mm: Measurement grid: dx=4mm, dy=4mm, dz=1.4mm
Reference Value = 61.425 V/m; Power Drift = -0.08 dB
Peak SAR (extrapolated) = 30.5 W/kg
SAR(1 g) = 8.49 W/kg; SAR(10 g) = 2.48 W/kg
Maximum value of SAR (measured) = 16.9 W/kg



0 dB = 16.9 W/kg = 12.28 dBW/kg

Date: 2/13/2014

Dipole 5600 MHz_SN:1104_Body

Communication System: CW; Frequency: 5600 MHz

Medium parameters used: f = 5600 MHz; σ = 5.754 S/m; ε_r = 47.391; ρ = 1000 kg/m^3

Phantom section: Flat Section

DASY 5 Configuration:

- Probe: EX3DV4 - SN3770; ConvF(4.01, 4.01, 4.01); Calibrated: 4/30/2013;
- Sensor-Surface: 2mm (Mechanical Surface Detection),
- Electronics: DAE4 Sn856; Calibrated: 5/23/2013
- Phantom: SAM2;
- DASY52 52.8.7; SEMCAD X 14.6.10

Configuration/d=10mm, Pin=100mW, dist=2mm: Interpolated grid: dx=10 mm, dy=10 mm

Maximum value of SAR (interpolated) = 16.9 W/kg

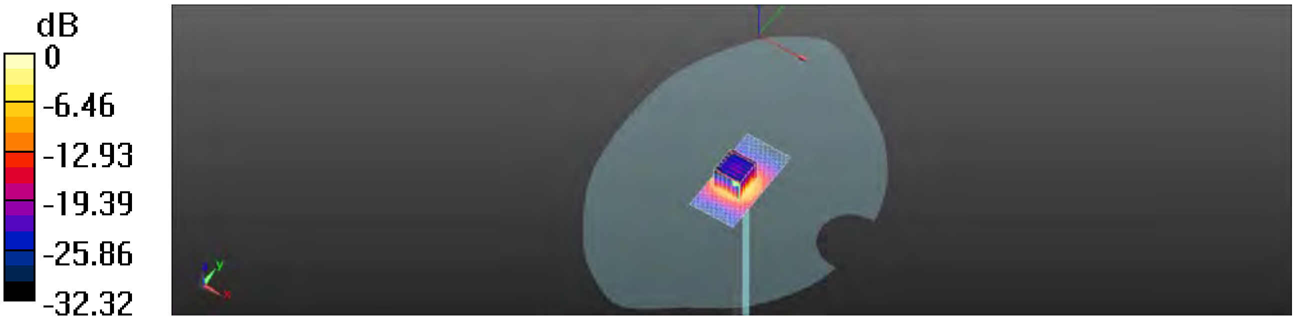
Configuration/d=10mm, Pin=100mW, dist=2mm: Measurement grid: dx=4mm, dy=4mm, dz=1.4mm

Reference Value = 52.457 V/m; Power Drift = -0.07 dB

Peak SAR (extrapolated) = 29.9 W/kg

SAR(1 g) = 8.23 W/kg; SAR(10 g) = 2.34 W/kg

Maximum value of SAR (measured) = 16.1 W/kg



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

Dipole 5800 MHz_SN:1104_Head

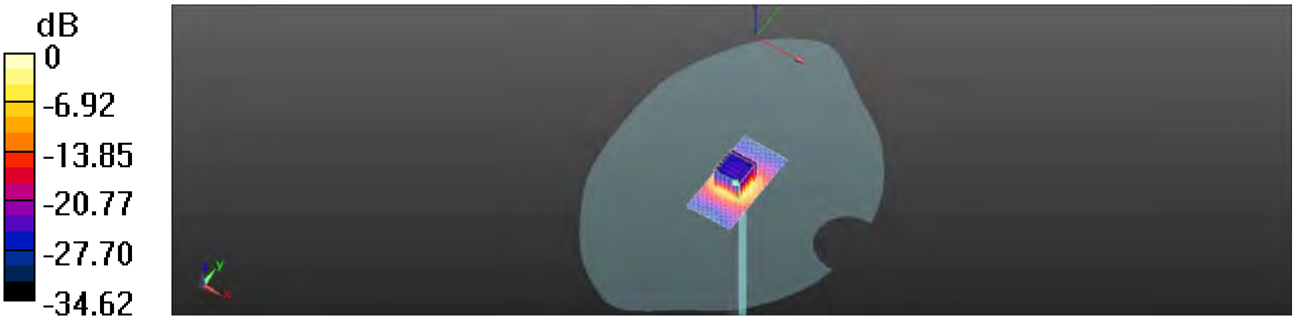
Communication System: CW; Frequency: 5800 MHz
Medium parameters used: f = 5800 MHz; σ = 5.309 S/m; ε_r = 34.725; ρ = 1000 kg/m^3
Phantom section: Flat Section

DASY 5 Configuration:

- Probe: EX3DV4 - SN3770; ConvF(4.66, 4.66, 4.66); Calibrated: 4/30/2013;
- Sensor-Surface: 2mm (Mechanical Surface Detection),
- Electronics: DAE4 Sn856; Calibrated: 5/23/2013
- Phantom: SAM2;
- DASY52 52.8.7; SEMCAD X 14.6.10

Configuration/d=10mm, Pin=100mW, dist=2mm: Interpolated grid: dx=10 mm, dy=10 mm
Maximum value of SAR (interpolated) = 16.5 W/kg

Configuration/d=10mm, Pin=100mW, dist=2mm: Measurement grid: dx=4mm, dy=4mm, dz=1.4mm
Reference Value = 59.432 V/m; Power Drift = -0.01 dB
Peak SAR (extrapolated) = 30.7 W/kg
SAR(1 g) = 7.95 W/kg; SAR(10 g) = 2.34 W/kg
Maximum value of SAR (measured) = 16.3 W/kg



0 dB = 16.3 W/kg = 12.12 dBW/kg

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Date: 2/13/2014

Dipole 5800 MHz_SN:1104_Body

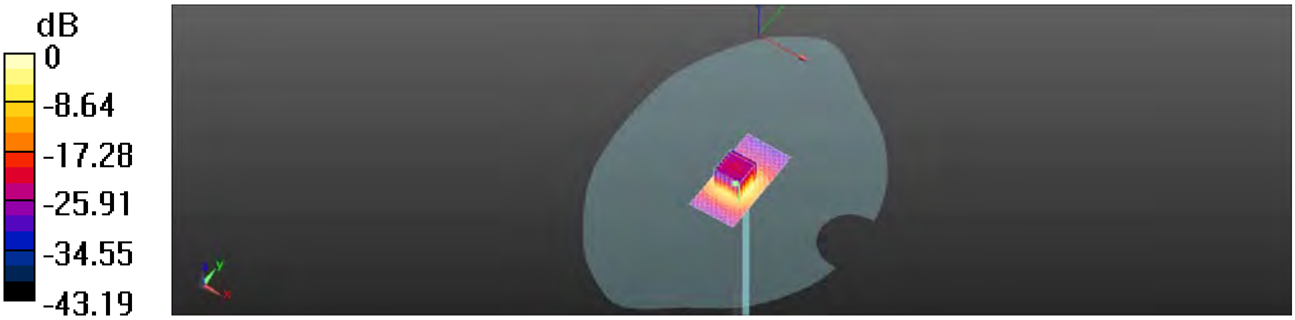
Communication System: CW; Frequency: 5800 MHz
Medium parameters used: f = 5800 MHz; σ = 6.046 S/m; ε_r = 46.896; ρ = 1000 kg/m^3
Phantom section: Flat Section

DASY 5 Configuration:

- Probe: EX3DV4 - SN3770; ConvF(4.29, 4.29, 4.29); Calibrated: 4/30/2013;
- Sensor-Surface: 2mm (Mechanical Surface Detection),
- Electronics: DAE4 Sn856; Calibrated: 5/23/2013
- Phantom: SAM2;
- DASY52 52.8.7; SEMCAD X 14.6.10

Configuration/d=10mm, Pin=100mW, dist=2mm: Interpolated grid: dx=10 mm, dy=10 mm
Maximum value of SAR (interpolated) = 15.4 W/kg

Configuration/d=10mm, Pin=100mW, dist=2mm: Measurement grid: dx=4mm, dy=4mm, dz=1.4mm
Reference Value = 47.822 V/m; Power Drift = -0.07 dB
Peak SAR (extrapolated) = 27.7 W/kg
SAR(1 g) = 7.56 W/kg; SAR(10 g) = 2.13 W/kg
Maximum value of SAR (measured) = 14.9 W/kg



0 dB = 14.9 W/kg = 11.73 dBW/kg

7. DAE & Probe Calibration Certificate

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Multilateral Agreement for the recognition of calibration certificates

Accreditation No.: **SCS 108**

Client **SGS-TW (Auden)**

Certificate No: **DAE4-856_May13**

CALIBRATION CERTIFICATE

Object: DAE4 - SD 000 D04 BM - SN: 856

Calibration procedure(s): QA CAL-06.v26
Calibration procedure for the data acquisition electronics (DAE)

Calibration date: May 23, 2013

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	02-Oct-12 (No:12728)	Oct-13
Secondary Standards	**ID #**	**Check Date (in house)**	**Scheduled Check**
Auto DAE Calibration Unit	SE UWS 053 AA 1001	07-Jan-13 (in house check)	In house check: Jan-14
Calibrator Box V2.1	SE UMS 006 AA 1002	07-Jan-13 (in house check)	In house check: Jan-14

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

Issued: May 23, 2013

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Certificate No: DAE4-856_May13 Page 1 of 5

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Accreditation No.: **SCS 108**

Glossary

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

Methods Applied and Interpretation of Parameters

- *DC Voltage Measurement:* Calibration Factor assessed for use in DASY system by comparison with a calibrated instrument traceable to national standards. The figure given corresponds to the full scale range of the voltmeter in the respective range.
- *Connector angle:* The angle of the connector is assessed measuring the angle mechanically by a tool inserted. Uncertainty is not required.
- The following parameters as documented in the Appendix contain technical information as a result from the performance test and require no uncertainty.
    - *DC Voltage Measurement Linearity:* Verification of the Linearity at +10% and -10% of the nominal calibration voltage. Influence of offset voltage is included in this measurement.
    - *Common mode sensitivity:* Influence of a positive or negative common mode voltage on the differential measurement.
    - *Channel separation:* Influence of a voltage on the neighbor channels not subject to an input voltage.
    - *AD Converter Values with inputs shorted:* Values on the internal AD converter corresponding to zero input voltage
    - *Input Offset Measurement:* Output voltage and statistical results over a large number of zero voltage measurements.
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    - *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.

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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	403.416 ± 0.02% (k=2)	404.540 ± 0.02% (k=2)	403.867 ± 0.02% (k=2)
Low Range	3.97422 ± 1.50% (k=2)	3.97703 ± 1.50% (k=2)	3.97733 ± 1.50% (k=2)

Connector Angle

Connector Angle to be used in DASY system	52.5 ° ± 1 °

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Appendix

1. DC Voltage Linearity

High Range		Reading (µV)	Difference (µV)	Error (%)
Channel X	+ Input	199987.92	-6.55	-0.00
Channel X	+ Input	19997.24	-3.32	-0.02
Channel X	- Input	-19998.80	1.29	-0.01
Channel Y	+ Input	199992.46	-2.23	-0.00
Channel Y	+ Input	19997.79	-2.80	-0.01
Channel Y	- Input	-19998.99	1.02	-0.01
Channel Z	+ Input	199989.59	-5.43	-0.00
Channel Z	+ Input	19995.44	-5.08	-0.03
Channel Z	- Input	-20001.02	-0.96	0.00

Low Range		Reading (µV)	Difference (µV)	Error (%)
Channel X	+ Input	2001.12	0.11	0.01
Channel X	+ Input	202.01	0.43	0.21
Channel X	- Input	-199.13	-0.70	0.35
Channel Y	+ Input	2001.13	0.10	0.00
Channel Y	+ Input	200.48	-1.04	-0.52
Channel Y	- Input	-199.06	-0.54	0.27
Channel Z	+ Input	2001.11	0.21	0.01
Channel Z	+ Input	200.59	-0.87	-0.43
Channel Z	- Input	-199.44	-0.99	0.50

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	-15.25	-16.64
	- 200	18.50	16.42
Channel Y	200	-1.88	-1.90
	- 200	1.30	0.86
Channel Z	200	10.99	10.38
	- 200	-13.49	-12.90

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	-	2.15	-3.07
Channel Y	200	7.09	-	3.02
Channel Z	200	8.11	5.37	-

Certificate No: DAE4-856_May13 Page 4 of 5

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	16270	16836
Channel Y	15934	16230
Channel Z	15862	15687

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	0.87	-0.19	2.70	0.40
Channel Y	-0.41	-1.96	0.66	0.46
Channel Z	-0.75	-1.60	0.05	0.32

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 108**

Client **SGS-TW (Auden)**

Certificate No: **DAE4-1260_May13**

CALIBRATION CERTIFICATE

Object: DAE4 - SD 000 D04 BM - SN: 1260

Calibration procedure(s): QA CAL-06.v26
Calibration procedure for the data acquisition electronics (DAE)

Calibration date: May 03, 2013

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	02-Oct-12 (No:12728)	Oct-13
Secondary Standards	**ID #**	**Check Date (in house)**	**Scheduled Check**
Auto DAE Calibration Unit	SE UWS 053 AA 1001	07-Jan-13 (in house check)	In house check: Jan-14
Calibrator Box V2.1	SE UMS 006 AA 1002	07-Jan-13 (in house check)	In house check: Jan-14

	Name	Function	Signature
Calibrated by:	R.Mayoraz	Technician	R Mayoraz
Approved by:	Fin Bomholt	Deputy Technical Manager	i.V.

Issued: May 3, 2013

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Accreditation No.: **SCS 108**

Glossary

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

Methods Applied and Interpretation of Parameters

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

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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	406.022 ± 0.02% (k=2)	404.988 ± 0.02% (k=2)	405.575 ± 0.02% (k=2)
Low Range	3.95574 ± 1.50% (k=2)	4.01997 ± 1.50% (k=2)	4.00367 ± 1.50% (k=2)

Connector Angle

Connector Angle to be used in DASY system	85.5 ° ± 1 °

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Appendix

1. DC Voltage Linearity

High Range		Reading (μV)	Difference (μV)	Error (%)
Channel X	+ Input	199995.25	-0.61	-0.00
Channel X	+ Input	20002.51	2.55	0.01
Channel X	- Input	-19997.65	3.41	-0.02
Channel Y	+ Input	199996.90	1.29	0.00
Channel Y	+ Input	19999.21	-0.82	-0.00
Channel Y	- Input	-20002.81	-1.72	0.01
Channel Z	+ Input	199996.08	0.05	0.00
Channel Z	+ Input	20000.21	0.24	0.00
Channel Z	- Input	-20002.01	-0.82	0.00

Low Range		Reading (μV)	Difference (μV)	Error (%)
Channel X	+ Input	2000.32	0.08	0.00
Channel X	+ Input	201.12	0.32	0.16
Channel X	- Input	-198.54	0.64	-0.32
Channel Y	+ Input	1999.87	-0.37	-0.02
Channel Y	+ Input	199.82	-0.86	-0.43
Channel Y	- Input	-199.99	-0.69	0.35
Channel Z	+ Input	1999.72	-0.47	-0.02
Channel Z	+ Input	199.92	-0.73	-0.37
Channel Z	- Input	-199.77	-0.46	0.23

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	0.30	-1.55
	- 200	3.24	1.37
Channel Y	200	12.54	11.97
	- 200	-14.60	-14.70
Channel Z	200	-0.92	-0.66
	- 200	-0.59	-0.63

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	-	5.57	-1.95
Channel Y	200	9.87	-	7.47
Channel Z	200	10.03	6.92	-

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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	15916	15135
Channel Y	15816	15911
Channel Z	16041	16099

5. Input Offset Measurement

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

	Average (μV)	min. Offset (μV)	max. Offset (μV)	Std. Deviation (μV)
Channel X	-1.40	-2.24	0.17	0.43
Channel Y	-2.03	-3.15	0.29	0.50
Channel Z	-1.12	-2.10	-0.02	0.45

6. Input Offset Current

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

7. Input Resistance (Typical values for information)

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

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

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

9. Power Consumption (Typical values for information)

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

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Accreditation No.: **SCS 108**

Client **SGS-TW (Auden)**

Certificate No: **DAE4-547_Mar13**

CALIBRATION CERTIFICATE

Object	DAE4 - SD 000 D04 BJ - SN: 547
Calibration procedure(s)	QA CAL-06.v25 Calibration procedure for the data acquisition electronics (DAE)
Calibration date:	March 19, 2013

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	02-Oct-12 (No:12728)	Oct-13
Secondary Standards	**ID #**	**Check Date (in house)**	**Scheduled Check**
Auto DAE Calibration Unit	SE UWS 053 AA 1001	07-Jan-13 (in house check)	In house check: Jan-14
Calibrator Box V2.1	SE UMS 006 AA 1002	07-Jan-13 (in house check)	In house check: Jan-14

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

Issued: March 19, 2013

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Accreditation No.: **SCS 108**

Glossary

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

Methods Applied and Interpretation of Parameters

- *DC Voltage Measurement:* Calibration Factor assessed for use in DASY system by comparison with a calibrated instrument traceable to national standards. The figure given corresponds to the full scale range of the voltmeter in the respective range.
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DC Voltage Measurement

A/D - Converter Resolution nominal
High Range: 1LSB = 6.1μV , full range = -100...+300 mV
Low Range: 1LSB = 61nV , full range = -1.......+3mV
DASY measurement parameters: Auto Zero Time: 3 sec; Measuring time: 3 sec

Calibration Factors	X	Y	Z
High Range	404.021 ± 0.02% (k=2)	404.067 ± 0.02% (k=2)	404.200 ± 0.02% (k=2)
Low Range	3.95755 ± 1.55% (k=2)	3.96067 ± 1.55% (k=2)	3.97511 ± 1.55% (k=2)

Connector Angle

Connector Angle to be used in DASY system	159.5 ° ± 1 °

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Appendix

1. DC Voltage Linearity

High Range		Reading (μV)	Difference (μV)	Error (%)
Channel X	+ Input	199989.94	-2.47	-0.00
Channel X	+ Input	20003.37	3.96	0.02
Channel X	- Input	-19997.23	3.73	-0.02
Channel Y	+ Input	199995.29	2.73	0.00
Channel Y	+ Input	19998.90	-0.61	-0.00
Channel Y	- Input	-20001.19	-0.37	0.00
Channel Z	+ Input	199992.88	0.36	0.00
Channel Z	+ Input	20000.94	1.49	0.01
Channel Z	- Input	-20003.26	-2.37	0.01

Low Range		Reading (μV)	Difference (μV)	Error (%)
Channel X	+ Input	2000.36	0.34	0.02
Channel X	+ Input	200.82	0.29	0.14
Channel X	- Input	-200.37	-0.99	0.50
Channel Y	+ Input	2000.08	-0.04	-0.00
Channel Y	+ Input	200.50	-0.17	-0.08
Channel Y	- Input	-199.79	-0.52	0.26
Channel Z	+ Input	2000.48	0.30	0.02
Channel Z	+ Input	199.82	-0.83	-0.42
Channel Z	- Input	-200.63	-1.34	0.67

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	2.87	1.74
	- 200	-1.69	-2.59
Channel Y	200	-21.18	-22.16
	- 200	20.02	20.39
Channel Z	200	20.06	20.09
	- 200	-21.97	-22.40

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	-	3.33	-2.42
Channel Y	200	9.32	-	4.14
Channel Z	200	6.20	7.89	-

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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	16138	15290
Channel Y	16452	16239
Channel Z	15982	16909

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	2.86	1.75	3.69	0.45
Channel Y	-1.52	-2.51	-0.79	0.37
Channel Z	0.34	-1.21	1.52	0.53

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 108**

Client **SGS-TW (Auden)**

Certificate No: **EX3-3770_Apr13**

CALIBRATION CERTIFICATE

Object	EX3DV4 - SN:3770
Calibration procedure(s)	QA CAL-01.v8, QA CAL-14.v3, QA CAL-23.v4, QA CAL-25.v4 Calibration procedure for dosimetric E-field probes
Calibration date:	April 30, 2013

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	04-Apr-13 (No. 217-01733)	Apr-14
Power sensor E4412A	MY41498087	04-Apr-13 (No. 217-01733)	Apr-14
Reference 3 dB Attenuator	SN: S5054 (3c)	04-Apr-13 (No. 217-01737)	Apr-14
Reference 20 dB Attenuator	SN: S5277 (20x)	04-Apr-13 (No. 217-01735)	Apr-14
Reference 30 dB Attenuator	SN: S5129 (30b)	04-Apr-13 (No. 217-01738)	Apr-14
Reference Probe ES3DV2	SN: 3013	28-Dec-12 (No. ES3-3013_Dec12)	Dec-13
DAE4	SN: 660	31-Jan-13 (No. DAE4-660_Jan13)	Jan-14
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-15
Network Analyzer HP 8753E	US37390585	18-Oct-01 (in house check Oct-12)	In house check: Oct-13

	Name	Function	Signature
Calibrated by:	Israe El-Naouq	Laboratory Technician	Israe El-Naouq
Approved by:	Katja Pokovic	Technical Manager	

Issued: May 1, 2013

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

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Glossary:

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

Calibration is Performed According to the Following Standards:

a) IEEE Std 1528-2003, "IEEE Recommended Practice for Determining the Peak Spatial-Averaged Specific Absorption Rate (SAR) in the Human Head from Wireless Communications Devices: Measurement Techniques", December 2003
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

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.

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Probe EX3DV4

SN:3770

Manufactured: July 6, 2010
Calibrated: April 30, 2013

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

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DASY/EASY - Parameters of Probe: EX3DV4 - SN:3770

Basic Calibration Parameters

	Sensor X	Sensor Y	Sensor Z	Unc (k=2)
Norm ($\mu V/(V/m)^2$)[A]	0.31	0.60	0.41	± 10.1 %
DCP (mV)[B]	106.9	96.2	103.0	

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	125.8	±2.5 %
		Y	0.0	0.0	1.0		129.7	
		Z	0.0	0.0	1.0		142.2	

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

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DASY/EASY - Parameters of Probe: EX3DV4 - SN:3770

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	Depth (mm)	Unct. (k=2)
750	41.9	0.89	10.28	10.28	10.28	0.74	0.65	± 12.0 %
835	41.5	0.90	9.83	9.83	9.83	0.77	0.60	± 12.0 %
900	41.5	0.97	9.89	9.89	9.89	0.78	0.55	± 12.0 %
1750	40.1	1.37	8.29	8.29	8.29	0.72	0.65	± 12.0 %
1900	40.0	1.40	7.98	7.98	7.98	0.44	0.83	± 12.0 %
2000	40.0	1.40	7.94	7.94	7.94	0.45	0.79	± 12.0 %
2300	39.5	1.67	7.48	7.48	7.48	0.45	0.78	± 12.0 %
2450	39.2	1.80	7.12	7.12	7.12	0.33	0.99	± 12.0 %
5200	36.0	4.66	5.15	5.15	5.15	0.40	1.80	± 13.1 %
5300	35.9	4.76	4.95	4.95	4.95	0.40	1.80	± 13.1 %
5600	35.5	5.07	4.49	4.49	4.49	0.45	1.80	± 13.1 %
5800	35.3	5.27	4.66	4.66	4.66	0.45	1.80	± 13.1 %

[C] Frequency validity 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.
[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.

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DASY/EASY - Parameters of Probe: EX3DV4 - SN:3770

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	Depth (mm)	Unct. (k=2)
750	55.5	0.96	9.74	9.74	9.74	0.47	0.84	± 12.0 %
835	55.2	0.97	9.62	9.62	9.62	0.62	0.69	± 12.0 %
900	55.0	1.05	9.50	9.50	9.50	0.35	0.97	± 12.0 %
1750	53.4	1.49	7.85	7.85	7.85	0.39	0.88	± 12.0 %
1900	53.3	1.52	7.63	7.63	7.63	0.27	1.08	± 12.0 %
2000	53.3	1.52	7.72	7.72	7.72	0.27	1.17	± 12.0 %
2300	52.9	1.81	7.36	7.36	7.36	0.50	0.78	± 12.0 %
2450	52.7	1.95	7.21	7.21	7.21	0.56	0.68	± 12.0 %
5200	49.0	5.30	4.71	4.71	4.71	0.40	1.90	± 13.1 %
5300	48.9	5.42	4.42	4.42	4.42	0.45	1.90	± 13.1 %
5600	48.5	5.77	4.01	4.01	4.01	0.45	1.90	± 13.1 %
5800	48.2	6.00	4.29	4.29	4.29	0.50	1.90	± 13.1 %

[C] Frequency validity 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.
[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.

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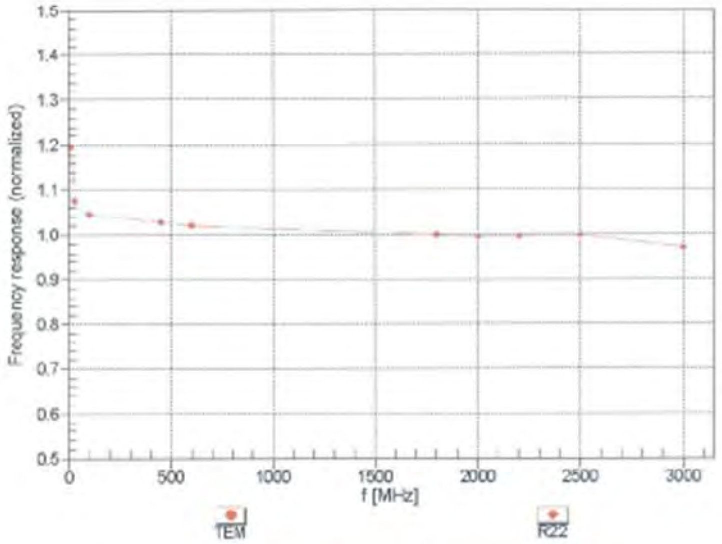
Frequency Response of E-Field

(TEM-Cell:ifi110 EXX, Waveguide: R22)



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

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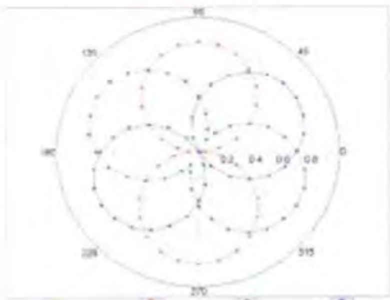
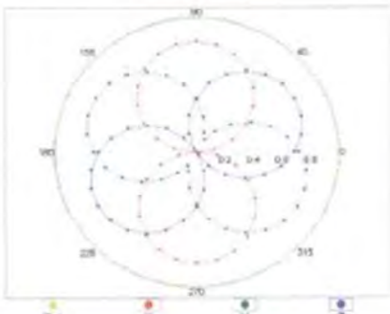
EX3DV4– SN:3770 April 30, 2013

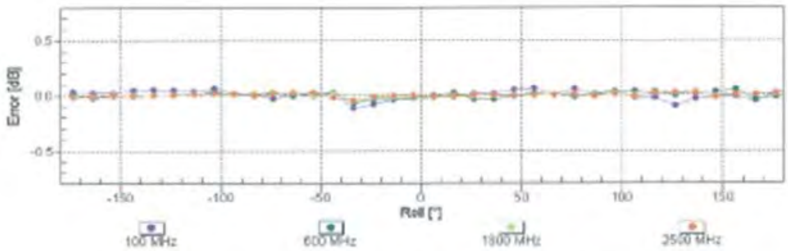
Receiving Pattern (ϕ), ϑ = 0°

f=600 MHz,TEM



f=1800 MHz,R22

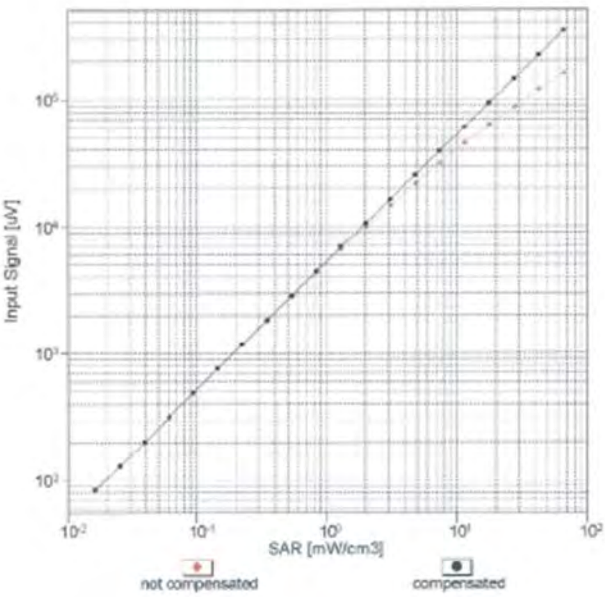


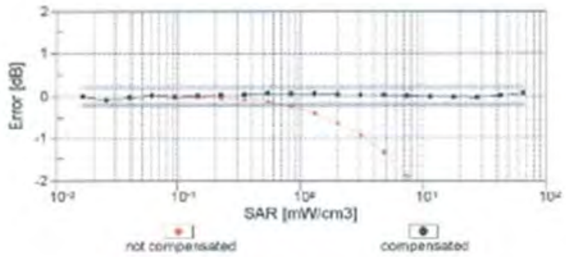


Uncertainty of Axial Isotropy Assessment: ± 0.5% (k=2)

Certificate No: EX3-3770_Apr13 Page 8 of 11

Dynamic Range f(SAR_{head})
(TEM cell , f = 900 MHz)





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

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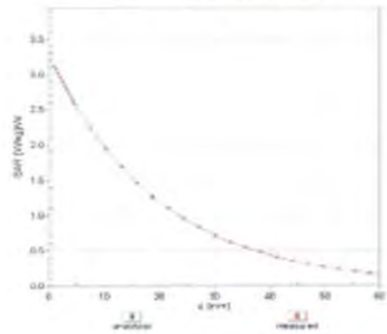
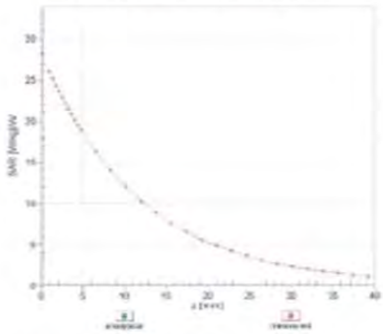
Conversion Factor Assessment

f = 835 MHz,WGLS R9 (H_convF)

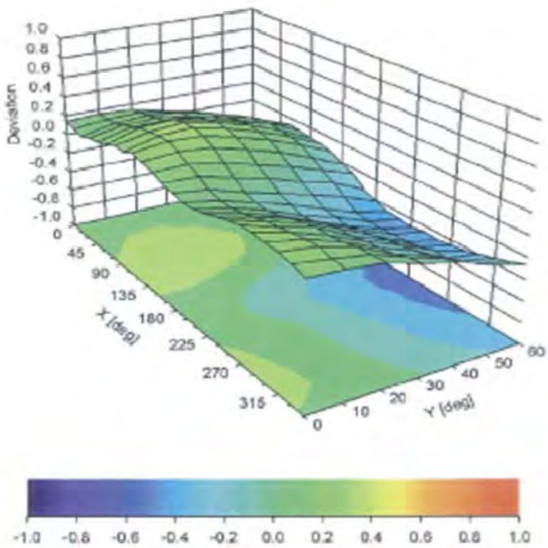


f = 1900 MHz,WGLS R22 (H_convF)



Deviation from Isotropy in Liquid

Error (ϕ, ϑ), f = 900 MHz



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

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DASY/EASY - Parameters of Probe: EX3DV4 - SN:3770

Other Probe Parameters

Sensor Arrangement	Triangular
Connector Angle (°)	-33.7
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	2 mm

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Accreditation No.: **SCS 108**

Client **SGS-TW (Auden)**

Certificate No: **EX3-3923_Jun13**

CALIBRATION CERTIFICATE

Object	EX3DV4 - SN:3923
Calibration procedure(s)	QA CAL-01.v8, QA CAL-14.v3, QA CAL-23.v4, QA CAL-25.v4 Calibration procedure for dosimetric E-field probes
Calibration date:	June 12, 2013

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	04-Apr-13 (No. 217-01733)	Apr-14
Power sensor E4412A	MY41498087	04-Apr-13 (No. 217-01733)	Apr-14
Reference 3 dB Attenuator	SN: S5054 (3c)	04-Apr-13 (No. 217-01737)	Apr-14
Reference 20 dB Attenuator	SN: S5277 (20x)	04-Apr-13 (No. 217-01735)	Apr-14
Reference 30 dB Attenuator	SN: S5129 (30b)	04-Apr-13 (No. 217-01738)	Apr-14
Reference Probe ES3DV2	SN: 3013	28-Dec-12 (No. ES3-3013_Dec12)	Dec-13
DAE4	SN: 660	31-Jan-13 (No. DAE4-660_Jan13)	Jan-14
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-15
Network Analyzer HP 8753E	US37390585	18-Oct-01 (in house check Oct-12)	In house check: Oct-13

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

Issued: June 17, 2013

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Engineering AG
Zeughausstrasse 43, 8004 Zurich, Switzerland

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Multilateral Agreement for the recognition of calibration certificates

Accreditation No.: **SCS 108**

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

Calibration is Performed According to the Following Standards:

a) IEEE Std 1528-2003, "IEEE Recommended Practice for Determining the Peak Spatial-Averaged Specific Absorption Rate (SAR) in the Human Head from Wireless Communications Devices: Measurement Techniques", December 2003
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

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.

Certificate No: EX3-3923_Jun13 Page 2 of 11

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Probe EX3DV4

SN:3923

Manufactured: March 8, 2013
Calibrated: June 12, 2013

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]	0.58	0.48	0.47	± 10.1 %
DCP (mV)[B]	99.8	101.1	96.6	

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	185.8	±3.3 %
		Y	0.0	0.0	1.0		156.5	
		Z	0.0	0.0	1.0		160.8	

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

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

Calibration Parameter Determined in Head Tissue Simulating Media

f (MHz)[C]	Relative Permittivity[F]	Conductivity (S/m)[F]	ConvF X	ConvF Y	ConvF Z	Alpha	Depth (mm)	Unct. (k=2)
750	41.9	0.89	10.53	10.53	10.53	0.32	0.92	± 12.0 %
835	41.5	0.90	10.08	10.08	10.08	0.26	0.97	± 12.0 %
900	41.5	0.97	10.04	10.04	10.04	0.36	0.87	± 12.0 %
1750	40.1	1.37	9.09	9.09	9.09	0.46	0.82	± 12.0 %
1900	40.0	1.40	8.67	8.67	8.67	0.52	0.75	± 12.0 %
2000	40.0	1.40	8.49	8.49	8.49	0.45	0.80	± 12.0 %
2300	39.5	1.67	8.05	8.05	8.05	0.32	0.91	± 12.0 %
2450	39.2	1.80	7.59	7.59	7.59	0.39	0.85	± 12.0 %
2600	39.0	1.96	7.44	7.44	7.44	0.42	0.85	± 12.0 %
5200	36.0	4.66	5.06	5.06	5.06	0.35	1.80	± 13.1 %
5300	35.9	4.76	4.82	4.82	4.82	0.35	1.80	± 13.1 %
5600	35.5	5.07	4.66	4.66	4.66	0.35	1.80	± 13.1 %
5800	35.3	5.27	4.49	4.49	4.49	0.45	1.80	± 13.1 %

[C] Frequency validity 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.
[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.

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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	Depth (mm)	Unct. (k=2)
750	55.5	0.96	10.55	10.55	10.55	0.38	0.92	± 12.0 %
835	55.2	0.97	10.35	10.35	10.35	0.24	1.25	± 12.0 %
900	55.0	1.05	10.29	10.29	10.29	0.43	0.86	± 12.0 %
1750	53.4	1.49	8.46	8.46	8.46	0.47	0.80	± 12.0 %
1900	53.3	1.52	8.10	8.10	8.10	0.41	0.82	± 12.0 %
2000	53.3	1.52	8.18	8.18	8.18	0.30	0.96	± 12.0 %
2300	52.9	1.81	7.79	7.79	7.79	0.47	0.72	± 12.0 %
2450	52.7	1.95	7.55	7.55	7.55	0.59	0.64	± 12.0 %
2600	52.5	2.16	7.37	7.37	7.37	0.80	0.50	± 12.0 %
5200	49.0	5.30	4.33	4.33	4.33	0.50	1.90	± 13.1 %
5300	48.9	5.42	4.13	4.13	4.13	0.50	1.90	± 13.1 %
5600	48.5	5.77	3.85	3.85	3.85	0.45	1.90	± 13.1 %
5800	48.2	6.00	3.94	3.94	3.94	0.55	1.90	± 13.1 %

[C] Frequency validity 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.
[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.

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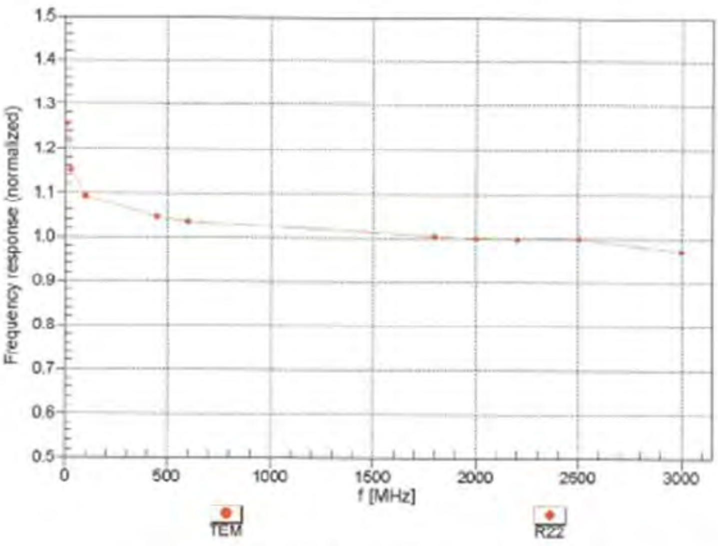
EX3DV4 - SN:3923 June 12, 2013

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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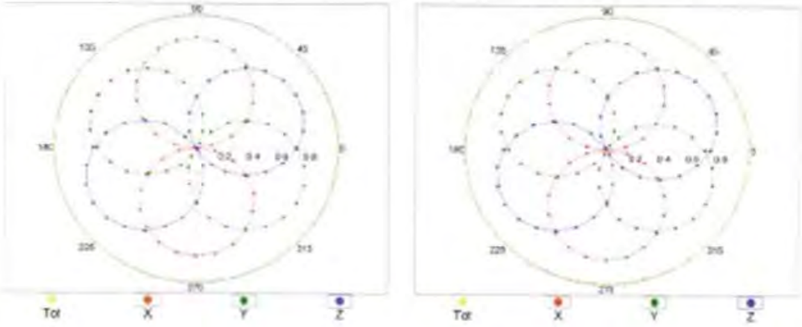
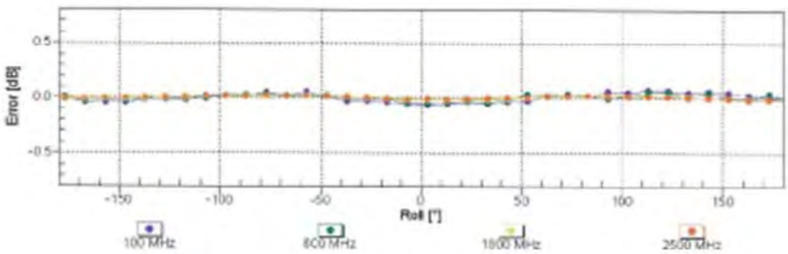
Receiving Pattern (ϕ), $\vartheta = 0°$

f=600 MHz,TEM f=1800 MHz,R22





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

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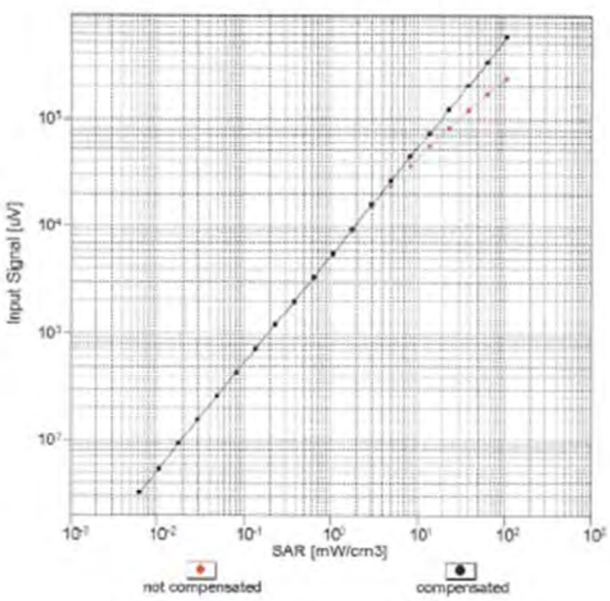
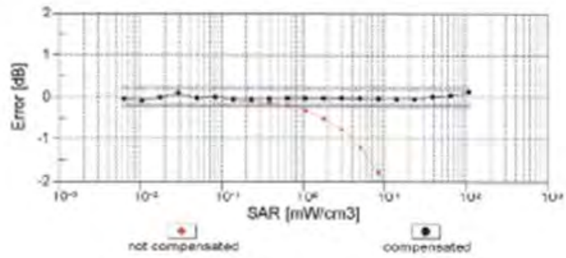
EX3DV4– SN:3923 June 12, 2013

Dynamic Range f(SAR_{head})
(TEM cell , f = 900 MHz)





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

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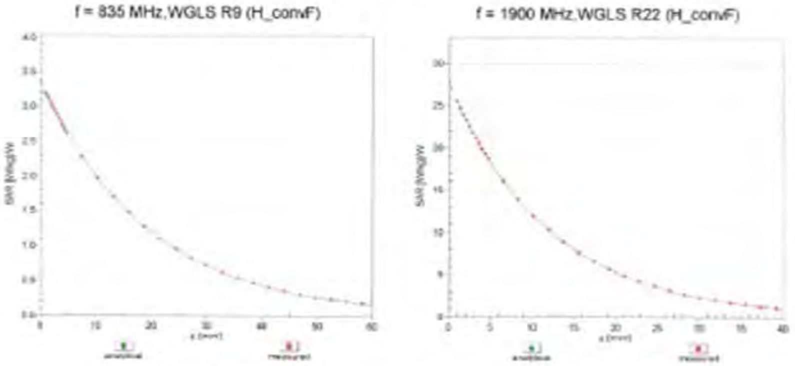
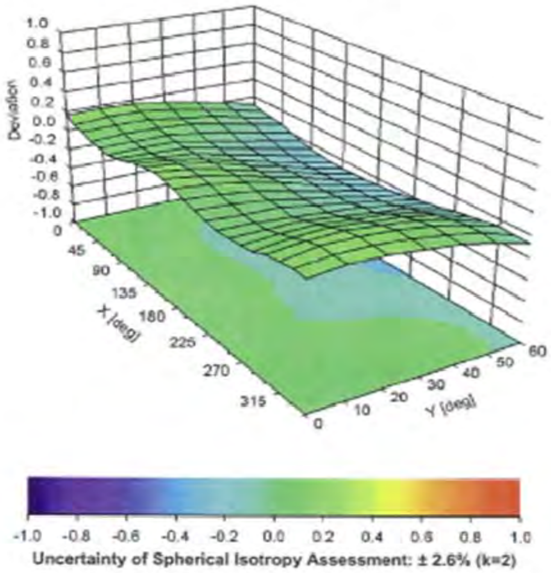
EX3DV4– SN:3923 June 12, 2013

Conversion Factor Assessment



Deviation from Isotropy in Liquid

Error (ϕ, ϑ), f = 900 MHz



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

Certificate No: EX3-3923_Jun13 Page 10 of 11

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

Other Probe Parameters

Sensor Arrangement	Triangular
Connector Angle (°)	-57.1
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	2 mm

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Accreditation No.: **SCS 108**

Client **SGS-TW (Auden)**

Certificate No: **EX3-3831_Jan14**

CALIBRATION CERTIFICATE

Object: EX3DV4 - SN:3831

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: January 31, 2014

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

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

Calibration Equipment used (M&TE critical for calibration)

Primary Standards	ID	Cal Date (Certificate No.)	Scheduled Calibration
Power meter E4419B	GB41293874	04-Apr-13 (No. 217-01733)	Apr-14
Power sensor E4412A	MY41498087	04-Apr-13 (No. 217-01733)	Apr-14
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Reference 30 dB Attenuator	SN: S5129 (30b)	04-Apr-13 (No. 217-01738)	Apr-14
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DAE4	SN: 660	13-Dec-13 (No. DAE4-660_Dec13)	Dec-14
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-13)	In house check: Oct-14

	Name	Function	Signature
Calibrated by:	Israe El-Naouq	Laboratory Technician	
Approved by:	Katja Pokovic	Technical Manager	

Issued: January 31, 2014

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Accreditation No.: **SCS 108**

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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

Methods Applied and Interpretation of Parameters:

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- *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).

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Probe EX3DV4

SN:3831

Manufactured: September 6, 2011
Calibrated: January 31, 2014

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

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DASY/EASY - Parameters of Probe: EX3DV4 - SN:3831

Basic Calibration Parameters

	Sensor X	Sensor Y	Sensor Z	Unc (k=2)
Norm (µV/(V/m)²)[A]	0.45	0.42	0.43	± 10.1 %
DCP (mV)[B]	102.4	100.1	97.7	

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	153.1	±3.0 %
		Y	0.0	0.0	1.0		146.3	
		Z	0.0	0.0	1.0		154.8	

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

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DASY/EASY - Parameters of Probe: EX3DV4 - SN:3831

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)	Unct. (k=2)
750	41.9	0.89	9.59	9.59	9.59	0.74	0.64	± 12.0 %
835	41.5	0.90	9.14	9.14	9.14	0.22	1.36	± 12.0 %
900	41.5	0.97	9.17	9.17	9.17	0.28	0.96	± 12.0 %
1750	40.1	1.37	8.00	8.00	8.00	0.26	0.99	± 12.0 %
1900	40.0	1.40	7.79	7.79	7.79	0.60	0.65	± 12.0 %
2000	40.0	1.40	7.71	7.71	7.71	0.39	0.79	± 12.0 %
2300	39.5	1.67	7.35	7.35	7.35	0.43	0.76	± 12.0 %
2450	39.2	1.80	6.99	6.99	6.99	0.37	0.85	± 12.0 %
2600	39.0	1.96	6.62	6.62	6.62	0.38	0.87	± 12.0 %
5200	36.0	4.66	4.67	4.67	4.67	0.35	1.80	± 13.1 %
5300	35.9	4.76	4.41	4.41	4.41	0.40	1.80	± 13.1 %
5600	35.5	5.07	3.99	3.99	3.99	0.50	1.80	± 13.1 %
5800	35.3	5.27	4.12	4.12	4.12	0.45	1.80	± 13.1 %

[C] Frequency validity 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.
[F] At frequencies below 3 GHz, the validity of tissue parameters (ε and σ) can be relaxed to ± 10% if liquid compensation formula is applied to measured SAR values. At frequencies above 3 GHz, the validity of tissue parameters (ε and σ) is restricted to ± 5%. The uncertainty is the RSS of the ConvF uncertainty for indicated target tissue parameters.
[G] Alpha/Depth are determined during calibration. SPEAG warrants that the remaining deviation due to the boundary effect after compensation is always less than ± 1% for frequencies below 3 GHz and below ± 2% for frequencies between 3-6 GHz at any distance larger than half the probe tip diameter from the boundary.

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DASY/EASY - Parameters of Probe: EX3DV4 - SN:3831

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)	Unct. (k=2)
750	55.5	0.96	9.10	9.10	9.10	0.50	0.80	± 12.0 %
835	55.2	0.97	9.03	9.03	9.03	0.28	1.15	± 12.0 %
900	55.0	1.05	8.84	8.84	8.84	0.29	1.08	± 12.0 %
1750	53.4	1.49	7.63	7.63	7.63	0.26	1.16	± 12.0 %
1900	53.3	1.52	7.19	7.19	7.19	0.32	1.01	± 12.0 %
2000	53.3	1.52	7.17	7.17	7.17	0.44	0.83	± 12.0 %
2300	52.9	1.81	6.90	6.90	6.90	0.52	0.76	± 12.0 %
2450	52.7	1.95	6.68	6.68	6.68	0.80	0.56	± 12.0 %
2600	52.5	2.16	6.50	6.50	6.50	0.80	0.50	± 12.0 %
5200	49.0	5.30	4.08	4.08	4.08	0.50	1.90	± 13.1 %
5300	48.9	5.42	3.87	3.87	3.87	0.50	1.90	± 13.1 %
5600	48.5	5.77	3.36	3.36	3.36	0.60	1.90	± 13.1 %
5800	48.2	6.00	3.78	3.78	3.78	0.55	1.90	± 13.1 %

[C] Frequency validity 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.
[F] At frequencies below 3 GHz, the validity of tissue parameters (ε and σ) can be relaxed to ± 10% if liquid compensation formula is applied to measured SAR values. At frequencies above 3 GHz, the validity of tissue parameters (ε and σ) is restricted to ± 5%. The uncertainty is the RSS of the ConvF uncertainty for indicated target tissue parameters.
[G] Alpha/Depth are determined during calibration. SPEAG warrants that the remaining deviation due to the boundary effect after compensation is always less than ± 1% for frequencies below 3 GHz and below ± 2% for frequencies between 3-6 GHz at any distance larger than half the probe tip diameter from the boundary.

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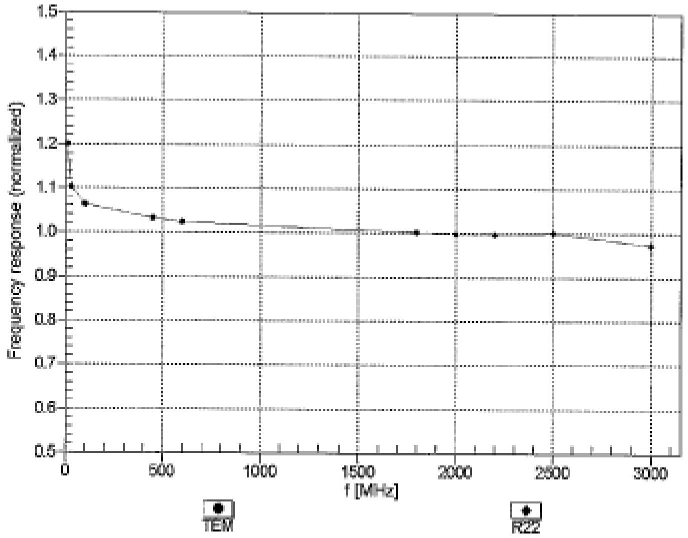
EX3DV4– SN:3831 January 31, 2014

Frequency Response of E-Field

(TEM-Cell:ifi110 EXX, Waveguide: R22)



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

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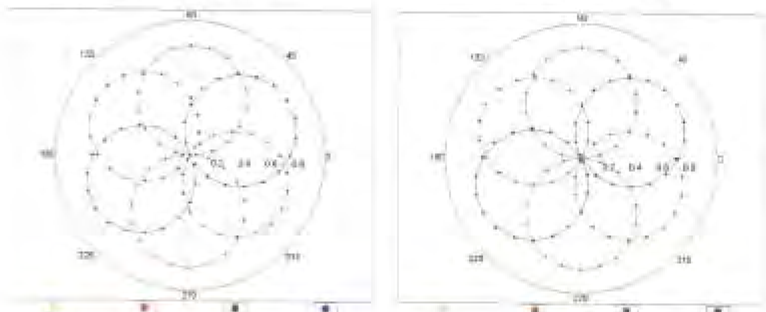
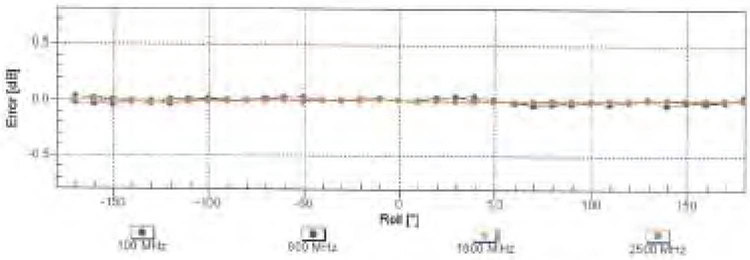
Receiving Pattern (ϕ), ϑ = 0°

f=600 MHz,TEM

f=1800 MHz,R22





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

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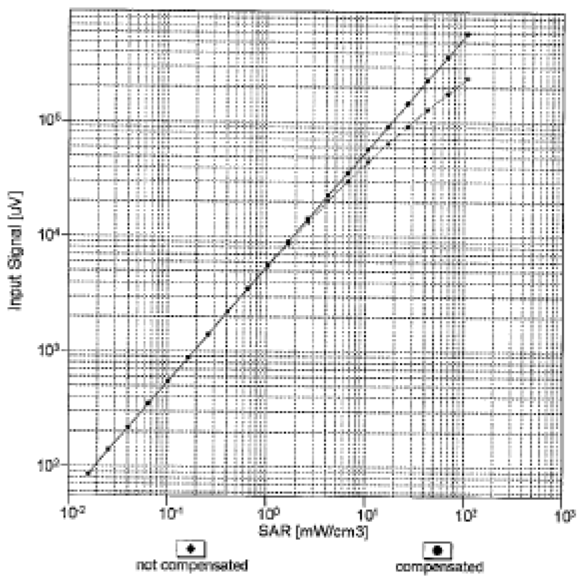
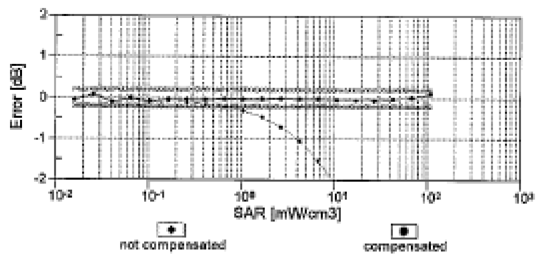
EX3DV4– SN:3831 January 31, 2014

Dynamic Range f(SAR_{head})
(TEM cell , f = 900 MHz)





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

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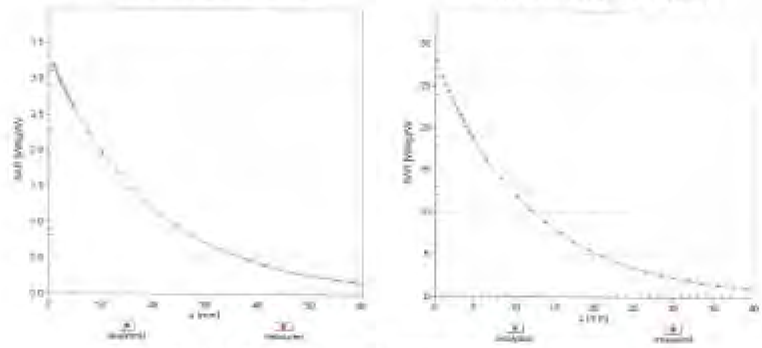
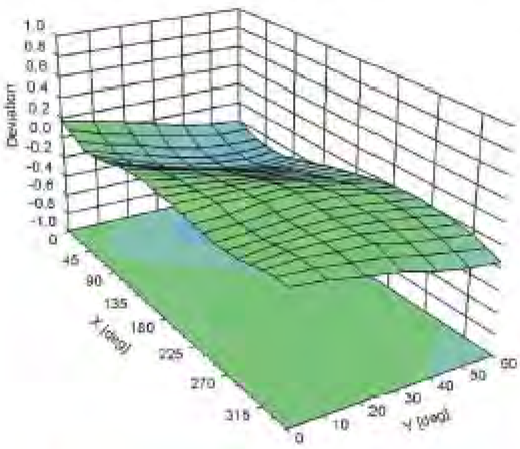
Conversion Factor Assessment



Deviation from Isotropy in Liquid

Error (ϕ, ϑ), f = 900 MHz



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

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DASY/EASY - Parameters of Probe: EX3DV4 - SN:3831

Other Probe Parameters

Sensor Arrangement	Triangular
Connector Angle (°)	-20.6
Mechanical Surface Detection Mode	enabled
Optical Surface Detection Mode	disabled
Probe Overall Length	337 mm
Probe Body Diameter	10 mm
Tip Length	9 mm
Tip Diameter	2.5 mm
Probe Tip to Sensor X Calibration Point	1 mm
Probe Tip to Sensor Y Calibration Point	1 mm
Probe Tip to Sensor Z Calibration Point	1 mm
Recommended Measurement Distance from Surface	2 mm

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Multilateral Agreement for the recognition of calibration certificates

Accreditation No.: **SCS 108**

Client: Auden

Certificate No: EX3-3578_Jun13

CALIBRATION CERTIFICATE

Object	EX3DV4 - SN:3578
Calibration procedure(s)	QA CAL-01.v8, QA CAL-14.v3, QA CAL-23.v4, QA CAL-25.v4 Calibration procedure for dosimetric E-field probes
Calibration date:	June 20, 2013

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	04-Apr-13 (No. 217-01733)	Apr-14
Power sensor E4412A	MY41498087	04-Apr-13 (No. 217-01733)	Apr-14
Reference 3 dB Attenuator	SN: S5054 (3c)	04-Apr-13 (No. 217-01737)	Apr-14
Reference 20 dB Attenuator	SN: S5277 (20x)	04-Apr-13 (No. 217-01735)	Apr-14
Reference 30 dB Attenuator	SN: S5129 (30b)	04-Apr-13 (No. 217-01738)	Apr-14
Reference Probe ES3DV2	SN: 3013	28-Dec-12 (No. ES3-3013_Dec12)	Dec-13
DAE4	SN: 660	31-Jan-13 (No. DAE4-660_Jan13)	Jan-14
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-15
Network Analyzer HP 8753E	US37390585	18-Oct-01 (in house check Oct-12)	In house check: Oct-13

	Name	Function	Signature
Calibrated by:	Israe El-Naouq	Laboratory Technician	Israe Elnaouq
Approved by:	Katja Pokovic	Technical Manager	

Issued: June 20, 2013

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

Certificate No: EX3-3578_Jun13 Page 1 of 11

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Accreditation No.: **SCS 108**

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

Calibration is Performed According to the Following Standards:

a) IEEE Std 1528-2003, "IEEE Recommended Practice for Determining the Peak Spatial-Averaged Specific Absorption Rate (SAR) in the Human Head from Wireless Communications Devices: Measurement Techniques", December 2003
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

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.

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Probe EX3DV4

SN:3578

Manufactured: November 4, 2005
Calibrated: June 20, 2013

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

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DASY/EASY - Parameters of Probe: EX3DV4 - SN:3578

Basic Calibration Parameters

	Sensor X	Sensor Y	Sensor Z	Unc (k=2)
Norm ($\mu V/(V/m)^2$)[A]	0.53	0.50	0.56	± 10.1 %
DCP (mV)[B]	100.0	100.4	100.7	

Modulation Calibration Parameters

UID	Communication System Name		A dB	B dB$\sqrt{\mu V}$	C	D dB	VR mV	Unc[E] (k=2)
0	CW	X	0.0	0.0	1.0	0.00	166.0	±3.3 %
		Y	0.0	0.0	1.0		167.7	
		Z	0.0	0.0	1.0		173.2	

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

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DASY/EASY - Parameters of Probe: EX3DV4 - SN:3578

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	Depth (mm)	Unct. (k=2)
750	41.9	0.89	8.85	8.85	8.85	0.26	1.13	± 12.0 %
835	41.5	0.90	8.41	8.41	8.41	0.25	1.18	± 12.0 %
900	41.5	0.97	8.29	8.29	8.29	0.19	1.45	± 12.0 %
1750	40.1	1.37	7.53	7.53	7.53	0.47	0.82	± 12.0 %
1900	40.0	1.40	7.17	7.17	7.17	0.59	0.75	± 12.0 %
2000	40.0	1.40	7.11	7.11	7.11	0.45	0.90	± 12.0 %
2450	39.2	1.80	6.39	6.39	6.39	0.61	0.76	± 12.0 %
5200	36.0	4.66	4.44	4.44	4.44	0.40	1.80	± 13.1 %
5300	35.9	4.76	4.26	4.26	4.26	0.40	1.80	± 13.1 %
5500	35.6	4.96	4.02	4.02	4.02	0.45	1.80	± 13.1 %
5600	35.5	5.07	3.92	3.92	3.92	0.40	1.80	± 13.1 %
5800	35.3	5.27	3.77	3.77	3.77	0.50	1.80	± 13.1 %

[C] Frequency validity 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.
[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.

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DASY/EASY - Parameters of Probe: EX3DV4 - SN:3578

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	Depth (mm)	Unct. (k=2)
750	55.5	0.96	8.68	8.68	8.68	0.52	0.80	± 12.0 %
835	55.2	0.97	8.50	8.50	8.50	0.25	1.24	± 12.0 %
900	55.0	1.05	8.43	8.43	8.43	0.56	0.76	± 12.0 %
1750	53.4	1.49	7.18	7.18	7.18	0.44	0.89	± 12.0 %
1900	53.3	1.52	6.78	6.78	6.78	0.61	0.76	± 12.0 %
2000	53.3	1.52	6.87	6.87	6.87	0.45	0.83	± 12.0 %
2450	52.7	1.95	6.31	6.31	6.31	0.80	0.62	± 12.0 %
5200	49.0	5.30	3.90	3.90	3.90	0.50	1.90	± 13.1 %
5300	48.9	5.42	3.64	3.64	3.64	0.50	1.90	± 13.1 %
5500	48.6	5.65	3.39	3.39	3.39	0.55	1.90	± 13.1 %
5600	48.5	5.77	3.29	3.29	3.29	0.50	1.90	± 13.1 %
5800	48.2	6.00	3.35	3.35	3.35	0.55	1.90	± 13.1 %

[C] Frequency validity 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.
[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.

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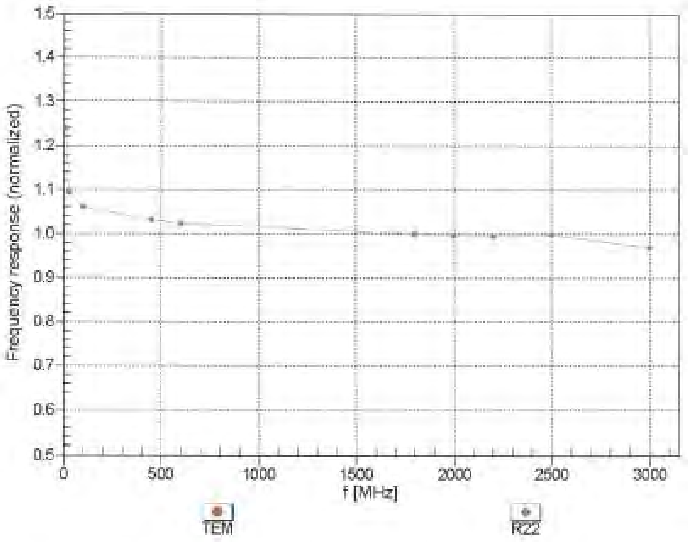
Frequency Response of E-Field

(TEM-Cell:ifi110 EXX, Waveguide: R22)



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

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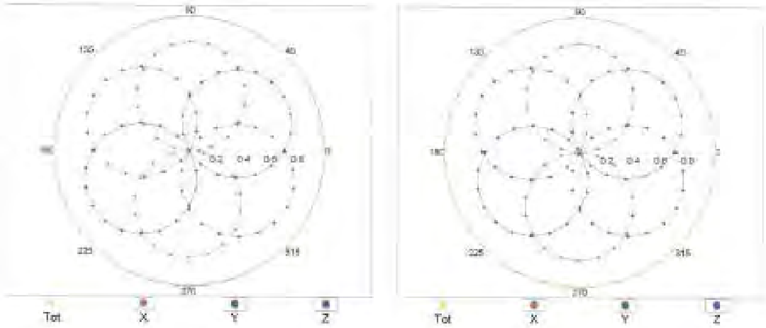
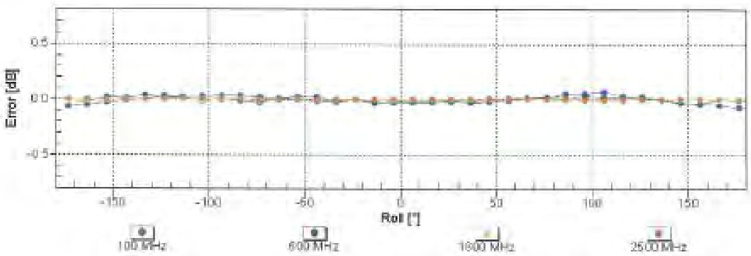
EX3DV4– SN:3578 June 20, 2013

Receiving Pattern (ϕ), ϑ = 0°

f=600 MHz,TEM f=1800 MHz,R22





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

Certificate No: EX3-3578_Jun13 Page 8 of 11

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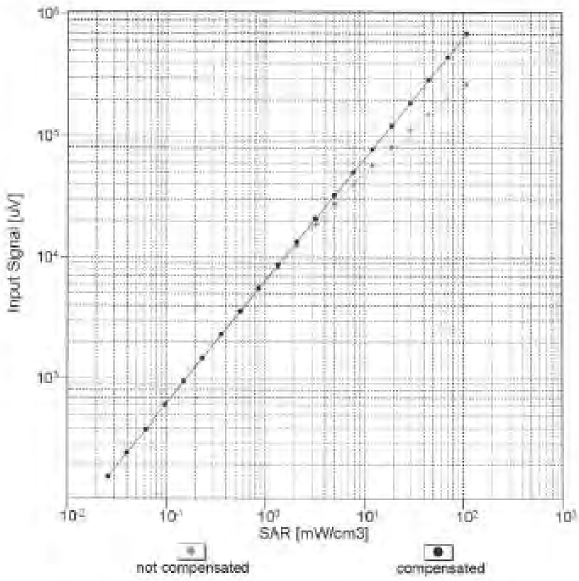
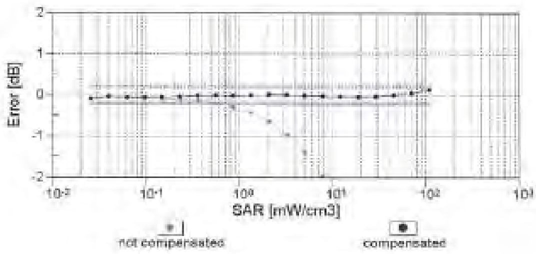
Dynamic Range f(SAR$_{head}$)
(TEM cell , f = 900 MHz)





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

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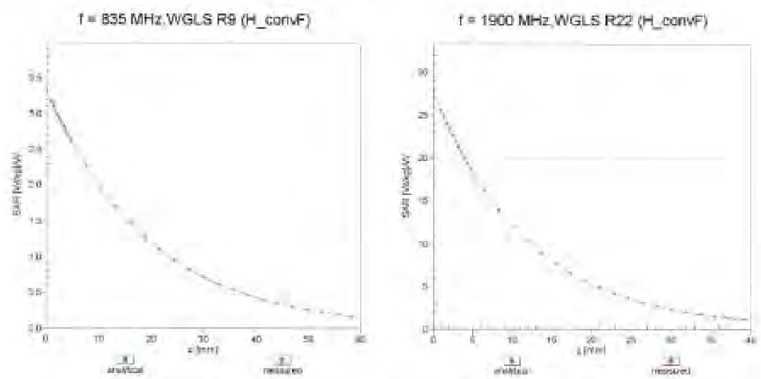
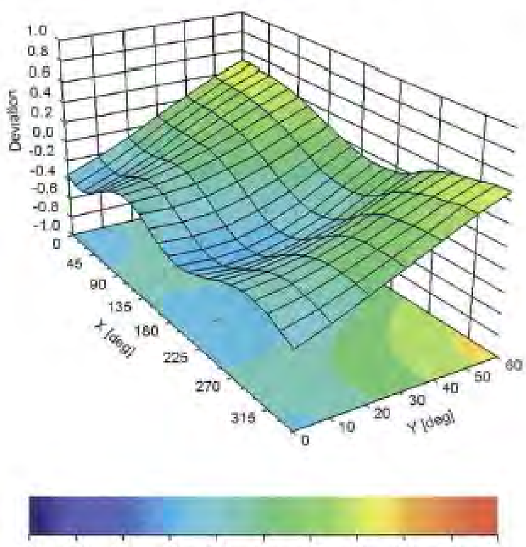
EX3DV4– SN:3578 June 20, 2013

Conversion Factor Assessment



Deviation from Isotropy in Liquid

Error (φ, θ), f = 900 MHz



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

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DASY/EASY - Parameters of Probe: EX3DV4 - SN:3578

Other Probe Parameters

Sensor Arrangement	Triangular
Connector Angle (°)	-113.6
Mechanical Surface Detection Mode	enabled
Optical Surface Detection Mode	disabled
Probe Overall Length	337 mm
Probe Body Diameter	10 mm
Tip Length	9 mm
Tip Diameter	2.5 mm
Probe Tip to Sensor X Calibration Point	1 mm
Probe Tip to Sensor Y Calibration Point	1 mm
Probe Tip to Sensor Z Calibration Point	1 mm
Recommended Measurement Distance from Surface	2 mm

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8. Uncertainty Budget

Measurement Uncertainty evaluation template for DUT SAR test
IEEE 1528

A	c	D	e	f	g	h=c * f / e	i=c * g / e	k
Source of Uncertainty	Tolerance/ Uncertainty %	Probability Distribuitoin	Div	ci (1g)	ci (10g)	Standard uncertainty	Standard uncertainty	vi, or Veff
Measurement system								
Probe calibration(under 6Ghz)	6.55%	N	1	1	1	6.55%	6.55%	∞
Isotropy , Axial	3.50%	R	√3	1	1	2.02%	2.02%	∞
Isotropy, Hemispherical	9.60%	R	√3	1	1	5.54%	5.54%	∞
Boundary Effect	1.00%	R	√3	1	1	0.58%	0.58%	∞
Linearity	4.70%	R	√3	1	1	2.71%	2.71%	∞
Detection Limits	1.00%	R	√3	1	1	0.58%	0.58%	∞
Readout Electronics	0.30%	N	1	1	1	0.30%	0.30%	∞
Response time	0.80%	R	√3	1	1	0.46%	0.46%	∞
Integration Time	2.60%	R	√3	1	1	1.50%	1.50%	∞
Measurement drift (class A evaluation)	1.75%	R	√3	1	1	1.01%	1.01%	∞
RF ambient condition - noise	3.00%	R	√3	1	1	1.73%	1.73%	∞
RF ambient conditions -reflections	3.00%	R	√3	1	1	1.73%	1.73%	∞
Probe positioner Mechanical restrictions	0.40%	R	√3	1	1	0.23%	0.23%	∞
Probe Positioning with respect to phantom	2.90%	R	√3	1	1	1.67%	1.67%	∞
Post-processing	1.00%	R	√3	1	1	0.58%	0.58%	∞
Max SAR Eval	1.00%	R	√3	1	1	0.58%	0.58%	∞
Test Sample related								
Test sample	2.90%	N	1	1	1	2.90%	2.90%	M-1
Device Holder Uncertainty	3.60%	N	1	1	1	3.60%	3.60%	M-1
Drift of output power	5.00%	R	√3	1	1	2.89%	2.89%	∞
Phantom and Setup								
Phantom Uncertainty	4.00%	R	√3	1	1	2.31%	2.31%	∞
Liquid conductivity(meas.) Max at 1900 band	4.86%	N	1	0.64	0.43	3.11%	2.09%	M
Liquid permitivity(meas.) Max at 750 band	4.33%	N	1	0.6	0.49	2.60%	2.12%	M
Combined standard uncertainty		RSS				12.26%	11.95%	
Expant uncertainty (95% confidence interval), K=2						24.52%	23.90%	

9. Phantom Description

Schmid & Partner Engineering AG speag

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Phone +41 1 245 9700, Fax +41 1 245 9779
info@speag.com, http://www.speag.com

Certificate of Conformity / First Article Inspection

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

Tests

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

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

Standards

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

Conformity

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

Date 07.07.2005

Signature / Stamp

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

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

10. System Validation from Original Equipment Supplier

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

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

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 108

Client SGS-TW (Auden)

Certificate No: D750V3-1015_Aug13

CALIBRATION CERTIFICATE

Object	D750V3 - SN: 1015
Calibration procedure(s)	QA CAL-05.v9 Calibration procedure for dipole validation kits above 700 MHz
Calibration date	August 26, 2013

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	01-Nov-12 (No. 217-01640)	Oct-13
Power sensor HP 8481A	US37292783	01-Nov-12 (No. 217-01640)	Oct-13
Reference 20 dB Attenuator	SN: 5058 (20k)	04-Apr-13 (No. 217-01736)	Apr-14
Type-N mismatch combination	SN: 5047.3 / 06327	04-Apr-13 (No. 217-01739)	Apr-14
Reference Probe ES3DV3	SN: 3205	28-Dec-12 (No. ES3-3205_Dec12)	Dec-13
DAE4	SN: 601	25-Apr-13 (No. DAE4-601_Apr13)	Apr-14

Secondary Standards	ID #	Check Date (in house)	Scheduled Check
Power sensor HP 8481A	MY41092317	18-Oct-02 (in house check Oct-11)	In house check: Oct-13
RF generator R&S SMT-06	100005	04-Aug-99 (in house check Oct-11)	In house check: Oct-13
Network Analyzer HP 8753E	US37390585 S4206	18-Oct-01 (in house check Oct-12)	In house check: Oct-13

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

Issued: August 26, 2013

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

Certificate No: D750V3-1015_Aug13 Page 1 of 8

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Engineering AG
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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 108**

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 1528-2003, "IEEE Recommended Practice for Determining the Peak Spatial-Averaged Specific Absorption Rate (SAR) in the Human Head from Wireless Communications Devices: Measurement Techniques", December 2003
b) IEC 62209-1, "Procedure to measure the Specific Absorption Rate (SAR) for hand-held devices used in close proximity to the ear (frequency range of 300 MHz to 3 GHz)", February 2005
c) KDB 865664, "SAR Measurement Requirements for 100 MHz to 6 GHz"

Additional Documentation:

d) DASY4/5 System Handbook

Methods Applied and Interpretation of Parameters:

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

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

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Measurement Conditions

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

DASY Version	DASY5	V52.8.7
Extrapolation	Advanced Extrapolation	
Phantom	Modular Flat Phantom	
Distance Dipole Center - TSL	15 mm	with Spacer
Zoom Scan Resolution	dx, dy, dz = 5 mm	
Frequency	750 MHz ± 1 MHz	

Head TSL parameters

The following parameters and calculations were applied.

	Temperature	**Permittivity**	**Conductivity**
Nominal Head TSL parameters	22.0 °C	41.9	0.89 mho/m
Measured Head TSL parameters	(22.0 ± 0.2) °C	41.7 ± 6 %	0.90 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	2.14 W/kg
SAR for nominal Head TSL parameters	normalized to 1W	**8.48 W/kg ± 17.0 % (k=2)**

SAR averaged over 10 cm^3 (10 g) of Head TSL	condition	
SAR measured	250 mW input power	1.39 W/kg
SAR for nominal Head TSL parameters	normalized to 1W	**5.52 W/kg ± 16.5 % (k=2)**

Body TSL parameters

The following parameters and calculations were applied.

	Temperature	**Permittivity**	**Conductivity**
Nominal Body TSL parameters	22.0 °C	55.5	0.96 mho/m
Measured Body TSL parameters	(22.0 ± 0.2) °C	54.5 ± 6 %	0.98 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	2.23 W/kg
SAR for nominal Body TSL parameters	normalized to 1W	**8.75 W/kg ± 17.0 % (k=2)**

SAR averaged over 10 cm^3 (10 g) of Body TSL	condition	
SAR measured	250 mW input power	1.46 W/kg
SAR for nominal Body TSL parameters	normalized to 1W	**5.75 W/kg ± 16.5 % (k=2)**

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Appendix

Antenna Parameters with Head TSL

Impedance, transformed to feed point	52.8 Ω - 0.3 jΩ
Return Loss	- 31.2 dB

Antenna Parameters with Body TSL

Impedance, transformed to feed point	48.4 Ω - 2.6 jΩ
Return Loss	- 30.1 dB

General Antenna Parameters and Design

Electrical Delay (one direction)	1.036 ns

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

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

Additional EUT Data

Manufactured by	SPEAG
Manufactured on	March 22, 2010

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DASY5 Validation Report for Head TSL

Date: 26.08.2013

Test Laboratory: SPEAG, Zurich, Switzerland

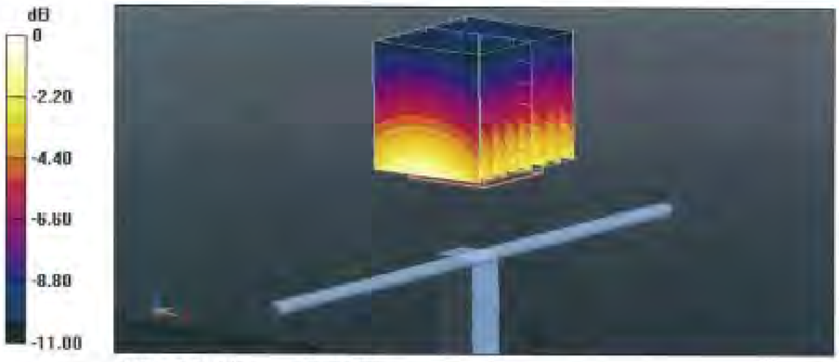
DUT: Dipole 750 MHz; Type: D750V3; Serial: D750V3 - SN: 1015

Communication System: UID 0 - CW ; Frequency: 750 MHz
Medium parameters used: f = 750 MHz; σ = 0.9 S/m; ε_r = 41.7; ρ = 1000 kg/m^3
Phantom section: Flat Section
Measurement Standard: DASY5 (IEEE/IEC/ANSI C63.19-2007)

DASY52 Configuration:

- Probe: ES3DV3 - SN3205; ConvF(6.28, 6.28, 6.28); Calibrated: 28.12.2012;
- Sensor-Surface: 3mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn601; Calibrated: 25.04.2013
- Phantom: Flat Phantom 4.9L; Type: QD000P49AA; Serial: 1001
- DASY52 52.8.7(1137); SEMCAD X 14.6.10(7164)

Dipole Calibration for Head Tissue/Pin=250 mW, d=15mm/Zoom Scan (7x8x7)/Cube 0:
Measurement grid: dx=5mm, dy=5mm, dz=5mm
Reference Value = 53.165 V/m; Power Drift = 0.02 dB
Peak SAR (extrapolated) = 3.27 W/kg
SAR(1 g) = 2.14 W/kg; SAR(10 g) = 1.39 W/kg
Maximum value of SAR (measured) = 2.51 W/kg



0 dB = 2.51 W/kg = 4.00 dBW/kg

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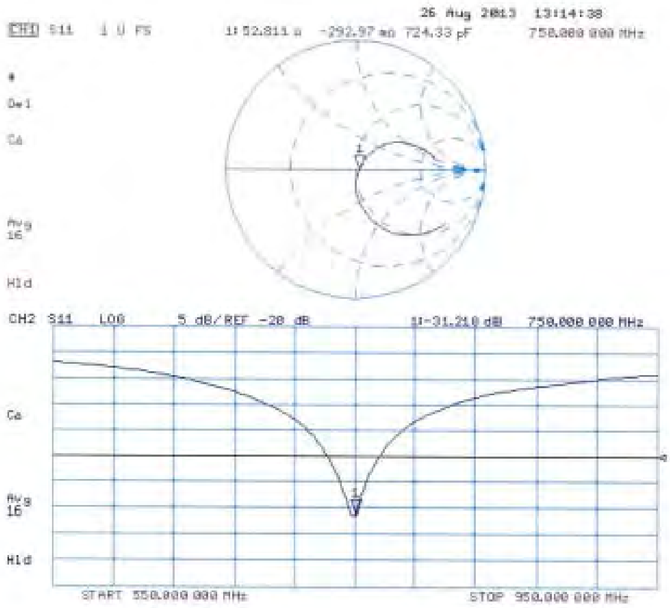
Impedance Measurement Plot for Head TSL



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DASY5 Validation Report for Body TSL

Date: 26.08.2013

Test Laboratory: SPEAG, Zurich, Switzerland

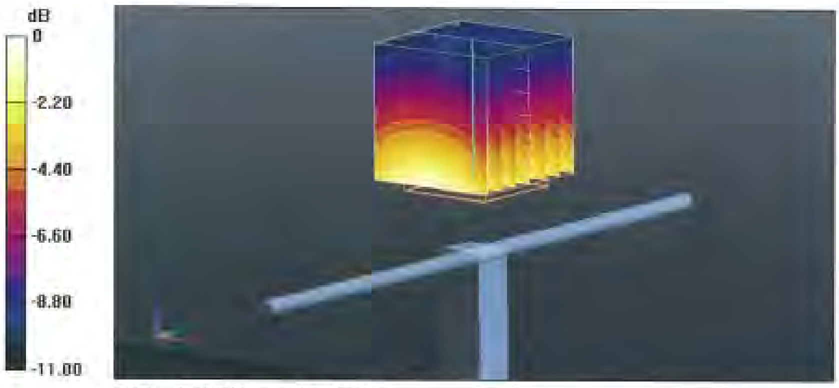
DUT: Dipole 750 MHz; Type: D750V3; Serial: D750V3 - SN: 1015

Communication System: UID 0 - CW ; Frequency: 750 MHz
Medium parameters used: f = 750 MHz; σ = 0.98 S/m; ε_r = 54.5; ρ = 1000 kg/m^3
Phantom section: Flat Section
Measurement Standard: DASY5 (IEEE/IEC/ANSI C63.19-2007)

DASY52 Configuration:

- Probe: ES3DV3 - SN3205; ConvF(6.11, 6.11, 6.11); Calibrated: 28.12.2012;
- Sensor-Surface: 3mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn601; Calibrated: 25.04.2013
- Phantom: Flat Phantom 4.9L; Type: QD000P49AA; Serial: 1001
- DASY52 52.8.7(1137); SEMCAD X 14.6.10(7164)

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 = 53.165 V/m; Power Drift = 0.02 dB
Peak SAR (extrapolated) = 3.28 W/kg
SAR(1 g) = 2.23 W/kg; SAR(10 g) = 1.46 W/kg
Maximum value of SAR (measured) = 2.60 W/kg



0 dB = 2.60 W/kg = 4.15 dBW/kg

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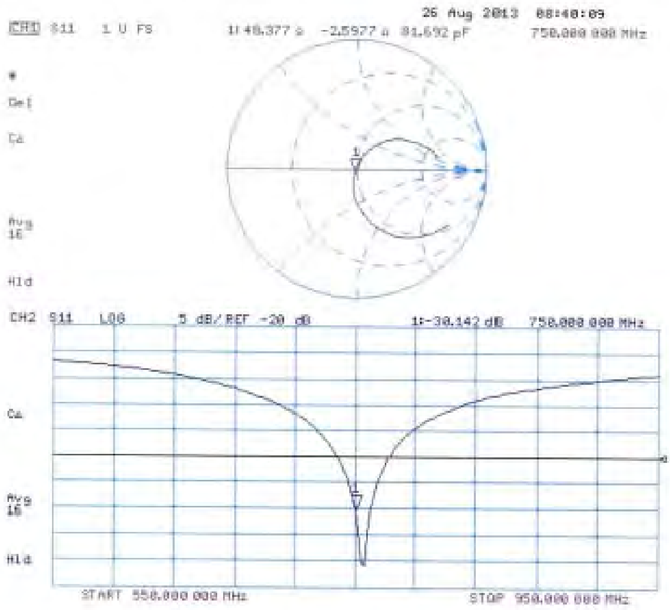
Impedance Measurement Plot for Body TSL



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Accreditation No.: SCS 108

Client SGS-TW (Auden)

Certificate No: D835V2-4d156_Jun13

CALIBRATION CERTIFICATE

Object	D835V2 - SN: 4d156
Calibration procedure(s)	QA CAL-05.v9 Calibration procedure for dipole validation kits above 700 MHz
Calibration date:	June 06, 2013

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	01-Nov-12 (No. 217-01640)	Oct-13
Power sensor HP 8481A	US37292783	01-Nov-12 (No. 217-01640)	Oct-13
Reference 20 dB Attenuator	SN: 5058 (20k)	04-Apr-13 (No. 217-01736)	Apr-14
Type-N mismatch combination	SN: 5047.3 / 06327	04-Apr-13 (No. 217-01739)	Apr-14
Reference Probe ES3DV3	SN: 3205	28-Dec-12 (No. ES3-3205_Dec12)	Dec-13
DAE4	SN: 601	25-Apr-13 (No. DAE4-601_Apr13)	Apr-14

Secondary Standards	ID #	Check Date (in house)	Scheduled Check
Power sensor HP 8481A	MY41092317	18-Oct-02 (in house check Oct-11)	In house check: Oct-13
RF generator R&S SMT-06	100005	04-Aug-99 (in house check Oct-11)	In house check: Oct-13
Network Analyzer HP 8753E	US37390585 S4206	18-Oct-01 (in house check Oct-12)	In house check: Oct-13

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

Issued: June 6, 2013

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Certificate No: D835V2-4d156_Jun13 Page 1 of 8

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Multilateral Agreement for the recognition of calibration certificates

Accreditation No.: SCS 108

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 1528-2003, "IEEE Recommended Practice for Determining the Peak Spatial-Averaged Specific Absorption Rate (SAR) in the Human Head from Wireless Communications Devices: Measurement Techniques", December 2003
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) Federal Communications Commission Office of Engineering & Technology (FCC OET), "Evaluating Compliance with FCC Guidelines for Human Exposure to Radiofrequency Electromagnetic Fields; Additional Information for Evaluating Compliance of Mobile and Portable Devices with FCC Limits for Human Exposure to Radiofrequency Emissions", Supplement C (Edition 01-01) to Bulletin 65

Additional Documentation:

d) DASY4/5 System Handbook

Methods Applied and Interpretation of Parameters:

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

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

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Member of SGS Group

Measurement Conditions

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

DASY Version	DASY5	V52.8.6
Extrapolation	Advanced Extrapolation	
Phantom	Modular Flat Phantom	
Distance Dipole Center - TSL	15 mm	with Spacer
Zoom Scan Resolution	dx, dy, dz = 5 mm	
Frequency	835 MHz ± 1 MHz	

Head TSL parameters

The following parameters and calculations were applied.

	Temperature	**Permittivity**	**Conductivity**
Nominal Head TSL parameters	22.0 °C	41.5	0.90 mho/m
Measured Head TSL parameters	(22.0 ± 0.2) °C	40.4 ± 6 %	0.94 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	2.48 W/kg
SAR for nominal Head TSL parameters	normalized to 1W	**9.54 W/kg ± 17.0 % (k=2)**

SAR averaged over 10 cm^3 (10 g) of Head TSL	condition	
SAR measured	250 mW input power	1.60 W/kg
SAR for nominal Head TSL parameters	normalized to 1W	**6.21 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	54.5 ± 6 %	1.00 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	2.46 W/kg
SAR for nominal Body TSL parameters	normalized to 1W	**9.59 W/kg ± 17.0 % (k=2)**

SAR averaged over 10 cm^3 (10 g) of Body TSL	condition	
SAR measured	250 mW input power	1.60 W/kg
SAR for nominal Body TSL parameters	normalized to 1W	**6.27 W/kg ± 16.5 % (k=2)**

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Appendix

Antenna Parameters with Head TSL

Impedance, transformed to feed point	52.0 Ω - 2.4 jΩ
Return Loss	- 30.3 dB

Antenna Parameters with Body TSL

Impedance, transformed to feed point	47.4 Ω - 4.6 jΩ
Return Loss	- 25.3 dB

General Antenna Parameters and Design

Electrical Delay (one direction)	1.430 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 28, 2012

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DASY5 Validation Report for Head TSL

Date: 06.06.2013

Test Laboratory: SPEAG, Zurich, Switzerland

DUT: Dipole 835 MHz; Type: D835V2; Serial: D835V2 - SN: 4d156

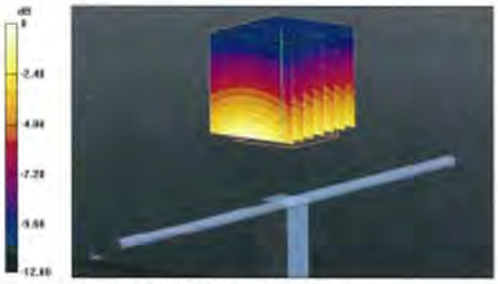
Communication System: UID 0 - CW ; Frequency: 835 MHz
Medium parameters used: f = 835 MHz; σ = 0.94 S/m; ε_r = 40.4; ρ = 1000 kg/m^3
Phantom section: Flat Section
Measurement Standard: DASY5 (IEEE/IEC/ANSI C63.19-2007)

DASY52 Configuration:

- Probe: ES3DV3 - SN3205; ConvF(6.05, 6.05, 6.05); Calibrated: 28.12.2012;
- Sensor-Surface: 3mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn601; Calibrated: 25.04.2013
- Phantom: Flat Phantom 4.9L; Type: QD000P49AA; Serial: 1001
- DASY52 52.8.6(1115); SEMCAD X 14.6.9(7117)

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 = 57.269 V/m; Power Drift = 0.02 dB
Peak SAR (extrapolated) = 3.78 W/kg
SAR(1 g) = 2.48 W/kg; SAR(10 g) = 1.6 W/kg
Maximum value of SAR (measured) = 2.92 W/kg



0 dB = 2.92 W/kg = 4.65 dBW/kg

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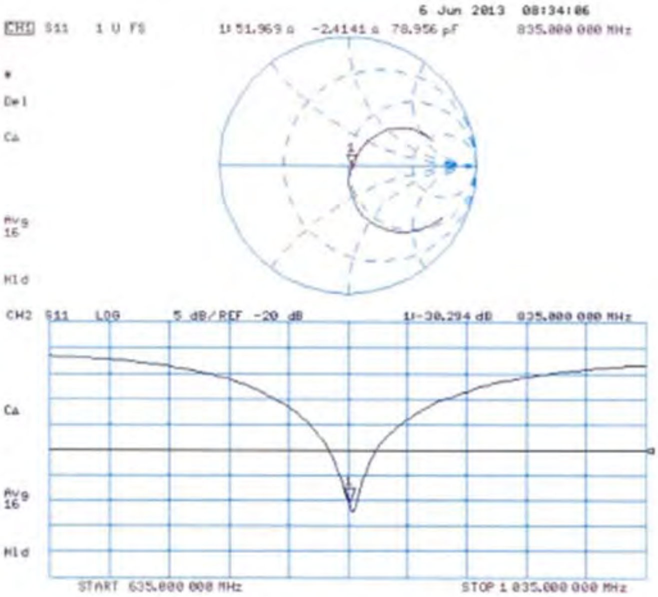
Impedance Measurement Plot for Head TSL



Certificate No: D835V2-4d156_Jun13 Page 6 of 8

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DASY5 Validation Report for Body TSL

Date: 05.06.2013

Test Laboratory: SPEAG, Zurich, Switzerland

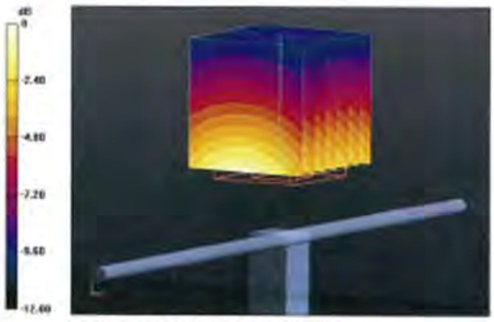
DUT: Dipole 835 MHz; Type: D835V2; Serial: D835V2 - SN: 4d156

Communication System: UID 0 - CW ; Frequency: 835 MHz
Medium parameters used: f = 835 MHz; σ = 1 S/m; ε_r = 54.5; ρ = 1000 kg/m^3
Phantom section: Flat Section
Measurement Standard: DASY5 (IEEE/IEC/ANSI C63.19-2007)

DASY52 Configuration:

- Probe: ES3DV3 - SN3205; ConvF(6.04, 6.04, 6.04); Calibrated: 28.12.2012;
- Sensor-Surface: 3mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn601; Calibrated: 25.04.2013
- Phantom: Flat Phantom 4.9L; Type: QD000P49AA; Serial: 1001
- DASY52 52.8.6(1115); SEMCAD X 14.6.9(7117)

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 = 55.321 V/m; Power Drift = 0.02 dB
Peak SAR (extrapolated) = 3.64 W/kg
SAR(1 g) = 2.46 W/kg; SAR(10 g) = 1.6 W/kg
Maximum value of SAR (measured) = 2.87 W/kg



0 dB = 2.87 W/kg = 4.58 dBW/kg

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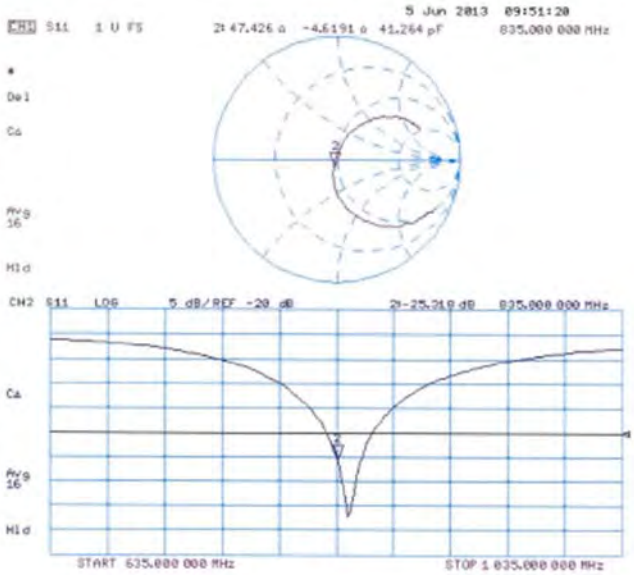
Impedance Measurement Plot for Body TSL



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Accreditation No.: **SCS 108**

Client **SGS-TW (Auden)**

Certificate No: **D1750V2-1095_Jun13**

CALIBRATION CERTIFICATE

Object	D1750V2 - SN: 1095
Calibration procedure(s)	QA CAL-05.v9 Calibration procedure for dipole validation kits above 700 MHz
Calibration date:	June 06, 2013

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	01-Nov-12 (No. 217-01640)	Oct-13
Power sensor HP 8481A	US37292783	01-Nov-12 (No. 217-01640)	Oct-13
Reference 20 dB Attenuator	SN: 5058 (20k)	04-Apr-13 (No. 217-01736)	Apr-14
Type-N mismatch combination	SN: 5047.3 / 06327	04-Apr-13 (No. 217-01739)	Apr-14
Reference Probe ES3DV3	SN: 3205	28-Dec-12 (No. ES3-3205_Dec12)	Dec-13
DAE4	SN: 601	25-Apr-13 (No. DAE4-601_Apr13)	Apr-14

Secondary Standards	ID #	Check Date (in house)	Scheduled Check
Power sensor HP 8481A	MY41092317	18-Oct-02 (in house check Oct-11)	In house check: Oct-13
RF generator R&S SMT-06	100005	04-Aug-99 (in house check Oct-11)	In house check: Oct-13
Network Analyzer HP 8753E	US37390585 S4206	18-Oct-01 (in house check Oct-12)	In house check: Oct-13

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

Issued: June 6, 2013

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

Accreditation No.: **SCS 108**

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 1528-2003, "IEEE Recommended Practice for Determining the Peak Spatial-Averaged Specific Absorption Rate (SAR) in the Human Head from Wireless Communications Devices: Measurement Techniques", December 2003
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) Federal Communications Commission Office of Engineering & Technology (FCC OET), "Evaluating Compliance with FCC Guidelines for Human Exposure to Radiofrequency Electromagnetic Fields; Additional Information for Evaluating Compliance of Mobile and Portable Devices with FCC Limits for Human Exposure to Radiofrequency Emissions", Supplement C (Edition 01-01) to Bulletin 65

Additional Documentation:

d) DASY4/5 System Handbook

Methods Applied and Interpretation of Parameters:

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

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

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Measurement Conditions

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

DASY Version	DASY5	V52.8.6
Extrapolation	Advanced Extrapolation	
Phantom	Modular Flat Phantom	
Distance Dipole Center - TSL	10 mm	with Spacer
Zoom Scan Resolution	dx, dy, dz = 5 mm	
Frequency	1750 MHz ± 1 MHz	

Head TSL parameters

The following parameters and calculations were applied.

	Temperature	Permittivity	Conductivity
Nominal Head TSL parameters	22.0 °C	40.1	1.37 mho/m
Measured Head TSL parameters	(22.0 ± 0.2) °C	39.1 ± 6 %	1.32 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	9.01 W/kg
SAR for nominal Head TSL parameters	normalized to 1W	**36.7 W/kg ± 17.0 % (k=2)**

SAR averaged over 10 cm^3 (10 g) of Head TSL	condition	
SAR measured	250 mW input power	4.80 W/kg
SAR for nominal Head TSL parameters	normalized to 1W	**19.4 W/kg ± 16.5 % (k=2)**

Body TSL parameters

The following parameters and calculations were applied.

	Temperature	Permittivity	Conductivity
Nominal Body TSL parameters	22.0 °C	53.4	1.49 mho/m
Measured Body TSL parameters	(22.0 ± 0.2) °C	51.7 ± 6 %	1.47 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	9.50 W/kg
SAR for nominal Body TSL parameters	normalized to 1W	**38.0 W/kg ± 17.0 % (k=2)**

SAR averaged over 10 cm^3 (10 g) of Body TSL	condition	
SAR measured	250 mW input power	5.09 W/kg
SAR for nominal Body TSL parameters	normalized to 1W	**20.4 W/kg ± 16.5 % (k=2)**

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Appendix

Antenna Parameters with Head TSL

Impedance, transformed to feed point	48.9 Ω + 0.4 jΩ
Return Loss	- 38.3 dB

Antenna Parameters with Body TSL

Impedance, transformed to feed point	44.9 Ω + 0.2 jΩ
Return Loss	- 25.4 dB

General Antenna Parameters and Design

Electrical Delay (one direction)	1.217 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 07, 2012

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DASY5 Validation Report for Head TSL

Date: 06.06.2013

Test Laboratory: SPEAG, Zurich, Switzerland

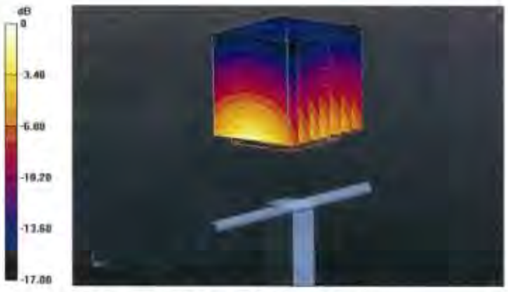
DUT: Dipole 1750 MHz; Type: D1750V2; Serial: D1750V2 - SN: 1095

Communication System: UID 0 - CW ; Frequency: 1750 MHz
Medium parameters used: f = 1750 MHz; $\sigma = 1.32$ S/m; $\varepsilon_r = 39.1$; $\rho = 1000$ kg/m^3
Phantom section: Flat Section
Measurement Standard: DASY5 (IEEE/IEC/ANSI C63.19-2007)

DASY52 Configuration:

- Probe: ES3DV3 - SN3205; ConvF(5.18, 5.18, 5.18); Calibrated: 28.12.2012;
- Sensor-Surface: 3mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn601; Calibrated: 25.04.2013
- Phantom: Flat Phantom 5.0 (front); Type: QD000P50AA; Serial: 1001
- DASY52 52.8.6(1115); SEMCAD X 14.6.9(7117)

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 = 93.648 V/m; Power Drift = 0.04 dB
Peak SAR (extrapolated) = 16.2 W/kg
SAR(1 g) = 9.01 W/kg; SAR(10 g) = 4.8 W/kg
Maximum value of SAR (measured) = 11.2 W/kg



0 dB = 11.2 W/kg = 10.49 dBW/kg

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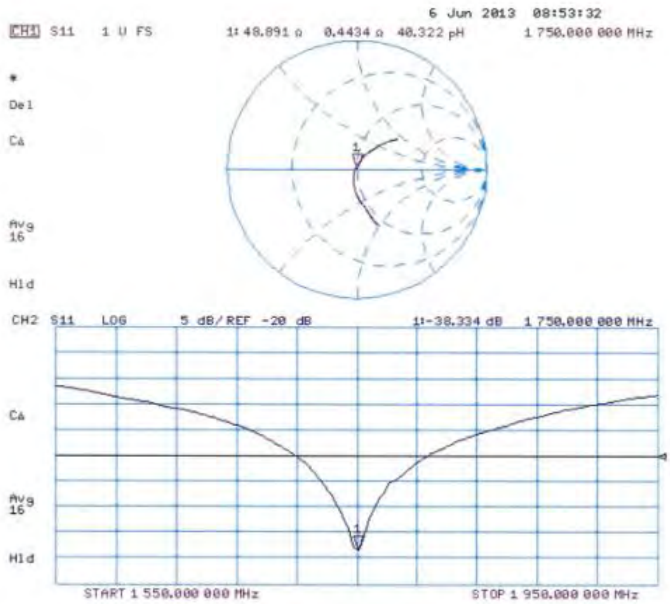
Impedance Measurement Plot for Head TSL



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DASY5 Validation Report for Body TSL

Date: 05.06.2013

Test Laboratory: SPEAG, Zurich, Switzerland

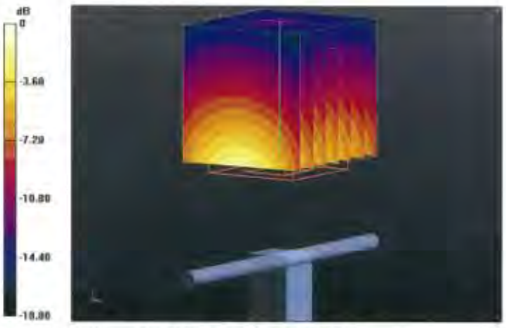
DUT: Dipole 1750 MHz; Type: D1750V2; Serial: D1750V2 - SN: 1095

Communication System: UID 0 - CW ; Frequency: 1750 MHz
Medium parameters used: f = 1750 MHz; $\sigma = 1.47$ S/m; $\varepsilon_r = 51.7$; $\rho = 1000$ kg/m^3
Phantom section: Flat Section
Measurement Standard: DASY5 (IEEE/IEC/ANSI C63.19-2007)

DASY52 Configuration:

- Probe: ES3DV3 - SN3205; ConvF(4.83, 4.83, 4.83); Calibrated: 28.12.2012;
- Sensor-Surface: 3mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn601; Calibrated: 25.04.2013
- Phantom: Flat Phantom 5.0 (back); Type: QD000P50AA; Serial: 1002
- DASY52 52.8.6(1115); SEMCAD X 14.6.9(7117)

Dipole Calibration for Body Tissue/Pin=250 mW, d=10mm/Zoom Scan (7x7x7)/Cube 0:
Measurement grid: dx=5mm, dy=5mm, dz=5mm
Reference Value = 93.648 V/m; Power Drift = 0.04 dB
Peak SAR (extrapolated) = 16.4 W/kg
SAR(1 g) = 9.5 W/kg; SAR(10 g) = 5.09 W/kg
Maximum value of SAR (measured) = 11.9 W/kg



0 dB = 11.9 W/kg = 10.76 dBW/kg

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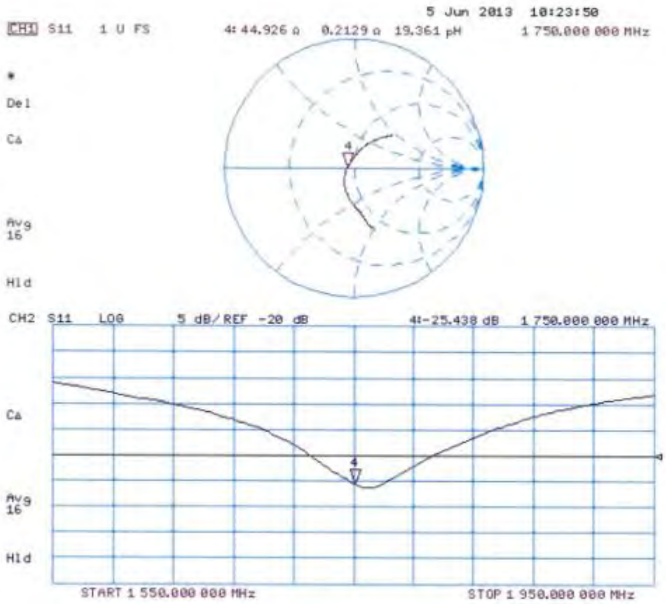
Impedance Measurement Plot for Body TSL



Certificate No: D1750V2-1095_Jun13 Page 8 of 8

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Accreditation No.: **SCS 108**

Client **SGS-TW (Auden)**

Certificate No: **D1750V2-1008_May13**

CALIBRATION CERTIFICATE

Object	D1750V2 - SN: 1008
Calibration procedure(s)	QA CAL-05.v9 Calibration procedure for dipole validation kits above 700 MHz
Calibration date:	May 29, 2013

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	01-Nov-12 (No. 217-01640)	Oct-13
Power sensor HP 8481A	US37292783	01-Nov-12 (No. 217-01640)	Oct-13
Reference 20 dB Attenuator	SN: 5058 (20k)	04-Apr-13 (No. 217-01736)	Apr-14
Type-N mismatch combination	SN: 5047.3 / 06327	04-Apr-13 (No. 217-01739)	Apr-14
Reference Probe ES3DV3	SN: 3205	28-Dec-12 (No. ES3-3205_Dec12)	Dec-13
DAE4	SN: 601	25-Apr-13 (No. DAE4-601_Apr13)	Apr-14
Secondary Standards	**ID #**	**Check Date (in house)**	**Scheduled Check**
Power sensor HP 8481A	MY41092317	18-Oct-02 (in house check Oct-11)	In house check: Oct-13
RF generator R&S SMT-06	100005	04-Aug-99 (in house check Oct-11)	In house check: Oct-13
Network Analyzer HP 8753E	US37390585 S4206	18-Oct-01 (in house check Oct-12)	In house check: Oct-13

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

Issued: May 29, 2013

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Accreditation No.: **SCS 108**

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 1528-2003, "IEEE Recommended Practice for Determining the Peak Spatial-Averaged Specific Absorption Rate (SAR) in the Human Head from Wireless Communications Devices: Measurement Techniques", December 2003
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) Federal Communications Commission Office of Engineering & Technology (FCC OET), "Evaluating Compliance with FCC Guidelines for Human Exposure to Radiofrequency Electromagnetic Fields; Additional Information for Evaluating Compliance of Mobile and Portable Devices with FCC Limits for Human Exposure to Radiofrequency Emissions", Supplement C (Edition 01-01) to Bulletin 65

Additional Documentation:

d) DASY4/5 System Handbook

Methods Applied and Interpretation of Parameters:

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

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

Measurement Conditions

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

DASY Version	DASY5	V52.8.6
Extrapolation	Advanced Extrapolation	
Phantom	Modular Flat Phantom	
Distance Dipole Center - TSL	10 mm	with Spacer
Zoom Scan Resolution	dx, dy, dz = 5 mm	
Frequency	1750 MHz ± 1 MHz	

Head TSL parameters

The following parameters and calculations were applied.

	Temperature	Permittivity	Conductivity
Nominal Head TSL parameters	22.0 °C	40.1	1.37 mho/m
Measured Head TSL parameters	(22.0 ± 0.2) °C	39.1 ± 6 %	1.32 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	9.04 W/kg
SAR for nominal Head TSL parameters	normalized to 1W	**36.8 W/kg ± 17.0 % (k=2)**

SAR averaged over 10 cm^3 (10 g) of Head TSL	condition	
SAR measured	250 mW input power	4.83 W/kg
SAR for nominal Head TSL parameters	normalized to 1W	**19.5 W/kg ± 16.5 % (k=2)**

Body TSL parameters

The following parameters and calculations were applied.

	Temperature	Permittivity	Conductivity
Nominal Body TSL parameters	22.0 °C	53.4	1.49 mho/m
Measured Body TSL parameters	(22.0 ± 0.2) °C	51.7 ± 6 %	1.47 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	9.46 W/kg
SAR for nominal Body TSL parameters	normalized to 1W	**37.9 W/kg ± 17.0 % (k=2)**

SAR averaged over 10 cm^3 (10 g) of Body TSL	condition	
SAR measured	250 mW input power	5.07 W/kg
SAR for nominal Body TSL parameters	normalized to 1W	**20.3 W/kg ± 16.5 % (k=2)**

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Appendix

Antenna Parameters with Head TSL

Impedance, transformed to feed point	50.2 Ω + 0.2 jΩ
Return Loss	- 50.1 dB

Antenna Parameters with Body TSL

Impedance, transformed to feed point	46.0 Ω - 0.1 jΩ
Return Loss	- 27.6 dB

General Antenna Parameters and Design

Electrical Delay (one direction)	1.222 ns

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

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

Additional EUT Data

Manufactured by	SPEAG
Manufactured on	February 11, 2009

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DASY5 Validation Report for Head TSL

Date: 28.05.2013

Test Laboratory: SPEAG, Zurich, Switzerland

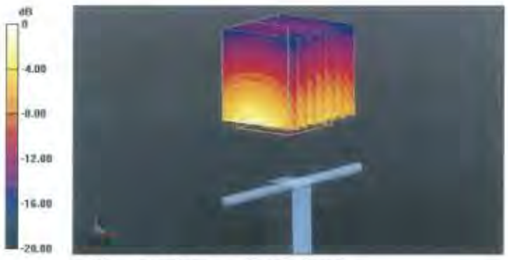
DUT: Dipole 1750 MHz; Type: D1750V2; Serial: D1750V2 - SN: 1008

Communication System: UID 0 - CW ; Frequency: 1750 MHz
Medium parameters used: f = 1750 MHz; σ = 1.32 S/m; ε_r = 39.1; ρ = 1000 kg/m^3
Phantom section: Flat Section
Measurement Standard: DASY5 (IEEE/IEC/ANSI C63.19-2007)

DASY52 Configuration:

- Probe: ES3DV3 - SN3205; ConvF(5.18, 5.18, 5.18); Calibrated: 28.12.2012;
- Sensor-Surface: 3mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn601; Calibrated: 25.04.2013
- Phantom: Flat Phantom 5.0 (front); Type: QD000P50AA; Serial: 1001
- DASY52 52.8.6(1115); SEMCAD X 14.6.9(7117)

Dipole Calibration for Head Tissue/Pin=250 mW, d=10mm/Zoom Scan (7x7x7)/Cube 0:
Measurement grid: dx=5mm, dy=5mm, dz=5mm
Reference Value = 95.241 V/m; Power Drift = 0.02 dB
Peak SAR (extrapolated) = 16.2 W/kg
SAR(1 g) = 9.04 W/kg; SAR(10 g) = 4.83 W/kg
Maximum value of SAR (measured) = 11.2 W/kg



0 dB = 11.2 W/kg = 10.49 dBW/kg

Certificate No: D1750V2-1008_May13 Page 5 of 8

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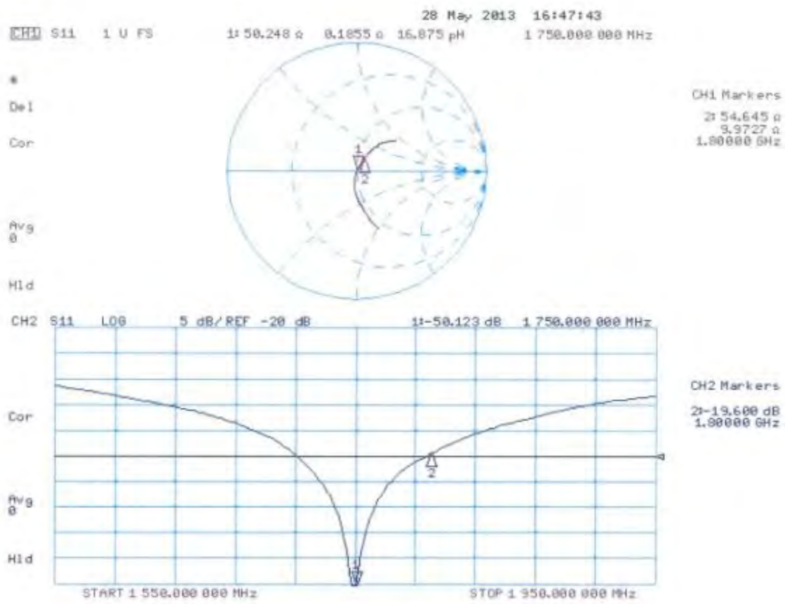
Impedance Measurement Plot for Head TSL



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DASY5 Validation Report for Body TSL

Date: 29.05.2013

Test Laboratory: SPEAG, Zurich, Switzerland

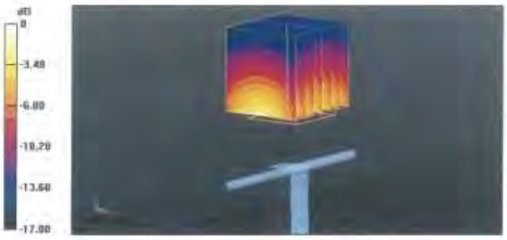
DUT: Dipole 1750 MHz; Type: D1750V2; Serial: D1750V2 - SN: 1008

Communication System: UID 0 - CW ; Frequency: 1750 MHz
Medium parameters used: f = 1750 MHz; σ = 1.47 S/m; ε_r = 51.7; ρ = 1000 kg/m^3
Phantom section: Flat Section
Measurement Standard: DASY5 (IEEE/IEC/ANSI C63.19-2007)

DASY52 Configuration:

- Probe: ES3DV3 - SN3205; ConvF(4.83, 4.83, 4.83); Calibrated: 28.12.2012;
- Sensor-Surface: 3mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn601; Calibrated: 25.04.2013
- Phantom: Flat Phantom 5.0 (back); Type: QD000P50AA; Serial: 1002
- DASY52 52.8.6(1115); SEMCAD X 14.6.9(7117)

Dipole Calibration for Body Tissue/Pin=250 mW, d=10mm/Zoom Scan (7x7x7)/Cube 0:
Measurement grid: dx=5mm, dy=5mm, dz=5mm
Reference Value = 93.817 V/m; Power Drift = 0.00 dB
Peak SAR (extrapolated) = 16.3 W/kg
SAR(1 g) = 9.46 W/kg; SAR(10 g) = 5.07 W/kg
Maximum value of SAR (measured) = 11.9 W/kg



0 dB = 11.9 W/kg = 10.76 dBW/kg

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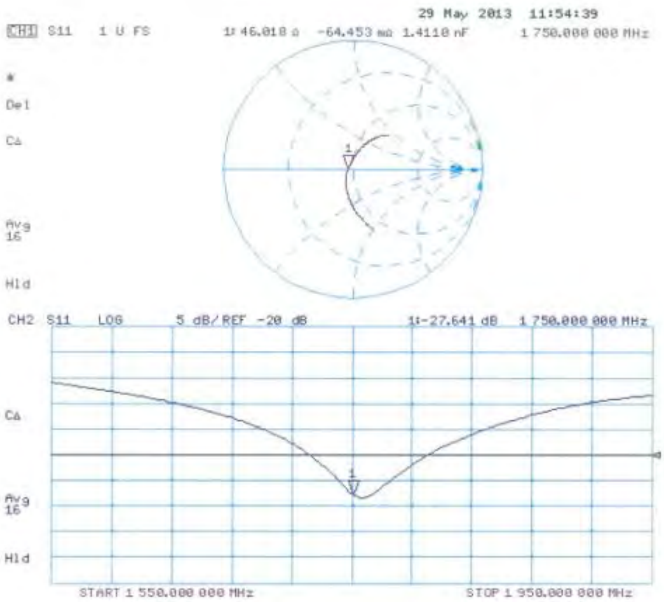
Impedance Measurement Plot for Body TSL



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Accreditation No.: **SCS 108**

Client **SGS-TW (Auden)**

Certificate No: **D1900V2-5d173_Jun13**

CALIBRATION CERTIFICATE

Object	D1900V2 - SN: 5d173
Calibration procedure(s)	QA CAL-05.v9 Calibration procedure for dipole validation kits above 700 MHz
Calibration date:	June 10, 2013

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	01-Nov-12 (No. 217-01640)	Oct-13
Power sensor HP 8481A	US37292783	01-Nov-12 (No. 217-01640)	Oct-13
Reference 20 dB Attenuator	SN: 5058 (20k)	04-Apr-13 (No. 217-01736)	Apr-14
Type-N mismatch combination	SN: 5047.3 / 06327	04-Apr-13 (No. 217-01739)	Apr-14
Reference Probe ES3DV3	SN: 3205	28-Dec-12 (No. ES3-3205_Dec12)	Dec-13
DAE4	SN: 601	25-Apr-13 (No. DAE4-601_Apr13)	Apr-14

Secondary Standards	ID #	Check Date (in house)	Scheduled Check
Power sensor HP 8481A	MY41092317	18-Oct-02 (in house check Oct-11)	In house check: Oct-13
RF generator R&S SMT-06	100005	04-Aug-99 (in house check Oct-11)	In house check: Oct-13
Network Analyzer HP 8753E	US37390585 S4206	18-Oct-01 (in house check Oct-12)	In house check: Oct-13

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

Issued: June 11, 2013

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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 1528-2003, "IEEE Recommended Practice for Determining the Peak Spatial-Averaged Specific Absorption Rate (SAR) in the Human Head from Wireless Communications Devices: Measurement Techniques", December 2003
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) Federal Communications Commission Office of Engineering & Technology (FCC OET), "Evaluating Compliance with FCC Guidelines for Human Exposure to Radiofrequency Electromagnetic Fields; Additional Information for Evaluating Compliance of Mobile and Portable Devices with FCC Limits for Human Exposure to Radiofrequency Emissions", Supplement C (Edition 01-01) to Bulletin 65

Additional Documentation:

d) DASY4/5 System Handbook

Methods Applied and Interpretation of Parameters:

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

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

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Measurement Conditions

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

DASY Version	DASY5	V52.8.7
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	39.3 ± 6 %	1.34 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	9.82 W/kg
SAR for nominal Head TSL parameters	normalized to 1W	**40.2 W/kg ± 17.0 % (k=2)**

SAR averaged over 10 cm^3 (10 g) of Head TSL	condition	
SAR measured	250 mW input power	5.17 W/kg
SAR for nominal Head TSL parameters	normalized to 1W	**21.0 W/kg ± 16.5 % (k=2)**

Body TSL parameters

The following parameters and calculations were applied.

	Temperature	Permittivity	Conductivity
Nominal Body TSL parameters	22.0 °C	53.3	1.52 mho/m
Measured Body TSL parameters	(22.0 ± 0.2) °C	53.7 ± 6 %	1.50 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	10.1 W/kg
SAR for nominal Body TSL parameters	normalized to 1W	**40.8 W/kg ± 17.0 % (k=2)**

SAR averaged over 10 cm^3 (10 g) of Body TSL	condition	
SAR measured	250 mW input power	5.42 W/kg
SAR for nominal Body TSL parameters	normalized to 1W	**21.8 W/kg ± 16.5 % (k=2)**

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Appendix

Antenna Parameters with Head TSL

Impedance, transformed to feed point	52.2 Ω + 5.4 jΩ
Return Loss	- 24.8 dB

Antenna Parameters with Body TSL

Impedance, transformed to feed point	47.3 Ω + 5.8 jΩ
Return Loss	- 23.6 dB

General Antenna Parameters and Design

Electrical Delay (one direction)	1.200 ns

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

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

Additional EUT Data

Manufactured by	SPEAG
Manufactured on	June 08, 2012

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DASY5 Validation Report for Head TSL

Date: 10.06.2013

Test Laboratory: SPEAG, Zurich, Switzerland

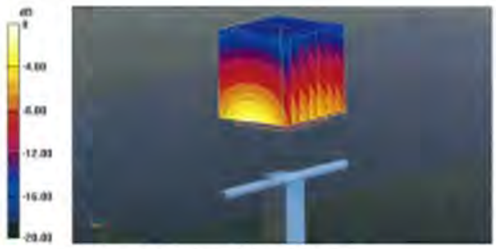
DUT: Dipole 1900 MHz; Type: D1900V2; Serial: D1900V2 - SN: 5d173

Communication System: UID 0 - CW ; Frequency: 1900 MHz
Medium parameters used: f = 1900 MHz; σ = 1.34 S/m; ε_r = 39.3; ρ = 1000 kg/m^3
Phantom section: Flat Section
Measurement Standard: DASY5 (IEEE/IEC/ANSI C63.19-2007)

DASY52 Configuration:

- Probe: ES3DV3 - SN3205; ConvF(4.98, 4.98, 4.98); Calibrated: 28.12.2012;
- Sensor-Surface: 3mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn601; Calibrated: 25.04.2013
- Phantom: Flat Phantom 5.0 (front); Type: QD000P50AA; Serial: 1001
- DASY52 52.8.7(1137); SEMCAD X 14.6.10(7164)

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 = 96.647 V/m; Power Drift = 0.06 dB
Peak SAR (extrapolated) = 17.8 W/kg
SAR(1 g) = 9.82 W/kg; SAR(10 g) = 5.17 W/kg
Maximum value of SAR (measured) = 12.2 W/kg



0 dB = 12.2 W/kg = 10.86 dBW/kg

Certificate No: D1900V2-5d173_Jun13 Page 5 of 8

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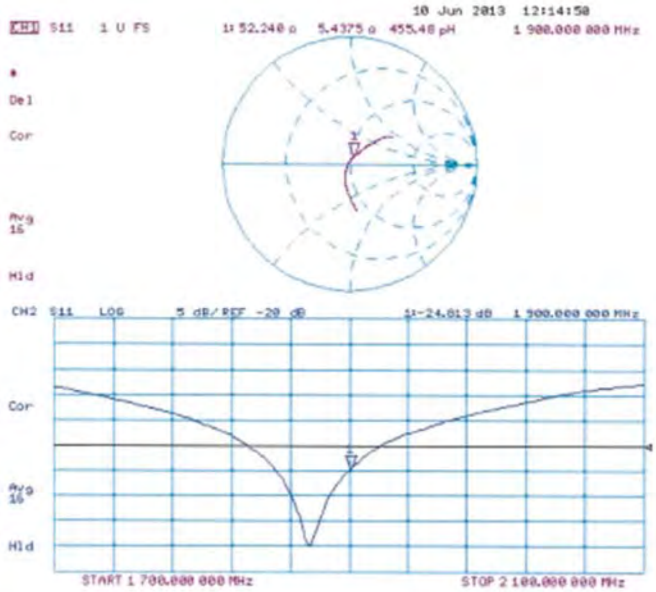
Impedance Measurement Plot for Head TSL



Certificate No: D1900V2-5d173_Jun13 Page 6 of 8

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DASY5 Validation Report for Body TSL

Date: 10.06.2013

Test Laboratory: SPEAG, Zurich, Switzerland

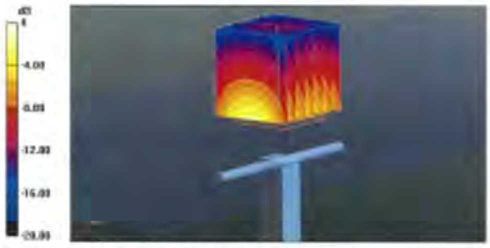
DUT: Dipole 1900 MHz; Type: D1900V2; Serial: D1900V2 - SN: 5d173

Communication System: UID 0 - CW ; Frequency: 1900 MHz
Medium parameters used: f = 1900 MHz; σ = 1.5 S/m; ε_r = 53.7; ρ = 1000 kg/m^3
Phantom section: Flat Section
Measurement Standard: DASY5 (IEEE/IEC/ANSI C63.19-2007)

DASY52 Configuration:

- Probe: ES3DV3 - SN3205; ConvF(4.6, 4.6, 4.6); Calibrated: 28.12.2012;
- Sensor-Surface: 3mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn601; Calibrated: 25.04.2013
- Phantom: Flat Phantom 5.0 (back); Type: QD000P50AA; Serial: 1002
- DASY52 52.8.7(1137); SEMCAD X 14.6.10(7164)

Dipole Calibration for Body Tissue/Pin=250 mW, d=10mm/Zoom Scan (7x7x7)/Cube 0:
Measurement grid: dx=5mm, dy=5mm, dz=5mm
Reference Value = 96.647 V/m; Power Drift = 0.01 dB
Peak SAR (extrapolated) = 17.3 W/kg
SAR(1 g) = 10.1 W/kg; SAR(10 g) = 5.42 W/kg
Maximum value of SAR (measured) = 12.8 W/kg



0 dB = 12.8 W/kg = 11.07 dBW/kg

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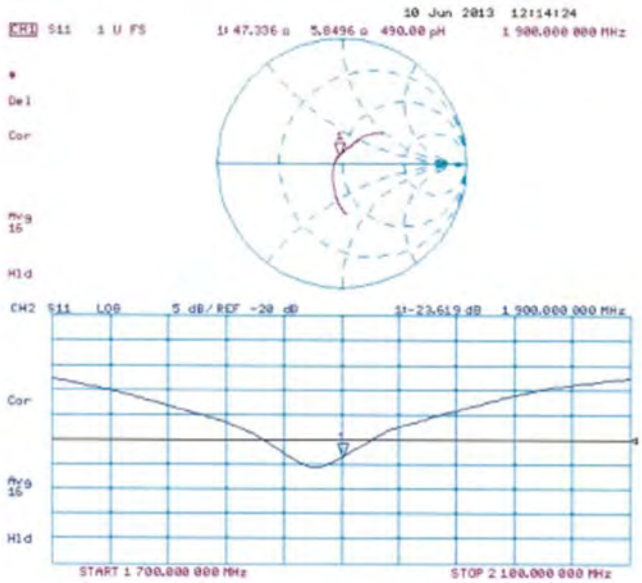
Impedance Measurement Plot for Body TSL



Certificate No: D1900V2-5d173_Jun13 Page 8 of 8

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Accreditation No.: **SCS 108**

Client **SGS-TW (Auden)**

Certificate No: **D2450V2-912_Jun13**

CALIBRATION CERTIFICATE

Object	D2450V2 - SN: 912
Calibration procedure(s)	QA CAL-05.v9 Calibration procedure for dipole validation kits above 700 MHz
Calibration date:	June 07, 2013

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	01-Nov-12 (No. 217-01640)	Oct-13
Power sensor HP 8481A	US37292783	01-Nov-12 (No. 217-01640)	Oct-13
Reference 20 dB Attenuator	SN: 5058 (20k)	04-Apr-13 (No. 217-01736)	Apr-14
Type-N mismatch combination	SN: 5047.3 / 06327	04-Apr-13 (No. 217-01739)	Apr-14
Reference Probe ES3DV3	SN: 3205	28-Dec-12 (No. ES3-3205_Dec12)	Dec-13
DAE4	SN: 601	25-Apr-13 (No. DAE4-601_Apr13)	Apr-14

Secondary Standards	ID #	Check Date (in house)	Scheduled Check
Power sensor HP 8481A	MY41092317	18-Oct-02 (in house check Oct-11)	In house check: Oct-13
RF generator R&S SMT-06	100005	04-Aug-99 (in house check Oct-11)	In house check: Oct-13
Network Analyzer HP 8753E	US37390585 S4206	18-Oct-01 (in house check Oct-12)	In house check: Oct-13

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

Issued: June 7, 2013

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Accreditation No.: **SCS 108**

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 1528-2003, "IEEE Recommended Practice for Determining the Peak Spatial-Averaged Specific Absorption Rate (SAR) in the Human Head from Wireless Communications Devices: Measurement Techniques", December 2003
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) Federal Communications Commission Office of Engineering & Technology (FCC OET), "Evaluating Compliance with FCC Guidelines for Human Exposure to Radiofrequency Electromagnetic Fields; Additional Information for Evaluating Compliance of Mobile and Portable Devices with FCC Limits for Human Exposure to Radiofrequency Emissions", Supplement C (Edition 01-01) to Bulletin 65

Additional Documentation:

d) DASY4/5 System Handbook

Methods Applied and Interpretation of Parameters:

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

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

Measurement Conditions

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

DASY Version	DASY5	V52.8.7
Extrapolation	Advanced Extrapolation	
Phantom	Modular Flat Phantom	
Distance Dipole Center - TSL	10 mm	with Spacer
Zoom Scan Resolution	dx, dy, dz = 5 mm	
Frequency	2450 MHz ± 1 MHz	

Head TSL parameters

The following parameters and calculations were applied.

	Temperature	Permittivity	Conductivity
Nominal Head TSL parameters	22.0 °C	39.2	1.80 mho/m
Measured Head TSL parameters	(22.0 ± 0.2) °C	37.8 ± 6 %	1.81 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	13.5 W/kg
SAR for nominal Head TSL parameters	normalized to 1W	**53.4 W/kg ± 17.0 % (k=2)**

SAR averaged over 10 cm^3 (10 g) of Head TSL	condition	
SAR measured	250 mW input power	6.25 W/kg
SAR for nominal Head TSL parameters	normalized to 1W	**24.8 W/kg ± 16.5 % (k=2)**

Body TSL parameters

The following parameters and calculations were applied.

	Temperature	Permittivity	Conductivity
Nominal Body TSL parameters	22.0 °C	52.7	1.95 mho/m
Measured Body TSL parameters	(22.0 ± 0.2) °C	50.9 ± 6 %	2.02 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	13.2 W/kg
SAR for nominal Body TSL parameters	normalized to 1W	**51.5 W/kg ± 17.0 % (k=2)**

SAR averaged over 10 cm^3 (10 g) of Body TSL	condition	
SAR measured	250 mW input power	6.08 W/kg
SAR for nominal Body TSL parameters	normalized to 1W	**24.0 W/kg ± 16.5 % (k=2)**

Certificate No: D2450V2-912_Jun13 Page 3 of 8

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Appendix

Antenna Parameters with Head TSL

Impedance, transformed to feed point	55.6 Ω + 1.3 jΩ
Return Loss	- 25.2 dB

Antenna Parameters with Body TSL

Impedance, transformed to feed point	50.8 Ω + 2.9 jΩ
Return Loss	- 30.6 dB

General Antenna Parameters and Design

Electrical Delay (one direction)	1.155 ns

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

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

Additional EUT Data

Manufactured by	SPEAG
Manufactured on	December 19, 2012

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DASY5 Validation Report for Head TSL

Date: 07.06.2013

Test Laboratory: SPEAG, Zurich, Switzerland

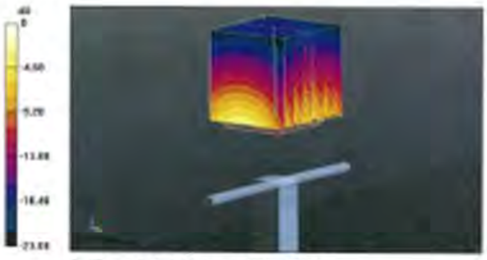
DUT: Dipole 2450 MHz; Type: D2450V2; Serial: D2450V2 - SN: 912

Communication System: UID 0 - CW ; Frequency: 2450 MHz
Medium parameters used: f = 2450 MHz; σ = 1.81 S/m; ε_r = 37.8; ρ = 1000 kg/m^3
Phantom section: Flat Section
Measurement Standard: DASY5 (IEEE/IEC/ANSI C63.19-2007)

DASY52 Configuration:

- Probe: ES3DV3 - SN3205; ConvF(4.52, 4.52, 4.52); Calibrated: 28.12.2012;
- Sensor-Surface: 3mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn601; Calibrated: 25.04.2013
- Phantom: Flat Phantom 5.0 (front); Type: QD000P50AA; Serial: 1001
- DASY52 52.8.7(1137); SEMCAD X 14.6.10(7164)

Dipole Calibration for Head Tissue/Pin=250 mW, d=10mm/Zoom Scan (7x7x7)/Cube 0:
Measurement grid: dx=5mm, dy=5mm, dz=5mm
Reference Value = 95.115 V/m; Power Drift = 0.07 dB
Peak SAR (extrapolated) = 28.2 W/kg
SAR(1 g) = 13.5 W/kg; SAR(10 g) = 6.25 W/kg
Maximum value of SAR (measured) = 17.1 W/kg



0 dB = 17.1 W/kg = 12.33 dBW/kg

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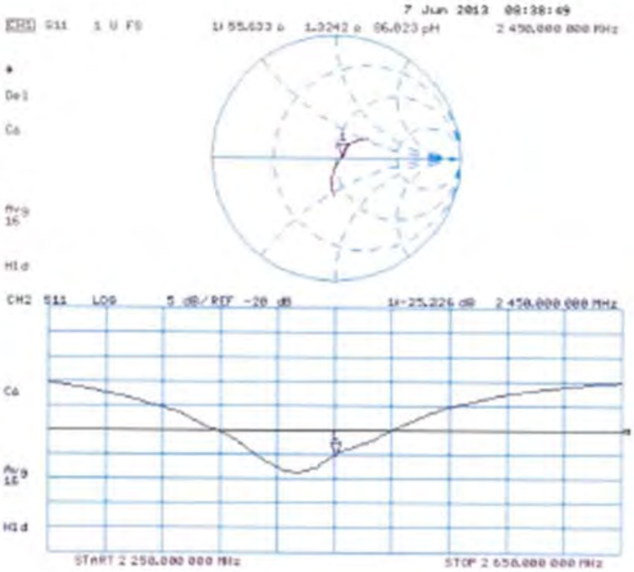
Impedance Measurement Plot for Head TSL



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DASY5 Validation Report for Body TSL

Date: 07.06.2013

Test Laboratory: SPEAG, Zurich, Switzerland

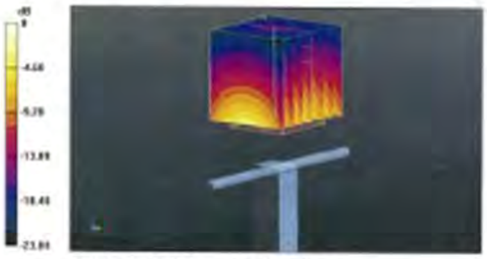
DUT: Dipole 2450 MHz; Type: D2450V2; Serial: D2450V2 - SN: 912

Communication System: UID 0 - CW ; Frequency: 2450 MHz
Medium parameters used: f = 2450 MHz; σ = 2.02 S/m; ε_r = 50.9; ρ = 1000 kg/m^3
Phantom section: Flat Section
Measurement Standard: DASY5 (IEEE/IEC/ANSI C63.19-2007)

DASY52 Configuration:

- Probe: ES3DV3 - SN3205; ConvF(4.42, 4.42, 4.42); Calibrated: 28.12.2012;
- Sensor-Surface: 3mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn601; Calibrated: 25.04.2013
- Phantom: Flat Phantom 5.0 (back); Type: QD000P50AA; Serial: 1002
- DASY52 52.8.7(1137); SEMCAD X 14.6.10(7164)

Dipole Calibration for Body Tissue/Pin=250 mW, d=10mm/Zoom Scan (7x7x7)/Cube 0:
Measurement grid: dx=5mm, dy=5mm, dz=5mm
Reference Value = 95.115 V/m; Power Drift = -0.00 dB
Peak SAR (extrapolated) = 27.8 W/kg
SAR(1 g) = 13.2 W/kg; SAR(10 g) = 6.08 W/kg
Maximum value of SAR (measured) = 17.2 W/kg



0 dB = 17.2 W/kg = 12.36 dBW/kg

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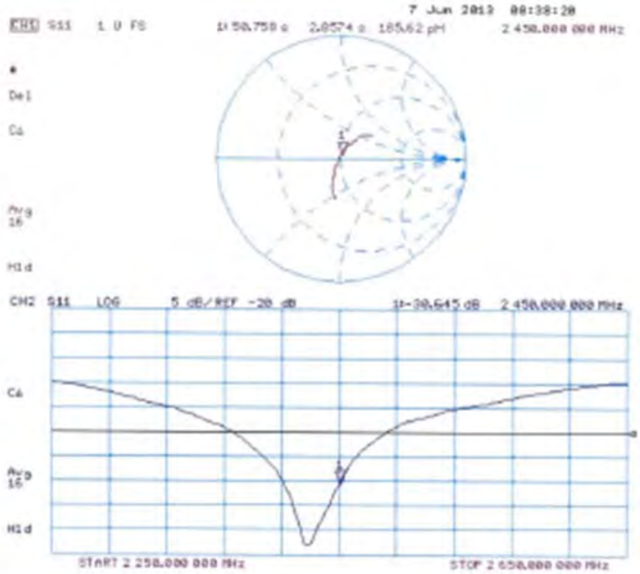
Impedance Measurement Plot for Body TSL



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Accreditation No.: **SCS 108**

Client **SGS-TW (Auden)**

Certificate No: **D2600V2-1005_Jan14**

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 28, 2014

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

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

Calibration Equipment used (M&TE critical for calibration)

Primary Standards	ID #	Cal Date (Certificate No.)	Scheduled Calibration
Power meter EPM-442A	GB37480704	09-Oct-13 (No. 217-01827)	Oct-14
Power sensor HP 8481A	US37292783	09-Oct-13 (No. 217-01827)	Oct-14
Power sensor HP 8481A	MY41092317	09-Oct-13 (No. 217-01828)	Oct-14
Reference 20 dB Attenuator	SN: 5058 (20k)	04-Apr-13 (No. 217-01736)	Apr-14
Type-N mismatch combination	SN: 5047.3 / 06327	04-Apr-13 (No. 217-01739)	Apr-14
Reference Probe ES3DV3	SN: 3205	30-Dec-13 (No. ES3-3205_Dec13)	Dec-14
DAE4	SN: 601	25-Apr-13 (No. DAE4-601_Apr13)	Apr-14

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-13)	In house check: Oct-14

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

Issued: January 28, 2014

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Certificate No: D2600V2-1005_Jan14 Page 1 of 8

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

Accreditation No.: **SCS 108**

Glossary:

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

Calibration is Performed According to the Following Standards:

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

Additional Documentation:

d) DASY4/5 System Handbook

Methods Applied and Interpretation of Parameters:

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

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

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Measurement Conditions

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

DASY Version	DASY5	V52.8.7
Extrapolation	Advanced Extrapolation	
Phantom	Modular Flat Phantom	
Distance Dipole Center - TSL	10 mm	with Spacer
Zoom Scan Resolution	dx, dy, dz = 5 mm	
Frequency	2600 MHz ± 1 MHz	

Head TSL parameters

The following parameters and calculations were applied.

	Temperature	**Permittivity**	**Conductivity**
Nominal Head TSL parameters	22.0 °C	39.0	1.96 mho/m
Measured Head TSL parameters	(22.0 ± 0.2) °C	38.2 ± 6 %	2.02 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	14.7 W/kg
SAR for nominal Head TSL parameters	normalized to 1W	**57.7 W/kg ± 17.0 % (k=2)**

SAR averaged over 10 cm^3 (10 g) of Head TSL	condition	
SAR measured	250 mW input power	6.57 W/kg
SAR for nominal Head TSL parameters	normalized to 1W	**26.0 W/kg ± 16.5 % (k=2)**

Body TSL parameters

The following parameters and calculations were applied.

	Temperature	**Permittivity**	**Conductivity**
Nominal Body TSL parameters	22.0 °C	52.5	2.16 mho/m
Measured Body TSL parameters	(22.0 ± 0.2) °C	50.9 ± 6 %	2.21 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	14.3 W/kg
SAR for nominal Body TSL parameters	normalized to 1W	**56.2 W/kg ± 17.0 % (k=2)**

SAR averaged over 10 cm^3 (10 g) of Body TSL	condition	
SAR measured	250 mW input power	6.33 W/kg
SAR for nominal Body TSL parameters	normalized to 1W	**25.1 W/kg ± 16.5 % (k=2)**

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Appendix

Antenna Parameters with Head TSL

Impedance, transformed to feed point	50.1 Ω - 3.2 jΩ
Return Loss	- 30.0 dB

Antenna Parameters with Body TSL

Impedance, transformed to feed point	46.5 Ω - 2.6 jΩ
Return Loss	- 26.8 dB

General Antenna Parameters and Design

Electrical Delay (one direction)	1.155 ns

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

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

Additional EUT Data

Manufactured by	SPEAG
Manufactured on	December 23, 2008

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DASY5 Validation Report for Head TSL

Date: 28.01.2014

Test Laboratory: SPEAG, Zurich, Switzerland

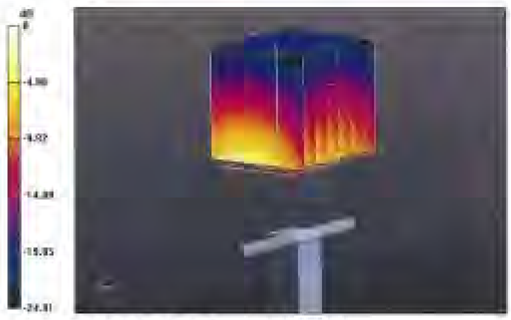
DUT: Dipole 2600 MHz; Type: D2600V2; Serial: D2600V2 - SN: 1005

Communication System: UID 0 - CW; Frequency: 2600 MHz
Medium parameters used: f = 2600 MHz; σ = 2.02 S/m; ε_r = 38.2; ρ = 1000 kg/m^3
Phantom section: Flat Section
Measurement Standard: DASY5 (IEEE/IEC/ANSI C63.19-2007)

DASY52 Configuration:

- Probe: ES3DV3 - SN3205; ConvF(4.46, 4.46, 4.46); Calibrated: 30.12.2013;
- Sensor-Surface: 3mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn601; Calibrated: 25.04.2013
- Phantom: Flat Phantom 5.0 (front); Type: QD000P50AA; Serial: 1001
- DASY52 52.8.7(1137); SEMCAD X 14.6.10(7164)

Dipole Calibration for Head Tissue/Pin=250 mW, d=10mm/Zoom Scan (7x7x7)/Cube 0:
Measurement grid: dx=5mm, dy=5mm, dz=5mm
Reference Value = 98.590 V/m; Power Drift = 0.08 dB
Peak SAR (extrapolated) = 31.3 W/kg
SAR(1 g) = 14.7 W/kg; SAR(10 g) = 6.57 W/kg
Maximum value of SAR (measured) = 19.3 W/kg



0 dB = 19.3 W/kg = 12.86 dBW/kg

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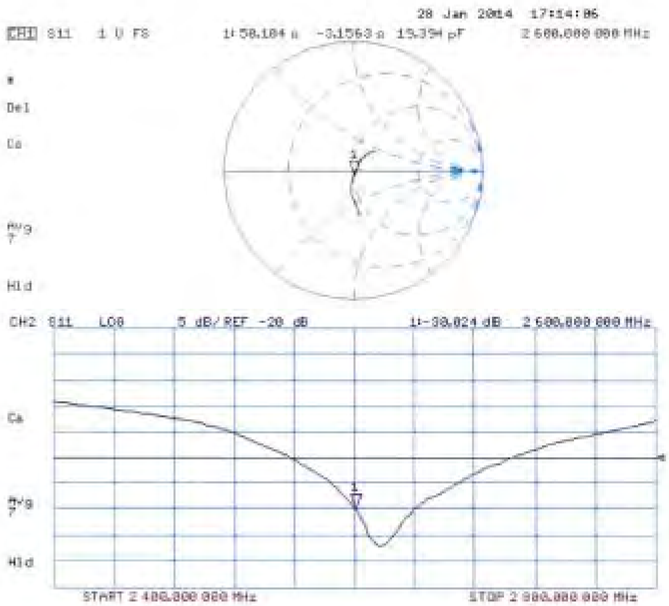
Impedance Measurement Plot for Head TSL



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DASY5 Validation Report for Body TSL

Date: 28.01.2014

Test Laboratory: SPEAG, Zurich, Switzerland

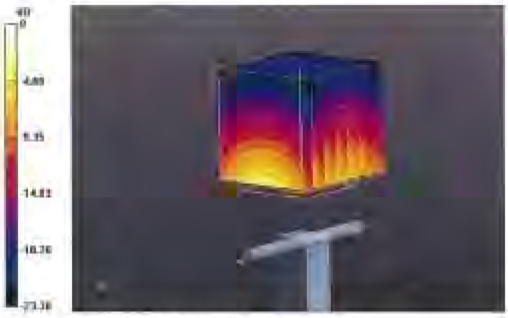
DUT: Dipole 2600 MHz; Type: D2600V2; Serial: D2600V2 - SN: 1005

Communication System: UID 0 - CW; Frequency: 2600 MHz
Medium parameters used: f = 2600 MHz; σ = 2.21 S/m; ε_r = 50.9; ρ = 1000 kg/m^3
Phantom section: Flat Section
Measurement Standard: DASY5 (IEEE/IEC/ANSI C63.19-2007)

DASY52 Configuration:

- Probe: ES3DV3 - SN3205; ConvF(4.24, 4.24, 4.24); Calibrated: 30.12.2013
- Sensor-Surface: 3mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn601; Calibrated: 25.04.2013
- Phantom: Flat Phantom 5.0 (back); Type: QD000P50AA; Serial: 1002
- DASY52 52.8.7(1137); SEMCAD X 14.6.10(7164)

Dipole Calibration for Body Tissue/Pin=250 mW, d=10mm/Zoom Scan (7x7x7)/Cube 0:
Measurement grid: dx=5mm, dy=5mm, dz=5mm
Reference Value = 96.624 V/m; Power Drift = -0.00 dB
Peak SAR (extrapolated) = 30.8 W/kg
SAR(1 g) = 14.3 W/kg; SAR(10 g) = 6.33 W/kg
Maximum value of SAR (measured) = 19.3 W/kg



0 dB = 19.3 W/kg = 12.86 dBW/kg

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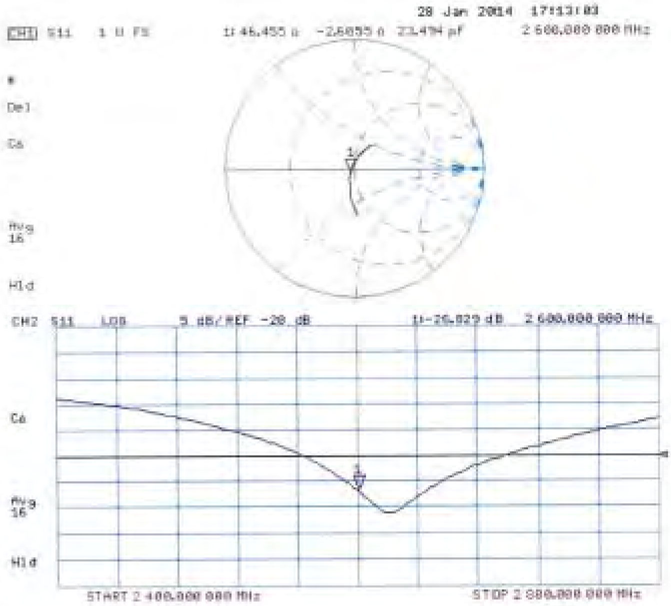
Impedance Measurement Plot for Body TSL



Certificate No: D2600V2-1005_Jan14 Page 8 of 8

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Accreditation No.: **SCS 108**

Client **SGS-TW (Auden)**

Certificate No: **D5GHzV2-1104_May13**

CALIBRATION CERTIFICATE

Object	D5GHzV2 - SN: 1104
Calibration procedure(s)	QA CAL-22.v2 Calibration procedure for dipole validation kits between 3-6 GHz
Calibration date:	May 07, 2013

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	01-Nov-12 (No. 217-01640)	Oct-13
Power sensor HP 8481A	US37292783	01-Nov-12 (No. 217-01640)	Oct-13
Reference 20 dB Attenuator	SN: 5058 (20k)	04-Apr-13 (No. 217-01736)	Apr-14
Type-N mismatch combination	SN: 5047.3 / 06327	04-Apr-13 (No. 217-01739)	Apr-14
Reference Probe EX3DV4	SN: 3503	28-Dec-12 (No. EX3-3503_Dec12)	Dec-13
DAE4	SN: 601	25-Apr-13 (No. DAE4-601_Apr13)	Apr-14

Secondary Standards	ID #	Check Date (in house)	Scheduled Check
Power sensor HP 8481A	MY41092317	18-Oct-02 (in house check Oct-11)	In house check: Oct-13
RF generator R&S SMT-06	100005	04-Aug-99 (in house check Oct-11)	In house check: Oct-13
Network Analyzer HP 8753E	US37390585 S4206	18-Oct-01 (in house check Oct-12)	In house check: Oct-13

	Name	Function	Signature
Calibrated by:	Israe El-Naouq	Laboratory Technician	Israe Elnaouq
Approved by:	Katja Pokovic	Technical Manager	

Issued: May 7, 2013

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

Certificate No: D5GHzV2-1104_May13 Page 1 of 15

Robert Chang

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Accreditation No.: SCS 108

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) IEC 62209-2, "Evaluation of Human Exposure to Radio Frequency Fields from Handheld and Body-Mounted Wireless Communication Devices in the Frequency Range of 30 MHz to 6 GHz: Human models, Instrumentation, and Procedures"; Part 2: "Procedure to determine the Specific Absorption Rate (SAR) for including accessories and multiple transmitters", March 2010

b) Federal Communications Commission Office of Engineering & Technology (FCC OET), "Evaluating Compliance with FCC Guidelines for Human Exposure to Radiofrequency Electromagnetic Fields; Additional Information for Evaluating Compliance of Mobile and Portable Devices with FCC Limits for Human Exposure to Radiofrequency Emissions", Supplement C (Edition 01-01) to Bulletin 65

Additional Documentation:

c) 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%.

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Measurement Conditions

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

DASY Version	DASY5	V52.8.6
Extrapolation	Advanced Extrapolation	
Phantom	Modular Flat Phantom V5.0	
Distance Dipole Center - TSL	10 mm	with Spacer
Zoom Scan Resolution	dx, dy = 4.0 mm, dz = 1.4 mm	Graded Ratio = 1.4 (Z direction)
Frequency	5200 MHz ± 1 MHz 5300 MHz ± 1 MHz 5600 MHz ± 1 MHz 5800 MHz ± 1 MHz	

Head TSL parameters at 5200 MHz

The following parameters and calculations were applied.

	Temperature	Permittivity	Conductivity
Nominal Head TSL parameters	22.0 °C	36.0	4.66 mho/m
Measured Head TSL parameters	(22.0 ± 0.2) °C	34.7 ± 6 %	4.58 mho/m ± 6 %
Head TSL temperature change during test	< 0.5 °C	----	----

SAR result with Head TSL at 5200 MHz

SAR averaged over 1 cm^3 (1 g) of Head TSL	Condition	
SAR measured	100 mW input power	8.27 W/kg
SAR for nominal Head TSL parameters	normalized to 1W	**82.0 W/kg ± 19.9 % (k=2)**

SAR averaged over 10 cm^3 (10 g) of Head TSL	condition	
SAR measured	100 mW input power	2.36 W/kg
SAR for nominal Head TSL parameters	normalized to 1W	**23.4 W/kg ± 19.5 % (k=2)**

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Head TSL parameters at 5300 MHz

The following parameters and calculations were applied.

	Temperature	Permittivity	Conductivity
Nominal Head TSL parameters	22.0 °C	35.9	4.76 mho/m
Measured Head TSL parameters	(22.0 ± 0.2) °C	34.5 ± 6 %	4.68 mho/m ± 6 %
Head TSL temperature change during test	< 0.5 °C	----	----

SAR result with Head TSL at 5300 MHz

SAR averaged over 1 cm^3 (1 g) of Head TSL	Condition	
SAR measured	100 mW input power	8.51 W/kg
SAR for nominal Head TSL parameters	normalized to 1W	**84.4 W / kg ± 19.9 % (k=2)**

SAR averaged over 10 cm^3 (10 g) of Head TSL	condition	
SAR measured	100 mW input power	2.44 W/kg
SAR for nominal Head TSL parameters	normalized to 1W	**24.1 W/kg ± 19.5 % (k=2)**

Head TSL parameters at 5600 MHz

The following parameters and calculations were applied.

	Temperature	Permittivity	Conductivity
Nominal Head TSL parameters	22.0 °C	35.5	5.07 mho/m
Measured Head TSL parameters	(22.0 ± 0.2) °C	34.1 ± 6 %	4.96 mho/m ± 6 %
Head TSL temperature change during test	< 0.5 °C	----	----

SAR result with Head TSL at 5600 MHz

SAR averaged over 1 cm^3 (1 g) of Head TSL	Condition	
SAR measured	100 mW input power	8.62 W/kg
SAR for nominal Head TSL parameters	normalized to 1W	**85.4 W/kg ± 19.9 % (k=2)**

SAR averaged over 10 cm^3 (10 g) of Head TSL	condition	
SAR measured	100 mW input power	2.45 W/kg
SAR for nominal Head TSL parameters	normalized to 1W	**24.2 W/kg ± 19.5 % (k=2)**

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Head TSL parameters at 5800 MHz

The following parameters and calculations were applied.

	Temperature	Permittivity	Conductivity
Nominal Head TSL parameters	22.0 °C	35.3	5.27 mho/m
Measured Head TSL parameters	(22.0 ± 0.2) °C	33.8 ± 6 %	5.17 mho/m ± 6 %
Head TSL temperature change during test	< 0.5 °C	----	----

SAR result with Head TSL at 5800 MHz

SAR averaged over 1 cm^3 (1 g) of Head TSL	Condition	
SAR measured	100 mW input power	8.09 W/kg
SAR for nominal Head TSL parameters	normalized to 1W	**80.1 W/kg ± 19.9 % (k=2)**

SAR averaged over 10 cm^3 (10 g) of Head TSL	condition	
SAR measured	100 mW input power	2.30 W/kg
SAR for nominal Head TSL parameters	normalized to 1W	**22.7 W/kg ± 19.5 % (k=2)**

Body TSL parameters at 5200 MHz

The following parameters and calculations were applied.

	Temperature	Permittivity	Conductivity
Nominal Body TSL parameters	22.0 °C	49.0	5.30 mho/m
Measured Body TSL parameters	(22.0 ± 0.2) °C	46.9 ± 6 %	5.43 mho/m ± 6 %
Body TSL temperature change during test	< 0.5 °C	----	----

SAR result with Body TSL at 5200 MHz

SAR averaged over 1 cm^3 (1 g) of Body TSL	Condition	
SAR measured	100 mW input power	7.64 W/kg
SAR for nominal Body TSL parameters	normalized to 1W	**75.8 W/kg ± 19.9 % (k=2)**

SAR averaged over 10 cm^3 (10 g) of Body TSL	condition	
SAR measured	100 mW input power	2.14 W/kg
SAR for nominal Body TSL parameters	normalized to 1W	**21.2 W/kg ± 19.5 % (k=2)**

Body TSL parameters at 5300 MHz

The following parameters and calculations were applied.

	Temperature	Permittivity	Conductivity
Nominal Body TSL parameters	22.0 °C	48.9	5.42 mho/m
Measured Body TSL parameters	(22.0 ± 0.2) °C	46.8 ± 6 %	5.56 mho/m ± 6 %
Body TSL temperature change during test	< 0.5 °C	----	----

SAR result with Body TSL at 5300 MHz

SAR averaged over 1 cm^3 (1 g) of Body TSL	Condition	
SAR measured	100 mW input power	7.77 W/kg
SAR for nominal Body TSL parameters	normalized to 1W	**77.1 W/kg ± 19.9 % (k=2)**

SAR averaged over 10 cm^3 (10 g) of Body TSL	condition	
SAR measured	100 mW input power	2.17 W/kg
SAR for nominal Body TSL parameters	normalized to 1W	**21.5 W/kg ± 19.5 % (k=2)**

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Body TSL parameters at 5600 MHz

The following parameters and calculations were applied.

	Temperature	Permittivity	Conductivity
Nominal Body TSL parameters	22.0 °C	48.5	5.77 mho/m
Measured Body TSL parameters	(22.0 ± 0.2) °C	46.2 ± 6 %	5.94 mho/m ± 6 %
Body TSL temperature change during test	< 0.5 °C	----	----

SAR result with Body TSL at 5600 MHz

SAR averaged over 1 cm^3 (1 g) of Body TSL	Condition	
SAR measured	100 mW input power	8.25 W/kg
SAR for nominal Body TSL parameters	normalized to 1W	**81.8 W/kg ± 19.9 % (k=2)**

SAR averaged over 10 cm^3 (10 g) of Body TSL	condition	
SAR measured	100 mW input power	2.29 W/kg
SAR for nominal Body TSL parameters	normalized to 1W	**22.6 W/kg ± 19.5 % (k=2)**

Body TSL parameters at 5800 MHz

The following parameters and calculations were applied.

	Temperature	Permittivity	Conductivity
Nominal Body TSL parameters	22.0 °C	48.2	6.00 mho/m
Measured Body TSL parameters	(22.0 ± 0.2) °C	45.9 ± 6 %	6.22 mho/m ± 6 %
Body TSL temperature change during test	< 0.5 °C	----	----

SAR result with Body TSL at 5800 MHz

SAR averaged over 1 cm^3 (1 g) of Body TSL	Condition	
SAR measured	100 mW input power	7.60 W/kg
SAR for nominal Body TSL parameters	normalized to 1W	**75.4 W/kg ± 19.9 % (k=2)**

SAR averaged over 10 cm^3 (10 g) of Body TSL	condition	
SAR measured	100 mW input power	2.10 W/kg
SAR for nominal Body TSL parameters	normalized to 1W	**20.8 W/kg ± 19.5 % (k=2)**

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Appendix

Antenna Parameters with Head TSL at 5200 MHz

Impedance, transformed to feed point	52.6 Ω - 9.7 jΩ
Return Loss	- 20.2 dB

Antenna Parameters with Head TSL at 5300 MHz

Impedance, transformed to feed point	52.6 Ω - 2.8 jΩ
Return Loss	- 28.6 dB

Antenna Parameters with Head TSL at 5600 MHz

Impedance, transformed to feed point	57.2 Ω - 5.1 jΩ
Return Loss	- 21.7 dB

Antenna Parameters with Head TSL at 5800 MHz

Impedance, transformed to feed point	55.5 Ω - 1.0 jΩ
Return Loss	- 25.5 dB

Antenna Parameters with Body TSL at 5200 MHz

Impedance, transformed to feed point	53.1 Ω - 8.0 jΩ
Return Loss	- 21.7 dB

Antenna Parameters with Body TSL at 5300 MHz

Impedance, transformed to feed point	51.9 Ω - 2.0 jΩ
Return Loss	- 31.4 dB

Antenna Parameters with Body TSL at 5600 MHz

Impedance, transformed to feed point	58.7 Ω - 3.7 jΩ
Return Loss	- 21.2 dB

Antenna Parameters with Body TSL at 5800 MHz

Impedance, transformed to feed point	56.0 Ω + 1.5 jΩ
Return Loss	- 24.7 dB

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General Antenna Parameters and Design

Electrical Delay (one direction)	1.207 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	September 24, 2010

DASY5 Validation Report for Head TSL

Date: 07.05.2013

Test Laboratory: SPEAG, Zurich, Switzerland

DUT: Dipole 5GHz; Type: D5GHzV2; Serial: D5GHzV2 - SN: 1104

Communication System: UID 0 - CW ; Frequency: 5200 MHz, Frequency: 5300 MHz, Frequency: 5600 MHz, Frequency: 5800 MHz
Medium parameters used: f = 5200 MHz; σ = 4.58 S/m; ε_r = 34.7; ρ = 1000 kg/m^3 , Medium parameters used: f = 5300 MHz; σ = 4.68 S/m; ε_r = 34.5; ρ = 1000 kg/m^3 , Medium parameters used: f = 5600 MHz; σ = 4.96 S/m; ε_r = 34.1; ρ = 1000 kg/m^3 , Medium parameters used: f = 5800 MHz; σ = 5.17 S/m; ε_r = 33.8; ρ = 1000 kg/m^3
Phantom section: Flat Section
Measurement Standard: DASY5 (IEEE/IEC/ANSI C63.19-2007)

DASY52 Configuration:

- Probe: EX3DV4 - SN3503; ConvF(5.41, 5.41, 5.41); Calibrated: 28.12.2012, ConvF(5.1, 5.1, 5.1); Calibrated: 28.12.2012, ConvF(4.76, 4.76, 4.76); Calibrated: 28.12.2012, ConvF(4.81, 4.81, 4.81); Calibrated: 28.12.2012;
- Sensor-Surface: 1.4mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn601; Calibrated: 25.04.2013
- Phantom: Flat Phantom 5.0 (front); Type: QD000P50AA; Serial: 1001
- DASY52 52.8.6(1115); SEMCAD X 14.6.9(7117)

Dipole Calibration for Head Tissue/Pin=100mW, dist=10mm, f=5200 MHz/Zoom Scan, dist=1.4mm (8x8x7)/Cube 0: Measurement grid: dx=4mm, dy=4mm, dz=1.4mm
Reference Value = 65.914 V/m; Power Drift = -0.07 dB
Peak SAR (extrapolated) = 31.2 W/kg
SAR(1 g) = 8.27 W/kg; SAR(10 g) = 2.36 W/kg
Maximum value of SAR (measured) = 19.3 W/kg

Dipole Calibration for Head Tissue/Pin=100mW, dist=10mm, f=5300 MHz/Zoom Scan, dist=1.4mm (8x8x7)/Cube 0: Measurement grid: dx=4mm, dy=4mm, dz=1.4mm
Reference Value = 66.338 V/m; Power Drift = 0.05 dB
Peak SAR (extrapolated) = 32.5 W/kg
SAR(1 g) = 8.51 W/kg; SAR(10 g) = 2.44 W/kg
Maximum value of SAR (measured) = 20.0 W/kg

Dipole Calibration for Head Tissue/Pin=100mW, dist=10mm, f=5600 MHz/Zoom Scan, dist=1.4mm (8x8x7)/Cube 0: Measurement grid: dx=4mm, dy=4mm, dz=1.4mm
Reference Value = 65.836 V/m; Power Drift = 0.04 dB
Peak SAR (extrapolated) = 34.4 W/kg
SAR(1 g) = 8.62 W/kg; SAR(10 g) = 2.45 W/kg
Maximum value of SAR (measured) = 20.7 W/kg

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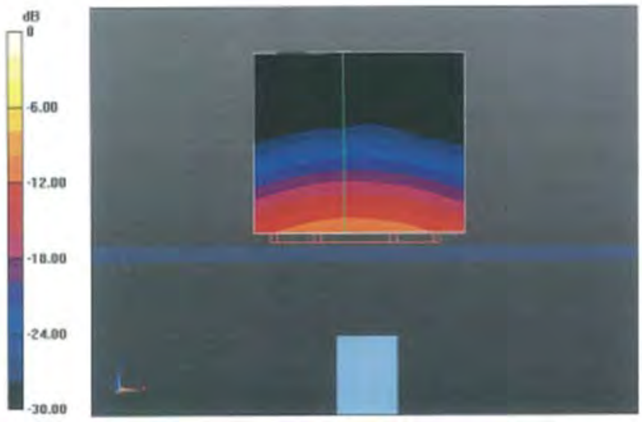
Dipole Calibration for Head Tissue/Pin=100mW, dist=10mm, f=5800 MHz 2/Zoom Scan, dist=1.4mm (8x8x7)/Cube 0: Measurement grid: dx=4mm, dy=4mm, dz=1.4mm
Reference Value = 62.381 V/m; Power Drift = 0.05 dB
Peak SAR (extrapolated) = 33.9 W/kg
SAR(1 g) = 8.09 W/kg; SAR(10 g) = 2.3 W/kg
Maximum value of SAR (measured) = 19.8 W/kg



0 dB = 19.8 W/kg = 12.97 dBW/kg

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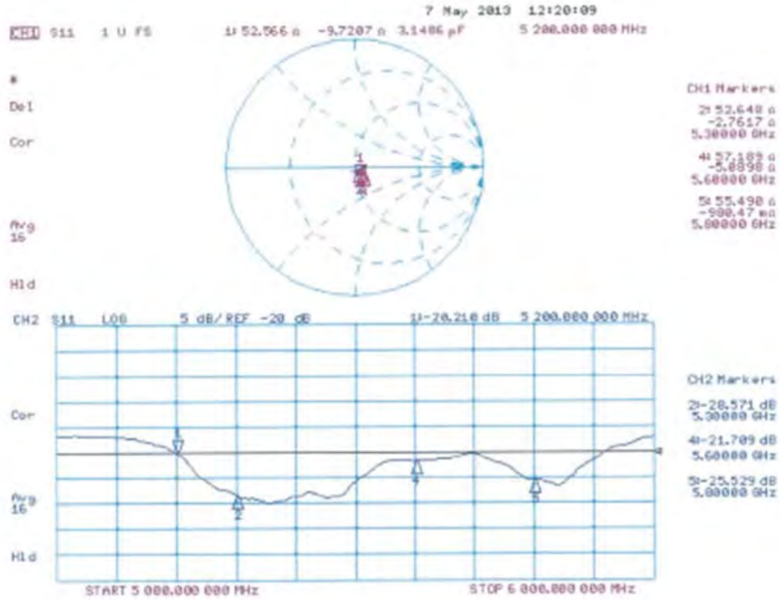
Impedance Measurement Plot for Head TSL



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DASY5 Validation Report for Body TSL

Date: 06.05.2013

Test Laboratory: SPEAG, Zurich, Switzerland

DUT: Dipole 5GHz; Type: D5GHzV2; Serial: D5GHzV2 - SN: 1104

Communication System: UID 0 - CW ; Frequency: 5200 MHz, Frequency: 5300 MHz, Frequency: 5600 MHz, Frequency: 5800 MHz
Medium parameters used: f = 5200 MHz; σ = 5.43 S/m; ε_r = 46.9; ρ = 1000 kg/m^3 , Medium parameters used: f = 5300 MHz; σ = 5.56 S/m; ε_r = 46.8; ρ = 1000 kg/m^3 , Medium parameters used: f = 5600 MHz; σ = 5.94 S/m; ε_r = 46.2; ρ = 1000 kg/m^3 , Medium parameters used: f = 5800 MHz; σ = 6.22 S/m; ε_r = 45.9; ρ = 1000 kg/m^3
Phantom section: Flat Section
Measurement Standard: DASY5 (IEEE/IEC/ANSI C63.19-2007)

DASY52 Configuration:

- Probe: EX3DV4 - SN3503; ConvF(4.91, 4.91, 4.91); Calibrated: 28.12.2012, ConvF(4.67, 4.67, 4.67); Calibrated: 28.12.2012, ConvF(4.22, 4.22, 4.22); Calibrated: 28.12.2012, ConvF(4.38, 4.38, 4.38); Calibrated: 28.12.2012;
- Sensor-Surface: 1.4mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn601; Calibrated: 25.04.2013
- Phantom: Flat Phantom 5.0 (back); Type: QD000P50AA; Serial: 1002
- DASY52 52.8.6(1115); SEMCAD X 14.6.9(7117)

Dipole Calibration for Body Tissue/Pin=100mW, dist=10mm, f=5200 MHz/Zoom Scan, dist=1.4mm (8x8x7)/Cube 0: Measurement grid: dx=4mm, dy=4mm, dz=1.4mm
Reference Value = 59.375 V/m; Power Drift = -0.06 dB
Peak SAR (extrapolated) = 30.1 W/kg
SAR(1 g) = 7.64 W/kg; SAR(10 g) = 2.14 W/kg
Maximum value of SAR (measured) = 18.0 W/kg

Dipole Calibration for Body Tissue/Pin=100mW, dist=10mm, f=5300 MHz/Zoom Scan, dist=1.4mm (8x8x7)/Cube 0: Measurement grid: dx=4mm, dy=4mm, dz=1.4mm
Reference Value = 59.419 V/m; Power Drift = -0.06 dB
Peak SAR (extrapolated) = 31.4 W/kg
SAR(1 g) = 7.77 W/kg; SAR(10 g) = 2.17 W/kg
Maximum value of SAR (measured) = 18.5 W/kg

Dipole Calibration for Body Tissue/Pin=100mW, dist=10mm, f=5600 MHz/Zoom Scan, dist=1.4mm (8x8x7)/Cube 0: Measurement grid: dx=4mm, dy=4mm, dz=1.4mm
Reference Value = 59.408 V/m; Power Drift = -0.06 dB
Peak SAR (extrapolated) = 36.4 W/kg
SAR(1 g) = 8.25 W/kg; SAR(10 g) = 2.29 W/kg
Maximum value of SAR (measured) = 20.3 W/kg

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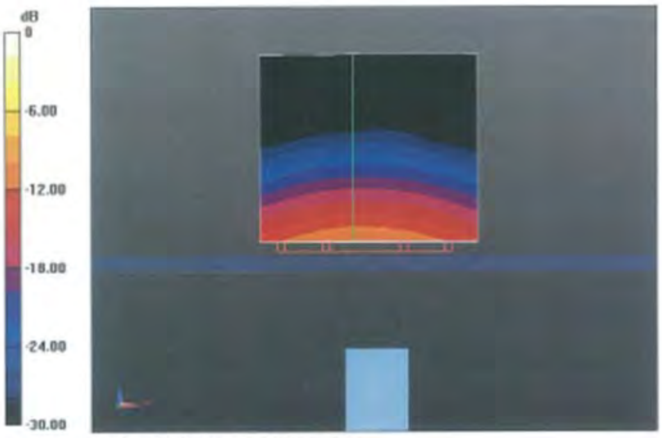
Dipole Calibration for Body Tissue/Pin=100mW, dist=10mm, f=5800 MHz/Zoom Scan, dist=1.4mm (8x8x7)/Cube 0: Measurement grid: dx=4mm, dy=4mm, dz=1.4mm
Reference Value = 56.084 V/m; Power Drift = -0.06 dB
Peak SAR (extrapolated) = 35.3 W/kg
SAR(1 g) = 7.6 W/kg; SAR(10 g) = 2.1 W/kg
Maximum value of SAR (measured) = 18.9 W/kg



0 dB = 18.9 W/kg = 12.76 dBW/kg

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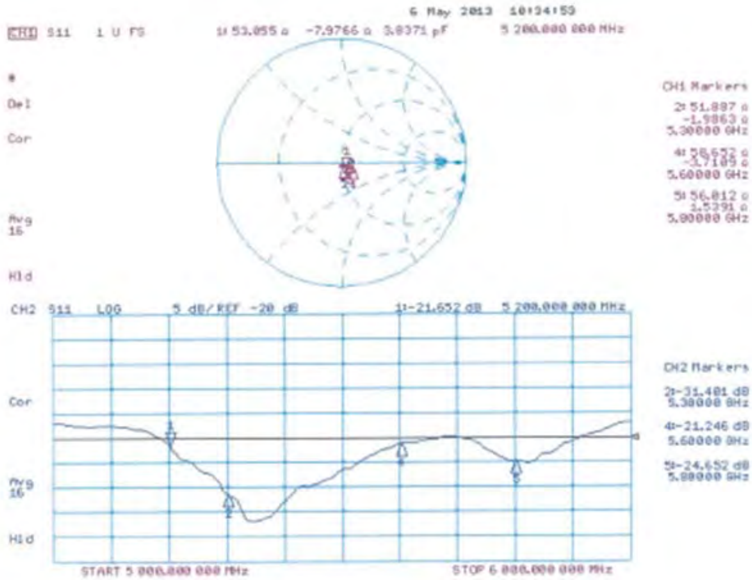
Impedance Measurement Plot for Body TSL



End of 1st part of report

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