# 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 |



Shenzhen STS Test Services Co., Ltd.
1/F., Building B, Zhuoke Science Park, No.190,Chongqing Road,
Fuyong Street, Bao'an District, Shenzhen, Guangdong,China
TEL: +86-755 3688 6288 FAX: +86-755 3688 6277 E-mail:sts@stsapp.com

# Test Report Certification

**Applicant's name** ..... : Bak USA Technologies Corp.

Address ..... : 425 Michigan Avenue, Buffalo, NY 14203, USA

**Manufacture'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)

# Table of Contents

# 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;<br>Charge Limit: 4.2V;<br>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<br>LTE Band 4:1710.7~1754.3MHz<br>LTE Band 5: 824.7~848.3MHz<br>LTE Band 13: 779.5~784.5MHz<br>LTE Band 17:706.5 ~713.5MHz<br>Bluetooth:2402~ 2480MHz | | | 802.11b/g/n(HT20/40):2412~2462MHz<br>WLAN 802.11a/n/ac(HT20/40/80):<br>5150~5250 MHz;<br>5250~5350 MHz;<br>5470~5725 MHz;<br>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)<br>Part 15 Spread Spectrum Transmitter (DSS)<br>Digital Transmission System (DTS) | | | | | |
| Operating Mode: | LTE:QPSK,16QAM;<br>WLAN: 802.11 a/b/g/n(HT20)/n(HT40)/a/ac20/ac40/ac80;<br>Bluetooth: V3.0 + EDR (GFSK, π/4DQPSK, 8DPSK)<br>Bluetooth: V4.0 | | | | | |
| Antenna Specification: | LTE: PIFA Antenna<br>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 (℃) | 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:

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

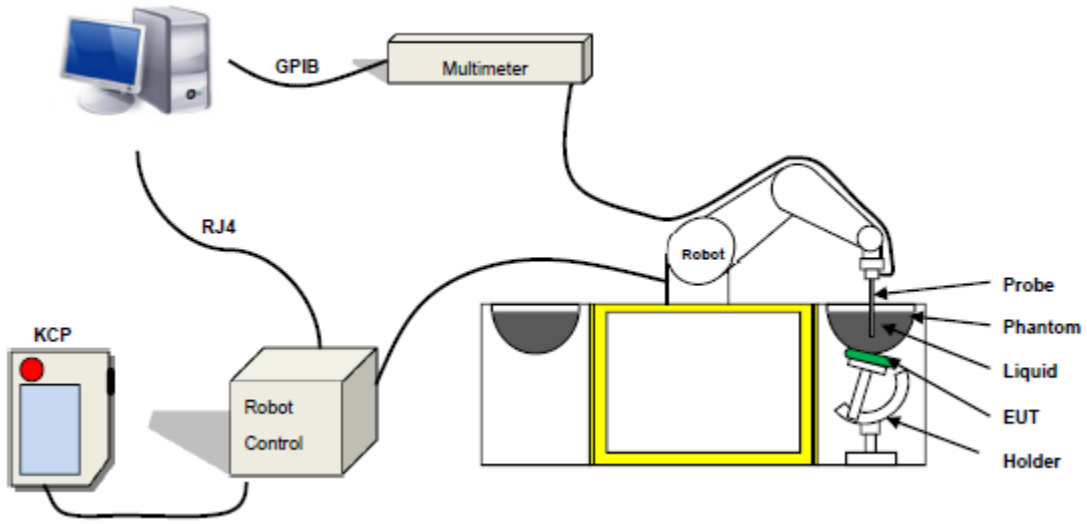
SAR is expressed in units of Watts per kilogram (W/kg) SAR measurement can be related to the electrical field in the tissue by

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

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±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*

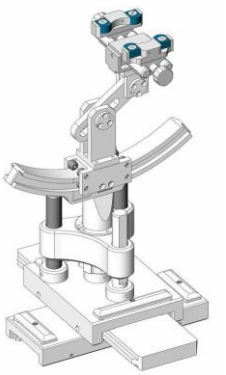
3.2.2 Phantom

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. 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 | εr |
| 750 | / | / | / | 0.79 | / | 64.81 | / | 34.40 | 0.97 | 41.8 |
| 835 | / | / | / | 0.79 | / | 64.81 | / | 34.40 | 0.97 | 41.8 |
| 900 | / | / | / | 0.79 | / | 64.81 | / | 34.40 | 0.97 | 41.8 |
| 1800 | / | 13.84 | / | 0.35 | / | / | 30.45 | 55.36 | 1.38 | 41.0 |
| 1900 | / | 13.84 | / | 0.35 | / | / | 30.45 | 55.36 | 1.38 | 41.0 |
| 2000 | / | 7.99 | / | 0.16 | / | / | 19.97 | 71.88 | 1.55 | 41.1 |
| 2450 | / | 7.99 | / | 0.16 | / | / | 19.97 | 71.88 | 1.88 | 40.3 |
| 2600 | / | 7.99 | / | 0.16 | / | / | 19.97 | 71.88 | 1.88 | 40.3 |

| Tissue dielectric parameters for head and body phantoms | | | | |
|---|---|---|---|---|
| Frequency | $\varepsilon_r$ | | 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%

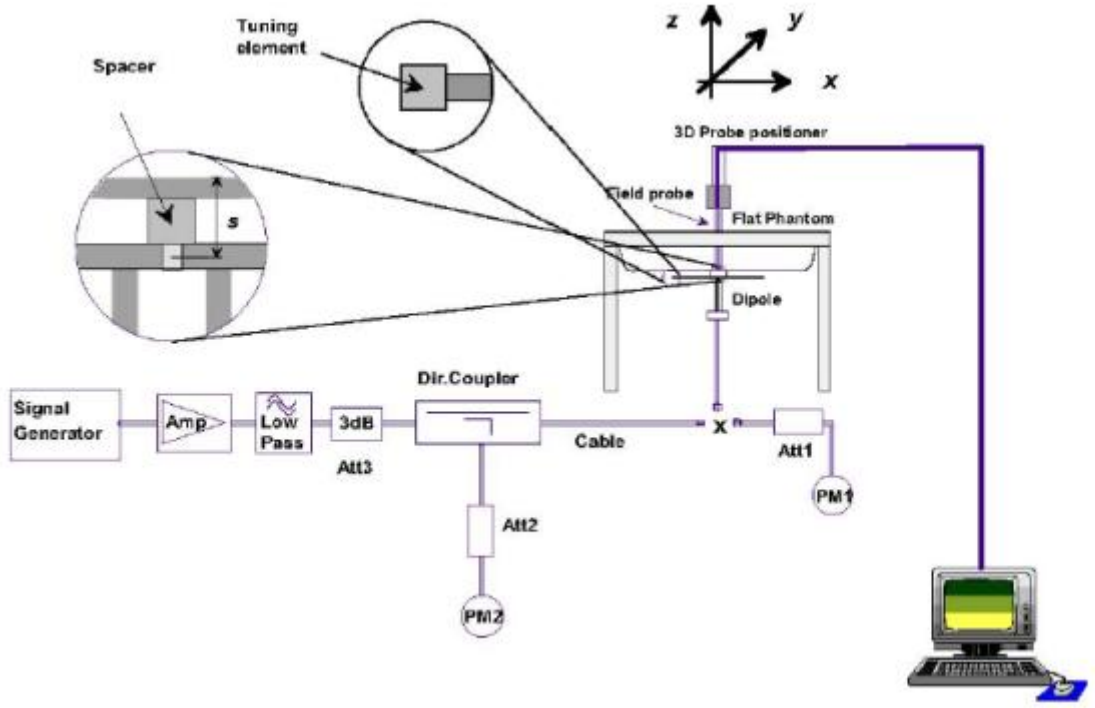
| Body Simulating Liquid | | Parameters | Target | Measured | Deviation[%] | Limited[%] |
|---|---|---|---|---|---|---|
| Frequency | Temp. [°C] | | | | | |
| 750 MHz | 22.30 | Permitivity: | 55.5 | 55.3 | -0.36 | ±5 |
| | | Conductivity: | 0.96 | 0.92 | -4.17 | ±5 |
| 835 MHz | 22.30 | Permitivity: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

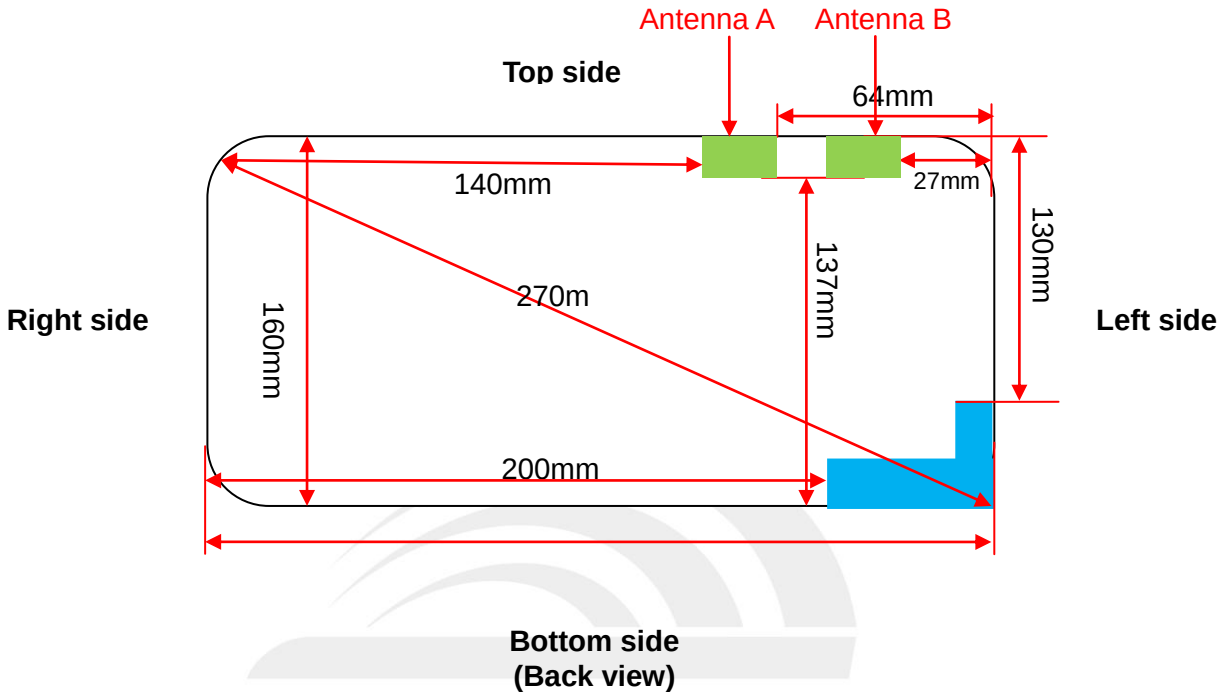
- Establish a call with the maximum output power with a base station simulator. The connection between the mobile and the base station simulator is established via air interface
- Measurement of the local E-field value at a fixed location. This value serves as a reference value for calculating a possible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

➢ Area Scan& Zoom Scan

First Area Scan is used to locate the approximate location(s) of the local peak SAR value(s). The measurement grid within an Area Scan is defined by the grid extent, grid step size and grid offset. Next, in order to determine the EM field distribution in a three-dimensional spatial extension, Zoom Scan is required. The Zoom Scan is performed around the highest E-field value to determine the averaged SAR-distribution over 10 g. Area scan and zoom scan resolution setting follows KDB 865664 D01 quoted below.
When the 1-g SAR of the highest peak is within 2 dB of the SAR limit, additional zoom scans are required for other peaks within 2 dB of the highest peak that have not been included in any zoom scan to ensure there is no increase in SAR.

# 7. EUT Antenna Location Sketch

It is a MID, support LTE/WIFI/BT mode.




WWAN Antenna

WIFI/BT Antenna

## 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:
   [(max.power of channel, including tune-up tolerance, Mw)/( min. test separation distance, mm)]*[√f(GHZ)]≤3.0 for 1-g SAR and≤7.5 for10-g extremity SAR ,f(GHz) is the RF channel transmit frequency in GHz.Power and distance are rounded to the nearest mW and mm before calculation.The result is rounded to one decimal place for comparison
   For <50mm distance, we just calculate mW of the exclusion threshold value(3.0)to do compare
5. per KDB 447498 D01, at 100 MHz to 6GHz and for test separation distances >50mm, the SAR test exclusion threshold is determined according to the following
   a)[threshold at 50mm in step 1]+(test separation distance -50mm)*(f (MHz)/150)]Mw, at 100 MHz to 1500 MHz
   b) [threshold at 50mm in step1]+( test separation distance -50mm) *10]mW at＞1500MHz and≤6GHz
6. Per KDB 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 futher 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

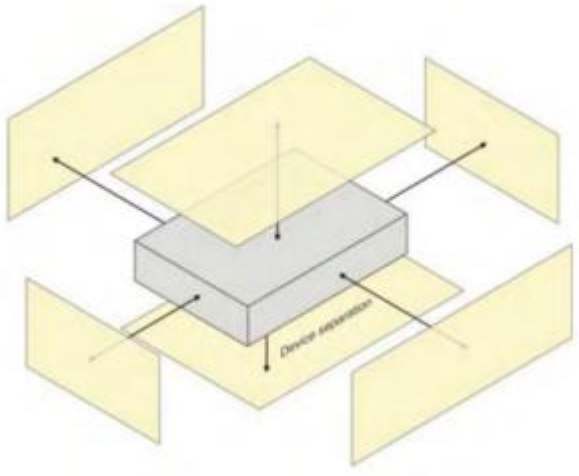
This EUT was tested in Rear Face.

## 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 W/kg, the highest *reported* SAR configuration for that wireless mode and frequency band should be repeated for the body-worn accessory with a headset attached to the handset.

## 8.2 Hotspot mode exposure position condition

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



# 9. Uncertainty

## 9.1 Measurement Uncertainty

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

| 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 | √3 | $(1\text{-cp})^{1/2}$ | $(1\text{-cp})^{1/2}$ | 1.43 | 1.43 | ∞ |
| 3 | Hemispherical isotropy | 5.9 | R | √3 | $\sqrt{C_p}$ | $\sqrt{C_p}$ | 2.41 | 2.41 | ∞ |
| 4 | Boundary effect | 1.0 | R | √3 | 1 | 1 | 0.58 | 0.58 | ∞ |
| 5 | Linearity | 4.7 | R | √3 | 1 | 1 | 2.71 | 2.71 | ∞ |
| 6 | System Detection limits | 1.0 | R | √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 | √3 | 1 | 1 | 0 | 0 | ∞ |
| 9 | Integration time | 1.4 | R | √3 | 1 | 1 | 0.81 | 0.81 | ∞ |
| 10 | Ambient noise | 3.0 | R | √3 | 1 | 1 | 1.73 | 1.73 | ∞ |
| 11 | Ambient reflections | 3.0 | R | √3 | 1 | 1 | 1.73 | 1.73 | ∞ |
| 12 | Probe positioner mech. restrictions | 1.4 | R | √3 | 1 | 1 | 0.81 | 0.81 | ∞ |
| 13 | Probe positioning with respect to phantom shell | 1.4 | R | √3 | 1 | 1 | 0.81 | 0.81 | ∞ |
| 14 | Max.SAR evaluation | 1.0 | R | √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 | √3 | 1 | 1 | 2.89 | 2.89 | ∞ |
| Phantom and set-up | | | | | | | | | |
| 18 | Phantom uncertainty | 4.0 | R | √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 | √3 | $(1\text{-cp})^{1/2}$ | $(1\text{-cp})^{1/2}$ | 1.43 | 1.43 | ∞ |
| 3 | Hemispherical isotropy | 5.9 | R | √3 | $\sqrt{C_p}$ | $\sqrt{C_p}$ | 2.41 | 2.41 | ∞ |
| 4 | Boundary effect | 1.0 | R | √3 | 1 | 1 | 0.58 | 0.58 | ∞ |
| 5 | Linearity | 4.7 | R | √3 | 1 | 1 | 2.71 | 2.71 | ∞ |
| 6 | System Detection limits | 1.0 | R | √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 | √3 | 1 | 1 | 0 | 0 | ∞ |
| 10 | Integration time | 1.4 | R | √3 | 1 | 1 | 0.81 | 0.81 | ∞ |
| 11 | Ambient noise | 3.0 | R | √3 | 1 | 1 | 1.73 | 1.73 | ∞ |
| 12 | Ambient reflections | 3.0 | R | √3 | 1 | 1 | 1.73 | 1.73 | ∞ |
| 13 | Probe positioner mech. restrictions | 1.4 | R | √3 | 1 | 1 | 0.81 | 0.81 | ∞ |
| 14 | Probe positioning with respect to phantom shell | 1.4 | R | √3 | 1 | 1 | 0.81 | 0.81 | ∞ |
| 15 | Max.SAR evaluation | 1.0 | R | √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 drit measurement | 5 | R | √3 | 1 | 1 | 2.89 | 2.89 | ∞ |
| 18 | Dipole Axis to liquid Distance | 2 | R | √3 | 1 | 1 | | | ∞ |
| Phantom and set-up | | | | | | | | | |
| 19 | Phantom uncertainty | 4.0 | R | √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 |
| π/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 $\leqslant$ 0.8 W/kg. Otherwise, SAR is measured for the highest output power channel; and if the reported SAR is > 1.45 W/kg, the remaining required test channels must also be tested.
6. Per KDB 941225 D05, 16QAM output power for each RB allocation configuration is > not ½ dB higher than the same configuration in QPSK and the reported SAR for the QPSK configuration is $\leqslant$ 1.45 W/kg; Per KDB 941225 D05, 16QAM SAR testing is not required.
7. Per KDB 941225 D05, Smaller bandwidth output power for each RB allocation configuration is > not ½ dB higher than the same configuration in the largest supported bandwidth, and the reported SAR for the largest supported bandwidth is $\leqslant$ 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:
[(max. power of channel, including tune-up tolerance, mW)/(min. test separation distance, mm)]·[√f(GHZ)] ≤ 3.0 for 1-g SAR and ≤ 7.5 for 10-g extremity SAR, where:

• f(GHZ) is the RF channel transmit frequency in GHz
• Power and distance are rounded to the nearest mW and mm before calculation
• The result is rounded to one decimal place for comparison

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

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

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)* √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)* √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)* √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)* √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)* √5700] = **19.01** > 3.0.

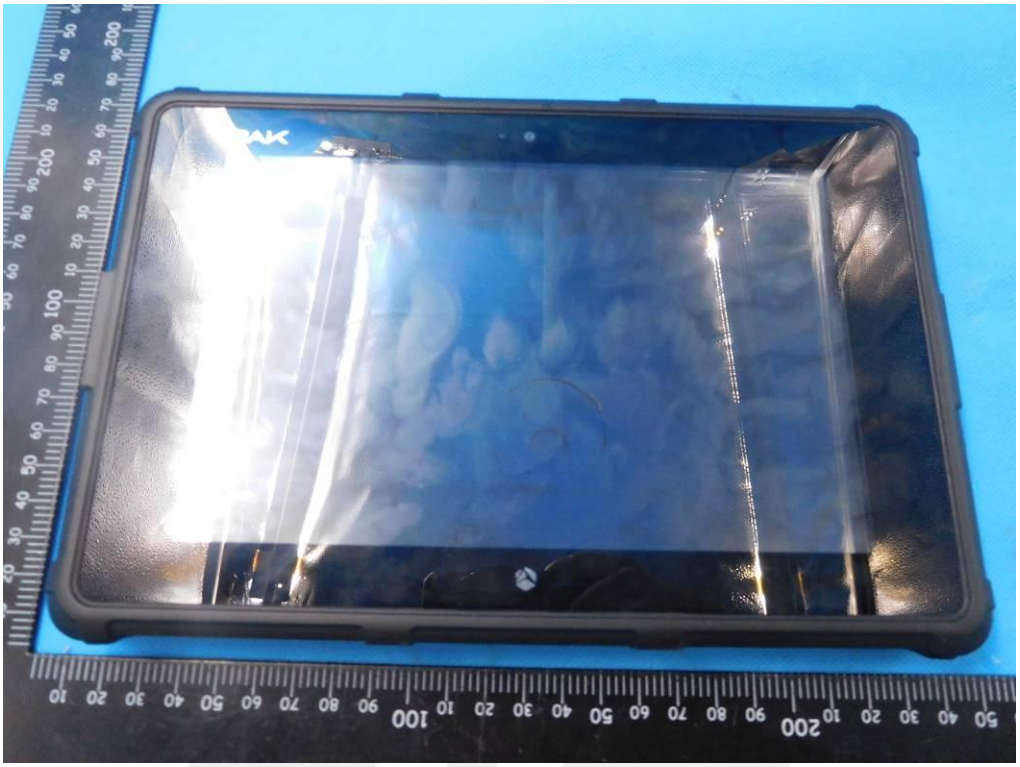
Based on the maximum conducted power of **5.8 GHz WIFI Body** (rounded to the nearest mW) and the antenna to user separation distance,

**5.8 GHz WIFI Body SAR was required**; [(79.43/5)* √5825] = **19.66** > 3.0.

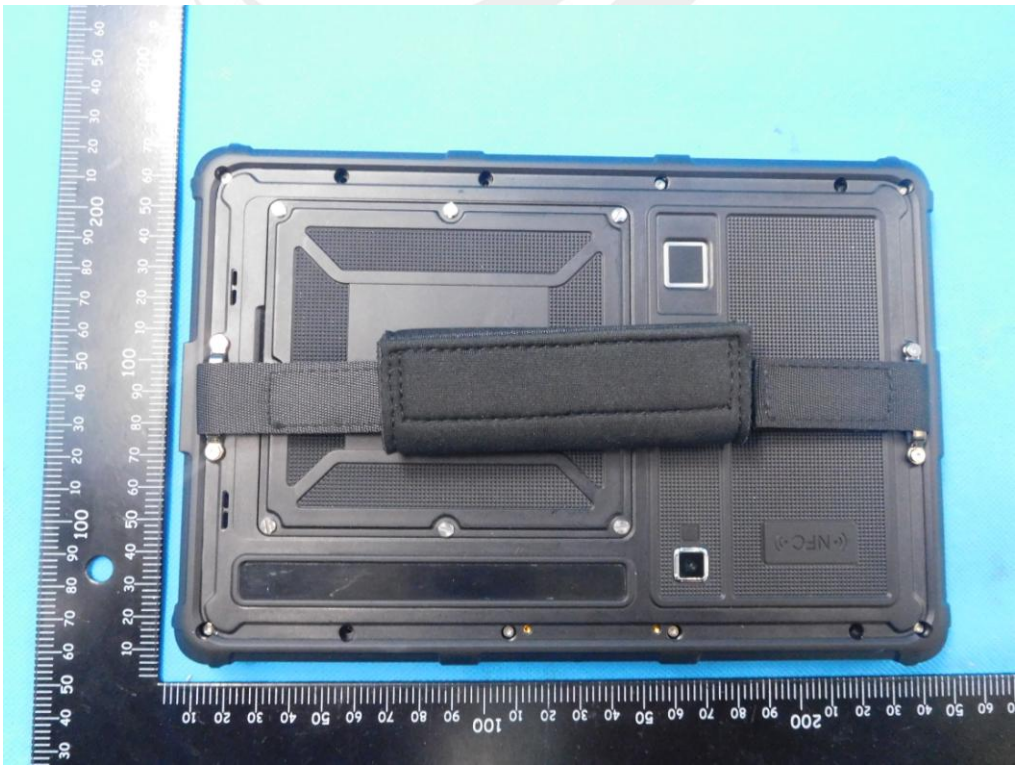
# 11. EUT And Test Setup Photo

## 11.1 EUT Photo

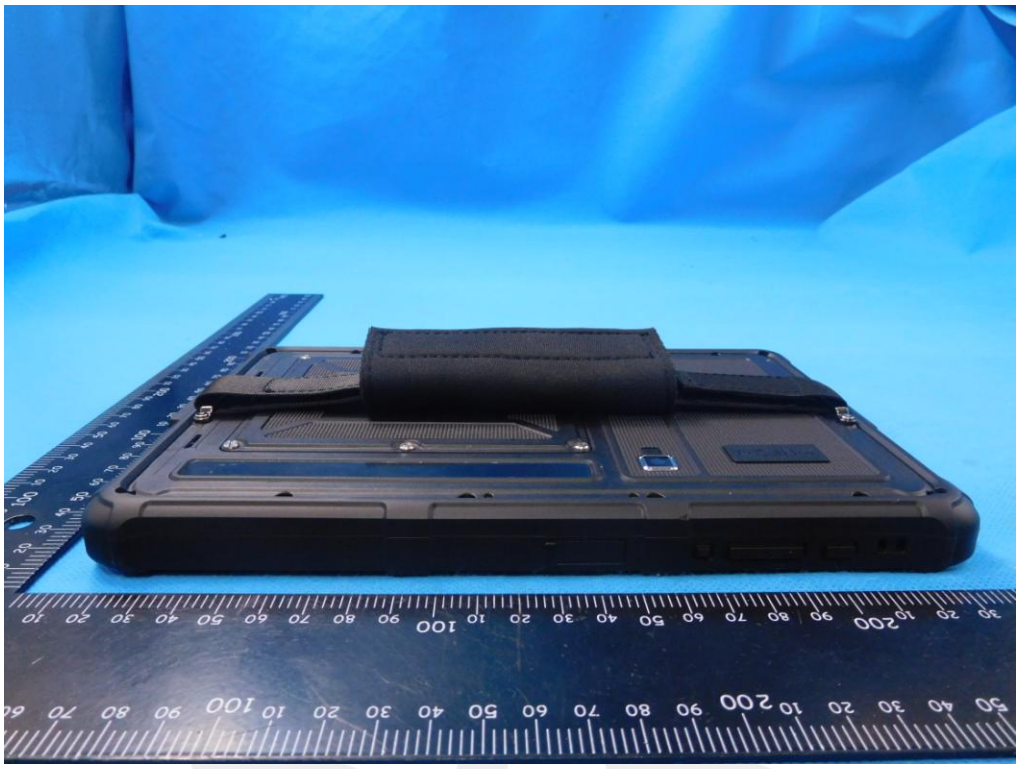
Front side



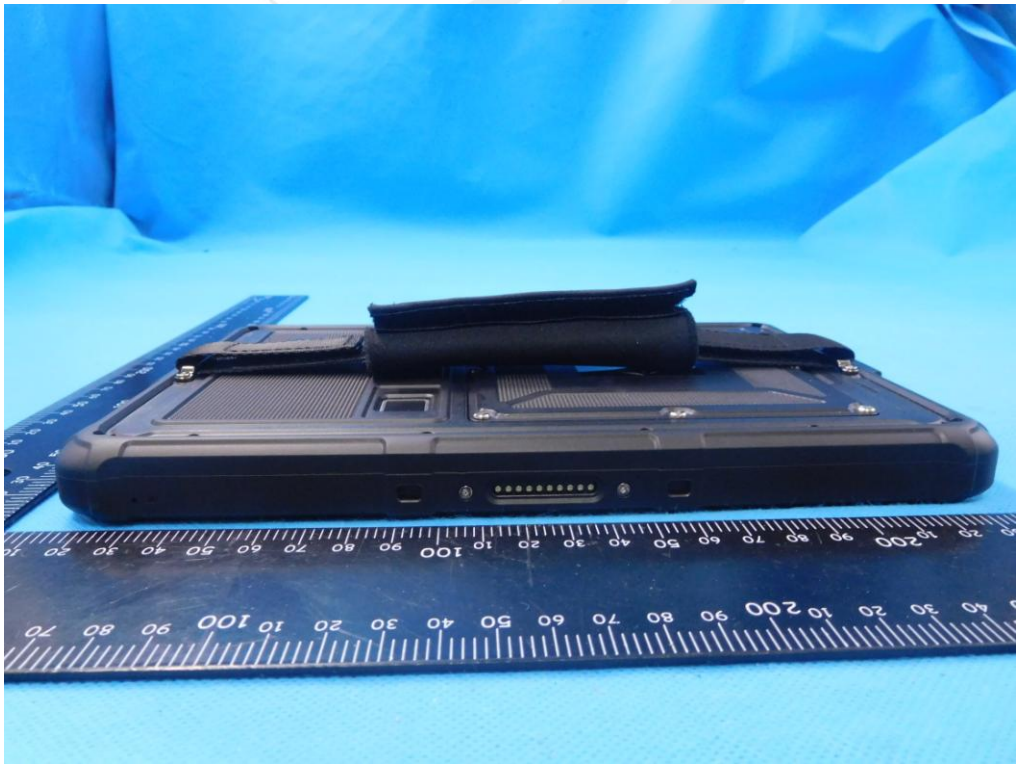
Back side



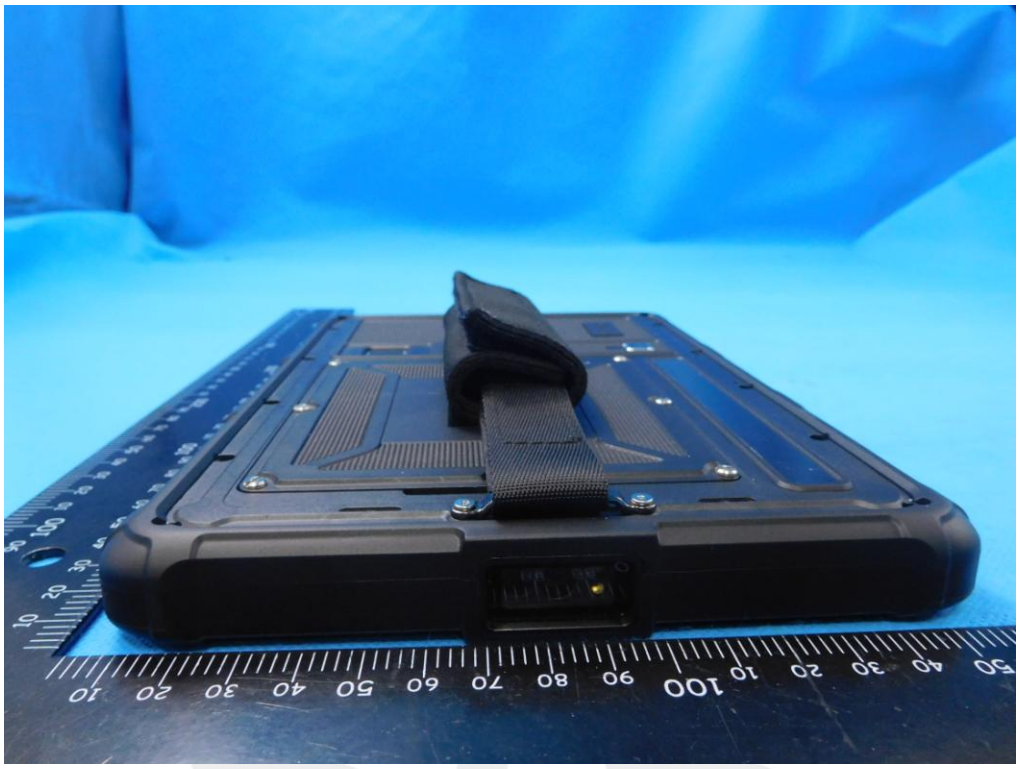
Top side



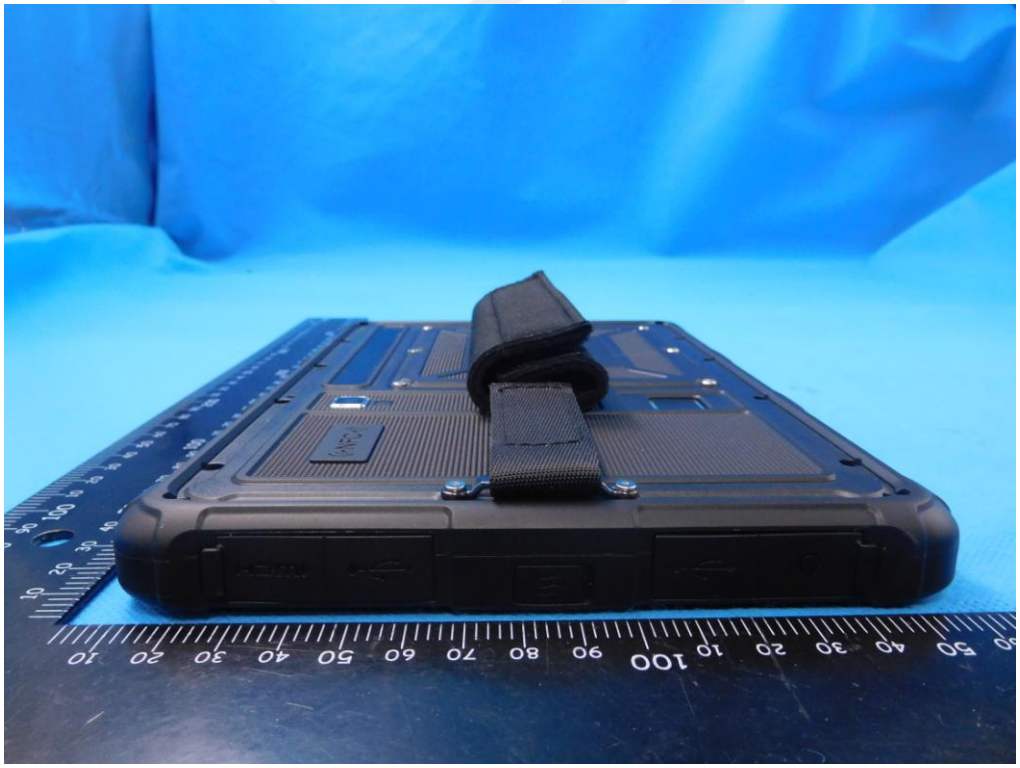
Bottom side



Left side



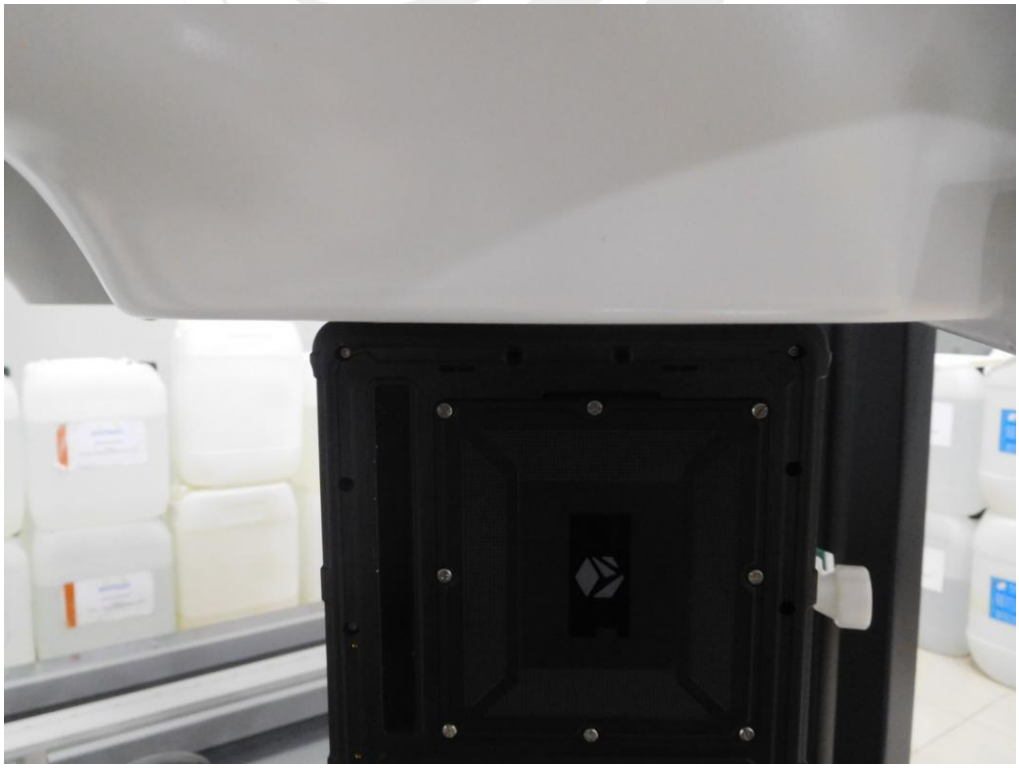
Right side



## 11.2 Setup Photo

Body Back side(separation distance is 0mm)

Body left side(separation distance is 0mm)



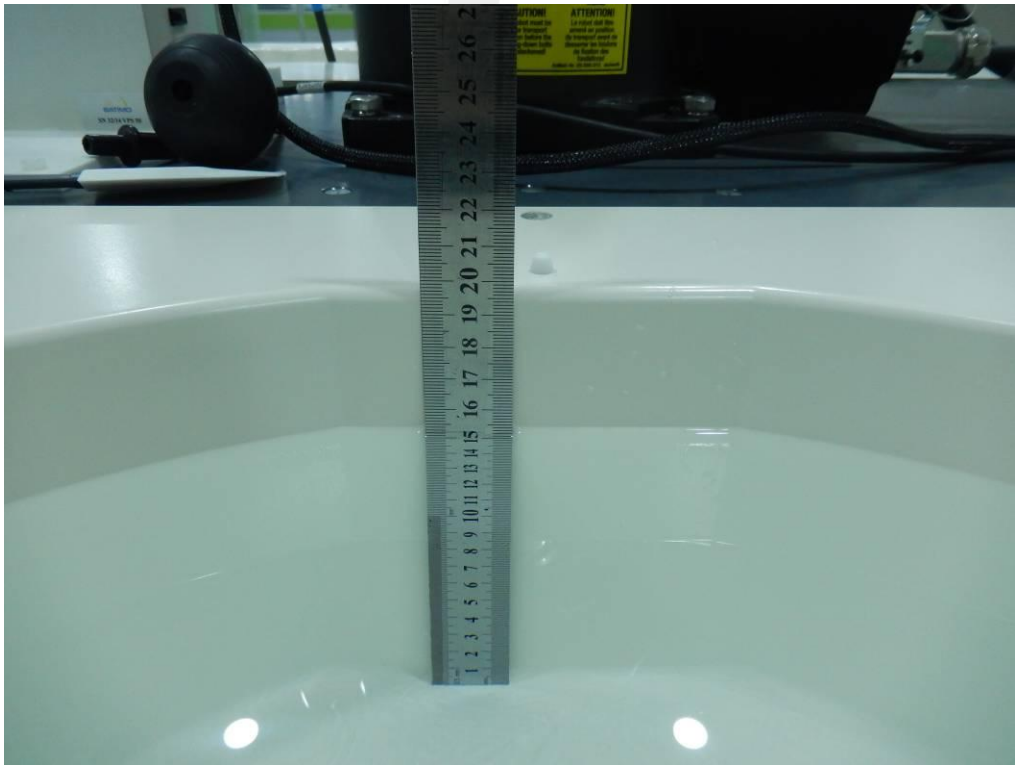
0

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≥0.8W/Kg.
2. Per KDB 865664 D01V01,if the ratio of largest to smallest SAR for the original and first repeated measurement is≤1.2and the measured SAR＜1.45W/Kg, only one repeated measurement is required.
3. Perform a second repeated measurement only if the ratio of largest to smallest SAR for the original and first repeated measurements is＞1.20 or when the original or repeated measurement is ≥ 1.45W/Kg
4. The ratio is the difference in percentage between original and repeated measured SAR.

**Simultaneous Multi-band Transmission Evaluation:**

Application Simultaneous Transmission information:

| Position | Simultaneous state |
|---|---|
| Body | 1. 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:

1. The 2.4G WLAN and 5G WLAN cannot transmit simultaneously.
2. The WLAN and Bluetooth cannot transmit simultaneously, so there is no co-location test requirement for WLAN and Bluetooth.
3. For simultaneous transmission at head and body exposure position, 2 transmitters simultaneous transmission was the worst state.
4. Based upon KDB 447498 D01 v05, BT SAR is excluded as below table.
5. If the test separation distance is <5mm, 5mm is used for excluded SAR calculation.
6. For minimum test separation distance≦50mm,Bluetooth standalone SAR is excluded according to [(max. power of channel, including tune-up tolerance, mW)/ (min. test separation distance, mm) ·[√f (GHz) /x] ≦3.0 for 1-g SAR and ≦7.5 for 10-g extremity SAR
7. The reported SAR summation is calculated based on the same configuration and test position.
8. KDB 447498 / 4.3.2 (2) when standalone SAR test exclusion applies to an antenna that transmits simultaneously with other antennas, the standalone SAR must be estimated according to following to determine simultaneous transmission SAR test exclusion:
   a) (max. power of channel, including tune-up tolerance, mW)/(min. test separation distance, mm)]·[√f (GHz) /x] W/kg for test separation distances≤ 50 mm;
   Where x = 7.5 for 1-g SAR, and x = 18.75 for 10-g SAR.
   b) 0.4W/Kg for 1-g SAR and 1.0W/Kg for 10-g SAR, when the separation distance is >50mm.

| Estimated SAR | | Maximum 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 EPGO281 | 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 POSITIONNING SYSTEM | SN 32/14 MSH97 | N/A | N/A |
| SAR TEST BENCH | SATIMO | LAPTOP POSITIONNING 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 |

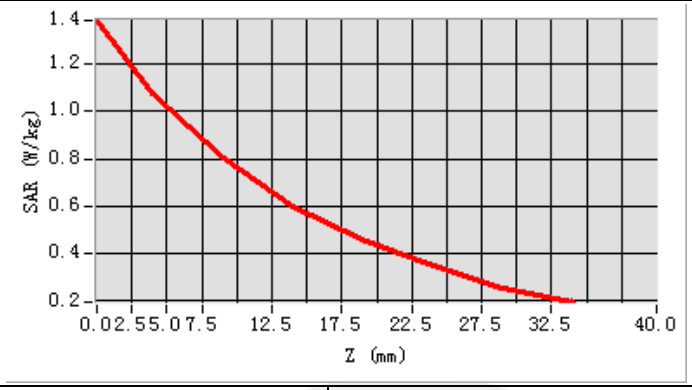
**Maximum location: X=1.00, Y=0.00**

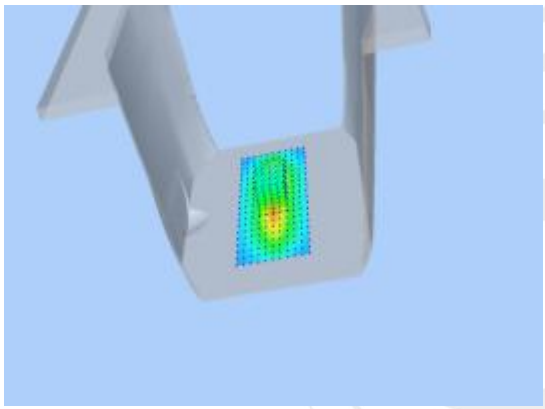
**SAR Peak: 1.30 W/kg**

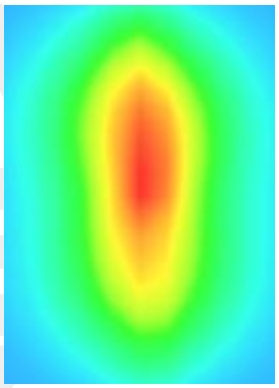
| | |
|---|---|
| SAR 10g (W/Kg) | 0.576142 |
| SAR 1g (W/Kg) | 0.856325 |

# 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 |

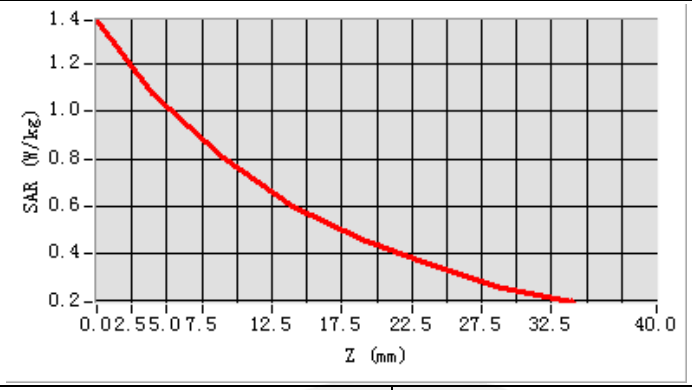
**Maximum location: X=1.00, Y=0.00**

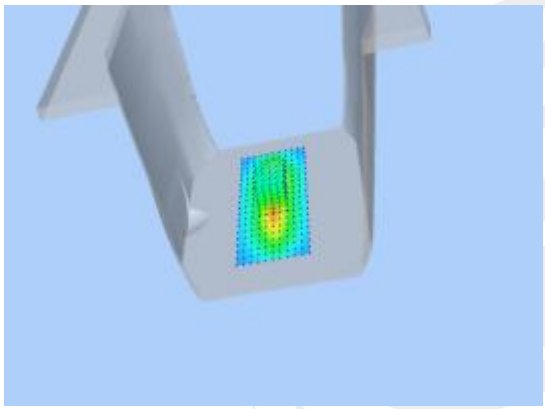
**SAR Peak: 1.50 W/kg**

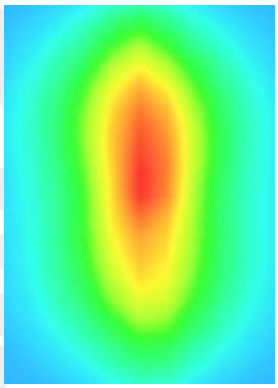
| | |
|---|---|
| SAR 10g (W/Kg) | 0.603221 |
| SAR 1g (W/Kg) | 0.946658 |

# Z Axis Scan

| Z (mm) | 0 | 4 | 9 | 14 | 19 | 24 | 29 |
|---|---|---|---|---|---|---|---|
| SAR(W/Kg) | 1.3725 | 1.0058 | 0.6838 | 0.4755 | 0.3314 | 0.2365 | 0.1688 |



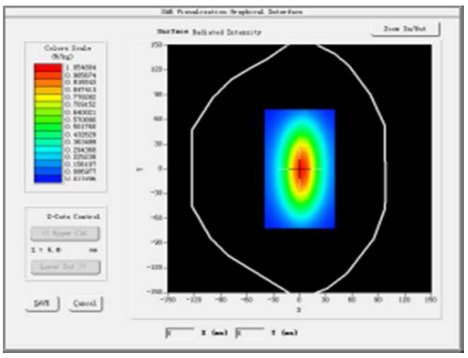
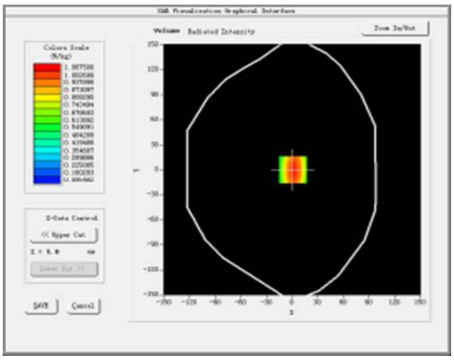


## System Performance Check Data(1800MHz Body)

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 |

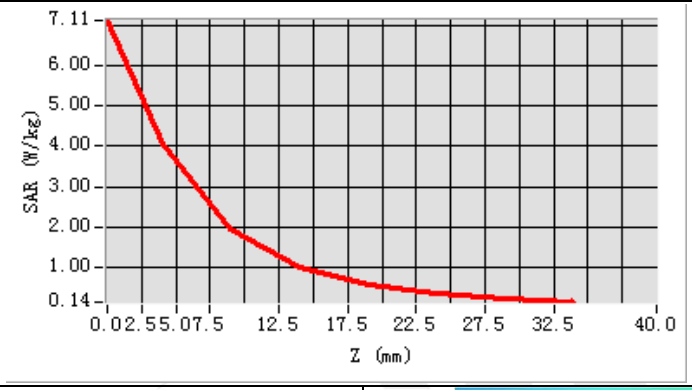
| SURFACE SAR | VOLUME SAR |
|---|---|
|  |  |

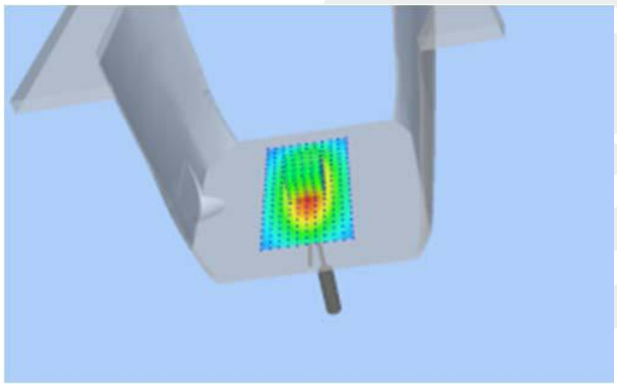
**Maximum location: X=6.00, Y=2.00**

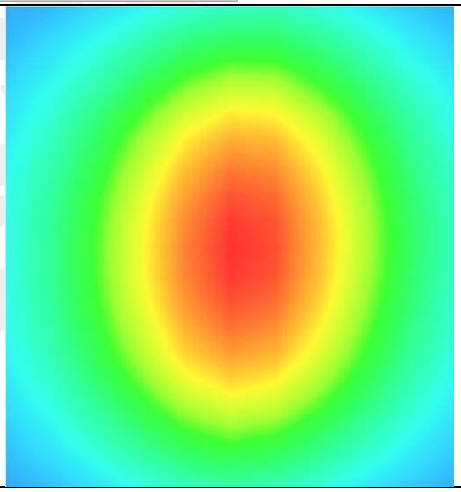
| | |
|---|---|
| SAR 10g (W/Kg) | 1.98768 |
| SAR 1g (W/Kg) | 3.86917 |

## 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 |



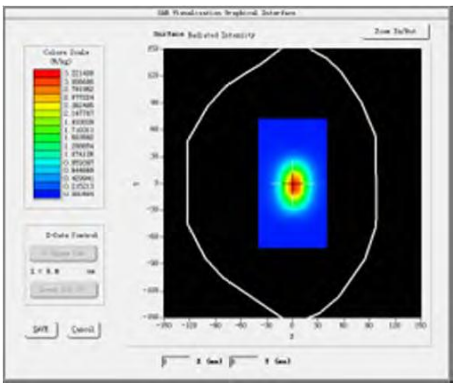
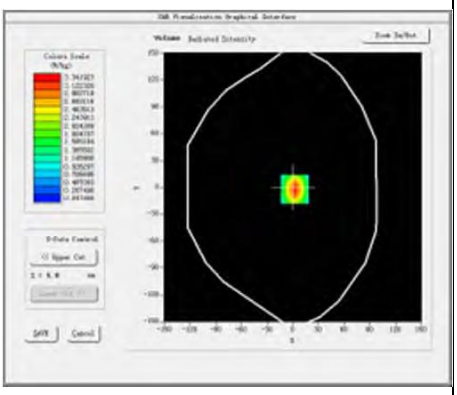


## System Performance Check Data (1900MHz Body)

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 |

| SURFACE SAR | VOLUME SAR |
|---|---|
|  |  |

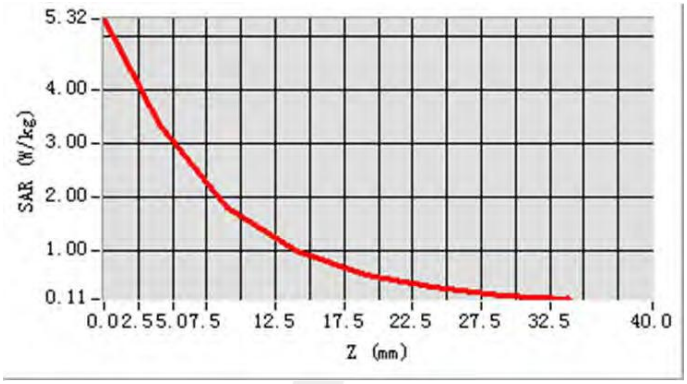
**Maximum location: X=2.00, Y=2.00**

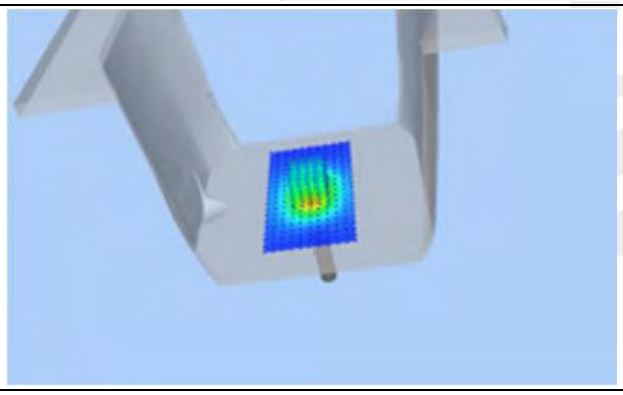
**SAR Peak: 5.27 W/kg**

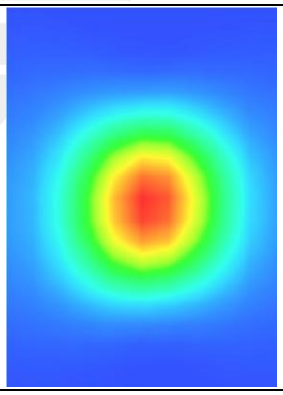
| | |
|---|---|
| SAR 10g (W/Kg) | 2.258194 |
| SAR 1g (W/Kg) | 4.052147 |

## 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 |



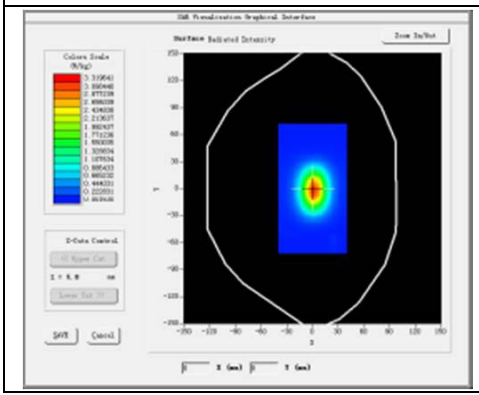
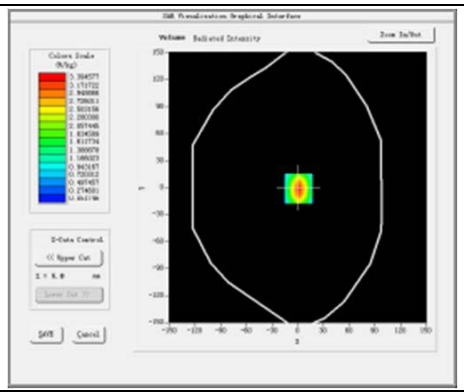


## System Performance Check Data (2450MHz Body)

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.**

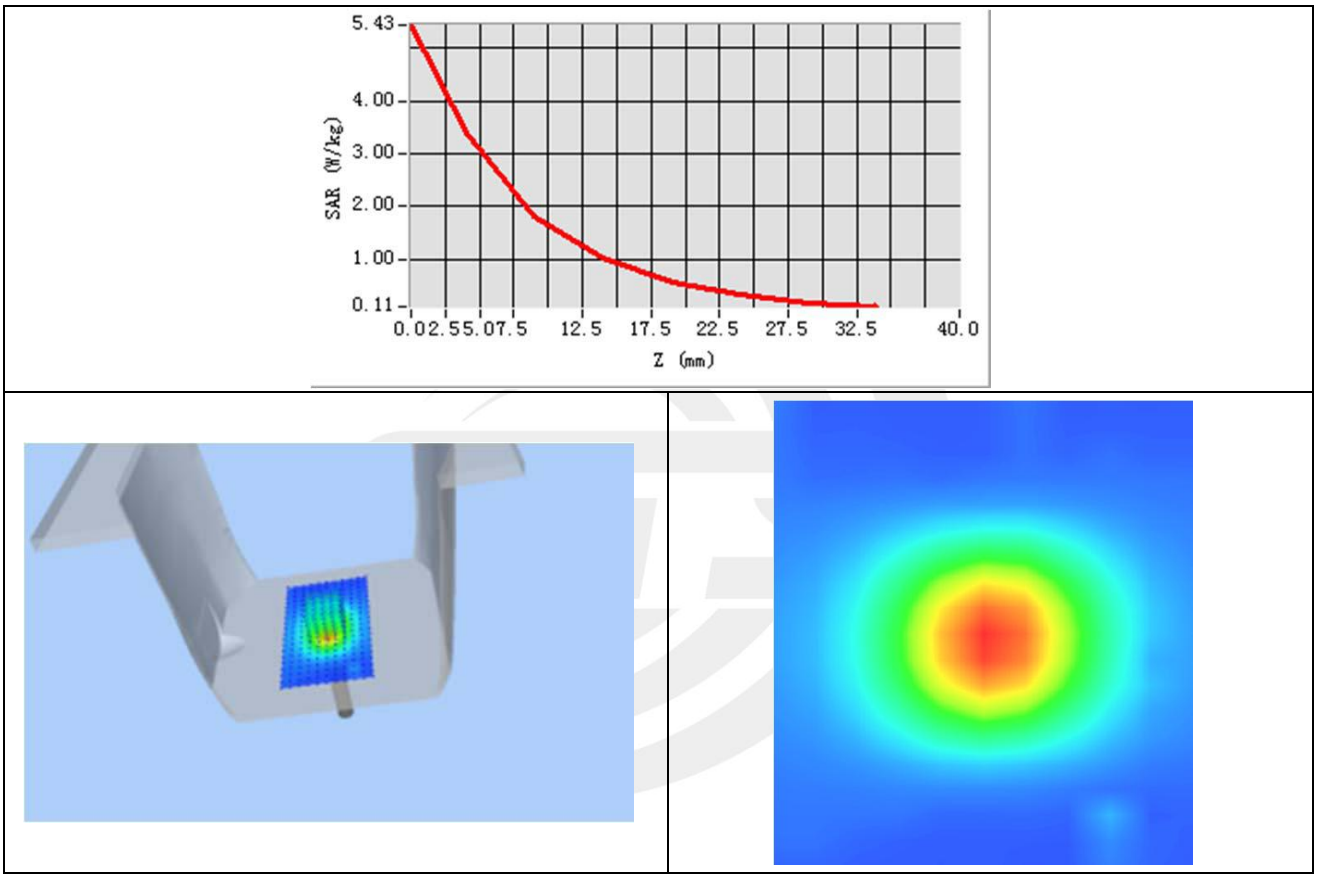
| Device Position | Validation plane |
|---|---|
| Band | 2450 MHz |
| Channels | - |
| Signal | CW |
| Frequency (MHz) | 2450 |
| Relative permittivity (real part) | 52.316002 |
| Relative permittivity | 12.930000 |
| Conductivity (S/m) | 1.92 |
| Power drift (%) | -1.200000 |
| Ambient Temperature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

| SURFACE SAR | VOLUME SAR |
|---|---|
|  |  |

**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

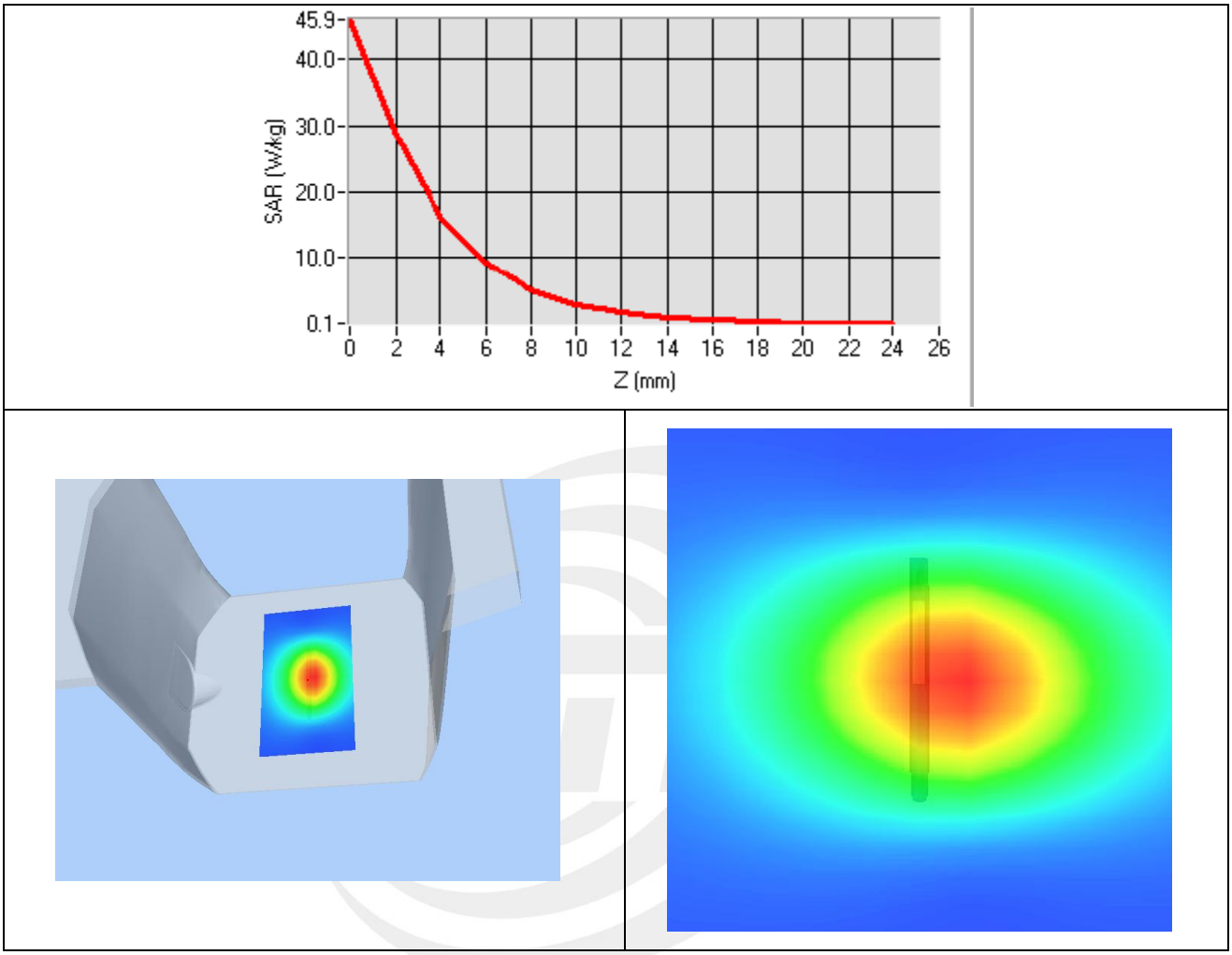
**Experimental conditions.**

| 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

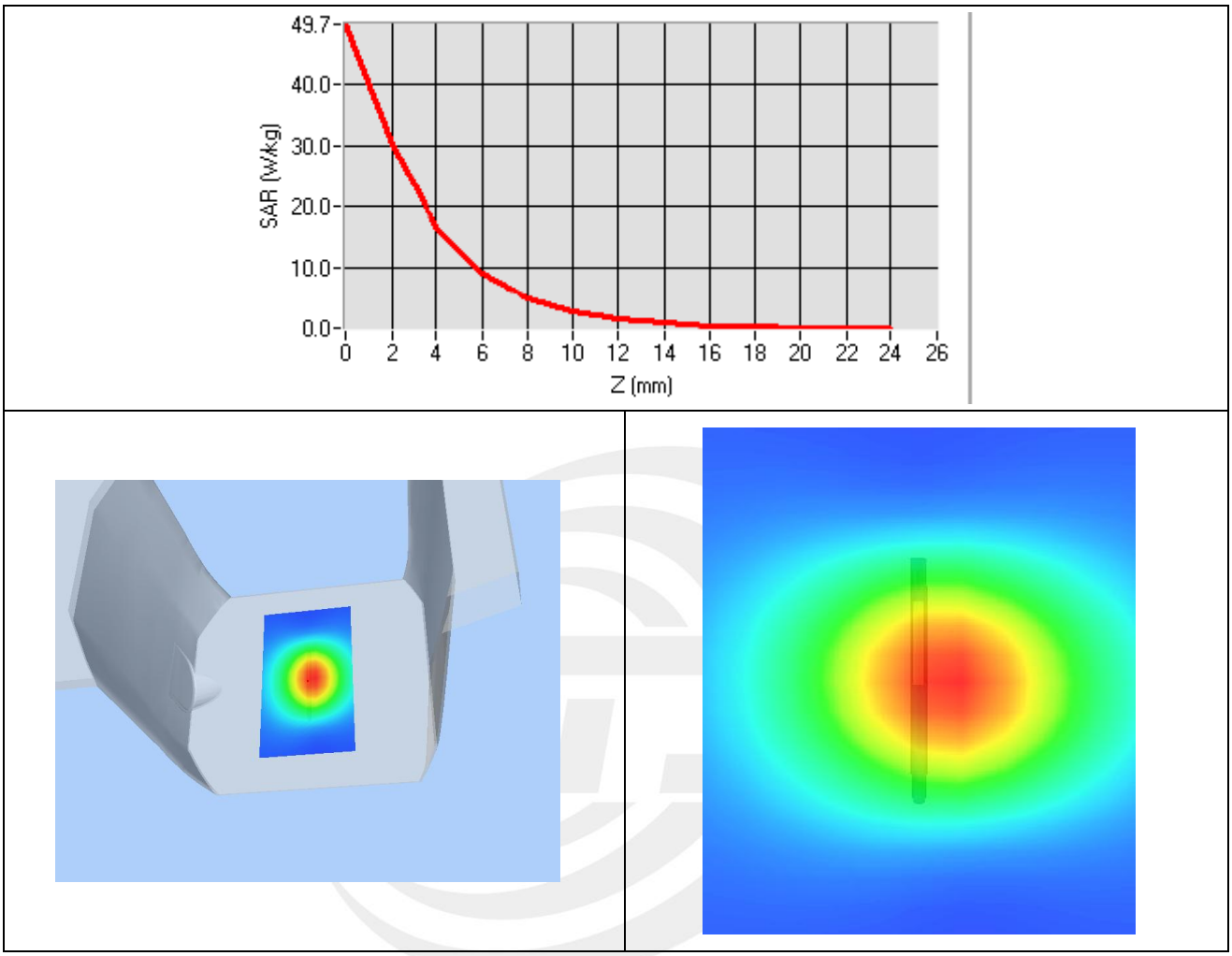
**Experimental conditions.**

| 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

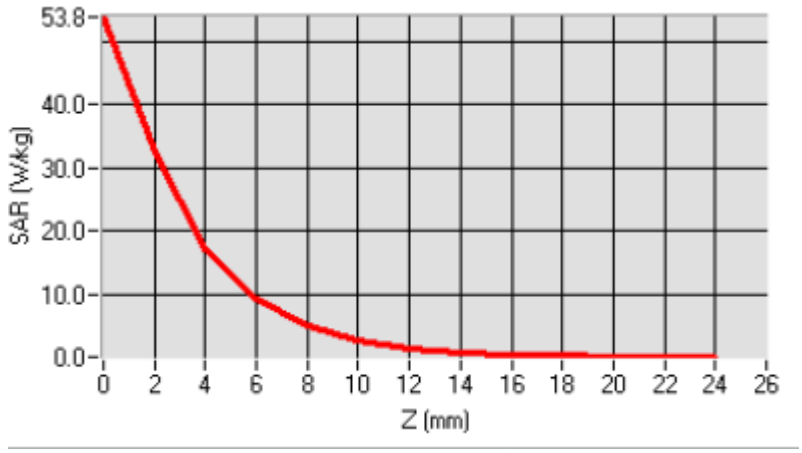
**Experimental conditions.**

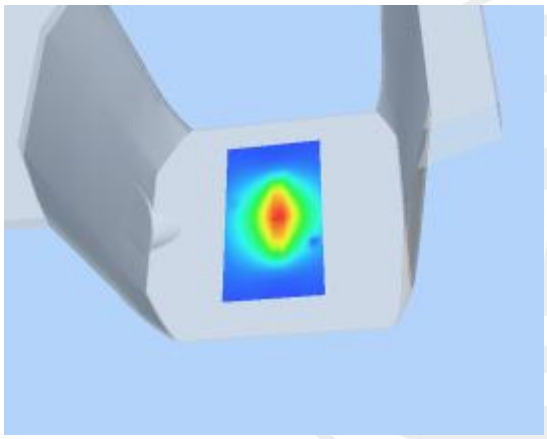
| Device Position | Validation plane |
|---|---|
| Band | 5600 MHz |
| Channels | - |
| Signal | CW |
| Frequency (MHz) | 5600 |
| Relative permittivity (real part) | 47.540000 |
| Relative permittivity (imaginary) | 19.610000 |
| Conductivity (S/m) | 5.78000 |
| Power drift (%) | 1.860000 |
| Ambient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

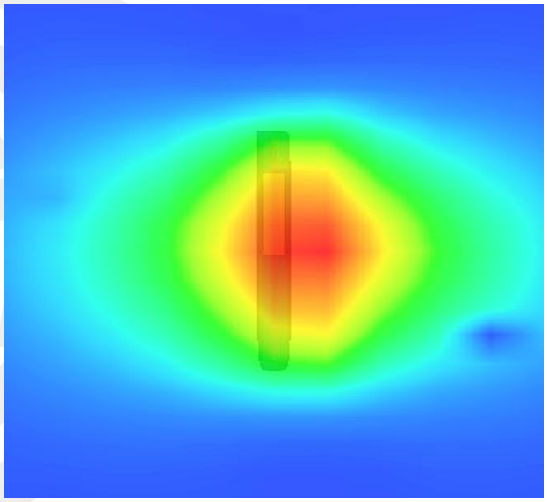
**Maximum location: X=7.00, Y=2.00**

| 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

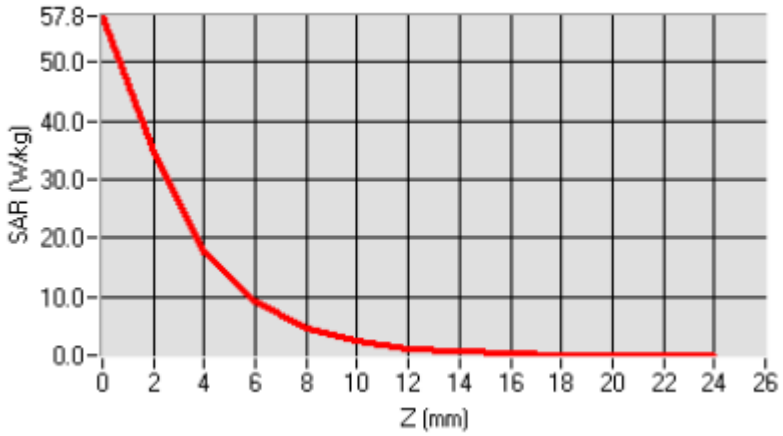
**Experimental conditions.**

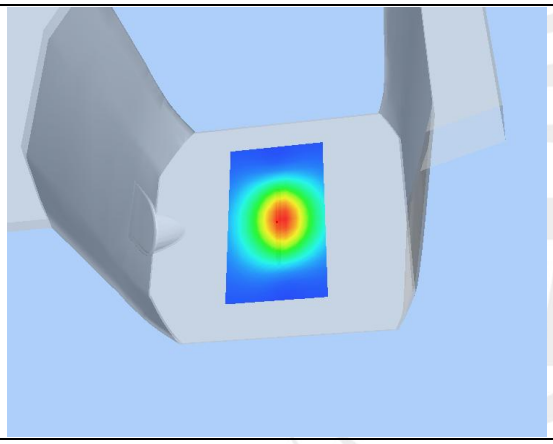
| Device Position | Validation plane |
|---|---|
| Band | 5800 MHz |
| Channels | - |
| Signal | CW |
| Frequency (MHz) | 5800 |
| Relative permittivity (real part) | 48.820000 |
| Relative permittivity (imaginary) | 19.830000 |
| Conductivity (S/m) | 5.73000 |
| Power drift (%) | -1.00000 |
| Ambient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

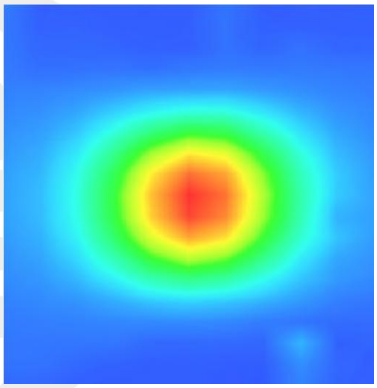
**Maximum location: X=3.00, Y=2.00**

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

# Z Axis Scan


57.8
50.0
40.0
30.0
20.0
10.0
0.0
SAR (W/Kg)
0 2 4 6 8 10 12 14 16 18 20 22 24 26
Z (mm)





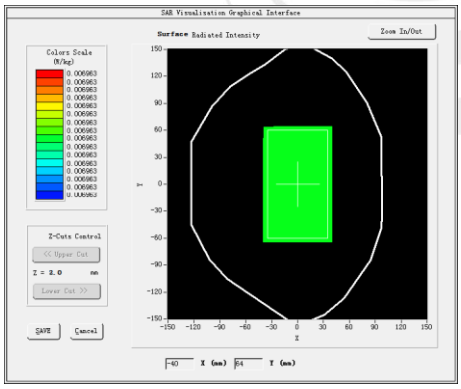
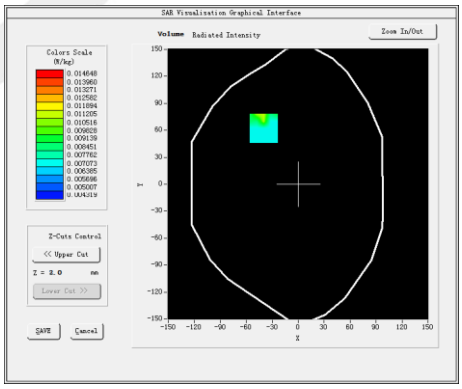
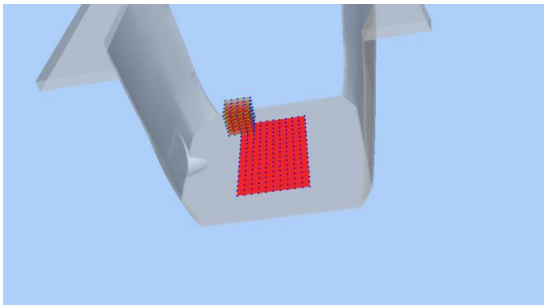
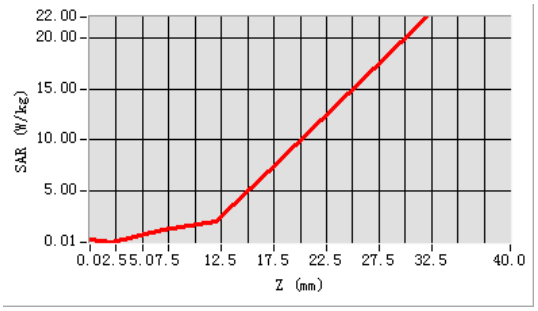
# Appendix B. SAR Test Plots

## 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 |

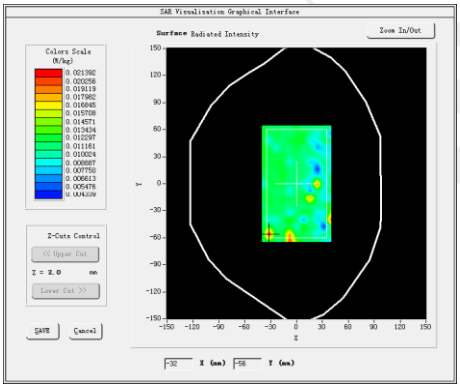
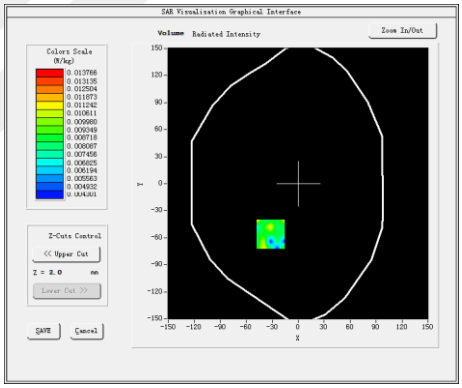
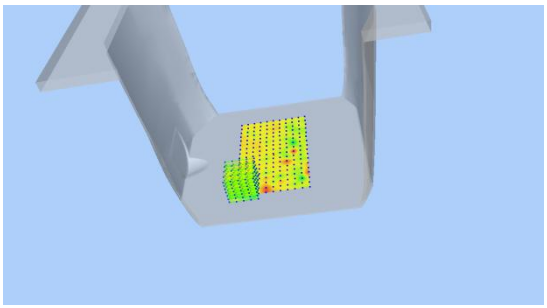
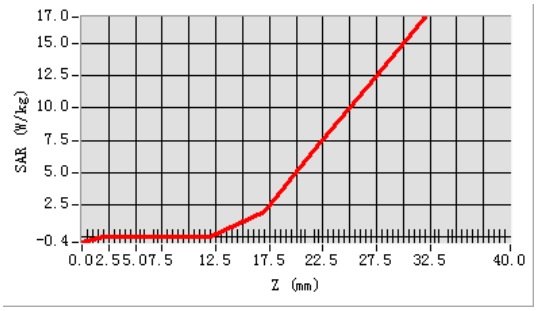
| SURFACE SAR | VOLUME SAR |
|---|---|
|  |  |
| **3D** | **Z Axis Scan** |
|  |  |

**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 |

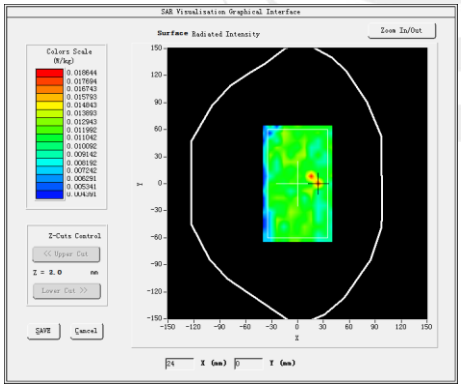
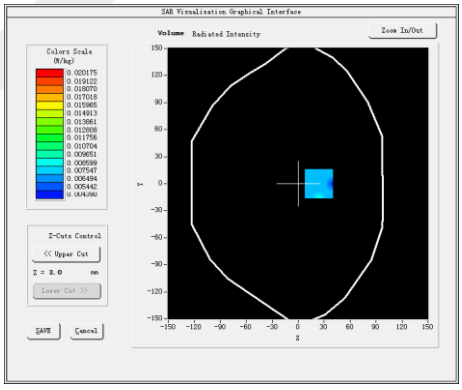
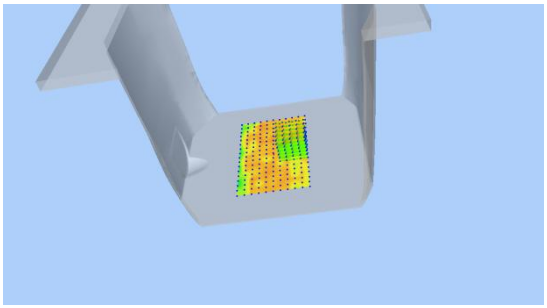
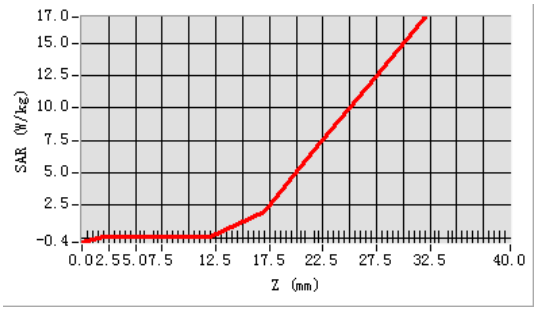
| SURFACE SAR | VOLUME SAR |
|---|---|
|  |  |
| **3D** | **Z Axis Scan** |
|  |  |

**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 |

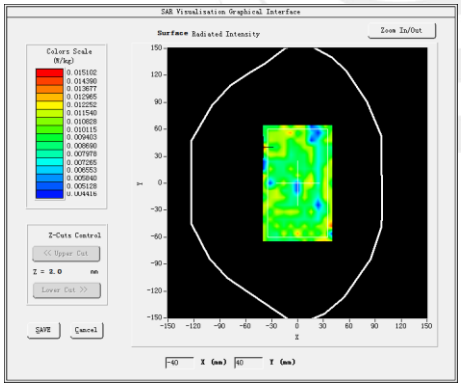
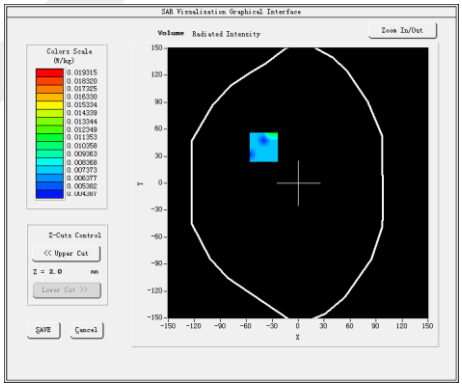
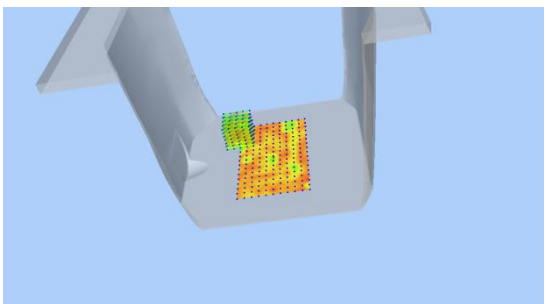
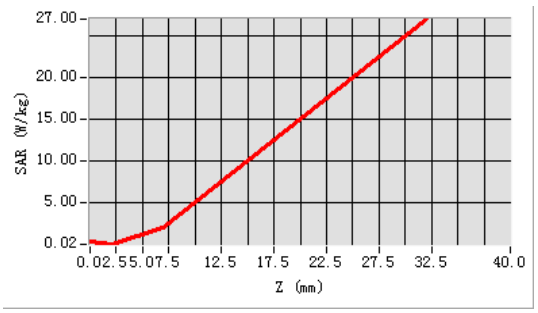
| SURFACE SAR | VOLUME SAR |
|---|---|
|  |  |
| **3D** | **Z Axis Scan** |
|  |  |

**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 |

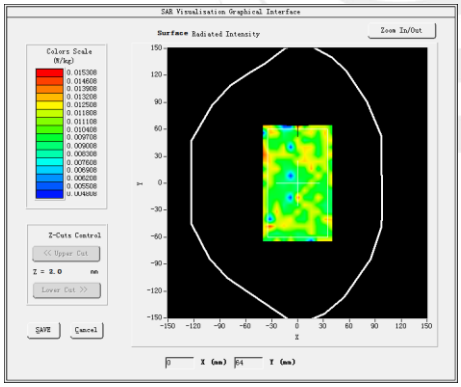
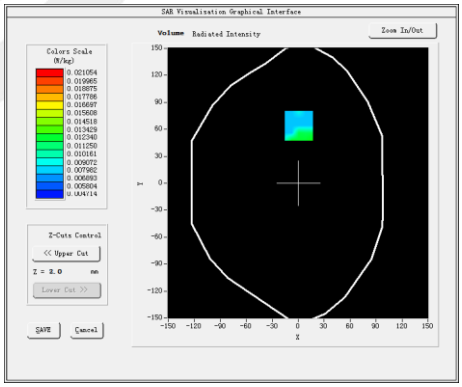
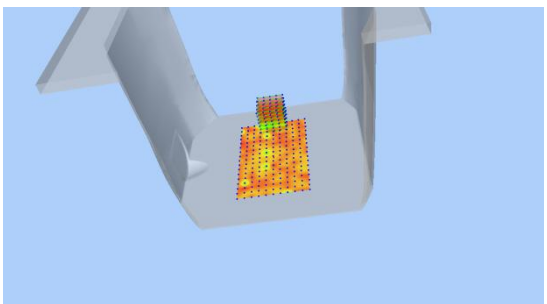
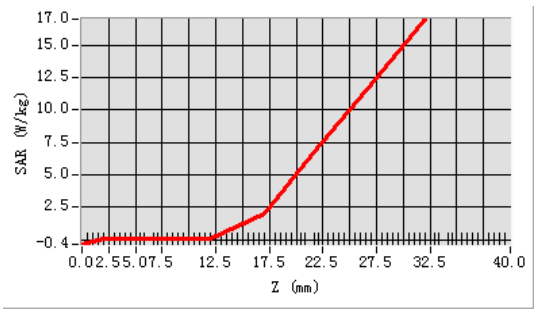
| SURFACE SAR | VOLUME SAR |
|---|---|
|  |  |
| **3D** | **Z Axis Scan** |
|  |  |

**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 |

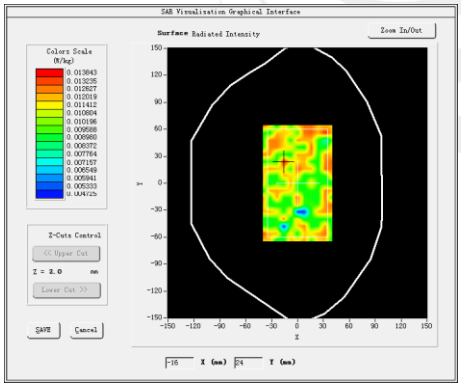
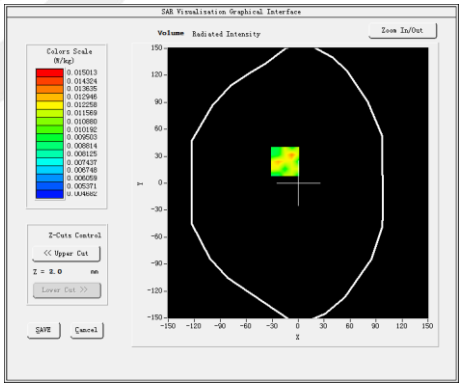
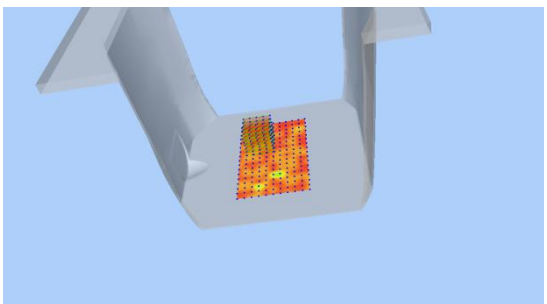
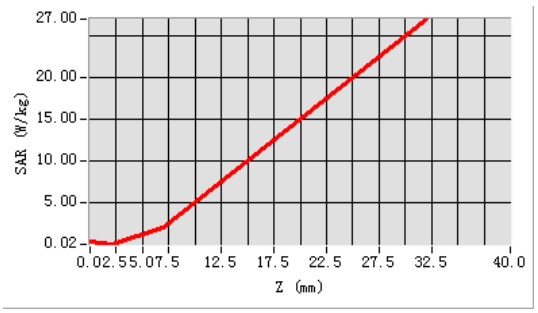
| SURFACE SAR | VOLUME SAR |
|---|---|
|  |  |
| **3D** | **Z Axis Scan** |
|  |  |

**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 |

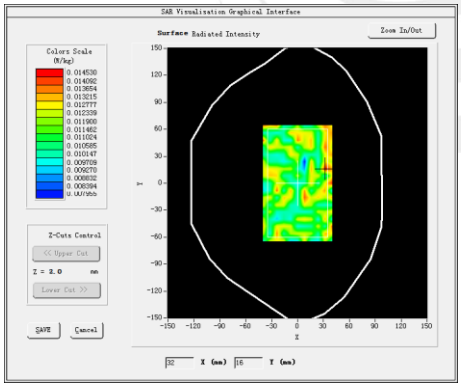
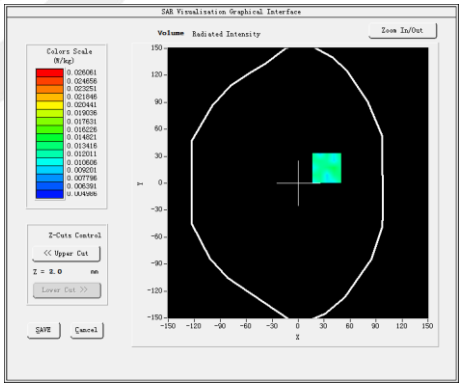
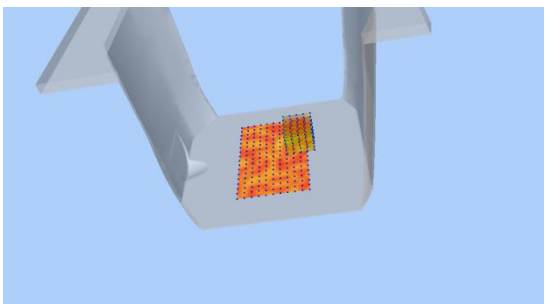
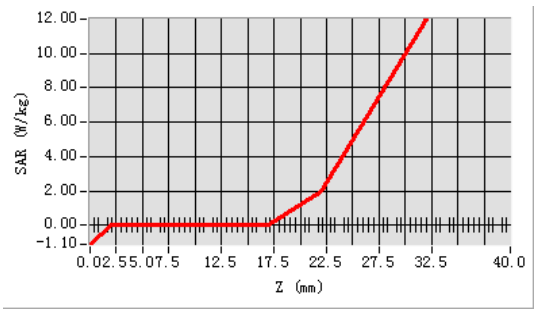
| SURFACE SAR | VOLUME SAR |
|---|---|
|  |  |
| **3D** | **Z Axis Scan** |
|  |  |

**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 |

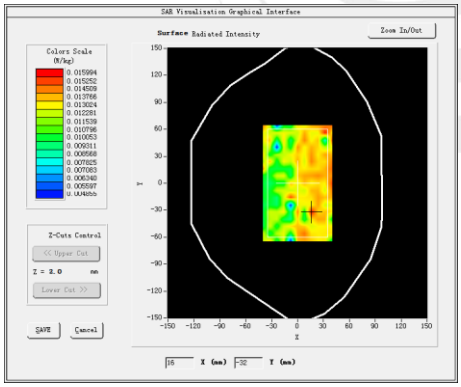
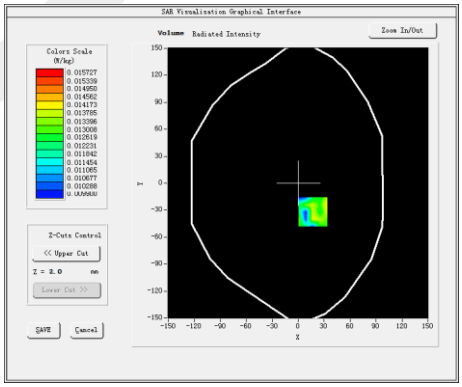
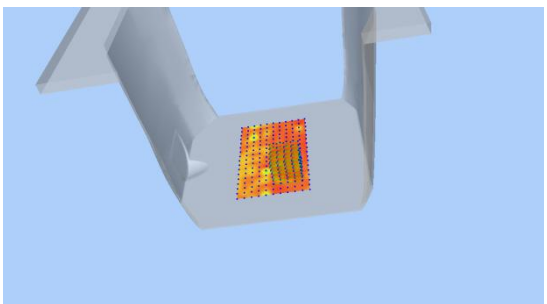
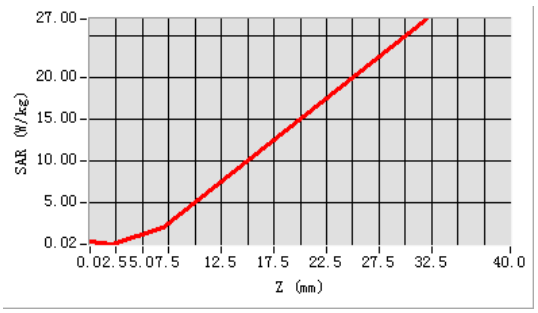
| SURFACE SAR | VOLUME SAR |
|---|---|
|  |  |
| **3D** | **Z Axis Scan** |
|  |  |

**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 |

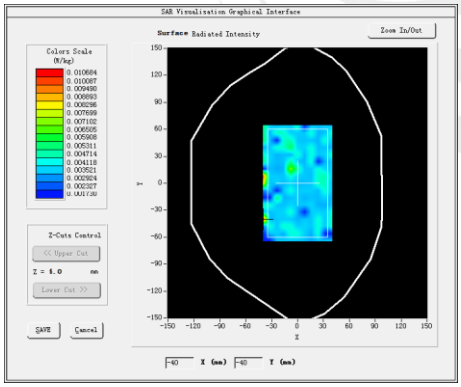
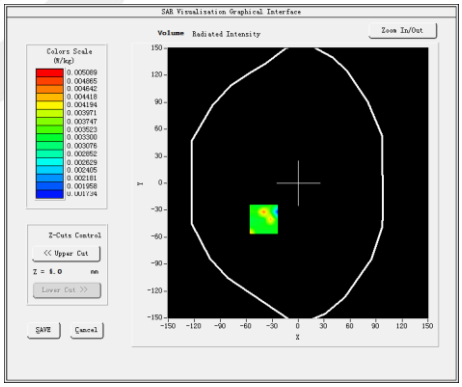
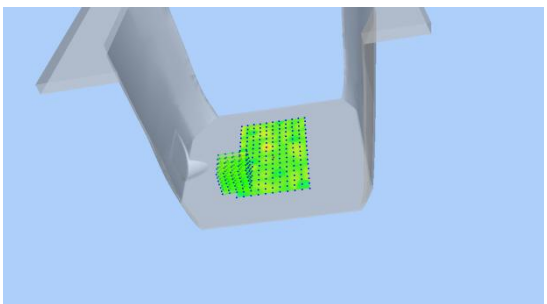
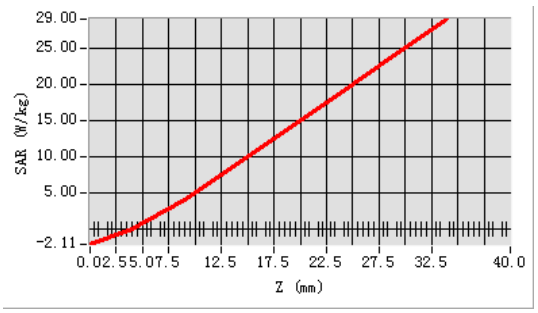
| SURFACE SAR | VOLUME SAR |
|---|---|
|  |  |
| **3D** | **Z Axis Scan** |
|  |  |

**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 |

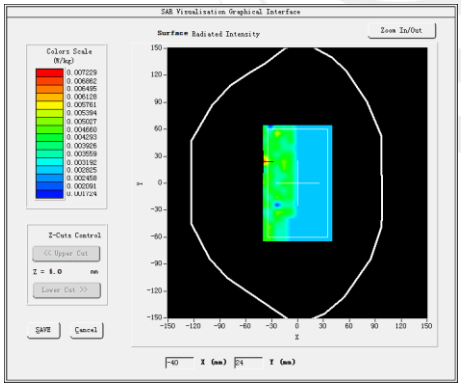
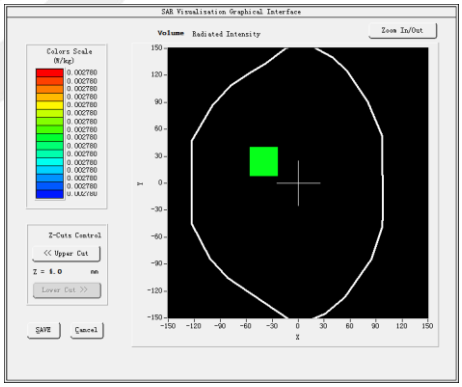
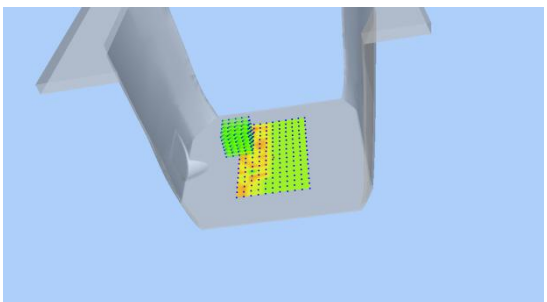
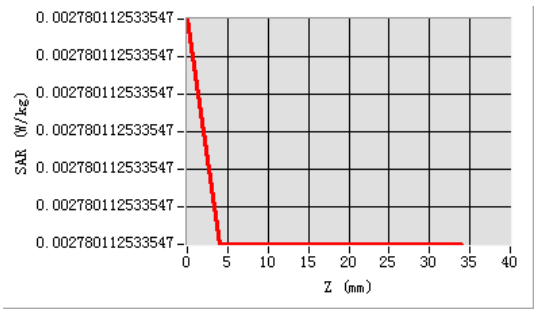
| SURFACE SAR | VOLUME SAR |
|---|---|
|  |  |
| **3D** | **Z Axis Scan** |
|  |  |

## 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 |

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

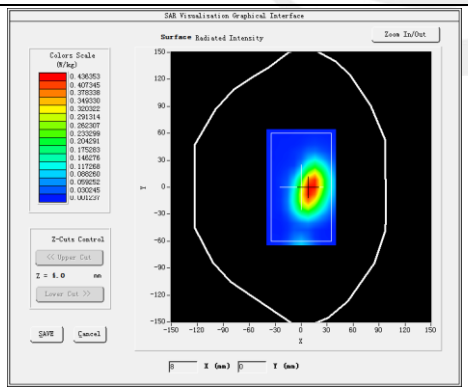
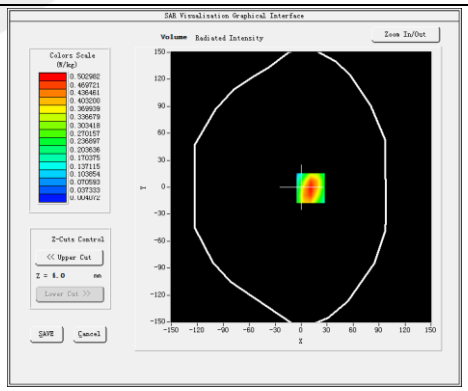
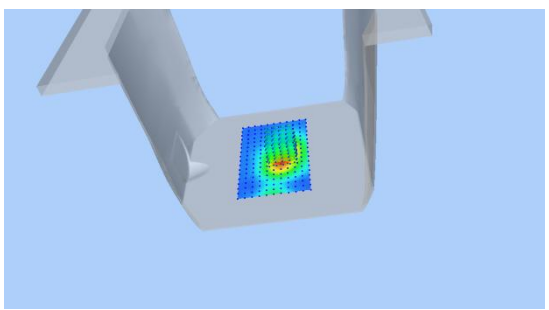
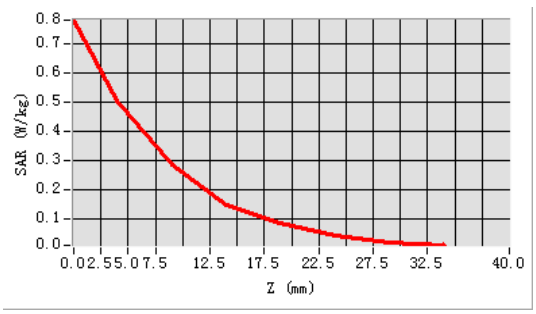
**Plot 11: DUT: MID; EUT Model: Seal 8 pro**

| | |
|---|---|
| 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 |

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

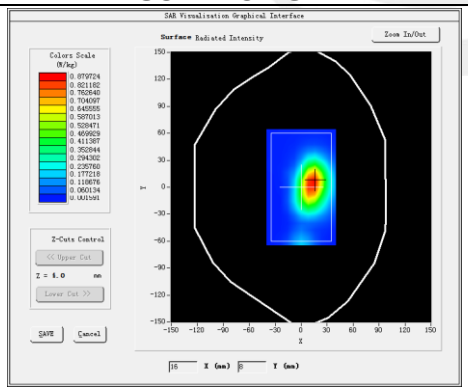
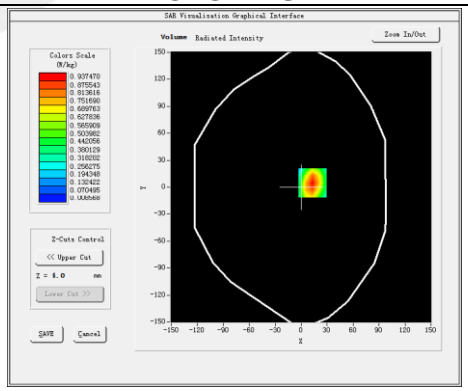
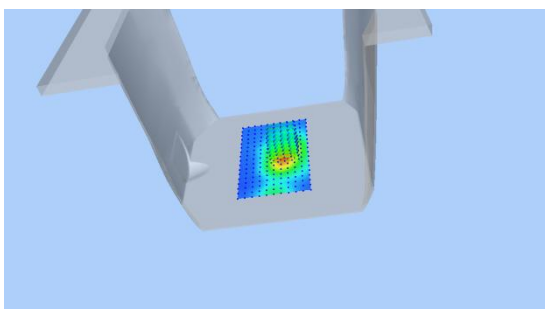
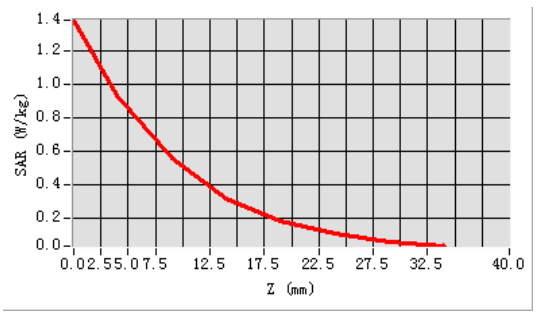
**Plot 12: DUT: MID; EUT Model: Seal 8 pro**

| | |
|---|---|
| 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 |

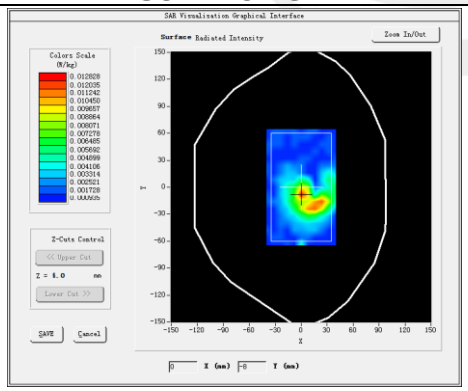
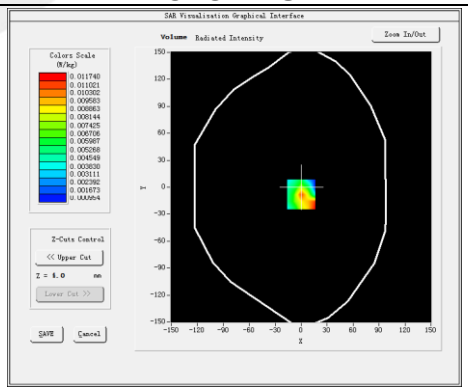
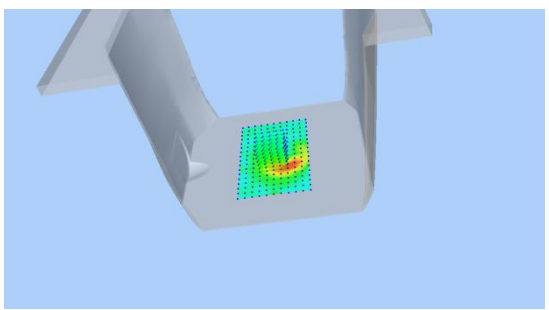
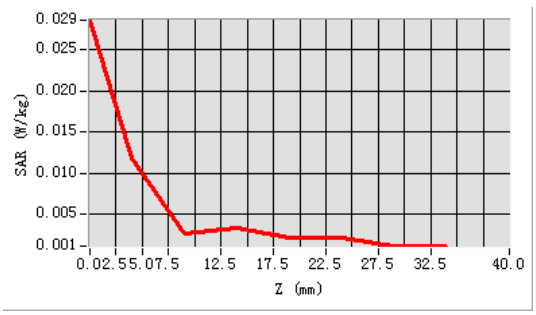
| SURFACE SAR | VOLUME SAR |
|---|---|
|  |  |
| **3D screen shot** | **Z Axis Scan** |
|  |  |

**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 |

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

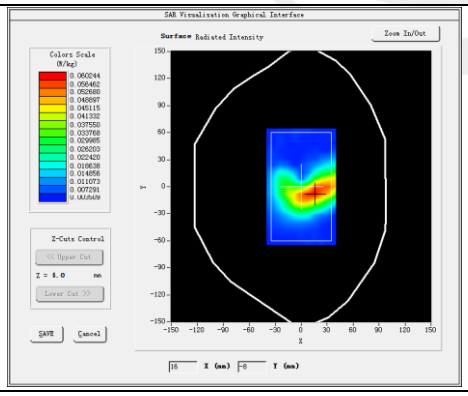
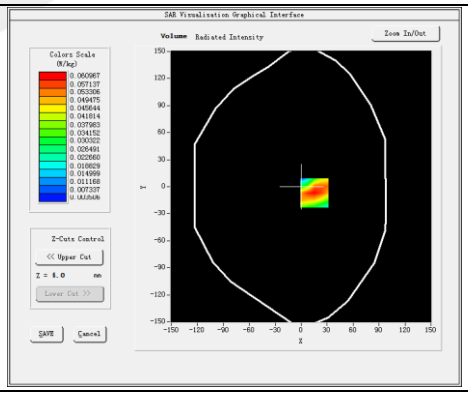
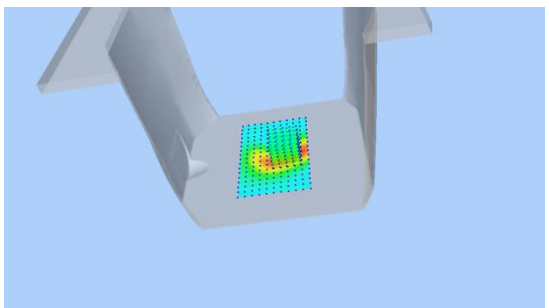
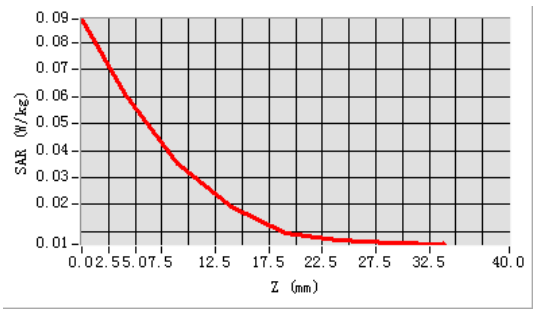
**Plot 14: DUT: MID; EUT Model: Seal 8 pro**

| | |
|---|---|
| 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 |

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

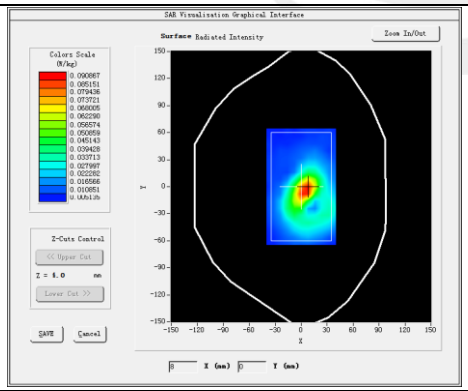
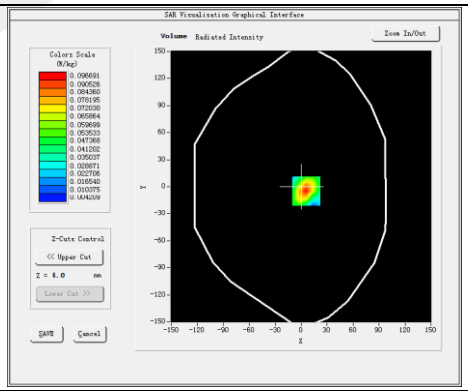
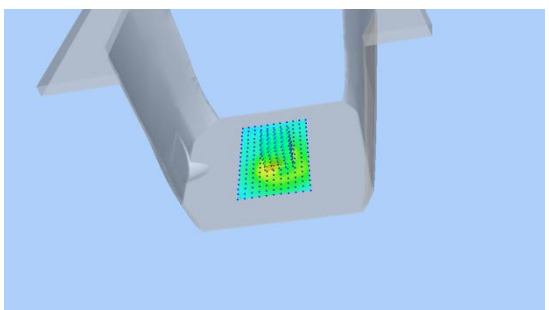
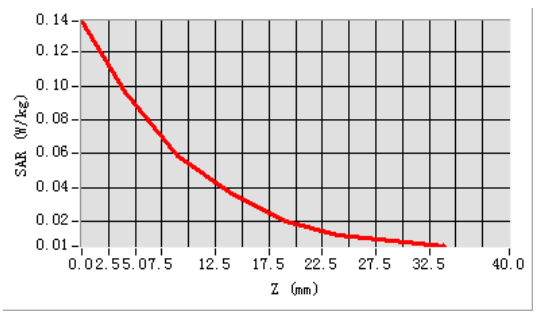
**Plot 15: DUT: MID; EUT Model: Seal 8 pro**

| | |
|---|---|
| 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 |

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

# Appendix C. Probe Calibration And Dipole Calibration Report

Refer the appendix Calibration Report.

※※※※※END OF THE REPORT※※※※※