



FCC SAR TEST REPORT

Report No: STS1611185H01

Issued for

Bak USA Technologies Corp.

425 Michigan Avenue, Buffalo, NY 14203, USA

Product Name:	MID
Brand Name:	BAK
Model Name:	Seal 8 pro
Series Model:	N/A
FCC ID:	2AEY7-S8A002
Test Standard:	ANSI/IEEE Std. C95.1
	FCC 47 CFR Part 2 (2.1093)
	IEEE 1528: 2013
Max. Report SAR (1g):	Body:1.083 W/kg

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Test Report Certification

Applicant's name : Bak USA Technologies Corp.
 Address : 425 Michigan Avenue, Buffalo, NY 14203, USA
Manufacturer's Name : Bak USA Technologies Corp.
 Address : 425 Michigan Avenue, Buffalo, NY 14203, USA

Product description

Product name : MID
 Trademark : BAK
 Model and/or type reference : Seal 8 pro
 Series Model..... : N/A

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..... : 08 Dec. 2016
 Date of Issue..... : 12 Dec. 2016
 Test Result..... : **Pass**

Testing Engineer : Aaron Bu.
 (Aaron Bu)

Technical Manager : Vita Li
 (Vita Li)

Authorized Signatory : Bovey Yang
 (Bovey Yang)





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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

Equipment	MID					
Brand Name	BAK					
Model No.	Seal 8 pro					
Series Model	N/A					
FCC ID	2AEY7-S8A002					
Model Difference	N/A					
Battery	Rated Voltage: 3.7V; Charge Limit: 4.2V; Capacity: 5700mAh					
Device Category	Portable					
Product stage	Production unit					
RF Exposure Environment	General Population / Uncontrolled					
Hardware Version	N/A					
Software Version	N/A					
Frequency Range	LTE Band 2:1850.7~1909.3MHz LTE Band 4:1710.7~1754.3MHz LTE Band 5: 824.7~848.3MHz LTE Band 13: 779.5~784.5MHz LTE Band 17:706.5 ~713.5MHz Bluetooth:2402~ 2480MHz			802.11b/g/n(HT20/40):2412~2462MHz WLAN 802.11a/n/ac(HT20/40/80): 5150~5250 MHz; 5250~5350 MHz; 5470~5725 MHz; 5725~5875 MHz;		
Max. Reported SAR(1g): (Limit:1.6W/kg)	Band	Mode	Body Worn and Hotspot(W/kg)	Band	Mode	Body Worn and Hotspot(W/kg)
	PCT	LTE Band 2	0.553	DTS	WIFI (2.4 G)	0.012
	PCT	LTE Band 4	1.083	NII	WIFI (5.2 G)	0.011
	PCT	LTE Band 5	0.019	NII	WIFI (5.3 G)	0.014
	PCT	LTE Band 13	0.066	NII	WIFI (5.6 G)	0.015
	PCT	LTE Band 17	0.116	NII	WIFI (5.8 G)	0.005
	DSS	Bluetooth ^{Note}	0.334	/	/	/
1-g Sum SAR				1.417		
MIMO SAR(1g): (Limit:1.6W/kg)	Mode		SAR (W/kg)	Mode		SAR (W/kg)
	WIFI (2.4 G)		0.022	WIFI (5.6 G)		0.029
	WIFI (5.2 G)		0.018	WIFI (5.8 G)		0.008
	WIFI (5.3 G)		0.026	/		/
FCC Equipment Class	PCS Licensed Transmitter worn on body (PCT) Part 15 Spread Spectrum Transmitter (DSS) Digital Transmission System (DTS)					
Operating Mode:	LTE:QPSK,16QAM; WLAN: 802.11 a/b/g/n(HT20)/n(HT40)/a/ac20/ac40/ac80; Bluetooth: V3.0 + EDR (GFSK, π/4DQPSK, 8DPSK) Bluetooth: V4.0					
Antenna Specification:	LTE: PIFA Antenna BT,WIFI: PIFA Antenna					
SIM Card	Support single card					
Hotspot Mode:	2.4G support hotspot mode; 5G does not support hotspot mode.					
DTM Mode:	Not Support					



Note:

1. Bluetooth 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	Actual
Temperature (°C)	18-25	22~23
Humidity (%RH)	30-70	55~65

1.3 Test Factory

Shenzhen STS Test Services Co., Ltd.

Add. : 1/F, Building B, Zhuoke Science Park, No.190, Chongqing Road, Fuyong, Baoan District, Shenzhen, Guangdong, China





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 D05 v02r05	SAR for LTE 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
11	FCC KDB 616217 D04 v01r02	SAR for laptop and tablets

(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:

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

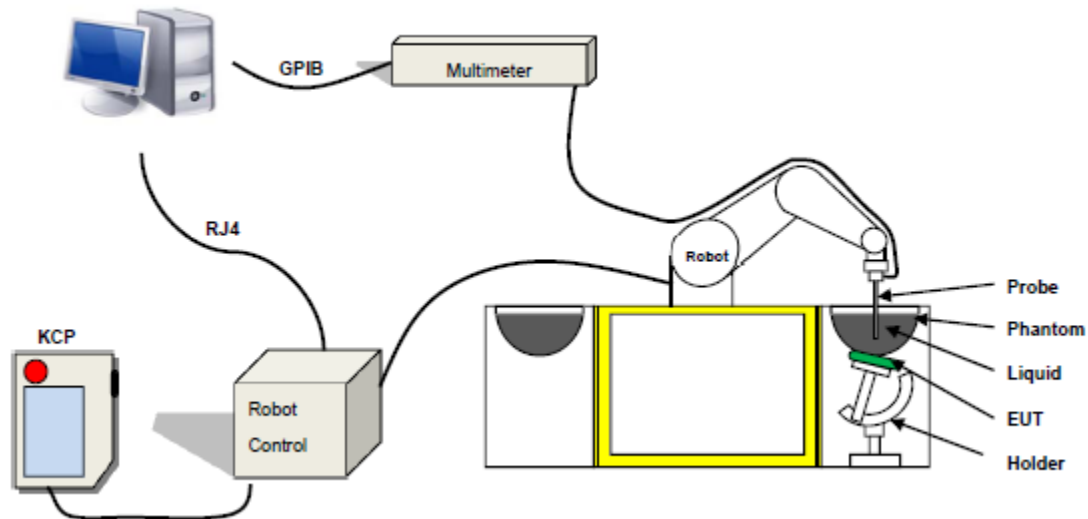
SAR is expressed in units of Watts per kilogram (W/kg) SAR measurement can be related to the electrical field in the tissue by

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

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

SATIMO 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 OpenSAR 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 45/15 EPGO281 with following specifications is used

- Dynamic range: 0.01-100 W/kg
 - Tip Diameter: 2.5 mm
 - Length of Individual Dipoles: 2 mm
 - Maximum external diameter: 8 mm
 - Distance between dipoles / probe extremity: 2.7 mm (repeatability better than +/- 1mm)
 - Probe linearity: $0 \pm 2.60\%$ (± 0.11 dB)
 - Axial Isotropy: < 0.25 dB
 - Spherical Isotropy: < 0.25 dB
 - Calibration range: 450MHz to 6GHz 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.

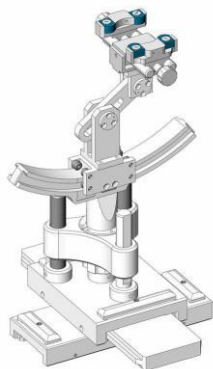
SN 32/14 SAM115



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.

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

Tissue dielectric parameters for head and body phantoms				
Frequency	ϵ_r		σ S/m	
	Head	Body	Head	Body
300	45.3	58.2	0.87	0.92
450	43.5	58.7	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: 08 Dec. 2016

Ambient condition: Temperature 22.30°C Relative humidity: 50%

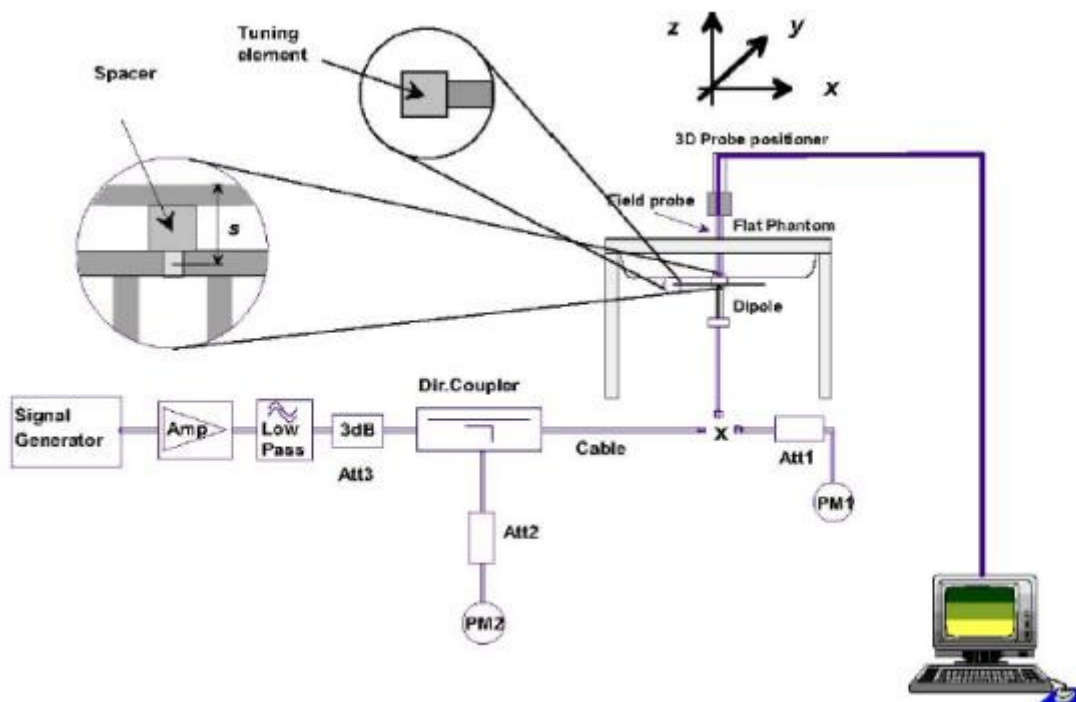
Body Simulating Liquid		Parameters	Target	Measured	Deviation[%]	Limited[%]
Frequency	Temp. [°C]					
750 MHz	22.30	Permittivity:	55.5	55.3	-0.36	±5
		Conductivity:	0.96	0.92	-4.17	±5
835 MHz	22.30	Permittivity:	55.2	54.1	-1.99	±5
		Conductivity:	0.97	0.99	2.06	±5
1800 MHz	22.30	Permittivity:	53.4	52.7	-1.31	±5
		Conductivity:	1.49	1.51	1.34	±5
1900 MHz	22.30	Permittivity:	53.3	52.32	-1.84	±5
		Conductivity:	1.52	1.51	-0.66	±5
2450 MHz	22.30	Permittivity:	52.7	52.35	-0.66	±5
		Conductivity:	1.95	1.93	-1.03	±5
5200 MHz	22.30	Permittivity :	49.0	47.5	-3.06	± 10
		Conductivity:	5.30	5.49	3.58	± 10
5300 MHz	22.30	Permittivity:	48.9	49.43	1.08	± 10
		Conductivity:	5.42	5.44	0.37	± 10
5600 MHz	22.30	Permittivity :	48.5	47.54	-1.98	± 10
		Conductivity:	5.77	5.78	0.17	± 10
5800 MHz	22.30	Permittivity:	48.2	48.82	1.29	± 10
		Conductivity:	6.00	5.73	-4.50	± 10

5. SAR System Validation

5.1 Validation System

Each SATIMO system is equipped with one or more system validation kits. These units, together with the predefined measurement procedures within the SATIMO 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 SATIMO, the validation data should be within its specification of 10 %.

Ambient condition: Temperature 23.2°C Relative humidity: 50%

Freq.(MHz)	Power(mW)	Tested Value (W/Kg)	Normalized SAR (W/kg)	Target(W/Kg)	Tolerance(%)	Date
750 Body	100	0.844	8.44	8.49	-0.59	2016-12-08
835 Body	100	0.959	9.59	9.56	0.31	2016-12-08
1800 Body	100	3.869	38.69	38.4	0.76	2016-12-08
1900 Body	100	4.052	40.52	39.7	2.07	2016-12-08
2450 Body	100	5.153	51.53	52.4	-1.66	2016-12-08
5200 Body	100	15.801	158.01	158.49	-0.30	2016-12-08
5600 Body	100	17.432	174.32	175.65	-0.76	2016-12-08
5800 Body	100	18.562	185.62	183.06	1.40	2016-12-08
5200 Body	100	15.849	158.49	159.00	-0.32	2016-12-08
5300 Body	100	16.93	169.33	166.40	1.76	2016-12-08
5600 Body	100	17.56	175.64	173.80	1.06	2016-12-08
5800 Body	100	18.54	185.41	181.20	2.32	2016-12-08

Note: The tolerance limit of System validation $\pm 10\%$.



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 to 16 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.

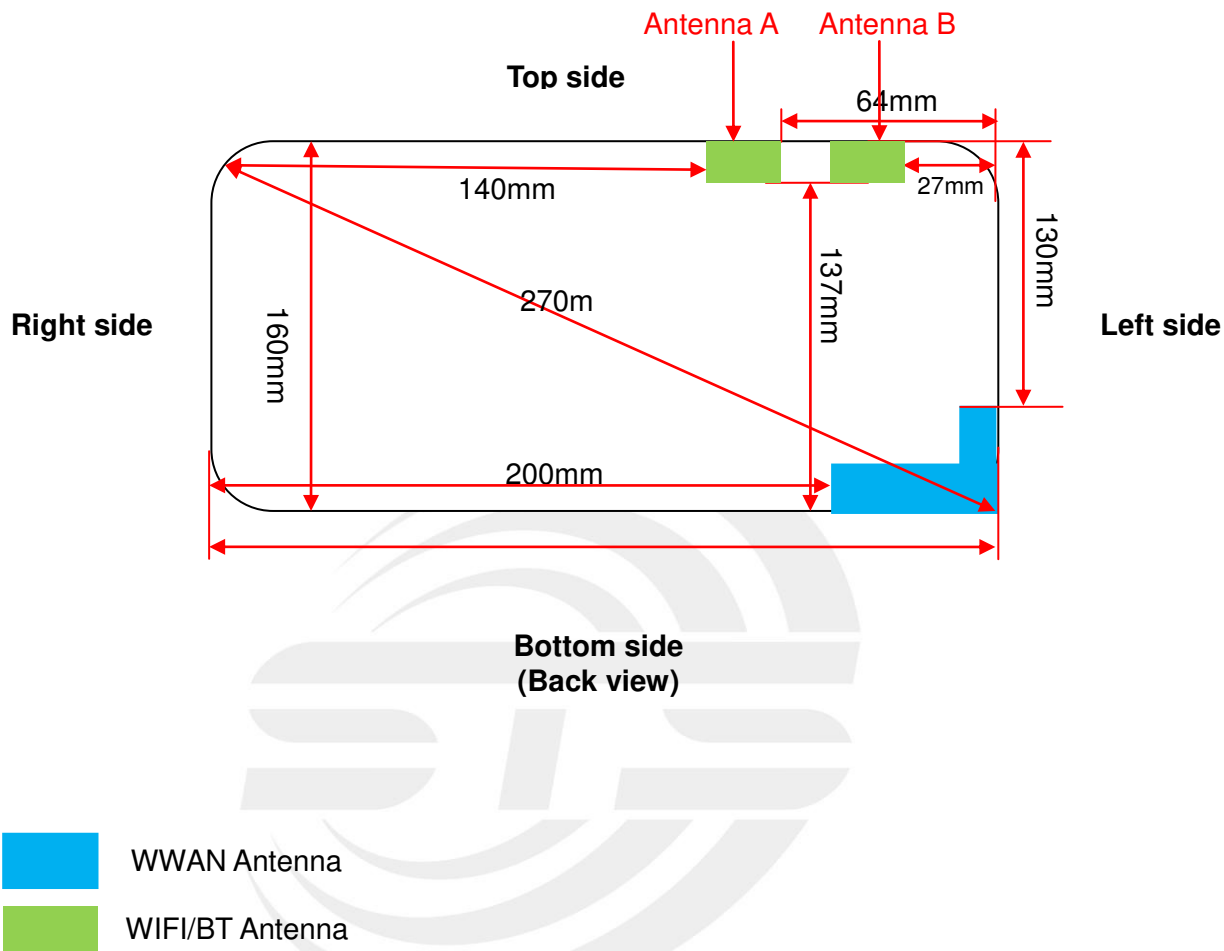
➤ Area Scan & Zoom Scan

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 MID, support LTE/WIFI/BT mode.





7.1 SAR test exclusion consider table

According with FCC KDB 447498 D01, appendix A, <SAR test exclusion thresholds for 100MHz ~6GHz and ≤50mm> table, this device SAR test configurations consider as following:

Band	Test position configurations				
	Back	Right edge	Left edge	Top edge	Bottom edge
WWAN	<5mm	200mm	<5mm	130mm	<5mm
	Yes	No	Yes	Yes	Yes
WIFI A /BT	<5mm	140mm	64mm	<5mm	137mm
	Yes	No	Yes	Yes	No
WIFI B	<5mm	177mm	27mm	<5mm	137mm
	Yes	No	Yes	Yes	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 <5mm, 5mm 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:

$$[(\text{max.power of channel, including tune-up tolerance, Mw}) / (\text{min. test separation distance, mm})] * [\sqrt{f(\text{GHz})}] \leq 3.0 \text{ for 1-g SAR and } \leq 7.5 \text{ for 10-g extremity SAR}$$
 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 step 1] + (test separation distance - 50mm) * 10 mW at > 1500MHz and ≤6GHz
6. Per KDB 447498 D02, RMC 12.2kbps setting is used to evaluate SAR. If HSDPA/HSUPA/DC-HSDPA output power is <0.25db higher than RMC 12.2Kbps, or reported SAR with RMC 12.2kbps setting is ≤1.2W/Kg, HSDPA/HSUPA/DC-HSDPA SAR evaluation can be excluded.
7. 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.

8. EUT Test Position

This EUT was tested in Rear Face.

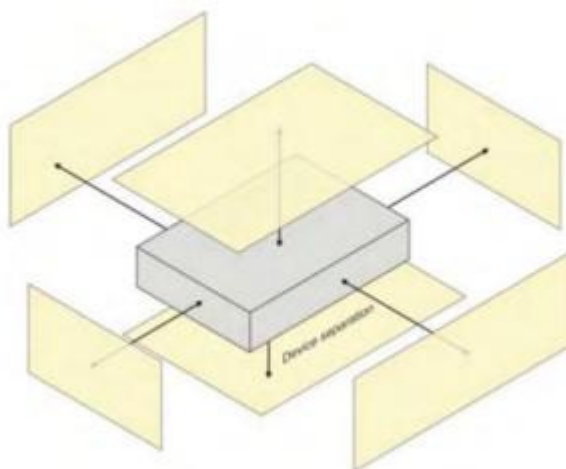
8.1 Body-worn Position Conditions:

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 $> 1.2 \text{ W/kg}$, 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 from 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.

NO	Source	Tol(%)	Prob. Dist.	Div. k	ci (1g)	ci (10g)	1gUi	10gUi	Veff
Measurement System									
1	Probe calibration	5.8	N	1	1	1	5.8	5.8	∞
2	Axial isotropy	3.5	R	$\sqrt{3}$	$(1-cp)^{1/2}$	$(1-cp)^{1/2}$	1.43	1.43	∞
3	Hemispherical isotropy	5.9	R	$\sqrt{3}$	$\sqrt{C_p}$	$\sqrt{C_p}$	2.41	2.41	∞
4	Boundary effect	1.0	R	$\sqrt{3}$	1	1	0.58	0.58	∞
5	Linearity	4.7	R	$\sqrt{3}$	1	1	2.71	2.71	∞
6	System Detection limits	1.0	R	$\sqrt{3}$	1	1	0.58	0.58	∞
7	Readout electronics	0.5	N	1	1	1	0.50	0.50	∞
8	Response time	0	R	$\sqrt{3}$	1	1	0	0	∞
9	Integration time	1.4	R	$\sqrt{3}$	1	1	0.81	0.81	∞
10	Ambient noise	3.0	R	$\sqrt{3}$	1	1	1.73	1.73	∞
11	Ambient reflections	3.0	R	$\sqrt{3}$	1	1	1.73	1.73	∞
12	Probe positioner mech. restrictions	1.4	R	$\sqrt{3}$	1	1	0.81	0.81	∞
13	Probe positioning with respect to phantom shell	1.4	R	$\sqrt{3}$	1	1	0.81	0.81	∞
14	Max.SAR evaluation	1.0	R	$\sqrt{3}$	1	1	0.6	0.6	∞
Test sample related									



15	Device positioning	2.6	N	1	1	1	2.6	2.6	11
16	Device holder	3	N	1	1	1	3.0	3.0	7
17	Drift of output power	5.0	R	$\sqrt{3}$	1	1	2.89	2.89	∞
Phantom and set-up									
18	Phantom uncertainty	4.0	R	$\sqrt{3}$	1	1	2.31	2.31	∞
19	Liquid conductivity (target)	2.5	N	1	0.78	0.71	1.95	1.78	5
20	Liquid conductivity (meas)	4	N	1	0.23	0.26	0.92	1.04	5
21	Liquid Permittivity (target)	2.5	N	1	0.78	0.71	1.95	1.78	∞
22	Liquid Permittivity (meas)	5.0	N	1	0.23	0.26	1.15	1.30	∞
Combined standard			RSS	$U_c = \sqrt{\sum_{i=1}^n C_i^2 U_i^2}$			10.63%	10.54%	
Expanded uncertainty (P=95%)		$U = k U_c, k=2$					21.26%	21.08%	



9.2 System validation Uncertainty

NO	Source	Tol(%)	Prob. Dist.	Div. k	ci (1g)	ci (10g)	1gUi	10gUi	Veff
Measurement System									
1	Probe calibration	5.8	N	1	1	1	5.8	5.8	∞
2	Axial isotropy	3.5	R	$\sqrt{3}$	$(1-cp)^{1/2}$	$(1-cp)^{1/2}$	1.43	1.43	∞
3	Hemispherical isotropy	5.9	R	$\sqrt{3}$	$\sqrt{C_p}$	$\sqrt{C_p}$	2.41	2.41	∞
4	Boundary effect	1.0	R	$\sqrt{3}$	1	1	0.58	0.58	∞
5	Linearity	4.7	R	$\sqrt{3}$	1	1	2.71	2.71	∞
6	System Detection limits	1.0	R	$\sqrt{3}$	1	1	0.58	0.58	∞
7	Modulation response	0	N	1	1	1	0	0	∞
8	Readout electronics	0.5	N	1	1	1	0.50	0.50	∞
9	Response time	0	R	$\sqrt{3}$	1	1	0	0	∞
10	Integration time	1.4	R	$\sqrt{3}$	1	1	0.81	0.81	∞
11	Ambient noise	3.0	R	$\sqrt{3}$	1	1	1.73	1.73	∞
12	Ambient reflections	3.0	R	$\sqrt{3}$	1	1	1.73	1.73	∞
13	Probe positioner mech. restrictions	1.4	R	$\sqrt{3}$	1	1	0.81	0.81	∞
14	Probe positioning with respect to phantom shell	1.4	R	$\sqrt{3}$	1	1	0.81	0.81	∞
15	Max.SAR evaluation	1.0	R	$\sqrt{3}$	1	1	0.6	0.6	∞
Dipole									
16	Deviation of experimental source from	4	N	1	1	1	4.00	4.00	∞



17	Input power and SAR drift measurement	5	R	$\sqrt{3}$	1	1	2.89	2.89	∞
18	Dipole Axis to liquid Distance	2	R	$\sqrt{3}$	1	1			∞
Phantom and set-up									
19	Phantom uncertainty	4.0	R	$\sqrt{3}$	1	1	2.31	2.31	∞
20	Uncertainty in SAR correction for deviation(in	2.0	N	1	1	0.84	2	1.68	∞
21	Liquid conductivity (target)	2	N	1	1	0.84	2.00	1.68	∞
22	Liquid conductivity (temperature uncertainty)	2.5	N	1	0.78	0.71	1.95	1.78	5
23	Liquid conductivity (meas)	4	N	1	0.23	0.26	0.92	1.04	5
24	Liquid Permittivity (target)	2.5	N	1	0.78	0.71	1.95	1.78	∞
25	Liquid Permittivity (temperature uncertainty)	2.5	N	1	0.78	0.71	1.95	1.78	5
26	Liquid Permittivity (meas)	5.0	N	1	0.23	0.26	1.15	1.30	∞
Combined standard			RSS	$U_c = \sqrt{\sum_{i=1}^n C_i^2 U_i^2}$			10.15%	10.05%	
Expanded uncertainty (P=95%)		$U = k U_c, k=2$					20.29%	20.10%	



10. Conducted Power Measurement

10.1 Test Result

General Note:

1 Power must be measured at each transmit antenna port according to the DSSS and OFDM transmission configurations in each standalone and aggregated frequency band.

2 Power measurement is required for the transmission mode configuration with the highest maximum output power specified for production units.

1) When the same highest maximum output power specification applies to multiple transmission modes, the largest channel bandwidth configuration with the lowest order modulation and lowest data rate is measured.

2) When the same highest maximum output power is specified for multiple largest channel bandwidth configurations with the same lowest order modulation or lowest order modulation and lowest data rate, power measurement is required for all equivalent 802.11 configurations with the same maximum output power.

3 For each transmission mode configuration, power must be measured for the highest and lowest channels; and at the mid-band channel(s) when there are at least 3 channels. For configurations with multiple mid-band channels, due to an even number of channels, both channels should be measured.

Band	Model	Ch.	Freq. (MHz)	Average Power (dBm)	Average Power (dBm)	Total Average Power (dBm)	SAR Test Require
				Ant 1	Ant 2		
2450MHz	802.11b	1	2412	16.79	17.58	20.21	No
		6	2437	17.51	18.42	21.00	No
		11	2462	17.79	18.95	21.42	Yes
	802.11g	1	2412	14.49	15.27	17.91	No
		6	2437	16.69	17.35	20.04	No
		11	2462	14.58	14.94	17.77	No
	802.11n (HT20)	1	2412	13.35	14.14	16.77	No
		6	2437	16.33	17.10	19.74	No
		11	2462	14.28	14.90	17.61	No
	802.11n (HT40)	3	2422	12.66	13.26	15.98	No
		6	2437	16.71	17.25	20.00	No
		9	2452	13.05	13.75	16.42	No



Band	Model	Ch.	Freq. (MHz)	Average Power (dBm)	Average Power (dBm)	Total Average Power (dBm)	SAR Test Require
				Ant 1	Ant 2		
5200MHz	802.11a	36	5180	14.98	15.18	18.09	Yes
		44	5220	14.86	15.09	17.99	No
		48	5240	14.72	15.06	17.90	No
	802.11n (HT20)	36	5180	14.20	14.96	17.61	No
		44	5220	14.22	14.83	17.55	No
		48	5240	14.35	14.82	17.60	No
	802.11n (HT40)	38	5190	14.14	14.68	17.43	No
		46	5230	14.28	14.62	17.46	No
	802.11ac (VHT20)	36	5180	14.04	14.60	17.34	No
		44	5220	13.96	14.59	17.30	No
		48	5240	13.86	14.44	17.17	No
	802.11ac (VHT40)	38	5190	14.26	14.73	17.51	No
		46	5230	14.25	14.67	17.48	No
	802.11ac (VHT80)	42(36)	5210	12.89	13.67	16.31	No
5300MHz	802.11a	52	5260	14.86	14.96	17.92	No
		60	5300	14.92	15.21	18.08	Yes
		64	5320	14.86	15.08	17.98	No
	802.11n (HT20)	52	5260	14.36	14.68	17.53	No
		60	5300	14.23	14.93	17.60	No
		64	5320	14.29	14.78	17.55	No
	802.11n (HT40)	54	5270	14.24	14.70	17.49	No
		62	5310	13.70	14.73	17.26	No
	802.11ac (VHT20)	52	5260	13.96	14.33	17.16	No
		60	5300	13.94	14.47	17.22	No
		64	5320	14.06	14.57	17.33	No
	802.11ac (VHT40)	54	5270	14.16	14.60	17.40	No
		62	5310	14.18	14.85	17.54	No
	802.11ac (VHT80)	58(52)	5290	13.16	13.60	16.40	No



Band	Model	Ch.	Freq. (MHz)	Average Power (dBm)	Average Power (dBm)	Total Average Power (dBm)	SAR Test Require
				Ant 1	Ant 2		
5600MHz	802.11a	100	5500	14.82	15.83	18.36	No
		120	5600	15.58	15.67	18.64	Yes
		140	5700	15.57	14.30	17.99	No
	802.11n (HT20)	100	5500	15.48	15.60	18.55	No
		120	5600	15.84	15.23	18.56	No
		140	5700	15.42	14.06	17.80	No
	802.11n (HT40)	102	5510	13.50	13.13	16.33	No
		118	5590	15.03	15.29	18.17	No
		134	5670	15.08	14.82	17.96	No
	802.11ac (VHT20)	100	5500	15.36	15.30	18.34	No
		120	5600	15.72	14.95	18.36	No
		140	5700	15.10	14.03	17.61	No
		144	5720	15.46	14.01	17.81	No
	802.11ac (VHT40)	102	5510	13.57	13.17	16.38	No
		118	5590	14.94	15.20	18.08	No
		134	5670	14.98	14.82	17.91	No
	802.11ac (VHT80)	106(100)	5530	13.15	13.04	16.11	No
		122(116)	5610	13.84	14.17	17.02	No
5800MHz	802.11a	149	5745	16.04	15.03	18.57	Yes
		157	5785	15.52	14.38	18.00	No
		165	5825	15.21	13.79	17.57	No
	802.11n (HT20)	149	5745	16.12	14.77	18.51	No
		157	5785	15.60	14.25	17.99	No
		165	5825	15.40	13.61	17.61	No
	802.11n (HT40)	151	5755	14.98	14.52	17.77	No
		159	5795	14.54	14.47	17.52	No
	802.11ac (VHT20)	149	5745	15.96	14.46	18.28	No
		157	5785	15.64	13.71	17.79	No
		165	5825	15.08	13.19	17.25	No
	802.11ac (VHT40)	142	5710	15.16	14.40	17.81	No
		151	5755	14.88	14.45	17.68	No
		159	5795	14.64	13.93	17.31	No
	802.11ac (VHT80)	138(132)	5690	13.88	13.64	16.77	No
		155(157)	5775	13.42	13.29	16.37	No

**Bluetooth**

Mode	Channel Number	Frequency (MHz)	Average Power (dBm)
GFSK(1Mbps)	0	2402	5.91
	39	2441	7.71
	78	2480	8.69
$\pi/4$ -DQPSK(2Mbps)	0	2402	2.81
	39	2441	4.36
	78	2480	5.28
8DPSK(3Mbps)	0	2402	2.79
	39	2441	4.37
	78	2480	5.26

BT 4.0

Mode	Channel Number	Frequency (MHz)	Average Power (dBm)
GFSK(1Mbps)	0	2402	-0.31
	19	2440	0.25
	39	2480	-0.13



LTE Conducted Power

General Note:

1. Anritsu MT8820C 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 $\frac{1}{2}$ 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 $\frac{1}{2}$ 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

BW(MHz)	Modulation	RB Size	RB Offset	Power Low CH./Freq.	Power Middle CH./Freq.	Power High CH./Freq.
Channel				18607	18900	19193
Frequency(MHz)				1850.7	1880	1909.3
1.4	QPSK	1	0	23.14	21.93	22.48
1.4	QPSK	1	2	22.94	21.61	22.11
1.4	QPSK	1	5	23.00	22.27	22.65
1.4	QPSK	3	0	23.09	21.57	22.55
1.4	QPSK	3	1	23.01	22.19	22.31
1.4	QPSK	3	2	22.84	22.47	22.75
1.4	QPSK	6	0	22.99	21.32	22.23
1.4	16QAM	1	0	21.96	23.13	23.18
1.4	16QAM	1	2	22.13	23.51	23.54
1.4	16QAM	1	5	22.73	23.56	23.09
1.4	16QAM	3	0	22.14	23.23	23.15
1.4	16QAM	3	1	21.96	23.51	23.17
1.4	16QAM	3	2	22.08	23.50	23.05
1.4	16QAM	6	0	21.97	23.04	23.47
Channel				18615	18900	19185
Frequency(MHz)				1851.5	1880	1908.5
3	QPSK	1	0	20.05	23.65	20.11
3	QPSK	1	7	19.96	23.37	21.02
3	QPSK	1	14	19.95	22.69	20.28
3	QPSK	8	0	20.08	22.49	20.48
3	QPSK	8	4	20.31	22.78	21.03
3	QPSK	8	7	20.34	20.71	21.44
3	QPSK	15	0	20.23	22.10	21.29
3	16QAM	1	0	22.27	21.09	21.33
3	16QAM	1	7	23.02	21.02	20.39
3	16QAM	1	14	23.13	21.13	22.15
3	16QAM	8	0	22.31	20.89	21.70
3	16QAM	8	4	22.26	22.89	22.45
3	16QAM	8	7	21.98	21.33	22.38
3	16QAM	15	0	20.09	21.24	22.29
Channel				18625	18900	19175
Frequency(MHz)				1852.5	1880	1907.5
5	QPSK	1	0	20.23	21.13	21.84
5	QPSK	1	12	20.61	21.02	21.67
5	QPSK	1	24	20.54	21.13	20.72
5	QPSK	12	0	20.57	21.02	20.92
5	QPSK	12	6	20.04	21.05	21.82
5	QPSK	12	11	20.86	21.23	22.44
5	QPSK	25	0	20.60	21.27	21.22
5	16QAM	1	0	22.95	23.65	20.58
5	16QAM	1	12	22.98	21.07	21.98
5	16QAM	1	24	21.80	22.56	22.02
5	16QAM	12	0	23.17	22.53	22.00
5	16QAM	12	6	22.26	23.19	22.33
5	16QAM	12	11	21.82	23.03	21.97
5	16QAM	25	0	23.04	22.49	23.27



Channel				18650	18900	19150
Frequency(MHz)				1855	1880	1905
10	QPSK	1	0	21.51	21.59	22.01
10	QPSK	1	24	22.78	21.33	21.98
10	QPSK	1	49	22.57	22.89	22.22
10	QPSK	25	0	22.06	23.37	22.06
10	QPSK	25	12	22.03	22.46	21.51
10	QPSK	25	24	22.25	22.31	22.37
10	QPSK	50	0	22.57	22.55	21.87
10	16QAM	1	0	22.14	22.30	23.20
10	16QAM	1	24	22.45	21.45	23.11
10	16QAM	1	49	22.20	21.45	22.98
10	16QAM	25	0	22.09	21.38	22.73
10	16QAM	25	12	22.18	21.08	22.07
10	16QAM	25	24	21.56	21.78	22.30
10	16QAM	50	0	23.10	21.33	22.27
Channel				18675	18900	19125
Frequency(MHz)				1857.5	1880	1902.5
15	QPSK	1	0	22.08	22.68	21.45
15	QPSK	1	37	22.15	22.52	21.32
15	QPSK	1	74	21.95	22.34	21.33
15	QPSK	36	0	22.13	20.80	21.10
15	QPSK	36	18	22.27	22.61	21.38
15	QPSK	36	39	21.97	21.75	21.10
15	QPSK	75	0	22.11	21.32	21.73
15	16QAM	1	0	21.10	22.09	22.56
15	16QAM	1	38	21.37	22.04	22.37
15	16QAM	1	75	21.08	21.97	22.32
15	16QAM	36	0	21.28	22.11	22.13
15	16QAM	36	18	21.07	22.55	22.42
15	16QAM	36	39	21.13	22.34	22.83
15	16QAM	75	0	21.15	22.44	22.89
Channel				18700	18900	19100
Frequency(MHz)				1860	1880	1900
20	QPSK	1	0	22.32	21.41	21.23
20	QPSK	1	49	21.95	21.01	22.14
20	QPSK	1	99	22.02	21.04	22.02
20	QPSK	50	0	22.41	21.45	22.30
20	QPSK	50	24	22.39	21.07	21.87
20	QPSK	50	49	22.45	21.31	22.22
20	QPSK	100	0	22.22	20.93	22.43
20	16QAM	1	0	21.46	21.65	21.45
20	16QAM	1	49	21.31	22.38	21.42
20	16QAM	1	99	21.56	22.32	21.33
20	16QAM	50	0	21.32	21.79	21.64
20	16QAM	50	24	21.54	22.45	21.34
20	16QAM	50	49	21.61	22.65	21.43
20	16QAM	100	0	21.48	22.04	21.58



LTE Band 4

BW(MHz)	Modulation	RB Size	RB Offset	Power Low CH./Freq.	Power Middle CH./Freq.	Power High CH./Freq.
Channel				19957	20175	20393
Frequency(MHz)				1710.7	1732.5	1754.3
1.4	QPSK	1	0	22.65	20.58	21.49
1.4	QPSK	1	2	23.06	20.77	21.42
1.4	QPSK	1	5	23.05	20.78	21.31
1.4	QPSK	3	0	22.83	20.65	21.82
1.4	QPSK	3	1	21.87	20.24	22.02
1.4	QPSK	3	2	22.73	20.41	22.76
1.4	QPSK	6	0	22.86	20.47	22.21
1.4	16QAM	1	0	22.33	22.65	23.23
1.4	16QAM	1	2	22.02	22.21	23.12
1.4	16QAM	1	5	22.50	22.14	23.13
1.4	16QAM	3	0	22.85	22.56	23.06
1.4	16QAM	3	1	21.77	22.86	23.03
1.4	16QAM	3	2	21.99	22.78	22.90
1.4	16QAM	6	0	22.36	22.17	22.81
Channel				19965	20175	20385
Frequency(MHz)				1711.5	1732.5	1753.5
3	QPSK	1	0	21.45	21.90	21.21
3	QPSK	1	7	21.98	21.92	21.41
3	QPSK	1	14	22.42	22.80	21.86
3	QPSK	8	0	22.11	23.02	21.80
3	QPSK	8	4	22.19	21.38	21.12
3	QPSK	8	7	22.49	22.73	21.70
3	QPSK	15	0	22.03	23.08	21.24
3	16QAM	1	0	22.25	19.77	19.17
3	16QAM	1	7	21.97	20.12	18.98
3	16QAM	1	14	22.05	20.02	21.81
3	16QAM	8	0	22.11	21.20	22.52
3	16QAM	8	4	21.97	19.57	21.90
3	16QAM	8	7	22.12	20.61	21.82
3	16QAM	15	0	22.00	20.81	23.36
Channel				19975	20175	20375
Frequency(MHz)				1712.5	1732.5	1752.5
5	QPSK	1	0	21.77	20.50	21.39
5	QPSK	1	12	21.81	23.07	22.20
5	QPSK	1	24	20.76	22.95	22.02
5	QPSK	12	0	22.67	22.80	22.81
5	QPSK	12	6	21.76	20.79	22.83
5	QPSK	12	11	21.02	20.34	20.98
5	QPSK	25	0	20.71	22.65	20.86
5	16QAM	1	0	22.54	22.64	21.01
5	16QAM	1	12	21.74	21.67	20.67
5	16QAM	1	24	23.19	22.48	20.88
5	16QAM	12	0	22.08	22.71	21.10
5	16QAM	12	6	22.04	21.99	21.55
5	16QAM	12	11	21.81	21.93	19.64
5	16QAM	25	0	22.83	23.02	21.49



Channel				20000	20175	20350
Frequency(MHz)				1715	1732.5	1750
10	QPSK	1	0	20.92	22.48	21.95
10	QPSK	1	24	20.45	22.37	20.70
10	QPSK	1	49	20.59	21.17	21.85
10	QPSK	25	0	20.61	22.04	21.28
10	QPSK	25	12	20.18	22.03	20.35
10	QPSK	25	24	20.35	22.01	20.84
10	QPSK	50	0	20.98	21.98	21.17
10	16QAM	1	0	21.96	21.12	21.57
10	16QAM	1	24	21.22	21.08	21.28
10	16QAM	1	49	22.18	20.56	22.15
10	16QAM	25	0	21.83	20.84	21.72
10	16QAM	25	12	20.78	20.48	21.24
10	16QAM	25	24	21.09	20.99	21.36
10	16QAM	50	0	21.94	20.73	21.29
Channel				20025	20175	20325
Frequency(MHz)				1717.5	1732.5	1747.5
15	QPSK	1	0	20.03	22.50	20.34
15	QPSK	1	37	20.64	22.96	20.31
15	QPSK	1	74	20.10	22.85	19.87
15	QPSK	36	0	20.26	22.97	19.96
15	QPSK	36	18	20.69	22.55	20.23
15	QPSK	36	39	19.93	22.81	20.31
15	QPSK	75	0	20.86	22.79	20.41
15	16QAM	1	0	21.54	20.46	21.10
15	16QAM	1	38	21.33	20.31	21.97
15	16QAM	1	75	20.43	20.45	20.98
15	16QAM	36	0	20.72	20.33	21.45
15	16QAM	36	18	19.90	19.84	21.03
15	16QAM	36	39	20.27	20.32	21.19
15	16QAM	75	0	20.73	19.70	21.01
Channel				20050	20175	20300
Frequency(MHz)				1720	1732.5	1745
20	QPSK	1	0	20.49	22.04	20.09
20	QPSK	1	49	20.34	21.46	20.11
20	QPSK	1	99	20.99	22.09	21.23
20	QPSK	50	0	20.49	22.00	20.65
20	QPSK	50	24	20.03	21.89	20.09
20	QPSK	50	49	20.20	21.45	20.12
20	QPSK	100	0	20.14	21.50	20.54
20	16QAM	1	0	20.99	22.10	20.55
20	16QAM	1	49	20.54	22.11	20.86
20	16QAM	1	99	20.81	21.75	21.49
20	16QAM	50	0	20.83	21.90	21.03
20	16QAM	50	24	20.96	20.89	21.78
20	16QAM	50	49	20.77	20.43	21.21
20	16QAM	100	0	20.50	20.63	20.81



LTE Band 5

BW(MHz)	Modulation	RB Size	RB Offset	Power Low CH./Freq.	Power Middle CH./Freq.	Power High CH./Freq.
Channel				20407	20525	20643
Frequency(MHz)				824.7	836.5	848.3
1.4	QPSK	1	0	20.81	21.37	21.13
1.4	QPSK	1	2	21.97	21.46	21.47
1.4	QPSK	1	5	21.96	20.64	20.75
1.4	QPSK	3	0	21.02	21.09	20.85
1.4	QPSK	3	1	22.02	20.88	20.73
1.4	QPSK	3	2	21.85	20.65	20.62
1.4	QPSK	6	0	20.60	20.95	22.46
1.4	16QAM	1	0	21.35	21.50	21.82
1.4	16QAM	1	2	21.04	21.77	20.64
1.4	16QAM	1	5	21.49	21.94	20.98
1.4	16QAM	3	0	20.83	20.71	22.68
1.4	16QAM	3	1	20.77	21.83	21.33
1.4	16QAM	3	2	20.79	22.00	21.85
1.4	16QAM	6	0	21.01	20.86	21.60
Channel				20415	20525	20635
Frequency(MHz)				825.5	836.5	847.5
3	QPSK	1	0	21.21	21.04	21.31
3	QPSK	1	7	20.90	20.69	21.55
3	QPSK	1	14	21.87	21.30	22.06
3	QPSK	8	0	22.26	20.54	20.63
3	QPSK	8	4	20.65	21.18	21.38
3	QPSK	8	7	20.45	20.46	21.30
3	QPSK	15	0	20.88	20.86	20.85
3	16QAM	1	0	20.21	20.97	20.72
3	16QAM	1	7	21.09	20.72	22.20
3	16QAM	1	14	22.01	21.72	23.11
3	16QAM	8	0	21.68	23.22	20.67
3	16QAM	8	4	21.44	20.73	22.20
3	16QAM	8	7	22.25	21.99	22.03
3	16QAM	15	0	21.18	21.54	21.42
Channel				20425	20525	20625
Frequency(MHz)				826.5	836.5	846.5
5	QPSK	1	0	20.63	20.73	20.97
5	QPSK	1	12	21.16	19.49	20.86
5	QPSK	1	24	20.97	22.02	21.05
5	QPSK	12	0	20.66	21.35	21.42
5	QPSK	12	6	21.43	19.81	20.54
5	QPSK	12	11	21.10	19.62	20.77
5	QPSK	25	0	21.10	21.22	20.72
5	16QAM	1	0	20.75	21.42	21.11
5	16QAM	1	12	21.34	20.95	20.37
5	16QAM	1	24	21.59	21.41	21.88
5	16QAM	12	0	23.22	21.05	21.14
5	16QAM	12	6	20.96	20.67	20.82
5	16QAM	12	11	21.18	20.74	20.32
5	16QAM	25	0	20.63	20.97	21.05



Channel				20450	20525	20600
Frequency(MHz)				829	836.5	844
10	QPSK	1	0	20.43	20.95	20.70
10	QPSK	1	24	21.53	20.81	21.08
10	QPSK	1	49	21.02	20.99	21.18
10	QPSK	25	0	20.01	20.74	20.11
10	QPSK	25	12	20.66	20.62	20.54
10	QPSK	25	24	20.39	21.37	20.64
10	QPSK	50	0	20.45	21.13	20.75
10	16QAM	1	0	21.86	19.83	20.56
10	16QAM	1	24	21.66	19.43	21.68
10	16QAM	1	49	21.17	20.55	21.01
10	16QAM	25	0	21.11	19.92	20.87
10	16QAM	25	12	21.35	19.45	20.80
10	16QAM	25	24	21.34	20.92	20.86
10	16QAM	50	0	20.87	21.36	21.54

LTE Band 13

BW(MHz)	Modulation	RB Size	RB Offset	Power Low CH./Freq.	Power Middle CH./Freq.	Power High CH./Freq.
Channel				23205	23230	23255
Frequency(MHz)				779.5	782	784.5
5	QPSK	1	0	21.71	21.72	21.06
5	QPSK	1	12	19.75	22.06	21.62
5	QPSK	1	24	21.45	20.91	21.17
5	QPSK	12	0	21.50	20.90	22.44
5	QPSK	12	6	20.02	22.49	20.59
5	QPSK	12	11	22.17	21.12	20.95
5	QPSK	25	0	21.93	21.09	20.84
5	16QAM	1	0	21.52	20.68	20.74
5	16QAM	1	12	20.80	21.76	20.70
5	16QAM	1	24	22.23	20.99	23.31
5	16QAM	12	0	22.05	21.20	20.90
5	16QAM	12	6	22.37	22.31	22.28
5	16QAM	12	11	21.94	23.49	21.96
5	16QAM	25	0	21.78	20.80	20.58
Channel				23230		
Frequency(MHz)				782		
10	QPSK	1	0	22.03		
10	QPSK	1	24	20.92		
10	QPSK	1	49	22.37		
10	QPSK	25	0	22.52		
10	QPSK	25	12	20.92		
10	QPSK	25	24	23.11		
10	QPSK	50	0	20.81		
10	16QAM	1	0	22.34		
10	16QAM	1	24	21.65		
10	16QAM	1	49	22.26		
10	16QAM	25	0	21.26		
10	16QAM	25	12	21.39		
10	16QAM	25	24	22.83		
10	16QAM	50	0	21.73		



LTE Band 17

BW(MHz)	Modulation	RB Size	RB Offset	Power Low CH./Freq.	Power Middle CH./Freq.	Power High CH./Freq.
Channel				23755	23790	23825
Frequency(MHz)				706.5	710	713.5
5	QPSK	1	0	21.06	21.55	21.34
5	QPSK	1	12	22.08	21.03	20.98
5	QPSK	1	24	22.40	22.48	20.36
5	QPSK	12	0	21.59	22.38	22.35
5	QPSK	12	6	23.49	21.79	20.54
5	QPSK	12	11	22.05	22.91	20.44
5	QPSK	25	0	22.34	22.43	22.38
5	16QAM	1	0	22.06	21.93	21.28
5	16QAM	1	12	20.61	22.07	21.74
5	16QAM	1	24	20.99	20.72	23.17
5	16QAM	12	0	20.62	21.10	22.46
5	16QAM	12	6	21.01	21.16	22.08
5	16QAM	12	11	22.54	23.27	21.80
5	16QAM	25	0	20.52	20.63	22.49
Channel				23780	23790	23800
Frequency(MHz)				709	710	711
10	QPSK	1	0	21.54	21.72	21.01
10	QPSK	1	24	21.06	21.81	22.30
10	QPSK	1	49	20.68	21.34	22.21
10	QPSK	25	0	21.98	22.34	21.40
10	QPSK	25	12	21.32	21.67	20.89
10	QPSK	25	24	21.72	22.89	23.08
10	QPSK	50	0	22.02	22.04	22.07
10	16QAM	1	0	22.08	21.54	21.12
10	16QAM	1	24	22.11	20.91	22.41
10	16QAM	1	49	23.07	21.14	21.39
10	16QAM	25	0	22.13	20.60	20.91
10	16QAM	25	12	22.21	21.46	20.88
10	16QAM	25	24	21.57	21.24	22.70
10	16QAM	50	0	21.57	20.52	21.68



10.2 Tune-up Power

Band	Mode	Antenna A	Antenna B	
2450MHz	IEEE 802.11b		17±1dBm	18±1dBm
	IEEE 802.11g	Low Channel	14±1dBm	15±1dBm
		Mid. Channel	16±1dBm	17±1dBm
		High Channel	14±1dBm	14±1dBm
	IEEE 802.11n(HT 20)	Low Channel	13±1dBm	14±1dBm
		Mid. Channel	16±1dBm	17±1dBm
		High Channel	14±1dBm	14±1dBm
	IEEE 802.11n(HT 40)	Low Channel	12±1dBm	13±1dBm
		Mid. Channel	16±1dBm	17±1dBm
High Channel		13±1dBm	13±1dBm	
5200 MHz	802.11a		14±1dBm	15±1dBm
	802.11n(HT20)		14±1dBm	14±1dBm
	802.11n(HT40)		14±1dBm	14±1dBm
	802.11ac(VHT20)		14±1dBm	14±1dBm
	802.11ac(VHT40)		14±1dBm	14±1dBm
	802.11ac(VHT80)		12±1dBm	13±1dBm
5300 MHz	802.11a		14±1dBm	15±1dBm
	802.11n(HT20)		14±1dBm	14±1dBm
	802.11n(HT40)		14±1dBm	14±1dBm
	802.11ac(VHT20)		14±1dBm	14±1dBm
	802.11ac(VHT40)		14±1dBm	14±1dBm
	802.11ac(VHT80)		13±1dBm	13±1dBm
5600 MHz	802.11a		15±1dBm	15±1dBm
	802.11n(HT20)		15±1dBm	15±1dBm
	802.11n(HT40)	Low Channel	13±1dBm	13±1dBm
		Mid. Channel	15±1dBm	15±1dBm
		High Channel	15±1dBm	14±1dBm
	802.11ac(VHT20)		15±1dBm	15±1dBm
	802.11ac(VHT40)	Low Channel	13±1dBm	13±1dBm
		Mid. Channel	14±1dBm	15±1dBm
		High Channel	14±1dBm	14±1dBm
802.11ac(VHT80)		13±1dBm	14±1dBm	
5800 MHz	802.11a		15.1±1dBm	14.1±1dBm
	802.11n(HT20)		16±1dBm	14±1dBm
	802.11n(HT40)		14±1dBm	14±1dBm
	802.11ac(VHT20)		15±1dBm	14±1dBm
	802.11ac(VHT40)		15±1dBm	14±1dBm
	802.11ac(VHT80)		13±1dBm	13±1dBm

Mode	BT(AVG)		
	Low Channel	Mid. Channel	High Channel
GFSK	5±1dBm	7±1dBm	8±1dBm
π/4-DQPSK	2±1dBm	4±1dBm	5±1dBm
8DPSK	2±1dBm	4±1dBm	5±1dBm

Mode	BT 4.0(AVG)
GFSK	0±1dBm



LTE Band 2

BW(MHz)	Modulation	RB Size	RB Offset	Power Low CH./Freq.	Power Middle CH./Freq.	Power High CH./Freq.
Channel				18607	18900	19193
Frequency(MHz)				1850.7	1880	1909.3
1.4	QPSK	1	0	23±1dBm	21±1dBm	22±1dBm
1.4	QPSK	1	2	22±1dBm	21±1dBm	22±1dBm
1.4	QPSK	1	5	23±1dBm	22±1dBm	22±1dBm
1.4	QPSK	3	0	23±1dBm	21±1dBm	22±1dBm
1.4	QPSK	3	1	23±1dBm	22±1dBm	22±1dBm
1.4	QPSK	3	2	22±1dBm	22±1dBm	22±1dBm
1.4	QPSK	6	0	22±1dBm	21±1dBm	22±1dBm
1.4	16QAM	1	0	21±1dBm	23±1dBm	23±1dBm
1.4	16QAM	1	2	22±1dBm	23±1dBm	23±1dBm
1.4	16QAM	1	5	22±1dBm	23±1dBm	23±1dBm
1.4	16QAM	3	0	22±1dBm	23±1dBm	23±1dBm
1.4	16QAM	3	1	21±1dBm	23±1dBm	23±1dBm
1.4	16QAM	3	2	22±1dBm	23±1dBm	23±1dBm
1.4	16QAM	6	0	21±1dBm	23±1dBm	23±1dBm
Channel				18615	18900	19185
Frequency(MHz)				1851.5	1880	1908.5
3	QPSK	1	0	20±1dBm	23±1dBm	20±1dBm
3	QPSK	1	7	19±1dBm	23±1dBm	21±1dBm
3	QPSK	1	14	19±1dBm	22±1dBm	20±1dBm
3	QPSK	8	0	20±1dBm	22±1dBm	20±1dBm
3	QPSK	8	4	20±1dBm	22±1dBm	21±1dBm
3	QPSK	8	7	20±1dBm	20±1dBm	21±1dBm
3	QPSK	15	0	20±1dBm	22±1dBm	21±1dBm
3	16QAM	1	0	22±1dBm	21±1dBm	21±1dBm
3	16QAM	1	7	23±1dBm	21±1dBm	20±1dBm
3	16QAM	1	14	23±1dBm	21±1dBm	22±1dBm
3	16QAM	8	0	22±1dBm	20±1dBm	21±1dBm
3	16QAM	8	4	22±1dBm	22±1dBm	22±1dBm
3	16QAM	8	7	21±1dBm	21±1dBm	22±1dBm
3	16QAM	15	0	20±1dBm	21±1dBm	22±1dBm
Channel				18625	18900	19175
Frequency(MHz)				1852.5	1880	1907.5
5	QPSK	1	0	20±1dBm	21±1dBm	21±1dBm
5	QPSK	1	12	20±1dBm	21±1dBm	21±1dBm
5	QPSK	1	24	20±1dBm	21±1dBm	20±1dBm
5	QPSK	12	0	20±1dBm	21±1dBm	20±1dBm
5	QPSK	12	6	20±1dBm	21±1dBm	21±1dBm
5	QPSK	12	11	20±1dBm	21±1dBm	22±1dBm
5	QPSK	25	0	20±1dBm	21±1dBm	21±1dBm
5	16QAM	1	0	22±1dBm	23±1dBm	20±1dBm
5	16QAM	1	12	22±1dBm	21±1dBm	21±1dBm
5	16QAM	1	24	21±1dBm	22±1dBm	22±1dBm
5	16QAM	12	0	23±1dBm	22±1dBm	22±1dBm
5	16QAM	12	6	22±1dBm	23±1dBm	22±1dBm
5	16QAM	12	11	21±1dBm	23±1dBm	21±1dBm
5	16QAM	25	0	23±1dBm	22±1dBm	23±1dBm



Channel				18650	18900	19150
Frequency(MHz)				1855	1880	1905
10	QPSK	1	0	21±1dBm	21±1dBm	22±1dBm
10	QPSK	1	24	22±1dBm	21±1dBm	21±1dBm
10	QPSK	1	49	22±1dBm	22±1dBm	22±1dBm
10	QPSK	25	0	22±1dBm	23±1dBm	22±1dBm
10	QPSK	25	12	22±1dBm	22±1dBm	21±1dBm
10	QPSK	25	24	22±1dBm	22±1dBm	22±1dBm
10	QPSK	50	0	22±1dBm	22±1dBm	21±1dBm
10	16QAM	1	0	22±1dBm	22±1dBm	23±1dBm
10	16QAM	1	24	22±1dBm	21±1dBm	23±1dBm
10	16QAM	1	49	22±1dBm	21±1dBm	22±1dBm
10	16QAM	25	0	22±1dBm	21±1dBm	22±1dBm
10	16QAM	25	12	22±1dBm	21±1dBm	22±1dBm
10	16QAM	25	24	21±1dBm	21±1dBm	22±1dBm
10	16QAM	50	0	23±1dBm	21±1dBm	22±1dBm
Channel				18675	18900	19125
Frequency(MHz)				1857.5	1880	1902.5
15	QPSK	1	0	22±1dBm	22±1dBm	21±1dBm
15	QPSK	1	37	22±1dBm	22±1dBm	21±1dBm
15	QPSK	1	74	21±1dBm	22±1dBm	21±1dBm
15	QPSK	36	0	22±1dBm	20±1dBm	21±1dBm
15	QPSK	36	18	22±1dBm	22±1dBm	21±1dBm
15	QPSK	36	39	21±1dBm	21±1dBm	21±1dBm
15	QPSK	75	0	21±1dBm	21±1dBm	21±1dBm
15	16QAM	1	0	21±1dBm	22±1dBm	22±1dBm
15	16QAM	1	38	21±1dBm	22±1dBm	22±1dBm
15	16QAM	1	75	21±1dBm	21±1dBm	22±1dBm
15	16QAM	36	0	21±1dBm	22±1dBm	22±1dBm
15	16QAM	36	18	21±1dBm	22±1dBm	22±1dBm
15	16QAM	36	39	21±1dBm	22±1dBm	22±1dBm
15	16QAM	75	0	21±1dBm	22±1dBm	22±1dBm
Channel				18700	18900	19100
Frequency(MHz)				1860	1880	1900
20	QPSK	1	0	22±1dBm	21±1dBm	21±1dBm
20	QPSK	1	49	21±1dBm	21±1dBm	22±1dBm
20	QPSK	1	99	22±1dBm	21±1dBm	22±1dBm
20	QPSK	50	0	22±1dBm	21±1dBm	22±1dBm
20	QPSK	50	24	22±1dBm	21±1dBm	21±1dBm
20	QPSK	50	49	22±1dBm	21±1dBm	22±1dBm
20	QPSK	100	0	22±1dBm	20±1dBm	22±1dBm
20	16QAM	1	0	21±1dBm	21±1dBm	21±1dBm
20	16QAM	1	49	21±1dBm	22±1dBm	21±1dBm
20	16QAM	1	99	21±1dBm	22±1dBm	21±1dBm
20	16QAM	50	0	21±1dBm	21±1dBm	21±1dBm
20	16QAM	50	24	21±1dBm	22±1dBm	21±1dBm
20	16QAM	50	49	21±1dBm	22±1dBm	21±1dBm
20	16QAM	100	0	21±1dBm	22±1dBm	21±1dBm



LTE Band 4

BW(MHz)	Modulation	RB Size	RB Offset	Power Low CH./Freq.	Power Middle CH./Freq.	Power High CH./Freq.
Channel				19957	20175	20393
Frequency(MHz)				1710.7	1732.5	1754.3
1.4	QPSK	1	0	22±1dBm	20±1dBm	21±1dBm
1.4	QPSK	1	2	23±1dBm	20±1dBm	21±1dBm
1.4	QPSK	1	5	23±1dBm	20±1dBm	21±1dBm
1.4	QPSK	3	0	22±1dBm	20±1dBm	21±1dBm
1.4	QPSK	3	1	21±1dBm	20±1dBm	22±1dBm
1.4	QPSK	3	2	22±1dBm	20±1dBm	22±1dBm
1.4	QPSK	6	0	22±1dBm	20±1dBm	22±1dBm
1.4	16QAM	1	0	22±1dBm	22±1dBm	23±1dBm
1.4	16QAM	1	2	22±1dBm	22±1dBm	23±1dBm
1.4	16QAM	1	5	21±1dBm	22±1dBm	23±1dBm
1.4	16QAM	3	0	22±1dBm	22±1dBm	23±1dBm
1.4	16QAM	3	1	21±1dBm	22±1dBm	23±1dBm
1.4	16QAM	3	2	21±1dBm	22±1dBm	22±1dBm
1.4	16QAM	6	0	22±1dBm	22±1dBm	22±1dBm
Channel				19965	20175	20385
Frequency(MHz)				1711.5	1732.5	1753.5
3	QPSK	1	0	21±1dBm	21±1dBm	21±1dBm
3	QPSK	1	7	21±1dBm	21±1dBm	21±1dBm
3	QPSK	1	14	22±1dBm	22±1dBm	21±1dBm
3	QPSK	8	0	22±1dBm	23±1dBm	21±1dBm
3	QPSK	8	4	22±1dBm	21±1dBm	21±1dBm
3	QPSK	8	7	22±1dBm	22±1dBm	21±1dBm
3	QPSK	15	0	22±1dBm	23±1dBm	21±1dBm
3	16QAM	1	0	22±1dBm	19±1dBm	19±1dBm
3	16QAM	1	7	21±1dBm	20±1dBm	18±1dBm
3	16QAM	1	14	22±1dBm	20±1dBm	21±1dBm
3	16QAM	8	0	22±1dBm	21±1dBm	22±1dBm
3	16QAM	8	4	21±1dBm	19±1dBm	21±1dBm
3	16QAM	8	7	22±1dBm	20±1dBm	21±1dBm
3	16QAM	15	0	22±1dBm	20±1dBm	23±1dBm
Channel				19975	20175	20375
Frequency(MHz)				1712.5	1732.5	1752.5
5	QPSK	1	0	21±1dBm	20±1dBm	21±1dBm
5	QPSK	1	12	21±1dBm	23±1dBm	22±1dBm
5	QPSK	1	24	20±1dBm	22±1dBm	22±1dBm
5	QPSK	12	0	22±1dBm	22±1dBm	22±1dBm
5	QPSK	12	6	21±1dBm	20±1dBm	22±1dBm
5	QPSK	12	11	21±1dBm	20±1dBm	20±1dBm
5	QPSK	25	0	20±1dBm	22±1dBm	20±1dBm
5	16QAM	1	0	22±1dBm	22±1dBm	21±1dBm
5	16QAM	1	12	21±1dBm	21±1dBm	20±1dBm
5	16QAM	1	24	23±1dBm	22±1dBm	20±1dBm
5	16QAM	12	0	22±1dBm	22±1dBm	21±1dBm
5	16QAM	12	6	22±1dBm	21±1dBm	21±1dBm
5	16QAM	12	11	21±1dBm	21±1dBm	19±1dBm
5	16QAM	25	0	22±1dBm	23±1dBm	21±1dBm



Channel				20000	20175	20350
Frequency(MHz)				1715	1732.5	1750
10	QPSK	1	0	20±1dBm	22±1dBm	21±1dBm
10	QPSK	1	24	20±1dBm	22±1dBm	20±1dBm
10	QPSK	1	49	20±1dBm	21±1dBm	21±1dBm
10	QPSK	25	0	20±1dBm	22±1dBm	21±1dBm
10	QPSK	25	12	20±1dBm	22±1dBm	20±1dBm
10	QPSK	25	24	20±1dBm	22±1dBm	20±1dBm
10	QPSK	50	0	20±1dBm	21±1dBm	21±1dBm
10	16QAM	1	0	21±1dBm	21±1dBm	21±1dBm
10	16QAM	1	24	21±1dBm	21±1dBm	21±1dBm
10	16QAM	1	49	22±1dBm	20±1dBm	22±1dBm
10	16QAM	25	0	21±1dBm	20±1dBm	21±1dBm
10	16QAM	25	12	20±1dBm	20±1dBm	21±1dBm
10	16QAM	25	24	21±1dBm	20±1dBm	21±1dBm
10	16QAM	50	0	21±1dBm	20±1dBm	21±1dBm
Channel				20025	20175	20325
Frequency(MHz)				1717.5	1732.5	1747.5
15	QPSK	1	0	20±1dBm	22±1dBm	20±1dBm
15	QPSK	1	37	20±1dBm	22±1dBm	20±1dBm
15	QPSK	1	74	20±1dBm	22±1dBm	19±1dBm
15	QPSK	36	0	20±1dBm	22±1dBm	19±1dBm
15	QPSK	36	18	20±1dBm	22±1dBm	20±1dBm
15	QPSK	36	39	19±1dBm	22±1dBm	20±1dBm
15	QPSK	75	0	20±1dBm	22±1dBm	20±1dBm
15	16QAM	1	0	21±1dBm	20±1dBm	21±1dBm
15	16QAM	1	38	21±1dBm	20±1dBm	21±1dBm
15	16QAM	1	75	20±1dBm	20±1dBm	20±1dBm
15	16QAM	36	0	20±1dBm	20±1dBm	21±1dBm
15	16QAM	36	18	19±1dBm	19±1dBm	21±1dBm
15	16QAM	36	39	20±1dBm	20±1dBm	21±1dBm
15	16QAM	75	0	20±1dBm	19±1dBm	21±1dBm
Channel				20050	20175	20300
Frequency(MHz)				1720	1732.5	1745
20	QPSK	1	0	20±1dBm	22±1dBm	20±1dBm
20	QPSK	1	49	20±1dBm	21±1dBm	20±1dBm
20	QPSK	1	99	20±1dBm	22±1dBm	21±1dBm
20	QPSK	50	0	20±1dBm	22±1dBm	20±1dBm
20	QPSK	50	24	20±1dBm	21±1dBm	20±1dBm
20	QPSK	50	49	20±1dBm	21±1dBm	20±1dBm
20	QPSK	100	0	20±1dBm	21±1dBm	20±1dBm
20	16QAM	1	0	20±1dBm	22±1dBm	20±1dBm
20	16QAM	1	49	20±1dBm	22±1dBm	20±1dBm
20	16QAM	1	99	20±1dBm	21±1dBm	21±1dBm
20	16QAM	50	0	20±1dBm	21±1dBm	21±1dBm
20	16QAM	50	24	20±1dBm	20±1dBm	21±1dBm
20	16QAM	50	49	20±1dBm	20±1dBm	21±1dBm
20	16QAM	100	0	20±1dBm	20±1dBm	20±1dBm



LTE Band 5

BW(MHz)	Modulation	RB Size	RB Offset	Power Low CH./Freq.	Power Middle CH./Freq.	Power High CH./Freq.
Channel				20407	20525	20643
Frequency(MHz)				824.7	836.5	848.3
1.4	QPSK	1	0	20±1dBm	21±1dBm	21±1dBm
1.4	QPSK	1	2	21±1dBm	21±1dBm	21±1dBm
1.4	QPSK	1	5	21±1dBm	20±1dBm	20±1dBm
1.4	QPSK	3	0	21±1dBm	21±1dBm	20±1dBm
1.4	QPSK	3	1	22±1dBm	20±1dBm	20±1dBm
1.4	QPSK	3	2	21±1dBm	20±1dBm	20±1dBm
1.4	QPSK	6	0	20±1dBm	20±1dBm	22±1dBm
1.4	16QAM	1	0	21±1dBm	21±1dBm	21±1dBm
1.4	16QAM	1	2	21±1dBm	21±1dBm	20±1dBm
1.4	16QAM	1	5	21±1dBm	21±1dBm	20±1dBm
1.4	16QAM	3	0	20±1dBm	20±1dBm	22±1dBm
1.4	16QAM	3	1	20±1dBm	21±1dBm	21±1dBm
1.4	16QAM	3	2	20±1dBm	22±1dBm	21±1dBm
1.4	16QAM	6	0	21±1dBm	20±1dBm	21±1dBm
Channel				20415	20525	20635
Frequency(MHz)				825.5	836.5	847.5
3	QPSK	1	0	21±1dBm	21±1dBm	21±1dBm
3	QPSK	1	7	20±1dBm	20±1dBm	21±1dBm
3	QPSK	1	14	21±1dBm	21±1dBm	22±1dBm
3	QPSK	8	0	22±1dBm	20±1dBm	20±1dBm
3	QPSK	8	4	20±1dBm	21±1dBm	21±1dBm
3	QPSK	8	7	20±1dBm	20±1dBm	21±1dBm
3	QPSK	15	0	20±1dBm	20±1dBm	20±1dBm
3	16QAM	1	0	20±1dBm	20±1dBm	20±1dBm
3	16QAM	1	7	21±1dBm	20±1dBm	22±1dBm
3	16QAM	1	14	22±1dBm	21±1dBm	23±1dBm
3	16QAM	8	0	21±1dBm	23±1dBm	20±1dBm
3	16QAM	8	4	21±1dBm	20±1dBm	22±1dBm
3	16QAM	8	7	22±1dBm	21±1dBm	22±1dBm
3	16QAM	15	0	21±1dBm	21±1dBm	21±1dBm
Channel				20425	20525	20625
Frequency(MHz)				826.5	836.5	846.5
5	QPSK	1	0	20±1dBm	20±1dBm	20±1dBm
5	QPSK	1	12	21±1dBm	19±1dBm	20±1dBm
5	QPSK	1	24	20±1dBm	22±1dBm	21±1dBm
5	QPSK	12	0	20±1dBm	21±1dBm	21±1dBm
5	QPSK	12	6	21±1dBm	19±1dBm	20±1dBm
5	QPSK	12	11	21±1dBm	19±1dBm	20±1dBm
5	QPSK	25	0	21±1dBm	21±1dBm	20±1dBm
5	16QAM	1	0	20±1dBm	21±1dBm	21±1dBm
5	16QAM	1	12	21±1dBm	20±1dBm	20±1dBm
5	16QAM	1	24	21±1dBm	21±1dBm	21±1dBm
5	16QAM	12	0	23±1dBm	21±1dBm	21±1dBm
5	16QAM	12	6	20±1dBm	20±1dBm	20±1dBm
5	16QAM	12	11	21±1dBm	20±1dBm	20±1dBm
5	16QAM	25	0	20±1dBm	20±1dBm	21±1dBm



Channel				20450	20525	20600
Frequency(MHz)				829	836.5	844
10	QPSK	1	0	20±1dBm	20±1dBm	20±1dBm
10	QPSK	1	24	21±1dBm	20±1dBm	21±1dBm
10	QPSK	1	49	21±1dBm	20±1dBm	21±1dBm
10	QPSK	25	0	20±1dBm	20±1dBm	20±1dBm
10	QPSK	25	12	20±1dBm	20±1dBm	20±1dBm
10	QPSK	25	24	20±1dBm	21±1dBm	20±1dBm
10	QPSK	50	0	20±1dBm	21±1dBm	20±1dBm
10	16QAM	1	0	21±1dBm	19±1dBm	20±1dBm
10	16QAM	1	24	21±1dBm	19±1dBm	21±1dBm
10	16QAM	1	49	21±1dBm	20±1dBm	21±1dBm
10	16QAM	25	0	21±1dBm	19±1dBm	20±1dBm
10	16QAM	25	12	21±1dBm	19±1dBm	20±1dBm
10	16QAM	25	24	21±1dBm	20±1dBm	20±1dBm
10	16QAM	50	0	20±1dBm	21±1dBm	21±1dBm

LTE Band 13

BW(MHz)	Modulation	RB Size	RB Offset	Power Low CH./Freq.	Power Middle CH./Freq.	Power High CH./Freq.
Channel				23205	23230	23255
Frequency(MHz)				779.5	782	784.5
5	QPSK	1	0	21±1dBm	21±1dBm	21±1dBm
5	QPSK	1	12	19±1dBm	22±1dBm	21±1dBm
5	QPSK	1	24	21±1dBm	20±1dBm	21±1dBm
5	QPSK	12	0	21±1dBm	20±1dBm	22±1dBm
5	QPSK	12	6	20±1dBm	22±1dBm	20±1dBm
5	QPSK	12	11	22±1dBm	21±1dBm	20±1dBm
5	QPSK	25	0	21±1dBm	21±1dBm	20±1dBm
5	16QAM	1	0	21±1dBm	20±1dBm	20±1dBm
5	16QAM	1	12	20±1dBm	21±1dBm	20±1dBm
5	16QAM	1	24	22±1dBm	20±1dBm	23±1dBm
5	16QAM	12	0	22±1dBm	21±1dBm	20±1dBm
5	16QAM	12	6	22±1dBm	22±1dBm	22±1dBm
5	16QAM	12	11	21±1dBm	23±1dBm	21±1dBm
5	16QAM	25	0	21±1dBm	20±1dBm	20±1dBm
Channel				23230		
Frequency(MHz)				782		
10	QPSK	1	0	22±1dBm		
10	QPSK	1	24	20±1dBm		
10	QPSK	1	49	22±1dBm		
10	QPSK	25	0	22±1dBm		
10	QPSK	25	12	20±1dBm		
10	QPSK	25	24	21±1dBm		
10	QPSK	50	0	20±1dBm		
10	16QAM	1	0	22±1dBm		
10	16QAM	1	24	21±1dBm		
10	16QAM	1	49	22±1dBm		
10	16QAM	25	0	21±1dBm		
10	16QAM	25	12	21±1dBm		
10	16QAM	25	24	22±1dBm		
10	16QAM	50	0	21±1dBm		



LTE Band 17

BW(MHz)	Modulation	RB Size	RB Offset	Power Low CH./Freq.	Power Middle CH./Freq.	Power High CH./Freq.
Channel				23755	23790	23825
Frequency(MHz)				706.5	710	713.5
5	QPSK	1	0	21±1dBm	21±1dBm	21±1dBm
5	QPSK	1	12	22±1dBm	21±1dBm	20±1dBm
5	QPSK	1	24	22±1dBm	22±1dBm	20±1dBm
5	QPSK	12	0	21±1dBm	22±1dBm	22±1dBm
5	QPSK	12	6	23±1dBm	21±1dBm	20±1dBm
5	QPSK	12	11	22±1dBm	22±1dBm	20±1dBm
5	QPSK	25	0	22±1dBm	22±1dBm	22±1dBm
5	16QAM	1	0	22±1dBm	21±1dBm	21±1dBm
5	16QAM	1	12	20±1dBm	22±1dBm	21±1dBm
5	16QAM	1	24	20±1dBm	20±1dBm	23±1dBm
5	16QAM	12	0	20±1dBm	21±1dBm	22±1dBm
5	16QAM	12	6	21±1dBm	21±1dBm	22±1dBm
5	16QAM	12	11	22±1dBm	23±1dBm	21±1dBm
5	16QAM	25	0	20±1dBm	20±1dBm	22±1dBm
Channel				23780	23790	23800
Frequency(MHz)				709	710	711
10	QPSK	1	0	21±1dBm	21±1dBm	21±1dBm
10	QPSK	1	24	21±1dBm	21±1dBm	22±1dBm
10	QPSK	1	49	20±1dBm	21±1dBm	22±1dBm
10	QPSK	25	0	21±1dBm	22±1dBm	21±1dBm
10	QPSK	25	12	21±1dBm	21±1dBm	20±1dBm
10	QPSK	25	24	21±1dBm	22±1dBm	23±1dBm
10	QPSK	50	0	22±1dBm	22±1dBm	22±1dBm
10	16QAM	1	0	22±1dBm	21±1dBm	21±1dBm
10	16QAM	1	24	22±1dBm	20±1dBm	22±1dBm
10	16QAM	1	49	23±1dBm	21±1dBm	21±1dBm
10	16QAM	25	0	22±1dBm	20±1dBm	20±1dBm
10	16QAM	25	12	22±1dBm	21±1dBm	20±1dBm
10	16QAM	25	24	21±1dBm	21±1dBm	22±1dBm
10	16QAM	50	0	21±1dBm	20±1dBm	21±1dBm



10.3 SAR Test Exclusions Applied

Per FCC KDB 447498D01, the 1-g SAR and 10-g SAR test exclusion thresholds for 100 MHz to 6 GHz at test separation distances ≤ 50 mm are determined by:

$[(\text{max. power of channel, including tune-up tolerance, mW}) / (\text{min. test separation distance, mm})] \cdot \sqrt{f(\text{GHZ})} \leq 3.0$ for 1-g SAR and ≤ 7.5 for 10-g extremity SAR, where:

- $f(\text{GHZ})$ 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

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

$$\frac{\text{Max Power of Channel (mW)}}{\text{Test Separation Dist (mm)}} * \sqrt{\text{Frequency(GHz)}} \leq 3.0$$

Based on the maximum conducted power of **Bluetooth Body** (rounded to the nearest mW) and the antenna to user separation distance,

Bluetooth Body SAR was not required; $[(7.943/5) * \sqrt{2.402}] = 2.50 < 3.0$.

Based on the maximum conducted power of **2.4 GHz WIFI Body** (rounded to the nearest mW) and the antenna to user separation distance,

2.4 GHz WIFI SAR was required; $[(63.096/5) * \sqrt{2.462}] = 19.80 > 3.0$.

Based on the maximum conducted power of **5.2 GHz WIFI Body** (rounded to the nearest mW) and the antenna to user separation distance,

5.2 GHz WIFI Body SAR was required; $[(39.81/5) * \sqrt{5240}] = 14.48 > 3.0$.

Based on the maximum conducted power of **5.3 GHz WIFI Body** (rounded to the nearest mW) and the antenna to user separation distance,

5.3 GHz WIFI Body SAR was required; $[(39.81/5) * \sqrt{5320}] = 14.59 > 3.0$.

Based on the maximum conducted power of **5.6 GHz WIFI Body** (rounded to the nearest mW) and the antenna to user separation distance,

5.6 GHz WIFI Body SAR was required; $[(31.62/5) * \sqrt{5700}] = 19.01 > 3.0$.

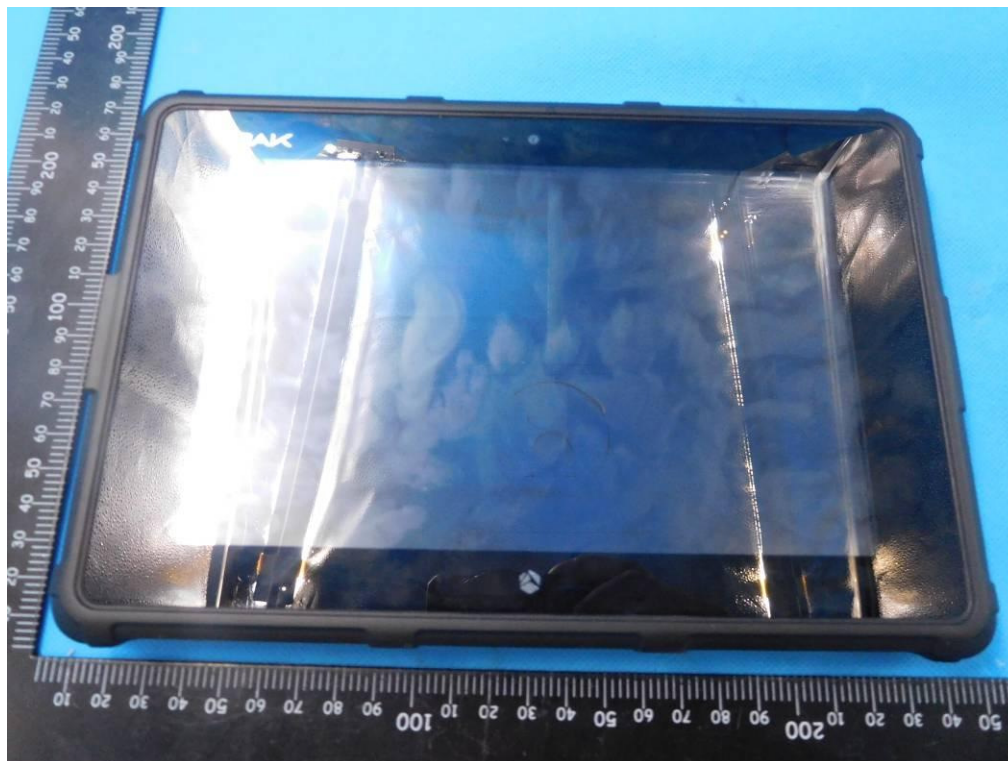
Based on the maximum conducted power of **5.8 GHz WIFI Body** (rounded to the nearest mW) and the antenna to user separation distance,

5.8 GHz WIFI Body SAR was required; $[(79.43/5) * \sqrt{5825}] = 19.66 > 3.0$.

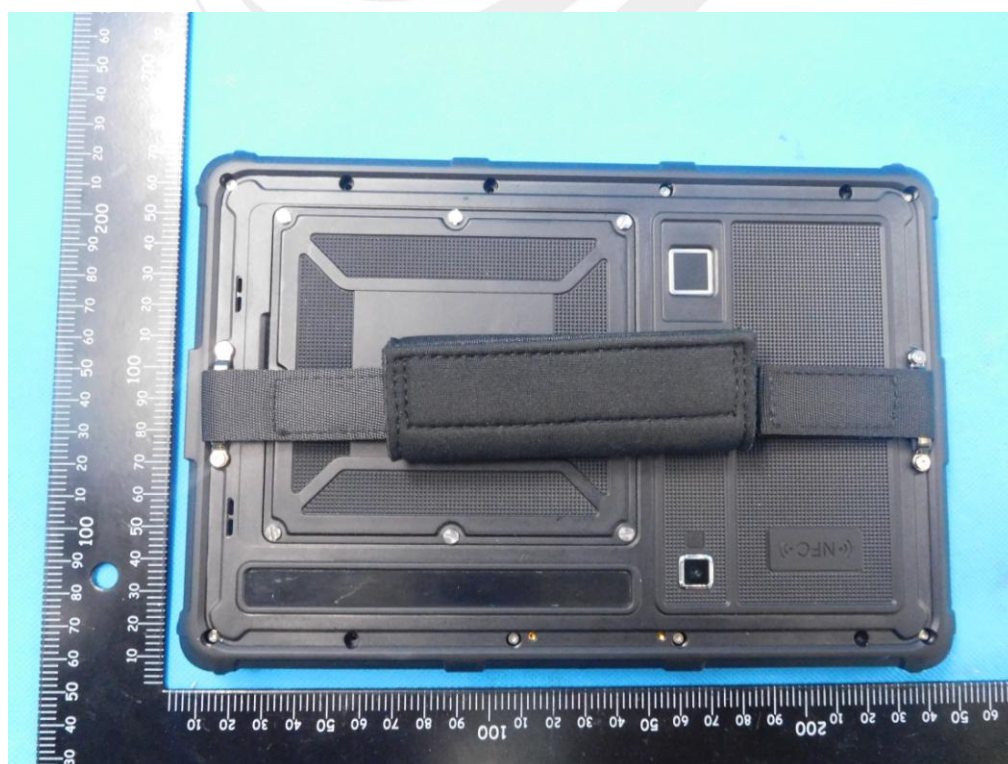
11. EUT And Test Setup Photo

11.1 EUT Photo

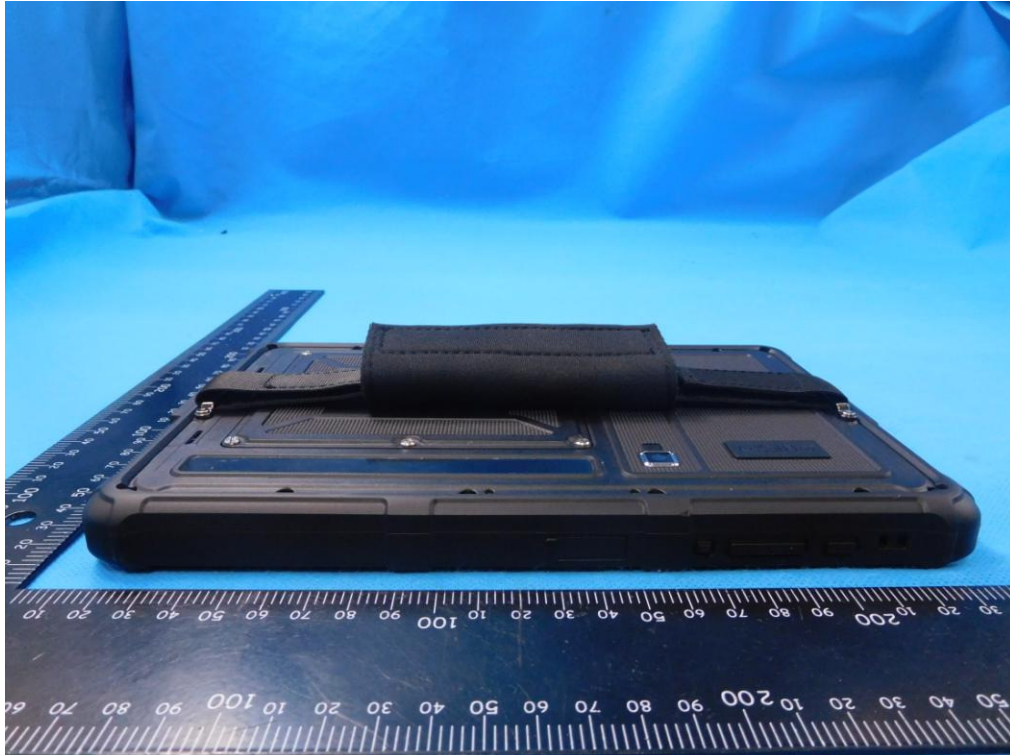
Front side



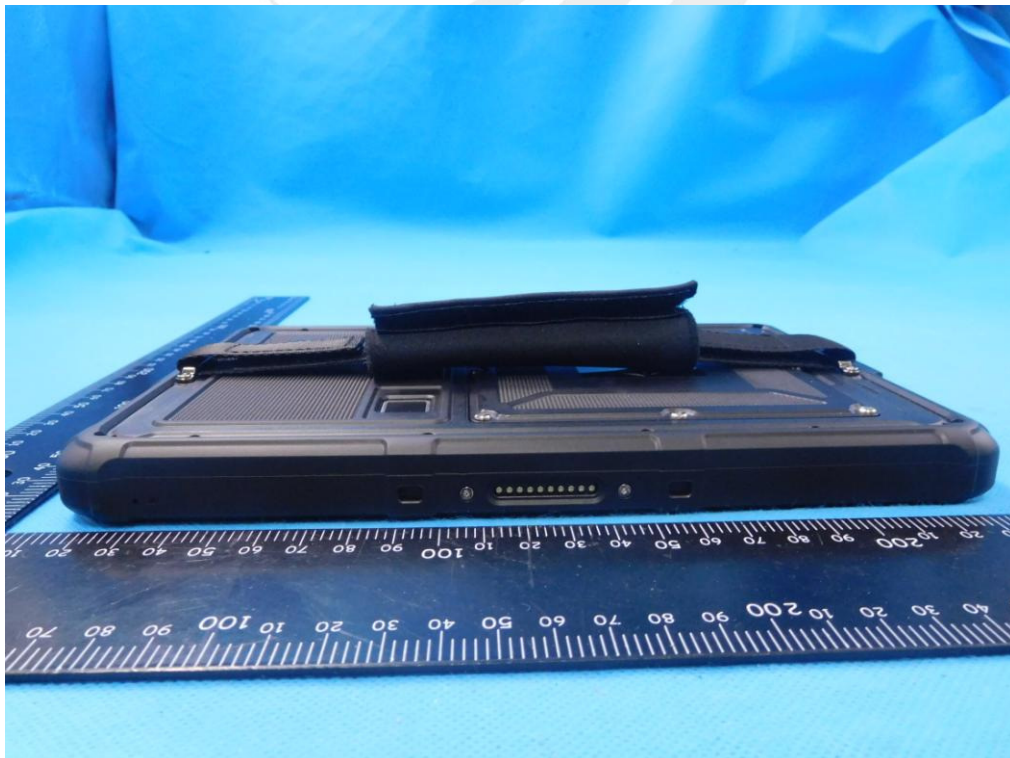
Back side



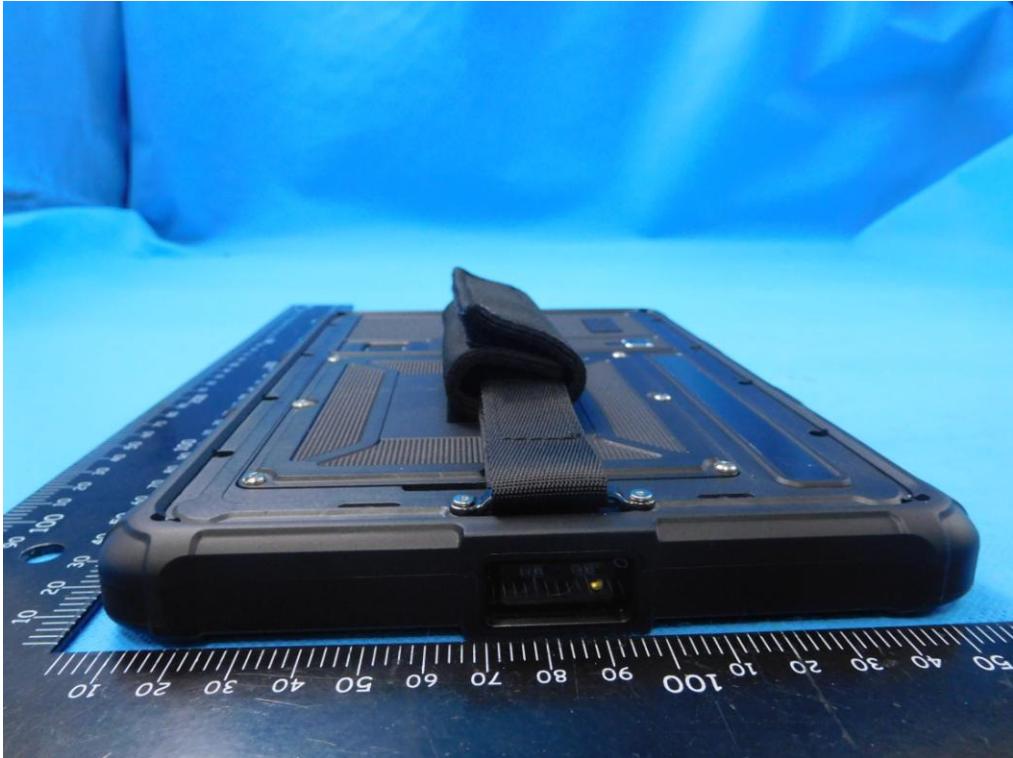
Top side



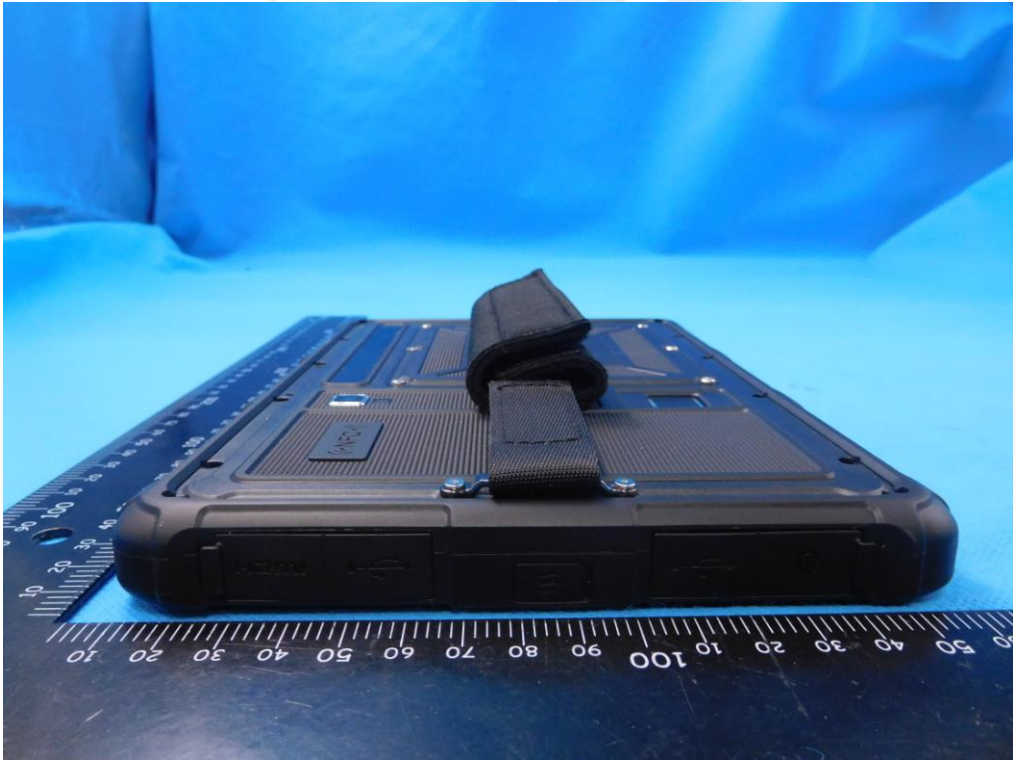
Bottom side



Left side



Right side

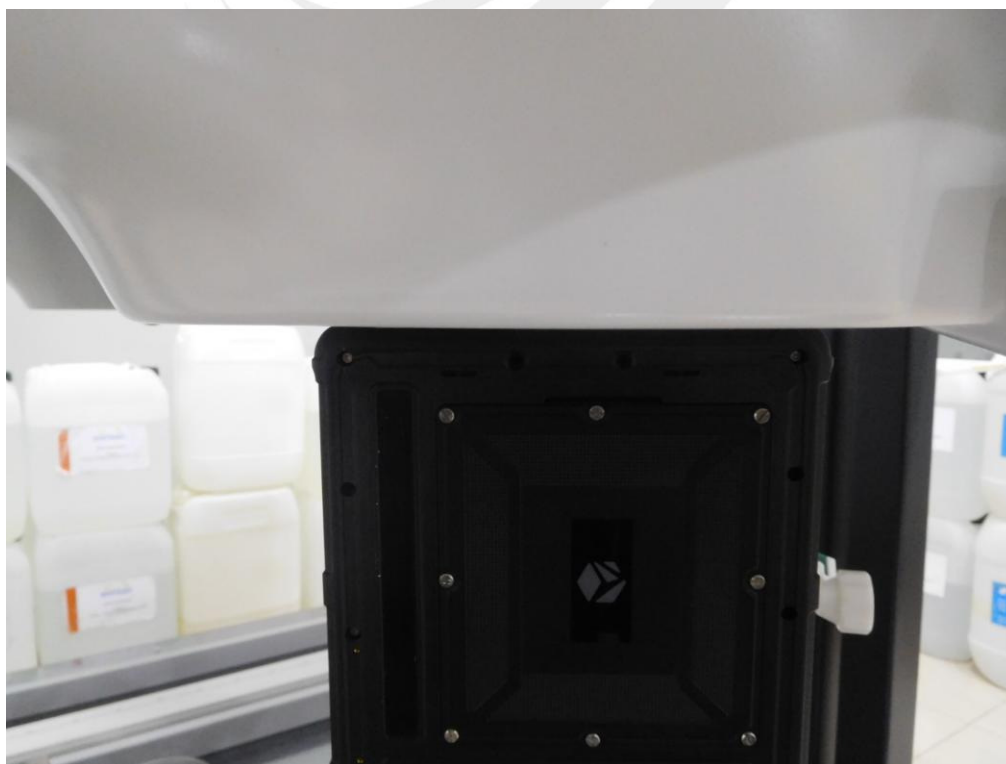


11.2 Setup Photo

Body Back side(separation distance is 0mm)



Body left side(separation distance is 0mm)



Body top side(separation distance is 0mm)



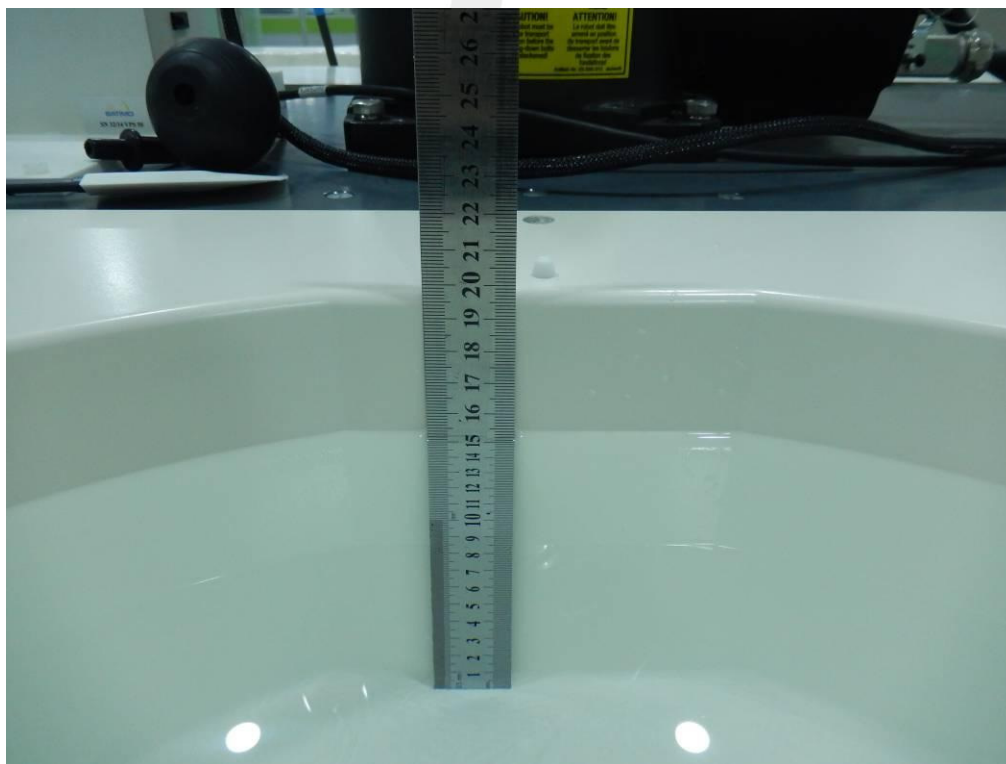
Body Bottom side(separation distance is 0mm)



Body Back side with headphone(separation distance is 0mm)



Liquid depth (15 cm)





12. SAR Result Summary

12.1 Body-worn and Hotspot SAR

Band (MHz)	Mode	ANT.	Test Position	Ch.	Result 1g (W/Kg)	Power Drift(%)	Max.Turn-up Power(dBm)	Meas.Output Power(dBm)	Duty cycle(%)	Scaled SAR (W/Kg)	Meas. No.
2450	802.11b	ANT.A	Back side	11	0.011	1.77	18	17.79	100	0.012	1
			Top side	11	0.008	1.76	18	17.79	100	0.008	/
			Left side	11	0.006	-1.45	18	17.79	100	0.006	/
		ANT.B	Back side	11	0.010	-2.01	19	18.95	100	0.010	2
			Top side	11	0.007	-3.02	19	18.95	100	0.007	/
			Left side	11	0.004	2.11	19	18.95	100	0.004	/
5200	802.11a	ANT.A	Back side	36	0.007	-1.17	15	14.98	100	0.007	3
			Top side	36	0.005	-1.75	15	14.98	100	0.005	/
			Left side	36	0.004	1.54	15	14.98	100	0.004	/
		ANT.B	Back side	36	0.009	-1.61	16	15.18	100	0.011	4
			Top side	36	0.005	0.89	16	15.18	100	0.006	/
			Left side	36	0.003	2.68	16	15.18	100	0.004	/
5300	802.11a	ANT.A	Back side	60	0.012	-4.36	15	14.92	100	0.012	5
			Top side	60	0.008	2.16	15	14.92	100	0.008	/
			Left side	60	0.006	-2.66	15	14.92	100	0.006	/
		ANT.B	Back side	60	0.012	0.52	16	15.21	100	0.014	6
			Top side	60	0.008	-0.97	16	15.21	100	0.010	/
			Left side	60	0.005	-1.45	16	15.21	100	0.006	/
5600	802.11a	ANT.A	Back side	120	0.013	-4.25	16	15.58	100	0.014	7
			Top side	120	0.009	1.42	16	15.58	100	0.010	/
			Left side	120	0.006	0.98	16	15.58	100	0.007	/
		ANT.B	Back side	100	0.014	-1.69	16	15.83	100	0.015	8
			Top side	100	0.009	2.09	16	15.83	100	0.009	/
			Left side	100	0.008	0.74	16	15.83	100	0.008	/
5800	802.11a	ANT.A	Back side	149	0.005	-3.79	16.1	16.04	100	0.005	9
			Top side	149	0.003	2.66	16.1	16.04	100	0.003	/
			Left side	149	0.003	1.45	16.1	16.04	100	0.003	/
		ANT.B	Back side	149	0.003	-1.41	15.1	15.03	100	0.003	10
			Top side	149	0.001	-3.09	15.1	15.03	100	0.001	/
			Left side	149	0.002	1.33	15.1	15.03	100	0.002	/

Note:

1. The test separation of all above table is 0mm.
2. 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 **0.008** W/Kg for Body)
3. 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.
4. <KDB 248227 D01, SAR Guidance for Wi-Fi Transmitters>: For WLAN 5 GHz, the initial test configuration was selected according to the transmission mode with the highest maximum output power. When the reported SAR of initial test configuration is > 0.8 W/kg, SAR is required for the subsequent highest measured output power channel until the reported SAR result is ≤ 1.2 W/kg or all required channels are measured. For other transmission modes, SAR is not required when the highest reported SAR for initial test configuration is adjusted by the ratio of subsequent test configuration to initial test configuration specified maximum output power and it is ≤ 1.2 W/kg.



MIMO for 2.4G DTS and 5G NII (Antenna A + Antenna B) :

Band (MHz)	Mode	Antenna	Test Position	Scaled SAR (W/Kg)	1-g Sum SAR (W/kg)
2450	802.11b	Antenna A	Back side	0.012	0.022
		Antenna B	Back side	0.010	
		Antenna A	Top side	0.008	0.015
		Antenna B	Top side	0.007	
		Antenna A	Left side	0.006	0.010
		Antenna B	Left side	0.004	
5200	802.11a	Antenna A	Back side	0.007	0.018
		Antenna B	Back side	0.011	
		Antenna A	Top side	0.005	0.011
		Antenna B	Top side	0.006	
		Antenna A	Left side	0.004	0.008
		Antenna B	Left side	0.004	
5300	802.11a	Antenna A	Back side	0.012	0.026
		Antenna B	Back side	0.014	
		Antenna A	Top side	0.008	0.018
		Antenna B	Top side	0.010	
		Antenna A	Left side	0.006	0.012
		Antenna B	Left side	0.006	
5600	802.11a	Antenna A	Back side	0.014	0.029
		Antenna B	Back side	0.015	
		Antenna A	Top side	0.010	0.019
		Antenna B	Top side	0.009	
		Antenna A	Left side	0.007	0.015
		Antenna B	Left side	0.008	
5800	802.11a	Antenna A	Back side	0.005	0.008
		Antenna B	Back side	0.003	
		Antenna A	Top side	0.003	0.004
		Antenna B	Top side	0.001	
		Antenna A	Left side	0.003	0.005
		Antenna B	Left side	0.002	



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	18700	0.190	-0.40	23	22.32	0.222	/
			50	49	Back Side	18700	0.112	-2.89	23	22.45	0.127	/
			1	0	Left Side	18700	0.124	0.76	23	22.32	0.145	/
			50	49	Left Side	18700	0.098	-2.75	23	22.45	0.111	/
			1	0	Bottom Side	18700	0.473	3.00	23	22.32	0.553	11
			50	49	Bottom Side	18700	0.361	1.81	23	22.45	0.410	/
LTE Band 4	20M	QPSK	1	99	Back Side	20175	0.513	-1.06	23	22.09	0.633	/
			50	0	Back Side	20175	0.402	2.27	23	22.00	0.506	/
			1	99	Left Side	20175	0.312	0.56	23	22.09	0.385	/
			50	0	Left Side	20175	0.284	1.33	23	22.00	0.358	/
			1	99	Bottom Side	20050	0.602	-1.84	21	20.99	0.603	/
			1	99	Bottom Side	20175	0.878	-0.75	23	22.09	1.083	12
			1	99	Bottom Side	20300	0.714	-1.11	22	21.23	0.853	/
			50	0	Bottom Side	20175	0.613	1.45	23	22.00	0.772	/
			100	0	Bottom Side	20175	0.594	0.49	22	21.50	0.666	/
LTE Band 5	10M	QPSK	1	24	Back Side	20450	0.011	-0.88	22	21.53	0.012	/
			25	24	Back Side	20525	0.008	2.14	22	21.37	0.009	/
			1	24	Left Side	20450	0.007	1.97	22	21.53	0.008	/
			25	24	Left Side	20525	0.005	2.78	22	21.37	0.006	/
			1	24	Bottom Side	20450	0.017	-1.79	22	21.53	0.019	13
			25	24	Bottom Side	20525	0.014	2.14	22	21.37	0.016	/
LTE Band 13	10M	QPSK	1	49	Back Side	23230	0.057	-1.43	23	22.37	0.066	14
			25	24	Back Side	23230	0.051	2.57	24	23.11	0.063	/
			1	49	Left Side	23230	0.032	-0.39	23	22.37	0.037	/
			25	24	Left Side	23230	0.028	0.83	24	23.11	0.034	/
			1	49	Bottom Side	23230	0.043	0.10	23	22.37	0.050	/
			25	24	Bottom Side	23230	0.036	1.04	24	23.11	0.044	/
LTE Band 17	10M	QPSK	1	24	Back Side	23800	0.090	1.22	23	22.30	0.106	/
			1	24	Back Side	23790	0.084	-2.02	23	22.89	0.086	/
			1	24	Left Side	23800	0.070	-3.80	23	22.30	0.082	/
			1	24	Left Side	23790	0.065	0.84	23	22.89	0.067	/
			1	24	Bottom Side	23800	0.099	-2.68	23	22.30	0.116	15
			1	24	Bottom Side	23790	0.091	-1.04	23	22.89	0.093	/

**Worst Case Test (With headset test)**

Band	BW (MHz)	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 4	20M	1	99	Bottom Side	20175	0.861	1.52	23	22.09	1.062	/

12.2 Repeated SAR Measurement

Band	BW (MHz)	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 4	20M	1	99	Bottom Side	20175	0.854	-2.70	23	22.09	1.053	/

12.3 Repeated SAR Ratio

Band	BW (MHz)	RB Size	RB offset	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
LTE Band 4	20M	1	99	Bottom Side	20175	0.878	0.854	1.03	-	-	-

Note:

1. Per KDB 865664 D01V01, for each frequency band, repeated SAR measurement is required only when the measured SAR is ≥ 0.8 W/Kg.
2. Per KDB 865664 D01V01, if the ratio of largest to smallest SAR for the original and first repeated measurement is ≤ 1.2 and the measured SAR < 1.45 W/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 ≥ 1.45 W/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. LTE + 2.4G WIFI
	2. LTE + 5.2 G WIFI
	3. LTE + 5.3 G WIFI
	4. LTE + 5.6 G WIFI
	5. LTE + 5.8 G WIFI
	6. LTE + Bluetooth

NOTE:

- The 2.4G WLAN and 5G WLAN cannot transmit simultaneously.
- The WLAN and Bluetooth cannot transmit simultaneously, so there is no co-location test requirement for WLAN and Bluetooth.
- For simultaneous transmission at head and body exposure position, 2 transmitters simultaneous transmission was the worst state.
- Based upon KDB 447498 D01 v05, BT SAR is excluded as below table.
- If the test separation distance is <5mm, 5mm is used for excluded SAR calculation.
- For minimum test separation distance $\leq 50\text{mm}$, Bluetooth standalone SAR is excluded according to $[(\text{max. power of channel, including tune-up tolerance, mW}) / (\text{min. test separation distance, mm}) \cdot \sqrt{f \text{ (GHz) / x}}] \leq 3.0$ for 1-g SAR and ≤ 7.5 for 10-g extremity SAR
- The reported SAR summation is calculated based on the same configuration and test position.
- 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:
 - $(\text{max. power of channel, including tune-up tolerance, mW}) / (\text{min. test separation distance, mm}) \cdot \sqrt{f \text{ (GHz) / x}} \text{ W/kg}$ for test separation distances $\leq 50 \text{ mm}$;
Where $x = 7.5$ for 1-g SAR, and $x = 18.75$ for 10-g SAR.
 - 0.4W/Kg for 1-g SAR and 1.0W/Kg for 10-g SAR, when the separation distance is $>50\text{mm}$.

Estimated SAR		Maximum Power		Antenna to user(mm)	Frequency(GHz)	Stand alone SAR(1g) [W/kg]
		dBm	mW			
BT	Body	9	7.943	5	2480	0.334



Simultaneous Mode	Position	Mode	Max. 1-g SAR (W/kg)	1-g Sum SAR (W/kg)
LTE + 2.4G WIFI	Body	LTE RMC	1.083	1.105
		WIFI(MIMO)	0.022	
LTE + 5.2G WIFI	Body	LTE RMC	1.083	1.101
		WIFI(MIMO)	0.018	
LTE + 5.3G WIFI	Body	LTE RMC	1.083	1.109
		WIFI(MIMO)	0.026	
LTE + 5.6G WIFI	Body	LTE RMC	1.083	1.112
		WIFI(MIMO)	0.029	
LTE + 5.8G WIFI	Body	LTE RMC	1.083	1.091
		WIFI(MIMO)	0.008	
LTE + Bluetooth	Body	LTE RMC	1.083	1.417
		Bluetooth	0.334	

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	SATIMO	SID750	SN 30/14 DIP0G750-331	2014.09.01	2017.08.31
835MHz Dipole	SATIMO	SID835	SN 30/14 DIP0G835-332	2014.09.01	2017.08.31
1800MHz Dipole	SATIMO	SID1800	SN 30/14 DIP1G800-329	2014.09.01	2017.08.31
1900MHz Dipole	SATIMO	SID1900	SN 30/14 DIP1G900-333	2014.09.01	2017.08.31
2450MHzDipole	SATIMO	SID2450	SN 30/14 DIP2G450-335	2014.09.01	2017.08.31
Antenna	SATIMO	ANTA3	SN 07/13 ZNTA52	2014.09.01	2017.08.31
Waveguide	SATIMO	SWG5500	SN 13/14 WGA32	2014.09.01	2017.08.31
E-Field Probe	MVG	SSE2	SN 45/15 EPMO281	2015.12.10	2016.12.09
Phantom1	SATIMO	SAM	SN 32/14 SAM115	N/A	N/A
Phantom2	SATIMO	SAM	SN 32/14 SAM116	N/A	N/A
SAR TEST BENCH	SATIMO	GSM and WCDMA mobile phone POSITIONNIN G SYSTEM	SN 32/14 MSH97	N/A	N/A
SAR TEST BENCH	SATIMO	LAPTOP POSITIONNIN G SYSTEM	SN 32/14 LSH29	N/A	N/A
Dielectric Probe Kit	SATIMO	SCLMP	SN 32/14 OCPG52	2016.08.30	2017.08.29
Multi Meter	Keithley	Multi Meter 2000	4050073	2016.10.23	2017.10.22
Signal Generator	Agilent	N5182A	MY50140530	2016.10.23	2017.10.22
Power Meter	R&S	NRP	100510	2016.10.23	2017.10.22
Power Meter	HP	EPM-442A	GB37170267	2016.10.23	2017.10.22
Power Sensor	R&S	NRP-Z11	101919	2016.10.23	2017.10.22
Power Sensor	HP	8481A	2702A65976	2016.10.23	2017.10.22
Power Sensor	R&S	NRP-Z21	103971	2016.10.23	2017.10.22
Network Analyzer	Agilent	5071C	EMY46103472	2016.10.23	2017.10.22
Attenuator 1	PE	PE7005-10	N/A	2016.10.23	2017.10.22
Attenuator 2	PE	PE7005-3	N/A	2016.10.23	2017.10.22
Attenuator 3	Woken	WK0602-XX	N/A	2016.10.23	2017.10.22
Dual Directional Coupler	Agilent	778D	50422	2016.10.23	2017.10.22



Appendix A. System Validation Plots

System Performance Check Data (750MHz Body)

Type: Phone measurement (Complete)

Area scan resolution: dx=8mm,dy=8mm

Zoom scan resolution: dx=8mm, dy=8mm, dz=5mm

Date of measurement: 2016-12-08

Measurement duration: 14 minutes 12 seconds

Experimental conditions.

Probe	
Phantom	Validation plane
Device Position	-
Band	750MHz
Channels	-
Signal	CW
Frequency (MHz)	750MHz
Relative permittivity (real part)	55.26
Relative permittivity	23.251187
Conductivity (S/m)	0.91
Power drift (%)	1.020000
Ambient Temperature:	23.2°C
Liquid Temperature:	22.3°C
Probe	SN 45/15 EPGO281
ConvF:	1.59
Crest factor:	1:1

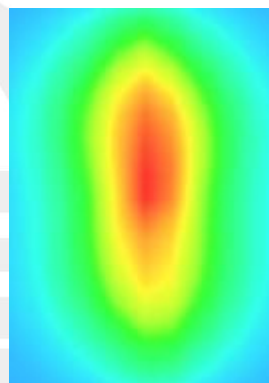
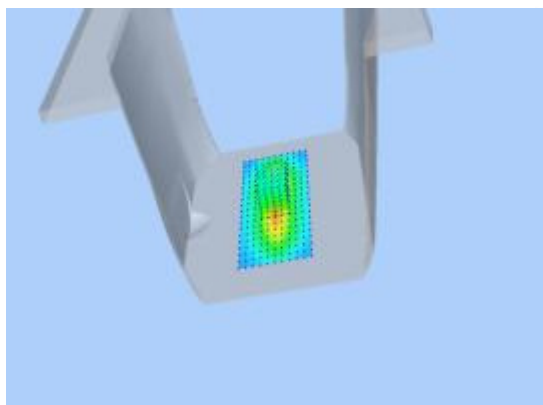
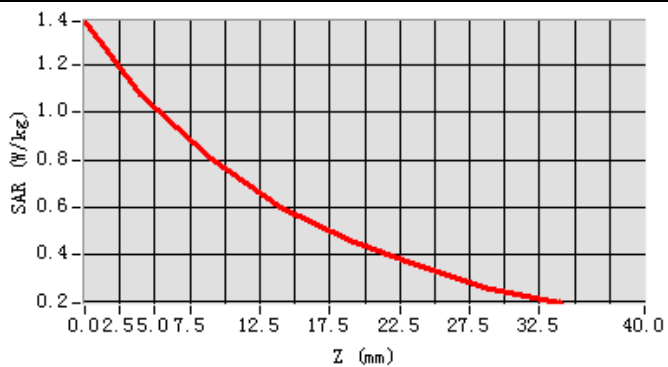
Maximum location: X=1.00, Y=0.00

SAR Peak: 1.30 W/kg

SAR 10g (W/Kg)	0.576142
SAR 1g (W/Kg)	0.856325

Z Axis Scan

Z (mm)	0	4	9	14	19	24	29
SAR(W/Kg)	1.30254	0.85658	0.56325	0.49362	0.31412	0.24366	0.10355



**System Performance Check Data (835MHz Body)**

Type: Phone measurement (Complete)

Area scan resolution: dx=8mm,dy=8mm

Zoom scan resolution: dx=8mm, dy=8mm, dz=5mm

Date of measurement: 2016-12-08

Measurement duration: 14 minutes 13 seconds

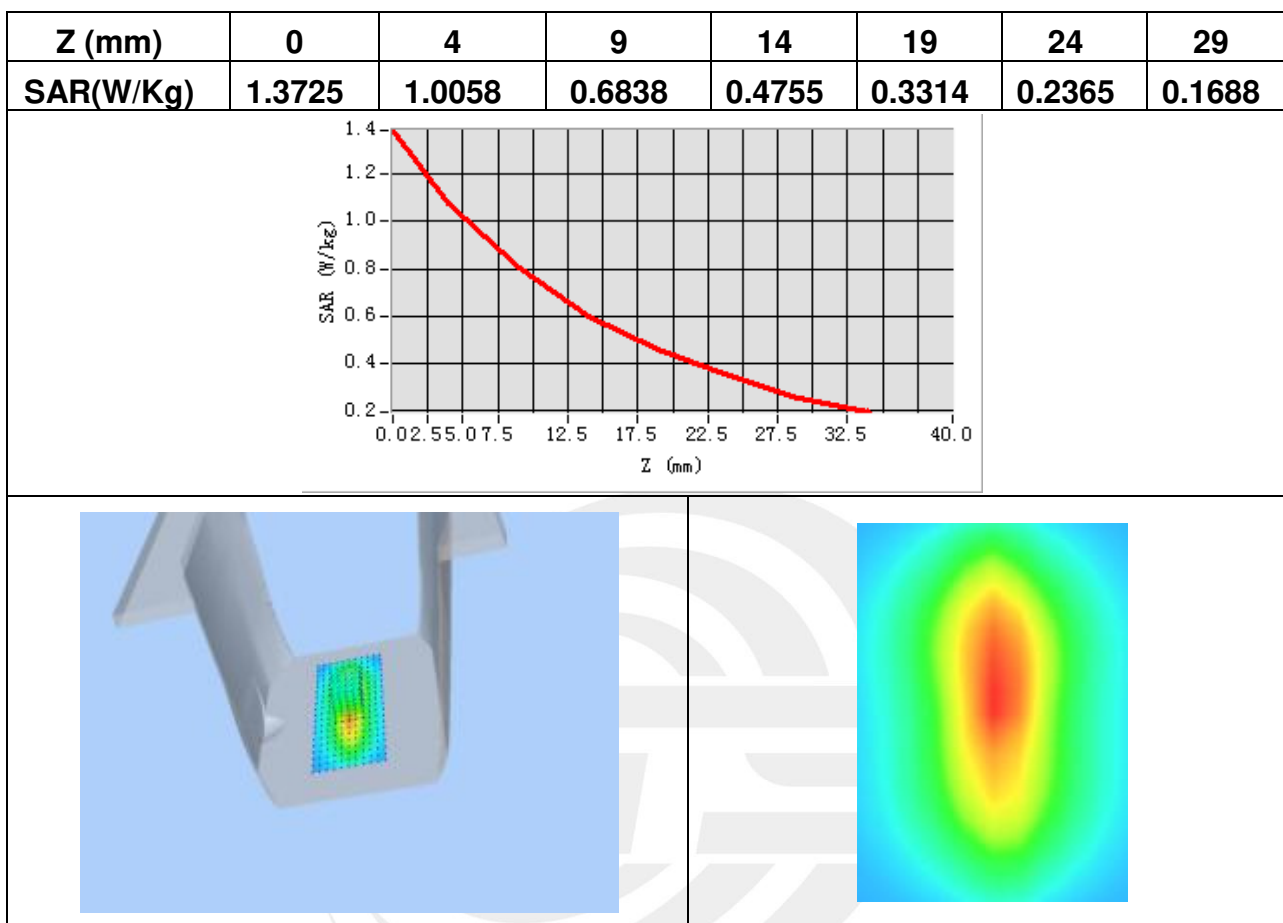
Experimental conditions.

Probe	
Phantom	Validation plane
Device Position	-
Band	835MHz
Channels	-
Signal	CW
Frequency (MHz)	835MHz
Relative permittivity (real part)	54.70
Relative permittivity	21.408187
Conductivity (S/m)	0.98
Power drift (%)	0.090000
Ambient Temperature:	23.2°C
Liquid Temperature:	22.3°C
Probe	SN 45/15 EPGO281
ConvF:	1.85
Crest factor:	1:1

Maximum location: X=1.00, Y=0.00**SAR Peak: 1.50 W/kg**

SAR 10g (W/Kg)	0.603221
SAR 1g (W/Kg)	0.946658

Z Axis Scan



System Performance Check Data(1800MHz Body)

Type: Phone measurement (Complete)

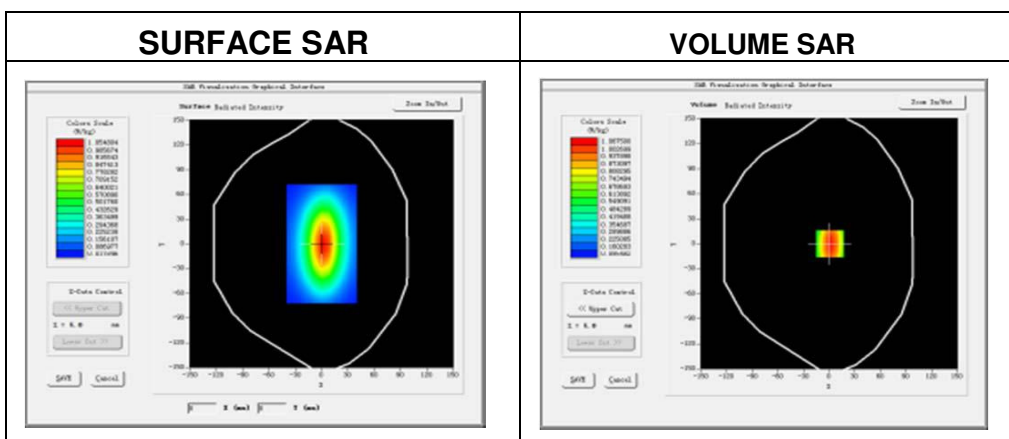
Area scan resolution: dx=8mm,dy=8mm

Zoom scan resolution: dx=8mm, dy=8mm, dz=5mm

Date of measurement: 2016-12-08

Experimental conditions.

Phantom	Validation plane
Device Position	-
Band	1800MHz
Channels	-
Signal	CW
Frequency (MHz)	1800MHz
Relative permittivity (real part)	52.6
Relative permittivity	15.08356
Conductivity (S/m)	1.376582
Power drift (%)	2.351
Ambient Temperature	23.2°C
Liquid Temperature	22.3°C
Probe	SN 45/15 EPGO281
ConvF	1.87
Crest factor:	1:1

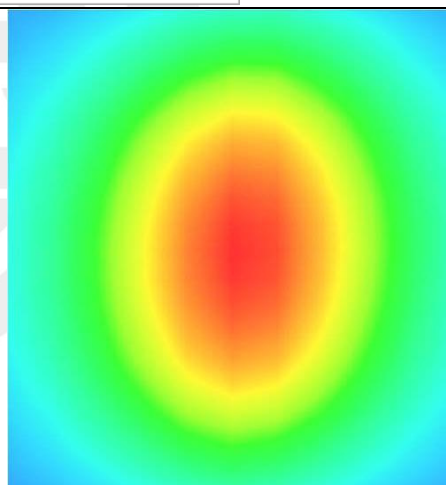
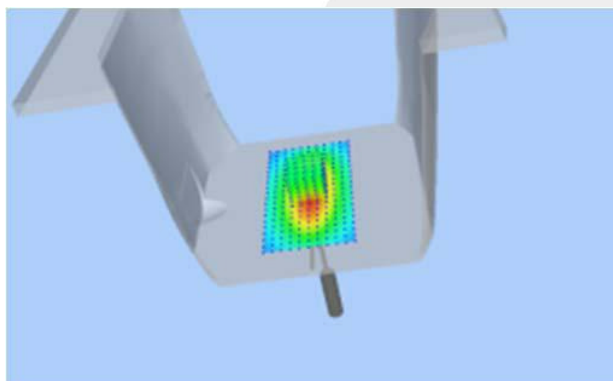
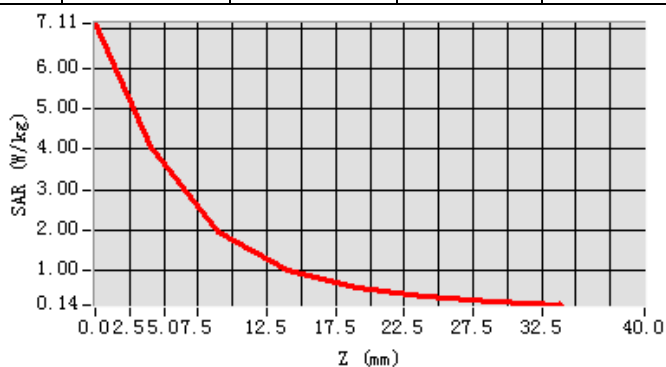


Maximum location: X=6.00, Y=2.00

SAR 10g (W/Kg)	1.98768
SAR 1g (W/Kg)	3.86917

Z Axis Scan

Z (mm)	0	4	9	14	19	24	29
SAR(W/Kg)	7.2356	4.1258	1.9683	1.1253	0.6535	0.3652	0.2658



**System Performance Check Data (1900MHz Body)**

Type: Phone measurement (Complete)

Area scan resolution: dx=8mm,dy=8mm

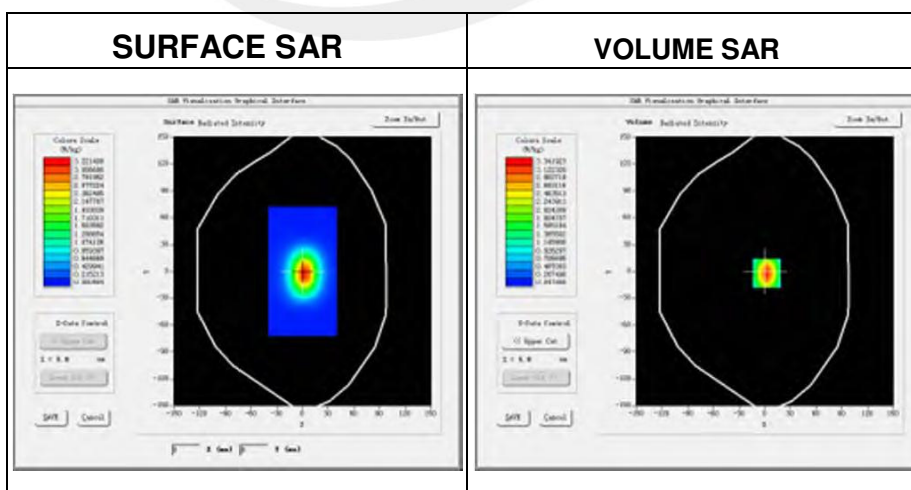
Zoom scan resolution: dx=8mm, dy=8mm, dz=5mm

Date of measurement: 2016-12-08

Measurement duration: 14 minutes 46 seconds

Experimental conditions.

Device Position	-
Band	1900MHz
Channels	-
Signal	CW
Frequency (MHz)	1900
Relative permittivity (real part)	52.31
Relative permittivity	12.87531
Conductivity (S/m)	1.5
Power drift (%)	0.37
Ambient Temperature:	23.2°C
Liquid Temperature:	22.3°C
Probe	SN 45/15 EPGO281
ConvF:	2.16
Crest factor:	1:1





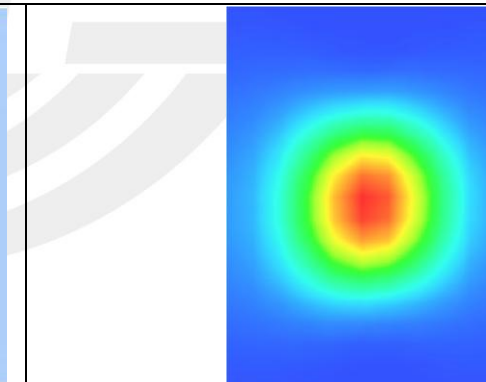
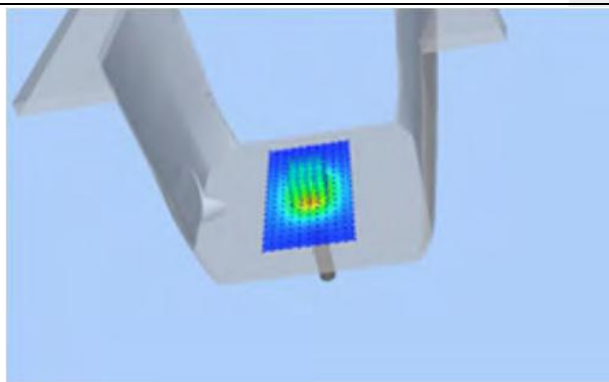
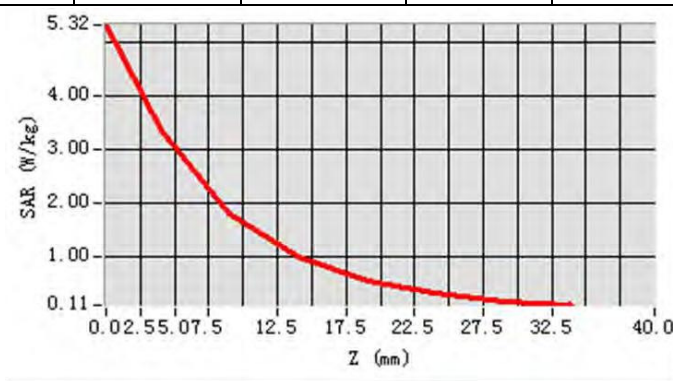
Maximum location: X=2.00, Y=2.00

SAR Peak: 5.27 W/kg

SAR 10g (W/Kg)	2.258194
SAR 1g (W/Kg)	4.052147

Z Axis Scan

Z (mm)	0	4	9	14	19	24	29
SAR(W/Kg)	5.3196	3.3419	1.8167	1.0186	0.5752	0.3285	0.1898

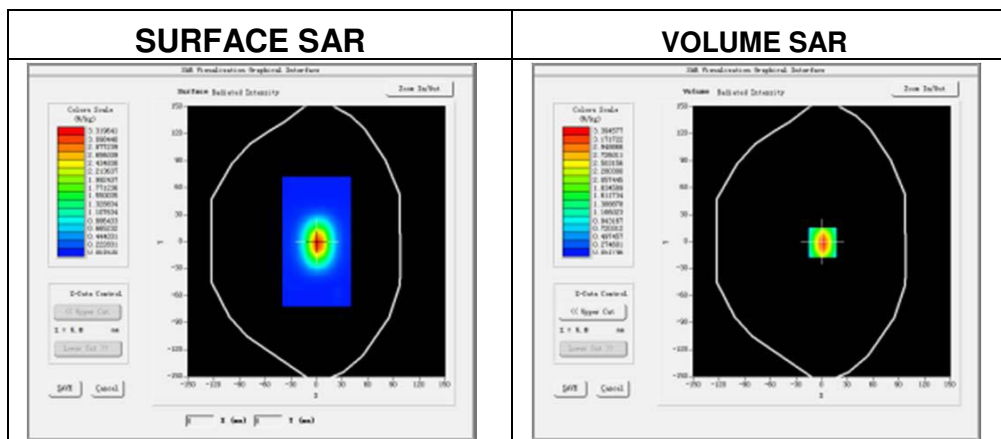


System Performance Check Data (2450MHz Body)

Type: Phone measurement (Complete)
 Area scan resolution: dx=8mm,dy=8mm
 Zoom scan resolution: dx=8mm, dy=8mm, dz=5mm
 Date of measurement: 2016-12-08
 Measurement duration: 14 minutes 23 seconds

Experimental conditions.

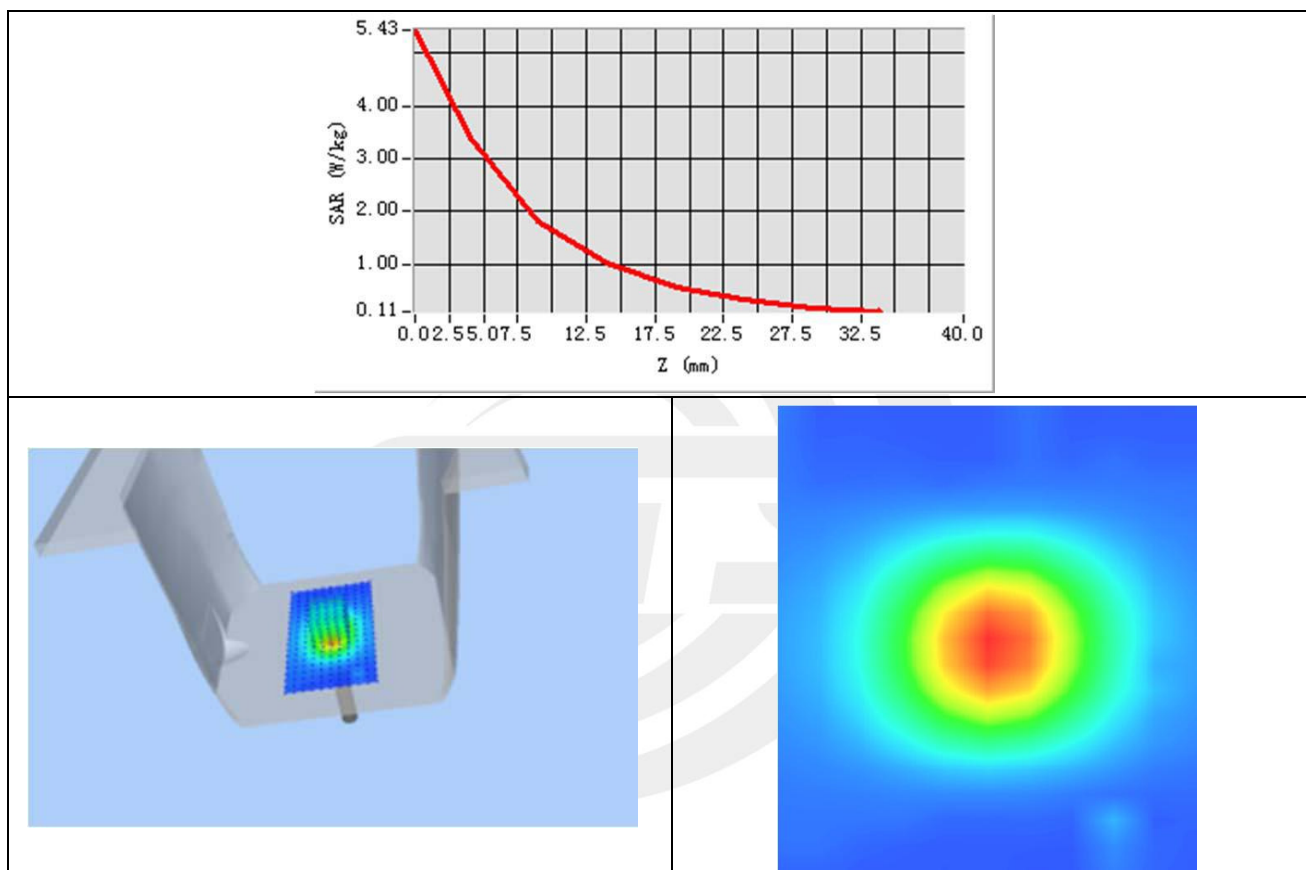
Device Position	Validation plane
Band	2450 MHz
Channels	-
Signal	CW
Frequency (MHz)	2450
Relative permittivity (real part)	52.316002
Relative permittivity	12.930000
Conductivity (S/m)	1.92
Power drift (%)	-1.200000
Ambient Temperature	23.2°C
Liquid Temperature	22.3°C
Probe	SN 45/15 EPGO281
ConvF	2.28
Crest factor:	1:1



Maximum location: X=3.00, Y=1.00

SAR 10g (W/Kg)	2.357362
SAR 1g (W/Kg)	5.153482

Z Axis Scan



**System Performance Check Data(5200MHz Body)**

Type: Phone measurement (Complete)

Area scan resolution: dx=8mm,dy=8mm

Zoom scan resolution: dx=4mm, dy=4mm, dz=2mm

Date of measurement: 2016-12-08

Measurement duration: 14 minutes 22 seconds

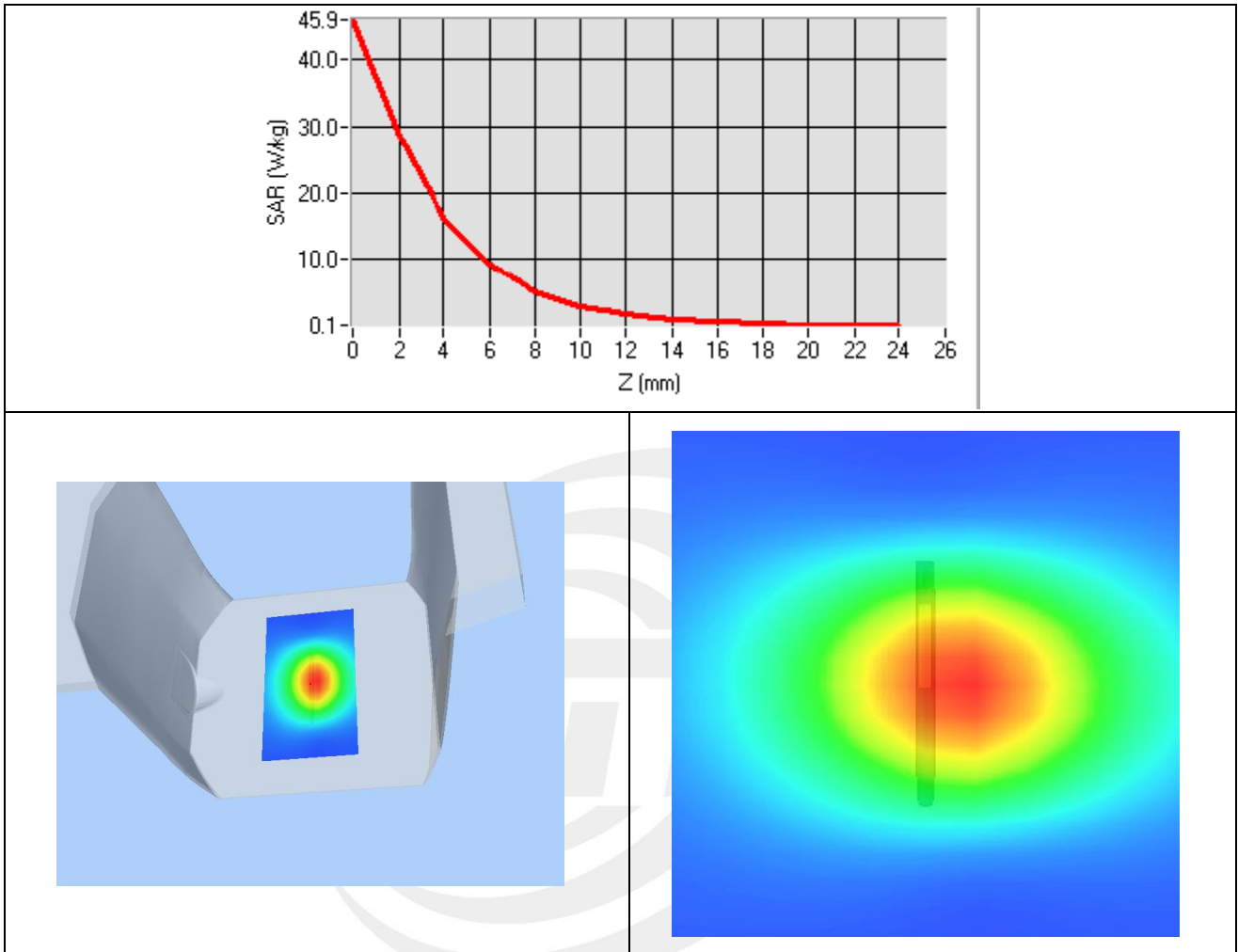
Experimental conditions.

Device Position	Validation plane
Band	5200 MHz
Channels	-
Signal	CW
Frequency (MHz)	5200
Relative permittivity (real part)	47.50000
Relative permittivity (imaginary)	16.250000
Conductivity (S/m)	5.49000
Power drift (%)	4.140000
Ambient Temperature	22.7°C
Liquid Temperature	22.3°C
Probe	SN 45/15 EPGO281
ConvF	2.52
Crest factor:	1:1

Maximum location: X=7.00, Y=2.00

SAR 10g (W/Kg)	5.643525
SAR 1g (W/Kg)	15.862541

Z Axis Scan



**System Performance Check Data(5300MHz Body)**

Type: Phone measurement (Complete)

Area scan resolution: dx=8mm,dy=8mm

Zoom scan resolution: dx=4mm, dy=4mm, dz=2mm

Date of measurement: 2016-12-08

Measurement duration: 14 minutes 24 seconds

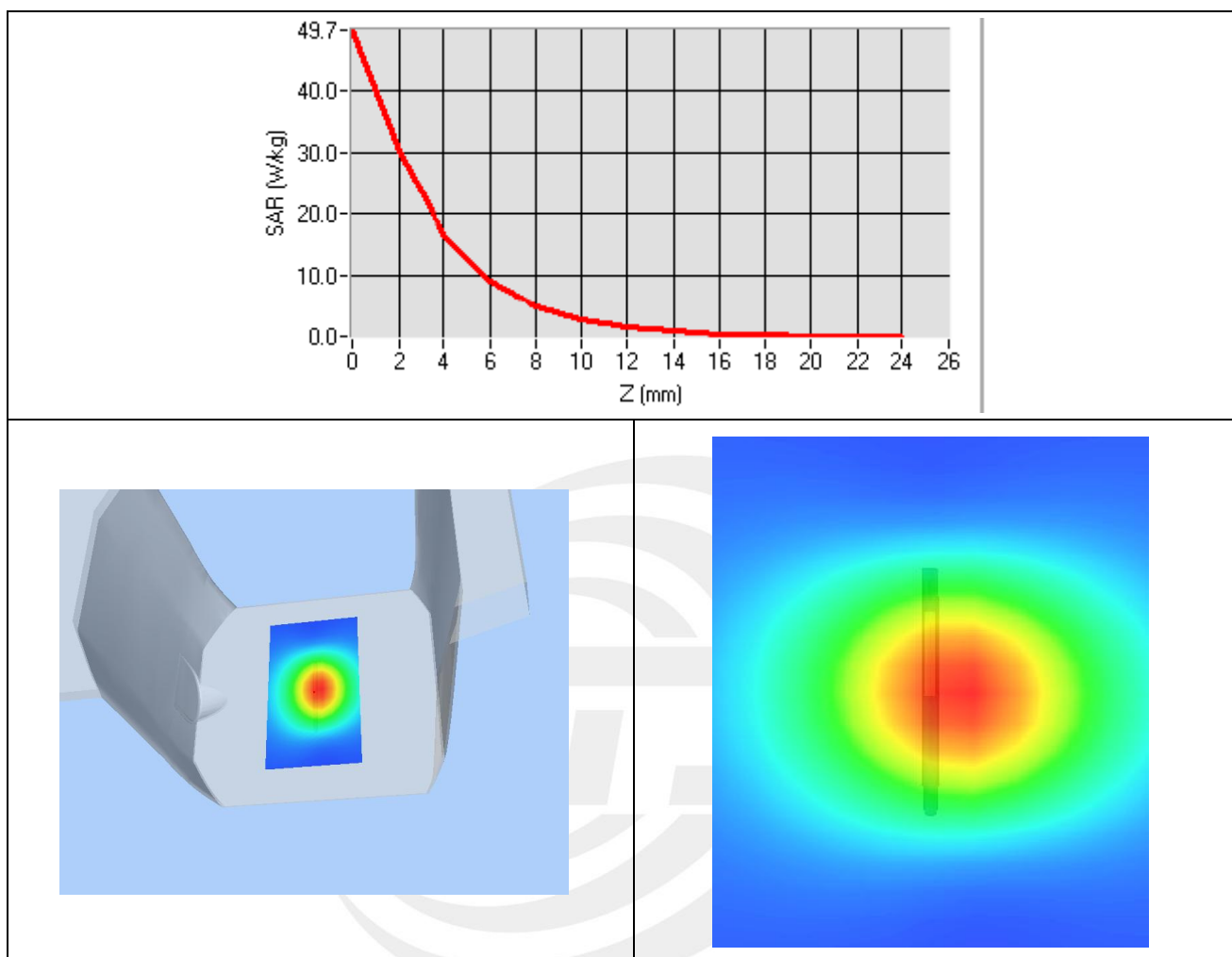
Experimental conditions.

Device Position	Validation plane
Band	5300 MHz
Channels	-
Signal	CW
Frequency (MHz)	5300
Relative permittivity (real part)	49.430000
Relative permittivity (imaginary)	19.140000
Conductivity (S/m)	5.437435
Power drift (%)	-1.770000
Ambient Temperature	22.7°C
Liquid Temperature	22.3°C
Probe	SN 45/15 EPGO281
ConvF	2.79
Crest factor:	1:1

Maximum location: X=5.00, Y=3.00

SAR 10g (W/Kg)	6.847433
SAR 1g (W/Kg)	16.933272

Z Axis Scan



**System Performance Check Data(5600MHz Body)**

Type: Phone measurement (Complete)

Area scan resolution: dx=8mm,dy=8mm

Zoom scan resolution: dx=4mm, dy=4mm, dz=2mm

Date of measurement: 2016-12-08

Measurement duration: 14 minutes 24 seconds

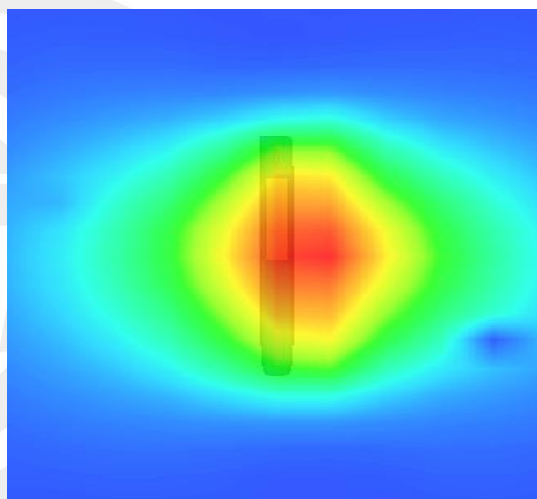
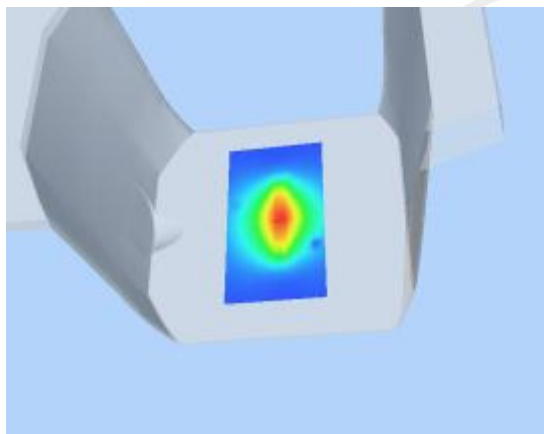
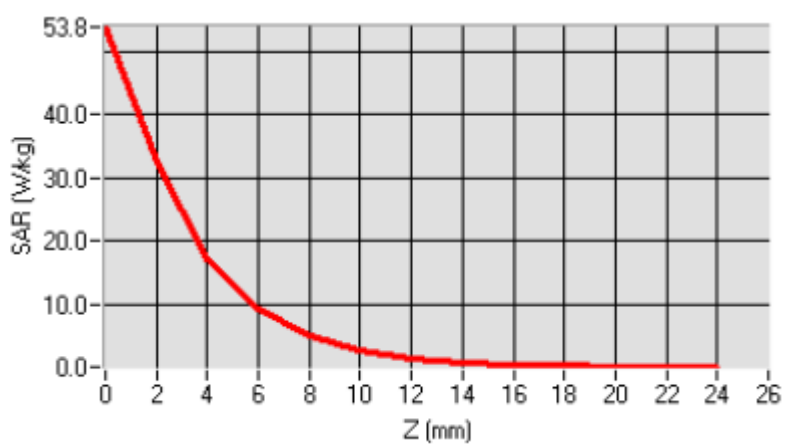
Experimental conditions.

Device Position	Validation plane
Band	5600 MHz
Channels	-
Signal	CW
Frequency (MHz)	5600
Relative permittivity (real part)	47.540000
Relative permittivity (imaginary)	19.610000
Conductivity (S/m)	5.78000
Power drift (%)	1.860000
Ambient Temperature	22.7°C
Liquid Temperature	22.3°C
Probe	SN 45/15 EPGO281
ConvF	2.83
Crest factor:	1:1

Maximum location: X=7.00, Y=2.00

SAR 10g (W/Kg)	7.269389
SAR 1g (W/Kg)	17.563842

Z Axis Scan



**System Performance Check Data(5800MHz Body)**

Type: Phone measurement (Complete)

Area scan resolution: dx=8mm,dy=8mm

Zoom scan resolution: dx=4mm, dy=4mm, dz=2mm

Date of measurement: 2016-12-08

Measurement duration: 14 minutes 24 seconds

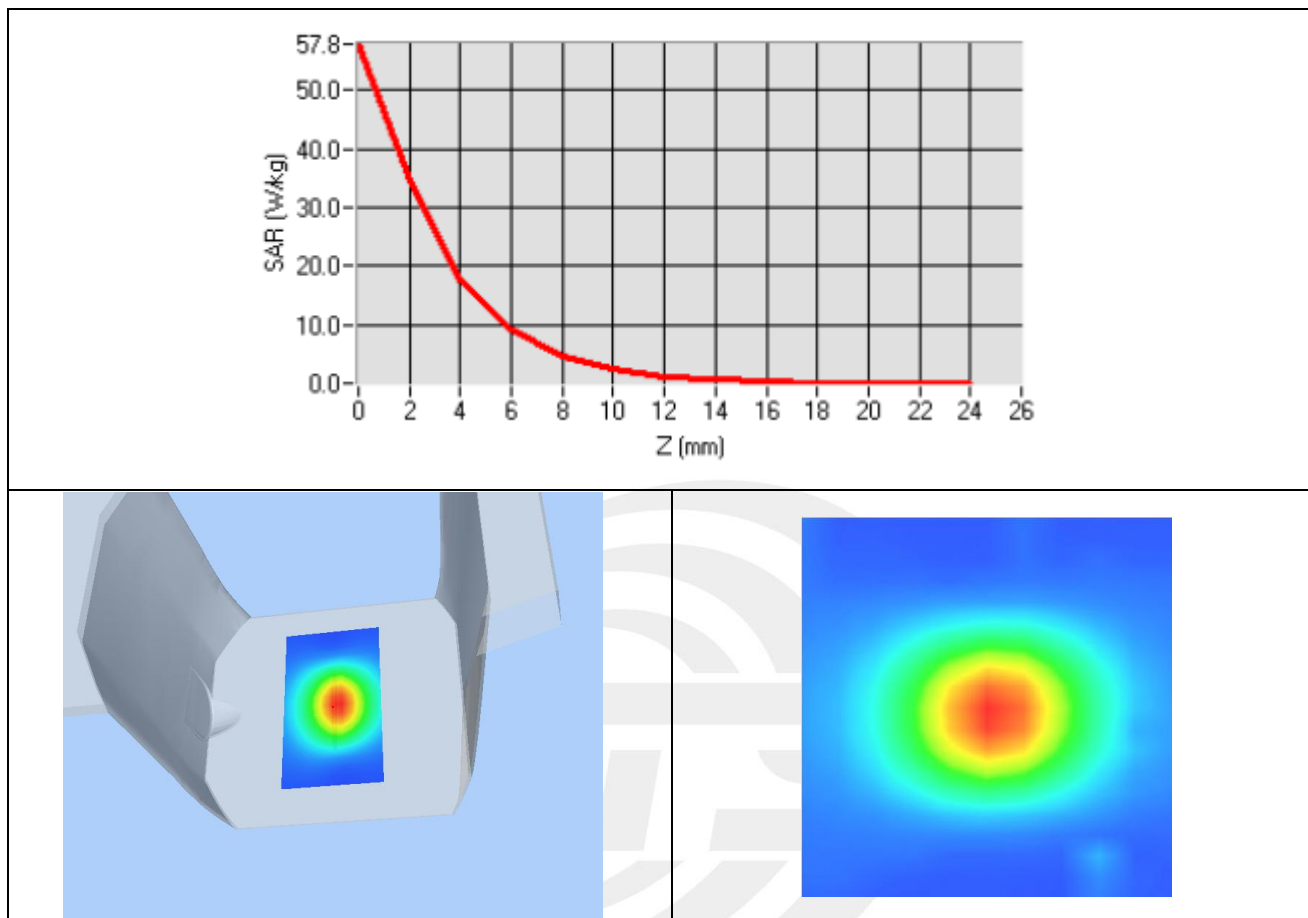
Experimental conditions.

Device Position	Validation plane
Band	5800 MHz
Channels	-
Signal	CW
Frequency (MHz)	5800
Relative permittivity (real part)	48.820000
Relative permittivity (imaginary)	19.830000
Conductivity (S/m)	5.73000
Power drift (%)	-1.00000
Ambient Temperature	22.7°C
Liquid Temperature	22.3°C
Probe	SN 45/15 EPGO281
ConvF	2.60
Crest factor:	1:1

Maximum location: X=3.00, Y=2.00

SAR 10g (W/Kg)	8.653684
SAR 1g (W/Kg)	18.540752

Z Axis Scan



Appendix B. SAR Test Plots

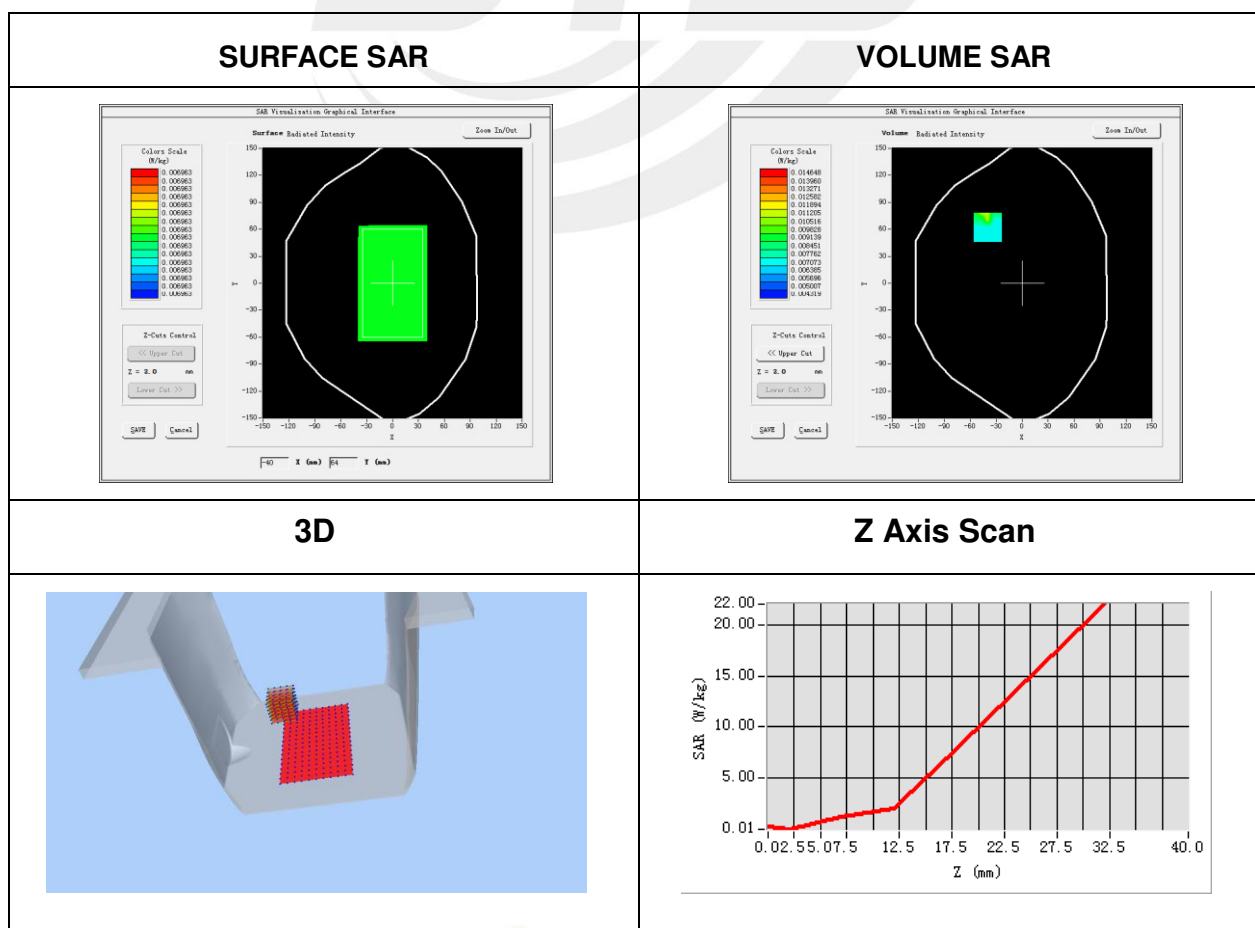
Plot 1: DUT: MID; EUT Model: Seal 8 pro

Test Date	2016-12-08
Probe	SN 45/15 EPGO281
ConvF	2.28
Area Scan	dx=8mm dy=8mm, h= 5.00 mm
ZoomScan	5x5x7,dx=8mm dy=8mm dz=5mm, Complete/ndx=8mm dy=8mm, h= 5.00 mm
Phantom	Validation plane
Antenna	A
Device Position	Body back side
Band	IEEE 802.11b ISM
Channels	High
Signal	IEEE802.b (Crest factor: 1.0)
Frequency (MHz)	2462
Relative permittivity (real part)	52.40
Conductivity (S/m)	1.94
Variation (%)	1.77

Maximum location: X=-40.00, Y=62.00

SAR Peak: 0.02 W/kg

SAR 10g (W/Kg)	0.009502
SAR 1g (W/Kg)	0.010646



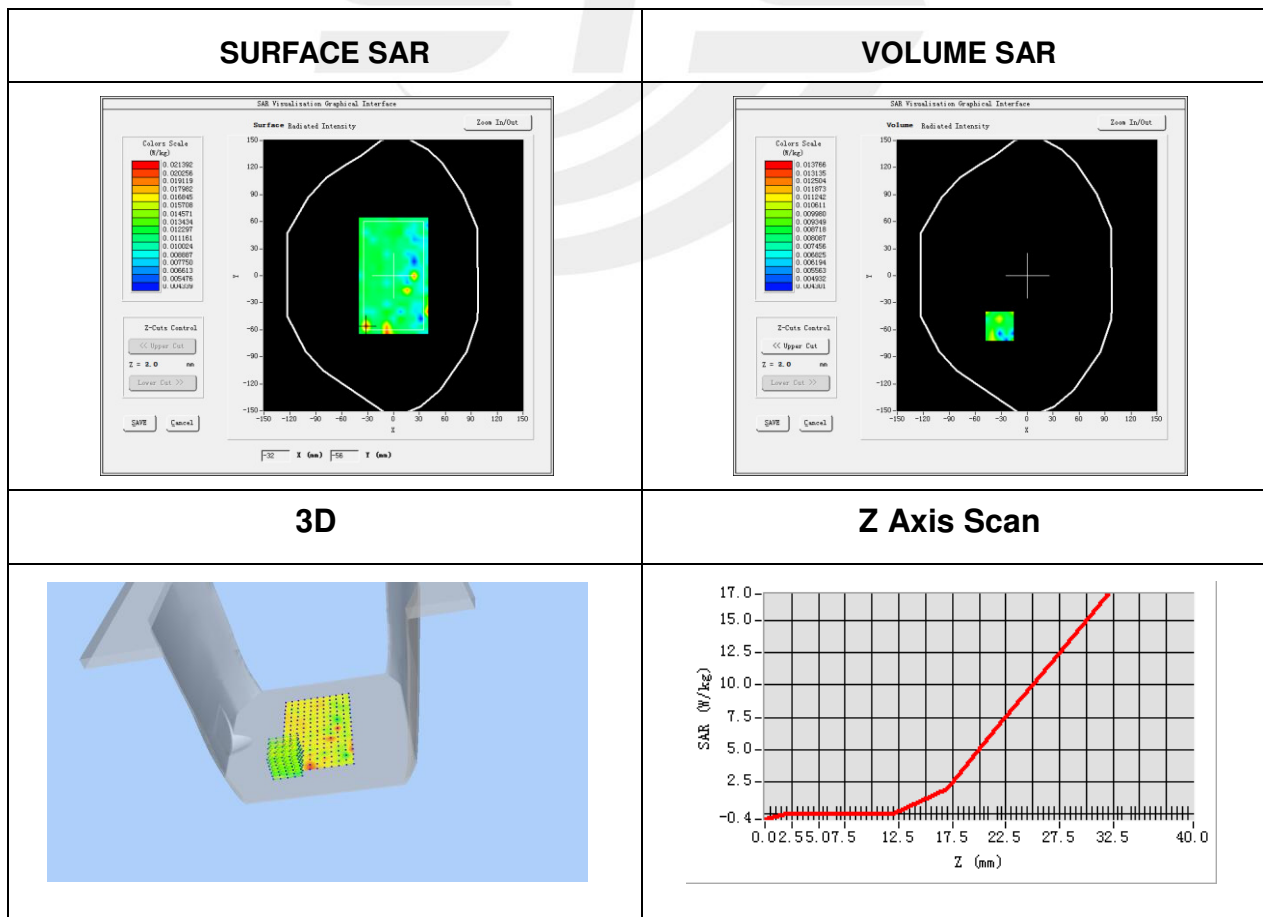
Plot 2: DUT: MID; EUT Model: Seal 8 pro

Test Date	2016-12-08
Probe	SN 45/15 EPGO281
ConvF	2.28
Area Scan	dx=8mm dy=8mm, h= 5.00 mm
ZoomScan	5x5x7,dx=8mm dy=8mm dz=5mm, Complete/ndx=8mm dy=8mm, h= 5.00 mm
Phantom	Validation plane
Antenna	B
Device Position	Body back side
Band	IEEE 802.11b ISM
Channels	High
Signal	IEEE802.b (Crest factor: 1.0)
Frequency (MHz)	2462
Relative permittivity (real part)	52.35
Conductivity (S/m)	1.93
Variation (%)	-2.01

Maximum location: X=-32.00, Y=-56.00

SAR Peak: 0.02 W/kg

SAR 10g (W/Kg)	0.009370
SAR 1g (W/Kg)	0.010321

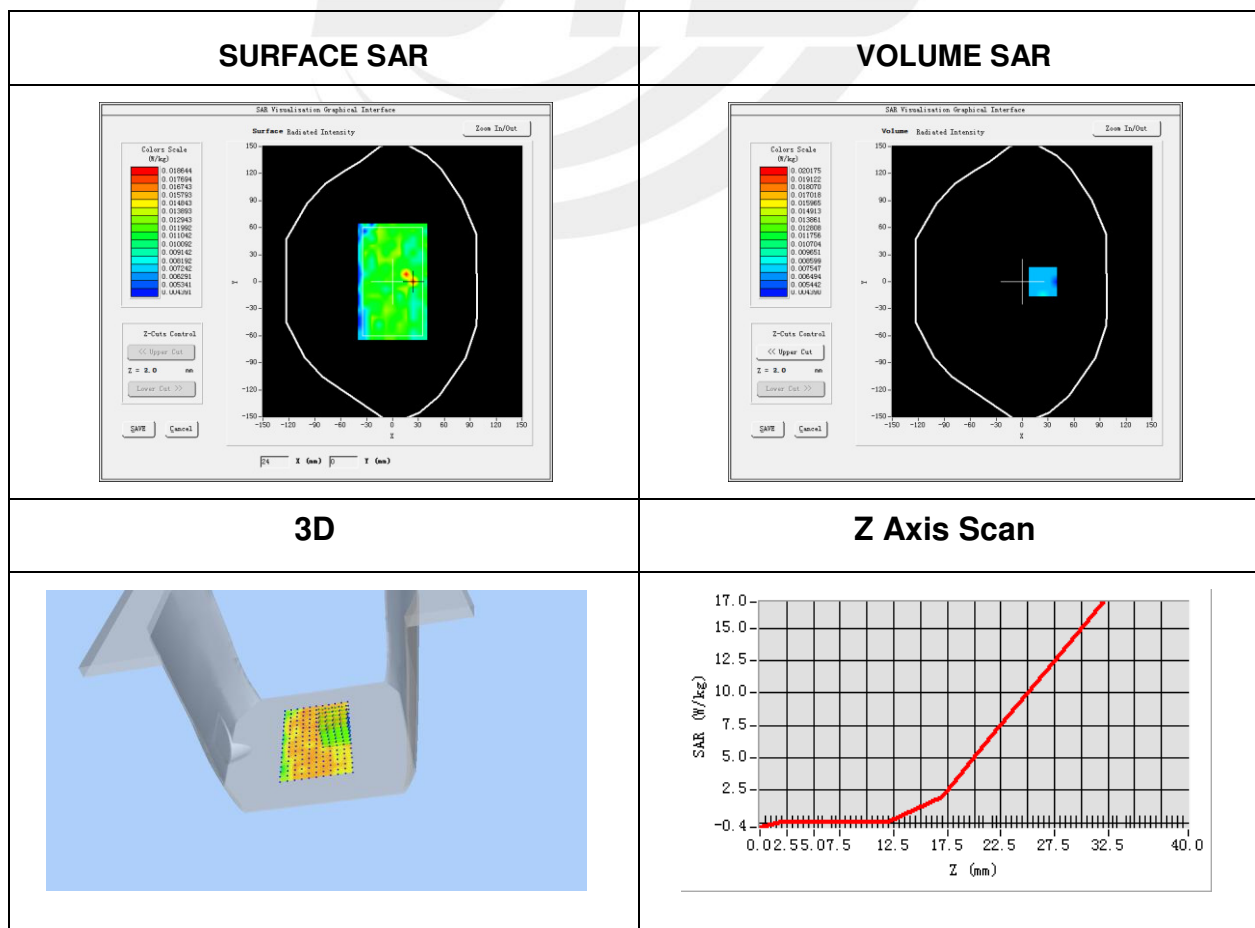


Plot 3: DUT: MID; EUT Model: Seal 8 pro

Test Date	2016-12-08
Probe	SN 45/15 EPGO281
ConvF	2.52
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
Antenna	A
Device Position	Body back side
Band	IEEE 802.11a ISM
Channels	Low
Signal	IEEE802.a (Crest factor: 1.0)
Frequency (MHz)	5180
Relative permittivity (real part)	47.5
Conductivity (S/m)	5.49
Variation (%)	-1.17

Maximum location: X=24.00, Y=0.00
SAR Peak: 0.01 W/kg

SAR 10g (W/Kg)	0.007617
SAR 1g (W/Kg)	0.007063

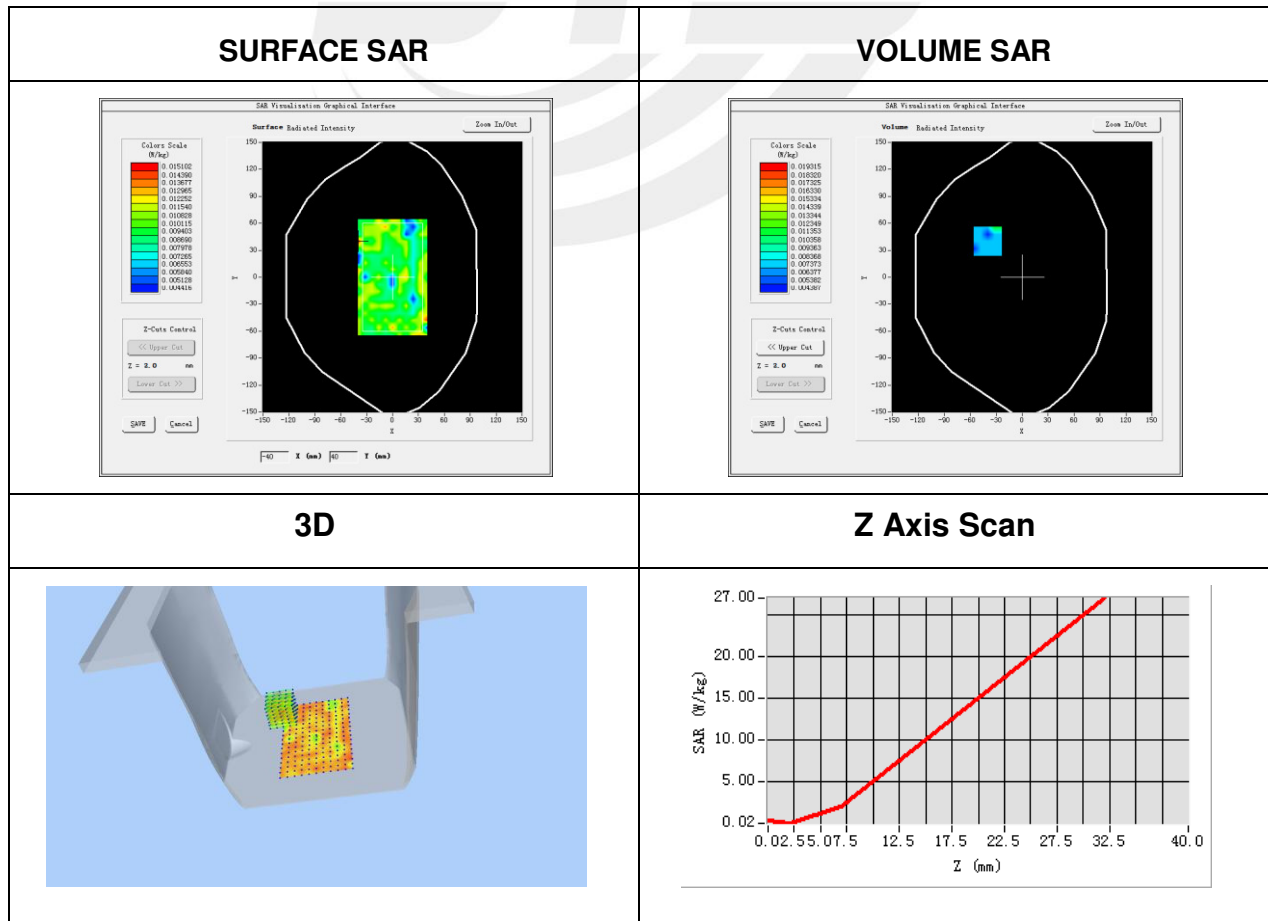


Plot 4: DUT: MID; EUT Model: Seal 8 pro

Test Date	2016-12-08
Probe	SN 45/15 EPGO281
ConvF	2.52
Area Scan	dx=8mm dy=8mm, h= 5.00 mm
ZoomScan	5x5x7,dx=8mm dy=8mm dz=5mm, Complete/ndx=8mm dy=8mm, h= 5.00 mm
Phantom	Validation plane
Antenna	B
Device Position	Body back side
Band	IEEE 802.11a ISM
Channels	Low
Signal	IEEE802.a (Crest factor: 1.0)
Frequency (MHz)	5180
Relative permittivity (real part)	47.5
Conductivity (S/m)	5.49
Variation (%)	-1.61

Maximum location: X=-40.00, Y=40.00
 SAR Peak: 0.01 W/kg

SAR 10g (W/Kg)	0.009825
SAR 1g (W/Kg)	0.008917



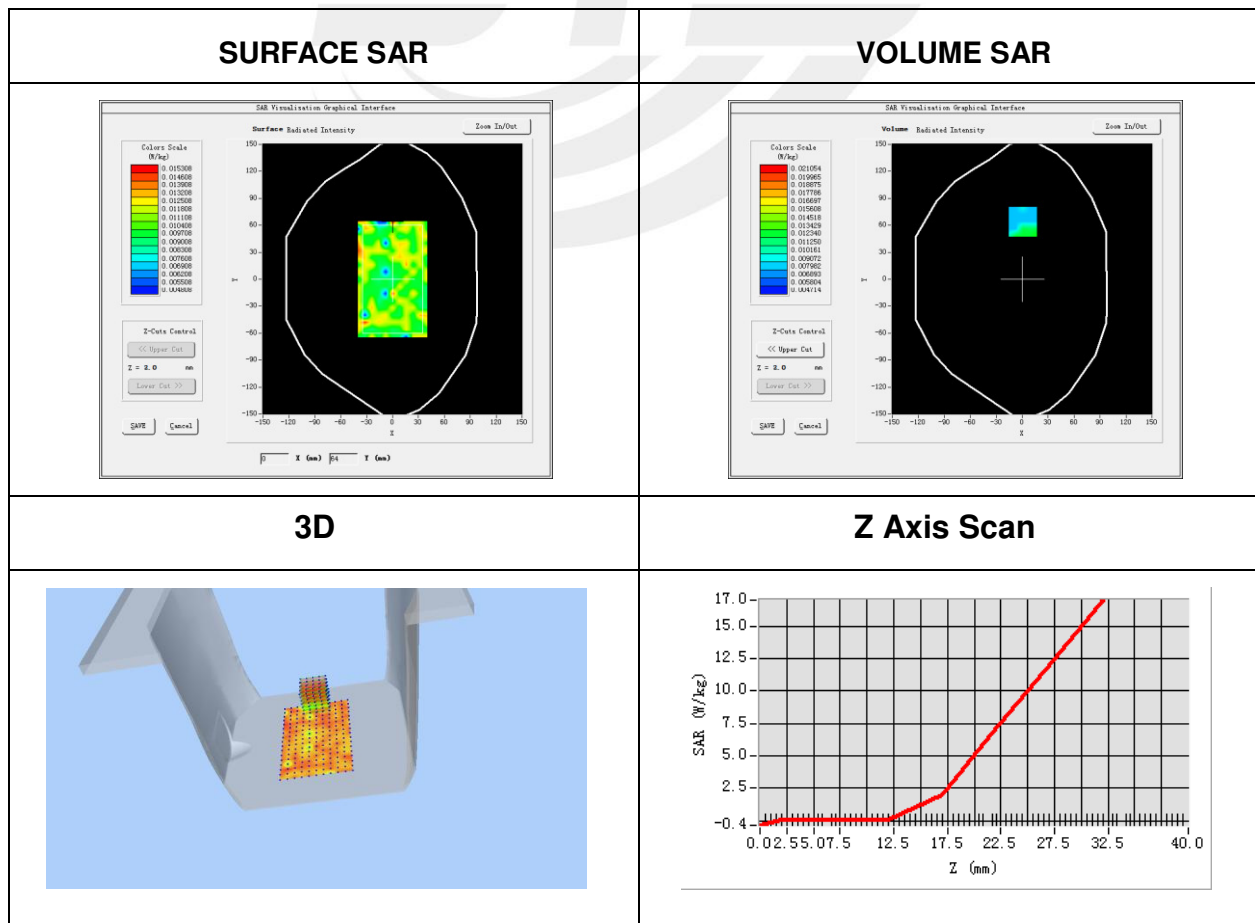
Plot 5: DUT: MID; EUT Model: Seal 8 pro

Test Date	2016-12-08
Probe	SN 45/15 EPGO281
ConvF	2.79
Area Scan	dx=8mm dy=8mm, h= 5.00 mm
ZoomScan	5x5x7,dx=8mm dy=8mm dz=5mm, Complete/ndx=8mm dy=8mm, h= 5.00 mm
Phantom	Validation plane
Antenna	A
Device Position	Body back side
Band	IEEE 802.11a ISM
Channels	Middle
Signal	IEEE802.a (Crest factor: 1.0)
Frequency (MHz)	5300
Relative permittivity (real part)	49.43
Conductivity (S/m)	5.44
Variation (%)	-4.36

Maximum location: X=1.00, Y=64.00

SAR Peak: 0.02 W/kg

SAR 10g (W/Kg)	0.011625
SAR 1g (W/Kg)	0.012356

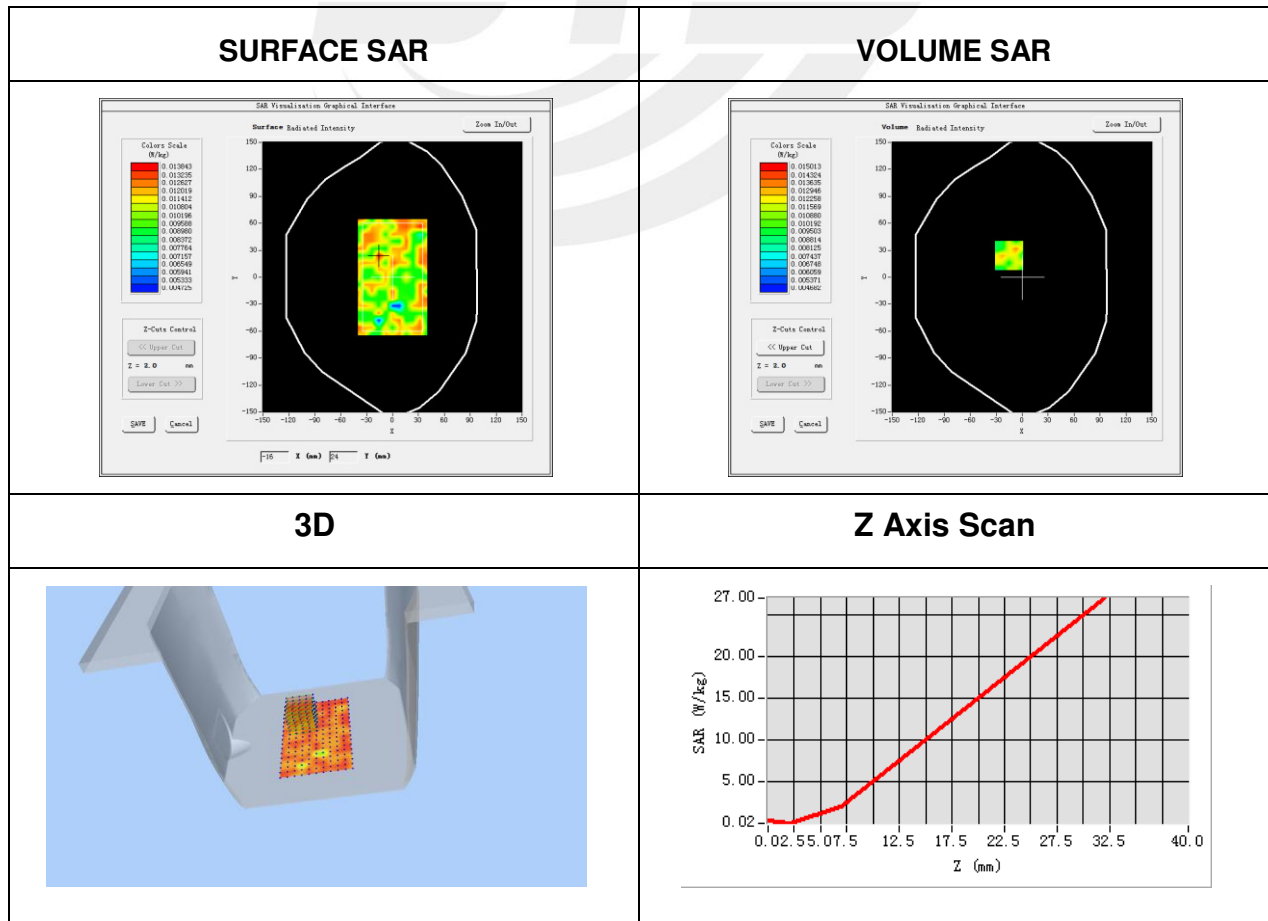


Plot 6: DUT: MID; EUT Model: Seal 8 pro

Test Date	2016-12-08
Probe	SN 45/15 EPGO281
ConvF	2.79
Area Scan	dx=8mm dy=8mm, h= 5.00 mm
ZoomScan	5x5x7,dx=8mm dy=8mm dz=5mm, Complete/ndx=8mm dy=8mm, h= 5.00 mm
Phantom	Validation plane
Antenna	B
Device Position	Body back side
Band	IEEE 802.11a ISM
Channels	Middle
Signal	IEEE802.a (Crest factor: 1.0)
Frequency (MHz)	5300
Relative permittivity (real part)	49.43
Conductivity (S/m)	5.44
Variation (%)	0.52

Maximum location: X=-15.00, Y=24.00
 SAR Peak: 0.02 W/kg

SAR 10g (W/Kg)	0.011261
SAR 1g (W/Kg)	0.012181

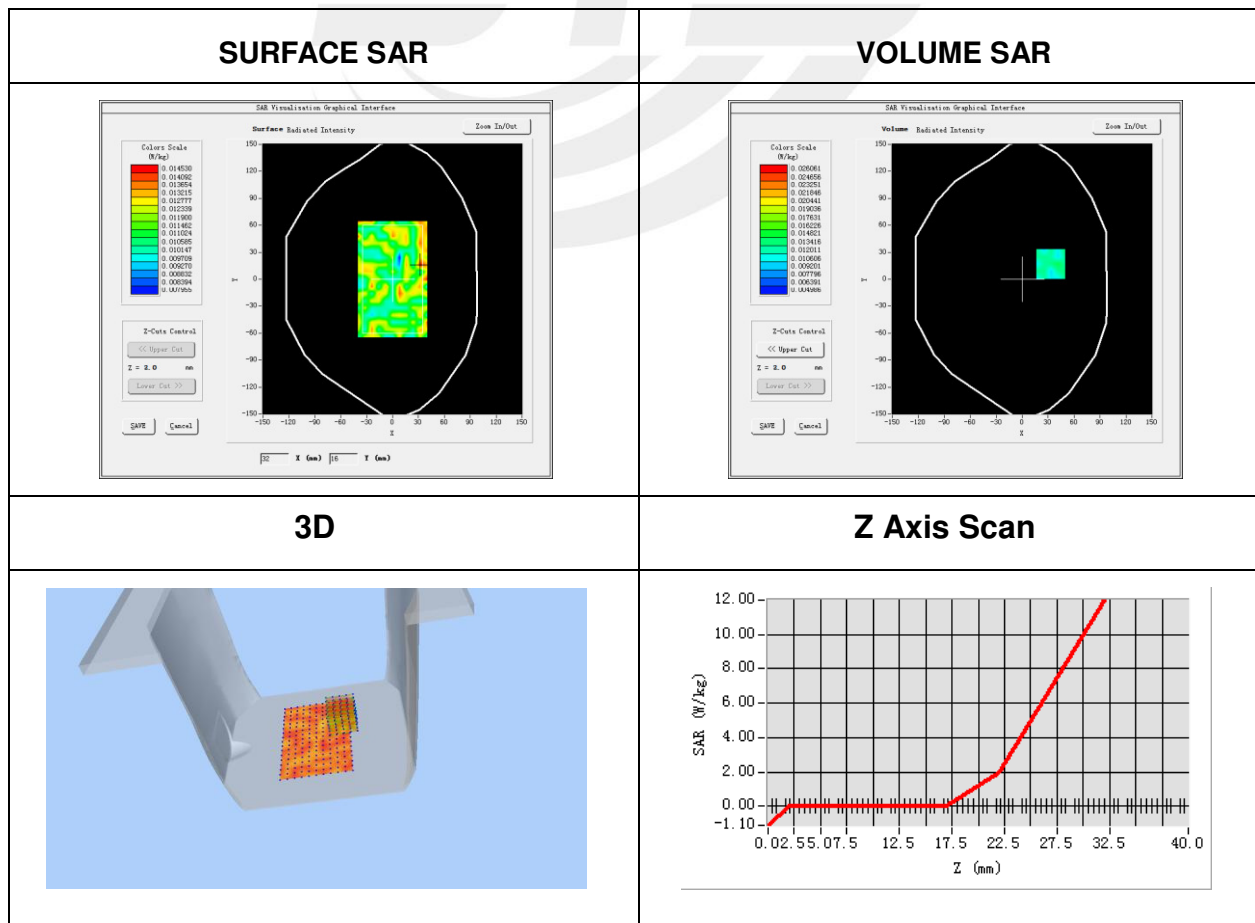


Plot 7: DUT: MID; EUT Model: Seal 8 pro

Test Date	2016-12-08
Probe	SN 45/15 EPGO281
ConvF	2.83
Area Scan	dx=8mm dy=8mm, h= 5.00 mm
ZoomScan	5x5x7,dx=8mm dy=8mm dz=5mm, Complete/ndx=8mm dy=8mm, h= 5.00 mm
Phantom	Validation plane
Antenna	A
Device Position	Body back side
Band	IEEE 802.11a ISM
Channels	Middle
Signal	IEEE802.a (Crest factor: 1.0)
Frequency (MHz)	5600
Relative permittivity (real part)	47.54
Conductivity (S/m)	5.78
Variation (%)	-4.25

Maximum location: X=33.00, Y=17.00
SAR Peak:0.02 W/kg

SAR 10g (W/Kg)	0.012388
SAR 1g (W/Kg)	0.012522

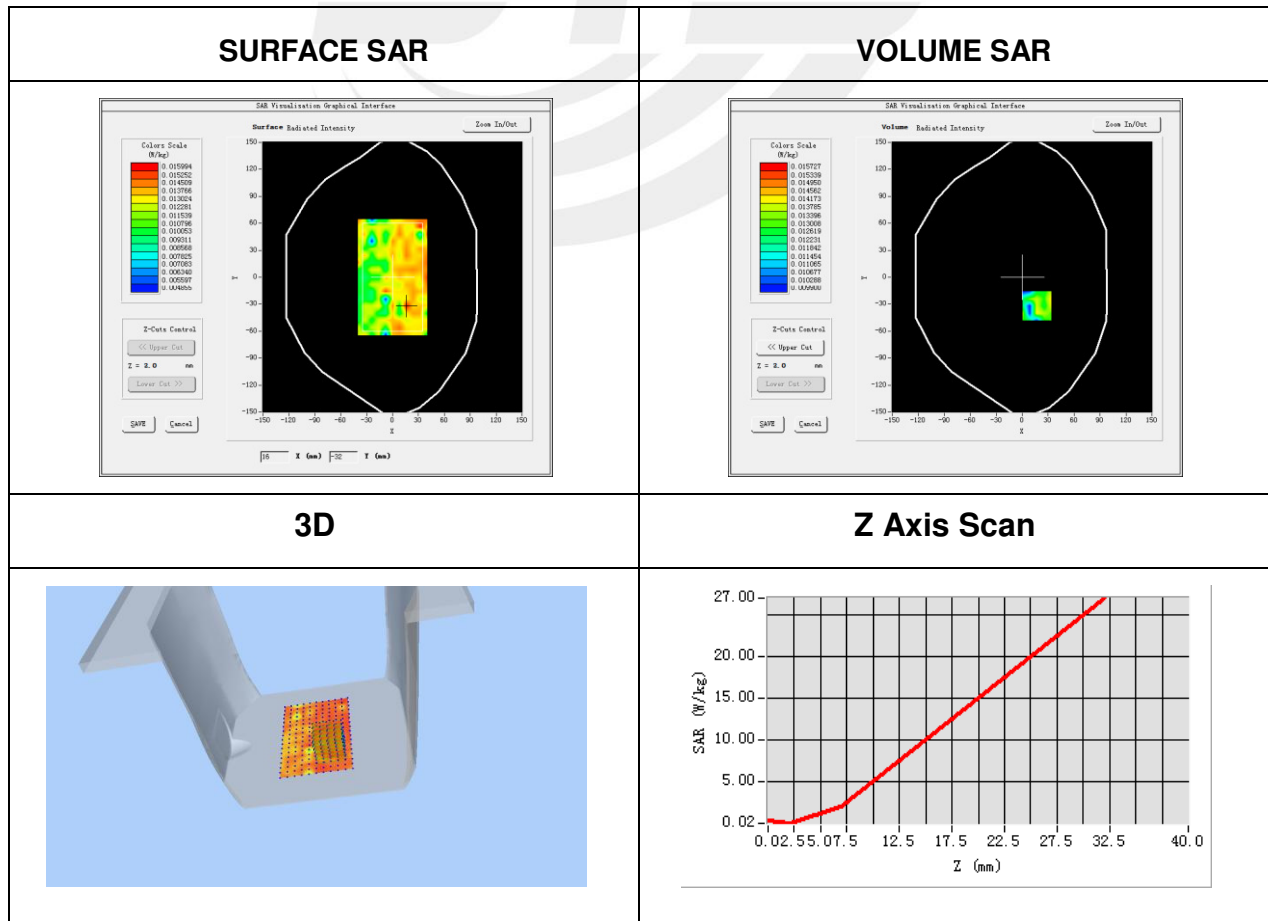


Plot 8: DUT: MID; EUT Model: Seal 8 pro

Test Date	2016-12-08
Probe	SN 45/15 EPGO281
ConvF	2.83
Area Scan	dx=8mm dy=8mm, h= 5.00 mm
ZoomScan	5x5x7,dx=8mm dy=8mm dz=5mm, Complete/ndx=8mm dy=8mm, h= 5.00 mm
Phantom	Validation plane
Antenna	B
Device Position	Body back side
Band	IEEE 802.11a ISM
Channels	Low
Signal	IEEE802.a (Crest factor: 1.0)
Frequency (MHz)	5500
Relative permittivity (real part)	47.54
Conductivity (S/m)	5.78
Variation (%)	-1.69

Maximum location: X=17.00, Y=-32.00
SAR Peak: 0.02 W/kg

SAR 10g (W/Kg)	0.013299
SAR 1g (W/Kg)	0.014008



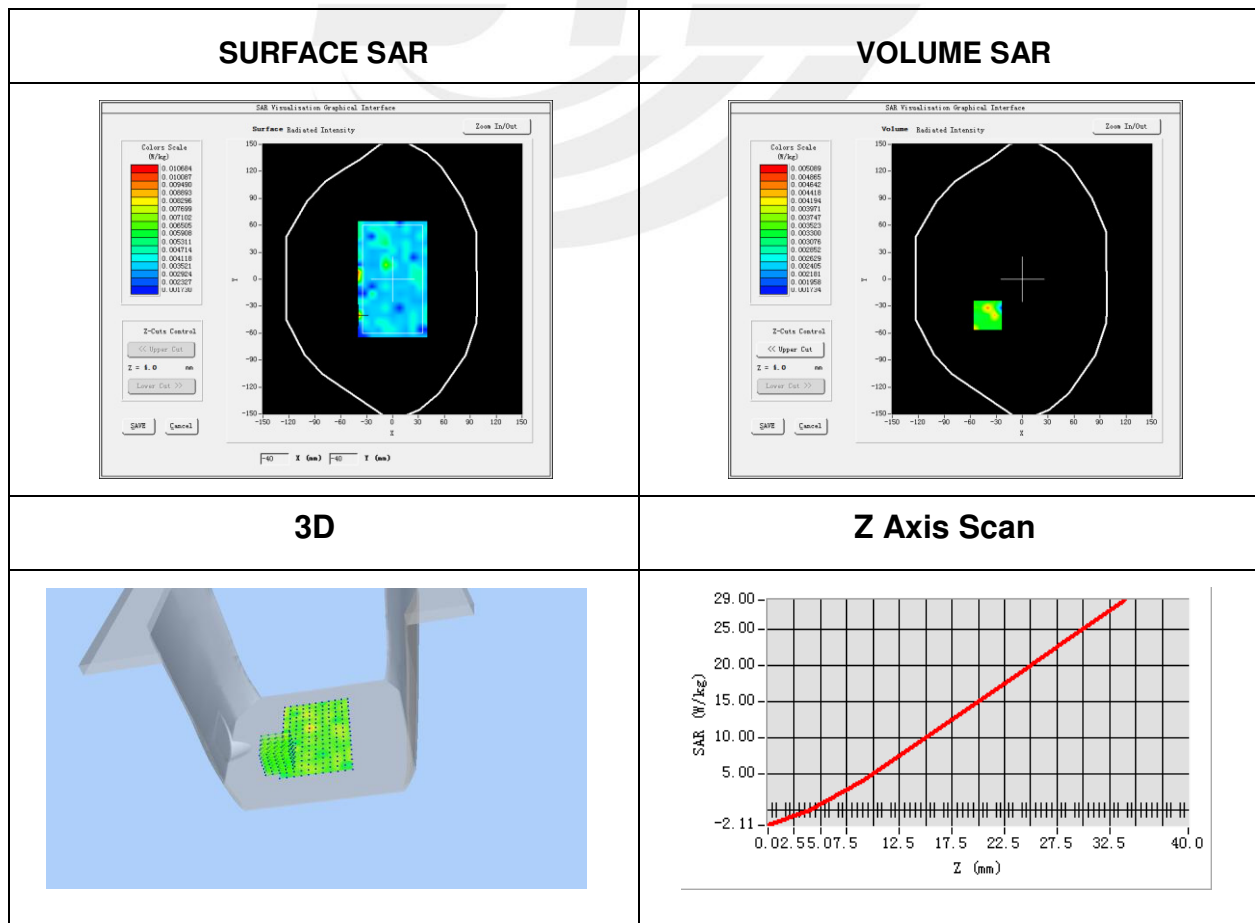
Plot 9: DUT: MID; EUT Model: Seal 8 pro

Test Date	2016-12-08
Probe	SN 45/15 EPGO281
ConvF	2.60
Area Scan	dx=8mm dy=8mm, h= 5.00 mm
ZoomScan	5x5x7,dx=8mm dy=8mm dz=5mm, Complete/ndx=8mm dy=8mm, h= 5.00 mm
Phantom	Validation plane
Antenna	A
Device Position	Body back side
Band	IEEE 802.11a ISM
Channels	Low
Signal	IEEE802.a (Crest factor: 1.0)
Frequency (MHz)	5745
Relative permittivity (real part)	48.82
Conductivity (S/m)	5.73
Variation (%)	-3.79

Maximum location: X=-40.00, Y=-40.00

SAR Peak: 0.01 W/kg

SAR 10g (W/Kg)	0.003568
SAR 1g (W/Kg)	0.004514

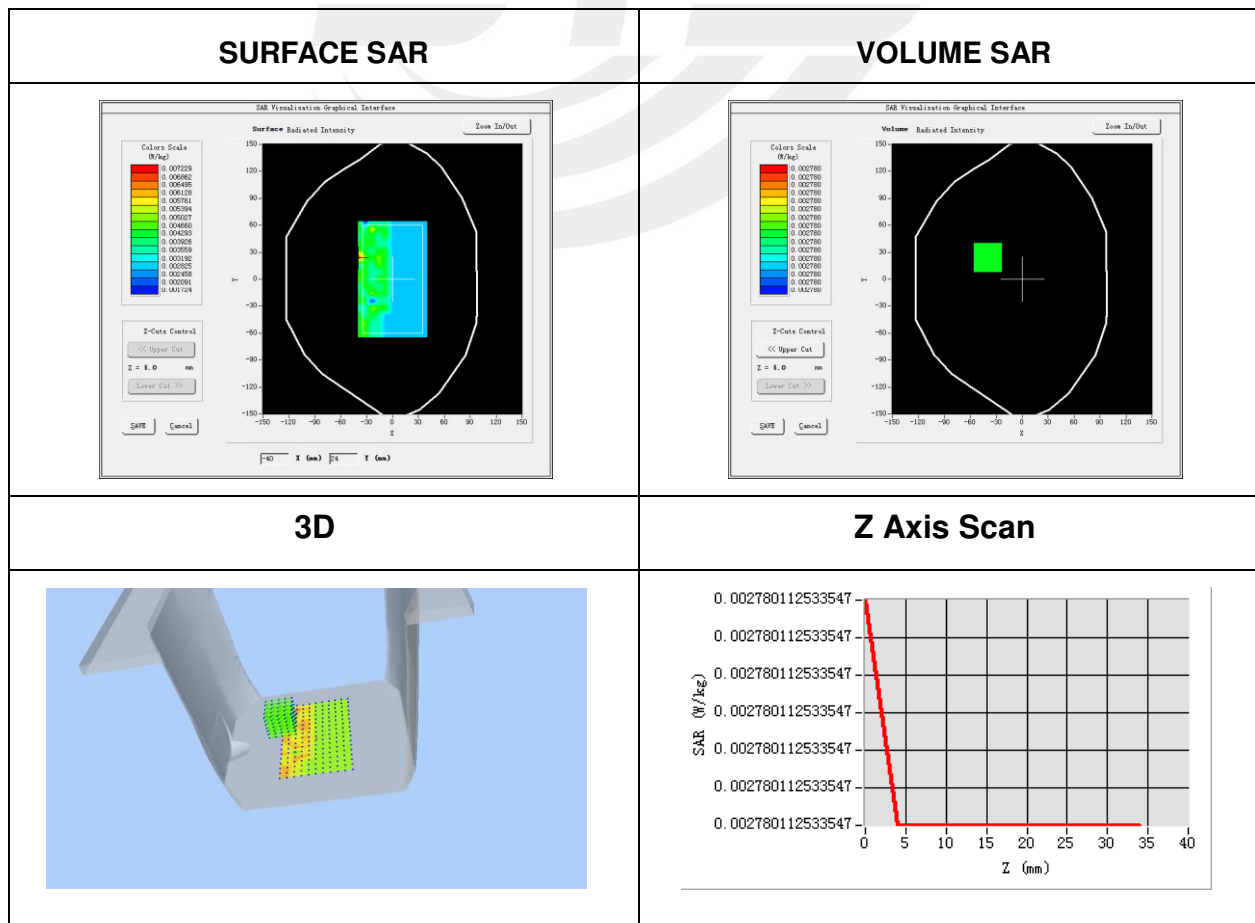


Plot 10: DUT: MID; EUT Model: Seal 8 pro

Test Date	2016-12-08
Probe	SN 45/15 EPGO281
ConvF	2.60
Area Scan	dx=8mm dy=8mm, h= 5.00 mm
ZoomScan	5x5x7,dx=8mm dy=8mm dz=5mm, Complete/ndx=8mm dy=8mm, h= 5.00 mm
Phantom	Validation plane
Antenna	B
Device Position	Body back side
Band	IEEE 802.11a ISM
Channels	Low
Signal	IEEE802.a (Crest factor: 1.0)
Frequency (MHz)	5745
Relative permittivity (real part)	48.82
Conductivity (S/m)	5.73
Variation (%)	-1.41

Maximum location: X=-40.00, Y=24.00
SAR Peak: 0.01 W/kg

SAR 10g (W/Kg)	0.002780
SAR 1g (W/Kg)	0.002780



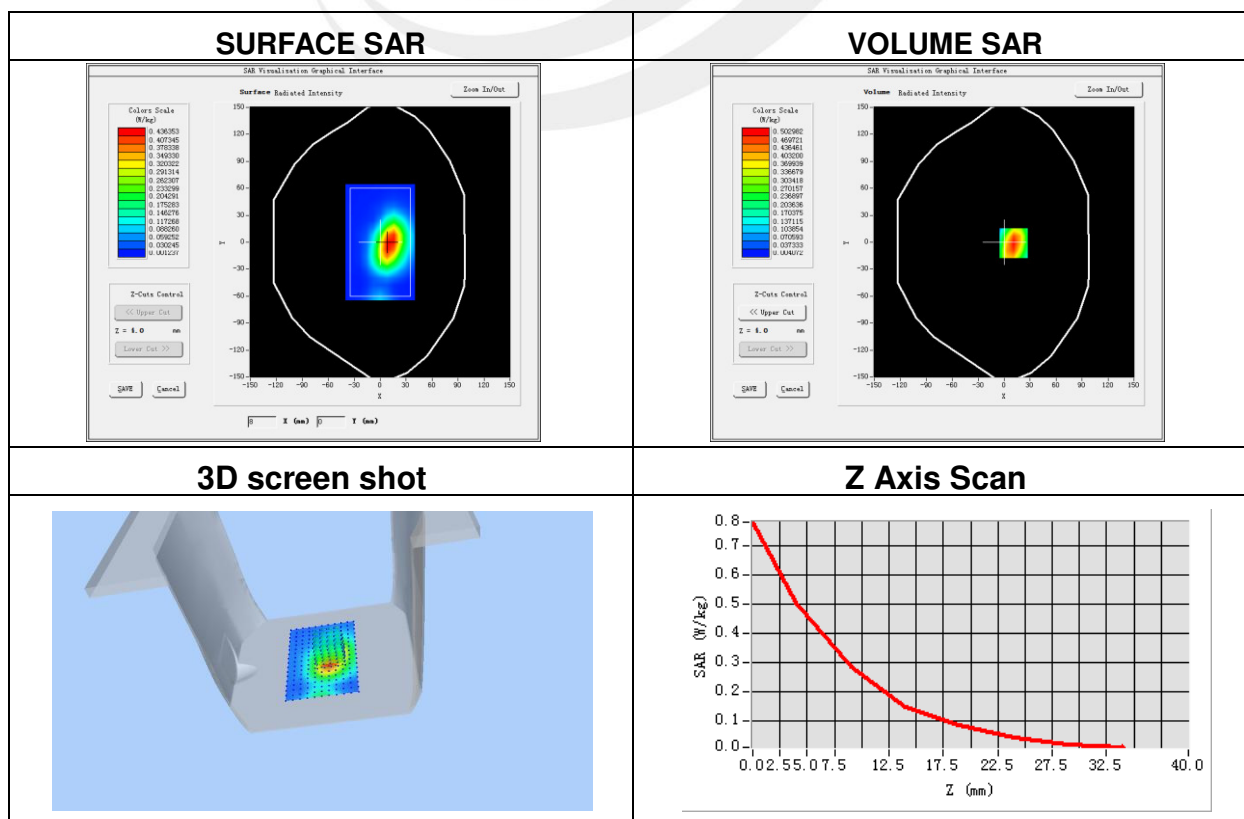
Plot 11: DUT: MID; EUT Model: Seal 8 pro

Test Date	2016-12-08
Ambient Temperature(°C)	22.70
Liquid Temperature(°C)	22.30
Probe	SN 45/15 EPGO281
ConvF	2.16
Area Scan	dx=8mm dy=8mm, h= 5.00 mm
ZoomScan	5x5x7,dx=8mm dy=8mm dz=5mm, Complete/ndx=8mm dy=8mm, h= 5.00 mm
Phantom	Validation plane
Device Position	Body bottom side
Band	LTE Band 2(RB 1)
Channels	Low
Signal	LTE (Crest factor: 1.0)
Frequency (MHz)	1860
Relative permittivity (real part)	53.30
Conductivity (S/m)	1.52
Variation (%)	3.0

Maximum location: X=11.00, Y=-1.00

SAR Peak: 0.78 W/kg

SAR 10g (W/Kg)	0.249789
SAR 1g (W/Kg)	0.473092



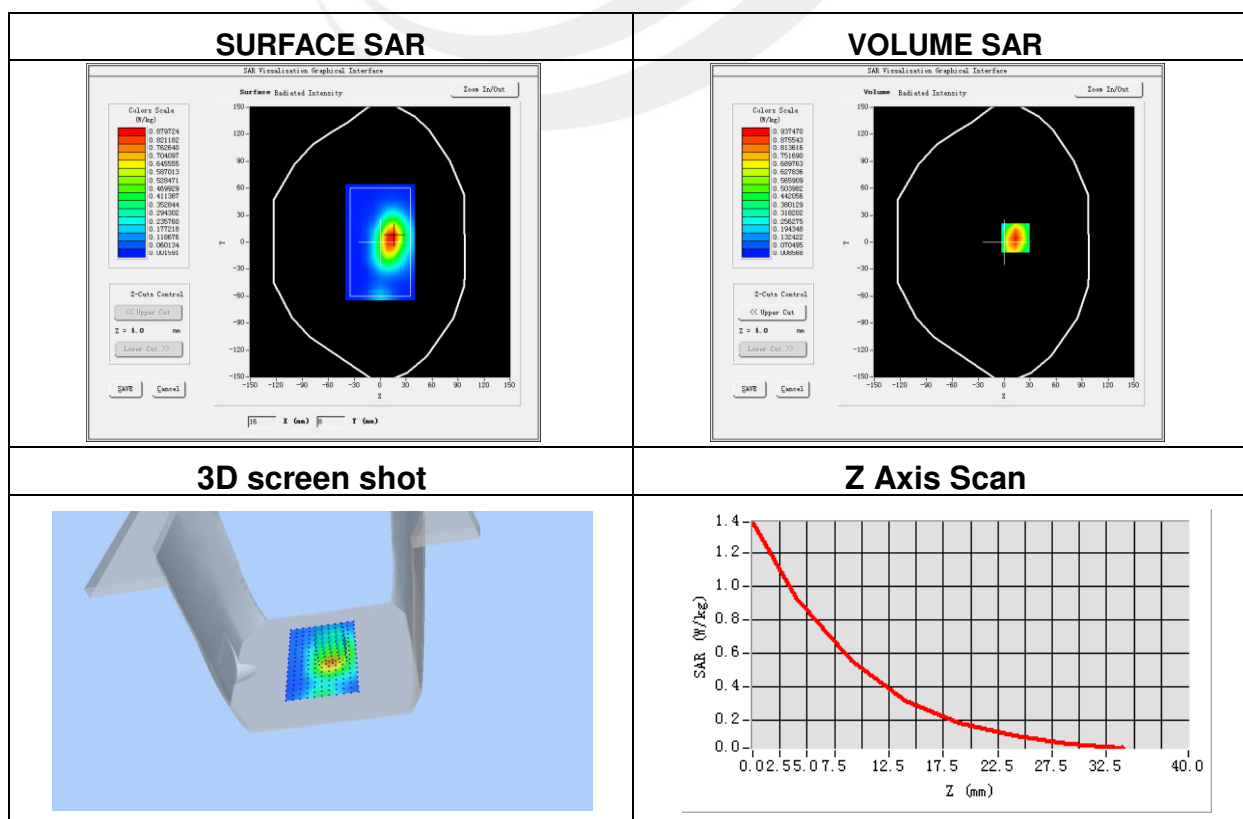
Plot 12: DUT: MID; EUT Model: Seal 8 pro

Test Date	2016-12-08
Ambient Temperature(°C)	22.70
Liquid Temperature(°C)	22.30
Probe	SN 45/15 EPGO281
ConvF	1.87
Area Scan	dx=8mm dy=8mm, h= 5.00 mm
ZoomScan	5x5x7,dx=8mm dy=8mm dz=5mm, Complete/ndx=8mm dy=8mm, h= 5.00 mm
Phantom	Validation plane
Device Position	Body bottom side
Band	LTE Band 4 (RB 1)
Channels	Middle
Signal	LTE (Crest factor: 1.0)
Frequency (MHz)	1732.5
Relative permittivity (real part)	52.6
Conductivity (S/m)	1.38
Variation (%)	-0.75

Maximum location: X=13.00, Y=5.00

SAR Peak: 1.38 W/kg

SAR 10g (W/Kg)	0.477363
SAR 1g (W/Kg)	0.877660



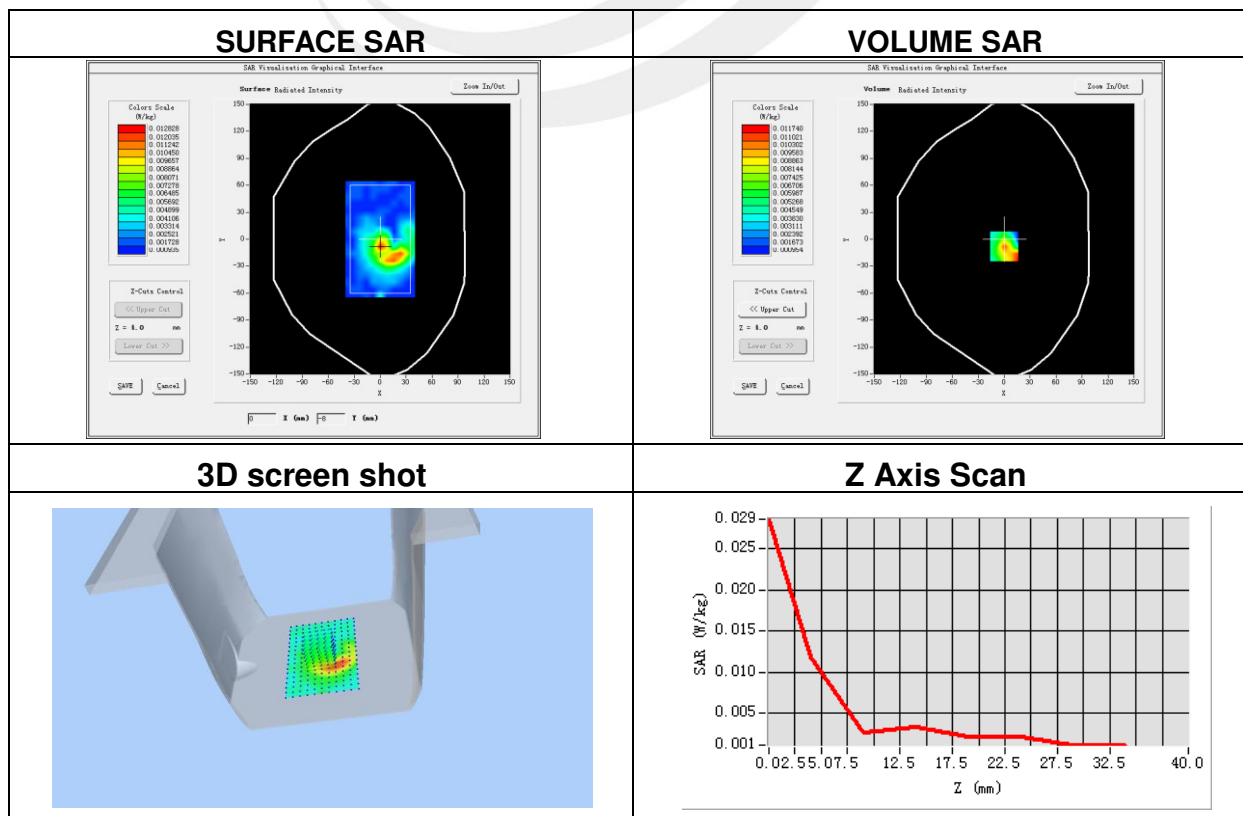
Plot 13: DUT: MID; EUT Model: Seal 8 pro

Test Date	2016-12-08
Ambient Temperature(°C)	22.70
Liquid Temperature(°C)	22.30
Probe	SN 45/15 EPGO281
ConvF	1.87
Area Scan	dx=8mm dy=8mm, h= 5.00 mm
ZoomScan	5x5x7,dx=8mm dy=8mm dz=5mm, Complete/ndx=8mm dy=8mm, h= 5.00 mm
Phantom	Validation plane
Device Position	Body bottom side
Band	LTE Band 5 (RB 1)
Channels	Low
Signal	LTE (Crest factor: 1.0)
Frequency (MHz)	829
Relative permittivity (real part)	52.6
Conductivity (S/m)	1.38
Variation (%)	-1.79

Maximum location: X=0.00, Y=-8.00

SAR Peak: 0.03 W/kg

SAR 10g (W/Kg)	0.008744
SAR 1g (W/Kg)	0.017254



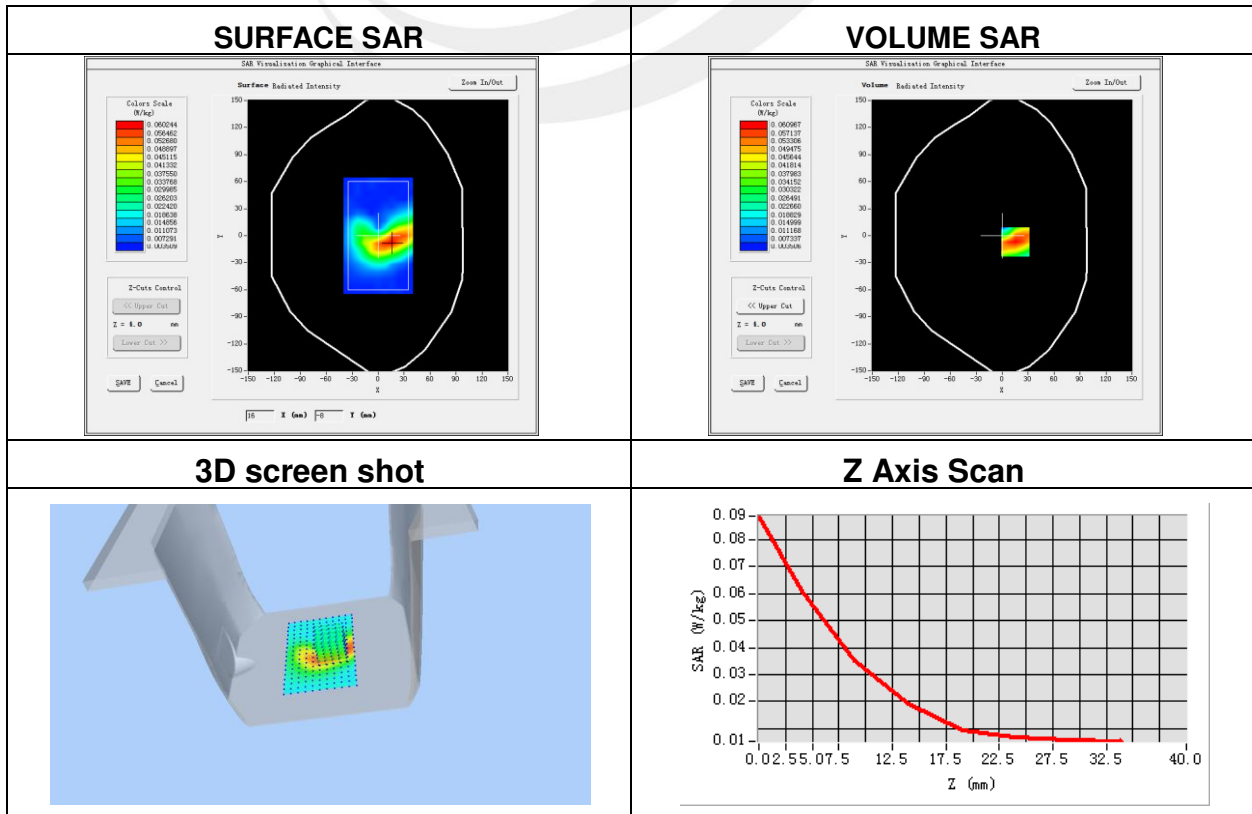
Plot 14: DUT: MID; EUT Model: Seal 8 pro

Test Date	2016-12-08
Ambient Temperature(°C)	22.70
Liquid Temperature(°C)	22.30
Probe	SN 45/15 EPGO281
ConvF	2.38
Area Scan	dx=8mm dy=8mm, h= 5.00 mm
ZoomScan	5x5x7,dx=8mm dy=8mm dz=5mm, Complete/ndx=8mm dy=8mm, h= 5.00 mm
Phantom	Validation plane
Device Position	Body back side
Band	LTE Band 13 (RB 1)
Channels	Middle
Signal	LTE (Crest factor: 1.0)
Frequency (MHz)	782
Relative permittivity (real part)	55.26
Conductivity (S/m)	0.91
Variation (%)	-1.43

Maximum location: X=15.00, Y=-7.00

SAR Peak: 0.09 W/kg

SAR 10g (W/Kg)	0.031296
SAR 1g (W/Kg)	0.057024

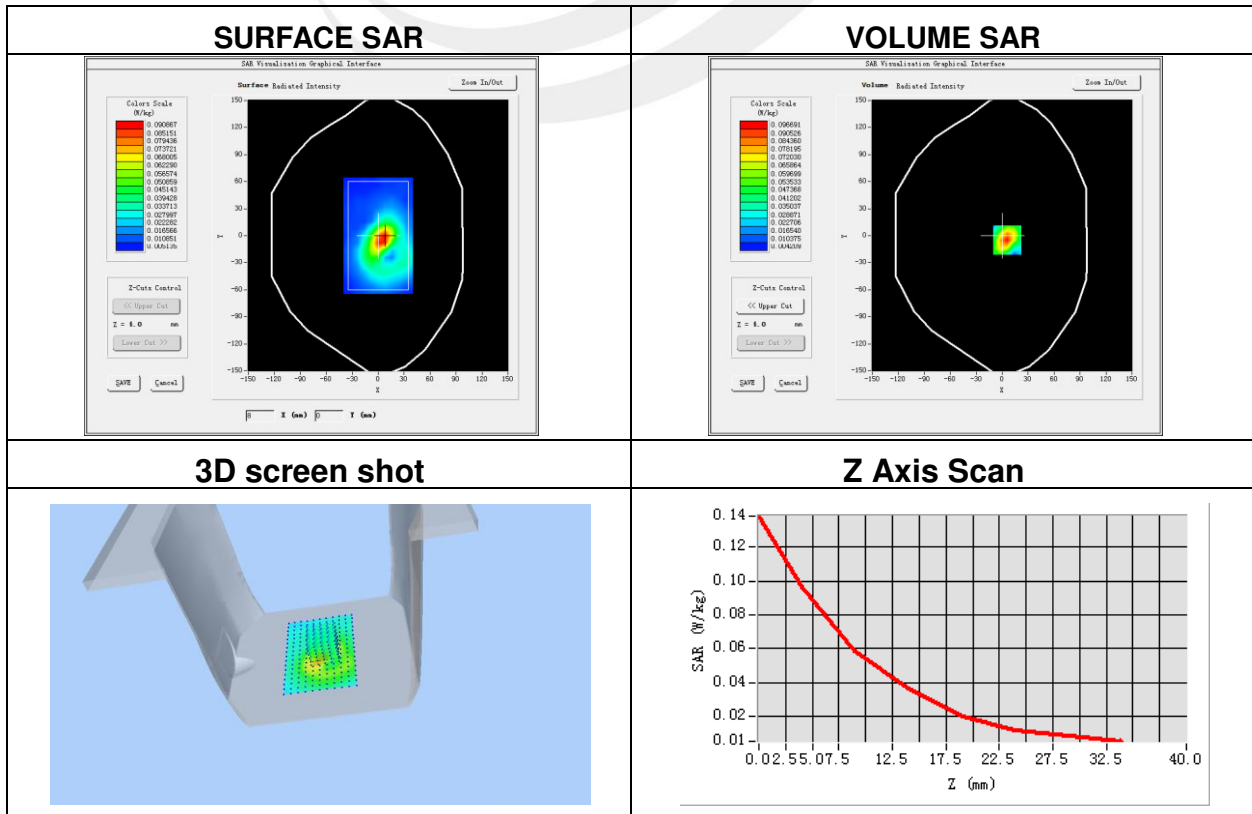


Plot 15: DUT: MID; EUT Model: Seal 8 pro

Test Date	2016-12-08
Ambient Temperature(°C)	22.70
Liquid Temperature(°C)	22.30
Probe	SN 45/15 EPGO281
ConvF	1.59
Area Scan	dx=8mm dy=8mm, h= 5.00 mm
ZoomScan	5x5x7,dx=8mm dy=8mm dz=5mm, Complete/ndx=8mm dy=8mm, h= 5.00 mm
Phantom	Validation plane
Device Position	Body bottom side
Band	LTE Band 17 (RB 1)
Channels	High
Signal	LTE (Crest factor: 1.0)
Frequency (MHz)	711
Relative permittivity (real part)	55.26
Conductivity (S/m)	0.91
Variation (%)	-2.68

Maximum location: X=6.00, Y=-5.00
SAR Peak: 0.14 W/kg

SAR 10g (W/Kg)	0.048061
SAR 1g (W/Kg)	0.099174





Appendix C. Probe Calibration And Dipole Calibration Report

Refer the appendix Calibration Report.

※※※※END OF THE REPORT※※※※

