# TEST REPORT

Report Number: C21T00091-SAR01-V00

| | |
|---|---|
| Applicant | Shanghai Sunmi Technology Co.,Ltd. |
| Product Name | Smart POS system |
| Model Name | T6900 |
| Brand Name | SUNMI |
| FCC ID | 2AH25T6900 |

Industrial Internet Innovation Center (Shanghai) Co., Ltd. tested the above equipment in accordance with the requirements in ANSI C95.1-1992, IEEE std 1528-2013.

| | | | |
|---|---|---|---|
| Prepared by | 李浪 | Reviewed by | 鄢航 |
| Approved by | 宋加平 | Issue Date | 2022-01-10 |

**Industrial Internet Innovation Center (Shanghai) Co., Ltd.**

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**Test Laboratory:**
Industrial Internet Innovation Center (Shanghai) Co., Ltd.
Add: Building 4, No. 766 Jingang Rd, Pudong, Shanghai, China
Tel: +86 21 68866880

## Revision Version

| Report Number | Revision | Date | Memo |
|---|---|---|---|
| C21T00091-SAR01-V00 | 00 | 2022-01-10 | Initial creation of test report |

# CONTENTS

# 1. Test Laboratory

## 1.1. Testing Location

Primary Lab:

| | |
|---|---|
| Company Name | Industrial Internet Innovation Center (Shanghai) Co., Ltd. |
| Address | Building 4, No. 766 Jingang Rd, Pudong, Shanghai, China |
| FCC Registration No. | 958356 |
| FCC Designation No. | CN1177 |

## 1.2. Testing Environment

| | |
|---|---|
| Normal Temperature | 18℃~25℃ |
| Relative Humidity | 25%RH~75%RH |

## 1.3. Project Information

| | |
|---|---|
| Project Leader | Wang wenwen |
| Testing Start Date | 2021-11-26 |
| Testing End Date | 2021-11-29 |

# 2. Client Information

## 2.1. Applicant Information

| | |
|---|---|
| Company Name | Shanghai Sunmi Technology Co.,Ltd. |
| Address | Room 505, KIC Plaza, No.388 Song Hu Road, Yang Pu District, Shanghai, China |
| Telephone | +86 18501703215 |

## 2.2. Manufacturer Information

| | |
|---|---|
| Company Name | Shanghai Sunmi Technology Co.,Ltd. |
| Address | Room 505, KIC Plaza, No.388 Song Hu Road, Yang Pu District, Shanghai, China |
| Telephone | +86 18501703215 |

# 3. Equipment under Test (EUT) and Ancillary Equipment (AE)

## 3.1. About EUT

| | |
|---|---|
| Product Name | Smart POS system |
| Model name | T6900 |
| Supported Radio Technology and Bands | GSM850/GSM900/GSM1800/GSM1900<br>WCDMA Band I/II/IV/V/VIII<br>LTE Band 1/2/3/4/5/7/17/28/38/41<br>BT4.2<br>WLAN 802.11a/b/g/n<br>GNSS |
| Tx Frequency | 824.2-848.8 MHz (GSM850)<br>1850.2-1909.8MHz (GSM1900)<br>1852.4-1907.6 MHz (WCDMA Band II)<br>1712.4-1752.6 MHz (WCDMA Band IV)<br>826.4-846.6MHz (WCDMA Band V)<br>1850.7-1909.3 MHz (LTE Band 2)<br>1710.7-1754.3 MHz (LTE Band 4)<br>824.7-848.3 MHz (LTE Band 5)<br>2502.5-2567.5 MHz (LTE Band 7)<br>706.5-713.5 MHz (LTE Band 17)<br>2498.5-2687.5MHz (LTE Band 41)<br>2412-2462 MHz (Wi-Fi)<br>5180-5240 MHz (U-NII-1)<br>5260-5320 MHz (U-NII-2A)<br>5745-5825 MHz (U-NII-3)<br>2402-2480 MHz (BT) |
| Hardware Version | B1691_MAIN_PCB_V1.1 |
| Software Version | V1.0.2 |
| FCC ID | 2AH25T6900 |
| Dimension | 222mm*81.6mm*17.6mm |

Note: Photographs of EUT are shown in ANNEX C of this test report.

## 3.2. Internal Identification of EUT used during the test

| EUT ID* | SN or IMEI | HW Version | SW Version | Date of Receipt |
|---|---|---|---|---|
| N08 | N/A | B1691_MAIN_PCB_V1.1 | V1.0.2 | 2021-09-10 |
| N09 | N/A | B1691_MAIN_PCB_V1.1 | V1.0.2 | 2021-11-11 |

*EUT ID: is internally used to identify the test sample in the lab.

## 3.3. Internal Identification of AE used during the test

| AE ID* | Description | Model | SN/Remark |
|---|---|---|---|
| BA04 | Battery | T6900 | B21019104724 |
| BB01 | Battery | N/A | N/A |

*AE ID: is internally used to identify the test sample in the lab.

*The AE is provided by the client.

# 4. Reference Documents

## 4.1. Reference Documents for testing

The following documents listed in this section are referred for testing.

| Reference | Title | Version |
|---|---|---|
| ANSI C95.1 | IEEE Standard for Safety Levels with Respect to Human Exposure to Radio Frequency Electromagnetic Fields, 3 kHz to 300 GHz. | 1992 |
| IEEE std 1528 | Recommended Practice for Determining the Peak Spatial-Average Specific Absorption Rate (SAR) in the Human Body Due to Wireless Communications Devices: Experimental Techniques. | 2013 |
| KDB648474 | Handset SAR | D04 v01r03 |
| KDB248227 | 802 11 Wi-Fi SAR | D01 v02r02 |
| KDB447498 | General RF Exposure Guidance | D01 v06 |
| KDB865664 | SAR Measurement 100 MHz to 6 GHz | D01 v01r04 |
| KDB865664 | RF Exposure Reporting | D02 v01r02 |
| KDB941225 | 3G SAR Procedures | D01 v03r01 |
| KDB941225 | SAR for LTE Devices | D05 v02r05 |
| KDB941225 | Hotspot SAR | D06 v02r01 |
| KDB616217 | SAR for laptop and tablets | D04 v01r02 |

## 4.2. Criterion

At frequencies between 100 kHz and 6 GHz, the MPE (Maximum Permissible Exposure) in population/ uncontrolled environments for electromagnetic field strengths may be exceeded if

a) The exposure conditions can be shown by appropriate techniques to produce SARs below 0.08W/kg, as averaged over the whole body, and spatial peak SAR values not exceeding 1.6 W/kg, as averaged over any 1g of tissue (defined as a tissue volume in the shape of a cube), except for the hands, wrists, feet, and ankles where the spatial peak SAR shall not exceed 4 W/kg, as averaged over any 10g of tissue (defined as a tissue volume in the shape of a cube); and

b) The induced currents in the body confirm with the MPE in table 2, Part B in ANSI C95.1-1992.

# 5. Test Summary

## 5.1. Summary of Test Results

The maximum results of Specific Absorption Rate (SAR) in standalone mode are as follows.

| Band | Reported SAR 1g(W/Kg) | | |
|---|---|---|---|
| | Head | Body(5mm) | Limb(0mm) |
| GSM 850 | N/A | 1.22(original) | 1.533(original) |
| GSM 1900 | N/A | 1.077(original) | 2.274(original) |
| WCDMA Band II | N/A | 1.2(original) | 2.07(original) |
| WCDMA Band IV | N/A | 1.142(original) | 1.518(original) |
| WCDMA Band V | N/A | 0.543(original) | 0.67(original) |
| LTE Band 2 | N/A | 0.867(original) | 1.472(original) |
| LTE Band 4 | N/A | **1.262**(original) | **2.586**(original) |
| LTE Band 5 | N/A | 0.724(original) | 0.915(original) |
| LTE Band 7 | N/A | 0.663(original) | 0.936(original) |
| LTE Band 17 | N/A | 0.556(original) | 0.656(original) |
| LTE Band 41 | N/A | 0.432(original) | 0.457(original) |
| Wi-Fi 2.4G | N/A | 0.356(original) | 0.323(original) |
| Wi-Fi 5G | N/A | 0.385(original) | 0.222(original) |

The maximum results of Specific Absorption Rate (SAR) in simultaneous mode are as follows.

| Highest Reported SAR 1g(W/kg) | | |
|---|---|---|
| Mode | Position | Simultaneous Transmission SAR |
| GSM850&Wi-Fi 2.4G | Body(5mm) | 1.433 |
| LTE B4&BT | Limb(0mm) | 2.646 |

## 5.2. Statements

The T6900, manufactured by Shanghai Sunmi Technology Co.,Ltd. is a variant product for testing.

The product has two SIM cards, SIM 1 and SIM 2 does not support simultaneous work, only supports a single transmitter; When SIM 1 is working, SIM 2 will be suspended until SIM 2 is selected. When stop using the SIM 1, SIM 2 would work. SIM1 is the worst case.

This project has two sets of configured sample N08 (Mainly supply) and N09 (Secondary supply), both the N08 and the N09 samples test the worst mode of WWAN and WLAN SAR.

This project is a variant project based on the original report I19T00121-SAR01 by ECIT, we tested the worst mode of the original report, and the test data of the worst mode was recorded in the report.

Industrial Internet Innovation Center (Shanghai) Co., Ltd. has verified that the compliance of the tested device specified in section 3 of this test report is successfully evaluated according to the procedure and test methods as defined in type certification requirement listed in section 4 of this test report.

The description of the differences between the models is updated as follows:

| | Product NO. | The difference with initial certified product |
|---|---|---|
| Mainly Supply | N08 | 1. Add a back up CPU(model:MT8765V/WA)<br>2. Add a back up 27.12MHz Crystal for NFC(model:SX20Y027120BA1T)<br>3. Add a back up PCB supplier ZHIHAO<br>4. Change mcu from MH1902 BGA121 to MH1902T BGA121<br>5. Add a back up NFC chip FM17660<br>6. Add a back up LCD(model:LMFBH055100970)<br>7. Add a back up Camera (model:LH-XC-5035COM-B1691-V9.0)<br>8. Add a back up NFC antenna(model:SH19038IB100-6)<br>9. back up memory |
| Secondary Supply | N09 | 1. Add a back up CPU(model:MT8765V/WA)<br>2. Add a back up 27.12MHz Crystal for NFC(model:SX20Y027120BA1T)<br>3. Add a back up PCB supplier ZHIHAO<br>4. Change mcu from MH1902 BGA121 to MH1902T BGA121<br>5. Add a back up LCD(model:LMFBH055100970)<br>6. Add a back up Camera (model:LH-XC-5035COM-B1691-V9.0)<br>7. Add a back up NFC antenna(model:SH19038IB100-6)<br>8. back up memory |

# 6. Specific Absorption Rate (SAR)

## 6.1. Introduction

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.

## 6.2. SAR Definition

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 ( $\rho$ ). 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 either related to the temperature elevation in tissue by:

$$SAR = c\left(\frac{\delta T}{\delta t}\right)$$

Where: C is the specific head capacity, $\delta T$ is the temperature rise and $\delta T$ is the exposure duration, or related to the electrical field in the tissue by:

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

Where:

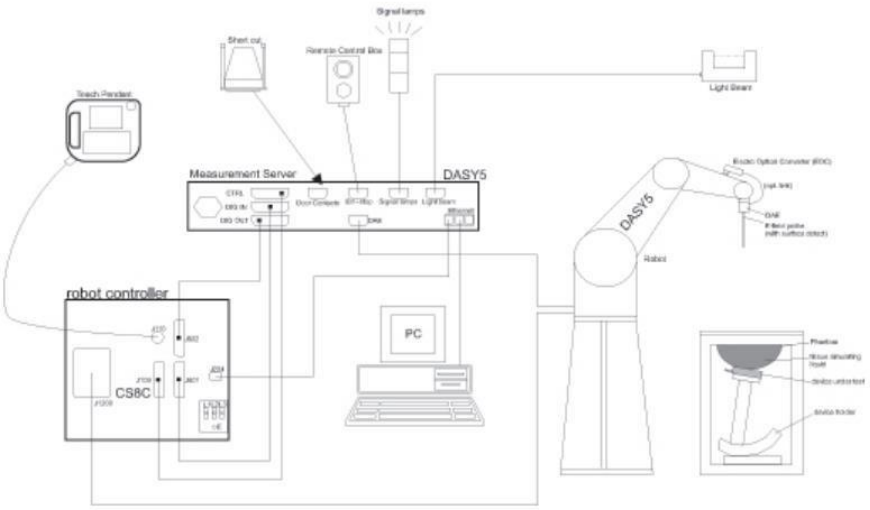
- $\sigma$ is the conductivity of the tissue
- $\rho$ is the mass density of tissue, which is normally set to 1g/cm$^3$
- $E$ is the RMS electrical field strength

However for evaluating SAR of low power transmitter, electrical field measurement is typically applied.

# 7. SAR Measurement System Introduction

## 7.1. Measurement Set-up

The DASY5 system for performing compliance tests is illustrated above graphically. This system consists of the following items:




Picture 7-1 SAR Measurement Set-up

- A standard high precision 6-axis robot (Stäubli TX=RX family) with controller, teach pendant and software. An arm extension for accommodating the data acquisition electronics (DAE).
- An isotropic field probe optimized and calibrated for the targeted measurement.
- A data acquisition electronics (DAE) which performs the signal amplification, signal multiplexing, AD conversion, offset measurements, mechanical surface detection, collision detection, etc. The unit is battery powered with standard or rechargeable batteries. The signal is optically transmitted to the EOC.
- The Electro-optical converter (EOC) performs the conversion from optical to electrical signals for the digital communication to the DAE. To use optical surface detection, a special version of the EOC is required. The EOC signal is transmitted to the measurement server.
- The function of the measurement server is to perform the time critical tasks such as signal filtering, control of the robot operation and fast movement interrupts.
- The Light Beam used is for probe alignment. This improves the (absolute) accuracy of the probe positioning.
- A computer running WinXP and the DASY5 software.
- Remote control and teach pendant as well as additional circuitry for robot safety such as warning lamps, etc.

The phantom, the device holder and other accessories according to the targeted measurement.

## 7.2. E-field Probe System

The SAR measurements were conducted with the dosimetric probe designed in the classical triangular configuration and optimized for dosimetric evaluation. The probe is constructed using the thick film technique; with printed resistive lines on ceramic substrates. The probe is equipped with an optical multi-fiber line ending at the front of the probe tip. It is connected to the EOC box on the robot arm and provides an automatic detection of the phantom surface. Half of the fibers are connected to a pulsed infrared transmitter, the other half to a synchronized receiver. As the probe approaches the surface, the reflection from the surface produces a coupling from the transmitting to the receiving fibers. This reflection increases first during the approach, reaches maximum and then decreases. If the probe is flatly touching the surface, the coupling is zero. The distance of the coupling maximum to the surface is independent of the surface reflectivity and largely independent of the surface to probe angle. The DASY5 software reads the reflection during a software approach and looks for the maximum using 2nd order curve fitting. The approach is stopped at reaching the maximum.

| Probe Specifications | |
|---|---|
| Model | EX3DV4 |
| Frequency Range | 4 MHz – 10 GHz |
| Calibration | In head simulating tissue at frequency from 650MHz to 5900MHz |
| Linearity | ±0.2 dB (30 MHz – 10 GHz) |
| Dynamic Range | 10 µW/g – >100 mW/g |
| Probe Length | 337 mm |
| Probe Tip Length | 20 mm |
| Body Diameter | 12 mm |
| Tip Diameter | 2.5 mm |
| Tip-Center | 1 mm |
| Application | High precision dosimetric measurements in any exposure scenario (e.g., very strong gradient fields); the only probe that enables compliance testing for frequencies up to 6 GHz with precision of better than 30% |

Picture 7-2 Detail of Probe

Picture 7-3 E-field Probe

## 7.3. E-field Probe Calibration

Each E-Probe/Probe Amplifier combination has unique calibration parameters. A TEM cell calibration procedure is conducted to determine the proper amplifier settings to enter in the probe parameters. The amplifier settings are determined for a given frequency by subjecting the probe to a known E-field density (1 mW/cm2) using an RF Signal generator, TEM cell, and RF Power Meter.

The free space E-field from amplified probe outputs is determined in a test chamber. This calibration can be performed in a TEM cell if the frequency is below 1 GHz and inn a waveguide or other methodologies above 1 GHz for free space. For the free space calibration, the probe is placed in the volumetric center of the cavity and at the proper orientation with the field. The probe is then rotated 360 degrees until the three channels show the maximum reading. The power density readings equates to 1 mW/cm2..

E-field temperature correlation calibration is performed in a flat phantom filled with the appropriate simulated brain tissue. The E-field in the medium correlates with the temperature rise in the dielectric medium. For temperature correlation calibration a RF transparent thermistor-based temperature probe is used in conjunction with the E-field probe.

$$SAR = C\frac{\Delta T}{\Delta t}$$

Where:

$\Delta t$ = Exposure time (30 seconds),

C = Heat capacity of tissue (brain or muscle),

$\Delta T$ = Temperature increase due to RF exposure.

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

Where:

$\sigma$ = Simulated tissue conductivity,

$\rho$ = Tissue density (kg/m$^3$).

## 7.4. Other Test Equipment

### 7.4.1. Data Acquisition Electronics (DAE)

| | |
|---|---|
| The data acquisition electronics consist of a highly sensitive electrometer-grade preamplifier with auto-zeroing, a channel and gain-switching multiplexer, a fast 16 bit AD-converter and a command decoder with a control logic unit. Transmission to the measurement server is accomplished through an optical downlink for data and status information, as well as an optical uplink for commands and the clock. |  |
| The mechanical probe mounting device includes two different sensor systems for frontal and sideways probe contacts. They are used for mechanical surface detection and probe collision detection. The input impedance of the DAE is 200M Ohm; the inputs are symmetrical and floating. Common mode rejection is above 80dB. | Picture 7-4: DAE |

### 7.4.2. Robot

| | |
|---|---|
| The SPEAG DASY system uses the high precision robots (DASY5: TX90) type from Stäubli SA (France).<br>For the 6-axis controller system, the robot controller version from Stäubli is used. The Stäubli robot series have many features that are important for our application |  |
| ➢ High precision (repeatability 0.02mm)<br>➢ High reliability (industrial design)<br>➢ Low maintenance costs (virtually maintenance free due to direct drive gears; no belt drives)<br>➢ Jerk-free straight movements (brushless synchronal motors; no stepper motors)<br>➢ Low ELF interference (motor control fields shielded via the closed metallic construction shields) | Picture 7-5: DASY5 |

### 7.4.3. Measurement Server

The DASY5 measurement server is based on a PC/104 CPU board with a 400 MHz intel ULV Celeron, 128 MB chipdisk and 128 MB RAM. The necessary circuits for communication with either the DAE4 (or DAE3) electronics box as well as the 16 bit AD converter system for optical detection and digital I/O interface are contained on the DASY5 I/O board, which is directly connected to the PC/104 bus of the CPU board.


Picture 7-6: Server for DASY5

The measurement server performs all real-time data evaluation of field measurements and surface detection, controls robot movements and handles safety operation. The PC operating system cannot interfere with these time critical processes. All connections are supervised by a watchdog, and disconnection of any of the cables to the measurement server will automatically disarm the robot and disable all program-controlled robot movements. Furthermore, the measurement server is equipped with an expansion port which is reserved for future applications. Please note that this expansion port does not have a standardized pinout, and therefore only devices provided by SPEAG can be connected. Devices from any other supplier could seriously damage the measurement server.

### 7.4.4. Device Holder for Phantom

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 5mm distance, a positioning uncertainty of ±0.5mm 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.

The DASY device holder is designed to cope with the different positions given in the standard. It has two scales for device rotation (with respect to the body axis) and device inclination (with respect to the line between the ear reference points). The rotation centers for both scales is the ear reference point (ERP). Thus the device needs no repositioning when changing the angles.

Picture 7-7: Device Holder

The DASY device holder is constructed of low-loss POM material having the following dielectric parameters: relative permittivity $\varepsilon$ =3 and loss tangent $\delta$ =0.02. The amount of dielectric material has been reduced in the closest vicinity of the device, since measurements have suggested that the influence of the clamp on the test results could thus be lowered.

| | |
|---|---|
| The extension is lightweight and made of POM, acrylic glass and foam. It fits easily on the upper part of the Mounting Device in place of the phone positioner. The extension is fully compatible with the Twin-SAM and ELI phantoms. |  |
| The DASY device holder is constructed of low-loss POM material having the following dielectric parameters: relative permittivity $\varepsilon$ =3 and loss tangent $\delta$ =0.02. The amount of dielectric material has been reduced in the closest vicinity of the device, since measurements have suggested that the influence of the clamp on the test results could thus be lowered. | Picture 7-8: Laptop Extension Kit |

### 7.4.5. Phantom

The SAM Twin Phantom V4.0 is constructed of a fiberglass shell integrated in a table. The shape of the shell is based on data from an anatomical study designed to represent the 90th percentile of the population. The phantom enables the dissymmetric evaluation of SAR for both left and right handed handset usage, as well as body-worn usage using the flat phantom region. Reference markings on the Phantom allow the complete setup of all predefined phantom positions and measurement grids by manually teaching three points in the robot. The shell phantom has a 2mm shell thickness (except the ear region where shell thickness increases to 6 mm).

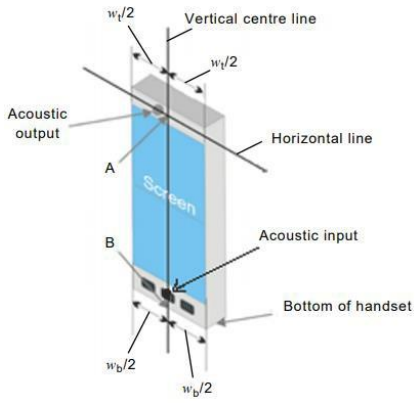
| | |
|---|---|
| Shell Thickness | 2 ± 0.2 mm |
| Available | Special |
| Filling Volume | Approx. 25 liters |
| Dimensions | 810 mm x l000 mm x 500 mm (H x L x W) |

Picture 7-9: SAM Twin Phantom

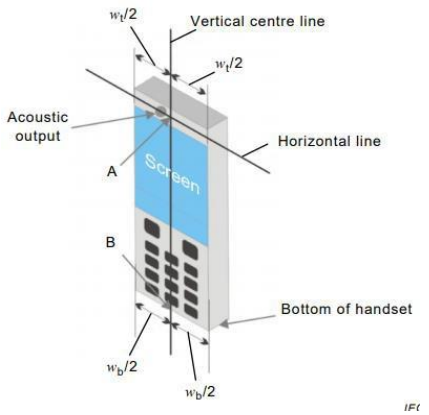
# 8. Test Position in Relation to the Phantom

## 8.1. General considerations

This standard specifies two handset test positions against the head phantom – the “cheek” position and the “tilt” position.

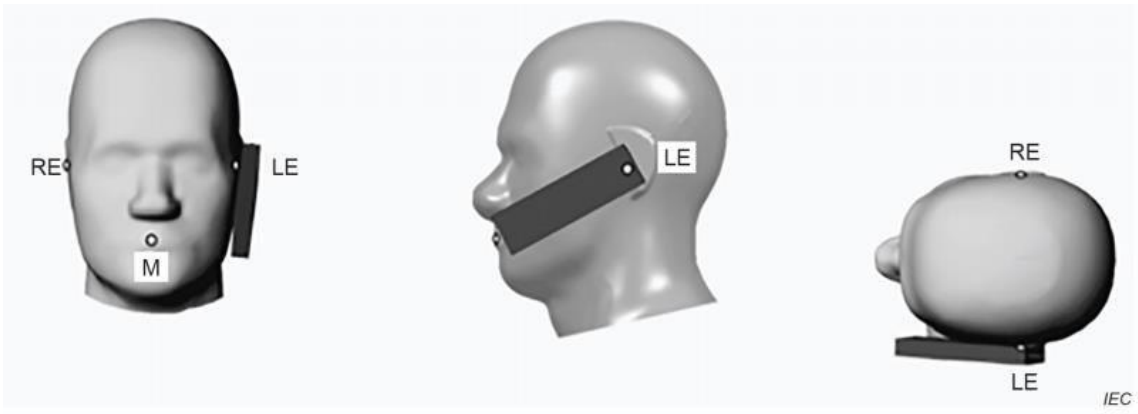



Picture 8-1 full touch screen smart phone (top)

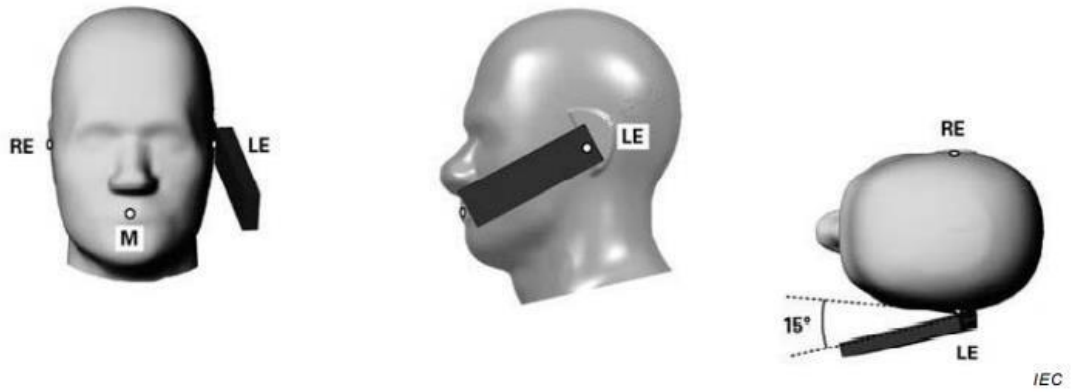



Picture 8-2 keyboard handset (bottom)

| | |
|---|---|
| $w_t$ | Width of the handset at the level of the acoustic output |
| $w_b$ | Width of the bottom of the handset |
| A | Midpoint of the width $w_t$ of the DUT at the level of the acoustic output |
| B | Midpoint of the width $w_b$ of the bottom of the handset |

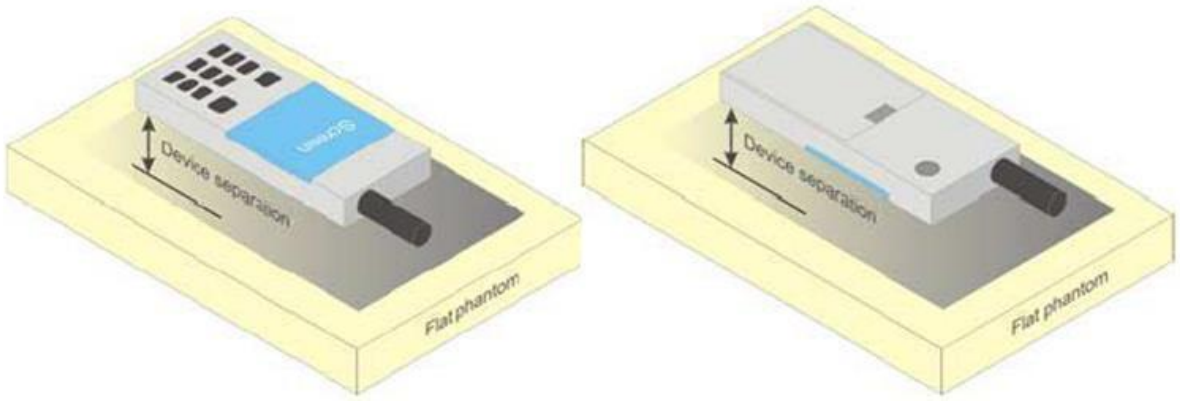



Picture 8-3 Cheek position of the wireless device on the left side of SAM




Picture 8-4 Tilt position of the wireless device on the left side of SAM

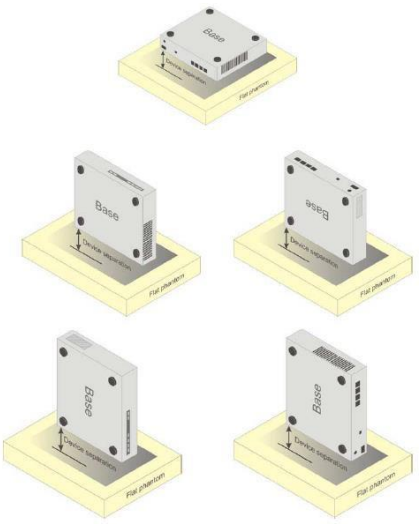
## 8.2. Body-worn device




Picture 8-5 Test positions for body-worn devices

A typical example of a body-worn device is a mobile phone, wireless enabled PDA (personal digital assistant) or other battery operated wireless device with the ability to transmit while mounted on a person's body using a carry accessory approved by the wireless device manufacturer.

## 8.3. Desktop device

| | |
|---|---|
| A typical example of a desktop device is a wireless enabled desktop computer placed on a table or desk when used. |  |
| The DUT shall be positioned at the distance and in the orientation to the phantom that corresponds to the intended use as specified by the manufacturer in the user instructions. For devices that employ an external antenna with variable positions. | |
| Tests shall be performed for all antenna positions specified. | |
| Picture 8-6 shows positions for desktop device SAR tests. If the intended use is not specified, the device shall be tested directly against the flat | Picture 8-6 Test positions for desktop devices |

# 9. Tissue Simulating Liquids

## 9.1. Equivalent Tissues Composition

The liquid used for the frequency range of 650-6000 MHz consisted of water, sugar, salt, preventol, glycol monobutyl and Cellulose. The liquid has been previously proven to be suited for worst-case. The Table 9.1 shows the detail solution. It's satisfying the latest tissue dielectric parameters requirements proposed by the IEEE 1528 and IEC 62209.

Table 9.1: Composition of the Head Tissue Equivalent Matter

| Frequency (MHz) | 835 | 900 | 1800 | 1950 | 2300 | 2450 | 2600 | 5800 |
|---|---|---|---|---|---|---|---|---|
| Ingredients (% by weight) | | | | | | | | |
| Water | 41.45 | 40.92 | 55.242 | 54.89 | 56.34 | 58.79 | 58.79 | 65.53 |
| Sugar | 56.0 | 56.5 | / | / | / | / | / | |
| Salt | 1.45 | 1.48 | 0.306 | 0.18 | 0.14 | 0.06 | 0.06 | |
| Preventol | 0.1 | 0.1 | / | / | / | / | / | |
| Cellulose | 1.0 | 1.0 | / | / | / | / | / | |
| GlycolMonobutyl | / | / | 44.452 | 44.93 | 43.52 | 41.15 | 41.15 | |
| Diethylenglycol momohexylether | / | / | / | / | / | / | / | 17.24 |
| Triton X-100 | / | / | / | / | / | / | / | 17.23 |
| Dielectric Parameters Target Value | ε=41.5 σ=0.90 | ε=41.5 σ=0.97 | ε=40.0 σ=1.40 | ε=40.0 σ=1.40 | ε=39.5 σ=1.67 | ε=39.2 σ=1.80 | ε=39.0 σ=1.96 | ε=35.3 σ=5.27 |

Table 9.2: Targets for tissue simulating liquid

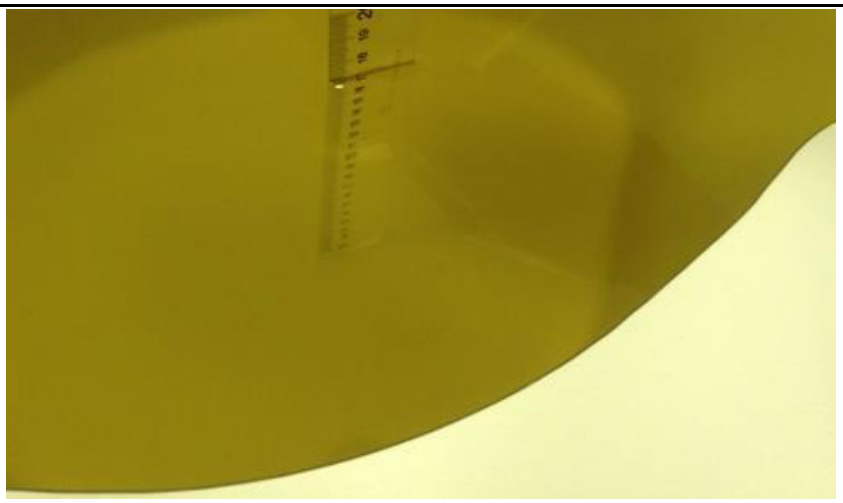
| Frequency (MHz) | Liquid Type | Conductivity (σ) | ± 5% Range | Permittivity (ε) | ± 5% Range |
|---|---|---|---|---|---|
| 835 | Head | 0.90 | 0.874~0.97 | 41.5 | 39.4~43.6 |
| 900 | Head | 0.97 | 0.92~1.02 | 41.5 | 39.4~43.6 |
| 1800 | Head | 1.40 | 1.33~1.47 | 40.0 | 38.0~42.0 |
| 1950 | Head | 1.40 | 1.33~1.47 | 40.0 | 38.0~42.0 |
| 2300 | Head | 1.67 | 1.59~1.75 | 39.5 | 37.5~41.4 |
| 2450 | Head | 1.80 | 1.71~1.89 | 39.2 | 37.2~41.2 |
| 2600 | Head | 1.96 | 1.86~2.06 | 39.0 | 37.5~40.95 |
| 5200 | Head | 4.66 | 4.43~4.89 | 35.99 | 34.19~37.79 |
| 5300 | Head | 4.76 | 4.52~4.99 | 35.87 | 34.08~37.66 |
| 5500 | Head | 4.96 | 4.71~5.2 | 35.6 | 33.82~37.38 |
| 5600 | Head | 5.07 | 4.82~5.32 | 35.53 | 33.75~37.30 |
| 5800 | Head | 5.27 | 5.01~5.53 | 35.3 | 33.54~37.05 |

## 9.2. Dielectric Performance of TSL

Table 9.3: Dielectric Performance of Head Tissue Simulating Liquid

| Tissue Simulating Liquid | | | | | | | | |
|---|---|---|---|---|---|---|---|---|
| Frequency (MHz) | Head(Standard) | | Temperature | Date | Test Result | | Deviation (%) | |
| | Permittivity ε | Conductivity σ | | | Permittivity ε | Conductivity σ | Permittivity ε | Conductivity σ |
| 1750-1 | 40.10 | 1.37 | 22.0℃ | 2021-11-26 | 39.377 | 1.383 | -1.80% | 0.95% |
| 1750-2 | 40.10 | 1.37 | 21.9℃ | 2021-11-29 | 38.977 | 1.34 | -2.80% | -2.19% |
| 2450-1 | 39.20 | 1.80 | 22.0℃ | 2021-11-26 | 37.824 | 1.844 | -3.51% | 2.44% |
| 2450-2 | 39.20 | 1.80 | 21.9℃ | 2021-11-29 | 38.124 | 1.868 | -2.74% | 3.78% |
| 5800-1 | 35.3 | 5.27 | 22.0℃ | 2021-11-26 | 34.618 | 5.155 | -1.93% | -2.18% |
| 5800-2 | 35.3 | 5.27 | 21.9℃ | 2021-11-29 | 36.025 | 5.257 | 2.05% | -0.25% |

## 9.3. Liquid depth



Picture 9-1 Liquid depth in the Flat Phantom

| | |
|---|---|
| A | The Measurements were performed in the flat section of the TWIN SAM or ELI phantom, shell thickness: 2.0±0.2mm (bottom Plate) filled with Body or Head simulating Liquid. |
| B | The depth of tissue-equivalent liquid in a phantom must be ≥ 15.0 cm for SAR measurements. |

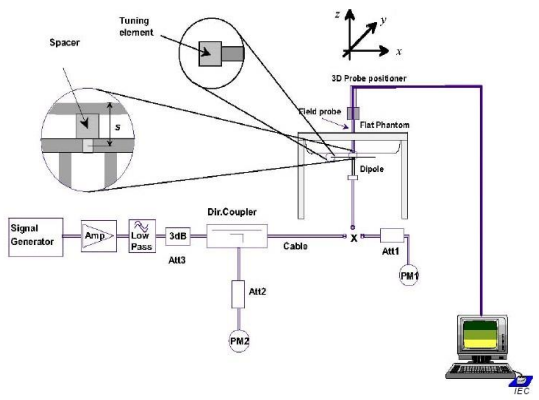
# 10. System Validation

## 10.1. System Validation

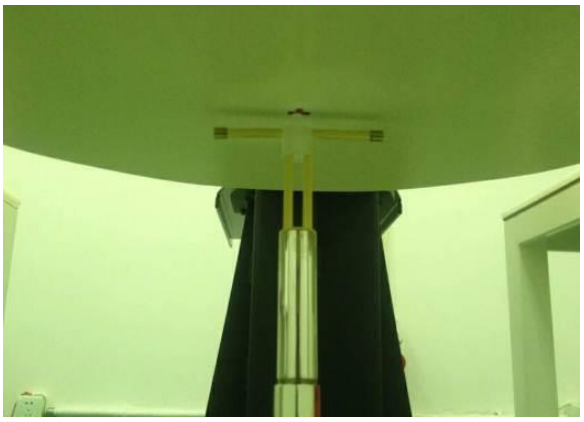
Each DASY system is equipped with one or more system validation kits. These units, together with the predefined measurement procedures within the DASY software, enable the user to conduct the system performance check and system validation. System validation kit includes a dipole, tripod holder to fix it underneath the flat phantom and a corresponding distance holder.

## 10.2. System Setup

In the simplified setup for system evaluation, the DUT is replaced by a calibrated dipole and the power source is replaced by a continuous wave that comes from a signal generator. The calibrated dipole must be placed beneath the flat phantom section of the SAM twin phantom with the correct distance holder. The distance holder should touch the phantom surface with a light pressure at the reference marking and be oriented parallel to the long side of the phantom. The equipment setup is shown below:




Picture 10-1 Setup for System Evaluation



Picture 10-2. Setup for Dipole

## 10.3. System Validation Result

Table 10.1: System Validation Result of SAR

| SAR System Validation | | | | | | | | |
|---|---|---|---|---|---|---|---|---|
| Frequency (MHz) | Target Value (w/kg) | | Temperature | Date | Test Result (w/kg) | | Deviation (%) | |
| | 10g | 1g | | | 10g | 1g | 10g | 1g |
| 1750-1 | 19 | 36.4 | 22.0℃ | 2021-11-26 | 19.08 | 35.84 | 0.42% | -1.54% |
| 1750-2 | 19 | 36.4 | 21.9℃ | 2021-11-29 | 19.6 | 36.76 | 3.16% | 0.99% |
| 2450-1 | 24 | 52.8 | 22.0℃ | 2021-11-26 | 23.96 | 51.6 | -0.17% | -2.27% |
| 2450-2 | 24 | 52.8 | 21.9℃ | 2021-11-29 | 24.28 | 52.4 | 1.17% | -0.76% |
| 5800-1 | 22.3 | 78.4 | 22.0℃ | 2021-11-26 | 21.2 | 74.3 | -4.93% | -5.23% |
| 5800-2 | 22.3 | 78.4 | 21.9℃ | 2021-11-29 | 22.2 | 77.9 | -0.45% | -0.64% |
| Note: The system verifies that the measured input power level is equivalent to 250mW, and the measured results are compared with the target value by converting to 1W. | | | | | | | | |

# 11. Measurement Procedures

## 11.1. Test Steps

According to the SAR test standard, the recommended procedure for assessing the peak spatial-average SAR value consists of the following steps:

**(a) Power reference measurement**

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

**(b) Area scan**

The area scan is used as a fast scan in two dimensions to find the area of high field values, before doing a finer measurement around the hot spot. The sophisticated interpolation routines implemented in DASY software can find the maximum locations even in relatively coarse grids. The scan area is defined by an editable grid. This grid is anchored at the grid reference point of the selected section in the phantom. When the area scan's property sheet is brought up, grid was at to 15mm * 15mm and can be edited by users.

**(c) Zoom scan**

Zoom scans are used to assess the peak spatial SAR values within a cubic averaging volume containing 1g and 10g of simulated tissue. The default zoom scan measures 5 * 5 * 7 points within a cube whose base faces are centered around the maximum found in a preceding area scan job within the same procedure. If the preceding Area Scan job indicates more than one maximum, the number of Zoom Scans has to be enlarged accordingly.

**(d) Power drift measurement**

The drift job measures the field at the same location as the most recent reference job within the same procedure, and with the same setting. The drift measurement gives the field difference in dB from the reading conducted within the last reference measurement. Several drift measurements are possible for one reference measurement. This allows a user to monitor the power drift of the device under within a batch process. In the properties of the drift job, the user can specify a limit for the drift and have DASY software stop the measurements if this limit is exceeded. This ensures that the power drift during one measurement is within 5%.

The SAR measurement procedures for each of test conditions are as follows:

(a) Make EUT to transmit it maximum output power

(b) Measure conducted output power through RF cable

(c) Place the EUT in the specific position of phantom

(d) Measure SAR results for Middle channel or the highest power channel on each testing position

(e) Measure SAR results for other channels in worst SAR testing position if the reported SAR of highest power channel is larger than 0.8 W/kg

(f) Record the SAR value

## 11.2. Spatial Peak SAR Evaluation

The procedure for spatial peak SAR evaluation has been implemented according to the IEEE1529 standard. It can be conducted for 1g and 10g.

The DASY system allows evaluations that combine measured data and robot positions, such as:

**a) Maximum Search**

During a maximum search, global and local maximum searches are automatically performed in 2D after each Area Scan measurement with at least 6 measurement points. It is based on the evaluation of the local SAR gradient calculated by the Quadratic Shepard's method. The algorithm will find the global maximum and all local maxima within -2dB of the global maxima for all SAR distributions.

**b) Extrapolation**

Extrapolation routines are used to obtain SAR values between the lowest measurement points and the inner phantom surface. The extrapolation distance is determined by the surface detection distance and the probe sensor offset. Several measurements at different distances are necessary for the extrapolation. Extrapolation routines require at least 10 measurement points in 3D space. They are used in the Cube Scan to obtain SAR values between the lowest measurement points and the inner phantom surface. The routine uses the modified Quadratic Shepard's method for extrapolation. For a grid using 5*5*5 measurement points with 5mm resolution amounting to 343 measurement points, the uncertainty of the extrapolation routines is less than 1% for 1g and 10 cubes.

**c) Boundary effect**

For measurements in the immediate vicinity of a phantom surface, the field coupling effects between the probe and the boundary influence the probe characteristics. Boundary effect errors of different dosi-metric probe types have been analyzed by measurements and using a numerical probe model. As expected, both methods showed an enhanced sensitivity in the immediate vicinity of the boundary. The effect strongly depends on the probe dimensions and disappears with increasing distance from the boundary. The sensitivity can be approximately given as:

$$S \approx So + Sb * \exp\left(-\frac{\blacklozenge}{a}\right) * \cos\left(\pi \frac{\blacklozenge}{\lambda}\right)$$

Since the decay of the boundary effect dominates for small probe ($a \ll \lambda$), the cos-term can be omitted. Factors Sb (parameter Alpha in the DASY software) and a (parameter Delta in the DASY software) ard assessed during probe calibration and used for numerical compensation of the boundary effect. Several simulations and measurements have confirmed that the compensation is valid for different field and boundary configurations.

This simple compensation procedure can largely reduce the probe uncertainty near boundaries. It works well as long as:

- The boundary curvature is small
- The probe axis is angled less than 30_to the boundary normal
- The distance between probe and boundary is larger than 25% of the probe diameter
- The probe is symmetric (all sensors have the same offset from the probe tip)

Since all of these requirements are fulfilled in a DASY system, the correction of the probe boundary effect in the vicinity of the phantom surface is performed in a fully automated manner via the measurement data extraction during post processing.

## 11.3. General Measurement Procedure

The area and zoom scan resolutions specified in the table below must be applied to the SAR measurements and fully documented in SAR reports to qualify for TCB approval. Probe boundary effect error compensation is required for measurements with the probe tip closer than half a probe tip diameter to the phantom surface. Both the probe tip diameter and sensor offset distance must satisfy measurement protocols; to ensure probe boundary effect errors are minimized and the higher fields closest to the phantom surface can be correctly measured and extrapolated to the phantom surface for computing 1-g SAR. Tolerances of the post-processing algorithms must be verified by the test laboratory for the scan resolutions used in the SAR measurements, according to the reference distribution functions specified in IEEE Std 1528-2013. The results should be documented as part of the system validation records and may be requested to support test results when all the measurement parameters in the following table are not satisfied.

Table 11.1: Test Resolution Requirement

<table>
<tr><th colspan="3">Items</th><th>≤3GHz</th><th>>3GHz</th></tr>
<tr><td colspan="3">Maximum Distance</td><td>5mm ±1mm</td><td>$\frac{1}{2} * \delta * \ln(2)$ mm ±0.5mm</td></tr>
<tr><td colspan="3">Maximum probe angle</td><td>30±1°</td><td>20±1°</td></tr>
<tr><td colspan="3" rowspan="3">Maximum Area Scan spatial resolution:<br>$\Delta x_{Area}$, $\Delta y_{Area}$</td><td>≤2GHz: ≤15mm</td><td>3-4GHz: ≤12mm</td></tr>
<tr><td>2-3GHz: ≤12mm</td><td>4-6GHz: ≤10mm</td></tr>
<tr><td colspan="2">when the x or y dimension of the device , in the measurement plane orientation, is smaller than the above, the measurement resolution must be ≤ the corresponding x or y dimension of the device with at least one measurement point on the device</td></tr>
<tr><td colspan="3" rowspan="2">Maximum Zoom Scan spatial resolution:<br>$\Delta x_{Zoom}$, $\Delta y_{Zoom}$</td><td>≤2GHz: ≤8mm</td><td>3-4GHz: ≤5mm</td></tr>
<tr><td>2-3GHz: ≤5mm</td><td>4-6GHz: ≤4mm</td></tr>
<tr><td rowspan="3">maximum zoom scan spatial resolution, normal to phantom surface</td><td colspan="2">uniform grid: $\Delta z_{Zoom}(n)$</td><td>≤5mm</td><td>3-4GHz: ≤4mm<br>4-5GHz: ≤3mm<br>5-6GHz: ≤2mm</td></tr>
<tr><td rowspan="2">graded grid</td><td>$\Delta z_{Zoom}(1)$: between 1st two points closest to phantom surface</td><td>≤4mm</td><td>3-4GHz: ≤3mm<br>4-5GHz: ≤2.5mm<br>5-6GHz: ≤2mm</td></tr>
<tr><td>$\Delta z_{Zoom}(n>1)$ between subsequent points</td><td colspan="2">≤1.5*</td></tr>
<tr><td>minimum zoom scan volume</td><td colspan="2">x, y, z</td><td>≥30mm</td><td>3-4GHz: ≥28mm<br>4-5GHz: ≥25mm<br>5-6GHz: ≥22mm</td></tr>
<tr><td colspan="5">Notes:<br><br>δ is the penetration depth of a plane-wave at normal incidence to the tissue medium in IEEE 1528-2013.<br>When Zoom Scan is required and reported SAR from the Area Scan based 1-g SAR estimation procedure of KDB</td></tr>
</table>

publication 447498 is ≤1.4 W/kg, ≤8mm for 2GHz-3GHz, ≤7mm for 3GHz-4GHz, ≤5mm for 4GHz-6GHz Zoom Scan resolution may be applied.

## 11.4. WCDMA Measurement Procedures

The following procedures are applicable to WCDMA handsets operating under 3GPP Release99, Release 5 and Release 6. The default test configuration is to measure SAR with an established radio link between the DUT and a communication test set using a 12.2kbps RMC (reference measurement channel) configured in Test Loop Mode 1. SAR is selectively confirmed for other physical channel configurations (DPCCH & DPDCH), HSDPA and HSPA (HSUPA/HSDPA) modes according to output power, exposure conditions and device operating capabilities. Both uplink and downlink should be configured with the same RMC or AMR, when required. SAR for Release 5 HSDPA and Release 6 HSPA are measured using the applicable FRC (fixed reference channel) and E-DCH reference channel configurations. Maximum output power is verified according to applicable versions of 3GPP TS 34.121 and SAR must be measured according to these maximum output conditions. When Maximum Power Reduction (MPR) is not implemented according to Cubic Metric (CM) requirements for Release 6 HSPA, the following procedures do not apply.

Table 11.2: HSDPA setting for Release 5

| Sub-test | $\beta_c$ | $\beta_d$ | $\beta_d$ (SF) | $\beta_c / \beta_d$ | $\beta_{hs}$ | CM (dB) | MPR (dB) |
|---|---|---|---|---|---|---|---|
| 1 | 2/15 | 15/15 | 64 | 2/15 | 4/15 | 1.5 | 0.5 |
| 2 | 12/15 | 15/15 | 64 | 12/15 | 24/25 | 2.0 | 1 |
| 3 | 15/15 | 8/15 | 64 | 15/8 | 30/15 | 2.0 | 1 |
| 4 | 15/15 | 4/15 | 64 | 15/4 | 30/15 | 2.0 | 1 |

Table 11.3: HSUPA setting for Release 6

| Sub-test | $\beta_c$ | $\beta_d$ | $\beta_d$ (SF) | $\beta_c / \beta_d$ | $\beta_{hs}$ | $\beta_{ec}$ | $\beta_{ed}$ | $\beta_{ed}$ (SF) | $\beta_{ed}$ (codes) | CM (dB) | MPR (dB) | AG Index | E-TFCI |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 1 | 11/15 | 15/15 | 64 | 11/15 | 22/15 | 209/225 | 1039/225 | 4 | 1 | 2.0 | 1.0 | 20 | 75 |
| 2 | 6/15 | 15/15 | 64 | 6/15 | 12/15 | 12/15 | 12/15 | 4 | 1 | 3.0 | 2.0 | 12 | 67 |
| 3 | 15/15 | 9/15 | 64 | 15/9 | 30/15 | 30/15 | $\beta_{ed1}$:47/15<br>$\beta_{ed2}$:47/15 | 4 | 2 | 3.0 | 2.0 | 15 | 92 |
| 4 | 2/15 | 15/15 | 64 | 2/15 | 4/15 | 4/15 | 56/75 | 4 | 1 | 2.0 | 1.0 | 17 | 71 |
| 5 | 15/15 | 15/15 | 64 | 15/15 | 24/15 | 30/15 | 134/15 | 4 | 1 | 2.0 | 1.0 | 21 | 81 |

## 11.5. LTE Measurement Procedure

SAR tests for LTE are performed with a base station simulator. Closed loop power control was used so the UE transmits with maximum output power during SAR testing.

1. 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.

2. 50% RB allocation for QPSK SAR testing follows 1RB QPSK allocation procedure.

3. For QPSK with 100% RB allocation, SAR is not required when the highest maximum output power for 100 % RB allocation is less than the highest maximum output power in 50% and 1 RB allocations and the highest reported SAR for 1 RB and 50% RB allocation are ≤ 0.8 W/kg. Otherwise, SAR is measured for the highest output power channel, and if the reported SAR is > 1.45 W/kg, the remaining required test channels must also be tested.

4. 16QAM/64QAM output power for each RB allocation configuration is > not $\frac{1}{2}$ d B higher than the same configuration in QPSK and the reported SAR for the QPSK configuration is ≤ 1.45 W/kg; 16QAM/64QAM SAR testing is not required.

5. Smaller bandwidth output power for each RB allocation configuration is > not $\frac{1}{2}$ d B higher than the same configuration in the largest supported bandwidth, and the reported SAR for the largest supported bandwidth is ≤ 1.45 W/kg; smaller bandwidth SAR testing is not required.

6. For LTE Band 12/26 the maximum bandwidth does not support three non-overlapping channels, when a device supports overlapping channel assignment in a channel bandwidth configuration, the middle channel of the group of overlapping channels should be selected for testing.

7. LTE band 17/2/5/38/4 SAR test was covered by Band 12/25/26/41/66; according to TCB workshop, SAR test for overlapping LTE bands can be reduced if

a. The maximum output power, including tolerance, for the smaller band is ≤ the larger band to qualify for the SAR test exclusion.

b. The channel bandwidth and other operating parameters for the smaller band are fully supported by the larger band.

**LTE Carrier Aggregation Conducted Power (Downlink)**

According to KDB941225 D05A v01r02, Uplink maximum output power measurement with downlink carrier aggregation active should be measured, using the highest output channel measured without downlink carrier aggregation, to confirm that uplink maximum output power with downlink carrier aggregation active remains within the specified tune-up tolerance limits and not more than ¼ dB higher than the maximum output measured without downlink carrier aggregation active.

**LTE Carrier Aggregation Conducted Power (Uplink)**

UL CA shall be tested based on the worst-case SAR configuration determined from non-CA SAR testing result. The channel BW, channel number, RB allocation, etc. would be selected to allow contiguous CA of PCC and SCC. Uplink output power for UL CA is the total power measured across the PCC and SCC. UL CA power measurements were performed for each antennas at with QPSK modulation based on the worst-case standalone SAR.

The UL CA mode power measurements represent the total power across both carriers. Measurements were made for all supported PCC bandwidths using the channel/RB combination resulting in the highest standalone output power at the least MPR (0 dB). SCCs were set to use configurations similar to the PCC to establish conservative or worst case equivalent SAR test conditions (highest maximum power with MPR of 0 dB).
The standalone power measurement is the power for the PCC in the non-CA mode (i.e. single carrier power). In all cases the UL CA power is less than or equal to the standalone power.

**LTE TDD Considerations**

According to KDB 941225 D05 SAR for LTE Devices, for Time-Division Duplex (TDD) systems, SAR must be tested using a fixed periodic duty factor according to the highest transmission duty factor implemented for the device and supported by the defined 3GPP LTE TDD configurations.
SAR was tested with the highest transmission duty factor (63.33%) using Uplink-downlink configuration 0 and Special sub-frame configuration 7.
LTE TDD Band 41 supports 3GPP TS 36.211 section 4.2 for Type 2 Frame Structure and Table 4.2-2 for uplink-downlink configurations and Table 4.2-1 for Special sub-frame configurations.

Table 11.4 Calculated Duty Cycle for LTE TDD

| Uplink-Downlink Configuration | | Sub-frame Number | | | | | | | | | | Calculated |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 0 | Periodicity | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | 10 | Duty Cycle (%) |
| 0 | 5 ms | D | S | U | U | U | D | S | U | U | U | 63.33 |
| 1 | 5 ms | D | S | U | U | D | D | S | U | U | D | 43.33 |
| 2 | 5 ms | D | S | U | D | D | D | S | U | D | D | 23.33 |
| 3 | 10 ms | D | S | U | U | U | D | D | D | D | D | 31.67 |
| 4 | 10 ms | D | S | U | U | D | D | D | D | D | D | 21.67 |
| 5 | 10 ms | D | S | U | D | D | D | D | D | D | D | 11.67 |
| 6 | 5 ms | D | S | U | U | U | D | S | U | U | D | 53.33 |

Example for Calculated Duty Cycle for Uplink-Downlink Configuration 0.

Calculated Duty Cycle = (5120 × Ts × 2 + 6 ms) / 10ms = 63.33%
Where
Ts = 1/(15000 x 2048) seconds

## 11.6. Bluetooth & Wi-Fi Measurement Procedures

Normal network operating configurations are not suitable for measuring the SAR of 802.11 transmitters in general. Unpredictable fluctuations in network traffic and antenna diversity conditions can introduce undesirable variations in SAR results. The SAR for these devices should be measured using chipset based test mode software to ensure that the results are consistent and reliable.
Chipset based test mode software is hardware dependent and generally varies among manufacturers. The device operating parameters established in a test mode for SAR measurements must be identical to those programmed in production units, including output power levels, amplifier gain settings and other RF performance tuning parameters. The test frequencies should correspond to actual channel frequencies defined for domestic use. SAR for devices with switched diversity should be measured with only one

antenna transmitting at a time during each SAR measurement, according to a fixed modulation and data rate. The same data pattern should be used for all measurements.

# 12. Simultaneous Transmission SAR Considerations

## 12.1. Reference Document

The following procedures adopted from “FCC SAR Considerations for Cell Phones with Multiple Transmitters” are applicable to handsets with built-in unlicensed transmitters such as 802.11 a/b/g and Bluetooth devices which may simultaneously transmit with the licensed transmitter.

## 12.2. Antenna Separation Distances


Picture 12-1 Antenna Locations

## 12.3. SAR Measurement Positions

The edges with less than 2.5 cm distance to the antennas need to be tested for SAR.

Table 12.1: SAR measurement Positions

| Antenna Mode | Front | Back | Left | Right | Top | Bottom |
|---|---|---|---|---|---|---|
| 2/3/4G | Yes | Yes | Yes | Yes | No | Yes |
| BT/Wi-Fi | Yes | Yes | Yes | Yes | Yes | No |

## 12.4. Low Power Transmitters SAR Consideration

Standalone 1-g head or body SAR evaluation by measurement or numerical simulation for low power transmitters is not required when the corresponding SAR Exclusion Threshold condition, listed below, is satisfied.

The 1-g SAR test exclusion threshold for 100 MHz to 6 GHz at test separation distances ≤ 50 mm are determined by:

$$\frac{(\text{Max. Power of channel, mW})}{(\text{Min. Test Separation Distance, mm})} \times \sqrt{(\text{Frequency, GHz})} \leq 3.0$$

Where:

(Max. Power of channel, mW) = (Max. Power of channel, dBm)

- Frequency (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

According to the KDB447498 appendix A, the SAR test exclusion threshold for 2450MHz at 5mm test separation distances is 10mW. That means the transmitters with tune-up power below 10mW are excluded for SAR measurement.

## 12.5. Simultaneous Transmission Analysis

KDB 447498 D01 General RF Exposure Guidance introduces a new formula for calculating the SPLSR (SAR to Peak Location Ratio) between pairs of simultaneously transmitting antennas:

$$\mathrm{SPLSR} = \sqrt{(\mathrm{SAR1} + \mathrm{SAR2})^3/\mathrm{Ri}}$$

Where:

- SAR1 is the highest measured or estimated SAR for the first of a pair of simultaneous transmitting antennas, in a specific test operating mode and exposure condition.
- SAR2 is the highest measured or estimated SAR for the second of a pair of simultaneous transmitting antennas, in the same test operating mode and exposure condition as the first.
- Ri is the separation distance between the pair of simultaneous transmitting antennas. When the SAR is measured, for both antennas in the pair, it is determined by the actual x, y and z coordinates in the 1-g SAR for each SAR peak location , based on the extrapolated and interpolated result in the zoom scan measurement, using the formula of

$$(\mathrm{x1} - \mathrm{x2})^2 + (\mathrm{y1} - \mathrm{y2})^2 + (\mathrm{z1} - \mathrm{z2})^2$$

In order for a pair of simultaneous transmitting antennas with the sum of 1-g SAR > 1.6 W/kg to qualify for exemption from Simultaneous Transmission SAR measurements, it has to satisfy the condition of:

$$\sqrt{(\mathrm{SAR1} + \mathrm{SAR2})^3/\mathrm{Ri}} < 0.04$$

## 12.6. Simultaneous Transmission Table

Table 12.3: Simultaneous Transmission Configurations

| Items | Capable Transmit Configurations |
|---|---|
| 1 | GSM/GPRS/EDGE + BT |
| 2 | GSM/GPRS/EDGE + Wi-Fi |
| 3 | WCDMA + BT |
| 4 | WCDMA+ Wi-Fi |
| 5 | LTE + BT |
| 6 | LTE + Wi-Fi |
| Note: For the DUT, the WLAN and BT modules sharing a single antenna, and so these two modules can't transmit signal simultaneously. GSM/WCDMA/LTE modules sharing a single antenna, so these two modules can't transmit signal simultaneously.<br>So we can get above combination that can transmit signal simultaneously. | |

# 13. Conducted Output Power

## 13.1. GSM Measurement result

Table 13.1: The conducted power measurement results for GSM850

| GSM | | | GSM850 | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|
| Model | Modulation | Time Slot | Tune up (dBm) | Measure Power(dBm) | | | Cal. Factor(dB) | Average Power(dBm) | | | |
| | | | | 128 | 190 | 251 | | 128 | 190 | 251 | |
| GPRS | GMSK | 1 Tx | 32.5 | 32.29 | 32.19 | 32.32 | -9.03 | 23.26 | 23.16 | 23.29 | |
| | | 2 Tx | 32 | 31.7 | 31.59 | 31.77 | -6.02 | 25.68 | 25.57 | 25.75 | |
| | | 3 Tx | 30.5 | 30.14 | 30.01 | 30.17 | -4.26 | 25.88 | 25.75 | 25.91 | |
| | | 4 Tx | 29.5 | 28.93 | 28.85 | 29.01 | -3.01 | 25.92 | 25.84 | **26** | |

Table 13.2: The conducted power measurement results for GSM1900

| GSM | | | GSM1900 | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|
| Model | Modulation | Time Slot | Tune up (dBm) | Measure Power(dBm) | | | Cal. Factor(dB) | Average Power(dBm) | | |
| | | | | 512 | 661 | 810 | | 512 | 661 | 810 |
| GPRS | GMSK | 1 Tx | 29.5 | 28.95 | 29.07 | 29.12 | -9.03 | 19.92 | 20.04 | 20.09 |
| | | 2 Tx | 29 | 28.4 | 28.52 | 28.59 | -6.02 | 22.38 | 22.5 | 22.57 |
| | | 3 Tx | 27.5 | 26.98 | 27.11 | 27.15 | -4.26 | 22.72 | 22.85 | 22.89 |
| | | 4 Tx | 26.5 | 25.97 | 26.07 | 26.12 | -3.01 | 22.96 | 23.06 | **23.11** |

NOTES:

1) Division Factors

To average the power, the division factor is as follows:

1TX-slot = 1 transmit time slot out of 8 time slots=> conducted power divided by (8/1) => -9.03dB

2TX-slots = 2 transmit time slots out of 8 time slots=> conducted power divided by (8/2) => -6.02dB

3TX-slots = 3 transmit time slots out of 8 time slots=> conducted power divided by (8/3) => -4.26dB

4TX-slots = 4 transmit time slots out of 8 time slots=> conducted power divided by (8/4) => -3.01dB

According to the conducted power as above, the body measurements are performed with 4Txslots for GSM850 and 4Txslots for GSM1900.

## 13.2. WCDMA Measurement result

Table 13.3: The conducted Power for WCDMA Band Ⅱ

| WCDMA | | WCDMA BⅡ | | | |
|---|---|---|---|---|---|
| Mode | Test Mode | Tune up | Channel | | |
| | | | 9262 | 9400 | 9538 |
| WCDMA | RMC | 23 | 22.38 | 22.47 | 22.65 |
| HSDPA | Subtest1 | 22 | 21.17 | 21.24 | 21.4 |
| | Subtest2 | 22 | 21.27 | 21.35 | 21.52 |
| | Subtest3 | 22 | 21.22 | 21.3 | 21.47 |
| | Subtest4 | 22 | 21.25 | 21.31 | 21.48 |
| HSUPA | Subtest1 | 22 | 21.15 | 21.23 | 21.4 |
| | Subtest2 | 22 | 21.37 | 21.44 | 21.63 |
| | Subtest3 | 22 | 21.25 | 21.34 | 21.49 |
| | Subtest4 | 22 | 21.28 | 21.37 | 21.54 |
| | Subtest5 | 22 | 21.19 | 21.27 | 21.44 |

Table 13.4: The conducted Power for WCDMA Band Ⅳ

| WCDMA | | WCDMA BⅣ | | | |
|---|---|---|---|---|---|
| Mode | Test Mode | Tune up | Channel | | |
| | | | 1312 | 1413 | 1513 |
| WCDMA | RMC | 23 | 22.57 | 22.6 | 22.55 |
| HSDPA | Subtest1 | 23 | 21.34 | 21.26 | 21.13 |
| | Subtest2 | 23 | 21.14 | 21.22 | 21.3 |
| | Subtest3 | 21 | 20.8 | 20.77 | 20.74 |
| | Subtest4 | 21 | 20.92 | 20.87 | 20.81 |
| HSUPA | Subtest1 | 21 | 20.7 | 20.87 | 20.9 |
| | Subtest2 | 21 | 20.25 | 20.21 | 20.24 |
| | Subtest3 | 21 | 20.24 | 20.35 | 20.17 |
| | Subtest4 | 22 | 21.05 | 21.05 | 21.08 |
| | Subtest5 | 21 | 20.85 | 20.95 | 20.97 |

Table 13.5: The conducted Power for WCDMA Band Ⅴ

| WCDMA | | WCDMA B5 | | | |
|---|---|---|---|---|---|
| Mode | Test Mode | Tune up | Channel | | |
| | | | 4132 | 4183 | 4233 |
| WCDMA | RMC | 23 | 22.79 | 22.8 | 22.69 |
| HSDPA | Subtest1 | 22 | 21.62 | 21.54 | 21.14 |
| | Subtest2 | 22 | 21.42 | 21.5 | 21.31 |
| | Subtest3 | 22 | 21.08 | 21.05 | 20.75 |
| | Subtest4 | 22 | 21.2 | 21.15 | 20.82 |
| HSUPA | Subtest1 | 22 | 20.98 | 21.15 | 20.91 |
| | Subtest2 | 21 | 20.53 | 20.49 | 20.25 |
| | Subtest3 | 21 | 20.52 | 20.63 | 20.18 |
| | Subtest4 | 22 | 21.33 | 21.33 | 21.09 |
| | Subtest5 | 22 | 21.13 | 21.23 | 20.98 |

## 13.3. LTE Measurement result

Table 13.6: The conducted Power for LTE Band 2/4/5/7/17/41

| LTE | | | LTE B2 | | | |
|---|---|---|---|---|---|---|
| Modulation | RB | RB Offset | Tune up | 1.4MHz | | |
| | | | | 19193 | 18900 | 18607 |
| QPSK | 1 | Low | 22.5 | 21.85 | 21.71 | 21.60 |
| | | Middle | | 21.98 | 21.86 | 21.70 |
| | | High | | 21.85 | 21.73 | 21.57 |
| | 50% | Low | 22.5 | 21.96 | 21.80 | 21.68 |
| | | Middle | | 21.96 | 21.88 | 21.74 |
| | | High | | 21.92 | 21.78 | 21.66 |
| | 100% | / | 21.5 | 21.05 | 20.91 | 20.77 |
| 16QAM | 1 | Low | 21.5 | 21.15 | 21.03 | 20.93 |
| | | Middle | | 21.19 | 21.11 | 21.06 |
| | | High | | 21.10 | 21.08 | 20.86 |
| | 5 | Low | 21.5 | 20.99 | 20.90 | 20.77 |
| | | Middle | | 21.08 | 20.95 | 20.82 |
| | | High | | 21.00 | 20.89 | 20.77 |
| | 100% | / | 20.5 | 20.04 | 19.96 | 19.82 |
| Modulation | RB | RB Offset | Tune up | 3MHz | | |
| | | | | 19185 | 18900 | 18615 |
| QPSK | 1 | Low | 22.5 | 21.94 | 21.84 | 21.39 |
| | | Middle | | 22.15 | 22.05 | 21.75 |
| | | High | | 21.97 | 21.81 | 21.66 |
| | 50% | Low | 21.5 | 21.08 | 20.95 | 20.72 |
| | | Middle | | 21.10 | 20.98 | 20.83 |
| | | High | | 21.06 | 20.93 | 20.78 |
| | 100% | / | 21.5 | 21.06 | 20.94 | 20.73 |
| 16QAM | 1 | Low | 21.5 | 20.75 | 20.60 | 20.50 |
| | | Middle | | 20.87 | 20.79 | 20.58 |
| | | High | | 20.71 | 20.65 | 20.45 |
| | 50% | Low | 21.5 | 19.57 | 19.44 | 19.28 |
| | | Middle | | 19.57 | 19.44 | 19.29 |
| | | High | | 19.53 | 19.43 | 19.29 |
| | 100% | / | 20.5 | 19.54 | 19.38 | 19.25 |
| Modulation | RB | RB Offset | Tune up | 5MHz | | |
| | | | | 19175 | 18900 | 18625 |
| QPSK | 1 | Low | 22.5 | 21.31 | 21.21 | 21.08 |
| | | Middle | | 21.58 | 21.46 | 21.45 |
| | | High | | 21.34 | 21.24 | 21.07 |
| | 50% | Low | 21.5 | 20.56 | 20.42 | 20.21 |

| | | | | | | |
|---|---|---|---|---|---|---|
| | | Middle | | 20.61 | 20.48 | 20.27 |
| | | High | | 20.49 | 20.44 | 20.23 |
| | 100% | / | 21.5 | 20.56 | 20.47 | 20.29 |
| 16QAM | 1 | Low | 21.5 | 20.62 | 20.57 | 20.41 |
| | | Middle | | 20.89 | 20.86 | 20.64 |
| | | High | | 20.65 | 20.51 | 20.38 |
| | 50% | Low | 21.5 | 19.53 | 19.42 | 19.21 |
| | | Middle | | 19.57 | 19.44 | 19.28 |
| | | High | | 19.47 | 19.40 | 19.23 |
| | 100% | / | 20.5 | 19.51 | 19.42 | 19.25 |
| Modulation | RB | RB Offset | Tune up | 10MHz | | |
| | | | | 19150 | 18900 | 18650 |
| QPSK | 1 | Low | 22.5 | 21.38 | 21.24 | 21.20 |
| | | Middle | | 21.57 | 21.46 | 21.36 |
| | | High | | 21.43 | 21.28 | 21.18 |
| | 50% | Low | 21.5 | 20.62 | 20.45 | 20.25 |
| | | Middle | | 20.61 | 20.50 | 20.32 |
| | | High | | 20.58 | 20.42 | 20.26 |
| | 100% | / | 21.5 | 20.61 | 20.45 | 20.30 |
| 16QAM | 1 | Low | 21.5 | 20.72 | 20.64 | 20.52 |
| | | Middle | | 20.91 | 20.77 | 20.53 |
| | | High | | 20.73 | 20.65 | 20.44 |
| | 50% | Low | 21.5 | 19.55 | 19.39 | 19.21 |
| | | Middle | | 19.57 | 19.42 | 19.26 |
| | | High | | 19.51 | 19.42 | 19.17 |
| | 100% | / | 20.5 | 19.54 | 19.42 | 19.24 |
| Modulation | RB | RB Offset | Tune up | 15MHz | | |
| | | | | 19125 | 18900 | 18675 |
| QPSK | 1 | Low | 22.5 | 21.33 | 21.24 | 21.16 |
| | | Middle | | 21.48 | 21.37 | 21.27 |
| | | High | | 21.38 | 21.21 | 21.08 |
| | 50% | Low | 21.5 | 20.57 | 20.44 | 20.31 |
| | | Middle | | 20.58 | 20.50 | 20.32 |
| | | High | | 20.56 | 20.44 | 20.30 |
| | 100% | / | 21.5 | 20.62 | 20.48 | 20.31 |
| 16QAM | 1 | Low | 21.5 | 20.63 | 20.58 | 20.47 |
| | | Middle | | 20.80 | 20.65 | 20.53 |
| | | High | | 20.69 | 20.54 | 20.38 |
| | 50% | Low | 21.5 | 19.55 | 19.39 | 19.25 |
| | | Middle | | 19.54 | 19.47 | 19.27 |
| | | High | | 19.51 | 19.42 | 19.24 |
| | 100% | / | 20.5 | 19.52 | 19.41 | 19.24 |

| Modulation | RB | RB Offset | Tune up | 20MHz | | |
|---|---|---|---|---|---|---|
| | | | | 19100 | 18900 | 18700 |
| QPSK | 1 | Low | 22.5 | 21.17 | 21.06 | 21.06 |
| | | Middle | | 21.54 | 21.46 | 21.40 |
| | | High | | 21.23 | 21.06 | 20.91 |
| | 50% | Low | 21.5 | 20.65 | 20.45 | 20.31 |
| | | Middle | | 20.61 | 20.50 | 20.37 |
| | | High | | 20.54 | 20.49 | 20.37 |
| | 100% | / | 21.5 | 20.60 | 20.47 | 20.31 |
| 16QAM | 1 | Low | 21.5 | 20.54 | 20.40 | 20.34 |
| | | Middle | | 20.87 | 20.76 | 20.65 |
| | | High | | 20.46 | 20.40 | 20.15 |
| | 50% | Low | 21.5 | 19.60 | 19.41 | 19.29 |
| | | Middle | | 19.56 | 19.45 | 19.32 |
| | | High | | 19.50 | 19.45 | 19.29 |
| | 100% | / | 20.5 | 19.53 | 19.42 | 19.25 |
| LTE | | | LTE B4 | | | |
| Modulation | RB | RB Offset | Tune up | 1.4MHz | | |
| | | | | 20393 | 20175 | 19957 |
| QPSK | 1 | Low | 22 | 21.40 | 21.46 | 21.53 |
| | | Middle | | 21.51 | 21.59 | 21.67 |
| | | High | | 21.39 | 21.45 | 21.51 |
| | 50% | Low | 22 | 21.49 | 21.56 | 21.62 |
| | | Middle | | 21.55 | 21.61 | 21.66 |
| | | High | | 21.49 | 21.55 | 21.59 |
| | 100% | / | 21 | 20.50 | 20.58 | 20.60 |
| 16QAM | 1 | Low | 21 | 20.69 | 20.76 | 20.76 |
| | | Middle | | 20.78 | 20.80 | 20.91 |
| | | High | | 20.67 | 20.74 | 20.78 |
| | 5 | Low | 21 | 20.48 | 20.52 | 20.59 |
| | | Middle | | 20.57 | 20.60 | 20.67 |
| | | High | | 20.53 | 20.51 | 20.60 |
| | 100% | / | 20 | 19.56 | 19.55 | 19.65 |
| Modulation | RB | RB Offset | Tune up | 3MHz | | |
| | | | | 20385 | 20175 | 19965 |
| QPSK | 1 | Low | 22 | 21.50 | 21.53 | 21.58 |
| | | Middle | | 21.56 | 21.72 | 21.77 |
| | | High | | 21.48 | 21.52 | 21.54 |
| | 50% | Low | 22 | 20.50 | 20.55 | 20.61 |
| | | Middle | | 20.51 | 20.57 | 20.63 |
| | | High | | 20.50 | 20.53 | 20.60 |
| | 100% | / | 21 | 20.52 | 20.55 | 20.63 |

| | | | | | | |
|---|---|---|---|---|---|---|
| 16QAM | 1 | Low | 21 | 20.74 | 20.79 | 20.87 |
| | | Middle | | 20.76 | 20.94 | 20.93 |
| | | High | | 20.71 | 20.75 | 20.85 |
| | 50% | Low | 21 | 19.53 | 19.60 | 19.64 |
| | | Middle | | 19.53 | 19.57 | 19.66 |
| | | High | | 19.55 | 19.56 | 19.62 |
| | 100% | / | 20 | 19.48 | 19.52 | 19.60 |
| Modulation | RB | RB Offset | Tune up | 5MHz | | |
| | | | | 20375 | 20175 | 19975 |
| QPSK | 1 | Low | 22 | 21.40 | 21.44 | 21.52 |
| | | Middle | | 21.64 | 21.72 | 21.75 |
| | | High | | 21.36 | 21.43 | 21.43 |
| | 50% | Low | 22 | 20.48 | 20.53 | 20.57 |
| | | Middle | | 20.52 | 20.59 | 20.63 |
| | | High | | 20.42 | 20.47 | 20.54 |
| | 100% | / | 21 | 20.49 | 20.56 | 20.59 |
| 16QAM | 1 | Low | 21 | 20.66 | 20.63 | 20.79 |
| | | Middle | | 20.93 | 20.93 | 21.03 |
| | | High | | 20.62 | 20.67 | 20.74 |
| | 50% | Low | 21 | 19.50 | 19.54 | 19.56 |
| | | Middle | | 19.53 | 19.59 | 19.64 |
| | | High | | 19.44 | 19.48 | 19.53 |
| | 100% | / | 20 | 19.44 | 19.48 | 19.58 |
| Modulation | RB | RB Offset | Tune up | 10MHz | | |
| | | | | 20350 | 20175 | 20000 |
| QPSK | 1 | Low | 22 | 21.61 | 21.58 | 21.64 |
| | | Middle | | 21.65 | 21.58 | 21.70 |
| | | High | | 21.47 | 21.52 | 21.58 |
| | 50% | Low | 22 | 20.66 | 20.64 | 20.64 |
| | | Middle | | 20.63 | 20.65 | 20.64 |
| | | High | | 20.52 | 20.54 | 20.65 |
| | 100% | / | 21 | 20.60 | 20.61 | 20.65 |
| 16QAM | 1 | Low | 21 | 20.86 | 20.80 | 20.89 |
| | | Middle | | 20.88 | 20.86 | 20.92 |
| | | High | | 20.71 | 20.72 | 20.79 |
| | 50% | Low | 21 | 19.60 | 19.58 | 19.55 |
| | | Middle | | 19.57 | 19.56 | 19.61 |
| | | High | | 19.50 | 19.49 | 19.63 |
| | 100% | / | 20 | 19.59 | 19.57 | 19.59 |
| Modulation | RB | RB Offset | Tune up | 15MHz | | |
| | | | | 20325 | 20175 | 20025 |
| QPSK | 1 | Low | 22 | 21.53 | 21.55 | 21.57 |

| | | | | | | |
|---|---|---|---|---|---|---|
| | | Middle | | 21.59 | 21.59 | 21.62 |
| | | High | | 21.43 | 21.45 | 21.43 |
| | 50% | Low | 22 | 20.65 | 20.63 | 20.60 |
| | | Middle | | 20.62 | 20.63 | 20.63 |
| | | High | | 20.55 | 20.55 | 20.61 |
| | 100% | / | 21 | 20.65 | 20.62 | 20.65 |
| 16QAM | 1 | Low | 21 | 20.79 | 20.75 | 20.83 |
| | | Middle | | 20.82 | 20.81 | 20.93 |
| | | High | | 20.66 | 20.71 | 20.69 |
| | 50% | Low | 21 | 19.67 | 19.61 | 19.58 |
| | | Middle | | 19.63 | 19.60 | 19.66 |
| | | High | | 19.55 | 19.55 | 19.59 |
| | 100% | / | 20 | 19.58 | 19.56 | 19.62 |
| Modulation | RB | RB Offset | Tune up | 20MHz | | |
| | | | | 20300 | 20175 | 20050 |
| QPSK | 1 | Low | 22 | 21.36 | 21.35 | 21.42 |
| | | Middle | | 21.70 | 21.65 | 21.65 |
| | | High | | 21.22 | 21.29 | 21.25 |
| | 50% | Low | 22 | 20.73 | 20.69 | 20.63 |
| | | Middle | | 20.66 | 20.66 | 20.69 |
| | | High | | 20.56 | 20.52 | 20.63 |
| | 100% | / | 21 | 20.67 | 20.59 | 20.57 |
| 16QAM | 1 | Low | 21 | 20.61 | 20.65 | 20.64 |
| | | Middle | | 20.96 | 20.88 | 21.00 |
| | | High | | 20.49 | 20.48 | 20.56 |
| | 50% | Low | 21 | 19.72 | 19.67 | 19.59 |
| | | Middle | | 19.64 | 19.58 | 19.64 |
| | | High | | 19.54 | 19.47 | 19.60 |
| | 100% | / | 20 | 19.63 | 19.57 | 19.56 |
| LTE | | | LTE B5 | | | |
| Modulation | RB | RB Offset | Tune up | 1.4MHz | | |
| | | | | 20643 | 20525 | 20407 |
| QPSK | 1 | Low | 23 | 22.05 | 22.03 | 22.12 |
| | | Middle | | 22.24 | 22.15 | 22.22 |
| | | High | | 22.09 | 22.06 | 22.04 |
| | 50% | Low | 23 | 22.16 | 22.13 | 22.21 |
| | | Middle | | 22.21 | 22.19 | 22.23 |
| | | High | | 22.17 | 22.10 | 22.18 |
| | 100% | / | 22 | 21.26 | 21.22 | 21.25 |
| 16QAM | 1 | Low | 22 | 21.32 | 21.39 | 21.48 |
| | | Middle | | 21.48 | 21.40 | 21.55 |
| | | High | | 21.37 | 21.26 | 21.33 |

| | | | | | | |
|---|---|---|---|---|---|---|
| | 5 | Low | 22 | 21.20 | 21.16 | 21.29 |
| | | Middle | | 21.29 | 21.24 | 21.29 |
| | | High | | 21.24 | 21.15 | 21.24 |
| | 100% | / | 21 | 20.28 | 20.24 | 20.28 |
| Modulation | RB | RB Offset | Tune up | 3MHz | | |
| | | | | 20635 | 20525 | 20415 |
| QPSK | 1 | Low | 23 | 22.11 | 22.08 | 22.17 |
| | | Middle | | 22.19 | 22.19 | 22.24 |
| | | High | | 22.11 | 22.13 | 22.12 |
| | 50% | Low | 23 | 21.20 | 21.19 | 21.20 |
| | | Middle | | 21.26 | 21.26 | 21.26 |
| | | High | | 21.21 | 21.24 | 21.22 |
| | 100% | / | 22 | 21.18 | 21.19 | 21.21 |
| 16QAM | 1 | Low | 22 | 21.40 | 21.41 | 21.50 |
| | | Middle | | 21.53 | 21.50 | 21.61 |
| | | High | | 21.44 | 21.42 | 21.44 |
| | 50% | Low | 22 | 20.20 | 20.18 | 20.24 |
| | | Middle | | 20.24 | 20.23 | 20.24 |
| | | High | | 20.18 | 20.24 | 20.23 |
| | 100% | / | 21 | 20.19 | 20.19 | 20.18 |
| Modulation | RB | RB Offset | Tune up | 5MHz | | |
| | | | | 20625 | 20525 | 20425 |
| QPSK | 1 | Low | 23 | 22.04 | 22.02 | 22.03 |
| | | Middle | | 22.20 | 22.16 | 22.29 |
| | | High | | 22.00 | 22.00 | 22.01 |
| | 50% | Low | 23 | 21.18 | 21.19 | 21.18 |
| | | Middle | | 21.21 | 21.25 | 21.24 |
| | | High | | 21.15 | 21.22 | 21.21 |
| | 100% | / | 22 | 21.17 | 21.27 | 21.23 |
| 16QAM | 1 | Low | 22 | 21.35 | 21.33 | 21.39 |
| | | Middle | | 21.56 | 21.55 | 21.51 |
| | | High | | 21.34 | 21.43 | 21.35 |
| | 50% | Low | 22 | 20.17 | 20.16 | 20.14 |
| | | Middle | | 20.21 | 20.24 | 20.20 |
| | | High | | 20.14 | 20.19 | 20.19 |
| | 100% | / | 21 | 20.11 | 20.20 | 20.15 |
| Modulation | RB | RB Offset | Tune up | 10MHz | | |
| | | | | 20600 | 20525 | 20450 |
| QPSK | 1 | Low | 23 | 22.11 | 22.13 | 22.18 |
| | | Middle | | 22.20 | 22.19 | 22.23 |
| | | High | | 22.10 | 22.11 | 22.13 |
| | 50% | Low | 23 | 21.31 | 21.31 | 21.25 |

| | | | | | | |
|---|---|---|---|---|---|---|
| | | Middle | | 21.29 | 21.27 | 21.27 |
| | | High | | 21.26 | 21.31 | 21.27 |
| | 100% | / | 22 | 21.28 | 21.32 | 21.25 |
| 16QAM | 1 | Low | 22 | 21.45 | 21.46 | 21.50 |
| | | Middle | | 21.51 | 21.54 | 21.54 |
| | | High | | 21.48 | 21.45 | 21.46 |
| | 50% | Low | 22 | 20.26 | 20.23 | 20.22 |
| | | Middle | | 20.25 | 20.22 | 20.22 |
| | | High | | 20.21 | 20.24 | 20.21 |
| | 100% | / | 21 | 20.28 | 20.28 | 20.21 |
| LTE | | | LTE B7 | | | |
| Modulation | RB | RB Offset | Tune up | 5MHz | | |
| | | | | 21425 | 21100 | 20775 |
| QPSK | 1 | Low | 23 | 22.15 | 22.05 | 22.09 |
| | | Middle | | 22.42 | 22.29 | 22.39 |
| | | High | | 22.16 | 22.05 | 22.10 |
| | 50% | Low | 22 | 21.29 | 21.14 | 21.21 |
| | | Middle | | 21.35 | 21.20 | 21.30 |
| | | High | | 21.30 | 21.15 | 21.21 |
| | 100% | / | 22 | 21.32 | 21.19 | 21.27 |
| 16QAM | 1 | Low | 22 | 21.44 | 21.26 | 21.27 |
| | | Middle | | 21.68 | 21.58 | 21.61 |
| | | High | | 21.40 | 21.27 | 21.35 |
| | 5 | Low | 21 | 20.26 | 20.12 | 20.18 |
| | | Middle | | 20.31 | 20.19 | 20.25 |
| | | High | | 20.30 | 20.14 | 20.19 |
| | 100% | / | 21 | 20.28 | 20.12 | 20.18 |
| Modulation | RB | RB Offset | Tune up | 10MHz | | |
| | | | | 21400 | 21100 | 20800 |
| QPSK | 1 | Low | 23 | 22.26 | 22.17 | 22.18 |
| | | Middle | | 22.47 | 22.28 | 22.41 |
| | | High | | 22.35 | 22.21 | 22.28 |
| | 50% | Low | 22 | 21.37 | 21.26 | 21.34 |
| | | Middle | | 21.45 | 21.26 | 21.33 |
| | | High | | 21.47 | 21.29 | 21.32 |
| | 100% | / | 22 | 21.43 | 21.28 | 21.34 |
| 16QAM | 1 | Low | 22 | 21.45 | 21.31 | 21.36 |
| | | Middle | | 21.63 | 21.48 | 21.44 |
| | | High | | 21.50 | 21.40 | 21.45 |
| | 50% | Low | 21 | 20.28 | 20.18 | 20.26 |
| | | Middle | | 20.37 | 20.23 | 20.27 |
| | | High | | 20.38 | 20.21 | 20.24 |

| | | | | | | |
|---|---|---|---|---|---|---|
| | 100% | / | 21 | 20.33 | 20.24 | 20.26 |
| Modulation | RB | RB Offset | Tune up | 15MHz | | |
| | | | | 21375 | 21100 | 20825 |
| QPSK | 1 | Low | 23 | 22.20 | 22.11 | 22.14 |
| | | Middle | | 22.39 | 22.23 | 22.32 |
| | | High | | 22.33 | 22.16 | 22.29 |
| | 50% | Low | 22 | 21.34 | 21.25 | 21.33 |
| | | Middle | | 21.45 | 21.30 | 21.36 |
| | | High | | 21.49 | 21.30 | 21.44 |
| | 100% | / | 22 | 21.46 | 21.31 | 21.41 |
| 16QAM | 1 | Low | 22 | 21.39 | 21.30 | 21.29 |
| | | Middle | | 21.60 | 21.41 | 21.53 |
| | | High | | 21.53 | 21.37 | 21.51 |
| | 50% | Low | 21 | 20.29 | 20.23 | 20.29 |
| | | Middle | | 20.41 | 20.27 | 20.31 |
| | | High | | 20.43 | 20.26 | 20.38 |
| | 100% | / | 21 | 20.38 | 20.22 | 20.36 |
| Modulation | RB | RB Offset | Tune up | 20MHz | | |
| | | | | 21350 | 21100 | 20850 |
| QPSK | 1 | Low | 23 | 21.94 | 21.94 | 21.97 |
| | | Middle | | 22.84 | 22.29 | 22.38 |
| | | High | | 22.58 | 22.03 | 22.10 |
| | 50% | Low | 22 | 21.25 | 21.25 | 21.36 |
| | | Middle | | 21.43 | 21.34 | 21.41 |
| | | High | | 21.46 | 21.27 | 21.51 |
| | 100% | / | 22 | 21.35 | 21.27 | 21.43 |
| 16QAM | 1 | Low | 22 | 21.18 | 21.16 | 21.12 |
| | | Middle | | 21.68 | 21.53 | 21.62 |
| | | High | | 21.34 | 21.31 | 21.40 |
| | 50% | Low | 21 | 20.25 | 20.22 | 20.33 |
| | | Middle | | 20.40 | 20.29 | 20.37 |
| | | High | | 20.48 | 20.24 | 20.46 |
| | 100% | / | 21 | 20.32 | 20.21 | 20.33 |
| LTE | | | LTE B17 | | | |
| Modulation | RB | RB Offset | Tune up | 5MHz | | |
| | | | | 23825 | 23790 | 23755 |
| QPSK | 1 | Low | 23 | 22.24 | 22.27 | 22.22 |
| | | Middle | | 22.50 | 22.50 | 22.48 |
| | | High | | 22.25 | 22.23 | 22.25 |
| | 50% | Low | 22 | 21.35 | 21.33 | 21.28 |
| | | Middle | | 21.40 | 21.39 | 21.39 |
| | | High | | 21.38 | 21.32 | 21.44 |

| | | | | | | |
|---|---|---|---|---|---|---|
| | 100% | / | 22 | 21.38 | 21.36 | 21.37 |
| 16QAM | 1 | Low | 22 | 21.40 | 21.38 | 21.48 |
| | | Middle | | 21.69 | 21.75 | 21.70 |
| | | High | | 21.37 | 21.45 | 21.56 |
| | 5 | Low | 21 | 20.29 | 20.29 | 20.27 |
| | | Middle | | 20.37 | 20.36 | 20.35 |
| | | High | | 20.30 | 20.25 | 20.37 |
| | 100% | / | 21 | 20.31 | 20.28 | 20.32 |
| Modulation | RB | RB Offset | Tune up | 10MHz | | |
| | | | | 23800 | 23790 | 23780 |
| QPSK | 1 | Low | 23 | 22.27 | 22.27 | 22.32 |
| | | Middle | | 22.47 | 22.45 | 22.49 |
| | | High | | 22.35 | 22.32 | 22.37 |
| | 50% | Low | 22 | 21.42 | 21.38 | 21.33 |
| | | Middle | | 21.44 | 21.42 | 21.42 |
| | | High | | 21.43 | 21.37 | 21.38 |
| | 100% | / | 22 | 21.44 | 21.41 | 21.36 |
| 16QAM | 1 | Low | 22 | 21.51 | 21.47 | 21.54 |
| | | Middle | | 21.73 | 21.66 | 21.75 |
| | | High | | 21.50 | 21.54 | 21.62 |
| | 50% | Low | 21 | 20.35 | 20.28 | 20.23 |
| | | Middle | | 20.38 | 20.38 | 20.37 |
| | | High | | 20.36 | 20.30 | 20.29 |
| | 100% | / | 21 | 20.36 | 20.32 | 20.30 |
| LTE | | | LTE B41 | | | |
| Modulation | RB | RB Offset | Tune up | 5MHz | | |
| | | | | 40065 | 40640 | 41215 |
| QPSK | 1 | Low | 23 | 22.42 | 22.43 | 22.45 |
| | | Middle | | 22.56 | 22.53 | 22.56 |
| | | High | | 22.40 | 22.41 | 22.43 |
| | 50% | Low | 22 | 20.97 | 20.99 | 21.03 |
| | | Middle | | 21.04 | 21.06 | 21.07 |
| | | High | | 21.05 | 21.28 | 21.01 |
| | 100% | / | 22 | 21.04 | 20.99 | 21.06 |
| 16QAM | 1 | Low | 22 | 21.42 | 21.42 | 21.47 |
| | | Middle | | 21.54 | 21.51 | 21.54 |
| | | High | | 21.29 | 21.34 | 21.30 |
| | 5 | Low | 21 | 20.03 | 19.91 | 20.04 |
| | | Middle | | 19.97 | 20.03 | 20.14 |
| | | High | | 20.07 | 20.30 | 19.89 |
| | 100% | / | 21 | 19.94 | 19.95 | 20.04 |
| Modulation | RB | RB Offset | Tune up | 10MHz | | |

| | | | | 40090 | 40640 | 41190 |
|---|---|---|---|---|---|---|
| QPSK | 1 | Low | 23 | 22.52 | 22.50 | 22.53 |
| | | Middle | | 22.11 | 22.11 | 22.19 |
| | | High | | 22.50 | 22.34 | 22.20 |
| | 50% | Low | 22 | 21.36 | 21.45 | 21.56 |
| | | Middle | | 21.61 | 21.55 | 21.66 |
| | | High | | 21.66 | 21.59 | 21.62 |
| | 100% | / | 22 | 21.63 | 21.61 | 21.69 |
| 16QAM | 1 | Low | 22 | 21.32 | 21.39 | 21.44 |
| | | Middle | | 21.09 | 21.12 | 21.11 |
| | | High | | 21.39 | 21.38 | 21.07 |
| | 50% | Low | 21 | 20.42 | 20.37 | 20.51 |
| | | Middle | | 20.56 | 20.52 | 20.73 |
| | | High | | 20.68 | 20.49 | 20.50 |
| | 100% | / | 21 | 20.53 | 20.57 | 20.47 |
| Modulation | RB | RB Offset | Tune up | 15MHz | | |
| | | | | 40115 | 40640 | 41165 |
| QPSK | 1 | Low | 23 | 21.94 | 21.93 | 21.94 |
| | | Middle | | 21.99 | 22.00 | 22.07 |
| | | High | | 21.86 | 21.92 | 21.98 |
| | 50% | Low | 22 | 21.54 | 21.59 | 21.63 |
| | | Middle | | 21.59 | 21.59 | 21.56 |
| | | High | | 21.54 | 21.60 | 21.53 |
| | 100% | / | 22 | 21.53 | 21.49 | 21.57 |
| 16QAM | 1 | Low | 22 | 20.99 | 20.90 | 20.96 |
| | | Middle | | 20.98 | 21.07 | 20.95 |
| | | High | | 20.85 | 20.86 | 20.78 |
| | 50% | Low | 21 | 20.61 | 20.51 | 20.03 |
| | | Middle | | 20.52 | 20.65 | 20.63 |
| | | High | | 20.46 | 20.62 | 20.45 |
| | 100% | / | 21 | 20.43 | 20.45 | 20.55 |
| Modulation | RB | RB Offset | Tune up | 20MHz | | |
| | | | | 40140 | 40640 | 41140 |
| QPSK | 1 | Low | 23 | 21.80 | 21.77 | 21.76 |
| | | Middle | | 22.10 | 22.08 | 22.16 |
| | | High | | 21.77 | 21.79 | 21.81 |
| | 50% | Low | 22 | 20.94 | 20.88 | 21.11 |
| | | Middle | | 21.03 | 21.11 | 21.17 |
| | | High | | 21.07 | 21.10 | 21.03 |
| | 100% | / | 22 | 21.04 | 21.05 | 21.09 |
| 16QAM | 1 | Low | 22 | 20.83 | 20.73 | 20.78 |
| | | Middle | | 21.08 | 21.16 | 21.05 |

| | | | | | | |
|---|---|---|---|---|---|---|
| | | High | | 20.76 | 20.72 | 20.61 |
| | 50% | Low | 21 | 20.00 | 19.83 | 19.86 |
| | | Middle | | 19.98 | 20.18 | 20.24 |
| | | High | | 19.98 | 20.13 | 19.95 |
| | 100% | / | 21 | 19.93 | 19.99 | 20.04 |

## 13.4. BT Measurement result

Table 13.7: The conducted power for Bluetooth

| Bluetooth | | BT conducted power (dBm) | | | | | |
|---|---|---|---|---|---|---|---|
| Mode | Channel | DH1 | | 2DH1 | | 3DH1 | |
| | | Tune up | Output Power | Tune up | Output Power | Tune up | Output Power |
| BT5.0 | 2402 | 5.5 | 5.15 | 5.5 | 4.5 | 5.5 | 4.93 |
| | 2441 | 5.0 | 4.0 | 5.0 | 3.54 | 5.0 | 3.72 |
| | 2480 | 5.0 | 4.01 | 5.0 | 3.56 | 5.0 | 3.73 |
| Bluetooth | | BLE conducted power (dBm) | | | | | |
| Mode | | Channel | | Tune up | | Output Power | |
| BLE | | 0 | | 4 | | 3.28 | |
| | | 19 | | 4 | | 2.81 | |
| | | 38 | | 4 | | 3.12 | |

## 13.5. Wi-Fi Measurement result

Table 13.8: The average conducted power for Wi-Fi

| Mode | Channel | Frequency(MHz) | Tune up | Average power(dBm) |
|---|---|---|---|---|
| 802.11 b | 1 | 2412 | 19 | 17.68 |
| | 6 | 2437 | 19 | 18.09 |
| | 11 | 2462 | 19 | 18.16 |
| 802.11 g | 1 | 2412 | 16 | 15.06 |
| | 6 | 2437 | 16 | 15.13 |
| | 11 | 2462 | 16 | 15.37 |
| 802.11 n 20M | 1 | 2412 | 16 | 15.03 |
| | 6 | 2437 | 16 | 15.42 |
| | 11 | 2462 | 16 | 15.35 |
| 802.11 n 40M | 3 | 2422 | 16 | 15.03 |
| | 6 | 2437 | 16 | 14.72 |
| | 9 | 2452 | 16 | 14.73 |
| Mode | Channel | Frequency(MHz) | Tune up | Average power(dBm) |
| 802.11 a | 36 | 5180 | 14 | 13.35 |
| | 40 | 5200 | 14 | 12.86 |
| | 48 | 5240 | 14 | 12.79 |
| | 52 | 5260 | 12 | 11.82 |

| | | | | |
|---|---|---|---|---|
| | 56 | 5280 | 12 | 11.85 |
| | 64 | 5320 | 12 | 11.5 |
| | 149 | 5745 | 12.5 | 11.84 |
| | 157 | 5785 | 12.5 | 12.02 |
| | 165 | 5825 | 12.5 | 11.87 |
| 802.11 n 20M | 36 | 5180 | 14 | 13.38 |
| | 40 | 5200 | 14 | 12.85 |
| | 48 | 5240 | 14 | 12.87 |
| | 52 | 5260 | 12 | 11.58 |
| | 56 | 5280 | 12 | 11.9 |
| | 64 | 5320 | 12 | 11.57 |
| | 149 | 5745 | 12.5 | 11.87 |
| | 157 | 5785 | 12.5 | 12.0 |
| | 165 | 5825 | 12.5 | 11.9 |
| 802.11 n 40M | 38 | 5190 | 14 | 13.27 |
| | 46 | 5230 | 14 | 13.18 |
| | 54 | 5270 | 14 | 13.08 |
| | 62 | 5310 | 14 | 12.72 |
| | 151 | 5755 | 14 | 13.55 |
| | 159 | 5795 | 14 | 13.65 |

# 14. Measurement Results

## 14.1. Standalone SAR Test Result For I19D00121-SAR01

Table 14.1: SAR Values for GSM850

| Test Position | Cover Type | Mode | Channel | Frequency (MHz) | Measured power (dBm) | Tune-up (dBm) | Power Drift (dB) | Limit of 1gSAR 1.6 W/kg (mW/g) | | | Figure No. |
|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | | | | | | Measured SAR1g | Scaling Factor | Report SAR1g | |
| **Body SAR (Define 5mm)** | | | | | | | | | | | |
| Left Side | Standard | GPRS 4TS | 190 | 836.6 | 28.85 | 29.5 | 0.040 | 0.238 | 1.16 | 0.276 | / |
| Right Side | Standard | GPRS 4TS | 190 | 836.6 | 28.85 | 29.5 | 0.160 | 0.411 | 1.16 | 0.477 | / |
| Front Side | Standard | GPRS 4TS | 190 | 836.6 | 28.85 | 29.5 | 0.020 | 0.856 | 1.16 | 0.994 | / |
| Back Side | Standard | GPRS 4TS | 190 | 836.6 | 28.85 | 29.5 | 0.080 | 0.824 | 1.16 | 0.957 | / |
| Bottom Side | Standard | GPRS 4TS | 190 | 836.6 | 28.85 | 29.5 | 0.020 | 0.378 | 1.16 | 0.439 | / |
| Front Side | Standard | GPRS 4TS | 128 | 824.2 | 28.93 | 29.5 | -0.020 | 0.777 | 1.14 | 0.886 | / |
| Front Side | Standard | GPRS 4TS | 251 | 848.8 | 29.01 | 29.5 | 0.040 | 1.08 | 1.12 | 1.209 | / |
| Back Side | Standard | GPRS 4TS | 128 | 824.2 | 28.93 | 29.5 | 0.040 | 0.617 | 1.14 | 0.704 | / |
| Back Side | Standard | GPRS 4TS | 251 | 848.8 | 29.01 | 29.5 | 0.010 | 0.963 | 1.12 | 1.078 | / |
| **Body SAR (Define 5mm repeated)** | | | | | | | | | | | |
| Front Side | Standard | GPRS 4TS | 251 | 848.8 | 29.01 | 29.5 | 0.080 | 1.09 | 1.12 | **1.220** | **1** |
| Back Side | Standard | GPRS 4TS | 251 | 848.8 | 29.01 | 29.5 | 0.050 | 0.984 | 1.12 | 1.102 | / |
| **Test Position** | **Cover Type** | **Mode** | **Channel** | **Frequency (MHz)** | **Measured power (dBm)** | **Tune-up (dBm)** | **Power Drift (dB)** | **Limit of 10gSAR 4.0 W/kg (mW/g)** | | | **Figure No.** |
| | | | | | | | | **Measured SAR10g** | **Scaling Factor** | **Report SAR10g** | |
| **Limb SAR (Distance 0mm)** | | | | | | | | | | | |
| Left Side | Standard | GPRS 4TS | 190 | 836.6 | 28.85 | 29.5 | -0.01 | 0.206 | 1.16 | 0.239 | / |
| Right Side | Standard | GPRS 4TS | 190 | 836.6 | 28.85 | 29.5 | -0.17 | 0.363 | 1.16 | 0.422 | / |
| Front Side | Standard | GPRS 4TS | 190 | 836.6 | 28.85 | 29.5 | -0.08 | 1.32 | 1.16 | **1.533** | **2** |
| Back Side | Standard | GPRS 4TS | 190 | 836.6 | 28.85 | 29.5 | 0.02 | 1.24 | 1.16 | 1.440 | / |
| Bottom Side | Standard | GPRS 4TS | 190 | 836.6 | 28.85 | 29.5 | 0.01 | 0.462 | 1.16 | 0.537 | / |

Table 14.2: SAR Values for GSM1900

| Test Position | Cover Type | Mode | Channel | Frequency (MHz) | Measured power (dBm) | Tune-up (dBm) | Power Drift (dB) | Limit of 1gSAR 1.6 W/kg (mW/g) | | | Figure No. |
|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | | | | | | Measured | Scaling Factor | Report | |
| **Body SAR (Define 5mm)** | | | | | | | | | | | |
| Left Side | Standard | GPRS 4TS | 661 | 1880 | 26.07 | 26.5 | 0.130 | 0.121 | 1.10 | 0.134 | / |
| Right Side | Standard | GPRS 4TS | 661 | 1880 | 26.07 | 26.5 | 0.150 | 0.075 | 1.10 | 0.083 | / |
| Front Side | Standard | GPRS 4TS | 661 | 1880 | 26.07 | 26.5 | 0.020 | 0.719 | 1.10 | 0.794 | / |
| Back Side | Standard | GPRS 4TS | 661 | 1880 | 26.07 | 26.5 | 0.040 | 0.600 | 1.10 | 0.662 | / |
| Bottom Side | Standard | GPRS 4TS | 661 | 1880 | 26.07 | 26.5 | 0.180 | 0.902 | 1.10 | 0.996 | / |
| Bottom Side | Standard | GPRS 4TS | 512 | 1850.2 | 25.97 | 26.5 | 0.180 | 0.628 | 1.13 | 0.710 | / |
| Bottom Side | Standard | GPRS 4TS | 810 | 1909.8 | 26.12 | 26.5 | 0.130 | 0.982 | 1.09 | 1.072 | / |
| **Body SAR (Define 5mm Repeated)** | | | | | | | | | | | |
| Bottom Side | Standard | GPRS 4TS | 810 | 1909.8 | 26.12 | 26.5 | 0.120 | 0.987 | 1.09 | **1.077** | **3** |
| **Test Position** | **Cover Type** | **Mode** | **Channel** | **Frequency (MHz)** | **Measured power (dBm)** | **Tune-up (dBm)** | **Power Drift (dB)** | **Limit of 10gSAR 4.0 W/kg (mW/g)** | | | **Figure No.** |
| | | | | | | | | **Measured** | **Scaling Factor** | **Report SAR10** | |
| **Limb SAR (Distance 0mm)** | | | | | | | | | | | |
| Left Side | Standard | GPRS 4TS | 661 | 1880 | 26.07 | 26.5 | 0.04 | 0.196 | 1.10 | 0.216 | / |
| Right Side | Standard | GPRS 4TS | 661 | 1880 | 26.07 | 26.5 | 0.03 | 0.0688 | 1.10 | 0.076 | / |
| Front Side | Standard | GPRS 4TS | 661 | 1880 | 26.07 | 26.5 | -0.16 | 2.06 | 1.10 | **2.274** | **4** |
| Back Side | Standard | GPRS 4TS | 661 | 1880 | 26.07 | 26.5 | 0.06 | 1.99 | 1.10 | 2.197 | / |
| Bottom Side | Standard | GPRS 4TS | 661 | 1880 | 26.07 | 26.5 | 0.08 | 2.05 | 1.10 | 2.263 | / |
| Front Side | Standard | GPRS 4TS | 512 | 1850.2 | 25.97 | 26.5 | 0.05 | 1.67 | 1.13 | 1.887 | / |
| Front Side | Standard | GPRS 4TS | 810 | 1909.8 | 26.12 | 26.5 | 0.05 | 2.03 | 1.09 | 2.216 | / |
| **Limb SAR (Distance 0mm Repeated)** | | | | | | | | | | | |
| Front Side | Standard | GPRS 4TS | 661 | 1880 | 26.07 | 26.5 | 0.04 | 2.05 | 1.10 | 2.263 | / |

Table 14.3: SAR Values for WCDMA Band Ⅱ

| Test Position | Cover Type | Mode | Channel | Frequency (MHz) | Measured power (dBm) | Tune-up (dBm) | Power Drift (dB) | Limit of 1gSAR 1.6 W/kg (mW/g) | | | Figure No. |
|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | | | | | | Measured SAR1g | Scaling | Report SAR1g | |
| **Body SAR (Define 5mm)** | | | | | | | | | | | |
| Left Side | Standard | RMC12.2k | 9538 | 1907.6 | 22.65 | 23 | 0.180 | 0.036 | 1.08 | 0.039 | / |
| Right Side | Standard | RMC12.2k | 9538 | 1907.6 | 22.65 | 23 | 0.170 | 0.032 | 1.08 | 0.034 | / |
| Front Side | Standard | RMC12.2k | 9538 | 1907.6 | 22.65 | 23 | 0.130 | 0.392 | 1.08 | 0.425 | / |
| Back Side | Standard | RMC12.2k | 9538 | 1907.6 | 22.65 | 23 | 0.180 | 0.340 | 1.08 | 0.369 | / |
| Bottom Side | Standard | RMC12.2k | 9538 | 1907.6 | 22.65 | 23 | 0.120 | 0.679 | 1.08 | 0.736 | / |
| Bottom Side | Standard | RMC12.2k | 9400 | 1880 | 22.47 | 23 | 0.120 | 0.869 | 1.13 | 0.982 | / |
| Bottom Side | Standard | RMC12.2k | 9262 | 1852.4 | 22.38 | 23 | 0.130 | 1.04 | 1.15 | **1.200** | **5** |
| **Body SAR (Define 5mm Repeated)** | | | | | | | | | | | |
| Bottom Side | Standard | RMC12.2k | 9262 | 1852.4 | 22.38 | 23 | 0.140 | 1.04 | 1.15 | **1.200** | / |
| **Test Position** | **Cover Type** | **Mode** | **Channel** | **Frequency (MHz)** | **Measured power (dBm)** | **Tune-up (dBm)** | **Power Drift (dB)** | **Limit of 10gSAR 4.0 W/kg (mW/g)** | | | **Figure No.** |
| | | | | | | | | **Measured SAR10g** | **Scaling** | **Report SAR10g** | |
| **Limb SAR (Distance 0mm)** | | | | | | | | | | | |
| Left Side | Standard | RMC12.2k | 9538 | 1907.6 | 22.65 | 23 | 0.07 | 0.138 | 1.08 | 0.150 | / |
| Right Side | Standard | RMC12.2k | 9538 | 1907.6 | 22.65 | 23 | 0.08 | 0.0637 | 1.08 | 0.069 | / |
| Front Side | Standard | RMC12.2k | 9538 | 1907.6 | 22.65 | 23 | 0.03 | 1.91 | 1.08 | **2.070** | **6** |
| Back Side | Standard | RMC12.2k | 9538 | 1907.6 | 22.65 | 23 | 0.02 | 1.65 | 1.08 | 1.788 | / |
| Bottom Side | Standard | RMC12.2k | 9538 | 1907.6 | 22.65 | 23 | 0.01 | 1.7 | 1.08 | 1.843 | / |
| Front Side | Standard | RMC12.2k | 9400 | 1880 | 22.47 | 23 | 0.03 | 1.82 | 1.13 | 2.056 | / |
| Front Side | Standard | RMC12.2k | 9262 | 1852.4 | 22.38 | 23 | 0.06 | 1.55 | 1.15 | 1.788 | / |

Table 14.4: SAR Values for WCDMA Band Ⅳ

| Test Position | Cover Type | Mode | Channel | Frequency (MHz) | Measured power (dBm) | Tune-up (dBm) | Power Drift (dB) | Limit of 1gSAR 1.6 W/kg (mW/g) | | | Figure No. |
|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | | | | | | Measured SAR1g | Scaling | Report SAR1g | |
| **Body SAR (Define 5mm)** | | | | | | | | | | | |
| Left Side | Standard | RMC12.2k | 1413 | 1732.6 | 22.6 | 23 | -0.070 | 0.031 | 1.10 | 0.033 | / |
| Right Side | Standard | RMC12.2k | 1413 | 1732.6 | 22.6 | 23 | 0.020 | 0.018 | 1.10 | 0.019 | / |
| Front Side | Standard | RMC12.2k | 1413 | 1732.6 | 22.6 | 23 | 0.070 | 0.216 | 1.10 | 0.237 | / |
| Back Side | Standard | RMC12.2k | 1413 | 1732.6 | 22.6 | 23 | 0.040 | 0.265 | 1.10 | 0.291 | / |
| Bottom Side | Standard | RMC12.2k | 1413 | 1732.6 | 22.6 | 23 | 0.190 | 0.888 | 1.10 | 0.974 | / |
| Bottom Side | Standard | RMC12.2k | 1312 | 1712.4 | 22.57 | 23 | 0.140 | 0.838 | 1.10 | 0.925 | / |
| Bottom Side | Standard | RMC12.2k | 1513 | 1752.6 | 22.55 | 23 | 0.170 | 1.03 | 1.11 | **1.142** | **7** |
| **Body SAR (Define 5mm Repeated)** | | | | | | | | | | | |
| Bottom Side | Standard | RMC12.2k | 1513 | 1752.6 | 22.55 | 23 | 0.180 | 0.963 | 1.11 | 1.068 | / |
| **Test Position** | **Cover Type** | **Mode** | **Channel** | **Frequency (MHz)** | **Measured power (dBm)** | **Tune-up (dBm)** | **Power Drift (dB)** | **Limit of 10gSAR 4.0 W/kg (mW/g)** | | | **Figure No.** |
| | | | | | | | | **Measured SAR10g** | **Scaling** | **Report SAR10g** | |
| **Limb SAR (Distance 0mm)** | | | | | | | | | | | |
| Left Side | Standard | RMC12.2k | 1413 | 1732.6 | 22.6 | 23 | 0.03 | 0.0916 | 1.10 | 0.100 | / |
| Right Side | Standard | RMC12.2k | 1413 | 1732.6 | 22.6 | 23 | 0.09 | 0.0885 | 1.10 | 0.097 | / |
| Front Side | Standard | RMC12.2k | 1413 | 1732.6 | 22.6 | 23 | 0.08 | 1.49 | 1.10 | 1.634 | / |
| Back Side | Standard | RMC12.2k | 1413 | 1732.6 | 22.6 | 23 | 0.01 | 1.36 | 1.10 | 1.491 | / |
| Bottom Side | Standard | RMC12.2k | 1413 | 1732.6 | 22.6 | 23 | -0.09 | 2.22 | 1.10 | 2.434 | / |
| Bottom Side | Standard | RMC12.2k | 1312 | 1712.4 | 22.57 | 23 | 0.16 | 2.01 | 1.10 | 2.219 | / |
| Bottom Side | Standard | RMC12.2k | 1513 | 1752.6 | 22.55 | 23 | 0.10 | 2.27 | 1.11 | **2.518** | **8** |
| **Limb SAR (Distance 0mm Repeated)** | | | | | | | | | | | |
| Bottom Side | Standard | RMC12.2k | 1513 | 1752.6 | 22.55 | 23 | 0.08 | 1.65 | 1.11 | 1.830 | / |

Table 14.5: SAR Values for WCDMA Band Ⅴ

| Test Position | Cover Type | Mode | Channel | Frequency (MHz) | Measured power (dBm) | Tune-up (dBm) | Power Drift (dB) | Limit of 1gSAR 1.6 W/kg (mW/g) | | | Figure No. |
|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | | | | | | Measured SAR1g | Scaling | Report SAR1g | |
| **Body SAR (Define 5mm)** | | | | | | | | | | | |
| Left Side | Standard | RMC12.2k | 4183 | 836.6 | 22.8 | 23 | -0.080 | 0.118 | 1.05 | 0.124 | / |
| Right Side | Standard | RMC12.2k | 4183 | 836.6 | 22.8 | 23 | -0.050 | 0.183 | 1.05 | 0.192 | / |
| Front Side | Standard | RMC12.2k | 4183 | 836.6 | 22.8 | 23 | -0.020 | 0.519 | 1.05 | **0.543** | **9** |
| Back Side | Standard | RMC12.2k | 4183 | 836.6 | 22.8 | 23 | -0.030 | 0.354 | 1.05 | 0.371 | / |
| Bottom Side | Standard | RMC12.2k | 4183 | 836.6 | 22.8 | 23 | -0.030 | 0.189 | 1.05 | 0.198 | / |
| **Test Position** | **Cover Type** | **Mode** | **Channel** | **Frequency (MHz)** | **Measured power (dBm)** | **Tune-up (dBm)** | **Power Drift (dB)** | **Limit of 10gSAR 4.0 W/kg (mW/g)** | | | **Figure No.** |
| | | | | | | | | **Measured SAR10g** | **Scaling** | **Report SAR10g** | |
| **Limb SAR (Distance 0mm)** | | | | | | | | | | | |
| Left Side | Standard | RMC12.2k | 4183 | 836.6 | 22.8 | 23 | -0.03 | 0.11 | 1.05 | 0.115 | / |
| Right Side | Standard | RMC12.2k | 4183 | 836.6 | 22.8 | 23 | 0.10 | 0.204 | 1.05 | 0.214 | / |
| Front Side | Standard | RMC12.2k | 4183 | 836.6 | 22.8 | 23 | -0.13 | 0.64 | 1.05 | **0.670** | **10** |
| Back Side | Standard | RMC12.2k | 4183 | 836.6 | 22.8 | 23 | 0.11 | 0.554 | 1.05 | 0.580 | / |
| Bottom Side | Standard | RMC12.2k | 4183 | 836.6 | 22.8 | 23 | 0.05 | 0.25 | 1.05 | 0.262 | / |

Table 14.6: SAR Values for LTE Band 2

| Test Position | Cover Type | Mode | | | | Channel | Frequency (MHz) | Measured power (dBm) | Tune-up (dBm) | Power Drift (dB) | Limit of 1gSAR 1.6 W/kg (mW/g) | | | Figure No. |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | Modulation | BW(MHz) | RB Allocation | RB Offset | | | | | | Measured SAR1g | Scaling Factor | Report SAR1g | |
| **Body SAR (Define 5mm)** | | | | | | | | | | | | | | |
| Left Side | Standard | QPSK | 20 | 1 | mid | 19100 | 1900 | 21.54 | 22.5 | 0.150 | 0.030 | 1.25 | 0.038 | / |
| Right Side | Standard | QPSK | 20 | 1 | mid | 19100 | 1900 | 21.54 | 22.5 | -0.090 | 0.015 | 1.25 | 0.019 | / |
| Front Side | Standard | QPSK | 20 | 1 | mid | 19100 | 1900 | 21.54 | 22.5 | 0.080 | 0.486 | 1.25 | 0.606 | / |
| Back Side | Standard | QPSK | 20 | 1 | mid | 19100 | 1900 | 21.54 | 22.5 | 0.150 | 0.432 | 1.25 | 0.539 | / |
| Bottom Side | Standard | QPSK | 20 | 1 | mid | 19100 | 1900 | 21.54 | 22.5 | -0.130 | 0.588 | 1.25 | 0.733 | / |
| Left Side | Standard | QPSK | 20 | 50% | low | 19100 | 1900 | 20.65 | 21.5 | 0.080 | 0.036 | 1.22 | 0.043 | / |
| Right Side | Standard | QPSK | 20 | 50% | low | 19100 | 1900 | 20.65 | 21.5 | -0.170 | 0.018 | 1.22 | 0.022 | / |
| Front Side | Standard | QPSK | 20 | 50% | low | 19100 | 1900 | 20.65 | 21.5 | 0.070 | 0.552 | 1.22 | 0.671 | / |
| Back Side | Standard | QPSK | 20 | 50% | low | 19100 | 1900 | 20.65 | 21.5 | 0.160 | 0.494 | 1.22 | 0.601 | / |
| Bottom Side | Standard | QPSK | 20 | 50% | low | 19100 | 1900 | 20.65 | 21.5 | 0.050 | 0.713 | 1.22 | **0.867** | **11** |
| Bottom Side | Standard | QPSK | 20 | 50% | low | 18900 | 1880 | 20.5 | 21.5 | 0.080 | 0.650 | 1.26 | 0.818 | / |
| Bottom Side | Standard | QPSK | 20 | 50% | low | 18700 | 1860 | 20.37 | 21.5 | 0.100 | 0.666 | 1.30 | 0.864 | / |
| Test Position | Cover Type | Mode | | | | Channel | Frequency (MHz) | Measured power (dBm) | Tune-up (dBm) | Power Drift (dB) | Limit of 10gSAR 4.0 W/kg (mW/g) | | | Figure No. |
| | | Modulation | BW(MHz) | RB Allocation | RB Offset | | | | | | Measured SAR10g | Scaling Factor | Report SAR10g | |
| **Limb SAR (Distance 0mm)** | | | | | | | | | | | | | | |
| Left Side | Standard | QPSK | 20 | 1 | mid | 19100 | 1900 | 21.54 | 22.5 | 0.12 | 0.0848 | 1.25 | 0.106 | / |
| Right Side | Standard | QPSK | 20 | 1 | mid | 19100 | 1900 | 21.54 | 22.5 | 0.13 | 0.0384 | 1.25 | 0.048 | / |
| Front Side | Standard | QPSK | 20 | 1 | mid | 19100 | 1900 | 21.54 | 22.5 | -0.13 | 1.16 | 1.25 | 1.447 | / |
| Back Side | Standard | QPSK | 20 | 1 | mid | 19100 | 1900 | 21.54 | 22.5 | 0.15 | 1.03 | 1.25 | 1.285 | / |
| Bottom Side | Standard | QPSK | 20 | 1 | mid | 19100 | 1900 | 21.54 | 22.5 | 0.13 | 1.18 | 1.25 | **1.472** | **12** |
| Left Side | Standard | QPSK | 20 | 50% | low | 19100 | 1900 | 20.65 | 21.5 | -0.13 | 0.033 | 1.22 | 0.040 | / |
| Right Side | Standard | QPSK | 20 | 50% | low | 19100 | 1900 | 20.65 | 21.5 | 0.05 | 0.0139 | 1.22 | 0.017 | / |
| Front Side | Standard | QPSK | 20 | 50% | low | 19100 | 1900 | 20.65 | 21.5 | 0.09 | 0.446 | 1.22 | 0.542 | / |
| Back Side | Standard | QPSK | 20 | 50% | low | 19100 | 1900 | 20.65 | 21.5 | 0.07 | 0.343 | 1.22 | 0.417 | / |
| Bottom Side | Standard | QPSK | 20 | 50% | low | 19100 | 1900 | 20.65 | 21.5 | 0.06 | 0.486 | 1.22 | 0.591 | / |

Table 14.7: SAR Values for LTE Band 4

| Test Position | Cover Type | Mode | | | | Channel | Frequency (MHz) | Measured power (dBm) | Tune-up (dBm) | Power Drift (dB) | Limit of 1gSAR 1.6 W/kg (mW/g) | | | Figure No. |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | Modulation | BW(MHz) | RB Allocation | RB Offset | | | | | | Measured SAR1g | Scaling Factor | Report SAR1g | |
| **Body SAR (Define 5mm)** | | | | | | | | | | | | | | |
| Left Side | Standard | QPSK | 20 | 1 | mid | 20300 | 1745 | 21.7 | 22 | 0.030 | 0.042 | 1.07 | 0.045 | / |
| Right Side | Standard | QPSK | 20 | 1 | mid | 20300 | 1745 | 21.7 | 22 | 0.160 | 0.048 | 1.07 | 0.051 | / |
| Front Side | Standard | QPSK | 20 | 1 | mid | 20300 | 1745 | 21.7 | 22 | -0.040 | 0.657 | 1.07 | 0.704 | / |
| Back Side | Standard | QPSK | 20 | 1 | mid | 20300 | 1745 | 21.7 | 22 | 0.010 | 0.633 | 1.07 | 0.678 | / |
| Bottom Side | Standard | QPSK | 20 | 1 | mid | 20300 | 1745 | 21.7 | 22 | 0.180 | 0.938 | 1.07 | 1.005 | / |
| Left Side | Standard | QPSK | 20 | 50% | low | 20300 | 1745 | 20.73 | 22 | 0.010 | 0.040 | 1.34 | 0.053 | / |
| Right Side | Standard | QPSK | 20 | 50% | low | 20300 | 1745 | 20.73 | 22 | 0.020 | 0.046 | 1.34 | 0.062 | / |
| Front Side | Standard | QPSK | 20 | 50% | low | 20300 | 1745 | 20.73 | 22 | 0.060 | 0.594 | 1.34 | 0.796 | / |
| Back Side | Standard | QPSK | 20 | 50% | low | 20300 | 1745 | 20.73 | 22 | 0.040 | 0.640 | 1.34 | 0.857 | / |
| Bottom Side | Standard | QPSK | 20 | 50% | low | 20300 | 1745 | 20.73 | 22 | 0.170 | 0.942 | 1.34 | **1.262** | **13** |
| Bottom Side | Standard | QPSK | 20 | 1 | mid | 20050 | 1720 | 21.65 | 22 | 0.140 | 0.787 | 1.08 | 0.853 | / |
| Bottom Side | Standard | QPSK | 20 | 1 | mid | 20175 | 1732.5 | 21.65 | 22 | 0.150 | 0.862 | 1.08 | 0.934 | / |
| Bottom Side | Standard | QPSK | 20 | 50% | low | 20050 | 1720 | 20.63 | 22 | 0.160 | 0.750 | 1.37 | 1.028 | / |
| Bottom Side | Standard | QPSK | 20 | 50% | low | 20175 | 1732.5 | 20.69 | 22 | 0.170 | 0.814 | 1.35 | 1.101 | / |
| **Body SAR (Define 5mmRepeated)** | | | | | | | | | | | | | | |
| Bottom Side | Standard | QPSK | 20 | 50% | low | 20300 | 1745 | 20.73 | 22 | 0.090 | 0.829 | 1.34 | 1.111 | / |
| **Test Position** | **Cover Type** | **Mode** | | | | **Channel** | **Frequency (MHz)** | **Measured power (dBm)** | **Tune-up (dBm)** | **Power Drift (dB)** | **Limit of 10gSAR 4.0 W/kg (mW/g)** | | | **Figure No.** |
| | | **Modulation** | **BW(MHz)** | **RB Allocation** | **RB Offset** | | | | | | **Measured SAR10g** | **Scaling Factor** | **Report SAR10g** | |
| **Limb SAR (Distance 0mm)** | | | | | | | | | | | | | | |
| Left Side | Standard | QPSK | 20 | 1 | mid | 20300 | 1745 | 21.7 | 22 | 0.04 | 0.103 | 1.07 | 0.110 | / |
| Right Side | Standard | QPSK | 20 | 1 | mid | 20300 | 1745 | 21.7 | 22 | 0.18 | 0.0754 | 1.07 | 0.081 | / |
| Front Side | Standard | QPSK | 20 | 1 | mid | 20300 | 1745 | 21.7 | 22 | 0.12 | 1.49 | 1.07 | 1.597 | / |
| Back Side | Standard | QPSK | 20 | 1 | mid | 20300 | 1745 | 21.7 | 22 | 0.07 | 1.32 | 1.07 | 1.414 | / |
| Bottom Side | Standard | QPSK | 20 | 1 | mid | 20300 | 1745 | 21.7 | 22 | 0.14 | 2.23 | 1.07 | 2.389 | / |
| Left Side | Standard | QPSK | 20 | 50% | low | 20300 | 1745 | 20.73 | 22 | 0.04 | 0.0728 | 1.34 | 0.098 | / |
| Right Side | Standard | QPSK | 20 | 50% | low | 20300 | 1745 | 20.73 | 22 | 0.08 | 0.0747 | 1.34 | 0.100 | / |
| Front Side | Standard | QPSK | 20 | 50% | low | 20300 | 1745 | 20.73 | 22 | -0.01 | 1.36 | 1.34 | 1.822 | / |
| Back Side | Standard | QPSK | 20 | 50% | low | 20300 | 1745 | 20.73 | 22 | 0.08 | 1.21 | 1.34 | 1.621 | / |
| Bottom Side | Standard | QPSK | 20 | 50% | low | 20300 | 1745 | 20.73 | 22 | -0.09 | 1.93 | 1.34 | **2.586** | **14** |
| Bottom Side | Standard | QPSK | 20 | 1 | mid | 20050 | 1720 | 21.65 | 22 | 0.08 | 1.24 | 1.08 | 1.344 | / |
| Bottom Side | Standard | QPSK | 20 | 1 | mid | 20175 | 1732.5 | 21.65 | 22 | 0.08 | 1.36 | 1.08 | 1.474 | / |
| Bottom Side | Standard | QPSK | 20 | 50% | low | 20050 | 1720 | 20.63 | 22 | 0.17 | 0.982 | 1.37 | 1.346 | / |
| Bottom Side | Standard | QPSK | 20 | 50% | low | 20175 | 1732.5 | 20.69 | 22 | 0.15 | 1.07 | 1.35 | 1.447 | / |
| **Limb SAR (Distance 0mmRepeated)** | | | | | | | | | | | | | | |
| Bottom Side | Standard | QPSK | 20 | 1 | mid | 20300 | 1745 | 21.7 | 22 | 0.16 | 1.51 | 1.07 | 1.618 | / |

Table 14.8: SAR Values for LTE Band 5

| Test Position | Cover Type | Mode | | | | Channel | Frequency (MHz) | Measured power (dBm) | Tune-up (dBm) | Power Drift (dB) | Limit of 1gSAR 1.6 W/kg (mW/g) | | | Figure No. |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | Modulation | BW(MHz) | RB Allocation | RB Offset | | | | | | Measured SAR1g | Scaling Factor | Report SAR1g | |
| **Body SAR (Define 5mm)** | | | | | | | | | | | | | | |
| Left Side | Standard | QPSK | 10 | 1 | mid | 20450 | 829 | 22.23 | 23 | -0.080 | 0.170 | 1.19 | 0.203 | / |
| Right Side | Standard | QPSK | 10 | 1 | mid | 20450 | 829 | 22.23 | 23 | 0.090 | 0.244 | 1.19 | 0.291 | / |
| Front Side | Standard | QPSK | 10 | 1 | mid | 20450 | 829 | 22.23 | 23 | 0.070 | 0.593 | 1.19 | 0.708 | / |
| Back Side | Standard | QPSK | 10 | 1 | mid | 20450 | 829 | 22.23 | 23 | 0.010 | 0.606 | 1.19 | **0.724** | **15** |
| Bottom Side | Standard | QPSK | 10 | 1 | mid | 20450 | 829 | 22.23 | 23 | 0.180 | 0.209 | 1.19 | 0.250 | / |
| Left Side | Standard | QPSK | 10 | 50% | low | 20525 | 836.5 | 21.31 | 23 | 0.030 | 0.123 | 1.48 | 0.182 | / |
| Right Side | Standard | QPSK | 10 | 50% | low | 20525 | 836.5 | 21.31 | 23 | 0.160 | 0.185 | 1.48 | 0.273 | / |
| Front Side | Standard | QPSK | 10 | 50% | low | 20525 | 836.5 | 21.31 | 23 | 0.120 | 0.490 | 1.48 | 0.723 | / |
| Back Side | Standard | QPSK | 10 | 50% | low | 20525 | 836.5 | 21.31 | 23 | 0.010 | 0.433 | 1.48 | 0.639 | / |
| Bottom Side | Standard | QPSK | 10 | 50% | low | 20525 | 836.5 | 21.31 | 23 | 0.130 | 0.214 | 1.48 | 0.316 | / |
| Test Position | Cover Type | Mode | | | | Channel | Frequency (MHz) | Measured power (dBm) | Tune-up (dBm) | Power Drift (dB) | Limit of 10gSAR 4.0 W/kg (mW/g) | | | Figure No. |
| | | Modulation | BW(MHz) | RB Allocation | RB Offset | | | | | | Measured SAR10g | Scaling Factor | Report SAR10g | |
| **Limb SAR (Distance 0mm)** | | | | | | | | | | | | | | |
| Left Side | Standard | QPSK | 10 | 1 | mid | 20450 | 829 | 22.23 | 23 | 0.11 | 0.142 | 1.19 | 0.170 | / |
| Right Side | Standard | QPSK | 10 | 1 | mid | 20450 | 829 | 22.23 | 23 | 0.01 | 0.216 | 1.19 | 0.258 | / |
| Front Side | Standard | QPSK | 10 | 1 | mid | 20450 | 829 | 22.23 | 23 | -0.13 | 0.734 | 1.19 | 0.876 | / |
| Back Side | Standard | QPSK | 10 | 1 | mid | 20450 | 829 | 22.23 | 23 | 0.02 | 0.583 | 1.19 | 0.696 | / |
| Bottom Side | Standard | QPSK | 10 | 1 | mid | 20450 | 829 | 22.29 | 23 | 0.16 | 0.27 | 1.18 | 0.318 | / |
| Left Side | Standard | QPSK | 10 | 50% | low | 20525 | 836.5 | 21.31 | 23 | -0.07 | 0.101 | 1.48 | 0.149 | / |
| Right Side | Standard | QPSK | 10 | 50% | low | 20525 | 836.5 | 21.31 | 23 | 0.08 | 0.176 | 1.48 | 0.260 | / |
| Front Side | Standard | QPSK | 10 | 50% | low | 20525 | 836.5 | 21.31 | 23 | -0.17 | 0.62 | 1.48 | **0.915** | **16** |
| Back Side | Standard | QPSK | 10 | 50% | low | 20525 | 836.5 | 21.31 | 23 | -0.17 | 0.516 | 1.48 | 0.761 | / |
| Bottom Side | Standard | QPSK | 10 | 50% | low | 20525 | 836.5 | 21.31 | 23 | 0.14 | 0.276 | 1.48 | 0.407 | / |

Table 14.9: SAR Values for LTE Band 7

| Test Position | Cover Type | Mode | | | | Channel | Frequency (MHz) | Measured power (dBm) | Tune-up (dBm) | Power Drift (dB) | Limit of 1gSAR 1.6 W/kg (mW/g) | | | Figure No. |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | Modulation | BW(MHz) | RB Allocation | RB Offset | | | | | | Measured SAR1g | Scaling Factor | Report SAR1g | |
| **Body SAR (Define 5 mm)** | | | | | | | | | | | | | | |
| Left Side | Standard | QPSK | 20 | 1 | mid | 21350 | 2560 | 22.84 | 23 | 0.040 | 0.280 | 1.04 | 0.291 | / |
| Right Side | Standard | QPSK | 20 | 1 | mid | 21350 | 2560 | 22.84 | 23 | 0.060 | 0.047 | 1.04 | 0.049 | / |
| Front Side | Standard | QPSK | 20 | 1 | mid | 21350 | 2560 | 22.84 | 23 | -0.110 | 0.591 | 1.04 | 0.613 | / |
| Back Side | Standard | QPSK | 20 | 1 | mid | 21350 | 2560 | 22.84 | 23 | 0.090 | 0.635 | 1.04 | 0.659 | / |
| Bottom Side | Standard | QPSK | 20 | 1 | mid | 21350 | 2560 | 22.84 | 23 | 0.180 | 0.621 | 1.04 | 0.644 | / |
| Left Side | Standard | QPSK | 20 | 50% | high | 20850 | 2510 | 21.51 | 22 | 0.070 | 0.282 | 1.12 | 0.316 | / |
| Right Side | Standard | QPSK | 20 | 50% | high | 20850 | 2510 | 21.51 | 22 | 0.040 | 0.044 | 1.12 | 0.049 | / |
| Front Side | Standard | QPSK | 20 | 50% | high | 20850 | 2510 | 21.51 | 22 | -0.040 | 0.578 | 1.12 | 0.647 | / |
| Back Side | Standard | QPSK | 20 | 50% | high | 20850 | 2510 | 21.51 | 22 | 0.060 | 0.592 | 1.12 | **0.663** | **17** |
| Bottom Side | Standard | QPSK | 20 | 50% | high | 20850 | 2510 | 21.51 | 22 | 0.020 | 0.572 | 1.12 | 0.640 | / |
| Test Position | Cover Type | Mode | | | | Channel | Frequency (MHz) | Measured power (dBm) | Tune-up (dBm) | Power Drift (dB) | Limit of 10gSAR 4.0 W/kg (mW/g) | | | Figure No. |
| | | Modulation | BW(MHz) | RB Allocation | RB Offset | | | | | | Measured SAR10g | Scaling Factor | Report SAR10g | |
| **Limb SAR (Distance 0mm)** | | | | | | | | | | | | | | |
| Left Side | Standard | QPSK | 20 | 1 | mid | 21350 | 2560 | 22.84 | 23 | 0.19 | 0.259 | 1.04 | 0.269 | / |
| Right Side | Standard | QPSK | 20 | 1 | mid | 21350 | 2560 | 22.84 | 23 | -0.15 | 0.0375 | 1.04 | 0.039 | / |
| Front Side | Standard | QPSK | 20 | 1 | mid | 21350 | 2560 | 22.84 | 23 | 0.05 | 0.855 | 1.04 | 0.887 | / |
| Back Side | Standard | QPSK | 20 | 1 | mid | 21350 | 2560 | 22.84 | 23 | 0.12 | 0.671 | 1.04 | 0.696 | / |
| Bottom Side | Standard | QPSK | 20 | 1 | mid | 21350 | 2560 | 22.84 | 23 | 0.13 | 0.588 | 1.04 | 0.610 | / |
| Left Side | Standard | QPSK | 20 | 50% | high | 20850 | 2510 | 21.51 | 22 | 0.19 | 0.264 | 1.12 | 0.296 | / |
| Right Side | Standard | QPSK | 20 | 50% | high | 20850 | 2510 | 21.51 | 22 | 0.13 | 0.0372 | 1.12 | 0.042 | / |
| Front Side | Standard | QPSK | 20 | 50% | high | 20850 | 2510 | 21.51 | 22 | 0.16 | 0.836 | 1.12 | **0.936** | **18** |
| Back Side | Standard | QPSK | 20 | 50% | high | 20850 | 2510 | 21.51 | 22 | 0.16 | 0.687 | 1.12 | 0.769 | / |
| Bottom Side | Standard | QPSK | 20 | 50% | high | 20850 | 2510 | 21.51 | 22 | 0.13 | 0.596 | 1.12 | 0.667 | / |

Table 14.10: SAR Values for LTE Band 17

| Test Position | Cover Type | Mode | | | | Channel | Frequency (MHz) | Measured power (dBm) | Tune-up (dBm) | Power Drift (dB) | Limit of 1gSAR 1.6 W/kg (mW/g) | | | Figure No. |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | Modulation | BW(MHz) | RB Allocation | RB Offset | | | | | | Measured SAR1g | Scaling Factor | Report SAR1g | |
| **Body SAR (Define 5mm)** | | | | | | | | | | | | | | |
| Left Side | Standard | QPSK | 10 | 1 | mid | 23780 | 709 | 22.49 | 23 | -0.040 | 0.172 | 1.12 | 0.193 | / |
| Right Side | Standard | QPSK | 10 | 1 | mid | 23780 | 709 | 22.49 | 23 | -0.040 | 0.214 | 1.12 | 0.241 | / |
| Front Side | Standard | QPSK | 10 | 1 | mid | 23780 | 709 | 22.49 | 23 | -0.090 | 0.494 | 1.12 | **0.556** | **19** |
| Back Side | Standard | QPSK | 10 | 1 | mid | 23780 | 709 | 22.49 | 23 | -0.080 | 0.302 | 1.12 | 0.340 | / |
| Bottom Side | Standard | QPSK | 10 | 1 | mid | 23780 | 709 | 22.49 | 23 | 0.070 | 0.192 | 1.12 | 0.216 | / |
| Left Side | Standard | QPSK | 10 | 50% | mid | 23800 | 711 | 21.44 | 22 | -0.040 | 0.065 | 1.14 | 0.074 | / |
| Right Side | Standard | QPSK | 10 | 50% | mid | 23800 | 711 | 21.44 | 22 | -0.130 | 0.132 | 1.14 | 0.150 | / |
| Front Side | Standard | QPSK | 10 | 50% | mid | 23800 | 711 | 21.44 | 22 | -0.080 | 0.347 | 1.14 | 0.395 | / |
| Back Side | Standard | QPSK | 10 | 50% | mid | 23800 | 711 | 21.44 | 22 | 0.150 | 0.249 | 1.14 | 0.283 | / |
| Bottom Side | Standard | QPSK | 10 | 50% | mid | 23800 | 711 | 21.44 | 22 | -0.170 | 0.148 | 1.14 | 0.168 | / |
| Test Position | Cover Type | Mode | | | | Channel | Frequency (MHz) | Measured power (dBm) | Tune-up (dBm) | Power Drift (dB) | Limit of 10gSAR 4.0 W/kg (mW/g) | | | Figure No. |
| | | Modulation | BW(MHz) | RB Allocation | RB Offset | | | | | | Measured SAR10g | Scaling Factor | Report SAR10g | |
| **Limb SAR (Distance 0mm)** | | | | | | | | | | | | | | |
| Left Side | Standard | QPSK | 10 | 1 | mid | 23780 | 709 | 22.49 | 23 | 0.020 | 0.168 | 1.12 | 0.189 | / |
| Right Side | Standard | QPSK | 10 | 1 | mid | 23780 | 709 | 22.49 | 23 | 0.050 | 0.212 | 1.12 | 0.238 | / |
| Front Side | Standard | QPSK | 10 | 1 | mid | 23780 | 709 | 22.49 | 23 | -0.020 | 0.583 | 1.12 | **0.656** | **20** |
| Back Side | Standard | QPSK | 10 | 1 | mid | 23780 | 709 | 22.49 | 23 | 0.080 | 0.406 | 1.12 | 0.457 | / |
| Bottom Side | Standard | QPSK | 10 | 1 | mid | 23780 | 709 | 22.49 | 23 | 0.010 | 0.269 | 1.12 | 0.303 | / |
| Left Side | Standard | QPSK | 10 | 50% | mid | 23800 | 711 | 21.44 | 22 | 0.050 | 0.129 | 1.14 | 0.147 | / |
| Right Side | Standard | QPSK | 10 | 50% | mid | 23800 | 711 | 21.44 | 22 | 0.110 | 0.163 | 1.14 | 0.185 | / |
| Front Side | Standard | QPSK | 10 | 50% | mid | 23800 | 711 | 21.44 | 22 | -0.050 | 0.448 | 1.14 | 0.510 | / |
| Back Side | Standard | QPSK | 10 | 50% | mid | 23800 | 711 | 21.44 | 22 | 0.070 | 0.307 | 1.14 | 0.349 | / |
| Bottom Side | Standard | QPSK | 10 | 50% | mid | 23800 | 711 | 21.44 | 22 | 0.050 | 0.207 | 1.14 | 0.235 | / |

## Table 14.11: SAR Values for LTE Band 41

| Test Position | Cover Type | Mode | | | | Channel | Frequency (MHz) | Measured power (dBm) | Tune-up (dBm) | Power Drift (dB) | Limit of 1gSAR 1.6 W/kg (mW/g) | | | Figure No. |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | Modulation | BW(MHz) | RB Allocation | RB Offset | | | | | | Measured SAR1g | Scaling Factor | Report SAR1g | |
| **Body SAR (Define 5mm)** | | | | | | | | | | | | | | |
| Left Side | Standard | QPSK | 20 | 1 | mid | 41140 | 2645 | 22.16 | 23 | 0.030 | 0.110 | 1.21 | 0.133 | / |
| Right Side | Standard | QPSK | 20 | 1 | mid | 41140 | 2645 | 22.16 | 23 | 0.000 | 0.029 | 1.21 | 0.035 | / |
| Front Side | Standard | QPSK | 20 | 1 | mid | 41140 | 2645 | 22.16 | 23 | 0.050 | 0.255 | 1.21 | 0.309 | / |
| Back Side | Standard | QPSK | 20 | 1 | mid | 41140 | 2645 | 22.16 | 23 | 0.040 | 0.327 | 1.21 | 0.397 | / |
| Bottom Side | Standard | QPSK | 20 | 1 | mid | 41140 | 2645 | 22.16 | 23 | -0.090 | 0.356 | 1.21 | **0.432** | **21** |
| Left Side | Standard | QPSK | 20 | 50% | mid | 41140 | 2645 | 21.17 | 22 | 0.010 | 0.114 | 1.21 | 0.138 | / |
| Right Side | Standard | QPSK | 20 | 50% | mid | 41140 | 2645 | 21.17 | 22 | 0.010 | 0.028 | 1.21 | 0.033 | / |
| Front Side | Standard | QPSK | 20 | 50% | mid | 41140 | 2645 | 21.17 | 22 | 0.090 | 0.254 | 1.21 | 0.307 | / |
| Back Side | Standard | QPSK | 20 | 50% | mid | 41140 | 2645 | 21.17 | 22 | 0.090 | 0.310 | 1.21 | 0.375 | / |
| Bottom Side | Standard | QPSK | 20 | 50% | mid | 41140 | 2645 | 21.17 | 22 | 0.040 | 0.340 | 1.21 | 0.412 | / |
| **Test Position** | **Cover Type** | **Mode** | | | | **Channel** | **Frequency (MHz)** | **Measured power (dBm)** | **Tune-up (dBm)** | **Power Drift (dB)** | **Limit of 10gSAR 4.0 W/kg (mW/g)** | | | **Figure No.** |
| | | **Modulation** | **BW(MHz)** | **RB Allocation** | **RB Offset** | | | | | | **Measured SAR10g** | **Scaling Factor** | **Report SAR10g** | |
| **Limb SAR (Distance 0mm)** | | | | | | | | | | | | | | |
| Left Side | Standard | QPSK | 20 | 1 | mid | 41140 | 2645 | 22.16 | 23 | 0.12 | 0.105 | 1.21 | 0.127 | / |
| Right Side | Standard | QPSK | 20 | 1 | mid | 41140 | 2645 | 22.16 | 23 | 0.01 | 0.0196 | 1.21 | 0.024 | / |
| Front Side | Standard | QPSK | 20 | 1 | mid | 41140 | 2645 | 22.16 | 23 | 0.15 | 0.377 | 1.21 | **0.457** | **22** |
| Back Side | Standard | QPSK | 20 | 1 | mid | 41140 | 2645 | 22.16 | 23 | -0.08 | 0.322 | 1.21 | 0.391 | / |
| Bottom Side | Standard | QPSK | 20 | 1 | mid | 41140 | 2645 | 22.16 | 23 | 0.16 | 0.33 | 1.21 | 0.400 | / |
| Left Side | Standard | QPSK | 20 | 50% | mid | 41140 | 2645 | 21.17 | 22 | 0.17 | 0.115 | 1.21 | 0.139 | / |
| Right Side | Standard | QPSK | 20 | 50% | mid | 41140 | 2645 | 21.17 | 22 | 0.06 | 0.02 | 1.21 | 0.024 | / |
| Front Side | Standard | QPSK | 20 | 50% | mid | 41140 | 2645 | 21.17 | 22 | -0.11 | 0.362 | 1.21 | 0.438 | / |
| Back Side | Standard | QPSK | 20 | 50% | mid | 41140 | 2645 | 21.17 | 22 | 0.03 | 0.308 | 1.21 | 0.373 | / |
| Bottom Side | Standard | QPSK | 20 | 50% | mid | 41140 | 2645 | 21.17 | 22 | 0.19 | 0.32 | 1.21 | 0.387 | / |

## Table 14.12: SAR Values for Wi-Fi 2.4G

| Test Position | Cover Type | Mode | BW(MHz) | Duty Cycle | Channel | Frequency (MHz) | Measured power (dBm) | Tune-up (dBm) | Power Drift (dB) | Limit of 1gSAR 1.6 W/kg (mW/g) | | | Figure No. |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | | | | | | | | Measured SAR1g | Scaling Factor | Report SAR1 | |
| **Body SAR (Define 5mm)** | | | | | | | | | | | | | |
| Left Side | Standard | 802.11b | 20 | 1:1 | 11 | 2462 | 18.16 | 19 | 0.020 | 0.027 | 1.21 | 0.033 | / |
| Right Side | Standard | 802.11b | 20 | 1:1 | 11 | 2462 | 18.16 | 19 | 0.110 | 0.036 | 1.21 | 0.044 | / |
| Front Side | Standard | 802.11b | 20 | 1:1 | 11 | 2462 | 18.16 | 19 | 0.030 | 0.021 | 1.21 | 0.025 | / |
| Back Side | Standard | 802.11b | 20 | 1:1 | 11 | 2462 | 18.16 | 19 | 0.030 | 0.273 | 1.21 | 0.331 | / |
| Top Side | Standard | 802.11b | 20 | 1:1 | 11 | 2462 | 18.16 | 19 | 0.070 | 0.293 | 1.21 | **0.356** | **23** |
| **Test Position** | **Cover Type** | **Mode** | **BW(MHz)** | **Duty Cycle** | **Channel** | **Frequency (MHz)** | **Measured power (dBm)** | **Tune-up (dBm)** | **Power Drift (dB)** | **Limit of 10gSAR 4.0 W/kg (mW/g)** | | | **Figure No.** |
| | | | | | | | | | | **Measured SAR10g** | **Scaling Factor** | **Report SAR10** | |
| **Limb SAR (Distance 0mm)** | | | | | | | | | | | | | |
| Left Side | Standard | 802.11b | 20 | 1:1 | 11 | 2462 | 18.16 | 19 | 0.13 | 0.0251 | 1.21 | 0.030 | / |
| Right Side | Standard | 802.11b | 20 | 1:1 | 11 | 2462 | 18.16 | 19 | 0.13 | 0.0411 | 1.21 | 0.050 | / |
| Front Side | Standard | 802.11b | 20 | 1:1 | 11 | 2462 | 18.16 | 19 | 0.16 | 0.0107 | 1.21 | 0.013 | / |
| Back Side | Standard | 802.11b | 20 | 1:1 | 11 | 2462 | 18.16 | 19 | 0.15 | 0.169 | 1.21 | 0.205 | / |
| Top Side | Standard | 802.11b | 20 | 1:1 | 11 | 2462 | 18.16 | 19 | 0.13 | 0.266 | 1.21 | **0.323** | **24** |

Table 14.13: SAR Values for Wi-Fi 5G U-NII Band 1

| Test Position | Cover Type | Mode | BW(MHz) | Duty Cycle | Channel | Frequency (MHz) | Measured power (dBm) | Tune-up (dBm) | Power Drift (dB) | Limit of 1gSAR 1.6 W/kg (mW/g) | | | Figure No. |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | | | | | | | | Measured SAR1g | Scaling Factor | Report SAR1g | |
| **Body SAR (Define 5mm)** | | | | | | | | | | | | | |
| Front Side | Standard | 802.11a | 20 | 1:1 | 36 | 5180 | 13.35 | 13.5 | 0.190 | 0.098 | 1.04 | 0.101 | / |
| Back Side | Standard | 802.11a | 20 | 1:1 | 36 | 5180 | 13.35 | 13.5 | 0.110 | 0.271 | 1.04 | **0.281** | **25** |
| Left Side | Standard | 802.11a | 20 | 1:1 | 36 | 5180 | 13.35 | 13.5 | 0.140 | 0.080 | 1.04 | 0.083 | / |
| Right Side | Standard | 802.11a | 20 | 1:1 | 36 | 5180 | 13.35 | 13.5 | 0.120 | 0.064 | 1.04 | 0.066 | / |
| Top Side | Standard | 802.11a | 20 | 1:1 | 36 | 5180 | 13.35 | 13.5 | 0.150 | 0.253 | 1.04 | 0.262 | / |
| **Test Position** | **Cover Type** | **Mode** | **BW(MHz)** | **Duty Cycle** | **Channel** | **Frequency (MHz)** | **Measured power (dBm)** | **Tune-up (dBm)** | **Power Drift (dB)** | **Limit of 10gSAR 4.0 W/kg (mW/g)** | | | **Figure No.** |
| | | | | | | | | | | **Measured SAR10g** | **Scaling Factor** | **Report SAR10g** | |
| **Limb SAR (Distance 0mm)** | | | | | | | | | | | | | |
| Front Side | Standard | 802.11a | 20 | 1:1 | 36 | 5180 | 13.35 | 13.5 | 0.19 | 0.0525 | 1.04 | 0.054 | / |
| Back Side | Standard | 802.11a | 20 | 1:1 | 36 | 5180 | 13.35 | 13.5 | 0.10 | 0.214 | 1.04 | **0.222** | **26** |
| Left Side | Standard | 802.11a | 20 | 1:1 | 36 | 5180 | 13.35 | 13.5 | 0.12 | 0.0104 | 1.04 | 0.011 | / |
| Right Side | Standard | 802.11a | 20 | 1:1 | 36 | 5180 | 13.35 | 13.5 | 0.14 | 0.0346 | 1.04 | 0.036 | / |
| Top Side | Standard | 802.11a | 20 | 1:1 | 36 | 5180 | 13.35 | 13.5 | -0.13 | 0.0828 | 1.04 | 0.086 | / |

Table 14.14: SAR Values for Wi-Fi 5G U-NII Band 3

| Test Position | Cover Type | Mode | BW(MHz) | Duty Cycle | Channel | Frequency (MHz) | Measured power (dBm) | Tune-up (dBm) | Power Drift (dB) | Limit of 1gSAR 1.6 W/kg (mW/g) | | | Figure No. |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | | | | | | | | Measured SAR1g | Scaling Factor | Report SAR1g | |
| **Body SAR (Define 5mm)** | | | | | | | | | | | | | |
| Top Side | Standard | 802.11n | 40 | 1:1 | 159 | 5795 | 13.65 | 14 | -0.070 | 0.355 | 1.08 | **0.385** | **27** |
| Left Side | Standard | 802.11n | 40 | 1:1 | 159 | 5795 | 13.65 | 14 | 0.060 | 0.043 | 1.08 | 0.047 | / |
| Right Side | Standard | 802.11n | 40 | 1:1 | 159 | 5795 | 13.65 | 14 | 0.130 | 0.089 | 1.08 | 0.096 | / |
| Front Side | Standard | 802.11n | 40 | 1:1 | 159 | 5795 | 13.65 | 14 | 0.050 | 0.171 | 1.08 | 0.185 | / |
| Back Side | Standard | 802.11n | 40 | 1:1 | 159 | 5795 | 13.65 | 14 | 0.140 | 0.227 | 1.08 | 0.246 | / |
| **Test Position** | **Cover Type** | **Mode** | **BW(MHz)** | **Duty Cycle** | **Channel** | **Frequency (MHz)** | **Measured power (dBm)** | **Tune-up (dBm)** | **Power Drift (dB)** | **Limit of 10gSAR 4.0 W/kg (mW/g)** | | | **Figure No.** |
| | | | | | | | | | | **Measured SAR10g** | **Scaling Factor** | **Report SAR10g** | |
| **Limb SAR (Distance 0mm)** | | | | | | | | | | | | | |
| Front Side | Standard | 802.11n | 40 | 1:1 | 159 | 5795 | 13.65 | 14 | 0.19 | 0.0539 | 1.00 | 0.054 | / |
| Back Side | Standard | 802.11n | 40 | 1:1 | 159 | 5795 | 13.65 | 14 | 0.11 | 0.185 | 1.08 | **0.201** | **28** |
| Left Side | Standard | 802.11n | 40 | 1:1 | 159 | 5795 | 13.65 | 14 | 0.13 | 0.0396 | 1.00 | 0.040 | / |
| Right Side | Standard | 802.11n | 40 | 1:1 | 159 | 5795 | 13.65 | 14 | 0.17 | 0.0551 | 1.08 | 0.060 | / |
| Top Side | Standard | 802.11n | 40 | 1:1 | 159 | 5795 | 13.65 | 14 | 0.18 | 0.149 | 1.08 | 0.162 | / |

## 14.2. Standalone SAR Test Result For C21T00091-SAR01-V01

Table 14.15: SAR Values for LTE Band 4

| Test Position | Cover Type | Mode | | | | Channel | Frequency (MHz) | Measured power (dBm) | Tune-up (dBm) | Power Drift (dB) | Limit of 1gSAR 1.6 W/kg (mW/g) | | | Figure No. |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | Modulation | BW(MHz) | RB Allocation | RB Offset | | | | | | Measured SAR1g | Scaling Factor | Report SAR1g | |
| **Body SAR (5mm)-N08-BA04** | | | | | | | | | | | | | | |
| Bottom Side | Standard | QPSK | 20 | 50% | low | 20300 | 1745 | 20.73 | 22 | -0.030 | 0.573 | 1.34 | 0.768 | / |
| **Body SAR (5mm)-N08-BB01** | | | | | | | | | | | | | | |
| Bottom Side | Standard | QPSK | 20 | 50% | low | 20300 | 1745 | 20.63 | 22 | -0.040 | 0.538 | 1.37 | 0.738 | / |
| **Body SAR (5mm)-N09-BA04** | | | | | | | | | | | | | | |
| Bottom Side | Standard | QPSK | 20 | 50% | low | 20300 | 1745 | 20.69 | 22 | 0.040 | 0.629 | 1.35 | **0.850** | **1** |
| **Body SAR (5mm)-N09-BB01** | | | | | | | | | | | | | | |
| Bottom Side | Standard | QPSK | 20 | 50% | low | 20300 | 1745 | 20.69 | 22 | -0.080 | 0.424 | 1.35 | 0.573 | / |
| **Test Position** | **Cover Type** | **Mode** | | | | **Channel** | **Frequency (MHz)** | **Measured power (dBm)** | **Tune-up (dBm)** | **Power Drift (dB)** | **Limit of 10gSAR 4.0 W/kg (mW/g)** | | | **Figure No.** |
| | | **Modulation** | **BW(MHz)** | **RB Allocation** | **RB Offset** | | | | | | **Measured SAR10g** | **Scaling Factor** | **Report SAR10g** | |
| **Limb SAR (Distance 0mm)-N08-BA04** | | | | | | | | | | | | | | |
| Bottom Side | Standard | QPSK | 20 | 50% | low | 20300 | 1745 | 20.73 | 22 | -0.03 | 0.608 | 1.34 | 0.815 | / |
| **Limb SAR (Distance 0mm)-N08-BB01** | | | | | | | | | | | | | | |
| Bottom Side | Standard | QPSK | 20 | 50% | low | 20300 | 1745 | 20.73 | 22 | -0.03 | 0.58 | 1.34 | 0.777 | / |
| **Limb SAR (Distance 0mm)-N09-BA04** | | | | | | | | | | | | | | |
| Bottom Side | Standard | QPSK | 20 | 50% | low | 20300 | 1745 | 20.73 | 22 | -0.04 | 0.638 | 1.34 | 0.855 | / |
| **Limb SAR (Distance 0mm)-N09-BB01** | | | | | | | | | | | | | | |
| Bottom Side | Standard | QPSK | 20 | 50% | low | 20300 | 1745 | 20.73 | 22 | -0.05 | 0.652 | 1.34 | **0.873** | **2** |

Table 14.16: SAR Values for Wi-Fi 2.4G

| Test Position | Cover Type | Mode | BW(MHz) | Duty Cycle | Channel | Frequency (MHz) | Measured power (dBm) | Tune-up (dBm) | Power Drift (dB) | Limit of 10gSAR 4.0 W/kg (mW/g) | | | Figure No. |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | | | | | | | | Measured | Scaling | Report SAR10 | |
| **Limb SAR (Distance 0mm)-N08-BA04** | | | | | | | | | | | | | |
| Top Side | Standard | 802.11b | 20 | 1:1 | 11 | 2462 | 18.16 | 19 | 0.11 | 0.123 | 1.21 | 0.149 | / |
| **Limb SAR (Distance 0mm)-N08-BB01** | | | | | | | | | | | | | |
| Top Side | Standard | 802.11b | 20 | 1:1 | 11 | 2462 | 18.16 | 19 | -0.13 | 0.118 | 1.21 | 0.143 | / |
| **Limb SAR (Distance 0mm)-N09-BA04** | | | | | | | | | | | | | |
| Top Side | Standard | 802.11b | 20 | 1:1 | 11 | 2462 | 18.16 | 19 | 0.10 | 0.102 | 1.21 | 0.124 | / |
| **Limb SAR (Distance 0mm)-N09-BB01** | | | | | | | | | | | | | |
| Top Side | Standard | 802.11b | 20 | 1:1 | 11 | 2462 | 18.16 | 19 | -0.10 | 0.142 | 1.21 | **0.172** | **3** |

Table 14.17: SAR Values for Wi-Fi 5G U-NII Band 3

| Test Position | Cover Type | Mode | BW(MHz) | Duty Cycle | Channel | Frequency (MHz) | Measured power (dBm) | Tune-up (dBm) | Power Drift (dB) | Limit of 1gSAR 1.6 W/kg (mW/g) | | | Figure No. |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | | | | | | | | Measured SAR1g | Scaling Factor | Report SAR1g | |
| **Body SAR (5mm)-N08-BA04** | | | | | | | | | | | | | |
| Top Side | Standard | 802.11n | 20 | 1:1 | 159 | 5795 | 13.65 | 14 | 0.070 | 0.241 | 1.08 | **0.261** | **4** |
| **Body SAR (5mm)-N08-BB01** | | | | | | | | | | | | | |
| Top Side | Standard | 802.11a | 20 | 1:1 | 159 | 5795 | 13.65 | 14 | 0.020 | 0.171 | 1.08 | 0.185 | / |
| **Body SAR (5mm)-N09-BA04** | | | | | | | | | | | | | |
| Top Side | Standard | 802.11a | 20 | 1:1 | 159 | 5795 | 13.65 | 14 | -0.060 | 0.208 | 1.08 | 0.225 | / |
| **Body SAR (5mm)-N09-BB01** | | | | | | | | | | | | | |
| Top Side | Standard | 802.11a | 20 | 1:1 | 159 | 5795 | 13.65 | 14 | 0.020 | 0.124 | 1.08 | 0.134 | / |

## 14.3. Simultaneous SAR Evaluation

Table 14.18 Simultaneous transmission SAR

| Standalone SAR for 2G(W/Kg) | | | | |
|---|---|---|---|---|
| Test Position | | GSM 850 | GSM 1900 | Highest SAR |
| Body 5mm | Phantom Side | 1.22 | 0.794 | 1.22 |
| | Ground Side | 1.102 | 0.662 | 1.102 |
| | Left Side | 0.276 | 0.134 | 0.276 |
| | Right Side | 0.477 | 0.083 | 0.477 |
| | Top Side | - | - | - |
| | Bottom Side | 0.439 | 1.077 | 1.077 |
| Limb 0mm | Phantom Side | 1.533 | 2.274 | 2.274 |
| | Ground Side | 1.44 | 2.197 | 2.197 |
| | Left Side | 0.239 | 0.216 | 0.239 |
| | Right Side | 0.422 | 0.076 | 0.422 |
| | Top Side | - | - | - |
| | Bottom Side | 0.537 | 2.263 | 2.263 |

| Standalone SAR for 3G(W/Kg) | | | | | |
|---|---|---|---|---|---|
| Test Position | | WCDMA Band II | WCDMA Band IV | WCDMA Band V | Highest SAR |
| Body 5mm | Phantom Side | 0.425 | 0.237 | 0.543 | 0.543 |
| | Ground Side | 0.369 | 0.291 | 0.371 | 0.371 |
| | Left Side | 0.039 | 0.033 | 0.124 | 0.124 |
| | Right Side | 0.034 | 0.019 | 0.192 | 0.192 |
| | Top Side | - | - | - | - |
| | Bottom Side | 1.2 | 1.142 | 0.198 | 1.2 |
| Limb 0mm | Phantom Side | 2.07 | 1.634 | 0.67 | 2.07 |
| | Ground Side | 1.788 | 1.491 | 0.58 | 1.788 |
| | Left Side | 0.15 | 0.1 | 0.115 | 0.15 |
| | Right Side | 0.069 | 0.097 | 0.214 | 0.214 |
| | Top Side | - | - | - | - |
| | Bottom Side | 1.843 | 2.518 | 0.262 | 2.518 |

| Standalone SAR for 4G(W/Kg) | | | | | | | | |
|---|---|---|---|---|---|---|---|---|
| Test Position | | LTE Band 2 | LTE Band 4 | LTE Band 5 | LTE Band7 | LTE Band17 | LTE Band41 | Highest SAR |
| Body 5mm | Phantom Side | 0.671 | 0.796 | 0.723 | 0.647 | 0.556 | 0.309 | 0.796 |
| | Ground Side | 0.601 | 0.857 | 0.724 | 0.663 | 0.34 | 0.397 | 0.857 |
| | Left Side | 0.043 | 0.053 | 0.203 | 0.316 | 0.193 | 0.138 | 0.316 |
| | Right Side | 0.022 | 0.062 | 0.291 | 0.049 | 0.241 | 0.035 | 0.291 |
| | Top Side | - | - | - | - | - | - | - |
| | Bottom Side | 0.867 | 1.262 | 0.316 | 0.644 | 0.216 | 0.432 | 1.262 |
| Limb 0mm | Phantom Side | 1.447 | 1.822 | 0.915 | 0.936 | 0.656 | 0.457 | 1.822 |
| | Ground Side | 1.285 | 1.621 | 0.761 | 0.769 | 0.457 | 0.391 | 1.621 |
| | Left Side | 0.106 | 0.11 | 0.17 | 0.296 | 0.189 | 0.139 | 0.296 |
| | Right Side | 0.048 | 0.1 | 0.26 | 0.042 | 0.238 | 0.024 | 0.26 |
| | Top Side | - | - | - | - | - | - | - |
| | Bottom Side | 1.472 | 2.586 | 0.407 | 0.667 | 0.303 | 0.391 | 2.586 |

| Simultaneous multi-band transmission | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|
| Test Position | | 2G | 3G | 4G | 2.4GHz | | WiFi | SUM | SUM |
| | | | | | BT | WiFi | 5G | 2.4GHz | 5G |
| Body 5mm | Phantom Side | 1.22 | 0.543 | 0.796 | 0.149 | 0.025 | 0.185 | 1.369 | 1.405 |
| | Ground Side | 1.102 | 0.371 | 0.857 | 0.149 | 0.331 | 0.281 | **1.433** | 1.383 |
| | Left Side | 0.276 | 0.124 | 0.316 | 0.149 | 0.033 | 0.083 | 0.465 | 0.399 |
| | Right Side | 0.477 | 0.192 | 0.291 | 0.149 | 0.044 | 0.096 | 0.626 | 0.573 |
| | Top Side | - | - | - | 0.149 | 0.356 | 0.385 | 0.356 | 0.385 |
| | Bottom Side | 1.077 | 1.2 | 1.262 | 0.149 | - | - | 1.411 | 1.262 |
| Limb 0mm | Phantom Side | 2.274 | 2.07 | 1.822 | 0.06 | 0.013 | 0.054 | 2.334 | 2.328 |
| | Ground Side | 2.197 | 1.788 | 1.621 | 0.06 | 0.205 | 0.222 | 2.402 | 2.419 |
| | Left Side | 0.239 | 0.15 | 0.296 | 0.06 | 0.03 | 0.04 | 0.356 | 0.336 |
| | Right Side | 0.422 | 0.214 | 0.26 | 0.06 | 0.05 | 0.06 | 0.482 | 0.482 |
| | Top Side | - | - | - | 0.06 | 0.323 | 0.162 | 0.323 | 0.162 |
| | Bottom Side | 2.263 | 2.518 | 2.586 | 0.06 | - | - | **2.646** | 2.586 |

According to the conducted power measurement result, we can draw the conclusion that: stand-alone SAR for Wi-Fi should be performed. Then, simultaneous transmission SAR for Wi-Fi/BT is considered with measurement results of GSM/WCDMA/LTE and Wi-Fi/BT.

According to the above table, the sum of reported SAR values for partial-body GSM/WCDMA/LTE and Wi-Fi < 1.6W/kg; the sum of reported SAR values for Limb GSM/WCDMA/LTE and Wi-Fi < 4.0W/kg. So the simultaneous transmission SAR is not required for Wi-Fi/BT transmitter.

## 14.4. SAR Measurement Variability

SAR measurement variability must be assessed for each frequency band, which is determined by the SAR probe calibration point and tissue-equivalent medium used for the device measurements. When both head and body tissue-equivalent media are required for SAR measurements in a frequency band, the variability measurement procedures should be applied to the tissue medium with the highest measured SAR, using the highest measured SAR configuration for that tissue-equivalent medium.

The following procedures are applied to determine if repeated measurements are required.

1) Repeated measurement is not required when the original highest measured SAR is < 0.80 W/kg; steps2) through 4) do not apply.

2) When the original highest measured SAR is ≥ 0.80 W/kg, repeat that measurement once.

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 (~ 10% from the 1-g SAR limit).

4) Perform a third repeated measurement only if the original, first or second repeated measurement is ≥1.5 W/kg and the ratio of largest to smallest SAR for the original, first and second repeated measurements is > 1.20.

Table 14.5: SAR Measurement Variability (1g)

| Frequency | | Configuration | Test Position | Original SAR (W/kg) | First Repeated SAR (W/kg) | The Ratio |
|---|---|---|---|---|---|---|
| MHz | Ch. | | | | | |
| N/A | N/A | N/A | N/A | N/A | N/A | N/A |

Note: According to the KDB 865664 D01 repeated measurement is not required when the original highest measured SAR is < 0.8 W/kg.

## 15. Test Equipment List

| Item | Equipment Name | Type | Serial Number | Manufacturer | Cal. Date | Cal. interval |
|---|---|---|---|---|---|---|
| 1 | Network analyzer | N5242A | MY51221755 | Agilent | 2021-10-23 | 1 year |
| 2 | Power meter | NRVD | 102257 | RS | 2021-05-10 | 1 year |
| 3 | Power sensor | NRV-Z5 | 100241 | RS | 2021-05-10 | 1 year |
| 4 | Power sensor | NRV-Z5 | 100644 | RS | 2021-05-10 | 1 year |
| 5 | Signal Generator | E8247C | MY43000157 | Agilent | 2021-05-10 | 1 year |
| 6 | Amplifier | NTWPA-0086010F | 12023024 | rflight | N/A | N/A |
| 7 | Coupler | 778D | MY4825551 | Agilent | 2021-05-10 | 1 year |
| 8 | BTS | MT8820C | 6201240338 | Anritsu | 2021-10-23 | 1 year |
| 9 | BTS | CMU200 | 123102 | RS | 2021-5-10 | 1 year |
| 10 | E-field Probe | EX3DV4 | 7633 | SPEAG | 2021-04-09 | 1 year |
| 11 | DAE | DAE4 | 1244 | SPEAG | 2021-03-23 | 1 year |
| 12 | Dipole Validation Kit | D1750V2 | 1044 | SPEAG | 2021-09-18 | 1 year |
| 13 | Dipole Validation Kit | D2450V2 | 858 | SPEAG | 2021-09-18 | 1 year |
| 14 | Dipole Validation Kit | D5GHzV2 | 1172 | SPEAG | 2021-03-23 | 1 year |

# Annex A: Graph Results

## Fig .1 LTE B4 50RB 0offset Bottom Mode High 5mm

Date/Time: 2021/11/26

Electronics: DAE4 Sn1581

Medium parameters used (interpolated): f = 1745 MHz; $\sigma$ = 1.379 S/m; $\varepsilon_r$ = 39.381; $\rho$ = 1000 kg/m$^3$

Ambient Temperature:22.0°C Liquid Temperature:22.0°C

Communication System: LTE B4 ; Frequency: 1745 MHz; Duty Cycle: 1:1

Probe: EX3DV4 - SN7401ConvF(8.62, 8.62, 8.62) @ 1745 MHz

**LTE B4 50RB 0offset Bottom Mode High 5mm/Area Scan (51x81x1):**

Measurement grid: dx=10 mm, dy=10 mm

Maximum value of SAR (Measurement) = 1.04 W/kg

**LTE B4 50RB 0offset Bottom Mode High 5mm/Zoom Scan (7x7x7)/Cube 0:**

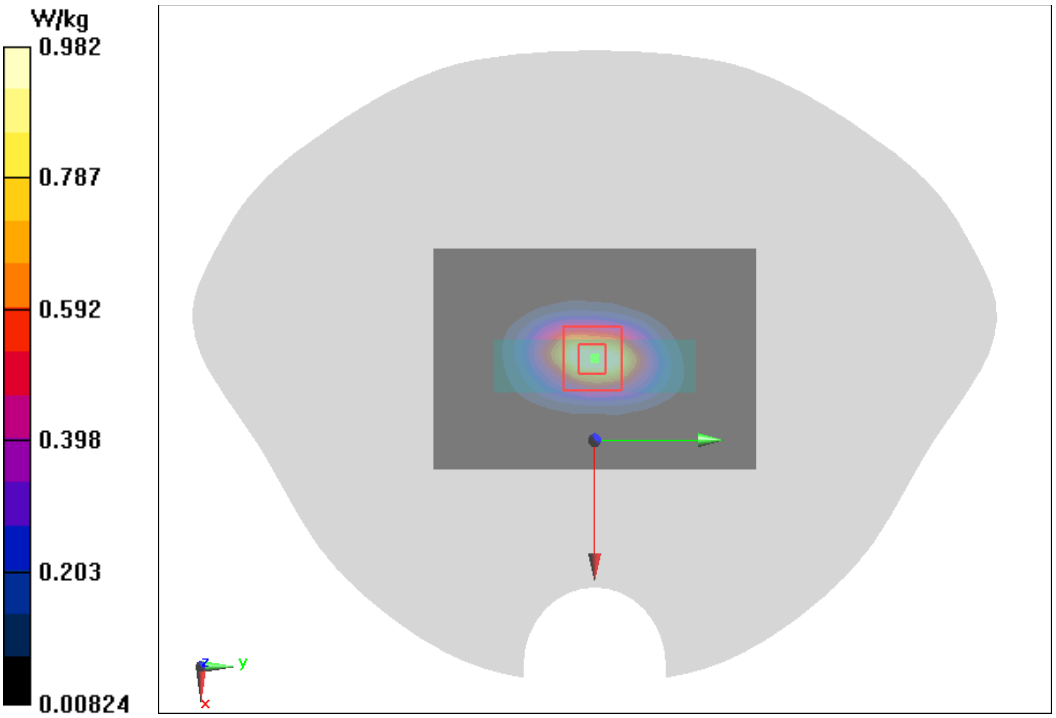
Measurement grid: dx=5mm, dy=5mm, dz=5mm

Reference Value = 27.11 V/m; Power Drift = 0.04 dB

Peak SAR (extrapolated) = 1.18 W/kg

SAR(1 g) = 0.629 W/kg; SAR(10 g) = 0.319 W/kg

Maximum value of SAR (measured) = 0.982 W/kg



## Fig .2 LTE B4 50RB 0offset Bottom Mode High 0mm

Date/Time: 2021/11/29

Electronics: DAE4 Sn1581

Medium parameters used (interpolated): f = 1745 MHz; $\sigma$ = 1.336 S/m; $\varepsilon_r$ = 38.981; $\rho$ = 1000 kg/m$^3$

Ambient Temperature:21.9°C  Liquid Temperature:21.9°C

Communication System: LTE B4 ;  Frequency: 1745 MHz; Duty Cycle: 1:1

Probe: EX3DV4 - SN7401ConvF(8.62, 8.62, 8.62) @ 1745 MHz

**LTE B4 50RB 0offset Bottom Mode High 0mm/Area Scan (51x81x1):**

Measurement grid: dx=10 mm, dy=10 mm

Maximum value of SAR (Measurement) = 2.57 W/kg

**LTE B4 50RB 0offset Bottom Mode High 0mm/Zoom Scan (7x7x7)/Cube 0:**

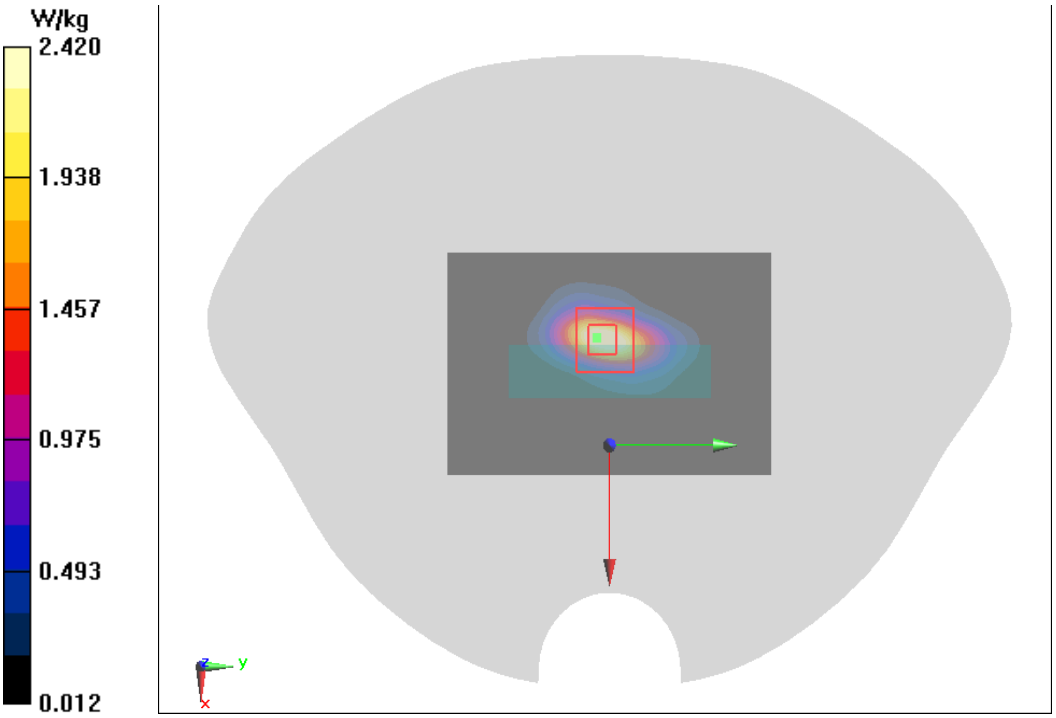
Measurement grid: dx=5mm, dy=5mm, dz=5mm

Reference Value = 24.74 V/m; Power Drift = -0.05 dB

Peak SAR (extrapolated) = 2.96 W/kg

SAR(1 g) = 1.41 W/kg; SAR(10 g) = 0.652 W/kg

Maximum value of SAR (measured) = 2.42 W/kg



## Fig .3 Wi-Fi2.4G 11b Top Mode High 0mm

Date/Time: 2021/11/29

Electronics: DAE4 Sn1581

Medium parameters used (interpolated): f = 2462 MHz; $\sigma$ = 1.878 S/m; $\varepsilon_r$ = 38.099; $\rho$ = 1000 kg/m$^3$

Ambient Temperature:21.9°C Liquid Temperature:21.9°C

Communication System: WLan 2450 ; Frequency: 2462 MHz; Duty Cycle: 1:1

Probe: EX3DV4 - SN7401ConvF(7.9, 7.9, 7.9) @ 2462 MHz

**Wi-Fi2.4G 11b Top Mode High 0mm/Area Scan (61x101x1):**

Measurement grid: dx=10 mm, dy=10 mm

Maximum value of SAR (Measurement) = 0.412 W/kg

**Wi-Fi2.4G 11b Top Mode High 0mm/Zoom Scan (7x7x7)/Cube 0:**

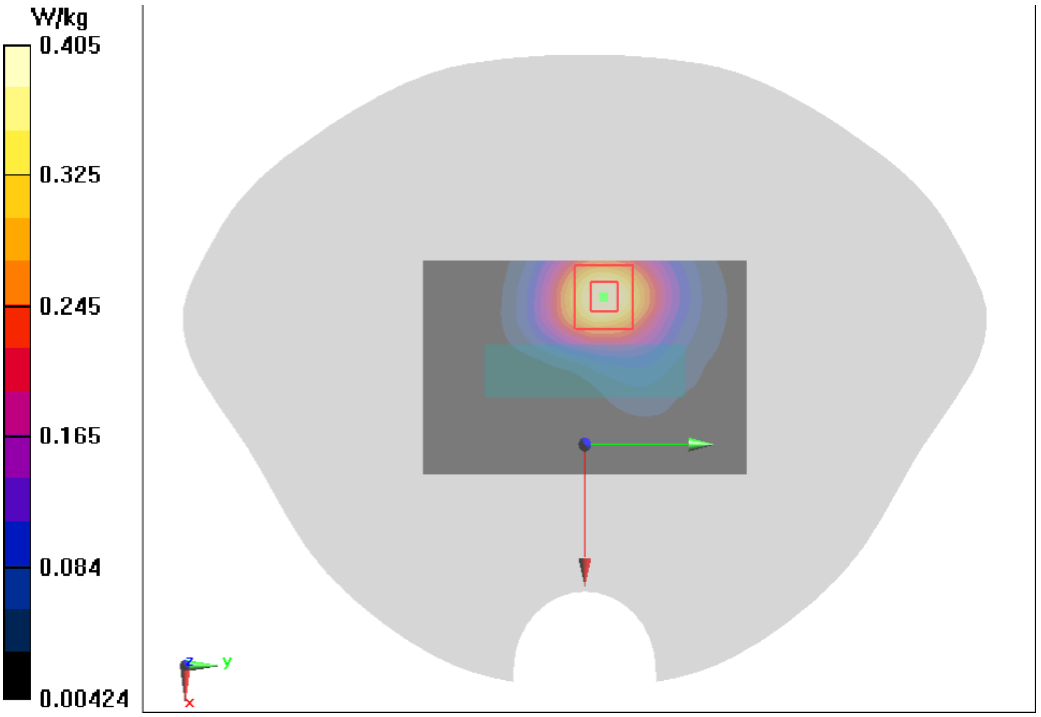
Measurement grid: dx=5mm, dy=5mm, dz=5mm

Reference Value = 5.253 V/m; Power Drift = -0.10 dB

Peak SAR (extrapolated) = 0.488 W/kg

SAR(1 g) = 0.265 W/kg; SAR(10 g) = 0.142 W/kg

Maximum value of SAR (measured) = 0.405 W/kg



## Fig .4 Wi-Fi5G 11n Top Mode High 5mm

Date/Time: 2021/11/26

Electronics: DAE4 Sn1581

Medium parameters used (interpolated): f = 5795 MHz; $\sigma$ = 5.149 S/m; $\varepsilon_r$ = 34.628; $\rho$ = 1000 kg/m$^3$

Ambient Temperature:22.0°C Liquid Temperature:22.0°C

Communication System: 5G-U-NII-3 ; Frequency: 5795 MHz; Duty Cycle: 1:1

Probe: EX3DV4 - SN7401ConvF(5.19, 5.19, 5.19) @ 5795 MHz

**Wi-Fi5G 11n Top Mode High 5mm/Area Scan (81x121x1):**

Measurement grid: dx=10 mm, dy=10 mm

Maximum value of SAR (Measurement) = 0.518 W/kg

**Wi-Fi5G 11n Top Mode High 5mm/Zoom Scan (7x7x7)/Cube 0:**

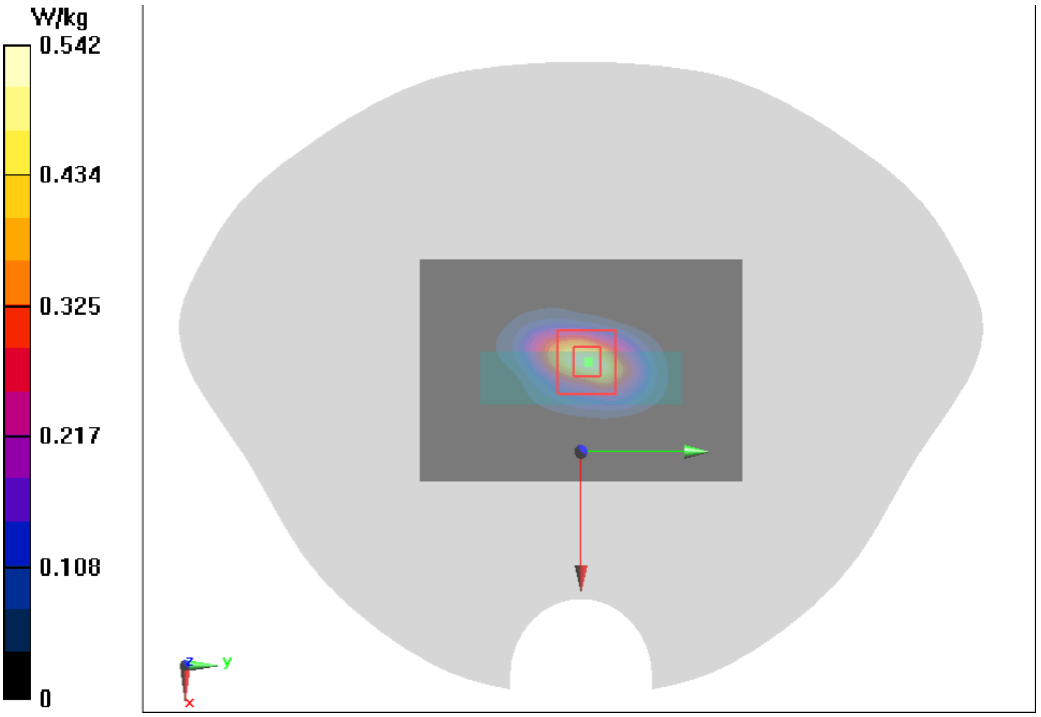
Measurement grid: dx=5mm, dy=5mm, dz=5mm

Reference Value = 1.508 V/m; Power Drift = 0.07 dB

Peak SAR (extrapolated) = 0.915 W/kg

SAR(1 g) = 0.241 W/kg; SAR(10 g) = 0.097 W/kg

Maximum value of SAR (measured) = 0.542 W/kg



# Annex B: System Check Plot

## Head 1750MHz-1

Date/Time: 2021/11/26

Electronics: DAE4 Sn1581

Medium parameters used: f = 1750 MHz; $\sigma$ = 1.383 S/m; $\varepsilon_r$ = 39.377; $\rho$ = 1000 kg/m$^3$

Ambient Temperature:22.0°C Liquid Temperature:22.0°C

Communication System: CW ; Frequency: 1750 MHz; Duty Cycle: 1:1

Probe: EX3DV4 - SN7401ConvF(8.62, 8.62, 8.62) @ 1750 MHz

**System Check Head 1750MHz/Area Scan (71x61x1):**

Measurement grid: dx=10 mm, dy=10 mm

Maximum value of SAR (Measurement) = 14.4 W/kg

**System Check Head 1750MHz/Zoom Scan (7x7x7) (7x7x7)/Cube 0:**

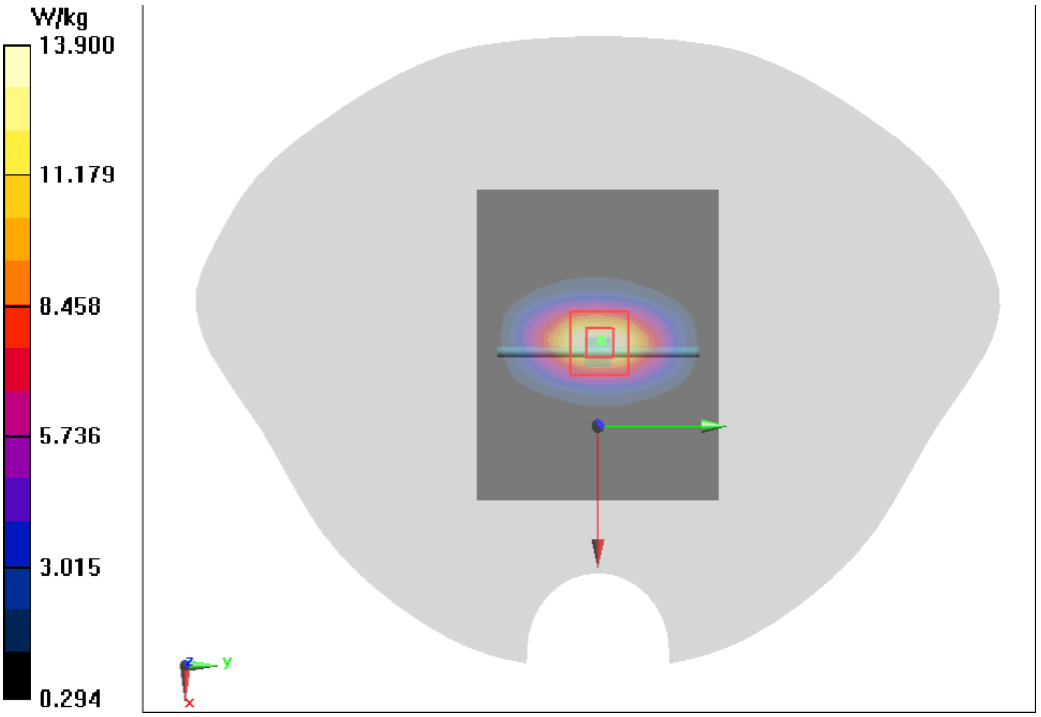
Measurement grid: dx=5mm, dy=5mm, dz=5mm

Reference Value = 103.2 V/m; Power Drift = -0.09 dB

Peak SAR (extrapolated) = 16.7 W/kg

SAR(1 g) = 8.96 W/kg; SAR(10 g) = 4.77 W/kg

Maximum value of SAR (measured) = 13.9 W/kg



## Head 1750MHz-2

Date/Time: 2021/11/29

Electronics: DAE4 Sn1581

Medium parameters used: f = 1750 MHz; $\sigma$ = 1.300 S/m; $\varepsilon_r$ = 38.977; $\rho$ = 1000 kg/m$^3$

Ambient Temperature:21.9°C  Liquid Temperature:21.9°C

Communication System: CW ;  Frequency: 1750 MHz; Duty Cycle: 1:1

Probe: EX3DV4 - SN7401ConvF(8.62, 8.62, 8.62) @ 1750 MHz

**System Check Head 1750MHz/Area Scan (71x61x1):**

Measurement grid: dx=10 mm, dy=10 mm

Maximum value of SAR (Measurement) = 14.8 W/kg

**System Check Head 1750MHz/Zoom Scan (7x7x7) (7x7x7)/Cube 0:**

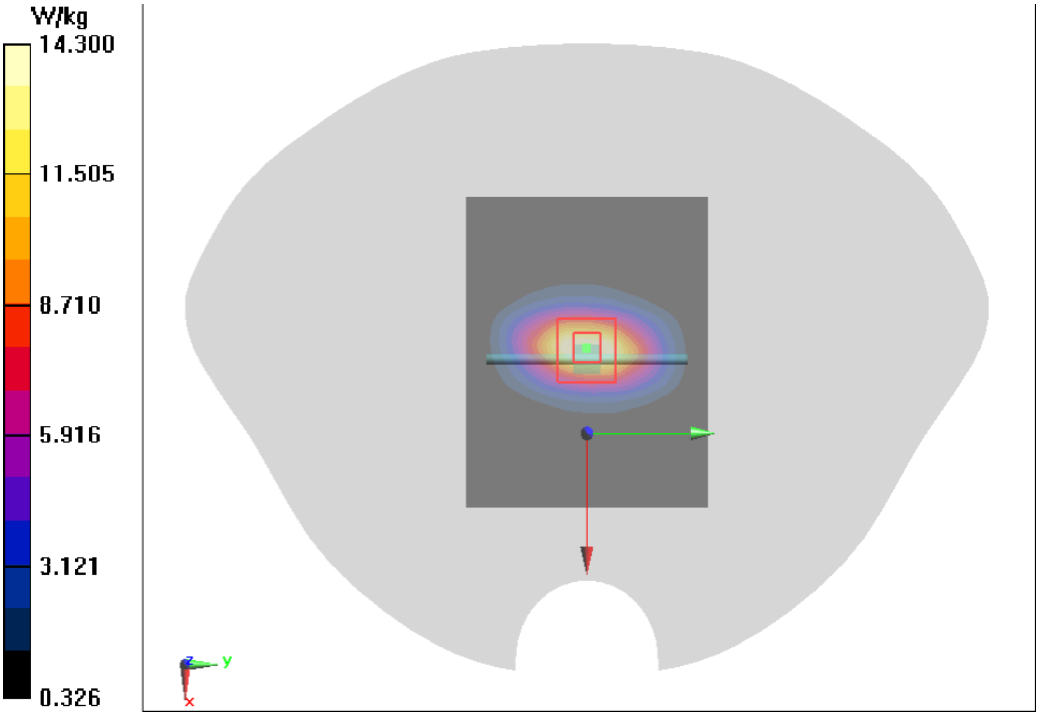
Measurement grid: dx=5mm, dy=5mm, dz=5mm

Reference Value = 107.1 V/m; Power Drift = -0.08 dB

Peak SAR (extrapolated) = 17.2 W/kg

SAR(1 g) = 9.19 W/kg; SAR(10 g) = 4.9 W/kg

Maximum value of SAR (measured) = 14.3 W/kg



## Head 2450MHz-1

Date/Time: 2021/11/26

Electronics: DAE4 Sn1581

Medium parameters used (interpolated): f = 2450 MHz; $\sigma$ = 1.844 S/m; $\varepsilon_r$ = 37.824; $\rho$ = 1000 kg/m$^3$

Ambient Temperature:22.0°C Liquid Temperature:22.0°C

Communication System: CW ; Frequency: 2450 MHz; Duty Cycle: 1:1

Probe: EX3DV4 - SN7401ConvF(7.9, 7.9, 7.9) @ 2450 MHz

**System Check Head 2450MHz /Area Scan (101x101x1):**

Measurement grid: dx=10 mm, dy=10 mm

Maximum value of SAR (Measurement) = 15.0 W/kg

**System Check Head 2450MHz/Zoom Scan (7x7x7)/Cube 0:**

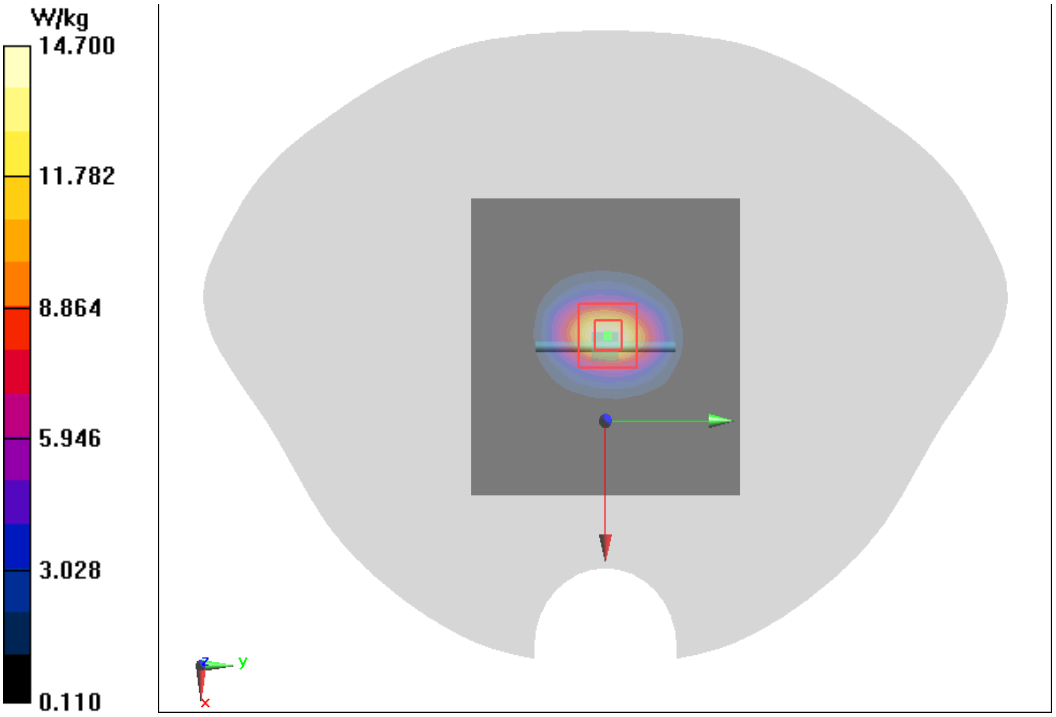
Measurement grid: dx=5mm, dy=5mm, dz=5mm

Reference Value = 84.32 V/m; Power Drift = 0.12 dB

Peak SAR (extrapolated) = 27.1 W/kg

SAR(1 g) = 12.9 W/kg; SAR(10 g) = 5.99 W/kg

Maximum value of SAR (measured) = 14.7 W/kg



## Head 2450MHz-2

Date/Time: 2021/11/29

Electronics: DAE4 Sn1581

Medium parameters used: f = 2450 MHz; $\sigma$ = 1.868 S/m; $\varepsilon_r$ = 38.124; $\rho$ = 1000 kg/m$^3$

Ambient Temperature:21.9°C  Liquid Temperature:21.9°C

Communication System: CW ;  Frequency: 2450 MHz; Duty Cycle: 1:1

Probe: EX3DV4 - SN7401ConvF(7.9, 7.9, 7.9) @ 2450 MHz

**System Check Head 2450MHz/Area Scan (101x101x1):**

Measurement grid: dx=10 mm, dy=10 mm

Maximum value of SAR (Measurement) = 15.2 W/kg

**System Check Head 2450MHz/Zoom Scan (7x7x7)/Cube 0:**

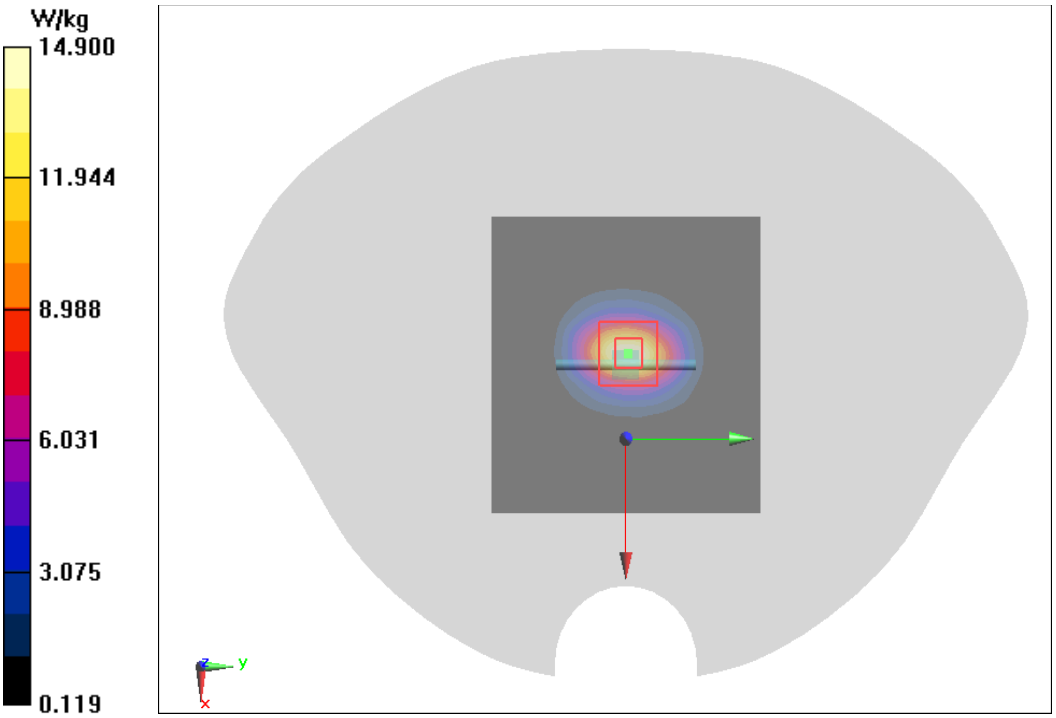
Measurement grid: dx=5mm, dy=5mm, dz=5mm

Reference Value = 84.58 V/m; Power Drift = 0.08 dB

Peak SAR (extrapolated) = 27.5 W/kg

SAR(1 g) = 13.1 W/kg; SAR(10 g) = 6.07 W/kg

Maximum value of SAR (measured) = 14.9 W/kg



## Head 5800MHz-1

Date/Time: 2021/11/26

Electronics: DAE4 Sn1581

Medium parameters used: f = 5800 MHz; $\sigma$ = 5.155 S/m; $\varepsilon_r$ = 34.618; $\rho$ = 1000 kg/m$^3$

Ambient Temperature:22.0°C  Liquid Temperature:22.0°C

Communication System: CW ;  Frequency: 5800 MHz; Duty Cycle: 1:1

Probe: EX3DV4 - SN7401ConvF(5.19, 5.19, 5.19) @ 5800 MHz

**System Check Head 5800MHz/Area Scan (91x91x1):**

Measurement grid: dx=10 mm, dy=10 mm

Maximum value of SAR (Measurement) = 19.0 W/kg

**System Check Head 5800MHz/Zoom Scan (4x4x1.4mm, graded), dist=1.4mm (7x7x7)/Cube 0:**

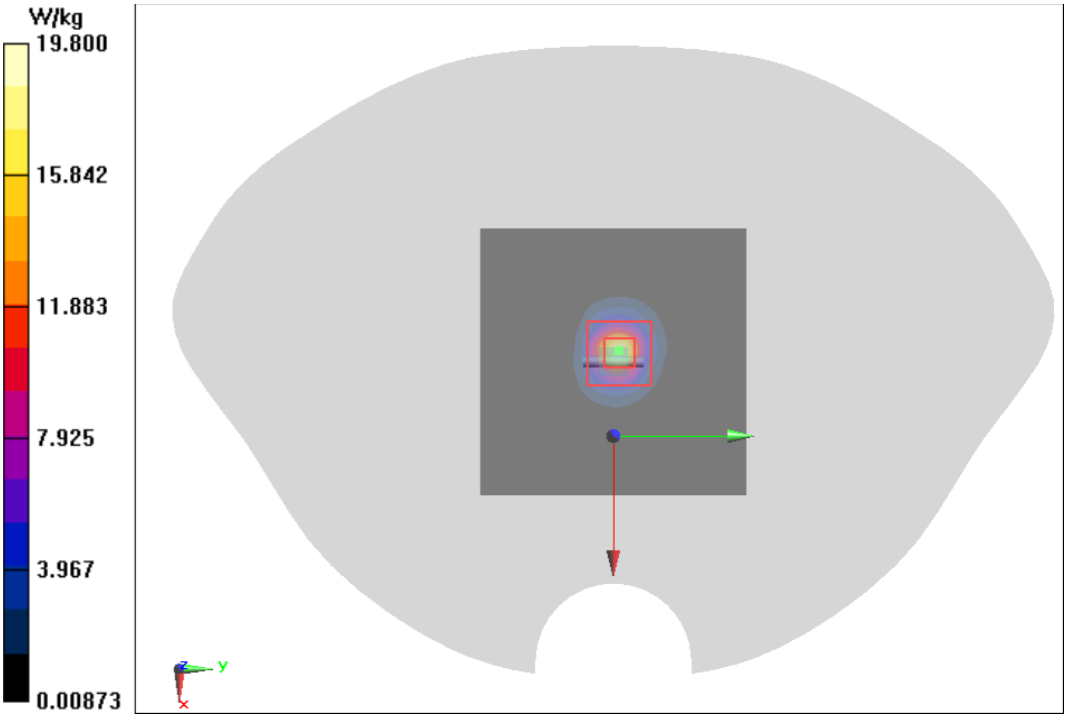
Measurement grid: dx=5mm, dy=5mm, dz=5mm

Reference Value = 62.01 V/m; Power Drift = 0.09 dB

Peak SAR (extrapolated) = 33.5 W/kg

SAR(1 g) = 7.43 W/kg; SAR(10 g) = 2.12 W/kg

Maximum value of SAR (measured) = 19.8 W/kg



## Head 5800MHz-2

Date/Time: 2021/11/29

Electronics: DAE4 Sn1581

Medium parameters used: f = 5800 MHz; $\sigma$ = 5.257 S/m; $\varepsilon_r$ = 36.025; $\rho$ = 1000 kg/m$^3$

Ambient Temperature:21.9°C  Liquid Temperature:21.9°C

Communication System: CW ;  Frequency: 5800 MHz; Duty Cycle: 1:1

Probe: EX3DV4 - SN7401ConvF(5.19, 5.19, 5.19) @ 5800 MHz

**System Check Head 5800MHz/Area Scan (91x91x1):**

Measurement grid: dx=10 mm, dy=10 mm

Maximum value of SAR (Measurement) = 19.4 W/kg

**System Check Head 5800MHz/Zoom Scan (4x4x1.4mm, graded), dist=1.4mm (7x7x7)/Cube 0:**

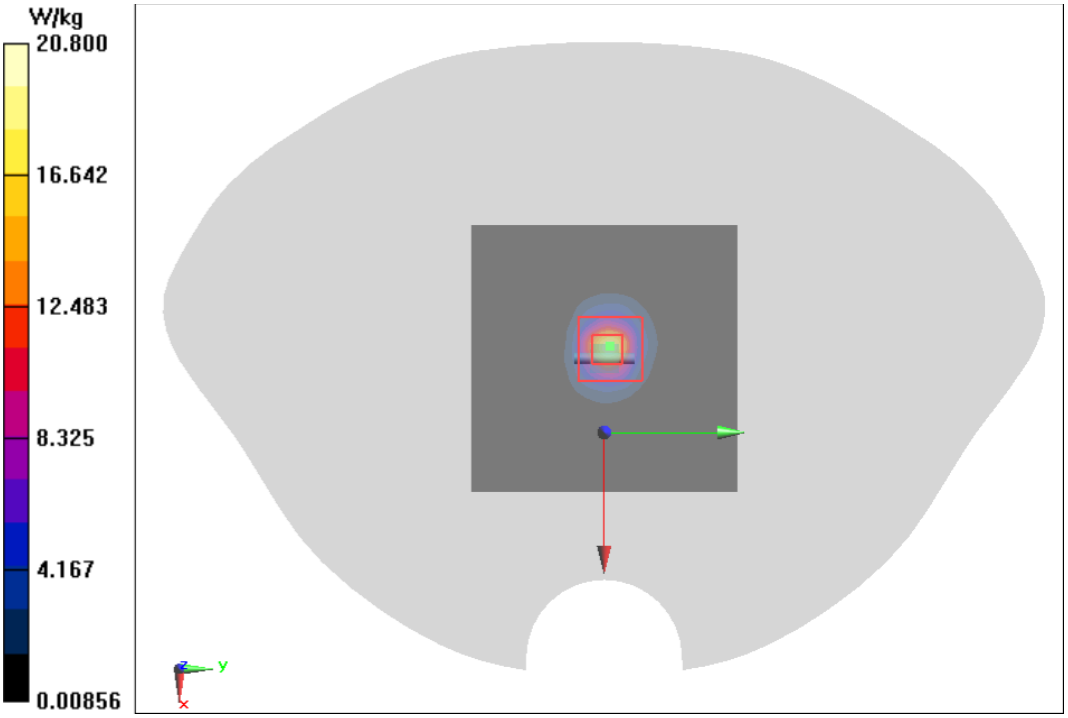
Measurement grid: dx=5mm, dy=5mm, dz=5mm

Reference Value = 62.29 V/m; Power Drift = 0.01 dB

Peak SAR (extrapolated) = 35.4 W/kg

SAR(1 g) = 7.79 W/kg; SAR(10 g) = 2.22 W/kg

Maximum value of SAR (measured) = 20.8 W/kg



# Annex C: Measurement Uncertainty

Table D.1 Measurement Uncertainty Evaluation for SAR Test

| Error Description | Uncert. Value | Prob. Dist. | Div. | (Ci) | (Ci) | Std. Unc.[%] | Std. Unc.[%] | (vi) veff |
|---|---|---|---|---|---|---|---|---|
| | | | | 1g | 10g | (1g) | (10g) | |
| Measurement System | | | | | | | | |
| Probe Calibration | 13.30 | N | 2 | 1 | 1 | 6.65 | 6.65 | ∞ |
| Axial Isotropy | 4.70 | R | $\sqrt{3}$ | 0.7 | 0.7 | 1.90 | 1.90 | ∞ |
| Hemispherical Isotropy | 9.60 | R | $\sqrt{3}$ | 0.7 | 0.7 | 3.88 | 3.88 | ∞ |
| Boundary effects | 2.00 | R | $\sqrt{3}$ | 1 | 1 | 1.15 | 1.15 | ∞ |
| Linearity | 4.70 | R | $\sqrt{3}$ | 1 | 1 | 2.71 | 2.71 | ∞ |
| System Detection Limits | 1.00 | R | $\sqrt{3}$ | 1 | 1 | 0.58 | 0.58 | ∞ |
| Readout Electronics | 0.30 | N | 1 | 1 | 1 | 0.30 | 0.30 | ∞ |
| Response Time | 0.80 | R | $\sqrt{3}$ | 1 | 1 | 0.50 | 0.50 | ∞ |
| Integration Time | 2.60 | R | $\sqrt{3}$ | 1 | 1 | 1.50 | 1.50 | ∞ |
| RF Ambient Noise | 3.00 | R | $\sqrt{3}$ | 1 | 1 | 1.70 | 1.70 | ∞ |
| RF Ambient Reflections | 3.00 | R | $\sqrt{3}$ | 1 | 1 | 1.70 | 1.70 | ∞ |
| Probe Positioner | 1.50 | R | $\sqrt{3}$ | 1 | 1 | 0.87 | 0.87 | ∞ |
| Probe Positioning | 0.80 | R | $\sqrt{3}$ | 1 | 1 | 0.40 | 0.40 | ∞ |
| Post-processing | 4.00 | R | $\sqrt{3}$ | 1 | 1 | 2.30 | 2.30 | ∞ |
| Test Sample Related | | | | | | | | |
| Device Holder | 1.01 | N | 1 | 1 | 1 | 1.01 | 1.01 | 71 |
| Test sample Positioning | 2.28 | N | 1 | 1 | 1 | 2.28 | 2.28 | 4 |
| Power Drift | 5.00 | R | $\sqrt{3}$ | 1 | 1 | 2.89 | 2.89 | ∞ |
| Phantom and Setup | | | | | | | | |
| Phantom Uncertainty | 7.60 | R | $\sqrt{3}$ | 1 | 1 | 4.40 | 4.40 | ∞ |
| SAR correction | 1.90 | N | 1 | 1 | 0.84 | 1.90 | 1.60 | ∞ |
| Liquid Conductivity ((meas.) | 2.50 | N | 1 | 0.78 | 0.71 | 2.00 | 1.80 | ∞ |
| Liquid Permittivity ((meas.) | 2.50 | N | 1 | 0.23 | 0.26 | 0.60 | 0.70 | ∞ |
| Liquid Conductivity (Temp.) | 2.45 | R | $\sqrt{3}$ | 0.78 | 0.71 | 1.11 | 1.01 | ∞ |
| Liquid Permittivity (Temp.) | 0.72 | R | $\sqrt{3}$ | 0.23 | 0.26 | 0.10 | 0.11 | ∞ |
| Combined Std. Uncertainty | $\diamondsuit_c = \sqrt{\sum_{i-1}^{n} \diamondsuit_i^2 \diamondsuit_i'^2}$ | | | | | 10.85 | 10.72 | |
| Expanded STD Uncertainty | $\diamondsuit_c = \diamondsuit\diamondsuit' (\diamondsuit = 2)$ | | | | | **21.70** | **21.44** | |

Table D.2 Measurement Uncertainty Evaluation for System Validation

| Error Description | Uncert. Value | Prob. Dist. | Div. | (Ci) 1g | (Ci) 10g | Std. Unc.[%] (1g) | Std. Unc.[%] (10g) | (vi) veff |
|---|---|---|---|---|---|---|---|---|
| Measurement System | | | | | | | | |
| Probe Calibration | 13.30 | N | 2 | 1 | 1 | 6.65 | 6.65 | ∞ |
| Axial Isotropy | 4.70 | R | $\sqrt{3}$ | 0.7 | 0.7 | 1.90 | 1.90 | ∞ |
| Hemispherical Isotropy | 9.60 | R | $\sqrt{3}$ | 0.7 | 0.7 | 3.88 | 3.88 | ∞ |
| Boundary effects | 2.00 | R | $\sqrt{3}$ | 1 | 1 | 1.15 | 1.15 | ∞ |
| Linearity | 4.70 | R | $\sqrt{3}$ | 1 | 1 | 2.71 | 2.71 | ∞ |
| System Detection Limits | 1.00 | R | $\sqrt{3}$ | 1 | 1 | 0.58 | 0.58 | ∞ |
| Readout Electronics | 0.30 | N | 1 | 1 | 1 | 0.30 | 0.30 | ∞ |
| Response Time | 0.80 | R | $\sqrt{3}$ | 1 | 1 | 0.50 | 0.50 | ∞ |
| Integration Time | 2.60 | R | $\sqrt{3}$ | 1 | 1 | 1.50 | 1.50 | ∞ |
| RF Ambient Noise | 3.00 | R | $\sqrt{3}$ | 1 | 1 | 1.70 | 1.70 | ∞ |
| RF Ambient Reflections | 3.00 | R | $\sqrt{3}$ | 1 | 1 | 1.70 | 1.70 | ∞ |
| Probe Positioner | 1.50 | R | $\sqrt{3}$ | 1 | 1 | 0.87 | 0.87 | ∞ |
| Probe Positioning | 0.80 | R | $\sqrt{3}$ | 1 | 1 | 0.40 | 0.40 | ∞ |
| Post-processing | 4.00 | R | $\sqrt{3}$ | 1 | 1 | 2.30 | 2.30 | ∞ |
| Test Sample Related | | | | | | | | |
| Validation Dipole Positioning | 2.00 | N | $\sqrt{3}$ | 1 | 1 | 1.15 | 1.15 | ∞ |
| Dipole Input Power | 5.00 | N | $\sqrt{3}$ | 1 | 1 | 2.89 | 2.89 | ∞ |
| Power Drift | 5.00 | R | $\sqrt{3}$ | 1 | 1 | 2.89 | 2.89 | ∞ |
| Phantom and Setup | | | | | | | | |
| Phantom Uncertainty | 7.60 | R | $\sqrt{3}$ | 1 | 1 | 4.40 | 4.40 | ∞ |
| SAR correction | 1.90 | N | 1 | 1 | 0.84 | 1.90 | 1.60 | ∞ |
| Liquid Conductivity ((meas.) | 2.50 | N | 1 | 0.78 | 0.71 | 2.00 | 1.80 | ∞ |
| Liquid Permittivity ((meas.) | 2.50 | N | 1 | 0.23 | 0.26 | 0.60 | 0.70 | ∞ |
| Liquid Conductivity (Temp.) | 2.45 | R | $\sqrt{3}$ | 0.78 | 0.71 | 1.11 | 1.01 | ∞ |
| Liquid Permittivity (Temp.) | 0.72 | R | $\sqrt{3}$ | 0.23 | 0.26 | 0.10 | 0.11 | ∞ |
| Combined Std. Uncertainty | $\sqrt{\sum_{i-1}^{n} \square_i^2 \square_i'^2}$ | | | | | 10.01 | 10.88 | |
| Expanded STD Uncertainty | $\square_c = \square\square' (\square = 2)$ | | | | | **22.01** | **21.76** | |

# Annex D: Calibration Certificate

In Collaboration with
s p e a g
CALIBRATION LABORATORY
Add: No.52 HuaYuanBei Road, Haidian District, Beijing, 100191, China
Tel: +86-10-62304633-2512 Fax: +86-10-62304633-2504
E-mail: cttl@chinattl.com Http://www.chinattl.cn

中国认可
国际互认
校准
CALIBRATION
CNAS L0570

Client : 3in Certificate No: Z21-60060

## CALIBRATION CERTIFICATE

| | |
|---|---|
| Object | DAE4 - SN: 1244 |
| Calibration Procedure(s) | FF-Z11-002-01<br>Calibration Procedure for the Data Acquisition Electronics (DAEx) |
| Calibration date: | March 23, 2021 |

This calibration Certificate documents the traceability to national standards, which realize the physical units of measurements(SI). The measurements and the uncertainties with confidence probability are given on the following pages and are part of the certificate.

All calibrations have been conducted in the closed laboratory facility: environment temperature(22±3)℃ and humidity<70%.

Calibration Equipment used (M&TE critical for calibration)

| Primary Standards | ID # | Cal Date(Calibrated by, Certificate No.) | Scheduled Calibration |
|---|---|---|---|
| Process Calibrator 753 | 1971018 | 16-Jun-20 (CTTL, No.J20X04342) | Jun-21 |

| | Name | Function | Signature |
|---|---|---|---|
| Calibrated by: | Yu Zongying | SAR Test Engineer | |
| Reviewed by: | Lin Hao | SAR Test Engineer | |
| Approved by: | Qi Dianyuan | SAR Project Leader | |

Issued: March 25, 2021

Add: No.52 HuaYuanBei Road, Haidian District, Beijing, 100191, China
Tel: +86-10-62304633-2512 Fax: +86-10-62304633-2504
E-mail: cttl@chinattl.com Http://www.chinattl.cn

**Glossary:**

| | |
|---|---|
| DAE | data acquisition electronics |
| Connector angle | information used in DASY system to align probe sensor X to the robot coordinate system. |

**Methods Applied and Interpretation of Parameters:**

- *DC Voltage Measurement*: Calibration Factor assessed for use in DASY system by comparison with a calibrated instrument traceable to national standards. The figure given corresponds to the full scale range of the voltmeter in the respective range.
- *Connector angle*: The angle of the connector is assessed measuring the angle mechanically by a tool inserted. Uncertainty is not required.
- The report provide only calibration results for DAE, it does not contain other performance test results.

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CALIBRATION LABORATORY
Add: No.52 HuaYuanBei Road, Haidian District, Beijing, 100191, China
Tel: +86-10-62304633-2512 Fax: +86-10-62304633-2504
E-mail: cttl@chinattl.com Http://www.chinattl.cn

## DC Voltage Measurement

A/D - Converter Resolution nominal

High Range: 1LSB = 6.1μV , full range = -100...+300 mV
Low Range: 1LSB = 61nV , full range = -1.....+3mV

DASY measurement parameters: Auto Zero Time: 3 sec; Measuring time: 3 sec

| Calibration Factors | X | Y | Z |
|---|---|---|---|
| High Range | 403.865 ± 0.15% (k=2) | 403.596 ± 0.15% (k=2) | 404.512 ± 0.15% (k=2) |
| Low Range | 3.95292 ± 0.7% (k=2) | 3.97071 ± 0.7% (k=2) | 3.97935 ± 0.7% (k=2) |

## Connector Angle

| Connector Angle to be used in DASY system | 23.5° ± 1 ° |
|---|---|

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Add: No.52 HuaYuanBei Road, Haidian District, Beijing, 100191, China
Tel: +86-10-62304633-2512 Fax: +86-10-62304633-2504
E-mail: cttl@chinattl.com Http://www.chinattl.cn

中国认可 国际互认 校准 CALIBRATION CNAS L0570

Client 3in Certificate No: Z21-60058

# CALIBRATION CERTIFICATE

Object EX3DV4 - SN : 7633

Calibration Procedure(s) FF-Z11-004-02
Calibration Procedures for Dosimetric E-field Probes

Calibration date: April 09, 2021

This calibration Certificate documents the traceability to national standards, which realize the physical units of measurements(SI). The measurements and the uncertainties with confidence probability are given on the following pages and are part of the certificate.

All calibrations have been conducted in the closed laboratory facility: environment temperature(22±3)°C and humidity<70%.

Calibration Equipment used (M&TE critical for calibration)

| Primary Standards | ID # | Cal Date(Calibrated by, Certificate No.) | Scheduled Calibration |
|---|---|---|---|
| Power Meter NRP2 | 101919 | 16-Jun-20(CTTL, No.J20X04344) | Jun-21 |
| Power sensor NRP-Z91 | 101547 | 16-Jun-20(CTTL, No.J20X04344) | Jun-21 |
| Power sensor NRP-Z91 | 101548 | 16-Jun-20(CTTL, No.J20X04344) | Jun-21 |
| Reference 10dBAttenuator | 18N50W-10dB | 10-Feb-20(CTTL, No.J20X00525) | Feb-22 |
| Reference 20dBAttenuator | 18N50W-20dB | 10-Feb-20(CTTL, No.J20X00526) | Feb-22 |
| Reference Probe EX3DV4 | SN 7307 | 29-May-20(SPEAG, No.EX3-7307_May20) | May-21 |
| DAE4 | SN 1555 | 25-Aug-20(SPEAG, No.DAE4-1555_Aug20) | Aug-21 |

| Secondary Standards | ID # | Cal Date(Calibrated by, Certificate No.) | Scheduled Calibration |
|---|---|---|---|
| SignalGenerator MG3700A | 6201052605 | 23-Jun-20(CTTL, No.J20X04343) | Jun-21 |
| Network Analyzer E5071C | MY46110673 | 21-Jan-21(CTTL, No.J20X00515) | Jan-22 |

| | Name | Function | Signature |
|---|---|---|---|
| Calibrated by: | Yu Zongying | SAR Test Engineer | |
| Reviewed by: | Lin Hao | SAR Test Engineer | |
| Approved by: | Qi Dianyuan | SAR Project Leader | |

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Add: No.52 HuaYuanBei Road, Haidian District, Beijing, 100191, China
Tel: +86-10-62304633-2512 Fax: +86-10-62304633-2504
E-mail: cttl@chinattl.com Http://www.chinattl.cn

**Glossary:**

| | |
|---|---|
| TSL | tissue simulating liquid |
| NORMx,y,z | sensitivity in free space |
| ConvF | sensitivity in TSL / NORMx,y,z |
| DCP | diode compression point |
| CF | crest factor (1/duty_cycle) of the RF signal |
| A,B,C,D | modulation dependent linearization parameters |
| Polarization Φ | Φ rotation around probe axis |
| Polarization θ | θ rotation around an axis that is in the plane normal to probe axis (at measurement center), i θ=0 is normal to probe axis |
| Connector Angle | information used in DASY system to align probe sensor X to the robot coordinate system |

**Calibration is Performed According to the Following Standards:**

a) IEEE Std 1528-2013, "IEEE Recommended Practice for Determining the Peak Spatial-Averaged Specific Absorption Rate (SAR) in the Human Head from Wireless Communications Devices: Measurement Techniques", June 2013

b) IEC 62209-1, "Measurement procedure for the assessment of Specific Absorption Rate (SAR) from hand-held and body-mounted devices used next to the ear (frequency range of 300 MHz to 6 GHz)", July 2016

c) IEC 62209-2, "Procedure to determine the Specific Absorption Rate (SAR) for wireless communication devices used in close proximity to the human body (frequency range of 30 MHz to 6 GHz)", March 2010

d) KDB 865664, "SAR Measurement Requirements for 100 MHz to 6 GHz"

**Methods Applied and Interpretation of Parameters:**

- *NORMx,y,z:* Assessed for E-field polarization θ=0 (f≤900MHz in TEM-cell; f>1800MHz: waveguide). NORMx,y,z are only intermediate values, i.e., the uncertainties of NORMx,y,z does not effect the $E^2$-field uncertainty inside TSL (see below ConvF).
- *NORM(f)x,y,z = NORMx,y,z* frequency_response* (see Frequency Response Chart). This linearization is implemented in DASY4 software versions later than 4.2. The uncertainty of the frequency response is included in the stated uncertainty of ConvF.
- *DCPx,y,z:* DCP are numerical linearization parameters assessed based on the data of power sweep (no uncertainty required). DCP does not depend on frequency nor media.
- PAR: PAR is the Peak to Average Ratio that is not calibrated but determined based on the signal characteristics.
- *Ax,y,z; Bx,y,z; Cx,y,z;VRx,y,z:*A,B,C are numerical linearization parameters assessed based on the data of power sweep for specific modulation signal. The parameters do not depend on frequency nor media. VR is the maximum calibration range expressed in RMS voltage across the diode.
- *ConvF and Boundary Effect Parameters:* Assessed in flat phantom using E-field (or Temperature Transfer Standard for f≤800MHz) and inside waveguide using analytical field distributions based on power measurements for f >800MHz. The same setups are used for assessment of the parameters applied for boundary compensation (alpha, depth) of which typical uncertainty valued are given. These parameters are used in DASY4 software to improve probe accuracy close to the boundary. The sensitivity in TSL corresponds to NORMx,y,z* ConvF whereby the uncertainty corresponds to that given for ConvF. A frequency dependent ConvF is used in DASY version 4.4 and higher which allows extending the validity from±50MHz to±100MHz.
- *Spherical isotropy (3D deviation from isotropy):* in a field of low gradients realized using a flat phantom exposed by a patch antenna.
- *Sensor Offset:* The sensor offset corresponds to the offset of virtual measurement center from the probe tip (on probe axis). No tolerance required.
- *Connector Angle:* The angle is assessed using the information gained by determining the *NORMx* (no uncertainty required).

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CALIBRATION LABORATORY
Add: No.52 HuaYuanBei Road, Haidian District, Beijing, 100191, China
Tel: +86-10-62304633-2512 Fax: +86-10-62304633-2504
E-mail: cttl@chinattl.com Http://www.chinattl.cn

# DASY/EASY – Parameters of Probe: EX3DV4 – SN:7633

## Basic Calibration Parameters

| | Sensor X | Sensor Y | Sensor Z | Unc (*k*=2) |
|---|---|---|---|---|
| Norm(μV/(V/m)²)[A] | 0.65 | 0.64 | 0.67 | ±10.0% |
| DCP(mV)[B] | 109.1 | 115.3 | 113.7 | |

## Modulation Calibration Parameters

| UID | Communication System Name | | A dB | B dB√μV | C | D dB | VR mV | Unc[E] (*k*=2) |
|---|---|---|---|---|---|---|---|---|
| 0 | CW | X | 0.0 | 0.0 | 1.0 | 0.00 | 214.7 | ±2.5% |
| | | Y | 0.0 | 0.0 | 1.0 | | 213.1 | |
| | | Z | 0.0 | 0.0 | 1.0 | | 221.8 | |

The reported uncertainty of measurement is stated as the standard uncertainty of Measurement multiplied by the coverage factor *k*=2, which for a normal distribution Corresponds to a coverage probability of approximately 95%.

[A] The uncertainties of Norm X, Y, Z do not affect the E²-field uncertainty inside TSL (see Page 4).
[B] Numerical linearization parameter: uncertainty not required.
[E] Uncertainly is determined using the max. deviation from linear response applying rectangular distribution and is expressed for the square of the field value.

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CALIBRATION LABORATORY
Add: No.52 HuaYuanBei Road, Haidian District, Beijing, 100191, China
Tel: +86-10-62304633-2512 Fax: +86-10-62304633-2504
E-mail: cttl@chinattl.com Http://www.chinattl.cn

# DASY/EASY – Parameters of Probe: EX3DV4 – SN:7633

## Calibration Parameter Determined in Head Tissue Simulating Media

| f [MHz][C] | Relative Permittivity [F] | Conductivity (S/m) [F] | ConvF X | ConvF Y | ConvF Z | Alpha[G] | Depth[G] (mm) | Unct. (k=2) |
|---|---|---|---|---|---|---|---|---|
| 750 | 41.9 | 0.89 | 10.83 | 10.83 | 10.83 | 0.40 | 0.80 | ±12.1% |
| 835 | 41.5 | 0.90 | 10.51 | 10.51 | 10.51 | 0.13 | 1.56 | ±12.1% |
| 900 | 41.5 | 0.97 | 10.43 | 10.43 | 10.43 | 0.14 | 1.46 | ±12.1% |
| 1750 | 40.1 | 1.37 | 8.93 | 8.93 | 8.93 | 0.22 | 1.05 | ±12.1% |
| 1900 | 40.0 | 1.40 | 8.64 | 8.64 | 8.64 | 0.24 | 1.07 | ±12.1% |
| 2000 | 40.0 | 1.40 | 8.68 | 8.68 | 8.68 | 0.19 | 1.18 | ±12.1% |
| 2300 | 39.5 | 1.67 | 8.34 | 8.34 | 8.34 | 0.39 | 0.82 | ±12.1% |
| 2450 | 39.2 | 1.80 | 8.02 | 8.02 | 8.02 | 0.39 | 0.87 | ±12.1% |
| 2600 | 39.0 | 1.96 | 7.75 | 7.75 | 7.75 | 0.42 | 0.83 | ±12.1% |
| 3300 | 38.2 | 2.71 | 7.40 | 7.40 | 7.40 | 0.41 | 0.93 | ±13.3% |
| 3500 | 37.9 | 2.91 | 7.10 | 7.10 | 7.10 | 0.45 | 0.92 | ±13.3% |
| 3700 | 37.7 | 3.12 | 6.80 | 6.80 | 6.80 | 0.42 | 1.02 | ±13.3% |
| 3900 | 37.5 | 3.32 | 6.84 | 6.84 | 6.84 | 0.40 | 1.17 | ±13.3% |
| 4100 | 37.2 | 3.53 | 6.78 | 6.78 | 6.78 | 0.40 | 1.15 | ±13.3% |
| 4200 | 37.1 | 3.63 | 6.74 | 6.74 | 6.74 | 0.35 | 1.33 | ±13.3% |
| 4400 | 36.9 | 3.84 | 6.63 | 6.63 | 6.63 | 0.30 | 1.50 | ±13.3% |
| 4600 | 36.7 | 4.04 | 6.42 | 6.42 | 6.42 | 0.45 | 1.25 | ±13.3% |
| 4800 | 36.4 | 4.25 | 6.37 | 6.37 | 6.37 | 0.45 | 1.30 | ±13.3% |
| 4950 | 36.3 | 4.40 | 6.08 | 6.08 | 6.08 | 0.50 | 1.20 | ±13.3% |
| 5250 | 35.9 | 4.71 | 5.78 | 5.78 | 5.78 | 0.45 | 1.32 | ±13.3% |
| 5600 | 35.5 | 5.07 | 5.20 | 5.20 | 5.20 | 0.50 | 1.30 | ±13.3% |
| 5750 | 35.4 | 5.22 | 5.18 | 5.18 | 5.18 | 0.55 | 1.30 | ±13.3% |

[C] Frequency validity above 300 MHz of ±100MHz only applies for DASY v4.4 and higher (Page 2), else it is restricted to ±50MHz. The uncertainty is the RSS of ConvF uncertainty at calibration frequency and the uncertainty for the indicated frequency band. Frequency validity below 300 MHz is ± 10, 25, 40, 50 and 70 MHz for ConvF assessments at 30, 64, 128, 150 and 220 MHz respectively. Above 5 GHz frequency validity can be extended to ± 110 MHz.

[F] At frequency below 3 GHz, the validity of tissue parameters (ε and σ) can be relaxed to ±10% if liquid compensation formula is applied to measured SAR values. At frequencies above 3 GHz, the validity of tissue parameters (ε and σ) is restricted to ±5%. The uncertainty is the RSS of the ConvF uncertainty for indicated target tissue parameters.

[G] Alpha/Depth are determined during calibration. SPEAG warrants that the remaining deviation due to the boundary effect after compensation is always less than ± 1% for frequencies below 3 GHz and below ± 2% for the frequencies between 3-6 GHz at any distance larger than half the probe tip diameter from the boundary.

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CALIBRATION LABORATORY
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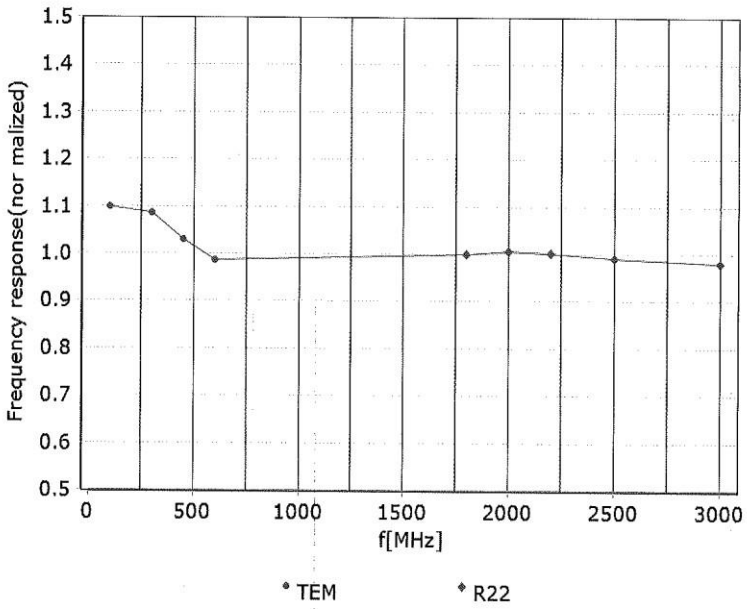
E-mail: cttl@chinattl.com Http://www.chinattl.cn

# Frequency Response of E-Field
## (TEM-Cell: ifi110 EXX, Waveguide: R22)




**Uncertainty of Frequency Response of E-field: ±7.4% (*k*=2)**

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CALIBRATION LABORATORY
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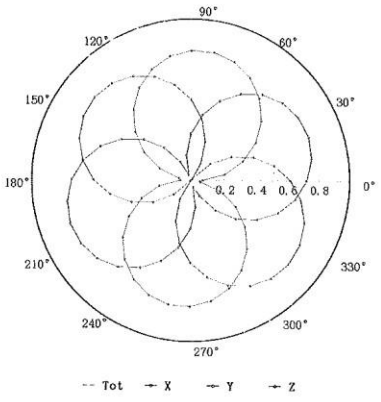
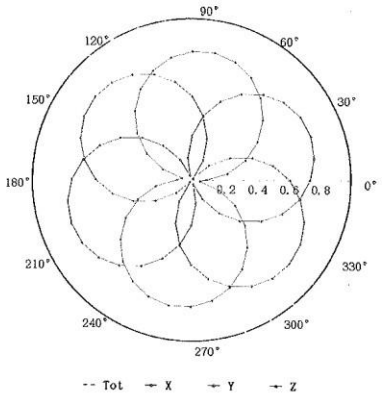
Tel: +86-10-62304633-2512 Fax: +86-10-62304633-2504
E-mail: cttl@chinattl.com Http://www.chinattl.cn

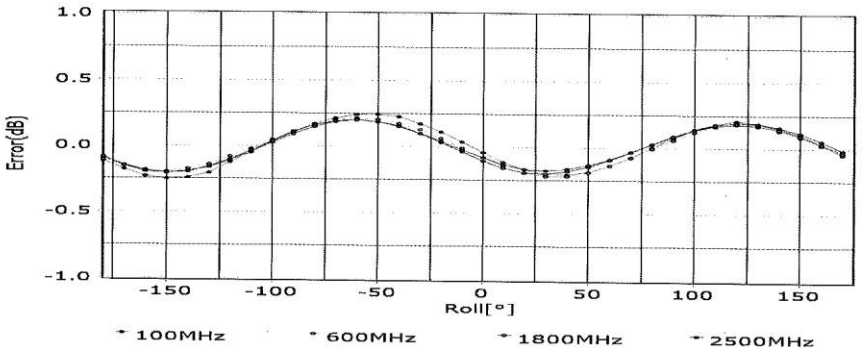
## Receiving Pattern (Φ), θ=0°

**f=600 MHz, TEM**




**f=1800 MHz, R22**




Uncertainty of Axial Isotropy Assessment: ±1.2% (*k*=2)

## 휀 Dynamic Range f($SAR_{head}$)