SAR Test Report

FOR:

Manufacturer: Sony
Type Number: PM-0745-BV
FCC ID: PY7PM-0745

Test Report #: SAR_CETEC_063_13001_FCC

Date of Report: 1/24/2014

FCC Listed #:
A2LA Accredited

IC Recognized #
3462B-1

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TABLE OF CONTENTS

1. Assessment

The following device was evaluated against the limits for general population uncontrolled exposure specified in FCC 2.1093 and RSS 102, Issue 4 according to measurement procedures specified in FCC regulation as listed in chapter 5, IEEE 1528:2003, IEC 62209-1:2005, and IEC 62209-2:2010 and no deviations were ascertained during the course of the tests performed.

Company	Description	Type Number
Sony	Phablet	PM-0745-BV

Responsible for Testing Laboratory:

Date	Section	Name	Signature
1/24/2014	Compliance	Franz Engert (Manager of Compliance)	Digitally signed by Franz Engert DN: cn=Franz Engert, c=US, o=CETECOM, ou=Complience, email=franz.engert@cetecom.com Date: 2014.01.24 22:13:03 -08'00'

Responsible for the Report:

Date	Section	Name	Signature
1/24/2014	Compliance	Josie Sabado (Test Lab Manager)	

The test results of this test report relate exclusively to the test item specified in Section 3.
CETECOM Inc. USA does not assume responsibility for any conclusions and generalizations drawn from the test results with regard to other specimens or samples of the type of the equipment represented by the test item. The test report may only be reproduced or published in full. Reproduction or publication of extracts from the report requires the prior written approval of CETECOM Inc. USA.

2. Administrative Data

2.1. Identification of the Testing Laboratory Issuing the SAR Test Report

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Test Lab Manager:	Josie Sabado
Responsible Project Leader:	Josie Sabado

2.2. Identification of the Client

Applicant's Name:	Sony Mobile Communications AB
Address:	Nya Vattentornet 22188 Lund
Country:	SWEDEN
Contact Person:	Mikael Nilsson
Phone No.	+46 46 19 30 00
e-mail:	Micke.nilsson@sonymobile.com

2.3. Identification of the Manufacturer

Same as above client.

3. Equipment under Test (EUT)

3.1. General Specification of the Equipment under Test

Product Type:	Portable
Prototype/Production:	Pre-Production
RF Exposure Environment:	General / Uncontrolled
Dimensions:	73.3 x 146.8 x 8.2 mm
Exposure Conditions:	Held next to the ear Body worn Personal Wireless Router (Hotspot Mode)
Type Number:	PM-0745-BV
FCC ID:	PY7PM-0745
Antenna Type:	Main Cellular: Internal, Slit, Tx/Rx Secondary Cellular: Internal, Slit, Rx Only WLAN/BT: Internal, Monopole
Operating Voltage Range:	3.7 V DC by embedded battery
Operating Temperature Range:	-30°C to +60°C
Supported Radios:	GSM/GPRS/EGPRS MS Class 12, DTM MS Class 11, Power Class 4/1, Mobile Class A WCDMA/HSDPA/DC-HSDPA/HSUPA/HSPA+, Power Class 3, DL cat 24, UL cat 6 (5.7 Mbps uplink and QPSK) LTE Bluetooth v2.1 + EDR, Bluetooth 4.0 ANT+ 802.11 b/g/n (HT20) SISO 802.11 a/n (HT20, HT40)/ac (VHT-20, VHT-40, VHT-80) SISO GPS receiver at 1.575 MHz NFC
Power Back-Off Modes:	None
Date of Testing:	December 19, 2013 – January 9, 2014

3.2. Technical Specification of Supported Radios

Signal Type	Duty Cycle	Type(s) of Modulation	Band	Transmit Frequency Range (MHz)	Measured Maximum Conducted Output Power (dBm)
GSM	12.5%	GMSK	GSM 850	824.2 – 848.8	32.6
			PCS 1900	1850.2 – 1909.8	30.4
(E)GPRS	1 uplink timeslot: 12.5% 2 uplink timeslots: 25% 3 uplink timeslots: 37.5% 4 uplink timeslots: 50%	GMSK, 8PSK	GSM 850	824.2 – 848.8	32.7
			PCS 1900	1850.2 – 1909.8	30.3
DTM	2 uplink timeslots: 25% 3 uplink timeslots: 37.5%	GMSK, 8PSK	GSM 850	824.2 – 848.8	30.8
			PCS 1900	1850.2 – 1909.8	27.3
WCDMA	100%	QPSK, 16 QAM	FDD II	1852.4 – 1907.6	23.8
			FDD IV	1712.4 – 1752.6	22.34
			FDD V	826.4 – 846.6	23.95
LTE	100%	QPSK, 16-QAM	Band 2	1850.7 – 1909.3	22.92
			Band 4	1710.7 – 1754.3	22.21
			Band 5	824.7 – 848.3	23.5
			Band 7	2502.5 – 2567.5	20.7
Bluetooth v2.1 + EDR	77%	GFSK, π/4 DQPSK, 8DPSK	N/A	2402 – 2480	9.1
Bluetooth v4.0	62%	GFSK	N/A	2402-2480	2.5
802.11 b/g/n	100%	BPSK, QPSK, 16-QAM, 64-QAM	N/A	2412 – 2462	16.4
802.11 a/n/ac	100%	BPSK, QPSK, 16-QAM, 64-QAM	Sub-Band 1	5180 – 5240	16.7
			Sub-Band 2	5260 – 5320	16.7
			Sub-Band 3	5500 – 5700	17.4
			Sub-Band 4	5745 – 5825	14.4
GPS[1]	N/A	N/A	L1	N/A	N/A
NFC[1]	100%	ASK	N/A	13.56	N/A

NOTES:
1. Bands are supported by the EUT, but outside of the scope of this test report.

3.3. Identification of the Equipment Under Test (EUT)

EUT #	Serial Number	HW Version	SW Version	Comment
1	CB5A1W5TUG	AP1.1	17.0.A.0.276	GSM/GPRS Radiated
2	CB5A1W5TUE	AP1.1	17.0.A.0.276	WCDMA Radiated
3	CB5A1W5TUN	AP1.1	17.0.A.0.276	LTE Radiated
4	CB5A1W5TQV	AP1.1	17.0.A.0.276	WLAN/Bluetooth Radiated
5	CB5A1W5TV1	AP1.1	17.0.A.0.276	Cellular Conducted
6	CB5A1W5TUD	AP1.1	17.0.A.0.276	Cellular Conducted
7	CB5A1W5TUZ	AP1.1	17.0.A.0.276	WLAN/Bluetooth Conducted

3.4. Identification of Accessory equipment

AE #	Type	Manufacturer	Model	Serial Number	Comments
1	Headset	Sony	N/A	N/A	

3.5. Maximum SAR values

Signal Type	Band	Exposure Condition	Measured 1g SAR	Maximum Scaled 1g SAR[1]
GSM	850	Head	0.455	0.560
	1900	Head	0.333	0.341
DTM	850	Head	0.497	0.520
	1900	Head	0.485	0.485
GPRS	850	Body	0.464	0.464
		Hotspot	0.464	0.464
	1900	Body	0.601	0.601
		Hotspot	0.601	0.601
WCDMA	FDD II	Head	0.553	0.579
		Body	0.717	0.751
		Hotspot	0.717	0.751
	FDD IV	Head	0.694	0.739
		Body	0.444	0.472
		Hotspot	0.444	0.472
	FDD V	Head	0.445	0.505
		Body	0.427	0.485
		Hotspot	0.427	0.485

Signal Type	Band	Exposure Condition	Measured 1g SAR	Maximum Scaled 1g SAR[1]
LTE-FDD	Band 2	Head	0.483	0.641
		Body	0.656	0.871
		Hotspot	0.656	0.871
	Band 4	Head	0.356	0.386
		Body	0.728	0.789
		Hotspot	0.728	0.789
	Band 5	Head	0.326	0.387
		Body	0.324	0.385
		Hotspot	0.324	0.385
	Band 7	Head	0.700	0.940
		Body	0.275	0.351
		Hotspot	0.470	0.600
802.11b	N/A	Head	0.293	0.293
		Body	0.131	0.131
		Hotspot	0.131	0.131
802.11a	Sub-Band 1	Head	0.147	0.147
		Body	0.529	0.529
	Sub-Band 2	Head	0.138	0.138
		Body	0.734	0.734
	Sub-Band 3	Head	0.122	0.122
		Body	0.762	0.762
	Sub-Band 4	Head	0.096	0.096
		Body	0.356	0.356
Bluetooth	N/A	Head	0.043	0.062

NOTES:
1. Measured 1g SAR scaled to manufacturer stated output power upper tolerance limit.

4. Subject of Investigation

The objective of the measurements done by CETECOM Inc. was the dosimetric assessment of the EUT described in section 3. The tests were performed in configurations for devices operated next to a person's body. The examinations were carried out with the dosimetric assessment system DASY52 described in Section 6.

4.1. The IEEE Standard C95.1 and the FCC Exposure Criteria

The limits are set by CFR 47 FCC rule parts 1.1307 and 2.1093, following the recommendations in IEEE C95.1-1999 (ANSI/IEEE C95.1-1999), "IEEE Standard for Safety Levels with Respect to Human Exposure to Radio Frequency Electromagnetic Fields, 3 kHz to 300 GHz."

4.2. SAR Limit

In this report the comparison between the exposure limits and the SAR data is made using the spatial peak SAR.

Having in mind a worst case consideration, the SAR limit is valid for uncontrolled environment and portable transmitters. The SAR values have to be averaged over a mass of 1g (SAR_{1g}) and/or 10g (SAR_{10g}) with the shape of a cube.

Standard	Exposure Condition	Average SAR (W/kg)	Mass Average (g)
FCC CFR 47 Part 2.1093 (d)(2)	Partial-Body	1.6	1
	Limb	4	10

5. Measurement Procedure

The Federal Communications Commission (FCC) requires routine dosimetric assessment of mobile telecom-communications devices, either by laboratory measurement techniques or by computational modeling, prior to equipment authorization or use. The measurement procedure shall be performed according to IEEE 1528:2003. The following KDB publications have additionally been applied:

447498 D01 V05 – General RF Exposure Guidance
648474 D04 V01 – SAR Handsets Multi Xmiter and Ant
865664 D01V01 – SAR measurement 100 MHz to 6 GHz
248227 D01 V01R02 – SAR Measurement Procedures for 802.11 a/b/g Transmitters
941225 D01 V02 – SAR Measurement Procedures for 3G Devices
941225 D02 v02v0 - Guidance for 3GPP R6 and R7 HSPA+
941225 D03 V01 – Recommended SAR Test Reduction Procedures for GSM/GPRS/EDGE

5.1. General Requirements

SAR evaluation was performed in a laboratory with an environment which avoids influence on SAR measurements by ambient EM sources and any reflection from the environment itself. The ambient temperature was in the range of 18°C to 25°C and 30-70% humidity. Simulating liquid temperature did not deviate more than +/- 2°C throughout SAR evaluation.

5.2. Body-worn and Other Configurations

Phantom Requirements
For body-worn and other configurations a flat phantom shall be used which is comprised of material with electrical properties similar to the corresponding tissues.

Test Position
The body-worn configurations shall be tested with the supplied accessories (belt-clips, holsters, etc.) attached to the device in normal use configuration. Devices with a headset output shall be tested with a connected headset.

Test to be Performed
For purpose of determining test requirements, accessories may be divided into two categories: those that do not contain metallic components and those that do. For multiple accessories that do not contain metallic components, the device may be tested only with that accessory which provides the closest spacing to the body. For multiple accessories that contain metallic components, the device must be tested with each accessory that contains a unique metallic component. If multiple accessories share an identical metallic component, only the accessory that provides the closest spacing to the body must be tested. If the manufacturer provides none body-worn accessories a separation distance of 1.5 cm between the back of the device and the flat phantom is recommended. Other separation distances may be used, but they shall not exceed 2.5 cm. In these cases, the device may use body-worn accessories that provide a separation distance greater than that tested for the device provided however that the accessory contains no metallic components.

For devices with retractable antenna the SAR test shall be performed with the antenna fully extended and fully retracted. Other factors that may affect the exposure shall also be tested. For example, optional antennas or optional battery packs which may significantly change the volume, lengths, flip open/closed, etc. of the device, or any other accessories which might have the potential to considerably increase the peak spatial-average SAR value.

5.3. Procedure for assessing the peak spatial-average SAR

Step 1*:* Power reference measurement:

Prior to the SAR test, a local SAR measurement should be taken at a user-selected spatial reference point to monitor power variations during testing.

Step 2: Area scan

The measurement procedures for evaluating SAR associated with wireless handsets typically start with a coarse measurement grid in order to determine the approximate location of the local peak SAR values. This is referred to as the "area scan" procedure. The SAR distribution is scanned along the inside surface of typically half of the head of the phantom but at least larger than the areas projected (normal to the phantom's surface) by the handset and antenna. An example grid is given in Figure 4. The distance between the measured points and phantom surface should be less than 8 mm, and should remain constant (variation less than ± 1 mm) during the entire scan in order to determine the locations of the local peak SAR with sufficient precision. The distance between the measurement points should enable the detection of the location of local maximum with an accuracy of better than half the linear dimension of the tissue cube after interpolation. The resolution can also be tested using the functions in [IEEE 1528:2033] Annex E (see E.5.2). The approximate locations of the peak SARs should be determined from area scan. Since a given amplitude local peak with steep gradients may produce lower spatial-average SAR than slightly lower amplitude peaks with less steep gradients, it is necessary to evaluate the other peaks as well. However, since the spatial gradients of local SAR peaks are a function of wavelength inside the tissue simulating liquid and incident magnetic field strength, it is not necessary to evaluate peaks that are less than –2dB of the local maximum. Two-dimensional spline algorithms [Press, et al, 1996], [Brishoual, 2001] are typically used to determine the peaks and gradients within the scanned area. If the peak is closer than one-half of the linear dimension of the 1 g or 10 g tissue cube to the scan border, the measurement area should be enlarged if possible, e.g., by tilting the probe or the phantom (see Figure 5).

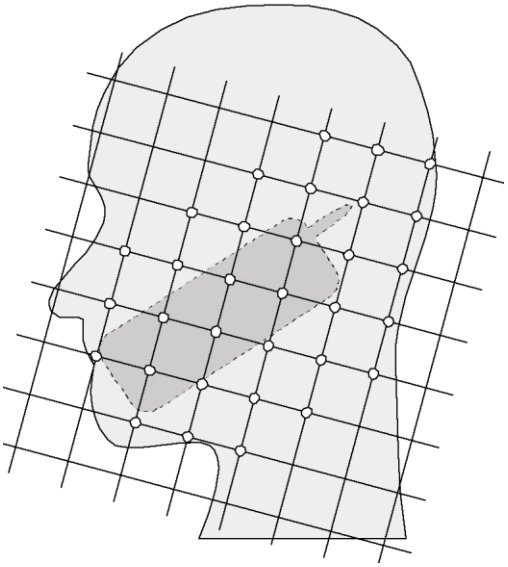


Figure 4 – Example of an area scan including the position of the handset. The scanned area (white dots) should be larger than the area projected by the handset and antenna.

The SPEAG DASY SAR system uses a mechanical sensor detection to find the phantom surface. To decrease test time, the DASY software allows the operator to choose an option where the SAR probe will reuse measurement locations from a previous identical area scan. With this option enabled, the DASY system will not use mechanical sensor detection to find the phantom surface. Locations of each measurement point of the area scan is taken at the same locations as an identical area scan if one is available. Area scans that reused location of measurement points is noted in the result plots under DASY Configuration > Sensor-Surface.

Step 3: Zoom scan

In order to assess the peak spatial SAR values averaged over a 1 g and 10 g cube, fine resolution volume scans, called "zoom scans", are performed at the peak SAR locations determined during the "area scan." The zoom scan volume should have at least 1.5 times the linear dimension of either a 1 g or a 10 g tissue cube for whichever peak spatial-average SAR is being evaluated. The peak local SAR locations that were determined in the area scan (interpolated value) should be on the centerline of the zoom scans. The centerline is the line that is normal to the surface and in the center of the volume scan. If this is not possible, the zoom scan can be shifted but not by more than half the dimension of the 1 g or a 10 g tissue cube.

The maximum spatial-average SAR is determined by a numerical analysis of the SAR values obtained in the volume of the zoom scan, whereby interpolation (between measured points) and extrapolation (between surface and closest measured points) routines should be applied. A 3-D-spline algorithm [Press, et al, 1996], [Kreyszig, 1983], [Brishoual, 2001] can be used for interpolation and a trapezoidal algorithm for the integration (averaging). Scan resolutions of larger than 2 mm can be used provided the uncertainty is evaluated according to E (see E.5).

In some areas of the phantom, such as the jaw and upper head region, the angle of the probe with respect to the line normal to the surface might become large, e.g., at angles larger than ± 30º (see Figure 5), which

may increase the boundary effect to an unacceptable level. In these cases, a change in the orientation of the probe and/or the phantom is recommended during the zoom scan so that the angle between the probe housing tube and the line normal to the surface is significantly reduced (<30º).

Step 4: Power reference measurement

The local SAR should be measured at exactly the same location as in Step 1. The absolute value of the measurement drift (the difference between the SAR measured in Step 4 and Step 1) should be recorded in the uncertainty budget. It is recommended that the drift be kept within ± 5%. If this is not possible, even with repeat testing, additional information may be used to demonstrate the power stability during the test. Power reference measurements can be taken after each zoom scan, if more than one zoom scan is needed. However, the drift should always be referred to the initial state with fully charged battery.

5.4. Determination of the largest peak spatial-average SAR

In order to determine the largest value of the peak spatial-average SAR of a handset, all device positions, configurations and operational modes should be tested for each frequency band according to steps 1 to 3 below.

Step 1: The tests of 6.4 should be conducted at the channel that is closest to the center of the transmit frequency band (*fc*) for:

a) all device positions (cheek and tilt, for both left and right sides of the SAM phantom,

b) all configurations for each device position in (a), e.g. antenna extended and retracted, and

c) all operational modes for each device position in (a) and configuration in (b) in each frequency band, e.g. analog and digital.

If more than three frequencies need to be tested, (i.e., Nc > 3), then all frequencies, configurations and modes must be tested for all of the above positions.

Step 2: For the condition providing highest spatial peak SAR determined in Step 1 conduct all tests of 6.4 at all other test frequencies, e.g. lowest and highest frequencies. In addition, for all other conditions (device position, configuration and operational mode) where the spatial peak SAR value determined in Step 1 is within 3dB of the applicable SAR limit, it is recommended that all other test frequencies should be tested as well[1].

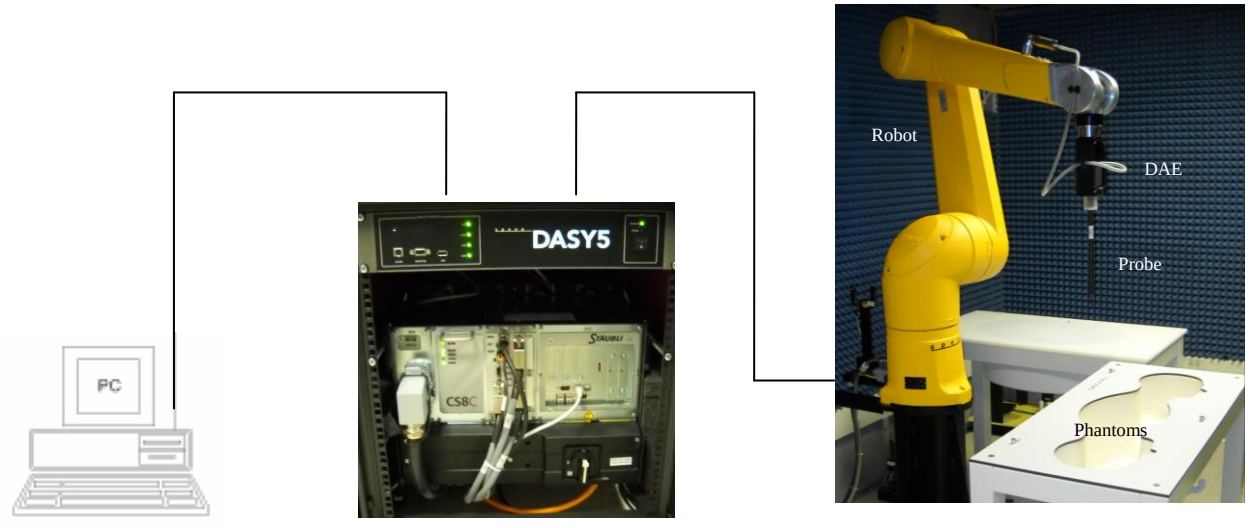
Step 3: Examine all data to determine the largest value of the peak spatial-average SAR found in Steps 1 to 2.

6. The Measurement System

6.1. Robot system specification

The SAR measurement system being used is the SPEAG DASY52 system, which consists of a Stäubli TX90XL 6-axis robot arm and CS8c controller, SPEAG SAR Probe, Data Acquisition Electronics, and SAM Twin Phantom. The robot is used to articulate the probe to programmed positions inside the phantom to obtain the SAR readings from the EUT.

The system is controlled remotely from a PC, which contains the software to control the robot and data acquisition equipment. The software also displays the data obtained from test scans.



Schematic diagram of the SAR measurement system

In operation, the system first does an area (2D) scan at a fixed depth within the liquid from the inside wall of the phantom. When the maximum SAR point has been found, the system will then carry out a 3D scan centered at that point to determine volume averaged SAR level.

6.2. Isotropic E-Field Probe for Dosimetric Measurements

The probes are constructed using three orthogonal dipole sensors arranged on an interlocking, triangular prism core. The probes have built-in shielding against static charges and are contained within a PEEK cylindrical enclosure material at the tip. Probe calibration is described in the probe's calibration certificate.

6.3. Data Acquisition Electronics

The DAE contains a signal amplifier, multiplexer, 16bit A/D converter and control logic. It uses an optical link for communication with the DASY5 system. The DAE has a dynamic range of -100 to 300 mV. It also contains a two step probe touch detector for mechanical surface detection and emergency robot stop.

6.4. Phantoms

The Twin SAM V4.0 Phantom is designed to specifications defined in IEEE 1528, and IEC/EN 62209-1. It enables the dosimetric evaluation of left and right hand phone usage as well as body mounted usage at the flat phantom region.

Additionally, the Oval Flat ELI V4.0 Phantom is designed to specification defined in IEEE 1528, and IEC/EN 62209-2. It enables the dosimetric evaluation of body mounted usage.

6.5. Interpolation and Extrapolation schemes

The interpolation, extrapolation and maximum search routines are all based on the modified Quadratic Shepard's method. The interpolation scheme combines a least-square fitted function method and a weighted average method which are the two basic types of computational interpolation and approximation. The routines construct a once-continuously differentiable function that interpolates the measurement values.

7. Uncertainty Assessment

The uncertainty values for components specified were evaluated according to the procedures of *IEEE 1528-2003, NIST 1297 1994 edition and ISO Guide to the Expression of Uncertainty in Measurements (GUM)*.

7.1. Measurement Uncertainty Budget According to IEEE 1528:2003

a	***b***	***c***	***d***	***e = f(d,k)***	***f***	***g = c x f / e***	***k***
Uncertainty Component	**Sec.**	**Tol. (± %)**	**Prob. Dist.**	**Div.**	**c_i (1-g)**	**1-g u_i (±%)**	**v_i**
Measurement System							
Probe Calibration	E2.1	5.5	N	1	1	5.5	∞
Axial Isotropy	E2.2	4.7	R	√3	0.7	1.9	∞
Hemispherical Isotropy	E2.2	9.6	R	√3	0.7	3.9	∞
Boundary Effect	E2.3	1.0	R	√3	1	0.6	∞
Linearity	E2.4	4.7	R	√3	1	2.7	∞
System Detection Limits	E2.5	1.0	R	√3	1	0.6	∞
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 Noise	E6.1	3.0	R	√3	1	1.7	∞
RF Ambient Reflections	E6.1	3.0	R	√3	1	1.7	∞
Probe Positioner Mechanical Tolerance	E6.2	0.4	R	√3	1	0.2	∞
Probe Positioning with respect to Phantom Shell	E6.3	2.9	R	√3	1	1.7	∞
Extrapolation, interpolation and Integration Algorithms for Max. SAR Evaluation	E5.2	1.0	R	√3	1	0.6	∞
Test sample Related							
Test Sample Positioning	E4.2	2.9	N	1	1	2.9	*145*
Device Holder Uncertainty	E4.1	3.6	N	1	1	3.6	*5*
Output Power Variation - SAR drift measurement	6.6.2	5.0	R	√3	1	2.9	∞
Phantom and Tissue Parameters							
Phantom Uncertainty (shape and thickness tolerances)	E3.1	4.0	R	√3	1	2.3	∞
Liquid Conductivity Target - tolerance	E3.2	5.0	R	√3	0.7	1.8	∞
Liquid Conductivity - measurement uncertainty	E3.3	2.5	N	1	0.7	1.6	∞
Liquid Permittivity Target tolerance	E3.2	5.0	R	√3	0.6	1.7	∞
Liquid Permittivity - measurement uncertainty	E3.3	2.5	N	1	0.6	1.5	∞
Combined Standard Uncertainty			RSS			**± 10.7%**	
Expanded Uncertainty (95% CONFIDENCE INTERVAL)			*k*= 2.00705			**± 21.4%**	

8. Test results summary

8.1. Conducted Average Output Power

Measurement uncertainty for conducted measurements is ±0.5dB

Bluetooth

Average power measured using an average power meter.

Channel	Frequency [MHz]	Average Power [dBm]		
		GFSK	π/4 DQPSK	8-DPSK
0	2402	7.1	4.1	4.1
39	2441	9.1	6.2	6.2
78	2480	7.6	4.3	4.2
Upper Power Tolerance Limit		11	9	9

Channel	Frequency [MHz]	Average Power [dBm]
		LE
0	2402	2.5
19	2440	2.5
39	2480	2.5
Upper Power Tolerance Limit		3

ANT+

Channel	Frequency [MHz]	Average Power [dBm]
		ANT+
1	2403	5.51
39	2441	7.8
78	2480	5.53

WLAN – 2.4 GHz Band

Average power measured using an average power meter.

Channel	Frequency [MHz]	Average Power [dBm] 802.11b	Upper Power Tolerance Limit
1	2412	14.9	14.9
6	2437	16.4	16.4
11	2462	14.6	14.9

Channel	Frequency [MHz]	Average Power [dBm] 802.11g	Upper Power Tolerance Limit
1	2412	14.3	14.4
6	2437	15.7	15.9
11	2462	14.3	14.4

Channel	Frequency [MHz]	Average Power [dBm] 802.11n HT20	Upper Power Tolerance Limit
1	2412	13.8	14.1
6	2437	15.6	15.6
11	2462	13.8	14.1

WLAN – 5 GHz Band

Average power measured using an average power meter.

Channel	Frequency [MHz]	Average Power [dBm]			Upper Power Tolerance Limit
		802.11a	802.11n, HT20	802.11ac, VHT-20	
36	5180	16.7	16.7	16.7	16.7
40	5200	16.7	16.7	16.7	
44	5220	16.7	16.7	16.7	
48	5240	16.7	16.7	16.7	
52	5260	16.7	16.7	16.7	
56	5280	16.7	16.7	16.7	
60	5300	16.7	16.7	16.7	
64	5320	16.7	16.7	16.7	
100	5500	17.4	17.4	17.4	17.4
104	5520	17.4	17.4	17.4	
108	5540	17.4	17.4	17.4	
112	5560	17.4	17.4	17.4	
116	5580	17.4	17.4	17.4	
132	5660	17.4	17.4	17.4	
136	5680	17.4	17.4	17.4	
140	5700	17.4	17.4	17.4	
149	5745	14.4	14.4	14.4	14.4
153	5765	14.4	14.4	14.4	
157	5785	14.4	14.4	14.4	
161	5805	14.4	14.4	14.4	
165	5825	14.4	14.4	14.4	

Channel	Frequency [MHz]	Avg. Power [dBm]		Upper Power Tolerance Limit
		802.11n, HT40	802.11ac, VHT-40	
38	5190	13.3	13.3	13.3
46	5230	13.2	13.3	
54	5270	13.3	13.3	
62	5310	13.3	13.3	
102	5510	15.7	15.7	15.7
110	5550	15.7	15.7	
134	5670	15.7	15.7	
151	5755	14	14	14
159	5795	14	14	

Channel	Frequency [MHz]	Avg. Power [dBm]	Upper Power Tolerance Limit
		802.11ac, VHT-80	
42	5210	11.3	11.5
58	5290	11.4	11.5
106	5530	13.7	13.7
155	5775	13.7	13.7

GSM

Average power measured using a Rhode and Schwarz CMU 200.

Band	Channel	Frequency [MHz]	Average Power [dBm]	Upper Power Tolerance Limit
GSM 850	128	824.2	32.6	33.4
	190	836.6	32.5	
	251	848.8	32.5	
PCS 1900	512	1850.2	30.2	30.5
	661	1880	30.4	
	810	1909.8	30.3	

GSM 850 Band – (E)GPRS

Average power measured using a Rhode and Schwarz CMU 200.

Number of Uplink Timeslots		Modulation	Channel / Frequency [MHz]						Burst Average Upper Power Tolerance Limit
			128 / 824.2		190 / 836.6		251 / 848.8		
			Measured Burst Average Power [dBm]	Calculated Time Average Power [dBm]	Measured Burst Average Power [dBm]	Calculated Time Average Power [dBm]	Measured Burst Average Power [dBm]	Calculated Time Average Power [dBm]	
GPRS	1	GMSK	32.7	23.7	32.7	23.7	32.7	23.7	33.4
	2		30.8	24.8	30.8	24.8	30.7	24.7	31
	3		29	24.75	29	24.75	28.8	24.55	29
	4		28	25	28	25	27.9	24.9	28
EGPRS	1	GMSK	32.6	23.6	32.6	23.6	32.6	23.6	33.4
	2		30.9	24.9	30.9	24.9	30.8	24.8	31
	3		29	24.75	28.9	24.65	28.8	24.55	29
	4		28	25	28	25	27.9	24.9	28
	1	8PSK	27.4	18.4	27.3	18.3	27	18	28
	2		25.5	19.5	25.3	19.3	25.1	19.1	26
	3		24.5	20.25	24.4	20.15	24.2	19.95	25
	4		22.4	19.4	22.4	19.4	22.1	19.1	23

GSM 850 Band – DTM

Average power measured using a Rhode and Schwarz CMU 200.

Number of Uplink Timeslots		Modulation	Channel / Frequency [MHz]						Burst Average Upper Power Tolerance Limit
			128 / 824.2		190 / 836.6		251 / 848.8		
			Measured Burst Average Power [dBm]	Calculated Time Average Power [dBm]	Measured Burst Average Power [dBm]	Calculated Time Average Power [dBm]	Measured Burst Average Power [dBm]	Calculated Time Average Power [dBm]	
GSM + GPRS	1 CS + 1 PD	GMSK	30.7	24.7	30.8	24.8	30.8	24.8	31
	1CS + 2 PD		28.7	24.45	28.8	24.55	28.9	24.65	29
GSM + EGPRS	1 CS + 1 PD	GMSK	30.6	24.6	30.8	24.8	30.8	24.8	31
	1 CS + 2 PD		28.7	24.45	28.7	24.45	28.8	24.55	29
	1 CS + 1 PD	GMSK (CS) 8PSK (PD)	30.7/25.1	22.73	30.8/25.1	22.8	30.8/25.1	22.8	31/26
	1 CS + 2 PD		28.7/24.1	20.96	28.7/24.3	21.01	28.8/24.2	21.06	29/25

PCS 1900 Band - (E)GPRS

Average power measured using a Rhode and Schwarz CMU 200.

Number of Uplink Timeslots		Modulation	Channel / Frequency [MHz]						Burst Average Upper Power Tolerance Limit
			512 / 1850.2		661 / 1880		810 / 1909.8		
			Measured Burst Average Power [dBm]	Calculated Time Average Power [dBm]	Measured Burst Average Power [dBm]	Calculated Time Average Power [dBm]	Measured Burst Average Power [dBm]	Calculated Time Average Power [dBm]	
GPRS	1	GMSK	30.3	21.3	30.2	21.2	30.2	21.2	30.5
	2		27.5	21.5	27.5	21.5	27.5	21.5	27.5
	3		26.5	22.25	26.5	22.25	26.5	22.25	26.5
	4		25.5	22.5	25.5	22.5	25.5	22.5	25.5
EGPRS	1	GMSK	30.3	21.3	30.2	21.2	30.2	21.2	30.5
	2		27.5	21.5	27.5	21.5	27.5	21.5	27.5
	3		26.5	22.25	26.5	22.25	26.5	22.25	26.5
	4		25.5	22.5	25.5	22.5	25.5	22.5	25.5
	1	8PSK	26.3	17.3	26.4	17.4	26.2	17.2	27
	2		24.5	18.5	24.6	18.6	24.5	18.5	25
	3		23.7	19.45	23.9	19.65	23.7	19.45	24
	4		22.6	19.6	22.7	19.7	22.6	19.6	23

PCS 1900 Band – DTM

Average power measured using a Rhode and Schwarz CMU 200.

Number of Uplink Timeslots		Modulation	Channel / Frequency [MHz]						Burst Average Upper Power Tolerance Limit
			512 / 1850.2		661 / 1880		810 / 1909.8		
			Measured Burst Average Power [dBm]	Calculated Time Average Power [dBm]	Measured Burst Average Power [dBm]	Calculated Time Average Power [dBm]	Measured Burst Average Power [dBm]	Calculated Time Average Power [dBm]	
GSM + GPRS	1 CS + 1 PD	GMSK	27.3	21.3	27.3	21.3	27.2	21.2	27.5
	1CS + 2 PD		26.5	22.25	26.5	22.25	26.4	22.15	26.5
GSM + EGPRS	1 CS + 1 PD	GMSK	27.3	21.3	27.3	21.3	27.3	21.3	27.5
	1 CS + 2 PD		26.5	22.25	26.5	22.25	26.4	22.15	26.5
	1 CS + 1 PD	GMSK (CS) 8PSK (PD)	27.3/24.2	20	27.3/24.4	20.07	27.2/24.3	19.97	27.5/25
	1 CS + 2 PD		26.5/23.2	19.14	26.5/23.3	19.17	26.5/23.1	19.1	26.5/24

WCDMA

Average power measured using a Rhode and Schwarz CMU 200.

Band	Channel	Frequency [MHz]	Average Power [dBm]		Upper Power Tolerance Limit
			12.2kbps AMR, 3.4kb SRB	12.2kbps RMC	
FDD II	9262	1852.4	23.71	23.8	24
	9400	1880	23.79	23.8	
	9538	1907.6	23.6	23.63	
FDD IV	1312	1712.4	22.15	22.11	22.5
	1413	1732.6	22.24	22.23	
	1513	1752.6	22.32	22.34	
FDD V	4132	826.4	23.81	23.81	24.5
	4175	835	23.83	23.95	
	4233	846.6	23.76	23.76	

HSDPA

Settings are according to FCC KDB 941225 D01, "SAR Measurement Procedures for 3G Devices" section "Release 5 HSDPA Data Devices"

Average power measured using a Rhode and Schwarz CMU 200. Reference Rhode and Schwarz application note 1CM72: Operation Guide for HSDPA Test Setup according to 3GPP TS 34.121, section 2.2.

Band	Channel	Frequency [MHz]	Average Power [dBm]			
			Sub-test 1	Sub-test 2	Sub-test 3	Sub-test 4
WCDMA FDD V	4132	826.4	23.64	23.65	23.15	23.03
	4175	835	23.65	23.67	23.23	23.23
	4233	846.6	23.72	23.77	23.16	23.18
WCDMA FDD IV	1312	1712.4	22.1	22.14	21.62	21.6
	1413	1732.6	22.12	22.17	21.66	21.64
	1513	1752.6	22.17	22.22	21.71	21.7
WCDMA FDD II	9262	1852.4	23.14	23.18	22.8	22.8
	9400	1880	23.19	23.15	22.79	22.81
	9538	1907.6	23.12	23.17	22.84	22.83

HSUPA

Settings are according to FCC KDB 941225 D01, "SAR Measurement Procedures for 3G Devices" section "Release 6 HSPA Data Devices"
Average power measured using a Rhode and Schwarz CMU 200. Reference Rhode and Schwarz application note 1CM73: Operation Guide for HSUPA Test Setup according to 3GPP TS 34.121, section 2.1 and 2.2.

Band	Channel	Frequency [MHz]	Average Power [dBm]				
			Sub-test 1	Sub-test 2	Sub-test 3	Sub-test 4	Sub-test 5
WCDMA FDD V	4132	826.4	23.2	21.16	21.91	20.83	22.7
	4175	835	22.87	21.03	22.05	21.03	22.9
	4233	846.6	23.55	21.54	22.52	21.54	23.52
WCDMA FDD IV	1312	1712.4	21.94	20.06	20.92	20.03	21.89
	1413	1732.6	22.05	20.22	21	20.16	22.02
	1513	1752.6	21.85	19.89	20.83	19.98	21.8
WCDMA FDD II	9262	1852.4	22.87	20.91	21.83	20.94	22.78
	9400	1880	22.8	20.74	21.93	20.96	22.76
	9538	1907.6	22.67	20.67	21.61	20.58	22.48

LTE – QPSK Modulation

Band	Bandwidth [MHz]	Channel	Frequency [MHz]	# RB / RB Position						
				100% / Low	50% / Low	50% / Mid	50% / High	1 / Low	1 / Mid	1 / High
2	20	18700	1860	21.76	21.79	21.68	21.74	22.73	22.75	22.83
		18900	1880	21.73	21.67	21.65	21.64	22.76	22.77	22.75
		19100	1900	21.65	21.6	21.68	21.61	22.64	22.7	22.83
		Factory Upper Tolerance		23	23			24		
	15	18675	1857.5	21.56	21.58	21.53	21.49	23	22.45	22.42
		18900	1880	21.48	21.51	21.4	21.49	22.69	22.73	22.62
		19125	1902.5	21.55	21.54	21.53	21.62	22.5	22.51	22.61
		Factory Upper Tolerance		23	23			24		
	10	18650	1855	21.68	21.65	21.68	21.61	22.36	22.42	22.4
		18900	1880	21.56	21.5	21.56	21.58	22.64	22.8	22.74
		19150	1905	21.71	21.57	21.68	21.75	22.53	22.72	22.7
		Factory Upper Tolerance		23	23			24		
	5	18625	1852.5	21.51	21.49	21.53	21.5	22.43	22.46	22.48
		18900	1880	21.47	21.53	21.6	21.4	22.64	22.65	22.64
		19175	1907.5	21.68	21.64	21.72	21.69	22.77	22.68	22.68
		Factory Upper Tolerance		23	23			24		
	3	18615	1851.5	21.59	21.53	21.56	21.54	22.46	22.34	22.4
		18900	1880	21.66	21.61	21.48	21.67	22.64	22.72	22.78
		19185	1908.5	21.58	21.6	21.61	21.54	22.71	22.7	22.67
		Factory Upper Tolerance		23	23			24		
	1.4	18607	1850.7	21.51	22.52	22.53	22.55	22.41	22.36	22.45
		18900	1880	21.6	22.68	22.65	22.77	22.75	22.74	22.92
		19193	1909.3	21.6	22.74	22.71	22.7	22.64	22.66	22.73
		Factory Upper Tolerance		23	24			24		

Band	Bandwidth [MHz]	Channel	Frequency [MHz]	# RB / RB Position						
				100% / Low	50% / Low	50% / Mid	50% / High	1 / Low	1 / Mid	1 / High
4	20	20050	1720	20.99	20.85	20.95	21	21.79	21.92	22.06
		20175	1732.5	21.11	21.1	21.07	21.04	22.05	22.15	22.08
		20300	1745	21	21.01	21.03	21.04	21.98	21.83	22.08
		Factory Upper Tolerance		21.5	21.5			22.5		
	15	20025	1717.5	20.81	20.76	20.68	20.85	21.9	21.54	21.67
		20175	1732.5	20.95	20.95	20.93	20.88	21.9	22	21.85
		20325	1747.5	20.83	20.8	20.78	20.8	21.65	21.67	21.82
		Factory Upper Tolerance		21.5	21.5			22.5		
	10	20000	1715	20.72	20.71	20.78	20.68	21.44	21.53	21.58
		20175	1732.5	20.87	20.94	20.85	20.88	21.94	22	21.77
		20350	1750	20.81	20.77	20.78	20.8	21.46	21.77	21.78
		Factory Upper Tolerance		21.5	21.5			22.5		
	5	19975	1712.5	20.7	20.65	20.73	20.8	21.74	21.83	21.37
		20175	1732.5	20.89	21	20.92	20.91	21.92	21.86	21.92
		20375	1752.5	20.84	20.85	20.8	20.8	21.74	21.7	21.82
		Factory Upper Tolerance		21.5	21.5			22.5		
	3	19965	1711.5	21.03	20.98	21	21.02	21.87	21.83	21.82
		20175	1732.5	21.12	21.08	21.13	21.1	22.13	22	21.94
		20385	1753.5	21.02	21.01	21.05	21.03	22.08	22	22.05
		Factory Upper Tolerance		21.5	21.5			22.5		
	1.4	19957	1710.7	21.03	22.1	22.08	22.03	20.98	21.99	22.06
		20175	1732.5	21.17	22.1	22.2	22.21	22.08	22.1	22.1
		20393	1754.3	21.04	21.99	22.02	22	21.93	21.82	21.92
		Factory Upper Tolerance		21.5	22.5			22.5		

Band	Bandwidth [MHz]	Channel	Frequency [MHz]	# RB / RB Position						
				100% / Low	50% / Low	50% / Mid	50% / High	1 / Low	1 / Mid	1 / High
5	10	20600	844	22.16	22.09	22.2	22.16	22.91	22.97	22.9
		20525	836.5	22.14	22.15	22.12	22.15	23	23.13	23.25
		20450	829	22.08	21.96	22.11	22.1	22.98	23	23
		Factory Upper Tolerance		23	23			24		
	5	20625	846.5	22.16	22.3	22.32	22.17	23.38	23.38	23.3
		20525	836.5	22.15	22.21	22.2	22.17	23.05	23.09	23.1
		20425	826.5	21.93	21.94	21.97	21.95	23	22.85	23.04
		Factory Upper Tolerance		23	23			24		
	3	20635	847.5	22.17	22.23	22.07	22.09	23.25	23.01	23.16
		20525	836.5	22.11	22.11	22.13	22.14	23.15	23	23.07
		20415	825.5	22.03	22.04	21.93	21.95	22.86	22.7	22.73
		Factory Upper Tolerance		23	23			24		
	1.4	20643	848.3	22.2	23.5	23.04	23.03	23	22.95	23.07
		20525	836.5	22.18	23.09	23.14	23.15	23.22	23.17	23.16
		20407	824.7	22.13	23.11	23.06	23.1	23.08	23	22.94
		Factory Upper Tolerance		23	24			24		

Band	Bandwidth [MHz]	Channel	Frequency [MHz]	# RB / RB Position						
				100% / Low	50% / Low	50% / Mid	50% / High	1 / Low	1 / Mid	1 / High
7	20	20850	2510	19.82	19.87	19.86	19.74	19.66	19.8	19.72
		21100	2535	19.78	19.71	19.64	19.81	19.83	19.89	19.94
		21350	2560	20.14	20.15	20.08	20	20.15	20.06	19.9
		Factory Upper Tolerance		20.7	20.7			20.7		
	15	20825	2507.5	20.11	19.83	20.01	20.11	19.7	20	20.11
		21100	2535	19.85	19.95	19.97	20.06	19.95	19.91	19.9
		21375	2562.5	20.42	20.7	20.55	20.2	20.34	20.47	20.05
		Factory Upper Tolerance		20.7	20.7			20.7		
	10	20800	2505	19.85	19.78	19.97	20.03	19.2	19.92	19.85
		21100	2535	19.93	19.87	19.97	19.96	19.81	19.98	20
		21400	2565	20.42	20.6	20.37	20.25	20.6	20.23	20.1
		Factory Upper Tolerance		20.7	20.7			20.7		
	5	20775	2502.5	19.7	19.45	19.65	19.75	19.25	19.54	19.86
		21100	2535	20.05	20.1	20.07	20.11	20.1	20.21	20.25
		21425	2567.5	20.17	20.21	20.18	20.19	20.25	20.17	20.17
		Factory Upper Tolerance		20.7	20.7			20.7		

LTE – 16QAM Modulation

Band	Bandwidth [MHz]	Channel	Frequency [MHz]	# RB / RB Position						
				100% / Low	50% / Low	50% / Mid	50% / High	1 / Low	1 / Mid	1 / High
2	20	18700	1860	21.06	21	20.98	21.03	22.23	22.25	22.34
		18900	1880	20.95	21.8	21.01	21.05	22.03	22	21.75
		19100	1900	21.07	20.96	20.99	21.06	21.91	21.94	22.08
		Factory Upper Tolerance		22	22			23		
	15	18675	1857.5	21.14	21.11	21.08	21.03	22.18	22.24	22.16
		18900	1880	21.03	20.98	21	20.85	21.98	22.04	22.03
		19125	1902.5	21.11	21.06	21.03	21.07	21.93	21.9	21.91
		Factory Upper Tolerance		22	22			23		
	10	18650	1855	21.05	21.04	21.09	21.05	22.13	22.23	22.2
		18900	1880	20.99	21.05	21.16	21.07	21.56	21.64	21.65
		19150	1905	20.95	21.08	21.1	21.15	21.83	21.95	22.04
		Factory Upper Tolerance		22	22			23		
	5	18625	1852.5	21	20.96	20.97	21	21.75	21.76	21.82
		18900	1880	21.02	21.05	21.02	20.9	22.08	22.14	22.05
		19175	1907.5	21.14	21.15	21.07	21.03	21.59	21.65	21.91
		Factory Upper Tolerance		22	22			23		
	3	18615	1851.5	20.95	21	20.97	21	22.08	22.1	22.15
		18900	1880	21.02	20.95	20.98	20.89	21.75	21.81	21.62
		19185	1908.5	21.18	21.05	20.95	21	21.9	21.9	21.97
		Factory Upper Tolerance		22	22			23		
	1.4	18607	1850.7	20.8	22.07	21.98	22.02	22.15	22.19	22.12
		18900	1880	21.08	22.16	22.1	22.09	21.77	21.85	21.88
		19193	1909.3	21.09	22.1	22.25	22.3	21.91	21.97	21.98
		Factory Upper Tolerance		22	23			23		

Band	Bandwidth [MHz]	Channel	Frequency [MHz]	# RB / RB Position						
				100% / Low	50% / Low	50% / Mid	50% / High	1 / Low	1 / Mid	1 / High
4	20	20050	1720	20.23	20.09	20.21	20.27	21.26	21.38	21.44
		20175	1732.5	20.2	20.28	20.26	20.17	21.04	21.1	20.98
		20300	1745	20.13	20.08	20.1	20.12	21.2	21	21.25
		Factory Upper Tolerance		20.5	20.5			21.5		
	15	20025	1717.5	20.14	20.12	20.11	20.22	21.23	21.3	21.35
		20175	1732.5	20.26	20.25	20.15	20.13	21.19	21.22	21.09
		20325	1747.5	20.16	20.13	20.12	20.2	20.97	20.9	21.14
		Factory Upper Tolerance		20.5	20.5			21.5		
	10	20000	1715	20.08	20.19	20.1	20.30	20.9	20.87	20.95
		20175	1732.5	20.22	20.31	20.24	20.26	21.4	21.49	21.25
		20350	1750	20.22	20.3	20.28	20.32	20.6	20.7	20.86
		Factory Upper Tolerance		20.5	20.5			21.5		
	5	19975	1712.5	20.08	20.04	20.1	20.09	20.89	20.93	20.92
		20175	1732.5	20.28	20.37	20.27	20.34	21.4	21.35	21.37
		20375	1752.5	20.3	20.22	20.22	20.25	20.76	20.69	20.89
		Factory Upper Tolerance		20.5	20.5			21.5		
	3	19965	1711.5	20.05	20.1	20.07	20.08	21.19	21.28	21.28
		20175	1732.5	20.17	20.22	20.1	20.12	20.92	20.8	20.81
		20385	1753.5	20.38	20.16	20.23	20.26	21.07	21.12	21.2
		Factory Upper Tolerance		20.5	20.5			21.5		
	1.4	19957	1710.7	19.9	21.1	21.08	21.11	21.23	21.23	21.2
		20175	1732.5	20.32	21.4	21.3	21.29	20.9	20.8	20.92
		20393	1754.3	20.41	21.41	21.35	21.36	21.02	21	21.08
		Factory Upper Tolerance		20.5	21.5			21.5		

Band	Bandwidth [MHz]	Channel	Frequency [MHz]	# RB / RB Position						
				100% / Low	50% / Low	50% / Mid	50% / High	1 / Low	1 / Mid	1 / High
5	10	20600	844	21.17	21.32	21.11	21.2	22.12	21.95	22
		20525	836.5	21.3	21.22	21.25	21.25	22.3	22.45	22.38
		20450	829	21.2	21.1	21.15	21.25	21.59	21.7	21.62
		Factory Upper Tolerance		22	22			23		
	5	20625	846.5	21.2	21.3	21.28	21.25	21.96	22	22.02
		20525	836.5	21.25	21.27	21.25	21.23	22.21	22.3	22.37
		20425	826.5	21.12	21	21.05	21.05	21.55	21.5	21.71
		Factory Upper Tolerance		22	22			23		
	3	20635	847.5	21.3	21.25	21.32	21.18	22.2	22.24	22.42
		20525	836.5	21.21	21.13	21.1	21.15	22.01	21.97	21.85
		20415	825.5	21.07	20.98	20.95	20.98	21.8	21.8	21.82
		Factory Upper Tolerance		22	22			23		
	1.4	20643	848.3	20.9	22.08	22.12	22.2	22.45	22.55	22.42
		20525	836.5	21.32	22.36	22.37	22.32	21.81	21.8	21.91
		20407	824.7	21.11	22.02	22.06	22	21.75	21.7	21.82
		Factory Upper Tolerance		22	23			23		

Band	Bandwidth [MHz]	Channel	Frequency [MHz]	# RB / RB Position						
				100% / Low	50% / Low	50% / Mid	50% / High	1 / Low	1 / Mid	1 / High
7	20	20850	2510	19.85	19.82	19.81	19.74	19.77	19.81	19.83
		21100	2535	19.1	19.15	19.15	19.13	19.67	19.55	19.38
		21350	2560	19.9	19.9	19.96	19.91	19.5	19.83	19.7
		Factory Upper Tolerance		20.7	20.7			20.7		
	15	20825	2507.5	19.44	19.38	19.56	19.61	18.9	19.53	19.68
		21100	2535	19.27	19.31	19.3	19.35	19.52	19.37	19.29
		21375	2562.5	19.7	19.91	19.9	19.75	19.82	20.04	19.88
		Factory Upper Tolerance		20.7	20.7			20.7		
	10	20800	2505	19.33	19.25	19.45	19.59	18.6	19.2	19.43
		21100	2535	19.28	19.38	19.46	19.43	19.52	19.65	19.48
		21400	2565	19.83	19.99	19.85	19.83	19.6	19.38	19.25
		Factory Upper Tolerance		20.7	20.7			20.7		
	5	20775	2502.5	19.37	19	19.15	19.23	18.32	18.54	18.91
		21100	2535	19.42	19.4	19.36	19.38	19.22	19.2	19.16
		21425	2567.5	19.71	19.7	19.72	19.71	19.69	19.8	19.78
		Factory Upper Tolerance		20.7	20.7			20.7		

8.2. Stand-Alone SAR Evaluation Exclusion

Antenna	Operation Mode	SAR Evaluation Exclusion Reason
WLAN	802.11g 802.11n	According to KDB 248227, 802.11g and 802.11n is not required when the maximum average output power is < ¼ dB higher than that measured on the corresponding 802.11b or 802.11a channels.
WLAN	802.11ac	According to the April 2013 TCB Workshop, RF Exposure Procedures Update, the usual 802.11 test exclusions are applied. 802.11ac is not required when the maximum average output power is < ¼ dB higher than that measured on the corresponding 802.11a channels.
Cellular	GSM 850 band, 8PSK Modulation	According to KDB 941225 and IEEE 1528-2003 footnote 11, SAR evaluation for low-power modes are required for devices that produced a peak SAR larger than one half of the compliance limit. The highest SAR value for GMSK is less than one half of the 1.6 W/kg limit.
Cellular	PCS 1900 band, 8PSK Modulation	According to KDB 941225 and IEEE 1528-2003 footnote 11, SAR evaluation for low-power modes are required for devices that produced a peak SAR larger than one half of the compliance limit. The highest SAR value for GMSK is less than one half of the 1.6 W/kg limit.
Cellular	HSDPA	According to KDB 941225, SAR evaluation is not required when the maximum average output power is < ¼ dB higher than that measured on the corresponding channels without HSDPA using 12.2 kbps RMC and the maximum SAR for 12.2 kbps RMC is less than 1.2 W/kg.
Cellular	HSPA	According to KDB 941225, SAR evaluation is not required when the maximum average output power is < ¼ dB higher than that measured on the corresponding channels without HSPA using 12.2 kbps RMC and the maximum SAR for 12.2 kbps RMC is less than 1.2 W/kg.
Cellular	LTE – 16QAM Modulation	According to KDB 941225, D05, SAR evaluation is required when the highest maximum output power for the configuration in the higher order modulation is > ½ dB higher than the same configuration in QPSK or when the scaled SAR for the QPSK configuration is > 1.45 W/kg.
Cellular	LTE – Smaller Channel Bandwidths	According to KDB 941225, D05, SAR evaluation is required when the highest maximum output power of a configuration in the smaller channel bandwidth is > ½ dB higher than the equivalent channel configuration in the largest channel bandwidth configuration or the scaled SAR of a configuration for the largest channel bandwidth is > 1.45 W/kg.

8.3. Test Positions and Configurations

Exposure Condition	Distance	Position	Positioning Photo (Appendix B)
Head SAR	0 mm	Left Touch	Photo 1
		Left 15° Tilt	Photo 2
		Right Touch	Photo 3
		Right 15° Tilt	Photo 4
Body SAR[1]	10 mm	Front	Photo 5
		Back	Photo 6
Personal Wireless Router (Hotspot Mode) SAR	10 mm	Front	Photo 5
		Back	Photo 6
		Top Edge	Photo 7
		Left Edge	Photo 8
		Bottom Edge	Photo 9
		Right Edge	Photo 10

Notes:

1. Manufacturer declares a 15 mm distance for body-worn accessory SAR measurements. SAR evaluation is performed at 10 mm. SAR values for body-worn accessory exposure are worst case.

KDB 941225 D06 states the positions to be tested for personal wireless router mode is any face or edge within 25 mm of the antenna. See antenna locations in Appendix B for antenna locations.

Personal Wireless Router Mode Positions			
Antenna	**Face / Edge**	**Antenna-Edge Distance (mm)**	**Tested**
Cellular	Front	1.2	Yes
	Back	1.2	Yes
	Bottom Edge	0	Yes
	Top Edge	89.92	No
	Left Edge	0	Yes
	Right Edge	0	Yes
WLAN / Bluetooth	Front	5.67	Yes
	Back	1.16	Yes
	Bottom Edge	95.52	No
	Top Edge	16.02	Yes
	Left Edge	55.47	No
	Right Edge	4.79	Yes

WLAN is tested on the channel with the highest measured conducted average power.

WLAN is tested with 100% duty cycle. According to SPEAG user manual section 27.2, CW can be assumed which results in crest factor 1.

If the SAR value on the middle channel was more than 3dB below the limit, high and low channels were not evaluated.

Measured SAR values are scaled up to the manufacturer's stated output power.

Configurations with multiple SAR values have at least one peak SAR within 2 dB of the primary peak.

8.4. SAR Results for Head

GSM 850

Operation Mode	Channel	Frequency (MHz)	Position	SAR 1g (W/kg)	Scaled SAR 1g (W/kg)	Results (Appendix A)
GSM	190	836.6	Right Touch	0.455	0.560	Plot 1
			Right Tilt	0.187	0.230	Plot 2
			Left Touch	0.369	0.454	Plot 3
			Left Tilt	0.175	0.215	Plot 4
DTM: 1 CS + 1 PD	190	836.6	Right Touch	0.497	0.520	Plot 5
			Right Tilt	0.180	0.188	Plot 6
			Left Touch	0.384	0.402	Plot 7
			Left Tilt	0.171	0.179	Plot 8

PCS 1900

Operation Mode	Channel	Frequency (MHz)	Position	SAR 1g (W/kg)	Scaled SAR 1g (W/kg)	Results (Appendix A)
GSM	661	1880	Right Touch	0.333	0.341	Plot 9
			Right Tilt	0.035	0.036	Plot 10
			Left Touch	0.258	0.264	Plot 11
			Left Tilt	0.032	0.033	Plot 12
				0.032	0.033	
DTM: 1 CS + 2 PD	661	1880	Right Touch	0.485	0.485	Plot 13
			Right Tilt	0.067	0.067	Plot 14
			Left Touch	0.322	0.322	Plot 15
			Left Tilt	0.050	0.050	Plot 16

WCDMA FDD II

Operation Mode	Channel	Frequency (MHz)	Position	SAR 1g (W/kg)	Scaled SAR 1g (W/kg)	Results (Appendix A)
12.2 kbps RMC	9400	1880	Right Touch	0.553	0.579	Plot 17
			Right Tilt	0.067	0.070	Plot 18
			Left Touch	0.371	0.388	Plot 19
			Left Tilt	0.078	0.082	Plot 20

WCDMA FDD IV

Operation Mode	Channel	Frequency (MHz)	Position	SAR 1g (W/kg)	Scaled SAR 1g (W/kg)	Results (Appendix A)
12.2 kbps RMC	1413	1732.6	Right Touch	0.694	0.739	Plot 21
			Right Tilt	0.122	0.130	Plot 22
			Left Touch	0.688	0.732	Plot 23
			Left Tilt	0.157	0.167	Plot 24

WCDMA FDD V

Operation Mode	Channel	Frequency (MHz)	Position	SAR 1g (W/kg)	Scaled SAR 1g (W/kg)	Results (Appendix A)
12.2 kbps RMC	4183	836.6	Right Touch	0.445	0.505	Plot 25
			Right Tilt	0.184	0.209	Plot 26
			Left Touch	0.383	0.435	Plot 27
			Left Tilt	0.186	0.211	Plot 28

LTE Band 2

Operation Mode	Channel	Frequency (MHz)	Position	SAR 1g (W/kg)	Scaled SAR 1g (W/kg)	Results (Appendix A)
QPSK, 20 MHz BW, 1 RB, Mid	18900	1880	Right Touch	0.483	0.641	Plot 29
			Right Tilt	0.111	0.147	Plot 30
			Left Touch	0.448	0.595	Plot 31
			Left Tilt	0.080	0.107	Plot 32
				0.070	0.093	
QPSK, 20 MHz BW, 50 RB, Low	18900	1880	Right Touch	0.335	0.455	Plot 33
			Right Tilt	0.085	0.115	Plot 34
			Left Touch	0.357	0.485	Plot 35
			Left Tilt	0.061	0.084	Plot 36
				0.051	0.069	

LTE Band 4

Operation Mode	Channel	Frequency (MHz)	Position	SAR 1g (W/kg)	Scaled SAR 1g (W/kg)	Results (Appendix A)
QPSK, 20 MHz BW, 1 RB, Mid	20175	1732.5	Right Touch	0.187	0.203	Plot 37
			Right Tilt	0.045	0.049	Plot 38
			Left Touch	0.356	0.386	Plot 39
			Left Tilt	0.083	0.090	Plot 40
QPSK, 20 MHz BW, 50 RB, Low	20175	1732.5	Right Touch	0.144	0.158	Plot 41
			Right Tilt	0.040	0.043	Plot 42
			Left Touch	0.307	0.337	Plot 43
			Left Tilt	0.074	0.081	Plot 44

LTE Band 5

Operation Mode	Channel	Frequency (MHz)	Position	SAR 1g (W/kg)	Scaled SAR 1g (W/kg)	Results (Appendix A)
QPSK, 10 MHz BW, 1 RB, High	20525	836.5	Right Touch	0.326	0.387	Plot 45
			Right Tilt	0.138	0.164	Plot 46
			Left Touch	0.253	0.301	Plot 47
			Left Tilt	0.131	0.156	Plot 48
QPSK, 10 MHz BW, 25 RB, High	20525	836.5	Right Touch	0.251	0.305	Plot 49
			Right Tilt	0.112	0.136	Plot 50
			Left Touch	0.211	0.257	Plot 51
			Left Tilt	0.112	0.136	Plot 52

LTE Band 7

Operation Mode	Channel	Frequency (MHz)	Position	SAR 1g (W/kg)	Scaled SAR 1g (W/kg)	Results (Appendix A)
QPSK, 20 MHz BW, 1 RB, High	21100	2535	Right Touch	0.487	0.622	Plot 53
			Right Tilt	0.072	0.091	Plot 54
				0.047	0.056	
			Left Touch	0.733	0.936	Plot 55
			Left Tilt	0.135	0.172	Plot 56
	20850	2510	Left Touch	0.700	0.940	Plot 57
	21350	2560	Left Touch	0.658	0.848	Plot 58
QPSK, 20 MHz BW, 50 RB, High	21100	2535	Right Touch	0.486	0.508	Plot 59
			Right Tilt	0.067	0.069	Plot 60
				0.050	0.061	
			Left Touch	0.679	0.709	Plot 61
			Left Tilt	0.037	0.039	Plot 62
QPSK, 20 MHz, 100 RB	21100	2535	Left Touch	0.717	0.886	Plot 63

WLAN – 802.11b

Operation Mode	Channel	Frequency (MHz)	Position	SAR 1g (W/kg)	Scaled SAR 1g (W/kg)	Results (Appendix A)
100% Duty Cycle	6	2437	Right Touch	0.174	0.174	Plot 64
				0.128	0.128	
			Right Tilt	0.087	0.0872	Plot 65
			Left Touch	0.293	0.293	Plot 66
			Left Tilt	0.197	0.197	Plot 67

WLAN – 802.11a – Sub-Band 1

Operation Mode	Channel	Frequency (MHz)	Position	SAR 1g (W/kg)	Scaled SAR 1g (W/kg)	Results (Appendix A)
100% Duty Cycle	36	51850	Right Touch	0.119	0.119	Plot 68
				0.045	0.045	
			Right Tilt	0.029	0.029	Plot 69
			Left Touch	0.147	0.147	Plot 70
			Left Tilt	0.043	0.043	Plot 71

WLAN 802.11a – Sub-Band 2

Operation Mode	Channel	Frequency (MHz)	Position	SAR 1g (W/kg)	Scaled SAR 1g (W/kg)	Results (Appendix A)
100% Duty Cycle	52	5260	Right Touch	0.120	0.120	Plot 72
			Right Tilt	0.035	0.035	Plot 73
			Left Touch	0.138	0.138	Plot 74
			Left Tilt	0.038	0.038	Plot 75

WLAN 802.11a – Sub-Band 3

Operation Mode	Channel	Frequency (MHz)	Position	SAR 1g (W/kg)	Scaled SAR 1g (W/kg)	Results (Appendix A)
100% Duty Cycle	104	5520	Right Touch	0.075	0.075	Plot 76
			Right Tilt	0.00854	0.00854	Plot 77
			Left Touch	0.122	0.122	Plot 78
			Left Tilt	0.013	0.013	Plot 79

WLAN 802.11a – Sub-Band 4

Operation Mode	Channel	Frequency (MHz)	Position	SAR 1g (W/kg)	Scaled SAR 1g (W/kg)	Results (Appendix A)
100% Duty Cycle	149	5745	Right Touch	0.035	0.035	Plot 80
			Right Tilt	0.013	0.013	Plot 81
			Left Touch	0.096	0.096	Plot 82
			Left Tilt	0.028	0.028	Plot 83

Bluetooth

Operation Mode	Channel	Frequency (MHz)	Position	SAR 1g (W/kg)	Scaled SAR 1g (W/kg)	Results (Appendix A)
GFSK, DH5	39	2441	Right Touch	0.028	0.043	Plot 84
			Right Tilt	0.011	0.017	Plot 85
			Left Touch	0.043	0.067	Plot 86
			Left Tilt	0.026	0.040	Plot 87

8.5. SAR Results for Body / Hotspot

GPRS 850

Operation Mode	Channel	Frequency (MHz)	Position	SAR 1g (W/kg)	Scaled SAR 1g (W/kg)	Results (Appendix A)
GMSK, 4 Uplink Timeslots	190	836.6	Front	0.382	0.382	Plot 88
			Back	0.464	0.464	Plot 89
			Bottom Edge	0.115	0.115	Plot 90
			Left Edge	0.097	0.0965	Plot 91
			Right Edge	0.129	0.129	Plot 92
				0.113	0.113	

PCS 1900

Operation Mode	Channel	Frequency (MHz)	Position	SAR 1g (W/kg)	Scaled SAR 1g (W/kg)	Results (Appendix A)
GMSK, 4 Uplink Timeslots	661	1880	Front	0.473	0.473	Plot 93
			Back	0.601	0.601	Plot 94
			Bottom Edge	0.223	0.223	Plot 95
			Left Edge	0.241	0.241	Plot 96
			Right Edge	0.278	0.278	Plot 97

WCDMA FDD II

Operation Mode	Channel	Frequency (MHz)	Position	SAR 1g (W/kg)	Scaled SAR 1g (W/kg)	Results (Appendix A)
12.2 kbps RMC	9400	1880	Front	0.71	0.743	Plot 98
			Back	0.717	0.751	Plot 99
			Bottom Edge	0.243	0.254	Plot 100
			Left Edge	0.225	0.236	Plot 101
			Right Edge	0.334	0.350	Plot 102

WCMDA FDD IV

Operation Mode	Channel	Frequency (MHz)	Position	SAR 1g (W/kg)	Scaled SAR 1g (W/kg)	Results (Appendix A)
12.2 kbps RMC	1413	1732.6	Front	0.436	0.464	Plot 103
			Back	0.444	0.472	Plot 104
			Bottom Edge	0.204	0.217	Plot 105
			Left Edge	0.562	0.598	Plot 106
			Right Edge	0.093	0.099	Plot 107

WCDMA FDD V

Operation Mode	Channel	Frequency (MHz)	Position	SAR 1g (W/kg)	Scaled SAR 1g (W/kg)	Results (Appendix A)
12.2 kbps RMC	4183	836.6	Front	0.395	0.448	Plot 108
			Back	0.427	0.485	Plot 109
			Bottom Edge	0.096	0.109	Plot 110
			Left Edge	0.068	0.078	Plot 111
				0.074	0.084	
			Right Edge	0.108	0.123	Plot 112
				0.129	0.146	

LTE Band 2

Operation Mode	Channel	Frequency (MHz)	Position	SAR 1g (W/kg)	Scaled SAR 1g (W/kg)	Results (Appendix A)
QPSK, 20 MHz BW, 1 RB, Mid	18900	1880	Front	0.523	0.694	Plot 113
			Back	0.656	0.871	Plot 114
			Bottom Edge	0.262	0.348	Plot 115
			Left Edge	0.300	0.398	Plot 116
			Right Edge	0.240	0.319	Plot 117
				0.160	0.212	
	18700	1860	Back	0.606	0.793	Plot 118
	19100	1900	Back	0.628	0.822	Plot 119
QPSK, 20 MHz BW, 50 RB, Low	18900	1880	Front	0.420	0.570	Plot 120
			Back	0.532	0.723	Plot 121
			Bottom Edge	0.210	0.285	Plot 122
			Left Edge	0.249	0.338	Plot 123
			Right Edge	0.184	0.250	Plot 124
QPSK, 20 MHz BW, 100 RB	18900	1880	Back	0.466	0.620	Plot 125

LTE Band 4

Operation Mode	Channel	Frequency (MHz)	Position	SAR 1g (W/kg)	Scaled SAR 1g (W/kg)	Results (Appendix A)
QPSK, 20 MHz BW, 1 RB, Mid	20175	1732.5	Front	0.607	0.658	Plot 126
			Back	0.728	0.789	Plot 127
			Bottom Edge	0.141	0.153	Plot 128
			Left Edge	0.251	0.272	Plot 129
			Right Edge	0.150	0.163	Plot 130
	20050	1720	Back	0.641	0.733	Plot 131
	20300	1745	Back	0.580	0.677	Plot 132
QPSK, 20 MHz BW, 50 RB, Low	20175	1732.5	Front	0.493	0.541	Plot 133
			Back	0.528	0.579	Plot 134
			Bottom Edge	0.122	0.134	Plot 135
			Left Edge	0.207	0.227	Plot 136
			Right Edge	0.107	0.117	Plot 137
QPSK, 20 MHz BW, 100 RB	20175	1732.5	Back	0.512	0.560	Plot 138

LTE Band 5

Operation Mode	Channel	Frequency (MHz)	Position	SAR 1g (W/kg)	Scaled SAR 1g (W/kg)	Results (Appendix A)
QPSK, 10 MHz BW, 1 RB, High	20525	836.5	Front	0.320	0.380	Plot 139
			Back	0.324	0.385	Plot 140
			Bottom Edge	0.053	0.063	Plot 141
			Left Edge	0.053	0.063	Plot 142
			Right Edge	0.081	0.097	Plot 143
				0.059	0.070	
QPSK, 10 MHz BW, 25 RB, High	20525	836.5	Front	0.247	0.300	Plot 144
			Back	0.261	0.317	Plot 145
			Bottom Edge	0.047	0.058	Plot 146
			Left Edge	0.048	0.058	Plot 147
			Right Edge	0.087	0.106	Plot 148

NOTES:
1. Measured SAR values are scaled up to the manufacturer's stated output power.
2. Configurations with multiple SAR values have at least one peak SAR within 2 dB of the primary peak.

LTE Band 7

Operation Mode	Channel	Frequency (MHz)	Position	SAR 1g (W/kg)	Scaled SAR 1g (W/kg)	Results (Appendix A)
QPSK, 20 MHz BW, 1 RB, High	21100	2535	Front	0.233	0.278	Plot 149
				0.166	0.198	
			Back	0.275	0.351	Plot 150
				0.218	0.260	
			Bottom Edge	0.0735	0.094	Plot 151
			Left Edge	0.016	0.020	Plot 152
			Right Edge	0.470	0.600	Plot 153
				0.343	0.409	
QPSK, 20 MHz BW, 50 RB, High	21100	2535	Front	0.232	0.242	Plot 154
				0.179	0.220	
			Back	0.273	0.285	Plot 155
				0.215	0.264	
			Bottom Edge	0.067	0.070	Plot 156
			Left Edge	0.019	0.020	Plot 157
			Right Edge	0.455	0.475	Plot 158
				0.326	0.400	

WLAN – 802.11b

Operation Mode	Channel	Frequency (MHz)	Position	SAR 1g (W/kg)	Scaled SAR 1g (W/kg)	Results (Appendix A)
100% Duty Cycle	6	2437	Front	0.049	0.049	Plot 159
				0.035	0.035	
			Back	0.131	0.131	Plot 160
			Top Edge	0.011	0.011	Plot 161
			Right Edge	0.050	0.050	Plot 162

WLAN – 802.11a, Sub-Band 1

Operation Mode	Channel	Frequency (MHz)	Position	SAR 1g (W/kg)	Scaled SAR 1g (W/kg)	Results (Appendix A)
100% Duty Cycle	36	5180	Front	0.017	0.017	Plot 163
			Back	0.529	0.529	Plot 164

WLAN – 802.11a, Sub-Band 2

Operation Mode	Channel	Frequency (MHz)	Position	SAR 1g (W/kg)	Scaled SAR 1g (W/kg)	Results (Appendix A)
100% Duty Cycle	52	5260	Front	0.023	0.023	Plot 165
			Back	0.734	0.734	Plot 166

WLAN – 802.11a, Sub-Band 3

Operation Mode	Channel	Frequency (MHz)	Position	SAR 1g (W/kg)	Scaled SAR 1g (W/kg)	Results (Appendix A)
100% Duty Cycle	104	5520	Front	0.00919	0.00919	Plot 167
			Back	0.762	0.762	Plot 168

WLAN – Sub-Band 4

Operation Mode	Channel	Frequency (MHz)	Position	SAR 1g (W/kg)	Scaled SAR 1g (W/kg)	Results (Appendix A)
100% Duty Cycle	149	5745	Front	0.015	0.015	Plot 169
			Back	0.356	0.356	Plot 170

8.6. Simultaneous Transmission SAR Evaluation Consideration

According to KDB 648474, SAR evaluation for simultaneous transmission can be excluded when specific requirements are satisfied.

When standalone SAR evaluation is excluded, the estimated SAR value is calculated as:
(*max. power of channel, including tune-up tolerance, mW*)/(*min. test separation distance, mm*)]·[$\sqrt{f_{(GHz)}}/x$] W/kg
where x=7.5. Bluetooth for body positions is calculated as 0.265 W/kg

Position	Highest Scaled SAR 1g (W/kg)		
	WLAN	Bluetooth	Cellular
Right Touch	0.174	0.043	0.739
Right Tilt	0.0872	0.017	0.230
Left Touch	0.293	0.067	0.940
Left Tilt	0.197	0.040	0.215
Front	0.049	0.265	0.743
Back	0.762	0.265	0.871
Right Edge	0.050	0.265	0.600

Position	Simultaneous Transmission Antenna Combinations	Sum of SAR 1g (W/kg)	SAR to Peak Location Separation Ratio[1]	Simultaneous Transmission Evaluation Exclusion Reason
Right Touch	WLAN + Cellular	0.913		Sum of SAR < 1.6
	Bluetooth Cellular	0.782		Sum of SAR < 1.6
Right Tilt	WLAN + Cellular	0.317		Sum of SAR < 1.6
	Bluetooth Cellular	0.247		Sum of SAR < 1.6
Left Touch	WLAN + Cellular	1.23		Sum of SAR < 1.6
	Bluetooth Cellular	1.01		Sum of SAR < 1.6
Left Tilt	WLAN + Cellular	0.412		Sum of SAR < 1.6
	Bluetooth Cellular	0.255		Sum of SAR < 1.6
Front	WLAN + Cellular	0.792		Sum of SAR < 1.6
	Bluetooth Cellular	1.01		Sum of SAR < 1.6
Back	WLAN + Cellular	1.63	0.02	SAR to peak location separation ratio < 0.04
	Bluetooth Cellular	1.14		Sum of SAR < 1.6
Right Edge	WLAN + Cellular	0.65		Sum of SAR < 1.6
	Bluetooth Cellular	0.865		Sum of SAR < 1.6

1. SAR to Peak Location Separation Ratio is only calculated if the Sum of SAR 1g (W/kg) is equal to or greater than 1.6 W/kg.

SAR to Peak Location Separation Ratio Analysis

According to KDB 447498, when the sum of SAR is larger than the limit, SAR test exclusion for simultaneous transmission is determined by the SAR to peak location separation ratio. The ratio is determined by $(SAR_1 + SAR_2)^{1.5}/R_i$ and must be ≤ 0.04 to qualify for SAR test exclusion.

For the WLAN antenna and cellular antenna pair at the back position, SEMCAD is used to determine the peak location separation distance.

Peak Location for WLAN:
(-3.00, 3.82, -18.17)

Peak Location for Cellular:
(2.08, -7.08, -18.26)

Separation Distance:
Distance [cm]: 12.03

The SAR to peak location separation ratio is $(1.63)^{1.5} / 120.3 = 0.02$.

8.7. Dipole verification

Prior to formal testing at each frequency a system verification was performed in accordance with IEEE 1528. The 1 Watt reference SAR value is taken from the SPEAG dipole calibration report as required by FCC KDB 450824 D01. All of the testing described in this report was performed within 24 hours of the system verification. The following results were obtained:

Date	Liquid Type	Frequency (MHz)	CW input at dipole feed (Watts)	1g SAR (W/kg)[1]	1 Watt reference SAR value (W/kg)	Difference reference SAR value to normalized SAR	Results (Appendix A)
12/19/2013	HSL	835	1	9.98	9.54	4.61%	Plot 171
1/20/2014	HSL	835	1	9.51	9.54	-0.31%	Plot 172
12/31/2013	HSL	900	1	10.4	10.9	-4.59%	Plot 173
12/21/2013	HSL	1750	1	33.7	36.8	-8.42%	Plot 174
12/23/2013	HSL	1750	1	33.5	36.8	-8.97%	Plot 175
1/9/2014	HSL	1750	1	33.4	36.8	-9.24%	Plot 176
12/19/2013	HSL	1900	1	35.9	39.7	-9.57%	Plot 177
12/21/2013	HSL	1900	1	36.4	39.7	-8.31%	Plot 178
1/9/2014	HSL	1900	1	36.7	39.7	-7.56%	Plot 179
1/20/2014	HSL	1900	1	36.8	39.7	-7.30%	Plot 180
1/3/2014	HSL	2450	1	48.9	52.8	-7.39%	Plot 181
1/8/2014	HSL	2450	1	51.5	52.8	-2.46%	Plot 182
1/3/2014	HSL	2550	1	54.9	57.2	-4.02%	Plot 183
1/8/2014	HSL	2550	1	56.5	57.2	-1.22%	Plot 184
1/7/2014	HSL	5200	1	79.9	77.5	3.10%	Plot 185
1/7/2014	HSL	5500	1	73.9	81.7	-9.55%	Plot 186
1/7/2014	HSL	5800	1	69.3	75.3	-7.97%	Plot 187
1/9/2014	MSL	835	1	9.77	9.55	2.30%	Plot 188
12/27/2013	MSL	900	1	9.83	10.8	-8.98%	Plot 189
12/29/2013	MSL	900	1	10	10.8	-7.41%	Plot 190
12/30/2013	MSL	1750	1	34.4	37.8	-8.99%	Plot 191
12/31/2013	MSL	1750	1	35.3	37.8	-6.61%	Plot 192
1/2/2014	MSL	1750	1	34.5	37.8	-8.73%	Plot 193
12/29/2013	MSL	1900	1	37.2	40.3	-7.69%	Plot 194
1/2/2014	MSL	1900	1	37	40.3	-8.19%	Plot 195
1/3/2014	MSL	2450	1	50.8	50.9	-0.20%	Plot 196
1/6/2014	MSL	2550	1	51	54.1	-5.73%	Plot 197
1/4/2014	MSL	5200	1	71.3	74.3	-4.04%	Plot 198
1/5/2014	MSL	5200	1	70.5	74.3	-5.11%	Plot 199
1/6/2014	MSL	5500	1	76	79.2	-4.04%	Plot 200
1/5/2014	MSL	5800	1	70.2	74.4	-5.65%	Plot 201

NOTES:

1. Verification between 5000 MHz and 6000 MHz is performed with 100 mW (20 dBm) input power to the dipole. The measured SAR values are scaled to 1 W (30 dBm)

9. References

1. [IEEE 1999] IEEE Std C95.1-1999: IEEE Standard for Safety Levels with Respect to Human Exposure to Radio Frequency Electromagnetic Fields, 3 kHz to 300 GHz, Inst. of Electrical and Electronics Engineers, Inc., December 1998.

2. [IEEE 2003] IEEE Std 1528-2003: IEEE Recommended Practice for Determining the Peak Spatial-Average Specific Absorption Rate (SAR) in the Human Head From Wireless Communications Devices: Measurement Techniques. Inst. of Electrical and Electronics Engineers, Inc., December 2003.

3. [NIST 1994] NIST: Guidelines for Evaluating and Expressing the Uncertainty of NIST Measurement Results, Technical Note 1297 (TN1297), United States Department of Commerce Technology Administration, National Institute of Standards and Technology, September 1994.

4. [FCC 20XX] Various FCC KDB Publications,
< http://transition.fcc.gov/oet/ea/eameasurements.html#sar>

10. Report History

Date	Report Name	Changes to report	Report prepared by
1/24/2014	SAR_CETEC_063_13001_FCC	First Version	J. Sabado