SAR Test Report

Report No.: STS2502086H01

Issued for

Shenzhen Eview GPS Technology

Rm 201, building 1-A, Nankechuang Yuangu, Dalang,
Longhua District, Shenzhen, China

Product Name:	Personal Mobile Alarm System
Brand Name:	N/A
Model Name:	EV-12X
Series Model(s):	EV-12, EV-12X-A
FCC ID:	2AUMJEV-12X-A
Test Standard:	ANSI/IEEE Std. C95.1 FCC 47 CFR Part 2 (2.1093) IEEE Std. 1528-2013
Max. Report SAR (1g)	Body: 1.415 W/kg

The test results presented in this report relate only to the object tested. This report shall not be reproduced, except in full, without the written approval of the Shenzhen STS Test Services Co., Ltd.

TEST REPORT CERTIFICATION

Applicant's name..... : Shenzhen Eview GPS Technology

Address..... : Rm 201, building 1-A, Nankechuang Yuangu, Dalang, Longhua District, Shenzhen, China

Manufacturer's Name.....: Shenzhen Eview GPS Technology

Address..... : Rm 201, building 1-A, Nankechuang Yuangu, Dalang, Longhua District, Shenzhen, China

Factory's Name..... : Shenzhen Eview GPS Technology

Address..... : Rm 201, building 1-A, Nankechuang Yuangu, Dalang, Longhua District, Shenzhen, China

Product description

Product name..... : Personal Mobile Alarm System

Brand name ..... : N/A

Model name ..... : EV-12X

Series Model(s) :..... EV-12, EV-12X-A

Standards.....: ANSI/IEEE Std. C95.1
FCC 47 CFR Part 2 (2.1093)
IEEE Std. 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.....: 14 Apr. 2025 ~ 16 Apr. 2025

Date of Issue..... : 21 Apr. 2025

Test Result..... : **Pass**

Testing Engineer : Xin Liu

(Xin.Liu)

Technical Manager : Shi fan. long

(Shifan. Long)

Authorized Signatory : Bovey Yang

(Bovey Yang)

SHENZHEN STS TEST SERVICES CO., LTD. TESTING APPROVAL

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Revision History

Rev.	Issue Date	Report No.	Effect Page	Contents
00	21 Apr. 2025	STS2502086H01	ALL	Initial Issue

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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	Personal Mobile Alarm System		
Brand Name	N/A		
Model Name	EV-12X		
Series Model	EV-12, EV-12X-A		
Model Difference	Only the name is different.		
Battery	Rated Voltage:3.8V Capacity: 720mAh		
Device Category	Portable		
Product stage	Production unit		
RF Exposure Environment	General Population / Uncontrolled		
Hardware Version	V1.2		
Software Version	V1.0.44.11		
Frequency Range	LTE Band 2: 1850 MHz ~ 1910 MHz LTE Band 4: 1710 MHz ~ 1755 MHz LTE Band 12: 699 MHz ~ 716 MHz WLAN802.11b/g/n20: 2412 MHz ~ 2462 MHz WLAN 802.11n40: 2422 MHz ~ 2452 MHz BLE: 2402 MHz to 2480 MHz		
Max. Reported SAR(1g): (Limit:1.6W/kg) Test distance: Body:10mm	Band	Mode	Body Worn and Hotspot(W/kg)
	PCB	LTE Band 2	1.415
	PCB	LTE Band 4	1.104
	PCB	LTE Band 12	0.110
	DTS	2.4G WLAN	0.147
	DSS	BLE Note	0.023
1-g Sum SAR			1.585
FCC Equipment Class	Licensed Transmitter (PCB) Part 15 Spread Spectrum Transmitter (DSS) Digital Transmission System (DTS)		
Operating Mode:	LTE: QPSK, 16QAM 2.4G WLAN : 802.11b(DSSS):CCK,DQPSK,DBPSK 802.11g(OFDM):BPSK,QPSK,16-QAM,64-QAM 802.11n(OFDM):BPSK,QPSK,16-QAM,64-QAM BLE: GFSK		
Antenna Specification:	LTE: PIFA Antenna BLE: PIFA Antenna WLAN: PIFA Antenna		
SIM Card	Support dual-SIM, dual standby, the multiple SIM card with two lines cannot transmitting at the same time		
Hotspot Mode	Support		
DTM Mode	Not Support		
Note: 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.

101, Building B, Zhuoke Science Park, No.190 Chongqing Road, ZhanChengShequ, Fuhai 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	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.
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 D04 v01	RF Exposure Procedures and Equipment Authorization Policies for Mobile and Portable Devices
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 D05 v02r05	SAR for LTE Devices
8	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:

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

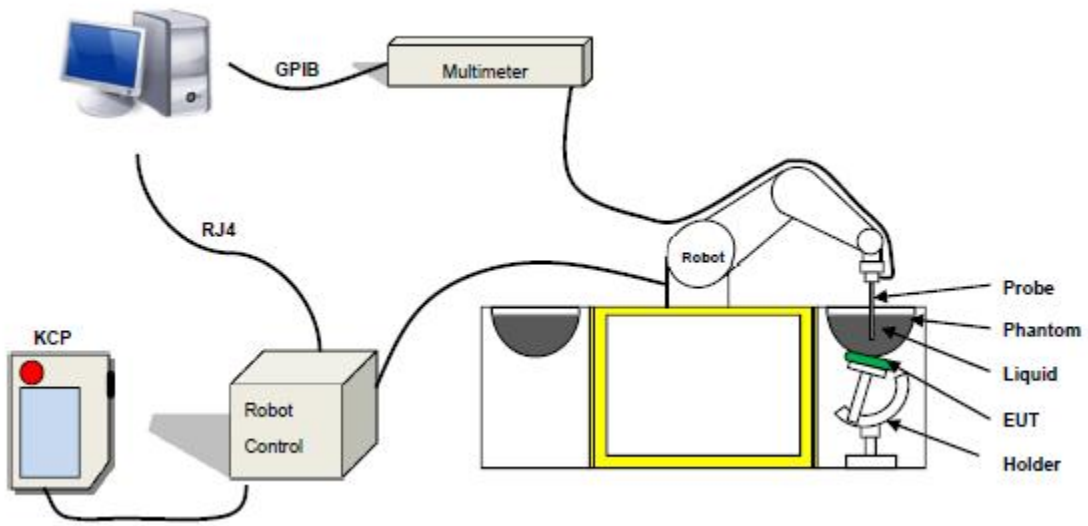
SAR is expressed in units of Watts per kilogram (W/kg) SAR measurement can be related to the electrical field in the tissue by

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

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

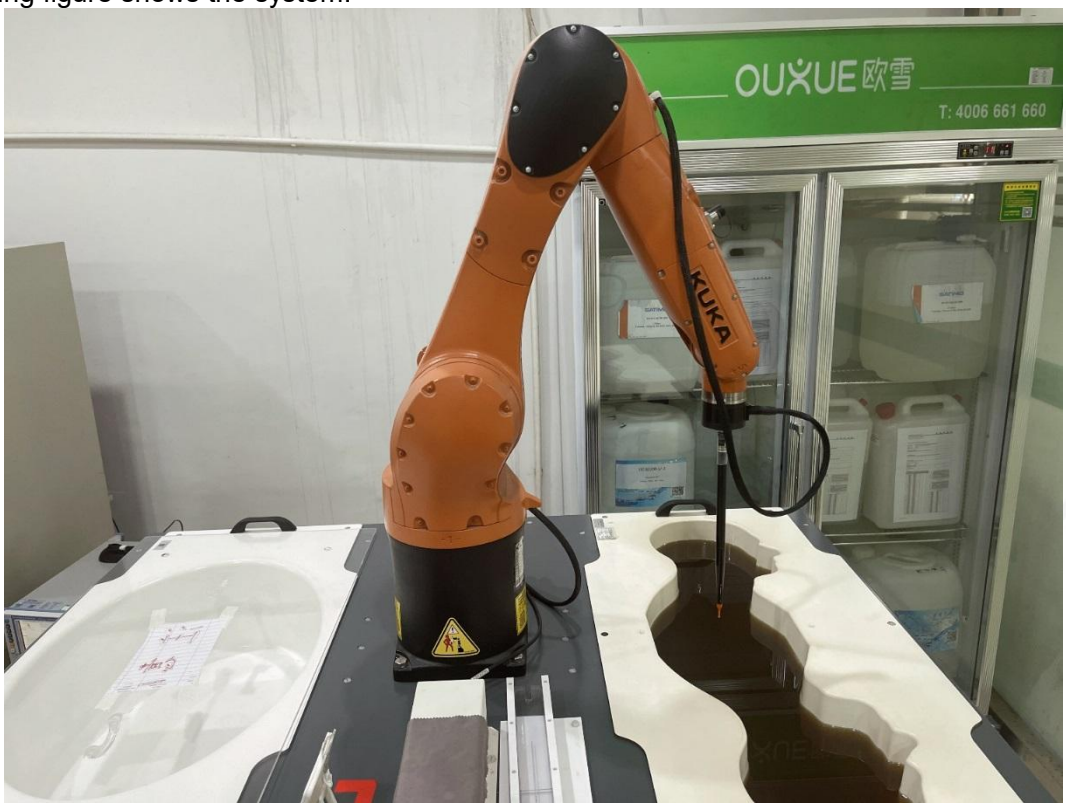
MVG SAR System Diagram:



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 08/21 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: 150 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

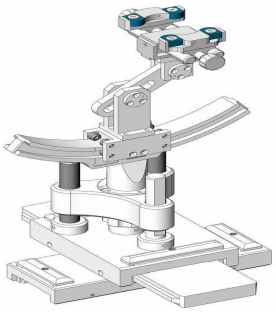
3.2.2 Phantom

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.

SN 32/14 SAM115

Figure-SN 21/21 ELLI48

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. Tissue Simulating Liquids

4.1 Simulating Liquids Parameter Check

The simulating liquids should be checked at the beginning of a series of SAR measurements to determine of the dielectric parameters are within the tolerances of the specified target values

The uncertainty due to the liquid conductivity and permittivity arises from two different sources. The first source of error is the deviation of the liquid conductivity from its target value (max _ 5 %) and the second source of error arises from the measurement procedures used to assess conductivity. The uncertainty shall be assessed using a rectangular probability For 1 g averaging, the maximum weighting coefficient for SAR is 0,5.

IEEE SCC-34/SC-2 RECOMMENDED TISSUE DIELECTRIC PARAMETERS

The head and body tissue dielectric parameters recommended by the IEEE SCC-34/SC-2 have been incorporated in the following table.

Frequency	εr	σ 10g S/m
300	45.3	0.87
450	43.5	0.87
750	41.9	0.89
835	41.5	0.90
900	41.5	0.97
1450	40.5	1.20
1800 to 2000	40.0	1.40
2100	39.8	1.49
2450	39.2	1.80
2600	39.0	1.96
3000	38.5	2.40
3500	37.9	2.91
4000	37.4	3.43
4500	36.8	3.94
5000	36.2	4.45
5200	36.0	4.66
5400	35.8	4.86
5600	35.5	5.07
5800	35.3	5.27

The following table gives the recipes for tissue simulating liquid and the theoretical Conductivity/Permittivity.

Head (Reference IEEE1528)								
Frequency (MHz)	Water (%)	Sugar (%)	Cellulose (%)	Salt (%)	Preventol (%)	DGBE (%)	Conductivity σ (S/m)	Permittivity ε
750	41.1	57.0	0.2	1.4	0.2	0	0.89	41.9
835	40.3	57.9	0.2	1.4	0.2	0	0.90	41.5
900	40.3	57.9	0.2	1.4	0.2	0	0.97	41.5
1800, 1900, 2000	55.2	0	0	0.3	0	44.5	1.4	40.0
2450	55.0	0	0	0.1	0	44.9	1.80	39.2
2600	54.9	0	0	0.1	0	45.0	1.96	39.0
Frequency (MHz)	Water (%)	Hexyl Carbitol (%)			Triton X-100 (%)		Conductivity σ (S/m)	Permittivity ε
5200	62.52	17.24			17.24		4.66	36.0
5800	62.52	17.24			17.24		5.27	35.3
Body (From instrument manufacturer)								
Frequency (MHz)	Water (%)	Sugar (%)	Cellulose (%)	Salt (%)	Preventol (%)	DGBE (%)	Conductivity σ (S/m)	Permittivity ε
750	51.7	47.2	0	0.9	0.1	0	0.96	55.5
835	50.8	48.2	0	0.9	0.1	0	0.97	55.2
900	50.8	48.2	0	0.9	0.1	0	1.05	55.0
1800, 1900, 2000	70.2	0	0	0.4	0	29.4	1.52	53.3
2450	68.6	0	0	0.1	0	31.3	1.95	52.7
2600	68.2	0	0	0.1	0	31.7	2.16	52.5
Frequency(MHz)	Water	DGBE (%)			Salt (%)		Conductivity σ (S/m)	Permittivity ε
5200	78.60	21.40			/		5.30	49.00
5800	78.50	21.40			0.1		6.00	48.20

LIQUID MEASUREMENT RESULTS

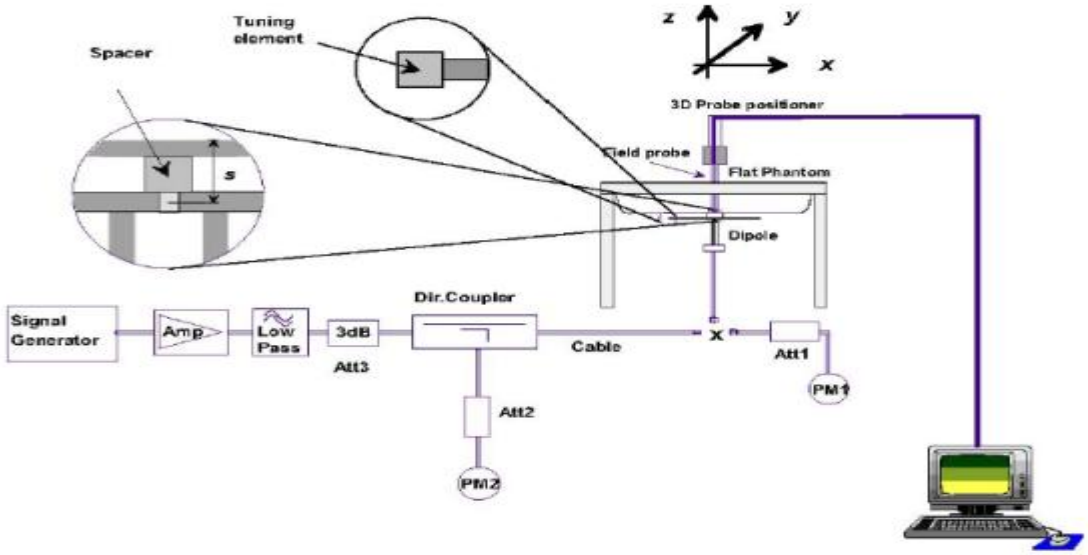
Date	Ambient		Simulating Liquid		Parameters	Target	Measured	Deviation %	Limited %
	Temp. [°C]	Humidity %	Frequency(MHz)	Temp. [°C]					
2025-04-14	21.7	47	711	21.3	Permittivity	42.11	43.00	2.12	±5
					Conductivity	0.89	0.91	2.55	±5
2025-04-14	21.7	47	750	21.4	Permittivity	41.90	42.39	1.17	±5
					Conductivity	0.89	0.88	-1.12	±5
2025-04-15	21.3	59	1720	20.9	Permittivity	40.11	40.50	0.96	±5
					Conductivity	1.35	1.38	1.90	±5
2025-04-15	21.3	59	1800	21.0	Permittivity	40.00	40.34	0.85	±5
					Conductivity	1.40	1.37	-2.14	±5
2025-04-15	21.3	60	1880	21.0	Permittivity	39.89	40.79	2.27	±5
					Conductivity	1.45	1.41	-2.47	±5
2025-04-16	23.0	51	2412	22.6	Permittivity	39.27	40.25	2.50	±5
					Conductivity	1.77	1.81	2.48	±5
2025-04-16	23.0	51	2450	22.7	Permittivity	39.20	39.44	0.61	±5
					Conductivity	1.80	1.77	-1.67	±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

Justification for Extended SAR Dipole Calibrations

Usage of SAR dipoles calibrated less than 3 years ago but more than 1 year ago were confirmed in maintaining retum loss (>20 dB, within 20% of prior calibration) and impedance (within 5 ohm from prior calibration) requirements per extended calibrations in KDB 865664 D01:

Dipole		Date of Measurement	Return Loss (dB)	Delta (%)	Impedance	Delta(ohm)
SN 30/14 DIP0G750-331	Head Liquid	2023-07-04	-25.47	/	55.2	/
		2024-07-01	-25.98	2.00	54.86	-0.62
5023-DIP1G800-747	Head Liquid	2023-12-20	-27.38	/	50.2	/
		2024-12-11	-29.08	6.21	46.36	-7.65
SN 30/14 DIP2G450-335	Head Liquid	2023-07-04	-26.03	/	46.3	/
		2024-07-01	-26.42	1.50	47.25	2.05

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)	1g(W/kg)	(%)	(%)
2025-04-14	750	100	0.81	8.06	8.49	-5.06	10
2025-04-15	1800	100	3.87	38.73	38.31	1.09	10
2025-04-16	2450	100	5.19	51.90	54.70	-5.12	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

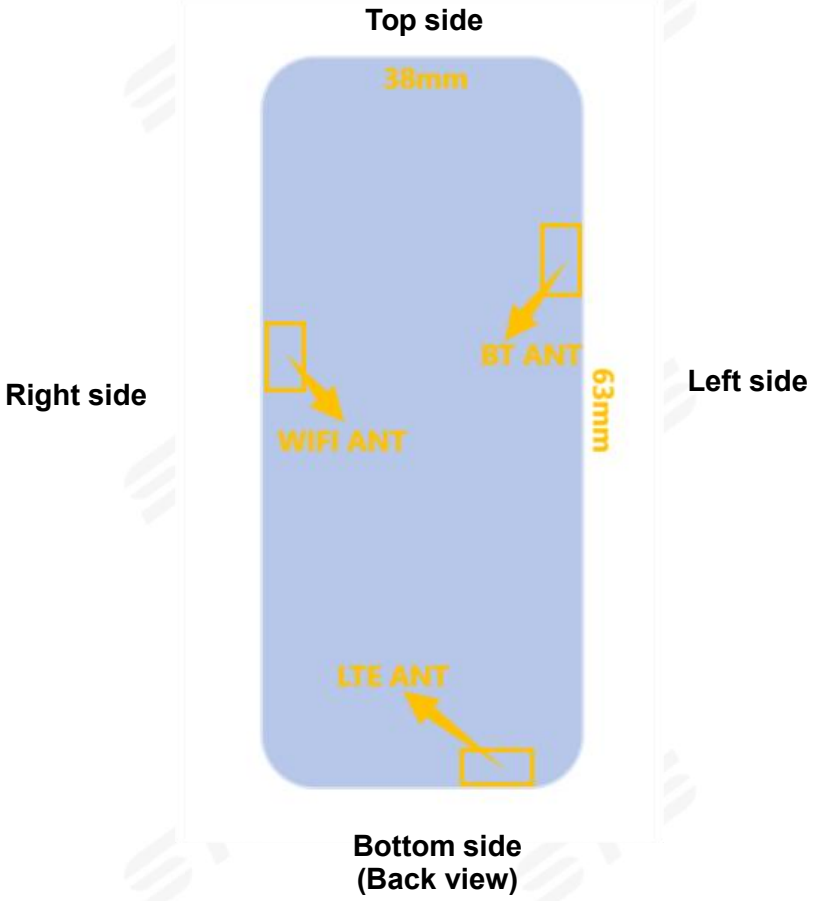
- Establish a call with the maximum output power with a base station simulator. The connection between the mobile and the base station simulator is established via air interface
- Measurement of the local E-field value at a fixed location. This value serves as a reference value for calculating a possible 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 D01 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 CON CHIP (4G), support LTE/WLAN/BT mode.



Antenna Separation Distance(cm)						
ANT	Front Side	Back Side	Left Side	Right Side	Top Side	Bottom Side
WLAN	≤0.5	≤0.5	3.4	≤0.5	3.9	2.4
BT	≤0.5	≤0.5	≤0.5	3.4	2.8	3.4
WWAN	≤0.5	≤0.5	1	2.3	5.8	≤0.5

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.

Exposure Position	Wireless Interface	LTE Band 2	LTE Band 4	LTE Band 12	BT	2.4G WLAN
	Calculated Frequency(GHz)	1.880	1.720	0.711	2.440	2.412
	Maximum Turn-up power (dBm)	22.5	23.5	24	0.5	9.5
	Maximum rated power(mW)	177.83	223.87	251.19	1.12	8.91
Back Side	Separation distance (cm)	≤0.5	≤0.5	≤0.5	≤0.5	≤0.5
	exclusion threshold(mW)	3.39	3.64	11.59	2.75	2.78
	Testing required?	YES	YES	YES	NO	YES
Front Side	Separation distance (cm)	≤0.5	≤0.5	≤0.5	≤0.5	≤0.5
	exclusion threshold(mW)	3.39	3.64	11.59	2.75	2.78
	Testing required?	YES	YES	YES	NO	YES
Left Edge	Separation distance (cm)	1	1	1	≤0.5	3.4
	exclusion threshold(mW)	12.18	12.91	28.71	2.75	105.81
	Testing required?	YES	YES	YES	NO	NO
Right Edge	Separation distance (cm)	2.3	2.3	2.3	3.4	≤0.5
	exclusion threshold(mW)	56.63	59.04	85.45	105.34	2.78
	Testing required?	YES	YES	YES	NO	YES
Top Edge	Separation distance (cm)	5.8	5.8	5.8	2.8	3.9
	exclusion threshold(mW)	311.91	319.46	286.83	72.83	137.30
	Testing required?	NO	NO	NO	NO	NO
Bottom Edge	Separation distance (cm)	≤0.5	≤0.5	≤0.5	3.4	2.4
	exclusion threshold(mW)	3.39	3.64	11.59	105.34	54.61
	Testing required?	YES	YES	YES	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 D04, 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 D04, if the maximum time-averaged power available does not exceed 1 mW. This stand-alone SAR exemption test.

4. Per KDB 447498 D04, the available maximum time-averaged power or effective radiated power (ERP), whichever is greater, is less than or equal to the threshold Pth (mW) described in the following formula. This method shall only be used at separation distances (cm) from 0.5 centimeters to 40 centimeters and at frequencies from 0.3 GHz to 6 GHz (inclusive). Pth is given by:

$$P_{th}\ (\text{mW}) = \begin{cases} ERP_{20\ cm}(d/20\ \text{cm})^x & d \le 20\ \text{cm} \\ ERP_{20\ cm} & 20\ \text{cm} < d \le 40\ \text{cm} \end{cases}$$

Where

$$x = -\log_{10}\left(\frac{60}{ERP_{20\ cm}\sqrt{f}}\right) \text{ and } f \text{ is in GHz;}$$

and

$$ERP_{20\ cm}\ (\text{mW}) = \begin{cases} 2040f & 0.3\ \text{GHz} \le f < 1.5\ \text{GHz} \\ 3060 & 1.5\ \text{GHz} \le f \le 6\ \text{GHz} \end{cases}$$

d = the separation distance (cm);

5. Per KDB 447498 D04, An alternative to the SAR-based exemption is using below table and the minimum separation distance (R in meters) from the body of a nearby person for the frequency (f in MHz) at which the source operates, the ERP (watts) is no more than the calculated value prescribed for that frequency. For the exemption in below table to apply, R must be at least λ/2π, where λ is the free-space operating wavelength in meters. If the ERP of a single RF source is not easily obtained, then the available maximum time-averaged power may be used in lieu of ERP if the physical dimensions of the radiating structure(s) do not exceed the electrical length of λ/4 or if the antenna gain is less than that of a half-wave dipole (1.64 linear value).

RF Source frequency (MHz)	Threshold ERP(watts)
0.3-1.34	1,920 R^2.
1.34-30	3,450 R^2/f^2.
30-300	3.83 R^2.
300-1,500	0.0128 R^2f.
1,500-100,000	19.2R^2.

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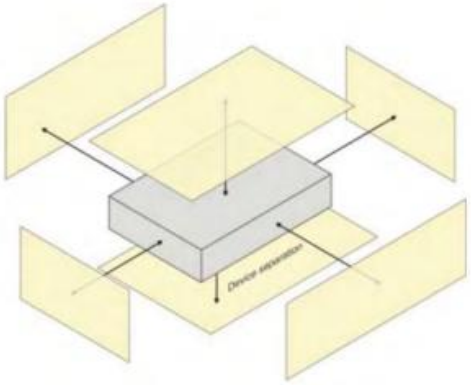
6. Per KDB 248227 D01, choose the highest output power channel to test SAR and determine further SAR exclusion 8.for each frequency band ,testing at higher data rates and higher order modulations is not required when the maximum average output power for each of each of these configurations is less than 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, SAR evaluation for the front surface of tablet display screens are generally not necessary.

8. EUT Test Position

This EUT was tested in Back Side, Left Side, Right Side, Bottom Side and Top Side.

8.1 Body-worn Position Conditions

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.



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.

SATIMO Uncertainty- SN 08/21 EPGO352									
Measurement uncertainty for DUT averaged over 1 gram / 10 gram.									
Uncertainty Component	Sec.	Tol (+- %)	Prob. Dist.	Div.	Ci (1g)	Ci (10g)	1g Ui (+-%)	10g Ui (+-%)	vi
Measurement System									
Probe calibration	E.2.1	5.72	N	1.00	1.00	1.00	5.72	5.72	∞
Axial Isotropy	E.2.2	0.18	R	1.73	0.71	0.71	0.07	0.07	∞
Hemispherical Isotropy	E.2.2	1.04	R	1.73	0.71	0.71	0.42	0.42	∞
Boundary effect	E.2.3	0.80	R	1.73	1.00	1.00	0.46	0.46	∞
Linearity	E.2.4	1.25	R	1.73	1.00	1.00	0.72	0.72	∞
System detection limits	E.2.4	1.20	R	1.73	1.00	1.00	0.69	0.69	∞
Modulation response	E2.5	3.42	R	1.73	1.00	1.00	1.97	1.97	∞
Readout Electronics	E.2.6	0.26	N	1.00	1.00	1.00	0.26	0.26	∞
Response Time	E.2.7	0.17	R	1.73	1.00	1.00	0.10	0.10	∞
Integration Time	E.2.8	1.43	R	1.73	1.00	1.00	0.83	0.83	∞
RF ambient conditions-Noise	E.6.1	3.51	R	1.73	1.00	1.00	2.03	2.03	∞
RF ambient conditions-reflections	E.6.1	3.15	R	1.73	1.00	1.00	1.82	1.82	∞
Probe positioner mechanical tolerance	E.6.2	1.20	R	1.73	1.00	1.00	0.69	0.69	∞
Probe positioning with respect to phantom shell	E.6.3	1.40	R	1.73	1.00	1.00	0.81	0.81	∞
Extrapolation, interpolation, and integrations algorithms for max. SAR evaluation	E.5	2.10	R	1.73	1.00	1.00	1.21	1.21	∞
Test sample Related									
Test sample positioning	E.4.2	3.10	N	1.00	1.00	1.00	3.10	3.10	∞
Device holder uncertainty	E.4.1	3.80	N	1.00	1.00	1.00	3.80	3.80	∞
Output power variation—SAR drift measurement	E.2.9	4.50	R	1.73	1.00	1.00	2.60	2.60	∞
SAR scaling	E.6.5	1.80	R	1.73	1.00	1.00	1.04	1.04	∞
Phantom and tissue parameters									
Phantom shell uncertainty—shape, thickness, and permittivity	E.3.1	3.70	R	1.73	1.00	1.00	2.14	2.14	∞
Uncertainty in SAR correction for deviations in permittivity and conductivity	E.3.2	1.90	N	1.00	1.00	0.84	1.90	1.60	∞
Liquid conductivity measurement	E.3.3	2.40	R	1.73	0.78	0.71	1.08	0.98	M
Liquid permittivity measurement	E.3.3	4.10	N	1.00	0.78	0.71	3.20	2.91	M
Liquid conductivity—temperature uncertainty	E.3.4	2.70	R	1.73	0.23	0.26	0.36	0.41	∞
Liquid permittivity—temperature uncertainty	E.3.4	4.80	N	1.00	0.23	0.26	1.10	1.25	∞
Combined Standard Uncertainty			RSS				10.08	9.59	
Expanded Uncertainty (95% Confidence interval)			K=2				19.58	19.18	

SATIMO Uncertainty- SN 08/21 EPGO352									
System Validation uncertainty for DUT averaged over 1 gram / 10 gram.									
Uncertainty Component	Sec.	Tol (+- %)	Prob. Dist.	Div.	Ci (1g)	Ci (10g)	1g Ui (+-%)	10g Ui (+-%)	vi
Measurement System									
Probe calibration	E.2.1	5.72	N	1.00	1.00	1.00	5.72	5.72	∞
Axial Isotropy	E.2.2	0.18	R	1.73	1.00	1.00	0.10	0.10	∞
Hemispherical Isotropy	E.2.2	1.04	R	1.73	0.00	0.00	0.00	0.00	∞
Boundary effect	E.2.3	0.80	R	1.73	1.00	1.00	0.46	0.46	∞
Linearity	E.2.4	1.25	R	1.73	1.00	1.00	0.72	0.72	∞
System detection limits	E.2.4	1.20	R	1.73	1.00	1.00	0.69	0.69	∞
Modulation response	E2.5	3.42	R	1.73	0.00	0.00	0.00	0.00	∞
Readout Electronics	E.2.6	0.26	N	1.00	1.00	1.00	0.26	0.26	∞
Response Time	E.2.7	0.17	R	1.73	0.00	0.00	0.00	0.00	∞
Integration Time	E.2.8	1.43	R	1.73	0.00	0.00	0.00	0.00	∞
RF ambient conditions-Noise	E.6.1	3.51	R	1.73	1.00	1.00	2.03	2.03	∞
RF ambient conditions-reflections	E.6.1	3.15	R	1.73	1.00	1.00	1.82	1.82	∞
Probe positioner mechanical tolerance	E.6.2	1.20	R	1.73	1.00	1.00	0.69	0.69	∞
Probe positioning with respect to phantom shell	E.6.3	1.40	R	1.73	1.00	1.00	0.81	0.81	∞
Extrapolation, interpolation, and integrations algorithms for max. SAR evaluation	E.5	2.10	R	1.73	1.00	1.00	1.21	1.21	∞
System validation source									
Deviation of experimental dipole from numerical dipole	E.6.4	4.80	N	1.00	1.00	1.00	4.80	4.80	∞
Input power and SAR drift measurement	8,6.6.4	5.10	R	1.73	1.00	1.00	2.94	2.94	∞
Dipole axis to liquid distance	8,E.6.6	2.40	R	1.73	1.00	1.00	1.39	1.39	∞
Phantom and set-up									
Phantom shell uncertainty—shape, thickness, and permittivity	E.3.1	3.70	R	1.73	1.00	1.00	2.14	2.14	∞
Uncertainty in SAR correction for deviations in permittivity and conductivity	E.3.2	1.90	N	1.00	1.00	0.84	1.90	1.60	∞
Liquid conductivity (temperature uncertainty)	E.3.3	2.40	R	1.73	0.78	0.71	1.08	0.98	∞
Liquid conductivity(measured)	E.3.3	4.10	N	1.00	0.78	0.71	3.20	2.91	M
Liquid permittivity(temperature uncertainty)	E.3.4	2.70	R	1.73	0.23	0.26	0.36	0.41	∞
Liquid permittivity (measured)	E.3.4	4.80	N	1.00	0.23	0.26	1.10	1.25	M
Combined Standard Uncertainty			RSS				9.72	9.52	
Expanded Uncertainty (95% Confidence interval)			K=2				19.44	19.03	

SATIMO Uncertainty- SN 08/21 EPGO352									
◦ System Check uncertainty for DUT averaged over 1 gram / 10 gram.									
Uncertainty Component	Sec.	Tol	Prob. Dist.	Div.	Ci (1g)	Ci (10g)	1g Ui (+-%)	10g Ui (+-%)	vi
		(+- %)							
Measurement System									
Probe calibration drift	E.2.1.3	5.72	N	1.00	1.00	1.00	5.72	5.72	∞
Axial Isotropy	E.2.2	0.18	R	1.73	0.00	0.00	0.00	0.00	∞
Hemispherical Isotropy	E.2.2	1.04	R	1.73	0.00	0.00	0.00	0.00	∞
Boundary effect	E.2.3	0.8	R	1.73	0.00	0.00	0.00	0.00	∞
Linearity	E.2.4	1.25	R	1.73	0.00	0.00	0.00	0.00	∞
System detection limits	E.2.4	1.20	R	1.73	0.00	0.00	0.00	0.00	∞
Modulation response	E2.5	3.42	R	1.73	0.00	0.00	0.00	0.00	∞
Readout Electronics	E.2.6	0.26	N	1.00	0.00	0.00	0.00	0.00	∞
Response Time	E.2.7	0.17	R	1.73	0.00	0.00	0.00	0.00	∞
Integration Time	E.2.8	1.43	R	1.73	0.00	0.00	0.00	0.00	∞
RF ambient conditions-Noise	E.6.1	3.51	R	1.73	0.00	0.00	0.00	0.00	∞
RF ambient conditions-reflections	E.6.1	3.15	R	1.73	0.00	0.00	0.00	0.00	∞
Probe positioner mechanical tolerance	E.6.2	1.2	R	1.73	1.00	1.00	0.69	0.69	∞
Probe positioning with respect to phantom shell	E.6.3	1.4	R	1.73	1.00	1.00	0.81	0.81	∞
Extrapolation, interpolation, and integrations algorithms for max. SAR evaluation	E.5	3.9	R	1.73	0.00	0.00	0.00	0.00	∞
System check source (dipole)									
Deviation of experimental dipoles	E.6.4	4.8	N	1.00	1.00	1.00	4.80	4.80	∞
Input power and SAR drift measurement	8,6.6.4	5.1	R	1.73	1.00	1.00	2.94	2.94	∞
Dipole axis to liquid distance	8,E.6.6	2.4	R	1.73	1.00	1.00	1.39	1.39	∞
Phantom and tissue parameters									
Phantom shell uncertainty—shape, thickness, and permittivity	E.3.1	3.7	R	1.73	1.00	1.00	2.14	2.14	∞
Uncertainty in SAR correction for deviations in permittivity and conductivity	E.3.2	1.9	N	1.00	1.00	0.84	1.90	1.60	∞
Liquid conductivity measurement	E.3.3	2.4	R	1.73	0.78	0.71	1.08	0.98	∞
Liquid permittivity measurement	E.3.3	4.1	N	1.00	0.78	0.71	3.20	2.91	M
Liquid conductivity—temperature uncertainty	E.3.4	2.7	R	1.73	0.23	0.26	0.36	0.41	∞
Liquid permittivity—temperature uncertainty	E.3.4	4.8	N	1.00	0.23	0.26	1.10	1.25	M
Combined Standard Uncertainty			RSS				5.56	5.20	
Expanded Uncertainty (95% Confidence interval)			K=2				11.12	10.41	

10. Conducted Power Measurement

10.1 Test Result

2.4G WLAN

2.4GWIFI				
Mode	Channel Number	Frequency (MHz)	Average Power (dBm)	Output Power (mW)
802.11b	1	2412	9.14	8.20
	7	2437	8.49	7.06
	11	2462	8.23	6.65
802.11g	1	2412	9.45	8.81
	7	2437	9.21	8.34
	11	2462	9.05	8.04
802.11 n-HT20	1	2412	8.97	7.89
	7	2437	8.84	7.66
	11	2462	8.86	7.69

BLE

BLE				
Mode	Channel Number	Frequency (MHz)	Average Power (dBm)	Output Power (mW)
GFSK(1Mbps)	0	2402	0.21	1.05
	19	2440	0.28	1.07
	39	2480	0.24	1.06

LTE Conducted Power

General Note:

1. Anritsu CMW500 base station simulator was used to setup the connection with EUT; the frequency band, channel bandwidth, RB allocation configuration, modulation type are set in the base station simulator to configure EUT transmitting at maximum power and at different configurations which are requested to be reported to FCC, for conducted power measurement and SAR testing.
2. Per KDB 941225 D05, when a properly configured base station simulator is used for the SAR and power measurements, spectrum plots for each RB allocation and offset configuration is not required.
3. Per KDB 941225 D05, start with the largest channel bandwidth and measure SAR for QPSK with 1 RB allocation, using the RB offset and required test channel combination with the highest maximum output power for RB offsets at the upper edge, middle and lower edge of each required test channel.
4. Per KDB 941225 D05, 50% RB allocation for QPSK SAR testing follows 1RB QPSK allocation procedure.
5. Per KDB 941225 D05, For QPSK with 100% RB allocation, SAR is not required when the highest maximum output power for 100 % RB allocation is less than the highest maximum output power in 50% and 1 RB allocations and the highest reported SAR for 1 RB and 50% RB allocation are ≤ 0.8 W/kg. Otherwise, SAR is measured for the highest output power channel; and if the reported SAR is > 1.45 W/kg, the remaining required test channels must also be tested.
6. Per KDB 941225 D05, 16QAM output power for each RB allocation configuration is > not ½ dB higher than the same configuration in QPSK and the reported SAR for the QPSK configuration is ≤ 1.45 W/kg; Per KDB 941225 D05, 16QAM SAR testing is not required.
7. Per KDB 941225 D05, Smaller bandwidth output power for each RB allocation configuration is > not ½ dB higher than the same configuration in the largest supported bandwidth, and the reported SAR for the largest supported bandwidth is ≤ 1.45 W/kg; Per KDB 941225 D05, smaller bandwidth SAR testing is not required.

LTE Band 2

LTE Band 2 Maximum Average Power [dBm]						
BW [MHz]	**RB Size**	**RB Offset**	**Mod**	**Lowest**	**Middle**	**Highest**
1.4	1	0	QPSK	22.63	21.79	21.85
1.4	1	2		22.69	21.94	21.84
1.4	1	5		22.45	21.87	21.76
1.4	3	0		22.21	21.95	21.74
1.4	3	2		22.33	22.13	21.93
1.4	3	3		22.14	21.91	22.05
1.4	6	0		21.12	21.06	20.94
1.4	1	0	16-QAM	21.27	20.84	20.80
1.4	1	2		21.14	20.71	20.72
1.4	1	5		21.04	20.68	20.88
1.4	3	0		20.96	20.92	20.81
1.4	3	2		21.06	21.00	20.94
1.4	3	3		21.06	21.01	21.28
1.4	6	0		19.75	20.03	19.92
3	1	0	QPSK	21.93	21.98	21.95
3	1	7		21.91	22.29	21.68
3	1	14		21.81	21.99	21.61
3	8	0		21.05	21.11	20.88
3	8	4		21.00	21.15	20.89
3	8	7		21.01	21.03	20.88
3	15	0		20.94	21.10	20.94
3	1	0	16-QAM	20.87	21.59	21.11
3	1	7		20.70	21.31	21.25
3	1	14		20.79	21.13	21.21
3	8	0		19.89	20.34	20.15
3	8	4		20.14	20.30	20.04
3	8	7		20.14	20.27	19.90
3	15	0		20.08	20.18	19.83

LTE BAND 2

LTE Band 2 Maximum Average Power [dBm]						
BW [MHz]	**RB Size**	**RB Offset**	**Mod**	**Lowest**	**Middle**	**Highest**
5	1	0	QPSK	21.82	21.82	21.46
5	1	13		22.05	22.00	21.66
5	1	24		21.96	21.73	21.63
5	12	0		20.91	20.95	20.68
5	12	6		20.95	20.97	20.73
5	12	13		20.97	20.96	20.85
5	25	0		20.96	21.03	20.68
5	1	0	16-QAM	20.52	21.15	19.90
5	1	13		21.04	21.43	20.72
5	1	24		20.84	21.22	20.73
5	12	0		19.99	19.68	19.78
5	12	6		19.94	19.90	19.74
5	12	13		20.06	19.80	19.79
5	25	0		19.99	19.84	19.74
10	1	0	QPSK	21.78	21.80	21.61
10	1	25		22.25	22.25	22.02
10	1	49		21.84	21.59	21.77
10	25	0		20.83	21.11	20.80
10	25	13		20.84	21.09	20.84
10	25	25		20.93	20.99	20.80
10	50	0		20.85	20.99	20.84
10	1	0	16-QAM	20.70	21.13	20.43
10	1	25		20.80	21.95	21.73
10	1	49		20.34	20.83	21.07
10	25	0		21.01	20.98	20.82
10	25	13		21.19	21.14	20.80
10	25	25		21.11	20.78	20.74
10	50	0		19.96	20.00	19.84

LTE BAND 2

LTE Band 2 Maximum Average Power [dBm]						
BW [MHz]	**RB Size**	**RB Offset**	**Mod**	**Lowest**	**Middle**	**Highest**
15	1	0	QPSK	21.67	21.72	21.77
15	1	38		22.05	22.01	21.75
15	1	74		21.67	21.60	21.74
15	36	0		20.81	20.90	20.72
15	36	18		20.97	20.99	21.10
15	36	39		20.84	20.88	21.12
15	75	0		20.83	20.87	20.96
15	1	0	16-QAM	21.18	21.28	21.27
15	1	38		21.29	22.07	20.98
15	1	74		21.21	21.46	20.50
15	36	0		20.80	20.99	20.81
15	36	18		21.16	20.97	20.80
15	36	39		20.92	20.71	20.78
15	75	0		19.78	19.84	19.82
20	1	0	QPSK	21.78	22.18	21.68
20	1	50		22.19	22.31	21.86
20	1	99		21.80	21.66	21.86
20	50	0		20.84	21.00	20.92
20	50	25		21.05	20.94	20.92
20	50	50		20.93	20.93	20.74
20	100	0		20.92	20.94	20.80
20	1	0	16-QAM	20.90	20.78	21.19
20	1	50		21.07	20.95	21.51
20	1	99		20.36	20.03	21.18
20	50	0		20.79	21.00	20.71
20	50	25		21.13	21.04	20.70
20	50	50		20.72	20.68	20.47
20	100	0		20.04	19.91	19.66

LTE BAND 4

LTE Band 4 Maximum Average Power [dBm]						
BW [MHz]	**RB Size**	**RB Offset**	**Mod**	**Lowest**	**Middle**	**Highest**
1.4	1	0	QPSK	23.40	22.96	22.88
1.4	1	2		23.31	23.15	23.15
1.4	1	5		23.22	23.16	22.93
1.4	3	0		23.20	23.03	22.77
1.4	3	2		23.28	22.99	22.87
1.4	3	3		23.26	22.82	22.83
1.4	6	0		22.22	21.97	21.71
1.4	1	0	16-QAM	22.84	21.97	21.60
1.4	1	2		23.04	21.99	21.58
1.4	1	5		22.64	21.86	21.74
1.4	3	0		22.17	21.78	21.63
1.4	3	2		22.30	22.11	21.72
1.4	3	3		21.99	22.00	21.78
1.4	6	0		21.25	20.83	20.50
3	1	0	QPSK	22.81	22.61	22.35
3	1	7		23.31	22.67	22.55
3	1	14		22.79	22.54	22.49
3	8	0		21.75	21.49	21.40
3	8	4		21.83	21.52	21.48
3	8	7		21.79	21.75	21.36
3	15	0		21.75	21.66	21.45
3	1	0	16-QAM	22.07	21.57	21.55
3	1	7		22.75	21.60	22.03
3	1	14		22.63	21.13	21.73
3	8	0		21.01	20.35	20.22
3	8	4		20.97	20.39	20.31
3	8	7		21.09	20.67	20.51
3	15	0		21.17	20.38	20.90

LTE BAND 4

LTE Band 4 Maximum Average Power [dBm]						
BW [MHz]	**RB Size**	**RB Offset**	**Mod**	**Lowest**	**Middle**	**Highest**
5	1	0	QPSK	23.16	22.77	22.81
5	1	13		23.20	22.88	22.81
5	1	24		22.84	22.70	22.83
5	12	0		22.31	21.66	21.73
5	12	6		22.20	21.75	21.70
5	12	13		22.06	21.73	21.93
5	25	0		22.19	21.64	21.74
5	1	0	16-QAM	22.33	20.83	21.48
5	1	13		22.37	21.24	21.72
5	1	24		22.59	21.12	21.94
5	12	0		21.23	20.66	20.66
5	12	6		21.12	20.71	20.81
5	12	13		20.86	20.87	20.77
5	25	0		21.00	20.65	20.81
10	1	0	QPSK	23.10	22.63	22.52
10	1	25		23.22	23.20	22.58
10	1	49		22.93	22.34	22.77
10	25	0		22.12	21.52	21.68
10	25	13		22.08	21.58	21.51
10	25	25		21.89	21.51	21.63
10	50	0		21.98	21.59	21.70
10	1	0	16-QAM	21.63	21.26	21.93
10	1	25		22.44	22.11	22.13
10	1	49		21.30	22.08	21.86
10	25	0		21.84	21.56	21.65
10	25	13		22.05	21.69	21.57
10	25	25		21.69	21.62	21.53
10	50	0		20.99	20.54	20.51

LTE BAND 4

LTE Band 4 Maximum Average Power [dBm]						
BW [MHz]	**RB Size**	**RB Offset**	**Mod**	**Lowest**	**Middle**	**Highest**
15	1	0	QPSK	22.77	22.82	22.89
15	1	38		22.83	22.82	22.92
15	1	74		22.74	22.74	22.68
15	36	0		22.01	21.58	21.92
15	36	18		22.08	21.60	21.90
15	36	39		21.89	21.73	21.60
15	75	0		21.93	21.58	21.85
15	1	0	16-QAM	22.49	22.10	22.32
15	1	38		22.04	22.10	22.00
15	1	74		21.36	22.64	22.18
15	36	0		22.18	21.41	22.07
15	36	18		22.17	21.66	21.93
15	36	39		21.81	21.70	21.99
15	75	0		21.05	20.61	20.89
20	1	0	QPSK	23.06	22.73	22.86
20	1	50		23.19	23.02	23.08
20	1	99		22.86	22.91	22.88
20	50	0		22.45	21.65	22.04
20	50	25		22.22	21.80	22.07
20	50	50		21.96	21.66	22.12
20	100	0		22.00	21.56	22.01
20	1	0	16-QAM	22.74	21.71	22.19
20	1	50		22.25	21.62	22.85
20	1	99		22.55	21.62	22.58
20	50	0		22.04	21.49	22.00
20	50	25		21.88	21.58	22.09
20	50	50		21.87	21.60	22.03
20	100	0		21.29	20.29	21.34

LTE BAND 12

LTE Band 12 Maximum Average Power [dBm]						
BW [MHz]	**RB Size**	**RB Offset**	**Mod**	**Lowest**	**Middle**	**Highest**
1.4	1	0	QPSK	23.19	23.23	23.30
1.4	1	2		23.48	23.29	23.65
1.4	1	5		23.38	23.23	23.75
1.4	3	0		23.33	23.46	23.47
1.4	3	2		23.42	23.43	23.63
1.4	3	3		23.44	23.39	23.73
1.4	6	0		22.36	22.44	22.60
1.4	1	0	16-QAM	22.47	22.84	22.60
1.4	1	2		22.45	22.97	22.69
1.4	1	5		22.38	22.80	23.02
1.4	3	0		22.71	22.21	22.91
1.4	3	2		22.76	22.62	22.89
1.4	3	3		22.79	22.59	23.17
1.4	6	0		21.53	21.52	21.65
3	1	0	QPSK	23.45	23.51	23.61
3	1	7		23.56	23.55	23.65
3	1	14		23.46	23.40	23.99
3	8	0		22.49	22.53	22.59
3	8	4		22.54	22.48	22.77
3	8	7		22.58	22.62	22.76
3	15	0		22.52	22.41	22.74
3	1	0	16-QAM	22.27	23.04	23.37
3	1	7		22.44	23.18	22.98
3	1	14		22.47	23.07	23.76
3	8	0		21.50	21.68	22.00
3	8	4		21.45	21.65	21.86
3	8	7		21.68	21.42	21.95
3	15	0		21.47	21.33	21.80

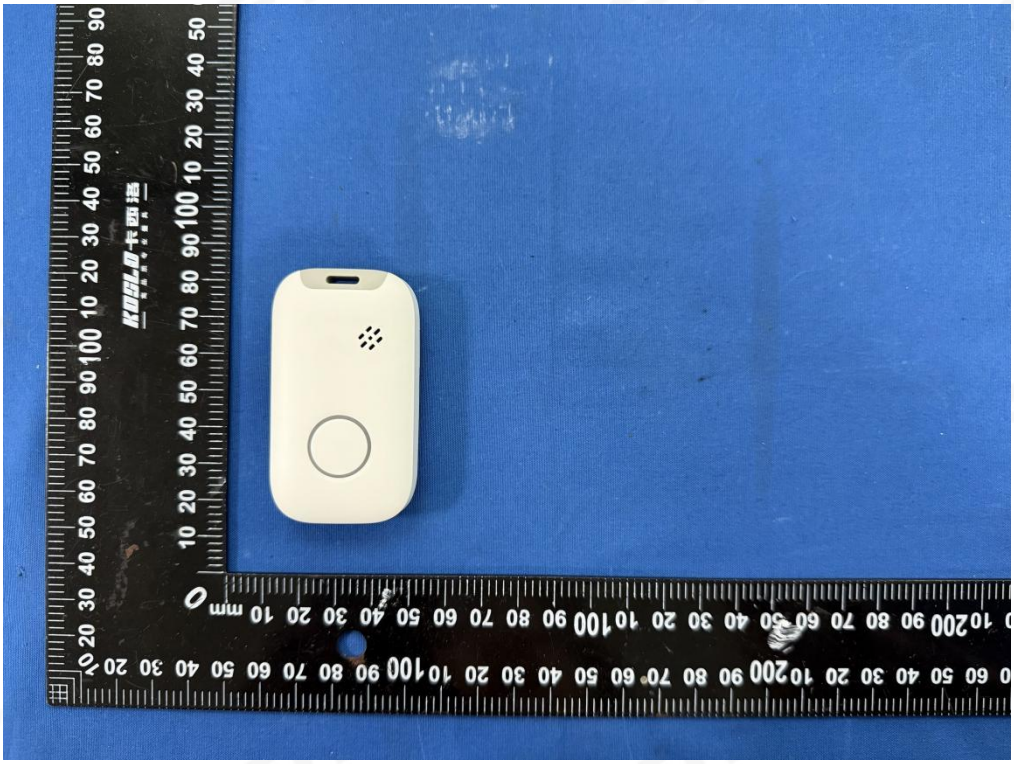
LTE BAND 12

LTE Band 12 Maximum Average Power [dBm]						
BW [MHz]	**RB Size**	**RB Offset**	**Mod**	**Lowest**	**Middle**	**Highest**
5	1	0	QPSK	23.35	23.32	23.23
5	1	13		23.65	23.45	23.30
5	1	24		23.48	23.54	23.42
5	12	0		22.60	22.59	22.51
5	12	6		22.68	22.58	22.56
5	12	13		22.53	22.55	22.53
5	25	0		22.52	22.50	22.50
5	1	0	16-QAM	22.28	22.31	22.59
5	1	13		22.68	21.91	22.94
5	1	24		22.07	22.31	23.00
5	12	0		21.48	21.32	21.60
5	12	6		21.49	21.24	21.66
5	12	13		21.55	20.99	21.57
5	25	0		21.58	21.20	21.49
10	1	0	QPSK	23.25	23.29	23.50
10	1	25		23.73	23.57	23.92
10	1	49		23.29	23.33	23.67
10	25	0		22.35	22.42	22.49
10	25	13		22.35	22.47	22.66
10	25	25		22.47	22.52	22.59
10	50	0		22.56	22.38	22.50
10	1	0	16-QAM	22.33	22.73	22.67
10	1	25		22.33	23.02	23.38
10	1	49		21.89	23.17	22.95
10	25	0		22.58	22.28	22.41
10	25	13		22.54	22.52	22.81
10	25	25		22.48	22.64	22.62
10	50	0		21.29	21.43	21.50

11. EUT and Test Setup Photo

11.1 EUT Photo

Front side



Back side

Top side

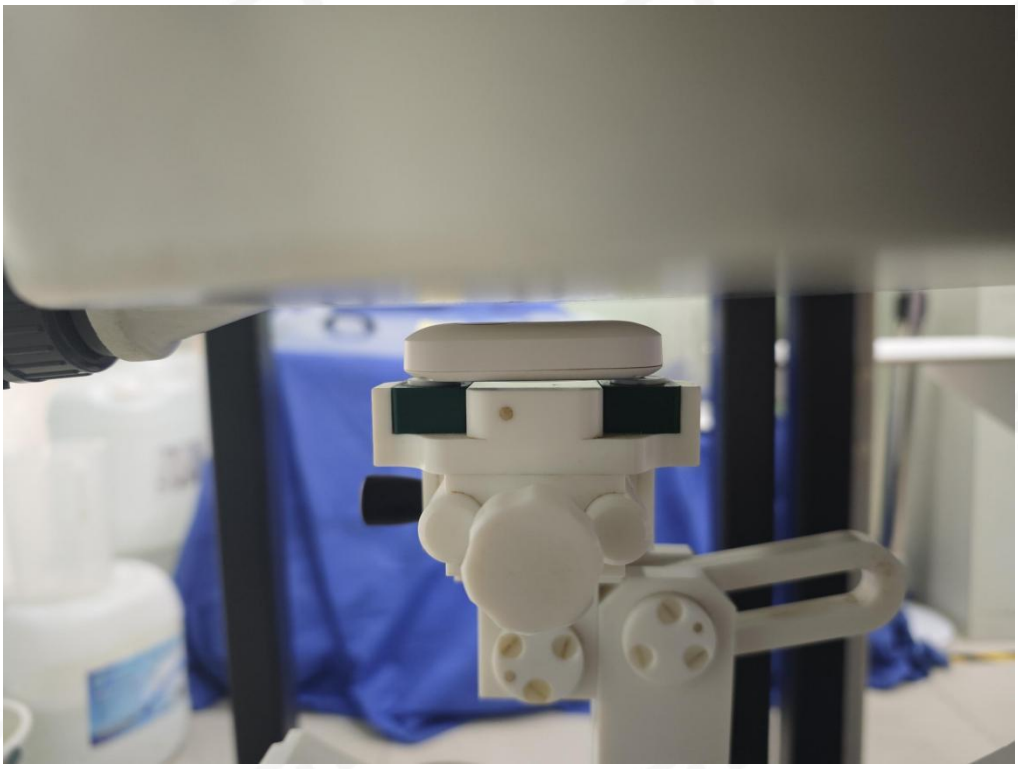
Bottom side

Left side

Right side

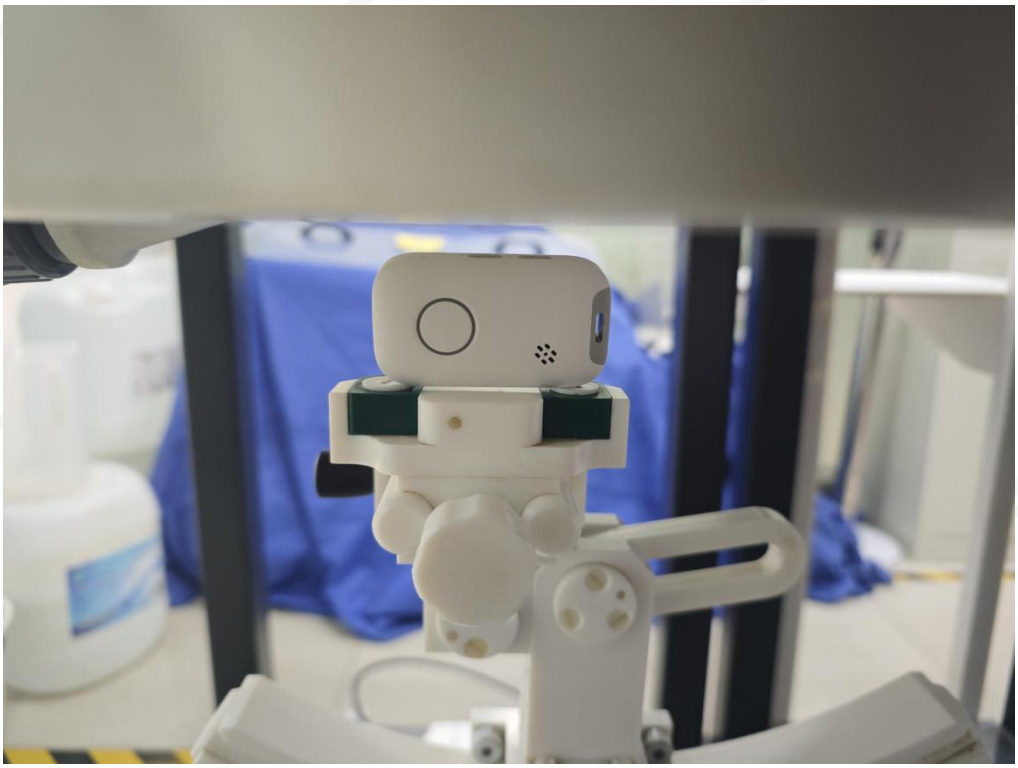
11.2 Setup Photo

Body Front side(separation distance is 10mm)

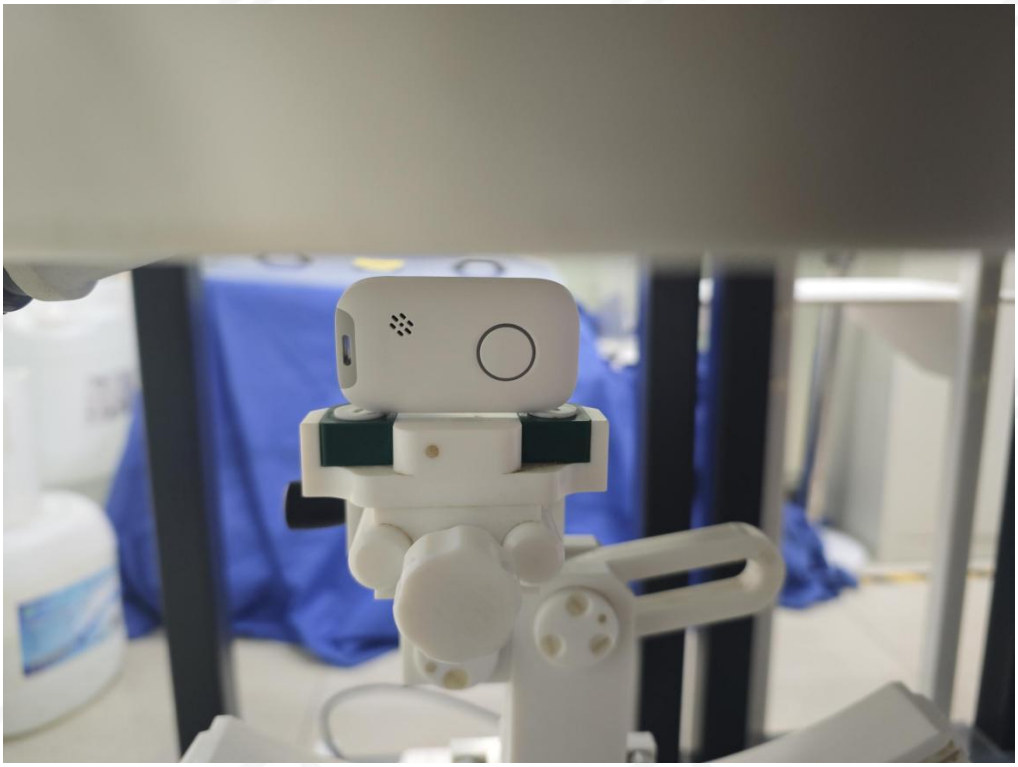


Body Back side(separation distance is 10mm)

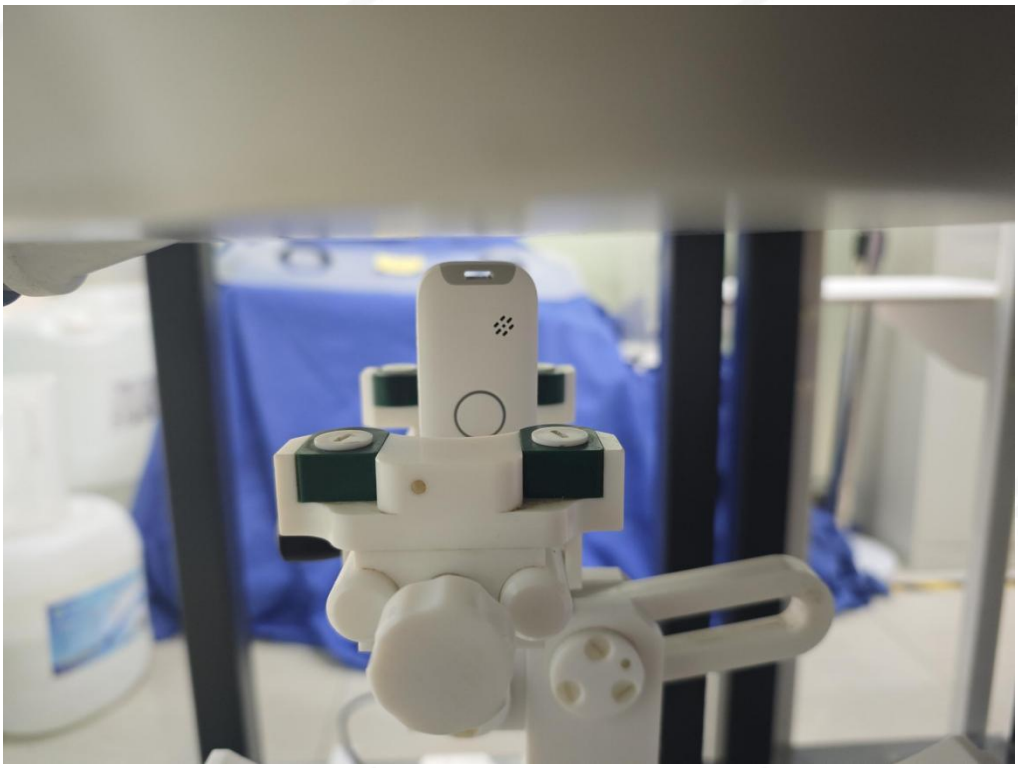
Body Left side(separation distance is 10mm)



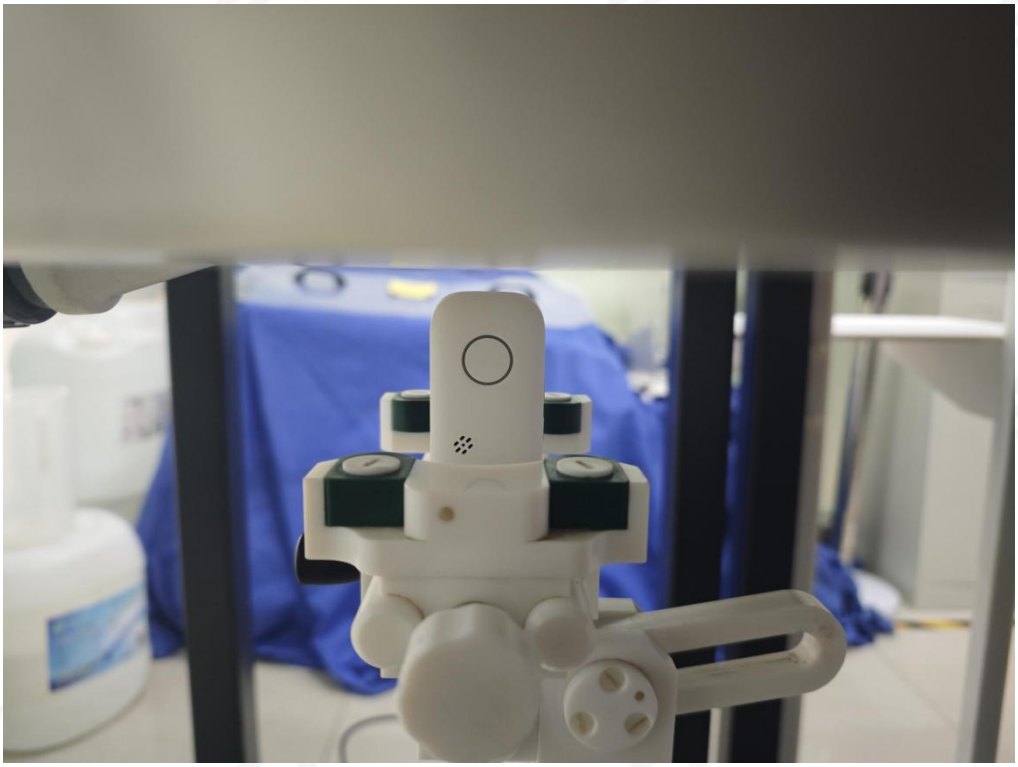
Body Right Side (separation distance is 10mm)



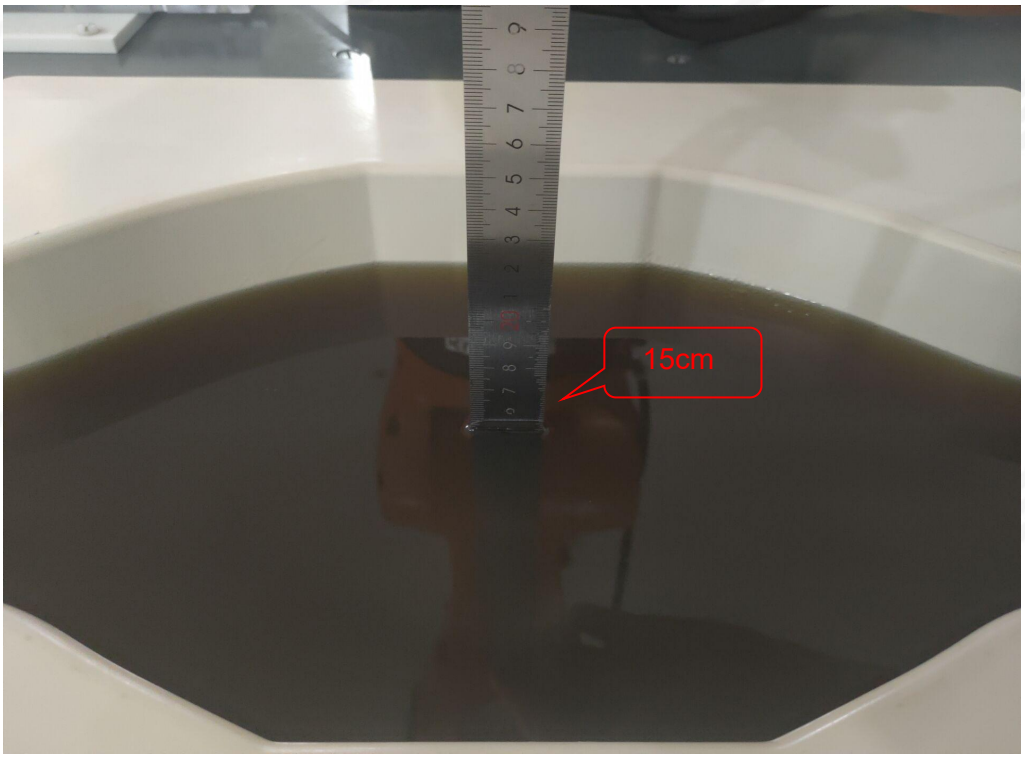
Body Top side (separation distance is 10mm)



Body Bottom Side (separation distance is 10mm)



Liquid depth (15 cm)



12. SAR Result Summary

12.1 Body-worn SAR

Band	BW (MHz)	Mod.	RB Size	RB offset	Test Position	Freq.	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	50	Front Side	1860	0.946	-2.06	22.50	22.19	1.016	/
			1	50	Front Side	1880	1.031	-1.49	22.50	22.31	1.077	/
			1	50	Front Side	1900	0.885	0.89	22.00	21.86	0.914	/
			50	0	Front Side	1860	0.764	-3.33	21.00	20.84	0.793	/
			50	0	Front Side	1880	0.826	-1.56	21.00	21.00	0.826	/
			50	0	Front Side	1900	0.782	-2.42	21.00	20.92	0.797	/
			1	50	Back Side	1860	1.286	-3.22	22.50	22.19	1.381	/
			1	50	Back Side	1880	1.354	-1.73	22.50	22.31	**1.415**	**1**
			1	50	Back Side	1900	1.154	3.67	22.00	21.86	1.192	/
			50	0	Back Side	1860	0.986	0.85	21.00	20.84	1.023	/
			50	0	Back Side	1880	1.125	-3.04	21.00	21.00	1.125	/
			50	0	Back Side	1900	1.064	-0.83	21.00	20.92	1.084	/
			1	50	Left Side	1880	0.321	3.90	22.50	22.31	0.335	/
			50	0	Left Side	1880	0.286	1.41	21.00	21.00	0.286	/
			1	50	Right Side	1880	0.277	-0.06	22.50	22.31	0.289	/
			50	0	Right Side	1880	0.234	-2.68	21.00	21.00	0.234	/
			1	50	Bottom Side	1880	0.752	0.42	22.50	22.31	0.786	/
			50	0	Bottom Side	1880	0.712	0.91	21.00	21.00	0.712	/
LTE Band 4	20M	QPSK	1	50	Front Side	1720	0.744	-3.57	23.50	23.19	0.799	/
			50	0	Front Side	1720	0.715	-3.63	22.50	22.45	0.723	/
			1	50	Back Side	1720	1.028	3.91	23.50	23.19	**1.104**	**2**
			1	50	Back Side	1732.5	0.945	-3.41	23.50	23.02	1.055	/
			1	50	Back Side	1745	0.926	0.32	23.50	23.08	1.020	/
			50	0	Back Side	1720	0.846	-0.08	22.50	22.45	0.856	/
			50	0	Back Side	1732.5	0.765	-1.98	22.00	21.65	0.829	/
			50	0	Back Side	1745	0.814	-2.89	22.50	22.04	0.905	/
			1	50	Left Side	1720	0.254	1.91	23.50	23.19	0.273	/
			50	0	Left Side	1720	0.226	3.62	22.50	22.45	0.229	/
			1	50	Right Side	1720	0.218	-1.87	23.50	23.19	0.234	/
			50	0	Right Side	1720	0.174	1.39	22.50	22.45	0.176	/
			1	50	Bottom Side	1720	0.535	1.16	23.50	23.19	0.575	/
			50	0	Bottom Side	1720	0.500	-1.32	22.50	22.45	0.506	/

LTE Band 12	10M	QPSK	1	25	Front Side	711	0.091	-2.77	24.00	23.92	0.093	/
			25	13	Front Side	711	0.074	-1.00	23.00	22.66	0.080	/
			1	25	Back Side	711	0.108	2.46	24.00	23.92	**0.110**	**3**
			25	13	Back Side	711	0.086	-3.07	23.00	22.66	0.093	/
			1	25	Left Side	711	0.062	3.58	24.00	23.92	0.063	/
			25	13	Left Side	711	0.051	-2.51	23.00	22.66	0.055	/
			1	25	Right Side	711	0.053	1.22	24.00	23.92	0.054	/
			25	13	Right Side	711	0.042	-1.47	23.00	22.66	0.045	/
			1	25	Bottom Side	711	0.078	-2.52	24.00	23.92	0.079	/
			25	13	Bottom Side	711	0.056	1.52	23.00	22.66	0.061	/

Band	Model	Test Position	Freq.	SAR (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	Front Side	2412	0.101	-1.79	9.50	9.14	0.110	/
		Back Side	2412	0.135	-2.73	9.50	9.14	**0.147**	**4**
		Top Side	2412	0.085	-1.33	9.50	9.14	0.092	/

Note:

1. The test separation of all above table is 0mm.
2. Per KDB 447498 D04, 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. Scaled SAR(W/kg)= Measured SAR(W/kg)*Tune-up Scaling Factor
3. 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 **0.147** W/Kg for Body)
4. 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.

12.2 Repeated SAR

Band	BW (MHz)	Mod.	RB Size	RB offset	Test Position	Freq.	Result 1g (W/Kg)	Power Drift(%)	Meas.Output Power(dBm)	Max.Turn-up Power(dBm)	Scaled SAR(W/Kg)	Meas. No.
LTE Band 2	20M	QPSK	1	50	Front Side	1860	0.946	-2.06	22.50	22.19	1.016	/
			1	50	Front Side	1880	1.031	-1.49	22.50	22.31	1.077	/
			1	50	Front Side	1900	0.885	0.89	22.00	21.86	0.914	/
			50	0	Front Side	1860	0.764	-3.33	21.00	20.84	0.793	/
			50	0	Front Side	1880	0.826	-1.56	21.00	21.00	0.826	/
			50	0	Front Side	1900	0.782	-2.42	21.00	20.92	0.797	/
			1	50	Back Side	1860	1.286	-3.22	22.50	22.19	1.381	/
			1	50	Back Side	1880	1.354	-1.73	22.50	22.31	**1.415**	/
			1	50	Back Side	1900	1.154	3.67	22.00	21.86	1.192	/
			50	0	Back Side	1860	0.986	0.85	21.00	20.84	1.023	/
			50	0	Back Side	1880	1.125	-3.04	21.00	21.00	1.125	/
			50	0	Back Side	1900	1.064	-0.83	21.00	20.92	1.084	/
LTE Band 4	20M	QPSK	1	50	Back Side	1720	1.028	3.91	23.50	23.19	**1.104**	/
			1	50	Back Side	1732.5	0.945	-3.41	23.50	23.02	1.055	/
			1	50	Back Side	1745	0.926	0.32	23.50	23.08	1.020	/
			50	0	Back Side	1720	0.846	-0.08	22.50	22.45	0.856	/
			50	0	Back Side	1732.5	0.765	-1.98	22.00	21.65	0.829	/
			50	0	Back Side	1745	0.814	-2.89	22.50	22.04	0.905	/

12.3 Repeated SAR measurement

Band	BW (MHz)	Mod.	RB Size	RB offset	Test Position	Freq.	Original Measured SAR 1g(W/kg)	1 st Repeated SAR 1g	Ratio	Original Measured	2nd Repeated SAR 1g	Ratio
LTE Band 2	20M	QPSK	1	50	Front Side	1860	0.946	0.932	1.015	-	-	-
			1	50	Front Side	1880	1.031	1.008	1.023	-	-	-
			1	50	Front Side	1900	0.885	0.869	1.018	-	-	-
			50	0	Front Side	1860	0.764	0.726	1.052	-	-	-
			50	0	Front Side	1880	0.826	0.795	1.040	-	-	-
			50	0	Front Side	1900	0.782	0.745	1.049	-	-	-
			1	50	Back Side	1860	1.286	1.280	1.005	-	-	-
			1	50	Back Side	1880	1.354	1.287	1.052	-	-	-
			1	50	Back Side	1900	1.154	1.137	1.015	-	-	-
			50	0	Back Side	1860	0.986	0.985	1.001	-	-	-
			50	0	Back Side	1880	1.125	1.076	1.046	-	-	-
			50	0	Back Side	1900	1.064	1.037	1.026	-	-	-
LTE Band 4	20M	QPSK	1	50	Back Side	1720	1.028	1.004	1.024	-	-	-
			1	50	Back Side	1732.5	0.945	0.926	1.020	-	-	-
			1	50	Back Side	1745	0.926	0.918	1.008	-	-	-
			50	0	Back Side	1720	0.846	0.825	1.026	-	-	-
			50	0	Back Side	1732.5	0.765	0.757	1.011	-	-	-
			50	0	Back Side	1745	0.814	0.797	1.021	-	-	-

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.

Application Simultaneous Transmission information:

Position	Simultaneous State
Body	1. LTE + 2.4GHz WLAN + BT

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. If the test separation distance is <5mm, 5mm is used for excluded SAR calculation.
4. 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 Average Power		Dis.	Frequency (GHz)	Stand alone SAR(1g) [W/kg]
		dBm	mW			
BLE	Body	0.5	1.122	10	2.44	0.023

Simultaneous Mode	Position	Mode	Max. 1-g SAR (W/kg)	1-g Sum SAR (W/kg)
LTE+2.4G WLAN+BT	Body	LTE	1.415	1.585
		2.4G WLAN	0.147	
		BLE	0.023	

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	2023.07.04	2026.07.03
1800MHz Dipole	MVG	SID1800	5023-DIP1G800-747	2023.12.20	2026.12.19
2450MHzDipole	MVG	SID2450	SN 30/14 DIP2G450-335	2023.07.04	2026.07.03
E-Field Probe	MVG	SSE2	SN 08/21 EPGO352	2024.09.18	2025.09.17
Dielectric Probe Kit	MVG	SCLMP	SN 32/14 OCPG67	2024.09.18	2025.09.17
Antenna	MVG	ANTA3	SN 07/13 ZNTA52	N/A	N/A
Phantom1	MVG	SAM	SN 32/14 SAM115	N/A	N/A
Phantom3	MVG	SAM	SN 21/21 ELLI48	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	HXT-10-8-SMA	240327017	2025-02-22	2026-02-21
Directional coupler	Xi'an Xingbo	XBOH-OA08-20 dB	211123-4-3	2025-02-22	2026-02-21
Network Analyzer	Agilent	E5071C	MY46520378	2024-09-25	2025-09-26
Multi Meter	Keithley	Multi Meter 2000	4050073	2024-09-25	2025-09-26
Signal Generator	Agilent	N5182A	MY50140530	2024-09-25	2025-09-26
Wireless Communication Test Set	Agilent	8960-E5515C	MY48360751	2025-02-22	2026-02-21
Wireless Communication Test Set	R&S	CMW500	156324	2024-09-25	2025-09-26
Power Amplifier	DESAY	ZHL-42W	9638	2024-09-25	2025-09-26
Power Meter	R&S	NRP	100510	2024-09-25	2025-09-26
Power Sensor	R&S	NRP-Z11	101919	2024-09-25	2025-09-26
Power Sensor	Keysight	U2021XA	MY56280002	2024-09-25	2025-09-26
Temperature hygrometer	SuWei	SW-108	N/A	2024.10.15	2025.10.14
Thermograph	Elitech	RC-4	S/N EF7176501537	2024.10.15	2025.10.14

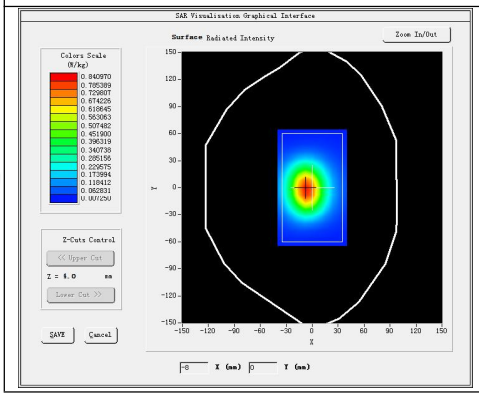
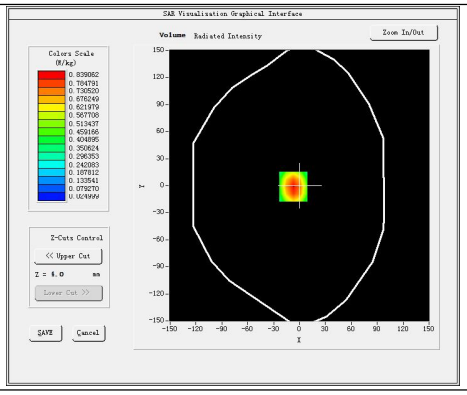
Appendix A. System Validation Plots

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: 2025-04-14

Experimental conditions

Phantom	Validation plane
Device Position	-
Band	750MHz
Channels	-
Signal	CW
Frequency (MHz)	750MHz
Relative permittivity	42.39
Conductivity (S/m)	0.88
Probe	SN 08/21 EPGO352
ConvF	1.56
Crest factor	1:1

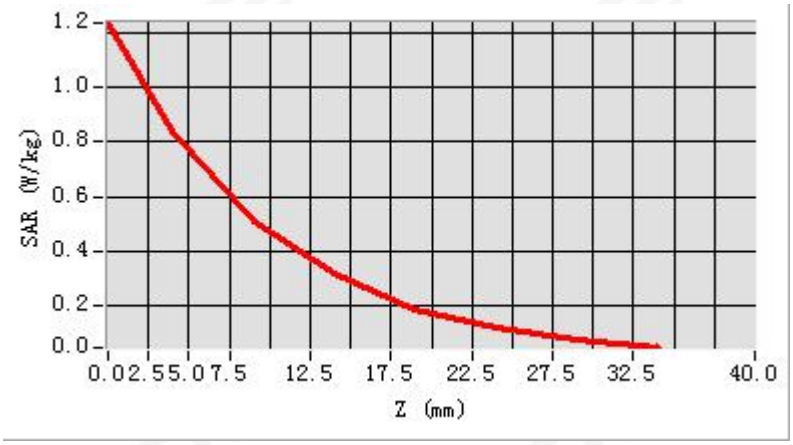
SURFACE SAR	VOLUME SAR
	

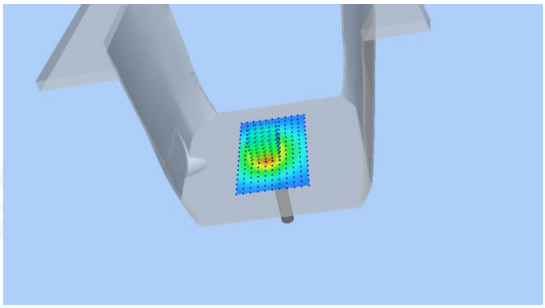
Maximum location: X=-7.00, Y=-1.00

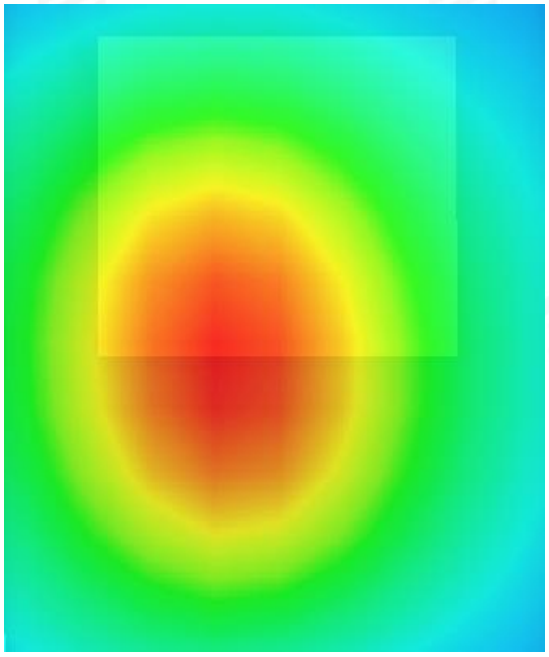
SAR Peak: 1.23 W/kg

SAR 10g (W/Kg)	0.461388
SAR 1g (W/Kg)	0.806000

Z Axis Scan





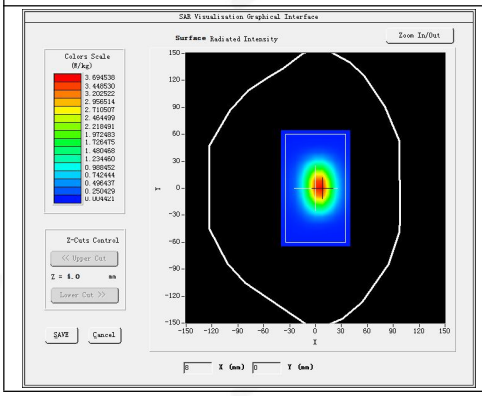
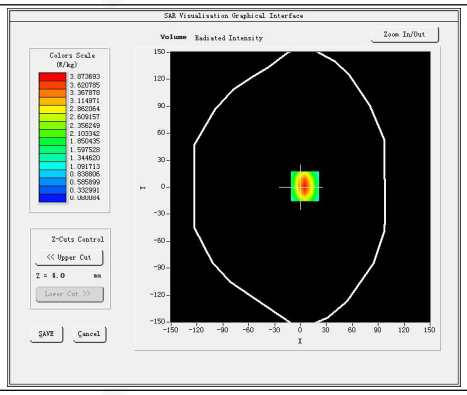


System Performance Check Data(1800MHz)

Type: Phone measurement (Complete)
Area scan resolution: dx=8mm, dy=8mm
Zoom scan resolution: dx=8mm, dy=8mm, dz=5mm
Date of measurement: 2025-04-15

Experimental conditions.

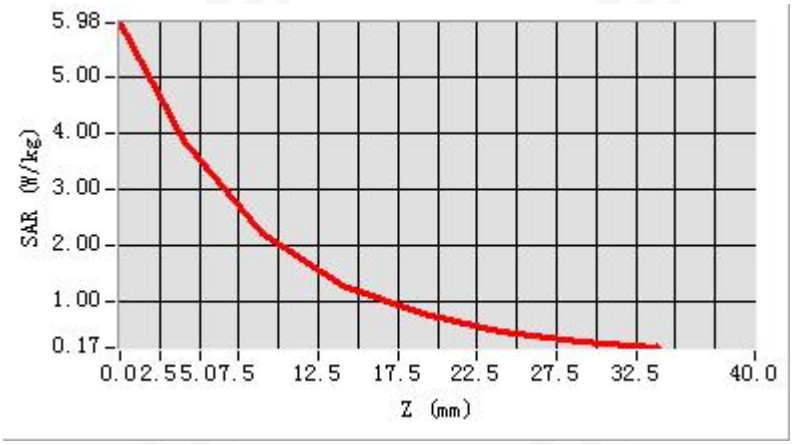
Phantom	Validation plane
Device Position	-
Band	1800MHz
Channels	-
Signal	CW
Frequency (MHz)	1800MHz
Relative permittivity	40.34
Conductivity (S/m)	1.37
Probe	SN 08/21 EPGO352
ConvF	1.58
Crest factor:	1:1

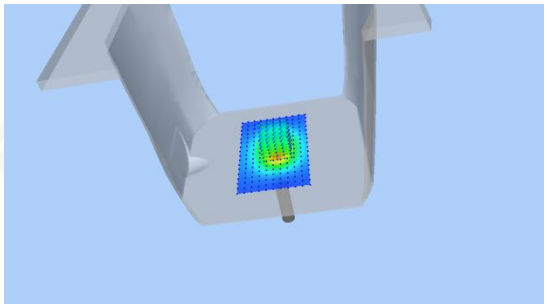
SURFACE SAR	VOLUME SAR
	

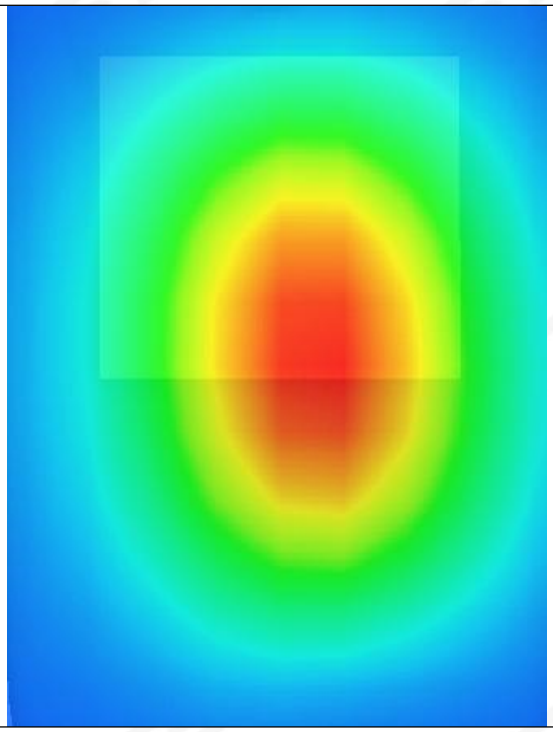
Maximum location: X=5.00, Y=1.00

SAR 10g (W/Kg)	1.993216
SAR 1g (W/Kg)	3.872634

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)



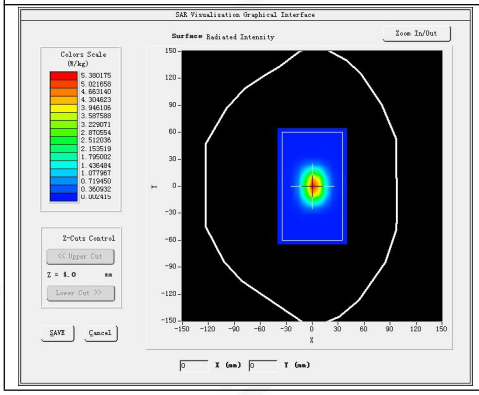
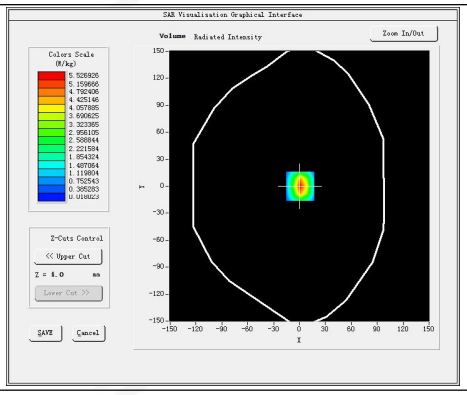


System Performance Check Data (2450MHz)

Type: Phone measurement (Complete)
Area scan resolution: dx=8mm, dy=8mm
Zoom scan resolution: dx=8mm, dy=8mm, dz=5mm
Date of measurement: 2025-04-16

Experimental conditions.

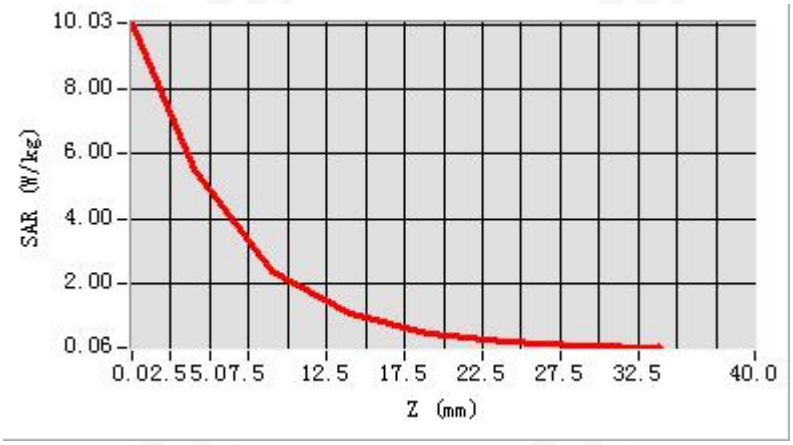
Device Position	Validation plane
Band	2450 MHz
Channels	-
Signal	CW
Frequency (MHz)	2450
Relative permittivity	39.44
Conductivity (S/m)	1.77
Probe	SN 08/21 EPGO352
ConvF	1.80
Crest factor:	1:1

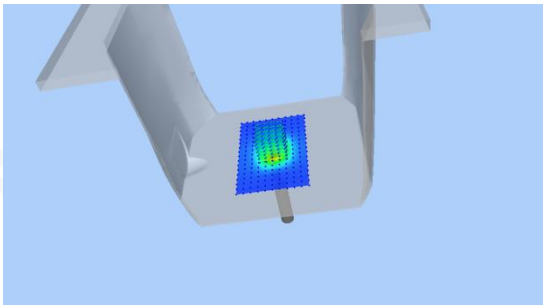
SURFACE SAR	VOLUME SAR
	

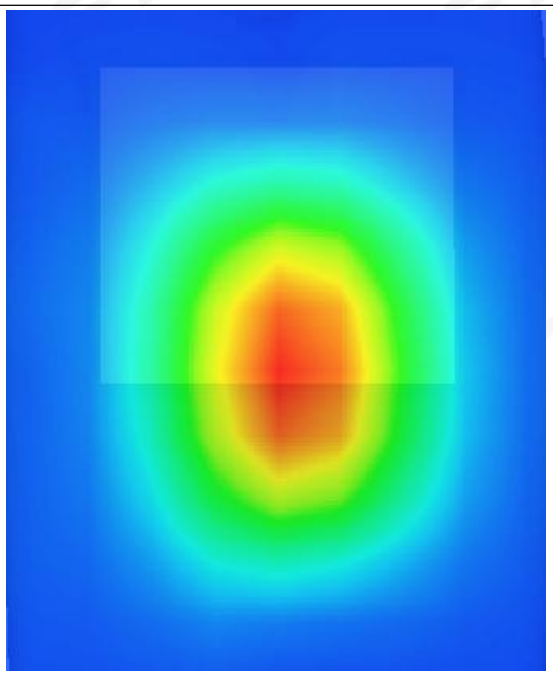
Maximum location: X=1.00, Y=0.00

SAR 10g (W/Kg)	2.175280
SAR 1g (W/Kg)	5.189774

Z Axis Scan


10.03
8.00
6.00
4.00
2.00
0.06
SAR (W/kg)
0.02.55.07.5
12.5
17.5
22.5
27.5
32.5
40.0
Z (mm)





Appendix B. SAR Test Plots

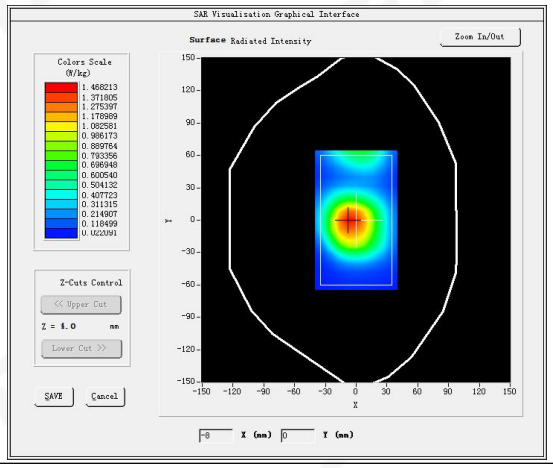
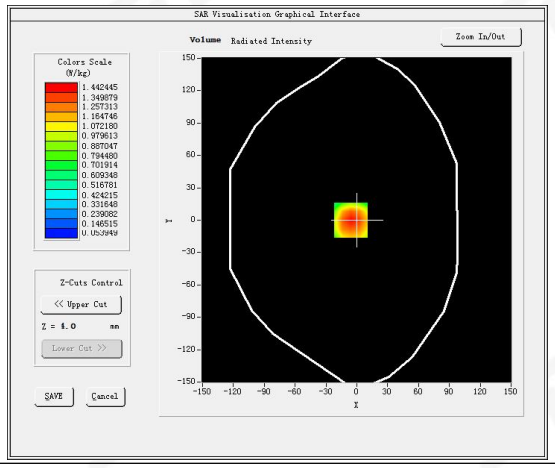
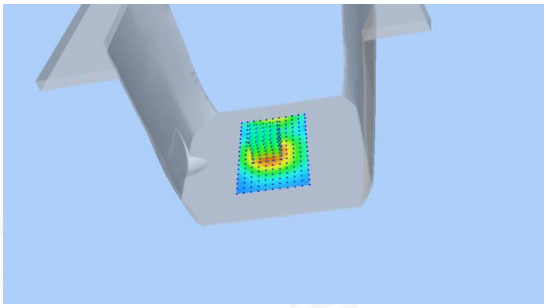
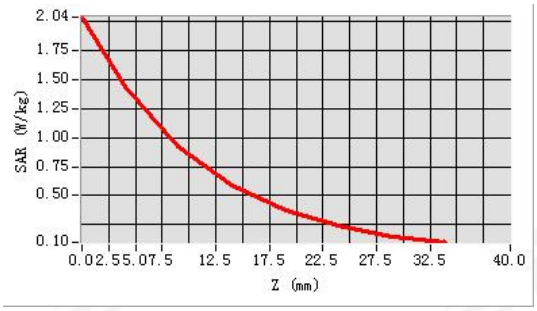
Plot 1: DUT: Personal Mobile Alarm System; EUT Model: EV-12X

Test Date	2025-04-15
Probe	SN 08/21 EPGO352
Area Scan	dx=8mm, dy=8mm, h= 5.00 mm
Zoom Scan	5x5x7, dx=8mm, dy=8mm, dz=5mm
Phantom	Validation plane
Device Position	Back Side
Band	LTE Band 2(RB 1)
Signal	LTE (Crest factor: 1.0)
Frequency (MHz)	1880
Relative permittivity (real part)	40.79
Conductivity (S/m)	1.41

Maximum location: X=-6.00, Y=0.00

SAR Peak: 2.04 W/kg

SAR 10g (W/Kg)	0.728406
SAR 1g (W/Kg)	1.354038

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

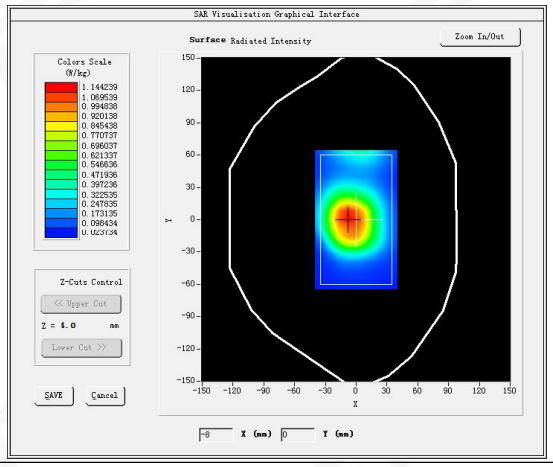
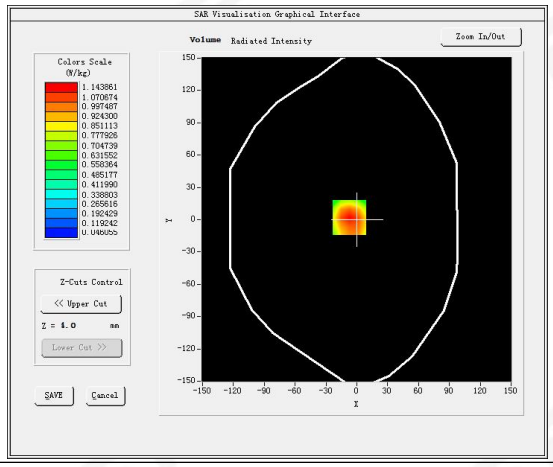
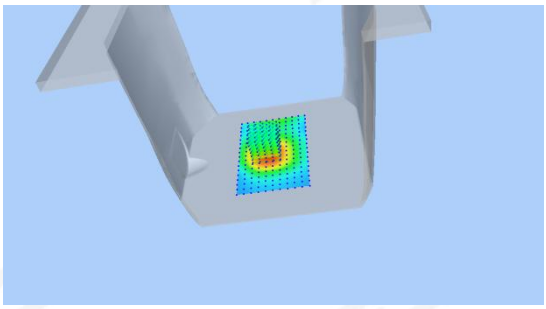
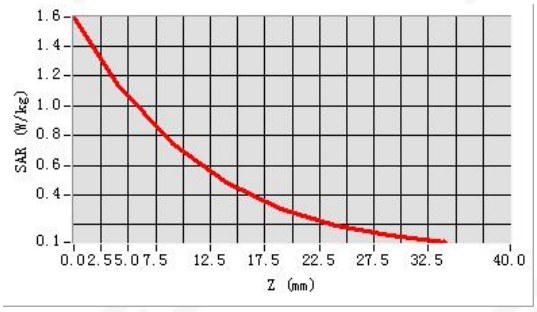
Plot 2: DUT: Personal Mobile Alarm System; EUT Model: EV-12X

Test Date	2025-04-15
Probe	SN 08/21 EPGO352
Area Scan	dx=8mm, dy=8mm, h= 5.00 mm
Zoom Scan	5x5x7, dx=8mm, dy=8mm, dz=5mm
Phantom	Validation plane
Device Position	Back Side
Band	LTE Band 4 (RB 1)
Signal	LTE (Crest factor: 1.0)
Frequency (MHz)	1720
Relative permittivity (real part)	40.50
Conductivity (S/m)	1.38

Maximum location: X=-7.00, Y=2.00

SAR Peak: 1.59 W/kg

SAR 10g (W/Kg)	0.668315
SAR 1g (W/Kg)	1.027569

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

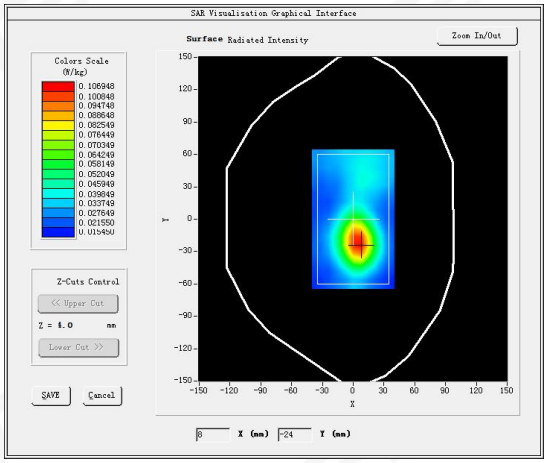
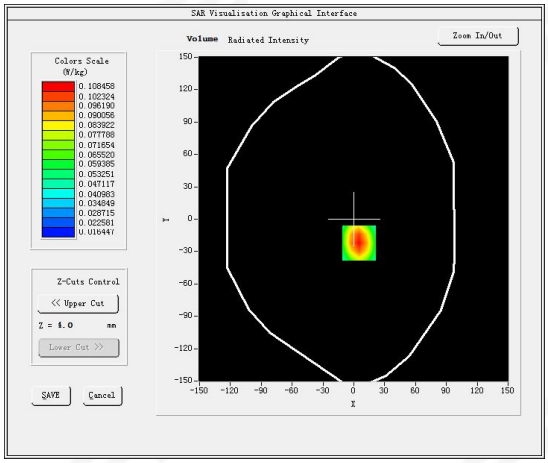
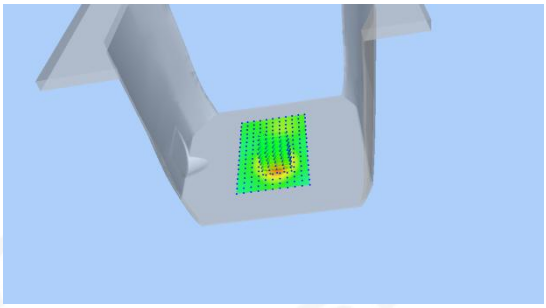
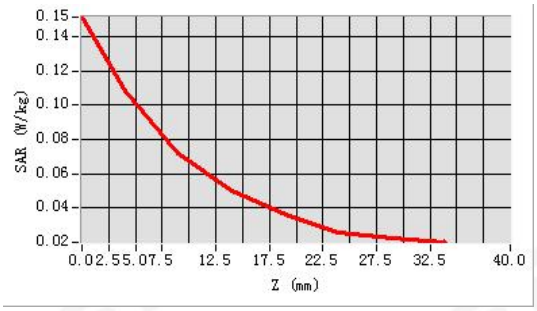
Plot 3: DUT: Personal Mobile Alarm System; EUT Model: EV-12X

Test Date	2025-04-14
Probe	SN 08/21 EPGO352
Area Scan	dx=8mm, dy=8mm, h= 5.00 mm
Zoom Scan	5x5x7, dx=8mm, dy=8mm, dz=5mm
Phantom	Validation plane
Device Position	Back Side
Band	LTE Band 12 (RB 1)
Signal	LTE (Crest factor: 1.0)
Frequency (MHz)	711
Relative permittivity (real part)	43.00
Conductivity (S/m)	0.91

Maximum location: X=5.00, Y=-22.00

SAR Peak: 0.15 W/kg

SAR 10g (W/Kg)	0.065999
SAR 1g (W/Kg)	0.108419

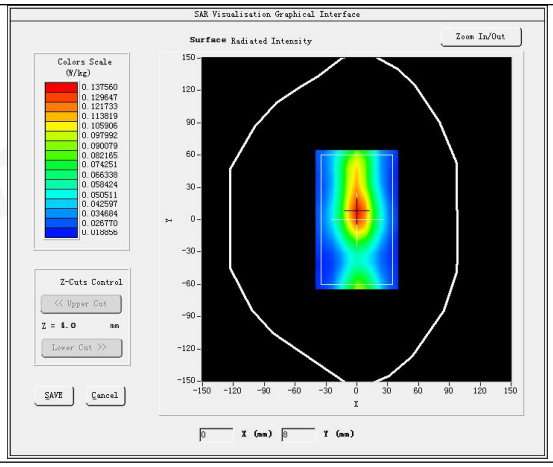
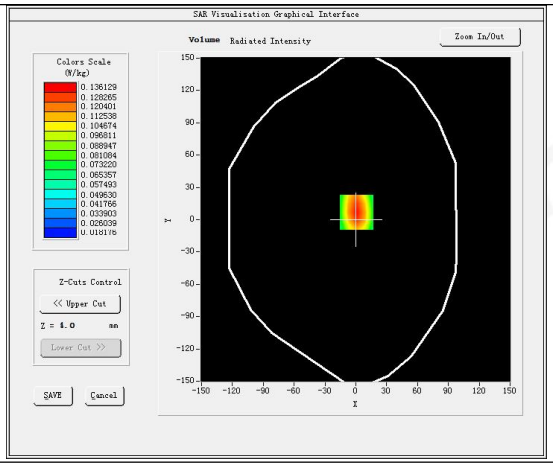
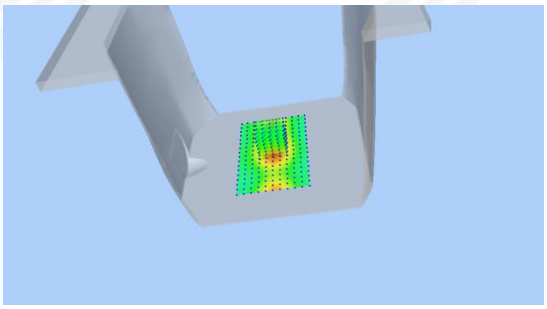
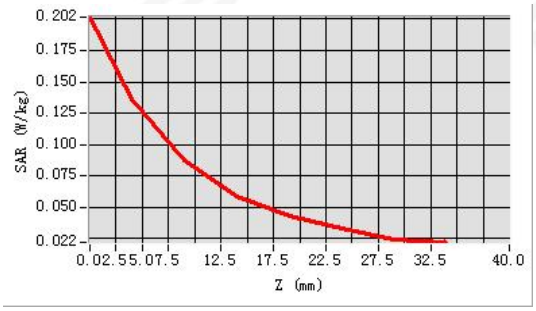
SURFACE SAR	VOLUME SAR
	
3D screen shot	**Z Axis Scan**
	

Plot 4: DUT: Personal Mobile Alarm System; EUT Model: EV-12X

Test Date	2025-04-16
Probe	SN 08/21 EPGO352
Area Scan	dx=8mm, dy=8mm, h= 5.00 mm
Zoom Scan	5x5x7, dx=8mm, dy=8mm, dz=5mm
Phantom	Validation plane
Device Position	Back Side
Band	IEEE 802.11b ISM
Signal	IEEE802.b (Crest factor: 1.0)
Frequency (MHz)	2412
Relative permittivity (real part)	40.25
Conductivity (S/m)	1.81

Maximum location: X=1.00, Y=7.00
SAR Peak: 0.20 W/kg

SAR 10g (W/Kg)	0.082446
SAR 1g (W/Kg)	0.134682

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

Appendix C. Probe Calibration and Dipole Calibration Report

Refer the appendix Calibration Report.

※※※※※END OF THE REPORT※※※※※