REPORT No.: SZ22080079S01

TEST REPORT

APPLICANT	:	Acer Incorporated
PRODUCT NAME	:	Acer Connect
MODEL NAME	:	M3
BRAND NAME	:	Acer
FCC ID	:	HLZM3
STANDARD(S)	:	FCC 47 CFR Part 2(2.1093) IEEE 1528-2013
RECEIPT DATE	:	2022-11-10
TEST DATE	:	2022-12-12 to 2023-03-06
ISSUE DATE	:	2023-03-07

Edited by : Xie Yiyun

Xie Yiyun (Rapporteur)

Approved by: Shen Junsheng

Shen Junsheng (Supervisor)

DIRECTORY

Changed History		
Version	**Date**	**Reason for Change**
1.0	2023-03-07	First edition

1. SAR Results Summary

The maximum results of Specific Absorption Rate (SAR) found during test as bellows:

<Highest Reported SAR Summary>

Frequency Band		Highest SAR Summary Body (Gap 10mm) 1g SAR (W/kg)
LTE	LTE Band 5	0.559
	LTE Band 7	0.645
	LTE Band 12/17	0.447
	LTE Band 13	0.616
	LTE Band 14	0.689
	LTE Band 25/2	0.883
	LTE Band 26	0.487
	LTE Band 30	0.663
	LTE Band 38	0.535
	LTE Band 41	0.608
	LTE Band 42	0.283
	LTE Band 48	0.397
	LTE Band 66/4	0.917
	LTE Band 71	0.252
5G NR	n2	0.871
	n5	0.449
	n7	1.012
	n38	1.122
	n41	1.018
	n66	0.554
	n71	0.257
	n77	1.059
	n78	1.049
WLAN	2.4GHz WLAN	0.420
	5GHz WLAN	0.599

Highest Simultaneous Transmission SAR_{1g} (W/Kg):	1.591 W/kg	Limit(W/kg): 1.6 W/kg

Note:

1. For FDD-LTE Band 2/4/17 is full covered by FDD-LTE Band 25/66/12, therefore only FDD-LTE

Band 25/66/12 was tested.

2. This device is in compliance with Specific Absorption Rate (SAR) for general population or uncontrolled exposure limits (1.6W/kg as averaged over any 1 gram of tissue; specified in FCC 47 CFR part 1 (1.1310) and IEEE C95.1-1991), and had been tested in accordance with the measurement methods and procedures specified in IEEE 1528-2013 and FCC KDB publications.
3. When the test result is a critical value, we will use the measurement uncertainty give the judgment result based on the 95% confidence intervals.

2. Technical Information

Note: Provide by applicant.

2.1. Applicant and Manufacturer Information

Applicant:	Acer Incorporated
Applicant Address:	8F, 88, Sec. 1, Xintai 5th Rd. Xizhi, New Taipei City 221 Taiwan
Manufacturer:	Acer Incorporated
Manufacturer Address:	8F, 88, Sec. 1, Xintai 5th Rd. Xizhi, New Taipei City 221 Taiwan

2.2. Equipment under Test (EUT) Description

Product Name:	Acer Connect
EUT IMEI:	353818570007003 353818570006187
Hardware Version:	L30-MB-V1.1
Software Version:	ASW2106_UN_1201_T0054
Frequency Bands:	LTE Band 2: 1850 MHz ~ 1910 MHz LTE Band 4: 1710 MHz ~ 1755 MHz LTE Band 5: 824 MHz ~ 849 MHz LTE Band 7: 2500 MHz ~ 2570 MHz LTE Band 12: 699 MHz ~ 716 MHz LTE Band 13: 777 MHz ~ 787 MHz LTE Band 14: 788 MHz ~ 798 MHz LTE Band 17: 704 MHz ~ 716 MHz LTE Band 25: 1850 MHz ~ 1915 MHz LTE Band 26: 814 MHz ~ 849 MHz LTE Band 30: 2305 MHz ~ 2315 MHz LTE Band 38: 2570 MHz ~ 2620 MHz

	LTE Band 41: 2496 MHz ~ 2690 MHz LTE Band 42: 3450 MHz ~ 3550 MHz; 3550 MHz ~3600 MHz LTE Band 48: 3550 MHz ~ 3700 MHz LTE Band 66: 1710 MHz ~ 1780 MHz LTE Band 71: 663 MHz ~ 698 MHz 5G NR n2: 1850 MHz ~ 1910 MHz 5G NR n5: 824 MHz ~ 849 MHz 5G NR n7: 2500 MHz ~ 2570 MHz 5G NR n38: 2570 MHz ~ 2620 MHz 5G NR n41: 2496 MHz ~ 2690 MHz 5G NR n66: 1710 MHz ~ 1780 MHz 5G NR n71: 663 MHz ~ 698 MHz 5G NR n77: 3450 MHz ~ 3550 MHz; 3700 MHz ~3980 MHz 5G NR n78: 3450 MHz ~ 3550 MHz; 3700 MHz ~3800 MHz WLAN 2.4GHz: 2412 MHz ~ 2462 MHz WLAN 5.2GHz: 5180 MHz ~ 5240 MHz WLAN 5.8GHz: 5745 MHz ~ 5825 MHz
Modulation Mode:	LTE: QPSK, 16QAM, 64QAM 5G NR: DFT-s-OFDM/CP-OFDM, PI/2 BPSK QPSK, 16QAM, 64QAM, 256QAM 802.11b: DSSS 802.11a/g/n-HT20/HT40/ac-VHT20/40/80: OFDM 802.11ax-HEW20/40/80: OFDMA
Operation Class:	Class B
Carrier Aggregation:	Downlink only
Hotspot Mode:	Support
WLAN MIMO:	Support
Antenna Type:	WWAN: Fixed Internal Antenna WLAN: PIFA Antenna
SIM Cards Description:	LTE+5G NR

Note: For more detailed description, please refer to specification or user manual supplied by the applicant and/or manufacturer.

2.3. Environment of Test Site/Conditions

Normal Temperature (NT):	20-25 °C
Relative Humidity:	30-75 %
Air Pressure:	980-1020 hPa

Test Frequency:	FDD-LTE Band 2/4/5/7/12/13/14/17/25/26/30/66/71 TDD-LTE Band 38/41/42/48 5G NR n2/5/7/38/41/66/71/77/78 WLAN 2.4GHz WLAN 5GHz
Operation Mode:	Call established
Power Level:	FDD-LTE Band 2/4/5/7/12/13/14/17/25/26/30/66/71 (Maximum output power) TDD-LTE Band 38/41/42/48 (Maximum output power) 5G NR n2/5/7/38/41/66/71/77/78 (Maximum output power) WLAN 2.4GHz/WLAN 5GHz Refers to Annex E in this report

During SAR test, EUT is in Traffic Mode (Channel Allocated) at Normal Voltage Condition. A communication link is set up with a System Simulator (SS) by air link, and a call is established.

The EUT shall use its internal transmitter. The antenna(s), battery and accessories shall be those specified by the Factory. The EUT battery must be fully charged and checked periodically during the test to ascertain uniform power output. If a wireless link is used, the antenna connected to the output of the base station simulator shall be placed at least 50 cm away from the handset.
The signal transmitted by the simulator to the antenna feeding point shall be lower than the output power level of the handset by at least 35 dB.

3. Specific Absorption Rate (SAR)

3.1. Introduction

SAR is related to the rate at which energy is absorbed per unit mass in an object exposed to a radio field. The SAR distribution in a biological body is complicated and is usually carried out by experimental techniques or numerical modeling. The standard recommends limits for two tiers of groups, occupational or controlled and general population or uncontrolled, based on a person's awareness and ability to exercise control over his or her exposure. In general, occupational or controlled exposure limits are Middle than the limits for general population or uncontrolled.

3.2. SAR Definition

The SAR definition is the time derivative (rate) of the incremental energy (dW) absorbed by(dissipated in) an incremental mass (dm) contained in a volume element (dv) of a given density. (ρ). The equation description is as below:

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

SAR is expressed in units of Watts per kilogram (W/kg).
SAR measurement can be either related to the temperature elevation in tissue by,

$$\mathbf{SAR} = \mathbf{C}\left(\frac{\boldsymbol{\delta}\mathbf{T}}{\boldsymbol{\delta}\mathbf{t}}\right)$$

Where C is the specific head capacity, δT is the temperature rise and δt the exposure duration, or related to the electrical field in the tissue by

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

Where σ is the conductivity of the tissue, ρ is the mass density of the tissue and $|E|$ is the rmselectrical field strength.

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

4. RF Exposure Limits

4.1. Uncontrolled Environment

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.

4.2. Controlled Environment

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.

Limits for General Population/Uncontrolled Exposure (W/kg)

Type Exposure	Uncontrolled Environment Limit
Spatial Peak SAR (1g cube tissue for head and trunk)	1.6 W/kg
Spatial Peak SAR (10g cube tissue for limbs)	4.0 W/kg
Spatial Peak SAR (1g cube tissue for whole body)	0.08 W/kg

Note:

1. Occupational/Uncontrolled Environments are defined as locations where there is exposure that may be incurred by people who are aware of the potential for exposure (i.e. as a result of employment or occupation).
2. Whole-Body SAR is averaged over the entire body, partial-body SAR is averaged over any 1gram of tissue defined as a tissue volume in the shape of a cube. SAR for hands, wrists, feet and ankles is averaged over any 10 grams of tissue defined as a tissue volume in the shape of a cube.

5. Applied Reference Documents

Leading reference documents for testing:

Identity	Document Title	Method Determination /Remark
FCC 47CFR Part 2(2.1093)	Radio Frequency Radiation Exposure Evaluation: Portable Devices	No deviation
IEEE 1528-2013	IEEE Recommended Practice for Determining the Peak Spatial-Average Specific Absorption Rate (SAR) in the Human Head from Wireless Communications Devices: Measurement Techniques	No deviation
KDB 447498 D01v06	General RF Exposure Guidance	No deviation
KDB 248227 D01v02r02	SAR Measurement Procedures for 802.11 Transmitters	No deviation
KDB 865664 D01v01r04	SAR Measurement 100 MHz to 6 GHz	No deviation
KDB 865664 D02v01r02	RF Exposure Reporting	No deviation
KDB 648474 D04v01r03	Handset SAR	No deviation
KDB 941225 D01v03r01	3G SAR MEAUREMENT PROCEDURES	No deviation
KDB 941225 D05v02r05	SAR Evaluation Consideration for LTE Devices	No deviation
KDB 941225 D06v02r01	SAR Evaluation Procedures For Portable Devices With Wireless Router Capabilities	No deviation
Note 1: Additions to, deviation, or exclusions from the method shall be judged in the "method determination" column of add, deviate or exclude from the specific method shall be explained in the "Remark" of the above table.		

6. SAR Measurement System

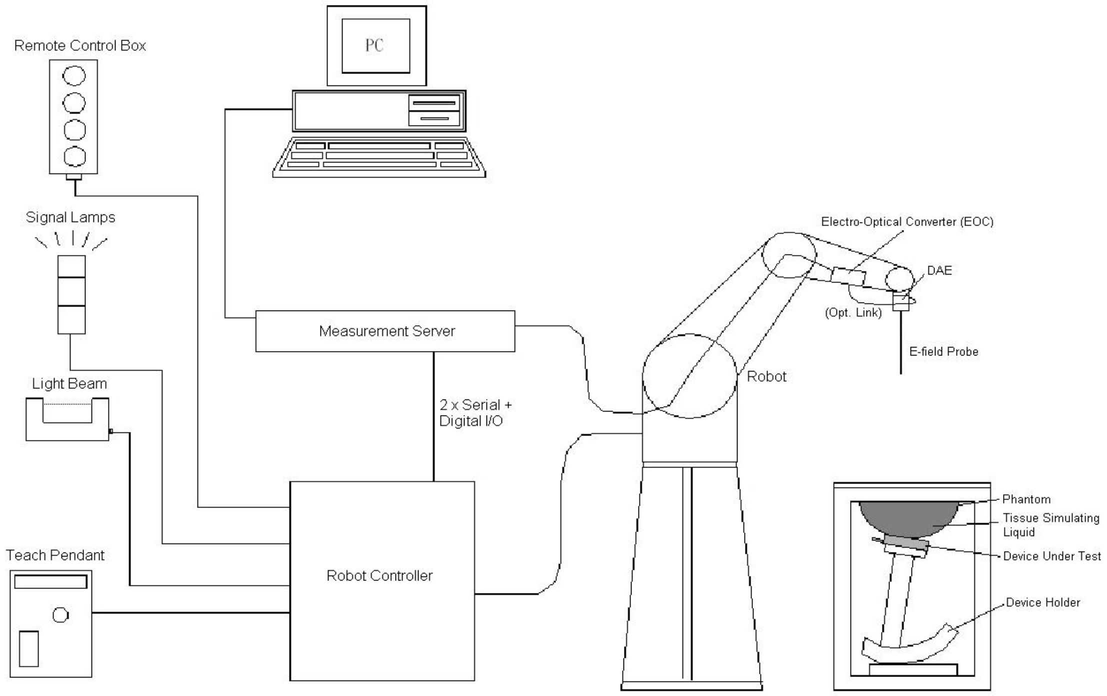

Fig 6.1 SPEAG DASY System Configurations

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

- A standard high precision 6-axis robot with controller, a teach pendant and software.
- A data acquisition electronic (DAE) attached to the robot arm extension.
- A dosimetric probe equipped with an optical surface detector system.
- The electro-optical converter (ECO) performs the conversion between optical and electrical signals
- A measurement server performs the time critical tasks such as signal filtering, control of the robot operation and fast movement interrupts.
- A probe alignment unit which improves the accuracy of the probe positioning.
- A computer operating Windows XP.
- DASY software.
- Remove control with teach pendant and additional circuitry for robot safety such as warming lamps, etc.
- The SAM twin phantom.
- A device holder.
- Tissue simulating liquid.
- Dipole for evaluating the proper functioning of the system.
- Some of the components are described in details in the following sub-sections.

6.1. E-Field Probe

The SAR measurement is conducted with the dosimetric probe (manufactured by SPEAG).The probe is specially designed and calibrated for use in liquid with high permittivity. The dosimetric probe has special calibration in liquid at different frequency. This probe has a built in optical surface detection system to prevent from collision with phantom.

➢ **E-Field Probe Specification**

<ES3DV3 Probe>

Construction	Symmetrical design with triangular core Built-in optical fiber for surface detection system. Built-in shielding against static charges. PEEK enclosure material (resistant to organic solvents, e.g., DGBE)
Frequency	10 MHz to 3 GHz; Linearity: ± 0.2 dB
Directivity	± 0.2 dB in HSL (rotation around probe axis) ± 0.4 dB in HSL (rotation normal to probe axis)
Dynamic Range	5 μW/g to 100 mW/g; Linearity: ± 0.2 dB
Dimensions	Overall length: 330 mm (Tip: 16 mm) Tip diameter: 6.8 mm (Body: 12 mm) Distance from probe tip to dipole centers: 2.7 mm

Fig 6.2 Photo of ES3DV3

<EX3DV4 Probe>

Construction	Symmetrical design with triangular core Built-in shielding against static charges PEEK enclosure material (resistant to organic solvents, e.g., DGBE)
Frequency	10 MHz to 6 GHz; Linearity: ± 0.2 dB
Directivity	± 0.3 dB in HSL (rotation around probe axis) ± 0.5 dB in tissue material (rotation normal to probe axis)
Dynamic Range	10 μW/g to 100 mW/g; Linearity: ± 0.2 dB
Dimensions	Overall length: 330 mm (Tip: 20 mm) Tip diameter: 2.5 mm (Body: 12 mm) Typical distance from probe tip to dipole centers: 1 mm

Fig 6.3 Photo of EX3DV4

➢ **E-Field Probe Calibration**

Each probe needs to be calibrated according to a dosimetric assessment procedure with accuracy better than ± 10%. The spherical isotropy shall be evaluated and within ± 0.25 dB. The sensitivity parameters (NormX, NormY, and NormZ), the diode compression parameter (DCP) and the conversion factor (ConvF) of the probe are tested. The calibration data can be referred to appendix C of this report.

6.2. Data Acquisition Electronics (DAE)

The data acquisition electronics(DAE) consists of a highly sensitive electrometer-grade preamplifier with auto-zeroing, a channel and gain-switching multiplexer, a fast16 bit AD-converter and a command decoder and control logic unit. AD-converter and a command decoder and control logic unit. Transmission to the measurement server is accomplished through an optical downlink for data and status information as well as an optical uplink for commands and the clock. The input impedance of the DAE is 200MOhm; the inputs are symmetrical and floating. Common mode rejection is above 80 dB.

Fig 6.4 Photo of DAE

6.3. Robot

The SPEAG DASY system uses the high precision robots (DASY4: RX90BL; DASY5: TX90XL) type from Stäubli SA (France). For the 6-axis controller system, the robot controller version (DASY4: CS7MB; DASY5: CS8c) from Stäubli is used. The Stäubli robot series have many features that are important for our application:

High precision (repeatability ±0.035 mm)

High reliability (industrial design)

Jerk-free straight movements

Low ELF interference (the closed metallic construction shields against motor control fields)

Fig 6.5 Photo of DASY5

6.4. Measurement Server

The measurement server is based on a PC/104 CPU board with CPU (DASY4: 166 MHz, Intel Pentium; DASY5: 400 MHz, Intel Celeron), chip disk (DASY4: 32 MB; DASY5: 128 MB), RAM (DASY4: 64 MB, DASY5: 128 MB). The necessary circuits for communication with the DAE electronic box, as well as the 16 bit AD converter system for optical detection and digital I/O interface are contained on the DASY I/O board, which is directly connected to the PC/104 bus of the CPU board. The measurement server performs all the real-time data evaluation for field measurements and surface detection, controls robot movements and handles safety operations.

Fig 6.6 Photo of Server for DASY5

6.5. Light Beam Unit

The light beam switch allows automatic "tooling" of the probe. During the process, the actual position of the probe tip with respect to the robot arm is measured, as well as the probe length and the horizontal probe offset. The software then corrects all movements, such that the robot coordinates are valid for the probe tip.
The repeatability of this process is better than 0.1 mm. If a position has been taught with an aligned probe, the same position will be reached with another aligned probe within 0.1 mm, even if the other probe has different dimensions. During probe rotations, the probe tip will keep its actual position.

Fig. 6.7 Photo of Light Beam

6.6. Phantom

<SAM Twin Phantom>

Shell Thickness	2 ± 0.2 mm (sagging: <1%) Center ear point: 6 ± 0.2 mm	
Filling Volume	Approx. 25 liters	
Dimensions	Length: 1000 mm; Width: 500 mm; Height: adjustable feet	
Measurement Areas	Left Head, Right Head, Flat Phantom	**Fig. 6.8 Photo of SAM Phantom**

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

6.7. Device Holder

<Device Holder for SAM Twin Phantom>

The SAR in the phantom is approximately inversely proportional to the square of the distance between the source and the liquid surface. For a source at 5 mm distance, a positioning uncertainty of ± 0.5 mm would produce a SAR uncertainty of ± 20 %. Accurate device positioning is therefore crucial for accurate and repeatable measurements. The positions in which the devices must be measured are defined by the standards.

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

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

<Laptop Extension Kit>

The extension is lightweight and made of POM, acrylic glass and foam. It fits easily on the upper part of the mounting device in place of the phone positioned. The extension is fully compatible with the SAM Twin and ELI phantoms.

Fig 6.9 Device Holder

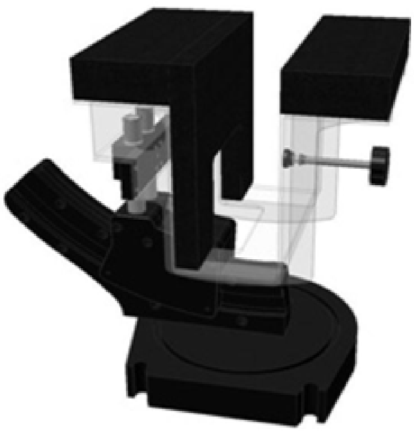

Fig 6.10 Laptop Extension Kit

6.8. Data Storage and Evaluation

➢ **Data Storage**

The DASY software stores the assessed data from the data acquisition electronics as raw data (in microvolt readings from the probe sensors), together with all the necessary software parameters for the data evaluation (probe calibration data, liquid parameters and device frequency and modulation data) in measurement files. The post-processing software evaluates the desired unit and format for output each time the data is visualized or exported. This allows verification of the complete software setup even after the measurement and allows correction of erroneous parameter settings. For example, if a measurement has been performed with an incorrect crest factor parameter in the device setup, the parameter can be corrected afterwards and the data can be reevaluated.
The measured data can be visualized or exported in different units or formats, depending on the selected probe type (e.g., [V/m], [A/m], [mW/g]). Some of these units are not available in certain situations or give meaningless results, e.g., a SAR-output in a non-lose media, will always be zero. Raw data can also be exported to perform the evaluation with other software packages.

➢ **Data Evaluation**

The DASY post-processing software (SEMCAD) automatically executes the following procedures to calculate the field units from the microvolt readings at the probe connector. The parameters used in the evaluation are stored in the configuration modules of the software.

Probe parameters:	- Sensitivity	$Norm_i$, a_{i0}, a_{i1}, a_{i2}
	- Conversion factor	$ConvF_i$
	- Diode compression point	dcpi
Device parameters:	- Frequency	f
	- Crest factor	cf
Media parameters:	- Conductivity	σ
	- Density	ρ

These parameters must be set correctly in the software. They can be found in the component documents or they can be imported into the software from the configuration files issued for the DASY components. In the direct measuring mode of the multi-meter option, the parameters of the actual system setup are used. In the scan visualization and export modes, the parameters stored in the corresponding document files are used.

The first step of the evaluation is a linearization of the filtered input signal to account for the compression characteristics of the detector diode. The compensation depends on the input signal, the diode type and the DC-transmission factor from the diode to the evaluation electronics. If the exciting field is pulsed, the crest factor of the signal must be known to correctly compensate for peak power.

The formula for each channel can be given as:

$$V_i = U_i + U_i^2 \times \frac{cf}{dcp_i}$$

With Vi = compensated signal of channel i, (i = x, y, z)
Ui = input signal of channel i, (i = x, y, z)
cf = crest factor of exciting field (DASY parameter)
dcpi = diode compression point (DASY parameter)

From the compensated input signals, the primary field data for each channel can be evaluated:

E-field Probes: $E_i = \sqrt{\frac{V_i}{Norm_i \times ConvF}}$

H-field Probes: $H_i = \sqrt{V_i} \times \frac{a_{i0} + a_{i1} + a_{i2} f^2}{f}$

With V_i = compensated signal of channel i, (i = x, y, z)
$Norm_i$ = sensor sensitivity of channel i, (i = x, y, z), μV/(V/m)^2 forE-field
Probes ConvF = sensitivity enhancement in solution
a_{ij} = sensor sensitivity factors for H-field probes
f = carrier frequency [GHz]
E_i = electric field strength of channel i in V/m
H_i = magnetic field strength of channel i in A/m

The RSS value of the field components gives the total field strength (Hermitian magnitude):

$$E_{tot} = \sqrt{E_x^2 + E_y^2 + E_z^2}$$

The primary field data are used to calculate the derived field units.

$$SAR = E_{tot}^2 \times \frac{\sigma}{\rho \times 1000}$$

with SAR = local specific absorption rate in mW/g
E_{tot} = total field strength in V/m
σ = conductivity in [mho/m] or [Siemens/m]
ρ = equivalent tissue density in g/cm^3

Note that the density is set to 1, to account for actual head tissue density rather than the density of the tissue simulating liquid.

6.9. Test Equipment List

Manufacturer	Name of Equipment	Type/Model	Serial No./ SW Version	Calibration	
				Last Cal.	Due Date
SPEAG	750MHz System Validation Kit	D750V2	1223	2022.08.22	2025.08.21
SPEAG	900MHz System Validation Kit	D900V2	1d064	2021.12.17	2024.12.16
SPEAG	1800MHz System Validation Kit	D1800V2	2d158	2021.12.17	2024.12.16
SPEAG	2000MHz System Validation Kit	D2000V2	1050	2021.12.18	2024.12.17
SPEAG	2300MHz System Validation Kit	D2300V2	1107	2020.06.03	2023.06.02
SPEAG	2450MHz System Validation Kit	D2450V2	805	2021.12.17	2024.12.16
SPEAG	2600MHz System Validation Kit	D2600V2	1198	2022.08.17	2025.08.16
SPEAG	3500MHz System Validation Kit	D3500V2	1104	2020.06.03	2023.06.02
SPEAG	3700MHz System Validation Kit	D3700V2	1076	2020.06.03	2023.06.02
SPEAG	3900MHz System Validation Kit	D3900V2	1046	2020.06.02	2023.06.01
SPEAG	5000MHz System Validation Kit	D5GHzV2	1176	2021.12.19	2024.12.18
SPEAG	DOSIMETRIC ASSESSMENT SYSTEM	DASY52	52.10.4.1527	NCR	NCR
SPEAG	Dosimetric E-Field Probe	EX3DV4	3823	2022.03.04	2023.03.03
SPEAG	Dosimetric E-Field Probe	EX3DV4	7608	2022.12.12	2023.12.11
SPEAG	Dosimetric E-Field Probe	EX3DV4	7624	2022.03.31	2023.03.30
SPEAG	Data Acquisition Electronics	DAE4	480	2022.06.22	2023.06.21
SPEAG	SAM Twin Phantom 2	QD 000 P40 CB	TP-1464	NCR	NCR
SPEAG	Phone Positioner	N/A	N/A	NCR	NCR
R&S	Network Emulator	CMW500	165755	2022.02.14	2023.02.13
Anritsu	Network Emulator	MT8820C	6201274521	2023.02.09	2024.02.08
Anritsu	Network Emulator	MT8821C	6261830572	2022.02.14	2023.02.13
Agilent	Network Analyzer	E5071B	MY42404762	2022.03.01	2023.02.28
Agilent	Network Analyzer	E5071B	MY42404762	2023.02.09	2024.02.08
Speag	Dielectric Assessment KIT	DAK-3.5	1279	2022.09.17	2023.09.16
mini-circuits	Amplifier	ZHL-42W+	608501717	NCR	NCR
mini-circuits	Amplifier	ZVE-8G+	754401735	NCR	NCR
Agilent	Signal Generator	N5182B	MY53050509	2022.11.30	2023.11.29
R&S	Power Senor	NRP8S	103215	2022.01.25	2023.01.24
R&S	Power Senor	NRP8S	103215	2023.02.09	2024.02.08
Agilent	Power Meter	E4416A	MY45102093	2022.10.11	2023.10.10

R&S	Power Sensor	NRP8S	103240	2022.02.14	2023.02.13
R&S	Power Sensor	NRP8S	103240	2023.02.09	2024.02.08
Anritsu	Power Meter	E4418B	GB43318055	2022.08.30	2023.08.29
Agilent	Dual Directional Coupler	778D	50422	NA	NA
MCL	Attenuation	351-218-010	N/A	NA	NA
R&S	Spectrum Analyzer	N9030A	MY54170556	2022.10.10	2023.10.09
KTJ	Thermo meter	TA298	N/A	2022.12.08	2023.12.07
SPEAG	Tissue Simulating Liquids	HBBL600-10000V6		24H	

Note:

1. The calibration certificate of DASY can be referred to appendix G of this report.
2. The Insertion Loss calibration of Dual Directional Coupler and Attenuator were characterized via the network analyzer and compensated during system check.
3. The dielectric probe kit was calibrated via the network analyzer, with the specified procedure (calibrated in pure water) and calibration kit (standard) short circuit, before the dielectric measurement. The specific procedure and calibration kit are provided by Speag.
4. In system check we need to monitor the level on the power meter, and adjust the power amplifier level to have precise power level to the dipole; the measured SAR will be normalized to 1W input power according to the ratio of1W to the input power to the dipole. For system check, the calibration of the power amplifier is deemed not critically required for correct measurement; the power meter is critical and we do have calibration for it.
5. Attenuator insertion loss is calibrated by the network Analyzer, which the calibration is valid, before system check.
6. N.C.R means No Calibration Requirement.

7. Tissue Simulating Liquids

For SAR measurement of the field distribution inside the phantom, the phantom must be filled with homogeneous tissue simulating liquid to a depth of at least 15cm.For head SAR testing, the liquid height from the ear reference point (ERP) of the phantom to the liquid top surface is larger than 15cm. For body SAR testing, the liquid height from the center of the flat phantom to the liquid top surface is larger than 15cm, which is shown in Fig. 7.1. For body SAR testing, the liquid height from the center of the flat phantom to the liquid top surface is larger than 15 cm, which is shown in Fig. 7.2.Thenominaldielectricvaluesofthe tissue simulating liquids in the phantom and the tolerance of 5%are listed in below table.

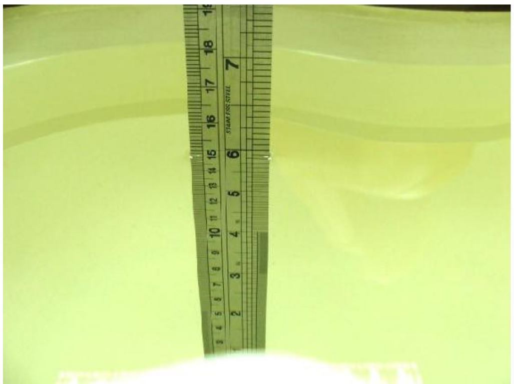

Fig 7.1 Photo of Liquid Height for Head SAR

Fig 7.2 Photo of Liquid Height for Body SAR

The following table gives the recipes for tissue simulating liquids

Frequency (MHz)	Water (%)	Sugar (%)	Cellulose (%)	Salt (%)	Preventol (%)	DGBE (%)	Conductivity (σ)	Permittivity (εr)
Head								
750	41.1	57.0	0.2	1.4	0.2	0	0.89	41.9
835	40.3	57.9	0.2	1.4	0.2	0	0.90	41.5
1800,1900,2000	55.2	0	0	0.3	0	44.5	1.40	40.0
2450	55.0	0	0	0	0	45.0	1.80	39.2
2600	54.8	0	0	0.1	0	45.1	1.96	39.0
Body								
750	51.7	47.2	0	0.9	0.1	0	0.96	55.5
835	50.8	48.2	0	0.9	0.1	0	0.97	55.2
1800,1900,2000	70.2	0	0	0.4	0	29.4	1.52	53.3
2450	68.6	0	0	0	0	31.4	1.95	52.7
2600	68.1	0	0	0.1	0	31.8	2.16	52.5

Simulating Liquid for 5GHz, Manufactured by SPEAG.

Ingredients	(% by weight)
Water	64~78%
Mineral oil	11~18%
Emulsifiers	9~15%
Additives and Salt	2~3%

Note: Please refer to the validation results for dielectric parameters of each frequency band.
The dielectric properties of the tissue simulating liquids were verified prior to the SAR evaluation using a SPEAG Dielectric Assessment KIT and an Agilent Network Analyzer.

Table 1: Dielectric Performance of Tissue Simulating Liquid

Frequency (MHz)	Tissue Type	Liquid Temp.(℃)	Conductivity (σ)	Conductivity Target (σ)	Delta (σ) (%)	Limit (%)	Date
750	HSL	22.1	0.906	0.89	1.80	±5	2022.12.12
900	HSL	22.1	0.979	0.97	0.93	±5	2022.12.13
1800	HSL	22.2	1.438	1.40	2.71	±5	2022.12.15
2000	HSL	22.2	1.425	1.40	1.79	±5	2022.12.16
2300	HSL	22.3	1.669	1.67	-0.06	±5	2023.02.08
2450	HSL	22.3	1.822	1.80	1.22	±5	2022.12.17
2600	HSL	22.4	1.981	1.96	1.07	±5	2023.01.31
3500	HSL	22.4	2.913	2.91	0.10	±5	2022.12.14
3500	HSL	22.4	2.912	2.91	0.07	±5	2023.03.06
3700	HSL	22.1	3.107	3.05	1.87	±5	2022.12.16
3700	HSL	22.2	3.103	3.05	1.74	±5	2023.03.06
3900	HSL	22.4	3.223	3.15	2.32	±5	2022.12.21
5250	HSL	22.5	4.698	4.71	-0.25	±5	2022.12.19
5750	HSL	22.5	5.338	5.22	2.26	±5	2022.12.20
Frequency (MHz)	**Tissue Type**	**Liquid Temp.(℃)**	**Permittivity (εr)**	**Permittivity Target (εr)**	**Delta (εr) (%)**	**Limit (%)**	**Date**
750	HSL	22.1	42.043	41.90	0.34	±5	2022.12.12
900	HSL	22.1	41.347	41.50	-0.37	±5	2022.12.13
1800	HSL	22.2	41.115	40.00	2.79	±5	2022.12.15
2000	HSL	22.2	40.197	40.00	0.49	±5	2022.12.16
2300	HSL	22.3	39.471	39.50	-0.07	±5	2023.02.08
2450	HSL	22.3	38.806	39.20	-1.01	±5	2022.12.17
2600	HSL	22.4	38.490	39.00	-1.31	±5	2023.01.31
3500	HSL	22.4	37.914	37.90	0.04	±5	2022.12.14
3500	HSL	22.4	37.908	37.90	0.02	±5	2023.03.06
3700	HSL	22.1	39.346	37.70	4.37	±5	2022.12.16
3700	HSL	22.2	39.338	37.70	4.34	±5	2023.03.06
3900	HSL	22.4	39.255	37.50	4.68	±5	2022.12.21
5250	HSL	22.5	36.330	35.95	1.06	±5	2022.12.19
5750	HSL	22.5	35.130	35.35	-0.62	±5	2022.12.20

8. SAR System Verification

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

8.1. Purpose of System Performance check

The system performance check verifies that the system operates within its specifications. System and operator errors can be detected and corrected. It is recommended that the system performance check be performed prior to any usage of the system in order to guarantee reproducible results. The system performance check uses normal SAR measurements in a simplified setup with a well characterized source. This setup was selected to give a high sensitivity to all parameters that might fail or vary over time. The system check does not intend to replace the calibration of the components, but indicates situations where the system uncertainty is exceeded due to drift or failure.

8.2. System Setup

The output power on dipole port must be calibrated to 24 dBm (250 mW) before dipole is connected. In the simplified setup for system evaluation, the DUT is replaced by a calibrated dipole and the power source is replaced by a continuous wave which comes from a signal generator. The calibrated dipole must be placed beneath the flat phantom section of the SAM twin phantom with the correct distance holder. The distance holder should touch the phantom surface with a light pressure at the reference marking and be oriented parallel to the long side of the phantom. The system check verifies that the system operates within its specifications. It is performed daily or before every SAR measurement. The system check uses normal SAR measurements in the flat section of the phantom with a matched dipole at a specified distance. The system verification setup is shown as below.

Fig 8.1 Photo of Dipole Setup

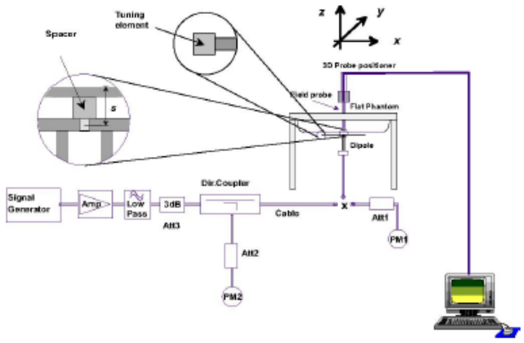

Fig 8.2 System Setup for System Evaluation

8.3. Validation Results

After system check testing, the SAR result will be normalized to 1W forward input power and compared with the reference SAR value derived from validation dipole certificate report. The deviation of system check should be within 10%.

<Validation Setup>

Frequency (MHz)	Tissue Type	Input Power(mW)	Dipole S/N	Probe S/N	DAE S/N
750	HSL	250	D750V3-1223	7608	480
900	HSL	250	D900V2-1d064	7608	480
1800	HSL	250	D1800V2-2d158	7608	480
2000	HSL	250	D2000V2-1050	7608	480
2300	HSL	250	D2300V2-1107	7608	480
2450	HSL	250	D2450V2-805	7608	480
2600	HSL	250	D2600V2-1198	7608	480
3500	HSL	100	D3500V2-1104	7608	480
3500	HSL	100	D3500V2-1104	7624	480
3700	HSL	100	D3700V2-1076	7608	480
3700	HSL	100	D3700V2-1076	7624	480
3900	HSL	100	D3900V2-1046	7608	480
5250	HSL	100	D5GHzV2-1176-5250	7608	480
5750	HSL	100	D5GHzV2-1176-5750	3823	480

<System Validation>

Frequency (MHz)	Tissue Type	Conductivity (σ)	Permittivity (εr)	CW Signal Validation		
				Sensitivity	Probe Linearity	Probe Isotropy
750	HSL	0.851	42.43	PASS	PASS	PASS
835	HSL	0.898	41.88	PASS	PASS	PASS
1750	HSL	1.386	39.91	PASS	PASS	PASS
1800	HSL	1.449	41.26	PASS	PASS	PASS
1900	HSL	1.435	39.65	PASS	PASS	PASS
2000	HSL	1.451	39.42	PASS	PASS	PASS
2300	HSL	1.764	38.99	PASS	PASS	PASS
2450	HSL	1.863	38.85	PASS	PASS	PASS
2600	HSL	1.973	38.58	PASS	PASS	PASS
5250	HSL	4.528	35.32	PASS	PASS	PASS
5600	HSL	4.905	34.89	PASS	PASS	PASS

5750	HSL	5.077	34.28	PASS	PASS	PASS

Frequency (MHz)	Tissue Type	Conductivity (σ)	Permittivity (εr)	Modulation Signal Validation		
				Mod. Type	Duty Factor	PAR
750	HSL	0.851	42.43	N/A	N/A	N/A
835	HSL	0.898	41.88	GMSK	PASS	N/A
1750	HSL	1.386	39.91	N/A	N/A	N/A
1800	HSL	1.449	41.26	N/A	N/A	N/A
1900	HSL	1.435	39.65	GMSK	PASS	N/A
2000	HSL	1.451	39.42	GMSK	PASS	N/A
2300	HSL	1.764	38.99	OFDM	PASS	PASS
2450	HSL	1.863	38.85	OFDM	PASS	PASS
2600	HSL	1.973	38.58	TDD	PASS	N/A
5250	HSL	4.528	35.32	OFDM	N/A	PASS
5600	HSL	4.905	34.89	OFDM	N/A	PASS
5750	HSL	5.077	34.28	OFDM	N/A	PASS

<Validation Results>

Date	Frequency (MHz)	Tissue Type	Input Power (mW)	Measured 1g SAR (W/kg)	Targeted 1g SAR (W/kg)	Normalized 1g SAR (W/kg)	Deviation (%)
2022.12.12	750	HSL	250	2.11	8.54	8.44	-1.17
2022.12.13	900	HSL	250	2.92	11.20	11.68	4.29
2022.12.15	1800	HSL	250	9.78	39.20	39.12	-0.20
2022.12.16	2000	HSL	250	10.20	41.60	40.8	-1.92
2023.02.08	2300	HSL	250	12.58	48.40	50.32	3.97
2022.12.17	2450	HSL	250	13.40	52.30	53.6	2.49
2023.01.31	2600	HSL	250	14.25	57.00	57	0.00
2022.12.14	3500	HSL	100	7.02	67.20	70.2	4.46
2023.03.06	3500	HSL	100	7.04	67.20	70.4	4.76
2022.12.16	3700	HSL	100	6.68	67.50	66.8	-1.04
2023.03.06	3700	HSL	100	6.65	67.50	66.5	-1.48
2022.12.21	3900	HSL	100	7.38	69.90	73.8	5.58
2022.12.19	5250	HSL	100	7.57	76.70	75.7	-1.30
2022.12.20	5750	HSL	100	7.98	78.70	79.8	1.40

Date	Frequency (MHz)	Tissue Type	Input Power (mW)	Measured 10g SAR (W/kg)	Targeted 10g SAR (W/kg)	Normalized 10g SAR (W/kg)	Deviation (%)
2022.12.12	750	HSL	250	1.42	5.57	5.68	1.97
2022.12.13	900	HSL	250	1.88	7.19	7.52	4.59
2022.12.15	1800	HSL	250	5.10	20.10	20.4	1.49
2022.12.16	2000	HSL	250	5.21	20.70	20.84	0.68
2023.02.08	2300	HSL	250	6.02	23.00	24.08	4.70
2022.12.17	2450	HSL	250	6.23	23.90	24.92	4.27
2023.01.31	2600	HSL	250	6.53	25.70	26.12	1.63
2022.12.14	3500	HSL	100	2.68	25.10	26.8	6.77
2023.03.06	3500	HSL	100	2.59	25.10	25.9	3.19
2022.12.16	3700	HSL	100	2.41	24.20	24.1	-0.41
2023.03.06	3700	HSL	100	2.42	24.20	24.2	0.00
2022.12.21	3900	HSL	100	2.60	24.10	26	7.88
2022.12.19	5250	HSL	100	2.25	22.10	22.5	1.81
2022.12.20	5750	HSL	100	2.35	22.50	23.5	4.44

Note: System checks the specific test data please see Annex C.

9. EUT Testing Position

This EUT was tested in six different positions. They are right cheek/right tilted/left cheek/left tilted for head, Front/Back of the EUT with phantom 10 mm gap, as illustrated below, please refer to Appendix B for the test setup photos.

9.1. SAR Evaluation near the Mouth/Jaw Regions of the Phantom

Antennas located near the bottom of a phone may require SAR measurements around the mouth and jaw regions of the SAM head phantom. This typically applies to clam-shell style phones that are generally longer in the unfolded normal use positions or to certain older style long rectangular phones.

Under these circumstances, the following procedures apply, adopted from the FCC guidance on SAR handsets document FCC KDB Publication 648474 D04v01r03. The SAR required in these regions of SAM should be measured using a flat phantom. The phone should be positioned with a separation distance of 4 mm between the ear reference point (ERP) and the outer surface of the flat phantom shell. While maintaining this distance at the ERP location, the low (bottom) edge of the phone should be lowered from the phantom to establish the same separation distance between the peak SAR locations identified by the truncated partial SAR distribution measured with the SAM phantom. The distance from the peak SAR location to the phone is determined by the straight line passing perpendicularly through the phantom surface. When it is not feasible to maintain 4 mm separation at the ERP while also establishing the required separation at the peak SAR location, the top edge of the phone will be allowed to touch the phantom with a separation < 4 mm at the ERP. The phone should not be tilted to the left or right while placed in this inclined position to the flat phantom.

9.2. Body-worn Configurations

The body-worn configurations shall be tested with the supplied accessories (belt-clips, holsters, etc.) attached to the device in normal use configuration.

For body-worn and other configurations a flat phantom shall be used which is comprised of material with electrical properties similar to the corresponding tissues.

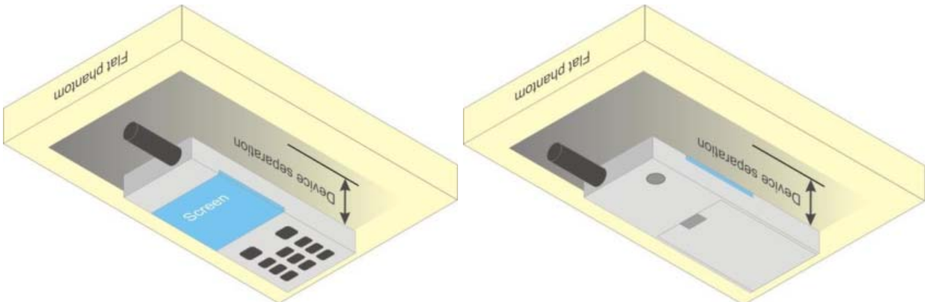

Fig 9.1 Illustration for Body Worn Position

9.3. Hotspot Mode Exposure Position Conditions

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

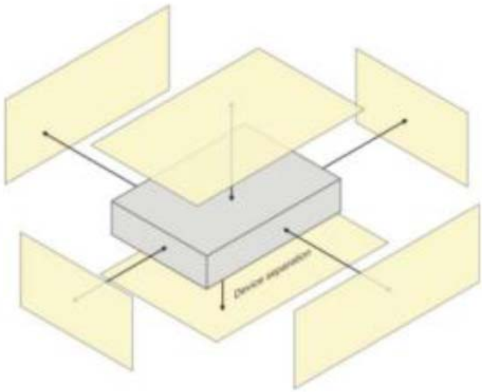

Fig 9.2 Illustration for Hotspot Position

10. Measurement Procedures

The measurement procedures are as follows:

<Conducted power measurement>

(a) For WWAN power measurement, use base station simulator to configure EUT WWAN transmission in conducted connection with RF cable, at maximum power in each supported wireless interface and frequency band.

(b) Read the WWAN RF power level from the base station simulator.

(c) For WLAN/BT power measurement, use engineering software to configure EUT WLAN/BT continuously transmission, at maximum RF power in each supported wireless interface and frequency band.

(d) Connect EUT RF port through RF cable to the power meter, and measure WLAN/BT output power.

<SAR measurement>

(a) Use base station simulator to configure EUT WWAN transmission in radiated connection, and engineering software to configure EUT WLAN/BT continuously transmission, at maximum RF power, in the highest power channel.

(b) Place the EUT in the positions as Appendix D demonstrates.

(c) Set scan area, grid size and other setting on the DASY software.

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

(e) Find out the largest SAR result on these testing positions of each band.

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

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

(a) Power reference measurement.

(b) Area scan.

(c) Zoom scan.

(d) Power drift measurement.

10.1. Spatial Peak SAR Evaluation

The procedure for spatial peak SAR evaluation has been implemented according to the test standard. It can be conducted for 1g and 10g, as well as for user-specific masses. The DASY software includes all numerical procedures necessary to evaluate the spatial peak SAR value.

The base for the evaluation is a "cube" measurement. The measured volume must include the 1g and 10g cubes with the highest averaged SAR values. For that purpose, the center of the measured volume is aligned to the interpolated peak SAR value of a previously performed area scan.

The entire evaluation of the spatial peak values is performed within the post-processing engine (SEMCAD). The system always gives the maximum values for the 1g and 10g cubes. The algorithm to find the cube with highest averaged SAR is divided into the following stages:

(a) Extraction of the measured data (grid and values) from the Zoom Scan.
(b) Calculation of the SAR value at every measurement point based on all stored data (A/D values and measurement parameters).
(c) Generation of a high-resolution mesh within the measured volume.
(d) Interpolation of all measured values form the measurement grid to the high-resolution grid.
(e) Extrapolation of the entire 3-D field distribution to the phantom surface over the distance from sensor to surface.
(f)Calculation of the averaged SAR within masses of 1g and 10g.

10.2. Power Reference Measurement

The Power Reference Measurement and Power Drift Measurements are 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.

10.3. Area Scan Procedures

Area scans are defined prior to the measurement process being executed with a user defined variable spacing between each measurement point (integral) allowing low uncertainty measurements to be conducted. Scans defined for FCC applications utilize a10mm^2 step integral, with 1mm interpolation used to locate the peak SAR area used for zoom scan assessments.

When an Area Scan has measured all reachable points, it computes the field maxima founding the scanned area, within a range of the global maximum. The range (in dB) is specified in the standards for compliance testing. For example, a 2 dB range is required in IEEE1528-2003.

10.4. Zoom Scan Procedures

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. A density of 1000 kg/m^3 is used to represent the head and body tissue density and not the phantom liquid density, in order to be consistent with the definition of the liquid dielectric properties, i.e. the side length of the 1g cube is 10mm, with the side length of the 10 g cube 21,5mm.The zoom scan integer steps can be user defined so as to reduce uncertainty, but normal practice for typical test applications utilize a physical step of 5x5x7 (8mmx8mmx5mm) providing a volume of 32mm in the X & Y axis, and 30mm in the Z axis.

10.5. SAR Averaged Methods

In DASY, the interpolation and extrapolation are both based on the modified Quadratic Sheppard's method. The interpolation scheme combines a least-square fitted function method and a weighted average method which are the two basic types of computational interpolation and approximation.

Extrapolation routines are used to obtain SAR values between the lowest measurement points and the inner phantom surface. The extrapolation distance is determined by the surface detection distance and the probe sensor offset. The uncertainty increases with the extrapolation distance. To keep the uncertainty within 1% for the 1 g and 10 g cubes, the extrapolation distance should not be larger than 5 mm.

10.6. Power Drift Monitoring

All SAR testing is under the DUT install full charged battery and transmit maximum output power. In DASY measurement software, the power reference measurement and power drift measurement procedures are used for monitoring the power drift of DUT during SAR test. Both these procedures measure the field at a specified reference position before and after the SAR testing. The software will calculate the field difference in dB. If the power drift more than 5%, the SAR will be retested.

11. SAR Test Procedure

11.1. General Scan Requirements

Probe boundary effect error compensation is required for measurements with the probe tip closer than half a probe tip diameter to the phantom surface. Both the probe tip diameter and sensor offset distance must satisfy measurement protocols; to ensure probe boundary effect errors are minimized and the higher fields closest to the phantom surface can be correctly measured and extrapolated to the phantom surface for computing 1-g SAR. Tolerances of the post-processing algorithms must be verified by the test laboratory for the scan resolutions used in the SAR measurements, according to the reference distribution functions specified in IEEE Std. 1528-2013.

<table>
<tr><th colspan="3"></th><th>≤ 3 GHz</th><th>> 3 GHz</th></tr>
<tr><td colspan="3">Maximum distance from closest measurement point (geometric center of probe sensors) to phantom surface</td><td>5 mm ± 1 mm</td><td>$\frac{1}{2} \cdot \delta \cdot \ln(2)$ mm ± 0.5 mm</td></tr>
<tr><td colspan="3">Maximum probe angle from probe axis to phantom surface normal at the measurement location</td><td>30° ± 1°</td><td>20° ± 1°</td></tr>
<tr><td colspan="3" rowspan="2">Maximum area scan spatial resolution: Δx_{Area}, Δy_{Area}</td><td>≤ 2 GHz: ≤ 15 mm
2 – 3 GHz: ≤ 12 mm</td><td>3 – 4 GHz: ≤ 12 mm
4 – 6 GHz: ≤ 10 mm</td></tr>
<tr><td colspan="2">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 ≤ the corresponding x or y dimension of the test device with at least one measurement point on the test device.</td></tr>
<tr><td colspan="3">Maximum zoom scan spatial resolution: Δx_{Zoom}, Δy_{Zoom}</td><td>≤ 2 GHz: ≤ 8 mm
2 – 3 GHz: ≤ 5 mm*</td><td>3 – 4 GHz: ≤ 5 mm*
4 – 6 GHz: ≤ 4 mm*</td></tr>
<tr><td rowspan="3">Maximum zoom scan spatial resolution, normal to phantom surface</td><td colspan="2">uniform grid: $\Delta z_{Zoom}(n)$</td><td>≤ 5 mm</td><td>3 – 4 GHz: ≤ 4 mm
4 – 5 GHz: ≤ 3 mm
5 – 6 GHz: ≤ 2 mm</td></tr>
<tr><td rowspan="2">graded grid</td><td>$\Delta z_{Zoom}(1)$: between 1st two points closest to phantom surface</td><td>≤ 4 mm</td><td>3 – 4 GHz: ≤ 3 mm
4 – 5 GHz: ≤ 2.5 mm
5 – 6 GHz: ≤ 2 mm</td></tr>
<tr><td>$\Delta z_{Zoom}(n>1)$: between subsequent points</td><td colspan="2">$\leq 1.5 \cdot \Delta z_{Zoom}(n-1)$ mm</td></tr>
<tr><td>Minimum zoom scan volume</td><td colspan="2">x, y, z</td><td>≥ 30 mm</td><td>3 – 4 GHz: ≥ 28 mm
4 – 5 GHz: ≥ 25 mm
5 – 6 GHz: ≥ 22 mm</td></tr>
<tr><td colspan="5">Note: δ is the penetration depth of a plane-wave at normal incidence to the tissue medium; see IEEE Std 1528-2013 for details.
* When zoom scan is required and the <u>reported</u> SAR from the area scan based 1-g SAR estimation procedures of KDB Publication 447498 is ≤ 1.4 W/kg, ≤ 8 mm, ≤ 7 mm and ≤ 5 mm zoom scan resolution may be applied, respectively, for 2 GHz to 3 GHz, 3 GHz to 4 GHz and 4 GHz to 6 GHz.</td></tr>
</table>

11.2. Test Procedure

The Following steps are used for each test position

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

11.3. Description of Interpolation/Extrapolation Scheme

The local SAR inside the phantom is measured using small dipole sensing elements inside a probe body. The probe tip must not be in contact with the phantom surface in order to minimize measurements errors, but the highest local SAR will occur at the surface of the phantom.

An extrapolation is using to determinate this highest local SAR values. The extrapolation is based on a fourth-order least-square polynomial fit of measured data. The local SAR value is then extrapolated from the liquid surface with a 1mm step.

The measurements have to be performed over a limited time (due to the duration of the battery) so the step of measurement is high. It could vary between 5 and 8 mm. To obtain an accurate assessment of the maximum SAR averaged over 10 grams and 1 gram requires a very fine resolution in the three dimensional scanned data array.

11.4. Wireless Router

Some battery-operated handsets have the capability to transmit and receive user through simultaneous transmission of WIFI simultaneously with a separate licensed transmitter. The FCC has provided guidance in FCC KDB Publication 941225 D06 v02r01 where SAR test considerations for handsets (L x W ≥ 9 cm x 5 cm) are based on a composite test separation distance of 10 from the front, back and edges of the device containing transmitting antennas within 2.5cm of their edges, determined form general mixed use conditions for this type of devices. Since the hotspot SAR results may overlap with the body-worn accessory SAR requirements, the more conservative configurations can be considered, thus excluding some body-worn accessory SAR tests.

When the user enables the personal wireless router functions for the handset, actual operations include simultaneous transmission of both the WIFI transmitter and another licensed transmitter. Both transmitters often do not transmit at the same transmitting frequency and thus cannot be evaluated for SAR under actual use conditions due to the limitations of the SAR assessment probes. Therefore, SAR must be evaluated for each frequency transmission and mode separately and spatially summed with the WIFI transmitter according to FCC KDB Publication 447498 D01v06 publication procedures. The “Portable Hotspot” feature on the handset was NOT activated during SAR assessments, to ensure the SAR measurements were evaluated for a single transmission frequency RF signal at a time.

12. SAR Test Configuration

<LTE Mode>

LTE Target MPR level

The device implements maximum power reduction per 3GPP 36.101 requirements where the MPR target is as below table. The MPR settings are implemented configured into firmware and cannot be disabled by the end user or LTE carrier network.

Modulation	Channel bandwidth / Transmission bandwidth configuration [RB]						MPR Target (dB)	3GPP MPR (dB)
	1.4 MHz	3.0 MHz	5 MHz	10 MHz	15 MHz	20 MHz		
QPSK	> 5	> 4	> 8	> 12	> 16	> 18	1	≤ 1
16 QAM	≤ 5	≤ 4	≤ 8	≤ 12	≤ 16	≤ 18	1	≤ 1
64 QAM	> 5	> 4	> 8	> 12	> 16	> 18	2	≤ 2

Note: The measurement result showed some difference from the target MPR level, due to expected 0.5dBmeasurement tolerance

LTE Bands

LTE Bands	Channel bandwidth / Transmission bandwidth configuration [RB]					
	1.4 MHz	3.0 MHz	5 MHz	10 MHz	15 MHz	20 MHz
2	√	√	√	√	√	√
4	√	√	√	√	√	√
5	√	√	√	√	N/A	N/A
7	N/A	N/A	√	√	√	√
12	N/A	N/A	√	√	N/A	N/A
13	N/A	N/A	√	√	N/A	N/A
14	N/A	N/A	√	√	N/A	N/A
17	N/A	N/A	√	√	N/A	N/A
25	√	√	√	√	√	√
26	√	√	√	√	√	N/A
30	N/A	N/A	√	√	N/A	N/A
38	N/A	N/A	√	√	√	√
41	N/A	N/A	√	√	√	√
42	N/A	N/A	√	√	√	√
48	N/A	N/A	√	√	√	√
66	√	√	√	√	√	√
71	N/A	N/A	√	√	√	√

Note:

1. Per KDB 941225 D05v02r05, when a properly configured base station simulator is used for the SAR and power measurements, spectrum plots for each RB allocation and offset configuration is not required.
2. Per KDB 941225 D05v02r05, 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.
3. Per KDB 941225 D05v02r05, 50% RB allocation for QPSK SAR testing follows 1RB QPSK allocation procedure.
4. Per KDB 941225 D05v02r05, for QPSK with 100% RB allocation, SAR is not required when the highest maximum output power for 100 % RB allocation is less than the highest maximum output power in 50% and 1 RB allocations and the highest reported SAR for 1 RB and 50% RB allocation are ≤ 0.8 W/kg. Otherwise, SAR is measured for the highest output power channel; and if the reported SAR is > 1.45 W/kg, the remaining required test channels must also be tested.
5. Per KDB 941225 D05v02r05, 16QAM/64QAM output power for each RB allocation configuration is > not ½ dB higher than the same configuration in QPSK and the reported SAR for the QPSK configuration is ≤ 1.45 W/kg; Per KDB941225 D05v02r05, 16QAM/64QAM SAR testing is not required.
6. Per KDB 941225 D05v02r05, smaller bandwidth output power for each RB allocation configuration is > not ½ Db higher than the same configuration in the largest supported bandwidth, and the reported SAR for the largest supported band width is ≤ 1.45 W/kg; Per KDB 941225 D05v02r05, smaller bandwidth SAR testing is not required.
7. For LTE B4 / B5 / B7 / B17 the maximum bandwidth does not support three non-overlapping channels, per KDB941225 D05v02r05, when a device supports overlapping channel assignment in a channel bandwidth configuration, the middle channel of the group of overlapping channels should be selected for testing.
8. LTE band 2 / 12 SAR test was covered by Band 25 / 17; according to April 2015 TCB workshop, SAR test for overlapping LTE bands can be reduced if
   a. The maximum output power, including tolerance, for the smaller band is ≤ the larger band to qualify for the SAR test exclusion.
   b. The channel bandwidth and other operating parameters for the smaller band are fully supported by the larger band.
9. According to 2017 TCB workshop, for 64 QAM and 16 QAM should be verified by checking the signal constellation with a call box to avoid incorrect maximum power levels due to MPR and other requirements associated with signal modulation, and the following figure is taken from the "Fundamental Measurement >> Modulation Analysis >>constellation" mode of the device connect to the CMW500 base station, therefore, the device 64QAM and 16QAMsignal modulation are correct. Identify if Maximum Power Reduction (MPR) is optional or mandatory, i.e. built-in by design: only mandatory MPR may be considered during SAR testing, when the maximum output

power is permanently limited by the MPR implemented within the UE; and only for the applicable RB (resource block) configurations specified in LTE standards: b) A-MPR (additional MPR) must be disabled.

10. Per KDB 447498 D01v06, the reported SAR is the measured SAR value adjusted for maximum tune-up tolerance.
    a. Tune-up scaling Factor = tune-up limit power (mW) / EUT RF power (mW), where tune-up limit is the maximum rated power among all production units.
    b. For SAR testing of WLAN signal with non-100% duty cycle, the measured SAR is scaled-up by the duty cycle scaling factor which is equal to "1/(duty cycle)"
    c. For WWAN: Reported SAR(W/kg)= Measured SAR(W/kg)*Tune-up Scaling Factor
    d. For WLAN/Bluetooth: Reported SAR(W/kg)= Measured SAR(W/kg)* Duty Cycle scaling factor * Tune-up scaling factor
    e. For TDD LTE SAR measurement, the duty cycle 1:1.59 (62.9 %) was used perform testing and considering the theoretical duty cycle of 63.3% for extended cyclic prefix in the uplink, and the theoretical duty cycle of 62.9% for normal cyclic prefix in uplink, a scaling factor of extended cyclic prefix 63.3%/62.9% = 1.006 is applied to scale-up the measured SAR result. The Reported TDD LTE SAR = measured SAR (W/kg)* Tune-up Scaling Factor* scaling factor for extended cyclic prefix.
11. Per KDB 447498 D01v06, for each exposure position, testing of other required channels within the operating mode of a frequency band is not required when the reported 1-g or 10-g SAR for the mid-band or highest output power channel is:≤ 0.8 W/kg or 2.0 W/kg, for 1-g or 10-g respectively, when the transmission band is ≤ 100 MHz≤ 0.6 W/kg or 1.5 W/kg, for 1-g or 10-g respectively, when the transmission band is between 100 MHz and 200 MHz≤ 0.4 W/kg or 1.0 W/kg, for 1-g or 10-g respectively, when the transmission band is ≥ 200 MHz
12. Per KDB 865664 D01v01r04, for each frequency band, repeated SAR measurement is required only when the measured SAR is ≥0.8W/kg.
13. Per KDB 648474 D04v01r03, when the reported SAR for a body-worn accessory measured without a headset connected to the handset is ≤ 1.2 W/kg, SAR testing with a headset connected to the handset is not required.

<WLAN 2.4GHz>

1. SAR is measured for 2.4 GHz 802.11b DSSS using either the fixed test position or, when applicable, the initial test position procedure. SAR test reduction is determined according to the following:
    a. When the reported SAR of the highest measured maximum output power channel for the exposure configuration is ≤ 0.8 W/kg, no further SAR testing is required for 802.11b DSSS in that exposure configuration.
    b. When the reported SAR is > 0.8 W/kg, SAR is required for that position using the next highest measured output power channel. When any reported SAR is > 1.2 W/kg, SAR is required for

the third channel; i.e., all channels require testing.

2. 2.4 GHz 802.11 g/n OFDM are additionally evaluated for SAR if the highest reported SAR for 802.11b, adjusted by the ratio of the OFDM to DSSS specified maximum output power, is > 1.2 W/kg. When SAR is required for OFDM modes in 2.4 GHz band, the Initial Test configuration Procedures should be followed.
3. For held-to-ear and hotspot operations, the initial test position procedures were applied. The test position with the highest extrapolated peak SAR will be used as the initial test position. When reported SAR for the initial test position is ≤ 0.4 W/kg, no additional testing for the remaining test positions was required. Otherwise, SAR is evaluated at the subsequent highest peak SAR positions until the reported SAR result is ≤ 0.8 W/kg or all test positions are measured.
4. Justification for test configurations for WLAN per KDB Publication 248227 D02DR02-41929 for 2.4 GHz WI-FI single transmission chain operations, the highest measured maximum output power channel for DSSS was selected for SAR measurement. SAR for OFDM modes (2.4 GHz802.11g/n) was not required due to the maximum allowed powers and the highest reported DSSSSAR.
5. A fixed level power reduction is applied for WiFi when handset operates "held to the body" condition or "held to the ear" condition, the power reduction triggered by audio receiver detection and call establish status.
6. Per KDB 248227 D01v02r02, In the 2.4 GHz band, separate SAR procedures are applied to DSSS and OFDM configurations to simplify DSSS test requirements.SAR is not required for the following 2.4 GHz OFDM conditions:
   a. When KDB Publication 447498 SAR test exclusion applies to the OFDM configuration.
   b. When the highest reported SAR for DSSS is adjusted by the ratio of OFDM to DSSS specified maximum output power and the adjusted SAR is ≤ 1.2 W/kg.

<WLAN 5GHz>

A) U-NII-1 and U-NII-2A Bands

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

1. When the same maximum output power is specified for both bands, begin SAR measurement in U-NII-2A band by applying the OFDM SAR requirements. If the highest reported SAR for a test configuration is ≤ 1.2 W/kg, SAR is not required for U-NII-1 band for that configuration (802.11 mode and exposure condition); otherwise, both bands are tested independently for SAR.
2. When different maximum output power is specified for the bands, begin SAR measurement in the band with higher specified maximum output power. The highest reported SAR for the tested configuration is adjusted by the ratio of lower to higher specified maximum output power for the two bands. When the adjusted SAR is ≤ 1.2 W/kg, SAR is not required for the band with lower

maximum output power in that test configuration; otherwise, both bands are tested independently for SAR.

3. The two U-NII bands may be aggregated to support a 160 MHz channel on channel number 50.
4. Without additional testing, the maximum output power for this is limited to the lower of the maximum output power certified for the two bands. When SAR measurement is required for at least one of the bands and the highest reported SAR adjusted by the ratio of specified maximum output power of aggregated to standalone band is > 1.2 W/kg, SAR is required for the 160 MHz channel. This procedure does not apply to an aggregated band with maximum output higher than the standalone band(s); the aggregated band must be tested independently for SAR. SAR is not required when the 160 MHz channel is operating at a reduced maximum power and also qualifies for SAR test exclusion.

B) U-NII-2C and U-NII-3 Bands

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

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

C) OFDM Transmission Mode SAR Test Configuration and Channel Selection Requirements

The initial test configuration for 5 GHz OFDM transmission modes is determined by the 802.11 configuration with the highest maximum output power specified for production units, including tune-up tolerance, in each standalone and aggregated frequency band. SAR for the initial test configuration is measured using the highest maximum output power channel determined by the default power measurement procedures. When multiple configurations in a frequency band have the same specified maximum output power, the initial test configuration is determined according to the following steps applied sequentially.

1. The largest channel bandwidth configuration is selected among the multiple configurations with the same specified maximum output power.
2. If multiple configurations have the same specified maximum output power and largest channel bandwidth, the lowest order modulation among the largest channel bandwidth configurations is selected.
3. If multiple configurations have the same specified maximum output power, largest channel band width and lowest order modulation, the lowest data rate configuration among these configurations is selected.
4. When multiple transmission modes (802.11a/g/n/ac) have the same specified maximum output power, largest channel bandwidth, lowest order modulation and lowest data rate, the lowest order 802.11 mode is selected; i.e., 802.11a is chosen over 802.11n then 802.11ac or 802.11g is chosen over 802.11n. After an initial test configuration is determined, if multiple test channels have the same measured maximum output power, the channel chosen for SAR measurement is determined according to the following. These channel selection procedures apply to both the initial test configuration and subsequent test configuration(s), with respect to the default power measurement procedures or additional power measurements required for further SAR test reduction. The same procedures also apply to subsequent highest output power channel(s) selection.
5. The channel closest to mid-band frequency is selected for SAR measurement.
6. For channels with equal separation from mid-band frequency; for example, high and low channels or two mid-band channels, the higher frequency (number) channel is selected for SAR measurement.

D) SAR Test Requirements for OFDM configurations

When SAR measurement is required for 802.11 a/n/ac OFDM configurations, each standalone and frequency aggregated band is considered separately for SAR test reduction. When the sametransmitter and antenna(s) are used for U-NII-1 and U-NII-2A bands, additional SAR test reduction Vapplies. When band gap channels between U-NII-2C band and 5.8 GHz U-NII-3 or §15.247 bandare supported, the highest maximum output power transmission mode configuration and maximumoutput power channel across the bands must be used to determine SAR test reduction, accordingto the initial test configuration and subsequent test configuration requirements. In applying theinitial test configuration and subsequent test configuration procedures, the 802.11 transmissionconfiguration with the highest specified maximum output power and the channel within a testconfiguration with the highest measured maximum output power should be clearly distinguished toapply the procedures.

13. Conducted Power List

Remark: The output power of LTE/5G NR/WLAN refers to the annex E of this report.

14. LTE Carrier Aggregation

14.1. LTE Downlink Carrier Aggregation

➢ **Carrier Aggregation Configuration**

For the device supports bands and bandwidths and configurations are provided as follow table was according to 3GPP.

2CC Downlink Carrier Aggregation				
NO.	Combination	DL MIMO	Restriction	Completely Covered by Measurement Superset
1	CA_5B	-	-	No
2	CA_7C	-	-	No
3	CA_66B	-	-	No
4	CA_66C	-	-	No
5	CA_2A_2A	-	-	No
6	CA_2A-4A	-	-	No
7	CA_2A-4A	-	-	No
8	CA_2A-5A	-	-	No
9	CA_2A-5A	-	-	No
10	CA_2A-12A	-	-	No
11	CA_2A-12A	-	-	No
12	CA_2A-13A	-	-	No
13	CA_2A-13A	-	-	No
14	CA_2A-14A	-	-	No
15	CA_2A-14A	-	-	No
16	CA_2A-29A	-	-	No
17	CA_2A-66A	-	-	No
18	CA_2A-66A	-	-	No
19	CA_2A-71A	-	-	No
20	CA_2A-71A	-	-	No
21	CA_5A-5A	-	-	No
22	CA_5A-7A	-	-	No
23	CA_5A-7A	-	-	No

24	CA_5A-30A	-	-	No
25	CA_5A-30A	-	-	No
26	CA_5A-66A	-	-	No
27	CA_5A-66A	-	-	No
28	CA_7A-7A	-	-	No
29	CA_7A-12A	-	-	No
30	CA_7A-12A	-	-	No
31	CA_7A-71A	-	-	No
32	CA_7A-71A	-	-	No
33	CA_12A-66A	-	-	No
34	CA_12A-66A	-	-	No
35	CA_13A-66A	-	-	No
36	CA_13A-66A	-	-	No
37	CA_14A-66A	-	-	No
38	CA_14A-66A	-	-	No
39	CA_25A-25A	-	-	No
40	CA_25A-66A	-	-	No
41	CA_25A-66A	-	-	No
42	CA_66A-71A	-	-	No
43	CA_66A-71A	-	-	No
44	CA_66A-66A	-	-	No

➢ **LTE Downlink Carrier Aggregation Conducted Power**

1. According to KDB941225 D05A v01r02, Uplink maximum output power measurement with downlink carrier aggregation active should be measured, using the highest output channel measured without downlink carrier aggregation, to confirm that uplink maximum output power with downlink carrier aggregation active remains within the specified tune-up tolerance limits and not more than ¼ dB higher than the maximum output measured without downlink carrier aggregation active.
2. Uplink maximum output power with downlink carrier aggregation active does not show more than ¼ dB higher than the maximum output power without downlink carrier aggregation active, therefore SAR evaluation with downlink carrier aggregation active can be excluded.
3. For power measurement were control and acknowledge data is sent on uplink channels that operate identical to specifications when downlink carrier aggregation is inactive.
4. Selected highest measured power when downlink carrier aggregation is inactive for conducted power comparison with downlink carrier aggregation is active, 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.

5. For non-contiguous intra-band CA, the SCC selected to provide maximum separation from the PCC and must remain fully within the downlink transmission band.
6. For Intra-band, contiguous CA, the downlink channels selected to perform the uplink power measurement must satisfy
7. 3GPP channel spacing (5.4.1A of 3GPP TS 36.521 or equivalent) and channel bandwidth (5.4.2A) requirements.

$$\text{Nominal channel spacing} = \left\lfloor \frac{BW_{Channel(1)} + BW_{Channel(2)} - 0.1\left|BW_{Channel(1)} - BW_{Channel(2)}\right|}{0.6} \right\rfloor 0.3 \quad [\text{MHz}]$$

8. The output power of CA downlink refers to the annex E of this report.

15. 5G NR EN-DC Consideration

➢ **General Guidance**

1. It is only limited to operate at EN-DC (NSA)/SA for 5G NR implementation According to the character of the device. SAR measurement should be performed separately for the limitations of the probe calculation factors.
2. When the EN-DC is active the output power of the LTE anchors is equal or less than the standalone carrier, therefore the LTE output power and SAR were estimated based on the standalone carrier to performed sim-TX analysis with 5G NR, WLAN and Bluetooth.
3. According to October 2020 TCB Workshop publication, EN-DC SAR assessment should follow:
   a. If the signal uplink 1-g SAR values for each band are both less than 0.8 W/kg and the algebraic summation of the 1-g SAR values are less than 1.45 W/kg no additional measurements need to be performed.
   b. If one or the signal uplink 1-g SAR values is greater than 0.8 W/kg, instead of algebraically summing the 1-g SAR values, sum up the SAR distributions, similar to the enlarged zoom scan (volume scan) procedures found in FCC KDB Publication 865664 D01. And PAG is required for this case.
   c. If the algebraic sum of the 1-g SAR values is > 1.45 W/kg additional measurements may have to be made. Submit a KDB inquiry for additional guidance and PAG is required for this case.
   d. When the algebraic sum of the 1-g SAR values is > 1.6 W/kg, SPLSR analysis procedure should be applied.

➢ **5G NR Anchor Combination**

5G-NR	EN-DC Combination		E-UTRA	NR
	Downlink	Uplink		
FDD	DC_5B_n2A	5B_n2	5B	n2
FDD	DC_5B_n66A	5B_n66	5B	n66
TDD	DC_7C_n77A	7C_n77	7C	n77
TDD	DC_7C_n78A	7C_n78	7C	n78
FDD	DC_66B_n2A	66B_n2	66B	n2
FDD	DC_66C_n2A	66C_n2	66C	n2
FDD	DC_2A_n7A	2A_n7	2A	n7
TDD	DC_2A_n41A	2A_n41	2A	n41
FDD	DC_2A_n66A	2A_n66	2A	n66
TDD	DC_2A_n77A	2A_n77	2A	n77
TDD	DC_2A_n78A	2A_n78	2A	n78
FDD	DC_5A_n2A	5A_n2	5A	n2
TDD	DC_5A_n78A	5A_n78	5A	n78
TDD	DC_5A_n77A	5A_n77	5A	n77

FDD	DC_5A_n7A	5A_n7	5A	n7
FDD	DC_5A_n38A	5A_n38	5A	n38
FDD	DC_5A_n66A	5A_n66	5A	n66
TDD	DC_7A_n77A	7A_n77	7A	n77
TDD	DC_7A_n78A	7A_n78	7A	n78
FDD	DC_12A_n2A	12A_n2	12A	n2
TDD	DC_12A_n78A	12A_n78	12A	n78
TDD	DC_12A_n77A	12A_n77	12A	n77
FDD	DC_12A_n66A	12A_n66	12A	n66
FDD	DC_12A_n7A	12A_n7	12A	n7
FDD	DC_12A_n38A	12A_n38	12A	n38
TDD	DC_12A_n41A	12A_n41	12A	n41
FDD	DC_13A_n2A	13A_n2	13A	n2
FDD	DC_13A_n7A	13A_n7	13A	n7
FDD	DC_13A_n66A	13A_n66	13A	n66
TDD	DC_13A_n77A	13A_n77	13A	n77
TDD	DC_13A_n78A	13A_n78	13A	n78
TDD	DC_14A_n77A	14A_n77	14A	n77
TDD	DC_25A_n77A	25A_n77	25A	n77
TDD	DC_26A_n77A	26A_n77	26A	n77
TDD	DC_25A_n78A	25A_n78	25A	n78
TDD	DC_26A_n78A	26A_n78	26A	n78
TDD	DC_26A_n41A	26A_n41	26A	n41
TDD	DC_30A_n77A	30A_n77	30A	n77
FDD	DC_66A_n2A	66A_n2	66A	n2
FDD	DC_66A_n41A	66A_n41	66A	n41
TDD	DC_66A_n77A	66A_n77	66A	n77
TDD	DC_66A_n78A	66A_n78	66A	n78
FDD	DC_71A_n2A	71A_n2	71A	n2
FDD	DC_71A_n38A	71A_n38	71A	n38
TDD	DC_71A_n41A	71A_n41	71A	n41
FDD	DC_71A_n66A	71A_n66	71A	n66
TDD	DC_71A_n78A	71A_n78	71A	n78
FDD	DC_2A-2A_n66A	2A_n66	2A-2A	n66
TDD	DC_2A-2A_n77A	2A_n77	2A-2A	n77
TDD	DC_2A-2A_n78A	2A_n78	2A-2A	n78
TDD	DC_2A-4A_n41A	2A_n41	2A-4A	n41
TDD	DC_2A-4A_n41A	4A_n41	2A-4A	n41
FDD	DC_2A-5A_n7A	2A_n7	2A-5A	n7
FDD	DC_2A-5A_n7A	5A_n7	2A-5A	n7

TDD	DC_2A-5A_n77A	2A_n77	2A-5A	n77
TDD	DC_2A-5A_n77A	5A_n77	2A-5A	n77
TDD	DC_2A-5A_n78A	2A_n78	2A-5A	n78
TDD	DC_2A-5A_n78A	5A_n78	2A-5A	n78
FDD	DC_2A-12A_n7A	2A_n7	2A-12A	n7
FDD	DC_2A-12A_n7A	12A_n7	2A-12A	n7
TDD	DC_2A-12A_n41A	2A_n41	2A-12A	n41
TDD	DC_2A-12A_n41A	12A_n41	2A-12A	n41
TDD	DC_2A-12A_n77A	2A_n77	2A-12A	n77
TDD	DC_2A-12A_n77A	12A_n77	2A-12A	n77
TDD	DC_2A-12A_n78A	2A_n78	2A-12A	n78
TDD	DC_2A-12A_n78A	12A_n78	2A-12A	n78
TDD	DC_2A-13A_n77A	2A_n77	2A-13A	n77
TDD	DC_2A-13A_n77A	13A_n77	2A-13A	n77
TDD	DC_2A-14A_n77A	2A_n77	2A-14A	n77
TDD	DC_2A-14A_n77A	14A_n77	2A-14A	n77
TDD	DC_2A-29A_n78A	2A_n78	2A-29A	n78
TDD	DC_2A-66A_n41A	2A_n41	2A-66A	n41
TDD	DC_2A-66A_n41A	66A_n41	2A-66A	n41
TDD	DC_2A-66A_n77A	2A_n77	2A-66A	n77
TDD	DC_2A-66A_n77A	66A_n77	2A-66A	n77
TDD	DC_2A-66A_n78A	2A_n78	2A-66A	n78
TDD	DC_2A-66A_n78A	66A_n78	2A-66A	n78
TDD	DC_2A-71A_n78A	2A_n78	2A-71A	n78
TDD	DC_2A-71A_n78A	71A_n78	2A-71A	n78
FDD	DC_5A-5A_n2A	5A_n2	5A-5A	n2
FDD	DC_5A-5A_n66A	5A_n66	5A-5A	n66
FDD	DC_5A-7A_n77A	5A_n77	5A-7A	n77
FDD	DC_5A-7A_n77A	7A_n77	5A-7A	n77
TDD	DC_5A-7A_n78A	5A_n78	5A-7A	n78
TDD	DC_5A-7A_n78A	7A_n78	5A-7A	n78
TDD	DC_5A-30A_n77A	5A_n77	5A-30A	n77
TDD	DC_5A-30A_n77A	30A_n77	5A-30A	n77
FDD	DC_5A-66A_n2A	5A_n2	5A-66A	n2
FDD	DC_5A-66A_n2A	66A_n2	5A-66A	n2
TDD	DC_5A-66A_n77A	5A_n77	5A-66A	n77
TDD	DC_5A-66A_n77A	66A_n77	5A-66A	n77
TDD	DC_5A-66A_n78A	5A_n78	5A-66A	n78
TDD	DC_5A-66A_n78A	66A_n78	5A-66A	n78
TDD	DC_7A-7A_n77A	7A_n77	7A-7A	n77

TDD	DC_7A-7A_n78A	7A_n78	7A-7A	n78
TDD	DC_7A-12A_n78A	7A_n78	7A-12A	n78
TDD	DC_7A-12A_n78A	12A_n78	7A-12A	n78
TDD	DC_7A-71A_n78A	7A_n78	7A-71A	n78
TDD	DC_7A-71A_n78A	71A_n78	7A-71A	n78
FDD	DC_12A-66A_n2A	12A_n2	12A-66A	n2
FDD	DC_12A-66A_n2A	66A_n2	12A-66A	n2
TDD	DC_12A-66A_n77A	12A_n77	12A-66A	n77
TDD	DC_12A-66A_n77A	66A_n77	12A-66A	n77
TDD	DC_12A-66A_n78A	12A_n78	12A-66A	n78
TDD	DC_12A-66A_n78A	66A_n78	12A-66A	n78
FDD	DC_13A-66A_n2A	13A_n2	13A-66A	n2
FDD	DC_13A-66A_n2A	66A_n2	13A-66A	n2
TDD	DC_13A-66A_n77A	13A_n77	13A-66A	n77
TDD	DC_13A-66A_n77A	66A_n77	13A-66A	n77
TDD	DC_14A-66A_n77A	14A_n77	14A-66A	n77
TDD	DC_14A-66A_n77A	66A_n77	14A-66A	n77
TDD	DC_25A-25A_n77A	25A_n77	25A-25A	n77
TDD	DC_25A-25A_n78A	25A_n78	25A-25A	n78
TDD	DC_25A-66A_n77A	25A_n77	25A-66A	n77
TDD	DC_25A-66A_n77A	66A_n77	25A-66A	n77
TDD	DC_25A-66A_n78A	25A_n78	25A-66A	n78
TDD	DC_25A-66A_n78A	66A_n78	25A-66A	n78
FDD	DC_66A-66A_n2A	66A_n2	66A-66A	n2
TDD	DC_66A-66A_n77A	66A_n77	66A-66A	n77
TDD	DC_66A-66A_n78A	66A_n78	66A-66A	n78
TDD	DC_66A-71A_n78A	66A_n78	66A-71A	n78
TDD	DC_66A-71A_n78A	71A_n78	66A-71A	n78

➢ **Maximum Power for EN-DC**

EN-DC Configuration	LTE Signal Carrier				5G NR		
	Band	BW (MHz)	Maximum Power(dBm)		Band	BW (MHz)	Maximum Power(dBm)
			Standalone	EN-DC Active			EN-DC Active
EN-DC_5A_n2	5	10	23.5	23.5	2	20	19
EN-DC_12A_n2	12	10	23.5	23.5	2	20	19
EN-DC_13A_n2	13	10	21.5	23.5	2	20	19
EN-DC_66A_n2	66	20	19.5	23.5	2	20	19
EN-DC_71A_n2	71	20	23.5	23.5	2	20	19
EN-DC_2A_n7	2	20	20.5	24.5	7	20	20
EN-DC_5A_n7	5	10	23.5	24.5	7	20	20
EN-DC_12A_n7	12	10	23.5	24.5	7	20	20
EN-DC_13A_n7	13	10	21.5	24.5	7	20	20
EN-DC_5A_n38	5	10	23.5	22.5	38	40	17.5
EN-DC_12A_n38	12	10	23.5	22.5	38	40	17.5
EN-DC_71A_n38	71	20	23.5	22.5	38	40	17.5
EN-DC_2A_n41	2	20	20.5	22	41	100	18
EN-DC_4A_n41	4	20	19.5	22	41	100	18
EN-DC_12A_n41	12	10	23.5	22	41	100	18
EN-DC_26A_n41	26	15	23.5	22	41	100	18
EN-DC_66A_n41	66	20	19.5	22	41	100	18
EN-DC_71A_n41	71	20	23.5	22	41	100	18
EN-DC_2A_n66	2	20	20.5	23.5	66	40	21
EN-DC_5A_n66	5	10	23.5	23.5	66	40	21
EN-DC_12A_n66	12	10	23.5	23.5	66	40	21
EN-DC_13A_n66	13	10	21.5	23.5	66	40	21
EN-DC_71A_n66	71	20	23.5	23.5	66	40	21
EN-DC_2A_n77	2	20	20.5	21	77	100	19
EN-DC_5A_n77	5	10	23.5	21	77	100	19
EN-DC_7A_n77	7	20	22.0	21	77	100	19
EN-DC_12A_n77	12	10	23.5	21	77	100	19
EN-DC_13A_n77	13	10	21.5	21	77	100	19
EN-DC_14A_n77	14	10	21.5	21	77	100	19
EN-DC_25A_n77	25	20	20.5	21	77	100	19
EN-DC_26A_n77	26	15	23.5	21	77	100	19

EN-DC_30A_n77	30	10	18.0	21	77	100	19
EN-DC_66A_n77	66	20	19.5	21	77	100	19
EN-DC_2A_n78	2	20	20.5	21	78	100	19
EN-DC_5A_n78	5	10	23.5	21	78	100	19
EN-DC_7A_n78	7	20	22.0	21	78	100	19
EN-DC_12A_n78	12	10	23.5	21	78	100	19
EN-DC_13A_n78	13	10	21.5	21	78	100	19
EN-DC_25A_n78	25	20	20.5	21	78	100	19
EN-DC_26A_n78	26	15	23.5	21	78	100	19
EN-DC_66A_n78	66	20	19.5	21	78	100	19
EN-DC_71A_n78	71	20	23.5	21	78	100	19

Note: The total power of EN-DC refers to SZ22080079W03.

16. EUT Antenna Location

➢ **EUT Antenna Location**

The location of antenna was recorded in annex B
ANT0-main(TX/RX): LTE Band 2/4/5/7/12/14/17/25/26/30/66/71, 5G NR n2/5/7/66 ANT0-Diversity MIMO(RX): LTE band 38/41, 5G NR n38/41 ANT 1-diversity(RX): LTE band 2/4/5/7/12/13/14/17/25/26/29/30/66/71/38/41, 5G NR n2/5/7/66/71/38/41 ANT2-main(TX/RX): LTE band 38/41, 5G NR n38/41 ANT2-Diversity MIMO(RX): 2/4/7/25/30/66/42/48, 5G NR n2/7/66/77/78 ANT3-main(TX/RX): LTE band 42/48, 5G NR n77/78 ANT3-Diversity MIMO(RX): 2/4/7/25/30/66/38/41, 5G NR n2/7/66/38/41 ANT 5-diversity MIMO(RX): LTE band 42/48, 5G NR n77/78 ANT 6-diversity MIMO(RX): LTE band 42/48, 5G NR n77/78 ANT7-WIFI0(TX/RX): WLAN 2.4GHz/5GHz ANT8-WIFI0(TX/RX): WLAN 2.4GHz/5GHz

➢ **EUT Antenna Distance**

Antenna Location	Front	Back	Left	Right	Top	Bottom
ANT 0	＜5mm	＜5mm	＜25mm	＜5mm	＜5mm	＞25mm
ANT 2	＜5mm	＜5mm	＜25mm	＞25mm	＞25mm	＜5mm
ANT 3	＜5mm	＜5mm	＜5mm	＞25mm	＜5mm	＞25mm
ANT 7	＜5mm	＜5mm	＜5mm	＞25mm	＞25mm	＞25mm
ANT 8	＜5mm	＜5mm	＞25mm	＜5mm	＞25mm	＞25mm

➢ **Hotspot Evaluation**

Assessment	Hotspot Side for SAR Test Distance: 10mm					
Antennas	Front	Back	Left	Right	Top	Bottom
ANT 0	Yes	Yes	Yes	Yes	Yes	No
ANT 2	Yes	Yes	Yes	No	No	Yes
ANT 3	Yes	Yes	Yes	No	Yes	No

ANT 7	Yes	Yes	Yes	No	No	No
ANT 8	Yes	Yes	No	Yes	No	No

Note :

1. The SAR evaluation procedures for Portable Devices with Wireless Router function is according to KDB 941225 D06 Hotspot SAR v02r01.
2. Head/Body-worn/Hotspot mode SAR assessments are required.
3. Referring to KDB 941225 D06, when the overall device length and width are ≥ 9cm*5cm, the test distance is 10 mm. SAR must be measured for all sides and surfaces with a transmitting antenna located within 25mm from that surface or edge.

17. Block Diagram of the Tests to be Performed

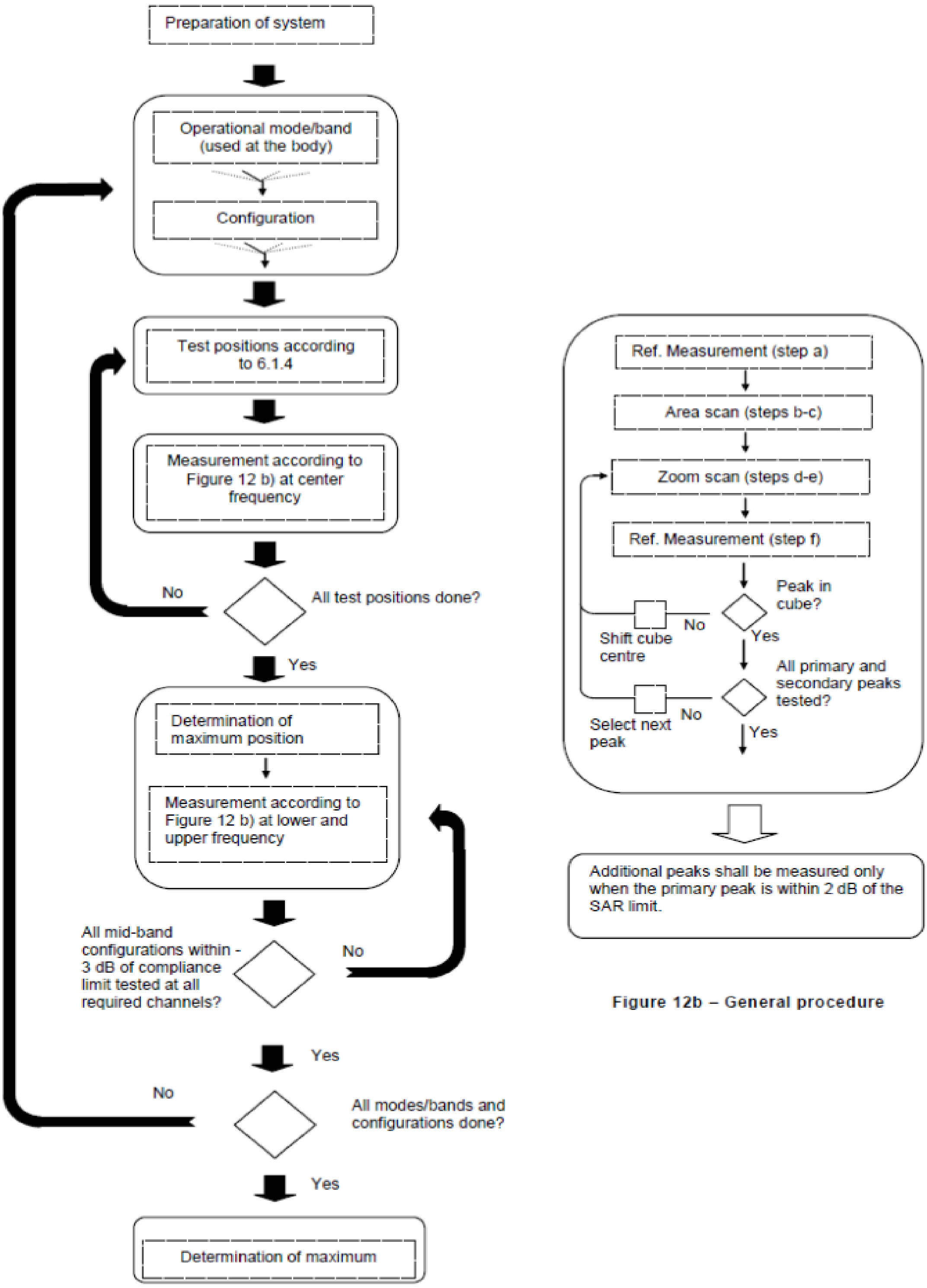

Figure 12b – General procedure

18. Test Results List

18.1. Test Guidance

1. Per KDB 447498 D01v06, the reported SAR is the measured SAR value adjusted for maximum tune-up tolerance.
   a. Tune-up scaling Factor = tune-up limit power (mW) / EUT RF power (mW), where tune-up limit is the maximum rated power among all production units.
   b. For SAR testing of WLAN signal with non-100% duty cycle, the measured SAR is scaled-up by the duty cycle scaling factor which is equal to "1/(duty cycle)".
   c. For WWAN: Reported SAR(W/kg)= Measured SAR(W/kg)*Tune-up Scaling Factor.
   d. For WLAN/Bluetooth: Reported SAR(W/kg)= Measured SAR(W/kg)* Duty Cycle scaling factor * Tune-up scaling factor.
2. Per KDB 447498 D01v06, for each exposure position, testing of other required channels within the operating mode of a frequency band is not required when the *reported* 1-g or 10-g SAR for the mid-band or highest output power channel is:
   a. ≤ 0.8 W/kg or 2.0 W/kg, for 1-g or 10-g respectively, when the transmission band is ≤ 100 MHz
   b. ≤ 0.6 W/kg or 1.5 W/kg, for 1-g or 10-g respectively, when the transmission band is between 100 MHz and 200 MHz
   c. ≤ 0.4 W/kg or 1.0 W/kg, for 1-g or 10-g respectively, when the transmission band is ≥ 200 MHz
3. Per KDB 865664 D01v01r04, for each frequency band, repeated SAR measurement is required only when the measured SAR is ≥0.8W/kg.
4. Per KDB 648474 D04v01r03, when the reported SAR for a body-worn accessory measured without a headset connected to the handset is ≤ 1.2 W/kg, SAR testing with a headset connected to the handset is not required.
5. Per KDB648474 D04v01r03, for smart phones with a display diagonal dimension > 15.0 cm or an overall diagonal dimension > 16.0 cm, when hotspot mode applies, 10-g extremity SAR is required only for the surfaces and edges with hotspot mode 1-g reported SAR > 1.2 W/kg, however, when power reduction applies to hotspot mode the measured SAR must be scaled to the maximum output power, including tolerance, allowed for tablet modes to compare with the 1.2 W/kg SAR test reduction threshold.
6. Per KDB248227 D01v02r02, a Wi-Fi device must be configured to transmit continuously at the required data rate, channel bandwidth and signal modulation, using the highest transmission duty factor supported by the test mode tools for SAR measurement. The test frequencies established using test mode must correspond to the actual channel frequencies required for operations in the U.S. When 802.11 frame gaps are accounted for in the transmission, a maximum transmission duty factor of 92 - 96% is typically achievable in most test mode configurations. A minimum transmission duty factor of 85% is required to avoid certain hardware and device implementation issues related to wide range SAR scaling. In addition, a periodic

transmission duty factor is required for current generation SAR systems to measure SAR correctly. Unless it is permitted by specific KDB procedures or continuous transmission is specifically restricted by the device, the reported SAR must be scaled to 100% transmission duty factor to determine compliance at the maximum tune-up tolerance limit. When a device is not capable of sustaining continuous transmission or the output can become nonlinear, and it is limited by hardware design and unable to transmit at higher than 85% duty factor, a periodic duty factor within 15% of the maximum duty factor the device is capable of transmitting should be used. The reported SAR must be scaled to the maximum transmission duty factor to determine compliance. Descriptions of the procedures applied to establish the specific duty factor used for SAR testing are required in SAR reports to support the test results.

7. For CA intra-band uplink, SAR measurement was performed at the worst condition of standalone carrier, and it was performed separately for CA inter-band uplink according to the TCB workshop publication in October 2018.
8. The CA intra-band uplink and 5G NR SAR measurement procedure should be followed the TCB workshop publication in October 2020:
    a. If the signal uplink 1-g SAR values for each band are both less than 0.8 W/kg and the algebraic summation of the 1-g SAR values are less than 1.45 W/kg no additional measurements need to be performed.
    b. If one or the signal uplink 1-g SAR values is greater than 0.8 W/kg, instead of algebraically summing the 1-g SAR values, sum up the SAR distributions, similar to the enlarged zoom scan (volume scan) procedures found in FCC KDB Publication 865664 D01. And PAG is required for this case.
    c. If the algebraic sum of the 1-g SAR values is > 1.45 W/kg additional measurements may have to be made. Submit a KDB inquiry for additional guidance and PAG is required for this case.
    d. When the algebraic sum of the 1-g SAR values is > 1.6 W/kg, SPLSR analysis procedure should be applied.
9. Per KDB 447498 D01v06, for each exposure position, if the highest output power channel Reported SAR ≤ 0.8W/kg, other channels SAR testing is not necessary.
10. Per KDB 865664 D01v01r04, for each frequency band, repeated SAR measurement is required when the measured SAR is ≥ 0.8W/kg.
11. Per KDB 941225 D05v02r05, 100% RB allocation SAR measurement is not required when the highest reported SAR for 1 RB and 50% RB allocation are ≤ 0.8 W/kg.
12. Per KDB 248227 D01v02r02, for 802.11b DSSS , when the reported SAR of the highest measured maximum output power channel for the exposure configuration is ≤ 0.8 W/kg, no further SAR testing is required in that exposure configuration.
13. Per KDB 248227 D01v02r02, OFDM SAR is not required when the highest reported SAR for DSSS is adjusted by the ratio of OFDM to DSSS specified maximum output power and the adjusted SAR is ≤ 1.2 W/kg.

14. According to KDB 865664 D02v01r02, SAR plot is required for the highest measured SAR in each exposure configuration, wireless mode and frequency band combination.
15. When this device is close to human body the sensor at the top side will be active automatically and the reduced power level 1&2 of WWAN applied.
16. The reduced power level 2 of WLAN will be applied to EN-DC and simultaneous transmission.
17. The Power level condition applied should be follow:

Transmission Condition	Wireless System	Antenna	Body
Standalone	WWAN	Ant 0	Reduced Power Level 1
		Ant 2	Reduced Power Level 1
		Ant 3	Reduced Power Level 1
	WLAN	Ant 7	Full Power
		Ant 8	Full Power

Transmission Condition	Wireless System	Antenna	Body
EN-DC & Simultaneous	WWAN	Ant 0	Reduced Power Level 2
		Ant 2	Reduced Power Level 2
		Ant 3	Reduced Power Level 2
	WLAN	Ant 7	Full Power
		Ant 8	Full Power

18.2. Body SAR Data

➢ **LTE QPSK Body SAR**

Plot No.	Band/Mode	Test Position	CH.	Ave. Power (dBm)	Tune-up Limit (dBm)	Tune-up Scaling Factor	Meas. SAR_{1g} (W/kg)	Reported SAR_{1g} (W/kg)
Sensor off/Full Power for Ant 0								
	LTE Band 5/1RB#0 10M	Front Side	20525	22.88	23.50	1.153	0.338	0.390
1#	LTE Band 5/1RB#0 10M	Back Side	20525	22.88	23.50	1.153	0.485	0.559
	LTE Band 5/1RB#0 10M	Left Side	20525	22.88	23.50	1.153	0.199	0.230
	LTE Band 5/1RB#0 10M	Right Side	20525	22.88	23.50	1.153	0.239	0.276
	LTE Band 5/1RB#0 10M	Top Side	20525	22.88	23.50	1.153	0.184	0.212
	LTE Band 5/25RB#0 10M	Front Side	20525	21.89	22.50	1.151	0.283	0.326
	LTE Band 5/25RB#0 10M	Back Side	20525	21.89	22.50	1.151	0.404	0.465
	LTE Band 5/25RB#0 10M	Left Side	20525	21.89	22.50	1.151	0.136	0.156
	LTE Band 5/25RB#0 10M	Right Side	20525	21.89	22.50	1.151	0.176	0.202
	LTE Band 5/25RB#0 10M	Top Side	20525	21.89	22.50	1.151	0.119	0.137
Sensor off/Full Power for Ant 0								
	LTE Band 7/1RB#0 20M	Front Side	21100	22.69	23.50	1.205	0.403	0.486
2#	LTE Band 7/1RB#0 20M	Back Side	21100	22.69	23.50	1.205	0.535	0.645
	LTE Band 7/1RB#0 20M	Left Side	21100	22.69	23.50	1.205	0.170	0.205
	LTE Band 7/1RB#0 20M	Right Side	21100	22.69	23.50	1.205	0.254	0.306
	LTE Band 7/1RB#0 20M	Top Side	21100	22.69	23.50	1.205	0.462	0.556
	LTE Band 7/50RB#0 20M	Front Side	21100	21.89	22.50	1.151	0.382	0.440
	LTE Band 7/50RB#0 20M	Back Side	21100	21.89	22.50	1.151	0.515	0.593
	LTE Band 7/50RB#0 20M	Left Side	21100	21.89	22.50	1.151	0.088	0.101
	LTE Band 7/50RB#0 20M	Right Side	21100	21.89	22.50	1.151	0.131	0.151
	LTE Band 7/50RB#0 20M	Top Side	21100	21.89	22.50	1.151	0.394	0.454
Sensor on/Reduced Power Level 2 for EN-DC & Simultaneous Transmission								
	LTE Band 7/1RB#0 20M	Front Side	21100	21.19	22.00	1.205	0.359	0.433
	LTE Band 7/1RB#0 20M	Back Side	21100	21.19	22.00	1.205	0.457	0.551
	LTE Band 7/1RB#0 20M	Left Side	21100	21.19	22.00	1.205	0.145	0.175
	LTE Band 7/1RB#0 20M	Right Side	21100	21.19	22.00	1.205	0.217	0.261
	LTE Band 7/1RB#0 20M	Top Side	21100	21.19	22.00	1.205	0.394	0.475
	LTE Band 7/50RB#0 20M	Front Side	21100	20.39	21.00	1.151	0.373	0.429
	LTE Band 7/50RB#0 20M	Back Side	21100	20.39	21.00	1.151	0.400	0.460
	LTE Band 7/50RB#0 20M	Left Side	21100	20.39	21.00	1.151	0.078	0.090
	LTE Band 7/50RB#0 20M	Right Side	21100	20.39	21.00	1.151	0.116	0.134

	LTE Band 7/50RB#0 20M	Top Side	21100	20.39	21.00	1.151	0.350	0.403
Sensor off/Full Power for Ant 0								
	LTE Band 12/1RB#0 10M	Front Side	23095	22.73	23.50	1.194	0.253	0.302
3#	LTE Band 12/1RB#0 10M	Back Side	23095	22.73	23.50	1.194	0.374	0.447
	LTE Band 12/1RB#0 10M	Left Side	23095	22.73	23.50	1.194	0.152	0.181
	LTE Band 12/1RB#0 10M	Right Side	23095	22.73	23.50	1.194	0.271	0.324
	LTE Band 12/1RB#0 10M	Top Side	23095	22.73	23.50	1.194	0.067	0.080
	LTE Band 12/25RB#0 10M	Front Side	23095	21.70	22.50	1.202	0.201	0.242
	LTE Band 12/25RB#0 10M	Back Side	23095	21.70	22.50	1.202	0.289	0.347
	LTE Band 12/25RB#0 10M	Left Side	23095	21.70	22.50	1.202	0.101	0.122
	LTE Band 12/25RB#0 10M	Right Side	23095	21.70	22.50	1.202	0.173	0.208
	LTE Band 12/25RB#0 10M	Top Side	23095	21.70	22.50	1.202	0.044	0.053
Sensor off/Full Power for Ant 0								
	LTE Band 13/1RB#0 10M	Front Side	23230	22.72	23.50	1.197	0.479	0.573
4#	LTE Band 13/1RB#0 10M	Back Side	23230	22.72	23.50	1.197	0.515	0.616
	LTE Band 13/1RB#0 10M	Left Side	23230	22.72	23.50	1.197	0.245	0.294
	LTE Band 13/1RB#0 10M	Right Side	23230	22.72	23.50	1.197	0.287	0.344
	LTE Band 13/1RB#0 10M	Top Side	23230	22.72	23.50	1.197	0.109	0.131
	LTE Band 13/25RB#0 10M	Front Side	23230	21.55	22.50	1.245	0.417	0.519
	LTE Band 13/25RB#0 10M	Back Side	23230	21.55	22.50	1.245	0.414	0.515
	LTE Band 13/25RB#0 10M	Left Side	23230	21.55	22.50	1.245	0.199	0.248
	LTE Band 13/25RB#0 10M	Right Side	23230	21.55	22.50	1.245	0.231	0.288
	LTE Band 13/25RB#0 10M	Top Side	23230	21.55	22.50	1.245	0.083	0.104
Sensor on/Reduced Power Level 2 for EN-DC								
	LTE Band 13/1RB#0 10M	Front Side	23230	20.82	21.50	1.169	0.429	0.502
	LTE Band 13/1RB#0 10M	Back Side	23230	20.82	21.50	1.169	0.435	0.509
	LTE Band 13/1RB#0 10M	Left Side	23230	20.82	21.50	1.169	0.207	0.242
	LTE Band 13/1RB#0 10M	Right Side	23230	20.82	21.50	1.169	0.242	0.284
	LTE Band 13/1RB#0 10M	Top Side	23230	20.82	21.50	1.169	0.092	0.108
	LTE Band 13/25RB#0 10M	Front Side	23230	19.55	20.50	1.245	0.347	0.432
	LTE Band 13/25RB#0 10M	Back Side	23230	19.55	20.50	1.245	0.349	0.434
	LTE Band 13/25RB#0 10M	Left Side	23230	19.55	20.50	1.245	0.166	0.206
	LTE Band 13/25RB#0 10M	Right Side	23230	19.55	20.50	1.245	0.193	0.240
	LTE Band 13/25RB#0 10M	Top Side	23230	19.55	20.50	1.245	0.069	0.086
Sensor off/Full Power for Ant 0								
	LTE Band 14/1RB#0 10M	Front Side	23330	22.84	23.50	1.164	0.564	0.657
5#	LTE Band 14/1RB#0 10M	Back Side	23330	22.84	23.50	1.164	0.592	0.689
	LTE Band 14/1RB#0 10M	Left Side	23330	22.84	23.50	1.164	0.285	0.332

	LTE Band 14/1RB#0 10M	Right Side	23330	22.84	23.50	1.164	0.350	0.408
	LTE Band 14/1RB#0 10M	Top Side	23330	22.84	23.50	1.164	0.116	0.134
	LTE Band 14/25RB#0 10M	Front Side	23330	21.81	22.50	1.172	0.483	0.566
	LTE Band 14/25RB#0 10M	Back Side	23330	21.81	22.50	1.172	0.489	0.574
	LTE Band 14/25RB#0 10M	Left Side	23330	21.81	22.50	1.172	0.236	0.277
	LTE Band 14/25RB#0 10M	Right Side	23330	21.81	22.50	1.172	0.286	0.336
	LTE Band 14/25RB#0 10M	Top Side	23330	21.81	22.50	1.172	0.094	0.110
Sensor on/Reduced Power Level 2 for EN-DC								
	LTE Band 14/1RB#0 10M	Front Side	23330	20.84	21.50	1.164	0.406	0.473
	LTE Band 14/1RB#0 10M	Back Side	23330	20.84	21.50	1.164	0.449	0.523
	LTE Band 14/1RB#0 10M	Left Side	23330	20.84	21.50	1.164	0.216	0.252
	LTE Band 14/1RB#0 10M	Right Side	23330	20.84	21.50	1.164	0.266	0.309
	LTE Band 14/1RB#0 10M	Top Side	23330	20.84	21.50	1.164	0.088	0.102
	LTE Band 14/25RB#0 10M	Front Side	23330	19.81	20.50	1.172	0.366	0.429
	LTE Band 14/25RB#0 10M	Back Side	23330	19.81	20.50	1.172	0.371	0.435
	LTE Band 14/25RB#0 10M	Left Side	23330	19.81	20.50	1.172	0.179	0.210
	LTE Band 14/25RB#0 10M	Right Side	23330	19.81	20.50	1.172	0.217	0.255
	LTE Band 14/25RB#0 10M	Top Side	23330	19.81	20.50	1.172	0.071	0.084
Sensor off/Full Power for Ant 0								
	LTE Band 25/1RB#0 20M	Front Side	26365	22.93	23.50	1.140	0.629	0.717
6#	LTE Band 25/1RB#0 20M	Back Side	26365	22.93	23.50	1.140	0.774	0.883
	LTE Band 25/1RB#0 20M	Left Side	26365	22.93	23.50	1.140	0.178	0.203
	LTE Band 25/1RB#0 20M	Right Side	26365	22.93	23.50	1.140	0.667	0.761
	LTE Band 25/1RB#0 20M	Top Side	26365	22.93	23.50	1.140	0.688	0.784
	LTE Band 25/1RB#0 20M	Back Side	26140	22.86	23.50	1.159	0.754	0.874
	LTE Band 25/1RB#0 20M	Back Side	26590	22.88	23.50	1.153	0.726	0.837
	LTE Band 25/50RB#0 20M	Front Side	26365	21.93	22.50	1.140	0.576	0.657
	LTE Band 25/50RB#0 20M	Back Side	26365	21.93	22.50	1.140	0.700	0.798
	LTE Band 25/50RB#0 20M	Left Side	26365	21.93	22.50	1.140	0.144	0.164
	LTE Band 25/50RB#0 20M	Right Side	26365	21.93	22.50	1.140	0.636	0.725
	LTE Band 25/50RB#0 20M	Top Side	26365	21.93	22.50	1.140	0.609	0.694
	LTE Band 25/100RB#0 20M	Back Side	26365	21.70	22.50	1.202	0.631	0.759
Sensor on/Reduced Power Level 2 for EN-DC & Simultaneous Transmission								
	LTE Band 25/1RB#0 20M	Front Side	26365	19.95	20.50	1.135	0.340	0.386
	LTE Band 25/1RB#0 20M	Back Side	26365	19.95	20.50	1.135	0.431	0.489
	LTE Band 25/1RB#0 20M	Left Side	26365	19.95	20.50	1.135	0.099	0.113
	LTE Band 25/1RB#0 20M	Right Side	26365	19.95	20.50	1.135	0.371	0.422
	LTE Band 25/1RB#0 20M	Top Side	26365	19.95	20.50	1.135	0.383	0.435

	LTE Band 25/50RB#0 20M	Front Side	26365	18.95	19.50	1.135	0.324	0.367
	LTE Band 25/50RB#0 20M	Back Side	26365	18.95	19.50	1.135	0.393	0.446
	LTE Band 25/50RB#0 20M	Left Side	26365	18.95	19.50	1.135	0.081	0.092
	LTE Band 25/50RB#0 20M	Right Side	26365	18.95	19.50	1.135	0.357	0.406
	LTE Band 25/50RB#0 20M	Top Side	26365	18.95	19.50	1.135	0.342	0.388
Sensor off/Full Power for Ant 0								
	LTE Band 26/1RB#0 15M	Front Side	26865	22.86	23.50	1.159	0.321	0.372
7#	LTE Band 26/1RB#0 15M	Back Side	26865	22.86	23.50	1.159	0.420	0.487
	LTE Band 26/1RB#0 15M	Left Side	26865	22.86	23.50	1.159	0.134	0.155
	LTE Band 26/1RB#0 15M	Right Side	26865	22.86	23.50	1.159	0.178	0.206
	LTE Band 26/1RB#0 15M	Top Side	26865	22.86	23.50	1.159	0.351	0.407
	LTE Band 26/36RB#0 15M	Front Side	26865	21.78	22.50	1.180	0.278	0.328
	LTE Band 26/36RB#0 15M	Back Side	26865	21.78	22.50	1.180	0.302	0.356
	LTE Band 26/36RB#0 15M	Left Side	26865	21.78	22.50	1.180	0.123	0.145
	LTE Band 26/36RB#0 15M	Right Side	26865	21.78	22.50	1.180	0.162	0.191
	LTE Band 26/36RB#0 15M	Top Side	26865	21.78	22.50	1.180	0.278	0.328
Sensor on/Reduced Power Level 1 for Ant 0								
	LTE Band 30/1RB#0 10M	Front Side	27710	17.55	18.00	1.109	0.245	0.272
8#	LTE Band 30/1RB#0 10M	Back Side	27710	17.55	18.00	1.109	0.598	0.663
	LTE Band 30/1RB#0 10M	Left Side	27710	17.55	18.00	1.109	0.040	0.044
	LTE Band 30/1RB#0 10M	Right Side	27710	17.55	18.00	1.109	0.067	0.075
	LTE Band 30/1RB#0 10M	Top Side	27710	17.55	18.00	1.109	0.392	0.435
	LTE Band 30/25RB#0 10M	Front Side	27710	16.61	17.00	1.094	0.230	0.251
	LTE Band 30/25RB#0 10M	Back Side	27710	16.61	17.00	1.094	0.561	0.614
	LTE Band 30/25RB#0 10M	Left Side	27710	16.61	17.00	1.094	0.037	0.041
	LTE Band 30/25RB#0 10M	Right Side	27710	16.61	17.00	1.094	0.063	0.069
	LTE Band 30/25RB#0 10M	Top Side	27710	16.61	17.00	1.094	0.368	0.402
Sensor off/Full Power for Ant 2								
9#	LTE Band 38/1RB#0 20M	Front Side	38000	22.21	23.00	1.199	0.443	0.535
	LTE Band 38/1RB#0 20M	Back Side	38000	22.21	23.00	1.199	0.302	0.364
	LTE Band 38/1RB#0 20M	Left Side	38000	22.21	23.00	1.199	0.157	0.189
	LTE Band 38/1RB#0 20M	Bottom Side	38000	22.21	23.00	1.199	0.197	0.237
	LTE Band 38/50RB#0 20M	Front Side	38000	21.08	22.00	1.236	0.310	0.386
	LTE Band 38/50RB#0 20M	Back Side	38000	21.08	22.00	1.236	0.261	0.325
	LTE Band 38/50RB#0 20M	Left Side	38000	21.08	22.00	1.236	0.135	0.168
	LTE Band 38/50RB#0 20M	Bottom Side	38000	21.08	22.00	1.236	0.158	0.197
Sensor off/Full Power for Ant 2								
	LTE Band 41/1RB#0 20M	Front Side	40620	22.62	23.50	1.225	0.400	0.493

	LTE Band 41/1RB#0 20M	Back Side	40620	22.62	23.50	1.225	0.271	0.334
	LTE Band 41/1RB#0 20M	Left Side	40620	22.62	23.50	1.225	0.298	0.367
	LTE Band 41/1RB#0 20M	Bottom Side	40620	22.62	23.50	1.225	0.365	0.449
	LTE Band 41/50RB#0 20M	Front Side	40620	21.67	22.50	1.211	0.336	0.409
	LTE Band 41/50RB#0 20M	Back Side	40620	21.67	22.50	1.211	0.222	0.270
	LTE Band 41/50RB#0 20M	Left Side	40620	21.67	22.50	1.211	0.238	0.290
	LTE Band 41/50RB#0 20M	Bottom Side	40620	21.67	22.50	1.211	0.308	0.376
Sensor on/Reduced Power Level 1 for Ant 2 (HPUE)								
10#	LTE Band 41/1RB#0 20M	Front Side	40620	18.30	19.00	1.175	0.514	0.608
	LTE Band 41/1RB#0 20M	Back Side	40620	18.30	19.00	1.175	0.109	0.129
	LTE Band 41/1RB#0 20M	Left Side	40620	18.30	19.00	1.175	0.283	0.334
	LTE Band 41/1RB#0 20M	Bottom Side	40620	18.30	19.00	1.175	0.282	0.333
	LTE Band 41/50RB#0 20M	Front Side	40620	17.32	18.00	1.169	0.277	0.326
	LTE Band 41/50RB#0 20M	Back Side	40620	17.32	18.00	1.169	0.159	0.187
	LTE Band 41/50RB#0 20M	Left Side	40620	17.32	18.00	1.169	0.113	0.133
	LTE Band 41/50RB#0 20M	Bottom Side	40620	17.32	18.00	1.169	0.105	0.124
Sensor off/Full Power for Ant 3								
	LTE Band 42/1RB#0 20M	Front Side	42590	20.80	21.50	1.175	0.195	0.230
	LTE Band 42/1RB#0 20M	Back Side	42590	20.80	21.50	1.175	0.181	0.214
	LTE Band 42/1RB#0 20M	Left Side	42590	20.80	21.50	1.175	0.225	0.266
	LTE Band 42/1RB#0 20M	Top Side	42590	20.80	21.50	1.175	0.166	0.196
	LTE Band 42/50RB#0 20M	Front Side	42590	19.85	20.50	1.161	0.166	0.194
	LTE Band 42/50RB#0 20M	Back Side	42590	19.85	20.50	1.161	0.153	0.179
	LTE Band 42/50RB#0 20M	Left Side	42590	19.85	20.50	1.161	0.161	0.188
	LTE Band 42/50RB#0 20M	Top Side	42590	19.85	20.50	1.161	0.108	0.126
Sensor off/Full Power for Ant 3								
11#	LTE Band 42/1RB#0 20M	Front Side	43340	20.76	21.50	1.186	0.237	0.283
	LTE Band 42/1RB#0 20M	Back Side	43340	20.76	21.50	1.186	0.134	0.160
	LTE Band 42/1RB#0 20M	Left Side	43340	20.76	21.50	1.186	0.188	0.224
	LTE Band 42/1RB#0 20M	Top Side	43340	20.76	21.50	1.186	0.195	0.233
	LTE Band 42/50RB#0 20M	Front Side	43340	19.75	20.50	1.189	0.220	0.263
	LTE Band 42/50RB#0 20M	Back Side	43340	19.75	20.50	1.189	0.118	0.141
	LTE Band 42/50RB#0 20M	Left Side	43340	19.75	20.50	1.189	0.170	0.203
	LTE Band 42/50RB#0 20M	Top Side	43340	19.75	20.50	1.189	0.183	0.219
Sensor off/Full Power for Ant 3								
	LTE Band 48/1RB#0 20M	Front Side	55990	20.95	21.50	1.135	0.272	0.309
	LTE Band 48/1RB#0 20M	Back Side	55990	20.95	21.50	1.135	0.176	0.200

12#	LTE Band 48/1RB#0 20M	Left Side	55990	20.95	21.50	1.135	0.350	0.397
	LTE Band 48/1RB#0 20M	Top Side	55990	20.95	21.50	1.135	0.283	0.321
	LTE Band 48/50RB#0 20M	Front Side	55990	19.72	20.50	1.197	0.239	0.286
	LTE Band 48/50RB#0 20M	Back Side	55990	19.72	20.50	1.197	0.166	0.199
	LTE Band 48/50RB#0 20M	Left Side	55990	19.72	20.50	1.197	0.303	0.362
	LTE Band 48/50RB#0 20M	Top Side	55990	19.72	20.50	1.197	0.211	0.252
Sensor off/Full Power for Ant 0								
	LTE Band 66/1RB#0 20M	Front Side	132322	22.82	23.50	1.169	0.759	0.888
13#	LTE Band 66/1RB#0 20M	Back Side	132322	22.82	23.50	1.169	0.784	0.917
	LTE Band 66/1RB#0 20M	Left Side	132322	22.82	23.50	1.169	0.122	0.143
	LTE Band 66/1RB#0 20M	Right Side	132322	22.82	23.50	1.169	0.486	0.568
	LTE Band 66/1RB#0 20M	Top Side	132322	22.82	23.50	1.169	0.706	0.826
	LTE Band 66/1RB#0 20M	Front Side	132072	22.68	23.50	1.208	0.711	0.859
	LTE Band 66/1RB#0 20M	Front Side	132572	22.80	23.50	1.175	0.687	0.807
	LTE Band 66/1RB#0 20M	Back Side	132072	22.68	23.50	1.208	0.739	0.893
	LTE Band 66/1RB#0 20M	Back Side	132572	22.80	23.50	1.175	0.755	0.887
	LTE Band 66/50RB#0 20M	Front Side	132322	21.68	22.50	1.208	0.548	0.662
	LTE Band 66/50RB#0 20M	Back Side	132322	21.68	22.50	1.208	0.571	0.690
	LTE Band 66/50RB#0 20M	Left Side	132322	21.68	22.50	1.208	0.106	0.128
	LTE Band 66/50RB#0 20M	Right Side	132322	21.68	22.50	1.208	0.409	0.494
	LTE Band 66/50RB#0 20M	Top Side	132322	21.68	22.50	1.208	0.540	0.652
	LTE Band 66/100RB#0 20M	Back Side	132322	21.61	22.50	1.227	0.643	0.789
Sensor on/Reduced Power Level 2 for EN-DC & Simultaneous Transmission								
	LTE Band 66/1RB#0 20M	Front Side	132322	18.92	19.50	1.143	0.499	0.570
	LTE Band 66/1RB#0 20M	Back Side	132322	18.92	19.50	1.143	0.559	0.639
	LTE Band 66/1RB#0 20M	Left Side	132322	18.92	19.50	1.143	0.087	0.099
	LTE Band 66/1RB#0 20M	Right Side	132322	18.92	19.50	1.143	0.347	0.397
	LTE Band 66/1RB#0 20M	Top Side	132322	18.92	19.50	1.143	0.503	0.575
	LTE Band 66/50RB#0 20M	Front Side	132322	17.72	18.50	1.197	0.414	0.496
	LTE Band 66/50RB#0 20M	Back Side	132322	17.72	18.50	1.197	0.432	0.517
	LTE Band 66/50RB#0 20M	Left Side	132322	17.72	18.50	1.197	0.080	0.096
	LTE Band 66/50RB#0 20M	Right Side	132322	17.72	18.50	1.197	0.309	0.370
	LTE Band 66/50RB#0 20M	Top Side	132322	17.72	18.50	1.197	0.408	0.488
Sensor off/Full Power for Ant 0								
	LTE Band 71/1RB#0 20M	Front Side	133322	22.77	23.50	1.183	0.171	0.202
14#	LTE Band 71/1RB#0 20M	Back Side	133322	22.77	23.50	1.183	0.213	0.252
	LTE Band 71/1RB#0 20M	Left Side	133322	22.77	23.50	1.183	0.095	0.112
	LTE Band 71/1RB#0 20M	Right Side	133322	22.77	23.50	1.183	0.178	0.211

	LTE Band 71/1RB#0 20M	Top Side	133322	22.77	23.50	1.183	0.045	0.053
	LTE Band 71/50RB#0 20M	Front Side	133322	21.67	22.50	1.211	0.162	0.196
	LTE Band 71/50RB#0 20M	Back Side	133322	21.67	22.50	1.211	0.203	0.245
	LTE Band 71/50RB#0 20M	Left Side	133322	21.67	22.50	1.211	0.087	0.105
	LTE Band 71/50RB#0 20M	Right Side	133322	21.67	22.50	1.211	0.165	0.199
	LTE Band 71/50RB#0 20M	Top Side	133322	21.67	22.50	1.211	0.039	0.047

➢ **5G NR DFT-s-QPSK Body SAR**

Plot No.	Band/Mode	Test Position	CH.	Ave. Power (dBm)	Tune-up Limit (dBm)	Tune-up Scaling Factor	Meas. SAR_{1g} (W/kg)	Reported SAR_{1g} (W/kg)
Sensor off/Full Power for Ant 0								
	5G NR n2/1RB#1 20M	Front Side	376000	23.54	24.50	1.247	0.611	0.762
15#	5G NR n2/1RB#1 20M	Back Side	376000	23.54	24.50	1.247	0.698	0.871
	5G NR n2/1RB#1 20M	Left Side	376000	23.54	24.50	1.247	0.090	0.113
	5G NR n2/1RB#1 20M	Right Side	376000	23.54	24.50	1.247	0.540	0.674
	5G NR n2/1RB#1 20M	Top Side	376000	23.54	24.50	1.247	0.377	0.470
	5G NR n2/1RB#1 20M	Back Side	372000	23.46	24.50	1.271	0.663	0.842
	5G NR n2/1RB#1 20M	Back Side	380000	23.30	24.50	1.318	0.615	0.811
	5G NR n2/50RB#1 20M	Front Side	376000	23.15	24.50	1.365	0.410	0.560
	5G NR n2/50RB#1 20M	Back Side	376000	23.15	24.50	1.365	0.584	0.797
	5G NR n2/50RB#1 20M	Left Side	376000	23.15	24.50	1.365	0.075	0.102
	5G NR n2/50RB#1 20M	Right Side	376000	23.15	24.50	1.365	0.359	0.489
	5G NR n2/50RB#1 20M	Top Side	376000	23.15	24.50	1.365	0.259	0.353
	5G NR n2/100RB#0 20M	Back Side	376000	22.15	24.50	1.718	0.452	0.776
Sensor on/Reduced Power Level 2 for EN-DC & Simultaneous Transmission								
	5G NR n2/1RB#1 20M	Front Side	376000	19.04	20.00	1.247	0.254	0.317
	5G NR n2/1RB#1 20M	Back Side	376000	19.04	20.00	1.247	0.290	0.362
	5G NR n2/1RB#1 20M	Left Side	376000	19.04	20.00	1.247	0.038	0.047
	5G NR n2/1RB#1 20M	Right Side	376000	19.04	20.00	1.247	0.224	0.280
	5G NR n2/1RB#1 20M	Top Side	376000	19.04	20.00	1.247	0.157	0.195
	5G NR n2/50RB#1 20M	Front Side	376000	18.65	20.00	1.365	0.185	0.252
	5G NR n2/50RB#1 20M	Back Side	376000	18.65	20.00	1.365	0.263	0.359
	5G NR n2/50RB#1 20M	Left Side	376000	18.65	20.00	1.365	0.034	0.046
	5G NR n2/50RB#1 20M	Right Side	376000	18.65	20.00	1.365	0.161	0.220
	5G NR n2/50RB#1 20M	Right Side	376000	18.65	20.00	1.365	0.116	0.159
Sensor off/Full Power for Ant 0								
	5G NR n5/1RB#1 20M	Front Side	167300	23.93	24.50	1.140	0.371	0.423
16#	5G NR n5/1RB#1 20M	Back Side	167300	23.93	24.50	1.140	0.394	0.449

	5G NR n5/1RB#1 20M	Left Side	167300	23.93	24.50	1.140	0.133	0.152
	5G NR n5/1RB#1 20M	Right Side	167300	23.93	24.50	1.140	0.177	0.202
	5G NR n5/1RB#1 20M	Top Side	167300	23.93	24.50	1.140	0.159	0.181
	5G NR n5/50RB#1 20M	Front Side	167300	23.84	24.50	1.164	0.268	0.312
	5G NR n5/50RB#1 20M	Back Side	167300	23.84	24.50	1.164	0.294	0.342
	5G NR n5/50RB#1 20M	Left Side	167300	23.84	24.50	1.164	0.104	0.121
	5G NR n5/50RB#1 20M	Right Side	167300	23.84	24.50	1.164	0.146	0.170
	5G NR n5/50RB#1 20M	Top Side	167300	23.84	24.50	1.164	0.106	0.123
Sensor off/Full Power for Ant 0								
	5G NR n7/1RB#1 20M	Front Side	507000	24.40	25.00	1.148	0.531	0.610
	5G NR n7/1RB#1 20M	Back Side	507000	24.40	25.00	1.148	0.754	0.866
	5G NR n7/1RB#1 20M	Left Side	507000	24.40	25.00	1.148	0.224	0.257
	5G NR n7/1RB#1 20M	Right Side	507000	24.40	25.00	1.148	0.166	0.191
	5G NR n7/1RB#1 20M	Top Side	507000	24.40	25.00	1.148	0.377	0.433
	5G NR n7/1RB#1 20M	Back Side	502000	24.26	25.00	1.186	0.781	0.926
17#	5G NR n7/1RB#1 20M	Back Side	512000	24.22	25.00	1.197	0.846	1.012
	5G NR n7/50RB#1 20M	Front Side	507000	23.83	25.00	1.309	0.451	0.591
	5G NR n7/50RB#1 20M	Back Side	507000	23.83	25.00	1.309	0.609	0.797
	5G NR n7/50RB#1 20M	Left Side	507000	23.83	25.00	1.309	0.190	0.249
	5G NR n7/50RB#1 20M	Right Side	507000	23.83	25.00	1.309	0.141	0.185
	5G NR n7/50RB#1 20M	Top Side	507000	23.83	25.00	1.309	0.241	0.316
	5G NR n7/100RB#0 20M	Back Side	512000	23.16	25.00	1.528	0.577	0.881
Sensor on/Reduced Power Level 2 for EN-DC & Simultaneous Transmission								
	5G NR n7/1RB#1 20M	Front Side	507000	19.90	20.50	1.148	0.237	0.272
	5G NR n7/1RB#1 20M	Back Side	507000	19.90	20.50	1.148	0.336	0.386
	5G NR n7/1RB#1 20M	Left Side	507000	19.90	20.50	1.148	0.100	0.115
	5G NR n7/1RB#1 20M	Right Side	507000	19.90	20.50	1.148	0.074	0.085
	5G NR n7/1RB#1 20M	Top Side	507000	19.90	20.50	1.148	0.168	0.193
	5G NR n7/50RB#1 20M	Front Side	507000	19.33	20.50	1.309	0.203	0.266
	5G NR n7/50RB#1 20M	Back Side	507000	19.33	20.50	1.309	0.274	0.359
	5G NR n7/50RB#1 20M	Left Side	507000	19.33	20.50	1.309	0.086	0.112
	5G NR n7/50RB#1 20M	Right Side	507000	19.33	20.50	1.309	0.063	0.083
	5G NR n7/50RB#1 20M	Top Side	507000	19.33	20.50	1.309	0.108	0.142
Sensor off/Full Power for Ant 2								
	5G NR n38/1RB#1 40M	Front Side	519000	22.20	23.00	1.202	0.850	1.022
	5G NR n38/1RB#1 40M	Back Side	519000	22.20	23.00	1.202	0.639	0.768
	5G NR n38/1RB#1 40M	Left Side	519000	22.20	23.00	1.202	0.524	0.630
	5G NR n38/1RB#1 40M	Bottom Side	519000	22.20	23.00	1.202	0.532	0.640

	5G NR n38/1RB#1 40M	Front Side	518000	22.05	23.00	1.245	0.832	1.035
18#	5G NR n38/1RB#1 40M	Front Side	520000	22.09	23.00	1.233	0.910	1.122
	5G NR n38/50RB#1 40M	Front Side	519000	21.95	23.00	1.274	0.663	0.844
	5G NR n38/50RB#1 40M	Back Side	519000	21.95	23.00	1.274	0.605	0.771
	5G NR n38/50RB#1 40M	Left Side	519000	21.95	23.00	1.274	0.409	0.521
	5G NR n38/50RB#1 40M	Bottom Side	519000	21.95	23.00	1.274	0.630	0.802
	5G NR n38/50RB#1 40M	Front Side	518000	21.80	23.00	1.318	0.649	0.855
	5G NR n38/50RB#1 40M	Front Side	520000	21.55	23.00	1.396	0.710	0.991
	5G NR n38/100RB#0 40M	Front Side	520000	20.02	23.00	1.986	0.403	0.800
Sensor on/Reduced Power Level 2 for EN-DC & Simultaneous Transmission								
	5G NR n38/1RB#1 40M	Front Side	519000	17.20	18.00	1.202	0.328	0.394
	5G NR n38/1RB#1 40M	Back Side	519000	17.20	18.00	1.202	0.288	0.346
	5G NR n38/1RB#1 40M	Left Side	519000	17.20	18.00	1.202	0.236	0.283
	5G NR n38/1RB#1 40M	Bottom Side	519000	17.20	18.00	1.202	0.239	0.288
	5G NR n38/50RB#1 40M	Front Side	519000	16.95	18.00	1.274	0.298	0.380
	5G NR n38/50RB#1 40M	Back Side	519000	16.95	18.00	1.274	0.272	0.347
	5G NR n38/50RB#1 40M	Left Side	519000	16.95	18.00	1.274	0.184	0.234
	5G NR n38/50RB#1 40M	Bottom Side	519000	16.95	18.00	1.274	0.284	0.361
Sensor on/Reduced Power Level 1 for Ant 2								
19#	5G NR n41/1RB#1 100M	Front Side	518598	21.95	22.50	1.135	0.897	1.018
	5G NR n41/1RB#1 100M	Back Side	518598	21.95	22.50	1.135	0.460	0.523
	5G NR n41/1RB#1 100M	Left Side	518598	21.95	22.50	1.135	0.323	0.367
	5G NR n41/1RB#1 100M	Bottom Side	518598	21.95	22.50	1.135	0.488	0.554
	5G NR n41/1RB#1 100M	Front Side	509202	21.66	22.50	1.213	0.760	0.922
	5G NR n41/1RB#1 100M	Front Side	513900	21.51	22.50	1.256	0.728	0.914
	5G NR n41/1RB#1 100M	Front Side	523296	21.50	22.50	1.259	0.723	0.910
	5G NR n41/1RB#1 100M	Front Side	528000	21.44	22.50	1.276	0.790	1.008
	5G NR n41/135RB#1 100M	Front Side	518598	21.86	22.50	1.159	0.829	0.961
	5G NR n41/135RB#1 100M	Back Side	518598	21.86	22.50	1.159	0.536	0.622
	5G NR n41/135RB#1 100M	Left Side	518598	21.86	22.50	1.159	0.389	0.451
	5G NR n41/135RB#1 100M	Bottom Side	518598	21.86	22.50	1.159	0.584	0.677
	5G NR n41/135RB#1 100M	Front Side	509202	21.08	22.50	1.387	0.713	0.989
	5G NR n41/135RB#1 100M	Front Side	513900	21.33	22.50	1.309	0.683	0.894
	5G NR n41/135RB#1 100M	Front Side	523296	21.71	22.50	1.199	0.678	0.814
	5G NR n41/135RB#1 100M	Front Side	528000	21.76	22.50	1.186	0.741	0.879
	5G NR n41/270RB#0 100M	Front Side	518598	20.66	22.50	1.528	0.562	0.858
Sensor on/Reduced Power Level 2 for EN-DC & Simultaneous Transmission								
	5G NR n41/1RB#1 100M	Front Side	518598	17.95	18.50	1.135	0.361	0.410

	5G NR n41/1RB#1 100M	Back Side	518598	17.95	18.50	1.135	0.185	0.210
	5G NR n41/1RB#1 100M	Left Side	518598	17.95	18.50	1.135	0.130	0.148
	5G NR n41/1RB#1 100M	Bottom Side	518598	17.95	18.50	1.135	0.197	0.223
	5G NR n41/135RB#1 100M	Front Side	518598	17.86	18.50	1.159	0.332	0.384
	5G NR n41/135RB#1 100M	Back Side	518598	17.86	18.50	1.159	0.215	0.249
	5G NR n41/135RB#1 100M	Left Side	518598	17.86	18.50	1.159	0.156	0.180
	5G NR n41/135RB#1 100M	Bottom Side	518598	17.86	18.50	1.159	0.234	0.271
Sensor off/Full Power for Ant 0								
	5G NR n66/1RB#1 40M	Front Side	349000	23.45	24.00	1.135	0.341	0.387
20#	5G NR n66/1RB#1 40M	Back Side	349000	23.45	24.00	1.135	0.488	0.554
	5G NR n66/1RB#1 40M	Left Side	349000	23.45	24.00	1.135	0.095	0.108
	5G NR n66/1RB#1 40M	Right Side	349000	23.45	24.00	1.135	0.279	0.317
	5G NR n66/1RB#1 40M	Top Side	349000	23.45	24.00	1.135	0.366	0.415
	5G NR n66/53RB#1 40M	Front Side	349000	23.27	24.00	1.183	0.388	0.459
	5G NR n66/53RB#1 40M	Back Side	349000	23.27	24.00	1.183	0.413	0.488
	5G NR n66/53RB#1 40M	Left Side	349000	23.27	24.00	1.183	0.094	0.111
	5G NR n66/53RB#1 40M	Right Side	349000	23.27	24.00	1.183	0.236	0.279
	5G NR n66/53RB#1 40M	Top Side	349000	23.27	24.00	1.183	0.297	0.351
Sensor on/Reduced Power Level 2 for EN-DC & Simultaneous Transmission								
	5G NR n66/1RB#1 40M	Front Side	349000	20.95	21.50	1.135	0.231	0.263
	5G NR n66/1RB#1 40M	Back Side	349000	20.95	21.50	1.135	0.331	0.376
	5G NR n66/1RB#1 40M	Left Side	349000	20.95	21.50	1.135	0.064	0.073
	5G NR n66/1RB#1 40M	Right Side	349000	20.95	21.50	1.135	0.189	0.215
	5G NR n66/1RB#1 40M	Top Side	349000	20.95	21.50	1.135	0.248	0.282
	5G NR n66/53RB#1 40M	Front Side	349000	20.77	21.50	1.183	0.203	0.240
	5G NR n66/53RB#1 40M	Back Side	349000	20.77	21.50	1.183	0.264	0.313
	5G NR n66/53RB#1 40M	Left Side	349000	20.77	21.50	1.183	0.060	0.071
	5G NR n66/53RB#1 40M	Right Side	349000	20.77	21.50	1.183	0.151	0.179
	5G NR n66/53RB#1 40M	Top Side	349000	20.77	21.50	1.183	0.190	0.225
Sensor off/Full Power for Ant 0								
	5G NR n71/1RB#1 20M	Front Side	136100	23.72	24.50	1.197	0.165	0.197
21#	5G NR n71/1RB#1 20M	Back Side	136100	23.72	24.50	1.197	0.215	0.257
	5G NR n71/1RB#1 20M	Left Side	136100	23.72	24.50	1.197	0.068	0.081
	5G NR n71/1RB#1 20M	Right Side	136100	23.72	24.50	1.197	0.160	0.191
	5G NR n71/1RB#1 20M	Top Side	136100	23.72	24.50	1.197	0.186	0.223
	5G NR n71/50RB#1 20M	Front Side	136100	23.62	24.50	1.225	0.144	0.176
	5G NR n71/50RB#1 20M	Back Side	136100	23.62	24.50	1.225	0.190	0.233
	5G NR n71/50RB#1 20M	Left Side	136100	23.62	24.50	1.225	0.059	0.072

	5G NR n71/50RB#1 20M	Right Side	136100	23.44	24.50	1.276	0.123	0.157
	5G NR n71/50RB#1 20M	Top Side	136100	23.44	24.50	1.276	0.183	0.234
Sensor on/Reduced Power Level 1 for Ant 3								
	5G NR n77/1RB#1 100M	Front Side	656000	20.93	21.50	1.140	0.461	0.526
	5G NR n77/1RB#1 100M	Back Side	656000	20.93	21.50	1.140	0.471	0.537
	5G NR n77/1RB#1 100M	Left Side	656000	20.93	21.50	1.140	0.703	0.802
	5G NR n77/1RB#1 100M	Top Side	656000	20.93	21.50	1.140	0.158	0.180
	5G NR n77/1RB#1 100M	Left Side	650000	20.61	21.50	1.227	0.815	1.000
	5G NR n77/1RB#1 100M	Left Side	653000	20.77	21.50	1.183	0.845	1.000
	5G NR n77/1RB#1 100M	Left Side	659000	20.68	21.50	1.208	0.815	0.984
22#	5G NR n77/1RB#1 100M	Left Side	662000	20.56	21.50	1.242	0.853	1.059
	5G NR n77/135RB#1 100M	Front Side	656000	20.56	21.50	1.242	0.346	0.429
	5G NR n77/135RB#1 100M	Back Side	656000	20.56	21.50	1.242	0.353	0.439
	5G NR n77/135RB#1 100M	Left Side	656000	20.56	21.50	1.242	0.619	0.769
	5G NR n77/135RB#1 100M	Top Side	656000	20.56	21.50	1.242	0.119	0.147
	5G NR n77/270RB#0 100M	Left Side	662000	18.98	21.50	1.786	0.421	0.752
Sensor on/Reduced Power Level 2 for EN-DC & Simultaneous Transmission								
	5G NR n77/1RB#1 100M	Front Side	656000	18.93	19.50	1.140	0.328	0.374
	5G NR n77/1RB#1 100M	Back Side	656000	18.93	19.50	1.140	0.298	0.340
	5G NR n77/1RB#1 100M	Left Side	656000	18.93	19.50	1.140	0.622	0.709
	5G NR n77/1RB#1 100M	Top Side	656000	18.93	19.50	1.140	0.140	0.159
	5G NR n77/135RB#1 100M	Front Side	656000	18.56	19.50	1.242	0.276	0.342
	5G NR n77/135RB#1 100M	Back Side	656000	18.56	19.50	1.242	0.263	0.327
	5G NR n77/135RB#1 100M	Left Side	656000	18.56	19.50	1.242	0.553	0.687
	5G NR n77/135RB#1 100M	Top Side	656000	18.56	19.50	1.242	0.102	0.127
Sensor on/Reduced Power Level 1 for Ant 3								
	5G NR n77/1RB#1 100M	Front Side	633334	20.97	21.50	1.130	0.802	0.906
	5G NR n77/1RB#1 100M	Back Side	633334	20.97	21.50	1.130	0.562	0.635
	5G NR n77/1RB#1 100M	Left Side	633334	20.97	21.50	1.130	0.652	0.737
	5G NR n77/1RB#1 100M	Top Side	633334	20.97	21.50	1.130	0.144	0.163
	5G NR n77/135RB#1 100M	Front Side	633334	20.89	21.50	1.151	0.387	0.445
	5G NR n77/135RB#1 100M	Back Side	633334	20.89	21.50	1.151	0.397	0.457
	5G NR n77/135RB#1 100M	Left Side	633334	20.89	21.50	1.151	0.621	0.715
	5G NR n77/135RB#1 100M	Top Side	633334	20.89	21.50	1.151	0.120	0.138
	5G NR n77/270RB#0 100M	Front Side	633334	19.69	21.50	1.517	0.526	0.798
Sensor on/Reduced Power Level 2 for EN-DC & Simultaneous Transmission								
	5G NR n77/1RB#1 100M	Front Side	633334	18.97	19.50	1.130	0.355	0.401
	5G NR n77/1RB#1 100M	Back Side	633334	18.97	19.50	1.130	0.249	0.281

	5G NR n77/1RB#1 100M	Left Side	633334	18.97	19.50	1.130	0.289	0.326
	5G NR n77/1RB#1 100M	Top Side	633334	18.97	19.50	1.130	0.064	0.072
	5G NR n77/135RB#1 100M	Front Side	633334	18.89	19.50	1.151	0.271	0.312
	5G NR n77/135RB#1 100M	Back Side	633334	18.89	19.50	1.151	0.176	0.202
	5G NR n77/135RB#1 100M	Left Side	633334	18.89	19.50	1.151	0.189	0.218
	5G NR n77/135RB#1 100M	Top Side	633334	18.89	19.50	1.151	0.053	0.061
Sensor on/Reduced Power Level 1 for Ant 3								
	5G NR n78/1RB#1 100M	Front Side	650000	20.65	21.50	1.216	0.479	0.583
	5G NR n78/1RB#1 100M	Back Side	650000	20.65	21.50	1.216	0.365	0.444
	5G NR n78/1RB#1 100M	Left Side	650000	20.65	21.50	1.216	0.759	0.923
	5G NR n78/1RB#1 100M	Top Side	650000	20.65	21.50	1.216	0.155	0.189
	5G NR n78/135RB#1 100M	Front Side	650000	20.10	21.50	1.380	0.407	0.562
	5G NR n78/135RB#1 100M	Back Side	650000	20.10	21.50	1.380	0.310	0.428
	5G NR n78/135RB#1 100M	Left Side	650000	20.10	21.50	1.380	0.634	0.874
	5G NR n78/135RB#1 100M	Top Side	650000	20.10	21.50	1.380	0.132	0.182
	5G NR n78/270RB#0 100M	Left Side	650000	19.00	21.50	1.778	0.363	0.646
Sensor on/Reduced Power Level 2 for EN-DC & Simultaneous Transmission								
	5G NR n78/1RB#1 100M	Front Side	650000	18.65	19.50	1.216	0.245	0.298
	5G NR n78/1RB#1 100M	Back Side	650000	18.65	19.50	1.216	0.241	0.293
	5G NR n78/1RB#1 100M	Left Side	650000	18.65	19.50	1.216	0.420	0.511
	5G NR n78/1RB#1 100M	Top Side	650000	18.65	19.50	1.216	0.086	0.104
	5G NR n78/135RB#1 100M	Front Side	650000	18.10	19.50	1.380	0.224	0.309
	5G NR n78/135RB#1 100M	Back Side	650000	18.10	19.50	1.380	0.171	0.236
	5G NR n78/135RB#1 100M	Left Side	650000	18.10	19.50	1.380	0.216	0.298
	5G NR n78/135RB#1 100M	Top Side	650000	18.10	19.50	1.380	0.072	0.100
Sensor off/Full Power for Ant 3								
	5G NR n78/1RB#1 100M	Front Side	633334	25.45	26.00	1.135	0.658	0.747
	5G NR n78/1RB#1 100M	Back Side	633334	25.45	26.00	1.135	0.503	0.571
23#	5G NR n78/1RB#1 100M	Left Side	633334	25.45	26.00	1.135	0.924	1.049
	5G NR n78/1RB#1 100M	Top Side	633334	25.45	26.00	1.135	0.052	0.059
	5G NR n78/135RB#1 100M	Front Side	633334	25.37	26.00	1.156	0.592	0.685
	5G NR n78/135RB#1 100M	Back Side	633334	25.37	26.00	1.156	0.453	0.523
	5G NR n78/135RB#1 100M	Left Side	633334	25.37	26.00	1.156	0.728	0.842
	5G NR n78/135RB#1 100M	Top Side	633334	25.37	26.00	1.156	0.022	0.025
	5G NR n78/270RB#0 100M	Left Side	633334	24.33	26.00	1.469	0.583	0.856
Sensor on/Reduced Power Level 2 for EN-DC & Simultaneous Transmission								
	5G NR n78/1RB#1 100M	Front Side	633334	19.18	20.00	1.208	0.202	0.244
	5G NR n78/1RB#1 100M	Back Side	633334	19.18	20.00	1.208	0.154	0.187

	5G NR n78/1RB#1 100M	Left Side	633334	19.18	20.00	1.208	0.284	0.343
	5G NR n78/1RB#1 100M	Top Side	633334	19.18	20.00	1.208	0.016	0.019
	5G NR n78/135RB#1 100M	Front Side	633334	18.97	20.00	1.268	0.194	0.246
	5G NR n78/135RB#1 100M	Back Side	633334	18.97	20.00	1.268	0.149	0.188
	5G NR n78/135RB#1 100M	Left Side	633334	18.97	20.00	1.268	0.239	0.303
	5G NR n78/135RB#1 100M	Top Side	633334	18.97	20.00	1.268	0.007	0.009

- **WLAN Body SAR**

Plot No.	Band/Mode	Test Position	CH.	Ave. Power (dBm)	Tune-up Limit (dBm)	Tune-up Scaling Factor	Meas. SAR_{1g} (W/kg)	Reported SAR_{1g} (W/kg)
Full Power for Ant 7								
	WLAN2.4GHz/802.11b	Front Side	1	16.72	17.00	1.067	0.086	0.092
	WLAN2.4GHz/802.11b	Back Side	1	16.72	17.00	1.067	0.117	0.125
	WLAN2.4GHz/802.11b	Left Side	1	16.72	17.00	1.067	0.079	0.084
	WLAN2.4GHz/802.11b	Right Side	1	16.72	17.00	1.067	0.020	0.021
	WLAN2.4GHz/802.11b	Top Side	1	16.72	17.00	1.067	0.025	0.027
	WLAN2.4GHz/802.11b	Bottom Side	1	16.72	17.00	1.067	0.017	0.018
Full Power for Ant 8								
	WLAN2.4GHz/802.11b	Front Side	6	15.96	16.50	1.132	0.337	0.382
	WLAN2.4GHz/802.11b	Back Side	6	15.96	16.50	1.132	0.153	0.173
	WLAN2.4GHz/802.11b	Left Side	6	15.96	16.50	1.132	0.042	0.048
24#	WLAN2.4GHz/802.11b	Right Side	6	15.96	16.50	1.132	0.371	0.420
	WLAN2.4GHz/802.11b	Top Side	6	15.96	16.50	1.132	0.020	0.023
	WLAN2.4GHz/802.11b	Bottom Side	6	15.96	16.50	1.132	0.031	0.035
Full Power for Ant 7								
	WLAN5.2GHz/802.11a	Front Side	48	12.08	12.50	1.102	0.205	0.226
	WLAN5.2GHz/802.11a	Back Side	48	12.08	12.50	1.102	0.178	0.196
	WLAN5.2GHz/802.11a	Left Side	48	12.08	12.50	1.102	0.370	0.408
	WLAN5.2GHz/802.11a	Right Side	48	12.08	12.50	1.102	0.044	0.048
	WLAN5.2GHz/802.11a	Top Side	48	12.08	12.50	1.102	0.050	0.055
	WLAN5.2GHz/802.11a	Bottom Side	48	12.08	12.50	1.102	0.031	0.034
Full Power for Ant 8								
	WLAN5.2GHz/802.11ac 40	Front Side	46	11.71	12.00	1.069	0.147	0.157
	WLAN5.2GHz/802.11ac 40	Back Side	46	11.71	12.00	1.069	0.305	0.326
	WLAN5.2GHz/802.11ac 40	Left Side	46	11.71	12.00	1.069	0.020	0.022
25#	WLAN5.2GHz/802.11ac 40	Right Side	46	11.71	12.00	1.069	0.560	0.599
	WLAN5.2GHz/802.11ac 40	Top Side	46	11.71	12.00	1.069	0.056	0.060
	WLAN5.2GHz/802.11ac 40	Bottom Side	46	11.71	12.00	1.069	0.037	0.040

Full Power for Ant 7								
	WLAN5.8GHz/802.11ax20 RU242	Front Side	165	17.35	17.50	1.035	0.223	0.231
	WLAN5.8GHz/802.11ax20 RU242	Back Side	165	17.35	17.50	1.035	0.253	0.262
26#	WLAN5.8GHz/802.11ax20 RU242	Left Side	165	17.35	17.50	1.035	0.378	0.391
	WLAN5.8GHz/802.11ax20 RU242	Right Side	165	17.35	17.50	1.035	0.010	0.010
	WLAN5.8GHz/802.11ax20 RU242	Top Side	165	17.35	17.50	1.035	0.017	0.018
	WLAN5.8GHz/802.11ax20 RU242	Bottom Side	165	17.35	17.50	1.035	0.022	0.023
Full Power for Ant 8								
	WLAN5.8GHz/802.11ax20 RU242	Front Side	149	18.01	18.50	1.119	0.172	0.193
	WLAN5.8GHz/802.11ax20 RU242	Back Side	149	18.01	18.50	1.119	0.214	0.240
	WLAN5.8GHz/802.11ax20 RU242	Left Side	149	18.01	18.50	1.119	0.011	0.012
	WLAN5.8GHz/802.11ax20 RU242	Right Side	149	18.01	18.50	1.119	0.394	0.441
	WLAN5.8GHz/802.11ax20 RU242	Top Side	149	18.01	18.50	1.119	0.020	0.022
	WLAN5.8GHz/802.11ax20 RU242	Bottom Side	149	18.01	18.50	1.119	0.016	0.018

Note:

1. For TDD-LTE, the reported SAR should be scaled with the duty cycle scaling factor 1.006.
2. The 2.4G WLAN reported 1g SAR (W/kg) should be scaled with the duty cycle scaling factor 1.000, 5G WLAN with 1.000.

18.3. Repeated SAR Assessment

➢ **General Note**

In accordance with published RF Exposure KDB procedure 865664 D01 SAR measurement 100 MHz to 6 GHz. These additional measurements are repeated after the completion of all measurements requiring the same head or body tissue-equivalent medium in a frequency band. The test device should be returned to ambient conditions (normal room temperature) with the battery fully charged before it is re-mounted on the device holder for the repeated measurement(s) to minimize any unexpected variations in the repeated results.

1. Repeated measurement is not required when the original highest measured SAR is < 0.80 W/kg;
2. When the original highest measured SAR is ≥ 0.80 W/kg, repeat that measurement once.
3. Perform a second repeated measurement only if the ratio of largest to smallest SAR for the original and first repeated measurements is > 1.20 or when the original or repeated measurement is ≥ 1.45 W/kg (~ 10% from the 1-g SAR limit).
4. Perform a third repeated measurement only if the original, first or second repeated measurement is ≥1.5 W/kg and the ratio of largest to smallest SAR for the original, first and second repeated measurements is > 1.20.

➢ Test Results

Plot No.	Band/Mode	Test Position	CH.	Ave. Power (dBm)	Tune-up Limit (dBm)	Tune-up Scaling Factor	Meas. SAR_{1g} (W/kg)	Reported SAR_{1g} (W/kg)
Sensor off/Full Power for Ant 0								
OR.	5G NR n7/1RB#1 20M	Back Side	512000	24.22	25.00	1.197	0.846	1.012
1st	5G NR n7/1RB#1 20M	Back Side	512000	24.22	25.00	1.197	0.829	0.992
Sensor off/Full Power for Ant 2								
OR.	5G NR n38/1RB#1 40M	Front Side	520000	22.09	23.00	1.233	0.910	1.122
1st	5G NR n38/1RB#1 40M	Front Side	520000	22.09	23.00	1.233	0.887	1.094
Sensor on/Reduced Power Level 1 for Ant 2								
OR.	5G NR n41/1RB#1 100M	Front Side	518598	21.95	22.50	1.135	0.897	1.018
1st	5G NR n41/1RB#1 100M	Front Side	518598	21.95	22.50	1.135	0.869	0.986
Sensor on/Reduced Power Level 1 for Ant 3								
OR.	5G NR n77/1RB#1 100M	Left Side	662000	20.56	21.50	1.242	0.853	1.059
1st	5G NR n77/1RB#1 100M	Left Side	662000	20.56	21.50	1.242	0.846	1.050
Sensor on/Reduced Power Level 1 for Ant 3								
OR.	5G NR n77/1RB#1 100M	Front Side	633334	20.97	21.50	1.130	0.802	0.906
1st	5G NR n77/1RB#1 100M	Front Side	633334	20.97	21.50	1.130	0.788	0.890
Sensor off/Full Power for Ant 3								
OR.	5G NR n78/1RB#1 100M	Left Side	633334	25.45	26.00	1.135	0.924	1.049
1st	5G NR n78/1RB#1 100M	Left Side	633334	25.45	26.00	1.135	0.912	1.035

19. Simultaneous Transmission Evaluation

19.1. Simultaneous Transmission Consideration

No.	Simultaneous Transmission Consideration	Body
1	WWAN+WLAN 2.4GHz SISO/5GHz SISO	Yes
2	WWAN+WLAN 2.4GHzSISO/5GHz MIMO	Yes
3	WWAN+WLAN 2.4GHz SISO+5GHz SISO	Yes

Note:

1. When the user enables the personal wireless router functions for the handset, actual operations include simultaneous transmission of the WWAN and WLAN transmitters. The "Portable Hotspot" feature on the handset was NOT activated, to ensure the SAR measurements were evaluated for a single transmission frequency RF signal.
2. The hotspot SAR result may overlap with the body-worn accessory SAR requirements, per KDB 941225 D06, the more conservative configurations can be considered, thus excluding some unnecessary body-worn accessory SAR tests.
3. Per KDB 447498D01v06, simultaneous transmission SAR evaluation procedures is as followed:
   Step 1: If sum of 1 g SAR < 1.6 W/kg, Simultaneous SAR measurement is not required.
   Step 2: If sum of 1 g SAR > 1.6 W/kg, ratio of SAR to peak separation distance for pair of transmitters calculated.
   Step 3: If the ratio of SAR to peak separation distance is ≤ 0.04, Simultaneous SAR measurement is not required.
   Step 4: If the ratio of SAR to peak separation distance is > 0.04, Simultaneous SAR measurement is required and simultaneous transmission SAR value is calculated.
   (The ratio is determined by: (SAR1 + SAR2) ^ 1.5/Ri ≤ 0.04,
   Ri is the separation distance between the peak SAR locations for the antenna pair in mm.
4. 2.4G&5G MIMO SAR were combined standalone SAR of ANT 7 and ANT 8.
5. When it supports transmit simultaneously at WWAN+WLAN MIMO mode, the co-location SAR of WWAN+WLAN (standalone SAR) would not be recorded in this report.
6. The standalone SAR of EN-DC and simultaneous transmission SAR of LTE/5G NR (SA/NSA) refers to the annex F of this report.

20. Uncertainty Assessment

According to KDB 865664 D01 SAR measurement 100 MHz to 6GHz, when the highest measured 1-g SAR is less than 1.5 W/kg and 10-g extremity SAR less than 3.75 W/kg, the expanded SAR measurement uncertainty must be less than 30% with a confidence interval of k=2. When these conditions are met, extensive SAR measurement uncertainty analysis described in IEEE 1528-2013 is not required in the SAR report and submitted for equipment approval. For this device, both the 1-g SAR is less than 1.5 W/kg and 10-g extremity SAR less than 3.75 W/kg. Therefore the measurement uncertainty table is not required in this report.

Annex A General Information

1. Identification of the Responsible Testing Laboratory

Laboratory Name:	Shenzhen Morlab Communications Technology Co., Ltd.
Laboratory Address:	FL.3, Building A, FeiYang Science Park, No.8 LongChang Road, Block 67, BaoAn District, ShenZhen, GuangDong Province, P. R. China
Telephone:	+86 755 36698555
Facsimile:	+86 755 36698525

2. Identification of the Responsible Testing Location

Name:	Shenzhen Morlab Communications Technology Co., Ltd.
Address:	FL.3, Building A, FeiYang Science Park, No.8 LongChang Road, Block 67, BaoAn District, ShenZhen, GuangDong Province, P. R. China

3. Facilities and Accreditations

The FCC designation number is CN1192, the test firm registration number is 226174.

Note:

The main report is end here and the other Annex (B,C,D,E,F,G) will be submitted separately.

****** END OF MAIN REPORT ******