SAR TEST REPORT

For

GL Technologies (Hong Kong) Limited

Portable 4G LTE Router

Test Model: GL-E750V2C6

Prepared for	:	GL Technologies (Hong Kong) Limited
Address	:	Unit 601, Building 5W, Hong Kong Science Park, Shatin, N.T., Hong Kong

Prepared by	:	Shenzhen LCS Compliance Testing Laboratory Ltd.
Address	:	101, 201 Bldg A & 301 Bldg C, Juji Industrial Park Yabianxueziwei, Shajing Street, Baoan District, Shenzhen, 518000, China
Tel	:	(86)755-82591330
Fax	:	(86)755-82591332
Web	:	www.LCS-cert.com
Mail	:	webmaster@LCS-cert.com

Date of receipt of test sample	:	July 25, 2023
Number of tested samples	:	1
Sample number	:	A071923013-1
Serial number	:	Prototype
Date of Test	:	July 25, 2023~ August 14, 2023
Date of Report	:	August 18, 2023

SAR TEST REPORT

Report Reference No.....:	**LCSA071923013EB**
Date Of Issue.....:	August 18, 2023
Testing Laboratory Name.....:	**Shenzhen LCS Compliance Testing Laboratory Ltd.**
Address.....:	101, 201 Bldg A & 301 Bldg C, Juji Industrial Park Yabianxueziwei, Shajing Street, Baoan District, Shenzhen, 518000, China
Testing Location/ Procedure .....:	Full application of Harmonised standards ■ Partial application of Harmonised standards □ Other standard testing method □
Applicant's Name.....:	**GL Technologies (Hong Kong) Limited**
Address.....:	Unit 601, Building 5W, Hong Kong Science Park, Shatin, N.T., Hong Kong
Test Specification:	
Standard .....:	IEEE Std C95.1, 2019/IEC-IEEE 62209-1528-2020 /FCC Part 2.1093
Test Report Form No.....:	LCSEMC-1.0
TRF Originator.....:	Shenzhen LCS Compliance Testing Laboratory Ltd.
Master TRF.....:	Dated 2011-03

Test Item Description.....:	**Portable 4G LTE Router**
Trade Mark .....:	GL.iNET
Model/Type Reference .....:	GL-E750V2C6
Operation Frequency.....:	WCDMA II,IV;V LTE2,4,5,7,12,13,14,17,25,26,30,38,41,48,66,71; WIFI 2.4G,5.2G,5.8G
Ratings.....:	Input: 5.0V⎓2.0A For AC Adapter Input: 100-240V~, 50/60Hz, 0.3A Adapter Output: 5.0V⎓2.0A, 10.0W DC 3.7V by Rechargeable Li-ion Battery, 7000mAh
Result .....:	**Positive**

Compiled by:	**Supervised by:**	**Approved by:**
Jay Zhan	Cary Luo	Gavin Liang
Jay Zhan/ File administrators	Cary Luo / Technique principal	Gavin Liang/ Manager

SAR TEST REPORT

Test Report No. :	**LCSA071923013EB**	August 18, 2023 Date of issue

Type / Model.....	:	GL-E750V2C6
EUT.....	:	Portable 4G LTE Router
Applicant.....	**:**	**GL Technologies (Hong Kong) Limited**
Address.....	:	Unit 601, Building 5W, Hong Kong Science Park, Shatin, N.T., Hong Kong
Telephone.....	:	/
Fax.....	:	/
Manufacturer.....	**:**	**Shenzhen Guanglian Zhitong Technology Co., LTD**
Address.....	:	Room 305-306, Skyworth Digital Building, Shiyan Street, Baoan District, Shenzhen, China
Telephone.....	:	/
Fax.....	:	/
Factory.....	**:**	**Shenzhen Guanglian Zhitong Technology Co., LTD**
Address.....	:	Room 305-306, Skyworth Digital Building, Shiyan Street, Baoan District, Shenzhen, China
Telephone.....	:	/
Fax.....	:	/

Revison History

Revision	Issue Date	Revision Content	Revised By
000	August 18, 2023	Initial Issue	---

TABLE OF CONTENTS

1. TEST STANDARDS AND TEST DESCRIPTION

1.1. Test Standards

IEEE Std C95.1-2019: IEEE Standard for Safety Levels with Respect to Human Exposure to Electric, Magnetic, and Electromagnetic Fields, 0 Hz 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.
IEC-IEEE 62209-1528-2020: Measurement procedure for the assessment of specific absorption rate of human exposure to radio frequency fields from hand-held and body-mounted wireless communication devices –Part 1528: Human models, instrumentation, and procedures(Frequency range of 4 MHz to 10 GHz)
FCC Part 2.1093:Radiofrequency Radiation Exposure Evaluation Portable Devices
KDB447498 D01 General RF Exposure Guidance v06 : Mobile and Portable Device RF Exposure Procedures and Equipment Authorization Policies
KDB447498 D02 SAR Procedures for Dongle Xmtr v02r01: SAR Measurement Procedures For USB Dongle Transmitters.
KDB865664 D01 SAR Measurement 100 MHz to 6 GHz v01r04 : SAR Measurement Requirements for 100 MHz to 6 GHz
KDB865664 D02 RF Exposure Reporting v01r02: RF Exposure Compliance Reporting and Documentation Considerations
KDB 248227 D01 802.11 Wi-Fi SAR v02r02: SAR GUIDANCE FOR IEEE 802.11 (Wi-Fi) TRANSMITTERS
KDB941225 D01 3G SAR Procedures: 3G SAR MEAUREMENT PROCEDURES
KDB 941225 D05 SAR for LTE Devices: SAR Evaluation Considerations For LTE Devices

1.2. Test Description

The EUT battery must be fully charged and checked periodically during the test to ascertain uniform power . And Test device is identical prototype.

1.3. General Remarks

Date of receipt of test sample	:	July 25, 2023
Testing commenced on	:	July 25, 2023
Testing concluded on	:	August 18, 2023

1.4. Product Description

The ComNav Technology Ltd.'s Model: GL-E750V2C6 or the "EUT" as referred to in this report; more general information as follows, for more details, refer to the user's manual of the EUT.

General Description	
EUT :	Portable 4G LTE Router
Model/Type reference:	GL-E750V2C6
Additional Model No.	/
FCC ID:	2AFIW-E750V2C6
Contains FCC ID:	XMR2022EM060KGL
Model Declaration:	/
Hardware Version	/
Firmware Version:	/
Power supply:	Input: 5.0V⎓2.0A For AC Adapter Input: 100-240V~, 50/60Hz, 0.3A Adapter Output: 5.0V⎓2.0A, 10.0W DC 3.7V by Rechargeable Li-ion Battery, 7000mAh
The EUT is EM05-G Data Collector. the LTE Module is intended for WLAN transmission. It is equipped withWCDMA Band II, Band IV,Band V; LTE 2,4,5,7,12,13,14,17,25,26,30,38,41,48,66,71;WIFI 2.4G,5.2G,5.8G For more information see the following datasheet	

Technical Characteristics	
LTE	
Operation Band:	E-UTRA Band 2(U.S.-Band) E-UTRA Band 4(U.S.-Band) E-UTRA Band 5(U.S.-Band) E-UTRA Band 7(U.S.-Band) E-UTRA Band 12(U.S.-Band) E-UTRA Band 13(U.S.-Band) E-UTRA Band 14(U.S.-Band) E-UTRA Band 17(U.S.-Band) E-UTRA Band 25(U.S.-Band) E-UTRA Band 26(U.S.-Band) E-UTRA Band 30(U.S.-Band) E-UTRA Band 38(U.S.-Band) E-UTRA Band 41(U.S.-Band) E-UTRA Band 48(U.S.-Band) E-UTRA Band 66(U.S.-Band) E-UTRA Band 71(U.S.-Band)
FrequencyRange:	LTE Band 2: 1852.4~1907.6MHz LTE Band 4: 1710~1755MHz LTE Band 5: 826.4~846.6MHz LTE Band 7: 826.4~846.6MHz LTE Band 12: 826.4~846.6MHz LTE Band 13: 826.4~846.6MHz LTE Band 14: 826.4~846.6MHz LTE Band 17: 826.4~846.6MHz LTE Band 25: 826.4~846.6MHz LTE Band 26: 826.4~846.6MHz

	LTE Band 30: 826.4~846.6MHz LTE Band 38: 826.4~846.6MHz LTE Band 41: 826.4~846.6MHz LTE Band 48: 3550~3700MHz LTE Band 66: 1710~1780MHz LTE Band 71: 663~698MHz
Modulation Type:	QPSK/16QAM
Release Version:	R12
Power Class:	Class 3
Antenna Description:	FPC Antenna 0.25dBi (max.) For E-UTRA Band 2 1.47dBi (max.) For E-UTRA Band 4 2.68dBi (max.) For E-UTRA Band 5 0.55dBi (max.) For E-UTRA Band 7 -0.20dBi (max.) For E-UTRA Band 12 1.54dBi (max.) For E-UTRA Band 13 2.42dBi (max.) For E-UTRA Band 14 -0.20dBi (max.) For E-UTRA Band 17 0.25dBi (max.) For E-UTRA Band 25 2.87dBi (max.) For E-UTRA Band 26 -3.06dBi (max.) For E-UTRA Band 30 -0.23dBi (max.) For E-UTRA Band 38 0.78dBi (max.) For E-UTRA Band 41 -4.29dBi (max.) For E-UTRA Band 48 1.47dBi (max.) For E-UTRA Band 66 1.22dBi (max.) For E-UTRA Band 71
UMTS	
Operation Band:	WCDMA Band II (U.S.-Band) WCDMA Band V (U.S.-Band) WCDMA Band IV (U.S.-Band)
FrequencyRange:	WCDMA Band II: 1852.4~1907.6MHz WCDMA Band IV: 1710~1755MHz WCDMA Band V: 826.4~846.6MHz
Modulation Type:	QPSK,16QAM
WCDMA Release Version:	R99
Antenna Description:	FPC Antenna 0.25dBi (max.) For WCDMA Band II 1.47dBi (max.) For WCDMA Band IV 2.68dBi (max.) For WCDMA Band V
WIFI(2.4G Band)	
Frequency Range:	2412MHz~2462MHz
Channel Spacing:	5MHz
Channel Number:	11 Channels for 20MHz bandwidth (2412~2462MHz) 7 Channels for 40MHz bandwidth (2422~2452MHz)
Modulation Type:	IEEE 802.11b: DSSS (CCK, DQPSK, DBPSK) IEEE 802.11g: OFDM (64QAM, 16QAM, QPSK, BPSK) IEEE 802.11n: OFDM (64QAM, 16QAM, QPSK, BPSK)
Antenna Description:	Antenna0: Internal Antenna, 1.48dBi(Max.) Antenna1: Internal Antenna, 1.57dBi(Max.)

5.2G WLAN	
Frequency Range:	5180MHz~5240MHz
Channel Number:	4 Channels for 20MHz bandwidth(5180MHz~5240MHz) 2 channels for 40MHz bandwidth(5190MHz~5230MHz) 1 channels for 80MHz bandwidth(5210MHz)
Modulation Type:	IEEE 802.11a: OFDM (64QAM, 16QAM, QPSK, BPSK) IEEE 802.11n: OFDM (64QAM, 16QAM, QPSK, BPSK) IEEE 802.11ac: OFDM (256QAM, 64QAM, 16QAM, QPSK, BPSK)
Antenna Description:	Internal Antenna, 0.82dBi(Max.)
5.8G WLAN	
Frequency Range:	5745MHz~5825MHz
Channel Number:	5 channels for 20MHz bandwidth(5745MHz~5825MHz) 2 channels for 40MHz bandwidth(5755MHz~5795MHz) 1 channels for 80MHz bandwidth(5775MHz)
Modulation Type:	IEEE 802.11a: OFDM (64QAM, 16QAM, QPSK, BPSK) IEEE 802.11n: OFDM (64QAM, 16QAM, QPSK, BPSK) IEEE 802.11ac: OFDM (256QAM, 64QAM, 16QAM, QPSK, BPSK)
Antenna Description:	Internal Antenna, 0.95dBi(Max.)

1.5. Statement of Compliance

The maximum of results of SAR found during testing for GL-E750V2C6 are follows:

<Highest Reported standalone SAR Summary>

Classment Class	Frequency Band	Body-worn/Hotspot (Report SAR1-g (W/kg) (Separation Distance 0mm)
PCB	WCDMA Band II	1.081
	WCDMA Band IV	0.644
	WCDMA Band V	0.790
	LTE band 2	0.270
	LTE band 4	0.376
	LTE band 5	0.336
	LTE band 7	0.316
	LTE band 12	0.263
	LTE band 13	0.302
	LTE band 14	0.336
	LTE band 17	0.290
	LTE band 25	0.309
	LTE band 26	0.118
	LTE band 30	0.136
	LTE band 38	0.169
	LTE band 41	0.429
	LTE band 48	0.230
	LTE band 66	0.324
	LTE band 71	0.335
DTS	WIFI2.4G Ant0	0.068
	WIFI2.4G Ant1	0.035
NII	WIFI 5.2G Ant1	0.062
	WIFI 5.8G Ant1	0.061

This device is in compliance with Specific Absorption Rate (SAR) for general population/uncontrolled exposure limits (1.6 W/kg) specified in FCC 47 CFR part 2 (2.1093) and ANSI/IEEE C95.1-2019, and had been tested in accordance with the measurement methods and procedures specified in IEEE 1528-2013.

<Highest Reported simultaneous SAR Summary>

Exposure Position	Classment Class	Body (Report SAR_{1-g} (W/kg)	Highest Reported Simultaneous Transmission SAR_{1-g} (W/kg)
Body (hotspot open)	PCB	1.081	**1.211**
	DTS (Ant0)	0.068	
	NII(Ant1)	0.062	

2. TEST ENVIRONMENT

2.1. Test Facility

The test facility is recognized, certified, or accredited by the following organizations:

Site Description

SAR Lab. : NVLAP Accreditation Code is 600167-0.
FCC Designation Number is CN5024.
CAB identifier is CN0071.
CNAS Registration Number is L4595.
Test Firm Registration Number: 254912.

2.2. Environmental conditions

During the measurement the environmental conditions were within the listed ranges:

Temperature:	18-25 ° C
Humidity:	40-65 %
Atmospheric pressure:	950-1050mbar

2.3. SAR Limits

FCC Limit (1g Tissue)

EXPOSURE LIMITS	SAR (W/kg)	
	(General Population / Uncontrolled Exposure Environment)	(Occupational / Controlled Exposure Environment)
Spatial Average(averaged over the whole body)	0.08	0.4
Spatial Peak(averaged over any 1 g of tissue)	1.6	8.0
Spatial Peak(hands/wrists/ feet/anklesaveraged over 10 g)	4.0	20.0

Population/Uncontrolled Environments are defined as locations where there is the exposure of individual who have no knowledge or control of their exposure.
Occupational/Controlled Environments are defined as locations where there is exposure that may be incurred by people who are aware of the potential for exposure (i.e. as a result of employment or occupation).

2.4. Equipments Used during the Test

Item	Equipment	Manufacturer	Model No.	Serial No.	Cal Date	Due Date
1	PC	Lenovo	G5005	MY42081102	N/A	N/A
2	SAR Measurement system	SATIMO	4014_01	SAR_4014_01	N/A	N/A
3	Signal Generator	Agilent	E4438C	MY49072627	2023/06/09	2024/06/08
4	S-parameter Network Analyzer	Agilent	8753ES	US38432944	2023/06/09	2024/06/08
5	Wideband Radio Communication Tester	R&S	CMW500	103818-1	2022/10/29	2023/10/28
6	E-Field PROBE	MVG	SSE2	SN 25/22 EPGO376	2023/06/22	2024/06/21
7	DIPOLE 750	SATIMO	SID 750	SN 07/14 DIP 0G750-302	2021/09/29	2024/09/28
8	DIPOLE 835	SATIMO	SID 835	SN 07/14 DIP 0G835-303	2021/09/29	2024/09/28
9	DIPOLE 1800	SATIMO	SID 1800	SN 07/14 DIP 1G800-301	2021/09/29	2024/09/28
10	DIPOLE 1900	SATIMO	SID 1900	SN 38/18 DIP 1G900-466	2021/09/22	2024/09/21
11	DIPOLE 2300	SATIMO	SID 2300	SN 38/18 DIP 2G300-467	2021/09/22	2024/09/21
12	DIPOLE 2450	SATIMO	SID 2450	SN 07/14 DIP 2G450-306	2021/09/29	2024/09/28
13	DIPOLE 2600	SATIMO	SID 2600	SN 38/18 DIP 2G600-468	2021/09/22	2024/09/21
14	DIPOLE 3500	SATIMO	SID 3500	SN 06/22 DIP 3G500-646	2022/11/2	2025/11/02
15	DIPOLE 3700	SATIMO	SID 3700	SN 09/12 DIP 3G700-361	2021/10/15	2024/10/15
16	DIPOLE 5000-6000	SATIMO	SWG5500	SN 49/16 WGA 43	2021/09/22	2024/09/21
17	COMOSAR OPENCoaxial Probe	SATIMO	OCPG 68	SN 40/14 OCPG68	2022/10/29	2023/10/28
18	SAR Locator	SATIMO	VPS51	SN 40/14 VPS51	2022/10/29	2023/10/28
19	Communication Antenna	SATIMO	ANTA57	SN 39/14 ANTA57	2022/10/29	2023/10/28
20	FEATURE PHONEPOSITIONING DEVICE	SATIMO	MSH98	SN 40/14 MSH98	N/A	N/A
21	DUMMY PROBE	SATIMO	DP60	SN 03/14 DP60	N/A	N/A
22	SAM PHANTOM	SATIMO	SAM117	SN 40/14 SAM117	N/A	N/A
23	Liquid measurement Kit	HP	85033D	3423A03482	N/A	N/A
24	Power meter	Agilent	E4419B	MY45104493	2022/10/29	2023/10/28
25	Power meter	Agilent	E4419B	MY45100308	2022/10/29	2023/10/28
26	Power sensor	Agilent	E9301H	MY41495616	2022/10/29	2023/10/28
27	Power sensor	Agilent	E9301H	MY41495234	2022/10/29	2023/10/28
28	Directional Coupler	MCLI/USA	4426-20	3746	2023/06/09	2024/06/08

3. SAR MEASUREMENTS SYSTEM CONFIGURATION

3.1. SARMeasurement Set-up

The OPENSAR system for performing compliance tests consist of the following items:

A standard high precision 6-axis robot (KUKA) with controller and software.

KUKA Control Panel (KCP)

A dosimetric probe, i.e., an isotropic E-field probe optimized and calibrated for usage in tissue simulating liquid. The probe is equipped with a Video Positioning System(VPS).

The stress sensor is composed with mechanical and electronic when the electronic part detects a change on the electro-mechanical switch,It sends an “Emergency signal” to the robot controller that to stop robot’s moves

A computer operating Windows XP.

OPENSAR software

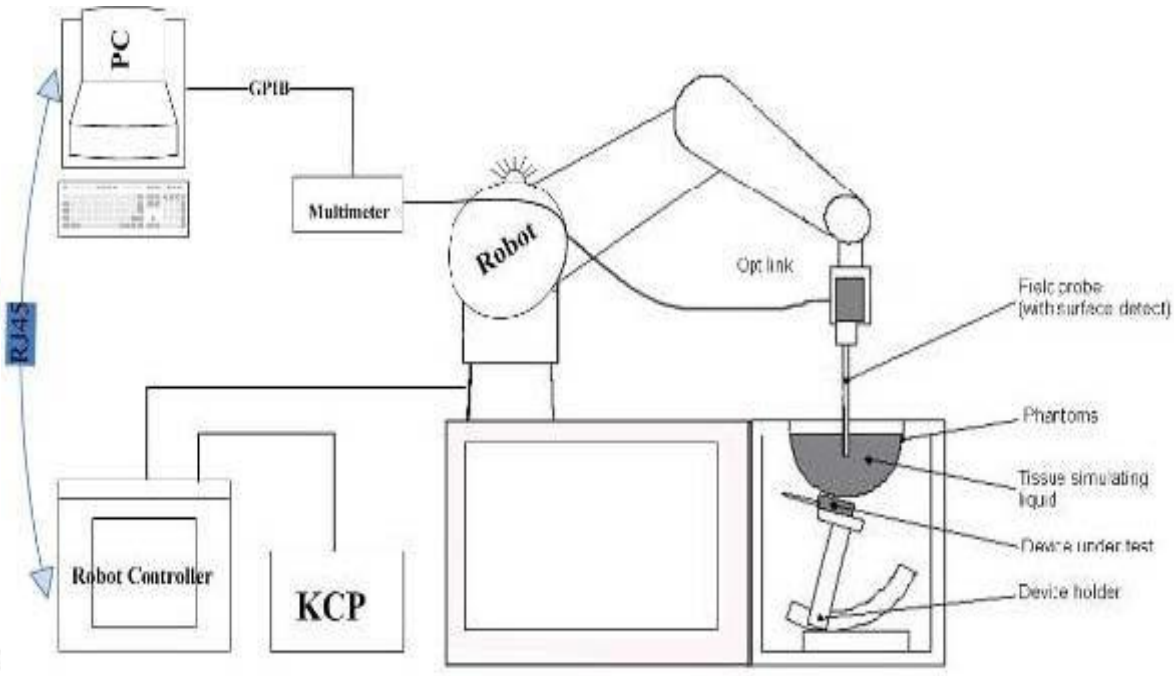
Remote control with teaches pendant and additional circuitry for robot safety such as warning lamps, etc.

The SAM phantom enabling testing left-hand right-hand and body usage.

The Position device for handheld EUT

Tissue simulating liquid mixed according to the given recipes .

System validation dipoles to validate the proper functioning of the system.



3.2. OPENSAR E-field Probe System

The SAR measurements were conducted with the dosimetric probe EPGO376 (manufactured by MVG), designed in the classical triangular configuration and optimized for dosimetric evaluation.

Probe Specification

ConstructionSymmetrical design with triangular core
Interleaved sensors
Built-in shielding against static charges
PEEK enclosure material (resistant to organic solvents, e.g., DGBE)

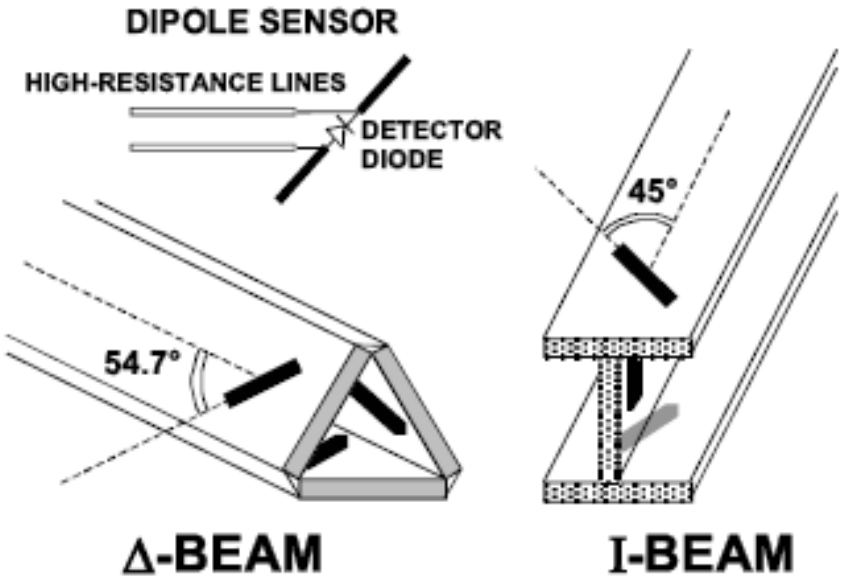
CalibrationISO/IEC 17025 calibration service available.

Frequency	450 MHz to 6 GHz; Linearity:0.25dB(450 MHz to 6 GHz)
Directivity	0.25 dB in HSL (rotation around probe axis) 0.5 dB in tissue material (rotation normal to probe axis)
Dynamic Range	0.01W/kg to > 100 W/kg; Linearity: 0.25 dB
Dimensions	Overall length: 330 mm (Tip: 16mm) Tip diameter: 5 mm (Body: 8 mm) Distance from probe tip to sensor centers: 2.5 mm
Application	General dosimetry up to 6 GHz Dosimetry in strong gradient fields Compliance tests of Mobile Phones

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.

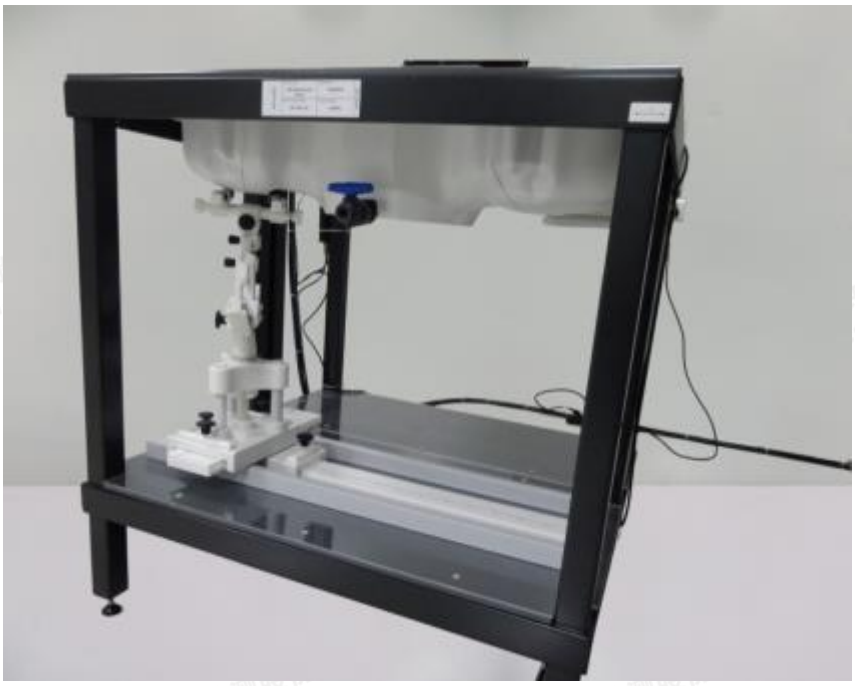
The E-Field probe utilizes a triangular sensor arrangement as detailed in the diagram below:



3.3. Phantoms

The SAM Phantom SAM117 is constructed of a fiberglass shell ntegrated in a wooden table. The shape of the shell is in compliance with the specification set in IEEE 1528 and EN62209-1 , EN62209-2.The phantom enables the dosimetric evaluation of left and right hand phone usage as well as body mounted usage at the flat phantom region. A cover prevents the evaporation of the liquid. Reference markings on the Phantom allow the complete setup of allpredefined phantom positions and measurement grids by manually teaching three points in the robo

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.

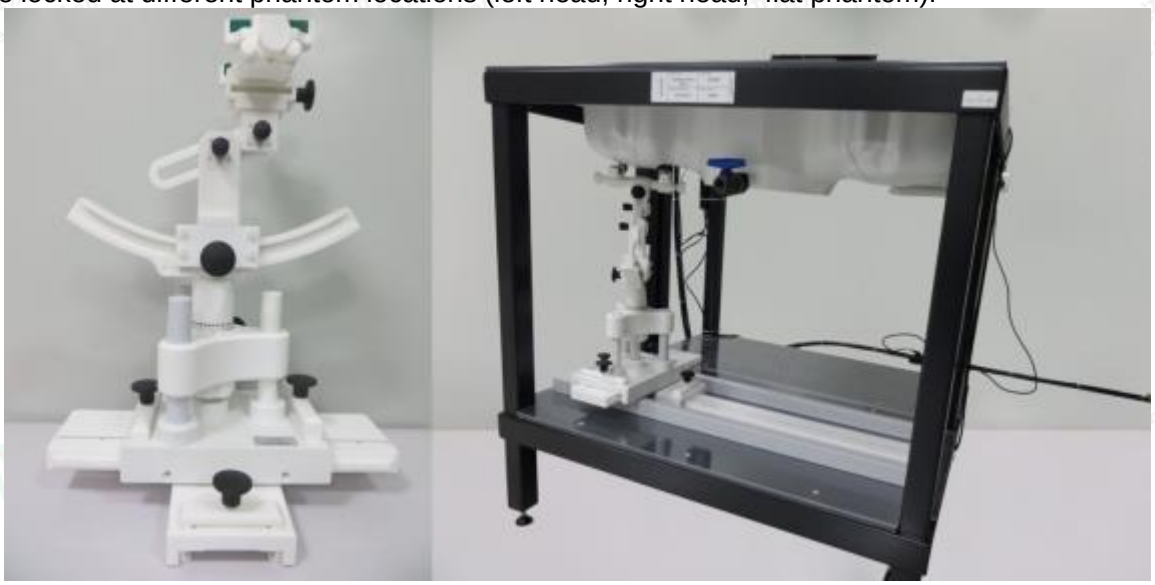


SAM Twin Phantom

3.4. Device Holder

In combination with the Generic Twin PhantomSAM117, the Mounting Device enables the rotation of the

mounted transmitter in spherical coordinates whereby the rotation points is the ear opening. The devices can be easily, accurately, and repeatedly positioned according to the FCC specifications. The device holder can be locked at different phantom locations (left head, right head, flat phantom).



Device holder supplied by SATIMO

3.5. Scanning Procedure

The procedure for assessing the peak spatial-average SAR value consists of the following steps

Power Reference Measurement

The reference and drift jobs are useful jobs for monitoring the power drift of the device under test in the batch process. Both jobs measure the field at a specified reference position, at a selectable distance from the phantom surface. The reference position can be either the selected section's grid reference point or a user point in this section. The reference job projects the selected point onto the phantom surface, orients the probe perpendicularly to the surface, and approaches the surface using the selected detection method.

Area Scan

The Area Scan is used as a fast scan in two dimensions to find the area of high field values before running a detailed measurement around the hot spot.Before starting the area scan a grid spacing of 15 mm x 15 mm is set. During the scan the distance of the probe to the phantom remains unchanged. After finishing area scan, the field maxima within a range of 2 dB will be ascertained.

	≤ 3 GHz	> 3 GHz
Maximum distance from closest measurement point (geometric center of probe sensors) to phantom surface	5 mm ± 1 mm	½·δ·ln(2) mm ± 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.	

Zoom Scan

Zoom Scans are used to estimate the peak spatial SAR values within a cubic averaging volume containing 1 g and 10 g of simulated tissue. The default Zoom Scan is done by 7x7x7 points within a cube whose base is centered around the maxima found in the preceding area scan.

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·$\Delta z_{Zoom}(n-1)$ mm	
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 IEEE Std 1528-2013 for details.

* When zoom scan is required and the *reported* SAR from the *area scan based 1-g SAR estimation* procedures of KDB Publication 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.

Power Drift measurement

The drift job measures the field at the same location as the most recent reference job within the same procedure, and with the same settings. The drift measurement gives the field difference in dB from the reading conducted within the last reference measurement. Several drift measurements are possible for one reference measurement. This allows a user to monitor the power drift of the device under test within a batch process. In the properties of the Drift job, the user can specify a limit for the drift and have OPENSAR software stop the measurements if this limit is exceeded.

3.6. Data Storage and Evaluation

Data Storage

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

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

Data Evaluation

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

Probe parameters:	- Sensitivity	Normi, ai0, ai1, ai2
	- Conversion factor	ConvFi
	- Diode compression point	Dcpi
Device parameters:	- Frequency	f
	- Crest factor	cf
Media parameters:	- Conductivity	σ
	- Density	ρ

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

The first step of the evaluation is a linearization of the filtered input signal to account for the compression characteristics of the detector diode. The compensation depends on the input signal, the diode type and the DC-transmission factor from the diode to the evaluation electronics.If the exciting field is pulsed, the crest factor of the signal must be known to correctly compensate for peak power. The formula for each channel can be given as:

$$V_i = U_i + U_i^2 \cdot \frac{cf}{dcp_i}$$

With Vi = compensated signal of channel i (i = x, y, z)
Ui = input signal of channel i (i = x, y, z)
cf = crest factor of exciting field
dcpi = diode compression point

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

$$\text{E} - \text{fieldprobes}: \qquad E_i = \sqrt{\frac{V_i}{Norm_i \cdot ConvF}}$$

$$\text{H} - \text{fieldprobes}: \qquad H_i = \sqrt{V_i} \cdot \frac{a_{i0} + a_{i1} f + a_{i2} f^2}{f}$$

With Vi = compensated signal of channel i (i = x, y, z)
Normi = sensor sensitivity of channel i (i = x, y, z)
[mV/(V/m)2] for E-field Probes
ConvF = sensitivity enhancement in solution
aij = sensor sensitivity factors for H-field probes
f = carrier frequency [GHz]
Ei = electric field strength of channel i in V/m
Hi = magnetic field strength of channel i in A/m

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

$$E_{tot} = \sqrt{E_x^2 + E_y^2 + E_z^2}$$

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

$$SAR = E_{tot}^2 \cdot \frac{\sigma}{\rho \cdot 1'000}$$

with SAR = local specific absorption rate in mW/g
Etot = total field strength in V/m
σ = conductivity in [mho/m] or [Siemens/m]
ρ = equivalent tissue density in g/cm3

Note that the density is normally set to 1 (or 1.06), to account for actual brain density rather than the density of the simulation liquid.

3.7. Tissue Dielectric Parameters for Head and Body Phantoms

The liquid is consisted of water,salt,Glycol,Sugar,Preventol and Cellulose.The liquid has previously been proven to be suited for worst-case.It's satisfying the latest tissue dielectric parameters requirements proposed by the KDB865664.

The composition of the tissue simulating liquid

Frequency (MHz)	Bactericide	DGBE	HEC	NaCl	Sucrose	1,2-Propan ediol	X100	Water	Conductivity	Permittivity
	%	%	%	%	%	%	%	%	σ	εr
750	/	/	/	0.79	/	64.81	/	34.40	0.97	41.8
835	/	/	/	0.79	/	64.81	/	34.40	0.97	41.8
900	/	/	/	0.79	/	64.81	/	34.40	0.97	41.8
1800	/	13.84	/	0.35	/	/	30.45	55.36	1.38	41.0
1900	/	13.84	/	0.35	/	/	30.45	55.36	1.38	41.0
2000	/	7.99	/	0.16	/	/	19.97	71.88	1.55	41.1
2450	/	7.99	/	0.16	/	/	19.97	71.88	1.88	40.3
2600	/	7.99	/	0.16	/	/	19.97	71.88	1.88	40.3

Target Frequency (MHz)	Head	
	ε_r	σ(S/m)
150	52.3	0.76
300	45.3	0.87
450	43.5	0.87
750	42.0	0.89
835	41.5	0.90
900	41.5	0.97
915	41.5	0.98
1450	40.5	1.20
1610	40.3	1.29
1800-2000	40.0	1.40
2450	39.2	1.80
2600	39.0	1.96
3000	38.5	2.40
3500	37.9	2.91
3700	37.7	3.12
5800	35.3	5.27

3.8. Tissue equivalent liquid properties

Dielectric Performance of Head Tissue Simulating Liquid

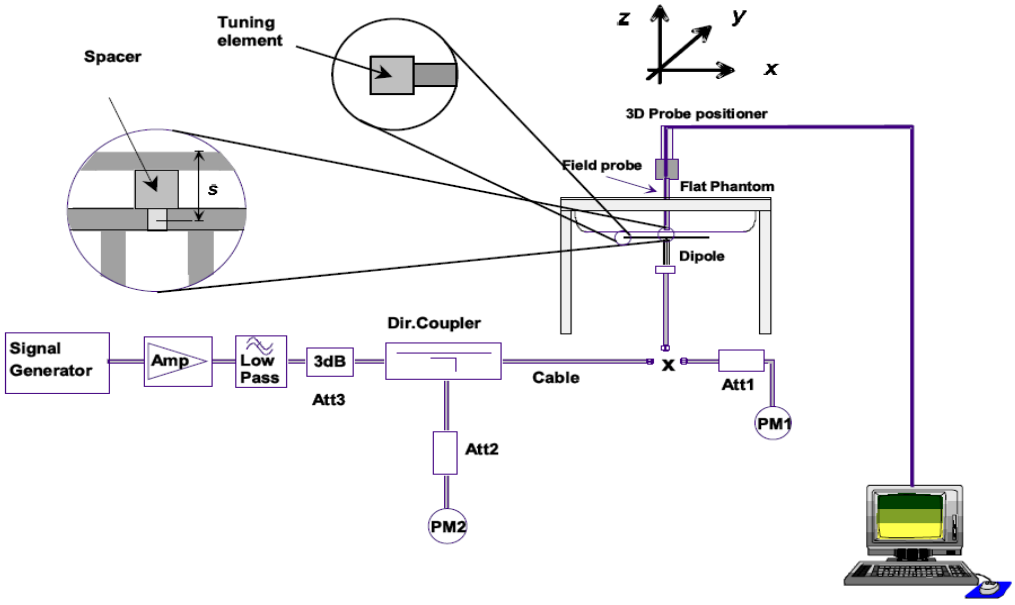
Tissue Type	Measured Frequency (MHz)	Target Tissue		Measured Tissue				Liquid Temp.	Test Data
		σ	ε_r	σ	Dev.	ε_r	Dev.		
750H	750	0.89	41.96	0.90	1.12%	41.68	-0.67%	21.3	07/27/2023
835H	835	0.97	41.50	0.96	-1.03%	41.52	0.05%	20.2	07/31/2023
1800H	1800	1.40	40.00	1.41	0.71%	39.95	-0.12%	22.1	08/02/2023

1900H	1900	1.40	40.00	1.39	-0.71%	39.86	-0.35%	21.3	08/04/2023
2300H	2300	1.66	39.47	1.64	-1.20%	39.69	0.56%	21.4	08/05/2023
2450H	2450	1.80	39.20	1.77	-1.67%	39.41	0.54%	23.4	08/08/2023
2600H	2600	1.96	39.01	1.94	-1.02%	39.32	0.79%	21.5	08/09/2023
3500H	3500	2.91	37.93	2.89	-0.69%	38.51	1.53%	21.7	08/10/2023
3700H	3700	3.12	37.70	3.02	-3.21%	37.46	-0.64%	21.2	08/11/2023
5200H	5200	4.66	36.00	4.67	0.21%	35.72	-0.78%	23.2	08/12/2023
5800H	5800	5.27	35.30	5.24	-0.57%	36.65	3.82%	22.5	08/14/2023

3.9. System Check

The purpose of the system check is to verify that the system operates within its specifications at the decice test frequency.The system check is simple check of repeatability to make sure that the system works correctly at the time of the compliance test;

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



The output power on dipole port must be calibrated to 20 dBm (100mW) before dipole is connected.

Photo of Dipole Setup

Justification for Extended SAR Dipole Calibrations

Referring to KDB 865664D01V01r04, if dipoles are verified in return loss (<-20dB, within 20% of prior calibration), and in impedance (within 5 ohm of prior calibration), the annual calibration is not necessary and the calibration interval can be extended.While calibration intervals not exceed 3 years.

SID750 SN 07/14 DIP 0G750-302 Extend Dipole Calibrations

Date of Measurement	Return-Loss (dB)	Delta (%)	Real Impedance (ohm)	Delta (ohm)	Imaginary Impedance (ohm)	Delta (ohm)
2021-09-29	-34.80		50.7		1.6	
2022-09-29	-34.35	-1.29	51.2	0.5	1.5	-0.1

SID835 SN 07/14 DIP 0G835-303 Extend Dipole Calibrations

Date of Measurement	Return-Loss (dB)	Delta (%)	Real Impedance (ohm)	Delta (ohm)	Imaginary Impedance (ohm)	Delta (ohm)
2021-09-29	-24.49		54.9		2.8	
2022-09-29	-24.17	-1.31	54.5	-0.4	2.6	-0.2

SID1800 SN 30/14 DIP 1G800-301 Extend Dipole Calibrations

Date of Measurement	Return-Loss (dB)	Delta (%)	Real Impedance (ohm)	Delta (ohm)	Imaginary Impedance (ohm)	Delta (ohm)
2021-09-29	-20.26		43.1		6.9	
2022-09-29	-20.13	-0.64	42.9	-0.2	6.7	-0.2

SID1900 SN 38/18 DIP 1G900-466 Extend Dipole Calibrations

Date of Measurement	Return-Loss (dB)	Delta (%)	Real Impedance (ohm)	Delta (ohm)	Imaginary Impedance (ohm)	Delta (ohm)
2021-09-22	-26.43		50.5		4.7	
2022-09-22	-26.33	-0.38	50.2	-0.3	4.5	-0.2

SID2300 SN 38/18 DIP 2G300-467 Extend Dipole Calibrations

Date of Measurement	Return-Loss (dB)	Delta (%)	Real Impedance (ohm)	Delta (ohm)	Imaginary Impedance (ohm)	Delta (ohm)
2021-09-22	-25.78		46.6		2.6	
2021-09-22	-25.69	0.32	46.9	-0.1	2.2	-0.1

SID2450 SN 07/14 DIP 2G450-306 Extend Dipole Calibrations

Date of Measurement	Return-Loss (dB)	Delta (%)	Real Impedance (ohm)	Delta (ohm)	Imaginary Impedance (ohm)	Delta (ohm)
2021-09-29	-25.59		44.7		-1.1	
2022-09-29	-25.68	0.35	44.8	0.1	-1.0	0.1

SID2600 SN 38/18 DIP 2G600-468 Extend Dipole Calibrations

Date of Measurement	Return-Loss (dB)	Delta (%)	Real Impedance (ohm)	Delta (ohm)	Imaginary Impedance (ohm)	Delta (ohm)
2021-09-22	-29.14		49.2		3.4	
2022-09-22	-29.12	-0.07	49.1	-0.1	3.2	-0.1

SID3500 SN 06/22 DIP 3G500-646 Extend Dipole Calibrations

Date of Measurement	Return-Loss (dB)	Delta (%)	Real Impedance (ohm)	Delta (ohm)	Imaginary Impedance (ohm)	Delta (ohm)
2022-11-02	-25.97		53.4		-3.7	

SID3700 SN 09/12 DIP 3G700-361 Extend Dipole Calibrations

Date of Measurement	Return-Loss (dB)	Delta (%)	Real Impedance (ohm)	Delta (ohm)	Imaginary Impedance (ohm)	Delta (ohm)
2021-10-15	-20.85		54.9		-8.3	
2022-10-15	-20.94	0.43	55.0	0.1	-8.29	0.01

SID5200 SN 49/16 DIP WGA43 Extend Dipole Calibrations

Date of Measurement	Return-Loss (dB)	Delta (%)	Real Impedance (ohm)	Delta (ohm)	Imaginary Impedance (ohm)	Delta (ohm)
2021-09-22	-8.59		19.38		13.50	
2022-09-22	-8.62	0.35	19.25	-0.13	13.47	-0.03

SID5800 SN 49/16 DIP WGA43 Extend Dipole Calibrations

Date of Measurement	Return-Loss (dB)	Delta (%)	Real Impedance (ohm)	Delta (ohm)	Imaginary Impedance (ohm)	Delta (ohm)
2021-09-22	-11.37		54.79		25.47	
2022-09-22	-11.42	0.44	54.68	-0.11	25.26	-0.21

Mixture Type	Frequency (MHz)	Power	SAR_{1g} (W/Kg)	SAR_{10g} (W/Kg)	Drift (%)	1W Target		Difference percentage		Liquid Temp	Date
						SAR_{1g} (W/Kg)	SAR_{10g} (W/Kg)	1g	10g		
Head	750	100 mW	0.833	0.562	0.98	8.38	5.53	-0.60%	1.63%	21.3	07/27/2023
		Normalize to 1 Watt	8.33	5.62							
Head	835	100 mW	0.953	0.636	0.33	9.60	6.20	-0.73%	2.58%	20.2	07/31/2023
		Normalize to 1 Watt	9.53	6.36							
Head	1800	100 mW	3.839	2.043	-1.11	38.13	20.20	0.68%	1.14%	22.1	08/02/2023
		Normalize to 1 Watt	38.39	20.43							
Head	1900	100 mW	3.978	2.093	-4.15	40.03	20.55	-0.62%	1.85%	21.3	08/04/2023
		Normalize to 1 Watt	39.78	20.93							
Head	2300	100 mW	4.911	2.289	0.08	49.24	23.05	-0.26%	-0.69%	21.4	08/05/2023
		Normalize to 1 Watt	49.11	22.89							
Head	2450	100 mW	5.426	2.503	-3.65	53.89	24.15	0.69%	3.64%	23.4	08/08/2023
		Normalize to 1 Watt	54.26	25.03							
Head	2600	100 mW	5.718	2.298	-4.85	56.91	24.69	0.47%	-6.93%	21.5	08/09/2023
		Normalize to 1 Watt	57.18	22.98							
Head	3500	100 mW	6.882	2.625	-2.56	68.97	25.38	-0.22%	3.43%	21.7	08/10/2023
		Normalize to 1 Watt	68.82	26.25							
Head	3700	100 mW	6.542	2.365	0.74	66.30	24.16	-1.33%	-2.11%	21.2	08/11/2023
		Normalize to 1 Watt	65.42	23.65							
Head	5200	100 mW	17.219	5.906	4.52	165.77	57.20	3.87%	3.25%	23.2	08/12/2023
		Normalize to 1 Watt	172.19	59.06							
Head	5800	100 mW	18.252	6.158	3.66	186.77	62.84	-2.28%	-2.01%	22.5	08/14/2023
		Normalize to 1 Watt	182.52	61.58							

3.10. SAR measurement procedure

The measurement procedures are as follows:

3.10.1 Conducted power measurement

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

3.10.2 GSM Test Configuration

SAR tests for GSM 850 and GSM 1900, a communication link is set up with a System Simulator (SS) by air link. Using CMU200 the power level is set to “5” for GSM 850, set to “0” for GSM 1900. Since the GPRS class is 12 for this EUT, it has at most 4 timeslots in uplink and at most 4 timeslots in downlink, the maximum total timeslots is 5. the EGPRS class is 12 for this EUT, it has at most 4 timeslots in uplink and at most 4 timeslots in downlink, the maximum total timeslots is 5.

SAR test reduction for GPRS and EDGE modes is determined by the source-based time-averaged output power specified for production units, including tune-up tolerance. The data mode with highest specified time-averaged output power should be tested for SAR compliance in the applicable exposure conditions. For modes with the same specified maximum output power and tolerance, the higher number time-slot configuration should be tested. GSM voice and GPRS data use GMSK, which is a constant amplitude modulation with minimal peak to average power difference within the time-slot burst. For EDGE, GMSK is used for MCS 1 – MCS 4 and 8-PSK is used for MCS 5 – MCS 9; where 8-PSK has an inherently higher peak-to-average power ratio. The GMSK and 8-PSK EDGE configurations are considered separately for SAR compliance. The GMSK EDGE configurations are grouped with GPRS and considered with respect to time-averaged maximum output power to determine compliance. The 3G SAR test reduction procedure is applied to 8-PSK EDGE with GMSK GPRS/EDGE as the primary mode.

3.10.3 UMTS Test Configuration

3G SAR Test Reduction Procedure
In the following procedures, the mode tested for SAR is referred to as the primary mode. The equivalent modes considered for SAR test reduction are denoted as secondary modes. Both primary and secondary modes must be in the same frequency band. 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.3 This is referred to as the 3G SAR test reduction procedure in the following SAR test guidance, where the primary mode is identified in the applicable wireless mode test procedures and the secondary mode is wireless mode being considered for SAR test reduction by that procedure. When the 3G SAR test reduction procedure is not satisfied, it is identified as “otherwise” in the applicable procedures; SAR measurement is required for the secondary mode.

Output power Verification

Maximum output power is verified on the high, middle and low channels according to procedures described in section 5.2 of 3GPP TS 34.121, using the appropriate RMC or AMR with TPC (transmit power control) set to all “1’s” for WCDMA/HSDPA or by applying the required inner loop power control procedures to maintain maximum output power while HSUPA is active. Results for all applicable physical channel configurations (DPCCH, DPDCHn and spreading codes, HSDPA, HSPA) are requied in the SAR report. All configurations that are not supported by the handset or cannot be measured due to technical or equipment limitations must be clearly identified.

Head SAR

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

1) Body-Worn Accessory SAR

SAR for body-worn accessory configurations is measured using a 12.2 kbps RMC with TPC bits configured to all "1's". The 3G SAR test reduction procedure is applied to other spreading codes and multiple DPDCHn configurations supported by the handset with 12.2 kbps RMC as the primary mode. Otherwise, SAR is measured using an applicable RMC configuration with the corresponding spreaing code or DPDCHn, for the highest reported body-worn accessory exposure SAR configuration in 12.2 kbps RMC. When more than 2 DPDCHn are supported by the handset, it may be necessary to configure additional DPDCHn using FTM (Factory Test Mode) or other chipset based test approaches with parameters similar to those used in 384 kbps and 768 kbps RMC.

2) Handsets with Release 5 HSDPA

The 3G SAR test reduction procedure is applied to HSDPA body-worn accessory configurations with 12.2 kbps RMC as the primary mode. Otherwise, SAR is measured for HSDPA using the HSDPA body SAR procedures in the "Release 5 HSDPA Data Devices" section of this document, for the highest reported SAR body-worn accessory exposure configuration in 12.2 kbps RMC. Handsets with both HSDPA and HSUPA are tested according to Release 6 HSPA test procedures.

HSDPA should be configured according to the UE category of a test device.The number of HSDSCH/ HS-PDSCHs, HARQ processes, minimum inter-TTI interval, transport block sizes and RV coding sequence are defined by the H-set. To maintain a consistent test configuration and stable transmission conditions, QPSK is used in the H-set for SAR testing. HS-DPCCH shouldbe configured with a CQI feedback cycle of 4 ms with a CQI repetition factor of 2 to maintain aconstant rate of active CQI slots. DPCCH and DPDCH gain factors(βc, βd), and HS-DPCCHpower offset parameters (ΔACK, ΔNACK, ΔCQI) should be set according to values indicated in theTable below. The CQI value is determined by the UE category, transport block size, numberof HS-PDSCHs and modulation used in the H-set

Table 2: Subtests for UMTS Release 5 HSDPA

Sub-set	β_c	β_d	β_d (SF)	β_c/β_d	β_{hs} (note 1, note 2)	CM(dB) (note 3)	MPR(dB)
1	2/15	15/15	64	2/15	4/15	0.0	0.0
2	12/15 (note 4)	15/15 (note 4)	64	12/15 (note 4)	24/15	1.0	0.0
3	15/15	8/15	64	15/8	30/15	1.5	0.5
4	15/15	4/15	64	15/4	30/15	1.5	0.5

Note1: Δ_{ACK}, Δ_{NACK} and Δ_{CQI}= 8 ⇔ $A_{hs} = \beta_{hs}/\beta_c$=30/15 ⇔ β_{hs}=30/15*β_c
Note2: CM=1 forβ_c/β_d =12/15, β_{hs}/β_c=24/15.
Note3:For subtest 2 the $\beta_c\beta_d$ ratio of 12/15 for the TFC during the measurement period(TF1,TF0) is achieved by setting the signaled gain factors for the reference TFC (TFC1,TF1) to β_c=11/15 and β_d=15/15.

HSUPA Test Configuration

The 3G SAR test reduction procedure is applied to HSPA (HSUPA/HSDPA with RMC) body-worn accessory configurations with 12.2 kbps RMC as the primary mode. Otherwise, SAR is measured for HSPA using the HSPA body SAR procedures in the "Release 6 HSPA Data Devices" section of this document, for the highest reported body-worn accessory exposure SAR configuration in 12.2 kbps RMC. When VOIP is applicable for next to the ear head exposure in HSPA, the 3G SAR test reduction procedure is applied to HSPA with 12.2 kbps RMC as the primary mode; otherwise, the same HSPA configuration used for body-worn accessory measurements is tested for next to the ear head exposure.

Due to inner loop power control requirements in HSPA, a communication test set is required for output power and SAR tests. The 12.2 kbps RMC, FRC H-set 1 and E-DCH configurations for HSPA are configured according to the β values indicated in Table 2 and other applicable procedures described in the 'WCDMA Handset' and 'Release 5 HSDPA Data Devices' sections of this document

Table 3: Sub-Test 5 Setup for Release 6 HSUPA

Sub-set	β_c	β_d	β_d (SF)	β_c/β_d	β_{hs}(1)	β_{ec}	β_{ed}	β_{ed} (SF)	β_{ed} (codes)	CM (2) (dB)	MPR (dB)	AG(4) Index	E-TFCI
1	11/15(3)	15/15(3)	64	11/15(3)	22/15	209/225	1039/225	4	1	1.0	0.0	20	75
2	6/15	15/15	64	6/15	12/15	12/15	94/75	4	1	3.0	2.0	12	67
3	15/15	9/15	64	15/9	30/15	30/15	β_{ed1}:47/15 β_{ed2}:47/15	4	2	2.0	1.0	15	92
4	2/15	15/15	64	2/15	4/15	2/15	56/75	4	1	3.0	2.0	17	71
5	15/15(4)	15/15(4)	64	15/15(4)	30/15	24/15	134/15	4	1	1.0	0.0	21	81

Note 1: Δ_{ACK}, ΔNACK and Δ_{CQI} = 8 $\Leftrightarrow$ $A_{hs} = \beta_{hs}/\beta_c$ = 30/15 $\Leftrightarrow \beta_{hs}$= 30/15 *$\beta_c$.
Note 2: CM = 1 for βc/βd =12/15, β_{hs}/β_c =24/15. For all other combinations of DPDCH, DPCCH, HS- DPCCH, E-DPDCH and E-DPCCH the MPR is based on the relative CM difference.
Note 3: For subtest 1 the βc/βd ratio of 11/15 for the TFC during the measurement period (TF1, TF0) is achieved by setting the signaled gain factors for the reference TFC (TF1, TF1) to βc = 10/15 and βd = 15/15.
Note 4: For subtest 5 the βc/βd ratio of 15/15 for the TFC during the measurement period (TF1, TF0) is achieved by setting the signaled gain factors for the reference TFC (TF1, TF1) to βc = 14/15 and βd = 15/15.
Note 5: Testing UE using E-DPDCH Physical Layer category 1 Sub-test 3 is not required according to TS 25.306 Figure 5.1g.
Note 6: βed can not be set directly; it is set by Absolute Grant Value.

3.10.4 WIFI Test Configuration

The SAR measurement and test reduction procedures are structured according to either the DSSS or OFDM transmission mode configurations used in each standalone frequency band and aggregated band. For devices that operate in exposure configurations that require multiple test positions, additional SAR test reduction may be applied. The maximum output power specified for production units, including tune-up tolerance, are used to determine initial SAR test requirements for the 802.11 transmission modes in a frequency band. SAR is measured using the highest measured maximum output power channel for the initial test configuration. SAR measurement and test reduction for the remaining 802.11 modes and test channels are determined according to measured or specified maximum output power and reported SAR of the initial measurements. The general test reduction and SAR measurement approaches are summarized in the following:

1. The maximum output power specified for production units are determined for all applicable 802.11 transmission modes in each standalone and aggregated frequency band. Maximum output power is measured for the highest maximum output power configuration(s) in each frequency band according to the default power measurement procedures.
2. For OFDM transmission configurations in the 2.4 GHz and 5 GHz bands, an “initial test configuration” is first determined for each standalone and aggregated frequency band according to the maximum output power and tune-up tolerance specified for production units.

a. When the same maximum power is specified for multiple transmission modes in a frequency band, the largest channel bandwidth, lowest order modulation, lowest data rate and lowest order 802.11a/g/n/ac mode is used for SAR measurement, on the highest measured output power channel in the initial test configuration, for each frequency band.

b. SAR is measured for OFDM configurations using the initial test configuration procedures. Additional frequency band specific SAR test reduction may be considered for individual frequency bands

c. Depending on the reported SAR of the highest maximum output power channel tested in the initial test configuration, SAR test reduction may apply to subsequent highest output channels in the initial test configuration to reduce the number of SAR measurements.

3. The Initial test configuration does not apply to DSSS. The 2.4 GHz band SAR test requirements and 802.11b DSSS procedures are used to establish the transmission configurations required for SAR measurement.
4. An “initial test position”is applied to further reduce the number of SAR tests for devices operating in next to the ear, UMPC mini-tablet or hotspot mode exposure configurations that require multiple test positions .

a. SAR is measured for 802.11b according to the 2.4 GHz DSSS procedure using the exposure condition established by the initial test position.

b. SAR is measured for 2.4 GHz and 5 GHz OFDM configurations using the initial test configuration. 802.11b/g/n operating modes are tested independently according to the service requirements in each frequency band. 802.11b/g/n modes are tested on the maximum average output channel.

5. The Initial test position does not apply to devices that require a fixed exposure test position. SAR is measured in a fixed exposure test position for these devices in 802.11b according to the 2.4 GHz DSSS procedure or in 2.4 GHz and 5 GHz OFDM configurations using the initial test configuration procedures .
6. The “subsequent test configuration”procedures are applied to determine if additional SAR measurements are required for the remaining OFDM transmission modes that have not been tested in the initial test configuration. SAR test exclusion is determined according to reported SAR in the initial test configuration and maximum output power specified or measured for these other OFDM configurations.

2.4 GHz and 5GHz SAR Procedures

Separate SAR procedures are applied to DSSS and OFDM configurations in the 2.4 GHz band to simplify DSSS test requirements. For 802.11b DSSS SAR measurements, DSSS SAR procedure applies to fixed exposure test position and initial test position procedure applies to multiple exposure test positions. When SAR measurement is required for an OFDM configuration, the initial test configuration, subsequent test configuration and initial test position procedures are applied. The SAR test exclusion requirements for 802.11g/n OFDM configurations are described in section 5.2.2.

1. 802.11b DSSS SAR Test Requirements

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

a. When the reported SAR of the highest measured maximum output power channel (section 3.1) for the exposure configuration is ≤ 0.8 W/kg, no further SAR testing is required for 802.11b DSSS in that exposure configuration.
b. When the reported SAR is > 0.8 W/kg, SAR is required for that exposure configuration using the next highest measured output power channel. When any reported SAR is > 1.2 W/kg, SAR is required for the third channel; i.e., all channels require testing.

1. 2.4 GHz 802.11g/n OFDM SAR Test Exclusion Requirements

When SAR measurement is required for 2.4 GHz 802.11g/n OFDM configurations, the measurement and test reduction procedures for OFDM are applied (section 5.3). SAR is not required for the following 2.4 GHz OFDM conditions.

a. When KDB Publication 447498 SAR test exclusion applies to the OFDM configuration
b. When the highest reported SAR for DSSS is adjusted by the ratio of OFDM to DSSS specified maximum output power and the adjusted SAR is ≤ 1.2 W/kg.

2. SAR Test Requirements for OFDM Configurations

When SAR measurement is required for 802.11 a/g/n/ac OFDM configurations, each standalone and frequency aggregated band is considered separately for SAR test reduction. When the same transmitter and antenna(s) are used for U-NII-1 and U-NII-2A bands, additional SAR test reduction applies. When band gap channels between U-NII-2C band and 5.8 GHz U-NII-3 or §15.247 band are supported, the highest maximum output power transmission mode configuration and maximum output power channel across the bands must be used to determine SAR test reduction, according to the initial test configuration and subsequent test configuration requirements.20 In applying the initial test configuration and subsequent test configuration procedures, the 802.11 transmission configuration with the highest specified maximum output power and the channel within a test configuration with the highest measured maximum output power should be clearly distinguished to apply the procedures.

3. OFDM Transmission Mode SAR Test Configuration and Channel Selection Requirements

The initial test configuration for 2.4 GHz and 5 GHz OFDM transmission modes is determined by the 802.11 configuration with the highest maximum output power specified for production units, including tune-up tolerance, in each standalone and aggregated frequency band. SAR for the initial test configuration is measured using the highest maximum output power channel determined by the default power measurement procedures (section 4). When multiple configurations in a frequency band have the same specified maximum output power, the initial test configuration is determined according to the following steps applied sequentially.

a. The largest channel bandwidth configuration is selected among the multiple configurations with the same specified maximum output power.
b. If multiple configurations have the same specified maximum output power and largest channel bandwidth, the lowest order modulation among the largest channel bandwidth configurations is selected.
c. If multiple configurations have the same specified maximum output power, largest channel bandwidth and lowest order modulation, the lowest data rate configuration among these configurations is selected.

d. When multiple transmission modes (802.11a/g/n/ac) have the same specified maximum output power, largest channel bandwidth, lowest order modulation and lowest data rate, the lowest order 802.11 mode is selected; i.e., 802.11a is chosen over 802.11n then 802.11ac or 802.11g is chosen over 802.11n.

After an initial test configuration is determined, if multiple test channels have the same measured maximum output power, the channel chosen for SAR measurement is determined according to the following. These channel selection procedures apply to both the initial test configuration and subsequent test configuration(s), with respect to the default power measurement procedures or additional power measurements required for further SAR test reduction. The same procedures also apply to subsequent highest output power channel(s) selection.

a. Channels with measured maximum output power within ¼ dB of each other are considered to have the same maximum output.
b. When there are multiple test channels with the same measured maximum output power, the channel closest to mid-band frequency is selected for SAR measurement.
c. When there are multiple test channels with the same measured maximum output power and equal separation from mid-band frequency; for example, high and low channels or two mid-band channels, the higher frequency (number) channel is selected for SAR measurement.

Initial Test Configuration Procedures

An initial test configuration is determined for OFDM transmission modes according to the channel bandwidth, modulation and data rate combination(s) with the highest maximum output power specified for production units in each standalone and aggregated frequency band. SAR is measured using the highest measured maximum output power channel. For configurations with the same specified or measured maximum output power, additional transmission mode and test channel selection procedures are required (see section 5.3.2). SAR test reduction of subsequent highest output test channels is based on the reported SAR of the initial test configuration.

For next to the ear, hotspot mode and UMC mini-tablet exposure configurations where multiple test positions are required, the initial test position procedure is applied to minimize the number of test positions required for SAR measurement using the initial test configuration transmission mode.23 For fixed exposure conditions that do not have multiple SAR test positions, SAR is measured in the transmission mode determined by the initial test configuration. When the reported SAR of the initial test configuration is > 0.8 W/kg, SAR measurement is required for the subsequent next highest measured output power channel(s) in the initial test configuration until the reported SAR is ≤ 1.2 W/kg or all required channels are tested.

4. Subsequent Test Configuration Procedures

SAR measurement requirements for the remaining 802.11 transmission mode configurations that have not been tested in the initial test configuration are determined separately for each standalone and aggregated frequency band, in each exposure condition, according to the maximum output power specified for production units. The initial test position procedure is applied to next to the ear, UMPC mini-tablet and hotspot mode configurations. When the same maximum output power is specified for multiple transmission modes, the procedures in section 5.3.2 are applied to determine the test configuration. Additional power measurements may be required to determine if SAR measurements are required for subsequent highest output power channels in a subsequent test configuration. The subsequent test configuration and SAR measurement procedures are described in the following.

a. When SAR test exclusion provisions of KDB Publication 447498 are applicable and SAR measurement is not required for the initial test configuration, SAR is also not required for the next highest maximum output power transmission mode subsequent test configuration(s) in that frequency band or aggregated band and exposure configuration.
b. When the highest reported SAR for the initial test configuration (when applicable, include subsequent highest output channels), according to the initial test position or fixed exposure position requirements, is adjusted by the ratio of the subsequent test configuration to initial test configuration specified maximum output power and the adjusted SAR is ≤ 1.2 W/kg, SAR is not required for that subsequent test configuration.
c. The number of channels in the initial test configuration and subsequent test configuration can be different due to differences in channel bandwidth. When SAR measurement is required for a subsequent test configuration and the channel bandwidth is smaller than that in the initial test configuration, all channels in the subsequent test configuration that overlap with the larger bandwidth channel tested in the initial test configuration should be used to determine the highest maximum output power channel. This step requires additional power measurement to identify the highest maximum output power channel in the subsequent test configuration to determine SAR test reduction.

1). SAR should first be measured for the channel with highest measured output power in the subsequent test configuration.
2). SAR for subsequent highest measured maximum output power channels in the subsequent test configuration is required only when the reported SAR of the preceding higher maximum output power channel(s) in the subsequent test configuration is > 1.2 W/kg or until all required channels are tested.
a) For channels with the same measured maximum output power, SAR should be measured using the channel closest to the center frequency of the larger channel bandwidth channel in the initial test configuration.

d. SAR measurements for the remaining highest specified maximum output power OFDM transmission mode configurations that have not been tested in the initial test configuration (highest maximum output) or subsequent test configuration(s) (subsequent next highest maximum output power) is determined by applying the subsequent test configuration procedures in this section to the remaining configurations according to the following:

1) replace “subsequent test configuration” with “next subsequent test configuration” (i.e., subsequent next highest specified maximum output power configuration)
2) replace “initial test configuration” with “all tested higher output power configurations.

3.11. Power Reduction

The product without any power reduction.

3.12. Power Drift

To control the output power stability during the SAR test, SAR 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. This ensures that the power drift during one measurement is within 5%.

4. TEST CONDITIONS AND RESULTS

4.1. Conducted Power Results

According KDB 447498D01 General RF Exposure Guidance v06 Section 4.1 2) states that "Unless it is specified differently in the published RF exposure KDB procedures, these requirements also apply to test reduction and test exclusion considerations. Time-averaged maximum conducted output power applies to SAR and, as required by § 2.1091(c), time-averaged ERP applies to MPE. When an antenna port is not available on the device to support conducted power measurement, such as FRS and certain Part 15 transmitters with built-in integral antennas, the maximum output power allowed for production units should be used to determine RF exposure test exclusion and compliance."

<UMTS Conducted Power>

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

HSDPA Setup Configuration:

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

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

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

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

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

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

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

Setup Configuration

HSUPA Setup Configuration:

a. The EUT was connected to Base StationR&S CMU200 referred to the Setup Configuration.
b. The RF path losses were compensated into the measurements.
c. A call was established between EUT and Base Station with following setting * :

i. Call Configs = 5.2B, 5.9B, 5.10B, and 5.13.2B with QPSK
ii. Set the Gain Factors (β_c and β_d) and parameters (AG Index) were set according to each specific sub-test in the following table, C11.1.3, quoted from the TS 34.121
iii. Set Cell Power = -86 dBm
iv. Set Channel Type = 12.2k + HSPA
v. Set UE Target Power
vi. Power Ctrl Mode= Alternating bits
vii. Set and observe the E-TFCI
viii. Confirm that E-TFCI is equal to the target E-TFCI of 75 for sub-test 1, and other subtest's E-TFCI

d. The transmitted maximum output power was recorded.

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

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

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

General Note

1. Per KDB 941225 D01, RMC 12.2kbps setting is used to evaluate SAR. If AMR 12.2kbps power is < 0.25dB higher than RMC 12.2kbps, SAR tests with AMR 12.2kbps can be excluded.
2. By design, AMR and HSDPA/HSUPA RF power will not be larger than RMC 12.2kbps, detailed information is included in Tune-up Procure exhibit.
3. It is expected by the manufacturer that MPR for some HSDPA/HSUPA subtests may differ from the specification of 3GPP, according to the chipset implementation in this model. The implementation and expected deviation are detailed in tune-up procedure exhibit.

Conducted Power Measurement Results(WCDMA Band II/IV/V)

Item	Band	FDD Band V result (dBm)			FDD Band II result (dBm)			FDD Band IV result (dBm)		
		Test Channel			Test Channel			Test Channel		
		4132/ 826.4	4183/ 836.6	4233/ 846.6	9262/ 1852.4	9400/ 1880	9538/ 1907.6	1312/ 1712.4	1413/ 1732.6	1513/ 1752.6
RMC	12.2kbps	23.14	23.33	23.26	23.23	23.11	23.1	23.06	23.19	23.21
HSDPA	Subtest 1	22.23	22.29	22.26	22.16	22.18	22.12	22.08	22.18	22.18
	Subtest 2	22.21	22.32	22.24	22.1	22.15	22.13	22.07	22.08	22.15
	Subtest 3	21.7	21.82	21.72	21.64	21.63	21.64	21.56	21.66	21.67
	Subtest 4	21.78	21.79	21.75	21.58	21.64	21.63	21.59	21.65	21.67
HSUPA	Subtest 1	22.18	22.28	22.26	22.07	22.17	22.05	22.05	22.18	22.15

	Subtest 2	20.24	20.36	20.28	20.14	20.15	20.11	20.1	20.15	20.13
	Subtest 3	21.22	21.31	21.24	21.09	21.13	21.09	21.09	21.18	21.17
	Subtest 4	20.25	20.33	20.28	20.11	20.18	20.1	20.03	20.18	20.18
	Subtest 5	22.09	22.16	22.16	21.93	21.82	21.93	21.91	22.04	22.05

Note:1.When the maximum output power and tune-up tolerance specified for production units in a secondary mode is ≤1/2dB higher than the primary mode (RMC12.2kbps) or when the highest reported SAR of the primary mode is scaled by the ratio of specified maximum output power and tune-up tolerance of secondary to primary mode and the adjusted SAR is ≤ 1.2 W/kg, SAR measurement is not required for the secondary mode.

LTE Band2/25

Frequency (MHz)	Channel Bandwidth (MHz)	RB Size	RB Offset	Output Power (dBm)	EIRP (dBm)	Limit (dBm)
QPSK						
1850.70	1.4	1	0	22.82	23.07	< 33.01
1882.50				22.54	22.79	< 33.01
1914.30				22.57	22.82	< 33.01
1850.70	1.4	1	2	22.81	23.06	< 33.01
1882.50				22.72	22.97	< 33.01
1914.30				22.68	22.93	< 33.01
1850.70	1.4	1	6	22.70	22.95	< 33.01
1882.50				22.60	22.85	< 33.01
1914.30				22.64	22.89	< 33.01
1850.70	1.4	6	0	21.76	22.01	< 33.01
1882.50				21.71	21.96	< 33.01
1914.30				21.73	21.98	< 33.01
1851.50	3	1	0	22.89	23.14	< 33.01
1882.50				22.84	23.09	< 33.01
1913.50				22.68	22.93	< 33.01
1851.50	3	1	7	22.97	23.22	< 33.01
1882.50				22.80	23.05	< 33.01
1913.50				22.80	23.05	< 33.01
1851.50	3	1	14	22.87	23.12	< 33.01
1882.50				22.70	22.95	< 33.01
1913.50				22.65	22.90	< 33.01
1851.50	3	15	0	21.89	22.14	< 33.01
1882.50				21.80	22.05	< 33.01
1913.50				21.84	22.09	< 33.01

Frequency (MHz)	Channel Bandwidth (MHz)	RB Size	RB Offset	Output Power (dBm)	EIRP (dBm)	Limit (dBm)
QPSK						
1852.50	5	1	0	22.82	23.07	< 33.01
1882.50				22.73	22.98	< 33.01
1912.50				22.84	23.09	< 33.01
1852.50				22.93	23.18	< 33.01

1882.50	5	1	12	22.77	23.02	< 33.01
1912.50				22.70	22.95	< 33.01
1852.50	5	1	24	22.97	23.22	< 33.01
1882.50				22.74	22.99	< 33.01
1912.50				22.67	22.92	< 33.01
1852.50	5	25	0	21.95	22.20	< 33.01
1882.50				21.83	22.08	< 33.01
1912.50				21.80	22.05	< 33.01
1855.00	10	1	0	22.83	23.08	< 33.01
1882.50				22.69	22.94	< 33.01
1910.00				22.74	22.99	< 33.01
1855.00	10	1	24	22.94	23.19	< 33.01
1882.50				22.77	23.02	< 33.01
1910.00				22.75	23.00	< 33.01
1855.00	10	1	49	22.84	23.09	< 33.01
1882.50				22.70	22.95	< 33.01
1910.00				22.68	22.93	< 33.01
1855.00	10	50	0	21.86	22.11	< 33.01
1882.50				21.83	22.08	< 33.01
1910.00				21.83	22.08	< 33.01
Note: The EIRP (dBm) = Output Power (dBm) + Antenna Gain (dBi)						

Frequency (MHz)	Channel Bandwidth (MHz)	RB Size	RB Offset	Output Power (dBm)	EIRP (dBm)	Limit (dBm)
QPSK						
1857.50	15	1	0	22.88	23.13	< 33.01
1882.50				22.78	23.03	< 33.01
1907.50				22.75	23.00	< 33.01
1857.50	15	1	37	22.89	23.14	< 33.01
1882.50				22.72	22.97	< 33.01
1907.50				22.76	23.01	< 33.01
1857.50	15	1	74	22.92	23.17	< 33.01
1882.50				22.90	23.15	< 33.01
1907.50				22.79	23.04	< 33.01
1857.50	15	75	0	21.90	22.15	< 33.01
1882.50				21.92	22.17	< 33.01
1907.50				21.88	22.13	< 33.01

1860.00	20	1	0	22.85	23.10	< 33.01
1882.50				22.68	22.93	< 33.01
1905.00				22.75	23.00	< 33.01
1860.00	20	1	49	22.90	23.15	< 33.01
1882.50				22.85	23.10	< 33.01
1905.00				22.78	23.03	< 33.01
1860.00	20	1	99	22.93	23.18	< 33.01
1882.50				22.83	23.08	< 33.01
1905.00				22.85	23.10	< 33.01
1860.00	20	100	0	21.96	22.21	< 33.01
1882.50				21.77	22.02	< 33.01
1905.00				21.85	22.10	< 33.01
Note: The EIRP (dBm) = Output Power (dBm) + Antenna Gain (dBi)						

LTE Band4/66

Frequency (MHz)	Channel Bandwidth (MHz)	RB Size	RB Offset	Output Power (dBm)	EIRP (dBm)	Limit (dBm)
QPSK						
1710.70	1.4	1	0	22.68	24.15	< 30.00
1745.00				22.69	24.16	< 30.00
1779.30				22.61	24.08	< 30.00
1710.70	1.4	1	2	22.78	24.25	< 30.00
1745.00				22.82	24.29	< 30.00
1779.30				22.72	24.19	< 30.00
1710.70	1.4	1	6	22.77	24.24	< 30.00
1745.00				22.69	24.16	< 30.00
1779.30				22.61	24.08	< 30.00
1710.70	1.4	6	0	21.82	23.29	< 30.00
1745.00				21.90	23.37	< 30.00
1779.30				21.73	23.20	< 30.00
1711.50	3	1	0	22.76	24.23	< 30.00
1745.00				22.73	24.20	< 30.00
1778.50				22.71	24.18	< 30.00
1711.50	3	1	7	22.94	24.41	< 30.00
1745.00				22.91	24.38	< 30.00
1778.50				22.75	24.22	< 30.00

1711.50	3	1	14	22.77	24.24	< 30.00
1745.00				22.85	24.32	< 30.00
1778.50				22.67	24.14	< 30.00
1711.50	3	15	0	21.90	23.37	< 30.00
1745.00				21.93	23.40	< 30.00
1778.50				21.79	23.26	< 30.00
Note: The EIRP (dBm) = Output Power (dBm) + Antenna Gain (dBi)						

Frequency (MHz)	Channel Bandwidth (MHz)	RB Size	RB Offset	Output Power (dBm)	EIRP (dBm)	Limit (dBm)
QPSK						
1712.50	5	1	0	22.77	24.24	< 30.00
1745.00				22.78	24.25	< 30.00
1777.50				22.66	24.13	< 30.00
1712.50	5	1	12	22.83	24.30	< 30.00
1745.00				22.83	24.30	< 30.00
1777.50				22.74	24.21	< 30.00
1712.50	5	1	24	22.86	24.33	< 30.00
1745.00				22.83	24.30	< 30.00
1777.50				22.67	24.14	< 30.00
1712.50	5	25	0	21.88	23.35	< 30.00
1745.00				21.93	23.40	< 30.00
1777.50				21.75	23.22	< 30.00
1715.00	10	1	0	22.82	24.29	< 30.00
1745.00				22.75	24.22	< 30.00
1775.00				22.63	24.10	< 30.00
1715.00	10	1	24	22.89	24.36	< 30.00
1745.00				22.85	24.32	< 30.00
1775.00				22.73	24.20	< 30.00
1715.00	10	1	49	22.77	24.24	< 30.00
1745.00				22.86	24.33	< 30.00
1775.00				22.74	24.21	< 30.00
1715.00	10	50	0	21.89	23.36	< 30.00
1745.00				21.96	23.43	< 30.00
1775.00				21.82	23.29	< 30.00
Note: The EIRP (dBm) = Output Power (dBm) + Antenna Gain (dBi)						

Frequency (MHz)	Channel Bandwidth (MHz)	RB Size	RB Offset	Output Power (dBm)	EIRP (dBm)	Limit (dBm)
QPSK						
1717.50	15	1	0	22.84	24.31	< 30.00
1745.00				22.72	24.19	< 30.00
1772.50				22.75	24.22	< 30.00
1717.50	15	1	37	22.88	24.35	< 30.00
1745.00				22.88	24.35	< 30.00
1772.50				22.64	24.11	< 30.00
1717.50	15	1	74	22.93	24.40	< 30.00
1745.00				22.91	24.38	< 30.00
1772.50				22.76	24.23	< 30.00
1717.50	15	75	0	21.98	23.45	< 30.00
1745.00				21.93	23.40	< 30.00
1772.50				21.85	23.32	< 30.00
1720.00	20	1	0	22.81	24.28	< 30.00
1745.00				22.75	24.22	< 30.00
1770.00				22.73	24.20	< 30.00
1720.00	20	1	49	22.86	24.33	< 30.00
1745.00				22.87	24.34	< 30.00
1770.00				22.67	24.14	< 30.00
1720.00	20	1	99	22.97	24.44	< 30.00
1745.00				22.83	24.30	< 30.00
1770.00				22.78	24.25	< 30.00
1720.00	20	100	0	21.92	23.39	< 30.00
1745.00				21.90	23.37	< 30.00
1770.00				21.86	23.33	< 30.00
Note: The EIRP (dBm) = Output Power (dBm) + Antenna Gain (dBi)						

LTE Band5/26

Frequency (MHz)	Channel Bandwidth (MHz)	RB Size	RB Offset	Output Power (dBm)	ERP (dBm)	Limit (dBm)
QPSK						
824.70	1.4	1	0	22.81	23.34	< 38.45
836.50				22.80	23.33	< 38.45
848.30				22.72	23.25	< 38.45

824.70	1.4	1	2	22.92	23.45	< 38.45
836.50				22.88	23.41	< 38.45
848.30				22.86	23.39	< 38.45
824.70	1.4	1	6	22.82	23.35	< 38.45
836.50				22.84	23.37	< 38.45
848.30				22.72	23.25	< 38.45
824.70	1.4	6	0	21.92	22.45	< 38.45
836.50				21.90	22.43	< 38.45
848.30				21.87	22.40	< 38.45
825.50	3	1	0	22.98	23.51	< 38.45
836.50				22.94	23.47	< 38.45
846.50				22.91	23.44	< 38.45
825.50	3	1	7	23.09	23.62	< 38.45
836.50				23.07	23.60	< 38.45
846.50				22.86	23.39	< 38.45
825.50	3	1	14	22.87	23.40	< 38.45
836.50				22.90	23.43	< 38.45
846.50				22.90	23.43	< 38.45
825.50	3	15	0	22.00	22.53	< 38.45
836.50				22.03	22.56	< 38.45
846.50				22.03	22.56	< 38.45
Note: The ERP (dBm) = Output Power (dBm) + Antenna Gain (dBi) - 2.15						

Frequency (MHz)	Channel Bandwidth (MHz)	RB Size	RB Offset	Output Power (dBm)	ERP (dBm)	Limit (dBm)
QPSK						
826.50	5	1	0	22.91	23.44	< 38.45
836.50				23.01	23.54	< 38.45
846.50				23.01	23.54	< 38.45
826.50	5	1	12	22.94	23.47	< 38.45
836.50				22.90	23.43	< 38.45
846.50				22.86	23.39	< 38.45
826.50	5	1	24	22.87	23.40	< 38.45
836.50				22.92	23.45	< 38.45
846.50				22.86	23.39	< 38.45
826.50	5	25	0	21.93	22.46	< 38.45
836.50				22.07	22.60	< 38.45

846.50				22.01	22.54	< 38.45
829.00	10	1	0	22.95	23.48	< 38.45
836.50				23.08	23.61	< 38.45
844.00				23.00	23.53	< 38.45
829.00	10	1	24	22.92	23.45	< 38.45
836.50				22.94	23.47	< 38.45
844.00				22.89	23.42	< 38.45
829.00	10	1	49	22.95	23.48	< 38.45
836.50				22.98	23.51	< 38.45
844.00				22.86	23.39	< 38.45
829.00	10	50	0	22.07	22.60	< 38.45
836.50				22.05	22.58	< 38.45
844.00				22.01	22.54	< 38.45
Note: The ERP (dBm) = Output Power (dBm) + Antenna Gain (dBi) - 2.15						

Frequency (MHz)	Channel Bandwidth (MHz)	RB Size	RB Offset	Output Power (dBm)	ERP (dBm)	Limit (dBm)
QPSK						
821.50	15	1	0	22.98	23.51	< 38.45
836.50				23.03	23.56	< 38.45
841.50				22.96	23.49	< 38.45
821.50	15	1	37	22.90	23.43	< 38.45
836.50				22.91	23.44	< 38.45
841.50				22.88	23.41	< 38.45
821.50	15	1	74	22.85	23.38	< 38.45
836.50				22.84	23.37	< 38.45
841.50				22.78	23.31	< 38.45
821.50	15	75	0	22.00	22.53	< 38.45
836.50				21.98	22.51	< 38.45
841.50				21.93	22.46	< 38.45
Note: The ERP (dBm) = Output Power (dBm) + Antenna Gain (dBi) - 2.15						

LTE Band7

Frequency (MHz)	Channel Bandwidth (MHz)	RB Size	RB Offset	Output Power (dBm)	EIRP (dBm)	Limit (dBm)
QPSK						

2502.50	5	1	0	22.74	23.29	< 33.01
2535.00				22.77	23.32	< 33.01
2567.50				22.84	23.39	< 33.01
2502.50	5	1	12	22.71	23.26	< 33.01
2535.00				22.73	23.28	< 33.01
2567.50				22.87	23.42	< 33.01
2502.50	5	1	24	22.83	23.38	< 33.01
2535.00				22.72	23.27	< 33.01
2567.50				22.83	23.38	< 33.01
2502.50	5	25	0	21.82	22.37	< 33.01
2535.00				21.83	22.38	< 33.01
2567.50				21.96	22.51	< 33.01
2505.00	10	1	0	22.77	23.32	< 33.01
2535.00				22.79	23.34	< 33.01
2565.00				22.84	23.39	< 33.01
2505.00	10	1	24	22.82	23.37	< 33.01
2535.00				22.80	23.35	< 33.01
2565.00				22.91	23.46	< 33.01
2505.00	10	1	49	22.86	23.41	< 33.01
2535.00				22.75	23.30	< 33.01
2565.00				22.83	23.38	< 33.01
2505.00	10	50	0	21.79	22.34	< 33.01
2535.00				21.85	22.40	< 33.01
2565.00				21.89	22.44	< 33.01
Note: The EIRP (dBm) = Output Power (dBm) + Antenna Gain (dBi)						

Frequency (MHz)	Channel Bandwidth (MHz)	RB Size	RB Offset	Output Power (dBm)	EIRP (dBm)	Limit (dBm)
QPSK						
2507.50	15	1	0	22.93	23.48	< 33.01
2535.00				22.82	23.37	< 33.01
2562.50				22.92	23.47	< 33.01
2507.50	15	1	37	22.92	23.47	< 33.01
2535.00				22.77	23.32	< 33.01
2562.50				22.80	23.35	< 33.01
2507.50	15	1	74	22.91	23.46	< 33.01
2535.00				22.74	23.29	< 33.01

2562.50				22.93	23.48	< 33.01
2507.50	15	75	0	21.90	22.45	< 33.01
2535.00				21.87	22.42	< 33.01
2562.50				21.88	22.43	< 33.01
2510.00	20	1	0	22.81	23.36	< 33.01
2535.00				22.99	23.54	< 33.01
2560.00				22.93	23.48	< 33.01
2510.00	20	1	49	22.74	23.29	< 33.01
2535.00				22.79	23.34	< 33.01
2560.00				22.87	23.42	< 33.01
2510.00	20	1	99	22.92	23.47	< 33.01
2535.00				22.75	23.30	< 33.01
2560.00				22.72	23.27	< 33.01
2510.00	20	100	0	21.84	22.39	< 33.01
2535.00				21.87	22.42	< 33.01
2560.00				21.87	22.42	< 33.01
Note: The EIRP (dBm) = Output Power (dBm) + Antenna Gain (dBi)						

LTE Band12/17

Frequency (MHz)	Channel Bandwidth (MHz)	RB Size	RB Offset	Output Power (dBm)	ERP (dBm)	Limit (dBm)
QPSK						
699.7	1.4	1	0	22.87	20.52	< 34.77
707.5				22.80	20.45	< 34.77
715.3				22.77	20.42	< 34.77
699.7	1.4	1	2	22.94	20.59	< 34.77
707.5				22.86	20.51	< 34.77
715.3				22.86	20.51	< 34.77
699.7	1.4	1	6	22.82	20.47	< 34.77
707.5				22.74	20.39	< 34.77
715.3				22.81	20.46	< 34.77
699.7	1.4	6	0	21.95	19.60	< 34.77
707.5				21.94	19.59	< 34.77
715.3				21.98	19.63	< 34.77
700.5	3	1	0	22.93	20.58	< 34.77
707.5				22.89	20.54	< 34.77

714.5				22.91	20.56	< 34.77
700.5	3	1	7	23.02	20.67	< 34.77
707.5				22.89	20.54	< 34.77
714.5				22.97	20.62	< 34.77
700.5	3	1	14	22.91	20.56	< 34.77
707.5				22.81	20.46	< 34.77
714.5				22.87	20.52	< 34.77
700.5	3	15	0	22.00	19.65	< 34.77
707.5				21.98	19.63	< 34.77
714.5				22.00	19.65	< 34.77
Note: The ERP (dBm) = Output Power (dBm) + Antenna Gain (dBi) - 2.15						

Frequency (MHz)	Channel Bandwidth (MHz)	RB Size	RB Offset	Output Power (dBm)	ERP (dBm)	Limit (dBm)
QPSK						
701.5	5	1	0	22.92	20.57	< 34.77
707.5				22.89	20.54	< 34.77
713.5				22.82	20.47	< 34.77
701.5	5	1	12	22.94	20.59	< 34.77
707.5				22.84	20.49	< 34.77
713.5				22.87	20.52	< 34.77
701.5	5	1	24	22.89	20.54	< 34.77
707.5				22.80	20.45	< 34.77
713.5				22.91	20.56	< 34.77
701.5	5	25	0	22.01	19.66	< 34.77
707.5				22.00	19.65	< 34.77
713.5				21.88	19.53	< 34.77
704.0	10	1	0	22.97	20.62	< 34.77
707.5				22.89	20.54	< 34.77
711.0				22.86	20.51	< 34.77
704.0	10	1	24	22.92	20.57	< 34.77
707.5				22.87	20.52	< 34.77
711.0				22.84	20.49	< 34.77
704.0	10	1	49	22.89	20.54	< 34.77
707.5				22.83	20.48	< 34.77
711.0				22.86	20.51	< 34.77
704.0				21.95	19.60	< 34.77

707.5	10	50	0	21.97	19.62	< 34.77
711.0				21.93	19.58	< 34.77
Note: The ERP (dBm) = Output Power (dBm) + Antenna Gain (dBi) - 2.15						

LTE Band13

Frequency (MHz)	Channel Bandwidth (MHz)	RB Size	RB Offset	Output Power (dBm)	ERP (dBm)	Limit (dBm)
QPSK						
779.5	5	1	0	22.75	22.14	< 34.77
782.0				22.83	22.22	< 34.77
784.5				22.72	22.11	< 34.77
779.5	5	1	12	22.72	22.11	< 34.77
782.0				22.72	22.11	< 34.77
784.5				22.75	22.14	< 34.77
779.5	5	1	24	22.66	22.05	< 34.77
782.0				22.83	22.22	< 34.77
784.5				22.73	22.12	< 34.77
779.5	5	25	0	21.88	21.27	< 34.77
782.0				21.82	21.21	< 34.77
784.5				21.80	21.19	< 34.77
782.0	10	1	0	22.75	22.14	< 34.77
782.0		1	24	22.77	22.16	< 34.77
782.0		1	49	22.79	22.18	< 34.77
782.0		50	0	21.80	21.19	< 34.77
Note: The ERP (dBm) = Output Power (dBm) + Antenna Gain (dBi) - 2.15						

LTE Band 14

Frequency (MHz)	Channel Bandwidth (MHz)	RB Size	RB Offset	Output Power (dBm)	ERP (dBm)	Limit (dBm)
QPSK						
790.5	5	1	0	22.89	23.16	<44.77
793.0				22.85	23.12	<44.77
795.5				22.87	23.14	<44.77
790.5	5	1	12	22.86	23.13	<44.77
793.0				22.82	23.09	<44.77

795.5				22.85	23.12	<44.77
790.5	5	1	24	22.85	23.12	<44.77
793.0				22.83	23.10	<44.77
795.5				22.80	23.07	<44.77
790.5	5	25	0	21.99	22.26	<44.77
793.0				22.01	22.28	<44.77
795.5				21.93	22.20	<44.77
793.0	10	1	0	22.87	23.14	<44.77
793.0			24	22.84	23.11	<44.77
793.0			49	22.77	23.04	<44.77
793.0	10	50	0	22.00	22.27	<44.77
Note: The ERP (dBm) = Output Power (dBm) + Antenna Gain (dBi) - 2.15						

LTE Band26

Frequency (MHz)	Channel Bandwidth (MHz)	RB Size	RB Offset	Output Power (dBm)	Output Power (W)	Limit (W)
QPSK						
814.7	1.4	1	0	22.92	0.1959	< 100
819.0				22.83	0.1919	< 100
823.3				22.92	0.1959	< 100
814.7	1.4	1	2	22.97	0.1982	< 100
819.0				22.93	0.1963	< 100
823.3				22.99	0.1991	< 100
814.7	1.4	1	6	22.84	0.1923	< 100
819.0				22.81	0.1910	< 100
823.3				22.89	0.1945	< 100
814.7	1.4	6	0	21.97	0.1574	< 100
819.0				21.88	0.1542	< 100
823.3				21.97	0.1574	< 100
815.5	3	1	0	22.98	0.1986	< 100
819.0				22.84	0.1923	< 100
822.5				22.87	0.1936	< 100
815.5	3	1	7	23.01	0.2000	< 100
819.0				22.99	0.1991	< 100
822.5				22.98	0.1986	< 100
815.5				22.95	0.1972	< 100

819.0	3	1	14	22.87	0.1936	< 100
822.5				22.96	0.1977	< 100
815.5	3	15	0	22.04	0.1600	< 100
819.0				22.00	0.1585	< 100
822.5				22.08	0.1614	< 100

Frequency (MHz)	Channel Bandwidth (MHz)	RB Size	RB Offset	Output Power (dBm)	Output Power (W)	Limit (W)
QPSK						
816.5	5	1	0	22.91	0.1954	< 100
819.0				22.92	0.1959	< 100
821.5				22.95	0.1972	< 100
816.5	5	1	12	22.93	0.1963	< 100
819.0				22.88	0.1941	< 100
821.5				22.84	0.1923	< 100
816.5	5	1	24	22.93	0.1963	< 100
819.0				22.86	0.1932	< 100
821.5				22.91	0.1954	< 100
816.5	5	25	0	21.99	0.1581	< 100
819.0				22.06	0.1607	< 100
821.5				22.05	0.1603	< 100
819.0	10	1	0	23.05	0.2018	< 100
		1	24	22.86	0.1932	< 100
		1	49	22.96	0.1977	< 100
		50	0	22.10	0.1622	< 100
821.5	15	1	0	23.07	0.2028	< 100
		1	36	22.88	0.1941	< 100
		1	74	22.97	0.1982	< 100
		75	0	22.08	0.1614	< 100

LTE Band 30

Frequency (MHz)	Channel Bandwidth (MHz)	RB Size	RB Offset	Power Density (dBm/5MHz)	EIRP Density (dBm/5MHz)	Limit (dBm /5MHz)
QPSK						
2307.5	5	1	0	22.91	19.85	< 23.98
2310.0				23.05	19.99	< 23.98

2312.5				22.94	19.88	< 23.98
2307.5	5	1	12	23.01	19.95	< 23.98
2310.0				23.09	20.03	< 23.98
2312.5				22.90	19.84	< 23.98
2307.5	5	1	24	22.95	19.89	< 23.98
2310.0				22.88	19.82	< 23.98
2312.5				22.72	19.66	< 23.98
2307.5	5	25	0	22.08	19.02	< 23.98
2310.0				22.09	19.03	< 23.98
2312.5				21.89	18.83	< 23.98
2310.0	10	1	0	23.02	19.96	< 23.98
		1	24	23.10	20.04	< 23.98
		1	49	22.93	19.87	< 23.98
		50	0	19.63	16.57	< 23.98
Note: The EIRP Density (dBm/5MHz) = Power Density (dBm/5MHz) + Antenna Gain (dBi)						

LTE Band38/41

Frequency (MHz)	Channel Bandwidth (MHz)	RB Size	RB Offset	Output Power (dBm)	EIRP (dBm)	Limit (dBm)
QPSK						
2498.50	5	1	0	22.57	23.35	< 33.01
2593.00				22.74	23.52	< 33.01
2687.50				22.87	23.65	< 33.01
2498.50	5	1	12	22.60	23.38	< 33.01
2593.00				22.81	23.59	< 33.01
2687.50				22.87	23.65	< 33.01
2498.50	5	1	24	22.58	23.36	< 33.01
2593.00				22.75	23.53	< 33.01
2687.50				22.81	23.59	< 33.01
2498.50	5	25	0	21.64	22.42	< 33.01
2593.00				21.74	22.52	< 33.01
2687.50				21.89	22.67	< 33.01
2501.00	10	1	0	22.59	23.37	< 33.01
2593.00				22.95	23.73	< 33.01
2685.00				22.83	23.61	< 33.01
2501.00				22.63	23.41	< 33.01

2593.00	10	1	24	22.90	23.68	< 33.01
2685.00				22.83	23.61	< 33.01
2501.00	10	1	49	22.74	23.52	< 33.01
2593.00				22.73	23.51	< 33.01
2685.00				22.88	23.66	< 33.01
2501.00	10	50	0	21.69	22.47	< 33.01
2593.00				21.77	22.55	< 33.01
2685.00				21.87	22.65	< 33.01
Note: The EIRP (dBm) = Output Power (dBm) + Antenna Gain (dBi)						

Frequency (MHz)	Channel Bandwidth (MHz)	RB Size	RB Offset	Output Power (dBm)	EIRP (dBm)	Limit (dBm)
QPSK						
2503.50	15	1	0	22.64	23.42	< 33.01
2593.00				22.99	23.77	< 33.01
2682.50				22.80	23.58	< 33.01
2503.50	15	1	37	22.69	23.47	< 33.01
2593.00				22.86	23.64	< 33.01
2682.50				22.92	23.70	< 33.01
2503.50	15	1	74	22.81	23.59	< 33.01
2593.00				22.90	23.68	< 33.01
2682.50				22.88	23.66	< 33.01
2503.50	15	75	0	21.75	22.53	< 33.01
2593.00				21.76	22.54	< 33.01
2682.50				21.88	22.66	< 33.01
2506.00	20	1	0	22.66	23.44	< 33.01
2593.00				23.07	23.85	< 33.01
2680.00				22.94	23.72	< 33.01
2506.00	20	1	49	22.69	23.47	< 33.01
2593.00				22.86	23.64	< 33.01
2680.00				22.79	23.57	< 33.01
2506.00	20	1	99	22.82	23.60	< 33.01
2593.00				22.97	23.75	< 33.01
2680.00				22.85	23.63	< 33.01
2506.00	20	100	0	21.79	22.57	< 33.01
2593.00				21.83	22.61	< 33.01
2680.00				21.81	22.59	< 33.01

Note: The EIRP (dBm) = Output Power (dBm) + Antenna Gain (dBi)

LTE Band48

Frequency (MHz)	Channel Bandwidth (MHz)	RB Size	RB Offset	Output Power (dBm/10MHz)	EIRP (dBm/ 10MHz)	Limit (dBm/ 10MHz)
QPSK						
3552.5	5	1	0	23.71	19.42	<23.00
3625.0				24.27	19.98	<23.00
3697.5				24.32	20.03	<23.00
3552.5	5	1	12	23.14	18.85	<23.00
3625.0				23.46	19.17	<23.00
3697.5				23.54	19.25	<23.00
3552.5	5	1	24	23.19	18.90	<23.00
3625.0				23.70	19.41	<23.00
3697.5				23.84	19.55	<23.00
3552.5	5	25	0	22.30	18.01	<23.00
3625.0				22.55	18.26	<23.00
3697.5				22.66	18.37	<23.00
3555.0	10	1	0	23.11	18.82	<23.00
3625.0				22.94	18.65	<23.00
3695.0				22.99	18.70	<23.00
3555.0	10	1	24	23.40	19.11	<23.00
3625.0				23.24	18.95	<23.00
3695.0				23.35	19.06	<23.00
3555.0	10	1	49	23.47	19.18	<23.00
3625.0				23.30	19.01	<23.00
3695.0				23.34	19.05	<23.00
3555.0	10	50	0	22.71	18.42	<23.00
3625.0				22.60	18.31	<23.00
3695.0				22.62	18.33	<23.00
Note: The EIRP (dBm/10MHz) = Output Power (dBm/10MHz) + Antenna Gain (dBi)						

Frequency (MHz)	Channel Bandwidth (MHz)	RB Size	RB Offset	Output Power (dBm/10MHz)	EIRP (dBm/ 10MHz)	Limit (dBm/ 10MHz)
QPSK						

3557.5	15	1	0	23.66	19.37	<23.00
3625.0				23.53	19.24	<23.00
3692.5				24.11	19.82	<23.00
3557.5	15	1	37	23.77	19.48	<23.00
3625.0				23.67	19.38	<23.00
3692.5				23.31	19.02	<23.00
3557.5	15	1	74	23.42	19.13	<23.00
3625.0				23.26	18.97	<23.00
3692.5				23.82	19.53	<23.00
3557.5	15	75	0	21.51	17.22	<23.00
3625.0				21.45	17.16	<23.00
3692.5				21.48	17.19	<23.00
3560.0	20	1	0	23.85	19.56	<23.00
3625.0				23.78	19.49	<23.00
3690.0				23.95	19.66	<23.00
3560.0	20	1	50	23.36	19.07	<23.00
3625.0				23.24	18.95	<23.00
3690.0				23.41	19.12	<23.00
3560.0	20	1	99	23.78	19.49	<23.00
3625.0				23.59	19.30	<23.00
3690.0				23.61	19.32	<23.00
3560.0	20	100	0	20.43	16.14	<23.00
3625.0				20.27	15.98	<23.00
3690.0				20.37	16.08	<23.00
Note: The EIRP (dBm/10MHz) = Output Power (dBm/10MHz) + Antenna Gain (dBi)						

LTE Band71

Frequency (MHz)	Channel Bandwidth (MHz)	RB Size	RB Offset	Output Power (dBm)	ERP (dBm)	Limit (dBm)
QPSK						
665.5	5	1	0	22.75	21.82	< 34.77
680.5				22.92	21.99	< 34.77
695.5				22.97	22.04	< 34.77
665.5	5	1	12	22.78	21.85	< 34.77
680.5				22.86	21.93	< 34.77
695.5				23.00	22.07	< 34.77

665.5	5	1	24	22.78	21.85	< 34.77
680.5				22.82	21.89	< 34.77
695.5				22.92	21.99	< 34.77
665.5	5	25	0	21.91	20.98	< 34.77
680.5				21.99	21.06	< 34.77
695.5				22.05	21.12	< 34.77
668.0	10	1	0	22.79	21.86	< 34.77
680.5				22.81	21.88	< 34.77
693.0				22.96	22.03	< 34.77
668.0	10	1	24	22.80	21.87	< 34.77
680.5				22.87	21.94	< 34.77
693.0				23.05	22.12	< 34.77
668.0	10	1	49	22.79	21.86	< 34.77
680.5				22.93	22.00	< 34.77
693.0				22.89	21.96	< 34.77
668.0	10	50	0	21.97	21.04	< 34.77
680.5				21.98	21.05	< 34.77
693.0				21.96	21.03	< 34.77
Note: The ERP (dBm) = Output Power (dBm) + Antenna Gain (dBi) - 2.15						

Frequency (MHz)	Channel Bandwidth (MHz)	RB Size	RB Offset	Output Power (dBm)	ERP (dBm)	Limit (dBm)
QPSK						
670.5	15	1	0	22.81	21.88	< 34.77
680.5				22.96	22.03	< 34.77
690.5				22.90	21.97	< 34.77
670.5	15	1	37	22.81	21.88	< 34.77
680.5				22.96	22.03	< 34.77
690.5				22.88	21.95	< 34.77
670.5	15	1	74	22.95	22.02	< 34.77
680.5				22.86	21.93	< 34.77
690.5				22.96	22.03	< 34.77
670.5	15	75	0	21.93	21.00	< 34.77
680.5				21.99	21.06	< 34.77
690.5				22.00	21.07	< 34.77
673.0	20	1	0	22.85	21.92	< 34.77
683.0				22.94	22.01	< 34.77

688.0				23.06	22.13	< 34.77
673.0	20	1	49	22.87	21.94	< 34.77
683.0				22.83	21.90	< 34.77
688.0				22.93	22.00	< 34.77
673.0	20	1	99	22.81	21.88	< 34.77
683.0				23.04	22.11	< 34.77
688.0				22.97	22.04	< 34.77
673.0	20	100	0	22.10	21.17	< 34.77
683.0				21.99	21.06	< 34.77
688.0				22.01	21.08	< 34.77
Note: The ERP (dBm) = Output Power (dBm) + Antenna Gain (dBi) - 2.15						

WIFI 2.4G Ant0

Condition	Mode	Frequency (MHz)	Antenna	Conducted Power (dBm)	Limit (dBm)	Verdict
NVNT	b	2412	Ant0	16.03	30	Pass
NVNT	b	2437	Ant0	14.29	30	Pass
NVNT	b	2462	Ant0	14.39	30	Pass
NVNT	g	2412	Ant0	14.66	30	Pass
NVNT	g	2437	Ant0	13.71	30	Pass
NVNT	g	2462	Ant0	13.33	30	Pass
NVNT	n20	2412	Ant0	14.85	30	Pass
NVNT	n20	2437	Ant0	13.18	30	Pass
NVNT	n20	2462	Ant0	14.69	30	Pass
NVNT	n40	2422	Ant0	13.05	30	Pass
NVNT	n40	2437	Ant0	11.99	30	Pass
NVNT	n40	2452	Ant0	11.09	30	Pass

WIFI 2.4G Ant1

Condition	Mode	Frequency (MHz)	Antenna	Conducted Power (dBm)	Limit (dBm)	Verdict
NVNT	b	2412	Ant1	13.41	30	Pass
NVNT	b	2437	Ant1	13.83	30	Pass
NVNT	b	2462	Ant1	13.73	30	Pass
NVNT	g	2412	Ant1	11.43	30	Pass
NVNT	g	2437	Ant1	11.66	30	Pass
NVNT	g	2462	Ant1	12.02	30	Pass
NVNT	n20	2412	Ant1	11.86	30	Pass
NVNT	n20	2437	Ant1	11.59	30	Pass
NVNT	n20	2462	Ant1	12.17	30	Pass
NVNT	n40	2422	Ant1	12.01	30	Pass
NVNT	n40	2437	Ant1	12.04	30	Pass
NVNT	n40	2452	Ant1	11.37	30	Pass

WIFI 5.2G

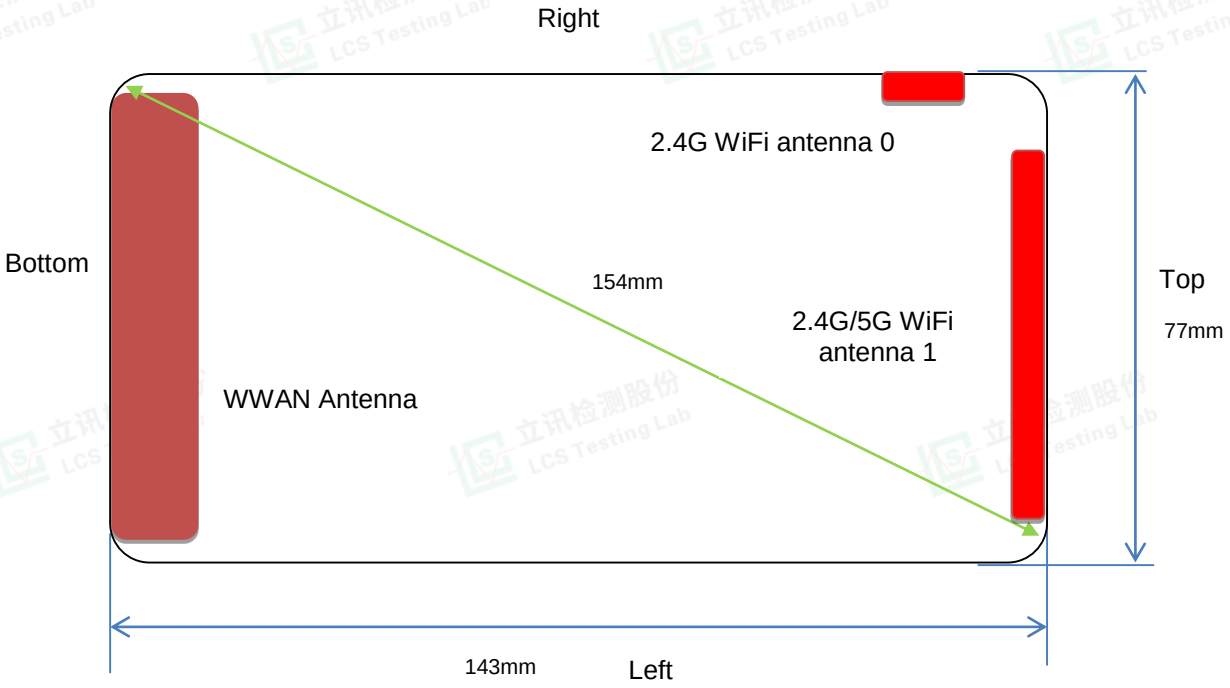
Condition	Mode	Frequency (MHz)	Antenna	Conducted Power (dBm)
NVNT	a	5180	Ant1	13.91
NVNT	a	5200	Ant1	13.54
NVNT	a	5240	Ant1	10.82
NVNT	n20	5180	Ant1	13.74
NVNT	n20	5200	Ant1	13.57

NVNT	n20	5240	Ant1	11.04
NVNT	n40	5190	Ant1	13.28
NVNT	n40	5230	Ant1	11.29
NVNT	ac20	5180	Ant1	13.76
NVNT	ac20	5200	Ant1	13.63
NVNT	ac20	5240	Ant1	10.95
NVNT	ac40	5190	Ant1	13.33
NVNT	ac40	5230	Ant1	11.34
NVNT	ac80	5210	Ant1	10.12

WIFI 5.8G

Condition	Mode	Frequency (MHz)	Antenna	Conducted Power (dBm)
NVNT	a	5745	Ant1	10.33
NVNT	a	5785	Ant1	10.12
NVNT	a	5825	Ant1	9.36
NVNT	n20	5745	Ant1	10.2
NVNT	n20	5785	Ant1	10.18
NVNT	n20	5825	Ant1	9.51
NVNT	n40	5755	Ant1	10.01
NVNT	n40	5795	Ant1	9.46
NVNT	ac20	5745	Ant1	10.16
NVNT	ac20	5785	Ant1	10.14
NVNT	ac20	5825	Ant1	9.47
NVNT	ac40	5755	Ant1	9.96
NVNT	ac40	5795	Ant1	9.43
NVNT	ac80	5775	Ant1	7.78

4.2. Transmit Antennas and SAR Measurement Position



Rear View

Antenna information:

WWAN Antenna	UMTS/LTE TX/RX
WLAN Antenna	WLAN TX/RX

Antenna information:

Note:

1). Per KDB648474 D04, 10-g extremity SAR is not required when Body-Worn mode 1-g reported SAR < 1.2 W/Kg.

2). According to the KDB941225 D06 Hot Spot SAR v02, the edges with less than 25 mm distance to the antennas need to be tested for SAR.

3). Per KDB 616217 D04, The antennas in tablets are typically located near the back (bottom) surface and/or along the edges of the devices; therefore, SAR evaluation is required for these configurations. Exposures from antennas through the front (top) surface of the displaysection of a full-size tablet, away from the edges, are generally limited to the user's hands.

Distance of The Antenna to the EUT surface and edge (mm)						
Antennas	**Front**	**Back**	**Top Side**	**Bottom Side**	**Left Side**	**Right Side**
WWAN	<5	<5	124	<5	<5	<5
WLAN ANT0	<5	<5	<5	109	74	<5
WLAN Ant1	<5	<5	<5	131	<5	<5

Positions for SAR tests; Hotspot mode						
Antennas	**Front**	**Back**	**Top Side**	**Bottom Side**	**Left Side**	**Right Side**
WWAN	Yes	Yes	No	Yes	Yes	Yes
WLAN ANT0	Yes	Yes	Yes	No	No	Yes
WLAN Ant1	Yes	Yes	Yes	No	Yes	Yes

General Note: Referring to KDB 941225 D06 v02, When the overall device length and width are ≥9cm*5cm, the test distance is 0mm, SAR must be measured for all sides and surfaces with a transmitting antenna located with 25mm from that surface or edge.

4.3. SAR Measurement Results

The calculated SAR is obtained by the following formula:

Reported SAR=Measured SAR*$10^{(Ptarget-Pmeasured))/10}$

Scaling factor=$10^{(Ptarget-Pmeasured))/10}$

Reported SAR= Measured SAR* Scaling factor

Where

P_{target} is the power of manufacturing upper limit;

$P_{measured}$ is the measured power;

Measured SAR is measured SAR at measured power which including power drift)

Reported SAR which including Power Drift and Scaling factor

Duty Cycle

Test Mode	Duty Cycle
UMTS	1:1
LTE	1:1

4.3.1 SAR Results

SAR Values [WCDMA Band II]										
Ch.	*Freq. (MHz)*	*Channel Type*	*Test Position*	*Conducted Power (dBm)*	*Maximum Allowed Power (dBm)*	*PowerDrift(%)*	*ScalingFactor*	*SAR_{1-g} results(W/kg)*		*Graph*
								Measured	*Reported*	*Results*
measured / reported SAR numbers - Body (hotspot open, distance 0mm)										
9262	1852.4	RMC	Front	23.21	23.50	0.23	1.069	0.725	0.775	
9262	1852.4	RMC	Rear	23.21	23.50	-1.63	1.069	**1.011**	**1.081**	**Plot 1**
9400	1880.0	RMC	Rear	23.11	23.50	-0.42	1.094	0.986	1.079	
9538	1907.6	RMC	Rear	23.10	23.50	0.06	1.096	0.960	1.053	
9262	1852.4	RMC	Left	23.21	23.50	0.36	1.069	0.126	0.135	
9262	1852.4	RMC	Right	23.21	23.50	0.36	1.069	0.326	0.349	
9262	1852.4	RMC	Bottom	23.21	23.50	-0.03	1.069	0.284	0.304	

SAR Values [WCDMA Band IV]										
Ch.	*Freq. (MHz)*	*Channel Type*	*Test Position*	*Conducted Power (dBm)*	*Maximum Allowed Power (dBm)*	*PowerDrift(%)*	*ScalingFactor*	*SAR_{1-g} results(W/kg)*		*Graph*
								Measured	*Reported*	*Results*
measured / reported SAR numbers - Body (hotspot open, distance 0mm)										
1513	1752.6	RMC	Front	23.21	23.50	0.16	1.069	0.552	0.590	
1513	1752.6	RMC	Rear	23.21	23.50	-0.57	1.069	**0.602**	**0.644**	**Plot 2**
1513	1752.6	RMC	Left	23.21	23.50	0.43	1.069	0.042	0.045	
1513	1752.6	RMC	Right	23.21	23.50	0.43	1.069	0.110	0.118	
1513	1752.6	RMC	Bottom	23.21	23.50	0.78	1.069	0.123	0.131	

SAR Values [WCDMA Band V]										
Ch.	*Freq. (MHz)*	*Channel Type*	*Test Position*	*Conducted Power (dBm)*	*Maximum Allowed Power (dBm)*	*PowerDrift(%)*	*ScalingFactor*	*SAR_{1-g} results(W/kg)*		*Graph*
								Measured	*Reported*	*Results*
measured / reported SAR numbers - Body (hotspot open, distance 0mm)										
4183	836.6	RMC	Front	23.33	24.00	0.13	1.167	0.486	0.567	
4183	836.6	RMC	Rear	23.33	24.00	-0.11	1.167	**0.677**	**0.790**	**Plot 3**
4183	836.6	RMC	Left	23.33	24.00	0.09	1.167	0.057	0.067	
4183	836.6	RMC	Right	23.33	24.00	0.09	1.167	0.102	0.119	
4183	836.6	RMC	Bottom	23.33	24.00	-0.18	1.167	0.096	0.112	

Remark:
1. The value with block color is the maximum SAR Value of each test band.
2. Per FCC KDB Publication 447498 D01, if the reported (scaled) SAR measured at the middle channel or highest output power channel for each test configuration is ≤ 0.8 W/kg then testing at the other channels is optional for such test configuration(s).
3. RMC - RMC 12.2kbps mode;*

SAR Values [LTE Band 2]										
Ch.	*Freq. (MHz)*	*Channel Type*	*Test Position*	*Conducted Power (dBm)*	*Maximum Allowed Power (dBm)*	*Power Drift(%)*	*Scaling Factor*	*SAR_{1-g} results(W/kg)*		*Graph*
								Measured	*Reported*	*Results*
measured / reported SAR numbers - Body (hotspot open, distance 0mm)										
18700	1860.0	1RB	Front	22.93	23.00	0.03	1.016	0.209	0.212	
18700	1860.0	1RB	Rear	22.93	23.00	0.28	1.016	**0.266**	**0.270**	**Plot 4**
18700	1860.0	1RB	Left	22.93	23.00	-0.17	1.016	0.066	0.067	
18700	1860.0	1RB	Right	22.93	23.00	-0.17	1.016	0.102	0.104	
18700	1860.0	1RB	Bottom	22.93	23.00	-0.25	1.016	0.091	0.092	
18700	1860.0	50%RB	Front	21.56	22.00	0.21	1.107	0.196	0.217	
18700	1860.0	50%RB	Rear	21.56	22.00	0.19	1.107	0.240	0.266	
18700	1860.0	50%RB	Left	21.56	22.00	-0.06	1.107	0.036	0.040	
18700	1860.0	50%RB	Right	21.56	22.00	-0.06	1.107	0.111	0.123	
18700	1860.0	50%RB	Bottom	21.56	22.00	0.07	1.107	0.107	0.118	

SAR Values [LTE Band 4]										
Ch.	*Freq. (MHz)*	*Channel Type*	*Test Position*	*Conducted Power (dBm)*	*Maximum Allowed Power (dBm)*	*Power Drift(%)*	*Scaling Factor*	*SAR_{1-g} results(W/kg)*		*Graph*
								Measured	*Reported*	*Results*
measured / reported SAR numbers - Body (hotspot open, distance 0mm)										
20050	1720.0	1RB	Front	22.97	23.00	-1.15	1.007	0.268	0.270	
20050	1720.0	1RB	Rear	22.97	23.00	-1.11	1.007	**0.373**	**0.376**	**Plot 5**
20050	1720.0	1RB	Left	22.97	23.00	-1.20	1.007	0.105	0.106	
20050	1720.0	1RB	Right	22.97	23.00	-0.13	1.007	0.198	0.199	
20050	1720.0	1RB	Bottom	22.97	23.00	-1.20	1.007	0.142	0.143	
20175	1732.5	50%RB	Front	21.74	22.00	0.11	1.062	0.241	0.256	
20175	1732.5	50%RB	Rear	21.74	22.00	0.49	1.062	0.316	0.335	
20175	1732.5	50%RB	Left	21.74	22.00	0.05	1.062	0.100	0.106	
20175	1732.5	50%RB	Right	21.74	22.00	0.05	1.062	0.177	0.188	
20175	1732.5	50%RB	Bottom	21.74	22.00	0.03	1.062	0.203	0.216	

SAR Values [LTE Band 5]										
Ch.	*Freq. (MHz)*	*Channel Type*	*Test Position*	*Conducted Power (dBm)*	*Maximum Allowed Power (dBm)*	*Power Drift(%)*	*Scaling Factor*	*SAR_{1-g} results(W/kg)*		*Graph*
								Measured	*Reported*	*Results*
measured / reported SAR numbers - Body (hotspot open, distance 0mm)										
20525	836.5	1RB	Front	23.08	23.50	-0.16	1.102	0.220	0.242	
20525	836.5	1RB	Rear	23.08	23.50	-0.75	1.102	**0.305**	**0.336**	**Plot 6**
20525	836.5	1RB	Left	23.08	23.50	0.51	1.102	0.076	0.084	
20525	836.5	1RB	Right	23.08	23.50	0.69	1.102	0.152	0.167	
20525	836.5	1RB	Bottom	23.08	23.50	0.51	1.102	0.089	0.098	
20525	836.5	50%RB	Front	22.06	22.50	-0.02	1.107	0.163	0.180	
20525	836.5	50%RB	Rear	22.06	22.50	-0.14	1.107	0.241	0.267	
20525	836.5	50%RB	Left	22.06	22.50	-0.20	1.107	0.081	0.090	
20525	836.5	50%RB	Right	22.06	22.50	-0.20	1.107	0.110	0.122	
20525	836.5	50%RB	Bottom	22.06	22.50	-0.14	1.107	0.056	0.062	

SAR Values [LTE Band 7]										
Ch.	*Freq. (MHz)*	*Channel Type*	*Test Position*	*Conducted Power (dBm)*	*Maximum Allowed Power (dBm)*	*Power Drift(%)*	*Scaling Factor*	*SAR_{1-g} results(W/kg)*		*Graph*
								Measured	*Reported*	*Results*
measured / reported SAR numbers - Body (hotspot open, distance 0mm)										
21100	2535.0	1RB	Front	22.99	23.50	0.13	1.125	0.120	0.135	
21100	2535.0	1RB	Rear	22.99	23.50	-0.50	1.125	**0.281**	**0.316**	**Plot 7**
21100	2535.0	1RB	Left	22.99	23.50	0.09	1.125	0.045	0.051	
21100	2535.0	1RB	Right	22.99	23.50	0.09	1.125	0.081	0.091	
21100	2535.0	1RB	Bottom	22.99	23.50	-0.15	1.125	0.042	0.047	
21100	2535.0	50%RB	Front	21.79	22.50	0.62	1.178	0.114	0.134	
21100	2535.0	50%RB	Rear	21.79	22.50	-0.13	1.178	0.252	0.297	
21100	2535.0	50%RB	Left	21.79	22.50	-0.20	1.178	0.032	0.038	
21100	2535.0	50%RB	Right	21.79	22.50	-0.20	1.178	0.062	0.073	
21100	2535.0	50%RB	Bottom	21.79	22.50	0.46	1.178	0.030	0.035	

SAR Values [LTE Band 12]										
Ch.	*Freq. (MHz)*	*Channel Type*	*Test Position*	*Conducted Power (dBm)*	*Maximum Allowed Power (dBm)*	*Power Drift(%)*	*Scaling Factor*	*SAR_{1-g} results(W/kg)*		*Graph*
								Measured	*Reported*	*Results*
measured / reported SAR numbers - Body (hotspot open, distance 0mm)										
23060	704.0	1RB	Front	22.97	23.50	0.15	1.130	0.096	0.108	
23060	704.0	1RB	Rear	22.97	23.50	-0.19	1.130	**0.233**	**0.263**	**Plot 8**
23060	704.0	1RB	Left	22.97	23.50	-0.02	1.130	0.036	0.041	
23060	704.0	1RB	Right	22.97	23.50	-0.02	1.130	0.075	0.085	
23060	704.0	1RB	Bottom	22.97	23.50	0.19	1.130	0.045	0.051	
23060	704.0	50%RB	Front	21.97	22.50	0.20	1.130	0.101	0.114	
23060	704.0	50%RB	Rear	21.97	22.50	-0.14	1.130	0.189	0.214	
23060	704.0	50%RB	Left	21.97	22.50	-0.43	1.130	0.025	0.028	
23060	704.0	50%RB	Right	21.97	22.50	-0.43	1.130	0.065	0.073	
23060	704.0	50%RB	Bottom	21.97	22.50	0.03	1.130	0.012	0.014	

SAR Values [LTE Band 13]										
Ch.	*Freq. (MHz)*	*Channel Type*	*Test Position*	*Conducted Power (dBm)*	*Maximum Allowed Power (dBm)*	*Power Drift(%)*	*Scaling Factor*	*SAR_{1-g} results(W/kg)*		*Graph*
								Measured	*Reported*	*Results*
measured / reported SAR numbers - Body (hotspot open, distance 0mm)										
23230	782.0	1RB	Front	22.77	23.50	0.02	1.183	0.102	0.121	
23230	782.0	1RB	Rear	22.77	23.50	-0.01	1.183	**0.255**	**0.302**	**Plot 9**
23230	782.0	1RB	Left	22.77	23.50	-0.11	1.183	0.058	0.069	
23230	782.0	1RB	Right	22.77	23.50	-0.11	1.183	0.074	0.088	
23230	782.0	1RB	Bottom	22.77	23.50	0.13	1.183	0.065	0.077	
23230	782.0	50%RB	Front	21.59	22.50	0.46	1.233	0.087	0.107	
23230	782.0	50%RB	Rear	21.59	22.50	-0.02	1.233	0.155	0.191	
23230	782.0	50%RB	Left	21.59	22.50	0.85	1.233	0.024	0.030	
23230	782.0	50%RB	Right	21.59	22.50	0.85	1.233	0.036	0.044	
23230	782.0	50%RB	Bottom	21.59	22.50	0.19	1.233	0.025	0.031	

SAR Values [LTE Band 14]										
Ch.	*Freq. (MHz)*	*Channel Type*	*Test Position*	*Conducted Power (dBm)*	*Maximum Allowed Power (dBm)*	*Power Drift(%)*	*Scaling Factor*	*SAR_{1-g} results(W/kg)*		*Graph*
								Measured	*Reported*	*Results*
measured / reported SAR numbers - Body (hotspot open, distance 0mm)										
23330	793.0	1RB	Front	22.84	23.50	0.19	1.164	0.189	0.220	
23330	793.0	1RB	Rear	22.84	23.50	0.48	1.164	**0.289**	**0.336**	**Plot 10**
23330	793.0	1RB	Left	22.84	23.50	0.20	1.164	0.095	0.111	
23330	793.0	1RB	Right	22.84	23.50	0.20	1.164	0.102	0.119	
23330	793.0	1RB	Bottom	22.84	23.50	-0.11	1.164	0.054	0.063	
23330	793.0	50%RB	Front	21.89	22.50	-0.53	1.151	0.154	0.177	
23330	793.0	50%RB	Rear	21.89	22.50	-0.05	1.151	0.232	0.267	
23330	793.0	50%RB	Left	21.89	22.50	0.75	1.151	0.057	0.066	
23330	793.0	50%RB	Right	21.89	22.50	0.75	1.151	0.089	0.102	
23330	793.0	50%RB	Bottom	21.89	22.50	0.66	1.151	0.023	0.026	

SAR Values [LTE Band 17]										
Ch.	*Freq. (MHz)*	*Channel Type*	*Test Position*	*Conducted Power (dBm)*	*Maximum Allowed Power (dBm)*	*Power Drift(%)*	*Scaling Factor*	*SAR_{1-g} results(W/kg)*		*Graph*
								Measured	*Reported*	*Results*
measured / reported SAR numbers - Body (hotspot open, distance 0mm)										
23780	709.0	1RB	Front	22.97	23.50	0.21	1.130	0.241	0.272	
23780	709.0	1RB	Rear	22.97	23.50	0.40	1.130	**0.257**	**0.290**	**Plot 11**
23780	709.0	1RB	Left	22.97	23.50	-0.16	1.130	0.052	0.059	
23780	709.0	1RB	Right	22.97	23.50	-0.16	1.130	0.125	0.141	
23780	709.0	1RB	Bottom	22.97	23.50	0.45	1.130	0.108	0.122	
23780	709.0	50%RB	Front	21.97	22.50	0.20	1.130	0.229	0.259	
23780	709.0	50%RB	Rear	21.97	22.50	0.46	1.130	0.238	0.269	
23780	709.0	50%RB	Left	21.97	22.50	0.17	1.130	0.036	0.041	
23780	709.0	50%RB	Right	21.97	22.50	0.17	1.130	0.118	0.133	
23780	709.0	50%RB	Bottom	21.97	22.50	-0.05	1.130	0.096	0.108	

SAR Values [LTE Band 25]										
Ch.	*Freq. (MHz)*	*Channel Type*	*Test Position*	*Conducted Power (dBm)*	*Maximum Allowed Power (dBm)*	*Power Drift(%)*	*Scaling Factor*	*SAR_{1-g} results(W/kg)*		*Graph*
								Measured	*Reported*	*Results*
measured / reported SAR numbers - Body (hotspot open, distance 0mm)										
26140	1860.0	1RB	Front	22.93	23.00	0.06	1.016	0.287	0.292	
26140	1860.0	1RB	Rear	22.93	23.00	-0.12	1.016	**0.304**	**0.309**	**Plot 12**
26140	1860.0	1RB	Left	22.93	23.00	-0.05	1.016	0.112	0.114	
26140	1860.0	1RB	Right	22.93	23.00	-0.05	1.016	0.199	0.202	
26140	1860.0	1RB	Bottom	22.93	23.00	-0.46	1.016	0.110	0.112	
26140	1860.0	50%RB	Front	21.56	22.00	-0.19	1.107	0.265	0.293	
26140	1860.0	50%RB	Rear	21.56	22.00	0.52	1.107	0.279	0.309	
26140	1860.0	50%RB	Left	21.56	22.00	0.16	1.107	0.096	0.106	
26140	1860.0	50%RB	Right	21.56	22.00	0.16	1.107	0.154	0.170	
26140	1860.0	50%RB	Bottom	21.56	22.00	0.04	1.107	0.107	0.118	

SAR Values [LTE Band 26] (814-824)										
Ch.	*Freq. (MHz)*	*Channel Type*	*Test Position*	*Conducted Power (dBm)*	*Maximum Allowed Power (dBm)*	*Power Drift(%)*	*Scaling Factor*	*SAR_{1-g} results(W/kg)*		*Graph*
								Measured	*Reported*	*Results*
measured / reported SAR numbers - Body (hotspot open, distance 0mm)										
26740	819.0	1RB	Front	23.07	23.50	0.13	1.104	0.095	0.105	
26740	819.0	1RB	Rear	23.07	23.50	-1.32	1.104	**0.107**	**0.118**	**Plot 13**
26740	819.0	1RB	Left	23.07	23.50	-0.09	1.104	0.035	0.039	
26740	819.0	1RB	Right	23.07	23.50	-0.09	1.104	0.056	0.062	
26740	819.0	1RB	Bottom	23.07	23.50	0.24	1.104	0.024	0.026	
26740	819.0	50%RB	Front	22.01	22.50	-0.14	1.119	0.085	0.095	
26740	819.0	50%RB	Rear	22.01	22.50	0.26	1.119	0.102	0.114	
26740	819.0	50%RB	Left	22.01	22.50	-0.03	1.119	0.021	0.024	
26740	819.0	50%RB	Right	22.01	22.50	-0.03	1.119	0.035	0.039	
26740	819.0	50%RB	Bottom	22.01	22.50	0.50	1.119	0.011	0.012	

SAR Values [LTE Band 26] (824-849)										
Ch.	Freq. (MHz)	Channel Type	Test Position	Conducted Power (dBm)	Maximum Allowed Power (dBm)	Power Drift(%)	Scaling Factor	SAR_{1-g} results(W/kg)		Graph
								Measured	Reported	Results
measured / reported SAR numbers - Body (hotspot open, distance 0mm)										
26915	836.5	1RB	Front	23.03	23.50	-3.65	1.114	0.089	0.099	
26915	836.5	1RB	Rear	23.03	23.50	1.45	1.114	**0.101**	**0.113**	
26915	836.5	1RB	Left	23.03	23.50	-0.65	1.114	0.030	0.033	
26915	836.5	1RB	Right	23.03	23.50	3.89	1.114	0.051	0.057	
26915	836.5	1RB	Bottom	23.03	23.50	-4.78	1.114	0.018	0.020	
26765	821.5	50%RB	Front	22.00	22.00	0.85	1.000	0.080	0.080	
26765	821.5	50%RB	Rear	22.00	22.00	-4.44	1.000	0.096	0.096	
26765	821.5	50%RB	Left	22.00	22.00	3.36	1.000	0.017	0.017	
26765	821.5	50%RB	Right	22.00	22.00	-2.98	1.000	0.030	0.030	
26765	821.5	50%RB	Bottom	22.00	22.00	-2.02	1.000	0.007	0.007	

SAR Values [LTE Band 30]										
Ch.	Freq. (MHz)	Channel Type	Test Position	Conducted Power (dBm)	Maximum Allowed Power (dBm)	Power Drift(%)	Scaling Factor	SAR_{1-g} results(W/kg)		Graph
								Measured	Reported	Results
measured / reported SAR numbers - Body (hotspot open, distance 0mm)										
27710	2310.0	1RB	Front	23.10	23.50	0.02	1.096	0.113	0.124	
27710	2310.0	1RB	Rear	23.10	23.50	-2.19	1.096	**0.124**	**0.136**	**Plot 14**
27710	2310.0	1RB	Left	23.10	23.50	-0.61	1.096	0.020	0.022	
27710	2310.0	1RB	Right	23.10	23.50	-0.61	1.096	0.045	0.049	
27710	2310.0	1RB	Bottom	23.10	23.50	0.26	1.096	0.023	0.025	
27710	2310.0	50%RB	Front	22.75	22.50	-0.04	0.944	0.089	0.084	
27710	2310.0	50%RB	Rear	22.75	22.50	0.30	0.944	0.111	0.105	
27710	2310.0	50%RB	Left	22.75	22.50	0.11	0.944	0.018	0.017	
27710	2310.0	50%RB	Right	22.75	22.50	0.11	0.944	0.035	0.033	
27710	2310.0	50%RB	Bottom	22.75	22.50	-0.47	0.944	0.015	0.014	

SAR Values [LTE Band 38]										
Ch.	Freq. (MHz)	Channel Type	Test Position	Conducted Power (dBm)	Maximum Allowed Power (dBm)	Power Drift(%)	Scaling Factor	SAR_{1-g} results(W/kg)		Graph
								Measured	Reported	Results
measured / reported SAR numbers - Body (hotspot open, distance 0mm)										
38000	2595.0	1RB	Front	23.07	23.50	0.17	1.104	0.124	0.137	
38000	2595.0	1RB	Rear	23.07	23.50	-0.71	1.104	**0.153**	**0.169**	**Plot 15**
38000	2595.0	1RB	Left	23.07	23.50	0.67	1.104	0.054	0.060	
38000	2595.0	1RB	Right	23.07	23.50	0.67	1.104	0.089	0.098	
38000	2595.0	1RB	Bottom	23.07	23.50	0.15	1.104	0.065	0.072	
38000	2595.0	50%RB	Front	21.89	22.50	-0.53	1.151	0.110	0.127	
38000	2595.0	50%RB	Rear	21.89	22.50	0.09	1.151	0.128	0.147	
38000	2595.0	50%RB	Left	21.89	22.50	-0.61	1.151	0.032	0.037	
38000	2595.0	50%RB	Right	21.89	22.50	-0.61	1.151	0.077	0.089	
38000	2595.0	50%RB	Bottom	21.89	22.50	0.35	1.151	0.071	0.082	

SAR Values [LTE Band 41]										
Ch.	*Freq. (MHz)*	*Channel Type*	*Test Position*	*Conducted Power (dBm)*	*Maximum Allowed Power (dBm)*	*Power Drift(%)*	*Scaling Factor*	*SAR_{1-g} results(W/kg)*		*Graph*
								Measured	*Reported*	*Results*
measured / reported SAR numbers - Body (hotspot open, distance 0mm)										
40620	2593.0	1RB	Front	23.07	23.50	0.01	1.104	0.315	0.348	
40620	2593.0	1RB	Rear	23.07	23.50	-0.68	1.104	**0.389**	**0.429**	**Plot 16**
40620	2593.0	1RB	Left	23.07	23.50	-0.02	1.104	0.154	0.170	
40620	2593.0	1RB	Right	23.07	23.50	-0.02	1.104	0.201	0.222	
40620	2593.0	1RB	Bottom	23.07	23.50	0.49	1.104	0.127	0.140	
40620	2593.0	50%RB	Front	21.89	22.50	-0.18	1.151	0.311	0.358	
40620	2593.0	50%RB	Rear	21.89	22.50	-0.23	1.151	0.325	0.374	
40620	2593.0	50%RB	Left	21.89	22.50	0.85	1.151	0.136	0.157	
40620	2593.0	50%RB	Right	21.89	22.50	0.85	1.151	0.154	0.177	
40620	2593.0	50%RB	Bottom	21.89	22.50	0.16	1.151	0.100	0.115	

SAR Values [LTE Band 48]										
Ch.	*Freq. (MHz)*	*Channel Type*	*Test Position*	*Conducted Power (dBm)*	*Maximum Allowed Power (dBm)*	*Power Drift(%)*	*Scaling Factor*	*SAR_{1-g} results(W/kg)*		*Graph*
								Measured	*Reported*	*Results*
measured / reported SAR numbers - Body (hotspot open, distance 0mm)										
55290	3690.0	1RB	Front	23.95	24.00	-0.19	1.012	0.200	0.202	
55290	3690.0	1RB	Rear	23.95	24.00	4.96	1.012	**0.227**	**0.230**	**Plot 17**
55290	3690.0	1RB	Left	23.95	24.00	0.12	1.012	0.075	0.076	
55290	3690.0	1RB	Right	23.95	24.00	0.12	1.012	0.101	0.102	
55290	3690.0	1RB	Bottom	23.95	24.00	0.25	1.012	0.069	0.070	
55290	3690.0	50%RB	Front	22.65	23.00	0.36	1.084	0.186	0.202	
55290	3690.0	50%RB	Rear	22.65	23.00	-0.01	1.084	0.209	0.227	
55290	3690.0	50%RB	Left	22.65	23.00	0.72	1.084	0.062	0.067	
55290	3690.0	50%RB	Right	22.65	23.00	0.72	1.084	0.096	0.104	
55290	3690.0	50%RB	Bottom	22.65	23.00	0.17	1.084	0.054	0.059	

SAR Values [LTE Band 66]										
Ch.	*Freq. (MHz)*	*Channel Type*	*Test Position*	*Conducted Power (dBm)*	*Maximum Allowed Power (dBm)*	*Power Drift(%)*	*Scaling Factor*	*SAR_{1-g} results(W/kg)*		*Graph*
								Measured	*Reported*	*Results*
measured / reported SAR numbers - Body (hotspot open, distance 0mm)										
131972	1710.0	1RB	Front	22.97	23.00	0.12	1.007	0.265	0.267	
131972	1710.0	1RB	Rear	22.97	23.00	-0.73	1.007	**0.322**	**0.324**	**Plot 18**
131972	1710.0	1RB	Left	22.97	23.00	0.66	1.007	0.085	0.086	
131972	1710.0	1RB	Right	22.97	23.00	0.66	1.007	0.111	0.112	
131972	1710.0	1RB	Bottom	22.97	23.00	-0.17	1.007	0.089	0.090	
131972	1710.0	50%RB	Front	21.74	22.00	-0.02	1.062	0.241	0.256	
131972	1710.0	50%RB	Rear	21.74	22.00	0.81	1.062	0.302	0.321	
131972	1710.0	50%RB	Left	21.74	22.00	-0.66	1.062	0.079	0.084	
131972	1710.0	50%RB	Right	21.74	22.00	-0.66	1.062	0.105	0.111	
131972	1710.0	50%RB	Bottom	21.74	22.00	0.49	1.062	0.078	0.083	

SAR Values [LTE Band 71]										
Ch.	Freq. (MHz)	Channel Type	Test Position	Conducted Power (dBm)	Maximum Allowed Power (dBm)	Power Drift(%)	Scaling Factor	SAR_{1-g} results(W/kg)		Graph
								Measured	Reported	Results
measured / reported SAR numbers - Body (hotspot open, distance 0mm)										
133372	688.0	1RB	Front	23.06	24.00	0.02	1.242	0.225	0.279	
133372	688.0	1RB	Rear	23.06	24.00	0.81	1.242	**0.270**	**0.335**	**Plot 19**
133372	688.0	1RB	Left	23.06	24.00	0.06	1.242	0.096	0.119	
133372	688.0	1RB	Right	23.06	24.00	0.06	1.242	0.136	0.169	
133372	688.0	1RB	Bottom	23.06	24.00	0.14	1.242	0.102	0.127	
133372	688.0	50%RB	Front	22.05	23.00	-0.55	1.245	0.231	0.287	
133372	688.0	50%RB	Rear	22.05	23.00	-0.33	1.245	0.258	0.321	
133372	688.0	50%RB	Left	22.05	23.00	0.48	1.245	0.107	0.133	
133372	688.0	50%RB	Right	22.05	23.00	0.48	1.245	0.125	0.156	
133372	688.0	50%RB	Bottom	22.05	23.00	-0.02	1.245	0.095	0.118	

SAR Values [WIFI 2.4G] Ant0										
Ch.	Freq. (MHz)	Channel Type	Test Position	Conducted Power (dBm)	Maximum Allowed Power (dBm)	Power Drift(%)	Scaling Factor	SAR_{1-g} results(W/kg)		Graph
								Measured	Reported	Results
measured / reported SAR numbers - Body (hotspot open, distance 0mm) <SIM1>										
1	2412	802.11b	Front	16.03	17.00	-2.12	1.250	**0.060**	**0.075**	**Plot 20**
1	2412	802.11b	Rear	16.03	17.00	0.36	1.250	0.054	0.068	
1	2412	802.11b	Right	16.03	17.00	-0.25	1.250	0.036	0.045	
1	2412	802.11b	Top	16.03	17.00	0.43	1.250	0.021	0.026	

SAR Values [WIFI 2.4G] Ant1										
Ch.	Freq. (MHz)	Channel Type	Test Position	Conducted Power (dBm)	Maximum Allowed Power (dBm)	Power Drift(%)	Scaling Factor	SAR_{1-g} results(W/kg)		Graph
								Measured	Reported	Results
measured / reported SAR numbers - Body (hotspot open, distance 0mm) <SIM1>										
6	2437	802.11b	Front	13.83	14.00	0.05	1.040	**0.052**	**0.054**	
6	2437	802.11b	Rear	13.83	14.00	-0.13	1.040	0.034	0.035	
6	2437	802.11b	Left	13.83	14.00	-1.87	1.040	0.012	0.012	
6	2437	802.11b	Right	13.83	14.00	0.02	1.040	0.021	0.022	
6	2437	802.11b	Top	13.83	14.00	0.01	1.040	0.031	0.032	

SAR Values [WIFI 5.2G] Ant1										
Ch.	Freq. (MHz)	Channel Type	Test Position	Conducted Power (dBm)	Maximum Allowed Power (dBm)	Power Drift(%)	Scaling Factor	SAR_{1-g} results(W/kg)		Graph
								Measured	Reported	Results
measured / reported SAR numbers - Body (hotspot open, distance 0mm) <SIM1>										
36	5180	802.11a	Front	13.91	14.50	0.18	1.146	**0.061**	**0.070**	**Plot 21**
36	5180	802.11a	Rear	13.91	14.50	0.03	1.146	0.054	0.062	
36	5180	802.11a	Left	13.91	14.50	-4.65	1.146	0.014	0.016	
36	5180	802.11a	Right	13.91	14.50	-0.02	1.146	0.021	0.024	
36	5180	802.11a	Top	13.91	14.50	0.15	1.146	0.038	0.044	

SAR Values [[WIFI 5.8G] Ant1										
Ch.	*Freq. (MHz)*	*Channel Type*	*Test Position*	*Conducted Power (dBm)*	*Maximum Allowed Power (dBm)*	*Power Drift(%)*	*Scaling Factor*	*SAR_{1-g} results(W/kg)*		*Graph*
								Measured	*Reported*	*Results*
measured / reported SAR numbers - Body (hotspot open, distance 0mm) <SIM1>										
149	5745	802.11a	Front	10.33	11.00	-2.19	1.167	**0.076**	**0.089**	**Plot 22**
149	5745	802.11a	Rear	10.33	11.00	0.46	1.167	0.052	0.061	
149	5745	802.11a	Left	10.33	11.00	3.25	1.167	0.014	0.016	
149	5745	802.11a	Right	10.33	11.00	-0.15	1.167	0.023	0.027	
149	5745	802.11a	Top	10.33	11.00	0.79	1.167	0.046	0.054	

Remark:
1. The value with blue color is the maximum SAR Value of each test band.
2. Per FCC KDB Publication 447498 D01, if the reported (scaled) SAR measured at the middle channel or highest output power channel for each test configuration is ≤ 0.8 W/kg then testing at the other channels is optional for such test configuration(s).
3. When the same maximum output power is specified for both bands, begin SAR measurement in U-NII-2A band by applying the OFDM SAR requirements.19 If the highest reported SAR for a test configuration is ≤ 1.2 W/kg, SAR is not required for U-NII-1 band for that configuration (802.11 mode and exposure condition); otherwise, each band is tested independently for SAR.
4. When different maximum output power is specified for the bands, begin SAR measurement in the band with higher specified maximum output power. The highest reported SAR for the tested configuration is adjusted by the ratio of lower to higher specified maximum output power for the two bands. When the adjusted SAR is ≤ 1.2 W/kg, SAR is not required for the band with lower maximum output power in that test configuration; otherwise, each band is tested independently for SAR.

4.4. Simultaneous TX SAR Considerations

4.4.1 Introduction

Simultaneous transmission SAR test exclusion is determined for each operating configuration and exposure condition according to the reported standalone SAR of each applicable simultaneous transmiting antenna.
The device has 4 antennas, WWAN main antenna, WWAN diversity antenna(RX only), NFC antenna(RX only) and WiFi/BT antenna supports 2.4Wi-Fi.The 2 TX antennas can always transmit simultaneously.The work mode combination is showed as below table.;

Application Simultaneous Transmission information:

Combination No.	Mode
1	WWAN+WIFI

4.4.2 Evaluation of Simultaneous SAR

Body Hotspot Exposure Conditions

Simultaneous transmission SAR for WiFi and UMTS

Test Position	UMTS Band II Reported SAR1-g (W/kg)	UMTS Band IV Reported SAR1-g (W/kg)	UMTS Band V Reported SAR1-g (W/kg)	WiFi2.4G Reported SAR1-g (W/kg) ANT0	WiFi2.4G Reported SAR1-g (W/kg) ANT1	WiFi5.2G Reported SAR1-g (W/kg) ANT1	WiFi5.8G Reported SAR1-g (W/kg) ANT1	MAX. ΣSAR1-g (W/kg)	SAR1-g Limit (W/kg)	Peak location separation ratio	Simut Meas. Required
Front	**0.775**	0.590	0.567	**0.075**	0.054	0.070	**0.089**	0.939	1.6	no	no
Rear	**1.081**	0.644	0.790	**0.068**	0.035	**0.062**	0.061	**1.211**	1.6	no	no
Left	**0.135**	0.045	0.067	/	0.012	0.016	**0.016**	0.151	1.6	no	no
Right	**0.349**	0.118	0.119	**0.045**	0.022	0.024	**0.027**	0.421	1.6	no	no
Bottom	**0.304**	0.131	0.112	/	/	/	/	0.304	1.6	no	no
Top	/	/	/	**0.026**	0.032	0.044	**0.054**	0.080	1.6	no	no

SAR for WiFi and LTE

Reported SAR1-g(W/kg)	Test Position					
	Front	Rear	Left	Right	Bottom	Top
LTE Band2	0.212	0.270	0.067	0.123	0.118	/
LTE Band4	0.270	0.376	0.106	0.199	0.216	/
LTE Band5	0.242	0.336	0.090	0.167	0.098	/
LTE Band7	0.135	0.316	0.051	0.091	0.047	/
LTE Band12	0.108	0.263	0.041	0.085	0.051	/
LTE Band13	0.121	0.302	0.069	0.088	0.077	/
LTE Band14	0.220	0.336	0.111	0.119	0.063	/
LTE Band17	0.272	0.290	0.059	0.141	0.122	/
LTE Band25	0.292	0.309	0.114	0.202	0.118	/
LTE Band26	0.105	0.118	0.039	0.062	0.026	/
LTE Band30	0.124	0.136	0.022	0.049	0.025	/
LTE Band38	0.137	0.169	0.060	0.098	0.082	/
LTE Band41	**0.348**	**0.429**	**0.170**	**0.222**	**0.140**	/
LTE Band48	0.202	0.230	0.076	0.104	0.070	/
LTE Band66	0.267	0.324	0.086	0.112	0.090	/
LTE Band71	0.279	0.335	0.133	0.169	0.127	/
WiFi2.4G ANT0	**0.075**	**0.068**	/	**0.045**	/	**0.026**
WiFi2.4G ANT1	0.054	0.035	0.012	0.022	/	0.032
WiFi5.2G ANT1	0.070	**0.062**	0.016	0.024	/	0.044
WiFi5.8G ANT1	**0.089**	0.061	**0.016**	**0.027**	/	**0.080**
MAX. ΣSAR1-g (W/kg)	0.512	0.559	0.186	0.294	0.140	0.106
SAR1-g Limit (W/kg)	1.600	1.600	1.600	1.600	1.600	1.600
Peak location separation ratio	no	no	no	no	no	no
Simut Meas. Required	no	no	no	no	no	no

Note:
1. The value with **block** color is the maximum values of standalone
2. The value with blue color is the maximum values of $\sum SAR_{1-g}$

4.5. SAR Measurement Variability

According to KDB865664, Repeated measurements are required only when the measured SAR is ≥ 0.80 W/kg. If the measured SAR value of the initial repeated measurement is < 1.45 W/kg with ≤ 20% variation, only one repeated measurement is required to reaffirm that the results are not expected to have substantial variations, which may introduce significant compliance concerns. A second repeated measurement is required only if the measured result for the initial repeated measurement is within 10% of the SAR limit and vary by more than 20%, which are often related to device and measurement setup difficulties. The following procedures are applied to determine if repeated measurements are required. The same procedures should be adapted for measurements according to extremity and occupational exposure limits by applying a factor of 2.5 for extremity exposure and a factor of 5 for occupational exposure to the corresponding SAR thresholds.19 The repeated measurement results must be clearly identified in the SAR report. All measured SAR, including the repeated results, must be considered to determine compliance and for reporting according to KDB 690783.Repeated measurement is not required when the original highest measured SAR is < 0.80 W/kg; steps 2) through 4) do not apply.

3) When the original highest measured SAR is ≥ 0.80 W/kg, repeat that measurement once.
4) Perform a second repeated measurement only if the ratio of largest to smallest SAR for the original and first repeated measurements is > 1.20 or when the original or repeated measurement is ≥ 1.45 W/kg (~ 10% from the 1-g SAR limit).
5) Perform a third repeated measurement only if the original, first or second repeated measurement is ≥ 1.5 W/kg and the ratio of largest to smallest SAR for the original, first and second repeated measurements is > 1.20.
6) Perform a third repeated measurement only if the original, first or second repeated measurement is ≥ 1.5 W/kg and the ratio of largest to smallest SAR for the original, first and second repeated measurements is > 1.20

Frequency Band (MHz)	Air Interface	RF Exposure Configuration	Test Position	Repeated SAR (yes/no)	Highest Measured SAR1-g (W/Kg)	First Repeated	
						Measued SAR_{1-g} (W/Kg)	Largest to Smallest SAR Ratio
750	LTE Band 12	Standalone	Body-Rear	no	0.233	n/a	n/a
	LTE Band 13	Standalone	Body-Rear	no	0.255	n/a	n/a
	LTE Band 14	Standalone	Body-Rear	no	0.289	n/a	n/a
	LTE Band 17	Standalone	Body-Rear	no	0.257	n/a	n/a
	LTE Band 71	Standalone	Body-Rear	no	0.270	n/a	n/a
850	WCDMA Band V	Standalone	Body-Rear	no	0.677	n/a	n/a
	LTE Band 5	Standalone	Body-Rear	no	0.305	n/a	n/a
	LTE Band 26	Standalone	Body-Rear	no	0.107	n/a	n/a
1800	WCDMA Band IV	Standalone	Body-Rear	no	0.602	n/a	n/a
	LTE Band 4	Standalone	Body-Rear	no	0.373	n/a	n/a
	LTE Band 66	Standalone	Body-Rear	no	0.322	n/a	n/a
1900	WCDMA Band II	Standalone	Body-Rear	no	1.011	1.006	1.005
	LTE Band 2	Standalone	Body-Rear	no	0.266	n/a	n/a
	LTE Band 25	Standalone	Body-Rear	no	0.304	n/a	n/a
2300	LTE Band 30	Standalone	Body-Rear	no	0.124	n/a	n/a
2450	WIFI2.4G	Standalone	Body-Rear	no	0.060	n/a	n/a
2600	LTE Band 7	Standalone	Body-Rear	no	0.281	n/a	n/a
	LTE Band 38	Standalone	Body-Rear	no	0.153	n/a	n/a
	LTE Band 41	Standalone	Body-Rear	no	0.389	n/a	n/a
3700	LTE Band 48	Standalone	Body-Rear	no	0.227	n/a	n/a
5200	WIFI5.2G	Standalone	Body-Rear	no	0.061	n/a	n/a
5800	WIFI5.8G	Standalone	Body-Rear	no	0.076	n/a	n/a

Remark:

1. *Second Repeated Measurement is not required since the ratio of the largest to smallest SAR for the orignal and first repeated measurement is not > 1.20 or 3 (1-g or 10-g respectively)*

4.6. General description of test procedures

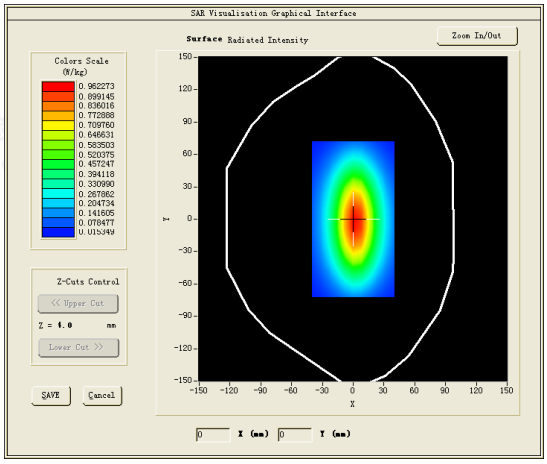
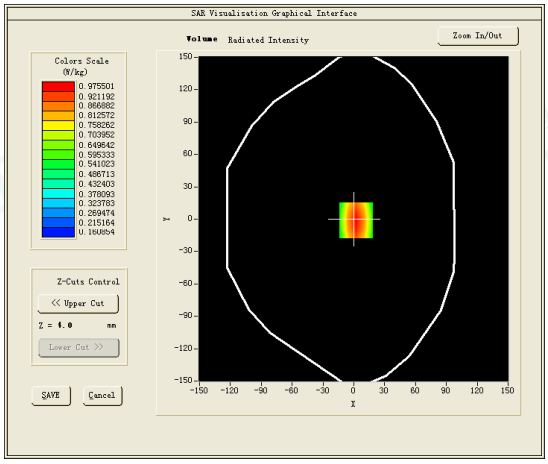
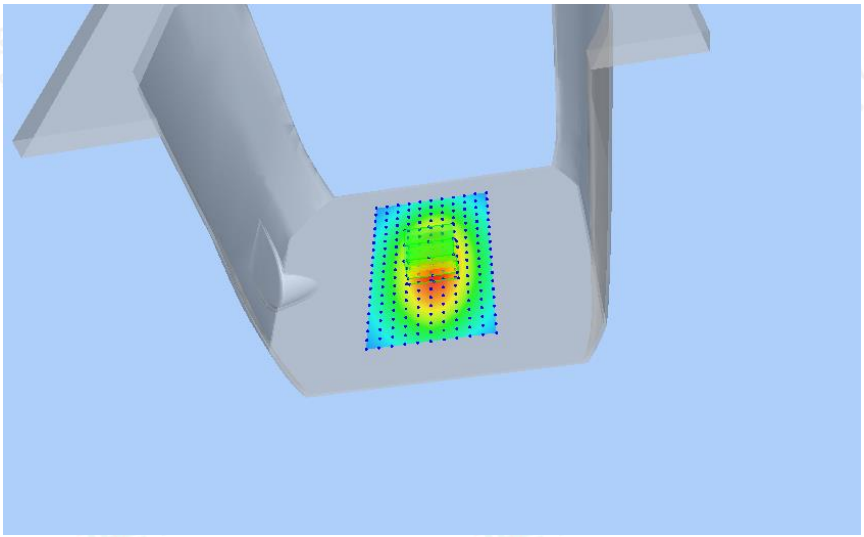
1. Test positions as described in the tables above are in accordance with the specified test standard.
2. Tests in body position were performed in that configuration, which generates the highest time based averaged output power (see conducted power results).
3. According to IEEE 1528 the SAR test shall be performed at middle channel. Testing of top and bottom channel is optional.
4. According to KDB 447498 D01 testing of other required channels within the operating mode of a frequency band is not required when the reported 1-g or 10-g SAR for the mid-band or highest output power channel is:
   ● ≤ 0.8 W/kg or 2.0 W/kg, for 1-g or 10-g respectively, when the transmission band is ≤ 100 MHz
   ● ≤ 0.6 W/kg or 1.5 W/kg, for 1-g or 10-g respectively, when the transmission band is between 100 MHz and 200 MHz
   ● ≤ 0.4 W/kg or 1.0 W/kg, for 1-g or 10-g respectively, when the transmission band is ≥ 200 MHz
5. IEEE 1528-2003 require the middle channel to be tested first. This generally applies to wireless devices that are designed to operate in technologies with tight tolerances for maximum output power variations across channels in the band. 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.
6. When the same maximum output power is specified for both bands, begin SAR measurement in U-NII-2A band by applying the OFDM SAR requirements.19 If the highest reported SAR for a test configuration is ≤ 1.2 W/kg, SAR is not required for U-NII-1 band for that configuration (802.11 mode and exposure condition); otherwise, each band is tested independently for SAR.
7. When different maximum output power is specified for the bands, begin SAR measurement in the band with higher specified maximum output power. The highest reported SAR for the tested configuration is adjusted by the ratio of lower to higher specified maximum output power for the two bands. When the adjusted SAR is ≤ 1.2 W/kg, SAR is not required for the band with lower maximum output power in that test configuration; otherwise, each band is tested independently for SAR.

4.7. Measurement Uncertainty (450MHz-6GHz)

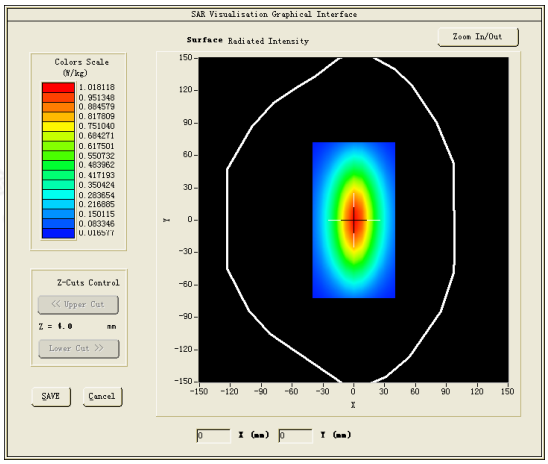
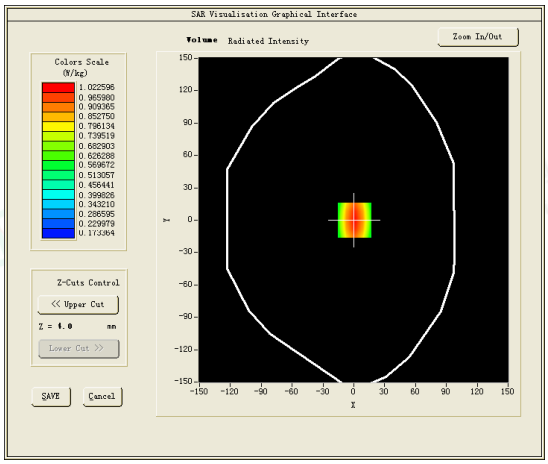
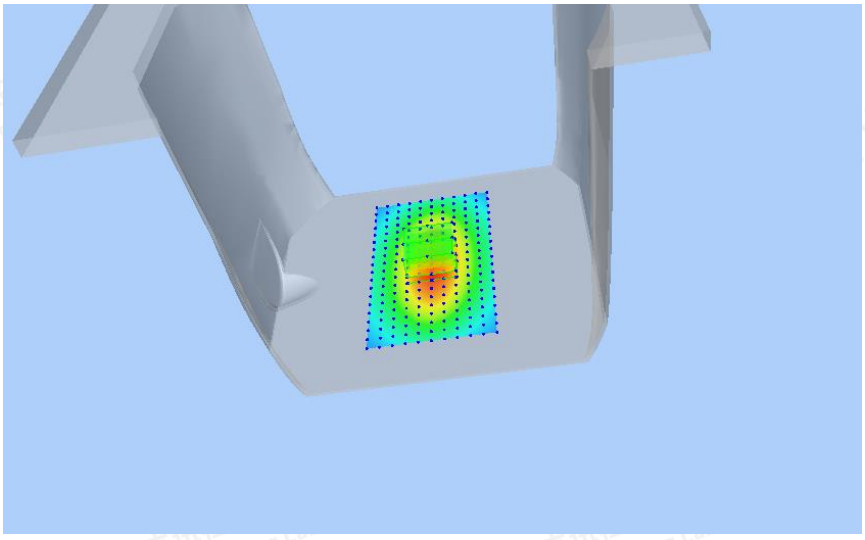
Not required as SAR measurement uncertainty analysis is required in SAR reports only when the highest measured SAR in a frequency band is ≥ 1.5 W/kg for 1-g SAR accoridng to KDB865664D01.

4.8. System Check Results

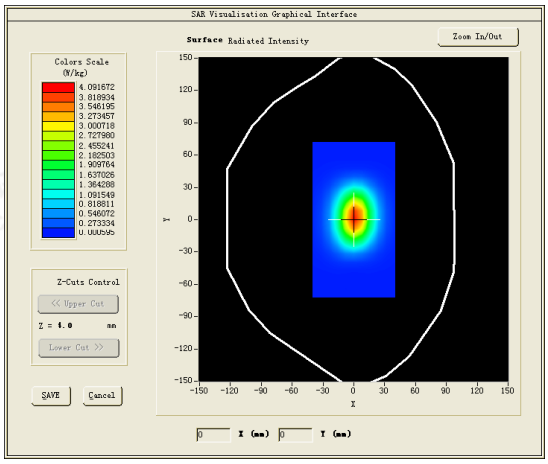
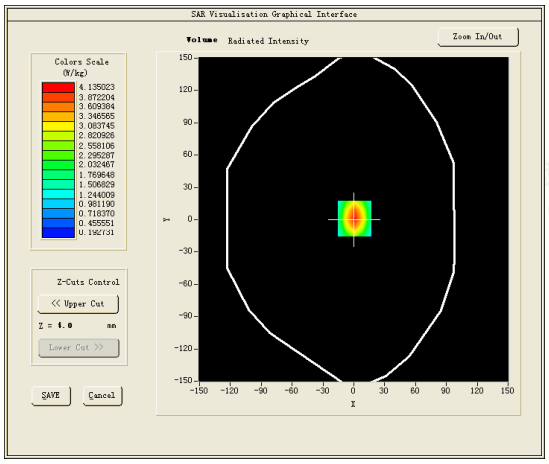
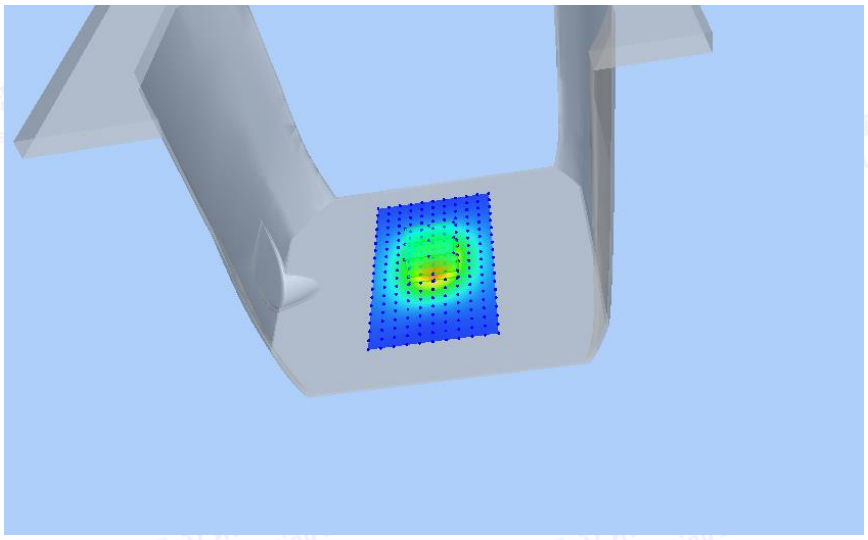
Test mode:750MHz(Head)
Product Description:Validation
Model:Dipole SID750
E-Field Probe: SSE2(SN 25/22 EPGO376)
Test Date: July 27, 2023

Medium(liquid type)	HSL_750
Frequency (MHz)	750.0000
Relative permittivity (real part)	41.68
Conductivity (S/m)	0.90
Input power	100mW
Crest Factor	1.0
Conversion Factor	1.49
Variation (%)	0.980000
SAR 10g (W/Kg)	0.562523
SAR 1g (W/Kg)	0.833146
SURFACE SAR	**VOLUME SAR**
	
	

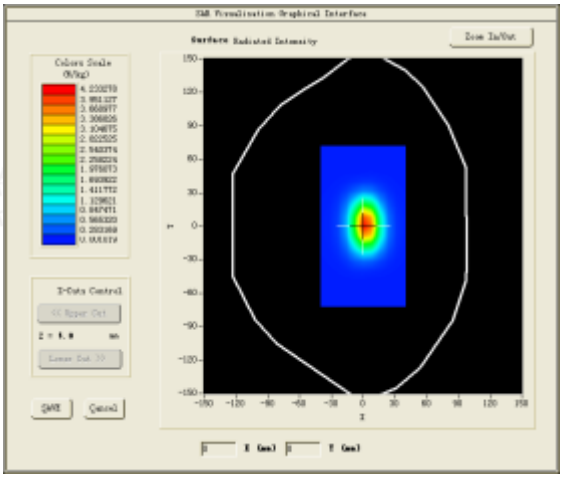
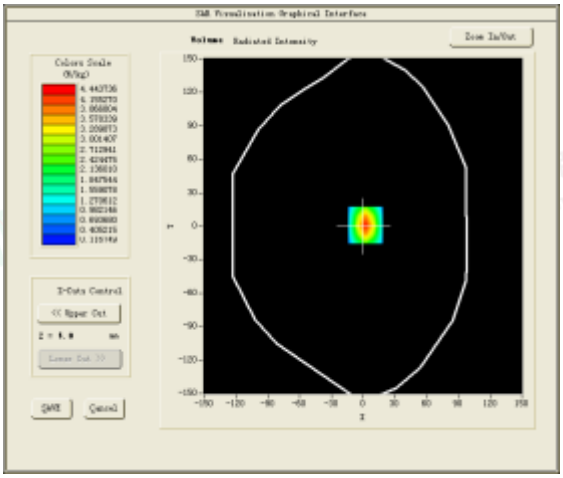
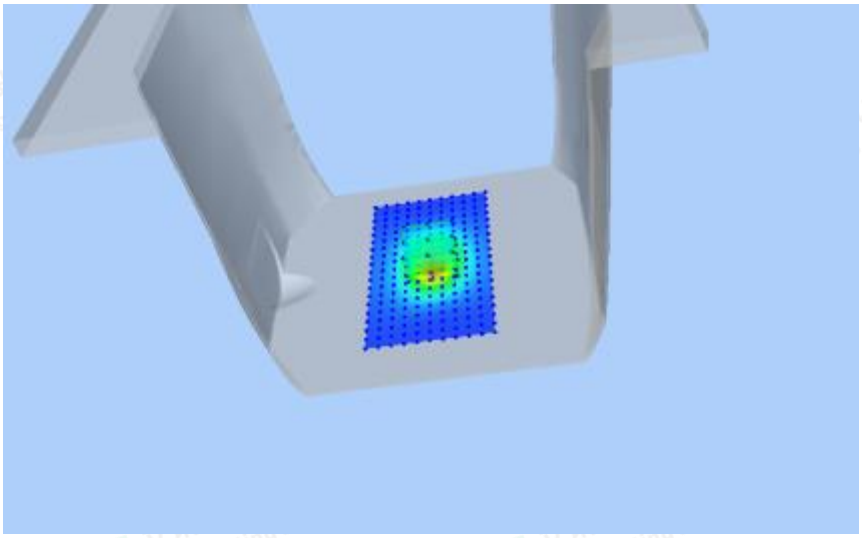
Test mode:835MHz(Head)
Product Description:Validation
Model:Dipole SID835
E-Field Probe:SSE2(SN 25/22 EPGO376)
Test Date: July 31, 2023

Medium(liquid type)	HSL_835
Frequency (MHz)	835.0000
Relative permittivity (real part)	41.52
Conductivity (S/m)	0.96
Input power	100mW
Crest Factor	1.0
Conversion Factor	1.50
Variation (%)	0.330000
SAR 10g (W/Kg)	0.665618
SAR 1g (W/Kg)	0.953254
SURFACE SAR	**VOLUME SAR**
	
	

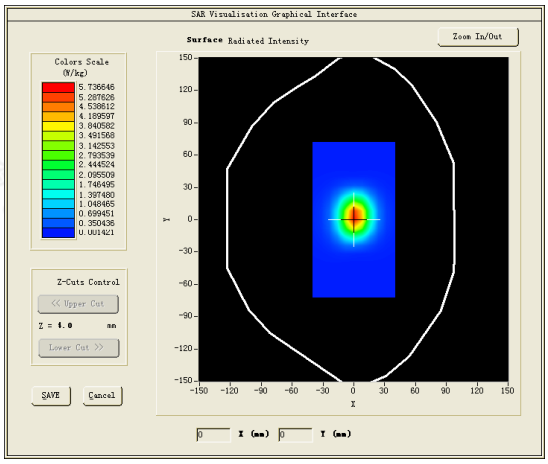
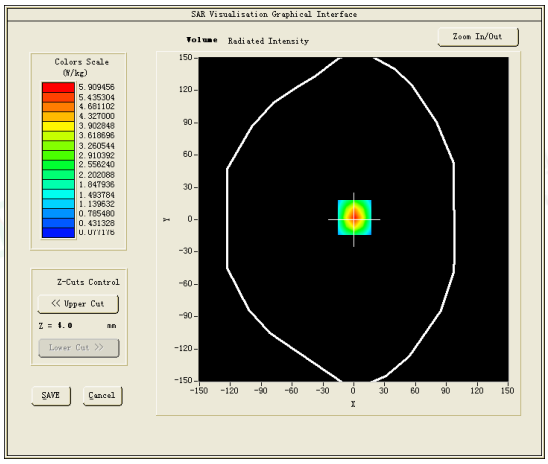
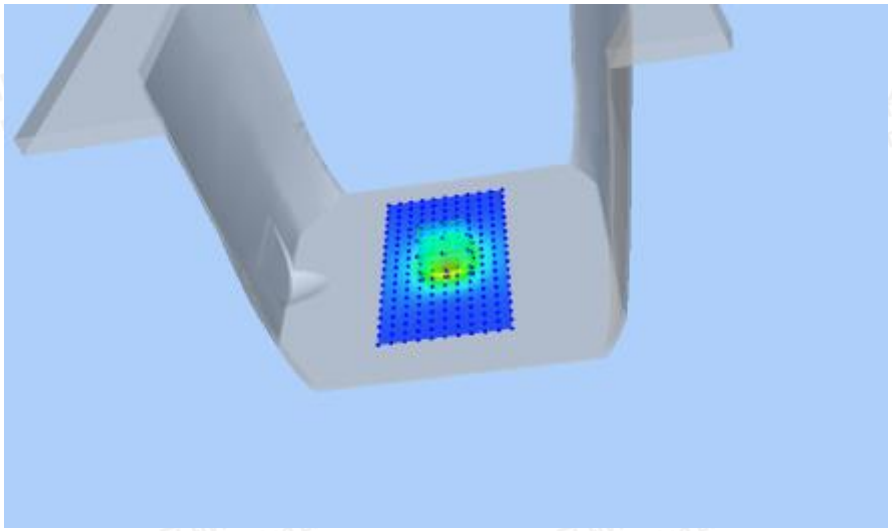
Test mode:1800MHz(Head)
Product Description:Validation
Model :Dipole SID1800
E-Field Probe:SSE2(SN 25/22 EPGO376)
Test Date: August 02, 2023

Medium(liquid type)	HSL_1800
Frequency (MHz)	1800.0000
Relative permittivity (real part)	39.95
Conductivity (S/m)	1.41
Input power	100mW
Crest Factor	1.0
Conversion Factor	1.73
Variation (%)	-1.110000
SAR 10g (W/Kg)	2.042543
SAR 1g (W/Kg)	3.838541
SURFACE SAR	**VOLUME SAR**
	
	

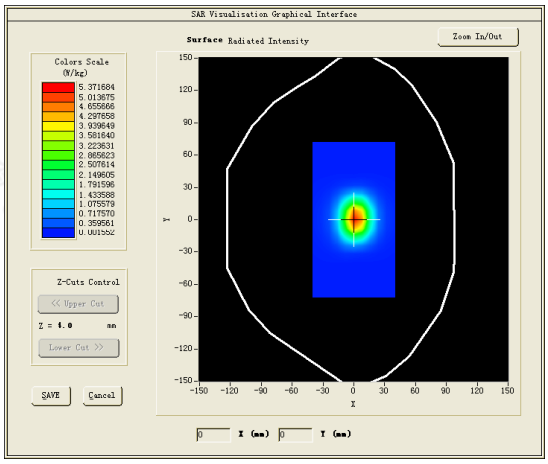
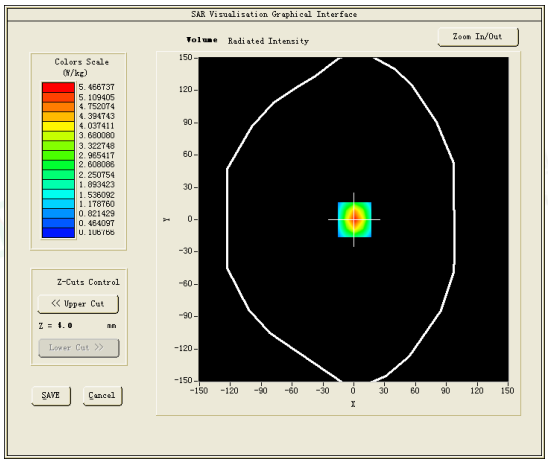
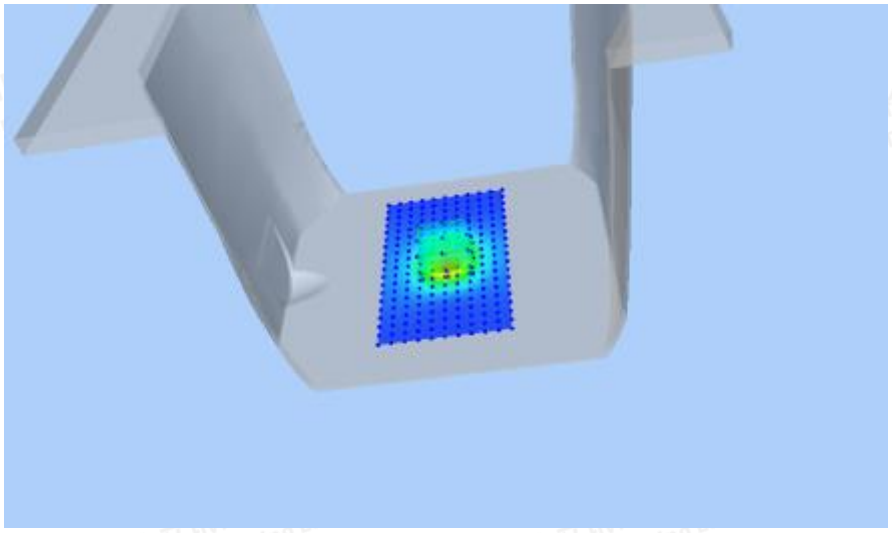
Test mode:1900MHz(Head)
Product Description:Validation
Model :Dipole SID1900
E-Field Probe:SSE2(SN 25/22 EPGO376)
Test Date: August 04, 2023

Medium(liquid type)	HSL_1900
Frequency (MHz)	1900.0000
Relative permittivity (real part)	39.86
Conductivity (S/m)	1.39
Input power	100mW
Crest Factor	1.0
Conversion Factor	1.91
Variation (%)	-4.150000
SAR 10g (W/Kg)	2.093462
SAR 1g (W/Kg)	3.978354
SURFACE SAR	**VOLUME SAR**
	
	

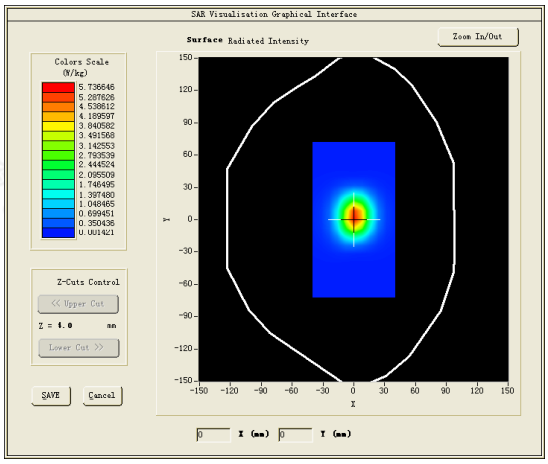
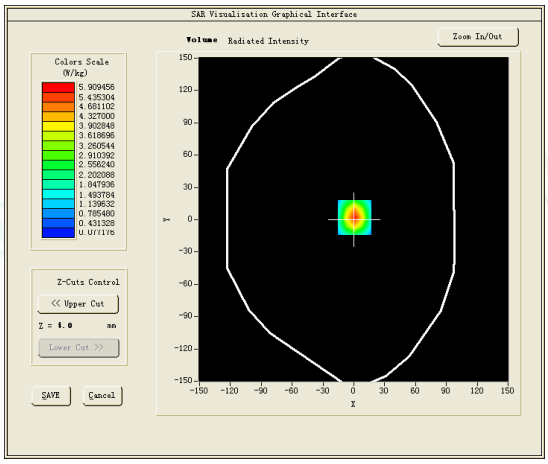
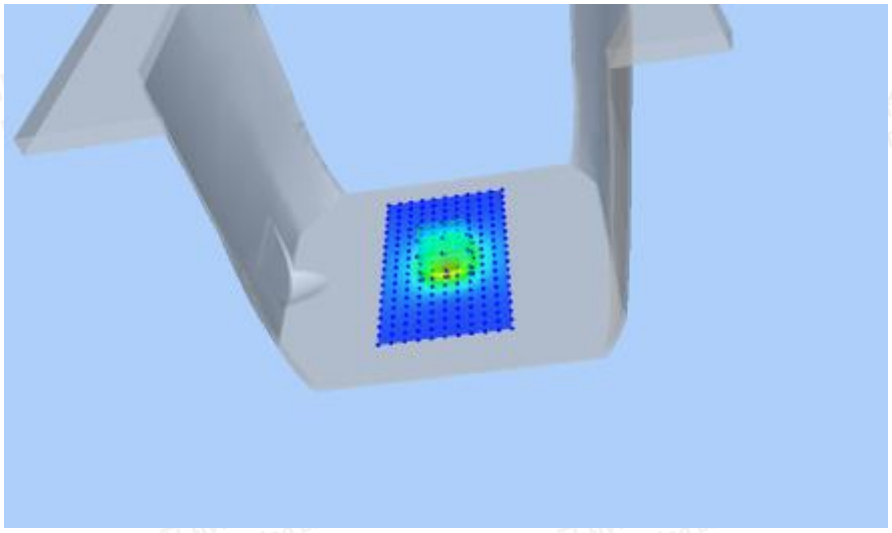
Test mode:2300MHz
Product Description:Validation
Model:Dipole SID2300
E-Field Probe: SSE2(SN 25/22 EPGO376)
Test Date: August 05, 2023

Medium(liquid type)	HSL_2300
Frequency (MHz)	2300.0000
Relative permittivity (real part)	39.69
Conductivity (S/m)	1.64
Input power	100mW
Crest Factor	1.0
Conversion Factor	1.92
Variation (%)	0.080000
SAR 10g (W/Kg)	2.288541
SAR 1g (W/Kg)	4.911682
SURFACE SAR	**VOLUME SAR**
	
	

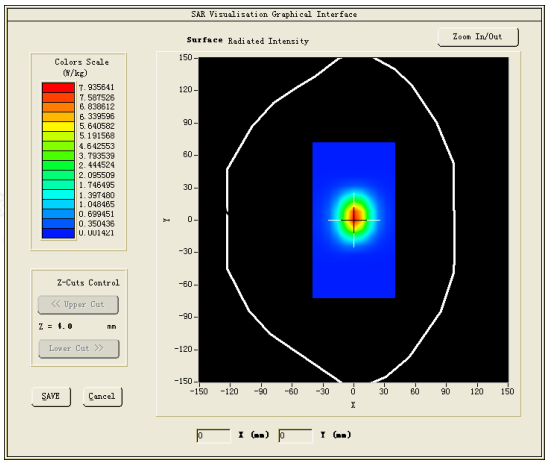
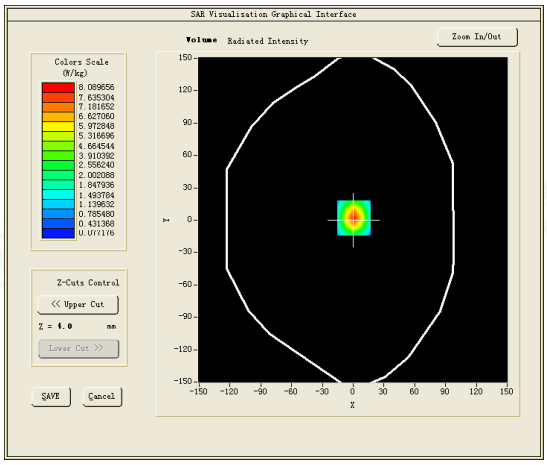
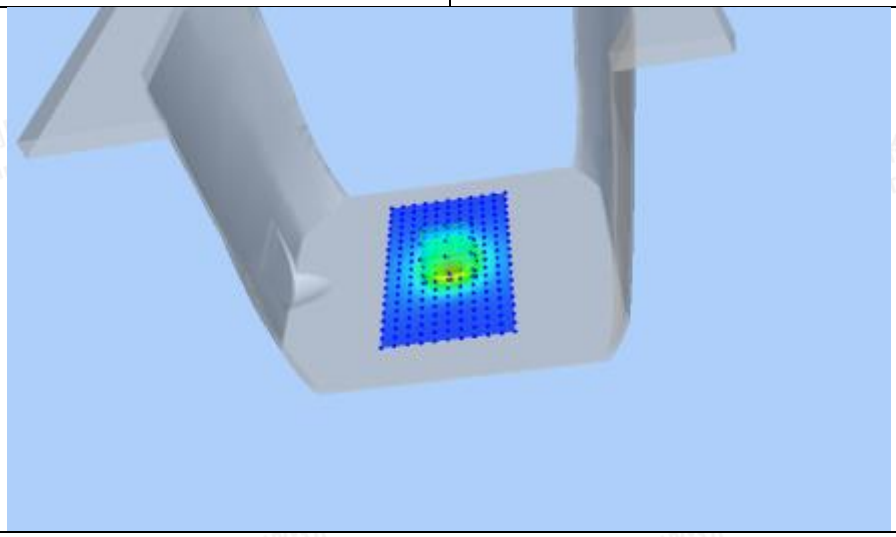
Test mode:2450MHz
Product Description:Validation
Model:Dipole SID2450
E-Field Probe: SSE2(SN 25/22 EPGO376)
Test Date: August 08, 2023

Medium(liquid type)	HSL_2450
Frequency (MHz)	2450.0000
Relative permittivity (real part)	39.41
Conductivity (S/m)	1.77
Input power	100mW
Crest Factor	1.0
Conversion Factor	1.98
Variation (%)	-3.650000
SAR 10g (W/Kg)	2.502974
SAR 1g (W/Kg)	5.425521
SURFACE SAR	**VOLUME SAR**
	
	

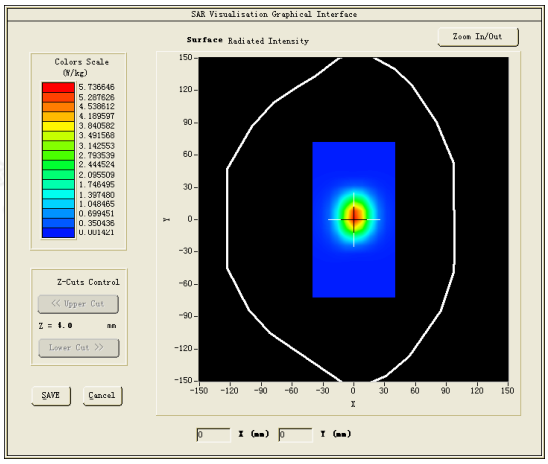
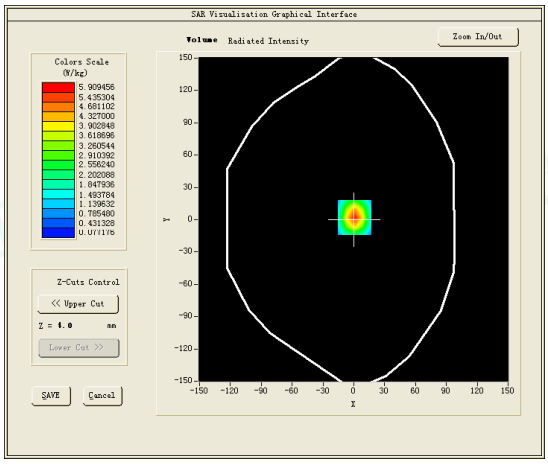
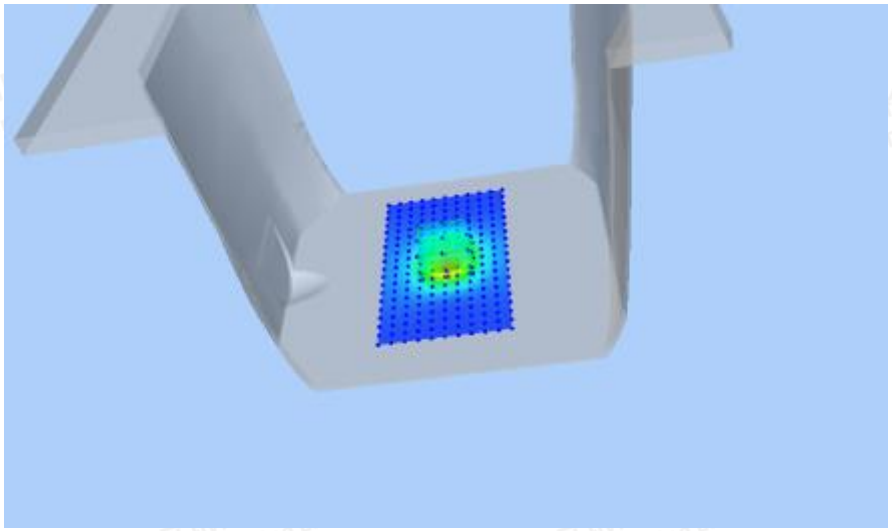
Test mode:2600MHz
Product Description:Validation
Model:Dipole SID2600
E-Field Probe: SSE2(SN 25/22 EPGO376)
Test Date: August 09, 2023

Medium(liquid type)	HSL_2600
Frequency (MHz)	2600.0000
Relative permittivity (real part)	39.32
Conductivity (S/m)	1.94
Input power	100mW
Crest Factor	1.0
Conversion Factor	1.87
Variation (%)	-4.850000
SAR 10g (W/Kg)	2.297541
SAR 1g (W/Kg)	5.718065
SURFACE SAR	**VOLUME SAR**
	
	

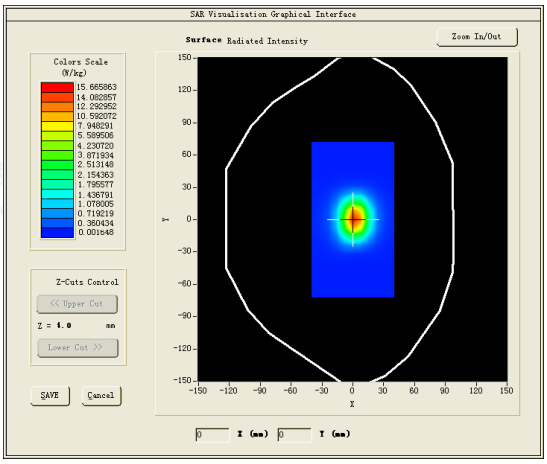
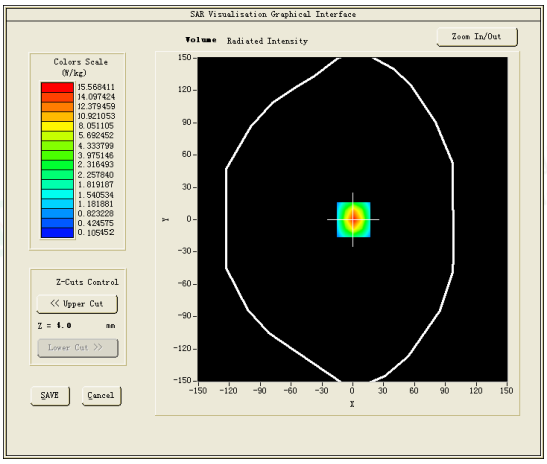
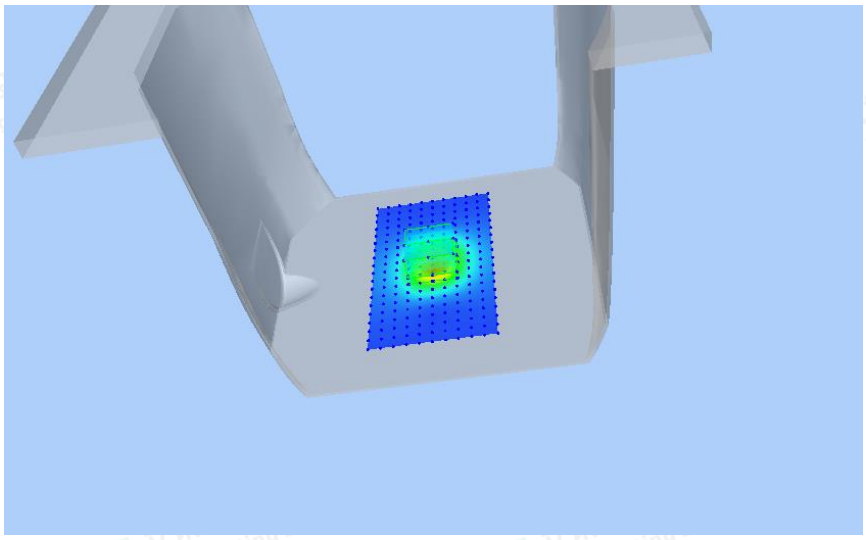
Test mode:3500MHz
Product Description:Validation
Model:Dipole SID3500
E-Field Probe: SSE2(SN 25/22 EPGO376)
Test Date: August 10, 2023

Medium(liquid type)	HSL_3500
Frequency (MHz)	3500.0000
Relative permittivity (real part)	38.51
Conductivity (S/m)	2.89
Input power	100mW
Crest Factor	1.0
Conversion Factor	1.85
Variation (%)	-2.560000
SAR 10g (W/Kg)	2.625437
SAR 1g (W/Kg)	6.882152
SURFACE SAR	**VOLUME SAR**
	
	

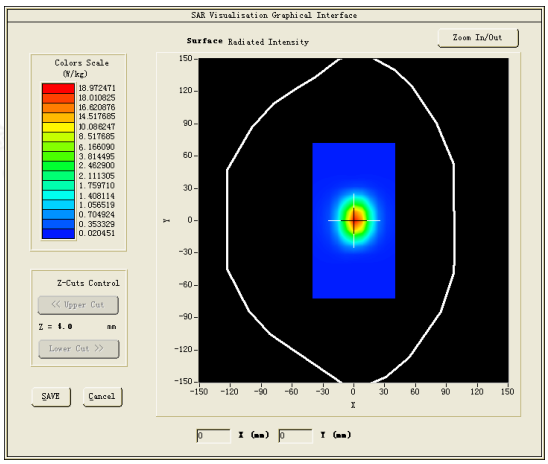
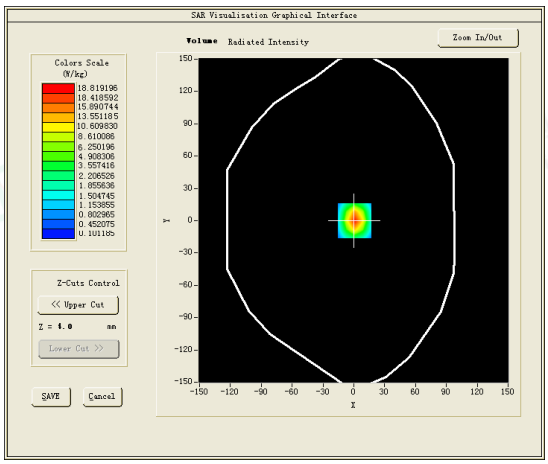
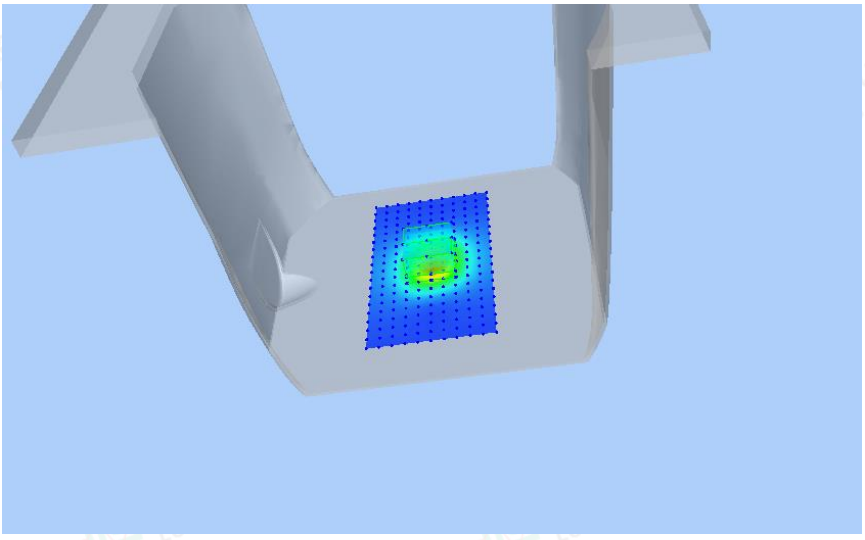
Test mode:3700MHz
Product Description:Validation
Model:Dipole SID3700
E-Field Probe: SSE2(SN 25/22 EPGO376)
Test Date: August 11, 2023

Medium(liquid type)	HSL_3700
Frequency (MHz)	3700.0000
Relative permittivity (real part)	37.46
Conductivity (S/m)	3.02
Input power	100mW
Crest Factor	1.0
Conversion Factor	1.79
Variation (%)	0.740000
SAR 10g (W/Kg)	2.364541
SAR 1g (W/Kg)	6.541551
SURFACE SAR	**VOLUME SAR**
	
	

Test mode:5200MHz(Head)
Product Description:Validation
Model:Dipole SWG5500
E-Field Probe: SSE2(SN 25/22 EPGO376)
Test Date: August 12, 2023

Medium(liquid type)	HSL _5000
Frequency (MHz)	5200.0000
Relative permittivity (real part)	35.72
Conductivity (S/m)	4.67
Input power	100mW
Crest Factor	1.0
Conversion Factor	1.80
Variation (%)	4.520000
SAR 10g (W/Kg)	5.906210
SAR 1g (W/Kg)	17.219034
SURFACE SAR	**VOLUME SAR**
	
	

Test mode:5800MHz(Head)
Product Description:Validation
Model:Dipole SWG5500
E-Field Probe: SSE2(SN 25/22 EPGO376)
Test Date: August 14, 2023

Medium(liquid type)	HSL _5000
Frequency (MHz)	5800.0000
Relative permittivity (real part)	36.65
Conductivity (S/m)	5.24
Input power	100mW
Crest Factor	1.0
Conversion Factor	2.07
Variation (%)	3.660000
SAR 10g (W/Kg)	6.158085
SAR 1g (W/Kg)	18.252250
SURFACE SAR	**VOLUME SAR**
	
	

4.9. SAR Test Graph Results

SAR plots for the highest measured SAR in each exposure configuration, wireless mode and frequency band combination

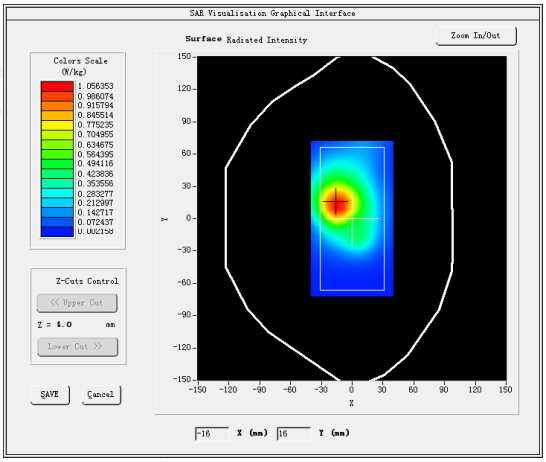
#1Test Mode: WCDMA Band II, Low channel(Body Rear Side)

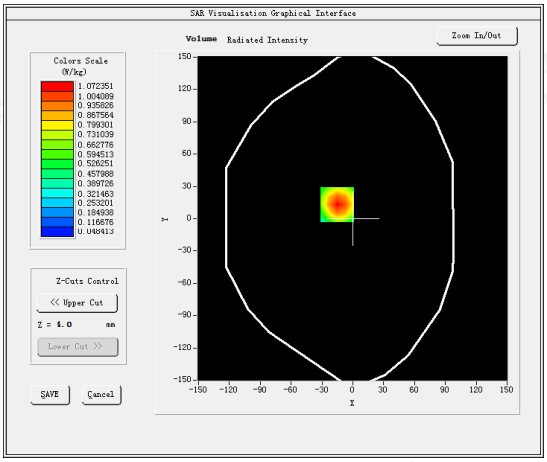
Product Description:Portable 4G LTE Router

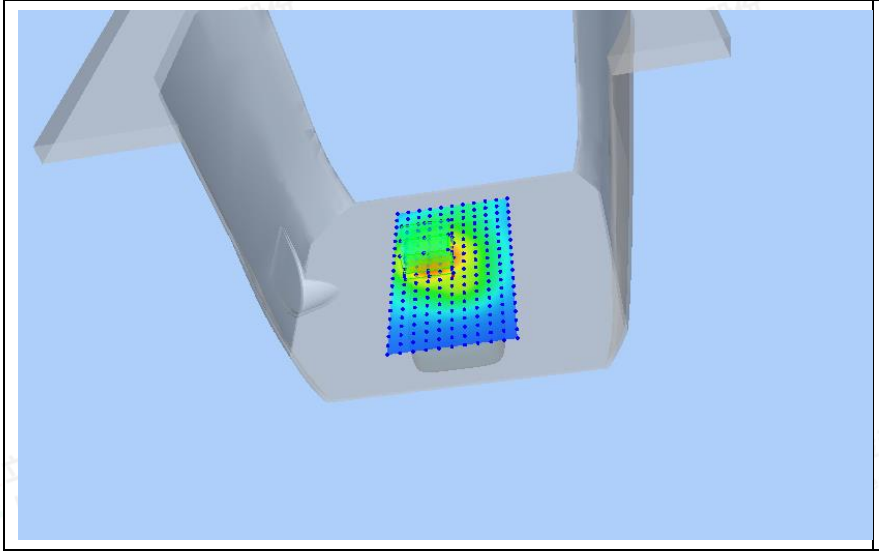
Model:GL-E750V2C6

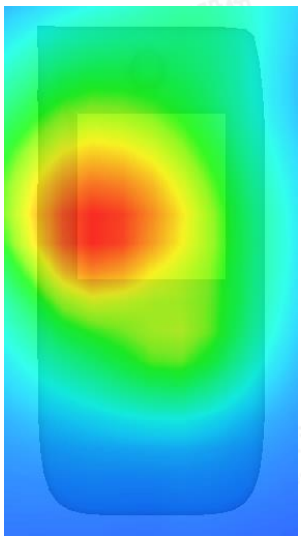
Test Date: August 04, 2023

Medium(liquid type)	HSL_1900
Frequency (MHz)	1852.4000
Relative permittivity (real part)	39.25
Conductivity (S/m)	1.40
E-Field Probe	SN 25/22 EPGO376
Crest Factor	1.0
Conversion Factor	1.91
Sensor	4mm
Area Scan	dx=8mm dy=8mm
Zoom Scan	5x5x7,dx=8mm dy=8mm dz=5mm
Variation (%)	-1.630000
SAR 10g (W/Kg)	0.584433
SAR 1g (W/Kg)	1.010592
SURFACE SAR	VOLUME SAR





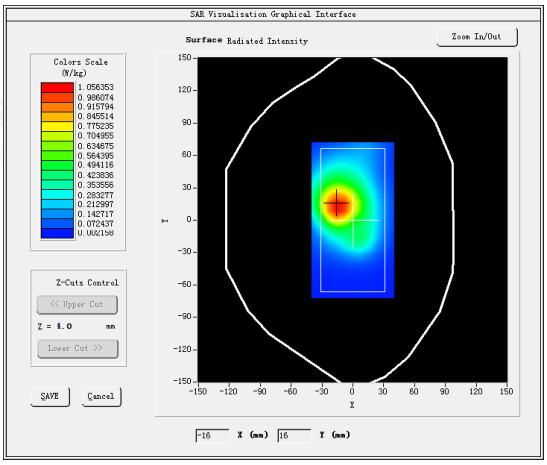


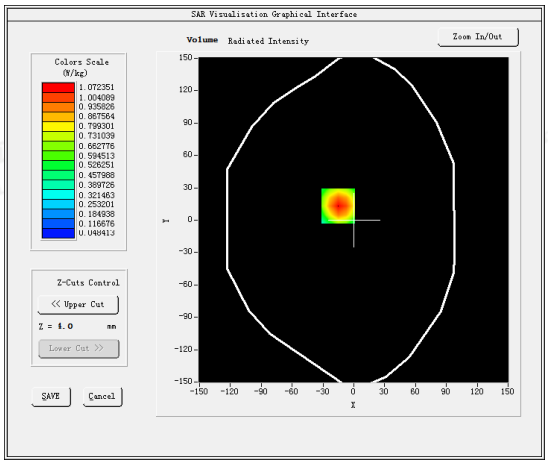


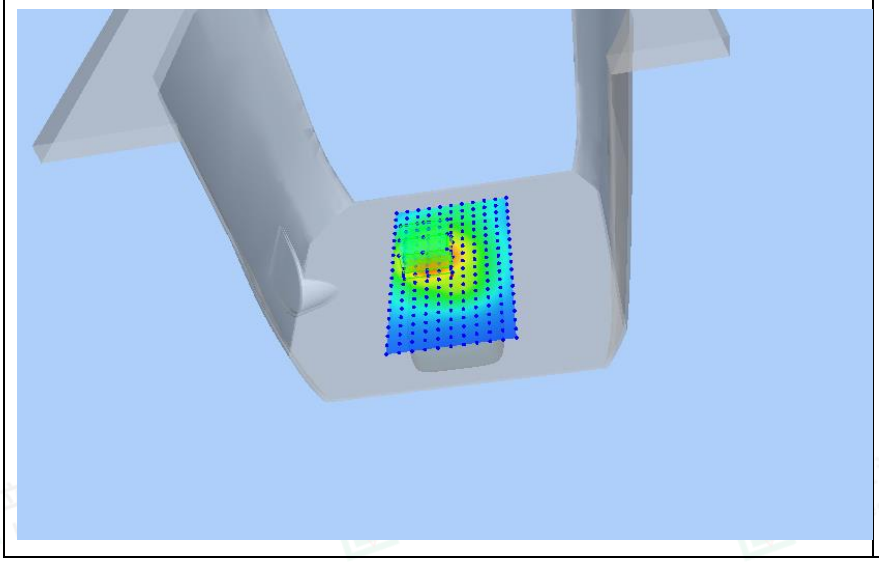
#2

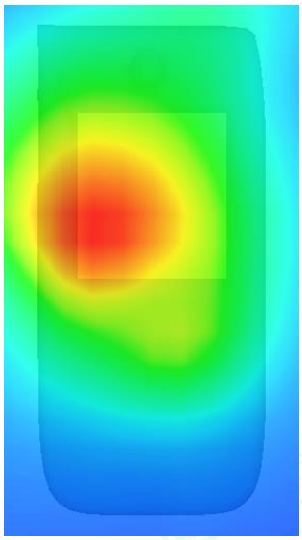
Test Mode: WCDMA Band IV,High channel(Body Rear Side)
Product Description:Portable 4G LTE Router
Model:GL-E750V2C6
Test Date: August 02, 2023

Medium(liquid type)	HSL_1800
Frequency (MHz)	1752.60000
Relative permittivity (real part)	41.50
Conductivity (S/m)	1.38
E-Field Probe	SN 25/22 EPGO376
Crest Factor	1.0
Conversion Factor	1.73
Sensor	4mm
Area Scan	dx=8mm dy=8mm
Zoom Scan	5x5x7,dx=8mm dy=8mm dz=5mm
Variation (%)	-1.630000
SAR 10g (W/Kg)	0.584433
SAR 1g (W/Kg)	1.010592
SURFACE SAR	**VOLUME SAR**





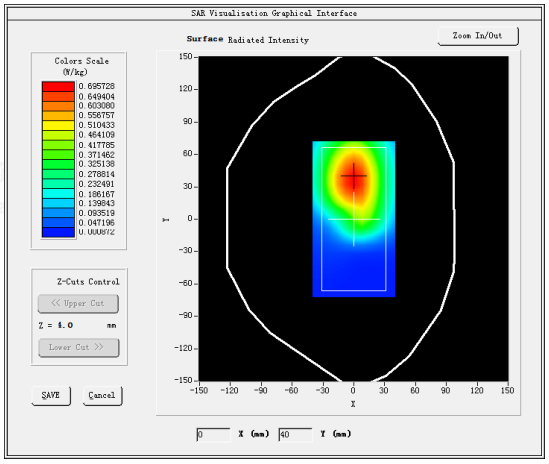


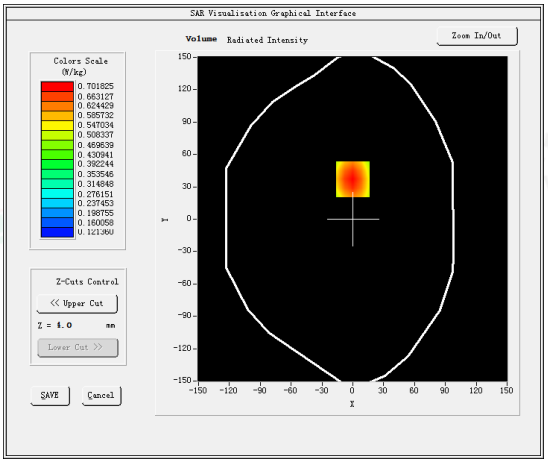


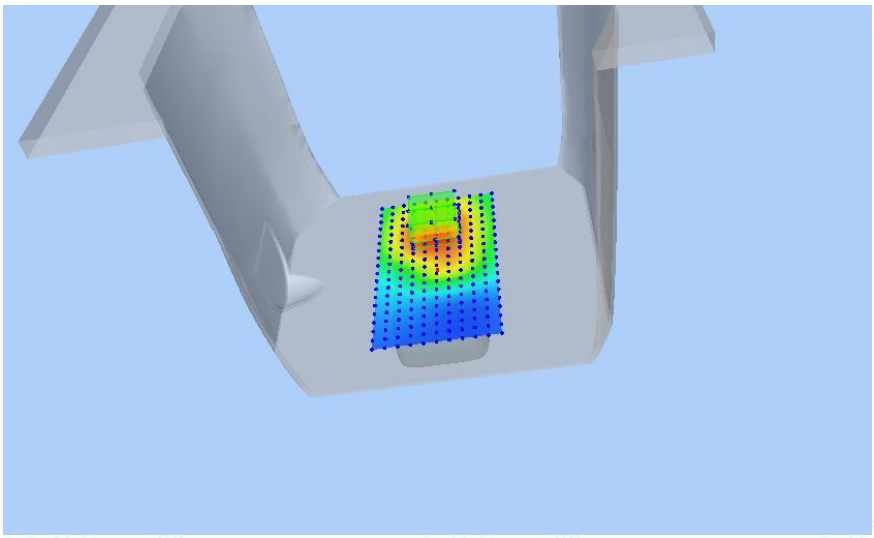
#3

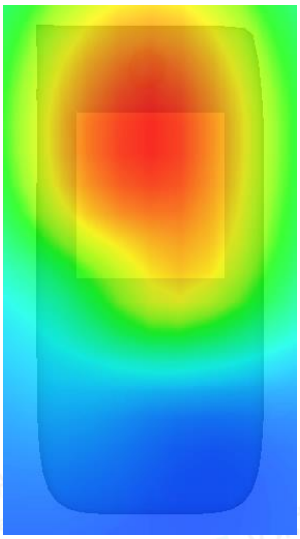
Test Mode: WCDMA Band V, Middle channel(Body Rear Side)
Product Description:Portable 4G LTE Router
Model:GL-E750V2C6
Test Date: July 31, 2023

Medium(liquid type)	HSL_835
Frequency (MHz)	836.6000
Relative permittivity (real part)	41.82
Conductivity (S/m)	0.94
E-Field Probe	SN 25/22 EPGO376
Crest Factor	1.0
Conversion Factor	1.50
Sensor	4mm
Area Scan	dx=8mm dy=8mm
Zoom Scan	5x5x7,dx=8mm dy=8mm dz=5mm
Variation (%)	-0.110000
SAR 10g (W/Kg)	0.474497
SAR 1g (W/Kg)	0.676566
SURFACE SAR	**VOLUME SAR**



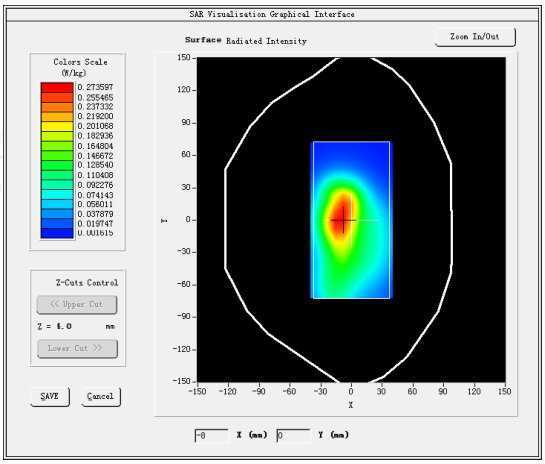
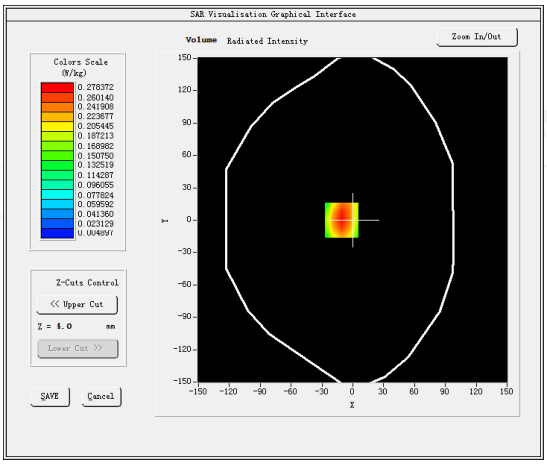
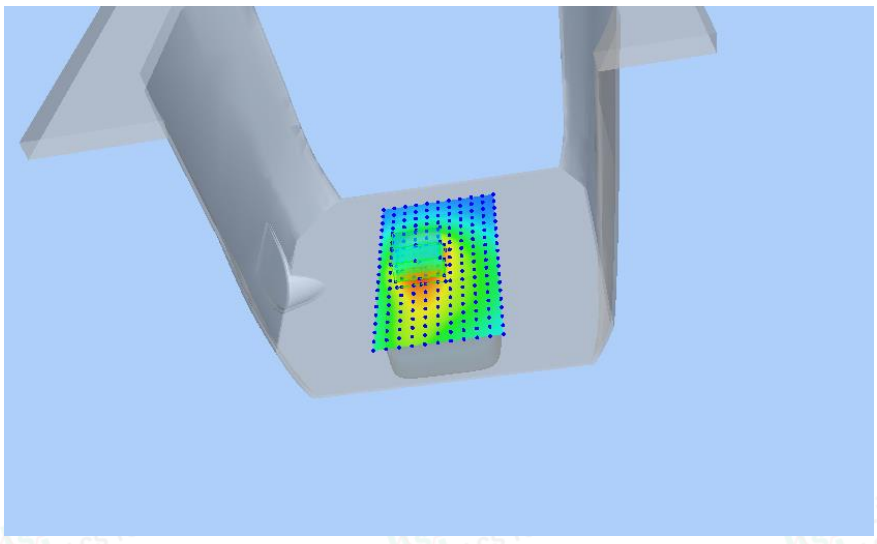
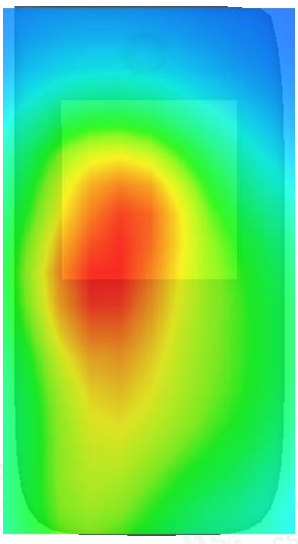






#4

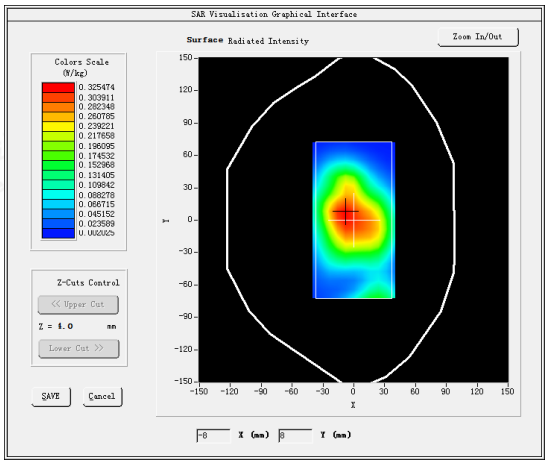
Test Mode: LTE Band 2, 1RB Low channel(Body Rear Side)
Product Description:Portable 4G LTE Router
Model:GL-E750V2C6
Test Date: August 04, 2023

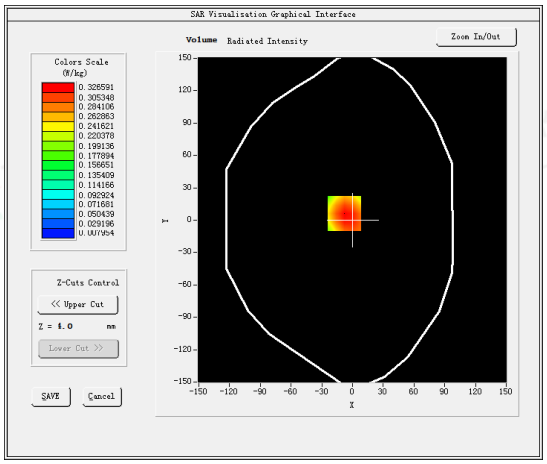
Medium(liquid type)	HSL_1900
Frequency (MHz)	1860.0000
Relative permittivity (real part)	39.25
Conductivity (S/m)	1.40
E-Field Probe	SN 25/22 EPGO376
Crest Factor	1.0
Conversion Factor	1.91
Sensor	4mm
Area Scan	dx=8mm dy=8mm
Zoom Scan	5x5x7,dx=8mm dy=8mm dz=5mm
Variation (%)	0.280000
SAR 10g (W/Kg)	0.134854
SAR 1g (W/Kg)	0.266091
SURFACE SAR	**VOLUME SAR**
	
	

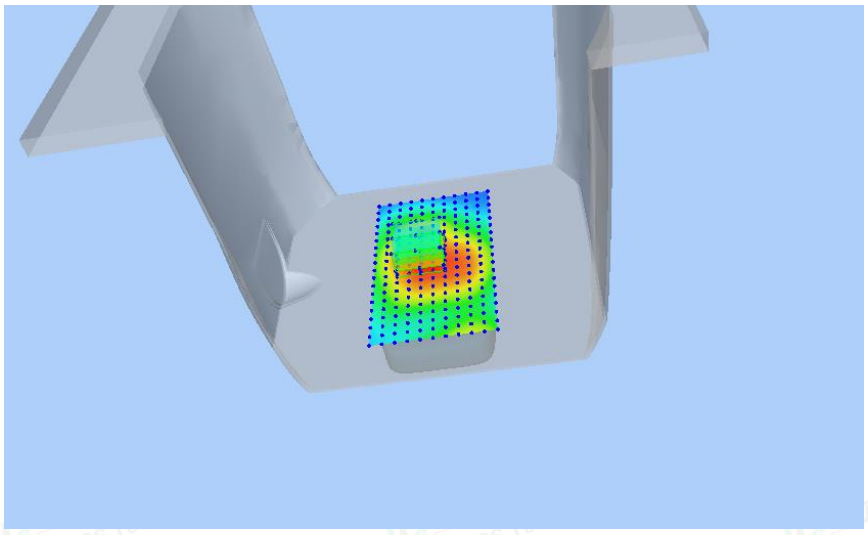
#5

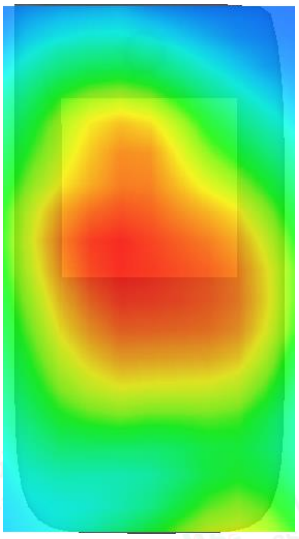
Test Mode: LTE Band 4, 1RB,Low channel(Body Rear Side)
Product Description:Portable 4G LTE Router
Model:GL-E750V2C6
Test Date: August 02, 2023

Medium(liquid type)	HSL_1800
Frequency (MHz)	1720.0000
Relative permittivity (real part)	41.50
Conductivity (S/m)	1.38
E-Field Probe	SN 25/22 EPGO376
Crest Factor	1.0
Conversion Factor	1.73
Sensor	4mm
Area Scan	dx=8mm dy=8mm
Zoom Scan	5x5x7,dx=8mm dy=8mm dz=5mm
Variation (%)	-1.110000
SAR 10g (W/Kg)	0.197008
SAR 1g (W/Kg)	0.372776
SURFACE SAR	**VOLUME SAR**



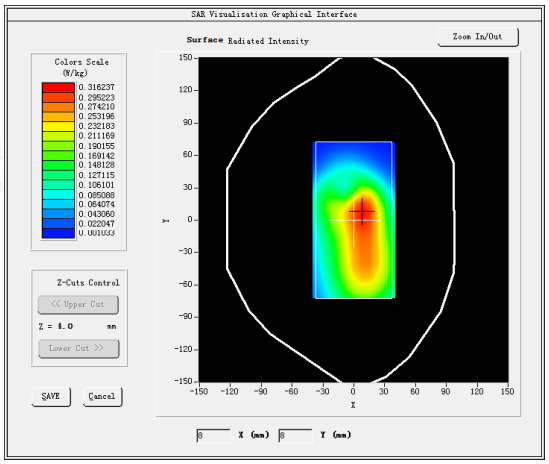
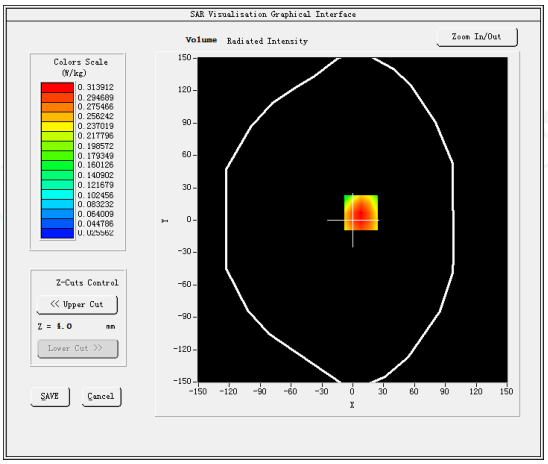
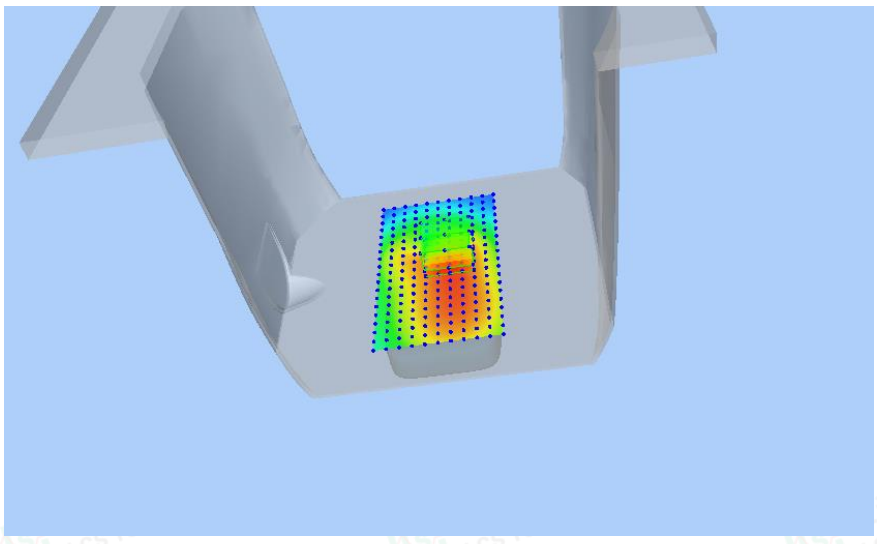
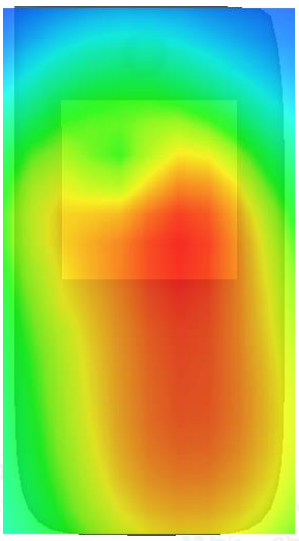






#6

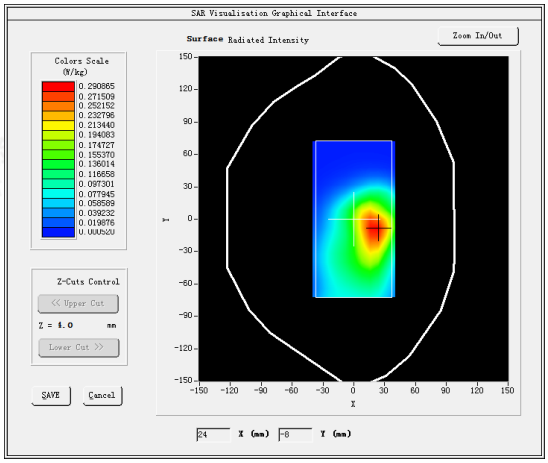
Test Mode: LTE Band 5, 1RB,Middle channel(Body Rear Side)
Product Description:Portable 4G LTE Router
Model:GL-E750V2C6
Test Date: July 31, 2023

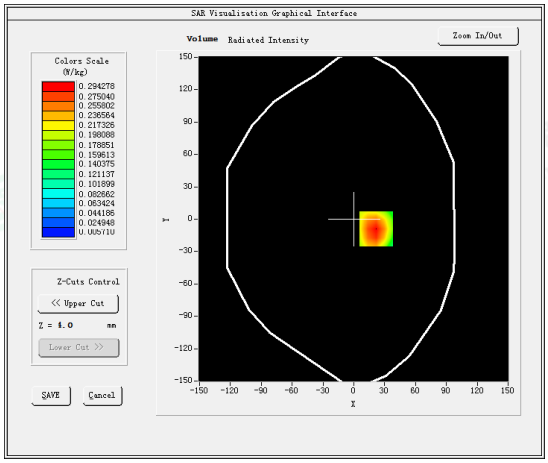
Medium(liquid type)	HSL_835
Frequency (MHz)	836.5000
Relative permittivity (real part)	41.82
Conductivity (S/m)	0.94
E-Field Probe	SN 25/22 EPGO376
Crest Factor	1.0
Conversion Factor	1.50
Sensor	4mm
Area Scan	dx=8mm dy=8mm
Zoom Scan	5x5x7,dx=8mm dy=8mm dz=5mm
Variation (%)	-0.75000
SAR 10g (W/Kg)	0.212380
SAR 1g (W/Kg)	0.304536
SURFACE SAR	**VOLUME SAR**
	
	

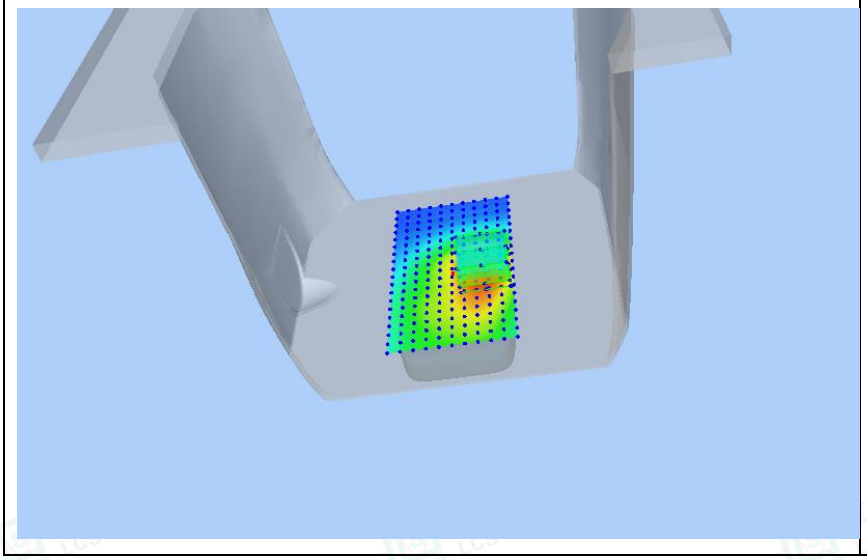
#7

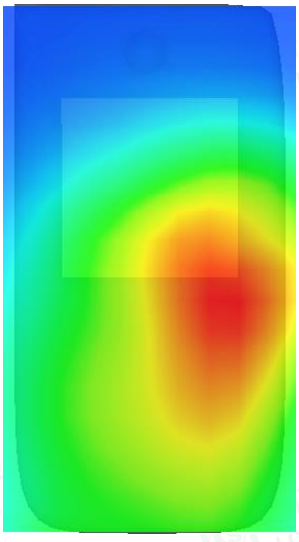
Test Mode: LTE Band 7, 1RB,Middle channel(Body Rear Side)
Product Description:Portable 4G LTE Router
Model:GL-E750V2C6
Test Date: August 09, 2023

Medium(liquid type)	HSL_2600
Frequency (MHz)	2535.0000
Relative permittivity (real part)	37.81
Conductivity (S/m)	1.97
E-Field Probe	SN 25/22 EPGO376
Crest Factor	1.0
Conversion Factor	1.87
Sensor	4mm
Area Scan	dx=8mm dy=8mm
Zoom Scan	7x7x7,dx=5mm dy=5mm dz=5mm
Variation (%)	-0.500000
SAR 10g (W/Kg)	0.280823
SAR 1g (W/Kg)	0.280823
SURFACE SAR	**VOLUME SAR**



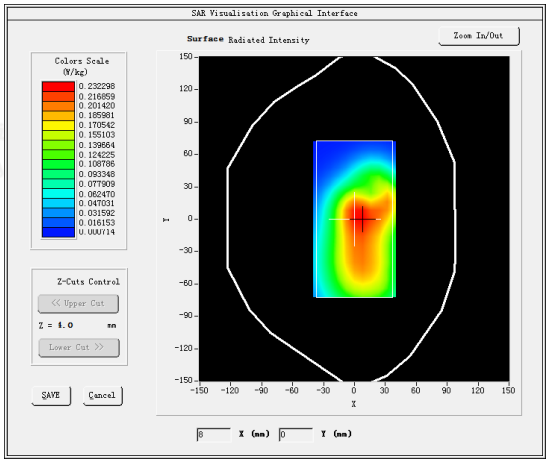
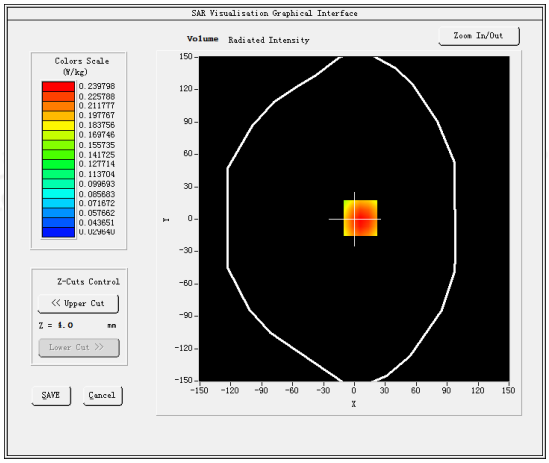
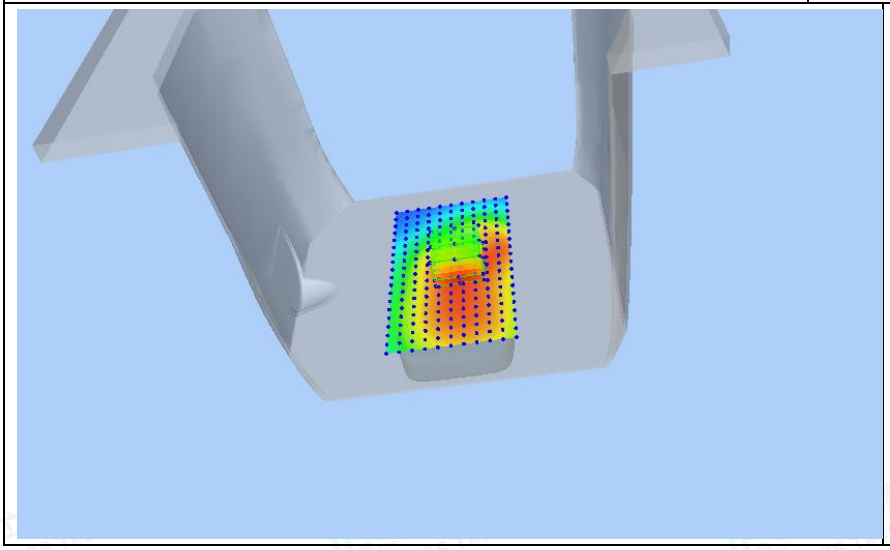
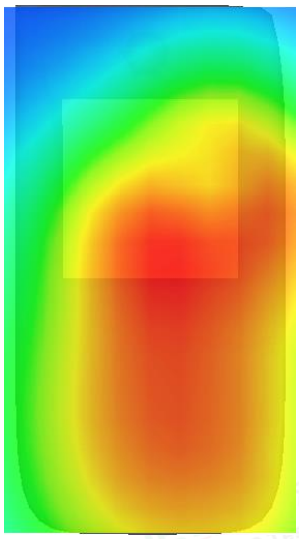






#8

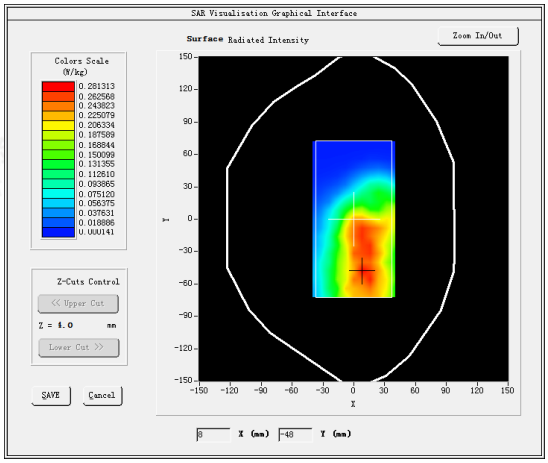
Test Mode: LTE Band 12, 1RB, Low channel (Body Rear Side)
Product Description:Portable 4G LTE Router
Model:GL-E750V2C6
Test Date: July 27, 2023

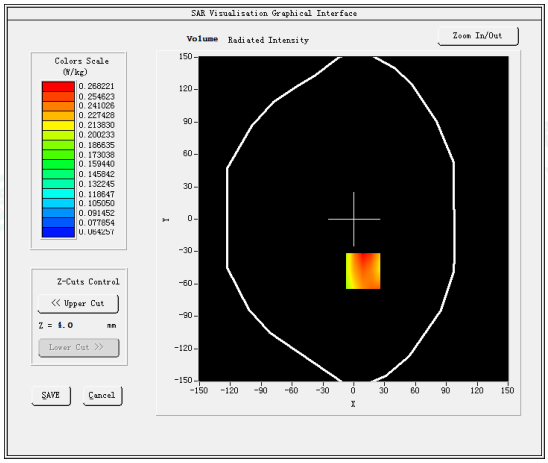
Medium(liquid type)	HSL_750
Frequency (MHz)	704.0000
Relative permittivity (real part)	40.59
Conductivity (S/m)	0.91
E-Field Probe	SN 25/22 EPGO376
Crest Factor	1.0
Conversion Factor	1.49
Sensor	4mm
Area Scan	dx=8mm dy=8mm
Zoom Scan	5x5x7,dx=8mm dy=8mm dz=5mm
Variation (%)	-0.190000
SAR 10g (W/Kg)	0.165471
SAR 1g (W/Kg)	0.232716
SURFACE SAR	**VOLUME SAR**
	
	

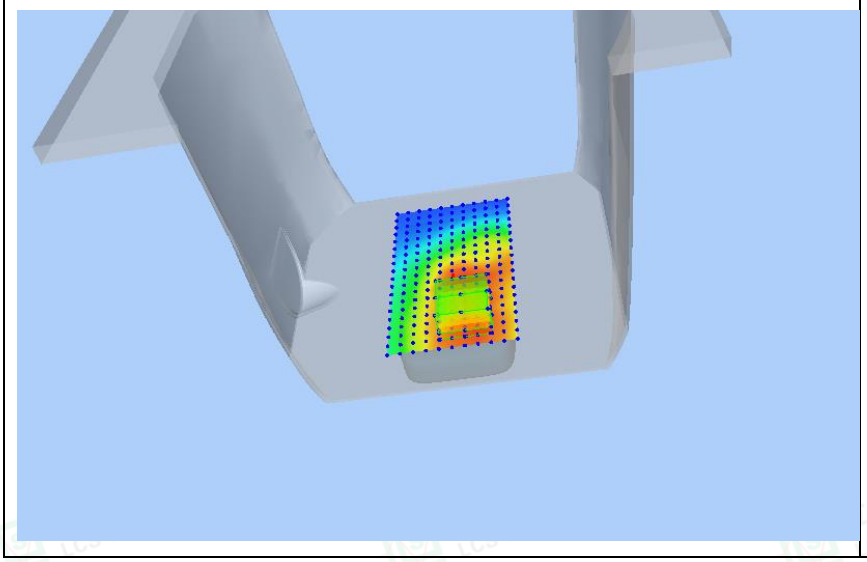
#9

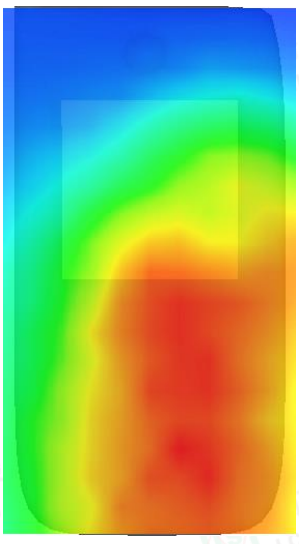
Test Mode: LTE Band 13, 1RB, Middle channel(Body Rear Side)
Product Description:Portable 4G LTE Router
Model:GL-E750V2C6
Test Date: July 27, 2023

Medium(liquid type)	HSL_750
Frequency (MHz)	782.0000
Relative permittivity (real part)	40.59
Conductivity (S/m)	0.91
E-Field Probe	SN 25/22 EPGO376
Crest Factor	1.0
Conversion Factor	1.49
Sensor	4mm
Area Scan	dx=8mm dy=8mm
Zoom Scan	5x5x7,dx=8mm dy=8mm dz=5mm
Variation (%)	-0.010000
SAR 10g (W/Kg)	0.190714
SAR 1g (W/Kg)	0.255166
SURFACE SAR	**VOLUME SAR**



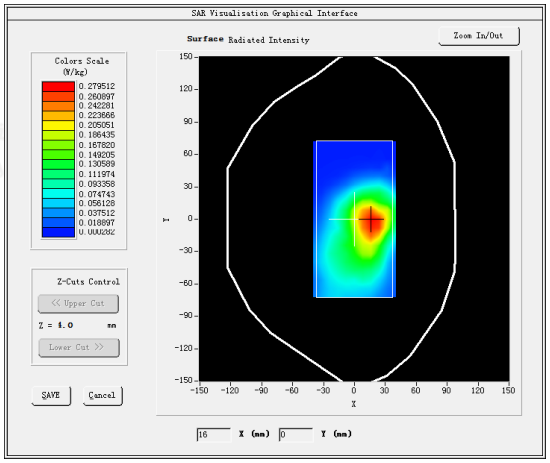
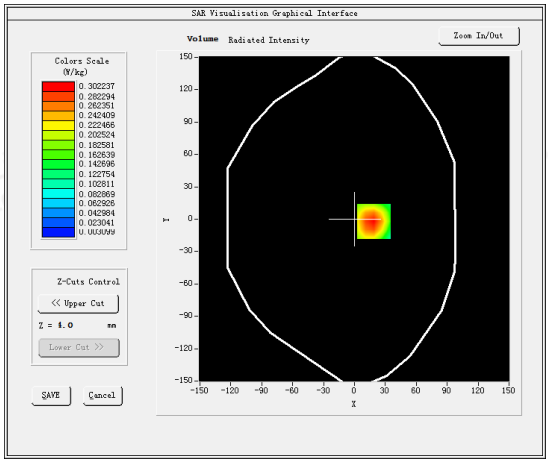
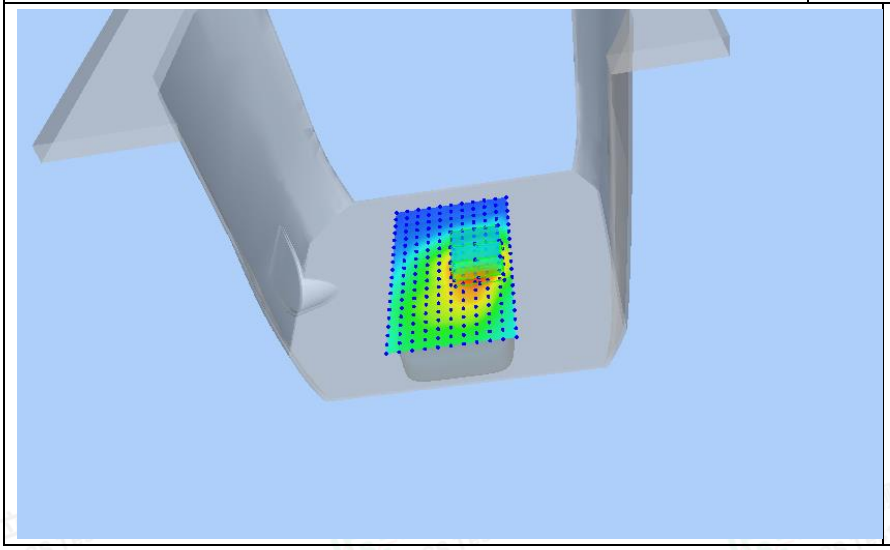
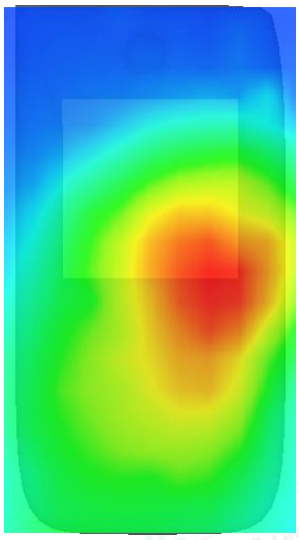






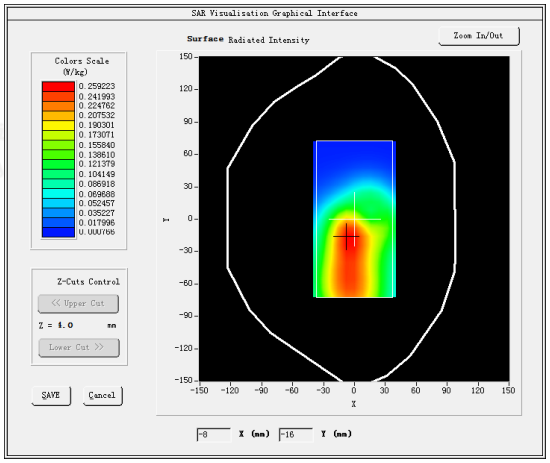
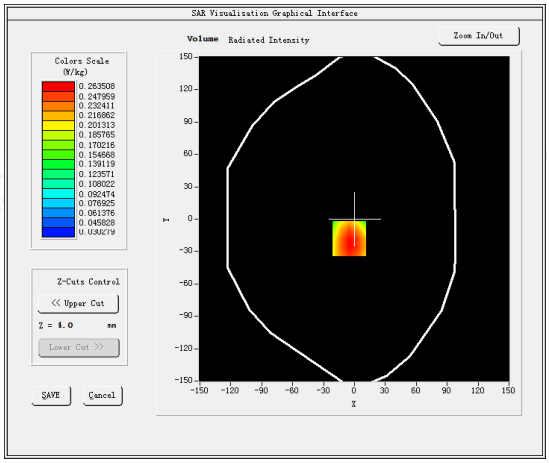
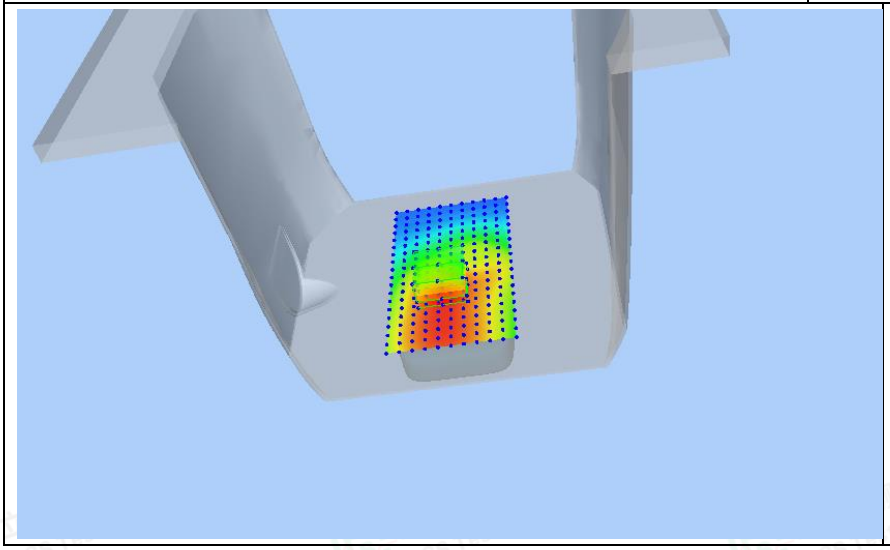
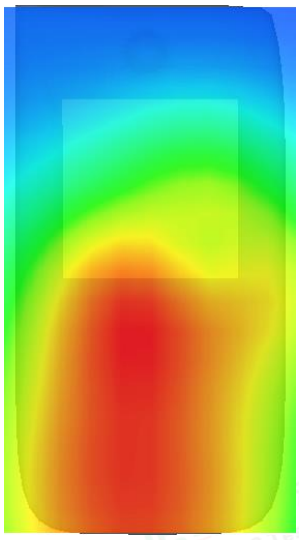
#10

Test Mode: LTE Band 14, 1RB, Middle channel(Body Rear Side)
Product Description:Portable 4G LTE Router
Model:GL-E750V2C6
Test Date: July 27, 2023

Medium(liquid type)	HSL_750
Frequency (MHz)	793.0000
Relative permittivity (real part)	40.59
Conductivity (S/m)	0.91
E-Field Probe	SN 25/22 EPGO376
Crest Factor	1.0
Conversion Factor	1.49
Sensor	4mm
Area Scan	dx=8mm dy=8mm
Zoom Scan	5x5x7,dx=8mm dy=8mm dz=5mm
Variation (%)	0.480000
SAR 10g (W/Kg)	0.141203
SAR 1g (W/Kg)	0.289382
SURFACE SAR	**VOLUME SAR**
	
	

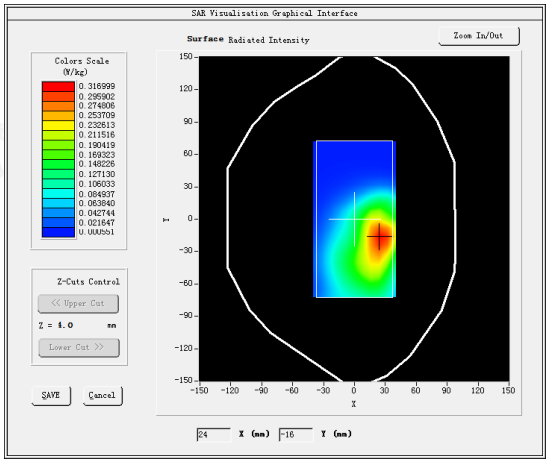
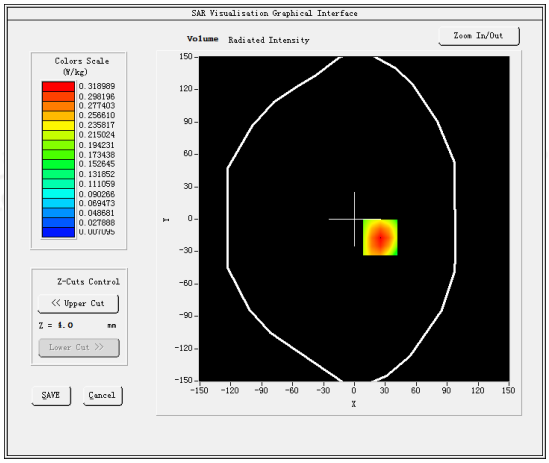
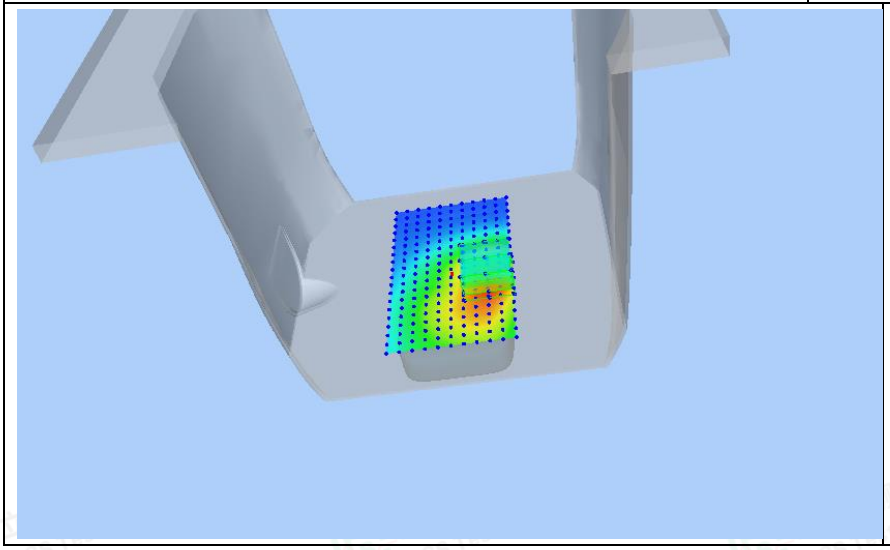
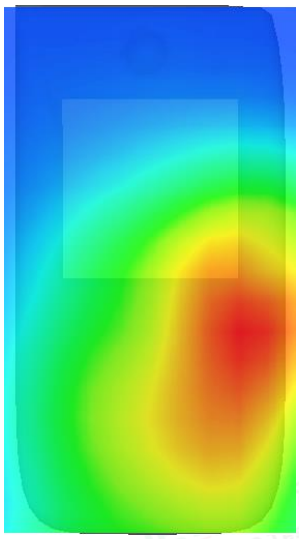
#11

Test Mode: LTE Band 17, 1RB, Low channel(Body Rear Side)
Product Description:Portable 4G LTE Router
Model:GL-E750V2C6
Test Date: July 27, 2023

Medium(liquid type)	HSL_750
Frequency (MHz)	709.0000
Relative permittivity (real part)	40.59
Conductivity (S/m)	0.91
E-Field Probe	SN 25/22 EPGO376
Crest Factor	1.0
Conversion Factor	1.49
Sensor	4mm
Area Scan	dx=8mm dy=8mm
Zoom Scan	5x5x7,dx=8mm dy=8mm dz=5mm
Variation (%)	0.400000
SAR 10g (W/Kg)	0.182095
SAR 1g (W/Kg)	0.256582
SURFACE SAR	**VOLUME SAR**
	
	

#12

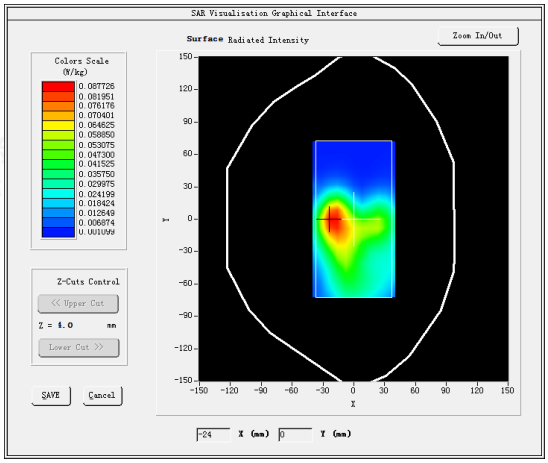
Test Mode: LTE Band 25, 1RB, Middle channel (Body Rear Side)
Product Description:Portable 4G LTE Router
Model:GL-E750V2C6
Test Date: August 02, 2023

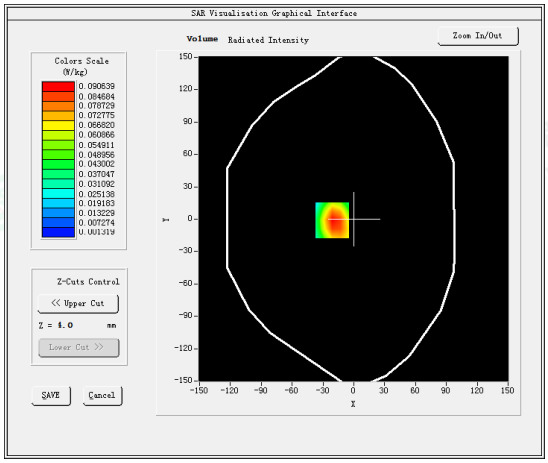
Medium(liquid type)	HSL_1800
Frequency (MHz)	1860.0000
Relative permittivity (real part)	41.50
Conductivity (S/m)	1.38
E-Field Probe	SN 25/22 EPGO376
Crest Factor	1.0
Conversion Factor	1.73
Sensor	4mm
Area Scan	dx=8mm dy=8mm
Zoom Scan	5x5x7,dx=8mm dy=8mm dz=5mm
Variation (%)	-0.120000
SAR 10g (W/Kg)	0.157613
SAR 1g (W/Kg)	0.303973
SURFACE SAR	**VOLUME SAR**
	
	

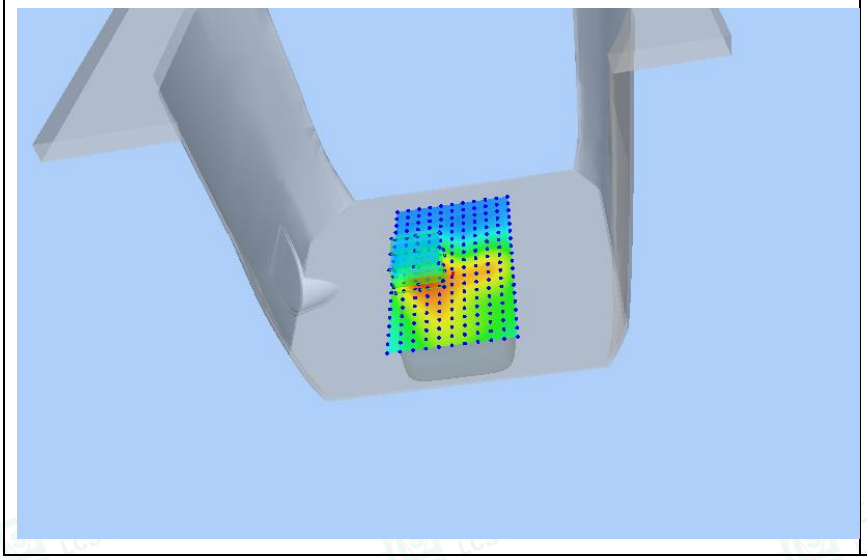
#13

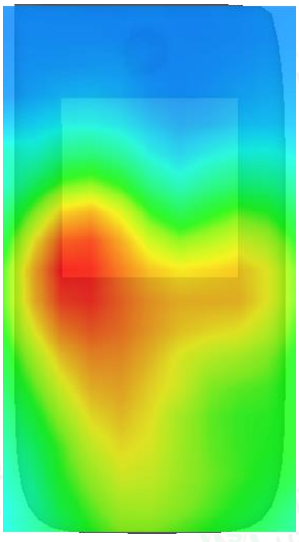
Test Mode: LTE Band 26, 1RB, Middle channel(Body Rear Side)
Product Description:Portable 4G LTE Router
Model:GL-E750V2C6
Test Date: July 31, 2023

Medium(liquid type)	HSL_835
Frequency (MHz)	819.0000
Relative permittivity (real part)	41.82
Conductivity (S/m)	0.94
E-Field Probe	SN 25/22 EPGO376
Crest Factor	1.0
Conversion Factor	1.50
Sensor	4mm
Area Scan	dx=8mm dy=8mm
Zoom Scan	5x5x7,dx=8mm dy=8mm dz=5mm
Variation (%)	-1.320000
SAR 10g (W/Kg)	0.045451
SAR 1g (W/Kg)	0.106600
SURFACE SAR	**VOLUME SAR**









#14

Test Mode: LTE Band 30, 1RB, Middle channel(Body Rear Side)
Product Description:Portable 4G LTE Router
Model:GL-E750V2C6
Test Date: August 05, 2023

Medium(liquid type)	HSL_2300
Frequency (MHz)	2310.0000
Relative permittivity (real part)	39.74
Conductivity (S/m)	1.62
E-Field Probe	SN 25/22 EPGO376
Crest Factor	1.0
Conversion Factor	1.92
Sensor	4mm
Area Scan	dx=8mm dy=8mm
Zoom Scan	7x7x7,dx=5mm dy=5mm dz=5mm
Variation (%)	-2.190000
SAR 10g (W/Kg)	0.051648
SAR 1g (W/Kg)	0.123607
SURFACE SAR	**VOLUME SAR**