FCC SAR TEST REPORT

FCC ID	**: P4Q-N536B**
Equipment	**: Tablet**
Brand Name	**: Mitac, Magellan**
Model Name	**: N536B**
Applicant	**: MiTAC Digital Technology Corporation No.200, Wen Hua 2nd Rd., Guishan Dist., Taoyuan City 333, Taiwan (R.O.C.)**
Manufacturer	**: MITAC Computer (Kunshan) Co,. Ltd. No. 269, 2nd Avenue, District A, Conprehensive Free Trade Zone, 300 Kunshan, China**
Standard	**: FCC 47 CFR Part 2 (2.1093) ANSI/IEEE C95.1-1992 IEEE 1528-2013**

The product was received on Apr. 10, 2018 and testing was started from Apr. 13, 2018 and completed on Jun. 03, 2018. We, SPORTON INTERNATIONAL INC., would like to declare that the tested sample has been evaluated in accordance with the test procedures and has been in compliance with the applicable technical standards.

The report must not be used by the client to claim product certification, approval, or endorsement by TAF or any agency of government.

The test results in this variant report apply exclusively to the tested model / sample. Without written approval of SPORTON INTERTIONAL INC. EMC & Wireless Communications Laboratory, the test report shall not be reproduced except in full.

Jones Tsai

Approved by: Jones Tsai / Manager

SPORTON INTERTIONAL INC. EMC & Wireless Communications Laboratory
No. 52, Huaya 1st Rd., Guishan Dist., Taoyuan City, Taiwan (R.O.C.)

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History of this test report

Report No.	Version	Description	Issued Date
FA720610-10	01	Initial issue of report	Jul. 10, 2018

1. Statement of Compliance

The maximum results of Specific Absorption Rate (SAR) found during testing for MiTAC Digital Technology Corporation, Tablet, N536B, are as follows.

Equipment Class	Frequency Band	Highest SAR Summary				Highest Simultaneous Transmission 1g SAR (W/kg)
		Head (Separation 0mm)	Body-worn (Separation 10mm)	Hotspot (Separation 10mm)	Product Specific (Separation 0mm)	
		1g SAR (W/kg)			10g SAR (W/kg)	
Licensed	WCDMA II	0.63	0.92	0.92		1.58
	WCDMA V	0.46	0.55	0.55		
	LTE Band 2	0.56	0.90	0.90		
	LTE Band 4	0.33	0.78	0.78		
	LTE Band 5	0.35	0.31	0.31		
	LTE Band 12	0.26	0.35	0.35		
DTS	2.4GHz WLAN	0.51	0.98	0.98		1.53
NII	5GHz WLAN	1.12	0.80	0.76	0.92	1.58
DSS	Bluetooth	0.01	0.05	0.05		0.97
Date of Testing:		2018/4/13 ~ 2018/6/3				

Sporton Lab is accredited to ISO 17025 by Taiwan Accreditation Foundation (TAF code: 1190) and the FCC designation No. TW1190 under the FCC 2.948(e) by Mutual Recognition Agreement (MRA) in FCC test.This device is in compliance with Specific Absorption Rate (SAR) for general population/uncontrolled exposure limits (1.6 W/kg for Partial-Body 1g SAR, 4.0 W/kg for Product Specific 10g SAR) 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 1528-2013 and FCC KDB publications

Reviewed by: Eric Huang
Report Producer: Daisy Peng

2. Guidance Applied

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 1528-2013
- FCC KDB 865664 D01 SAR Measurement 100 MHz to 6 GHz v01r04
- FCC KDB 865664 D02 SAR Reporting v01r02
- FCC KDB 447498 D01 General RF Exposure Guidance v06
- FCC KDB 648474 D04 SAR Evaluation Considerations for Wireless Handsets v01r03
- FCC KDB 248227 D01 802.11 Wi-Fi SAR v02r02
- FCC KDB 941225 D01 3G SAR Procedures v03r01
- FCC KDB 941225 D05 SAR for LTE Devices v02r05
- FCC KDB 941225 D06 Hotspot Mode SAR v02r01
- FCC KDB 941225 D07 UMPC Mini Tablet v01r02

3. Equipment Under Test (EUT) Information

3.1 General Information

Product Feature & Specification	
Equipment Name	Tablet
Brand Name	Mitac, Magellan
Model Name	N536B
FCC ID	P4Q-N536B
Wireless Technology and Frequency Range	WCDMA Band II: 1852.4 MHz ~ 1907.6 MHz WCDMA Band V: 826.4 MHz ~ 846.6 MHz LTE Band 2: 1850.7 MHz ~ 1909.3 MHz LTE Band 4: 1710.7 MHz ~ 1754.3 MHz LTE Band 5: 824.7 MHz ~ 848.3 MHz LTE Band 12: 699.7 MHz ~ 715.3 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	RMC/AMR 12.2Kbps HSDPA HSUPA LTE: QPSK, 16QAM WLAN 2.4GHz : 802.11b/g/n HT20 WLAN 5GHz : 802.11a/n HT20/HT40 Bluetooth BR/EDR/LE NFC:ASK
EUT Stage	Production Unit
Remark: 1. WLAN and Bluetooth share the same antenna, but cannot transmit simultaneously. 2. This device has two kinds of sample; the detail comparison as following table, RF exposure evaluation is selected SKU3 as the main tested and SKU4 spot check worst case found in SKU3.	

Sample List		
SKU	**SKU3**	**SKU4**
Model Name	N536B	N536B
WLAN	Support	Support
WWAN	Support(with voice)	Support(with voice)
RFID(13.56MHz)	Support	Support
Barcode	Support(SR)	Support(MR)
GPS	Support	Support

3.2 General LTE SAR Test and Reporting Considerations

Summarized necessary items addressed in KDB 941225 D05 v02r05	
FCC ID	P4Q-N536B
Equipment Name	Tablet
Operating Frequency Range of each LTE transmission band	LTE Band 2: 1850.7 MHz ~ 1909.3 MHz LTE Band 4: 1710.7 MHz ~ 1754.3 MHz LTE Band 5: 824.7 MHz ~ 848.3 MHz LTE Band 12: 699.7 MHz ~ 715.3 MHz
Channel Bandwidth	LTE Band 02:1.4MHz, 3MHz, 5MHz, 10MHz, 15MHz, 20MHz LTE Band 04:1.4MHz, 3MHz, 5MHz, 10MHz, 15MHz, 20MHz LTE Band 05:1.4MHz, 3MHz, 5MHz, 10MHz LTE Band 12:1.4MHz, 3MHz, 5MHz, 10MHz
uplink modulations used	QPSK / 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 1, 2 and 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.

Modulation	Channel bandwidth / Transmission bandwidth (N_{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
64 QAM	≤ 5	≤ 4	≤ 8	≤ 12	≤ 16	≤ 18	≤ 2
64 QAM	> 5	> 4	> 8	> 12	> 16	> 18	≤ 3
256 QAM	≥ 1						≤ 5

Transmission (H, M, L) channel numbers and frequencies in each LTE band

LTE Band 2

	Bandwidth 1.4 MHz		Bandwidth 3 MHz		Bandwidth 5 MHz		Bandwidth 10 MHz		Bandwidth 15 MHz		Bandwidth 20 MHz	
	Ch. #	Freq. (MHz)	Ch. #	Freq. (MHz)	Ch. #	Freq. (MHz)	Ch. #	Freq. (MHz)	Ch. #	Freq. (MHz)	Ch. #	Freq. (MHz)
L	18607	1850.7	18615	1851.5	18625	1852.5	18650	1855	18675	1857.5	18700	1860
M	18900	1880	18900	1880	18900	1880	18900	1880	18900	1880	18900	1880
H	19193	1909.3	19185	1908.5	19175	1907.5	19150	1905	19125	1902.5	19100	1900

LTE Band 4

	Bandwidth 1.4 MHz		Bandwidth 3 MHz		Bandwidth 5 MHz		Bandwidth 10 MHz		Bandwidth 15 MHz		Bandwidth 20 MHz	
	Ch. #	Freq. (MHz)	Ch. #	Freq. (MHz)	Ch. #	Freq. (MHz)	Ch. #	Freq. (MHz)	Ch. #	Freq. (MHz)	Ch. #	Freq. (MHz)
L	19957	1710.7	19965	1711.5	19975	1712.5	20000	1715	20025	1717.5	20050	1720
M	20175	1732.5	20175	1732.5	20175	1732.5	20175	1732.5	20175	1732.5	20175	1732.5
H	20393	1754.3	20385	1753.5	20375	1752.5	20350	1750	20325	1747.5	20300	1745

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 12

	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	23017	699.7	23025	700.5	23035	701.5	23060	704
M	23095	707.5	23095	707.5	23095	707.5	23095	707.5
H	23173	715.3	23165	714.5	23155	713.5	23130	711

4. RF Exposure Limits

4.1 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.

4.2 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.

5. Specific Absorption Rate (SAR)

5.1 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.

5.2 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:

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

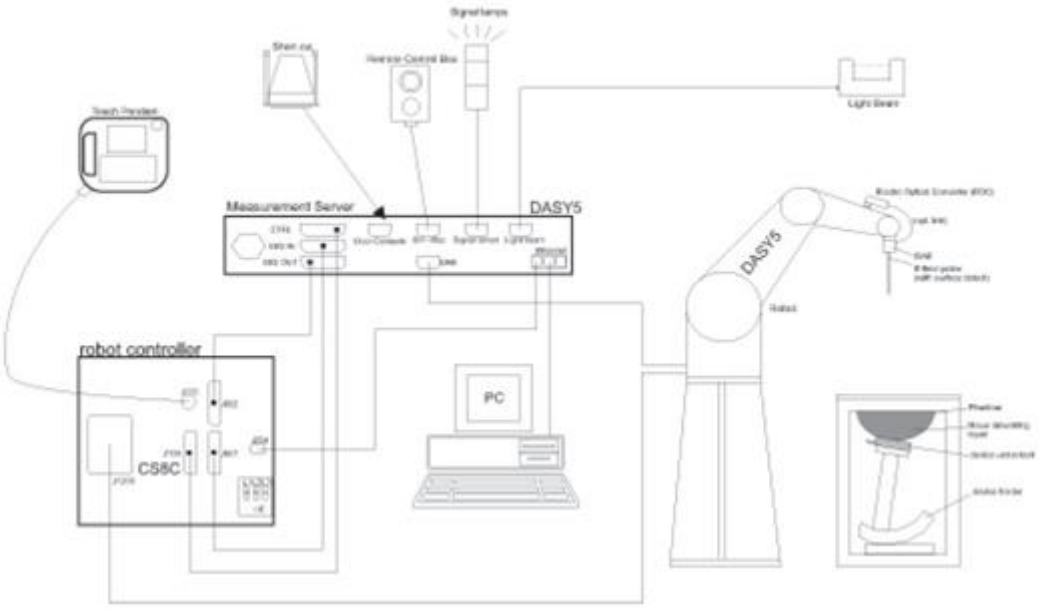
SAR is expressed in units of Watts per kilogram (W/kg)

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

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

6. 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.

6.1 E-Field Probe

The SAR measurement is conducted with the dosimetric probe (manufactured by SPEAG).The probe is specially designed and calibrated for use in liquid with high permittivity. The dosimetric probe has special calibration in liquid at different frequency. This probe has a built in optical surface detection system to prevent from collision with phantom.

<ES3DV3 Probe>

Construction	Symmetric design with triangular core Interleaved sensors Built-in shielding against static charges PEEK enclosure material (resistant to organic solvents, e.g., DGBE)	
Frequency	10 MHz – 4 GHz; Linearity: ±0.2 dB (30 MHz – 4 GHz)	
Directivity	±0.2 dB in TSL (rotation around probe axis) ±0.3 dB in TSL (rotation normal to probe axis)	
Dynamic Range	5 µW/g – >100 mW/g; Linearity: ±0.2 dB	
Dimensions	Overall length: 337 mm (tip: 20 mm) Tip diameter: 3.9 mm (body: 12 mm) Distance from probe tip to dipole centers: 3.0 mm	

<EX3DV4 Probe>

Construction	Symmetric design with triangular core Built-in shielding against static charges PEEK enclosure material (resistant to organic solvents, e.g., DGBE)	
Frequency	10 MHz – >6 GHz Linearity: ±0.2 dB (30 MHz – 6 GHz)	
Directivity	±0.3 dB in TSL (rotation around probe axis) ±0.5 dB in TSL (rotation normal to probe axis)	
Dynamic Range	10 µW/g – >100 mW/g Linearity: ±0.2 dB (noise: typically <1 µW/g)	
Dimensions	Overall length: 337 mm (tip: 20 mm) Tip diameter: 2.5 mm (body: 12 mm) Typical distance from probe tip to dipole centers: 1 mm	

6.2 Data Acquisition Electronics (DAE)

The data acquisition electronics (DAE) consists of a highly sensitive electrometer-grade preamplifier with auto-zeroing, a channel and gain-switching multiplexer, a fast 16 bit AD-converter and a command decoder and control logic unit. Transmission to the measurement server is accomplished through an optical downlink for data and status information as well as an optical uplink for commands and the clock.

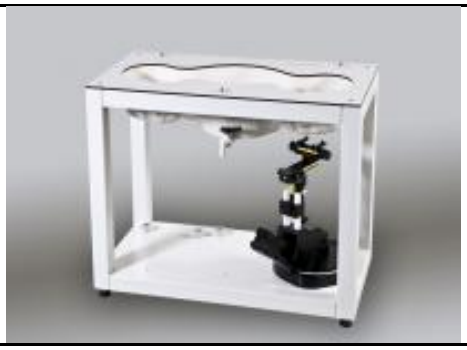
The input impedance of the DAE is 200 MOhm; the inputs are symmetrical and floating. Common mode rejection is above 80 dB.

Fig 5.1 Photo of DAE

6.3 Phantom

<SAM Twin Phantom>

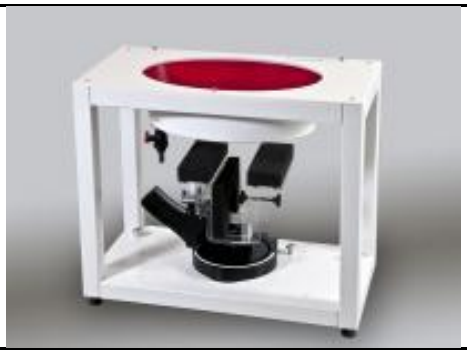
Shell Thickness	2 ± 0.2 mm; Center ear point: 6 ± 0.2 mm
Filling Volume	Approx. 25 liters
Dimensions	Length: 1000 mm; Width: 500 mm; Height: adjustable feet
Measurement Areas	Left Hand, Right Hand, Flat Phantom



The bottom plate contains three pair of bolts for locking the device holder. The device holder positions are adjusted to the standard measurement positions in the three sections. A white cover is provided to tap the phantom during off-periods to prevent water evaporation and changes in the liquid parameters. On the phantom top, three reference markers are provided to identify the phantom position with respect to the robot.

<ELI Phantom>

Shell Thickness	2 ± 0.2 mm (sagging: <1%)
Filling Volume	Approx. 30 liters
Dimensions	Major ellipse axis: 600 mm Minor axis: 400 mm



The ELI phantom is intended for compliance testing of handheld and body-mounted wireless devices in the frequency range of 30 MHz to 6 GHz. ELI4 is fully compatible with standard and all known tissue simulating liquids.

6.4 Device Holder

<Mounting Device for Hand-Held Transmitter>

In combination with the Twin SAM V5.0/V5.0c or ELI phantoms, the Mounting Device for Hand-Held Transmitters enables rotation of the mounted transmitter device to specified spherical coordinates. At the heads, the rotation axis is at the ear opening. Transmitter devices can be easily and accurately positioned according to IEC 62209-1, IEEE 1528, FCC, or other specifications. The device holder can be locked for positioning at different phantom sections (left head, right head, flat). And upgrade kit to Mounting Device to enable easy mounting of wider devices like big smart-phones, e-books, small tablets, etc. It holds devices with width up to 140 mm.

Mounting Device for Hand-Held Transmitters

Mounting Device Adaptor for Wide-Phones

<Mounting Device for Laptops and other Body-Worn Transmitters>

The extension is lightweight and made of POM, acrylic glass and foam. It fits easily on the upper part of the mounting device in place of the phone positioned. The extension is fully compatible with the SAM Twin and ELI phantoms.

Mounting Device for Laptops

7. 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

7.1 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

7.2 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.

7.3 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 D01v01r04 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.	

7.4 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 D01v01r04 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.

7.5 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.

7.6 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.

8. Test Equipment List

Manufacturer	Name of Equipment	Type/Model	Serial Number	Calibration	
				Last Cal.	Due Date
SPEAG	750MHz System Validation Kit	D750V3	1012	May. 22, 2017	May. 21, 2018
SPEAG	835MHz System Validation Kit	D835V2	4d167	Feb. 27, 2018	Feb. 26, 2019
SPEAG	1750MHz System Validation Kit	D1750V2	1068	Nov. 15, 2017	Nov. 14, 2018
SPEAG	1900MHz System Validation Kit	D1900V2	5d041	Sep. 28, 2017	Sep. 27, 2018
SPEAG	2450MHz System Validation Kit	D2450V2	736	Sep. 18, 2017	Sep. 17, 2018
SPEAG	5GHz System Validation Kit	D5GHzV2	1006	Sep. 26, 2017	Sep. 25, 2018
SPEAG	Data Acquisition Electronics	DAE4	1424	Jan. 18, 2018	Jan. 17, 2019
SPEAG	Data Acquisition Electronics	DAE3	495	May. 22, 2017	May. 21, 2018
SPEAG	Data Acquisition Electronics	DAE4	1399	Nov. 16, 2017	Nov. 15, 2018
SPEAG	Data Acquisition Electronics	DAE4	778	May. 22, 2017	May. 21, 2018
SPEAG	Data Acquisition Electronics	DAE4	1338	Dec. 04, 2017	Dec. 03, 2018
SPEAG	Dosimetric E-Field Probe	EX3DV4	3976	Jan. 23, 2018	Jan. 22, 2019
SPEAG	Dosimetric E-Field Probe	ES3DV3	3270	Sep. 25, 2017	Sep. 24, 2018
SPEAG	Dosimetric E-Field Probe	ES3DV3	3071	Dec. 18, 2017	Dec. 17, 2019
SPEAG	Dosimetric E-Field Probe	EX3DV4	7346	Feb. 28, 2018	Feb. 27, 2019
Gencom	Thermometer	TE1	TM685-1	Mar. 16, 2018	Mar. 15, 2019
Gencom	Thermometer	TE1	TM685-2	Mar. 16, 2018	Mar. 15, 2019
WonDer	Thermometer	WD-5016	TM642-1	Mar. 16, 2018	Mar. 15, 2019
WonDer	Thermometer	WD-5016	TM642-2	Mar. 16, 2018	Mar. 15, 2019
Anritsu	Radio Communication Analyzer	MT8820C	6201074414	Apr. 02, 2018	Apr. 01, 2019
Agilent	Wireless Communication Test Set	E5515C	MY48360820	Jan. 15, 2018	Jan. 14, 2020
R&S	BT Base Station	CBT	100815	Feb. 05, 2018	Feb. 04, 2019
SPEAG	Device Holder	N/A	N/A	N/A	N/A
Anritsu	Signal Generator	MG3710A	6201502524	Dec. 07, 2017	Dec. 06, 2018
Agilent	ENA Network Analyzer	E5071C	MY46316648	Jan. 17, 2018	Jan. 16, 2019
SPEAG	Dielectric Probe Kit	DAK-3.5	1126	Sep. 26, 2017	Sep. 25, 2018
LINE SEIKI	Digital Thermometer	LKMelectronic	DTM3000SPEZIAL	Sep. 06, 2017	Sep. 05, 2018
Anritsu	Power Meter	ML2495A	932001	Sep. 26, 2017	Sep. 25, 2018
Anritsu	Power Sensor	MA2411B	846202	Sep. 26, 2017	Sep. 25, 2018
Anritsu	Power Meter	ML2495A	1218006	Oct. 06, 2017	Oct. 05, 2018
Anritsu	Power Sensor	MA2411B	1207363	Oct. 06, 2017	Oct. 05, 2018
Agilent	Spectrum Analyzer	E4408B	MY44211028	Aug. 23, 2017	Aug. 22, 2018
Anritsu	Spectrum Analyzer	MS2830A	6201396378	Jun. 26, 2017	Jun. 25, 2018
Mini-Circuits	Power Amplifier	ZVE-8G+	D120604	Mar. 12, 2018	Mar. 11, 2019
Mini-Circuits	Power Amplifier	ZHL-42W+	QA1344002	Mar. 12, 2018	Mar. 11, 2019
ATM	Dual Directional Coupler	C122H-10	P610410z-02	Note 1	
Woken	Attenuator 1	WK0602-XX	N/A	Note 1	
PE	Attenuator 2	PE7005-10	N/A	Note 1	
PE	Attenuator 3	PE7005- 3	N/A	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.

9. System Verification

9.1 Tissue Simulating Liquids

For the measurement of the field distribution inside the SAM phantom with DASY, the phantom must be filled with around 25 liters of homogeneous body tissue simulating liquid. For head SAR testing, the liquid height from the ear reference point (ERP) of the phantom to the liquid top surface is larger than 15 cm, which is shown in Fig. 10.1. For body SAR testing, the liquid height from the center of the flat phantom to the liquid top surface is larger than 15 cm, which is shown in Fig. 10.2.

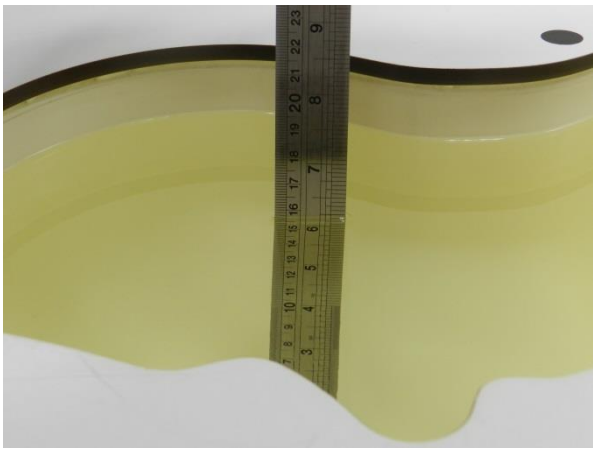


Fig 10.1Photo of Liquid Height for Head SAR

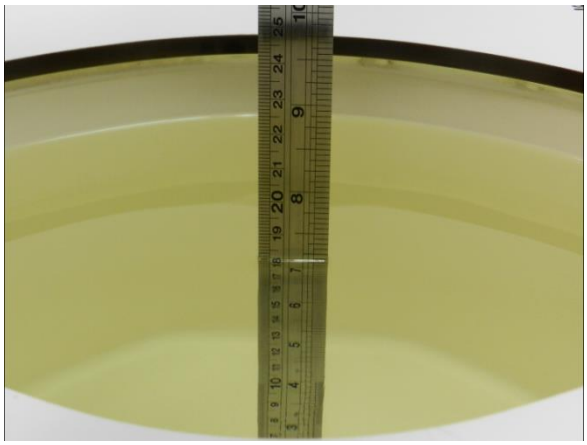


Fig 10.2 Photo of Liquid Height for Body SAR

9.2 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
750	HSL	22.3	0.895	42.937	0.89	41.90	0.56	2.47	±5	2018/4/17
750	MSL	22.5	0.973	54.256	0.96	55.50	1.35	-2.24	±5	2018/4/16
835	HSL	22.3	0.894	41.435	0.90	41.50	-0.67	-0.16	±5	2018/4/17
835	MSL	22.5	0.937	56.065	0.97	55.20	-3.40	1.57	±5	2018/4/16
1750	HSL	22.7	1.351	39.511	1.37	40.10	-1.39	-1.47	±5	2018/4/16
1750	MSL	22.5	1.441	55.010	1.49	53.40	-3.29	3.01	±5	2018/4/13
1900	HSL	22.7	1.413	40.769	1.40	40.00	0.93	1.92	±5	2018/4/16
1900	MSL	22.4	1.555	55.299	1.52	53.30	2.30	3.75	±5	2018/4/13
2450	HSL	22.2	1.811	39.800	1.80	39.20	0.61	1.53	±5	2018/6/2
2450	HSL	22.5	1.777	40.325	1.80	39.20	-1.28	2.87	±5	2018/6/3
2450	MSL	22.5	1.986	54.777	1.95	52.70	1.85	3.94	±5	2018/6/3
5250	HSL	22.6	4.577	36.912	4.71	35.95	-2.82	2.68	±5	2018/5/31
5250	MSL	22.7	5.303	47.436	5.36	48.95	-1.06	-3.09	±5	2018/6/2
5600	HSL	22.6	4.934	36.412	5.07	35.50	-2.68	2.57	±5	2018/5/31
5600	MSL	22.7	5.744	46.845	5.77	48.50	-0.45	-3.41	±5	2018/6/2
5750	HSL	22.6	5.093	36.204	5.22	35.35	-2.43	2.42	±5	2018/5/31
5750	MSL	22.7	5.944	46.578	5.94	48.28	0.07	-3.53	±5	2018/6/2

9.3 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.

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 (%)
2018/4/17	750	HSL	250	D750V3-1012	ES3DV3 - SN3270	DAE4 Sn778	2.07	8.22	8.28	0.73
2018/4/16	750	MSL	250	D750V3-1012	ES3DV3 - SN3270	DAE4 Sn778	2.21	8.71	8.84	1.49
2018/4/17	835	HSL	250	D835V2-4d167	ES3DV3 - SN3270	DAE4 Sn778	2.31	9.26	9.24	-0.22
2018/4/16	835	MSL	250	D835V2-4d167	ES3DV3 - SN3270	DAE4 Sn778	2.41	9.62	9.64	0.21
2018/4/16	1750	HSL	250	D1750V2-1068	ES3DV3 - SN3270	DAE4 Sn778	8.96	36.70	35.84	-2.34
2018/4/13	1750	MSL	250	D1750V2-1068	EX3DV4 - SN3976	DAE3 Sn495	9.55	37.20	38.20	2.69
2018/4/16	1900	HSL	250	D1900V2-5d041	ES3DV3 - SN3270	DAE4 Sn778	9.73	40.50	38.92	-3.90
2018/4/13	1900	MSL	250	D1900V2-5d041	EX3DV4 - SN3976	DAE3 Sn495	10.40	40.70	41.60	2.21
2018/6/2	2450	HSL	250	D2450V2-736	ES3DV3 - SN3071	DAE4 Sn1424	13.60	52.40	54.40	3.82
2018/6/3	2450	HSL	250	D2450V2-736	EX3DV4 - SN3976	DAE4 Sn1338	12.50	52.40	50.00	-4.58
2018/6/3	2450	MSL	250	D2450V2-736	EX3DV4 - SN7346	DAE4 Sn1399	13.30	50.80	53.20	4.72
2018/5/31	5250	HSL	100	D5GHzV2-1006-5250	EX3DV4 - SN7346	DAE4 Sn1399	7.79	78.30	77.90	-0.51
2018/6/2	5250	MSL	100	D5GHzV2-1006-5250	EX3DV4 - SN7346	DAE4 Sn1399	7.29	77.00	72.90	-5.32
2018/5/31	5600	HSL	100	D5GHzV2-1006-5600	EX3DV4 - SN7346	DAE4 Sn1399	8.23	85.00	82.30	-3.18
2018/6/2	5600	MSL	100	D5GHzV2-1006-5600	EX3DV4 - SN7346	DAE4 Sn1399	7.74	80.10	77.40	-3.37
2018/5/31	5750	HSL	100	D5GHzV2-1006-5750	EX3DV4 - SN7346	DAE4 Sn1399	8.05	78.50	80.50	2.55
2018/6/2	5750	MSL	100	D5GHzV2-1006-5750	EX3DV4 - SN7346	DAE4 Sn1399	7.02	75.10	70.20	-6.52

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 (%)
2018/6/2	5250	MSL	100	D5GHzV2-1006-5250	EX3DV4 - SN7346	DAE4 Sn1399	1.99	21.30	19.9	-6.57
2018/6/2	5600	MSL	100	D5GHzV2-1006-5600	EX3DV4 - SN7346	DAE4 Sn1399	2.12	22.40	21.2	-5.36

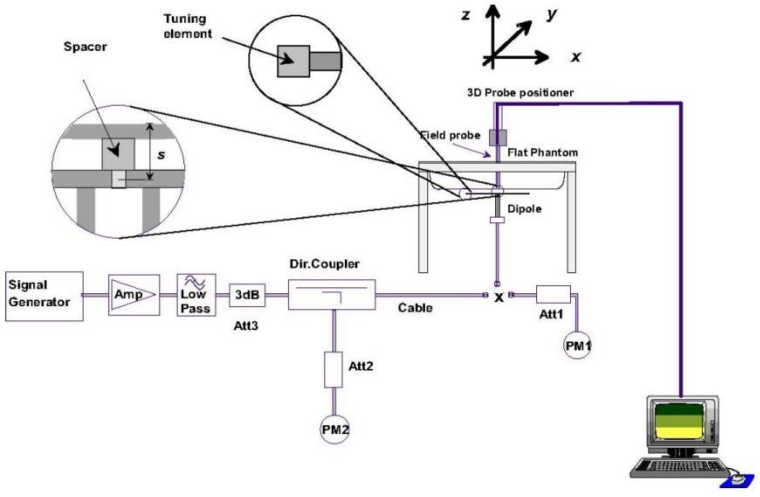


Fig 8.3.1 System Performance Check Setup

Fig 8.3.2 Setup Photo

10. RF Exposure Positions

10.1 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.

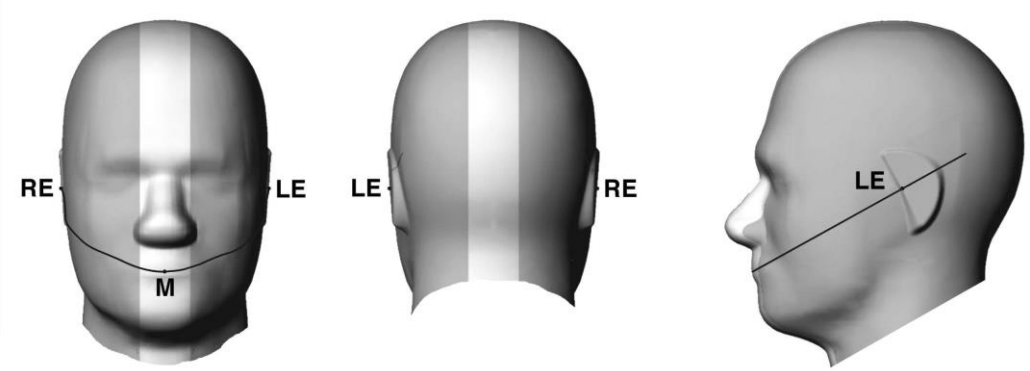


Fig 9.1.1 Front, back, and side views of SAM twin phantom

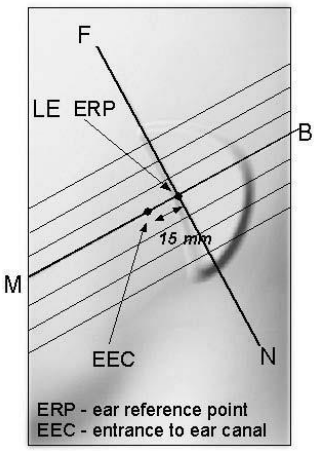


Fig 9.1.2 Close-up side view of phantom showing the ear region.

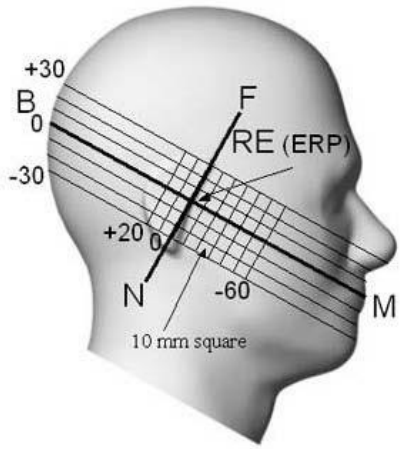


Fig 9.1.3 Side view of the phantom showing relevant markings and seven cross-sectional plane locations

10.2 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.

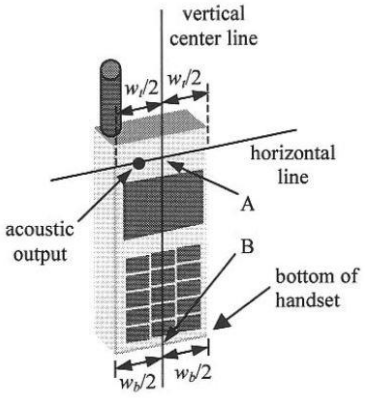


Fig 9.2.1 Handset vertical and horizontal reference lines—"fixed case

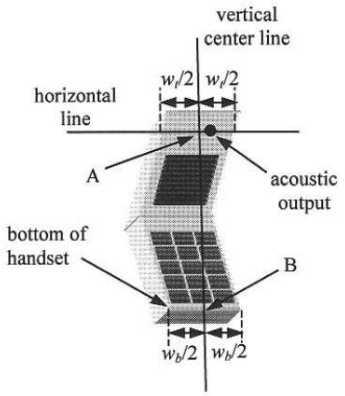


Fig 9.2.2 Handset vertical and horizontal reference lines—"clam-shell case"

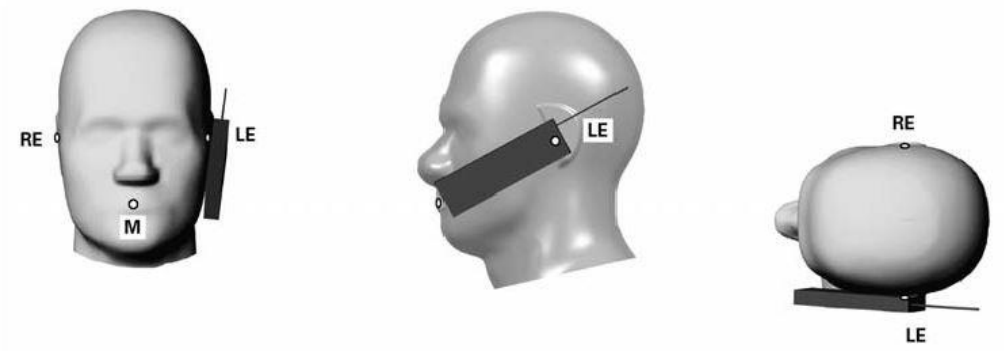


Fig 9.2.3 cheek or touch position. The reference points for the right ear (RE), left ear (LE), and mouth (M), which establish the Reference Plane for handset positioning, are indicated.

10.3 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

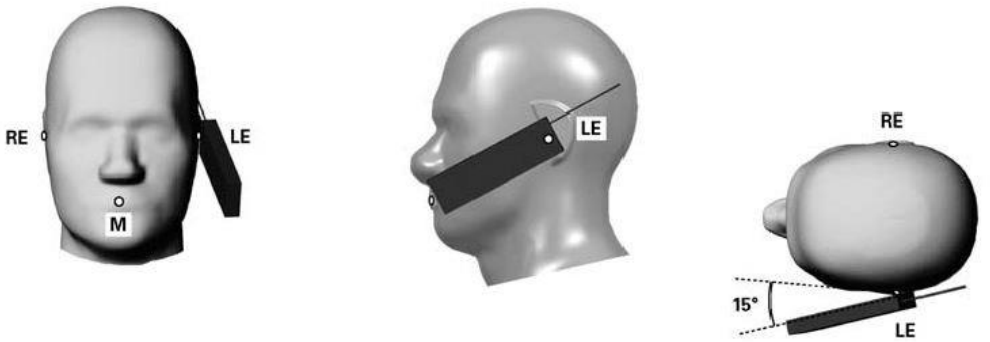


Fig 9.3.1 Tilt position. The reference points for the right ear (RE), left ear (LE), and mouth (M), which define the Reference Plane for handset positioning, are indicated.

10.4 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 KDB648474 D04v01r03, 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 D01v06 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.

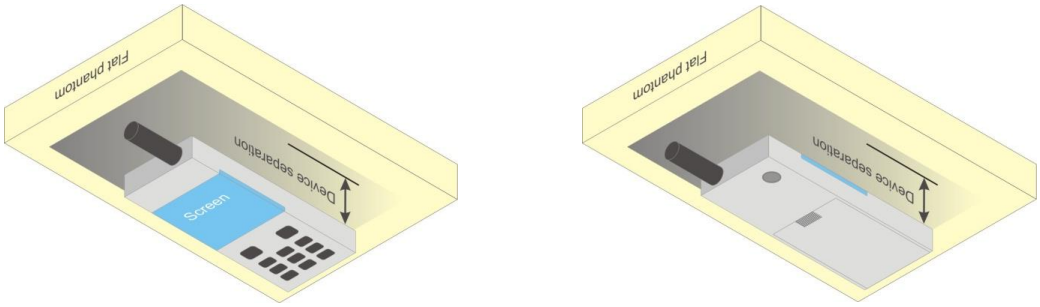


Fig 9.4 Body Worn Position

10.5 Product Specific

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, According to KDB648474 D04v01r03, the following phablet procedures should be applied to evaluate SAR compliance for each applicable wireless modes and frequency band. Devices marketed as phablets, regardless of form factors and operating characteristics must be tested as a phablet to determine SAR compliance

1. The normally required head and body-worn accessory SAR test procedures for handsets, including hotspot mode, must be applied.

2. 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.

10.6 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 KDB Publication 941225 D06 v02r01 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 D01v06 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. Conducted RF Output Power (Unit: dBm)

<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 D01v03r01 are applied for 3GPP Rel. 6 HSPA to configure the device in the required sub-test mode(s) to determine SAR test exclusion.

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 4) (Note 5)	β_{ed} (SF)	β_{ed} (Codes)	CM (dB) (Note 2)	MPR (dB) (Note 2) (Note 6)	AG Index (Note 5)	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	$\beta_{ed}1$: 47/15 $\beta_{ed}2$: 47/15	4 4	2	2.0	1.0	15	92
4	2/15	15/15	64	2/15	4/15	2/15	56/75	4	1	3.0	2.0	17	71
5	15/15	0	-	-	5/15	5/15	47/15	4	1	1.0	0.0	12	67

Note 1: For sub-test 1 to 4, Δ_{ACK}, Δ_{NACK} and Δ_{CQI} = 30/15 with β_{hs} = 30/15 * β_c. For sub-test 5, Δ_{ACK}, Δ_{NACK} and Δ_{CQI} = 5/15 with β_{hs} = 5/15 * 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: 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 5: β_{ed} can not be set directly; it is set by Absolute Grant Value.

Note 6: For subtests 2, 3 and 4, UE may perform E-DPDCH power scaling at max power which could results in slightly smaller MPR values.

Setup Configuration

<WCDMA Conducted Power>

General Note:

1. Per KDB 941225 D01v03r01, for SAR testing is measured using a 12.2 kbps RMC with TPC bits configured to all "1's".
2. Per KDB 941225 D01v03r01, RMC 12.2kbps setting is used to evaluate SAR. The maximum output power and tune-up tolerance specified for production units in HSDPA / HSUPA / DC-HSDPA is ≤ ¼ dB higher than RMC 12.2Kbps or when the highest reported SAR of the RMC12.2Kbps is scaled by the ratio of specified maximum output power and tune-up tolerance of HSDPA / HSUPA / DC-HSDPA to RMC12.2Kbps and the adjusted SAR is ≤ 1.2 W/kg, SAR measurement is not required for HSDPA / HSUPA / DC-HSDPA, and according to the following RF output power, the output power results of the secondary modes (HSUPA, HSDPA, DC-HSDPA) are less than ¼ dB higher than the primary modes; therefore, SAR measurement is not required for HSDPA / HSUPA / DC-HSDPA.

Band		WCDMA II			Tune-up Limit (dBm)	WCDMA V			Tune-up Limit (dBm)
TX Channel		9262	9400	9538		4132	4182	4233	
Rx Channel		9662	9800	9938		4357	4407	4458	
Frequency (MHz)		1852.4	1880	1907.6		826.4	836.4	846.6	
3GPP Rel 99	AMR 12.2Kbps	22.82	22.92	22.81	24.00	22.84	22.80	22.93	24.00
3GPP Rel 99	RMC 12.2Kbps	22.84	22.99	22.83	24.00	22.87	22.82	22.95	24.00
3GPP Rel 6	HSDPA Subtest-1	22.88	22.98	22.92	24.00	22.94	22.83	22.92	24.00
3GPP Rel 6	HSDPA Subtest-2	22.95	22.97	22.94	24.00	22.91	22.86	22.94	24.00
3GPP Rel 6	HSDPA Subtest-3	22.42	22.48	22.43	23.50	22.43	22.36	22.49	23.50
3GPP Rel 6	HSDPA Subtest-4	22.18	22.28	22.11	23.50	22.18	22.12	22.32	23.50
3GPP Rel 6	HSUPA Subtest-1	22.37	22.49	22.43	24.00	22.50	22.49	22.55	24.00
3GPP Rel 6	HSUPA Subtest-2	20.68	20.77	20.61	22.00	20.75	20.65	20.79	22.00
3GPP Rel 6	HSUPA Subtest-3	21.70	21.79	21.71	23.00	21.74	21.70	21.76	23.00
3GPP Rel 6	HSUPA Subtest-4	20.89	21.00	20.88	22.00	20.97	20.93	20.95	22.00
3GPP Rel 6	HSUPA Subtest-5	22.96	22.95	22.90	24.00	22.90	22.90	22.93	24.00

<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 D05v02r05, 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 D05v02r05, 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 D05v02r05, 50% RB allocation for QPSK SAR testing follows 1RB QPSK allocation procedure.
5. Per KDB 941225 D05v02r05, 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 D05v02r05, 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 D05v02r05, 16QAM SAR testing is not required.
7. Per KDB 941225 D05v02r05, 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 D05v02r05, smaller bandwidth SAR testing is not required.
8. For LTE B4 / B5 / B12 the maximum bandwidth does not support three non-overlapping channels, per KDB 941225 D05v02r05, when a device supports overlapping channel assignment in a channel bandwidth configuration, the middle channel of the group of overlapping channels should be selected for testing.

<LTE Band 2>

BW [MHz]	Modulation	RB Size	RB Offset	Power Low Ch. / Freq.	Power Middle Ch. / Freq.	Power High Ch. / Freq.	Tune-up limit (dBm)
Channel				18700	18900	19100	
Frequency (MHz)				1860	1880	1900	
20	QPSK	1	0	22.27	22.28	22.35	23
20	QPSK	1	49	22.06	22.07	22.13	
20	QPSK	1	99	21.90	21.98	21.89	
20	QPSK	50	0	21.19	21.20	21.41	22
20	QPSK	50	24	20.99	21.02	21.17	
20	QPSK	50	50	20.92	20.96	20.94	
20	QPSK	100	0	21.10	21.16	21.18	
20	16QAM	1	0	21.20	21.47	21.48	22
20	16QAM	1	49	21.18	21.18	21.34	
20	16QAM	1	99	21.03	21.13	20.98	
20	16QAM	50	0	20.26	20.27	20.44	21
20	16QAM	50	24	20.05	20.13	20.24	
20	16QAM	50	50	19.95	20.07	19.99	
20	16QAM	100	0	20.14	20.21	20.24	
Channel				18675	18900	19125	Tune-up limit (dBm)
Frequency (MHz)				1857.5	1880	1902.5	
15	QPSK	1	0	22.21	22.32	22.33	23
15	QPSK	1	37	21.97	22.00	22.05	
15	QPSK	1	74	21.87	22.01	21.98	
15	QPSK	36	0	21.22	21.25	21.48	22
15	QPSK	36	20	21.00	21.14	21.18	
15	QPSK	36	39	20.99	21.09	21.14	
15	QPSK	75	0	21.08	21.21	21.29	
15	16QAM	1	0	21.60	21.71	21.72	22
15	16QAM	1	37	21.28	21.24	21.39	
15	16QAM	1	74	21.25	21.22	21.27	
15	16QAM	36	0	20.30	20.31	20.54	21
15	16QAM	36	20	20.05	20.17	20.18	
15	16QAM	36	39	20.06	20.15	20.13	
15	16QAM	75	0	20.14	20.28	20.26	
Channel				18650	18900	19150	Tune-up limit (dBm)
Frequency (MHz)				1855	1880	1905	
10	QPSK	1	0	22.24	22.13	22.31	23
10	QPSK	1	25	21.97	22.03	21.93	
10	QPSK	1	49	22.00	21.92	21.85	
10	QPSK	25	0	21.11	21.05	21.26	22
10	QPSK	25	12	21.02	21.04	21.07	
10	QPSK	25	25	20.98	21.03	21.03	
10	QPSK	50	0	21.09	21.09	21.08	
10	16QAM	1	0	21.53	21.45	21.71	22
10	16QAM	1	25	21.25	21.31	21.32	
10	16QAM	1	49	21.32	21.25	21.26	
10	16QAM	25	0	20.21	20.18	20.28	21
10	16QAM	25	12	20.11	20.13	20.07	
10	16QAM	25	25	20.06	20.15	20.05	
10	16QAM	50	0	20.17	20.21	20.10	

Channel				18625	18900	19175	Tune-up limit (dBm)
Frequency (MHz)				1852.5	1880	1907.5	
5	QPSK	1	0	22.09	21.97	22.11	23
5	QPSK	1	12	21.94	22.06	22.07	
5	QPSK	1	24	21.90	22.00	21.89	
5	QPSK	12	0	21.06	21.08	21.16	22
5	QPSK	12	7	20.96	21.10	21.07	
5	QPSK	12	13	21.00	21.08	21.02	
5	QPSK	25	0	20.96	21.10	21.07	
5	16QAM	1	0	21.37	21.27	21.41	22
5	16QAM	1	12	21.28	21.31	21.35	
5	16QAM	1	24	21.23	21.32	21.14	
5	16QAM	12	0	20.18	20.19	20.20	21
5	16QAM	12	7	20.10	20.26	20.22	
5	16QAM	12	13	20.09	20.19	20.14	
5	16QAM	25	0	20.04	20.20	20.18	
Channel				18615	18900	19185	Tune-up limit (dBm)
Frequency (MHz)				1851.5	1880	1908.5	
3	QPSK	1	0	22.04	22.00	22.05	23
3	QPSK	1	8	21.97	22.01	22.02	
3	QPSK	1	14	21.94	22.01	22.00	
3	QPSK	8	0	21.10	21.04	21.15	22
3	QPSK	8	4	21.06	21.09	21.10	
3	QPSK	8	7	21.02	21.08	21.04	
3	QPSK	15	0	21.06	21.10	21.08	
3	16QAM	1	0	21.36	21.27	21.37	22
3	16QAM	1	8	21.28	21.32	21.31	
3	16QAM	1	14	21.20	21.27	21.28	
3	16QAM	8	0	20.20	20.18	20.26	21
3	16QAM	8	4	20.12	20.17	20.14	
3	16QAM	8	7	20.15	20.21	20.15	
3	16QAM	15	0	20.19	20.23	20.19	
Channel				18607	18900	19193	Tune-up limit (dBm)
Frequency (MHz)				1850.7	1880	1909.3	
1.4	QPSK	1	0	22.06	22.05	22.05	23
1.4	QPSK	1	3	21.99	22.03	21.97	
1.4	QPSK	1	5	22.01	22.05	22.03	
1.4	QPSK	3	0	22.11	22.10	22.08	
1.4	QPSK	3	1	22.02	22.07	22.01	
1.4	QPSK	3	3	22.03	22.12	22.11	
1.4	QPSK	6	0	20.96	21.06	20.99	22
1.4	16QAM	1	0	21.28	21.33	21.36	22
1.4	16QAM	1	3	21.32	21.41	21.34	
1.4	16QAM	1	5	21.26	21.34	21.38	
1.4	16QAM	3	0	21.09	21.19	21.15	
1.4	16QAM	3	1	21.09	21.16	21.17	
1.4	16QAM	3	3	21.05	21.17	21.16	
1.4	16QAM	6	0	20.18	20.24	20.19	21

<LTE Band 4>

BW [MHz]	Modulation	RB Size	RB Offset	Power Low Ch. / Freq.	Power Middle Ch. / Freq.	Power High Ch. / Freq.	Tune-up limit (dBm)
Channel				20050	20175	20300	
Frequency (MHz)				1720	1732.5	1745	
20	QPSK	1	0	22.61	22.71	22.57	23
20	QPSK	1	49	22.23	22.28	22.41	
20	QPSK	1	99	22.24	22.33	22.31	
20	QPSK	50	0	21.52	21.59	21.54	22
20	QPSK	50	24	21.26	21.29	21.46	
20	QPSK	50	50	21.20	21.21	21.48	
20	QPSK	100	0	21.33	21.47	21.42	
20	16QAM	1	0	21.90	21.85	21.83	22
20	16QAM	1	49	21.53	21.53	21.74	
20	16QAM	1	99	21.41	21.48	21.44	
20	16QAM	50	0	20.57	20.49	20.65	21
20	16QAM	50	24	20.30	20.34	20.49	
20	16QAM	50	50	20.23	20.25	20.52	
20	16QAM	100	0	20.33	20.39	20.51	
Channel				20025	20175	20325	Tune-up limit (dBm)
Frequency (MHz)				1717.5	1732.5	1747.5	
15	QPSK	1	0	22.67	22.70	22.69	23
15	QPSK	1	37	22.35	22.38	22.55	
15	QPSK	1	74	22.24	22.29	22.43	
15	QPSK	36	0	21.63	21.49	21.70	22
15	QPSK	36	20	21.36	21.37	21.56	
15	QPSK	36	39	21.33	21.32	21.56	
15	QPSK	75	0	21.43	21.44	21.62	
15	16QAM	1	0	21.87	21.96	21.99	22
15	16QAM	1	37	21.69	21.70	21.82	
15	16QAM	1	74	21.57	21.62	21.67	
15	16QAM	36	0	20.66	20.54	20.75	21
15	16QAM	36	20	20.38	20.38	20.59	
15	16QAM	36	39	20.33	20.33	20.59	
15	16QAM	75	0	20.41	20.45	20.64	
Channel				20000	20175	20350	Tune-up limit (dBm)
Frequency (MHz)				1715	1732.5	1750	
10	QPSK	1	0	22.69	22.44	22.66	23
10	QPSK	1	25	22.40	22.34	22.61	
10	QPSK	1	49	22.26	22.24	22.42	
10	QPSK	25	0	21.54	21.38	21.63	22
10	QPSK	25	12	21.40	21.35	21.60	
10	QPSK	25	25	21.31	21.34	21.46	
10	QPSK	50	0	21.41	21.39	21.61	
10	16QAM	1	0	21.97	21.80	21.96	22
10	16QAM	1	25	21.66	21.68	21.92	
10	16QAM	1	49	21.48	21.48	21.69	
10	16QAM	25	0	20.60	20.44	20.71	21
10	16QAM	25	12	20.44	20.41	20.68	
10	16QAM	25	25	20.35	20.43	20.54	
10	16QAM	50	0	20.46	20.43	20.68	

Channel				19975	20175	20375	Tune-up limit (dBm)
Frequency (MHz)				1712.5	1732.5	1752.5	
5	QPSK	1	0	22.54	22.37	22.69	23
5	QPSK	1	12	22.45	22.39	22.64	
5	QPSK	1	24	22.36	22.35	22.47	
5	QPSK	12	0	21.56	21.42	21.69	22
5	QPSK	12	7	21.45	21.35	21.58	
5	QPSK	12	13	21.42	21.42	21.53	
5	QPSK	25	0	21.45	21.39	21.57	
5	16QAM	1	0	21.82	21.75	21.98	22
5	16QAM	1	12	21.69	21.73	21.90	
5	16QAM	1	24	21.64	21.71	21.75	
5	16QAM	12	0	20.66	20.49	20.78	21
5	16QAM	12	7	20.54	20.47	20.63	
5	16QAM	12	13	20.54	20.50	20.58	
5	16QAM	25	0	20.58	20.45	20.63	
Channel				19965	20175	20385	Tune-up limit (dBm)
Frequency (MHz)				1711.5	1732.5	1753.5	
3	QPSK	1	0	22.53	22.42	22.60	23
3	QPSK	1	8	22.50	22.38	22.55	
3	QPSK	1	14	22.40	22.43	22.50	
3	QPSK	8	0	21.55	21.43	21.57	22
3	QPSK	8	4	21.56	21.42	21.55	
3	QPSK	8	7	21.54	21.43	21.53	
3	QPSK	15	0	21.54	21.41	21.55	
3	16QAM	1	0	21.84	21.72	21.81	22
3	16QAM	1	8	21.86	21.69	21.77	
3	16QAM	1	14	21.72	21.71	21.77	
3	16QAM	8	0	20.65	20.50	20.65	21
3	16QAM	8	4	20.64	20.43	20.60	
3	16QAM	8	7	20.62	20.55	20.61	
3	16QAM	15	0	20.66	20.48	20.64	
Channel				19957	20175	20393	Tune-up limit (dBm)
Frequency (MHz)				1710.7	1732.5	1754.3	
1.4	QPSK	1	0	22.51	22.42	22.59	23
1.4	QPSK	1	3	22.50	22.41	22.57	
1.4	QPSK	1	5	22.52	22.42	22.58	
1.4	QPSK	3	0	22.53	22.45	22.61	
1.4	QPSK	3	1	22.56	22.40	22.58	
1.4	QPSK	3	3	22.56	22.45	22.59	
1.4	QPSK	6	0	21.55	21.36	21.54	22
1.4	16QAM	1	0	21.82	21.72	21.86	22
1.4	16QAM	1	3	21.97	21.74	21.84	
1.4	16QAM	1	5	21.85	21.71	21.85	
1.4	16QAM	3	0	21.67	21.48	21.69	
1.4	16QAM	3	1	21.59	21.55	21.62	
1.4	16QAM	3	3	21.61	21.49	21.61	
1.4	16QAM	6	0	20.66	20.53	20.63	21

<LTE Band 5>

BW [MHz]	Modulation	RB Size	RB Offset	Power Low Ch. / Freq.	Power Middle Ch. / Freq.	Power High Ch. / Freq.	Tune-up limit (dBm)
Channel				20450	20525	20600	
Frequency (MHz)				829	836.5	844	
10	QPSK	1	0	22.08	22.18	22.12	23
10	QPSK	1	25	22.07	22.14	21.98	
10	QPSK	1	49	21.92	21.97	21.84	
10	QPSK	25	0	21.00	21.15	21.14	22
10	QPSK	25	12	21.00	21.09	20.99	
10	QPSK	25	25	21.01	21.00	20.98	
10	QPSK	50	0	21.02	21.11	20.99	
10	16QAM	1	0	21.39	21.45	21.40	22
10	16QAM	1	25	21.44	21.45	21.31	
10	16QAM	1	49	21.25	21.30	21.18	
10	16QAM	25	0	20.09	20.20	20.18	21
10	16QAM	25	12	20.06	20.13	20.02	
10	16QAM	25	25	20.06	20.04	20.01	
10	16QAM	50	0	20.09	20.13	20.04	
Channel				20425	20525	20625	Tune-up limit (dBm)
Frequency (MHz)				826.5	836.5	846.5	
5	QPSK	1	0	22.07	22.14	21.94	23
5	QPSK	1	12	22.06	22.10	22.02	
5	QPSK	1	24	21.99	22.01	21.84	
5	QPSK	12	0	21.07	21.14	21.05	22
5	QPSK	12	7	21.01	21.08	21.00	
5	QPSK	12	13	21.04	21.05	20.94	
5	QPSK	25	0	21.01	21.08	21.01	
5	16QAM	1	0	21.32	21.42	21.25	22
5	16QAM	1	12	21.34	21.49	21.33	
5	16QAM	1	24	21.27	21.34	21.12	
5	16QAM	12	0	20.08	20.19	20.09	21
5	16QAM	12	7	20.03	20.11	20.03	
5	16QAM	12	13	20.07	20.09	19.98	
5	16QAM	25	0	20.04	20.10	20.03	
Channel				20415	20525	20635	Tune-up limit (dBm)
Frequency (MHz)				825.5	836.5	847.5	
3	QPSK	1	0	22.07	22.15	22.03	23
3	QPSK	1	8	22.06	22.15	21.99	
3	QPSK	1	14	22.00	22.06	21.88	
3	QPSK	8	0	21.04	21.12	21.02	22
3	QPSK	8	4	21.01	21.09	20.98	
3	QPSK	8	7	21.01	21.07	20.97	
3	QPSK	15	0	21.03	21.10	21.01	
3	16QAM	1	0	21.31	21.42	21.32	22
3	16QAM	1	8	21.35	21.44	21.28	
3	16QAM	1	14	21.25	21.26	21.10	
3	16QAM	8	0	20.12	20.15	20.07	21
3	16QAM	8	4	20.07	20.12	20.03	
3	16QAM	8	7	20.04	20.14	20.02	
3	16QAM	15	0	20.08	20.13	20.03	

Channel				20407	20525	20643	Tune-up limit (dBm)
Frequency (MHz)				824.7	836.5	848.3	
1.4	QPSK	1	0	22.10	22.16	22.05	23
1.4	QPSK	1	3	22.06	22.16	22.03	
1.4	QPSK	1	5	22.06	22.17	21.99	
1.4	QPSK	3	0	22.05	22.15	22.04	
1.4	QPSK	3	1	22.06	22.13	22.02	
1.4	QPSK	3	3	22.04	22.14	21.97	
1.4	QPSK	6	0	21.04	21.10	20.99	22
1.4	16QAM	1	0	21.40	21.51	21.32	22
1.4	16QAM	1	3	21.46	21.55	21.34	
1.4	16QAM	1	5	21.41	21.48	21.26	
1.4	16QAM	3	0	21.12	21.21	21.07	
1.4	16QAM	3	1	21.13	21.23	21.07	
1.4	16QAM	3	3	21.11	21.17	20.98	
1.4	16QAM	6	0	20.11	20.21	20.06	21

<LTE Band 12>

BW [MHz]	Modulation	RB Size	RB Offset	Power Low Ch. / Freq.	Power Middle Ch. / Freq.	Power High Ch. / Freq.	Tune-up limit (dBm)
Channel				23060	23095	23130	
Frequency (MHz)				704	707.5	711	
10	QPSK	1	0	22.07	22.32	22.26	23
10	QPSK	1	25	22.20	22.16	22.09	
10	QPSK	1	49	21.90	22.00	22.08	
10	QPSK	25	0	21.19	21.26	21.23	22
10	QPSK	25	12	21.13	21.15	21.16	
10	QPSK	25	25	21.15	21.20	21.19	
10	QPSK	50	0	21.11	21.19	21.15	
10	16QAM	1	0	21.35	21.46	21.61	22
10	16QAM	1	25	21.51	21.48	21.36	
10	16QAM	1	49	21.19	21.26	21.40	
10	16QAM	25	0	20.20	20.26	20.27	21
10	16QAM	25	12	20.13	20.16	20.19	
10	16QAM	25	25	20.05	20.14	20.20	
10	16QAM	50	0	20.09	20.17	20.19	
Channel				23035	23095	23155	Tune-up limit (dBm)
Frequency (MHz)				701.5	707.5	713.5	
5	QPSK	1	0	22.11	22.11	22.03	23
5	QPSK	1	12	22.13	22.16	22.16	
5	QPSK	1	24	22.03	21.99	22.15	
5	QPSK	12	0	21.24	21.23	21.19	22
5	QPSK	12	7	21.17	21.15	21.23	
5	QPSK	12	13	21.12	21.11	21.09	
5	QPSK	25	0	21.17	21.12	21.27	
5	16QAM	1	0	21.40	21.41	21.32	22
5	16QAM	1	12	21.45	21.46	21.40	
5	16QAM	1	24	21.33	21.29	21.45	
5	16QAM	12	0	20.27	20.26	20.19	21
5	16QAM	12	7	20.15	20.18	20.19	
5	16QAM	12	13	20.13	20.15	20.09	
5	16QAM	25	0	20.19	20.14	20.27	
Channel				23025	23095	23165	Tune-up limit (dBm)
Frequency (MHz)				700.5	707.5	714.5	
3	QPSK	1	0	22.11	22.14	22.08	23
3	QPSK	1	8	22.15	22.14	22.15	
3	QPSK	1	14	22.10	22.10	22.22	
3	QPSK	8	0	21.13	21.20	21.26	22
3	QPSK	8	4	21.19	21.15	21.15	
3	QPSK	8	7	21.15	21.10	21.16	
3	QPSK	15	0	21.16	21.16	21.17	
3	16QAM	1	0	21.40	21.40	21.34	22
3	16QAM	1	8	21.43	21.52	21.37	
3	16QAM	1	14	21.37	21.36	21.42	
3	16QAM	8	0	20.17	20.21	20.24	21
3	16QAM	8	4	20.19	20.16	20.11	
3	16QAM	8	7	20.18	20.16	20.15	
3	16QAM	15	0	20.22	20.19	20.17	

Channel				23017	23095	23173	Tune-up limit (dBm)
Frequency (MHz)				699.7	707.5	715.3	
1.4	QPSK	1	0	22.14	22.21	22.24	23
1.4	QPSK	1	3	22.11	22.18	22.25	
1.4	QPSK	1	5	22.21	22.17	22.23	
1.4	QPSK	3	0	22.15	22.20	22.25	
1.4	QPSK	3	1	22.14	22.19	22.24	
1.4	QPSK	3	3	22.16	22.19	22.26	
1.4	QPSK	6	0	21.12	21.17	21.23	22
1.4	16QAM	1	0	21.50	21.60	21.60	22
1.4	16QAM	1	3	21.51	21.52	21.59	
1.4	16QAM	1	5	21.55	21.49	21.57	
1.4	16QAM	3	0	21.26	21.28	21.29	
1.4	16QAM	3	1	21.25	21.28	21.27	
1.4	16QAM	3	3	21.20	21.24	21.33	
1.4	16QAM	6	0	20.23	20.20	20.27	21

<WLAN Conducted Power>

General Note:

1. Per KDB 248227 D01v02r02, SAR test reduction is determined according to 802.11 transmission mode configurations and certain exposure conditions with multiple test positions. In the 2.4 GHz band, separate SAR procedures are applied to DSSS and OFDM configurations to simplify DSSS test requirements. For OFDM, in both 2.4 and 5 GHz bands, an initial test configuration must be determined for each standalone and aggregated frequency band, according to the transmission mode configuration with the highest maximum output power specified for production units to perform SAR measurements. If the same highest maximum output power applies to different combinations of channel bandwidths, modulations and data rates, additional procedures are applied to determine which test configurations require SAR measurement. When applicable, an initial test position may be applied to reduce the number of SAR measurements required for next to the ear, UMPC mini-tablet or hotspot mode configurations with multiple test positions.
2. For 2.4 GHz 802.11b DSSS, either the initial test position procedure for multiple exposure test positions or the DSSS procedure for fixed exposure position is applied; these are mutually exclusive. For 2.4 GHz and 5 GHz OFDM configurations, the initial test configuration is applied to measure SAR using either the initial test position procedure for multiple exposure test position configurations or the initial test configuration procedures for fixed exposure test conditions. Based on the reported SAR of the measured configurations and maximum output power of the transmission mode configurations that are not included in the initial test configuration, the subsequent test configuration and initial test position procedures are applied to determine if SAR measurements are required for the remaining OFDM transmission configurations. In general, the number of test channels that require SAR measurement is minimized based on maximum output power measured for the test sample(s).
3. For OFDM transmission configurations in the 2.4 GHz and 5 GHz bands, When the same maximum power is specified for multiple transmission modes in a frequency band, the largest channel bandwidth, lowest order modulation, lowest data rate and lowest order 802.11a/g/n/ac mode is used for SAR measurement, on the highest measured output power channel for each frequency band.
4. DSSS and OFDM configurations are considered separately according to the required SAR procedures. SAR is measured in the initial test position using the 802.11 transmission mode configuration required by the DSSS procedure or initial test configuration and subsequent test configuration(s) according to the OFDM procedures.18 The initial test position procedure is described in the following:
    a. When the reported SAR of the initial test position is ≤ 0.4 W/kg, further SAR measurement is not required for the other test positions in that exposure configuration and 802.11 transmission mode combinations within the frequency band or aggregated band.
    b. When the reported SAR of the test position is > 0.4 W/kg, SAR is repeated for the 802.11 transmission mode configuration tested in the initial test position to measure the subsequent next closet/smallest test separation distance and maximum coupling test position on the highest maximum output power channel, until the report SAR is ≤ 0.8 W/kg or all required test position are tested.
    c. For all positions/configurations, when the reported SAR is > 0.8 W/kg, SAR is measured for these test positions/configurations on the subsequent next highest measured output power channel(s) until the reported SAR is ≤ 1.2 W/kg or all required channels are tested.

<2.4GHz WLAN>

	Mode	Channel	Frequency (MHz)	Average power (dBm)	Tune-Up Limit	Duty Cycle %
2.4GHz WLAN	802.11b 1Mbps	1	2412	19.59	20.50	97.14
		6	2437	19.53	20.50	
		11	2462	20.13	20.50	
	802.11g 6Mbps	1	2412	15.68	16.00	86.62
		6	2437	20.48	20.50	
		11	2462	15.85	16.00	
	802.11n-HT20 MCS0	1	2412	15.24	15.50	85.91
		6	2437	18.86	19.00	
		11	2462	16.08	16.50	

<5GHz WLAN>

	Mode	Channel	Frequency (MHz)	Average power (dBm)	Tune-Up Limit	Duty Cycle %
5.2GHz WLAN	802.11a 6Mbps	36	5180	19.15	19.50	86.71
		40	5200	19.47	20.00	
		44	5220	18.89	19.50	
		48	5240	18.84	19.00	
	802.11n-HT20 MCS0	36	5180	18.80	19.00	85.91
		40	5200	19.66	20.00	
		44	5220	18.81	19.50	
		48	5240	18.20	19.00	
	802.11n-HT40 MCS0	38	5190	13.64	14.00	85.37
		46	5230	19.27	19.50	

	Mode	Channel	Frequency (MHz)	Average power (dBm)	Tune-Up Limit	Duty Cycle %
5.3GHz WLAN	802.11a 6Mbps	52	5260	21.42	21.50	86.71
		56	5280	20.90	21.50	
		60	5300	21.33	21.50	
		64	5320	18.57	19.00	
	802.11n-HT20 MCS0	52	5260	21.06	21.50	85.91
		56	5280	21.03	21.50	
		60	5300	19.87	21.50	
		64	5320	18.60	19.00	
	802.11n-HT40 MCS0	54	5270	20.04	20.50	85.37
		62	5310	8.61	9.00	

	Mode	Channel	Frequency (MHz)	Average power (dBm)	Tune-Up Limit	Duty Cycle %
5.5GHz WLAN	802.11a 6Mbps	100	5500	19.84	20.00	86.71
		116	5580	21.17	22.00	
		124	5620	20.88	21.00	
		132	5660	21.09	21.50	
		140	5700	15.37	15.50	
	802.11n-HT20 MCS0	100	5500	19.06	20.00	85.91
		116	5580	21.77	22.00	
		124	5620	20.93	21.00	
		132	5660	21.11	21.50	
		140	5700	15.23	15.50	
	802.11n-HT40 MCS0	102	5510	16.04	16.50	85.37
		110	5550	19.79	20.00	
		126	5630	19.96	20.50	
		134	5670	17.97	18.50	

	Mode	Channel	Frequency (MHz)	Average power (dBm)	Tune-Up Limit	Duty Cycle %
5.8GHz WLAN	802.11a MCS0	149	5745	15.77	16.00	86.71
		157	5785	21.18	21.50	
		165	5825	18.14	18.50	
	802.11n-HT20 MCS0	149	5745	15.14	16.00	85.91
		157	5785	21.29	21.50	
		165	5825	17.69	18.50	
	802.11n-HT40 MCS0	151	5755	14.21	14.50	85.37
		159	5795	17.94	18.50	

<2.4GHz Bluetooth>

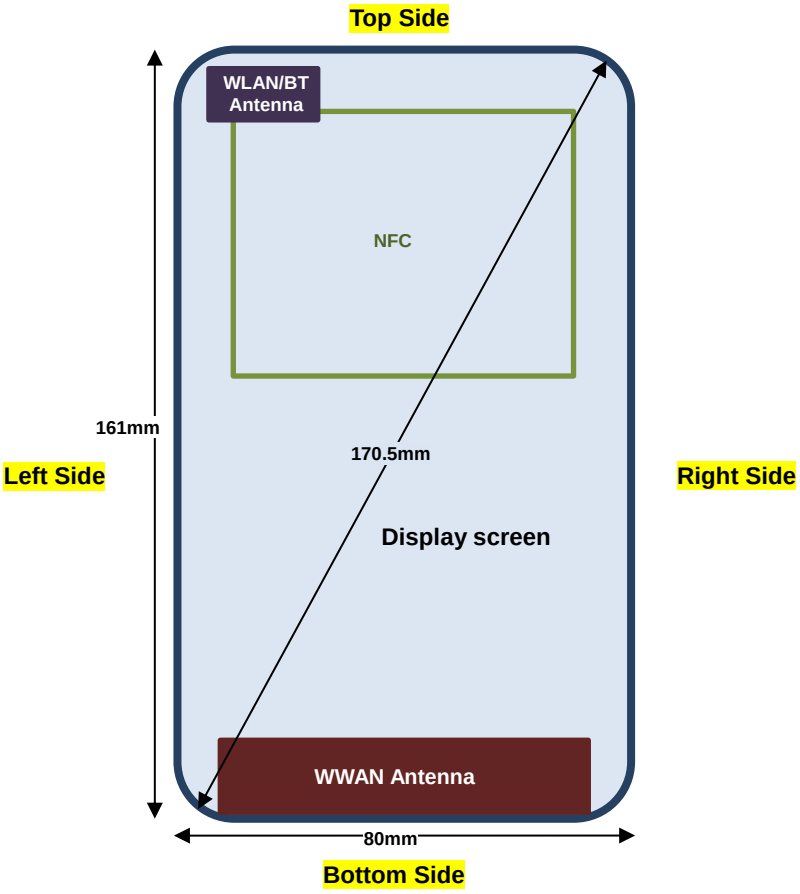
General Note:

1. For 2.4GHz Bluetooth SAR testing was selected 1Mbps due to its highest average power and duty cycle is 77.13% considered in SAR testing, and the duty cycle would be scaled to theoretical 83.3% in reported SAR calculation.

Mode	Channel	Frequency (MHz)	Average power (dBm)		
			1Mbps	2Mbps	3Mbps
BR / EDR	CH 00	2402	9.16	7.10	6.93
	CH 39	2441	8.84	6.84	6.67
	CH 78	2480	8.53	6.37	6.27
Tune-up Limit			9.50	7.50	7.50

Mode	Channel	Frequency (MHz)	Average power (dBm)
			GFSK
LE	CH 00	2402	-0.46
	CH 19	2440	-0.89
	CH 39	2480	-1.27
Tune-up Limit			0.00

12. 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 Main	≤ 25mm	≤ 25mm	>25mm	≤ 25mm	≤ 25mm	≤ 25mm
BT&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 Main	Yes	Yes	No	Yes	Yes	Yes
BT&WLAN	Yes	Yes	Yes	No	No	Yes

General Note:

1. Referring to KDB 941225 D06 v02r01, 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.

13. SAR Test Results

General Note:

1. Per KDB 447498 D01v06, 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 SAR testing of WLAN signal with non-100% duty cycle, the measured SAR is scaled-up by the duty cycle scaling factor which is equal to "1/(duty cycle)"
   c. For WWAN: Reported SAR(W/kg)= Measured SAR(W/kg)*Tune-up Scaling Factor
   d. For WLAN/Bluetooth: Reported SAR(W/kg)= Measured SAR(W/kg)* Duty Cycle scaling factor * Tune-up scaling factor
2. Per KDB 447498 D01v06, 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. Per KDB 865664 D01v01r04, for each frequency band, repeated SAR measurement is required only when the measured SAR is ≥0.8W/kg.
4. Per KDB 648474 D04v01r03, when the reported SAR for a body-worn accessory measured without a headset connected to the handset is ≤ 1.2 W/kg, SAR testing with a headset connected to the handset is not required.
5. Per KDB648474 D04v01r03, for smart phones with a display diagonal dimension > 15cm or an overall diagonal dimension > 16cm, when hotspot mode applies, 10-g product specific SAR is required only for the surfaces and edges with hotspot mode 1-g reported SAR > 1.2 W/kg, in this report all the hotspot mode results are < 1.2W/kg.
6. For 5.3GHz / 5.5GHz WLAN product specific SAR is necessary too, due to an overall diagonal dimension is > 16cm.

UMTS Note:

1. Per KDB 941225 D01v03r01, for SAR testing is measured using a 12.2 kbps RMC with TPC bits configured to all “1’s”.
2. Per KDB 941225 D01v03r01, RMC 12.2kbps setting is used to evaluate SAR. The maximum output power and tune-up tolerance specified for production units in HSDPA / HSUPA is ≤ ¼ dB higher than RMC 12.2Kbps or when the highest reported SAR of the RMC12.2Kbps is scaled by the ratio of specified maximum output power and tune-up tolerance of HSDPA / HSUPA to RMC12.2Kbps and the adjusted SAR is ≤ 1.2 W/kg, SAR measurement is not required for HSDPA / HSUPA , and according to the following RF output power, the output power results of the secondary modes (HSUPA, HSDPA, DC-HSDPA) are less than ¼ dB higher than the primary modes; therefore, SAR measurement is not required for HSDPA / HSUPA.

LTE Note:

1. Per KDB 941225 D05v02r05, 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 D05v02r05, 50% RB allocation for QPSK SAR testing follows 1RB QPSK allocation procedure.
3. Per KDB 941225 D05v02r05, 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 D05v02r05, 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 D05v02r05, 16QAM SAR testing is not required.
5. Per KDB 941225 D05v02r05, 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 D05v02r05, smaller bandwidth SAR testing is not required.
6. For LTE B12 / B5 / B4 the maximum bandwidth does not support three non-overlapping channels, per KDB 941225 D05v02r05, when a device supports overlapping channel assignment in a channel bandwidth configuration, the middle channel of the group of overlapping channels should be selected for testing.

WLAN Note:

1. Per KDB 248227 D01v02r02, for 2.4GHz 802.11g/n SAR testing is not required when the highest reported SAR for DSSS is adjusted by the ratio of OFDM to DSSS specified maximum output power and the adjusted SAR is ≤ 1.2 W/kg.
2. Per KDB 248227 D01v02r02, U-NII-1 SAR testing is not required when the U-NII-2A band highest reported SAR for a test configuration is ≤ 1.2 W/kg, SAR is not required for U-NII-1 band.
3. When the reported SAR of the test position is > 0.4 W/kg, SAR is repeated for the 802.11 transmission mode configuration tested in the initial test position to measure the subsequent next closet/smallest test separation distance and maximum coupling test position on the highest maximum output power channel, until the report SAR is ≤ 0.8 W/kg or all required test position are tested.
4. For all positions / configurations, when the reported SAR is > 0.8 W/kg, SAR is measured for these test positions / configurations on the subsequent next highest measured output power channel(s) until the reported SAR is ≤ 1.2 W/kg or all required channels are tested.
5. During SAR testing the WLAN transmission was verified using a spectrum analyzer.
6. Since the same RF amplifier and antenna is used for WiFi / Bluetooth transmitter and the Bluetooth output power is least 2 dB below the output power of WiFi, therefore, for Bluetooth SAR testing is selected worst position from each exposure condition to be tested.

13.1 Head SAR

<WCDMA SAR>

Plot No.	Band	Mode	Test Position	Gap (mm)	Sample	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 II	RMC 12.2Kbps	Right Cheek	0mm	SKU 3	9400	1880	22.99	24.00	1.262	-0.1	0.275	0.347
	WCDMA II	RMC 12.2Kbps	Right Tilted	0mm	SKU 3	9400	1880	22.99	24.00	1.262	0.14	0.137	0.173
	WCDMA II	RMC 12.2Kbps	Left Cheek	0mm	SKU 3	9400	1880	22.99	24.00	1.262	-0.01	0.470	0.593
01	WCDMA II	RMC 12.2Kbps	Left Cheek	0mm	SKU 3	9262	1852.4	22.84	24.00	1.306	0.03	0.483	0.631
	WCDMA II	RMC 12.2Kbps	Left Cheek	0mm	SKU 3	9538	1907.6	22.83	24.00	1.309	0.02	0.463	0.606
	WCDMA II	RMC 12.2Kbps	Left Tilted	0mm	SKU 3	9400	1880	22.99	24.00	1.262	0.05	0.123	0.155
	WCDMA II	RMC 12.2Kbps	Left Cheek	0mm	SKU 4	9262	1852.4	22.84	24.00	1.306	0.19	0.422	0.551
	WCDMA V	RMC 12.2Kbps	Right Cheek	0mm	SKU 3	4233	846.6	22.95	24.00	1.274	0.04	0.318	0.405
	WCDMA V	RMC 12.2Kbps	Right Tilted	0mm	SKU 3	4233	846.6	22.95	24.00	1.274	-0.02	0.181	0.231
02	WCDMA V	RMC 12.2Kbps	Left Cheek	0mm	SKU 3	4233	846.6	22.95	24.00	1.274	0.07	0.361	0.460
	WCDMA V	RMC 12.2Kbps	Left Cheek	0mm	SKU 3	4132	826.4	22.87	24.00	1.297	0.1	0.323	0.419
	WCDMA V	RMC 12.2Kbps	Left Cheek	0mm	SKU 3	4182	836.4	22.82	24.00	1.312	0.01	0.330	0.433
	WCDMA V	RMC 12.2Kbps	Left Tilted	0mm	SKU 3	4233	846.6	22.95	24.00	1.274	-0.02	0.207	0.264
	WCDMA V	RMC 12.2Kbps	Left Cheek	0mm	SKU 4	4233	846.6	22.95	24.00	1.274	0	0.327	0.416

<LTE SAR>

Plot No.	Band	BW (MHz)	Modulation	RB Size	RB offset	Test Position	Gap (mm)	Sample	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)
	LTE Band 2	20M	QPSK	1	0	Right Cheek	0mm	SKU 3	19100	1900	22.35	23.00	1.161	0.05	0.227	0.264
	LTE Band 2	20M	QPSK	50	0	Right Cheek	0mm	SKU 3	19100	1900	21.41	22.00	1.146	0.05	0.170	0.195
	LTE Band 2	20M	QPSK	1	0	Right Tilted	0mm	SKU 3	19100	1900	22.35	23.00	1.161	0.03	0.127	0.148
	LTE Band 2	20M	QPSK	50	0	Right Tilted	0mm	SKU 3	19100	1900	21.41	22.00	1.146	-0.12	0.100	0.115
	LTE Band 2	20M	QPSK	1	0	Left Cheek	0mm	SKU 3	19100	1900	22.35	23.00	1.161	0.19	0.478	0.555
	LTE Band 2	20M	QPSK	1	0	Left Cheek	0mm	SKU 3	18700	1860	22.27	23.00	1.183	0.04	0.434	0.513
03	LTE Band 2	20M	QPSK	1	0	Left Cheek	0mm	SKU 3	18900	1880	22.28	23.00	1.180	0.1	0.472	0.557
	LTE Band 2	20M	QPSK	50	0	Left Cheek	0mm	SKU 3	19100	1900	21.41	22.00	1.146	0.09	0.368	0.422
	LTE Band 2	20M	QPSK	1	0	Left Tilted	0mm	SKU 3	19100	1900	22.35	23.00	1.161	0.06	0.175	0.203
	LTE Band 2	20M	QPSK	50	0	Left Tilted	0mm	SKU 3	19100	1900	21.41	22.00	1.146	-0.01	0.150	0.172
	LTE Band 2	20M	QPSK	1	0	Left Cheek	0mm	SKU 4	18900	1880	22.28	23.00	1.180	0.14	0.394	0.465
	LTE Band 4	20M	QPSK	1	0	Right Cheek	0mm	SKU 3	20175	1732.5	22.71	23.00	1.069	0.02	0.174	0.186
	LTE Band 4	20M	QPSK	50	0	Right Cheek	0mm	SKU 3	20175	1732.5	21.59	22.00	1.099	0.1	0.130	0.143
	LTE Band 4	20M	QPSK	1	0	Right Tilted	0mm	SKU 3	20175	1732.5	22.71	23.00	1.069	0.08	0.068	0.073
	LTE Band 4	20M	QPSK	50	0	Right Tilted	0mm	SKU 3	20175	1732.5	21.59	22.00	1.099	0.11	0.050	0.055
04	LTE Band 4	20M	QPSK	1	0	Left Cheek	0mm	SKU 3	20175	1732.5	22.71	23.00	1.069	0.11	0.309	0.330
	LTE Band 4	20M	QPSK	50	0	Left Cheek	0mm	SKU 3	20175	1732.5	21.59	22.00	1.099	0.17	0.242	0.266
	LTE Band 4	20M	QPSK	1	0	Left Tilted	0mm	SKU 3	20175	1732.5	22.71	23.00	1.069	0.07	0.070	0.075
	LTE Band 4	20M	QPSK	50	0	Left Tilted	0mm	SKU 3	20175	1732.5	21.59	22.00	1.099	0.08	0.053	0.058
	LTE Band 4	20M	QPSK	1	0	Left Cheek	0mm	SKU 4	20175	1732.5	22.71	23.00	1.069	0.11	0.276	0.295
	LTE Band 5	10M	QPSK	1	0	Right Cheek	0mm	SKU 3	20525	836.5	22.18	23.00	1.208	-0.02	0.248	0.300
	LTE Band 5	10M	QPSK	25	0	Right Cheek	0mm	SKU 3	20525	836.5	21.15	22.00	1.216	0.05	0.205	0.249
	LTE Band 5	10M	QPSK	1	0	Right Tilted	0mm	SKU 3	20525	836.5	22.18	23.00	1.208	0.01	0.135	0.163
	LTE Band 5	10M	QPSK	25	0	Right Tilted	0mm	SKU 3	20525	836.5	21.15	22.00	1.216	0.07	0.112	0.136
05	LTE Band 5	10M	QPSK	1	0	Left Cheek	0mm	SKU 3	20525	836.5	22.18	23.00	1.208	-0.01	0.286	0.345
	LTE Band 5	10M	QPSK	25	0	Left Cheek	0mm	SKU 3	20525	836.5	21.15	22.00	1.216	0.02	0.234	0.285
	LTE Band 5	10M	QPSK	1	0	Left Tilted	0mm	SKU 3	20525	836.5	22.18	23.00	1.208	0.03	0.161	0.194
	LTE Band 5	10M	QPSK	25	0	Left Tilted	0mm	SKU 3	20525	836.5	21.15	22.00	1.216	0.01	0.131	0.159
	LTE Band 5	10M	QPSK	1	0	Left Cheek	0mm	SKU 4	20525	836.5	22.18	23.00	1.208	-0.03	0.283	0.342
	LTE Band 12	10M	QPSK	1	0	Right Cheek	0mm	SKU 3	23095	707.5	22.32	23.00	1.169	-0.05	0.197	0.230
	LTE Band 12	10M	QPSK	25	0	Right Cheek	0mm	SKU 3	23095	707.5	21.26	22.00	1.186	0.03	0.146	0.173
	LTE Band 12	10M	QPSK	1	0	Right Tilted	0mm	SKU 3	23095	707.5	22.32	23.00	1.169	0.07	0.115	0.134
	LTE Band 12	10M	QPSK	25	0	Right Tilted	0mm	SKU 3	23095	707.5	21.26	22.00	1.186	0.03	0.085	0.101
06	LTE Band 12	10M	QPSK	1	0	Left Cheek	0mm	SKU 3	23095	707.5	22.32	23.00	1.169	0.12	0.226	0.264
	LTE Band 12	10M	QPSK	25	0	Left Cheek	0mm	SKU 3	23095	707.5	21.26	22.00	1.186	0.12	0.178	0.211
	LTE Band 12	10M	QPSK	1	0	Left Tilted	0mm	SKU 3	23095	707.5	22.32	23.00	1.169	0.13	0.129	0.151
	LTE Band 12	10M	QPSK	25	0	Left Tilted	0mm	SKU 3	23095	707.5	21.26	22.00	1.186	0.16	0.101	0.120
	LTE Band 12	10M	QPSK	1	0	Left Cheek	0mm	SKU 4	23095	707.5	22.32	23.00	1.169	0.07	0.225	0.263

<Bluetooth SAR>

Plot No.	Band	Mode	Test Position	Gap (mm)	Sample	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)
	Bluetooth	1Mbps	Right Cheek	0mm	SKU 3	0	2402	9.16	9.50	1.081	77.13	1.080	-0.12	0.010	0.011
07	Bluetooth	1Mbps	Right Cheek	0mm	SKU 3	39	2441	8.84	9.50	1.164	77.13	1.080	-0.16	0.010	0.013
	Bluetooth	1Mbps	Right Cheek	0mm	SKU 3	78	2480	8.53	9.50	1.250	77.13	1.080	-0.12	0.004	0.006
	Bluetooth	1Mbps	Right Cheek	0mm	SKU 4	39	2441	8.84	9.50	1.164	77.13	1.080	0.18	0.010	0.012

<WLAN SAR>

Plot No.	Band	Mode	Test Position	Gap (mm)	Sample	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)
	WLAN2.4GHz	802.11b 1Mbps	Right Cheek	0mm	SKU 3	11	2462	20.13	20.50	1.089	97.14	1.029	0.01	0.242	0.271
08	WLAN2.4GHz	802.11b 1Mbps	Right Cheek	0mm	SKU 3	1	2412	19.59	20.50	1.233	97.14	1.029	0.04	0.398	0.505
	WLAN2.4GHz	802.11b 1Mbps	Right Cheek	0mm	SKU 3	6	2437	19.53	20.50	1.250	97.14	1.029	-0.16	0.335	0.431
	WLAN2.4GHz	802.11b 1Mbps	Right Tilted	0mm	SKU 3	11	2462	20.13	20.50	1.089	97.14	1.029	0.02	0.125	0.140
	WLAN2.4GHz	802.11b 1Mbps	Left Cheek	0mm	SKU 3	11	2462	20.13	20.50	1.089	97.14	1.029	0	0.132	0.148
	WLAN2.4GHz	802.11b 1Mbps	Left Tilted	0mm	SKU 3	11	2462	20.13	20.50	1.089	97.14	1.029	-0.01	0.141	0.158
	WLAN2.4GHz	802.11b 1Mbps	Right Cheek	0mm	SKU 4	1	2412	19.59	20.50	1.233	97.14	1.029	-0.12	0.363	0.461
	WLAN5GHz	802.11a 6Mbps	Right Cheek	0mm	SKU 3	52	5260	21.42	21.50	1.019	86.71	1.153	-0.14	0.658	0.773
09	WLAN5GHz	802.11a 6Mbps	Right Cheek	0mm	SKU 3	56	5280	20.90	21.50	1.148	86.71	1.153	-0.03	0.738	0.977
	WLAN5GHz	802.11a 6Mbps	Right Cheek	0mm	SKU 3	60	5300	21.33	21.50	1.040	86.71	1.153	0.01	0.741	0.889
	WLAN5GHz	802.11a 6Mbps	Right Cheek	0mm	SKU 3	64	5320	18.57	19.00	1.104	86.71	1.153	0.06	0.756	0.963
	WLAN5GHz	802.11a 6Mbps	Right Tilted	0mm	SKU 3	52	5260	21.42	21.50	1.019	86.71	1.153	-0.04	0.451	0.530
	WLAN5GHz	802.11a 6Mbps	Left Cheek	0mm	SKU 3	52	5260	21.42	21.50	1.019	86.71	1.153	-0.15	0.589	0.692
	WLAN5GHz	802.11a 6Mbps	Left Tilted	0mm	SKU 3	52	5260	21.42	21.50	1.019	86.71	1.153	-0.12	0.464	0.545
	WLAN5GHz	802.11a 6Mbps	Right Cheek	0mm	SKU 4	56	5280	20.90	21.50	1.148	86.71	1.153	-0.1	0.595	0.788
	WLAN5GHz	802.11a 6Mbps	Right Cheek	0mm	SKU 3	116	5580	21.17	22.00	1.211	86.71	1.153	-0.01	0.433	0.604
	WLAN5GHz	802.11a 6Mbps	Right Tilted	0mm	SKU 3	116	5580	21.17	22.00	1.211	86.71	1.153	0.06	0.326	0.455
10	WLAN5GHz	802.11a 6Mbps	Left Cheek	0mm	SKU 3	116	5580	21.17	22.00	1.211	86.71	1.153	0.09	0.650	0.907
	WLAN5GHz	802.11a 6Mbps	Left Cheek	0mm	SKU 3	100	5500	19.84	20.00	1.038	86.71	1.153	-0.12	0.336	0.402
	WLAN5GHz	802.11a 6Mbps	Left Cheek	0mm	SKU 3	132	5660	21.09	21.50	1.099	86.71	1.153	-0.14	0.712	0.902
	WLAN5GHz	802.11a 6Mbps	Left Cheek	0mm	SKU 3	140	5700	15.37	15.50	1.031	86.71	1.153	-0.16	0.097	0.115
	WLAN5GHz	802.11a 6Mbps	Left Tilted	0mm	SKU 3	116	5580	21.17	22.00	1.211	86.71	1.153	-0.13	0.371	0.518
	WLAN5GHz	802.11a 6Mbps	Left Cheek	0mm	SKU 4	116	5580	21.17	22.00	1.211	86.71	1.153	-0.16	0.647	0.903
	WLAN5GHz	802.11a 6Mbps	Right Cheek	0mm	SKU 3	157	5785	21.18	21.50	1.077	86.71	1.153	0.03	0.589	0.731
	WLAN5GHz	802.11a 6Mbps	Right Tilted	0mm	SKU 3	157	5785	21.18	21.50	1.077	86.71	1.153	-0.11	0.446	0.554
	WLAN5GHz	802.11a 6Mbps	Left Cheek	0mm	SKU 3	157	5785	21.18	21.50	1.077	86.71	1.153	-0.02	0.692	0.859
	WLAN5GHz	802.11a 6Mbps	Left Cheek	0mm	SKU 3	149	5745	15.77	16.00	1.055	86.71	1.153	-0.13	0.144	0.175
	WLAN5GHz	802.11a 6Mbps	Left Cheek	0mm	SKU 3	165	5825	18.14	18.50	1.087	86.71	1.153	-0.06	0.360	0.451
	WLAN5GHz	802.11a 6Mbps	Left Tilted	0mm	SKU 3	157	5785	21.18	21.50	1.077	86.71	1.153	-0.04	0.537	0.667
11	WLAN5GHz	802.11a 6Mbps	Left Cheek	0mm	SKU 4	157	5785	21.18	21.50	1.077	86.71	1.153	0.09	0.898	1.115

13.2 Hotspot SAR

<WCDMA SAR>

Plot No.	Band	Mode	Test Position	Gap (mm)	Sample	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 II	RMC 12.2Kbps	Front	10mm	SKU 3	9400	1880	22.99	24.00	1.262	0.06	0.398	0.502
	WCDMA II	RMC 12.2Kbps	Back	10mm	SKU 3	9400	1880	22.99	24.00	1.262	-0.15	0.668	0.843
	WCDMA II	RMC 12.2Kbps	Back	10mm	SKU 3	9262	1852.4	22.84	24.00	1.306	-0.09	0.682	0.891
12	WCDMA II	RMC 12.2Kbps	Back	10mm	SKU 3	9538	1907.6	22.83	24.00	1.309	-0.17	0.706	0.924
	WCDMA II	RMC 12.2Kbps	Left Side	10mm	SKU 3	9400	1880	22.99	24.00	1.262	0.07	0.225	0.284
	WCDMA II	RMC 12.2Kbps	Right Side	10mm	SKU 3	9400	1880	22.99	24.00	1.262	-0.02	0.064	0.081
	WCDMA II	RMC 12.2Kbps	Bottom Side	10mm	SKU 3	9400	1880	22.99	24.00	1.262	0.01	0.412	0.520
	WCDMA II	RMC 12.2Kbps	Back	10mm	SKU 4	9538	1907.6	22.83	24.00	1.309	-0.17	0.673	0.881
	WCDMA V	RMC 12.2Kbps	Front	10mm	SKU 3	4233	846.6	22.95	24.00	1.274	0.03	0.305	0.388
13	WCDMA V	RMC 12.2Kbps	Back	10mm	SKU 3	4233	846.6	22.95	24.00	1.274	0.03	0.431	0.549
	WCDMA V	RMC 12.2Kbps	Back	10mm	SKU 3	4132	826.4	22.87	24.00	1.297	0.01	0.355	0.460
	WCDMA V	RMC 12.2Kbps	Back	10mm	SKU 3	4182	836.4	22.82	24.00	1.312	-0.03	0.381	0.500
	WCDMA V	RMC 12.2Kbps	Left Side	10mm	SKU 3	4233	846.6	22.95	24.00	1.274	0.01	0.277	0.353
	WCDMA V	RMC 12.2Kbps	Right Side	10mm	SKU 3	4233	846.6	22.95	24.00	1.274	-0.01	0.172	0.219
	WCDMA V	RMC 12.2Kbps	Bottom Side	10mm	SKU 3	4233	846.6	22.95	24.00	1.274	-0.04	0.195	0.248
	WCDMA V	RMC 12.2Kbps	Back	10mm	SKU 4	4233	846.6	22.95	24.00	1.274	0.04	0.361	0.460

<LTE SAR>

Plot No.	Band	BW (MHz)	Modulation	RB Size	RB offset	Test Position	Gap (mm)	Sample	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)
	LTE Band 2	20M	QPSK	1	0	Front	10mm	SKU 3	19100	1900	22.35	23.00	1.161	0.09	0.456	0.530
	LTE Band 2	20M	QPSK	50	0	Front	10mm	SKU 3	19100	1900	21.41	22.00	1.146	0.05	0.362	0.415
	LTE Band 2	20M	QPSK	1	0	Back	10mm	SKU 3	19100	1900	22.35	23.00	1.161	-0.06	0.612	0.711
	LTE Band 2	20M	QPSK	1	0	Back	10mm	SKU 3	18700	1860	22.27	23.00	1.183	-0.01	0.683	0.808
14	LTE Band 2	20M	QPSK	1	0	Back	10mm	SKU 3	18900	1880	22.28	23.00	1.180	0.05	0.758	0.895
	LTE Band 2	20M	QPSK	50	0	Back	10mm	SKU 3	19100	1900	21.41	22.00	1.146	-0.02	0.524	0.600
	LTE Band 2	20M	QPSK	100	0	Back	10mm	SKU 3	19100	1900	21.18	22.00	1.208	-0.11	0.502	0.606
	LTE Band 2	20M	QPSK	1	0	Left Side	10mm	SKU 3	19100	1900	22.35	23.00	1.161	-0.04	0.230	0.267
	LTE Band 2	20M	QPSK	50	0	Left Side	10mm	SKU 3	19100	1900	21.41	22.00	1.146	-0.05	0.182	0.208
	LTE Band 2	20M	QPSK	1	0	Right Side	10mm	SKU 3	19100	1900	22.35	23.00	1.161	-0.13	0.065	0.075
	LTE Band 2	20M	QPSK	50	0	Right Side	10mm	SKU 3	19100	1900	21.41	22.00	1.146	0	0.056	0.064
	LTE Band 2	20M	QPSK	1	0	Bottom Side	10mm	SKU 3	19100	1900	22.35	23.00	1.161	-0.13	0.421	0.489
	LTE Band 2	20M	QPSK	50	0	Bottom Side	10mm	SKU 3	19100	1900	21.41	22.00	1.146	0.03	0.326	0.373
	LTE Band 2	20M	QPSK	1	0	Back	10mm	SKU 4	18900	1880	22.28	23.00	1.180	-0.08	0.602	0.711
	LTE Band 4	20M	QPSK	1	0	Front	10mm	SKU 3	20175	1732.5	22.71	23.00	1.069	-0.02	0.501	0.536
	LTE Band 4	20M	QPSK	50	0	Front	10mm	SKU 3	20175	1732.5	21.59	22.00	1.099	0.06	0.394	0.433
15	LTE Band 4	20M	QPSK	1	0	Back	10mm	SKU 3	20175	1732.5	22.71	23.00	1.069	0	0.729	0.779
	LTE Band 4	20M	QPSK	50	0	Back	10mm	SKU 3	20175	1732.5	21.59	22.00	1.099	0.01	0.575	0.632
	LTE Band 4	20M	QPSK	1	0	Left Side	10mm	SKU 3	20175	1732.5	22.71	23.00	1.069	-0.11	0.213	0.228
	LTE Band 4	20M	QPSK	50	0	Left Side	10mm	SKU 3	20175	1732.5	21.59	22.00	1.099	-0.07	0.167	0.184
	LTE Band 4	20M	QPSK	1	0	Right Side	10mm	SKU 3	20175	1732.5	22.71	23.00	1.069	-0.09	0.033	0.035
	LTE Band 4	20M	QPSK	50	0	Right Side	10mm	SKU 3	20175	1732.5	21.59	22.00	1.099	0.01	0.024	0.026
	LTE Band 4	20M	QPSK	1	0	Bottom Side	10mm	SKU 3	20175	1732.5	22.71	23.00	1.069	0.04	0.505	0.540
	LTE Band 4	20M	QPSK	50	0	Bottom Side	10mm	SKU 3	20175	1732.5	21.59	22.00	1.099	0.02	0.389	0.428
	LTE Band 4	20M	QPSK	1	0	Back	10mm	SKU 4	20175	1732.5	22.71	23.00	1.069	-0.09	0.617	0.660
16	LTE Band 5	10M	QPSK	1	0	Front	10mm	SKU 3	20525	836.5	22.18	23.00	1.208	0.02	0.257	0.310
	LTE Band 5	10M	QPSK	25	0	Front	10mm	SKU 3	20525	836.5	21.15	22.00	1.216	0.02	0.210	0.255
	LTE Band 5	10M	QPSK	1	0	Back	10mm	SKU 3	20525	836.5	22.18	23.00	1.208	0.01	0.253	0.306
	LTE Band 5	10M	QPSK	25	0	Back	10mm	SKU 3	20525	836.5	21.15	22.00	1.216	0	0.214	0.260
	LTE Band 5	10M	QPSK	1	0	Left Side	10mm	SKU 3	20525	836.5	22.18	23.00	1.208	-0.04	0.222	0.268
	LTE Band 5	10M	QPSK	25	0	Left Side	10mm	SKU 3	20525	836.5	21.15	22.00	1.216	0.05	0.183	0.223
	LTE Band 5	10M	QPSK	1	0	Right Side	10mm	SKU 3	20525	836.5	22.18	23.00	1.208	0	0.139	0.168
	LTE Band 5	10M	QPSK	25	0	Right Side	10mm	SKU 3	20525	836.5	21.15	22.00	1.216	-0.04	0.115	0.140
	LTE Band 5	10M	QPSK	1	0	Bottom Side	10mm	SKU 3	20525	836.5	22.18	23.00	1.208	0	0.156	0.188
	LTE Band 5	10M	QPSK	25	0	Bottom Side	10mm	SKU 3	20525	836.5	21.15	22.00	1.216	-0.05	0.128	0.156
	LTE Band 5	10M	QPSK	1	0	Front	10mm	SKU 4	20525	836.5	22.18	23.00	1.208	0.04	0.244	0.295
	LTE Band 12	10M	QPSK	1	0	Front	10mm	SKU 3	23095	707.5	22.32	23.00	1.169	0.05	0.265	0.310
	LTE Band 12	10M	QPSK	25	0	Front	10mm	SKU 3	23095	707.5	21.26	22.00	1.186	0	0.205	0.243
17	LTE Band 12	10M	QPSK	1	0	Back	10mm	SKU 3	23095	707.5	22.32	23.00	1.169	-0.03	0.302	0.353
	LTE Band 12	10M	QPSK	25	0	Back	10mm	SKU 3	23095	707.5	21.26	22.00	1.186	-0.01	0.235	0.279
	LTE Band 12	10M	QPSK	1	0	Left Side	10mm	SKU 3	23095	707.5	22.32	23.00	1.169	0	0.287	0.336
	LTE Band 12	10M	QPSK	25	0	Left Side	10mm	SKU 3	23095	707.5	21.26	22.00	1.186	0.04	0.224	0.266
	LTE Band 12	10M	QPSK	1	0	Right Side	10mm	SKU 3	23095	707.5	22.32	23.00	1.169	0.01	0.162	0.189
	LTE Band 12	10M	QPSK	25	0	Right Side	10mm	SKU 3	23095	707.5	21.26	22.00	1.186	-0.02	0.125	0.148
	LTE Band 12	10M	QPSK	1	0	Bottom Side	10mm	SKU 3	23095	707.5	22.32	23.00	1.169	-0.03	0.076	0.089
	LTE Band 12	10M	QPSK	25	0	Bottom Side	10mm	SKU 3	23095	707.5	21.26	22.00	1.186	-0.04	0.060	0.071
	LTE Band 12	10M	QPSK	1	0	Back	10mm	SKU 4	23095	707.5	22.32	23.00	1.169	-0.03	0.289	0.338

<Bluetooth SAR>

Plot No.	Band	Mode	Test Position	Gap (mm)	Sample	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)
	Bluetooth	1Mbps	Back	10mm	SKU 3	0	2402	9.16	9.50	1.081	77.13	1.080	0.01	0.038	0.044
18	Bluetooth	1Mbps	Back	10mm	SKU 3	39	2441	8.84	9.50	1.164	77.13	1.080	-0.04	0.037	0.047
	Bluetooth	1Mbps	Back	10mm	SKU 3	78	2480	8.53	9.50	1.250	77.13	1.080	0.15	0.023	0.031
	Bluetooth	1Mbps	Back	10mm	SKU 4	39	2441	8.84	9.50	1.164	77.13	1.080	-0.11	0.030	0.038

<WLAN SAR>

Plot No.	Band	Mode	Test Position	Gap (mm)	Sample	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)
	WLAN2.4GHz	802.11b 1Mbps	Front	10mm	SKU 3	11	2462	20.13	20.50	1.089	97.14	1.029	-0.01	0.055	0.062
	WLAN2.4GHz	802.11b 1Mbps	Back	10mm	SKU 3	11	2462	20.13	20.50	1.089	97.14	1.029	-0.06	0.675	0.756
19	WLAN2.4GHz	802.11b 1Mbps	Back	10mm	SKU 3	1	2412	19.59	20.50	1.233	97.14	1.029	-0.09	0.770	0.977
	WLAN2.4GHz	802.11b 1Mbps	Back	10mm	SKU 3	6	2437	19.53	20.50	1.250	97.14	1.029	-0.13	0.754	0.970
	WLAN2.4GHz	802.11b 1Mbps	Left Side	10mm	SKU 3	11	2462	20.13	20.50	1.089	97.14	1.029	-0.01	0.486	0.545
	WLAN2.4GHz	802.11b 1Mbps	Top Side	10mm	SKU 3	11	2462	20.13	20.50	1.089	97.14	1.029	-0.05	0.155	0.174
	WLAN2.4GHz	802.11b 1Mbps	Back	10mm	SKU 4	1	2412	19.59	20.50	1.233	97.14	1.029	-0.11	0.627	0.796
	WLAN5GHz	802.11a 6Mbps	Front	10mm	SKU 3	157	5785	21.18	21.50	1.077	86.71	1.153	-0.1	0.186	0.231
20	WLAN5GHz	802.11a 6Mbps	Back	10mm	SKU 3	157	5785	21.18	21.50	1.077	86.71	1.153	0.03	0.613	0.761
	WLAN5GHz	802.11a 6Mbps	Back	10mm	SKU 3	149	5745	15.77	16.00	1.055	86.71	1.153	-0.09	0.134	0.163
	WLAN5GHz	802.11a 6Mbps	Back	10mm	SKU 3	165	5825	18.14	18.50	1.087	86.71	1.153	-0.09	0.264	0.331
	WLAN5GHz	802.11a 6Mbps	Left Side	10mm	SKU 3	157	5785	21.18	21.50	1.077	86.71	1.153	-0.17	0.466	0.578
	WLAN5GHz	802.11a 6Mbps	Top Side	10mm	SKU 3	157	5785	21.18	21.50	1.077	86.71	1.153	0.03	0.090	0.112
	WLAN5GHz	802.11a 6Mbps	Back	10mm	SKU 4	157	5785	21.18	21.50	1.077	86.71	1.153	0.02	0.466	0.578

13.3 Body Worn Accessory SAR

<WCDMA SAR>

Plot No.	Band	Mode	Test Position	Gap (mm)	Sample	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 II	RMC 12.2Kbps	Front	10mm	SKU 3	9400	1880	22.99	24.00	1.262	0.06	0.398	0.502
	WCDMA II	RMC 12.2Kbps	Back	10mm	SKU 3	9400	1880	22.99	24.00	1.262	-0.15	0.668	0.843
	WCDMA II	RMC 12.2Kbps	Back	10mm	SKU 3	9262	1852.4	22.84	24.00	1.306	-0.09	0.682	0.891
21	WCDMA II	RMC 12.2Kbps	Back	10mm	SKU 3	9538	1907.6	22.83	24.00	1.309	-0.17	0.706	0.924
	WCDMA II	RMC 12.2Kbps	Back	10mm	SKU 4	9538	1907.6	22.83	24.00	1.309	-0.17	0.673	0.881
	WCDMA V	RMC 12.2Kbps	Front	10mm	SKU 3	4233	846.6	22.95	24.00	1.274	0.03	0.305	0.388
22	WCDMA V	RMC 12.2Kbps	Back	10mm	SKU 3	4233	846.6	22.95	24.00	1.274	0.03	0.431	0.549
	WCDMA V	RMC 12.2Kbps	Back	10mm	SKU 3	4132	826.4	22.87	24.00	1.297	0.01	0.355	0.460
	WCDMA V	RMC 12.2Kbps	Back	10mm	SKU 3	4182	836.4	22.82	24.00	1.312	-0.03	0.381	0.500
	WCDMA V	RMC 12.2Kbps	Back	10mm	SKU 4	4233	846.6	22.95	24.00	1.274	0.04	0.361	0.460

<LTE SAR>

Plot No.	Band	BW (MHz)	Modulation	RB Size	RB offset	Test Position	Gap (mm)	Sample	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)
	LTE Band 2	20M	QPSK	1	0	Front	10mm	SKU 3	19100	1900	22.35	23.00	1.161	0.09	0.456	0.530
	LTE Band 2	20M	QPSK	50	0	Front	10mm	SKU 3	19100	1900	21.41	22.00	1.146	0.05	0.362	0.415
	LTE Band 2	20M	QPSK	1	0	Back	10mm	SKU 3	19100	1900	22.35	23.00	1.161	-0.06	0.612	0.711
	LTE Band 2	20M	QPSK	1	0	Back	10mm	SKU 3	18700	1860	22.27	23.00	1.183	-0.01	0.683	0.808
23	LTE Band 2	20M	QPSK	1	0	Back	10mm	SKU 3	18900	1880	22.28	23.00	1.180	0.05	0.758	0.895
	LTE Band 2	20M	QPSK	50	0	Back	10mm	SKU 3	19100	1900	21.41	22.00	1.146	-0.02	0.524	0.600
	LTE Band 2	20M	QPSK	100	0	Back	10mm	SKU 3	19100	1900	21.18	22.00	1.208	-0.11	0.502	0.606
	LTE Band 2	20M	QPSK	1	0	Back	10mm	SKU 4	18900	1880	22.28	23.00	1.180	-0.08	0.602	0.711
	LTE Band 4	20M	QPSK	1	0	Front	10mm	SKU 3	20175	1732.5	22.71	23.00	1.069	-0.02	0.501	0.536
	LTE Band 4	20M	QPSK	50	0	Front	10mm	SKU 3	20175	1732.5	21.59	22.00	1.099	0.06	0.394	0.433
24	LTE Band 4	20M	QPSK	1	0	Back	10mm	SKU 3	20175	1732.5	22.71	23.00	1.069	0	0.729	0.779
	LTE Band 4	20M	QPSK	50	0	Back	10mm	SKU 3	20175	1732.5	21.59	22.00	1.099	0.01	0.575	0.632
	LTE Band 4	20M	QPSK	1	0	Back	10mm	SKU 4	20175	1732.5	22.71	23.00	1.069	-0.09	0.617	0.660
25	LTE Band 5	10M	QPSK	1	0	Front	10mm	SKU 3	20525	836.5	22.18	23.00	1.208	0.02	0.257	0.310
	LTE Band 5	10M	QPSK	25	0	Front	10mm	SKU 3	20525	836.5	21.15	22.00	1.216	0.02	0.210	0.255
	LTE Band 5	10M	QPSK	1	0	Back	10mm	SKU 3	20525	836.5	22.18	23.00	1.208	0.01	0.253	0.306
	LTE Band 5	10M	QPSK	25	0	Back	10mm	SKU 3	20525	836.5	21.15	22.00	1.216	0	0.214	0.260
	LTE Band 5	10M	QPSK	1	0	Front	10mm	SKU 4	20525	836.5	22.18	23.00	1.208	0.04	0.244	0.295
	LTE Band 12	10M	QPSK	1	0	Front	10mm	SKU 3	23095	707.5	22.32	23.00	1.169	0.05	0.265	0.310
	LTE Band 12	10M	QPSK	25	0	Front	10mm	SKU 3	23095	707.5	21.26	22.00	1.186	0	0.205	0.243
26	LTE Band 12	10M	QPSK	1	0	Back	10mm	SKU 3	23095	707.5	22.32	23.00	1.169	-0.03	0.302	0.353
	LTE Band 12	10M	QPSK	25	0	Back	10mm	SKU 3	23095	707.5	21.26	22.00	1.186	-0.01	0.235	0.279
	LTE Band 12	10M	QPSK	1	0	Back	10mm	SKU 4	23095	707.5	22.32	23.00	1.169	-0.03	0.289	0.338

<Bluetooth SAR>

Plot No.	Band	Mode	Test Position	Gap (mm)	Sample	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)
	Bluetooth	1Mbps	Back	10mm	SKU 3	0	2402	9.16	9.50	1.081	77.13	1.080	0.01	0.038	0.044
27	Bluetooth	1Mbps	Back	10mm	SKU 3	39	2441	8.84	9.50	1.164	77.13	1.080	-0.04	0.037	0.047
	Bluetooth	1Mbps	Back	10mm	SKU 3	78	2480	8.53	9.50	1.250	77.13	1.080	0.15	0.023	0.031
	Bluetooth	1Mbps	Back	10mm	SKU 4	39	2441	8.84	9.50	1.164	77.13	1.080	-0.11	0.033	0.041

<WLAN SAR>

Plot No.	Band	Mode	Test Position	Gap (mm)	Sample	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)
	WLAN2.4GHz	802.11b 1Mbps	Front	10mm	SKU 3	11	2462	20.13	20.50	1.089	97.14	1.029	-0.01	0.055	0.062
	WLAN2.4GHz	802.11b 1Mbps	Back	10mm	SKU 3	11	2462	20.13	20.50	1.089	97.14	1.029	-0.06	0.675	0.756
28	WLAN2.4GHz	802.11b 1Mbps	Back	10mm	SKU 3	1	2412	19.59	20.50	1.233	97.14	1.029	-0.09	0.770	0.977
	WLAN2.4GHz	802.11b 1Mbps	Back	10mm	SKU 3	6	2437	19.53	20.50	1.250	97.14	1.029	-0.13	0.754	0.970
	WLAN2.4GHz	802.11b 1Mbps	Back	10mm	SKU 4	1	2412	19.59	20.50	1.233	97.14	1.029	-0.11	0.627	0.796
	WLAN5GHz	802.11a 6Mbps	Front	10mm	SKU 3	52	5260	21.42	21.50	1.019	86.71	1.153	-0.03	0.119	0.140
	WLAN5GHz	802.11a 6Mbps	Back	10mm	SKU 3	52	5260	21.42	21.50	1.019	86.71	1.153	-0.12	0.157	0.184
29	WLAN5GHz	802.11a 6Mbps	Back	10mm	SKU 3	56	5280	20.90	21.50	1.148	86.71	1.153	-0.09	0.163	0.216
	WLAN5GHz	802.11a 6Mbps	Back	10mm	SKU 3	60	5300	21.33	21.50	1.040	86.71	1.153	-0.16	0.177	0.212
	WLAN5GHz	802.11a 6Mbps	Back	10mm	SKU 3	64	5320	18.57	19.00	1.104	86.71	1.153	-0.15	0.117	0.149
	WLAN5GHz	802.11a 6Mbps	Back	10mm	SKU 4	56	5280	20.90	21.50	1.148	86.71	1.153	-0.05	0.155	0.205
	WLAN5GHz	802.11a 6Mbps	Front	10mm	SKU 3	116	5580	21.17	22.00	1.211	86.71	1.153	-0.01	0.107	0.149
	WLAN5GHz	802.11a 6Mbps	Back	10mm	SKU 3	116	5580	21.17	22.00	1.211	86.71	1.153	-0.09	0.402	0.561
	WLAN5GHz	802.11a 6Mbps	Back	10mm	SKU 3	100	5500	19.84	20.00	1.038	86.71	1.153	-0.16	0.407	0.487
30	WLAN5GHz	802.11a 6Mbps	Back	10mm	SKU 3	132	5660	21.09	21.50	1.099	86.71	1.153	-0.09	0.627	0.795
	WLAN5GHz	802.11a 6Mbps	Back	10mm	SKU 3	140	5700	15.37	15.50	1.031	86.71	1.153	-0.05	0.146	0.173
	WLAN5GHz	802.11a 6Mbps	Back	10mm	SKU 4	132	5660	21.09	21.50	1.099	86.71	1.153	-0.07	0.352	0.446

13.4 Product Specific SAR

<WLAN SAR>

Plot No.	Band	Mode	Test Position	Gap (mm)	Sample	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)
	WLAN5GHz	802.11a 6Mbps	Front	0mm	SKU 3	52	5260	21.42	21.50	1.019	86.71	1.153	0.02	0.298	0.350
	WLAN5GHz	802.11a 6Mbps	Back	0mm	SKU 3	52	5260	21.42	21.50	1.019	86.71	1.153	-0.13	0.181	0.213
	WLAN5GHz	802.11a 6Mbps	Left Side	0mm	SKU 3	52	5260	21.42	21.50	1.019	86.71	1.153	0.02	0.487	0.572
31	WLAN5GHz	802.11a 6Mbps	Left Side	0mm	SKU 3	56	5280	20.90	21.50	1.148	86.71	1.153	-0.09	0.521	0.690
	WLAN5GHz	802.11a 6Mbps	Left Side	0mm	SKU 3	60	5300	21.33	21.50	1.040	86.71	1.153	0.03	0.538	0.645
	WLAN5GHz	802.11a 6Mbps	Left Side	0mm	SKU 3	64	5320	18.57	19.00	1.104	86.71	1.153	0.01	0.316	0.402
	WLAN5GHz	802.11a 6Mbps	Top Side	0mm	SKU 3	52	5260	21.42	21.50	1.019	86.71	1.153	0	0.106	0.125
	WLAN5GHz	802.11a 6Mbps	Left Side	0mm	SKU 4	56	5280	20.90	21.50	1.148	86.71	1.153	-0.05	0.436	0.577
	WLAN5GHz	802.11a 6Mbps	Front	0mm	SKU 3	116	5580	21.17	22.00	1.211	86.71	1.153	-0.09	0.230	0.321
	WLAN5GHz	802.11a 6Mbps	Back	0mm	SKU 3	116	5580	21.17	22.00	1.211	86.71	1.153	-0.03	0.545	0.761
	WLAN5GHz	802.11a 6Mbps	Left Side	0mm	SKU 3	116	5580	21.17	22.00	1.211	86.71	1.153	0.06	0.638	0.891
	WLAN5GHz	802.11a 6Mbps	Left Side	0mm	SKU 3	100	5500	19.84	20.00	1.038	86.71	1.153	-0.08	0.448	0.536
32	WLAN5GHz	802.11a 6Mbps	Left Side	0mm	SKU 3	132	5660	21.09	21.50	1.099	86.71	1.153	-0.18	0.728	0.922
	WLAN5GHz	802.11a 6Mbps	Left Side	0mm	SKU 3	140	5700	15.37	15.50	1.031	86.71	1.153	-0.03	0.163	0.194
	WLAN5GHz	802.11a 6Mbps	Top Side	0mm	SKU 3	116	5580	21.17	22.00	1.211	86.71	1.153	0.02	0.071	0.099
	WLAN5GHz	802.11a 6Mbps	Left Side	0mm	SKU 4	132	5660	21.09	21.50	1.099	86.71	1.153	-0.18	0.480	0.608

13.5 Repeated SAR Measurement

No.	Band	Mode	Test Position	Gap (mm)	Sample	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	WLAN5GHz	802.11a 6Mbps	Left Cheek	0mm	SKU 4	157	5785	21.18	21.50	1.077	86.71	1.153	0.09	0.898		1.115
2nd	WLAN5GHz	802.11a 6Mbps	Left Cheek	0mm	SKU 4	157	5785	21.18	21.50	1.077	86.71	1.153	0.04	0.868	1.03	1.078

General Note:

1. Per KDB 865664 D01v01r04, for each frequency band, repeated SAR measurement is required only when the measured SAR is ≥0.8W/kg.
2. Per KDB 865664 D01v01r04, if the ratio among the repeated measurement is ≤ 1.2 and the measured SAR <1.45W/kg, only one repeated measurement is required.
3. The ratio is the difference in percentage between original and repeated *measured SAR*.
4. All measurement SAR result is scaled-up to account for tune-up tolerance and is compliant.

14. Simultaneous Transmission Analysis

NO.	Simultaneous Transmission Configurations	Head	Body-worn	Hotspot	Product Specific
1.	WCDMA + WLAN2.4GHz	Yes	Yes	Yes	Yes
2.	LTE + WLAN2.4GHz	Yes	Yes	Yes	Yes
3.	WCDMA+ Bluetooth	Yes	Yes	Yes	Yes
4.	LTE + Bluetooth	Yes	Yes	Yes	Yes
5.	WCDMA + WLAN5GHz	Yes	Yes	Yes	Yes
6.	LTE + WLAN5GHz	Yes	Yes	Yes	Yes

General Note:

1. WLAN and Bluetooth share the same antenna, and cannot transmit simultaneously.
2. EUT will choose either WLAN 2.4GHz or WLAN 5GHz according to the network signal condition; therefore, 2.4GHz WLAN and 5GHz WLAN will not operate simultaneously at any moment.
3. The Scaled SAR summation is calculated based on the same configuration and test position.
4. Per KDB 447498 D01v06, 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.
   v) The SPLSR calculated results please refer to section 14.5.

14.1 Head Exposure Conditions

WWAN Band		Exposure Position	1 WWAN 1g SAR (W/kg)	2 2.4GHz WLAN 1g SAR (W/kg)	3 5GHz WLAN 1g SAR (W/kg)	4 Bluetooth 1g SAR (W/kg)	1+2 Summed 1g SAR (W/kg)	1+3 Summed 1g SAR (W/kg)	1+4 Summed 1g SAR (W/kg)	SPLSR	Case No
WCDMA	WCDMA II	Right Cheek	0.347	0.505	0.977	0.013	**0.852**	**1.324**	**0.360**		
		Right Tilted	0.173	0.140	0.554	0.013	**0.313**	**0.727**	**0.186**		
		Left Cheek	0.631	0.148	1.115	0.013	**0.779**	**1.746**	**0.644**	0.03	Case 1
		Left Tilted	0.155	0.158	0.667	0.013	**0.313**	**0.822**	**0.168**		
	WCDMA V	Right Cheek	0.405	0.505	0.977	0.013	**0.910**	**1.382**	**0.418**		
		Right Tilted	0.231	0.140	0.554	0.013	**0.371**	**0.785**	**0.244**		
		Left Cheek	0.460	0.148	1.115	0.013	**0.608**	**1.575**	**0.473**		
		Left Tilted	0.264	0.158	0.667	0.013	**0.422**	**0.931**	**0.277**		
LTE	LTE Band 2	Right Cheek	0.264	0.505	0.977	0.013	**0.769**	**1.241**	**0.277**		
		Right Tilted	0.148	0.140	0.554	0.013	**0.288**	**0.702**	**0.161**		
		Left Cheek	0.557	0.148	1.115	0.013	**0.705**	**1.672**	**0.570**	0.03	Case 2
		Left Tilted	0.203	0.158	0.667	0.013	**0.361**	**0.870**	**0.216**		
	LTE Band 4	Right Cheek	0.186	0.505	0.977	0.013	**0.691**	**1.163**	**0.199**		
		Right Tilted	0.073	0.140	0.554	0.013	**0.213**	**0.627**	**0.086**		
		Left Cheek	0.330	0.148	1.115	0.013	**0.478**	**1.445**	**0.343**		
		Left Tilted	0.075	0.158	0.667	0.013	**0.233**	**0.742**	**0.088**		
	LTE Band 5	Right Cheek	0.300	0.505	0.977	0.013	**0.805**	**1.277**	**0.313**		
		Right Tilted	0.163	0.140	0.554	0.013	**0.303**	**0.717**	**0.176**		
		Left Cheek	0.345	0.148	1.115	0.013	**0.493**	**1.460**	**0.358**		
		Left Tilted	0.194	0.158	0.667	0.013	**0.352**	**0.861**	**0.207**		
	LTE Band 12	Right Cheek	0.230	0.505	0.977	0.013	**0.735**	**1.207**	**0.243**		
		Right Tilted	0.134	0.140	0.554	0.013	**0.274**	**0.688**	**0.147**		
		Left Cheek	0.264	0.148	1.115	0.013	**0.412**	**1.379**	**0.277**		
		Left Tilted	0.151	0.158	0.667	0.013	**0.309**	**0.818**	**0.164**		

14.2 Hotspot Exposure Conditions

WWAN Band		Exposure Position	1 WWAN 1g SAR (W/kg)	2 2.4GHz WLAN 1g SAR (W/kg)	3 5GHz WLAN 1g SAR (W/kg)	4 Bluetooth 1g SAR (W/kg)	1+2 Summed 1g SAR (W/kg)	1+3 Summed 1g SAR (W/kg)	1+4 Summed 1g SAR (W/kg)	SPLSR	Case No
WCDMA	WCDMA II	Front	0.502	0.062	0.231	0.047	**0.564**	**0.733**	**0.549**		
		Back	0.924	0.977	0.761	0.047	**1.901**	**1.685**	**0.971**	0.02	Case 3
		Left side	0.284	0.545	0.578	0.047	**0.829**	**0.862**	**0.331**		
		Right side	0.081				**0.081**	**0.081**	**0.081**		
		Top side		0.174	0.112	0.047	**0.174**	**0.112**	**0.047**		
		Bottom side	0.520				**0.520**	**0.520**	**0.520**		
	WCDMA V	Front	0.388	0.062	0.231	0.047	**0.450**	**0.619**	**0.435**		
		Back	0.549	0.977	0.761	0.047	**1.526**	**1.310**	**0.596**		
		Left side	0.353	0.545	0.578	0.047	**0.898**	**0.931**	**0.400**		
		Right side	0.219				**0.219**	**0.219**	**0.219**		
		Top side		0.174	0.112	0.047	**0.174**	**0.112**	**0.047**		
		Bottom side	0.248				**0.248**	**0.248**	**0.248**		
LTE	LTE Band 2	Front	0.530	0.062	0.231	0.047	**0.592**	**0.761**	**0.577**		
		Back	0.895	0.977	0.761	0.047	**1.872**	**1.656**	**0.942**	0.02	Case 4
		Left side	0.267	0.545	0.578	0.047	**0.812**	**0.845**	**0.314**		
		Right side	0.075				**0.075**	**0.075**	**0.075**		
		Top side		0.174	0.112	0.047	**0.174**	**0.112**	**0.047**		
		Bottom side	0.489				**0.489**	**0.489**	**0.489**		
	LTE Band 4	Front	0.536	0.062	0.231	0.047	**0.598**	**0.767**	**0.583**		
		Back	0.779	0.977	0.761	0.047	**1.756**	**1.540**	**0.826**	0.02	Case 5
		Left side	0.228	0.545	0.578	0.047	**0.773**	**0.806**	**0.275**		
		Right side	0.035				**0.035**	**0.035**	**0.035**		
		Top side		0.174	0.112	0.047	**0.174**	**0.112**	**0.047**		
		Bottom side	0.540				**0.540**	**0.540**	**0.540**		
	LTE Band 5	Front	0.310	0.062	0.231	0.047	**0.372**	**0.541**	**0.357**		
		Back	0.306	0.977	0.761	0.047	**1.283**	**1.067**	**0.353**		
		Left side	0.268	0.545	0.578	0.047	**0.813**	**0.846**	**0.315**		
		Right side	0.168				**0.168**	**0.168**	**0.168**		
		Top side		0.174	0.112	0.047	**0.174**	**0.112**	**0.047**		
		Bottom side	0.188				**0.188**	**0.188**	**0.188**		
	LTE Band 12	Front	0.310	0.062	0.231	0.047	**0.372**	**0.541**	**0.357**		
		Back	0.353	0.977	0.761	0.047	**1.330**	**1.114**	**0.400**		
		Left side	0.336	0.545	0.578	0.047	**0.881**	**0.914**	**0.383**		
		Right side	0.189				**0.189**	**0.189**	**0.189**		
		Top side		0.174	0.112	0.047	**0.174**	**0.112**	**0.047**		
		Bottom side	0.089				**0.089**	**0.089**	**0.089**		

14.3 Body-Worn Accessory Exposure Conditions

WWAN Band		Exposure Position	1 WWAN 1g SAR (W/kg)	2 2.4GHz WLAN 1g SAR (W/kg)	3 5GHz WLAN 1g SAR (W/kg)	4 Bluetooth 1g SAR (W/kg)	1+2 Summed 1g SAR (W/kg)	1+3 Summed 1g SAR (W/kg)	1+4 Summed 1g SAR (W/kg)	SPLSR	Case No
WCDMA	WCDMA II	Front	0.502	0.062	0.149	0.047	**0.564**	**0.651**	**0.549**		
		Back	0.924	0.977	0.795	0.047	**1.901**	**1.719**	**0.971**	0.02	Case 3
	WCDMA V	Front	0.388	0.062	0.149	0.047	**0.450**	**0.537**	**0.435**		
		Back	0.549	0.977	0.795	0.047	**1.526**	**1.344**	**0.596**		
LTE	LTE Band 2	Front	0.530	0.062	0.149	0.047	**0.592**	**0.679**	**0.577**		
		Back	0.895	0.977	0.795	0.047	**1.872**	**1.690**	**0.942**	0.02	Case 4
	LTE Band 4	Front	0.536	0.062	0.149	0.047	**0.598**	**0.685**	**0.583**		
		Back	0.779	0.977	0.795	0.047	**1.756**	**1.574**	**0.826**	0.02	Case 5
	LTE Band 5	Front	0.310	0.062	0.149	0.047	**0.372**	**0.459**	**0.357**		
		Back	0.306	0.977	0.795	0.047	**1.283**	**1.101**	**0.353**		
	LTE Band 12	Front	0.310	0.062	0.149	0.047	**0.372**	**0.459**	**0.357**		
		Back	0.353	0.977	0.795	0.047	**1.330**	**1.148**	**0.400**		

14.4 Product Specific Exposure Conditions

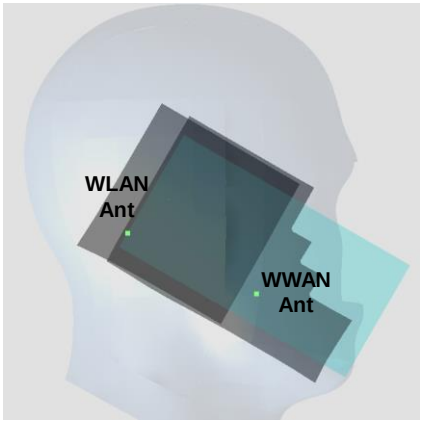
Exposure Position	1 WWAN 10g SAR (W/kg)	2 2.4GHz WLAN 10g SAR (W/kg)	3 5GHz WLAN 10g SAR (W/kg)	4 Bluetooth 10g SAR (W/kg)	1+2 Summed 10g SAR (W/kg)	1+3 Summed 10g SAR (W/kg)	1+4 Summed 10g SAR (W/kg)
Front	-	-	0.350	-	**-**	**0.350**	**-**
Back	-	-	0.761	-	**-**	**0.761**	**-**
Left side	-	-	0.922	-	**-**	**0.922**	**-**
Right side	-	-	-	-	**-**	**-**	**-**
Top side	-	-	0.125	-	**-**	**0.125**	**-**
Bottom side	-	-	-	-	**-**	**-**	**-**

14.5 SPLSR Evaluation and Analysis

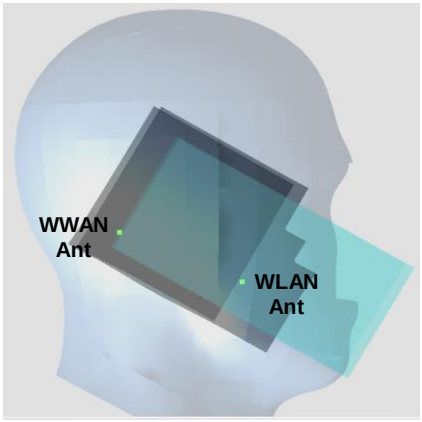
General Note:

1. SPLSR = $(SAR_1 + SAR_2)^{1.5}$ / (*min. separation distance, mm*). If SPLSR ≤ 0.04, simultaneously transmission SAR measurement is not necessary.
2. For SPLSR calculation is selected highest summation SAR result perform.

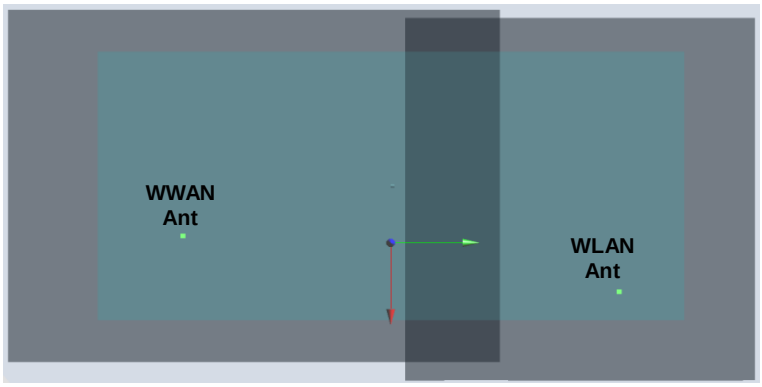
Case 1	Band	Position	SAR (W/kg)	Gap (mm)	SAR peak location (mm)			3D distance (mm)	Summed SAR (W/kg)	SPLSR Results	Simultaneous SAR
					X	Y	Z				
	WCDMA II	Left Cheek	0.631	0	53.1	-59.21	-0.38	83.7	1.75	0.03	Not required
	WLAN5GHz		1.115	0	-22.93	-24.86	6.8				



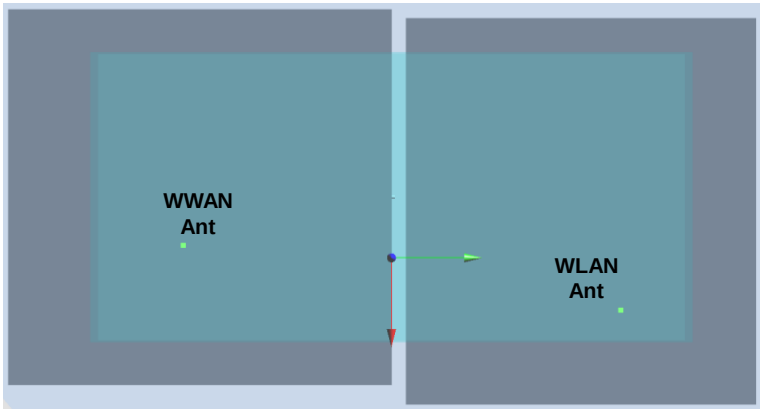
Case 2	Band	Position	SAR (W/kg)	Gap (mm)	SAR peak location (mm)			3D distance (mm)	Summed SAR (W/kg)	SPLSR Results	Simultaneous SAR
					X	Y	Z				
	LTE Band 2	Left Cheek	0.557	0	52.75	-57.38	-0.54	82.7	1.67	0.03	Not required
	WLAN5GHz		1.115	0	-22.93	-24.86	6.8				



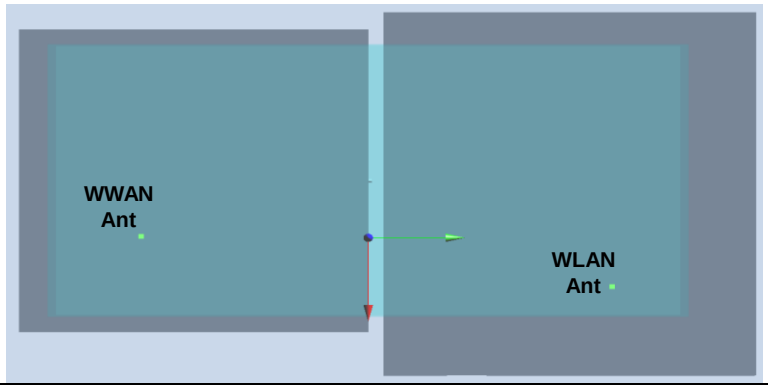
Case 3	Band	Position	SAR (W/kg)	Gap (mm)	SAR peak location (cm) X	Y	Z	3D distance (mm)	Summed SAR (W/kg)	SPLSR Results	Simultaneous SAR
	WCDMA II	Back	0.924	0	15.6	-62.4	-1.3	124.1	1.90	0.02	Not required
	WLAN2.4GHz		0.977	0	30.65	60.8	-1.55				



Case 4	Band	Position	SAR (W/kg)	Gap (mm)	SAR peak location (cm) X	Y	Z	3D distance (mm)	Summed SAR (W/kg)	SPLSR Results	Simultaneous SAR
	LTE Band 2	Back	0.895	0	14.1	-64	-1.24	125.9	1.87	0.02	Not required
	WLAN2.4GHz		0.977	0	30.65	60.8	-1.55				



Case 5	Band	Position	SAR (W/kg)	Gap (mm)	SAR peak location (cm) X	Y	Z	3D distance (mm)	Summed SAR (W/kg)	SPLSR Results	Simultaneous SAR
	LTE Band 4	Back	0.779	0	17.1	-65.5	-1.2	127.0	1.76	0.02	Not required
	WLAN2.4GHz		0.977	0	30.65	60.8	-1.55				



Test Engineer： Ted Hsieh Jay Jian Nick Yu Mood Huang San Lin and Poa Pan

15. Uncertainty Assessment

Per KDB 865664 D01 SAR measurement 100MHz to 6GHz, when the highest measured 1-g SAR within a frequency band is < 1.5 W/kg and the measured 10-g SAR within a frequency band is < 3.75 W/kg. The expanded SAR measurement uncertainty must be ≤ 30%, for a confidence interval of k = 2. If these conditions are met, extensive SAR measurement uncertainty analysis described in IEEE Std 1528-2013 is not required in SAR reports submitted for equipment approval. For this device, the highest measured 1-g SAR is less 1.5W/kg and highest measured 10-g SAR is less 3.75W/kg. Therefore, the measurement uncertainty table is not required in this report.

16. 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. 1528-2013, “IEEE Recommended Practice for Determining the Peak Spatial-Average Specific Absorption Rate (SAR) in the Human Head from Wireless Communications Devices: Measurement Techniques”, Sep 2013

[4] SPEAG DASY System Handbook

[5] FCC KDB 248227 D01 v02r02, “SAR Guidance for IEEE 802.11 (WiFi) Transmitters”, Oct 2015.

[6] FCC KDB 447498 D01 v06, “Mobile and Portable Device RF Exposure Procedures and Equipment Authorization Policies”, Oct 2015

[7] FCC KDB 648474 D04 v01r03, “SAR Evaluation Considerations for Wireless Handsets”, Oct 2015.

[8] FCC KDB 941225 D01 v03r01, “3G SAR MEAUREMENT PROCEDURES”, Oct 2015

[9] FCC KDB 941225 D05 v02r05, “SAR Evaluation Considerations for LTE Devices”, Dec 2015

[10] FCC KDB 941225 D06 v02r01, "SAR Evaluation Procedures for Portable Devices with Wireless Router Capabilities", Oct 2015.

[11] FCC KDB 941225 D07 v01r02, " SAR Evaluation Procedures for UMPC Mini-Tablet Devices", Oct 2015.

[12] FCC KDB 865664 D01 v01r04, "SAR Measurement Requirements for 100 MHz to 6 GHz", Aug 2015.

[13] FCC KDB 865664 D02 v01r02, “RF Exposure Compliance Reporting and Documentation Considerations” Oct 2015.