SAR TEST REPORT

No. I17N00776-SAR

For

Huawei Technologies Co., Ltd.

Smart Phone

Model Name: SLA-L03

With

Hardware Version: HL1SLAM

Software Version: SLA-L03C900B044

FCC ID: QISSLA-L03

Issued Date: 2017-07-24

Note:

The test results in this test report relate only to the devices specified in this report. This report shall not be reproduced except in full without the written approval of CTTL.

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REPORT HISTORY

Report Number	Revision	Issue Date	Description
I17N00776-SAR	Rev.0	2017-07-16	Initial creation of test report
I17N00776-SAR	Rev.1	2017-07-24	add multi-batteries evaluation and headset test result

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1 Test Laboratory

1.1 Testing Location

Company Name:	CTTL(Shenzhen)
Address:	TCL International E City No.1001 Zhongshanyuan Road, Nanshan District, Shenzhen, Guangdong Province P.R.China

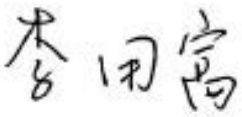
1.2 Testing Environment

Temperature:	18°C~25 °C
Relative humidity:	30%~ 70%
Ground system resistance:	< 4Ω
Ambient noise & Reflection:	< 0.012 W/kg

1.3 Project Data

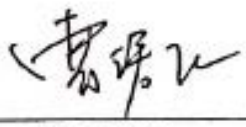
Project Leader:	Zhang Yunzhuan
Test Engineer:	Li Yongfu
Testing Start Date:	June 27, 2017
Testing End Date:	July 8, 2017

1.4 Signature



Li Yongfu
(Prepared this test report)

Zhang Yunzhuan
(Reviewed this test report)



Cao Junfei
Deputy Director of the laboratory
(Approved this test report)

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2 Statement of Compliance

The maximum results of Specific Absorption Rate (SAR) found during testing for Huawei Technologies Co., Ltd. Smart Phone SLA-L03 are as follows:

Table 2.1: Highest Reported SAR (1g)

	Technology Band	Highest Reported SAR 1g(W/Kg)	Equipment Class
Head (Separation Distance 0mm)	GSM850	**0.41**	PCE
	PCS1900	**0.18**	
	UMTS FDD 5	**0.26**	
	UMTS FDD 2	**0.55**	
	UMTS FDD 4	**0.25**	
	LTE Band 2	**0.32**	
	LTE Band 4	**0.15**	
	LTE Band 5	**0.19**	
	LTE Band 7	**0.55**	
	WLAN 2.4GHz	**0.86**	DTS
Hotspot (Data) (Separation Distance 10mm)	GSM850	**0.69**	PCE
	PCS1900	**0.42**	
	UMTS FDD 5	**0.29**	
	UMTS FDD 2	**0.61**	
	UMTS FDD 4	**1.32**	
	LTE Band 2	**0.41**	
	LTE Band 4	**0.79**	
	LTE Band 5	**0.11**	
	LTE Band 7	**0.82**	
	WLAN 2.4GHz	**0.20**	DTS
Body Worn (Data) (Separation Distance 10mm)	GSM850	**0.69**	PCE
	PCS1900	**0.42**	
	UMTS FDD 5	**0.29**	
	UMTS FDD 2	**0.61**	
	UMTS FDD 4	**1.32**	
	LTE Band 2	**0.41**	
	LTE Band 4	**0.46**	
	LTE Band 5	**0.11**	
	LTE Band 7	**0.82**	
	WLAN 2.4GHz	**0.20**	DTS

The SAR values found for the Mobile Phone are below the maximum recommended levels of 1.6 W/Kg as averaged over any 1g tissue according to the ANSI C95.1-1999.

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 which provides a minimum separation distance of 10 mm between this device and the body of the user. Use of other accessories may not ensure

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compliance with FCC RF exposure guidelines.
The EUT battery must be fully charged and checked periodically during the test to ascertain uniform power output.
The measurement together with the test system set-up is described in annex C of this test report. A detailed description of the equipment under test can be found in chapter 4 of this test report.
The highest reported SAR value is obtained at the case of **(Table 2.1),** and the values are**: 1.32W/kg(1g).**

Table 2.2: The sum of reported SAR values for main antenna and Wi-Fi

	Position	Main antenna	Wi-Fi	Sum
Highest reported SAR value for Head	Right Touch	0.41	0.86	**1.27**
Highest reported SAR value for Body	Rear	1.32	0.20	**1.52**

Table2.3: The sum of reported SAR values for main antenna and BT

	Position	Main antenna	BT*	Sum
Highest reported SAR value for Head	Left Touch	0.55	0.33	**0.88**
Highest reported SAR value for Body	Rear	1.32	0.17	**1.49**

BT*-Estimated SAR for Bluetooth (seethetable13.3)

According to the above tables, the highest sum of reported SAR values is **1.52 W/kg (1g)**. The detail for simultaneous transmission consideration is described in chapter 13.

3 Client Information

3.1 Applicant Information

Company Name:	Huawei Technologies Co., Ltd.
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Telephone:	0086-0755-28970299
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3.2 Manufacturer Information

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Address /Post:	Huawei Base, Bantian, Longgang District, Shenzhen 518129, P.R.

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	China
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Fax:	0086-0755-89650226

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4 Equipment Under Test (EUT) and Ancillary Equipment (AE)

4.1 About EUT

Description:	Smart Phone
Model name:	SLA-L03
Operating mode(s):	GSM 850/900, WCDMA 850/1700/1900, LTE_FDD Band 2/4/5/7, BT, Wi-Fi 2.4G
Tested Tx Frequency:	824.2–848.8 MHz (GSM 850)
	1850.2–1910 MHz (GSM 1900)
	826.4–846.6 MHz (WCDMA850 Band V)
	1852.4–1907.6 MHz (WCDMA1900 Band II)
	1712.4-1752.6 MHz (WCDMA1700 Band IV)
	2502.5–2567.5 MHz (LTE_FDD Band 7)
	829–844 MHz (LTE_FDD Band 5)
	1720–1745 MHz (LTE_FDD Band 4)
	1860–1900 MHz (LTE_FDD Band 2)
	2412 – 2462 MHz (Wi-Fi 2.4G)
GPRS&EGPRS Multislot Class:	12
GPRS capability Class:	B
WCDMA Category:	USAT: 5
	HSDPA: 14
	HSUPA: 7
Release Version:	GSM: Rel5
	GPRS: Rel5
	UMTS: Rel8
	LTE: Rel9
Test device Production information:	Production unit
Device type:	Portable device
Antenna type:	Integrated antenna
Accessories/Body-worn configurations:	/
Hotspot mode:	Support

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4.2 Internal Identification of EUT used during the test

EUT ID*	SN or IMEI	HW Version	SW Version
EUT1	IMEI: 86554803008116	HL1SLAM	SLA-L03C900B044
EUT2	IMEI: 86554803007761	HL1SLAM	SLA-L03C900B044

*EUT ID: is used to identify the test sample in the lab internally.

Note: It is performed to test SAR with the EUT 1, and conducted power with the EUT 2.

4.3 Internal Identification of AE used during the test

AE ID*	Description	Model	SN	Manufacturer
AE1	Battery	HB405979ECW	/	Sunwoda Electronic Co., Ltd. Huizhou Desay Battery Co., Ltd.
AE2	Headset	MEMD1632B580C00	/	Jiangxi Lianchuang Hongsheng Electronic Co., LTD.
AE3	Headset	EMC309-001	/	MERRY ELECTRONICS CO., LTD.
AE4	Headset	1311-3291-3.5mm-229	/	BOLUO COUNTY QUANCHENG ELECTRONIC CO.,LTD.
AE5	Headset	NA12	/	GoerTek Inc
AE6	Headset	1293#+3283# 3.5MM-150	/	BOLUO COUNTY QUANCHENG ELECTRONIC CO.,LTD.
AE7	Headset	HA1-3	/	GoerTek Inc.
AE8	Headset	MEMD1532B528000	/	Jiangxi Lianchuang Hongsheng Electronic Co., LTD.

*AE ID: is used to identify the test sample in the lab internally.

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5 TEST METHODOLOGY

5.1 Applicable Limit Regulations

ANSI C95.1–1999:IEEE Standard for Safety Levels with Respect to Human Exposure to Radio Frequency Electromagnetic Fields, 3 kHz to 300 GHz.
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.

5.2 Applicable Measurement Standards

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

KDB447498 D01 General RF Exposure Guidance v06: Mobile and Portable Devices RF Exposure Procedures and Equipment Authorization Policies.

KDB648474 D04 Handset SAR v01r03: SAR Evaluation Considerations for Wireless Handsets.

KDB941225 D01 SAR test for 3G devices v03r01: SAR Measurement Procedures for 3G Devices

KDB941225 D05 SAR for LTE Devices v02r05: SAR Evaluation Considerations for LTE Devices

KDB 941225 D06 Hot Spot SAR v02r01: SAR Evaluation Procedures for Portable Devices with Wireless Router Capabilities

KDB 248227 D01 802.11 Wi-Fi SAR v02r02: SAR Guidance for IEEE 802.11 (Wi-Fi) Transmitters.

KDB 865664 D01 SAR measurement 100 MHz to 6 GHz v01r04: SAR Measurement Requirements for 100 MHz to 6 GHz.

KDB 865664 D02 RF Exposure Reporting v01r02: RF Exposure Compliance Reporting and Documentation Considerations

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6 Specific Absorption Rate (SAR)

6.1 Introduction

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

6.2 SAR Definition

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

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

SAR is expressed in units of Watts per kilogram (W/kg)
SAR measurement can be either related to the temperature elevation in tissue by

$$SAR = c\left(\frac{\delta T}{\delta t}\right)$$

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

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

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

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

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7 Tissue Simulating Liquids

7.1 Targets for tissue simulating liquid

Table 7.1: Targets for tissue simulating liquid

Frequency (MHz)	Liquid Type	Conductivity (σ)	± 5% Range	Permittivity (ε)	± 5% Range
835	Head	0.90	0.86～0.95	41.5	39.4～43.6
835	Body	0.97	0.92～1.02	55.2	52.4～58.0
1800	Head	1.40	1.33～1.47	40.0	38.0～42.0
1800	Body	1.52	1.44～1.60	53.3	50.6～56.0
1900	Head	1.40	1.33～1.47	40.0	38.0～42.0
1900	Body	1.52	1.44～1.60	53.3	50.6～56.0
2450	Head	1.80	1.71～1.89	39.2	37.2～41.2
2450	Body	1.95	1.85～2.05	52.7	50.1～55.3
2550	Head	1.91	1.81～2.01	39.07	37.1～41.0
2550	Body	2.09	1.99～2.19	52.6	50.0～55.2

7.2 Dielectric Performance

Table 7.2: Dielectric Performance of Tissue Simulating Liquid

Measurement Date (yyyy-mm-dd)	Type	Frequency	Permittivity ε	Drift (%)	Conductivity σ (S/m)	Drift (%)
2017-6-27	Head	835	40.83	-1.61	0.926	2.89
2017-6-27	Body	835	53.69	-2.74	0.997	2.78
2017-6-30	Head	1800	39.47	-1.33	1.378	-1.57
2017-6-30	Body	1800	53.21	-0.17	1.497	-1.51
2017-7-2	Head	1900	39.23	-1.93	1.416	1.14
2017-7-2	Body	1900	52.87	-0.81	1.544	1.58
2017-7-4	Head	2450	38.56	-1.63	1.826	1.44
2017-7-4	Body	2450	53.42	1.37	1.979	1.49
2017-7-8	Head	2550	38.45	-1.59	1.937	1.41
2017-7-8	Body	2550	53.34	1.41	2.117	1.29

Note: The liquid temperature is 22.0°C

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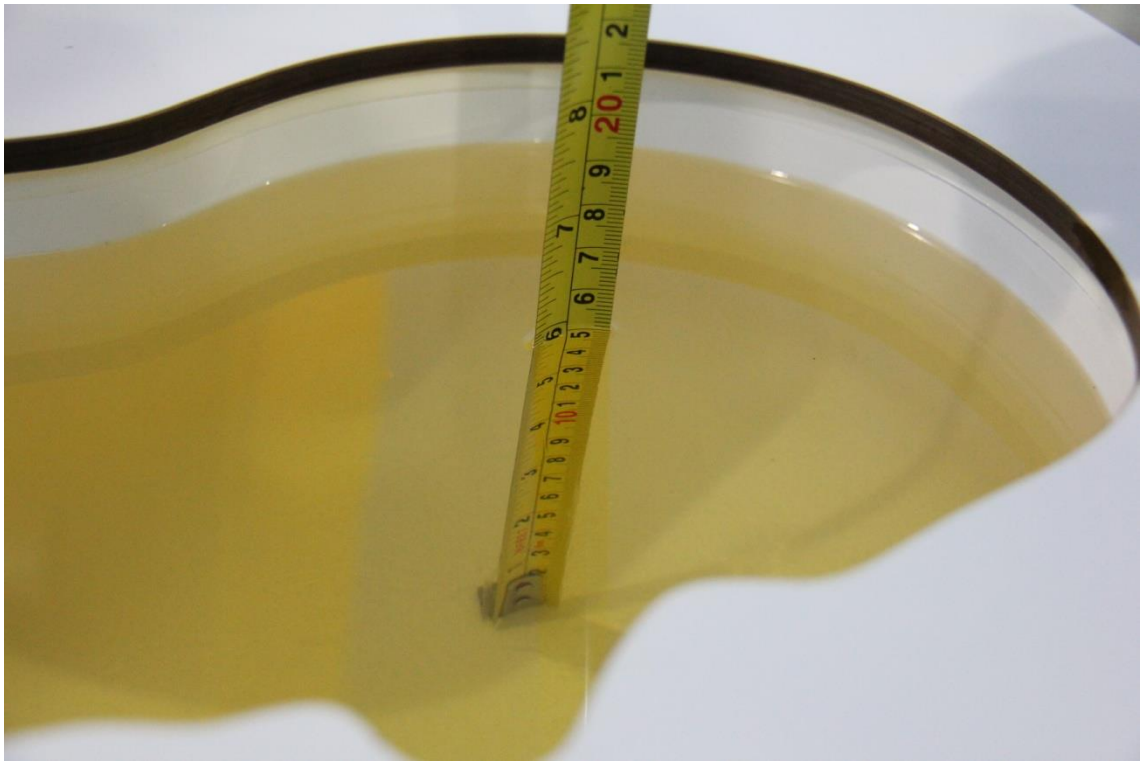

Picture 7-1: Liquid depth in the Head Phantom (835 MHz)

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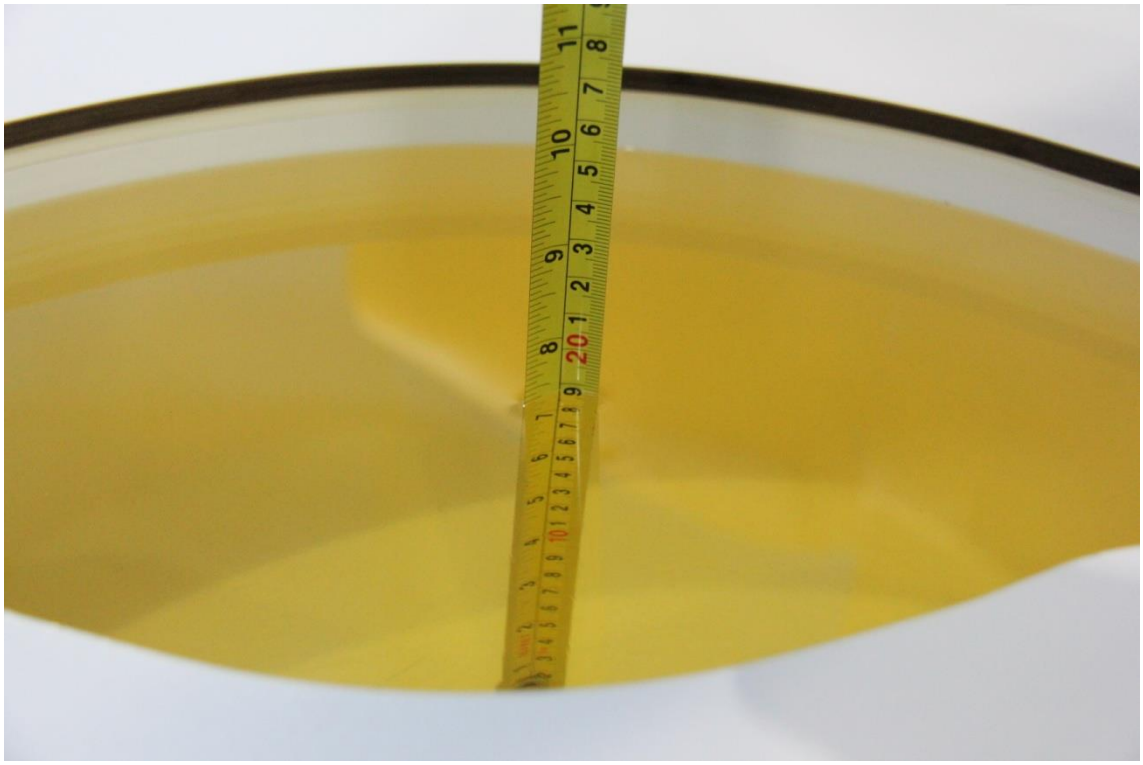

Picture 7-2: Liquid depth in the Flat Phantom (835 MHz)

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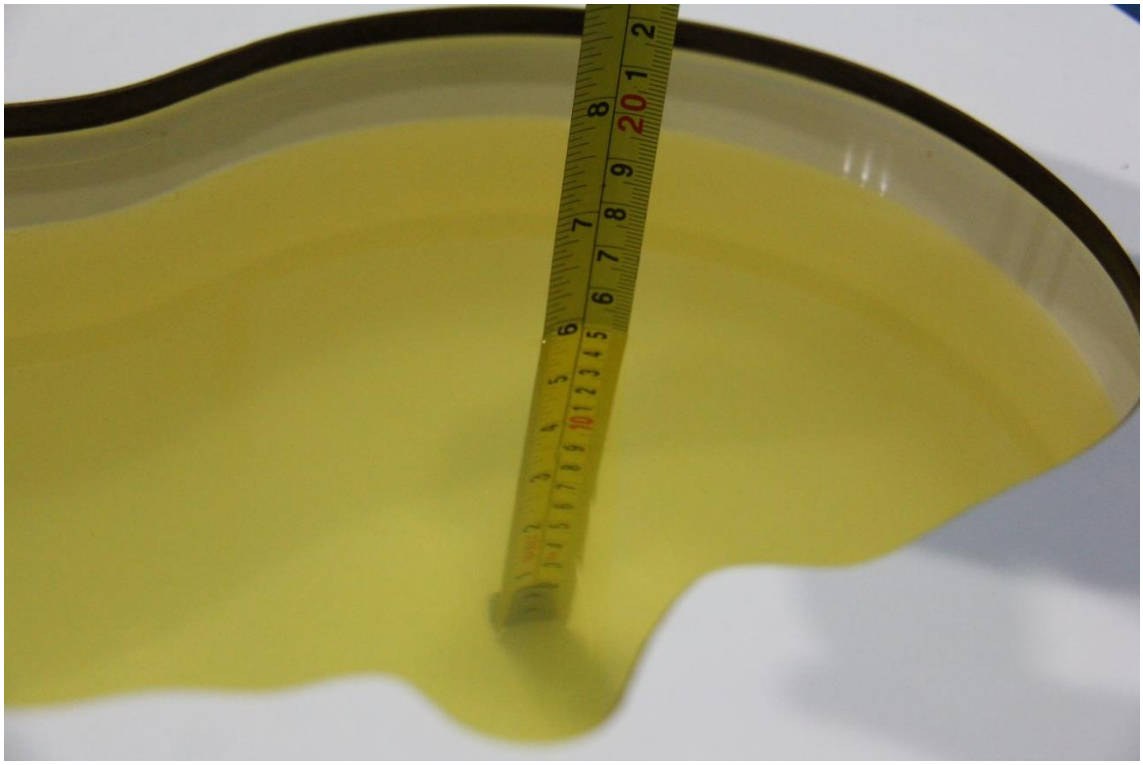
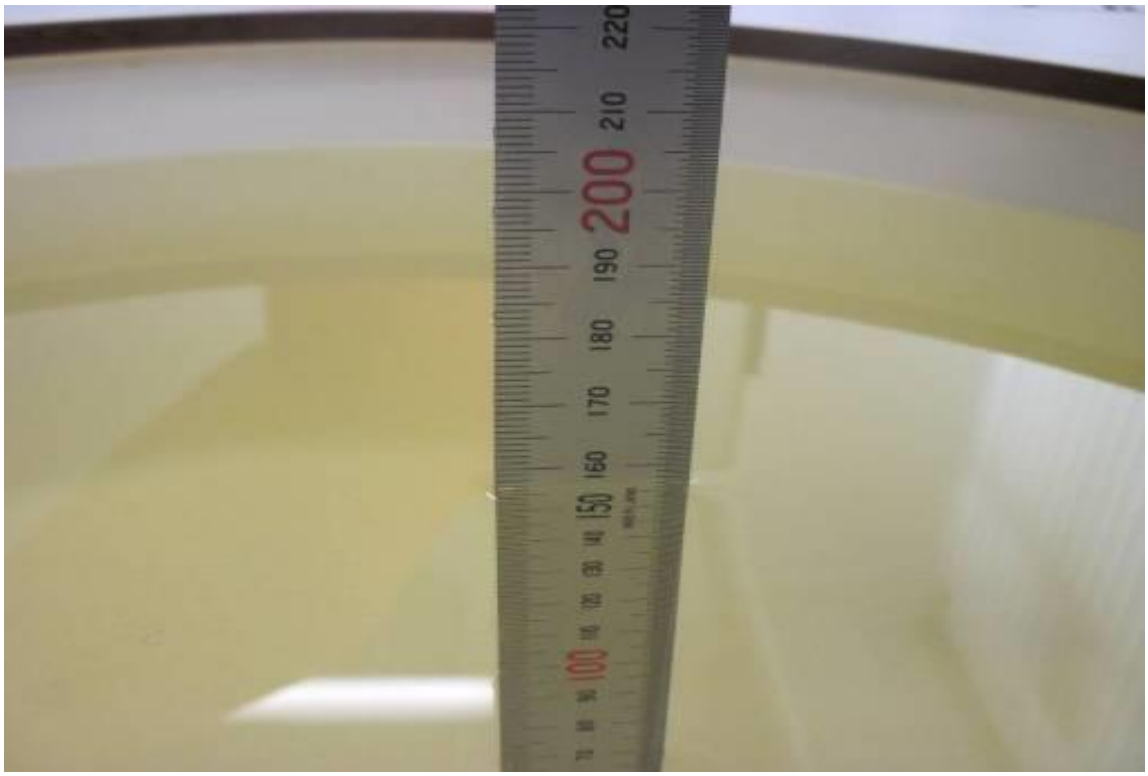


Picture 7-3: Liquid depth in the Head Phantom (1800 MHz)



Picture 7-4: Liquid depth in the Flat Phantom (1800MHz)

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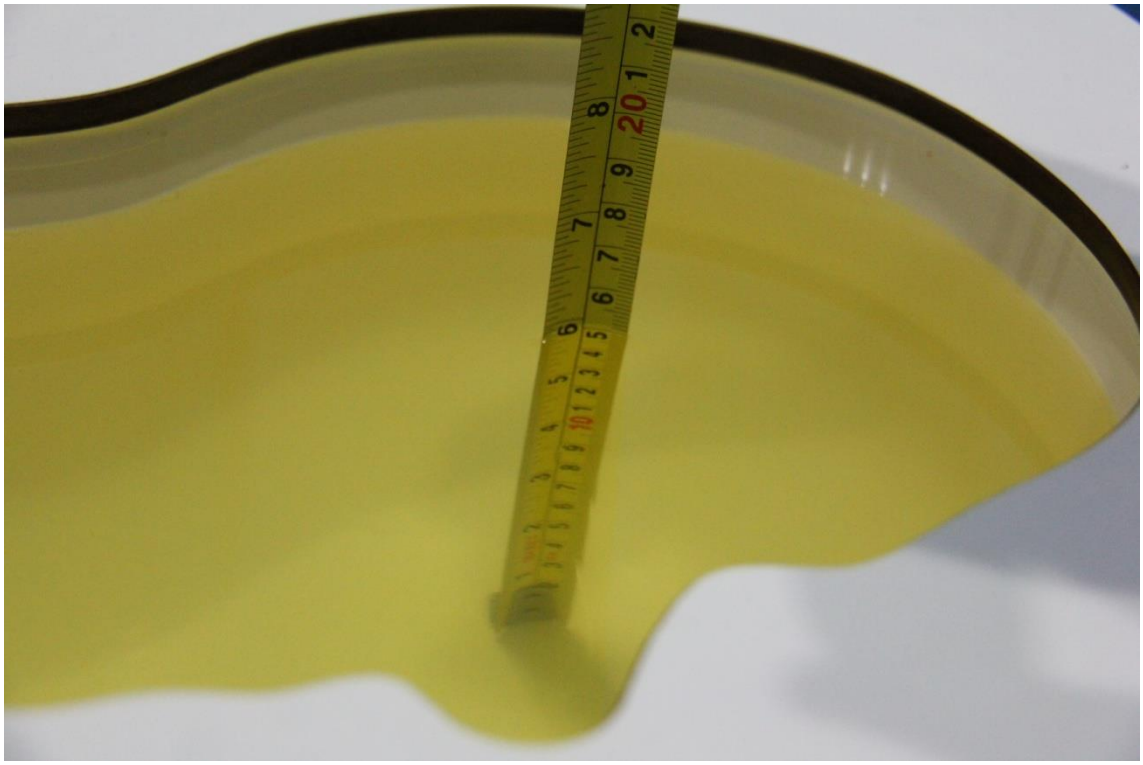
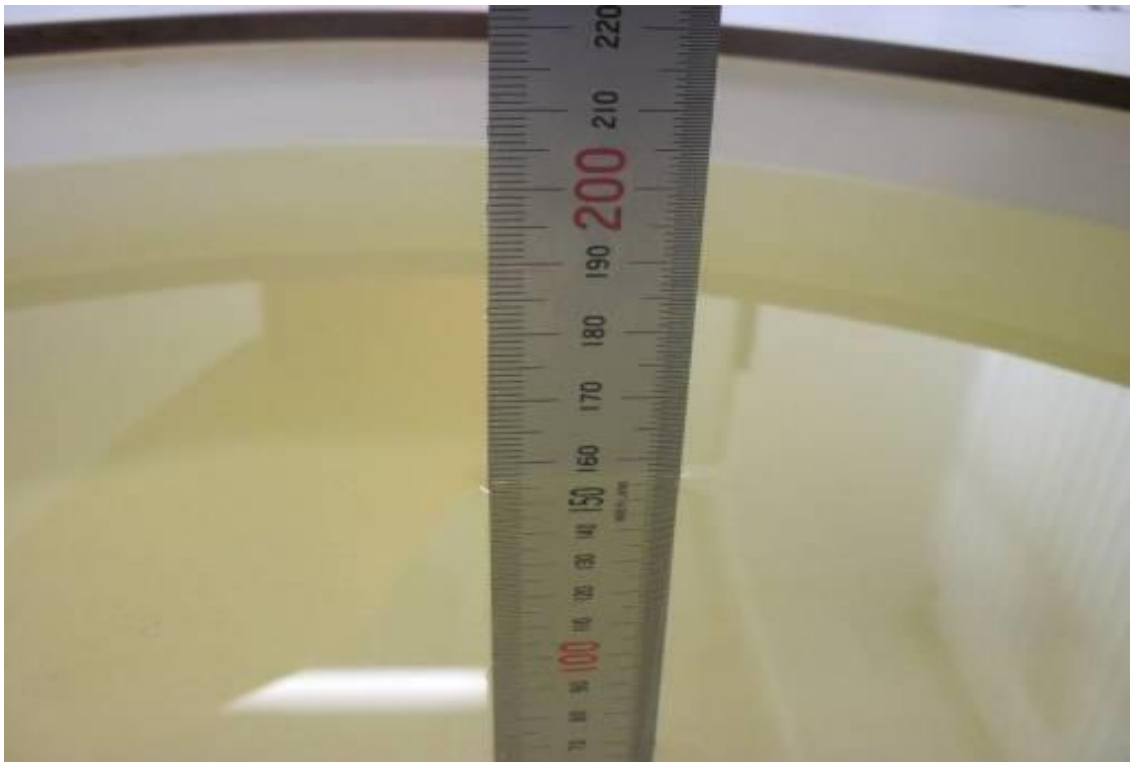


Picture 7-5: Liquid depth in the Head Phantom (1900 MHz)



Picture 7-6: Liquid depth in the Flat Phantom (1900MHz)

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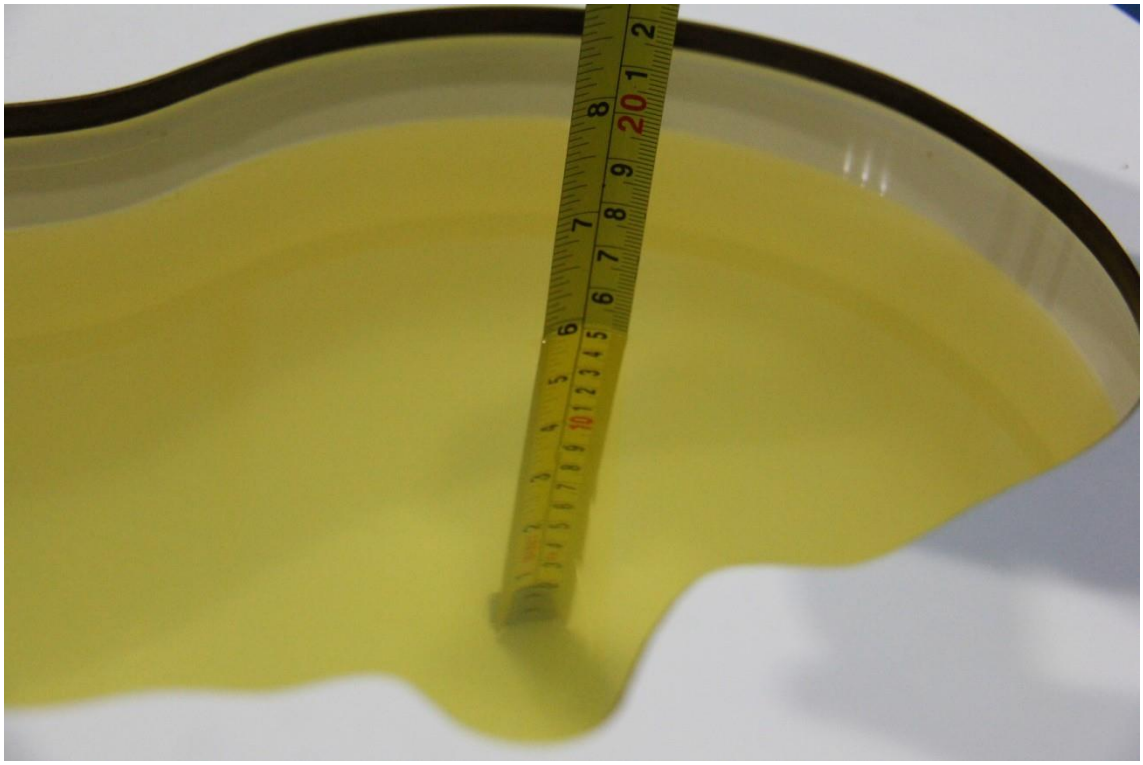
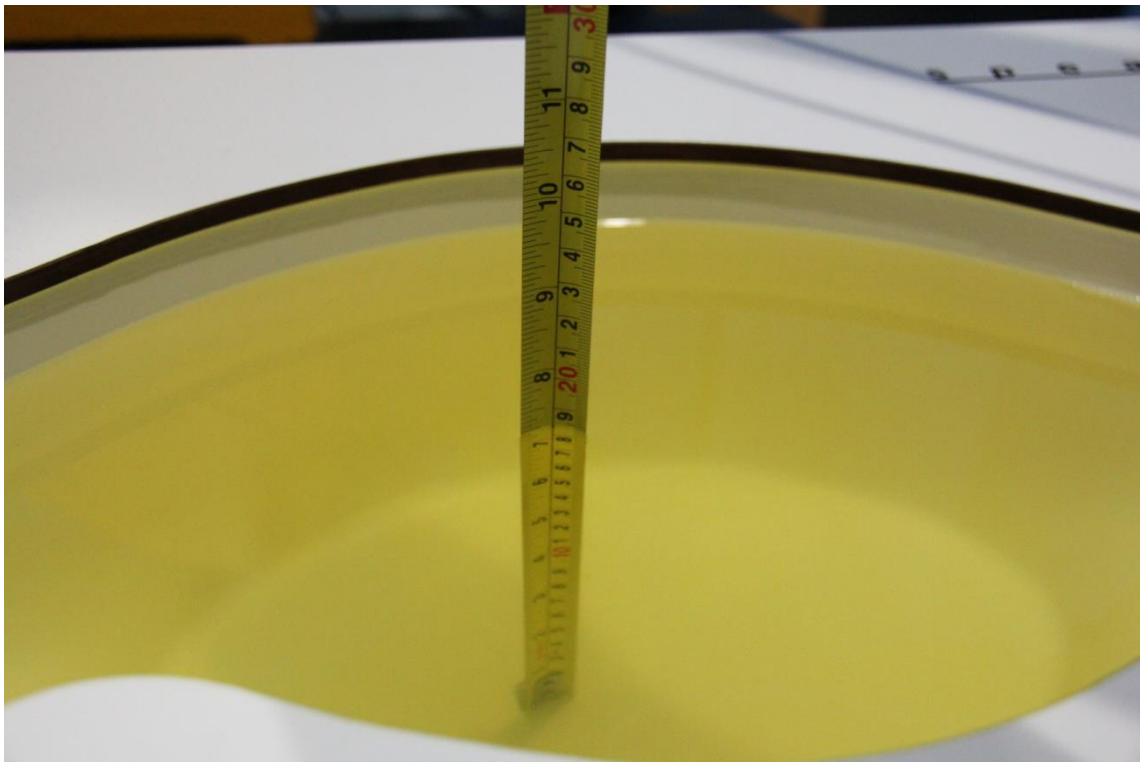


Picture 7-7: Liquid depth in the Head Phantom (2450 MHz)



Picture 7-8: Liquid depth in the Flat Phantom (2450MHz)

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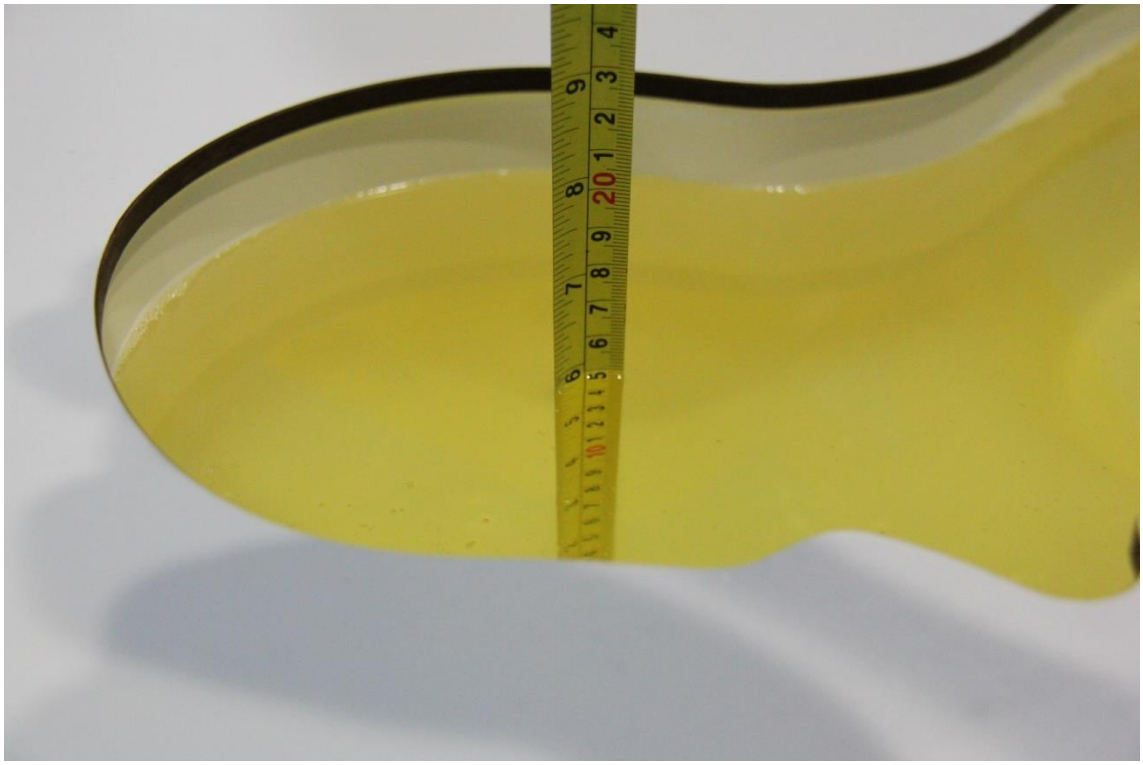
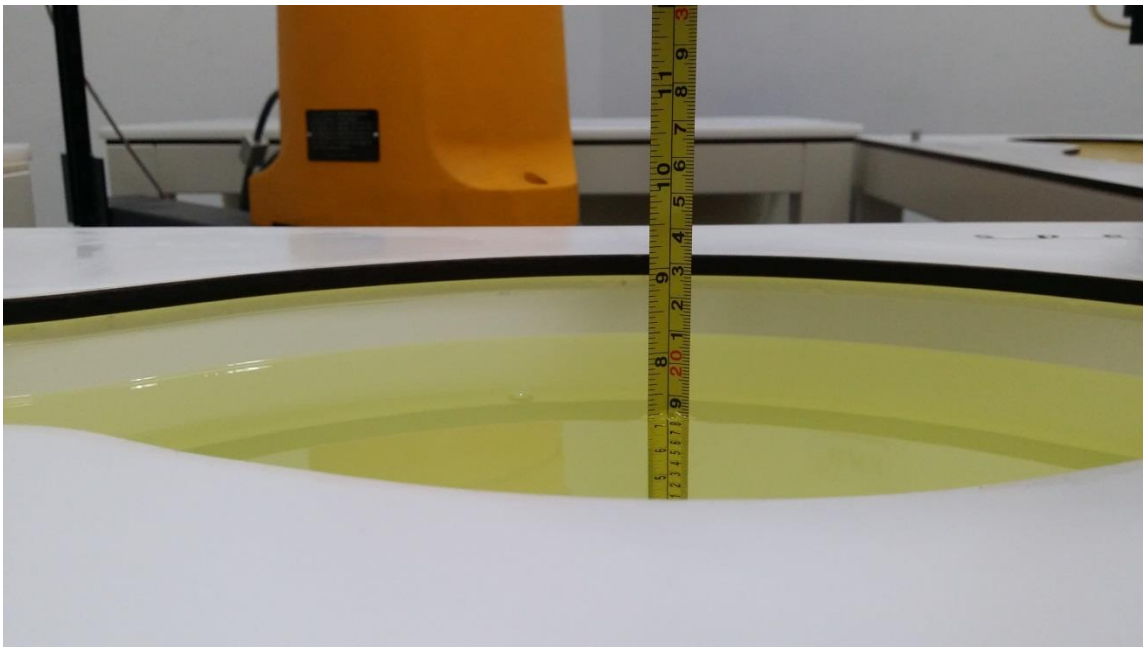


Picture 7-9: Liquid depth in the Head Phantom(2550MHz)



Picture 7-10: Liquid depth in the Flat Phantom(2550MHz)

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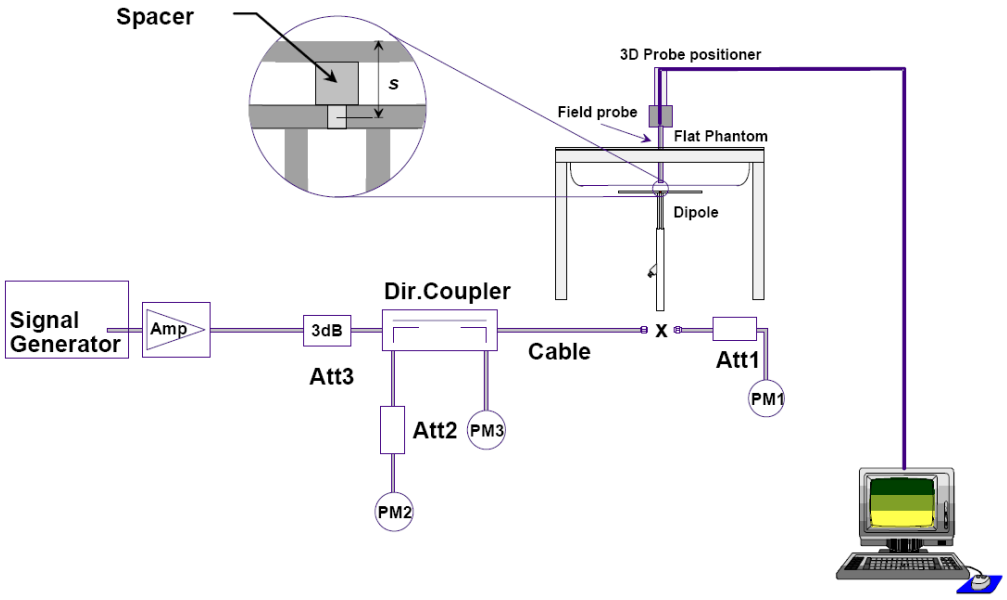
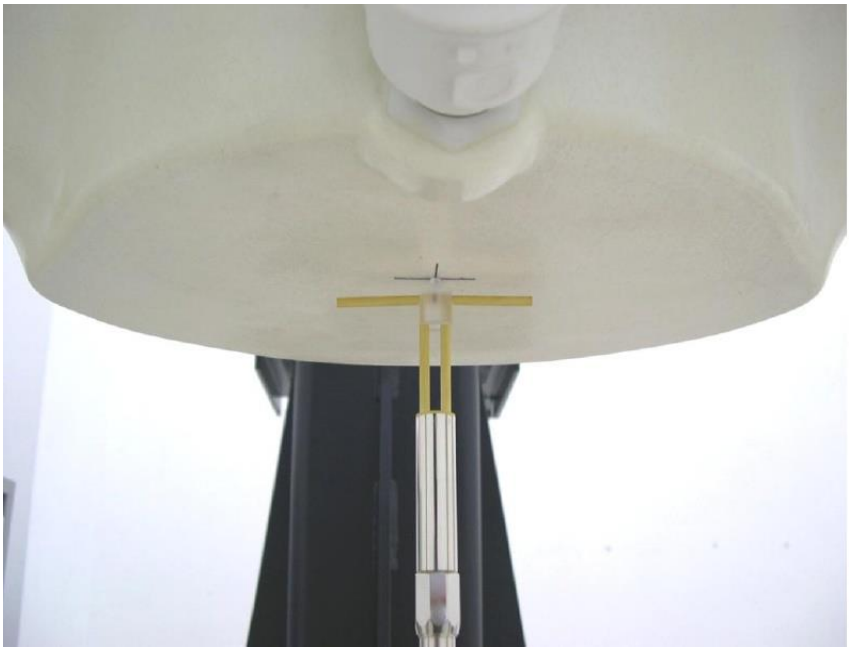
8 System verification

8.1 System Setup

In the simplified setup for system evaluation, the DUT is replaced by a calibrated dipole and the power source is replaced by a continuous wave that comes from a signal generator. The calibrated dipole must be placed beneath the flat phantom section of the SAM twin phantom with the correct distance holder. The distance holder should touch the phantom surface with a light pressure at the reference marking and be oriented parallel to the long side of the phantom. The equipment setup is shown below:



Picture 8.1 System Setup for System Evaluation



Picture 8.2 Photo of Dipole Setup

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8.2 System Verification

SAR system verification is required to confirm measurement accuracy, according to the tissue dielectric media, probe calibration points and other system operating parameters required for measuring the SAR of a test device. The system verification must be performed for each frequency band and within the valid range of each probe calibration point required for testing the device.

The system verification results are required that the area scan estimated 1-g SAR is within 3% of the zoom scan 1-g SAR. The details are presented in annex B.

Table 8.1: System Verification of Head

Measurement Date (yyyy-mm-dd)	Frequency	Target value (W/kg)		Measured value (W/kg)		Deviation (%)	
		10 g Average	1 g Average	10 g Average	1 g Average	10 g Average	1 g Average
2017-6-27	835 MHz	6.03	9.22	6.12	9.38	1.49	1.74
2017-6-30	1800 MHz	20.6	38.8	20.4	38.3	-0.97	-1.29
2017-7-2	1900 MHz	21.0	40.8	21.26	41.40	1.24	1.47
2017-7-4	2450 MHz	24.1	52.5	24.4	53.1	1.24	1.14
2017-7-8	2550 MHz	26.2	57.2	26.36	58.80	0.61	2.80

Table 8.2: System Verification of Body

Measurement Date (yyyy-mm-dd)	Frequency	Target value (W/kg)		Measured value (W/kg)		Deviation (%)	
		10 g Average	1 g Average	10 g Average	1 g Average	10 g Average	1 g Average
2017-6-27	835 MHz	6.20	9.44	6.29	9.56	1.45	1.27
2017-6-30	1800 MHz	21.1	39.6	20.83	39.08	-1.28	-1.31
2017-7-2	1900 MHz	21.3	41.1	21.76	42.34	2.16	3.02
2017-7-4	2450 MHz	24.4	52.3	24.65	53.26	1.02	1.84
2017-7-8	2550 MHz	25.1	54.8	24.46	52.76	-2.55	-3.72

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9 Measurement Procedures

9.1 Tests to be performed

In order to determine the highest value of the peak spatial-average SAR of a handset, all device positions, configurations and operational modes shall be tested for each frequency band according to steps 1 to 3 below. A flowchart of the test process is shown in picture 9.1.

Step 1: The tests described in 9.2 shall be performed at the channel that is closest to the center of the transmit frequency band (f_c) for:

a) all device positions (cheek and tilt, for both left and right sides of the SAM phantom, as described in annex D),
b) all configurations for each device position in a), e.g., antenna extended and retracted, and
c) all operational modes, e.g., analogue and digital, for each device position in a) and configuration in b) in each frequency band.

If more than three frequencies need to be tested according to 11.1 (i.e., N_c > 3), then all frequencies, configurations and modes shall be tested for all of the above test conditions.

Step 2: For the condition providing highest peak spatial-average SAR determined in Step 1, perform all tests described in 9.2 at all other test frequencies, i.e., lowest and highest frequencies. In addition, for all other conditions (device position, configuration and operational mode) where the peak spatial-average SAR value determined in Step 1 is within 3 dB of the applicable SAR limit, it is recommended that all other test frequencies shall be tested as well.

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

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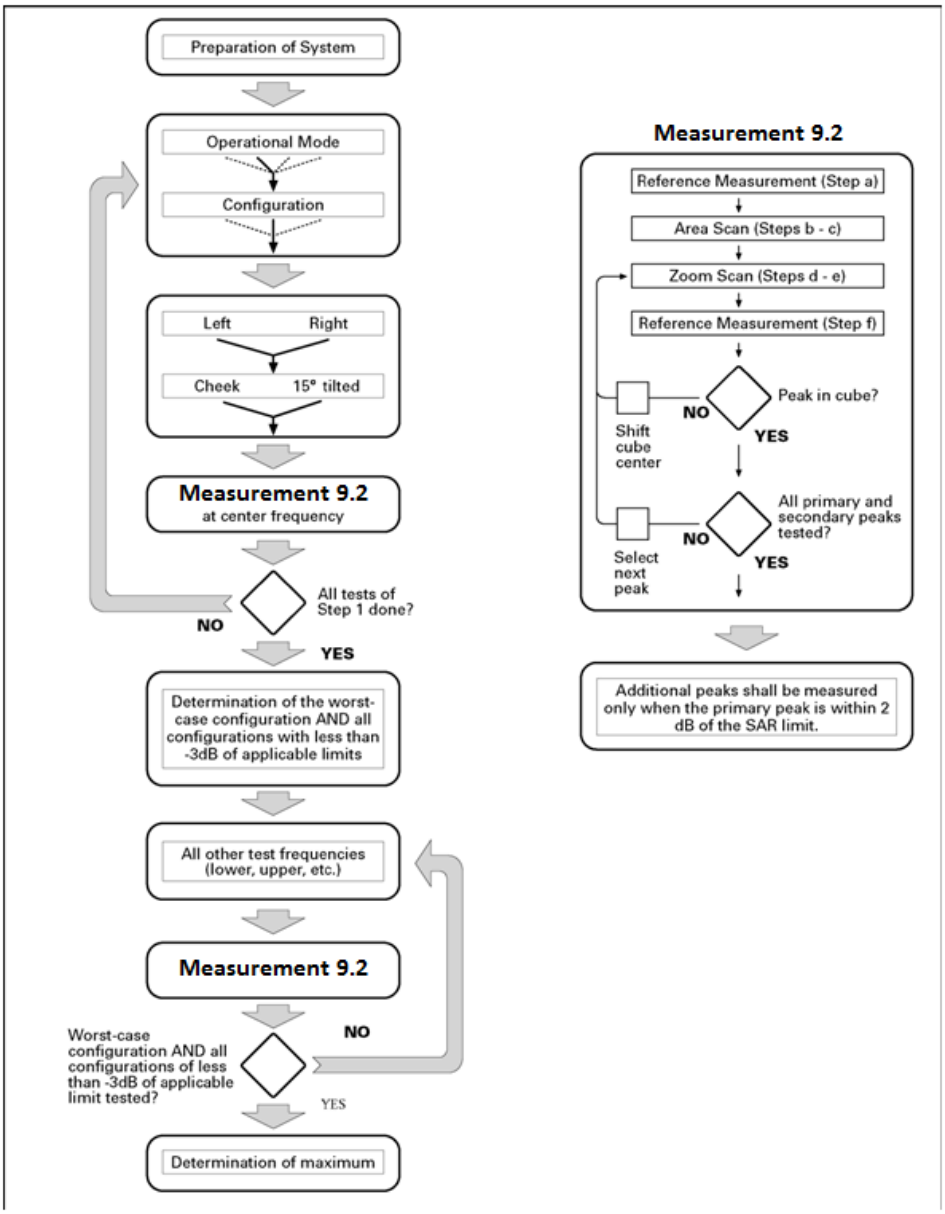

Picture 9.1Block diagram of the tests to be performed

9.2 General Measurement Procedure

The area and zoom scan resolutions specified in the table below must be applied to the SAR measurements and fully documented in SAR reports to qualify for TCB approval. Probe boundary effect error compensation is required for measurements with the probe tip closer than half a probe tip diameter to the phantom surface. Both the probe tip diameter and sensor offset distance must satisfy measurement protocols; to ensure probe boundary effect errors are minimized and the higher fields closest to the phantom surface can be correctly measured and extrapolated to the phantom surface for computing 1-g SAR. Tolerances of the post-processing algorithms must be verified by the test laboratory for the scan resolutions used in the SAR measurements, according to the reference distribution functions specified in IEEE Std 1528-2013. The results should be documented as part of the system validation records and may be requested to support test results

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when all the measurement parameters in the following table are not satisfied.

			≤ 3 GHz	> 3 GHz
Maximum distance from closest measurement point (geometric center of probe sensors) to phantom surface			5 ± 1 mm	½·δ·ln(2) ± 0.5 mm
Maximum probe angle from probe axis to phantom surface normal at the measurement location			30° ± 1°	20° ± 1°
Maximum area scan spatial resolution: Δx_{Area}, Δy_{Area}			≤ 2 GHz: ≤ 15 mm 2 – 3 GHz: ≤ 12 mm	3 – 4 GHz: ≤ 12 mm 4 – 6 GHz: ≤ 10 mm
			When the x or y dimension of the test device, in the measurement plane orientation, is smaller than the above, the measurement resolution must be ≤ the corresponding x or y dimension of the test device with at least one measurement point on the test device.	
Maximum zoom scan spatial resolution: Δx_{Zoom}, Δy_{Zoom}			≤ 2 GHz: ≤ 8 mm 2 – 3 GHz: ≤ 5 mm*	3 – 4 GHz: ≤ 5 mm* 4 – 6 GHz: ≤ 4 mm*
Maximum zoom scan spatial resolution, normal to phantom surface	uniform grid: $\Delta z_{Zoom}(n)$		≤ 5 mm	3 – 4 GHz: ≤ 4 mm 4 – 5 GHz: ≤ 3 mm 5 – 6 GHz: ≤ 2 mm
	graded grid	$\Delta z_{Zoom}(1)$: between 1st two points closest to phantom surface	≤ 4 mm	3 – 4 GHz: ≤ 3 mm 4 – 5 GHz: ≤ 2.5 mm 5 – 6 GHz: ≤ 2 mm
		$\Delta z_{Zoom}(n>1)$: between subsequent points	≤ 1.5·$\Delta z_{Zoom}(n-1)$	
Minimum zoom scan volume	x, y, z		≥ 30 mm	3 – 4 GHz: ≥ 28 mm 4 – 5 GHz: ≥ 25 mm 5 – 6 GHz: ≥ 22 mm
Note: δ is the penetration depth of a plane-wave at normal incidence to the tissue medium; see draft standard IEEE P1528-2011 for details. * When zoom scan is required and the *reported* SAR from the area scan based *1-g SAR estimation* procedures of KDB 447498 is ≤ 1.4 W/kg, ≤ 8 mm, ≤ 7 mm and ≤ 5 mm zoom scan resolution may be applied, respectively, for 2 GHz to 3 GHz, 3 GHz to 4 GHz and 4 GHz to 6 GHz.				

9.3 WCDMA Measurement Procedures for SAR

The following procedures are applicable to WCDMA handsets operating under 3GPP Release5, Release6, Release 7 and Release 8. The default test configuration is to measure SAR with an established radio link between the DUT and a communication test set using a 12.2kbps RMC (reference measurement channel) configured in Test Loop Mode 1. SAR is selectively confirmed for other physical channel configurations (DPCCH & $DPDCH_n$), HSDPA and HSPA (HSUPA/HSDPA) modes according to output power, exposure conditions and device operating capabilities. Both uplink and downlink should be configured with the same RMC or AMR, when required. SAR for Release 5 HSDPA and Release 6 HSPA are measured using the applicable FRC (fixed reference channel) and E-DCH reference channel configurations. Maximum output power is verified according to applicable versions of 3GPP TS 34.121 and SAR must be measured according to these maximum output conditions. When Maximum Power Reduction (MPR) is not implemented according to Cubic Metric (CM) requirements for Release 6 HSPA, the following procedures do not apply.

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For Release 5 HSDPA Data Devices:

Sub-test	β_c	β_d	β_d （SF）	β_c / β_d	β_{hs}	CM/dB
1	2/15	15/15	64	2/15	4/15	0.0
2	12/15	15/15	64	12/15	24/25	1.0
3	15/15	8/15	64	15/8	30/15	1.5
4	15/15	4/15	64	15/4	30/15	1.5

For Release 6 HSPA Data Devices

Sub-test	β_c	β_d	β_d （SF）	β_c / β_d	β_{hs}	β_{ec}	β_{ed}	β_{ed} （SF）	β_{ed} （codes）	CM (dB)	MPR (dB)	AG Index	E-TFCI
1	11/15	15/15	64	11/15	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	12/15	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	4/15	56/75	4	1	3.0	2.0	17	71
5	15/15	15/15	64	15/15	24/15	30/15	134/15	4	1	1.0	0.0	21	81

9.4 Bluetooth & Wi-Fi Measurement Procedures for SAR

Normal network operating configurations are not suitable for measuring the SAR of 802.11 transmitters in general. Unpredictable fluctuations in network traffic and antenna diversity conditions can introduce undesirable variations in SAR results. The SAR for these devices should be measured using chipset based test mode software to ensure that the results are consistent and reliable.

Chipset based test mode software is hardware dependent and generally varies among manufacturers. The device operating parameters established in a test mode for SAR measurements must be identical to those programmed in production units, including output power levels, amplifier gain settings and other RF performance tuning parameters. The test frequencies should correspond to actual channel frequencies defined for domestic use. SAR for devices with switched diversity should be measured with only one antenna transmitting at a time during each SAR measurement, according to a fixed modulation and data rate. The same data pattern should be used for all measurements.

9.5 SAR Measurement for LTE

SAR tests for LTE are performed with a base station simulator, Anristu MT8820C. Closed loop power control was used so the UE transmits with maximum output power during SAR testing. All powers were measured with the Anristu MT8820C.It is performed for conducted power and SAR based on the KDB941225 D05.

SAR is evaluated separately according to the following procedures for the different test positions

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in each exposure condition – head, body, body-worn accessories and other use conditions. The procedures in the following subsections are applied separately to test each LTE frequency band.

1) 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 among 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.
2) QPSK with 50% RB allocation
   The procedures required for 1 RB allocation in 1) are applied to measure the SAR for QPSK with 50% RB allocation.
3) 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 1) and 2) 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.

9.6 Power Drift

To control the output power stability during the SAR test, DASY5 system calculates the power drift by measuring the E-field at the same location at the beginning and at the end of the measurement for each test position. These drift values can be found in Section 14 labeled as: (Power Drift [dB]). This ensures that the power drift during one measurement is within 5%.

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10 Area Scan Based 1-g SAR

10.1 Requirement of KDB

According to the KDB447498 D01, when the implementation is based the specific polynomial fit algorithm as presented at the 29th Bioelectromagnetics Society meeting (2007) and the estimated 1-gSAR is ≤ 1.2 W/kg, a zoom scan measurement is not required provided it is also not needed for any other purpose; for example, if the peak SAR location required for simultaneous transmission SAR test exclusion can be determined accurately by the SAR system or manually to discriminate between distinctive peaks and scattered noisy SAR distributions from area scans.

There must not be any warning or alert messages due to various measurement concerns identified by the SAR system; for example, noise in measurements, peaks too close to scan boundary, peaks are too sharp, spatial resolution and uncertainty issues etc. The SAR system verification must also demonstrate that the area scan estimated 1-g SAR is within 3% of the zoom scan 1-g SAR (See Annex B). When all the SAR results for each exposure condition in a frequency band and wireless mode are based on estimated 1-g SAR, the 1-g SAR for the highest SAR configuration must be determined by a zoom scan.

10.2 Fast SAR Algorithms

The approach is based on the area scan measurement applying a frequency dependent attenuation parameter. This attenuation parameter was empirically determined by analyzing a large number of phones. The MOTOROLA FAST SAR was developed and validated by the MOTOROLA Research Group in Ft. Lauderdale.

In the initial study, an approximation algorithm based on Linear fit was developed. The accuracy of the algorithm has been demonstrated across a broad frequency range (136-2450 MHz) and for both 1- and 10-g averaged SAR using a sample of 264 SAR measurements from 55 wireless handsets. For the sample size studied, the root-mean-squared errors of the algorithm are 1.2% and 5.8% for 1- and 10-g averaged SAR, respectively. The paper describing the algorithm in detail is expected to be published in August 2004 within the Special Issue of Transactions on MTT.

In the second step, the same research group optimized the fitting algorithm to an Polynomial fit whereby the frequency validity was extended to cover the range 30-6000MHz. Details of this study can be found in the BEMS 2007 Proceedings.

Both algorithms are implemented in DASY software.

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11 Conducted Output Power

11.1 Manufacturing tolerance

Table 11.1: GSM Speech

GSM 850			
Channel	Channel 251	Channel 190	Channel 128
Target (dBm)	32.5	32.5	32.5
Tolerance ±(dB)	-1.5~~+1.0	-1.5~~+1.0	-1.5~~+1.0
GSM 1900			
Channel	Channel 810	Channel 661	Channel 512
Target (dBm)	29.5	29.5	29.5
Tolerance ±(dB)	-1.5~~+1.0	-1.5~~+1.0	-1.5~~+1.0

Table 11.2: GPRS & EGPRS

GSM 850 GPRS				
Channel		**251**	**190**	**128**
1Txslot	Target (dBm)	32.5	32	32
	Tolerance ±(dB)	-1.5~~+1.0	-1.5~~+1.0	-1.5~~+1.0
2Txslots	Target (dBm)	30	31.5	31.5
	Tolerance ±(dB)	-1.5~~+1.0	-1.5~~+1.0	-1.5~~+1.0
3Txslots	Target (dBm)	28.5	29.5	29.5
	Tolerance ±(dB)	-1.5~~+1.0	-1.5~~+1.0	-1.5~~+1.0
4Txslots	Target (dBm)	27.5	28.5	28.5
	Tolerance ±(dB)	-1.5~~+1.0	-1.5~~+1.0	-1.5~~+1.0
GSM 850 EGPRS(8PSK)				
Channel		**251**	**190**	**128**
1Txslot	Target (dBm)	26.5	26.5	26.5
	Tolerance ±(dB)	-1.5~~+1.0	-1.5~~+1.0	-1.5~~+1.0
2Txslots	Target (dBm)	24.5	24.5	24.5
	Tolerance ±(dB)	-1.5~~+1.0	-1.5~~+1.0	-1.5~~+1.0
3Txslots	Target (dBm)	23	23	23
	Tolerance ±(dB)	-1.5~~+1.0	-1.5~~+1.0	-1.5~~+1.0
4Txslots	Target (dBm)	22	22	22
	Tolerance ±(dB)	-1.5~~+1.0	-1.5~~+1.0	-1.5~~+1.0
GSM 1900 GPRS				
Channel		**810**	**661**	**512**
1Txslot	Target (dBm)	29.5	29.5	29.5
	Tolerance ±(dB)	1	1	1
2Txslots	Target (dBm)	27.0	27.0	27.0
	Tolerance ±(dB)	1	1	1
3Txslots	Target (dBm)	25.5	25.5	25.5
	Tolerance ±(dB)	1	1	1

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4Txslots	Target (dBm)	24.5	24.5	24.5
	Tolerance ±(dB)	1	1	1
GSM 1900 EGPRS(8PSK)				
Channel		**810**	**661**	**512**
1Txslot	Target (dBm)	25.5	25.5	25.5
	Tolerance ±(dB)	-1.5~~+1.0	-1.5~~+1.0	-1.5~~+1.0
2Txslots	Target (dBm)	24.5	24.5	24.5
	Tolerance ±(dB)	-1.5~~+1.0	-1.5~~+1.0	-1.5~~+1.0
3Txslots	Target (dBm)	22.5	22.5	22.5
	Tolerance ±(dB)	-1.5~~+1.0	-1.5~~+1.0	-1.5~~+1.0
4Txslots	Target (dBm)	21.5	21.5	21.5
	Tolerance ±(dB)	-1.5~~+1.0	-1.5~~+1.0	-1.5~~+1.0

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Table 11.3: WCDMA

UMTS Band II		Conducted Power (dBm)		
		Channel 9538	Channel 9400	Channel 9262
CS	Target (dBm)	22.7	22.7	22.7
	Tolerance ±(dB)	-2~~+1.0	-2~~+1.0	-2~~+1.0
HSUPA sub-test 1-5	Target (dBm)	22	22	22
	Tolerance ±(dB)	-2.5~~+1.0	-2.5~~+1.0	-2.5~~+1.0
HSDPA sub-test 1-4	Target (dBm)	22	22	22
	Tolerance ±(dB)	-2.5~~+1.0	-2.5~~+1.0	-2.5~~+1.0
UMTS Band IV		Conducted Power(dBm)		
		Channel 1513	Channel 1413	Channel 1312
CS	Target (dBm)	22.5	22.5	22.5
	Tolerance ±(dB)	-1.5~~+1.0	-1.5~~+1.0	-1.5~~+1.0
HSUPA sub-test 1-5	Target (dBm)	22	22	22
	Tolerance ±(dB)	-2.5~~+1.0	-2.5~~+1.0	-2.5~~+1.0
HSDPA sub-test 1-4	Target (dBm)	22	22	22
	Tolerance ±(dB)	-2.5~~+1.0	-2.5~~+1.0	-2.5~~+1.0
UMTS Band V		Conducted Power(dBm)		
		Channel 4233	Channel 4182	Channel 4132
CS	Target (dBm)	23	23	23
	Tolerance ±(dB)	-1.5~~+1.0	-1.5~~+1.0	-1.5~~+1.0
HSUPA sub-test 1-5	Target (dBm)	22	22	22
	Tolerance ±(dB)	-2.5~~+1.0	-2.5~~+1.0	-2.5~~+1.0
HSDPA sub-test 1-4	Target (dBm)	22	22	22
	Tolerance ±(dB)	-2.5~~+1.0	-2.5~~+1.0	-2.5~~+1.0

Table 11.4: LTE

LTE Band 2 QPSK			
Channel	Channel 19100	Channel 18900	Channel 18700
Target (dBm)	21.5	21.5	21.5
Tolerance ±(dB)	1	1	1
LTE Band 2 16QAM			
Channel	Channel 19100	Channel 18900	Channel 18700
Target (dBm)	21	21	21
Tolerance ±(dB)	1	1	1
LTE Band 4 QPSK			
Channel	Channel 20300	Channel 20175	Channel 20050
Target (dBm)	21.5	21.5	21.5
Tolerance ±(dB)	1	1	1
LTE Band 4 16QAM			
Channel	Channel 20300	Channel 20175	Channel 20050

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Target (dBm)	21	21	21
Tolerance ±(dB)	1	1	1
LTE Band 5 QPSK			
Channel	Channel 20600	Channel 20525	Channel 20450
Target (dBm)	21.5	21.5	21.5
Tolerance ±(dB)	1	1	1
LTE Band 5 16QAM			
Channel	Channel 20600	Channel 20525	Channel 20450
Target (dBm)	21	21	21
Tolerance ±(dB)	1	1	1
LTE Band 7 QPSK			
Channel	Channel 21350	Channel 21100	Channel 20850
Target (dBm)	21.5	21.5	21.5
Tolerance ±(dB)	1	1	1
LTE Band 7 16QAM			
Channel	Channel 21350	Channel 21100	Channel 20850
Target (dBm)	21	21	21
Tolerance ±(dB)	1	1	1

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Table 11.5: Bluetooth

Mode		2402MHz（Ch0）	2441MHz（Ch39）	2480MHz（Ch78）
GFSK	Target (dBm)	7	7	7
	Tolerance ±(dB)	2	2	2
EDR2M-4_DQPSK	Target (dBm)	7	7	7
	Tolerance ±(dB)	2	2	2
EDR3M-8DPSK	Target (dBm)	7	7	7
	Tolerance ±(dB)	2	2	2
GFSK(BLE)	Target (dBm)	1	1	1
	Tolerance ±(dB)	2	2	2

Table 11.6: Wi-Fi

Mode	Channel/Data rate	Target (dBm)	Tolerance ±(dB)
802.11 b (2.4GHz)	1Mbps~11Mbps	16	-2~+1.5
802.11 g (2.4GHz)	6Mbps~54Mbps	13	2
802.11 n (2.4GHz HT20)	MCS0~MCS7	12	2

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11.2 GSM Measurement result

During the process of testing, the EUT was controlled via Agilent Digital Radio Communication tester (E5515C) to ensure the maximum power transmission and proper modulation. This result contains conducted output power for the EUT. In all cases, the measured peak output power should be greater and within 5% than EMI measurement.

Table 11.7: The conducted power measurement results for GSM850/1900

GSM 850MHz	Conducted Power (dBm)		
	Channel 251(848.8MHz)	Channel 190(836.6MHz)	Channel 128(824.2MHz)
	31.55	31.50	31.38
GSM 1900MHz	Conducted Power(dBm)		
	Channel 810(1909.8MHz)	Channel 661(1880MHz)	Channel 512(1850.2MHz)
	29.96	29.70	29.71

Table 11.8: The conducted power measurement results for GPRS and EGPRS

GSM 850		Measured Power (dBm)			calculation	Average Power (dBm)		
		251	190	128		251	190	128
GPRS	1Txslots	31.51	31.42	31.31	-9.03dB	22.48	22.39	22.28
	2Txslots	30.07	29.94	29.81	-6.02dB	24.05	23.92	23.79
	3Txslots	28.45	28.27	28.24	-4.26dB	24.19	24.01	23.98
	4Txslots	27.44	27.13	27.03	-3.01dB	**24.43**	**24.12**	**24.02**
EGPRS (8PSK)	1Txslots	25.47	25.52	25.49	-9.03dB	16.44	16.49	16.46
	2Txslots	23.62	23.58	23.25	-6.02dB	17.6	17.56	17.23
	3Txslots	21.81	22.09	21.59	-4.26dB	17.55	17.83	17.33
	4Txslots	20.72	20.54	20.71	-3.01dB	**17.71**	**17.53**	**17.7**
GSM 1900		Measured Power (dBm)			calculation	Average Power (dBm)		
		810	661	512		810	661	512
GPRS	1Txslots	29.95	29.64	29.63	-9.03dB	20.92	20.61	20.6
	2Txslots	27.44	27.29	27.19	-6.02dB	21.42	21.27	21.17
	3Txslots	25.58	25.54	25.50	-4.26dB	21.32	21.28	21.24
	4Txslots	24.44	24.50	24.53	-3.01dB	**21.43**	**21.49**	**21.52**
EGPRS (8PSK)	1Txslots	25.49	25.43	25.37	-9.03dB	16.46	16.4	16.34
	2Txslots	23.37	23.31	23.36	-6.02dB	17.35	17.29	17.34
	3Txslots	21.69	21.53	21.62	-4.26dB	17.43	17.27	17.36
	4Txslots	20.72	20.61	20.47	-3.01dB	**17.71**	**17.6**	**17.46**

NOTES:

1) Division Factors

To average the power, the division factor is as follows:

1TX-slot = 1 transmit time slot out of 8 time slots=> conducted power divided by (8/1) => -9.03dB

2TX-slots = 2 transmit time slots out of 8 time slots=> conducted power divided by (8/2) => -6.02dB

3TX-slots = 3 transmit time slots out of 8 time slots=> conducted power divided by (8/3) => -4.26dB

4TX-slots = 4 transmit time slots out of 8 time slots=> conducted power divided by (8/4) => -3.01dB

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According to the conducted power as above, the body measurements are performed with 4Txslots for GSM 850 and GSM 1900.

11.3 WCDMA Measurement result

Table 11.9: The conducted Power for WCDMA1900/1700/850

Item	band	FDD Band 2 result		
	ARFCN	9538(1907.6MHz)	9400(1880MHz)	9262(1852.4MHz)
WCDMA	12.2kbps RMC	22.1	22.0	22.1
HSDPA	1	21.0	21.0	21.1
	2	21.0	21.0	21.1
	3	20.6	20.5	20.6
	4	20.5	20.5	20.5
HSUPA	1	21.1	21.1	21.0
	2	20.1	20,.2	20.2
	3	19.7	20,.1	19.7
	4	20.7	20.6	20.6
	5	21.1	21.0	21.0
Item	band	FDD Band 4 result		
	ARFCN	1512(1752.4MHz)	1450(1740MHz)	1312(1712.4MHz)
WCDMA	12.2kbps RMC	23.15	23.17	23.26
HSDPA	1	21.8	21.7	21.7
	2	21.8	21.9	21.8
	3	21.3	21.4	21.3
	4	21.4	21.3	21.4
HSUPA	1	21.2	21.3	21.2
	2	20.5	20.4	20.4
	3	20.4	20.4	20.6
	4	21.4	21.4	21.5
	5	21.7	21.7	21.7
Item	band	FDD Band 5 result		
	ARFCN	4233(846.6MHz)	4182(836.4MHz)	4132(826.4MHz)
WCDMA	12.2kbps RMC	22.7	22.9	22.8
HSDPA	1	21.8	22.0	21.9
	2	21.8	21.9	21.9
	3	21.3	21.4	21.3
	4	21.3	21.4	21.3
HSUPA	1	21.2	21.2	21.2
	2	20.9	21.0	20.8
	3	20.8	20.7	20.6
	4	21.4	20.9	21.2
	5	21.9	22.0	21.9

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11.4 LTE-FDD Measurement result

Table 11.10: The conducted Power for LTE-FDD

LTE-FDD Band 2				Actual output Power (dBm)		
	RB allocation	RB offset	Modulation	High	Middle	Low
				1909.3MHz	1880MHz	1850.7MHz
1.4 MHz	1RB	High	QPSK	21.83	21.85	21.80
			16QAM	20.46	20.48	20.43
		Middle	QPSK	21.77	21.91	21.84
			16QAM	20.56	20.70	20.63
		Low	QPSK	21.73	21.81	21.70
			16QAM	20.36	20.45	20.46
	50%RB	High	QPSK	21.87	22.05	21.94
			16QAM	20.77	20.83	20.69
		Middle	QPSK	21.89	22.13	22.05
			16QAM	20.82	20.76	20.85
		Low	QPSK	21.88	22.08	21.93
			16QAM	20.80	20.78	20.84
	100%RB	/	QPSK	20.85	20.91	20.78
			16QAM	19.68	19.84	19.75
3 MHz	RB allocation	RB offset	Modulation	High	Middle	Low
				1908.5MHz	1880MHz	1851.5MHz
	1RB	High	QPSK	21.73	21.99	21.83
			16QAM	20.18	20.80	20.40
		Middle	QPSK	21.73	21.93	21.97
			16QAM	20.65	21.13	20.53
		Low	QPSK	21.70	22.02	21.86
			16QAM	20.30	20.40	20.22
	50%RB	High	QPSK	20.94	20.93	20.85
			16QAM	19.96	19.93	19.95
		Middle	QPSK	20.83	20.93	20.86
			16QAM	19.93	20.05	19.98
		Low	QPSK	20.93	20.87	20.81
			16QAM	19.93	19.99	20.20
	100%RB	/	QPSK	20.90	20.91	20.84
			16QAM	19.87	19.98	19.91
5 MHz	RB allocation	RB offset	Modulation	High	Middle	Low
				1907.5MHz	1880MHz	1852.5MHz
	1RB	High	QPSK	21.74	21.80	21.82
			16QAM	20.27	20.99	20.17
		Middle	QPSK	21.85	22.00	21.85

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			16QAM	20.66	21.19	20.62
		Low	QPSK	21.74	21.88	21.62
			16QAM	20.50	20.93	20.29
	50%RB	High	QPSK	20.83	20.96	20.87
			16QAM	19.75	19.88	19.92
		Middle	QPSK	20.90	20.83	20.84
			16QAM	19.83	19.89	19.82
		Low	QPSK	20.73	20.81	20.76
			16QAM	19.76	19.87	19.82
	100%RB	/	QPSK	20.85	20.84	20.82
			16QAM	19.76	20.00	19.89
10MHz	RB allocation	RB offset	Modulation	High	Middle	Low
				1905MHz	1880MHz	1855MHz
	1RB	High	QPSK	21.65	22.03	21.96
			16QAM	21.10	20.61	20.46
		Middle	QPSK	22.13	22.04	21.96
			16QAM	20.85	20.80	20.60
		Low	QPSK	21.86	21.78	21.83
			16QAM	20.45	20.23	20.50
	50%RB	High	QPSK	20.80	20.98	20.83
			16QAM	19.91	20.10	19.87
		Middle	QPSK	21.00	20.93	20.84
			16QAM	20.00	20.02	19.89
		Low	QPSK	20.90	20.83	20.80
			16QAM	19.96	19.95	19.99
	100%RB	/	QPSK	20.90	20.93	20.80
			16QAM	20.05	20.00	19.85
15 MHz	RB allocation	RB offset	Modulation	High	Middle	Low
				1902.5MHz	1880MHz	1857.5MHz
	1RB	High	QPSK	21.89	21.99	21.88
			16QAM	20.93	20.50	20.39
		Middle	QPSK	21.89	21.77	21.93
			16QAM	20.72	20.20	20.01
		Low	QPSK	21.67	21.74	21.99
			16QAM	20.62	20.17	20.11
	50%RB	High	QPSK	22.04	22.04	21.92
			16QAM	21.05	20.88	20.75
		Middle	QPSK	21.86	22.04	22.00
			16QAM	20.87	20.81	20.65
		Low	QPSK	21.81	21.99	22.01
			16QAM	20.87	20.77	20.66
	100%RB	/	QPSK	20.93	21.03	20.99
			16QAM	20.01	20.07	19.93

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	RB allocation	RB offset	Modulation	High	Middle	Low
				1900MHz	1880MHz	1860MHz
20MHz	1RB	High	QPSK	21.65	21.76	21.88
			16QAM	20.00	20.09	20.43
		Middle	QPSK	21.84	22.06	**22.10**
			16QAM	20.64	20.71	20.49
		Low	QPSK	21.74	21.74	21.69
			16QAM	20.15	20.06	20.01
	50%RB	High	QPSK	20.99	20.90	20.88
			16QAM	19.99	19.81	19.86
		Middle	QPSK	20.93	20.95	**21.03**
			16QAM	19.85	19.88	20.06
		Low	QPSK	20.93	20.94	20.80
			16QAM	19.95	19.89	19.98
	100%RB	/	QPSK	20.85	20.94	20.87
			16QAM	19.86	19.98	20.00

LTE-FDD Band 4				Actual output Power (dBm)		
	RB allocation	RB offset	Modulation	High	Middle	Low
				1754.3MHz	1732.5MHz	1710.7MHz
1.4 MHz	1RB	High	QPSK	21.80	21.74	21.71
			16QAM	20.58	20.40	20.29
		Middle	QPSK	21.72	21.81	21.84
			16QAM	20.53	20.53	20.56
		Low	QPSK	21.72	21.78	21.80
			16QAM	20.43	20.41	20.50
	50%RB	High	QPSK	21.84	21.97	21.83
			16QAM	20.67	20.66	20.78
		Middle	QPSK	21.99	21.87	21.96
			16QAM	20.60	20.74	20.84
		Low	QPSK	21.92	22.09	21.81
			16QAM	20.57	20.71	20.79
	100%RB	/	QPSK	20.82	20.81	20.90
			16QAM	19.45	19.77	19.57
	RB allocation	RB offset	Modulation	High	Middle	Low
				1753.5MHz	1732.5MHz	1711.5MHz
3 MHz	1RB	High	QPSK	21.81	21.68	21.90
			16QAM	20.60	20.63	20.54
		Middle	QPSK	21.74	21.86	21.86
			16QAM	20.59	20.83	20.45
		Low	QPSK	21.68	21.77	21.86
			16QAM	20.61	20.62	20.36

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	50%RB	High	QPSK	20.76	20.91	20.86
			16QAM	19.82	19.91	19.87
		Middle	QPSK	20.72	20.92	20.84
			16QAM	19.87	20.00	19.69
		Low	QPSK	20.74	20.89	20.79
			16QAM	19.89	20.01	19.48
	100%RB	/	QPSK	20.82	20.86	20.83
			16QAM	19.82	19.91	19.79

5 MHz	RB allocation	RB offset	Modulation	High	Middle	Low
				1752.5MHz	1732.5MHz	1712.5MHz
	1RB	High	QPSK	21.79	21.78	21.58
			16QAM	20.27	20.41	20.50
		Middle	QPSK	22.17	21.73	21.68
			16QAM	20.64	20.65	20.54
		Low	QPSK	22.08	21.67	21.78
			16QAM	20.54	20.45	20.33
	50%RB	High	QPSK	21.12	20.89	20.90
			16QAM	19.69	19.68	19.72
		Middle	QPSK	21.14	21.01	20.87
			16QAM	19.79	19.88	19.69
		Low	QPSK	21.02	20.94	20.82
			16QAM	19.74	19.87	19.70
	100%RB	/	QPSK	21.10	20.88	20.92
			16QAM	19.96	19.84	19.82

LTE-FDD Band 4				Actual output Power (dBm)		
10 MHz	RB allocation	RB offset	Modulation	High	Middle	Low
				1750MHz	1732.5MHz	1715MHz
	1RB	High	QPSK	21.99	21.73	21.86
			16QAM	20.58	20.37	20.46
		Middle	QPSK	22.12	22.01	21.84
			16QAM	20.80	20.63	20.42
		Low	QPSK	22.05	21.63	21.61
			16QAM	20.63	20.33	20.30
	50%RB	High	QPSK	20.99	20.88	20.86
			16QAM	19.92	19.79	19.71
		Middle	QPSK	21.11	20.87	20.90
			16QAM	20.12	19.90	19.72
		Low	QPSK	21.14	20.87	20.81
			16QAM	19.95	19.77	19.82
	100%RB	/	QPSK	21.15	20.82	20.92
			16QAM	20.10	19.73	19.88

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	RB allocation	RB offset	Modulation	High	Middle	Low
				1747.5MHz	1732.5MHz	1717.5MHz
15 MHz	1RB	High	QPSK	22.17	21.78	21.92
			16QAM	21.32	21.07	20.51
		Middle	QPSK	22.16	21.78	21.78
			16QAM	20.88	20.62	20.48
		Low	QPSK	22.22	21.96	21.86
			16QAM	20.63	20.46	20.50
	50%RB	High	QPSK	22.09	21.95	21.97
			16QAM	21.16	20.92	21.02
		Middle	QPSK	22.12	21.88	21.84
			16QAM	21.00	20.77	20.68
		Low	QPSK	22.24	21.89	21.81
			16QAM	20.91	20.84	20.67
	100%RB	/	QPSK	21.26	20.99	21.03
			16QAM	20.12	19.92	19.87

	RB allocation	RB offset	Modulation	High	Middle	Low
				1745MHz	1732.5MHz	1720MHz
20 MHz	1RB	High	QPSK	21.99	21.82	21.86
			16QAM	20.32	20.02	20.78
		Middle	QPSK	22.19	22.01	21.98
			16QAM	20.62	20.58	20.58
		Low	QPSK	**22.22**	21.84	21.80
			16QAM	20.54	20.10	19.92
	50%RB	High	QPSK	21.15	20.88	20.97
			16QAM	20.23	19.78	19.94
		Middle	QPSK	**21.16**	20.97	20.96
			16QAM	20.14	19.95	19.94
		Low	QPSK	21.15	20.89	20.92
			16QAM	20.16	19.85	19.90
	100%RB	/	QPSK	21.14	20.87	21.00
			16QAM	20.09	19.73	19.97

LTE-FDD Band 5				Actual output Power (dBm)		
	RB allocation	RB offset	Modulation	High	Middle	Low
				848.3MHz	836.5MHz	824.7MHz
1.4MHz	1RB	High	QPSK	22.26	22.20	22.14
			16QAM	20.79	20.89	20.82
		Middle	QPSK	22.27	22.21	22.24
			16QAM	21.08	21.14	21.07
		Low	QPSK	22.31	22.11	22.20

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			16QAM	20.90	20.91	20.86
	50%RB	High	QPSK	22.27	22.32	22.20
			16QAM	21.06	21.03	21.07
		Middle	QPSK	22.37	22.32	22.31
			16QAM	21.14	21.13	21.14
		Low	QPSK	22.39	22.27	22.39
			16QAM	21.13	21.09	21.09
	100%RB	/	QPSK	21.24	21.23	21.25
			16QAM	20.10	20.11	19.89
3MHz	RB allocation	RB offset	Modulation	High	Middle	Low
				847.5MHz	836.5MHz	825.5MHz
	1RB	High	QPSK	22.28	22.20	22.20
			16QAM	21.00	21.19	20.67
		Middle	QPSK	22.48	22.13	22.26
			16QAM	21.15	21.01	20.90
		Low	QPSK	22.37	22.07	22.20
			16QAM	21.01	20.80	20.80
	50%RB	High	QPSK	21.38	21.35	21.25
			16QAM	20.36	20.43	20.43
		Middle	QPSK	21.38	21.35	21.31
			16QAM	20.49	20.41	20.43
		Low	QPSK	21.32	21.36	21.30
			16QAM	20.23	20.27	20.42
	100%RB	/	QPSK	21.35	21.34	21.28
			16QAM	20.12	20.31	20.26
5 MHz	RB allocation	RB offset	Modulation	High	Middle	Low
				846.5MHz	836.5MHz	826.5MHz
	1RB	High	QPSK	22.24	22.10	22.11
			16QAM	20.88	20.91	20.65
		Middle	QPSK	22.51	22.23	22.26
			16QAM	21.07	20.99	20.94
		Low	QPSK	22.31	22.10	22.16
			16QAM	20.97	20.84	20.65
	50%RB	High	QPSK	21.33	21.30	21.19
			16QAM	20.18	20.14	20.08
		Middle	QPSK	21.34	21.29	21.28
			16QAM	20.35	20.24	20.20
		Low	QPSK	21.36	21.24	21.25
			16QAM	20.29	20.21	20.19
	100%RB	/	QPSK	21.28	21.23	21.24
			16QAM	20.28	20.30	20.21
10MHz	RB allocation	RB offset	Modulation	High	Middle	Low
				844MHz	836.5MHz	829MHz

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	1RB	High	QPSK	22.36	22.34	22.28
			16QAM	20.97	20.86	20.79
		Middle	QPSK	**22.46**	22.41	22.36
			16QAM	21.18	21.15	20.75
		Low	QPSK	22.32	22.31	22.21
			16QAM	20.92	20.93	20.46
	50%RB	High	QPSK	21.35	21.33	21.36
			16QAM	20.38	20.39	20.36
		Middle	QPSK	**21.41**	21.32	21.35
			16QAM	20.44	20.41	20.46
		Low	QPSK	21.27	21.32	21.31
			16QAM	20.28	20.32	20.37
	100%RB	/	QPSK	21.28	21.35	21.39
			16QAM	20.28	20.26	20.42

LTE-FDD Band 7				Actual output Power (dBm)		
5 MHz	RB allocation	RB offset	Modulation	High	Middle	Low
				2567.4MHz	2535MHz	2502.5MHz
	1RB	High	QPSK	22.44	22.29	22.35
			16QAM	21.37	21.27	21.01
		Middle	QPSK	22.68	22.45	22.68
			16QAM	21.45	21.21	21.19
		Low	QPSK	22.51	22.44	22.24
			16QAM	20.92	21.17	21.25
	50%RB	High	QPSK	21.63	21.55	21.50
			16QAM	20.54	20.30	20.33
		Middle	QPSK	21.70	21.51	21.44
			16QAM	20.62	20.45	20.27
		Low	QPSK	21.61	21.49	21.42
			16QAM	20.54	20.32	20.13
	100%RB	/	QPSK	21.64	21.54	21.47
			16QAM	20.67	20.33	20.44
10MHz	RB allocation	RB offset	Modulation	High	Middle	Low
				2565MHz	2535MHz	2505MHz
	1RB	High	QPSK	22.72	22.62	22.34
			16QAM	21.69	21.16	21.00
		Middle	QPSK	22.71	22.51	22.57
			16QAM	21.07	21.31	21.21
		Low	QPSK	22.71	22.50	22.30
			16QAM	21.34	21.40	20.82
	50%RB	High	QPSK	21.65	21.61	21.46
			16QAM	20.65	20.54	20.40
		Middle	QPSK	21.66	21.57	21.49

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			16QAM	20.73	20.48	20.51
		Low	QPSK	21.66	21.60	21.51
			16QAM	20.62	20.47	20.51
	100%RB	/	QPSK	21.73	21.62	21.52
			16QAM	20.60	20.46	20.42
15 MHz	RB allocation	RB offset	Modulation	High	Middle	Low
				2562.5MHz	2535MHz	2507.5MHz
	1RB	High	QPSK	22.61	22.38	22.41
			16QAM	21.73	20.91	21.11
		Middle	QPSK	22.38	22.60	22.30
			16QAM	21.43	20.74	21.06
		Low	QPSK	22.35	22.47	22.38
			16QAM	21.27	20.77	21.08
	50%RB	High	QPSK	22.56	22.50	22.59
			16QAM	21.63	21.61	21.51
		Middle	QPSK	22.54	22.52	22.46
			16QAM	21.45	21.51	21.51
		Low	QPSK	22.54	22.50	22.44
			16QAM	21.38	21.47	21.39
	100%RB	/	QPSK	21.61	21.52	21.54
			16QAM	20.56	20.46	20.45
20MHz	RB allocation	RB offset	Modulation	High	Middle	Low
				2560MHz	2535MHz	2510MHz
	1RB	High	QPSK	**22.47**	22.29	22.21
			16QAM	21.26	20.77	21.48
		Middle	QPSK	22.47	22.42	22.40
			16QAM	21.80	21.19	21.41
		Low	QPSK	22.17	22.16	22.05
			16QAM	21.29	21.14	21.00
	50%RB	High	QPSK	21.50	**21.61**	21.55
			16QAM	20.55	20.51	20.53
		Middle	QPSK	21.52	21.48	21.54
			16QAM	20.59	20.49	20.57
		Low	QPSK	21.46	21.52	21.37
			16QAM	20.62	20.34	20.38
	100%RB	/	QPSK	21.54	21.53	21.44
			16QAM	20.61	20.43	20.47

11.5 Wi-Fi and BT Measurement result

The output power of BT antenna is as following:

Mode	Conducted Power (dBm)		
	Channel 0 (2402MHz)	Channel 39 (2441MHz)	Channel 78 (2480MHz)

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GFSK	7.30	7.43	6.25
EDR2M-4_DQPSK	8.19	8.28	7.04
EDR3M-8DPSK	8.37	**8.48**	7.21
Mode	Channel 0 (2402MHz)	Channel 19 (2440MHz)	Channel 39 (2441MHz)
BLE	0.62	0.91	-0.51

The average conducted power for Wi-Fi is as following:

Mode	Channel	Frequency (MHz)	Conducted Output Power(dBm)	Test Rate Data
802.11b	1	2412	16.13	1 Mbps
	6	2437	15.56	1 Mbps
	11	2462	16.23	1 Mbps
802.11g	1	2412	13.32	6 Mbps
	6	2437	12.68	6 Mbps
	11	2462	13.67	6 Mbps
802.11n(20MHz)	1	2412	12.45	MCS0
	6	2437	11.80	MCS0
	11	2462	12.80	MCS0

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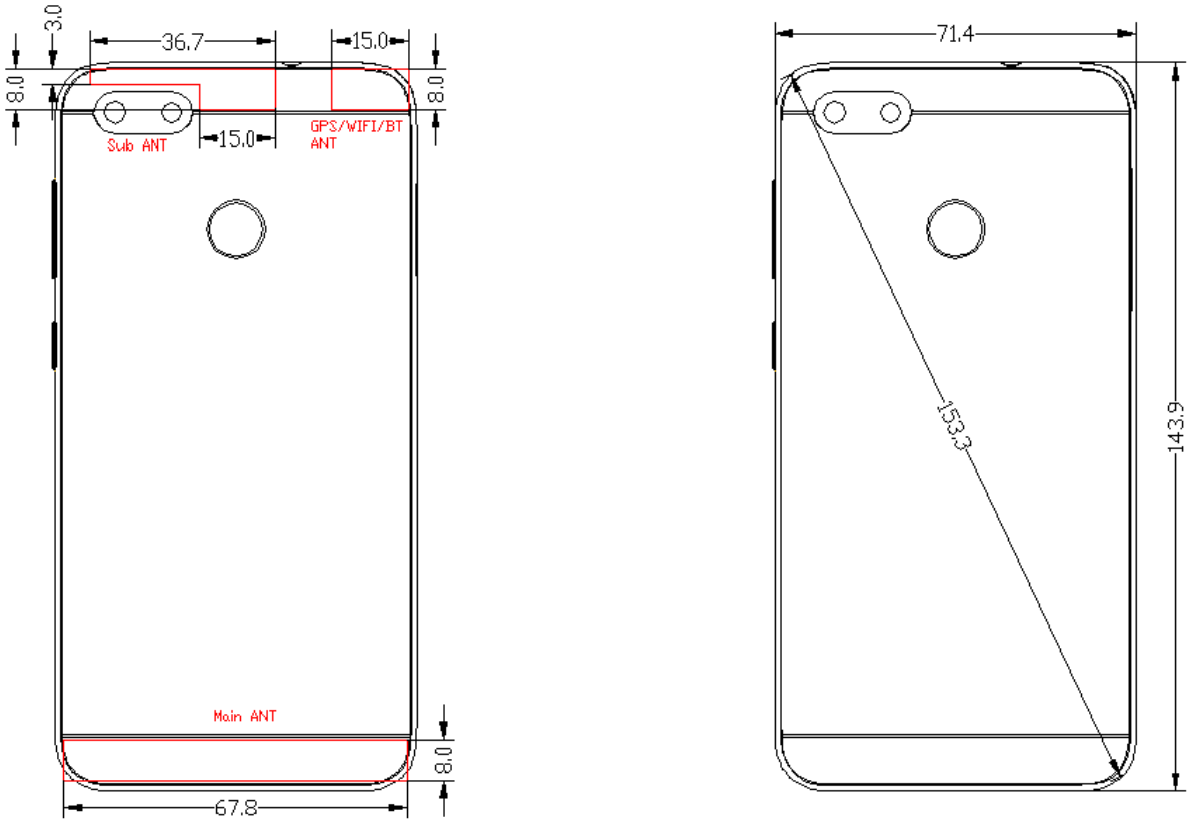
12 Simultaneous TX SAR Considerations

12.1 Introduction

The following procedures adopted from “FCC SAR Considerations for Cell Phones with Multiple Transmitters” are applicable to handsets with built-in unlicensed transmitters such as 802.11 a/b/g and Bluetooth devices which may simultaneously transmit with the licensed transmitter.
For this device, the BT and Wi-Fi can transmit simultaneous with other transmitters.

12.2 Transmit Antenna Separation Distances



Picture 12.1 Antenna Locations

12.3 SAR Measurement Positions

According to the KDB941225 D06 Hot Spot SAR, the edges with less than 2.5 cm distance to the antennas need to be tested for SAR.

SAR measurement positions						
Mode	Front	Rear	Left edge	Right edge	Top edge	Bottom edge
Main antenna	Yes	Yes	Yes	Yes	No	Yes
WLAN	Yes	Yes	No	Yes	Yes	No

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12.4 Standalone SAR Test Exclusion Considerations

Standalone 1-g head or body SAR evaluation by measurement or numerical simulation is not required when the corresponding SAR Exclusion Threshold condition, listed below, is satisfied. The 1-g SAR test exclusion threshold 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, 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

Table 12.1: Standalone SAR test exclusion considerations

Band/Mode	f(GHz)	Position	SAR test exclusion threshold (mW)	RF output power		SAR test exclusion
				dBm	mW	
Bluetooth	2.441	Head	9.60	8.48	7.05	Yes
		Body	19.20	8.48	7.05	Yes
2.4GHz WLAN 802.11 b	2.45	Head	9.58	16.23	41.98	No
		Body	19.17	16.23	41.98	No

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13 Evaluation of Simultaneous

Table 13.1: The sum of reported SAR values for main antenna and WiFi

	Position	Main antenna	Wi-Fi	Sum
Highest reported SAR value for Head	Left Touch	0.55	0.42	**0.97**
	Left Tilt	0.42	0.48	**0.90**
	Right Touch	0.41	0.86	**1.27**
Highest reported SAR value for Body	Rear	1.32	0.20	**1.52**

Table 13.2: The sum of reported SAR values for main antenna and Bluetooth

	Position	Main antenna	BT*	Sum
Highest reported SAR value for Head	Left Touch	0.55	0.33	**0.88**
	Left Tilt	0.42	0.33	**0.75**
	Right Touch	0.41	0.17	**0.74**
Highest reported SAR value for Body	Rear	1.32	0.17	**1.49**

Table 13.3: Estimated SAR for Bluetooth

Position	f (GHz)	Distance (mm)	Upper limit of power *		Estimated$_{1g}$ (W/kg)
			dBm	mW	
Head	2.441	5	9	7.94	0.33
Body	2.441	10	9	7.94	0.17

* - Maximum possible output power declared by manufacturer

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

Conclusion:
According to the above tables, the sum of reported SAR values is < 1.6W/kg. So the simultaneous transmission SAR with volume scans is not required.

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14 SAR Test Result

It is determined by user manual for the distance between the EUT and the phantom bottom.
The distance is 10mm and just applied to the condition of body worn accessory.
It is performed for all SAR measurements with area scan based 1-g SAR estimation (Fast SAR). A zoom scan measurement is added when the estimated 1-g SAR is the highest measured SAR in each exposure configuration, wireless mode and frequency band combination or >1.2W/kg.
The calculated SAR is obtained by the following formula:

$$\text{Reported SAR} = \text{Measured SAR} \times 10^{(P_{Target}-P_{Measured})/10}$$

Where P_{Target} is the power of manufacturing upper limit;
$P_{Measured}$ is the measured power in chapter 11.

Table 14.1: Duty Cycle

Mode	Duty Cycle
Speech for GSM850/1900	1:8.3
GPRS&EGPRS for GSM850/1900	1:2
WCDMA850/1700/1900	1:1
FDD_LTE Band 2/4/5/7	1:1

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14.1 The evaluation of multi-batteries

We'll perform the head measurement in all bands with the primary battery depending on the evaluation of multi-batteries and retest on highest value point with other batteries. Then, repeat the measurement in the Body test.

Table 14.2: The evaluation of multi-batteries for Head Test

Frequency		Mode/Band	Side	Test Position	Battery Manufacturer	SAR(1g) (W/kg)	Power Drift(dB)
MHz	Ch.						
848.8	251	GSM850	Right	Touch	Sunwoda Electronic Co., Ltd.	0.264	0.08
848.8	251	GSM850	Right	Touch	Huizhou Desay Battery Co., Ltd.	0.247	0.06

Note: According to the values in the above table, the battery, HB405979ECW by Sunwoda Electronic Co., Ltd., is the primary battery. We'll perform the Head measurement with this battery and retest on highest value point with others.

Table 14.3: The evaluation of multi-batteries for Body Test

Table 14.4: Frequency		Mode/Band	Test Position	Spacing (mm)	Battery Manufacturer	SAR(1g) (W/kg)	Power Drift(dB)
MHz	Ch.						
848.8	251	GSM850	Rear	10	Sunwoda Electronic Co., Ltd.	0.541	-0.04
848.8	251	GSM850	Rear	10	Huizhou Desay Battery Co., Ltd.	0.532	0.08

Note: According to the values in the above table, the battery, HB405979ECW by Sunwoda Electronic Co., Ltd., is the primary battery. We'll perform the Head measurement with this battery and retest on highest value point with others.

Table 14.5: SAR Values on highest value point for other batteries (Head/Body)

Frequency		Mode/Band	Test Position	Spacing (mm)	Battery Manufacturer	SAR(1g) (W/kg)	Power Drift(dB)
MHz	Ch.						
2462	11	WIFI 2.4G	Right/Head	10	Huizhou Desay Battery Co., Ltd.	0.618	-0.10
1712.4	1312	WCDMA1700	Rear/Body	10	Huizhou Desay Battery Co., Ltd.	1.14	0.05

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14.2 SAR results for Fast SAR

Table 14.6: SAR Values (GSM 850 MHz - Head)

Frequency		Side	Test Position	Figure No.	Conducted Power (dBm)	Max. tune-up Power (dBm)	Measured SAR(10g) (W/kg)	Reported SAR(10g) (W/kg)	Measured SAR(1g) (W/kg)	Reported SAR(1g)(W/kg)	Power Drift (dB)
MHz	Ch.										
836.6	190	Left	Touch	/	31.50	33.5	0.124	**0.20**	0.178	**0.28**	0.06
836.6	190	Left	Tilt	/	31.50	33.5	0.081	**0.13**	0.116	**0.18**	0.05
836.6	190	Right	Touch	/	31.50	33.5	0.124	**0.20**	0.180	**0.29**	0.05
836.6	190	Right	Tilt	/	31.50	33.5	0.075	**0.12**	0.107	**0.17**	0.20
848.8	251	Right	Touch	Fig.1	31.55	33.5	0.203	**0.32**	0.264	**0.41**	0.08
824.2	128	Right	Touch	/	31.38	33.5	0.123	**0.20**	0.178	**0.29**	0.04

Table 14.7: SAR Values (GSM 850 MHz -Body）-AP ON

Frequency		Test Position	Figure No.	Conducted Power (dBm)	Max. tune-up Power (dBm)	Measured SAR(10g) (W/kg)	Reported SAR(10g) (W/kg)	Measured SAR(1g) (W/kg)	Reported SAR(1g)(W/kg)	Power Drift (dB)
MHz	Ch.									
836.6	190	Front	/	27.13	28.5	0.264	**0.36**	0.374	**0.51**	-0.07
836.6	190	Rear	/	27.13	28.5	0.313	**0.43**	0.443	**0.61**	-0.05
836.6	190	Left	/	27.13	28.5	0.235	**0.32**	0.350	**0.48**	-0.03
836.6	190	Right	/	27.13	28.5	0.260	**0.36**	0.384	**0.53**	-0.03
836.6	190	Bottom	/	27.13	28.5	0.014	**0.02**	0.024	**0.03**	0.03
848.8	251	Rear	Fig.2	27.44	28.5	0.414	**0.53**	0.541	**0.69**	-0.04
824.2	128	Rear	/	27.03	28.5	0.297	**0.42**	0.420	**0.59**	0.04

Note1: The distance between the EUT and the phantom bottom is 10mm.

Table 14.8: SAR Values (GSM 850 MHz -Body）-AP OFF

Frequency		Test Position	Figure No.	Conducted Power (dBm)	Max. tune-up Power (dBm)	Measured SAR(10g) (W/kg)	Reported SAR(10g) (W/kg)	Measured SAR(1g) (W/kg)	Reported SAR(1g)(W/kg)	Power Drift (dB)
MHz	Ch.									
836.6	190	Front	/	27.13	28.5	0.264	**0.36**	0.374	**0.51**	-0.07
836.6	190	Rear	/	27.13	28.5	0.313	**0.43**	0.443	**0.61**	-0.05
848.8	251	Rear	/	27.44	28.5	0.414	**0.53**	0.541	**0.69**	-0.04
824.2	128	Rear	/	27.03	28.5	0.297	**0.42**	0.420	**0.59**	0.04

Note1: The distance between the EUT and the phantom bottom is 10mm.

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Table 14.9: SAR Values (GSM 1900 MHz - Head)

Frequency		Side	Test Position	Figure No.	Conducted Power (dBm)	Max. tune-up Power (dBm)	Measured SAR(10g) (W/kg)	Reported SAR(10g) (W/kg)	Measured SAR(1g) (W/kg)	Reported SAR(1g)(W/kg)	Power Drift (dB)
MHz	Ch.										
1880	661	Left	Touch	/	29.70	30.5	0.082	**0.10**	0.139	**0.17**	0.10
1880	661	Left	Tilt	/	29.70	30.5	0.058	**0.07**	0.103	**0.12**	0.07
1880	661	Right	Touch	/	29.70	30.5	0.068	**0.08**	0.115	**0.14**	0.08
1880	661	Right	Tilt	/	29.70	30.5	0.047	**0.06**	0.082	**0.10**	0.03
1909.8	810	Left	Touch	Fig.3	29.96	30.5	0.099	**0.11**	0.158	**0.18**	0.07
1850.2	512	Left	Touch	/	29.71	30.5	0.076	**0.09**	0.130	**0.16**	0.01

Table 14.10: SAR Values (GSM 1900 MHz -Body）-AP ON

Frequency		Test Position	Figure No.	Conducted Power (dBm)	Max. tune-up Power (dBm)	Measured SAR(10g) (W/kg)	Reported SAR(10g) (W/kg)	Measured SAR(1g) (W/kg)	Reported SAR(1g)(W/kg)	Power Drift (dB)
MHz	Ch.									
1880	661	Front	/	24.50	25.5	0.136	**0.17**	0.243	**0.31**	0.01
1880	661	Rear	/	24.50	25.5	0.174	**0.22**	0.288	**0.36**	0.04
1880	661	Left	/	24.50	25.5	0.119	**0.15**	0.202	**0.25**	0.10
1880	661	Right	/	24.50	25.5	0.123	**0.15**	0.217	**0.27**	0.16
1880	661	Bottom	/	24.50	25.5	0.136	**0.17**	0.263	**0.33**	0.11
1909.8	810	Rear	Fig.4	24.44	25.5	0.205	**0.26**	0.326	**0.42**	0.19
1850.2	512	Rear	/	24.53	25.5	0.180	**0.23**	0.297	**0.37**	0.18

Note1: The distance between the EUT and the phantom bottom is 10mm.

Table 14.11: SAR Values (GSM 1900 MHz -Body）-AP OFF

Frequency		Test Position	Figure No.	Conducted Power (dBm)	Max. tune-up Power (dBm)	Measured SAR(10g) (W/kg)	Reported SAR(10g) (W/kg)	Measured SAR(1g) (W/kg)	Reported SAR(1g)(W/kg)	Power Drift (dB)
MHz	Ch.									
1880	661	Front	/	24.50	25.5	0.136	**0.17**	0.243	**0.31**	0.01
1880	661	Rear	/	24.50	25.5	0.174	**0.22**	0.288	**0.36**	0.04
1909.8	810	Rear	/	24.44	25.5	0.205	**0.26**	0.326	**0.42**	0.19
1850.2	512	Rear	/	24.53	25.5	0.180	**0.23**	0.297	**0.37**	0.18

Note1: The distance between the EUT and the phantom bottom is 10mm.

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Table 14.12: SAR Values (WCDMA 850 MHz - Head)

Frequency		Side	Test Position	Figure No.	Conducted Power (dBm)	Max. tune-up Power (dBm)	Measured SAR(10g) (W/kg)	Reported SAR(10g) (W/kg)	Measured SAR(1g) (W/kg)	Reported SAR(1g)(W/kg)	Power Drift (dB)
MHz	Ch.										
836.4	4182	Left	Touch	/	22.9	24	0.143	**0.18**	0.190	**0.24**	-0.16
836.4	4182	Left	Tilt	/	22.9	24	0.062	**0.08**	0.112	**0.14**	0.12
836.4	4182	Right	Touch	/	22.9	24	0.100	**0.13**	0.151	**0.19**	-0.18
836.4	4182	Right	Tilt	/	22.9	24	0.039	**0.05**	0.066	**0.09**	0.11
846.6	4233	Left	Touch	Fig.5	22.7	24	0.148	**0.20**	0.195	**0.26**	0.11
826.4	4132	Left	Touch	/	22.8	24	0.138	**0.18**	0.180	**0.24**	0.14

Table 14.13: SAR Values (WCDMA 850 MHz -Body）-AP ON

Frequency		Test Position	Figure No.	Conducted Power (dBm)	Max. tune-up Power (dBm)	Measured SAR(10g) (W/kg)	Reported SAR(10g) (W/kg)	Measured SAR(1g) (W/kg)	Reported SAR(1g)(W/kg)	Power Drift (dB)
MHz	Ch.									
836.4	4182	Front	/	22.9	24	0.057	**0.07**	0.083	**0.11**	0.02
836.4	4182	Rear	/	22.9	24	0.125	**0.16**	0.178	**0.23**	0.18
836.4	4182	Left	/	22.9	24	0.079	**0.10**	0.123	**0.16**	-0.08
836.4	4182	Right	/	22.9	24	0.105	**0.14**	0.168	**0.22**	0.06
836.4	4182	Bottom	/	22.9	24	0.009	**0.01**	0.018	**0.02**	0.15
846.6	4233	Rear	Fig.6	22.7	24	0.165	**0.22**	0.212	**0.29**	0.08
826.4	4132	Rear	/	22.8	24	0.130	**0.17**	0.183	**0.24**	-0.20

Note1: The distance between the EUT and the phantom bottom is 10mm.

Table 14.14: SAR Values (WCDMA 850 MHz -Body）-AP OFF

Frequency		Test Position	Figure No.	Conducted Power (dBm)	Max. tune-up Power (dBm)	Measured SAR(10g) (W/kg)	Reported SAR(10g) (W/kg)	Measured SAR(1g) (W/kg)	Reported SAR(1g)(W/kg)	Power Drift (dB)
MHz	Ch.									
836.4	4182	Front	/	22.9	24	0.057	**0.07**	0.083	**0.11**	0.02
836.4	4182	Rear	/	22.9	24	0.125	**0.16**	0.178	**0.23**	0.18
846.6	4233	Rear	/	22.7	24	0.165	**0.22**	0.212	**0.29**	0.08
826.4	4132	Rear	/	22.8	24	0.130	**0.17**	0.183	**0.24**	-0.20

Note1: The distance between the EUT and the phantom bottom is 10mm.

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Table 14.15: SAR Values (WCDMA1700 MHz - Head)

Frequency		Side	Test Position	Figure No.	Conducted Power (dBm)	Max. tune-up Power (dBm)	Measured SAR(10g) (W/kg)	Reported SAR(10g) (W/kg)	Measured SAR(1g) (W/kg)	Reported SAR(1g)(W/kg)	Power Drift (dB)
MHz	Ch.										
1732.6	1413	Left	Touch	/	23.17	23.5	0.128	**0.14**	0.211	**0.23**	-0.20
1732.6	1413	Left	Tilt	/	23.17	23.5	0.118	**0.13**	0.199	**0.21**	-0.16
1732.6	1413	Right	Touch	/	23.17	23.5	0.128	**0.14**	0.215	**0.23**	-0.14
1732.6	1413	Right	Tilt	/	23.17	23.5	0.045	**0.05**	0.077	**0.08**	0.16
1752.6	1513	Left	Touch	Fig.7	23.15	23.5	0.152	**0.16**	0.228	**0.25**	0.15
1712.4	1312	Left	Touch	/	23.26	23.5	0.122	**0.13**	0.199	**0.21**	0.13

Table 14.16: SAR Values (WCDMA1700 MHz Body)-AP ON

Frequency		Test Position	Figure No.	Conducted Power (dBm)	Max. tune-up Power (dBm)	Measured SAR(10g) (W/kg)	Reported SAR(10g) (W/kg)	Measured SAR(1g) (W/kg)	Reported SAR(1g)(W/kg)	Power Drift (dB)
MHz	Ch.									
1732.6	1413	Front	/	23.17	23.5	0.403	**0.43**	0.666	**0.72**	0.01
1732.6	1413	Rear	/	23.17	23.5	0.521	**0.56**	0.939	**1.01**	0.20
1732.6	1413	Left	/	23.17	23.5	0.022	**0.02**	0.039	**0.04**	0.16
1732.6	1413	Right	/	23.17	23.5	0.066	**0.07**	0.113	**0.12**	0.19
1732.6	1413	Bottom	/	23.17	23.5	0.498	**0.54**	0.864	**0.93**	0.12
1752.6	1513	Bottom	/	23.15	23.5	0.482	**0.52**	0.833	**0.90**	0.11
1712.4	1312	Bottom	/	23.26	23.5	0.486	**0.51**	0.841	**0.89**	0.09
1752.6	1513	Rear	/	23.15	23.5	0.485	**0.53**	0.882	**0.96**	0.16
1712.4	1312	Rear	Fig.8	23.26	23.5	0.662	**0.70**	1.250	**1.32**	0.10
1712.4	1312	Headset1 Rear	/	23.26	23.5	0.643	**0.68**	1.180	**1.25**	0.04
1712.4	1312	Headset2 Rear	/	23.26	23.5	0.654	**0.69**	1.17	**1.24**	0.08
1712.4	1312	Headset3 Rear	/	23.26	23.5	0.659	**0.70**	1.14	**1.20**	0.10
1712.4	1312	Headset4 Rear	/	23.26	23.5	0.651	**0.69**	1.06	**1.12**	0.12
1712.4	1312	Headset5 Rear	/	23.26	23.5	0.649	**0.69**	1.03	**1.09**	0.06
1712.4	1312	Headset6 Rear	/	23.26	23.5	0.653	**0.69**	1.09	**1.15**	0.05
1712.4	1312	Headset7 Rear	/	23.26	23.5	0.646	**0.68**	0.99	**1.05**	0.03

Note1: The distance between the EUT and the phantom bottom is 10mm.

Note2: Headset1—7 Correspond to AE2--8

Table 14.17: SAR Values (WCDMA1700 MHz -Body)-AP OFF

Frequency		Test Position	Figure No.	Conducted Power (dBm)	Max. tune-up Power (dBm)	Measured SAR(10g) (W/kg)	Reported SAR(10g) (W/kg)	Measured SAR(1g) (W/kg)	Reported SAR(1g)(W/kg)	Power Drift (dB)
MHz	Ch.									
1732.6	1413	Front	/	23.17	23.5	0.521	**0.56**	0.939	**1.01**	0.20
1732.6	1413	Rear	/	23.17	23.5	0.403	**0.43**	0.666	**0.72**	0.01
1752.6	1513	Rear	/	23.15	23.5	0.485	**0.53**	0.882	**0.96**	0.16
1712.4	1312	Rear	/	23.26	23.5	0.662	**0.70**	1.250	**1.32**	0.10
1712.4	1312	Head set Rear	/	23.26	23.5	0.643	**0.68**	1.180	**1.25**	0.04

Note1: The distance between the EUT and the phantom bottom is 10mm

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