FCC SAR Test Report

APPLICANT	:	**Motorola Mobility, LLC**
EQUIPMENT	:	**Mobile Cellular Phone**
BRAND NAME	:	**Motorola Mobility, LLC**
MODEL NAME	:	**3600**
FCC ID	:	**IHDT56QD2**
STANDARD	:	**FCC 47 CFR Part 2 (2.1093)** **ANSI/IEEE C95.1-1992** **IEEE 1528-2003**

We, SPORTON INTERNATIONAL INC., would like to declare that the tested sample has been evaluated in accordance with the procedures and had been in compliance with the applicable technical standards.

The test results in this report apply exclusively to the tested model / sample. Without written approval of SPORTON INTERNATIONAL INC., the test report shall not be reproduced except in full.

Reviewed by: Eric Huang / Deputy Manager

Approved by: Jones Tsai / Manager

Testing Laboratory
1190

SPORTON INTERNATIONAL INC.
No. 52, Hwa Ya 1st Rd., Hwa Ya Technology Park, Kwei-Shan Hsiang, Tao Yuan Hsien, Taiwan, R.O.C.

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Revision History

REPORT NO.	VERSION	DESCRIPTION	ISSUED DATE
FA491144A	Rev. 01	Initial issue of report	Oct. 08, 2014

1. Statement of Compliance

The maximum results of Specific Absorption Rate (SAR) found during testing for **Motorola Mobility, LLC, Mobile Cellular Phone, 3600,** are as follows.

Equipment Class	Frequency Band	Highest SAR Summary				
		Head (Separation 0mm) 1g SAR (W/kg)	Body-worn (Separation 15mm) 1g SAR (W/kg)	Wireless Router (Separation 10mm) 1g SAR (W/kg)	Extremity (Separation 0mm) 10g SAR (W/kg)	Highest Simultaneous Transmission 1g SAR (W/kg)
PCE	GSM850	0.68	0.61	0.89		1.56
	GSM1900	0.18	0.67	0.69	1.91	
	WCDMA Band V	0.40	0.47	0.66		
	WCDMA Band IV	0.16	0.84	**1.24**	3.12	
	WCDMA Band II	0.29	**1.04**	1.03	**3.84**	
	LTE Band 5	0.26	0.54	0.76		
	LTE Band 41	0.15	0.62	0.98	1.77	
DTS	WLAN 2.4GHz Band	**0.93**	0.13	0.23		1.33
NII	WLAN 5.2GHz Band	0.67	0.18	0.18		1.56
	WLAN 5.3GHz Band	0.85	0.16			
	WLAN 5.5GHz Band	0.88	0.32			
	WLAN 5.8GHz Band	0.86	0.36	0.42		
DSS	Bluetooth	0.07	0.01	0.01		1.24
Date of Testing:		09/25/2014 ~ 10/02/2014				

This device is in compliance with Specific Absorption Rate (SAR) for general population/uncontrolled exposure limits (1.6 W/kg) specified in FCC 47 CFR part 2 (2.1093) and ANSI/IEEE C95.1-1992, and had been tested in accordance with the measurement methods and procedures specified in IEEE 1528-2003.

2. Administration Data

Testing Laboratory	
Test Site	SPORTON INTERNATIONAL INC.
Test Site Location	No. 52, Hwa Ya 1st Rd., Hwa Ya Technology Park, Kwei-Shan Hsiang, Tao Yuan Hsien, Taiwan, R.O.C. TEL: +886-3-327-3456 FAX: +886-3-328-4978

Applicant	
Company Name	Motorola Mobility, LLC
Address	222 W Merchandise Mart Plaza, Suite 1800, Chicago, IL 60654, United States

Manufacturer	
Company Name	Motorola Mobility, LLC
Address	222 W Merchandise Mart Plaza, Suite 1800, Chicago, IL 60654, United States

3. Guidance Standard

The Specific Absorption Rate (SAR) testing specification, method, and procedure for this device is in accordance with the following standards:

- FCC 47 CFR Part 2 (2.1093)
- ANSI/IEEE C95.1-1992
- IEEE 1528-2003
- FCC KDB 865664 D01 SAR Measurement 100 MHz to 6 GHz v01r03
- FCC KDB 865664 D02 SAR Reporting v01r01
- FCC KDB 447498 D01 General RF Exposure Guidance v05r02
- FCC KDB 648474 D04 SAR Evaluation Considerations for Wireless Handsets v01r02
- FCC KDB 941225 D01 SAR test for 3G devices v02
- FCC KDB 941225 D02 HSPA and 1x Advanced v02r02
- FCC KDB 941225 D03 SAR Test Reduction GSM GPRS EDGE v01
- FCC KDB 941225 D05 SAR for LTE Devices v02r03
- FCC KDB 941225 D06 Hotspot Mode SAR v01r01

4. Equipment Under Test (EUT)

4.1 General Information

Product Feature & Specification	
Equipment Name	Mobile Cellular Phone
Brand Name	Motorola Mobility, LLC
Model Name	3600
FCC ID	IHDT56QD2
IMEI Code	359320050014900
Wireless Technology and Frequency Range	GSM850: 824.2 MHz ~ 848.8 MHz GSM1900: 1850.2 MHz ~ 1909.8 MHz WCDMA Band V: 826.4 MHz ~ 846.6 MHz WCDMA Band IV: 1712.4 MHz ~ 1752.6 MHz WCDMA Band II: 1852.4 MHz ~ 1907.6 MHz LTE Band 5: 824.7 MHz ~ 848.3 MHz LTE Band 41: 2498.5 MHz ~ 2687.5 MHz WLAN 2.4GHz Band: 2412 MHz ~ 2462 MHz WLAN 5.2GHz Band: 5180 MHz ~ 5240 MHz WLAN 5.3GHz Band: 5260 MHz ~ 5320 MHz WLAN 5.5GHz Band: 5500 MHz ~ 5700 MHz WLAN 5.8GHz Band: 5745 MHz ~ 5825 MHz Bluetooth: 2402 MHz ~ 2480 MHz NFC: 13.56 MHz
Mode	・GSM/GPRS/EGPRS ・RMC/AMR 12.2Kbps ・HSDPA ・HSUPA ・DC-HSDPA ・LTE: QPSK, 16QAM ・802.11a/b/g/n/ac HT20/HT40/VHT20/VHT40/VHT80 ・Bluetooth v3.0+EDR，Bluetooth v4.0-LE ・NFC:ASK
GSM / (E)GPRS Transfer mode	Class B – EUT cannot support Packet Switched and Circuit Switched Network simultaneously but can automatically switch between Packet and Circuit Switched Network.
EUT Stage	Identical Prototype

Remark:

1. This report only assessed GSM1900, WCDMA B2 / B4 and LTE B41, other frequency band exposure evaluation which refer to the Sporton FCC SAR Report, FCC ID: IHDT56QD1, Report No: FA480670A and Appendix D and the WLAN SAR result also used perform simultaneous transmission analysis.
2. This device supported VoIP in EGPRS, WCDMA, LTE (e.g. 3rd party VoIP).
3. While operating in body-adjacent exposure configurations during a mobile hotspot session, reduced power limits are enforced on the GSM1900, WCDMA B2 / B4 and LTE B41 transmitter. More detailed information which can be referred to “operational description”.
4. This device 2.4GHz / 5.2GHz / 5.8GHz WLAN supports Hotspot operation and WiFi Direct (Group Client / Group Owner), and 5.3GHz / 5.5GHz WLAN supports WiFi Direct (Group Client).

4.2 Maximum Tune-up Limit

Mode	Burst average power(dBm)	
	GSM 850	GSM 1900
GSM (GMSK, 1 Tx slot)	33.00	30.50
GPRS (GMSK, 1 Tx slot)	33.00	30.50
GPRS (GMSK, 2 Tx slots)	33.00	27.50
GPRS (GMSK, 3 Tx slots)	28.75	25.75
GPRS (GMSK, 4 Tx slots)	27.50	24.50
EDGE (8PSK, 1 Tx slot)	28.50	27.50
EDGE (8PSK, 2 Tx slots)	27.50	24.50
EDGE (8PSK, 3 Tx slots)	24.00	22.75
EDGE (8PSK, 4 Tx slots)	22.50	21.50

Band / Mode			Average power(dBm)
WCDMA	Band V / IV / II	AMR / RMC 12.2Kbps	24.0
		HSDPA Subtest-1	23.0
		DC-HSDPA Subtest-1	23.0
		HSUPA Subtest-5	23.0
LTE		Band 5	24.0
		Band 41	24.0

Channel / Mode	BT Average Power (dBm)			
	Mode			
	1Mbps	2Mbps	3Mbps	BT4.0-LE
Low channel	9	5	5	5
Middle channel	10	7	7	7
High channel	9	5	5	5

Band / Frequency (MHz)		IEEE 802.11 Average Power (dBm)			
		11b	11g	HT20	VHT20
2.4GHz Band	2412	20	20	21	20
	2437	20	23	22	22.5
	2462	20	20	20.5	20

Band / Frequency (MHz)		IEEE 802.11 Average Power (dBm)					
		11a	HT20	HT40	VHT20	VHT40	VHT80
5.2GHz Band	5180	22	20.5		21		
	5190			19		19.5	
	5200	23	21.5		21		
	5210						19.5
	5220	22	21.5		23		
	5230			19.5		21.5	
	5240	22	21.5		23		
5.3GHz Band	5260	22	21.5		22.5		
	5270			19.5		21.5	
	5280	23	21.5		23		
	5290						19.5
	5300	22	21.5		22.5		
	5310			19.5		20	
	5320	22	21.5		21.5		
5.5GHz Band	5500	21.5	21.5		21		
	5510			17		17.5	
	5520	23	21.5		22.5		
	5530						17.5
	5540	23	21.5		22.5		
	5550			21		22	
	5560	23	21.5		22.5		
	5580	21.5	21.5		22.5		
	5660	22.5	20.5		22.5		
	5670			20.5		22	
	5680	22.5	20.5		22.5		
	5690						19.5
	5700	20	20.5		20		
	5710			22		22	
	5720	23	23.5		22		
5.8GHz Band	5745	21	21		20.5		
	5755			18		18.5	
	5765	22.5	22.5		20.5		
	5775						19
	5785	22.5	22.5		22.5		
	5795			20.5		22	
	5805	22.5	22.5		22.5		
	5825	22	22		21.5		

4.3 General LTE SAR Test and Reporting Considerations

Summarized necessary items addressed in KDB 941225 D05 v02r03	
FCC ID	IHDT56QD2
Equipment Name	Mobile Cellular Phone
Operating Frequency Range of each LTE transmission band	LTE Band 5: 824.7 MHz ~ 848.3 MHz LTE Band 41: 2498.5 MHz ~ 2687.5 MHz
uplink modulations used	QPSK, and 16QAM
LTE Voice / Data requirements	Data only
LTE MPR permanently built-in by design	Table 6.2.3-1: Maximum Power Reduction (MPR) for Power Class 3
LTE A-MPR	In the base station simulator configuration, Network Setting value is set to NS_01 to disable A-MPR during SAR testing and the LTE SAR tests was transmitting on all TTI frames (Maximum TTI)
Spectrum plots for RB configuration	A properly configured base station simulator was used for the SAR and power measurement; therefore, spectrum plots for each RB allocation and offset configuration are not included in the SAR report.
Power reduction applied to satisfy SAR compliance	Yes, When operating in hotspot mode that LTE B2 / B4 / B25 / B7 / B41 power reduction applied to satisfy SAR compliance.

Modulation	Channel bandwidth / Transmission bandwidth (RB)						MPR (dB)
	1.4 MHz	3.0 MHz	5 MHz	10 MHz	15 MHz	20 MHz	
QPSK	> 5	> 4	> 8	> 12	> 16	> 18	≤ 1
16 QAM	≤ 5	≤ 4	≤ 8	≤ 12	≤ 16	≤ 18	≤ 1
16 QAM	> 5	> 4	> 8	> 12	> 16	> 18	≤ 2

LTE Band 5

	Bandwidth 1.4 MHz		Bandwidth 3 MHz		Bandwidth 5 MHz		Bandwidth 10 MHz	
	Ch. #	Freq. (MHz)	Ch. #	Freq. (MHz)	Ch. #	Freq. (MHz)	Ch. #	Freq. (MHz)
L	20407	824.7	20415	825.5	20425	826.5	20450	829
M	20525	836.5	20525	836.5	20525	836.5	20525	836.5
H	20643	848.3	20635	847.5	20625	846.5	20600	844

LTE Band 41

	Bandwidth 5 MHz		Bandwidth 10 MHz		Bandwidth 15 MHz		Bandwidth 20 MHz	
	Ch. #	Freq. (MHz)	Ch. #	Freq. (MHz)	Ch. #	Freq. (MHz)	Ch. #	Freq. (MHz)
L	39675	2498.5	39700	2501	39725	2503.5	39750	2506
L M	40148	2545.8	40160	2547	40173	2548.3	40185	2549.5
M	40620	2593	40620	2590	40620	2593	40620	2593
H M	41093	2640.3	41080	2639	41068	2637.8	41055	2636.5
H	41565	2687.5	41540	2685	41515	2682.5	41490	2680

5. RF Exposure Limits

5.1 Uncontrolled Environment

Uncontrolled Environments are defined as locations where there is the exposure of individuals who have no knowledge or control of their exposure. The general population/uncontrolled exposure limits are applicable to situations in which the general public may be exposed or in which persons who are exposed as a consequence of their employment may not be made fully aware of the potential for exposure or cannot exercise control over their exposure. Members of the general public would come under this category when exposure is not employment-related; for example, in the case of a wireless transmitter that exposes persons in its vicinity.

5.2 Controlled Environment

Controlled Environments are defined as locations where there is exposure that may be incurred by persons who are aware of the potential for exposure, (i.e. as a result of employment or occupation). In general, occupational/controlled exposure limits are applicable to situations in which persons are exposed as a consequence of their employment, who have been made fully aware of the potential for exposure and can exercise control over their exposure. The exposure category is also applicable when the exposure is of a transient nature due to incidental passage through a location where the exposure levels may be higher than the general population/uncontrolled limits, but the exposed person is fully aware of the potential for exposure and can exercise control over his or her exposure by leaving the area or by some other appropriate means.

Limits for Occupational/Controlled Exposure (W/kg)

Whole-Body	Partial-Body	Hands, Wrists, Feet and Ankles
0.4	8.0	20.0

Limits for General Population/Uncontrolled Exposure (W/kg)

Whole-Body	Partial-Body	Hands, Wrists, Feet and Ankles
0.08	1.6	4.0

1. Whole-Body SAR is averaged over the entire body, partial-body SAR is averaged over any 1gram of tissue defined as a tissue volume in the shape of a cube. SAR for hands, wrists, feet and ankles is averaged over any 10 grams of tissue defined as a tissue volume in the shape of a cube.

6. Specific Absorption Rate (SAR)

6.1 Introduction

SAR is related to the rate at which energy is absorbed per unit mass in an object exposed to a radio field. The SAR distribution in a biological body is complicated and is usually carried out by experimental techniques or numerical modeling. The standard recommends limits for two tiers of groups, occupational/controlled and general population/uncontrolled, based on a person's awareness and ability to exercise control over his or her exposure. In general, occupational/controlled exposure limits are higher than the limits for general population/uncontrolled.

6.2 SAR Definition

The SAR definition is the time derivative (rate) of the incremental energy (dW) absorbed by (dissipated in) an incremental mass (dm) contained in a volume element (dv) of a given density (ρ). The equation description is as below:

$$\mathbf{SAR} = \frac{\mathbf{d}}{\mathbf{dt}}\left(\frac{\mathbf{dW}}{\mathbf{dm}}\right) = \frac{\mathbf{d}}{\mathbf{dt}}\left(\frac{\mathbf{dW}}{\boldsymbol{\rho}\mathbf{dv}}\right)$$

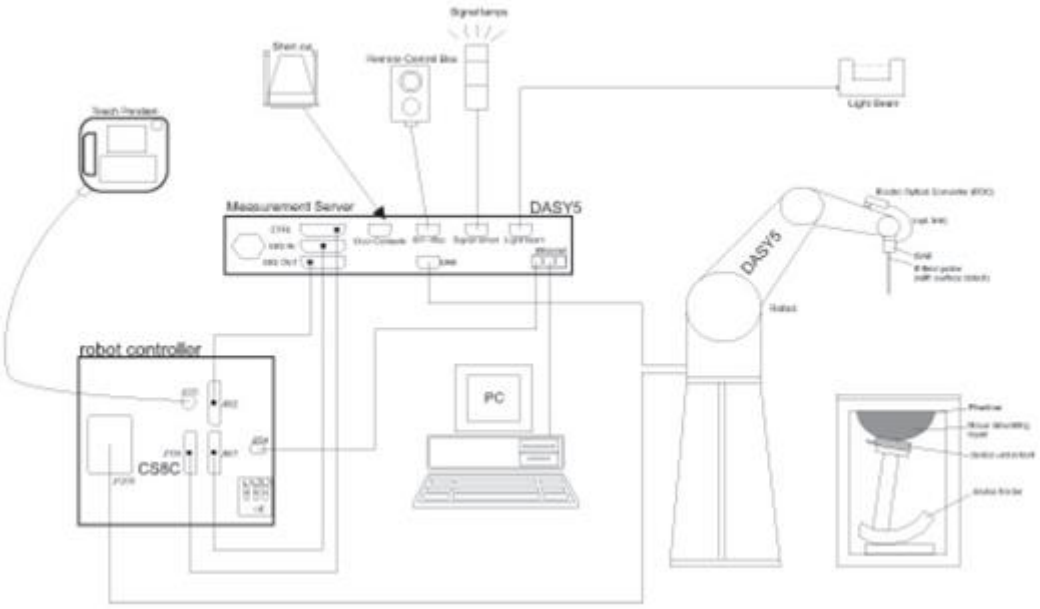
SAR is expressed in units of Watts per kilogram (W/kg)

$$\mathbf{SAR} = \frac{\boldsymbol{\sigma}|\mathbf{E}|^{\mathbf{2}}}{\boldsymbol{\rho}}$$

Where: σ is the conductivity of the tissue, ρ is the mass density of the tissue and E is the RMS electrical field strength.

7. System Description and Setup

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



- A standard high precision 6-axis robot with controller, teach pendant and software. An arm extension for accommodating the data acquisition electronics (DAE).
- An isotropic Field probe optimized and calibrated for the targeted measurement.
- A data acquisition electronics (DAE) which performs the signal amplification, signal multiplexing, AD-conversion, offset measurements, mechanical surface detection, collision detection, etc. The unit is battery powered with standard or rechargeable batteries. The signal is optically transmitted to the EOC.
- The Electro-optical converter (EOC) performs the conversion from optical to electrical signals for the digital communication to the DAE. To use optical surface detection, a special version of the EOC is required. The EOC signal is transmitted to the measurement server.
- The function of the measurement server is to perform the time critical tasks such as signal filtering, control of the robot operation and fast movement interrupts.
- The Light Beam used is for probe alignment. This improves the (absolute) accuracy of the probe positioning.
- A computer running WinXP or Win7 and the DASY5 software.
- Remote control and teach pendant as well as additional circuitry for robot safety such as warning lamps, etc.
- The phantom, the device holder and other accessories according to the targeted measurement.

8. Measurement Procedures

The measurement procedures are as follows:

<Conducted power measurement>

(a) For WWAN power measurement, use base station simulator to configure EUT WWAN transmission in conducted connection with RF cable, at maximum power in each supported wireless interface and frequency band.
(b) Read the WWAN RF power level from the base station simulator.
(c) For WLAN/BT power measurement, use engineering software to configure EUT WLAN/BT continuously transmission, at maximum RF power in each supported wireless interface and frequency band
(d) Connect EUT RF port through RF cable to the power meter, and measure WLAN/BT output power

<SAR measurement>

(a) Use base station simulator to configure EUT WWAN transmission in radiated connection, and engineering software to configure EUT WLAN/BT continuously transmission, at maximum RF power, in the highest power channel.
(b) Place the EUT in the positions as Appendix D demonstrates.
(c) Set scan area, grid size and other setting on the DASY software.
(d) Measure SAR results for the highest power channel on each testing position.
(e) Find out the largest SAR result on these testing positions of each band
(f) Measure SAR results for other channels in worst SAR testing position if the reported SAR of highest power channel is larger than 0.8 W/kg

According to the test standard, the recommended procedure for assessing the peak spatial-average SAR value consists of the following steps:

(a) Power reference measurement
(b) Area scan
(c) Zoom scan
(d) Power drift measurement

8.1 Spatial Peak SAR Evaluation

The procedure for spatial peak SAR evaluation has been implemented according to the test standard. It can be conducted for 1g and 10g, as well as for user-specific masses. The DASY software includes all numerical procedures necessary to evaluate the spatial peak SAR value.

The base for the evaluation is a "cube" measurement. The measured volume must include the 1g and 10g cubes with the highest averaged SAR values. For that purpose, the center of the measured volume is aligned to the interpolated peak SAR value of a previously performed area scan.

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

(a) Extraction of the measured data (grid and values) from the Zoom Scan
(b) Calculation of the SAR value at every measurement point based on all stored data (A/D values and measurement parameters)
(c) Generation of a high-resolution mesh within the measured volume
(d) Interpolation of all measured values form the measurement grid to the high-resolution grid
(e) Extrapolation of the entire 3-D field distribution to the phantom surface over the distance from sensor to surface
(f) Calculation of the averaged SAR within masses of 1g and 10g

8.2 Power Reference Measurement

The Power Reference Measurement and Power Drift Measurements are for monitoring the power drift of the device under test in the batch process. The minimum distance of probe sensors to surface determines the closest measurement point to phantom surface. This distance cannot be smaller than the distance of sensor calibration points to probe tip as defined in the probe properties.

8.3 Area Scan

The area scan is used as a fast scan in two dimensions to find the area of high field values, before doing a fine measurement around the hot spot. The sophisticated interpolation routines implemented in DASY software can find the maximum found in the scanned area, within a range of the global maximum. The range (in dB0 is specified in the standards for compliance testing. For example, a 2 dB range is required in IEEE standard 1528 and IEC 62209 standards, whereby 3 dB is a requirement when compliance is assessed in accordance with the ARIB standard (Japan), if only one zoom scan follows the area scan, then only the absolute maximum will be taken as reference. For cases where multiple maximums are detected, the number of zoom scans has to be increased accordingly.

Area scan parameters extracted from FCC KDB 865664 D01v01r03 SAR measurement 100 MHz to 6 GHz.

	≤ 3 GHz	> 3 GHz
Maximum distance from closest measurement point (geometric center of probe sensors) to phantom surface	5 ± 1 mm	½·δ·ln(2) ± 0.5 mm
Maximum probe angle from probe axis to phantom surface normal at the measurement location	30° ± 1°	20° ± 1°
Maximum area scan spatial resolution: Δx_{Area}, Δy_{Area}	≤ 2 GHz: ≤ 15 mm 2 – 3 GHz: ≤ 12 mm	3 – 4 GHz: ≤ 12 mm 4 – 6 GHz: ≤ 10 mm
	When the x or y dimension of the test device, in the measurement plane orientation, is smaller than the above, the measurement resolution must be ≤ the corresponding x or y dimension of the test device with at least one measurement point on the test device.	

8.4 Zoom Scan

Zoom scans are used assess the peak spatial SAR values within a cubic averaging volume containing 1 gram and 10 gram of simulated tissue. The zoom scan measures points (refer to table below) within a cube shoes base faces are centered on the maxima found in a preceding area scan job within the same procedure. When the measurement is done, the zoom scan evaluates the averaged SAR for 1 gram and 10 gram and displays these values next to the job's label.

Zoom scan parameters extracted from FCC KDB 865664 D01v01r03 SAR measurement 100 MHz to 6 GHz.

			≤ 3 GHz	> 3 GHz
Maximum zoom scan spatial resolution: Δx_{Zoom}, Δy_{Zoom}			≤ 2 GHz: ≤ 8 mm 2 – 3 GHz: ≤ 5 mm*	3 – 4 GHz: ≤ 5 mm* 4 – 6 GHz: ≤ 4 mm*
Maximum zoom scan spatial resolution, normal to phantom surface	uniform grid: $\Delta z_{Zoom}(n)$		≤ 5 mm	3 – 4 GHz: ≤ 4 mm 4 – 5 GHz: ≤ 3 mm 5 – 6 GHz: ≤ 2 mm
	graded grid	$\Delta z_{Zoom}(1)$: between 1st two points closest to phantom surface	≤ 4 mm	3 – 4 GHz: ≤ 3 mm 4 – 5 GHz: ≤ 2.5 mm 5 – 6 GHz: ≤ 2 mm
		$\Delta z_{Zoom}(n>1)$: between subsequent points	≤ 1.5·$\Delta z_{Zoom}(n-1)$	
Minimum zoom scan volume	x, y, z		≥ 30 mm	3 – 4 GHz: ≥ 28 mm 4 – 5 GHz: ≥ 25 mm 5 – 6 GHz: ≥ 22 mm

Note: δ is the penetration depth of a plane-wave at normal incidence to the tissue medium; see draft standard IEEE P1528-2011 for details.

* When zoom scan is required and the *reported* SAR from the *area scan based 1-g SAR estimation* procedures of KDB 447498 is ≤ 1.4 W/kg, ≤ 8 mm, ≤ 7 mm and ≤ 5 mm zoom scan resolution may be applied, respectively, for 2 GHz to 3 GHz, 3 GHz to 4 GHz and 4 GHz to 6 GHz.

8.5 Volume Scan Procedures

The volume scan is used for assess overlapping SAR distributions for antennas transmitting in different frequency bands. It is equivalent to an oversized zoom scan used in standalone measurements. The measurement volume will be used to enclose all the simultaneous transmitting antennas. For antennas transmitting simultaneously in different frequency bands, the volume scan is measured separately in each frequency band. In order to sum correctly to compute the 1g aggregate SAR, the EUT remain in the same test position for all measurements and all volume scan use the same spatial resolution and grid spacing. When all volume scan were completed, the software, SEMCAD postprocessor can combine and subsequently superpose these measurement data to calculating the multiband SAR.

8.6 Power Drift Monitoring

All SAR testing is under the EUT install full charged battery and transmit maximum output power. In DASY measurement software, the power reference measurement and power drift measurement procedures are used for monitoring the power drift of EUT during SAR test. Both these procedures measure the field at a specified reference position before and after the SAR testing. The software will calculate the field difference in dB. If the power drifts more than 5%, the SAR will be retested.

9. Test Equipment List

Manufacturer	Name of Equipment	Type/Model	Serial Number	Calibration	
				Last Cal.	Due Date
SPEAG	1750MHz System Validation Kit	D1750V2	1068	Nov. 27, 2013	Nov. 26, 2014
SPEAG	1900MHz System Validation Kit	D1900V2	5d041	Mar. 21, 2014	Mar. 20, 2015
SPEAG	2600MHz System Validation Kit	D2600V2	1008	Aug. 21, 2014	Aug. 20, 2015
SPEAG	Data Acquisition Electronics	DAE3	495	May. 19, 2014	May. 18, 2015
SPEAG	Dosimetric E-Field Probe	EX3DV4	3925	May. 22, 2014	May. 21, 2015
Wisewind	Thermometer	ETP-101	TM685	Oct. 22, 2013	Oct. 21, 2014
Anritsu	Radio Communication Analyzer	MT8820C	6201074414	Feb. 11, 2014	Feb. 10, 2015
Agilent	Wireless Communication Test Set	E5515C	MY50266977	May. 27, 2014	May. 26, 2015
SPEAG	Device Holder	N/A	N/A	N/A	N/A
Agilent	Signal Generator	E4438C	MY49070755	Oct. 08, 2013	Oct. 07, 2014
SPEAG	Dielectric Probe Kit	DAK-3.5	1126	Jul. 23, 2013	Jul. 22, 2014
Agilent	ENA Network Analyzer	E5071C	MY46316648	Feb. 07, 2014	Feb. 06, 2015
Anritsu	Power Meter	ML2495A	1349001	Dec. 04, 2013	Dec. 03, 2014
Anritsu	Power Sensor	MA2411B	1306099	Dec. 03, 2013	Dec. 02, 2014
R&S	Spectrum Analyzer	FSP 30	101329	Jun. 14, 2014	Jun. 13, 2015
Agilent	Dual Directional Coupler	778D	50422	Note 1	
Woken	Attenuator	WK0602-XX	N/A	Note 1	
PE	Attenuator	PE7005-10	N/A	Note 1	
PE	Attenuator	PE7005- 3	N/A	Note 1	
AR	Power Amplifier	5S1G4M2	0328767	Note 1	
Mini-Circuits	Power Amplifier	ZVE-3W	162601250	Note 1	
Mini-Circuits	Power Amplifier	ZHL-42W+	13440021344	Note 1	

General Note:

1. Prior to system verification and validation, the path loss from the signal generator to the system check source and the power meter, which includes the amplifier, cable, attenuator and directional coupler, was measured by the network analyzer. The reading of the power meter was offset by the path loss difference between the path to the power meter and the path to the system check source to monitor the actual power level fed to the system check source.

10. System Verification

10.1 Tissue Verification

The following tissue formulations are provided for reference only as some of the parameters have not been thoroughly verified. The composition of ingredients may be modified accordingly to achieve the desired target tissue parameters required for routine SAR evaluation.

Frequency (MHz)	Water (%)	Sugar (%)	Cellulose (%)	Salt (%)	Preventol (%)	DGBE (%)	Conductivity (σ)	Permittivity (εr)
For Head								
750	41.1	57.0	0.2	1.4	0.2	0	0.89	41.9
835	40.3	57.9	0.2	1.4	0.2	0	0.90	41.5
900	40.3	57.9	0.2	1.4	0.2	0	0.97	41.5
1800, 1900, 2000	55.2	0	0	0.3	0	44.5	1.40	40.0
2450	55.0	0	0	0	0	45.0	1.80	39.2
2600	54.8	0	0	0.1	0	45.1	1.96	39.0
For Body								
750	51.7	47.2	0	0.9	0.1	0	0.96	55.5
835	50.8	48.2	0	0.9	0.1	0	0.97	55.2
900	50.8	48.2	0	0.9	0.1	0	1.05	55.0
1800, 1900, 2000	70.2	0	0	0.4	0	29.4	1.52	53.3
2450	68.6	0	0	0	0	31.4	1.95	52.7
2600	68.1	0	0	0.1	0	31.8	2.16	52.5

Simulating Liquid for 5GHz, Manufactured by SPEAG

Ingredients	(% by weight)
Water	64~78%
Mineral oil	11~18%
Emulsifiers	9~15%
Additives and Salt	2~3%

<Tissue Dielectric Parameter Check Results>

Frequency (MHz)	Tissue Type	Liquid Temp. (℃)	Conductivity (σ)	Permittivity (ε_r)	Conductivity Target (σ)	Permittivity Target (ε_r)	Delta (σ) (%)	Delta (ε_r) (%)	Limit (%)	Date
1750	Head	22.5	1.389	39.795	1.37	40.10	1.39	-0.76	±5	2014/9/30
1750	Body	22.7	1.525	51.728	1.49	53.40	2.35	-3.13	±5	2014/9/28
1750	Body	22.7	1.526	52.021	1.49	53.40	2.42	-2.58	±5	2014/9/30
1900	Head	22.3	1.458	38.959	1.40	40.00	4.14	-2.60	±5	2014/9/26
1900	Head	22.5	1.446	38.297	1.40	40.00	3.29	-4.26	±5	2014/9/30
1900	Body	22.5	1.530	52.859	1.52	53.30	0.66	-0.83	±5	2014/9/25
1900	Body	22.7	1.516	53.631	1.52	53.30	-0.26	0.62	±5	2014/9/27
1900	Body	22.4	1.534	51.986	1.52	53.30	0.92	-2.47	±5	2014/9/29
2600	Head	22.6	1.981	38.254	1.96	39.00	1.07	-1.91	±5	2014/9/26
2600	Body	22.4	2.165	53.823	2.16	52.50	0.23	2.52	±5	2014/9/26
2600	Body	22.6	2.201	52.823	2.16	52.50	1.90	0.62	±5	2014/10/1
2600	Body	22.4	2.187	54.003	2.16	52.50	1.25	2.86	±5	2014/10/2

10.2 System Performance Check Results

Comparing to the original SAR value provided by SPEAG, the verification data should be within its specification of 10 %. Below table shows the target SAR and measured SAR after normalized to 1W input power. The table below indicates the system performance check can meet the variation criterion and the plots can be referred to Appendix A of this report.

<System Verification 1g SAR Results>

Date	Frequency (MHz)	Tissue Type	Input Power (mW)	Dipole S/N	Probe S/N	DAE S/N	Measured 1g SAR (W/kg)	Targeted 1g SAR (W/kg)	Normalized 1g SAR (W/kg)	Deviation (%)
2014/9/30	1750	Head	250	D1750V2-1068	EX3DV4 - SN3925	DAE3 Sn495	9.86	37.30	39.44	5.74
2014/9/28	1750	Body	250	D1750V2-1068	EX3DV4 - SN3925	DAE3 Sn495	9.33	37.50	37.32	-0.48
2014/9/30	1750	Body	250	D1750V2-1068	EX3DV4 - SN3925	DAE3 Sn495	9.38	37.50	37.52	0.05
2014/9/26	1900	Head	250	D1900V2-5d041	EX3DV4 - SN3925	DAE3 Sn495	9.94	41.00	39.76	-3.02
2014/9/30	1900	Head	250	D1900V2-5d041	EX3DV4 - SN3925	DAE3 Sn495	9.72	41.00	38.88	-5.17
2014/9/25	1900	Body	250	D1900V2-5d041	EX3DV4 - SN3925	DAE3 Sn495	10.80	41.00	43.20	5.37
2014/9/27	1900	Body	250	D1900V2-5d041	EX3DV4 - SN3925	DAE3 Sn495	10.30	41.00	41.20	0.49
2014/9/29	1900	Body	250	D1900V2-5d041	EX3DV4 - SN3925	DAE3 Sn495	10.00	41.00	40.00	-2.44
2014/9/26	2600	Head	250	D2600V2-1008	EX3DV4 - SN3925	DAE3 Sn495	13.60	57.10	54.40	-4.73
2014/9/26	2600	Body	250	D2600V2-1008	EX3DV4 - SN3925	DAE3 Sn495	13.40	55.30	53.60	-3.07
2014/10/1	2600	Body	250	D2600V2-1008	EX3DV4 - SN3925	DAE3 Sn495	13.90	55.30	55.60	0.54
2014/10/2	2600	Body	250	D2600V2-1008	EX3DV4 - SN3925	DAE3 Sn495	13.40	55.30	53.60	-3.07

<System Verification 10g SAR Results>

Date	Frequency (MHz)	Tissue Type	Input Power (mW)	Dipole S/N	Probe S/N	DAE S/N	Measured 10g SAR (W/kg)	Targeted 10g SAR (W/kg)	Normalized 10g SAR (W/kg)	Deviation (%)
2014/9/30	1750	Body	250	D1750V2-1068	EX3DV4 - SN3925	DAE3 Sn495	5.01	20.10	20.04	-0.30
2014/9/29	1900	Body	250	D1900V2-5d041	EX3DV4 - SN3925	DAE3 Sn495	5.22	21.70	20.88	-3.78
2014/10/1	2600	Body	250	D2600V2-1008	EX3DV4 - SN3925	DAE3 Sn495	6.11	24.50	24.44	-0.24

11. RF Exposure Positions

11.1 Ear and handset reference point

Figure 9.1.1 shows the front, back, and side views of the SAM phantom. The center-of-mouth reference point is labeled "M," the left ear reference point (ERP) is marked "LE," and the right ERP is marked "RE." Each ERP is 15 mm along the B-M (back-mouth) line behind the entrance-to-ear-canal (EEC) point, as shown in Figure 9.1.2 The Reference Plane is defined as passing through the two ear reference points and point M. The line N-F (neck-front), also called the reference pivoting line, is normal to the Reference Plane and perpendicular to both a line passing through RE and LE and the B-M line (see Figure 9.1.3). Both N-F and B-M lines should be marked on the exterior of the phantom shell to facilitate handset positioning. Posterior to the N-F line the ear shape is a flat surface with 6 mm thickness at each ERP, and forward of the N-F line the ear is truncated, as illustrated in Figure 9.1.2. The ear truncation is introduced to preclude the ear lobe from interfering with handset tilt, which could lead to unstable positioning at the cheek.

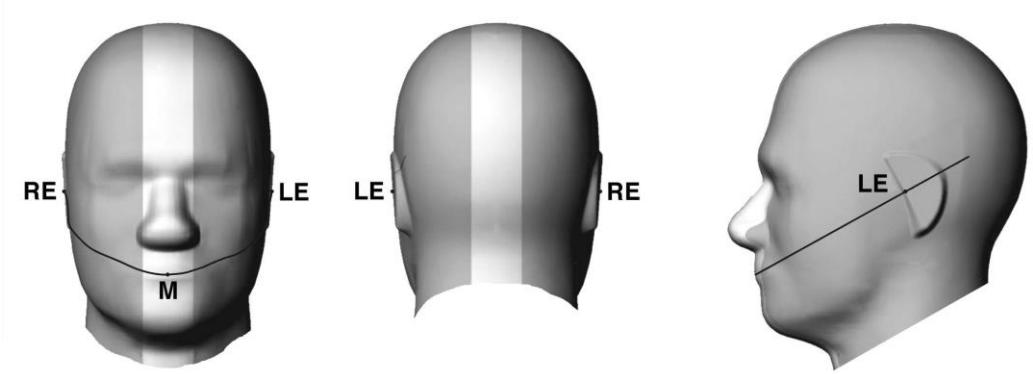


Fig 9.1.1 Front, back, and side views of SAM twin phantom

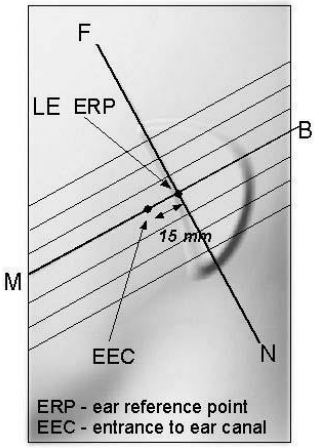


Fig 9.1.2 Close-up side view of phantom showing the ear region.

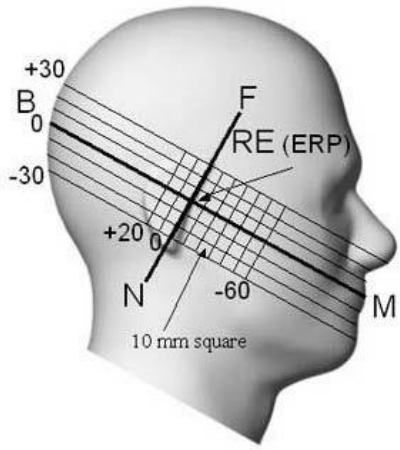


Fig 9.1.3 Side view of the phantom showing relevant markings and seven cross-sectional plane locations

11.2 Definition of the cheek position

1. Ready the handset for talk operation, if necessary. For example, for handsets with a cover piece (flip cover), open the cover. If the handset can transmit with the cover closed, both configurations must be tested.
2. Define two imaginary lines on the handset—the vertical centerline and the horizontal line. The vertical centerline passes through two points on the front side of the handset—the midpoint of the width wt of the handset at the level of the acoustic output (point A in Figure 9.2.1 and Figure 9.2.2), and the midpoint of the width wb of the bottom of the handset (point B). The horizontal line is perpendicular to the vertical centerline and passes through the center of the acoustic output (see Figure 9.2.1). The two lines intersect at point A. Note that for many handsets, point A coincides with the center of the acoustic output; however, the acoustic output may be located elsewhere on the horizontal line. Also note that the vertical centerline is not necessarily parallel to the front face of the handset (see Figure 9.2.2), especially for clamshell handsets, handsets with flip covers, and other irregularly-shaped handsets.
3. Position the handset close to the surface of the phantom such that point A is on the (virtual) extension of the line passing through points RE and LE on the phantom (see Figure 9.2.3), such that the plane defined by the vertical centerline and the horizontal line of the handset is approximately parallel to the sagittal plane of the phantom.
4. Translate the handset towards the phantom along the line passing through RE and LE until handset point A touches the pinna at the ERP.
5. While maintaining the handset in this plane, rotate it around the LE-RE line until the vertical centerline is in the plane normal to the plane containing B-M and N-F lines, i.e., the Reference Plane.
6. Rotate the handset around the vertical centerline until the handset (horizontal line) is parallel to the N-F line.
7. While maintaining the vertical centerline in the Reference Plane, keeping point A on the line passing through RE and LE, and maintaining the handset contact with the pinna, rotate the handset about the N-F line until any point on the handset is in contact with a phantom point below the pinna on the cheek. See Figure 9.2.3. The actual rotation angles should be documented in the test report.

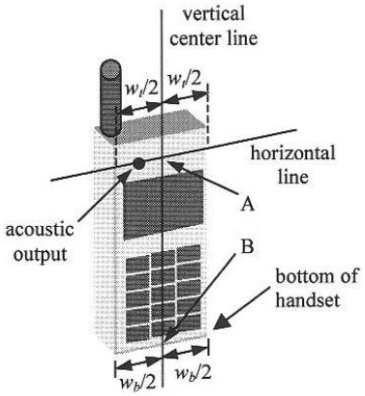


Fig 9.2.1 Handset vertical and horizontal reference lines—"fixed case

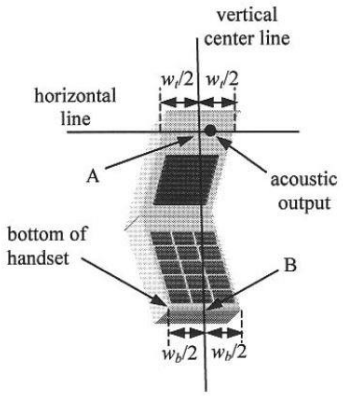


Fig 9.2.2 Handset vertical and horizontal reference lines—"clam-shell case"

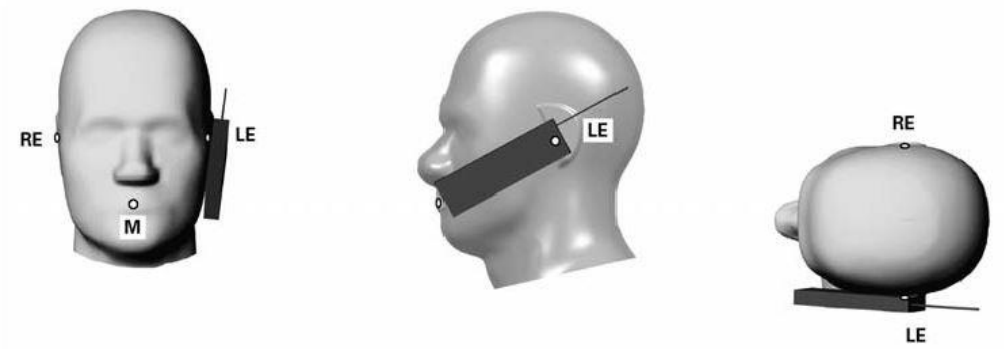


Fig 9.2.3 cheek or touch position. The reference points for the right ear (RE), left ear (LE), and mouth (M), which establish the Reference Plane for handset positioning, are indicated.

11.3 Definition of the tilt position

1. Ready the handset for talk operation, if necessary. For example, for handsets with a cover piece (flip cover), open the cover. If the handset can transmit with the cover closed, both configurations must be tested.
2. While maintaining the orientation of the handset, move the handset away from the pinna along the line passing through RE and LE far enough to allow a rotation of the handset away from the cheek by 15°.
3. Rotate the handset around the horizontal line by 15°.
4. While maintaining the orientation of the handset, move the handset towards the phantom on the line passing through RE and LE until any part of the handset touches the ear. The tilt position is obtained when the contact point is on the pinna. See Figure 9.3.1. If contact occurs at any location other than the pinna, e.g., the antenna at the back of the phantom head, the angle of the handset should be reduced. In this case, the tilt position is obtained if any point on the handset is in contact with the pinna and a second point

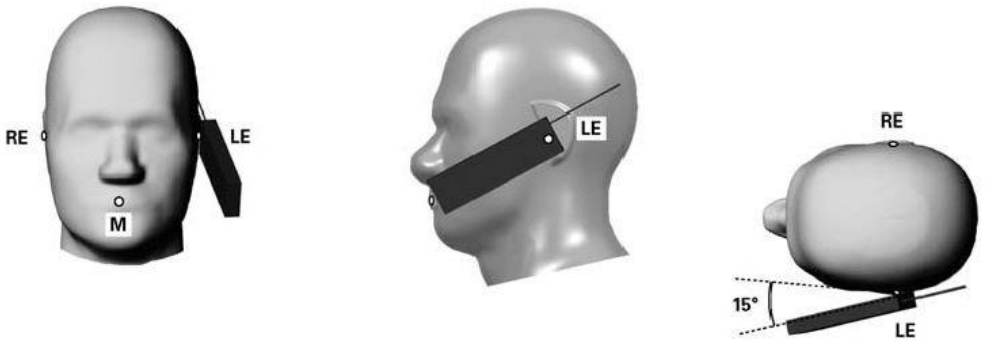


Fig 9.3.1 Tilt position. The reference points for the right ear (RE), left ear (LE), and mouth (M), which define the Reference Plane for handset positioning, are indicated.

11.4 Body Worn Accessory

Body-worn operating configurations are tested with the belt-clips and holsters attached to the device and positioned against a flat phantom in a normal use configuration (see Figure 9.4). Per KDB 648474 D04v01r02, body-worn accessory exposure is typically related to voice mode operations when handsets are carried in body-worn accessories. The body-worn accessory procedures in FCC KDB 447498 D01v05r02 should be used to test for body-worn accessory SAR compliance, without a headset connected to it. This enables the test results for such configuration to be compatible with that required for hotspot mode when the body-worn accessory test separation distance is greater than or equal to that required for hotspot mode, when applicable. When the reported SAR for body-worn accessory, measured without a headset connected to the handset is < 1.2 W/kg, the highest reported SAR configuration for that wireless mode and frequency band should be repeated for that body-worn accessory with a handset attached to the handset.

Accessories for body-worn operation configurations are divided into two categories: those that do not contain metallic components and those that do contain metallic components and those that do contain metallic components. When multiple accessories that do not contain metallic components are supplied with the device, the device is tested with only the accessory that dictates the closest spacing to the body. Then multiple accessories that contain metallic components are test with the device with each accessory. If multiple accessories share an identical metallic component (i.e. the same metallic belt-chip used with different holsters with no other metallic components) only the accessory that dictates the closest spacing to the body is tested.

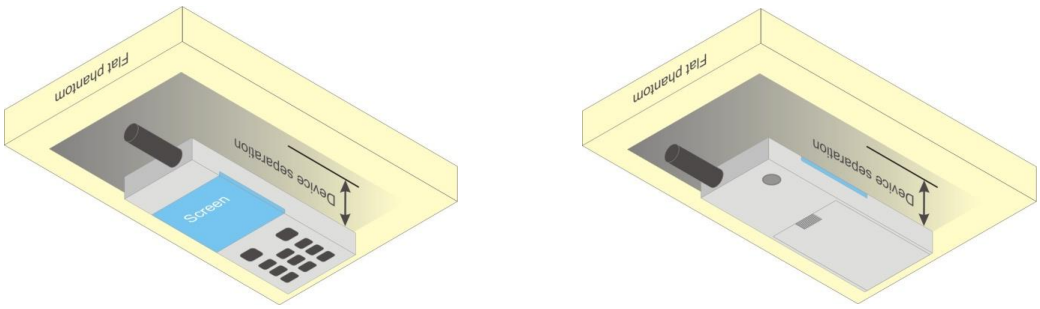


Fig 9.4 Body Worn Position

11.5 Wireless Router

Some battery-operated handsets have the capability to transmit and receive user through simultaneous transmission of WIFI simultaneously with a separate licensed transmitter. The FCC has provided guidance in FCC HDB Publication 941225 D06v01r01 where SAR test considerations for handsets (L x W ≥ 9 cm x 5 cm) are based on a composite test separation distance of 10mm from the front, back and edges of the device containing transmitting antennas within 2.5cm of their edges, determined form general mixed use conditions for this type of devices. Since the hotspot SAR results may overlap with the body-worn accessory SAR requirements, the more conservative configurations can be considered, thus excluding some body-worn accessory SAR tests.

When the user enables the personal wireless router functions for the handset, actual operations include simultaneous transmission of both the WIFI transmitter and another licensed transmitter. Both transmitters often do not transmit at the same transmitting frequency and thus cannot be evaluated for SAR under actual use conditions due to the limitations of the SAR assessment probes. Therefore, SAR must be evaluated for each frequency transmission and mode separately and spatially summed with the WIFI transmitter according to FCC KDB Publication 447498 D01v05r02 publication procedures. The “Portable Hotspot” feature on the handset was NOT activated during SAR assessments, to ensure the SAR measurements were evaluated for a single transmission frequency RF signal at a time.

11.6 Extremity Exposure Configurations

Devices that are designed or intended for use on extremities or mainly operated in extremity only exposure conditions; i.e., hands, wrists, feet and ankles, may require extremity SAR evaluation. When the device also operates in close proximity to the user’s body, SAR compliance for the body is also required. The 1-g body and 10-g extremity SAR exclusion thresholds found in KDB Publication 447498 D01v05 should be applied to determine SAR test requirements.

For smart phones with a display diagonal dimension > 15.0 cm or an overall diagonal dimension > 16.0 cm that provide similar mobile web access and multimedia support found in mini-tablets or UMPC mini-tablets that support voice calls next to the ear, unless it is confirmed otherwise through KDB inquiries, the following phablet procedures should be applied to evaluate SAR compliance for each applicable wireless mode and frequency band. Devices marketed as phablets, regardless of form factors and operating characteristics must be tested as a phablet to determine SAR compliance. The normally required head and body-worn accessory SAR test procedures for handsets, including hotspot mode, must be applied. The UMPC mini-tablet procedures must also be applied to test the SAR of all surfaces and edges with an antenna located at ≤ 25 mm from that surface or edge, in direct contact with a flat phantom, for 10-g extremity SAR according to the body-equivalent tissue dielectric parameters in KDB 865664 to address interactive hand use exposure conditions.6 The UMPC mini-tablet 1-g SAR at 5 mm is not required. When hotspot mode applies, 10-g extremity SAR is required only for the surfaces and edges with hotspot mode 1-g reported SAR > 1.2 W/kg; however, when power reduction applies to hotspot mode the measured SAR must be scaled to the maximum output power, including tolerance, allowed for phablet modes to compare with the 1.2 W/kg SAR test reduction threshold. The normal tablet procedures in KDB 616217 are required when the over diagonal dimension of the device is > 20.0 cm. Hotspot mode SAR is not required when normal tablet procedures are applied. Extremity 10-g SAR is also not required for the front (top) surface of large form factor full size tablets. The more conservative tablet SAR results can be used to support the 10-g extremity SAR for phablet mode. The simultaneous transmission operating configurations applicable to voice and data transmissions for both phone and mini-tablet modes must be taken into consideration separately for 1-g and 10-g SAR to determine the simultaneous transmission SAR test exclusion and measurement requirements for the relevant wireless mode and exposure conditions

12. Conducted RF Output Power (Unit: dBm)

<GSM Conducted Power>

General Note:

1. According to October 2013TCB Workshop, For GSM / EGPRS, the number of time slots to test for SAR should correspond to the highest source-based time-averaged maximum output power configuration, Considering the possibility of e.g. 3rd party VoIP operation for head and body-worn SAR testing, the EUT was set in GPRS (4Tx slots) for GSM1900, due to its highest frame-average power.
2. For hotspot mode SAR testing, GPRS / EDGE should be evaluated, therefore the EUT was set in GPRS 4 Tx slots for GSM1900, due to its highest frame-average power.

Band GSM1900	Burst Average Power (dBm)			Tune-up Limit (dBm)	Frame-Average Power (dBm)			Tune-up Limit (dBm)
TX Channel	512	661	810		512	661	810	
Frequency (MHz)	1850.2	1880	1909.8		1850.2	1880	1909.8	
GSM (GMSK, 1 Tx slot)	29.79	29.79	29.68	30.50	20.79	20.79	20.68	21.50
GPRS (GMSK, 1 Tx slot) – CS1	29.81	29.80	29.70	30.50	20.81	20.80	20.70	21.50
GPRS (GMSK, 2 Tx slots) – CS1	26.73	26.68	26.79	27.50	20.73	20.68	20.79	21.50
GPRS (GMSK, 3 Tx slots) – CS1	24.84	24.81	24.87	25.75	20.58	20.55	20.61	21.49
GPRS (GMSK, 4 Tx slots) – CS1	23.36	23.38	23.43	24.50	20.36	20.38	20.43	21.50
EDGE (8PSK, 1 Tx slot) – MCS5	25.53	25.50	25.59	27.50	16.53	16.50	16.59	18.50
EDGE (8PSK, 2 Tx slots) – MCS5	22.74	22.70	22.79	24.50	16.74	16.70	16.79	18.50
EDGE (8PSK, 3 Tx slots) – MCS5	21.69	21.63	21.67	22.75	17.43	17.37	17.41	18.49
EDGE (8PSK, 4 Tx slots) – MCS5	20.65	20.33	20.61	21.50	17.65	17.33	17.61	18.50

<WCDMA Conducted Power>

1. The following tests were conducted according to the test requirements outlines in 3GPP TS 34.121 specification.
2. The procedures in KDB 941225 D01 are applied for 3GPP Rel. 6 HSPA to configure the device in the required sub-test mode(s) to determine SAR test exclusion.
3. For DC-HSDPA, the device was configured according to the H-Set 12, Fixed Reference Channel (FRC) configuration in Table C.8.1.12 of 3GPP TS 34.121-1, with the primary and the secondary serving HS-DSCH Cell enabled during the power measurement.

A summary of these settings are illustrated below:

HSDPA Setup Configuration:

a. The EUT was connected to Base Station Agilent E5515C referred to the Setup Configuration.
b. The RF path losses were compensated into the measurements.
c. A call was established between EUT and Base Station with following setting:
   i. Set Gain Factors (β_c and β_d) and parameters were set according to each
   ii. Specific sub-test in the following table, C10.1.4, quoted from the TS 34.121
   iii. Set RMC 12.2Kbps + HSDPA mode.
   iv. Set Cell Power = -86 dBm
   v. Set HS-DSCH Configuration Type to FRC (H-set 1, QPSK)
   vi. Select HSDPA Uplink Parameters
   vii. Set Delta ACK, Delta NACK and Delta CQI = 8
   viii. Set Ack-Nack Repetition Factor to 3
   ix. Set CQI Feedback Cycle (k) to 4 ms
   x. Set CQI Repetition Factor to 2
   xi. Power Ctrl Mode = All Up bits
d. The transmitted maximum output power was recorded.

Table C.10.1.4: β values for transmitter characteristics tests with HS-DPCCH

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

Note 1: Δ_{ACK}, Δ_{NACK} and Δ_{CQI} = 30/15 with β_{hs} = 30/15 * β_c .

Note 2: For the HS-DPCCH power mask requirement test in clause 5.2C, 5.7A, and the Error Vector Magnitude (EVM) with HS-DPCCH test in clause 5.13.1A, and HSDPA EVM with phase discontinuity in clause 5.13.1AA, Δ_{ACK} and Δ_{NACK} = 30/15 with β_{hs} = 30/15 * β_c , and Δ_{CQI} = 24/15 with β_{hs} = 24/15 * β_c .

Note 3: CM = 1 for β_c/β_d =12/15, β_{hs}/β_c=24/15. For all other combinations of DPDCH, DPCCH and HS-DPCCH the MPR is based on the relative CM difference. This is applicable for only UEs that support HSDPA in release 6 and later releases.

Note 4: For subtest 2 the β_c/β_d ratio of 12/15 for the TFC during the measurement period (TF1, TF0) is achieved by setting the signalled gain factors for the reference TFC (TF1, TF1) to β_c = 11/15 and β_d = 15/15.

Setup Configuration

HSUPA Setup Configuration:

a. The EUT was connected to Base Station Agilent E5515C referred to the Setup Configuration.
b. The RF path losses were compensated into the measurements.
c. A call was established between EUT and Base Station with following setting * :
   i. Call Configs = 5.2B, 5.9B, 5.10B, and 5.13.2B with QPSK
   ii. Set the Gain Factors (β_c and β_d) and parameters (AG Index) were set according to each specific sub-test in the following table, C11.1.3, quoted from the TS 34.121
   iii. Set Cell Power = -86 dBm
   iv. Set Channel Type = 12.2k + HSPA
   v. Set UE Target Power
   vi. Power Ctrl Mode= Alternating bits
   vii. Set and observe the E-TFCI
   viii. Confirm that E-TFCI is equal to the target E-TFCI of 75 for sub-test 1, and other subtest's E-TFCI
d. The transmitted maximum output power was recorded.

Table C.11.1.3: β values for transmitter characteristics tests with HS-DPCCH and E-DCH

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

Note 1: Δ_{ACK}, Δ_{NACK} and Δ_{CQI} = 30/15 with β_{hs} = 30/15 * β_c.
Note 2: CM = 1 for β_c/β_d =12/15, β_{hs}/β_c=24/15. For all other combinations of DPDCH, DPCCH, HS- DPCCH, E-DPDCH and E-DPCCH the MPR is based on the relative CM difference.
Note 3: For subtest 1 the β_c/β_d ratio of 11/15 for the TFC during the measurement period (TF1, TF0) is achieved by setting the signalled gain factors for the reference TFC (TF1, TF1) to β_c = 10/15 and β_d = 15/15.
Note 4: For subtest 5 the β_c/β_d ratio of 15/15 for the TFC during the measurement period (TF1, TF0) is achieved by setting the signalled gain factors for the reference TFC (TF1, TF1) to β_c = 14/15 and β_d = 15/15.
Note 5: In case of testing by UE using E-DPDCH Physical Layer category 1, Sub-test 3 is omitted according to TS25.306 Table 5.1g.
Note 6: β_{ed} can not be set directly, it is set by Absolute Grant Value.

Setup Configuration

DC-HSDPA 3GPP release 8 Setup Configuration:

a. The EUT was connected to Base Station Agilent E5515C referred to the Setup Configuration below
b. The RF path losses were compensated into the measurements.
c. A call was established between EUT and Base Station with following setting:
   i. Set RMC 12.2Kbps + HSDPA mode.
   ii. Set Cell Power = -25 dBm
   iii. Set HS-DSCH Configuration Type to FRC (H-set 12, QPSK)
   iv. Select HSDPA Uplink Parameters
   v. Set Gain Factors (β_c and β_d) and parameters were set according to each Specific sub-test in the following table, C10.1.4, quoted from the TS 34.121
      a). Subtest 1: β_c/β_d=2/15
      b). Subtest 2: β_c/β_d=12/15
      c). Subtest 3: β_c/β_d=15/8
      d). Subtest 4: β_c/β_d=15/4
   vi. Set Delta ACK, Delta NACK and Delta CQI = 8
   vii. Set Ack-Nack Repetition Factor to 3
   viii. Set CQI Feedback Cycle (k) to 4 ms
   ix. Set CQI Repetition Factor to 2
   x. Power Ctrl Mode = All Up bits
d. The transmitted maximum output power was recorded.

The following tests were conducted according to the test requirements outlines in 3GPP TS 34.121 specification.
A summary of these settings are illustrated below:

C.8.1.12 Fixed Reference Channel Definition H-Set 12

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

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

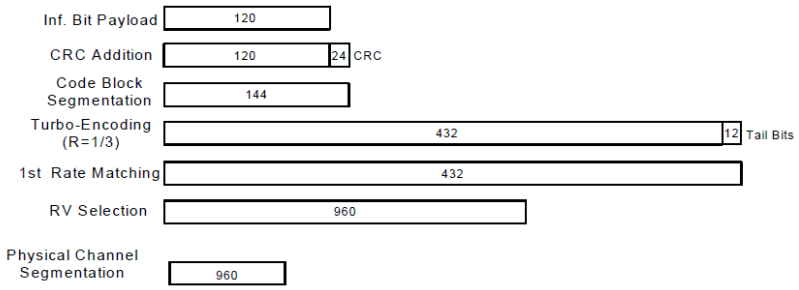


Figure C.8.19: Coding rate for Fixed reference Channel H-Set 12 (QPSK)

Setup Configuration

<WCDMA Conducted Power>

General Note:

1. SAR testing in AMR configuration is not required when the maximum average output of each RF channel for AMR 12.2Kbps is less than 0.25dB higher than that measured in RMC 12.2Kbps
2. Per KDB 941225 D02v02r02, RMC 12.2kbps setting is used to evaluate SAR. If HSDPA/HSUPA/DC-HSDPA output power is < 0.25dB higher than RMC, or reported SAR with RMC 12.2kbps setting is ≤ 1.2W/kg, HSDPA/HSUPA/DC-HSDPA SAR evaluation can be excluded..

Band		WCDMA II			WCDMA IV		
TX Channel		9262	9400	9538	1312	1413	1513
Frequency (MHz)		1852.4	1880	1907.6	1712.4	1732.6	1752.6
3GPP Rel 99	AMR 12.2Kbps	23.00	23.02	22.81	22.71	22.76	22.88
3GPP Rel 99	RMC 12.2Kbps	23.01	23.05	22.84	22.75	22.79	22.93
3GPP Rel 6	HSDPA Subtest-1	21.99	22.05	21.87	21.86	21.88	21.97
3GPP Rel 6	HSDPA Subtest-2	22.01	22.04	21.85	21.85	21.86	21.96
3GPP Rel 6	HSDPA Subtest-3	21.49	21.56	21.34	21.32	21.30	21.51
3GPP Rel 6	HSDPA Subtest-4	21.52	21.55	21.33	21.28	21.32	21.49
3GPP Rel 8	DC-HSDPA Subtest-1	21.98	22.04	21.86	21.84	21.86	21.95
3GPP Rel 8	DC-HSDPA Subtest-2	22.00	22.03	21.84	21.83	21.84	21.94
3GPP Rel 8	DC-HSDPA Subtest-3	21.48	21.55	21.33	21.30	21.28	21.49
3GPP Rel 8	DC-HSDPA Subtest-4	21.51	21.54	21.32	21.26	21.30	21.47
3GPP Rel 6	HSUPA Subtest-1	21.55	21.66	21.48	21.71	21.77	21.83
3GPP Rel 6	HSUPA Subtest-2	20.63	20.64	20.58	20.84	20.87	20.92
3GPP Rel 6	HSUPA Subtest-3	21.13	21.14	21.04	21.36	21.38	21.48
3GPP Rel 6	HSUPA Subtest-4	20.50	20.55	20.48	20.67	20.68	20.81
3GPP Rel 6	HSUPA Subtest-5	22.00	22.04	21.85	21.84	21.88	21.96

<LTE Conducted Power>

General Note:

1. Anritsu MT8820C base station simulator was used to setup the connection with EUT; the frequency band, channel bandwidth, RB allocation configuration, modulation type are set in the base station simulator to configure EUT transmitting at maximum power and at different configurations which are requested to be reported to FCC, for conducted power measurement and SAR testing.
2. Per KDB 941225 D05v02r03, when a properly configured base station simulator is used for the SAR and power measurements, spectrum plots for each RB allocation and offset configuration is not required.
3. Per KDB 941225 D05v02r03, start with the largest channel bandwidth and measure SAR for QPSK with 1 RB allocation, using the RB offset and required test channel combination with the highest maximum output power for RB offsets at the upper edge, middle and lower edge of each required test channel.
4. Per KDB 941225 D05v02r03, 50% RB allocation for QPSK SAR testing follows 1RB QPSK allocation procedure.
5. Per KDB 941225 D05v02r03, For QPSK with 100% RB allocation, SAR is not required when the highest maximum output power for 100 % RB allocation is less than the highest maximum output power in 50% and 1 RB allocations and the highest reported SAR for 1 RB and 50% RB allocation are ≤ 0.8 W/kg. Otherwise, SAR is measured for the highest output power channel; and if the reported SAR is > 1.45 W/kg, the remaining required test channels must also be tested.
6. Per KDB 941225 D05v02r03, 16QAM output power for each RB allocation configuration is > not ½ dB higher than the same configuration in QPSK and the reported SAR for the QPSK configuration is ≤ 1.45 W/kg; Per KDB 941225 D05v02r03, 16QAM SAR testing is not required.
7. Per KDB 941225 D05v02r03, Smaller bandwidth output power for each RB allocation configuration is > not ½ dB higher than the same configuration in the largest supported bandwidth, and the reported SAR for the largest supported bandwidth is ≤ 1.45 W/kg; Per KDB 941225 D05v02r03, smaller bandwidth SAR testing is not required.

<TDD LTE SAR Measurement>

TDD LTE configuration setup for SAR measurement

SAR was tested with a fixed periodic duty factor according to the highest transmission duty factor implemented for the device and supported by 3GPP.

a. 3GPP TS 36.211 section 4.2 for Type 2 Frame Structure and Table 4.2-2 for uplink-downlink configurations
b. "special subframe S" contains both uplink and downlink transmissions, it has been taken into consideration to determine the transmission duty factor according to the worst case uplink and downlink cyclic prefix requirements for UpPTS
c. Establishing connections with base station simulators ensure a consistent means for testing SAR and recommended for evaluating SAR. The Anritsu MT8820C (firmware: #22.52#004) was used for LTE output power measurements and SAR testing.

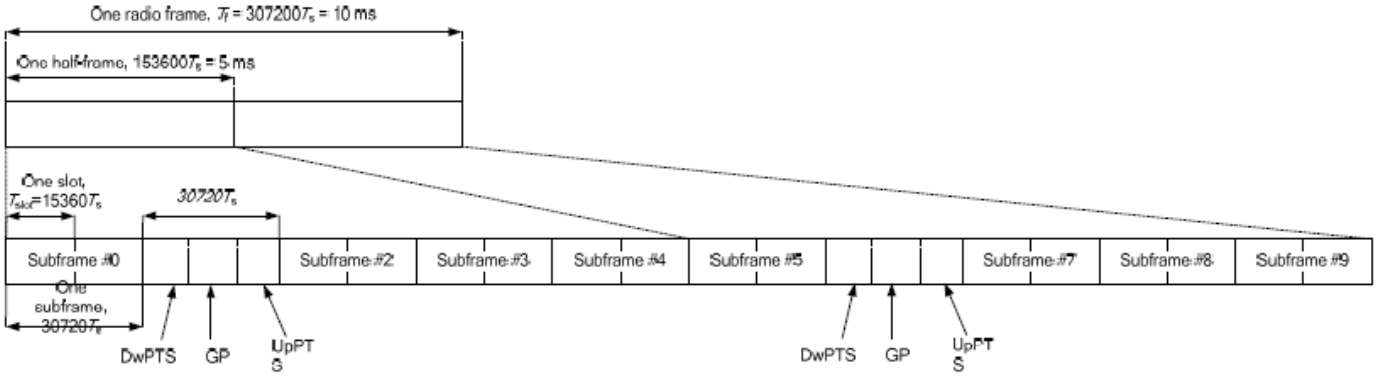


Figure 4.2-1: Frame structure type 2 (for 5 ms switch-point periodicity).

Table 4.2-2: Uplink-downlink configurations.

Uplink-downlink configuration	Downlink-to-Uplink Switch-point periodicity	Subframe number									
		0	1	2	3	4	5	6	7	8	9
0	5 ms	D	S	U	U	U	D	S	U	U	U
1	5 ms	D	S	U	U	D	D	S	U	U	D
2	5 ms	D	S	U	D	D	D	S	U	D	D
3	10 ms	D	S	U	U	U	D	D	D	D	D
4	10 ms	D	S	U	U	D	D	D	D	D	D
5	10 ms	D	S	U	D	D	D	D	D	D	D
6	5 ms	D	S	U	U	U	D	S	U	U	D

Table 4.2-1: Configuration of special subframe (lengths of DwPTS/GP/UpPTS).

Special subframe configuration	Normal cyclic prefix in downlink			Extended cyclic prefix in downlink		
	DwPTS	UpPTS		DwPTS	UpPTS	
		Normal cyclic prefix in uplink	Extended cyclic prefix in uplink		Normal cyclic prefix in uplink	Extended cyclic prefix in uplink
0	$6592 \cdot T_s$	$2192 \cdot T_s$	$2560 \cdot T_s$	$7680 \cdot T_s$	$2192 \cdot T_s$	$2560 \cdot T_s$
1	$19760 \cdot T_s$			$20480 \cdot T_s$		
2	$21952 \cdot T_s$			$23040 \cdot T_s$		
3	$24144 \cdot T_s$			$25600 \cdot T_s$		
4	$26336 \cdot T_s$			$7680 \cdot T_s$	$4384 \cdot T_s$	$5120 \cdot T_s$
5	$6592 \cdot T_s$	$4384 \cdot T_s$	$5120 \cdot T_s$	$20480 \cdot T_s$		
6	$19760 \cdot T_s$			$23040 \cdot T_s$		
7	$21952 \cdot T_s$			$12800 \cdot T_s$		
8	$24144 \cdot T_s$			-	-	-
9	$13168 \cdot T_s$			-	-	-

Special subframe (30720·T_s): Normal cyclic prefix in downlink (UpPTS)			
	Special subframe configuration	**Normal cyclic prefix in uplink**	**Extended cyclic prefix in uplink**
Uplink duty factor in one special subframe	**0~4**	7.13%	8.33%
	5~9	14.3%	16.7%

Special subframe(30720·T_s): Extended cyclic prefix in downlink (UpPTS)			
	Special subframe configuration	**Normal cyclic prefix in uplink**	**Extended cyclic prefix in uplink**
Uplink duty factor in one special subframe	**0~3**	7.13%	8.33%
	4~7	14.3%	16.7%

The highest duty factor is resulted from:

i. Uplink-downlink configuration: 0. In a half-frame consisted of 5 subfames, uplink operation is in 3 uplink subframes and 1 special subframe.

ii. special subframe configuration: 5-9 for normal cyclic prefix in downlink, 4-7 for extended cyclic prefix in downlink

iii. for special subframe with extended cyclic prefix in uplink, the total uplink duty factor in one half-frame is: (3+0.167)/5 = 63.3%

iv. for special subframe with normal cyclic prefix in uplink, the total uplink duty factor in one half-frame is: (3+0.143)/5 = 62.9%

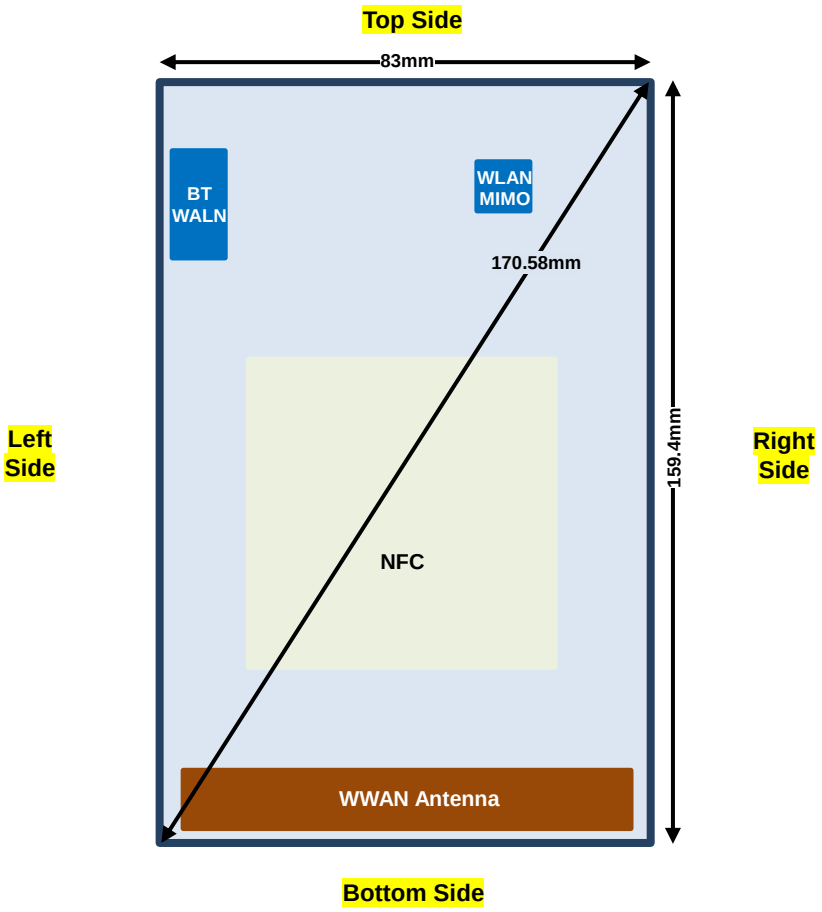
v. For TDD LTE SAR measurement, the duty cycle 1:1.59 (62.9 %) was used perform testing and considering the theoretical duty cycle of 63.3% for extended cyclic prefix in the uplink, and the theoretical duty cycle of 62.9% for normal cyclic prefix in uplink, a scaling factor of extended cyclic prefix 63.3%/62.9% = 1.01 is applied to scale-up the measured SAR result. The scaled TDD LTE SAR = measured SAR (W/kg)* Tune-up Scaling Factor* scaling factor for extended cyclic prefix.

<LTE Band 41>

BW [MHz]	Modulation	RB Size	RB Offset	Power Low Ch. / Freq.	Power Low Middle Ch. / Freq.	Power Middle Ch. / Freq.	Power Middle High Ch. / Freq.	Power High Ch. / Freq.	Tune up Limit (dBm)	MPR (dB)
Channel				39750	40185	40620	41055	41490		
Frequency (MHz)				2506	2549.5	2593	2636.5	2680		
20	QPSK	1	0	22.99	22.89	22.91	22.79	22.72	24.0	0
20	QPSK	1	49	22.96	22.85	22.85	22.77	22.71		
20	QPSK	1	99	22.98	22.87	22.90	22.56	22.52		
20	QPSK	50	0	22.06	22.05	21.97	21.93	21.83	23.0	1
20	QPSK	50	24	21.98	22.04	21.92	21.90	21.76		
20	QPSK	50	49	21.96	21.93	21.96	21.84	21.82		
20	QPSK	100	0	22.10	21.87	22.04	21.88	21.78		
20	16QAM	1	0	21.80	21.72	21.74	21.62	21.60	23.0	1
20	16QAM	1	49	21.79	21.71	21.67	21.60	21.55		
20	16QAM	1	99	21.70	21.70	21.69	21.54	21.59		
20	16QAM	50	0	20.92	20.89	20.94	20.82	20.87	22.0	2
20	16QAM	50	24	21.05	20.93	20.87	20.89	20.87		
20	16QAM	50	49	20.97	20.94	20.94	20.93	20.65		
20	16QAM	100	0	21.03	21.01	21.08	20.91	20.59		
Channel				39725	40173	40620	41068	41515	Tune up Limit (dBm)	MPR (dB)
Frequency (MHz)				2503.5	2548.3	2593	2637.8	2682.5		
15	QPSK	1	0	22.95	22.85	22.88	22.79	22.68	24.0	0
15	QPSK	1	37	22.94	22.84	22.83	22.76	22.67		
15	QPSK	1	74	22.90	22.82	22.87	22.51	22.42		
15	QPSK	36	0	21.90	21.82	21.89	22.67	21.52	23.0	1
15	QPSK	36	18	21.99	21.92	21.83	22.69	21.72		
15	QPSK	36	37	21.91	21.92	21.91	21.74	21.80		
15	QPSK	75	0	22.02	21.84	22.02	21.85	21.69		
15	16QAM	1	0	21.77	21.65	21.67	21.57	21.56	23.0	1
15	16QAM	1	37	21.73	21.71	21.66	21.56	21.50		
15	16QAM	1	74	21.67	21.63	21.63	21.50	21.55		
15	16QAM	36	0	20.90	20.84	20.92	20.80	20.84	22.0	2
15	16QAM	36	18	21.03	20.83	20.77	20.79	20.83		
15	16QAM	36	37	20.91	20.88	20.91	20.84	20.56		
15	16QAM	75	0	20.96	21.01	21.01	20.91	20.66		
Channel				39700	40160	40620	41080	41540	Tune up Limit (dBm)	MPR (dB)
Frequency (MHz)				2501	2547	2593	2639	2685		
10	QPSK	1	0	22.92	22.84	22.83	22.73	22.62	24.0	0
10	QPSK	1	24	22.90	22.76	22.79	22.69	22.62		
10	QPSK	1	49	22.91	22.79	22.80	22.55	22.47		
10	QPSK	25	0	21.96	21.78	21.95	22.63	21.48	23.0	1
10	QPSK	25	12	22.03	21.95	21.82	22.67	21.71		
10	QPSK	25	24	21.95	21.89	21.94	21.80	21.82		
10	QPSK	50	0	22.03	21.84	21.99	21.87	21.70		
10	16QAM	1	0	21.78	21.71	21.74	21.56	21.58	23.0	1
10	16QAM	1	24	21.75	21.65	21.66	21.55	21.54		
10	16QAM	1	49	21.70	21.65	21.61	21.54	21.57		
10	16QAM	25	0	20.88	20.89	20.93	20.78	20.84	22.0	2
10	16QAM	25	12	20.99	20.88	20.81	20.84	20.81		
10	16QAM	25	24	20.95	20.85	20.88	20.85	20.56		
10	16QAM	50	0	20.95	20.92	21.02	20.86	20.55		

Channel				39675	40148	40620	41093	41565	Tune up Limit (dBm)	MPR (dB)
Frequency (MHz)				2498.5	2545.8	2593	2640.3	2687.5		
5	QPSK	1	0	22.95	22.88	22.87	22.78	22.66	24.0	0
5	QPSK	1	12	22.93	22.78	22.76	22.75	22.63		
5	QPSK	1	24	22.91	22.81	22.86	22.48	22.52		
5	QPSK	12	0	21.89	21.78	21.97	22.72	21.52	23.0	1
5	QPSK	12	6	22.04	21.90	21.89	22.62	21.75		
5	QPSK	12	11	21.91	21.88	21.96	21.74	21.80		
5	QPSK	25	0	22.03	21.85	21.99	21.86	21.70		
5	16QAM	1	0	21.72	21.72	21.74	21.61	21.53	23.0	1
5	16QAM	1	12	21.70	21.63	21.59	21.53	21.49		
5	16QAM	1	24	21.64	21.60	21.69	21.47	21.50		
5	16QAM	12	0	20.92	20.82	20.84	20.78	20.80	22.0	2
5	16QAM	12	6	21.02	20.87	20.86	20.87	20.87		
5	16QAM	12	11	20.93	20.85	20.90	20.84	20.60		
5	16QAM	25	0	20.98	20.93	20.98	20.84	20.58		

13. Antenna Location



Front View

Distance of the Antenna to the EUT surface/edge						
Antennas	Back	Front	Top Side	Bottom Side	Right Side	Left Side
WWAN	≤ 25mm	≤ 25mm	> 25mm	≤ 25mm	≤ 25mm	≤ 25mm
WLAN	≤ 25mm	≤ 25mm	> 25mm	> 25mm	≤ 25mm	≤ 25mm
Positions for SAR tests; Hotspot mode						
Antennas	Back	Front	Top Side	Bottom Side	Right Side	Left Side
WWAN	Yes	Yes	No	Yes	Yes	Yes
WLAN	Yes	Yes	Yes	No	Yes	Yes

General Note:

1. Referring to KDB 941225 D06 v01r01, when the overall device length and width are ≥ 9cm*5cm, the test distance is 10 mm. SAR must be measured for all sides and surfaces with a transmitting antenna located within 25mm from that surface or edge

14. SAR Test Results

General Note:

1. Per KDB 447498 D01v05r02, the reported SAR is the measured SAR value adjusted for maximum tune-up tolerance.
   a. Tune-up scaling Factor = tune-up limit power (mW) / EUT RF power (mW), where tune-up limit is the maximum rated power among all production units.
   b. For WWAN: Reported SAR(W/kg)= Measured SAR(W/kg)*Tune-up Scaling Factor
2. Per KDB 447498 D01v05r02, for each exposure position, testing of other required channels within the operating mode of a frequency band is not required when the reported 1-g or 10-g SAR for the mid-band or highest output power channel is:
   - ≤ 0.8 W/kg or 2.0 W/kg, for 1-g or 10-g respectively, when the transmission band is ≤ 100 MHz
   - ≤ 0.6 W/kg or 1.5 W/kg, for 1-g or 10-g respectively, when the transmission band is between 100 MHz and 200 MHz
   - ≤ 0.4 W/kg or 1.0 W/kg, for 1-g or 10-g respectively, when the transmission band is ≥ 200 MHz
3. Pre KDB648474 D04v01r02, when the reported SAR for a body-worn accessory, measured without a headset connected to the handset is > 1.2 W/kg, the highest reported SAR configuration for that wireless mode and frequency band should be repeated for that body-worn accessory with a headset attached to the handset, if reported SAR < 1.2 W/kg connected to the headset is not required.
4. Per KDB648474 D04v01r02, for smart phones with a display diagonal dimension > 15.0 cm or an overall diagonal dimension > 16.0 cm, when hotspot mode applies, 10-g extremity SAR is required only for the surfaces and edges with hotspot mode 1-g reported SAR > 1.2 W/kg, however, when power reduction applies to hotspot mode the measured SAR must be scaled to the maximum output power, including tolerance, allowed for phablet modes to compare with the 1.2 W/kg SAR test reduction threshold.
5. While operating in body-adjacent exposure configurations during a mobile hotspot session, reduced power limits are enforced on the GSM1900, WCDMA B2 / B4 and LTE B41 transmitter. More detailed information which can be referred to “operational description”.
6. This device utilizes dynamic antenna tuning on the main antenna. Please refer to the operational description (Exhibit 12) for functionality description, and FCC the pre-test KDB inquiry (Exhibit 12A) for test guidance. Test results for this specific condition are labeled as Triggered in the Antenna Tuner column contained in the tables below.

GSM Note:

1. According to October 2013TCB Workshop, For GSM / EGPRS, the number of time slots to test for SAR should correspond to the highest source-based time-averaged maximum output power configuration, Considering the possibility of e.g. 3rd party VoIP operation for head and body-worn SAR testing, the EUT was set in GPRS (4Tx slots) for GSM1900, due to its highest frame-average power.
2. For hotspot mode SAR testing, GPRS / EDGE should be evaluated, therefore the EUT was set in GPRS 4 Tx slots for GSM1900, due to its highest frame-average power.

WCDMA Note:

1. Per KDB 941225 D02v02r02, RMC 12.2kbps setting is used to evaluate SAR. If HSDPA/HSUPA/DC-HSDPA output power is < 0.25dB higher than RMC, or reported SAR with RMC 12.2kbps setting is ≤ 1.2W/kg, HSDPA/HSUPA/DC-HSDPA SAR evaluation can be excluded.

LTE Note:

1. Per KDB 941225 D05v02r03, start with the largest channel bandwidth and measure SAR for QPSK with 1 RB allocation, using the RB offset and required test channel combination with the highest maximum output power for RB offsets at the upper edge, middle and lower edge of each required test channel.
2. Per KDB 941225 D05v02r03, 50% RB allocation for QPSK SAR testing follows 1RB QPSK allocation procedure.
3. Per KDB 941225 D05v02r03, For QPSK with 100% RB allocation, SAR is not required when the highest maximum output power for 100 % RB allocation is less than the highest maximum output power in 50% and 1 RB allocations and the highest reported SAR for 1 RB and 50% RB allocation are ≤ 0.8 W/kg. Otherwise, SAR is measured for the highest output power channel; and if the reported SAR is > 1.45 W/kg, the remaining required test channels must also be tested.
4. Per KDB 941225 D05v02r03, 16QAM output power for each RB allocation configuration is > not ½ dB higher than the same configuration in QPSK and the reported SAR for the QPSK configuration is ≤ 1.45 W/kg; Per KDB 941225 D05v02r03, 16QAM SAR testing is not required.
5. Per KDB 941225 D05v02r03, Smaller bandwidth output power for each RB allocation configuration is > not ½ dB higher than the same configuration in the largest supported bandwidth, and the reported SAR for the largest supported bandwidth is ≤ 1.45 W/kg; Per KDB 941225 D05v02r03, smaller bandwidth SAR testing is not required.
6. For TDD LTE SAR measurement, the duty cycle 1:1.59 (62.9 %) was used perform testing and considering the theoretical duty cycle of 63.3% for extended cyclic prefix in the uplink, and the theoretical duty cycle of 62.9% for normal cyclic prefix in uplink, a scaling factor of extended cyclic prefix 63.3%/62.9% = 1.01 is applied to scale-up the measured SAR result. The Reported TDD LTE SAR = measured SAR (W/kg)* Tune-up Scaling Factor* scaling factor for extended cyclic prefix.

14.1 Head SAR

<GSM SAR>

Plot No.	Band	Mode	Test Position	Antenna Tuner	Ch.	Freq. (MHz)	Average Power (dBm)	Tune-Up Limit (dBm)	Tune-up Scaling Factor	Power Drift (dB)	Measured 1g SAR (W/kg)	Reported 1g SAR (W/kg)
	GSM1900	GPRS (4 Tx slots)	Right Cheek	Non-Trigger	810	1909.8	23.43	24.50	1.279	-0.15	0.063	0.081
	GSM1900	GPRS (4 Tx slots)	Right Tilted	Non-Trigger	810	1909.8	23.43	24.50	1.279	0.04	0.049	0.063
01	GSM1900	GPRS (4 Tx slots)	Left Cheek	Non-Trigger	810	1909.8	23.43	24.50	1.279	0.03	0.139	**0.178**
	GSM1900	GPRS (4 Tx slots)	Left Cheek	Trigger	810	1909.8	23.43	24.50	1.279	0.01	0.102	0.130
	GSM1900	GPRS (4 Tx slots)	Left Tilted	Non-Trigger	810	1909.8	23.43	24.50	1.279	0.04	0.044	0.056

<WCDMA SAR>

Plot No.	Band	Mode	Test Position	Antenna Tuner	Ch.	Freq. (MHz)	Average Power (dBm)	Tune-Up Limit (dBm)	Tune-up Scaling Factor	Power Drift (dB)	Measured 1g SAR (W/kg)	Reported 1g SAR (W/kg)
	WCDMA IV	RMC 12.2Kbps	Right Cheek	Non-Trigger	1513	1752.6	22.93	24.00	1.279	0.06	0.037	0.047
	WCDMA IV	RMC 12.2Kbps	Right Tilted	Non-Trigger	1513	1752.6	22.93	24.00	1.279	0.02	0.041	0.052
	WCDMA IV	RMC 12.2Kbps	Left Cheek	Non-Trigger	1513	1752.6	22.93	24.00	1.279	-0.07	0.116	0.148
02	WCDMA IV	RMC 12.2Kbps	Left Cheek	Trigger	1513	1752.6	22.93	24.00	1.279	-0.03	0.124	**0.159**
	WCDMA IV	RMC 12.2Kbps	Left Tilted	Non-Trigger	1513	1752.6	22.93	24.00	1.279	-0.04	0.036	0.046
	WCDMA II	RMC 12.2Kbps	Right Cheek	Non-Trigger	9400	1880	23.05	24.00	1.245	-0.03	0.111	0.138
	WCDMA II	RMC 12.2Kbps	Right Tilted	Non-Trigger	9400	1880	23.05	24.00	1.245	0.06	0.063	0.078
03	WCDMA II	RMC 12.2Kbps	Left Cheek	Non-Trigger	9400	1880	23.05	24.00	1.245	0.05	0.232	**0.289**
	WCDMA II	RMC 12.2Kbps	Left Cheek	Trigger	9400	1880	23.05	24.00	1.245	-0.04	0.183	0.228
	WCDMA II	RMC 12.2Kbps	Left Tilted	Non-Trigger	9400	1880	23.05	24.00	1.245	0.06	0.054	0.067

<TDD LTE SAR>

Plot No.	Band	BW (MHz)	Modulation	RB Size	RB offset	Test Position	Antenna Tuner	Ch.	Freq. (MHz)	Average Power (dBm)	Tune-Up Limit (dBm)	Tune-up Scaling Factor	Duty Cycle %	Duty Cycle Scaling Factor	Power Drift (dB)	Measured 1g SAR (W/kg)	Reported 1g SAR (W/kg)
	LTE Band 41	20M	QPSK	1RB	0Offset	Right Cheek	Non-Trigger	39750	2506	22.99	24.00	1.262	62.9	1.01	-0.02	0.071	0.090
	LTE Band 41	20M	QPSK	50RB	0Offset	Right Cheek	Non-Trigger	39750	2506	22.06	23.00	1.242	62.9	1.01	0.18	0.038	0.047
	LTE Band 41	20M	QPSK	1RB	0Offset	Right Tilted	Non-Trigger	39750	2506	22.99	24.00	1.262	62.9	1.01	0.11	0.050	0.063
	LTE Band 41	20M	QPSK	50RB	0Offset	Right Tilted	Non-Trigger	39750	2506	22.06	23.00	1.242	62.9	1.01	0.04	0.029	0.036
	LTE Band 41	20M	QPSK	1RB	0Offset	Left Cheek	Non-Trigger	39750	2506	22.99	24.00	1.262	62.9	1.01	0.19	0.109	0.138
	LTE Band 41	20M	QPSK	50RB	0Offset	Left Cheek	Non-Trigger	39750	2506	22.06	23.00	1.242	62.9	1.01	0.08	0.064	0.080
04	LTE Band 41	20M	QPSK	1RB	0Offset	Left Cheek	Trigger	39750	2506	22.99	24.00	1.262	62.9	1.01	-0.05	0.114	**0.145**
	LTE Band 41	20M	QPSK	50RB	0Offset	Left Cheek	Trigger	39750	2506	22.06	23.00	1.242	62.9	1.01	0.02	0.075	0.094
	LTE Band 41	20M	QPSK	1RB	0Offset	Left Tilted	Non-Trigger	39750	2506	22.99	24.00	1.262	62.9	1.01	0.16	0.046	0.058
	LTE Band 41	20M	QPSK	50RB	0Offset	Left Tilted	Non-Trigger	39750	2506	22.06	23.00	1.242	62.9	1.01	0.15	0.027	0.034

14.2 Wireless Router SAR

<GSM SAR>

Plot No.	Band	Mode	Test Position	Gap (cm)	Power Reduction	Ch.	Freq. (MHz)	Average Power (dBm)	Tune-Up Limit (dBm)	Tune-up Scaling Factor	Power Drift (dB)	Measured 1g SAR (W/kg)	Reported 1g SAR (W/kg)
	GSM1900	GPRS (4 Tx slots)	Front	1cm	ON	810	1909.8		19.00	1.000	0	0.323	0.323
	GSM1900	GPRS (4 Tx slots)	Back	1cm	ON	810	1909.8		19.00	1.000	0	0.298	0.298
	GSM1900	GPRS (4 Tx slots)	Left Side	1cm	ON	810	1909.8		19.00	1.000	-0.03	0.046	0.046
	GSM1900	GPRS (4 Tx slots)	Right Side	1cm	ON	810	1909.8		19.00	1.000	-0.1	0.012	0.012
05	GSM1900	GPRS (4 Tx slots)	Bottom Side	1cm	ON	810	1909.8		19.00	1.000	-0.07	0.687	**0.687**

<WCDMA SAR>

Plot No.	Band	Mode	Test Position	Gap (cm)	Power Reduction	Ch.	Freq. (MHz)	Average Power (dBm)	Tune-Up Limit (dBm)	Tune-up Scaling Factor	Power Drift (dB)	Measured 1g SAR (W/kg)	Reported 1g SAR (W/kg)
	WCDMA IV	RMC 12.2Kbps	Front	1cm	ON	1513	1752.6		21.80	1.000	0.17	0.914	0.914
	WCDMA IV	RMC 12.2Kbps	Front	1cm	ON	1312	1712.4		21.80	1.000	0.09	0.704	0.704
	WCDMA IV	RMC 12.2Kbps	Front	1cm	ON	1413	1732.6		21.80	1.000	0.08	0.847	0.847
	WCDMA IV	RMC 12.2Kbps	Back	1cm	ON	1513	1752.6		21.80	1.000	0.1	0.919	0.919
	WCDMA IV	RMC 12.2Kbps	Back	1cm	ON	1312	1712.4		21.80	1.000	0.12	0.676	0.676
	WCDMA IV	RMC 12.2Kbps	Back	1cm	ON	1413	1732.6		21.80	1.000	0.04	0.783	0.783
	WCDMA IV	RMC 12.2Kbps	Left Side	1cm	ON	1513	1752.6		21.80	1.000	-0.07	0.114	0.114
	WCDMA IV	RMC 12.2Kbps	Right Side	1cm	ON	1513	1752.6		21.80	1.000	0.03	0.049	0.049
06	WCDMA IV	RMC 12.2Kbps	Bottom Side	1cm	ON	1513	1752.6		21.80	1.000	-0.09	1.240	**1.240**
	WCDMA IV	RMC 12.2Kbps	Bottom Side	1cm	ON	1312	1712.4		21.80	1.000	-0.11	0.876	0.876
	WCDMA IV	RMC 12.2Kbps	Bottom Side	1cm	ON	1413	1732.6		21.80	1.000	-0.14	1.050	1.050
	WCDMA II	RMC 12.2Kbps	Front	1cm	ON	9400	1880		19.50	1.000	0	0.488	0.488
	WCDMA II	RMC 12.2Kbps	Back	1cm	ON	9400	1880		19.50	1.000	0.02	0.457	0.457
	WCDMA II	RMC 12.2Kbps	Left Side	1cm	ON	9400	1880		19.50	1.000	-0.01	0.070	0.070
	WCDMA II	RMC 12.2Kbps	Right Side	1cm	ON	9400	1880		19.50	1.000	0.15	0.019	0.019
07	WCDMA II	RMC 12.2Kbps	Bottom Side	1cm	ON	9400	1880		19.50	1.000	-0.17	1.030	**1.030**
	WCDMA II	RMC 12.2Kbps	Bottom Side	1cm	ON	9262	1852.4		19.50	1.000	0	0.951	0.951
	WCDMA II	RMC 12.2Kbps	Bottom Side	1cm	ON	9538	1907.6		19.50	1.000	-0.01	0.923	0.923

<TDD LTE SAR>

Plot No.	Band	BW (MHz)	Modulation	RB Size	RB offset	Test Position	Gap (cm)	Power Reduction	Ch.	Freq. (MHz)	Average Power (dBm)	Tune-Up Limit (dBm)	Tune-up Scaling Factor	Duty Cycle %	Duty Cycle Scaling Factor	Power Drift (dB)	Measured 1g SAR (W/kg)	Reported 1g SAR (W/kg)
	LTE Band 41	20M	QPSK	1RB	0Offset	Front	1cm	ON	39750	2506		19.50	1.000	62.9	1.01	0.13	0.397	0.399
	LTE Band 41	20M	QPSK	50RB	0Offset	Front	1cm	ON	39750	2506		19.50	1.000	62.9	1.01	0.09	0.315	0.317
	LTE Band 41	20M	QPSK	1RB	0Offset	Back	1cm	ON	39750	2506		19.50	1.000	62.9	1.01	0.03	0.390	0.392
	LTE Band 41	20M	QPSK	50RB	0Offset	Back	1cm	ON	39750	2506		19.50	1.000	62.9	1.01	0.01	0.312	0.314
	LTE Band 41	20M	QPSK	1RB	0Offset	Left Side	1cm	ON	39750	2506		19.50	1.000	62.9	1.01	-0.09	0.147	0.148
	LTE Band 41	20M	QPSK	50RB	0Offset	Left Side	1cm	ON	39750	2506		19.50	1.000	62.9	1.01	0.01	0.123	0.124
	LTE Band 41	20M	QPSK	1RB	0Offset	Right Side	1cm	ON	39750	2506		19.50	1.000	62.9	1.01	0.03	0.011	0.011
	LTE Band 41	20M	QPSK	50RB	0Offset	Right Side	1cm	ON	39750	2506		19.50	1.000	62.9	1.01	0.02	0.010	0.010
08	LTE Band 41	20M	QPSK	1RB	0Offset	Bottom Side	1cm	ON	39750	2506		19.50	1.000	62.9	1.01	-0.09	0.970	**0.976**
	LTE Band 41	20M	QPSK	1RB	0Offset	Bottom Side	1cm	ON	40620	2593		19.50	1.000	62.9	1.01	-0.08	0.623	0.627
	LTE Band 41	20M	QPSK	1RB	0Offset	Bottom Side	1cm	ON	41490	2680		19.50	1.000	62.9	1.01	-0.03	0.305	0.307
	LTE Band 41	20M	QPSK	1RB	0Offset	Bottom Side	1cm	ON	40185	2549.5		19.50	1.000	62.9	1.01	-0.08	0.817	0.822
	LTE Band 41	20M	QPSK	1RB	0Offset	Bottom Side	1cm	ON	41055	2636.5		19.50	1.000	62.9	1.01	0.01	0.424	0.427
	LTE Band 41	20M	QPSK	50RB	0Offset	Bottom Side	1cm	ON	39750	2506		19.50	1.000	62.9	1.01	-0.14	0.803	0.808
	LTE Band 41	20M	QPSK	50RB	0Offset	Bottom Side	1cm	ON	40620	2593		19.50	1.000	62.9	1.01	-0.1	0.467	0.470
	LTE Band 41	20M	QPSK	50RB	0Offset	Bottom Side	1cm	ON	41490	2680		19.50	1.000	62.9	1.01	0	0.226	0.227
	LTE Band 41	20M	QPSK	50RB	0Offset	Bottom Side	1cm	ON	40185	2549.5		19.50	1.000	62.9	1.01	-0.07	0.625	0.629
	LTE Band 41	20M	QPSK	50RB	0Offset	Bottom Side	1cm	ON	41055	2636.5		19.50	1.000	62.9	1.01	-0.1	0.312	0.314
	LTE Band 41	20M	QPSK	100RB	0Offset	Bottom Side	1cm	ON	39750	2506		19.50	1.000	62.9	1.01	-0.04	0.767	0.772

14.3 Extremity SAR

<GSM SAR>

Plot No.	Band	Mode	Test Position	Gap (cm)	Antenna Tuner	Ch.	Freq. (MHz)	Average Power (dBm)	Tune-Up Limit (dBm)	Tune-up Scaling Factor	Power Drift (dB)	Measured 10g SAR (W/kg)	Reported 10g SAR (W/kg)
09	GSM1900	GPRS (4 Tx slots)	Bottom Side	0cm	Trigger	810	1909.8	23.43	24.50	1.279	0.12	1.490	1.906

<WCDMA SAR>

Plot No.	Band	Mode	Test Position	Gap (cm)	Antenna Tuner	Ch.	Freq. (MHz)	Average Power (dBm)	Tune-Up Limit (dBm)	Tune-up Scaling Factor	Power Drift (dB)	Measured 10g SAR (W/kg)	Reported 10g SAR (W/kg)
10	WCDMA IV	RMC 12.2Kbps	Front	0cm	Trigger	1513	1752.6	22.93	24.00	1.279	-0.02	2.440	3.122
	WCDMA IV	RMC 12.2Kbps	Front	0cm	Trigger	1312	1712.4	22.75	24.00	1.334	0.05	2.030	2.707
	WCDMA IV	RMC 12.2Kbps	Front	0cm	Trigger	1413	1732.6	22.79	24.00	1.321	-0.05	2.330	3.079
	WCDMA IV	RMC 12.2Kbps	Back	0cm	Trigger	1513	1752.6	22.93	24.00	1.279	0.02	1.960	2.508
	WCDMA IV	RMC 12.2Kbps	Back	0cm	Trigger	1312	1712.4	22.75	24.00	1.334	0.02	1.490	1.987
	WCDMA IV	RMC 12.2Kbps	Back	0cm	Trigger	1413	1732.6	22.79	24.00	1.321	0.03	1.720	2.273
	WCDMA IV	RMC 12.2Kbps	Bottom Side	0cm	Trigger	1513	1752.6	22.93	24.00	1.279	0.06	2.290	2.930
	WCDMA IV	RMC 12.2Kbps	Bottom Side	0cm	Trigger	1312	1712.4	22.75	24.00	1.334	-0.04	1.890	2.520
	WCDMA IV	RMC 12.2Kbps	Bottom Side	0cm	Trigger	1413	1732.6	22.79	24.00	1.321	0.07	2.180	2.880
	WCDMA II	RMC 12.2Kbps	Front	0cm	Trigger	9400	1880	23.05	24.00	1.245	0.13	3.040	3.783
11	WCDMA II	RMC 12.2Kbps	Front	0cm	Trigger	9262	1852.4	23.01	24.00	1.256	0.13	3.060	3.843
	WCDMA II	RMC 12.2Kbps	Front	0cm	Trigger	9538	1907.6	22.84	24.00	1.306	0.05	2.880	3.762
	WCDMA II	RMC 12.2Kbps	Back	0cm	Trigger	9400	1880	23.05	24.00	1.245	0.07	2.700	3.360
	WCDMA II	RMC 12.2Kbps	Back	0cm	Trigger	9262	1852.4	23.01	24.00	1.256	0.17	2.660	3.341
	WCDMA II	RMC 12.2Kbps	Back	0cm	Trigger	9538	1907.6	22.84	24.00	1.306	0.06	2.520	3.292
	WCDMA II	RMC 12.2Kbps	Bottom Side	0cm	Trigger	9400	1880	23.05	24.00	1.245	0.06	2.180	2.713
	WCDMA II	RMC 12.2Kbps	Bottom Side	0cm	Trigger	9262	1852.4	23.01	24.00	1.256	0.06	2.160	2.713
	WCDMA II	RMC 12.2Kbps	Bottom Side	0cm	Trigger	9538	1907.6	22.84	24.00	1.306	0.19	1.970	2.573

<TDD LTE SAR>

Plot No.	Band	BW (MHz)	Modulation	RB Size	RB offset	Test Position	Gap (cm)	Antenna Tuner	Ch.	Freq. (MHz)	Average Power (dBm)	Tune-Up Limit (dBm)	Tune-up Scaling Factor	Duty Cycle %	Duty Cycle Scaling Factor	Power Drift (dB)	Measured 10g SAR (W/kg)	Reported 10g SAR (W/kg)
	LTE Band 41	20M	QPSK	1RB	0Offset	Bottom Side	0cm	Trigger	39750	2506	22.99	24.00	1.262	62.9	1.01	0.11	1.330	1.688
	LTE Band 41	20M	QPSK	1RB	0Offset	Bottom Side	0cm	Trigger	40620	2593	22.91	24.00	1.285	62.9	1.01	-0.04	1.260	1.629
	LTE Band 41	20M	QPSK	1RB	0Offset	Bottom Side	0cm	Trigger	41490	2680	22.72	24.00	1.343	62.9	1.01	-0.01	1.120	1.513
12	LTE Band 41	20M	QPSK	1RB	0Offset	Bottom Side	0cm	Trigger	40185	2549.5	22.89	24.00	1.291	62.9	1.01	0.01	1.360	1.767
	LTE Band 41	20M	QPSK	1RB	0Offset	Bottom Side	0cm	Trigger	41055	2636.5	22.79	24.00	1.321	62.9	1.01	-0.02	1.220	1.622
	LTE Band 41	20M	QPSK	50RB	0Offset	Bottom Side	0cm	Trigger	39750	2506	22.06	23.00	1.242	62.9	1.01	0.14	0.880	1.099
	LTE Band 41	20M	QPSK	100RB	0Offset	Bottom Side	0cm	Trigger	39750	2506	22.10	23.00	1.230	62.9	1.01	0.08	0.876	1.084

14.4 Body Worn Accessory SAR

<GSM SAR>

Plot No.	Band	Mode	Test Position	Gap (cm)	Antenna Tuner	Headset	Ch.	Freq. (MHz)	Average Power (dBm)	Tune-Up Limit (dBm)	Tune-up Scaling Factor	Power Drift (dB)	Measured 1g SAR (W/kg)	Reported 1g SAR (W/kg)
13	GSM1900	GPRS (4 Tx slots)	Front	1.5cm	Non-Trigger		810	1909.8	23.43	24.50	1.279	-0.02	0.523	**0.669**
	GSM1900	GPRS (4 Tx slots)	Front	1.5cm	Trigger	Headset	810	1909.8	23.43	24.50	1.279	-0.04	0.472	0.604
	GSM1900	GPRS (4 Tx slots)	Back	1.5cm	Non-Trigger		810	1909.8	23.43	24.50	1.279	-0.04	0.516	0.660

<WCDMA SAR>

Plot No.	Band	Mode	Test Position	Gap (cm)	Antenna Tuner	Headset	Ch.	Freq. (MHz)	Average Power (dBm)	Tune-Up Limit (dBm)	Tune-up Scaling Factor	Power Drift (dB)	Measured 1g SAR (W/kg)	Reported 1g SAR (W/kg)
14	WCDMA IV	RMC 12.2Kbps	Front	1.5cm	Non-Trigger		1513	1752.6	22.93	24.00	1.279	0.06	0.657	**0.841**
	WCDMA IV	RMC 12.2Kbps	Front	1.5cm	Non-Trigger		1312	1712.4	22.75	24.00	1.334	-0.18	0.585	0.780
	WCDMA IV	RMC 12.2Kbps	Front	1.5cm	Non-Trigger		1413	1732.6	22.79	24.00	1.321	0.19	0.527	0.696
	WCDMA IV	RMC 12.2Kbps	Front	1.5cm	Trigger	Headset	1513	1752.6	22.93	24.00	1.279	0.01	0.637	0.815
	WCDMA IV	RMC 12.2Kbps	Front	1.5cm	Trigger	Headset	1312	1712.4	22.75	24.00	1.334	0	0.454	0.605
	WCDMA IV	RMC 12.2Kbps	Front	1.5cm	Trigger	Headset	1413	1732.6	22.79	24.00	1.321	0.01	0.541	0.715
	WCDMA IV	RMC 12.2Kbps	Back	1.5cm	Non-Trigger		1513	1752.6	22.93	24.00	1.279	0.01	0.603	0.771
	WCDMA II	RMC 12.2Kbps	Front	1.5cm	Non-Trigger		9400	1880	23.05	24.00	1.245	0.01	0.791	0.984
15	WCDMA II	RMC 12.2Kbps	Front	1.5cm	Non-Trigger		9262	1852.4	23.01	24.00	1.256	0.03	0.830	**1.043**
	WCDMA II	RMC 12.2Kbps	Front	1.5cm	Non-Trigger		9538	1907.6	22.84	24.00	1.306	0.03	0.748	0.977
	WCDMA II	RMC 12.2Kbps	Front	1.5cm	Trigger	Headset	9400	1880	23.05	24.00	1.245	0.11	0.649	0.808
	WCDMA II	RMC 12.2Kbps	Front	1.5cm	Trigger	Headset	9262	1852.4	23.01	24.00	1.256	0	0.695	0.873
	WCDMA II	RMC 12.2Kbps	Front	1.5cm	Trigger	Headset	9538	1907.6	22.84	24.00	1.306	0.01	0.600	0.784
	WCDMA II	RMC 12.2Kbps	Back	1.5cm	Non-Trigger		9400	1880	23.05	24.00	1.245	0.03	0.782	0.973
	WCDMA II	RMC 12.2Kbps	Back	1.5cm	Non-Trigger		9262	1852.4	23.01	24.00	1.256	0	0.826	1.037
	WCDMA II	RMC 12.2Kbps	Back	1.5cm	Non-Trigger		9538	1907.6	22.84	24.00	1.306	0.04	0.734	0.959

<TDD LTE SAR>

Plot No.	Band	BW (MHz)	Modulation	RB Size	RB offset	Test Position	Gap (cm)	Antenna Tuner	Headset	Ch.	Freq. (MHz)	Average Power (dBm)	Tune-Up Limit (dBm)	Tune-up Scaling Factor	Duty Cycle %	Duty Cycle Scaling Factor	Power Drift (dB)	Measured 1g SAR (W/kg)	Reported 1g SAR (W/kg)
	LTE Band 41	20M	QPSK	1RB	0Offset	Front	1.5cm	Non-Trigger		39750	2506	22.99	24.00	1.262	62.9	1.01	-0.06	0.480	0.609
	LTE Band 41	20M	QPSK	1RB	0Offset	Front	1.5cm	Non-Trigger		40620	2593	22.91	24.00	1.285	62.9	1.01	0.04	0.337	0.436
	LTE Band 41	20M	QPSK	1RB	0Offset	Front	1.5cm	Non-Trigger		41490	2680	22.72	24.00	1.343	62.9	1.01	-0.08	0.330	0.446
	LTE Band 41	20M	QPSK	1RB	0Offset	Front	1.5cm	Non-Trigger		40185	2549.5	22.89	24.00	1.291	62.9	1.01	0.02	0.409	0.531
	LTE Band 41	20M	QPSK	1RB	0Offset	Front	1.5cm	Non-Trigger		41055	2636.5	22.79	24.00	1.321	62.9	1.01	-0.01	0.289	0.384
	LTE Band 41	20M	QPSK	50RB	0Offset	Front	1.5cm	Non-Trigger		39750	2506	22.06	23.00	1.242	62.9	1.01	-0.01	0.268	0.335
	LTE Band 41	20M	QPSK	100RB	0Offset	Front	1.5cm	Non-Trigger		39750	2506	22.10	23.00	1.230	62.9	1.01	-0.19	0.322	0.399
16	LTE Band 41	20M	QPSK	1RB	0Offset	Front	1.5cm	Trigger	Headset	39750	2506	22.99	24.00	1.262	62.9	1.01	-0.07	0.489	**0.621**
	LTE Band 41	20M	QPSK	1RB	0Offset	Front	1.5cm	Trigger	Headset	40620	2593	22.91	24.00	1.285	62.9	1.01	-0.05	0.303	0.392
	LTE Band 41	20M	QPSK	1RB	0Offset	Front	1.5cm	Trigger	Headset	41490	2680	22.72	24.00	1.343	62.9	1.01	-0.04	0.301	0.407
	LTE Band 41	20M	QPSK	1RB	0Offset	Front	1.5cm	Trigger	Headset	40185	2549.5	22.89	24.00	1.291	62.9	1.01	-0.04	0.389	0.505
	LTE Band 41	20M	QPSK	1RB	0Offset	Front	1.5cm	Trigger	Headset	41055	2636.5	22.79	24.00	1.321	62.9	1.01	-0.07	0.269	0.358
	LTE Band 41	20M	QPSK	50RB	0Offset	Front	1.5cm	Trigger	Headset	39750	2506	22.06	23.00	1.242	62.9	1.01	-0.07	0.277	0.346
	LTE Band 41	20M	QPSK	100RB	0Offset	Front	1.5cm	Trigger	Headset	39750	2506	22.10	23.00	1.230	62.9	1.01	-0.01	0.274	0.339
	LTE Band 41	20M	QPSK	1RB	0Offset	Back	1.5cm	Non-Trigger		39750	2506	22.99	24.00	1.262	62.9	1.01	-0.05	0.452	0.574
	LTE Band 41	20M	QPSK	50RB	0Offset	Back	1.5cm	Non-Trigger		39750	2506	22.06	23.00	1.242	62.9	1.01	0	0.251	0.314

14.5 Repeated SAR Measurement

General Note:

1. Per KDB 865664 D01v01r03, for each frequency band, repeated SAR measurement is required only when the measured SAR is ≥0.8W/kg.
2. Per KDB 865664 D01v01r03, if the ratio among the repeated measurement is ≤ 1.2 and the measured SAR <1.45W/kg, only one repeated measurement is required.
3. Per KDB 865664 D01v01r03, if the extremity repeated SAR is necessary, the same procedures should be adapted for measurements according to extremity and occupational exposure limits by applying a factor of 2.5 for extremity exposure and a factor of 5 for occupational exposure to the corresponding SAR thresholds.
4. The ratio is the difference in percentage between original and repeated *measured SAR*.
5. All measurement SAR result is scaled-up to account for tune-up tolerance and is compliant.

<1g Repeated SAR>

No.	Band	BW (MHz)	Modulation	RB Size	RB offset	Mode	Test Position	Gap (cm)	Power Reduction	Ch.	Freq. (MHz)	Average Power (dBm)	Tune-Up Limit (dBm)	Tune-up Scaling Factor	Duty Cycle %	Duty Cycle Scaling Factor	Power Drift (dB)	Measured 1g SAR (W/kg)	Ratio	Reported 1g SAR (W/kg)
1st	WCDMA IV	-	-	-	-	RMC 12.2Kbps	Bottom Side	1cm	ON	1513	1752.6		22.00	1.000	-	-	-0.09	1.240	-	1.240
2nd	WCDMA IV	-	-	-	-	RMC 12.2Kbps	Bottom Side	1cm	ON	1513	1752.6		22.00	1.000	-	-	-0.13	1.230	1.01	1.230
1st	WCDMA II	-	-	-	-	RMC 12.2Kbps	Bottom Side	1cm	ON	9400	1880		19.00	1.000	-	-	-0.17	1.030	-	1.030
2nd	WCDMA II	-	-	-	-	RMC 12.2Kbps	Bottom Side	1cm	ON	9400	1880		19.00	1.000	-	-	-0.1	0.972	1.06	0.972
1st	LTE Band 41	20M	QPSK	1RB	0Offset	-	Bottom Side	1cm	ON	39750	2506		19.50	1.000	62.9	1.01	-0.09	0.970	-	0.976
2nd	LTE Band 41	20M	QPSK	1RB	0Offset	-	Bottom Side	1cm	ON	39750	2506		19.50	1.000	62.9	1.01	-0.09	0.948	1.02	0.954

<10g Repeated SAR>

No.	Band	Mode	Test Position	Gap (cm)	Antenna Tuner	Ch.	Freq. (MHz)	Average Power (dBm)	Tune-Up Limit (dBm)	Tune-up Scaling Factor	Power Drift (dB)	Measured 10g SAR (W/kg)	Ratio	Reported 10g SAR (W/kg)
1st	WCDMA IV	RMC 12.2Kbps	Front	0cm	Trigger	1513	1752.6	22.93	24.00	1.279	-0.02	2.440	-	3.122
2nd	WCDMA IV	RMC 12.2Kbps	Front	0cm	Trigger	1513	1752.6	22.93	24.00	1.279	0.07	2.390	1.02	3.058
1st	WCDMA II	RMC 12.2Kbps	Front	0cm	Trigger	9262	1852.4	23.01	24.00	1.256	0.13	3.060	-	3.843
2nd	WCDMA II	RMC 12.2Kbps	Front	0cm	Trigger	9262	1852.4	23.01	24.00	1.256	-0.04	2.960	1.03	3.718

15. Simultaneous Transmission Analysis

NO.	Simultaneous Transmission Configurations	Mobile Phone				Note
		Head	Body-worn	Wireless Router	Extremity	
1.	GSM(Voice) + WLAN2.4GHz(data)	Yes	Yes		Yes	
2.	WCDMA(Voice) + WLAN2.4GHz(data)	Yes	Yes		Yes	
3.	GSM(Voice) + Bluetooth(data)	Yes	Yes		Yes	
4.	WCDMA((Voice) + Bluetooth(data)	Yes	Yes		Yes	
5.	GSM(Voice) + WLAN5GHz(data)	Yes	Yes		Yes	
6.	WCDMA((Voice) + WLAN5GHz(data)	Yes	Yes		Yes	
7.	GPRS/EDGE(Data) + WLAN2.4GHz(data)	Yes	Yes	Yes	Yes	2.4GHz Hotspot
8.	WCDMA(Data) + WLAN2.4GHz(data)	Yes	Yes	Yes	Yes	2.4GHz Hotspot
9.	LTE(Data) + WLAN2.4GHz(data)	Yes	Yes	Yes	Yes	2.4GHz Hotspot
10.	GPRS/EDGE(Data) + Bluetooth(data)	Yes	Yes	Yes	Yes	Bluetooth Tethering
11.	WCDMA(Data) + Bluetooth(data)	Yes	Yes	Yes	Yes	Bluetooth Tethering
12.	LTE(Data) + Bluetooth(data)	Yes	Yes	Yes	Yes	Bluetooth Tethering
13.	GPRS/EDGE(Data) + WLAN5GHz(data)	Yes	Yes	Yes	Yes	WiFi Direct
14.	WCDMA(Data) + WLAN5GHz(data)	Yes	Yes	Yes	Yes	WiFi Direct
15.	LTE(Data) + WLAN5GHz(data)	Yes	Yes	Yes	Yes	WiFi Direct

General Note:

1. This device supported VoIP in EGPRS, WCDMA, CDMA, LTE (e.g. 3rd party VoIP).
2. The WLAN cannot transmit simultaneously with Bluetooth.
3. This device 2.4GHz / 5.2GHz / 5.8GHz WLAN supports Hotspot operation and WiFi Direct (Group Client / Group Owner), and 5.3GHz / 5.5GHz WLAN supports WiFi Direct (Group Client).
4. The worst case 2.4GHz / 5GHz WLAN reported SAR for each configuration was used for SAR summation, Therefore, the following summations represent the absolute worst cases for simultaneous transmission with the WLAN.
5. In body-worn exposure condition, the WWAN connection a headset SAR simultaneously transmission was select WLAN without connect a headset SAR for conservatively summation.
6. Per KDB 447498 D01v05r02, simultaneous transmission SAR is compliant if,
   i) Scalar SAR summation < 1.6W/kg.
   ii) SPLSR = (SAR1 + SAR2)1.5 / (min. separation distance, mm), and the peak separation distance is determined from the square root of [(x1-x2)2 + (y1-y2)2 + (z1-z2)2], where (x1, y1, z1) and (x2, y2, z2) are the coordinates of the extrapolated peak SAR locations in the zoom scan
   iii) If SPLSR ≤ 0.04, simultaneously transmission SAR measurement is not necessary
   iv) Simultaneously transmission SAR measurement, and the reported multi-band SAR < 1.6W/kg

15.1 Head Exposure Conditions

WWAN Band		Exposure Position	1	2	3	1+2 Summed SAR (W/kg)	1+3 Summed SAR (W/kg)	SPLSR	Case No
			WWAN	2.4GHz	2.4GHz Bluetooth				
			SAR (W/kg)	SAR (W/kg)	SAR (W/kg)				
GSM	GSM1900	Right Cheek	0.081	0.930	0.072	**1.01**	**0.15**		
		Right Tilted	0.063	0.324	0.034	**0.39**	**0.10**		
		Left Cheek	0.178	0.328	0.007	**0.51**	**0.19**		
		Left Tilted	0.056	0.311	0.012	**0.37**	**0.07**		
WCDMA	Band IV	Right Cheek	0.047	0.930	0.072	**0.98**	**0.12**		
		Right Tilted	0.052	0.324	0.034	**0.38**	**0.09**		
		Left Cheek	0.159	0.328	0.007	**0.49**	**0.17**		
		Left Tilted	0.046	0.311	0.012	**0.36**	**0.06**		
	Band II	Right Cheek	0.138	0.930	0.072	**1.07**	**0.21**		
		Right Tilted	0.078	0.324	0.034	**0.40**	**0.11**		
		Left Cheek	0.289	0.328	0.007	**0.62**	**0.30**		
		Left Tilted	0.067	0.311	0.012	**0.38**	**0.08**		
LTE	Band 41	Right Cheek	0.09	0.930	0.072	**1.02**	**0.16**		
		Right Tilted	0.063	0.324	0.034	**0.39**	**0.10**		
		Left Cheek	0.145	0.328	0.007	**0.47**	**0.15**		
		Left Tilted	0.058	0.311	0.012	**0.37**	**0.07**		

WWAN Band		Exposure Position	1	2		1+2 Summed SAR (W/kg)	SPLSR	Case No
			WWAN	5.2GHz / 5.3GHz / 5.5GHz/5.8GHz WLAN				
			SAR (W/kg)	Band	SAR (W/kg)			
GSM	GSM1900	Right Cheek	0.081	5.5GHz WLAN	0.882	**0.96**		
		Right Tilted	0.063	5.2GHz WLAN	0.258	**0.32**		
		Left Cheek	0.178	5.5GHz WLAN	0.304	**0.48**		
		Left Tilted	0.056	5.5GHz WLAN	0.259	**0.32**		
WCDMA	Band IV	Right Cheek	0.047	5.5GHz WLAN	0.882	**0.93**		
		Right Tilted	0.052	5.2GHz WLAN	0.258	**0.31**		
		Left Cheek	0.159	5.5GHz WLAN	0.304	**0.46**		
		Left Tilted	0.046	5.5GHz WLAN	0.259	**0.31**		
	Band II	Right Cheek	0.138	5.5GHz WLAN	0.882	**1.02**		
		Right Tilted	0.078	5.2GHz WLAN	0.258	**0.34**		
		Left Cheek	0.289	5.5GHz WLAN	0.304	**0.59**		
		Left Tilted	0.067	5.5GHz WLAN	0.259	**0.33**		
LTE	Band 41	Right Cheek	0.09	5.5GHz WLAN	0.882	**0.97**		
		Right Tilted	0.063	5.2GHz WLAN	0.258	**0.32**		
		Left Cheek	0.145	5.5GHz WLAN	0.304	**0.45**		
		Left Tilted	0.058	5.5GHz WLAN	0.259	**0.32**		

15.2 Wireless Router Exposure Conditions

WWAN Band		Exposure Position	1 WWAN SAR (W/kg)	2 2.4GHz WLAN SAR (W/kg)	3 2.4GHz Bluetooth SAR (W/kg)	1+2 Summed SAR (W/kg)	1+3 Summed SAR (W/kg)	SPLSR	Case No
GSM	GSM1900	Front	0.323	0.124	0.007	**0.45**	**0.33**		
		Back	0.298	0.124	0.007	**0.42**	**0.31**		
		Left side	0.046	0.225	0.013	**0.27**	**0.06**		
		Right side	0.012	0.032	0.001	**0.04**	**0.01**		
		Top side		0.082	0.007	**0.08**	**0.01**		
		Bottom side	0.687			**0.69**	**0.69**		
WCDMA	Band IV	Front	0.914	0.124	0.007	**1.04**	**0.92**		
		Back	0.919	0.124	0.007	**1.04**	**0.93**		
		Left side	0.114	0.225	0.013	**0.34**	**0.13**		
		Right side	0.049	0.032	0.001	**0.08**	**0.05**		
		Top side		0.082	0.007	**0.08**	**0.01**		
		Bottom side	1.240			**1.24**	**1.24**		
	Band II	Front	0.488	0.124	0.007	**0.61**	**0.50**		
		Back	0.457	0.124	0.007	**0.58**	**0.46**		
		Left side	0.07	0.225	0.013	**0.30**	**0.08**		
		Right side	0.019	0.032	0.001	**0.05**	**0.02**		
		Top side		0.082	0.007	**0.08**	**0.01**		
		Bottom side	1.030			**1.03**	**1.03**		
LTE	Band 41	Front	0.399	0.124	0.007	**0.52**	**0.41**		
		Back	0.392	0.124	0.007	**0.52**	**0.40**		
		Left side	0.148	0.225	0.013	**0.37**	**0.16**		
		Right side	0.011	0.032	0.001	**0.04**	**0.01**		
		Top side		0.082	0.007	**0.08**	**0.01**		
		Bottom side	0.976			**0.98**	**0.98**		

WWAN Band		Exposure Position	1	2		1+2 Summed SAR (W/kg)	SPLSR	Case No
			WWAN	5.2GHz / 5.3GHz / 5.5GHz/5.8GHz				
			SAR (W/kg)	Band	SAR (W/kg)			
GSM	GSM1900	Front	0.323	5.8GHz WLAN	0.148	**0.47**		
		Back	0.298	5.8GHz WLAN	0.419	**0.72**		
		Left side	0.046	5.2GHz WLAN	0.178	**0.22**		
		Right side	0.012	5.8GHz WLAN	0.110	**0.12**		
		Top side		5.8GHz WLAN	0.080	**0.08**		
		Bottom side	0.687			**0.69**		
WCDMA	Band IV	Front	0.914	5.8GHz WLAN	0.148	**1.06**		
		Back	0.919	5.8GHz WLAN	0.419	**1.34**		
		Left side	0.114	5.2GHz WLAN	0.178	**0.29**		
		Right side	0.049	5.8GHz WLAN	0.110	**0.16**		
		Top side		5.8GHz WLAN	0.080	**0.08**		
		Bottom side	1.240			**1.24**		
	Band II	Front	0.488	5.8GHz WLAN	0.148	**0.64**		
		Back	0.457	5.8GHz WLAN	0.419	**0.88**		
		Left side	0.07	5.2GHz WLAN	0.178	**0.25**		
		Right side	0.019	5.8GHz WLAN	0.110	**0.13**		
		Top side		5.8GHz WLAN	0.080	**0.08**		
		Bottom side	1.030			**1.03**		
LTE	Band 41	Front	0.399	5.8GHz WLAN	0.148	**0.55**		
		Back	0.392	5.8GHz WLAN	0.419	**0.81**		
		Left side	0.148	5.2GHz WLAN	0.178	**0.33**		
		Right side	0.011	5.8GHz WLAN	0.110	**0.12**		
		Top side		5.8GHz WLAN	0.080	**0.08**		
		Bottom side	0.976			**0.98**		

15.3 Body-Worn Accessory Exposure Conditions

WWAN Band		Exposure Position	1	2	3	1+2 Summed SAR (W/kg)	1+3 Summed SAR (W/kg)	SPLSR	Case No
			WWAN	2.4GHz / 5.8GHz WLAN	2.4GHz Bluetooth				
			SAR (W/kg)	SAR (W/kg)	SAR (W/kg)				
GSM	GSM1900	Front	0.669	0.076	0.008	**0.75**	**0.68**		
		Back	0.66	0.128	0.002	**0.79**	**0.66**		
		Front with Headset	0.604	0.076	0.008	**0.68**	**0.61**		
WCDMA	Band IV	Front	0.841	0.076	0.008	**0.92**	**0.85**		
		Back	0.771	0.128	0.002	**0.90**	**0.77**		
		Front with Headset	0.815	0.076	0.008	**0.89**	**0.82**		
	Band II	Front	1.043	0.076	0.008	**1.12**	**1.05**		
		Back	1.037	0.128	0.002	**1.17**	**1.04**		
		Front with Headset	0.873	0.076	0.008	**0.95**	**0.88**		
LTE	Band 41	Front	0.609	0.076	0.008	**0.69**	**0.62**		
		Back	0.574	0.128	0.002	**0.70**	**0.58**		
		Front with Headset	0.621	0.076	0.008	**0.70**	**0.63**		

WWAN Band		Exposure Position	1	2		1+2 Summed SAR (W/kg)	SPLSR	Case No
			WWAN	5.2GHz / 5.3GHz / 5.5GHz/5.8GHz				
			SAR (W/kg)	Band	SAR (W/kg)			
GSM	GSM1900	Front	0.669	5.8GHz WLAN	0.091	**0.76**		
		Back	0.66	5.8GHz WLAN	0.363	**1.02**		
		Front with Headset	0.604	5.8GHz WLAN	0.091	**0.70**		
WCDMA	Band IV	Front	0.841	5.8GHz WLAN	0.091	**0.93**		
		Back	0.771	5.8GHz WLAN	0.363	**1.13**		
		Front with Headset	0.815	5.8GHz WLAN	0.091	**0.91**		
	Band II	Front	1.043	5.8GHz WLAN	0.091	**1.13**		
		Back	1.037	5.8GHz WLAN	0.363	**1.40**		
		Front with Headset	0.873	5.8GHz WLAN	0.091	**0.96**		
LTE	Band 41	Front	0.609	5.8GHz WLAN	0.091	**0.70**		
		Back	0.574	5.8GHz WLAN	0.363	**0.94**		
		Front with Headset	0.621	5.8GHz WLAN	0.091	**0.71**		

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16. Uncertainty Assessment

The component of uncertainly may generally be categorized according to the methods used to evaluate them. The evaluation of uncertainly by the statistical analysis of a series of observations is termed a Type An evaluation of uncertainty. The evaluation of uncertainty by means other than the statistical analysis of a series of observation is termed a Type B evaluation of uncertainty. Each component of uncertainty, however evaluated, is represented by an estimated standard deviation, termed standard uncertainty, which is determined by the positive square root of the estimated variance.

A Type A evaluation of standard uncertainty may be based on any valid statistical method for treating data. This includes calculating the standard deviation of the mean of a series of independent observations; using the method of least squares to fit a curve to the data in order to estimate the parameter of the curve and their standard deviations; or carrying out an analysis of variance in order to identify and quantify random effects in certain kinds of measurement.

A type B evaluation of standard uncertainty is typically based on scientific judgment using all of the relevant information available. These may include previous measurement data, experience, and knowledge of the behavior and properties of relevant materials and instruments, manufacture's specification, data provided in calibration reports and uncertainties assigned to reference data taken from handbooks. Broadly speaking, the uncertainty is either obtained from an outdoor source or obtained from an assumed distribution, such as the normal distribution, rectangular or triangular distributions indicated in table below.

Uncertainty Distributions	Normal	Rectangular	Triangular	U-Shape
Multi-plying Factor[(a)]	1/k[(b)]	1/√3	1/√6	1/√2

(a) standard uncertainty is determined as the product of the multiplying factor and the estimated range of variations in the measured quantity

(b) κ is the coverage factor

Table 16.1. Standard Uncertainty for Assumed Distribution

The combined standard uncertainty of the measurement result represents the estimated standard deviation of the result. It is obtained by combining the individual standard uncertainties of both Type A and Type B evaluation using the usual "root-sum-squares" (RSS) methods of combining standard deviations by taking the positive square root of the estimated variances.

Expanded uncertainty is a measure of uncertainty that defines an interval about the measurement result within which the measured value is confidently believed to lie. It is obtained by multiplying the combined standard uncertainty by a coverage factor. Typically, the coverage factor ranges from 2 to 3. Using a coverage factor allows the true value of a measured quantity to be specified with a defined probability within the specified uncertainty range. For purpose of this document, a coverage factor two is used, which corresponds to confidence interval of about 95 %. The DASY uncertainty Budget is shown in the following tables.

Error Description	Uncertainty Value (±%)	Probability Distribution	Divisor	Ci (1g)	Ci (10g)	Standard Uncertainty (1g)	Standard Uncertainty (10g)
Measurement System							
Probe Calibration	6.0	Normal	1	1	1	± 6.0 %	± 6.0 %
Axial Isotropy	4.7	Rectangular	√3	0.7	0.7	± 1.9 %	± 1.9 %
Hemispherical Isotropy	9.6	Rectangular	√3	0.7	0.7	± 3.9 %	± 3.9 %
Boundary Effects	1.0	Rectangular	√3	1	1	± 0.6 %	± 0.6 %
Linearity	4.7	Rectangular	√3	1	1	± 2.7 %	± 2.7 %
System Detection Limits	1.0	Rectangular	√3	1	1	± 0.6 %	± 0.6 %
Readout Electronics	0.3	Normal	1	1	1	± 0.3 %	± 0.3 %
Response Time	0.8	Rectangular	√3	1	1	± 0.5 %	± 0.5 %
Integration Time	2.6	Rectangular	√3	1	1	± 1.5 %	± 1.5 %
RF Ambient Noise	3.0	Rectangular	√3	1	1	± 1.7 %	± 1.7 %
RF Ambient Reflections	3.0	Rectangular	√3	1	1	± 1.7 %	± 1.7 %
Probe Positioner	0.4	Rectangular	√3	1	1	± 0.2 %	± 0.2 %
Probe Positioning	2.9	Rectangular	√3	1	1	± 1.7 %	± 1.7 %
Max. SAR Eval.	1.0	Rectangular	√3	1	1	± 0.6 %	± 0.6 %
Test Sample Related							
Device Positioning	2.9	Normal	1	1	1	± 2.9 %	± 2.9 %
Device Holder	3.6	Normal	1	1	1	± 3.6 %	± 3.6 %
Power Drift	5.0	Rectangular	√3	1	1	± 2.9 %	± 2.9 %
Phantom and Setup							
Phantom Uncertainty	4.0	Rectangular	√3	1	1	± 2.3 %	± 2.3 %
Liquid Conductivity (Target)	5.0	Rectangular	√3	0.64	0.43	± 1.8 %	± 1.2 %
Liquid Conductivity (Meas.)	2.5	Normal	1	0.64	0.43	± 1.6 %	± 1.1 %
Liquid Permittivity (Target)	5.0	Rectangular	√3	0.6	0.49	± 1.7 %	± 1.4 %
Liquid Permittivity (Meas.)	2.5	Normal	1	0.6	0.49	± 1.5 %	± 1.2 %
Combined Standard Uncertainty						± 11.0 %	± 10.8 %
Coverage Factor for 95 %						K=2	
Expanded Uncertainty						**± 22.0 %**	**± 21.5 %**

Table 16.2. Uncertainty Budget for frequency range 300 MHz to 3 GHz

17. References

[1] FCC 47 CFR Part 2 “Frequency Allocations and Radio Treaty Matters; General Rules and Regulations”

[2] ANSI/IEEE Std. C95.1-1992, “IEEE Standard for Safety Levels with Respect to Human Exposure to Radio Frequency Electromagnetic Fields, 3 kHz to 300 GHz”, September 1992

[3] IEEE Std. 1528-2003, “Recommended Practice for Determining the Peak Spatial-Average Specific Absorption Rate (SAR) in the Human Head from Wireless Communications Devices: Measurement Techniques”, December 2003

[4] SPEAG DASY System Handbook

[5] FCC KDB 447498 D01 v05r02, “Mobile and Portable Device RF Exposure Procedures and Equipment Authorization Policies”, Feb 2014

[6] FCC KDB 648474 D04 v01r02, “SAR Evaluation Considerations for Wireless Handsets”, Dec 2013.

[7] FCC KDB 941225 D01 v02, “SAR Measurement Procedures for 3G Devices – CDMA 2000 / Ev-Do / WCDMA / HSDPA / HSPA”, October 2007

[8] FCC KDB 941225 D02 v02r02, “SAR Guidance for HSPA, HSPA+, DC-HSDPA and 1x-Advanced”, May 2013.

[9] FCC KDB 941225 D03 v01, “Recommended SAR Test Reduction Procedures for GSM / GPRS / EDGE”, December 2008

[10] FCC KDB 941225 D05 v02r03, “SAR Evaluation Considerations for LTE Devices”, Dec 2013

[11] FCC KDB 941225 D06 v01r01, "SAR Evaluation Procedures for Portable Devices with Wireless Router Capabilities", May 2013.

[12] FCC KDB 865664 D01 v01r03, "SAR Measurement Requirements for 100 MHz to 6 GHz", Feb 2014.

[13] FCC KDB 865664 D02 v01r01, “RF Exposure Compliance Reporting and Documentation Considerations” May 2013.