



REPORT No.: SZ24100189S01

TEST REPORT

APPLICANT : Rhino Mobility LLC
PRODUCT NAME : Hotspot
MODEL NAME : H1
BRAND NAME : RHINO
FCC ID : 2AUOUH1
STANDARD(S) : FCC 47 CFR Part 2(2.1093)
IEEE 1528-2013
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Changed History		
Version	Date	Reason for Change
1.0	2025-01-20	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 7	0.940
	LTE Band 12	0.929
	LTE Band 13	0.991
	LTE Band 14	0.789
	LTE Band 25/2	0.865
	LTE Band 26/5	0.985
	LTE Band 30	0.791
	LTE Band 41	0.817
	LTE Band 48	0.282
	LTE Band 66/4	1.160
	LTE Band 71	1.073
5G NR	n2	0.975
	n5	0.757
	n7	0.949
	n12	0.900
	n14	0.994
	n25	0.955
	n26	0.969
	n30	0.985
	n41	0.930
	n48	0.285
	n66	0.992
	n71	0.224
	n77	0.195
	n78	0.187
WLAN	2.4GHz WLAN	0.283
	5GHz WLAN	0.307

Highest Simultaneous Transmission SAR _{1g} (W/Kg):	1.555 W/kg	Limit(W/kg): 1.6 W/kg
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Note:

1. This device is compliance with Specific Absorption Rate (SAR) for general population or uncontrolled exposure limits (1.6 W/kg for 1g SAR, 1.0 mW/cm² for iPD and APD in 4cm²) 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, TCBC workshop notes and FCC KDB publications.
2. For FDD-LTE Band 2/4/5 is full covered by FDD-LTE Band 25/66/26, therefore only FDD-LTE Band 25/66/26 was tested.
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:	Rhino Mobility LLC
Applicant Address:	8 The Green, Suite A, Dover, Delaware,19901, USA
Manufacturer:	Rhino Mobility LLC
Manufacturer Address:	8 The Green, Suite A, Dover, Delaware,19901, USA

2.2. Equipment under Test (EUT) Description

Product Name:	Hotspot
EUT No.:	19#、20#
Hardware Version:	SD5001_V1.0
Software Version:	H1(001)_20250109
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 25: 1850 MHz ~ 1915 MHz LTE Band 26: 814 MHz ~ 849 MHz LTE Band 30: 2305 MHz ~ 2315 MHz LTE Band 41: 2496 MHz ~ 2690 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 n12: 699 MHz ~ 716 MHz 5G NR n14: 788 MHz ~ 798 MHz 5G NR n25: 1850 MHz ~ 1915 MHz 5G NR n26: 814 MHz ~ 824 MHz; 824 MHz ~ 849 MHz 5G NR n30: 2305 MHz ~ 2315 MHz 5G NR n41: 2496 MHz ~ 2690 MHz



	5G NR n48: 3550 MHz ~ 3700 MHz 5G NR n66: 1710 MHz ~ 1780 MHz 5G NR n71: 663 MHz ~ 698 MHz 5G NR n77: 3300 MHz ~ 3420 MHz 5G NR n78: 3300 MHz ~ 3820 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, 256QAM 5G NR: DFT-s-OFDM/CP-OFDM, PI/2 BPSK QPSK, 16QAM, 64QAM, 256QAM 802.11b: DSSS 802.11g/n-HT20/HT40: OFDM 802.11a/n-HT20/40/ac-VHT20/40/80: OFDM 802.11ax-HEW20/40/80: OFDMA
Hotspot Mode:	Support
WLAN MIMO:	Support
Antenna Type:	LTE: PIFA Antenna 5G NR: PIFA 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 %

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:

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

SAR is expressed in units of Watts per kilogram (W/kg).

SAR measurement can be either related to the temperature elevation in tissue by,

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

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

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

Where σ is the conductivity of the tissue, ρ is the mass density of the tissue and |E| is the 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.

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

Frequency range (MHz)	Electric field strength (V/m)	Magnetic field strength (A/m)	Power density (mW/cm ²)	Averaging time (minutes)
(A) Limits for Occupational/Controlled Exposures				
0.3-3.0	614	1.63	*(100)	6
3.0-30	1842/f	4.89/f	*(900/f ²)	6
30-300	61.4	0.163	1.0	6
300-1500			f/300	6
1500-100,000			5	6
(B) Limits for General Population/Uncontrolled Exposure				
0.3-1.34	614	1.63	*(100)	30
1.34-30	824/f	2.19/f	*(180/f ²)	30
30-300	27.5	0.073	0.2	30
300-1500			f/1500	30
1500-100,000			1.0	30

Note:

- 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).
- 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.



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.



5. Applied Reference Documents

Leading reference documents for testing:

Identity	Document Title	Method Determination /Remark
FCC 47 CFR 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 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: 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

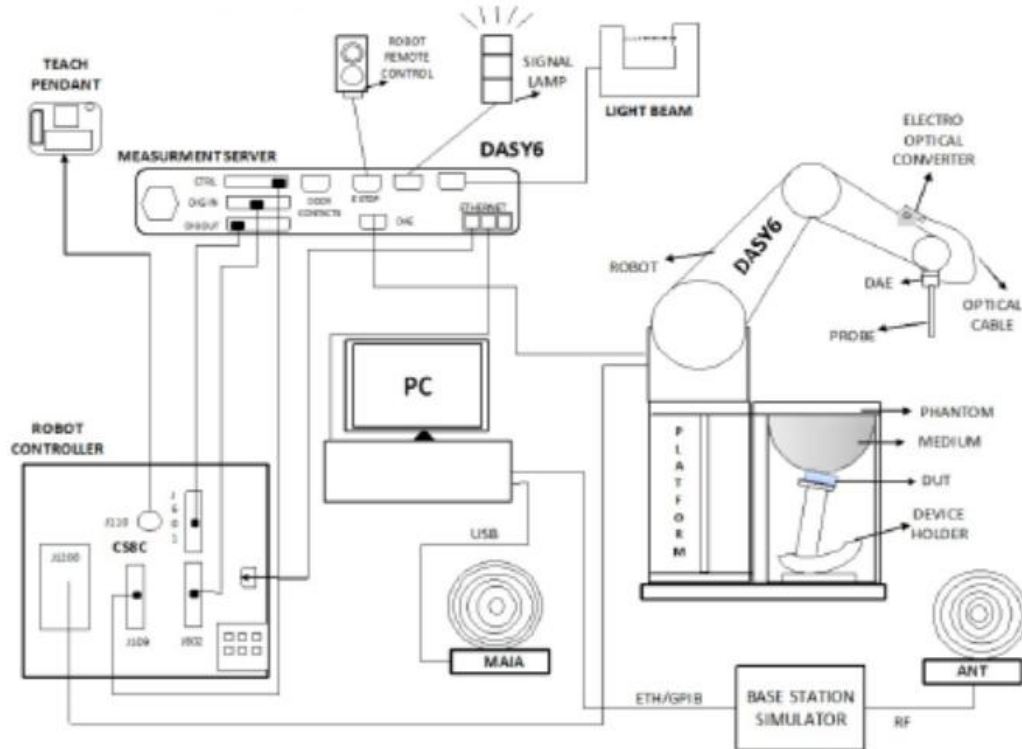


Fig 6.1 SPEAG DASY System Configurations

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.
- Remote control with teach pendant and additional circuitry for robot safety such as warning 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 μ W/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 μ W/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 $\pm 10\%$. 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 fast 16 bit AD-converter and a command decoder and control logic unit. Transmission to the measurement server is accomplished through an optical downlink for data and status information as well as an optical uplink for commands and the clock. The input impedance of the DAE is 200 MOhm; the inputs are symmetrical and floating. Common mode rejection is above 80 dB.

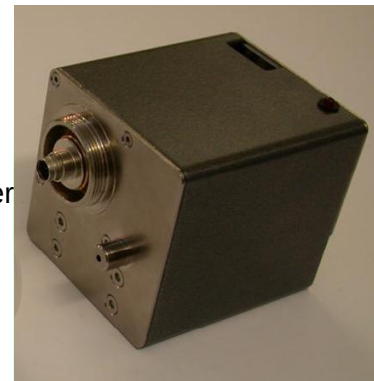


Fig 6.4 Photo of DAE

6.3. Robot

The SPEAG DASY system uses the high precision robots (DASY6: TX60XL) type from Stäubli SA (France). For the 6-axis controller system, the robot controller version (DASY6: CS8c) from Stäubli is used. The Stäubli robot series have many features that are important for our application:

- High precision (repeatability 0.02 mm)
- High reliability (industrial design)
- Low maintenance costs (virtually maintenance free due to direct drive gears; nobelt drives)
- Jerk-free straight movements
- Low ELF interference (motor control fields shielded via the closed metallic construction shields)



Fig. 6.5 Photo of Robot

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>

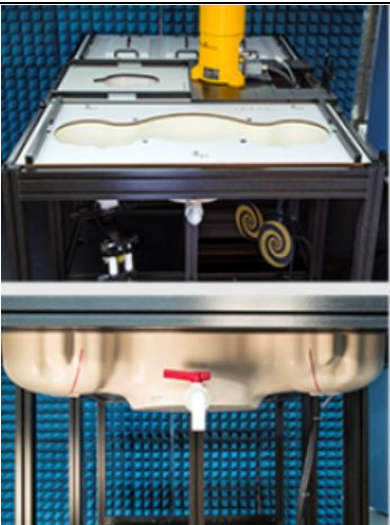
Shell Thickness	2 ± 0.2 mm (sagging: <1%) Center ear point: 6 ± 0.2 mm	
Filling Volume	Approx. 25 liters	
Dimensions	Length: 1000 mm; Width: 500 mm; Height: adjustable feet	
Measurement Areas	Left Head, Right Head, Flat phantom	

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 $\epsilon = 3$ and loss tangent $\delta = 0.02$. The amount of dielectric material has been reduced in the closest vicinity of the device, since measurements have suggested that the influence of the clamp on the test results could thus be lowered.

<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	$\text{Norm}_i, a_{i0}, a_{i1}, a_{i2}$
	- 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:

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

With V_i = compensated signal of channel i, (i = x, y, z)
 U_i = 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:

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

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

With V_i = compensated signal of channel i, (i = x, y, z)
 Norm_i = sensor sensitivity of channel i, (i = x, y, z), $\mu\text{V}/(\text{V/m})^2$ for E-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):

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

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

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

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/cm³

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	D750V3	1223	2022.08.22	2025.08.21
SPEAG	900MHz System Validation Kit	D900V2	1d064	2024.10.21	2027.10.20
SPEAG	1800MHz System Validation Kit	D1800V2	2d158	2024.10.21	2027.10.20
SPEAG	2000MHz System Validation Kit	D2000V2	1050	2024.10.22	2027.10.21
SPEAG	2300MHz System Validation Kit	D2300V2	1107	2024.10.21	2027.10.20
SPEAG	2450MHz System Validation Kit	D2450V2	805	2024.10.22	2027.10.21
SPEAG	2600MHz System Validation Kit	D2600V2	1198	2024.10.23	2027.10.22
SPEAG	3500MHz System Validation Kit	D3500V2	1104	2024.10.21	2027.10.20
SPEAG	3700MHz System Validation Kit	D3700V2	1076	2024.10.23	2027.10.22
SPEAG	3900MHz System Validation Kit	D3900V2	1046	2024.10.21	2027.10.20
SPEAG	5000MHz System Validation Kit	D5GHzV2	1176	2024.10.22	2027.10.21
SPEAG	DOSIMETRIC ASSESSMENT SYSTEM Software	DASY52	52.10.4.1527	NCR	NCR
SPEAG	Dosimetric E-Field Probe	EX3DV4	7608	2024.03.21	2025.03.20
SPEAG	Dosimetric E-Field Probe	EX3DV4	3823	2024.11.11	2025.11.10
SPEAG	Data Acquisition Electronics	DAE4	1643	2024.03.27	2025.03.26
SPEAG	Data Acquisition Electronics	DAE4	480	2024.11.11	2025.11.10
SPEAG	SAM Twin Phantom 2	QD 000 P40 CC	TP-1464	NCR	NCR
SPEAG	Phone Positioner	N/A	N/A	NCR	NCR
R&S	Network Emulator	CMW500	165755	2025.01.06	2026.01.05
Anritsu	Network Emulator	MT8820C	6201274521	2025.01.06	2026.01.05
Agilent	Network Analyzer	E5071B	MY42404762	2025.01.06	2026.01.05
SPEAG	Dielectric Assessment KIT	DAK-3.5	1279	2024.03.18	2026.03.17
mini-circuits	Amplifier	ZHL-42W+	608501717	NCR	NCR
mini-circuits	Amplifier	ZVE-8G+	754401735	NCR	NCR
Agilent	Signal Generator	N5182B	MY53050509	2024.09.11	2025.09.10
R&S	Power Sensor	NRP8S	103215	2025.01.06	2026.01.05
Anritsu	Power Meter	E4418B	GB43318055	2024.05.30	2025.05.29
Agilent	Dual Directional Coupler	778D	50422	NA	NA
MCL	Attenuation	351-218-010	N/A	NA	NA
R&S	Spectrum Analyzer	N9030A	MY54170556	2024.09.18	2025.09.17



KTJ	Thermo meter	TA298	N/A	2024.11.20	2025.11.19
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 of 1W 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. The nominal dielectric values of the tissue simulating liquids in the phantom and the tolerance of 5% are listed in below table.

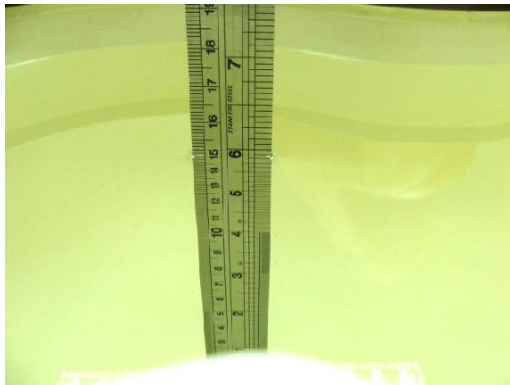


Fig 7.1 Photo of Liquid Height for Head SAR



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 (ϵ_r)
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.(°C)	Conductivity (σ)	Conductivity Target (σ)	Delta (σ) (%)	Limit (%)	Date
750	HSL	22.1	0.903	0.89	1.46	±5	2025.01.02
750	HSL	22.1	0.909	0.89	2.13	±5	2025.01.08
900	HSL	22.2	0.988	0.97	1.86	±5	2024.12.29
900	HSL	22.1	0.972	0.97	0.21	±5	2025.01.09
1800	HSL	22.1	1.387	1.40	-0.93	±5	2025.01.03
1800	HSL	22.2	1.362	1.40	-2.71	±5	2025.01.10
2000	HSL	22.3	1.431	1.40	2.21	±5	2024.12.28
2300	HSL	22.2	1.631	1.67	-2.34	±5	2025.01.04
2450	HSL	22.1	1.801	1.80	0.06	±5	2025.01.05
2600	HSL	22.4	1.977	1.96	0.87	±5	2025.01.06
2600	HSL	22.1	1.980	1.96	1.02	±5	2025.01.11
3500	HSL	22.1	2.866	2.91	-1.51	±5	2025.01.07
3700	HSL	22.2	3.118	3.05	2.23	±5	2025.01.12
3900	HSL	22.2	3.108	3.15	-1.33	±5	2025.01.12
5250	HSL	22.3	4.724	4.71	0.30	±5	2024.12.30
5750	HSL	22.1	5.026	5.22	-3.72	±5	2025.01.01

Frequency (MHz)	Tissue Type	Liquid Temp.(°C)	Permittivity (ϵ_r)	Permittivity Target (ϵ_r)	Delta (ϵ_r) (%)	Limit (%)	Date
750	HSL	22.1	41.125	41.90	-1.85	±5	2025.01.02
750	HSL	22.1	42.159	41.90	0.62	±5	2025.01.08
900	HSL	22.2	40.562	41.50	-2.26	±5	2024.12.29
900	HSL	22.1	41.591	41.50	0.22	±5	2025.01.09
1800	HSL	22.1	40.339	40.00	0.85	±5	2025.01.03
1800	HSL	22.2	40.514	40.00	1.29	±5	2025.01.10
2000	HSL	22.3	39.656	40.00	-0.86	±5	2024.12.28
2300	HSL	22.2	39.331	39.50	-0.43	±5	2025.01.04
2450	HSL	22.1	38.912	39.20	-0.73	±5	2025.01.05
2600	HSL	22.4	38.425	39.00	-1.47	±5	2025.01.06
2600	HSL	22.1	38.249	39.00	-1.93	±5	2025.01.11
3500	HSL	22.1	37.857	37.90	-0.11	±5	2025.01.07



3700	HSL	22.2	37.812	37.70	0.30	±5	2025.01.12
3900	HSL	22.2	36.516	37.50	-2.62	±5	2025.01.12
5250	HSL	22.3	35.424	35.95	-1.46	±5	2024.12.30
5750	HSL	22.1	34.279	35.35	-3.03	±5	2025.01.01

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. SAR System Performance Check

➤ 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.

➤ 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

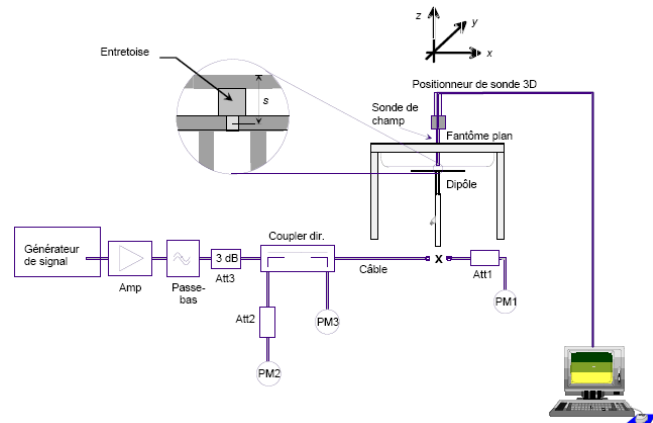


Fig 8.2 System Setup for System Evaluation

➤ 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	3823	480
900	HSL	250	D900V2-1d064	3823	480
1800	HSL	250	D1800V2-2d158	3823	480
2000	HSL	250	D2000V2-1050	3823	480
2300	HSL	250	D2300V2-1107	3823	480
2450	HSL	250	D2450V2-805	3823	480
2600	HSL	250	D2600V2-1198	3823	480
3500	HSL	100	D3500V2-1104	7608	1643
3700	HSL	100	D3700V2-1076	7608	1643
3900	HSL	100	D3900V2-1046	7608	1643
5250	HSL	100	D5GHzV2-1176-5250	3823	480
5750	HSL	100	D5GHzV2-1176-5750	3823	480



<System Validation>

Frequency (MHz)	Tissue Type	Conductivity (σ)	Permittivity (ϵ_r)	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
6500	HSL	6.07	34.46	PASS	PASS	PASS

Frequency (MHz)	Tissue Type	Conductivity (σ)	Permittivity (ϵ_r)	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
6500	HSL	6.07	34.46	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 (%)
2025.01.02	750	HSL	250	2.08	8.54	8.32	-2.58
2025.01.08	750	HSL	250	2.05	8.54	8.2	-3.98
2024.12.29	900	HSL	250	2.93	10.90	11.72	7.52
2025.01.09	900	HSL	250	2.95	10.90	11.8	8.26
2025.01.03	1800	HSL	250	10.32	39.50	41.28	4.51
2025.01.10	1800	HSL	250	10.15	39.50	40.6	2.78
2024.12.28	2000	HSL	250	11.09	41.40	44.36	7.15
2025.01.04	2300	HSL	250	11.81	48.80	47.24	-3.20
2025.01.05	2450	HSL	250	13.53	52.80	54.12	2.50
2025.01.06	2600	HSL	250	14.28	55.90	57.12	2.18
2025.01.11	2600	HSL	250	15.11	55.90	60.44	8.12
2025.01.07	3500	HSL	100	7.15	66.70	71.5	7.20
2025.01.12	3700	HSL	100	7.11	67.50	71.1	5.33
2025.01.12	3900	HSL	100	7.43	68.00	74.3	9.26
2024.12.30	5250	HSL	100	7.86	77.30	78.6	1.68
2025.01.01	5750	HSL	100	8.33	77.20	83.3	7.90

Date	Frequency (MHz)	Tissue Type	Input Power (mW)	Measured 10g SAR (W/kg)	Targeted 10g SAR (W/kg)	Normalized 10g SAR (W/kg)	Deviation (%)
2025.01.02	750	HSL	250	1.37	5.57	5.48	-1.62
2025.01.08	750	HSL	250	1.41	5.57	5.64	1.26
2024.12.29	900	HSL	250	1.92	7.00	7.68	9.71
2025.01.09	900	HSL	250	1.90	7.00	7.6	8.57
2025.01.03	1800	HSL	250	5.41	20.60	21.64	5.05
2025.01.10	1800	HSL	250	5.35	20.60	21.4	3.88
2024.12.28	2000	HSL	250	5.47	21.00	21.88	4.19
2025.01.04	2300	HSL	250	5.82	23.20	23.28	0.34
2025.01.05	2450	HSL	250	6.29	24.50	25.16	2.69
2025.01.06	2600	HSL	250	6.75	24.90	27	8.43
2025.01.11	2600	HSL	250	6.58	24.90	26.32	5.70
2025.01.07	3500	HSL	100	2.69	25.30	26.9	6.32
2025.01.12	3700	HSL	100	2.62	24.20	26.2	8.26
2025.01.12	3900	HSL	100	2.32	23.60	23.2	-1.69
2024.12.30	5250	HSL	100	2.32	21.50	23.2	7.91

2025.01.01	5750	HSL	100	2.03	21.20	20.3	-4.25
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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 Front/Back/Left/Right/Top/Bottom of the EUT with phantom 10 mm gap, as illustrated below, please refer to Appendix B for the test setup photos.

9.1. 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.

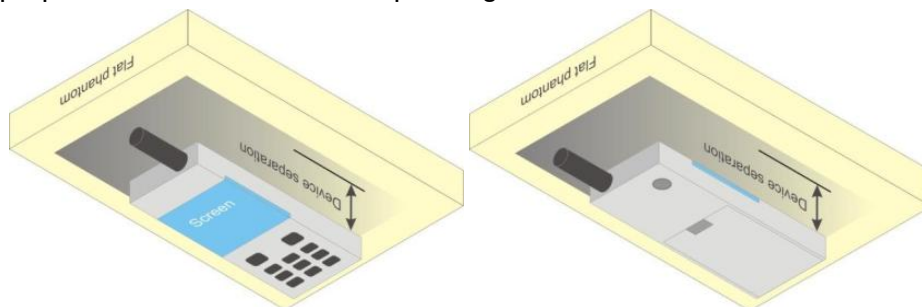


Fig 9.1 Illustration for Body Worn Position

9.2. 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).

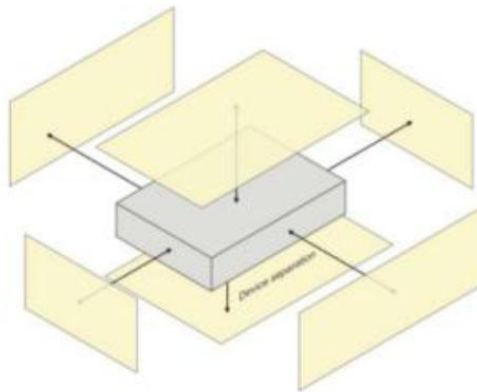


Fig 9.2 Illustration for Hotspot Position

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 from 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 a 10mm² 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/m³ 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.

			≤ 3 GHz	> 3 GHz
Maximum distance from closest measurement point (geometric center of probe sensors) to phantom surface			5 mm $\pm$ 1 mm	$\frac{1}{2} \cdot \delta \cdot \ln(2)$ mm $\pm$ 0.5 mm
Maximum probe angle from probe axis to phantom surface normal at the measurement location			$30^{\circ} \pm 1^{\circ}$	$20^{\circ} \pm 1^{\circ}$
Maximum area scan spatial resolution: Δx_{Area} , Δy_{Area}			≤ 2 GHz: ≤ 15 mm 2 – 3 GHz: ≤ 12 mm	3 – 4 GHz: ≤ 12 mm 4 – 6 GHz: ≤ 10 mm
			When the x or y dimension of the test device, in the measurement plane orientation, is smaller than the above, the measurement resolution must be $\leq$ the corresponding x or y dimension of the test device with at least one measurement point on the test device.	
Maximum zoom scan spatial resolution: Δx_{Zoom} , Δy_{Zoom}			≤ 2 GHz: ≤ 8 mm 2 – 3 GHz: ≤ 5 mm*	3 – 4 GHz: ≤ 5 mm* 4 – 6 GHz: ≤ 4 mm*
Maximum zoom scan spatial resolution, normal to phantom surface	uniform grid: $\Delta z_{Zoom}(n)$		≤ 5 mm	3 – 4 GHz: ≤ 4 mm 4 – 5 GHz: ≤ 3 mm 5 – 6 GHz: ≤ 2 mm
	graded grid	$\Delta z_{Zoom}(1)$: between 1 st two points closest to phantom surface	≤ 4 mm	3 – 4 GHz: ≤ 3 mm 4 – 5 GHz: ≤ 2.5 mm 5 – 6 GHz: ≤ 2 mm
		$\Delta z_{Zoom}(n>1)$: between subsequent points	$\leq 1.5 \cdot \Delta z_{Zoom}(n-1)$ mm	
Minimum zoom scan volume	x, y, z		≥ 30 mm	3 – 4 GHz: ≥ 28 mm 4 – 5 GHz: ≥ 25 mm 5 – 6 GHz: ≥ 22 mm
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 <i>reported</i> SAR from the <i>area scan based 1-g SAR estimation</i> 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.				

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 to 16 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 ($L \times W \geq 9 \text{ cm} \times 5 \text{ cm}$) 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 from 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	3GPP
	1.4	3.0	5	10	15	20	Target	MPR
	MHz	MHz	MHz	MHz	MHz	MHz	(dB)	(dB)
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 0.5dB measurement tolerance

LTE Bands

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

Note:

- 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 $\frac{1}{2}$ 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 $\frac{1}{2}$ 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 $\leq$ 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 16QAM signal 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.
- 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.
 - 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)"
 - For WWAN: Reported SAR(W/kg)= Measured SAR(W/kg)*Tune-up Scaling Factor
 - For WLAN/Bluetooth: Reported SAR(W/kg)= Measured SAR(W/kg)* Duty Cycle scaling factor * Tune-up scaling factor
 - 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 ≥ 0.8 W/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>

- 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:
 - 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.
 - 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.
- 2.4 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 GHz 802.11g/n) was not required due to the maximum allowed powers and the highest reported DSSS SAR.
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 $> 1.2 \text{ W/kg}$, 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 bandwidth 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 same transmitter and antenna(s) are used for U-NII-1 and U-NII-2A bands, additional SAR test reduction applies. When band gap channels between U-NII-2C band and 5.8 GHz U-NII-3 or §15.247 band are supported, the highest maximum output power transmission mode configuration and maximum output power channel across the bands must be used to determine SAR test reduction, according to the initial test configuration and subsequent test configuration requirements. In applying the initial test configuration and subsequent test configuration procedures, the 802.11 transmission configuration with the highest specified maximum output power and the channel within a test configuration with the highest measured maximum output power should be clearly distinguished to apply the procedures.



13. Conducted Power List

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

14. EUT Antenna Location

➤ EUT Antenna Location

The location of antenna was recorded in annex B

ANT 0:

LTE TRX:B2/B4/B5/B7/B12/B13/B14/B25/B26/B30/B41/B66/B71

NR5G TRX:n2/n5/n7/n14/n25/n26/n30/n41/n66/n71

ANT 1:

LTE DRX:B2/B4/B5/B7/B12/B13/B14/B25/B26/B30/B41/B66/B71

NR5G DRX:n2/n5/n7/n14/n25/n26/n30/n41/n66/n71

ANT 2:

LTE TRX:B48

NR5G TRX:n48/n77/n78

ANT 3:

LTE DRX:B48

NR5G DRX:n48/n77/n78

ANT 4:

GPS:L1+L5

WIFI 1:

2.4G/5GWIFI

WIFI 2:

2.4G/5GWIFI

**➤ EUT Antenna Distance**

Antenna Location	Front	Back	Left	Right	Top	Bottom
ANT 0	<5mm	<5mm	<5mm	>25mm	<5mm	<5mm
ANT 2	<5mm	<5mm	<5mm	>25mm	<5mm	>25mm
WIFI 1	<5mm	<5mm	<5mm	>25mm	>25mm	<5mm
WIFI 2	<5mm	<5mm	>25mm	<5mm	<5mm	>25mm

➤ Hotspot Evaluation

Assessment	Hotspot Side for SAR Test Distance: 10mm					
Antennas	Front	Back	Left	Right	Top	Bottom
ANT 0	Yes	Yes	Yes	No	Yes	Yes
ANT 2	Yes	Yes	Yes	No	Yes	No
WIFI 1	Yes	Yes	Yes	No	No	Yes
WIFI 2	Yes	Yes	No	Yes	Yes	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 $\geq 9\text{cm} \times 5\text{cm}$, 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.

15. Block Diagram of the Tests to be Performed

15.1. Body

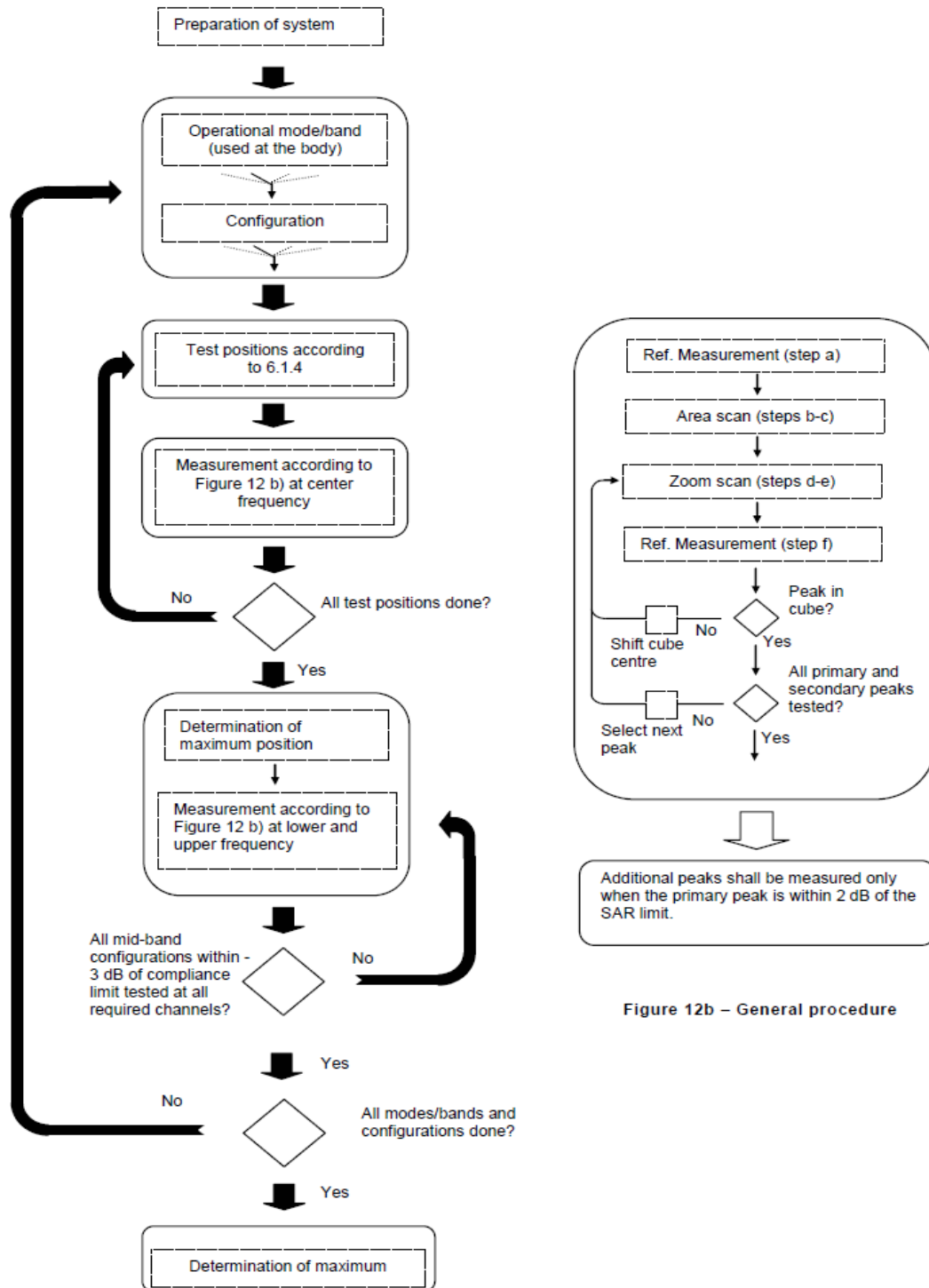


Figure 12b – General procedure

16. Proximity Sensor Considerations

16.1. Proximity Sensor Triggering Distances

➤ P-sensor Triggering Distance Testing

The EUT should be moved further away from and toward the flat phantom that fill with the tissue simulating liquid to determine the proximity sensor triggering distances. Conducted power is monitored qualitatively to identify the general triggering characteristics and recorded quantitatively, versus spacing, as required by the procedures.

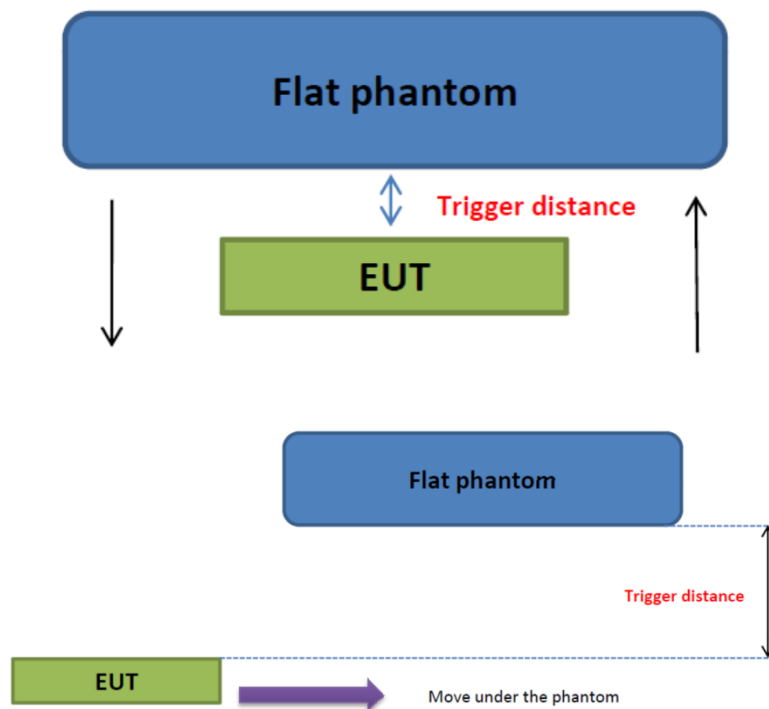


Fig.19.1 Illustration for proximity sensor trigger

➤ P-sensor Triggering Distance

<WWAN>

Proximity Sensor Trigger Distance (mm)						
Exposure Position	Front Side	Back Side	Left Side	Right Side	Top Side	Bottom Side
Minimum	15	N/A	15	N/A	15	15

<WLAN>

Proximity Sensor Trigger Distance (mm)						
Exposure Position	Front Side	Back Side	Left Side	Right Side	Top Side	Bottom Side
Minimum	15	N/A	15	N/A	15	15



16.2. Proximity Sensor Coverage

Proximity sensors are not normally designed to cover the entire back surface or edges of a MIFI. The sensing regions are usually limited to areas near the sensor element. If a sensor is spatially offset from the antenna(s), it is necessary to verify sensor triggering for conditions where the antenna is next to the user but the sensor is laterally further away to ensure sensor coverage is sufficient for reducing the power to maintain compliance. For P-sensor coverage testing, the device is moved and “along the direction of maximum antenna and sensor offset”. Illustrating in the internal photo exhibit, although the sensor spatially offset, there is no trigger condition where the antenna is next to the user, the sensor is laterally further away, therefore proximity sensor coverage testing is not required. This procedure is not required since the antenna, sensor and peak SAR location is overlapped with the sensor.

17. Test Results List

17.1. 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 ≥ 0.8 W/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.



17.2. 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 on/Reduced Power (ANT 0)								
	LTE Band 7/1RB#0 20M	Front Side	21100	20.96	22.00	1.271	0.405	0.515
	LTE Band 7/1RB#0 20M	Back Side	21100	20.96	22.00	1.271	0.734	0.933
	LTE Band 7/1RB#0 20M	Left Side	21100	20.96	22.00	1.271	0.298	0.379
	LTE Band 7/1RB#0 20M	Top Side	21100	20.96	22.00	1.271	0.227	0.288
	LTE Band 7/1RB#0 20M	Bottom Side	21100	20.96	22.00	1.271	0.171	0.217
	LTE Band 7/1RB#0 20M	Back Side	20850	20.95	22.00	1.274	0.641	0.816
1#	LTE Band 7/1RB#0 20M	Back Side	21350	20.89	22.00	1.291	0.728	0.940
	LTE Band 7/50RB#0 20M	Front Side	21100	19.90	21.00	1.288	0.302	0.389
	LTE Band 7/50RB#0 20M	Back Side	21100	19.90	21.00	1.288	0.581	0.748
	LTE Band 7/50RB#0 20M	Left Side	21100	19.90	21.00	1.288	0.187	0.241
	LTE Band 7/50RB#0 20M	Top Side	21100	19.90	21.00	1.288	0.160	0.206
	LTE Band 7/50RB#0 20M	Bottom Side	21100	19.90	21.00	1.288	0.135	0.174
	LTE Band 7/100RB#0 20M	Back Side	21100	19.75	21.00	1.334	0.526	0.701
Sensor on/Reduced Power (ANT 0)								
	LTE Band 12/1RB#0 10M	Front Side	23095	22.28	23.00	1.180	0.725	0.856
	LTE Band 12/1RB#0 10M	Back Side	23095	22.28	23.00	1.180	0.711	0.839
	LTE Band 12/1RB#0 10M	Left Side	23095	22.28	23.00	1.180	0.085	0.100
	LTE Band 12/1RB#0 10M	Top Side	23095	22.28	23.00	1.180	0.291	0.343
	LTE Band 12/1RB#0 10M	Bottom Side	23095	22.28	23.00	1.180	0.409	0.483
	LTE Band 12/1RB#0 10M	Front Side	23060	22.24	23.00	1.191	0.702	0.836
2#	LTE Band 12/1RB#0 10M	Front Side	23130	22.20	23.00	1.202	0.773	0.929
	LTE Band 12/1RB#0 10M	Back Side	23060	22.24	23.00	1.191	0.659	0.785
	LTE Band 12/1RB#0 10M	Back Side	23130	22.20	23.00	1.202	0.761	0.915
	LTE Band 12/25RB#0 10M	Front Side	23095	21.21	22.00	1.199	0.538	0.645
	LTE Band 12/25RB#0 10M	Back Side	23095	21.21	22.00	1.199	0.544	0.653
	LTE Band 12/25RB#0 10M	Left Side	23095	21.21	22.00	1.199	0.062	0.074
	LTE Band 12/25RB#0 10M	Top Side	23095	21.21	22.00	1.199	0.239	0.287
	LTE Band 12/25RB#0 10M	Bottom Side	23095	21.21	22.00	1.199	0.331	0.397
	LTE Band 12/50RB#0 10M	Front Side	23130	21.03	22.00	1.250	0.505	0.631
Sensor on/Reduced Power (ANT 0)								
	LTE Band 13/1RB#0 10M	Front Side	23230	21.20	22.00	1.202	0.773	0.929
3#	LTE Band 13/1RB#0 10M	Back Side	23230	21.20	22.00	1.202	0.824	0.991



	LTE Band 13/1RB#0 10M	Left Side	23230	21.20	22.00	1.202	0.074	0.089
	LTE Band 13/1RB#0 10M	Top Side	23230	21.20	22.00	1.202	0.335	0.403
	LTE Band 13/1RB#0 10M	Bottom Side	23230	21.20	22.00	1.202	0.432	0.519
	LTE Band 13/25RB#0 10M	Front Side	23230	20.05	21.00	1.245	0.582	0.724
	LTE Band 13/25RB#0 10M	Back Side	23230	20.05	21.00	1.245	0.594	0.739
	LTE Band 13/25RB#0 10M	Left Side	23230	20.05	21.00	1.245	0.053	0.066
	LTE Band 13/25RB#0 10M	Top Side	23230	20.05	21.00	1.245	0.289	0.360
	LTE Band 13/25RB#0 10M	Bottom Side	23230	20.05	21.00	1.245	0.356	0.443
	LTE Band 13/50RB#0 10M	Back Side	23230	19.99	21.00	1.262	0.557	0.703
Sensor on/Reduced Power (ANT 0)								
	LTE Band 14/1RB#0 10M	Front Side	23330	20.13	21.00	1.222	0.631	0.771
4#	LTE Band 14/1RB#0 10M	Back Side	23330	20.13	21.00	1.222	0.646	0.789
	LTE Band 14/1RB#0 10M	Left Side	23330	20.13	21.00	1.222	0.054	0.066
	LTE Band 14/1RB#0 10M	Top Side	23330	20.13	21.00	1.222	0.297	0.363
	LTE Band 14/1RB#0 10M	Bottom Side	23330	20.13	21.00	1.222	0.338	0.413
	LTE Band 14/25RB#0 10M	Front Side	23330	19.04	20.00	1.247	0.445	0.555
	LTE Band 14/25RB#0 10M	Back Side	23330	19.04	20.00	1.247	0.449	0.560
	LTE Band 14/25RB#0 10M	Left Side	23330	19.04	20.00	1.247	0.041	0.051
	LTE Band 14/25RB#0 10M	Top Side	23330	19.04	20.00	1.247	0.224	0.279
	LTE Band 14/25RB#0 10M	Bottom Side	23330	19.04	20.00	1.247	0.273	0.341
Sensor on/Reduced Power (ANT 0)								
	LTE Band 25/1RB#0 20M	Front Side	26365	19.11	20.00	1.227	0.304	0.373
	LTE Band 25/1RB#0 20M	Back Side	26365	19.11	20.00	1.227	0.409	0.502
	LTE Band 25/1RB#0 20M	Left Side	26365	19.11	20.00	1.227	0.661	0.811
	LTE Band 25/1RB#0 20M	Top Side	26365	19.11	20.00	1.227	0.288	0.354
	LTE Band 25/1RB#0 20M	Bottom Side	26365	19.11	20.00	1.227	0.078	0.096
5#	LTE Band 25/1RB#0 20M	Left Side	26140	19.08	20.00	1.236	0.700	0.865
	LTE Band 25/1RB#0 20M	Left Side	26590	19.03	20.00	1.250	0.639	0.799
	LTE Band 25/50RB#0 20M	Front Side	26365	18.10	19.00	1.230	0.310	0.381
	LTE Band 25/50RB#0 20M	Back Side	26365	18.10	19.00	1.230	0.406	0.499
	LTE Band 25/50RB#0 20M	Left Side	26365	18.10	19.00	1.230	0.455	0.560
	LTE Band 25/50RB#0 20M	Top Side	26365	18.10	19.00	1.230	0.199	0.245
	LTE Band 25/50RB#0 20M	Bottom Side	26365	18.10	19.00	1.230	0.055	0.068
	LTE Band 25/100RB#0 20M	Left Side	26365	17.89	19.00	1.291	0.417	0.538
Sensor on/Reduced Power (ANT 0)								
6#	LTE Band 26/1RB#0 15M	Front Side	26865	21.17	22.00	1.211	0.814	0.985
	LTE Band 26/1RB#0 15M	Back Side	26865	21.17	22.00	1.211	0.804	0.973
	LTE Band 26/1RB#0 15M	Left Side	26865	21.17	22.00	1.211	0.167	0.202



	LTE Band 26/1RB#0 15M	Top Side	26865	21.17	22.00	1.211	0.252	0.305
	LTE Band 26/1RB#0 15M	Bottom Side	26865	21.17	22.00	1.211	0.499	0.604
	LTE Band 26/1RB#0 15M	Front Side	26765	21.16	22.00	1.213	0.795	0.965
	LTE Band 26/1RB#0 15M	Front Side	26965	21.12	22.00	1.225	0.800	0.980
	LTE Band 26/1RB#0 15M	Back Side	26765	21.16	22.00	1.213	0.684	0.830
	LTE Band 26/1RB#0 15M	Back Side	26965	21.12	22.00	1.225	0.670	0.820
	LTE Band 26/36RB#0 15M	Front Side	26865	20.15	21.00	1.216	0.499	0.607
	LTE Band 26/36RB#0 15M	Back Side	26865	20.15	21.00	1.216	0.509	0.619
	LTE Band 26/36RB#0 15M	Left Side	26865	20.15	21.00	1.216	0.071	0.086
	LTE Band 26/36RB#0 15M	Top Side	26865	20.15	21.00	1.216	0.187	0.227
	LTE Band 26/36RB#0 15M	Bottom Side	26865	20.15	21.00	1.216	0.315	0.383
	LTE Band 26/75RB#0 15M	Front Side	26865	19.99	21.00	1.262	0.731	0.922
Sensor on/Reduced Power (ANT 0)								
	LTE Band 30/1RB#0 10M	Front Side	27710	21.83	23.00	1.309	0.325	0.425
	LTE Band 30/1RB#0 10M	Back Side	27710	21.83	23.00	1.309	0.389	0.509
7#	LTE Band 30/1RB#0 10M	Left Side	27710	21.83	23.00	1.309	0.604	0.791
	LTE Band 30/1RB#0 10M	Top Side	27710	21.83	23.00	1.309	0.507	0.664
	LTE Band 30/1RB#0 10M	Bottom Side	27710	21.83	23.00	1.309	0.077	0.101
	LTE Band 30/25RB#0 10M	Front Side	27710	20.79	22.00	1.321	0.228	0.301
	LTE Band 30/25RB#0 10M	Back Side	27710	20.79	22.00	1.321	0.319	0.421
	LTE Band 30/25RB#0 10M	Left Side	27710	20.79	22.00	1.321	0.594	0.785
	LTE Band 30/25RB#0 10M	Top Side	27710	20.79	22.00	1.321	0.408	0.539
	LTE Band 30/25RB#0 10M	Bottom Side	27710	20.79	22.00	1.321	0.062	0.082
Sensor on/Reduced Power (PC 2-ANT 0)								
	LTE Band 41/1RB#0 20M	Front Side	40620	23.57	25.00	1.390	0.229	0.321
	LTE Band 41/1RB#0 20M	Back Side	40620	23.57	25.00	1.390	0.573	0.801
	LTE Band 41/1RB#0 20M	Left Side	40620	23.57	25.00	1.390	0.329	0.459
	LTE Band 41/1RB#0 20M	Top Side	40620	23.57	25.00	1.390	0.224	0.314
	LTE Band 41/1RB#0 20M	Bottom Side	40620	23.57	25.00	1.390	0.088	0.123
	LTE Band 41/1RB#0 20M	Back Side	39750	23.47	25.00	1.422	0.544	0.779
8#	LTE Band 41/1RB#0 20M	Back Side	40185	23.50	25.00	1.413	0.575	0.817
	LTE Band 41/1RB#0 20M	Back Side	41055	23.55	25.00	1.396	0.351	0.493
	LTE Band 41/1RB#0 20M	Back Side	41490	23.51	25.00	1.409	0.549	0.778
	LTE Band 41/50RB#0 20M	Front Side	40620	22.52	24.00	1.406	0.266	0.376
	LTE Band 41/50RB#0 20M	Back Side	40620	22.52	24.00	1.406	0.451	0.638
	LTE Band 41/50RB#0 20M	Left Side	40620	22.52	24.00	1.406	0.455	0.644
	LTE Band 41/50RB#0 20M	Top Side	40620	22.52	24.00	1.406	0.340	0.481
	LTE Band 41/50RB#0 20M	Bottom Side	40620	22.52	24.00	1.406	0.124	0.175



	LTE Band 41/100RB#0 20M	Back Side	40620	22.34	24.00	1.466	0.406	0.599
Sensor on/Reduced Power (PC 3-ANT 0)								
	LTE Band 41/1RB#0 20M	Front Side	40620	20.98	22.00	1.265	0.274	0.349
	LTE Band 41/1RB#0 20M	Back Side	40620	20.98	22.00	1.265	0.445	0.566
	LTE Band 41/1RB#0 20M	Left Side	40620	20.98	22.00	1.265	0.401	0.510
	LTE Band 41/1RB#0 20M	Top Side	40620	20.98	22.00	1.265	0.228	0.290
	LTE Band 41/1RB#0 20M	Bottom Side	40620	20.98	22.00	1.265	0.112	0.143
	LTE Band 41/50RB#0 20M	Front Side	40620	19.92	21.00	1.282	0.236	0.304
	LTE Band 41/50RB#0 20M	Back Side	40620	19.92	21.00	1.282	0.383	0.494
	LTE Band 41/50RB#0 20M	Left Side	40620	19.92	21.00	1.282	0.345	0.445
	LTE Band 41/50RB#0 20M	Top Side	40620	19.92	21.00	1.282	0.196	0.253
	LTE Band 41/50RB#0 20M	Bottom Side	40620	19.92	21.00	1.282	0.096	0.124
Sensor off/Full Power (ANT 1)								
	LTE Band 48/1RB#0 20M	Front Side	55990	22.98	24.00	1.265	0.173	0.220
9#	LTE Band 48/1RB#0 20M	Back Side	55990	22.98	24.00	1.265	0.222	0.282
	LTE Band 48/1RB#0 20M	Left Side	55990	22.98	24.00	1.265	0.149	0.190
	LTE Band 48/1RB#0 20M	Top Side	55990	22.98	24.00	1.265	0.172	0.219
	LTE Band 48/50RB#0 20M	Front Side	55990	21.99	23.00	1.262	0.154	0.196
	LTE Band 48/50RB#0 20M	Back Side	55990	21.99	23.00	1.262	0.201	0.255
	LTE Band 48/50RB#0 20M	Left Side	55990	21.99	23.00	1.262	0.068	0.086
	LTE Band 48/50RB#0 20M	Top Side	55990	21.99	23.00	1.262	0.161	0.204
Sensor on/Reduced Power (ANT 0)								
	LTE Band 66/1RB#0 20M	Front Side	132322	18.97	20.00	1.268	0.381	0.483
	LTE Band 66/1RB#0 20M	Back Side	132322	18.97	20.00	1.268	0.366	0.464
	LTE Band 66/1RB#0 20M	Left Side	132322	18.97	20.00	1.268	0.833	1.056
	LTE Band 66/1RB#0 20M	Top Side	132322	18.97	20.00	1.268	0.175	0.222
	LTE Band 66/1RB#0 20M	Bottom Side	132322	18.97	20.00	1.268	0.058	0.074
	LTE Band 66/1RB#0 20M	Left Side	132072	18.90	20.00	1.288	0.876	1.129
10#	LTE Band 66/1RB#0 20M	Left Side	132572	18.89	20.00	1.291	0.898	1.160
	LTE Band 66/50RB#0 20M	Front Side	132322	17.95	19.00	1.274	0.329	0.419
	LTE Band 66/50RB#0 20M	Back Side	132322	17.95	19.00	1.274	0.387	0.493
	LTE Band 66/50RB#0 20M	Left Side	132322	17.95	19.00	1.274	0.612	0.779
	LTE Band 66/50RB#0 20M	Top Side	132322	17.95	19.00	1.274	0.139	0.177
	LTE Band 66/50RB#0 20M	Bottom Side	132322	17.95	19.00	1.274	0.045	0.057
	LTE Band 66/100RB#0 20M	Left Side	132322	17.71	19.00	1.346	0.528	0.711
Sensor off/Full Power (ANT 0)								
	LTE Band 71/1RB#0 20M	Front Side	133322	23.06	24.00	1.242	0.651	0.808
11#	LTE Band 71/1RB#0 20M	Back Side	133322	23.06	24.00	1.242	0.864	1.073



	LTE Band 71/1RB#0 20M	Left Side	133322	23.06	24.00	1.242	0.083	0.103
	LTE Band 71/1RB#0 20M	Top Side	133322	23.06	24.00	1.242	0.219	0.272
	LTE Band 71/1RB#0 20M	Bottom Side	133322	23.06	24.00	1.242	0.377	0.468
	LTE Band 71/1RB#0 20M	Front Side	133222	23.02	24.00	1.253	0.500	0.627
	LTE Band 71/1RB#0 20M	Front Side	133372	23.03	24.00	1.250	0.702	0.878
	LTE Band 71/1RB#0 20M	Back Side	133222	23.02	24.00	1.253	0.821	1.029
	LTE Band 71/1RB#0 20M	Back Side	133372	23.03	24.00	1.250	0.818	1.023
	LTE Band 71/1RB#0 20M	Front Side	133322	23.06	24.00	1.242	0.651	0.808
	LTE Band 71/50RB#0 20M	Front Side	133322	21.97	23.00	1.268	0.528	0.669
	LTE Band 71/50RB#0 20M	Back Side	133322	21.97	23.00	1.268	0.558	0.707
	LTE Band 71/50RB#0 20M	Left Side	133322	21.97	23.00	1.268	0.068	0.086
	LTE Band 71/50RB#0 20M	Top Side	133322	21.97	23.00	1.268	0.193	0.245
	LTE Band 71/50RB#0 20M	Bottom Side	133322	21.97	23.00	1.268	0.318	0.403
	LTE Band 71/100RB#0 20M	Back Side	133322	21.77	23.00	1.327	0.515	0.684

➤ **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 on/Reduced Power (ANT 0)								
	5G NR n2/1RB#1 20M	Front Side	376000	17.40	18.00	1.148	0.435	0.499
	5G NR n2/1RB#1 20M	Back Side	376000	17.40	18.00	1.148	0.555	0.637
12#	5G NR n2/1RB#1 20M	Left Side	376000	17.40	18.00	1.148	0.849	0.975
	5G NR n2/1RB#1 20M	Top Side	376000	17.40	18.00	1.148	0.338	0.388
	5G NR n2/1RB#1 20M	Bottom Side	376000	17.40	18.00	1.148	0.112	0.129
	5G NR n2/1RB#1 20M	Left Side	372000	17.28	18.00	1.180	0.811	0.957
	5G NR n2/1RB#1 20M	Left Side	380000	17.35	18.00	1.161	0.802	0.931
	5G NR n2/50RB#25 20M	Front Side	376000	16.97	17.50	1.130	0.411	0.464
	5G NR n2/50RB#25 20M	Back Side	376000	16.97	17.50	1.130	0.440	0.497
	5G NR n2/50RB#25 20M	Left Side	376000	16.97	17.50	1.130	0.706	0.798
	5G NR n2/50RB#25 20M	Top Side	376000	16.97	17.50	1.130	0.293	0.331
	5G NR n2/50RB#25 20M	Bottom Side	376000	16.97	17.50	1.130	0.162	0.183
	5G NR n2/50RB#25 20M	Left Side	372000	16.72	17.50	1.197	0.661	0.791
	5G NR n2/50RB#25 20M	Left Side	380000	16.80	17.50	1.175	0.675	0.793
	5G NR n2/100RB#0 20M	Left Side	376000	16.35	17.50	1.303	0.513	0.669
Sensor off/Full Power (ANT 0)								
	5G NR n5/1RB#1 20M	Front Side	167300	23.36	24.00	1.159	0.461	0.534
13#	5G NR n5/1RB#1 20M	Back Side	167300	23.36	24.00	1.159	0.653	0.757
	5G NR n5/1RB#1 20M	Left Side	167300	23.36	24.00	1.159	0.580	0.672



	5G NR n5/1RB#1 20M	Top Side	167300	23.36	24.00	1.159	0.121	0.140
	5G NR n5/1RB#1 20M	Bottom Side	167300	23.36	24.00	1.159	0.269	0.312
	5G NR n5/50RB#25 20M	Front Side	167300	23.24	24.00	1.191	0.577	0.687
	5G NR n5/50RB#25 20M	Back Side	167300	23.24	24.00	1.191	0.614	0.731
	5G NR n5/50RB#25 20M	Left Side	167300	23.24	24.00	1.191	0.077	0.092
	5G NR n5/50RB#25 20M	Top Side	167300	23.24	24.00	1.191	0.258	0.307
	5G NR n5/50RB#25 20M	Bottom Side	167300	23.24	24.00	1.191	0.375	0.447
Sensor on/Reduced Power (ANT 0)								
	5G NR n7/1RB#1 20M	Front Side	507000	22.00	23.00	1.259	0.572	0.720
	5G NR n7/1RB#1 20M	Back Side	507000	22.00	23.00	1.259	0.618	0.778
14#	5G NR n7/1RB#1 20M	Left Side	507000	22.00	23.00	1.259	0.754	0.949
	5G NR n7/1RB#1 20M	Top Side	507000	22.00	23.00	1.259	0.296	0.373
	5G NR n7/1RB#1 20M	Bottom Side	507000	22.00	23.00	1.259	0.156	0.196
	5G NR n7/1RB#1 20M	Left Side	502000	21.97	23.00	1.268	0.715	0.906
	5G NR n7/1RB#1 20M	Left Side	512000	21.96	23.00	1.271	0.733	0.931
	5G NR n7/50RB#25 20M	Front Side	507000	21.83	22.50	1.167	0.493	0.575
	5G NR n7/50RB#25 20M	Back Side	507000	21.83	22.50	1.167	0.601	0.701
	5G NR n7/50RB#25 20M	Left Side	507000	21.83	22.50	1.167	0.685	0.799
	5G NR n7/50RB#25 20M	Top Side	507000	21.83	22.50	1.167	0.280	0.327
	5G NR n7/50RB#25 20M	Bottom Side	507000	21.83	22.50	1.167	0.185	0.216
	5G NR n7/50RB#25 20M	Left Side	502000	21.79	22.50	1.178	0.667	0.785
	5G NR n7/50RB#25 20M	Left Side	512000	21.82	22.50	1.169	0.701	0.820
	5G NR n7/100RB#0 20M	Left Side	507000	21.23	22.50	1.340	0.588	0.788
Sensor on/Reduced Power (ANT 0)								
	5G NR n12/1RB#1 15M	Front Side	141500	22.35	23.00	1.161	0.479	0.557
15#	5G NR n12/1RB#1 15M	Back Side	141500	22.35	23.00	1.161	0.775	0.900
	5G NR n12/1RB#1 15M	Left Side	141500	22.35	23.00	1.161	0.116	0.135
	5G NR n12/1RB#1 15M	Top Side	141500	22.35	23.00	1.161	0.348	0.404
	5G NR n12/1RB#1 15M	Bottom Side	141500	22.35	23.00	1.161	0.492	0.571
	5G NR n12/1RB#1 15M	Back Side	141300	22.19	23.00	1.205	0.600	0.723
	5G NR n12/1RB#1 15M	Back Side	141700	22.20	23.00	1.202	0.611	0.734
	5G NR n12/36RB#18 15M	Front Side	141500	22.30	23.00	1.175	0.480	0.564
	5G NR n12/36RB#18 15M	Back Side	141500	22.30	23.00	1.175	0.556	0.654
	5G NR n12/36RB#18 15M	Left Side	141500	22.30	23.00	1.175	0.095	0.112
	5G NR n12/36RB#18 15M	Top Side	141500	22.30	23.00	1.175	0.370	0.435
	5G NR n12/36RB#18 15M	Bottom Side	141500	22.30	23.00	1.175	0.399	0.469
	5G NR n12/36RB#18 15M	Back Side	141300	22.28	23.00	1.180	0.540	0.638
	5G NR n12/36RB#18 15M	Back Side	141700	22.29	23.00	1.178	0.553	0.652



	5G NR n12/75RB#0 15M	Back Side	141500	21.34	23.00	1.466	0.509	0.745
Sensor on/Reduced Power (ANT 0)								
	5G NR n14/1RB#1 10M	Front Side	158600	22.63	23.00	1.089	0.692	0.754
16#	5G NR n14/1RB#1 10M	Back Side	158600	22.63	23.00	1.089	0.913	0.994
	5G NR n14/1RB#1 10M	Left Side	158600	22.63	23.00	1.089	0.087	0.095
	5G NR n14/1RB#1 10M	Top Side	158600	22.63	23.00	1.089	0.391	0.426
	5G NR n14/1RB#1 10M	Bottom Side	158600	22.63	23.00	1.089	0.488	0.531
	5G NR n14/25RB#12 10M	Front Side	158600	22.26	23.00	1.186	0.591	0.701
	5G NR n14/25RB#12 10M	Back Side	158600	22.26	23.00	1.186	0.699	0.829
	5G NR n14/25RB#12 10M	Left Side	158600	22.26	23.00	1.186	0.057	0.068
	5G NR n14/25RB#12 10M	Top Side	158600	22.26	23.00	1.186	0.219	0.260
	5G NR n14/25RB#12 10M	Bottom Side	158600	22.26	23.00	1.186	0.494	0.586
	5G NR n14/25RB#0 10M	Back Side	158600	21.80	23.00	1.318	0.554	0.730
Sensor on/Reduced Power (ANT 0)								
	5G NR n25/1RB#1 20M	Front Side	376500	19.16	20.00	1.213	0.461	0.559
	5G NR n25/1RB#1 20M	Back Side	376500	19.16	20.00	1.213	0.575	0.698
17#	5G NR n25/1RB#1 20M	Left Side	376500	19.16	20.00	1.213	0.787	0.955
	5G NR n25/1RB#1 20M	Top Side	376500	19.16	20.00	1.213	0.572	0.694
	5G NR n25/1RB#1 20M	Bottom Side	376500	19.16	20.00	1.213	0.218	0.265
	5G NR n25/1RB#1 20M	Left Side	372000	19.08	20.00	1.236	0.761	0.941
	5G NR n25/1RB#1 20M	Left Side	381000	19.04	20.00	1.247	0.765	0.954
	5G NR n25/50RB#25 20M	Front Side	376500	19.07	20.00	1.239	0.376	0.466
	5G NR n25/50RB#25 20M	Back Side	376500	19.07	20.00	1.239	0.458	0.567
	5G NR n25/50RB#25 20M	Left Side	376500	19.07	20.00	1.239	0.751	0.930
	5G NR n25/50RB#25 20M	Top Side	376500	19.07	20.00	1.239	0.458	0.567
	5G NR n25/50RB#25 20M	Bottom Side	376500	19.07	20.00	1.239	0.170	0.211
	5G NR n25/50RB#25 20M	Left Side	372000	18.88	20.00	1.294	0.458	0.593
	5G NR n25/50RB#25 20M	Left Side	381000	18.89	20.00	1.291	0.334	0.431
	5G NR n25/100RB#0 20M	Left Side	376500	18.50	20.00	1.413	0.610	0.862
Sensor on/Reduced Power (ANT 0)								
	5G NR n26/1RB#1 10M	Front Side	166300	21.62	22.50	1.225	0.652	0.798
18#	5G NR n26/1RB#1 10M	Back Side	166300	21.62	22.50	1.225	0.791	0.969
	5G NR n26/1RB#1 10M	Left Side	166300	21.62	22.50	1.225	0.093	0.114
	5G NR n26/1RB#1 10M	Top Side	166300	21.62	22.50	1.225	0.258	0.316
	5G NR n26/1RB#1 10M	Bottom Side	166300	21.62	22.50	1.225	0.593	0.726
	5G NR n26/25RB#12 10M	Front Side	166300	21.52	22.50	1.253	0.641	0.803
	5G NR n26/25RB#12 10M	Back Side	166300	21.52	22.50	1.253	0.699	0.876
	5G NR n26/25RB#12 10M	Back Side	166300	21.52	22.50	1.253	0.096	0.120



	5G NR n26/25RB#12 10M	Left Side	166300	21.52	22.50	1.253	0.063	0.079
	5G NR n26/25RB#12 10M	Top Side	166300	21.52	22.50	1.253	0.311	0.390
	5G NR n26/25RB#12 10M	Bottom Side	166300	21.52	22.50	1.253	0.396	0.496
	5G NR n26/50RB#0 10M	Back Side	166300	21.00	22.50	1.413	0.608	0.859
	5G NR n26/1RB#1 20M	Front Side	167300	21.71	22.50	1.199	0.575	0.690
	5G NR n26/1RB#1 20M	Back Side	167300	21.71	22.50	1.199	0.772	0.926
	5G NR n26/1RB#1 20M	Left Side	167300	21.71	22.50	1.199	0.081	0.097
	5G NR n26/1RB#1 20M	Top Side	167300	21.71	22.50	1.199	0.224	0.269
	5G NR n26/1RB#1 20M	Bottom Side	167300	21.71	22.50	1.199	0.516	0.619
	5G NR n26/1RB#1 20M	Back Side	166800	21.67	22.50	1.211	0.728	0.882
	5G NR n26/1RB#1 20M	Back Side	167800	21.61	22.50	1.227	0.749	0.919
	5G NR n26/25RB#12 20M	Front Side	167300	21.62	22.50	1.225	0.567	0.695
	5G NR n26/50RB#25 20M	Back Side	167300	21.62	22.50	1.225	0.686	0.841
	5G NR n26/50RB#25 20M	Left Side	167300	21.62	22.50	1.225	0.104	0.128
	5G NR n26/50RB#25 20M	Top Side	167300	21.62	22.50	1.225	0.243	0.297
	5G NR n26/50RB#25 20M	Bottom Side	167300	21.62	22.50	1.225	0.447	0.548
	5G NR n26/50RB#25 20M	Back Side	166800	21.36	22.50	1.300	0.620	0.807
	5G NR n26/50RB#25 20M	Back Side	167800	21.60	22.50	1.230	0.637	0.783
	5G NR n26/100RB#0 20M	Back Side	167300	20.90	22.50	1.445	0.513	0.742
Sensor off/Full Power (ANT 0)								
	5G NR n30/1RB#1 10M	Front Side	462000	22.98	24.00	1.265	0.420	0.531
	5G NR n30/1RB#1 10M	Back Side	462000	22.98	24.00	1.265	0.397	0.502
	5G NR n30/1RB#1 10M	Left Side	462000	22.98	24.00	1.265	0.453	0.573
	5G NR n30/1RB#1 10M	Top Side	462000	22.98	24.00	1.265	0.268	0.339
	5G NR n30/1RB#1 10M	Right Side	462000	22.98	24.00	1.265	0.045	0.057
	5G NR n30/25RB#12 10M	Front Side	462000	22.96	24.00	1.271	0.448	0.569
	5G NR n30/25RB#12 10M	Back Side	462000	22.96	24.00	1.271	0.537	0.682
19#	5G NR n30/25RB#12 10M	Left Side	462000	22.96	24.00	1.271	0.775	0.985
	5G NR n30/25RB#12 10M	Top Side	462000	22.96	24.00	1.271	0.150	0.191
	5G NR n30/25RB#12 10M	Right Side	462000	22.96	24.00	1.271	0.088	0.112
Sensor off/Full Power (ANT 0)								
	5G NR n41/1RB#1 20M	Front Side	518598	22.71	23.50	1.199	0.388	0.465
20#	5G NR n41/1RB#1 20M	Back Side	518598	22.71	23.50	1.199	0.775	0.930
	5G NR n41/1RB#1 20M	Left Side	518598	22.71	23.50	1.199	0.522	0.626
	5G NR n41/1RB#1 20M	Top Side	518598	22.71	23.50	1.199	0.438	0.525
	5G NR n41/1RB#1 20M	Bottom Side	518598	22.71	23.50	1.199	0.189	0.227
	5G NR n41/1RB#1 20M	Back Side	501204	22.62	23.50	1.225	0.613	0.751



	5G NR n41/1RB#1 20M	Back Side	509904	22.68	23.50	1.208	0.682	0.824
	5G NR n41/1RB#1 20M	Back Side	527298	22.55	23.50	1.245	0.732	0.911
	5G NR n41/1RB#1 20M	Back Side	535998	22.64	23.50	1.219	0.715	0.872
	5G NR n41/25RB#12 20M	Front Side	518598	22.68	23.50	1.208	0.278	0.336
	5G NR n41/25RB#12 20M	Back Side	518598	22.68	23.50	1.208	0.705	0.852
	5G NR n41/25RB#12 20M	Left Side	518598	22.68	23.50	1.208	0.581	0.702
	5G NR n41/25RB#12 20M	Top Side	518598	22.68	23.50	1.208	0.409	0.494
	5G NR n41/25RB#12 20M	Bottom Side	518598	22.68	23.50	1.208	0.153	0.185
	5G NR n41/25RB#12 20M	Back Side	501204	22.67	23.50	1.211	0.508	0.615
	5G NR n41/25RB#12 20M	Back Side	509904	22.63	23.50	1.222	0.673	0.822
	5G NR n41/25RB#12 20M	Back Side	527298	22.15	23.50	1.365	0.612	0.835
	5G NR n41/25RB#12 20M	Back Side	535998	22.34	23.50	1.306	0.701	0.916
	5G NR n41/50RB#0 20M	Back Side	518598	21.74	23.50	1.500	0.513	0.769
Sensor off/Full Power (ANT 2)								
	5G NR n48/1RB#1 20M	Front Side	641666	22.71	23.50	1.199	0.206	0.247
21#	5G NR n48/1RB#1 20M	Back Side	641666	22.71	23.50	1.199	0.238	0.285
	5G NR n48/1RB#1 20M	Left Side	641666	22.71	23.50	1.199	0.105	0.126
	5G NR n48/1RB#1 20M	Right Side	641666	22.71	23.50	1.199	0.087	0.104
	5G NR n48/1RB#1 20M	Top Side	641666	22.71	23.50	1.199	0.217	0.260
	5G NR n48/1RB#1 20M	Bottom Side	641666	22.71	23.50	1.199	0.118	0.142
	5G NR n48/25RB#12 20M	Front Side	641666	22.69	23.50	1.205	0.165	0.199
	5G NR n48/25RB#12 20M	Back Side	641666	22.69	23.50	1.205	0.213	0.257
	5G NR n48/25RB#12 20M	Left Side	641666	22.69	23.50	1.205	0.071	0.086
	5G NR n48/25RB#12 20M	Top Side	641666	22.69	23.50	1.205	0.196	0.236
Sensor on/Reduced Power (ANT 0)								
	5G NR n66/1RB#1 20M	Front Side	349000	19.03	20.00	1.250	0.201	0.251
	5G NR n66/1RB#1 20M	Back Side	349000	19.03	20.00	1.250	0.254	0.318
	5G NR n66/1RB#1 20M	Left Side	349000	19.03	20.00	1.250	0.659	0.824
	5G NR n66/1RB#1 20M	Top Side	349000	19.03	20.00	1.250	0.104	0.130
	5G NR n66/1RB#1 20M	Bottom Side	349000	19.03	20.00	1.250	0.086	0.108
	5G NR n66/1RB#1 20M	Left Side	344000	18.95	20.00	1.274	0.612	0.779
	5G NR n66/1RB#1 20M	Left Side	354000	18.99	20.00	1.262	0.637	0.804
	5G NR n66/25RB#12 20M	Front Side	349000	18.85	19.50	1.161	0.236	0.274
	5G NR n66/25RB#12 20M	Back Side	349000	18.85	19.50	1.161	0.262	0.304
22#	5G NR n66/25RB#12 20M	Left Side	349000	18.85	19.50	1.161	0.854	0.992
	5G NR n66/25RB#12 20M	Top Side	349000	18.85	19.50	1.161	0.143	0.166
	5G NR n66/25RB#12 20M	Bottom Side	349000	18.85	19.50	1.161	0.101	0.117
	5G NR n66/25RB#12 20M	Left Side	344000	18.84	19.50	1.164	0.601	0.700



	5G NR n66/25RB#12 20M	Left Side	354000	18.80	19.50	1.175	0.593	0.697
	5G NR n66/100RB#0 20M	Left Side	349000	18.30	19.50	1.318	0.611	0.805
Sensor off/Full Power (ANT 0)								
	5G NR n71/1RB#1 20M	Front Side	136100	23.01	24.00	1.256	0.162	0.203
23#	5G NR n71/1RB#1 20M	Back Side	136100	23.01	24.00	1.256	0.178	0.224
	5G NR n71/1RB#1 20M	Left Side	136100	23.01	24.00	1.256	0.026	0.033
	5G NR n71/1RB#1 20M	Top Side	136100	23.01	24.00	1.256	0.053	0.067
	5G NR n71/1RB#1 20M	Bottom Side	136100	23.01	24.00	1.256	0.089	0.112
	5G NR n71/25RB#12 20M	Front Side	136100	22.85	24.00	1.303	0.158	0.206
	5G NR n71/25RB#12 20M	Back Side	136100	22.85	24.00	1.303	0.167	0.218
	5G NR n71/25RB#12 20M	Left Side	136100	22.85	24.00	1.303	0.025	0.033
	5G NR n71/25RB#12 20M	Top Side	136100	22.85	24.00	1.303	0.050	0.065
	5G NR n71/25RB#12 20M	Bottom Side	136100	22.85	24.00	1.303	0.080	0.104
Sensor off/Full Power (ANT 2)								
	5G NR n77/1RB#1 20M	Front Side	633334	23.15	24.00	1.216	0.131	0.159
	5G NR n77/1RB#1 20M	Back Side	633334	23.15	24.00	1.216	0.153	0.186
	5G NR n77/1RB#1 20M	Left Side	633334	23.15	24.00	1.216	0.081	0.099
	5G NR n77/1RB#1 20M	Top Side	633334	23.15	24.00	1.216	0.152	0.185
	5G NR n77/25RB#25 20M	Front Side	633334	23.04	24.00	1.247	0.103	0.128
	5G NR n77/25RB#25 20M	Back Side	633334	23.04	24.00	1.247	0.155	0.193
	5G NR n77/25RB#25 20M	Left Side	633334	23.04	24.00	1.247	0.069	0.086
	5G NR n77/25RB#25 20M	Top Side	633334	23.04	24.00	1.247	0.145	0.181
Sensor off/Full Power (ANT 2)								
	5G NR n77/1RB#1 20M	Front Side	656000	23.15	24.00	1.216	0.108	0.131
24#	5G NR n77/1RB#1 20M	Back Side	656000	23.15	24.00	1.216	0.160	0.195
	5G NR n77/1RB#1 20M	Left Side	656000	23.15	24.00	1.216	0.041	0.050
	5G NR n77/1RB#1 20M	Top Side	656000	23.15	24.00	1.216	0.066	0.080
	5G NR n77/25RB#25 20M	Front Side	656000	23.04	24.00	1.247	0.093	0.116
	5G NR n77/25RB#25 20M	Back Side	656000	23.04	24.00	1.247	0.098	0.122
	5G NR n77/25RB#25 20M	Left Side	656000	23.04	24.00	1.247	0.036	0.045
	5G NR n77/25RB#25 20M	Top Side	656000	23.04	24.00	1.247	0.049	0.061
Sensor off/Full Power (ANT 2)								
	5G NR n78/1RB#1 20M	Front Side	633334	23.12	24.00	1.225	0.130	0.159
	5G NR n78/1RB#1 20M	Back Side	633334	23.12	24.00	1.225	0.147	0.180
	5G NR n78/1RB#1 20M	Left Side	633334	23.12	24.00	1.225	0.091	0.111
	5G NR n78/1RB#1 20M	Top Side	633334	23.12	24.00	1.225	0.113	0.138
	5G NR n78/25RB#25 20M	Front Side	633334	23.02	24.00	1.253	0.112	0.140
	5G NR n78/25RB#25 20M	Back Side	633334	23.02	24.00	1.253	0.146	0.183



	5G NR n78/25RB#25 20M	Left Side	633334	23.02	24.00	1.253	0.078	0.098
	5G NR n78/25RB#25 20M	Top Side	633334	23.02	24.00	1.253	0.117	0.147
	5G NR n78/1RB#1 20M	Front Side	650000	23.13	24.00	1.222	0.098	0.120
25#	5G NR n78/1RB#1 20M	Back Side	650000	23.13	24.00	1.222	0.153	0.187
	5G NR n78/1RB#1 20M	Left Side	650000	23.13	24.00	1.222	0.043	0.053
	5G NR n78/1RB#1 20M	Top Side	650000	23.13	24.00	1.222	0.111	0.136
	5G NR n78/25RB#25 20M	Front Side	650000	22.99	24.00	1.262	0.108	0.136
	5G NR n78/25RB#25 20M	Back Side	650000	22.99	24.00	1.262	0.135	0.170
	5G NR n78/25RB#25 20M	Left Side	650000	22.99	24.00	1.262	0.038	0.048
	5G NR n78/25RB#25 20M	Top Side	650000	22.99	24.00	1.262	0.064	0.081

➤ **WLAN 2.4GHz/5GHz 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 (WIFI 1)								
	WLAN2.4GHz/802.11b	Front Side	1	17.85	18.50	1.161	0.090	0.105
	WLAN2.4GHz/802.11b	Back Side	1	17.85	18.50	1.161	0.108	0.126
	WLAN2.4GHz/802.11b	Left Side	1	17.85	18.50	1.161	0.216	0.253
	WLAN2.4GHz/802.11b	Bottom Side	1	17.85	18.50	1.161	0.046	0.054
Sensor off/Full Power (WIFI 2)								
	WLAN2.4GHz/802.11b	Front Side	11	18.70	19.00	1.072	0.182	0.196
26#	WLAN2.4GHz/802.11b	Back Side	11	18.70	19.00	1.072	0.262	0.283
	WLAN2.4GHz/802.11b	Right Side	11	18.70	19.00	1.072	0.057	0.062
	WLAN2.4GHz/802.11b	Top Side	11	18.70	19.00	1.072	0.165	0.178
Sensor off/Full Power (MIMO)								
	WLAN2.4GHz/802.11n-HT40	Front Side	9	15.24	15.50	1.062	0.123	0.131
	WLAN2.4GHz/802.11n-HT40	Back Side	9	15.24	15.50	1.062	0.107	0.114
	WLAN2.4GHz/802.11n-HT40	Left Side	9	15.24	15.50	1.062	0.010	0.011
	WLAN2.4GHz/802.11n-HT40	Right Side	9	15.24	15.50	1.062	0.028	0.030
	WLAN2.4GHz/802.11n-HT40	Top Side	9	15.24	15.50	1.062	0.068	0.072
	WLAN2.4GHz/802.11n-HT40	Bottom Side	9	15.24	15.50	1.062	0.048	0.051
Sensor off/Full Power (WIFI 1)								
	WLAN5.2GHz/802.11a	Front Side	48	15.19	16.00	1.205	0.080	0.097
	WLAN5.2GHz/802.11a	Back Side	48	15.19	16.00	1.205	0.108	0.131
	WLAN5.2GHz/802.11a	Right Side	48	15.19	16.00	1.205	0.049	0.060
	WLAN5.2GHz/802.11a	Top Side	48	15.19	16.00	1.205	0.092	0.112
Sensor off/Full Power (WIFI 2)								



	WLAN5.2GHz/802.11a	Front Side	48	15.19	16.00	1.205	0.080	0.097
	WLAN5.2GHz/802.11a	Back Side	48	15.19	16.00	1.205	0.108	0.131
	WLAN5.2GHz/802.11a	Right Side	48	15.19	16.00	1.205	0.049	0.060
	WLAN5.2GHz/802.11a	Top Side	48	15.19	16.00	1.205	0.092	0.112
Sensor off/Full Power (WIFI 2)								
	WLAN5.2GHz/802.11a	Front Side	44	15.96	16.50	1.132	0.140	0.159
27#	WLAN5.2GHz/802.11a	Back Side	44	15.96	16.50	1.132	0.175	0.199
	WLAN5.2GHz/802.11a	Left Side	44	15.96	16.50	1.132	0.056	0.064
	WLAN5.2GHz/802.11a	Bottom Side	44	15.96	16.50	1.132	0.145	0.165
Sensor off/Full Power (MIMO)								
	WLAN5.2GHz/802.11n-HT40	Front Side	38	14.26	14.50	1.057	0.054	0.057
	WLAN5.2GHz/802.11n-HT40	Back Side	38	14.26	14.50	1.057	0.066	0.070
	WLAN5.2GHz/802.11n-HT40	Left Side	38	14.26	14.50	1.057	0.017	0.018
	WLAN5.2GHz/802.11n-HT40	Right Side	38	14.26	14.50	1.057	0.027	0.029
	WLAN5.2GHz/802.11n-HT40	Top Side	38	14.26	14.50	1.057	0.078	0.083
	WLAN5.2GHz/802.11n-HT40	Bottom Side	38	14.26	14.50	1.057	0.046	0.049
Sensor on/Reduced Power (WIFI 1)								
	WLAN5.8GHz/802.11a	Front Side	165	12.21	13.00	1.199	0.084	0.102
28#	WLAN5.8GHz/802.11a	Back Side	165	12.21	13.00	1.199	0.253	0.307
	WLAN5.8GHz/802.11a	Right Side	165	12.21	13.00	1.199	0.090	0.109
	WLAN5.8GHz/802.11a	Top Side	165	12.21	13.00	1.199	0.140	0.170
Sensor on/Reduced Power (WIFI 2)								
	WLAN5.8GHz/802.11a	Front Side	157	14.58	15.00	1.102	0.085	0.094
	WLAN5.8GHz/802.11a	Back Side	157	14.58	15.00	1.102	0.064	0.071
	WLAN5.8GHz/802.11a	Left Side	157	14.58	15.00	1.102	0.065	0.072
	WLAN5.8GHz/802.11a	Bottom Side	157	14.58	15.00	1.102	0.119	0.132
Sensor on/Reduced Power (MIMO)								
	WLAN5.8GHz/802.11n-HT40	Front Side	151	12.03	12.50	1.114	0.082	0.091
	WLAN5.8GHz/802.11n-HT40	Back Side	151	12.03	12.50	1.114	0.142	0.158
	WLAN5.8GHz/802.11n-HT40	Left Side	151	12.03	12.50	1.114	0.053	0.059
	WLAN5.8GHz/802.11n-HT40	Right Side	151	12.03	12.50	1.114	0.062	0.069
	WLAN5.8GHz/802.11n-HT40	Top Side	151	12.03	12.50	1.114	0.068	0.076
	WLAN5.8GHz/802.11n-HT40	Bottom Side	151	12.03	12.50	1.114	0.134	0.149

Note:

1. Per KDB 447498 D01v06, for each exposure position, if the highest output power channel Reported SAR $\leq 0.8\text{W/kg}$, other channels SAR testing is not necessary.
2. Per KDB 865664 D01v01r04, for each frequency band, repeated SAR measurement is required



when the measured SAR is $\geq 0.8\text{W/kg}$.

3. 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 $\leq 0.8\text{ W/kg}$.
4. 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 $\leq 0.8\text{ W/kg}$, no further SAR testing is required in that exposure configuration.
5. 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 $\leq 1.2\text{ W/kg}$.
6. According to KDB 865664 D02v01r02, SAR plot is required for the highest measured SAR in each exposure configuration, wireless mode and frequency band combination.
7. For TDD-LTE, the reported SAR should be scaled with the duty cycle scaling factor 1.006.
8. The WLAN 2.4GHz 802.11 b reported 1g SAR (W/kg) should be scaled with the duty cycle scaling factor 1.008/1.007, WLAN 2.4GHz 802.11n-HT40 with 1.003, WLAN 5GHz 802.11a with 1.005/1.010, and WLAN 5GHz 802.11n-HT40 with 1.001.

17.3. 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 ($\sim 10\%$ 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 on/Reduced Power(ANT 0)								
OR.	LTE Band 13/1RB#0 10M	Back Side	23230	21.20	22.00	1.202	0.824	0.991
1 st	LTE Band 13/1RB#0 10M	Back Side	23230	21.20	22.00	1.202	0.802	0.964
Sensor on/Reduced Power Leve (ANT 0)								
OR.	LTE Band 26/1RB#0 15M	Front Side	26865	21.17	22.00	1.211	0.814	0.985
1 st	LTE Band 26/1RB#0 15M	Front Side	26865	21.17	22.00	1.211	0.796	0.964
Sensor on/Reduced Power(ANT 0)								
OR.	LTE Band 66/1RB#0 20M	Left Side	132572	18.89	20.00	1.291	0.898	1.160
1 st	LTE Band 66/1RB#0 20M	Left Side	132572	18.89	20.00	1.291	0.851	1.099
Sensor off/Full Power (ANT 0)								
OR.	LTE Band 71/1RB#0 20M	Back Side	133322	23.06	24.00	1.242	0.864	1.073
1 st	LTE Band 71/1RB#0 20M	Back Side	133322	23.06	24.00	1.242	0.852	1.058
Sensor on/Reduced Power Leve (ANT 0)								
OR.	5G NR n14/1RB#1 10M	Back Side	158600	22.63	23.00	1.089	0.913	0.994
1 st	5G NR n14/1RB#1 10M	Back Side	158600	22.63	23.00	1.089	0.894	0.974
Sensor off/Full Power (ANT 0)								
OR.	5G NR n66/25RB#12 20M	Left Side	349000	18.85	19.50	1.161	0.854	0.992
1 st	5G NR n66/25RB#12 20M	Left Side	349000	18.85	19.50	1.161	0.841	0.977



18. Simultaneous Transmission Evaluation

18.1. Simultaneous Transmission Consideration

No.	Simultaneous Transmission Consideration	Body
1	WWAN(4G/5G) + WiFi 2.4G(ANT1)/ (ANT2)	Yes
2	WWAN(4G/5G) + WiFi 5G(ANT1)/ (ANT2)	Yes
3	WWAN(4G/5G) + WiFi 2.4G(ANT1) + WiFi 2.4G(ANT2)	Yes
4	WWAN(4G/5G) + WiFi 5G(ANT1) + WiFi 5G(ANT2)	Yes
5	WWAN(4G/5G) + WiFi 2.4G(ANT2) + WiFi 5G(ANT1)	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: $(SAR1 + SAR2) \wedge 1.5/R_i \leq 0.04$,
 R_i is the separation distance between the peak SAR locations for the antenna pair in mm.

18.2. Simultaneous Transmission Exposure Evaluation

Remark: The simultaneous transmission data was recorded in annex F.

19. 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.

20. Measurement Conclusion

The SAR evaluation indicates that the EUT complies with the RF radiation exposure limits of FCC, with respect to all parameters subject to this test. These measurements were taken to simulate the RF effects of RF exposure under worst-case conditions. Precise laboratory measures were taken to assure repeatability of the tests. The results and statements relate only to the item(s) tested. Please note that the absorption and distribution of electromagnetic energy in the body are very complex phenomena that depend on the mass, shape, and size of the body, the orientation of the body with respect to the field vectors, and the electrical properties of both the body and the environment. Other variables that may play a substantial role in possible biological effects are those that characterize the environment (e.g. ambient temperature, air velocity, relative humidity, and body insulation) and those that characterize the individual (e.g. age, gender, activity level, debilitation, or disease). Because various factors may interact with one another to vary the specific biological outcome of an exposure to electromagnetic fields, any protection guide should consider maximal amplification of biological effects as a result of field-body interactions, environmental conditions, and physiological variables.



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 *****