SAR Compliance Test Report

Test report no.:	FCC_RM-1041_01	**Date of report:**	2014-11-03
Template version:	19.8	**Number of pages:**	66
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Responsible test engineer:	Virpi Tuominen	**Product contact person:**	Helen Hu
Measurements made by:	Nina Koskinen, Marko Laaksonen, Teuvo Miettinen, Sami Savela		
Tested device:	RM-1041		
FCC ID:	QTLRM-1041	**IC:**	-
Supplement reports:	SAR_Photo_RM-1042_02		

Testing has been carried out in accordance with:

47CFR §2.1093
Radiofrequency Radiation Exposure Evaluation: Portable Devices
FCC published RF exposure KDB procedures
RSS-102, Issue 4
Evaluation Procedure for Mobile and Portable Radio Transmitters with Respect to Health Canada's Safety Code 6 for Exposure of Humans to Radio Frequency Fields
IEEE 1528 - 2013
IEEE Recommended Practice for Determining the Peak Spatial-Average Specific Absorption Rate (SAR) in the Human Head from Wireless Communications Devices: Measurement Technique

Documentation: The documentation of the testing performed on the tested devices is archived for 15 years at TCC Microsoft.

Test results: **The tested device complies with the requirements in respect of all parameters subject to the test.** The test results and statements relate only to the items tested. The test report shall not be reproduced except in full, without written approval of the laboratory.

Date and signatures:

For the contents:

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1. SUMMARY OF SAR TEST REPORT

1.1 Test Details

Period of test	2014-10-01 to 2014-11-03
HW and SW numbers of tested device	RM-1041, HW: 0364, SW: 02042.00000.14372.27013
Batteries used in testing	BV-T5A
Headsets used in testing	WH-108
Other accessories used in testing	-
State of sample	Prototype unit
Notes	-

1.2 Maximum Results

The maximum reported SAR values for Head, Body-Worn and Wireless Router configurations are given in section 1.2.1, 1.2.2 and 1.2.3 respectively. The device conforms to the requirements of the standard(s) when the maximum measured SAR value is less than or equal to the limit.

1.2.1 Head Configuration

Mode	Reported* SAR value (1g avg)	SAR limit (1g avg)	Result	Plot #
LTE750 (Band 13)	**0.43 W/kg**	1.6 W/kg	**PASSED**	1
CDMA800 (BC0)	**0.87 W/kg**	1.6 W/kg	**PASSED**	2
2-slot GPRS850	**0.89 W/kg**	1.6 W/kg	**PASSED**	3
WCDMA850 (Band 5)	**0.84 W/kg**	1.6 W/kg	**PASSED**	4
LTE1700/2100 (Band 4)	**0.54 W/kg**	1.6 W/kg	**PASSED**	5
CDMA1900 (BC1)	**0.36 W/kg**	1.6 W/kg	**PASSED**	6
2-slot GPRS1900	**0.29 W/kg**	1.6 W/kg	**PASSED**	7
WCDMA1900 (Band 2)	**0.54 W/kg**	1.6 W/kg	**PASSED**	8
LTE1900 (Band 2)	**0.29 W/kg**	1.6 W/kg	**PASSED**	9
WLAN2450	**0.63 W/kg**	1.6 W/kg	**PASSED**	10
Maximum of SPEAG combined multiband algorithm results				
2-slot GPRS850 + WLAN2450	**0.89 W/kg**	1.6 W/kg	**PASSED**	3

1.2.2 Body Worn Configuration

Summary of Maximum Results for Body-worn mode at 15.0mm

Mode	Reported* SAR value (1g avg)	SAR limit (1g avg)	Result	Plot #
LTE750 (Band 13)	**0.37 W/kg**	1.6 W/kg	**PASSED**	11
CDMA800 (BC0)	**0.73 W/kg**	1.6 W/kg	**PASSED**	12
2-slot GPRS850	**0.86 W/kg**	1.6 W/kg	**PASSED**	13
WCDMA850 (Band 5)	**0.67 W/kg**	1.6 W/kg	**PASSED**	14
LTE1700/2100 (Band 4)	**0.97 W/kg**	1.6 W/kg	**PASSED**	15
CDMA1900 (BC1)	**1.10 W/kg**	1.6 W/kg	**PASSED**	16
2-slot GPRS1900	**0.56 W/kg**	1.6 W/kg	**PASSED**	17
WCDMA1900 (Band 2)	**1.22 W/kg**	1.6 W/kg	**PASSED**	18
LTE1900 (Band 2)	**0.79 W/kg**	1.6 W/kg	**PASSED**	19
WLAN2450	**0.08 W/kg**	1.6 W/kg	**PASSED**	20
Maximum of SPEAG combined multiband algorithm results				
WCDMA1900 + WLAN2450	**1.22 W/kg**	1.6 W/kg	**PASSED**	18

1.2.3 Wireless Router Configuration

Summary of Maximum Results for Wireless Router mode at 10.0mm

Mode	Reported* SAR value (1g avg)	SAR limit (1g avg)	Result	Plot #
LTE750 (Band 13)	**0.60 W/kg**	1.6 W/kg	**PASSED**	21
CDMA800 (BC0)	**0.81 W/kg**	1.6 W/kg	**PASSED**	22
2-slot GPRS850	**0.96 W/kg**	1.6 W/kg	**PASSED**	23
WCDMA850 (Band 5)	**0.78 W/kg**	1.6 W/kg	**PASSED**	24
LTE1700/2100 (Band 4)	**0.75 W/kg**	1.6 W/kg	**PASSED**	25
CDMA1900 (BC1)	**0.96 W/kg**	1.6 W/kg	**PASSED**	26
2-slot GPRS1900	**0.44 W/kg**	1.6 W/kg	**PASSED**	27
WCDMA1900 (Band 2)	**1.10 W/kg**	1.6 W/kg	**PASSED**	28
LTE1900 (Band 2)	**0.89 W/kg**	1.6 W/kg	**PASSED**	29
WLAN2450	**0.16 W/kg**	1.6 W/kg	**PASSED**	30
Maximum of SPEAG combined multiband algorithm results				
WCDMA1900 + WLAN2450	**1.10 W/kg**	1.6 W/kg	**PASSED**	28

* Reported SAR values are scaled to, or measured at, upper limit of power tuning tolerance.

1.2.4 Summary SAR data

	FCC-defined SAR values for the Grants of Equipment Authorization		
	PCE	**DTS**	**NII**
Maximum Head SAR values	0.89 W/kg	0.63 W/kg	-
{Max + Max} Simultaneous Head SAR value	1.52 W/kg		
Maximum Body SAR values	1.22 W/kg	0.08 W/kg	-
{Max + Max} Simultaneous Body SAR value	1.30 W/kg		
Maximum Product Specific (Wireless Router) SAR values	1.10 W/kg	0.16 W/kg	-
{Max + Max} Simultaneous Product Specific SAR value	1.11 W/kg		
Maximum Simultaneous SAR value **Head SAR: 2-slot GPRS850 + WLAN2450**	1.52 W/kg		

Note:

PCE contains the highest results between all cellular modes (cellular, AWS and PCS bands)
DTS contains the highest results between WLAN 2.4GHz + RLAN 5725-5850MHz
NII contains the highest results between RLAN 5150-5250, 5250-5350 and 5470-5725

1.2.5 Maximum Drift

Maximum drift during measurements	≤ 0.2dB

1.2.6 Measurement Uncertainty

Expanded Uncertainty (k=2) 95%	± 29.8%

2. DESCRIPTION OF THE DEVICE UNDER TEST

Device category	Portable
Exposure environment	General population / uncontrolled

2.1 Bands and Modes of the DUT

Bands	Modes of Operation	Modulation Mode	Duty Cycle	Channel Bandwidth (MHz)	Transmitter Frequency Range (MHz)	Power Reduction in Wireless Router (Hotspot) Mode (dB)			
750 (Band 13)	LTE	QPSK / 16QAM	1	5, 10	777 - 787	0			
800 (BC0)	CDMA	QPSK	1		824 – 849	0			
850	GSM/GPRS	GMSK	1/8 to 4/8		824 – 849	1-slot	2-slot	3-slot	4-slot
						0	0	0	0
850	EGPRS	8PSK	1/8 to 4/8		824 – 849	0	0	0	0
850 (Band 5)	WCDMA		1		826 – 847	0			
850 (Band 5)	HSUPA		1		826 – 847	0			
850 (Band 5)	DC-HSDPA		1		826 – 847	0			
1700/2100 (Band 4)	LTE	QPSK / 16QAM	1	1.4, 3, 5, 10, 15, 20	1710 – 1755	3.5			
1900 (BC1)	CDMA	QPSK	1		1850 – 1910	3.5			
1900	GSM/GPRS	GMSK	1/8 to 4/8		1850 – 1910	1-slot	2-slot	3-slot	4-slot
						5	5	5	5
1900	EGPRS	8PSK	1/8 to 4/8		1850 – 1910	5	5	5	5
1900 (Band 2)	WCDMA		1		1852 – 1908	4			
1900 (Band 2)	HSUPA		1		1852 – 1908	5			
1900 (Band 2)	DC-HSDPA		1		1852 – 1908	4			
1900 (Band 2)	LTE	QPSK / 16QAM	1	1.4, 3, 5, 10, 15, 20	1850 – 1910	3.0			
2450	BT	GFSK	1		2402 – 2480	0			
2450	WLAN b-mode	DSSS	1	20	2412 – 2472	0			
2450	WLAN g-mode	OFDM	1	20	2412 – 2472	0			
2450	WLAN n-mode	OFDM	1	20	2412 – 2462 2412 – 2472	0			

2.2 DUT Features and Test Requirements

Common features	Testing / Specification / KDB
Bands operatin outside USA	These bands are not part of this filing: GSM/GPRS/EGPRS900 GSM/GPRS/EGPRS1800 WCDMA2100 (Band 1)
Number of SIM cards:	1
Ambient temperature:	20.5 – 22.5 °C / Controlled
Ambient humidity (RH %):	35 – 55 %RH / Controlled
Output power and batteries	The device output power was set to maximum power level for all tests. A fully charged battery was used for every test sequence.
Test channels	In all operating bands the measurements were performed on lowest, middle and highest channels, and/or on all required test channels as defined in Published FCC KDB Procedures.
VOIP	This device has Voice-over-IP capability for use at the ear. Therefore SAR for data modes was evaluated against the head profile of the phantom for all communication systems.
Antennas	One antenna for cellular bands and another antenna for WLAN band and BT. See the antenna drawing in the report SAR_Photo_RM-1041_02, Section 3.
Antenna tuner	N/A
Carrier Aggregation	N/A
GSM/GPRS/EGPRS	**KDB 941225 D03 SAR Test Reduction Procedures for GSM/GPRS/EDGE**
Device Class	B
GSM multi slot class	12
DTM	DTM class 11. The hotspot mode (Wireless Router mode) may operate concurrently in DTM mode with voice calls. The reported SAR test results are conservative regarding that use case, since output power in hotspot mode is equal to or lower than in normal voice and data modes. See Table 2.1 for hotspot mode power reductions. Also simultaneous transmissions with WLANs are already conservatively assessed for head and body-worn exposure conditions due to VoIP capability. Dual Transfer Mode was not specifically tested as the average power in multi-slot GMSK GPRS mode is always greater than, or equal to, the average power in Dual Transfer Mode in Microsoft devices.
EGPRS	8PSK EGPRS mode was not measured, because maximum averaged output power is lower in 8PSK EGPRS mode than in GPRS mode.
Call tester settings	CMU200 / Anritsu: MS signal was always set to maximum power: Pmax 5 for GSM850 and 0 for GSM1900.
Number of slots used in testing	The number of Tx slots in all GSM/GPRS mode tests was based on tuning target/conducted power data, see Section 3. The number of slots with highest or equal highest time-average power was tested.
CDMA	**KDB 941225 D01 SAR Measurement Procedures for 3G Devices**
CDMA Revision	EVDO Rev 0 / EVDO Rev A
Call tester settings	CMW500 / Anritsu : -CDMA, MS Power Control PCB Pattern was set All 0 (up) -EVDO, AT power control PCB Pattern was set All 0 (up)

(Table continues)

(Table continues)

<table>
<tr><th>WCDMA</th><th>KDB 941225 D01 SAR Measurement Procedures for 3G Devices</th></tr>
<tr><td>WCDMA / HSUPA / DC-HSDPA</td><td>Rel 8.
Conducted power measurements for WCDMA modes have been carried out in accordance with 3GPP TS34.1083 and GPP TS 34.121-1. See conducted power results in section 3</td></tr>
<tr><td>Call test settings for WCDMA</td><td>CMU200 / Anritsu : UE uplink signal was configured to 12.2kbps RMC with all TPC bit set to 1.</td></tr>
<tr><td>HSUPA</td><td>SAR tests for HSUPA mode have not been performed as no HSUPA Sub-test mode has an average power > 0.25dB above the basic WCDMA 12.2kbps RMC mode.</td></tr>
<tr><td>DC-HSDPA</td><td>SAR tests for DC-HSDPA mode have not been performed as no DC-HSDPA Sub-test mode has an average power > 0.25dB above the basic WCDMA 12.2kbps RMC mode.</td></tr>
<tr><th>LTE</th><th>KDB 941225 D05 SAR for LTE Devices v02r02 DR07-41372</th></tr>
<tr><td>LTE Category</td><td>3</td></tr>
<tr><td>Call tester settings</td><td>CMW500:
Uplink Power Control was set to ‘Max Power’.
Additional Spectrum Emission was set to ‘NS_01’ to disable A-MPR.</td></tr>
<tr><td>LTE MPR</td><td>MPR values as stipulated in Table 6.2.3_1 of 3GPP TS 36.101 (presented below) have been incorporated into the device; these MPR values are dependent on the modulation, Channel Bandwidth and Resource Block allocations as shown:

Table 6.2.3-1: Maximum Power Reduction (MPR) for Power Class 3
<table>
<tr><th rowspan="2">Modulation</th><th colspan="6">Channel bandwidth / Transmission bandwidth (RB)</th><th rowspan="2">MPR (dB)</th></tr>
<tr><th>1.4 MHz</th><th>3.0 MHz</th><th>5 MHz</th><th>10 MHz</th><th>15 MHz</th><th>20 MHz</th></tr>
<tr><td>QPSK</td><td>> 5</td><td>> 4</td><td>> 8</td><td>> 12</td><td>> 16</td><td>> 18</td><td>≤ 1</td></tr>
<tr><td>16 QAM</td><td>≤ 5</td><td>≤ 4</td><td>≤ 8</td><td>≤ 12</td><td>≤ 16</td><td>≤ 18</td><td>≤ 1</td></tr>
<tr><td>16 QAM</td><td>> 5</td><td>> 4</td><td>> 8</td><td>> 12</td><td>> 16</td><td>> 18</td><td>≤ 2</td></tr>
</table>
No additional MPR settings have been incorporated into the design of the device and therefore no A-MPR settings have been active during its testing.

Conducted Power Tables in Section 3: “Nominal” column lists measured powers with MPR active. The “A-MPR active” column lists measured powers with MPR and A-MPR active (as defined by 3GPP TS 36.101).</td></tr>
<tr><th>WLAN</th><th>KDB 248227 SAR Measurement Procedures for 802.11 a/b/g Transmitters</th></tr>
<tr><td>WLAN modes tested</td><td>The standard transmission mode of the device in all WLAN b-mode tests was BPSK 1Mbps.
The standard transmission mode of the device in all WLAN a-mode tests was BPSK 6 Mbps.
The standard transmission modes used have maximum time-averaged output powers within 0.25dB of the highest time-averaged output power of all the WLAN a, b, gand n modulation modes in this device as illustrated by the tables in Section 3.
In the tables in Section 3 it is shown if other transmission modes are used for check measurements.</td></tr>
<tr><td>WLAN test settings</td><td>The device was put into operation by using control software.</td></tr>
</table>

(Table continues)

(Table continues)

BT	**KDB 447498 D01 General RF Exposure Guidance v05**
BT Class	I
BT testing	BT power tuning target upper limit is 7.5dBm. WLAN2450 power tuning target upper limit is 19.5dBm. Since WLAN2450 and BT use same frequency and antenna, WLAN2450 power is 12.0dB higher, and they cannot transmit simultaneously, the WLAN2450 standalone SAR is conservative estimation of BT SAR. As WLAN2450 SAR result is below limit, also BT SAR can be deemed to comply without further analysis or standalone measurements. Also WLAN2450+cellular bands combined SAR results can be regarded as conservative estimation of BT+cellular combined SARs. As WLAN2450+cellular combined SAR result are below limit, also BT+cellular combined SAR can be deemed to comply without further analysis and.
Simultaneous transmission	**KDB 447498 D01 General RF Exposure Guidance v05**
In Head and Body-worn use	Simultaneous transmission of any singular cellular and PCS, AWS or with WLAN2450 is possible.
In Wireless router use	Simultaneous transmission of any singular cellular, AWS or PCS band with WLAN2450 is possible. The hotspot mode (Wireless Router mode) may operate concurrently in DTM mode with voice calls. The reported SAR test results are conservative regarding that use case, since output power in hotspot mode is equal to or lower than in normal voice and data modes. See following chapter for hotspot mode power reductions. Also simultaneous transmissions with WLANs are already conservatively assessed for head and body-worn exposure conditions due to VoIP capability.
Power reduction for Wireless Router mode	See the table in Section 2.1.
KDBs used in testing	**KDB 248227 SAR Measurement Procedures for 802.11 a/b/g Transmitters** **KDB 447498 D01 General RF Exposure Guidance v05** **KDB 648474 D04 SAR Handsets Multi Xmiter and Ant v01** **KDB 690783 D01 SAR Listings on Grants** **KDB 865664 D01 SAR Measurements 100MHz to 6GHz v01** **KDB 865664 D02 SAR Reporting v01** **KDB 941225 D01 SAR Measurement Procedures for 3G Devices** **KDB 941225 D03 SAR Test Reduction Procedures for GSM/GPRS/EDGE** **KDB 941225 D05 SAR for LTE Devices v02r02 DR07-41372**

3. CONDUCTED POWERS

The conducted output power of the device was measured by a separate test laboratory on the same units as used for SAR testing.

Shaded lines in the tables below show which mode/configuration is used in testing.

3.1 GSM/GPRS/EGPRS

GSM 850								
			Conducted power (dBm)			Time-averaged power (dBm)		
Slot configuration	Tuning target	Upper limit	CH 128 824.2 MHz	CH 190 836.6 MHz	CH 251 848.8 MHz	CH 128 824.2 MHz	CH 190 836.6 MHz	CH 251 848.8 MHz
GSM 1-slot	**33.0**	**33.4**	32.8	32.8	32.8	23.8	23.8	23.8
GPRS 2-slot	**30.0**	**30.4**	30.0	29.9	29.8	**24.0**	23.9	23.8
GPRS 3-slot	**28.2**	**28.6**	27.8	27.8	27.7	23.5	23.5	23.4
GPRS 4-slot	**27.0**	**27.4**	26.7	26.7	26.7	23.7	23.7	23.7
EGRPS 1-slot	**27.0**	**27.4**	27.3	27.1	27.0	18.3	18.1	18.0
EGPRS 2-slot	**24.0**	**24.4**	24.4	24.3	24.2	**18.4**	18.3	18.2
EGPRS 3-slot	**22.2**	**22.6**	22.4	22.3	22.3	18.1	18.0	18.0
EGPRS 4-slot	**21.0**	**21.4**	21.2	21.1	21.1	18.2	18.1	18.1

GSM 1900								
			Conducted power (dBm)			Time-averaged power (dBm)		
Slot configuration	Tuning target	Upper limit	CH 512 1850.2 MHz	CH 661 1880.0 MHz	CH 810 1909.8 MHz	CH 512 1850.2 MHz	CH 661 1880.0 MHz	CH 810 1909.8 MHz
GSM 1-slot	**30.0**	**30.4**	30.1	29.8	29.9	21.1	20.8	20.9
GPRS 2-slot	**27.0**	**27.4**	27.3	27.1	27.2	**21.3**	21.1	21.2
GPRS 3-slot	**25.2**	**25.6**	25.4	25.3	25.3	21.1	21.0	21.0
GPRS 4-slot	**24.0**	**24.4**	24.1	24.0	24.0	21.1	21.0	21.0
EGRPS 1-slot	**26.0**	**26.4**	26.2	25.8	25.8	17.2	16.8	16.8
EGPRS 2-slot	**23.0**	**23.4**	23.4	23.1	23.1	17.4	17.1	17.1
EGPRS 3-slot	**21.2**	**21.6**	21.2	21.1	21.0	16.9	16.8	16.7
EGPRS 4-slot	**20.0**	**20.4**	20.4	20.3	20.3	**17.4**	17.3	17.3

3.2 CDMA

			CDMA800 (BC0) / Concucted power (dBm)				
Radio Config	Service Option	SCH1 Rate	Tuning target	Upper limit	CH 1013 824.70 MHz	CH 384 836.52 MHz	CH 777 848.31 MHz
RC1	SO1	NA	24.0	24.4	-	-	-
RC1	SO2	NA	24.0	24.4	23.9	23.9	24.0
RC1	SO3	NA	24.0	24.4	23.9	23.9	23.9
RC1	SO55	NA	24.0	24.4	23.9	23.9	23.9
RC2	SO9	NA	24.0	24.4	23.9	23.9	23.9
RC2	SO17	NA	24.0	24.4	23.9	23.9	23.9
RC2	SO55	NA	24.0	24.4	23.8	23.9	23.9
RC3	SO1	NA	24.0	24.4	-	-	-
RC3	SO2	NA	24.0	24.4	23.9	23.9	24.0
RC3	SO3	NA	24.0	24.4	23.9	23.9	23.9
RC3	SO55	NA	24.0	24.4	**23.9**	**23.9**	**24.0**
RC3	SO32	0	24.0	24.4	-	-	-
RC3	SO32	9.6	24.0	24.4	-	-	-
RC3	SO32	19.2	24.0	24.4	-	-	-
RC3	SO32	38.4	24.0	24.4	-	-	-
RC3	SO32	76.8	24.0	24.4	-	-	-
RC3	SO32	153.6	24.0	24.4	-	-	-
RC3	SO33	9.6	24.0	24.4	-	-	-
RC3	SO33	19.2	24.0	24.4	-	-	-
RC3	SO33	38.4	24.0	24.4	-	-	-
RC3	SO33	76.8	24.0	24.4	-	-	-
RC3	SO33	153.6	24.0	24.4	-	-	-
RC4	SO1	NA	24.0	24.4	-		
RC4	SO2	NA	24.0	24.4	23.9	23.9	23.9
RC4	SO3	NA	24.0	24.4	23.9	23.9	24.0
RC4	SO55	NA	24.0	24.4	23.9	24.0	23.9
RC4	SO32	0	24.0	24.4	-	-	-
RC4	SO32	9.6	24.0	24.4	-	-	-
RC4	SO32	19.2	24.0	24.4	-	-	-
RC4	SO32	38.4	24.0	24.4	-	-	-
RC4	SO32	76.8	24.0	24.4	-	-	-
RC4	SO32	153.6	24.0	24.4	-	-	-
RC4	SO33	9.6	24.0	24.4	-	-	-
RC4	SO33	19.2	24.0	24.4	-	-	-
RC4	SO33	38.4	24.0	24.4	-	-	-
RC4	SO33	76.8	24.0	24.4	-	-	-
RC4	SO33	153.6	24.0	24.4	-	-	-
RC5	SO9	NA	24.0	24.4	23.9	23.9	23.9
RC5	SO17	NA	24.0	24.4	23.9	24.0	23.9
RC5	SO55	NA	24.0	24.4	23.9	23.9	23.9
RC5	SO33	9.6	24.0	24.4	-	-	-
RC5	SO33	19.2	24.0	24.4	-	-	-
RC5	SO33	38.4	24.0	24.4	-	-	-
RC5	SO33	76.8	24.0	24.4	-	-	-
RC5	SO33	153.6	24.0	24.4	-	-	-

EVDO Rev 0 Radio Config	Data Rate	Tuning target	Upper limit	CH 1013 824.70 MHz	CH 384 836.52 MHz	CH 777 848.31 MHz
RTAP	9.6	24.0	24.4	24.0	23.9	24.0
RTAP	19.2	24.0	24.4	23.9	23.9	24.0
RTAP	38.4	24.0	24.4	24.0	23.9	24.0
RTAP	76.8	24.0	24.4	24.0	23.9	24.0
RTAP	153.6	24.0	24.4	23.9	23.8	23.9

EVDO Rev A Radio Config	Pckt Size	Tuning target	Upper limit	CH 1013 824.70 MHz	CH 384 836.52 MHz	CH 777 848.31 MHz
RETAP	256	24.0	24.4	23.9	23.9	23.9
RETAP	512	24.0	24.4	23.9	23.9	23.9
RETAP	1024	24.0	24.4	23.9	23.8	23.9
RETAP	2048	24.0	24.4	23.9	23.8	23.9
RETAP	3072	24.0	24.4	23.9	23.8	23.9
RETAP	6144	24.0	24.4	23.9	23.8	23.9
RETAP	12288	24.0	24.4	23.9	23.8	23.9

			CDMA1900 (BC1) / Conducted power (dBm)				
Radio Config	Service Option	SCH1 Rate	Tuning target	Upper limit	CH 25 1851.25 MHz	CH 600 1880.0 MHz	CH 1175 1908.75 MHz
RC1	SO1	NA	23.5	23.9	-	-	-
RC1	SO2	NA	23.5	23.9	23.4	23.5	23.6
RC1	SO3	NA	23.5	23.9	**23.6**	**23.6**	23.6
RC1	SO55	NA	23.5	23.9	23.4	23.5	23.6
RC2	SO9	NA	23.5	23.9	23.4	23.5	23.6
RC2	SO17	NA	23.5	23.9	23.6	23.6	23.6
RC2	SO55	NA	23.5	23.9	23.4	23.5	23.6
RC3	SO1	NA	23.5	23.9	-	-	-
RC3	SO2	NA	23.5	23.9	23.2	23.3	23.4
RC3	SO3	NA	23.5	23.9	23.3	23.3	23.5
RC3	SO55	NA	23.5	23.9	**23.2**	**23.3**	**23.4**
RC3	SO32	0	23.5	23.9	-	-	-
RC3	SO32	9.6	23.5	23.9	-	-	-
RC3	SO32	19.2	23.5	23.9	-	-	-
RC3	SO32	38.4	23.5	23.9	-	-	-
RC3	SO32	76.8	23.5	23.9	-	-	-
RC3	SO32	153.6	23.5	23.9	-	-	-
RC3	SO33	9.6	23.5	23.9	-	-	-
RC3	SO33	19.2	23.5	23.9	-	-	-
RC3	SO33	38.4	23.5	23.9	-	-	-
RC3	SO33	76.8	23.5	23.9	-	-	-
RC3	SO33	153.6	23.5	23.9	-	-	-
RC4	SO1	NA	23.5	23.9			
RC4	SO2	NA	23.5	23.9	23.2	23.3	23.4
RC4	SO3	NA	23.5	23.9	23.3	23.3	23.4
RC4	SO55	NA	23.5	23.9	23.2	23.3	23.4
RC4	SO32	0	23.5	23.9	-	-	-
RC4	SO32	9.6	23.5	23.9	-	-	-
RC4	SO32	19.2	23.5	23.9	-	-	-
RC4	SO32	38.4	23.5	23.9	-	-	-
RC4	SO32	76.8	23.5	23.9	-	-	-
RC4	SO32	153.6	23.5	23.9	-	-	-
RC4	SO33	9.6	23.5	23.9	-	-	-
RC4	SO33	19.2	23.5	23.9	-	-	-
RC4	SO33	38.4	23.5	23.9	-	-	-
RC4	SO33	76.8	23.5	23.9	-	-	-
RC4	SO33	153.6	23.5	23.9	-	-	-
RC5	SO9	NA	23.5	23.9	23.2	23.3	23.4
RC5	SO17	NA	23.5	23.9	23.3	23.3	23.4
RC5	SO55	NA	23.5	23.9	23.2	23.3	23.4
RC5	SO33	9.6	23.5	23.9	-	-	-
RC5	SO33	19.2	23.5	23.9	-	-	-
RC5	SO33	38.4	23.5	23.9	-	-	-
RC5	SO33	76.8	23.5	23.9	-	-	-
RC5	SO33	153.6	23.5	23.9	-	-	-

EVDO Rev 0 Radio Config	Data Rate	Tuning target	Upper limit	CH 25 1851.25 MHz	CH 600 1880.0 MHz	CH 1175 1908.75 MHz
RTAP	9.6	23.5	23.9	23.4	23.5	23.6
RTAP	19.2	23.5	23.9	23.4	23.5	**23.7**
RTAP	38.4	23.5	23.9	23.4	23.5	23.6
RTAP	76.8	23.5	23.9	23.4	23.5	23.6
RTAP	153.6	23.5	23.9	23.4	23.5	23.5

EVDO Rev A Radio Config	Pckt Size	Tuning target	Upper limit	CH 25 1851.25 MHz	CH 600 1880.0 MHz	CH 1175 1908.75 MHz
RETAP	256	23.5	23.9	23.4	23.5	23.6
RETAP	512	23.5	23.9	23.4	23.5	23.6
RETAP	1024	23.5	23.9	23.4	23.5	23.5
RETAP	2048	23.5	23.9	23.4	23.5	23.6
RETAP	3072	23.5	23.9	23.4	23.5	23.6
RETAP	6144	23.5	23.9	23.4	23.5	23.6
RETAP	12288	23.5	23.9	23.4	23.5	23.6

3.3 WCDMA

Mode	WCDMA 5 / Conducted power (dBm)				
	Tuning target	Upper limit	CH 4132 826.4 MHz	CH 4175 835.0 MHz	CH 4233 846.6 MHz
WCDMA	24	24.4	**23.7**	**23.8**	**23.8**
HSUPA Sub-mode 1	24	24.4	22.0	22.4	22.6
HSUPA Sub-mode 2	22	22.4	21.5	21.2	21.3
HSUPA Sub-mode 3	23	23.4	21.7	21.4	21.8
HSUPA Sub-mode 4	22	22.4	22.1	22.2	22.3
HSUPA Sub-mode 5	24	24.4	22.6	22.7	22.9
DC-HSDPA Sub-mode 1	23	23.4	22.6	22.5	22.7
DC-HSDPA Sub-mode 2	23	23.4	22.7	22.5	22.7
DC-HSDPA Sub-mode 3	22.5	22.9	22.2	22.1	22.3
DC-HSDPA Sub-mode 4	22.5	22.9	22.2	22.1	22.3

Mode	WCDMA 2 / Conducted power (dBm)				
	Tuning target	Upper limit	CH 9262 1852.4 MHz	CH 9400 1880.0 MHz	CH 9538 1907.6 MHz
WCDMA	24	24.4	**23.8**	**23.7**	**23.6**
HSUPA Sub-mode 1	24	24.4	23.2	22.3	22.4
HSUPA Sub-mode 2	22	22.4	21.7	21.5	21.7
HSUPA Sub-mode 3	23	23.4	22.3	21.4	22.2
HSUPA Sub-mode 4	22	22.4	21.8	21.8	21.7
HSUPA Sub-mode 5	24	24.4	22.9	22.6	22.8
DC-HSDPA Sub-mode 1	23	23.4	23.1	22.9	22.9
DC-HSDPA Sub-mode 2	23	23.4	23.2	23.0	23.2
DC-HSDPA Sub-mode 3	22.5	22.9	22.6	22.5	22.7
DC-HSDPA Sub-mode 4	22.5	22.9	22.7	22.4	22.8

3.4 LTE

3.4.1 LTE750 (Band 13)

						Nominal (dBm)			A-MPR active (dBm)		
Band / BW	Modulation	RB Allocation	RB Offset	Tuning target	Upper limit	Ch23205 / 779.5 MHz	Ch23230 / 782 MHz	Ch23255 / 784.5 MHz	Ch23205 / 779.5 MHz	Ch23230 / 782 MHz	Ch23255 / 784.5 MHz
LTE13 5 MHz	QPSK	1	0	23.0	23.4	23.0	22.9	23.1			
		1	12	23.0	23.4	23.1	23.0	23.2			
		1	24	23.0	23.4	22.8	22.8	23.2			
		12	0	23.0	23.4	22.9	23.0	23.1			
		12	6	23.0	23.4	22.9	23.1	23.0			
		12	13	23.0	23.4	23.0	23.0	23.1			
		25	0	22.0	22.4	22.1	22.1	22.1			
	16QAM	1	0	22.0	22.4	22.1	21.9	22.2			
		1	12	22.0	22.4	22.2	21.9	22.3			
		1	24	22.0	22.4	21.8	21.8	22.3			
		12	0	22.0	22.4	22.0	22.1	22.1			
		12	6	22.0	22.4	22.0	22.1	22.0			
		12	13	22.0	22.4	22.1	22.1	22.2			
		25	0	21.0	21.4	21.0	21.2	21.1			

						Nominal (dBm)			A-MPR active (dBm)		
Band / BW	Modulation	RB Allocation	RB Offset	Tuning target	Upper limit	Ch23230 / 782 MHz	Ch23230 / 782 MHz	Ch23230 / 782 MHz	Ch23230 / 782 MHz	Ch23230 / 782 MHz	Ch23230 / 782 MHz
LTE13 10 MHz	QPSK	1	0	23.0	23.4	-	22.8	-	-	11.1	-
		1	24	23.0	23.4	-	22.9	-	-	23.1	-
		1	49	23.0	23.4	-	**23.0**	-	-	20.1	-
		25	0	23.0	23.4	-	22.9	-	-	11.1	-
		25	12	23.0	23.4	-	22.9	-	-	11.1	-
		25	25	23.0	23.4	-	**23.2**	-	-	23.2	-
		50	0	22.0	22.4	-	22.1	-	-	10.4	-
	16QAM	1	0	22.0	22.4	-	22.2	-	-	10.2	-
		1	24	22.0	22.4	-	22.3	-	-	22.1	-
		1	49	22.0	22.4	-	22.0	-	-	19.0	-
		25	0	22.0	22.4	-	22.0	-	-	10.3	-
		25	12	22.0	22.4	-	22.0	-	-	10.2	-
		25	25	22.0	22.4	-	22.2	-	-	22.3	-
		50	0	21.0	21.4	-	21.2	-	-	9.7	-

3.4.2 LTE1700/2100 (Band 4)

						Nominal (dBm)			A-MPR active (dBm)		
Band / BW	Modulation	RB Allocation	RB Offset	Tuning target	Upper limit	Ch19957 / 1710.7 MHz	Ch20175 / 1732.5 MHz	Ch20393 / 1754.3 MHz	Ch19957 / 1710.7 MHz	Ch20175 / 1732.5 MHz	Ch20393 / 1754.3 MHz
LTE4 1.4 MHz	QPSK	1	0	23.5	23.9	23.4	23.6	23.3			
		1	2	23.5	23.9	23.5	23.5	23.3			
		1	5	23.5	23.9	23.3	23.3	23.1			
		3	0	23.5	23.9	23.5	23.5	23.4			
		3	2	23.5	23.9	23.5	23.5	23.4			
		3	3	23.5	23.9	23.5	23.5	23.4			
		6	0	22.5	22.9	22.5	22.5	22.5			
	16QAM	1	0	22.5	22.9	22.2	22.5	22.2			
		1	2	22.5	22.9	22.3	22.6	22.2			
		1	5	22.5	22.9	22.2	22.4	22.2			
		3	0	22.5	22.9	22.5	22.6	22.5			
		3	2	22.5	22.9	22.5	22.6	22.5			
		3	3	22.5	22.9	22.5	22.6	22.4			
		6	0	21.5	21.9	21.5	21.5	21.4			

						Nominal (dBm)			A-MPR active (dBm)		
Band / BW	Modulation	RB Allocation	RB Offset	Tuning target	Upper limit	Ch19965 / 1711.5 MHz	Ch20175 / 1732.5 MHz	Ch20385 / 1753.5 MHz	Ch19965 / 1711.5 MHz	Ch20175 / 1732.5 MHz	Ch20385 / 1753.5 MHz
LTE4 3 MHz	QPSK	1	0	23.5	23.9	23.3	23.6	23.4	23.3	23.6	23.4
		1	7	23.5	23.9	23.3	23.5	23.4	23.4	23.6	23.4
		1	14	23.5	23.9	23.2	23.3	23.2	23.2	23.4	23.2
		8	0	23.5	23.9	23.5	23.5	23.4	23.5	23.5	23.5
		8	3	23.5	23.9	23.5	23.4	23.4	23.5	23.5	23.4
		8	7	23.5	23.9	23.4	23.5	23.3	23.4	23.5	23.4
		15	0	22.5	22.9	22.5	22.5	22.4	21.5	21.5	21.5
	16QAM	1	0	22.5	22.9	22.7	22.5	22.4	22.8	22.5	22.5
		1	7	22.5	22.9	22.8	22.6	22.3	22.8	22.5	22.6
		1	14	22.5	22.9	22.3	22.3	22.2	22.4	22.3	22.4
		8	0	22.5	22.9	22.7	22.6	22.7	22.7	22.5	22.6
		8	3	22.5	22.9	22.7	22.6	22.7	22.7	22.5	22.5
		8	7	22.5	22.9	22.7	22.5	22.6	22.7	22.5	22.5
		15	0	21.5	21.9	21.7	21.5	21.4	20.7	20.7	20.7

						Nominal (dBm)			A-MPR active (dBm)		
Band / BW	Modulation	RB Allocation	RB Offset	Tuning target	Upper limit	Ch19975 / 1712.5 MHz	Ch20175 / 1732.5 MHz	Ch20375 / 1752.5 MHz	Ch19975 / 1712.5 MHz	Ch20175 / 1732.5 MHz	Ch20375 / 1752.5 MHz
LTE4 5 MHz	QPSK	1	0	23.5	23.9	23.3	23.5	23.4	23.4	23.5	23.5
		1	12	23.5	23.9	23.4	23.5	23.4	23.5	23.5	23.5
		1	24	23.5	23.9	23.1	23.4	23.2	23.2	23.5	23.2
		12	0	23.5	23.9	23.5	23.5	23.3	22.5	22.6	22.5
		12	6	23.5	23.9	23.4	23.5	23.4	22.5	22.6	22.5
		12	13	23.5	23.9	23.5	23.5	23.3	22.6	22.6	22.5
		25	0	22.5	22.9	22.5	22.5	22.5	21.5	21.5	21.6
	16QAM	1	0	22.5	22.9	22.3	22.7	22.6	22.3	22.7	22.7
		1	12	22.5	22.9	22.4	22.7	22.6	22.4	22.8	22.7
		1	24	22.5	22.9	22.2	22.5	22.2	22.2	22.6	22.3
		12	0	22.5	22.9	22.5	22.5	22.4	21.6	21.5	21.5
		12	6	22.5	22.9	22.6	22.5	22.4	21.6	21.5	21.5
		12	13	22.5	22.9	22.6	22.5	22.4	21.6	21.6	21.5
		25	0	21.5	21.9	21.6	21.5	21.5	20.8	20.6	20.6

						Nominal (dBm)			A-MPR active (dBm)		
Band / BW	Modulation	RB Allocation	RB Offset	Tuning target	Upper limit	Ch20000 / 1715 MHz	Ch20175 / 1732.5 MHz	Ch20350 / 1750 MHz	Ch20000 / 1715 MHz	Ch20175 / 1732.5 MHz	Ch20350 / 1750 MHz
LTE4 10 MHz	QPSK	1	0	23.5	23.9	23.3	23.4	23.3	23.3	23.4	23.3
		1	24	23.5	23.9	23.2	23.5	23.4	23.3	23.5	23.5
		1	49	23.5	23.9	23.1	23.2	23.1	23.1	23.2	23.2
		25	0	23.5	23.9	23.4	23.4	23.5	22.5	22.5	22.5
		25	12	23.5	23.9	23.5	23.4	23.4	22.5	22.5	22.5
		25	25	23.5	23.9	23.4	23.5	23.4	22.5	22.6	22.5
		50	0	22.5	22.9	22.5	22.5	22.5	21.5	21.5	21.5
	16QAM	1	0	22.5	22.9	22.6	22.4	22.3	22.7	22.5	22.3
		1	24	22.5	22.9	22.7	22.4	22.4	22.7	22.5	22.5
		1	49	22.5	22.9	22.2	22.1	22.1	22.3	22.2	22.1
		25	0	22.5	22.9	22.4	22.5	22.6	21.5	21.5	21.6
		25	12	22.5	22.9	22.5	22.5	22.6	21.5	21.5	21.6
		25	25	22.5	22.9	22.5	22.6	22.5	21.5	21.6	21.6
		50	0	21.5	21.9	21.5	21.5	21.5	20.6	20.6	20.6

						Nominal (dBm)			A-MPR active (dBm)		
Band / BW	Modulation	RB Allocation	RB Offset	Tuning target	Upper limit	Ch20025 / 1717.5 MHz	Ch20175 / 1732.5 MHz	Ch20325 / 1747.5 MHz	Ch20025 / 1717.5 MHz	Ch20175 / 1732.5 MHz	Ch20325 / 1747.5 MHz
LTE4 15 MHz	QPSK	1	0	23.5	23.9	23.2	23.4	23.3	23.3	23.4	23.3
		1	36	23.5	23.9	23.2	23.5	23.4	23.2	23.6	23.5
		1	74	23.5	23.9	23.0	23.2	23.0	23.2	23.2	23.1
		36	0	23.5	23.9	23.4	23.4	23.4	22.5	22.5	22.5
		36	18	23.5	23.9	23.4	23.4	23.4	22.5	22.5	22.5
		36	38	23.5	23.9	23.4	23.4	23.5	22.5	22.5	22.6
		75	0	22.5	22.9	22.6	22.6	22.7	21.5	21.6	21.6
	16QAM	1	0	22.5	22.9	22.6	22.3	22.0	22.6	22.4	22.2
		1	36	22.5	22.9	22.7	22.5	22.3	22.7	22.5	22.3
		1	74	22.5	22.9	22.3	22.2	22.2	22.3	22.2	22.1
		36	0	22.5	22.9	22.6	22.4	22.6	21.6	21.5	21.5
		36	18	22.5	22.9	22.6	22.4	22.5	21.6	21.4	21.5
		36	38	22.5	22.9	22.6	22.5	22.5	21.6	21.5	21.5
		75	0	21.5	21.9	21.5	21.7	21.6	20.6	20.7	20.6

						Nominal (dBm)			A-MPR active (dBm)		
Band / BW	Modulation	RB Allocation	RB Offset	Tuning target	Upper limit	Ch20050 / 1720 MHz	Ch20175 / 1732.5 MHz	Ch20300 / 1745 MHz	Ch20050 / 1720 MHz	Ch20175 / 1732.5 MHz	Ch20300 / 1745 MHz
LTE4 20 MHz	QPSK	1	0	23.5	23.9	23.4	23.3	23.2	23.4	23.3	23.3
		1	49	23.5	23.9	23.4	**23.5**	23.4	23.5	23.6	23.5
		1	99	23.5	23.9	23.2	23.3	23.2	23.2	23.3	23.3
		50	0	23.5	23.9	23.4	23.4	23.4	22.5	22.5	22.5
		50	24	23.5	23.9	23.4	23.4	23.4	22.5	22.5	22.4
		50	50	23.5	23.9	**23.5**	23.4	23.5	22.5	22.5	22.5
		100	0	22.5	22.9	22.5	22.5	22.5	21.5	21.5	21.5
	16QAM	1	0	22.5	22.9	22.5	22.2	22.4	22.5	22.0	22.4
		1	49	22.5	22.9	22.6	22.2	22.6	22.6	22.2	22.7
		1	99	22.5	22.9	22.5	22.0	22.2	22.5	22.1	22.2
		50	0	22.5	22.9	22.5	22.3	22.4	21.5	21.3	21.4
		50	24	22.5	22.9	22.5	22.3	22.5	21.5	21.3	21.4
		50	50	22.5	22.9	22.5	22.4	22.6	21.5	21.3	21.6
		100	0	21.5	21.9	21.5	21.5	21.6	20.6	20.6	20.6

3.4.3 LTE1900 (Band 2)

						Nominal			A-MPR active		
Band / BW	Modulation	RB Allocation	RB Offset	Tuning target	Upper limit	Ch18607 / 1850.7 MHz	Ch18900 / 1880 MHz	Ch19193 / 1909.3 MHz	Ch18607 / 1850.7 MHz	Ch18900 / 1880 MHz	Ch19193 / 1909.3 MHz
		1	0	23.0	23.4	22.8	23.1	22.9			
		1	2	23.0	23.4	22.8	23.1	22.9			
		1	5	23.0	23.4	22.6	22.9	22.7			
	QPSK	3	0	23.0	23.4	22.9	23.0	23.0			
		3	2	23.0	23.4	22.8	23.0	22.9			
		3	3	23.0	23.4	22.8	23.0	22.9			
LTE2		6	0	22.0	22.4	22.0	22.0	21.9			
1.4 MHz		1	0	22.0	22.4	21.6	22.1	21.7			
		1	2	22.0	22.4	21.6	22.0	21.7			
		1	5	22.0	22.4	21.6	21.9	21.7			
	16QAM	3	0	22.0	22.4	21.9	22.1	21.8			
		3	2	22.0	22.4	21.9	22.1	21.8			
		3	3	22.0	22.4	21.9	22.1	21.7			
		6	0	21.0	21.4	20.9	21.1	20.8			

						Nominal			A-MPR active		
Band / BW	Modulation	RB Allocation	RB Offset	Tuning target	Upper limit	Ch18615 / 1851.5 MHz	Ch18900 / 1880 MHz	Ch19185 / 1908.5 MHz	Ch18615 / 1851.5 MHz	Ch18900 / 1880 MHz	Ch19185 / 1908.5 MHz
		1	0	23.0	23.4	22.7	23.2	22.9	22.7	23.1	22.9
		1	7	23.0	23.4	22.7	23.1	22.9	22.8	23.2	22.9
		1	14	23.0	23.4	22.5	22.9	22.7	22.6	22.9	22.7
	QPSK	8	0	23.0	23.4	22.8	23.0	22.9	22.9	23.1	23.0
		8	3	23.0	23.4	22.8	23.1	22.9	22.9	23.1	23.0
		8	7	23.0	23.4	22.7	23.0	22.9	22.7	23.1	22.9
LTE2		15	0	22.0	22.4	21.9	22.1	21.9	21.0	21.1	21.0
3 MHz		1	0	22.0	22.4	22.2	22.1	21.7	22.2	22.1	21.8
		1	7	22.0	22.4	22.2	22.1	21.8	22.2	22.1	21.8
		1	14	22.0	22.4	21.7	21.8	21.6	21.8	21.9	21.7
	16QAM	8	0	22.0	22.4	22.1	22.1	22.0	22.1	22.1	22.2
		8	3	22.0	22.4	22.0	22.2	22.1	22.1	22.2	22.1
		8	7	22.0	22.4	22.0	22.0	22.0	22.1	22.1	22.1
		15	0	21.0	21.4	21.1	21.0	20.9	20.2	20.1	20.0

						Nominal			A-MPR active		
Band / BW	Modulation	RB Allocation	RB Offset	Tuning target	Upper limit	Ch18625 / 1852.5 MHz	Ch18900 / 1880 MHz	Ch19175 / 1907.5 MHz	Ch18625 / 1852.5 MHz	Ch18900 / 1880 MHz	Ch19175 / 1907.5 MHz
		1	0	23.0	23.4	22.7	23.1	22.9	22.8	23.2	22.9
		1	12	23.0	23.4	22.9	23.1	22.9	22.9	23.2	23.0
		1	24	23.0	23.4	22.7	23.0	22.7	22.8	23.1	22.7
	QPSK	12	0	23.0	23.4	22.8	23.1	22.9	21.9	22.2	21.9
		12	6	23.0	23.4	22.8	23.1	22.9	22.0	22.2	21.9
		12	13	23.0	23.4	22.9	23.1	22.8	22.0	22.2	21.9
LTE2		25	0	22.0	22.4	21.9	22.1	21.9	21.0	21.1	21.1
5 MHz		1	0	22.0	22.4	21.6	22.2	22.1	21.7	22.4	22.1
		1	12	22.0	22.4	21.7	22.4	22.0	21.8	22.4	22.1
		1	24	22.0	22.4	21.8	22.1	21.7	21.8	22.2	21.8
	16QAM	12	0	22.0	22.4	21.9	22.1	21.8	21.1	21.2	21.0
		12	6	22.0	22.4	22.0	22.1	21.8	21.0	21.2	21.0
		12	13	22.0	22.4	22.0	22.1	21.9	21.1	21.2	21.0
		25	0	21.0	21.4	21.1	21.1	20.9	20.2	20.2	20.0

						Nominal			A-MPR active		
Band / BW	Modulation	RB Allocation	RB Offset	Tuning target	Upper limit	Ch18650 / 1855 MHz	Ch18900 / 1880 MHz	Ch19150 / 1905 MHz	Ch18650 / 1855 MHz	Ch18900 / 1880 MHz	Ch19150 / 1905 MHz
LTE2 10 MHz	QPSK	1	0	23.0	23.4	22.6	22.9	22.8	22.7	23.0	22.8
		1	24	23.0	23.4	22.8	23.0	22.8	22.8	23.1	22.9
		1	49	23.0	23.4	22.7	22.7	22.6	22.7	22.8	22.7
		25	0	23.0	23.4	22.9	23.0	22.9	22.0	22.1	21.9
		25	12	23.0	23.4	22.8	23.0	22.8	22.0	22.1	21.8
		25	25	23.0	23.4	23.0	23.1	22.9	22.1	22.2	22.0
		50	0	22.0	22.4	21.9	22.1	21.8	21.0	21.1	21.1
	16QAM	1	0	22.0	22.4	22.1	21.9	21.7	22.2	22.1	21.8
		1	24	22.0	22.4	22.3	22.0	21.7	22.4	22.1	21.8
		1	49	22.0	22.4	21.8	21.7	21.6	21.8	21.8	21.6
		25	0	22.0	22.4	22.0	22.1	21.9	21.0	21.1	21.0
		25	12	22.0	22.4	22.0	22.1	21.9	21.0	21.1	21.1
		25	25	22.0	22.4	22.1	22.2	21.9	21.2	21.3	21.2
		50	0	21.0	21.4	21.0	21.1	21.0	20.1	20.2	20.0

						Nominal			A-MPR active		
Band / BW	Modulation	RB Allocation	RB Offset	Tuning target	Upper limit	Ch18675 / 1857.5 MHz	Ch18900 / 1880 MHz	Ch19125 / 1902.5 MHz	Ch18675 / 1857.5 MHz	Ch18900 / 1880 MHz	Ch19125 / 1902.5 MHz
LTE2 15 MHz	QPSK	1	0	23.0	23.4	22.6	22.9	22.7	22.7	23.0	22.8
		1	36	23.0	23.4	22.8	23.1	22.8	22.8	23.1	22.8
		1	74	23.0	23.4	22.7	22.8	22.6	22.7	22.9	22.6
		36	0	23.0	23.4	22.9	22.9	22.9	22.0	22.1	22.0
		36	18	23.0	23.4	22.8	23.0	23.0	22.0	22.1	22.0
		36	38	23.0	23.4	23.0	23.0	22.9	22.1	22.1	21.9
		75	0	22.0	22.4	22.2	22.2	22.0	21.2	21.2	21.1
	16QAM	1	0	22.0	22.4	22.0	21.9	21.6	22.1	22.0	21.6
		1	36	22.0	22.4	22.3	22.1	21.6	22.3	22.2	21.7
		1	74	22.0	22.4	21.8	21.8	21.6	21.9	21.9	21.5
		36	0	22.0	22.4	22.0	22.0	22.0	21.1	21.1	21.1
		36	18	22.0	22.4	22.0	22.0	22.0	21.0	21.0	21.1
		36	38	22.0	22.4	22.1	22.0	21.9	21.2	21.1	21.0
		75	0	21.0	21.4	21.2	21.3	21.0	20.2	20.2	20.0

						Nominal			A-MPR active		
Band / BW	Modulation	RB Allocation	RB Offset	Tuning target	Upper limit	Ch18700 / 1860 MHz	Ch18900 / 1880 MHz	Ch19100 / 1900 MHz	Ch18700 / 1860 MHz	Ch18900 / 1880 MHz	Ch19100 / 1900 MHz
LTE2 20 MHz	QPSK	1	0	23.0	23.4	22.9	23.0	22.9	22.8	23.0	22.9
		1	49	23.0	23.4	23.0	**23.0**	23.0	23.0	23.0	23.0
		1	99	23.0	23.4	22.8	22.7	22.7	22.8	22.9	22.7
		50	0	23.0	23.4	22.8	22.9	23.0	22.0	22.0	22.1
		50	24	23.0	23.4	22.8	22.9	23.0	21.9	22.1	22.1
		50	50	23.0	23.4	**23.0**	22.9	22.9	22.1	22.0	22.0
		100	0	22.0	22.4	22.1	22.1	22.0	21.1	21.1	21.1
	16QAM	1	0	22.0	22.4	22.1	21.7	22.0	22.0	21.7	22.1
		1	49	22.0	22.4	22.2	21.7	22.1	22.2	21.8	22.2
		1	99	22.0	22.4	22.1	21.6	21.7	22.2	21.4	21.8
		50	0	22.0	22.4	21.9	21.9	22.1	21.0	20.9	21.2
		50	24	22.0	22.4	21.9	21.9	22.1	21.0	20.9	21.2
		50	50	22.0	22.4	22.1	21.9	21.9	21.2	20.9	21.1
		100	0	21.0	21.4	21.1	21.1	21.1	20.2	20.2	20.1

3.4.4 BT

BT	Tuning target (dBm)	Upper limit (dBm)
	6	7.5

3.4.5 WLAN2450

WLAN 2.4 GHz: 20 MHz channel bandwidth									
					Tuning target				
Standard	MCX index	Spatial streams	Modulation	Data speed [MBPS]	CH 1	CH 2	CH 6	CH 10	CH 11
802.11b			BPSK	1	**16.0**	**16.5**	**16.5**	**16.5**	**16.0**
802.11b			QPSK	2	**16.0**	**16.5**	**16.5**	**16.5**	**16.0**
802.11b			QPSK	5.5	**16.0**	**16.5**	**16.5**	**16.5**	**16.0**
802.11b			QPSK	11	**16.0**	**16.5**	**16.5**	**16.5**	**16.0**
802.11g			BPSK	6	**12.0**	**15.0**	**15.0**	**15.0**	**12.0**
802.11g			BPSK	9	**12.0**	**15.0**	**15.0**	**15.0**	**12.0**
802.11g			QPSK	12	**12.0**	**15.0**	**15.0**	**15.0**	**12.0**
802.11g			QPSK	18	**12.0**	**15.0**	**15.0**	**15.0**	**12.0**
802.11g			16QAM	24	**12.0**	**15.0**	**15.0**	**15.0**	**12.0**
802.11g			16QAM	36	**12.0**	**14.0**	**14.0**	**14.0**	**12.0**
802.11g			64QAM	48	**12.0**	**13.0**	**13.0**	**13.0**	**12.0**
802.11g			64QAM	54	**11.5**	**11.5**	**11.5**	**11.5**	**11.5**
802.11n	0	1	BPSK	6.5 / 7.25	**11.0**	**13.0**	**13.0**	**13.0**	**11.0**
802.11n	1	1	QPSK	13.0 / 14.4	**11.0**	**13.0**	**13.0**	**13.0**	**11.0**
802.11n	2	1	QPSK	19.5 / 21.7	**11.0**	**13.0**	**13.0**	**13.0**	**11.0**
802.11n	3	1	16QAM	26.0 / 28.9	**11.0**	**13.0**	**13.0**	**13.0**	**11.0**
802.11n	4	1	16QAM	39.0 / 43.3	**11.0**	**13.0**	**13.0**	**13.0**	**11.0**
802.11n	5	1	64QAM	52.0 / 57.8	**11.0**	**13.0**	**13.0**	**13.0**	**11.0**
802.11n	6	1	64QAM	58.5 / 65.0	**11.0**	**11.0**	**11.0**	**11.0**	**11.0**
802.11n	7	1	64QAM	65.0 / 72.2	**11.0**	**11.0**	**11.0**	**11.0**	**11.0**

WLAN 2.4 GHz: 20 MHz channel bandwidth									
					Upper limit of tuning target				
Standard	MCX index	Spatial streams	Modulation	Data speed [MBPS]	CH 1	CH 2	CH 6	CH 10	CH 11
802.11b			BPSK	1	17.5	18.0	18.0	18.0	17.5
802.11b			QPSK	2	17.5	18.0	18.0	18.0	17.5
802.11b			QPSK	5.5	17.5	18.0	18.0	18.0	17.5
802.11b			QPSK	11	17.5	18.0	18.0	18.0	17.5
802.11g			BPSK	6	13.5	16.5	16.5	16.5	13.5
802.11g			BPSK	9	13.5	16.5	16.5	16.5	13.5
802.11g			QPSK	12	13.5	16.5	16.5	16.5	13.5
802.11g			QPSK	18	13.5	16.5	16.5	16.5	13.5
802.11g			16QAM	24	13.5	16.5	16.5	16.5	13.5
802.11g			16QAM	36	13.5	15.5	15.5	15.5	13.5
802.11g			64QAM	48	13.5	14.5	14.5	14.5	13.5
802.11g			64QAM	54	13.0	13.0	13.0	13.0	13.0
802.11n	0	1	BPSK	6.5 / 7.25	12.5	14.5	14.5	14.5	12.5
802.11n	1	1	QPSK	13.0 / 14.4	12.5	14.5	14.5	14.5	12.5
802.11n	2	1	QPSK	19.5 / 21.7	12.5	14.5	14.5	14.5	12.5
802.11n	3	1	16QAM	26.0 / 28.9	12.5	14.5	14.5	14.5	12.5
802.11n	4	1	16QAM	39.0 / 43.3	12.5	14.5	14.5	14.5	12.5
802.11n	5	1	64QAM	52.0 / 57.8	12.5	14.5	14.5	14.5	12.5
802.11n	6	1	64QAM	58.5 / 65.0	12.5	12.5	12.5	12.5	12.5
802.11n	7	1	64QAM	65.0 / 72.2	12.5	12.5	12.5	12.5	12.5

WLAN 2.4 GHz: 20 MHz channel bandwidth									
					Measured value				
Standard	MCX index	Spatial streams	Modulation	Data speed [MBPS]	CH 1	CH 2	CH 6	CH 10	CH 11
802.11b			BPSK	1	16.4	**16.9**	**16.9**	**16.9**	16.4
802.11b			QPSK	2	16.3	16.9	16.9	16.8	16.3
802.11b			QPSK	5.5	16.3	16.8	16.8	16.9	16.4
802.11b			QPSK	11	16.4	16.9	16.9	17.0	16.4
802.11g			BPSK	6	12.3	14.9	15.1	14.9	12.2
802.11g			BPSK	9	12.4	14.8	14.8	14.8	12.1
802.11g			QPSK	12	12.2	14.6	14.9	14.8	12.2
802.11g			QPSK	18	12.2	14.8	14.8	14.8	12.1
802.11g			16QAM	24	12.1	14.7	14.9	14.7	12.2
802.11g			16QAM	36	12.1	14.2	14.2	14.2	12.2
802.11g			64QAM	48	12.2	13.1	13.3	13.2	12.1
802.11g			64QAM	54	11.8	11.8	11.8	11.8	11.7
802.11n	0	1	BPSK	6.5 / 7.25	11.1	13.1	13.2	13.1	11.2
802.11n	1	1	QPSK	13.0 / 14.4	11.1	13.2	13.1	13.1	11.3
802.11n	2	1	QPSK	19.5 / 21.7	11.0	13.1	13.2	13.2	11.2
802.11n	3	1	16QAM	26.0 / 28.9	11.2	13.0	13.1	12.9	11.1
802.11n	4	1	16QAM	39.0 / 43.3	11.1	13.1	13.1	13.1	11.2
802.11n	5	1	64QAM	52.0 / 57.8	11.1	13.1	13.1	12.9	10.9
802.11n	6	1	64QAM	58.5 / 65.0	10.9	11.1	11.1	10.9	10.9
802.11n	7	1	64QAM	65.0 / 72.2	10.8	10.8	10.9	11.1	10.9

4. DESCRIPTION OF THE TEST EQUIPMENT

4.1 Measurement System and Components

The measurements were performed using an automated DASY near-field scanning system manufactured by Schmid & Partner Engineering AG (SPEAG) in Switzerland. The SAR extrapolation algorithm used in all measurements was the 'advanced extrapolation' algorithm.

The following table lists calibration dates of SPEAG components:

Test Equipment	Serial Number	Calibration date	Calibration expiry
DAE 4	538	2013-11	2014-11
DAE 4	555	2014-05	2015-05
DAE 4	728	2013-11	2014-11
DAE 4	1302	2013-12	2014-12
DAE 4	1355	2014-05	2015-05
DAE 4	1316	2014-10	2015-10
E-field Probe ES3DV3	3165	2014-05	2015-05
E-field Probe ES3DV3	3194	2013-11	2014-11
E-field Probe ES3DV3	3118	2014-10	2015-10
E-field Probe EX3DV4	3834	2014-05	2015-05
E-field Probe EX3DV4	3960	2013-12	2014-12
Dipole Validation Kit, D750V2	1075	2012-11	2014-11
Dipole Validation Kit, D835V2	462	2014-05	2016-05
Dipole Validation Kit, D1750V2	1083	2014-05	2016-05
Dipole Validation Kit, D1900V2	5d030	2014-05	2016-05
Dipole Validation Kit, D2450V2	749	2012-12	2014-12
DASY4 software	Version 52.8	-	-

Additional test equipment used in testing:

Test Equipment	Model	Serial Number	Calibration date	Calibration expiry
Signal Generator	E4438C	MY42080610	2014-09	2015-09
Signal Generator	SML03	101264	2014-09	2015-09
Signal Generator	E4436B	US39260114	2014-09	2015-09
Signal Generator	SME06	836407/007	2014-09	2015-09
Amplifier	5S1G4M3	302338	-	-
Amplifier	ZHL-42-SMA	NO72095-5	-	-
Amplifier	5S1G4	25583	-	-
Amplifier	ZHL-42	854105	-	-
Power Meter	NRVS	838624/032	2014-09	2015-09
Power Meter	NRVD	840023/028	2014-09	2015-09
Power Meter	NRVZ	849305/029	2014-09	2015-09
Power Meter	NRVD	840297/032	2014-09	2015-09
Power Sensor	NRV-Z32	100067	2014-09	2015-09
Power Sensor	NRV-Z32	849745/018	2014-09	2015-09
Power Sensor	NRV-Z32	825600/002	2014-09	2015-09
Power Sensor	NRV-Z53	848532/001	2014-09	2015-09
Call Tester	CMU 200	103293	-	-
Call Tester	CMU 200	101111	-	-
Call Tester	CMU 200	104983	-	-
Call Tester	MT8820C	6201060952	-	-
Call Tester	MT8820C	6200883095	-	-
Call Tester	CMW 500	145474	-	-
Call Tester	CMW 500	110565	-	-
Network Analyzer	ENA E5071C	MY46213166	2014-09	2015-09
Network Analyzer	8753E	US38432928	2014-09	2015-09
Dielectric Probe Kit	DAK-3.5	1042	-	-
Dielectric Probe Kit	DAK-3.5	2088	-	-

4.1.1 Isotropic E-field Probe Type ES3DV3

Construction	Symmetrical design with triangular core Interleaved sensors Built-in shielding against static charges PEEK enclosure material (resistant to organic solvents, e.g., butyl diglycol)
Calibration	Calibration certificate in Appendix D
Frequency	10 MHz to 4 GHz (dosimetry); Linearity: ± 0.2 dB (30 MHz to 4 GHz)
Directivity	± 0.2 dB in HSL (rotation around probe axis) ± 0.3 dB in HSL (rotation normal to probe axis)
Dynamic Range	5 µW/g to > 100 mW/g; Linearity: ± 0.2 dB
Dimensions	Overall length: 330 mm Tip length: 20 mm Body diameter: 12 mm Tip diameter: 3.9 mm Distance from probe tip to dipole centers: 2.0 mm
Application	General dosimetry up to 4 GHz Compliance tests of mobile phones Fast automatic scanning in arbitrary phantoms

4.1.2 Isotropic E-field Probe Type EX3DV4

Construction	Symmetrical design with triangular core Built-in shielding against static charges PEEK enclosure material (resistant to organic solvents, e.g., DGBE)
Calibration	Calibration certificate in Appendix D
Frequency	10 MHz to >6 GHz (dosimetry); Linearity: ± 0.2 dB (30 MHz to 6 GHz)
Directivity	± 0.3 dB in HSL (rotation around probe axis) ± 0.5 dB in tissue material (rotation normal to probe axis)
Dynamic Range	10 µW/g to > 100 mW/g, Linearity: ± 0.2 dB
Dimensions	Overall length: 330 mm Tip length: 10 mm Body diameter: 12 mm Tip diameter: 2.5 mm Distance from probe tip to dipole centers: 1.0 mm
Application	General dosimetry up to 6 GHz Compliance tests of mobile phones Fast automatic scanning in arbitrary phantoms

4.2 Phantoms

The phantom used for all Head SAR tests i.e. for both system checks and device testing, was the twin-headed "SAM Phantom", manufactured by SPEAG; the SAM phantom conforms to the requirements of IEEE 1528.

The phantom used for all Body SAR tests i.e. for both system checks and device testing, was a flat phantom also manufactured by SPEAG this phantom conform to the requirements of FCC published RF Exposure KDB Procedures.

The SPEAG device holder (see Section 5.1) was used to position the device in all tests whilst a tripod was used to position the validation dipoles against the flat section of phantom.

4.3 Tissue Simulants

Recommended values for the dielectric parameters of the tissue simulants are given in IEEE 1528 and FCC published RF Exposure KDB Procedures. All tests were carried out using simulants whose dielectric parameters were within ± 5% of the recommended values. All tests were carried out within 24 hours of measuring the dielectric parameters.

The depth of the tissue simulant was at least 15.0 cm for all system check and device tests, measured from the ear reference point in the case of the SAM phantom and from the inner surface of the flat phantom.

4.3.1 Tissue Simulant Recipes

The following recipe(s) were used for Head and Body tissue simulant(s):

700MHz band

Ingredient	Head (% by weight)	Body (% by weight)
Deionised Water	52.13	69.23
Tween 20	46.59	29.56
Salt	1.28	1.21

800MHz band

Ingredient	Head (% by weight)	Body (% by weight)
Deionised Water	51.50	69.25
Tween 20	47.35	30.00
Salt	1.15	0.75

1750MHz band

Ingredient	Head (% by weight)	Body (% by weight)
Deionised Water	54.0	70.20
Tween 20	45.6	29.37
Salt	0.4	0.43

1900MHz band

Ingredient	Head (% by weight)	Body (% by weight)
Deionised Water	54.50	70.25
Tween 20	45.23	29.41
Salt	0.27	0.34

2450MHz band

Ingredient	Head (% by weight)	Body (% by weight)
Deionised Water	56.0	70.20
Tween 20	44.0	29.62
Salt	-	0.18

4.4 System validation and System checking

4.4.1 System validation status

Probe Calibration Point f / MHz	Test System	DASY SW	Dipole Type / SN	Probe Type / SN	Calibrated signal type(s)	DAE unit Type / SN	Validation done	
							Head tissue simulant	Body tissue simulant
750	TCC Salo / SAR-4	V52.8	D750V2 / 1034	EX3DV4 / 3960	CW	DAE4 / 1302	2014-02	2014-04
835	TCC Salo / SAR-2	V52.8	D835V2 / 462	ES3DV4 / 3194	CW	DAE4 / 538	2014-02	2013-12
1750	TCC Salo / SAR-1	V52.8	D1750V2 / 1083	EX3DV4 / 3834	CW	DAE4 / 1355	2014-06	2014-06
1750	TCC Salo / SAR-1	V52.8	D1750V2 / 1083	EX3DV4 / 3118	CW	DAE4 / 1316	2014-10	2014-10
1900	TCC Salo / SAR-1	V52.8	D1900V2 / 5d030	EX3DV4 / 3834	CW	DAE4 / 1355	2014-06	2014-06
1900	TCC Salo / SAR-5	V52.8	D1900V2 / 5d030	EX3DV4 / 3165	CW	DAE4 / 728	2014-06	2014-10
2450	TCC Salo / SAR-4	V52.8	D2450V2 / 729	EX3DV4 / 3960	CW	DAE4 / 1302	2014 -01	2014-01

4.4.2 System checking

The manufacturer calibrates the probes annually. Dielectric parameters of the tissue simulants were measured every day using the dielectric probe kit and the network analyser. A system check measurement was made following the determination of the dielectric parameters of the simulant, using the dipole validation kit. A power level of 250 mW was supplied to the dipole antenna, which was placed under the flat section of the twin SAM phantom for head system checking, and under the flat phantom for body system checking. The system checking results (dielectric parameters and SAR values) are given in the table below.

System checking, head tissue simulant

Dipole freq. [MHz]	Description	SAR 1g [W/kg]	Estimated SAR 1g [W/kg]	Estimated SAR 1g Dev. dSAR [%]	Scaled 1W SAR 1g [W/kg]	Dielectric Parameters		SAR 1g Deviation from target	Dielectric Parameters Deviation from target		Temp [°C]	Plot #
						e_r	s [S/m]	dSAR [%]	de_r [%]	ds [%]		
	Tolerances			±3%				±10 %	±5 %	±5 %		
750	Target result **SN:1075**	-	-	-	8.30	41.9	0.89	TCC Salo / SAR-4 EX3DV4 - SN:3960 Head 750MHz				
	2014-10-01	2.03	2.08	2.46	8.12	41.3	0.91	-2.17	-1.43	2.25	0.0	1
	Tolerances			±3%				±10 %	±5 %	±5 %		
835	Target result **SN:462**	-	-	-	9.19	41.5	0.90	TCC Salo / SAR-2 ES3DV3 - SN:3194 Head 835MHz				
	2014-10-01	2.35	2.38	1.28	9.40	40.4	0.91	2.29	-2.65	1.11	22.3	-
	2014-10-07	2.36	2.39	1.27	9.44	40.8	0.92	2.72	-1.69	2.22	22.4	2
	Tolerances			±3%				±10 %	±5 %	±5 %		
1750	Target result **SN:1083**	-	-	-	37.10	40.1	1.37	TCC Salo / SAR-1 EX3DV4 - SN:3834 Head 1750MHz				
	2014-10-01	9.31	9.48	1.83	37.24	40.0	1.34	0.38	-0.25	-2.19	20.8	3
	2014-10-14	9.24	9.51	2.92	36.96	40.0	1.34	-0.38	-0.25	-2.19	21.4	-
	Tolerances			±3%				±10 %	±5 %	±5 %		
1900	Target result **SN:5d030**	-	-	-	39.70	40.0	1.40	TCC Salo / SAR-1 EX3DV4 - SN:3834 Head 1900MHz				
	2014-10-02	10.30	10.50	1.94	41.20	39.3	1.42	3.78	-1.75	1.43	21.0	4
	2014-10-03	10.10	10.30	1.98	40.40	38.5	1.41	1.76	-3.75	0.71	21.0	-
	2014-10-10	10.00	10.20	2.00	40.00	39.2	1.39	0.76	-2.00	-0.71	20.8	-
	2014-10-14	10.20	10.40	1.96	40.80	39.5	1.40	2.77	-1.25	0.00	21.4	-
	2014-10-15	10.10	10.30	1.98	40.40	39.0	1.42	1.76	-2.50	1.43	20.0	-
	Tolerances			±3%				±10 %	±5 %	±5 %		
2450	Target result **SN:749**	-	-	-	53.90	39.2	1.80	TCC Salo / SAR-4 EX3DV4 - SN:3960 Head 2450MHz				
	2014-10-02	13.20	13.10	-0.76	52.80	39.0	1.78	-2.04	-0.51	-1.11	22.5	5
	2014-10-03	13.40	13.40	0.00	53.60	38.4	1.80	-0.56	-2.04	0.00	22.3	-

* Dielectric parameter reference data taken from IEEE1528/IEC62209

System checking, body tissue simulant

Dipole freq. [MHz]	Description	SAR 1g [W/kg]	Estimated SAR 1g [W/kg]	Estimated SAR 1g Dev. dSAR [%]	Scaled 1W SAR 1g [W/kg]	Dielectric Parameters		SAR 1g Deviation from target	Dielectric Parameters Deviation from target		Temp [°C]	Plot #
						e_r	s [S/m]	dSAR [%]	de_r [%]	ds [%]		
	Tolerances			±3%				±10 %	±5 %	±5 %		
750	Target result **SN:1075**	-	-	-	8.88	55.5	0.96	TCC Salo / SAR-4 EX3DV4 - SN:3960 Head 750MHz				
	2014-10-01	2.14	2.18	1.87	8.56	53.6	0.98	-3.60	-3.42	2.08	22.2	6
	Tolerances			±3%				±10 %	±5 %	±5 %		
835	Target result **SN:462**	-	-	-	9.41	55.2	0.97	TCC Salo / SAR-2 ES3DV3 - SN:3194 Head 835MHz				
	2014-10-02	2.35	2.39	1.70	9.40	54.7	0.97	-0.11	-0.91	0.00	22.1	-
	2014-10-03	2.36	2.39	1.27	9.44	54.4	0.97	0.32	-1.45	0.00	21.8	-
	2014-10-06	2.34	2.39	2.14	9.36	53.3	0.96	-0.53	-3.44	-1.03	21.7	7
	Tolerances			±3%				±10 %	±5 %	±5 %		
1750	Target result **SN:1083**	-	-	-	37.60	53.4	1.49	TCC Salo / SAR-1 EX3DV4 - SN:3834 Head 1750MHz				
	2014-10-07	9.64	9.68	0.41	38.56	52.1	1.46	2.55	-2.43	-2.01	21.7	-
	2014-10-08	9.65	9.71	0.62	38.60	52.1	1.45	2.66	-2.43	-2.68	21.7	8
	2014-10-13	9.52	9.66	1.47	38.08	52.0	1.44	1.28	-2.62	-3.36	20.8	-
	Tolerances			±3%				±10 %	±5 %	±5 %		
1750	Target result **SN:1083**	-	-	-	37.60	53.4	1.49	TCC Salo / SAR-1 ES3DV3 - SN:3118 Head 1750MHz				
	2014-11-03	9.34	9.45	1.20	37.36	52.7	1.45	0.64	-1.31	-2.68	21.3	9
	Tolerances			±3%				±10 %	±5 %	±5 %		
1900	Target result **SN:5d030**	-	-	-	40.30	53.3	1.52	TCC Salo / SAR-1 EX3DV4 - SN:3834 Head 1900MHz				
	2014-10-06	10.10	10.10	0.00	40.40	51.6	1.54	0.25	-3.19	1.32	21.1	-
	2014-10-09	10.10	10.10	0.00	40.40	51.9	1.55	0.25	-2.63	1.97	21.5	-
	2014-10-10	10.20	10.20	0.00	40.80	52.1	1.56	1.24	-2.25	2.63	21.2	-
	2014-10-15	10.20	10.20	0.00	40.80	52.1	1.54	1.24	-2.25	1.32	20.7	-
	2014-10-21	9.32	9.33	0.11	37.28	51.3	1.52	-7.49	-3.75	0.00	22.5	10
	2014-10-24	10.20	10.30	0.98	40.80	51.7	1.54	1.24	-3.00	1.32	19.8	-
	Tolerances			±3%				±10 %	±5 %	±5 %		
1900	Target result **SN:5d030**	-	-	-	40.30	53.3	1.52	TCC Salo / SAR-5 ES3DV4 - SN:3165 Head 1900MHz				
	2014-10-06	10.10	10.10	0.00	40.40	51.5	1.51	0.25	-3.38	-0.66	21.1	-
	2014-10-21	9.32	9.33	0.11	37.28	51.3	1.52	-7.49	-3.75	0.00	22.5	11
	Tolerances			±3%				±10 %	±5 %	±5 %		
2450	Target result **SN:749**	-	-	-	51.50	52.7	1.95	TCC Salo / SAR-4 EX3DV4 - SN:3960 Head 2450MHz				
	2014-10-03	12.40	12.20	-1.61	49.60	51.4	1.93	-3.69	-2.47	-1.03	22.2	-
	2014-10-06	12.40	12.50	0.81	49.60	50.8	1.93	-3.69	-3.61	-1.03	22.2	12

* Dielectric parameter reference data taken from FCC Published RF Exposure KDB Procedures

Plots of the system checking scans are given in Appendix A.

4.5 Tissue Simulants used in the Measurements

Head tissue simulant measurements

f [MHz]	Description	Dielectric Parameters e_r	Dielectric Parameters s [S/m]	Dielectric Parameters Deviation from recommended value de_r [%]	Dielectric Parameters Deviation from recommended value ds [%]	Temp [°C]
782	Tolerances			±5 %	±5 %	
	Recommended value	41.8	0.90			
	2014-10-01	41.1	0.93	-1.67	3.33	22.3
835	Tolerances			±5 %	±5 %	
	Recommended value	41.5	0.90			
	2014-10-01	40.4	0.91	-2.65	1.11	22.3
	2014-10-07	40.8	0.92	-1.69	2.22	22.4
836	Tolerances			±5 %	±5 %	
	Recommended value	41.5	0.90			
	2014-10-01	40.4	0.91	-2.65	1.11	22.3
	2014-10-07	40.8	0.92	-1.69	2.22	22.4
1732	Tolerances			±5 %	±5 %	
	Recommended value	40.1	1.36			
	2014-10-01	40.1	1.33	0.00	-2.21	20.8
	2014-10-14	40.0	1.32	-0.25	-2.94	21.4
1880	Tolerances			±5 %	±5 %	
	Recommended value	40.0	1.40			
	2014-10-02	39.4	1.40	-1.50	0.00	21.0
	2014-10-03	38.6	1.39	-3.50	-0.71	21.0
	2014-10-10	39.3	1.37	-1.75	-2.14	20.8
	2014-10-14	39.5	1.38	-1.25	-1.43	21.4
	2014-10-15	39.1	1.39	-2.25	-0.71	20.0
2437	Tolerances			±5 %	±5 %	
	Recommended value	39.2	1.79			
	2014-10-02	39.1	1.77	-0.26	-1.12	22.5
	2014-10-03	38.4	1.79	-2.04	0.00	22.3

Body tissue simulant measurements

f [MHz]	Description	Dielectric Parameters e_r	Dielectric Parameters s [S/m]	Dielectric Parameters Deviation from recommended value de_r [%]	Dielectric Parameters Deviation from recommended value ds [%]	Temp [°C]
782	Tolerances			±5 %	±5 %	
	Recommended value	55.4	0.97			
	2014-10-01	53.4	0.99	-3.61	2.06	22.2
835	Tolerances			±5 %	±5 %	
	Recommended value	55.2	0.97			
	2014-10-02	54.7	0.97	-0.91	0.00	22.1
	2014-10-03	54.4	0.97	-1.45	0.00	21.8
	2014-10-06	53.3	0.96	-3.44	-1.03	21.7
836	Tolerances			±5 %	±5 %	
	Recommended value	55.2	0.97			
	2014-10-02	54.7	0.97	-0.91	0.00	22.1
	2014-10-03	54.4	0.97	-1.45	0.00	21.8
	2014-10-06	53.3	0.96	-3.44	-1.03	21.7
1732	Tolerances			±5 %	±5 %	
	Recommended value	53.5	1.48			
	2014-10-07	52.2	1.44	-2.43	-2.70	21.7
	2014-10-08	52.2	1.43	-2.43	-3.38	21.7
	2014-10-13	52.0	1.43	-2.80	-3.38	20.8
	2014-11-03	52.7	1.43	-1.50	-3.38	21.3
1880	Tolerances			±5 %	±5 %	
	Recommended value	53.3	1.52			
	2014-10-06	51.6	1.52	-3.19	0.00	21.1
	2014-10-09	51.8	1.53	-2.81	0.66	21.5
	2014-10-10	52.0	1.53	-2.44	0.66	21.2
	2014-10-15	52.2	1.52	-2.06	0.00	20.7
	2014-10-21	51.4	1.50	-3.56	-1.32	20.7
	2014-10-24	51.7	1.51	-3.00	-0.66	19.8
2437	Tolerances			±5 %	±5 %	
	Recommended value	52.7	1.94			
	2014-10-03	51.5	1.92	-2.28	-1.03	22.2
	2014-10-06	50.8	1.91	-3.61	-1.55	22.2

Dielectric parameter data for the band edges is given in Appendix C.

5. DESCRIPTION OF THE TEST PROCEDURE

5.1 Device Holder

The device was placed in the device holder (illustrated below) that is supplied by SPEAG as an integral part of the Dasy system.

Device holder supplied by SPEAG

A spacer (illustrated below) was used to position the device within the SPEAG holder. The spacer positions the device so that the holder has minimal effect on the test results but still holds the device securely. The spacer was removed before the tests.

Spacer

5.2 Test Positions

5.2.1 Against Phantom Head

Measurements were made in “cheek” and “tilt” positions on both the left hand and right hand sides of the phantom.

The positions used in the measurements were according to IEEE 1528 "IEEE Recommended Practice for Determining the Peak Spatial-Average Specific Absorption Rate (SAR) in the Human Head from Wireless Communications Devices: Measurement Techniques".

5.2.2 Body Worn Configuration

The device was placed in the SPEAG holder using the spacer and placed below the flat phantom. The distance between the device and the phantom was kept at the separation distance indicated in Section 1.2 using a separate flat spacer that was removed before the start of the measurements. The device was oriented with both sides facing the phantom to find the highest results.

Microsoft body-worn accessories are commonly available for the separation distance used in this testing.

5.2.3 Wireless Router Configuration

The device was placed in the SPEAG holder and, in sequence, the back, display and each of the 4 edges was positioned 10.0mm away from the flat phantom. The spacer was removed before the start of the measurements.

5.3 Scan Procedures

First, area scans were used for determination of the field distribution. Next, a zoom scan, a minimum of 5x5x7 points covering a volume of at least 30x30x30mm, was performed around the highest E-field value to determine the averaged SAR value. Drift was determined by measuring the same point at the start of the area scan and again at the end of the zoom scan. Fast SAR is measured according to the KDB 447498 D01 General RF Exposure Guidance v05r01.

5.4 SAR Averaging Methods

The maximum SAR value was averaged over a cube of tissue using interpolation and extrapolation.

The interpolation, extrapolation and maximum search routines within Dasy4 are all based on the modified Quadratic Shepard's method (Robert J. Renka,"Multivariate Interpolation Of Large Sets Of Scattered Data", University of North Texas ACM Transactions on Mathematical Software, vol. 14, no. 2, June 1988, pp. 139-148).

The interpolation scheme combines a least-square fitted function method with a weighted average method. A trivariate 3-D / bivariate 2-D quadratic function is computed for each measurement point and fitted to neighbouring points by a least-square method. For the zoom scan, inverse distance weighting is incorporated to fit distant points more accurately. The interpolating function is finally calculated as a weighted average of the quadratics.

In the zoom scan, the interpolation function is used to extrapolate the Peak SAR from the deepest measurement points to the inner surface of the phantom.

6. MEASUREMENT UNCERTAINTY

Table 6.1 – Measurement uncertainty evaluation for 1g Full SAR in 0.3-6GHz range

Uncertainty Component	Section in IEEE 1528	Tol. (%)	Prob Dist	Div	c_i	$c_i .u_i$ (%)	v_i
Measurement System							
Probe Calibration	E2.1	±6.6	N	1	1	±6.6	∞
Axial Isotropy	E2.2	±4.7	R	√3	$(1-c_p)^{1/2}$	±1.9	∞
Hemispherical Isotropy	E2.2	±9.6	R	√3	$(c_p)^{1/2}$	±3.9	∞
Boundary Effect	E2.3	±2.0	R	√3	1	±1.2	∞
Linearity	E2.4	±4.7	R	√3	1	±2.7	∞
System Detection Limits	E2.5	±1.0	R	√3	1	±0.6	∞
Modulation response	E2.5	±2.4	R	√3	1	±1.4	
Readout Electronics	E2.6	±0.3	N	1	1	±0.3	∞
Response Time	E2.7	±0.8	R	√3	1	±0.5	∞
Integration Time	E2.8	±2.6	R	√3	1	±1.5	∞
RF Ambient Conditions - Noise	E6.1	±3.0	R	√3	1	±1.7	∞
RF Ambient Conditions - Reflections	E6.1	±3.0	R	√3	1	±1.7	∞
Probe Positioner Mechanical Tolerance	E6.2	±0.8	R	√3	1	±0.5	∞
Probe Positioning with respect to Phantom Shell	E6.3	±6.7	R	√3	1	±3.9	∞
Extrapolation, interpolation and Integration Algorithms for Max. SAR Evaluation	E5	±4.0	R	√3	1	±2.3	∞
Test sample Related							
Test Sample Positioning	E4.2	±6.0	N	1	1	±6.0	11
Device Holder Uncertainty	E4.1	±3.6	N	1	1	±3.6	5
Output Power Variation - SAR drift measurement	E2.9	±5.0	R	√3	1	±2.9	∞
Phantom and Tissue Parameters							
Phantom Uncertainty (shape and thickness tolerances)	E3.1	±6.6	R	√3	1	±3.8	∞
SAR correction	E3.2	±1.9	R	√3	1	±1.1	∞
Conductivity Target - tolerance	E3.4	±5.0	R	√3	0.6	±1.8	∞
Conductivity - measurement uncertainty	E3.3	±5.5	N	1	0.6	±3.5	5
Permittivity Target - tolerance	E3.4	±5.0	R	√3	0.6	±1.7	∞
Permittivity - measurement uncertainty	E3.3	±2.9	N	1	0.6	±1.7	5
Combined Standard Uncertainty			RSS			**±14.0**	198
Coverage Factor for 95%			**k=2**				
Expanded Uncertainty						**±28.2**	

Table 6.2 – Measurement uncertainty evaluation for 1g Fast SAR in 0.3-6GHz range

Relative DASY5 Uncertainty Budget for Fast SAR Tests According to IEEE 1528/2011 and IEC 62209-1/2011 (0.3-6 GHz range)						
Uncertainty Component	**Tol. (%)**	**Prob Dist.**	**Div.**	c_i	$c_i . u_i$ (%)	v_i
Measurement System						
Probe Calibration	±6.6	N	1	0		
Axial Isotropy	±4.7	R	√3	$(1-c_p)^{1/2}$	±1.9	∞
Hemispherical Isotropy	±9.6	R	√3	$(c_p)^{1/2}$	±3.9	∞
Boundary Effect	±2.0	R	√3	1	±1.2	∞
Linearity	±4.7	R	√3	1	±2.7	∞
System Detection Limits	±1.0	R	√3	1	±0.6	∞
Modulation Response	±2.4	R	√3	1	±1.4	∞
Readout Electronics	±0.3	N	1	0		
Response Time	±0.8	R	√3	0		
Integration Time	±2.6	R	√3	1	±1.5	∞
RF Ambient Conditions - Noise	±3.0	R	√3	1	±1.7	∞
RF Ambient Conditions - Reflections	±3.0	R	√3	0		
Probe Positioner Mechanical Tolerance	±0.8	R	√3	1	±0.5	∞
Probe Positioning with respect to Phantom Shell	±6.7	R	√3	1	±3.9	∞
Spatial x-y Resolution	±10.0	R	√3	1	±5.8	∞
Fast SAR z Approximation	±14.0	R	√3	1	±8.1	∞
Test sample Related						
Test Sample Positioning	±6.0	N	1	1	±6.0	12
Device Holder Uncertainty	±3.6	N	1	1	±3.6	5
Output Power Variation - SAR drift measurement	±5.0	R	√3	1	±2.9	∞
Power Scaling	±0	R	√3	0		
Phantom and Setup						
Phantom Uncertainty (shape and thickness tolerances)	±6.6	R	√3	1	±3.8	∞
SAR correction	±1.9	R	√3	0		
Conductivity Target - tolerance	±1.9	R	√3	0		
Conductivity - measurement uncertainty	±5.0	R	√3	0		
Permittivity Target - tolerance	±5.5	N	1	0		
Permittivity - measurement uncertainty	±5.0	R	√3	0		
Combined Standard Uncertainty		RSS			**±14.9**	748
Coverage Factor for 95%		**k=2**				
Expanded Uncertainty					**±29.8**	

7. RESULTS

7.1 The measured Head SAR values for the test device are tabulated below:

LTE750 (Band 13) Head SAR results

Mode	Device orientation	SAR measurement	Measured 1g SAR [W/kg]			Reported* 1g SAR [W/kg]			Max Deviation (Estimated SAR - Full SAR) [W/kg]	Plot #
				Ch 23230 782.0 MHz			Ch 23230 782.0 MHz			
10MHz Ch BW 1RB 100% offset	Tuning Target + Tolerance [dBm]		23.4			Scaling factor*				
	Conducted Power [dBm]		-	23.0	-	-	0.4	-	dB	
	Time-averaged Power [dBm]		-	23.0	-	-	1.10	-	Lin	
	Left Cheek	Estimated SAR	-	0.366	-	-	0.401	-	0.02	1
		Full SAR	-	0.389	-	-	**0.427**	-		
	Left Tilt	Estimated SAR	-	0.194	-	-	0.213	-	-	-
		Full SAR	-	-	-	-	-	-		
	Right Cheek	Estimated SAR	-	0.288	-	-	0.316	-	-	-
		Full SAR	-	-	-	-	-	-		
	Right Tilt	Estimated SAR	-	0.202	-	-	0.221	-	-	-
		Full SAR	-	-	-	-	-	-		
Mode	**Device orientation**	**SAR measurement**	**Measured 1g SAR [W/kg]**			**Reported* 1g SAR [W/kg]**			**Max Deviation (Estimated SAR - Full SAR) [W/kg]**	**Plot #**
				Ch 23230 782.0 MHz			**Ch 23230 782.0 MHz**			
10MHz Ch BW 50% RB 100% offset	Tuning Target + Tolerance [dBm]		23.4			Scaling factor*				
	Conducted Power [dBm]		-	23.2	-	0.0	0.2	0.0	dB	
	Time-averaged Power [dBm]		-	23.2	-	1.00	1.05	1.00	Lin	
	Left Cheek	Estimated SAR	-	0.278	-	-	0.291	-	-	-
		Full SAR	-	-	-	-	-	-		
	Left Tilt	Estimated SAR	-	0.153	-	-	0.160	-	-	-
		Full SAR	-	-	-	-	-	-		
	Right Cheek	Estimated SAR	-	0.224	-	-	0.235	-	-	-
		Full SAR	-	-	-	-	-	-		
	Right Tilt	Estimated SAR	-	0.155	-	-	0.162	-	-	-
		Full SAR	-	-	-	-	-	-		

CDMA800 (BC0) Head SAR results

Mode	Device orientation	SAR measurement	Measured 1g SAR [W/kg]			Reported* 1g SAR [W/kg]			Max Deviation (Estimated SAR - Full SAR) [W/kg]	Plot #
			Ch 1013 824.7 MHz	Ch 384 836.5 MHz	Ch 777 848.3 MHz	Ch 1013 824.7 MHz	Ch 384 836.5 MHz	Ch 777 848.3 MHz		
RC3/ SO55	Tuning Target + Tolerance [dBm]		24.4			Scaling factor*				
	Conducted Power [dBm]		23.9	23.9	24.0	0.5	0.5	0.4	dB	
	Time-averaged power [dBm]		23.9	23.9	24.0	1.11	1.13	1.11	Lin	
	Left Cheek	Estimated SAR	0.744	0.703	0.674	0.829	0.793	0.747	0.04	2
		Full SAR	0.781	-	-	**0.870**	-	-		
	Left Tilt	Estimated SAR	-	0.441	-	-	0.498	-	-	-
		Full SAR	-	-	-	-	-	-		
	Right Cheek	Estimated SAR	-	0.591	-	-	0.667	-	-	-
		Full SAR	-	-	-	-	-	-		
	Right Tilt	Estimated SAR	-	0.416	-	-	0.469	-	-	-
		Full SAR	-	-	-	-	-	-		

GSM/GPRS/EGPRS850MHz Head SAR results

Mode	Device orientation	SAR measurement	Measured 1g SAR [W/kg]			Reported* 1g SAR [W/kg]			Max Deviation (Estimated SAR - Full SAR) [W/kg]	Plot #
			Ch 128 824.2 MHz	Ch 190 836.6 MHz	Ch 251 848.8 MHz	Ch 128 824.2 MHz	Ch 190 836.6 MHz	Ch 251 848.8 MHz		
2-slot GPRS	Tuning Target + Tolerance [dBm]		30.4			Scaling factor*				
	Conducted Slot Average Power [dBm]		30.0	29.9	29.8	0.4	0.5	0.6	dB	
	Time-averaged power [dBm]		24.0	23.9	23.8	1.10	1.12	1.15	Lin	
	Left Cheek	Estimated SAR	0.754	0.749	0.758	0.827	0.840	0.870	0.02	3
		Full SAR	-	-	0.774	-	-	**0.889**		
	Left Tilt	Estimated SAR	-	0.486	-	-	0.545	-	-	-
		Full SAR	-	-	-	-	-	-		
	Right Cheek	Estimated SAR	-	0.597	-	-	0.670	-	-	-
		Full SAR	-	-	-	-	-	-		
	Right Tilt	Estimated SAR	-	0.485	-	-	0.544	-	-	-
		Full SAR	-	-	-	-	-	-		
2-slot 8PSK EGPRS	Tuning Target + Tolerance [dBm]		24.4			Scaling factor*				
	Conducted Slot Average Power [dBm]		24.4	24.3	24.2	0.0	0.1	0.2	dB	
	Time-averaged power [dBm]		18.4	18.3	18.2	1.00	1.02	1.05	Lin	
	Left Cheek	Estimated SAR	-	-	0.179	-	-	0.187	-	-
		Full SAR	-	-	-	-	-	-		

WCDMA850 (Band 5) Head SAR results

Mode	Device orientation	SAR measurement	Measured 1g SAR [W/kg]			Reported* 1g SAR [W/kg]			Max Deviation (Estimated SAR - Full SAR)	Plot #
			Ch 4132 826.4 MHz	Ch 4175 835.0 MHz	Ch 4233 846.6 MHz	Ch 4132 826.4 MHz	Ch 4175 835.0 MHz	Ch 4233 846.6 MHz	[W/kg]	
WCDMA	Tuning Target + Tolerance [dBm]		24.4			Scaling factor*				
	Conducted Power [dBm]		23.7	23.8	23.8	0.7	0.6	0.6	dB	
	Time-averaged power [dBm]		23.7	23.8	23.8	1.17	1.15	1.15	Lin	
	Left Cheek	Estimated SAR	0.679	0.674	0.664	0.798	0.774	0.762	0.04	4
		Full SAR	0.715	-	-	**0.840**	-	-		
	Left Tilt	Estimated SAR	-	0.458	-	-	0.526	-	-	-
		Full SAR	-	-	-	-	-	-		
	Right Cheek	Estimated SAR	-	0.524	-	-	0.602	-	-	-
		Full SAR	-	-	-	-	-	-		
	Right Tilt	Estimated SAR	-	0.403	-	-	0.463	-	-	-
		Full SAR	-	-	-	-	-	-		

LTE1700/2100 (Band 4) Head SAR results

Mode	Device orientation	SAR measurement	Measured 1g SAR [W/kg]			Reported* 1g SAR [W/kg]			Max Deviation (Estimated SAR - Full SAR) [W/kg]	Plot #
			Ch 20050 1720.0 MHz	Ch 20175 1732.5 MHz	Ch 20300 1745.0 MHz	Ch 20050 1720.0 MHz	Ch 20175 1732.5 MHz	Ch 20300 1745.0 MHz		
20MHz Ch BW 1RB 50% offset	Tuning Target + Tolerance [dBm]		23.9			Scaling factor*				
	Conducted Power [dBm]		23.4	23.5	23.4	0.5	0.4	0.5	dB	
	Time-averaged Power [dBm]		23.4	23.5	23.4	1.12	1.10	1.11	Lin	
	Left Cheek	Estimated SAR	-	0.437	-	-	0.481	-	-	-
		Full SAR	-	-	-	-	-	-		
	Left Tilt	Estimated SAR	-	0.235	-	-	0.259	-	-	-
		Full SAR	-	-	-	-	-	-		
	Right Cheek	Estimated SAR	-	0.482	-	-	0.531	-	0.01	5
		Full SAR	-	0.493	-	-	**0.543**	-		
	Right Tilt	Estimated SAR	-	0.255	-	-	0.281	-	-	-
		Full SAR	-	-	-	-	-	-		

Mode	Device orientation	SAR measurement	Measured 1g SAR [W/kg]			Reported* 1g SAR [W/kg]			Max Deviation (Estimated SAR - Full SAR) [W/kg]	Plot #
			Ch 20050 1720.0 MHz	Ch 20175 1732.5 MHz	Ch 20300 1745.0 MHz	Ch 20050 1720.0 MHz	Ch 20175 1732.5 MHz	Ch 20300 1745.0 MHz		
20MHz Ch BW 50% RB 100% offset	Tuning Target + Tolerance [dBm]		23.9			Scaling factor*				
	Conducted Power [dBm]		23.5	23.4	23.5	0.4	0.5	0.4	dB	
	Time-averaged Power [dBm]		23.5	23.4	23.5	1.10	1.12	1.10	Lin	
	Left Cheek	Estimated SAR	0.349	-	-	0.385	-	-	-	-
		Full SAR	-	-	-	-	-	-		
	Left Tilt	Estimated SAR	0.179	-	-	0.198	-	-	-	-
		Full SAR	-	-	-	-	-	-		
	Right Cheek	Estimated SAR	0.339	-	-	0.374	-	-	-	-
		Full SAR	-	-	-	-	-	-		
	Right Tilt	Estimated SAR	0.207	-	-	0.229	-	-	-	-
		Full SAR	-	-	-	-	-	-		

CDMA1900 (BC1) Head SAR results

Mode	Device orientation	SAR measurement	Measured 1g SAR [W/kg]			Reported* 1g SAR [W/kg]			Max Deviation (Estimated SAR - Full [W/kg]	Plot #
			Ch 25 1851.25 MHz	Ch 600 1880.0 MHz	Ch 1175 1908.75 MHz	Ch 25 1851.25 MHz	Ch 600 1880.0 MHz	Ch 1175 1908.75 MHz		
RC3/ SO55	Tuning Target + Tolerance [dBm]		23.9			Scaling factor*				
	Conducted Power [dBm]		23.2	23.3	23.4	0.7	0.6	0.5	dB	
	Time-averaged power [dBm]		23.2	23.3	23.4	1.17	1.14	1.11	Lin	
	Left Cheek	Estimated SAR	-	0.237	-	-	0.269	-	-	-
		Full SAR	-	-	-	-	-	-		
	Left Tilt	Estimated SAR	-	0.096	-	-	0.109	-	-	-
		Full SAR	-	-	-	-	-	-		
	Right Cheek	Estimated SAR	0.231	0.294	0.160	0.270	0.334	0.178	0.02	6
		Full SAR	-	0.314	-	-	**0.357**	-		
	Right Tilt	Estimated SAR	-	0.074	-	-	0.084	-	-	-
		Full SAR	-	-	-	-	-	-		
Mode	Device orientation	SAR measurement	Measured 1g SAR [W/kg]			Reported* 1g SAR [W/kg]			Max Deviation (Estimated SAR - Full [W/kg]	Plot #
			Ch 25 1851.25 MHz	Ch 600 1880.0 MHz	Ch 1175 1908.75 MHz	Ch 25 1851.25 MHz	Ch 600 1880.0 MHz	Ch 1175 1908.75 MHz		
RC1/ SO55	Tuning Target + Tolerance [dBm]		23.9			Scaling factor*				
	Conducted Power [dBm]		23.4	23.5	-	0.5	0.4	-	dB	
	Time-averaged power [dBm]		23.4	23.5	-	1.12	1.10	-	Lin	
	Right Cheek	Estimated SAR	0.280	0.260	-	0.314	0.285	-	-	-
		Full SAR	-	-	-	-	-	-		
Mode	Device orientation	SAR measurement	Measured 1g SAR [W/kg]			Reported* 1g SAR [W/kg]			Max Deviation (Estimated SAR - Full [W/kg]	Plot #
			Ch 25 1851.25 MHz	Ch 600 1880.0 MHz	Ch 1175 1908.75 MHz	Ch 25 1851.25 MHz	Ch 600 1880.0 MHz	Ch 1175 1908.75 MHz		
EVDO Rev 0 Data rate 19.2	Tuning Target + Tolerance [dBm]		23.9			Scaling factor*				
	Conducted Power [dBm]				23.7	23.9	23.9	0.2	dB	
	Time-averaged power [dBm]		0.0	0.0	23.7	245.47	245.47	1.05	Lin	
	Right Cheek	Estimated SAR	-	-	0.168	-	-	0.176	-	-
		Full SAR	-	-	-	-	-	-		

GSM/GPRS/EGPRS1900 Head SAR results

Mode	Device orientation	SAR measurement	Measured 1g SAR [W/kg]			Reported* 1g SAR [W/kg]			Max Deviation (Estimated SAR - Full SAR) [W/kg]	Plot #
			Ch 512 1850.2 MHz	Ch 661 1880.0 MHz	Ch 810 1909.8 MHz	Ch 512 1850.2 MHz	Ch 661 1880.0 MHz	Ch 810 1909.8 MHz		
2-slot GPRS	**Tuning Target + Tolerance [dBm]**		**27.4**			**Scaling factor***				
	Conducted Slot Average Power [dBm]		**27.4**	**27.3**	**27.4**	**0.0**	**0.1**	**0.0**	**dB**	
	Time-averaged power [dBm]		**21.4**	**21.3**	**21.4**	**1.00**	**1.02**	**1.00**	**Lin**	
	Left Cheek	Estimated SAR	0.287	0.269	0.252	0.287	0.275	0.252	0.00	7
		Full SAR	0.286	-	-	**0.286**	-	-		
	Left Tilt	Estimated SAR	-	0.063	-	-	0.065	-	-	-
		Full SAR	-	-	-	-	-	-		
	Right Cheek	Estimated SAR	-	0.149	-	-	0.152	-	-	-
		Full SAR	-	-	-	-	-	-		
	Right Tilt	Estimated SAR	-	0.054	-	-	0.055	-	-	-
		Full SAR	-	-	-	-	-	-		
4-slot 8PSK EGPRS	**Tuning Target + Tolerance [dBm]**		**20.4**			**Scaling factor***				
	Conducted Slot Average Power [dBm]		**20.3**	**20.2**	**20.3**	**0.1**	**0.2**	**0.1**	**dB**	
	Time-averaged power [dBm]		**17.3**	**17.2**	**17.3**	**1.02**	**1.05**	**1.02**	**Lin**	
	Left Cheek	Estimated SAR	0.117	-	-	0.119	-	-	-	-
		Full SAR	-	-	-	-	-	-		

WCDMA1900 (Band 2) Head SAR results

Mode	Device orientation	SAR measurement	Measured 1g SAR [W/kg]			Reported* 1g SAR [W/kg]			Max Deviation (Estimated SAR - Full SAR) [W/kg]	Plot #
			Ch 9262 1852.4 MHz	Ch 9400 1880.0 MHz	Ch 9538 1907.6 MHz	Ch 9262 1852.4 MHz	Ch 9400 1880.0 MHz	Ch 9538 1907.6 MHz		
WCDMA	Tuning Target + Tolerance [dBm]		24.4			Scaling factor*				
	Conducted Power [dBm]		23.7	23.8	24.0	0.7	0.6	0.4	dB	
	Time-averaged power [dBm]		23.7	23.8	24.0	1.17	1.15	1.10	Lin	
	Left Cheek	Estimated SAR	0.457	0.447	0.375	0.537	0.513	0.411	0.00	8
		Full SAR	0.459	-	-	**0.539**	-	-		
	Left Tilt	Estimated SAR	-	0.110	-	-	0.126	-	-	-
		Full SAR	-	-	-	-	-	-		
	Right Cheek	Estimated SAR	-	0.280	-	-	0.321	-	-	-
		Full SAR	-	-	-	-	-	-		
	Right Tilt	Estimated SAR	-	0.092	-	-	0.105	-	-	-
		Full SAR	-	-	-	-	-	-		

LTE1900 (Band 2) Head SAR results

Mode	Device orientation	SAR measurement	Measured 1g SAR [W/kg]			Reported* 1g SAR [W/kg]			Max Deviation (Estimated SAR - Full SAR)	Plot #
			Ch 18700 1860.0 MHz	Ch 18900 1880.0 MHz	Ch 19100 1900.0 MHz	Ch 18700 1869.0 MHz	Ch 18900 1880.0 MHz	Ch 19100 1900.0 MHz	[W/kg]	
20MHz Ch BW 1RB 50% offset	Tuning Target + Tolerance [dBm]		23.4			Scaling factor*				
	Conducted Power [dBm]		23.0	23.0	23.0	0.4	0.4	0.4	dB	
	Time-averaged Power [dBm]		23.0	23.0	23.0	1.11	1.09	1.11	Lin	
	Left Cheek	Estimated SAR	-	0.234	-	-	0.256	-	-	
		Full SAR	-	-	-	-	-	-		
	Left Tilt	Estimated SAR	-	0.086	-	-	0.094	-	-	
		Full SAR	-	-	-	-	-	-		
	Right Cheek	Estimated SAR	0.134	0.262	0.110	0.148	0.287	0.122	0.00	9
		Full SAR	-	0.265	-	-	**0.290**	-		
	Right Tilt	Estimated SAR	-	0.065	-	-	0.071	-	-	
		Full SAR	-	-	-	-	-	-		

Mode	Device orientation	SAR measurement	Measured 1g SAR [W/kg]			Reported* 1g SAR [W/kg]			Max Deviation (Estimated SAR - Full SAR)	Plot #
			Ch 18700 1860.0 MHz	Ch 18900 1880.0 MHz	Ch 19100 1900.0 MHz	Ch 18700 1869.0 MHz	Ch 18900 1880.0 MHz	Ch 19100 1900.0 MHz	[W/kg]	
20MHz Ch BW 50% RB 100% offset	Tuning Target + Tolerance [dBm]		23.4			Scaling factor*				
	Conducted Power [dBm]		23.0	22.9	22.9	0.4	0.5	0.5	dB	
	Time-averaged Power [dBm]		23.0	22.9	22.9	1.10	1.12	1.13	Lin	
	Left Cheek	Estimated SAR	0.247	-	-	0.271	-	-	-	
		Full SAR		-	-	-	-	-		
	Left Tilt	Estimated SAR	0.073	-	-	0.080	-	-	-	
		Full SAR		-	-	-	-	-		
	Right Cheek	Estimated SAR	0.223	-	-	0.245	-	-	-	
		Full SAR		-	-	-	-	-		
	Right Tilt	Estimated SAR	0.062	-	-	0.068	-	-	-	
		Full SAR		-	-	-	-	-		

2450MHz Head SAR results

Mode	Device orientation	SAR measurement	Measured 1g SAR [W/kg]			Reported* 1g SAR [W/kg]			Max Deviation (Estimated SAR - Full SAR) [W/kg]	Plot #
			Ch 2 2417.0 MHz	Ch 6 2437.0 MHz	Ch 10 2457.0 MHz	Ch 2 2417.0 MHz	Ch 6 2437.0 MHz	Ch 10 2457.0 MHz		
WLAN b-mode BPSK 1Mbps	Tuning Target + Tolerance [dBm]		18.0			Scaling factor*				
	Conducted Slot Average Power [dBm]		16.9	16.9	16.9	1.1	1.1	1.1	dB	
	Time-averaged power [dBm]		16.9	16.9	16.9	1.29	1.29	1.29	Lin	
	Left Cheek	Estimated SAR	0.461	0.479	0.414	0.594	0.617	0.533	0.01	10
		Full SAR	-	0.487	-	-	**0.627**	-		
	Left Tilt	Estimated SAR	-	0.383	-	-	0.493	-	-	-
		Full SAR	-	-	-	-	-	-		
	Right Cheek	Estimated SAR	-	0.248	-	-	0.319	-	-	-
		Full SAR	-	-	-	-	-	-		
	Right Tilt	Estimated SAR	-	0.293	-	-	0.377	-	-	-
		Full SAR	-	-	-	-	-	-		

Simultaneous transmissions: Combined SAR results – Individual band Max results

Test configuration	Max. Reported* 1g SAR results									
	WLAN 2450	LTE 750	CDMA 800	2-slot GPRS 850	WCDMA 850	LTE 1700/ 2100	CDMA 1900	2-slot GPRS 1900	WCDMA 1900	LTE 1900
Left, Cheek	0.627	0.427	0.870	0.889	0.840	0.481	0.269	0.286	0.539	0.271
Left, Tilt	0.493	0.213	0.498	0.545	0.526	0.259	0.109	0.065	0.126	0.094
Right, Cheek	0.319	0.316	0.667	0.670	0.602	0.543	0.357	0.152	0.321	0.290
Right, Tilt	0.377	0.221	0.469	0.544	0.463	0.281	0.084	0.055	0.105	0.071

Simultaneous transmissions: Combined SAR results – Max + Max combined results

Test configuration	Max. Reported* 1g SAR results								
	LTE750 + WLAN 2450	CDMA800 + WLAN 2450	2-slot GPRS850 + WLAN 2450	WCDMA 850 + WLAN 2450	LTE1700/ 2100 + WLAN 2450	CDMA 1900 + WLAN 2450	2-slot GPRS 1900 + WLAN 2450	WCDMA 1900 + WLAN 2450	LTE1900 + WLAN 2450
Left, Cheek	**1.05**	**1.50**	**1.52**	**1.47**	**1.11**	**0.896**	**0.913**	**1.17**	**0.898**
Left, Tilt	0.706	0.991	1.04	1.02	0.752	0.602	0.558	0.619	0.587
Right, Cheek	0.635	0.986	0.989	0.921	0.862	0.676	0.471	0.640	0.609
Right, Tilt	0.598	0.846	0.921	0.840	0.658	0.461	0.432	0.482	0.448

Note: Simultaneous Transmission Procedures as described in KDB648474 are not required for this product.

7.1.1 Combined Head SAR data

The Combined SAR data given in the tables below has been voluntarily calculated and should be ignored for FCC certification.

The following table gives a more accurate assessment of the SAR values for simultaneous transmission. These values have been calculated using the SPEAG Combined Multiband algorithm, which is based on area scans. It a) converts the 2D area scans into 3D volume scans by assuming frequency-dependent decay characteristics for the E-field, b) sums the SAR values for WLAN2450 and the cellular bands point-by-point and c) calculates the combined average SAR values.

Simultaneous transmissions: Combined SAR results – SPEAG Combined Multiband algorithm results

Test configuration	Max. Reported* 1g SAR results								
	LTE750 + WLAN 2450	CDMA800 + WLAN 2450	2-slot GPRS850 + WLAN 2450	WCDMA 850 + WLAN 2450	LTE1700/ 2100 + WLAN 2450	CDMA 1900 + WLAN 2450	2-slot GPRS1900 + WLAN 2450	WCDMA 1900 + WLAN 2450	LTE1900 + WLAN 2450
Left, Cheek	0.686	0.825	**0.870**	0.793	0.664	0.655	0.634	0.652	0.639
Left, Tilt	-	-	-	-	-	-	-	-	-
Right, Cheek	-	-	-	-	-	-	-	-	-
Right, Tilt	-	-	-	-	-	-	-	-	-

Maximum of the Combined SAR values, namely 2-slot GPRS850 + WLAN2450, in the above table is less than the maximum SAR value for the contributing cellular band. This is due to a) minimal overlap of the SAR distributions of the cellular band with WLAN2450 and b) uncertainties associated with the different methods of calculation. In this case, the maximum SAR values given for the combined Mode in the Summary table in Section 1.2.1 is that for the individual cellular band 2-slot GPRS850.

Note:
* Reported SAR values are scaled to, or measured at, upper limit of power tuning tolerance.
Highest result within individual zoom scan or individual expanded zoom scan results is given in Section 1.2 for each transmitter. Highest result within contributing individual zoom scan, individual expanded zoom scan, Speag combined algorithm or combined expanded zoom scan result is given in Section for the maximum simultaneous transmitter combination.

7.2 The measured Body SAR values for the test device are tabulated below:

LTE750 (Band 13) Body SAR results

Mode	Test configuration		SAR measurement	Measured 1g SAR [W/kg]			Reported* 1g SAR [W/kg]			Max Deviation (Estimated SAR - Full SAR) [W/kg]	Plot #
					Ch 23230 782.0 MHz			Ch 23230 782.0 MHz			
10MHz Ch BW 1RB 100% offset	Tuning Target + Tolerance [dBm]			23.4			Scaling factor*				
	Conducted Power [dBm]			-	23.0	-	-	0.4	-	dB	
	Time-averaged power [dBm]			-	23.0	-	-	1.10	-	Lin	
	Back	Without headset	Estimated SAR	-	0.316	-	-	0.346	-	-	-
			Full SAR	-	-	-	-	-	-		
	Display	Without headset	Estimated SAR	-	0.328	-	-	0.360	-	0.01	11
			Full SAR	-	0.336	-	-	**0.368**	-		
Mode	Test configuration		SAR measurement	Measured 1g SAR [W/kg]			Reported* 1g SAR [W/kg]			Max Deviation (Estimated SAR - Full SAR) [W/kg]	Plot #
					Ch 23230 782.0 MHz			Ch 23230 782.0 MHz			
10MHz Ch BW 50% RB 100% offset	Tuning Target + Tolerance [dBm]			23.4			Scaling factor*				
	Conducted Power [dBm]			-	23.4	-	-	0.0	-	dB	
	Time-averaged power [dBm]			-	23.4	-	-	1.00	-	Lin	
	Back	Without headset	Estimated SAR	-	0.245	-	-	0.245	-	-	-
			Full SAR	-	-	-	-	-	-		
	Display	Without headset	Estimated SAR	-	0.257	-	-	0.257	-	-	-
			Full SAR	-	-	-	-	-	-		

CDMA800 (BC0) Body SAR results

Mode	Device orientation		SAR measurement	Measured 1g SAR [W/kg]			Reported* 1g SAR [W/kg]			Max Deviation (Estimated SAR - Full SAR) [W/kg]	Plot #
				Ch 1013 824.7 MHz	Ch 384 836.5 MHz	Ch 777 848.3 MHz	Ch 1013 824.7 MHz	Ch 384 836.5 MHz	Ch 777 848.3 MHz		
RC3/ SO55	Tuning Target + Tolerance [dBm]			24.4			Scaling factor*				
	Conducted Slot Average Power [dBm]			23.9	23.9	24.0	0.5	0.5	0.4	dB	
	Time-averaged power [dBm]			23.9	23.9	24.0	1.11	1.13	1.11	Lin	
	Back	Without headset	Estimated SAR	-	0.567	-	-	0.640	-	-	-
			Full SAR	-	-	-	-	-	-		
	Display	Without headset	Estimated SAR	0.633	0.608	0.595	0.705	0.686	0.659	0.02	12
			Full SAR	0.652	-	-	**0.726**	-	-		

GSM/GPRS/EGPRS850 Body SAR results

Mode	Device orientation		SAR measurement	Measured 1g SAR [W/kg]			Reported* 1g SAR [W/kg]			Max Deviation (Estimated SAR - Full SAR) [W/kg]	Plot #
				Ch 128 824.2 MHz	Ch 190 836.6 MHz	Ch 251 848.8 MHz	Ch 128 824.2 MHz	Ch 190 836.6 MHz	Ch 251 848.8 MHz		
2-slot GPRS	Tuning Target + Tolerance [dBm]			30.4			Scaling factor*				
	Conducted Slot Average Power [dBm]			30.0	29.9	29.8	0.4	0.5	0.6	dB	
	Time-averaged power [dBm]			24.0	23.9	23.8	1.10	1.12	1.15	Lin	
	Back	Without headset	Estimated SAR	-	0.637	-	-	0.715	-	-	-
			Full SAR	-	-	-	-	-	-		
	Display	Without headset	Estimated SAR	0.613	0.679	0.729	0.672	0.762	0.837	0.02	13
			Full SAR	-	-	0.745	-	-	**0.855**		

WCDMA850 (Band 5) Body SAR results

Mode	Device orientation		SAR measurement	Measured 1g SAR [W/kg]			Reported* 1g SAR [W/kg]			Max Deviation (Estimated SAR - Full SAR) [W/kg]	Plot #
				Ch 4132 826.4 MHz	Ch 4175 835.0 MHz	Ch 4233 846.6 MHz	Ch 4132 826.4 MHz	Ch 4175 835.0 MHz	Ch 4233 846.6 MHz		
WCDMA	Tuning Target + Tolerance [dBm]			24.4			Scaling factor*				
	Conducted Slot Average Power [dBm]			23.7	23.8	23.8	0.7	0.6	0.6	dB	
	Time-averaged power [dBm]			23.7	23.8	23.8	1.17	1.15	1.15	Lin	
	Back	Without headset	Estimated SAR	-	0.506	-	-	0.581	-	-	-
			Full SAR	-	-	-	-	-	-		
	Display	Without headset	Estimated SAR	0.538	0.553	0.567	0.632	0.635	0.651	0.02	14
			Full SAR	-	-	0.587	-	-	**0.674**		

LTE1700/2100 (Band 4) Body SAR results

Mode	Test configuration		SAR measurement	Measured 1g SAR [W/kg]			Reported* 1g SAR [W/kg]			Max Deviation (Estimated SAR - Full SAR)	Plot #
				Ch 20050 1720.0 MHz	Ch 20175 1732.5 MHz	Ch 20300 1745.0 MHz	Ch 20050 1720.0 MHz	Ch 20175 1732.5 MHz	Ch 20300 1745.0 MHz	[W/kg]	
20MHz Ch BW 1RB 50% offset	Tuning Target + Tolerance [dBm]			23.9			Scaling factor*				
	Conducted Power [dBm]			23.4	23.5	23.4	0.5	0.4	0.5	dB	
	Time-averaged power [dBm]			23.4	23.5	23.4	1.12	1.10	1.11	Lin	
	Back	Without headset	Estimated SAR	0.602	0.622	0.658	0.675	0.685	0.732	-	-
			Full SAR	-	-	0.652	-	-	0.725		
	Display	Without headset	Estimated SAR	0.690	0.746	0.789	0.774	0.822	0.877	0.08	15
			Full SAR	-	-	0.872	-	-	**0.969**		
	Repeated Display without headset		Estimated SAR	-	-	0.777	-	-	0.864	0.08	-
			Full SAR	-	-	0.855	-	-	0.951		

Mode	Test configuration		SAR measurement	Measured 1g SAR [W/kg]			Reported* 1g SAR [W/kg]			Max Deviation (Estimated SAR - Full SAR)	Plot #
				Ch 20050 1720.0 MHz	Ch 20175 1732.5 MHz	Ch 20300 1745.0 MHz	Ch 20050 1720.0 MHz	Ch 20175 1732.5 MHz	Ch 20300 1745.0 MHz	[W/kg]	
20MHz Ch BW 50% RB 100% offset	Tuning Target + Tolerance [dBm]			23.9			Scaling factor*				
	Conducted Power [dBm]			23.5	23.4	23.5	0.4	0.5	0.4	dB	
	Time-averaged power [dBm]			23.5	23.4	23.5	1.10	1.12	1.10	Lin	
	Back	Without headset	Estimated SAR	0.591	-	-	0.653	-	-	-	-
			Full SAR	-	-	-	-	-	-		
	Display	Without headset	Estimated SAR	0.566	-	-	0.625	-	-	-	-
			Full SAR	-	-	-	-	-	-		

Mode	Test configuration		SAR measurement	Measured 1g SAR [W/kg]			Reported* 1g SAR [W/kg]			Max Deviation (Estimated SAR - Full SAR)	Plot #
				Ch 20050 1720.0 MHz	Ch 20175 1732.5 MHz	Ch 20300 1745.0 MHz	Ch 20050 1720.0 MHz	Ch 20175 1732.5 MHz	Ch 20300 1745.0 MHz	[W/kg]	
20MHz Ch BW 100%RB	Tuning Target + Tolerance [dBm]			22.9			Scaling factor*				
	Conducted Power [dBm]			22.5	22.5	22.5	0.4	0.4	0.4	dB	
	Time-averaged power [dBm]			22.5	22.5	22.5	1.10	1.10	1.09	Lin	
	Display facing phantom	Without headset	Estimated SAR	-	-	0.653	-	-	0.714	-	-
			Full SAR	-	-	-	-	-	-		

CDMA1900 (BC1) Body SAR results

Mode	Device orientation		SAR measurement	Measured 1g SAR [W/kg]			Reported* 1g SAR [W/kg]			Max Deviation (Estimated SAR - Full SAR) [W/kg]	Plot #
				Ch 25 1851.25 MHz	Ch 600 1880.0 MHz	Ch 1175 1908.75 MHz	Ch 25 1851.25 MHz	Ch 600 1880.0 MHz	Ch 1175 1908.75 MHz		
RC3/ SO55	Tuning Target + Tolerance [dBm]			23.9			Scaling factor*				
	Conducted Slot Average Power [dBm]			23.2	23.3	23.4	0.7	0.6	0.5	dB	
	Time-averaged power [dBm]			23.2	23.3	23.4	1.17	1.14	1.11	Lin	
	Back	Without headset	Estimated SAR	-	0.463	-	-	0.528	-	0.04	-
			Full SAR	-	0.502	-	-	0.572	-		
	Display	Without headset	Estimated SAR	0.816	0.862	0.809	0.954	0.980	0.898	0.12	16
			Full SAR	0.934	0.970	0.910	1.09	**1.10**	1.01		
	Repeated Display facing phantom without headset		Estimated SAR	-	-	-	-	-	-	-	-
			Full SAR	-	0.928	-	-	1.05	-		

Mode	Device orientation	SAR measurement	Measured 1g SAR [W/kg]			Reported* 1g SAR [W/kg]			Max Deviation (Estimated SAR - Full SAR) [W/kg]	Plot #
			Ch 25 1851.25 MHz	Ch 600 1880.0 MHz	Ch 1175 1908.75 MHz	Ch 25 1851.25 MHz	Ch 600 1880.0 MHz	Ch 1175 1908.75 MHz		
RC1/ SO55	Tuning Target + Tolerance [dBm]		23.9			Scaling factor*				
	Conducted Slot Average Power [dBm]		23.4	23.5		0.5	0.4	23.9	dB	
	Time-averaged power [dBm]		23.4	23.5	0.0	1.12	1.10	245.47	Lin	
	Display Without headset	Estimated SAR	0.562	0.572	-	0.631	0.627	-	-	-
		Full SAR	-	-	-	-	-	-		

Mode	Device orientation	SAR measurement	Measured 1g SAR [W/kg]			Reported* 1g SAR [W/kg]			Max Deviation (Estimated SAR - Full SAR) [W/kg]	Plot #
			Ch 25 1851.25 MHz	Ch 600 1880.0 MHz	Ch 1175 1908.75 MHz	Ch 25 1851.25 MHz	Ch 600 1880.0 MHz	Ch 1175 1908.75 MHz		
EVDO Rev 0 Data rate 19.2	Tuning Target + Tolerance [dBm]		23.9			Scaling factor*				
	Conducted Slot Average Power [dBm]				23.7	23.9	23.9	0.2	dB	
	Time-averaged power [dBm]		0.0	0.0	23.7	245.47	245.47	1.05	Lin	
	Display Without headset	Estimated SAR	-	-	0.521	-	-	0.546	-	-
		Full SAR	-	-	-	-	-	-		

GSM/GPRS/EGPRS1900 Body SAR results

Mode	Device orientation		SAR measurement	Measured 1g SAR [W/kg]			Reported* 1g SAR [W/kg]			Max Deviation (Estimated SAR - Full SAR)	Plot #
				Ch 512 1850.2 MHz	Ch 661 1880.0 MHz	Ch 810 1909.8 MHz	Ch 512 1850.2 MHz	Ch 661 1880.0 MHz	Ch 810 1909.8 MHz		
2-slot GPRS	Tuning Target + Tolerance [dBm]			27.4			Scaling factor*				
	Conducted Slot Average Power [dBm]			27.4	27.3	27.4	0.0	0.1	0.0	dB	
	Time-averaged power [dBm]			21.4	21.3	21.4	1.00	1.02	1.00	Lin	
	Back	Without headset	Estimated SAR	-	0.383	-	-	0.392	-	-	-
			Full SAR	-	-	-	-	-	-		
	Display	Without headset	Estimated SAR	0.491	0.486	0.447	0.491	0.497	0.447	0.06	17
			Full SAR	-	0.544	-	-	**0.557**	-		

WCDMA1900 (Band 2) Body SAR results

Mode	Device orientation		SAR measurement	Measured 1g SAR [W/kg]			Reported* 1g SAR [W/kg]			Max Deviation (Estimated SAR - Full SAR)	Plot #
				Ch 9262 1852.4 MHz	Ch 9400 1880.0 MHz	Ch 9538 1907.6 MHz	Ch 9262 1852.4 MHz	Ch 9400 1880.0 MHz	Ch 9538 1907.6 MHz		
WCDMA	Tuning Target + Tolerance [dBm]			24.4			Scaling factor*				
	Conducted Slot Average Power [dBm]			23.7	23.8	24.0	0.7	0.6	0.4	dB	
	Time-averaged power [dBm]			23.7	23.8	24.0	1.17	1.15	1.10	Lin	
	Back	Without headset	Estimated SAR	-	0.596	-	-	0.684	-	0.03	-
			Full SAR	-	0.625	-	-	0.718	-		
	Display	Without headset	Estimated SAR	0.901	0.891	0.788	1.06	1.02	0.864	0.14	18
			Full SAR	1.04	0.996	0.907	**1.22**	1.14	0.995		
		Headset WH-108	Estimated SAR	0.770	-	-	-	-	-	0.09	-
			Full SAR	0.863	-	-	-	-	-		
	Repeated Display without headset		Estimated SAR	-			-	-	-	-	-
			Full SAR	1.03			1.21	-	-		

LTE1900 (Band 2) Body SAR results

Mode	Test configuration		SAR measurement	Measured 1g SAR [W/kg]			Reported* 1g SAR [W/kg]			Max Deviation (Estimated SAR - Full [W/kg]	Plot #
				Ch 18700 1860.0 MHz	Ch 18900 1880.0 MHz	Ch 19100 1900.0 MHz	Ch 18700 1869.0 MHz	Ch 18900 1880.0 MHz	Ch 19100 1900.0 MHz		
20MHz Ch BW 1RB 50% offset	Tuning Target + Tolerance [dBm]			23.4			Scaling factor*				
	Conducted Power [dBm]			23.0	23.0	23.0	0.4	0.4	0.4	dB	
	Time-averaged power [dBm]			23.0	23.0	23.0	1.11	1.09	1.11	Lin	
	Back	Without headset	Estimated SAR	-	0.285	-	-	0.312	-	-	-
			Full SAR	-	-	-	-	-	-		
	Display	Without headset	Estimated SAR	-	0.643	-	-	0.703	-	0.08	19
			Full SAR	-	0.724	-	-	**0.792**	-		

Mode	Test configuration		SAR measurement	Measured 1g SAR [W/kg]			Reported* 1g SAR [W/kg]			Max Deviation (Estimated SAR - Full [W/kg]	Plot #
				Ch 18700 1860.0 MHz	Ch 18900 1880.0 MHz	Ch 19100 1900.0 MHz	Ch 18700 1869.0 MHz	Ch 18900 1880.0 MHz	Ch 19100 1900.0 MHz		
20MHz Ch BW 50% RB 100% offset	Tuning Target + Tolerance [dBm]			23.4			Scaling factor*				
	Conducted Power [dBm]			23.0	22.9	22.9	0.4	0.5	0.5	dB	
	Time-averaged power [dBm]			23.0	22.9	22.9	1.10	1.12	1.13	Lin	
	Back	Without headset	Estimated SAR	0.226	-	-	0.248	-	-	-	-
			Full SAR	-	-	-	-	-	-		
	Display	Without headset	Estimated SAR	0.299	-	-	0.328	-	-	-	-
			Full SAR	-	-	-	-	-	-		

2450MHz Body SAR results

Mode'-	Device orientation		SAR measurement	Measured 1g SAR [W/kg]			Reported* 1g SAR [W/kg]			Max Deviation (Estimated SAR - Full SAR) [W/kg]	Plot #
				Ch 2 2417.0 MHz	Ch 6 2437.0 MHz	Ch 10 2457.0 MHz	Ch 2 2417.0 MHz	Ch 6 2437.0 MHz	Ch 10 2457.0 MHz		
WLAN b-mode BPSK 1Mbps	Tuning Target + Tolerance [dBm]			18.0			Scaling factor*				
	Conducted Slot Average Power [dBm]			16.9	16.9	16.9	1.1	1.1	1.1	dB	
	Time-averaged power [dBm]			16.9	16.9	16.9	1.29	1.29	1.29	Lin	
	Back	Without headset	Estimated SAR	-	0.051	-	-	0.066	-	-	-
			Full SAR	-	-	-	-	-	-		
	Display	Without headset	Estimated SAR	0.060	0.060	0.051	0.077	0.077	0.066	0.00	20
			Full SAR	-	0.062	-	-	**0.080**	-		

Simultaneous transmissions: Combined SAR results – Individual band Max results

Test configuration	Max. Reported* 1g SAR results									
	WLAN 2450	LTE 750	CDMA 800	2-slot GPRS 850	WCDMA 850	LTE 1700/ 2100	CDMA 1900	2-slot GPRS 1900	WCDMA 1900	LTE 1900
Back facing phantom, Without Headset	0.066	0.346	0.640	0.715	0.581	0.725	0.572	0.392	0.719	0.312
Display facing phantom, Without Headset	0.080	0.368	0.726	0.855	0.674	0.969	1.10	0.557	1.22	0.792

Simultaneous transmissions: Combined SAR results – Max + Max combined results

Test configuration	Max. Reported* 1g SAR results								
	LTE750 + WLAN 2450	CDMA 800 + WLAN 2450	2-slot GPRS850 + WLAN 2450	WCDMA 850 + WLAN 2450	LTE1700/ 2100 + WLAN 2450	CDMA 1900 + WLAN 2450	2-slot GPRS1900 + WLAN 2450	WCDMA 1900 + WLAN 2450	LTE1900 + WLAN 2450
Back facing phantom, Without Headset	0.412	0.706	0.781	0.647	0.791	0.638	0.458	0.785	0.378
Display facing phantom, Without Headset	**0.448**	**0.806**	**0.935**	**0.754**	**1.05**	**1.18**	**0.637**	**1.30**	**0.872**

Note: Simultaneous Transmission Procedures as described in KDB648474 are not required for this product.

7.2.1 Combined Body SAR data

The Combined SAR data given in the tables below has been voluntarily calculated and should be ignored for FCC certification.

The following table gives a more accurate assessment of the SAR values for simultaneous transmission. These values have been calculated using the SPEAG Combined Multiband algorithm, which is based on area scans. It a) converts the 2D area scans into 3D volume scans by assuming frequency-dependent decay characteristics for the E-field, b) sums the SAR values for WLAN2450 and the cellular bands point-by-point and c) calculates the combined average SAR values.

Simultaneous transmissions: Combined SAR results – SPEAG Combined Multiband algorithm results

Test configuration	Max. Reported* 1g SAR results								
	LTE750 + WLAN 2450	CDMA 800 + WLAN 2450	2-slot GPRS850 + WLAN 2450	WCDMA 850 + WLAN 2450	LTE1700/ 2100 + WLAN 2450	CDMA 1900 + WLAN 2450	2-slot GPRS1900 + WLAN 2450	WCDMA 1900 + WLAN 2450	LTE1900 + WLAN 2450
Back facing phantom, Without Headset	-	-	-	-	-	-	-	-	-
Display facing phantom, Without Headset	0.371	0.714	0.852	0.665	0.885	0.988	0.499	**1.06**	0.704

Maximum of the Combined SAR values, namely WCDMA1900 + WLAN2450, in the above table is less than the maximum SAR value for the contributing cellular band. This is due to a) minimal overlap of the SAR distributions of the cellular band with WLAN2450 and b) uncertainties associated with the different methods of calculation. In this case, the maximum SAR values given for the combined Mode in the Summary table in Section 1.2.2 is that for the individual cellular band WCDMA1900.

Note:
* Reported SAR values are scaled to, or measured at, upper limit of power tuning tolerance.
Highest result within individual zoom scan or individual expanded zoom scan results is given in Section 1.2 for each transmitter. Highest result within contributing individual zoom scan, individual expanded zoom scan, Speag combined algorithm or combined expanded zoom scan results are given in Section for each simultaneous transmitter combination**.**

7.3 Body SAR assessment of Wireless Router mode at 10.0mm separation distance

LTE750 (Band 13) Wireless Router SAR results

Mode	Test configuration	SAR measurement	Measured 1g SAR [W/kg]			Reported* 1g SAR [W/kg]			Max Deviation (Estimated SAR - Full SAR)	Plot #
				Ch 23230 782.0 MHz			Ch 23230 782.0 MHz			
10MHz Ch BW 1RB 100% offset	Tuning Target + Tolerance [dBm]		23.4			Scaling factor*				
	Conducted Power [dBm]		-	23.0	-	-	0.4	-	dB	
	Time-averaged power [dBm]		-	23.0	-	-	1.10	-	Lin	
	Back	Estimated SAR	-	0.500	-	-	0.548	-	-	-
		Full SAR	-	-	-	-	-	-		
	Display	Estimated SAR	-	0.558	-	-	0.612	-	0.01	21
		Full SAR	-	0.544	-	-	**0.596**	-		
	Top	Estimated SAR	-	0.031	-	-	0.034	-	-	-
		Full SAR	-	-	-	-	-	-		
	Bottom	Estimated SAR	-	0.456	-	-	0.500	-	-	-
		Full SAR	-	-	-	-	-	-		
	Left	Estimated SAR	-	0.429	-	-	0.470	-	-	-
		Full SAR	-	-	-	-	-	-		
	Right	Estimated SAR	-	0.194	-	-	0.213	-	-	-
		Full SAR	-	-	-	-	-	-		

(LTE750 (Band 13) Wireless Router Table continues)

(LTE750 (Band 13) Wireless Router Table continues)

Mode	Test configuration	SAR measurement	Measured 1g SAR [W/kg]			Reported* 1g SAR [W/kg]			Max Deviation (Estimated SAR - Full SAR)	Plot #
				Ch 23230 782.0 MHz			Ch 23230 782.0 MHz			
10MHz Ch BW 50% RB 100% offset	Tuning Target + Tolerance [dBm]		23.4			Scaling factor*				
	Conducted Power [dBm]		-	23.2	-	-	0.2	-	dB	
	Time-averaged power [dBm]		-	23.2	-	-	1.05	-	Lin	
	Back	Estimated SAR	-	0.374	-	-	0.392	-	-	-
		Full SAR	-	-	-	-	-	-		
	Display	Estimated SAR	-	0.423	-	-	0.443	-	-	-
		Full SAR	-	-	-	-	-	-		
	Top	Estimated SAR	-	0.022	-	-	0.023	-	-	-
		Full SAR	-	-	-	-	-	-		
	Bottom	Estimated SAR	-	0.373	-	-	0.391	-	-	-
		Full SAR	-	-	-	-	-	-		
	Left	Estimated SAR	-	0.333	-	-	0.349	-	-	-
		Full SAR	-	-	-	-	-	-		
	Right	Estimated SAR	-	0.194	-	-	0.203	-	-	-
		Full SAR	-	-	-	-	-	-		

CDMA800 (BC0) Wireless Router SAR results

Mode	Device orientation	SAR measurement	Measured 1g SAR [W/kg]			Reported* 1g SAR [W/kg]			Max Deviation (Estimated SAR - Full [W/kg]	Plot #
			Ch 1013 824.7 MHz	Ch 384 836.5 MHz	Ch 777 848.3 MHz	Ch 1013 824.7 MHz	Ch 384 836.5 MHz	Ch 777 848.3 MHz		
RC3/ SO55	Tuning Target + Tolerance [dBm]		24.4			Scaling factor*				
	Conducted Power [dBm]		23.9	23.9	24.0	0.5	0.5	0.4	dB	
	Time-averaged power [dBm]		23.9	23.9	24.0	1.11	1.13	1.11	Lin	
	Back	Estimated SAR	-	0.620	-	-	0.700	-	-	-
		Full SAR	-	-	-	-	-	-		
	Display	Estimated SAR	0.701	0.677	0.633	0.781	0.764	0.701	0.03	22
		Full SAR	0.729	-	-	**0.812**	-	-		
	Top	Estimated SAR	-	0.028	-	-	0.032	-	-	-
		Full SAR	-	-	-	-	-	-		
	Bottom	Estimated SAR	-	0.493	-	-	0.556	-	-	-
		Full SAR	-	-	-	-	-	-		
	Left	Estimated SAR	-	0.632	-	-	0.713	-	-	-
		Full SAR	-	-	-	-	-	-		
	Right	Estimated SAR	-	0.450	-	-	0.508	-	-	-
		Full SAR	-	-	-	-	-	-		

GPRS/EGPRS850 Wireless Router SAR results

Mode	Device orientation	SAR measurement	Measured 1g SAR [W/kg]			Reported* 1g SAR [W/kg]			Max Deviation (Estimated SAR - Full SAR)	Plot #
			Ch 128 824.2 MHz	Ch 190 836.6 MHz	Ch 251 848.8 MHz	Ch 128 824.2 MHz	Ch 190 836.6 MHz	Ch 251 848.8 MHz	[W/kg]	
2-slot GPRS	**Tuning Target + Tolerance [dBm]**		**30.4**			**Scaling factor***				
	Conducted Slot Average Power [dBm]		**30.0**	**29.9**	**29.8**	**0.4**	**0.5**	**0.6**	**dB**	
	Time-averaged power [dBm]		**24.0**	**23.9**	**23.8**	**1.10**	**1.12**	**1.15**	**Lin**	
	Back	Estimated SAR	0.667	0.714	0.692	0.731	0.801	0.795	0.00	-
		Full SAR	-	0.711	-	-	0.798	-		
	Display	Estimated SAR	0.729	0.787	0.803	0.799	0.883	0.922	0.02	-
		Full SAR	-	-	0.784	-	-	0.900		
	Top	Estimated SAR	-	0.039	-	-	0.044	-	-	-
		Full SAR	-	-	-	-	-	-		
	Bottom	Estimated SAR	-	0.437	-	-	0.490	-	-	-
		Full SAR	-	-	-	-	-	-		
	Left	Estimated SAR	0.711	0.827	0.838	0.780	0.928	0.962	0.00	-
		Full SAR	-	-	0.839	-	-	0.963		
	Right	Estimated SAR	-	0.420	-	-	0.471	-	-	-
		Full SAR	-	-	-	-	-	-		
	Repeated Left	Estimated SAR	-	-	0.838	-	-	0.962	0.00	23
		Full SAR	-	-	0.840	-	-	**0.964**		

WCDMA850 (Band 5) Wireless Router SAR results

Mode	Device orientation	SAR measurement	Measured 1g SAR [W/kg]			Reported* 1g SAR [W/kg]			Max Deviation (Estimated SAR - Full SAR) [W/kg]	Plot #
			Ch 4132 826.4 MHz	Ch 4175 835.0 MHz	Ch 4233 846.6 MHz	Ch 4132 826.4 MHz	Ch 4175 835.0 MHz	Ch 4233 846.6 MHz		
WCDMA	**Tuning Target + Tolerance [dBm]**		**24.4**			**Scaling factor***				
	Conducted Power [dBm]		**23.7**	**23.8**	**23.8**	**0.7**	**0.6**	**0.6**	**dB**	
	Time-averaged power [dBm]		**23.7**	**23.8**	**23.8**	**1.17**	**1.15**	**1.15**	**Lin**	
	Back	Estimated SAR	-	0.587	-	-	0.674	-	-	-
		Full SAR	-	-	-	-	-	-		
	Display	Estimated SAR	0.636	0.642	0.640	0.747	0.737	0.735	0.03	24
		Full SAR	0.663	-	-	**0.779**	-	-		
	Top	Estimated SAR	-	0.030	-	-	0.035	-	-	-
		Full SAR	-	-	-	-	-	-		
	Bottom	Estimated SAR	-	0.377	-	-	0.433	-	-	-
		Full SAR	-	-	-	-	-	-		
	Left	Estimated SAR	-	0.636	-	-	0.730	-	-	-
		Full SAR	-	-	-	-	-	-		
	Right	Estimated SAR	-	0.377	-	-	0.433	-	-	-
		Full SAR	-	-	-	-	-	-		

LTE1700/2100 (Band 4) Wireless Router SAR results

Mode	Test configuration	SAR measurement	Measured 1g SAR [W/kg]			Reported* 1g SAR [W/kg]			Max Deviation (Estimated SAR - Full SAR)	Plot #
			Ch 20050 1720.0 MHz	Ch 20175 1732.5 MHz	Ch 20300 1745.0 MHz	Ch 20050 1720.0 MHz	Ch 20175 1732.5 MHz	Ch 20300 1745.0 MHz		
20MHz Ch BW 1RB 0% offset	Tuning Target + Tolerance [dBm]		20.4			Scaling factor*				
	Conducted Power [dBm]		20.2	20.4	20.3	0.2	0.0	0.1	dB	
	Time-averaged power [dBm]		20.2	20.4	20.3	1.05	1.01	1.04	Lin	
	Back	Estimated SAR	-	0.535	-	-	0.540	-	-	-
		Full SAR	-	-	-	-	-	-		
	Display	Estimated SAR	-	0.618	-	-	0.624	-	-	-
		Full SAR	-	-	-	-	-	-		
	Top	Estimated SAR	-	0.049	-	-	0.050	-	-	-
		Full SAR	-	-	-	-	-	-		
	Bottom	Estimated SAR	-	0.685	-	-	0.691	-	0.06	25
		Full SAR	-	0.742	-	-	**0.749**	-		
	Left	Estimated SAR	-	0.070	-	-	0.071	-	-	-
		Full SAR	-	-	-	-	-	-		
	Right	Estimated SAR	-	0.166	-	-	0.168	-	-	-
		Full SAR	-	-	-	-	-	-		

Mode	Test configuration	SAR measurement	Measured 1g SAR [W/kg]			Reported* 1g SAR [W/kg]			Plot #	Plot #
			Ch 20050 1720.0 MHz	Ch 20175 1732.5 MHz	Ch 20300 1745.0 MHz	Ch 20050 1720.0 MHz	Ch 20175 1732.5 MHz	Ch 20300 1745.0 MHz		
20MHz Ch BW 50% RB 50% offset	Tuning Target + Tolerance [dBm]		20.4			Scaling factor*				
	Conducted Power [dBm]		20.3	20.3	20.3	0.1	0.1	0.1	dB	
	Time-averaged power [dBm]		20.3	20.3	20.3	1.01	1.04	1.02	Lin	
	Back	Estimated SAR	-	0.447	-	-	0.463	-	-	-
		Full SAR	-	-	-	-	-	-		
	Display	Estimated SAR	-	0.517	-	-	0.535	-	-	-
		Full SAR	-	-	-	-	-	-		
	Top	Estimated SAR	-	0.039	-	-	0.041	-	-	-
		Full SAR	-	-	-	-	-	-		
	Bottom	Estimated SAR	-	0.517	-	-	0.535	-	-	-
		Full SAR	-	-	-	-	-	-		
	Left	Estimated SAR	-	0.056	-	-	0.058	-	-	-
		Full SAR	-	-	-	-	-	-		
	Right	Estimated SAR	-	0.139	-	-	0.144	-	-	-
		Full SAR	-	-	-	-	-	-		

CDMA1900 (BC1) Wireless Router SAR results

Mode	Device orientation	SAR measurement	Measured 1g SAR [W/kg]			Reported* 1g SAR [W/kg]			Max Deviation (Estimated SAR - Full SAR) [W/kg]	Plot #
			Ch 25 1851.25 MHz	Ch 600 1880.0 MHz	Ch 1175 1908.75 MHz	Ch 25 1851.25 MHz	Ch 600 1880.0 MHz	Ch 1175 1908.75 MHz		
RC3/ SO55	**Tuning Target + Tolerance [dBm]**		**20.4**			**Scaling factor***				
	Conducted Power [dBm]		**19.9**	**19.8**	**20.0**	**0.5**	**0.6**	**0.4**	**dB**	
	Time-averaged power [dBm]		**19.9**	**19.8**	**20.0**	**1.12**	**1.15**	**1.11**	**Lin**	
	Back	Estimated SAR	-	0.438	-	-	0.505	-	-	-
		Full SAR	-	-	-	-	-	-		
	Display	Estimated SAR	0.639	0.560	0.530	0.718	0.646	0.586	0.18	-
		Full SAR	0.752	0.738	0.646	0.845	0.851	0.714		
	Top	Estimated SAR	-	0.021	-	-	0.024	-	-	-
		Full SAR	-	-	-	-	-	-		
	Bottom	Estimated SAR	0.775	0.740	0.688	0.871	0.854	0.761	0.08	26
		Full SAR	0.858	-	-	**0.964**	-	-		
	Left	Estimated SAR	-	0.042	-	-	0.049	-	-	-
		Full SAR	-	-	-	-	-	-		
	Right	Estimated SAR	-	0.118	-	-	0.136	-	-	-
		Full SAR	-	-	-	-	-	-		
	Repeated Bottom	Estimated SAR	-	-	-	-	-	-	-	-
		Full SAR	0.856	-	-	0.962	-	-		

GPRS/EGPRS1900 Wireless Router SAR results

Mode	Device orientation	SAR measurement	Measured 1g SAR [W/kg]			Reported* 1g SAR [W/kg]			Max Deviation (Estimated SAR - Full SAR)	Plot #
			Ch 512 1850.2 MHz	Ch 661 1880.0 MHz	Ch 810 1909.8 MHz	Ch 512 1850.2 MHz	Ch 661 1880.0 MHz	Ch 810 1909.8 MHz		
2-slot GPRS	Tuning Target + Tolerance [dBm]		22.4			Scaling factor*				
	Conducted Slot Average Power [dBm]		22.4	22.4	22.4	0.0	0.0	0.0	dB	
	Time-averaged power [dBm]		16.4	16.4	16.4	1.00	1.00	1.00	Lin	
	Back	Estimated SAR	-	0.308	-	-	0.308	-	-	-
		Full SAR	-	-	-	-	-	-		
	Display	Estimated SAR	-	0.347	-	-	0.347	-	-	-
		Full SAR	-	-	-	-	-	-		
	Top	Estimated SAR	-	0.009	-	-	0.009	-	-	-
		Full SAR	-	-	-	-	-	-		
	Bottom	Estimated SAR	0.384	0.378	0.403	0.384	0.378	0.403	0.04	27
		Full SAR	-	-	0.443	-	-	**0.443**		
	Left	Estimated SAR	-	0.023	-	-	0.023	-	-	-
		Full SAR	-	-	-	-	-	-		
	Right	Estimated SAR	-	0.062	-	-	0.062	-	-	-
		Full SAR	-	-	-	-	-	-		

WCDMA1900 (Band 2) Wireless Router SAR results

Mode	Device orientation	SAR measurement	Measured 1g SAR [W/kg]			Reported* 1g SAR [W/kg]			Max Deviation (Estimated SAR - Full SAR)	Plot #
			Ch 9262 1852.4 MHz	Ch 9400 1880.0 MHz	Ch 9538 1907.6 MHz	Ch 9262 1852.4 MHz	Ch 9400 1880.0 MHz	Ch 9538 1907.6 MHz		
WCDMA	Tuning Target + Tolerance [dBm]		20.4			Scaling factor*				
	Conducted Power [dBm]		19.8	19.8	20.0	0.6	0.6	0.4	dB	
	Time-averaged power [dBm]		19.8	19.8	20.0	1.15	1.15	1.10	Lin	
	Back	Estimated SAR	-	0.497	-	-	0.571	-	-	-
		Full SAR	-	-	-	-	-	-		
	Display	Estimated SAR	0.661	0.647	0.536	0.759	0.743	0.588	0.15	-
		Full SAR	0.814	0.769	0.664	0.935	0.883	0.728		
	Top	Estimated SAR	-	0.021	-	-	0.024	-	-	-
		Full SAR	-	-	-	-	-	-		
	Bottom	Estimated SAR	0.908	0.759	0.773	1.043	0.871	0.848	-	28
		Full SAR	0.962	-	-	**1.10**	-	-		
	Left	Estimated SAR	-	0.050	-	-	0.057	-	-	-
		Full SAR	-	-	-	-	-	-		
	Right	Estimated SAR	-	0.155	-	-	0.178	-	-	-
		Full SAR	-	-	-	-	-	-		
	Repeated Bottom	Estimated SAR	-	-	-	-	-	-	-	-
		Full SAR	0.922	-	-	1.06	-	-		

LTE1900 (Band 2) Wireless Router SAR results

Mode	Test configuration	SAR measurement	Measured 1g SAR [W/kg]			Reported* 1g SAR [W/kg]			Max Deviation (Estimated SAR - Full SAR)	Plot #
			Ch 18700 1860.0 MHz	Ch 18900 1880.0 MHz	Ch 19100 1900.0 MHz	Ch 18700 1869.0 MHz	Ch 18900 1880.0 MHz	Ch 19100 1900.0 MHz		
20MHz Ch BW 1RB 0% offset	Tuning Target + Tolerance [dBm]		20.4			Scaling factor*				
	Conducted Power [dBm]		20.2	20.0	20.1	0.3	0.4	0.3	dB	
	Time-averaged power [dBm]		20.2	20.0	20.1	1.06	1.09	1.06	Lin	
	Back	Estimated SAR	0.441	-	-	0.467	-	-	-	-
		Full SAR	-	-	-	-	-	-		
	Display	Estimated SAR	0.680	-	-	0.720	-	-	0.10	-
		Full SAR	0.584	-	-	0.619	-	-		
	Top	Estimated SAR	0.008	-	-	0.009	-	-	-	-
		Full SAR	-	-	-	-	-	-		
	Bottom	Estimated SAR	0.741	-	0.742	0.785	-	0.790	0.06	-
		Full SAR	0.805	-	-	0.853	-	-		
	Left	Estimated SAR	0.038	-	-	0.040	-	-	-	-
		Full SAR	-	-	-	-	-	-		
	Right	Estimated SAR	0.157	-	-	0.166	-	-	-	-
		Full SAR	-	-	-	-	-	-		
Mode	Test configuration	SAR measurement	Measured 1g SAR [W/kg]			Reported* 1g SAR [W/kg]			Max Deviation (Estimated SAR - Full SAR)	Plot #
			Ch 18700 1860.0 MHz	Ch 18900 1880.0 MHz	Ch 19100 1900.0 MHz	Ch 18700 1869.0 MHz	Ch 18900 1880.0 MHz	Ch 19100 1900.0 MHz		
20MHz Ch BW 1RB 50% offset	Tuning Target + Tolerance [dBm]		20.4			Scaling factor*				
	Conducted Power [dBm]		20.2	20.1	20.0	0.2	0.3	0.4	dB	
	Time-averaged power [dBm]		20.2	20.1	20.0	1.04	1.08	1.10	Lin	
	Bottom	Estimated SAR	-	0.759	-	-	0.817	-	0.06	-
		Full SAR	-	0.820	-	-	0.883	-		
	Repeated Bottom	Estimated SAR	-	-	-	-	-	-	-	29
		Full SAR	-	0.823	-	-	**0.886**	-		

(LTE1900 (Band 2) Wireless Router SAR results table continues)

(LTE1900 (Band 2) Wireless Router SAR results table continues)

Mode	Test configuration	SAR measurement	Measured 1g SAR [W/kg]			Reported* 1g SAR [W/kg]			Max Deviation (Estimated SAR - Full SAR)	Plot #
			Ch 18700 1860.0 MHz	Ch 18900 1880.0 MHz	Ch 19100 1900.0 MHz	Ch 18700 1869.0 MHz	Ch 18900 1880.0 MHz	Ch 19100 1900.0 MHz		
20MHz Ch BW 50% RB 0% offset	Tuning Target + Tolerance [dBm]		20.4			Scaling factor*				
	Conducted Power [dBm]		20.2	20.1	20.3	0.2	0.3	0.1	dB	
	Time-averaged power [dBm]		20.2	20.1	20.3	1.04	1.06	1.03	Lin	
	Back	Estimated SAR	-	-	0.410	-	-	0.422	-	-
		Full SAR	-	-	-	-	-	-		
	Display	Estimated SAR	-	-	0.457	-	-	0.471	-	-
		Full SAR	-	-	-	-	-	-		
	Top	Estimated SAR	-	-	0.012	-	-	0.013	-	-
		Full SAR	-	-	-	-	-	-		
	Bottom	Estimated SAR	-	-	0.582	-	-	0.600	-	-
		Full SAR	-	-	-	-	-	-		
	Left	Estimated SAR	-	-	0.022	-	-	0.023	-	-
		Full SAR	-	-	-	-	-	-		
	Right	Estimated SAR	-	-	0.089	-	-	0.091	-	-
		Full SAR	-	-	-	-	-	-		

Mode	Test configuration	SAR measurement	Measured 1g SAR [W/kg]			Reported* 1g SAR [W/kg]			Max Deviation (Estimated SAR - Full SAR)	Plot #
			Ch 18700 1860.0 MHz	Ch 18900 1880.0 MHz	Ch 19100 1900.0 MHz	Ch 18700 1869.0 MHz	Ch 18900 1880.0 MHz	Ch 19100 1900.0 MHz		
20MHz Ch BW 100% RB	Tuning Target + Tolerance [dBm]		19.4			Scaling factor*				
	Conducted Power [dBm]		19.3	19.2	19.2	0.1	0.2	0.2	dB	
	Time-averaged power [dBm]		19.3	19.2	19.2	1.02	1.04	1.05	Lin	
	Bottom	Estimated SAR	0.616	-	-	0.630	-	-	-	-
		Full SAR	-	-	-	-	-	-		

2450MHz Wireless Router SAR results

Mode	Device orientation	SAR measurement	Measured 1g SAR [W/kg]			Reported* 1g SAR [W/kg]			Max Deviation (Estimated SAR - Full SAR) [W/kg]	Plot #
			Ch 2 2417.0 MHz	Ch 6 2437.0 MHz	Ch 10 2457.0 MHz	Ch 2 2417.0 MHz	Ch 6 2437.0 MHz	Ch 10 2457.0 MHz		
WLAN b-mode BPSK 1Mbps	Tuning Target + Tolerance [dBm]		18.0			Scaling factor*				
	Conducted Slot Average Power [dBm]		16.9	16.9	16.9	1.1	1.1	1.1	dB	
	Time-averaged power [dBm]		16.9	16.9	16.9	1.29	1.29	1.29	Lin	
	Back	Estimated SAR	-	0.108	-	-	0.139	-	-	-
		Full SAR	-	-	-	-	-	-		
	Display	Estimated SAR	-	0.099	-	-	0.127	-	-	-
		Full SAR	-	-	-	-	-	-		
	Top	Estimated SAR	0.110	0.119	0.103	0.142	0.153	0.133	0.00	30
		Full SAR	-	0.120	-	-	**0.155**	-		
	Bottom	Estimated SAR	-	0.004	-	-	0.005	-	-	-
		Full SAR	-	-	-	-	-	-		
	Left	Estimated SAR	-	0.022	-	-	0.029	-	-	-
		Full SAR	-	-	-	-	-	-		
	Right	Estimated SAR	-	0.062	-	-	0.080	-	-	-
		Full SAR	-	-	-	-	-	-		

Simultaneous transmissions: Combined SAR results – Individual band Max results

Test configuration	Max. Reported* 1g SAR results									
	WLAN 2450	LTE 750	CDMA 800	2-slot GPRS 850	WCDMA 850	LTE 1700/ 2100	CDMA 1900	2-slot GPRS 1900	WCDMA 1900	LTE 1900
Back	0.139	0.548	0.700	0.798	0.674	0.540	0.505	0.308	0.571	0.467
Display	0.127	0.596	0.812	0.900	0.779	0.624	0.851	0.347	0.953	0.619
Top edge	0.155	0.034	0.032	0.044	0.035	0.050	0.024	0.009	0.024	0.013
Bottom	0.005	0.500	0.556	0.490	0.433	0.749	0.964	0.443	1.10	0.886
Left edge	0.029	0.470	0.713	0.964	0.730	0.071	0.049	0.023	0.057	0.040
Right edge	0.080	0.213	0.508	0.471	0.433	0.168	0.136	0.062	0.178	0.166

Simultaneous transmissions: Combined SAR results – Max + Max combined results

Test configuration	Max. Reported* 1g SAR results								
	LTE750 + WLAN 2450	CDMA800 + WLAN 2450	2-slot GPRS850 + WLAN 2450	WCDMA 850 + WLAN 2450	LTE1700 /2100 + WLAN 2450	CDMA1900 + WLAN 2450	2-slot GPRS1900 + WLAN 2450	WCDMA 1900 + WLAN 2450	LTE1900 + WLAN 2450
Back	0.687	0.839	0.937	0.813	0.679	0.644	0.447	0.71	0.606
Display	**0.723**	**0.939**	**1.03**	**0.906**	0.751	**0.978**	**0.474**	1.08	0.746
Top edge	0.189	0.187	0.199	0.190	0.205	0.179	0.164	0.179	0.168
Bottom	0.505	0.561	0.495	0.438	**0.754**	0.969	0.448	**1.11**	**0.891**
Left edge	0.499	0.742	0.993	0.759	0.100	0.078	0.052	0.086	0.069
Right edge	0.293	0.588	0.551	0.513	0.248	0.216	0.142	0.258	0.246

Simultaneous Transmission Procedures as described in KDB648474 are not required for this product.

7.3.1 Combined Body SAR data

The Combined SAR data given in the tables below has been voluntarily calculated and should be ignored for FCC certification.

The following table gives a more accurate assessment of the SAR values for simultaneous transmission. These values have been calculated using the SPEAG Combined Multiband algorithm, which is based on area scans. It a) converts the 2D area scans into 3D volume scans by assuming frequency-dependent decay characteristics for the E-field, b) sums the SAR values for WLAN2450 and the cellular bands point-by-point and c) calculates the combined average SAR values.

Simultaneous transmissions: Combined SAR results – SPEAG Combined Multiband algorithm results

Test configuration	Max. Reported* 1g SAR results								
	LTE750 + WLAN 2450	CDMA800 + WLAN 2450	2-slot GPRS850 + WLAN 2450	WCDMA 850 + WLAN 2450	LTE1700 /2100 + WLAN 2450	CDMA1900 + WLAN 2450	2-slot GPRS1900 + WLAN 2450	WCDMA 1900 + WLAN 2450	LTE1900 + WLAN 2450
Back	-	-	-	-	-	-	-7	-	-
Display	0.624	0.797	0.945	0.764	-	0.656	0.358	-	-
Top edge	-	-	-	-	-	-	-	-	-
Bottom	-	-	-	-	0.701		-	**1.06**	0.830
Left edge	-	-	-	-	-	-	-	-	-
Right edge	-	-	-	-	-	-	-	-	-

Maximum of the Combined SAR values, namely WCDMA1900 + WLAN2450, in the above table is less than the maximum SAR value for the contributing cellular band. This is due to a) minimal overlap of the SAR distributions of the cellular band with WLAN2450 and b) uncertainties associated with the different methods of calculation. In this case, the maximum SAR values given for the combined Mode in the Summary table in Section 1.2.3 is that for the individual cellular band WCDMA1900.

Note:
* Reported SAR values are scaled to, or measured at, upper limit of power tuning tolerance.
Highest result within individual zoom scan or individual expanded zoom scan results is given in Section 1.2 for each transmitter. Highest result within contributing individual zoom scan, individual expanded zoom scan, Speag combined algorithm or combined expanded zoom scan results are given in Section for each simultaneous transmitter combination**.**

Plots of the Measurement scans are given in Appendix B.

APPENDIX A: SYSTEM CHECKING SCANS

Plot #1

Date/Time: 2014-10-01 08:55:24

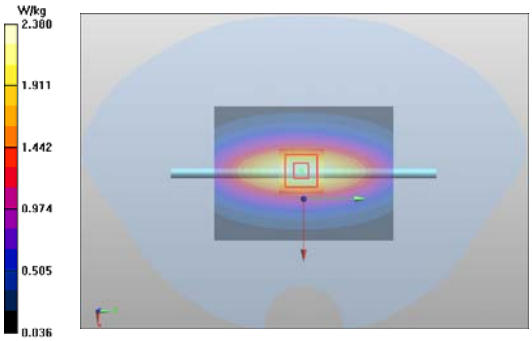
Test Laboratory: TCC Microsoft
Type: D750V3; Serial: D750V3 - SN:1075

Communication System: CW750
Frequency: 750 MHz; Duty Cycle: 1:1
Medium: HSL750; Medium Notes: t= 22.0 C
Medium parameters used: f = 750 MHz; σ = 0.911 S/m; ε_r = 41.322; ρ = 1000 kg/m^3
Phantom section: Flat Section

DASY Configuration:
- Probe: EX3DV4 - SN3960
- ConvF(10.78, 10.78, 10.78); Calibrated: 2013-12-10;
- Sensor-Surface: 3mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn1302; Calibrated: 2013-11-08
- Phantom: #1 SAM, SAR4; Type: SAM; Serial: TP-1018
- Measurement SW: DASY52, Version 52.8 (8); SEMCAD X Version 14.6.9 (7117)

Configuration (below 1Ghz)/d=15mm, Pin=250mW/Area Scan (61x81x1): Interpolated grid: dx=1.500 mm, dy=1.500 mm
Reference Value = 49.292 V/m
Fast SAR: SAR(1 g) = 2.08 W/kg
Fast SAR(10 g) = 1.41 W/kg
Maximum value of SAR (interpolated) = 2.38 W/kg

Configuration (below 1Ghz)/d=15mm, Pin=250mW/Zoom Scan (5x5x7)/Cube 0: Measurement grid: dx=7.5mm, dy=7.5mm, dz=5mm
Reference Value = 49.292 V/m
Peak SAR (extrapolated) = 3.03 W/kg
SAR(1 g) = 2.03 W/kg
SAR(10 g) = 1.34 W/kg
Power Drift = -0.04 dB
Maximum value of SAR (measured) = 2.38 W/kg



Plot #2

Date/Time: 2014-10-07 10:10:00

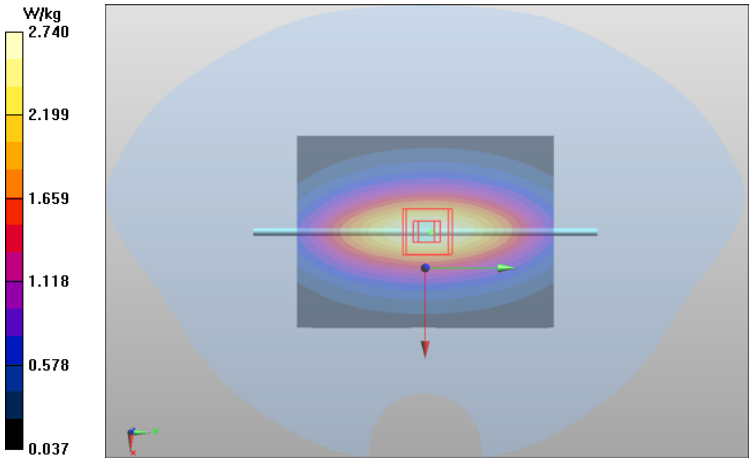
Test Laboratory: TCC Microsoft
Type: D835V2; Serial: D835V2 - SN:462

Communication System: CW835
Frequency: 835 MHz; Duty Cycle: 1:1
Medium: HSL835; Medium Notes: t= 21.4 C
Medium parameters used: f = 835 MHz; σ = 0.923 S/m; ε_r = 40.819; ρ = 1000 kg/m^3
Phantom section: Flat Section

DASY Configuration:
- Probe: ES3DV3 - SN3194
- ConvF(6.12, 6.12, 6.12); Calibrated: 2013-11-14;
- Sensor-Surface: 3mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn538; Calibrated: 2013-11-19
- Phantom: SAM 1; Type: Twin SAM 040 CA; Serial: TP-1596
- Measurement SW: DASY52, Version 52.8 (8); SEMCAD X Version 14.6.9 (7117)

d=15mm, Pin=250mW/Area Scan (81x61x1): Interpolated grid: dx=1.500 mm, dy=1.500 mm
Reference Value = 52.939 V/m
Fast SAR: SAR(1 g) = 2.39 W/kg
Fast SAR(10 g) = 1.61 W/kg
Maximum value of SAR (interpolated) = 2.74 W/kg

d=15mm, Pin=250mW/Zoom Scan (5x5x7)/Cube 0: Measurement grid: dx=7.5mm, dy=7.5mm, dz=5mm
Reference Value = 52.939 V/m
Peak SAR (extrapolated) = 3.49 W/kg
SAR(1 g) = 2.36 W/kg
SAR(10 g) = 1.54 W/kg
Power Drift = 0.02 dB
Maximum value of SAR (measured) = 2.75 W/kg



Plot #3

Date/Time: 2014-10-01 12:26:55

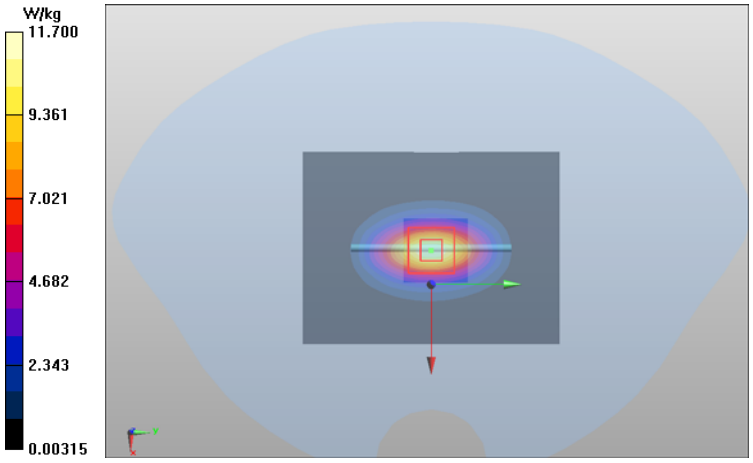
Test Laboratory: TCC Microsoft
Type: D1750V2; Serial: D1750V2 - SN:1083

Communication System: CW1750
Frequency: 1750 MHz; Duty Cycle: 1:1
Medium: HSL1750; Medium Notes: t= 21 C
Medium parameters used: f = 1750 MHz; σ = 1.347 S/m; ε_r = 40.03; ρ = 1000 kg/m^3
Phantom section: Flat Section

DASY Configuration:
- Probe: EX3DV4 - SN3834
- ConvF(7.62, 7.62, 7.62); Calibrated: 2014-05-08;
- Sensor-Surface: 3mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn1355; Calibrated: 2014-05-13
- Phantom: SAM 4; Type: Twin SAM 040 CA; Serial: TP-1692
- Measurement SW: DASY52, Version 52.8 (8); SEMCAD X Version 14.6.9 (7117)

d=10mm, Pin=250mW/Area Scan (91x121x1): Interpolated grid: dx=1.000 mm, dy=1.000 mm
Reference Value = 87.888 V/m
Fast SAR: SAR(1 g) = 9.48 W/kg
Fast SAR(10 g) = 5.12 W/kg
Maximum value of SAR (interpolated) = 11.7 W/kg

d=10mm, Pin=250mW/Zoom Scan (5x5x7)/Cube 0: Measurement grid: dx=7.5mm, dy=7.5mm, dz=5mm
Reference Value = 87.888 V/m
Peak SAR (extrapolated) = 17.2 W/kg
SAR(1 g) = 9.31 W/kg
SAR(10 g) = 4.88 W/kg
Power Drift = -0.03 dB
Maximum value of SAR (measured) = 11.8 W/kg



Plot #4

Date/Time: 2014-10-02 09:49:13

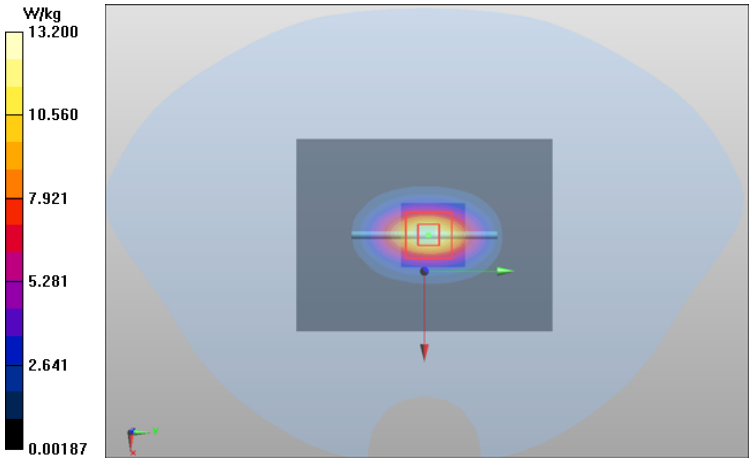
Test Laboratory: TCC Microsoft
Type: D1900V2; Serial: D1900V2 - SN:5d030

Communication System: CW1900
Frequency: 1900 MHz; Duty Cycle: 1:1
Medium: HSL1900; Medium Notes: t= 20,5 C
Medium parameters used: f = 1900 MHz; σ = 1.418 S/m; ε_r = 39.276; ρ = 1000 kg/m^3
Phantom section: Flat Section

DASY Configuration:
- Probe: EX3DV4 - SN3834
- ConvF(7.33, 7.33, 7.33); Calibrated: 2014-05-08;
- Sensor-Surface: 3mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn1355; Calibrated: 2014-05-13
- Phantom: SAM 1; Type: Twin SAM 040 CA; Serial: TP-1449
- Measurement SW: DASY52, Version 52.8 (8); SEMCAD X Version 14.6.9 (7117)

d=10mm, Pin=250mW/Area Scan (91x121x1): Interpolated grid: dx=1.000 mm, dy=1.000 mm
Reference Value = 90.462 V/m
Fast SAR: SAR(1 g) = 10.5 W/kg
Fast SAR(10 g) = 5.5 W/kg
Maximum value of SAR (interpolated) = 13.2 W/kg

d=10mm, Pin=250mW/Zoom Scan (5x5x7)/Cube 0: Measurement grid: dx=7.5mm, dy=7.5mm, dz=5mm
Reference Value = 90.462 V/m
Peak SAR (extrapolated) = 19.2 W/kg
SAR(1 g) = 10.3 W/kg
SAR(10 g) = 5.33 W/kg
Power Drift = -0.02 dB
Maximum value of SAR (measured) = 13.0 W/kg



Plot #5

Date/Time: 2014-10-02 11:17:23

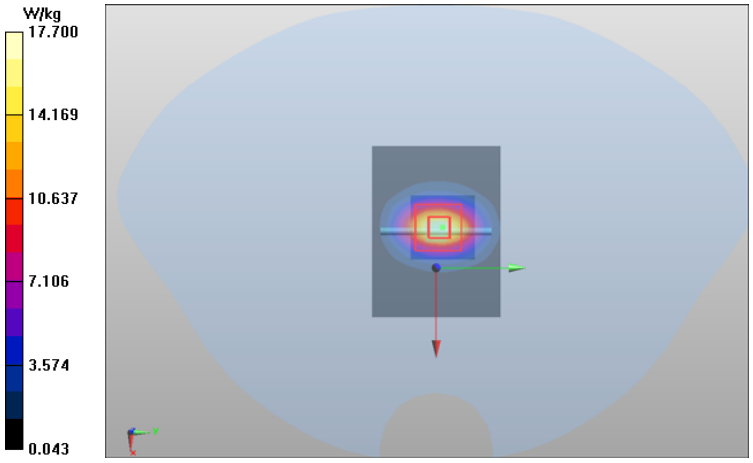
Test Laboratory: TCC Microsoft
Type: D2450V2; Serial: D2450V2 - SN:749

Communication System: CW2450
Frequency: 2450 MHz; Duty Cycle: 1:1
Medium: HSL2450; Medium Notes: t= 22.5 C
Medium parameters used: f = 2450 MHz; σ = 1.784 S/m; ε_r = 39.042; ρ = 1000 kg/m^3
Phantom section: Flat Section

DASY Configuration:
- Probe: EX3DV4 - SN3960
- ConvF(7.39, 7.39, 7.39); Calibrated: 2013-12-10;
- Sensor-Surface: 3mm (Mechanical Surface Detection), Sensor-Surface: 4mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn1302; Calibrated: 2013-11-08
- Phantom: #4 SAM, SAR4 ; Type: QD000P40CD; Serial: TP-1691
- Measurement SW: DASY52, Version 52.8 (8); SEMCAD X Version 14.6.9 (7117)

d=10mm, Pin=250mW/Area Scan (81x61x1): Interpolated grid: dx=1.000 mm, dy=1.000 mm
Reference Value = 90.834 V/m
Fast SAR: SAR(1 g) = 13.1 W/kg
Fast SAR(10 g) = 5.78 W/kg
Maximum value of SAR (interpolated) = 17.7 W/kg

d=10mm, Pin=250mW/Zoom Scan (5x5x7)/Cube 0: Measurement grid: dx=7.5mm, dy=7.5mm, dz=5mm
Reference Value = 90.834 V/m
Peak SAR (extrapolated) = 27.3 W/kg
SAR(1 g) = 13.2 W/kg
SAR(10 g) = 6.13 W/kg
Power Drift = -0.01 dB
Maximum value of SAR (measured) = 15.0 W/kg



Plot #6

Date/Time: 2014-10-01 14:15:32

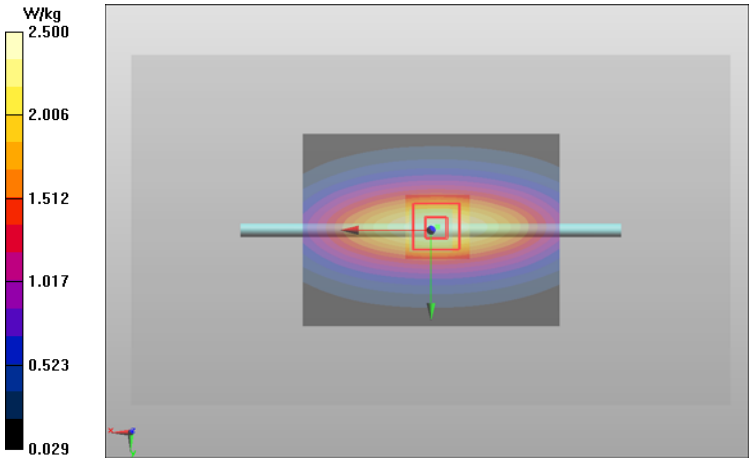
Test Laboratory: TCC Microsoft
Type: D750V3; Serial: D750V3 - SN:1075

Communication System: CW750
Frequency: 750 MHz; Duty Cycle: 1:1
Medium: BSL750; Medium Notes: t= 22.2 C
Medium parameters used: f = 750 MHz; σ = 0.979 S/m; ε_r = 53.572; ρ = 1000 kg/m^3
Phantom section: Center Section

DASY Configuration:
- Probe: EX3DV4 - SN3960
- ConvF(10.24, 10.24, 10.24); Calibrated: 2013-12-10;
- Sensor-Surface: 3mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn1302; Calibrated: 2013-11-08
- Phantom: #2 Triple, SAR4; Type: QD 000 P51 CA; Serial: TP-1123/1 (750 MHz), TP-1124/1 (2450 MHz)
- Measurement SW: DASY52, Version 52.8 (8); SEMCAD X Version 14.6.9 (7117)

d=15mm, Pin=250mW/Area Scan (81x61x1): Interpolated grid: dx=1.500 mm, dy=1.500 mm
Reference Value = 48.473 V/m
Fast SAR: SAR(1 g) = 2.18 W/kg
Fast SAR(10 g) = 1.48 W/kg
Maximum value of SAR (interpolated) = 2.50 W/kg

d=15mm, Pin=250mW/Zoom Scan (5x5x7)/Cube 0: Measurement grid: dx=7.5mm, dy=7.5mm, dz=5mm
Reference Value = 48.473 V/m
Peak SAR (extrapolated) = 3.15 W/kg
SAR(1 g) = 2.14 W/kg
SAR(10 g) = 1.42 W/kg
Power Drift = 0.02 dB
Maximum value of SAR (measured) = 2.49 W/kg



Plot #7

Date/Time: 2014-10-06 08:32:10

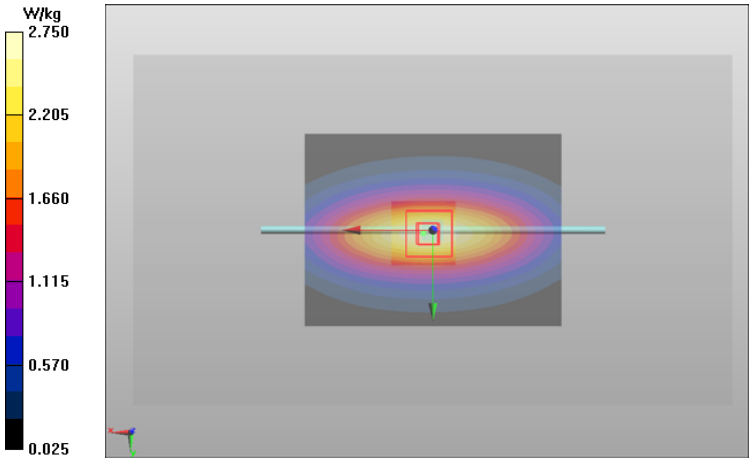
Test Laboratory: TCC Microsoft
Type: D835V2; Serial: D835V2 - SN:462

Communication System: CW835
Frequency: 835 MHz; Duty Cycle: 1:1
Medium: BSL835; Medium Notes: t= 21.7 C
Medium parameters used: f = 835 MHz; σ = 0.96 S/m; ε_r = 53.313; ρ = 1000 kg/m^3
Phantom section: Center Section

DASY Configuration:
- Probe: ES3DV3 - SN3194
- ConvF(6.05, 6.05, 6.05); Calibrated: 2013-11-14;
- Sensor-Surface: 3mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn538; Calibrated: 2013-11-19
- Phantom: SAM 3 Triple Phantom 5.1C; Type: QD 000 P51 CA; Serial: TP-1123/3
- Measurement SW: DASY52, Version 52.8 (8); SEMCAD X Version 14.6.9 (7117)

d=15mm, Pin=250mW/Area Scan (81x61x1): Interpolated grid: dx=1.500 mm, dy=1.500 mm
Reference Value = 52.141 V/m
Fast SAR: SAR(1 g) = 2.39 W/kg
Fast SAR(10 g) = 1.6 W/kg
Maximum value of SAR (interpolated) = 2.75 W/kg

d=15mm, Pin=250mW/Zoom Scan (5x5x7)/Cube 0: Measurement grid: dx=7.5mm, dy=7.5mm, dz=5mm
Reference Value = 52.141 V/m
Peak SAR (extrapolated) = 3.39 W/kg
SAR(1 g) = 2.34 W/kg
SAR(10 g) = 1.55 W/kg
Power Drift = -0.03 dB
Maximum value of SAR (measured) = 2.72 W/kg



Plot #8

Date/Time: 2014-10-08 09:44:07

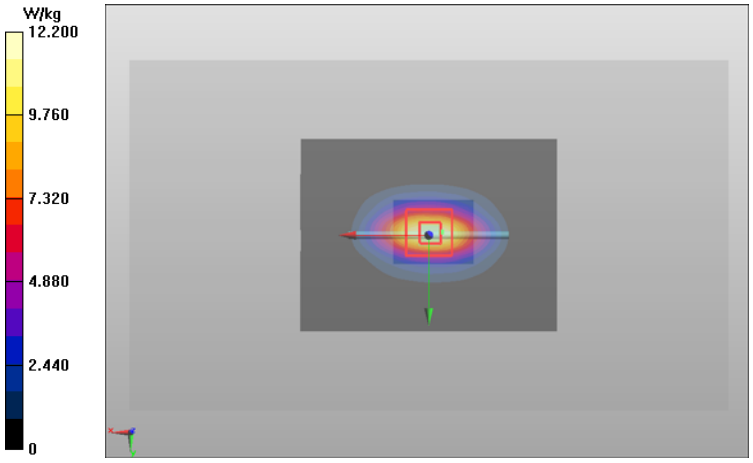
Test Laboratory: TCC Microsoft
Type: D1750V2; Serial: D1750V2 - SN:1083

Communication System: CW1750
Frequency: 1750 MHz; Duty Cycle: 1:1
Medium: BSL1750; Medium Notes: t= 21,7 C
Medium parameters used: f = 1750 MHz; σ = 1.453 S/m; ε_r = 52.078; ρ = 1000 kg/m^3
Phantom section: Center Section

DASY Configuration:
- Probe: EX3DV4 - SN3834
- ConvF(7.35, 7.35, 7.35); Calibrated: 2014-05-08;
- Sensor-Surface: 3mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn1355; Calibrated: 2014-05-13
- Phantom: SAM 3 Triple Phantom 5.1C; Type: QD 000 P51 CA; Serial: TP-1124/2 (1800MHz), TP-1123/2 (1900MHz)
- Measurement SW: DASY52, Version 52.8 (8); SEMCAD X Version 14.6.9 (7117)

d=10mm, Pin=250mW/Area Scan (81x61x1): Interpolated grid: dx=1.500 mm, dy=1.500 mm
Reference Value = 85.846 V/m
Fast SAR: SAR(1 g) = 9.71 W/kg
Fast SAR(10 g) = 5.09 W/kg
Maximum value of SAR (interpolated) = 12.2 W/kg

d=10mm, Pin=250mW/Zoom Scan (6x5x7)/Cube 0: Measurement grid: dx=7.5mm, dy=7.5mm, dz=5mm
Reference Value = 85.846 V/m
Peak SAR (extrapolated) = 17.1 W/kg
SAR(1 g) = 9.65 W/kg
SAR(10 g) = 5.16 W/kg
Power Drift = 0.00 dB
Maximum value of SAR (measured) = 12.1 W/kg



Plot #9

Date/Time: 2014-11-03 10:01:35

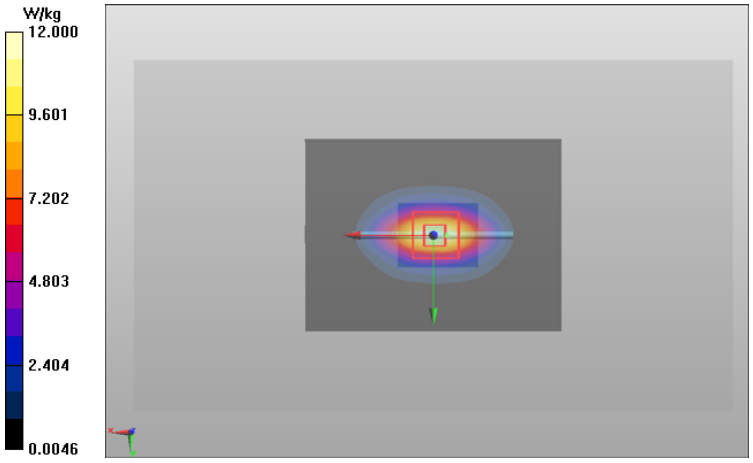
Test Laboratory: TCC Microsoft
Type: D1750V2; Serial: D1750V2 - SN:1083

Communication System: UID 0 - n/a, CW (0)
Frequency: 1750 MHz; Duty Cycle: 1:1
Medium: BSL1750; Medium Notes: t= 21.3 C
Medium parameters used: f = 1750 MHz; σ = 1.452 S/m; ε_r = 52.657; ρ = 1000 kg/m^3
Phantom section: Center Section

DASY Configuration:
- Probe: ES3DV3 - SN3118
- ConvF(4.64, 4.64, 4.64); Calibrated: 2014-10-21;
- Sensor-Surface: 3mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn1316; Calibrated: 2014-10-14
- Phantom: SAM 2 Triple Phantom 5.1C; Type: QD 000 P51 CA; Serial: TP-1124/2 (1800MHz), TP-1123/2 (1900MHz)
- Measurement SW: DASY52, Version 52.8 (8); SEMCAD X Version 14.6.9 (7117)

d=10mm, Pin=250mW/Area Scan (81x61x1): Interpolated grid: dx=1.500 mm, dy=1.500 mm
Reference Value = 86.442 V/m
Fast SAR: SAR(1 g) = 9.45 W/kg
Fast SAR(10 g) = 4.94 W/kg
Maximum value of SAR (interpolated) = 12.0 W/kg

d=10mm, Pin=250mW/Zoom Scan (6x5x7)/Cube 0: Measurement grid: dx=7.5mm, dy=7.5mm, dz=5mm
Reference Value = 86.442 V/m; Power Drift = -0.01 dB
Peak SAR (extrapolated) = 16.0 W/kg
SAR(1 g) = 9.34 W/kg
SAR(10 g) = 5.04 W/kg
Maximum value of SAR (measured) = 11.6 W/kg



Plot #10

Date/Time: 2014-10-10 11:18:29

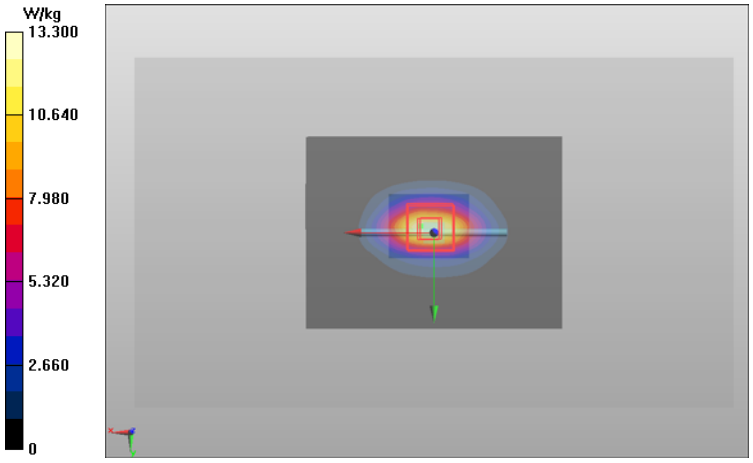
Test Laboratory: TCC Microsoft
Type: D1900V2; Serial: D1900V2 - SN:5d030

Communication System: CW1900
Frequency: 1900 MHz; Duty Cycle: 1:1
Medium: BSL1900; Medium Notes: t= 21,2 C
Medium parameters used: f = 1900 MHz; σ = 1.56 S/m; ε_r = 52.085; ρ = 1000 kg/m^3
Phantom section: Center Section

DASY Configuration:
- Probe: EX3DV4 - SN3834
- ConvF(7.15, 7.15, 7.15); Calibrated: 2014-05-08;
- Sensor-Surface: 3mm (Mechanical Surface Detection (Locations From Previous Scan Used)), Sensor-Surface: 3mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn1355; Calibrated: 2014-05-13
- Phantom: SAM 3 Triple Phantom 5.1C; Type: QD 000 P51 CA; Serial: TP-1124/2 (1800MHz), TP-1123/2 (1900MHz)
- Measurement SW: DASY52, Version 52.8 (8); SEMCAD X Version 14.6.9 (7117)

d=10mm, Pin=250mW 2/Area Scan (81x61x1): Interpolated grid: dx=1.500 mm, dy=1.500 mm
Reference Value = 84.786 V/m
Fast SAR: SAR(1 g) = 10.2 W/kg
Fast SAR(10 g) = 5.16 W/kg
Maximum value of SAR (interpolated) = 13.3 W/kg

d=10mm, Pin=250mW 2/Zoom Scan (6x5x7)/Cube 0: Measurement grid: dx=7.5mm, dy=7.5mm, dz=5mm
Reference Value = 84.786 V/m
Peak SAR (extrapolated) = 18.3 W/kg
SAR(1 g) = 10.2 W/kg
SAR(10 g) = 5.33 W/kg
Power Drift = -0.05 dB
Maximum value of SAR (measured) = 12.7 W/kg



Plot #11

Date/Time: 2014-10-21 15:25:45

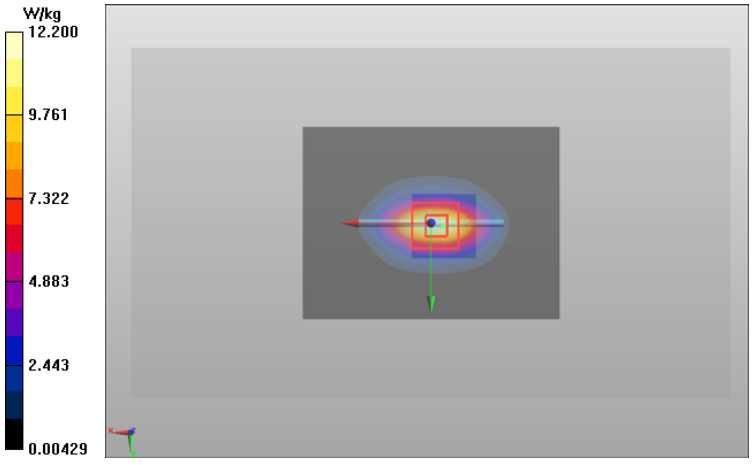
Test Laboratory: TCC Microsoft
Type: D1900V2; Serial: D1900V2 - SN:5d030

Communication System: CW1900
Frequency: 1900 MHz; Duty Cycle: 1:1
Medium: BSL1900; Medium Notes: t=22.5 C
Medium parameters used: f = 1900 MHz; σ = 1.521 S/m; ε_r = 51.332; ρ = 1000 kg/m^3
Phantom section: Center Section

DASY Configuration:
- Probe: ES3DV3 - SN3165
- ConvF(4.65, 4.65, 4.65); Calibrated: 2014-05-08;
- Sensor-Surface: 3mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn728; Calibrated: 2013-11-11
- Phantom: Triple Flat Phantom 5.1C; Type: SN 000 T01 DA;
- Measurement SW: DASY52, Version 52.8 (8); SEMCAD X Version 14.6.9 (7117)

d=10mm, Pin=250mW/Area Scan (81x61x1): Interpolated grid: dx=1.500 mm, dy=1.500 mm
Reference Value = 84.609 V/m
Fast SAR: SAR(1 g) = 9.33 W/kg
Fast SAR(10 g) = 4.7 W/kg
Maximum value of SAR (interpolated) = 12.2 W/kg

d=10mm, Pin=250mW/Zoom Scan (5x5x7)/Cube 0: Measurement grid: dx=7.5mm, dy=7.5mm, dz=5mm
Reference Value = 84.609 V/m
Peak SAR (extrapolated) = 16.2 W/kg
SAR(1 g) = 9.32 W/kg
SAR(10 g) = 4.92 W/kg
Power Drift = -0.01 dB
Maximum value of SAR (measured) = 11.5 W/kg



Plot #12

Date/Time: 2014-10-06 08:26:27

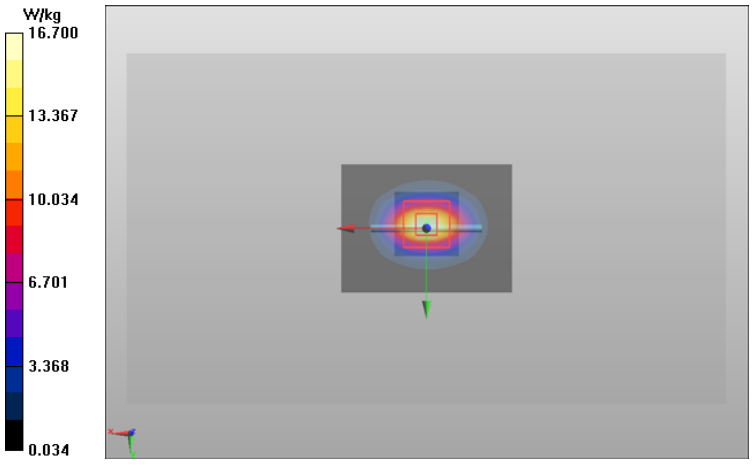
Test Laboratory: TCC Microsoft
Type: D2450V2; Serial: D2450V2 - SN:749

Communication System: CW2450
Frequency: 2450 MHz; Duty Cycle: 1:1
Medium: BSL2450; Medium Notes: t= 22.2 C
Medium parameters used: f = 2450 MHz; σ = 1.929 S/m; ε_r = 50.795; ρ = 1000 kg/m^3
Phantom section: Center Section

DASY Configuration:
- Probe: EX3DV4 - SN3960
- ConvF(7.44, 7.44, 7.44); Calibrated: 2013-12-10;
- Sensor-Surface: 3mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn1302; Calibrated: 2013-11-08
- Phantom: #2 Triple, SAR4; Type: QD 000 P51 CA; Serial: TP-1123/1 (750 MHz), TP-1124/1 (2450 MHz)
- Measurement SW: DASY52, Version 52.8 (8); SEMCAD X Version 14.6.9 (7117)

Configuration (2450GHz)/d=10mm, Pin=250mW/Area Scan (81x61x1): Interpolated grid: dx=1.000 mm, dy=1.000 mm
Reference Value = 85.617 V/m
Fast SAR: SAR(1 g) = 12.5 W/kg
Fast SAR(10 g) = 5.43 W/kg
Maximum value of SAR (interpolated) = 16.7 W/kg

Configuration (2450GHz)/d=10mm, Pin=250mW/Zoom Scan (7x7x7)/Cube 0: Measurement grid: dx=5mm, dy=5mm, dz=5mm
Reference Value = 85.617 V/m
Peak SAR (extrapolated) = 25.1 W/kg
SAR(1 g) = 12.4 W/kg
SAR(10 g) = 5.87 W/kg
Power Drift = -0.05 dB
Maximum value of SAR (measured) = 16.4 W/kg



APPENDIX B: MEASUREMENT SCANS

Plot #1

Date/Time: 2014-10-01 09:38:10

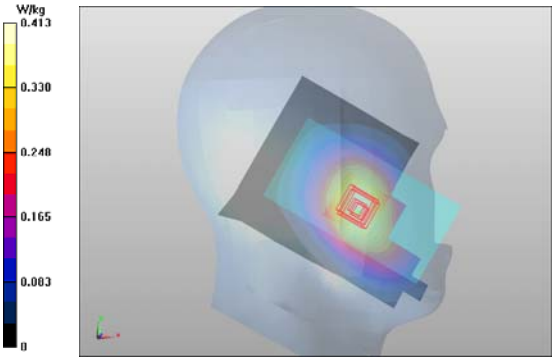
Test Laboratory: TCC Microsoft
Type: RM-1041; Serial: 353067/06/002945/3

Communication System: LTE750 (Band 13)
Frequency: 782 MHz; Duty Cycle: 1:1
Medium: HSL750; Medium Notes: t= 22.0 C
Medium parameters used: f = 782 MHz; σ = 0.93 S/m; ε_r = 41.093; ρ = 1000 kg/m^3
Phantom section: Left Section

DASY Configuration:
- Probe: EX3DV4 - SN3960
- ConvF(10.78, 10.78, 10.78); Calibrated: 2013-12-10;
- Sensor-Surface: 3mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn1302; Calibrated: 2013-11-08
- Phantom: #1 SAM, SAR4; Type: SAM; Serial: TP-1018
- Measurement SW: DASY52, Version 52.8 (8); SEMCAD X Version 14.6.9 (7117)

LTE750 (Band 13) - Left/Cheek - Middle - QPSK - 10MHz - 1RB - 100% offset/Area Scan (81x121x1):
Interpolated grid: dx=1.500 mm, dy=1.500 mm
Reference Value = 19.350 V/m
Fast SAR: SAR(1 g) = 0.366 W/kg
Fast SAR(10 g) = 0.259 W/kg
Maximum value of SAR (interpolated) = 0.413 W/kg

LTE750 (Band 13) - Left/Cheek - Middle - QPSK - 10MHz - 1RB - 100% offset/Zoom Scan (6x6x7)/Cube 0:
Measurement grid: dx=7.5mm, dy=7.5mm, dz=5mm
Reference Value = 19.696 V/m
Peak SAR (extrapolated) = 0.486 W/kg
SAR(1 g) = 0.389 W/kg
SAR(10 g) = 0.296 W/kg
Power Drift = 0.03 dB
Maximum value of SAR (measured) = 0.424 W/kg



Plot #2

Date/Time: 2014-10-01 14:33:48

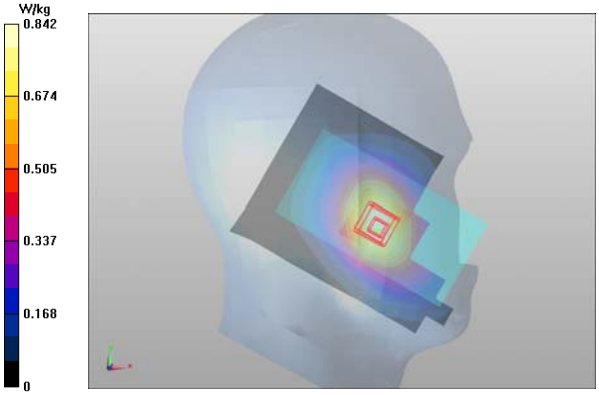
Test Laboratory: TCC Microsoft
Type: RM-1041; Serial: 353067/06/002958/6

Communication System: CDMA800 (BC0)
Frequency: 824.7 MHz; Duty Cycle: 1:1
Medium: HSL835; Medium Notes: t= 22.3C
Medium parameters used: f = 825 MHz; σ = 0.908 S/m; ε_r = 40.483; ρ = 1000 kg/m^3
Phantom section: Left Section

DASY Configuration:
- Probe: ES3DV3 - SN3194
- ConvF(6.12, 6.12, 6.12); Calibrated: 2013-11-14;
- Sensor-Surface: 3mm (Mechanical Surface Detection (Locations From Previous Scan Used)), Sensor-Surface: 3mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn538; Calibrated: 2013-11-19
- Phantom: SAM 1; Type: Twin SAM 040 CA; Serial: TP-1596
- Measurement SW: DASY52, Version 52.8 (8); SEMCAD X Version 14.6.9 (7117)

CDMA800 (BC0) - Left/Cheek - Low - RC3/SO55/Area Scan (81x121x1): Interpolated grid: dx=1.500 mm, dy=1.500 mm
Reference Value = 30.474 V/m
Fast SAR: SAR(1 g) = 0.744 W/kg
Fast SAR(10 g) = 0.522 W/kg
Maximum value of SAR (interpolated) = 0.842 W/kg

CDMA800 (BC0) - Left/Cheek - Low - RC3/SO55/Zoom Scan (6x6x7)/Cube 0: Measurement grid: dx=7.5mm, dy=7.5mm, dz=5mm
Reference Value = 30.654 V/m
Peak SAR (extrapolated) = 0.983 W/kg
SAR(1 g) = 0.781 W/kg
SAR(10 g) = 0.590 W/kg
Power Drift = -0.01 dB
Maximum value of SAR (measured) = 0.859 W/kg



Plot #3

Date/Time: 2014-10-01 09:53:13

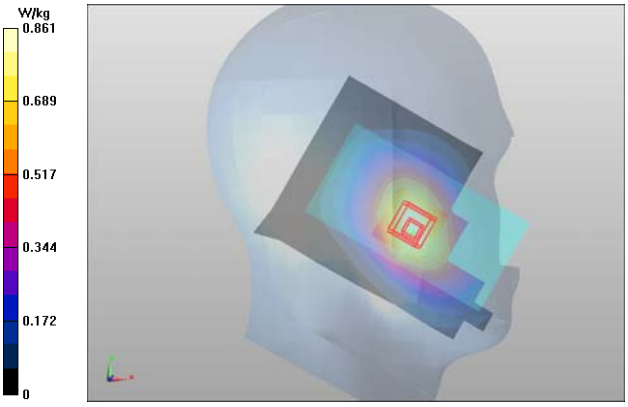
Test Laboratory: TCC Microsoft
Type: RM-1041; Serial: 353067/06/002958/6

Communication System: 2-slot GPRS850
Frequency: 848.8 MHz; Duty Cycle: 1:4.19952
Medium: HSL835; Medium Notes: t= 22.3C
Medium parameters used: f = 849 MHz; σ = 0.923 S/m; ε_r = 40.348; ρ = 1000 kg/m^3
Phantom section: Left Section

DASY Configuration:
- Probe: ES3DV3 - SN3194
- ConvF(6.12, 6.12, 6.12); Calibrated: 2013-11-14;
- Sensor-Surface: 3mm (Mechanical Surface Detection (Locations From Previous Scan Used)), Sensor-Surface: 3mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn538; Calibrated: 2013-11-19
- Phantom: SAM 1; Type: Twin SAM 040 CA; Serial: TP-1596
- Measurement SW: DASY52, Version 52.8 (8); SEMCAD X Version 14.6.9 (7117)

2-slot GPRS850 - Left/Cheek - High/Area Scan (81x121x1): Interpolated grid: dx=1.500 mm, dy=1.500 mm
Reference Value = 30.241 V/m
Fast SAR: SAR(1 g) = 0.758 W/kg
Fast SAR(10 g) = 0.528 W/kg
Maximum value of SAR (interpolated) = 0.861 W/kg

2-slot GPRS850 - Left/Cheek - High/Zoom Scan (6x6x7)/Cube 0: Measurement grid: dx=7.5mm, dy=7.5mm, dz=5mm
Reference Value = 30.257 V/m
Peak SAR (extrapolated) = 0.981 W/kg
SAR(1 g) = 0.774 W/kg
SAR(10 g) = 0.584 W/kg
Power Drift = -0.05 dB
Maximum value of SAR (measured) = 0.851 W/kg



Plot #4

Date/Time: 2014-10-01 11:02:17

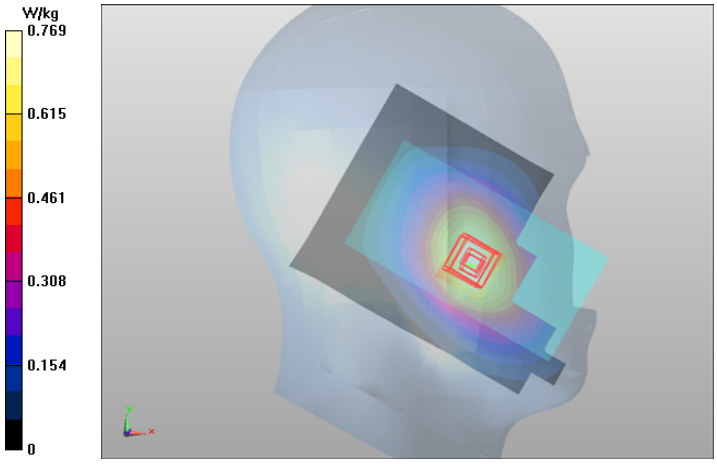
Test Laboratory: TCC Microsoft
Type: RM-1041; Serial: 353067/06/002958/6

Communication System: WCDMA850 (Band 5)
Frequency: 826.4 MHz; Duty Cycle: 1:1
Medium: HSL835; Medium Notes: t= 22.3C
Medium parameters used (interpolated): f = 826.4 MHz; σ = 0.909 S/m; ε_r = 40.475; ρ = 1000 kg/m^3
Phantom section: Left Section

DASY Configuration:
- Probe: ES3DV3 - SN3194
- ConvF(6.12, 6.12, 6.12); Calibrated: 2013-11-14;
- Sensor-Surface: 3mm (Mechanical Surface Detection (Locations From Previous Scan Used)), Sensor-Surface: 3mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn538; Calibrated: 2013-11-19
- Phantom: SAM 1; Type: Twin SAM 040 CA; Serial: TP-1596
- Measurement SW: DASY52, Version 52.8 (8); SEMCAD X Version 14.6.9 (7117)

WCDMA850 (Band 5) - Left/Cheek - Low/Area Scan (81x121x1): Interpolated grid: dx=1.500 mm, dy=1.500 mm
Reference Value = 29.114 V/m
Fast SAR: SAR(1 g) = 0.679 W/kg
Fast SAR(10 g) = 0.476 W/kg
Maximum value of SAR (interpolated) = 0.769 W/kg

WCDMA850 (Band 5) - Left/Cheek - Low/Zoom Scan (5x5x7)/Cube 0: Measurement grid: dx=7.5mm, dy=7.5mm, dz=5mm
Reference Value = 29.278 V/m
Peak SAR (extrapolated) = 0.899 W/kg
SAR(1 g) = 0.715 W/kg
SAR(10 g) = 0.536 W/kg
Power Drift = -0.04 dB
Maximum value of SAR (measured) = 0.785 W/kg



Plot #5

Date/Time: 2014-10-14 09:31:41

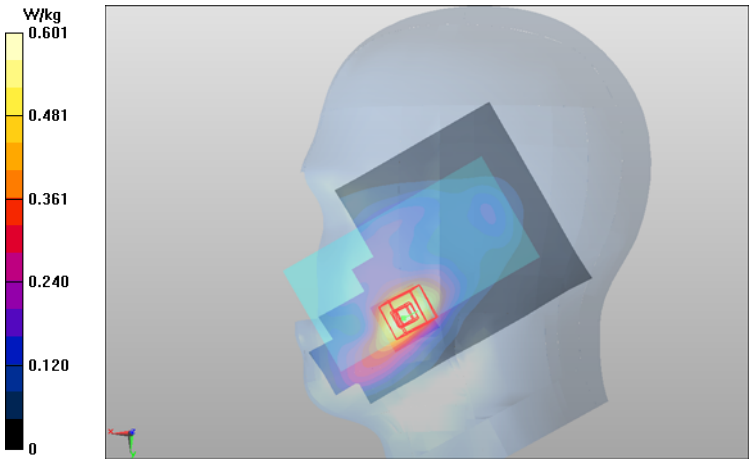
Test Laboratory: TCC Microsoft
Type: RM-1041; Serial: 353067/06/002939/6

Communication System: LTE1700/2100 (Band 4)
Frequency: 1732.5 MHz; Duty Cycle: 1:1
Medium: HSL1750; Medium Notes: t= 21.4 C
Medium parameters used (interpolated): f = 1732.5 MHz; σ = 1.321 S/m; ε_r = 40.013; ρ = 1000 kg/m^3
Phantom section: Right Section

DASY Configuration:
- Probe: EX3DV4 - SN3834
- ConvF(7.62, 7.62, 7.62); Calibrated: 2014-05-08;
- Sensor-Surface: 3mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn1355; Calibrated: 2014-05-13
- Phantom: SAM 4; Type: Twin SAM 040 CA; Serial: TP-1692
- Measurement SW: DASY52, Version 52.8 (8); SEMCAD X Version 14.6.9 (7117)

LTE1700_2100 (Band 4) - Right/Cheek - Middle - QPSK - 20MHz - 1RB - 50% offset/Area Scan (81x121x1):
Interpolated grid: dx=1.500 mm, dy=1.500 mm
Reference Value = 17.835 V/m
Fast SAR: SAR(1 g) = 0.482 W/kg
Fast SAR(10 g) = 0.286 W/kg
Maximum value of SAR (interpolated) = 0.601 W/kg

LTE1700_2100 (Band 4) - Right/Cheek - Middle - QPSK - 20MHz - 1RB - 50% offset/Zoom Scan (5x5x7)/Cube 0:
Measurement grid: dx=7.5mm, dy=7.5mm, dz=5mm
Reference Value = 17.835 V/m
Peak SAR (extrapolated) = 0.735 W/kg
SAR(1 g) = 0.493 W/kg
SAR(10 g) = 0.309 W/kg
Power Drift = 0.02 dB
Maximum value of SAR (measured) = 0.578 W/kg



Plot #6

Date/Time: 2014-10-03 09:53:13

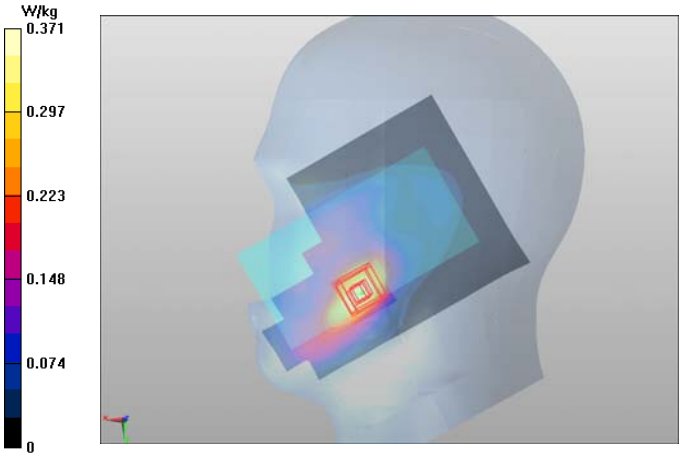
Test Laboratory: TCC Microsoft
Type: RM-1041; Serial: 353067/06/002939/6

Communication System: CDMA1900 (BC1)
Frequency: 1880 MHz; Duty Cycle: 1:1
Medium: HSL1900; Medium Notes: t= 21,0 C
Medium parameters used: f = 1880 MHz; σ = 1.39 S/m; ε_r = 38.618; ρ = 1000 kg/m^3
Phantom section: Right Section

DASY Configuration:
- Probe: EX3DV4 - SN3834
- ConvF(7.33, 7.33, 7.33); Calibrated: 2014-05-08;
- Sensor-Surface: 3mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn1355; Calibrated: 2014-05-13
- Phantom: SAM 1; Type: Twin SAM 040 CA; Serial: TP-1449
- Measurement SW: DASY52, Version 52.8 (8); SEMCAD X Version 14.6.9 (7117)

CDMA1900 (Band 2) - Right/Cheek - Middle - RC3/SO55/Area Scan (81x121x1): Interpolated grid: dx=1.500 mm, dy=1.500 mm
Reference Value = 13.624 V/m
Fast SAR: SAR(1 g) = 0.294 W/kg
Fast SAR(10 g) = 0.171 W/kg
Maximum value of SAR (interpolated) = 0.371 W/kg

CDMA1900 (Band 2) - Right/Cheek - Middle - RC3/SO55/Zoom Scan (5x5x7)/Cube 0: Measurement grid: dx=7.5mm, dy=7.5mm, dz=5mm
Reference Value = 13.452 V/m
Peak SAR (extrapolated) = 0.486 W/kg
SAR(1 g) = 0.314 W/kg
SAR(10 g) = 0.194 W/kg
Power Drift = -0.07 dB
Maximum value of SAR (measured) = 0.371 W/kg



Plot #7

Date/Time: 2014-10-14 17:20:58

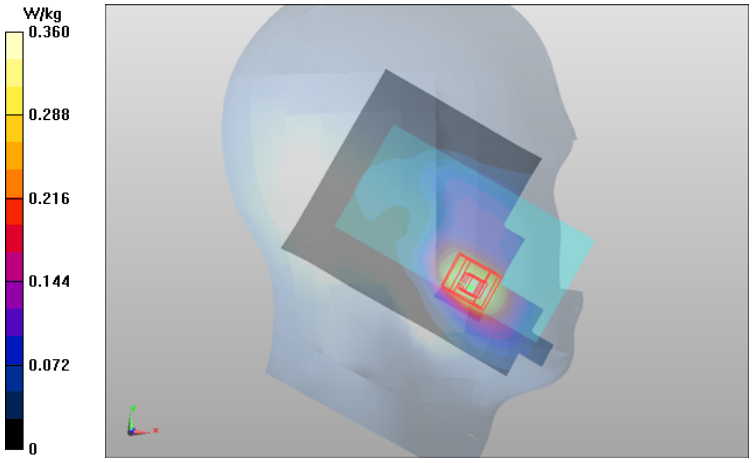
Test Laboratory: TCC Microsoft
Type: RM-1041; Serial: 353067/06/002944/6

Communication System: 2-slot GPRS1900
Frequency: 1850.2 MHz; Duty Cycle: 1:4.19952
Medium: HSL1900; Medium Notes: t= 21,4 C
Medium parameters used (interpolated): f = 1850.2 MHz; σ = 1.349 S/m; ε_r = 39.653; ρ = 1000 kg/m^3
Phantom section: Left Section

DASY Configuration:
- Probe: EX3DV4 - SN3834
- ConvF(7.33, 7.33, 7.33); Calibrated: 2014-05-08;
- Sensor-Surface: 3mm (Mechanical Surface Detection (Locations From Previous Scan Used)), Sensor-Surface: 3mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn1355; Calibrated: 2014-05-13
- Phantom: SAM 1; Type: Twin SAM 040 CA; Serial: TP-1449
- Measurement SW: DASY52, Version 52.8 (8); SEMCAD X Version 14.6.9 (7117)

2-slot GPRS1900 - Left/Cheek - Low/Area Scan (81x121x1): Interpolated grid: dx=1.500 mm, dy=1.500 mm
Reference Value = 15.093 V/m
Fast SAR: SAR(1 g) = 0.287 W/kg
Fast SAR(10 g) = 0.168 W/kg
Maximum value of SAR (interpolated) = 0.360 W/kg

2-slot GPRS1900 - Left/Cheek - Low/Zoom Scan (5x5x7)/Cube 0: Measurement grid: dx=7.5mm, dy=7.5mm, dz=5mm
Reference Value = 14.992 V/m
Peak SAR (extrapolated) = 0.428 W/kg
SAR(1 g) = 0.286 W/kg
SAR(10 g) = 0.184 W/kg
Power Drift = -0.04 dB
Maximum value of SAR (measured) = 0.332 W/kg



Plot #8

Date/Time: 2014-10-14 19:10:56

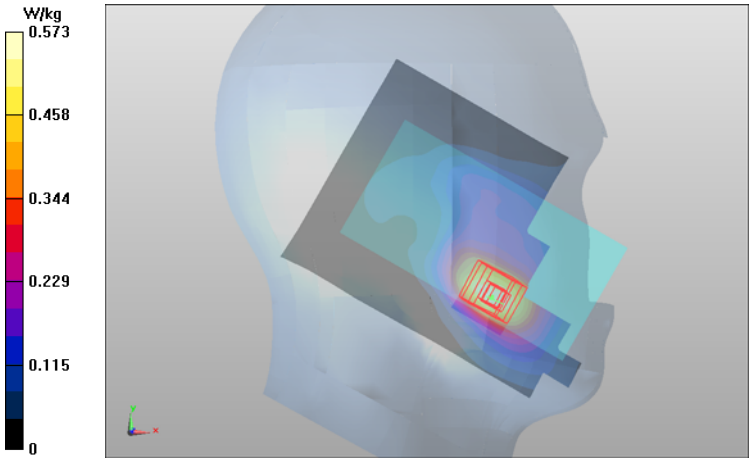
Test Laboratory: TCC Microsoft
Type: RM-1041; Serial: 353067/06/002944/6

Communication System: WCDMA1900 (Band 2)
Frequency: 1852.4 MHz; Duty Cycle: 1:1
Medium: HSL1900; Medium Notes: t= 21,4 C
Medium parameters used (interpolated): f = 1852.4 MHz; σ = 1.351 S/m; ε_r = 39.644; ρ = 1000 kg/m^3
Phantom section: Left Section

DASY Configuration:
- Probe: EX3DV4 - SN3834
- ConvF(7.33, 7.33, 7.33); Calibrated: 2014-05-08;
- Sensor-Surface: 3mm (Mechanical Surface Detection (Locations From Previous Scan Used)), Sensor-Surface: 3mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn1355; Calibrated: 2014-05-13
- Phantom: SAM 1; Type: Twin SAM 040 CA; Serial: TP-1449
- Measurement SW: DASY52, Version 52.8 (8); SEMCAD X Version 14.6.9 (7117)

WCDMA1900 (Band 2) - Left/Cheek - Low/Area Scan (81x121x1): Interpolated grid: dx=1.500 mm, dy=1.500 mm
Reference Value = 18.070 V/m
Fast SAR: SAR(1 g) = 0.457 W/kg
Fast SAR(10 g) = 0.271 W/kg
Maximum value of SAR (interpolated) = 0.573 W/kg

WCDMA1900 (Band 2) - Left/Cheek - Low/Zoom Scan (5x5x7)/Cube 0: Measurement grid: dx=7.5mm, dy=7.5mm, dz=5mm
Reference Value = 18.195 V/m
Peak SAR (extrapolated) = 0.692 W/kg
SAR(1 g) = 0.459 W/kg
SAR(10 g) = 0.289 W/kg
Power Drift = -0.05 dB
Maximum value of SAR (measured) = 0.535 W/kg



Plot #9

Date/Time: 2014-10-02 11:44:40

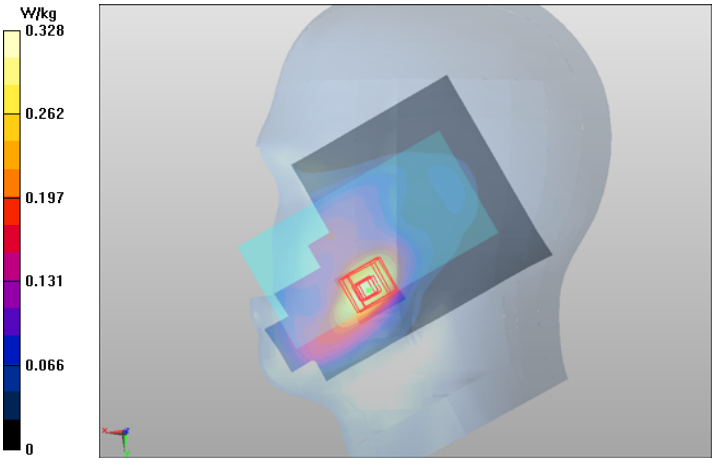
Test Laboratory: TCC Microsoft
Type: RM-1041; Serial: 353067/06/002939/6

Communication System: LTE1900 (Band 2)
Frequency: 1880 MHz; Duty Cycle: 1:1
Medium: HSL1900; Medium Notes: t= 20,5 C
Medium parameters used: f = 1880 MHz; σ = 1.397 S/m; ε_r = 39.355; ρ = 1000 kg/m^3
Phantom section: Right Section

DASY Configuration:
- Probe: EX3DV4 - SN3834
- ConvF(7.33, 7.33, 7.33); Calibrated: 2014-05-08;
- Sensor-Surface: 3mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn1355; Calibrated: 2014-05-13
- Phantom: SAM 1; Type: Twin SAM 040 CA; Serial: TP-1449
- Measurement SW: DASY52, Version 52.8 (8); SEMCAD X Version 14.6.9 (7117)

LTE 1900 (Band 2) - Right/Cheek - Middle - QPSK - 20MHz - 1RB - 50% offset/Area Scan (81x121x1):
Interpolated grid: dx=1.500 mm, dy=1.500 mm
Reference Value = 12.272 V/m
Fast SAR: SAR(1 g) = 0.262 W/kg
Fast SAR(10 g) = 0.153 W/kg
Maximum value of SAR (interpolated) = 0.328 W/kg

LTE 1900 (Band 2) - Right/Cheek - Middle - QPSK - 20MHz - 1RB - 50% offset/Zoom Scan (5x5x7)/Cube 0:
Measurement grid: dx=7.5mm, dy=7.5mm, dz=5mm
Reference Value = 12.756 V/m
Peak SAR (extrapolated) = 0.413 W/kg
SAR(1 g) = 0.265 W/kg
SAR(10 g) = 0.161 W/kg
Power Drift = 0.05 dB
Maximum value of SAR (measured) = 0.312 W/kg



Plot #10

Date/Time: 2014-10-02 12:40:38

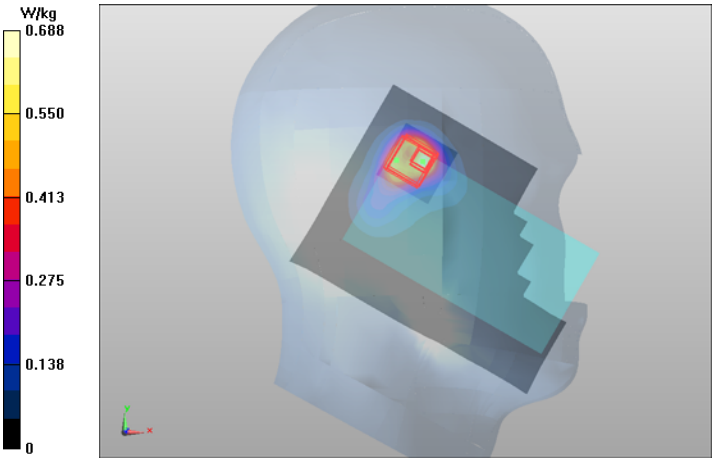
Test Laboratory: TCC Microsoft
Type: RM-1041; Serial: 353067/06/002945/3

Communication System: WLAN2450
Frequency: 2437 MHz; Duty Cycle: 1:1
Medium: HSL2450; Medium Notes: t= 22.5 C
Medium parameters used: f = 2437 MHz; σ = 1.77 S/m; ε_r = 39.095; ρ = 1000 kg/m^3
Phantom section: Left Section

DASY Configuration:
- Probe: EX3DV4 - SN3960
- ConvF(7.39, 7.39, 7.39); Calibrated: 2013-12-10;
- Sensor-Surface: 3mm (Mechanical Surface Detection (Locations From Previous Scan Used)), Sensor-Surface: 3mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn1302; Calibrated: 2013-11-08
- Phantom: #4 SAM, SAR4 ; Type: QD000P40CD; Serial: TP-1691
- Measurement SW: DASY52, Version 52.8 (8); SEMCAD X Version 14.6.9 (7117)

WLAN2450 b-mode - Left/Cheek - Channel 6 - BPSK 1Mbps/Area Scan (121x181x1): Interpolated grid: dx=1.000 mm, dy=1.000 mm
Reference Value = 19.112 V/m
Fast SAR: SAR(1 g) = 0.479 W/kg
Fast SAR(10 g) = 0.240 W/kg
Maximum value of SAR (interpolated) = 0.688 W/kg

WLAN2450 b-mode - Left/Cheek - Channel 6 - BPSK 1Mbps/Zoom Scan (8x8x7)/Cube 0: Measurement grid: dx=5mm, dy=5mm, dz=5mm
Reference Value = 19.071 V/m
Peak SAR (extrapolated) = 1.32 W/kg
SAR(1 g) = 0.487 W/kg
SAR(10 g) = 0.229 W/kg
Power Drift = -0.01 dB
Maximum value of SAR (measured) = 0.669 W/kg



Plot #11

Date/Time: 2014-10-01 15:02:24

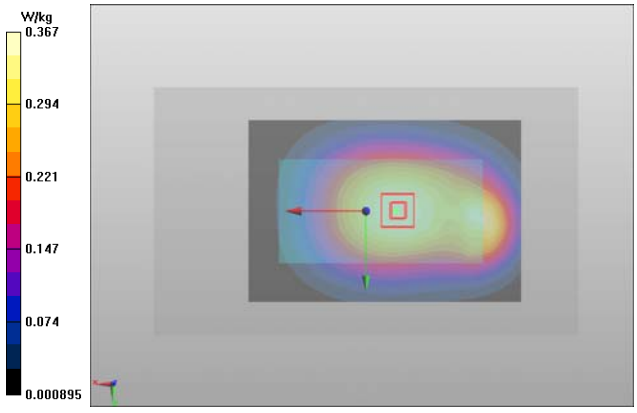
Test Laboratory: TCC Microsoft
Type: RM-1041; Serial: 353067/06/002945/3

Communication System: LTE750 (Band 13)
Frequency: 782 MHz; Duty Cycle: 1:1
Medium: BSL750; Medium Notes: t= 22.2 C
Medium parameters used: f = 782 MHz; σ = 0.996 S/m; ε_r = 53.389; ρ = 1000 kg/m^3
Phantom section: Center Section

DASY Configuration:
- Probe: EX3DV4 - SN3960
- ConvF(10.24, 10.24, 10.24); Calibrated: 2013-12-10;
- Sensor-Surface: 3mm (Mechanical Surface Detection (Locations From Previous Scan Used)), Sensor-Surface: 3mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn1302; Calibrated: 2013-11-08
- Phantom: #2 Triple, SAR4; Type: QD 000 P51 CA; Serial: TP-1123/1 (750 MHz), TP-1124/1 (2450 MHz)
- Measurement SW: DASY52, Version 52.8 (8); SEMCAD X Version 14.6.9 (7117)

LTE750 (Band 13)/Body - Middle - QPSK - 10MHz - 1RB - 100% offset - Spacer 15mm - No Headset - Display Facing Phantom/Area Scan (81x121x1): Interpolated grid: dx=1.500 mm, dy=1.500 mm
Reference Value = 19.164 V/m
Fast SAR: SAR(1 g) = 0.328 W/kg
Fast SAR(10 g) = 0.238 W/kg
Maximum value of SAR (interpolated) = 0.367 W/kg

LTE750 (Band 13)/Body - Middle - QPSK - 10MHz - 1RB - 100% offset - Spacer 15mm - No Headset - Display Facing Phantom/Zoom Scan (5x5x7)/Cube 0: Measurement grid: dx=7.5mm, dy=7.5mm, dz=5mm
Reference Value = 19.130 V/m
Peak SAR (extrapolated) = 0.424 W/kg
SAR(1 g) = 0.336 W/kg
SAR(10 g) = 0.256 W/kg
Power Drift = 0.03 dB
Maximum value of SAR (measured) = 0.369 W/kg



Plot #12

Date/Time: 2014-10-02 14:18:11

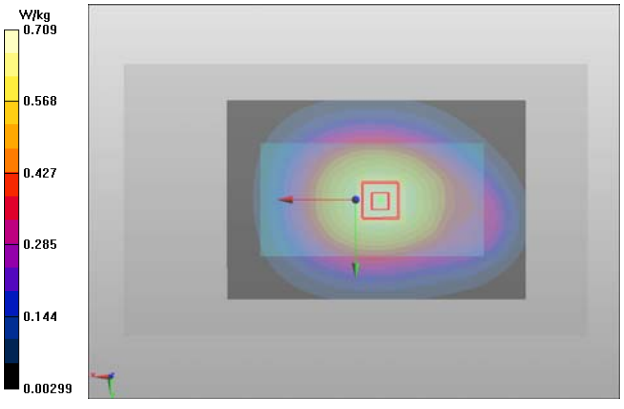
Test Laboratory: TCC Microsoft
Type: RM-1041; Serial: 353067/06/002958/6

Communication System: CDMA800 (BC0)
Frequency: 824.7 MHz; Duty Cycle: 1:1
Medium: BSL835; Medium Notes: t= 22 C
Medium parameters used: f = 825 MHz; σ = 0.968 S/m; ε_r = 54.718; ρ = 1000 kg/m^3
Phantom section: Center Section

DASY Configuration:
- Probe: ES3DV3 - SN3194
- ConvF(6.05, 6.05, 6.05); Calibrated: 2013-11-14;
- Sensor-Surface: 3mm (Mechanical Surface Detection (Locations From Previous Scan Used)), Sensor-Surface: 4mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn538; Calibrated: 2013-11-19
- Phantom: SAM 3 Triple Phantom 5.1C; Type: QD 000 P51 CA; Serial: TP-1123/3
- Measurement SW: DASY52, Version 52.8 (8); SEMCAD X Version 14.6.9 (7117)

CDMAS800 (BC0))/Body - Low - RC3/SO55 - Spacer 15mm - No Headset - Display Facing Phantom/Area Scan (81x121x1): Interpolated grid: dx=1.500 mm, dy=1.500 mm
Reference Value = 27.963 V/m
Fast SAR: SAR(1 g) = 0.633 W/kg
Fast SAR(10 g) = 0.457 W/kg
Maximum value of SAR (interpolated) = 0.709 W/kg

CDMAS800 (BC0))/Body - Low - RC3/SO55 - Spacer 15mm - No Headset - Display Facing Phantom/Zoom Scan (5x5x7)/Cube 0: Measurement grid: dx=7.5mm, dy=7.5mm, dz=5mm
Reference Value = 28.058 V/m
Peak SAR (extrapolated) = 0.797 W/kg
SAR(1 g) = 0.652 W/kg
SAR(10 g) = 0.503 W/kg
Power Drift = -0.00 dB
Maximum value of SAR (measured) = 0.682 W/kg



Plot #13

Date/Time: 2014-10-02 12:12:17

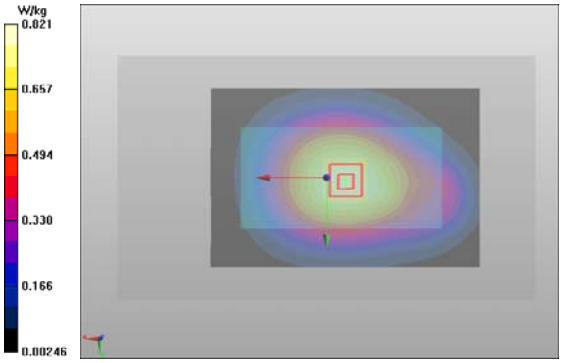
Test Laboratory: TCC Microsoft
Type: RM-1041; Serial: 353067/06/002958/6

Communication System: 2-slot GPRS850
Frequency: 848.8 MHz; Duty Cycle: 1:4.19952
Medium: BSL835; Medium Notes: t= 22 C
Medium parameters used: f = 849 MHz; σ = 0.983 S/m; ε_r = 54.616; ρ = 1000 kg/m^3
Phantom section: Center Section

DASY Configuration:
- Probe: ES3DV3 - SN3194
- ConvF(6.05, 6.05, 6.05); Calibrated: 2013-11-14;
- Sensor-Surface: 3mm (Mechanical Surface Detection (Locations From Previous Scan Used)), Sensor-Surface: 3mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn538; Calibrated: 2013-11-19
- Phantom: SAM 3 Triple Phantom 5.1C; Type: QD 000 P51 CA; Serial: TP-1123/3
- Measurement SW: DASY52, Version 52.8 (8); SEMCAD X Version 14.6.9 (7117)

2-slot GPRS850/Body - High - Spacer 15mm - No Headset - Display Facing Phantom/Area Scan (81x121x1):
Interpolated grid: dx=1.500 mm, dy=1.500 mm
Reference Value = 29.773 V/m
Fast SAR: SAR(1 g) = 0.729 W/kg
Fast SAR(10 g) = 0.524 W/kg
Maximum value of SAR (interpolated) = 0.821 W/kg

2-slot GPRS850/Body - High - Spacer 15mm - No Headset - Display Facing Phantom/Zoom Scan (5x5x7)/Cube 0: Measurement grid: dx=7.5mm, dy=7.5mm, dz=5mm
Reference Value = 29.859 V/m
Peak SAR (extrapolated) = 0.930 W/kg
SAR(1 g) = 0.745 W/kg
SAR(10 g) = 0.570 W/kg
Power Drift = -0.06 dB
Maximum value of SAR (measured) = 0.821 W/kg



Plot #14

Date/Time: 2014-10-02 13:15:45

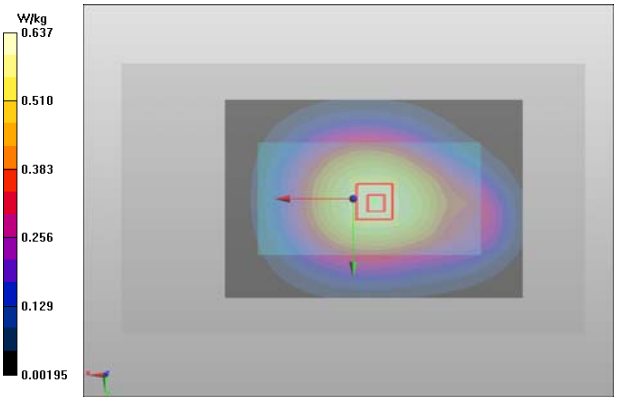
Test Laboratory: TCC Microsoft
Type: RM-1041; Serial: 353067/06/002958/6

Communication System: WCDMA850 (Band 5)
Frequency: 846.6 MHz; Duty Cycle: 1:1
Medium: BSL835; Medium Notes: t= 22 C
Medium parameters used: f = 847 MHz; σ = 0.982 S/m; ε_r = 54.624; ρ = 1000 kg/m^3
Phantom section: Center Section

DASY Configuration:
- Probe: ES3DV3 - SN3194
- ConvF(6.05, 6.05, 6.05); Calibrated: 2013-11-14;
- Sensor-Surface: 3mm (Mechanical Surface Detection (Locations From Previous Scan Used)), Sensor-Surface: 4mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn538; Calibrated: 2013-11-19
- Phantom: SAM 3 Triple Phantom 5.1C; Type: QD 000 P51 CA; Serial: TP-1123/3
- Measurement SW: DASY52, Version 52.8 (8); SEMCAD X Version 14.6.9 (7117)

WCDMAS850 (Band 5)/Body - High - Spacer 15mm - No Headset - Display Facing Phantom/Area Scan (81x121x1): Interpolated grid: dx=1.500 mm, dy=1.500 mm
Reference Value = 26.568 V/m
Fast SAR: SAR(1 g) = 0.567 W/kg
Fast SAR(10 g) = 0.408 W/kg
Maximum value of SAR (interpolated) = 0.637 W/kg

WCDMAS850 (Band 5)/Body - High - Spacer 15mm - No Headset - Display Facing Phantom/Zoom Scan (5x5x7)/Cube 0: Measurement grid: dx=7.5mm, dy=7.5mm, dz=5mm
Reference Value = 26.274 V/m
Peak SAR (extrapolated) = 0.721 W/kg
SAR(1 g) = 0.587 W/kg
SAR(10 g) = 0.452 W/kg
Power Drift = 0.05 dB
Maximum value of SAR (measured) = 0.613 W/kg



Plot #15

Date/Time: 2014-10-07 11:56:52

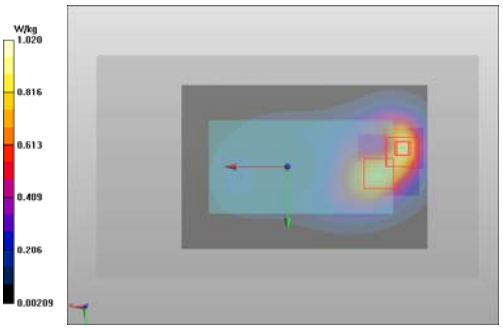
Test Laboratory: TCC Microsoft
Type: RM-1041; Serial: 353067/06/002939/6
Communication System: LTE1700/2100 (Band 4)
Frequency: 1745 MHz; Duty Cycle: 1:1
Medium: **BSL1750**; Medium Notes: t= 21,7 C
Medium parameters used: f = 1745 MHz; σ = 1.456 S/m; ε_r = 52.15; ρ = 1000 kg/m^3
Phantom section: Center Section

DASY Configuration:
- Probe: EX3DV4 - SN3834
- ConvF(7.35, 7.35, 7.35); Calibrated: 2014-05-08;
- Sensor-Surface: 3mm (Mechanical Surface Detection (Locations From Previous Scan Used)), Sensor-Surface: 3mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn1355; Calibrated: 2014-05-13
- Phantom: SAM 3 Triple Phantom 5.1C; Type: QD 000 P51 CA; Serial: TP-1124/2 (1800MHz), TP-1123/2 (1900MHz)
- Measurement SW: DASY52, Version 52.8 (8); SEMCAD X Version 14.6.9 (7117)

LTE1700_2100 (Band 4)/Body - High - QPSK - 20MHz - 1RB - 50% offset - Spacer 15mm - No Headset - Display Facing Phantom/Area Scan (81x121x1): Interpolated grid: dx=1.500 mm, dy=1.500 mm
Reference Value = 25.367 V/m
Fast SAR: SAR(1 g) = 0.789 W/kg
Fast SAR(10 g) = 0.474 W/kg
Maximum value of SAR (interpolated) = 1.02 W/kg

LTE1700_2100 (Band 4)/Body - High - QPSK - 20MHz - 1RB - 50% offset - Spacer 15mm - No Headset - Display Facing Phantom/Zoom Scan (5x5x7)/Cube 0: Measurement grid: dx=7.5mm, dy=7.5mm, dz=5mm
Reference Value = 25.264 V/m
Peak SAR (extrapolated) = 1.38 W/kg
SAR(1 g) = 0.868 W/kg
SAR(10 g) = 0.508 W/kg
Power Drift = 0.02 dB
Maximum value of SAR (measured) = 1.05 W/kg

LTE1700_2100 (Band 4)/Body - High - QPSK - 20MHz - 1RB - 50% offset - Spacer 15mm - No Headset - Display Facing Phantom/Zoom Scan 2 (7x7x7)/Cube 0: Measurement grid: dx=7.5mm, dy=7.5mm, dz=5mm
Reference Value = 25.264 V/m
Peak SAR (extrapolated) = 1.40 W/kg
SAR(1 g) = 0.872 W/kg;
SAR(10 g) = 0.506 W/kg
Maximum value of SAR (measured) = 1.03 W/kg
Power Drift = 0.02 dB



Plot #16

Date/Time: 2014-10-06 12:42:38

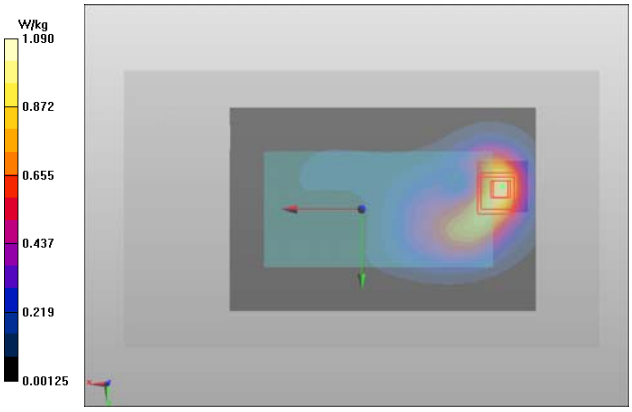
Test Laboratory: TCC Microsoft
Type: RM-1041; Serial: 353067/06/002939/6

Communication System: CDMA1900 (BC1)
Frequency: 1880 MHz; Duty Cycle: 1:1
Medium: BSL1900; Medium Notes: t= 21,1 C
Medium parameters used: f = 1880 MHz; σ = 1.518 S/m; ε_r = 51.615; ρ = 1000 kg/m^3
Phantom section: Center Section

DASY Configuration:
- Probe: EX3DV4 - SN3834
- ConvF(7.15, 7.15, 7.15); Calibrated: 2014-05-08;
- Sensor-Surface: 3mm (Mechanical Surface Detection (Locations From Previous Scan Used)), Sensor-Surface: 3mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn1355; Calibrated: 2014-05-13
- Phantom: SAM 3 Triple Phantom 5.1C; Type: QD 000 P51 CA; Serial: TP-1124/2 (1800MHz), TP-1123/2 (1900MHz)
- Measurement SW: DASY52, Version 52.8 (8); SEMCAD X Version 14.6.9 (7117)

CDMA1900 (BC 1))/Body - Middle - RC3/ SO55 - Spacer 15mm - No Headset - Display Facing Phantom/Area Scan (81x121x1): Interpolated grid: dx=1.500 mm, dy=1.500 mm
Reference Value = 21.003 V/m
Fast SAR: SAR(1 g) = 0.862 W/kg
Fast SAR(10 g) = 0.493 W/kg
Maximum value of SAR (interpolated) = 1.09 W/kg

CDMA1900 (BC 1))/Body - Middle - RC3/ SO55 - Spacer 15mm - No Headset - Display Facing Phantom/Zoom Scan (5x5x7)/Cube 0: Measurement grid: dx=7.5mm, dy=7.5mm, dz=5mm
Reference Value = 21.009 V/m
Peak SAR (extrapolated) = 1.61 W/kg
SAR(1 g) = 0.970 W/kg
SAR(10 g) = 0.543 W/kg
Power Drift = -0.01 dB
Maximum value of SAR (measured) = 1.17 W/kg



Plot #17

Date/Time: 2014-10-15 11:05:18

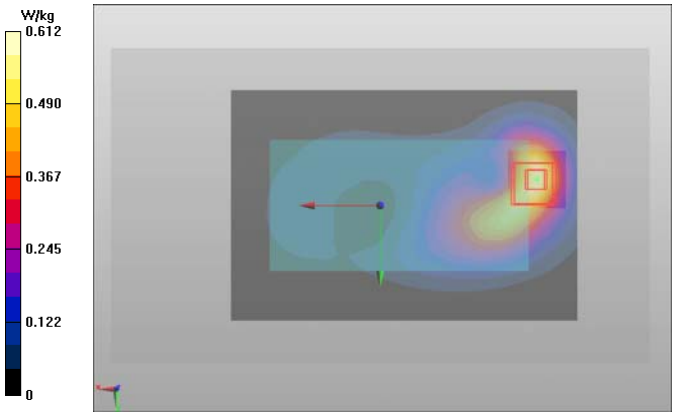
Test Laboratory: TCC Microsoft
Type: RM-1041; Serial: 353067/06/002940/4

Communication System: 2-slot GPRS1900
Frequency: 1880 MHz; Duty Cycle: 1:4.19952
Medium: BSL1900; Medium Notes: t= 20,7 C
Medium parameters used: f = 1880 MHz; σ = 1.518 S/m; ε_r = 52.185; ρ = 1000 kg/m^3
Phantom section: Center Section

DASY Configuration:
- Probe: EX3DV4 - SN3834
- ConvF(7.15, 7.15, 7.15); Calibrated: 2014-05-08;
- Sensor-Surface: 3mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn1355; Calibrated: 2014-05-13
- Phantom: SAM 3 Triple Phantom 5.1C; Type: QD 000 P51 CA; Serial: TP-1124/2 (1800MHz), TP-1123/2 (1900MHz)
- Measurement SW: DASY52, Version 52.8 (8); SEMCAD X Version 14.6.9 (7117)

2-slot GPRS1900/Body - Middle - Spacer 15mm - No Headset - Display Facing Phantom/Area Scan (81x121x1):
Interpolated grid: dx=1.500 mm, dy=1.500 mm
Reference Value = 10.328 V/m
Fast SAR: SAR(1 g) = 0.486 W/kg
Fast SAR(10 g) = 0.281 W/kg
Maximum value of SAR (interpolated) = 0.612 W/kg

2-slot GPRS1900/Body - Middle - Spacer 15mm - No Headset - Display Facing Phantom/Zoom Scan (5x5x7)/Cube 0: Measurement grid: dx=7.5mm, dy=7.5mm, dz=5mm
Reference Value = 10.192 V/m
Peak SAR (extrapolated) = 0.882 W/kg
SAR(1 g) = 0.544 W/kg
SAR(10 g) = 0.309 W/kg
Power Drift = 0.02 dB
Maximum value of SAR (measured) = 0.661 W/kg



Plot #18

Date/Time: 2014-10-15 12:22:14

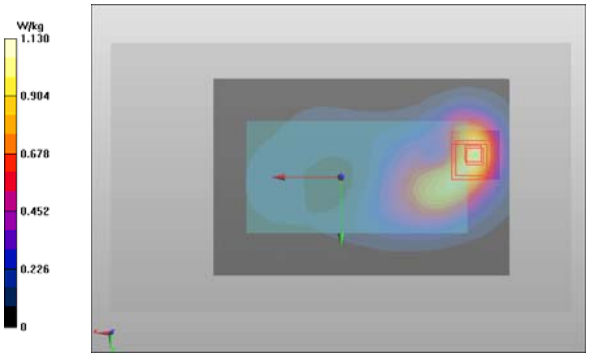
Test Laboratory: TCC Microsoft
Type: RM-1041; Serial: 353067/06/002940/4

Communication System: WCDMA1900 (Band 2)
Frequency: 1852.4 MHz; Duty Cycle: 1:1
Medium: BSL1900; Medium Notes: t= 20,7 C
Medium parameters used (interpolated): f = 1852.4 MHz; σ = 1.489 S/m; ε_r = 52.283; ρ = 1000 kg/m^3
Phantom section: Center Section

DASY Configuration:
- Probe: EX3DV4 - SN3834
- ConvF(7.15, 7.15, 7.15); Calibrated: 2014-05-08;
- Sensor-Surface: 3mm (Mechanical Surface Detection (Locations From Previous Scan Used)), Sensor-Surface: 4mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn1355; Calibrated: 2014-05-13
- Phantom: SAM 3 Triple Phantom 5.1C; Type: QD 000 P51 CA; Serial: TP-1124/2 (1800MHz), TP-1123/2 (1900MHz)
- Measurement SW: DASY52, Version 52.8 (8); SEMCAD X Version 14.6.9 (7117)

WCDMA1900 (Band 2)/Body - Low - Spacer 15mm - No Headset - Display Facing Phantom/Area Scan (81x121x1): Interpolated grid: dx=1.500 mm, dy=1.500 mm
Reference Value = 26.771 V/m
Fast SAR: SAR(1 g) = 0.901 W/kg
Fast SAR(10 g) = 0.535 W/kg
Maximum value of SAR (interpolated) = 1.13 W/kg

WCDMA1900 (Band 2)/Body - Low - Spacer 15mm - No Headset - Display Facing Phantom/Zoom Scan (5x5x7)/Cube 0: Measurement grid: dx=7.5mm, dy=7.5mm, dz=5mm
Reference Value = 26.816 V/m
Peak SAR (extrapolated) = 1.71 W/kg
SAR(1 g) = 1.04 W/kg
SAR(10 g) = 0.594 W/kg
Power Drift = -0.10 dB
Maximum value of SAR (measured) = 1.18 W/kg



Plot #19

Date/Time: 2014-10-06 11:04:51

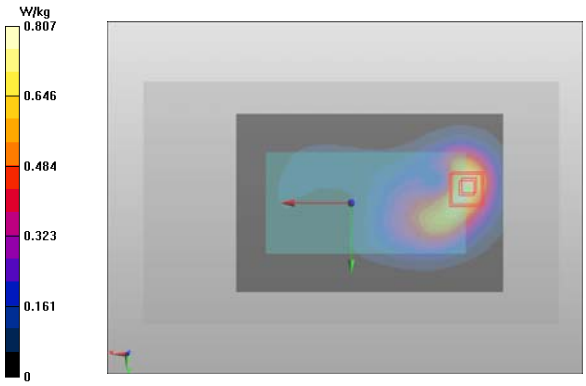
Test Laboratory: TCC Microsoft
Type: RM-1041; Serial: 353067/06/002939/6

Communication System: LTE1900 (Band 2)
Frequency: 1880 MHz; Duty Cycle: 1:1
Medium: BSL1900; Medium Notes: t= 21,1 C
Medium parameters used: f = 1880 MHz; σ = 1.518 S/m; ε_r = 51.615; ρ = 1000 kg/m^3
Phantom section: Center Section

DASY Configuration:
- Probe: EX3DV4 - SN3834
- ConvF(7.15, 7.15, 7.15); Calibrated: 2014-05-08;
- Sensor-Surface: 3mm (Mechanical Surface Detection (Locations From Previous Scan Used)), Sensor-Surface: 3mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn1355; Calibrated: 2014-05-13
- Phantom: SAM 3 Triple Phantom 5.1C; Type: QD 000 P51 CA; Serial: TP-1124/2 (1800MHz), TP-1123/2 (1900MHz)
- Measurement SW: DASY52, Version 52.8 (8); SEMCAD X Version 14.6.9 (7117)

LTE1900 (Band 2)/Body - Middle - QPSK - 20MHz - 1RB - 50% offset - Spacer 15mm - No Headset - Display Facing Phantom/Area Scan (81x121x1): Interpolated grid: dx=1.500 mm, dy=1.500 mm
Reference Value = 22.303 V/m
Fast SAR: SAR(1 g) = 0.643 W/kg
Fast SAR(10 g) = 0.375 W/kg
Maximum value of SAR (interpolated) = 0.807 W/kg

LTE1900 (Band 2)/Body - Middle - QPSK - 20MHz - 1RB - 50% offset - Spacer 15mm - No Headset - Display Facing Phantom/Zoom Scan (5x5x7)/Cube 0: Measurement grid: dx=7.5mm, dy=7.5mm, dz=5mm
Reference Value = 22.259 V/m
Peak SAR (extrapolated) = 1.19 W/kg
SAR(1 g) = 0.724 W/kg
SAR(10 g) = 0.410 W/kg
Power Drift = -0.01 dB
Maximum value of SAR (measured) = 0.885 W/kg



Plot #20

Date/Time: 2014-10-03 14:56:23

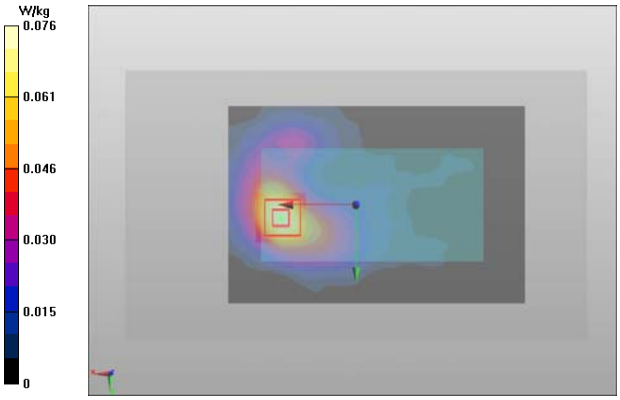
Test Laboratory: TCC Microsoft
Type: RM-1041; Serial: 353067/06/002945/3

Communication System: WLAN2450
Frequency: 2437 MHz; Duty Cycle: 1:1
Medium: BSL2450; Medium Notes: t= 22.1 C
Medium parameters used: f = 2437 MHz; σ = 1.918 S/m; ε_r = 51.454; ρ = 1000 kg/m^3
Phantom section: Center Section

DASY Configuration:
- Probe: EX3DV4 - SN3960
- ConvF(7.44, 7.44, 7.44); Calibrated: 2013-12-10;
- Sensor-Surface: 3mm (Mechanical Surface Detection (Locations From Previous Scan Used)), Sensor-Surface: 3mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn1302; Calibrated: 2013-11-08
- Phantom: #2 Triple, SAR4; Type: QD 000 P51 CA; Serial: TP-1123/1 (750 MHz), TP-1124/1 (2450 MHz)
- Measurement SW: DASY52, Version 52.8 (8); SEMCAD X Version 14.6.9 (7117)

WLAN2450 b-mode/Body - Channel 6 - BPSK 1 Mbps - Spacer 15mm - No Headset - Display Facing
Phantom/Area Scan (121x181x1): Interpolated grid: dx=1.000 mm, dy=1.000 mm
Reference Value = 5.342 V/m
Fast SAR: SAR(1 g) = 0.060 W/kg
Fast SAR(10 g) = 0.032 W/kg
Maximum value of SAR (interpolated) = 0.0760 W/kg

WLAN2450 b-mode/Body - Channel 6 - BPSK 1 Mbps - Spacer 15mm - No Headset - Display Facing
Phantom/Zoom Scan (7x7x7)/Cube 0: Measurement grid: dx=5mm, dy=5mm, dz=5mm
Reference Value = 5.358 V/m
Peak SAR (extrapolated) = 0.110 W/kg
SAR(1 g) = 0.062 W/kg
SAR(10 g) = 0.036 W/kg
Power Drift = 0.13 dB
Maximum value of SAR (measured) = 0.0753 W/kg



Plot #21

Date/Time: 2014-10-02 08:57:11

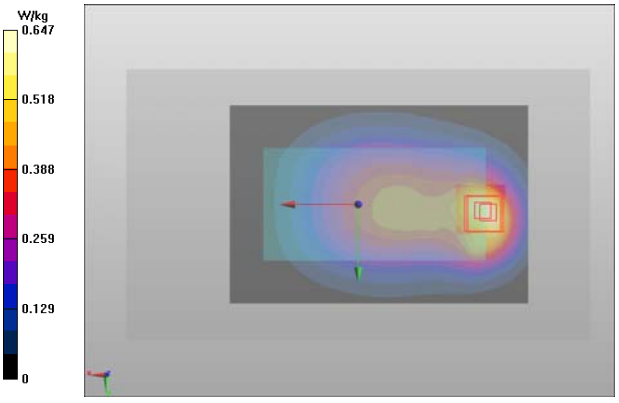
Test Laboratory: TCC Microsoft
Type: RM-1041; Serial: 353067/06/002945/3

Communication System: LTE750 (Band 13)
Frequency: 782 MHz; Duty Cycle: 1:1
Medium: BSL750; Medium Notes: t= 22.2 C
Medium parameters used: f = 782 MHz; σ = 0.996 S/m; ε_r = 53.389; ρ = 1000 kg/m^3
Phantom section: Center Section

DASY Configuration:
- Probe: EX3DV4 - SN3960
- ConvF(10.24, 10.24, 10.24); Calibrated: 2013-12-10;
- Sensor-Surface: 3mm (Mechanical Surface Detection (Locations From Previous Scan Used)), Sensor-Surface: 3mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn1302; Calibrated: 2013-11-08
- Phantom: #2 Triple, SAR4; Type: QD 000 P51 CA; Serial: TP-1123/1 (750 MHz), TP-1124/1 (2450 MHz)
- Measurement SW: DASY52, Version 52.8 (8); SEMCAD X Version 14.6.9 (7117)

LTE750 (Band 13)/Body - Middle - QPSK - 10MHz - 1RB - 100% offset - Spacer 10mm - No Headset - Display Facing Phantom/Area Scan (81x121x1): Interpolated grid: dx=1.500 mm, dy=1.500 mm
Reference Value = 25.427 V/m
Fast SAR: SAR(1 g) = 0.558 W/kg
Fast SAR(10 g) = 0.378 W/kg
Maximum value of SAR (interpolated) = 0.647 W/kg

LTE750 (Band 13)/Body - Middle - QPSK - 10MHz - 1RB - 100% offset - Spacer 10mm - No Headset - Display Facing Phantom/Zoom Scan (5x5x7)/Cube 0: Measurement grid: dx=7.5mm, dy=7.5mm, dz=5mm
Reference Value = 24.919 V/m
Peak SAR (extrapolated) = 0.933 W/kg
SAR(1 g) = 0.544 W/kg
SAR(10 g) = 0.327 W/kg
Power Drift = 0.05 dB
Maximum value of SAR (measured) = 0.644 W/kg



Plot #22

Date/Time: 2014-10-06 10:04:32

Test Laboratory: TCC Microsoft
Type: RM-1041; Serial: 353067/06/002958/6

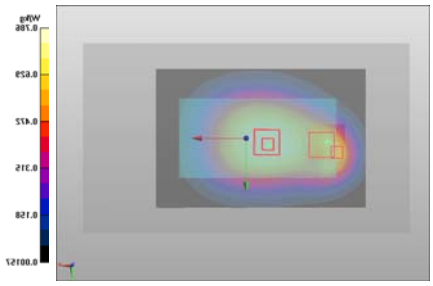
Communication System: CDMA800 (BC0)
Frequency: 824.7 MHz; Duty Cycle: 1:1
Medium: BSL835; Medium Notes: t= 21.7 C
Medium parameters used: f = 825 MHz; σ = 0.954 S/m; ε_r = 53.374; ρ = 1000 kg/m^3
Phantom section: Center Section

DASY Configuration:
- Probe: ES3DV3 - SN3194
- ConvF(6.05, 6.05, 6.05); Calibrated: 2013-11-14;
- Sensor-Surface: 3mm (Mechanical Surface Detection (Locations From Previous Scan Used)), Sensor-Surface: 3mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn538; Calibrated: 2013-11-19
- Phantom: SAM 3 Triple Phantom 5.1C; Type: QD 000 P51 CA; Serial: TP-1123/3
- Measurement SW: DASY52, Version 52.8 (8); SEMCAD X Version 14.6.9 (7117)

CDMA800 (BC0)/Body - Low - RC3/SO55 - Spacer 10mm - No Headset - Display Facing Phantom/Area Scan (81x121x1): Interpolated grid: dx=1.500 mm, dy=1.500 mm
Reference Value = 29.575 V/m
Fast SAR: SAR(1 g) = 0.701 W/kg
Fast SAR(10 g) = 0.507 W/kg
Maximum value of SAR (interpolated) = 0.786 W/kg

CDMA800 (BC0)/Body - Low - RC3/SO55 - Spacer 10mm - No Headset - Display Facing Phantom/Zoom Scan (5x5x7)/Cube 0: Measurement grid: dx=7.5mm, dy=7.5mm, dz=5mm
Reference Value = 29.748 V/m
Peak SAR (extrapolated) = 0.889 W/kg
SAR(1 g) = 0.729 W/kg
SAR(10 g) = 0.567 W/kg
Power Drift = -0.01 dB
Maximum value of SAR (measured) = 0.796 W/kg

CDMA800 (BC0)/Body - Low - RC3/SO55 - Spacer 10mm - No Headset - Display Facing Phantom/Zoom Scan 2 (5x5x7)/Cube 0: Measurement grid: dx=7.5mm, dy=7.5mm, dz=5mm
Reference Value = 29.748 V/m
Peak SAR (extrapolated) = 0.935 W/kg
SAR(1 g) = 0.544 W/kg
SAR(10 g) = 0.337 W/kg
Power Drift = -0.01 dB
Maximum value of SAR (measured) = 0.672 W/kg



Plot #23

Date/Time: 2014-10-03 14:57:05

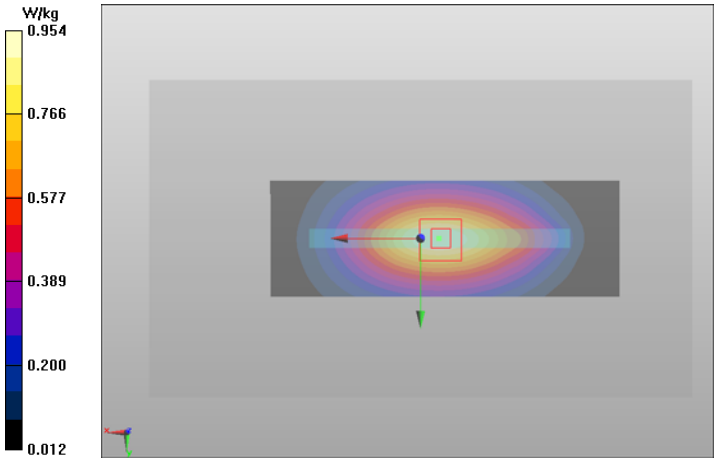
Test Laboratory: TCC Microsoft
Type: RM-1041; Serial: 353067/06/002958/6

Communication System: 2-slot GPRS850
Frequency: 848.8 MHz; Duty Cycle: 1:4.19952
Medium: BSL835; Medium Notes: t= 21.8 C
Medium parameters used: f = 849 MHz; σ = 0.98 S/m; ε_r = 54.322; ρ = 1000 kg/m^3
Phantom section: Center Section

DASY Configuration:
- Probe: ES3DV3 - SN3194
- ConvF(6.05, 6.05, 6.05); Calibrated: 2013-11-14;
- Sensor-Surface: 3mm (Mechanical Surface Detection (Locations From Previous Scan Used)), Sensor-Surface: 3mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn538; Calibrated: 2013-11-19
- Phantom: SAM 3 Triple Phantom 5.1C; Type: QD 000 P51 CA; Serial: TP-1123/3
- Measurement SW: DASY52, Version 52.8 (8); SEMCAD X Version 14.6.9 (7117)

2-slot GPRS850 – Left Right/Body - High - Spacer 10mm - No Headset - Left Edge Facing Phantom - Repeated/Area Scan (41x121x1): Interpolated grid: dx=1.500 mm, dy=1.500 mm
Maximum value of SAR (interpolated) = 0.954 W/kg

2-slot GPRS850 - Left Right/Body - High - Spacer 10mm - No Headset - Left Edge Facing Phantom - Repeated/Zoom Scan (5x5x7)/Cube 0: Measurement grid: dx=7.5mm, dy=7.5mm, dz=5mm
Reference Value = 32.415 V/m
Peak SAR (extrapolated) = 1.16 W/kg
SAR(1 g) = 0.840 W/kg
SAR(10 g) = 0.585 W/kg
Power Drift = -0.01 dB
Maximum value of SAR (measured) = 0.959 W/kg



Plot #24

Date/Time: 2014-10-03 16:52:40

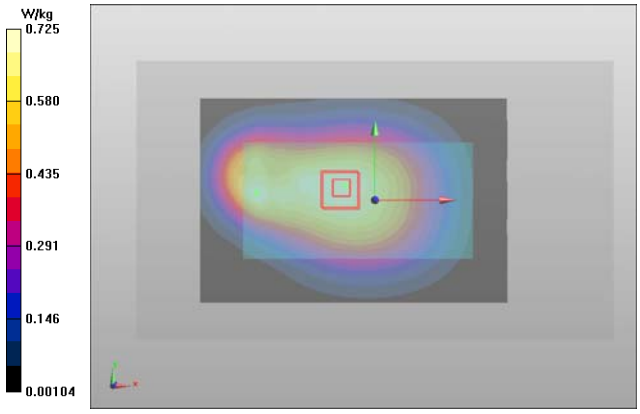
Test Laboratory: TCC Microsoft
Type: RM-1041; Serial: 353067/06/002958/6

Communication System: WCDMA850 (Band 5)
Frequency: 826.4 MHz; Duty Cycle: 1:1
Medium: BSL835; Medium Notes: t= 21.8 C
Medium parameters used (interpolated): f = 826.4 MHz; σ = 0.966 S/m; ε_r = 54.382; ρ = 1000 kg/m^3
Phantom section: Center Section

DASY Configuration:
- Probe: ES3DV3 - SN3194
- ConvF(6.05, 6.05, 6.05); Calibrated: 2013-11-14;
- Sensor-Surface: 3mm (Mechanical Surface Detection (Locations From Previous Scan Used)), Sensor-Surface: 3mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn538; Calibrated: 2013-11-19
- Phantom: SAM 3 Triple Phantom 5.1C; Type: QD 000 P51 CA; Serial: TP-1123/3
- Measurement SW: DASY52, Version 52.8 (8); SEMCAD X Version 14.6.9 (7117)

WCDMA850 (Band 5)/Body - Low - Spacer 10mm - No Headset - Display Facing Phantom/Area Scan (81x121x1): Interpolated grid: dx=1.500 mm, dy=1.500 mm
Reference Value = 27.856 V/m
Fast SAR: SAR(1 g) = 0.636 W/kg
Fast SAR(10 g) = 0.458 W/kg
Maximum value of SAR (interpolated) = 0.725 W/kg

WCDMA850 (Band 5)/Body - Low - Spacer 10mm - No Headset - Display Facing Phantom/Zoom Scan (6x12x7)/Cube 0: Measurement grid: dx=7.5mm, dy=7.5mm, dz=5mm
Reference Value = 27.950 V/m
Peak SAR (extrapolated) = 0.933 W/kg
SAR(1 g) = 0.663 W/kg
SAR(10 g) = 0.515 W/kg
Power Drift = -0.02 dB
Maximum value of SAR (measured) = 0.721 W/kg



Plot #25

Date/Time: 2014-10-13 15:26:04

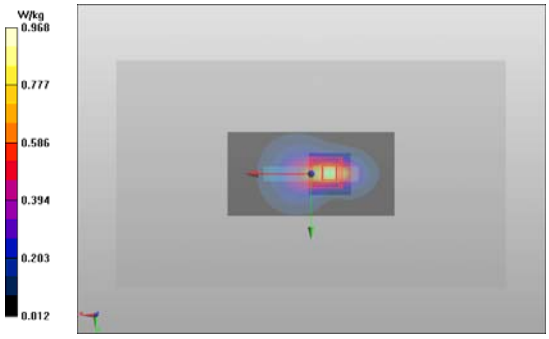
Test Laboratory: TCC Microsoft
Type: RM-1041; Serial: 353067/06/002944/6

Communication System: LTE1700/2100 (Band 4)
Frequency: 1732.5 MHz; Duty Cycle: 1:1
Medium: BSL1750; Medium Notes: t= 20.8 C
Medium parameters used (interpolated): f = 1732.5 MHz; σ = 1.437 S/m; ε_r = 52.05; ρ = 1000 kg/m^3
Phantom section: Center Section

DASY Configuration:
- Probe: EX3DV4 - SN3834
- ConvF(7.35, 7.35, 7.35); Calibrated: 2014-05-08;
- Sensor-Surface: 3mm (Mechanical Surface Detection), Sensor-Surface: 4mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn1355; Calibrated: 2014-05-13
- Phantom: SAM 3 Triple Phantom 5.1C; Type: QD 000 P51 CA; Serial: TP-1124/2 (1800MHz), TP-1123/2 (1900MHz)
- Measurement SW: DASY52, Version 52.8 (8); SEMCAD X Version 14.6.9 (7117)

LTE 1700_2100(Band 4) - Bottom/Body - Middle - QPSK - 20MHz - 1RB - 0% offset - Spacer 10mm - No Headset - Bottom Edge Facing Phantom/Area Scan (41x81x1): Interpolated grid: dx=1.500 mm, dy=1.500 mm
Reference Value = 21.488 V/m
Fast SAR: SAR(1 g) = 0.685 W/kg
Fast SAR(10 g) = 0.323 W/kg
Maximum value of SAR (interpolated) = 0.968 W/kg

LTE 1700_2100(Band 4) - Bottom/Body - Middle - QPSK - 20MHz - 1RB - 0% offset - Spacer 10mm - No Headset - Bottom Edge Facing Phantom/Zoom Scan (5x5x7)/Cube 0: Measurement grid: dx=7.5mm, dy=7.5mm, dz=5mm
Reference Value = 21.444 V/m
Peak SAR (extrapolated) = 1.32 W/kg
SAR(1 g) = 0.742 W/kg
SAR(10 g) = 0.377 W/kg
Power Drift = -0.02 dB
Maximum value of SAR (measured) = 0.854 W/kg



Plot #26

Date/Time: 2014-10-07 13:11:59

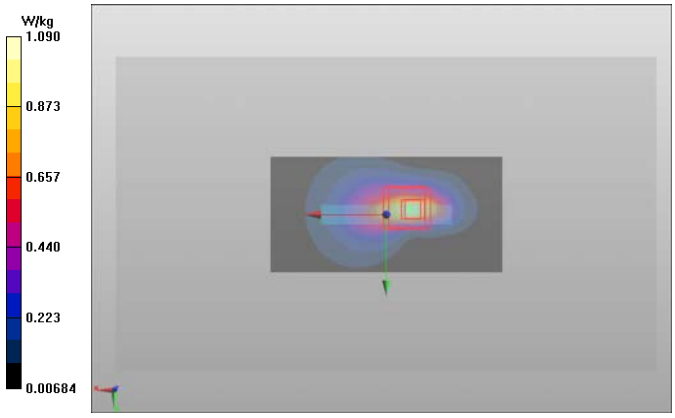
Test Laboratory: The name of your organization
Type: RM-1041; Serial: 353067/06/002944/6

Communication System: CDMA1900 (BC1)
Frequency: 1851.25 MHz; Duty Cycle: 1:1
Medium: BSL1900; Medium Notes: t=22.4 C
Medium parameters used (interpolated): f = 1851.25 MHz; σ = 1.471 S/m; ε_r = 51.136; ρ = 1000 kg/m^3
Phantom section: Center Section

DASY Configuration:
- Probe: ES3DV3 - SN3165
- ConvF(4.65, 4.65, 4.65); Calibrated: 2014-05-08;
- Sensor-Surface: 3mm (Mechanical Surface Detection (Locations From Previous Scan Used)), Sensor-Surface: 4mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn555; Calibrated: 2014-05-12
- Phantom: Triple Flat Phantom 5.1C; Type: SN 000 T01 DA;
- Measurement SW: DASY52, Version 52.8 (8); SEMCAD X Version 14.6.9 (7117)

CDMA1900 (Band 2) - Top_Bottom/Body - Low - Spacer 10mm - No Headset - Bottom Edge Facing
Phantom/Area Scan (41x81x1): Interpolated grid: dx=1.500 mm, dy=1.500 mm
Reference Value = 23.096 V/m
Fast SAR: SAR(1 g) = 0.775 W/kg
Fast SAR(10 g) = 0.370 W/kg
Maximum value of SAR (interpolated) = 1.09 W/kg

CDMA1900 (Band 2) - Top_Bottom/Body - Low - Spacer 10mm - No Headset - Bottom Edge Facing
Phantom/Zoom Scan (5x5x7)/Cube 0: Measurement grid: dx=7.5mm, dy=7.5mm, dz=5mm
Reference Value = 23.346 V/m
Peak SAR (extrapolated) = 1.58 W/kg
SAR(1 g) = 0.858 W/kg
SAR(10 g) = 0.430 W/kg
Power Drift = -0.10 dB
Maximum value of SAR (measured) = 0.973 W/kg



Plot #27

Date/Time: 2014-10-06 13:01:07

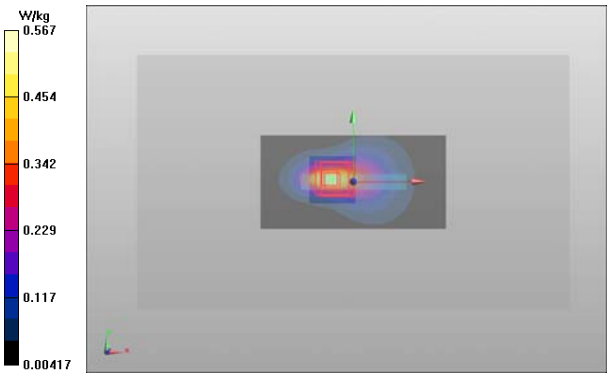
Test Laboratory: TCC Microsoft
Type: RM-1041; Serial: 353067/06/002944/6

Communication System: 2-slot GPRS1900
Frequency: 1909.8 MHz; Duty Cycle: 1:4.19952
Medium: BSL1900; Medium Notes: t= 22.4 C
Medium parameters used: f = 1910 MHz; σ = 1.519 S/m; ε_r = 51.495; ρ = 1000 kg/m^3
Phantom section: Center Section

DASY Configuration:
- Probe: ES3DV3 - SN3165
- ConvF(4.65, 4.65, 4.65); Calibrated: 2014-05-08;
- Sensor-Surface: 3mm (Mechanical Surface Detection), Sensor-Surface: 4mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn555; Calibrated: 2014-05-12
- Phantom: Triple Flat Phantom 5.1C; Type: SN 000 T01 DA;
- Measurement SW: DASY52, Version 52.8 (8); SEMCAD X Version 14.6.9 (7117)

2-Slot GPRS1900 (Band 2) - Bottom/Body - High - Spacer 10mm - No Headset - Bottom Edge Facing
Phantom/Area Scan (41x81x1): Interpolated grid: dx=1.500 mm, dy=1.500 mm
Reference Value = 16.118 V/m
Fast SAR: SAR(1 g) = 0.403 W/kg
Fast SAR(10 g) = 0.186 W/kg
Maximum value of SAR (interpolated) = 0.567 W/kg

2-Slot GPRS1900 (Band 2) - Bottom/Body - High - Spacer 10mm - No Headset - Bottom Edge Facing
Phantom/Zoom Scan (5x5x7)/Cube 0: Measurement grid: dx=7.5mm, dy=7.5mm, dz=5mm
Reference Value = 16.117 V/m
Peak SAR (extrapolated) = 0.817 W/kg
SAR(1 g) = 0.443 W/kg
SAR(10 g) = 0.219 W/kg
Power Drift = 0.07 dB
Maximum value of SAR (measured) = 0.504 W/kg



Plot #28

Date/Time: 2014-10-06 13:49:16

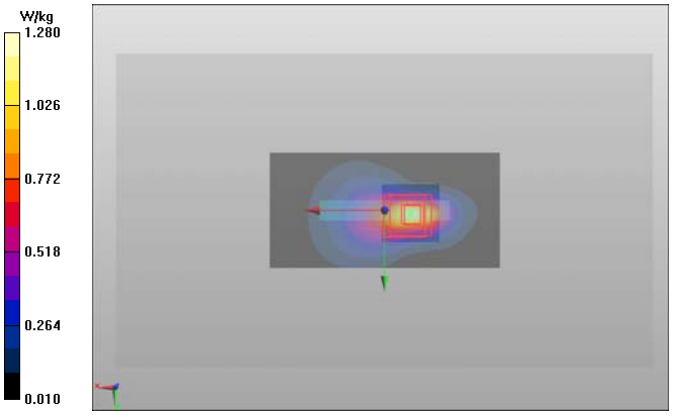
Test Laboratory: The name of your organization
Type: RM-1041; Serial: 353067/06/002944/6

Communication System: WCDMA1900 (Band 2)
Frequency: 1852.4 MHz; Duty Cycle: 1:1
Medium: BSL1900; Medium Notes: t= 22.4 C
Medium parameters used (interpolated): f = 1852.4 MHz; σ = 1.463 S/m; ε_r = 51.95; ρ = 1000 kg/m^3
Phantom section: Center Section

DASY Configuration:
- Probe: ES3DV3 - SN3165
- ConvF(4.65, 4.65, 4.65); Calibrated: 2014-05-08;
- Sensor-Surface: 3mm (Mechanical Surface Detection), Sensor-Surface: 4mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn555; Calibrated: 2014-05-12
- Phantom: Triple Flat Phantom 5.1C; Type: SN 000 T01 DA;
- Measurement SW: DASY52, Version 52.8 (8); SEMCAD X Version 14.6.9 (7117)

WCDMA1900 (Band 2) - Top_Bottom/Body - Low - Spacer 10mm - No Headset - Bottom Edge Facing
Phantom/Area Scan (41x81x1): Interpolated grid: dx=1.500 mm, dy=1.500 mm
Reference Value = 24.168 V/m
Fast SAR: SAR(1 g) = 0.908 W/kg
Fast SAR(10 g) = 0.422 W/kg
Maximum value of SAR (interpolated) = 1.28 W/kg

WCDMA1900 (Band 2) - Top_Bottom/Body - Low - Spacer 10mm - No Headset - Bottom Edge Facing
Phantom/Zoom Scan (5x5x7)/Cube 0: Measurement grid: dx=7.5mm, dy=7.5mm, dz=5mm
Reference Value = 23.645 V/m
Peak SAR (extrapolated) = 1.78 W/kg
SAR(1 g) = 0.962 W/kg
SAR(10 g) = 0.476 W/kg
Power Drift = 0.08 dB
Maximum value of SAR (measured) = 1.09 W/kg



Plot #29

Date/Time: 2014-10-06 10:51:54

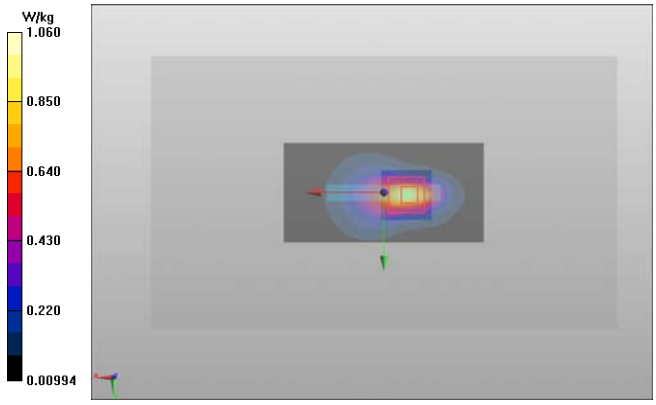
Test Laboratory: TCC Microsoft
Type: RM-1041; Serial: 353067/06/002944/6

Communication System: LTE1900 (Band 2)
Frequency: 1880 MHz; Duty Cycle: 1:1
Medium: BSL1900; Medium Notes: t=21.9 C
Medium parameters used: f = 1880 MHz; σ = 1.499 S/m; ε_r = 51.842; ρ = 1000 kg/m^3
Phantom section: Center Section

DASY Configuration:
- Probe: ES3DV3 - SN3165
- ConvF(4.65, 4.65, 4.65); Calibrated: 2014-05-08;
- Sensor-Surface: 3mm (Mechanical Surface Detection), Sensor-Surface: 4mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn555; Calibrated: 2014-05-12
- Phantom: Triple Flat Phantom 5.1C; Type: SN 000 T01 DA;
- Measurement SW: DASY52, Version 52.8 (8); SEMCAD X Version 14.6.9 (7117)

LTE1900 (Band 2) - Bottom/Body - Middle - QPSK - 20MHz - 1RB - 50% offset - Spacer 10mm - No Headset - Bottom Edge Facing Phantom - Repeated/Area Scan (41x81x1): Interpolated grid: dx=1.500 mm, dy=1.500 mm
Maximum value of SAR (interpolated) = 1.06 W/kg

LTE1900 (Band 2) - Bottom/Body - Middle - QPSK - 20MHz - 1RB - 50% offset - Spacer 10mm - No Headset - Bottom Edge Facing Phantom - Repeated/Zoom Scan (5x5x7)/Cube 0: Measurement grid: dx=7.5mm, dy=7.5mm, dz=5mm
Reference Value = 22.200 V/m
Peak SAR (extrapolated) = 1.49 W/kg
SAR(1 g) = 0.823 W/kg
SAR(10 g) = 0.412 W/kg
Power Drift = 0.04 dB
Maximum value of SAR (measured) = 0.945 W/kg



Plot #30

Date/Time: 2014-10-06 09:18:50

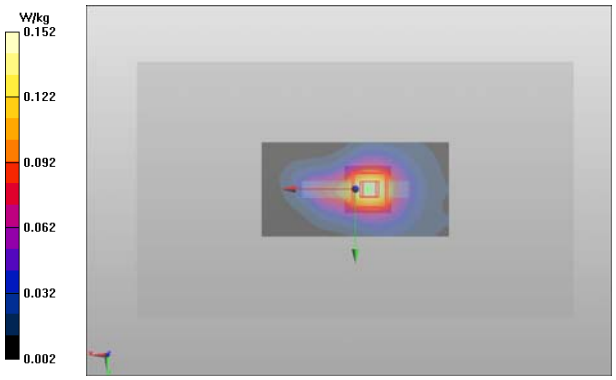
Test Laboratory: TCC Microsoft
Type: RM-1041; Serial: 353067/06/002945/3

Communication System: WLAN2450
Frequency: 2437 MHz; Duty Cycle: 1:1
Medium: BSL2450; Medium Notes: t= 22.2 C
Medium parameters used: f = 2437 MHz; σ = 1.91 S/m; ε_r = 50.841; ρ = 1000 kg/m^3
Phantom section: Center Section

DASY Configuration:
- Probe: EX3DV4 - SN3960
- ConvF(7.44, 7.44, 7.44); Calibrated: 2013-12-10;
- Sensor-Surface: 3mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn1302; Calibrated: 2013-11-08
- Phantom: #2 Triple, SAR4; Type: QD 000 P51 CA; Serial: TP-1123/1 (750 MHz), TP-1124/1 (2450 MHz)
- Measurement SW: DASY52, Version 52.8 (8); SEMCAD X Version 14.6.9 (7117)

WLAN2450 b-mode /Body - Channel 6 - BPSK 1 Mbps - Spacer 10mm - No Headset - Top Edge Facing
Phantom/Area Scan (61x121x1): Interpolated grid: dx=1.000 mm, dy=1.000 mm
Reference Value = 8.253 V/m
Fast SAR: SAR(1 g) = 0.119 W/kg
Fast SAR(10 g) = 0.060 W/kg
Maximum value of SAR (interpolated) = 0.152 W/kg

WLAN2450 b-mode /Body - Channel 6 - BPSK 1 Mbps - Spacer 10mm - No Headset - Top Edge Facing
Phantom/Zoom Scan (7x7x7)/Cube 0: Measurement grid: dx=5mm, dy=5mm, dz=5mm
Reference Value = 8.204 V/m
Peak SAR (extrapolated) = 0.216 W/kg
SAR(1 g) = 0.120 W/kg
SAR(10 g) = 0.065 W/kg
Power Drift = -0.04 dB
Maximum value of SAR (measured) = 0.148 W/kg



APPENDIX C: DIELECTRIC PARAMETERS OF THE TISSUE SIMULANTS

Head tissue simulant dielectric parameters used in the measurements:

f (MHz)	LTE750 (Band 13)	Dielectric Parameters					
	Date	-		Ch 23230 782.0 MHz		-	
		er	s [S/m]	er	s [S/m]	er	s [S/m]
782	2014-10-01	0.0	0.00	41.1	0.93	0.0	0.00
f (MHz)	CDMA800 (BC0)	Dielectric Parameters					
	Date	Ch 1013 824.7 MHz		Ch 384 836.5 MHz		Ch 777 848.3 MHz	
		er	s [S/m]	er	s [S/m]	er	s [S/m]
836	2014-10-01	40.5	0.91	40.4	0.91	40.4	0.92
	2014-10-07	41.0	0.91	40.8	0.92	40.7	0.93
f (MHz)	GSM 850	Dielectric Parameters					
	Date	Ch 128 824.2 MHz		Ch 190 836.6 MHz		Ch 251 848.8 MHz	
		er	s [S/m]	er	s [S/m]	er	s [S/m]
836	2014-10-01	40.5	0.91	40.4	0.91	40.3	0.92
	2014-10-07	41.0	0.91	40.8	0.92	40.7	0.93
f (MHz)	WCDMA850 (Band 5)	Dielectric Parameters					
	Date	Ch 4132 826.4 MHz		Ch 4175 835.0 MHz		Ch 4233 846.6 MHz	
		er	s [S/m]	er	s [S/m]	er	s [S/m]
835	2014-10-01	40.5	0.91	40.4	0.91	40.4	0.92
	2014-10-07	40.9	0.92	40.8	0.92	40.7	0.93
f (MHz)	LTE1700/2100 (Band 4)	Dielectric Parameters					
	Date	Ch 20050 1720.0 MHz		Ch 20175 1732.5 MHz		Ch 20300 1745.0 MHz	
		er	s [S/m]	er	s [S/m]	er	s [S/m]
1732	2014-10-01	40.2	1.32	40.1	1.33	40.1	1.34
	2014-10-14	40.1	1.31	40.0	1.32	40.0	1.33

(Head Tissue Simulant Table continues)

(Head Tissue Simulant Table continues)

f (MHz)	CDMA1900 (BC1) Date	Dielectric Parameters					
		Ch 25 1851.25 MHz		Ch 600 1880.0 MHz		Ch 1175 1908.75 MHz	
		er	s [S/m]	er	s [S/m]	er	s [S/m]
1880	2014-10-02	39.5	1.37	39.4	1.40	39.2	1.42
	2014-10-03	38.7	1.36	38.6	1.39	38.5	1.42
	2014-10-10	39.4	1.34	39.3	1.37	39.2	1.39
	2014-10-14	39.6	1.35	39.5	1.38	39.4	1.41
	2014-10-15	39.2	1.37	39.1	1.39	39.0	1.42
f (MHz)	GSM 1900 Date	Dielectric Parameters					
		Ch 512 1850.2 MHz		Ch 661 1880.0 MHz		Ch 810 1909.8 MHz	
		er	s [S/m]	er	s [S/m]	er	s [S/m]
1880	2014-10-02	39.5	1.37	39.4	1.40	39.2	1.43
	2014-10-03	38.7	1.36	38.6	1.39	38.5	1.42
	2014-10-10	39.4	1.34	39.3	1.37	39.2	1.39
	2014-10-14	39.7	1.35	39.5	1.38	39.4	1.41
	2014-10-15	39.2	1.37	39.1	1.39	39.0	1.42
f (MHz)	WCDMA1900 (Band 2) Date	Dielectric Parameters					
		Ch 9262 1852.4 MHz		Ch 9400 1880.0 MHz		Ch 9538 1907.6 MHz	
		er	s [S/m]	er	s [S/m]	er	s [S/m]
1880	2014-10-02	39.5	1.37	39.4	1.40	39.2	1.42
	2014-10-03	38.7	1.37	38.6	1.39	38.5	1.41
	2014-10-10	39.4	1.34	39.3	1.37	39.2	1.39
	2014-10-14	39.6	1.35	39.5	1.38	39.4	1.41
	2014-10-15	39.2	1.37	39.1	1.39	39.0	1.42
f (MHz)	LTE1900 (Band 2) Date	Dielectric Parameters					
		Ch 18700 1860.0 MHz		Ch 18900 1880.0 MHz		Ch 19100 1900.0 MHz	
		er	s [S/m]	er	s [S/m]	er	s [S/m]
1880	2014-10-02	39.4	1.38	39.4	1.40	39.3	1.42
	2014-10-03	38.7	1.37	38.6	1.39	38.5	1.41
	2014-10-10	39.4	1.35	39.3	1.37	39.2	1.39
	2014-10-14	39.6	1.36	39.5	1.38	39.5	1.40
	2014-10-15	39.2	1.38	39.1	1.39	39.0	1.42
f (MHz)	WLAN 2450 Date	Dielectric Parameters					
		Ch 1 2412.0 MHz		Ch 6 2437.0 MHz		Ch 11 2462.0 MHz	
		er	s [S/m]	er	s [S/m]	er	s [S/m]
2437	2014-10-02	39.2	1.74	39.1	1.77	39.0	1.79
	2014-10-03	38.5	1.77	38.4	1.79	38.3	1.81

Body tissue simulant dielectric parameters used in the measurements:

f (MHz)	LTE750 (Band 13)	Dielectric Parameters					
	Date	-		Ch 23230 782.0 MHz		-	
		er	s [S/m]	er	s [S/m]	er	s [S/m]
782	2014-10-01	-	-	53.4	1.00	-	-
f (MHz)	CDMA800 (BC0)	Dielectric Parameters					
	Date	Ch 1013 824.7 MHz		Ch 384 836.5 MHz		Ch 777 848.3 MHz	
		er	s [S/m]	er	s [S/m]	er	s [S/m]
836	2014-10-02	54.7	0.97	54.7	0.97	54.6	0.98
	2014-10-03	54.4	0.96	54.4	0.97	54.3	0.98
	2014-10-06	53.4	0.95	53.3	0.96	53.2	0.97
f (MHz)	GSM 850	Dielectric Parameters					
	Date	Ch 128 824.2 MHz		Ch 190 836.6 MHz		Ch 251 848.8 MHz	
		er	s [S/m]	er	s [S/m]	er	s [S/m]
836	2014-10-02	54.7	0.97	54.7	0.97	54.6	0.98
	2014-10-03	54.4	0.96	54.4	0.97	54.3	0.98
	2014-10-06	53.4	0.95	53.3	0.96	53.2	0.97
f (MHz)	WCDMA850 (Band 5)	Dielectric Parameters					
	Date	Ch 4132 826.4 MHz		Ch 4175 835.0 MHz		Ch 4233 846.6 MHz	
		er	s [S/m]	er	s [S/m]	er	s [S/m]
835	2014-10-02	54.7	0.97	54.7	0.97	54.6	0.98
	2014-10-03	54.4	0.96	54.4	0.97	54.3	0.98
	2014-10-06	53.4	0.95	53.3	0.96	53.2	0.97
f (MHz)	LTE1700/2100 (Band 4)	Dielectric Parameters					
	Date	Ch 20050 1720.0 MHz		Ch 20175 1732.5 MHz		Ch 20300 1745.0 MHz	
		er	s [S/m]	er	s [S/m]	er	s [S/m]
1732	2014-10-07	52.3	1.43	52.2	1.44	52.1	1.45
	2014-10-08	52.3	1.41	52.2	1.43	52.1	1.44
	2014-10-13	52.1	1.42	52.0	1.43	52.1	1.44
	2014-11-03	52.7	1.42	52.7	1.44	52.7	1.45

(Body Tissue Simulant Table continues)

(Body Tissue Simulant Table continues)

f (MHz)	CDMA1900 (BC1)	Dielectric Parameters					
	Date	Ch 25 1851.25 MHz		Ch 600 1880.0 MHz		Ch 1175 1908.75 MHz	
		er	s [S/m]	er	s [S/m]	er	s [S/m]
1880	2014-10-06	51.7	1.48	51.6	1.52	51.6	1.55
	2014-10-09	51.9	1.49	51.8	1.53	51.9	1.56
	2014-10-10	52.1	1.49	52.0	1.53	52.1	1.56
	2014-10-15	52.3	1.49	52.2	1.52	52.1	1.55
	2014-10-21	51.5	1.47	51.4	1.50	51.3	1.53
	2014-10-24	51.8	1.49	51.7	1.52	51.7	1.55
f (MHz)	GSM 1900	Dielectric Parameters					
	Date	Ch 512 1850.2 MHz		Ch 661 1880.0 MHz		Ch 810 1909.8 MHz	
		er	s [S/m]	er	s [S/m]	er	s [S/m]
1880	2014-10-06	51.7	1.48	51.6	1.52	51.6	1.55
	2014-10-09	51.9	1.48	51.8	1.53	51.9	1.56
	2014-10-10	52.1	1.48	52.0	1.53	52.1	1.57
	2014-10-15	52.3	1.48	52.2	1.52	52.1	1.55
	2014-10-21	51.5	1.47	51.4	1.50	51.3	1.53
	2014-10-24	51.8	1.49	51.7	1.52	51.6	1.55
f (MHz)	WCDMA1900 (Band 2)	Dielectric Parameters					
	Date	Ch 9262 1852.4 MHz		Ch 9400 1880.0 MHz		Ch 9538 1907.6 MHz	
		er	s [S/m]	er	s [S/m]	er	s [S/m]
1880	2014-10-06	51.7	1.48	51.6	1.52	51.6	1.55
	2014-10-09	51.9	1.49	51.8	1.53	51.9	1.56
	2014-10-10	52.1	1.49	52.0	1.53	52.1	1.56
	2014-10-15	52.3	1.49	52.2	1.52	52.1	1.55
	2014-10-21	51.5	1.47	51.4	1.50	51.3	1.53
	2014-10-24	51.8	1.49	51.7	1.52	51.7	1.55
f (MHz)	LTE1900 (Band 2)	Dielectric Parameters					
	Date	Ch 18700 1860.0 MHz		Ch 18900 1880.0 MHz		Ch 19100 1900.0 MHz	
		er	s [S/m]	er	s [S/m]	er	s [S/m]
1880	2014-10-06	51.7	1.49	51.6	1.52	51.6	1.54
	2014-10-09	51.9	1.50	51.8	1.53	51.9	1.55
	2014-10-10	52.1	1.50	52.0	1.53	52.1	1.56
	2014-10-15	52.3	1.49	52.2	1.52	52.1	1.54
	2014-10-21	51.5	1.48	51.4	1.50	51.3	1.52
	2014-10-24	51.8	1.50	51.7	1.52	51.7	1.54
f (MHz)	WLAN 2450	Dielectric Parameters					
	Date	Ch 1 2412.0 MHz		Ch 6 2437.0 MHz		Ch 11 2462.0 MHz	
		er	s [S/m]	er	s [S/m]	er	s [S/m]
2437	2014-10-03	51.5	1.89	51.5	1.92	51.4	1.94
	2014-10-06	51.0	1.88	50.8	1.91	50.8	1.94

APPENDIX D: RELEVANT PAGES FROM PROBE CALIBRATION REPORT(S)

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

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

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

Accreditation No.: SCS 108

Client **Nokia Salo TCC**

Certificate No: **EX3-3960_Dec13**

CALIBRATION CERTIFICATE

Object: EX3DV4 - SN:3960

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: December 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 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. 217-01736)	Apr-14
Reference 30 dB Attenuator	SN: S5129 (30b)	04-Apr-13 (No. 217-01738)	Apr-14
Reference Probe ES3DV2	SN: 3013	26-Dec-12 (No. ES3-3013_Dec12)	Dec-13
DAE4	SN: 660	4-Sep-13 (No. DAE4-660_Sep13)	Sep-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-13)	In house check: Oct-14

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

Issued: December 11, 2013

DASY/EASY - Parameters of Probe: EX3DV4 - SN:3960

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	10.78	10.78	10.78	0.47	0.86	± 12.0 %
835	41.5	0.90	10.45	10.45	10.45	0.41	0.86	± 12.0 %
1750	40.1	1.37	8.49	8.49	8.49	0.57	0.67	± 12.0 %
1900	40.0	1.40	8.23	8.23	8.23	0.62	0.64	± 12.0 %
2450	39.2	1.80	7.39	7.39	7.39	0.38	0.83	± 12.0 %
2600	39.0	1.96	7.33	7.33	7.33	0.39	0.84	± 12.0 %
5200	36.0	4.66	5.27	5.27	5.27	0.35	1.80	± 13.1 %
5300	35.9	4.76	5.07	5.07	5.07	0.35	1.80	± 13.1 %
5500	35.6	4.96	4.99	4.99	4.99	0.35	1.80	± 13.1 %
5600	35.5	5.07	4.80	4.80	4.80	0.35	1.80	± 13.1 %
5800	35.3	5.27	4.80	4.80	4.80	0.40	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.

DASY/EASY - Parameters of Probe: EX3DV4 - SN:3960

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	10.24	10.24	10.24	0.43	0.86	± 12.0 %
835	55.2	0.97	10.08	10.08	10.08	0.34	1.00	± 12.0 %
1750	53.4	1.49	8.33	8.33	8.33	0.52	0.72	± 12.0 %
1900	53.3	1.52	7.88	7.88	7.88	0.62	0.64	± 12.0 %
2450	52.7	1.95	7.44	7.44	7.44	0.62	0.50	± 12.0 %
2600	52.5	2.16	7.14	7.14	7.14	0.59	0.50	± 12.0 %
5200	49.0	5.30	4.60	4.60	4.60	0.45	1.90	± 13.1 %
5300	48.9	5.42	4.33	4.33	4.33	0.50	1.90	± 13.1 %
5500	48.6	5.65	4.12	4.12	4.12	0.50	1.90	± 13.1 %
5600	48.5	5.77	3.97	3.97	3.97	0.50	1.90	± 13.1 %
5800	48.2	6.00	4.14	4.14	4.14	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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Accreditation No.: **SCS 108**

Client **Nokia Salo TCC**

Certificate No: **EX3-3834_May14**

CALIBRATION CERTIFICATE

Object: EX3DV4 - SN:3834

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

Calibration date: May 8, 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	03-Apr-14 (No. 217-01911)	Jan-15
Power sensor E4412A	MY41498087	03-Apr-14 (No. 217-01911)	Jan-15
Reference 3 dB Attenuator	SN: S5054 (3c)	03-Apr-14 (No. 217-01915)	Jan-15
Reference 20 dB Attenuator	SN: S5277 (20x)	03-Apr-14 (No. 217-01919)	Jan-15
Reference 30 dB Attenuator	SN: S5129 (30b)	03-Apr-14 (No. 217-01920)	Jan-15
Reference Probe ES3DV2	SN: 3013	30-Dec-13 (No. ES3-3013_Dec13)	Dec-14
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: May 12, 2014

DASY/EASY - Parameters of Probe: EX3DV4 - SN:3834

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)
1750	40.1	1.37	7.62	7.62	7.62	0.80	0.59	± 12.0 %
1900	40.0	1.40	7.33	7.33	7.33	0.63	0.66	± 12.0 %

[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.

DASY/EASY - Parameters of Probe: EX3DV4 - SN:3834

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)
1750	53.4	1.49	7.35	7.35	7.35	0.77	0.63	± 12.0 %
1900	53.3	1.52	7.15	7.15	7.15	0.45	0.81	± 12.0 %

[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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Accreditation No.: **SCS 108**

Client **Nokia Salo TCC**

Certificate No: **ES3-3165_May14**

CALIBRATION CERTIFICATE

Object **ES3DV3 - SN:3165**

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

Calibration date **May 8, 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	03-Apr-14 (No. 217-01911)	Jan-15
Power sensor E4412A	MY41498087	03-Apr-14 (No. 217-01911)	Jan-15
Reference 3 dB Attenuator	SN: S5054 (3c)	03-Apr-14 (No. 217-01915)	Jan-15
Reference 20 dB Attenuator	SN: S5277 (20x)	03-Apr-14 (No. 217-01919)	Jan-15
Reference 30 dB Attenuator	SN: S5129 (30b)	03-Apr-14 (No. 217-01920)	Jan-15
Reference Probe ES3DV2	SN: 3013	30-Dec-13 (No. ES3-3013_Dec13)	Dec-14
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: May 12, 2014

DASY/EASY - Parameters of Probe: ES3DV3 - SN:3165

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)
835	41.5	0.90	6.02	6.02	6.02	0.25	2.13	± 12.0 %
1750	40.1	1.37	5.09	5.09	5.09	0.36	1.71	± 12.0 %
1900	40.0	1.40	4.89	4.89	4.89	0.60	1.30	± 12.0 %

[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.

DASY/EASY - Parameters of Probe: ES3DV3 - SN:3165

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)
835	55.2	0.97	6.01	6.01	6.01	0.70	1.23	± 12.0 %
1750	53.4	1.49	4.83	4.83	4.83	0.51	1.54	± 12.0 %
1900	53.3	1.52	4.65	4.65	4.65	0.47	1.65	± 12.0 %

[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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Accreditation No.: **SCS 108**

Client **Nokia Salo TCC**

Certificate No: **ES3-3194_Nov13**

CALIBRATION CERTIFICATE

Object ES3DV3 - SN:3194

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

Calibration date November 14, 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	4-Sep-13 (No. DAE4-660_Sep13)	Sep-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-13)	In house check: Oct-14

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

Issued: November 15, 2013

DASY/EASY - Parameters of Probe: ES3DV3 - SN:3194

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 [C]	Depth [C] (mm)	Unct. (k=2)
835	41.5	0.90	6.12	6.12	6.12	0.28	2.07	± 12.0 %

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

DASY/EASY - Parameters of Probe: ES3DV3 - SN:3194

Calibration Parameter Determined in Body Tissue Simulating Media

f (MHz) [E]	Relative Permittivity [F]	Conductivity (S/m) [F]	ConvF X	ConvF Y	ConvF Z	Alpha [G]	Depth [G] (mm)	Unct. (k=2)
835	55.2	0.97	6.05	6.05	6.05	0.69	1.30	± 12.0 %

[E] 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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Accreditation No.: SCS 108

Client **TCC Microsoft**

Certificate No: ES3-3118_Oct14

CALIBRATION CERTIFICATE

Object: ES3DV3 - SN:3118

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

Calibration date: October 21, 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	03-Apr-14 (No. 217-01911)	Apr-15
Power sensor E4412A	MY41498087	03-Apr-14 (No. 217-01911)	Apr-15
Reference 3 dB Attenuator	SN: S5054 (3c)	03-Apr-14 (No. 217-01915)	Apr-15
Reference 20 dB Attenuator	SN: S5277 (20x)	03-Apr-14 (No. 217-01919)	Apr-15
Reference 30 dB Attenuator	SN: S5129 (30b)	03-Apr-14 (No. 217-01920)	Apr-15
Reference Probe ES3DV2	SN: 3013	30-Dec-13 (No. ES3-3013_Dec13)	Dec-14
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-14)	In house check: Oct-15

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

Issued: October 21, 2014

DASY/EASY - Parameters of Probe: ES3DV3 - SN:3118

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	6.04	6.04	6.04	0.24	2.17	± 12.0 %
835	41.5	0.90	5.83	5.83	5.83	0.74	1.18	± 12.0 %
1750	40.1	1.37	4.98	4.98	4.98	0.73	1.17	± 12.0 %
1900	40.0	1.40	4.79	4.79	4.79	0.80	1.16	± 12.0 %
2300	39.5	1.67	4.51	4.51	4.51	0.75	1.26	± 12.0 %
2450	39.2	1.80	4.25	4.25	4.25	0.80	1.25	± 12.0 %
2600	39.0	1.96	4.18	4.18	4.18	0.80	1.27	± 12.0 %

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

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

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

DASY/EASY - Parameters of Probe: ES3DV3 - SN:3118

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	5.79	5.79	5.79	0.39	1.67	± 12.0 %
835	55.2	0.97	5.76	5.76	5.76	0.36	1.76	± 12.0 %
1750	53.4	1.49	4.64	4.64	4.64	0.60	1.40	± 12.0 %
1900	53.3	1.52	4.44	4.44	4.44	0.53	1.51	± 12.0 %
2300	52.9	1.81	4.22	4.22	4.22	0.80	1.19	± 12.0 %
2450	52.7	1.95	4.03	4.03	4.03	0.80	1.16	± 12.0 %
2600	52.5	2.16	3.93	3.93	3.93	0.80	1.04	± 12.0 %

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

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

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

APPENDIX E: RELEVANT PAGES FROM DIPOLE VALIDATION KIT REPORT(S)

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Accreditation No.: SCS 108

Client **Nokia Salo TCC**

Certificate No: D750V3-1075_Nov12

CALIBRATION CERTIFICATE

Object	D750V3 - SN: 1075
Calibration procedure(s)	QA CAL-05.v8 Calibration procedure for dipole validation kits above 700 MHz
Calibration date:	November 19, 2012

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)	27-Mar-12 (No. 217-01530)	Apr-13
Type-N mismatch combination	SN: 5047.2 / 06327	27-Mar-12 (No. 217-01533)	Apr-13
Reference Probe ES3DV3	SN: 3205	30-Dec-11 (No. ES3-3205_Dec11)	Dec-12
DAE4	SN: 601	27-Jun-12 (No. DAE4-601_Jun12)	Jun-13

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	
Approved by:	Katja Pokovic	Technical Manager	

Issued: November 19, 2012

Measurement Conditions

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

DASY Version	DASY5	V52.8.3
Extrapolation	Advanced Extrapolation	
Phantom	Modular Flat Phantom	
Distance Dipole Center - TSL	15 mm	with Spacer
Zoom Scan Resolution	dx, dy, dz = 5 mm	
Frequency	750 MHz ± 1 MHz	

Head TSL parameters

The following parameters and calculations were applied.

	Temperature	Permittivity	Conductivity
Nominal Head TSL parameters	22.0 °C	41.9	0.89 mho/m
Measured Head TSL parameters	(22.0 ± 0.2) °C	42.2 ± 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	2.09 W/kg
SAR for nominal Head TSL parameters	normalized to 1W	8.30 W/kg ± 17.0 % (k=2)

SAR averaged over 10 cm^3 (10 g) of Head TSL	condition	
SAR measured	250 mW input power	1.36 W/kg
SAR for nominal Head TSL parameters	normalized to 1W	5.41 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	55.3 ± 6 %	0.97 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	2.24 W/kg
SAR for nominal Body TSL parameters	normalized to 1W	8.88 W/kg ± 17.0 % (k=2)

SAR averaged over 10 cm^3 (10 g) of Body TSL	condition	
SAR measured	250 mW input power	1.48 W/kg
SAR for nominal Body TSL parameters	normalized to 1W	5.88 W/kg ± 16.5 % (k=2)

Appendix

Antenna Parameters with Head TSL

Impedance, transformed to feed point	55Ω + 0.6jΩ
Return Loss	- 26.0 dB

Antenna Parameters with Body TSL

Impedance, transformed to feed point	50.9Ω - 1.6 jΩ
Return Loss	- 34.6 dB

General Antenna Parameters and Design

Electrical Delay (one direction)	1.426 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 04, 2012

DASY5 Validation Report for Head TSL

Date: 19.11.2012

Test Laboratory: SPEAG, Zurich, Switzerland

DUT: Dipole 750 MHz; Type: D750V3; Serial: D750V3 - SN: 1075

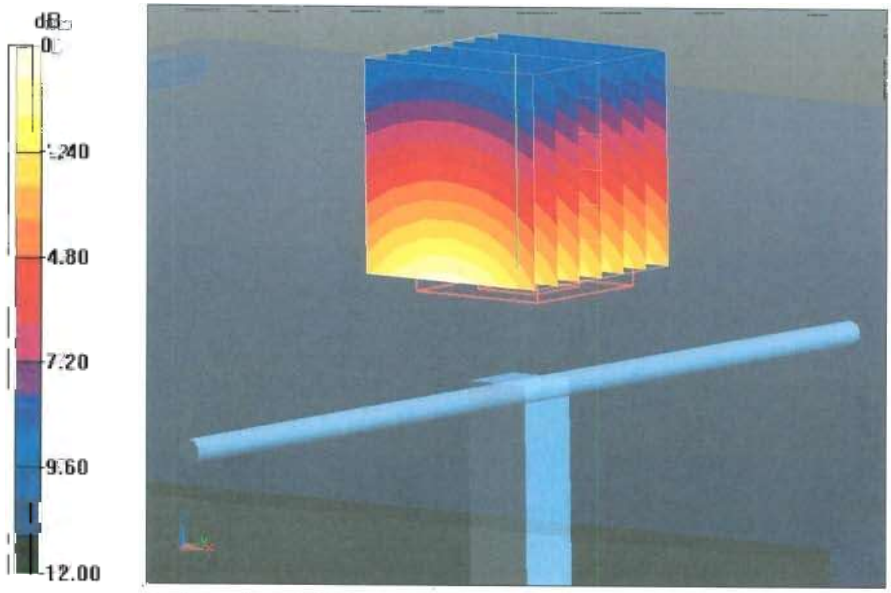
Communication System: CW; Frequency: 750 MHz
Medium parameters used: f = 750 MHz; σ = 0.9 mho/m; ε_r = 42.5; ρ = 1000 kg/m^3
Phantom section: Flat Section
Measurement Standard: DASY5 (IEEE/IEC/ANSI C63.19-2007)

DASY52 Configuration:

- Probe: ES3DV3 - SN3205; ConvF(6.33, 6.33, 6.33); Calibrated: 30.12.2011;
- Sensor-Surface: 3mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn601; Calibrated: 27.06.2012
- Phantom: Flat Phantom 4.9L; Type: QD000P49AA; Serial: 1001
- DASY52 52.8.3(988); SEMCAD X 14.6.7(6848)

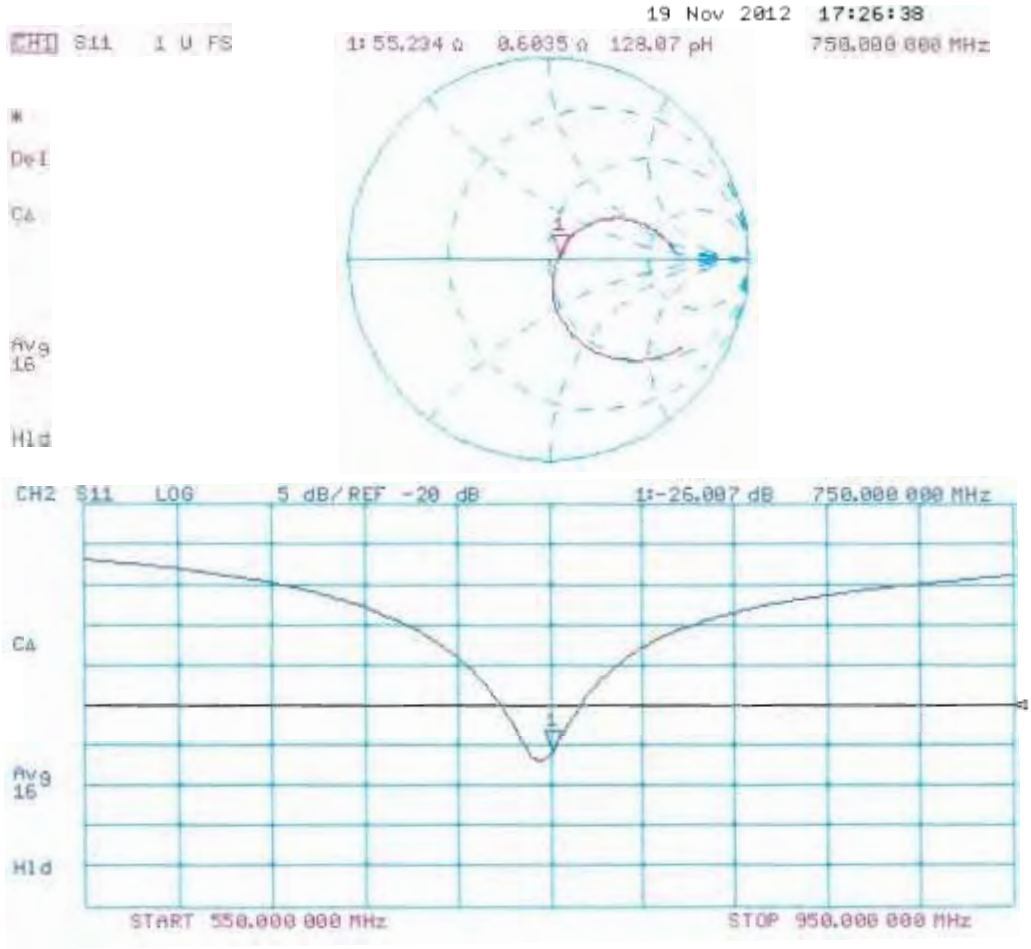
Dipole Calibration for Head Tissue/Pin=250 mW, d=15mm 2/Zoom Scan (7x8x7)/Cube 0:

Measurement grid: dx=5mm, dy=5mm, dz=5mm
Reference Value = 53.207 V/m; Power Drift = 0.04 dB
Peak SAR (extrapolated) = 3.22 W/kg
SAR(1 g) = 2.09 W/kg; SAR(10 g) = 1.36 W/kg
Maximum value of SAR (measured) = 2.45 W/kg



0 dB = 2.45 W/kg = 3.89 dBW/kg

Impedance Measurement Plot for Head TSL



DASY5 Validation Report for Body TSL

Date: 19.11.2012

Test Laboratory: SPEAG, Zurich, Switzerland

DUT: Dipole 750 MHz; Type: D750V3; Serial: D750V3 - SN: 1075

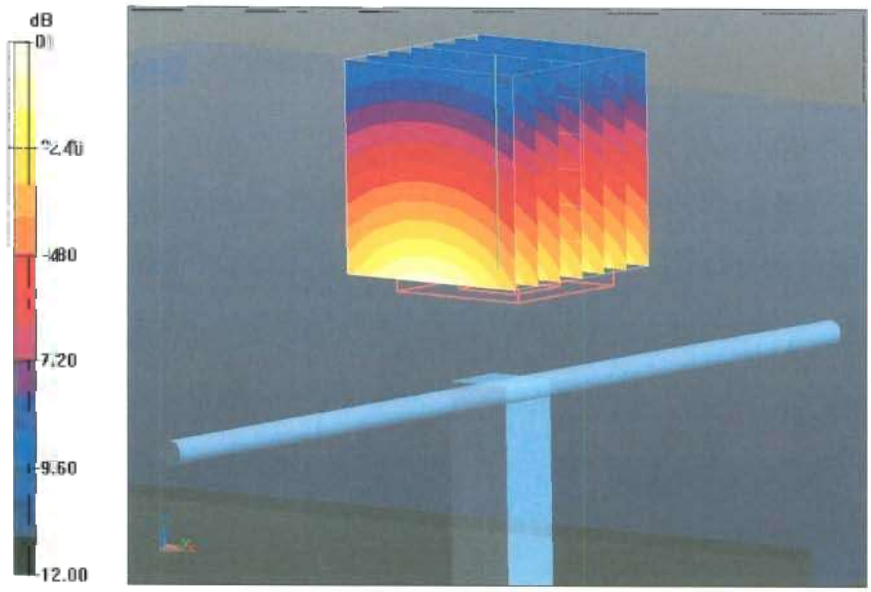
Communication System: CW; Frequency: 750 MHz
Medium parameters used: f = 750 MHz; σ = 0.97 mho/m; ε_r = 55.5; ρ = 1000 kg/m^3
Phantom section: Flat Section
Measurement Standard: DASY5 (IEEE/IEC/ANSI C63.19-2007)

DASY52 Configuration:

- Probe: ES3DV3 - SN3205; ConvF(6.12, 6.12, 6.12); Calibrated: 30.12.2011;
- Sensor-Surface: 3mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn601; Calibrated: 27.06.2012
- Phantom: Flat Phantom 4.9L; Type: QD000P49AA; Serial: 1001
- DASY52 52.8.3(988); SEMCAD X 14.6.7(6848)

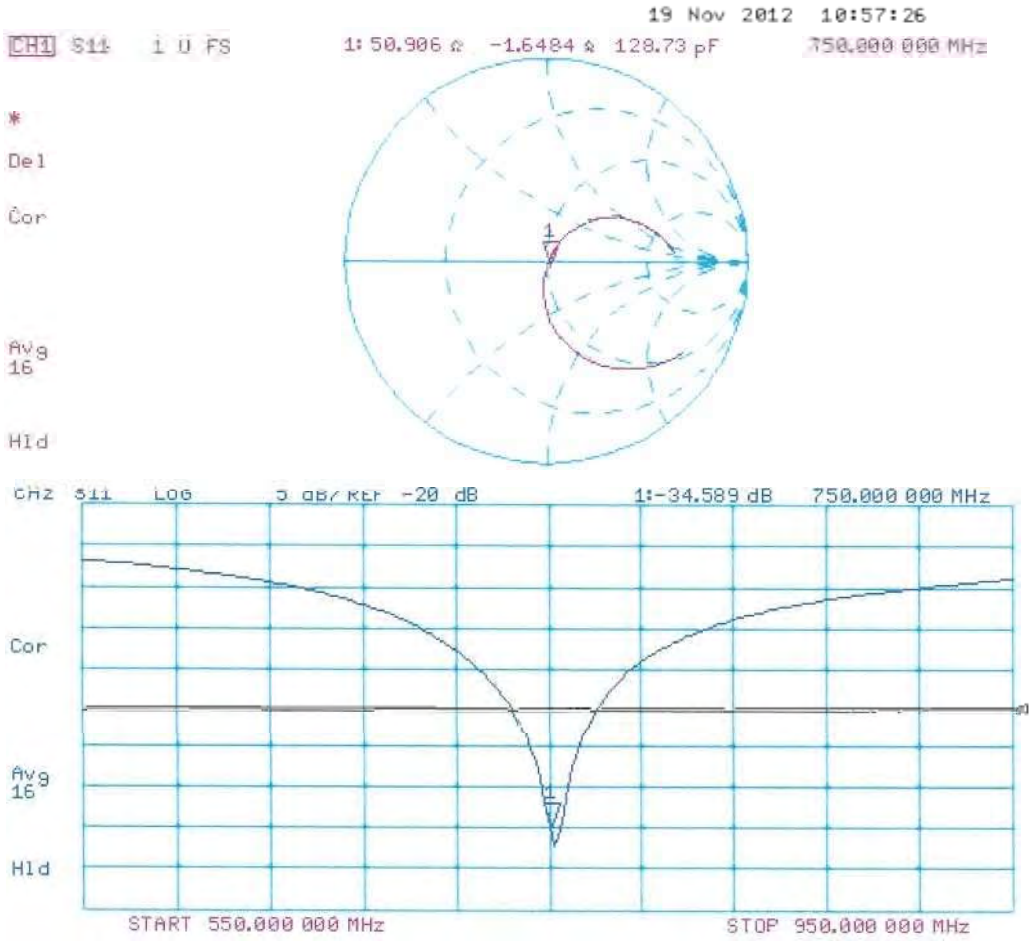
Dipole Calibration for Body Tissue/Pin=250 mW, d=15mm/Zoom Scan (7x7x7)/Cube 0:

Measurement grid: dx=5mm, dy=5mm, dz=5mm
Reference Value = 53.100 V/m; Power Drift = 0.01 dB
Peak SAR (extrapolated) = 3.35 W/kg
SAR(1 g) = 2.24 W/kg; SAR(10 g) = 1.48 W/kg
Maximum value of SAR (measured) = 2.60 W/kg



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

Impedance Measurement Plot for Body TSL



Dipole D750V3 – SN: 1075 Antenna Parameters measured: 2014-01-30 and 2014-08-18.

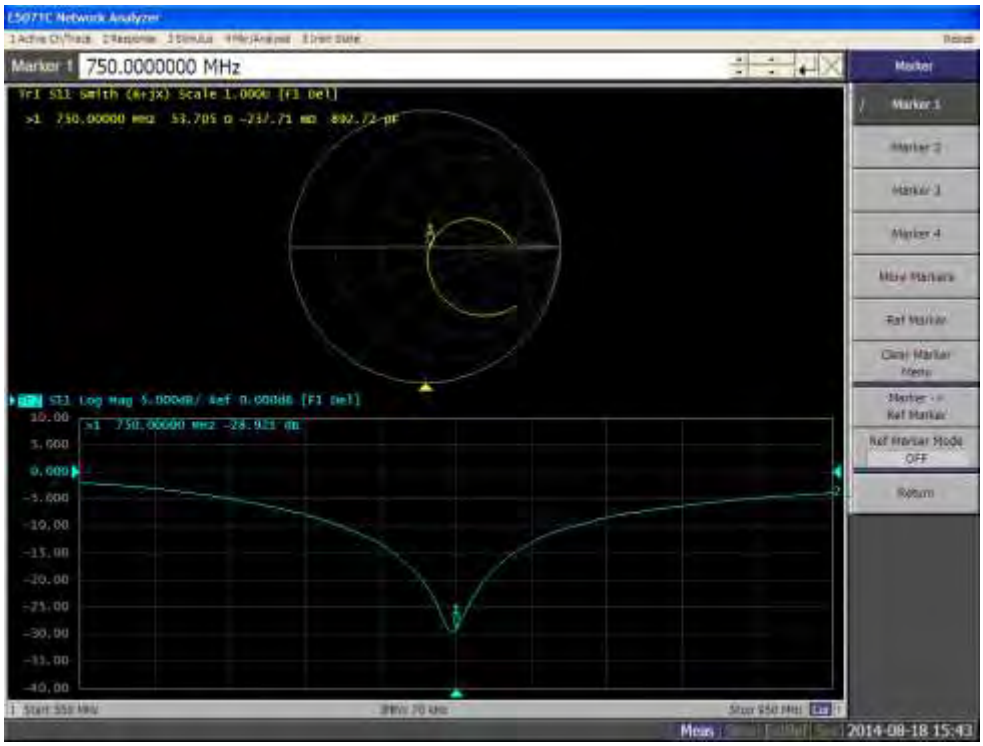
Antenna Parameters with Head TSL

	Calibration certificate	Annual measurement
Impedance, transformed to feed point	55.2 Ω + 0.6 jΩ	53.7 Ω - 0.2 jΩ
Return loss	-26.0 dB	-28.9 dB

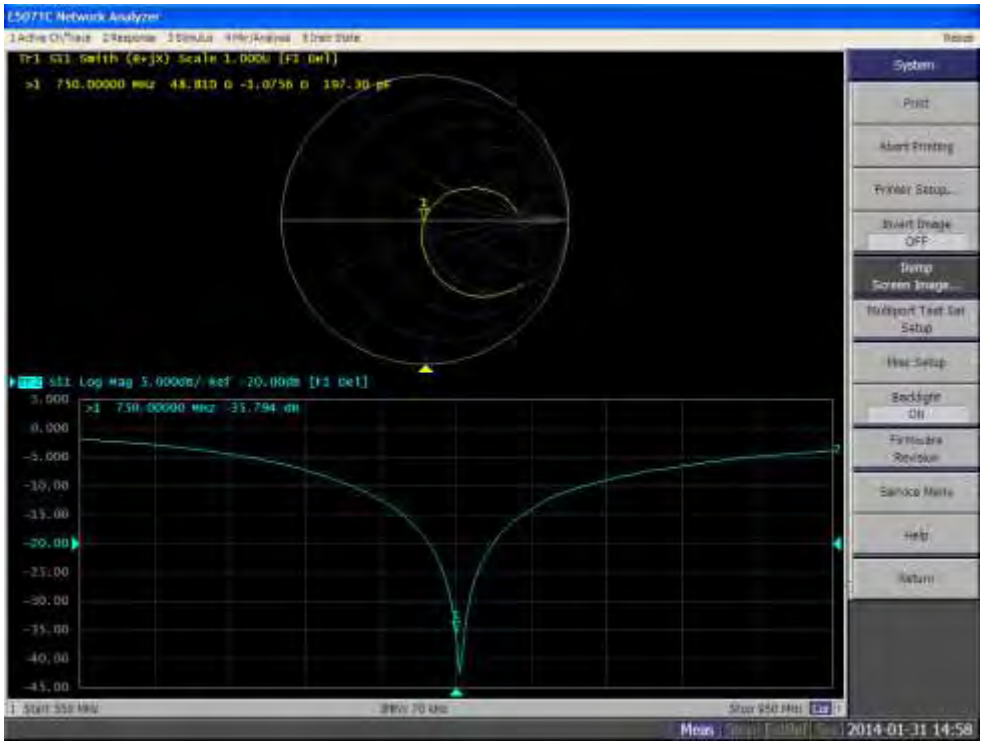
Antenna Parameters with Body TSL

	Calibration certificate	Annual measurement
Impedance, transformed to feed point	50.9 Ω - 1.6 jΩ	48.8 Ω - 1.1 jΩ
Return loss	-34.6 dB	-35.8 dB

Impedance Measurement Plot for Head TSL 750



Impedance Measurement Plot for Body TSL 750



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Accreditation No.: **SCS 108**

Client **Nokia Salo TCC**

Certificate No: **D835V2-462_May14**

CALIBRATION CERTIFICATE

Object D835V2 - SN: 462

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

Calibration date: May 06, 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)	03-Apr-14 (No. 217-01918)	Apr-15
Type-N mismatch combination	SN: 5047.2 / 06327	03-Apr-14 (No. 217-01921)	Apr-15
Reference Probe ES3DV3	SN: 3205	30-Dec-13 (No. ES3-3205_Dec13)	Dec-14
DAE4	SN: 601	30-Apr-14 (No. DAE4-601_Apr14)	Apr-15

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

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

Issued: May 7, 2014

Measurement Conditions

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

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

Head TSL parameters

The following parameters and calculations were applied.

	Temperature	Permittivity	Conductivity
Nominal Head TSL parameters	22.0 °C	41.5	0.90 mho/m
Measured Head TSL parameters	(22.0 ± 0.2) °C	40.2 ± 6 %	0.94 mho/m ± 6 %
Head TSL temperature change during test	< 0.5 °C	----	----

SAR result with Head TSL

SAR averaged over 1 cm³ (1 g) of Head TSL	Condition	
SAR measured	250 mW input power	2.39 W/kg
SAR for nominal Head TSL parameters	normalized to 1W	**9.19 W/kg ± 17.0 % (k=2)**

SAR averaged over 10 cm³ (10 g) of Head TSL	condition	
SAR measured	250 mW input power	1.54 W/kg
SAR for nominal Head TSL parameters	normalized to 1W	**5.98 W/kg ± 16.5 % (k=2)**

Body TSL parameters

The following parameters and calculations were applied.

	Temperature	Permittivity	Conductivity
Nominal Body TSL parameters	22.0 °C	55.2	0.97 mho/m
Measured Body TSL parameters	(22.0 ± 0.2) °C	56.6 ± 6 %	1.02 mho/m ± 6 %
Body TSL temperature change during test	< 0.5 °C	----	----

SAR result with Body TSL

SAR averaged over 1 cm³ (1 g) of Body TSL	Condition	
SAR measured	250 mW input power	2.43 W/kg
SAR for nominal Body TSL parameters	normalized to 1W	**9.41 W/kg ± 17.0 % (k=2)**

SAR averaged over 10 cm³ (10 g) of Body TSL	condition	
SAR measured	250 mW input power	1.58 W/kg
SAR for nominal Body TSL parameters	normalized to 1W	**6.16 W/kg ± 16.5 % (k=2)**

Appendix

Antenna Parameters with Head TSL

Impedance, transformed to feed point	50.7 Ω - 2.8 jΩ
Return Loss	-30.8 dB

Antenna Parameters with Body TSL

Impedance, transformed to feed point	45.8 Ω - 5.4 jΩ
Return Loss	- 23.0 dB

General Antenna Parameters and Design

Electrical Delay (one direction)	1.390 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 27, 2002

Date: 06.05.2014

Test Laboratory: SPEAG, Zurich, Switzerland

DUT: Dipole 835 MHz; Type: D835V2; Serial: D835V2 - SN: 462

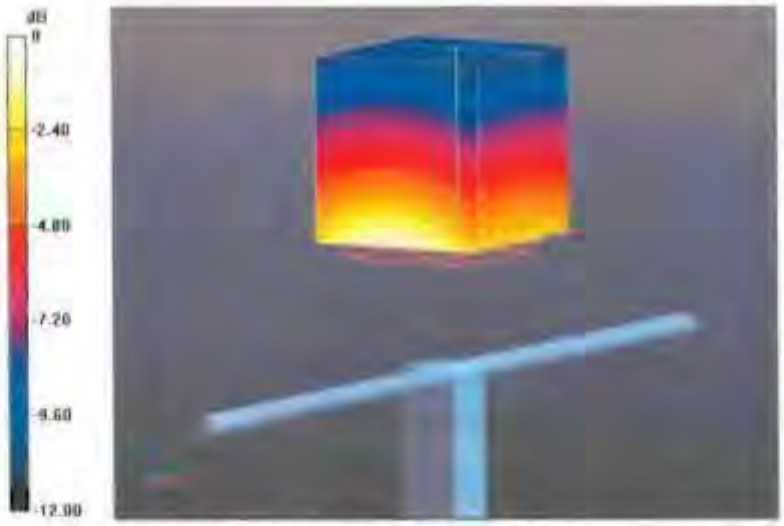
Communication System: UID 0 - CW; Frequency: 835 MHz
Medium parameters used: f = 835 MHz; σ = 0.94 S/m; ε_r = 40.2; ρ = 1000 kg/m^3
Phantom section: Flat Section
Measurement Standard: DASY5 (IEEE/IEC/ANSI C63.19-2007)

DASY52 Configuration:

- Probe: ES3DV3 - SN3205; ConvF(6.22, 6.22, 6.22); Calibrated: 30.12.2013;
- Sensor-Surface: 3mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn601; Calibrated: 30.04.2014
- Phantom: Flat Phantom 4.9L; Type: QD000P49AA; Serial: 1001
- DASY52 52.8.8(1222); SEMCAD X 14.6.10(7331)

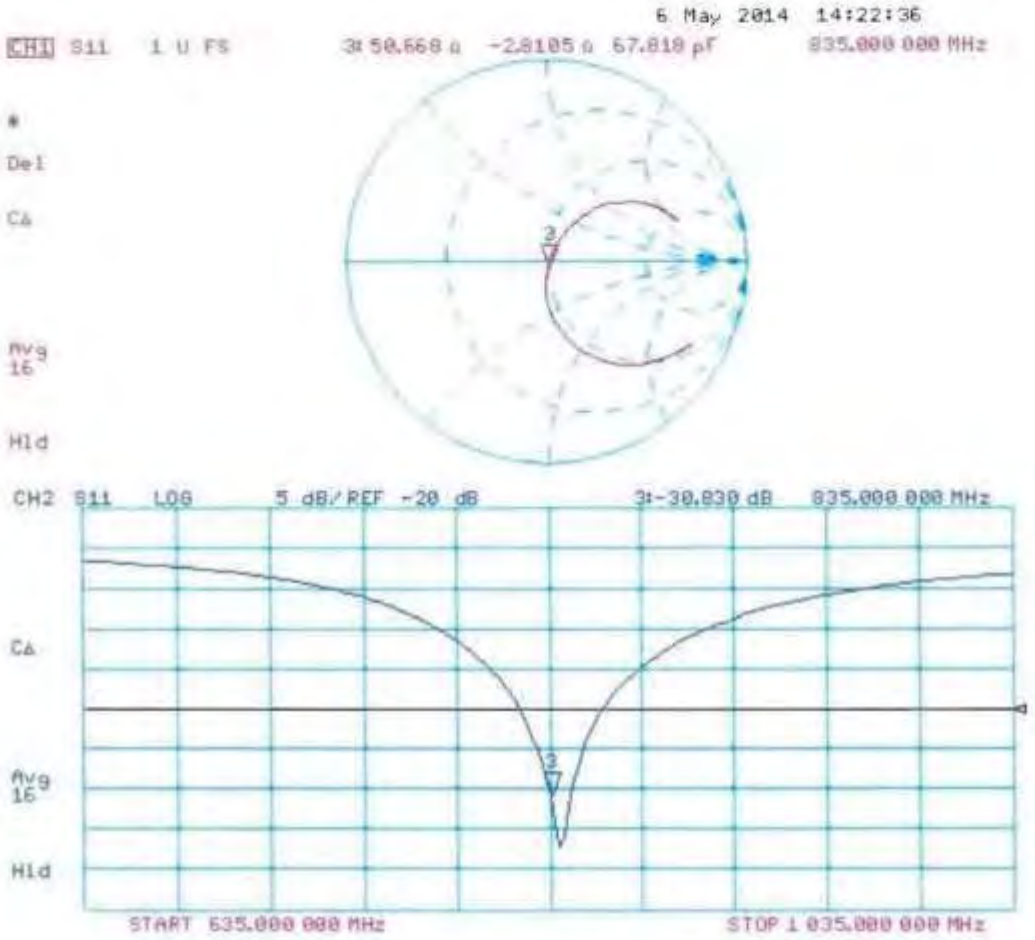
Dipole Calibration for Head Tissue/Pin=250 mW, d=15mm/Zoom Scan (7x7x7)/Cube 0:

Measurement grid: dx=5mm, dy=5mm, dz=5mm
Reference Value = 56.25 V/m; Power Drift = 0.02 dB
Peak SAR (extrapolated) = 3.62 W/kg
SAR(1 g) = 2.39 W/kg; SAR(10 g) = 1.54 W/kg
Maximum value of SAR (measured) = 2.80 W/kg



0 dB = 2.80 W/kg = 4.47 dBW/kg

Impedance Measurement Plot for Head TSL



DASY5 Validation Report for Body TSL

Date: 06.05.2014

Test Laboratory: SPEAG, Zurich, Switzerland

DUT: Dipole 835 MHz; Type: D835V2; Serial: D835V2 - SN: 462

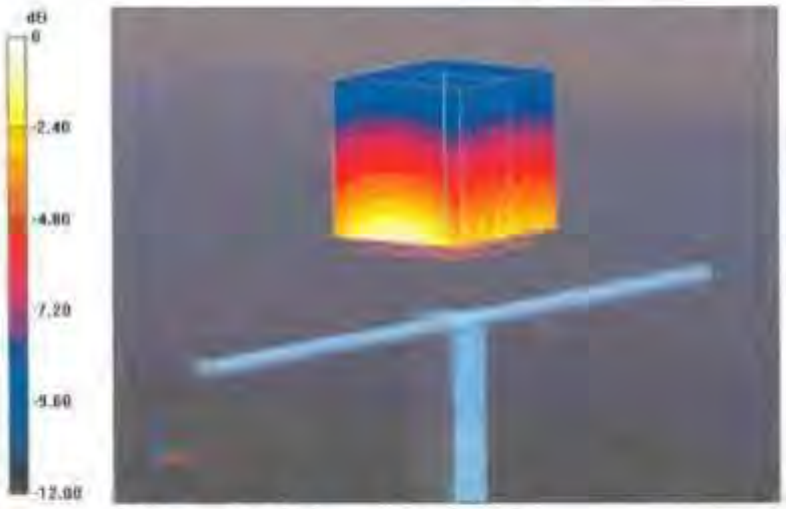
Communication System: UID 0 - CW; Frequency: 835 MHz
Medium parameters used: f = 835 MHz; σ = 1.02 S/m; ε_r = 56.6; ρ = 1000 kg/m^3
Phantom section: Flat Section
Measurement Standard: DASY5 (IEEE/IEC/ANSI C63.19-2007)

DASY52 Configuration:

- Probe: ES3DV3 - SN3205; ConvF(6.09, 6.09, 6.09); Calibrated: 30.12.2013;
- Sensor-Surface: 3mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn601; Calibrated: 30.04.2014
- Phantom: Flat Phantom 4.9L; Type: QD000P49AA; Serial: 1001
- DASY52 52.8.8(1222); SEMCAD X 14.6.10(7331)

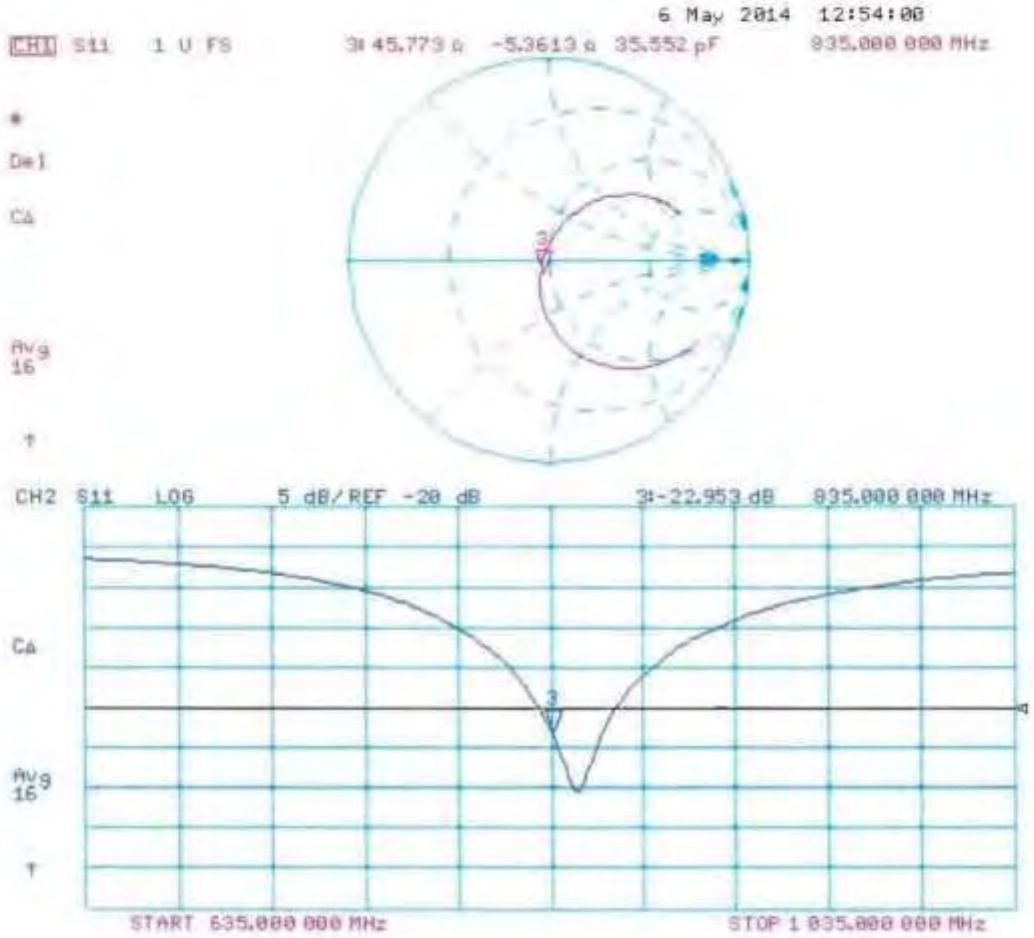
Dipole Calibration for Body Tissue/Pin=250 mW, d=15mm/Zoom Scan (7x7x7)/Cube 0:

Measurement grid: dx=5mm, dy=5mm, dz=5mm
Reference Value = 54.63 V/m; Power Drift = -0.04 dB
Peak SAR (extrapolated) = 3.61 W/kg
SAR(1 g) = 2.43 W/kg; SAR(10 g) = 1.58 W/kg
Maximum value of SAR (measured) = 2.85 W/kg



0 dB = 2.85 W/kg = 4.55 dBW/kg

Impedance Measurement Plot for Body TSL



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Accreditation No.: SCS 108

Client: Nokia Salo TCC

Certificate No: D1750V2-1083_May14

CALIBRATION CERTIFICATE

Object: D1750V2 - SN: 1083

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

Calibration date: May 07, 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)	03-Apr-14 (No. 217-01918)	Apr-15
Type-N mismatch combination	SN: 5047.2 / 06327	03-Apr-14 (No. 217-01921)	Apr-15
Reference Probe ES3DV3	SN: 3205	30-Dec-13 (No. ES3-3205_Dec13)	Dec-14
DAE4	SN: 601	30-Apr-14 (No. DAE4-601_Apr14)	Apr-15

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

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

Issued: May 7, 2014

Measurement Conditions

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

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

Head TSL parameters

The following parameters and calculations were applied.

	Temperature	Permittivity	Conductivity
Nominal Head TSL parameters	22.0 °C	40.1	1.37 mho/m
Measured Head TSL parameters	(22.0 ± 0.2) °C	39.0 ± 6 %	1.36 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	9.29 W/kg
SAR for nominal Head TSL parameters	normalized to 1W	**37.1 W/kg ± 17.0 % (k=2)**

SAR averaged over 10 cm^3 (10 g) of Head TSL	condition	
SAR measured	250 mW input power	4.91 W/kg
SAR for nominal Head TSL parameters	normalized to 1W	**19.6 W/kg ± 16.5 % (k=2)**

Body TSL parameters

The following parameters and calculations were applied.

	Temperature	Permittivity	Conductivity
Nominal Body TSL parameters	22.0 °C	53.4	1.49 mho/m
Measured Body TSL parameters	(22.0 ± 0.2) °C	52.2 ± 6 %	1.48 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	9.42 W/kg
SAR for nominal Body TSL parameters	normalized to 1W	**37.6 W/kg ± 17.0 % (k=2)**

SAR averaged over 10 cm^3 (10 g) of Body TSL	condition	
SAR measured	250 mW input power	5.05 W/kg
SAR for nominal Body TSL parameters	normalized to 1W	**20.2 W/kg ± 16.5 % (k=2)**

Appendix

Antenna Parameters with Head TSL

Impedance, transformed to feed point	50.9 Ω + 0.1 jΩ
Return Loss	-41.4 dB

Antenna Parameters with Body TSL

Impedance, transformed to feed point	46.3 Ω + 0.1 jΩ
Return Loss	-28.2 dB

General Antenna Parameters and Design

Electrical Delay (one direction)	1.219 ns

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

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

Additional EUT Data

Manufactured by	SPEAG
Manufactured on	January 19, 2011

DASY5 Validation Report for Head TSL

Date: 07.05.2014

Test Laboratory: SPEAG, Zurich, Switzerland

DUT: Dipole 1750 MHz; Type: D1750V2; Serial: D1750V2 - SN: 1083

Communication System: UID 0 - CW; Frequency: 1750 MHz
Medium parameters used: f = 1750 MHz; σ = 1.36 S/m; ε_r = 39; ρ = 1000 kg/m^3
Phantom section: Flat Section
Measurement Standard: DASY5 (IEEE/IEC/ANSI C63.19-2007)

DASY52 Configuration:

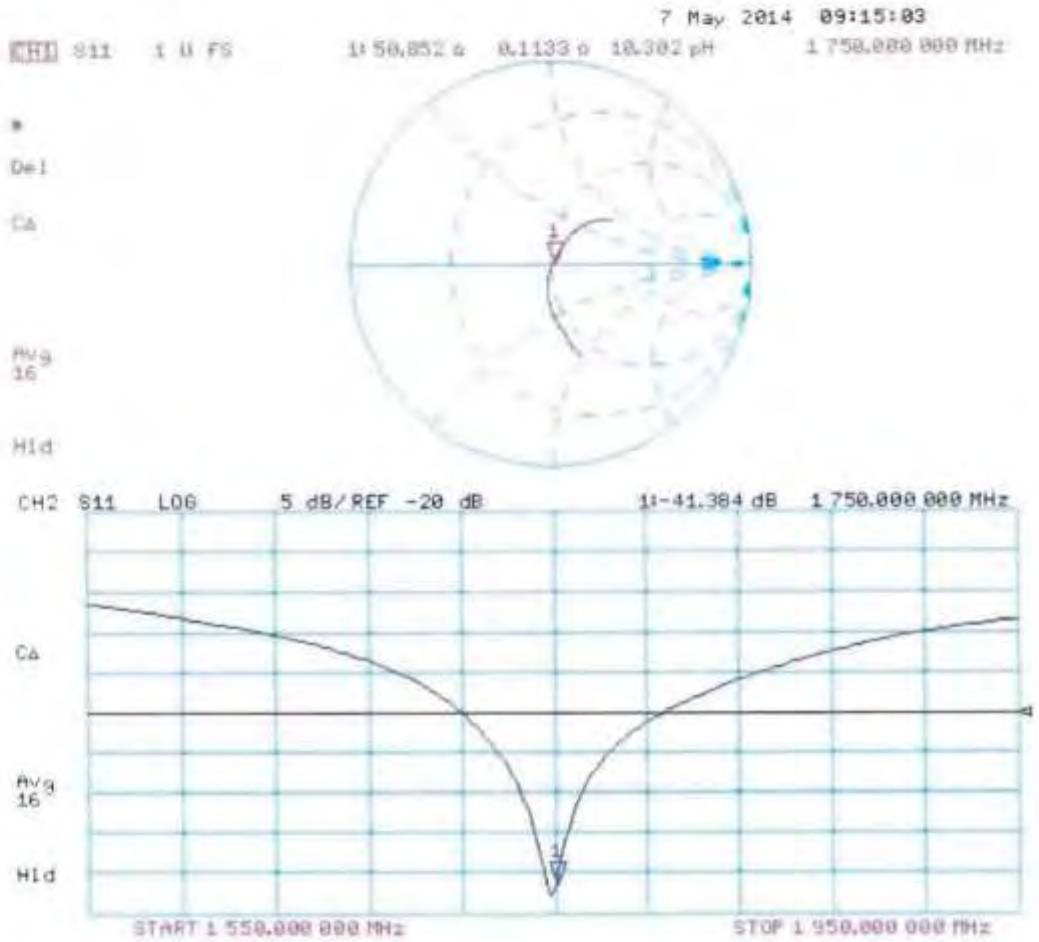
- Probe: ES3DV3 - SN3205; ConvF(5.23, 5.23, 5.23); Calibrated: 30.12.2013;
- Sensor-Surface: 3mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn601; Calibrated: 30.04.2014
- Phantom: Flat Phantom 5.0 (front); Type: QD000P50AA; Serial: 1001
- DASY52 52.8.8(1222); SEMCAD X 14.6.10(7331)

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

Measurement grid: dx=5mm, dy=5mm, dz=5mm
Reference Value = 95.99 V/m; Power Drift = 0.00 dB
Peak SAR (extrapolated) = 16.8 W/kg
SAR(1 g) = 9.29 W/kg; SAR(10 g) = 4.91 W/kg
Maximum value of SAR (measured) = 11.7 W/kg

0 dB = 11.7 W/kg = 10.68 dBW/kg

Impedance Measurement Plot for Head TSL



DASY5 Validation Report for Body TSL

Date: 07.05.2014

Test Laboratory: SPEAG, Zurich, Switzerland

DUT: Dipole 1750 MHz; Type: D1750V2; Serial: D1750V2 - SN: 1083

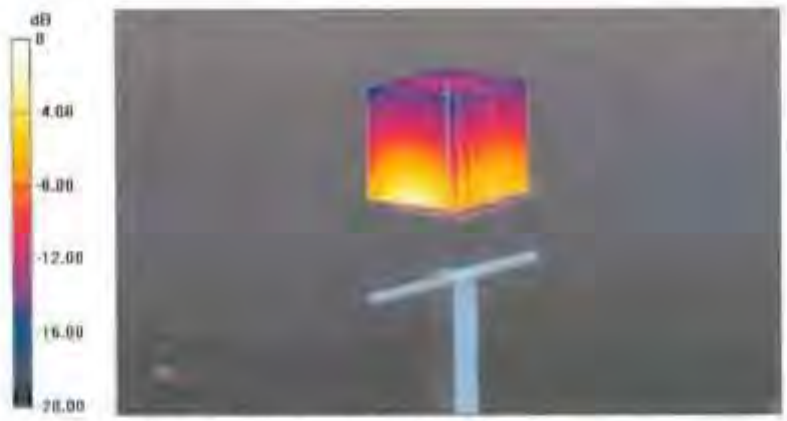
Communication System: UID 0 - CW; Frequency: 1750 MHz
Medium parameters used: f = 1750 MHz; σ = 1.48 S/m; ε_r = 52.2; ρ = 1000 kg/m^3
Phantom section: Flat Section
Measurement Standard: DASY5 (IEEE/IEC/ANSI C63.19-2007)

DASY52 Configuration:

- Probe: ES3DV3 - SN3205; ConvF(4.89, 4.89, 4.89); Calibrated: 30.12.2013;
- Sensor-Surface: 3mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn601; Calibrated: 30.04.2014
- Phantom: Flat Phantom 5.0 (back); Type: QD000P50AA; Serial: 1002
- DASY52 52.8.8(1222); SEMCAD X 14.6.10(7331)

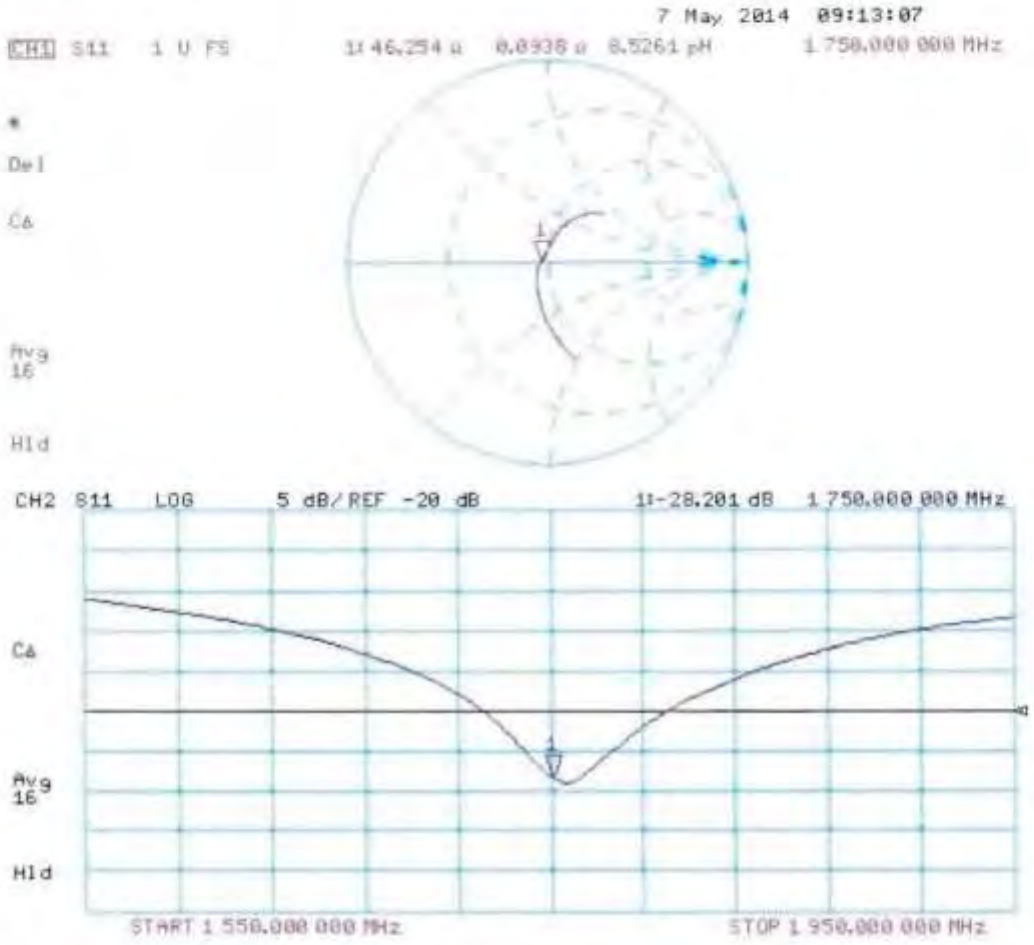
Dipole Calibration for Body Tissue/Pin=250 mW, d=10mm/Zoom Scan (7x7x7)/Cube 0:

Measurement grid: dx=5mm, dy=5mm, dz=5mm
Reference Value = 93.34 V/m; Power Drift = 0.00 dB
Peak SAR (extrapolated) = 16.2 W/kg
SAR(1 g) = 9.42 W/kg; SAR(10 g) = 5.05 W/kg
Maximum value of SAR (measured) = 11.8 W/kg



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

Impedance Measurement Plot for Body TSL



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Accreditation No.: **SCS 108**

Client **Nokia Salo TCC**

Certificate No: **D1900V2-5d030_May14**

CALIBRATION CERTIFICATE

Object D1900V2 - SN: 5d030

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

Calibration date May 14, 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)	03-Apr-14 (No. 217-01918)	Apr-15
Type-N mismatch combination	SN: 5047.2 / 06327	03-Apr-14 (No. 217-01921)	Apr-15
Reference Probe ES3DV3	SN: 3205	30-Dec-13 (No. ES3-3205_Dec13)	Dec-14
DAE4	SN: 601	30-Apr-14 (No. DAE4-601_Apr14)	Apr-15

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

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

Issued: May 15, 2014

Measurement Conditions

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

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

Head TSL parameters

The following parameters and calculations were applied.

	Temperature	**Permittivity**	**Conductivity**
Nominal Head TSL parameters	22.0 °C	40.0	1.40 mho/m
Measured Head TSL parameters	(22.0 ± 0.2) °C	39.3 ± 6 %	1.37 mho/m ± 6 %
Head TSL temperature change during test	< 0.5 °C	----	----

SAR result with Head TSL

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

SAR averaged over 10 cm³ (10 g) of Head TSL	condition	
SAR measured	250 mW input power	5.15 W/kg
SAR for nominal Head TSL parameters	normalized to 1W	**20.7 W/kg ± 16.5 % (k=2)**

Body TSL parameters

The following parameters and calculations were applied.

	Temperature	**Permittivity**	**Conductivity**
Nominal Body TSL parameters	22.0 °C	53.3	1.52 mho/m
Measured Body TSL parameters	(22.0 ± 0.2) °C	52.5 ± 6 %	1.52 mho/m ± 6 %
Body TSL temperature change during test	< 0.5 °C	----	----

SAR result with Body TSL

SAR averaged over 1 cm³ (1 g) of Body TSL	Condition	
SAR measured	250 mW input power	10.1 W/kg
SAR for nominal Body TSL parameters	normalized to 1W	**40.3 W/kg ± 17.0 % (k=2)**

SAR averaged over 10 cm³ (10 g) of Body TSL	condition	
SAR measured	250 mW input power	5.34 W/kg
SAR for nominal Body TSL parameters	normalized to 1W	**21.3 W/kg ± 16.5 % (k=2)**

Appendix

Antenna Parameters with Head TSL

Impedance, transformed to feed point	50.6 Ω + 4.3 jΩ
Return Loss	- 27.2 dB

Antenna Parameters with Body TSL

Impedance, transformed to feed point	46.6 Ω + 4.4 jΩ
Return Loss	- 24.8 dB

General Antenna Parameters and Design

Electrical Delay (one direction)	1.191 ns

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

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

Additional EUT Data

Manufactured by	SPEAG
Manufactured on	December 17, 2002

Date: 14.05.2014

Test Laboratory: SPEAG, Zurich, Switzerland

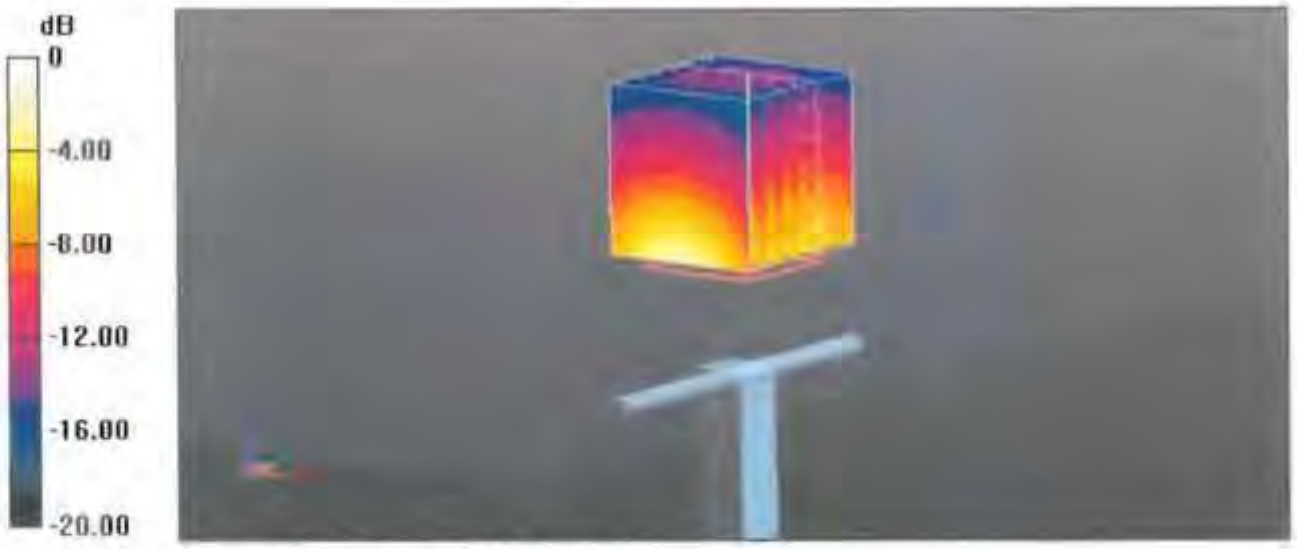
DUT: Dipole 1900 MHz; Type: D1900V2; Serial: D1900V2 - SN: 5d030

Communication System: UID 0 - CW; Frequency: 1900 MHz
Medium parameters used: f = 1900 MHz; σ = 1.37 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:

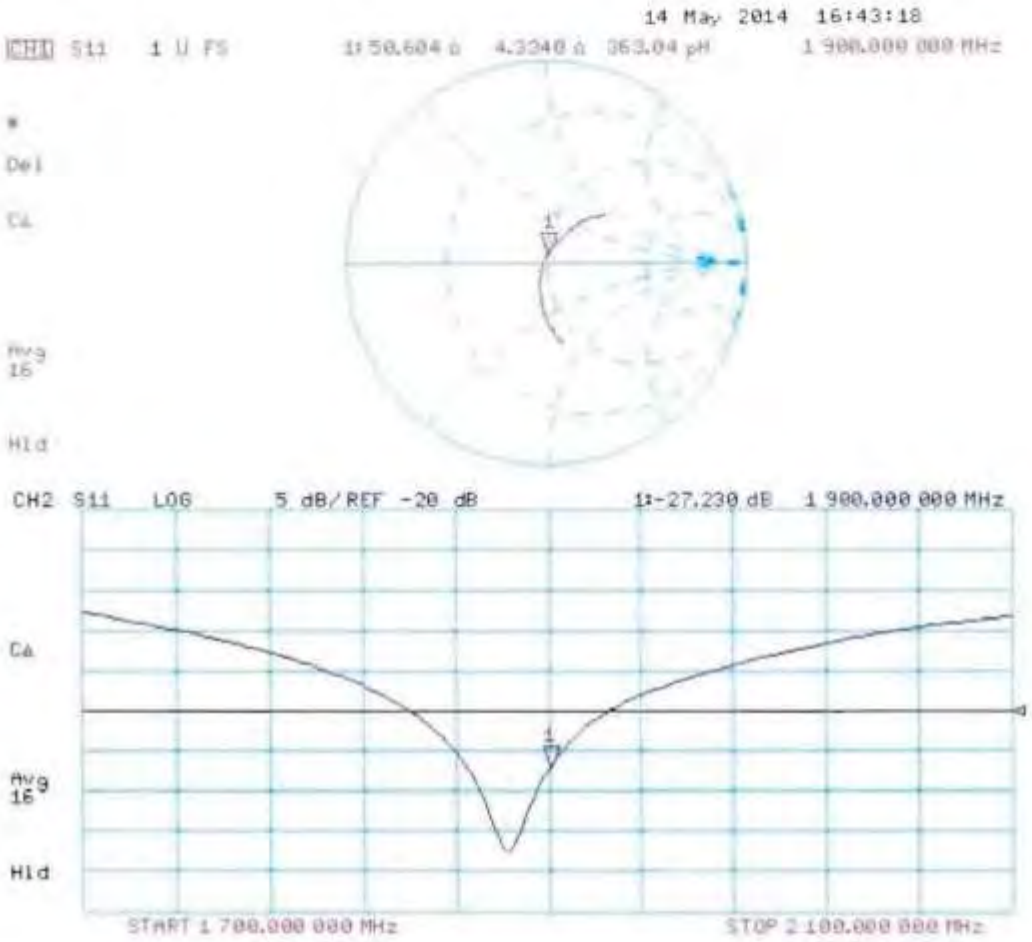
- Probe: ES3DV3 - SN3205; ConvF(5.06, 5.06, 5.06); Calibrated: 30.12.2013;
- Sensor-Surface: 3mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn601; Calibrated: 30.04.2014
- Phantom: Flat Phantom 5.0 (front); Type: QD000P50AA; Serial: 1001
- DASY52 52.8.8(1222); SEMCAD X 14.6.10(7331)

Dipole Calibration for Head Tissue/Pin=250 mW, d=10mm/Zoom Scan (7x7x7)/Cube 0:
Measurement grid: dx=5mm, dy=5mm, dz=5mm
Reference Value = 97.75 V/m; Power Drift = 0.01 dB
Peak SAR (extrapolated) = 18.0 W/kg
SAR(1 g) = 9.83 W/kg; SAR(10 g) = 5.15 W/kg
Maximum value of SAR (measured) = 12.3 W/kg



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

Impedance Measurement Plot for Head TSL



Date: 14.05.2014

Test Laboratory: SPEAG, Zurich, Switzerland

DUT: Dipole 1900 MHz; Type: D1900V2; Serial: D1900V2 - SN: 5d030

Communication System: UID 0 - CW; Frequency: 1900 MHz
Medium parameters used: f = 1900 MHz; σ = 1.52 S/m; ε_r = 52.5; ρ = 1000 kg/m^3
Phantom section: Flat Section
Measurement Standard: DASY5 (IEEE/IEC/ANSI C63.19-2007)

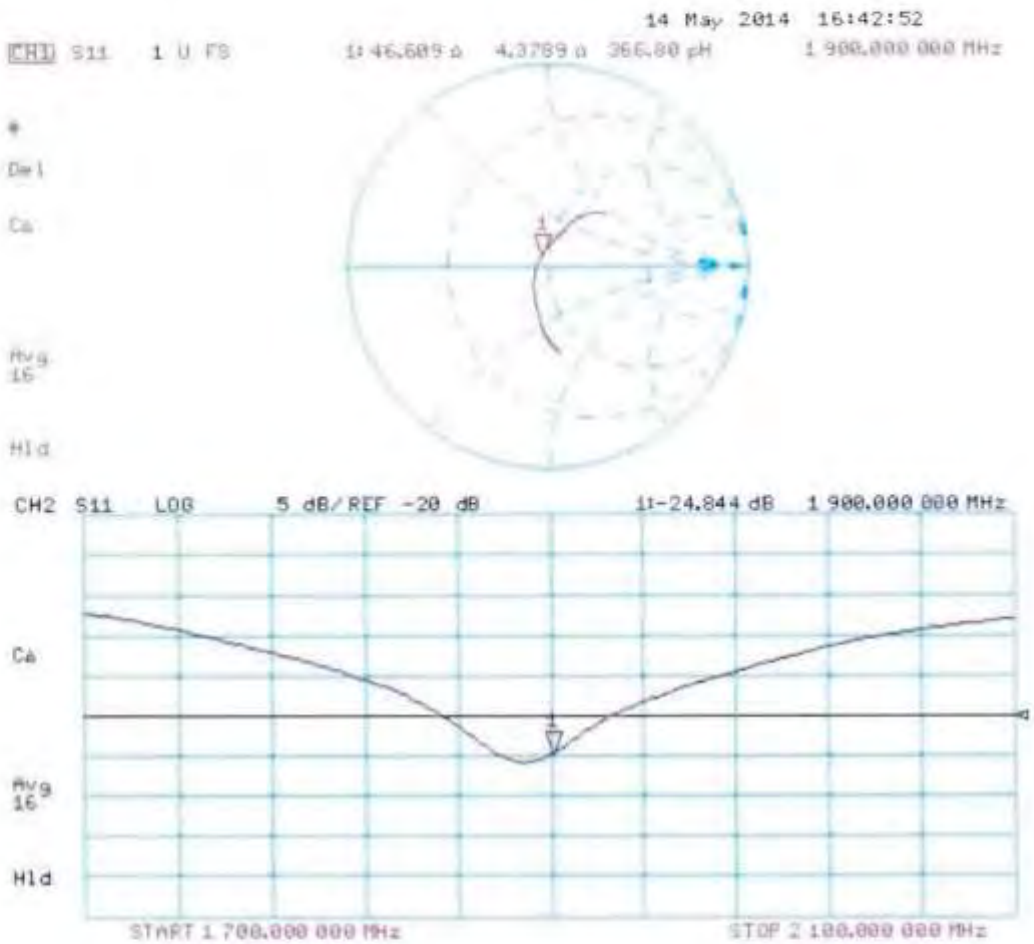
DASY52 Configuration:

- Probe: ES3DV3 - SN3205; ConvF(4.76, 4.76, 4.76); Calibrated: 30.12.2013;
- Sensor-Surface: 3mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn601; Calibrated: 30.04.2014
- Phantom: Flat Phantom 5.0 (back); Type: QD000P50AA; Serial: 1002
- DASY52 52.8.8(1222); SEMCAD X 14.6.10(7331)

Dipole Calibration for Body Tissue/Pin=250 mW, d=10mm/Zoom Scan (7x7x7)/Cube 0:
Measurement grid: dx=5mm, dy=5mm, dz=5mm
Reference Value = 94.65 V/m; Power Drift = 0.01 dB
Peak SAR (extrapolated) = 17.6 W/kg
SAR(1 g) = 10.1 W/kg; SAR(10 g) = 5.34 W/kg
Maximum value of SAR (measured) = 12.6 W/kg

0 dB = 12.6 W/kg = 11.00 dBW/kg

Impedance Measurement Plot for Body TSL



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Accreditation No.: SCS 108

Client **Nokia Salo TCC**

Certificate No: **D2450V2-749_Dec12**

CALIBRATION CERTIFICATE

Object	D2450V2 - SN: 749
Calibration procedure(s)	QA CAL-05.v8 Calibration procedure for dipole validation kits above 700 MHz
Calibration date:	December 07, 2012

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)	27-Mar-12 (No. 217-01530)	Apr-13
Type-N mismatch combination	SN: 5047.3 / 06327	27-Mar-12 (No. 217-01533)	Apr-13
Reference Probe ES3DV3	SN: 3205	30-Dec-11 (No. ES3-3205_Dec11)	Dec-12
DAE4	SN: 601	27-Jun-12 (No. DAE4-601_Jun12)	Jun-13

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	
oproved by:	Katja Pokovic	Technical Manager	

Issued: December 7, 2012

Measurement Conditions

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

DASY Version	DASY5	V52.8.3
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	38.2 ± 6 %	1.84 mho/m ± 6 %
Head TSL temperature change during test	< 0.5 °C	----	----

SAR result with Head TSL

SAR averaged over 1 cm³ (1 g) of Head TSL	Condition	
SAR measured	250 mW input power	13.7 W/kg
SAR for nominal Head TSL parameters	normalized to 1W	**53.9 W/kg ± 17.0 % (k=2)**

SAR averaged over 10 cm³ (10 g) of Head TSL	condition	
SAR measured	250 mW input power	6.35 W/kg
SAR for nominal Head TSL parameters	normalized to 1W	**25.2 W/kg ± 16.5 % (k=2)**

Body TSL parameters

The following parameters and calculations were applied.

	Temperature	**Permittivity**	**Conductivity**
Nominal Body TSL parameters	22.0 °C	52.7	1.95 mho/m
Measured Body TSL parameters	(22.0 ± 0.2) °C	50.7 ± 6 %	2.02 mho/m ± 6 %
Body TSL temperature change during test	< 0.5 °C	----	----

SAR result with Body TSL

SAR averaged over 1 cm³ (1 g) of Body TSL	Condition	
SAR measured	250 mW input power	13.2 W/kg
SAR for nominal Body TSL parameters	normalized to 1W	**51.5 W/kg ± 17.0 % (k=2)**

SAR averaged over 10 cm³ (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)**

Appendix

Antenna Parameters with Head TSL

Impedance, transformed to feed point	52.6 Ω + 3.4 jΩ
Return Loss	- 27.7 dB

Antenna Parameters with Body TSL

Impedance, transformed to feed point	49.5 Ω + 4.3 jΩ
Return Loss	- 27.3 dB

General Antenna Parameters and Design

Electrical Delay (one direction)	1.163 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 01, 2003

DASY5 Validation Report for Head TSL

Date: 07.12.2012

Test Laboratory: SPEAG, Zurich, Switzerland

DUT: Dipole 2450 MHz; Type: D2450V2; Serial: D2450V2 - SN: 749

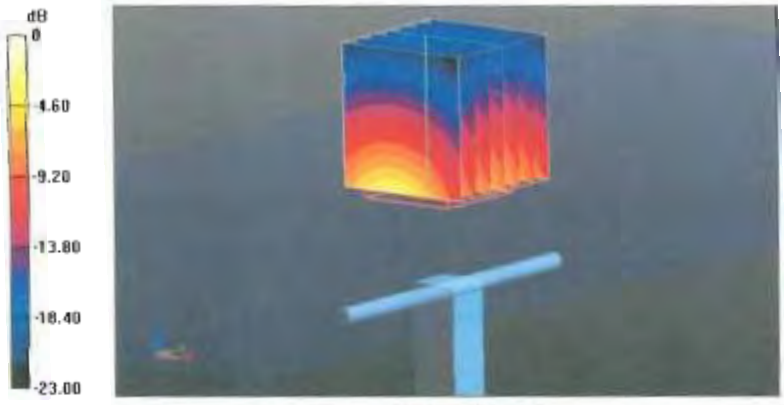
Communication System: CW; Frequency: 2450 MHz
Medium parameters used: f = 2450 MHz; σ = 1.84 mho/m; ε_r = 38.2; ρ = 1000 kg/m^3
Phantom section: Flat Section
Measurement Standard: DASY5 (IEEE/IEC/ANSI C63.19-2007)

DASY52 Configuration:

- Probe: ES3DV3 - SN3205; ConvF(4.45, 4.45, 4.45); Calibrated: 30.12.2011;
- Sensor-Surface: 3mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn601; Calibrated: 27.06.2012
- Phantom: Flat Phantom 5.0 (front); Type: QD000P50AA; Serial: 1001
- DASY52 52.8.3(988); SEMCAD X 14.6.7(6848)

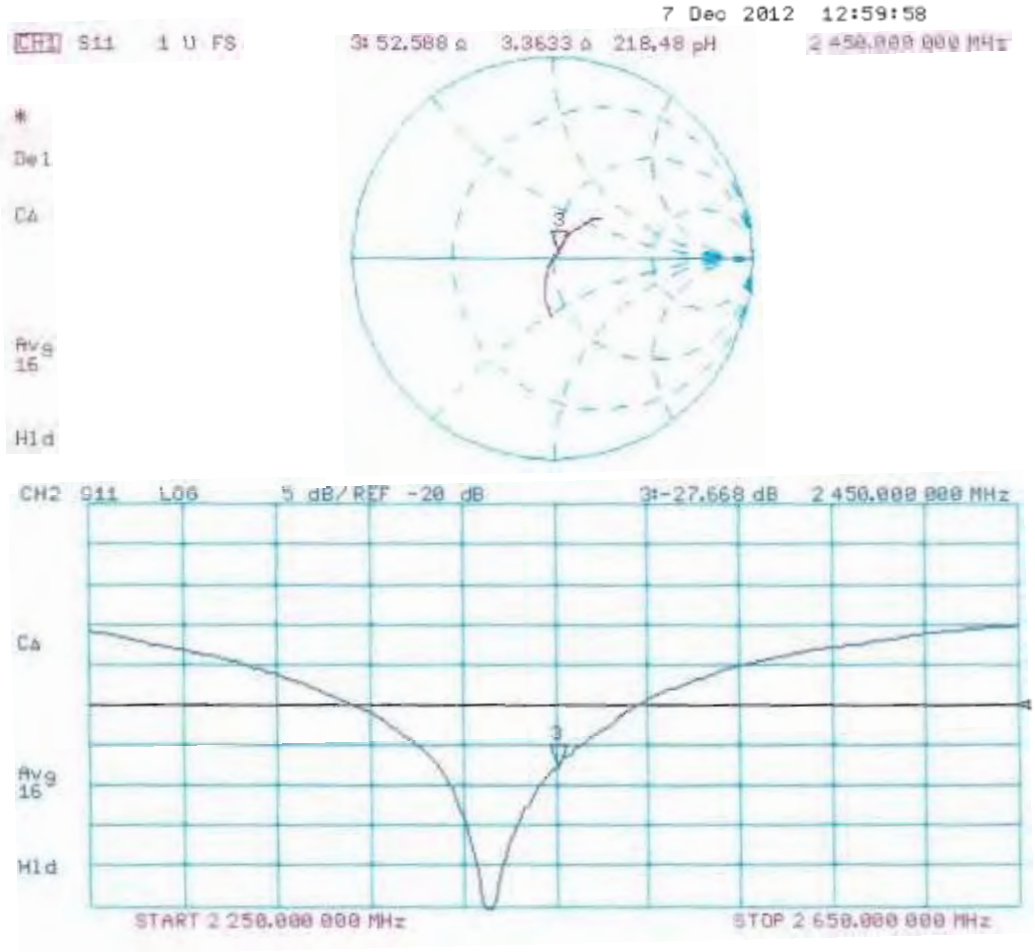
Dipole Calibration for Head Tissue/Pin=250 mW, d=10mm/Zoom Scan (7x7x7)/Cube 0:

Measurement grid: dx=5mm, dy=5mm, dz=5mm
Reference Value = 99.608 V/m; Power Drift = 0.00 dB
Peak SAR (extrapolated) = 28.2 W/kg
SAR(1 g) = 13.7 W/kg; SAR(10 g) = 6.35 W/kg
Maximum value of SAR (measured) = 17.3 W/kg



0 dB = 17.3 W/kg = 12.38 dBW/kg

Impedance Measurement Plot for Head TSL



Date: 07.12.2012

Test Laboratory: SPEAG, Zurich, Switzerland

DUT: Dipole 2450 MHz; Type: D2450V2; Serial: D2450V2 - SN: 749

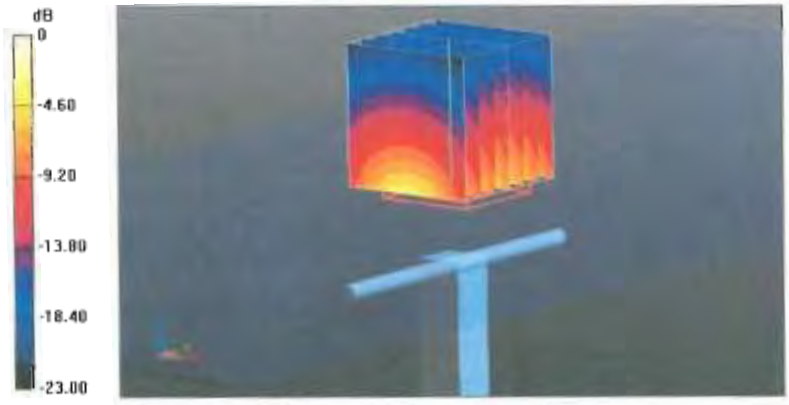
Communication System: CW; Frequency: 2450 MHz
Medium parameters used: f = 2450 MHz; σ = 2.02 mho/m; ε_r = 50.7; ρ = 1000 kg/m^3
Phantom section: Flat Section
Measurement Standard: DASY5 (IEEE/IEC/ANSI C63.19-2007)

DASY52 Configuration:

- Probe: ES3DV3 - SN3205; ConvF(4.26, 4.26, 4.26); Calibrated: 30.12.2011;
- Sensor-Surface: 3mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn601; Calibrated: 27.06.2012
- Phantom: Flat Phantom 5.0 (back); Type: QD000P50AA; Serial: 1002
- DASY52 52.8.3(988); SEMCAD X 14.6.7(6848)

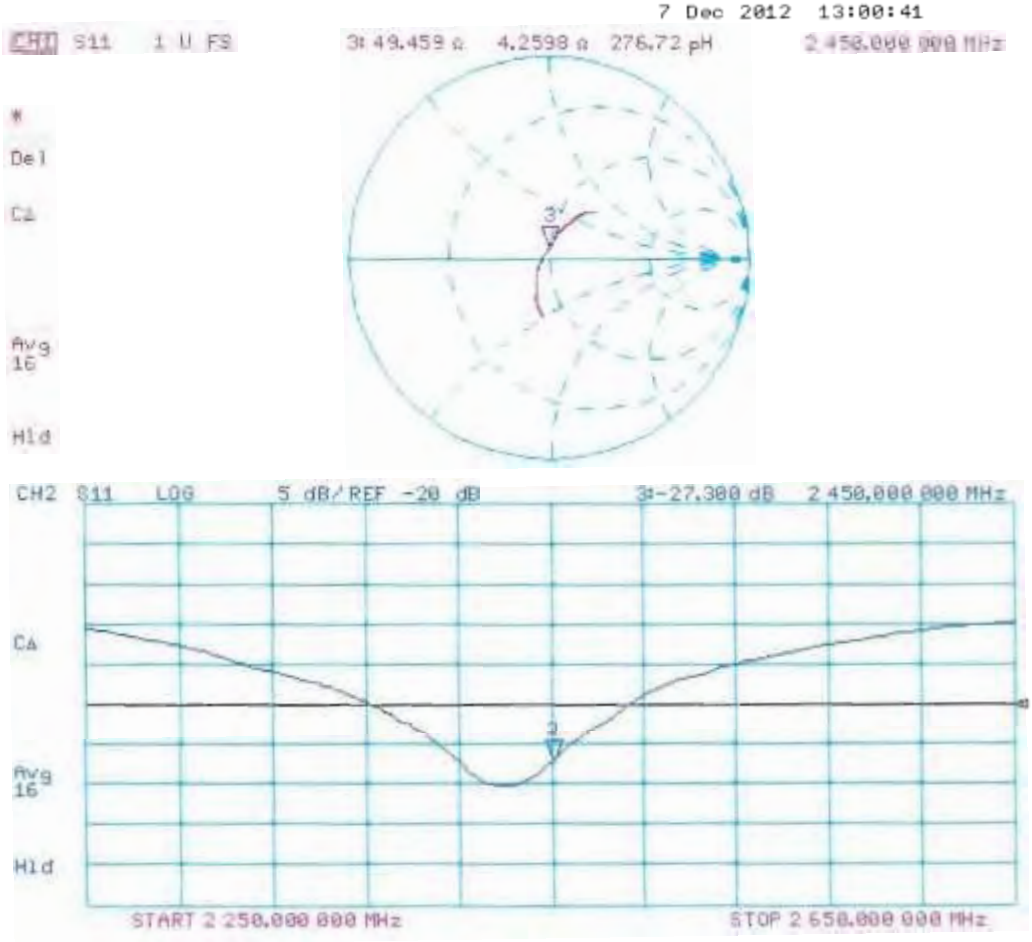
Dipole Calibration for Body Tissue/Pin=250 mW, d=10mm 2/Zoom Scan (7x7x7)/Cube 0:

Measurement grid: dx=5mm, dy=5mm, dz=5mm
Reference Value = 96.139 V/m; Power Drift = -0.00 dB
Peak SAR (extrapolated) = 27.4 W/kg
SAR(1 g) = 13.2 W/kg; SAR(10 g) = 6.08 W/kg
Maximum value of SAR (measured) = 17.4 W/kg



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

Impedance Measurement Plot for Body TSL



Dipole D2450V2 – SN:749 Antenna Parameters measured: 2014-01-14.

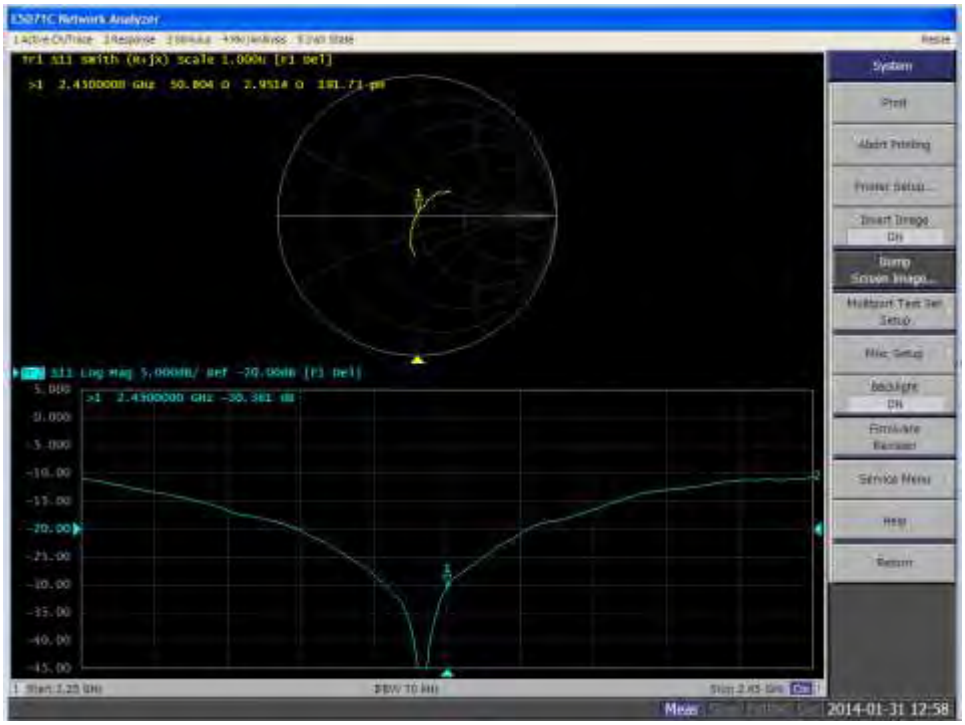
Antenna Parameters with Head TSL

	Calibration certificate	Annual measurement
Impedance, transformed to feed point	52.6 Ω - 3.4 jΩ	50.8 Ω - 3.0 jΩ
Return loss	-27.7 dB	-30.4 dB

Antenna Parameters with Body TSL

	Calibration certificate	Annual measurement
Impedance, transformed to feed point	49.5 Ω - 4.3 jΩ	48.9 Ω - 3.6 jΩ
Return loss	-27.3 dB	-28.4 dB

Impedance Measurement Plot for Head TSL 2450



Impedance Measurement Plot for Body TSL 2450