

# **FCC SAR Test Report**

**Applicant:** Imin Technology Pte Ltd  
**EUT Description:** POS Device  
**Model:** I25M02  
**Brand:** iMin  
**FCC ID:** 2AYD5-I25M02  
**Standards:** FCC 47CFR §2.1093  
**Date of Receipt:** 2026/03/11  
**Date of Test:** 2026/04/24 to 2026/05/08  
**Date of Issue:** 2026/05/09

TOWE. tested the above equipment in accordance with the requirements set forth in the above standards. The test results show that the equipment tested is capable of demonstrating compliance with the requirements as documented in this report.

the results documented in this report apply only to the tested sample, under the conditions and modes of operation as described herein. It is the manufacturer's responsibility to assure that additional production units of the model are manufactured with identical electrical and mechanical components. All sample tested were in good operating condition throughout the entire test program. Measurement Uncertainties are published for informational purposes only and were not taken into account unless noted otherwise. without written approval of TOWE, the test report shall not be reproduced except in full.



---

**Jim Huang**  
**Approved By:**



---

**Jack Li**  
**Reviewed By:**

### Revision History

| Rev. | Issue Date | Description | Revised by |
|------|------------|-------------|------------|
| 01   | 2026/05/09 | Original    | Jack Li    |
|      |            |             |            |
|      |            |             |            |
|      |            |             |            |

## Table of Contents

|           |                                                                  |           |
|-----------|------------------------------------------------------------------|-----------|
| <b>1</b>  | <b>Summary of Test Results.....</b>                              | <b>5</b>  |
| <b>2</b>  | <b>Guidance Applied .....</b>                                    | <b>6</b>  |
| <b>3</b>  | <b>Lab Information .....</b>                                     | <b>6</b>  |
| 3.1       | Testing Location.....                                            | 6         |
| 3.2       | Test Facility / Accreditations .....                             | 6         |
| 3.3       | Ambient Condition .....                                          | 6         |
| <b>4</b>  | <b>Client Information.....</b>                                   | <b>6</b>  |
| 4.1       | Applicant .....                                                  | 6         |
| 4.2       | Manufacturer .....                                               | 6         |
| <b>5</b>  | <b>Product Information.....</b>                                  | <b>7</b>  |
| 5.1       | Antenna Locations (Back View).....                               | 8         |
| <b>6</b>  | <b>RF Exposure Limits .....</b>                                  | <b>9</b>  |
| <b>7</b>  | <b>Introduction .....</b>                                        | <b>10</b> |
| 7.1       | SAR Definition .....                                             | 10        |
| <b>8</b>  | <b>SAR Measurements System .....</b>                             | <b>11</b> |
| 8.1       | The SAR Measurement Set-up .....                                 | 11        |
| 8.2       | E-Field Probe .....                                              | 12        |
| 8.3       | Data Acquisition Electronics (DAE) .....                         | 12        |
| 8.4       | Phantom .....                                                    | 13        |
| 8.5       | Device Holder .....                                              | 14        |
| 8.6       | Measurement procedure.....                                       | 15        |
| 8.6.1     | Power reference measurement.....                                 | 15        |
| 8.6.2     | Area scan .....                                                  | 15        |
| 8.6.3     | Zoom Scan.....                                                   | 16        |
| 8.6.4     | Power Drift Measurement .....                                    | 16        |
| <b>9</b>  | <b>Test Equipment list .....</b>                                 | <b>17</b> |
| <b>10</b> | <b>SAR measurement variability.....</b>                          | <b>18</b> |
| <b>11</b> | <b>Description of Test Position.....</b>                         | <b>19</b> |
| 11.1      | Body exposure conditions.....                                    | 19        |
| <b>12</b> | <b>System Verification .....</b>                                 | <b>19</b> |
| 12.1      | Tissue Verification .....                                        | 19        |
| 12.2      | SAR System Check.....                                            | 20        |
| 12.2.1    | System Check Result.....                                         | 20        |
| 12.2.2    | Detailed System Check Result .....                               | 20        |
| 12.3      | PD System Verification .....                                     | 21        |
| <b>13</b> | <b>SAR General Measurement Procedures.....</b>                   | <b>22</b> |
| 13.1      | 3G SAR Test Reduction Procedure .....                            | 22        |
| 13.2      | SAR Measurement Conditions for UMTS.....                         | 22        |
| 13.2.1    | Output Power Verification .....                                  | 22        |
| 13.2.2    | Body SAR Measurements .....                                      | 22        |
| 13.2.3    | SAR Measurements with Rel. 5 HSDPA .....                         | 22        |
| 13.2.4    | SAR Measurements with Rel. 6 HSUPA .....                         | 22        |
| 13.2.5    | SAR Measurement Conditions for HSPA+(16QAM).....                 | 23        |
| 13.3      | SAR Measurement Conditions for LTE.....                          | 24        |
| 13.3.1    | Spectrum Plots for RB Configurations .....                       | 24        |
| 13.3.2    | MPR.....                                                         | 24        |
| 13.3.3    | A-MPR.....                                                       | 24        |
| 13.3.4    | Largest channel bandwidth standalone SAR test requirements ..... | 24        |
| 13.3.5    | Other channel bandwidth standalone SAR test requirements .....   | 25        |
| 13.4      | SAR Testing with 802.11 Transmitters .....                       | 25        |
| 13.4.1    | Initial Test Position Procedure .....                            | 25        |
| 13.4.2    | Initial Test Configuration Procedure.....                        | 26        |

|                                                    |                                                            |           |
|----------------------------------------------------|------------------------------------------------------------|-----------|
| 13.4.3                                             | Subsequent Test Configuration Procedures.....              | 26        |
| 13.4.4                                             | 2.4 GHz SAR Procedures.....                                | 26        |
| 13.4.5                                             | 5 GHz SAR Procedures.....                                  | 27        |
| 13.4.6                                             | OFDM Transmission Mode and SAR Test Channel Selection..... | 27        |
| 13.4.7                                             | MIMO SAR Considerations .....                              | 27        |
| <b>14</b>                                          | <b>Conducted Power .....</b>                               | <b>28</b> |
| <b>15</b>                                          | <b>SAR Data Summary .....</b>                              | <b>29</b> |
| 15.1                                               | SAR Measurement Result of WCDMA Band II .....              | 30        |
| 15.2                                               | SAR Measurement Result of WCDMA Band IV .....              | 30        |
| 15.3                                               | SAR Measurement Result of WCDMA Band V .....               | 30        |
| 15.4                                               | SAR Measurement Result of LTE Band 2 .....                 | 31        |
| 15.5                                               | SAR Measurement Result of LTE Band 5 .....                 | 31        |
| 15.6                                               | SAR Measurement Result of LTE Band 12 .....                | 31        |
| 15.7                                               | SAR Measurement Result of LTE Band 13 .....                | 32        |
| 15.8                                               | SAR Measurement Result of LTE Band 14 .....                | 32        |
| 15.9                                               | SAR Measurement Result of LTE Band 66 .....                | 33        |
| 15.10                                              | SAR Measurement Result of LTE Band 71 .....                | 33        |
| 15.11                                              | SAR Measurement Result of WIFI 2.4G .....                  | 34        |
| 15.12                                              | SAR Measurement Result of WIFI 5G .....                    | 35        |
| 15.13                                              | SAR Measurement Result of WIFI 6G .....                    | 38        |
| 15.14                                              | PD Measurement Result of WIFI 6G .....                     | 39        |
| 15.15                                              | SAR Measurement Result of BT .....                         | 40        |
| 15.16                                              | SAR Measurement Result of NFC .....                        | 40        |
| <b>16</b>                                          | <b>Simultaneous Transmission Analysis .....</b>            | <b>41</b> |
| <b>17</b>                                          | <b>Measurement Uncertainty .....</b>                       | <b>44</b> |
| <b>18</b>                                          | <b>Calibration Certificate .....</b>                       | <b>46</b> |
| <b>19</b>                                          | <b>Test Setup Photos .....</b>                             | <b>46</b> |
| <b>Appendix A: System Check Plots .....</b>        |                                                            | <b>46</b> |
| <b>Appendix B: SAR Test Plots .....</b>            |                                                            | <b>46</b> |
| <b>Appendix C: Calibration certificate .....</b>   |                                                            | <b>46</b> |
| <b>Appendix D: Test Setup Photos .....</b>         |                                                            | <b>46</b> |
| <b>Appendix E: Conducted RF Output Power .....</b> |                                                            | <b>46</b> |

## 1 Summary of Test Results

| Band                                                                                                                                                                                                                                                                                                                                  | Highest SAR(W/kg) |
|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-------------------|
|                                                                                                                                                                                                                                                                                                                                       | Body 1g           |
| WCDMA Band II                                                                                                                                                                                                                                                                                                                         | 0.93              |
| WCDMA Band IV                                                                                                                                                                                                                                                                                                                         | 0.10              |
| WCDMA Band V                                                                                                                                                                                                                                                                                                                          | 1.10              |
| LTE Band 2                                                                                                                                                                                                                                                                                                                            | 0.83              |
| LTE Band 5                                                                                                                                                                                                                                                                                                                            | 0.79              |
| LTE Band 12                                                                                                                                                                                                                                                                                                                           | 0.57              |
| LTE Band 13                                                                                                                                                                                                                                                                                                                           | 0.87              |
| LTE Band 14                                                                                                                                                                                                                                                                                                                           | 1.03              |
| LTE Band 66/4                                                                                                                                                                                                                                                                                                                         | 0.31              |
| LTE Band 71                                                                                                                                                                                                                                                                                                                           | 0.80              |
| WIFI 2.4G                                                                                                                                                                                                                                                                                                                             | 0.07              |
| WIFI 5G                                                                                                                                                                                                                                                                                                                               | 0.14              |
| WIFI 6G                                                                                                                                                                                                                                                                                                                               | 0.21              |
| BT                                                                                                                                                                                                                                                                                                                                    | 0.11              |
| NFC                                                                                                                                                                                                                                                                                                                                   | 0.00              |
| SAR Limited(W/kg)                                                                                                                                                                                                                                                                                                                     | 1.6               |
| Highest Simultaneous Transmission SAR (W/kg)                                                                                                                                                                                                                                                                                          |                   |
| Scenario                                                                                                                                                                                                                                                                                                                              | Body 1g           |
| Summed SAR                                                                                                                                                                                                                                                                                                                            | 1.35              |
| SAR Limited(W/kg)                                                                                                                                                                                                                                                                                                                     | 1.6               |
| <b>Remark:</b><br>This device supports LTE B2/B4/B5/B12/B13/B14/B66/B71. Since the supported frequency span for LTE B4 falls completely within the support's frequency span for LTE B66, both LTE bands have the same target power, and both LTE bands share the same transmission path, therefore SAR was only assessed for LTE B66. |                   |

| Band    | Highest PD<br>(W/m <sup>2</sup> ) |
|---------|-----------------------------------|
| WIFI 6G | 1.72                              |
| Limit   | 10.0                              |

| Highest Simultaneous Transmission with Multiple transmitters | Total Exposure Radio |
|--------------------------------------------------------------|----------------------|
| SAR & Power Density                                          | 0.88                 |
| Radio Limit                                                  | 1.0                  |

## 2 Guidance Applied

FCC 47CFR §2.1093  
ANSI/IEEE C95.1-1992  
IEC/IEEE 62209-1528:2020  
IEC/IEEE 63195-1:2022  
IEC 62479:2010  
FCC KDB 941225 D01 3G SAR Measurement Procedures v03r01  
FCC KDB 941225 D05 SAR for LTE Devices v02r05  
FCC KDB 941225 D05A LTE Rel.10 KDB Inquiry Sheet v01r02  
FCC KDB 248227 D01 SAR Guidance for IEEE 802.11 Wi-Fi SAR v02r02  
FCC KDB 648474 D04 Handset SAR v01r03  
FCC KDB 447498 D01 General RF Exposure Guidance v06  
FCC KDB 865664 D01 SAR Measurement 100 MHz to 6 GHz v01r04  
FCC KDB 865664 D02 RF Exposure Reporting v01r02  
FCC KDB 616217 D04 SAR for laptop and tablets v01r02

## 3 Lab Information

### 3.1 Testing Location

These measurements tests were conducted at the Sushi TOWE Wireless Testing(Shenzhen) Co., Ltd. facility located at F401 and F101, Building E, Hongwei Industrial Zone, Liuxian 3rd Road, Bao'an District, Shenzhen, China. The measurement facility is compliant with the test site requirements specified in ANSI C63.4-2014

Tel.: +86-755-27212361

Contact Email: info@towewireless.com

### 3.2 Test Facility / Accreditations

#### A2LA (Certificate Number: 7088.01)

This laboratory is accredited in accordance with the recognized International Standard ISO/IEC 17025:2017 General requirements for the competence of testing and calibration laboratories. This accreditation demonstrates technical competence for a defined scope and the operation of a laboratory quality management system (refer to joint ISO-ILAC-IAF Communiqué dated April 2017).

#### FCC Designation No.: CN1353

Sushi TOWE Wireless Testing(Shenzhen) Co., Ltd. has been recognized as an accredited testing laboratory. Designation Number: CN1353.

#### ISED CAB identifier: CN0152

Sushi TOWE Wireless Testing(Shenzhen) Co., Ltd. has been recognized by ISED as an accredited testing laboratory.

CAB identifier: CN0152

Company Number: 31000

### 3.3 Ambient Condition

Temperature: 18°C~25°C

Relative Humidity: 30%~75%

## 4 Client Information

### 4.1 Applicant

|            |                                             |
|------------|---------------------------------------------|
| Applicant: | Imin Technology Pte Ltd                     |
| Address:   | 11 Bishan street 21 #03-05 Singapore 573943 |

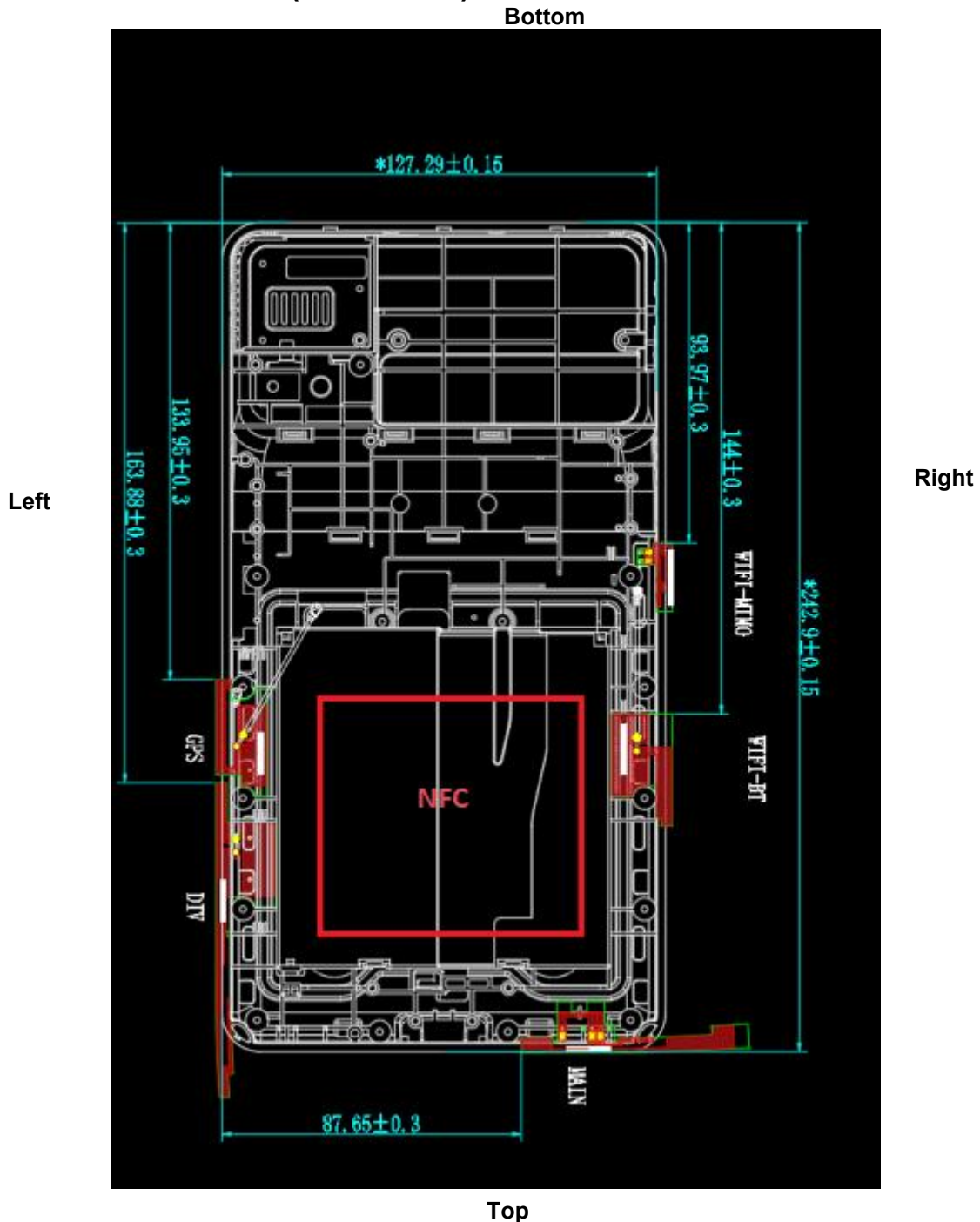
### 4.2 Manufacturer

|               |                                             |
|---------------|---------------------------------------------|
| Manufacturer: | Imin Technology Pte Ltd                     |
| Address:      | 11 Bishan street 21 #03-05 Singapore 573943 |

## 5 Product Information

|                                                                                                                                                   |                                                                                   |                          |
|---------------------------------------------------------------------------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|--------------------------|
| EUT Description                                                                                                                                   | POS Device                                                                        |                          |
| Model No.                                                                                                                                         | I25M02                                                                            |                          |
| Brand                                                                                                                                             | iMin                                                                              |                          |
| Hardware Version                                                                                                                                  | N/A                                                                               |                          |
| Software Version                                                                                                                                  | N/A                                                                               |                          |
| SN                                                                                                                                                | NMR151NLENGG00020                                                                 |                          |
| Device Capabilities:                                                                                                                              |                                                                                   |                          |
| Band                                                                                                                                              | Frequency Range (MHz)                                                             | Modulation Type          |
| WCDMA Band II                                                                                                                                     | 1850 ~ 1910                                                                       | RMC, HSDPA, HSUPA, HSPA+ |
| WCDMA Band IV                                                                                                                                     | 1710 ~ 1755                                                                       |                          |
| WCDMA Band V                                                                                                                                      | 824 ~ 849                                                                         |                          |
| LTE Band 2                                                                                                                                        | 1850 ~ 1910                                                                       | QPSK<br>16QAM            |
| LTE Band 4                                                                                                                                        | 1710 ~ 1755                                                                       |                          |
| LTE Band 5                                                                                                                                        | 824 ~ 849                                                                         |                          |
| LTE Band 12                                                                                                                                       | 699 ~ 716                                                                         |                          |
| LTE Band 13                                                                                                                                       | 777 ~ 787                                                                         |                          |
| LTE Band 14                                                                                                                                       | 788 ~ 798                                                                         |                          |
| LTE Band 66                                                                                                                                       | 1710 ~ 1780                                                                       |                          |
| LTE Band 71                                                                                                                                       | 663 ~ 698                                                                         |                          |
| NFC                                                                                                                                               | 13.56                                                                             | ASK                      |
| Bluetooth                                                                                                                                         | 2400~2483.5                                                                       | GFSK, π/4DQPSK, 8DPSK    |
| Wi-Fi 2.4G                                                                                                                                        | 2400~2483.5                                                                       | 802.11b/g/n/11ax         |
| Wi-Fi 5G                                                                                                                                          | 5150~5250                                                                         | 802.11a/n/ac/ax          |
|                                                                                                                                                   | 5250~5350                                                                         |                          |
|                                                                                                                                                   | 5470~5725                                                                         |                          |
|                                                                                                                                                   | 5725~5850                                                                         |                          |
| Wi-Fi 6G                                                                                                                                          | 5925~6425                                                                         | 802.11ac/ax              |
|                                                                                                                                                   | 6425~6525                                                                         |                          |
|                                                                                                                                                   | 6525~6875                                                                         |                          |
|                                                                                                                                                   | 6875~7125                                                                         |                          |
| Antenna Type                                                                                                                                      | <input type="checkbox"/> External, <input checked="" type="checkbox"/> Integrated |                          |
| Remark: The above EUT's information was declared by applicant, please refer to the specifications or user's manual for more detailed description. |                                                                                   |                          |

## 5.1 Antenna Locations (Back View)



### Note:

- 1) Per KDB 616217, the diagonal length is > 200mm, the device is considered a “tablet” device and needed to test 0mm 1-g body SAR.
- 2) The Div antenna is only for RX.

## 6 RF Exposure Limits

| Human Exposure                                                  | Uncontrolled Environment<br>General Population (W/kg) or (mW/g) | Controlled Environment<br>Occupational (W/kg) or (mW/g) |
|-----------------------------------------------------------------|-----------------------------------------------------------------|---------------------------------------------------------|
| <b>Spatial Peak SAR<sup>1</sup></b><br>(Brain/Trunk)            | 1.6                                                             | 8.0                                                     |
| <b>Spatial Average SAR<sup>2</sup></b><br>(Whole Body)          | 0.08                                                            | 0.4                                                     |
| <b>Spatial Peak SAR<sup>3</sup></b><br>(Hands/Feet/Ankle/Wrist) | 4.0                                                             | 20.0                                                    |

**Note:**

1, The Spatial Peak value of the SAR averaged over any 1 gram of tissue (defined as a tissue volume in the shape of a cube) and over the appropriate averaging time.

2, The Spatial Average value of the SAR averaged over the whole body.

3, The Spatial Peak value of the SAR averaged over any 10 grams of tissue (defined as a tissue volume in the shape of a cube) and over the appropriate averaging time.

**Uncontrolled Environments** are defined as locations where there is the exposure of individuals who have no knowledge or control of their exposure. The general population/uncontrolled exposure limits are applicable to situations in which the general public may be exposed or in which persons who are exposed as a consequence of their employment may not be made fully aware of the potential for exposure or cannot exercise control over their exposure. Members of the general public would come under this category when exposure is not employment-related; for example, in the case of a wireless transmitter that exposes persons in its vicinity.

**Controlled Environments** are defined as locations where there is exposure that may be incurred by persons who are aware of the potential for exposure, (i.e. as a result of employment or occupation). In general, occupational/controlled exposure limits are applicable to situations in which persons are exposed as a consequence of their employment, who have been made fully aware of the potential for exposure and can exercise control over their exposure. The exposure category is also applicable when the exposure is of a transient nature due to incidental passage through a location where the exposure levels may be higher than the general population/uncontrolled limits, but the exposed person is fully aware of the potential for exposure and can exercise control over his or her exposure by leaving the area or by some other appropriate means.

## 7 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.

### 7.1 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):

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

Where:

$\sigma$  is the conductivity of the tissue material (S/m)

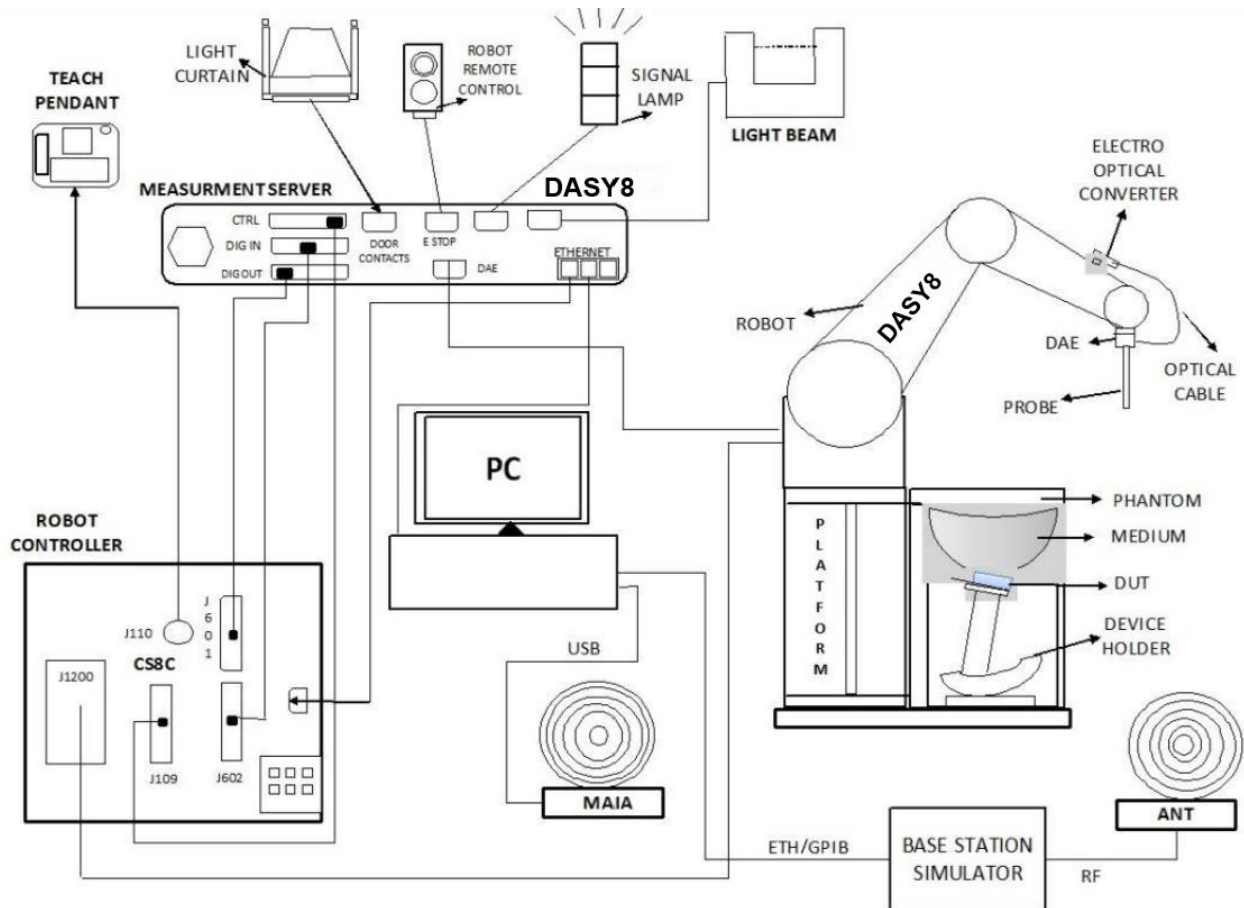
$\rho$  is the mass density of the tissue material (kg/m<sup>3</sup>)

E is the RMS electrical field strength (V/m)

## 8 SAR Measurements System

### 8.1 The SAR Measurement Set-up

The DASY system used for performing compliance tests consists of the following items:

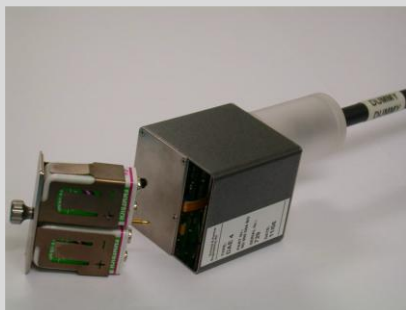


- A standard high precision 6-axis robot with controller, teach pendant and software. An arm extension for accommodating the data acquisition electronics (DAE).
- An isotropic Field probe optimized and calibrated for the targeted measurement.
- A data acquisition electronics (DAE) which performs the 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 Windows 11 and the DASY8 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.

## 8.2 E-Field Probe

|                                                                                   |                                                                                                                                                             |
|-----------------------------------------------------------------------------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------|
|  | Symmetrical design with triangular core<br>Built-in shielding against static charges<br>PEEK enclosure material (resistant to organic solvents, e.g., DGBE) |
| <b>Calibration</b>                                                                | ISO/IEC 17025 <a href="#">calibration service</a> available.                                                                                                |
| <b>Frequency</b>                                                                  | 10 MHz to > 6 GHz<br>Linearity: $\pm 0.2$ dB (30 MHz to 6 GHz)                                                                                              |
| <b>Directivity</b>                                                                | $\pm 0.3$ dB in TSL (rotation around probe axis)<br>$\pm 0.5$ dB in TSL (rotation normal to probe axis)                                                     |
| <b>Dynamic Range</b>                                                              | 10 $\mu$ W/g to > 100 mW/g<br>Linearity: $\pm 0.2$ dB (noise: typically < 1 $\mu$ W/g)                                                                      |
| <b>Dimensions</b>                                                                 | Overall length: 337 mm (Tip: 20 mm)<br>Tip diameter: 2.5 mm (Body: 12 mm)<br>Typical distance from probe tip to dipole centers: 1 mm                        |

## 8.3 Data Acquisition Electronics (DAE)

|                                                                                     |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  |
|-------------------------------------------------------------------------------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
|  | <p>The data acquisition electronics (DAE) consists 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 and 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.</p> <p>The input impedance of the DAE is 200 MOhm; the inputs are symmetrical and floating. Common mode rejection is above 80 dB.</p> |
|-------------------------------------------------------------------------------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|

## 8.4 Phantom

### SAM Twin Phantom:

|                                          |                                                             |                                                                                    |
|------------------------------------------|-------------------------------------------------------------|------------------------------------------------------------------------------------|
| <b>Material</b>                          | Vinylester, glass fiber reinforced (VE-GF)                  |  |
| <b>Shell Thickness</b>                   | 2 ± 0.2 mm (6 ± 0.2 mm at ear point)                        |                                                                                    |
| <b>Dimensions (incl. Wooden Support)</b> | Length: 1000 mm<br>Width: 500 mm<br>Height: adjustable feet |                                                                                    |
| <b>Filling Volume</b>                    | Approx. 25 liters                                           |                                                                                    |
| <b>Wooden Support</b>                    | SPEAG standard phantom table                                |                                                                                    |

The bottom plate contains three pair of bolts for locking the device holder. The device holder positions are adjusted to the standard measurement positions in the three sections. A white cover is provided to tap the phantom during off-periods to prevent water evaporation and changes in the liquid parameters. On the phantom top, three reference markers are provided to identify the phantom position with respect to the robot.

### ELI Phantom:

|                        |                                            |                                                                                      |
|------------------------|--------------------------------------------|--------------------------------------------------------------------------------------|
| <b>Material</b>        | Vinylester, glass fiber reinforced (VE-GF) |  |
| <b>Shell Thickness</b> | 2.0 ± 0.2 mm (bottom plate)                |                                                                                      |
| <b>Dimensions</b>      | Major axis: 600 mm<br>Minor axis: 400 mm   |                                                                                      |
| <b>Filling Volume</b>  | approx. 30 liters                          |                                                                                      |
| <b>Wooden Support</b>  | SPEAG standard phantom table               |                                                                                      |

The ELI phantom is intended for compliance testing of handheld and body-mounted wireless devices in the frequency range of 30 MHz to 6 GHz. ELI4 is fully compatible with standard and all known tissue simulating liquids.

## 8.5 Device Holder

The SAR measured 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  $\pm 0.5\text{mm}$  would produce uncertainty in the SAR of  $\pm 20\%$ . Accurate device positioning is therefore crucial for accurate and repeatable measurements. The positions at which the devices must be measured are defined by the standards. The DASY8 device holder along with the associated adaptors / options is designed to accommodate different types & sizes (laptops, tablets, phones) of test devices and yet provide accurate and repeatable positioning as described in the test standards.

The device holder is available in two configurations (see Figure 3.13.1): for hand held transmitters (mobile phones) – MD4HHTV5 – Mounting Device for Hand-Held Transmitters and for Body-Worn transmitters – MD4LAP5 – Mounting Device for laptops and other body worn transmitters.



(a) MD4HHTV5



(b) MD4LAPV5

Figure 3.13.1: Mounting Device for Hand-Held Devices and Laptop / Body-Worn Devices

## 8.6 Measurement procedure

### 8.6.1 Power reference measurement

The Power Reference Measurement and Power Drift Measurement jobs are useful jobs for monitoring the power drift of the device under test in the batch process. The minimum distance of probe sensors to surface determines the closest measurement point to phantom surface. This distance cannot be smaller than the distance of sensor calibration points to probe tip as defined in the probe properties.

### 8.6.2 Area scan

Measurement procedures for evaluating SAR from wireless handsets typically start with a coarse measurement grid to determine the approximate location of the local peak SAR values. This is known as the area-scan procedure. In addition, identify the positions of any local maxima with SAR values within 2 dB of the maximum value, and that will not be within the zoom scan of other peaks. Additional zoom scans shall be measured for such peaks only when the primary peak is within 2 dB of the SAR compliance limit.

Area scan parameters SAR measurement as below:

| Parameter                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        | DUT transmit frequency being tested                                     |                                                                              |
|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-------------------------------------------------------------------------|------------------------------------------------------------------------------|
|                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  | $f \leq 3 \text{ GHz}$                                                  | $3 \text{ GHz} < f \leq 10 \text{ GHz}$                                      |
| Maximum distance between the measured points (geometric centre of the sensors) and the inner phantom surface ( $z_{M1}$ in Figure 20 in mm)                                                                                                                                                                                                                                                                                                                                                                                                                                                      | $5 \pm 1$                                                               | $\delta \ln(2)/2 \pm 0,5^a$                                                  |
| Maximum spacing between adjacent measured points in mm (see O.8.3.1) <sup>b</sup>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                | 20, or half of the corresponding zoom scan length, whichever is smaller | $60/f$ , or half of the corresponding zoom scan length, whichever is smaller |
| Maximum angle between the probe axis and the phantom surface normal ( $\alpha$ in Figure 20) <sup>c</sup>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        | 5° (flat phantom only)<br>30° (other phantoms)                          | 5° (flat phantom only)<br>20° (other phantoms)                               |
| Tolerance in the probe angle                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     | 1°                                                                      | 1°                                                                           |
| <sup>a</sup> $\delta$ is the penetration depth for a plane-wave incident normally on a planar half-space.<br><sup>b</sup> See Clause O.8 on how $\Delta x$ and $\Delta y$ may be selected for individual area scan requirements.<br><sup>c</sup> The probe angle relative to the phantom surface normal is restricted due to the degradation in the measurement accuracy in fields with steep spatial gradients. The measurement accuracy decreases with increasing probe angle and increasing frequency. This is the reason for the tighter probe angle restriction at frequencies above 3 GHz. |                                                                         |                                                                              |

### 8.6.3 Zoom Scan

Zoom Scans are used to assess the peak spatial SAR values within a cubic averaging volume containing 1 g and 10 g of simulated tissue. The Zoom Scan measures points (refer to table below) within a cube whose base faces are centered on the maxima found in a preceding area scan job within the same procedure. When the measurement is done, the Zoom Scan evaluates the averaged SAR for 1 g and 10 g and displays these values next to the job's label.

Zoom Scan parameters SAR measurement as below:

| Parameter                                                                                                                                                                           | DUT transmit frequency being tested            |                                                |
|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|------------------------------------------------|------------------------------------------------|
|                                                                                                                                                                                     | $f \leq 3 \text{ GHz}$                         | $3 \text{ GHz} < f \leq 10 \text{ GHz}$        |
| Maximum distance between the closest measured points and the phantom surface ( $z_{M1}$ in Figure 20 and Table 3, in mm)                                                            | 5                                              | $\delta \ln(2)/2^a$                            |
| Maximum angle between the probe axis and the phantom surface normal ( $\alpha$ in Figure 20)                                                                                        | 5° (flat phantom only)<br>30° (other phantoms) | 5° (flat phantom only)<br>20° (other phantoms) |
| Maximum spacing between measured points in the $x$ - and $y$ -directions ( $\Delta x$ and $\Delta y$ , in mm)                                                                       | 8                                              | $24/f^b$                                       |
| For uniform grids:<br>Maximum spacing between measured points in the direction normal to the phantom shell ( $\Delta z_1$ in Figure 20, in mm)                                      | 5                                              | $10/(f - 1)$                                   |
| For graded grids:<br>Maximum spacing between the two closest measured points in the direction normal to the phantom shell ( $\Delta z_1$ in Figure 20, in mm)                       | 4                                              | $12/f$                                         |
| For graded grids:<br>Maximum incremental increase in the spacing between measured points in the direction normal to the phantom shell ( $R_z = \Delta z_2/\Delta z_1$ in Figure 20) | 1,5                                            | 1,5                                            |
| Minimum edge length of the zoom scan volume in the $x$ - and $y$ -directions ( $L_z$ in O.8.3.2, in mm)                                                                             | 30                                             | 22                                             |
| Minimum edge length of the zoom scan volume in the direction normal to the phantom shell ( $L_h$ in O.8.3.2 in mm)                                                                  | 30                                             | 22                                             |
| Tolerance in the probe angle                                                                                                                                                        | 1°                                             | 1°                                             |
| <sup>a</sup> $\delta$ is the penetration depth for a plane-wave incident normally on a planar half-space.                                                                           |                                                |                                                |
| <sup>b</sup> This is the maximum spacing allowed, which might not work for all circumstances.                                                                                       |                                                |                                                |

### 8.6.4 Power Drift Measurement

The Power Drift Measurement job measures the field at the same location as the most recent power reference measurement job within the same procedure, and with the same settings. The Power Drift Measurement gives the field difference in dB from the reading conducted within the last Power Reference Measurement. Several drift measurements are possible for one reference measurement. This allows a user to monitor the power drift of the device under test that must remain within a maximum variation of  $\pm 5\%$ . Detail power drift measurement refer to appendix B.

## 9 Test Equipment list

| Manufacturer     | Equipment Name                     | Model        | Serial Number  | Calibration Date | Due Date of calibration |
|------------------|------------------------------------|--------------|----------------|------------------|-------------------------|
| SPEAG            | ELI                                | ELI V8.0     | 2227           | NCR              | NCR                     |
| SPEAG            | mmWave Phantom                     | mmWave       | 1121           | NCR              | NCR                     |
| SPEAG            | E-Field Probe                      | EX3DV4       | 7858           | 2026/02/20       | 2027/02/19              |
| SPEAG            | E-Field Probe                      | EX3DV4       | 7812           | 2026/01/19       | 2027/01/18              |
| SPEAG            | EUmmWV Probe Tip Protection        | EUmmWV4      | 9455           | 2025/06/30       | 2026/06/29              |
| SPEAG            | Data Acquisition Electronics       | DAE4         | 1846           | 2026/01/07       | 2027/01/06              |
| SPEAG            | Data Acquisition Electronics       | DAE4         | 1847           | 2026/03/17       | 2027/03/16              |
| SPEAG            | System Validation Kits             | CLA13        | 1043           | 2024/01/03       | 2027/01/02              |
| SPEAG            | System Validation Kits             | D750V3       | 1231           | 2023/05/04       | 2026/05/03              |
| SPEAG            | System Validation Kits             | D835V2       | 4d302          | 2026/02/03       | 2029/02/02              |
| SPEAG            | System Validation Kits             | D1750V2      | 1115           | 2026/02/05       | 2029/02/04              |
| SPEAG            | System Validation Kits             | D1950V3      | 1266           | 2026/02/03       | 2029/02/02              |
| SPEAG            | System Validation Kits             | D2450V2      | 1099           | 2026/02/05       | 2029/02/04              |
| SPEAG            | System Validation Kits             | D5GHzV2      | 1371           | 2026/02/09       | 2029/02/08              |
| SPEAG            | System Validation Kits             | D6.5GHzV2    | 1096           | 2023/05/11       | 2026/05/10              |
| SPEAG            | System Validation Kits             | 10GHz        | 1055           | 2024/09/16       | 2027/09/15              |
| SPEAG            | Dielectric parameter probes        | DAK3.5       | 1341           | 2025/07/14       | 2026/07/13              |
| Agilent          | Network Analyzer                   | E5071B       | MY42302220     | 2026/03/05       | 2027/03/04              |
| Anritsu          | Radio Communication Analyzer       | MT8821C      | 6261991091     | 2026/03/05       | 2027/03/04              |
| Talent Microwave | Directional Coupler                | TC-05180-10S | 220420003      | NCR              | NCR                     |
| R&S              | Signal Generator                   | SMR20        | 100648         | 2026/03/05       | 2027/03/04              |
| QiJi             | Preamplifier                       | YX28982302   | TOWE-EQ-SR-020 | NCR              | NCR                     |
| QiJi             | Preamplifier                       | YX28982301   | TOWE-EQ-SR-021 | NCR              | NCR                     |
| R&S              | Power Sensor                       | NRP-Z21      | 101651         | 2026/03/05       | 2027/03/04              |
| R&S              | Power Sensor                       | NRP-Z21      | 104189         | 2026/03/05       | 2027/03/04              |
| HiSiDiKe         | Thermometer                        | TP300        | TOWE-EQ-SR-023 | 2026/03/09       | 2027/03/08              |
| BingYu           | Temperature and Humidity Indicator | HTC-1        | TOWE-EQ-SR-025 | 2025/06/04       | 2026/06/03              |

Note:

1. Referring to KDB 865664 D01v01r04, the dipole calibration interval can be extended to 3 years with justification. The dipoles are also not physically damaged or repaired during the interval.
2. The justification data of dipole can be found in Appendix C. The return loss is < -20dB, within 20% of prior calibration, the impedance is within 5 ohm of prior calibration.

## 10 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  $< 0.80$  or  $2 \text{ W/kg}$  (1-g or 10-g respectively); steps 2) through 4) do not apply.
- 2) When the original highest measured SAR is  $\geq 0.80$  or  $2 \text{ W/kg}$  (1-g or 10-g respectively), 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  $\geq 1.45$  or  $3.6 \text{ W/kg}$  ( $\sim 10\%$  from the 1-g or 10-g respective SAR limit).
- 4) Perform a third repeated measurement only if the original, first or second repeated measurement is  $\geq 1.5$  or  $3.75 \text{ W/kg}$  (1-g or 10-g respectively) and the ratio of largest to smallest SAR for the original, first and second repeated measurements is  $> 1.20$ .

## 11 Description of Test Position

### 11.1 Body exposure conditions

The overall diagonal dimension of the display section of a tablet is > 20 cm, Per FCC KDB 616217, the back surface and edges of the tablet should be tested for SAR compliance with the tablet touching the phantom. SAR evaluation for the front surface of tablet display screens is generally not necessary. The SAR Exclusion Threshold in KDB 447498 D04 can be applied to determine SAR test exclusion for adjacent edge configurations. The closest distance from the antenna to an adjacent tablet edge is used to determine if SAR testing is required for the adjacent edges, with the adjacent edge positioned against the phantom and the edge containing the antenna positioned perpendicular to the phantom.

## 12 System Verification

### 12.1 Tissue Verification

The Conductivity ( $\sigma$ ) and Permittivity ( $\rho$ ) are listed in bellow table. The temperature variation of the Tissue Simulate Liquids was  $22\pm 2^{\circ}\text{C}$ , the liquid depth of the ear reference point or the flat phantom was at least 15 cm (which is shown in Figure 12-1).

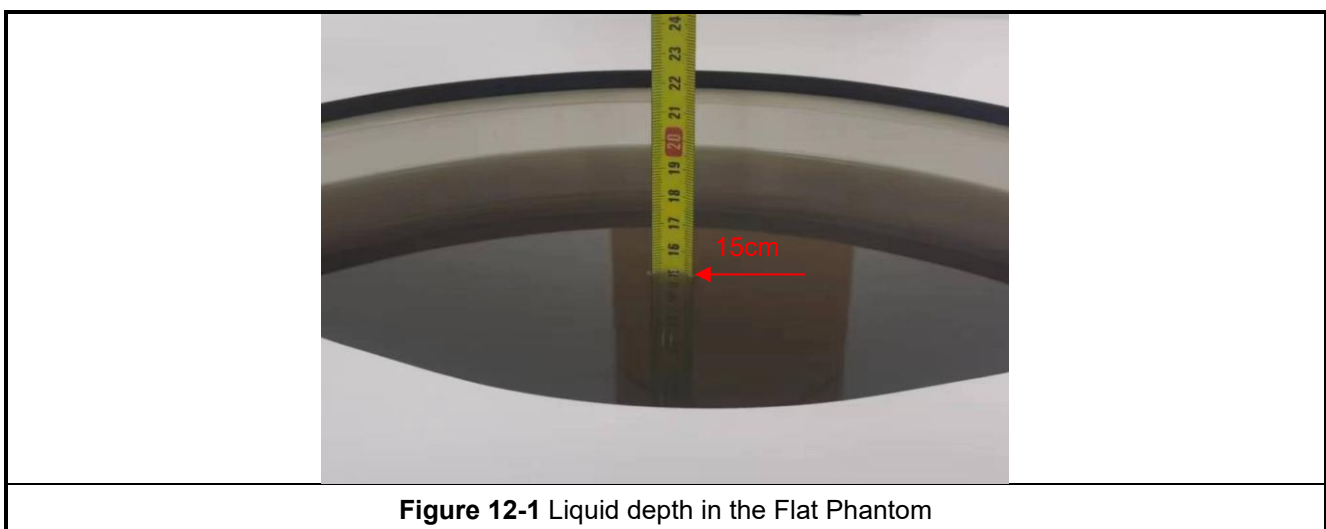


Figure 12-1 Liquid depth in the Flat Phantom

| Frequency (MHz) | Tissue Type | Liquid Temp. ( $^{\circ}\text{C}$ ) | Target Tissue             |                                   | Measured Tissue           |                                   | Deviation (Limit $\pm 5\%$ ) |                | Date       |
|-----------------|-------------|-------------------------------------|---------------------------|-----------------------------------|---------------------------|-----------------------------------|------------------------------|----------------|------------|
|                 |             |                                     | Permittivity $\epsilon_r$ | Conductivity $\sigma(\text{S/m})$ | Permittivity $\epsilon_r$ | Conductivity $\sigma(\text{S/m})$ | $\Delta\epsilon_r$           | $\Delta\sigma$ |            |
| 13              | Head        | 21.9                                | 55.00                     | 0.75                              | 55.700                    | 0.743                             | 1.27%                        | -0.93%         | 2026/04/24 |
| 750             | Head        | 22.1                                | 41.90                     | 0.89                              | 42.700                    | 0.893                             | 1.91%                        | 0.34%          | 2026/04/29 |
| 835             | Head        | 22.1                                | 41.50                     | 0.90                              | 42.300                    | 0.923                             | 1.93%                        | 2.56%          | 2026/04/28 |
| 1750            | Head        | 22.1                                | 40.10                     | 1.37                              | 40.500                    | 1.380                             | 1.00%                        | 0.73%          | 2026/04/28 |
| 1950            | Head        | 22.1                                | 40.00                     | 1.40                              | 40.900                    | 1.430                             | 2.25%                        | 2.14%          | 2026/04/28 |
| 2450            | Head        | 22.2                                | 39.20                     | 1.80                              | 40.700                    | 1.820                             | 3.83%                        | 1.11%          | 2026/05/08 |
| 5200            | Head        | 22.1                                | 36.00                     | 4.66                              | 35.300                    | 4.680                             | -1.94%                       | 0.43%          | 2026/05/06 |
| 5300            | Head        | 22.1                                | 35.90                     | 4.76                              | 35.300                    | 4.790                             | -1.67%                       | 0.63%          | 2026/05/06 |
| 5600            | Head        | 22.1                                | 35.50                     | 5.07                              | 34.300                    | 5.140                             | -3.38%                       | 1.38%          | 2026/05/06 |
| 5800            | Head        | 22.1                                | 35.30                     | 5.27                              | 34.200                    | 5.410                             | -3.12%                       | 2.66%          | 2026/05/06 |
| 6500            | Head        | 22.1                                | 34.50                     | 6.07                              | 35.500                    | 6.220                             | 2.90%                        | 2.47%          | 2026/05/07 |

Table 1: Measurement Tissue Parameters

## 12.2 SAR System Check

Prior to SAR assessment, a SAR system Check measurement was performed to see if the measured SAR was within  $\pm 10\%$  from the target SAR values. The System Performance Check Setup in Figure 12-3.

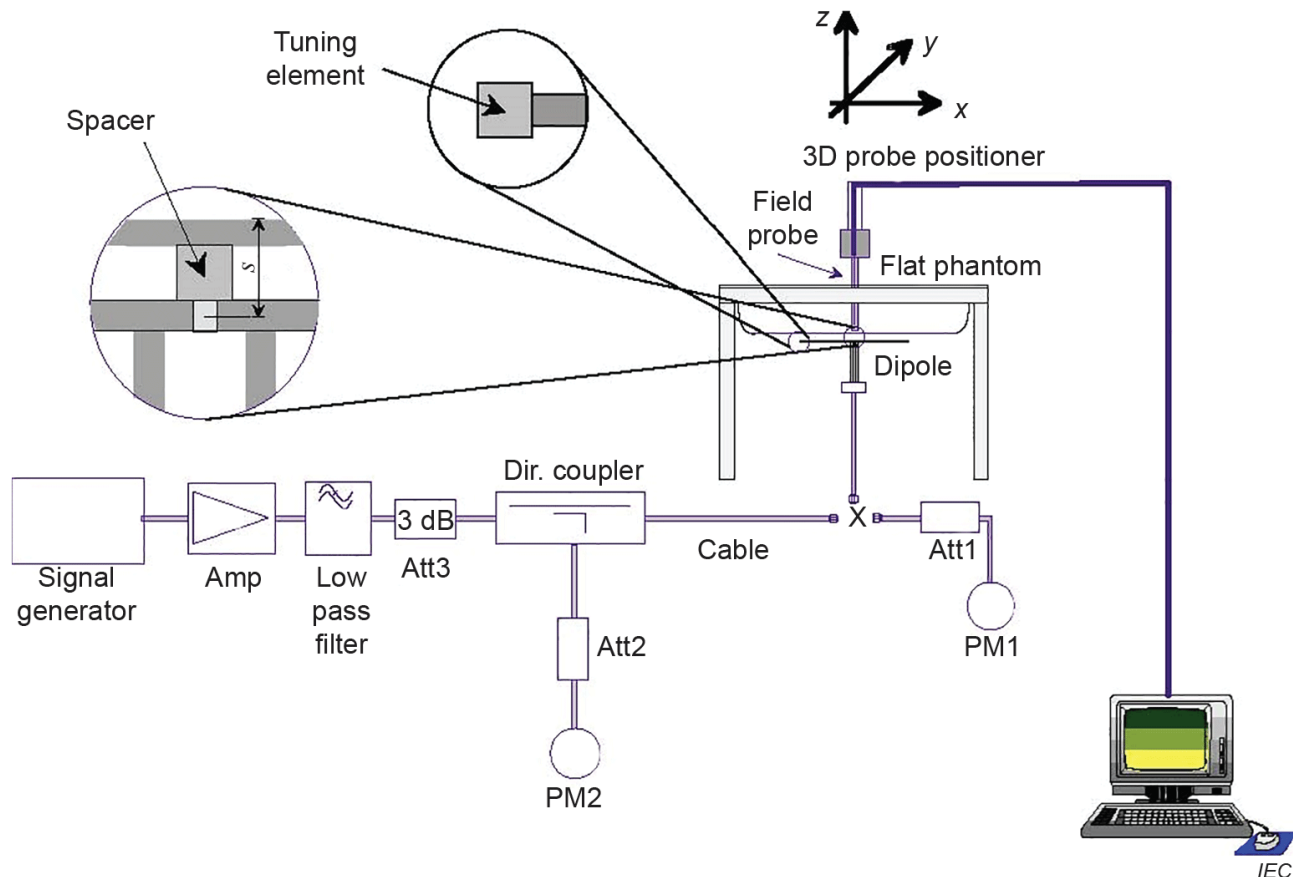


Figure 12-3 System Performance Check Setup

### 12.2.1 System Check Result

| Frequency (MHz) | Tissue Type | Dipole    | S/N   | Target SAR (1W) |            | Measured SAR (100mW) |            | Measured SAR (normalized to 1W) |            | Deviation (Limit $\pm 10\%$ ) |              | Date       |
|-----------------|-------------|-----------|-------|-----------------|------------|----------------------|------------|---------------------------------|------------|-------------------------------|--------------|------------|
|                 |             |           |       | 1g (W/kg)       | 10g (W/kg) | 1g (W/kg)            | 10g (W/kg) | 1g (W/kg)                       | 10g (W/kg) | $\Delta 1g$                   | $\Delta 10g$ |            |
| 13              | Head        | CLA-13    | 1043  | 0.484           | 0.297      | 0.045                | 0.028      | 0.450                           | 0.280      | -7.02%                        | -5.72%       | 2026/04/24 |
| 750             | Head        | D750V3    | 1231  | 8.67            | 5.67       | 0.829                | 0.551      | 8.29                            | 5.51       | -4.38%                        | -2.82%       | 2026/04/29 |
| 835             | Head        | D835V2    | 4d302 | 9.50            | 6.16       | 0.905                | 0.599      | 9.05                            | 5.99       | -4.74%                        | -2.76%       | 2026/04/28 |
| 1750            | Head        | D1750V2   | 1115  | 36.70           | 19.50      | 3.340                | 1.800      | 33.40                           | 18.00      | -8.99%                        | -7.69%       | 2026/04/28 |
| 1950            | Head        | D1950V3   | 1266  | 40.40           | 20.80      | 3.940                | 2.060      | 39.40                           | 20.60      | -2.48%                        | -0.96%       | 2026/04/28 |
| 2450            | Head        | D2450V2   | 1099  | 52.70           | 24.70      | 5.090                | 2.500      | 50.90                           | 25.00      | -3.42%                        | 1.21%        | 2026/05/08 |
| 5200            | Head        | D5GHzV2   | 1371  | 76.50           | 21.50      | 8.250                | 2.310      | 82.50                           | 23.10      | 7.84%                         | 7.44%        | 2026/05/06 |
| 5300            | Head        | D5GHzV2   | 1371  | 79.50           | 22.50      | 7.990                | 2.380      | 79.90                           | 23.80      | 0.50%                         | 5.78%        | 2026/05/06 |
| 5600            | Head        | D5GHzV2   | 1371  | 82.10           | 23.10      | 7.890                | 2.270      | 78.90                           | 22.70      | -3.90%                        | -1.73%       | 2026/05/06 |
| 5800            | Head        | D5GHzV2   | 1371  | 78.60           | 22.10      | 8.150                | 2.330      | 81.50                           | 23.30      | 3.69%                         | 5.43%        | 2026/05/06 |
| 6500            | Head        | D6.5GHzV2 | 1096  | 289.00          | 53.40      | 30.400               | 5.630      | 304.00                          | 56.30      | 5.19%                         | 5.43%        | 2026/05/07 |

Table 2: SAR System Check Result

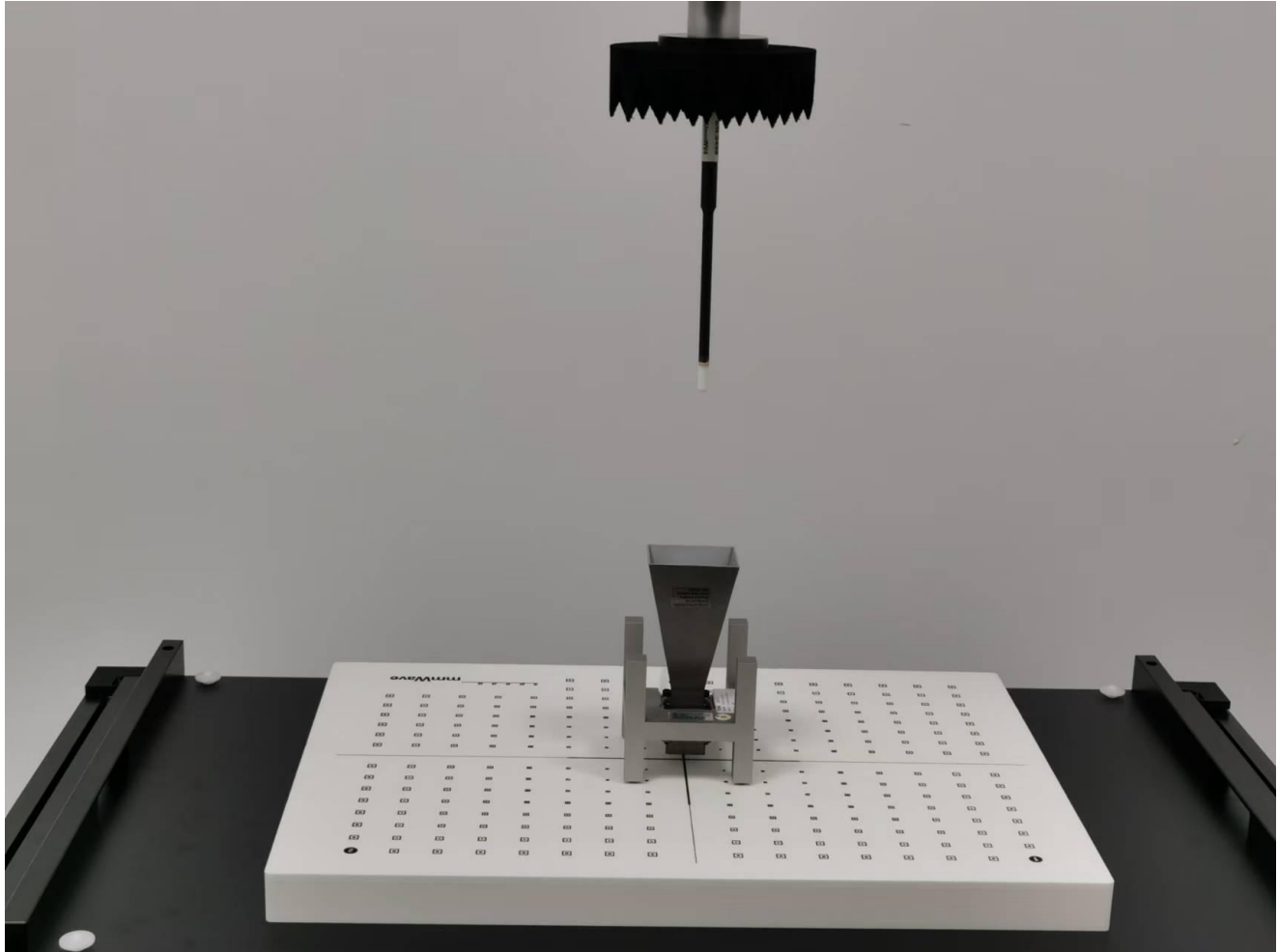
### 12.2.2 Detailed System Check Result

Please see Appendix A

## 12.3 PD System Verification

The system was verified to be within  $\pm 0.66$  dB of the power density targets on the calibration certificate according to the test system specification in the user's manual and calibration facility recommendation. The 0.66 dB deviation threshold represents the expanded uncertainty for system performance checks using SPEAG mmWave verification sources. The same spatial resolution and measurement region used in the source calibration was applied during the system check.

The measured power density distribution of verification source was also confirmed through visual inspection to have no noticeable differences, both spatially (shape) and numerically (level) from the distribution provided by the manufacturer, per November 2017 TCBC Workshop Notes.



System Verification Setup Photo

| Frequency (GHz) | PD Verification Source | Distance (mm) | Measured 4cm <sup>2</sup> (W/m <sup>2</sup> ) | Target 4cm <sup>2</sup> (W/m <sup>2</sup> ) | Deviation (dB) | Measured Date |
|-----------------|------------------------|---------------|-----------------------------------------------|---------------------------------------------|----------------|---------------|
| 10G             | 10GHz_1055             | 10            | 55.70                                         | 56.20                                       | 0.03           | 2026/04/26    |
| 10G             | 10GHz_1055             | 10            | 59.50                                         | 56.20                                       | 0.39           | 2026/04/27    |

Detailed System Check Results Please see Appendix A.

## **13 SAR General Measurement Procedures**

### **13.1 3G SAR Test Reduction Procedure**

In FCC KDB Publication 941225 D01, certain transmission modes within a frequency band and wireless mode evaluated for SAR are defined as primary modes. The equivalent modes considered for SAR test reduction are denoted as secondary modes. When the maximum output power including tune-up tolerance specified for production units in a secondary mode is  $\leq 0.25$  dB higher than the primary mode or when the highest reported SAR of the primary mode, scaled by the ratio of specified maximum output power and tune-up tolerance of secondary to primary mode, is  $\leq 1.2$  W/kg, SAR measurements are not required for the secondary mode. These criteria are referred to as the 3G SAR test reduction procedure. When the 3G SAR test reduction procedure is not satisfied, SAR measurements are additionally required for the secondary mode.

### **13.2 SAR Measurement Conditions for UMTS**

#### **13.2.1 Output Power Verification**

Maximum output power is verified on the high, middle and low channels according to procedures described in section 5.2 of 3GPP TS 34.121, using the appropriate RMC or AMR with TPC (transmit power control) set to all "1's" for WCDMA/HSDPA or by applying the required inner loop power control procedures to maintain maximum output power while HSUPA is active. Results for all applicable physical channel configurations (DPCCH, DPDCH<sub>n</sub> and spreading codes, HSDPA, HSPA) are required in the SAR report. All configurations that are not supported by the handset or cannot be measured due to technical or equipment limitations must be clearly identified.

#### **13.2.2 Body SAR Measurements**

SAR for body configurations is measured using a 12.2 kbps RMC with TPC bits configured to all "1's". The 3G SAR test reduction procedure is applied to other spreading codes and multiple DPDCH<sub>n</sub> configurations supported by the handset with 12.2 kbps RMC as the primary mode. Otherwise, SAR is measured using an applicable RMC configuration with the corresponding spreading code or DPDCH<sub>n</sub>, for the highest reported SAR configuration in 12.2 kbps RMC.

#### **13.2.3 SAR Measurements with Rel. 5 HSDPA**

The 3G SAR test reduction procedure is applied to HSDPA body configurations with 12.2 kbps RMC as the primary mode. Otherwise, Body SAR for HSDPA is measured using and FRC with H-SET 1 in Sub-test and a 12.2 kbps RMC without HSDPA. Handsets with both HSDPA and HSUPA are tested according to release 6 HSPA test procedures. 8.4.5 SAR Measurement with Rel.6 HSUPA The 3G SAR test Reduction Procedure is applied to HSPA (HSUPA/HSDPA with RMC) body configurations with 12.2 kbps RMC as the primary mode. Otherwise, Body SAR for HSPA is measured with E-DCH Sub-test 5, Using H-Set 1 and QPSK for FRC and a 12.2kbps RMC configured in Test Loop Mode 1 and Power Control algorithm 2, according to the highest reported body SAR configuration in 12.2 kbps RMC without HSPA. When VOIP applies to head exposure, the 3G SAR test reduction procedure is applied with 12.2 kbps RMC as the primary mode; otherwise, the same HSPA configuration used for body SAR measurements are applied to head exposure testing.

#### **13.2.4 SAR Measurements with Rel. 6 HSUPA**

The 3G SAR test reduction procedure is applied to HSPA (HSUPA/HSDPA with RMC) body configurations with 12.2 kbps RMC as the primary mode. Otherwise, Body SAR for HSPA is measured with E-DCH Sub-test 5, using H-Set1 and QPSK for FRC and a 12.2 kbps RMC configured in Test Loop Mode 1 and power control algorithm 2, according to the highest reported body SAR configuration in 12.2 kbps RMC without HSPA.

When VOIP applies to head exposure, the 3G SAR test reduction procedure is applied with 12.2 kbps RMC as the primary mode; otherwise, the same HSPA configuration used for body SAR measurements are applied to head exposure testing.

**13.2.5 SAR Measurement Conditions for HSPA+(16QAM)**

Per KDB 941225D01, SAR is required for Rel. 7 HSPA+ when SAR is required for Rel. 6 HSPA; otherwise, the 3G SAR test reduction procedure is applied to (uplink) HSPA+ with 12.2 kbps RMC as the primary mode. Power is measured for HSPA+ that supports uplink 16 QAM according to configurations in Table C.11.1.4 of 3GPP TS 34.121-1 to determine SAR test reduction.

■ Table C.11.1.4:  $\beta$  values for transmitter characteristics tests with HS-DPCCH and E-DCH with 16QAM

| Sub-test                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   | $\beta_c$<br>(Note3) | $\beta_d$ | $\beta_{HS}$<br>(Note1) | $\beta_{EC}$ | $\beta_{ed1}$<br>(2xSF2)<br>(Note 4)           | $\beta_{ed2}$<br>(2xSF4)<br>(Note 4)           | CM<br>(dB)<br>(Note 2) | MPR<br>(dB)<br>(Note 2) | AG<br>Index<br>(Note 4) | E-TFCI<br>(Note 5) | E-TFCI<br>(boost) |
|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|----------------------|-----------|-------------------------|--------------|------------------------------------------------|------------------------------------------------|------------------------|-------------------------|-------------------------|--------------------|-------------------|
| 1                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          | 1                    | 0         | 30/15                   | 30/15        | $\beta_{ed1}$ : 30/15<br>$\beta_{ed2}$ : 30/15 | $\beta_{ed3}$ : 24/15<br>$\beta_{ed4}$ : 24/15 | 3.5                    | 2.5                     | 14                      | 105                | 105               |
| <p>Note 1: <math>\Delta_{ACK}</math>, <math>\Delta_{NACK}</math> and <math>\Delta_{CQI} = 30/15</math> with <math>\beta_{HS} = 30/15 * \beta_c</math>.</p> <p>Note 2: CM = 3.5 and the MPR is based on the relative CM difference, MPR = MAX(CM-1,0).</p> <p>Note 3: DPDCH is not configured, therefore the <math>\beta_c</math> is set to 1 and <math>\beta_d = 0</math> by default.</p> <p>Note 4: <math>\beta_{ed}</math> can not be set directly; it is set by Absolute Grant Value.</p> <p>Note 5: All the sub-tests require the UE to transmit 2SF2+2SF4 16QAM EDCH and they apply for UE using E-DPDCH category 7. E-DCH TTI is set to 2ms TTI and E-DCH table index = 2. To support these E-DCH configurations DPDCH is not allocated. The UE is signalled to use the extrapolation algorithm.</p> |                      |           |                         |              |                                                |                                                |                        |                         |                         |                    |                   |

### 13.3 SAR Measurement Conditions for LTE

LTE modes are tested according to FCC KDB 941225 D05 publication. Establishing connections with base station simulators ensure a consistent means for testing SAR and are recommended for evaluating SAR [4]. The R&S CMW500 or Anritsu MT8820C/MT8821C simulators are used for LTE output power measurements and SAR testing. Closed loop power control was used so the UE transmits with maximum output power during SAR testing. SAR tests were performed with the same number of RB and RB offsets transmitting on all TTI frames (maximum TTI).

#### 13.3.1 Spectrum Plots for RB Configurations

A properly configured base station simulator was used for SAR tests and power measurements. Therefore, spectrum plots for RB configurations were not required to be included in this report.

#### 13.3.2 MPR

MPR is permanently implemented for this device by the manufacturer. The specific manufacturer target MPR is indicated alongside the SAR results. MPR is enabled for this device, according to 3GPP TS36.101 Section 6.2.3 – 6.2.5 under Table 6.2.3-1.

| Modulation | Channel bandwidth/Transmission bandwidth |       |       |        |        |        | MPR (dB) |
|------------|------------------------------------------|-------|-------|--------|--------|--------|----------|
|            | 1.4 MHz                                  | 3 MHz | 5 MHz | 10 MHz | 15 MHz | 20 MHz |          |
| QPSK       | ≤ 5                                      | ≤ 4   | ≤ 8   | ≤ 12   | ≤ 16   | ≤ 18   | 0        |
| QPSK       | > 5                                      | > 4   | > 8   | > 12   | > 16   | > 18   | 1        |
| 16QAM      | ≤ 5                                      | ≤ 4   | ≤ 8   | ≤ 12   | ≤ 16   | ≤ 18   | 1        |
| 16QAM      | > 5                                      | > 4   | > 8   | > 12   | > 16   | > 18   | 2        |
| 64QAM      | ≤ 5                                      | ≤ 4   | ≤ 8   | ≤ 12   | ≤ 16   | ≤ 18   | 2        |
| 64QAM      | > 5                                      | > 4   | > 8   | > 12   | > 16   | > 18   | 3        |
| 256QAM     | ≥1                                       |       |       |        |        |        | 5        |

#### 13.3.3 A-MPR

A-MPR (Additional MPR) has been disabled for all SAR tests by setting NS=01 on the base station simulator.

#### 13.3.4 Largest channel bandwidth standalone SAR test requirements

##### A. QPSK with 1 RB allocation

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. When the reported SAR is ≤ 0.8 W/kg, testing of the remaining RB offset configurations and required test channels is not required for 1 RB allocation; otherwise, SAR is required for the remaining required test channels and only for the RB offset configuration with the highest output power for that channel. When the reported SAR of a required test channel is > 1.45 W/kg, SAR is required for all three RB offset configurations for that required test channel.

##### B. QPSK with 50% RB allocation

The procedures required for 1 RB allocation in A are applied to measure the SAR for QPSK with 50% RB allocation.

##### C. QPSK with 100% RB allocation

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 in A and B 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.

**D. Higher order modulations**

For each modulation besides QPSK; e.g., 16-QAM, 64-QAM, apply the QPSK procedures in A, B, and C to determine the QAM configurations that may need SAR measurement. For each configuration identified as required for testing, SAR is required only when the highest maximum output power for the configuration in the higher order modulation is  $> \frac{1}{2}$  dB higher than the same configuration in QPSK or when the reported SAR for the QPSK configuration is  $> 1.45$  W/kg.

**13.3.5 Other channel bandwidth standalone SAR test requirements**

For the other channel bandwidths used by the device in a frequency band, apply all the procedures required for the largest channel bandwidth in 13.4.4 to determine the channels and RB configurations that need SAR testing, then only measure SAR when the highest maximum output power of a configuration requiring testing in the smaller channel bandwidth is  $> \frac{1}{2}$  dB higher than the equivalent channel configurations in the largest channel bandwidth configuration, or the reported SAR of a configuration for the largest channel bandwidth is  $> 1.45$  W/kg.

**13.4 SAR Testing with 802.11 Transmitters**

The normal network operating configurations of 802.11 transmitters are not suitable for SAR measurements. 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 the results are consistent and reliable. See KDB Publication 248227 D01 for more details.

A Wi-Fi device must be configured to transmit continuously at the required data rate, channel bandwidth and signal modulation, using the highest transmission duty factor supported by the test mode tools for SAR measurement.

For WiFi SAR testing, a communication link is set up with some command for WiFi mode test. During the test, at the each test frequency channel, the EUT is operated at the RF continuous emission mode. Per KDB248227 D01, a minimum transmission duty factor of 85% is required to avoid certain hardware and device implementation issues related to wide range SAR scaling. The reported SAR must be scaled to 100% transmission duty factor to determine compliance at the maximum tune-up tolerance limit.

**13.4.1 Initial Test Position Procedure**

DSSS and OFDM configurations are considered separately according to the required SAR procedures. SAR is measured in the initial test position using the 802.11 transmission mode configuration required by the DSSS procedure or initial test configuration and subsequent test configuration(s) according to the OFDM procedures. The initial test position procedure is described in the following:

1. When the reported SAR of the initial test position is  $\leq 0.4$  W/kg, further SAR measurement is not required for the other (remaining) test positions in that exposure configuration and 802.11 transmission mode combinations within the frequency band or aggregated band. SAR is also not required for that exposure configuration in the subsequent test configuration(s).
2. When the reported SAR of the initial test position is  $> 0.4$  W/kg, SAR is repeated for the 802.11 transmission mode configuration tested in the initial test position using subsequent highest extrapolated or estimated 1-g SAR conditions determined by area scans or next closest/smallest test separation distance and maximum RF coupling test positions based on manufacturer justification, on the highest maximum output power channel, until the reported SAR is  $\leq 0.8$  W/kg or all required test positions (left, right, touch, tilt or subsequent surfaces and edges) are tested.
3. For all positions/configurations tested using the initial test position and subsequent test positions, when the reported SAR is  $> 0.8$  W/kg, SAR is measured for these test positions/configurations on the subsequent next highest measured output power channel(s) until the reported SAR is  $\leq 1.2$  W/kg or all required channels are tested. a) Additional power measurements may be required for this step, which should be limited to those necessary for identifying the subsequent highest output power channels.

### 13.4.2 Initial Test Configuration Procedure

An initial test configuration is determined for OFDM transmission modes according to the channel bandwidth, modulation and data rate combination(s) with the highest maximum output power specified for production units in each standalone and aggregated frequency band. SAR is measured using the highest measured maximum output power channel. For configurations with the same specified or measured maximum output power, additional transmission mode and test channel selection procedures are required. SAR test reduction for subsequent highest output test channels is determined according to reported SAR of the initial test configuration.

For next to the ear, hotspot mode and UMC mini-tablet exposure configurations where multiple test positions are required, the initial test position procedure is applied to minimize the number of test positions required for SAR measurement using the initial test configuration transmission mode. For fixed exposure conditions that do not have multiple SAR test positions, SAR is measured in the transmission mode determined by the initial test configuration.

When the reported SAR of the initial test configuration is  $> 0.8$  W/kg, SAR measurement is required for subsequent next highest measured output power channel(s) in the initial test configuration until reported SAR is  $\leq 1.2$  W/kg or all required channels are tested.

### 13.4.3 Subsequent Test Configuration Procedures

For OFDM configurations in each frequency Band and aggregated Band, SAR is evaluated for initial test configuration using the fixed test position or the initial test position on procedure. When the highest reported SAR (for the initial test configuration), adjusted by the ratio of the specified maximum output power of the subsequent test configuration to initial test configuration, is  $\leq 1.2$  W/kg for 1g SAR and  $\leq 3.0$  W/kg for 10g SAR, no additional SAR tests for the subsequent test configurations are required.

### 13.4.4 2.4 GHz SAR Procedures

Separate SAR procedures are applied to DSSS and OFDM configurations in the 2.4 GHz band to simplify DSSS test requirements. For 802.11b DSSS SAR measurements, DSSS SAR procedure applies to fixed exposure test position and initial test position procedure applies to multiple exposure test positions.

#### A) 802.11b DSSS SAR Test Requirements

SAR is measured for 2.4 GHz 802.11b DSSS using either a fixed test position or, when applicable, the initial test position procedure. SAR test reduction is determined according to the following:

1. When the reported SAR of the highest measured maximum output power channel for the exposure configuration is  $\leq 0.8$  W/kg, no further SAR testing is required for 802.11b DSSS is that exposure configuration.
2. When the reported SAR is  $> 0.8$  W/kg, SAR is required for that exposure configuration using the next highest measured output power channel. When any reported SAR is  $> 1.2$  W/kg, SAR is required for the third channel; i.e., all channels require testing.

#### B) 2.4 GHz 802.11g/n OFDM SAR Test Exclusion Requirements

When SAR measurement is required for 2.4 GHz 802.11g/n OFDM configurations, the measurement and test reduction procedures for OFDM are applied (section 5.3 of of KDB248227 D01). SAR is not required for the following 2.4 GHz OFDM conditions.

1. When KDB Publication 447498 SAR test exclusion applies to the OFDM configuration.
2. When the highest reported SAR for DSSS is adjusted by the ratio of OFDM to DSSS specified maximum output power and the adjusted SAR is  $\leq 1.2$  W/kg.

#### C) SAR Test Requirements for OFDM configurations

When SAR measurement is required for 802.11 g/n OFDM configurations, each standalone and frequency aggregated band is considered separately for SAR test reduction. In applying the initial test configuration and subsequent test configuration procedures, the 802.11 transmission configuration with the highest specified maximum output power and the channel within a test configuration with the highest measured maximum output power should be clearly distinguished to apply the procedures.

### 13.4.5 5 GHz SAR Procedures

#### 13.4.5.1 U-NII-1 and U-NII-2A Bands

For devices that operate in only one of the U-NII-1 and U-NII-2A bands, the normally required SAR procedures for OFDM configurations are applied. For devices that operate in both U-NII bands using the same transmitter and antenna(s), SAR test reduction is determined according to the following:

- 1) When the same maximum output power is specified for both bands, begin SAR measurement in U-NII-2A band by applying the OFDM SAR requirements. If the highest reported SAR for a test configuration is  $\leq 1.2$  W/kg, SAR is not required for U-NII-1 band for that configuration (802.11 mode and exposure condition); otherwise, both bands are tested independently for SAR.
- 2) When different maximum output power is specified for the bands, begin SAR measurement in the band with higher specified maximum output power. The highest reported SAR for the tested configuration is adjusted by the ratio of lower to higher specified maximum output power for the two bands. When the adjusted SAR is  $\leq 1.2$  W/kg, SAR is not required for the band with lower maximum output power in that test configuration; otherwise, both bands are tested independently for SAR.
- 3) The two U-NII bands may be aggregated to support a 160 MHz channel on channel number 50. Without additional testing, the maximum output power for this is limited to the lower of the maximum output power certified for the two bands. When SAR measurement is required for at least one of the bands and the highest reported SAR adjusted by the ratio of specified maximum output power of aggregated to standalone band is  $> 1.2$  W/kg, SAR is required for the 160 MHz channel. This procedure does not apply to an aggregated band with maximum output higher than the standalone band(s); the aggregated band must be tested independently for SAR. SAR is not required when the 160 MHz channel is operating at a reduced maximum power and also qualifies for SAR test exclusion.

#### 13.4.5.2 U-NII-2C and U-NII-3 Bands

The frequency range covered by these bands is 380 MHz (5.47 – 5.85 GHz), which requires a minimum of at least two SAR probe calibration frequency points to support SAR measurements. When Terminal Doppler Weather Radar (TDWR) restriction applies, all channels that operate at 5.60 – 5.65 GHz must be included to apply the SAR test reduction and measurement procedures.

When the same transmitter and antenna(s) are used for U-NII-2C band and U-NII-3 band or 5.8 GHz band of §15.247, the bands may be aggregated to enable additional channels with 20, 40 or 80 MHz bandwidth to span across the band gap, as illustrated in Appendix B. The maximum output power for the additional band gap channels is limited to the lower of those certified for the bands. Unless band gap channels are permanently disabled, they must be considered for SAR testing. The frequency range covered by these bands is 380 MHz (5.47 – 5.85 GHz), which requires a minimum of at least two SAR probe calibration frequency points to support SAR measurements. To maintain SAR measurement accuracy and to facilitate test reduction, the channels in U-NII-2C band above 5.65 GHz may be grouped with the 5.8 GHz channels in U-NII-3 or §15.247 band to enable two SAR probe calibration frequency points to cover the bands, including the band gap channels. When band gap channels are supported and the bands are not aggregated for SAR testing, band gap channels must be considered independently in each band according to the normally required OFDM SAR measurement and probe calibration frequency points requirements.

### 13.4.6 OFDM Transmission Mode and SAR Test Channel Selection

When the same maximum output power was specified for multiple OFDM transmission mode configurations in a frequency band or aggregated band, SAR is measured using the configuration with the largest channel bandwidth, lowest order modulation and lowest data rate. When the maximum output power of a channel is the same for equivalent OFDM configurations; for example, 802.11a, 802.11n and 802.11ac or 802.11g and 802.11n with the same channel bandwidth, modulation and data rate etc., the lower order 802.11 mode i.e., 802.11a, then 802.11n and 802.11ac or 802.11g then 802.11n, is used for SAR measurement. When the maximum output power are the same for multiple test channels, either according to the default or additional power measurement requirements, SAR is measured using the channel closest to the middle of the frequency band or aggregated band. When there are multiple channels with the same maximum output power, SAR is measured using the higher number channel.

### 13.4.7 MIMO SAR Considerations

Per KDB 248227 D01, the simultaneous SAR provisions in KDB 447498 D01v06 should be applied to determine simultaneous transmission SAR test exclusion for WIFI MIMO. If the sum of 1g single transmission chain SAR measurements is  $< 1.6$  W/kg, no additional SAR measurements for MIMO are required. Alternatively, SAR for MIMO can be measured with all antennas transmitting simultaneously at the specified maximum output power of MIMO operation.

## 14 Conducted Power

**Note:** The detailed conducted power table can refer to Appendix E.

## 15 SAR Data Summary

### General Notes:

- 1) The Highest Reported SAR Plot refer to Appendix B.
- 2) Per KDB 447498 D01, testing of other required channels within the operating mode of a frequency band is not required when the reported 1g or 10g SAR for the mid-band or highest output power channel is:
  - $\leq 0.8\text{W/kg}$  for 1g or  $2.0\text{W/kg}$  for 10g respectively, when the transmission band is  $\leq 100\text{MHz}$ .
  - $\leq 0.6\text{ W/kg}$  or  $1.5\text{ W/kg}$ , for 1g or 10g respectively, when the transmission band is between 100 MHz and 200MHz.
  - $\leq 0.4\text{ W/kg}$  or  $1.0\text{ W/kg}$ , for 1g or 10g respectively, when the transmission band is  $\geq 200\text{MHz}$ .

### WiFi 5G Notes:

- 1) When the same maximum output power is specified for both bands, begin SAR measurement in U-NII-2A band by applying the OFDM SAR requirements. As the highest reported SAR for a test configuration is  $\leq 1.2\text{ W/kg}$ , SAR is not required for U-NII-1 band for that configuration.
- 2) For Wi-Fi 5G, U-NII-2A (5250-5350 MHz) and U-NII-2C (5470-5725 MHz) bands does not support hotspot function.

When the highest reported SAR for the initial test configuration is adjusted by the ratio of the subsequent test configuration to initial test configuration specified maximum output power and the adjusted SAR is  $\leq 1.2\text{ W/kg}$ , SAR test for the other 802.11 modes are not required.

### For NFC:

- 1) Standalone SAR testing for NFC will be performed with active mode and max power mode by test software with 100% duty cycle at 0mm separation distance.

### For WIFI 6G:

- 1) Absorbed power density (APD) using a  $4\text{cm}^2$  averaging area is reported based on SAR measurements.
- 2) Per FCC guidance and equipment manufacturer guidance, the power density results were scaled according to IEC 62479:2010 for the portion of the measurement uncertainty  $> 30\%$ . Total expanded uncertainty of 2.67 dB (84.93%) was used to determine the psPD measurement scaling factor.
- 3) Per April 2021 TCB Workshop, For the highest SAR test configurations also measure incident PD (total) using power-density reconstruction method in 2 mm closest measurement plane.
- 4) IPD is measured for all edges and surfaces of the device with a transmitting antenna located within 25 mm from that surface or edge.
- 5) The measurement procedure consists of measuring the PDinc at two different distances: 2 mm (compliance distance) and  $\lambda/5$ . The grid extents should be large enough to fully capture the transmitted energy. The grid step should be fine enough to demonstrate that the integrated Power Density iPDn fulfil the criterion described below. Since iPD ratio between the two distances is  $\geq -1\text{dB}$ , the grid step (0.0625) was sufficient for determining compliance at  $d=2\text{mm}$ .

$$10 \cdot \log_{10} \frac{iPD_n(2\text{mm})}{iPD_n(\lambda/5)} \geq -1$$

**15.1 SAR Measurement Result of WCDMA Band II**

| Test position      | Mode | Ch./Freq.(MHz) | SAR (W/kg)<br>1-g | Conducted<br>Power(dBm) | Tune up<br>Limit(dBm) | Scaling<br>Factor | Reported<br>1g SAR<br>(W/kg) |
|--------------------|------|----------------|-------------------|-------------------------|-----------------------|-------------------|------------------------------|
| Body 0mm           |      |                |                   |                         |                       |                   |                              |
| Back side          | RMC  | 9400/1880      | 0.157             | 23.59                   | 24.00                 | 1.099             | 0.173                        |
| Left side          | RMC  | 9400/1880      | 0.004             | 23.59                   | 24.00                 | 1.099             | 0.004                        |
| Right side         | RMC  | 9400/1880      | 0.125             | 23.59                   | 24.00                 | 1.099             | 0.137                        |
| Top side           | RMC  | 9400/1880      | 0.002             | 23.59                   | 24.00                 | 1.099             | 0.002                        |
| Bottom Side        | RMC  | 9400/1880      | 0.713             | 23.59                   | 24.00                 | 1.099             | 0.784                        |
| Bottom Side        | RMC  | 9262/1852.4    | 0.834             | 23.51                   | 24.00                 | 1.119             | <b>0.934</b>                 |
| Bottom Side Repeat | RMC  | 9262/1852.4    | 0.817             | 23.51                   | 24.00                 | 1.119             | 0.915                        |
| Bottom Side        | RMC  | 9538/1907.6    | 0.653             | 23.59                   | 24.00                 | 1.099             | 0.718                        |

Table 3: SAR of WCDMA Band II.

| Test Position                                                                                                                                                                                                                                                     | Channel/<br>Frequency<br>(MHz) | Measured<br>SAR (1g) | 1 <sup>st</sup> Repeated<br>SAR (1g) | Ratio | 2 <sup>nd</sup> Repeated<br>SAR (1g) | 3 <sup>rd</sup> Repeated<br>SAR (1g) |
|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|--------------------------------|----------------------|--------------------------------------|-------|--------------------------------------|--------------------------------------|
| Bottom Side                                                                                                                                                                                                                                                       | 9262/1852.4                    | 0.834                | 0.817                                | 1.021 | N/A                                  | N/A                                  |
| Note: 1) When the original highest measured SAR is $\geq 0.80$ W/kg, the measurement was repeated once.                                                                                                                                                           |                                |                      |                                      |       |                                      |                                      |
| 2) A second repeated measurement was performed only if the ratio of largest to smallest SAR for the original and first repeated measurement was $> 1.20$ or when the original or repeated measurement was $\geq 1.45$ W/kg ( $\sim 10\%$ from the 1-g SAR limit). |                                |                      |                                      |       |                                      |                                      |
| 3) A third repeated measurement was performed only if the original, first or second repeated measurement was $\geq 1.5$ W/kg and the ratio of largest to smallest SAR for the original, first and second repeated measurements is $> 1.20$ .                      |                                |                      |                                      |       |                                      |                                      |
| 4) Repeated measurements are not required when the original highest measured SAR is $< 0.80$ W/kg                                                                                                                                                                 |                                |                      |                                      |       |                                      |                                      |

**15.2 SAR Measurement Result of WCDMA Band IV**

| Test position | Mode | Ch./Freq.(MHz) | SAR (W/kg)<br>1-g | Conducted<br>Power(dBm) | Tune up<br>Limit(dBm) | Scaling<br>Factor | Reported<br>1g SAR<br>(W/kg) |
|---------------|------|----------------|-------------------|-------------------------|-----------------------|-------------------|------------------------------|
| Body 0mm      |      |                |                   |                         |                       |                   |                              |
| Back side     | RMC  | 1513/1752.6    | 0.040             | 23.49                   | 24.00                 | 1.125             | 0.045                        |
| Left side     | RMC  | 1513/1752.6    | 0.006             | 23.49                   | 24.00                 | 1.125             | 0.007                        |
| Right side    | RMC  | 1513/1752.6    | 0.008             | 23.49                   | 24.00                 | 1.125             | 0.009                        |
| Top side      | RMC  | 1513/1752.6    | 0.002             | 23.49                   | 24.00                 | 1.125             | 0.002                        |
| Bottom Side   | RMC  | 1513/1752.6    | 0.017             | 23.49                   | 24.00                 | 1.125             | 0.019                        |
| Bottom Side   | RMC  | 1312/1712.4    | 0.024             | 23.46                   | 24.00                 | 1.132             | 0.027                        |
| Bottom Side   | RMC  | 1412/1732.4    | 0.089             | 23.45                   | 24.00                 | 1.135             | <b>0.101</b>                 |

Table 4: SAR of WCDMA Band IV.

**15.3 SAR Measurement Result of WCDMA Band V**

| Test position      | Mode | Ch./Freq.(MHz) | SAR<br>(W/kg)<br>10-g | Conducted<br>Power(dBm) | Tune up<br>Limit(dBm) | Scaling<br>Factor | Reported<br>1g SAR<br>(W/kg) |
|--------------------|------|----------------|-----------------------|-------------------------|-----------------------|-------------------|------------------------------|
| Body 0mm           |      |                |                       |                         |                       |                   |                              |
| Back side          | RMC  | 4233/846.6     | 0.583                 | 23.65                   | 24.00                 | 1.084             | 0.632                        |
| Left side          | RMC  | 4233/846.6     | 0.060                 | 23.65                   | 24.00                 | 1.084             | 0.065                        |
| Right side         | RMC  | 4233/846.6     | 0.638                 | 23.65                   | 24.00                 | 1.084             | 0.692                        |
| Top side           | RMC  | 4233/846.6     | 0.049                 | 23.65                   | 24.00                 | 1.084             | 0.053                        |
| Bottom Side        | RMC  | 4233/846.6     | 0.928                 | 23.65                   | 24.00                 | 1.084             | 1.006                        |
| Bottom Side        | RMC  | 4132/826.4     | 0.875                 | 23.59                   | 24.00                 | 1.099             | 0.962                        |
| Bottom Side        | RMC  | 4182/836.4     | 0.987                 | 23.53                   | 24.00                 | 1.114             | <b>1.100</b>                 |
| Bottom Side Repeat | RMC  | 4182/836.4     | 0.942                 | 23.53                   | 24.00                 | 1.114             | 1.050                        |

Table 5: SAR of WCDMA Band V.

| Test Position                                                                                                                                                                                                                                                     | Channel/<br>Frequency<br>(MHz) | Measured<br>SAR (1g) | 1 <sup>st</sup> Repeated<br>SAR (1g) | Ratio | 2 <sup>nd</sup> Repeated<br>SAR (1g) | 3 <sup>rd</sup> Repeated<br>SAR (1g) |
|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|--------------------------------|----------------------|--------------------------------------|-------|--------------------------------------|--------------------------------------|
| Bottom Side                                                                                                                                                                                                                                                       | 4233/846.6                     | 0.987                | 0.942                                | 1.048 | N/A                                  | N/A                                  |
| Note: 1) When the original highest measured SAR is $\geq 0.80$ W/kg, the measurement was repeated once.                                                                                                                                                           |                                |                      |                                      |       |                                      |                                      |
| 2) A second repeated measurement was performed only if the ratio of largest to smallest SAR for the original and first repeated measurement was $> 1.20$ or when the original or repeated measurement was $\geq 1.45$ W/kg ( $\sim 10\%$ from the 1-g SAR limit). |                                |                      |                                      |       |                                      |                                      |
| 3) A third repeated measurement was performed only if the original, first or second repeated measurement was $\geq 1.5$ W/kg and the ratio of largest to smallest SAR for the original, first and second repeated measurements is $> 1.20$ .                      |                                |                      |                                      |       |                                      |                                      |
| 4) Repeated measurements are not required when the original highest measured SAR is $< 0.80$ W/kg                                                                                                                                                                 |                                |                      |                                      |       |                                      |                                      |

## 15.4 SAR Measurement Result of LTE Band 2

| Test position   | BW. (MHz) | Mode       | Ch./Freq.(MHz) | SAR (W/kg) 1-g | Conducted Power(dBm) | Tune up Limit(dBm) | Scaling Factor | Reported 1g SAR (W/kg) |
|-----------------|-----------|------------|----------------|----------------|----------------------|--------------------|----------------|------------------------|
| Body 0mm 1RB    |           |            |                |                |                      |                    |                |                        |
| Back side       | 20        | QPSK 1_50  | 18900/1880     | 0.159          | 22.47                | 23.00              | 1.130          | 0.180                  |
| Left side       | 20        | QPSK 1_50  | 18900/1880     | 0.008          | 22.47                | 23.00              | 1.130          | 0.009                  |
| Right side      | 20        | QPSK 1_50  | 18900/1880     | 0.122          | 22.47                | 23.00              | 1.130          | 0.138                  |
| Top side        | 20        | QPSK 1_50  | 18900/1880     | 0.002          | 22.47                | 23.00              | 1.130          | 0.002                  |
| Bottom side     | 20        | QPSK 1_50  | 18900/1880     | 0.683          | 22.47                | 23.00              | 1.130          | 0.772                  |
| Bottom side     | 20        | QPSK 1_50  | 18700/1860     | 0.639          | 22.26                | 23.00              | 1.186          | 0.758                  |
| Bottom side     | 20        | QPSK 1_50  | 19100/1900     | 0.714          | 22.33                | 23.00              | 1.167          | <b>0.833</b>           |
| Body 0mm 50%RB  |           |            |                |                |                      |                    |                |                        |
| Back side       | 20        | QPSK 50_50 | 19100/1900     | 0.137          | 21.27                | 22.00              | 1.183          | 0.162                  |
| Left side       | 20        | QPSK 50_50 | 19100/1900     | 0.006          | 21.27                | 22.00              | 1.183          | 0.007                  |
| Right side      | 20        | QPSK 50_50 | 19100/1900     | 0.112          | 21.27                | 22.00              | 1.183          | 0.133                  |
| Top side        | 20        | QPSK 50_50 | 19100/1900     | 0.002          | 21.27                | 22.00              | 1.183          | 0.002                  |
| Bottom side     | 20        | QPSK 50_50 | 19100/1900     | 0.529          | 21.27                | 22.00              | 1.183          | 0.626                  |
| Body 0mm 100%RB |           |            |                |                |                      |                    |                |                        |
| Bottom side     | 20        | QPSK 100_0 | 18900/1880     | 0.564          | 21.01                | 22.00              | 1.256          | 0.708                  |

Table 6: SAR of LTE Band 2.

## 15.5 SAR Measurement Result of LTE Band 5

| Test position  | BW. (MHz) | Mode       | Ch./Freq.(MHz) | SAR (W/kg) 1-g | Conducted Power(dBm) | Tune up Limit(dBm) | Scaling Factor | Reported 1g SAR (W/kg) |
|----------------|-----------|------------|----------------|----------------|----------------------|--------------------|----------------|------------------------|
| Body 0mm 1RB   |           |            |                |                |                      |                    |                |                        |
| Back side      | 10        | QPSK 1_25  | 20450/829      | 0.462          | 22.79                | 23.00              | 1.050          | 0.485                  |
| Left side      | 10        | QPSK 1_25  | 20450/829      | 0.048          | 22.79                | 23.00              | 1.050          | 0.050                  |
| Right side     | 10        | QPSK 1_25  | 20450/829      | 0.468          | 22.79                | 23.00              | 1.050          | 0.491                  |
| Top side       | 10        | QPSK 1_25  | 20450/829      | 0.004          | 22.79                | 23.00              | 1.050          | 0.004                  |
| Bottom side    | 10        | QPSK 1_25  | 20450/829      | 0.725          | 22.79                | 23.00              | 1.050          | 0.761                  |
| Bottom side    | 10        | QPSK 1_49  | 20525/836.5    | 0.694          | 22.61                | 23.00              | 1.094          | 0.759                  |
| Bottom side    | 10        | QPSK 1_49  | 20600/844      | 0.726          | 22.65                | 23.00              | 1.084          | <b>0.787</b>           |
| Body 0mm 50%RB |           |            |                |                |                      |                    |                |                        |
| Back side      | 10        | QPSK 25_25 | 20450/829      | 0.360          | 21.84                | 22.00              | 1.038          | 0.374                  |
| Left side      | 10        | QPSK 25_25 | 20450/829      | 0.018          | 21.84                | 22.00              | 1.038          | 0.019                  |
| Right side     | 10        | QPSK 25_25 | 20450/829      | 0.444          | 21.84                | 22.00              | 1.038          | 0.461                  |
| Top side       | 10        | QPSK 25_25 | 20450/829      | 0.003          | 21.84                | 22.00              | 1.038          | 0.003                  |
| Bottom side    | 10        | QPSK 25_25 | 20450/829      | 0.559          | 21.84                | 22.00              | 1.038          | 0.580                  |

Table 7: SAR of LTE Band 5.

## 15.6 SAR Measurement Result of LTE Band 12

| Test position  | BW. (MHz) | Mode       | Ch./Freq.(MHz) | SAR (W/kg) 1-g | Conducted Power(dBm) | Tune up Limit(dBm) | Scaling Factor | Reported 1g SAR (W/kg) |
|----------------|-----------|------------|----------------|----------------|----------------------|--------------------|----------------|------------------------|
| Body 0mm 1RB   |           |            |                |                |                      |                    |                |                        |
| Back side      | 10        | QPSK 1_49  | 23130/711      | 0.166          | 22.67                | 23.00              | 1.079          | 0.179                  |
| Left side      | 10        | QPSK 1_49  | 23130/711      | 0.008          | 22.67                | 23.00              | 1.079          | 0.009                  |
| Right side     | 10        | QPSK 1_49  | 23130/711      | 0.335          | 22.67                | 23.00              | 1.079          | 0.361                  |
| Top side       | 10        | QPSK 1_49  | 23130/711      | 0.003          | 22.67                | 23.00              | 1.079          | 0.003                  |
| Bottom side    | 10        | QPSK 1_49  | 23130/711      | 0.209          | 22.67                | 23.00              | 1.079          | 0.225                  |
| Right side     | 10        | QPSK 1_25  | 23060/704      | 0.524          | 22.64                | 23.00              | 1.086          | <b>0.569</b>           |
| Right side     | 10        | QPSK 1_25  | 23095/707.5    | 0.386          | 22.50                | 23.00              | 1.122          | 0.433                  |
| Body 0mm 50%RB |           |            |                |                |                      |                    |                |                        |
| Back side      | 10        | QPSK 25_25 | 23130/711      | 0.130          | 21.84                | 22.00              | 1.038          | 0.135                  |
| Left side      | 10        | QPSK 25_25 | 23130/711      | 0.006          | 21.84                | 22.00              | 1.038          | 0.006                  |
| Right side     | 10        | QPSK 25_25 | 23130/711      | 0.228          | 21.84                | 22.00              | 1.038          | 0.237                  |
| Top side       | 10        | QPSK 25_25 | 23130/711      | 0.002          | 21.84                | 22.00              | 1.038          | 0.002                  |
| Bottom side    | 10        | QPSK 25_25 | 23130/711      | 0.199          | 21.84                | 22.00              | 1.038          | 0.206                  |

Table 8: SAR of LTE Band 12.

## 15.7 SAR Measurement Result of LTE Band 13

| Test position   | BW. (MHz) | Mode      | Ch./Freq.(MHz) | SAR (W/kg) 1-g | Conducted Power(dBm) | Tune up Limit(dBm) | Scaling Factor | Reported 1g SAR (W/kg) |
|-----------------|-----------|-----------|----------------|----------------|----------------------|--------------------|----------------|------------------------|
| Body 0mm 1RB    |           |           |                |                |                      |                    |                |                        |
| Back side       | 10        | QPSK 1_25 | 23230/782      | 0.273          | 22.99                | 23.50              | 1.125          | 0.307                  |
| Left side       | 10        | QPSK 1_25 | 23230/782      | 0.009          | 22.99                | 23.50              | 1.125          | 0.010                  |
| Right side      | 10        | QPSK 1_25 | 23230/782      | 0.777          | 22.99                | 23.50              | 1.125          | <b>0.874</b>           |
| Top side        | 10        | QPSK 1_25 | 23230/782      | 0.003          | 22.99                | 23.50              | 1.125          | 0.003                  |
| Bottom side     | 10        | QPSK 1_25 | 23230/782      | 0.456          | 22.99                | 23.50              | 1.125          | 0.513                  |
| Body 0mm 50%RB  |           |           |                |                |                      |                    |                |                        |
| Back side       | 10        | QPSK 25_0 | 23230/782      | 0.230          | 21.84                | 22.50              | 1.164          | 0.268                  |
| Left side       | 10        | QPSK 25_0 | 23230/782      | 0.004          | 21.84                | 22.50              | 1.164          | 0.005                  |
| Right side      | 10        | QPSK 25_0 | 23230/782      | 0.481          | 21.84                | 22.50              | 1.164          | 0.560                  |
| Top side        | 10        | QPSK 25_0 | 23230/782      | 0.002          | 21.84                | 22.50              | 1.164          | 0.002                  |
| Bottom side     | 10        | QPSK 25_0 | 23230/782      | 0.371          | 21.84                | 22.50              | 1.164          | 0.432                  |
| Body 0mm 100%RB |           |           |                |                |                      |                    |                |                        |
| Right side      | 10        | QPSK 25_0 | 23230/782      | 0.447          | 21.91                | 22.50              | 1.146          | 0.512                  |

Table 9: SAR of LTE Band 13.

## 15.8 SAR Measurement Result of LTE Band 14

| Test position     | BW. (MHz) | Mode      | Ch./Freq.(MHz) | SAR (W/kg) 1-g | Conducted Power(dBm) | Tune up Limit(dBm) | Scaling Factor | Reported 1g SAR (W/kg) |
|-------------------|-----------|-----------|----------------|----------------|----------------------|--------------------|----------------|------------------------|
| Body 0mm 1RB      |           |           |                |                |                      |                    |                |                        |
| Back side         | 10        | QPSK 1_25 | 23330/793      | 0.369          | 23.23                | 23.50              | 1.064          | 0.393                  |
| Left side         | 10        | QPSK 1_25 | 23330/793      | 0.009          | 23.23                | 23.50              | 1.064          | 0.010                  |
| Right side        | 10        | QPSK 1_25 | 23330/793      | 0.969          | 23.23                | 23.50              | 1.064          | <b>1.031</b>           |
| Right side Repeat | 10        | QPSK 1_25 | 23330/793      | 0.948          | 23.23                | 23.50              | 1.064          | 1.009                  |
| Top side          | 10        | QPSK 1_25 | 23330/793      | 0.004          | 23.23                | 23.50              | 1.064          | 0.004                  |
| Bottom side       | 10        | QPSK 1_25 | 23330/793      | 0.411          | 23.23                | 23.50              | 1.064          | 0.437                  |
| Body 0mm 50%RB    |           |           |                |                |                      |                    |                |                        |
| Back side         | 10        | QPSK 25_0 | 23330/793      | 0.286          | 21.84                | 22.50              | 1.164          | 0.333                  |
| Left side         | 10        | QPSK 25_0 | 23330/793      | 0.007          | 21.84                | 22.50              | 1.164          | 0.008                  |
| Right side        | 10        | QPSK 25_0 | 23330/793      | 0.520          | 21.84                | 22.50              | 1.164          | 0.605                  |
| Top side          | 10        | QPSK 25_0 | 23330/793      | 0.003          | 21.84                | 22.50              | 1.164          | 0.003                  |
| Bottom side       | 10        | QPSK 25_0 | 23330/793      | 0.330          | 21.84                | 22.50              | 1.164          | 0.384                  |
| Body 0mm 100%RB   |           |           |                |                |                      |                    |                |                        |
| Right side        | 10        | QPSK 50_0 | 23330/793      | 0.601          | 21.73                | 22.50              | 1.194          | 0.718                  |

Table 10: SAR of LTE Band 14.

| Test Position                                                                                                                                                                                                                                                     | Channel/ Frequency (MHz) | Measured SAR (1g) | 1 <sup>st</sup> Repeated SAR (1g) | Ratio | 2 <sup>nd</sup> Repeated SAR (1g) | 3 <sup>rd</sup> Repeated SAR (1g) |
|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|--------------------------|-------------------|-----------------------------------|-------|-----------------------------------|-----------------------------------|
| Right side                                                                                                                                                                                                                                                        | 23330/793                | 0.969             | 0.948                             | 1.022 | N/A                               | N/A                               |
| Note: 1) When the original highest measured SAR is $\geq 0.80$ W/kg, the measurement was repeated once.                                                                                                                                                           |                          |                   |                                   |       |                                   |                                   |
| 2) A second repeated measurement was performed only if the ratio of largest to smallest SAR for the original and first repeated measurement was $> 1.20$ or when the original or repeated measurement was $\geq 1.45$ W/kg ( $\sim 10\%$ from the 1-g SAR limit). |                          |                   |                                   |       |                                   |                                   |
| 3) A third repeated measurement was performed only if the original, first or second repeated measurement was $\geq 1.5$ W/kg and the ratio of largest to smallest SAR for the original, first and second repeated measurements is $> 1.20$ .                      |                          |                   |                                   |       |                                   |                                   |
| 4) Repeated measurements are not required when the original highest measured SAR is $< 0.80$ W/kg                                                                                                                                                                 |                          |                   |                                   |       |                                   |                                   |

**15.9 SAR Measurement Result of LTE Band 66**

| Test position  | BW. (MHz) | Mode      | Ch./Freq.(MHz) | SAR (W/kg) 1-g | Conducted Power(dBm) | Tune up Limit(dBm) | Scaling Factor | Reported 1g SAR (W/kg) |
|----------------|-----------|-----------|----------------|----------------|----------------------|--------------------|----------------|------------------------|
| Body 0mm 1RB   |           |           |                |                |                      |                    |                |                        |
| Back side      | 20        | QPSK 1_50 | 132572/1770    | 0.066          | 21.73                | 22.50              | 1.194          | 0.079                  |
| Left side      | 20        | QPSK 1_50 | 132572/1770    | 0.006          | 21.73                | 22.50              | 1.194          | 0.007                  |
| Right side     | 20        | QPSK 1_50 | 132572/1770    | 0.011          | 21.73                | 22.50              | 1.194          | 0.013                  |
| Top side       | 20        | QPSK 1_50 | 132572/1770    | 0.003          | 21.73                | 22.50              | 1.194          | 0.004                  |
| Bottom side    | 20        | QPSK 1_50 | 132572/1770    | 0.261          | 21.73                | 22.50              | 1.194          | <b>0.312</b>           |
| Bottom side    | 20        | QPSK 1_50 | 132072/1720    | 0.165          | 21.67                | 22.50              | 1.211          | 0.200                  |
| Bottom side    | 20        | QPSK 1_0  | 132322/1745    | 0.090          | 21.67                | 22.50              | 1.211          | 0.109                  |
| Body 0mm 50%RB |           |           |                |                |                      |                    |                |                        |
| Back side      | 20        | QPSK 50_0 | 132572/1770    | 0.059          | 20.55                | 21.50              | 1.245          | 0.073                  |
| Left side      | 20        | QPSK 50_0 | 132572/1770    | 0.005          | 20.55                | 21.50              | 1.245          | 0.006                  |
| Right side     | 20        | QPSK 50_0 | 132572/1770    | 0.008          | 20.55                | 21.50              | 1.245          | 0.010                  |
| Top side       | 20        | QPSK 50_0 | 132572/1770    | 0.002          | 20.55                | 21.50              | 1.245          | 0.002                  |
| Bottom side    | 20        | QPSK 50_0 | 132572/1770    | 0.250          | 20.55                | 21.50              | 1.245          | 0.311                  |

Table 11: SAR of LTE Band 66.

**15.10 SAR Measurement Result of LTE Band 71**

| Test position   | BW. (MHz) | Mode       | Ch./Freq. (MHz) | SAR (W/kg) 1-g | Conducted Power(dBm) | Tune up Limit(dBm) | Scaling Factor | Reported 1g SAR (W/kg) |
|-----------------|-----------|------------|-----------------|----------------|----------------------|--------------------|----------------|------------------------|
| Body 0mm 1RB    |           |            |                 |                |                      |                    |                |                        |
| Back side       | 20        | QPSK 1_50  | 133372/688      | 0.204          | 22.88                | 23.50              | 1.153          | 0.235                  |
| Left side       | 20        | QPSK 1_50  | 133372/688      | 0.008          | 22.88                | 23.50              | 1.153          | 0.009                  |
| Right side      | 20        | QPSK 1_50  | 133372/688      | 0.456          | 22.88                | 23.50              | 1.153          | 0.526                  |
| Top side        | 20        | QPSK 1_50  | 133372/688      | 0.003          | 22.88                | 23.50              | 1.153          | 0.003                  |
| Bottom side     | 20        | QPSK 1_50  | 133372/688      | 0.341          | 22.88                | 23.50              | 1.153          | 0.393                  |
| Right side      | 20        | QPSK 1_50  | 133222/673      | 0.638          | 22.51                | 23.50              | 1.256          | <b>0.801</b>           |
| Right side      | 20        | QPSK 1_50  | 133322/683      | 0.464          | 22.78                | 23.50              | 1.180          | 0.548                  |
| Body 0mm 50%RB  |           |            |                 |                |                      |                    |                |                        |
| Back side       | 20        | QPSK 50_50 | 133372/688      | 0.153          | 21.62                | 22.50              | 1.225          | 0.187                  |
| Left side       | 20        | QPSK 50_50 | 133372/688      | 0.006          | 21.62                | 22.50              | 1.225          | 0.007                  |
| Right side      | 20        | QPSK 50_50 | 133372/688      | 0.446          | 21.62                | 22.50              | 1.225          | 0.546                  |
| Top side        | 20        | QPSK 50_50 | 133372/688      | 0.002          | 21.62                | 22.50              | 1.225          | 0.002                  |
| Bottom side     | 20        | QPSK 50_50 | 133372/688      | 0.251          | 21.62                | 22.50              | 1.225          | 0.307                  |
| Body 0mm 100%RB |           |            |                 |                |                      |                    |                |                        |
| Right side      | 20        | QPSK 100_0 | 133372/688      | 0.367          | 21.57                | 22.50              | 1.239          | 0.455                  |

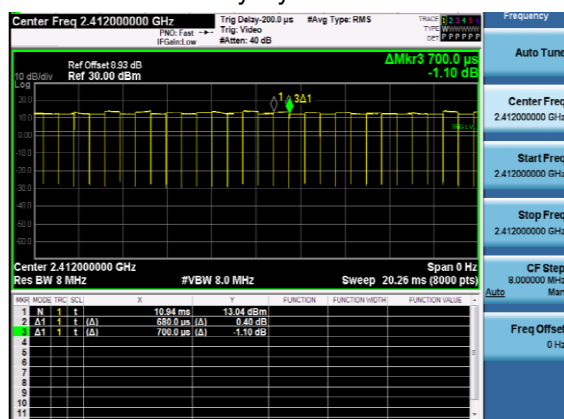
Table 12: SAR of LTE Band 71.

## 15.11 SAR Measurement Result of WIFI 2.4G

| Test position     | Mode        | Ch./Freq. (MHz) | SAR (W/kg) 1g | Duty Cycle | Duty Cycle Scaling Factor | Conducted Power (dBm) | Tune up Limit (dBm) | Scaling Factor | Reported 1g SAR (W/kg) |
|-------------------|-------------|-----------------|---------------|------------|---------------------------|-----------------------|---------------------|----------------|------------------------|
| Body 0mm          |             |                 |               |            |                           |                       |                     |                |                        |
| Back side         | 802.11b     | 11/2462         | 0.010         | 97.14%     | 1.029                     | 10.90                 | 11.00               | 1.023          | 0.011                  |
| Left side         | 802.11b     | 11/2462         | 0.008         | 97.14%     | 1.029                     | 10.90                 | 11.00               | 1.023          | 0.008                  |
| Right side        | 802.11b     | 11/2462         | 0.049         | 97.14%     | 1.029                     | 10.90                 | 11.00               | 1.023          | <b>0.052</b>           |
| Top side          | 802.11b     | 11/2462         | 0.004         | 97.14%     | 1.029                     | 10.90                 | 11.00               | 1.023          | 0.004                  |
| Bottom side       | 802.11b     | 11/2462         | 0.002         | 97.14%     | 1.029                     | 10.90                 | 11.00               | 1.023          | 0.002                  |
| Right side        | 802.11b     | 1/2412          | 0.011         | 97.14%     | 1.029                     | 9.02                  | 11.00               | 1.578          | 0.018                  |
| Right side        | 802.11b     | 6/2437          | 0.016         | 97.14%     | 1.029                     | 9.89                  | 11.00               | 1.291          | 0.021                  |
| ANT2 Test Results |             |                 |               |            |                           |                       |                     |                |                        |
| Body 0mm          |             |                 |               |            |                           |                       |                     |                |                        |
| Back side         | 802.11b     | 6/2437          | 0.010         | 97.14%     | 1.029                     | 12.47                 | 13.00               | 1.130          | 0.012                  |
| Left side         | 802.11b     | 6/2437          | 0.001         | 97.14%     | 1.029                     | 12.47                 | 13.00               | 1.130          | 0.001                  |
| Right side        | 802.11b     | 6/2437          | 0.017         | 97.14%     | 1.029                     | 12.47                 | 13.00               | 1.130          | 0.020                  |
| Top side          | 802.11b     | 6/2437          | 0.002         | 97.14%     | 1.029                     | 12.47                 | 13.00               | 1.130          | 0.002                  |
| Bottom side       | 802.11b     | 6/2437          | 0.001         | 97.14%     | 1.029                     | 12.47                 | 13.00               | 1.130          | 0.001                  |
| Right side        | 802.11b     | 1/2412          | 0.015         | 97.14%     | 1.029                     | 12.23                 | 13.00               | 1.194          | 0.018                  |
| Right side        | 802.11b     | 11/2462         | 0.021         | 97.14%     | 1.029                     | 12.05                 | 13.00               | 1.245          | <b>0.027</b>           |
| MIMO Test Results |             |                 |               |            |                           |                       |                     |                |                        |
| Body 0mm          |             |                 |               |            |                           |                       |                     |                |                        |
| Back side         | 802.11n 20M | 11/2462         | 0.011         | 98.35%     | 1.017                     | 16.02                 | 16.50               | 1.117          | 0.012                  |
| Left side         | 802.11n 20M | 11/2462         | 0.007         | 98.35%     | 1.017                     | 16.02                 | 16.50               | 1.117          | 0.008                  |
| Right side        | 802.11n 20M | 11/2462         | 0.061         | 98.35%     | 1.017                     | 16.02                 | 16.50               | 1.117          | <b>0.069</b>           |
| Top side          | 802.11n 20M | 11/2462         | 0.005         | 98.35%     | 1.017                     | 16.02                 | 16.50               | 1.117          | 0.006                  |
| Bottom side       | 802.11n 20M | 11/2462         | 0.002         | 98.35%     | 1.017                     | 16.02                 | 16.50               | 1.117          | 0.002                  |
| Right side        | 802.11n 20M | 1/2412          | 0.021         | 98.35%     | 1.017                     | 14.67                 | 16.50               | 1.524          | 0.033                  |
| Right side        | 802.11n 20M | 6/2437          | 0.027         | 98.35%     | 1.017                     | 15.19                 | 16.50               | 1.352          | 0.037                  |

Table 13: SAR of WIFI 2.4G.

Ant1/2 802.11b Duty Cycle= 680/700 =97.14%



MIMO 802.11 n 20M Duty Cycle= 5.37/5.46=98.35%

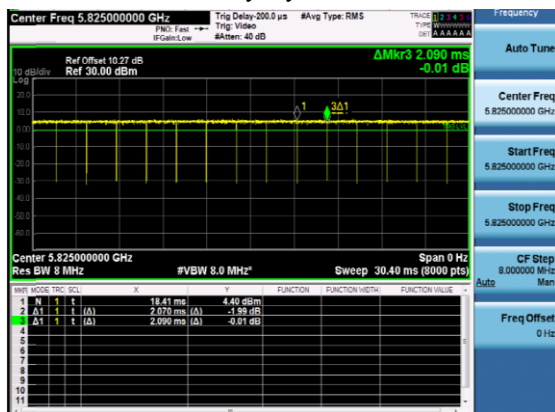


## 15.12 SAR Measurement Result of WIFI 5G

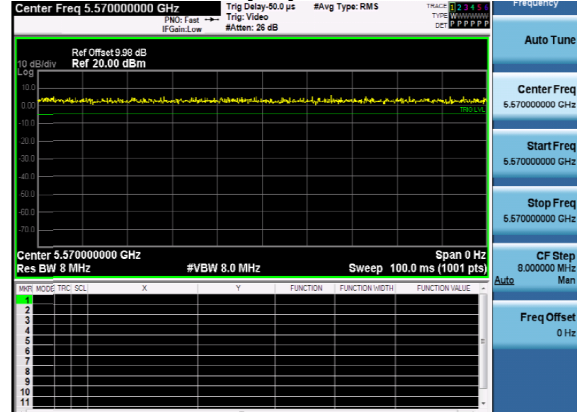
| ANT1 Test Results |               |                |               |            |                           |                      |                    |                |                        |
|-------------------|---------------|----------------|---------------|------------|---------------------------|----------------------|--------------------|----------------|------------------------|
| Test position     | Mode          | Ch./Freq.(MHz) | SAR (W/kg) 1g | Duty Cycle | Duty Cycle Scaling Factor | Conducted Power(dBm) | Tune up Limit(dBm) | Scaling Factor | Reported 1g SAR (W/kg) |
| U-NII-1 Body 0mm  |               |                |               |            |                           |                      |                    |                |                        |
| Back side         | 802.11ax 40M  | 46/5230        | 0.056         | 99.04%     | 1.010                     | 12.53                | 13.0               | 1.114          | 0.063                  |
| Left side         | 802.11ax 40M  | 46/5230        | 0.047         | 99.04%     | 1.010                     | 12.53                | 13.0               | 1.114          | 0.053                  |
| Right side        | 802.11ax 40M  | 46/5230        | 0.127         | 99.04%     | 1.010                     | 12.53                | 13.0               | 1.114          | <b>0.143</b>           |
| Top side          | 802.11ax 40M  | 46/5230        | 0.058         | 99.04%     | 1.010                     | 12.53                | 13.0               | 1.114          | 0.065                  |
| Bottom side       | 802.11ax 40M  | 46/5230        | 0.004         | 99.04%     | 1.010                     | 12.53                | 13.0               | 1.114          | 0.005                  |
| Right side        | 802.11ax 40M  | 38/5190        | 0.082         | 99.04%     | 1.010                     | 11.82                | 12.5               | 1.169          | 0.097                  |
| U-NII-2C Body 0mm |               |                |               |            |                           |                      |                    |                |                        |
| Back side         | 802.11ac 160M | 114/5570       | 0.037         | 100.00%    | 1.000                     | 10.31                | 10.5               | 1.045          | 0.039                  |
| Left side         | 802.11ac 160M | 114/5570       | 0.012         | 100.00%    | 1.000                     | 10.31                | 10.5               | 1.045          | 0.013                  |
| Right side        | 802.11ac 160M | 114/5570       | 0.048         | 100.00%    | 1.000                     | 10.31                | 10.5               | 1.045          | <b>0.050</b>           |
| Top side          | 802.11ac 160M | 114/5570       | 0.035         | 100.00%    | 1.000                     | 10.31                | 10.5               | 1.045          | 0.037                  |
| Bottom side       | 802.11ac 160M | 114/5570       | 0.001         | 100.00%    | 1.000                     | 10.31                | 10.5               | 1.045          | 0.001                  |
| U-NII-3 Body 0mm  |               |                |               |            |                           |                      |                    |                |                        |
| Back side         | 802.11a       | 157/5785       | 0.051         | 99.04%     | 1.010                     | 9.33                 | 9.5                | 1.040          | 0.054                  |
| Left side         | 802.11a       | 157/5785       | 0.016         | 99.04%     | 1.010                     | 9.33                 | 9.5                | 1.040          | 0.017                  |
| Right side        | 802.11a       | 157/5785       | 0.069         | 99.04%     | 1.010                     | 9.33                 | 9.5                | 1.040          | 0.072                  |
| Top side          | 802.11a       | 157/5785       | 0.043         | 99.04%     | 1.010                     | 9.33                 | 9.5                | 1.040          | 0.045                  |
| Bottom side       | 802.11a       | 157/5785       | 0.002         | 99.04%     | 1.010                     | 9.33                 | 9.5                | 1.040          | 0.002                  |
| Right side        | 802.11a       | 149/5745       | 0.071         | 99.04%     | 1.010                     | 9.10                 | 9.5                | 1.096          | 0.079                  |
| Right side        | 802.11a       | 165/5825       | 0.072         | 99.04%     | 1.010                     | 8.45                 | 9.5                | 1.274          | <b>0.093</b>           |

Table 14: SAR of WIFI 5G Ant1.

802.11a/ax 40M Duty Cycle= 2.07/2.09 =99.04%

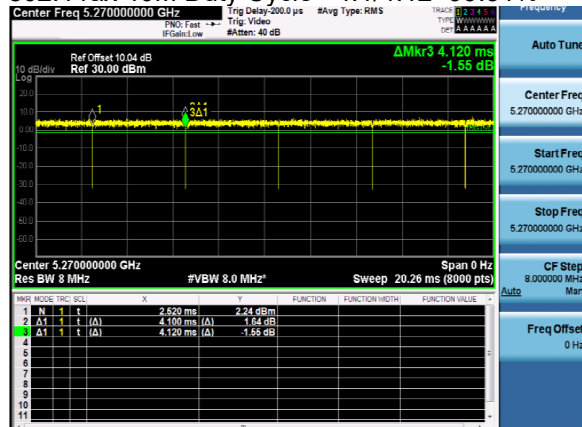
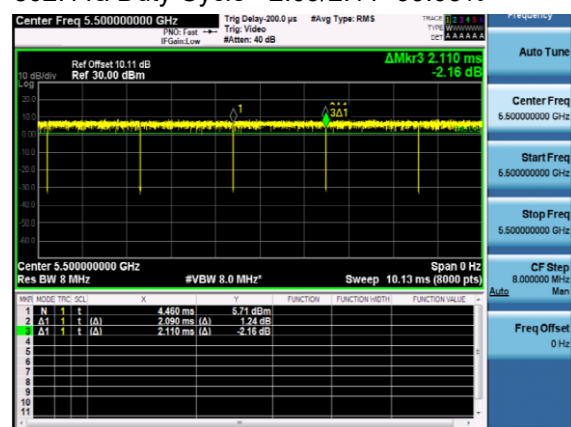


802.11ac 160M Duty Cycle= 100%



| ANT2 Test Results |              |                |               |            |                           |                      |                    |                |                        |
|-------------------|--------------|----------------|---------------|------------|---------------------------|----------------------|--------------------|----------------|------------------------|
| Test position     | Mode         | Ch./Freq.(MHz) | SAR (W/kg) 1g | Duty Cycle | Duty Cycle Scaling Factor | Conducted Power(dBm) | Tune up Limit(dBm) | Scaling Factor | Reported 1g SAR (W/kg) |
| U-NII-2A Body 0mm |              |                |               |            |                           |                      |                    |                |                        |
| Back side         | 802.11ax 40M | 54/5270        | 0.019         | 99.51%     | 1.005                     | 12.15                | 12.5               | 1.084          | 0.021                  |
| Left side         | 802.11ax 40M | 54/5270        | 0.057         | 99.51%     | 1.005                     | 12.15                | 12.5               | 1.084          | 0.062                  |
| Right side        | 802.11ax 40M | 54/5270        | 0.129         | 99.51%     | 1.005                     | 12.15                | 12.5               | 1.084          | <b>0.141</b>           |
| Top side          | 802.11ax 40M | 54/5270        | 0.054         | 99.51%     | 1.005                     | 12.15                | 12.5               | 1.084          | 0.059                  |
| Bottom side       | 802.11ax 40M | 54/5270        | 0.004         | 99.51%     | 1.005                     | 12.15                | 12.5               | 1.084          | 0.004                  |
| Right side        | 802.11ax 40M | 62/5310        | 0.092         | 99.51%     | 1.005                     | 12.13                | 12.5               | 1.089          | 0.101                  |
| U-NII-2C Body 0mm |              |                |               |            |                           |                      |                    |                |                        |
| Back side         | 802.11a      | 140/5700       | 0.033         | 99.05%     | 1.010                     | 13.01                | 13.5               | 1.119          | 0.037                  |
| Left side         | 802.11a      | 140/5700       | 0.025         | 99.05%     | 1.010                     | 13.01                | 13.5               | 1.119          | 0.028                  |
| Right side        | 802.11a      | 140/5700       | 0.080         | 99.05%     | 1.010                     | 13.01                | 13.5               | 1.119          | 0.090                  |
| Top side          | 802.11a      | 140/5700       | 0.054         | 99.05%     | 1.010                     | 13.01                | 13.5               | 1.119          | 0.061                  |
| Bottom side       | 802.11a      | 140/5700       | 0.003         | 99.05%     | 1.010                     | 13.01                | 13.5               | 1.119          | 0.003                  |
| Right side        | 802.11a      | 100/5500       | 0.091         | 99.05%     | 1.010                     | 9.92                 | 11.0               | 1.282          | <b>0.118</b>           |
| Right side        | 802.11a      | 120/5600       | 0.075         | 99.05%     | 1.010                     | 10.14                | 11.0               | 1.219          | 0.092                  |
| U-NII-3 Body 0mm  |              |                |               |            |                           |                      |                    |                |                        |
| Back side         | 802.11a      | 149/5745       | 0.014         | 99.05%     | 1.010                     | 10.74                | 11.0               | 1.062          | 0.015                  |
| Left side         | 802.11a      | 149/5745       | 0.031         | 99.05%     | 1.010                     | 10.74                | 11.0               | 1.062          | 0.033                  |
| Right side        | 802.11a      | 149/5745       | 0.090         | 99.05%     | 1.010                     | 10.74                | 11.0               | 1.062          | <b>0.097</b>           |
| Top side          | 802.11a      | 149/5745       | 0.042         | 99.05%     | 1.010                     | 10.74                | 11.0               | 1.062          | 0.045                  |
| Bottom side       | 802.11a      | 149/5745       | 0.003         | 99.05%     | 1.010                     | 10.74                | 11.0               | 1.062          | 0.003                  |
| Right side        | 802.11a      | 157/5785       | 0.065         | 99.05%     | 1.010                     | 9.93                 | 11.0               | 1.279          | 0.084                  |
| Right side        | 802.11a      | 165/5825       | 0.052         | 99.05%     | 1.010                     | 8.97                 | 10.5               | 1.422          | 0.075                  |

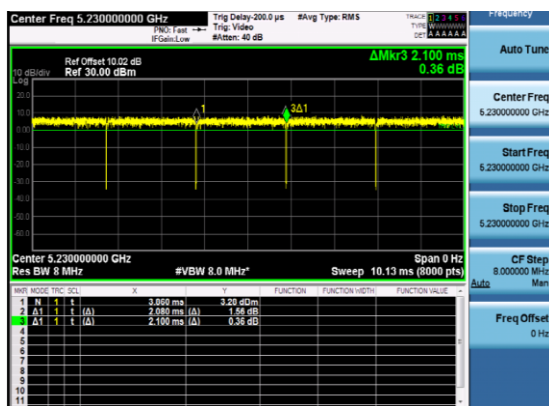
Table 15: SAR of WIFI 5G Ant2.

802.11ax 40M Duty Cycle=  $4.1/4.12=99.51\%$ 802.11a Duty Cycle=  $2.09/2.11=99.05\%$ 

| MIMO Test Results |              |                |               |            |                           |                      |                    |                |                        |
|-------------------|--------------|----------------|---------------|------------|---------------------------|----------------------|--------------------|----------------|------------------------|
| Test position     | Mode         | Ch./Freq.(MHz) | SAR (W/kg) 1g | Duty Cycle | Duty Cycle Scaling Factor | Conducted Power(dBm) | Tune up Limit(dBm) | Scaling Factor | Reported 1g SAR (W/kg) |
| U-NII-1 Body 0mm  |              |                |               |            |                           |                      |                    |                |                        |
| Back side         | 802.11ac 40M | 46/5230        | 0.059         | 99.05%     | 1.010                     | 14.65                | 15.0               | 1.084          | 0.065                  |
| Left side         | 802.11ac 40M | 46/5230        | 0.023         | 99.05%     | 1.010                     | 14.65                | 15.0               | 1.084          | 0.025                  |
| Right side        | 802.11ac 40M | 46/5230        | 0.130         | 99.05%     | 1.010                     | 14.65                | 15.0               | 1.084          | <b>0.142</b>           |
| Top side          | 802.11ac 40M | 46/5230        | 0.065         | 99.05%     | 1.010                     | 14.65                | 15.0               | 1.084          | 0.071                  |
| Bottom side       | 802.11ac 40M | 46/5230        | 0.004         | 99.05%     | 1.010                     | 14.65                | 15.0               | 1.084          | 0.004                  |
| Right side        | 802.11ac 40M | 38/5190        | 0.111         | 99.05%     | 1.010                     | 14.12                | 15.0               | 1.225          | 0.137                  |
| U-NII-2C Body 0mm |              |                |               |            |                           |                      |                    |                |                        |
| Back side         | 802.11ax 20M | 140/5700       | 0.032         | 99.63%     | 1.004                     | 15.02                | 15.5               | 1.117          | 0.036                  |
| Left side         | 802.11ax 20M | 140/5700       | 0.010         | 99.63%     | 1.004                     | 15.02                | 15.5               | 1.117          | 0.011                  |
| Right side        | 802.11ax 20M | 140/5700       | 0.049         | 99.63%     | 1.004                     | 15.02                | 15.5               | 1.117          | 0.055                  |
| Top side          | 802.11ax 20M | 140/5700       | 0.025         | 99.63%     | 1.004                     | 15.02                | 15.5               | 1.117          | 0.028                  |
| Bottom side       | 802.11ax 20M | 140/5700       | 0.003         | 99.63%     | 1.004                     | 15.02                | 15.5               | 1.117          | 0.003                  |
| Right side        | 802.11ax 20M | 100/5500       | 0.068         | 99.63%     | 1.004                     | 12.35                | 13.0               | 1.161          | <b>0.079</b>           |
| Right side        | 802.11ax 20M | 120/5600       | 0.061         | 99.63%     | 1.004                     | 12.91                | 13.0               | 1.021          | 0.063                  |
| U-NII-3 Body 0mm  |              |                |               |            |                           |                      |                    |                |                        |
| Back side         | 802.11n 40M  | 151/5755       | 0.047         | 99.62%     | 1.004                     | 12.53                | 13.0               | 1.114          | 0.053                  |
| Left side         | 802.11n 40M  | 151/5755       | 0.015         | 99.62%     | 1.004                     | 12.53                | 13.0               | 1.114          | 0.017                  |
| Right side        | 802.11n 40M  | 151/5755       | 0.086         | 99.62%     | 1.004                     | 12.53                | 13.0               | 1.114          | <b>0.096</b>           |
| Top side          | 802.11n 40M  | 151/5755       | 0.028         | 99.62%     | 1.004                     | 12.53                | 13.0               | 1.114          | 0.031                  |
| Bottom side       | 802.11n 40M  | 151/5755       | 0.002         | 99.62%     | 1.004                     | 12.53                | 13.0               | 1.114          | 0.002                  |
| Right side        | 802.11n 40M  | 159/5795       | 0.053         | 99.62%     | 1.004                     | 12.23                | 13.0               | 1.194          | 0.064                  |

Table 16: SAR of WIFI 5G MIMO.

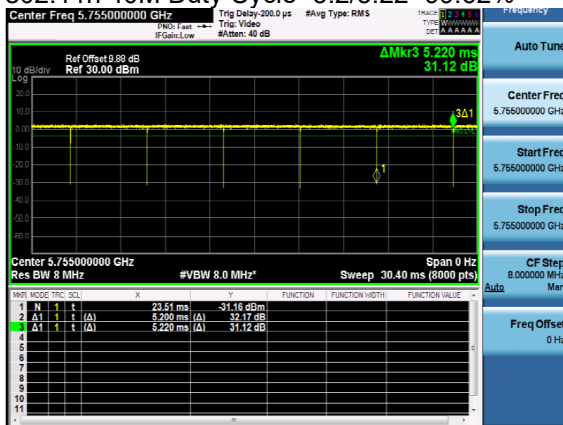
802.11ac 40M Duty Cycle=2.08/2.1=99.05%



802.11ax 20M Duty Cycle=5.41/5.43=99.63%



802.11n 40M Duty Cycle=5.2/5.22=99.62%

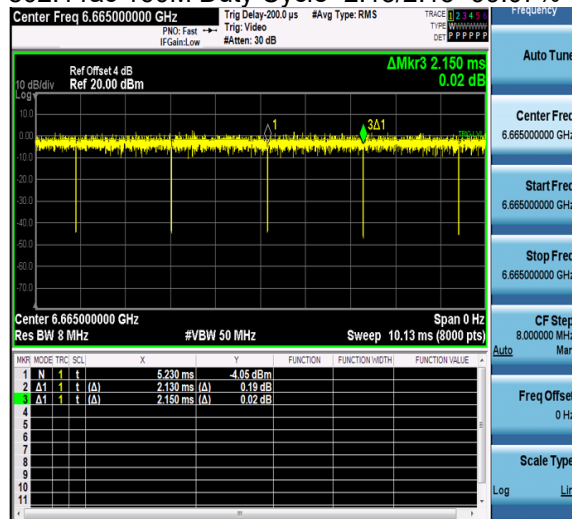


## 15.13 SAR Measurement Result of WIFI 6G

| Ant1 Test Results |               |                 |               |            |                           |                       |                     |                |                        |                                  |                                  |
|-------------------|---------------|-----------------|---------------|------------|---------------------------|-----------------------|---------------------|----------------|------------------------|----------------------------------|----------------------------------|
| Test position     | Mode          | Ch./Freq. (MHz) | SAR (W/kg) 1g | Duty Cycle | Duty Cycle Scaling Factor | Conducted Power (dBm) | Tune up Limit (dBm) | Scaling Factor | Reported 1g SAR (W/kg) | Measured APD (W/m <sup>2</sup> ) | Reported APD (W/m <sup>2</sup> ) |
| Body 0mm          |               |                 |               |            |                           |                       |                     |                |                        |                                  |                                  |
| Back side         | 802.11ac 160M | 111/6505        | 0.010         | 99.07%     | 1.009                     | 9.32                  | 10.00               | 1.169          | 0.012                  | 0.018                            | 0.021                            |
| Left side         | 802.11ac 160M | 111/6505        | 0.008         | 99.07%     | 1.009                     | 9.32                  | 10.00               | 1.169          | 0.009                  | 0.008                            | 0.009                            |
| Right side        | 802.11ac 160M | 111/6505        | 0.179         | 99.07%     | 1.009                     | 9.32                  | 10.00               | 1.169          | <b>0.211</b>           | 0.727                            | 0.858                            |
| Top side          | 802.11ac 160M | 111/6505        | 0.004         | 99.07%     | 1.009                     | 9.32                  | 10.00               | 1.169          | 0.005                  | 0.009                            | 0.011                            |
| Bottom side       | 802.11ac 160M | 111/6505        | 0.002         | 99.07%     | 1.009                     | 9.32                  | 10.00               | 1.169          | 0.002                  | 0.006                            | 0.007                            |
| Right side        | 802.11ac 160M | 15/6025         | 0.025         | 99.07%     | 1.009                     | 7.85                  | 8.50                | 1.161          | 0.029                  | 0.052                            | 0.061                            |
| Right side        | 802.11ac 160M | 79/6345         | 0.072         | 99.07%     | 1.009                     | 8.22                  | 8.50                | 1.067          | 0.077                  | 0.136                            | 0.146                            |
| Right side        | 802.11ac 160M | 143/6665        | 0.144         | 99.07%     | 1.009                     | 7.72                  | 8.00                | 1.067          | 0.155                  | 0.472                            | 0.508                            |
| Right side        | 802.11ac 160M | 207/6985        | 0.045         | 99.07%     | 1.009                     | 7.63                  | 8.00                | 1.089          | 0.049                  | 0.071                            | 0.078                            |
| Ant2 Test Results |               |                 |               |            |                           |                       |                     |                |                        |                                  |                                  |
| Test position     | Mode          | Ch./Freq. (MHz) | SAR (W/kg) 1g | Duty Cycle | Duty Cycle Scaling Factor | Conducted Power (dBm) | Tune up Limit (dBm) | Scaling Factor | Reported 1g SAR (W/kg) | Measured APD (W/m <sup>2</sup> ) | Reported APD (W/m <sup>2</sup> ) |
| Body 0mm          |               |                 |               |            |                           |                       |                     |                |                        |                                  |                                  |
| Back side         | 802.11ac 160M | 111/6505        | 0.021         | 99.07%     | 1.009                     | 9.67                  | 10.00               | 1.079          | 0.023                  | 0.028                            | 0.030                            |
| Left side         | 802.11ac 160M | 111/6505        | 0.006         | 99.07%     | 1.009                     | 9.67                  | 10.00               | 1.079          | 0.007                  | 0.007                            | 0.008                            |
| Right side        | 802.11ac 160M | 111/6505        | 0.178         | 99.07%     | 1.009                     | 9.67                  | 10.00               | 1.079          | <b>0.194</b>           | 0.751                            | 0.818                            |
| Top side          | 802.11ac 160M | 111/6505        | 0.001         | 99.07%     | 1.009                     | 9.67                  | 10.00               | 1.079          | 0.001                  | 0.002                            | 0.002                            |
| Bottom side       | 802.11ac 160M | 111/6505        | 0.013         | 99.07%     | 1.009                     | 9.67                  | 10.00               | 1.079          | 0.014                  | 0.009                            | 0.010                            |
| Right side        | 802.11ac 160M | 15/6025         | 0.019         | 99.07%     | 1.009                     | 7.09                  | 7.50                | 1.099          | 0.021                  | 0.015                            | 0.017                            |
| Right side        | 802.11ac 160M | 79/6345         | 0.079         | 99.07%     | 1.009                     | 7.14                  | 7.50                | 1.086          | 0.087                  | 0.181                            | 0.198                            |
| Right side        | 802.11ac 160M | 143/6665        | 0.132         | 99.07%     | 1.009                     | 8.05                  | 9.50                | 1.396          | 0.186                  | 0.577                            | 0.813                            |
| Right side        | 802.11ac 160M | 207/6985        | 0.042         | 99.07%     | 1.009                     | 7.52                  | 8.00                | 1.117          | 0.047                  | 0.048                            | 0.054                            |
| MIMO Test Results |               |                 |               |            |                           |                       |                     |                |                        |                                  |                                  |
| Test position     | Mode          | Ch./Freq. (MHz) | SAR (W/kg) 1g | Duty Cycle | Duty Cycle Scaling Factor | Conducted Power (dBm) | Tune up Limit (dBm) | Scaling Factor | Reported 1g SAR (W/kg) | Measured APD (W/m <sup>2</sup> ) | Reported APD (W/m <sup>2</sup> ) |
| Body 0mm          |               |                 |               |            |                           |                       |                     |                |                        |                                  |                                  |
| Back side         | 802.11ac 160M | 111/6505        | 0.026         | 99.07%     | 1.009                     | 12.51                 | 13.00               | 1.119          | 0.029                  | 0.021                            | 0.024                            |
| Left side         | 802.11ac 160M | 111/6505        | 0.009         | 99.07%     | 1.009                     | 12.51                 | 13.00               | 1.119          | 0.010                  | 0.010                            | 0.011                            |
| Right side        | 802.11ac 160M | 111/6505        | 0.184         | 99.07%     | 1.009                     | 12.51                 | 13.00               | 1.119          | <b>0.208</b>           | 0.814                            | 0.919                            |
| Top side          | 802.11ac 160M | 111/6505        | 0.004         | 99.07%     | 1.009                     | 12.51                 | 13.00               | 1.119          | 0.005                  | 0.008                            | 0.009                            |
| Bottom side       | 802.11ac 160M | 111/6505        | 0.012         | 99.07%     | 1.009                     | 12.51                 | 13.00               | 1.119          | 0.014                  | 0.011                            | 0.012                            |
| Right side        | 802.11ac 160M | 15/6025         | 0.019         | 99.07%     | 1.009                     | 10.50                 | 11.00               | 1.122          | 0.022                  | 0.020                            | 0.023                            |
| Right side        | 802.11ac 160M | 79/6345         | 0.051         | 99.07%     | 1.009                     | 10.72                 | 11.00               | 1.067          | 0.055                  | 0.040                            | 0.043                            |
| Right side        | 802.11ac 160M | 143/6665        | 0.129         | 99.07%     | 1.009                     | 10.90                 | 11.80               | 1.230          | 0.160                  | 0.366                            | 0.454                            |
| Right side        | 802.11ac 160M | 207/6985        | 0.035         | 99.07%     | 1.009                     | 10.59                 | 11.00               | 1.099          | 0.039                  | 0.028                            | 0.031                            |

Table 17: SAR of WIFI 6G.

802.11ac 160M Duty Cycle=2.13/2.15=99.07%



## 15.14 PD Measurement Result of WIFI 6G

| Test position | Mode          | Ch./Freq. (MHz) | Gap (mm) | Grid Step (λ) | Conducted Power(dBm) | Tune up Limit(dBm) | iPDn | iPD ratio (≥ -1) |
|---------------|---------------|-----------------|----------|---------------|----------------------|--------------------|------|------------------|
| Right side    | 802.11ac 160M | 111/6505        | 2.000    | 0.0625        | 9.67                 | 10.00              | 2.24 | 0.301            |
| Right side    | 802.11ac 160M | 111/6505        | 9.200    | 0.125         | 9.67                 | 10.00              | 2.09 |                  |

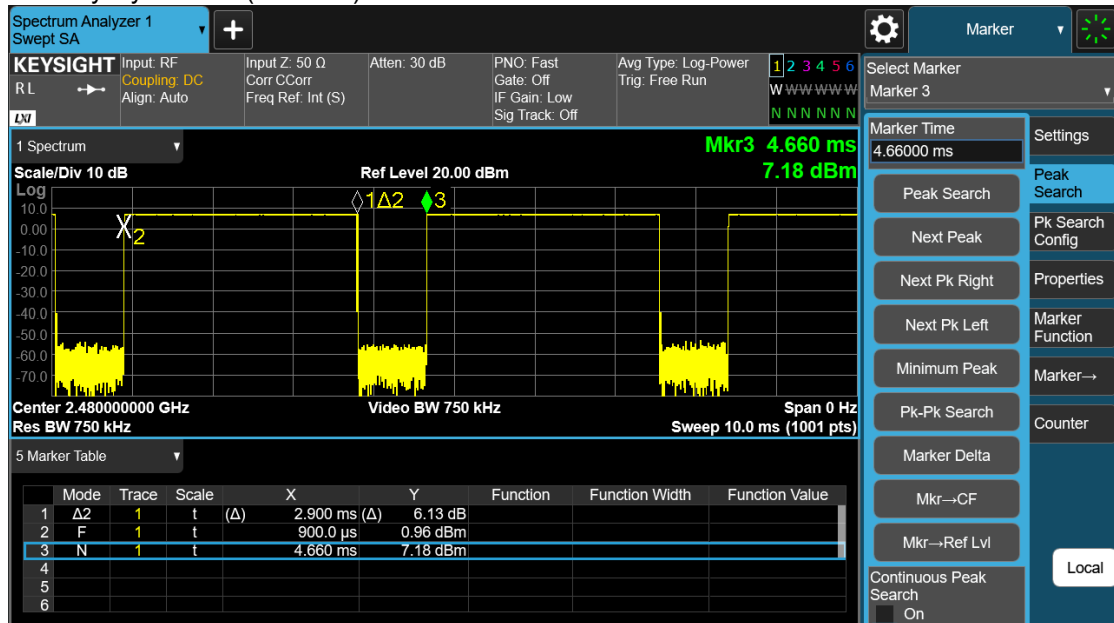
| ANT1 Test Results |               |                 |          |               |                                 |                                |            |                           |                      |                    |                |                                            |                                          |                                         |
|-------------------|---------------|-----------------|----------|---------------|---------------------------------|--------------------------------|------------|---------------------------|----------------------|--------------------|----------------|--------------------------------------------|------------------------------------------|-----------------------------------------|
| Test position     | Mode          | Ch./Freq. (MHz) | Gap (mm) | Grid Step (λ) | Normal psPD (W/m <sup>2</sup> ) | Total psPD (W/m <sup>2</sup> ) | Duty Cycle | Duty Cycle Scaling Factor | Conducted Power(dBm) | Tune up Limit(dBm) | Scaling Factor | Scaling Factor for Measurement Uncertainty | Reported Normal psPD (W/m <sup>2</sup> ) | Reported Total psPD (W/m <sup>2</sup> ) |
| Back side         | 802.11ac 160M | 111/6505        | 2.000    | 0.0625        | 0.082                           | 0.168                          | 99.07%     | 1.009                     | 9.32                 | 10.00              | 1.169          | 1.5493                                     | 0.150                                    | 0.307                                   |
| Left side         | 802.11ac 160M | 111/6505        | 2.000    | 0.0625        | 0.016                           | 0.034                          | 99.07%     | 1.009                     | 9.32                 | 10.00              | 1.169          | 1.5493                                     | 0.029                                    | 0.062                                   |
| Right side        | 802.11ac 160M | 111/6505        | 2.000    | 0.0625        | 0.156                           | 0.337                          | 99.07%     | 1.009                     | 9.32                 | 10.00              | 1.169          | 1.5493                                     | 0.285                                    | <b>0.616</b>                            |
| Top side          | 802.11ac 160M | 111/6505        | 2.000    | 0.0625        | 0.011                           | 0.024                          | 99.07%     | 1.009                     | 9.32                 | 10.00              | 1.169          | 1.5493                                     | 0.020                                    | 0.044                                   |
| Bottom side       | 802.11ac 160M | 111/6505        | 2.000    | 0.0625        | 0.010                           | 0.022                          | 99.07%     | 1.009                     | 9.32                 | 10.00              | 1.169          | 1.5493                                     | 0.018                                    | 0.040                                   |
| Right side        | 802.11ac 160M | 15/6025         | 2.000    | 0.0625        | 0.101                           | 0.211                          | 99.07%     | 1.009                     | 7.85                 | 8.50               | 1.161          | 1.5493                                     | 0.183                                    | 0.383                                   |
| Right side        | 802.11ac 160M | 79/6345         | 2.000    | 0.0625        | 0.113                           | 0.236                          | 99.07%     | 1.009                     | 8.22                 | 8.50               | 1.067          | 1.5493                                     | 0.188                                    | 0.393                                   |
| Right side        | 802.11ac 160M | 143/6665        | 2.000    | 0.0625        | 0.124                           | 0.255                          | 99.07%     | 1.009                     | 7.72                 | 8.00               | 1.067          | 1.5493                                     | 0.207                                    | 0.425                                   |
| Right side        | 802.11ac 160M | 207/6985        | 2.000    | 0.0625        | 0.108                           | 0.223                          | 99.07%     | 1.009                     | 7.63                 | 8.00               | 1.089          | 1.5493                                     | 0.184                                    | 0.380                                   |
| ANT2 Test Results |               |                 |          |               |                                 |                                |            |                           |                      |                    |                |                                            |                                          |                                         |
| Test position     | Mode          | Ch./Freq. (MHz) | Gap (mm) | Grid Step (λ) | Normal psPD (W/m <sup>2</sup> ) | Total psPD (W/m <sup>2</sup> ) | Duty Cycle | Duty Cycle Scaling Factor | Conducted Power(dBm) | Tune up Limit(dBm) | Scaling Factor | Scaling Factor for Measurement Uncertainty | Reported Normal psPD (W/m <sup>2</sup> ) | Reported Total psPD (W/m <sup>2</sup> ) |
| Back side         | 802.11ac 160M | 111/6505        | 2.000    | 0.0625        | 0.278                           | 0.621                          | 99.07%     | 1.009                     | 9.67                 | 10.00              | 1.079          | 1.5493                                     | 0.469                                    | 1.047                                   |
| Left side         | 802.11ac 160M | 111/6505        | 2.000    | 0.0625        | 0.015                           | 0.034                          | 99.07%     | 1.009                     | 9.67                 | 10.00              | 1.079          | 1.5493                                     | 0.025                                    | 0.057                                   |
| Right side        | 802.11ac 160M | 111/6505        | 2.000    | 0.0625        | 0.268                           | 0.719                          | 99.07%     | 1.009                     | 9.67                 | 10.00              | 1.079          | 1.5493                                     | 0.452                                    | <b>1.213</b>                            |
| Top side          | 802.11ac 160M | 111/6505        | 2.000    | 0.0625        | 0.011                           | 0.025                          | 99.07%     | 1.009                     | 9.67                 | 10.00              | 1.079          | 1.5493                                     | 0.019                                    | 0.042                                   |
| Bottom side       | 802.11ac 160M | 111/6505        | 2.000    | 0.0625        | 0.014                           | 0.029                          | 99.07%     | 1.009                     | 9.67                 | 10.00              | 1.079          | 1.5493                                     | 0.024                                    | 0.049                                   |
| Right side        | 802.11ac 160M | 15/6025         | 2.000    | 0.0625        | 0.126                           | 0.302                          | 99.07%     | 1.009                     | 7.09                 | 7.50               | 1.099          | 1.5493                                     | 0.216                                    | 0.519                                   |
| Right side        | 802.11ac 160M | 79/6345         | 2.000    | 0.0625        | 0.189                           | 0.442                          | 99.07%     | 1.009                     | 7.14                 | 7.50               | 1.086          | 1.5493                                     | 0.321                                    | 0.751                                   |
| Right side        | 802.11ac 160M | 143/6665        | 2.000    | 0.0625        | 0.201                           | 0.528                          | 99.07%     | 1.009                     | 8.05                 | 9.50               | 1.396          | 1.5493                                     | 0.439                                    | 1.153                                   |
| Right side        | 802.11ac 160M | 207/6985        | 2.000    | 0.0625        | 0.153                           | 0.366                          | 99.07%     | 1.009                     | 7.52                 | 8.00               | 1.117          | 1.5493                                     | 0.267                                    | 0.639                                   |
| MIMO Test Results |               |                 |          |               |                                 |                                |            |                           |                      |                    |                |                                            |                                          |                                         |
| Test position     | Mode          | Ch./Freq. (MHz) | Gap (mm) | Grid Step (λ) | Normal psPD (W/m <sup>2</sup> ) | Total psPD (W/m <sup>2</sup> ) | Duty Cycle | Duty Cycle Scaling Factor | Conducted Power(dBm) | Tune up Limit(dBm) | Scaling Factor | Scaling Factor for Measurement Uncertainty | Reported Normal psPD (W/m <sup>2</sup> ) | Reported Total psPD (W/m <sup>2</sup> ) |
| Back side         | 802.11ac 160M | 111/6505        | 2.000    | 0.0625        | 0.288                           | 0.593                          | 99.07%     | 1.009                     | 12.51                | 13.00              | 1.119          | 1.5493                                     | 0.504                                    | 1.038                                   |
| Left side         | 802.11ac 160M | 111/6505        | 2.000    | 0.0625        | 0.016                           | 0.038                          | 99.07%     | 1.009                     | 12.51                | 13.00              | 1.119          | 1.5493                                     | 0.028                                    | 0.066                                   |
| Right side        | 802.11ac 160M | 111/6505        | 2.000    | 0.0625        | 0.528                           | 0.982                          | 99.07%     | 1.009                     | 12.51                | 13.00              | 1.119          | 1.5493                                     | 0.924                                    | <b>1.718</b>                            |
| Top side          | 802.11ac 160M | 111/6505        | 2.000    | 0.0625        | 0.123                           | 0.243                          | 99.07%     | 1.009                     | 12.51                | 13.00              | 1.119          | 1.5493                                     | 0.215                                    | 0.425                                   |
| Bottom side       | 802.11ac 160M | 111/6505        | 2.000    | 0.0625        | 0.013                           | 0.027                          | 99.07%     | 1.009                     | 12.51                | 13.00              | 1.119          | 1.5493                                     | 0.023                                    | 0.047                                   |
| Right side        | 802.11ac 160M | 15/6025         | 2.000    | 0.0625        | 0.301                           | 0.598                          | 99.07%     | 1.009                     | 10.50                | 11.00              | 1.122          | 1.5493                                     | 0.528                                    | 1.049                                   |
| Right side        | 802.11ac 160M | 79/6345         | 2.000    | 0.0625        | 0.386                           | 0.768                          | 99.07%     | 1.009                     | 10.72                | 11.00              | 1.067          | 1.5493                                     | 0.644                                    | 1.281                                   |
| Right side        | 802.11ac 160M | 143/6665        | 2.000    | 0.0625        | 0.448                           | 0.887                          | 99.07%     | 1.009                     | 10.90                | 11.80              | 1.230          | 1.5493                                     | 0.862                                    | 1.706                                   |
| Right side        | 802.11ac 160M | 207/6985        | 2.000    | 0.0625        | 0.334                           | 0.659                          | 99.07%     | 1.009                     | 10.59                | 11.00              | 1.099          | 1.5493                                     | 0.574                                    | 1.132                                   |

Table 18: PD of WIFI 6G.

## 15.15 SAR Measurement Result of BT

| Test position | Mode | Ch./Freq. (MHz) | SAR (W/kg) 1g | Duty Cycle | Duty Cycle Scaling Factor | Conducted Power (dBm) | Tune up Limit (dBm) | Scaling Factor | Reported 1g SAR (W/kg) |
|---------------|------|-----------------|---------------|------------|---------------------------|-----------------------|---------------------|----------------|------------------------|
| Back side     | DH5  | 78/2480         | 0.042         | 77.13%     | 1.000                     | 6.39                  | 6.50                | 1.026          | 0.043                  |
| Left side     | DH5  | 78/2480         | 0.008         | 77.13%     | 1.000                     | 6.39                  | 6.50                | 1.026          | 0.008                  |
| Right side    | DH5  | 78/2480         | 0.103         | 77.13%     | 1.000                     | 6.39                  | 6.50                | 1.026          | <b>0.106</b>           |
| Top side      | DH5  | 78/2480         | 0.002         | 77.13%     | 1.000                     | 6.39                  | 6.50                | 1.026          | 0.002                  |
| Bottom side   | DH5  | 78/2480         | 0.001         | 77.13%     | 1.000                     | 6.39                  | 6.50                | 1.026          | 0.001                  |
| Right side    | DH5  | 0/2402          | 0.049         | 77.13%     | 1.000                     | 5.21                  | 6.00                | 1.199          | 0.059                  |
| Right side    | DH5  | 39/2441         | 0.059         | 77.13%     | 1.000                     | 5.10                  | 6.00                | 1.230          | 0.073                  |

Table 19: SAR of BT.

BT Duty Cycle=  $2.9/(4.66-0.9) = 77.13\%$ 

## 15.16 SAR Measurement Result of NFC

| Test position | Mode | Ch./Freq. (MHz) | SAR (W/kg) 1-g | SAR (W/kg) 10-g |
|---------------|------|-----------------|----------------|-----------------|
| Body 0mm      |      |                 |                |                 |
| Back side     | NFC  | 13.56MHz        | <b>0.004</b>   | <b>0.002</b>    |
| Left side     | NFC  | 13.56MHz        | 0.000          | 0.000           |
| Right side    | NFC  | 13.56MHz        | 0.000          | 0.000           |
| Top side      | NFC  | 13.56MHz        | 0.001          | 0.000           |
| Bottom side   | NFC  | 13.56MHz        | 0.000          | 0.000           |

Table 20: SAR of NFC.

## 16 Simultaneous Transmission Analysis

The Simultaneous Transmission Possibilities of this device are as below:

| NO. | Simultaneous Tx Combination   | Body |
|-----|-------------------------------|------|
| 1   | WWAN+WIFI 2.4G Ant1           | Y    |
| 2   | WWAN+WIFI 2.4G Ant2           | Y    |
| 3   | WWAN+WIFI 2.4G MIMO           | Y    |
| 4   | WWAN+WIFI 5G Ant1             | Y    |
| 5   | WWAN+WIFI 5G Ant2             | Y    |
| 6   | WWAN+WIFI 5G MIMO             | Y    |
| 7   | WWAN+WIFI 6G Ant1             | Y    |
| 8   | WWAN+WIFI 6G Ant2             | Y    |
| 9   | WWAN+WIFI 6G MIMO             | Y    |
| 10  | WWAN+BT                       | Y    |
| 11  | WWAN+NFC                      | Y    |
| 12  | WWAN+WIFI 2.4G Ant2 +BT       | Y    |
| 13  | WWAN+WIFI 5G Ant1 + BT        | Y    |
| 14  | WWAN+WIFI 5G Ant2 + BT        | Y    |
| 15  | WWAN+WIFI 5G MIMO + BT        | Y    |
| 16  | WWAN+WIFI 6G Ant1 + BT        | Y    |
| 17  | WWAN+WIFI 6G Ant2 + BT        | Y    |
| 18  | WWAN+WIFI 6G MIMO + BT        | Y    |
| 19  | WWAN+WIFI 2.4G Ant2 +BT + NFC | Y    |
| 20  | WWAN+WIFI 5G Ant1 + BT + NFC  | Y    |
| 21  | WWAN+WIFI 5G Ant2 + BT + NFC  | Y    |
| 22  | WWAN+WIFI 5G MIMO + BT + NFC  | Y    |
| 23  | WWAN+WIFI 6G Ant1 + BT + NFC  | Y    |
| 24  | WWAN+WIFI 6G Ant2 + BT + NFC  | Y    |
| 25  | WWAN+WIFI 6G MIMO + BT + NFC  | Y    |

### Summed SAR Analysis:

| Test position |             | SARmax (W/kg) |                  |                  |                  |                |                |                |                |                |                |           |       | Summed SAR |       |       |       |       |       |       |       |       |       |       |           |           |           |           |           |           |            |
|---------------|-------------|---------------|------------------|------------------|------------------|----------------|----------------|----------------|----------------|----------------|----------------|-----------|-------|------------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-----------|-----------|-----------|-----------|-----------|-----------|------------|
|               |             | Main Ant      | WIFI 2.4G (Ant1) | WIFI 2.4G (Ant2) | WIFI 2.4G (MIMO) | WIFI 5G (Ant1) | WIFI 5G (Ant2) | WIFI 5G (MIMO) | WIFI 6G (Ant1) | WIFI 6G (Ant2) | WIFI 6G (MIMO) | BT (Ant1) | NFC   |            |       |       |       |       |       |       |       |       |       |       |           |           |           |           |           |           |            |
|               |             | 1             | 2                | 3                | 4                | 5              | 6              | 7              | 8              | 9              | 10             | 11        | 12    | 1+2        | 1+3   | 1+4   | 1+5   | 1+6   | 1+7   | 1+8   | 1+9   | 1+10  | 1+11  | 1+12  | 1+3+11+12 | 1+5+11+12 | 1+6+11+12 | 1+7+11+12 | 1+8+11+12 | 1+9+11+12 | 1+10+11+12 |
| WCDMA B2      | Back side   | 0.173         | 0.011            | 0.012            | 0.012            | 0.063          | 0.037          | 0.065          | 0.012          | 0.023          | 0.029          | 0.043     | 0.004 | 0.184      | 0.185 | 0.185 | 0.236 | 0.210 | 0.238 | 0.185 | 0.196 | 0.202 | 0.216 | 0.177 | 0.232     | 0.283     | 0.257     | 0.285     | 0.232     | 0.243     | 0.249      |
|               | Left side   | 0.004         | 0.008            | 0.001            | 0.008            | 0.053          | 0.062          | 0.025          | 0.009          | 0.007          | 0.010          | 0.008     | 0.000 | 0.012      | 0.005 | 0.012 | 0.057 | 0.066 | 0.029 | 0.013 | 0.011 | 0.014 | 0.012 | 0.004 | 0.013     | 0.065     | 0.074     | 0.037     | 0.021     | 0.019     | 0.022      |
|               | Right side  | 0.137         | 0.052            | 0.027            | 0.069            | 0.143          | 0.141          | 0.142          | 0.211          | 0.194          | 0.208          | 0.106     | 0.000 | 0.189      | 0.164 | 0.206 | 0.280 | 0.278 | 0.279 | 0.348 | 0.331 | 0.345 | 0.243 | 0.137 | 0.270     | 0.386     | 0.384     | 0.385     | 0.454     | 0.437     | 0.451      |
|               | Top side    | 0.002         | 0.004            | 0.002            | 0.006            | 0.065          | 0.061          | 0.071          | 0.005          | 0.001          | 0.005          | 0.002     | 0.001 | 0.006      | 0.004 | 0.008 | 0.067 | 0.063 | 0.073 | 0.007 | 0.003 | 0.007 | 0.004 | 0.003 | 0.007     | 0.070     | 0.066     | 0.076     | 0.010     | 0.006     | 0.010      |
|               | Bottom side | 0.934         | 0.002            | 0.001            | 0.002            | 0.005          | 0.004          | 0.004          | 0.002          | 0.014          | 0.014          | 0.001     | 0.000 | 0.936      | 0.935 | 0.936 | 0.939 | 0.938 | 0.938 | 0.936 | 0.948 | 0.948 | 0.935 | 0.934 | 0.936     | 0.940     | 0.939     | 0.939     | 0.937     | 0.949     | 0.949      |
| WCDMA B4      | Back side   | 0.045         | 0.011            | 0.012            | 0.012            | 0.063          | 0.037          | 0.065          | 0.012          | 0.023          | 0.029          | 0.043     | 0.004 | 0.056      | 0.057 | 0.057 | 0.108 | 0.082 | 0.110 | 0.057 | 0.068 | 0.074 | 0.088 | 0.049 | 0.104     | 0.155     | 0.129     | 0.157     | 0.104     | 0.115     | 0.121      |
|               | Left side   | 0.007         | 0.008            | 0.001            | 0.008            | 0.053          | 0.062          | 0.025          | 0.009          | 0.007          | 0.010          | 0.008     | 0.000 | 0.015      | 0.008 | 0.015 | 0.060 | 0.069 | 0.032 | 0.016 | 0.014 | 0.017 | 0.015 | 0.007 | 0.016     | 0.068     | 0.077     | 0.040     | 0.024     | 0.022     | 0.025      |
|               | Right side  | 0.009         | 0.052            | 0.027            | 0.069            | 0.143          | 0.141          | 0.142          | 0.211          | 0.194          | 0.208          | 0.106     | 0.000 | 0.061      | 0.036 | 0.078 | 0.152 | 0.150 | 0.151 | 0.220 | 0.203 | 0.217 | 0.115 | 0.009 | 0.142     | 0.258     | 0.256     | 0.257     | 0.326     | 0.309     | 0.323      |
|               | Top side    | 0.002         | 0.004            | 0.002            | 0.006            | 0.065          | 0.061          | 0.071          | 0.005          | 0.001          | 0.005          | 0.002     | 0.001 | 0.006      | 0.004 | 0.008 | 0.067 | 0.063 | 0.073 | 0.007 | 0.003 | 0.007 | 0.004 | 0.003 | 0.007     | 0.070     | 0.066     | 0.076     | 0.010     | 0.006     | 0.010      |
|               | Bottom side | 0.101         | 0.002            | 0.001            | 0.002            | 0.005          | 0.004          | 0.004          | 0.002          | 0.014          | 0.014          | 0.001     | 0.000 | 0.103      | 0.102 | 0.103 | 0.106 | 0.105 | 0.105 | 0.103 | 0.115 | 0.115 | 0.102 | 0.101 | 0.103     | 0.107     | 0.106     | 0.106     | 0.104     | 0.116     | 0.116      |
| WCDMA B5      | Back side   | 0.632         | 0.011            | 0.012            | 0.012            | 0.063          | 0.037          | 0.065          | 0.012          | 0.023          | 0.029          | 0.043     | 0.004 | 0.643      | 0.644 | 0.644 | 0.695 | 0.669 | 0.697 | 0.644 | 0.655 | 0.661 | 0.675 | 0.636 | 0.691     | 0.742     | 0.716     | 0.744     | 0.691     | 0.702     | 0.708      |
|               | Left side   | 0.065         | 0.008            | 0.001            | 0.008            | 0.053          | 0.062          | 0.025          | 0.009          | 0.007          | 0.010          | 0.008     | 0.000 | 0.073      | 0.066 | 0.073 | 0.118 | 0.127 | 0.090 | 0.074 | 0.072 | 0.075 | 0.073 | 0.065 | 0.074     | 0.126     | 0.135     | 0.098     | 0.082     | 0.080     | 0.083      |
|               | Right side  | 0.692         | 0.052            | 0.027            | 0.069            | 0.143          | 0.141          | 0.142          | 0.211          | 0.194          | 0.208          | 0.106     | 0.000 | 0.744      | 0.719 | 0.761 | 0.835 | 0.833 | 0.834 | 0.903 | 0.886 | 0.900 | 0.798 | 0.692 | 0.825     | 0.941     | 0.939     | 0.940     | 1.009     | 0.992     | 1.006      |
|               | Top side    | 0.053         | 0.004            | 0.002            | 0.006            | 0.065          | 0.061          | 0.071          | 0.005          | 0.001          | 0.005          | 0.002     | 0.001 | 0.057      | 0.050 | 0.059 | 0.118 | 0.114 | 0.124 | 0.058 | 0.054 | 0.058 | 0.055 | 0.054 | 0.058     | 0.121     | 0.117     | 0.127     | 0.061     | 0.057     | 0.061      |
|               | Bottom side | 1.100         | 0.002            | 0.001            | 0.002            | 0.005          | 0.004          | 0.004          | 0.002          | 0.014          | 0.014          | 0.001     | 0.000 | 1.102      | 1.101 | 1.102 | 1.105 | 1.104 | 1.104 | 1.102 | 1.114 | 1.114 | 1.101 | 1.100 | 1.102     | 1.106     | 1.105     | 1.105     | 1.103     | 1.115     | 1.115      |
| LTE B2        | Back side   | 0.180         | 0.011            | 0.012            | 0.012            | 0.063          | 0.037          | 0.065          | 0.012          | 0.023          | 0.029          | 0.043     | 0.004 | 0.191      | 0.192 | 0.192 | 0.243 | 0.217 | 0.245 | 0.192 | 0.203 | 0.209 | 0.223 | 0.184 | 0.239     | 0.290     | 0.264     | 0.292     | 0.239     | 0.250     | 0.256      |
|               | Left side   | 0.009         | 0.008            | 0.001            | 0.008            | 0.053          | 0.062          | 0.025          | 0.009          | 0.007          | 0.010          | 0.008     | 0.000 | 0.017      | 0.010 | 0.017 | 0.062 | 0.071 | 0.034 | 0.018 | 0.016 | 0.019 | 0.017 | 0.009 | 0.018     | 0.070     | 0.079     | 0.042     | 0.026     | 0.024     | 0.027      |
|               | Right side  | 0.138         | 0.052            | 0.027            | 0.069            | 0.143          | 0.141          | 0.142          | 0.211          | 0.194          | 0.208          | 0.106     | 0.000 | 0.190      | 0.165 | 0.207 | 0.281 | 0.279 | 0.280 | 0.349 | 0.332 | 0.346 | 0.244 | 0.138 | 0.271     | 0.387     | 0.385     | 0.386     | 0.455     | 0.438     | 0.452      |
|               | Top side    | 0.002         | 0.004            | 0.002            | 0.006            | 0.065          | 0.061          | 0.071          | 0.005          | 0.001          | 0.005          | 0.002     | 0.001 | 0.006      | 0.004 | 0.008 | 0.067 | 0.063 | 0.073 | 0.007 | 0.003 | 0.007 | 0.004 | 0.003 | 0.007     | 0.070     | 0.066     | 0.076     | 0.010     | 0.006     | 0.010      |
|               | Bottom side | 0.833         | 0.002            | 0.001            | 0.002            | 0.005          | 0.004          | 0.004          | 0.002          | 0.014          | 0.014          | 0.001     | 0.000 | 0.835      | 0.834 | 0.835 | 0.838 | 0.837 | 0.837 | 0.835 | 0.847 | 0.847 | 0.834 | 0.833 | 0.835     | 0.839     | 0.838     | 0.838     | 0.836     | 0.848     | 0.848      |
| LTE B5        | Back side   | 0.485         | 0.011            | 0.012            | 0.012            | 0.063          | 0.037          | 0.065          | 0.012          | 0.023          | 0.029          | 0.043     | 0.004 | 0.496      | 0.497 | 0.497 | 0.548 | 0.522 | 0.550 | 0.497 | 0.508 | 0.514 | 0.528 | 0.489 | 0.544     | 0.595     | 0.569     | 0.597     | 0.544     | 0.555     | 0.561      |

|           |             |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |
|-----------|-------------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|
|           | Left side   | 0.050 | 0.008 | 0.001 | 0.008 | 0.053 | 0.062 | 0.025 | 0.009 | 0.007 | 0.010 | 0.008 | 0.000 | 0.058 | 0.051 | 0.050 | 0.103 | 0.112 | 0.075 | 0.050 | 0.057 | 0.060 | 0.058 | 0.050 | 0.059 | 0.111 | 0.120 | 0.083 | 0.067 | 0.065 | 0.068 |
|           | Right side  | 0.491 | 0.052 | 0.027 | 0.069 | 0.143 | 0.141 | 0.142 | 0.211 | 0.194 | 0.208 | 0.106 | 0.000 | 0.543 | 0.518 | 0.560 | 0.634 | 0.632 | 0.633 | 0.702 | 0.685 | 0.690 | 0.597 | 0.491 | 0.624 | 0.740 | 0.738 | 0.739 | 0.808 | 0.791 | 0.805 |
|           | Top side    | 0.004 | 0.004 | 0.002 | 0.006 | 0.065 | 0.061 | 0.071 | 0.005 | 0.001 | 0.005 | 0.002 | 0.001 | 0.008 | 0.006 | 0.010 | 0.069 | 0.065 | 0.075 | 0.009 | 0.005 | 0.009 | 0.006 | 0.005 | 0.009 | 0.072 | 0.068 | 0.078 | 0.012 | 0.008 | 0.012 |
|           | Bottom side | 0.787 | 0.002 | 0.001 | 0.002 | 0.005 | 0.004 | 0.004 | 0.002 | 0.014 | 0.014 | 0.001 | 0.000 | 0.789 | 0.789 | 0.789 | 0.792 | 0.791 | 0.791 | 0.789 | 0.801 | 0.801 | 0.789 | 0.787 | 0.789 | 0.793 | 0.792 | 0.792 | 0.790 | 0.802 | 0.802 |
|           |             |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |
| LTE B12   | Back side   | 0.179 | 0.011 | 0.012 | 0.012 | 0.063 | 0.037 | 0.065 | 0.012 | 0.023 | 0.029 | 0.043 | 0.004 | 0.190 | 0.191 | 0.191 | 0.242 | 0.216 | 0.244 | 0.191 | 0.202 | 0.208 | 0.222 | 0.183 | 0.238 | 0.289 | 0.263 | 0.291 | 0.238 | 0.249 | 0.255 |
|           | Left side   | 0.009 | 0.008 | 0.001 | 0.008 | 0.053 | 0.062 | 0.025 | 0.009 | 0.007 | 0.010 | 0.008 | 0.000 | 0.017 | 0.010 | 0.017 | 0.062 | 0.071 | 0.034 | 0.018 | 0.016 | 0.019 | 0.017 | 0.009 | 0.018 | 0.070 | 0.079 | 0.042 | 0.026 | 0.024 | 0.027 |
|           | Right side  | 0.569 | 0.052 | 0.027 | 0.069 | 0.143 | 0.141 | 0.142 | 0.211 | 0.194 | 0.208 | 0.106 | 0.000 | 0.621 | 0.598 | 0.638 | 0.712 | 0.710 | 0.711 | 0.780 | 0.763 | 0.777 | 0.675 | 0.569 | 0.702 | 0.818 | 0.816 | 0.817 | 0.886 | 0.869 | 0.883 |
|           | Top side    | 0.003 | 0.004 | 0.002 | 0.006 | 0.065 | 0.061 | 0.071 | 0.005 | 0.001 | 0.005 | 0.002 | 0.001 | 0.007 | 0.005 | 0.009 | 0.068 | 0.064 | 0.074 | 0.008 | 0.004 | 0.008 | 0.005 | 0.004 | 0.008 | 0.071 | 0.067 | 0.077 | 0.011 | 0.007 | 0.011 |
|           | Bottom side | 0.225 | 0.002 | 0.001 | 0.002 | 0.005 | 0.004 | 0.004 | 0.002 | 0.014 | 0.014 | 0.001 | 0.000 | 0.227 | 0.226 | 0.227 | 0.230 | 0.229 | 0.229 | 0.227 | 0.239 | 0.239 | 0.226 | 0.225 | 0.227 | 0.231 | 0.230 | 0.230 | 0.228 | 0.240 | 0.240 |
| LTE B13   | Back side   | 0.307 | 0.011 | 0.012 | 0.012 | 0.063 | 0.037 | 0.065 | 0.012 | 0.023 | 0.029 | 0.043 | 0.004 | 0.318 | 0.319 | 0.319 | 0.370 | 0.344 | 0.372 | 0.319 | 0.330 | 0.336 | 0.350 | 0.311 | 0.366 | 0.417 | 0.391 | 0.419 | 0.366 | 0.377 | 0.383 |
|           | Left side   | 0.010 | 0.008 | 0.001 | 0.008 | 0.053 | 0.062 | 0.025 | 0.009 | 0.007 | 0.010 | 0.008 | 0.000 | 0.018 | 0.011 | 0.018 | 0.063 | 0.072 | 0.035 | 0.019 | 0.017 | 0.020 | 0.018 | 0.010 | 0.019 | 0.071 | 0.080 | 0.043 | 0.027 | 0.025 | 0.028 |
|           | Right side  | 0.874 | 0.052 | 0.027 | 0.069 | 0.143 | 0.141 | 0.142 | 0.211 | 0.194 | 0.208 | 0.106 | 0.000 | 0.926 | 0.901 | 0.943 | 1.017 | 1.015 | 1.016 | 1.085 | 1.068 | 1.082 | 0.980 | 0.874 | 1.007 | 1.123 | 1.121 | 1.122 | 1.191 | 1.174 | 1.188 |
|           | Top side    | 0.003 | 0.004 | 0.002 | 0.006 | 0.065 | 0.061 | 0.071 | 0.005 | 0.001 | 0.005 | 0.002 | 0.001 | 0.007 | 0.005 | 0.009 | 0.068 | 0.064 | 0.074 | 0.008 | 0.004 | 0.008 | 0.005 | 0.004 | 0.008 | 0.071 | 0.067 | 0.077 | 0.011 | 0.007 | 0.011 |
|           | Bottom side | 0.513 | 0.002 | 0.001 | 0.002 | 0.005 | 0.004 | 0.004 | 0.002 | 0.014 | 0.014 | 0.001 | 0.000 | 0.515 | 0.514 | 0.515 | 0.518 | 0.517 | 0.517 | 0.515 | 0.527 | 0.527 | 0.514 | 0.513 | 0.515 | 0.519 | 0.518 | 0.518 | 0.516 | 0.528 | 0.528 |
| LTE B14   | Back side   | 0.393 | 0.011 | 0.012 | 0.012 | 0.063 | 0.037 | 0.065 | 0.012 | 0.023 | 0.029 | 0.043 | 0.004 | 0.404 | 0.405 | 0.405 | 0.456 | 0.430 | 0.458 | 0.405 | 0.416 | 0.422 | 0.436 | 0.397 | 0.452 | 0.503 | 0.477 | 0.505 | 0.452 | 0.463 | 0.469 |
|           | Left side   | 0.010 | 0.008 | 0.001 | 0.008 | 0.053 | 0.062 | 0.025 | 0.009 | 0.007 | 0.010 | 0.008 | 0.000 | 0.018 | 0.011 | 0.018 | 0.063 | 0.072 | 0.035 | 0.019 | 0.017 | 0.020 | 0.018 | 0.010 | 0.019 | 0.071 | 0.080 | 0.043 | 0.027 | 0.025 | 0.028 |
|           | Right side  | 1.031 | 0.052 | 0.027 | 0.069 | 0.143 | 0.141 | 0.142 | 0.211 | 0.194 | 0.208 | 0.106 | 0.000 | 1.083 | 1.058 | 1.100 | 1.174 | 1.172 | 1.173 | 1.242 | 1.225 | 1.239 | 1.137 | 1.031 | 1.164 | 1.280 | 1.278 | 1.279 | 1.348 | 1.331 | 1.345 |
|           | Top side    | 0.004 | 0.004 | 0.002 | 0.006 | 0.065 | 0.061 | 0.071 | 0.005 | 0.001 | 0.005 | 0.002 | 0.001 | 0.008 | 0.006 | 0.010 | 0.069 | 0.065 | 0.075 | 0.009 | 0.005 | 0.009 | 0.006 | 0.005 | 0.009 | 0.072 | 0.068 | 0.078 | 0.012 | 0.008 | 0.012 |
|           | Bottom side | 0.437 | 0.002 | 0.001 | 0.002 | 0.005 | 0.004 | 0.004 | 0.002 | 0.014 | 0.014 | 0.001 | 0.000 | 0.439 | 0.438 | 0.439 | 0.442 | 0.441 | 0.441 | 0.439 | 0.451 | 0.451 | 0.438 | 0.437 | 0.439 | 0.443 | 0.442 | 0.442 | 0.440 | 0.452 | 0.452 |
| LTE B66/4 | Back side   | 0.079 | 0.011 | 0.012 | 0.012 | 0.063 | 0.037 | 0.065 | 0.012 | 0.023 | 0.029 | 0.043 | 0.004 | 0.090 | 0.091 | 0.091 | 0.142 | 0.116 | 0.144 | 0.091 | 0.102 | 0.108 | 0.122 | 0.083 | 0.138 | 0.189 | 0.163 | 0.191 | 0.138 | 0.149 | 0.155 |
|           | Left side   | 0.007 | 0.008 | 0.001 | 0.008 | 0.053 | 0.062 | 0.025 | 0.009 | 0.007 | 0.010 | 0.008 | 0.000 | 0.015 | 0.008 | 0.015 | 0.060 | 0.069 | 0.032 | 0.016 | 0.014 | 0.017 | 0.015 | 0.007 | 0.016 | 0.068 | 0.077 | 0.040 | 0.024 | 0.022 | 0.025 |
|           | Right side  | 0.013 | 0.052 | 0.027 | 0.069 | 0.143 | 0.141 | 0.142 | 0.211 | 0.194 | 0.208 | 0.106 | 0.000 | 0.065 | 0.040 | 0.082 | 0.156 | 0.154 | 0.155 | 0.224 | 0.207 | 0.221 | 0.119 | 0.013 | 0.146 | 0.262 | 0.260 | 0.261 | 0.330 | 0.313 | 0.327 |
|           | Top side    | 0.004 | 0.004 | 0.002 | 0.006 | 0.065 | 0.061 | 0.071 | 0.005 | 0.001 | 0.005 | 0.002 | 0.001 | 0.008 | 0.006 | 0.010 | 0.069 | 0.065 | 0.075 | 0.009 | 0.005 | 0.009 | 0.006 | 0.005 | 0.009 | 0.072 | 0.068 | 0.078 | 0.012 | 0.008 | 0.012 |
|           | Bottom side | 0.312 | 0.002 | 0.001 | 0.002 | 0.005 | 0.004 | 0.004 | 0.002 | 0.014 | 0.014 | 0.001 | 0.000 | 0.314 | 0.313 | 0.314 | 0.317 | 0.316 | 0.316 | 0.314 | 0.326 | 0.326 | 0.313 | 0.312 | 0.314 | 0.318 | 0.317 | 0.317 | 0.315 | 0.327 | 0.327 |
| LTE B71   | Back side   | 0.235 | 0.011 | 0.012 | 0.012 | 0.063 | 0.037 | 0.065 | 0.012 | 0.023 | 0.029 | 0.043 | 0.004 | 0.246 | 0.247 | 0.247 | 0.298 | 0.272 | 0.300 | 0.247 | 0.258 | 0.264 | 0.278 | 0.239 | 0.294 | 0.345 | 0.319 | 0.347 | 0.294 | 0.305 | 0.311 |
|           | Left side   | 0.009 | 0.008 | 0.001 | 0.008 | 0.053 | 0.062 | 0.025 | 0.009 | 0.007 | 0.010 | 0.008 | 0.000 | 0.017 | 0.010 | 0.017 | 0.062 | 0.071 | 0.034 | 0.018 | 0.016 | 0.019 | 0.017 | 0.009 | 0.018 | 0.070 | 0.079 | 0.042 | 0.026 | 0.024 | 0.027 |
|           | Right side  | 0.801 | 0.052 | 0.027 | 0.069 | 0.143 | 0.141 | 0.142 | 0.211 | 0.194 | 0.208 | 0.106 | 0.000 | 0.853 | 0.828 | 0.870 | 0.944 | 0.942 | 0.943 | 1.012 | 0.995 | 1.009 | 0.907 | 0.801 | 0.934 | 1.050 | 1.048 | 1.049 | 1.118 | 1.101 | 1.115 |
|           | Top side    | 0.003 | 0.004 | 0.002 | 0.006 | 0.065 | 0.061 | 0.071 | 0.005 | 0.001 | 0.005 | 0.002 | 0.001 | 0.007 | 0.005 | 0.009 | 0.068 | 0.064 | 0.074 | 0.008 | 0.004 | 0.008 | 0.005 | 0.004 | 0.008 | 0.071 | 0.067 | 0.077 | 0.011 | 0.007 | 0.011 |
|           | Bottom side | 0.393 | 0.002 | 0.001 | 0.002 | 0.005 | 0.004 | 0.004 | 0.002 | 0.014 | 0.014 | 0.001 | 0.000 | 0.395 | 0.394 | 0.395 | 0.398 | 0.397 | 0.397 | 0.395 | 0.407 | 0.407 | 0.394 | 0.393 | 0.395 | 0.399 | 0.398 | 0.398 | 0.396 | 0.408 | 0.408 |

### Total Exposure Radio Analysis:

The fields generated by the antennas can be correlated or uncorrelated. At different frequencies, fields are always uncorrelated, and the aggregate power density contributions can be summed according to spatially averaged values of corresponding sources at any point in space,  $r$ , to determine the total exposure ratio (TER). Assuming  $I$  sources, the TER at each point in space is equal to

$$TER^{uncorr}(r) = \sum_{i=1}^I ER_i = \sum_{i=1}^I \frac{S_{av,i}(r, f_i)}{S_{lim}(f_i)}$$

Where  $S_{av,i}$  is the power density for the source  $I$  operating at a frequency  $f_i$  and  $S_{lim}$  is the power density limit as specified by the relevant standard.

Exposure from transmitters operating above and below 6GHz, where 6GHz denotes the transmission frequency where the basic restrictions change from being defined in terms of SAR to being defined in terms of power density, therefore uncorrelated and the TER is determined as

$$TER^{uncorr}(r) = \sum_{i=1}^I ER_i = \sum_{i=1}^I \frac{S_{av,i}(r, f_i)}{S_{lim}(f_i)}$$

According to the FCC guidance in TCBC workshop and IEC TR 63170, the total exposure ratio calculated by taking ratio of maximum reported SAR divided by SAR limit and adding it to maximum measured power density by its limit. Numerical sum of the ratios should be less 1. Therefore the simultaneous transmission should be follows:

$$TER = \sum_{n=1}^N \frac{SAR_n}{SAR_{n,limit}} + \sum_{n=1}^N \frac{S_{m,avg}}{S_{m,limit}} < 1$$

For transmitters operating above 6000 MHz, it is necessary to perform an assessment against the PD (basic restriction up to 10 GHz and reference levels beyond). The exposure ratio for the  $m$ -th transmitter is given by:

$$\max \left[ \frac{SAR_m}{SAR_{limit}}, \frac{APD_m}{APD_{limit}} \right] \quad 5925 \text{ MHz} < f_m \leq 10 \text{ GHz}$$

Where:

$SAR_m$  is the SAR value for the  $n$ -th transmitter/test frequency.

$SAR_{limit}$  is the basic restriction limit that is applicable to the  $n$ -th transmitter/test frequency.

$APD$  is the APD value for the  $m$ -th transmitter/test frequency.

$APD_{limit}$  is the basic restriction limit that is applicable to the  $m$ -th transmitter/test frequency.

### Total Exposure Ratio:

| Test position |             | Main Ant                  |                | WiFi 6G (Ant1)                      |                | WiFi 6G (Ant2)                      |                | WiFi 6G (MIMO)                      |                | BT (Ant1)                 |                | NFC                       |                | Total Exposure Ratio |       |        |               |               |                | Exposure Ratio Limit |
|---------------|-------------|---------------------------|----------------|-------------------------------------|----------------|-------------------------------------|----------------|-------------------------------------|----------------|---------------------------|----------------|---------------------------|----------------|----------------------|-------|--------|---------------|---------------|----------------|----------------------|
|               |             | SAR <sub>max</sub> (W/kg) | Exposure Ratio | Power Density (mW/cm <sup>2</sup> ) | Exposure Ratio | Power Density (mW/cm <sup>2</sup> ) | Exposure Ratio | Power Density (mW/cm <sup>2</sup> ) | Exposure Ratio | SAR <sub>max</sub> (W/kg) | Exposure Ratio | SAR <sub>max</sub> (W/kg) | Exposure Ratio | 1a+8a                | 1a+9a | 1a+10a | 1a+8a+11a+12a | 1a+9a+11a+12a | 1a+10a+11a+12a |                      |
|               |             | 1                         | 1a             | 8                                   | 8a             | 9                                   | 9a             | 10                                  | 10a            | 11                        | 11a            | 12                        | 12a            | 1a+8a                | 1a+9a | 1a+10a | 1a+8a+11a+12a | 1a+9a+11a+12a | 1a+10a+11a+12a |                      |
| WCDMA B2      | Back side   | 0.173                     | 0.108          | 0.307                               | 0.031          | 1.047                               | 0.105          | 1.038                               | 0.104          | 0.043                     | 0.027          | 0.004                     | 0.003          | 0.139                | 0.213 | 0.212  | 0.168         | 0.242         | 0.241          | 1.0                  |
|               | Left side   | 0.004                     | 0.003          | 0.062                               | 0.006          | 0.057                               | 0.006          | 0.066                               | 0.007          | 0.008                     | 0.005          | 0.000                     | 0.000          | 0.009                | 0.008 | 0.009  | 0.014         | 0.013         | 0.014          |                      |
|               | Right side  | 0.137                     | 0.086          | 0.616                               | 0.062          | 1.213                               | 0.121          | 1.718                               | 0.172          | 0.106                     | 0.066          | 0.000                     | 0.000          | 0.147                | 0.207 | 0.257  | 0.213         | 0.273         | 0.324          |                      |
|               | Top side    | 0.002                     | 0.001          | 0.044                               | 0.004          | 0.042                               | 0.004          | 0.425                               | 0.043          | 0.002                     | 0.001          | 0.001                     | 0.001          | 0.006                | 0.005 | 0.044  | 0.008         | 0.007         | 0.046          |                      |
| WCDMA B4      | Bottom side | 0.934                     | 0.584          | 0.040                               | 0.004          | 0.049                               | 0.005          | 0.047                               | 0.005          | 0.001                     | 0.001          | 0.000                     | 0.000          | 0.588                | 0.589 | 0.588  | 0.588         | 0.589         | 0.589          |                      |
|               | Back side   | 0.045                     | 0.028          | 0.307                               | 0.031          | 1.047                               | 0.105          | 1.038                               | 0.104          | 0.043                     | 0.027          | 0.004                     | 0.003          | 0.059                | 0.133 | 0.132  | 0.088         | 0.162         | 0.161          |                      |
|               | Left side   | 0.007                     | 0.004          | 0.062                               | 0.006          | 0.057                               | 0.006          | 0.066                               | 0.007          | 0.008                     | 0.005          | 0.000                     | 0.000          | 0.011                | 0.010 | 0.011  | 0.016         | 0.015         | 0.016          |                      |
|               | Right side  | 0.009                     | 0.006          | 0.616                               | 0.062          | 1.213                               | 0.121          | 1.718                               | 0.172          | 0.106                     | 0.066          | 0.000                     | 0.000          | 0.067                | 0.127 | 0.177  | 0.133         | 0.193         | 0.244          |                      |
| WCDMA B5      | Top side    | 0.002                     | 0.001          | 0.044                               | 0.004          | 0.042                               | 0.004          | 0.425                               | 0.043          | 0.002                     | 0.001          | 0.001                     | 0.001          | 0.006                | 0.005 | 0.044  | 0.008         | 0.007         | 0.046          |                      |
|               | Bottom side | 0.101                     | 0.063          | 0.040                               | 0.004          | 0.049                               | 0.005          | 0.047                               | 0.005          | 0.001                     | 0.001          | 0.000                     | 0.000          | 0.067                | 0.068 | 0.068  | 0.068         | 0.069         | 0.068          |                      |
|               | Back side   | 0.632                     | 0.395          | 0.307                               | 0.031          | 1.047                               | 0.105          | 1.038                               | 0.104          | 0.043                     | 0.027          | 0.004                     | 0.003          | 0.426                | 0.500 | 0.499  | 0.455         | 0.529         | 0.528          |                      |
|               | Left side   | 0.065                     | 0.041          | 0.062                               | 0.006          | 0.057                               | 0.006          | 0.066                               | 0.007          | 0.008                     | 0.005          | 0.000                     | 0.000          | 0.047                | 0.046 | 0.047  | 0.052         | 0.051         | 0.052          |                      |
| LTE B2        | Right side  | 0.692                     | 0.433          | 0.616                               | 0.062          | 1.213                               | 0.121          | 1.718                               | 0.172          | 0.106                     | 0.066          | 0.000                     | 0.000          | 0.494                | 0.554 | 0.604  | 0.560         | 0.620         | 0.671          |                      |
|               | Top side    | 0.053                     | 0.033          | 0.044                               | 0.004          | 0.042                               | 0.004          | 0.425                               | 0.043          | 0.002                     | 0.001          | 0.001                     | 0.001          | 0.038                | 0.037 | 0.076  | 0.039         | 0.039         | 0.078          |                      |
|               | Bottom side | 1.100                     | 0.688          | 0.040                               | 0.004          | 0.049                               | 0.005          | 0.047                               | 0.005          | 0.001                     | 0.001          | 0.000                     | 0.000          | 0.692                | 0.692 | 0.692  | 0.692         | 0.693         | 0.693          |                      |
|               | Back side   | 0.180                     | 0.113          | 0.307                               | 0.031          | 1.047                               | 0.105          | 1.038                               | 0.104          | 0.043                     | 0.027          | 0.004                     | 0.003          | 0.143                | 0.217 | 0.216  | 0.173         | 0.247         | 0.246          |                      |
| LTE B5        | Left side   | 0.009                     | 0.006          | 0.062                               | 0.006          | 0.057                               | 0.006          | 0.066                               | 0.007          | 0.008                     | 0.005          | 0.000                     | 0.000          | 0.012                | 0.011 | 0.012  | 0.017         | 0.016         | 0.017          |                      |
|               | Right side  | 0.138                     | 0.086          | 0.616                               | 0.062          | 1.213                               | 0.121          | 1.718                               | 0.172          | 0.106                     | 0.066          | 0.000                     | 0.000          | 0.148                | 0.208 | 0.258  | 0.214         | 0.274         | 0.324          |                      |
|               | Top side    | 0.002                     | 0.001          | 0.044                               | 0.004          | 0.042                               | 0.004          | 0.425                               | 0.043          | 0.002                     | 0.001          | 0.001                     | 0.001          | 0.006                | 0.005 | 0.044  | 0.008         | 0.007         | 0.046          |                      |
|               | Bottom side | 0.833                     | 0.521          | 0.040                               | 0.004          | 0.049                               | 0.005          | 0.047                               | 0.005          | 0.001                     | 0.001          | 0.000                     | 0.000          | 0.525                | 0.526 | 0.525  | 0.525         | 0.526         | 0.526          |                      |
| LTE B12       | Back side   | 0.485                     | 0.303          | 0.307                               | 0.031          | 1.047                               | 0.105          | 1.038                               | 0.104          | 0.043                     | 0.027          | 0.004                     | 0.003          | 0.334                | 0.408 | 0.407  | 0.363         | 0.437         | 0.436          |                      |
|               | Left side   | 0.050                     | 0.031          | 0.062                               | 0.006          | 0.057                               | 0.006          | 0.066                               | 0.007          | 0.008                     | 0.005          | 0.000                     | 0.000          | 0.037                | 0.037 | 0.038  | 0.042         | 0.042         | 0.043          |                      |
|               | Right side  | 0.491                     | 0.307          | 0.616                               | 0.062          | 1.213                               | 0.121          | 1.718                               | 0.172          | 0.106                     | 0.066          | 0.000                     | 0.000          | 0.368                | 0.428 | 0.479  | 0.435         | 0.494         | 0.545          |                      |
|               | Top side    | 0.004                     | 0.003          | 0.044                               | 0.004          | 0.042                               | 0.004          | 0.425                               | 0.043          | 0.002                     | 0.001          | 0.001                     | 0.001          | 0.007                | 0.007 | 0.045  | 0.009         | 0.009         | 0.047          |                      |
| LTE B13       | Bottom side | 0.787                     | 0.492          | 0.040                               | 0.004          | 0.049                               | 0.005          | 0.047                               | 0.005          | 0.001                     | 0.001          | 0.000                     | 0.000          | 0.496                | 0.497 | 0.497  | 0.497         | 0.497         | 0.497          |                      |
|               | Back side   | 0.179                     | 0.112          | 0.307                               | 0.031          | 1.047                               | 0.105          | 1.038                               | 0.104          | 0.043                     | 0.027          | 0.004                     | 0.003          | 0.143                | 0.217 | 0.216  | 0.172         | 0.246         | 0.245          |                      |
|               | Left side   | 0.009                     | 0.006          | 0.062                               | 0.006          | 0.057                               | 0.006          | 0.066                               | 0.007          | 0.008                     | 0.005          | 0.000                     | 0.000          | 0.012                | 0.011 | 0.012  | 0.017         | 0.016         | 0.017          |                      |
|               | Right side  | 0.569                     | 0.356          | 0.616                               | 0.062          | 1.213                               | 0.121          | 1.718                               | 0.172          | 0.106                     | 0.066          | 0.000                     | 0.000          | 0.417                | 0.477 | 0.527  | 0.483         | 0.543         | 0.594          |                      |
| LTE B14       | Top side    | 0.003                     | 0.002          | 0.044                               | 0.004          | 0.042                               | 0.004          | 0.425                               | 0.043          | 0.002                     | 0.001          | 0.001                     | 0.001          | 0.006                | 0.006 | 0.044  | 0.008         | 0.008         | 0.046          |                      |
|               | Bottom side | 0.225                     | 0.141          | 0.040                               | 0.004          | 0.049                               | 0.005          | 0.047                               | 0.005          | 0.001                     | 0.001          | 0.000                     | 0.000          | 0.145                | 0.146 | 0.145  | 0.145         | 0.146         | 0.146          |                      |
|               | Back side   | 0.307                     | 0.192          | 0.307                               | 0.031          | 1.047                               | 0.105          | 1.038                               | 0.104          | 0.043                     | 0.027          | 0.004                     | 0.003          | 0.223                | 0.297 | 0.296  | 0.252         | 0.326         | 0.325          |                      |
|               | Left side   | 0.010                     | 0.006          | 0.062                               | 0.006          | 0.057                               | 0.006          | 0.066                               | 0.007          | 0.008                     | 0.005          | 0.000                     | 0.000          | 0.012                | 0.012 | 0.013  | 0.017         | 0.017         | 0.018          |                      |
| LTE B6/4      | Right side  | 0.874                     | 0.546          | 0.616                               | 0.062          | 1.213                               | 0.121          | 1.718                               | 0.172          | 0.106                     | 0.066          | 0.000                     | 0.000          | 0.608                | 0.668 | 0.718  | 0.674         | 0.734         | 0.784          |                      |
|               | Top side    | 0.003                     | 0.002          | 0.044                               | 0.004          | 0.042                               | 0.004          | 0.425                               | 0.043          | 0.002                     | 0.001          | 0.001                     | 0.001          | 0.006                | 0.006 | 0.044  | 0.008         | 0.008         | 0.046          |                      |
|               | Bottom side | 0.513                     | 0.321          | 0.040                               | 0.004          | 0.049                               | 0.005          | 0.047                               | 0.005          | 0.001                     | 0.001          | 0.000                     | 0.000          | 0.325                | 0.326 | 0.325  | 0.325         | 0.326         | 0.326          |                      |
|               | Back side   | 0.393                     | 0.246          | 0.307                               | 0.031          | 1.047                               | 0.105          | 1.038                               | 0.104          | 0.043                     | 0.027          | 0.004                     | 0.003          | 0.276                | 0.350 | 0.349  | 0.306         | 0.380         | 0.379          |                      |
| LTE B71       | Left side   | 0.010                     | 0.006          | 0.062                               | 0.006          | 0.057                               | 0.006          | 0.066                               | 0.007          | 0.008                     | 0.005          | 0.000                     | 0.000          | 0.012                | 0.012 | 0.013  | 0.017         | 0.017         | 0.018          |                      |
|               | Right side  | 1.031                     | 0.644          | 0.616                               | 0.062          | 1.213                               | 0.121          | 1.718                               | 0.172          | 0.106                     | 0.066          | 0.000                     | 0.000          | 0.706                | 0.766 | 0.816  | 0.772         | 0.832         | 0.882          |                      |
|               | Top side    | 0.004                     | 0.003          | 0.044                               | 0.004          | 0.042                               | 0.004          | 0.425                               | 0.043          | 0.002                     | 0.001          | 0.001                     | 0.001          | 0.007                | 0.007 | 0.045  | 0.009         | 0.009         | 0.047          |                      |
|               | Bottom side | 0.437                     | 0.273          | 0.040                               | 0.004          | 0.049                               | 0.005          | 0.047                               | 0.005          | 0.001                     | 0.001          | 0.000                     | 0.000          | 0.277                | 0.278 | 0.278  | 0.278         | 0.279         | 0.278          |                      |
| LTE B6/4      | Back side   | 0.079                     | 0.049          | 0.307                               | 0.031          | 1.047                               | 0.105          | 1.038                               | 0.104          | 0.043                     | 0.027          | 0.004                     | 0.003          | 0.080                | 0.154 | 0.153  | 0.109         | 0.183         | 0.183          |                      |
|               | Left side   | 0.007                     | 0.004          | 0.062                               | 0.006          | 0.057                               | 0.006          | 0.066                               | 0.007          | 0.008                     | 0.005          | 0.000                     | 0.000          | 0.011                | 0.010 | 0.011  | 0.016         | 0.015         | 0.016          |                      |
|               | Right side  | 0.013                     | 0.008          | 0.616                               | 0.062          | 1.213                               | 0.121          | 1.718                               | 0.172          | 0.106                     | 0.066          | 0.000                     | 0.000          | 0.070                | 0.129 | 0.180  | 0.136         | 0.196         | 0.246          |                      |
|               | Top side    | 0.004                     | 0.003          | 0.044                               | 0.004          | 0.042                               | 0.004          | 0.425                               | 0.043          | 0.002                     | 0.001          | 0.001                     | 0.001          | 0.007                | 0.007 | 0.045  | 0.009         | 0.009         | 0.047          |                      |
| LTE B71       | Bottom side | 0.312                     | 0.195          | 0.040                               | 0.004          | 0.049                               | 0.005          | 0.047                               | 0.005          | 0.001                     | 0.001          | 0.000                     | 0.000          | 0.199                | 0.200 | 0.200  | 0.200         | 0.201         | 0.200          |                      |
|               | Back side   | 0.235                     | 0.147          | 0.307                               | 0.031          | 1.047                               | 0.105          | 1.038                               | 0.104          | 0.043                     | 0.027          | 0.004                     | 0.003          | 0.178                | 0.252 | 0.251  | 0.207         | 0.281         | 0.280          |                      |
|               | Left side   | 0.009                     | 0.006          | 0.062                               | 0.006          | 0.057                               | 0.006          | 0.066                               | 0.007          | 0.008                     | 0.005          | 0.000                     | 0.000          | 0.012                | 0.011 | 0.012  | 0.017         | 0.016         | 0.017          |                      |
|               | Right side  | 0.801                     | 0.501          | 0.616                               | 0.062          | 1.213                               | 0.121          | 1.718                               | 0.172          | 0.106                     | 0.066          | 0.000                     | 0.000          | 0.562                | 0.622 | 0.672  | 0.628         | 0.688         | 0.739          |                      |
| LTE B71       | Top side    | 0.003                     | 0.002          | 0.044                               | 0.004          | 0.042                               | 0.004          | 0.425                               | 0.043          | 0.002                     | 0.001          | 0.001                     | 0.001          | 0.006                | 0.006 | 0.044  | 0.008         | 0.008         | 0.046          |                      |
|               | Bottom side | 0.393                     | 0.246          | 0.040                               | 0.004          | 0.049                               | 0.005          | 0.047                               | 0.005          | 0.001                     | 0.001          | 0.000                     | 0.000          | 0.250                | 0.251 | 0.250  | 0.250         | 0.251         | 0.251          |                      |

## 17 Measurement Uncertainty

The expanded SAR measurement uncertainty must be  $\leq 30\%$ , for a confidence interval of  $k = 2$ .

| Input quantity $X_i$<br>(source of uncertainty)                          | Unc.<br>( $\pm$ ) | Prob.<br>Dist.<br>PDF <sub>i</sub> | Unc.<br>$a(x_i)$ | $C_i$<br>(1g) | $C_i$<br>(10g) | $U_i$<br>(1g)<br>(%) | $U_i$<br>(10g)<br>(%) |
|--------------------------------------------------------------------------|-------------------|------------------------------------|------------------|---------------|----------------|----------------------|-----------------------|
| Measurement system errors                                                |                   |                                    |                  |               |                |                      |                       |
| Probe calibration                                                        | 18.6              | N ( $k = 2$ )                      | 2                | 1             | 1              | 9.3                  | 9.3                   |
| Probe calibration drift                                                  | 1.7               | R                                  | $\sqrt{3}$       | 1             | 1              | 1.0                  | 1.0                   |
| Probe linearity and detection limit                                      | 0.9               | R                                  | $\sqrt{3}$       | 1             | 1              | 0.5                  | 0.5                   |
| Broadband signal                                                         | 0.5               | R                                  | $\sqrt{3}$       | 1             | 1              | 0.3                  | 0.3                   |
| Probe isotropy                                                           | 3.2               | R                                  | $\sqrt{3}$       | 1             | 1              | 1.8                  | 1.8                   |
| Other probe and data acquisition errors                                  | 0.6               | N                                  | 1                | 1             | 1              | 0.6                  | 0.6                   |
| RF ambient and noise                                                     | 3.0               | R                                  | $\sqrt{3}$       | 1             | 1              | 1.7                  | 1.7                   |
| Probe positioning errors                                                 | 0.5               | N                                  | 1                | 0.33          | 0.33           | 0.2                  | 0.2                   |
| Data processing errors                                                   | 4.0               | R                                  | $\sqrt{3}$       | 1             | 1              | 2.3                  | 2.3                   |
| Phantom and device (DUT or validation antenna) errors                    |                   |                                    |                  |               |                |                      |                       |
| Measurement of phantom conductivity( $\sigma$ )                          | 2.5               | N                                  | 1                | 0.78          | 0.71           | 2.0                  | 1.8                   |
| Temperature effects (medium)                                             | 2.7               | R                                  | $\sqrt{3}$       | 0.78          | 0.71           | 1.2                  | 1.1                   |
| Shell permittivity                                                       | 14.0              | R                                  | $\sqrt{3}$       | 0.5           | 0.5            | 4.0                  | 4.0                   |
| Distance between the radiating element of the DUT and the phantom medium | 2.0               | N                                  | 1                | 2             | 2              | 4.0                  | 4.0                   |
| Repeatability of positioning the DUT or source against the phantom       | 2.9               | N                                  | 1                | 1             | 1              | 2.9                  | 2.9                   |
| Device holder effects                                                    | 3.6               | N                                  | 1                | 1             | 1              | 3.6                  | 3.6                   |
| Effect of operating mode on probe sensitivity                            | 2.4               | R                                  | $\sqrt{3}$       | 1             | 1              | 1.4                  | 1.4                   |
| Time-average SAR                                                         | 0.0               | R                                  | $\sqrt{3}$       | 1             | 1              | 0.0                  | 0.0                   |
| Variation in SAR due to drift in output of DUT                           | 2.5               | N                                  | 1                | 1             | 1              | 2.5                  | 2.5                   |
| Validation antenna uncertainty (validation measurement only)             | 0.0               | N                                  | 1                | 1             | 1              | 0.0                  | 0.0                   |
| Uncertainty in accepted power (validation measurement only)              | 0.0               | N                                  | 1                | 1             | 1              | 0.0                  | 0.0                   |
| Corrections to the SAR result (if applied)                               |                   |                                    |                  |               |                |                      |                       |
| Phantom deviation from target ( $\epsilon', \sigma$ )                    | 1.9               | N                                  | 1                | 1             | 0.84           | 1.9                  | 1.6                   |
| SAR scaling                                                              | 0.0               | R                                  | $\sqrt{3}$       | 1             | 1              | 0.0                  | 0.0                   |
| Combined uncertainty                                                     | \                 |                                    |                  |               |                | 14.30                | 14.20                 |
| Expanded uncertainty and effective degrees of freedom ( $k = 2$ )        | \                 |                                    |                  |               |                | 28.59                | 28.39                 |

| Applicable for Power Density Measurements                               |                         |             |       |    |                            |           |
|-------------------------------------------------------------------------|-------------------------|-------------|-------|----|----------------------------|-----------|
| a                                                                       | b                       | c           | d     | e  | f=b*e/d                    | g         |
| Error Description                                                       | Uncertainty Value (±dB) | Probability | Div.  | Ci | Standard Uncertainty (±dB) | Vi (Veff) |
| <b>Uncertainty terms dependent on the measurement system</b>            |                         |             |       |    |                            |           |
| Probe Calibration                                                       | 0.49                    | N           | 1     | 1  | 0.49                       | ∞         |
| Probe correction                                                        | 0.00                    | R           | 1.732 | 1  | 0.00                       | ∞         |
| Frequency response (BW ≤1 GHz)                                          | 0.20                    | R           | 1.732 | 1  | 0.12                       | ∞         |
| Sensor cross coupling                                                   | 0.00                    | R           | 1.732 | 1  | 0.00                       | ∞         |
| Isotropy                                                                | 0.50                    | R           | 1.732 | 1  | 0.29                       | ∞         |
| Linearity                                                               | 0.20                    | R           | 1.732 | 1  | 0.12                       | ∞         |
| Probe scattering                                                        | 0.00                    | R           | 1.732 | 1  | 0.00                       | ∞         |
| Probe positioning offset                                                | 0.30                    | R           | 1.732 | 1  | 0.17                       | ∞         |
| Probe positioning repeatability                                         | 0.04                    | R           | 1.732 | 1  | 0.02                       | ∞         |
| Sensor mechanical offset                                                | 0.00                    | R           | 1.732 | 1  | 0.00                       | ∞         |
| Probe spatial resolution                                                | 0.00                    | R           | 1.732 | 1  | 0.00                       | ∞         |
| Field impedance dependance                                              | 0.00                    | R           | 1.732 | 1  | 0.00                       | ∞         |
| Amplitude and phase drift                                               | 0.00                    | R           | 1.732 | 1  | 0.00                       | ∞         |
| Amplitude and phase noise                                               | 0.04                    | R           | 1.732 | 1  | 0.02                       | ∞         |
| Measurement area truncation                                             | 0.00                    | R           | 1.732 | 1  | 0.00                       | ∞         |
| Data acquisition                                                        | 0.03                    | N           | 1     | 1  | 0.03                       | ∞         |
| Sampling                                                                | 0.00                    | R           | 1.732 | 1  | 0.00                       | ∞         |
| Field reconstruction                                                    | 2.00                    | R           | 1.732 | 1  | 1.15                       | ∞         |
| Forward transformation                                                  | 0.00                    | R           | 1.732 | 1  | 0.00                       | ∞         |
| Power density scaling                                                   | 0.00                    | R           | 1.732 | 1  | 0.00                       | ∞         |
| Spatial averaging                                                       | 0.10                    | R           | 1.732 | 1  | 0.06                       | ∞         |
| System detection limit                                                  | 0.04                    | R           | 1.732 | 1  | 0.02                       | ∞         |
| <b>Uncertainty terms dependent on the DUT and environmental factors</b> |                         |             |       |    |                            |           |
| Probe coupling with DUT                                                 | 0.00                    | R           | 1.732 | 1  | 0.00                       | ∞         |
| Modulation response                                                     | 0.40                    | R           | 1.732 | 1  | 0.23                       | ∞         |
| Integration time                                                        | 0.00                    | R           | 1.732 | 1  | 0.00                       | ∞         |
| Response time                                                           | 0.00                    | R           | 1.732 | 1  | 0.00                       | ∞         |
| Device holder influence                                                 | 0.10                    | R           | 1.732 | 1  | 0.06                       | ∞         |
| DUT alignment                                                           | 0.00                    | R           | 1.732 | 1  | 0.00                       | ∞         |
| RF ambient conditions                                                   | 0.04                    | R           | 1.732 | 1  | 0.02                       | ∞         |
| Ambient reflections                                                     | 0.04                    | R           | 1.732 | 1  | 0.02                       | ∞         |
| Immunity / secondary reception                                          | 0.00                    | R           | 1.732 | 1  | 0.00                       | ∞         |
| Drift of the DUT                                                        |                         | R           | 1.732 | 1  | 0.00                       | ∞         |
| Combined Std. Uncertainty                                               |                         |             |       |    | 1.33                       |           |
| Expanded STD Uncertainty (95%), K=2                                     |                         |             |       |    | 2.67                       |           |

## **18 Calibration Certificate**

Please see the Appendix C

## **19 Test Setup Photos**

Please see the Appendix D

## **Appendix A: System Check Plots**

## **Appendix B: SAR Test Plots**

## **Appendix C: Calibration certificate**

## **Appendix D: Test Setup Photos**

## **Appendix E: Conducted RF Output Power**

**--- The End ---**

---