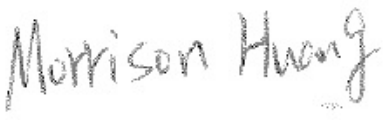
FCC SAR Test Report

FCC ID: QISLDN-LX3

Project No.	:	1801C011
Equipment	:	Smart Phone
Model Name	:	LDN-LX3
Applicant	:	Huawei Technologies Co.,Ltd.
Address	:	Administration Building, Headquarters of Huawei Technologies Co., Ltd., Bantian, Longgang District, Shenzhen, 518129, P.R.C

Date of Receipt	:	Jan. 05, 2018
Date of Test	:	Jan. 12, 2018 ~ Feb. 07, 2018
Issued Date	:	Feb. 08, 2018
Tested by	:	BTL Inc.



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Testing Laboratory
0659

Declaration

BTL represents to the client that testing is done in accordance with standard procedures as applicable and that test instruments used has been calibrated with the standards traceable to National Measurement Laboratory (**NML**), or National Institute of Standards and Technology (**NIST**).

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For the use of the authority's logo is limited unless the Test Standard(s)/Scope(s)/Item(s) mentioned in this test report is (are) included in the conformity assessment authorities acceptance respective.

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REPORT ISSUED HISTORY

Issued No.	Description	Issued Date
BTL-FCC SAR-1-1801C011	Original Issue	Feb. 08, 2018

1. GENERAL SUMMARY

Equipment	Smart Phone
Brand Name	HUAWEI
Model Name	LDN-LX3
Model difference	N/A
Manufacturer	Huawei Technologies Co.,Ltd.
Address	Administration Building, Headquarters of Huawei Technologies Co., Ltd., Bantian, Longgang District, Shenzhen, 518129, P.R.C
Standard(s)	**ANSI Std C95.1-1992** Safety Levels with Respect to Human Exposure to Radio Frequency Electromagnetic Fields, 3 kHz – 300 GHz.(IEEE Std C95.1-1991) **IEEE Std 1528-2013** Recommended Practice for Determining the Peak Spatial-Average Specific Absorption Rate (SAR) in the Human Head from Wireless Communications Devices: Measurement Techniques **KDB941225 D01** 3G SAR Procedures v03r01 **KDB941225 D05** SAR for LTE Devices v02r05 **KDB941225 D06** Hotspot Mode V02r01 **KDB447498 D01** General RF Exposure Guidance v06 **KDB648474 D04** Handset SAR v01r03 **KDB248227 D01** 802. 11 Wi-Fi SAR v02r02 **KDB865664 D01** SAR measurement 100 MHz to 6 GHz v01r04 **KDB865664 D02** SAR Reporting v01r02 **KDB690783 D01** SAR Listings on Grants v01r03

The above equipment has been tested and found compliance with the requirement of the relative standards by BTL Inc.
The test data, data evaluation, and equipment configuration contained in our test report (Ref No. BTL-FCC SAR-1-1801C011) were obtained utilizing the test procedures, test instruments, test sites that has been accredited by the Authority of TAF according to the ISO-17025 quality assessment standard and technical standard(s).

2. RF EMISSIONS MEASUREMENT

2.1 TEST FACILITY

The test facilities used to collect the test data in this report is **SAR room**at the location of No. 68-1, Ln. 169, Sec.2, Datong Rd., Xizhi Dist., New Taipei City 221, Taiwan.

2.2 MEASUREMENT UNCERTAINTY

Note: Per KDB865664 D01 SAR Measurement 100 MHz to 6 GHz, when the highest measured 1-g SAR within a frequency band is < 1.5 W/kg, the extensive SAR measurement uncertainty analysis described in IEEE Std 1528-2013 is not required in SAR reports submitted for equipment approval. The equivalent ratio (1.5/1.6) is applied to extremity and occupational exposure conditions.

3. GENERAL INFORMATION

3.1 STATEMENT OF COMPLIANCE

Equipment Class	Mode	Highest Head SAR-1g (W/kg)	Highest Body-worn(15mm) SAR-1g(W/kg)*	Highest Hotspot(10mm) SAR-1g(W/kg)	Highest product specific 10-g SAR (W/kg)**
PCE	GSM850	0.20	0.29	0.40	-
	GSM1900	0.10	0.28	0.88	0.43
	UMTS Band 2	0.17	0.47	0.53	-
	UMTS Band 4	0.12	0.98	0.96	2.15
	UMTS Band 5	0.18	0.30	0.33	-
	LTE Band 2	0.13	0.42	0.28	-
	LTE Band 4	0.12	0.98	0.60	1.68
	LTE Band 5	0.16	0.18	0.19	-
	LTE Band 7	0.10	0.42	0.75	-
DTS	2.4G WLAN	0.41	0.06	0.12	-
The highest simultaneous SAR_{1g} value is 1.12 W/kg per KDB690783 D01					

Note:

1)* For body-worn operation, this device has been tested and meets FCC RF exposure guidelines when used with any accessory that contains no metal and that positions the handset a minimum of 15mm from the body. Use of other accessories may not ensure compliance with FCC RF exposure guidelines.

2)**For product specific 10-g SAR operation, this device has been tested and meets the10-g SAR limits of 4.0 W/kg for general population/ uncontrolled exposure limits according to the ANSI C95.1:1992/IEEE C95.1:1991.

3)The device is in compliance with Specific Absorption Rate(SAR)for general population uncontrolled exposure limits according to the FCC rule §2.1093, the ANSI C95.1:1992/IEEE C95.1:1991, the NCRP Report Number 86 for uncontrolled environment, and had been tested in accordance with the measurement methods and procedures specified in IEEE Std 1528-2013 .

3.2 GENERAL DESCRIPTION OF EUT

Equipment	Smart Phone			
Model Name	LDN-LX3			
IMEI Code	Sample 1	IMEI 1: 867242030010607		
		IMEI 2: 867242030060602		
	Sample 2	IMEI 1: 867242030010672		
		IMEI 2: 867242030060677		
	Sample 3	IMEI 1: 867242030010755		
		IMEI 2: 867242030060750		
S/N	Sample 1: VWUBB17C18150069			
	Sample 2: VWUBB17C18150076			
	Sample 3: VWUBB17C18150084			
HW Version	HL1LDNM			
SW Version	LDN-LX3 5.0.1.37(C900)			
Modulation	GSM(GMSK/8PSK),UMTS(QPSK),LTE(QPSK/16QAM),WiFi(DSSS/OFDM),BT(GFSK/ π /4-DQPSK/8-DPSK)			
Operation Frequency Range(s)	Band	TX (MHz)	RX (MHz)	
	GSM850	824-849	869-894	
	GSM1900	1850-1910	1930-1990	
	UMTS Band 2	1850-1910	1930-1990	
	UMTS Band 4	1710-1755	2110-2155	
	UMTS Band 5	824-849	869-894	
	LTE Band 2	1850-1910	1930-1990	
	LTE Band 4	1710-1755	2110-2155	
	LTE Band 5	824-849	869-894	
	LTE Band 7	2500-2570	2620-2690	
	Bluetooth	2400 -2483.5		
	2.4GWIFI	2400 -2483.5		
GPRS/EDGE Multislot Class(12)	Max Number of Timeslots in Uplink:	4		
	Max Number of Timeslots in Downlink:	4		
	Max Total Timeslot:	5		
GSM Device class	Class B			
HSDPA UE Category	14			
HSUPA UE Category	6			
DC-HSDPA UE Category	24			
Power Class:	4,tested with power level 5(GSM850)			
	1,tested with power level 0(GSM1900)			
	3, tested with power control “all 1”(UMTS Band 2/4/5)			
	3, tested with power control “all Max” (LTE Band 2/4/5/7)			
Test Channels (low-mid-high):	128-190-251 (GSM850)			
	512-661-810 (GSM1900)			
	9262-9400-9538(UMTS Band 2)			
	1312-1413-1513 (UMTS Band 4)			
	4132-4182-4233 (UMTS Band 5)			
	18700-18900-19100(LTE Band 2 BW=20MHz)			
	20050-20175-20300(LTE Band 4 BW=20MHz)			
	20450-20525-20600(LTE Band 5 BW=10MHz)			
	20850-21100-21350(LTE Band 7 BW=20MHz)			
	1-6 -11 (2.4G WIFI 802.11b/g/n HT20)			
	3-6 - 9 (2.4G WIFI 802.11n HT40)			
Other Information				

Battery	Huawei Technologies Co., Ltd. Battery Model: HB366481ECW-11 Rated capacity: 2900mAh Nominal Voltage: ⎓ + 3.82V Charging Voltage: ⎓ + 4.35V 1. Huizhou Desay Battery Co., Ltd. 2. SCUD(Fujian)Electronics Co., Ltd. 3. Sunwoda Electronic Co., Ltd.
With Earphone(Yes/No)	Yes

3.3 LABORATORY ENVIRONMENT

Temperature	Min. = 18ºC, Max. = 25ºC
Relative humidity	Min. = 30%, Max. = 70%
Ground system resistance	< 0.5 Ω
Ambient noise is checked and found very low and in compliance with requirement of standards. Reflection of surrounding objects is minimized and in compliance with requirement of standards.	

3.4 MAIN TEST INSTRUMENTS

Item	Equipment	Manufacturer	Model	Serial No.	Cal. Date	Cal. Interval
1	E-field Probe	Speag	EX3DV4	7369	Aug. 24, 2017	1 Year
2	Data Acquisition Electronics	Speag	DAE4	1486	Aug. 17, 2017	1 Year
3	System Validation Dipole	Speag	D835V2	4d199	Aug. 12, 2015	3 Years
4	System Validation Dipole	Speag	D1800V2	2d210	Aug. 13, 2015	3 Years
5	System Validation Dipole	Speag	D1900V2	5d208	Aug. 13, 2015	3 Years
6	System Validation Dipole	Speag	D2450V2	973	Aug. 14, 2015	3 Years
7	System Validation Dipole	Speag	D2600V2	1111	Aug. 14, 2015	3 Years
8	SAM Twin Phantom	Speag	Twin Sam Phantom V5.0	1897	N/A	N/A
9	8960 Series 10 Wireless Com T est set	Agilent	E5515E	MY53211053	Mar. 26, 2017	1 Year
10	Radio Com Analyzer	Anritsu	MT8820C	6.202E+09	Nov. 05, 2017	1 Year
11	ENA Network Analyzer	Keysight	E5071C	MY46102965	Mar. 26, 2017	1 Year
12	Signal Generator	R&S	SMB100A	113244	Jul. 18, 2017	1 Year
13	Spectyrm Analyzer	R&S	FSV 7 GHz	103031	Jun. 06, 2017	1 Year
14	Power Meter	Anritsu	ML2495A	1128008	Oct. 02, 2017	1 Year
15	Power Sensor	Anritsu	MA2411B	1126001	Oct. 02, 2017	1 Year
16	Power Meter	Anritsu	ML2487A	6K00004714	Sep. 11, 2017	1 Year
17	Power Sensor	Anritsu	MA2411A	34138	Sep. 11, 2017	1 Year
18	Dielectric Assessment Kit	Speag	DAK-3.5	1226	N/A	N/A
19	Dielectric Probe Kit	Agilent	85070E	2593	N/A	N/A
20	Low pass filter	Mini-Circuits	SLP-2950+	M108294	N/A	N/A
21	Power Amplifier	Mini-Circuits	ZVE-2W-272+	N650001538	N/A	Note 1
22	Power Amplifier	Mini-Circuits	ZVE-8G+	N628801631	N/A	Note 1
23	Attenuator	Worken	WFA0602-10	SA10-01	N/A	Note 1
24	Attenuator	Worken	WFA0602-10	SA10-02	N/A	Note 1
25	Attenuator	Worken	WFA0602-3	SA3-01	N/A	Note 1
26	Dual directional coupler	Woken	0110A05601O-10	DOM5CIW3E2	N/A	Note 1

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.

2: ” N/A” denotes no model name, serial No. or calibration specified.

3: 1) Per KDB865664 D01 requirements for dipole calibration, the test laboratory has adopted three-year extended calibration interval. Each measured dipole is expected to evaluate with the following criteria at least on annual interval in Appendix C.

a) There is no physical damage on the dipole;

b) System check with specific dipole is within 10% of calibrated value;

c) The most recent return-loss result , measured at least annually, deviates by no more than 20% from the previous measurement;
d) The most recent measurement of the real or imaginary parts of the impedance, measured at least annually is within 5 Ω from the previous measurement.
2) Network analyzer probe calibration against air, distilled water and a short block performed before measuring liquid parameters.

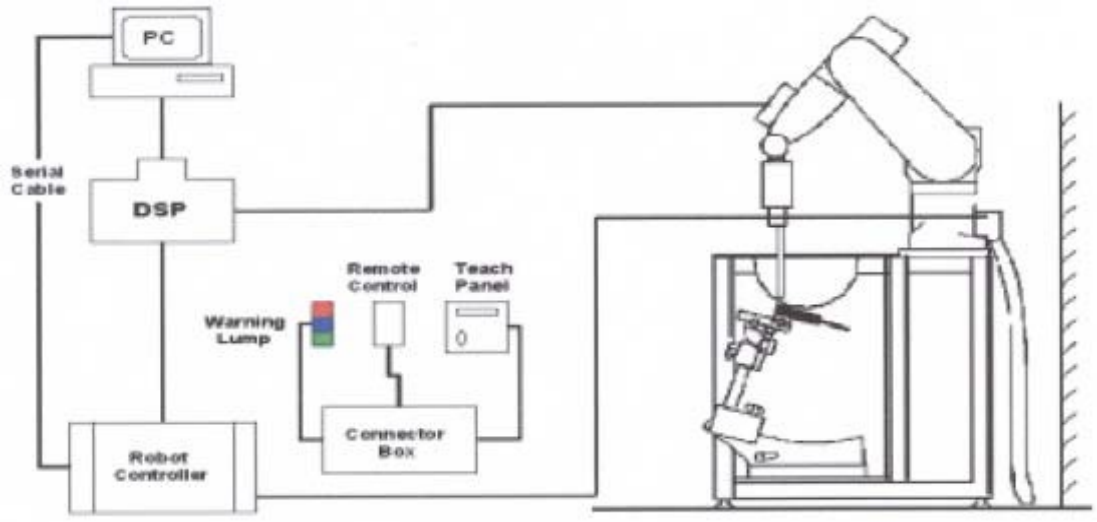
4.SAR MEASUREMENTS SYSTEM CONFIGURATION

4.1SAR MEASUREMENT SET-UP

The DASY5 system for performing compliance tests consists of the following items:

1. A standard high precision 6-axis robot (Stäubli RX family) with controller and software. An arm extension for accommodating the data acquisition electronics (DAE).
2. A dosimetric probe, i.e. an isotropic E-field probe optimized and calibrated for usage in tissue simulating liquid. The probe is equipped with an optical surface detector system.
3. A data acquisition electronic (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.
4. A unit to operate the optical surface detector which is connected to the EOC.
5. The Electro-Optical Coupler (EOC) performs the conversion from the optical into a digital electric signal of the DAE. The EOC is connected to the DASY5 measurement server.
6. TheDASY5 measurement server, which performs all real-time data evaluation for field measurements and surface detection, controls robot movements and handles safety operation. A computer operating Windows 7
7. DASY5 software and SEMCAD data evaluation software.
8. Remote control with teach panel and additional circuitry for robot safety such as warning lamps, etc.
9. The generic twin phantom enabling the testing of left-hand and right-hand usage.
10. The device holder for handheld mobile phones.
11. Tissue simulating liquid mixed according to the given recipes.
12. System validation dipoles allowing to validate the proper functioning of the system.

4.1.1Test Setup Layout



4.2 DASY5E-FIELDPROBESYSTEM

The SAR measurements were conducted with the dosimetric probe EX3DV4(manufactured by SPEAG), designed in the classical triangular configuration and optimized for dosimetric evaluation.

4.2.1EX3DV4 PROBE SPECIFICATION

Construction	Symmetrical design with triangular core Interleaved sensors Built-in shielding against static charges PEEK enclosure material (resistant to organic solvents, e.g., DGBE)
Calibration	ISO/IEC 17025 calibration service available
Frequency	10 MHz to 6 GHz Linearity: ± 0.2 dB (30 MHz to 6 GHz)
Directivity	± 0.3 dB in HSL (rotation around probe axis) ± 0.5 dB in tissue material (rotation normal to probe axis)
Dynamic Range	10 µW/g to > 100 mW/g Linearity:± 0.2dB
Dimensions	Overall length: 330 mm (Tip: 20 mm) Tip diameter: 2.5 mm (Body: 12 mm) Distance from probe tip to dipole centers: 1.0 mm

EX3DV4 E-field Probe

4.2.2E-FIELD PROBE CALIBRATION

Each probe is calibrated according to a dosimetric assessment procedure with accuracy better than ±10%. The spherical isotropy was evaluated and found to be better than ± 0.25dB. The sensitivity parameters (NormX, NormY, NormZ), the diode compression parameter (DCP) and the conversion factor (ConvF) of the probe are tested.

The free space E-field from amplified probe outputs is determined in a test chamber. This is performed in a TEM cell for frequencies bellow 1 GHz, and in a wave guide above 1 GHz for free space. For the free space calibration, the probe is placed in the volumetric center of the cavity and at the proper orientation with the field. The probe is then rotated 360 degrees.

E-field temperature correlation calibration is performed in a flat phantom filled with the appropriate simulated brain tissue. The measured free space E-field in the medium correlates to temperature rise in a dielectric medium. For temperature correlation calibration a RF transparent thermistor-based temperature probe is used in conjunction with the E-field probe.

$$SAR = C\frac{\Delta T}{\Delta t}$$

Where: Δt = Exposure time (30 seconds),

C = Heat capacity of tissue (brain or muscle),

ΔT = Temperature increase due to RF exposure.

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

Where: σ = Simulated tissue conductivity,

ρ = Tissue density (kg/m3).

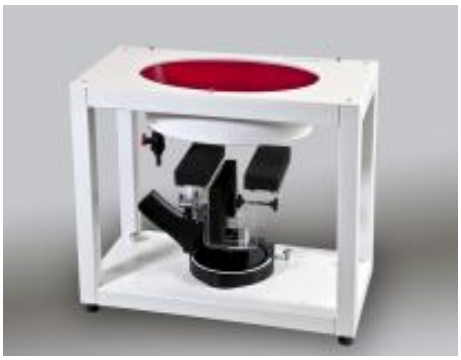
4.2.3OTHER TEST EQUIPMENT

4.2.3.1. Device Holder for Transmitters

Construction: Simple but effective and easy-to-use extension for Mounting Device that facilitates the testing of larger devices (e.g., laptops, cameras, etc.) It is light weight and fits easily on the upper part of the Mounting Device in place of the phone positioner. The extension is fully compatible with the Twin SAM, ELI4and SAM v6.0Phantoms.
Material: POM, Acrylic glass, Foam

4.2.3.2 Phantom

Model	ELI4 Phantom
Construction	Phantom for compliance testing of handheld and body-mounted wireless devices in the frequency range of 30 MHz to 6 GHz. ELI is fully compatible with the IEC 62209-2 standard and all known tissue simulating liquids. ELI has been optimized regarding its performance and can be integrated into our standard phantom tables. A cover prevents evaporation of the liquid. Reference markings on the phantom allow installation of the complete setup, including all predefined phantom positions and measurement grids, by teaching three points. The phantom is compatible with all SPEAG dosimetric probes and dipoles.
Shell Thickness	2±0.1 mm
Filling Volume	Approx. 30 liters
Dimensions	Length: 600 mm ; Width: 190mm Height: adjustable feet
Aailable	Special



Model	Twin SAM
Construction	The shell corresponds to the specifications of the Specific Anthropomorphic Mannequin (SAM) phantom defined in IEEE 1528 and IEC 62209-1. It enables the dosimetric evaluation of left and right hand phone usage as well as body mounted usage at the flat phantom region. A cover prevents evaporation of the liquid. Reference markings on the phantom allow the complete setup of all predefined phantom positions and measurement grids by teaching three points with the robot.
Shell Thickness	2 ± 0.2 mm
Filling Volume	Approx. 25 liters
Dimensions	Length:1000mm; Width: 500mm Height: adjustable feet
Aailable	Special

4.2.4SCANNING PROCEDURE

The DASY5 installation includes predefined files with recommended procedures for measurements and validation. They are read-only document files and destined as fully defined but unmeasured masks. All test positions (head or body-worn) are tested with the same configuration of test steps differing only in the grid definition for the different test positions.

The “reference” and “drift” measurements are located at the beginning and end of the batch process. They measure the field drift at one single point in the liquid over the complete procedure. The indicated drift is mainly the variation of the DUT’s output power and should vary max. ± 5 %.

The “surface check” measurement tests the optical surface detection system of the DASY5 system by repeatedly detecting the surface with the optical and mechanical surface detector and comparing the results. The output gives the detecting heights of both systems, the difference between the two systems and the standard deviation of the detection repeatability. Air bubbles or refraction in the liquid due to separation of the sugar-water mixture gives poor repeatability (above ± 0.1mm). To prevent wrong results tests are only executed when the liquid is free of air bubbles. The difference between the optical surface detection and the actual surface depends on the probe and is specified with each probe. (It does not depend on the surface reflectivity or the probe angle to the surface within ± 30°.)

- Area Scan

The “area scan” measures the SAR above the DUT or verification dipole on a parallel plane to the surface. It is used to locate the approximate location of the peak SAR with 2D spline interpolation. The robot performs a stepped movement along one grid axis while the local electrical field strength is measured by the probe. The probe is touching the surface of the SAM during acquisition of measurement values. The standard scan uses large grid spacing for faster measurement. Standard grid spacing for head measurements is 15 mm in x- and y- dimension(≤2GHz)，12 mm in x- and y- dimension(2-4 GHz) and 10mm in x- and y- dimension(4-6GHz). If a finer resolution is needed, the grid spacing can be reduced. Grid spacing and orientation have no influence on the SAR result. For special applications where the standard scan method does not find the peak SAR within the grid, e.g. mobile phones with flip cover, the grid can be adapted in orientation.

- Zoom Scan

A “zoom scan” measures the field in a volume around the 2D peak SAR value acquired in the previous “coarse” scan. This is a fine grid with maximum scan spatial resolution: Δx_{zoom}, Δy_{zoom}≤ 2GHz -≤8mm, 2-4GHz -≤5 mm and 4-6 GHz-≤4mm; Δz_{zoom}≤3GHz -≤5 mm, 3-4 GHz-≤4mm and 4-6GHz-≤2mm where the robot additionally moves the probe along the z-axis away from the bottom of the Phantom. DASY is also able to perform repeated zoom scans if more than 1 peak is found during area scan. In this document, the evaluated peak 1g and 10g averaged SAR values are shown in the 2D-graphics in Appendix B. Test results relevant for the specified standard (see chapter 1.4.)are shown in table form form in chapter 7.2.

A Z-axis scan measures the total SAR value at the x-and y-position of the maximum SAR value found during the cube scan. The probe is moved away in z-direction from the bottom of the SAM phantom in 2 mm steps. This measurement shows the continuity of the liquid and can - depending in the field strength – also show the liquid depth.

The following table summarizes the area scan and zoom scan resolutions per FCC KDB 865664D01:

Frequency	Maximun Area Scan resolution (Δx_{area}, Δy_{area})	Maximun Zoom Scan spatial resolution (Δx_{Zoom}, Δy_{Zoom})	Maximun Zoom Scan spatial resolution			Minimum zoom scan volume (x,y,z)
			Uniform Grid	Graded Grad		
			$\Delta z_{Zoom}(n)$	$\Delta z_{Zoom}(1)$*	$\Delta z_{Zoom}(n>1)$*	
≤2GHz	≤15mm	≤8mm	≤5mm	≤4mm	≤1.5*Δz_{Zoom}(n-1)	≥30mm
2-3GHz	≤12mm	≤5mm	≤5mm	≤4mm	≤1.5*Δz_{Zoom}(n-1)	≥30mm
3-4GHz	≤12mm	≤5mm	≤4mm	≤3mm	≤1.5*Δz_{Zoom}(n-1)	≥28mm
4-5GHz	≤10mm	≤4mm	≤3mm	≤2.5mm	≤1.5*Δz_{Zoom}(n-1)	≥25mm
5-6GHz	≤10mm	≤4mm	≤2mm	≤2mm	≤1.5*Δz_{Zoom}(n-1)	≥22mm

4.2.5SPATIAL PEAK SAR EVALUATION

The spatial peak SAR - value for 1 and 10 g is evaluated after the Cube measurements have been done. The basis of the evaluation are the SAR values measured at the points of the fine cube grid consisting of 5 x 5 x 7 points(with 8mm horizontal resolution) or 7 x 7 x 7 points(with 5mm horizontal resolution) or 8 x 8 x 7 points(with 4mm horizontal resolution). The algorithm that finds the maximal averaged volume is separated into three different stages.

- The data between the dipole center of the probe and the surface of the phantom are extrapolated. This data cannot be measured since the center of the dipole is 2.7 mm away from the tip of the probe and the distance between the surface and the lowest measuring point is about 1 mm (see probe calibration sheet). The extrapolated data from a cube measurement can be visualized by selecting “Graph Evaluated”.
- The maximum interpolated value is searched with a straight-forward algorithm. Around this maximum the SAR - values averaged over the spatial volumes (1g or 10 g) are computed using the 3d-spline interpolation algorithm. If the volume cannot be evaluated (i.e., if a part of the grid was cut off by the boundary of the measurement area) the evaluation will be started on the corners of the bottom plane of the cube.
- All neighboring volumes are evaluated until no neighboring volume with a higher average value is found.

Extrapolation

The extrapolation is based on a least square algorithm [W. Gander, Computermathematik, p.168-180]. Through the points in the first 3 cm along the z-axis, polynomials of order four are calculated. These polynomials are then used to evaluate the points between the surface and the probe tip. The points, calculated from the surface, have a distance of 1 mm from each other.

Interpolation

The interpolation of the points is done with a 3d-Spline. The 3d-Spline is composed of three one-dimensional splines with the "Not a knot"-condition [W. Gander, Computermathematik, p.141-150] (x, y and z -direction) [Numerical Recipes in C, Second Edition, p.123ff].

Volume Averaging

At First the size of the cube is calculated. Then the volume is integrated with the trapezoidal algorithm. 8000 points (20x20x20) are interpolated to calculate the average.

Advanced Extrapolation

DASY5 uses the advanced extrapolation option which is able to compansate boundary effects on E-field probes.

4.2.6DATA STORAGE AND EVALUATION

4.2.5.1Data Storage

The DASY5 software stores the acquired data from the data acquisition electronics as raw data (in microvolt readings from the probe sensors), together with all necessary software parameters for the data evaluation (probe calibration data, liquid parameters and device frequency and modulation data) in measurement files with the extension ".DAE4". The software evaluates the desired unit and format for output each time the data is visualized or exported. This allows verification of the complete software setup even after the measurement and allows correction of incorrect parameter settings. For example, if a measurement has been performed with a wrong crest factor parameter in the device setup, the parameter can be corrected afterwards and the data can be re-evaluated.

The measured data can be visualized or exported in different units or formats, depending on the selected probe type ([V/m], [A/m], [°C], [mW/g], [mW/cm²], [dBrel], etc.). Some of these units are not available in certain situations or show meaningless results, e.g., a SAR output in a lossless media will always be zero. Raw data can also be exported to perform the evaluation with other software packages.

4.2.7 Data Evaluation by SEMCAD

The SEMCAD software automatically executes the following procedures to calculate the field units from the microvolt readings at the probe connector. The parameters used in the evaluation are stored in the configuration modules of the software:

Probe parameters:	Sensitivity	Normi, a_{i0}, a_{i1}, a_{i2}
	Conversion factor	$ConvF_i$
	Diode compression point	Dcp_i
Device parameters:	Frequency	f
	Crest factor	cf
Media parameters:	Conductivity	
	Density	

These parameters must be set correctly in the software. They can be found in the component documents or they can be imported into the software from the configuration files issued for the DASY5 components. In the direct measuring mode of the multi meter option, the parameters of the actual system setup are used. In the scan visualization and export modes, the parameters stored in the corresponding document files are used.

The first step of the evaluation is a linearization of the filtered input signal to account for the compression characteristics of the detector diode. The compensation depends on the input signal, the diode type and the DC-transmission factor from the diode to the evaluation electronics.

If the exciting field is pulsed, the crest factor of the signal must be known to correctly compensate for peak power. The formula for each channel can be given as:

$$V_i = U_i + U_i^2 \cdot cf / dcp_i$$

With V_i = compensated signal of channel i (i = x, y, z)

U_i = input signal of channel i (i = x, y, z)

cf = crest factor of exciting field (DASY parameter)

dcp_i = diode compression point (DASY parameter)

From the compensated input signals the primary field data for each channel can be evaluated:

E-field probes: $E_i = (V_i / Norm_i \cdot ConvF)^{1/2}$

H-field probes: $H_i = (V_i)^{1/2} \cdot (a_{i0} + a_{i1} f + a_{i2} f^2) / f$

With V_i = compensated signal of channel i (i = x, y, z)

$Norm_i$ = sensor sensitivity of channel i (i = x, y, z)
[mV/(V/m)^2] for E-field Probes

ConvF = sensitivity enhancement in solution

aij = sensor sensitivity factors for H-field probes

f = carrier frequency [GHz]

E_i = electric field strength of channel i in V/m

H_i = magnetic field strength of channel i in A/m

The RSS value of the field components gives the total field strength (Hermitian magnitude):

$$E_{tot} = (E_X^2 + E_Y^2 + E_Z^2)^{1/2}$$

The primary field data are used to calculate the derived field units.

$$SAR = (E_{tot})^2 \cdot \sigma / (\rho \cdot 1000)$$

With SAR = local specific absorption rate in mW/g

E_{tot} = total field strength in V/m

= conductivity in [mho/m] or [Siemens/m]

= equivalent tissue density in g/cm^3

Note that the density is normally set to 1 (or 1.06), to account for actual brain density rather than the density of the simulation liquid. The power flow density is calculated assuming the excitation field to be a free space field.

$$P_{pwe} = E_{tot}^2 / 3770 \text{ or } P_{pwe} = H_{tot}^2 \cdot 37.7$$

With P_{pwe} = equivalent power density of a plane wave in mW/cm^2

E_{tot} = total field strength in V/m

H_{tot} = total magnetic field strength in A/m

5. SYSTEM VERIFICATION PROCEDURE

5.1 TISSUE VERIFICATION

The simulating liquids should be checked at the beginning of a series of SAR measurements to determine of the dielectic parameter are within the tolerances of the specified target values. The measured conductivity and relative permittivity should be within ± 5% of the target values.

The following materials are used for producing the tissue-equivalent materials.

Tissue Type	Bactericide	DGBE	HEC	NaCl	Sucrose	Triton X-100	Water	Diethylene Glycol Mono-hexylether
Head 835	0.2	-	0.2	1.5	57.0	-	41.1	-
Head 1800	-	44.5	-	0.3	-	-	55.2	-
Head 1900	-	44.5	-	0.2	-	-	55.3	-
Head 2450	-	45.0	-	0.1	-	-	54.9	-
Head 2600	-	45.1	-	0.1	-	-	54.8	-

Tissue Type	Bactericide	DGBE	HEC	NaCl	Sucrose	Triton X-100	Water	Diethylene Glycol Mono-hexylether
Body 835	0.2	-	0.2	0.9	48.5	-	50.2	-
Body 1800	-	29.5	-	0.4	-	-	70.1	-
Body 1900	-	29.5	-	0.3	-	-	70.2	-
Body 2450	-	31.4	-	0.1	-	-	68.5	-
Body 2600	-	31.8	-	0.1	-	-	68.1	-

Salt: 99+% Pure Sodium Chloride; Sugar: 98+% Pure Sucrose; Water: De-ionized, 16M + resistivity
HEC: Hydroxyethyl Cellulose; DGBE: 99+% Di(ethylene glycol) butyl ether,[2-(2-butoxyethoxy)ethanol]
Triton X-100(ultra pure): Polyethylene glycol mono [4-(1,1,3,3-tetramethylbutyl)phenyl]ether

Tissue Verification									
Tissue Type	Frequency (MHz)	Liquid Temp. (℃)	Conductivity (σ)	Permittivity (εr)	Targeted Conductivity (σ)	Targeted Permittivity (εr)	Deviation Conductivity (σ) (%)	Deviation Permittivity (εr) (%)	Date
Head	835	22.1	0.894	42.431	0.90	41.5	-0.67	2.24	Jan. 12, 2018
Head	1800	22	1.378	41.483	1.37	40.1	0.58	3.45	Jan. 16, 2018
Head	1900	22.1	1.414	41.293	1.40	40.0	1.00	3.23	Jan. 16, 2018
Head	2450	21.8	1.841	40.753	1.80	39.2	2.28	3.96	Feb. 01, 2018
Head	2600	21.7	2.017	37.487	1.96	39.0	2.91	-3.88	Jan. 17, 2018
Body	835	21.9	0.987	54.887	0.97	55.2	1.75	-0.57	Jan. 18, 2018
Body	835	22	0.981	53.997	0.97	55.2	1.13	-2.18	Jan. 31, 2018
Body	1800	21.9	1.536	54.100	1.49	53.4	3.09	1.31	Jan. 19, 2018
Body	1800	21.7	1.529	54.607	1.49	53.4	2.62	2.26	Jan. 30, 2018
Body	1900	21.8	1.537	53.057	1.52	53.3	1.12	-0.46	Jan. 19, 2018
Body	1900	21.9	1.557	53.378	1.52	53.3	2.43	0.15	Jan. 30, 2018
Body	1900	21.8	1.559	53.149	1.52	53.3	2.57	-0.28	Feb. 07, 2018
Body	2450	22	1.932	51.983	1.95	52.7	-0.92	-1.36	Feb. 01, 2018
Body	2600	22.1	2.170	50.911	2.16	52.5	0.46	-3.03	Jan. 26, 2018
Body	2600	22	2.168	51.398	2.16	52.5	0.37	-2.10	Feb. 01, 2018

Note:
1)The dielectric parameters of the tissue-equivalent liquid should be measured under similar ambient conditions and within 2 °C of the conditions expected during the SAR evaluation to satisfy protocol requirements.
2)KDB 865664 was ensured to be applied for probe calibration frequencies greater than or equal to 50MHz of the EUT frequencies.
3)The above measured tissue parameters were used in the DASY software to perform interpolation via the DASY software to determine actual dielectric parameters at the test frequencies. The SAR test plots may slightly differ from the table above since the DASY rounds to three significant digits.

5.2 SYSTEM CHECK

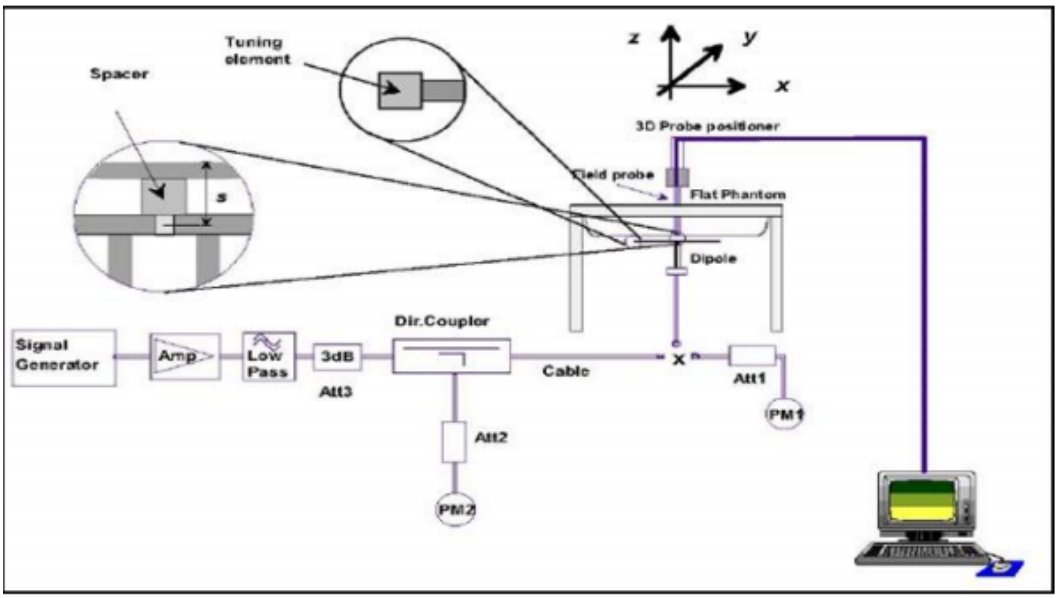
The system check is performed for verifying the accuracy of the complete measurement system and performance of the software. The system check is performed with tissue equivalent material according to IEEE P1528 (described above). The following table shows system check results for all frequency bands and tissue liquids used during the tests.

System Check	Date	Frequency (MHz)	Targeted SAR-1g (W/kg)	Measured SAR-1g (W/kg)	normalized SAR-1g (W/kg)	Deviation (%)	Dipole S/N
Head	Jan. 12, 2018	835	9.15	2.25	9.00	-1.64	4d199
Head	Jan. 16, 2018	1800	38.70	9.68	38.72	0.05	2d210
Head	Jan. 16, 2018	1900	41.50	10.40	41.60	0.24	5d208
Head	Feb. 01, 2018	2450	53.50	13.30	53.20	-0.56	973
Head	Jan. 17, 2018	2600	56.90	14.40	57.60	1.23	1111
Body	Jan. 18, 2018	835	9.43	2.36	9.44	0.11	4d199
Body	Jan. 31, 2018	835	9.43	2.35	9.40	-0.32	4d199
Body	Jan. 19, 2018	1800	37.20	9.73	38.92	4.62	2d210
Body	Jan. 30, 2018	1800	37.20	9.68	38.72	4.09	2d210
Body	Jan. 19, 2018	1900	40.40	10.00	40.00	-0.99	5d208
Body	Jan. 30, 2018	1900	40.40	10.40	41.60	2.97	5d208
Body	Feb. 07, 2018	1900	40.40	10.20	40.80	0.99	5d208
Body	Feb. 01, 2018	2450	51.70	12.70	50.80	-1.74	973
Body	Jan. 26, 2018	2600	57.20	14.70	58.80	2.80	1111
Body	Feb. 01, 2018	2600	57.20	14.40	57.60	0.70	1111

5.3 SYSTEM CHECK PROCEDURE

The system check is performed by using a system check dipole which is positioned parallel to the planar part of the SAM phantom at the reference point. The distance of the dipole to the SAM phantom is determined by a plexiglass spacer. The dipole is connected to the signal source consisting of signal generator and amplifier via a directional coupler, N-connector cable and adaption to SMA. It is fed with a power of 250 mW(below 5GHz) or 100mW(above 5GHz). To adjust this power a power meter is used. The power sensor is connected to the cable before the system check to measure the power at this point and do adjustments at the signal generator. At the outputs of the directional coupler both return loss as well as forward power are controlled during the system check to make sure that emitted power at the dipole is kept constant. This can also be checked by the power drift measurement after the test.

System check results have to be equal or near the values determined during dipole calibration (target SAR in table above) with the relevant liquids and test system (±10 %).



6.SAR MEASUREMENT VARIABILITY AND UNCERTAINTY

6.1SAR MEASUREMENT VARIABILITY

Per KDB865664 D01 SAR measurement 100 MHz to 6 GHz, SAR measurement variability must be assessed for each frequency band, which is determined by the SAR probe calibration point and tissue-equivalent medium used for the device measurements. The additional measurements are repeated after the completion of all measurements requiring the same head or body tissue-equivalent medium in a frequency band. The test device should be returned to ambient conditions (normal room temperature) with the battery fully charged before it is re-mounted on the device holder for the repeated measurement(s) to minimize any unexpected variations in the repeated results.

1) Repeated measurement is not required when the original highest measured SAR is < 0.80 W/kg; steps 2) through 4) do not apply.
2) When the original highest measured SAR is ≥ 0.80 W/kg, repeat that measurement once.
3) Perform a second repeated measurement only if the ratio of largest to smallest SAR for the original and first repeated measurements is > 1.20 or when the original or repeated measurement is≥ 1.45 W/kg (~ 10% from the 1-g SAR limit).
4) Perform a third repeated measurement only if the original, first or second repeated measurement is ≥1.5 W/kg and the ratio of largest to smallest SAR for the original, first and second repeated measurements is > 1.20.

The same procedures should be adapted for measurements according to extremity and occupational exposure limits by applying a factor of 2.5 for extremity exposure and a factor of 5 for occupational exposure to the corresponding SAR thresholds.

The detailed repeated measurement results are shown in Section 8.2.

7. OPERATIONAL CONDITIONS DURING TEST

7.1 SAR TEST CONFIGURATION

7.1.1 GSM TEST CONFIGURATION

SAR tests for GSM850 and GSM1900, a communication link is set up with a base station by air link. Using 8960 Series the power lever is set to “5”and “0” in SAR of GSM850 and GSM1900. The tests in the band of GSM850 and GSM1900 are performed in the mode of GPRS/EGPRS function. Since the GPRS class is 12 for this EUT, it has at most 4 timeslots in uplink and at most 4 timeslots in downlink, the maximum total timeslot is 5. The EGPRS class is 12 for this EUT, it has at most 4 timeslots in uplink, and at most 4 timeslots in downlink, the maximum total timeslot is 5.

When SAR tests for EGPRS mode is necessary, GMSK modulation should be used to minimize SAR measurement error due to higher peak-to-average power (PAR) ratios inherent in 8PSK.

According to specification 3GPP TS 51.010, the maximum power of the GSM can do the power reduction for the multi-slot.

The allowed power reduction in the multi-slot configuration is as following:

1) Hotspot off and capacitive sensor off

Number of timeslots in uplink assignment		Reduction of maximum output power (dB)		
Band	Time Slots	GPRS (GMSK)	EGPRS (GMSK)	EGPRS (8PSK)
GSM850	1 TX slot	0.0	0.0	6.9
	2 TX slots	3.0	3.0	9.9
	3 TX slots	4.2	4.2	11.1
	4 TX slots	5.0	5.0	10.9
GSM1900	1 TX slot	0.0	0.0	4.2
	2 TX slots	3.0	3.0	7.2
	3 TX slots	4.0	4.0	7.4
	4 TX slots	4.3	4.3	7.7

2) Hotspot on or capacitive sensor on

Number of timeslots in uplink assignment		Reduction of maximum output power (dB)		
Band	Time Slots	GPRS (GMSK)	EGPRS (GMSK)	EGPRS (8PSK)
GSM1900	1 TX slot	0.0	0.0	3.3
	2 TX slots	3.0	3.0	6.3
	3 TX slots	4.5	4.5	7.8
	4 TX slots	6.0	6.0	9.3

7.1.2 UMTS TEST CONFIGURATION

1. Output Power Verification

Maximum output power is verified on the High, Middle and Low channels according to the procedures description in section 5.2 of 3GPP TS 34.121,using the appropriate RMC or AMR with TPC(transmit power control) set to all “1s” for WCDMA/HSDPA or by applying the required inner loop power control procedures to maintain maximum output power while HSUPA is active. Result for all applicable physical channel configurations(DPCCH,DPDCHn and spreading codes, HSDPA, HSPA)
Should be tabulated in the SAR report .All configuration that are not supported by the DUT or cannot be measured due to technical or equipment limitation should be clearly identified.

2. WCDMA

(1).Head SAR Measurements
SAR for next to ear head exposure is measured using a 12.2 kbps RMC with TPC bits configured to all “1s”. The 3G SAR test reduction procedure is applied to AMR configurations with 12.2 kbps RMC as the primary mode. Otherwise, SAR is measured for 12.2 kbps AMR with 3.4kbps SRB(signaling radio bearer) using the highest reported SAR configuration in 12.2 kbps RMC for head exposure.

(2).Body SAR Measurements
SAR for body-worn accessory is measured using the 12.2 kbps RMC with the TPC bits configured to all “1s”. The 3G SAR test reduction procedure is applied to other spreading codes and multiple DPDCHn configurations supported by handset with 12.2 kbps RMC as the primary mode.

3. HSDPA

SAR for body exposure configurations is measured according to the “Body SAR Measurements” procedures of 3G device. When the maximum output power and tune-up tolerance specified for production units in a secondary mode is ≤¼ dB higher than the primary mode or when the highest reported SAR of the primary mode is scaled by the ratio of specified maximum output power and tune-up tolerance of secondary to primary mode and the adjusted SAR is ≤ 1.2W/kg, SAR measurement is not required for the secondary mode. This is referred to as the 3G SAR test reduction procedure in the following SAR test guidance, where the primary mode is identified in the applicable wireless mode test procedures and the secondary mode is wireless mode being considered for SAR test reduction by that procedure. When the 3G SAR test reduction procedure is not satisfied, it is identified as “otherwise” in the applicable procedures; SAR measurement is required for the secondary mode.

Per KDB941225 D01, the 3G SAR test reduction procedure is applied to HSDPA body configurations with 12.2 kbps RMC as the primary mode. Otherwise, SAR is measured for HSDPA using the HSDPA body SAR procedures for the highest reported SAR body exposure configuration in 12.2 kbps RMC.

HSDPA should be configured according to UE category of a test device. The number of HS-DSCH/HS-PDSCHs, HAPRQ processes, minimum inter-TTI interval, transport block sizes and RV coding sequence are defined by the H-set. To maintain a consistent test configuration and stable transmission condition, QPSK is used in the H-set for SAR testing. HS-DPCCH should be configured with a CQI feedback cycle of 4ms with a CQI repetition factor of 2 to maintain a constant rate of active CQI slots. The β_c and β_d gain factors for DPCCH and DPDCH were set according to the values in the below table, β_{hs} for HS-DPCCH is set automatically to the correct value when △ACK, △NACK, △CQI = 8. The variation of the β_c /β_d ratio causes a power reduction at sub-tests 2 - 4.

Sub-test	β_c	β_d	β_d (SF)	β_c /β_d	β_{hs} (1)	CM(dB)(2)	MPR (dB)
1	2/15	15/15	64	2/15	4/15	0.0	0
2	12/15(3)	15/15(3)	64	12/15(3)	24/15	1.0	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: △ACK, △NACK and △CQI = 8 $A_{hs} = \beta_{hs}/\beta_c = 30/15$ $\beta_{hs} = 30/15 * \beta_c$
Note 2 : CM=1 for β_c/β_d= 12/15, β_{hs}/β_c = 24/15. For all other combinations of DPDCH,DPCCH 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 3 : 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

The measurements were performed with a Fixed Reference Channel (FRC) and H-Set 1 QPSK.

Settings of required H-Set 1 QPSK acc. to 3GPP 34.121

Parameter	Value
Nominal average inf. bit rate	534 kbit/s
Inter-TTI Distance	3 TTI"s
Number of HARQ Processes	2 Processes
Information Bit Payload	3202 Bits
MAC-d PDU size	336 Bits
Number Code Blocks	1 Block
Binary Channel Bits Per TTI	4800 Bits
Total Available SMLs in UE	19200 SMLs
Number of SMLs per HARQ Process	9600 SMLs
Coding Rate	0.67
Number of Physical Channel Codes	5

HSDPA UE category

HS-DSCH Category	Maximum HS-DSCH Codes Received	Minimum Inter-TTI Interval	Maximum HS-DSCH Transport Block Bits/HS-DSCH TTI	Total Soft Channel Bits
1	5	3	7298	19200
2	5	3	7298	28800
3	5	2	7298	28800
4	5	2	7298	38400
5	5	1	7298	57600
6	5	1	7298	67200
7	10	1	14411	115200
8	10	1	14411	134400
9	15	1	25251	172800
10	15	1	27952	172800
11	5	2	3630	14400
12	5	1	3630	28800
13	15	1	34800	259200
14	15	1	42196	259200
15	15	1	23370	345600
16	15	1	27952	345600

4. HSUPA

SAR for Body exposure configurations is measured according to the “Body SAR Measurements” procedures of 3G device. When the maximum output power and tune-up tolerance specified for production units in a secondary mode is ≤¼ dB higher than the primary mode or when the highest reported SAR of the primary mode is scaled by the ratio of specified maximum output power and tune-up tolerance of secondary to primary mode and the adjusted SAR is ≤ 1.2W/kg, SAR measurement is not required for the secondary mode.

Per KDB941225 D01, the 3G SAR test reduction procedures is applied to HSPA (HSUPA/HSDPA with RMC) body configurations with 12.2 kbps RMC as the primary mode. Otherwise, SAR is measured for HSPA using the HSPA body SAR procedures for the highest reported body exposure SAR configuration in 12.2 kbps RMC.

Due to inner loop power control requirements in HSUPA, a commercial communication test set should be used for the output power and SAR tests. The 12.2 kbps RMC, FRC H-set 1 and E-DCH configurations for HSDPA should be configured according to the values indicated below as well as other applicable procedures described in the “WCDMA Handset“ and „Release 5 HSDPA Data Device” sections of 3G device.

Subtests for WCDMA Release 6 HSUPA

Sub-test	β_c	β_d	β_d (SF)	β_c/β_d	β_{hs}(1)	β_{ec}	β_{ed}	β_{ec} (SF)	β_{ed} (code)	CM(2) (dB)	MPR (dB)	AG(4) Index	E-TFCI
1	11/15(3)	15/15(3)	64	11/15(3)	22/15	209/225	1039/225	4	1	1.0	0.0	20	75
2	6/15	15/15	64	6/15	12/15	12/15	94/75	4	1	3.0	2.0	12	67
3	15/15	9/15	64	15/9	30/15	30/15	β_{ed1}:47/15 β_{ed2}:47/15	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(4)	15/15(4)	64	15/15(4)	30/15	24/15	134/15	4	1	1.0	0.0	21	81

Note 1: Δ ACK, Δ NACK and Δ CQI = 8 $A_{hs} = \beta_{hs}/\beta_c = 30/15$ $\beta_{hs} = 30/15 * \beta_c$

Note 2: CM = 1 for $\beta_c/\beta_d = 12/15$, $\beta_{hs}/\beta_c = 24/15$. 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 $\beta_c = 10/15$ and $\beta_d = 15/15$

Note 4 : For subtest 5 the β_c/β_d ratio of 15/15 for the TFC during the measurement period (TF1, TF0) is achieved by setting the signalled gain factors for the reference TFC (TF1,TF1) to $\beta_c = 14/15$ and $\beta_d = 15/15$

Note 5 : Testing UE using E-DPDCH Physical Layer category 1 Sub-test 3 is not required according to TS 25.306 Table 5.1g

Note 6: β_{ed} can not be set directly; it is set by Absolute Grant Value.

HSUPA UE category

UE E-DCH Category	Maximum E-DCH Codes Transmitted	Number of HARQ Processes	E-DCH TTI(ms)	Minimum Speading Factor	Maximum E-DCH Transport Block Bits	Max Rate (Mbps)
1	1	4	10	4	7110	0.7296
2	2	8	2	4	2798	1.4592
	2	4	10	4	14484	
3	2	4	10	4	14484	1.4592
4	2	8	2	2	5772	2.9185
	2	4	10	2	20000	2.00
5	2	4	10	2	20000	2.00
6 (No DPDCH)	4	8	10	2SF2&2SF4	11484	5.76
	4	4	2		20000	2.00
7 (No DPDCH)	4	8	2	2SF2&2SF4	22996	?
	4	4	10		20000	?

NOTE: When 4 codes are transmitted in parallel, two codes shall be transmitted with SF2 and two with SF4.UE categories 1 to 6 support QPSK only. UE category 7 supports QPSK and 16QAM.(TS25.306-7.3.0).

5. DC-HSDPA

SAR is required for Rel. 8 DC-HSDPA when SAR is required for Rel.5 HSDPA; otherwise, the 3G SAR test reduction procedure is applied to DC-HSDPA with 12.2 kbps RMC as the primary mode. Power is measured for DC-HSDPA according to the H-Set 12, FRC configuration in Table C.8.1.12 of 3GPP TS 34.121-1 to determine SAR test reduction. A primary and a Second serving HS-DSCH cell are required to perform the power measurement and for the results to be acceptable.

The following tests were completed according to procedures in section 7.3.13 of 3GPP TS 34.108 v9.5.0. A summary of these settings are illustrated below:

Downlink Physical Channels are set as per 3GPP TS34.121-1 v9.0.0 E.5.0
Levels for HSDPA connection setup

Parameter During Connection setup	Unit	Value
P-CPICH_Ec/Ior	dB	-10
P-CCPCH and SCH_Ec/Ior	dB	-12
PICH _Ec/Ior	dB	-15
HS-PDSCH	dB	off
HS-SCCH_1	dB	off
DPCH_Ec/Ior	dB	-5
OCNS_Ec/Ior	dB	-3.1

Call is set up as per 3GPP TS34.108 v9.5.0 sub clause 7.3.13
The configurations of the fixed reference channels for HSDPA RF tests are described in 3GPP TS 34.121, annex C for FDD and 3GPP TS 34.122.
The measurements were performed with a Fixed Reference Channel (FRC) H-Set 12 with QPSK

Parameter	Value
Nominal average inf. bit rate	60 kbit/s
Inter-TTI Distance	1 TTI"s
Number of HARQ Processes	6 Processes
Information Bit Payload	120 Bits
Number Code Blocks	1 Block
Binary Channel Bits Per TTI	960 Bits
Total Available SMLs in UE	19200 SMLs
Number of SMLs per HARQ Process	3200 SMLs
Coding Rate	0.15
Number of Physical Channel Codes	1

Note:
1.The RMC is intended to be used for DC-HSDPA mode and both cells shall transmit with identical parameters as listed in the table above.
2.Maximum number of transmission is limited to 1,i.e.,retransmission is not allowed. The redundancy and constellation version 0 shall be used.

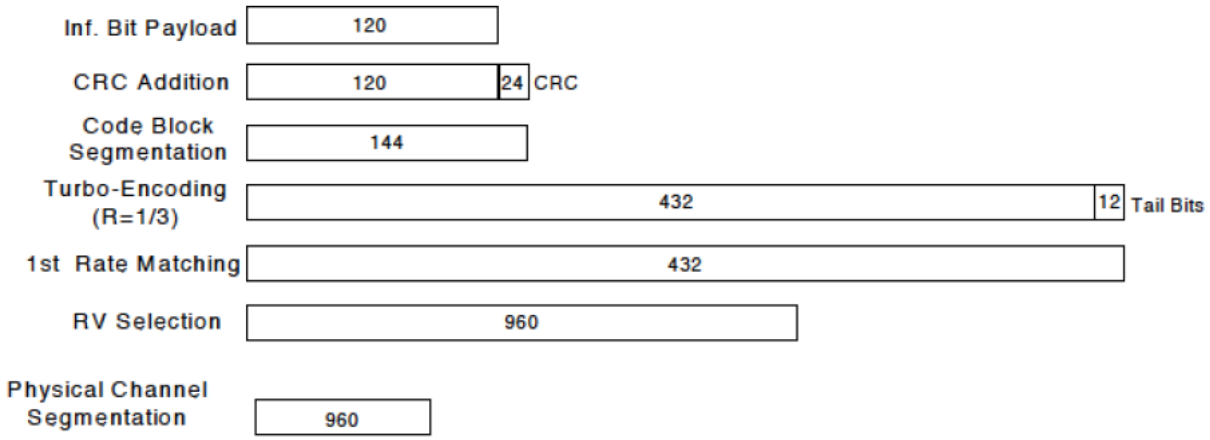


Figure C.8.19: Coding rate for Fixed reference Channel H-Set 12 (QPSK)

The following 4 Sub-tests for HSDPA were completed according to Release 5 procedures. A summary of subtest settings are illustrated below:

Sub-test	β_c	β_d	β_d (SF)	β_c/β_d	β_{hs} (1)	CM(dB)(2)	MPR (dB)
1	2/15	15/15	64	2/15	4/15	0.0	0
2	12/15(3)	15/15(3)	64	12/15(3)	24/15	1.0	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 = 8 $A_{hs} = \beta_{hs}/\beta_c = 30/15$ $\beta_{hs} = 30/15 * \beta_c$
Note 2: CM=1 for β_c/β_d= 12/15, β_{hs}/β_c = 24/15. For all other combinations of DPDCH, DPCCH 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 3: 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

Up commands are set continuously to set the UE to Max power.

Note:
1.The Dual Carriers transmission only applies to HSDPA physical channels
2.The Dual Carriers belong to the same Node and are on adjacent carriers.
3.The Dual Carriers do not support MIMO to serve UEs configured for dual cell operation
4.The Dual Carriers operate in the same frequency band .
5.The device doesn't support the modulation of 16QAM in uplink but 64QAM in downlink for DC-HSDPA mode.
6.The device doesn‟t support carrier aggregation for it just can operate in Release 8.

7.1.3 LTE TEST CONFIGURATION

SAR for LTE band exposure configurations is measured according to the procedures of KDB 941225 D05 SAR for LTE Devices. The CMW500 Wide Band Radio Communication Tester was used for LTE output power measurements and SAR testing. Closed loop power control was used so the UE transmits with maximum output power during SAR testing. SAR test were performed with the same number of RB and RB offsets transmitting on all TTI frames(Maximum TTI)

1. Spectrum Plots for RB configurations

A properly configured base station simulator was used for LTE output power measurements and SAR testing. Therefore, spectrum plots for RB configurations were not required to be included in this report.

2. MPR

When MPR is implemented permanently within the UE, regardless of network requirements, only those RB configurations allowed by 3GPP for the channel bandwidth and modulation combinations may be tested with MPR active. Configurations with RB allocations less than the RB thresholds required by 3GPP must be tested without MPR.
The allowed Maximum Power Reduction (MPR) for the maximum output power due to higher order modulation and transmit bandwidth configuration (resource blocks) is specified in Table 6.2.3-1 of the 3GPP TS36.101:

Table 6.2.3-1: Maximum Power Reduction (MPR) for Power Class 3

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

3. A-MPR

A-MPR(Additional MPR) has been disabled for all SAR tests by using Network Signalling Value of "NS_01"on the base station simulator.

4. LTE procedures for SAR testing

A) Largest channel bandwidth standalone SAR test requirements

i) QPSK with 1 RB allocation

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. When the reported SAR is ≤ 0.8 W/kg, testing of the remaining RB offset configurations and required test channels is not required for 1 RB allocation; otherwise, SAR is required for the remaining required test channels and only for the RB offset configuration with the highest output power for that channel. When the reported SAR of a required test channel is > 1.45 W/kg, SAR is required for all three RB offset configurations for that required test channel.

ii) QPSK with 50% RB allocation

The procedures required for 1 RB allocation in i) are applied to measure the SAR for QPSK with 50% RB allocation

iii) QPSK with 100% RB allocation

For QPSK with 100% RB allocation, SAR is not required when the highest maximum output power for 100 % RB allocation is less than the highest maximum output power in 50% and 1 RB allocations and the highest reported SAR for 1 RB and 50% RB allocation in i) and ii) 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.

iv) Higher order modulations

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

B) Other channel bandwidth standalone SAR test requirements

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

7.1.4 WIFI TEST CONFIGURATION

For WLAN SAR testing, WLAN engineering testing software installed on the DUT can provide continuous transmitting RF signal.

2.4G

Mode	802.11b	802.11g	802.11n HT20	802.11n HT40
Duty cycle	100%			
Crest factor	1			

For WiFi SAR testing, a communication link is set up with the test mode software for WiFi mode test. During the test, at the each test frequency channel, the EUT is operated at the RF continuous emission mode. The RF signal utilized in SAR measurement has 100% duty cycle and its crest factor is 1. The test procedures in KDB 248227 D01 are applied.

7.1.4.1 2.4G SAR Test Requirements

802.11b DSSS SAR Test Requirements

SAR is measured for 2.4 GHz 802.11b DSSS using either a fixed test position or, when applicable, the initial test position procedure. SAR test reduction is determined according to the following:

1) When the reported SAR of the highest measured maximum output power channel for the exposure configuration is ≤ 0.8 W/kg, no further SAR testing is required for 802.11b DSSS in that exposure configuration.
2) When the reported SAR is > 0.8 W/kg, SAR is required for that exposure configuration using the next highest measured output power channel. When any reported SAR is > 1.2 W/kg, SAR is required for the third channel; i.e., all channels require testing.

2.4 GHz 802.11g/n OFDM SAR Test Exclusion Requirements

When SAR measurement is required for 2.4 GHz 802.11g/n OFDM configurations, the measurement and test reduction procedures for OFDM are applied. SAR is not required for the following 2.4 GHz OFDM conditions.

1) When KDB Publication 447498 SAR test exclusion applies to the OFDM configuration.
2) 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.

7.2 PROXIMITY SENSOR POWER REDUCTION INFORMATION

7.2.1 General proximity sensor implementation description

This device uses a proximity sensor that share the same metallic electrode as the transmitting antenna to facilitate triggering in typical user interactivity with the device.

Due to the operating configurations and exposure conditions required by the device, the proximity sensor is used to indicate when the phablet is held close to a user's body exposure condition.It utilizes the proximity sensor to reduce the output power in specific wireless and operating modes to ensure SAR compliance for the following scenarios: To reduce the output power of main antennas in the product specific 10g-SAR exposure condition.

7.2.2 Antennas and sensor placement details

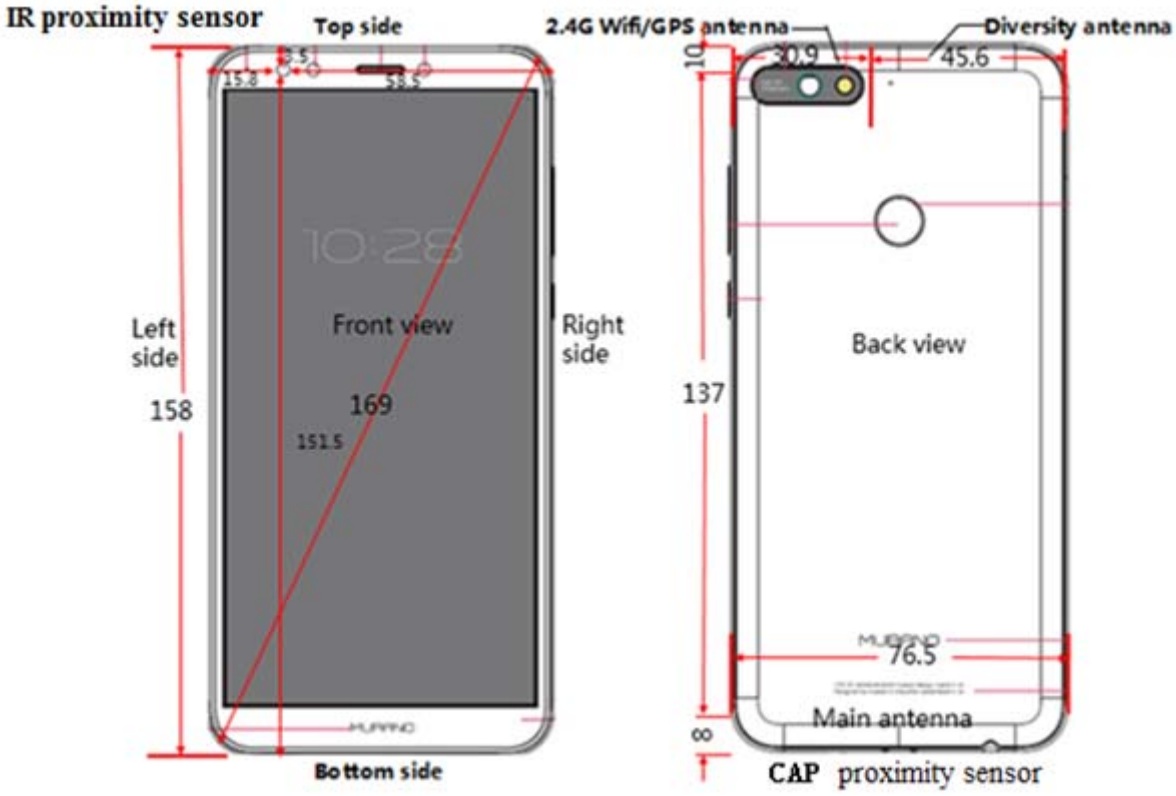


Figure 1: The location of the antennas

Note: 1. The Div Antenna and GPS Antenna does not have the transmit function.

2. The proximity sensor and main antenna use same metallic electrode, so the location is same.

	Antenna/Sensor-to- DUT sides separation distances					
Tx Antenna	**Front side**	**Back side**	**Left side**	**Right side**	**Top side**	**Bottom side**
Main 2G&3G&4G Antenna	NA	NA	NA	NA	150mm	NA
2.4G WiFi Antenna	NA	NA	45.6mm	NA	NA	148mm
sensor	NA	NA	NA	NA	150mm	NA
Diversity antenna and GPS antenna	Only receive signal, so it was not figured out in the following pictures					

7.2.3 Proximity sensor clarification

The proximity sensor is triggered by capacitance changes due to objects in the vicinity of the sensing element.
Capacitive proximity sensor share a metallic electrode with the GSM、WCDMA and LTE antenna radiator. The metallic electrode and sar sensor chip works as a sensor.

The proximity sensor or the power reduction cannot be intentionally or unintentionally turned-off by the user.

The expected capacitance trigger values are programmed in each device for each power back-off stage.

Capacitance trigger value is C1

When a certain object or human body approaches the DUT, if the measured capacitance is lower than C1, proximity sensor is not triggered. If the measured capacitance is equal to C1 or higher than C1, the power back-off is triggered.

Power Reduction operation table

The tablet use Qualcomm platform, which have some special NVs for SAR related max power back off, These NVs are used to set a new max power limit based proximity information and call configuration. When human body is in proximity and is detected by sensor, a new max power limit is set using the values stored in the NV. If Base station requests the higher output power above the limit, the power control algorithm inside modem chip will limit the power up to the preset power limit. If base station requests a lower output power less than the limit, the out power is controlled by base station.

Main Antenna					
Band	Sensor Trigger Distance	Hotspot on + capacitive sensor on+IR sensor off Power reduction(dB)	Hotspot off + capacitive sensor on+IR sensor off Power reduction(dB)	Hotspot on + capacitive sensor off+IR sensor off Power reduction(dB)	Other conditions
GSM1900	Front side: 8mm	4	4	4	0
	Back side: 14mm				
	Bottom side: 12mm				
UMTS Band2	Front side: 8mm	3	3	3	0
	Back side: 14mm				
	Bottom side: 12mm				
UMTS Band4	Front side: 8mm	3	3	3	0
	Back side: 14mm				
	Bottom side: 12mm				
LTE Band 2	Front side: 8mm	4	4	4	0
	Back side: 14mm				
	Bottom side: 12mm				
LTE Band 4	Front side: 8mm	4.5	4.5	4.5	0
	Back side: 14mm				
	Bottom side: 12mm				

Note:
1) Since the capacitive proximity sensor triggering distance for the front=10mm ; back=14mm ; bottom=12mm , a conservative distance of Front Side 9 mm was requried for addtional SAR test at maximum power level with sensor off. a conservative distance of Bottom Side 11 mm was requried for addtional SAR test at maximum power level with sensor off. a conservative distance of Back Side 13 mm was requried for addtional SAR test at maximum power level with sensor off.

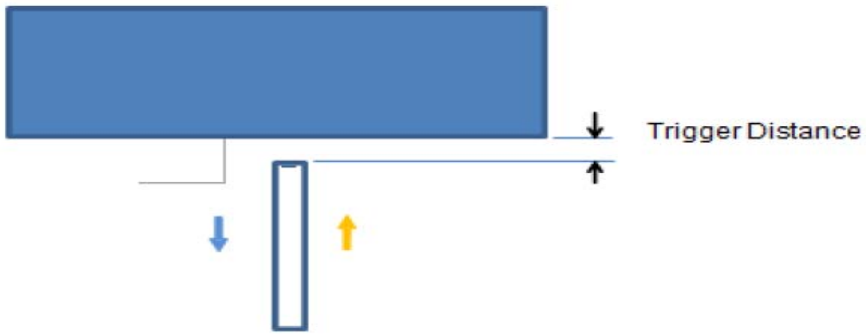
2) SAR tests with proximity sensor power reduction are only required for the sides of frequency bands in the table above. For the other sides or other frequency bands of the device, SAR is still tested at the maximum power level with sensor off.

3) IR sensor only operates with Receiver simultaneously on Voice mode (for GSM and UMTS) or VoLTE mode. When the mobile operates on data mode or on voice mode with headset insert or speaker on, the IR sensor will turn off. The IR sensor operates only on held-to-ear mode, which means the IR sensor will not affect the body SAR scenario.

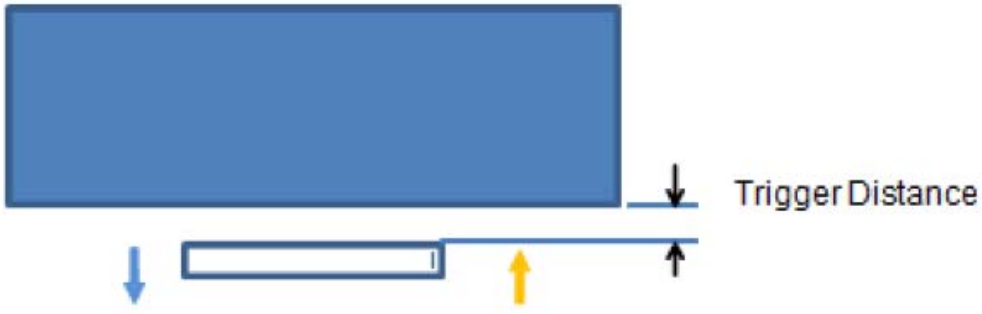
7.2.4 Proximity sensor coverage, distance and angle

7.2.4.1 Procedures for determining proximity sensor triggering distances (Per KDB616217 § 6.2)

Per FCC KDB 616217 D04v01, the device was tested by the test lab to determine the proximity sensor triggering distances for the back side and bottom side and front side of the device. To ensure all production units are compliant, the smallest separation distance determined by the sensor triggering minus 1 mm, must be used as the test separation distance for SAR testing. These SAR tests are included in addition to the SAR tests for the device touching the SAR phantom with reduced power.



Picture: Proximity sensor triggering distances assessment (Bottom side)



Picture: Proximity sensor triggering distances assessment (Back/Front side)

Table: Summary of Trigger Distances

Band(MHz)	Trigger distance-Front Side		Trigger distance-Bottom Side		Trigger distance-Back Side	
	Moving toward phantom	Moving away from phantom	Moving toward phantom	Moving away from phantom	Moving toward phantom	Moving away from phantom
GSM1900	8mm	8mm	12mm	12mm	14mm	14mm
UMTS Band 2	8mm	8mm	12mm	12mm	14mm	14mm
UMTS Band 4	8mm	8mm	12mm	12mm	14mm	14mm
LTE Band 2	8mm	8mm	12mm	12mm	14mm	14mm
LTE Band 4	8mm	8mm	12mm	12mm	14mm	14mm

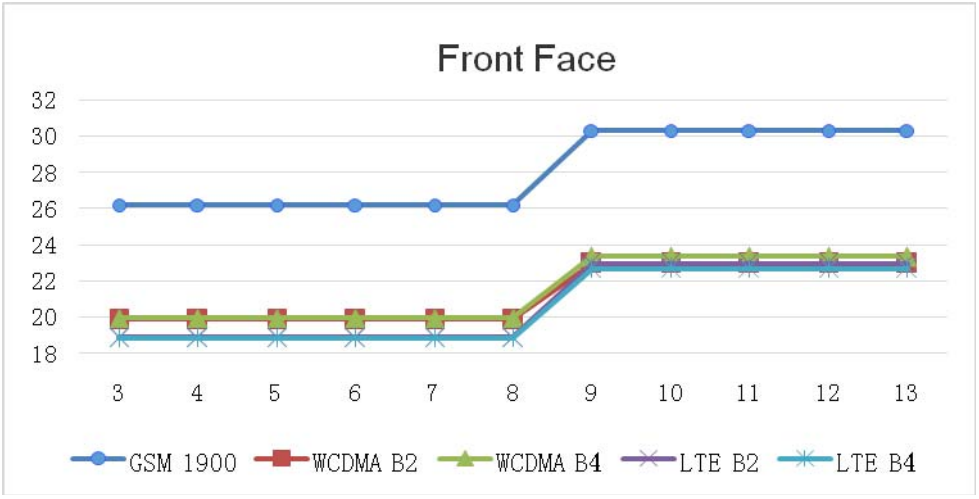
7.2.4.2 Procedures for determining antenna and proximity sensor coverage (Per KDB616217 § 6.3)

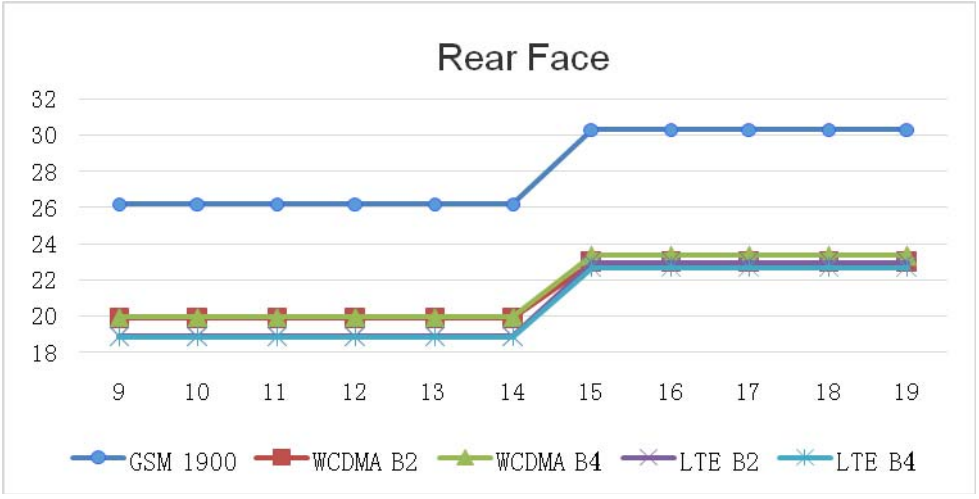
The proximity sensor and main antenna use same metallic electrode, so there is no spatial offset.

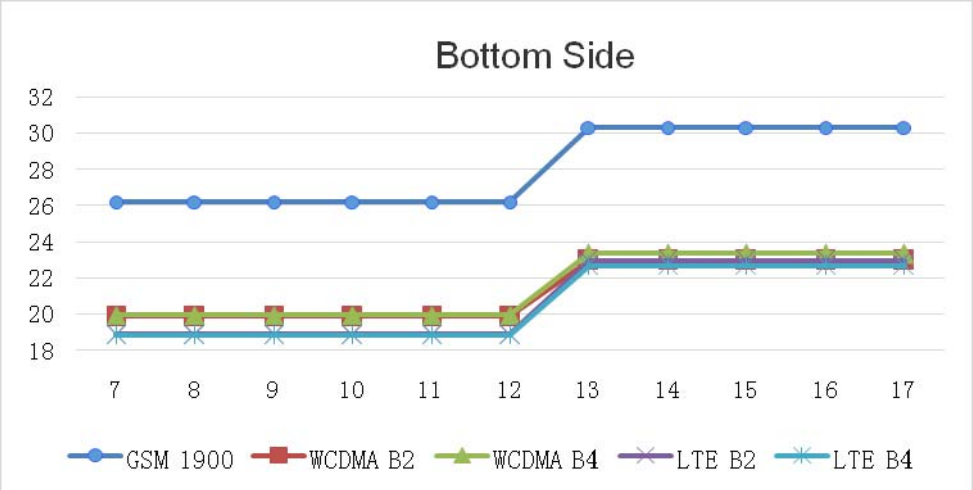
mode	distance(mm)										
	Front Face										
	Sensor on						Sensor off				
	3	4	5	6	7	8	9	10	11	12	13
GSM 1900	26.2	26.2	26.2	26.2	26.2	26.2	30.3	30.3	30.3	30.3	30.3
WCDMA B2	19.87	19.87	19.87	19.87	19.87	19.87	22.95	22.95	22.95	22.95	22.95
WCDMA B4	19.95	19.95	19.95	19.95	19.95	19.95	23.34	23.34	23.34	23.34	23.34
LTE B2	18.89	18.89	18.89	18.89	18.89	18.89	22.96	22.96	22.96	22.96	22.96
LTE B4	18.87	18.87	18.87	18.87	18.87	18.87	22.7	22.7	22.7	22.7	22.7

mode	distance(mm)										
	Rear Face										
	Sensor on						Sensor off				
	9	10	11	12	13	14	15	16	17	18	19
GSM 1900	26.2	26.2	26.2	26.2	26.2	26.2	30.3	30.3	30.3	30.3	30.3
WCDMA B2	19.87	19.87	19.87	19.87	19.87	19.87	22.95	22.95	22.95	22.95	22.95
WCDMA B4	19.95	19.95	19.95	19.95	19.95	19.95	23.34	23.34	23.34	23.34	23.34
LTE B2	18.89	18.89	18.89	18.89	18.89	18.89	22.96	22.96	22.96	22.96	22.96
LTE B4	18.87	18.87	18.87	18.87	18.87	18.87	22.7	22.7	22.7	22.7	22.7

mode	distance(mm)										
	Bottom Side										
	Sensor on						Sensor off				
	7	8	9	10	11	12	13	14	15	16	17
GSM 1900	26.2	26.2	26.2	26.2	26.2	26.2	30.3	30.3	30.3	30.3	30.3
WCDMA B2	19.87	19.87	19.87	19.87	19.87	19.87	22.95	22.95	22.95	22.95	22.95
WCDMA B4	19.95	19.95	19.95	19.95	19.95	19.95	23.34	23.34	23.34	23.34	23.34
LTE B2	18.89	18.89	18.89	18.89	18.89	18.89	22.96	22.96	22.96	22.96	22.96
LTE B4	18.87	18.87	18.87	18.87	18.87	18.87	22.7	22.7	22.7	22.7	22.7



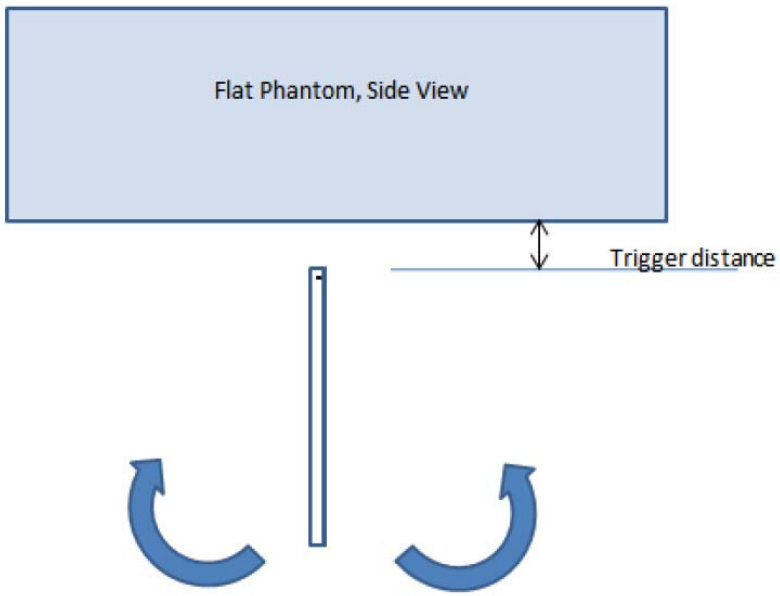




7.2.4.3 Procedures for determining device tilt angle influences to proximity sensor triggering (Per KDB616217 § 6.4)

Per FCC KDB 616217 D04v01, the DUT was positioned directly below the flat phantom at the minimum measured trigger distance with each applicable edge parallel to the base of the flat phantom for each band.

The EUT was rotated about each applicable edge for angles up to +/- 45°. If the output power increased during the rotation the DUT was moved 1mm toward the phantom and the rotation repeated. This procedure was repeated until the power remained reduced for all angles up to +/- 45°.



Picture: Proximity sensor tilts angle assessment

Table: Summary of Tablet Tilt Angle Influence to Proximity Sensor Triggering(Bottom side)

Band(MHz)	Minimum trigger distance at which power reduction was maintained over ±45°	Sensor Power Reduction Status										
		-45°	-35°	-25°	-15°	-5°	0°	5°	15°	25°	35°	45°
GSM 1900	12mm	on	on	on	on	on	on	on	on	on	on	on
UMTS B2	12mm	on	on	on	on	on	on	on	on	on	on	on
UMTS B4	12mm	on	on	on	on	on	on	on	on	on	on	on
LTE B2	12mm	on	on	on	on	on	on	on	on	on	on	on
LTE B4	12mm	on	on	on	on	on	on	on	on	on	on	on

7.2.4.4 Summary SAR test Plan for Proximity sensor power reduction

For Body SAR compliance, the device uses proximity sensor power reduction for some frequency bands of Main antenna and test positions.

1）To ensure all production units are compliant, the smallest separation distance determined by the sensor triggering and sensor coverage for normal and tilt positions for each applicable side triggering conditions, minus 1 mm, is used as the test separation distance for SAR testing.

2）SAR tests with proximity sensor power reduction are only required for the sides of frequency bands in the table above. For the other sides or other frequency bands of the device, SAR is still tested at the maximum power level with sensor off.

7.3 IR proximity sensor working

7.3.1 General proximity sensor implementation description

This device uses an infrared proximity sensor to facilitate triggering in typical user interactivity with the device.

Due to the operating configurations and exposure conditions required by the device, the proximity sensor is used to indicate when the phone is held close to a user's ear exposure condition or when the phone is used in body front side scenario exposure condition. It utilizes the proximity sensor to reduce the output power of Wi-Fi antenna when Wi-Fi and 2G&3G&4G main antenna voice mode transmit simultaneously in held-to-ear scenario or body front side scenario.

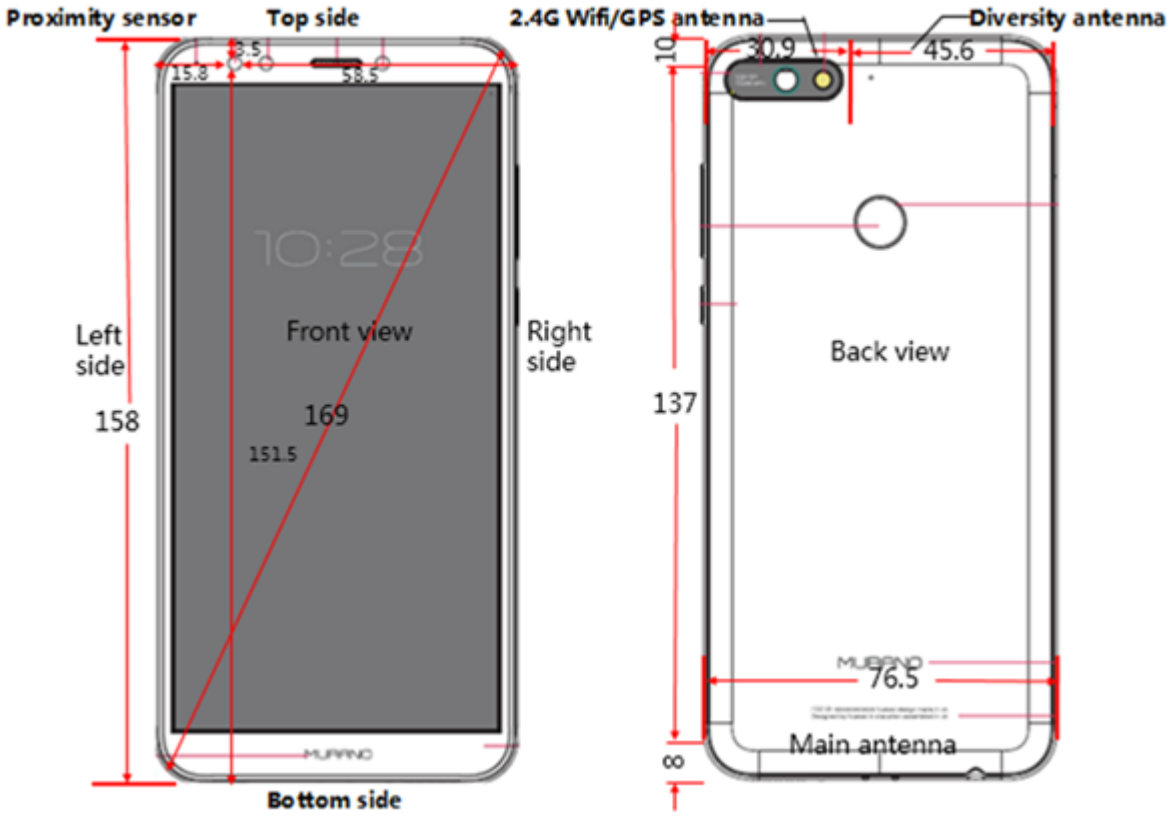
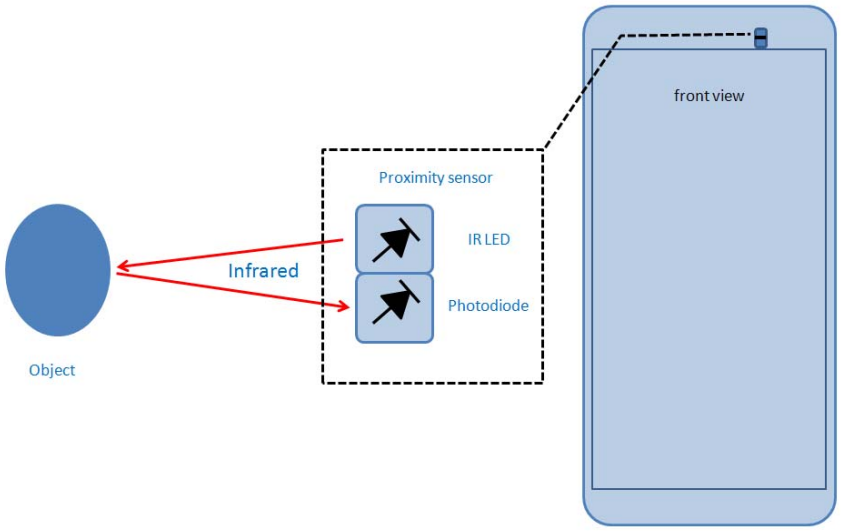


Figure1&2: The location of the antennas and the IR proximity sensor

Note: The device has one GSM&UMTS&LTE main antenna and one WiFi 2.4G/BT antenna.

Antenna and sensor distances (front view，unit:mm)						
Antenna	**Front side**	**Back side**	**Left side**	**Right side**	**Top side**	**Bottom side**
Main Antenna	0	0	0	0	150	0
2.4G WiFi Antenna	0	0	45.6	0	0	148
IR Proximity Sensor	0	0	15.8	58.5	3.5	151.5
The IR proximity sensor locates on the front face of the device and detects objects approaching only from the front side						

7.3.2 Proximity sensor clarifications



Figue3: The picture of the proximity sensor

7.3.2.1 Description of proximity sensor Techniques

As figure 3 shows, proximity detection is accomplished by photodiode measuring the amount of IR energy, from the internal IR LED, reflected off an object to determine its distance. As the sensor locates on the front side of the device, it only detects the front face approaching, like held-to-ear or body mode.

The device uses proximity sensor to detect the presence of nearby objects without any physical contact. When the device is under voice mode and the sensor finds the objects close enough and meet some other conditions at the same time, it will do the power reduction. When the call is off or sensor is not working on during the call, the power recovers as usual. The proximity sensor or the power reduction cannot be intentionally or unintentionally turned-off by the users.

7.3.2.2 Power Reduction operation table

The device uses HIMS platform, which offers SAR back off mechanism through reducing a fixed level WiFi power to meet complicated SAR scenarios. This fixed level WiFi power reducing mechanism will set a Max Tx-power that is different with Max Tx-power in NVs dynamically, while complicated SAR scenarios are triggered. IR proximity sensor only works in voice mode, like GSM, WCDMA. And LTE. When head is in proximity and is detected by sensor as users take voice services like above, SAR back off for WiFi will be applied immediately. If Base station requests the higher output power above the limit, the power control algorithm inside modem chip will limit the power up to the preset power limit. If base station requests a lower output power less than the limit, the out power is controlled by base station. And the out power will below or equal as min. More details information followings:

2G&3G&4G antenna + WiFi antenna simultaneous transmission				
Band/Mode	Power Reduction Level Amount (dB)			
	2G&3G&4G Antenna(Voice) + WiFi +IR Sensor on	VO-WiFi（Voice） +IR Sensor on	2G&3G&4G Antenna(Voice) + WiFi + IR Sensor off	VO-WiFi（Voice） +IR Sensor off
WIFI 2.4G	4.0	4.0	0	0

In user actual scenarios, while proximity sensor is triggered in voice mode, dynamical WiFi power reducing mechanism will set a lower WiFi Tx-power to make SAR back off immediately. Then if proximity sensor is away, WiFi proximity sensor power reducing mechanism will recover WiFi Tx-power that sets in NVs, now WiFi out power recovery to normal.

WiFi sensor power reducing mechanism need detect the WiFi connect state to make sure if it is necessary to set WiFi Tx-power back-off. In test lab environment, the Wi-Fi device must be configured to transmit continuously at the required data rate, channel bandwidth and signal modulation, using the highest transmission duty factor supported by the test mode tools per KDB248227. As Wi-Fi works in non signaling mode, so the reducing mechanism can not detect WiFi connect state. In order to validate the power change before and after sensor power reduction in WiFi non signaling mode, a specific external test software and chipset based internal test modes are used in sensor triggering power measurement validation tests.

In the sensor triggering power measurement tests, chipset based internal test modes enable proximity sensor logic in WiFi non signaling mode by the following steps:

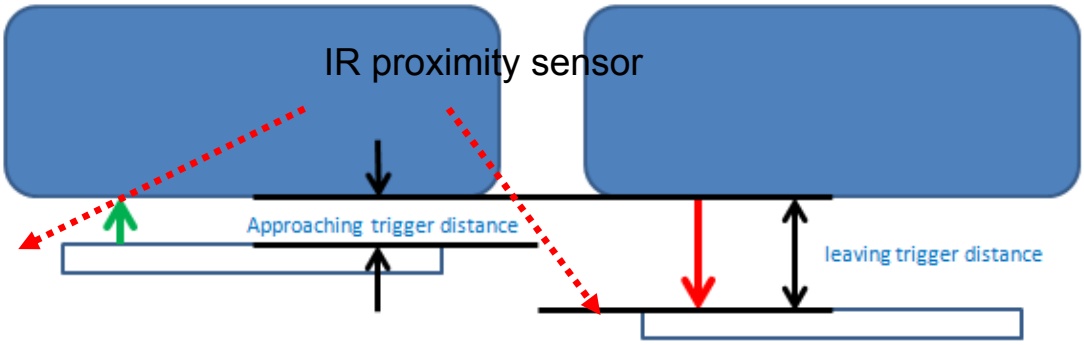
1) The first step, push the files into test device and restar the phone
2) The second step, send continuous non signaling frames from the test phone, make a call and cover the proximity sensor，then test the power

In the sensor triggering power measurement tests, WiFi power controlling logic for WiFi non signaling mode is the same as WiFi signaling mode. The Specific external test software and chipset based internal test modes only make sure that proximity sensor logic can be triggered in WiFi non signaling mode, and do not modify any settings in the phone. It can be ensured that the unmodified settings in production units, including maximum output power, amplifier gain and other RF performance or tuning parameters, are used for SAR measurement per KDB248227.

7.3.3 proximity sensor coverage, distance and angle

7.3.3.1 Procedures for determining proximity sensor triggering distances

The procedure per KDB 616217 D04§6.2 is used to determine the triggering distances. As the proximity sensor locates on the front face of the device and detects objects approaching only from the front side, so triggering distance only need to be checked for the front side of Wi-Fi band when Wi-Fi and 2G&3G&4G main antenna voice mode transmit transmit simultaneously.



Picture: Proximity sensor triggering distances assessment (Front side)

the DUT is moved towards from the flat phantom:

Distance between phantom to DUT in mm	45	40	35	30	25	20	15
Condition of Sensor in the front side of the device(under voice mode)	off	off	off	off	off	on	on

the DUT is moved away from the flat phantom:

Distance between phantom to DUT in mm	75	70	65	60	55	50	45
Condition of Sensor in the front side of the device(under voice mode)	off	off	off	off	off	on	on

Conclusion: The Proximity sensor triggering distance is N mm (about 20-50mm), so it can be ensured that the proximity sensor Power reduction is valid for the Head and body front side exposure condition.

7.3.3.2Procedures for determining antenna and proximity sensor coverage

As the proximity sensor locates on the front face of the device and detects objects approaching only from the front side, so triggering distance only need to be checked for the front side of Wi-Fi band when Wi-Fi and 2G&3G&4G main antenna voice mode transmit simultaneously.

7.3.3.3Procedures for determining device tilt angle influences to proximity sensor triggering

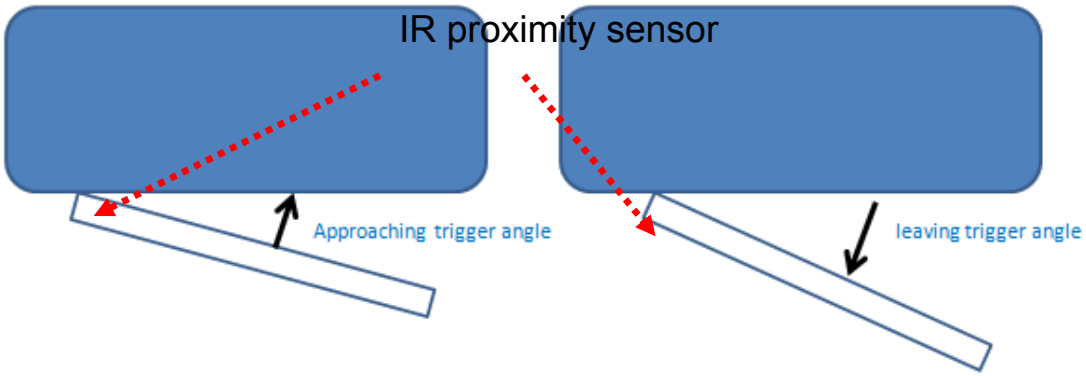
The following procedure is used to determine the triggering angle. Distance need to be check when device under voice mode so that sensor is working.

1）For Body exposure condition, as the proximity sensor triggering power reduction is only applicable for the front side, so tilt angle influences for the other edges does not need to be assessed.

2) For Head exposure condition, device tilt angle influences to proximity sensor triggering is determined as below:

Firstly, the DUT was positioned directly touch the SAM phantom (Left&Right hand touch cheek position) for each band. Rotate the DUT around the ear reference point of the phantom in 5° increments until the DUT is 15° or more away from the touch cheek position at 0°

Then the DUT is positioned at 15° or more away from the touch cheek position and moved towards the phantom in 5°increments until the DUT directly touch the SAM phantom at 0°(Left & Right hand touch cheek position).



The DUT is moved towards and away from SAM phantom.

angle between phantom to DUT in degree	0	5	10	15	20	25	30
Condition of Sensor	on	on	on	on	on	on	on

Based on the validation results above, angle tilt coverage can ensure that the proximity sensor is triggered for all the Head test positions(Left/Right Hand Touched cheek, Left/Right Hand tiled 15 °)

7.3.4 Summary SAR test Plan for Proximity sensor power reduction

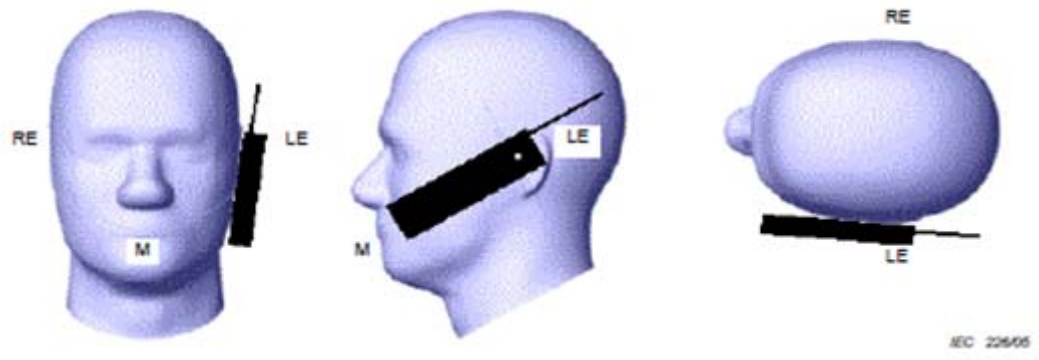
To sum up, as the device uses proximity sensor triggering power reduction when Wi-Fi antenna transmits simultaneously with main antenna(Voice mode) in held-to-ear scenarios or body front face scenario, therefore:

1) For Head SAR compliance: The standalone SAR compliance still uses the standalone SAR results tested at the maximum output power level without any power reduction. Additional Head SAR for Wi-Fi antenna is evaluated at reduced power levels when 2G&3G&4G antenna in voice mode and Wi-Fi antennas transmit simultaneously.
2) For Body/ **Product Specific 10-g** SAR compliance, the standalone SAR compliance still uses the standalone SAR results tested at the maximum output power level without any power reduction.

7.4 TEST POSITION

7.4.1 Head test configuration

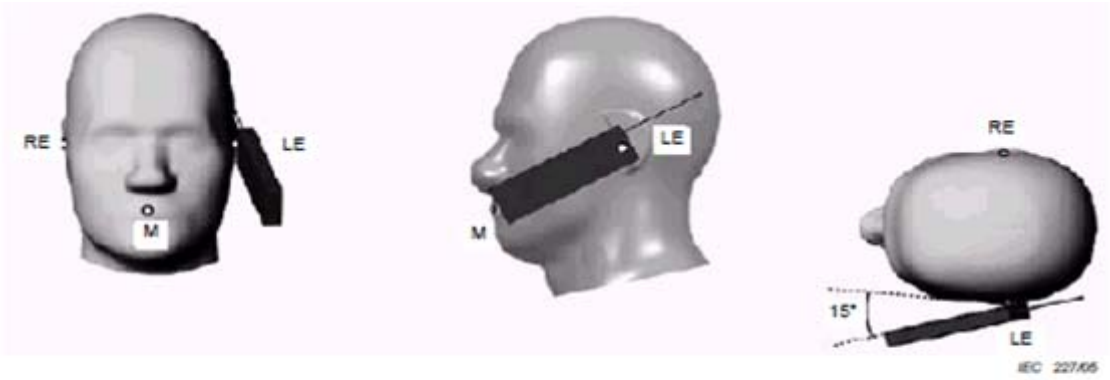
Measurements were made in “cheek” and “tilt” positions on both the left hand and right hand sides of the phantom.



Key	
M	Mouth reference point
LE	Left ear reference point (ERP)
RE	Right ear reference point (ERP)

Figure 1 Cheek position of the wireless device on the left side of SAM

Note1: Cheek position of the wireless device on Right side of SAM also is similar to the left side represented above.



Key	
M	Mouth reference point
LE	Left ear reference point (ERP)
RE	Right ear reference point (ERP)

Figure 2 Tilt position of the wireless device on the left side of SAM

Note2: Tilt position of the wireless device on Right side of SAM also is similar to the left side represented above.

7.4.2 Body-worn test configuration

Body-worn operating configurations should be tested with the belt-clips and holsters attached to the device and positioned against a flat phantom in normal use configurations. Devices with a headset output should be tested with a headset connected to the device. The distance between the device and the phantom was kept 15mm.

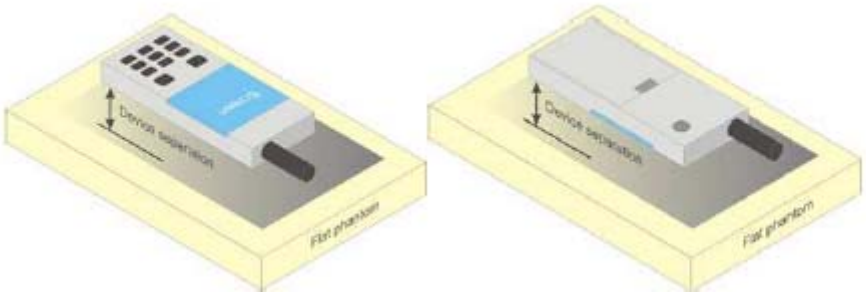


Figure 3 Test positions for body-worn device

7.4.3 Hotspot test configuration

Per FCC KDB 941225D06,The SAR test separation distance for hotspot mode is determined according to device form factor. When the overall length and width of a device is>9cm×5cm, a test separation distance of 10mm is required for hotspot mode SAR measurements. A test separation distance of 5mm or less is required for smaller devices. Hotspot mode SAR is measured for all edges and surfaces of the device with a transmitting antenna located within 25mm from that surface or edge; for the data modes, wireless technologies and frequency bands supporting hotspot mode. The SAR results are used to determine simultaneous transmission SAR test exclusion for hotspot mode; otherwise, simultaneous transmission SAR measurement is required.

7.4.4 Product specific 10-g SAR test configuration

Per KDB 648474 D04, for smart phones with a display diagonal dimension>15.0cm or an overall diagonal dimension>16.0cm 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, the device is marketed as “Phablet”.

The UMPC mini-tablets procedures must also be applied to test the SAR of all surfaces and edges with an antenna located at≤25mm from that surface or edge, in direct contact with a flat phantom, for product specific 10-g SAR according to the body-equivalent tissue dielectric parameters in KDB 865664 to address interactive hand use exposure conditions. The UMPC mini-tablet 1-g SAR at 5 mm is not required. When hotspot mode applies,product specific 10-g SAR is required only for the surfaces and edges with hotspot mode 1-g reported SAR>1.2W/kg; when power reduction applies to hotspot mode the measured SAR must be scaled to the maximum output power, including tolerance, allowed for phablet modes to compare with the 1.2 W/kg SAR test reduction threshold.

The size of the mobile phone is 158mm (length)X 76.5mm (width), the length of the diagonal is169mm .

The location of the antennas inside mobile phone is shown as below picture:

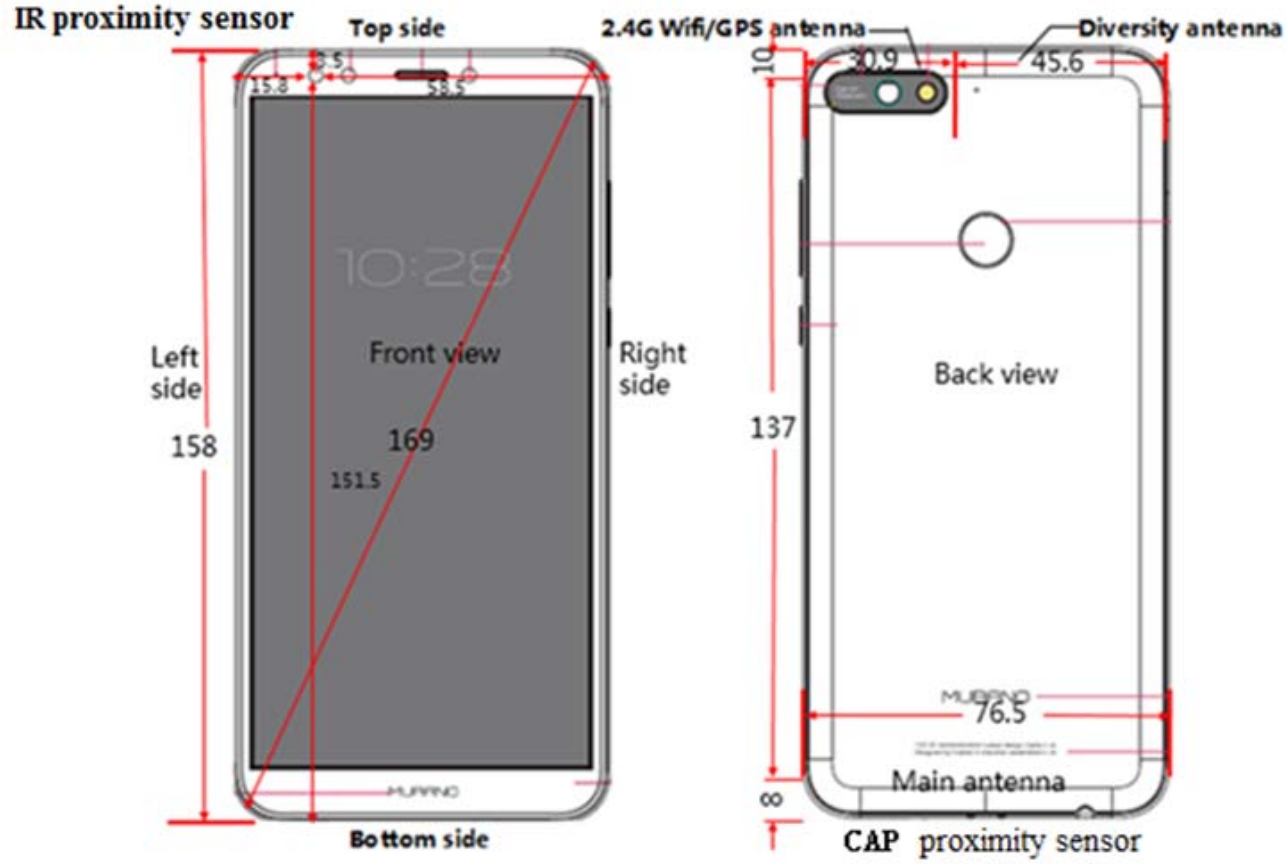


Table 7.2.2 Sides For Hotspot and product specific 10-g SAR Testing

Mode	Front Side	Rear Side	Left Side	Right Side	Top Side	Bottom Side
GSM850/1900	YES	YES	YES	YES	NO	YES
UMTS Band 2/4/5	YES	YES	YES	YES	NO	YES
LTE Band 2/4/5/7	YES	YES	YES	YES	NO	YES
2.4GWiFi	YES	YES	NO	YES	YES	NO

Note: Per KDB 941225 D06, particular DUT edges were not required to be evaluated for Hotspot SAR if the antenna-to-edge distance is greater than 2.5cm.

8.TEST RESULT

8.1CONDUCTED POWER RESULTS

8.1.1CONDUCTED POWER MEASUREMENTS OF GSM850

GSM850		Tune-up	Max Burst Average Power (dBm)			Tune-up	Max Frame Average Power (dBm)		
			128CH	190CH	251CH		128CH	190CH	251CH
			824.2MHz	836.6MHz	848.8MHz		824.2MHz	836.6MHz	848.8MHz
GSM (CS)		**34.00**	32.32	**32.11**	32.26	**24.81**	23.13	**22.92**	23.07
GPRS/ EDGE (GMSK)	1 Tx Slot	34.00	32.32	32.11	32.26	24.81	23.13	22.92	23.07
	2 Tx Slots	31.00	29.72	29.76	29.82	24.87	23.59	23.63	23.69
	3 Tx Slots	29.80	28.32	28.49	28.34	25.38	23.90	24.07	23.92
	4 Tx Slots	**29.00**	27.31	**27.48**	27.40	**25.82**	24.13	**24.30**	24.22
EDGE (8PSK)	1 Tx Slot	27.10	25.66	25.59	25.46	17.91	16.47	16.40	16.27
	2 Tx Slots	24.10	23.01	22.97	22.85	17.97	16.88	16.84	16.72
	3 Tx Slots	22.90	21.81	21.73	21.57	18.48	17.39	17.31	17.15
	4 Tx Slots	23.10	21.72	21.56	21.42	19.92	18.54	18.38	18.24

Note:
1) The conducted power of GSM850 is measured with RMS detector.
2) Frame-averaged output power was calculated from the measured burst-averaged output power by converting the slot powers into linear units and calculating the energy over 8 time slots.
3) Per KDB941225 D01, the bolded GPRS 4Tx mode was selected for SAR testing according to the highest frame –averaged output power table.
4) The frame-averaged power is linearly proportion to the slot number configured and it is linearly scaled the maximum burst-averaged power based on time slots. The calculated method is shown as below:
Frame-averaged power=10 x log(Burst-averaged power mW x Slot used/8)

8.1.2CONDUCTED POWER MEASUREMENTS OF GSM1900

1）Conducted power measurement results of GSM1900 (Hotspot off and capacitive sensor off)

GSM1900		Tune-up	Max Burst Average Power (dBm)			Tune-up	Max Frame Average Power (dBm)		
			512CH	661CH	810CH		512CH	661CH	810CH
			1850.2MHz	1880MHz	1909.8MHz		1850.2MHz	1880MHz	1909.8MHz
GSM (CS)		**30.80**	29.77	**30.03**	29.77	**21.61**	20.58	**20.84**	20.58
GPRS /EDGE (GMSK)	1 Tx Slot	30.80	29.77	30.03	29.77	21.61	20.58	20.84	20.58
	2 Tx Slots	27.80	26.85	27.36	27.05	21.67	20.72	21.23	20.92
	3 Tx Slots	26.80	25.87	26.10	25.73	22.38	21.45	21.68	21.31
	4 Tx Slots	**26.50**	25.33	**25.51**	25.22	**23.32**	22.15	**22.33**	22.04
EDGE (8PSK)	1 Tx Slot	26.60	25.38	25.52	25.07	17.41	16.19	16.33	15.88
	2 Tx Slots	23.60	22.61	22.73	22.26	17.47	16.48	16.60	16.13
	3 Tx Slots	23.40	22.09	22.16	21.66	18.98	17.67	17.74	17.24
	4 Tx Slots	23.10	21.58	21.73	21.15	19.92	18.40	18.55	17.97

Note:
1) The conducted power of GSM1900 is measured with RMS detector.
2) Frame-averaged output power was calculated from the measured burst-averaged output power by converting the slot powers into linear units and calculating the energy over 8 time slots.
3) Per KDB941225 D01, the bolded GPRS 4Tx mode was selected for SAR testing according to the highest frame –averaged output power table.
4) The frame-averaged power is linearly proportion to the slot number configured and it is linearly scaled the maximum burst-averaged power based on time slots. The calculated method is shown as below:
Frame-averaged power=10 x log(Burst-averaged power mW x Slot used/8)

2) Conducted power measurement results of GSM1900 (Hotspot on or capacitive sensor on)

GSM1900		Tune-up	Max Burst Average Power (dBm)			Tune-up	Max Frame Average Power (dBm)		
			512CH	661CH	810CH		512CH	661CH	810CH
			1850.2MHz	1880MHz	1909.8MHz		1850.2MHz	1880MHz	1909.8MHz
GSM (CS)		26.80	25.74	26.20	25.47	17.61	16.55	17.01	16.28
GPRS /EDGE (GMSK)	1 Tx Slot	26.80	25.74	26.20	25.47	17.61	16.55	17.01	16.28
	2 Tx Slots	23.80	22.33	22.97	21.98	17.67	16.20	16.84	15.85
	3 Tx Slots	**22.30**	**20.93**	**21.06**	**20.61**	**17.88**	**16.51**	**16.64**	**16.19**
	4 Tx Slots	20.80	19.24	19.33	18.97	17.62	16.06	16.15	15.79
EDGE (8PSK)	1 Tx Slot	23.50	22.20	22.32	21.82	14.31	13.01	13.13	12.63
	2 Tx Slots	20.50	19.17	19.27	18.81	14.37	13.04	13.14	12.68
	3 Tx Slots	19.00	17.52	17.48	17.24	14.58	13.10	13.06	12.82
	4 Tx Slots	17.50	16.34	16.42	15.91	14.32	13.16	13.24	12.73

Note:
1) The conducted power of GSM1900 is measured with RMS detector.
2) Frame-averaged output power was calculated from the measured burst-averaged output power by converting the slot powers into linear units and calculating the energy over 8 time slots.
3) Per KDB941225 D01, the bolded GPRS 3Tx mode was selected for SAR testing according to the highest frame –averaged output power table.
4) The frame-averaged power is linearly proportion to the slot number configured and it is linearly scaled the maximum burst-averaged power based on time slots. The calculated method is shown as below:
Frame-averaged power=10 x log(Burst-averaged power mW x Slot used/8)

8.1.3CONDUCTED POWER MEASUREMENTS OF UMTS Band 2

1）Conducted power measurement results of UMTS Band 2 (Hotspot off and capacitive sensor off)

UMTS Band 2		Tune-up	SAR Conducted Power (dBm)		
			9262CH	9400CH	9538CH
			1852.4	1880	1907.6
WCDMA	AMR Voice	24.50	23.07	22.95	22.97
	12.2kbps RMC	**24.50**	23.07	**22.95**	22.97
	64kbps RMC	24.50	23.03	22.90	23.04
	144kbps RMC	24.50	23.04	22.92	23.02
	384kbps RMC	24.50	23.06	22.91	23.06
HSDPA	Subtest 1	23.50	22.14	22.02	22.24
	Subtest 2	23.50	22.18	22.05	22.20
	Subtest 3	23.00	21.63	21.50	21.61
	Subtest 4	23.00	21.60	21.57	21.67
HSUPA	Subtest 1	22.50	21.17	20.92	20.96
	Subtest 2	22.00	20.61	20.58	20.66
	Subtest 3	21.50	20.81	20.69	20.74
	Subtest 4	22.00	21.21	21.15	21.22
	Subtest 5	23.00	21.23	21.16	21.26
DC-HSDPA	Subtest 1	23.50	22.14	22.02	22.24
	Subtest 2	23.50	22.18	22.05	22.20
	Subtest 3	23.00	21.63	21.50	21.61
	Subtest 4	23.00	21.60	21.57	21.67

Note:
1) The conducted power of UMTS Band 2 is measured with RMS detector.
2) Note: Per KDB941225 D01, When the maximum output power and tune-up tolerance specified for production units in a secondary mode is ≤¼ dB higher than the primary mode or when the highest reported SAR of the primary mode is scaled by the ratio of specified maximum output power and tune-up tolerance of secondary to primary mode and the adjusted SAR is ≤ 1.2 W/kg, SAR measurement is not required for the secondary mode.

2) Conducted power measurement results of UMTS Band 2 (Hotspot on or capacitive sensor on)

UMTS Band 2		Tune-up	SAR Conducted Power (dBm)		
			9262CH	9400CH	9538CH
			1852.4	1880	1907.6
WCDMA	AMR Voice	21.50	20.01	19.87	19.92
	12.2kbps RMC	**21.50**	**20.01**	**19.87**	**19.92**
	64kbps RMC	21.50	19.97	19.83	19.98
	144kbps RMC	21.50	19.97	19.84	20.00
	384kbps RMC	21.50	19.98	19.84	19.95
HSDPA	Subtest 1	20.50	19.06	19.00	19.06
	Subtest 2	20.50	19.02	18.95	19.10
	Subtest 3	20.00	18.61	18.53	18.58
	Subtest 4	20.00	18.62	18.55	18.61
HSUPA	Subtest 1	20.50	19.08	19.13	19.12
	Subtest 2	20.00	18.08	18.01	18.04
	Subtest 3	19.50	18.08	18.01	18.05
	Subtest 4	20.00	18.38	18.32	18.48
	Subtest 5	21.00	19.27	19.12	19.17
DC-HSDPA	Subtest 1	20.50	19.06	19.00	19.06
	Subtest 2	20.50	19.02	18.95	19.10
	Subtest 3	20.00	18.61	18.53	18.58
	Subtest 4	20.00	18.62	18.55	18.61

Note:
1) The conducted power of UMTS Band 2 is measured with RMS detector.
2) Note: Per KDB941225 D01, When the maximum output power and tune-up tolerance specified for production units in a secondary mode is ≤¼ dB higher than the primary mode or when the highest reported SAR of the primary mode is scaled by the ratio of specified maximum output power and tune-up tolerance of secondary to primary mode and the adjusted SAR is ≤ 1.2 W/kg, SAR measurement is not required for the secondary mode.

8.1.4CONDUCTED POWER MEASUREMENTS OF UMTS Band 4

1）Conducted power measurement results of UMTS Band 4 (Hotspot off and capacitive sensor off)

UMTS Band 4		Tune-up	SAR Conducted Power (dBm)		
			1312CH	1413CH	1513CH
			1712.4	1732.6	1752.6
WCDMA	AMR Voice	24.50	23.56	23.34	23.36
	12.2kbps RMC	**24.50**	**23.56**	**23.34**	**23.36**
	64kbps RMC	24.50	23.44	23.15	23.24
	144kbps RMC	24.50	23.53	23.28	23.39
	384kbps RMC	24.50	23.55	23.23	23.32
HSDPA	Subtest 1	23.50	22.32	22.18	22.26
	Subtest 2	23.50	22.30	22.14	22.23
	Subtest 3	23.00	21.82	21.67	21.68
	Subtest 4	23.00	21.81	21.66	21.76
HSUPA	Subtest 1	22.50	21.15	21.53	21.46
	Subtest 2	22.00	20.54	20.77	20.78
	Subtest 3	21.50	20.72	20.87	20.55
	Subtest 4	22.00	21.38	21.18	21.36
	Subtest 5	23.00	21.50	21.56	21.11
DC-HSDPA	Subtest 1	23.50	22.32	22.18	22.26
	Subtest 2	23.50	22.30	22.14	22.23
	Subtest 3	23.00	21.82	21.67	21.68
	Subtest 4	23.00	21.81	21.66	21.76

Note:
1) The conducted power of UMTS Band 4 is measured with RMS detector.
2) Note: Per KDB941225 D01, When the maximum output power and tune-up tolerance specified for production units in a secondary mode is ≤¼ dB higher than the primary mode or when the highest reported SAR of the primary mode is scaled by the ratio of specified maximum output power and tune-up tolerance of secondary to primary mode and the adjusted SAR is ≤ 1.2 W/kg, SAR measurement is not required for the secondary mode.

2）Conducted power measurement results of UMTS Band 4 (Hotspot on or capacitive sensor on)

UMTS Band 4		Tune-up	SAR Conducted Power (dBm)		
			1312CH	1413CH	1513CH
			1712.4	1732.6	1752.6
WCDMA	AMR Voice	21.50	20.04	19.95	19.93
	12.2kbps RMC	**21.50**	**20.04**	**19.95**	**19.93**
	64kbps RMC	21.50	20.04	19.84	20.03
	144kbps RMC	21.50	20.02	19.89	20.00
	384kbps RMC	21.50	20.03	19.90	20.02
HSDPA	Subtest 1	20.50	19.12	19.02	19.04
	Subtest 2	20.50	19.15	19.00	19.09
	Subtest 3	20.00	18.67	18.53	18.60
	Subtest 4	20.00	18.67	18.51	18.61
HSUPA	Subtest 1	19.50	18.70	18.64	18.91
	Subtest 2	19.00	18.20	18.11	18.05
	Subtest 3	18.50	17.87	18.15	18.10
	Subtest 4	19.00	18.37	18.44	18.61
	Subtest 5	20.00	19.22	19.09	19.01
DC-HSDPA	Subtest 1	20.50	19.12	19.02	19.04
	Subtest 2	20.50	19.15	19.00	19.09
	Subtest 3	20.00	18.67	18.53	18.60
	Subtest 4	20.00	18.67	18.51	18.61

Note:
1) The conducted power of UMTS Band 4 is measured with RMS detector.
2) Note: Per KDB941225 D01, When the maximum output power and tune-up tolerance specified for production units in a secondary mode is ≤¼ dB higher than the primary mode or when the highest reported SAR of the primary mode is scaled by the ratio of specified maximum output power and tune-up tolerance of secondary to primary mode and the adjusted SAR is ≤ 1.2 W/kg, SAR measurement is not required for the secondary mode.

8.1.5CONDUCTED POWER MEASUREMENTS OF UMTS Band 5

UMTS Band 5		Tune-up	SAR Conducted Power (dBm)		
			4132CH	4182CH	4233CH
			826.4	836.4	846.6
WCDMA	AMR Voice	25.00	23.11	23.67	23.54
	12.2kbps RMC	**25.00**	23.11	**23.67**	23.54
	64kbps RMC	25.00	23.15	23.61	23.50
	144kbps RMC	25.00	23.17	23.46	23.45
	384kbps RMC	25.00	23.14	23.57	23.51
HSDPA	Subtest 1	24.00	22.37	22.45	22.41
	Subtest 2	24.00	22.32	22.44	22.42
	Subtest 3	23.50	21.84	21.97	21.93
	Subtest 4	23.50	21.83	21.98	21.94
HSUPA	Subtest 1	23.00	21.37	21.51	21.42
	Subtest 2	22.50	20.84	20.87	20.80
	Subtest 3	22.00	21.12	21.24	21.26
	Subtest 4	22.50	21.24	21.35	21.29
	Subtest 5	23.50	21.52	21.58	21.51
DC-HSDPA	Subtest 1	24.00	22.37	22.45	22.41
	Subtest 2	24.00	22.32	22.44	22.42
	Subtest 3	23.50	21.84	21.97	21.93
	Subtest 4	23.50	21.83	21.98	21.94

Note:
1) The conducted power of UMTS Band 5 is measured with RMS detector.
2) Per KDB941225 D01, When the maximum output power and tune-up tolerance specified for production units in a secondary mode is ≤¼ dB higher than the primary mode or when the highest reported SAR of the primary mode is scaled by the ratio of specified maximum output power and tune-up tolerance of secondary to primary mode and the adjusted SAR is ≤ 1.2 W/kg, SAR measurement is not required for the secondary mode.

8.1.6CONDUCTED POWER MEASUREMENTS OF LTE Band 2

1) Conducted power measurement results of LTE Band 2 (Hotspot off and capacitive sensor off)

Band / BW	Modulation	RB Sizet	RB Offset	Max. Tune-up Power	Low CH	Mid CH	High CH
					18607	18900	19193
					1850.7	1880	1909.3
					MHz	MHz	MHz
2 / 1.4M	QPSK	1	0	24.00	22.43	22.47	22.21
		1	2	24.00	22.62	22.62	22.21
		1	5	24.00	22.56	22.55	22.12
		3	0	24.00	22.55	22.49	22.11
		3	1	24.00	22.58	22.53	22.15
		3	3	24.00	22.59	22.53	22.22
		6	0	23.00	21.70	21.53	21.16
	16QAM	1	0	23.00	21.51	21.86	21.23
		1	2	23.00	21.66	21.88	21.44
		1	5	23.00	21.54	21.83	21.28
		3	0	23.00	21.60	21.51	21.35
		3	1	23.00	21.61	21.46	21.40
		3	3	23.00	21.66	21.45	21.38
		6	0	22.00	20.74	20.15	20.19
Band / BW	Modulation	RB Sizet	RB Offset	Max. Tune-up Power	Low CH	Mid CH	High CH
					18615	18900	19185
					1851.5	1880	1908.5
					MHz	MHz	MHz
2 / 3M	QPSK	1	0	24.00	22.63	22.46	22.23
		1	7	24.00	22.70	22.40	22.28
		1	14	24.00	22.65	22.32	22.07
		8	0	23.00	21.55	21.54	21.21
		8	3	23.00	21.59	21.53	21.24
		8	7	23.00	21.55	21.48	21.20
		15	0	23.00	21.57	21.51	21.22
	16QAM	1	0	23.00	21.42	21.87	21.26
		1	7	23.00	21.46	21.91	21.22
		1	14	22.00	21.40	21.61	21.14
		8	0	22.00	20.62	20.56	20.29
		8	3	22.00	20.63	20.57	20.23
		8	7	22.00	20.60	20.50	20.29
		15	0	22.00	20.47	20.40	20.12

Band / BW	Modulation	RB Sizet	RB Offset	Max. Tune-up Power	Low CH	Mid CH	High CH
					18625	18900	19175
					1852.5	1880	1907.5
					MHz	MHz	MHz
2 / 5M	QPSK	1	0	24.00	22.71	22.26	22.30
		1	12	24.00	22.82	22.38	22.35
		1	24	24.00	22.64	22.21	22.19
		12	0	23.00	21.74	21.59	21.14
		12	6	23.00	21.78	21.59	21.22
		12	13	23.00	21.77	21.52	21.21
		25	0	23.00	21.57	21.56	21.17
	16QAM	1	0	23.00	22.06	21.07	21.03
		1	12	23.00	21.10	21.04	21.09
		1	24	22.00	21.02	20.87	20.80
		12	0	22.00	20.52	20.37	20.06
		12	6	22.00	20.56	20.36	20.13
		12	13	22.00	20.56	20.40	20.13
		25	0	22.00	20.78	20.48	20.10
Band / BW	Modulation	RB Sizet	RB Offset	Max. Tune-up Power	Low CH	Mid CH	High CH
					18650	18900	19150
					1855	1880	1905
					MHz	MHz	MHz
2 / 10M	QPSK	1	0	24.00	22.76	22.41	22.60
		1	24	24.00	22.86	22.64	22.68
		1	49	24.00	22.61	22.22	22.17
		25	0	23.00	21.62	21.54	21.44
		25	12	23.00	21.53	21.54	21.36
		25	25	23.00	21.48	21.39	21.18
		50	0	23.00	21.47	21.51	21.37
	16QAM	1	0	23.00	21.74	21.20	21.22
		1	24	23.00	21.72	21.38	21.54
		1	49	22.00	21.63	20.75	20.93
		25	0	22.00	20.55	20.52	20.51
		25	12	22.00	20.35	20.65	20.53
		25	25	22.00	20.29	20.50	20.34
		50	0	22.00	20.34	20.60	20.35

Band / BW	Modulation	RB Sizet	RB Offset	Max. Tune-up Power	Low CH	Mid CH	High CH
					18675	18900	19125
					1857.5	1880	1902.5
					MHz	MHz	MHz
2 / 15M	QPSK	1	0	24.00	22.71	22.36	22.28
		1	37	24.00	22.80	22.58	22.19
		1	74	24.00	22.65	22.06	22.09
		36	0	23.00	21.66	22.06	21.44
		36	19	23.00	21.63	21.55	21.41
		36	39	23.00	21.47	21.29	21.33
		75	0	23.00	21.51	21.46	21.38
	16QAM	1	0	23.00	21.73	21.91	22.10
		1	37	23.00	21.57	21.76	22.17
		1	74	22.00	21.57	21.62	21.90
		36	0	22.00	20.54	21.62	20.27
		36	19	22.00	20.52	20.54	20.32
		36	39	22.00	20.45	20.25	20.17
		75	0	22.00	20.52	20.54	20.26
Band / BW	Modulation	RB Sizet	RB Offset	Max. Tune-up Power	Low CH	Mid CH	High CH
					18700	18900	19100
					1860	1880	1900
					MHz	MHz	MHz
2 / 20M	QPSK	1	0	24.00	22.71	22.92	22.53
		1	50	24.00	**22.96**	22.17	22.88
		1	99	24.00	22.28	22.83	22.22
		50	0	23.00	21.83	21.74	21.77
		50	25	23.00	**21.83**	21.76	21.63
		50	50	23.00	21.67	21.70	21.46
		100	0	23.00	21.66	21.79	21.61
	16QAM	1	0	23.00	21.86	21.63	21.70
		1	50	23.00	21.67	21.07	21.60
		1	99	22.00	21.18	21.13	21.32
		50	0	22.00	20.63	20.68	20.63
		50	25	22.00	20.75	20.75	20.69
		50	50	22.00	20.67	20.58	20.51
		100	0	22.00	20.69	20.63	20.70

2) Conducted power measurement results of LTE Band 2 (Hotspot on or capacitive sensor on)

Band / BW	Modulation	RB Sizet	RB Offset	Max. Tune-up Power	Low CH	Mid CH	High CH
					18607	18900	19193
					1850.7	1880	1909.3
					MHz	MHz	MHz
2 / 1.4M	QPSK	1	0	20.00	18.82	18.54	18.40
		1	2	20.00	18.84	18.60	18.45
		1	5	20.00	18.79	18.52	18.40
		3	0	20.00	18.74	18.62	18.39
		3	1	20.00	18.89	18.66	18.43
		3	3	20.00	19.00	18.64	18.35
		6	0	20.00	18.36	18.21	18.00
	16QAM	1	0	20.00	18.33	18.69	18.05
		1	2	20.00	18.48	18.13	18.18
		1	5	20.00	18.34	18.07	18.07
		3	0	20.00	18.45	18.02	18.34
		3	1	20.00	18.48	18.05	18.34
		3	3	20.00	18.47	18.04	18.39
		6	0	20.00	18.65	18.24	18.04
Band / BW	Modulation	RB Sizet	RB Offset	Max. Tune-up Power	Low CH	Mid CH	High CH
					18615	18900	19185
					1851.5	1880	1908.5
					MHz	MHz	MHz
2 / 3M	QPSK	1	0	20.00	18.78	19.17	18.45
		1	7	20.00	18.80	18.72	18.53
		1	14	20.00	18.79	18.72	18.49
		8	0	20.00	18.38	18.39	18.09
		8	3	20.00	18.41	18.39	18.14
		8	7	20.00	18.38	18.36	18.12
		15	0	20.00	18.39	18.37	18.01
	16QAM	1	0	20.00	18.44	18.68	18.10
		1	7	20.00	18.43	18.15	18.17
		1	14	20.00	18.41	18.13	18.10
		8	0	20.00	18.54	18.45	18.00
		8	3	20.00	18.57	18.46	18.06
		8	7	20.00	18.51	18.40	18.02
		15	0	20.00	18.38	18.38	18.13

Band / BW	Modulation	RB Sizet	RB Offset	Max. Tune-up Power	Low CH	Mid CH	High CH
					18625	18900	19175
					1852.5	1880	1907.5
					MHz	MHz	MHz
2 / 5M	QPSK	1	0	20.00	18.72	18.56	18.30
		1	12	20.00	18.83	18.58	18.31
		1	24	20.00	18.67	18.44	18.25
		12	0	20.00	18.37	18.39	18.12
		12	6	20.00	18.41	18.38	18.10
		12	13	20.00	18.40	18.32	18.12
		25	0	20.00	18.39	18.35	18.07
	16QAM	1	0	20.00	18.78	18.20	18.03
		1	12	20.00	18.05	18.23	18.05
		1	24	20.00	18.04	18.07	18.02
		12	0	20.00	18.42	18.25	18.07
		12	6	20.00	18.46	18.24	18.04
		12	13	20.00	18.46	18.18	18.05
		25	0	20.00	18.57	18.21	18.05
Band / BW	Modulation	RB Sizet	RB Offset	Max. Tune-up Power	Low CH	Mid CH	High CH
					18650	18900	19150
					1855	1880	1905
					MHz	MHz	MHz
2 / 10M	QPSK	1	0	20.00	19.09	18.65	18.68
		1	24	20.00	18.93	19.02	18.97
		1	49	20.00	18.94	18.62	18.43
		25	0	20.00	18.53	18.36	18.21
		25	12	20.00	18.30	18.41	18.24
		25	25	20.00	18.33	18.26	18.05
		50	0	20.00	18.32	18.37	18.14
	16QAM	1	0	20.00	18.45	18.11	18.96
		1	24	20.00	18.58	18.28	18.35
		1	49	20.00	18.51	18.01	18.07
		25	0	20.00	18.43	18.50	18.45
		25	12	20.00	18.32	18.54	18.48
		25	25	20.00	18.26	18.38	18.29
		50	0	20.00	18.42	18.37	18.22

Band / BW	Modulation	RB Sizet	RB Offset	Max. Tune-up Power	Low CH	Mid CH	High CH
					18675	18900	19125
					1857.5	1880	1902.5
					MHz	MHz	MHz
2 / 15M	QPSK	1	0	20.00	19.18	18.65	18.60
		1	37	20.00	19.03	18.62	18.27
		1	74	20.00	18.90	18.36	18.39
		36	0	20.00	18.44	18.16	18.30
		36	19	20.00	18.40	18.42	18.37
		36	39	20.00	18.31	18.15	18.11
		75	0	20.00	18.28	18.32	18.15
	16QAM	1	0	20.00	18.62	18.07	18.98
		1	37	20.00	18.81	18.11	18.79
		1	74	20.00	18.38	18.07	18.09
		36	0	20.00	18.36	18.07	18.07
		36	19	20.00	18.43	18.58	18.35
		36	39	20.00	18.15	18.29	18.18
		75	0	20.00	18.23	18.34	18.15
Band / BW	Modulation	RB Sizet	RB Offset	Max. Tune-up Power	Low CH	Mid CH	High CH
					18700	18900	19100
					1860	1880	1900
					MHz	MHz	MHz
2 / 20M	QPSK	1	0	20.00	18.68	18.97	18.76
		1	50	20.00	18.89	18.93	**19.19**
		1	99	20.00	18.44	18.89	18.31
		50	0	20.00	18.32	**18.49**	18.34
		50	25	20.00	18.41	18.44	18.30
		50	50	20.00	18.33	18.23	18.12
		100	0	20.00	18.34	18.42	18.28
	16QAM	1	0	20.00	18.03	18.24	18.16
		1	50	20.00	18.19	18.25	18.34
		1	99	20.00	18.03	18.13	18.03
		50	0	20.00	18.24	18.53	18.31
		50	25	20.00	18.33	18.58	18.28
		50	50	20.00	18.25	18.16	18.11
		100	0	20.00	18.46	18.34	18.20

8.1.7CONDUCTED POWER MEASUREMENTS OF LTE Band 4

1）Conducted power measurement results of LTE Band 4 (Hotspot off and capacitive sensor off)

Band / BW	Modulation	RB Sizet	RB Offset	Max. Tune-up Power	Low CH	Mid CH	High CH
					19957	20175	20393
					1710.7	1732.5	1754.3
					MHz	MHz	MHz
4 / 1.4M	QPSK	1	0	24.00	22.29	22.31	22.67
		1	2	24.00	22.38	22.33	22.58
		1	5	24.00	22.31	22.24	22.51
		3	0	24.00	22.33	22.30	22.57
		3	1	24.00	22.37	22.30	22.75
		3	3	24.00	22.49	22.27	22.70
		6	0	23.00	21.32	21.33	21.63
	16QAM	1	0	23.00	21.48	21.02	21.67
		1	2	23.00	21.44	21.19	21.79
		1	5	23.00	21.20	21.15	21.81
		3	0	23.00	21.08	21.57	22.02
		3	1	23.00	21.12	21.54	22.03
		3	3	23.00	21.26	21.50	22.03
		6	0	22.00	20.75	20.39	21.09
Band / BW	Modulation	RB Sizet	RB Offset	Max. Tune-up Power	Low CH	Mid CH	High CH
					19965	20175	20385
					1711.5	1732.5	1753.5
					MHz	MHz	MHz
4 / 3M	QPSK	1	0	24.00	22.28	22.34	22.42
		1	7	24.00	22.48	22.50	22.54
		1	14	24.00	22.51	22.42	22.64
		8	0	23.00	21.35	21.35	21.49
		8	3	23.00	21.35	21.33	21.54
		8	7	23.00	21.38	21.29	21.45
		15	0	23.00	21.33	21.33	21.53
	16QAM	1	0	23.00	21.30	21.69	21.35
		1	7	23.00	21.30	21.75	21.43
		1	14	22.00	21.30	21.64	21.43
		8	0	22.00	20.33	20.37	20.50
		8	3	22.00	20.39	20.46	20.58
		8	7	22.00	20.43	20.40	20.49
		15	0	22.00	20.24	20.31	20.37

Band / BW	Modulation	RB Sizet	RB Offset	Max. Tune-up Power	Low CH	Mid CH	High CH
					19975	20175	20375
					1712.5	1732.5	1752.5
					MHz	MHz	MHz
4 / 5M	QPSK	1	0	24.00	22.53	22.12	22.39
		1	12	24.00	22.74	22.04	22.52
		1	24	24.00	22.64	22.17	22.56
		12	0	23.00	21.37	21.44	21.59
		12	6	23.00	21.54	21.38	21.64
		12	13	23.00	21.66	21.37	21.56
		25	0	23.00	21.45	21.41	21.55
	16QAM	1	0	23.00	21.06	21.43	21.10
		1	12	23.00	21.17	21.33	21.20
		1	24	22.00	20.78	20.78	21.04
		12	0	22.00	20.27	20.16	20.29
		12	6	22.00	20.42	20.09	20.35
		12	13	22.00	20.54	20.20	20.30
		25	0	22.00	20.46	20.27	20.28
Band / BW	Modulation	RB Sizet	RB Offset	Max. Tune-up Power	Low CH	Mid CH	High CH
					20000	20175	20350
					1715	1732.5	1750
					MHz	MHz	MHz
4 / 10M	QPSK	1	0	24.00	22.28	22.27	22.18
		1	24	24.00	22.83	22.62	22.64
		1	49	24.00	22.57	22.28	22.81
		25	0	23.00	21.53	21.38	21.52
		25	12	23.00	21.55	21.37	21.53
		25	25	23.00	21.49	21.23	21.57
		50	0	23.00	21.35	21.31	21.57
	16QAM	1	0	23.00	21.36	21.03	21.54
		1	24	23.00	21.63	21.04	22.28
		1	49	22.00	21.49	21.00	21.65
		25	0	22.00	20.44	20.40	20.66
		25	12	22.00	20.54	20.44	20.54
		25	25	22.00	20.37	20.23	20.52
		50	0	22.00	20.31	20.17	20.36

Band / BW	Modulation	RB Sizet	RB Offset	Max. Tune-up Power	Low CH	Mid CH	High CH
					20025	20175	20325
					1717.5	1732.5	1747.5
					MHz	MHz	MHz
4 / 15M	QPSK	1	0	24.00	22.32	22.35	22.63
		1	37	24.00	22.84	22.29	22.28
		1	74	24.00	22.55	22.48	22.82
		36	0	23.00	21.48	22.48	21.51
		36	19	23.00	21.46	21.34	21.53
		36	39	23.00	21.44	21.39	21.60
		75	0	23.00	21.34	21.39	21.50
	16QAM	1	0	23.00	21.52	21.05	22.26
		1	37	23.00	21.34	21.12	22.38
		1	74	22.00	21.44	21.54	21.90
		36	0	22.00	20.38	21.54	20.34
		36	19	22.00	20.41	20.29	20.47
		36	39	22.00	20.38	20.29	20.31
		75	0	22.00	20.28	20.32	20.37
Band / BW	Modulation	RB Sizet	RB Offset	Max. Tune-up Power	Low CH	Mid CH	High CH
					20050	20175	20300
					1720	1732.5	1745
					MHz	MHz	MHz
4 / 20M	QPSK	1	0	24.00	22.19	22.52	22.58
		1	50	24.00	22.70	22.04	**22.85**
		1	99	24.00	22.14	22.62	22.84
		50	0	23.00	21.59	21.60	21.78
		50	25	23.00	21.71	21.60	**21.82**
		50	50	23.00	21.64	21.57	21.72
		100	0	23.00	21.61	21.56	21.78
	16QAM	1	0	23.00	21.09	21.50	21.76
		1	50	23.00	21.65	21.10	21.66
		1	99	22.00	21.18	21.51	21.86
		50	0	22.00	20.52	20.65	20.69
		50	25	22.00	20.70	20.68	20.64
		50	50	22.00	20.50	20.44	20.57
		100	0	22.00	20.60	20.50	20.67

2) Conducted power measurement results of LTE Band 4 (Hotspot on or capacitive sensor on)

Band / BW	Modulation	RB Sizet	RB Offset	Max. Tune-up Power	Low CH	Mid CH	High CH
					19957	20175	20393
					1710.7	1732.5	1754.3
					MHz	MHz	MHz
4 / 1.4M	QPSK	1	0	19.50	18.42	18.30	18.59
		1	2	19.50	18.54	18.62	18.60
		1	5	19.50	18.48	18.23	18.51
		3	0	19.50	18.54	18.72	18.75
		3	1	19.50	18.59	18.72	18.77
		3	3	19.50	18.68	18.67	18.87
		6	0	19.50	18.16	18.13	18.46
	16QAM	1	0	19.50	18.02	18.45	18.06
		1	2	19.50	18.15	18.56	18.16
		1	5	19.50	18.11	18.47	18.12
		3	0	19.50	18.09	18.25	18.65
		3	1	19.50	18.14	18.25	18.82
		3	3	19.50	18.03	18.08	18.80
		6	0	19.50	18.54	17.91	18.48
Band / BW	Modulation	RB Sizet	RB Offset	Max. Tune-up Power	Low CH	Mid CH	High CH
					19965	20175	20385
					1711.5	1732.5	1753.5
					MHz	MHz	MHz
4 / 3M	QPSK	1	0	19.50	18.64	18.55	18.63
		1	7	19.50	18.92	18.59	18.75
		1	14	19.50	18.83	18.50	18.70
		8	0	19.50	18.18	18.15	18.24
		8	3	19.50	18.12	18.13	18.34
		8	7	19.50	18.14	18.13	18.27
		15	0	19.50	18.12	18.12	18.32
	16QAM	1	0	19.50	18.27	18.12	18.27
		1	7	19.50	18.14	18.18	18.25
		1	14	19.50	18.04	17.66	18.21
		8	0	19.50	17.97	18.22	18.34
		8	3	19.50	17.88	18.31	18.44
		8	7	19.50	17.98	18.15	18.35
		15	0	19.50	18.06	18.15	18.21

Band / BW	Modulation	RB Sizet	RB Offset	Max. Tune-up Power	Low CH	Mid CH	High CH
					19975	20175	20375
					1712.5	1732.5	1752.5
					MHz	MHz	MHz
4 / 5M	QPSK	1	0	19.50	18.40	19.16	19.27
		1	12	19.50	18.55	18.33	18.62
		1	24	19.50	18.63	18.23	18.61
		12	0	19.50	18.14	18.22	18.43
		12	6	19.50	18.28	18.17	18.52
		12	13	19.50	18.29	18.10	18.49
		25	0	19.50	18.20	18.15	18.44
	16QAM	1	0	19.50	18.11	18.00	18.10
		1	12	19.50	18.07	18.02	18.09
		1	24	19.50	17.58	17.76	18.18
		12	0	19.50	18.22	18.03	18.28
		12	6	19.50	18.35	17.99	18.37
		12	13	19.50	18.34	17.98	18.34
		25	0	19.50	18.30	18.04	18.31
Band / BW	Modulation	RB Sizet	RB Offset	Max. Tune-up Power	Low CH	Mid CH	High CH
					20000	20175	20350
					1715	1732.5	1750
					MHz	MHz	MHz
4 / 10M	QPSK	1	0	19.50	18.84	18.53	18.75
		1	24	19.50	19.01	18.82	19.10
		1	49	19.50	18.79	18.50	18.87
		25	0	19.50	18.31	18.19	18.27
		25	12	19.50	18.39	18.17	18.28
		25	25	19.50	18.21	18.02	18.28
		50	0	19.50	18.19	18.02	18.21
	16QAM	1	0	19.50	18.11	18.55	18.77
		1	24	19.50	18.38	18.58	18.18
		1	49	19.50	18.24	18.59	18.37
		25	0	19.50	18.35	18.27	18.32
		25	12	19.50	18.42	18.26	18.57
		25	25	19.50	18.37	18.23	18.45
		50	0	19.50	18.28	18.09	18.23

Band / BW	Modulation	RB Sizet	RB Offset	Max. Tune-up Power	Low CH	Mid CH	High CH
					20025	20175	20325
					1717.5	1732.5	1747.5
					MHz	MHz	MHz
4 / 15M	QPSK	1	0	19.50	19.29	18.39	18.75
		1	37	19.50	19.14	18.47	18.72
		1	74	19.50	18.84	18.52	18.85
		36	0	19.50	18.29	18.12	18.31
		36	19	19.50	18.27	18.11	18.28
		36	39	19.50	18.21	18.20	18.42
		75	0	19.50	18.13	18.18	18.30
	16QAM	1	0	19.50	18.24	18.19	18.43
		1	37	19.50	18.27	18.10	18.93
		1	74	19.50	18.28	17.58	18.40
		36	0	19.50	18.43	17.58	18.42
		36	19	19.50	18.29	18.23	18.31
		36	39	19.50	18.21	18.18	18.19
		75	0	19.50	18.15	18.15	18.25
Band / BW	Modulation	RB Sizet	RB Offset	Max. Tune-up Power	Low CH	Mid CH	High CH
					20050	20175	20300
					1720	1732.5	1745
					MHz	MHz	MHz
4 / 20M	QPSK	1	0	19.50	18.41	18.83	18.77
		1	50	19.50	18.87	18.73	**19.29**
		1	99	19.50	18.54	18.97	18.83
		50	0	19.50	18.22	18.16	**18.40**
		50	25	19.50	18.28	18.22	18.30
		50	50	19.50	18.13	18.18	18.23
		100	0	19.50	18.21	18.23	18.43
	16QAM	1	0	19.50	18.96	18.10	18.40
		1	50	19.50	18.20	18.12	18.30
		1	99	19.50	17.66	18.15	18.48
		50	0	19.50	18.18	18.29	18.26
		50	25	19.50	18.39	18.29	18.39
		50	50	19.50	18.12	18.04	18.22
		100	0	19.50	18.30	18.19	18.26

8.1.8CONDUCTED POWER MEASUREMENTS OF LTE Band 5

Band / BW	Modulation	RB Sizet	RB Offset	Max. Tune-up Power	Low CH	Mid CH	High CH
					20407	20525	20643
					824.7	836.5	848.3
					MHz	MHz	MHz
5 / 1.4M	QPSK	1	0	24.00	22.72	22.49	22.66
		1	2	24.00	22.90	22.84	22.78
		1	5	24.00	22.84	22.70	22.64
		3	0	24.00	22.89	22.68	22.57
		3	1	24.00	22.87	22.71	22.75
		3	3	24.00	22.90	22.73	22.76
		6	0	23.00	21.79	21.69	21.72
	16QAM	1	0	23.00	21.70	22.12	21.61
		1	2	23.00	22.03	22.20	21.71
		1	5	23.00	21.74	22.10	21.64
		3	0	23.00	21.45	21.74	21.93
		3	1	23.00	21.44	21.75	21.85
		3	3	23.00	21.48	21.75	21.80
		6	0	22.00	20.55	20.65	20.63
Band / BW	Modulation	RB Sizet	RB Offset	Max. Tune-up Power	Low CH	Mid CH	High CH
					20415	20525	20635
					825.5	836.5	847.5
					MHz	MHz	MHz
5 / 3M	QPSK	1	0	24.00	22.88	22.71	22.58
		1	7	24.00	22.78	22.75	22.75
		1	14	24.00	22.69	22.66	22.56
		8	0	23.00	21.89	21.78	21.81
		8	3	23.00	21.81	21.72	21.76
		8	7	23.00	21.71	21.71	21.69
		15	0	23.00	21.82	21.69	21.61
	16QAM	1	0	23.00	21.84	21.34	21.58
		1	7	23.00	21.95	21.36	21.57
		1	14	22.00	21.71	21.21	21.39
		8	0	22.00	20.85	20.83	20.28
		8	3	22.00	20.91	20.79	20.33
		8	7	22.00	20.93	20.75	20.36
		15	0	22.00	21.04	20.80	20.51

Band / BW	Modulation	RB Sizet	RB Offset	Max. Tune-up Power	Low CH	Mid CH	High CH
					20425	20525	20625
					826.5	836.5	846.5
					MHz	MHz	MHz
5 / 5M	QPSK	1	0	24.00	22.71	22.36	22.47
		1	12	24.00	22.80	22.58	22.84
		1	24	24.00	22.66	22.29	22.81
		12	0	23.00	21.95	21.80	21.60
		12	6	23.00	21.92	21.82	21.79
		12	13	23.00	21.94	21.77	21.76
		25	0	23.00	21.90	21.72	21.63
	16QAM	1	0	23.00	21.63	21.14	21.19
		1	12	23.00	21.34	21.23	21.23
		1	24	22.00	21.03	20.95	21.23
		12	0	22.00	20.80	20.71	20.32
		12	6	22.00	20.76	20.73	20.38
		12	13	22.00	20.83	20.69	20.46
		25	0	22.00	20.92	20.66	20.46
Band / BW	Modulation	RB Sizet	RB Offset	Max. Tune-up Power	Low CH	Mid CH	High CH
					20450	20525	20600
					829	836.5	844
					MHz	MHz	MHz
5 / 10M	QPSK	1	0	24.00	22.30	22.82	22.71
		1	24	24.00	22.90	22.99	22.99
		1	49	24.00	**23.05**	22.47	22.79
		25	0	23.00	21.90	21.91	21.73
		25	12	23.00	**21.92**	21.86	21.77
		25	25	23.00	21.82	21.65	21.66
		50	0	23.00	21.84	21.69	21.70
	16QAM	1	0	23.00	21.36	22.20	21.70
		1	24	23.00	21.96	22.13	21.66
		1	49	22.00	21.56	21.15	21.55
		25	0	22.00	20.92	20.93	20.73
		25	12	22.00	20.70	20.94	20.66
		25	25	22.00	20.63	20.68	20.64
		50	0	22.00	20.68	20.69	20.63

8.1.9CONDUCTED POWER MEASUREMENTS OF LTE BAND 7

Band / BW	Modulation	RB Sizet	RB Offset	Max. Tune-up Power	Low CH	Mid CH	High CH
					20775	21100	21425
					2502.5	2535	2567.5
					MHz	MHz	MHz
7 / 5M	QPSK	1	0	24.00	22.27	22.35	22.66
		1	12	24.00	22.53	22.50	22.69
		1	24	24.00	22.53	22.42	22.60
		12	0	23.00	21.33	21.73	21.90
		12	6	23.00	21.46	21.86	21.84
		12	13	23.00	21.50	21.82	21.78
		25	0	23.00	21.42	21.81	21.77
	16QAM	1	0	23.00	21.03	21.26	21.38
		1	12	23.00	21.09	21.87	21.39
		1	24	22.00	20.87	21.73	21.05
		12	0	22.00	20.40	20.68	20.85
		12	6	22.00	20.54	20.82	20.85
		12	13	22.00	20.58	20.79	20.79
		25	0	22.00	20.44	20.70	20.78
Band / BW	Modulation	RB Sizet	RB Offset	Max. Tune-up Power	Low CH	Mid CH	High CH
					20800	21100	21400
					2505	2535	2565
					MHz	MHz	MHz
7 / 10M	QPSK	1	0	24.00	22.28	22.53	22.63
		1	24	24.00	22.53	22.85	22.89
		1	49	24.00	22.26	22.50	22.60
		25	0	23.00	21.20	21.65	21.74
		25	12	23.00	21.33	21.68	21.75
		25	25	23.00	21.13	21.52	21.63
		50	0	23.00	21.13	21.59	21.65
	16QAM	1	0	23.00	21.25	21.16	21.62
		1	24	23.00	21.70	21.56	21.56
		1	49	22.00	21.19	20.95	21.40
		25	0	22.00	20.36	20.57	20.91
		25	12	22.00	20.40	20.78	20.82
		25	25	22.00	20.09	20.50	20.69
		50	0	22.00	20.24	20.45	20.65

Band / BW	Modulation	RB Sizet	RB Offset	Max. Tune-up Power	Low CH	Mid CH	High CH
					20825	21100	21375
					2507.5	2535	2562.5
					MHz	MHz	MHz
7 / 15M	QPSK	1	0	24.00	22.54	22.48	22.78
		1	37	24.00	22.58	22.68	22.71
		1	74	24.00	22.59	22.56	22.65
		36	0	23.00	21.45	21.88	21.90
		36	19	23.00	21.50	21.82	21.94
		36	39	23.00	21.26	21.74	21.83
		75	0	23.00	21.43	21.76	21.81
	16QAM	1	0	23.00	21.54	21.01	22.58
		1	37	23.00	21.78	21.33	22.66
		1	74	22.00	21.50	21.12	21.86
		36	0	22.00	20.40	20.71	20.81
		36	19	22.00	20.55	20.75	20.86
		36	39	22.00	20.12	20.66	20.59
		75	0	22.00	20.39	20.57	20.80
Band / BW	Modulation	RB Sizet	RB Offset	Max. Tune-up Power	Low CH	Mid CH	High CH
					20850	21100	21350
					2510	2535	2560
					MHz	MHz	MHz
7 / 20M	QPSK	1	0	24.00	22.06	22.62	22.75
		1	50	24.00	22.37	**22.96**	22.90
		1	99	24.00	22.01	22.74	22.48
		50	0	23.00	21.41	21.76	**22.01**
		50	25	23.00	21.42	21.79	21.89
		50	50	23.00	21.39	21.74	21.83
		100	0	23.00	21.42	21.70	21.93
	16QAM	1	0	23.00	21.09	21.61	21.86
		1	50	23.00	21.40	21.88	21.81
		1	99	22.00	20.85	21.44	21.67
		50	0	22.00	20.52	20.84	20.77
		50	25	22.00	20.51	20.97	20.87
		50	50	22.00	20.26	20.54	20.60
		100	0	22.00	20.43	20.79	20.83

8.1.10CONDUCTED POWER MEASUREMENTS OF WiFi 2.4G

1) Full Power measurement result for Sensor Off

Mode	Channel	Frequency(MHz)	Data Rate(Mbps)	Power Setting	Tune up	Average Power(dBm)	SAR Test(Yes/No)
802.11b	1	2412	1	16.50	18.00	17.72	No
	6	2437		16.50	18.00	16.78	No
	11	2462		16.50	**18.00**	**17.93**	**Yes**
802.11g	1	2412	6	17.00	17.00	Not Required	No
	6	2437		17.00	17.00	Not Required	No
	11	2462		17.00	17.00	Not Required	No
802.11n HT20	1	2412	6.5	15.00	15.00	Not Required	No
	6	2437		15.00	15.00	Not Required	No
	11	2462		15.00	15.00	Not Required	No
802.11n HT40	3	2422	13.5	14.00	14.00	Not Required	No
	6	2437		14.00	14.00	Not Required	No
	9	2452		14.00	14.00	Not Required	No

2) Full Power measurement result for Sensor On

Mode	Channel	Frequency(MHz)	Data Rate(Mbps)	Power Setting	Tune up	Average Power(dBm)	SAR Test(Yes/No)
802.11b	1	2412	1	12.50	14.00	13.86	No
	6	2437		12.50	14.00	12.74	No
	11	2462		12.50	**14.00**	**13.93**	**Yes**
802.11g	1	2412	6	13.00	13.00	Not Required	No
	6	2437		13.00	13.00	Not Required	No
	11	2462		13.00	13.00	Not Required	No
802.11n HT20	1	2412	6.5	11.00	11.00	Not Required	No
	6	2437		11.00	11.00	Not Required	No
	11	2462		11.00	11.00	Not Required	No
802.11n HT40	3	2422	13.5	10.00	10.00	Not Required	No
	6	2437		10.00	10.00	Not Required	No
	9	**2452**		10.00	10.00	Not Required	No

Note:

1) The Average conducted power of WiFi is measured with RMS detector.

2) Per KDB248227 D01, for WiFi 2.4GHz, the highest measured maximum output power Channel for DSSS modes (802.11b) was selected for SAR measurement.SAR for OFDM modes (2.4GHz 802.11g/n) was not required When the highest reported SAR for DSSS is adjusted by the ratio of OFDM modes (802.11g/n) to DSSS modes (802.11b) specified maximum output power and the adjusted SAR is ≤ 1.2 W/kg.

8.1.11CONDUCTED POWER MEASUREMENTS OF BT

BT	Tune Up	Average Conducted Power (dBm)		
		CH0	CH39	CH78
DH5	9.50	8.69	8.66	7.61
2DH5	8.00	7.20	7.19	6.18
3DH5	8.00	7.18	7.16	6.20

BT	Tune Up	Average Conducted Power (dBm)		
		CH0	CH19	CH39
BLE	3.00	2.43	2.48	1.29

Note:
1) The conducted power of BT is measured with RMS detector.

8.2SAR TEST RESULTS

General Notes:

1) Per KDB447498 D01, all measurement SAR results are scaled to the maximum tune-up tolerance limit to demonstrate compliant.
2) Per KDB447498 D01, 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. When the maximum output power variation across the required test channels is > ½ dB, instead of the middle channel, the highest output power channel must be used.
3) Per KDB865664 D01,for each frequency band, repeated SAR measurement is required only when the measured SAR is ≥0.8W/kg; if the deviation among the repeated measurement is ≤ 20%,and the measured SAR <1.45W/kg, only one repeated measurement is required.
4) Per KDB941225 D06, the DUT Dimension is bigger than 9 cm x 5 cm, so 10mm is chosen as the test separation distance for Hotspot mode. When the antenna-to-edge distance is greater than 2.5cm, such position does not need to be tested.
5) Per KDB648474 D04, SAR is evaluated without a headset connected to the device. When the standalone reported body-worn SAR is ≤1.2 W/kg, no additional SAR evaluations using a headset are required.
6) Per KDB865664 D02, SAR plot is only required for the highest measured SAR in each exposure configuration, wireless mode and frequency band combination; Plots are also required when the measured SAR is > 1.5 W/kg, or > 7.0 W/kg for occupational exposure. The published RF exposure KDB procedures may require additional plots; for example, to support SAR to peak location separation ratio test exclusion and/or volume scan post-processing.

GSM Notes:

1) Per KDB648474 D04, body-worn accessory testing is typically associated with voice operations. Therefore, GSM voice was evaluated for body-worn SAR.
2) Per KDB941225 D01, SAR test reduction for GPRS and EDGE modes is determined by the source-based time-averaged output power specified for production units, including tune-up tolerance. The data mode with highest specified time-averaged output power should be tested for SAR compliance in the applicable exposure conditions. For modes with the same specified maximum output power and tolerance, the higher number time-slot configuration should be tested.

UMTS Notes:

Per KDB941225 D01, When the maximum output power and tune-up tolerance specified for production units in a secondary mode is ≤¼ dB higher than the primary mode or when the highest reported SAR of the primary mode is scaled by the ratio of specified maximum output power and tune-up tolerance of secondary to primary mode and the adjusted SAR is ≤ 1.2 W/kg, SAR measurement is not required for the secondary mode.

LTE notes:

1) The LTE test configurations are determined according to KDB941225 D05 SAR for LTE Devices. The general test procedures used for SAR testing can be found in Section 7.1.3.
2) A-MPR was disabled for all SAR test by setting NS_01 on the base station simulator. SAR tests were performed with the same number of RB and RB offsets transmitting on all TTI frames(maximum TTI)

WLAN Notes:

1. For exposure conditions with multiple test positions, such as handset operating next to the ear, devices with hotspot mode, procedures for initial test position can be applied. Using the transmission mode determined by the DSSS procedure or initial test configuration, area scans are measured for all positions in an exposure condition. The test position with the highest extrapolated (peak) SAR is used as the initial test position. When the reported SAR of the initial test position is ≤ 0.4 W/kg, further SAR measurement is not required for the other (remaining) test positions. Otherwise, SAR is evaluated at the subsequent highest peak SAR position until the reported SAR result is ≤ 0.8 W/kg or all test positions are measured.
2. Justification for test configurations for WLAN per KDB Publication 248227 for 2.4GHZ WIFI single transmission chain operations, the highest measured maximum output power Channel for DSSS was selected for SAR measurement.SAR for OFDM modes(2.4GHz 802.11g/n) was not required due to the maximum allowed powers and the highest reported DSSS SAR. See Section 7.1.4 for more information.

8.2.1SAR MEASUREMENT RESULT OF HEAD

1. Head SAR test results of GSM

Test No.	Band	Mode	Channel	Test Position	SIM	Battery	Maximum Tune-up (dBm)	Conducted Power (dBm)	Power Drift	SAR 1g	SAR 10g	Scaled 1g SAR
1	GSM 850	GSM	190	Right Cheek	1	1	34	32.11	0.01	0.100	0.075	0.155
2	GSM 850	GSM	190	Right Tilted	1	1	34	32.11	0.09	0.098	0.071	0.151
3	GSM 850	GSM	190	Left Cheek	1	1	34	32.11	-0.11	0.103	0.082	0.159
4	GSM 850	GSM	190	Left Tilted	1	1	34	32.11	0.1	0.096	0.069	0.148
5	GSM 850	GSM	190	Left Cheek	2	1	34	32.11	-0.14	0.101	0.079	0.156
6	GSM 850	GSM	190	Left Cheek	1	2	34	32.11	-0.05	0.098	0.077	0.151
7	GSM 850	GSM	190	Left Cheek	1	3	34	32.11	-0.19	**0.128**	0.099	**0.198**
8	GSM 1900	GSM	661	Right Cheek	1	1	30.8	30.03	0.06	0.045	0.026	0.054
9	GSM 1900	GSM	661	Right Tilted	1	1	30.8	30.03	-0.16	0.081	0.044	0.097
10	GSM 1900	GSM	661	Left Cheek	1	1	30.8	30.03	0.02	0.048	0.030	0.057
11	GSM 1900	GSM	661	Left Tilted	1	1	30.8	30.03	0.09	0.074	0.040	0.088
12	GSM 1900	GSM	661	Right Tilted	2	1	30.8	30.03	0.04	0.080	0.042	0.096
13	GSM 1900	GSM	661	Right Tilted	1	2	30.8	30.03	0.11	0.073	0.039	0.087
14	GSM 1900	GSM	661	Right Tilted	1	3	30.8	30.03	0.03	**0.082**	0.042	**0.098**

2. Head SAR test results of UMTS

Test No.	Band	Mode	Channel	Test Position	SIM	Battery	Maximum Tune-up (dBm)	Conducted Power (dBm)	Power Drift	SAR 1g	SAR 10g	Scaled 1g SAR
15	UMTS B2	RMC12.2K	9400	Right Cheek	1	1	24.5	22.95	0.16	0.051	0.024	0.073
16	UMTS B2	RMC12.2K	9400	Right Tilted	1	1	24.5	22.95	0.02	**0.118**	0.063	**0.169**
17	UMTS B2	RMC12.2K	9400	Left Cheek	1	1	24.5	22.95	0.11	0.066	0.039	0.094
18	UMTS B2	RMC12.2K	9400	Left Tilted	1	1	24.5	22.95	-0.05	0.105	0.056	0.150
19	UMTS B2	RMC12.2K	9400	Right Tilted	2	1	24.5	22.95	0.07	0.103	0.053	0.147
20	UMTS B2	RMC12.2K	9400	Right Tilted	1	2	24.5	22.95	-0.01	0.074	0.045	0.106
21	UMTS B2	RMC12.2K	9400	Right Tilted	1	3	24.5	22.95	0.06	0.113	0.059	0.161
22	UMTS B4	RMC12.2K	1413	Right Cheek	1	1	24.5	23.34	0.09	0.082	0.056	0.107
23	UMTS B4	RMC12.2K	1413	Right Tilted	1	1	24.5	23.34	0	0.000	0.000	0.000
24	UMTS B4	RMC12.2K	1413	Left Cheek	1	1	24.5	23.34	-0.04	0.055	0.043	0.072
25	UMTS B4	RMC12.2K	1413	Left Tilted	1	1	24.5	23.34	-0.09	0.061	0.046	0.080
26	UMTS B4	RMC12.2K	1413	Right Cheek	2	1	24.5	23.34	0.07	0.072	0.051	0.094
27	UMTS B4	RMC12.2K	1413	Right Cheek	1	2	24.5	23.34	-0.06	0.078	0.051	0.102
28	UMTS B4	RMC12.2K	1413	Right Cheek	1	3	24.5	23.34	0.06	**0.095**	0.063	**0.124**
29	UMTS B5	RMC12.2K	4182	Right Cheek	1	1	25	23.67	0.12	0.112	0.085	0.152
30	UMTS B5	RMC12.2K	4182	Right Tilted	1	1	25	23.67	-0.1	0.091	0.068	0.124
31	UMTS B5	RMC12.2K	4182	Left Cheek	1	1	25	23.67	-0.14	0.115	0.090	0.156
32	UMTS B5	RMC12.2K	4182	Left Tilted	1	1	25	23.67	-0.05	0.101	0.079	0.137
33	UMTS B5	RMC12.2K	4182	Left Cheek	2	1	25	23.67	0.07	0.111	0.086	0.151
34	UMTS B5	RMC12.2K	4182	Left Cheek	2	2	25	23.67	0.09	0.110	0.086	0.149
35	UMTS B5	RMC12.2K	4182	Left Cheek	2	3	25	23.67	0	**0.133**	0.105	**0.181**

3. Head SAR test results of LTE B2

Test No.	Band	Mode	Channel	RB	offset	Test Position	SIM	Battery	Maximum Tune-up (dBm)	Conducted Power (dBm)	Power Drift	SAR 1g	SAR 10g	Scaled 1g SAR
36	LTE B2	QPSK20M	18700	1	50	Right Cheek	1	1	24	22.96	-0.05	0.072	0.043	0.092
37	LTE B2	QPSK20M	18700	1	50	Right Tilted	1	1	24	22.96	0.03	0.090	0.051	0.114
38	LTE B2	QPSK20M	18700	1	50	Left Cheek	1	1	24	22.96	0.15	0.073	0.046	0.093
39	LTE B2	QPSK20M	18700	1	50	Left Tilted	1	1	24	22.96	-0.11	0.095	0.054	0.121
40	LTE B2	QPSK20M	18700	50	25	Right Cheek	1	1	23	21.83	0.09	0.062	0.038	0.081
41	LTE B2	QPSK20M	18700	50	25	Right Tilted	1	1	23	21.83	0.01	0.091	0.052	0.119
42	LTE B2	QPSK20M	18700	50	25	Left Cheek	1	1	23	21.83	0.11	0.061	0.039	0.080
43	LTE B2	QPSK20M	18700	50	25	Left Tilted	1	1	23	21.83	-0.04	0.091	0.051	0.119
44	LTE B2	QPSK20M	18700	1	50	Left Tilted	2	1	24	22.96	-0.19	0.095	0.055	0.121
45	LTE B2	QPSK20M	18700	1	50	Left Tilted	1	2	24	22.96	0.05	0.098	0.054	0.125
46	LTE B2	QPSK20M	18700	1	50	Left Tilted	1	3	24	22.96	0.15	**0.100**	0.056	**0.127**

4. Head SAR test results of LTE B4

Test No.	Band	Mode	Channel	RB	offset	Test Position	SIM	Battery	Maximum Tune-up (dBm)	Conducted Power (dBm)	Power Drift	SAR 1g	SAR 10g	Scaled 1g SAR
47	LTE B4	QPSK20M	20300	1	50	Right Cheek	1	1	24	22.85	0.02	0.075	0.051	0.098
48	LTE B4	QPSK20M	20300	1	50	Right Tilted	1	1	24	22.85	-0.09	0.000	0.000	0.000
49	LTE B4	QPSK20M	20300	1	50	Left Cheek	1	1	24	22.85	0.07	0.063	0.030	0.082
50	LTE B4	QPSK20M	20300	1	50	Left Tilted	1	1	24	22.85	-0.02	0.068	0.032	0.089
51	LTE B4	QPSK20M	20300	50	25	Right Cheek	1	1	23	21.82	-0.08	0.073	0.042	0.096
52	LTE B4	QPSK20M	20300	50	25	Right Tilted	1	1	23	21.82	0.18	0.000	0.000	0.000
53	LTE B4	QPSK20M	20300	50	25	Left Cheek	1	1	23	21.82	0.11	0.025	0.011	0.033
54	LTE B4	QPSK20M	20300	50	25	Left Tilted	1	1	23	21.82	0.1	0.023	0.010	0.030
55	LTE B4	QPSK20M	20300	1	50	Right Cheek	2	1	24	22.85	-0.16	0.088	0.059	0.115
56	LTE B4	QPSK20M	20300	1	50	Right Cheek	2	2	24	22.85	-0.12	0.083	0.054	0.108
57	LTE B4	QPSK20M	20300	1	50	Right Cheek	2	3	24	22.85	-0.1	**0.093**	0.061	**0.121**

5. Head SAR test results of LTE B5

Test No.	Band	Mode	Channel	RB	offset	Test Position	SIM	Battery	Maximum Tune-up (dBm)	Conducted Power (dBm)	Power Drift	SAR 1g	SAR 10g	Scaled 1g SAR
58	LTE B5	QPSK10M	20450	1	49	Right Cheek	1	1	24	23.05	0.01	0.102	0.065	0.127
59	LTE B5	QPSK10M	20450	1	49	Right Tilted	1	1	24	23.05	-0.06	0.118	0.069	0.147
60	LTE B5	QPSK10M	20450	1	49	Left Cheek	1	1	24	23.05	0.18	0.098	0.061	0.122
61	LTE B5	QPSK10M	20450	1	49	Left Tilted	1	1	24	23.05	0.16	0.108	0.063	0.134
62	LTE B5	QPSK10M	20450	25	12	Right Cheek	1	1	23	21.92	-0.11	0.075	0.046	0.096
63	LTE B5	QPSK10M	20450	25	12	Right Tilted	1	1	23	21.92	-0.01	0.094	0.053	0.121
64	LTE B5	QPSK10M	20450	25	12	Left Cheek	1	1	23	21.92	0.05	0.076	0.044	0.097
65	LTE B5	QPSK10M	20450	25	12	Left Tilted	1	1	23	21.92	0.07	0.084	0.048	0.108
66	LTE B5	QPSK10M	20450	1	49	Right Tilted	2	1	24	23.05	0.08	**0.128**	0.077	**0.159**
67	LTE B5	QPSK10M	20450	1	49	Right Tilted	2	2	24	23.05	0.05	0.097	0.060	0.121
68	LTE B5	QPSK10M	20450	1	49	Right Tilted	2	3	24	23.05	0.11	0.120	0.072	0.149

6. Head SAR test results of LTE B7

Test No.	Band	Mode	Channel	RB	offset	Test Position	SIM	Battery	Maximum Tune-up (dBm)	Conducted Power (dBm)	Power Drift	SAR 1g	SAR 10g	Scaled 1g SAR
69	LTE B7	QPSK20M	21100	1	50	Right Cheek	1	1	24	22.96	0.01	0.039	0.024	0.050
70	LTE B7	QPSK20M	21100	1	50	Right Tilted	1	1	24	22.96	0.06	0.027	0.012	0.034
71	LTE B7	QPSK20M	21100	1	50	Left Cheek	1	1	24	22.96	-0.07	0.053	0.027	0.067
72	LTE B7	QPSK20M	21100	1	50	Left Tilted	1	1	24	22.96	-0.19	0.010	0.013	0.013
73	LTE B7	QPSK20M	21350	50	0	Right Cheek	1	1	23	22.01	0.03	0.018	0.014	0.023
74	LTE B7	QPSK20M	21350	50	0	Right Tilted	1	1	23	22.01	0.14	0.005	0.004	0.006
75	LTE B7	QPSK20M	21350	50	0	Left Cheek	1	1	23	22.01	-0.16	0.042	0.006	0.053
76	LTE B7	QPSK20M	21350	50	0	Left Tilted	1	1	23	22.01	0	0.000	0.000	0.000
77	LTE B7	QPSK20M	21100	1	50	Left Cheek	2	1	24	22.96	-0.03	0.055	0.029	0.070
78	LTE B7	QPSK20M	21100	1	50	Left Cheek	2	2	24	22.96	0.01	**0.077**	0.040	**0.098**
79	LTE B7	QPSK20M	21100	1	50	Left Cheek	2	3	24	22.96	0.06	0.043	0.023	0.055

7. Head SAR test results of WIFI

Test No.	Band	Channel	Test Position	Battery	Data Rate	Power Setting	Maximum Tune-up (dBm)	Conducted Power (dBm)	Power Drift	SAR 1g	SAR 10g	Scaled 1g SAR
100	802.11b	6	Right Cheek	1	1	12.5	14	13.86	0.05	0.162	0.075	0.167
101	802.11b	6	Right Tilted	1	1	12.5	14	13.86	-0.14	0.185	0.094	0.191
102	802.11b	6	Left Cheek	1	1	12.5	14	13.86	-0.07	0.291	0.129	0.301
103	802.11b	6	Left Tilted	1	1	12.5	14	13.86	0.09	0.303	0.135	0.313
104	802.11b	6	Left Tilted	2	1	12.5	14	12.74	0.17	**0.309**	0.138	**0.413**
105	802.11b	6	Left Tilted	3	1	12.5	14	12.74	0.01	0.282	0.122	0.377

8.2.2SAR MEASUREMENT RESULT OF BODY-WORN

1. Body-worn SAR test results of GSM

Test No.	Band	Mode	Channel	Test Position (with 15mm)	Sensor	SIM	Battery	Maximum Tune-up (dBm)	Conducted Power (dBm)	Power Drift	SAR 1g	SAR 10g	Scaled 1g SAR
200	GSM 850	GSM	190	Front Face	off	1	1	34	32.11	0.06	0.085	0.054	0.131
201	GSM 850	GSM	190	Rear Face	off	1	1	34	32.11	-0.04	**0.185**	0.145	**0.286**
202	GSM 850	GSM	190	Rear Face	off	2	1	34	32.11	-0.11	0.175	0.105	0.270
203	GSM 850	GSM	190	Rear Face	off	1	2	34	32.11	0.05	0.161	0.127	0.249
204	GSM 850	GSM	190	Rear Face	off	1	3	34	32.11	0.06	0.184	0.142	0.284
213	GSM 1900	GSM	661	Front Face	off	1	1	30.8	30.03	0.01	0.125	0.069	0.149
214	GSM 1900	GSM	661	Rear Face	off	1	1	30.8	30.03	0.15	0.231	0.137	0.276
215	GSM 1900	GSM	661	Rear Face	off	2	1	30.8	30.03	-0.02	0.245	0.148	0.293
216	GSM 1900	GSM	661	Rear Face	off	1	2	30.8	30.03	0.06	0.232	0.137	0.277
217	GSM 1900	GSM	661	Rear Face	off	1	3	30.8	30.03	0.05	**0.238**	0.140	**0.284**

2. Body-worn SAR test results of UMTS

Test No.	Band	Mode	Channel	Test Position (with 15mm)	Sensor	SIM	Battery	Maximum Tune-up (dBm)	Conducted Power (dBm)	Power Drift	SAR 1g	SAR 10g	Scaled 1g SAR
233	UMTS B2	RMC12.2K	9400	Front Face	off	1	1	24.5	22.95	0.05	0.141	0.095	0.201
234	UMTS B2	RMC12.2K	9400	Rear Face	off	1	1	24.5	22.95	-0.06	0.296	0.174	0.423
235	UMTS B2	RMC12.2K	9400	Rear Face	off	2	1	24.5	22.95	0.01	0.327	0.194	0.467
236	UMTS B2	RMC12.2K	9400	Rear Face	off	2	2	24.5	22.95	-0.11	0.318	0.187	0.454
237	UMTS B2	RMC12.2K	9400	Rear Face	off	2	3	24.5	22.95	0.13	**0.332**	0.196	**0.474**
255	UMTS B4	RMC12.2K	1413	Front Face	off	1	1	24.5	23.34	0.14	0.251	0.134	0.328
256	UMTS B4	RMC12.2K	1413	Rear Face	off	1	1	24.5	23.34	-0.07	0.681	0.435	0.890
257	UMTS B4	RMC12.2K	1312	Rear Face	off	1	1	24.5	23.56	0.09	0.591	0.407	0.734
258	UMTS B4	RMC12.2K	1513	Rear Face	off	1	1	24.5	23.36	0.15	0.661	0.425	0.859
259	UMTS B4	RMC12.2K	1413	Rear Face	off	2	1	24.5	23.34	0.02	**0.751**	0.440	**0.981**
260	UMTS B4	RMC12.2K	1413	Rear Face	off	2	2	24.5	23.34	-0.01	0.714	0.421	0.933
261	UMTS B4	RMC12.2K	1413	Rear Face	off	2	3	24.5	23.34	0.06	0.687	0.410	0.897
607	UMTS B4	RMC12.2K	1413	Rear Face	off	2	1	24.5	23.34	0.14	0.745	0.410	0.973
279	UMTS B5	RMC12.2K	4182	Front Face	off	1	1	25	23.67	0.05	0.124	0.071	0.168
280	UMTS B5	RMC12.2K	4182	Rear Face	off	1	1	25	23.67	0.14	0.211	0.132	0.287
281	UMTS B5	RMC12.2K	4182	Rear Face	off	2	1	25	23.67	0.01	**0.221**	0.173	**0.300**
282	UMTS B5	RMC12.2K	4182	Rear Face	off	2	2	25	23.67	0.15	0.189	0.148	0.257
283	UMTS B5	RMC12.2K	4182	Rear Face	off	2	3	25	23.67	-0.11	0.206	0.161	0.280

3. Body-worn SAR test results of LTE B2

Test No.	Band	Mode	CH	RB	offset	Test Position (with 15mm)	Sensor	SIM	Battery	Maximum Tune-up (dBm)	Conducted Power (dBm)	Power Drift	SAR 1g	SAR 10g	Scaled 1g SAR
300	LTE B2	QPSK20M	18700	1	50	Front Face	off	1	1	24	22.96	0.06	0.121	0.074	0.154
301	LTE B2	QPSK20M	18700	1	50	Rear Face	off	1	1	24	22.96	-0.02	**0.329**	0.194	**0.418**
302	LTE B2	QPSK20M	18700	50	25	Front Face	off	1	1	23	21.83	0.11	0.095	0.051	0.124
303	LTE B2	QPSK20M	18700	50	25	Rear Face	off	1	1	23	21.83	0.08	0.251	0.131	0.329
304	LTE B2	QPSK20M	18700	1	50	Rear Face	off	2	1	24	22.96	-0.06	0.298	0.194	0.379
305	LTE B2	QPSK20M	18700	1	50	Rear Face	off	1	2	24	22.96	0.05	0.293	0.175	0.372
306	LTE B2	QPSK20M	18700	1	50	Rear Face	off	1	3	24	22.96	0.11	0.289	0.164	0.367

4. Body-worn SAR test results of LTE B4

Test No.	Band	Mode	CH	RB	offset	Test Position (with 15mm)	Sensor	SIM	Battery	Maximum Tune-up (dBm)	Conducted Power (dBm)	Power Drift	SAR 1g	SAR 10g	Scaled 1g SAR
330	LTE B4	QPSK20M	20300	1	50	Front Face	off	1	1	24	22.85	0.04	0.205	0.136	0.267
331	LTE B4	QPSK20M	20300	1	50	Rear Face	off	1	1	24	22.85	-0.05	0.633	0.351	0.825
332	LTE B4	QPSK20M	20300	50	25	Front Face	off	1	1	23	21.82	0.16	0.175	0.106	0.229
333	LTE B4	QPSK20M	20300	50	25	Rear Face	off	1	1	23	21.82	0.09	0.511	0.292	0.670
334	LTE B4	QPSK20M	20050	1	50	Rear Face	off	1	1	24	22.70	-0.08	0.645	0.364	0.871
335	LTE B4	QPSK20M	20175	1	99	Rear Face	off	1	1	24	22.62	0.09	0.703	0.410	0.965
336	LTE B4	QPSK20M	20175	1	99	Rear Face	off	2	1	24	22.62	0.04	0.631	0.351	0.867
337	LTE B4	QPSK20M	20175	1	99	Rear Face	off	1	2	24	22.62	-0.14	**0.715**	0.426	**0.982**
338	LTE B4	QPSK20M	20175	1	99	Rear Face	off	1	3	24	22.62	0.01	0.622	0.372	0.855
339	LTE B4	QPSK20M	20175	100	0	Rear Face	off	1	2	23	21.56	0.1	0.558	0.316	0.777
608	LTE B4	QPSK20M	20175	1	99	Rear Face	off	1	2	24	22.62	-0.05	0.704	0.411	0.967

5. Body-worn SAR test results of LTE B5

Test No.	Band	Mode	CH	RB	offset	Test Position (with 15mm)	Sensor	SIM	Battery	Maximum Tune-up (dBm)	Conducted Power (dBm)	Power Drift	SAR 1g	SAR 10g	Scaled 1g SAR
364	LTE B5	QPSK10M	20450	1	49	Front Face	off	1	1	24	23.05	0.05	0.045	0.031	0.056
365	LTE B5	QPSK10M	20450	1	49	Rear Face	off	1	1	24	23.05	-0.01	0.106	0.061	0.132
366	LTE B5	QPSK10M	20450	25	12	Front Face	off	1	1	23	21.92	0.06	0.044	0.025	0.056
367	LTE B5	QPSK10M	20450	25	12	Rear Face	off	1	1	23	21.92	0.14	0.085	0.054	0.109
368	LTE B5	QPSK10M	20450	1	49	Rear Face	off	2	1	24	23.05	0.05	0.115	0.089	0.143
369	LTE B5	QPSK10M	20450	1	49	Rear Face	off	2	2	24	23.05	0.04	0.104	0.081	0.129
370	LTE B5	QPSK10M	20450	1	49	Rear Face	off	2	3	24	23.05	0.17	**0.142**	0.111	**0.177**

6. Body-worn SAR test results of LTE B7

Test No.	Band	Mode	CH	RB	offset	Test Position (with 15mm)	Sensor	SIM	Battery	Maximum Tune-up (dBm)	Conducted Power (dBm)	Power Drift	SAR 1g	SAR 10g	Scaled 1g SAR
385	LTE B7	QPKS20M	21100	1	50	Front Face	off	1	1	24	22.96	-0.04	0.085	0.042	0.108
386	LTE B7	QPKS20M	21100	1	50	Rear Face	off	1	1	24	22.96	0.1	0.324	0.181	0.411
387	LTE B7	QPKS20M	21350	50	0	Front Face	off	1	1	23	22.01	0.09	0.054	0.028	0.068
388	LTE B7	QPKS20M	21350	50	0	Rear Face	off	1	1	23	22.01	-0.06	0.225	0.151	0.283
389	LTE B7	QPKS20M	21100	1	50	Rear Face	off	2	1	24	22.96	0.14	0.318	0.170	0.404
390	LTE B7	QPKS20M	21100	1	50	Rear Face	off	1	2	24	22.96	0.06	0.303	0.171	0.385
391	LTE B7	QPKS20M	21100	1	50	Rear Face	off	1	3	24	22.96	-0.02	**0.327**	0.183	**0.415**

7. Body-worn SAR test results of WIFI

Test No.	Band	Channel	Test Position (with 15mm)	Battery	Data Rate	Power Setting	Maximum Tune-up (dBm)	Conducted Power (dBm)	Power Drift	SAR 1g	SAR 10g	Scaled 1g SAR
500	802.11b	1	Front Face	1	1	16.5	18	17.93	-0.01	**0.059**	0.034	**0.060**
501	802.11b	1	Rear Face	1	1	16.5	18	17.93	0	0.000	0.000	0.000
502	802.11b	1	Front Face	2	1	16.5	18	17.93	0.05	0.044	0.026	0.045
503	802.11b	1	Front Face	3	1	16.5	18	17.93	0.14	0.056	0.032	0.057

8.2.3SAR MEASUREMENT RESULT OF HOTSPOT

1. Hotspot SAR test results of GSM

Test No.	Band	Mode	Channel	Test Position (with 10mm)	Sensor	SIM	Battery	Maximum Tune-up (dBm)	Conducted Power (dBm)	Power Drift	SAR 1g	SAR 10g	Scaled 1g SAR
205	GSM 850	GPRS4TX	190	Front Face	off	1	1	29	27.48	0.15	0.170	0.124	0.241
206	GSM 850	GPRS4TX	190	Rear Face	off	1	1	29	27.48	-0.14	0.238	0.187	0.338
207	GSM 850	GPRS4TX	190	Left Side	off	1	1	29	27.48	0.05	0.166	0.115	0.236
208	GSM 850	GPRS4TX	190	Right Side	off	1	1	29	27.48	0.01	0.109	0.078	0.155
209	GSM 850	GPRS4TX	190	Bottom Side	off	1	1	29	27.48	-0.06	0.113	0.077	0.160
210	GSM 850	GPRS4TX	190	Rear Face	off	2	1	29	27.48	-0.11	0.231	0.182	0.328
211	GSM 850	GPRS4TX	190	Rear Face	off	1	2	29	27.48	0.03	0.236	0.186	0.335
212	GSM 850	GPRS4TX	190	Rear Face	off	1	3	29	27.48	-0.17	**0.285**	0.222	**0.404**
218	GSM 1900	GPRS3TX	661	Front Face	off	1	1	22.3	21.06	-0.05	0.286	0.168	0.381
219	GSM 1900	GPRS3TX	661	Rear Face	off	1	1	22.3	21.06	0.09	0.566	0.322	0.753
220	GSM 1900	GPRS3TX	661	Left Side	off	1	1	22.3	21.06	0.06	0.148	0.089	0.197
221	GSM 1900	GPRS3TX	661	Right Side	off	1	1	22.3	21.06	0.14	0.06	0.036	0.080
222	GSM 1900	GPRS3TX	661	Bottom Side	off	1	1	22.3	21.06	-0.04	0.61	0.344	0.812
800	GSM 1900	GPRS3TX	512	Bottom Side	off	1	1	22.3	20.93	0.08	**0.641**	0.363	**0.879**
801	GSM 1900	GPRS3TX	810	Bottom Side	off	1	1	22.3	20.61	0.05	0.592	0.329	0.874
223	GSM 1900	GPRS3TX	512	Bottom Side	off	2	1	22.3	21.06	0.07	0.624	0.348	0.830
224	GSM 1900	GPRS3TX	512	Bottom Side	off	1	2	22.3	21.06	0.06	0.618	0.351	0.822
225	GSM 1900	GPRS3TX	512	Bottom Side	off	1	3	22.3	21.06	0.18	0.585	0.325	0.778
802	GSM 1900	GPRS3TX	512	Bottom Side	off	1	1	22.3	20.93	0.04	0.635	0.357	0.871

2. Hotspot SAR test results of UMTS

Test No.	Band	Mode	Channel	Test Position (with 10mm)	Sensor	SIM	Battery	Maximum Tune-up (dBm)	Conducted Power (dBm)	Power Drift	SAR 1g	SAR 10g	Scaled 1g SAR
238	UMTS B2	RMC12.2K	9400	Front Face	off	1	1	21.5	19.87	0.05	0.175	0.132	0.255
239	UMTS B2	RMC12.2K	9400	Rear Face	off	1	1	21.5	19.87	-0.14	0.299	0.251	0.435
240	UMTS B2	RMC12.2K	9400	Left Side	off	1	1	21.5	19.87	0.11	0.045	0.021	0.065
241	UMTS B2	RMC12.2K	9400	Right Side	off	1	1	21.5	19.87	0.03	0.012	0.005	0.017
242	UMTS B2	RMC12.2K	9400	Bottom Side	off	1	1	21.5	19.87	0.09	0.283	0.184	0.412
243	UMTS B2	RMC12.2K	9262	Rear Face	off	1	1	21.5	20.01	-0.19	0.288	0.181	0.406
244	UMTS B2	RMC12.2K	9538	Rear Face	off	1	1	21.5	19.92	-0.06	0.350	0.203	0.504
245	UMTS B2	RMC12.2K	9538	Rear Face	off	2	1	21.5	19.92	0.05	0.341	0.195	0.491
246	UMTS B2	RMC12.2K	9538	Rear Face	off	1	2	21.5	19.92	0.04	0.342	0.199	0.492
247	UMTS B2	RMC12.2K	9538	Rear Face	off	1	3	21.5	19.92	0.08	**0.366**	0.207	**0.527**
262	UMTS B4	RMC12.2K	1413	Front Face	off	1	1	21.5	19.95	0.14	0.351	0.201	0.502
263	UMTS B4	RMC12.2K	1413	Rear Face	off	1	1	21.5	19.95	-0.11	0.662	0.340	0.946
264	UMTS B4	RMC12.2K	1413	Left Side	off	1	1	21.5	19.95	0.06	0.101	0.041	0.144
265	UMTS B4	RMC12.2K	1413	Right Side	off	1	1	21.5	19.95	-0.05	0.051	0.028	0.073
266	UMTS B4	RMC12.2K	1413	Bottom Side	off	1	1	21.5	19.95	0.03	0.510	0.265	0.729
267	UMTS B4	RMC12.2K	1312	Rear Face	off	1	1	21.5	20.04	0.07	0.545	0.321	0.763
268	UMTS B4	RMC12.2K	1513	Rear Face	off	1	1	21.5	19.93	-0.01	0.581	0.329	0.834
269	UMTS B4	RMC12.2K	1413	Rear Face	off	2	1	21.5	19.95	0.06	**0.673**	0.380	**0.962**
270	UMTS B4	RMC12.2K	1413	Rear Face	off	2	2	21.5	19.95	0.03	0.601	0.344	0.859
271	UMTS B4	RMC12.2K	1413	Rear Face	off	2	3	21.5	19.95	0.01	0.541	0.316	0.773
269	UMTS B4	RMC12.2K	1413	Rear Face	off	2	1	21.5	19.95	0.05	0.670	0.375	0.957
284	UMTS B5	RMC12.2K	4182	Front Face	off	1	1	25	23.67	0.05	0.086	0.089	0.117
285	UMTS B5	RMC12.2K	4182	Rear Face	off	1	1	25	23.67	-0.06	0.223	0.176	0.303
286	UMTS B5	RMC12.2K	4182	Left Side	off	1	1	25	23.67	-0.16	0.044	0.048	0.060
287	UMTS B5	RMC12.2K	4182	Right Side	off	1	1	25	23.67	0.07	0.106	0.096	0.144
288	UMTS B5	RMC12.2K	4182	Bottom Side	off	1	1	25	23.67	0.03	0.030	0.046	0.041
289	UMTS B5	RMC12.2K	4182	Rear Face	off	2	1	25	23.67	0.04	0.228	0.178	0.310
290	UMTS B5	RMC12.2K	4182	Rear Face	off	2	2	25	23.67	-0.04	0.232	0.183	0.315
291	UMTS B5	RMC12.2K	4182	Rear Face	off	2	3	25	23.67	0.02	**0.245**	0.192	**0.333**

3. Hotspot SAR test results of LTE B2

Test No.	Band	Mode	CH	RB	offset	Test Position (with 10mm)	Sensor	SIM	Battery	Maximum Tune-up (dBm)	Conducted Power (dBm)	Power Drift	SAR 1g	SAR 10g	Scaled 1g SAR
308	LTE B2	QPSK20M	19100	1	50	Front Face	off	1	1	19.5	19.19	-0.08	0.154	0.112	0.165
309	LTE B2	QPSK20M	19100	1	50	Rear Face	off	1	1	19.5	19.19	0.18	0.255	0.138	0.274
310	LTE B2	QPSK20M	19100	1	50	Left Side	off	1	1	19.5	19.19	0.11	0.085	0.041	0.091
311	LTE B2	QPSK20M	19100	1	50	Right Side	off	1	1	19.5	19.19	0.1	0.021	0.010	0.023
312	LTE B2	QPSK20M	19100	1	50	Bottom Side	off	1	1	19.5	19.19	-0.16	0.148	0.085	0.159
313	LTE B2	QPSK20M	18900	50	0	Front Face	off	1	1	19.5	18.49	-0.12	0.120	0.078	0.151
314	LTE B2	QPSK20M	18900	50	0	Rear Face	off	1	1	19.5	18.49	-0.1	0.214	0.121	0.270
315	LTE B2	QPSK20M	18900	50	0	Left Side	off	1	1	19.5	18.49	-0.14	0.071	0.034	0.089
316	LTE B2	QPSK20M	18900	50	0	Right Side	off	1	1	19.5	18.49	-0.05	0.021	0.011	0.027
317	LTE B2	QPSK20M	18900	50	0	Bottom Side	off	1	1	19.5	18.49	0.07	0.182	0.114	0.229
318	LTE B2	QPSK20M	19100	1	50	Rear Face	off	2	1	19.5	19.19	0.09	0.229	0.128	0.246
319	LTE B2	QPSK20M	19100	1	50	Rear Face	off	1	2	19.5	19.19	0.14	0.249	0.145	0.267
320	LTE B2	QPSK20M	19100	1	50	Rear Face	off	1	3	19.5	19.19	0.1	**0.257**	0.144	**0.276**

4. Hotspot SAR test results of LTE B4

Test No.	Band	Mode	CH	RB	offset	Test Position (with 10mm)	Sensor	SIM	Battery	Maximum Tune-up (dBm)	Conducted Power (dBm)	Power Drift	SAR 1g	SAR 10g	Scaled 1g SAR
340	LTE B4	QPSK20M	20300	1	50	Front Face	off	1	1	19.5	19.29	-0.12	0.352	0.183	0.369
341	LTE B4	QPSK20M	20300	1	50	Rear Face	off	1	1	19.5	19.29	0.11	0.424	0.214	0.445
342	LTE B4	QPSK20M	20300	1	50	Left Side	off	1	1	19.5	19.29	-0.17	0.078	0.023	0.082
343	LTE B4	QPSK20M	20300	1	50	Right Side	off	1	1	19.5	19.29	0.01	0.054	0.015	0.057
344	LTE B4	QPSK20M	20300	1	50	Bottom Side	off	1	1	19.5	19.29	-0.04	0.390	0.179	0.409
345	LTE B4	QPSK20M	20300	50	0	Front Face	off	1	1	19.5	18.40	0.16	0.270	0.137	0.348
346	LTE B4	QPSK20M	20300	50	0	Rear Face	off	1	1	19.5	18.40	-0.11	0.463	0.262	0.597
347	LTE B4	QPSK20M	20300	50	0	Left Side	off	1	1	19.5	18.40	-0.01	0.044	0.009	0.057
348	LTE B4	QPSK20M	20300	50	0	Right Side	off	1	1	19.5	18.40	0.05	0.049	0.012	0.063
349	LTE B4	QPSK20M	20300	50	0	Bottom Side	off	1	1	19.5	18.40	0.07	0.430	0.210	0.554
350	LTE B4	QPSK20M	20300	50	0	Rear Face	off	2	1	19.5	18.40	0.08	0.439	0.217	0.566
351	LTE B4	QPSK20M	20300	50	0	Rear Face	off	1	2	19.5	18.40	-0.02	**0.464**	0.263	**0.598**
352	LTE B4	QPSK20M	20300	50	0	Rear Face	off	1	3	19.5	18.40	0.01	0.426	0.248	0.549

5. Hotspot SAR test results of LTE B5

Test No.	Band	Mode	CH	RB	offset	Test Position (with 10mm)	Sensor	SIM	Battery	Maximum Tune-up (dBm)	Conducted Power (dBm)	Power Drift	SAR 1g	SAR 10g	Scaled 1g SAR
372	LTE B5	QPSK10M	20450	1	49	Front Face	off	1	1	24	23.05	0.06	0.084	0.048	0.105
373	LTE B5	QPSK10M	20450	1	49	Rear Face	off	1	1	24	23.05	-0.07	0.146	0.092	0.182
374	LTE B5	QPSK10M	20450	1	49	Left Side	off	1	1	24	23.05	0.14	0.046	0.016	0.057
375	LTE B5	QPSK10M	20450	1	49	Right Side	off	1	1	24	23.05	0.08	0.012	0.006	0.015
376	LTE B5	QPSK10M	20450	1	49	Bottom Side	off	1	1	24	23.05	-0.04	0.019	0.005	0.024
377	LTE B5	QPSK10M	20450	25	12	Front Face	off	1	1	23	21.92	-0.09	0.060	0.024	0.077
378	LTE B5	QPSK10M	20450	25	12	Rear Face	off	1	1	23	21.92	0.07	0.049	0.035	0.063
379	LTE B5	QPSK10M	20450	25	12	Left Side	off	1	1	23	21.92	-0.06	0.033	0.019	0.042
380	LTE B5	QPSK10M	20450	25	12	Right Side	off	1	1	23	21.92	0.06	0.010	0.005	0.013
381	LTE B5	QPSK10M	20450	25	12	Bottom Side	off	1	1	23	21.92	0.15	0.014	0.004	0.018
382	LTE B5	QPSK10M	20450	1	49	Rear Face	off	2	1	24	23.05	0.14	0.107	0.081	0.133
383	LTE B5	QPSK10M	20450	1	49	Rear Face	off	1	2	24	23.05	0.11	0.137	0.086	0.171
384	LTE B5	QPSK10M	20450	1	49	Rear Face	off	1	3	24	23.05	-0.04	**0.150**	0.095	**0.187**

6. Hotspot SAR test results of LTE B7

Test No.	Band	Mode	CH	RB	offset	Test Position (with 10mm)	Sensor	SIM	Battery	Maximum Tune-up (dBm)	Conducted Power (dBm)	Power Drift	SAR 1g	SAR 10g	Scaled 1g SAR
393	LTE B7	QPSK20M	21100	1	50	Front Face	off	1	1	24	22.96	-0.07	0.145	0.089	0.184
394	LTE B7	QPSK20M	21100	1	50	Rear Face	off	1	1	24	22.96	0.09	0.505	0.231	0.641
395	LTE B7	QPSK20M	21100	1	50	Left Side	off	1	1	24	22.96	0.17	0.085	0.041	0.108
396	LTE B7	QPSK20M	21100	1	50	Right Side	off	1	1	24	22.96	0.11	0.049	0.025	0.062
397	LTE B7	QPSK20M	21100	1	50	Bottom Side	off	1	1	24	22.96	0.01	0.321	0.151	0.408
398	LTE B7	QPSK20M	21350	50	0	Front Face	off	1	1	23	22.01	-0.04	0.122	0.069	0.153
399	LTE B7	QPSK20M	21350	50	0	Rear Face	off	1	1	23	22.01	0.16	0.459	0.185	0.577
400	LTE B7	QPSK20M	21350	50	0	Left Side	off	1	1	23	22.01	-0.11	0.046	0.024	0.058
401	LTE B7	QPSK20M	21350	50	0	Right Side	off	1	1	23	22.01	-0.01	0.041	0.020	0.052
402	LTE B7	QPSK20M	21350	50	0	Bottom Side	off	1	1	23	22.01	-0.05	0.225	0.146	0.283
405	LTE B7	QPSK20M	21100	1	50	Rear Face	off	2	1	24	22.96	0.09	0.491	0.211	0.624
406	LTE B7	QPSK20M	21100	1	50	Rear Face	off	1	2	24	22.96	0.04	0.508	0.251	0.645
407	LTE B7	QPSK20M	21100	1	50	Rear Face	off	1	3	24	22.96	-0.01	**0.592**	0.325	**0.752**

Note: According to 201610 FCC TCB workshop RF exposure slides, when the highest reported SAR of an antenna is ＞1.2W/kg, holder perturbation verification is required for each antenna, using the highest SAR configuration among all applicable frequency bands.

7. Hotspot SAR test results of WIFI

Test No.	Band	Channel	Test Position (with 15mm)	Battery	Data Rate	Power Setting	Maximum Tune-up (dBm)	Conducted Power (dBm)	Power Drift	SAR 1g	SAR 10g	Scaled 1g SAR
505	802.11b	1	Front Face	1	1	16.5	18	17.93	0.11	0.110	0.052	0.112
506	802.11b	1	Rear Face	1	1	16.5	18	17.93	-0.06	0.071	0.034	0.072
507	802.11b	1	Right Side	1	1	16.5	18	17.93	0.09	0.054	0.027	0.055
508	802.11b	1	Top Side	1	1	16.5	18	17.93	0.06	**0.113**	0.059	**0.115**
509	802.11b	1	Top Side	2	1	16.5	18	17.93	0.02	0.097	0.510	0.099
510	802.11b	1	Top Side	3	1	16.5	18	17.93	0.04	0.100	0.052	0.102

Note: Per KDB248227 D01, the highest SAR measured for the initial test position or initial test configuration should be used to determine SAR test exclusion according to the sum of 1-g SAR and SAR peak to location ratio provisions in KDB 447498. In addition, a test lab may also choose to perform standalone SAR measurements for test positions and 802.11 configurations that are not required by the initial test position or initial test configuration procedures and apply the results to determine simultaneous transmission SAR test exclusion, according to sum of 1-g and SAR peak to location ratio requirements to reduce the number of simultaneous transmission SAR measurements.

8.2.4SAR MEASUREMENT RESULT OF PRODUCT SPECIFIC 10-G SAR

Per KDB648474D04, when hotspot mode applies, product specific 10-g SAR is required only for the surfaces and edges with hotspot mode 1-g reported SAR > 1.2 W/kg; however, when power reduction applies to hotspot mode the measured SAR must be scaled to the maximum output power, including tolerance, allowed for phablet modes to compare with the 1.2 W/kg SAR test reduction threshold:

Test No.	Band	Mode	Channel	Test Position (with 10mm)	Sensor	SIM	Battery	Tune up(Full power)	Conducted Power (dBm)	Power Drift	SAR 1g	Scaled SAR1g (W/kg)	product specific 10-g SAR Exclusion
218	GSM 1900	GPRS3TX	661	Front Face	off	1	1	26.8	21.06	-0.05	0.286	1.072	Yes
219	GSM 1900	GPRS3TX	661	Rear Face	off	1	1	26.8	21.06	0.09	0.566	2.122	No
220	GSM 1900	GPRS3TX	661	Left Side	off	1	1	26.8	21.06	0.06	0.148	0.555	Yes
221	GSM 1900	GPRS3TX	661	Right Side	off	1	1	26.8	21.06	0.14	0.060	0.225	Yes
222	GSM 1900	GPRS3TX	661	Bottom Side	off	1	1	26.8	21.06	-0.04	0.610	2.287	No
800	GSM 1900	GPRS3TX	512	Bottom Side	off	1	1	26.8	20.93	0.08	0.641	2.477	No
801	GSM 1900	GPRS3TX	810	Bottom Side	off	1	1	26.8	20.61	0.05	0.592	2.462	No
223	GSM 1900	GPRS3TX	512	Bottom Side	off	2	1	26.8	21.06	0.07	0.624	2.340	No
224	GSM 1900	GPRS3TX	512	Bottom Side	off	1	2	26.8	21.06	0.06	0.618	2.317	No
225	GSM 1900	GPRS3TX	512	Bottom Side	off	1	3	26.8	21.06	0.18	0.585	2.194	No
802	GSM 1900	GPRS3TX	512	Bottom Side	off	1	1	26.8	20.93	0.04	0.635	2.453	No
238	UMTS B2	RMC12.2K	9400	Front Face	off	1	1	24.5	19.87	0.05	0.175	0.508	Yes
239	UMTS B2	RMC12.2K	9400	Rear Face	off	1	1	24.5	19.87	-0.14	0.299	0.868	Yes
240	UMTS B2	RMC12.2K	9400	Left Side	off	1	1	24.5	19.87	0.11	0.045	0.131	Yes
241	UMTS B2	RMC12.2K	9400	Right Side	off	1	1	24.5	19.87	0.03	0.012	0.035	Yes
242	UMTS B2	RMC12.2K	9400	Bottom Side	off	1	1	24.5	19.87	0.09	0.283	0.822	Yes
243	UMTS B2	RMC12.2K	9262	Rear Face	off	1	1	24.5	20.01	-0.19	0.288	0.810	Yes
244	UMTS B2	RMC12.2K	9538	Rear Face	off	1	1	24.5	19.92	-0.06	0.350	1.005	Yes
245	UMTS B2	RMC12.2K	9538	Rear Face	off	2	1	24.5	19.92	0.05	0.341	0.979	Yes
246	UMTS B2	RMC12.2K	9538	Rear Face	off	1	2	24.5	19.92	0.04	0.342	0.982	Yes
247	UMTS B2	RMC12.2K	9538	Rear Face	off	1	3	24.5	19.92	0.08	0.366	1.051	Yes
262	UMTS B4	RMC12.2K	1413	Front Face	off	1	1	24.5	19.95	0.14	0.351	1.001	Yes
263	UMTS B4	RMC12.2K	1413	Rear Face	off	1	1	24.5	19.95	-0.11	0.662	1.887	No
264	UMTS B4	RMC12.2K	1413	Left Side	off	1	1	24.5	19.95	0.06	0.101	0.288	Yes
265	UMTS B4	RMC12.2K	1413	Right Side	off	1	1	24.5	19.95	-0.05	0.051	0.145	Yes
266	UMTS B4	RMC12.2K	1413	Bottom Side	off	1	1	24.5	19.95	0.03	0.510	1.454	No
267	UMTS B4	RMC12.2K	1312	Rear Face	off	1	1	24.5	20.04	0.07	0.545	1.522	No
268	UMTS B4	RMC12.2K	1513	Rear Face	off	1	1	24.5	19.93	-0.01	0.581	1.664	No
269	UMTS B4	RMC12.2K	1413	Rear Face	off	2	1	24.5	19.95	0.06	0.673	1.919	No
270	UMTS B4	RMC12.2K	1413	Rear Face	off	2	2	24.5	19.95	0.03	0.601	1.713	No
271	UMTS B4	RMC12.2K	1413	Rear Face	off	2	3	24.5	19.95	0.01	0.541	1.542	No
269	UMTS B4	RMC12.2K	1413	Rear Face	off	2	1	24.5	19.95	0.05	0.670	1.910	No

Test No.	Band	Mode	CH	RB	offset	Test Position (with 10mm)	Sensor	SIM	Battery	Tune up(Full power)	Conducted Power (dBm)	Power Drift	SAR 1g	Scaled SAR1g (W/kg)	product specific 10-g SAR Exclusion
308	LTE B2	QPSK20M	19100	1	50	Front Face	off	1	1	24	19.19	-0.08	0.154	0.466	Yes
309	LTE B2	QPSK20M	19100	1	50	Rear Face	off	1	1	24	19.19	0.18	0.235	0.711	Yes
310	LTE B2	QPSK20M	19100	1	50	Left Side	off	1	1	24	19.19	0.11	0.085	0.257	Yes
311	LTE B2	QPSK20M	19100	1	50	Right Side	off	1	1	24	19.19	0.1	0.021	0.064	Yes
312	LTE B2	QPSK20M	19100	1	50	Bottom Side	off	1	1	24	19.19	-0.16	0.148	0.448	Yes
313	LTE B2	QPSK20M	18900	50	0	Front Face	off	1	1	23	18.49	-0.12	0.120	0.339	Yes
314	LTE B2	QPSK20M	18900	50	0	Rear Face	off	1	1	23	18.49	-0.1	0.214	0.604	Yes
315	LTE B2	QPSK20M	18900	50	0	Left Side	off	1	1	23	18.49	-0.14	0.071	0.200	Yes
316	LTE B2	QPSK20M	18900	50	0	Right Side	off	1	1	23	18.49	-0.05	0.021	0.060	Yes
317	LTE B2	QPSK20M	18900	50	0	Bottom Side	off	1	1	23	18.49	0.07	0.182	0.514	Yes
318	LTE B2	QPSK20M	19100	1	50	Rear Face	off	2	1	24	19.19	0.09	0.229	0.693	Yes
319	LTE B2	QPSK20M	19100	1	50	Rear Face	off	1	2	24	19.19	0.14	0.249	0.753	Yes
320	LTE B2	QPSK20M	19100	1	50	Rear Face	off	1	3	24	19.19	0.1	0.257	0.778	Yes
340	LTE B4	QPSK20M	20300	1	50	Front Face	off	1	1	24	19.29	-0.12	0.352	1.041	Yes
341	LTE B4	QPSK20M	20300	1	50	Rear Face	off	1	1	24	19.29	0.11	0.424	1.253	No
342	LTE B4	QPSK20M	20300	1	50	Left Side	off	1	1	24	19.29	-0.17	0.078	0.231	Yes
343	LTE B4	QPSK20M	20300	1	50	Right Side	off	1	1	24	19.29	0.01	0.054	0.160	Yes
344	LTE B4	QPSK20M	20300	1	50	Bottom Side	off	1	1	24	19.29	-0.04	0.390	1.153	Yes
345	LTE B4	QPSK20M	20300	50	0	Front Face	off	1	1	23	18.40	0.16	0.270	0.779	Yes
346	LTE B4	QPSK20M	20300	50	0	Rear Face	off	1	1	23	18.40	-0.11	0.463	1.335	No
347	LTE B4	QPSK20M	20300	50	0	Left Side	off	1	1	23	18.40	-0.01	0.044	0.127	Yes
348	LTE B4	QPSK20M	20300	50	0	Right Side	off	1	1	23	18.40	0.05	0.049	0.141	Yes
349	LTE B4	QPSK20M	20300	50	0	Bottom Side	off	1	1	23	18.40	0.07	0.430	1.240	No
350	LTE B4	QPSK20M	20300	50	0	Rear Face	off	2	1	23	18.40	0.08	0.439	1.266	No
351	LTE B4	QPSK20M	20300	50	0	Rear Face	off	1	2	23	18.40	-0.02	0.464	1.338	No
352	LTE B4	QPSK20M	20300	50	0	Rear Face	off	1	3	23	18.40	0.01	0.426	1.229	No

Test No.	Band	CH	Test Position (with 15mm)	Battery	Data Rate	Power Setting	Tune up(Full power)	Conducted Power (dBm)	Power Drift	SAR 1g	Scaled SAR1g (W/kg)	product specific 10-g SAR Exclusion
505	802.11b	1	Front Face	1	1	16.5	18	17.93	0.11	0.110	0.112	Yes
506	802.11b	1	Rear Face	1	1	16.5	18	17.93	-0.06	0.071	0.072	Yes
507	802.11b	1	Right Side	1	1	16.5	18	17.93	0.09	0.054	0.055	Yes
508	802.11b	1	Top Side	1	1	16.5	18	17.93	0.06	0.113	0.115	Yes
509	802.11b	1	Top Side	2	1	16.5	18	17.93	0.02	0.097	0.099	Yes
510	802.11b	1	Top Side	3	1	16.5	18	17.93	0.04	0.100	0.102	Yes

1. Product specific 10-g SAR test results of GSM1900

Test No.	Band	Mode	CH	Test Position	Separation Distance (cm)	Sensor	SIM	Battery	Maximum Tune-up (dBm)	Conducted Power (dBm)	Power Drift	SAR 1g	SAR 10g	Scaled 10g SAR
803	GSM 1900	GPRS4TX	661	Rear Face	1.3	off	1	1	26.5	25.51	0.06	0.451	0.274	0.344
804	GSM 1900	GPRS4TX	661	Bottom Side	1.1	off	1	1	26.5	25.51	-0.14	0.624	0.343	0.431
807	GSM 1900	GPRS4TX	661	Bottom Side	1.1	off	2	1	26.5	25.51	0.04	0.605	0.334	0.420
808	GSM 1900	GPRS4TX	661	Bottom Side	1.1	off	1	2	26.5	25.51	-0.07	0.621	**0.345**	**0.433**
809	GSM 1900	GPRS4TX	661	Bottom Side	1.1	off	1	3	26.5	25.51	0.18	0.552	0.308	0.387
810	GSM 1900	GPRS4TX	661	Rear Face	0	on	1	1	26.5	25.51	0.04	1.280	0.595	0.747
811	GSM 1900	GPRS4TX	661	Bottom Side	0	on	1	1	26.5	25.51	0.14	1.250	0.586	0.736
812	GSM 1900	GPRS4TX	661	Rear Face	0	on	2	1	26.5	25.51	0.1	1.260	0.587	0.737
813	GSM 1900	GPRS4TX	661	Rear Face	0	on	1	2	26.5	25.51	0.09	1.640	**0.724**	**0.909**
814	GSM 1900	GPRS4TX	661	Rear Face	0	on	1	3	26.5	25.51	0.04	1.490	0.653	0.820

2. Product specific 10-g SAR test results of UMTS B4

Test No.	Band	Mode	CH	Test Position	Separation Distance (cm)	Sensor	SIM	Battery	Maximum Tune-up (dBm)	Conducted Power (dBm)	Power Drift	SAR 1g	SAR 10g	Scaled 10g SAR
272	UMTS B4	RMC12.2K	1413	Rear Face	1.3	off	1	1	24.5	23.34	-0.02	0.654	0.401	0.524
273	UMTS B4	RMC12.2K	1413	Bottom Side	1.1	off	1	1	24.5	23.34	0.06	0.921	0.505	0.660
276	UMTS B4	RMC12.2K	1413	Bottom Side	1.1	off	2	1	24.5	23.34	0.16	0.930	0.536	0.700
277	UMTS B4	RMC12.2K	1413	Bottom Side	1.1	off	2	2	24.5	23.34	0.04	1.060	**0.609**	**0.795**
278	UMTS B4	RMC12.2K	1413	Bottom Side	1.1	off	2	3	24.5	23.34	-0.11	0.907	0.524	0.684
600	UMTS B4	RMC12.2K	1413	Rear Face	0	on	1	1	24.5	23.34	0.04	3.330	1.600	2.090
601	UMTS B4	RMC12.2K	1413	Bottom Side	0	on	1	1	24.5	23.34	0.15	2.640	1.270	1.659
602	UMTS B4	RMC12.2K	1312	Rear Face	0	on	1	1	24.5	23.56	0.05	3.560	1.690	2.098
603	UMTS B4	RMC12.2K	1513	Rear Face	0	on	1	1	24.5	23.36	0.1	3.170	1.550	2.015
604	UMTS B4	RMC12.2K	1312	Rear Face	0	on	2	1	24.5	23.56	0.11	3.510	1.640	2.036
605	UMTS B4	RMC12.2K	1312	Rear Face	0	on	1	2	24.5	23.56	0.03	3.730	**1.730**	**2.148**
606	UMTS B4	RMC12.2K	1312	Rear Face	0	on	1	3	24.5	23.56	0.15	3.420	1.560	1.937

3. Product specific 10-g SAR test results of LTE B4

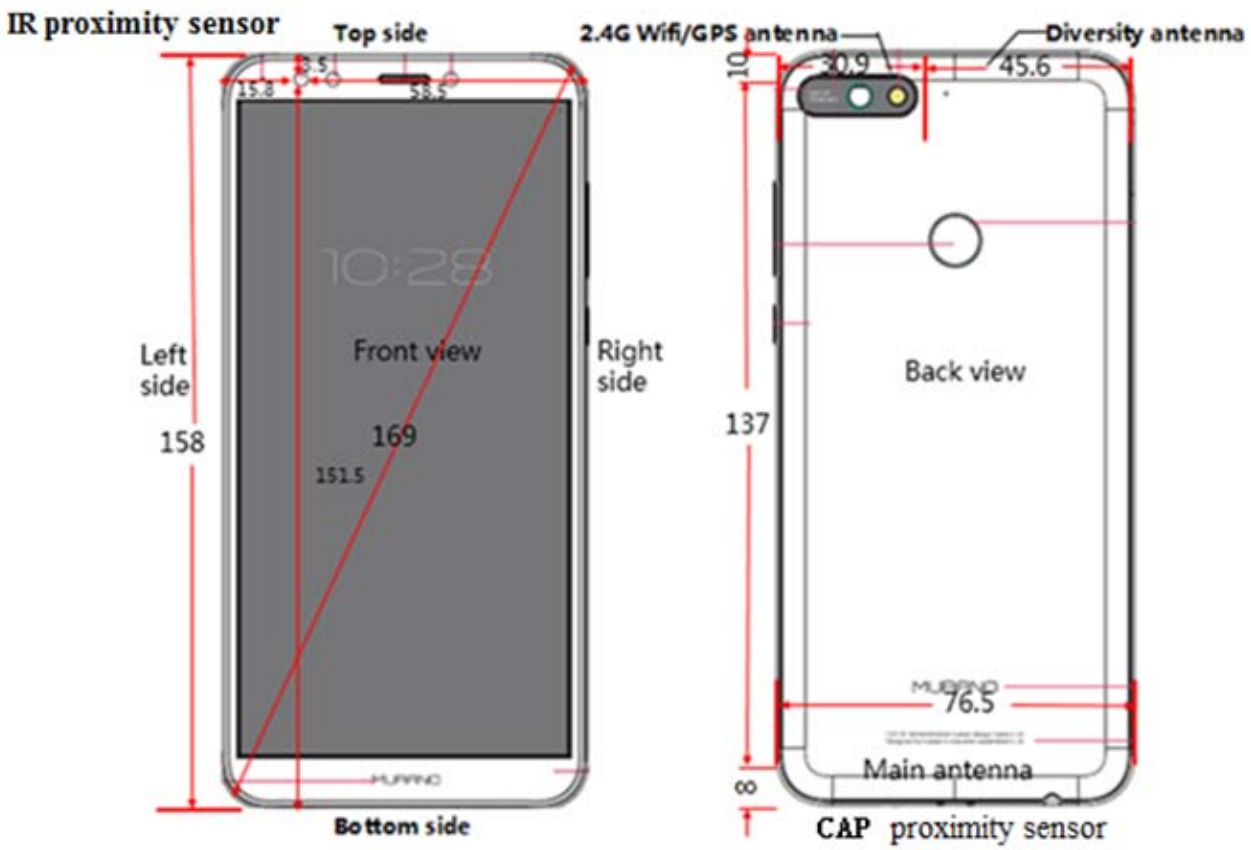
Test No.	Band	Mode	Channel	RB	offset	Test Position	Separation Distance (cm)	Sensor	SIM	Battery	Maximum Tune-up (dBm)	Conducted Power (dBm)	Power Drift	SAR 1g	SAR 10g	Scaled 10g SAR
354	LTE B4	QPSK20M	20300	1	50	Rear Face	1.3	off	1	1	24	22.85	-0.06	0.954	0.517	0.673
355	LTE B4	QPSK20M	20300	1	50	Bottom Side	1.1	off	1	1	24	22.85	-0.11	0.961	0.556	0.724
356	LTE B4	QPSK20M	20300	50	25	Rear Face	1.3	off	1	1	23	21.82	0.03	0.805	0.415	0.544
357	LTE B4	QPSK20M	20300	50	25	Bottom Side	1.1	off	1	1	23	21.82	-0.17	0.812	0.421	0.552
360	LTE B4	QPSK20M	20300	1	50	Bottom Side	1.1	off	2	1	24	22.85	0.04	0.931	0.449	0.585
361	LTE B4	QPSK20M	20300	1	50	Bottom Side	1.1	off	1	2	24	22.85	-0.03	1.000	**0.587**	**0.765**
362	LTE B4	QPSK20M	20300	1	50	Bottom Side	1.1	off	1	3	24	22.85	0.03	0.965	0.558	0.727
363	LTE B4	QPSK20M	20300	100	0	Bottom Side	1.1	off	1	2	23	21.78	0.05	0.861	0.402	0.532
609	LTE B4	QPSK20M	20300	1	50	Rear Face	0	on	1	1	24	22.85	0.14	2.420	1.160	1.511
610	LTE B4	QPSK20M	20300	1	50	Bottom Side	0	on	1	1	24	22.85	0.11	1.980	0.958	1.248
611	LTE B4	QPSK20M	20300	50	25	Rear Face	0	on	1	1	23	21.82	-0.09	2.370	1.140	1.495
612	LTE B4	QPSK20M	20300	50	25	Bottom Side	0	on	1	1	23	21.82	0.16	1.940	0.951	1.247
617	LTE B4	QPSK20M	20300	1	50	Rear Face	0	on	2	1	24	22.85	0.09	2.350	1.040	1.355
618	LTE B4	QPSK20M	20300	1	50	Rear Face	0	on	1	2	24	22.85	0.14	2.750	**1.290**	**1.681**
619	LTE B4	QPSK20M	20300	1	50	Rear Face	0	on	1	3	24	22.85	0.11	2.550	1.160	1.512

8.3 MULTIPLE TRANSMITTER EVALUATION

The following tables list information which is relevant for the decision if a simultaneous transmit evaluation is necessary according to FCC KDB 447498 D01 General RF Exposure Guidance.

The length of the diagonal of the mobile phone is 169mm.

The location of the antennas inside mobile phone is shown as below picture:



Note: 1. The Div Antenna and GPS Antenna does not have the transmit function.
2. The equipment under test(EUT) is a Dual-SIM-Card Mobile Phone. SIM1 and SIM2 both support 2G/3G/LTE.

8.3.1STAND-ALONE SAR TEST EXCLUSION

1. Per FCC KDB 447498 D01, the 1-g SAR and 10-g SAR test exclusion thresholds for 100 MHz to 6 GHz at test separation distances ≤ 50 mm are determined by:
[(max. power of channel, including tune-up tolerance, mW)/(min. test separation distance,mm)][√f(GHz)] ≤ 3.0 for 1-g SAR and ≤ 7.5 for product specific 10-g SAR, where:

- f(GHz) is the RF channel transmit frequency in GHz
- Power and distance are rounded to the nearest mW and mm before calculation
- The result is rounded to one decimal place for comparison

When the minimum test separation distance is < 5 mm, a distance of 5 mm is applied to determine SAR test exclusion.

Standalone SAR test exclusion for BT

Position		P_{max} (dBm)*	P_{max} (mW)	Distance (mm)	f (GHz)	Calculation Result	SAR Exclusion threshold	SAR test exclusion
Body-Worn		9.5	8.91	15	2.48	0.94	3	Yes
Head		9.5	8.91	5	2.48	2.81	3	Yes
product specific 10-g SAR	Rear	9.5	8.91	5	2.48	2.81	7.5	Yes

Note:

1)* - maximum possible output power declared by manufacturer

2.For 100 MHz to 6 GHz and test separation distances > 50 mm, the 1-g and 10-g SAR test exclusion thresholds are determined by the following (also illustrated in Appendix B):32
1) {[Power allowed at numeric threshold for 50 mm in step a)] + [(test separation distance – 50 mm)·(f(MHz)/150)]} mW, for 100 MHz to 1500 MHz
2) {[Power allowed at numeric threshold for 50 mm in step a)] + [(test separation distance – 50 mm)·10]} mW, for > 1500 MHz and ≤ 6 GHz

Standalone SAR test exclusion for BT

Position		f(GHz)	Power allowed at numeric Threshold at 50mm	Distance(mm)	Pmax (dBm)*	Pmax (mW)	SAR Exclusion Result	Test Requirement (Yes/No)
product specific 10-g SAR	Bottom	2.480	95.25	148	9.5	8.91	1075.25	No

When standalone SAR test exclusion applies to an antenna that transmits simultaneously with other antennas, the standalone SAR must be estimated according to following to determine simultaneous transmission SAR test exclusion:

(1) for test separation distances≤50mm

(max. power of channel, including tune-up tolerance, mW)/(min. test separation distance, mm)] • [√f(GHz)/x] W/kg for test separation distances≤50 mm,where x = 7.5 for 1-g SAR and x = 18.75 for 10-g SAR.

When the minimum test separation distance is < 5 mm, a distance of 5 mm is applied to determine SAR test exclusion

According to KDB 447498 D01,when standalone SAR test exclusion applies to an antenna that transmits simultaneously with other antennas, the standslone SAR was estimated according to following formula to result in substantially conservative SAR values of≤0.4W/kg to determine simultaneous transmission SAR test exclusion.

$$\text{Estimated SAR} = \frac{\text{Max. Tune up Power}_{(mW)}}{\text{Min. Test Separation Distance}_{(mm)}} \times \frac{\sqrt{f_{(GHz)}}}{7.5}$$

(2) for test separation distances≥50mm

0.4W/Kg for 1g SAR

Estimated SAR calculation for BT

Position		P_{max} (dBm)*	P_{max} (mW)	Distance (mm)	f (GHz)	X	Estimated SAR (W/kg)*
Body-Worn		9.5	8.91	15	2.48	7.5	0.125
Head		9.5	8.91	5	2.48	7.5	0.374
product specific 10-g SAR	Rear	9.5	8.91	5	2.48	18.75	0.150
	Bottom Side			> 50			0.4

Note: * - maximum possible output power declared by manufacturer

8.3.2STAND-ALONE SAR TEST EXCLUSION

Per FCC KDB 447498D01, SAR compliance for simultaneous transmission must be considered when the maximum duration of overlapping transmissions, including network hand-offs, is greater than 30 seconds. This device contains multiple transmitters that may operate simultaneously, and therefore requires a simultaneous transmission analysis.

The Simultaneous Transmission Possibilities of this device are as below:

NO.	Simultaneous Tx Combination	Head	Body-worn	Hotspot	Product Specific 10-g (0mm)
1	GSM Voice(Main ant) + BT	Yes	Yes	NA	Yes
2	GSM DATA(Main ant) + BT	N/A	Yes	NA	Yes
3	GSM Voice(Main ant) + WiFi	Yes	Yes	NA	Yes
4	GSM DATA(Main ant) + WiFi	N/A	Yes	Yes	Yes
5	UMTS Voice(Main ant) + BT	Yes	Yes	NA	Yes
6	UMTS Data(Main ant) + BT	N/A	Yes	NA	Yes
7	UMTS Voice(Main ant) + WiFi	Yes	Yes	NA	Yes
8	UMTS Data (Main ant) + WiFi	Yes*	Yes	Yes	Yes
9	LTE(Main ant) + WiFi	Yes*	Yes*	Yes	Yes
10	LTE(Main ant) + BT	Yes*	Yes*	NA	Yes

Note:
i)* VOIP 3rd party applications may possibly be installed and used by the end user.
ii) Wi-Fi 2.4G and Bluetooth share the same antenna and can't transmit simultaneously.
iii) 2G&3G&4G share the same antenna and can't transmit simultaneously.
iv) The device does not support DTM function.
v) Held to ear configurations are not applicable to Bluetooth and therefore were not considered for simultaneous transmission.
vi) The device supports VoLTE function.

8.3.3 SAR SUMMATION SCENARIO

About BT/ WiFi and GSM/UMTS/LTE antenna

Test Position / Reported SAR	Head (1-g SAR)				Body-Worn (1-g SAR)		Hotspot(1-g SAR)						product specific 10-g SAR	
	Right Cheek	Right Tilted	Left Cheek	Left Tilted	Front	Rear	Front	Rear	Left	Right	Top	Bottom	Rear	Bottom
GSM850	0.155	0.151	0.198	0.148	0.131	0.286	0.241	0.404	0.236	0.155	-	0.160	-	-
GSM1900	0.054	0.098	0.057	0.088	0.149	0.284	0.381	0.753	0.197	0.080	-	0.879	-	-
UMTS B2	0.073	0.169	0.094	0.150	0.201	0.474	0.255	0.527	0.065	0.017	-	0.412	-	-
UMTS B4	0.124	0.000	0.072	0.080	0.328	0.981	0.502	0.960	0.144	0.073	-	0.729	2.148	1.659
UMTS B5	0.152	0.124	0.181	0.137	0.168	0.300	0.117	0.333	0.060	0.144	-	0.041	-	-
LTE B2	0.092	0.119	0.093	0.127	0.154	0.418	0.165	0.276	0.091	0.027	-	0.229	-	-
LTE B4	0.121	0.000	0.082	0.089	0.267	0.982	0.369	0.598	0.082	0.063	-	0.554	1.681	1.248
LTE B5	0.127	0.159	0.122	0.134	0.056	0.177	0.105	0.187	0.057	0.015	-	0.024	-	-
LTE B7	0.050	0.034	0.098	0.013	0.108	0.415	0.184	0.752	0.108	0.062	-	0.408	-	-
WiFi 2.4G	0.167	0.191	0.301	0.413	0.060	0.000	0.112	0.072	-	0.055	0.115	-	-	-
BT	0.374	0.374	0.374	0.374	0.125	0.125	-	-	-	-	-	-	0.150	0.400
SUM MAX	0.529	0.543	0.572	0.563	0.453	**1.107**	0.614	1.032	0.236	0.210	0.115	0.879	**2.298**	2.059

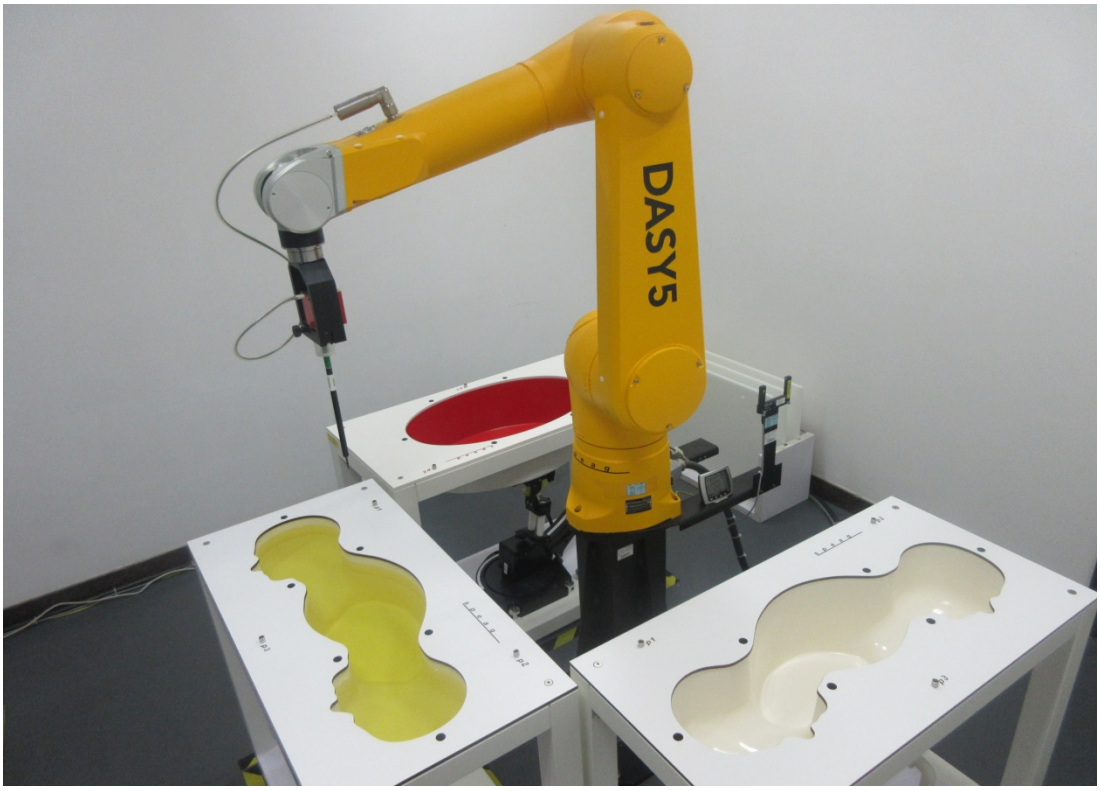
Note: 1.MAX. $\sum SAR_{1g}$ =1.107W/Kg<1.6 W/Kg, so the SAR to peak location separation ratio should not be considered.

2. MAX. $\sum SAR_{10g}$ =2.298W/Kg <4 W/Kg, so the SAR to peak location separation ratio should not be considered.

APPENDIX

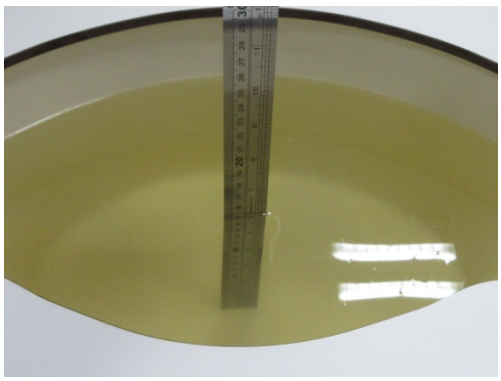
1. Test Layout

Specific Absorption Rate Test Layout

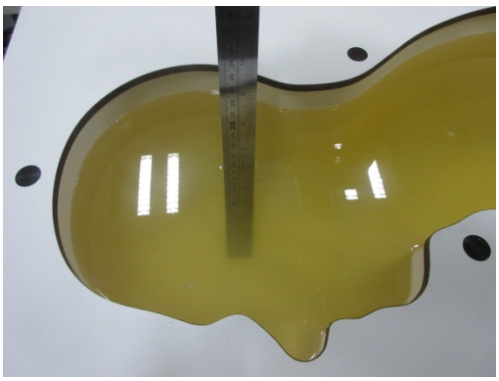


Liquid depth in the flat Phantom (≥15cm depth)

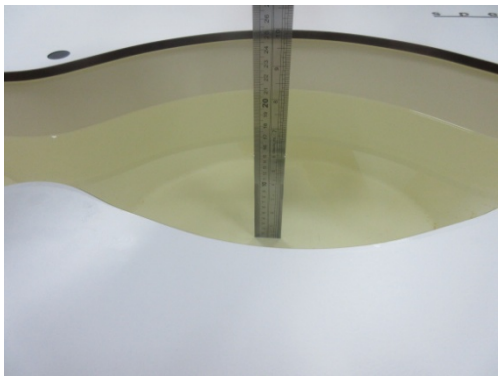
Body(835MHz) 15.5cm



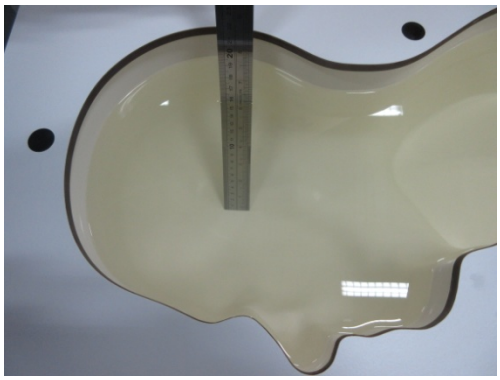
Head(835MHz) 15.9cm



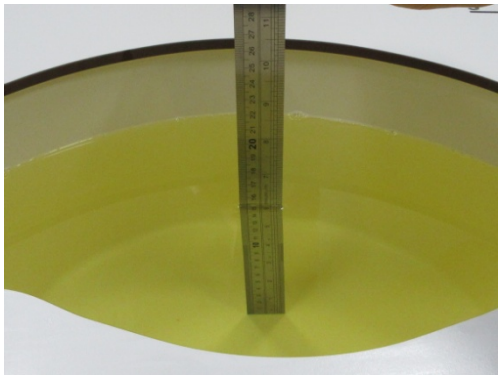
Body(1800MHz) 15.4cm



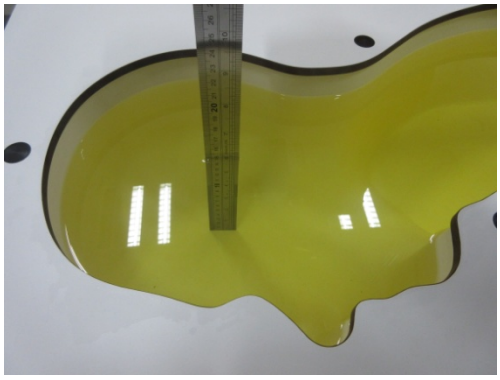
Head(1800MHz) 15.9cm



Body(1900MHz~2600 MHz) 15.5cm



Head (1900MHz~2600MHz) 15.1cm



Appendix A. SAR Plots of System Verification

(Pls See Appendix A.)

Appendix B. SAR Plots of SAR Measurement

(Pls See Appendix B.)

Appendix C. Calibration Certificate for Probe and Dipole

(Pls See Appendix C.)

Appendix D. Photographs of the Test Set-Up

(Pls See Appendix D.)

End