FCC SAR TEST REPORT

Report No.:	SET2015-19706
Product:	Mobile phone
Brand Name:	Haier
Model No.:	HM-G700-FL/L8
FCC ID:	SG7201512G700
Applicant:	Haier Telecom(Qingdao) CO., Ltd.
Address:	No1.Haier Road,Hi-tech Zone Qingdao,China
Issued by:	CCIC-SET
Lab Location:	Electronic Testing Building, Shahe Road，Xili, Nanshan District, Shenzhen, 518055, P. R. China
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Test Report

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Applicant……:	Haier Telecom(Qingdao) CO., Ltd.
Applicant Address……:	No1.Haier Road,Hi-tech Zone Qingdao,China
Manufacturer……:	Haier Telecom(Qingdao) CO., Ltd.
Manufacturer Address:	No1.Haier Road,Hi-tech Zone Qingdao,China
Test Standards……:	**47CFR § 2.1093-** Radiofrequency Radiation Exposure Evaluation: Portable Devices; **ANSI 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 1528–2013:** IEEE Recommended Practice for Determining the Peak Spatial-Average Specific Absorption Rate (SAR) in the Human Head from Wireless Communications Devices: Measurement Techniques
Test Result……:	Pass

Tested by ……: Mei Chun 2016-01-04

Chun Mei, Test Engineer

Reviewed by……: Shuangwen Zhang 2016-01-04

Shuangwen Zhang,Senior Egineer

Approved by……: Wu Lian 2016-01-04

Wu Li'an , Manager

Contents

This Test Report consists of the following Annexes:

1. GENERAL CONDITIONS

1.1 This report only refers to the item that has undergone the test.

1.2 This report standalone does not constitute or imply by its own an approval of the product by the certification Bodies or competent Authorities.

1.3 This document is only valid if complete; no partial reproduction can be made without written approval of CCIC-SET

1.4 This report cannot be used partially or in full for publicity and/or promotional purposes without previous written approval of CCIC-SET and the Accreditation Bodies, if it applies.

2. Administrative Date

2.1. Identification of the Responsible Testing Laboratory

Company Name:	CCIC-SET
Department:	EMC & RF Department
Address:	Electronic Testing Building, Shahe Road, Nanshan District, ShenZhen, P. R. China
Telephone:	+86-755-26629676
Fax:	+86-755-26627238
Responsible Test Lab Managers:	Mr. Wu Li'an

2.2. Identification of the Responsible Testing Location(s)

Company Name:	CCIC-SET
Address:	Electronic Testing Building, Shahe Road, Nanshan District, Shenzhen, P. R. China

2.3. Organization Item

CCIC-SET Report No.:	SET2015-19706
CCIC-SET Project Leader:	Mr. Li Sixiong
CCIC-SET Responsible for accreditation scope:	Mr. Wu Li'an
Start of Testing:	2015-12-23
End of Testing:	2015-12-29

2.4. Identification of Applicant

Company Name:	Haier Telecom(Qingdao) CO., Ltd.
Address:	No1.Haier Road,Hi-tech Zone Qingdao,China

2.5. Identification of Manufacture

Company Name:	Haier Telecom(Qingdao) CO., Ltd.
Address:	No1.Haier Road,Hi-tech Zone Qingdao,China

Notes: This data is based on the information by the applicant.

3. Equipment Under Test (EUT)

3.1. Identification of the Equipment under Test

Sample Name:	Mobile phone	
Type Name:	HM-G700-FL	
Brand Name:	Haier	
General description:	Support Band	GSM850MHz/1900MHz/900MHz/1800MHz WCDMA 850MHz/ 1700MHz/1900MHz, LTE Band2/4/7/17,WIFI, BT
	Test Band	GSM 850MHz/ GSM 1900MHz, GPRS 850MHz/ GPRS 1900MHz, WCDMA 850MHz/ 1700MHz/1900MHz, LTE Band 2/4/7/17,WIFI 802.11b
	Multislot Class	GPRS: Class 12; EGPRS: Class 12
	GPRS Class	Class B
	Development Stage	Identical Prototype
	Accessories	Power Supply
	Battery type	3.80V 2750mAh
	IMEI	353527059833843/353527059834841
	Antenna type	Inner Antenna
	Operation mode	GSM / GPRS /WCDMA/ LTE /WIFI
	Modulation mode	GSM(GMSK),UMTS(QPSK),LTE(QPSK,16QAM), WIFI(OFDM/DSSS)
	Max. RF Power	32.51dBm
	Max. SAR Value	Head: 0.79 W/kg; Body: 0.58 W/kg; Hotspot: 0.58 W/kg

NOTE:

a. The above EUT's information was declared by manufacturer. Please refer to the specifications or user's manual for more detailed description.

b. This device supports GPRS operation up to class12 (max.uplin:4, max.downlink:4, total timeslots:5). This device supports EDGE operation up to class12(max.uplin:4, max.downlink:4, total timeslots:5)

4 SAR SUMMARY

Highest Standalone SAR Summary

Exposure Position	Frequency Band	Scaled 1g-SAR(W/kg)	Highest Scaled 1g-SAR(W/kg)
Head	GSM850	0.24	0.79
	GSM1900	0.16	
	WCDMA Band Ⅴ	0.40	
	WCDMA Band Ⅳ	0.23	
	WCDMA Band II	0.28	
	LTE Band 2	0.25	
	LTE Band 4	0.12	
	LTE Band 7	0.37	
	LTE Band 17	0.04	
	WIFI	**0.79**	
Body-worn Accessory (10mm Gap)	GSM850	**0.58**	0.58
	GSM1900	0.29	
	WCDMA Band Ⅴ	0.45	
	WCDMA Band Ⅳ	0.36	
	WCDMA Band II	0.40	
	LTE Band 2	0.34	
	LTE Band 4	0.40	
	LTE Band 7	0.45	
	LTE Band 17	0.08	
	WIFI	0.23	
Hotspot (10mm Gap)	GSM850	0.46	0.58
	GSM1900	0.18	
	WCDMA Band Ⅴ	0.45	
	WCDMA Band Ⅳ	0.49	
	WCDMA Band II	0.40	
	LTE Band 2	0.42	
	LTE Band 4	0.50	
	LTE Band 7	**0.58**	
	LTE Band 17	0.09	
	WIFI	0.23	

Highest Simultaneous SAR Summary

Exposure Position	Frequency Band	Highest Scaled 1g-SAR(W/kg)
Head	WWAN(GSM850)&WIFI	1.11
Body-worn (10mmGap)	WWAN(GSM850)&WIFI	0.81
Hotspot (10mmGap)	WWAN(GSM850)&WIFI	0.69

5 Specific Absorption Rate (SAR)

5.1 Introduction

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

5.2 SAR Definition

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

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

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

SAR measurement can be either related to the temperature elevation in tissue by

$$\mathrm{SAR} = C\frac{\delta T}{\delta t}$$

where C is the specific head capacity, δT is the temperature rise and δt the exposure duration, or related to the electrical field in the tissue by

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

where σ is the conductivity of the tissue, ρ is the mass density of the tissue and E is the rms electrical field strength.

However for evaluating SAR of low power transmitter, electrical field measurement is typically applied.

5.3 Phantoms

The phantom used for all tests i.e. for both system checks and device testing, was the twin-headed "SAM Phantom", manufactured by SATIMO. The SAM twin phantom is a fiberglass shell phantom with 2mm shell thickness (except the ear region, where shell thickness increases to 6mm).

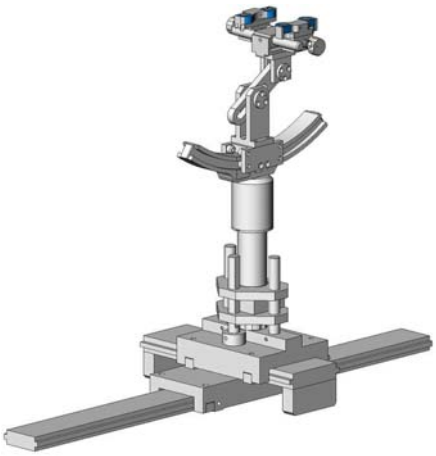
System checking was performed using the flat section, whilst Head SAR tests used the left and right head profile sections. Body SAR testing also used the flat section between the head profiles.

SAM Twin Phantom

5.4 Device Holder

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

The device holder is designed to cope with the different positions given in the standard. It has two scales for device rotation (with respect to the body axis) and device inclination (with respect to the line between the ear reference points). The rotation centers for both scales is the ear reference point (ERP). Thus the device needs no repositioning when changing the angles.



Device holder

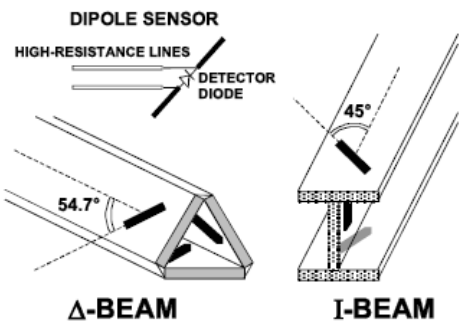
5.5 Probe Specification

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	700 MHz to 3 GHz; Linearity: ± 0.5 dB (700 MHz to 3 GHz)
Directivity	± 0.25 dB in HSL (rotation around probe axis) ± 0.5 dB in tissue material (rotation normal to probe axis)
Dynamic Range	1.5 μW/g to 100 mW/g; Linearity: ± 0.5 dB
Dimensions	Overall length: 330 mm (Tip: 20 mm) Tip diameter: 5 mm Distance from probe tip to dipole centers: <2.7 mm
Application	General dosimetry up to 3 GHz Dosimetry in strong gradient fields Compliance tests of mobile phones
Compatibility	COMOSAR

Isotropic E-Field Probe

The isotropic E-Field probe has been fully calibrated and assessed for isotropicity, and boundary effect within a controlled environment. Depending on the frequency for which the probe is calibrated the method utilized for calibration will change.

The E-Field probe utilizes a triangular sensor arrangement as detailed in the diagram below:



6 OPERATIONAL CONDITIONS DURING TEST

6.1 Schematic Test Configuration

During SAR test, EUT was operating in Traffic Mode (Channel Allocated) at Normal Voltage Condition. A communication link is set up with a System Simulator (SS) by air link, and a call is established.The EUT was commanded to operate at maximum transmitting power.

The EUT should use its internal transmitter. The antenna(s), battery and accessories shall be those specified by the manufacturer. The EUT battery must be fully charged and checked periodically during the test to ascertain uniform power output. If a wireless link was used, the antenna connected to the output of the base station simulator shall be placed at least 50 cm away from the handset.

The signal transmitted by the simulator to the antenna feeding point should be lower than the output power level of the handset by at least 35 dB

6.2 SAR Measurement System

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

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

6.2.1 Tissue Dielectric Parameters for Head and Body Phantoms

The head tissue dielectric parameters recommended by the IEEE SCC-34/SC-2 in P1528 have been incorporated in the following table. These head parameters are derived from planar layer models simulating the highest expected SAR for the dielectric properties and tissue thickness Power drifts in a human head. Other head and body tissue parameters that have not been specified in P1528 are derived from the tissue dielectric parameters computed from the 4-Cole-Cole equations described in Reference [12] and extrapolated according to the head parameters specified in P1528.

Table 1: Recommended Dielectric Performance of Tissue

Ingredients (% by weight)	Frequency (MHz)											
	450		835		915		1900		2450		2600	
Tissue Type	Head	Body	Head	Body	Head	Body	Head	Body	Head	Body	Head	Body
Water	38.56	51.16	41.46	52.4	41.05	56.0	54.9	40.4	62.7	73.2	55.24	64.49
Salt (Nacl)	3.95	1.49	1.45	1.4	1.35	0.76	0.18	0.5	0.5	0.04	0.5	0.024
Sugar	56.32	46.78	56.0	45.0	56.5	41.76	0.0	58.0	0.0	0.0	0.0	0.0
HEC	0.98	0.52	1.0	1.0	1.0	1.21	0.0	1.0	0.0	0.0	0.0	0.0

Bactericide	0.19	0.05	0.1	0.1	0.1	0.27	0.0	0.1	0.0	0.0	0.0	0.0
Triton x-100	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	36.8	0.0	44.45	32.25
DGBE	0.0	0.0	0.0	0.0	0.0	0.0	44.92	0.0	0.0	26.7	0.0	26.7
Dielectric Constant	43.42	58.0	42.54	56.1	42.0	56.8	39.9	54.0	39.8	52.5	39.0	52.5
Conductivity (s/m)	0.85	0.83	0.91	0.95	1.0	1.07	1.42	1.45	1.88	1.78	1.96	2.16

MSL/HSL750 (Body and Head liquid for 700 – 800 MHz)

Item	Head Tissue Simulation Liquid HSL750 Muscle(body)Tissue Simulation Liquid MSL750			
H2O	Water, 35 – 58%			
Sucrese	Sugar, white, refined, 40-60%			
NaCl	Sodium Chloride, 0-6%			
Hydroxyethel-cellulsoe	Medium Viscosity (CAS# 9004-62-0), <0.3%			
Preventol-D7	Preservative: aqueous preparation, (CAS# 55965-84-9), containing 5-chloro-2-methyl-3(2H)-isothiazolone and 2-methyyl-3(2H)-isothiazolone, 0.1-0.7%			
Frequency (MHz)	Head εr	Head σ(S/m)	Body εr	Bodyσ(S/m)
750	41.9	0.89	55.2	0.97

Note: The liquid of 700MHz&2600MHz typical liquid composition is provided by SATIMO.

Table 2 Recommended Tissue Dielectric Parameters

Frequency (MHz)	Head Tissue		Body Tissue	
	ε_r	σ(S/m)	ε_r	σ(S/m)
150	52.3	0.76	61.9	0.80
300	45.3	0.87	58.2	0.92
450	43.5	0.87	56.7	0.94
835	41.5	0.90	55.2	0.97
900	41.5	0.97	55.0	1.05
915	41.5	0.98	55.0	1.06
1450	40.5	1.20	54.0	1.30
1610	40.3	1.29	53.8	1.40
1800-2000	40.0	1.40	53.3	1.52
2450	39.2	1.80	52.7	1.95
3000	38.5	2.40	52.0	2.73
5800	35.3	5.27	48.2	6.00

6.2.2 Simulate liquid

For measurements against the phantom head, the “cheek” and “tilt” position on both the left hand and the right hand sides of the phantom. For body-worn measurements, the EUT was tested against flat phantom representing the user body. The EUT was put on in the belt holder. Stimulate liquid that are used for testing at frequencies of GSM 850MHz/1900MHz, WCDMA850MHz/1700MHz/1900MHz, LTE Band2/4/7/17 and Wi-Fi 2.4GHz, which are made mainly of sugar, salt and water solutions may be left in the phantoms.

Table 3: Dielectric Performance of Head Tissue Simulating Liquid

Temperature: 23.2°C; Humidity: 64%;			
/	Frequency	Permittivity ε	Conductivity σ (S/m)
Target value	750MHz	41.9±5%	0.89±5%
Validation value (Dec. 23th, 2015)	750MHz	41.71	0.88
Target value	850MHz	41.5±5%	0.90±5%
Validation value (Dec. 23th, 2015)	850MHz	41.36	0.88
Target value	1800 MHz	40.0±5%	1.40±5%
Validation value (Dec. 24th, 2015)	1800 MHz	39.75	1.39
Target value	1900MHz	40.0±5%	1.40±5%
Validation value (Dec. 24th, 2015)	1900MHz	39.85	1.39
Target value	2450MHz	39.2±5%	1.80±5%
Validation value (Dec. 26th, 2015)	2450MHz	38.94	1.79
Target value	2600MHz	39.0±5%	1.96±5%
Validation value (Dec. 26th, 2015)	2600MHz	38.89	1.93

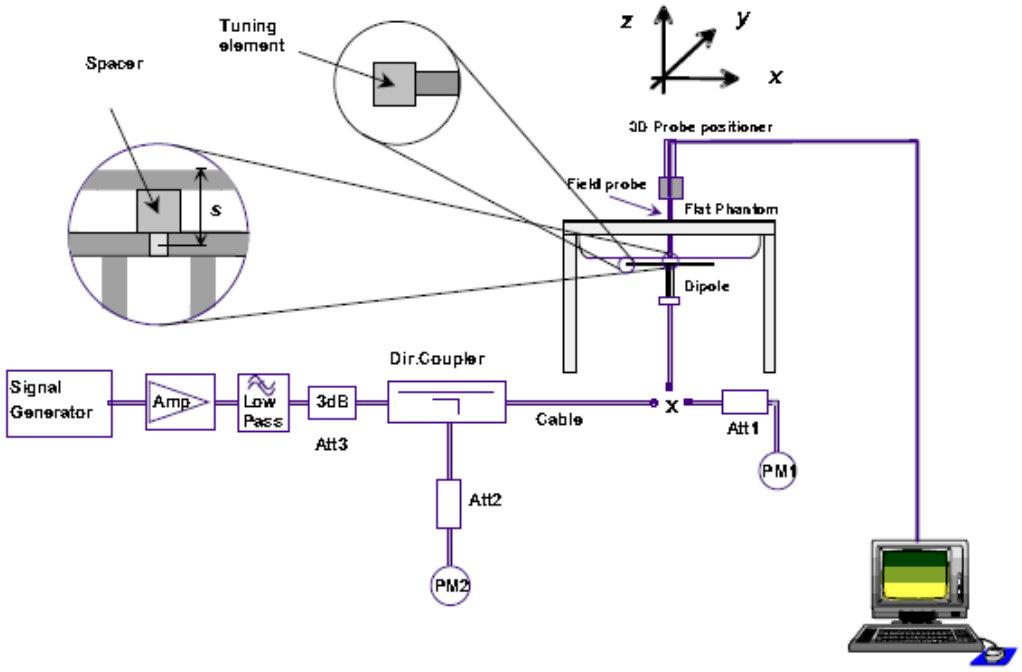
Table 4: Dielectric Performance of Body Tissue Simulating Liquid

Temperature: 23.2°C; Humidity: 64%;			
/	Frequency	Permittivity ε	Conductivity σ (S/m)
Target value	750MHz	55.2±5%	0.97±5%
Validation value (Dec. 27th, 2015)	750MHz	55.01	0.95
Target value	850MHz	55.2±5%	0.97±5%
Validation value (Dec. 27th, 2015)	850MHz	55.32	0.95
Target value	1800 MHz	53.3±5%	1.52±5%
Validation value (Dec. 28th, 2015)	1800 MHz	53.37	1.50
Target value	1900MHz	53.3±5%	1.52±5%
Validation value (Dec. 28th, 2015)	1900MHz	53.14	1.52
Target value	2450MHz	52.7±5%	1.95±5%
Validation value (Dec. 29th, 2015)	2450MHz	52.53	1.94
Target value	2600MHz	52.5±5%	2.16±5%
Validation value (Dec. 29th, 2015)	2600MHz	52.56	2.15

6.3 Results of validation testing

Prior to the assessment, the system validation kit was used to test whether the system was operating within its specifications of ±10%. The validation results are tabulated below. And also the corresponding SAR plot is attached as well in the SAR plots files.

The following procedure, recommended for performing validation tests using box phantoms is based on the procedures described in the IEEE standard P1528. Setup according to the setup diagram below :



With the SG and Amp and with directional coupler in place, set up the source signal at the relevant frequency and use a power meter to measure the power at the end of the SMA cable that you intend to connect to the balanced dipole. Adjust the SG to make this, say, 0.25W (24 dBm). If this level is too high to read directly with the power meter sensor, insert a calibrated attenuator (e.g. 10 or 20 dB) and make a suitable correction to the power meter reading.

Note 1: In this method, the directional coupler is used for monitoring rather than setting the exact feed power level. If, however, the directional coupler is used for power measurement, you should check the frequency range and power rating of the coupler and measure the coupling factor (referred to output) at the test frequency using a VNA.

Note 2: Remember that the use of a 3dB attenuator (as shown in Figure 8.1 of P1528) means that you need an RF amplifier of 2 times greater power for the same feed power. The other issue is the cable length. You might get up to 1dB of loss per meter of cable, so the cable length after the coupler needs to be quite short.

Note 3: For the validation testing done using CW signals, most power meters are suitable. However, if you are measuring the output of a modulated signal from either a signal generator or a handset, you must ensure that the power meter correctly reads the modulated signals.

The measured 1-gram averaged SAR values of the device against the phantom are provided in Tables 5 and Table 6. The humidity and ambient temperature of test facility were 64% and 23.2°C respectively. The body phantom were full of the body tissue simulating liquid. The EUT was supplied with full-charged battery for each measurement.

The distance between the back of the EUT and the bottom of the flat phantom is 10 mm (taking into account of the IEEE 1528 and the place of the antenna).

Table 5: Head SAR system validation (1g)

Frequency	Duty cycle	Target value （W/kg）	Test value (W/kg)	
			250 mW	1W
750MHz(Dec. 23th, 2015)	1:1	8.67±10%	2.10	8.40
835MHz(Dec. 23th, 2015)	1:1	9.77±10%	2.40	9.60
1800MHz(Dec. 24th, 2015)	1:1	38.67±10%	9.47	37.88
1900MHz(Dec. 24th, 2015)	1:1	40.37±10%	9.85	39.40
2450MHz(Dec. 26th, 2015)	1:1	53.60±10%	13.16	52.64
2600MHz((Dec. 26th, 2015)	1:1	56.19±10%	13.94	55.76

Table 6: Body SAR system validation (1g)

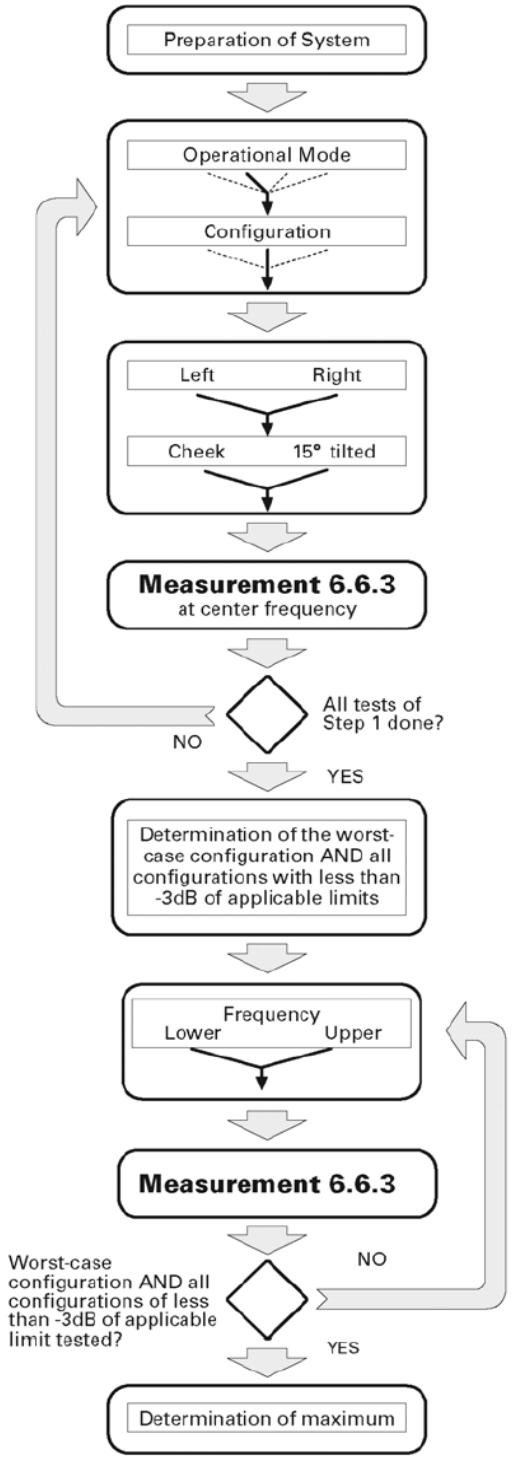
Frequency	Duty cycle	Target value （W/kg）	Test value (W/kg)	
			250 mW	1W
750MHz(Dec. 27th, 2015)	1:1	8.43±10%	2.01	8.04
835MHz(Dec. 27th, 2015)	1:1	10.31±10%	2.52	10.08
1800MHz(Dec. 28th, 2015)	1:1	40.07±10%	9.83	39.32
1900MHz(Dec. 28th, 2015)	1:1	40.81±10%	10.11	40.44
2450MHz(Dec. 29th, 2015)	1:1	52.66±10%	13.06	52.24
2600MHz((Dec. 29th, 2015)	1:1	57.55±10%	14.03	56.12

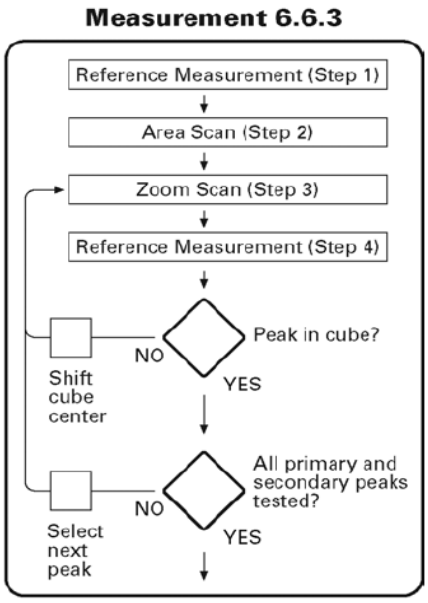
* Note: Target value was referring to the measured value in the calibration certificate of reference dipole.

Note: All SAR values are normalized to 1W forward power.

6.4 SAR measurement procedure

The SAR test against the head phantom was carried out as follow:





Establish a call with the maximum output power with a base station simulator, the connection between the EUT and the base station simulator is established via air interface.

After an area scan has been done at a fixed distance of 2mm from the surface of the phantom on the source side, a 3D scan is set up around the location of the maximum spot SAR. First, a point within the scan area is visited by the probe and a SAR reading taken at the start of testing. At the end of testing, the probe is returned to the same point and a

second reading is taken. Comparison between these start and end readings enables the power drift during measurement to be assessed.

Above is the scanning procedure flow chart and table from the IEEEp1528 standard. This is the procedure for which all compliant testing should be carried out to ensure that all variations of the device position and transmission behavior are tested.

For body-worn measurement, the EUT was tested under two position: face upward and back upward.

6.5 Transmitting antenna information

The GSM&WCDMA&LTE&WIFI&BT antennas inside the EUT.

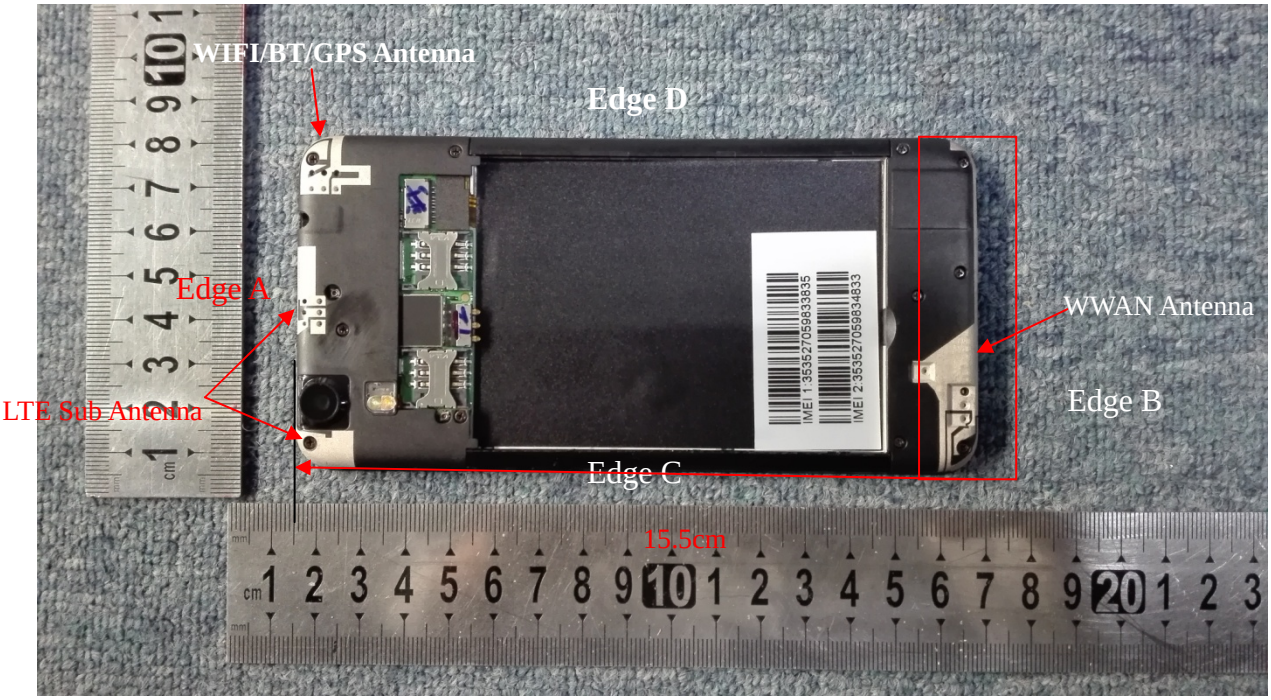


Fig. 3 Position of the antennas

Antenna-to-User (Edge Side) distance (mm):

Antenna	Front	Back	Edge A	Edge B	Edge C	Edge D
WWAN Main Antenna	3	3	135	2	2	2
WIFI Antenna	3	3	2	135	60	2

The Body SAR measurement positions of each band are as below:

Antenna	Front	Back	Edge A	Edge B	Edge C	Edge D
WWAN Antenna Body-worn	Yes	Yes	No	No	No	No
WWAN Antenna hotspot	Yes	Yes	No	Yes	Yes	Yes
WIFI Antenna Body-worn	Yes	Yes	No	No	No	No
WIFI Antenna hotspot	Yes	Yes	Yes	No	No	Yes

Note: According to KDB 941225 D06 v02r01, when antenna-to-edge>2.5cm, SAR is not required.

7 CHARACTERISTICS OF THE TEST

7.1 Applicable Limit Regulations

47CFR § 2.1093- Radiofrequency Radiation Exposure Evaluation: Portable Devices;

ANSI 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 1528–2013: IEEE Recommended Practice for Determining the Peak Spatial-Average Specific Absorption Rate (SAR) in the Human Head from Wireless Communications Devices: Measurement Techniques

It specifies the maximum exposure limit of **1.6 W/kg** as averaged over any 1 gram of tissue for portable devices being used within 20 cm of the user in the uncontrolled environment.

7.2 Applicable Measurement Standards

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

FCC 47 CFR Part2 (2.1093)
ANSI/IEEE C95.1-1992
IEEE 1528-2013
FCC KDB 248227 D01 802.11 Wi-Fi SAR v02r02
FCC KDB 447498 D01 v06 General RF Exposure Guidance
FCC KDB 648474 D04 v01r03 Handset SAR
FCC KDB 865664 D01 v01r04 SAR Measurement 100MHz to 6GHz
FCC KDB 865664 D02 v01r02 SAR Exposure Reporting
FCC KDB 941225 D01 v03r01 3G SAR Procedures
FCC KDB 941225 D05 v02r04 SAR for LTE Devices
FCC KDB 941225 D06 v02r01 Hotspot Mode

8 LABORATORY ENVIRONMENT

The Ambient Conditions during SAR Test

Temperature	Min. = 22 ℃, Max. = 25 ℃
Atmospheric pressure	Min.=86 kPa, Max.=106 kPa
Relative humidity	Min. = 45%, Max. = 75%
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.	

9.Conducted RF Output Power

9.1 GSM Conducted Power

GSM Conducted Power

Band		Burst Average Power (dBm)			Frame-Average Power (dBm)		
GSM850	TX Channel	128	190	251	128	190	251
	Frequency(MHz)	824.2	836.4	848.8	824.2	836.4	848.8
	GSM	32.46	32.48	32.51	23.43	23.45	23.48
	GPRS (Slot 1)	32.39	32.35	32.26	23.36	23.32	23.23
	GPRS (Slot 2)	29.21	29.11	29.09	23.19	23.09	23.07
	GPRS (Slot 3)	27.70	27.74	27.61	23.44	**23.48**	23.35
	GPRS (Slot 4)	25.90	25.82	25.72	22.89	22.81	22.71
	EDGE (Slot 1)	32.17	32.21	32.21	23.14	23.18	23.18
	EDGE (Slot 2)	29.02	28.92	28.89	23.00	22.90	22.87
	EDGE (Slot 3)	27.42	27.34	27.20	23.16	23.08	22.94
	EDGE (Slot 4)	25.60	25.52	25.43	22.59	22.51	22.43

	TX Channel	512	661	810	512	661	810
	Frequency(MHz)	1850.2	1880	1909.8	1850.2	1880	1909.8
GSM1900	GSM	**28.99**	28.76	28.65	19.96	19.73	19.62
	GPRS (Slot 1)	28.67	28.61	28.37	19.64	19.58	19.34
	GPRS (Slot 2)	26.81	26.75	26.42	20.79	20.73	20.40
	GPRS (Slot 3)	25.67	25.66	25.47	**21.41**	21.40	21.21
	GPRS (Slot 4)	24.22	24.20	24.08	21.21	21.19	21.07
	EDGE (Slot 1)	28.48	28.51	28.51	19.45	19.48	19.48
	EDGE (Slot 2)	26.51	26.45	26.12	20.49	20.43	20.10
	EDGE (Slot 3)	25.47	25.46	25.22	21.21	21.20	20.96
	EDGE (Slot 4)	24.02	24.00	23.88	21.01	20.99	20.87

Note: Per KDB 447498 D01 v06, the maximum output power channel is used for SAR testing and for further SAR test reduction.

For Head SAR testing, GSM should be evaluated, therefore the EUT was set in GSM Voice for GSM850 and GSM1900 due to its highest frame-average power.

For Body worn SAR testing, GSM should be evaluated, therefore the EUT was set in GSM Voice for GSM850 and GSM 1900 due to its highest frame-average power.

For hotspot mode SAR testing, GPRS and EDGE should be evaluated, therefore the EUT was set in GPRS850（**3**Tx slots）and GPRS1900 (**3**Tx slots) due to its highest frame-average power.

Timeslot consignations

No. Of Slots	Slot 1	Slot 2	Slot 3	Slot 4
Slot Consignation	1Up4Down	2UpDown	3UpDown	4Up1Down
Duty Cycle	1:8	1:4	1:2.67	1:2
Crest Factor	-9.03dB	-6.02dB	-4.26dB	-3.01dB

9.2 WCDMA Conducted peak output Power

WCDMA conducted output power

Item	band	WCDMA 850			WCDMA 1700			WCDMA 1900		
	ARFCN	4132	4183	4233	1312	1413	1513	9262	9400	9538
	subtest	dBm			dBm			dBm		
RMC 12.2kbps	non	22.87	**22.89**	22.56	**22.57**	22.53	22.55	**21.88**	21.80	21.71
HSDPA	1	22.25	22.41	22.32	21.89	21.94	21.91	21.28	21.33	21.26
	2	21.95	21.90	21.91	21.81	21.75	21.78	21.19	21.03	21.17
	3	21.82	21.77	21.81	21.75	21.69	21.77	20.78	20.81	20.75
	4	21.71	21.82	21.75	21.65	21.71	21.60	21.27	21.31	21.18
HSUPA	1	21.89	21.91	21.97	21.94	21.87	21.91	20.84	20.79	20.81
	2	21.71	21.77	21.84	21.63	21.62	21.59	20.64	20.61	20.58
	3	21.51	21.45	21.53	21.77	21.75	21.80	20.75	20.77	20.81
	4	21.86	21.85	21.80	21.57	21.51	21.54	20.82	20.85	20.81
	5	21.67	21.68	21.72	21.62	21.65	21.69	20.51	20.47	20.58
Note:	The Conducted RF Output Power test of WCDMA /HSDPA /HSUPA were tested by power meter.									

Note:

1. WCDMA SAR was tested under PMC 12.2kbps with HSPA Inactive per KDB Publication 941225 D01.HSPA SAR was not requires since the average output power of the HSPA subtests was not more than 0.25dB higher than the RMC level and SAR was less than 1.2W/kg.
2. It is expected by the manufacturer that MPR for some HSPA subtests may be up to 2dB more than specified by 3GPP, but also as low as 0dB according to the chipset implementation in this model.

9.3 LTE Conducted peak output Power

LTE Test Configurations

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 frames.

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 configuration [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 LTE procedures for SAR testing

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 ≤ 0.8W/kg, testing of the remaining RB offset configurations and required test channels is not required for 1RB 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.

1. LTE Band 2 Conducted Power Test Verdict:

BW(MHz)	Modulation	RB Size	RB Offset	Power(dBm) Low Ch./Freq.	Power(dBm) Middle Ch./Freq.	Power(dBm) High Ch./Freq.
Channel				18700	18900	19100
Frequency(MHz)				1860	1880	1900
20	QPSK	1	0	22.54	22.51	**22.57**
20	QPSK	1	49	22.40	22.39	22.45
20	QPSK	1	99	22.36	22.37	22.34
20	QPSK	50	0	21.68	21.72	21.70
20	QPSK	50	24	21.56	21.58	21.63
20	QPSK	50	49	21.61	21.63	21.57
20	QPSK	100	0	21.55	21.54	21.58
20	16QAM	1	0	21.17	21.15	21.14
20	16QAM	1	49	21.21	21.18	21.16
20	16QAM	1	99	21.12	21.14	21.09
20	16QAM	50	0	20.75	20.78	20.79
20	16QAM	50	24	20.71	20.69	20.75
20	16QAM	50	49	20.65	20.59	20.64
20	16QAM	100	0	20.55	20.57	20.61
Channel				18675	18900	19125
Frequency(MHz)				1857.5	1880	1902.5
15	QPSK	1	0	22.53	22.51	22.49
15	QPSK	1	37	22.45	22.50	22.47
15	QPSK	1	74	22.44	22.45	22.46
15	QPSK	36	0	21.72	21.75	21.73
15	QPSK	36	18	21.58	21.63	21.59
15	QPSK	36	37	21.63	21.67	21.64
15	QPSK	75	0	21.66	21.62	21.63
15	16QAM	1	0	21.29	21.25	21.24
15	16QAM	1	37	21.20	21.17	21.19
15	16QAM	1	74	21.25	21.22	21.20
15	16QAM	36	0	20.69	20.71	20.72
15	16QAM	36	18	20.65	20.62	20.59
15	16QAM	36	37	20.68	20.64	20.71
15	16QAM	75	0	20.67	20.72	20.68

BW(MHz)	Modulation	RB Size	RB Offset	Power(dBm) Low Ch./Freq.	Power(dBm) Middle Ch./Freq.	Power(dBm) High Ch./Freq.
Channel				18650	18900	19150
Frequency(MHz)				1855	1880	1905
10	QPSK	1	0	22.49	22.52	22.50
10	QPSK	1	24	22.45	22.49	22.46
10	QPSK	1	49	22.42	22.47	22.50
10	QPSK	25	0	21.76	21.71	21.73
10	QPSK	25	12	21.62	21.68	21.65
10	QPSK	25	24	21.69	21.70	21.64
10	QPSK	50	0	21.61	21.65	21.66
10	16QAM	1	0	21.27	21.31	21.30
10	16QAM	1	24	21.26	21.29	21.21
10	16QAM	1	49	21.32	21.22	21.28
10	16QAM	25	0	20.78	20.75	20.74
10	16QAM	25	12	20.65	20.68	20.72
10	16QAM	25	24	20.59	20.56	20.62
10	16QAM	50	0	20.61	20.72	20.62
Channel				18625	18900	19175
Frequency(MHz)				1852.5	1880	1907.5
5	QPSK	1	0	22.48	22.45	22.46
5	QPSK	1	12	22.42	22.47	22.45
5	QPSK	1	24	22.41	22.45	22.51
5	QPSK	12	0	21.77	21.79	21.72
5	QPSK	12	6	21.62	21.64	21.59
5	QPSK	12	11	21.71	21.68	21.67
5	QPSK	25	0	21.64	21.71	21.62
5	16QAM	1	0	21.29	21.32	21.31
5	16QAM	1	12	21.22	21.31	21.28
5	16QAM	1	24	21.25	21.30	21.29
5	16QAM	12	0	20.76	20.74	20.71
5	16QAM	12	6	20.67	20.75	20.73
5	16QAM	12	11	20.64	20.71	20.65
5	16QAM	25	0	20.76	20.75	20.77

BW(MHz)	Modulation	RB Size	RB Offset	Power(dBm) Low Ch./Freq.	Power(dBm) Middle Ch./Freq.	Power(dBm) High Ch./Freq.
Channel				18615	18900	19185
Frequency(MHz)				1851.5	1880	1908.5
3	QPSK	1	0	22.43	22.49	22.47
3	QPSK	1	7	22.37	22.39	22.45
3	QPSK	1	14	22.44	22.37	22.42
3	QPSK	8	0	21.75	21.72	21.79
3	QPSK	8	4	21.68	21.75	21.73
3	QPSK	8	7	21.64	21.68	21.75
3	QPSK	15	0	21.71	21.79	21.73
3	16QAM	1	0	21.61	21.59	21.62
3	16QAM	1	7	21.62	21.57	21.60
3	16QAM	1	14	21.64	21.58	21.62
3	16QAM	8	0	20.82	20.81	20.85
3	16QAM	8	4	20.85	20.77	20.82
3	16QAM	8	7	20.84	20.79	20.84
3	16QAM	15	0	20.67	20.72	20.70
Channel				18607	18900	19193
Frequency(MHz)				1850.7	1732.5	1909.3
1.4	QPSK	1	0	22.50	22.44	22.47
1.4	QPSK	1	2	22.43	22.42	22.46
1.4	QPSK	1	5	22.41	22.36	22.39
1.4	QPSK	3	0	21.70	21.79	21.72
1.4	QPSK	3	1	21.74	21.68	21.73
1.4	QPSK	3	2	21.64	21.57	21.61
1.4	QPSK	6	0	21.58	21.56	21.53
1.4	16QAM	1	0	21.30	21.22	21.25
1.4	16QAM	1	2	21.25	21.20	21.22
1.4	16QAM	1	5	21.17	21.22	21.14
1.4	16QAM	3	0	20.65	20.71	20.67
1.4	16QAM	3	1	20.64	20.58	20.65
1.4	16QAM	3	2	20.56	20.57	20.53
1.4	16QAM	6	0	20.68	20.71	20.74

2. LTE Band 4 Conducted Power Test Verdict:

BW(MHz)	Modulation	RB Size	RB Offset	Power(dBm) Low Ch./Freq.	Power(dBm) Middle Ch./Freq.	Power(dBm) High Ch./Freq.
Channel				20050	20175	20300
Frequency(MHz)				1720	1732.5	1745
20	QPSK	1	0	22.87	**22.92**	22.85
20	QPSK	1	49	22.84	22.85	22.79
20	QPSK	1	99	22.78	22.77	22.75
20	QPSK	50	0	22.12	22.04	22.07
20	QPSK	50	24	22.07	22.05	22.01
20	QPSK	50	49	21.98	21.92	21.95
20	QPSK	100	0	21.91	21.95	21.97
20	16QAM	1	0	21.42	21.31	21.34
20	16QAM	1	49	21.40	21.45	21.43
20	16QAM	1	99	21.34	21.40	21.37
20	16QAM	50	0	20.77	20.75	20.72
20	16QAM	50	24	20.69	20.67	20.70
20	16QAM	50	49	20.71	20.75	20.66
20	16QAM	100	0	20.74	20.75	20.81
Channel				20025	20175	20325
Frequency(MHz)				1717.5	1732.5	1747.5
15	QPSK	1	0	22.85	22.90	22.84
15	QPSK	1	37	22.83	22.81	22.82
15	QPSK	1	74	22.80	22.87	22.83
15	QPSK	36	0	22.15	22.07	22.09
15	QPSK	36	18	22.08	22.06	22.07
15	QPSK	36	37	22.06	22.10	22.04
15	QPSK	75	0	21.98	21.96	21.92
15	16QAM	1	0	21.46	21.37	21.43
15	16QAM	1	37	21.40	21.35	21.39
15	16QAM	1	74	21.45	21.42	21.38
15	16QAM	36	0	20.76	20.73	20.74
15	16QAM	36	18	20.69	20.63	20.67
15	16QAM	36	37	20.61	20.65	20.63
15	16QAM	75	0	20.78	20.74	20.81

BW(MHz)	Modulation	RB Size	RB Offset	Power(dBm) Low Ch./Freq.	Power(dBm) Middle Ch./Freq.	Power(dBm) High Ch./Freq.
Channel				20000	20175	20350
Frequency(MHz)				1715	1732.5	1750
10	QPSK	1	0	22.82	22.89	22.85
10	QPSK	1	24	22.85	22.82	22.83
10	QPSK	1	49	22.82	22.79	22.80
10	QPSK	25	0	22.14	22.16	22.11
10	QPSK	25	12	22.12	22.19	22.10
10	QPSK	25	24	21.67	21.60	21.65
10	QPSK	50	0	21.65	21.72	21.68
10	16QAM	1	0	21.47	21.45	21.44
10	16QAM	1	24	21.41	21. 42	21.35
10	16QAM	1	49	21.38	21.49	21.46
10	16QAM	25	0	20.75	20.83	20.80
10	16QAM	25	12	20.68	20.70	20.72
10	16QAM	25	24	20.72	20.68	20.74
10	16QAM	50	0	20.82	20.76	20.79
Channel				19975	20175	20375
Frequency(MHz)				1712.5	1732.5	1752.5
5	QPSK	1	0	22.90	22.81	22.87
5	QPSK	1	12	22.85	22.88	22.82
5	QPSK	1	24	22.81	22.83	22.85
5	QPSK	12	0	22.12	22.07	22.12
5	QPSK	12	6	22.07	22.10	22.08
5	QPSK	12	11	21.95	21.93	21.87
5	QPSK	25	0	21.93	21.88	21.95
5	16QAM	1	0	21.47	21.46	21.50
5	16QAM	1	12	21.51	21.47	21.42
5	16QAM	1	24	21.49	21.51	21.55
5	16QAM	12	0	20.85	20.81	20.78
5	16QAM	12	6	20.76	20.72	20.69
5	16QAM	12	11	20.65	20.64	20.62
5	16QAM	25	0	20.73	20.78	20.70

BW(MHz)	Modulation	RB Size	RB Offset	Power(dBm) Low Ch./Freq.	Power(dBm) Middle Ch./Freq.	Power(dBm) High Ch./Freq.
Channel				19965	20175	20385
Frequency(MHz)				1711.5	1732.5	1753.5
3	QPSK	1	0	22.86	22.84	22.88
3	QPSK	1	7	22.81	22.80	22.83
3	QPSK	1	14	22.82	22.85	22.87
3	QPSK	8	0	22.07	22.01	21.96
3	QPSK	8	4	22.00	22.05	22.08
3	QPSK	8	7	21.98	21.92	21.95
3	QPSK	15	0	21.87	21.94	21.91
3	16QAM	1	0	21.41	21.52	21.45
3	16QAM	1	7	21.47	21.45	21.43
3	16QAM	1	14	21.42	21.40	21.46
3	16QAM	8	0	20.83	20.85	20.82
3	16QAM	8	4	20.74	20.78	20.75
3	16QAM	8	7	20.63	20.68	20.65
3	16QAM	15	0	20.72	20.66	20.78
Channel				19957	20175	20393
Frequency(MHz)				1710.7	1732.5	1754.3
1.4	QPSK	1	0	22.95	22.91	22.92
1.4	QPSK	1	2	22.91	22.88	22.89
1.4	QPSK	1	5	22.87	22.89	22.83
1.4	QPSK	3	0	22.01	22.08	22.02
1.4	QPSK	3	1	22.07	22.03	21.98
1.4	QPSK	3	2	21.86	21.87	21.91
1.4	QPSK	6	0	21.87	21.96	21.93
1.4	16QAM	1	0	21.32	21.37	21.39
1.4	16QAM	1	2	21.43	21.34	21.41
1.4	16QAM	1	5	21.31	21.42	21.34
1.4	16QAM	3	0	20.75	20.74	20.85
1.4	16QAM	3	1	20.69	20.63	20.67
1.4	16QAM	3	2	20.60	20.58	20.57
1.4	16QAM	6	0	20.69	20.72	20.63

3. LTE Band 7 Conducted Power Test Verdict:

BW(MHz)	Modulation	RB Size	RB Offset	Power(dBm) Low Ch./Freq.	Power(dBm) Middle Ch./Freq.	Power(dBm) High Ch./Freq.
Channel				20850	21100	21350
Frequency(MHz)				2510	2535	2560
20	QPSK	1	0	21.32	**21.35**	21.27
20	QPSK	1	49	21.28	21.27	21.33
20	QPSK	1	99	21.31	21.22	21.25
20	QPSK	50	0	20.72	20.74	20.77
20	QPSK	50	24	20.77	20.75	20.71
20	QPSK	50	49	20.68	20.69	20.65
20	QPSK	100	0	20.65	20.60	20.63
20	16QAM	1	0	20.20	20.21	20.15
20	16QAM	1	49	20.24	20.22	20.23
20	16QAM	1	99	20.18	20.17	20.18
20	16QAM	50	0	19.77	19.75	19.72
20	16QAM	50	24	19.69	19.67	19.70
20	16QAM	50	49	19.64	19.61	19.66
20	16QAM	100	0	19.70	19.65	19.71
Channel				20825	21100	21375
Frequency(MHz)				2507.5	2535	2562.5
15	QPSK	1	0	21.30	**21.32**	21.31
15	QPSK	1	37	21.27	21.25	21.28
15	QPSK	1	74	21.26	21.28	21.27
15	QPSK	36	0	20.75	20.73	20.76
15	QPSK	36	18	20.72	20.71	20.72
15	QPSK	36	37	20.65	20.67	20.66
15	QPSK	75	0	20.64	20.63	20.65
15	16QAM	1	0	20.22	20.25	20.19
15	16QAM	1	37	20.24	20.22	20.15
15	16QAM	1	74	20.17	20.15	20.14
15	16QAM	36	0	19.75	19.74	19.79
15	16QAM	36	18	19.69	19.68	19.72
15	16QAM	36	37	19.65	19.66	19.64
15	16QAM	75	0	19.71	19.65	19.67

BW(MHz)	Modulation	RB Size	RB Offset	Power(dBm) Low Ch./Freq.	Power(dBm) Middle Ch./Freq.	Power(dBm) High Ch./Freq.
Channel				20800	21100	21400
Frequency(MHz)				2505	2535	2565
10	QPSK	1	0	21.27	**21.31**	21.28
10	QPSK	1	24	21.21	21.20	21.23
10	QPSK	1	49	21.20	21.23	21.21
10	QPSK	25	0	20.74	20.70	20.75
10	QPSK	25	12	20.72	20.74	20.72
10	QPSK	25	24	20.65	20.67	20.68
10	QPSK	50	0	20.63	20.62	20.65
10	16QAM	1	0	20.23	20.23	20.25
10	16QAM	1	24	20.20	20.22	20.24
10	16QAM	1	49	20.15	20.10	20.15
10	16QAM	25	0	19.72	19.74	19.73
10	16QAM	25	12	19.61	19.65	19.64
10	16QAM	25	24	19.65	19.60	19.65
10	16QAM	50	0	19.60	19.65	19.63
Channel				20775	21100	21425
Frequency(MHz)				2502.5	2535	2567.5
5	QPSK	1	0	21.32	**21.34**	21.30
5	QPSK	1	12	21.26	21.28	21.26
5	QPSK	1	24	21.24	21.26	21.25
5	QPSK	12	0	20.75	20.75	20.72
5	QPSK	12	6	20.74	20.75	20.70
5	QPSK	12	11	20.63	20.65	20.60
5	QPSK	25	0	20.62	20.60	20.62
5	16QAM	1	0	20.20	20.24	20.23
5	16QAM	1	12	20.25	20.22	20.20
5	16QAM	1	24	20.19	20.14	20.18
5	16QAM	12	0	19.74	19.70	19.72
5	16QAM	12	6	19.65	19.61	19.70
5	16QAM	12	11	19.65	19.66	19.60
5	16QAM	25	0	19.59	19.60	19.67

4. LTE Band 17 Conducted Power Test Verdict:

BW(MHz)	Modulation	RB Size	RB Offset	Power(dBm) Low Ch./Freq.	Power(dBm) Middle Ch./Freq.	Power(dBm) High Ch./Freq.
Channel				23780	23790	23800
Frequency(MHz)				709	710	711
10	QPSK	1	0	22.42	**22.50**	22.49
10	QPSK	1	24	22.45	22.42	22.47
10	QPSK	1	49	22.40	22.39	22.36
10	QPSK	25	0	21.74	21.76	21.71
10	QPSK	25	12	21.70	21.69	21.72
10	QPSK	25	24	21.71	21.67	21.65
10	QPSK	50	0	21.66	21.71	21.70
10	16QAM	1	0	21.22	21.27	21.20
10	16QAM	1	24	21.21	21.30	21.25
10	16QAM	1	49	21.18	21.19	21.16
10	16QAM	25	0	20.60	20.65	20.64
10	16QAM	25	12	20.68	20.70	20.72
10	16QAM	25	24	20.62	20.65	20.54
10	16QAM	50	0	20.60	20.56	20.59
Channel				23755	23790	23825
Frequency(MHz)				706.5	710	713.5
5	QPSK	1	0	22.42	**22.47**	22.42
5	QPSK	1	12	22.45	22.40	22.41
5	QPSK	1	24	22.42	22.44	22.39
5	QPSK	12	0	21.75	21.74	21.73
5	QPSK	12	6	21.71	21.69	21.74
5	QPSK	12	11	21.65	21.67	21.65
5	QPSK	25	0	21.64	21.66	21.64
5	16QAM	1	0	21.25	21.21	21.24
5	16QAM	1	12	21.27	21.28	21.22
5	16QAM	1	24	21.15	21.13	21.18
5	16QAM	12	0	20.65	20.61	20.63
5	16QAM	12	6	20.65	20.67	20.65
5	16QAM	12	11	20.60	20.61	20.58
5	16QAM	25	0	20.57	20.56	20.55

WLAN 2.4GHz Band Conducted Power

For the 802.11b/g SAR tests, a communication link is set up with the test mode software for WiFi mode test. The Absolute Radio Frequency Channel Number(ARFCN) is allocated to 1 ,6 and 11 respectively in the case of 2450MHz. During the test, at the each test frequency channel, the EUT is operated at the RF continuous emission mode. Each channel should be tested at the lowest data rate.

802.11b/g operating modes are tested independently according to the service requirements in each frequency band. 802.11b/g modes are tested on channel 1, 6, 11; however, if output power reduction is necessary for channels 1 and/or 11 to meet restricted band requirements the highest output channel closest to each of these channels must be tested instead.

SAR is not required for 802.11g/n channels when the maximum average output power is less than 0.25dB higher than that measured on the corresponding 802.11b channels.

Channel/Freq.(MHz)	Out Power (dBm) for Data Rates (Mbps)		
	802.11b	802.11g	802.11n(HT20)
1(2412)	12.41	12.23	12.74
6(2437)	12.74	12.58	12.49
11(2462)	12.66	12.52	12.43
Channel	802.11n(HT40)		
3(2422)	12.58		
6(2437)	12.33		
9(2452)	12.19		

Note:

1. Per KDB248227 D01 v02r02, choose the highest output power channel to test SAR and determine further SAR exclusion
2. For each frequency band, testing at higher data rates and higher order modulations is not required when the maximum average output power for each of these configurations is less than 1/4dB higher than those measured at lowest data rate
3. Per KDB248227 D01 v02r02, 802.11g /11n-HT20/11n-HT40 is not required. . When the highest reported SAR for DSSS is adjusted by the ratio of OFDM to DSSS specified maximum output power and the adjusted SAR is ≤1.2W/Kg. Thus the SAR can be excluded.

Bluetooth Output Power

Channel	Frequency (MHz)	BT3.0 Output Power(dBm)		
		GFSK	π/4-DQPSK	8-DPSK
CH 0	2402	0.18	-0.84	-0.38
CH 39	2441	-1.29	-1.61	-1.35
CH 78	2480	-0.96	-0.99	-1.17

Channel	Frequency (MHz)	BT4.0 Output Power(dBm)
		GFSK
CH 0	2402	-5.74
CH 20	2442	-5.73
CH 39	2480	-6.12

Note:

1. Per KDB 447498 D01v06, the 1-g and 10-g SAR test exclusion thresholds for 100MHz to 6GHz at test separation distances ≤ 50mm are determined by:[(max. power of channel, including tune-up tolerance, mW)/(min. test separation distance, mm)] • [$\sqrt{f}$ (GHz)] ≤3.0 for 1-g SAR and ≤7.5 for 10-g extremity SAR
   (1) f(GHz) is the RF channel transmit frequency in GHz
   (2) Power and distance are round to the nearest mW and mm before calculation
   (3) The result is rounded to one decimal place for comparison
   (4) If the test separation distance(antenna-user) is < 5mm, 5mm is used for excluded SAR calculation
   (5)

BT3.0 Max Power (dBm)	mW	Test Distance (mm)	Frequency(Ghz)	Exclusion Thresholds
0.3	1.07	5	2.4	0.33

Per KDB 447498 D01v06 exclusion thresholds is 0.33<3, RF exposure evaluation is not required.

BT estimated SAR value=Exclusion Thresholds/7.5=0.33/7.5=**0.04W/Kg**

BT3.0 Max Power (dBm)	mW	Test Distance (mm)	Frequency(Ghz)	Exclusion Thresholds
0.3	1.07	10	2.4	0.17

Per KDB 447498 D01v06 exclusion thresholds is 0.17<3, RF exposure evaluation is not required.
BT estimated SAR value=Exclusion Thresholds/7.5=0.17/7.5=**0.02W/Kg**

BT4.0 Max Power (dBm)	mW	Test Distance (mm)	Frequency(Ghz)	Exclusion Thresholds
-4.5	0.35	5	2.4	0.11

Per KDB 447498 D01v06 exclusion thresholds is 0.11<3, RF exposure evaluation is not required.

BT estimated SAR value=Exclusion Thresholds/7.5=0.11/7.5=0.015W/Kg

BT4.0 Max Power (dBm)	mW	Test Distance (mm)	Frequency(Ghz)	Exclusion Thresholds
-4.5	0.35	10	2.4	0.05

Per KDB 447498 D01v06 exclusion thresholds is 0.05<3, RF exposure evaluation is not required.
BT estimated SAR value=Exclusion Thresholds/7.5=0.05/7.5=0.007W/Kg
The estimated SAR value is used for simultaneous transmission analysis.

General Note:

1. Per KDB 447498 D01v06, the reported SAR is the measured SAR value adjusted for maximum tune-up tolerance.
2. Per KDB447498 D01v06, 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 KDB941225 D06 v02r01, 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. As the manufacture required, the separation distance use 5mm for Hotspot mode.
4. Per KDB 865664 D01v01r04,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.
5. Per KDB865664 D02 v01r02, 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(Refer to appendix D for details).
6. Per KDB941225 D01 v03r01, when multiple slots can be used, the GPRS/EDGE slot configuration with the highest frame–averaged output power was selected for SAR testing.
7. Per KDB941225 D01 v03r01, 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. Per KDB248227 D01 v02r02, 802.11g /11n-HT20/11n-HT40 is not required. When the highest reported SAR for DSSS is adjusted by the ratio of OFDM to DSSS specified maximum output power and the adjusted SAR is ≤1.2W/Kg. Thus the SAR can be excluded.

9.3. Scaling Factor calculation

Operation Mode	Channel	Output Power(dBm)	Tune up Power in tolerance(dBm)	Scaling Factor
GSM 850	128	32.46	32.0 ± 1.0	1.132
	190	32.48	32.0 ± 1.0	1.127
	251	32.51	32.0 ± 1.0	1.119
GPRS 850(3Tx)	128	27.70	27.5 ± 1.0	1.202
	190	27.74	27.5 ± 1.0	1.191
	251	27.61	27.5 ± 1.0	1.227
GSM1900	512	28.99	29.0 ± 1.0	1.262
	661	28.76	29.0 ± 1.0	1.330
	810	28.65	29.0 ± 1.0	1.365
GPRS1900(3Tx)	512	25.67	25.5 ± 1.0	1.211
	661	25.66	25.5 ± 1.0	1.213
	810	25.47	25.5 ± 1.0	1.268
WCDMA1900	9262	21.88	21.5 ± 1.0	1.153
	9400	21.80	21.5 ± 1.0	1.175
	9538	21.71	21.5 ± 1.0	1.199
WCDMA1700	1312	22.57	22.0 ± 1.0	1.104
	1413	22.53	22.0 ± 1.0	1.114
	1513	22.55	22.0 ± 1.0	1.109
WCDMA850	4132	22.87	22.0 ± 1.0	1.030
	4183	22.89	22.0 ± 1.0	1.026
	4233	22.56	22.0 ± 1.0	1.107
LTE B2 20MHz 1RB#0	18700	22.54	22.0 ± 1.0	1.111
	18900	22.51	22.0 ± 1.0	1.119
	19100	22.57	22.0 ± 1.0	1.104
LTE B2 20MHz 50RB#0	18700	21.68	21.5 ± 1.0	1.208
	18900	21.72	21.5 ± 1.0	1.197
	19100	21.70	21.5 ± 1.0	1.202
LTE B2 20MHz 100RB#0	18700	21.55	21.5 ± 1.0	1.244
	18900	21.54	21.5 ± 1.0	1.247
	19100	21.58	21.5 ± 1.0	1.236
LTE B4 20MHz 1RB#0	20050	22.87	22.0 ± 1.0	1.030
	20175	22.92	22.0 ± 1.0	1.019
	20300	22.85	22.0 ± 1.0	1.035
LTE B4 20MHz	20050	22.12	21.5 ± 1.0	1.091

50RB#0	20175	22.04	21.5 ± 1.0	1.111
	20300	22.07	21.5 ± 1.0	1.104
LTE B4 20MHz 100RB#0	20050	21.91	21.5 ± 1.0	1.146
	20175	21.95	21.5 ± 1.0	1.135
	20300	21.97	21.5 ± 1.0	1.130
LTE B7 20MHz 1RB#0	20850	21.32	21.5 ± 1.0	1.312
	21100	21.35	21.5 ± 1.0	1.303
	21350	21.27	21.5 ± 1.0	1.327
LTE B7 20MHz 50RB#0	20850	20.72	20.5 ± 1.0	1.197
	21100	20.74	20.5 ± 1.0	1.191
	21350	20.77	20.5 ± 1.0	1.183
LTE B7 20MHz 100RB#0	20850	20.65	20.5 ± 1.0	1.213
	21100	20.60	20.5 ± 1.0	1.230
	21350	20.63	20.5 ± 1.0	1.222
LTE B17 10MHz 1RB#0	23780	22.42	22.0 ± 1.0	1.143
	23790	22.50	22.0 ± 1.0	1.122
	23800	22.49	22.0 ± 1.0	1.124
LTE B17 10MHz 25RB#0	23780	21.74	21.5 ± 1.0	1.191
	23790	21.76	21.5 ± 1.0	1.186
	23800	21.71	21.5 ± 1.0	1.199
LTE B17 10MHz 50RB#0	23780	21.66	21.5 ± 1.0	1.213
	23790	21.71	21.5 ± 1.0	1.199
	23800	21.70	21.5 ± 1.0	1.202
WIFI 802.11b	1	12.41	12.0 ± 1.0	1.146
	6	12.74	12.0 ± 1.0	1.062
	11	12.66	12.0 ± 1.0	1.081
BT	1	0.18	-0.7 ± 1.0	1.028

Note: for LTE power tolerance, only QPSK modulation mode was provide here.

Simultaneous SAR

No.	Transmitter Combinations	Scenario Supported or not	Supported for Mobile Hotspot or not
1	GSM(Voice)+GSM(Data)	No	No
2	WCDMA(Voice)+WCDMA(Data)	No	No
3	GSM(Voice)+ WCDMA(Data)	No	No
4	WCDMA(Voice)+GSM(Data)	No	No
5	GSM(Voice)+ WCDMA(Voice)	No	No
6	GSM(Voice)+Wifi	Yes	No
7	WCDMA(Voice) +Wifi	Yes	No
8	GSM(Voice)+ BT	Yes	No
9	WCDMA(Voice) + BT	Yes	No
10	GSM(Data)+wifi	Yes	Yes
11	WCDMA(Data) +wifi	Yes	Yes
12	LTE(Data)+GSM(Voice/Data)	No	No
13	LTE(Data)+WCDMA(Voice/Data)	No	No
14	LTE(Data)+WIFI	Yes	Yes

10 TEST RESULTS

10.1 Summary of SAR Measurement Results

Table 7: SAR Values of GSM 850MHz Band

Temperature: 23.0~23.5°C, humidity: 62~64%.							
Test Positions			Channel /Frequency (MHz)	SAR(W/Kg), 1.6 (1g average)			Plot No.
				SAR (W/Kg),1g	Scaled Factor	Scaled SAR(W/Kg) ,1g	
Right Side of Head	Cheek		251/848.8	0.161	1.119	0.18	--
	Tilt 15 degrees		251/848.8	0.123	1.119	0.14	--
Left Side of Head	Cheek		251/848.8	**0.214**	1.119	**0.24**	**1**
	Tilt 15 degrees		251/848.8	0.208	1.119	0.23	--
Body-worn (10mm Separation)	GSM	Face Upward	251/848.8	0.290	1.119	0.32	--
		Back Upward	251/848.8	**0.515**	1.119	**0.58**	**2**
Hotspot (10mm Separation)	GPRS (3Tx)	Face Upward	190/836.6	0.338	1.191	0.40	--
		Back Upward	190/836.6	**0.385**	1.191	**0.46**	**3**
		Edge B	190/836.6	0.076	1.191	0.09	--
		Edge C	190/836.6	0.199	1.191	0.24	--
		Edge D	190/836.6	0.301	1.191	0.36	--

Table 8: SAR Values of GSM1900 MHz Band

Temperature: 23.0~23.5°C, humidity: 62~64%.							
Test Positions			Channel /Frequency (MHz)	SAR(W/Kg), 1.6 (1g average)			Plot No.
				SAR (W/Kg),1g	Scaled Factor	Scaled SAR(W/Kg) ,1g	
Right Side of Head	Cheek		512/1850.2	0.115	1.262	0.15	--
	Tilt 15 degrees		512/1850.2	0.083	1.262	0.10	--
Left Side of Head	Cheek		512/1850.2	**0.123**	1.262	**0.16**	**4**
	Tilt 15 degrees		512/1850.2	0.078	1.262	0.10	--
Body-worn (10mm Separation)	GSM	Face Upward	512/1850.2	0.127	1.262	0.16	--
		Back Upward	512/1850.2	**0.231**	1.262	**0.29**	**5**
Hotspot (10mm Separation)	GPRS (3Tx)	Face Upward	512/1850.2	0.109	1.211	0.13	--
		Back Upward	512/1850.2	**0.145**	1.211	**0.18**	**6**
		Edge B	512/1850.2	0.109	1.211	0.13	--
		Edge C	512/1850.2	0.133	1.211	0.16	--
		Edge D	512/1850.2	0.035	1.211	0.04	--

Table 9: SAR Values of WCDMA1900

Temperature: 23.0~23.5°C, humidity: 62~64%.						
Test Positions		Channel /Frequency (MHz)	SAR(W/Kg), 1.6 (1g average)			Plot No.
			SAR (W/Kg),1g	Scaled Factor	Scaled SAR(W/Kg),1g	
Right Side of Head	Cheek	9262/1852.4	**0.245**	1.153	**0.28**	**7**
	Tilt 15 degrees	9262/1852.4	0.125	1.153	0.14	--
Left Side of Head	Cheek	9262/1852.4	0.156	1.153	0.18	--
	Tilt 15 degrees	9262/1852.4	0.084	1.153	0.10	--
Body-worn (10mm Separation)	Face Upward	9262/1852.4	0.219	1.153	0.25	--
	Back Upward	9262/1852.4	**0.344**	1.153	**0.40**	**8**
Hotspot (10mm Separation)	Face Upward	9262/1852.4	0.219	1.153	0.25	--
	Back Upward	9262/1852.4	**0.344**	1.153	**0.40**	**8**
	Edge B	9262/1852.4	0.203	1.153	0.23	
	Edge C	9262/1852.4	0.264	1.153	0.30	--
	Edge D	9262/1852.4	0.062	1.153	0.07	--

Table10: SAR Values of WCDMA1700

Temperature: 23.0~23.5°C, humidity: 62~64%.						
Test Positions		Channel /Frequency (MHz)	SAR(W/Kg), 1.6 (1g average)			Plot No
			SAR (W/Kg),1g	Scaled Factor	Scaled SAR(W/Kg),1g	
Right Side of Head	Cheek	1312/1712.4	**0.205**	1.106	**0.23**	**9**
	Tilt 15 degrees	1312/1712.4	0.193	1.106	0.21	**--**
Left Side of Head	Cheek	1312/1712.4	0.204	1.106	0.23	**--**
	Tilt 15 degrees	1312/1712.4	0.093	1.106	0.10	**--**
Body-worn (10mm Separation)	Face Upward	1312/1712.4	0.307	1.106	0.34	**--**
	Back Upward	1312/1712.4	**0.324**	1.106	**0.36**	**10**
Hotspot (10mm Separation)	Face Upward	1312/1712.4	0.307	1.106	0.34	**--**
	Back Upward	1312/1712.4	0.324	1.106	0.36	**--**
	Edge B	1312/1712.4	0.230	1.106	0.25	**---**
	Edge C	1312/1712.4	**0.442**	1.106	**0.49**	**11**
	Edge D	1312/1712.4	0.054	1.106	0.06	**--**

Table 11: SAR Values of WCDMA850

Temperature: 23.0~23.5°C, humidity: 62~64%.						
Test Positions		Channel /Frequency (MHz)	SAR(W/Kg), 1.6 (1g average)			Plot No.
			SAR (W/Kg), 1g	Scaled Factor	Scaled SAR(W/Kg),1g	
Right Side of Head	Cheek	4183/836.6	**0.388**	1.026	**0.40**	**12**
	Tilt 15 degrees	4183/836.6	0.309	1.026	0.32	--
Left Side of Head	Cheek	4183/836.6	0.265	1.026	0.27	--
	Tilt 15 degrees	4183/836.6	0.261	1.026	0.27	--
Body-worn (10mm Separation)	Face Upward	4183/836.6	0.307	1.026	0.31	--
	Back Upward	4183/836.6	**0.443**	1.026	**0.45**	**13**
Hotspot (10mm Separation)	Face Upward	4183/836.6	0.307	1.026	0.31	--
	Back Upward	4183/836.6	**0.443**	1.026	**0.45**	**13**
	Edge B	4183/836.6	0.176	1.026	0.18	
	Edge C	4183/836.6	0.267	1.026	0.27	--
	Edge D	4183/836.6	0.339	1.026	0.35	--

Table 12: SAR Values of LTE Band 2, 20MHz, QPSK

Temperature: 23.0~23.5°C, humidity: 62~64%.						
Test Positions		Channel /Frequency (MHz)	SAR(W/Kg), 1.6 (1g average)			Plot No.
			SAR (W/Kg),1g	Scaled Factor	Scaled SAR(W/Kg),1g	
1RB #0						
Right Side of Head	Cheek	19100/1900	**0.224**	1.104	**0.25**	**14**
	Tilt 15 degrees	19100/1900	0.155	1.104	0.17	--
Left Side of Head	Cheek	19100/1900	0.155	1.104	0.17	--
	Tilt 15 degrees	19100/1900	0.074	1.104	0.08	--
Body (10mm Separation) Body-worn	Face Upward	19100/1900	0.249	1.104	0.27	--
	Back Upward	19100/1900	**0.306**	1.104	0.34	**15**
Body (10mm Separation) Hotspot	Face Upward	19100/1900	0.249	1.104	0.27	--
	Back Upward	19100/1900	0.306	1.104	0.34	--
	Edge B	19100/1900	0.244	1.104	0.27	**--**
	Edge C	19100/1900	**0.378**	1.104	**0.42**	**16**
	Edge D	19100/1900	0.084	1.104	0.09	--
50%RB #0						
Right Side of Head	Cheek	18900/1880	0.215	1.197	0.26	--
	Tilt 15 degrees	18900/1880	0.123	1.197	0.15	--
Left Side of Head	Cheek	18900/1880	0.118	1.197	0.14	--
	Tilt 15 degrees	18900/1880	0.036	1.197	0.04	--
Body (10mm Separation) Body-worn	Face Upward	18900/1880	0.232	1.197	0.28	--
	Back Upward	18900/1880	0.268	1.197	0.32	--
Body (10mm Separation) Hotspot	Face Upward	18900/1880	0.232	1.197	0.28	--
	Back Upward	18900/1880	0.268	1.197	0.32	--
	Edge B	18900/1880	0.233	1.197	0.28	
	Edge C	18900/1880	0.359	1.197	0.43	--
	Edge D	18900/1880	0.071	1.197	0.08	--

Table 12: SAR Values of LTE Band 4 , 20MHz, QPSK

Temperature: 23.0~23.5°C, humidity: 62~64%.						
Test Positions		Channel /Frequency (MHz)	SAR(W/Kg), 1.6 (1g average)			Plot No.
			SAR (W/Kg),1g	Scaled Factor	Scaled SAR(W/Kg), 1g	
1RB #0						
Right Side of Head	Cheek	20175/1732.5	**0.117**	1.019	**0.12**	**17**
	Tilt 15 degrees	20175/1732.5	0.076	1.019	0.08	--
Left Side of Head	Cheek	20175/1732.5	0.098	1.019	0.10	--
	Tilt 15 degrees	20175/1732.5	0.057	1.019	0.06	--
Body (10mm Separation) Body-worn	Face Upward	20175/1732.5	0.268	1.019	0.27	--
	Back Upward	20175/1732.5	**0.390**	1.019	**0.40**	**18**
Body (10mm Separation) Hotspot	Face Upward	20175/1732.5	0.268	1.019	0.27	--
	Back Upward	20175/1732.5	0.390	1.019	0.40	--
	Edge B	20175/1732.5	0.125	1.019	0.13	--
	Edge C	20175/1732.5	**0.490**	1.019	**0.50**	**19**
	Edge D	20175/1732.5	0.059	1.019	0.06	--
50%RB #0						
Right Side of Head	Cheek	20050/1720	0.105	1.091	0.11	--
	Tilt 15 degrees	20050/1720	0.066	1.091	0.07	--
Left Side of Head	Cheek	20050/1720	0.086	1.091	0.09	--
	Tilt 15 degrees	20050/1720	0.042	1.091	0.05	--
Body (10mm Separation) Body-worn	Face Upward	20050/1720	0.253	1.091	0.28	--
	Back Upward	20050/1720	0.356	1.091	0.39	--
Body (10mm Separation) Hotspot	Face Upward	20050/1720	0.253	1.091	0.28	--
	Back Upward	20050/1720	0.356	1.091	0.39	--
	Edge B	20050/1720	0.112	1.091	0.12	
	Edge C	20050/1720	0.463	1.091	0.51	--
	Edge D	20050/1720	0.034	1.091	0.04	--

Table 13: SAR Values of LTE Band 7,20MHz, QPSK

Temperature: 23.0~23.5°C, humidity: 62~64%.						
Test Positions		Channel /Frequency (MHz)	SAR(W/Kg), 1.6 (1g average)			Plot No.
			SAR (W/Kg),1g	Scaled Factor	Scaled SAR(W/Kg),1g	
1RB #0						
Right Side of Head	Cheek	21100/2535	**0.286**	1.303	**0.37**	**20**
	Tilt 15 degrees	21100/2535	0.158	1.303	0.21	--
Left Side of Head	Cheek	21100/2535	0.170	1.303	0.22	--
	Tilt 15 degrees	21100/2535	0.176	1.303	0.23	--
Body (10mm Separation) Body-worn	Face Upward	21100/2535	**0.342**	1.303	**0.45**	**21**
	Back Upward	21100/2535	0.243	1.303	0.32	--
Body (10mm Separation) Hotspot	Face Upward	21100/2535	0.342	1.303	0.45	--
	Back Upward	21100/2535	0.243	1.303	0.32	--
	Edge B	21100/2535	0.268	1.303	0.35	**--**
	Edge C	21100/2535	**0.445**	1.303	**0.58**	**22**
	Edge D	21100/2535	0.052	1.303	0.07	--
50%RB #0						
Right Side of Head	Cheek	21350/2560	0.281	1.183	0.33	--
	Tilt 15 degrees	21350/2560	0.143	1.183	0.17	--
Left Side of Head	Cheek	21350/2560	0.155	1.183	0.18	--
	Tilt 15 degrees	21350/2560	0.142	1.183	0.17	--
Body (10mm Separation) Body-worn	Face Upward	21350/2560	0.332	1.183	0.39	--
	Back Upward	21350/2560	0.215	1.183	0.25	--
Body (10mm Separation) Hotspot	Face Upward	21350/2560	0.332	1.183	0.39	--
	Back Upward	21350/2560	0.215	1.183	0.25	--
	Edge B	21350/2560	0.253	1.183	0.30	
	Edge C	21350/2560	0.421	1.183	0.50	--
	Edge D	21350/2560	0.031	1.183	0.04	--

Table 14: SAR Values of LTE Band 17,10MHz, QPSK

Temperature: 23.0~23.5°C, humidity: 62~64%.						
Test Positions		Channel /Frequency (MHz)	SAR(W/Kg), 1.6 (1g average)			Plot No.
			SAR (W/Kg),1g	Scaled Factor	Scaled SAR(W/Kg),1g	
1RB #0						
Right Side of Head	Cheek	23790/710	**0.036**	1.122	**0.04**	**23**
	Tilt 15 degrees	23790/710	0.026	1.122	0.03	--
Left Side of Head	Cheek	23790/710	0.028	1.122	0.03	--
	Tilt 15 degrees	23790/710	0.024	1.122	0.03	--
Body (10mm Separation) Body-worn	Face Upward	23790/710	0.047	1.122	0.05	**--**
	Back Upward	23790/710	**0.070**	1.122	**0.08**	**24**
Body (10mm Separation) Hotspot	Face Upward	23790/710	0.047	1.122	0.05	--
	Back Upward	23790/710	0.070	1.122	0.08	--
	Edge B	23790/710	**0.079**	1.122	**0.09**	**25**
	Edge C	23790/710	0.007	1.122	0.01	--
	Edge D	23790/710	0.036	1.122	0.04	--
50%RB #0						
Right Side of Head	Cheek	23790/710	0.032	1.186	0.04	--
	Tilt 15 degrees	23790/710	0.023	1.186	0.03	--
Left Side of Head	Cheek	23790/710	0.026	1.186	0.03	--
Body (10mm Separation) Body-worn	Face Upward	23790/710	0.042	1.186	0.05	--
	Back Upward	23790/710	0.066	1.186	0.08	--
Body (10mm Separation) Hotspot	Face Upward	23790/710	0.042	1.186	0.05	--
	Back Upward	23790/710	0.066	1.186	0.05	--
	Edge B	23790/710	0.071	1.186	0.08	
	Edge C	23790/710	0.005	1.186	0.01	--
	Edge D	23790/710	0.032	1.186	0.04	--

Table 15: SAR Values of Wi-Fi 802.11b

Test Positions		Channel /Frequency (MHz)	SAR(W/Kg), 1.6 (1g average)			Plot No.
			SAR(W/Kg) 1g	Scaled Factor	Scaled SAR(W/Kg) ,1g	
Right Side of Head	Cheek	6/2437	0.481	1.062	0.51	--
	Tilt 15 degrees	6/2437	**0.745**	1.062	**0.79**	**26**
Left Side of Head	Cheek	6/2437	0.087	1.062	0.09	--
	Tilt 15 degrees	6/2437	0.259	1.062	0.28	--
Body-worn (10mm Separation)	Face Upward	6/2437	0.164	1.062	0.17	--
	Back Upward	6/2437	**0.215**	1.062	**0.23**	**27**
Hotspot (10mm Separation)	Face Upward	6/2437	0.164	1.062	0.17	--
	Back Upward	6/2437	**0.215**	1.062	**0.23**	**27**
	Edge A	6/2437	0.112	1.062	0.12	--
	Edge D	6/2437	0.068	1.062	0.07	--

Note: When the 1-g SAR for the mid-band channel or the channel with the Highest output power satisfy the following conditions, testing of the other channels in the band is not required.(Per KDB 447498 D01 General RF Exposure Guidance v06)
• ≤ 0.8 W/kg, when the transmission band is ≤ 100 MHz
• ≤ 0.6 W/kg, when the transmission band is between 100 MHz and 200 MHz
• ≤ 0.4 W/kg, when the transmission band is ≥ 200 MHz

10.2 Simultaneous Transmissions Analysis

Localized Specific Absorption Rate (SAR) of this portable wireless device has been measured in all cases requested by the relevant standards cited in Clause 6 of this report. Maximum localized SAR is **below** exposure limits specified in the relevant standards.

Test Position		Right Cheek	Right Title	Left Cheek	Left Tilt
Head MAX 1-g SAR(W/Kg)	GSM850	0.18	0.14	0.24	0.23
	GSM1900	0.15	0.10	0.16	0.10
	WCDMA850	**0.40**	**0.32**	**0.27**	**0.27**
	WCDMA1700	0.23	0.21	0.23	0.10
	WCDMA1900	0.28	0.14	0.18	0.10
	LTE Band2	0.25	0.17	0.17	0.08
	LTE Band4	0.12	0.08	0.10	0.06
	LTE Band7	0.37	0.21	0.22	0.23
	LTE Band17	0.04	0.03	0.03	0.03
	WIFI 802.11b	0.51	0.79	0.09	0.28
	BT	0.04	0.04	0.04	0.04
BT Simultaneous ∑1-g SAR(W/Kg)		0.44	0.36	0.31	0.31
WiFi Simultaneous ∑1-g SAR(W/Kg)		0.91	1.11	0.36	0.55

Simultaneous Tx Combination of GSM/WCDMA/LTE and BT/WIFI (Head).

Test Position		Face	Back	Edge A	Edge B	Edge C	Edge D
Body-worn 10mm separation MAX 1-g SAR(W/Kg)	GSMS850	0.32	**0.58**	--	--	--	--
	GSM1900	0.16	0.29	--	--	--	--
	WCDMA850	**0.45**	0.31	--	--	--	--
	WCDMA1700	0.34	0.36				
	WCDMA1900	0.25	0.40	--	--	--	--
	LTE Band2	0.27	0.34	--	--	--	--
	LTE Band4	0.27	0.40	--	--	--	--
	LTE Band7	0.45	0.32	--	--	--	--
	LTE Band17	0.05	0.08	--	--	--	--
	WIFI 802.11b	0.17	0.23	--	--	--	--
	BT	0.02	0.02	--	--	--	--
BT Simultaneous ∑1-g SAR(W/Kg)		0.47	0.60	--	--	--	--
WiFi Simultaneous ∑1-g SAR(W/Kg)		0.62	0.81	--	--	--	--

Simultaneous Tx Combination of GSM/WCDMA/LTE and BT/WIFI (Body).

Test Position		Face	Back	Edge A	Edge B	Edge C	Edge D
Hotspot 10mm separation MAX 1-g SAR(W/Kg)	GPRS850	0.40	**0.46**	--	0.09	0.24	**0.36**
	GPRS1900	0.13	0.18	--	0.13	0.16	0.04
	WCDMA 850	**0.45**	0.31	--	0.18	0.27	0.35
	WCDMA1700	0.34	0.36		0.25	0.49	0.06
	WCDMA 1900	0.25	0.40	--	0.23	0.30	0.07
	LTE Band2	0.27	0.34	--	0.27	0.42	0.09
	LTE Band4	0.27	0.40	--	0.13	0.50	0.06
	LTE Band7	0.45	0.32	--	**0.35**	**0.58**	0.07
	LTE Band17	0.05	0.08	--	0.09	0.01	0.04
	WIFI 802.11b	0.17	0.23	0.12	--	--	0.07
	BT	0.02	0.02	0.02	0.02	0.02	0.02
BT Simultaneous ∑1-g SAR(W/Kg)		0.47	0.48	0.02	0.37	0.60	0.38
WiFi Simultaneous ∑1-g SAR(W/Kg)		0.62	0.69	0.12	0.35	0.58	0.43

Simultaneous Tx Combination of GSM/WCDMA/LTE and WIFI (Body).

The estimated SAR value with * Signal

SAR to Peak Location Separation Ratio (SPLSR)

As the Sum of the SAR is not greater than 1.6 W/kg SPLSR assessment is not required

11 Measurement Uncertainty

No.	Uncertainty Component	Type	Uncertainty Value (%)	Probability Distribution	k	ci	Standard Uncertainty (%) ui(%)	Degree of freedom Veff or vi
	Measurement System							
1	– Probe Calibration	B	5.8	N	1	1	5.8	∞
2	– Axial isotropy	B	3.5	R	$\sqrt{3}$	0.5	1.43	∞
3	– Hemispherical Isotropy	B	5.9	R	$\sqrt{3}$	0.5	2.41	∞
4	– Boundary Effect	B	1	R	$\sqrt{3}$	1	0.58	∞
5	– Linearity	B	4.7	R	$\sqrt{3}$	1	2.71	∞
6	– System Detection Limits	B	1.0	R	$\sqrt{3}$	1	0.58	∞
7	Modulation response	B	3	N	1	1	3.00	
8	– Readout Electronics	B	0.5	N	1	1	0.50	∞
9	– Response Time	B	1.4	R	$\sqrt{3}$	1	0.81	∞
10	– Integration Time	B	3.0	R	$\sqrt{3}$	1	1.73	∞
11	– RF Ambient Conditions	B	3.0	R	$\sqrt{3}$	1	1.73	∞
12	– Probe Position Mechanical tolerance	B	1.4	R	$\sqrt{3}$	1	0.81	∞
13	– Probe Position with respect to Phantom Shell	B	1.4	R	$\sqrt{3}$	1	0.81	∞
14	– Extrapolation, Interpolation and Integration Algorithms for Max. SAR evaluation	B	2.3	R	$\sqrt{3}$	1	1.33	∞
	Uncertainties of the DUT							
15	– Position of the DUT	A	2.6	N	$\sqrt{3}$	1	2.6	5
16	– Holder of the DUT	A	3	N	$\sqrt{3}$	1	3.0	5

17	– Output Power Variation –SAR drift measurement	B	5.0	R	$\sqrt{3}$	1	2.89	∞
Phantom and Tissue Parameters								
18	– Phantom Uncertainty(shape and thickness tolerances)	B	4	R	$\sqrt{3}$	1	2.31	∞
19	Uncertainty in SAR correction for deviation(in permittivity and conductivity)	B	2	N	1	1	2.00	
20	– Liquid Conductivity Target –tolerance	B	2.5	R	$\sqrt{3}$	0.6	1.95	∞
21	– Liquid Conductivity –measurement Uncertainty)	B	4	N	$\sqrt{3}$	1	0.92	9
22	– Liquid Permittivity Target tolerance	B	2.5	R	$\sqrt{3}$	0.6	1.95	∞
23	– Liquid Permittivity –measurement uncertainty	B	5	N	$\sqrt{3}$	1	1.15	∞
Combined Standard Uncertainty				RSS			10.63	
Expanded uncertainty (Confidence interval of 95 %)				K=2			21.26	

System Check Uncertainty

No.	Uncertainty Component	Type	Uncertainty Value (%)	Probability Distribution	k	ci	Standard Uncertainty (%) ui(%)	Degree of freedom Veff or vi
	Measurement System							
1	– Probe Calibration	B	5.8	N	1	1	5.8	∞
2	– Axial isotropy	B	3.5	R	$\sqrt{3}$	0.5	1.43	∞
3	– Hemispherical Isotropy	B	5.9	R	$\sqrt{3}$	0.5	2.41	∞
4	– Boundary Effect	B	1	R	$\sqrt{3}$	1	0.58	∞
5	– Linearity	B	4.7	R	$\sqrt{3}$	1	2.71	∞
6	– System Detection Limits	B	1	R	$\sqrt{3}$	1	0.58	∞
7	Modulation response	B	0	N	1	1	0.00	

8	– Readout Electronics	B	0.5	N	1	1	0.50	∞
9	– Response Time	B	0.00	R	$\sqrt{3}$	1	0.00	∞
10	– Integration Time	B	1.4	R	$\sqrt{3}$	1	0.81	∞
11	– RF Ambient Conditions	B	3.0	R	$\sqrt{3}$	1	1.73	∞
12	– Probe Position Mechanical tolerance	B	1.4	R	$\sqrt{3}$	1	0.81	∞
13	– Probe Position with respect to Phantom Shell	B	1.4	R	$\sqrt{3}$	1	0.81	∞
14	– Extrapolation, Interpolation and Integration Algorithms for Max. SAR evaluation	B	2.3	R	$\sqrt{3}$	1	1.33	∞
	Uncertainties of the DUT							
15	Deviation of experimental source from numberical source	A	4	N	1	1	4.00	5
16	Input Power and SAR drift measurement	A	5	R	$\sqrt{3}$	1	2.89	5
17	Dipole Axis to Liquid Distance	B	2	R	$\sqrt{3}$	1	1.2	∞
Phantom and Tissue Parameters								
18	– Phantom Uncertainty(shape and thickness tolerances)	B	4	R	$\sqrt{3}$	1	2.31	∞
19	Uncertainty in SAR correction for deviation(in permittivity and conductivity)	B	2	N	1	1	2.00	
20	– Liquid Conductivity Target –tolerance	B	2.5	R	$\sqrt{3}$	0.6	1.95	∞
21	– Liquid Conductivity –measurement Uncertainty)	B	4	N	$\sqrt{3}$	1	0.92	9
22	– Liquid Permittivity Target tolerance	B	2.5	R	$\sqrt{3}$	0.6	1.95	∞
23	– Liquid Permittivity –measurement uncertainty	B	5	N	$\sqrt{3}$	1	1.15	∞
Combined Standard Uncertainty				RSS			10.15	
Expanded uncertainty (Confidence interval of 95 %)				K=2			20.29	

12 MAIN TEST INSTRUMENTS

EQUIPMENT	TYPE	Series No.	Calibration Date	calibration period
System Simulator	E5515C	GB 47200710	2015/06/10	1 Year
System Simulator	CMW500	130805	2015/08/10	1 Year
SAR Probe	SATIMO	SN_0413_EP166	2015/08/10	1 Year
SAR Probe	SATIMO	SN09/13 EP169	2015/05/04	1 Year
Dipole	SID750	SN23/15 DIP0G750-378	2015/06/01	1 Year
Dipole	SID835	SN09/13 DIP0G835-217	2014/08/28	2 Year
Dipole	SID1800	SN09/13 DIP1G800-216	2014/08/28	2 Year
Dipole	SID1900	SN09/13 DIP1G900-218	2014/08/28	2 Year
Dipole	SID2450	SN09/13 DIP2G450-220	2014/08/28	2 Year
Dipole	SID2600	SN32/14 DIP2G600-338	2014/08/12	2 Year
Vector Network Analyzer	ZVB8	A0802530	2015/06/08	1 Year
Signal Generator	SMR27	A0304219	2015/06/08	1 Year
Power Meter	NRP2	A140401673	2015/03/27	1 Year
Power Sensor	NPR-Z11	1138.3004.02-114072-nq	2015/03/27	1 Year
Amplifier	Nucletudes	143060	2015/03/27	1 Year
Directional Coupler	DC6180A	305827	2015/03/27	1 Year
Power Meter	NRVS	A0802531	2015/03/27	1 Year
Power Sensor	NRV-Z4	100069	2015/03/27	1 Year
Multimeter	Keithley-2000	4014020	2015/03/27	1 Year

ANNEX A

of

CCIC-SET

CONFORMANCE TEST REPORT FOR

HUMAN EXPOSURE TO ELECTROMAGNETIC FIELDS

SET2015-19706

Mobile phone

Type Name: HM-G700-FL

Hardware Version: H01

Software Version: V01

TEST SETUP

This Annex consists of 7 pages

Date of Report: 2016-01-04

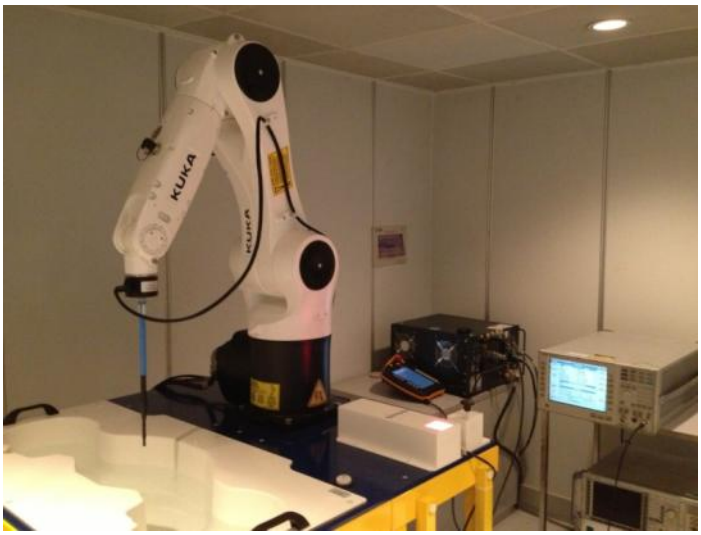


Fig.1 COMO SAR Test System

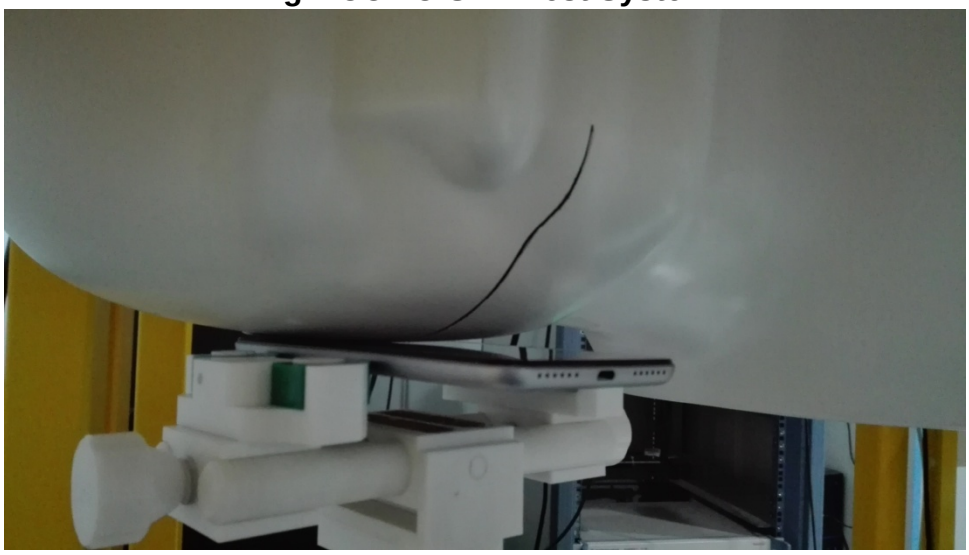


Fig.2 Right_Cheek

Fig.3 Right_Tilt

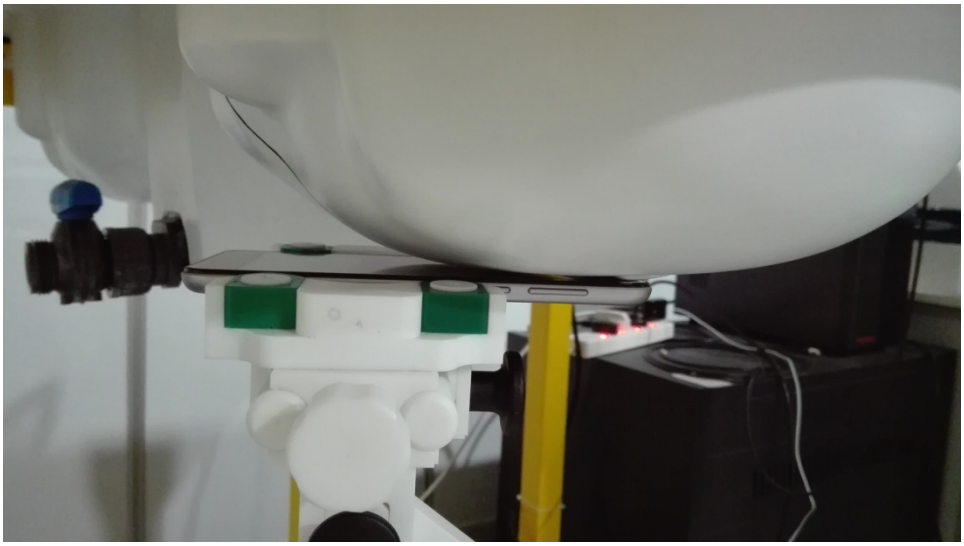


Fig.4 Left Cheek

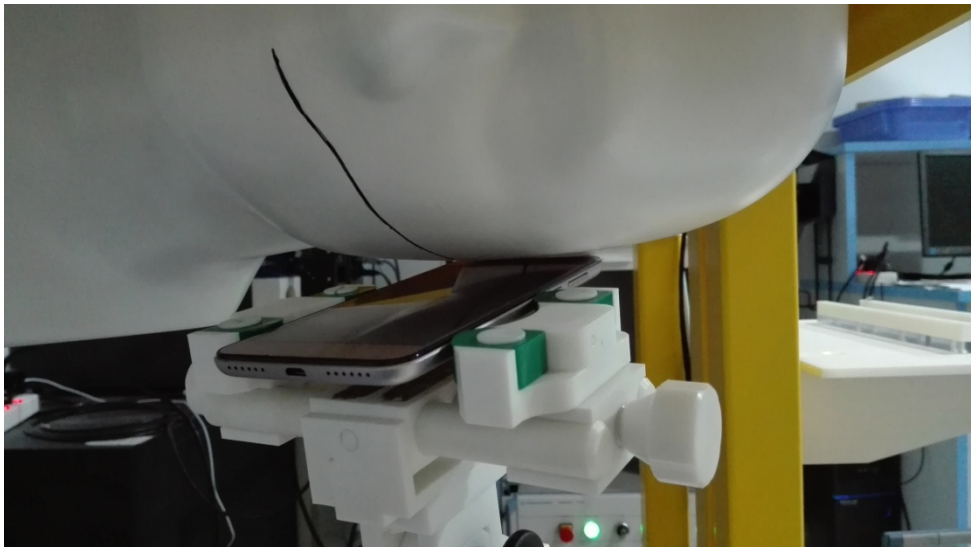


Fig.5 Left_Tilt

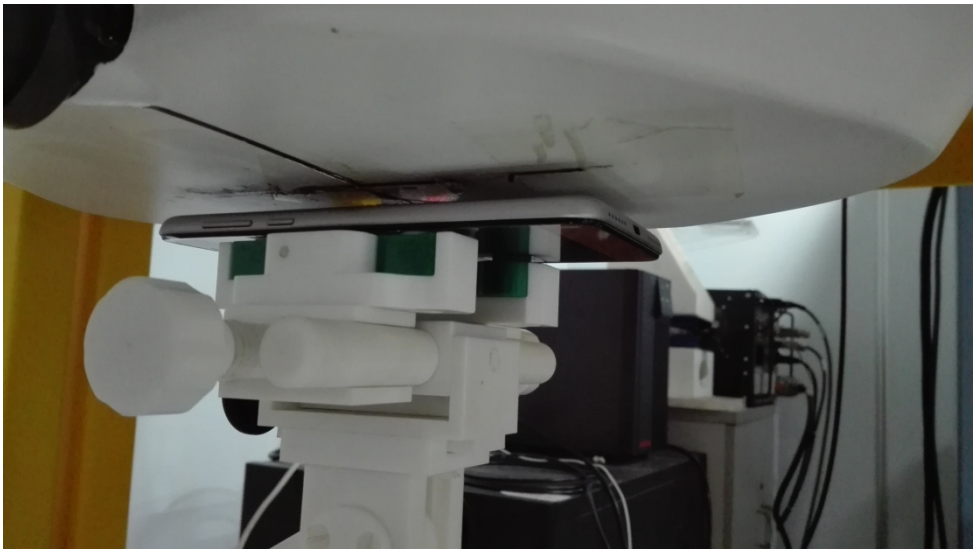


Fig.6 Body (Back upside,10mm separation)

Fig.7 Body (Face upside,10mm separation)

Fig.8 Body Edge A(UP,10mm separation)

Fig.9 Body Edge B(UP,10mm separation)

Fig.10 Body Edge C(UP,10mm separation)

Fig.11 Body Edge D(Right upside,10mm separation)

Fig.12 Head Liquid of 850MHz(15cm)

Fig.13 Body Liquid of 850MHz (15cm)

Fig.14 Head Liquid of 1800-1900MHz(15cm)

Fig.15 Body Liquid of 1800-1900MHz(15cm)

Fig.16 Head Liquid of 2450-2600MHz(15cm)

Fig.17 Body Liquid of 2450-2600MHz(15cm)

Fig.18 Head Liquid of 750MHz(15cm)

Fig.19 Body Liquid of 750MHz (15cm)

ANNEX B

of

CCIC-SET

CONFORMANCE TEST REPORT FOR

HUMAN EXPOSURE TO ELECTROMAGNETIC FIELDS

SET2015-19706

Mobile phone

Type Name: HM-G700-FL

Hardware Version: H01

Software Version: V01

Sample Photographs

This Annex consists of 2 pages

Date of Report: 2016-01-04

1. Appearance

Appearance and size (obverse)

Appearance and size (reverse)