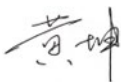


# **FCC SAR Test Report**

**Applicant:** Tri Cascade Inc.  
**EUT Description:** VOS 5G Dongle  
**Model:** VOS5-GF-2  
**Model Covered:** VOS5-NA-1, VOS5-NA-2, GC54310R-1  
**Brand:** TRI CASCADE VOS  
**FCC ID:** 2ACARVOS5G  
**Standards:** FCC 47CFR §2.1093  
**Date of Receipt:** 2024/05/13  
**Date of Test:** 2024/05/15 to 2024/06/23  
**Date of Issue:** 2024/08/02

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 the tested sample, under the conditions and modes of operation as described herein. It is the manufacturer's responsibility 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.



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**Huang Kun**  
**Approved By:**



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**Li Wei**  
**Reviewed By:**

## Revision History

| Rev. | Issue Date | Description                                                                                                                                  | Revised by |
|------|------------|----------------------------------------------------------------------------------------------------------------------------------------------|------------|
| 01   | 2024/07/09 | Original                                                                                                                                     | Li Wei     |
| 02   | 2024/08/02 | Add a description of TX Ant on page 8,<br>update test equipment list on page 17 and<br>add Simultaneous Transmission Analysis<br>on page 65. | Li Wei     |

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## 1 Summary of Test Results

| Band              | Highest SAR(W/kg) |
|-------------------|-------------------|
|                   | Body 5mm          |
| LTE Band 2        | 0.78              |
| LTE Band 5        | 0.70              |
| LTE Band 12       | 0.67              |
| LTE Band 13       | 0.70              |
| LTE Band 30       | 0.53              |
| LTE Band 41       | 0.59              |
| LTE Band 48       | 0.48              |
| LTE Band 66/4     | 0.68              |
| LTE Band 71       | 0.72              |
| NR Band n2        | 0.77              |
| NR Band n5        | 0.68              |
| NR Band n12       | 0.71              |
| NR Band n14       | 0.73              |
| NR Band n25       | 0.73              |
| NR Band n30       | 0.77              |
| NR Band n41       | 0.77              |
| NR Band n48       | <b>0.87</b>       |
| NR Band n66       | 0.61              |
| NR Band n70       | 0.61              |
| NR Band n71       | 0.75              |
| NR Band n77       | 0.79              |
| SAR Limited(W/kg) | 1.6               |

### Remark:

LTE band 4 SAR test was covered by Band 66; according to April 2015 TCB workshop, SAR test for overlapping LTE bands can be reduced if:

- the maximum output power, including tolerance, for the smaller band is  $\leq$  the larger band to qualify for the SAR test exclusion.
- the channel bandwidth and other operating parameters for the smaller band are fully supported by the larger band.

## 2 Guidance Applied

FCC 47CFR §2.1093

ANSI/IEEE C95.1-1992

IEEE 1528-2013

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 447498 D01 General RF Exposure Guidance v06

FCC KDB 447498 D02 SAR Procedures for Dongle Xmtr v02r01

FCC KDB 865664 D01 SAR Measurement 100 MHz to 6 GHz v01r04

FCC KDB 865664 D02 RF Exposure Reporting 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: | Tri Cascade Inc.                                |
| Address:   | 19200 Von Karman Ave, Ste 400, Irvine, CA 92612 |

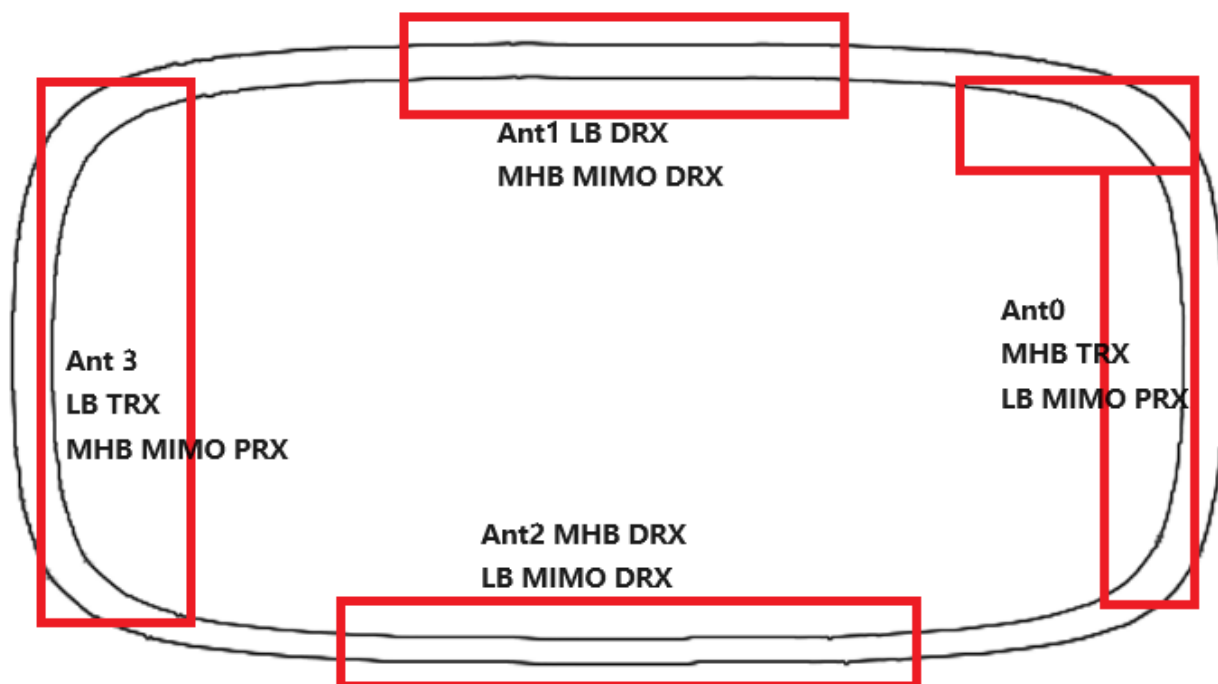
### 4.2 Manufacturer

|               |                                                 |
|---------------|-------------------------------------------------|
| Manufacturer: | Tri Cascade Inc.                                |
| Address:      | 19200 Von Karman Ave, Ste 400, Irvine, CA 92612 |

## 5 Product Information

|                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       |                                                                                   |                                                                                                                                                                                  |
|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| EUT Description                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       | VOS 5G Dongle                                                                     |                                                                                                                                                                                  |
| Model                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 | VOS5-GF-2                                                                         |                                                                                                                                                                                  |
| Model Covered                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         | VOS5-NA-1, VOS5-NA-2, GC54310R-1                                                  |                                                                                                                                                                                  |
| Brand                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 | TRI CASCADE VOS                                                                   |                                                                                                                                                                                  |
| Hardware Version                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      | V1.1                                                                              |                                                                                                                                                                                  |
| Software Version                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      | FG19_V01.15b01                                                                    |                                                                                                                                                                                  |
| IMEI                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  | 962513050034031                                                                   |                                                                                                                                                                                  |
| Device Capabilities:                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  |                                                                                   |                                                                                                                                                                                  |
| Band                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  | Frequency Range (MHz)                                                             | Modulation Type                                                                                                                                                                  |
| LTE Band 2                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            | 1850 ~1910                                                                        | <input checked="" type="checkbox"/> QPSK<br><input checked="" type="checkbox"/> 16QAM<br><input checked="" type="checkbox"/> 64QAM<br><input checked="" type="checkbox"/> 256QAM |
| LTE Band 4                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            | 1710~1755                                                                         |                                                                                                                                                                                  |
| LTE Band 5                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            | 824~849                                                                           |                                                                                                                                                                                  |
| LTE Band 12                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           | 699~716                                                                           |                                                                                                                                                                                  |
| LTE Band 13                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           | 777~787                                                                           |                                                                                                                                                                                  |
| LTE Band 29                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           | Downlink only                                                                     |                                                                                                                                                                                  |
| LTE Band 30                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           | 2305~2315                                                                         |                                                                                                                                                                                  |
| LTE Band 41 (Class 2/3)                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               | 2496~2690                                                                         |                                                                                                                                                                                  |
| LTE Band 46                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           | Downlink only                                                                     |                                                                                                                                                                                  |
| LTE Band 48                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           | 3550~3700                                                                         |                                                                                                                                                                                  |
| LTE Band 66                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           | 1710~1780                                                                         |                                                                                                                                                                                  |
| LTE Band 71                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           | 663~698                                                                           |                                                                                                                                                                                  |
| 5G NR n2                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              | 1850~1910                                                                         | <input checked="" type="checkbox"/> DFT-s-OFDM: (PI/2 BPSK, QPSK, 16QAM, 64QAM, 256QAM).<br><br><input checked="" type="checkbox"/> CP-OFDM: (QPSK, 16QAM, 64QAM, 256QAM)        |
| 5G NR n5                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              | 824~849                                                                           |                                                                                                                                                                                  |
| 5G NR n12                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             | 699 ~ 716                                                                         |                                                                                                                                                                                  |
| 5G NR n14                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             | 788~798                                                                           |                                                                                                                                                                                  |
| 5G NR n25                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             | 1850 ~ 1915                                                                       |                                                                                                                                                                                  |
| 5G NR n30                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             | 2305 ~ 2315                                                                       |                                                                                                                                                                                  |
| 5G NR n41 (Class 2/3)                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 | 2496~2690                                                                         |                                                                                                                                                                                  |
| 5G NR n48                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             | 3550 ~ 3700                                                                       |                                                                                                                                                                                  |
| 5G NR n66                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             | 1710~1780                                                                         |                                                                                                                                                                                  |
| 5G NR n70                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             | 1695 ~ 1710                                                                       |                                                                                                                                                                                  |
| 5G NR n71                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             | 663~698                                                                           |                                                                                                                                                                                  |
| 5G NR n77                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             | 3450~3550<br>3700~3980                                                            |                                                                                                                                                                                  |
| Antenna Type                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          | <input type="checkbox"/> External, <input checked="" type="checkbox"/> Integrated |                                                                                                                                                                                  |
| Remark:<br>1. The above EUT's information was declared by applicant, please refer to the specifications or user manual for more detailed description.<br>2. Reference applicant Model Confirmation Letter:<br>Their electrical circuit design, layout, components used and internal wiring are identical, Only the combinations of device color and logo color are different.<br>VOS5-NA-1 White/Light Grey,<br>VOS5-GF-2 White/Dark Grey,<br>GC54310R-1 Light Grey W/RGB logo,<br>VOS5-NA-2 Dark Grey.<br>According to the difference description above, only the VOS5-GF-2 model is tested, and other models share the same test data of VOS5-GF-2. |                                                                                   |                                                                                                                                                                                  |

## 5.1 Antenna Locations



**Note:**

Ant0: LTE B2/4/30/41/48/66, n2/25/30/41/48/66/70/77

Ant3: LTE B5/12/13/71, n5/12/14/41/71/77

## 5.2 Power reduction specification

This device uses a single fixed level of power reduction through static table look-up for SAR compliance and it is triggered by a single event or operation.

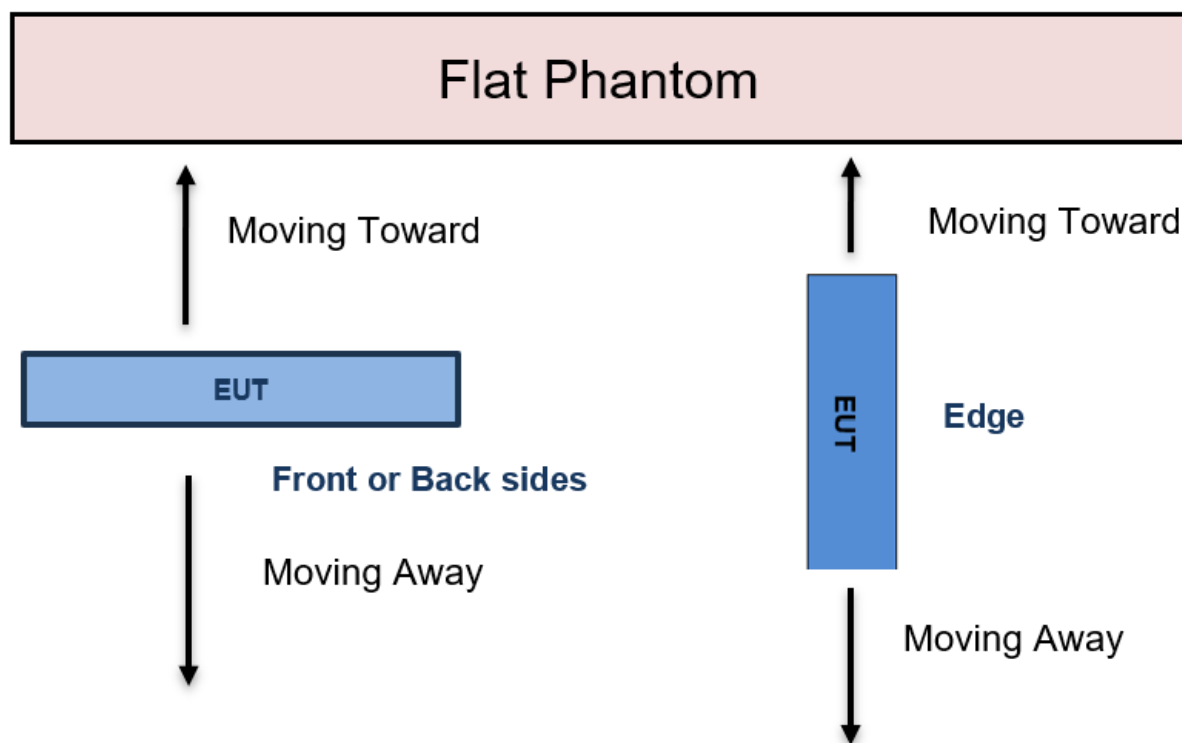
- 1) The proximity sensor is used to indicate when the device is held close to a user's body exposure condition. It utilizes the proximity sensor to reduce the output power in specific wireless and operating modes of main antenna to ensure SAR compliance (Refer to section 5.4 for detailed proximity Sensor information and validation data per KDB 616217).

The detailed power reduction information can refer to Conducted RF Output Power.

### 5.2.1 Proximity Sensor Triggering Test

#### Proximity sensor triggering distances:

Proximity sensor triggering distance testing was performed according to the procedures outlined in KDB 616217 D04 section 6.2, and EUT moving further away from the flat phantom and EUT moving toward the flat phantom were both assessed, and the tissue-equivalent medium was used for proximity sensor triggering testing.



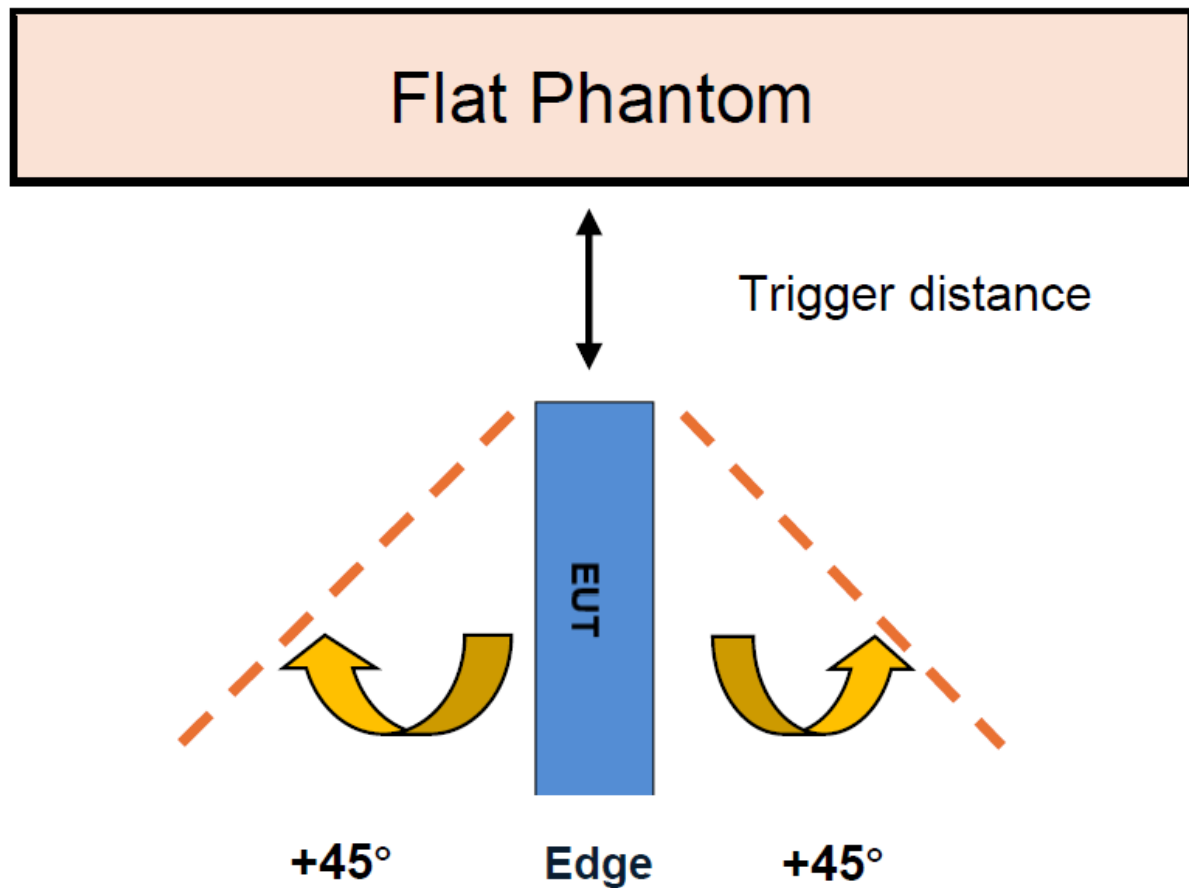
| Proximity Sensor Triggering Distance(mm) |       |      |      |       |     |
|------------------------------------------|-------|------|------|-------|-----|
| Position                                 | Front | Back | Left | Right | Top |
| Minimum                                  | 20    | 20   | 20   | 20    | 20  |
| SAR Test *                               | 19    | 19   | 19   | 19    | 19  |

\* For verification of compliance of power reduction scheme, additional SAR testing with EUT transmitting at full RF power at a conservative trigger distance -1mm was performed.

**Device tilt angle influences on proximity sensor triggering:**

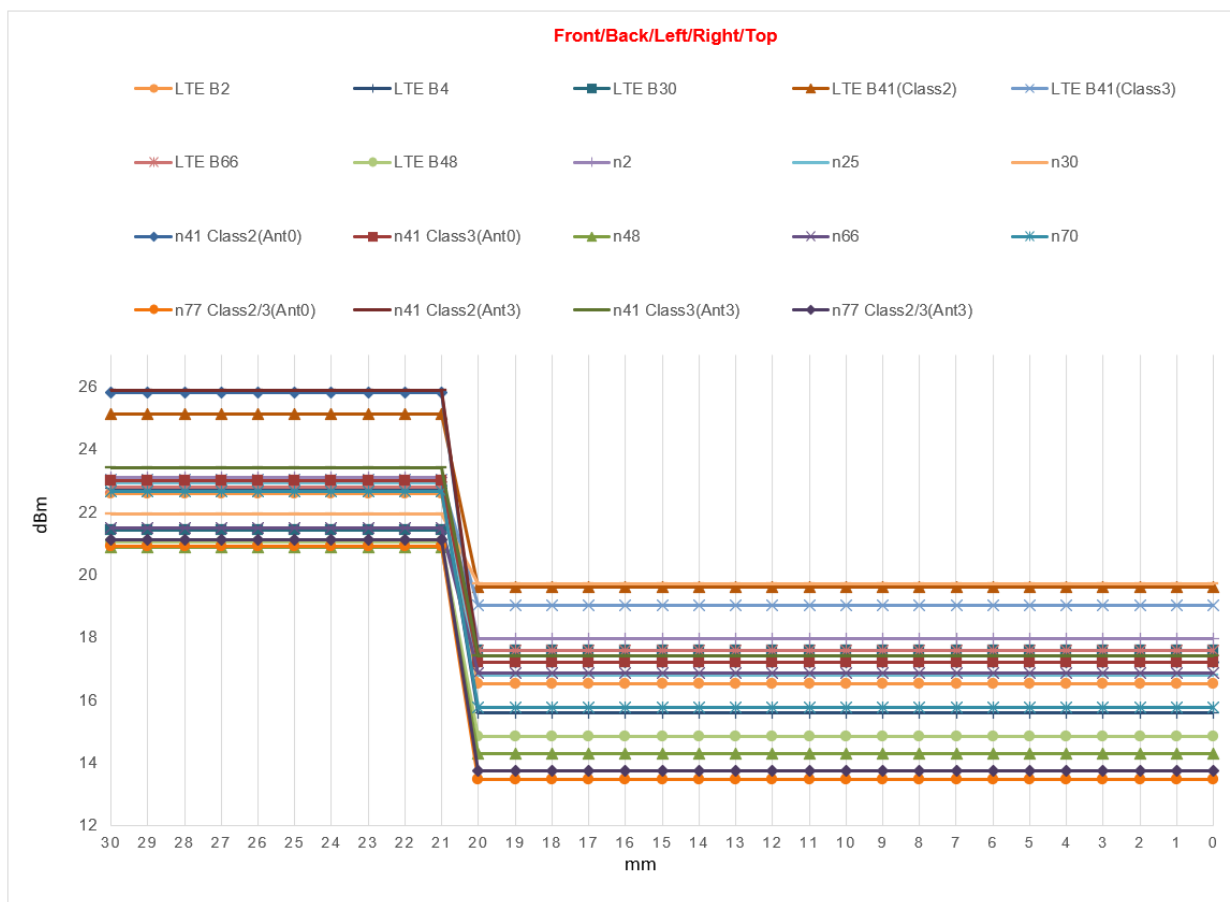
The influence of device tilt angles to proximity sensor triggering was determined by positioning each tablet edge that contains a transmitting antenna, perpendicular to the flat phantom.

Rotating the tablet around the edge next to the phantom in  $\leq 10^\circ$  increments until the tablet is  $\pm 45^\circ$  from the vertical position at  $0^\circ$ , and the maximum output power remains in the reduced mode.

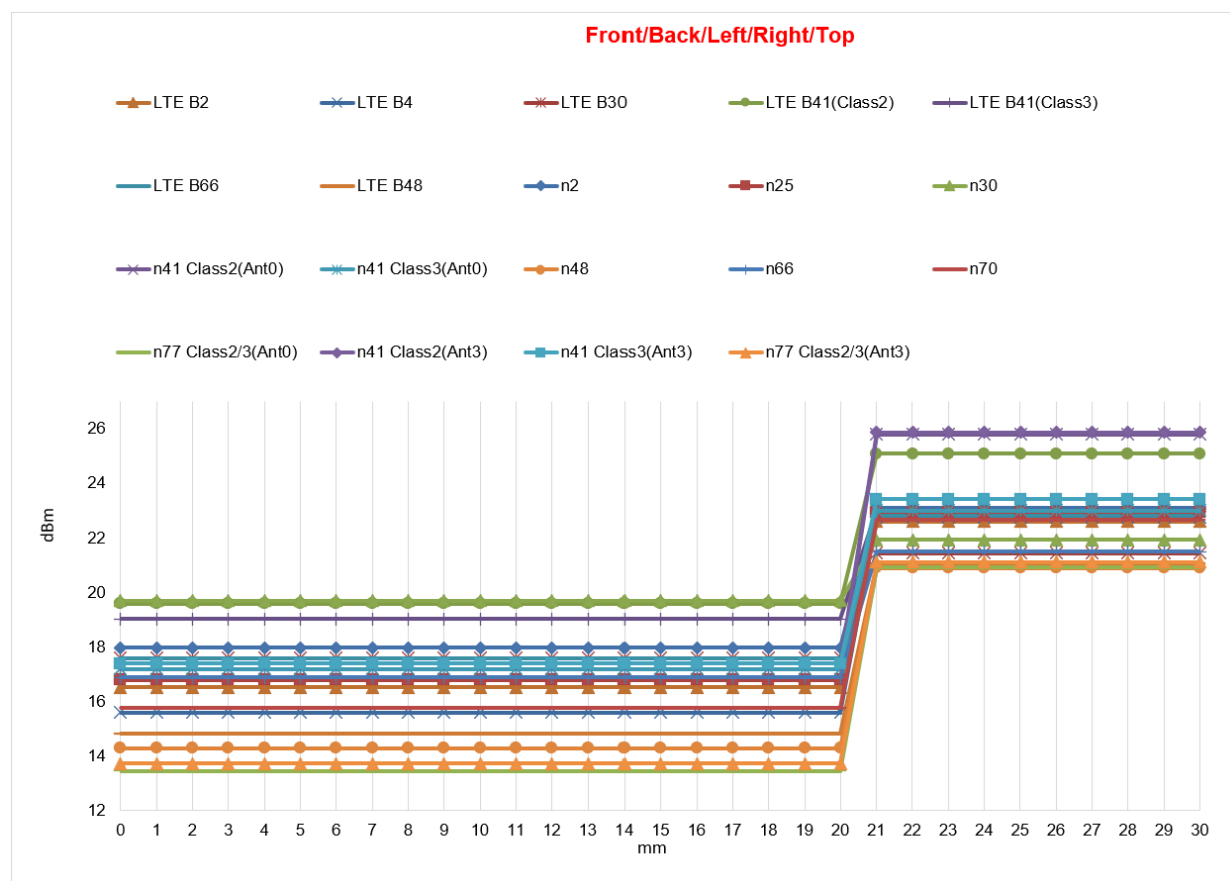


| Summary of Tablet Tilt Angle Influence on Proximity Sensor Triggering for Edge Side          |                                                                                              |                        |      |      |      |     |    |    |     |     |     |     |
|----------------------------------------------------------------------------------------------|----------------------------------------------------------------------------------------------|------------------------|------|------|------|-----|----|----|-----|-----|-----|-----|
| Minimum trigger distance<br>Per KDB616217§6.2                                                | Minimum trigger distance at<br>which power reduction was<br>maintained over $\pm 45^\circ$   | Power Reduction Status |      |      |      |     |    |    |     |     |     |     |
|                                                                                              |                                                                                              | -45°                   | -35° | -25° | -15° | -5° | 0° | 5° | 15° | 25° | 35° | 45° |
| Front side: 20mm<br>Back side: 20mm<br>Left side: 10mm<br>Right side: 20mm<br>Top side: 20mm | Front side: 20mm<br>Back side: 20mm<br>Left side: 10mm<br>Right side: 20mm<br>Top side: 20mm | on                     | on   | on   | on   | on  | on | on | on  | on  | on  | on  |

## DUT Moving Toward the Phantom:



## DUT Moving Away from the Phantom:



## 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)

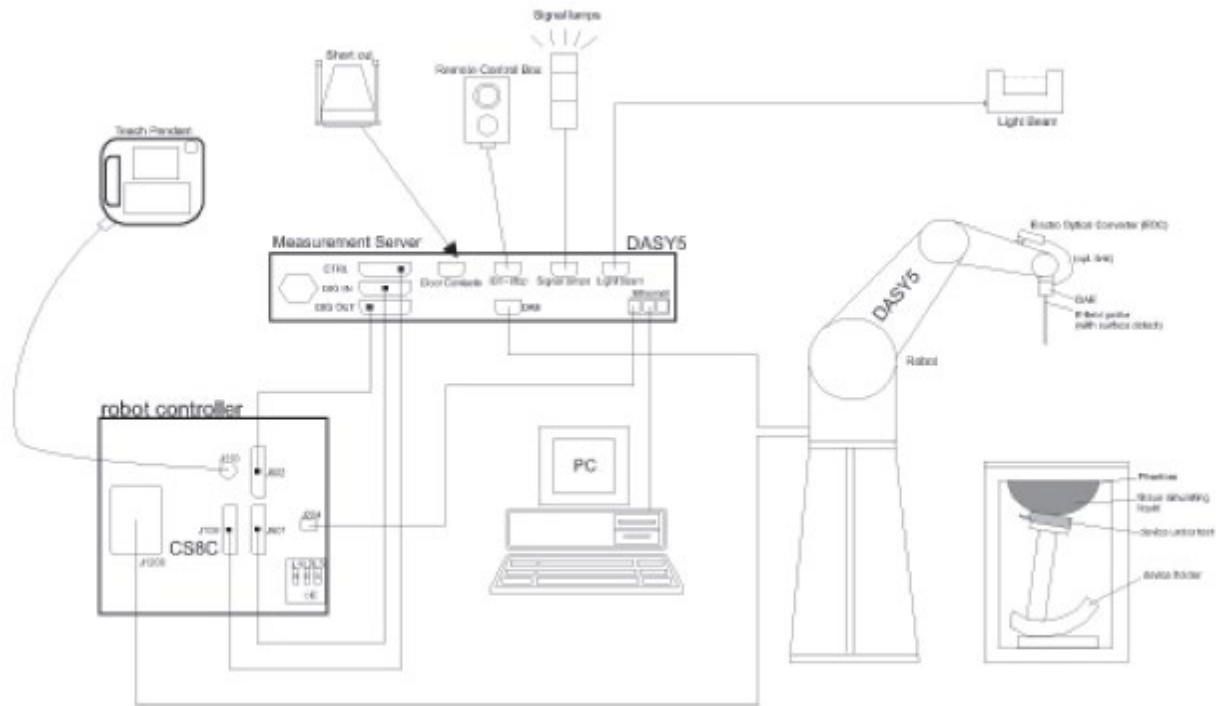
$\rho$  is the mass density of the tissue material (kg/m<sup>3</sup>)

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

## 8 SAR Measurements System

### 8.1 The SAR Measurement Set-up

The DASY5 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 WinXP or Windows and the DASY5 software.
- Remote control and teach pendant as well as additional circuitry for robot safety such as warning lamps, etc.
- The phantom, the device holder and other accessories according to the targeted measurement.

## 8.2 Measurement procedure

### 8.2.1 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.

### 8.2.2 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 extracted from FCC KDB 865664 D01 SAR measurement 100 MHz to 6 GHz.

|                                                                                                        | $\leq 3$ GHz                                                                                                                                                                                                                                                           | $> 3$ GHz                                              |
|--------------------------------------------------------------------------------------------------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|--------------------------------------------------------|
| Maximum distance from closest measurement point (geometric center of probe sensors) to phantom surface | $5 \pm 1$ mm                                                                                                                                                                                                                                                           | $\frac{1}{2} \cdot \delta \cdot \ln(2) \pm 0.5$ mm     |
| Maximum probe angle from probe axis to phantom surface normal at the measurement location              | $30^\circ \pm 1^\circ$                                                                                                                                                                                                                                                 | $20^\circ \pm 1^\circ$                                 |
| Maximum area scan spatial resolution: $\Delta x_{Area}$ , $\Delta y_{Area}$                            | $\leq 2$ GHz: $\leq 15$ mm<br>$2 - 3$ GHz: $\leq 12$ mm                                                                                                                                                                                                                | $3 - 4$ GHz: $\leq 12$ mm<br>$4 - 6$ GHz: $\leq 10$ mm |
|                                                                                                        | When the x or y dimension of the test device, in the measurement plane orientation, is smaller than the above, the measurement resolution must be $\leq$ the corresponding x or y dimension of the test device with at least one measurement point on the test device. |                                                        |

### 8.2.3 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 extracted from KDB 865664 D01 SAR Measurement 100 MHz to 6 GHz.

|                                                                                        |                                           |                                                                                             | $\leq 3$ GHz                                         | $> 3$ GHz                                                                     |
|----------------------------------------------------------------------------------------|-------------------------------------------|---------------------------------------------------------------------------------------------|------------------------------------------------------|-------------------------------------------------------------------------------|
| Maximum zoom scan spatial resolution: $\Delta x_{\text{Zoom}}, \Delta y_{\text{Zoom}}$ |                                           |                                                                                             | $\leq 2$ GHz: $\leq 8$ mm<br>2 – 3 GHz: $\leq 5$ mm* | 3 – 4 GHz: $\leq 5$ mm*<br>4 – 6 GHz: $\leq 4$ mm*                            |
| Maximum zoom scan spatial resolution, normal to phantom surface                        | uniform grid: $\Delta z_{\text{Zoom}}(n)$ |                                                                                             | $\leq 5$ mm                                          | 3 – 4 GHz: $\leq 4$ mm<br>4 – 5 GHz: $\leq 3$ mm<br>5 – 6 GHz: $\leq 2$ mm    |
|                                                                                        | graded grid                               | $\Delta z_{\text{Zoom}}(1)$ : between 1 <sup>st</sup> two points closest to phantom surface | $\leq 4$ mm                                          | 3 – 4 GHz: $\leq 3$ mm<br>4 – 5 GHz: $\leq 2.5$ mm<br>5 – 6 GHz: $\leq 2$ mm  |
|                                                                                        |                                           | $\Delta z_{\text{Zoom}}(n>1)$ : between subsequent points                                   | $\leq 1.5 \cdot \Delta z_{\text{Zoom}}(n-1)$         |                                                                               |
| Minimum zoom scan volume                                                               | x, y, z                                   |                                                                                             | $\geq 30$ mm                                         | 3 – 4 GHz: $\geq 28$ mm<br>4 – 5 GHz: $\geq 25$ mm<br>5 – 6 GHz: $\geq 22$ mm |

### 8.2.4 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            | Twin Phantom                       | SAM           | 1473           | NCR              | NCR                     |
| SPEAG            | Twin Phantom                       | SAM           | 2168           | NCR              | NCR                     |
| SPEAG            | E-Field Probe                      | EX3DV4        | 3624           | 2023/05/17       | 2024/05/16              |
| SPEAG            | E-Field Probe                      | EX3DV4        | 7858           | 2024/01/09       | 2025/01/08              |
| SPEAG            | E-Field Probe                      | EX3DV4        | 7733           | 2024/02/21       | 2025/02/20              |
| SPEAG            | Data Acquisition Electronics       | DAE4          | 1846           | 2023/11/29       | 2024/11/28              |
| SPEAG            | Data Acquisition Electronics       | DAE4          | 1847           | 2024/01/04       | 2025/01/03              |
| SPEAG            | System Validation Kits             | D750V3        | 1231           | 2023/05/04       | 2026/05/03              |
| SPEAG            | System Validation Kits             | D835V2        | 4d302          | 2023/02/06       | 2026/02/05              |
| SPEAG            | System Validation Kits             | D1750V2       | 1115           | 2023/03/23       | 2026/03/22              |
| SPEAG            | System Validation Kits             | D1900V2       | 512            | 2023/03/24       | 2026/03/23              |
| SPEAG            | System Validation Kits             | D2300V2       | 1137           | 2023/05/05       | 2026/05/04              |
| SPEAG            | System Validation Kits             | D2600V2       | 1094           | 2023/03/23       | 2026/03/22              |
| SPEAG            | System Validation Kits             | D3500V2       | 1150           | 2023/05/15       | 2026/05/14              |
| SPEAG            | System Validation Kits             | D3700V2       | 1127           | 2023/05/10       | 2026/05/09              |
| SPEAG            | System Validation Kits             | D3900V2       | 1099           | 2023/05/15       | 2026/05/14              |
| SPEAG            | Dielectric parameter probes        | DAKS-3.5      | 1001           | 2024/01/22       | 2025/01/21              |
| SPEAG            | Vector Network Analyzer            | DAKS_VNA R140 | 0140417        | 2024/01/16       | 2025/01/15              |
| Anritsu          | Radio Communication Analyzer       | MT8821C       | 6262170463     | 2024/03/25       | 2025/03/24              |
| Anritsu          | Radio Communication Analyzer       | MT8821C       | 6261991091     | 2024/03/25       | 2025/03/24              |
| R&S              | Signal Generator                   | SMR20         | 100621         | 2024/03/25       | 2025/03/24              |
| R&S              | AVG Power Sensor                   | NRP-Z21       | 101651         | 2024/03/25       | 2025/03/24              |
| R&S              | AVG Power Sensor                   | NRP-Z21       | 104189         | 2024/03/25       | 2025/03/24              |
| HAISIDIKE        | Thermometer                        | TP300         | TOWE-EQ-SR-023 | 2024/03/27       | 2025/03/26              |
| BingYu           | Temperature and Humidity Indicator | HTC-1         | TOWE-EQ-SR-024 | 2024/03/26       | 2025/03/25              |
| Talent Microwave | Directional Coupler                | TC-05180-10S  | 220420003      | NCR              | NCR                     |
| QiJi             | Amplifier                          | YX28982301    | TOWE-EQ-SR-020 | NCR              | NCR                     |
| QiJi             | Amplifier                          | YX28982302    | TOWE-EQ-SR-021 | NCR              | NCR                     |

Note:

- 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.
- 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.

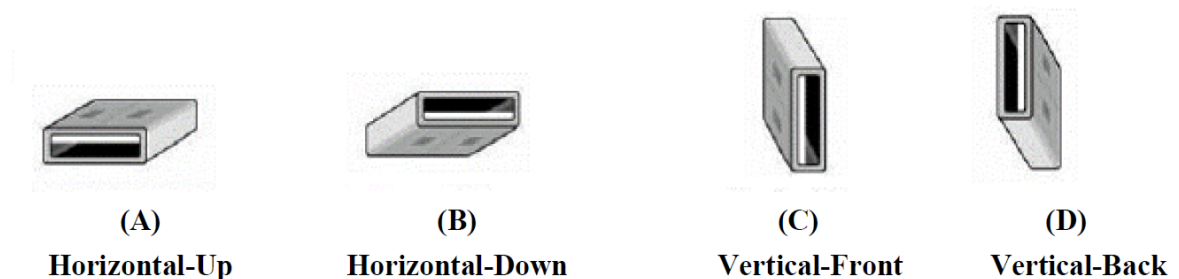
The following procedures are applied to determine if repeated measurements are required.

- 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

Per FCC KDB 447498 D02, for USB dongle transmitters with internal antennas, test all USB orientations (see figure below) with a device-to-phantom separation distance of 5 mm or less. These test orientations are intended for the exposure conditions found in typical laptop/notebook/netbook or tablet computers with either horizontal or vertical USB connector configurations at various locations in the keyboard section of the computer.



**Figure:** USB Connector Orientations Implemented on Laptop Computers

## 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 12-1/12-2).



Figure 12-1 Liquid depth in the Head Phantom

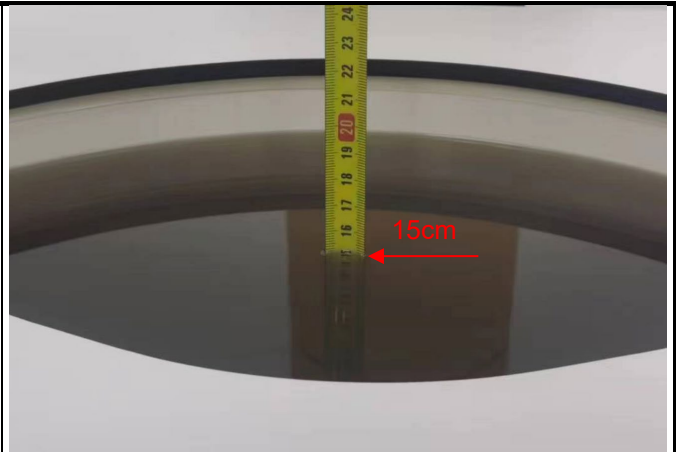


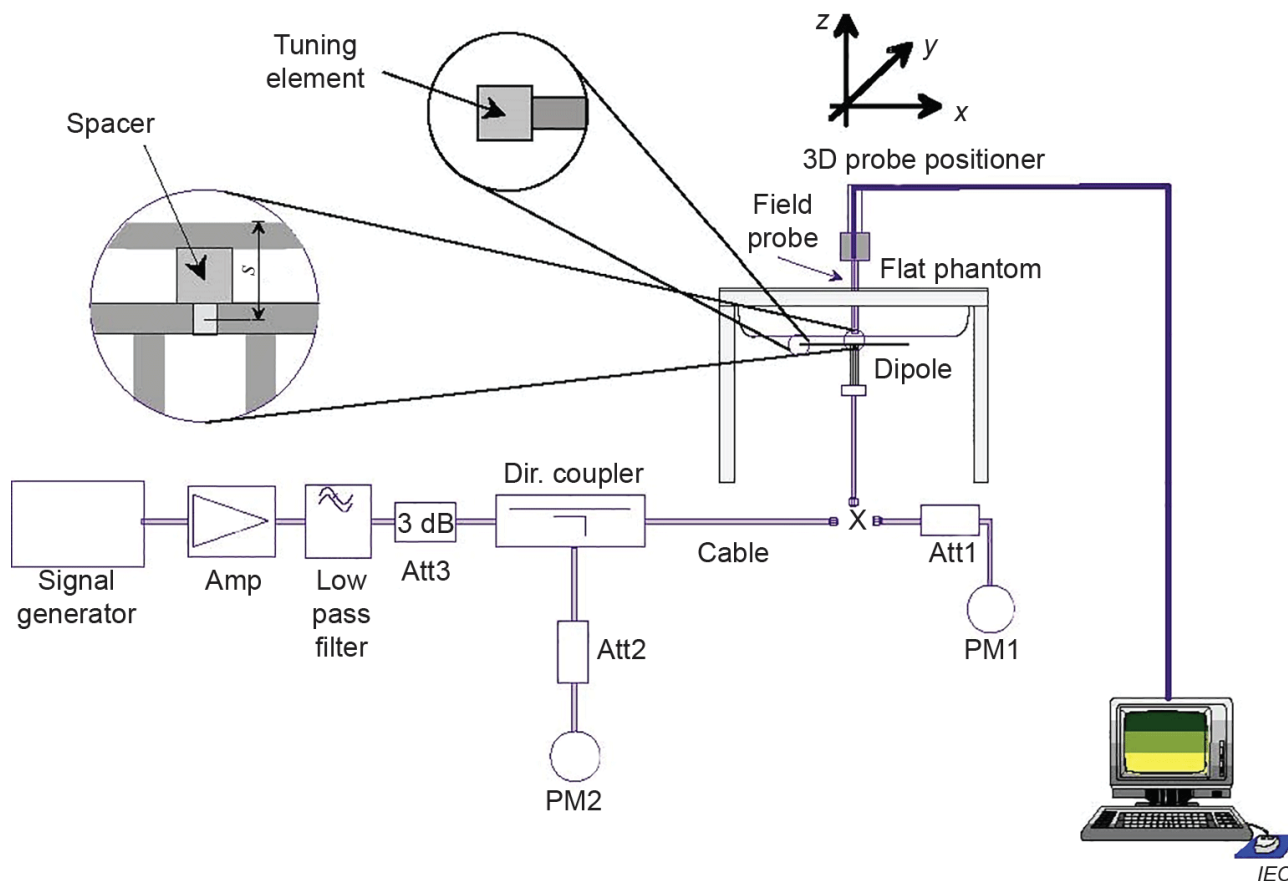
Figure 12-2 Liquid depth in the Flat Phantom

| 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 $\sigma(\text{S/m})$ | $\Delta\epsilon_r$           | $\Delta\sigma$ |            |
| 750             | Head        | 22.7                                | 41.90                     | 0.89                              | 42.052                    | 0.894                             | 0.36%                        | 0.44%          | 2024/05/15 |
| 750             | Head        | 21.3                                | 41.90                     | 0.89                              | 42.500                    | 0.901                             | 1.43%                        | 1.24%          | 2024/05/22 |
| 835             | Head        | 21.6                                | 41.50                     | 0.90                              | 41.900                    | 0.915                             | 0.96%                        | 1.67%          | 2024/05/21 |
| 1750            | Head        | 21.7                                | 40.10                     | 1.37                              | 39.800                    | 1.370                             | -0.75%                       | 0.00%          | 2024/06/05 |
| 1750            | Head        | 22.3                                | 40.10                     | 1.37                              | 39.900                    | 1.380                             | -0.50%                       | 0.73%          | 2024/06/07 |
| 1900            | Head        | 21.4                                | 40.00                     | 1.40                              | 39.900                    | 1.410                             | -0.25%                       | 0.71%          | 2024/06/06 |
| 2300            | Head        | 22.5                                | 39.50                     | 1.67                              | 39.600                    | 1.690                             | 0.25%                        | 1.20%          | 2024/06/18 |
| 2600            | Head        | 21.5                                | 39.00                     | 1.96                              | 38.700                    | 1.990                             | -0.77%                       | 1.53%          | 2024/06/06 |
| 2600            | Head        | 21.9                                | 39.00                     | 1.96                              | 38.900                    | 1.980                             | -0.26%                       | 1.02%          | 2024/06/17 |
| 2600            | Head        | 22.9                                | 39.00                     | 1.96                              | 39.700                    | 1.970                             | 1.79%                        | 0.51%          | 2024/06/21 |
| 3500            | Head        | 22.5                                | 37.90                     | 2.91                              | 38.200                    | 2.890                             | 0.79%                        | -0.69%         | 2024/06/13 |
| 3500            | Head        | 22.8                                | 37.90                     | 2.91                              | 38.400                    | 2.910                             | 1.32%                        | 0.00%          | 2024/06/15 |
| 3500            | Head        | 22.7                                | 37.90                     | 2.91                              | 38.500                    | 2.940                             | 1.58%                        | 1.03%          | 2024/06/23 |
| 3700            | Head        | 22.3                                | 37.70                     | 3.12                              | 38.100                    | 3.100                             | 1.06%                        | -0.64%         | 2024/06/13 |
| 3700            | Head        | 22.6                                | 37.70                     | 3.12                              | 38.200                    | 3.110                             | 1.33%                        | -0.32%         | 2024/06/15 |
| 3700            | Head        | 22.6                                | 37.70                     | 3.12                              | 38.400                    | 3.140                             | 1.86%                        | 0.64%          | 2024/06/23 |
| 3900            | Head        | 22.7                                | 37.50                     | 3.32                              | 37.900                    | 3.300                             | 1.07%                        | -0.60%         | 2024/06/23 |

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 (250mW) |            | 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) | $\Delta 1g$                   | $\Delta 10g$ |            |
| 750             | Head        | D750V3  | 1231  | 8.67            | 5.67       | 2.08                 | 1.34       | 8.32                            | 5.36       | -4.04%                        | -5.47%       | 2024/05/15 |
| 750             | Head        | D750V3  | 1231  | 8.67            | 5.67       | 2.19                 | 1.46       | 8.76                            | 5.84       | 1.04%                         | 3.00%        | 2024/05/22 |
| 835             | Head        | D835V2  | 4d302 | 9.78            | 6.37       | 2.50                 | 1.65       | 10.00                           | 6.60       | 2.25%                         | 3.61%        | 2024/05/21 |
| 1750            | Head        | D1750V2 | 1115  | 36.90           | 19.50      | 9.15                 | 4.92       | 36.60                           | 19.68      | -0.81%                        | 0.92%        | 2024/06/05 |
| 1750            | Head        | D1750V2 | 1115  | 36.90           | 19.50      | 9.25                 | 4.97       | 37.00                           | 19.88      | 0.27%                         | 1.95%        | 2024/06/07 |
| 1900            | Head        | D1900V2 | 512   | 39.40           | 20.50      | 10.50                | 5.49       | 42.00                           | 21.96      | 6.60%                         | 7.12%        | 2024/06/06 |
| 2300            | Head        | D2300V2 | 1137  | 49.3            | 24.00      | 11.90                | 5.75       | 47.60                           | 23.00      | -3.45%                        | -4.17%       | 2024/06/18 |
| 2600            | Head        | D2600V2 | 1094  | 56.30           | 25.00      | 14.40                | 6.55       | 57.60                           | 26.20      | 2.31%                         | 4.80%        | 2024/06/06 |
| 2600            | Head        | D2600V2 | 1094  | 56.30           | 25.00      | 14.10                | 6.42       | 56.40                           | 25.68      | 0.18%                         | 2.72%        | 2024/06/17 |
| 2600            | Head        | D2600V2 | 1094  | 56.30           | 25.00      | 14.00                | 6.36       | 56.00                           | 25.44      | -0.53%                        | 1.76%        | 2024/06/21 |
| 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) | $\Delta 1g$                   | $\Delta 10g$ |            |
| 3500            | Head        | D3500V2 | 1150  | 66.30           | 25.10      | 6.71                 | 2.60       | 67.10                           | 26.00      | 1.21%                         | 3.59%        | 2024/06/13 |
| 3500            | Head        | D3500V2 | 1150  | 66.30           | 25.10      | 6.70                 | 2.59       | 67.00                           | 25.90      | 1.06%                         | 3.19%        | 2024/06/15 |
| 3500            | Head        | D3500V2 | 1150  | 66.30           | 25.10      | 6.70                 | 2.60       | 67.00                           | 26.00      | 1.06%                         | 3.59%        | 2024/06/23 |
| 3700            | Head        | D3700V2 | 1127  | 66.60           | 24.10      | 6.77                 | 2.54       | 67.70                           | 25.40      | 1.65%                         | 5.39%        | 2024/06/13 |
| 3700            | Head        | D3700V2 | 1127  | 66.60           | 24.10      | 6.96                 | 2.61       | 69.60                           | 26.10      | 4.50%                         | 8.30%        | 2024/06/15 |
| 3700            | Head        | D3700V2 | 1127  | 66.60           | 24.10      | 6.79                 | 2.55       | 67.90                           | 25.50      | 1.95%                         | 5.81%        | 2024/06/23 |
| 3900            | Head        | D3900V2 | 1099  | 68.40           | 23.60      | 7.18                 | 2.57       | 71.80                           | 25.70      | 4.97%                         | 8.90%        | 2024/06/23 |

Table 2: SAR System Check Result

## 12.2.2 Detailed System Check Result

Please see the 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 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).

#### 13.2.1 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.

#### 13.2.2 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       | $\leq 5$                                 | $\leq 4$ | $\leq 8$ | $\leq 12$ | $\leq 16$ | $\leq 18$ | 0        |
| QPSK       | $> 5$                                    | $> 4$    | $> 8$    | $> 12$    | $> 16$    | $> 18$    | 1        |
| 16QAM      | $\leq 5$                                 | $\leq 4$ | $\leq 8$ | $\leq 12$ | $\leq 16$ | $\leq 18$ | 1        |
| 16QAM      | $> 5$                                    | $> 4$    | $> 8$    | $> 12$    | $> 16$    | $> 18$    | 2        |
| 64QAM      | $\leq 5$                                 | $\leq 4$ | $\leq 8$ | $\leq 12$ | $\leq 16$ | $\leq 18$ | 2        |
| 64QAM      | $> 5$                                    | $> 4$    | $> 8$    | $> 12$    | $> 16$    | $> 18$    | 3        |
| 256QAM     | $\geq 1$                                 |          |          |           |           |           | 5        |

#### 13.2.3 A-MPR

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

### 13.2.4 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  $\leq 0.8$  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  $\leq 0.8$  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.

### 13.2.5 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 13.2.4 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.

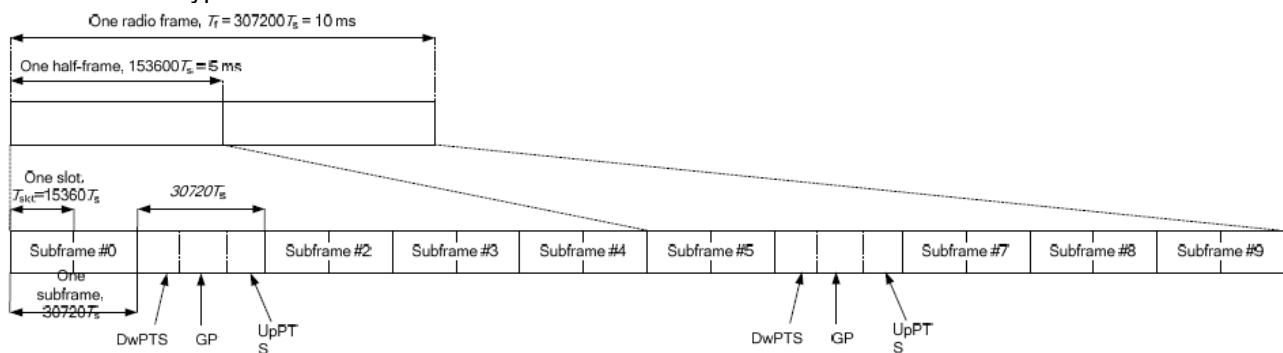
### 13.2.6 LTE TDD Considerations

For Time-Division Duplex (TDD) systems, SAR must be tested using a fixed periodic duty factor according to the highest transmission duty factor implemented for the device and supported by the defined 3GPP LTE TDD configurations.

SAR was tested with the highest transmission duty factor (63.33%) using Uplink-downlink configuration 0 and Special subframe configuration 7.

LTE TDD Band support 3GPP TS 36.211 section 4.2 for Type 2 Frame Structure and Table 4.2-2 for uplink-downlink configurations and Table 4.2-1 for Special subframe configurations.

Frame structure type 2:



Uplink-downlink configurations

| Uplink-downlink configuration | Downlink-to-Uplink Switch-point periodicity | Subframe number |   |   |   |   |   |   |   |   |   |
|-------------------------------|---------------------------------------------|-----------------|---|---|---|---|---|---|---|---|---|
|                               |                                             | 0               | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 |
| 0                             | 5 ms                                        | D               | S | U | U | U | D | S | U | U | U |
| 1                             | 5 ms                                        | D               | S | U | U | D | D | S | U | U | D |
| 2                             | 5 ms                                        | D               | S | U | D | D | D | S | U | D | D |
| 3                             | 10 ms                                       | D               | S | U | U | U | D | D | D | D | D |
| 4                             | 10 ms                                       | D               | S | U | U | D | D | D | D | D | D |
| 5                             | 10 ms                                       | D               | S | U | D | D | D | D | D | D | D |
| 6                             | 5 ms                                        | D               | S | U | U | U | D | S | U | U | D |

Configuration of special subframe (lengths of DwPTS/GP/UpPTS).

| Special subframe configuration | Normal cyclic prefix in downlink |                                |                                  | Extended cyclic prefix in downlink |                                |                                  |
|--------------------------------|----------------------------------|--------------------------------|----------------------------------|------------------------------------|--------------------------------|----------------------------------|
|                                | DwPTS                            | UpPTS                          |                                  | DwPTS                              | UpPTS                          |                                  |
|                                |                                  | Normal cyclic prefix in uplink | Extended cyclic prefix in uplink |                                    | Normal cyclic prefix in uplink | Extended cyclic prefix in uplink |
| 0                              | 6592. $T_s$                      | 2192. $T_s$                    | 2560. $T_s$                      | 7680. $T_s$                        | 2192. $T_s$                    | 2560. $T_s$                      |
| 1                              | 19760. $T_s$                     |                                |                                  | 20480. $T_s$                       |                                |                                  |
| 2                              | 21952. $T_s$                     |                                |                                  | 23040. $T_s$                       |                                |                                  |
| 3                              | 24144. $T_s$                     |                                |                                  | 25600. $T_s$                       |                                |                                  |
| 4                              | 26336. $T_s$                     | 4384. $T_s$                    | 5120. $T_s$                      | 7680. $T_s$                        | 4384. $T_s$                    | 5120. $T_s$                      |
| 5                              | 6592. $T_s$                      |                                |                                  | 20480. $T_s$                       |                                |                                  |
| 6                              | 19760. $T_s$                     |                                |                                  | 23040. $T_s$                       |                                |                                  |
| 7                              | 21952. $T_s$                     |                                |                                  | 25600. $T_s$                       |                                |                                  |
| 8                              | 24144. $T_s$                     |                                |                                  | -                                  |                                |                                  |
| 9                              | 13168. $T_s$                     |                                |                                  | -                                  |                                |                                  |

**Calculated Duty Cycle=[Extended cyclic prefix in uplink x (Ts) x # of S + # of U]/10ms**

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

Example for calculated Duty Cycle for Uplink-Downlink Configuration 0:

Calculated Duty Cycle =  $(5120 \times (1/(15000 \times 2048)) \times 2 + 0.006)/0.01 = 63.33 \%$

Where

$T_s = 1/(15000 \times 2048)$  seconds

HPUE:

Calculated Duty Cycle for Uplink-Downlink Configuration 1:

Calculated Duty Cycle =  $5120 \times (1/(15000 \times 2048)) \times 2 + 0.004)/0.01 = 43.33 \%$

### 13.3 SAR Measurement Conditions for NR

#### <5G NR Information>

| Band | SCS (kHz) | Bandwidth (MHz)                   | Duty Cycle (%) |
|------|-----------|-----------------------------------|----------------|
| n2   | 15        | 20,15,10,5                        | 100            |
| n5   | 15        | 20,15,10,5                        | 100            |
| n12  | 15        | 15,10,5                           | 100            |
| n14  | 15        | 10,5                              | 100            |
| n25  | 15        | 40,30,25,20,15,10,5               | 100            |
| n30  | 15        | 10,5                              | 100            |
| n41  | 30        | 100,90,80,70,60,50,40,30,20       | 100            |
| n48  | 30        | 40,20,15,10,5                     | 100            |
| n66  | 15        | 40,30,20,15,10,5                  | 100            |
| n70  | 15        | 15,10,5                           | 100            |
| n71  | 15        | 20,15,10,5                        | 100            |
| n77  | 30        | 100,90,80,70,60,50,40,30,20,15,10 | 100            |

#### <EN-DC Configuration>

|     |                       |
|-----|-----------------------|
| n2  | LTE B5/12/30/66       |
| n5  | LTE B2/12/13/30/48/66 |
| n25 | LTE B12/48/66         |
| n30 | LTE B2/5/12/66        |
| n41 | LTE B2/66             |
| n66 | LTE B2/5/12/13/30/48  |
| n71 | LTE B2/66             |
| n77 | LTE B2/5/12/13/66     |

#### 13.3.1 5G NR test procedure

For 5G NR test procedure was following step similar FCC KDB 941225 D05:

- A. For DFT-OFDM and CP-OFDM output power measurement reduction, according to 3GPP 38.101 maximum power reduction for power class 3, the CP-OFDM mode will not higher than DFT-OFDM mode, therefore, similar FCC KDB 941225 D05 procedure for other modulation output power for each RB allocation configuration is > not ½ dB higher than the same configuration in DFT-QPSK and the reported SAR for the DFT-QPSK configuration is ≤ 1.45 W/kg; CP-OFDM testing is not required.
- B. For DFT-OFDM output power measurement reduction, according to 38.101 maximum power reduction for power class 3, for PI/2 BPSK/16QAM/64QMA/256QAM and smaller bandwidth output power will spot check largest channel bandwidth worst RB configuration to ensure the PI/2 BPSK/16QAM/64QMA/256QAM and smaller bandwidth output power will not ½ dB higher than the same configuration in the largest supported bandwidth.
- C. SAR testing start with the largest SCS and 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.
- D. 50% RB allocation for QPSK SAR testing follows 1RB QPSK allocation procedure.
- E. QPSK with 100% RB allocation, SAR is not required when the highest maximum output power for 100 % RB allocation is less than the highest maximum output power in 50% and 1 RB allocations and the highest reported SAR for 1 RB and 50% RB allocation are ≤ 0.8 W/kg. Otherwise, SAR is measured for the highest output power channel; and if the reported SAR is > 1.45 W/kg, the remaining required test channels must also be tested.
- F. PI/2 BPSK/16QAM/64QAM/256QAM output powers according to 3GPP MPR will not ½ dB higher than the same configuration in QPSK, also reported SAR for the QPSK configuration is less than 1.45 W/kg, PI/2 BPSK/16QAM/64QAM/256QAM SAR testing are not required.
- G. Smaller SCS/bandwidth output power for each RB allocation configuration for this device will not ½ dB higher than the same configuration in the largest supported bandwidth, and the reported SAR for the largest supported bandwidth is ≤ 1.45 W/kg, smaller bandwidth SAR testing is not required for this device.

**H. 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 TS 38.101-1 Section 6.2.2 under Table 6.2.2 -1.

| Modulation |           | MPR (dB)            |                      |                      |
|------------|-----------|---------------------|----------------------|----------------------|
|            |           | Edge RB allocations | Outer RB allocations | Inner RB allocations |
| DFT-s-OFDM | Pi/2 BPSK | $\leq 3.5^1$        | $\leq 1.2^1$         | $\leq 0.2^1$         |
|            |           | $\leq 0.5^2$        | $\leq 0.5^2$         | $0^2$                |
|            | QPSK      | $\leq 1$            |                      | 0                    |
|            | 16 QAM    | $\leq 2$            |                      | $\leq 1$             |
|            | 64 QAM    | $\leq 2.5$          |                      |                      |
|            | 256 QAM   | $\leq 4.5$          |                      |                      |
| CP-OFDM    | QPSK      | $\leq 3$            |                      | $\leq 1.5$           |
|            | 16 QAM    | $\leq 3$            |                      | $\leq 2$             |
|            | 64 QAM    | $\leq 3.5$          |                      |                      |
|            | 256 QAM   | $\leq 6.5$          |                      |                      |

NOTE 1: Applicable for UE operating in TDD mode with Pi/2 BPSK modulation and UE indicates support for UE capability powerBoosting-pi2BPSK and if the IE powerBoostPi2BPSK is set to 1 and 40 % or less slots in radio frame are used for UL transmission for bands n40, n41, n77, n78 and n79. The reference power of 0 dB MPR is 26dBm.

NOTE 2: Applicable for UE operating in FDD mode, or in TDD mode in bands other than n40, n41, n77, n78 and n79 with Pi/2 BPSK modulation and if the IE powerBoostPi2BPSK is set to 0 and if more than 40 % of slots in radio frame are used for UL transmission for bands n40, n41, n77, n78 and n79.

I. For 5G NR test, using FTM (Factory Test Mode) to perform SAR with default 100% transmission.

J. For 5G NR SAR Test as below:

For 5G NR NSA mode with the same UL EN\_DC combination but different DL EN\_DC combinations, e.g.: EN\_DC configuration: UL DC\_5A\_n4 (UL two bands) with DL DC\_5C\_n4 (DL two bands):

- The UL EN\_DC configuration, including the Tx antenna configuration, RF path, the channel bandwidth and other operating parameters are the same.
- The maximum output power, including tolerance, for the UL EN\_DC configuration with DL two or more bands must be  $\leq$  the same UL EN\_DC configuration with DL two bands only to qualify for the SAR test exclusion.

K. For EN\_DC SAR, as the existing SAR test system cannot test the multiple different frequency bands simultaneous Transmission SAR at the same time, we suggest that the conservative “max + max” multi-Tx and SAR scaling method can be used to evaluate the inter-band Uplink EN\_DC SAR from standalone SAR test results of each LTE and NR EN\_DC component band and the conservative “max + max” multi-Tx method to combine the scaled SAR value from each EN\_DC component band as the inter-band Uplink EN\_DC SAR. All Simultaneous Transmission Scenarios will be evaluated independently in the final SAR report.

L. For this device, 5G NR n41/77 SA mode support UL 2\*2 MIMO and 5G NR NSA mode does not support UL 2\*2 MIMO. For the MIMO SAR, each antenna SAR will be evaluated independently. Then the conservative “max + max” multi-Tx method should be used to combine the scaled SAR value of each antenna as the UL 2\*2 MIMO SAR.

## 14 Conducted Power

### 14.1 Conducted Power of LTE

Detail output power measurement refer to appendix E.

#### 14.1.1 Conducted Power of LTE CA

The device supports downlink and intra-band contiguous uplink LTE Carrier Aggregation (CA). When carrier aggregation applies, implementation and measurement details for the following are necessary.

- a) Intra-band carrier aggregation requirements for uplink.
- b) Intra-band and inter-band carrier aggregation requirements for downlink
- c) The device supports Inter-band uplink LTE CA for CA\_12A-66A, CA\_13A-66A, CA\_2A-12A, CA\_2A-13A, CA\_4A-13A, with two component carriers in the uplink.

The possible downlink and uplink LTE CA combinations supported by this device are as below tables per 3GPP TS 36.101. The conducted power measurement results of downlink and uplink LTE CA are provided in Section 8 of this report per 3GPP TS 36.521-1. The downlink LTE CA SAR test is not required since the maximum output power for downlink LTE CA was not more than 0.25dB higher than the maximum output power for without downlink LTE CA.

SAR test procedure for intra-band contiguous UL LTE CA is as below:

- 1) Maximum output power is measured for each UL CA configuration for the required test channels described in KDB 941225 D05
  - UL PCC configuration is determined by the required test channel
  - SCC and subsequent CCs are added alternatively to either side of the PCC or within the transmission band for channels at the ends of a frequency band.
- 2) SAR for UL CA is required in each exposure condition and frequency band combination.
- 3) For this device, as the maximum output for Intra-band uplink LTE CA is  $\leq$  standalone LTE mode (without CA),
  - PCC is configured according to the highest standalone SAR configuration tested.
  - SCC and subsequent CCs are configured according to procedures used for power measurement and parameters (BW, RB etc.) like that used for the PCC
- 4) When the reported SAR for UL CA configuration, described above, is  $> 1.2$  W/kg, UL CA SAR is also required for all required test channels (PCC based)
- 5) UL CA SAR is also required for standalone SAR configurations  $> 1.2$  W/kg when they are scaled to the UL CA power level.

Intra-band contiguous CA operating bands:

| E-UTRA CA Band | E-UTRA Band | Uplink (UL) operating band                 |            | Downlink (DL) operating band               |            | Duplex Mode |
|----------------|-------------|--------------------------------------------|------------|--------------------------------------------|------------|-------------|
|                |             | BS receive / UE transmit                   |            | BS transmit / UE receive                   |            |             |
|                |             | F <sub>UL_low</sub> – F <sub>UL_high</sub> |            | F <sub>DL_low</sub> – F <sub>DL_high</sub> |            |             |
| CA 41C         | 41          | 2496 MHz                                   | – 2690 MHz | 2496 MHz                                   | – 2690 MHz | TDD         |

The power of the Intra-band CA is as follows:

### Class3

| Combination | Modulation | PCC  |          |            |        |              |            | SCC  |          |            |        |              | Sensor off |              | Sensor on |              |
|-------------|------------|------|----------|------------|--------|--------------|------------|------|----------|------------|--------|--------------|------------|--------------|-----------|--------------|
|             |            | Band | BW (MHz) | UL Channel | UL# RB | UL RB Offset | DL Channel | Band | BW (MHz) | UL Channel | UL# RB | UL RB Offset | Power      | tune-up(dBm) | Power     | tune-up(dBm) |
| CA_41C      | QPSK       | 41   | 20       | 39750      | 1      | 99           | 39750      | 41   | 20       | 39948      | 1      | 0            | 23.32      | 24.50        | 19.53     | 20.50        |
| CA_41C      | QPSK       | 41   | 20       | 40185      | 1      | 99           | 40185      | 41   | 20       | 40383      | 1      | 0            | 23.40      | 24.50        | 19.54     | 20.50        |
| CA_41C      | QPSK       | 41   | 20       | 40620      | 1      | 99           | 40620      | 41   | 20       | 40818      | 1      | 0            | 23.68      | 24.50        | 19.62     | 20.50        |
| CA_41C      | QPSK       | 41   | 20       | 41055      | 1      | 99           | 41055      | 41   | 20       | 41253      | 1      | 0            | 23.52      | 24.50        | 19.61     | 20.50        |
| CA_41C      | QPSK       | 41   | 20       | 41490      | 1      | 0            | 41490      | 41   | 20       | 41292      | 1      | 99           | 23.65      | 24.50        | 19.68     | 20.50        |

### Class2

| Combination | Modulation | PCC  |          |            |        |              |            | SCC  |          |            |        |              | Sensor off |              | Sensor on |              |
|-------------|------------|------|----------|------------|--------|--------------|------------|------|----------|------------|--------|--------------|------------|--------------|-----------|--------------|
|             |            | Band | BW (MHz) | UL Channel | UL# RB | UL RB Offset | DL Channel | Band | BW (MHz) | UL Channel | UL# RB | UL RB Offset | Power      | tune-up(dBm) | Power     | tune-up(dBm) |
| CA_41C      | QPSK       | 41   | 20       | 39750      | 1      | 99           | 39750      | 41   | 20       | 39948      | 1      | 0            | 25.47      | 26.50        | 19.55     | 20.50        |
| CA_41C      | QPSK       | 41   | 20       | 40185      | 1      | 99           | 40185      | 41   | 20       | 40383      | 1      | 0            | 25.41      | 26.50        | 19.56     | 20.50        |
| CA_41C      | QPSK       | 41   | 20       | 40620      | 1      | 99           | 40620      | 41   | 20       | 40818      | 1      | 0            | 25.48      | 26.50        | 19.72     | 20.50        |
| CA_41C      | QPSK       | 41   | 20       | 41055      | 1      | 99           | 41055      | 41   | 20       | 41253      | 1      | 0            | 25.45      | 26.50        | 19.66     | 20.50        |
| CA_41C      | QPSK       | 41   | 20       | 41490      | 1      | 0            | 41490      | 41   | 20       | 41292      | 1      | 99           | 25.55      | 26.50        | 19.71     | 20.50        |

The possible downlink LTE CA combinations supported by this device are as below tables. The following conducted power measurement results of downlink LTE carrier aggregation are provided to quantify downlink only carrier aggregation SAR test exclusion per KDB 941225 D05A. Uplink maximum output power is measured with downlink carrier aggregation active, using the channel with highest measured maximum output power when downlink carrier aggregation is inactive, to confirm that when downlink carrier aggregation is active uplink maximum output power remains within the specified tune-up tolerance limits and not more than ¼ dB higher than the maximum output power measured when downlink carrier aggregation inactive, therefore SAR evaluation with downlink carrier aggregation can be excluded.

DL CA as below:

| Number | 2CC Combination |
|--------|-----------------|
| 1      | CA_2A-4A        |
| 2      | CA_2A-5A        |
| 3      | CA_2A-66A       |
| 4      | CA_2A-71A       |
| 5      | CA_2C           |
| 6      | CA_30A-66A      |
| 7      | CA_41A-41A      |
| 8      | CA_41C          |
| 9      | CA_46A-66A      |
| 10     | CA_48A-48A      |
| 11     | CA_48A-66A      |
| 12     | CA_48C          |
| 13     | CA_4A_12A       |
| 14     | CA_4A_13A       |
| 15     | CA_4A_29A       |
| 16     | CA_4A_30A       |
| 17     | CA_4A_66A       |
| 18     | CA_4A_48A       |
| 19     | CA_4A_4A        |
| 20     | CA_4A_5A        |
| 21     | CA_4A_71A       |
| 22     | CA_5A_13A       |
| 23     | CA_5A_30A       |
| 24     | CA_5A_5A        |
| 25     | CA_5A_66A       |
| 26     | CA_66A_66A      |
| 27     | CA_66A_71A      |
| 28     | CA_66B          |
| 29     | CA_66C          |
| 30     | CA_2A-48A       |
| 31     | CA_14A-30A      |
| 32     | CA_14A-66A      |
| 33     | CA_2A-14A       |

| DL CA Combination | PCC      |          |            |            |                |        |              | SCC      |          |            | Sensor off(dBm) |                        |                           |         | Sensor on(dBm)         |                           |         |
|-------------------|----------|----------|------------|------------|----------------|--------|--------------|----------|----------|------------|-----------------|------------------------|---------------------------|---------|------------------------|---------------------------|---------|
|                   | LTE Band | BW (MHz) | Modulation | UL Channel | UL Freq. (MHz) | UL# RB | UL RB Offset | LTE Band | BW (MHz) | DL Channel | DL Freq. (MHz)  | With CA Tx.Power (dBm) | Without CA Tx.Power (dBm) | Tune-up | With CA Tx.Power (dBm) | Without CA Tx.Power (dBm) | Tune-up |
| CA_2A-4A          | B2       | 20M      | QPSK       | 18900      | 1880           | 1      | 50           | B4       | 20M      | 2175       | 2132.5          | 22.56                  | 22.61                     | 24.00   | 16.44                  | 16.52                     | 18.00   |
|                   | B4       | 20M      | QPSK       | 20175      | 1732.5         | 1      | 50           | B2       | 20M      | 900        | 1960            | 22.72                  | 22.77                     | 24.50   | 15.58                  | 15.60                     | 17.00   |
| CA_2A-5A          | B2       | 20M      | QPSK       | 18900      | 1880           | 1      | 50           | B5       | 10M      | 2525       | 881.5           | 22.59                  | 22.61                     | 24.00   | 16.44                  | 16.52                     | 18.00   |
|                   | B5       | 10M      | QPSK       | 20525      | 836.5          | 1      | 25           | B2       | 20M      | 900        | 1960            | 23.16                  | 23.25                     | 24.50   | /                      | /                         | /       |
| CA_2A-66A         | B2       | 20M      | QPSK       | 18900      | 1880           | 1      | 50           | B66      | 20M      | 66786      | 2145            | 22.49                  | 22.61                     | 24.00   | 16.42                  | 16.52                     | 18.00   |
|                   | B66      | 20M      | QPSK       | 132322     | 1745           | 1      | 50           | B2       | 20M      | 900        | 1960            | 22.77                  | 22.82                     | 24.50   | 17.55                  | 17.60                     | 19.00   |
| CA_2A-71A         | B2       | 20M      | QPSK       | 18900      | 1880           | 1      | 50           | B71      | 20M      | 68786      | 637             | 22.56                  | 22.61                     | 24.00   | 16.48                  | 16.52                     | 18.00   |
|                   | B71      | 20M      | QPSK       | 133322     | 683            | 1      | 50           | B2       | 20M      | 900        | 1960            | 23.06                  | 23.11                     | 24.50   | /                      | /                         | /       |
| CA_2C             | B2       | 20M      | QPSK       | 18700      | 1860           | 1      | 50           | B2       | 20M      | 898        | 1959.8          | 22.42                  | 22.44                     | 24.00   | 16.41                  | 16.47                     | 18.00   |
| CA_30A-66A        | B30      | 10M      | QPSK       | 27710      | 2310           | 1      | 25           | B66      | 20M      | 66786      | 2145            | 21.43                  | 21.45                     | 23.00   | 17.52                  | 17.60                     | 19.00   |
|                   | B66      | 20M      | QPSK       | 132322     | 1745           | 1      | 50           | B30      | 10M      | 9820       | 2355            | 22.79                  | 22.82                     | 24.50   | 17.49                  | 17.60                     | 19.00   |
| CA_41A-41A        | B41      | 20M      | QPSK       | 39750      | 2506           | 1      | 50           | B41      | 20M      | 41490      | 2680            | 22.80                  | 22.83                     | 24.50   | 18.88                  | 18.92                     | 20.50   |
| CA_41C            | B41      | 20M      | QPSK       | 39750      | 2506           | 1      | 50           | B41      | 20M      | 39948      | 2525.8          | 22.76                  | 22.83                     | 24.50   | 18.84                  | 18.92                     | 20.50   |
| CA_46A-66A        | B66      | 20M      | QPSK       | 132322     | 1745           | 1      | 50           | B46      | 20M      | 50690      | 5540            | 22.77                  | 22.82                     | 24.50   | 17.55                  | 17.60                     | 19.00   |
| CA_48A-48A        | B48      | 20M      | QPSK       | 56640      | 3690           | 1      | 50           | B48      | 20M      | 55340      | 3560            | 21.00                  | 21.05                     | 22.50   | 14.76                  | 14.82                     | 16.00   |
| CA_48A-66A        | B48      | 20M      | QPSK       | 56640      | 3690           | 1      | 50           | B66      | 20M      | 66786      | 2145            | 21.03                  | 21.05                     | 22.50   | 17.80                  | 14.82                     | 16.00   |
|                   | B66      | 20M      | QPSK       | 132322     | 1745           | 1      | 50           | B48      | 20M      | 55990      | 3625            | 22.81                  | 22.82                     | 24.50   | 17.56                  | 17.60                     | 19.00   |
| CA_48C            | B48      | 20M      | QPSK       | 56640      | 3690           | 1      | 50           | B48      | 20M      | 56442      | 3670.2          | 21.00                  | 21.05                     | 22.50   | 14.76                  | 14.82                     | 16.00   |
| CA_4A_12A         | B4       | 20M      | QPSK       | 20175      | 1732.5         | 1      | 50           | B12      | 10M      | 5095       | 737.5           | 22.69                  | 22.77                     | 24.50   | 15.55                  | 15.60                     | 17.00   |
|                   | B12      | 10M      | QPSK       | 23095      | 707.5          | 1      | 25           | B4       | 20M      | 2175       | 2132.5          | 23.40                  | 23.48                     | 24.50   | /                      | /                         | /       |
| CA_4A_13A         | B4       | 20M      | QPSK       | 20175      | 1732.5         | 1      | 50           | B13      | 10M      | 5230       | 751             | 22.68                  | 22.77                     | 24.50   | 15.43                  | 15.60                     | 17.00   |
|                   | B13      | 10M      | QPSK       | 23230      | 782            | 1      | 25           | B4       | 20M      | 2175       | 2132.5          | 23.35                  | 23.41                     | 24.50   | /                      | /                         | /       |
| CA_4A_29A         | B4       | 20M      | QPSK       | 20175      | 1732.5         | 1      | 50           | B29      | 10M      | 9715       | 722.5           | 22.70                  | 22.77                     | 24.50   | 15.52                  | 15.60                     | 17.00   |
| CA_4A_30A         | B4       | 20M      | QPSK       | 20175      | 1732.5         | 1      | 50           | B30      | 10M      | 9820       | 2355            | 22.68                  | 22.77                     | 24.50   | 15.59                  | 15.60                     | 17.00   |
|                   | B30      | 10M      | QPSK       | 27710      | 2310           | 1      | 25           | B4       | 20M      | 2175       | 2132.5          | 21.40                  | 21.45                     | 23.00   | 17.53                  | 17.60                     | 19.00   |
| CA_4A_66A         | B4       | 20M      | QPSK       | 20175      | 1732.5         | 1      | 50           | B66      | 20M      | 66786      | 2145            | 22.70                  | 22.77                     | 24.50   | 15.55                  | 15.60                     | 17.00   |
|                   | B66      | 20M      | QPSK       | 132322     | 1745           | 1      | 50           | B4       | 20M      | 2175       | 2132.5          | 22.81                  | 22.82                     | 24.50   | 17.59                  | 17.60                     | 19.00   |
| CA_4A_48A         | B4       | 20M      | QPSK       | 20175      | 1732.5         | 1      | 50           | B48      | 20M      | 55990      | 3625            | 22.66                  | 22.77                     | 24.50   | 15.48                  | 15.60                     | 17.00   |
|                   | B48      | 20M      | QPSK       | 56640      | 3690           | 1      | 50           | B4       | 20M      | 2175       | 2132.5          | 21.03                  | 21.05                     | 22.50   | 14.73                  | 14.82                     | 16.00   |
| CA_4A_4A          | B4       | 20M      | QPSK       | 20050      | 1720           | 1      | 50           | B4       | 20M      | 2300       | 2145            | 22.65                  | 22.75                     | 24.50   | 15.44                  | 15.52                     | 17.00   |
| CA_4A_5A          | B4       | 20M      | QPSK       | 20175      | 1732.5         | 1      | 50           | B5       | 10M      | 2525       | 881.5           | 22.63                  | 22.77                     | 24.50   | 15.53                  | 15.60                     | 17.00   |
|                   | B5       | 10M      | QPSK       | 20525      | 836.5          | 1      | 25           | B4       | 20M      | 2175       | 2132.5          | 23.14                  | 23.25                     | 24.50   | /                      | /                         | /       |
| CA_4A_71A         | B4       | 20M      | QPSK       | 20175      | 1732.5         | 1      | 50           | B71      | 20M      | 68786      | 637             | 22.62                  | 22.77                     | 24.50   | 15.57                  | 15.60                     | 17.00   |
|                   | B71      | 20M      | QPSK       | 133322     | 683            | 1      | 50           | B4       | 20M      | 2175       | 2132.5          | 23.02                  | 23.11                     | 24.50   | /                      | /                         | /       |
| CA_5A_13A         | B5       | 10M      | QPSK       | 20525      | 836.5          | 1      | 25           | B13      | 10M      | 5230       | 751             | 23.13                  | 23.25                     | 24.50   | /                      | /                         | /       |
|                   | B13      | 10M      | QPSK       | 23230      | 782            | 1      | 25           | B5       | 10M      | 2525       | 881.5           | 23.26                  | 23.41                     | 24.50   | /                      | /                         | /       |
| CA_5A_30A         | B5       | 10M      | QPSK       | 20525      | 836.5          | 1      | 25           | B30      | 10M      | 9820       | 2355            | 23.15                  | 23.25                     | 24.50   | /                      | /                         | /       |
|                   | B30      | 10M      | QPSK       | 27710      | 2310           | 1      | 25           | B5       | 10M      | 2525       | 881.5           | 21.40                  | 21.45                     | 23.00   | 17.51                  | 17.60                     | 19.00   |
| CA_5A_5A          | B5       | 10M      | QPSK       | 20600      | 844            | 1      | 25           | B5       | 10M      | 2450       | 874             | 23.03                  | 23.13                     | 24.50   | /                      | /                         | /       |
| CA_5A_66A         | B5       | 10M      | QPSK       | 20525      | 836.5          | 1      | 25           | B66      | 20M      | 66786      | 2145            | 23.14                  | 23.25                     | 24.50   | /                      | /                         | /       |
|                   | B66      | 20M      | QPSK       | 132322     | 1745           | 1      | 50           | B5       | 10M      | 2525       | 881.5           | 22.77                  | 22.82                     | 24.50   | 17.49                  | 17.60                     | 19.00   |
| CA_66A_66A        | B66      | 10M      | QPSK       | 132022     | 1715           | 1      | 25           | B66      | 10M      | 66585      | 2124.9          | 22.66                  | 22.76                     | 24.50   | 17.58                  | 17.63                     | 19.00   |
| CA_66A_71A        | B66      | 20M      | QPSK       | 132322     | 1745           | 1      | 50           | B71      | 20M      | 68786      | 637             | 22.69                  | 22.82                     | 24.50   | 17.55                  | 17.60                     | 19.00   |
|                   | B71      | 20M      | QPSK       | 133322     | 683            | 1      | 50           | B66      | 20M      | 66786      | 2145            | 23.03                  | 23.11                     | 24.50   | /                      | /                         | /       |
| CA_66B            | B66      | 10M      | QPSK       | 132022     | 1715           | 1      | 25           | B66      | 10M      | 66585      | 2124.9          | 22.71                  | 22.76                     | 24.50   | 17.56                  | 17.63                     | 19.00   |
| CA_66C            | B66      | 20M      | QPSK       | 132072     | 1720           | 1      | 50           | B66      | 20M      | 66734      | 2139.8          | 22.66                  | 22.79                     | 24.50   | 17.50                  | 17.58                     | 19.00   |
| CA_2A-48A         | B2       | 20M      | QPSK       | 18900      | 1880           | 1      | 50           | B48      | 20M      | 55990      | 3625            | 22.55                  | 22.61                     | 24.00   | 16.48                  | 16.52                     | 18.00   |
|                   | B48      | 20M      | QPSK       | 56640      | 3690           | 1      | 50           | B2       | 20M      | 900        | 1960            | 21.00                  | 21.05                     | 22.50   | 14.73                  | 14.82                     | 16.00   |

Note:

The downlink LTE CA SAR test is not required since the maximum output power for downlink LTE CA was not more than 0.25dB higher than the maximum output power for without downlink LTE CA.

## 14.2 Conducted Power of 5G NR

Detail output power measurement 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  $\geq 200\text{MHz}$ .

## 15.1 SAR Measurement Result of LTE Band 2

| Ant 0 Test Results        |              |            |                    |                      |                       |                         |                       |                   |                              |
|---------------------------|--------------|------------|--------------------|----------------------|-----------------------|-------------------------|-----------------------|-------------------|------------------------------|
| Test position             | BW.<br>(MHz) | Mode       | Ch./Freq.<br>(MHz) | SAR<br>(W/kg)<br>1-g | 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 5mm (1RB) Sensor On  |              |            |                    |                      |                       |                         |                       |                   |                              |
| Front side                | 20           | QPSK 1_50  | 18900/1880         | 0.343                | 0.203                 | 16.52                   | 18.00                 | 1.406             | 0.482                        |
| Back side                 | 20           | QPSK 1_50  | 18900/1880         | 0.358                | 0.188                 | 16.52                   | 18.00                 | 1.406             | 0.503                        |
| Right side                | 20           | QPSK 1_50  | 18900/1880         | 0.242                | 0.144                 | 16.52                   | 18.00                 | 1.406             | 0.340                        |
| Body 5mm(50%RB) Sensor On |              |            |                    |                      |                       |                         |                       |                   |                              |
| Front side                | 20           | QPSK 50_25 | 18900/1880         | 0.324                | 0.184                 | 16.53                   | 18.00                 | 1.403             | 0.455                        |
| Back side                 | 20           | QPSK 50_25 | 18900/1880         | 0.332                | 0.184                 | 16.53                   | 18.00                 | 1.403             | 0.466                        |
| Right side                | 20           | QPSK 50_25 | 18900/1880         | 0.168                | 0.100                 | 16.53                   | 18.00                 | 1.403             | 0.236                        |
| Body (1RB) Sensor Off     |              |            |                    |                      |                       |                         |                       |                   |                              |
| Front side 19mm           | 20           | QPSK 1_50  | 18900/1880         | 0.505                | 0.314                 | 22.61                   | 24.00                 | 1.377             | 0.695                        |
| Back side 19mm            | 20           | QPSK 1_50  | 18900/1880         | 0.204                | 0.123                 | 22.61                   | 24.00                 | 1.377             | 0.281                        |
| Left side 5mm             | 20           | QPSK 1_50  | 18900/1880         | 0.200                | 0.117                 | 22.61                   | 24.00                 | 1.377             | 0.275                        |
| Right side 19mm           | 20           | QPSK 1_50  | 18900/1880         | 0.254                | 0.156                 | 22.61                   | 24.00                 | 1.377             | 0.350                        |
| Top side 5mm              | 20           | QPSK 1_50  | 18900/1880         | 0.160                | 0.099                 | 22.61                   | 24.00                 | 1.377             | 0.220                        |
| Front side 19mm           | 20           | QPSK 1_50  | 18700/1860         | 0.463                | 0.288                 | 22.44                   | 24.00                 | 1.432             | 0.663                        |
| Front side 19mm           | 20           | QPSK 1_50  | 19100/1900         | 0.540                | 0.332                 | 22.41                   | 24.00                 | 1.442             | <b>0.779</b>                 |
| Body (50%RB) Sensor Off   |              |            |                    |                      |                       |                         |                       |                   |                              |
| Front side 19mm           | 20           | QPSK 50_25 | 18900/1880         | 0.405                | 0.253                 | 21.59                   | 23.00                 | 1.384             | 0.560                        |
| Back side 19mm            | 20           | QPSK 50_25 | 18900/1880         | 0.161                | 0.096                 | 21.59                   | 23.00                 | 1.384             | 0.223                        |
| Left side 5mm             | 20           | QPSK 50_25 | 18900/1880         | 0.158                | 0.092                 | 21.59                   | 23.00                 | 1.384             | 0.219                        |
| Right side 19mm           | 20           | QPSK 50_25 | 18900/1880         | 0.201                | 0.123                 | 21.59                   | 23.00                 | 1.384             | 0.278                        |
| Top side 5mm              | 20           | QPSK 50_25 | 18900/1880         | 0.158                | 0.096                 | 21.59                   | 23.00                 | 1.384             | 0.219                        |

Table 3: SAR of LTE Band 2.

## 15.2 SAR Measurement Result of LTE Band 5

| Ant 3 Test Results |           |            |                 |                |                 |                      |                    |                |                        |
|--------------------|-----------|------------|-----------------|----------------|-----------------|----------------------|--------------------|----------------|------------------------|
| Test position      | BW. (MHz) | Mode       | Ch./Freq. (MHz) | SAR (W/kg) 1-g | SAR (W/kg) 10-g | Conducted Power(dBm) | Tune up Limit(dBm) | Scaling Factor | Reported 1g SAR (W/kg) |
| Body 5mm (1RB)     |           |            |                 |                |                 |                      |                    |                |                        |
| Front side         | 10        | QPSK 1_25  | 20525/836.5     | 0.528          | 0.300           | 23.25                | 24.50              | 1.334          | <b>0.704</b>           |
| Back side          | 10        | QPSK 1_25  | 20525/836.5     | 0.262          | 0.186           | 23.25                | 24.50              | 1.334          | 0.349                  |
| Left side          | 10        | QPSK 1_25  | 20525/836.5     | 0.234          | 0.144           | 23.25                | 24.50              | 1.334          | 0.312                  |
| Right side         | 10        | QPSK 1_25  | 20525/836.5     | 0.098          | 0.069           | 23.25                | 24.50              | 1.334          | 0.131                  |
| Top side           | 10        | QPSK 1_25  | 20525/836.5     | 0.207          | 0.136           | 23.25                | 24.50              | 1.334          | 0.276                  |
| Body 5mm (50%RB)   |           |            |                 |                |                 |                      |                    |                |                        |
| Front side         | 10        | QPSK 25_13 | 20525/836.5     | 0.414          | 0.237           | 22.25                | 23.50              | 1.334          | 0.552                  |
| Back side          | 10        | QPSK 25_13 | 20525/836.5     | 0.206          | 0.147           | 22.25                | 23.50              | 1.334          | 0.275                  |
| Left side          | 10        | QPSK 25_13 | 20525/836.5     | 0.185          | 0.114           | 22.25                | 23.50              | 1.334          | 0.247                  |
| Right side         | 10        | QPSK 25_13 | 20525/836.5     | 0.085          | 0.057           | 22.25                | 23.50              | 1.334          | 0.113                  |
| Top side           | 10        | QPSK 25_13 | 20525/836.5     | 0.156          | 0.104           | 22.25                | 23.50              | 1.334          | 0.208                  |

Table 4: SAR of LTE Band 5.

## 15.3 SAR Measurement Result of LTE Band 12

| Ant 3 Test Results |           |            |                 |                |                 |                      |                    |                |                        |
|--------------------|-----------|------------|-----------------|----------------|-----------------|----------------------|--------------------|----------------|------------------------|
| Test position      | BW. (MHz) | Mode       | Ch./Freq. (MHz) | SAR (W/kg) 1-g | SAR (W/kg) 10-g | Conducted Power(dBm) | Tune up Limit(dBm) | Scaling Factor | Reported 1g SAR (W/kg) |
| Body 5mm (1RB)     |           |            |                 |                |                 |                      |                    |                |                        |
| Front side         | 10        | QPSK 1_25  | 23095/707.5     | 0.505          | 0.321           | 23.48                | 24.50              | 1.265          | 0.639                  |
| Back side          | 10        | QPSK 1_25  | 23095/707.5     | 0.527          | 0.357           | 23.48                | 24.50              | 1.265          | <b>0.667</b>           |
| Left side          | 10        | QPSK 1_25  | 23095/707.5     | 0.506          | 0.333           | 23.48                | 24.50              | 1.265          | 0.640                  |
| Right side         | 10        | QPSK 1_25  | 23095/707.5     | 0.187          | 0.125           | 23.48                | 24.50              | 1.265          | 0.237                  |
| Top side           | 10        | QPSK 1_25  | 23095/707.5     | 0.365          | 0.211           | 23.48                | 24.50              | 1.265          | 0.462                  |
| Body 5mm (50%RB)   |           |            |                 |                |                 |                      |                    |                |                        |
| Front side         | 10        | QPSK 25_13 | 23095/707.5     | 0.434          | 0.283           | 22.34                | 23.50              | 1.306          | 0.567                  |
| Back side          | 10        | QPSK 25_13 | 23095/707.5     | 0.429          | 0.294           | 22.34                | 23.50              | 1.306          | 0.560                  |
| Left side          | 10        | QPSK 25_13 | 23095/707.5     | 0.388          | 0.254           | 22.34                | 23.50              | 1.306          | 0.507                  |
| Right side         | 10        | QPSK 25_13 | 23095/707.5     | 0.142          | 0.095           | 22.34                | 23.50              | 1.306          | 0.185                  |
| Top side           | 10        | QPSK 25_13 | 23095/707.5     | 0.282          | 0.165           | 22.34                | 23.50              | 1.306          | 0.368                  |

Table 5: SAR of LTE Band 12.

## 15.4 SAR Measurement Result of LTE Band 13

| Ant 3 Test Results |           |            |                 |                |                 |                      |                    |                |                        |
|--------------------|-----------|------------|-----------------|----------------|-----------------|----------------------|--------------------|----------------|------------------------|
| Test position      | BW. (MHz) | Mode       | Ch./Freq. (MHz) | SAR (W/kg) 1-g | SAR (W/kg) 10-g | Conducted Power(dBm) | Tune up Limit(dBm) | Scaling Factor | Reported 1g SAR (W/kg) |
| Body 5mm (1RB)     |           |            |                 |                |                 |                      |                    |                |                        |
| Front side         | 10        | QPSK 1_25  | 23230/782       | 0.547          | 0.333           | 23.41                | 24.50              | 1.285          | <b>0.703</b>           |
| Back side          | 10        | QPSK 1_25  | 23230/782       | 0.402          | 0.277           | 23.41                | 24.50              | 1.285          | 0.517                  |
| Left side          | 10        | QPSK 1_25  | 23230/782       | 0.350          | 0.233           | 23.41                | 24.50              | 1.285          | 0.450                  |
| Right side         | 10        | QPSK 1_25  | 23230/782       | 0.131          | 0.090           | 23.41                | 24.50              | 1.285          | 0.168                  |
| Top side           | 10        | QPSK 1_25  | 23230/782       | 0.288          | 0.187           | 23.41                | 24.50              | 1.285          | 0.370                  |
| Body 5mm (50%RB)   |           |            |                 |                |                 |                      |                    |                |                        |
| Front side         | 10        | QPSK 25_13 | 23230/782       | 0.400          | 0.261           | 22.23                | 23.50              | 1.340          | 0.536                  |
| Back side          | 10        | QPSK 25_13 | 23230/782       | 0.331          | 0.224           | 22.23                | 23.50              | 1.340          | 0.443                  |
| Left side          | 10        | QPSK 25_13 | 23230/782       | 0.269          | 0.179           | 22.23                | 23.50              | 1.340          | 0.360                  |
| Right side         | 10        | QPSK 25_13 | 23230/782       | 0.107          | 0.071           | 22.23                | 23.50              | 1.340          | 0.143                  |
| Top side           | 10        | QPSK 25_13 | 23230/782       | 0.232          | 0.149           | 22.23                | 23.50              | 1.340          | 0.311                  |

Table 6: SAR of LTE Band 13.

**15.5 SAR Measurement Result of LTE Band 30**

| Ant 0 Test Results        |              |            |                    |                      |                       |                         |                       |                   |                              |
|---------------------------|--------------|------------|--------------------|----------------------|-----------------------|-------------------------|-----------------------|-------------------|------------------------------|
| Test position             | BW.<br>(MHz) | Mode       | Ch./Freq.<br>(MHz) | SAR<br>(W/kg)<br>1-g | 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 5mm (1RB) Sensor On  |              |            |                    |                      |                       |                         |                       |                   |                              |
| Front side                | 10           | QPSK 1_25  | 27710/2310         | 0.231                | 0.120                 | 17.60                   | 19.00                 | 1.380             | 0.319                        |
| Back side                 | 10           | QPSK 1_25  | 27710/2310         | 0.383                | 0.188                 | 17.60                   | 19.00                 | 1.380             | <b>0.529</b>                 |
| Right side                | 10           | QPSK 1_25  | 27710/2310         | 0.196                | 0.108                 | 17.60                   | 19.00                 | 1.380             | 0.271                        |
| Body 5mm(50%RB) Sensor On |              |            |                    |                      |                       |                         |                       |                   |                              |
| Front side                | 10           | QPSK 25_13 | 27710/2310         | 0.229                | 0.118                 | 17.44                   | 19.00                 | 1.432             | 0.328                        |
| Back side                 | 10           | QPSK 25_13 | 27710/2310         | 0.367                | 0.182                 | 17.44                   | 19.00                 | 1.432             | 0.526                        |
| Right side                | 10           | QPSK 25_13 | 27710/2310         | 0.192                | 0.106                 | 17.44                   | 19.00                 | 1.432             | 0.275                        |
| Body (1RB) Sensor Off     |              |            |                    |                      |                       |                         |                       |                   |                              |
| Front side 19mm           | 10           | QPSK 1_25  | 27710/2310         | 0.144                | 0.083                 | 21.45                   | 23.00                 | 1.429             | 0.206                        |
| Back side 19mm            | 10           | QPSK 1_25  | 27710/2310         | 0.119                | 0.062                 | 21.45                   | 23.00                 | 1.429             | 0.170                        |
| Left side 5mm             | 10           | QPSK 1_25  | 27710/2310         | 0.056                | 0.025                 | 21.45                   | 23.00                 | 1.429             | 0.080                        |
| Right side 19mm           | 10           | QPSK 1_25  | 27710/2310         | 0.130                | 0.075                 | 21.45                   | 23.00                 | 1.429             | 0.186                        |
| Top side 5mm              | 10           | QPSK 1_25  | 27710/2310         | 0.067                | 0.035                 | 21.45                   | 23.00                 | 1.429             | 0.096                        |
| Body (50%RB) Sensor Off   |              |            |                    |                      |                       |                         |                       |                   |                              |
| Front side 19mm           | 10           | QPSK 25_13 | 27710/2310         | 0.113                | 0.066                 | 20.35                   | 22.00                 | 1.462             | 0.165                        |
| Back side 19mm            | 10           | QPSK 25_13 | 27710/2310         | 0.092                | 0.052                 | 20.35                   | 22.00                 | 1.462             | 0.135                        |
| Left side 5mm             | 10           | QPSK 25_13 | 27710/2310         | 0.055                | 0.023                 | 20.35                   | 22.00                 | 1.462             | 0.080                        |
| Right side 19mm           | 10           | QPSK 25_13 | 27710/2310         | 0.104                | 0.061                 | 20.35                   | 22.00                 | 1.462             | 0.152                        |
| Top side 5mm              | 10           | QPSK 25_13 | 27710/2310         | 0.066                | 0.031                 | 20.35                   | 22.00                 | 1.462             | 0.097                        |

Table 7: SAR of LTE Band 30.

## 15.6 SAR Measurement Result of LTE Band 41

| Ant 0 Test Results        |              |            |               |                    |                      |                       |                         |                       |                   |                              |
|---------------------------|--------------|------------|---------------|--------------------|----------------------|-----------------------|-------------------------|-----------------------|-------------------|------------------------------|
| Test position             | BW.<br>(MHz) | Mode       | Duty<br>Cycle | Ch./Freq.<br>(MHz) | SAR<br>(W/kg)<br>1-g | 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 5mm(1RB) Sensor On   |              |            |               |                    |                      |                       |                         |                       |                   |                              |
| Front side                | 20           | QPSK 1_50  | 1:1.58        | 40620/2593         | 0.287                | 0.155                 | 19.03                   | 20.50                 | 1.403             | 0.403                        |
| Back side                 | 20           | QPSK 1_50  | 1:1.58        | 40620/2593         | 0.420                | 0.209                 | 19.03                   | 20.50                 | 1.403             | <b>0.589</b>                 |
| Back side class2          | 20           | QPSK 1_50  | 1:2.31        | 40620/2593         | 0.352                | 0.182                 | 19.60                   | 20.50                 | 1.230             | 0.433                        |
| Back side                 | 20           | PCC 1_99   | 1:1.58        | 40620/2593         | 0.412                | 0.206                 | 19.62                   | 20.50                 | 1.225             | 0.505                        |
|                           |              | SCC 1_0    | 1:1.58        | 40818/2612.8       |                      |                       |                         |                       |                   |                              |
| Right side                | 20           | QPSK 1_50  | 1:1.58        | 40620/2593         | 0.312                | 0.148                 | 19.03                   | 20.50                 | 1.403             | 0.438                        |
| Body 5mm(50%RB) Sensor On |              |            |               |                    |                      |                       |                         |                       |                   |                              |
| Front side                | 20           | QPSK 50_25 | 1:1.58        | 40620/2593         | 0.288                | 0.156                 | 18.96                   | 20.50                 | 1.426             | 0.411                        |
| Back side                 | 20           | QPSK 50_25 | 1:1.58        | 40620/2593         | 0.412                | 0.136                 | 18.96                   | 20.50                 | 1.426             | 0.587                        |
| Right side                | 20           | QPSK 50_25 | 1:1.58        | 40620/2593         | 0.309                | 0.148                 | 18.96                   | 20.50                 | 1.426             | 0.441                        |
| Body(1RB) Sensor Off      |              |            |               |                    |                      |                       |                         |                       |                   |                              |
| Front side 19mm           | 20           | QPSK 1_50  | 1:1.58        | 40620/2593         | 0.221                | 0.125                 | 23.05                   | 24.50                 | 1.396             | 0.309                        |
| Back side 19mm            | 20           | QPSK 1_50  | 1:1.58        | 40620/2593         | 0.178                | 0.099                 | 23.05                   | 24.50                 | 1.396             | 0.249                        |
| Left side 5mm             | 20           | QPSK 1_50  | 1:1.58        | 40620/2593         | 0.123                | 0.065                 | 23.05                   | 24.50                 | 1.396             | 0.172                        |
| Right side 19mm           | 20           | QPSK 1_50  | 1:1.58        | 40620/2593         | 0.203                | 0.114                 | 23.05                   | 24.50                 | 1.396             | 0.283                        |
| Top side 5mm              | 20           | QPSK 1_50  | 1:1.58        | 40620/2593         | 0.097                | 0.052                 | 23.05                   | 24.50                 | 1.396             | 0.135                        |
| Body(50%RB) Sensor Off    |              |            |               |                    |                      |                       |                         |                       |                   |                              |
| Front side 19mm           | 20           | QPSK 50_25 | 1:1.58        | 40620/2593         | 0.179                | 0.101                 | 22.03                   | 23.50                 | 1.403             | 0.251                        |
| Back side 19mm            | 20           | QPSK 50_25 | 1:1.58        | 40620/2593         | 0.144                | 0.080                 | 22.03                   | 23.50                 | 1.403             | 0.202                        |
| Left side 5mm             | 20           | QPSK 50_25 | 1:1.58        | 40620/2593         | 0.099                | 0.052                 | 22.03                   | 23.50                 | 1.403             | 0.139                        |
| Right side 19mm           | 20           | QPSK 50_25 | 1:1.58        | 40620/2593         | 0.163                | 0.092                 | 22.03                   | 23.50                 | 1.403             | 0.229                        |
| Top side 5mm              | 20           | QPSK 50_25 | 1:1.58        | 40620/2593         | 0.080                | 0.043                 | 22.03                   | 23.50                 | 1.403             | 0.112                        |

Table 8: SAR of LTE Band 41.

### LTE Band 41 Power Class 2 and Power Class 3 Linearity:

This device supports Power Class 2 and Power Class 3 operations for LTE Band 41. The highest available duty cycle for Power Class 2 operations is 43.3 % using UL-DL configuration 1. Per May 2017 TCB Workshop Notes based on the device behavior, all SAR tests were performed using Power Class 3. SAR with Power Class 2 at the highest power and available duty factor was additionally performed for the Power Class 3 configuration with the highest SAR for each exposure condition. The linearity between the Power Class 2 and Power Class 3 SAR results and the respective frame averaged powers was calculated to determine that the results were linear.

Per May 2017 TCB Workshop, no additional SAR measurements were required since the linearity between power classes was < 10% and all reported SAR values were < 1.4 W/kg for 1g and < 3.5 W/kg for 10g.

LTE Band 41 SAR testing with power class 2 at the highest power and available duty factor was additionally performed for the power class 3 configuration with the highest SAR for each exposure condition.

LTE Band 41 Linearity Data:

|                                     | Power Class 3 | Power Class 2 |
|-------------------------------------|---------------|---------------|
| Tune-up(dBm)                        | 20.50         | 20.50         |
| Measured power(dBm)                 | 19.03         | 19.60         |
| Measured SAR(W/kg)                  | 0.420         | 0.352         |
| Measured power(mw)                  | 79.98         | 91.20         |
| Duty Cycle                          | 63.3%         | 43.3%         |
| Frame Average power(mw)             | 50.63         | 39.49         |
| % deviation from expected linearity |               | 7.45%         |

## 15.7 SAR Measurement Result of LTE Band 48

| Ant 0 Test Results        |              |            |               |                    |                      |                       |                         |                       |                   |                              |
|---------------------------|--------------|------------|---------------|--------------------|----------------------|-----------------------|-------------------------|-----------------------|-------------------|------------------------------|
| Test position             | BW.<br>(MHz) | Mode       | Duty<br>Cycle | Ch./Freq.<br>(MHz) | SAR<br>(W/kg)<br>1-g | 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 5mm(1RB) Sensor On   |              |            |               |                    |                      |                       |                         |                       |                   |                              |
| Front side                | 20           | QPSK 1_50  | 1:1.58        | 56640/3690         | 0.265                | 0.097                 | 14.82                   | 16.00                 | 1.312             | 0.348                        |
| Back side                 | 20           | QPSK 1_50  | 1:1.58        | 56640/3690         | 0.033                | 0.016                 | 14.82                   | 16.00                 | 1.312             | 0.043                        |
| Right side                | 20           | QPSK 1_50  | 1:1.58        | 56640/3690         | 0.315                | 0.109                 | 14.82                   | 16.00                 | 1.312             | 0.413                        |
| Body 5mm(50%RB) Sensor On |              |            |               |                    |                      |                       |                         |                       |                   |                              |
| Front side                | 20           | QPSK 50_25 | 1:1.58        | 56640/3690         | 0.270                | 0.098                 | 14.50                   | 16.00                 | 1.413             | 0.381                        |
| Back side                 | 20           | QPSK 50_25 | 1:1.58        | 56640/3690         | 0.037                | 0.017                 | 14.50                   | 16.00                 | 1.413             | 0.052                        |
| Right side                | 20           | QPSK 50_25 | 1:1.58        | 56640/3690         | 0.317                | 0.111                 | 14.50                   | 16.00                 | 1.413             | 0.448                        |
| Body(1RB) Sensor Off      |              |            |               |                    |                      |                       |                         |                       |                   |                              |
| Front side 19mm           | 20           | QPSK 1_50  | 1:1.58        | 56640/3690         | 0.346                | 0.166                 | 21.05                   | 22.50                 | 1.396             | <b>0.483</b>                 |
| Back side 19mm            | 20           | QPSK 1_50  | 1:1.58        | 56640/3690         | 0.060                | 0.030                 | 21.05                   | 22.50                 | 1.396             | 0.084                        |
| Left side 5mm             | 20           | QPSK 1_50  | 1:1.58        | 56640/3690         | 0.042                | 0.018                 | 21.05                   | 22.50                 | 1.396             | 0.059                        |
| Right side 19mm           | 20           | QPSK 1_50  | 1:1.58        | 56640/3690         | 0.247                | 0.114                 | 21.05                   | 22.50                 | 1.396             | 0.345                        |
| Top side 5mm              | 20           | QPSK 1_50  | 1:1.58        | 56640/3690         | 0.047                | 0.022                 | 21.05                   | 22.50                 | 1.396             | 0.066                        |
| Body(50%RB) Sensor Off    |              |            |               |                    |                      |                       |                         |                       |                   |                              |
| Front side 19mm           | 20           | QPSK 50_25 | 1:1.58        | 56640/3690         | 0.262                | 0.129                 | 20.10                   | 21.50                 | 1.380             | 0.362                        |
| Back side 19mm            | 20           | QPSK 50_25 | 1:1.58        | 56640/3690         | 0.049                | 0.024                 | 20.10                   | 21.50                 | 1.380             | 0.068                        |
| Left side 5mm             | 20           | QPSK 50_25 | 1:1.58        | 56640/3690         | 0.036                | 0.014                 | 20.10                   | 21.50                 | 1.380             | 0.050                        |
| Right side 19mm           | 20           | QPSK 50_25 | 1:1.58        | 56640/3690         | 0.202                | 0.094                 | 20.10                   | 21.50                 | 1.380             | 0.279                        |
| Top side 5mm              | 20           | QPSK 50_25 | 1:1.58        | 56640/3690         | 0.033                | 0.016                 | 20.10                   | 21.50                 | 1.380             | 0.046                        |

Table 9: SAR of LTE Band 48.

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

| Ant 0 Test Results         |              |            |                    |                      |                       |                         |                       |                   |                              |
|----------------------------|--------------|------------|--------------------|----------------------|-----------------------|-------------------------|-----------------------|-------------------|------------------------------|
| Test position              | BW.<br>(MHz) | Mode       | Ch./Freq.<br>(MHz) | SAR<br>(W/kg)<br>1-g | 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 5mm (1RB) Sensor On   |              |            |                    |                      |                       |                         |                       |                   |                              |
| Front side                 | 20           | QPSK 1_50  | 132322/1745        | 0.492                | 0.300                 | 17.60                   | 19.00                 | 1.380             | <b>0.679</b>                 |
| Back side                  | 20           | QPSK 1_50  | 132322/1745        | 0.484                | 0.261                 | 17.60                   | 19.00                 | 1.380             | 0.668                        |
| Right side                 | 20           | QPSK 1_50  | 132322/1745        | 0.285                | 0.160                 | 17.60                   | 19.00                 | 1.380             | 0.393                        |
| Body 5mm (50%RB) Sensor On |              |            |                    |                      |                       |                         |                       |                   |                              |
| Front side                 | 20           | QPSK 50_25 | 132322/1745        | 0.478                | 0.291                 | 17.54                   | 19.00                 | 1.400             | 0.669                        |
| Back side                  | 20           | QPSK 50_25 | 132322/1745        | 0.468                | 0.251                 | 17.54                   | 19.00                 | 1.400             | 0.655                        |
| Right side                 | 20           | QPSK 50_25 | 132322/1745        | 0.242                | 0.144                 | 17.54                   | 19.00                 | 1.400             | 0.339                        |
| Body (1RB) Sensor Off      |              |            |                    |                      |                       |                         |                       |                   |                              |
| Front side 19mm            | 20           | QPSK 1_50  | 132322/1745        | 0.458                | 0.293                 | 22.82                   | 23.00                 | 1.042             | 0.477                        |
| Back side 19mm             | 20           | QPSK 1_50  | 132322/1745        | 0.277                | 0.174                 | 22.82                   | 23.00                 | 1.042             | 0.289                        |
| Left side 5mm              | 20           | QPSK 1_50  | 132322/1745        | 0.239                | 0.143                 | 22.82                   | 23.00                 | 1.042             | 0.249                        |
| Right side 19mm            | 20           | QPSK 1_50  | 132322/1745        | 0.226                | 0.141                 | 22.82                   | 23.00                 | 1.042             | 0.236                        |
| Top side 5mm               | 20           | QPSK 1_50  | 132322/1745        | 0.204                | 0.126                 | 22.82                   | 23.00                 | 1.042             | 0.213                        |
| Body(50%RB) Sensor Off     |              |            |                    |                      |                       |                         |                       |                   |                              |
| Front side 19mm            | 20           | QPSK 50_25 | 132322/1745        | 0.338                | 0.210                 | 21.73                   | 22.00                 | 1.064             | 0.360                        |
| Back side 19mm             | 20           | QPSK 50_25 | 132322/1745        | 0.212                | 0.133                 | 21.73                   | 22.00                 | 1.064             | 0.226                        |
| Left side 5mm              | 20           | QPSK 50_25 | 132322/1745        | 0.188                | 0.111                 | 21.73                   | 22.00                 | 1.064             | 0.200                        |
| Right side 19mm            | 20           | QPSK 50_25 | 132322/1745        | 0.173                | 0.108                 | 21.73                   | 22.00                 | 1.064             | 0.184                        |
| Top side 5mm               | 20           | QPSK 50_25 | 132322/1745        | 0.160                | 0.099                 | 21.73                   | 22.00                 | 1.064             | 0.170                        |

Table 10: SAR of LTE Band 66.

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

| Ant 3 Test Results |           |            |                 |                |                 |                      |                    |                |                        |
|--------------------|-----------|------------|-----------------|----------------|-----------------|----------------------|--------------------|----------------|------------------------|
| Test position      | BW. (MHz) | Mode       | Ch./Freq. (MHz) | SAR (W/kg) 1-g | SAR (W/kg) 10-g | Conducted Power(dBm) | Tune up Limit(dBm) | Scaling Factor | Reported 1g SAR (W/kg) |
| Body 5mm (1RB)     |           |            |                 |                |                 |                      |                    |                |                        |
| Front side         | 20        | QPSK 1_50  | 133322/683      | 0.524          | 0.309           | 23.11                | 24.50              | 1.377          | <b>0.722</b>           |
| Back side          | 20        | QPSK 1_50  | 133322/683      | 0.514          | 0.349           | 23.11                | 24.50              | 1.377          | 0.708                  |
| Left side          | 20        | QPSK 1_50  | 133322/683      | 0.368          | 0.243           | 23.11                | 24.50              | 1.377          | 0.507                  |
| Right side         | 20        | QPSK 1_50  | 133322/683      | 0.249          | 0.167           | 23.11                | 24.50              | 1.377          | 0.343                  |
| Top side           | 20        | QPSK 1_50  | 133322/683      | 0.296          | 0.146           | 23.11                | 24.50              | 1.377          | 0.408                  |
| Body 5mm (50%RB)   |           |            |                 |                |                 |                      |                    |                |                        |
| Front side         | 20        | QPSK 50_25 | 133322/683      | 0.480          | 0.265           | 22.10                | 23.50              | 1.380          | 0.663                  |
| Back side          | 20        | QPSK 50_25 | 133322/683      | 0.417          | 0.290           | 22.10                | 23.50              | 1.380          | 0.576                  |
| Left side          | 20        | QPSK 50_25 | 133322/683      | 0.320          | 0.203           | 22.10                | 23.50              | 1.380          | 0.442                  |
| Right side         | 20        | QPSK 50_25 | 133322/683      | 0.192          | 0.128           | 22.10                | 23.50              | 1.380          | 0.265                  |
| Top side           | 20        | QPSK 50_25 | 133322/683      | 0.229          | 0.114           | 22.10                | 23.50              | 1.380          | 0.316                  |

Table 11: SAR of LTE Band 71.

## 15.10 SAR Measurement Result of 5G NR n2

| Ant 0 Test Results         |              |            |                    |                      |                       |                         |                       |                   |                              |
|----------------------------|--------------|------------|--------------------|----------------------|-----------------------|-------------------------|-----------------------|-------------------|------------------------------|
| Test position              | BW.<br>(MHz) | Mode       | Ch./Freq.<br>(MHz) | SAR<br>(W/kg)<br>1-g | 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 5mm (1RB) Sensor On   |              |            |                    |                      |                       |                         |                       |                   |                              |
| Front side                 | 20           | QPSK 1_53  | 376000/1880        | 0.475                | 0.282                 | 17.98                   | 19.50                 | 1.419             | 0.674                        |
| Back side                  | 20           | QPSK 1_53  | 376000/1880        | 0.541                | 0.256                 | 17.98                   | 19.50                 | 1.419             | <b>0.768</b>                 |
| Right side                 | 20           | QPSK 1_53  | 376000/1880        | 0.249                | 0.144                 | 17.98                   | 19.50                 | 1.419             | 0.353                        |
| Body 5mm (50%RB) Sensor On |              |            |                    |                      |                       |                         |                       |                   |                              |
| Front side                 | 20           | QPSK 50_28 | 376000/1880        | 0.432                | 0.253                 | 17.65                   | 19.50                 | 1.531             | 0.661                        |
| Back side                  | 20           | QPSK 50_28 | 376000/1880        | 0.447                | 0.246                 | 17.65                   | 19.50                 | 1.531             | 0.684                        |
| Right side                 | 20           | QPSK 50_28 | 376000/1880        | 0.248                | 0.144                 | 17.65                   | 19.50                 | 1.531             | 0.380                        |
| Body (1RB) Sensor Off      |              |            |                    |                      |                       |                         |                       |                   |                              |
| Front side 19mm            | 20           | QPSK 1_53  | 376000/1880        | 0.522                | 0.326                 | 23.12                   | 24.50                 | 1.374             | 0.717                        |
| Back side 19mm             | 20           | QPSK 1_53  | 376000/1880        | 0.224                | 0.131                 | 23.12                   | 24.50                 | 1.374             | 0.308                        |
| Left side 5mm              | 20           | QPSK 1_53  | 376000/1880        | 0.174                | 0.103                 | 23.12                   | 24.50                 | 1.374             | 0.239                        |
| Right side 19mm            | 20           | QPSK 1_53  | 376000/1880        | 0.269                | 0.165                 | 23.12                   | 24.50                 | 1.374             | 0.370                        |
| Top side 5mm               | 20           | QPSK 1_53  | 376000/1880        | 0.192                | 0.160                 | 23.12                   | 24.50                 | 1.374             | 0.264                        |
| Body (50%RB) Sensor Off    |              |            |                    |                      |                       |                         |                       |                   |                              |
| Front side 19mm            | 20           | QPSK 50_28 | 376000/1880        | 0.480                | 0.290                 | 23.00                   | 24.50                 | 1.413             | 0.678                        |
| Back side 19mm             | 20           | QPSK 50_28 | 376000/1880        | 0.168                | 0.102                 | 23.00                   | 24.50                 | 1.413             | 0.237                        |
| Left side 5mm              | 20           | QPSK 50_28 | 376000/1880        | 0.149                | 0.088                 | 23.00                   | 24.50                 | 1.413             | 0.210                        |
| Right side 19mm            | 20           | QPSK 50_28 | 376000/1880        | 0.241                | 0.148                 | 23.00                   | 24.50                 | 1.413             | 0.340                        |
| Top side 5mm               | 20           | QPSK 50_28 | 376000/1880        | 0.178                | 0.110                 | 23.00                   | 24.50                 | 1.413             | 0.251                        |

Table 12: SAR of 5G NR n2.

## 15.11 SAR Measurement Result of 5G NR n5

| Ant 3 Test Results |           |            |                 |                |                 |                      |                    |                |                        |
|--------------------|-----------|------------|-----------------|----------------|-----------------|----------------------|--------------------|----------------|------------------------|
| Test position      | BW. (MHz) | Mode       | Ch./Freq. (MHz) | SAR (W/kg) 1-g | SAR (W/kg) 10-g | Conducted Power(dBm) | Tune up Limit(dBm) | Scaling Factor | Reported 1g SAR (W/kg) |
| Body 5mm (1RB)     |           |            |                 |                |                 |                      |                    |                |                        |
| Front side         | 20        | QPSK 1_1   | 167300/836.5    | 0.538          | 0.311           | 23.48                | 24.50              | 1.265          | <b>0.680</b>           |
| Back side          | 20        | QPSK 1_1   | 167300/836.5    | 0.305          | 0.217           | 23.48                | 24.50              | 1.265          | 0.386                  |
| Left side          | 20        | QPSK 1_1   | 167300/836.5    | 0.219          | 0.149           | 23.48                | 24.50              | 1.265          | 0.277                  |
| Right side         | 20        | QPSK 1_1   | 167300/836.5    | 0.083          | 0.058           | 23.48                | 24.50              | 1.265          | 0.105                  |
| Top side           | 20        | QPSK 1_1   | 167300/836.5    | 0.157          | 0.105           | 23.48                | 24.50              | 1.265          | 0.199                  |
| Body 5mm (50%RB)   |           |            |                 |                |                 |                      |                    |                |                        |
| Front side         | 20        | QPSK 50_28 | 167300/836.5    | 0.352          | 0.223           | 23.40                | 24.50              | 1.288          | 0.453                  |
| Back side          | 20        | QPSK 50_28 | 167300/836.5    | 0.209          | 0.143           | 23.40                | 24.50              | 1.288          | 0.269                  |
| Left side          | 20        | QPSK 50_28 | 167300/836.5    | 0.179          | 0.118           | 23.40                | 24.50              | 1.288          | 0.231                  |
| Right side         | 20        | QPSK 50_28 | 167300/836.5    | 0.065          | 0.045           | 23.40                | 24.50              | 1.288          | 0.084                  |
| Top side           | 20        | QPSK 50_28 | 167300/836.5    | 0.300          | 0.087           | 23.40                | 24.50              | 1.288          | 0.386                  |

Table 13: SAR of 5G NR n5.

## 15.12 SAR Measurement Result of 5G NR n12

| Ant 3 Test Results |           |            |                 |                |                 |                      |                    |                |                        |
|--------------------|-----------|------------|-----------------|----------------|-----------------|----------------------|--------------------|----------------|------------------------|
| Test position      | BW. (MHz) | Mode       | Ch./Freq. (MHz) | SAR (W/kg) 1-g | SAR (W/kg) 10-g | Conducted Power(dBm) | Tune up Limit(dBm) | Scaling Factor | Reported 1g SAR (W/kg) |
| Body 5mm (1RB)     |           |            |                 |                |                 |                      |                    |                |                        |
| Front side         | 15        | QPSK 1_40  | 141500/707.5    | 0.556          | 0.355           | 23.48                | 24.50              | 1.265          | 0.703                  |
| Back side          | 15        | QPSK 1_40  | 141500/707.5    | 0.552          | 0.376           | 23.48                | 24.50              | 1.265          | 0.698                  |
| Left side          | 15        | QPSK 1_40  | 141500/707.5    | 0.482          | 0.318           | 23.48                | 24.50              | 1.265          | 0.610                  |
| Right side         | 15        | QPSK 1_40  | 141500/707.5    | 0.187          | 0.128           | 23.48                | 24.50              | 1.265          | 0.237                  |
| Top side           | 15        | QPSK 1_40  | 141500/707.5    | 0.371          | 0.209           | 23.48                | 24.50              | 1.265          | 0.469                  |
| Body 5mm (50%RB)   |           |            |                 |                |                 |                      |                    |                |                        |
| Front side         | 15        | QPSK 36_22 | 141500/707.5    | 0.551          | 0.339           | 23.41                | 24.50              | 1.285          | <b>0.708</b>           |
| Back side          | 15        | QPSK 36_22 | 141500/707.5    | 0.547          | 0.372           | 23.41                | 24.50              | 1.285          | 0.703                  |
| Left side          | 15        | QPSK 36_22 | 141500/707.5    | 0.456          | 0.301           | 23.41                | 24.50              | 1.285          | 0.586                  |
| Right side         | 15        | QPSK 36_22 | 141500/707.5    | 0.189          | 0.128           | 23.41                | 24.50              | 1.285          | 0.243                  |
| Top side           | 15        | QPSK 36_22 | 141500/707.5    | 0.379          | 0.214           | 23.41                | 24.50              | 1.285          | 0.487                  |

Table 14: SAR of 5G NR n12.

**15.13 SAR Measurement Result of 5G NR n14**

| Ant 3 Test Results |           |            |                 |                |                 |                      |                    |                |                        |
|--------------------|-----------|------------|-----------------|----------------|-----------------|----------------------|--------------------|----------------|------------------------|
| Test position      | BW. (MHz) | Mode       | Ch./Freq. (MHz) | SAR (W/kg) 1-g | SAR (W/kg) 10-g | Conducted Power(dBm) | Tune up Limit(dBm) | Scaling Factor | Reported 1g SAR (W/kg) |
| Body 5mm (1RB)     |           |            |                 |                |                 |                      |                    |                |                        |
| Front side         | 10        | QPSK 1_1   | 158600/793      | 0.601          | 0.362           | 23.68                | 24.50              | 1.208          | <b>0.726</b>           |
| Back side          | 10        | QPSK 1_1   | 158600/793      | 0.419          | 0.287           | 23.68                | 24.50              | 1.208          | 0.506                  |
| Left side          | 10        | QPSK 1_1   | 158600/793      | 0.326          | 0.223           | 23.68                | 24.50              | 1.208          | 0.394                  |
| Right side         | 10        | QPSK 1_1   | 158600/793      | 0.154          | 0.106           | 23.68                | 24.50              | 1.208          | 0.186                  |
| Top side           | 10        | QPSK 1_1   | 158600/793      | 0.231          | 0.152           | 23.68                | 24.50              | 1.208          | 0.279                  |
| Body 5mm (50%RB)   |           |            |                 |                |                 |                      |                    |                |                        |
| Front side         | 10        | QPSK 25_14 | 158600/793      | 0.520          | 0.335           | 23.42                | 24.50              | 1.282          | 0.667                  |
| Back side          | 10        | QPSK 25_14 | 158600/793      | 0.341          | 0.233           | 23.42                | 24.50              | 1.282          | 0.437                  |
| Left side          | 10        | QPSK 25_14 | 158600/793      | 0.287          | 0.195           | 23.42                | 24.50              | 1.282          | 0.368                  |
| Right side         | 10        | QPSK 25_14 | 158600/793      | 0.136          | 0.094           | 23.42                | 24.50              | 1.282          | 0.174                  |
| Top side           | 10        | QPSK 25_14 | 158600/793      | 0.218          | 0.144           | 23.42                | 24.50              | 1.282          | 0.280                  |

Table 15: SAR of 5G NR n14.

## 15.14 SAR Measurement Result of 5G NR n25

| Ant 0 Test Results         |              |             |                    |                      |                       |                         |                       |                   |                              |
|----------------------------|--------------|-------------|--------------------|----------------------|-----------------------|-------------------------|-----------------------|-------------------|------------------------------|
| Test position              | BW.<br>(MHz) | Mode        | Ch./Freq.<br>(MHz) | SAR<br>(W/kg)<br>1-g | 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 5mm (1RB) Sensor On   |              |             |                    |                      |                       |                         |                       |                   |                              |
| Front side                 | 40           | QPSK 1_1    | 376500/1882.5      | 0.350                | 0.207                 | 16.80                   | 18.50                 | 1.479             | 0.518                        |
| Back side                  | 40           | QPSK 1_1    | 376500/1882.5      | 0.399                | 0.209                 | 16.80                   | 18.50                 | 1.479             | 0.590                        |
| Right side                 | 40           | QPSK 1_1    | 376500/1882.5      | 0.191                | 0.111                 | 16.80                   | 18.50                 | 1.479             | 0.283                        |
| Body 5mm (50%RB) Sensor On |              |             |                    |                      |                       |                         |                       |                   |                              |
| Front side                 | 40           | QPSK 108_54 | 376500/1882.5      | 0.343                | 0.199                 | 16.78                   | 18.50                 | 1.486             | 0.510                        |
| Back side                  | 40           | QPSK 108_54 | 376500/1882.5      | 0.367                | 0.201                 | 16.78                   | 18.50                 | 1.486             | 0.545                        |
| Right side                 | 40           | QPSK 108_54 | 376500/1882.5      | 0.190                | 0.110                 | 16.78                   | 18.50                 | 1.486             | 0.282                        |
| Body (1RB) Sensor Off      |              |             |                    |                      |                       |                         |                       |                   |                              |
| Front side 19mm            | 40           | QPSK 1_1    | 376500/1882.5      | 0.512                | 0.319                 | 22.95                   | 24.50                 | 1.429             | <b>0.732</b>                 |
| Back side 19mm             | 40           | QPSK 1_1    | 376500/1882.5      | 0.223                | 0.132                 | 22.95                   | 24.50                 | 1.429             | 0.319                        |
| Left side 5mm              | 40           | QPSK 1_1    | 376500/1882.5      | 0.169                | 0.101                 | 22.95                   | 24.50                 | 1.429             | 0.241                        |
| Right side 19mm            | 40           | QPSK 1_1    | 376500/1882.5      | 0.274                | 0.168                 | 22.95                   | 24.50                 | 1.429             | 0.392                        |
| Top side 5mm               | 40           | QPSK 1_1    | 376500/1882.5      | 0.188                | 0.150                 | 22.95                   | 24.50                 | 1.429             | 0.269                        |
| Body (50%RB) Sensor Off    |              |             |                    |                      |                       |                         |                       |                   |                              |
| Front side 19mm            | 40           | QPSK 108_54 | 376500/1882.5      | 0.487                | 0.295                 | 22.88                   | 24.50                 | 1.452             | 0.707                        |
| Back side 19mm             | 40           | QPSK 108_54 | 376500/1882.5      | 0.195                | 0.116                 | 22.88                   | 24.50                 | 1.452             | 0.283                        |
| Left side 5mm              | 40           | QPSK 108_54 | 376500/1882.5      | 0.198                | 0.148                 | 22.88                   | 24.50                 | 1.452             | 0.288                        |
| Right side 19mm            | 40           | QPSK 108_54 | 376500/1882.5      | 0.265                | 0.163                 | 22.88                   | 24.50                 | 1.452             | 0.385                        |
| Top side 5mm               | 40           | QPSK 108_54 | 376500/1882.5      | 0.172                | 0.106                 | 22.88                   | 24.50                 | 1.452             | 0.250                        |

Table 16: SAR of 5G NR n25.

## 15.15 SAR Measurement Result of 5G NR n30

| Ant 0 Test Results        |              |            |                    |                      |                       |                         |                       |                   |                              |
|---------------------------|--------------|------------|--------------------|----------------------|-----------------------|-------------------------|-----------------------|-------------------|------------------------------|
| Test position             | BW.<br>(MHz) | Mode       | Ch./Freq.<br>(MHz) | SAR<br>(W/kg)<br>1-g | 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 5mm (1RB) Sensor On  |              |            |                    |                      |                       |                         |                       |                   |                              |
| Front side                | 10           | QPSK 1_26  | 462000/2310        | 0.488                | 0.248                 | 19.71                   | 20.50                 | 1.199             | 0.585                        |
| Back side                 | 10           | QPSK 1_26  | 462000/2310        | 0.645                | 0.334                 | 19.71                   | 20.50                 | 1.199             | <b>0.774</b>                 |
| Right side                | 10           | QPSK 1_26  | 462000/2310        | 0.429                | 0.216                 | 19.71                   | 20.50                 | 1.199             | 0.515                        |
| Body 5mm(50%RB) Sensor On |              |            |                    |                      |                       |                         |                       |                   |                              |
| Front side                | 10           | QPSK 25_14 | 462000/2310        | 0.531                | 0.279                 | 19.55                   | 20.50                 | 1.245             | 0.661                        |
| Back side                 | 10           | QPSK 25_14 | 462000/2310        | 0.606                | 0.313                 | 19.55                   | 20.50                 | 1.245             | 0.754                        |
| Right side                | 10           | QPSK 25_14 | 462000/2310        | 0.416                | 0.211                 | 19.55                   | 20.50                 | 1.245             | 0.518                        |
| Body (1RB) Sensor Off     |              |            |                    |                      |                       |                         |                       |                   |                              |
| Front side 19mm           | 10           | QPSK 1_26  | 462000/2310        | 0.091                | 0.054                 | 21.94                   | 23.00                 | 1.276             | 0.116                        |
| Back side 19mm            | 10           | QPSK 1_26  | 462000/2310        | 0.121                | 0.069                 | 21.94                   | 23.00                 | 1.276             | 0.154                        |
| Left side 5mm             | 10           | QPSK 1_26  | 462000/2310        | 0.043                | 0.020                 | 21.94                   | 23.00                 | 1.276             | 0.055                        |
| Right side 19mm           | 10           | QPSK 1_26  | 462000/2310        | 0.087                | 0.050                 | 21.94                   | 23.00                 | 1.276             | 0.111                        |
| Top side 5mm              | 10           | QPSK 1_26  | 462000/2310        | 0.070                | 0.037                 | 21.94                   | 23.00                 | 1.276             | 0.089                        |
| Body (50%RB) Sensor Off   |              |            |                    |                      |                       |                         |                       |                   |                              |
| Front side 19mm           | 10           | QPSK 25_14 | 462000/2310        | 0.094                | 0.056                 | 21.92                   | 23.00                 | 1.282             | 0.121                        |
| Back side 19mm            | 10           | QPSK 25_14 | 462000/2310        | 0.110                | 0.063                 | 21.92                   | 23.00                 | 1.282             | 0.141                        |
| Left side 5mm             | 10           | QPSK 25_14 | 462000/2310        | 0.037                | 0.018                 | 21.92                   | 23.00                 | 1.282             | 0.047                        |
| Right side 19mm           | 10           | QPSK 25_14 | 462000/2310        | 0.085                | 0.048                 | 21.92                   | 23.00                 | 1.282             | 0.109                        |
| Top side 5mm              | 10           | QPSK 25_14 | 462000/2310        | 0.043                | 0.020                 | 21.92                   | 23.00                 | 1.282             | 0.055                        |

Table 17: SAR of 5G NR n30.

## 15.16 SAR Measurement Result of 5G NR n41

| Ant 0 Test Results        |              |             |               |                    |                      |                       |                         |                       |                   |                              |
|---------------------------|--------------|-------------|---------------|--------------------|----------------------|-----------------------|-------------------------|-----------------------|-------------------|------------------------------|
| Test position             | BW.<br>(MHz) | Mode        | Duty<br>Cycle | Ch./Freq.<br>(MHz) | SAR<br>(W/kg)<br>1-g | 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 5mm(1RB) Sensor On   |              |             |               |                    |                      |                       |                         |                       |                   |                              |
| Front side                | 100          | QPSK 1_137  | 100%          | 518598/2592.99     | 0.400                | 0.202                 | 17.20                   | 18.50                 | 1.349             | 0.540                        |
| Back side                 | 100          | QPSK 1_137  | 100%          | 518598/2592.99     | 0.496                | 0.244                 | 17.20                   | 18.50                 | 1.349             | 0.669                        |
| Right side                | 100          | QPSK 1_137  | 100%          | 518598/2592.99     | 0.376                | 0.167                 | 17.20                   | 18.50                 | 1.349             | 0.507                        |
| Back side                 | 100          | QPSK 1_137  | 100%          | 509202/2546.01     | 0.324                | 0.163                 | 17.05                   | 18.50                 | 1.396             | 0.452                        |
| Back side                 | 100          | QPSK 1_137  | 100%          | 513900/2569.5      | 0.468                | 0.233                 | 16.90                   | 18.50                 | 1.445             | 0.676                        |
| Back side                 | 100          | QPSK 1_137  | 100%          | 523302/2616.51     | 0.530                | 0.257                 | 16.92                   | 18.50                 | 1.439             | 0.763                        |
| Back side                 | 100          | QPSK 1_137  | 100%          | 528000/2640        | 0.565                | 0.273                 | 17.15                   | 18.50                 | 1.365             | 0.771                        |
| Body 5mm(50%RB) Sensor On |              |             |               |                    |                      |                       |                         |                       |                   |                              |
| Front side                | 100          | QPSK 135_69 | 100%          | 518598/2592.99     | 0.303                | 0.155                 | 17.10                   | 18.50                 | 1.380             | 0.418                        |
| Back side                 | 100          | QPSK 135_69 | 100%          | 518598/2592.99     | 0.442                | 0.222                 | 17.10                   | 18.50                 | 1.380             | 0.610                        |
| Right side                | 100          | QPSK 135_69 | 100%          | 518598/2592.99     | 0.307                | 0.139                 | 17.10                   | 18.50                 | 1.380             | 0.424                        |
| Back side                 | 100          | QPSK 135_69 | 100%          | 509202/2546.01     | 0.269                | 0.134                 | 17.04                   | 18.50                 | 1.400             | 0.376                        |
| Back side                 | 100          | QPSK 135_69 | 100%          | 513900/2569.5      | 0.431                | 0.213                 | 16.93                   | 18.50                 | 1.435             | 0.619                        |
| Back side                 | 100          | QPSK 135_69 | 100%          | 523302/2616.51     | 0.448                | 0.221                 | 16.66                   | 18.50                 | 1.528             | 0.684                        |
| Back side                 | 100          | QPSK 135_69 | 100%          | 528000/2640        | 0.480                | 0.234                 | 16.86                   | 18.50                 | 1.459             | 0.700                        |
| Body(1RB) Sensor Off      |              |             |               |                    |                      |                       |                         |                       |                   |                              |
| Front side 19mm           | 100          | QPSK 1_137  | 100%          | 518598/2592.99     | 0.315                | 0.176                 | 25.80                   | 27.50                 | 1.479             | 0.466                        |
| Back side 19mm            | 100          | QPSK 1_137  | 100%          | 518598/2592.99     | 0.168                | 0.082                 | 25.80                   | 27.50                 | 1.479             | 0.248                        |
| Left side 5mm             | 100          | QPSK 1_137  | 100%          | 518598/2592.99     | 0.170                | 0.074                 | 25.80                   | 27.50                 | 1.479             | 0.251                        |
| Right side 19mm           | 100          | QPSK 1_137  | 100%          | 518598/2592.99     | 0.244                | 0.092                 | 25.80                   | 27.50                 | 1.479             | 0.361                        |
| Top side 5mm              | 100          | QPSK 1_137  | 100%          | 518598/2592.99     | 0.089                | 0.050                 | 25.80                   | 27.50                 | 1.479             | 0.132                        |
| Body(50%RB) Sensor Off    |              |             |               |                    |                      |                       |                         |                       |                   |                              |
| Front side 19mm           | 100          | QPSK 135_69 | 100%          | 518598/2592.99     | 0.369                | 0.203                 | 25.65                   | 27.00                 | 1.365             | 0.504                        |
| Back side 19mm            | 100          | QPSK 135_69 | 100%          | 518598/2592.99     | 0.319                | 0.170                 | 25.65                   | 27.50                 | 1.531             | 0.488                        |
| Left side 5mm             | 100          | QPSK 135_69 | 100%          | 518598/2592.99     | 0.151                | 0.070                 | 25.65                   | 27.50                 | 1.531             | 0.231                        |
| Right side 19mm           | 100          | QPSK 135_69 | 100%          | 518598/2592.99     | 0.145                | 0.038                 | 25.65                   | 27.50                 | 1.531             | 0.222                        |
| Top side 5mm              | 100          | QPSK 135_69 | 100%          | 518598/2592.99     | 0.117                | 0.060                 | 25.65                   | 27.50                 | 1.531             | 0.179                        |
| Ant 3 Test Results        |              |             |               |                    |                      |                       |                         |                       |                   |                              |
| Test position             | BW.<br>(MHz) | Mode        | Duty<br>Cycle | Ch./Freq.<br>(MHz) | SAR<br>(W/kg)<br>1-g | 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 5mm(1RB) Sensor On   |              |             |               |                    |                      |                       |                         |                       |                   |                              |
| Front side                | 100          | QPSK 1_137  | 100%          | 518598/2592.99     | 0.366                | 0.182                 | 17.40                   | 18.50                 | 1.288             | 0.471                        |
| Back side                 | 100          | QPSK 1_137  | 100%          | 518598/2592.99     | 0.129                | 0.069                 | 17.40                   | 18.50                 | 1.288             | 0.166                        |
| Right side                | 100          | QPSK 1_137  | 100%          | 518598/2592.99     | 0.133                | 0.064                 | 17.40                   | 18.50                 | 1.288             | 0.171                        |
| Top side                  | 100          | QPSK 1_137  | 100%          | 518598/2592.99     | 0.130                | 0.065                 | 17.40                   | 18.50                 | 1.288             | 0.167                        |
| Body 5mm(50%RB) Sensor On |              |             |               |                    |                      |                       |                         |                       |                   |                              |
| Front side                | 100          | QPSK 135_69 | 100%          | 518598/2592.99     | 0.304                | 0.142                 | 17.35                   | 18.50                 | 1.303             | 0.396                        |
| Back side                 | 100          | QPSK 135_69 | 100%          | 518598/2592.99     | 0.141                | 0.077                 | 17.35                   | 18.50                 | 1.303             | 0.184                        |
| Right side                | 100          | QPSK 135_69 | 100%          | 518598/2592.99     | 0.149                | 0.070                 | 17.35                   | 18.50                 | 1.303             | 0.194                        |
| Top side                  | 100          | QPSK 135_69 | 100%          | 518598/2592.99     | 0.162                | 0.075                 | 17.35                   | 18.50                 | 1.303             | 0.211                        |
| Body(1RB) Sensor Off      |              |             |               |                    |                      |                       |                         |                       |                   |                              |
| Front side 19mm           | 100          | QPSK 1_137  | 100%          | 518598/2592.99     | 0.319                | 0.166                 | 25.87                   | 27.50                 | 1.455             | 0.464                        |
| Back side 19mm            | 100          | QPSK 1_137  | 100%          | 518598/2592.99     | 0.155                | 0.084                 | 25.87                   | 27.50                 | 1.455             | 0.226                        |
| Left side 5mm             | 100          | QPSK 1_137  | 100%          | 518598/2592.99     | 0.080                | 0.044                 | 25.87                   | 27.50                 | 1.455             | 0.116                        |
| Right side 19mm           | 100          | QPSK 1_137  | 100%          | 518598/2592.99     | 0.140                | 0.077                 | 25.87                   | 27.50                 | 1.455             | 0.204                        |
| Top side 19mm             | 100          | QPSK 1_137  | 100%          | 518598/2592.99     | 0.117                | 0.063                 | 25.87                   | 27.50                 | 1.455             | 0.170                        |
| Body(50%RB) Sensor Off    |              |             |               |                    |                      |                       |                         |                       |                   |                              |
| Front side 19mm           | 100          | QPSK 135_69 | 100%          | 518598/2592.99     | 0.274                | 0.144                 | 25.82                   | 27.50                 | 1.472             | 0.403                        |
| Back side 19mm            | 100          | QPSK 135_69 | 100%          | 518598/2592.99     | 0.267                | 0.142                 | 25.82                   | 27.50                 | 1.472             | 0.393                        |
| Left side 5mm             | 100          | QPSK 135_69 | 100%          | 518598/2592.99     | 0.258                | 0.129                 | 25.82                   | 27.50                 | 1.472             | 0.380                        |
| Right side 19mm           | 100          | QPSK 135_69 | 100%          | 518598/2592.99     | 0.222                | 0.121                 | 25.82                   | 27.50                 | 1.472             | 0.327                        |
| Top side 19mm             | 100          | QPSK 135_69 | 100%          | 518598/2592.99     | 0.125                | 0.069                 | 25.82                   | 27.50                 | 1.472             | 0.184                        |

| MIMO (Ant0+Ant 3) Test Results |              |      |               |                    |                      |                       |                         |                       |                   |                              |
|--------------------------------|--------------|------|---------------|--------------------|----------------------|-----------------------|-------------------------|-----------------------|-------------------|------------------------------|
| Test position                  | BW.<br>(MHz) | Mode | Duty<br>Cycle | Ch./Freq.<br>(MHz) | SAR<br>(W/kg)<br>1-g | 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) |
| Front side                     | 100          | QPSK | 100%          | /                  | /                    | /                     | /                       | /                     | /                 | 1.011                        |
| Back side                      | 100          | QPSK | 100%          | /                  | /                    | /                     | /                       | /                     | /                 | 1.062                        |
| Left side                      | 100          | QPSK | 100%          | /                  | /                    | /                     | /                       | /                     | /                 | 0.380                        |
| Right side                     | 100          | QPSK | 100%          | /                  | /                    | /                     | /                       | /                     | /                 | 0.834                        |
| Top side                       | 100          | QPSK | 100%          | /                  | /                    | /                     | /                       | /                     | /                 | 0.390                        |

Table 18: SAR of 5G NR n41.

**Note:**

For the MIMO SAR, each antenna SAR will be evaluated independently. Then the conservative “max + max” multi-Tx method should be used to combine the scaled SAR value of each antenna as the UL 2\*2 MIMO SAR.

## 15.17 SAR Measurement Result of 5G NR n48

| Ant 0 Test Results         |              |             |               |                    |                      |                       |                         |                       |                   |                              |           |
|----------------------------|--------------|-------------|---------------|--------------------|----------------------|-----------------------|-------------------------|-----------------------|-------------------|------------------------------|-----------|
| Test position              | BW.<br>(MHz) | Mode        | Duty<br>Cycle | Ch./Freq.<br>(MHz) | SAR<br>(W/kg)<br>1-g | 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) | Date      |
| Body 5mm(1RB) Sensor On    |              |             |               |                    |                      |                       |                         |                       |                   |                              |           |
| Front side                 | 40           | QPSK 1_1    | 100%          | 642888/3643.32     | 0.490                | 0.178                 | 14.29                   | 15.50                 | 1.321             | 0.647                        | 2024/6/15 |
| Back side                  | 40           | QPSK 1_1    | 100%          | 642888/3643.32     | 0.059                | 0.026                 | 14.29                   | 15.50                 | 1.321             | 0.078                        | 2024/6/15 |
| Right side                 | 40           | QPSK 1_1    | 100%          | 642888/3643.32     | 0.484                | 0.169                 | 14.29                   | 15.50                 | 1.321             | 0.640                        | 2024/6/15 |
| Front side                 | 40           | QPSK 1_1    | 100%          | 638000/3570        | 0.512                | 0.188                 | 14.14                   | 15.50                 | 1.368             | 0.700                        | 2024/6/15 |
| Front side                 | 40           | QPSK 1_1    | 100%          | 640446/3606.69     | 0.554                | 0.212                 | 14.22                   | 15.50                 | 1.343             | 0.744                        | 2024/6/15 |
| Front side                 | 40           | QPSK 1_1    | 100%          | 645332/3679.98     | 0.439                | 0.179                 | 14.12                   | 15.50                 | 1.374             | 0.603                        | 2024/6/15 |
| Right side                 | 40           | QPSK 1_1    | 100%          | 638000/3570        | 0.602                | 0.205                 | 14.14                   | 15.50                 | 1.368             | 0.823                        | 2024/6/15 |
| Right side                 | 40           | QPSK 1_1    | 100%          | 640446/3606.69     | 0.625                | 0.214                 | 14.22                   | 15.50                 | 1.343             | 0.839                        | 2024/6/15 |
| Right side                 | 40           | QPSK 1_1    | 100%          | 645332/3679.98     | 0.614                | 0.211                 | 14.12                   | 15.50                 | 1.374             | 0.844                        | 2024/6/15 |
| Body 5mm(50%RB) Sensor On  |              |             |               |                    |                      |                       |                         |                       |                   |                              |           |
| Front side                 | 40           | QPSK 108_54 | 100%          | 642888/3643.32     | 0.507                | 0.184                 | 14.27                   | 15.50                 | 1.327             | 0.673                        | 2024/6/15 |
| Back side                  | 40           | QPSK 108_54 | 100%          | 642888/3643.32     | 0.075                | 0.032                 | 14.27                   | 15.50                 | 1.327             | 0.100                        | 2024/6/15 |
| Right side                 | 40           | QPSK 108_54 | 100%          | 642888/3643.32     | 0.556                | 0.182                 | 14.27                   | 15.50                 | 1.327             | 0.738                        | 2024/6/15 |
| Front side                 | 40           | QPSK 108_54 | 100%          | 638000/3570        | 0.544                | 0.207                 | 14.21                   | 15.50                 | 1.346             | 0.732                        | 2024/6/15 |
| Front side                 | 40           | QPSK 108_54 | 100%          | 640446/3606.69     | 0.598                | 0.203                 | 14.11                   | 15.50                 | 1.377             | 0.824                        | 2024/6/15 |
| Front side                 | 40           | QPSK 108_54 | 100%          | 645332/3679.98     | 0.576                | 0.207                 | 14.11                   | 15.50                 | 1.377             | 0.793                        | 2024/6/15 |
| Right side                 | 40           | QPSK 108_54 | 100%          | 638000/3570        | 0.586                | 0.215                 | 14.21                   | 15.50                 | 1.346             | 0.789                        | 2024/6/15 |
| Front side                 | 40           | QPSK 108_54 | 100%          | 640446/3606.69     | 0.634                | 0.220                 | 14.11                   | 15.50                 | 1.377             | 0.873                        | 2024/6/15 |
| Right side                 | 40           | QPSK 108_54 | 100%          | 645332/3679.98     | 0.621                | 0.212                 | 14.11                   | 15.50                 | 1.377             | 0.855                        | 2024/6/15 |
| Body 5mm(100%RB) Sensor On |              |             |               |                    |                      |                       |                         |                       |                   |                              |           |
| Front side                 | 40           | QPSK 216_0  | 100%          | 642888/3643.32     | 0.365                | 0.144                 | 13.12                   | 14.50                 | 1.374             | 0.502                        | 2024/6/15 |
| Right side                 | 40           | QPSK 216_0  | 100%          | 642888/3643.32     | 0.449                | 0.166                 | 13.12                   | 14.50                 | 1.374             | 0.617                        | 2024/6/15 |
| Body(1RB) Sensor Off       |              |             |               |                    |                      |                       |                         |                       |                   |                              |           |
| Front side 19mm            | 40           | QPSK 1_1    | 100%          | 642888/3643.32     | 0.577                | 0.274                 | 20.90                   | 22.50                 | 1.445             | 0.834                        | 2024/6/15 |
| Back side 19mm             | 40           | QPSK 1_1    | 100%          | 642888/3643.32     | 0.101                | 0.049                 | 20.90                   | 22.50                 | 1.445             | 0.146                        | 2024/6/15 |
| Left side 5mm              | 40           | QPSK 1_1    | 100%          | 642888/3643.32     | 0.037                | 0.016                 | 20.90                   | 22.50                 | 1.445             | 0.053                        | 2024/6/15 |
| Right side 19mm            | 40           | QPSK 1_1    | 100%          | 642888/3643.32     | 0.542                | 0.244                 | 20.90                   | 22.50                 | 1.445             | 0.783                        | 2024/6/15 |
| Top side 5mm               | 40           | QPSK 1_1    | 100%          | 642888/3643.32     | 0.105                | 0.044                 | 20.90                   | 22.50                 | 1.445             | 0.152                        | 2024/6/15 |
| Front side 19mm            | 40           | QPSK 1_1    | 100%          | 638000/3570        | 0.566                | 0.271                 | 20.84                   | 22.50                 | 1.466             | 0.830                        | 2024/6/15 |
| Front side 19mm            | 40           | QPSK 1_1    | 100%          | 640446/3606.69     | 0.602                | 0.261                 | 20.89                   | 22.50                 | 1.449             | 0.872                        | 2024/6/15 |
| Front side 19mm            | 40           | QPSK 1_1    | 100%          | 645332/3679.98     | 0.588                | 0.259                 | 20.83                   | 22.50                 | 1.469             | 0.864                        | 2024/6/15 |
| Right side 19mm            | 40           | QPSK 1_1    | 100%          | 638000/3570        | 0.501                | 0.227                 | 20.84                   | 22.50                 | 1.466             | 0.734                        | 2024/6/15 |
| Right side 19mm            | 40           | QPSK 1_1    | 100%          | 640446/3606.69     | 0.523                | 0.236                 | 20.89                   | 22.50                 | 1.449             | 0.758                        | 2024/6/15 |
| Right side 19mm            | 40           | QPSK 1_1    | 100%          | 645332/3679.98     | 0.463                | 0.210                 | 20.83                   | 22.50                 | 1.469             | 0.680                        | 2024/6/15 |
| Body(50%RB) Sensor Off     |              |             |               |                    |                      |                       |                         |                       |                   |                              |           |
| Front side 19mm            | 40           | QPSK 108_54 | 100%          | 642888/3643.32     | 0.494                | 0.233                 | 20.20                   | 22.00                 | 1.514             | 0.748                        | 2024/6/15 |
| Back side 19mm             | 40           | QPSK 108_54 | 100%          | 642888/3643.32     | 0.098                | 0.047                 | 20.20                   | 22.00                 | 1.514             | 0.148                        | 2024/6/15 |
| Left side 5mm              | 40           | QPSK 108_54 | 100%          | 642888/3643.32     | 0.039                | 0.015                 | 20.20                   | 22.00                 | 1.514             | 0.059                        | 2024/6/15 |
| Right side 19mm            | 40           | QPSK 108_54 | 100%          | 642888/3643.32     | 0.432                | 0.194                 | 20.20                   | 22.00                 | 1.514             | 0.654                        | 2024/6/15 |
| Top side 5mm               | 40           | QPSK 108_54 | 100%          | 642888/3643.32     | 0.073                | 0.032                 | 20.20                   | 22.00                 | 1.514             | 0.110                        | 2024/6/15 |
| Front side 19mm            | 40           | QPSK 108_54 | 100%          | 638000/3570        | 0.520                | 0.247                 | 20.17                   | 22.00                 | 1.524             | 0.793                        | 2024/6/15 |
| Front side 19mm            | 40           | QPSK 108_54 | 100%          | 640446/3606.69     | 0.529                | 0.250                 | 20.18                   | 22.00                 | 1.521             | 0.804                        | 2024/6/15 |
| Front side 19mm            | 40           | QPSK 108_54 | 100%          | 645332/3679.98     | 0.486                | 0.235                 | 20.15                   | 22.00                 | 1.531             | 0.744                        | 2024/6/15 |
| Right side 19mm            | 40           | QPSK 108_54 | 100%          | 638000/3570        | 0.471                | 0.212                 | 20.17                   | 22.00                 | 1.524             | 0.718                        | 2024/6/15 |
| Right side 19mm            | 40           | QPSK 108_54 | 100%          | 640446/3606.69     | 0.453                | 0.204                 | 20.18                   | 22.00                 | 1.521             | 0.689                        | 2024/6/15 |
| Right side 19mm            | 40           | QPSK 108_54 | 100%          | 645332/3679.98     | 0.411                | 0.181                 | 20.15                   | 22.00                 | 1.531             | 0.629                        | 2024/6/15 |
| Body(100%RB) Sensor Off    |              |             |               |                    |                      |                       |                         |                       |                   |                              |           |
| Front side 19mm            | 40           | QPSK 216_0  | 100%          | 642888/3643.32     | 0.372                | 0.179                 | 19.02                   | 20.50                 | 1.406             | 0.523                        | 2024/6/15 |
| Right side 19mm            | 40           | QPSK 216_0  | 100%          | 642888/3643.32     | 0.298                | 0.139                 | 19.02                   | 20.50                 | 1.406             | 0.419                        | 2024/6/15 |

Table 19: SAR of 5G NR n48.

## 15.18 SAR Measurement Result of 5G NR n66

| Ant 0 Test Results         |              |             |                    |                      |                       |                         |                       |                   |                              |
|----------------------------|--------------|-------------|--------------------|----------------------|-----------------------|-------------------------|-----------------------|-------------------|------------------------------|
| Test position              | BW.<br>(MHz) | Mode        | Ch./Freq.<br>(MHz) | SAR<br>(W/kg)<br>1-g | 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 5mm (1RB) Sensor On   |              |             |                    |                      |                       |                         |                       |                   |                              |
| Front side                 | 40           | QPSK 1_214  | 352000/1760        | 0.408                | 0.250                 | 16.88                   | 18.50                 | 1.452             | 0.592                        |
| Back side                  | 40           | QPSK 1_214  | 352000/1760        | 0.396                | 0.229                 | 16.88                   | 18.50                 | 1.452             | 0.575                        |
| Right side                 | 40           | QPSK 1_214  | 352000/1760        | 0.196                | 0.118                 | 16.88                   | 18.50                 | 1.452             | 0.285                        |
| Body 5mm (50%RB) Sensor On |              |             |                    |                      |                       |                         |                       |                   |                              |
| Front side                 | 40           | QPSK 108_54 | 352000/1760        | 0.401                | 0.237                 | 16.85                   | 18.50                 | 1.462             | 0.586                        |
| Back side                  | 40           | QPSK 108_54 | 352000/1760        | 0.404                | 0.235                 | 16.85                   | 18.50                 | 1.462             | 0.591                        |
| Right side                 | 40           | QPSK 108_54 | 352000/1760        | 0.190                | 0.114                 | 16.85                   | 18.50                 | 1.462             | 0.278                        |
| Body (1RB) Sensor Off      |              |             |                    |                      |                       |                         |                       |                   |                              |
| Front side 19mm            | 40           | QPSK 1_214  | 352000/1760        | 0.435                | 0.276                 | 21.50                   | 23.00                 | 1.413             | <b>0.614</b>                 |
| Back side 19mm             | 40           | QPSK 1_214  | 352000/1760        | 0.222                | 0.140                 | 21.50                   | 23.00                 | 1.413             | 0.314                        |
| Left side 5mm              | 40           | QPSK 1_214  | 352000/1760        | 0.248                | 0.148                 | 21.50                   | 23.00                 | 1.413             | 0.350                        |
| Right side 19mm            | 40           | QPSK 1_214  | 352000/1760        | 0.242                | 0.150                 | 21.50                   | 23.00                 | 1.413             | 0.342                        |
| Top side 5mm               | 40           | QPSK 1_214  | 352000/1760        | 0.205                | 0.128                 | 21.50                   | 23.00                 | 1.413             | 0.290                        |
| Body (50%RB) Sensor Off    |              |             |                    |                      |                       |                         |                       |                   |                              |
| Front side 19mm            | 40           | QPSK 108_54 | 352000/1760        | 0.354                | 0.217                 | 21.45                   | 23.00                 | 1.429             | 0.506                        |
| Back side 19mm             | 40           | QPSK 108_54 | 352000/1760        | 0.207                | 0.131                 | 21.45                   | 23.00                 | 1.429             | 0.296                        |
| Left side 5mm              | 40           | QPSK 108_54 | 352000/1760        | 0.191                | 0.112                 | 21.45                   | 23.00                 | 1.429             | 0.273                        |
| Right side 19mm            | 40           | QPSK 108_54 | 352000/1760        | 0.167                | 0.103                 | 21.45                   | 23.00                 | 1.429             | 0.239                        |
| Top side 5mm               | 40           | QPSK 108_54 | 352000/1760        | 0.165                | 0.111                 | 21.45                   | 23.00                 | 1.429             | 0.236                        |

Table 20: SAR of 5G NR n66.

## 15.19 SAR Measurement Result of 5G NR n70

| Ant 0 Test Results         |              |            |                    |                      |                       |                         |                       |                   |                              |
|----------------------------|--------------|------------|--------------------|----------------------|-----------------------|-------------------------|-----------------------|-------------------|------------------------------|
| Test position              | BW.<br>(MHz) | Mode       | Ch./Freq.<br>(MHz) | SAR<br>(W/kg)<br>1-g | 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 5mm (1RB) Sensor On   |              |            |                    |                      |                       |                         |                       |                   |                              |
| Front side                 | 15           | QPSK 1_1   | 340500/1702.5      | 0.383                | 0.237                 | 15.76                   | 17.50                 | 1.493             | 0.572                        |
| Back side                  | 15           | QPSK 1_1   | 340500/1702.5      | 0.307                | 0.165                 | 15.76                   | 17.50                 | 1.493             | 0.458                        |
| Right side                 | 15           | QPSK 1_1   | 340500/1702.5      | 0.153                | 0.093                 | 15.76                   | 17.50                 | 1.493             | 0.228                        |
| Body 5mm (50%RB) Sensor On |              |            |                    |                      |                       |                         |                       |                   |                              |
| Front side                 | 15           | QPSK 36_22 | 340500/1702.5      | 0.406                | 0.249                 | 15.72                   | 17.50                 | 1.507             | <b>0.612</b>                 |
| Back side                  | 15           | QPSK 36_22 | 340500/1702.5      | 0.297                | 0.172                 | 15.72                   | 17.50                 | 1.507             | 0.447                        |
| Right side                 | 15           | QPSK 36_22 | 340500/1702.5      | 0.156                | 0.095                 | 15.72                   | 17.50                 | 1.507             | 0.235                        |
| Body (1RB) Sensor Off      |              |            |                    |                      |                       |                         |                       |                   |                              |
| Front side 19mm            | 15           | QPSK 1_1   | 340500/1702.5      | 0.356                | 0.218                 | 22.66                   | 24.50                 | 1.528             | 0.544                        |
| Back side 19mm             | 15           | QPSK 1_1   | 340500/1702.5      | 0.225                | 0.142                 | 22.66                   | 24.50                 | 1.528             | 0.344                        |
| Left side 5mm              | 15           | QPSK 1_1   | 340500/1702.5      | 0.163                | 0.097                 | 22.66                   | 24.50                 | 1.528             | 0.249                        |
| Right side 19mm            | 15           | QPSK 1_1   | 340500/1702.5      | 0.231                | 0.119                 | 22.66                   | 24.50                 | 1.528             | 0.353                        |
| Top side 5mm               | 15           | QPSK 1_1   | 340500/1702.5      | 0.182                | 0.103                 | 22.66                   | 24.50                 | 1.528             | 0.278                        |
| Body (50%RB) Sensor Off    |              |            |                    |                      |                       |                         |                       |                   |                              |
| Front side 19mm            | 15           | QPSK 36_22 | 340500/1702.5      | 0.381                | 0.234                 | 22.55                   | 24.50                 | 1.567             | 0.597                        |
| Back side 19mm             | 15           | QPSK 36_22 | 340500/1702.5      | 0.259                | 0.164                 | 22.55                   | 24.50                 | 1.567             | 0.406                        |
| Left side 5mm              | 15           | QPSK 36_22 | 340500/1702.5      | 0.182                | 0.109                 | 22.55                   | 24.50                 | 1.567             | 0.285                        |
| Right side 19mm            | 15           | QPSK 36_22 | 340500/1702.5      | 0.192                | 0.119                 | 22.55                   | 24.50                 | 1.567             | 0.301                        |
| Top side 5mm               | 15           | QPSK 36_22 | 340500/1702.5      | 0.153                | 0.068                 | 22.55                   | 24.50                 | 1.567             | 0.240                        |

Table 21: SAR of 5G NR n70.

**15.20 SAR Measurement Result of 5G NR n71**

| Ant 3 Test Results |           |            |                 |                |                 |                      |                    |                |                        |
|--------------------|-----------|------------|-----------------|----------------|-----------------|----------------------|--------------------|----------------|------------------------|
| Test position      | BW. (MHz) | Mode       | Ch./Freq. (MHz) | SAR (W/kg) 1-g | SAR (W/kg) 10-g | Conducted Power(dBm) | Tune up Limit(dBm) | Scaling Factor | Reported 1g SAR (W/kg) |
| Body 5mm (1RB)     |           |            |                 |                |                 |                      |                    |                |                        |
| Front side         | 20        | QPSK 1_1   | 137600/688      | 0.601          | 0.364           | 23.56                | 24.50              | 1.242          | <b>0.746</b>           |
| Back side          | 20        | QPSK 1_1   | 137600/688      | 0.588          | 0.405           | 23.56                | 24.50              | 1.242          | 0.730                  |
| Left side          | 20        | QPSK 1_1   | 137600/688      | 0.389          | 0.242           | 23.56                | 24.50              | 1.242          | 0.483                  |
| Right side         | 20        | QPSK 1_1   | 137600/688      | 0.234          | 0.157           | 23.56                | 24.50              | 1.242          | 0.291                  |
| Top side           | 20        | QPSK 1_1   | 137600/688      | 0.395          | 0.220           | 23.56                | 24.50              | 1.242          | 0.490                  |
| Body 5mm (50%RB)   |           |            |                 |                |                 |                      |                    |                |                        |
| Front side         | 20        | QPSK 50_28 | 137600/688      | 0.561          | 0.369           | 23.38                | 24.50              | 1.294          | 0.726                  |
| Back side          | 20        | QPSK 50_28 | 137600/688      | 0.568          | 0.389           | 23.38                | 24.50              | 1.294          | 0.735                  |
| Left side          | 20        | QPSK 50_28 | 137600/688      | 0.285          | 0.188           | 23.38                | 24.50              | 1.294          | 0.369                  |
| Right side         | 20        | QPSK 50_28 | 137600/688      | 0.212          | 0.141           | 23.38                | 24.50              | 1.294          | 0.274                  |
| Top side           | 20        | QPSK 50_28 | 137600/688      | 0.401          | 0.222           | 23.38                | 24.50              | 1.294          | 0.519                  |

Table 22: SAR of 5G NR n71.

## 15.21 SAR Measurement Result of 5G NR n77

| Ant 0 Test Results             |              |              |               |                    |                      |                       |                         |                       |                   |                              |
|--------------------------------|--------------|--------------|---------------|--------------------|----------------------|-----------------------|-------------------------|-----------------------|-------------------|------------------------------|
| Test position                  | BW.<br>(MHz) | Mode         | Duty<br>Cycle | Ch./Freq.<br>(MHz) | SAR<br>(W/kg)<br>1-g | 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 5mm(1RB) Sensor On        |              |              |               |                    |                      |                       |                         |                       |                   |                              |
| Front side                     | 100          | QPSK 1_271   | 100%          | 633334/3500.01     | 0.457                | 0.167                 | 13.05                   | 14.50                 | 1.396             | 0.638                        |
| Back side                      | 100          | QPSK 1_271   | 100%          | 633334/3500.01     | 0.062                | 0.026                 | 13.05                   | 14.50                 | 1.396             | 0.087                        |
| Right side                     | 100          | QPSK 1_271   | 100%          | 633334/3500.01     | 0.544                | 0.191                 | 13.05                   | 14.50                 | 1.396             | <b>0.760</b>                 |
| Body 5mm(50%RB) Sensor On      |              |              |               |                    |                      |                       |                         |                       |                   |                              |
| Front side                     | 100          | QPSK 135_138 | 100%          | 633334/3500.01     | 0.460                | 0.165                 | 13.00                   | 14.50                 | 1.413             | 0.650                        |
| Back side                      | 100          | QPSK 135_138 | 100%          | 633334/3500.01     | 0.051                | 0.022                 | 13.00                   | 14.50                 | 1.413             | 0.072                        |
| Right side                     | 100          | QPSK 135_138 | 100%          | 633334/3500.01     | 0.509                | 0.183                 | 13.00                   | 14.50                 | 1.413             | 0.719                        |
| Body(1RB) Sensor Off           |              |              |               |                    |                      |                       |                         |                       |                   |                              |
| Front side 19mm                | 100          | QPSK 1_271   | 100%          | 633334/3500.01     | 0.518                | 0.251                 | 20.51                   | 22.00                 | 1.409             | 0.730                        |
| Back side 19mm                 | 100          | QPSK 1_271   | 100%          | 633334/3500.01     | 0.100                | 0.051                 | 20.51                   | 22.00                 | 1.409             | 0.141                        |
| Left side 5mm                  | 100          | QPSK 1_271   | 100%          | 633334/3500.01     | 0.054                | 0.025                 | 20.51                   | 22.00                 | 1.409             | 0.076                        |
| Right side 19mm                | 100          | QPSK 1_271   | 100%          | 633334/3500.01     | 0.463                | 0.217                 | 20.51                   | 22.00                 | 1.409             | 0.653                        |
| Top side 5mm                   | 100          | QPSK 1_271   | 100%          | 633334/3500.01     | 0.077                | 0.034                 | 20.51                   | 22.00                 | 1.409             | 0.109                        |
| Body(50%RB) Sensor Off         |              |              |               |                    |                      |                       |                         |                       |                   |                              |
| Front side 19mm                | 100          | QPSK 135_138 | 100%          | 633334/3500.01     | 0.499                | 0.237                 | 20.30                   | 22.00                 | 1.479             | 0.738                        |
| Back side 19mm                 | 100          | QPSK 135_138 | 100%          | 633334/3500.01     | 0.070                | 0.046                 | 20.30                   | 22.00                 | 1.479             | 0.104                        |
| Left side 5mm                  | 100          | QPSK 135_138 | 100%          | 633334/3500.01     | 0.060                | 0.030                 | 20.30                   | 22.00                 | 1.479             | 0.089                        |
| Right side 19mm                | 100          | QPSK 135_138 | 100%          | 633334/3500.01     | 0.428                | 0.195                 | 20.30                   | 22.00                 | 1.479             | 0.633                        |
| Top side 5mm                   | 100          | QPSK 135_138 | 100%          | 633334/3500.01     | 0.061                | 0.026                 | 20.30                   | 22.00                 | 1.479             | 0.090                        |
| Ant 3 Test Results             |              |              |               |                    |                      |                       |                         |                       |                   |                              |
| Test position                  | BW.<br>(MHz) | Mode         | Duty<br>Cycle | Ch./Freq.<br>(MHz) | SAR<br>(W/kg)<br>1-g | 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 5mm(1RB) Sensor On        |              |              |               |                    |                      |                       |                         |                       |                   |                              |
| Front side                     | 100          | QPSK 1_271   | 100%          | 633334/3500.01     | 0.108                | 0.047                 | 13.46                   | 14.50                 | 1.271             | 0.137                        |
| Back side                      | 100          | QPSK 1_271   | 100%          | 633334/3500.01     | 0.135                | 0.057                 | 13.46                   | 14.50                 | 1.271             | 0.172                        |
| Right side                     | 100          | QPSK 1_271   | 100%          | 633334/3500.01     | 0.038                | 0.017                 | 13.46                   | 14.50                 | 1.271             | 0.048                        |
| Top side                       | 100          | QPSK 1_271   | 100%          | 633334/3500.01     | 0.090                | 0.031                 | 13.46                   | 14.50                 | 1.271             | 0.114                        |
| Body 5mm(50%RB) Sensor On      |              |              |               |                    |                      |                       |                         |                       |                   |                              |
| Front side                     | 100          | QPSK 135_138 | 100%          | 633334/3500.01     | 0.092                | 0.040                 | 13.28                   | 14.50                 | 1.324             | 0.122                        |
| Back side                      | 100          | QPSK 135_138 | 100%          | 633334/3500.01     | 0.167                | 0.070                 | 13.28                   | 14.50                 | 1.324             | 0.221                        |
| Right side                     | 100          | QPSK 135_138 | 100%          | 633334/3500.01     | 0.030                | 0.014                 | 13.28                   | 14.50                 | 1.324             | 0.040                        |
| Top side                       | 100          | QPSK 135_138 | 100%          | 633334/3500.01     | 0.073                | 0.027                 | 13.28                   | 14.50                 | 1.324             | 0.097                        |
| Body(1RB) Sensor Off           |              |              |               |                    |                      |                       |                         |                       |                   |                              |
| Front side 19mm                | 100          | QPSK 1_271   | 100%          | 633334/3500.01     | 0.218                | 0.106                 | 20.85                   | 22.00                 | 1.303             | 0.284                        |
| Back side 19mm                 | 100          | QPSK 1_271   | 100%          | 633334/3500.01     | 0.251                | 0.114                 | 20.85                   | 22.00                 | 1.303             | <b>0.327</b>                 |
| Left side 5mm                  | 100          | QPSK 1_271   | 100%          | 633334/3500.01     | 0.089                | 0.045                 | 20.85                   | 22.00                 | 1.303             | 0.116                        |
| Right side 19mm                | 100          | QPSK 1_271   | 100%          | 633334/3500.01     | 0.072                | 0.038                 | 20.85                   | 22.00                 | 1.303             | 0.094                        |
| Top side 19mm                  | 100          | QPSK 1_271   | 100%          | 633334/3500.01     | 0.090                | 0.043                 | 20.85                   | 22.00                 | 1.303             | 0.117                        |
| Body(50%RB) Sensor Off         |              |              |               |                    |                      |                       |                         |                       |                   |                              |
| Front side 19mm                | 100          | QPSK 135_138 | 100%          | 633334/3500.01     | 0.167                | 0.079                 | 20.75                   | 22.00                 | 1.334             | 0.223                        |
| Back side 19mm                 | 100          | QPSK 135_138 | 100%          | 633334/3500.01     | 0.241                | 0.114                 | 20.75                   | 22.00                 | 1.334             | 0.321                        |
| Left side 5mm                  | 100          | QPSK 135_138 | 100%          | 633334/3500.01     | 0.077                | 0.038                 | 20.75                   | 22.00                 | 1.334             | 0.103                        |
| Right side 19mm                | 100          | QPSK 135_138 | 100%          | 633334/3500.01     | 0.061                | 0.029                 | 20.75                   | 22.00                 | 1.334             | 0.081                        |
| Top side 19mm                  | 100          | QPSK 135_138 | 100%          | 633334/3500.01     | 0.079                | 0.037                 | 20.75                   | 22.00                 | 1.334             | 0.105                        |
| MIMO (Ant0+Ant 3) Test Results |              |              |               |                    |                      |                       |                         |                       |                   |                              |
| Test position                  | BW.<br>(MHz) | Mode         | Duty<br>Cycle | Ch./Freq.<br>(MHz) | SAR<br>(W/kg)<br>1-g | 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) |
| Front side                     | 100          | QPSK         | 100%          | /                  | /                    | /                     | /                       | /                     | /                 | 1.022                        |
| Back side                      | 100          | QPSK         | 100%          | /                  | /                    | /                     | /                       | /                     | /                 | 0.468                        |
| Left side                      | 100          | QPSK         | 100%          | /                  | /                    | /                     | /                       | /                     | /                 | 0.205                        |
| Right side                     | 100          | QPSK         | 100%          | /                  | /                    | /                     | /                       | /                     | /                 | 0.854                        |
| Top side                       | 100          | QPSK         | 100%          | /                  | /                    | /                     | /                       | /                     | /                 | 0.226                        |

Table 23: SAR of 5G NR n77(3450~3550MHz).

**Note:**

For the MIMO SAR, each antenna SAR will be evaluated independently. Then the conservative “max + max” multi-Tx method should be used to combine the scaled SAR value of each antenna as the UL 2\*2 MIMO SAR.

| Ant 0 Test Results        |              |              |               |                    |                      |                       |                         |                       |                   |                              |
|---------------------------|--------------|--------------|---------------|--------------------|----------------------|-----------------------|-------------------------|-----------------------|-------------------|------------------------------|
| Test position             | BW.<br>(MHz) | Mode         | Duty<br>Cycle | Ch./Freq.<br>(MHz) | SAR<br>(W/kg)<br>1-g | 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 5mm(1RB) Sensor On   |              |              |               |                    |                      |                       |                         |                       |                   |                              |
| Front side                | 100          | QPSK 1_271   | 100%          | 654800/3822        | 0.426                | 0.173                 | 13.45                   | 14.50                 | 1.274             | 0.543                        |
| Back side                 | 100          | QPSK 1_271   | 100%          | 654800/3822        | 0.072                | 0.030                 | 13.45                   | 14.50                 | 1.274             | 0.092                        |
| Right side                | 100          | QPSK 1_271   | 100%          | 654800/3822        | 0.536                | 0.172                 | 13.45                   | 14.50                 | 1.274             | 0.683                        |
| Front side                | 100          | QPSK 1_271   | 100%          | 650000/3750        | 0.484                | 0.173                 | 13.41                   | 14.50                 | 1.285             | 0.622                        |
| Front side                | 100          | QPSK 1_271   | 100%          | 652400/3786        | 0.451                | 0.166                 | 13.34                   | 14.50                 | 1.306             | 0.589                        |
| Front side                | 100          | QPSK 1_271   | 100%          | 657200/3858        | 0.451                | 0.164                 | 13.38                   | 14.50                 | 1.294             | 0.584                        |
| Front side                | 100          | QPSK 1_271   | 100%          | 659600/3894        | 0.511                | 0.179                 | 13.26                   | 14.50                 | 1.330             | 0.680                        |
| Front side                | 100          | QPSK 1_271   | 100%          | 662000/3930        | 0.471                | 0.160                 | 13.20                   | 14.50                 | 1.349             | 0.635                        |
| Right side                | 100          | QPSK 1_271   | 100%          | 650000/3750        | 0.493                | 0.169                 | 13.41                   | 14.50                 | 1.285             | 0.634                        |
| Right side                | 100          | QPSK 1_271   | 100%          | 652400/3786        | 0.509                | 0.168                 | 13.34                   | 14.50                 | 1.306             | 0.665                        |
| Right side                | 100          | QPSK 1_271   | 100%          | 657200/3858        | 0.503                | 0.179                 | 13.38                   | 14.50                 | 1.294             | 0.651                        |
| Right side                | 100          | QPSK 1_271   | 100%          | 659600/3894        | 0.539                | 0.173                 | 13.26                   | 14.50                 | 1.330             | 0.717                        |
| Right side                | 100          | QPSK 1_271   | 100%          | 662000/3930        | 0.504                | 0.171                 | 13.20                   | 14.50                 | 1.349             | 0.680                        |
| Body 5mm(50%RB) Sensor On |              |              |               |                    |                      |                       |                         |                       |                   |                              |
| Front side                | 100          | QPSK 135_138 | 100%          | 654800/3822        | 0.385                | 0.148                 | 13.14                   | 14.50                 | 1.368             | 0.527                        |
| Back side                 | 100          | QPSK 135_138 | 100%          | 654800/3822        | 0.075                | 0.023                 | 13.14                   | 14.50                 | 1.368             | 0.103                        |
| Right side                | 100          | QPSK 135_138 | 100%          | 654800/3822        | 0.518                | 0.173                 | 13.14                   | 14.50                 | 1.368             | 0.708                        |
| Front side                | 100          | QPSK 135_138 | 100%          | 650000/3750        | 0.471                | 0.169                 | 13.10                   | 14.50                 | 1.380             | 0.650                        |
| Front side                | 100          | QPSK 135_138 | 100%          | 652400/3786        | 0.442                | 0.156                 | 13.02                   | 14.50                 | 1.406             | 0.621                        |
| Front side                | 100          | QPSK 135_138 | 100%          | 657200/3858        | 0.440                | 0.152                 | 12.98                   | 14.50                 | 1.419             | 0.624                        |
| Front side                | 100          | QPSK 135_138 | 100%          | 659600/3894        | 0.502                | 0.170                 | 12.91                   | 14.50                 | 1.442             | 0.724                        |
| Front side                | 100          | QPSK 135_138 | 100%          | 662000/3930        | 0.462                | 0.154                 | 12.88                   | 14.50                 | 1.452             | 0.671                        |
| Right side                | 100          | QPSK 135_138 | 100%          | 650000/3750        | 0.482                | 0.152                 | 13.10                   | 14.50                 | 1.380             | 0.665                        |
| Right side                | 100          | QPSK 135_138 | 100%          | 652400/3786        | 0.478                | 0.153                 | 13.02                   | 14.50                 | 1.406             | 0.672                        |
| Right side                | 100          | QPSK 135_138 | 100%          | 657200/3858        | 0.469                | 0.149                 | 12.98                   | 14.50                 | 1.419             | 0.666                        |
| Right side                | 100          | QPSK 135_138 | 100%          | 659600/3894        | 0.521                | 0.165                 | 12.91                   | 14.50                 | 1.442             | 0.751                        |
| Right side                | 100          | QPSK 135_138 | 100%          | 662000/3930        | 0.495                | 0.162                 | 12.88                   | 14.50                 | 1.452             | 0.719                        |
| Body(1RB) Sensor Off      |              |              |               |                    |                      |                       |                         |                       |                   |                              |
| Front side 19mm           | 100          | QPSK 1_271   | 100%          | 654800/3822        | 0.482                | 0.220                 | 20.92                   | 22.00                 | 1.282             | 0.618                        |
| Back side 19mm            | 100          | QPSK 1_271   | 100%          | 654800/3822        | 0.115                | 0.058                 | 20.92                   | 22.00                 | 1.282             | 0.147                        |
| Left side 5mm             | 100          | QPSK 1_271   | 100%          | 654800/3822        | 0.059                | 0.027                 | 20.92                   | 22.00                 | 1.282             | 0.076                        |
| Right side 19mm           | 100          | QPSK 1_271   | 100%          | 654800/3822        | 0.514                | 0.232                 | 20.92                   | 22.00                 | 1.282             | 0.659                        |
| Top side 5mm              | 100          | QPSK 1_271   | 100%          | 654800/3822        | 0.095                | 0.043                 | 20.92                   | 22.00                 | 1.282             | 0.122                        |
| Front side 19mm           | 100          | QPSK 1_271   | 100%          | 650000/3750        | 0.457                | 0.213                 | 20.90                   | 22.00                 | 1.288             | 0.589                        |
| Front side 19mm           | 100          | QPSK 1_271   | 100%          | 652400/3786        | 0.463                | 0.213                 | 20.84                   | 22.00                 | 1.306             | 0.605                        |
| Front side 19mm           | 100          | QPSK 1_271   | 100%          | 657200/3858        | 0.500                | 0.227                 | 20.80                   | 22.00                 | 1.318             | 0.659                        |
| Front side 19mm           | 100          | QPSK 1_271   | 100%          | 659600/3894        | 0.502                | 0.230                 | 20.82                   | 22.00                 | 1.312             | 0.659                        |
| Front side 19mm           | 100          | QPSK 1_271   | 100%          | 662000/3930        | 0.532                | 0.245                 | 20.90                   | 22.00                 | 1.288             | 0.685                        |
| Right side 19mm           | 100          | QPSK 1_271   | 100%          | 650000/3750        | 0.481                | 0.221                 | 20.90                   | 22.00                 | 1.288             | 0.620                        |
| Right side 19mm           | 100          | QPSK 1_271   | 100%          | 652400/3786        | 0.504                | 0.223                 | 20.84                   | 22.00                 | 1.306             | 0.658                        |
| Right side 19mm           | 100          | QPSK 1_271   | 100%          | 657200/3858        | 0.546                | 0.246                 | 20.80                   | 22.00                 | 1.318             | 0.720                        |
| Right side 19mm           | 100          | QPSK 1_271   | 100%          | 659600/3894        | 0.522                | 0.236                 | 20.82                   | 22.00                 | 1.312             | 0.685                        |
| Right side 19mm           | 100          | QPSK 1_271   | 100%          | 662000/3930        | 0.609                | 0.277                 | 20.90                   | 22.00                 | 1.288             | <b>0.785</b>                 |
| Body(50%RB) Sensor Off    |              |              |               |                    |                      |                       |                         |                       |                   |                              |
| Front side 19mm           | 100          | QPSK 135_138 | 100%          | 654800/3822        | 0.479                | 0.223                 | 20.82                   | 22.00                 | 1.312             | 0.629                        |
| Back side 19mm            | 100          | QPSK 135_138 | 100%          | 654800/3822        | 0.098                | 0.047                 | 20.82                   | 22.00                 | 1.312             | 0.129                        |
| Left side 5mm             | 100          | QPSK 135_138 | 100%          | 654800/3822        | 0.058                | 0.027                 | 20.82                   | 22.00                 | 1.312             | 0.076                        |
| Right side 19mm           | 100          | QPSK 135_138 | 100%          | 654800/3822        | 0.457                | 0.205                 | 20.82                   | 22.00                 | 1.312             | 0.600                        |
| Top side 5mm              | 100          | QPSK 135_138 | 100%          | 654800/3822        | 0.114                | 0.053                 | 20.82                   | 22.00                 | 1.312             | 0.150                        |
| Front side 19mm           | 100          | QPSK 135_138 | 100%          | 650000/3750        | 0.443                | 0.204                 | 20.50                   | 22.00                 | 1.413             | 0.626                        |
| Front side 19mm           | 100          | QPSK 135_138 | 100%          | 652400/3786        | 0.451                | 0.203                 | 20.60                   | 22.00                 | 1.380             | 0.623                        |
| Front side 19mm           | 100          | QPSK 135_138 | 100%          | 657200/3858        | 0.485                | 0.215                 | 20.67                   | 22.00                 | 1.358             | 0.659                        |
| Front side 19mm           | 100          | QPSK 135_138 | 100%          | 659600/3894        | 0.478                | 0.219                 | 20.64                   | 22.00                 | 1.368             | 0.654                        |
| Front side 19mm           | 100          | QPSK 135_138 | 100%          | 662000/3930        | 0.513                | 0.239                 | 20.80                   | 22.00                 | 1.318             | 0.676                        |
| Right side 19mm           | 100          | QPSK 135_138 | 100%          | 650000/3750        | 0.471                | 0.216                 | 20.50                   | 22.00                 | 1.413             | 0.665                        |
| Right side 19mm           | 100          | QPSK 135_138 | 100%          | 652400/3786        | 0.488                | 0.214                 | 20.60                   | 22.00                 | 1.380             | 0.674                        |
| Right side 19mm           | 100          | QPSK 135_138 | 100%          | 657200/3858        | 0.524                | 0.227                 | 20.67                   | 22.00                 | 1.358             | 0.712                        |
| Right side 19mm           | 100          | QPSK 135_138 | 100%          | 659600/3894        | 0.514                | 0.229                 | 20.64                   | 22.00                 | 1.368             | 0.703                        |
| Right side 19mm           | 100          | QPSK 135_138 | 100%          | 662000/3930        | 0.584                | 0.266                 | 20.80                   | 22.00                 | 1.318             | 0.770                        |

| Ant 3 Test Results             |              |              |               |                    |                      |                       |                         |                       |                   |                              |
|--------------------------------|--------------|--------------|---------------|--------------------|----------------------|-----------------------|-------------------------|-----------------------|-------------------|------------------------------|
| Test position                  | BW.<br>(MHz) | Mode         | Duty<br>Cycle | Ch./Freq.<br>(MHz) | SAR<br>(W/kg)<br>1-g | 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 5mm(1RB) Sensor On        |              |              |               |                    |                      |                       |                         |                       |                   |                              |
| Front side                     | 100          | QPSK 1_271   | 100%          | 654800/3822        | 0.259                | 0.098                 | 13.73                   | 14.50                 | 1.194             | 0.309                        |
| Back side                      | 100          | QPSK 1_271   | 100%          | 654800/3822        | 0.128                | 0.052                 | 13.73                   | 14.50                 | 1.194             | 0.153                        |
| Right side                     | 100          | QPSK 1_271   | 100%          | 654800/3822        | 0.073                | 0.031                 | 13.73                   | 14.50                 | 1.194             | 0.087                        |
| Top side                       | 100          | QPSK 1_271   | 100%          | 654800/3822        | 0.066                | 0.030                 | 13.73                   | 14.50                 | 1.194             | 0.079                        |
| Body 5mm(50%RB) Sensor On      |              |              |               |                    |                      |                       |                         |                       |                   |                              |
| Front side                     | 100          | QPSK 135_138 | 100%          | 654800/3822        | 0.223                | 0.086                 | 13.65                   | 14.50                 | 1.216             | 0.271                        |
| Back side                      | 100          | QPSK 135_138 | 100%          | 654800/3822        | 0.119                | 0.049                 | 13.65                   | 14.50                 | 1.216             | 0.145                        |
| Right side                     | 100          | QPSK 135_138 | 100%          | 654800/3822        | 0.050                | 0.020                 | 13.65                   | 14.50                 | 1.216             | 0.061                        |
| Top side                       | 100          | QPSK 135_138 | 100%          | 654800/3822        | 0.065                | 0.025                 | 13.65                   | 14.50                 | 1.216             | 0.079                        |
| Body(1RB) Sensor Off           |              |              |               |                    |                      |                       |                         |                       |                   |                              |
| Front side 19mm                | 100          | QPSK 1_271   | 100%          | 654800/3822        | 0.372                | 0.172                 | 21.12                   | 22.00                 | 1.225             | <b>0.456</b>                 |
| Back side 19mm                 | 100          | QPSK 1_271   | 100%          | 654800/3822        | 0.098                | 0.048                 | 21.12                   | 22.00                 | 1.225             | 0.120                        |
| Left side 5mm                  | 100          | QPSK 1_271   | 100%          | 654800/3822        | 0.056                | 0.027                 | 21.12                   | 22.00                 | 1.225             | 0.069                        |
| Right side 19mm                | 100          | QPSK 1_271   | 100%          | 654800/3822        | 0.111                | 0.054                 | 21.12                   | 22.00                 | 1.225             | 0.136                        |
| Top side 19mm                  | 100          | QPSK 1_271   | 100%          | 654800/3822        | 0.071                | 0.036                 | 21.12                   | 22.00                 | 1.225             | 0.087                        |
| Front side 19mm                | 100          | QPSK 1_271   | 100%          | 650000/3750        | 0.358                | 0.155                 | 21.02                   | 22.00                 | 1.253             | 0.449                        |
| Front side 19mm                | 100          | QPSK 1_271   | 100%          | 652400/3786        | 0.316                | 0.144                 | 21.04                   | 22.00                 | 1.247             | 0.394                        |
| Front side 19mm                | 100          | QPSK 1_271   | 100%          | 657200/3858        | 0.240                | 0.110                 | 21.06                   | 22.00                 | 1.242             | 0.298                        |
| Front side 19mm                | 100          | QPSK 1_271   | 100%          | 659600/3894        | 0.214                | 0.890                 | 20.97                   | 22.00                 | 1.268             | 0.271                        |
| Front side 19mm                | 100          | QPSK 1_271   | 100%          | 662000/3930        | 0.232                | 0.092                 | 21.06                   | 22.00                 | 1.242             | 0.288                        |
| Body(50%RB) Sensor Off         |              |              |               |                    |                      |                       |                         |                       |                   |                              |
| Front side 19mm                | 100          | QPSK 135_138 | 100%          | 654800/3822        | 0.335                | 0.152                 | 21.09                   | 22.00                 | 1.233             | 0.413                        |
| Back side 19mm                 | 100          | QPSK 135_138 | 100%          | 654800/3822        | 0.111                | 0.053                 | 21.09                   | 22.00                 | 1.233             | 0.137                        |
| Left side 5mm                  | 100          | QPSK 135_138 | 100%          | 654800/3822        | 0.050                | 0.023                 | 21.09                   | 22.00                 | 1.233             | 0.062                        |
| Right side 19mm                | 100          | QPSK 135_138 | 100%          | 654800/3822        | 0.094                | 0.046                 | 21.09                   | 22.00                 | 1.233             | 0.116                        |
| Top side 19mm                  | 100          | QPSK 135_138 | 100%          | 654800/3822        | 0.099                | 0.047                 | 21.09                   | 22.00                 | 1.233             | 0.122                        |
| Front side 19mm                | 100          | QPSK 135_138 | 100%          | 650000/3750        | 0.352                | 0.154                 | 20.94                   | 22.00                 | 1.276             | 0.449                        |
| Front side 19mm                | 100          | QPSK 135_138 | 100%          | 652400/3786        | 0.317                | 0.135                 | 21.01                   | 22.00                 | 1.256             | 0.398                        |
| Front side 19mm                | 100          | QPSK 135_138 | 100%          | 657200/3858        | 0.278                | 0.127                 | 21.03                   | 22.00                 | 1.250             | 0.348                        |
| Front side 19mm                | 100          | QPSK 135_138 | 100%          | 659600/3894        | 0.253                | 0.104                 | 20.95                   | 22.00                 | 1.274             | 0.322                        |
| Front side 19mm                | 100          | QPSK 135_138 | 100%          | 662000/3930        | 0.221                | 0.102                 | 21.00                   | 22.00                 | 1.259             | 0.278                        |
| MIMO (Ant0+Ant 3) Test Results |              |              |               |                    |                      |                       |                         |                       |                   |                              |
| Test position                  | BW.<br>(MHz) | Mode         | Duty<br>Cycle | Ch./Freq.<br>(MHz) | SAR<br>(W/kg)<br>1-g | 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) |
| Front side                     | 100          | QPSK         | 100%          | /                  | /                    | /                     | /                       | /                     | /                 | 1.180                        |
| Back side                      | 100          | QPSK         | 100%          | /                  | /                    | /                     | /                       | /                     | /                 | 0.300                        |
| Left side                      | 100          | QPSK         | 100%          | /                  | /                    | /                     | /                       | /                     | /                 | 0.145                        |
| Right side                     | 100          | QPSK         | 100%          | /                  | /                    | /                     | /                       | /                     | /                 | 0.921                        |
| Top side                       | 100          | QPSK         | 100%          | /                  | /                    | /                     | /                       | /                     | /                 | 0.272                        |

Table 24: SAR of 5G NR n77(3700~3980MHz).

**Note:**

For the MIMO SAR, each antenna SAR will be evaluated independently. Then the conservative “max + max” multi-Tx method should be used to combine the scaled SAR value of each antenna as the UL 2\*2 MIMO SAR.

## 15.22 EN\_DC and Inter-band UL CA SAR Summary

## EN\_DC SAR:

| LTE Band<br>(EN-DC) | Exposure<br>position | Ant0  | Ant3  | n2    |      | EN-DC<br>SAR |
|---------------------|----------------------|-------|-------|-------|------|--------------|
|                     |                      |       |       | Ant0  | Ant3 |              |
| Band 5              | Front                | /     | 0.704 | 0.717 | /    | 1.421        |
|                     | Back                 | /     | 0.349 | 0.768 | /    | 1.117        |
|                     | Left                 | /     | 0.312 | 0.239 | /    | 0.551        |
|                     | Right                | /     | 0.131 | 0.380 | /    | 0.511        |
|                     | Top                  | /     | 0.276 | 0.264 | /    | 0.540        |
|                     | Bottom               | /     | /     | /     | /    | /            |
| Band 12             | Front                | /     | 0.639 | 0.717 | /    | 1.356        |
|                     | Back                 | /     | 0.667 | 0.768 | /    | 1.435        |
|                     | Left                 | /     | 0.640 | 0.239 | /    | 0.879        |
|                     | Right                | /     | 0.237 | 0.380 | /    | 0.617        |
|                     | Top                  | /     | 0.462 | 0.264 | /    | 0.726        |
|                     | Bottom               | /     | /     | /     | /    | /            |
| Band 13             | Front                | /     | 0.703 | 0.717 | /    | 1.420        |
|                     | Back                 | /     | 0.517 | 0.768 | /    | 1.285        |
|                     | Left                 | /     | 0.450 | 0.239 | /    | 0.689        |
|                     | Right                | /     | 0.168 | 0.380 | /    | 0.548        |
|                     | Top                  | /     | 0.370 | 0.264 | /    | 0.634        |
|                     | Bottom               | /     | /     | /     | /    | /            |
| Band 30             | Front                | 0.328 | /     | 0.717 | /    | 1.045        |
|                     | Back                 | 0.529 | /     | 0.768 | /    | 1.297        |
|                     | Left                 | 0.080 | /     | 0.239 | /    | 0.319        |
|                     | Right                | 0.275 | /     | 0.380 | /    | 0.655        |
|                     | Top                  | 0.097 | /     | 0.264 | /    | 0.361        |
|                     | Bottom               | /     | /     | /     | /    | /            |
| Band 66             | Front                | 0.679 | /     | 0.717 | /    | 1.396        |
|                     | Back                 | 0.668 | /     | 0.768 | /    | 1.436        |
|                     | Left                 | 0.249 | /     | 0.239 | /    | 0.488        |
|                     | Right                | 0.393 | /     | 0.380 | /    | 0.773        |
|                     | Top                  | 0.213 | /     | 0.264 | /    | 0.477        |
|                     | Bottom               | /     | /     | /     | /    | /            |

| LTE Band<br>(EN-DC) | Exposure position | Ant0  | Ant3  | n5   |       | EN-DC<br>SAR |
|---------------------|-------------------|-------|-------|------|-------|--------------|
|                     |                   |       |       | Ant0 | Ant3  |              |
| Band 2              | Front             | 0.695 | /     | /    | 0.680 | 1.375        |
|                     | Back              | 0.503 | /     | /    | 0.386 | 0.889        |
|                     | Left              | 0.275 | /     | /    | 0.277 | 0.552        |
|                     | Right             | 0.350 | /     | /    | 0.105 | 0.455        |
|                     | Top               | 0.220 | /     | /    | 0.386 | 0.606        |
|                     | Bottom            | /     | /     | /    | /     | /            |
| Band 12             | Front             | /     | 0.639 | /    | 0.680 | 1.319        |
|                     | Back              | /     | 0.667 | /    | 0.386 | 1.053        |
|                     | Left              | /     | 0.640 | /    | 0.277 | 0.917        |
|                     | Right             | /     | 0.237 | /    | 0.105 | 0.342        |
|                     | Top               | /     | 0.462 | /    | 0.386 | 0.848        |
|                     | Bottom            | /     | /     | /    | /     | /            |

|         |        |       |       |   |       |       |
|---------|--------|-------|-------|---|-------|-------|
| Band 13 | Front  | /     | 0.703 | / | 0.680 | 1.383 |
|         | Back   | /     | 0.517 | / | 0.386 | 0.903 |
|         | Left   | /     | 0.450 | / | 0.277 | 0.727 |
|         | Right  | /     | 0.168 | / | 0.105 | 0.273 |
|         | Top    | /     | 0.370 | / | 0.386 | 0.756 |
|         | Bottom | /     | /     | / | /     | /     |
| Band 30 | Front  | 0.328 | /     | / | 0.680 | 1.008 |
|         | Back   | 0.529 | /     | / | 0.386 | 0.915 |
|         | Left   | 0.080 | /     | / | 0.277 | 0.357 |
|         | Right  | 0.275 | /     | / | 0.105 | 0.380 |
|         | Top    | 0.097 | /     | / | 0.386 | 0.483 |
|         | Bottom | /     | /     | / | /     | /     |
| Band 48 | Front  | 0.483 | /     | / | 0.680 | 1.163 |
|         | Back   | 0.084 | /     | / | 0.386 | 0.470 |
|         | Left   | 0.059 | /     | / | 0.277 | 0.336 |
|         | Right  | 0.448 | /     | / | 0.105 | 0.553 |
|         | Top    | 0.066 | /     | / | 0.386 | 0.452 |
|         | Bottom | /     | /     | / | /     | /     |
| Band 66 | Front  | 0.679 | /     | / | 0.680 | 1.359 |
|         | Back   | 0.668 | /     | / | 0.386 | 1.054 |
|         | Left   | 0.249 | /     | / | 0.277 | 0.526 |
|         | Right  | 0.393 | /     | / | 0.105 | 0.498 |
|         | Top    | 0.213 | /     | / | 0.386 | 0.599 |
|         | Bottom | /     | /     | / | /     | /     |

| LTE Band<br>(EN-DC) | Exposure<br>position | Ant0  | Ant3 | n41   |       | EN-DC<br>SAR |
|---------------------|----------------------|-------|------|-------|-------|--------------|
|                     |                      |       |      | Ant0  | Ant3  |              |
| Band 2              | Front                | 0.695 | /    | 0.540 | 0.471 | 1.235        |
|                     | Back                 | 0.503 | /    | 0.771 | 0.393 | 1.274        |
|                     | Left                 | 0.275 | /    | 0.251 | 0.380 | 0.655        |
|                     | Right                | 0.350 | /    | 0.507 | 0.327 | 0.857        |
|                     | Top                  | 0.220 | /    | 0.179 | 0.211 | 0.431        |
|                     | Bottom               | /     | /    | /     | /     | /            |
| Band 66             | Front                | 0.679 | /    | 0.540 | 0.471 | 1.219        |
|                     | Back                 | 0.668 | /    | 0.771 | 0.393 | 1.439        |
|                     | Left                 | 0.249 | /    | 0.251 | 0.380 | 0.629        |
|                     | Right                | 0.393 | /    | 0.507 | 0.327 | 0.900        |
|                     | Top                  | 0.213 | /    | 0.179 | 0.211 | 0.424        |
|                     | Bottom               | /     | /    | /     | /     | /            |

| LTE Band<br>(EN-DC) | Exposure position | Ant0  | Ant3 | n71  |       | EN-DC<br>SAR |
|---------------------|-------------------|-------|------|------|-------|--------------|
|                     |                   |       |      | Ant0 | Ant3  |              |
| Band 2              | Front             | 0.695 | /    | /    | 0.746 | 1.441        |
|                     | Back              | 0.503 | /    | /    | 0.735 | 1.238        |
|                     | Left              | 0.275 | /    | /    | 0.483 | 0.758        |
|                     | Right             | 0.350 | /    | /    | 0.291 | 0.641        |
|                     | Top               | 0.220 | /    | /    | 0.519 | 0.739        |
|                     | Bottom            | /     | /    | /    | /     | /            |
| Band 66             | Front             | 0.679 | /    | /    | 0.746 | 1.425        |
|                     | Back              | 0.668 | /    | /    | 0.735 | 1.403        |
|                     | Left              | 0.249 | /    | /    | 0.483 | 0.732        |
|                     | Right             | 0.393 | /    | /    | 0.291 | 0.684        |
|                     | Top               | 0.213 | /    | /    | 0.519 | 0.732        |
|                     | Bottom            | /     | /    | /    | /     | /            |

| LTE Band<br>(EN-DC) | Exposure position | Ant0  | Ant3  | n25   |      | EN-DC<br>SAR |
|---------------------|-------------------|-------|-------|-------|------|--------------|
|                     |                   |       |       | Ant0  | Ant3 |              |
| Band 12             | Front             | /     | 0.639 | 0.732 | /    | 1.371        |
|                     | Back              | /     | 0.667 | 0.590 | /    | 1.257        |
|                     | Left              | /     | 0.640 | 0.288 | /    | 0.928        |
|                     | Right             | /     | 0.237 | 0.392 | /    | 0.629        |
|                     | Top               | /     | 0.462 | 0.269 | /    | 0.731        |
|                     | Bottom            | /     | /     | /     | /    | /            |
| Band 48             | Front             | 0.483 | /     | 0.732 | /    | 1.215        |
|                     | Back              | 0.084 | /     | 0.590 | /    | 0.674        |
|                     | Left              | 0.059 | /     | 0.288 | /    | 0.347        |
|                     | Right             | 0.448 | /     | 0.392 | /    | 0.840        |
|                     | Top               | 0.066 | /     | 0.269 | /    | 0.335        |
|                     | Bottom            | /     | /     | /     | /    | /            |
| Band 66             | Front             | 0.679 | /     | 0.732 | /    | 1.411        |
|                     | Back              | 0.668 | /     | 0.590 | /    | 1.258        |
|                     | Left              | 0.249 | /     | 0.288 | /    | 0.537        |
|                     | Right             | 0.393 | /     | 0.392 | /    | 0.785        |
|                     | Top               | 0.213 | /     | 0.269 | /    | 0.482        |
|                     | Bottom            | /     | /     | /     | /    | /            |

| LTE Band<br>(EN-DC) | Exposure position | Ant0  | Ant3  | n30   |      | EN-DC<br>SAR |
|---------------------|-------------------|-------|-------|-------|------|--------------|
|                     |                   |       |       | Ant0  | Ant3 |              |
| Band 2              | Front             | 0.695 | /     | 0.661 | /    | 1.356        |
|                     | Back              | 0.503 | /     | 0.774 | /    | 1.277        |
|                     | Left              | 0.275 | /     | 0.055 | /    | 0.330        |
|                     | Right             | 0.350 | /     | 0.518 | /    | 0.868        |
|                     | Top               | 0.220 | /     | 0.089 | /    | 0.309        |
|                     | Bottom            | /     | /     | /     | /    | /            |
| Band 5              | Front             | /     | 0.704 | 0.661 | /    | 1.365        |
|                     | Back              | /     | 0.349 | 0.774 | /    | 1.123        |
|                     | Left              | /     | 0.312 | 0.055 | /    | 0.367        |
|                     | Right             | /     | 0.131 | 0.518 | /    | 0.649        |
|                     | Top               | /     | 0.276 | 0.089 | /    | 0.365        |
|                     | Bottom            | /     | /     | /     | /    | /            |
| Band 12             | Front             | /     | 0.639 | 0.661 | /    | 1.300        |

|         |        |       |       |       |   |       |
|---------|--------|-------|-------|-------|---|-------|
|         | Back   | /     | 0.667 | 0.774 | / | 1.441 |
|         | Left   | /     | 0.640 | 0.055 | / | 0.695 |
|         | Right  | /     | 0.237 | 0.518 | / | 0.755 |
|         | Top    | /     | 0.462 | 0.089 | / | 0.551 |
|         | Bottom | /     | /     | /     | / | /     |
| Band 66 | Front  | 0.679 | /     | 0.661 | / | 1.340 |
|         | Back   | 0.668 | /     | 0.774 | / | 1.442 |
|         | Left   | 0.249 | /     | 0.055 | / | 0.304 |
|         | Right  | 0.393 | /     | 0.518 | / | 0.911 |
|         | Top    | 0.213 | /     | 0.089 | / | 0.302 |
|         | Bottom | /     | /     | /     | / | /     |

| LTE Band<br>(EN-DC) | Exposure<br>position | Ant0  | Ant3  | n66   |      | EN-DC<br>SAR |
|---------------------|----------------------|-------|-------|-------|------|--------------|
|                     |                      |       |       | Ant0  | Ant3 |              |
| Band 2              | Front                | 0.695 | /     | 0.614 | /    | 1.309        |
|                     | Back                 | 0.503 | /     | 0.591 | /    | 1.094        |
|                     | Left                 | 0.275 | /     | 0.350 | /    | 0.625        |
|                     | Right                | 0.350 | /     | 0.342 | /    | 0.692        |
|                     | Top                  | 0.220 | /     | 0.290 | /    | 0.510        |
|                     | Bottom               | /     | /     | /     | /    | /            |
| Band 5              | Front                | /     | 0.704 | 0.614 | /    | 1.318        |
|                     | Back                 | /     | 0.349 | 0.591 | /    | 0.940        |
|                     | Left                 | /     | 0.312 | 0.350 | /    | 0.662        |
|                     | Right                | /     | 0.131 | 0.342 | /    | 0.473        |
|                     | Top                  | /     | 0.276 | 0.290 | /    | 0.566        |
|                     | Bottom               | /     | /     | /     | /    | /            |
| Band 12             | Front                | /     | 0.639 | 0.614 | /    | 1.253        |
|                     | Back                 | /     | 0.667 | 0.591 | /    | 1.258        |
|                     | Left                 | /     | 0.640 | 0.350 | /    | 0.990        |
|                     | Right                | /     | 0.237 | 0.342 | /    | 0.579        |
|                     | Top                  | /     | 0.462 | 0.290 | /    | 0.752        |
|                     | Bottom               | /     | /     | /     | /    | /            |
| Band 13             | Front                | /     | 0.703 | 0.614 | /    | 1.317        |
|                     | Back                 | /     | 0.517 | 0.591 | /    | 1.108        |
|                     | Left                 | /     | 0.450 | 0.350 | /    | 0.800        |
|                     | Right                | /     | 0.168 | 0.342 | /    | 0.510        |
|                     | Top                  | /     | 0.370 | 0.290 | /    | 0.660        |
|                     | Bottom               | /     | /     | /     | /    | /            |
| Band 30             | Front                | 0.328 | /     | 0.614 | /    | 0.942        |
|                     | Back                 | 0.529 | /     | 0.591 | /    | 1.120        |
|                     | Left                 | 0.080 | /     | 0.350 | /    | 0.430        |
|                     | Right                | 0.275 | /     | 0.342 | /    | 0.617        |
|                     | Top                  | 0.097 | /     | 0.290 | /    | 0.387        |
|                     | Bottom               | /     | /     | /     | /    | /            |
| Band 48             | Front                | 0.483 | /     | 0.614 | /    | 1.097        |
|                     | Back                 | 0.084 | /     | 0.591 | /    | 0.675        |
|                     | Left                 | 0.059 | /     | 0.350 | /    | 0.409        |
|                     | Right                | 0.448 | /     | 0.342 | /    | 0.790        |
|                     | Top                  | 0.066 | /     | 0.290 | /    | 0.356        |
|                     | Bottom               | /     | /     | /     | /    | /            |

| LTE Band<br>(EN-DC) | Exposure position | Ant0  | Ant3  | n77   |       | EN-DC<br>SAR |
|---------------------|-------------------|-------|-------|-------|-------|--------------|
|                     |                   |       |       | Ant0  | Ant3  |              |
| Band 2              | Front             | 0.695 | /     | 0.738 | 0.456 | 1.433        |
|                     | Back              | 0.503 | /     | 0.147 | 0.327 | 0.830        |
|                     | Left              | 0.275 | /     | 0.089 | 0.116 | 0.391        |
|                     | Right             | 0.350 | /     | 0.785 | 0.136 | 1.135        |
|                     | Top               | 0.220 | /     | 0.150 | 0.122 | 0.370        |
|                     | Bottom            | /     | /     | /     | /     | /            |
| Band 5              | Front             | /     | 0.704 | 0.738 | 0.456 | 1.442        |
|                     | Back              | /     | 0.349 | 0.147 | 0.327 | 0.676        |
|                     | Left              | /     | 0.312 | 0.089 | 0.116 | 0.428        |
|                     | Right             | /     | 0.131 | 0.785 | 0.136 | 0.916        |
|                     | Top               | /     | 0.276 | 0.150 | 0.122 | 0.426        |
|                     | Bottom            | /     | /     | /     | /     | /            |
| Band 12             | Front             | /     | 0.639 | 0.738 | 0.456 | 1.377        |
|                     | Back              | /     | 0.667 | 0.147 | 0.327 | 0.994        |
|                     | Left              | /     | 0.640 | 0.089 | 0.116 | 0.756        |
|                     | Right             | /     | 0.237 | 0.785 | 0.136 | 1.022        |
|                     | Top               | /     | 0.462 | 0.150 | 0.122 | 0.612        |
|                     | Bottom            | /     | /     | /     | /     | /            |
| Band 13             | Front             | /     | 0.703 | 0.738 | 0.456 | 1.441        |
|                     | Back              | /     | 0.517 | 0.147 | 0.327 | 0.844        |
|                     | Left              | /     | 0.450 | 0.089 | 0.116 | 0.566        |
|                     | Right             | /     | 0.168 | 0.785 | 0.136 | 0.953        |
|                     | Top               | /     | 0.370 | 0.150 | 0.122 | 0.520        |
|                     | Bottom            | /     | /     | /     | /     | /            |
| Band 66             | Front             | 0.679 | /     | 0.738 | 0.456 | 1.417        |
|                     | Back              | 0.668 | /     | 0.147 | 0.327 | 0.995        |
|                     | Left              | 0.249 | /     | 0.089 | 0.116 | 0.365        |
|                     | Right             | 0.393 | /     | 0.785 | 0.136 | 1.178        |
|                     | Top               | 0.213 | /     | 0.150 | 0.122 | 0.363        |
|                     | Bottom            | /     | /     | /     | /     | /            |

**Inter-band UL CA SAR:**

| Exposure position | LTE B12<br>Ant3 | LTE B66<br>Ant0 | Inter-band<br>SAR |
|-------------------|-----------------|-----------------|-------------------|
| Front             | 0.639           | 0.679           | 1.318             |
| Back              | 0.667           | 0.668           | 1.335             |
| Left              | 0.640           | 0.249           | 0.889             |
| Right             | 0.237           | 0.393           | 0.630             |
| Top               | 0.462           | 0.213           | 0.675             |
| Bottom            | /               | /               | /                 |

| Exposure position | LTE B13<br>Ant3 | LTE B66<br>Ant0 | Inter-band<br>SAR |
|-------------------|-----------------|-----------------|-------------------|
| Front             | 0.703           | 0.679           | 1.382             |
| Back              | 0.517           | 0.668           | 1.185             |
| Left              | 0.450           | 0.249           | 0.699             |
| Right             | 0.168           | 0.393           | 0.561             |
| Top               | 0.370           | 0.213           | 0.583             |
| Bottom            | /               | /               | /                 |

| Exposure position | LTE B2<br>Ant0 | LTE B12<br>Ant3 | Inter-band<br>SAR |
|-------------------|----------------|-----------------|-------------------|
| Front             | 0.695          | 0.639           | 1.334             |
| Back              | 0.503          | 0.667           | 1.170             |
| Left              | 0.275          | 0.640           | 0.915             |
| Right             | 0.350          | 0.237           | 0.587             |
| Top               | 0.220          | 0.462           | 0.682             |
| Bottom            | /              | /               | /                 |

| Exposure position | LTE B2<br>Ant0 | LTE B13<br>Ant3 | Inter-band<br>SAR |
|-------------------|----------------|-----------------|-------------------|
| Front             | 0.695          | 0.703           | 1.398             |
| Back              | 0.503          | 0.517           | 1.020             |
| Left              | 0.275          | 0.450           | 0.725             |
| Right             | 0.350          | 0.168           | 0.518             |
| Top               | 0.220          | 0.370           | 0.590             |
| Bottom            | /              | /               | /                 |

| Exposure position | LTE B4<br>Ant0 | LTE B13<br>Ant3 | Inter-band<br>SAR |
|-------------------|----------------|-----------------|-------------------|
| Front             | 0.679          | 0.703           | 1.382             |
| Back              | 0.668          | 0.517           | 1.185             |
| Left              | 0.352          | 0.450           | 0.802             |
| Right             | 0.393          | 0.168           | 0.561             |
| Top               | 0.300          | 0.370           | 0.670             |
| Bottom            | /              | /               | /                 |

## **16 Simultaneous Transmission Analysis**

This device does not have any simultaneous transmission other than support for EN\_DC and UL CA (see section 15.22).

## **17 Measurement Uncertainty**

Per KDB 865664 D01 SAR measurement 100MHz to 6GHz, when the highest measured 1-g SAR within a frequency band is  $< 1.5$  W/kg and the measured 10-g SAR within a frequency band is  $< 3.75$  W/kg. The expanded SAR measurement uncertainty must be  $\leq 30\%$ , for a confidence interval of  $k = 2$ . If these conditions are met, extensive SAR measurement uncertainty analysis described in IEEE Std 1528-2013 is not required in SAR reports submitted for equipment approval.

## **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 Output Power Table**

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

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