FCC SAR TEST REPORT

Report No.: STS2105059H01

Issued for

Octopus Interactive Inc.

4550 Montgomery Ave, Ste 215N Bethesda Maryland USA

Product Name:	Tablet PC
Brand Name:	Octopus
Model Name:	Octopus_One
Series Model:	L863LM
FCC ID:	2AZPF-OCTOPUS
Test Standard:	ANSI/IEEE Std. C95.1
	FCC 47 CFR Part 2 (2.1093)
	IEEE 1528: 2013
Max. Report SAR (1g):	Body: 0.983 W/kg

ShenZhen STS Test Services Co.,Ltd.
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Test Report Certification

Applicant's name	:	Octopus Interactive Inc.
Address	:	4550 Montgomery Ave, Ste 215N Bethesda Maryland USA
Manufacture's Name	:	Shenzhen Pretech Industrial Co.,Ltd
Address	:	2101A, BAK technology building, Gaoxin Central Avenue 4th, Nanshan District, Shenzhen 518057, China

Product description

Product name	:	Tablet PC
Brand name	:	Octopus
Model name	:	Octopus_One
Series Model	:	L863LM
Standards	:	ANSI/IEEE Std. C95.1-1992 FCC 47 CFR Part 2 (2.1093) IEEE 1528: 2013

The device was tested by Shenzhen STS Test Services Co., Ltd. in accordance with the measurement methods and procedures specified in KDB 865664 The test results in this report apply only to the tested sample of the stated device/equipment. Other similar device/equipment will not necessarily produce the same results due to production tolerance and measurement uncertainties.

Date of Test

Date (s) of performance of tests	:	11 June 2021 ~ 23 June 2021
Date of Issue	:	27 July 2021
Test Result	:	**Pass**

Testing Engineer : Luffy He

(Luffy He)

Technical Manager : Sean She

(Sean she)

Authorized Signatory : Vita Li

(Vita Li)

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Revision History

Rev.	Issue Date	Report No.	Effect Page	Contents
00	27 July 2021	STS2105059H01	ALL	Initial Issue

1. General Information

Environmental evaluation measurements of specific absorption rate (SAR) distributions in emulated human head and body tissues exposed to radio frequency (RF) radiation from wireless portable devices for compliance with the rules and regulations of the U.S. Federal Communications Commission (FCC).

1.1 EUT Description

Product Name	Tablet PC		
Brand Name	Octopus		
Model Name	Octopus_One		
Series Model	L863LM		
Model Difference	Only different in model name.		
Device Category	Portable		
Product stage	Production unit		
RF Exposure Environment	General Population / Uncontrolled		
Hardware Version	RC-US716		
Software Version	US716I.R0.V8.67.RC-V08.9899		
Frequency Range	GSM 850: 824 MHz ~ 849 MHz PCS1900: 1850 MHz ~ 1910 MHz WCDMA Band II: 1850~1910MHz WCDMA Band V : 824~849MHz LTE Band 2: 1850~1910MHz LTE Band 4 : 1710~1755MHz LTE Band 5: 824~849MHz LTE Band 12: 699-716MHz LTE Band 17:704~716MHz 2.4G WLAN 802.11b/g/n20/n40: 2412 to 2462 MHz 5.2G WLAN 802.11a/n20/n40/ac20/ac40/ac80: 5150 to 5250 MHz 5.8G WLAN 802.11a/n20/n40/ac20/ac40/ac80: 5725 to 5875 MHz Bluetooth: 2402 to 2480 MHz		
Max. Reported SAR(1g): (Limit:1.6W/kg)	Band	Mode	Body worn and hotspot (W/kg)
	PCB	GSM 850	0.046
	PCB	GSM 1900	0.973
	PCB	WCDMA Band II	0.233
	PCB	WCDMA Band V	0.056
	PCB	LTE Band 2	0.643
	PCB	LTE Band 4	0.983
	PCB	LTE Band 5	0.090
	PCB	LTE Band 12	0.089
	PCB	LTE Band 17	0.127
	DTS	2.4GHz WLAN	0.468
	NII	5.2GHz WLAN	0.384
	NII	5.8GHz WLAN	0.592
	DSS	Bluetooth Note	0.132

FCC Equipment Class	PCS Licensed Transmitter(PCB) Part 15 Spread Spectrum Transmitter (DSS) Unlicensed National Information Infrastructure TX (NII) Digital Transmission System (DTS)
Battery	Rated Voltage:3.7V Charge Limit Voltage:4.2V Capacity: 4000mAh
Operating Mode	GSM: GSM Voice; GPRS/EGPRS Class 12 WCDMA: QPSK; HSDPA:QPSK/16QAM; HSUPA:BPSK LTE: QPSK, 16QAM WLAN: 802.11 a/b/g/n20/n40/ac20/ac40/ac80 Bluetooth: 5.0EDR (GFSK +π/4DQPSK+8DPSK) BLE: GFSK
Antenna Specification	PIFA Antenna
Hotspot Mode	Support
DTM Mode	Not Support
Note: 1. Bluetooth and 5.2G WIFI SAR was estimated 2. The EUT battery must be fully charged and checked periodically during the test to ascertain uniform power	

1.2 Test Environment

Ambient conditions in the SAR laboratory:

Items	Required
Temperature (℃)	18-25
Humidity (%RH)	30-70

1.3 Test Factory

ShenZhen STS Test Services Co.,Ltd.

A 1/F, Building B, Zhuoke Science Park, No.190 Chongqing Road, HepingShequ, Fuyong Sub-District, Bao'an District, Shenzhen, Guang Dong, China

FCC test Firm Registration No.: 625569

IC Registration No.: 12108A

A2LA Certificate No.: 4338.01

2. Test Standards and Limits

No.	Identity	Document Title
1	47 CFR Part 2	Frequency Allocations and Radio Treaty Matters; General Rules and Regulations
2	ANSI/IEEE Std. C95.1-1992	IEEE Standard for Safety Levels with Respect to Human Exposure to Radio Frequency Electromagnetic Fields, 3 kHz to 300 GHz
3	IEEE Std. 1528-2013	Recommended Practice for Determining the Peak Spatial-Average Specific Absorption Rate (SAR) in the Human Head from Wireless Communications Devices: Measurement Techniques
4	FCC KDB 447498 D01 v06	Mobile and Portable Device RF Exposure Procedures and Equipment Authorization Policies
5	FCC KDB 865664 D01 v01r04	SAR Measurement 100 MHz to 6 GHz
6	FCC KDB 865664 D02 v01r02	RF Exposure Reporting
7	FCC KDB 941225 D01 v03r01	SAR Measurement Procedures for 3G Devices
8	FCC KDB 941225 D06 v02r01	Hotspot Mode SAR
9	FCC KDB 648474 D04 v01r03	SAR Evaluation Considerations for Wireless Handsets
10	FCC KDB 248227 D01 Wi-Fi SAR v02r02	SAR Considerations for 802.11 Devices

(A). Limits for Occupational/Controlled Exposure (W/kg)

Whole-Body	Partial-Body	Hands, Wrists, Feet and Ankles
0.4	8.0	20.0

(B). Limits for General Population/Uncontrolled Exposure (W/kg)

Whole-Body	Partial-Body	Hands, Wrists, Feet and Ankles
0.08	1.6	4.0

NOTE: Whole-Body SAR is averaged over the entire body, partial-body SAR is averaged over any 1 gram of tissue defined as a tissue volume in the shape of a cube. SAR for hands, wrists, feet and ankles is averaged over any 10 grams of tissue defined as a tissue volume in the shape of a cube.

Population/Uncontrolled Environments:
Are defined as locations where there is the exposure of individuals 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).

NOTE

GENERAL POPULATION/UNCONTROLLED EXPOSURE

PARTIAL BODY LIMIT

1.6 W/kg

3. SAR Measurement System

3.1 Definition of Specific Absorption Rate (SAR)

SAR is related to the rate at which energy is absorbed per unit mass in an object exposed to a radio field. The SAR distribution in a biological body is complicated and is usually carried out by experimental techniques or numerical modeling. The standard recommends limits for two tiers of groups, occupational/controlled and general population/uncontrolled, based on a person's awareness and ability to exercise control over his or her exposure. In general, occupational/controlled exposure limits are higher than the limits for general population/uncontrolled.
The SAR definition is the time derivative (rate) of the incremental energy (dW) absorbed by (dissipated in) an incremental mass (dm) contained in a volume element (dv) of a given density (ρ). The equation description is as below:

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

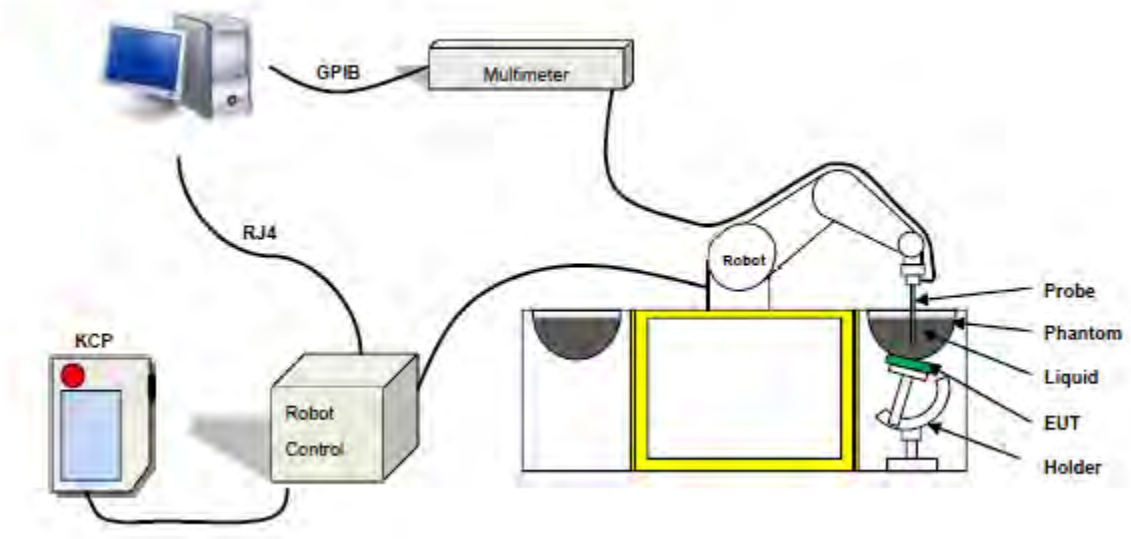
SAR is expressed in units of Watts per kilogram (W/kg) SAR measurement can be related to the electrical field in the tissue by

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

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

3.2 SAR System

MVG SAR System Diagram:



COMOSAR is a system that is able to determine the SAR distribution inside a phantom of human being according to different standards. The COMOSAR system consists of the following items:

- Main computer to control all the system
- 6 axis robot
- Data acquisition system
- Miniature E-field probe
- Phone holder
- Head simulating tissue

The following figure shows the system.

The EUT under test operating at the maximum power level is placed in the phone holder, under the phantom, which is filled with head simulating liquid. The E-Field probe measures the electric field inside the phantom. The Open SAR software computes the results to give a SAR value in a 1g or 10g mass.

3.2.1 Probe

For the measurements the Specific Dosimetric E-Field Probe SN 07/21 EPGO352 with following specifications is used

- Probe Length: 330 mm
- Length of Individual Dipoles: 2 mm
- Maximum external diameter: 8 mm
- Probe Tip External Diameter: 2.5 mm
- Distance between dipole/probe extremity: 1 mm
- Dynamic range: 0.01-100 W/kg
- Probe linearity: 3%
- Axial Isotropy: < 0.10 dB
- Spherical Isotropy: < 0.10 dB
- Calibration range: 450 MHz to 6 GHz for head & body simulating liquid.
- Angle between probe axis (evaluation axis) and surface normal line: less than 30°

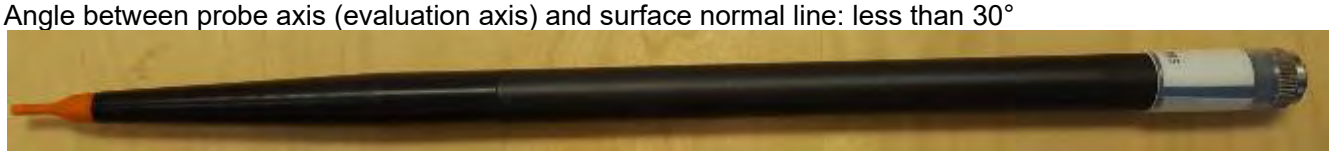


Figure 1-MVG COMOSAR Dosimetric E field Dipole

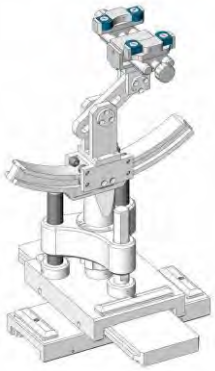
3.2.2 Phantom

For the measurements the Specific Anthropomorphic Mannequin (SAM) defined by the IEEE SCC-34/SC2 group is used. The phantom is a polyurethane shell integrated in a wooden table. The thickness of the phantom amounts to 2mm +/- 0.2mm. It enables the dosimetric evaluation of left and right phone usage and includes an additional flat phantom part for the simplified performance check. The phantom set-up includes a cover, which prevents the evaporation of the liquid.

Figure-SN 32/14 SAM115

Figure-SN 32/14 SAM116

3.2.3 Device Holder



The SAR in the phantom is approximately inversely proportional to the square of the distance between the source and the liquid surface. For a source at 5 mm distance, a positioning uncertainty of ± 0.5 mm would produce a SAR uncertainty of ± 20 %. Accurate device positioning is therefore crucial for accurate and repeatable measurements. The positions in which the devices must be measured are defined by the standards.

4. Tissue Simulating Liquids

4.1 Simulating Liquids Parameter Check

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

Head Tissue

Frequency (MHz)	cellulose	DGBE	HEC	NaCl	Preventol	Sugar	X100	Water	Conductivity	Permittivity
	%	%	%	%	%	%	%	%	σ	εr
750	0.2	/	/	1.4	0.2	57.0	/	41.1	0.89	41.9
835	0.2	/	/	1.4	0.2	57.9	/	40.3	0.90	41.5
900	0.2	/	/	1.4	0.2	57.9	/	40.3	0.97	41.5
1800	/	44.5	/	0.3	/	/	30.45	55.2	1.4	40.0
1900	/	44.5	/	0.3	/	/	30.45	55.2	1.4	40.0
2000	/	44.5	/	0.3	/	/	/	55.2	1.4	40.0
2450	/	44.9	/	0.1	/	/	/	55.0	1.80	39.2
2600	/	45.0	/	0.1	/	/	/	54.9	1.96	39.0

Body Tissue

Frequency (MHz)	cellulose	DGBE	HEC	NaCl	Preventol	Sugar	X100	Water	Conductivity	Permittivity
	%	%	%	%	%	%	%	%	σ	εr
750	0.2	/	/	0.9	0.1	47.2	/	51.7	0.96	55.5
835	0.2	/	/	0.9	0.1	48.2	/	50.8	0.97	55.2
900	0.2	/	/	0.9	0.1	48.2	/	50.8	1.05	55.0
1800	/	29.4	/	0.4	/	/	30.45	70.2	1.52	53.3
1900	/	29.4	/	0.4	/	/	30.45	70.2	1.52	53.3
2000	/	29.4	/	0.4	/	/	/	70.2	1.52	53.3
2450	/	31.3	/	0.1	/	/	/	68.6	1.95	52.7
2600	/	31.7	/	0.1	/	/	/	68.2	2.16	52.3

Tissue dielectric parameters for head and body phantoms				
Frequency	εr		σ S/m	
	Head	Body	Head	Body
300	45.3	58.2	0.87	0.92
450	43.5	56.7	0.87	0.94
900	41.5	55.0	0.97	1.05
1450	40.5	54.0	1.20	1.30
1800	40.0	53.3	1.40	1.52
2450	39.2	52.7	1.80	1.95
3000	38.5	52.0	2.40	2.73
5800	35.3	48.2	5.27	6.00

LIQUID MEASUREMENT RESULTS

Date	Ambient condition		Simulating Liquid		Parameters	Target	Measured	Deviation [%]	Limited [%]
	Temp. [°C]	Humidity [%]	Frequency	Temp. [°C]					
2021-06-11	23.2	50	704 MHz	22.8	Permittivity	42.15	42.60	1.07	±5
					Conductivity	0.89	0.87	-2.25	±5
2021-06-11	23.2	50	709 MHz	22.8	Permittivity	42.12	42.19	0.17	±5
					Conductivity	0.89	0.93	4.49	±5
2021-06-11	23.2	50	750 MHz	22.8	Permittivity	41.9	40.56	-3.20	±5
					Conductivity	0.89	0.89	0.00	±5
2021-06-15	23.5	51	829 MHz	23.2	Permittivity	41.53	40.34	-2.87	±5
					Conductivity	0.9	0.89	-1.11	±5
2021-06-15	23.5	51	835 MHz	23.2	Permittivity	41.5	40.80	-1.69	±5
					Conductivity	0.9	0.89	-1.11	±5
2021-06-15	23.5	51	836.6 MHz	22.2	Permittivity	41.5	41.49	-0.02	± 5
					Conductivity	0.9	0.87	-3.33	± 5
2021-06-15	23.5	51	848.8 MHz	22.2	Permittivity	41.5	41.51	0.02	± 5
					Conductivity	0.91	0.88	-3.30	± 5
2021-06-16	23	48	900 MHz	22.2	Permittivity	41.5	40.07	-3.45	± 5
					Conductivity	0.97	0.98	1.03	± 5
2021-06-17	22.7	47	1720 MHz	22.0	Permittivity	40.11	39.83	-0.70	± 5
					Conductivity	1.35	1.32	-2.22	± 5
2021-06-17	22.7	47	1732.5 MHz	22.0	Permittivity	40.1	39.65	-1.12	± 5
					Conductivity	1.36	1.37	0.74	± 5
2021-06-17	22.7	47	1745 MHz	22.4	Permittivity	40.08	38.90	-2.94	± 5
					Conductivity	1.37	1.37	0.00	± 5
2021-06-17	22.7	47	1800 MHz	22.4	Permittivity	40	40.85	2.13	± 5
					Conductivity	1.4	1.43	2.14	± 5
2021-06-18	23.1	50	1850.2 MHz	22.8	Permittivity	40	41.17	2.93	± 5
					Conductivity	1.4	1.41	0.71	± 5
2021-06-18	23.1	50	1860 MHz	22.8	Permittivity	40	39.87	-0.33	± 5
					Conductivity	1.4	1.39	-0.71	± 5
2021-06-18	23.1	50	1880 MHz	22.8	Permittivity	40	39.82	-0.45	± 5
					Conductivity	1.4	1.42	1.43	± 5
2021-06-18	23.1	50	1900 MHz	22.8	Permittivity	40	39.38	-1.55	± 5
					Conductivity	1.4	1.36	-2.86	± 5
2021-06-18	23.1	50	1907.6 MHz	22.8	Permittivity	40	41.04	2.60	± 5
					Conductivity	1.4	1.37	-2.14	± 5
2021-06-18	23.1	50	1909.8 MHz	22.8	Permittivity	40	39.51	-1.23	± 5
					Conductivity	1.4	1.43	2.14	± 5

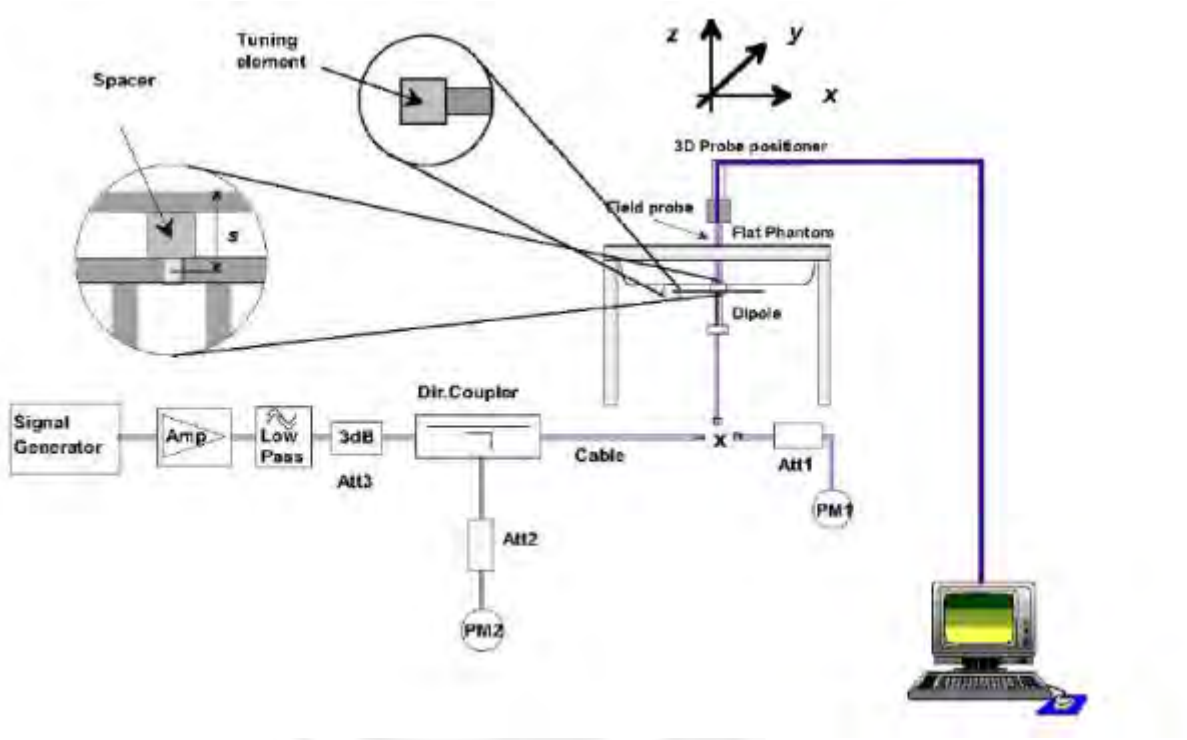
2021-06-21	22.6	48	2412 MHz	22.3	Permittivity	39.26	38.96	-0.76	±5
					Conductivity	1.77	1.82	2.82	±5
2021-06-21	22.6	48	2450 MHz	22.3	Permittivity	39.2	40.37	2.98	±5
					Conductivity	1.8	1.81	0.56	±5
2021-06-22	22.9	51	5200 MHz	22.6	Permittivity	36	35.75	-0.69	±5
					Conductivity	4.66	4.65	-0.21	±5
2021-06-23	23.1	52	5775MHz	22.9	Permittivity	35.33	34.57	-2.15	±5
					Conductivity	5.24	5.09	-2.86	±5
2021-06-23	23.1	52	5800MHz	22.9	Permittivity	35.3	35.48	0.51	±5
					Conductivity	5.27	5.22	-0.95	±5

5. SAR System Validation

5.1 Validation System

Each MVG system is equipped with one or more system validation kits. These units, together with the predefined measurement procedures within the MVG software, enable the user to conduct the system performance check and system validation. System kit includes a dipole, and dipole device holder.

The system check verifies that the system operates within its specifications. It's performed daily or before every SAR measurement. The system check uses normal SAR measurement in the flat section of the phantom with a matched dipole at a specified distance. The system validation setup is shown as below.



5.2 Validation Result

Comparing to the original SAR value provided by MVG, the validation data should be within its specification of 10 %.

Date	Freq.	Power	Tested Value	Normalized SAR	Target SAR	Tolerance	Limit
	(MHz)	(mW)	(W/Kg)	(W/kg)	(W/kg)	(%)	(%)
2021-06-11	750	100	0.844	8.44	8.49	-0.60	10
2021-06-15	835	100	0.987	9.87	9.56	3.26	10
2021-06-16	900	100	1.091	10.91	10.90	0.11	10
2021-06-17	1800	100	4.006	40.06	38.40	4.32	10
2021-06-18	1900	100	4.122	41.22	39.70	3.84	10
2021-06-21	2450	100	5.133	51.33	52.40	-2.05	10
2021-06-22	5200	100	16.010	160.10	159.00	0.69	10
2021-06-23	5800	100	18.156	181.56	181.20	0.20	10

Note:

1. The tolerance limit of System validation ±10%.
2. The dipole input power (forward power) was 100 mW.
3. The results are normalized to 1 W input power.

6. SAR Evaluation Procedures

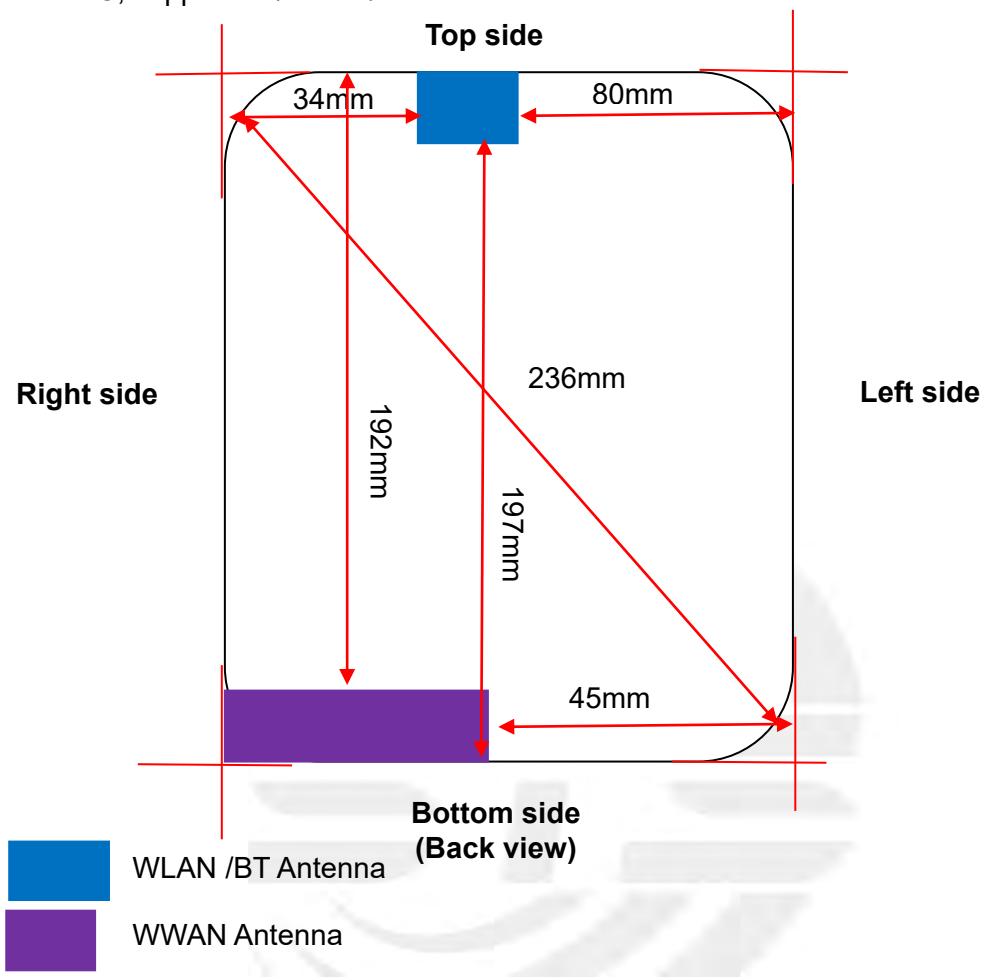
The procedure for assessing the average SAR value consists of the following steps:
The following steps are used for each test position
- Establish a call with the maximum output power with a base station simulator. The connection between the mobile and the base station simulator is established via air interface
- Measurement of the local E-field value at a fixed location. This value serves as a reference value for calculating a possible power drift.
- Measurement of the SAR distribution with a grid of 8 to 16mm * 8 to16 mm and a constant distance to the inner surface of the phantom. Since the sensors cannot directly measure at the inner phantom surface, the values between the sensors and the inner phantom surface are extrapolated. With these values the area of the maximum SAR is calculated by an interpolation scheme.
- Around this point, a cube of 30 * 30 * 30 mm or 32 * 32 * 32 mm is assessed by measuring 5 or 8 * 5 or 8*4 or 5 mm. With these data, the peak spatial-average SAR value can be calculated.

Area Scan& Zoom Scan:

First Area Scan is used to locate the approximate location(s) of the local peak SAR value(s). The measurement grid within an Area Scan is defined by the grid extent, grid step size and grid offset. Next, in order to determine the EM field distribution in a three-dimensional spatial extension, Zoom Scan is required. The Zoom Scan is performed around the highest E-field value to determine the averaged SAR -distribution over 10 g. Area scan and zoom scan resolution setting follows KDB 865664 D01v01r01 quoted below.
When the 1-g SAR of the highest peak is within 2 dB of the SAR limit, additional zoom scans are required for other peaks within 2 dB of the highest peak that have not been included in any zoom scan to ensure there is no increase in SAR.

7. EUT Antenna Location Sketch

It is a Tablet PC, support BT/WLAN/WWAN mode.



Note 1: The antenna information refer the manufacturer provide report, applicable only to the tested sample identified in the report.

7.1 SAR test exclusion consider table

The WWAN/WLAN/BT SAR evaluation of Maximum power (dBm) summing tolerance.

	Wireless Interface	GSM850	PCS1900	WCDMA II	WCDMA V	LTE Band 2
Exposure Position	Calculated Frequency(MHz)	848.8	1909.8	1907.6	836.6	1860
	Maximum power (dBm)	33	30.5	24.6	25.5	26
	Maximum rated power(mW)	1995.26	1122.02	288.40	354.81	398.11
Back Side	Separation distance (mm)	5	5	5	5	5
	exclusion threshold(mW)	16.28	10.85	10.86	16.40	11.00
	Testing required?	YES	YES	YES	YES	YES
Left Edge	Separation distance (mm)	45	45	45	45	45
	exclusion threshold(mW)	146.53	97.69	97.74	147.60	98.99
	Testing required?	YES	YES	YES	YES	YES
Right Edge	Separation distance (mm)	5	5	5	5	5
	exclusion threshold(mW)	16.28	10.85	10.86	16.40	11.00
	Testing required?	YES	YES	YES	YES	YES
Top Edge	Separation distance (mm)	192	192	192	192	192
	exclusion threshold(mW)	966.34	1528.54	1528.60	955.98	1529.99
	Testing required?	YES	NO	NO	NO	NO
Bottom Edge	Separation distance (mm)	5	5	5	5	5
	exclusion threshold(mW)	16.28	10.85	10.86	16.40	11.00
	Testing required?	YES	YES	YES	YES	YES

Exposure Position	Wireless Interface	LTE Band 4	LTE Band 5	LTE Band 12	LTE Band 17	BT
	Calculated Frequency(MHz)	1720	829	704	709	2441
	Maximum power (dBm)	25.5	24	23.5	23.5	5
	Maximum rated power(mW)	354.81	251.19	223.87	223.87	3.16
Back Side	Separation distance (mm)	5	5	5	5	5
	exclusion threshold(mW)	11.44	16.47	17.88	17.81	9.60
	Testing required?	YES	YES	YES	YES	NO
Left Edge	Separation distance (mm)	45	45	45	45	80
	exclusion threshold(mW)	102.94	148.27	160.90	160.33	396.01
	Testing required?	YES	YES	YES	YES	NO
Right Edge	Separation distance (mm)	5	5	5	5	34
	exclusion threshold(mW)	11.44	16.47	17.88	17.81	65.29
	Testing required?	YES	YES	YES	YES	NO
Top Edge	Separation distance (mm)	192	192	192	192	5
	exclusion threshold(mW)	1534.37	949.53	845.23	849.33	9.60
	Testing required?	NO	NO	NO	NO	NO
Bottom Edge	Separation distance (mm)	5	5	5	5	197
	exclusion threshold(mW)	11.44	16.47	17.88	17.81	1566.01
	Testing required?	YES	YES	YES	YES	NO

Exposure Position	Wireless Interface	2.4G WLAN	5.2G WLAN	5.8G WLAN
	Calculated Frequency(MHz)	2412	5210	5775
	Maximum power (dBm)	11	8	13.5
	Maximum rated power(mW)	12.59	6.31	22.39
Back Side	Separation distance (mm)	5	5	5
	exclusion threshold(mW)	9.66	6.57	6.24
	Testing required?	YES	NO	YES
Left Edge	Separation distance (mm)	80	80	80
	exclusion threshold(mW)	396.58	365.72	362.42
	Testing required?	NO	NO	NO
Right Edge	Separation distance (mm)	34	34	34
	exclusion threshold(mW)	65.68	44.69	42.44
	Testing required?	NO	NO	NO
Top Edge	Separation distance (mm)	5	5	5
	exclusion threshold(mW)	9.66	6.57	6.24
	Testing required?	YES	NO	YES
Bottom Edge	Separation distance (mm)	197	197	197
	exclusion threshold(mW)	1566.58	1535.72	1532.42
	Testing required?	NO	NO	NO

Note：

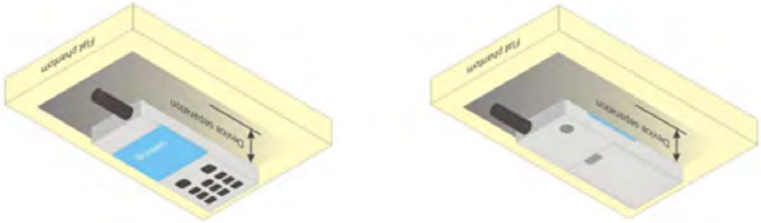
1. maximum power is the source-based time-average power and represents the maximum RF output power among production units.
2. per KDB 447498 D01, for larger devices, the test separation distance of adjacent edge configuration is determined by the closest separation between the antenna and the user.
3. per KDB 447498 D01, standalone SAR test exclusion threshold is applied; if the distance of the antenna to the user is <25mm,25mm is user to determine SAR exclusion threshold
4. per KDB 447498 D01, the 1-g and 10-g SAR test exclusion thresholds for 100 MHz to 6 GHz at test separation distance ≤50mm are determined by:
   [(max.power of channel, including tune-up tolerance, Mw)/(min. test separation distance, mm)]*[√f(GHZ))≤3.0 for 1-g SAR and≤7.5 for10-g extremity SAR ,f(GHz) is the RF channel transmit frequency in GHz. Power and distance are rounded to the nearest mW and mm before calculation. The result is rounded to one decimal place for comparison
   For <50mm distance, we just calculate mW of the exclusion threshold value(3.0)to do compare
5. per KDB 447498 D01, at 100 MHz to 6GHz and for test separation distances >50mm, the SAR test exclusion threshold is determined according to the following
   a)[threshold at 50mm in step 1]+(test separation distance -50mm)*(f (MHz)/150)]Mw, at 100 MHz to 1500 MHz
   b) [threshold at 50mm in step1]+(test separation distance -50mm) *10]mW at＞1500MHz and≤6GHz
6. Per KDB 248227 D01, choose the highest output power channel to test SAR and determine further SAR exclusion 8.for each frequency band ,testing at higher data rates and higher order modulations is not required when the maximum average output power for each of each of these configurations is less than 1/4db higher than those measured at the lower data rate than 11b mode ,thus the SAR can be excluded.
7. Per KDB 616217 D04, the rear surface and edges of tablet should be tested for SAR compliance.

8. EUT Test Position

This EUT was tested the rear surface and edges of EUT.

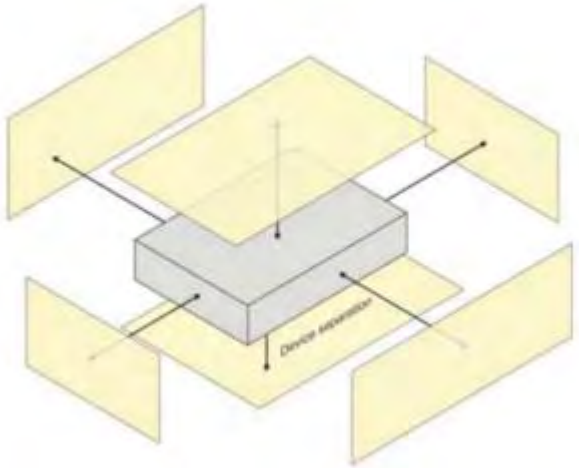
8.1 Body-worn Position Conditions

Body-worn accessory exposure is typically related to voice mode operations when handsets are carried in body-worn accessories. The body-worn accessory procedures in KDB Publication 447498 D01 should be used to test for body-worn accessory SAR compliance, without a headset connected to it. When the same wireless transmission configuration is used for testing body-worn accessory and hotspot mode SAR, respectively, in voice and data mode, SAR results for the most conservative *test separation distance* configuration may be used to support both SAR conditions. When the *reported* SAR for a body-worn accessory, measured without a headset connected to the handset, is > 1.2 W/kg, the highest *reported* SAR configuration for that wireless mode and frequency band should be repeated for the body-worn accessory with a headset attached to the handset.



8.2 Hotspot mode exposure position condition

For handsets that support hotspot mode operations, with wireless router capabilities and various web browsing function, the relevant hand and body exposure condition are tested according to the hotspot SAR procedures in KDB 941225. A test separation distance of 10 mm is required between the phantom and all surface and edges with a transmitting antenna located within 25 mm form that surface or edge.
When form factor of a handset is smaller than 9cm x 5cm, a test separation distance of 5mm (instead of 10mm)is required for testing hotspot mode. When the separate distance required for body-worn accessory testing is larger than or equal to that tested for hotspot mode, in the same wireless mode and for the same surface of the phone, the hotspot mode SAR data may be used to support body-worn accessory SAR compliance for that particular configuration(surface).



9. Uncertainty

9.1 Measurement Uncertainty

The following measurement uncertainty levels have been estimated for tests performed on the EUT as specified in IEEE 1528: 2013.This uncertainty represents an expanded uncertainty expressed at approximately the 95% confidence level using a coverage factor of k=2.

Uncertainty Component	Tol (+- %)	Prob. Dist.	Div.	Ci (1g)	Ci (10g)	1g Ui (+-%)	10g Ui (+-%)	vi
Measurement System								
Probe calibration	5.831	N	1	1	1	5.83	5.83	∞
Axial Isotropy	0.695	R	$\sqrt{3}$	$\sqrt{0.5}$	$\sqrt{0.5}$	0.28	0.28	∞
Hemispherical Isotropy	1.045	R	$\sqrt{3}$	$\sqrt{0.5}$	$\sqrt{0.5}$	0.43	0.43	∞
Boundary effect	1.0	R	$\sqrt{3}$	1	1	0.58	0.58	∞
Linearity	0.685	R	$\sqrt{3}$	1	1	0.40	0.40	∞
System detection limits	1.0	R	$\sqrt{3}$	1	1	0.58	0.58	∞
Modulation response	3.0	R	$\sqrt{3}$	1	1	1.73	1.73	∞
Readout Electronics	0.021	N	1	1	1	0.021	0.021	∞
Response Time	0	R	$\sqrt{3}$	1	1	0	0	∞
Integration Time	1.4	R	$\sqrt{3}$	1	1	0.81	0.81	∞
RF ambient conditions-Noise	3.0	R	$\sqrt{3}$	1	1	1.73	1.73	∞
RF ambient conditions-reflections	3.0	R	$\sqrt{3}$	1	1	1.73	1.73	∞
Probe positioner mechanical tolerance	1.4	R	$\sqrt{3}$	1	1	0.81	0.81	∞
Probe positioning with respect to phantom shell	1.4	R	$\sqrt{3}$	1	1	0.81	0.81	∞
Post-processing	2.3	R	$\sqrt{3}$	1	1	1.33	1.33	∞
Test sample Related								
Test sample positioning	2.6	N	1	1	1	2.6	2.6	∞
Device holder uncertainty	3	N	1	1	1	3	3	∞
SAR drift measurement	5	R	$\sqrt{3}$	1	1	2.89	2.89	∞
SAR scaling	5	R	$\sqrt{3}$	1	1	2.89	2.89	∞
Phantom and tissue parameters								
Phantom uncertainty(shape and thickness uncertainty)	4	R	$\sqrt{3}$	1	1	2.31	2.31	∞
Uncertainty in SAR correction for deviations in permittivity and conductivity	1.9	N	1	1	0.84	1.90	1.60	∞
Liquid conductivity(temperature uncertainty)	2.5	R	$\sqrt{3}$	0.78	0.71	1.13	1.02	∞
Liquid conductivity(measured)	4	N	1	0.78	0.71	3.12	2.84	M
Liquid permittivity(temperature uncertainty)	2.5	R	$\sqrt{3}$	0.23	0.26	0.33	0.38	∞
Liquid permittivity(measured)	5	N	1	0.23	0.26	1.15	1.30	M
Combined Standard Uncertainty		RSS				9.79	9.59	
Expanded Uncertainty (95% Confidence interval)		K=2				19.58	19.18	

9.2 System validation Uncertainty

Uncertainty Component	Tol (+- %)	Prob. Dist.	Div.	Ci (1g)	Ci (10g)	1g Ui (+-%)	10g Ui (+-%)	vi
Measurement System								
Probe calibration	5.831	N	1	1	1	5.83	5.83	∞
Axial Isotropy	0.695	R	$\sqrt{3}$	1	1	0.40	0.40	∞
Hemispherical Isotropy	1.045	R	$\sqrt{3}$	0	0	0.00	0.00	∞
Boundary effect	1.0	R	$\sqrt{3}$	1	1	0.58	0.58	∞
Linearity	0.685	R	$\sqrt{3}$	1	1	0.40	0.40	∞
System detection limits	1.0	R	$\sqrt{3}$	1	1	0.58	0.58	∞
Modulation response	3.0	R	$\sqrt{3}$	0	0	0.00	0.00	∞
Readout Electronics	0.021	N	1	1	1	0.021	0.021	∞
Response Time	0.0	R	$\sqrt{3}$	0	0	0.00	0.00	∞
Integration Time	1.4	R	$\sqrt{3}$	0	0	0.00	0.00	∞
RF ambient conditions-Noise	3.0	R	$\sqrt{3}$	1	1	1.73	1.73	∞
RF ambient conditions-reflections	3.0	R	$\sqrt{3}$	1	1	1.73	1.73	∞
Probe positioner mechanical tolerance	1.4	R	$\sqrt{3}$	1	1	0.81	0.81	∞
Probe positioning with respect to phantom shell	1.4	R	$\sqrt{3}$	1	1	0.81	0.81	∞
Post-Processing	2.3	R	$\sqrt{3}$	1	1	1.33	1.33	∞
System validation source								
Deviation of experimental dipole from numerical dipole	5.0	N	1	1	1	5.00	5.00	∞
Input power and SAR drift measurement	5.0	R	$\sqrt{3}$	1	1	2.89	2.89	∞
Other source contribution Uncertainty	2.0	R	$\sqrt{3}$	1	1	1.15	1.15	∞
Phantom and set-up								
Phantom uncertainty(shape and thickness uncertainty)	4.0	R	$\sqrt{3}$	1	1	2.31	2.31	∞
Uncertainty in SAR correction for deviations in permittivity and conductivity	1.9	N	1	1	0.84	1.90	1.60	∞
Liquid conductivity(temperature uncertainty)	2.5	R	$\sqrt{3}$	0.78	0.71	1.13	1.02	∞
Liquid conductivity(measured)	4	N	1	0.78	0.71	3.12	2.84	M
Liquid permittivity(temperature uncertainty)	2.5	R	$\sqrt{3}$	0.23	0.26	0.33	0.38	∞
Liquid permittivity(measured)	5	N	1	0.23	0.26	1.15	1.30	M
Combined Standard Uncertainty		RSS				9.718	9.517	
Expanded Uncertainty (95% Confidence interval)		K=2				19.44	19.04	

10. Conducted Power Measurement

10.1 Test Result

Burst Average Power (dBm)						
Band	GSM 850			PCS 1900		
Channel	128	190	251	512	661	810
Frequency (MHz)	31.77	32.22	32.62	29.44	29.49	30.08
GSM(GMSK, 1-Slot)	32.20	32.55	32.75	29.37	29.58	30.07
GPRS (GMSK, 1-Slot)	31.74	32.14	32.28	28.97	29.10	29.66
GPRS (GMSK, 2-Slot)	31.29	31.74	31.87	28.48	28.63	29.24
GPRS (GMSK, 3-Slot)	30.83	31.31	31.40	28.05	28.14	28.76
GPRS (GMSK, 4-Slot)	26.68	27.06	27.17	25.42	26.01	27.29
EGPRS(8PSK, 1-Slot)	25.92	26.33	26.37	24.68	25.24	26.55
EGPRS(8PSK, 2-Slot)	25.20	25.62	25.61	23.88	24.53	25.78
EGPRS(8PSK, 3-Slot)	24.45	24.89	24.83	23.16	23.81	25.04
EGPRS(8PSK, 4-Slot)	31.77	32.22	32.62	29.44	29.49	30.08

Remark: GPRS, CS4 coding scheme. EGPRS, MCS5 coding scheme.
Multi-Slot Class 8, Support Max 4 downlink, 1 uplink, 5 working link
Multi-Slot Class 10, Support Max 4 downlink, 2 uplink, 5 working link
Multi-Slot Class 12, Support Max 4 downlink, 4 uplink, 5 working link

Fram- Average Power(dBm)						
Band	GSM 850			PCS 1900		
Channel	128	190	251	512	661	810
Frequency (MHz)	824.2	836.6	848.8	1850.2	1880.0	1909.8
GSM(GMSK, 1-Slot)	22.74	23.19	23.59	20.41	20.46	21.05
GPRS (GMSK, 1-Slot)	23.17	23.52	23.72	20.34	20.55	21.04
GPRS (GMSK, 2-Slot)	25.72	26.12	26.26	22.95	23.08	23.64
GPRS (GMSK, 3-Slot)	27.03	27.48	27.61	24.22	24.37	24.98
GPRS (GMSK, 4-Slot)	27.82	28.30	28.39	25.04	25.13	25.75
EGPRS(8PSK, 1-Slot)	17.65	18.03	18.14	16.39	16.98	18.26
EGPRS(8PSK, 2-Slot)	19.90	20.31	20.35	18.66	19.22	20.53
EGPRS(8PSK, 3-Slot)	20.94	21.36	21.35	19.62	20.27	21.52
EGPRS(8PSK, 4-Slot)	21.44	21.88	21.82	20.15	20.80	22.03

Remark :
1. SAR testing was performed on the maximum frame-averaged power mode.
2. The frame-averaged power is linearly proportion to the slot number configured and it is linearly scaled the maximum
Burst - averaged power based on time slots. The calculated method is shown as below:
Frame-averaged power = Burst averaged power (1 TX Slot) – 9.03 dB
Frame-averaged power = Burst averaged power (2 TX Slots) – 6.02 dB
Frame-averaged power = Burst averaged power (3 TX Slots) - 4.26 dB
Frame-averaged power = Burst averaged power (4 TX Slots) – 3.01 dB

WCDMA

Band	WCDMA Band II			WCDMA Band V		
Channel	9262	9400	9538	4132	4183	4233
Frequency (MHz)	1852.4	1880	1907.6	826.4	836.6	846.6
AMR 12.2Kbps	24.15	24.02	24.56	25.01	25.29	24.72
RMC 12.2Kbps	24.18	24.09	24.57	25.08	25.34	24.75
HSDPA Subtest-1	23.21	22.52	22.91	23.01	23.26	23.38
HSDPA Subtest-2	22.72	22.06	22.44	22.55	22.85	22.88
HSDPA Subtest-3	22.29	21.61	21.98	22.15	22.44	22.47
HSDPA Subtest-4	21.8	21.13	21.57	21.71	22.03	22.06
HSUPA Subtest-1	23.53	22.4	23.42	23.06	22.99	23.43
HSUPA Subtest-2	22.62	21.43	22.5	22.09	22.05	22.49
HSUPA Subtest-3	22.62	20.93	22.03	21.99	21.58	22.18
HSUPA Subtest-4	22.27	20.59	21.72	21.64	21.2	21.73
HSUPA Subtest-5	20.83	19.17	20.25	20.18	19.77	20.28

According to 3GPP 25.101 sub-clause 6.2.2, the maximum output power is allowed to be reduced by following the table.

Table 6.1A: UE maximum output power with HS-DPCCH and E-DCH

UE Transmit Channel Configuration	CM(db)	MPR(db)
For all combinations of ,DPDCH,DPCCH HS-DPDCH,E-DPDCH and E-DPCCH	0≤ CM≤3.5	MAX(CM-1,0)
Note: CM=1 for βc/βd=12/15, βhs/ βc=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.		

The device supports MPR to solve linearity issues (ACLR or SEM) due to the higher peak-to average ratios (PAR) of the HSUPA signal. This prevents saturating the full range of the TX DAC inside of device and provides a reduced power output to the RF transceiver chip according to the Cubic Metric (a function of the combinations of DPDCH, DPCCH, HS-DPCCH, E-DPDCH and E-DPCCH).

When E-DPDCH channels are present the beta gains on those channels are reduced firsts to try to get the power under the allowed limit. If the beta gains are lowered as far as possible, then a hard limiting is applied at the maximum allowed level.

The SW currently recalculates the cubic metric every time the beta gains on the E-DPDCH are reduced. The cubic metric will likely get lower each time this is done .However, there is no reported reduction of maximum output power in the HSUPA mode since the device also provides a compensation for the power back-off by increasing the gain of TX_AGC in the transceiver (PA) device.

The end effect is that the DUT output power is identical to the case where there is no MPR in the device.

2.4G WLAN

Mode	Channel Number	Frequency (MHz)	Average Power (dBm)
802.11b	1	2412	10.78
	6	2437	10.37
	11	2462	10.37
802.11g	1	2412	10.42
	6	2437	10.15
	11	2462	10.20
802.11 n-HT20	1	2412	10.40
	6	2437	10.10
	11	2462	10.14
802.11 n-HT40	3	2422	10.83
	6	2437	10.14
	9	2452	9.71

BT

Mode	Channel Number	Frequency (MHz)	Average Power (dBm)
GFSK(1Mbps)	0	2402	4.77
	39	2441	4.83
	78	2480	4.68
π/4-QPSK(2Mbps)	0	2402	1.75
	39	2441	3.06
	78	2480	1.36
8DPSK(3Mbps)	0	2402	1.73
	39	2441	3.05
	78	2480	1.37

BLE

Mode	Channel Number	Frequency (MHz)	Average Power (dBm)
GFSK(1Mbps)	0	2402	-7.94
	19	2440	-8.26
	39	2480	-6.48

5.2G WLAN

Mode	Channel Number	Frequency (MHz)	Output Power (dBm)
802.11a20	36	5180	6.48
	40	5200	6.06
	48	5240	4.64
802.11 n-HT20	36	5180	6.74
	40	5200	5.49
	48	5240	3.91
802.11 n-HT40	38	5190	7.03
	46	5230	5.80
802.11ac-VHT20	36	5180	6.89
	40	5200	6.62
	48	5240	5.37
802.11ac-VHT40	38	5190	6.75
	46	5230	5.64
802.11ac-VHT80	42	5210	7.94

5.8G WLAN

Mode	Channel Number	Frequency (MHz)	Output Power (dBm)
802.11a20	149	5745	9.06
	157	5785	6.55
	165	5825	7.28
802.11 n-HT20	149	5745	9.08
	157	5785	6.49
	165	5825	7.15
802.11 n-HT40	151	5755	8.21
	159	5795	6.27
802.11ac-VHT20	149	5745	9.04
	157	5785	6.36
	165	5825	7.13
802.11ac-VHT40	151	5755	8.16
	159	5795	9.62
802.11ac-VHT80	155	5775	13.29

LTE Power

LTE Band 2 Maximum Average Power [dBm]						
BW [MHz]	RB Size	RB Offset	Mod	Lowest	Middle	Highest
1.4	1	0	QPSK	25.70	25.23	25.35
1.4	1	2		25.45	25.02	25.10
1.4	1	5		25.23	24.79	24.85
1.4	3	0		24.97	24.58	24.61
1.4	3	1		24.72	24.30	24.40
1.4	3	2		24.45	24.00	24.12
1.4	6	0		24.19	23.78	23.90
1.4	1	0	16-QAM	25.41	25.01	25.12
1.4	1	2		25.14	24.74	24.90
1.4	1	5		24.94	24.51	24.63
1.4	3	0		24.66	24.31	24.33
1.4	3	1		24.42	24.06	24.12
1.4	3	2		24.12	23.82	23.83
1.4	6	0		23.87	23.56	23.61
3	1	0	QPSK	25.02	24.32	24.57
3	1	7		24.75	24.10	24.37
3	1	14		24.52	23.85	24.15
3	8	0		24.27	23.63	23.90
3	8	4		24.05	23.33	23.65
3	8	7		23.78	23.04	23.35
3	15	0		23.50	22.81	23.06
3	1	0	16-QAM	24.79	24.08	24.28
3	1	7		24.55	23.79	24.07
3	1	14		24.27	23.55	23.77
3	8	0		24.05	23.32	23.56
3	8	4		23.78	23.10	23.32
3	8	7		23.55	22.85	23.07
3	15	0		23.30	22.60	22.84

LTE Band 2 Maximum Average Power [dBm]						
BW [MHz]	**RB Size**	**RB Offset**	**Mod**	**Lowest**	**Middle**	**Highest**
5	1	0	QPSK	24.55	23.74	24.12
5	1	12		24.28	23.49	23.85
5	1	24		24.01	23.27	23.58
5	12	0		23.79	23.06	23.29
5	12	6		23.50	22.77	23.01
5	12	11		23.27	22.56	22.76
5	25	0		22.97	22.32	22.52
5	1	0	16-QAM	24.27	23.44	23.89
5	1	12		24.03	23.20	23.65
5	1	24		23.74	22.92	23.38
5	12	0		23.45	22.67	23.12
5	12	6		23.17	22.44	22.84
5	12	11		22.93	22.20	22.63
5	25	0		22.64	21.96	22.33
10	1	0	QPSK	24.31	23.61	23.98
10	1	24		24.10	23.37	23.76
10	1	49		23.82	23.16	23.54
10	25	0		23.59	22.86	23.32
10	25	12		23.34	22.65	23.05
10	25	24		23.11	22.45	22.79
10	50	0		22.90	22.19	22.49
10	1	0	16-QAM	24.06	23.32	23.71
10	1	24		23.85	23.05	23.45
10	1	49		23.56	22.81	23.22
10	25	0		23.26	22.61	22.98
10	25	12		22.98	22.34	22.70
10	25	24		22.70	22.09	22.40
10	50	0		22.44	21.86	22.20

LTE Band 2 Maximum Average Power [dBm]						
BW [MHz]	**RB Size**	**RB Offset**	**Mod**	**Lowest**	**Middle**	**Highest**
15	1	0	QPSK	24.12	23.55	23.76
15	1	37		23.85	23.30	23.55
15	1	74		23.60	23.10	23.31
15	36	0		23.31	22.82	23.01
15	36	18		23.04	22.53	22.71
15	36	39		22.79	22.31	22.42
15	75	0		22.50	22.10	22.22
15	1	0	16-QAM	23.82	23.27	23.51
15	1	38		23.54	23.05	23.25
15	1	75		23.30	22.79	23.05
15	36	0		23.07	22.51	22.82
15	36	18		22.81	22.28	22.52
15	36	39		22.52	22.07	22.30
15	75	0		22.28	21.86	22.05
20	1	0	QPSK	25.84	25.36	25.42
20	1	49		25.61	25.08	25.20
20	1	99		25.33	24.82	24.91
20	50	0		25.12	24.57	24.63
20	50	24		24.92	24.32	24.39
20	50	49		24.71	24.03	24.14
20	100	0		24.45	23.81	23.88
20	1	0	16-QAM	25.60	25.07	25.14
20	1	49		25.34	24.84	24.92
20	1	99		25.05	24.54	24.63
20	50	0		24.76	24.32	24.38
20	50	24		24.56	24.03	24.14
20	50	49		24.35	23.77	23.90
20	100	0		24.12	23.54	23.64

LTE Band 4 Maximum Average Power [dBm]						
BW [MHz]	RB Size	RB Offset	Mod	Lowest	Middle	Highest
1.4	1	0	QPSK	24.12	23.12	23.13
1.4	1	2		23.86	22.90	22.91
1.4	1	5		23.59	22.69	22.62
1.4	3	0		23.34	22.41	22.32
1.4	3	1		23.10	22.17	22.08
1.4	3	2		22.82	21.89	21.83
1.4	6	0		22.57	21.60	21.57
1.4	1	0	16-QAM	23.88	22.86	22.91
1.4	1	2		23.58	22.63	22.67
1.4	1	5		23.29	22.38	22.43
1.4	3	0		23.06	22.18	22.13
1.4	3	1		22.77	21.95	21.91
1.4	3	2		22.54	21.73	21.65
1.4	6	0		22.25	21.44	21.43
3	1	0	QPSK	23.99	23.06	23.05
3	1	7		23.69	22.82	22.79
3	1	14		23.47	22.57	22.58
3	8	0		23.23	22.33	22.28
3	8	4		22.97	22.11	22.05
3	8	7		22.76	21.88	21.84
3	15	0		22.48	21.65	21.59
3	1	0	16-QAM	23.77	22.79	22.82
3	1	7		23.52	22.56	22.62
3	1	14		23.31	22.30	22.37
3	8	0		23.06	22.06	22.14
3	8	4		22.80	21.84	21.94
3	8	7		22.56	21.56	21.66
3	15	0		22.28	21.36	21.43

LTE Band 4 Maximum Average Power [dBm]						
BW [MHz]	**RB Size**	**RB Offset**	**Mod**	**Lowest**	**Middle**	**Highest**
5	1	0	QPSK	23.88	23.02	22.99
5	1	12		23.66	22.73	22.70
5	1	24		23.37	22.45	22.46
5	12	0		23.11	22.25	22.25
5	12	6		22.91	21.99	21.96
5	12	11		22.67	21.78	21.76
5	25	0		22.41	21.56	21.55
5	1	0	16-QAM	23.64	22.79	22.79
5	1	12		23.42	22.51	22.50
5	1	24		23.19	22.22	22.29
5	12	0		22.97	21.94	22.00
5	12	6		22.73	21.68	21.73
5	12	11		22.49	21.42	21.46
5	25	0		22.23	21.18	21.22
10	1	0	QPSK	24.03	23.22	23.23
10	1	24		23.82	23.00	22.99
10	1	49		23.56	22.77	22.78
10	25	0		23.34	22.52	22.56
10	25	12		23.04	22.24	22.29
10	25	24		22.81	21.97	22.02
10	50	0		22.54	21.76	21.72
10	1	0	16-QAM	23.76	22.98	22.96
10	1	24		23.55	22.73	22.70
10	1	49		23.30	22.45	22.46
10	25	0		23.04	22.19	22.16
10	25	12		22.77	21.97	21.91
10	25	24		22.49	21.74	21.65
10	50	0		22.24	21.51	21.44

LTE Band 4 Maximum Average Power [dBm]						
BW [MHz]	**RB Size**	**RB Offset**	**Mod**	**Lowest**	**Middle**	**Highest**
15	1	0	QPSK	25.23	25.01	25.06
15	1	37		24.97	24.79	24.80
15	1	74		24.74	24.55	24.59
15	36	0		24.52	24.27	24.37
15	36	18		24.22	24.03	24.10
15	36	39		23.94	23.75	23.86
15	75	0		23.71	23.54	23.65
15	1	0	16-QAM	24.99	24.74	24.82
15	1	38		24.72	24.46	24.57
15	1	75		24.46	24.17	24.33
15	36	0		24.24	23.91	24.10
15	36	18		23.96	23.62	23.84
15	36	39		23.70	23.41	23.63
15	75	0		23.41	23.20	23.33
20	1	0	QPSK	25.27	25.12	25.13
20	1	49		24.99	24.86	24.92
20	1	99		24.70	24.58	24.63
20	50	0		24.47	24.38	24.37
20	50	24		24.21	24.14	24.16
20	50	49		23.94	23.90	23.91
20	100	0		23.69	23.60	23.68
20	1	0	16-QAM	24.98	24.86	24.87
20	1	49		24.73	24.59	24.59
20	1	99		24.48	24.29	24.34
20	50	0		24.19	24.08	24.06
20	50	24		23.98	23.84	23.77
20	50	49		23.72	23.58	23.53
20	100	0		23.45	23.34	23.28

LTE Band 5 Maximum Average Power [dBm]						
BW [MHz]	**RB Size**	**RB Offset**	**Mod**	**Lowest**	**Middle**	**Highest**
1.4	1	0	QPSK	23.02	23.15	23.31
1.4	1	2		22.73	22.89	23.06
1.4	1	5		22.49	22.67	22.78
1.4	3	0		22.21	22.39	22.57
1.4	3	1		21.98	22.15	22.34
1.4	3	2		21.74	21.86	22.09
1.4	6	0		21.50	21.58	21.87
1.4	1	0	16-QAM	22.80	22.93	23.06
1.4	1	2		22.54	22.69	22.77
1.4	1	5		22.28	22.45	22.50
1.4	3	0		22.04	22.18	22.22
1.4	3	1		21.78	21.93	21.97
1.4	3	2		21.49	21.66	21.68
1.4	6	0		21.27	21.42	21.39
3	1	0	QPSK	22.68	22.95	22.86
3	1	7		22.43	22.69	22.59
3	1	14		22.18	22.47	22.30
3	8	0		21.96	22.22	22.03
3	8	4		21.67	22.01	21.83
3	8	7		21.38	21.78	21.56
3	15	0		21.17	21.56	21.31
3	1	0	16-QAM	22.41	22.70	22.61
3	1	7		22.18	22.44	22.37
3	1	14		21.88	22.20	22.12
3	8	0		21.66	21.91	21.84
3	8	4		21.40	21.66	21.59
3	8	7		21.17	21.43	21.30
3	15	0		20.93	21.23	21.06

LTE Band 5 Maximum Average Power [dBm]						
BW [MHz]	**RB Size**	**RB Offset**	**Mod**	**Lowest**	**Middle**	**Highest**
5	1	0	QPSK	23.15	23.12	23.05
5	1	12		22.89	22.92	22.78
5	1	24		22.67	22.65	22.57
5	12	0		22.37	22.36	22.34
5	12	6		22.12	22.15	22.07
5	12	11		21.82	21.91	21.85
5	25	0		21.55	21.64	21.55
5	1	0	16-QAM	22.92	22.88	22.81
5	1	12		22.69	22.64	22.52
5	1	24		22.39	22.43	22.31
5	12	0		22.17	22.14	22.04
5	12	6		21.91	21.88	21.82
5	12	11		21.69	21.60	21.57
5	25	0		21.45	21.34	21.33
10	1	0	QPSK	23.56	23.33	23.26
10	1	24		23.28	23.05	23.05
10	1	49		23.06	22.77	22.83
10	25	0		22.84	22.50	22.53
10	25	12		22.55	22.29	22.32
10	25	24		22.35	22.05	22.07
10	50	0		22.10	21.81	21.85
10	1	0	16-QAM	23.30	23.07	23.04
10	1	24		23.07	22.80	22.83
10	1	49		22.81	22.51	22.55
10	25	0		22.52	22.23	22.27
10	25	12		22.31	22.01	22.07
10	25	24		22.03	21.74	21.78
10	50	0		21.75	21.44	21.58

LTE Band 12 Maximum Average Power [dBm]						
BW [MHz]	**RB Size**	**RB Offset**	**Mod**	**Lowest**	**Middle**	**Highest**
1.4	1	0	QPSK	23.12	23.15	23.11
1.4	1	2		22.83	22.89	22.89
1.4	1	5		22.53	22.62	22.69
1.4	3	0		22.32	22.35	22.45
1.4	3	1		22.11	22.06	22.21
1.4	3	2		21.84	21.82	21.99
1.4	6	0		21.57	21.60	21.78
1.4	1	0	16-QAM	22.90	22.94	22.85
1.4	1	2		22.70	22.70	22.56
1.4	1	5		22.41	22.42	22.36
1.4	3	0		22.14	22.13	22.15
1.4	3	1		21.87	21.90	21.92
1.4	3	2		21.65	21.64	21.69
1.4	6	0		21.43	21.44	21.48
3	1	0	QPSK	23.09	23.02	23.08
3	1	7		22.84	22.79	22.85
3	1	14		22.59	22.54	22.57
3	8	0		22.33	22.24	22.35
3	8	4		22.06	22.01	22.05
3	8	7		21.79	21.78	21.79
3	15	0		21.58	21.56	21.50
3	1	0	16-QAM	22.82	22.72	22.78
3	1	7		22.53	22.47	22.56
3	1	14		22.27	22.27	22.29
3	8	0		22.04	22.03	22.00
3	8	4		21.76	21.74	21.78
3	8	7		21.47	21.51	21.49
3	15	0		21.18	21.25	21.23

LTE Band 12 Maximum Average Power [dBm]						
BW [MHz]	**RB Size**	**RB Offset**	**Mod**	**Lowest**	**Middle**	**Highest**
5	1	0	QPSK	23.15	23.10	23.06
5	1	12		22.86	22.83	22.83
5	1	24		22.56	22.62	22.62
5	12	0		22.31	22.38	22.35
5	12	6		22.11	22.16	22.10
5	12	11		21.86	21.89	21.84
5	25	0		21.59	21.68	21.56
5	1	0	16-QAM	22.86	22.84	22.79
5	1	12		22.62	22.57	22.54
5	1	24		22.39	22.33	22.24
5	12	0		22.10	22.04	22.04
5	12	6		21.86	21.81	21.74
5	12	11		21.60	21.55	21.52
5	25	0		21.37	21.32	21.25
10	1	0	QPSK	23.32	23.26	23.22
10	1	24		23.06	22.99	22.93
10	1	49		22.82	22.78	22.65
10	25	0		22.57	22.49	22.42
10	25	12		22.31	22.29	22.17
10	25	24		22.11	22.00	21.92
10	50	0		21.81	21.80	21.66
10	1	0	16-QAM	23.03	23.05	22.97
10	1	24		22.83	22.77	22.70
10	1	49		22.54	22.48	22.43
10	25	0		22.33	22.22	22.19
10	25	12		22.06	21.97	21.96
10	25	24		21.79	21.69	21.73
10	50	0		21.50	21.43	21.49

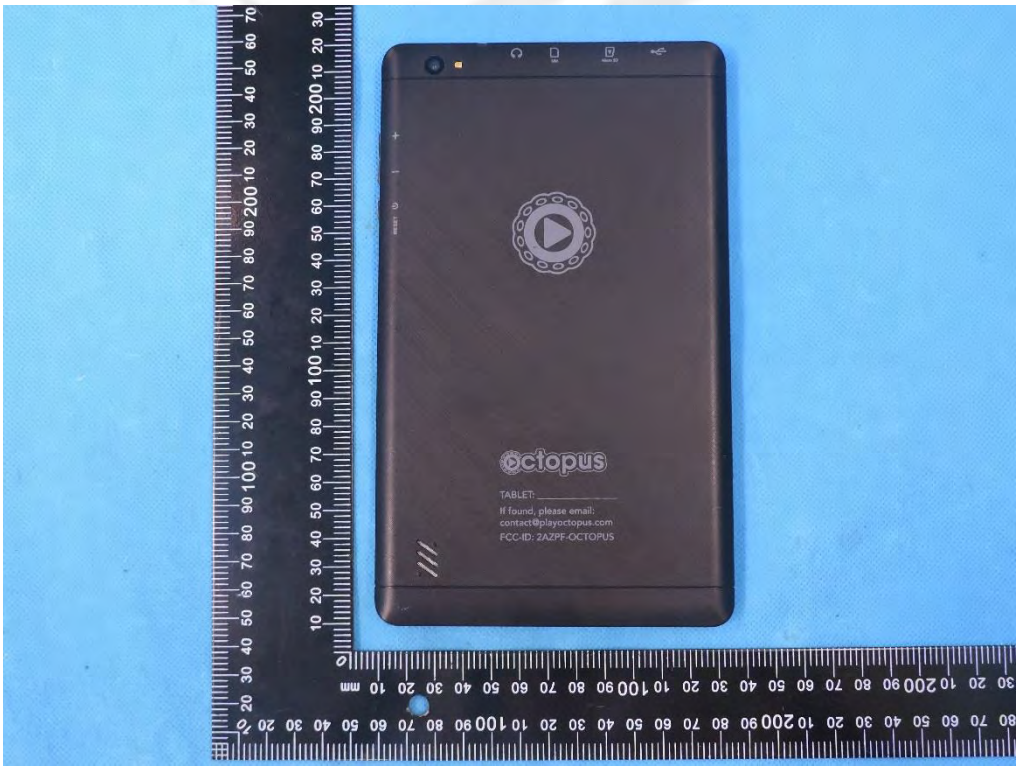
LTE Band 17 Maximum Average Power [dBm]						
BW [MHz]	**RB Size**	**RB Offset**	**Mod**	**Lowest**	**Middle**	**Highest**
5	1	0	QPSK	23.12	23.05	23.08
5	1	12		22.87	22.85	22.88
5	1	24		22.60	22.63	22.65
5	12	0		22.37	22.38	22.36
5	12	6		22.16	22.11	22.06
5	12	11		21.91	21.86	21.80
5	25	0		21.68	21.57	21.60
5	1	0	16-QAM	22.87	22.84	22.82
5	1	12		22.64	22.64	22.59
5	1	24		22.43	22.34	22.30
5	12	0		22.17	22.06	22.07
5	12	6		21.96	21.83	21.86
5	12	11		21.75	21.54	21.62
5	25	0		21.46	21.26	21.41
10	1	0	QPSK	23.26	23.21	23.15
10	1	24		23.03	22.92	22.90
10	1	49		22.82	22.66	22.62
10	25	0		22.60	22.40	22.32
10	25	12		22.38	22.11	22.07
10	25	24		22.09	21.86	21.77
10	50	0		21.85	21.62	21.52
10	1	0	16-QAM	23.04	22.98	22.92
10	1	24		22.75	22.74	22.65
10	1	49		22.46	22.49	22.42
10	25	0		22.16	22.27	22.16
10	25	12		21.96	21.99	21.87
10	25	24		21.73	21.75	21.58
10	50	0		21.51	21.53	21.37

11. EUT And Test Setup Photo

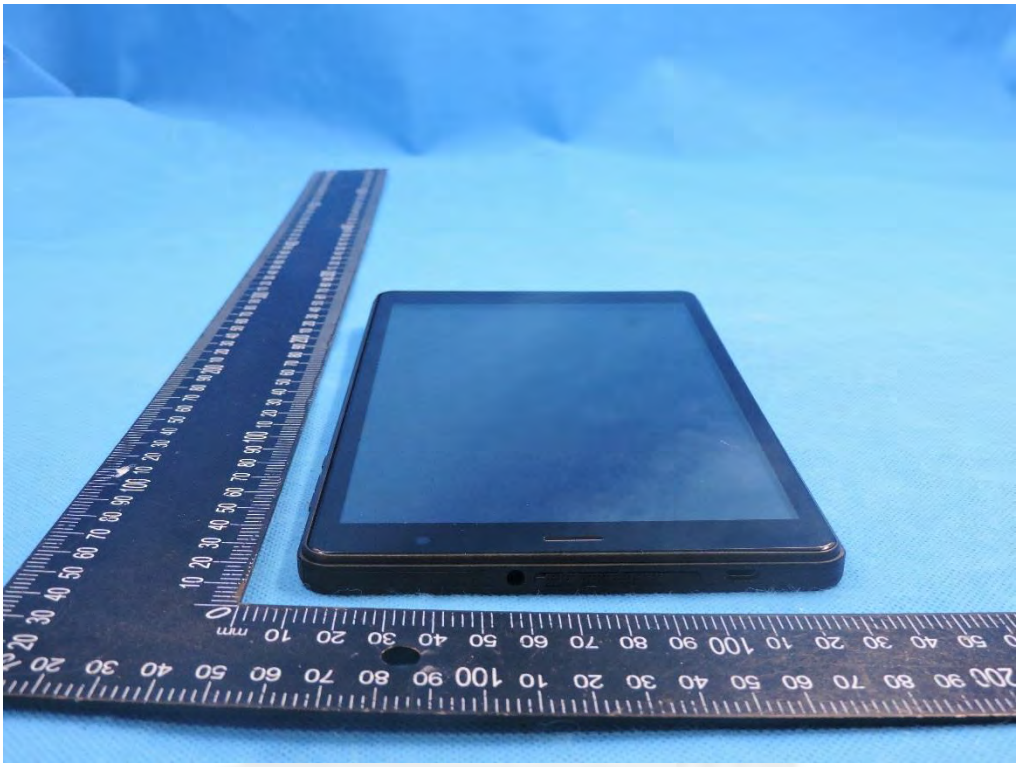
11.1 EUT Photo

Front side

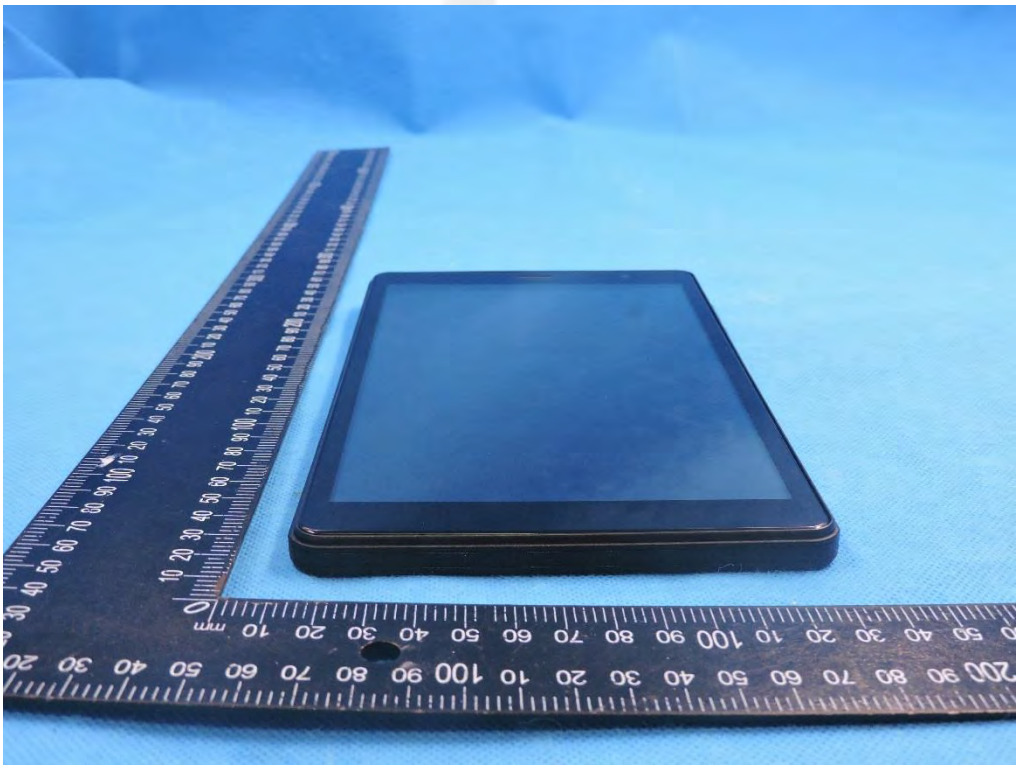
Back side



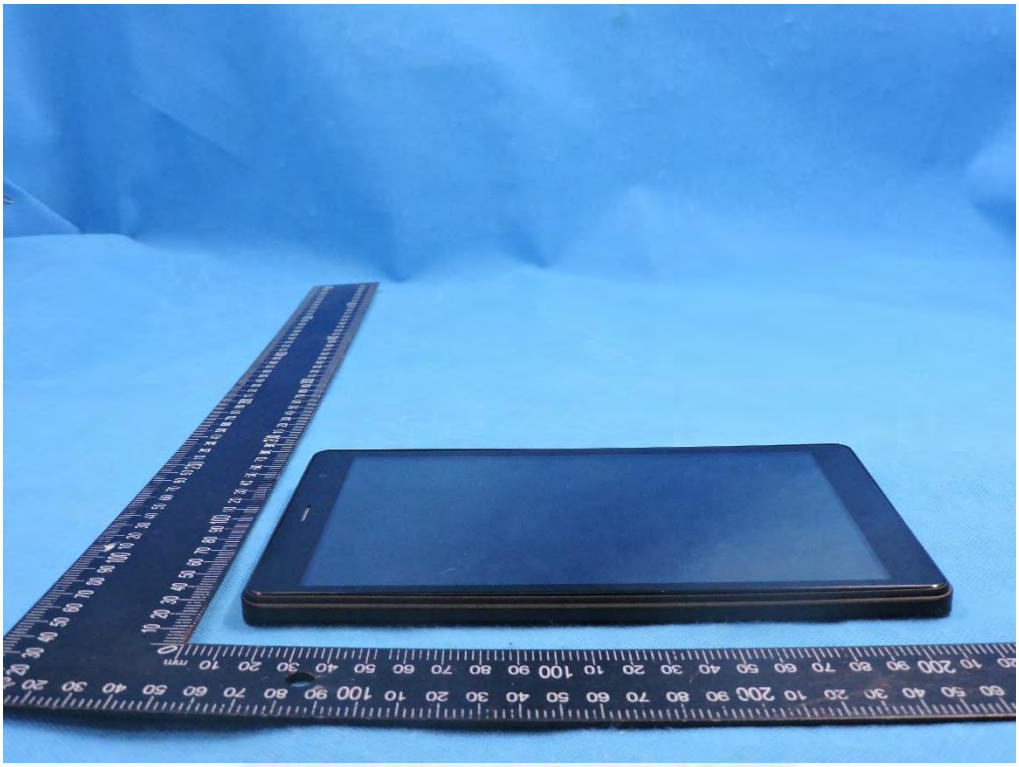
Top side



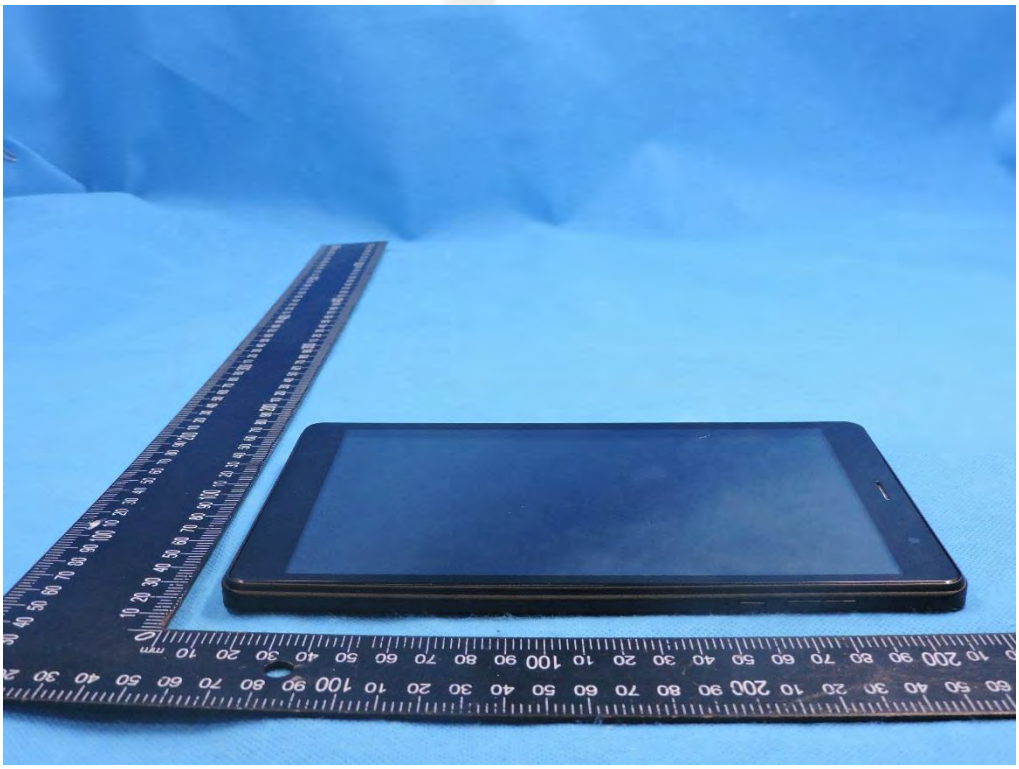
Bottom side



Left side

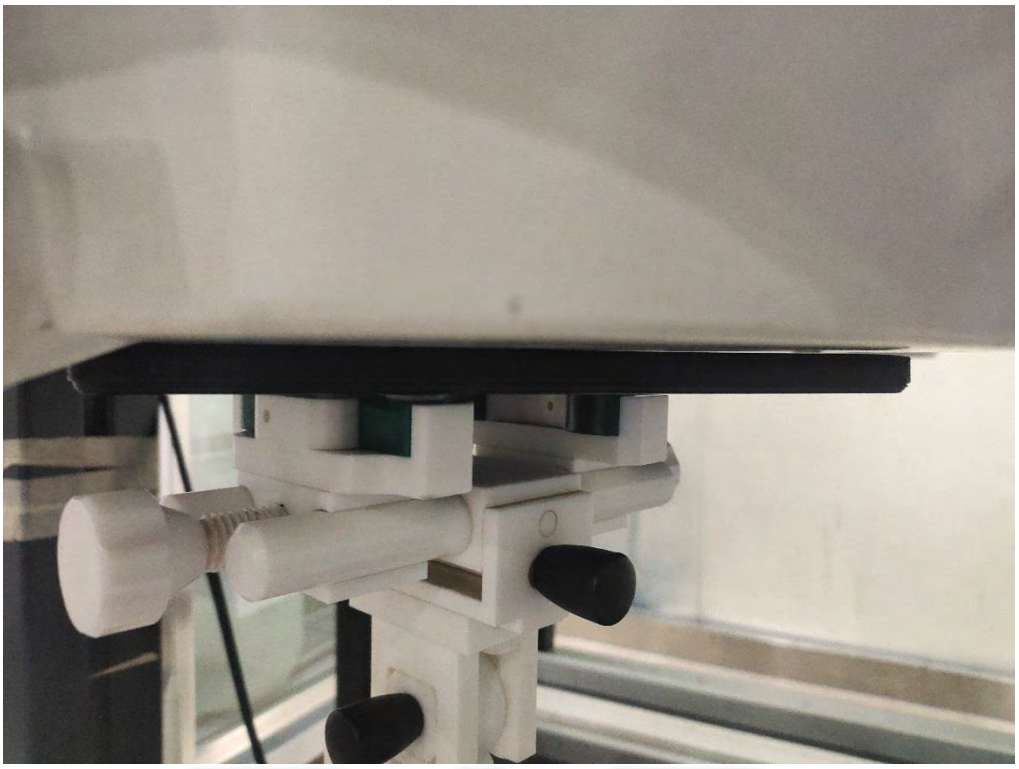


Right side

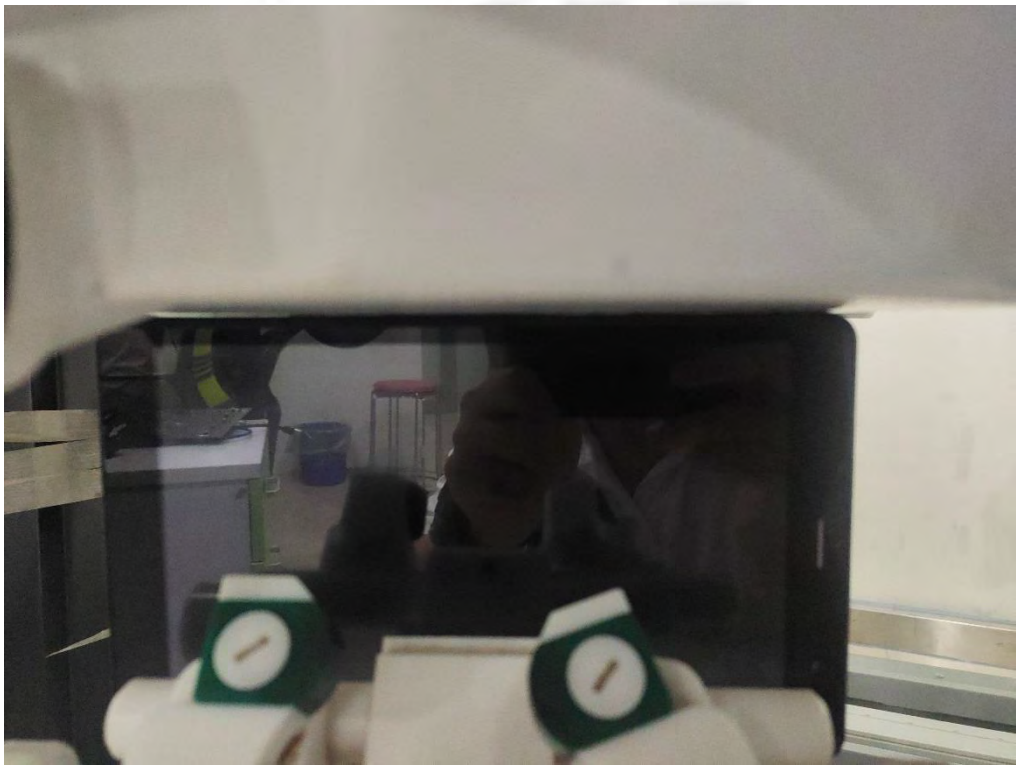


11.2 Setup Photo

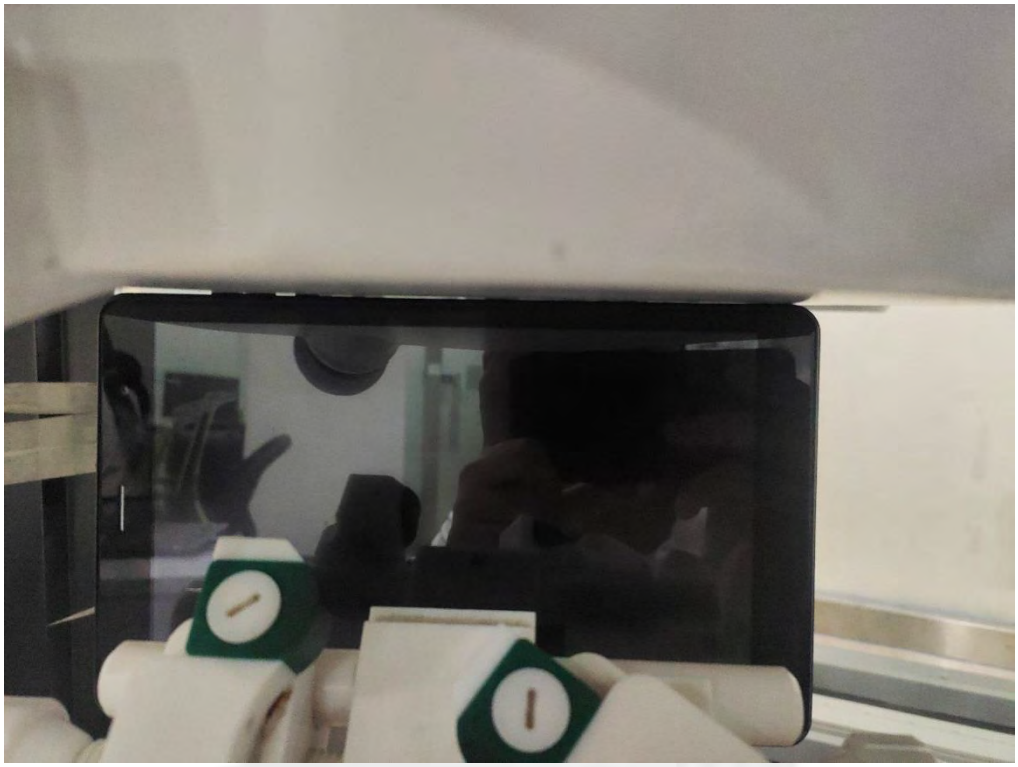
Body Back side(separation distance is 0mm)



Body Left side(separation distance is 0mm)

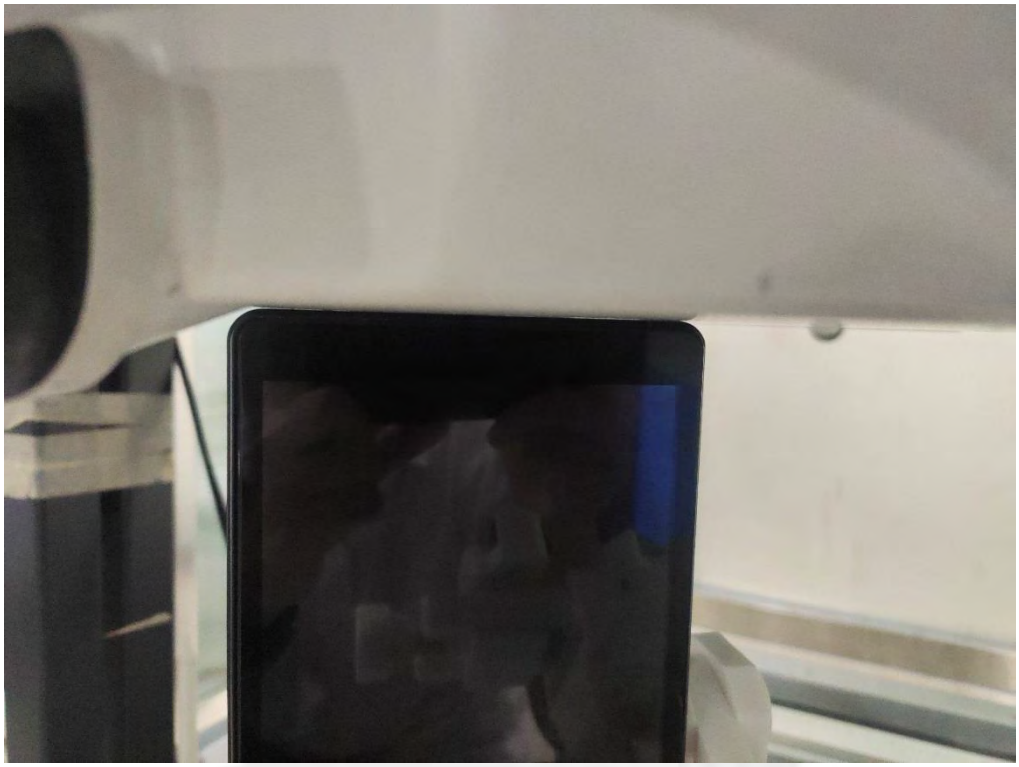


Body Right side(separation distance is 0mm)

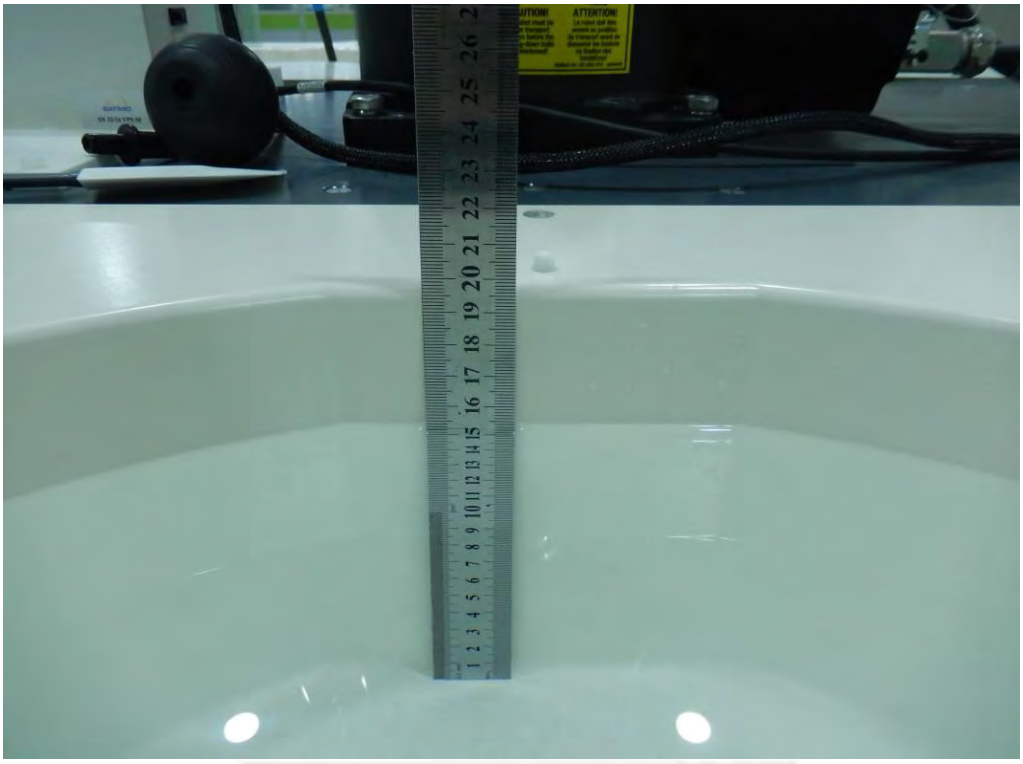


Body Top side(separation distance is 0mm)

Body Bottom side(separation distance is 0mm)



Liquid depth (15 cm)



12. SAR Result Summary

12.1 Body-worn SAR

Band	Model	Test Position	Ch.	Result 1g (W/Kg)	Power Drift(%)	Max.Turn-up Power(dBm)	Meas.Output Power(dBm)	Scaled SAR (W/Kg)	Meas. No.
GSM850	GPRS Data-4 Slot	Back Side	848.8	0.045	2.20	31.50	31.40	**0.046**	1
		Left Edge	848.8	0.013	2.02	31.50	31.40	0.013	/
		Right Edge	848.8	0.010	-2.92	31.50	31.40	0.010	/
		Top Edge	848.8	0.008	3.09	31.50	31.40	0.008	/
		Bottom Edge	848.8	0.023	1.65	31.50	31.40	0.024	/
GSM1900	GPRS Data-4 Slot	Back Side	1850.2	0.721	-0.94	29.00	28.05	0.897	/
		Back Side	1880	0.717	-0.85	29.00	28.14	0.874	/
		Back Side	1909.8	0.921	-2.23	29.00	28.76	**0.973**	2
		Left Edge	1909.8	0.008	-0.51	29.00	28.76	0.008	/
		Right Edge	1909.8	0.179	-0.18	29.00	28.76	0.189	/
		Bottom Edge	1909.8	0.453	-1.15	29.00	28.76	0.479	/
WCDMA Band II	RMC	Back Side	1907.6	0.231	0.06	24.60	24.57	**0.233**	3
		Left Edge	1907.6	0.122	-3.21	24.60	24.57	0.123	/
		Right Edge	1907.6	0.023	2.18	24.60	24.57	0.023	/
		Bottom Edge	1907.6	0.089	-1.22	24.60	24.57	0.090	/
WCDMA Band V	RMC	Back Side	836.6	0.054	-2.97	25.50	25.34	**0.056**	4
		Left Edge	836.6	0.023	3.37	25.50	25.34	0.024	/
		Right Edge	836.6	0.011	-2.07	25.50	25.34	0.011	/
		Bottom Edge	836.6	0.019	-1.96	25.50	25.34	0.020	/

Band	BW (MHz)	Mod.	RB Size	RB offset	Test Position	Ch.	Result 1g (W/Kg)	Power Drift(%)	Max. Turn-up Power(dBm)	Meas. Output Power(dBm)	Scaled SAR (W/Kg)	Meas.No.
LTE Band 2	20M	QPSK	1	0	Back Side	1860	0.197	-3.00	26.00	25.84	0.204	/
			50	0	Back Side	1860	0.187	3.27	25.50	25.12	0.204	/
			1	0	Left Side	1860	0.009	2.40	26.00	25.84	0.009	/
			50	0	Left Side	1860	0.008	3.34	25.50	25.12	0.009	/
			1	0	Right Side	1860	0.084	1.27	26.00	25.84	0.087	/
			50	0	Right Side	1860	0.080	-0.87	25.50	25.12	0.087	/
			1	0	Bottom Side	1860	0.620	3.49	26.00	25.84	**0.643**	5
			50	0	Bottom Side	1860	0.611	0.30	25.50	25.12	0.667	/
LTE Band 4	20M	QPSK	1	0	Back Side	1720	0.932	2.04	25.50	25.27	**0.983**	6
			1	0	Back Side	1732.5	0.724	-3.74	25.50	25.12	0.790	/
			1	0	Back Side	1745	0.733	-1.36	25.50	25.13	0.798	/
			50	0	Back Side	1720	0.754	0.21	24.50	24.47	0.759	/
			1	0	Left Side	1720	0.014	3.01	25.50	25.27	0.015	/
			50	0	Left Side	1720	0.013	0.03	24.50	24.47	0.013	/
			1	0	Right Side	1720	0.262	3.70	25.50	25.27	0.276	/
			50	0	Right Side	1720	0.258	-0.72	24.50	24.47	0.260	/
			1	0	Bottom Side	1720	0.299	3.57	25.50	25.27	0.315	/
			50	0	Bottom Side	1720	0.284	1.89	24.50	24.47	0.286	/
LTE Band 5	10M	QPSK	1	0	Back Side	829	0.081	-1.28	24.00	23.56	**0.090**	7
			25	0	Back Side	829	0.073	2.93	23.00	22.84	0.076	/
			1	0	Left Side	829	0.008	1.99	24.00	23.56	0.009	/
			25	0	Left Side	829	0.007	-2.24	23.00	22.84	0.007	/
			1	0	Right Side	829	0.027	3.52	24.00	23.56	0.030	/
			25	0	Right Side	829	0.024	0.98	23.00	22.84	0.025	/
			1	0	Bottom Side	829	0.037	-2.45	24.00	23.56	0.041	/
			25	0	Bottom Side	829	0.034	-1.73	23.00	22.84	0.035	/

LTE Band 12	10M	QPSK	1	0	Back Side	704	0.061	2.99	23.50	23.32	0.064	/
			25	0	Back Side	704	0.054	1.16	23.00	22.57	0.060	/
			1	0	Left Side	704	0.006	-3.59	23.50	23.32	0.006	/
			25	0	Left Side	704	0.005	-0.69	23.00	22.57	0.006	/
			1	0	Right Side	704	0.010	-1.16	23.50	23.32	0.010	/
			25	0	Right Side	704	0.009	0.53	23.00	22.57	0.010	/
			1	0	Bottom Side	704	0.085	-3.04	23.50	23.32	**0.089**	8
			25	0	Bottom Side	704	0.082	0.60	23.00	22.57	0.091	/
LTE Band 17	10M	QPSK	1	0	Back Side	709	0.096	-3.59	23.50	23.26	0.101	/
			25	0	Back Side	709	0.091	-0.43	23.00	22.60	0.100	/
			1	0	Left Side	709	0.022	-0.31	23.50	23.26	0.023	/
			25	0	Left Side	709	0.018	-0.21	23.00	22.60	0.020	/
			1	0	Right Side	709	0.011	-2.09	23.50	23.26	0.012	/
			25	0	Right Side	709	0.010	1.22	23.00	22.60	0.011	/
			1	0	Bottom Side	709	0.120	-3.01	23.50	23.26	**0.127**	9
			25	0	Bottom Side	709	0.113	0.69	23.00	22.60	0.124	/

Band	Model	Test Position	Ch.	Result 1g (W/Kg)	Power Drift(%)	Max.Turn-up Power(dBm)	Meas.Output Power(dBm)	Scaled SAR (W/Kg)	Meas. No.
2.4GHz WLAN	802.11b	Back Side	2412	0.445	-0.30	11.00	10.78	0.468	10
		Top Edge	2412	0.156	2.50	11.00	10.78	0.164	/
5.8GHz WLAN	802.11ac-VHT80	Back Side	5775	0.425	0.26	13.50	13.29	0.446	/
		Top Edge	5775	0.564	0.50	13.50	13.29	0.592	11

Note:

1. The test separation of all above table is 0mm.
2. The Bluetooth and WLAN can't simultaneous transmission at the same time.
3. Per KDB 447498 D01, the reported SAR is the measured SAR value adjusted for maximum tune-up tolerance.
   a. Tune-up scaling Factor = tune-up limit power (mW) / EUT RF power (mW), where tune-up limit is the maximum rated power among all production units.
   b. For WWAN: Scaled SAR(W/kg)= Measured SAR(W/kg)*Tune-up Scaling Factor
4. Per KDB 248227- 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. (The highest reported SAR for DSSS is adjusted by the ratio of OFDM to DSSS specified maximum output power was **0.410** W/kg for Body)
5. When the user enables the personal Wireless router functions for the handsets, actual operations include simultaneous transmission of both the Wi-Fi transmitting frequency and thus cannot be evaluated for SAR under actual use conditions. The "Portable Hotspot" feature on the handset was NOT activated, to ensure the SAR measurements were evaluated for a single transmission frequency RF signal.

Repeated SAR

Band	Mode	Test Position	Ch.	Result 1g (W/Kg)	Power Drift(%)	Max.Turn-up Power(dBm)	Meas.Output Power(dBm)	Scaled SAR (W/Kg)	Meas. No.
GSM 1900	GPRS Data-4 Slot	Back Side	1850.2	0.693	-1.92	29	28.05	0.862	-
		Back Side	1880	0.690	0.46	29	28.14	0.841	-
		Back Side	1909.8	0.914	1.09	29	28.76	0.966	-
LTE Band 4	QPSK	Back Side	1720	0.932	1.04	25.5	25.27	0.983	-

12.2 repeated SAR measurement

Band	Mode	Test Position	Ch.	Original Measured SAR 1g(mW/g)	1 st Repeated SAR 1g	Ratio	Original Measured SAR 1g(mW/g)	2nd Repeated SAR 1g	Ratio
GSM 1900	GPRS Data-4 Slot	Back Side	1850.2	0.721	0.693	1.040	-	-	-
		Back Side	1880	0.717	0.690	1.039	-	-	-
		Back Side	1909.8	0.921	0.914	1.008	-	-	-
LTE Band 4	QPSK	Back Side	1720	0.932	0.932	1.000	-	-	-

Note:

1. Per KDB 865664 D01,for each frequency band ,repeated SAR measurement is required only when the measured SAR is≥0.8W/Kg.
2. Per KDB 865664 D01,if the ratio of largest to smallest SAR for the original and first repeated measurement is≤1.2 and the measured SAR＜1.45W/Kg, only one repeated measurement is required.
3. Perform a second repeated measurement only if the ratio of largest to smallest SAR for the original and first repeated measurements is＞1.20 or when the original or repeated measurement is ≥ 1.45W/Kg
4. The ratio is the difference in percentage between original and repeated measured SAR.

Simultaneous Multi-band Transmission Evaluation:

Application Simultaneous Transmission information:

Position	Simultaneous State
Body	1. GSM + 2.4GHz WLAN/5G WLAN
	2. GSM + Bluetooth
	3. WCDMA + 2.4GHz WLAN/5G WLAN
	4. WCDMA + Bluetooth
	5. LTE + 2.4GHz WLAN/5G WLAN
	6. LTE + Bluetooth

NOTE:

1. Bluetooth and WLAN can't simultaneous transmission at the same time.
2. For simultaneous transmission at head and body exposure position, 2 transmitters simultaneous transmission was the worst state.
3. Based upon KDB 447498 D01, BT SAR is excluded as below table.
4. If the test separation distance is <5mm, 5mm is used for excluded SAR calculation.
5. For minimum test separation distance≦50mm,Bluetooth standalone SAR is excluded according to [(max. power of channel, including tune-up tolerance, mW)/ (min. test separation distance, mm)·[√f (GHz) /x] ≦3.0 for 1-g SAR and ≦7.5 for 10-g extremity SAR
6. The reported SAR summation is calculated based on the same configuration and test position.
7. KDB 447498 / 4.3.2 (2) when standalone SAR test exclusion applies to an antenna that transmits simultaneously with other antennas, the standalone SAR must be estimated according to following to determine simultaneous transmission SAR test exclusion:
   a) (max. power of channel, including tune-up tolerance, mW)/(min. test separation distance, mm)]·[√f (GHz) /x] W/kg for test separation distances≤ 50 mm;
   Where x = 7.5 for 1-g SAR, and x = 18.75 for 10-g SAR.
   b) 0.4W/Kg for 1-g SAR and 1.0W/Kg for 10-g SAR, when the separation distance is >50mm.

Estimated SAR		Maximum Turn-up Power		Antenna to user(mm)	Frequency(GHz)	Stand Alone SAR(1g) [W/kg]
		dBm	mW			
BT	Body	5	3.162	≤5	2.441	0.132
5.2G WLAN	Body	8	6.310	≤5	5.21	0.384

Simultaneous Mode	Position	Mode	Max. 1-g SAR (W/kg)	1-g Sum SAR (W/kg)
GSM + 2.4G WLAN	Body	GSM	0.973	1.441
		2.4G WLAN	0.468	
GSM + Bluetooth	Body	GSM	0.973	1.105
		Bluetooth	0.132	
GSM + 5.2G WLAN	Body	GSM	0.973	1.357
		5.2G WLAN	0.384	
GSM + 5.8G WLAN	Body	GSM	0.973	1.565
		5.8G WLAN	0.592	
WCDMA + 2.4G WLAN	Body	WCDMA	0.233	0.701
		2.4G WLAN	0.468	
WCDMA + Bluetooth	Body	WCDMA	0.233	0.365
		Bluetooth	0.132	
WCDMA + 5.2G WLAN	Body	WCDMA	0.233	0.617
		5.2G WLAN	0.384	
WCDMA + 5.8G WLAN	Body	WCDMA	0.233	0.825
		5.8G WLAN	0.592	
LTE + 2.4G WLAN	Body	LTE	0.983	1.451
		2.4G WLAN	0.468	
LTE + Bluetooth	Body	LTE	0.983	1.115
		Bluetooth	0.132	
LTE + 5.2G WLAN	Body	LTE	0.983	1.367
		5.2G WLAN	0.384	
LTE + 5.8G WLAN	Body	LTE	0.983	1.575
		5.8G WLAN	0.592	

Simultaneous transmission SAR test exclusion is determined for each operating configuration and exposure condition according to the reported standalone SAR of each applicable simultaneous transmitting antenna.

When the sum of SAR 1g of all simultaneously transmitting antennas in an operating mode and exposure condition combination is within the SAR limit (SAR-1g 1.6 W/kg), the simultaneous transmission SAR is not required. When the sum of SAR 1g is greater than the SAR limit (SAR-1g 1.6 W/kg), SAR test exclusion is determined by the SPLSR.

13. Equipment List

Kind of Equipment	Manufacturer	Type No.	Serial No.	Last Calibration	Calibrated Until
750MHz Dipole	MVG	SID750	SN 30/14 DIP0G750-331	2020.07.14	2023.07.13
835MHz Dipole	MVG	SID835	SN 30/14 DIP0G835-332	2020.07.14	2023.07.13
1800MHz Dipole	MVG	SID1800	SN 30/14 DIP1G800-329	2020.07.14	2023.07.13
1900MHz Dipole	MVG	SID1900	SN 30/14 DIP1G900-333	2020.07.14	2023.07.13
2450MHzDipole	MVG	SID2450	SN 30/14 DIP2G450-335	2020.07.14	2023.07.13
Waveguide	SATIMO	SWG5500	SN 13/14 WGA32	2020.07.14	2023.07.13
E-Field Probe	MVG	SSE2	SN 07/21 EPGO352	2021.03.01	2022.02.28
Dielectric Probe Kit	MVG	SCLMP	SN 32/14 OCPG67	2020.11.24	2021.11.23
Antenna	MVG	ANTA3	SN 07/13 ZNTA52	N/A	N/A
Phantom1	MVG	SAM	SN 32/14 SAM115	N/A	N/A
Phantom2	MVG	SAM	SN 32/14 SAM116	N/A	N/A
Phone holder	MVG	N/A	SN 32/14 MSH97	N/A	N/A
Laptop holder	MVG	N/A	SN 32/14 LSH29	N/A	N/A
Attenuator	Agilent	99899	DC-18GHz	N/A	N/A
Directional coupler	Narda	4226-20	3305	N/A	N/A
Network Analyzer	Agilent	8753ES	US38432810	2020.10.12	2021.10.11
Multi Meter	Keithley	Multi Meter 2000	4050073	2020.10.10	2021.10.09
Signal Generator	Agilent	N5182A	MY50140530	2020.10.10	2021.10.09
Wireless Communication Test Set	Agilent	8960-E5515C	MY48360751	2020.10.10	2021.10.09
Wireless Communication Test Set	R&S	CMW500	117239	2020.10.10	2021.10.09
Power Amplifier	DESAY	ZHL-42W	9638	2020.10.12	2021.10.11
Power Meter	R&S	NRP	100510	2020.10.10	2021.10.09
Power Meter	Agilent	E4418B	GB43312526	2020.10.10	2021.10.09
Power Sensor	R&S	NRP-Z11	101919	2020.10.10	2021.10.09
Power Sensor	Agilent	E9301A	MY41497725	2020.10.10	2021.10.09
Temperature hygrometer	SuWei	SW-108	N/A	2020.10.12	2021.10.11
Thermograph	Elitech	RC-4	S/N EF7176501537	2020.10.12	2021.10.11

Note:
Per KDB 865664 D01, Dipole SAR Validation Verification, STS LAB has adopted 3 years calibration intervals. On annual basis, every measurement dipole has been evaluated and is in compliance with the following criteria:
1. There is no physical damage on the dipole
2. System validation with specific dipole is within 10% of calibrated value
Return-loss in within 20% of calibrated measurement

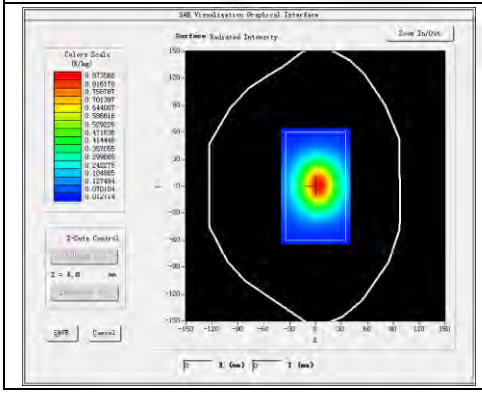
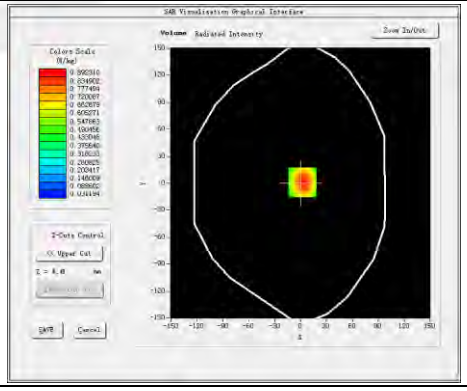
Appendix A. System Validation Plots

System Performance Check Data (750MHz)

Type: Phone measurement (Complete)
Area scan resolution: dx=8mm, dy=8mm
Zoom scan resolution: dx=8mm, dy=8mm, dz=5mm
Date of measurement: 2021-06-11

Experimental conditions

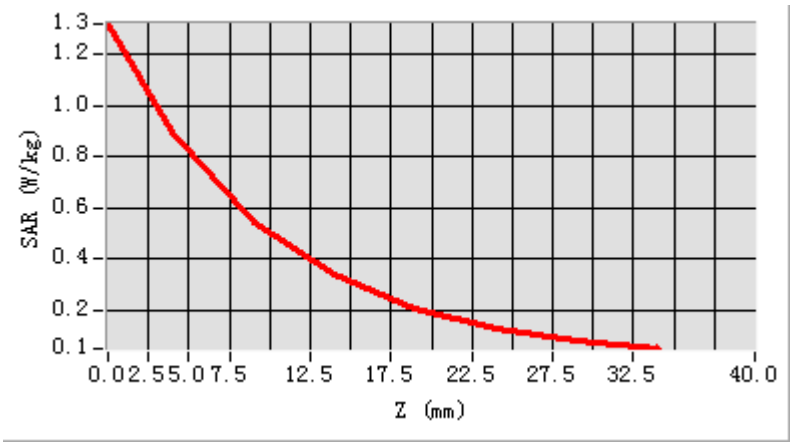
Phantom	Validation plane
Device Position	-
Band	750MHz
Channels	-
Signal	CW
Frequency (MHz)	750MHz
Relative permittivity	40.56
Conductivity (S/m)	0.89
Probe	SN 07/21 EPGO352
ConvF	1.58
Crest factor	1:1

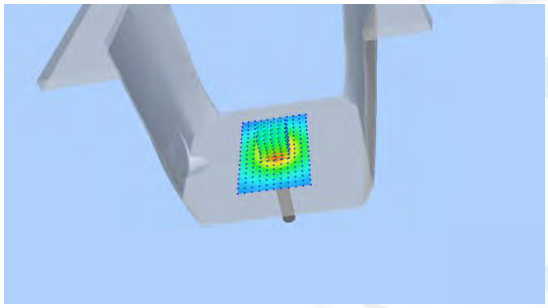
SURFACE SAR	VOLUME SAR
	

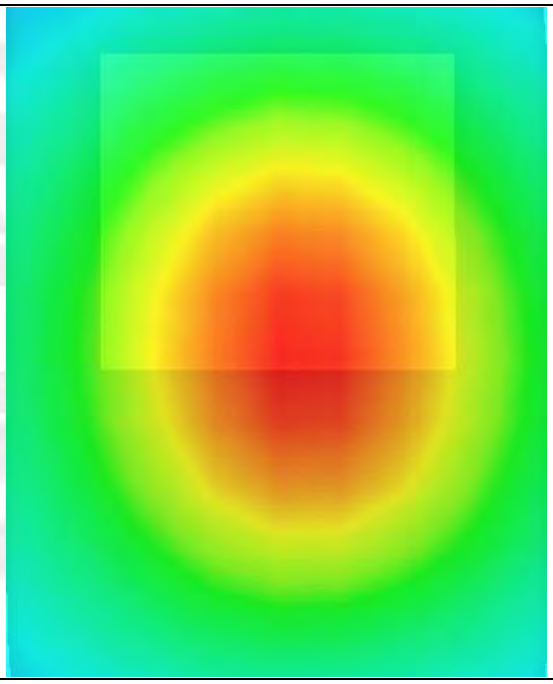
Maximum location: X=2.00, Y=1.00

SAR 10g (W/Kg)	0.546528
SAR 1g (W/Kg)	0.843893

Z Axis Scan


1.3
1.2
1.0
0.8
0.6
0.4
0.2
0.1
SAR (W/kg)
0.0 2.5 5.0 7.5 12.5 17.5 22.5 27.5 32.5 40.0
Z (mm)





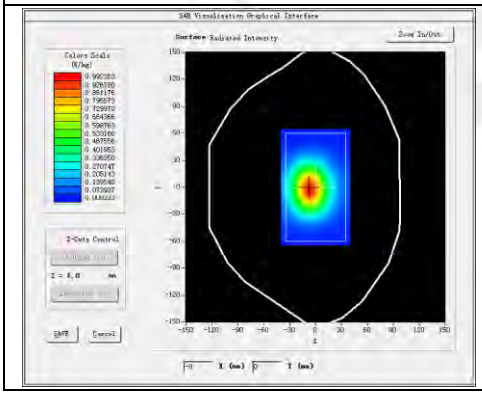
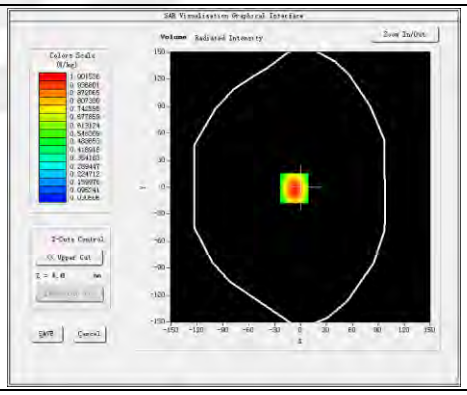
System Performance Check Data (835MHz)

Type: Phone measurement (Complete)

Area scan resolution: dx=8mm, dy=8mm
Zoom scan resolution: dx=8mm, dy=8mm, dz=5mm
Date of measurement: 2021-06-15

Experimental conditions

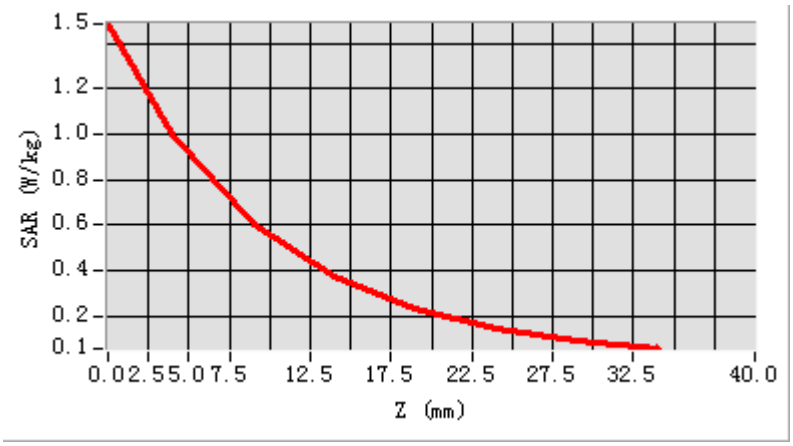
Phantom	Validation plane
Device Position	-
Band	835MHz
Channels	-
Signal	CW
Frequency (MHz)	835MHz
Relative permittivity	40.80
Conductivity (S/m)	0.89
Probe	SN 07/21 EPGO352
ConvF:	1.57
Crest factor:	1:1

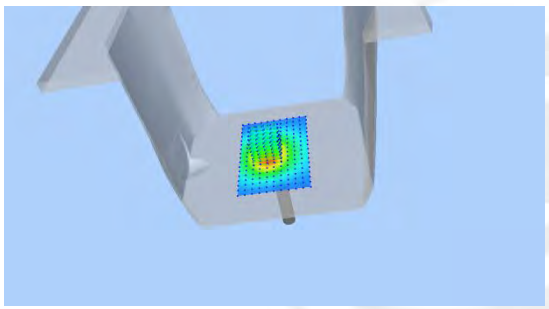
SURFACE SAR	VOLUME SAR
	

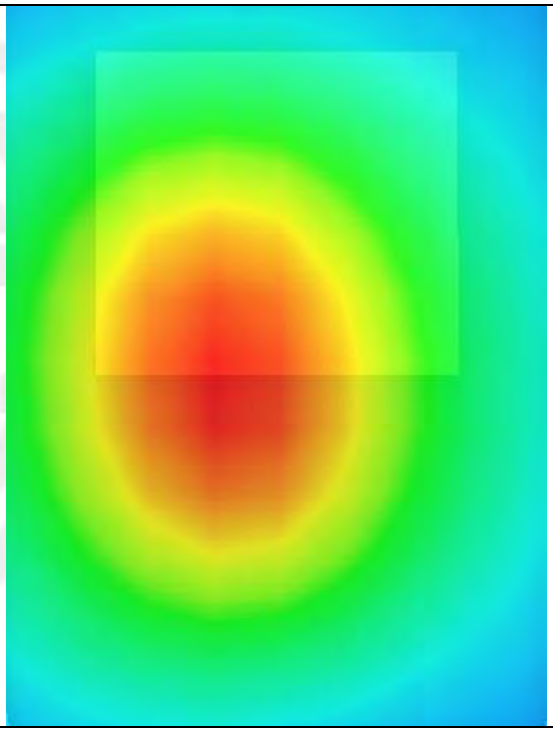
Maximum location: X=-7.00, Y=-1.00

SAR 10g (W/Kg)	0.668145
SAR 1g (W/Kg)	0.987132

Z Axis Scan


1.5
1.2
1.0
0.8
0.6
0.4
0.2
0.1
SAR (W/kg)
0.0 2.5 5.0 7.5 12.5 17.5 22.5 27.5 32.5 40.0
Z (mm)



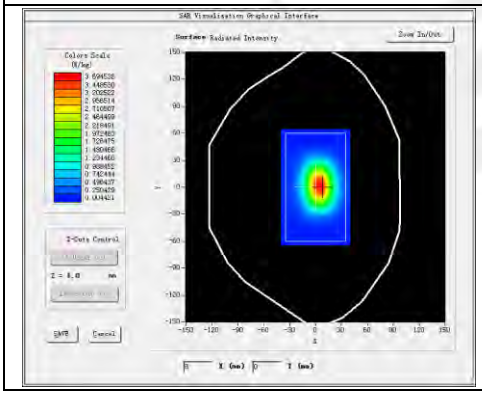
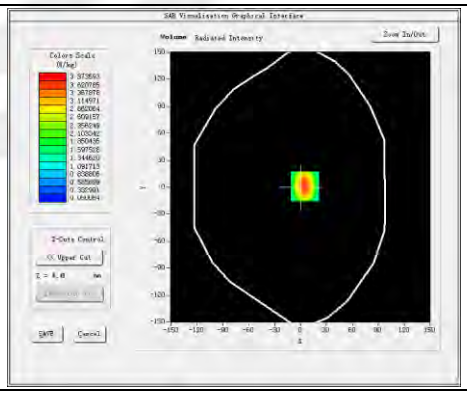


System Performance Check Data(1800MHz)

Type: Phone measurement (Complete)
Area scan resolution: dx=8mm, dy=8mm
Zoom scan resolution: dx=8mm, dy=8mm, dz=5mm
Date of measurement: 2021-06-17

Experimental conditions.

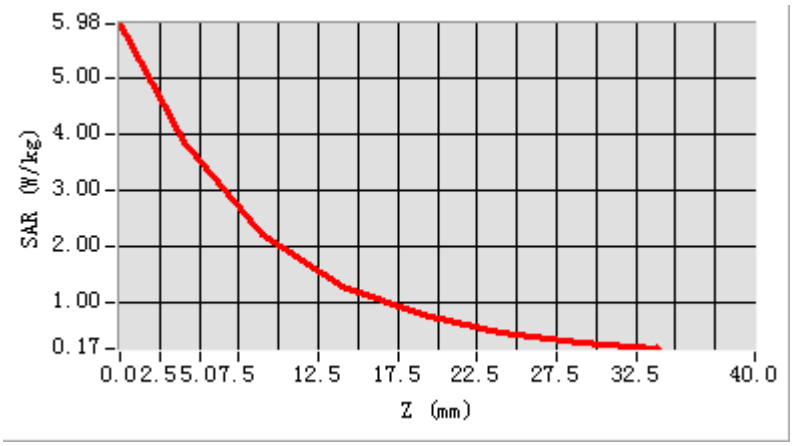
Phantom	Validation plane
Device Position	-
Band	1800MHz
Channels	-
Signal	CW
Frequency (MHz)	1800MHz
Relative permittivity	40.85
Conductivity (S/m)	1.43
Probe	SN 07/21 EPGO352
ConvF	1.60
Crest factor:	1:1

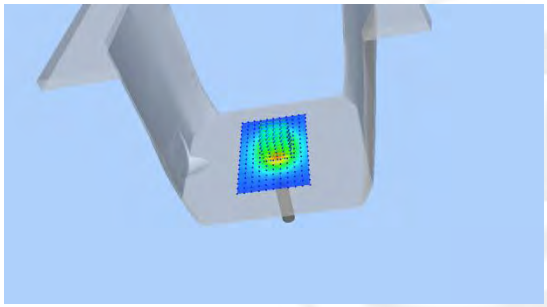
SURFACE SAR	VOLUME SAR
	

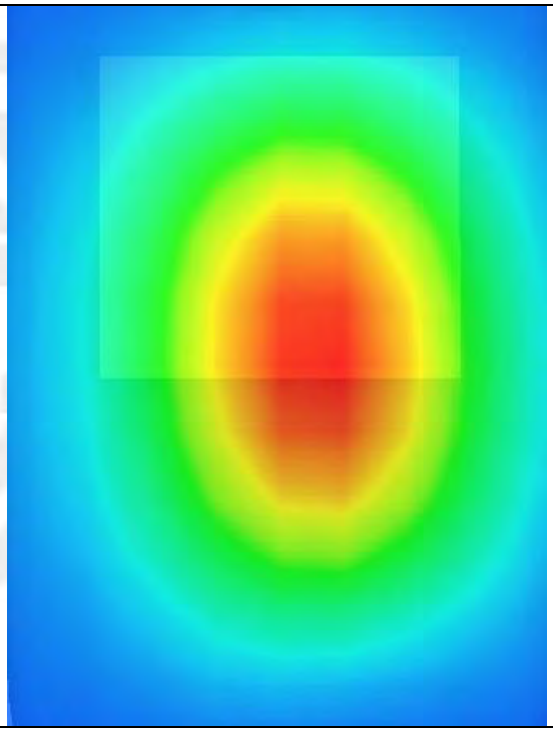
Maximum location: X=5.00, Y=1.00

SAR 10g (W/Kg)	2.025874
SAR 1g (W/Kg)	4.006020

Z Axis Scan


5.98
5.00
4.00
3.00
2.00
1.00
0.17
SAR (W/kg)
0.0 2.5 5.0 7.5 12.5 17.5 22.5 27.5 32.5 40.0
Z (mm)



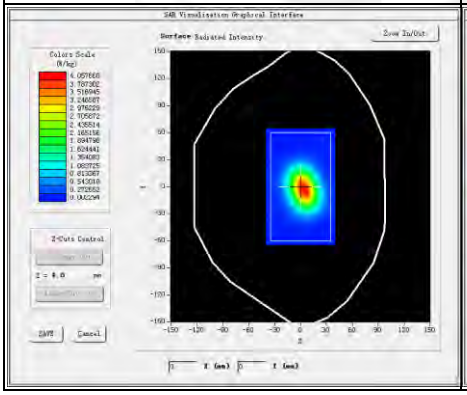
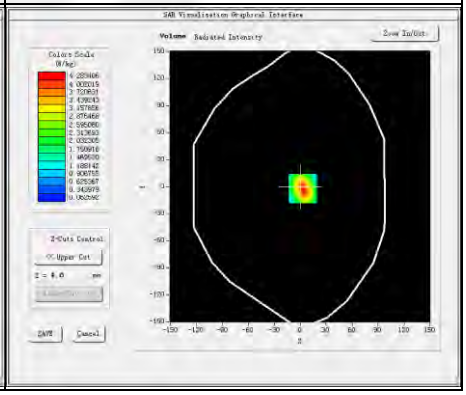


System Performance Check Data (1900MHz)

Type: Phone measurement (Complete)
Area scan resolution: dx=8mm, dy=8mm
Zoom scan resolution: dx=8mm, dy=8mm, dz=5mm
Date of measurement: 2021-06-18

Experimental conditions.

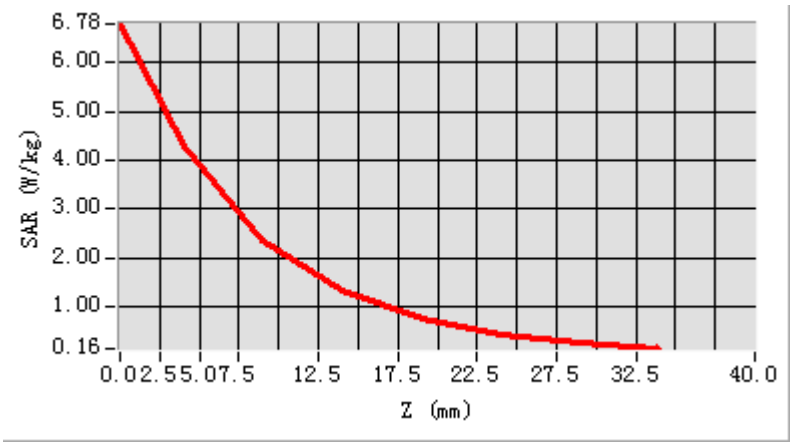
Phantom	Validation plane
Device Position	-
Band	1900MHz
Channels	-
Signal	CW
Frequency (MHz)	1900MHz
Relative permittivity	39.38
Conductivity (S/m)	1.36
Probe	SN 07/21 EPGO352
ConvF:	1.78
Crest factor:	1:1

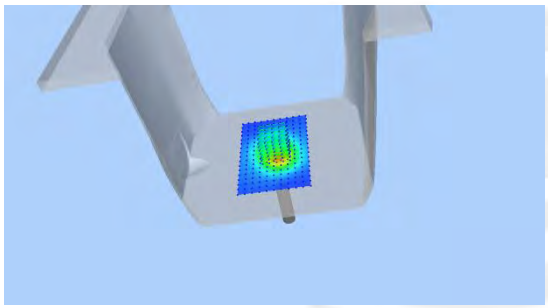
SURFACE SAR	VOLUME SAR
	

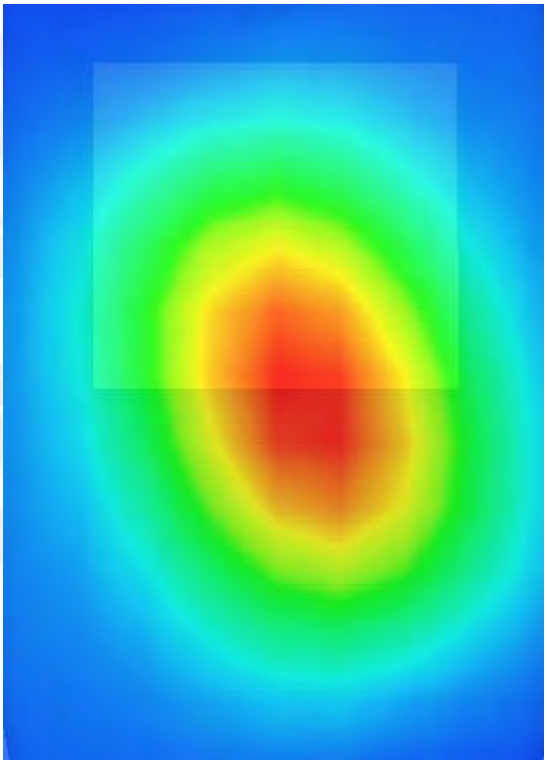
Maximum location: X=3.00, Y=-2.00

SAR 10g (W/Kg)	2.045835
SAR 1g (W/Kg)	4.122367

Z Axis Scan


6.78
6.00
5.00
4.00
3.00
2.00
1.00
0.16
SAR (W/kg)
0.0 2.5 5.0 7.5 12.5 17.5 22.5 27.5 32.5 40.0
Z (mm)



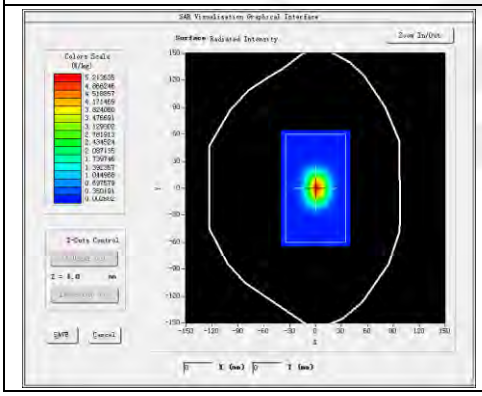
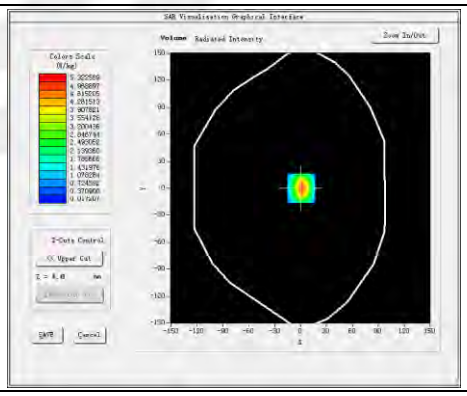


System Performance Check Data (2450MHz)

Type: Phone measurement (Complete)
Area scan resolution: dx=8mm, dy=8mm
Zoom scan resolution: dx=8mm, dy=8mm, dz=5mm
Date of measurement: 2021-06-21

Experimental conditions.

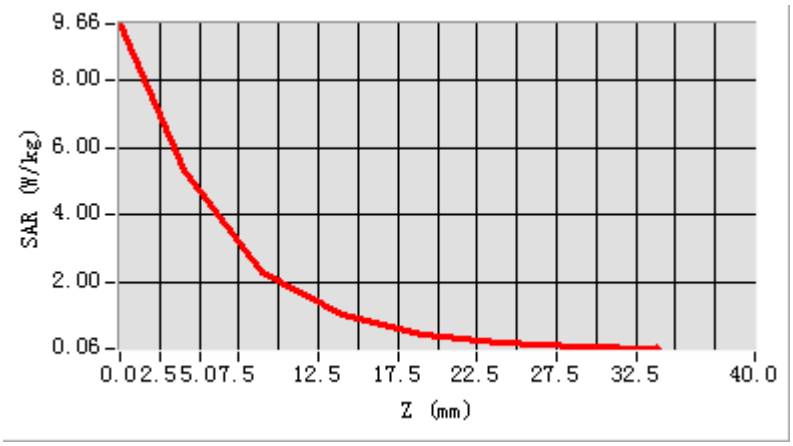
Device Position	Validation plane
Band	2450 MHz
Channels	-
Signal	CW
Frequency (MHz)	2450
Relative permittivity	40.37
Conductivity (S/m)	1.81
Probe	SN 07/21 EPGO352
ConvF	1.75
Crest factor	1:1

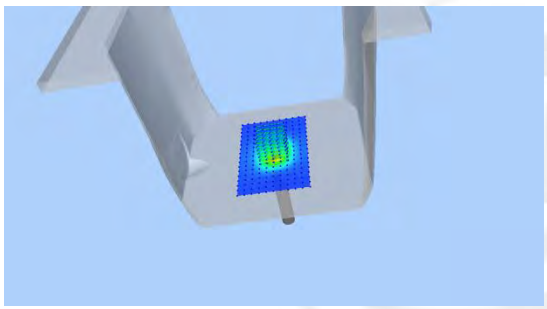
SURFACE SAR	VOLUME SAR
	

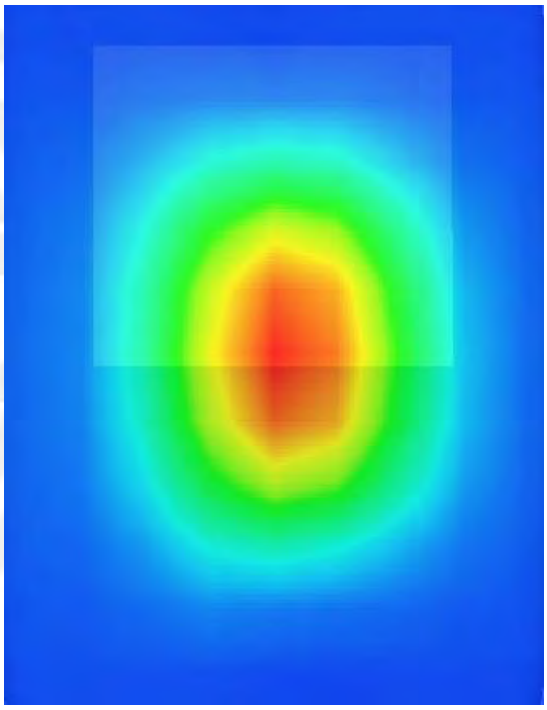
Maximum location: X=1.00, Y=0.00

SAR 10g (W/Kg)	2.328546
SAR 1g (W/Kg)	5.132702

Z Axis Scan


9.66
8.00
6.00
4.00
2.00
0.06
SAR (W/kg)
0.0 2.5 5.0 7.5 12.5 17.5 22.5 27.5 32.5 40.0
Z (mm)



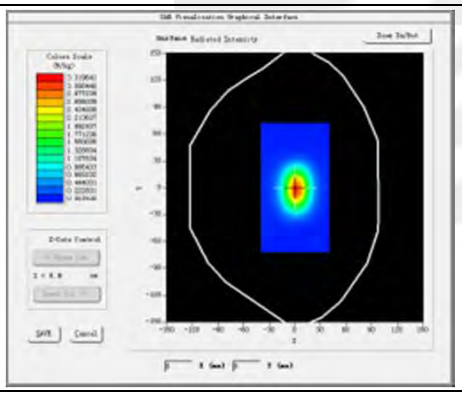
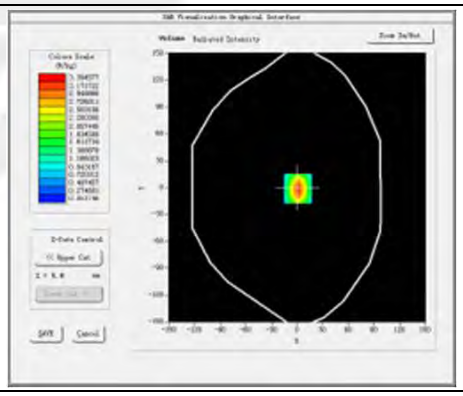


System Performance Check Data(5200MHz)

Type: Dipole measurement (Complete)
Area scan resolution: dx=8mm,dy=8mm
Zoom scan resolution: dx=4mm, dy=4mm, dz=2mm
Date of measurement: 2021-06-22

Experimental conditions.

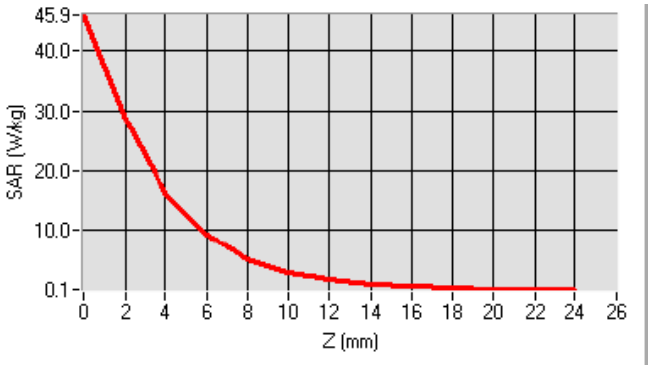
Device Position	Validation plane
Band	5200 MHz
Channels	-
Signal	CW
Frequency (MHz)	5200
Relative permittivity	35.75
Conductivity (S/m)	4.65
Probe	SN 07/21 EPGO352
ConvF	1.47
Crest factor:	1:1

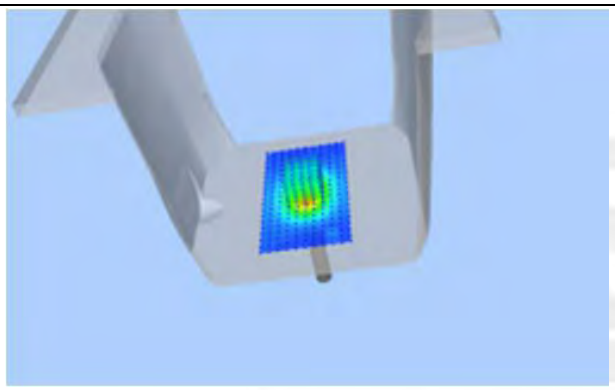
SURFACE SAR	VOLUME SAR
	

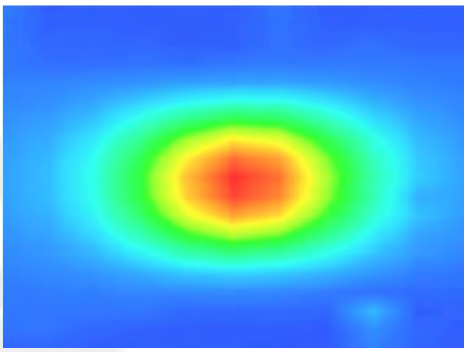
Maximum location: X=7.00, Y=2.00

SAR 10g (W/Kg)	5.575687
SAR 1g (W/Kg)	16.010396

Z Axis Scan





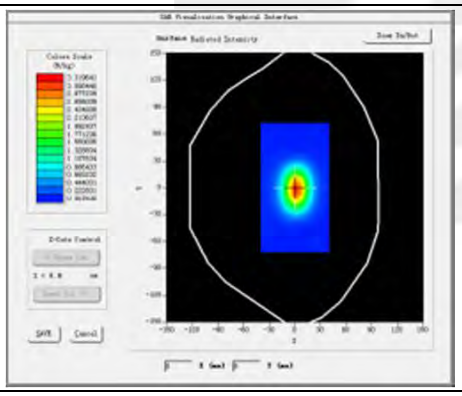
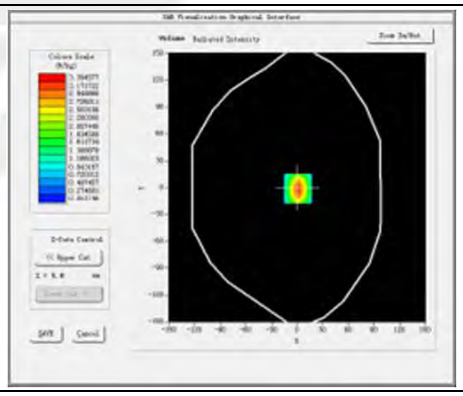


System Performance Check Data(5800MHz)

Type: Dipole measurement (Complete)
Area scan resolution: dx=8mm,dy=8mm
Zoom scan resolution: dx=4mm, dy=4mm, dz=2mm
Date of measurement: 2021-06-23

Experimental conditions.

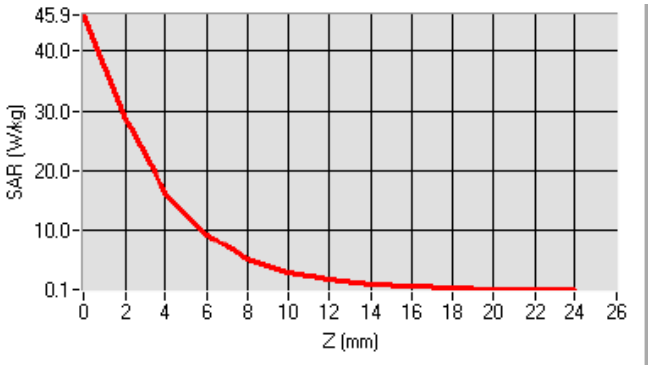
Device Position	Validation plane
Band	5800 MHz
Channels	-
Signal	CW
Frequency (MHz)	5800
Relative permittivity	35.48
Conductivity (S/m)	5.22
Probe	SN 07/21 EPGO352
ConvF	1.64
Crest factor:	1:1

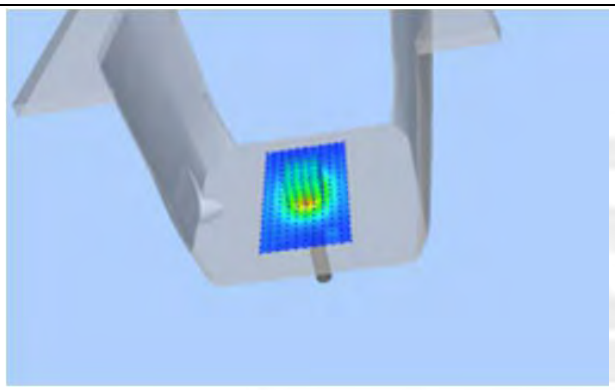
SURFACE SAR	VOLUME SAR
	

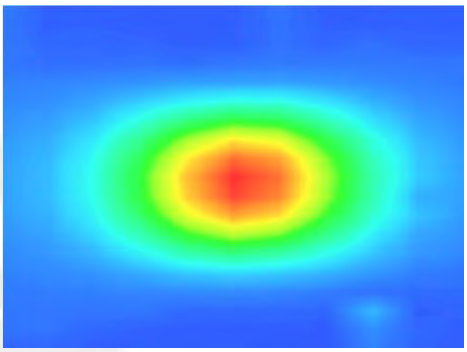
Maximum location: X=7.00, Y=2.00

SAR 10g (W/Kg)	6.175321
SAR 1g (W/Kg)	18.156214

Z Axis Scan







Appendix B. SAR Test Plots

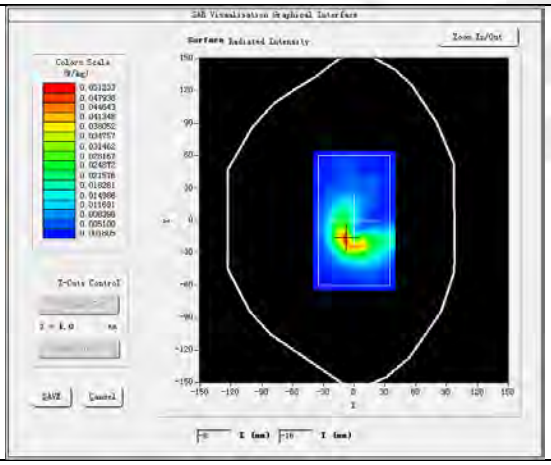
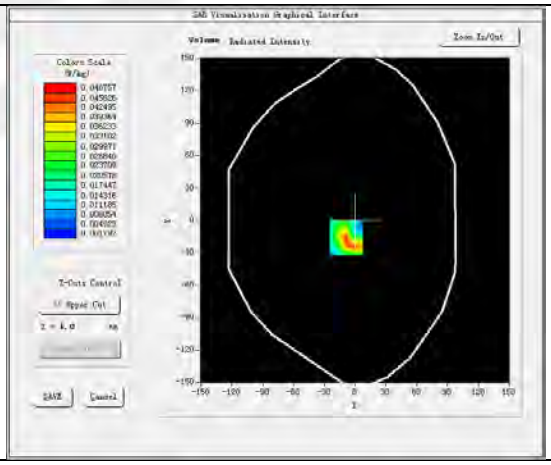
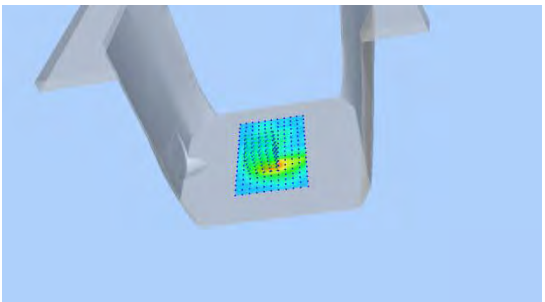
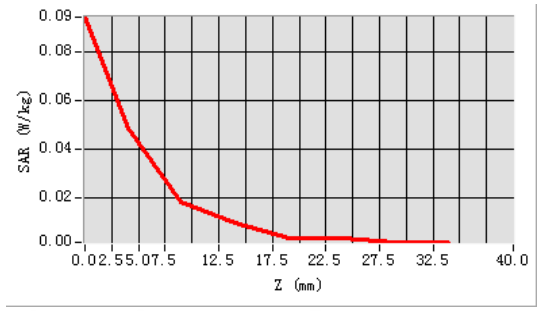
Plot 1: DUT: Tablet PC; EUT Model: Octopus_One

Test Date	2021-06-15
Probe	SN 07/21 EPGO352
Area Scan	dx=8mm, dy=8mm, h= 5.00 mm
Zoom Scan	5x5x7, dx=8mm, dy=8mm, dz=5mm, Complete/ndx=8mm, dy=8mm, h= 5.00 mm
Phantom	Validation plane
Device Position	Back Side
Band	GPRS 850
Channels	High
Signal	Duty Cycle: 0.50 (Crest factor: 0.5)
Frequency (MHz)	848.8
Relative permittivity (real part)	42.40
Conductivity (S/m)	0.89

Maximum location: X=-9.00, Y=-16.00

SAR Peak: 0.10 W/kg

SAR 10g (W/Kg)	0.019966
SAR 1g (W/Kg)	0.045326

SURFACE SAR	VOLUME SAR
	
3D screen shot	**Z Axis Scan**
	

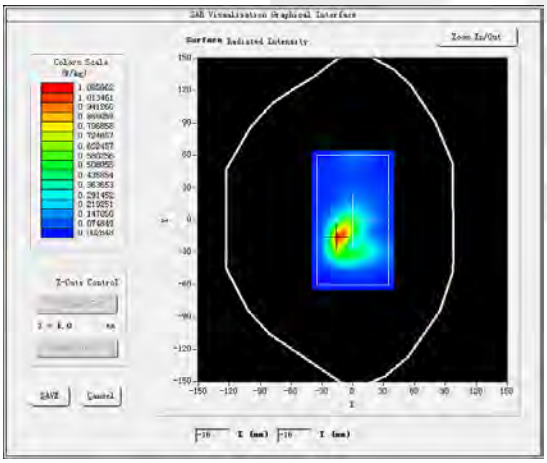
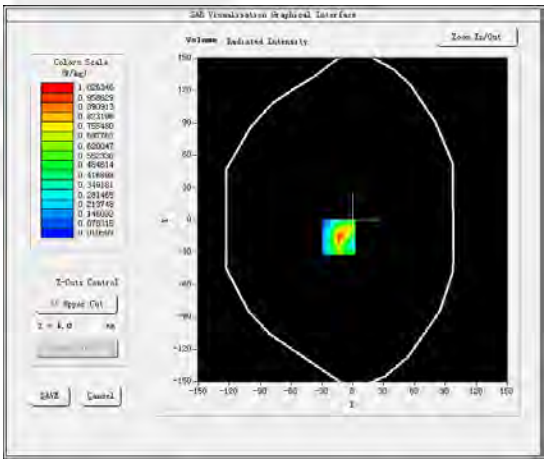
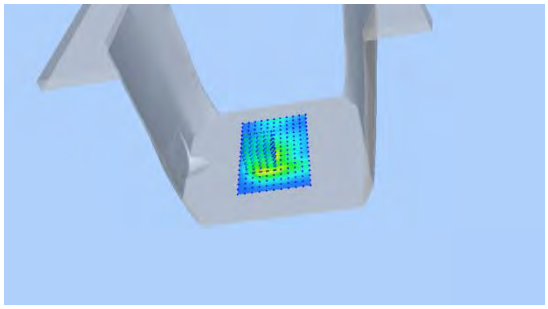
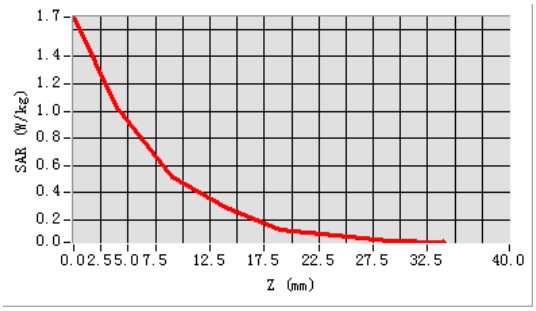
Plot 2: DUT: Tablet PC; EUT Model: Octopus_One

Test Date	2021-06-18
Probe	SN 07/21 EPGO352
Area Scan	dx=8mm, dy=8mm, h= 5.00 mm
Zoom Scan	5x5x7, dx=8mm, dy=8mm, dz=5mm, Complete/ndx=8mm, dy=8mm, h= 5.00 mm
Phantom	Validation plane
Device Position	Back side
Band	GPRS 1900
Channels	High
Signal	Duty Cycle: 0.50 (Crest factor: 0.5)
Frequency (MHz)	1909.8
Relative permittivity (real part)	40.05
Conductivity (S/m)	1.37

Maximum location: X=-14.00, Y=-16.00

SAR Peak: 1.73 W/kg

SAR 10g (W/Kg)	0.413605
SAR 1g (W/Kg)	0.921482

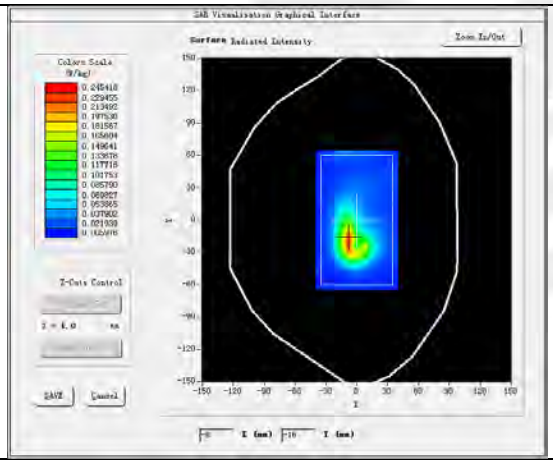
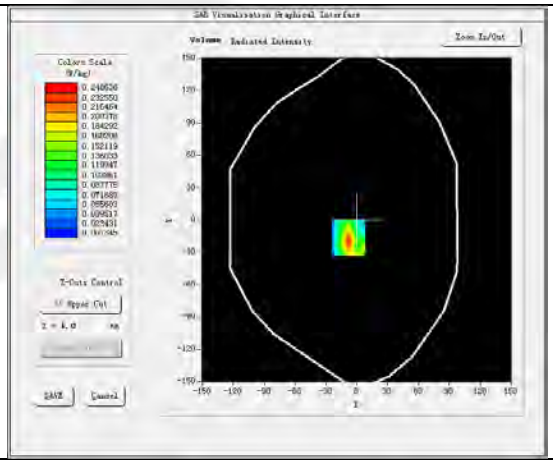
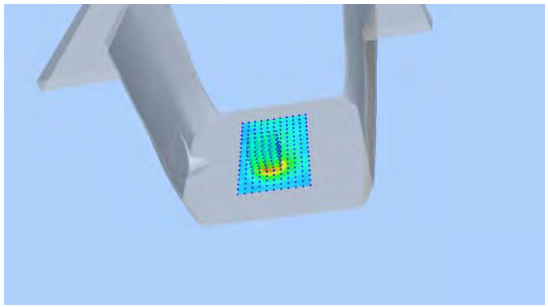
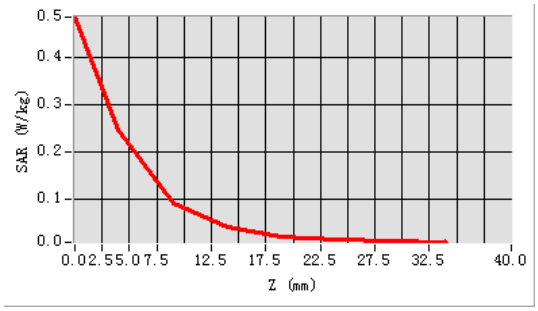
SURFACE SAR	VOLUME SAR
	
3D screen shot	**Z Axis Scan**
	

Plot 3: DUT: Tablet PC; EUT Model: Octopus_One

Test Date	2021-06-18
Probe	SN 07/21 EPGO352
Area Scan	dx=8mm, dy=8mm, h= 5.00 mm
Zoom Scan	5x5x7,dx=8mm, dy=8mm, dz=5mm, Complete/ndx=8mm, dy=8mm, h= 5.00 mm
Phantom	Validation plane
Device Position	Back Side
Band	WCDMA II
Channels	9538
Signal	WCDMA (Crest factor: 1.0)
Frequency (MHz)	1907.6
Relative permittivity (real part)	39.57
Conductivity (S/m)	1.43

Maximum location: X=-8.00 Y=-17.00
SAR Peak: 0.49 W/kg

SAR 10g (W/Kg)	0.100413
SAR 1g (W/Kg)	0.231154

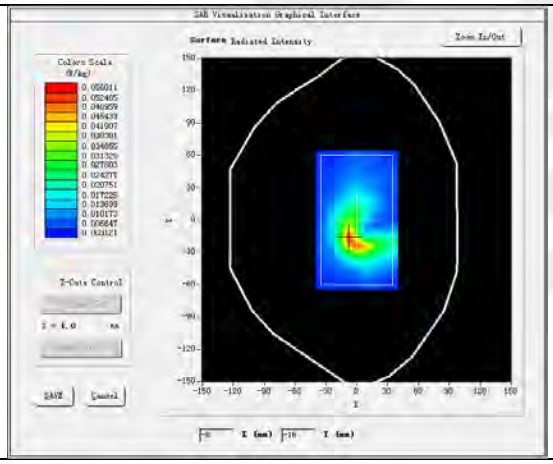
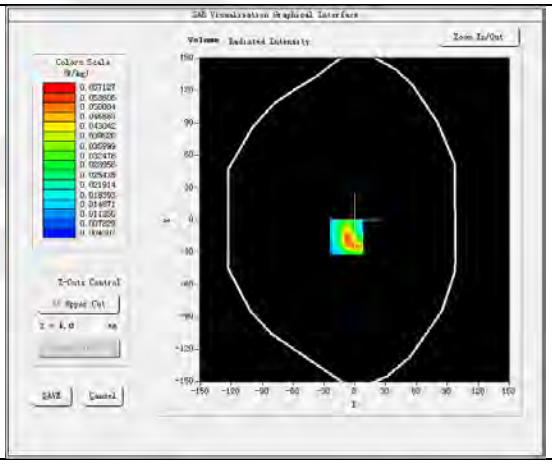
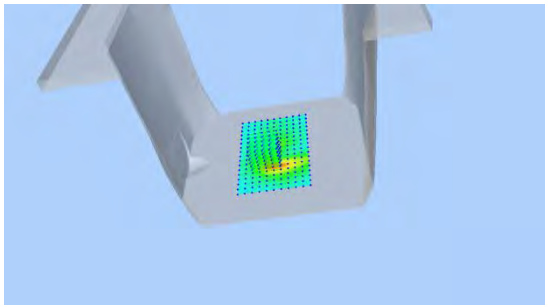
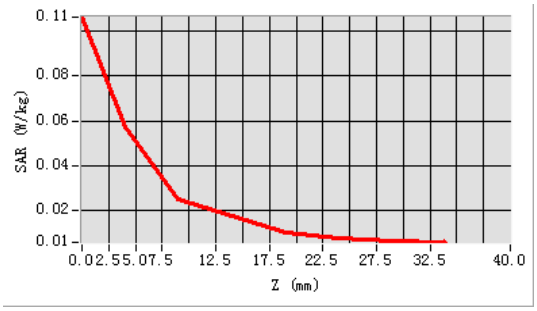
SURFACE SAR	VOLUME SAR
	
3D	**Z Axis Scan**
	

Plot 4: DUT: Tablet PC; EUT Model: Octopus_One

Test Date	2021-06-15
Probe	SN 07/21 EPGO352
Area Scan	dx=8mm, dy=8mm, h= 5.00 mm
Zoom Scan	5x5x7,dx=8mm, dy=8mm, dz=5mm, Complete/ndx=8mm, dy=8mm, h= 5.00 mm
Phantom	Validation plane
Device Position	Back Side
Band	WCDMA V
Channels	4183
Signal	WCDMA (Crest factor: 1.0)
Frequency (MHz)	836.6
Relative permittivity (real part)	43.39
Conductivity (S/m)	0.92

Maximum location: X=-8.00 Y=-16.00
SAR Peak: 0.11 W/kg

SAR 10g (W/Kg)	0.025443
SAR 1g (W/Kg)	0.054130

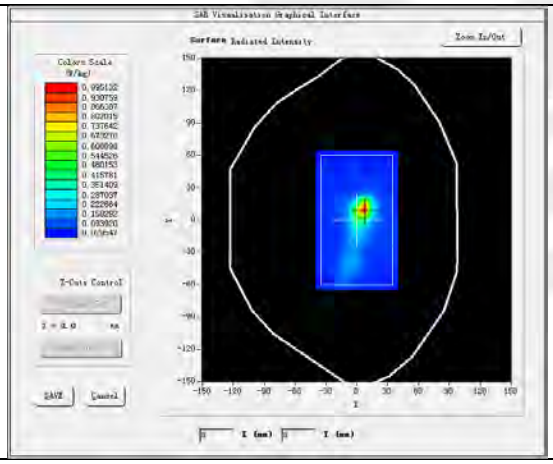
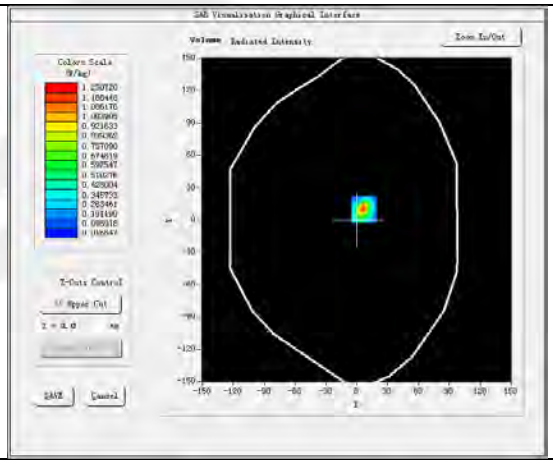
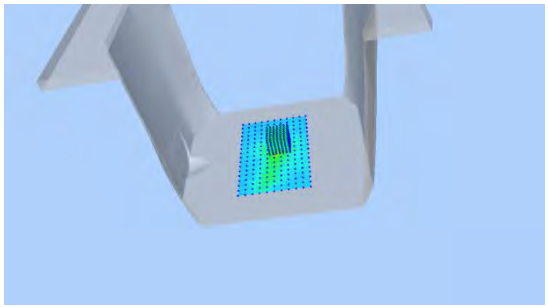
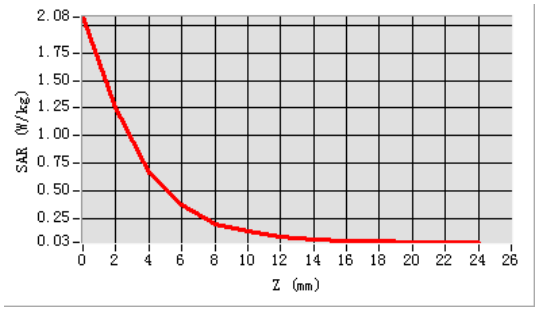
SURFACE SAR	VOLUME SAR
	
3D	**Z Axis Scan**
	

Plot 5: DUT: Tablet PC; EUT Model: Octopus_One

Test Date	2021-06-18
Probe	SN 07/21 EPGO352
Area Scan	dx=8mm, dy=8mm, h= 5.00 mm
Zoom Scan	5x5x7,dx=8mm, dy=8mm, dz=5mm, Complete/ndx=8mm, dy=8mm, h= 5.00 mm
Phantom	Validation plane
Device Position	Bottom Side
Band	LTE Band 2
Channels	18700
Signal	LTE (Crest factor: 1.0)
Frequency (MHz)	1860
Relative permittivity (real part)	39.23
Conductivity (S/m)	1.79

Maximum location: X=7.00 Y=10.00
SAR Peak: 2.25 W/kg

SAR 10g (W/Kg)	0.187127
SAR 1g (W/Kg)	0.620115

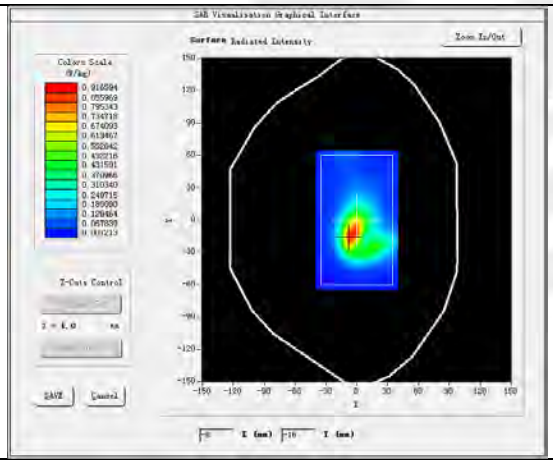
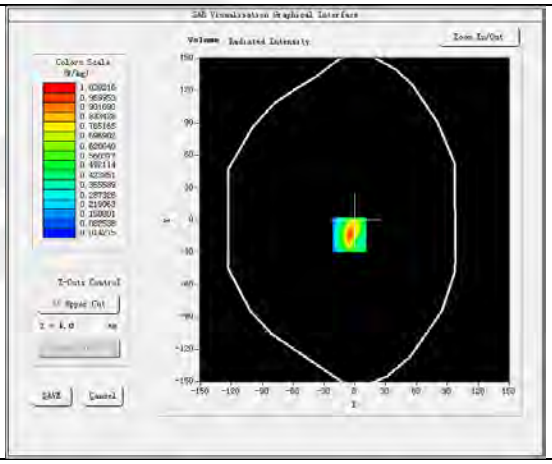
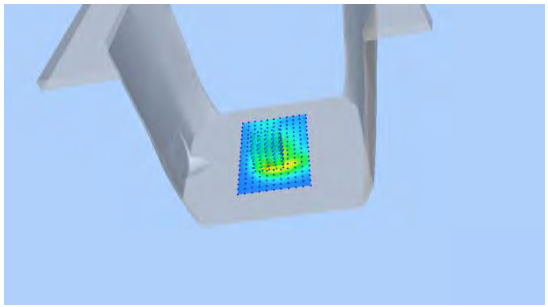
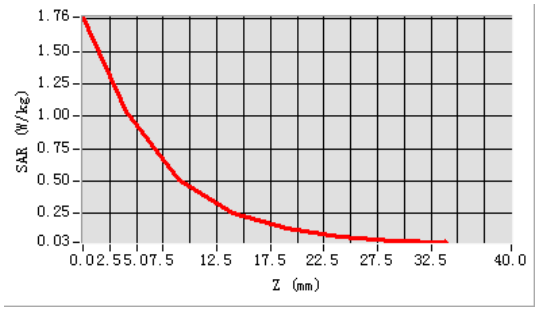
SURFACE SAR	VOLUME SAR
	
3D	**Z Axis Scan**
	

Plot 6: DUT: Tablet PC; EUT Model: Octopus_One

Test Date	2021-06-17
Probe	SN 07/21 EPGO352
Area Scan	dx=8mm, dy=8mm, h= 5.00 mm
Zoom Scan	5x5x7,dx=8mm, dy=8mm, dz=5mm, Complete/ndx=8mm, dy=8mm, h= 5.00 mm
Phantom	Validation plane
Device Position	Back Side
Band	LTE Band 4
Channels	20050
Signal	LTE (Crest factor: 1.0)
Frequency (MHz)	1720
Relative permittivity (real part)	39.23
Conductivity (S/m)	1.79

Maximum location: X=-5.00 Y=-14.00
SAR Peak: 1.77 W/kg

SAR 10g (W/Kg)	0.423889
SAR 1g (W/Kg)	0.932185

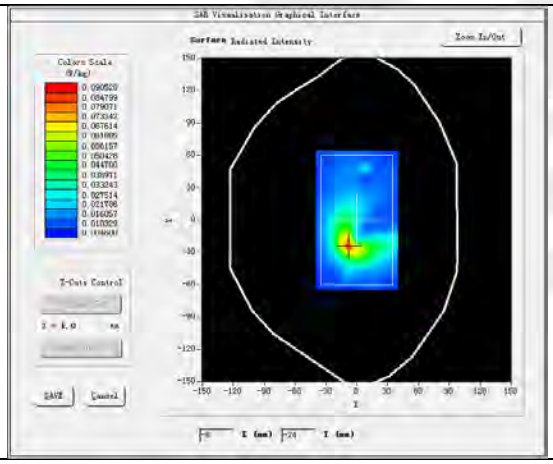
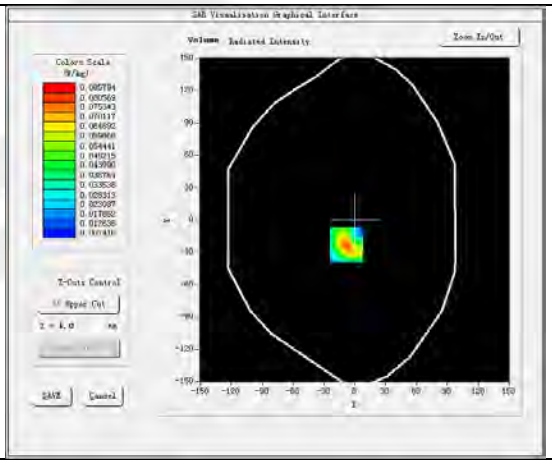
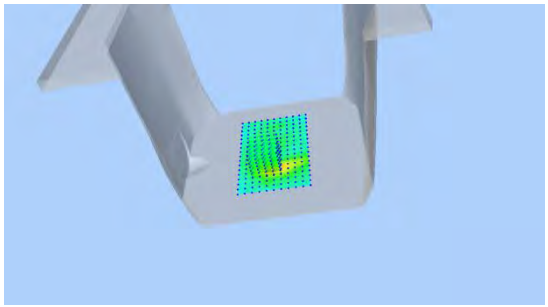
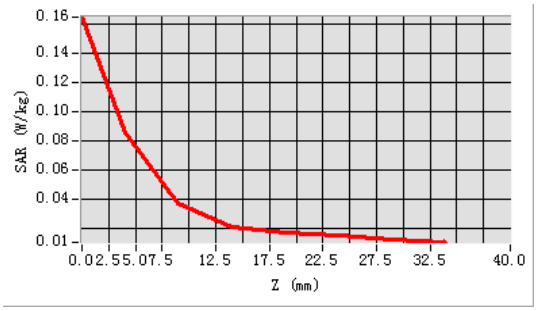
SURFACE SAR	VOLUME SAR
	
3D	**Z Axis Scan**
	

Plot 7: DUT: Tablet PC; EUT Model: Octopus_One

Test Date	2021-06-15
Probe	SN 07/21 EPGO352
Area Scan	dx=8mm, dy=8mm, h= 5.00 mm
Zoom Scan	5x5x7,dx=8mm, dy=8mm, dz=5mm, Complete/ndx=8mm, dy=8mm, h= 5.00 mm
Phantom	Validation plane
Device Position	Back Side
Band	LTE Band 5
Channels	20450
Signal	LTE (Crest factor: 1.0)
Frequency (MHz)	829
Relative permittivity (real part)	43.39
Conductivity (S/m)	0.92

Maximum location: X=-8.00 Y=-23.00
SAR Peak: 0.16 W/kg

SAR 10g (W/Kg)	0.038750
SAR 1g (W/Kg)	0.080678

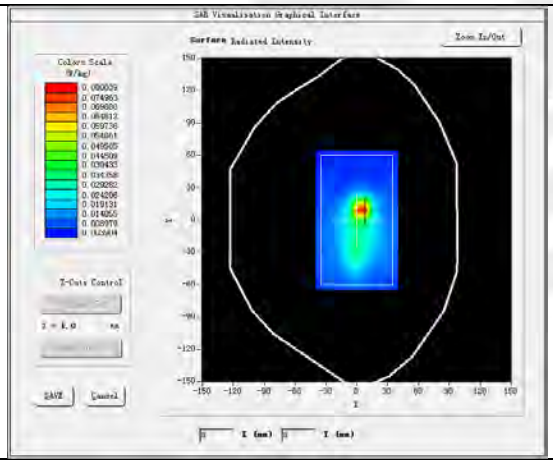
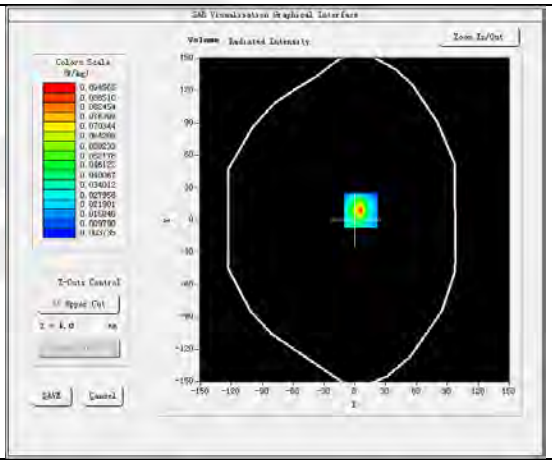
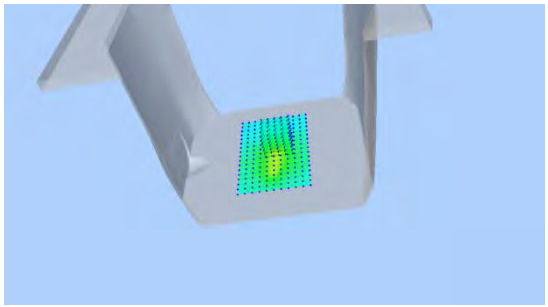
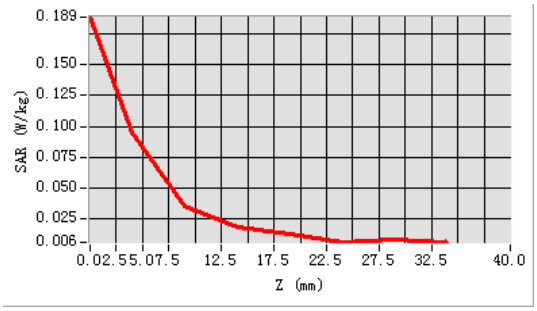
SURFACE SAR	VOLUME SAR
	
3D	**Z Axis Scan**
	

Plot 8: DUT: Tablet PC; EUT Model: Octopus_One

Test Date	2021-06-11
Probe	SN 07/21 EPGO352
Area Scan	dx=8mm, dy=8mm, h= 5.00 mm
Zoom Scan	5x5x7,dx=8mm, dy=8mm, dz=5mm, Complete/ndx=8mm, dy=8mm, h= 5.00 mm
Phantom	Validation plane
Device Position	Bottom Side
Band	LTE Band 12
Channels	23060
Signal	LTE (Crest factor: 1.0)
Frequency (MHz)	704
Relative permittivity (real part)	42.13
Conductivity (S/m)	0.91

Maximum location: X=6.00 Y=9.00
SAR Peak: 0.19 W/kg

SAR 10g (W/Kg)	0.032953
SAR 1g (W/Kg)	0.085432

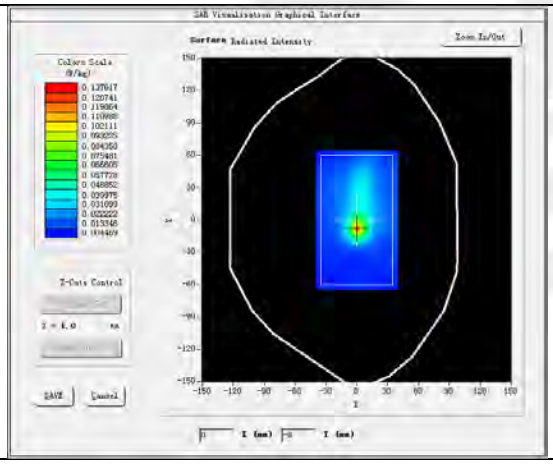
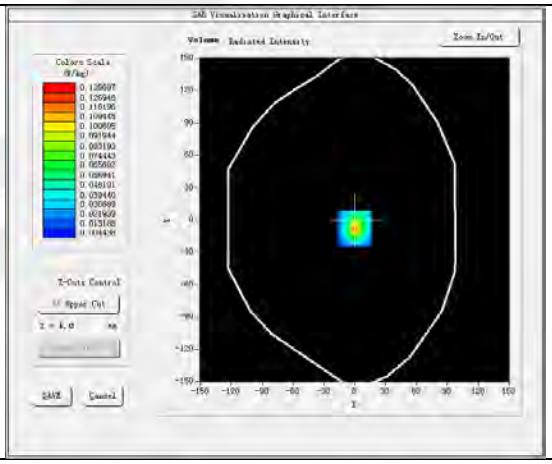
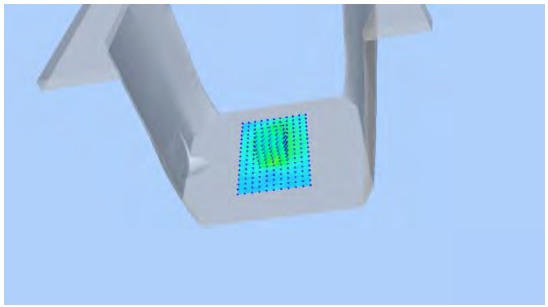
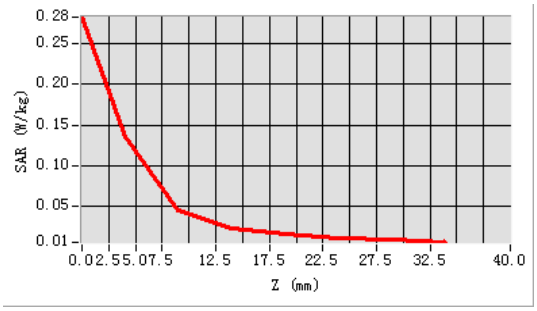
SURFACE SAR	VOLUME SAR
	
3D	**Z Axis Scan**
	

Plot 9: DUT: Tablet PC; EUT Model: Octopus_One

Test Date	2021-06-11
Probe	SN 07/21 EPGO352
Area Scan	dx=8mm, dy=8mm, h= 5.00 mm
Zoom Scan	5x5x7,dx=8mm, dy=8mm, dz=5mm, Complete/ndx=8mm, dy=8mm, h= 5.00 mm
Phantom	Validation plane
Device Position	Bottom Side
Band	LTE Band 17
Channels	23780
Signal	LTE (Crest factor: 1.0)
Frequency (MHz)	709
Relative permittivity (real part)	41.75
Conductivity (S/m)	0.90

Maximum location: X=0.00 Y=-8.00
SAR Peak: 0.28 W/kg

SAR 10g (W/Kg)	0.044104
SAR 1g (W/Kg)	0.120218

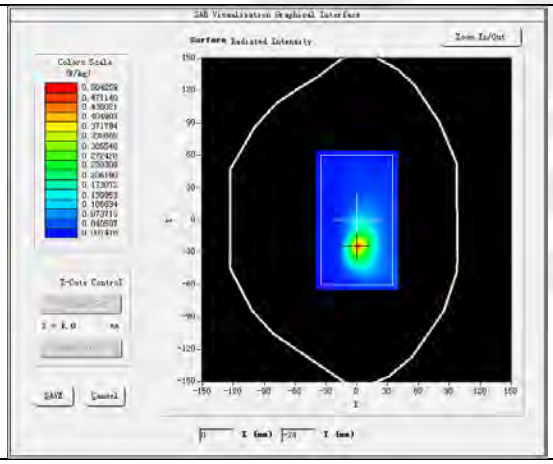
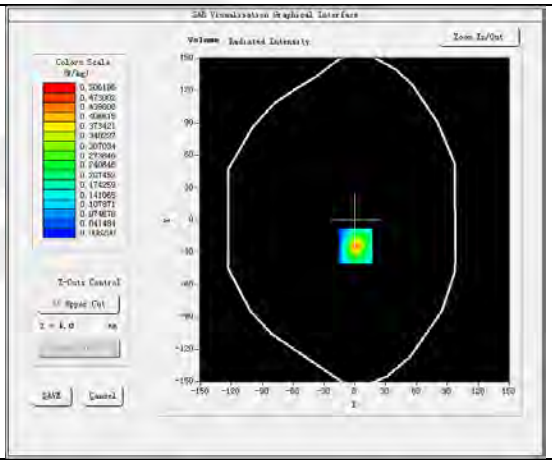
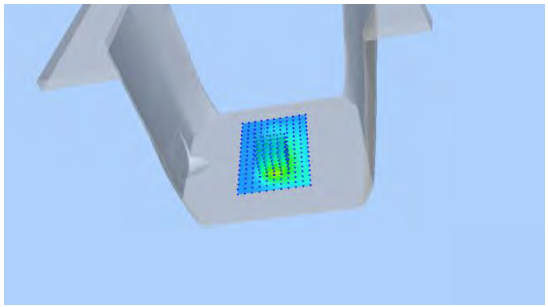
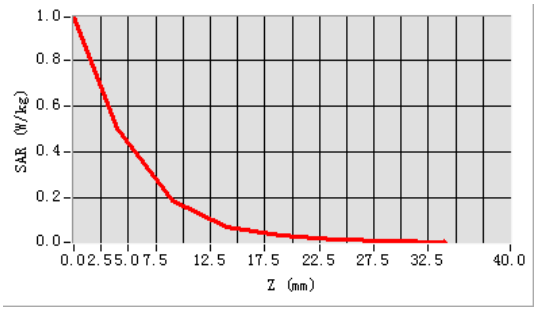
SURFACE SAR	VOLUME SAR
	
3D	**Z Axis Scan**
	

Plot 10: DUT: Tablet PC; EUT Model: Octopus_One

Test Date	2021-06-21
Probe	SN 07/21 EPGO352
Area Scan	dx=8mm, dy=8mm, h= 5.00 mm
Zoom Scan	5x5x7,dx=8mm, dy=8mm, dz=5mm, Complete/ndx=8mm, dy=8mm, h= 5.00 mm
Phantom	Validation plane
Device Position	Back Side
Band	IEEE 802.11b
Channels	1
Signal	IEEE802.11b (Crest factor: 1.0)
Frequency (MHz)	2412
Relative permittivity (real part)	39.23
Conductivity (S/m)	1.79

Maximum location: X=1.00 Y=-24.00
SAR Peak: 0.97W/kg

SAR 10g (W/Kg)	0.168652
SAR 1g (W/Kg)	0.445130

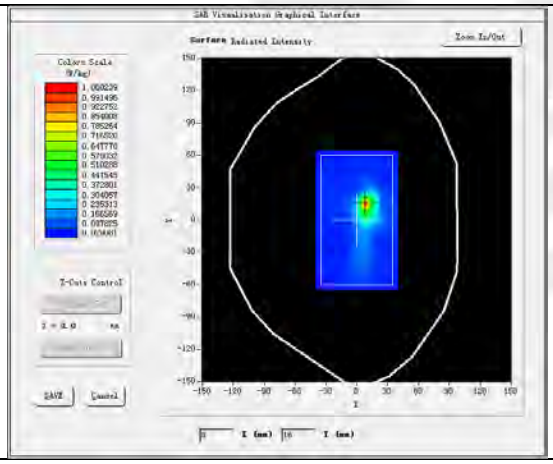
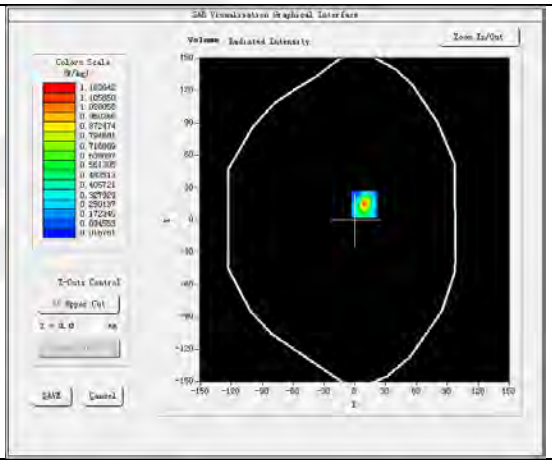
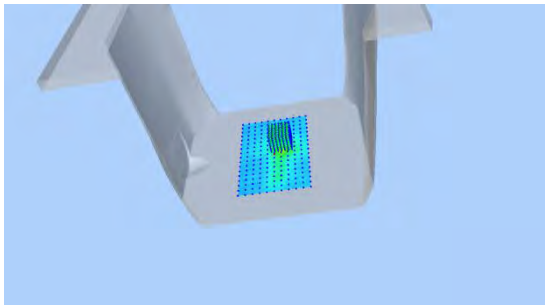
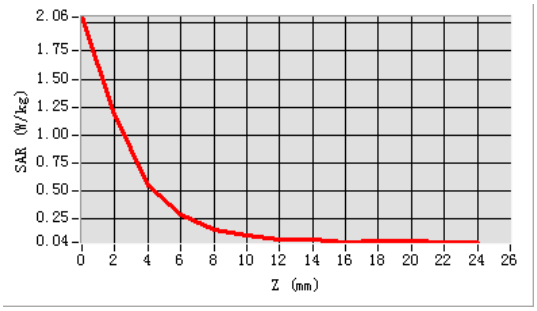
SURFACE SAR	VOLUME SAR
	
3D	**Z Axis Scan**
	

Plot 11: DUT: Tablet PC; EUT Model: Octopus_One

Test Date	2021-06-23
Probe	SN 07/21 EPGO352
Area Scan	dx=8mm, dy=8mm, h= 5.00 mm
Zoom Scan	7x7x12,dx=4mm, dy=4mm, dz=2mm, Complete/ndx=8mm, dy=8mm, h= 5.00 mm
Phantom	Validation plane
Device Position	Top Side
Band	IEEE 802.11ac80
Channels	155
Signal	IEEE802.11ac80 (Crest factor: 1.0)
Frequency (MHz)	5775
Relative permittivity (real part)	35.36
Conductivity (S/m)	5.22

Maximum location: X=9.00 Y=15.00
SAR Peak: 2.17 W/kg

SAR 10g (W/Kg)	0.168888
SAR 1g (W/Kg)	0.564189

SURFACE SAR	VOLUME SAR
	
3D	**Z Axis Scan**
	

Appendix C. Probe Calibration And Dipole Calibration Report

Refer the appendix Calibration Report.

※※※※※END OF THE REPORT※※※※※