REPORT No.: SZ21110383S01

TEST REPORT

APPLICANT	:	Realme Chongqing Mobile Telecommunications Corp., Ltd.
PRODUCT NAME	:	Mobile Phone
MODEL NAME	:	RMX3511
BRAND NAME	:	realme
FCC ID	:	2AUYFRMX3511
STANDARD(S)	:	FCC 47 CFR Part 2(2.1093) IEEE 1528-2013
RECEIPT DATE	:	2021-12-01
TEST DATE	:	2021-12-24 to 2022-01-05
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DIRECTORY

Changed History		
Version	**Date**	**Reason for Change**
1.0	2022-01-18	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			
		Head (Gap 0mm)	Body-worn (Gap 10mm)	Hotspot (Gap 10mm)	Extremity (Gap 0mm)
		1g SAR (W/kg)			10g SAR (W/kg)
GSM	GSM850	0.494	0.283	0.283	N/A
	GSM1900	0.791	0.213	0.375	N/A
WCDMA	WCDMA II	1.184	0.458	0.596	N/A
	WCDMA IV	0.530	0.527	0.655	N/A
	WCDMA V	0.523	0.304	0.304	N/A
LTE	LTE Band 2	0.769	0.889	0.889	N/A
	LTE Band 4	0.616	0.477	0.580	N/A
	LTE Band 5	0.415	0.338	0.338	N/A
	LTE Band 7	0.694	0.436	0.572	N/A
	LTE Band 12/17	0.169	0.230	0.230	N/A
	LTE Band 26	0.448	0.392	0.392	N/A
	LTE Band 38	1.008	0.717	0.798	N/A
	LTE Band 40	0.533	0.333	0.473	N/A
	LTE Band 41	0.785	0.684	0.782	N/A
	LTE Band 66	0.625	0.506	0.660	N/A
WLAN	2.4GHz WLAN	1.043	0.335	0.335	N/A
	5GHz WLAN	1.081	1.130	1.130	1.262
2.4GHz Band	Bluetooth	N/A	0.060	0.060	N/A

Max Scaled SAR_{1g} (W/Kg):	Head:	1.184 W/kg	Limit(W/kg): 1.6 W/kg
	Body-worn:	1.130 W/kg	
	Hotspot:	1.130 W/kg	
Max Scaled SAR_{10g} (W/Kg):	Extremity	1.262 W/kg	Limit(W/kg): 4.0 W/kg

Highest Simultaneous Transmission SAR_{1g} (W/Kg):	1.388 W/kg	Limit(W/kg): 1.6 W/kg

Note:

1. This device is in compliance with Specific Absorption Rate (SAR) for general population or uncontrolled exposure limits (1.6W/kg as averaged over any 1 gram of tissue; specified in FCC

47 CFR part 1 (1.1310) and IEEE C95.1-1991), and had been tested in accordance with the measurement methods and procedures specified in IEEE 1528-2013 and FCC KDB publications.

2. 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:	Realme Chongqing Mobile Telecommunications Corp., Ltd.
Applicant Address:	No.178 Yulong Avenue, Yufengshan, Yubei District, Chongqing, China
Manufacturer:	Realme Chongqing Mobile Telecommunications Corp., Ltd.
Manufacturer Address:	No.178 Yulong Avenue, Yufengshan, Yubei District, Chongqing, China

2.2. Equipment under Test (EUT) Description

Product Name:	Mobile Phone
IMEI:	863252060020156 863252060020131
Hardware Version:	11
Software Version:	Android 11
Frequency Bands:	GSM 850: 824 MHz ~ 849 MHz GSM 1900: 1850 MHz ~ 1910 MHz WCDMA Band II: 1850 MHz ~ 1910 MHz WCDMA Band IV: 1710 MHz ~ 1755 MHz WCDMA Band V: 824 MHz ~ 849 MHz 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 17: 704 MHz ~ 716 MHz LTE Band 26: 814 MHz ~ 849 MHz LTE Band 38: 2570 MHz ~ 2620 MHz LTE Band 40A: 2305 MHz ~ 2315 MHz LTE Band 40B: 2350 MHz ~ 2360 MHz LTE Band 41: 2535 MHz ~ 2655 MHz LTE Band 66: 1710 MHz ~ 1780 MHz WLAN 2.4GHz: 2412 MHz ~ 2462 MHz WLAN 5.2GHz: 5180 MHz ~ 5240 MHz

	WLAN 5.3GHz: 5260 MHz ~ 5320 MHz WLAN 5.6GHz: 5500 MHz ~ 5720 MHz WLAN 5.8GHz: 5745 MHz ~ 5825 MHz Bluetooth: 2402 MHz ~ 2480 MHz	
Modulation Mode:	GSM/GPRS: GMSK EDGE: 8PSK WCDMA: QPSK, 16QAM LTE: QPSK, 16QAM, 64QAM 802.11b: DSSS 802.11a/g/n-HT20/HT40/ac-VHT20/40/80: OFDM BR+EDR: GFSK(1Mbps), π/4-DQPSK(2Mbps), 8-DPSK(3Mbps) Bluetooth LE: GFSK(1Mbps)	
Multi-slot Class:	GPRS: Multi-slot Class12 EDGE: Multi-slot Class 12	
Operation Class:	Class B	
VoLTE Mode:	Support	
Hotspot Mode:	Support (5G WLAN only for B1 & B4)	
Transmit Type:	WWAN: 1Tx/1Rx, 1Tx/2Rx WLAN: 1Tx/1Rx	
Antenna Type:	WWAN: PIFA Antenna WLAN: PIFA Antenna Bluetooth: PIFA Antenna	
SIM Cards Description:	SIM 1	GSM+WCDMA+LTE
	SIM 2	GSM+WCDMA+LTE

2.3. Accessories Information

Battery Type 1:	Manufacturer:	Huizhou Desay Battery Co., Ltd
	Brand Name:	realme
	Model:	BLP877
	Capacity:	Typical: 5000mAh, Rated: 4890mAh
	Rated Voltage:	3.87V
Battery Type 2:	Manufacturer:	Dongguan NVT Technology Co., Ltd
	Brand Name:	realme
	Model:	BLP877
	Capacity:	Typical: 5000mAh, Rated: 4890mAh
	Rated Voltage:	3.87V
Battery Type 3:	Manufacturer:	TWS Technology (Guangzhou) Limited
	Brand Name:	realme
	Model:	BLP877
	Capacity:	Typical: 5000mAh, Rated: 4890mAh
	Rated Voltage:	3.87V

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

2.4. Environment of Test Site/Conditions

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

Test Frequency:	GSM 850MHz/1900MHz WCDMA Band II/IV/V FDD-LTE Band 2/4/5/7/12/17/26/66 TDD-LTE Band 38/40A/40B/41 WLAN 2.4GHz WLAN 5GHz Bluetooth
Operation Mode:	Call established
Power Level:	GSM 850 MHz Maximum output power(level 5) GSM 1900MHz Maximum output power(level 0) WCDMA Band II/IV/V (All Up Bits) FDD-LTE Band 2/4/5/7/12/17/26/66 (Maximum output power) TDD-LTE Band 38/40A/40B/41 (Maximum output power) WLAN 2.4GHz WLAN 5GHz Bluetooth

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

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

3. Specific Absorption Rate (SAR)

3.1. Introduction

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

3.2. SAR Definition

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

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

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

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

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

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

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

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

4. RF Exposure Limits

4.1. Uncontrolled Environment

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

4.2. Controlled Environment

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

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

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

Note:

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

5. Applied Reference Documents

Leading reference documents for testing:

Identity	Document Title	Method Determination /Remark
FCC 47CFR Part 2(2.1093)	Radio Frequency Radiation Exposure Evaluation: Portable Devices	No deviation
IEEE 1528-2013	IEEE Recommended Practice for Determining the Peak Spatial-Average Specific Absorption Rate (SAR) in the Human Head from Wireless Communications Devices: Measurement Techniques	No deviation
KDB 447498 D01v06	General RF Exposure Guidance	No deviation
KDB 248227 D01v02r02	SAR Measurement Procedures for 802.11 Transmitters	No deviation
KDB 865664 D01v01r04	SAR Measurement 100 MHz to 6 GHz	No deviation
KDB 865664 D02v01r02	RF Exposure Reporting	No deviation
KDB 648474 D04v01r03	Handset SAR	No deviation
KDB 941225 D01v03r01	3G SAR MEAUREMENT PROCEDURES	No deviation
KDB 941225 D05v02r05	SAR Evaluation Consideration for LTE Devices	No deviation
KDB 941225 D06v02r01	SAR Evaluation Procedures For Portable Devices With Wireless Router Capabilities	No deviation
Note 1: The test item is not applicable. **Note 2:** Additions to, deviation, or exclusions from the method shall be judged in the "method determination" column of add, deviate or exclude from the specific method shall be explained in the "Remark" of the above table.		

6. SAR Measurement System

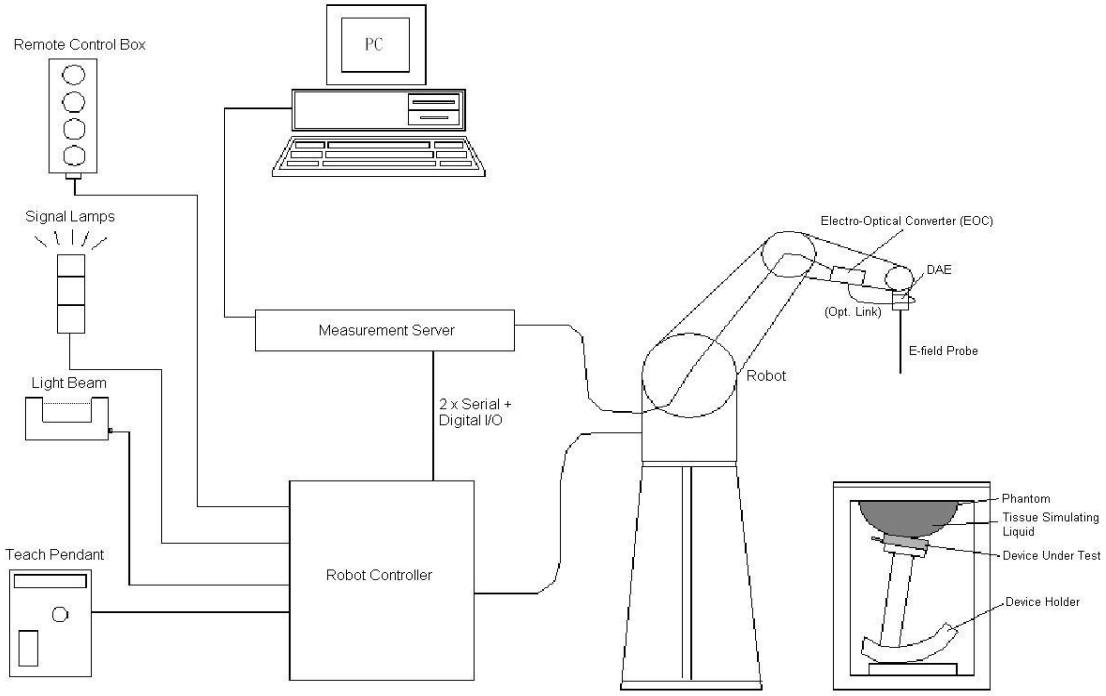


Fig 6.1 SPEAG DASY System Configurations

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

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

6.1. E-Field Probe

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

➢ **E-Field Probe Specification**

<ES3DV3 Probe>

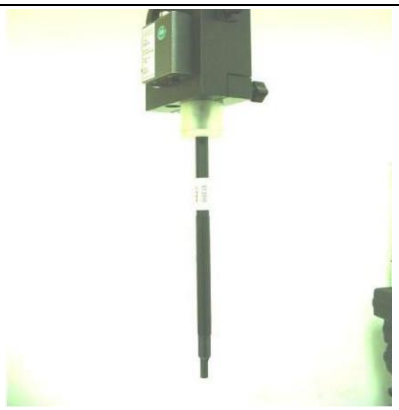
Construction	Symmetrical design with triangular core Built-in optical fiber for surface detection system. Built-in shielding against static charges. PEEK enclosure material (resistant to organic solvents, e.g., DGBE)	
Frequency	10 MHz to 3 GHz; Linearity: ± 0.2 dB	
Directivity	± 0.2 dB in HSL (rotation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

Fig 6.2 Photo of ES3DV3

<EX3DV4 Probe>

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

Fig 6.3 Photo of EX3DV4

➢ **E-Field Probe Calibration**

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

6.2. Data Acquisition Electronics (DAE)

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

Fig 6.4 Photo of DAE

6.3. Robot

The SPEAG DASY system uses the high precision robots (DASY4: RX90BL; DASY5: TX90XL) type from Stäubli SA (France). For the 6-axis controller system, the robot controller version (DASY4: CS7MB; DASY5: CS8c) from Stäubli is used. The Stäubli robot series have many features that are important for our application:
High precision (repeatability ±0.035 mm)
High reliability (industrial design)
Jerk-free straight movements
Low ELF interference (the closed metallic construction shields against motor control fields)

Fig 6.5 Photo of DASY5

6.4. Measurement Server

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

Fig 6.6 Photo of Server for DASY5

6.5. Light Beam Unit

The light beam switch allows automatic "tooling" of the probe. During the process, the actual position of the probe tip with respect to the robot arm is measured, as well as the probe length and the horizontal probe offset. The software then corrects all movements, such that the robot coordinates are valid for the probe tip.

The repeatability of this process is better than 0.1 mm. If a position has been taught with an aligned probe, the same position will be reached with another aligned probe within 0.1 mm, even if the other probe has different dimensions. During probe rotations, the probe tip will keep its actual position.

Fig. 6.7 Photo of Light Beam

6.6. Phantom

<SAM Twin Phantom>

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

Fig. 6.8 Photo of SAM Phantom

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

6.7. Device Holder

<Device Holder for SAM Twin Phantom>

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

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

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

<Laptop Extension Kit>

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

Fig 6.9 Device Holder

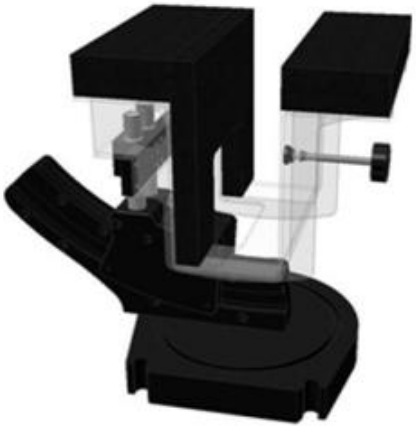


Fig 6.10 Laptop Extension Kit

6.8. Data Storage and Evaluation

➢ **Data Storage**

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

➢ **Data Evaluation**

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

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

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

The first step of the evaluation is a linearization of the filtered input signal to account for the compression characteristics of the detector diode. The compensation depends on the input signal, the diode type and the DC-transmission factor from the diode to the evaluation electronics. If the

exciting field is pulsed, the crest factor of the signal must be known to correctly compensate for peak power.

The formula for each channel can be given as:

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

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

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

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

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

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

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

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

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

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

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

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

6.9. Test Equipment List

Manufacturer	Name of Equipment	Type/Model	Serial Number	Calibration	
				Last Cal.	Due Date
SPEAG	750MHz System Validation Kit	D750V3	1173	2021.06.21	2024.06.20
SPEAG	900MHz System Validation Kit	D900V2	1d064	2021.12.17	2024.12.16
SPEAG	1800MHz System Validation Kit	D1800V2	2d158	2021.12.17	2024.12.16
SPEAG	2000MHz System Validation Kit	D2000V2	1050	2021.12.18	2024.12.17
SPEAG	2300MHz System Validation Kit	D2300V2	1107	2020.6.3	2023.6.2
SPEAG	2450MHz System Validation Kit	D2450V2	805	2021.12.17	2024.12.16
SPEAG	2600MHz System Validation Kit	D2600V2	1139	2021.6.25	2024.6.24
SPEAG	5000MHz System Validation Kit	D5GHzV2	1176	2021.12.19	2024.12.18
SPEAG	DOSIMETRIC ASSESSMENT SYSTEM	DASY52	52.10.4.1527	NCR	NCR
SPEAG	Dosimetric E-Field Probe	EX3DV4	3753	2021.07.26	2022.07.25
SPEAG	Data Acquisition Electronics	DAE4	1353	2021.10.19	2022.10.18
SPEAG	Dielectric Assessment KIT	DAK-3.5	1279	2021.11.03	2022.11.02
SPEAG	Twin-SAM	QD 000 P40 Ax	2020	NCR	NCR
SPEAG	Phone Positioner	N/A	N/A	NCR	NCR
R&S	Network Emulator	CMW500	165755	2021.02.25	2022.02.24
Agilent	Network Analyzer	E5071B	MY42404762	2021.03.29	2022.03.28
mini-circuits	Amplifier	ZHL-42W+	608501717	NCR	NCR
mini-circuits	Amplifier	ZVE-8G+	754401735	NCR	NCR
Agilent	Signal Generator	N5182B	MY53050509	2021.03.25	2022.03.24
Agilent	Power Senor	N8482A	MY41090849	2021.10.21	2022.10.20
Agilent	Power Meter	E4416A	MY45102093	2021.10.21	2022.10.20
Anritsu	Power Sensor	MA2411B	N/A	2021.10.21	2022.10.20
Anritsu	Power Meter	NRVD	101066	2021.10.21	2022.10.20
Agilent	Dual Directional Coupler	778D	50422	NA	NA
MCL	Attenuation1	351-218-010	N/A	NA	NA
KTJ	Thermo meter	TA298	N/A	2021.01.15	2022.01.14
SPEAG	Tissue Simulating Liquids	HBBL600-10000V6		24H	

Note:

1. The calibration certificate of DASY can be referred to appendix E of this report.
2. The Insertion Loss calibration of Dual Directional Coupler and Attenuator were characterized via the network analyzer and compensated during system check.

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

7. Tissue Simulating Liquids

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

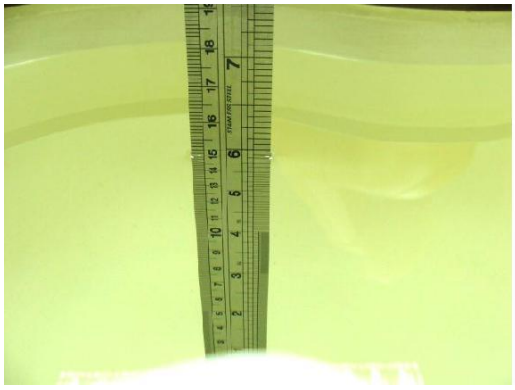


Fig 7.1 Photo of Liquid Height for Head SAR

Fig 7.2 Photo of Liquid Height for Body SAR

The following table gives the recipes for tissue simulating liquids

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

Simulating Liquid for 5GHz, Manufactured by SPEAG.

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

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

Table 1: Dielectric Performance of Tissue Simulating Liquid

Frequency (MHz)	Tissue Type	Liquid Temp.(℃)	Conductivity (σ)	Conductivity Target (σ)	Delta (σ) (%)	Limit (%)	Date
750	HSL	22.3	0.912	0.89	2.47	±5	2021.12.26
900	HSL	22.3	0.994	0.97	2.47	±5	2021.12.24
1800	HSL	22.1	1.426	1.40	1.86	±5	2022.1.1
2000	HSL	22.1	1.439	1.40	2.79	±5	2021.12.25
2300	HSL	22.1	1.711	1.67	2.46	±5	2021.12.31
2450	HSL	22.3	1.796	1.80	-0.22	±5	2022.1.3
2600	HSL	22.3	1.983	1.96	1.17	±5	2022.1.2
5250	HSL	22.1	4.838	4.71	2.72	±5	2022.1.5
5600	HSL	22.1	5.159	5.07	1.76	±5	2022.1.5
5750	HSL	22.1	5.361	5.22	2.70	±5	2022.1.5
Frequency (MHz)	**Tissue Type**	**Liquid Temp.(℃)**	**Permittivity (εr)**	**Permittivity Target (εr)**	**Delta (εr) (%)**	**Limit (%)**	**Date**
750	HSL	22.3	41.265	41.90	-1.52	±5	2021.12.26
900	HSL	22.3	41.812	41.50	0.75	±5	2021.12.24
1800	HSL	22.1	40.522	40.00	1.31	±5	2022.1.1
2000	HSL	22.1	40.699	40.00	1.75	±5	2021.12.25
2300	HSL	22.1	39.736	39.50	0.60	±5	2021.12.31
2450	HSL	22.3	39.882	39.20	1.74	±5	2022.1.3
2600	HSL	22.3	39.534	39.00	1.37	±5	2022.1.2
5250	HSL	22.1	37.926	37.70	0.60	±5	2022.1.5
5600	HSL	22.1	35.687	35.50	0.53	±5	2022.1.5
5750	HSL	22.1	37.525	37.00	1.42	±5	2022.1.5

8. SAR System Verification

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

8.1. Purpose of System Performance check

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

8.2. System Setup

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

Fig 8.1 Photo of Dipole Setup

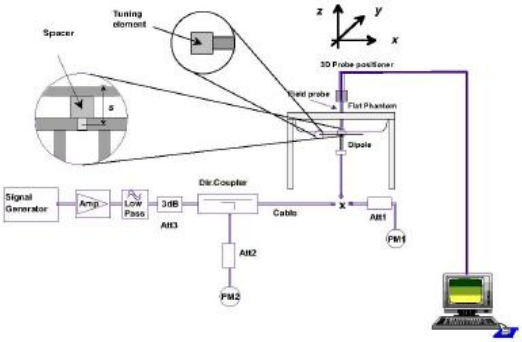


Fig 8.2 System Setup for System Evaluation

8.3. Validation Results

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

<Validation Setup>

Frequency (MHz)	Tissue Type	Input Power(mW)	Dipole S/N	Probe S/N	DAE S/N
750	HSL	250	D750V3-1173	3753	1353
900	HSL	250	D900V2-1d064	3753	1353
1800	HSL	250	D1800V2-2d158	3753	1353
2000	HSL	250	D2000V2-1050	3753	1353
2300	HSL	250	D2300V2-1107	3753	1353
2450	HSL	250	D2450V2-805	3753	1353
2600	HSL	250	D2600V2-1139	3753	1353
5250	HSL	100	D5GHzV2-1176-5750	3753	1353
5600	HSL	100	D5GHzV2-1176-5600	3753	1353
5750	HSL	100	D5GHzV2-1176-5750	3753	1353

<System Validation>

Frequency (MHz)	Tissue Type	Conductivity (σ)	Permittivity (εr)	CW Signal Validation		
				Sensitivity	Probe Linearity	Probe Isotropy
750	HSL	0.851	42.43	PASS	PASS	PASS
835	HSL	0.898	41.88	PASS	PASS	PASS
1750	HSL	1.386	39.91	PASS	PASS	PASS
1800	HSL	1.449	41.26	PASS	PASS	PASS
1900	HSL	1.435	39.65	PASS	PASS	PASS
2000	HSL	1.451	39.42	PASS	PASS	PASS
2300	HSL	1.764	38.99	PASS	PASS	PASS
2450	HSL	1.863	38.85	PASS	PASS	PASS
2600	HSL	1.973	38.58	PASS	PASS	PASS
3400	HSL	2.88	38.10	PASS	PASS	PASS
3500	HSL	2.91	37.90	PASS	PASS	PASS
3700	HSL	3.05	37.70	PASS	PASS	PASS
3900	HSL	3.15	37.50	PASS	PASS	PASS
4100	HSL	3.25	37.20	PASS	PASS	PASS
4200	HSL	3.34	37.00	PASS	PASS	PASS

4400	HSL	3.58	36.70	PASS	PASS	PASS
4600	HSL	3.70	36.60	PASS	PASS	PASS
4800	HSL	3.82	36.40	PASS	PASS	PASS
4900	HSL	3.96	36.20	PASS	PASS	PASS
5250	HSL	4.528	35.32	PASS	PASS	PASS
5600	HSL	4.905	34.89	PASS	PASS	PASS
5750	HSL	5.077	34.28	PASS	PASS	PASS

Frequency (MHz)	Tissue Type	Conductivity (σ)	Permittivity (εr)	Modulation Signal Validation		
				Mod. Type	Duty Factor	PAR
750	HSL	0.851	42.43	N/A	N/A	N/A
835	HSL	0.898	41.88	GMSK	PASS	N/A
1750	HSL	1.386	39.91	N/A	N/A	N/A
1800	HSL	1.449	41.26	N/A	N/A	N/A
1900	HSL	1.435	39.65	GMSK	PASS	N/A
2000	HSL	1.451	39.42	GMSK	PASS	N/A
2300	HSL	1.764	38.99	OFDM	PASS	PASS
2450	HSL	1.863	38.85	OFDM	PASS	PASS
2600	HSL	1.973	38.58	TDD	PASS	N/A
3400	HSL	2.88	38.10	OFDM	PASS	PASS
3500	HSL	2.91	37.90	OFDM	PASS	PASS
3700	HSL	3.05	37.70	OFDM	PASS	PASS
3900	HSL	3.15	37.50	OFDM	PASS	PASS
4100	HSL	3.25	37.20	OFDM	PASS	PASS
4200	HSL	3.34	37.00	OFDM	PASS	PASS
4400	HSL	3.58	36.70	OFDM	PASS	PASS
4600	HSL	3.70	36.60	OFDM	PASS	PASS
4800	HSL	3.82	36.40	OFDM	PASS	PASS
4900	HSL	3.96	36.20	OFDM	PASS	PASS
5250	HSL	4.528	35.32	OFDM	N/A	PASS
5600	HSL	4.905	34.89	OFDM	N/A	PASS
5750	HSL	5.077	34.28	OFDM	N/A	PASS

<Validation Results>

Date	Frequency (MHz)	Tissue Type	Input Power (mW)	Measured 1g SAR (W/kg)	Targeted 1g SAR (W/kg)	Normalized 1g SAR (W/kg)	Deviation (%)
2021.12.26	750	HSL	250	2.10	8.26	8.4	1.69
2021.12.24	900	HSL	250	2.77	11.20	11.08	-1.07
2022.1.1	1800	HSL	250	9.82	39.20	39.28	0.20
2021.12.25	2000	HSL	250	10.16	41.60	40.64	-2.31
2021.12.31	2300	HSL	250	12.34	48.40	49.36	1.98
2022.1.3	2450	HSL	250	13.44	52.30	53.76	2.79
2022.1.2	2600	HSL	250	13.56	54.00	54.24	0.44
2022.1.5	5250	HSL	100	7.79	76.70	77.9	1.56
2022.1.5	5600	HSL	100	8.36	80.30	83.6	4.11
2022.1.5	5750	HSL	100	8.31	78.70	83.1	5.59

Date	Frequency (MHz)	Tissue Type	Input Power (mW)	Measured 10g SAR (W/kg)	Targeted 10g SAR (W/kg)	Normalized 10g SAR (W/kg)	Deviation (%)
2021.12.26	750	HSL	250	1.42	5.45	5.684	4.29
2021.12.24	900	HSL	250	1.72	7.19	6.888	-4.20
2022.1.1	1800	HSL	250	5.37	20.10	21.464	6.79
2021.12.25	2000	HSL	250	5.43	20.70	21.7	4.83
2021.12.31	2300	HSL	250	5.83	23.00	23.304	1.32
2022.1.3	2450	HSL	250	6.18	23.90	24.72	3.43
2022.1.2	2600	HSL	250	6.42	24.50	25.68	4.82
2022.1.5	5250	HSL	100	2.36	22.10	23.6	6.79
2022.1.5	5600	HSL	100	2.41	23.30	24.1	3.43
2022.1.5	5750	HSL	100	2.29	22.50	22.9	1.78

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

9. EUT Testing Position

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

9.1. Handset Reference Points

The vertical centre line passes through two points on the front side of the handset – the midpoint of the width wt of the handset at the level of the acoustic output, and the midpoint of the width wb of the bottom of the handset.
The horizontal line is perpendicular to the vertical centre line and passes the center of the acoustic output. The horizontal line is also tangential to the handset at point A.
The two lines intersect at point A. Note that for many handsets, point A coincides with the center of the acoustic output; however, the acoustic output may be located elsewhere on the horizontal line. Also note that the vertical centre line is not necessarily parallel to the front face of the handset, especially for clamshell handsets, handsets with flip covers, and other irregularly shaped handsets.

Fig. 9.1 Illustration for Cheek Position

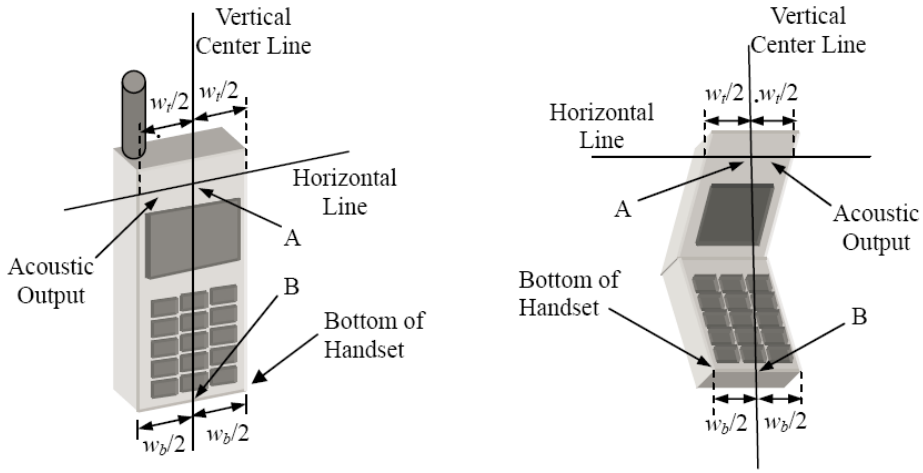


Fig. 9.2 Illustration for Handset Vertical and Horizontal Reference Lines

9.2. Positioning for Cheek / Touch

To position the device with the vertical center line of the body of the device and the horizontal line crossing the center piece in a plane parallel to the sagittal plane of the phantom. While maintaining the device in this plane, align the vertical center line with the reference plane containing the three ear and mouth reference point (M: Mouth, RE: Right Ear and LE: Left Ear) and align the center of the ear piece with the line RE-LE.

To move the device towards the phantom with the ear piece aligned with the line LE-RE until the phone touched the ear. While maintaining the device in the reference plane and maintaining the phone contact with the ear, move the bottom of the phone until any point on the front side is in contact with the cheek of the phantom or until contact with the ear is lost (see below figure)

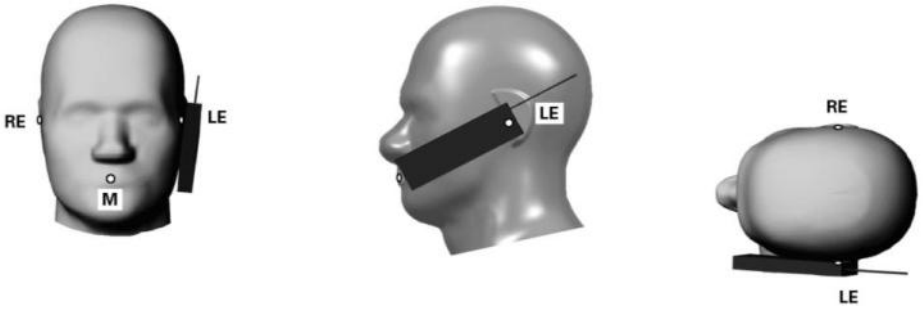


Fig 9.3 Illustration for Cheek Position

9.3. Positioning for Ear / 15º Tilt

To position the device in the “cheek” position described above.
While maintaining the device the reference plane described above and pivoting against the ear, moves it outward away from the mouth by an angle of 15 degrees or until contact with the ear is lost (see figure below).

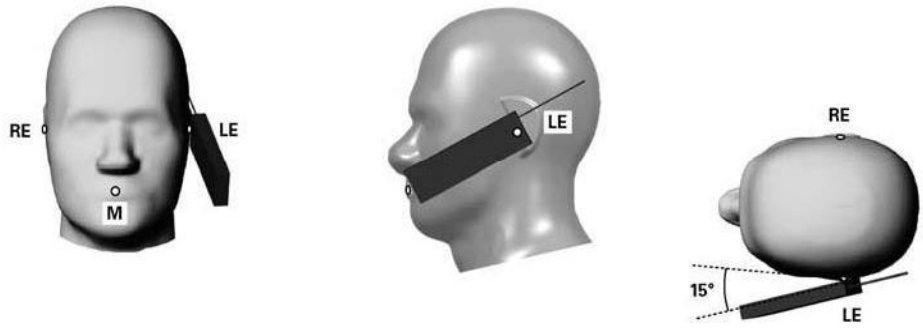


Fig 9.4 Illustration for Tilted Position

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

Antennas located near the bottom of a phone may require SAR measurements around the mouth and jaw regions of the SAM head phantom. This typically applies to clam-shell style phones that are generally longer in the unfolded normal use positions or to certain older style long rectangular phones.
Under these circumstances, the following procedures apply, adopted from the FCC guidance on SAR handsets document FCC KDB Publication 648474 D04v01r03. The SAR required in these regions of SAM should be measured using a flat phantom. The phone should be positioned with a separation distance of 4 mm between the ear reference point (ERP) and the outer surface of the flat phantom shell. While maintaining this distance at the ERP location, the low (bottom) edge of the phone should be lowered from the phantom to establish the same separation distance between the peak SAR locations identified by the truncated partial SAR distribution measured with the SAM phantom. The distance from the peak SAR location to the phone is determined by the straight line passing perpendicularly through the phantom surface. When it is not feasible to maintain 4 mm separation at the ERP while also establishing the required separation at the peak SAR location, the top edge of the phone will be allowed to touch the phantom with a separation < 4 mm at the ERP. The phone should not be tilted to the left or right while placed in this inclined position to the flat phantom.

9.5. 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.

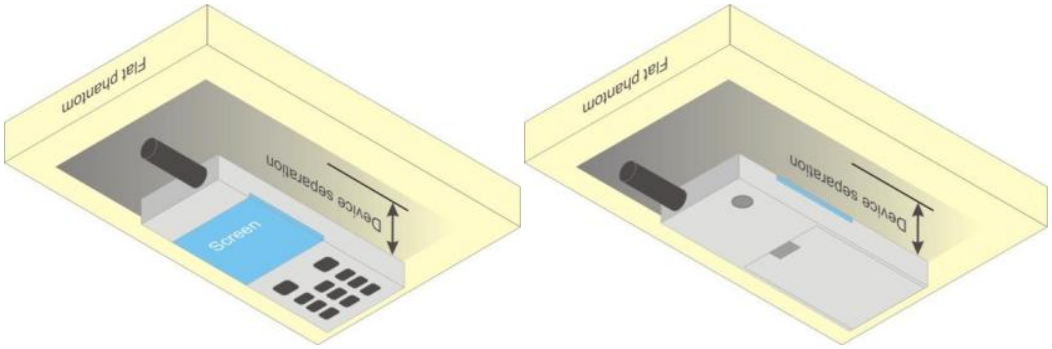


Fig 9.5 Illustration for Body Worn Position

9.6. 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).

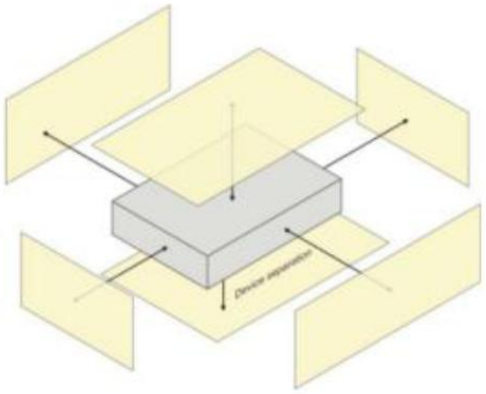


Fig 9.6 Illustration for Hotspot Position

10. Measurement Procedures

The measurement procedures are as follows:

<Conducted power measurement>

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

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

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

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

<SAR measurement>

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

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

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

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

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

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

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

(a) Power reference measurement.

(b) Area scan.

(c) Zoom scan.

(d) Power drift measurement.

10.1. Spatial Peak SAR Evaluation

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

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

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

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

10.2. Power Reference Measurement

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

10.3. Area Scan Procedures

Area scans are defined prior to the measurement process being executed with a user defined variable spacing between each measurement point (integral) allowing low uncertainty measurements to be conducted. Scans defined for FCC applications utilize a10mm² 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.

<table>
<tr><td colspan="3"></td><td>≤ 3 GHz</td><td>> 3 GHz</td></tr>
<tr><td colspan="3">Maximum distance from closest measurement point (geometric center of probe sensors) to phantom surface</td><td>5 mm ± 1 mm</td><td>½·δ·ln(2) mm ± 0.5 mm</td></tr>
<tr><td colspan="3">Maximum probe angle from probe axis to phantom surface normal at the measurement location</td><td>30° ± 1°</td><td>20° ± 1°</td></tr>
<tr><td colspan="3" rowspan="2">Maximum area scan spatial resolution: Δx_{Area}, Δy_{Area}</td><td>≤ 2 GHz: ≤ 15 mm
2 – 3 GHz: ≤ 12 mm</td><td>3 – 4 GHz: ≤ 12 mm
4 – 6 GHz: ≤ 10 mm</td></tr>
<tr><td colspan="2">When the x or y dimension of the test device, in the measurement plane orientation, is smaller than the above, the measurement resolution must be ≤ the corresponding x or y dimension of the test device with at least one measurement point on the test device.</td></tr>
<tr><td colspan="3">Maximum zoom scan spatial resolution: Δx_{Zoom}, Δy_{Zoom}</td><td>≤ 2 GHz: ≤ 8 mm
2 – 3 GHz: ≤ 5 mm*</td><td>3 – 4 GHz: ≤ 5 mm*
4 – 6 GHz: ≤ 4 mm*</td></tr>
<tr><td rowspan="3">Maximum zoom scan spatial resolution, normal to phantom surface</td><td colspan="2">uniform grid: $\Delta z_{Zoom}(n)$</td><td>≤ 5 mm</td><td>3 – 4 GHz: ≤ 4 mm
4 – 5 GHz: ≤ 3 mm
5 – 6 GHz: ≤ 2 mm</td></tr>
<tr><td rowspan="2">graded grid</td><td>$\Delta z_{Zoom}(1)$: between 1st two points closest to phantom surface</td><td>≤ 4 mm</td><td>3 – 4 GHz: ≤ 3 mm
4 – 5 GHz: ≤ 2.5 mm
5 – 6 GHz: ≤ 2 mm</td></tr>
<tr><td>$\Delta z_{Zoom}(n>1)$: between subsequent points</td><td colspan="2">≤ 1.5·$\Delta z_{Zoom}(n-1)$ mm</td></tr>
<tr><td>Minimum zoom scan volume</td><td colspan="2">x, y, z</td><td>≥ 30 mm</td><td>3 – 4 GHz: ≥ 28 mm
4 – 5 GHz: ≥ 25 mm
5 – 6 GHz: ≥ 22 mm</td></tr>
<tr><td colspan="5">Note: δ is the penetration depth of a plane-wave at normal incidence to the tissue medium; see IEEE Std 1528-2013 for details.
* When zoom scan is required and the reported SAR from the area scan based 1-g SAR estimation procedures of KDB Publication 447498 is ≤ 1.4 W/kg, ≤ 8 mm, ≤ 7 mm and ≤ 5 mm zoom scan resolution may be applied, respectively, for 2 GHz to 3 GHz, 3 GHz to 4 GHz and 4 GHz to 6 GHz.</td></tr>
</table>

11.2. Test Procedure

The Following steps are used for each test position

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

11.3. Description of Interpolation/Extrapolation Scheme

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

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

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

11.4. Wireless Router

Some battery-operated handsets have the capability to transmit and receive user through simultaneous transmission of WIFI simultaneously with a separate licensed transmitter. The FCC has provided guidance in FCC KDB Publication 941225 D06 v02r01 where SAR test considerations for handsets (L x W ≥ 9 cm x 5 cm) are based on a composite test separation distance of 10 from the front, back and edges of the device containing transmitting antennas within 2.5cm of their edges,

determined form general mixed use conditions for this type of devices. Since the hotspot SAR results may overlap with the body-worn accessory SAR requirements, the more conservative configurations can be considered, thus excluding some body-worn accessory SAR tests.

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

12. SAR Test Configuration

<GSM Mode>

A summary of these settings are illustrated below:
For GSM850 frequency band, the power control is set to 5 for GSM/GPRS mode (GSMK-CS1) and set to 8 for EDGE mode (MCS5); For GSM1900 frequency band, the power control is set to 0 for GSM/GPRS mode (GSMK-CS1) and set to 2 for EDGE mode (MCS5).

1. Per KDB 447498 D01v06, the maximum output power channel is used for SAR testing and for further SAR test reduction.
2. Per KDB 941225 D01v03r01, SAR test reduction for GSM / GPRS / EDGE modes is determined by the source-based time-averaged output power including tune-up tolerance. The mode with highest specified time-averaged output power should be tested for SAR compliance in the applicable exposure conditions. For modes with the same specified maximum output power and tolerance, the higher number time-slot configuration should be tested. Therefore, the GPRS (4Tx slots) for GSM850/GSM1900 is considered as the primary mode.
3. Other configurations of GSM / GPRS / EDGE are considered as secondary modes.

Timeslot consignations:

Remark:

1. The frame-averaged power is linearly reported the maximum burst averaged power over 8 time slots. The calculated method are shown as below:
   The duty cycle "x" of different time slots as below:
   1 TX slot is 1/8, 2 TX slots is 2/8, 3 TX slots is 3/8 and 4 TX slots is 4/8
   Based on the calculation formula:
   Frame-averaged power = Burst averaged power + 10 1og (x)
   So,
   Frame-averaged power (1 TX slot) = Burst averaged power (1 TX slot)– 9.03
   Frame-averaged power (2 TX slots) = Burst averaged power (2 TX slots)– 6.02
   Frame-averaged power (3 TX slots) = Burst averaged power (3 TX slots)– 4.26
   Frame-averaged power (4 TX slots) = Burst averaged power (4 TX slots) – 3.01
2. CS1 coding scheme was used in GPRS conducted power measurements and SAR testing, MCS5 coding scheme was used in EGPRS conducted power measurements and SAR testing (if necessary).

No. of Slots:	Slot 1	Slot 2	Slot 3	Slot 4
Slot Consignation:	1Up4Down	2Up3Down	3Up2Down	4Up1Down
Duty Cycle:	1:8.3	1:4.15	1:2.77	1:2.08
Correct Factor:	-9.03dB	-6.02dB	-4.26dB	-3.01dB

<WCDMA Mode>

Summary of UMTS conducted power measurement:

1. The 3G SAR test reduction procedure is applied, when the maximum output power and tune-up tolerance specified for production units in a secondary mode is ≤ ¼ dB higher than the primary mode, SAR measurement is not required for the secondary mode.
2. The following tests were conducted according to the test requirements outlines in 3GPP TS 34.121 specification.
3. The procedures in KDB 941225 D01v03r01 are applied for 3GPP Rel. 6 HSPA to configure the device in the required sub-test mode(s) to determine SAR test exclusion.
4. For HSPA+ devices supporting 16 QAM in the uplink, power measurements procedure is according to the configurations in Table C.11.1.4 of 3GPP TS 34.121-1.
5. Per KDB 941225 D01v03r01, RMC 12.2kbps setting is used to evaluate SAR. The maximum output power and tune-up tolerance specified for production units in HSDPA / HSUPA / DC-HSDPA / HSPA+ is ≤ ¼ dB higher than RMC 12.2Kbps or when the highest reported SAR of the RMC12.2Kbps is scaled by the ratio of specified maximum output power and tune-up tolerance of HSDPA / HSUPA / DC-HSDPA / HSPA+ to RMC12.2Kbps and the adjusted SAR is ≤ 1.2 W/kg, SAR measurement is not required for HSDPA / HSUPA / DC-HSDPA / HSPA+, and according to the following RF output power, the output power results of the secondary modes (HSDPA / HSUPA / DC-HSDPA / HSPA+) are less than ¼ dB higher than the primary modes; therefore, SAR measurement is not required for HSDPA / HSUPA / DC-HSDPA / HSPA+.
6. A fixed level power reduction is applied for WCDMA Band II when handset open Hotspot mode, the power reduction triggered.

HSDPA Setup Configuration

Sub-test	β_c	β_d	β_d (SF)	β_c/β_d	β_{hs} (1)	CM (dB) (2)
1	2/15	15/15	64	2/15	4/15	0.0
2	12/15 (3)	15/15 (3)	64	12/15 (3)	24/15	1.0
3	15/15	8/15	64	15/8	30/15	1.5
4	15/15	4/15	64	15/4	30/15	1.5

Note 1: Δ_{ACK}, Δ_{NACK} and $\Delta_{CQI} = 8 \Leftrightarrow A_{hs} = \beta_{hs}/\beta_c = 30/15 \Leftrightarrow \beta_{hs} = 30/15 * \beta_c$
Note 2: CM = 1 for β_c/β_d =12/15, β_{hs}/β_c=24/15.
Note 3: For subtest 2 the β_c/β_d ratio of 12/15 for the TFC during the measurement period (TF1, TF0) is achieved by setting the signaled gain factors for the reference TFC (TF1, TF1) to β_c = 11/15 and β_d = 15/15.

HSUPA Setup Configuration

Sub-test	β_c	β_d	β_d (SF)	β_c/β_d	β_{hs}(1)	β_{ec}	β_{ed}	β_{ed} (SF)	β_{ed} (codes)	CM(2) (dB)	MPR (dB)	AG(4) Index	E-TFCI
1	11/15(3)	15/15(3)	64	11/15(3)	22/15	209/225	1039/225	4	1	1.0	0.0	20	75
2	6/15	15/15	64	6/15	12/15	12/15	94/75	4	1	3.0	2.0	12	67
3	15/15	9/15	64	15/9	30/15	30/15	β_{ed1}: 47/15 β_{ed2}: 47/15	4	2	2.0	1.0	15	92
4	2/15	15/15	64	2/15	4/15	2/15	56/75	4	1	3.0	2.0	17	71
5	15/15(4)	15/15(4)	64	15/15(4)	30/15	24/15	134/15	4	1	1.0	0.0	21	81

Note 1: Δ_{ACK}, Δ_{NACK} and $\Delta_{CQI} = 8 \Leftrightarrow A_{hs} = \beta_{hs}/\beta_c = 30/15 \Leftrightarrow \beta_{hs} = 30/15 * \beta_c$.
Note 2: CM = 1 for β_c/β_d =12/15, β_{hs}/β_c=24/15. For all other combinations of DPDCH, DPCCH, HS- DPCCH, E-DPDCH and E-DPCCH the MPR is based on the relative CM difference.
Note 3: For subtest 1 the β_c/β_d ratio of 11/15 for the TFC during the measurement period (TF1, TF0) is achieved by setting the signaled gain factors for the reference TFC (TF1, TF1) to β_c = 10/15 and β_d = 15/15.
Note 4: For subtest 5 the β_c/β_d ratio of 15/15 for the TFC during the measurement period (TF1, TF0) is achieved by setting the signaled gain factors for the reference TFC (TF1, TF1) to β_c = 14/15 and β_d = 15/15.
Note 5: Testing UE using E-DPDCH Physical Layer category 1 Sub-test 3 is not required according to TS 25.306 Table 5.1g.
Note 6: β_{ed} cannot be set directly; it is set by Absolute Grant Value.

HSPA+ 3GPP release 7 (uplink category 7) 16QAM, Setup Configuration:

Table C.11.1.4: β values for transmitter characteristics tests with HS-DPCCH and E-DCH with 16QAM

Sub-test	β_c (Note3)	β_d	β_{HS} (Note1)	β_{ec}	β_{ed} (2xSF2) (Note 4)	β_{ed} (2xSF4) (Note 4)	CM (dB) (Note 2)	MPR (dB) (Note 2)	AG Index (Note 4)	E-TFCI (Note 5)	E-TFCI (boost)
1	1	0	30/15	30/15	β_{ed}1: 30/15 β_{ed}2: 30/15	β_{ed}3: 24/15 β_{ed}4: 24/15	3.5	2.5	14	105	105

Note 1: Δ_{ACK}, Δ_{NACK} and Δ_{CQI} = 30/15 with $\beta_{hs} = 30/15 * \beta_c$.
Note 2: CM = 3.5 and the MPR is based on the relative CM difference, MPR = MAX(CM-1,0).
Note 3: DPDCH is not configured, therefore the β_c is set to 1 and β_d = 0 by default.
Note 4: β_{ed} can not be set directly; it is set by Absolute Grant Value.
Note 5: All the sub-tests require the UE to transmit 2SF2+2SF4 16QAM EDCH and they apply for UE using E-DPDCH category 7. E-DCH TTI is set to 2ms TTI and E-DCH table index = 2. To support these E-DCH configurations DPDCH is not allocated. The UE is signaled to use the extrapolation algorithm.

DC-HSDPA Setup Configuration

The following tests were completed according to procedures in section 7.3.13 of 3GPP TS34.108 v9.5.0. A summary of these settings are illustrated below:
Downlink Physical Channels are set as per 3GPP TS34.121-1 v9.0.0 E.5.

Table E.5.0: Levels for HSDPA connection setup

Parameter During Connection setup	Unit	Value
P-CPICH_Ec/Ior	dB	-10
P-CCPCH and SCH_Ec/Ior	dB	-12
PICH _Ec/Ior	dB	-15
HS-PDSCH	dB	off
HS-SCCH_1	dB	off
DPCH_Ec/Ior	dB	-5
OCNS_Ec/Ior	dB	-3.1

Call is set up as per 3GPP TS34.108 v9.5.0 sub clause 7.3.13

The configurations of the fixed reference channels for HSDPA RF tests are described in 3GPP TS 34.121, annex C for FDD and 3GPP TS 34.122.

Table C.8.1.12: Fixed Reference Channel H-Set 12

Parameter	Unit	Value
Nominal Avg. Inf. Bit Rate	kbps	60
Inter-TTI Distance	TTI's	1
Number of HARQ Processes	Processes	6
Information Bit Payload (N_{INF})	Bits	120
Number Code Blocks	Blocks	1
Binary Channel Bits Per TTI	Bits	960
Total Available SML's in UE	SML's	19200
Number of SML's per HARQ Proc.	SML's	3200
Coding Rate		0.15
Number of Physical Channel Codes	Codes	1
Modulation		QPSK
Note 1: The RMC is intended to be used for DC-HSDPA mode and both cells shall transmit with identical parameters as listed in the table. Note 2: Maximum number of transmission is limited to 1, i.e., retransmission is not allowed. The redundancy and constellation version 0 shall be used.		

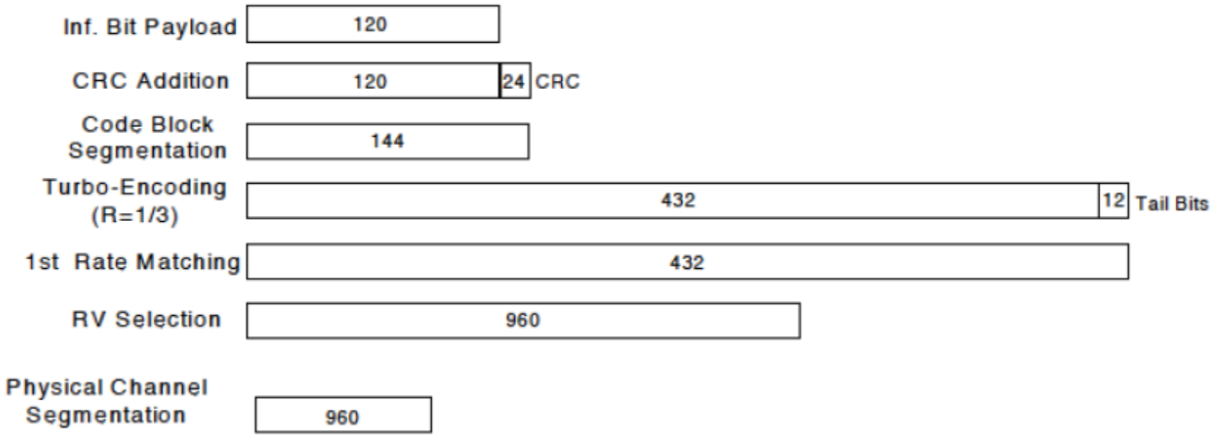


Figure C.8.19: Coding rate for Fixed reference Channel H-Set 12 (QPSK)

<CDMA Mode>

1xEV-DO Rev. B

Call box setup procedure
1xEV-DO Release B
1> CMW 500 Signal Generator > 1xEV-DO Taskbar Enable
2> CMW 500 1xEV-DO Signaling Configuration Window >
3> 1xEV-DO Signaling On Window:
Under Access Network Control:
Band Class: BC0: US Cellular
RF Channel: 31
1xEV-DO Power: -70 dBm
4> 1xEV-DO Signaling Configuration Window
Under RF Frequency Band / Channel: Enter Ch. Frequency

- Under Carrier Configuration: RF Frequency

For Two Carriers: Low Channel (1013)

	RF Channel	RF Channel Offset
Carrier [0]	31	0
Carrier [1]	1013	982

- Under Carrier Configuration: RF Pilot

	Carrier Sector	Active on AN	Assigned to AT
Pilot [0]	C0/S0	✓	✓
	CA/S1	✓	✓

For Three Carriers: Low Channel (1013)

	RF Channel	RF Channel Offset
Carrier [0]	72	0
Carrier [1]	31	-41
Carrier [2]	1013	941

- Under Carrier Configuration: RF Pilot

	Carrier Sector	Active on AN	Assigned to AT
Pilot [0]	C0/S0	✓	✓
Pilot [1]	C1/S1	✓	✓
Pilot [2]	C2/S2	✓	✓

<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 0.5dBmeasurement 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	√	√	N/A	N/A
17	N/A	N/A	√	√	N/A	N/A
26	√	√	√	√	√	N/A
38	N/A	N/A	√	√	√	√
40A	N/A	N/A	√	√	N/A	N/A
40B	N/A	N/A	√	√	N/A	N/A
41	N/A	N/A	√	√	√	√
66	√	√	√	√	√	√

Note:

1. Per KDB 941225 D05v02r05, when a properly configured base station simulator is used for the SAR and power measurements, spectrum plots for each RB allocation and offset configuration is not required.
2. Per KDB 941225 D05v02r05, start with the largest channel bandwidth and measure SAR for QPSK with 1 RB allocation, using the RB offset and required test channel combination with the highest maximum output power for RB offsets at the upper edge, middle and lower edge of each required test channel.
3. Per KDB 941225 D05v02r05, 50% RB allocation for QPSK SAR testing follows 1RB QPSK

allocation procedure.

4. Per KDB 941225 D05v02r05, for QPSK with 100% RB allocation, SAR is not required when the highest maximum output power for 100 % RB allocation is less than the highest maximum output power in 50% and 1 RB allocations and the highest reported SAR for 1 RB and 50% RB allocation are ≤ 0.8 W/kg. Otherwise, SAR is measured for the highest output power channel; and if the reported SAR is > 1.45 W/kg, the remaining required test channels must also be tested.
5. Per KDB 941225 D05v02r05, 16QAM/64QAM output power for each RB allocation configuration is > not ½ dB higher than the same configuration in QPSK and the reported SAR for the QPSK configuration is ≤ 1.45 W/kg; Per KDB941225 D05v02r05, 16QAM/64QAM SAR testing is not required.
6. Per KDB 941225 D05v02r05, smaller bandwidth output power for each RB allocation configuration is > not ½ Db higher than the same configuration in the largest supported bandwidth, and the reported SAR for the largest supported band width is ≤ 1.45 W/kg; Per KDB 941225 D05v02r05, smaller bandwidth SAR testing is not required.
7. For LTE B4 / B5 / B7 / B17 the maximum bandwidth does not support three non-overlapping channels, per KDB941225 D05v02r05, when a device supports overlapping channel assignment in a channel bandwidth configuration, the middle channel of the group of overlapping channels should be selected for testing.
8. LTE band 2 / 12 SAR test was covered by Band 25 / 17; according to April 2015 TCB workshop, SAR test for overlapping LTE bands can be reduced if
   a. The maximum output power, including tolerance, for the smaller band is ≤ the larger band to qualify for the SAR test exclusion.
   b. The channel bandwidth and other operating parameters for the smaller band are fully supported by the larger band.
9. According to 2017 TCB workshop, for 64 QAM and 16 QAM should be verified by checking the signal constellation with a call box to avoid incorrect maximum power levels due to MPR and other requirements associated with signal modulation, and the following figure is taken from the "Fundamental Measurement >> Modulation Analysis >>constellation" mode of the device connect to the CMW500 base station, therefore, the device 64QAM and 16QAMsignal modulation are correct. Identify if Maximum Power Reduction (MPR) is optional or mandatory, i.e. built-in by design: only mandatory MPR may be considered during SAR testing, when the maximum output power is permanently limited by the MPR implemented within the UE; and only for the applicable RB (resource block) configurations specified in LTE standards: b) A-MPR (additional MPR) must be disabled.
10. Per KDB 447498 D01v06, the reported SAR is the measured SAR value adjusted for maximum tune-up tolerance.
    a. Tune-up scaling Factor = tune-up limit power (mW) / EUT RF power (mW), where tune-up limit is the maximum rated power among all production units.
    b. For SAR testing of WLAN signal with non-100% duty cycle, the measured SAR is scaled-up

by the duty cycle scaling factor which is equal to "1/(duty cycle)"

c. For WWAN: Reported SAR(W/kg)= Measured SAR(W/kg)*Tune-up Scaling Factor

d. For WLAN/Bluetooth: Reported SAR(W/kg)= Measured SAR(W/kg)* Duty Cycle scaling factor * Tune-up scaling factor

e. For TDD LTE SAR measurement, the duty cycle 1:1.59 (62.9 %) was used perform testing and considering the theoretical duty cycle of 63.3% for extended cyclic prefix in the uplink, and the theoretical duty cycle of 62.9% for normal cyclic prefix in uplink, a scaling factor of extended cyclic prefix 63.3%/62.9% = 1.006 is applied to scale-up the measured SAR result. The Reported TDD LTE SAR = measured SAR (W/kg)* Tune-up Scaling Factor* scaling factor for extended cyclic prefix.

11. Per KDB 447498 D01v06, for each exposure position, testing of other required channels within the operating mode of a frequency band is not required when the reported 1-g or 10-g SAR for the mid-band or highest output power channel is:≤ 0.8 W/kg or 2.0 W/kg, for 1-g or 10-g respectively, when the transmission band is ≤ 100 MHz≤ 0.6 W/kg or 1.5 W/kg, for 1-g or 10-g respectively, when the transmission band is between 100 MHz and 200 MHz≤ 0.4 W/kg or 1.0 W/kg, for 1-g or 10-g respectively, when the transmission band is ≥ 200 MHz
12. Per KDB 865664 D01v01r04, for each frequency band, repeated SAR measurement is required only when the measured SAR is ≥0.8W/kg.
13. Per KDB 648474 D04v01r03, when the reported SAR for a body-worn accessory measured without a headset connected to the handset is ≤ 1.2 W/kg, SAR testing with a headset connected to the handset is not required.

<WLAN 2.4GHz>

1. SAR is measured for 2.4 GHz 802.11b DSSS using either the fixed test position or, when applicable, the initial test position procedure. SAR test reduction is determined according to the following:
   a. When the reported SAR of the highest measured maximum output power channel for the exposure configuration is ≤ 0.8 W/kg, no further SAR testing is required for 802.11b DSSS in that exposure configuration.
   b. When the reported SAR is > 0.8 W/kg, SAR is required for that position using the next highest measured output power channel. When any reported SAR is > 1.2 W/kg, SAR is required for the third channel; i.e., all channels require testing.
2. 2.4 GHz 802.11 g/n OFDM are additionally evaluated for SAR if the highest reported SAR for 802.11b, adjusted by the ratio of the OFDM to DSSS specified maximum output power, is > 1.2 W/kg. When SAR is required for OFDM modes in 2.4 GHz band, the Initial Test configuration Procedures should be followed.
3. For held-to-ear and hotspot operations, the initial test position procedures were applied. The test position with the highest extrapolated peak SAR will be used as the initial test position. When reported SAR for the initial test position is ≤ 0.4 W/kg, no additional testing for the remaining

test positions was required. Otherwise, SAR is evaluated at the subsequent highest peak SAR positions until the reported SAR result is ≤ 0.8 W/kg or all test positions are measured.

4. Justification for test configurations for WLAN per KDB Publication 248227 D02DR02-41929 for 2.4 GHz WI-FI single transmission chain operations, the highest measured maximum output power channel for DSSS was selected for SAR measurement. SAR for OFDM modes (2.4 GHz802.11g/n) was not required due to the maximum allowed powers and the highest reported DSSSSAR.
5. A fixed level power reduction is applied for WiFi when handset operates "held to the body" condition or "held to the ear" condition, the power reduction triggered by audio receiver detection and call establish status.
6. Per KDB 248227 D01v02r02, In the 2.4 GHz band, separate SAR procedures are applied to DSSS and OFDM configurations to simplify DSSS test requirements.SAR is not required for the following 2.4 GHz OFDM conditions:
   a. When KDB Publication 447498 SAR test exclusion applies to the OFDM configuration.
   b. When the highest reported SAR for DSSS is adjusted by the ratio of OFDM to DSSS specified maximum output power and the adjusted SAR is ≤ 1.2 W/kg.

<WLAN 5GHz>

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

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

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

required when the 160 MHz channel is operating at a reduced maximum power and also qualifies for SAR test exclusion.

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

The frequency range covered by these bands is 380 MHz (5.47 – 5.85 GHz), which requires a minimum of at least two SAR probe calibration frequency points to support SAR measurements. when Terminal Doppler Weather Radar (TDWR) restriction applies, all channels that operate at 5.60 – 5.65 GHz must be included to apply the SAR test reduction and measurement procedures.
When the same transmitter and antenna(s) are used for U-NII-2C band and U-NII-3 band or 5.8 GHz band of §15.247, the bands may be aggregated to enable additional channels with 20, 40 or 80 MHz bandwidth to span across the band gap, as illustrated in Appendix B. The maximum output power for the additional band gap channels is limited to the lower of those certified for the bands. Unless band gap channels are permanently disabled, they must be considered for SAR testing. The frequency range covered by these bands is 380 MHz (5.47 – 5.85 GHz), which requires a minimum of at least two SAR probe calibration frequency points to support SAR measurements. To maintain SAR measurement accuracy and to facilitate test reduction, the channels in U-NII-2C band above 5.65 GHz may be grouped with the 5.8 GHz channels in U-NII-3 or §15.247 band to enable two SAR probe calibration frequency points to cover the bands, including the band gap channels. When band gap channels are supported and the bands are not aggregated for SAR testing, band gap channels must be considered independently in each band according to the normally required OFDM SAR measurement and probe calibration frequency points requirements.

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

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

1. The largest channel bandwidth configuration is selected among the multiple configurations with the same specified maximum output power.
2. If multiple configurations have the same specified maximum output power and largest channel bandwidth, the lowest order modulation among the largest channel bandwidth configurations is selected.
3. If multiple configurations have the same specified maximum output power, largest channel band width and lowest order modulation, the lowest data rate configuration among these configurations is selected.

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

D) SAR Test Requirements for OFDM configurations

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

13. Conducted Power List

Remark: The output power of GSM/WCDMA/LTE refers to the annex E of this report.

14. Hotspot Mode Evaluation Procedure

➢ **EUT Antenna Location**

The location of antenna was recorded in annex B
Antenna supports TX/RX bands: ANT 0: GSM 850/1900, UMTS Band II/IV/V, LTE Band 2/4/5/7/12/17/26/38/40/41/66 ANT 1: GSM 850/1900, UMTS Band II/IV/V, LTE Band 2/4/5/7/12/17/26/38/40/41/66 ANT 2: WLAN 2.4GHz/5GHz, Bluetooth Antenna supports RX bands: ANT 3: GPS

➢ **EUT Antenna Distance**

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

➢ **Hotspot Evaluation**

Assessment	Hotspot side for SAR Test distance: 10mm					
Antennas	Front	Back	Left	Right	Top	Bottom
ANT 0	Yes	Yes	Yes	Yes	No	Yes
ANT 1	Yes	Yes	Yes	No	Yes	No
ANT 2	Yes	Yes	No	Yes	Yes	No

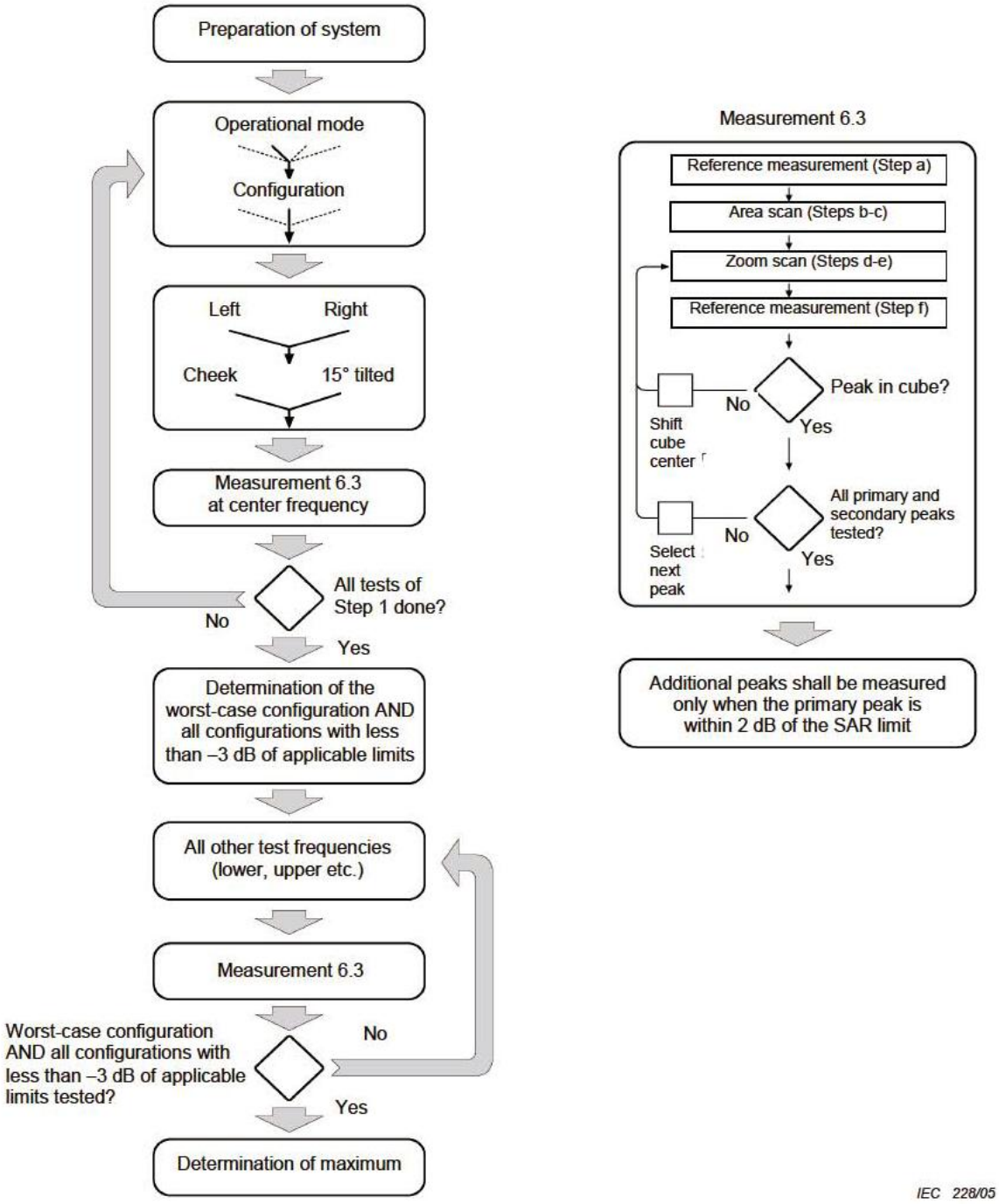
Note :

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 ≥ 9cm*5cm, the test distance is 10 mm. SAR must be measured for all sides and surfaces with a transmitting antenna located within 25mm from that surface or edge.
4. For WWAN bands, all of surface or edges would be tested except the bottom side of ANT 1 and top side of ANT 0 in this report.

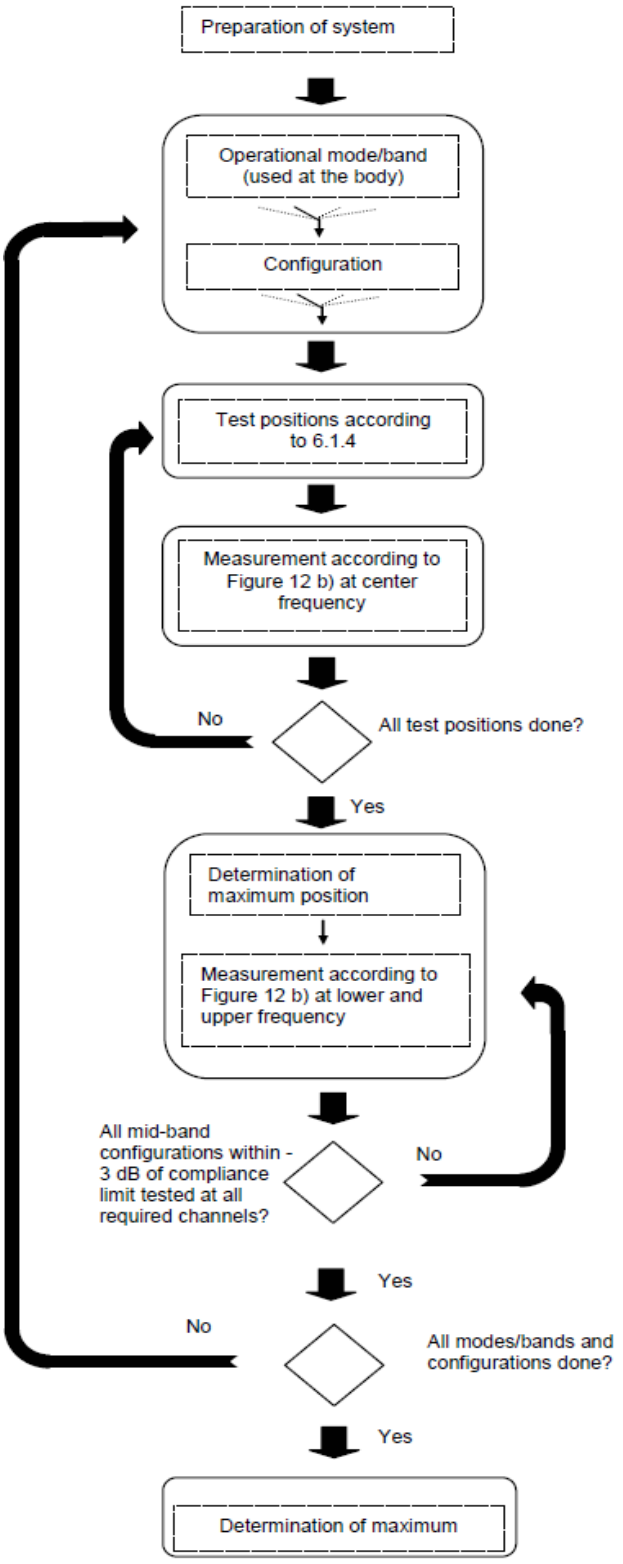
5. For WLAN bands, all of surface or edges would be tested except the bottom side in this report.

15. Block Diagram of the Tests to be Performed

15.1. Head



15.2. Body



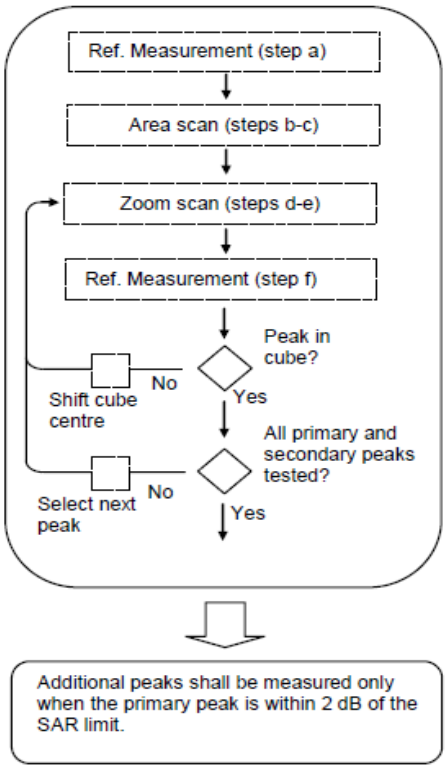


Figure 12b – General procedure

16. Test Results List

16.1. Test Guidance

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

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

7. For TDD-LTE Band 40, the entire band is unable to be used that as per 27.5; only 2 paried block (2305 to 2315MHz, 2350 to 2360MHz) are allowed with regards to "TDD" operation. the channel allocation, and bandwidth covert to test channels shall be re-adjusted; furthermore, as per 27.50, the duty cycle must be adjusted that TDD in this band must not exceed 38%. Before testing, the special combination must be set in the base station before the periodic measurement can be carried out.
8. There are three types of battery in this report, the first one was used to testing all of exposure conditions, and the others were verified the worst condition of head, body-worn or hotspot exposure.
9. This device will select corresponding conducted power automatically in different using conditions.
   a. TX power switching between upper and lower antennas is realized through DPDT switch
   b. The power backoff of head and body SAR is realized by monitoring the opening and closing of receiver (the receiver opening and calls the power back off parameter of head SAR, and the receiver closed and calls the power back off parameter of body SAR)
   c. Single and simultaneous transmission of cellular SAR: during cellular operation, it is realized by monitoring WiFi connection and non connection (Wi Fi connection, call the power backoff parameter of cellular SAR simultaneous transmission, Wi Fi disconnection, call the power backoff parameter of single transmission SAR)
   d. Single and simultaneous transmission of WiFi SAR: when WiFi is connected, it is realized by monitoring whether the RF modem works or not (when the modem works, call the WiFi SAR simultaneous transmission SAR power back off parameter; when the modem does not work, call the WiFi SAR single transmission SAR power back off parameter)

10. The power level applied as below:

Transmission Condition	Wireless System	Antenna	Head	Body
Standalone	GSM850	ANT 1	Reduced Power Level 1	Full Power
		ANT 0	Full Power	Full Power
	GSM1900	ANT 1	Reduced Power Level 1	Reduced Power Level 2
		ANT 0	Full Power	Reduced Power Level 3
	WCDMA II	ANT 1	Reduced Power Level 1	Reduced Power Level 2
		ANT 0	Full Power	Reduced Power Level 3
	WCDMA IV	ANT 1	Reduced Power Level 1	Reduced Power Level 2
		ANT 0	Full Power	Reduced Power Level 3
	WCDMA V	ANT 1	Reduced Power Level 1	Full Power
		ANT 0	Full Power	Full Power
	LTE Band 2	ANT 1	Reduced Power Level 1	Reduced Power Level 2
		ANT 0	Full Power	Reduced Power Level 3
	LTE Band 4	ANT 1	Reduced Power Level 1	Reduced Power Level 2
		ANT 0	Full Power	Reduced Power Level 3
	LTE Band 5	ANT 1	Reduced Power Level 1	Full Power
		ANT 0	Full Power	Reduced Power Level 3
	LTE Band 7	ANT 1	Reduced Power Level 1	Reduced Power Level 2
		ANT 0	Full Power	Reduced Power Level 3
	LTE Band 12/17	ANT 1	Full Power	Full Power
		ANT 0	Full Power	Full Power
	LTE Band 26	ANT 1	Reduced Power Level 1	Full Power
		ANT 0	Full Power	Full Power
	LTE Band 38	ANT 1	Reduced Power Level 1	Full Power
		ANT 0	Full Power	Full Power
	LTE Band 40	ANT 1	Reduced Power Level 1	Reduced Power Level 2
		ANT 0	Full Power	Reduced Power Level 3
	LTE Band 41	ANT 1	Reduced Power Level 1	Full Power
		ANT 0	Full Power	Full Power
	LTE Band 66	ANT 1	Reduced Power Level 1	Reduced Power Level 2
		ANT 0	Full Power	Reduced Power Level 3
	WLAN2.4G	ANT 2	Reduced Power Level 1	Full Power
	WLAN5.2G	ANT 2	Reduced Power Level 1	Full Power

	WLAN5.3G	ANT 2	Reduced Power Level 1	Reduced Power Level 4
	WLAN5.5G	ANT 2	Reduced Power Level 1	Full Power
	WLAN5.8G	ANT 2	Reduced Power Level 1	Full Power

Transmission Condition	Wireless System	Antenna	Head	Body
Simultaneous	WCDMA II	ANT 1	Reduced Power Level 5	Reduced Power Level 2
		ANT 0	Full Power	Reduced Power Level 3
	LTE Band 38	ANT 1	Reduced Power Level 5	Full Power
		ANT 0	Full Power	Full Power
	WLAN2.4G	ANT 2	Reduced Power Level 6	Full Power
	WLAN5.2G	ANT 2	Reduced Power Level 6	Reduced Power Level 7
	WLAN5.3G	ANT 2	Reduced Power Level 6	Reduced Power Level 7
	WLAN5.5G	ANT 2	Reduced Power Level 6	Reduced Power Level 7
	WLAN5.8G	ANT 2	Reduced Power Level 6	Reduced Power Level 7

16.2. Head SAR Data

➢ GSM Head 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)
Reduced Power Level 1 for ANT 1								
1#	GPRS 850(2 TX slots)	Right Cheek	189	26.56	27.50	1.242	0.398	0.494
	GPRS 850(2 TX slots)	Right Tilt	189	26.56	27.50	1.242	0.264	0.328
	GPRS 850(2 TX slots)	Left Cheek	189	26.56	27.50	1.242	0.155	0.192
	GPRS 850(2 TX slots)	Left Tilt	189	26.56	27.50	1.242	0.116	0.144
Full Power for ANT 0								
	GPRS 850(2 TX slots)	Right Cheek	189	30.56	31.50	1.242	0.124	0.154
	GPRS 850(2 TX slots)	Right Tilt	189	30.56	31.50	1.242	0.108	0.134
	GPRS 850(2 TX slots)	Left Cheek	189	30.56	31.50	1.242	0.090	0.112
	GPRS 850(2 TX slots)	Left Tilt	189	30.56	31.50	1.242	0.077	0.096
Reduced Power Level 1 for ANT 1								
2#	GPRS 1900(3 TX slots)	Right Cheek	661	20.69	21.50	1.205	0.656	0.791
	GPRS 1900(3 TX slots)	Right Tilt	661	20.69	21.50	1.205	0.615	0.741
	GPRS 1900(3 TX slots)	Left Cheek	661	20.69	21.50	1.205	0.424	0.511
	GPRS 1900(3 TX slots)	Left Tilt	661	20.69	21.50	1.205	0.325	0.392
Full Power for ANT 0								
	GPRS 1900(3 TX slots)	Right Cheek	661	25.69	26.50	1.205	0.092	0.111
	GPRS 1900(3 TX slots)	Right Tilt	661	25.69	26.50	1.205	0.058	0.070
	GPRS 1900(3 TX slots)	Left Cheek	661	25.69	26.50	1.205	0.055	0.066
	GPRS 1900(3 TX slots)	Left Tilt	661	25.69	26.50	1.205	0.039	0.047

➢ WCDMA Head 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)
Reduced Power Level 1 for ANT 1								
3#	Band II/RMC 12.2Kbps	Right Cheek	9400	15.05	16.00	1.245	0.951	1.184
	Band II/RMC 12.2Kbps	Right Tilt	9400	15.05	16.00	1.245	0.789	0.982
	Band II/RMC 12.2Kbps	Left Cheek	9400	15.05	16.00	1.245	0.511	0.636
	Band II/RMC 12.2Kbps	Left Tilt	9400	15.05	16.00	1.245	0.408	0.508
	Band II/RMC 12.2Kbps	Right Cheek	9262	15.02	16.00	1.253	0.633	0.793
	Band II/RMC 12.2Kbps	Right Cheek	9538	15.03	16.00	1.250	0.796	0.995
	Band II/RMC 12.2Kbps	Right Tilt	9262	15.02	16.00	1.253	0.760	0.952

	Band II/RMC 12.2Kbps	Right Tilt	9538	15.03	16.00	1.250	0.900	1.125
	Band II/RMC 12.2Kbps	Right Cheek Battery 2	9400	15.05	16.00	1.245	0.902	1.123
	Band II/RMC 12.2Kbps	Right Cheek Battery 3	9400	15.05	16.00	1.245	0.924	1.15
Reduced Power Level 5 for simultaneous transmission								
	Band II/RMC 12.2Kbps	Right Cheek	9400	14.05	15.00	1.245	0.493	0.614
	Band II/RMC 12.2Kbps	Right Tilt	9400	14.05	15.00	1.245	0.365	0.454
	Band II/RMC 12.2Kbps	Left Cheek	9400	14.05	15.00	1.245	0.165	0.205
	Band II/RMC 12.2Kbps	Left Tilt	9400	14.05	15.00	1.245	0.100	0.124
Full Power for ANT 0								
	Band II/RMC 12.2Kbps	Right Cheek	9400	23.05	24.00	1.245	0.072	0.090
	Band II/RMC 12.2Kbps	Right Tilt	9400	23.05	24.00	1.245	0.065	0.081
	Band II/RMC 12.2Kbps	Left Cheek	9400	23.05	24.00	1.245	0.036	0.045
	Band II/RMC 12.2Kbps	Left Tilt	9400	23.05	24.00	1.245	0.025	0.031
Reduced Power Level 1 for ANT 1								
4#	Band IV/RMC 12.2Kbps	Right Cheek	1413	16.16	17.00	1.213	0.437	0.530
	Band IV/RMC 12.2Kbps	Right Tilt	1413	16.16	17.00	1.213	0.362	0.439
	Band IV/RMC 12.2Kbps	Left Cheek	1413	16.16	17.00	1.213	0.147	0.178
	Band IV/RMC 12.2Kbps	Left Tilt	1413	16.16	17.00	1.213	0.126	0.153
Full Power for ANT 0								
	Band IV/RMC 12.2Kbps	Right Cheek	1413	23.16	24.00	1.213	0.056	0.068
	Band IV/RMC 12.2Kbps	Right Tilt	1413	23.16	24.00	1.213	0.031	0.038
	Band IV/RMC 12.2Kbps	Left Cheek	1413	23.16	24.00	1.213	0.037	0.045
	Band IV/RMC 12.2Kbps	Left Tilt	1413	23.16	24.00	1.213	0.026	0.032
Reduced Power Level 1 for ANT 1								
5#	Band V/RMC 12.2Kbps	Right Cheek	4182	20.17	21.00	1.211	0.432	0.523
	Band V/RMC 12.2Kbps	Right Tilt	4182	20.17	21.00	1.211	0.418	0.506
	Band V/RMC 12.2Kbps	Left Cheek	4182	20.17	21.00	1.211	0.247	0.299
	Band V/RMC 12.2Kbps	Left Tilt	4182	20.17	21.00	1.211	0.234	0.283
Full Power for ANT 0								
	Band V/RMC 12.2Kbps	Right Cheek	4182	23.17	24.00	1.211	0.178	0.215
	Band V/RMC 12.2Kbps	Right Tilt	4182	23.17	24.00	1.211	0.144	0.174
	Band V/RMC 12.2Kbps	Left Cheek	4182	23.17	24.00	1.211	0.169	0.205
	Band V/RMC 12.2Kbps	Left Tilt	4182	23.17	24.00	1.211	0.132	0.160

➢ LTE QPSK Head 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)
Reduced Power Level 1 for ANT 1								
8#	LTE Band 2/1RB#0 20M	Right Cheek	18900	15.14	16.00	1.219	0.631	0.769
	LTE Band 2/1RB#0 20M	Right Tilt	18900	15.14	16.00	1.219	0.465	0.567
	LTE Band 2/1RB#0 20M	Left Cheek	18900	15.14	16.00	1.219	0.221	0.269
	LTE Band 2/1RB#0 20M	Left Tilt	18900	15.14	16.00	1.219	0.142	0.173
	LTE Band 2/50RB#0 20M	Right Cheek	18900	14.28	15.00	1.180	0.516	0.609
	LTE Band 2/50RB#0 20M	Right Tilt	18900	14.28	15.00	1.180	0.342	0.404
	LTE Band 2/50RB#0 20M	Left Cheek	18900	14.28	15.00	1.180	0.155	0.183
	LTE Band 2/50RB#0 20M	Left Tilt	18900	14.28	15.00	1.180	0.100	0.118
Full Power for ANT 0								
	LTE Band 2/1RB#0 20M	Right Cheek	18900	23.14	24.00	1.219	0.075	0.091
	LTE Band 2/1RB#0 20M	Right Tilt	18900	23.14	24.00	1.219	0.063	0.077
	LTE Band 2/1RB#0 20M	Left Cheek	18900	23.14	24.00	1.219	0.064	0.078
	LTE Band 2/1RB#0 20M	Left Tilt	18900	23.14	24.00	1.219	0.042	0.051
	LTE Band 2/50RB#0 20M	Right Cheek	18900	22.28	23.00	1.180	0.063	0.074
	LTE Band 2/50RB#0 20M	Right Tilt	18900	22.28	23.00	1.180	0.055	0.065
	LTE Band 2/50RB#0 20M	Left Cheek	18900	22.28	23.00	1.180	0.041	0.048
	LTE Band 2/50RB#0 20M	Left Tilt	18900	22.28	23.00	1.180	0.033	0.039
Reduced Power Level 1 for ANT 1								
9#	LTE Band 4/1RB#0 20M	Right Cheek	20175	15.08	16.00	1.236	0.499	0.616
	LTE Band 4/1RB#0 20M	Right Tilt	20175	15.08	16.00	1.236	0.356	0.440
	LTE Band 4/1RB#0 20M	Left Cheek	20175	15.08	16.00	1.236	0.202	0.250
	LTE Band 4/1RB#0 20M	Left Tilt	20175	15.08	16.00	1.236	0.136	0.168
	LTE Band 4/50RB#0 20M	Right Cheek	20175	14.20	15.00	1.202	0.369	0.444
	LTE Band 4/50RB#0 20M	Right Tilt	20175	14.20	15.00	1.202	0.281	0.338
	LTE Band 4/50RB#0 20M	Left Cheek	20175	14.20	15.00	1.202	0.126	0.151
	LTE Band 4/50RB#0 20M	Left Tilt	20175	14.20	15.00	1.202	0.100	0.120
Full Power for ANT 0								
	LTE Band 4/1RB#0 20M	Right Cheek	20175	23.08	24.00	1.236	0.072	0.089
	LTE Band 4/1RB#0 20M	Right Tilt	20175	23.08	24.00	1.236	0.066	0.082
	LTE Band 4/1RB#0 20M	Left Cheek	20175	23.08	24.00	1.236	0.058	0.072
	LTE Band 4/1RB#0 20M	Left Tilt	20175	23.08	24.00	1.236	0.054	0.067
	LTE Band 4/50RB#0 20M	Right Cheek	20175	22.20	23.00	1.202	0.063	0.076
	LTE Band 4/50RB#0 20M	Right Tilt	20175	22.20	23.00	1.202	0.055	0.066
	LTE Band 4/50RB#0 20M	Left Cheek	20175	22.20	23.00	1.202	0.031	0.037

	LTE Band 4/50RB#0 20M	Left Tilt	20175	22.20	23.00	1.202	0.026	0.031
Reduced Power Level 1 for ANT 1								
10#	LTE Band 5/1RB#0 10M	Right Cheek	20525	20.52	21.50	1.253	0.331	0.415
	LTE Band 5/1RB#0 10M	Right Tilt	20525	20.52	21.50	1.253	0.265	0.332
	LTE Band 5/1RB#0 10M	Left Cheek	20525	20.52	21.50	1.253	0.111	0.139
	LTE Band 5/1RB#0 10M	Left Tilt	20525	20.52	21.50	1.253	0.094	0.118
	LTE Band 5/25RB#0 10M	Right Cheek	20525	19.84	20.50	1.164	0.262	0.305
	LTE Band 5/25RB#0 10M	Right Tilt	20525	19.84	20.50	1.164	0.192	0.224
	LTE Band 5/25RB#0 10M	Left Cheek	20525	19.84	20.50	1.164	0.099	0.115
	LTE Band 5/25RB#0 10M	Left Tilt	20525	19.84	20.50	1.164	0.076	0.088
Full Power for ANT 0								
	LTE Band 5/1RB#0 10M	Right Cheek	20525	23.52	24.50	1.253	0.128	0.160
	LTE Band 5/1RB#0 10M	Right Tilt	20525	23.52	24.50	1.253	0.078	0.098
	LTE Band 5/1RB#0 10M	Left Cheek	20525	23.52	24.50	1.253	0.068	0.085
	LTE Band 5/1RB#0 10M	Left Tilt	20525	23.52	24.50	1.253	0.056	0.070
	LTE Band 5/25RB#0 10M	Right Cheek	20525	22.84	23.50	1.164	0.089	0.104
	LTE Band 5/25RB#0 10M	Right Tilt	20525	22.84	23.50	1.164	0.066	0.077
	LTE Band 5/25RB#0 10M	Left Cheek	20525	22.84	23.50	1.164	0.057	0.066
	LTE Band 5/25RB#0 10M	Left Tilt	20525	22.84	23.50	1.164	0.041	0.048
Reduced Power Level 1 for ANT 1								
11#	LTE Band 7/1RB#0 20M	Right Cheek	21100	14.11	15.00	1.227	0.565	0.694
	LTE Band 7/1RB#0 20M	Right Tilt	21100	14.11	15.00	1.227	0.558	0.685
	LTE Band 7/1RB#0 20M	Left Cheek	21100	14.11	15.00	1.227	0.127	0.156
	LTE Band 7/1RB#0 20M	Left Tilt	21100	14.11	15.00	1.227	0.092	0.113
	LTE Band 7/50RB#0 20M	Right Cheek	21100	13.23	14.00	1.194	0.444	0.530
	LTE Band 7/50RB#0 20M	Right Tilt	21100	13.23	14.00	1.194	0.388	0.463
	LTE Band 7/50RB#0 20M	Left Cheek	21100	13.23	14.00	1.194	0.094	0.112
	LTE Band 7/50RB#0 20M	Left Tilt	21100	13.23	14.00	1.194	0.065	0.078
Full Power for ANT 0								
	LTE Band 7/1RB#0 20M	Right Cheek	21100	23.11	24.00	1.227	0.147	0.180
	LTE Band 7/1RB#0 20M	Right Tilt	21100	23.11	24.00	1.227	0.122	0.150
	LTE Band 7/1RB#0 20M	Left Cheek	21100	23.11	24.00	1.227	0.110	0.135
	LTE Band 7/1RB#0 20M	Left Tilt	21100	23.11	24.00	1.227	0.088	0.108
	LTE Band 7/50RB#0 20M	Right Cheek	21100	22.23	23.00	1.194	0.120	0.143
	LTE Band 7/50RB#0 20M	Right Tilt	21100	22.23	23.00	1.194	0.090	0.107
	LTE Band 7/50RB#0 20M	Left Cheek	21100	22.23	23.00	1.194	0.076	0.091
	LTE Band 7/50RB#0 20M	Left Tilt	21100	22.23	23.00	1.194	0.055	0.066
Reduced Power Level 1 for ANT 1								

12#	LTE Band 12/1RB#0 10M	Right Cheek	23095	23.55	24.50	1.245	0.136	0.169
	LTE Band 12/1RB#0 10M	Right Tilt	23095	23.55	24.50	1.245	0.055	0.068
	LTE Band 12/1RB#0 10M	Left Cheek	23095	23.55	24.50	1.245	0.072	0.090
	LTE Band 12/1RB#0 10M	Left Tilt	23095	23.55	24.50	1.245	0.047	0.058
	LTE Band 12/25RB#0 10M	Right Cheek	23095	22.74	23.50	1.191	0.104	0.124
	LTE Band 12/25RB#0 10M	Right Tilt	23095	22.74	23.50	1.191	0.036	0.043
	LTE Band 12/25RB#0 10M	Left Cheek	23095	22.74	23.50	1.191	0.055	0.066
	LTE Band 12/25RB#0 10M	Left Tilt	23095	22.74	23.50	1.191	0.032	0.038
Full Power for ANT 0								
	LTE Band 12/1RB#0 10M	Right Cheek	23095	23.55	24.50	1.245	0.100	0.124
	LTE Band 12/1RB#0 10M	Right Tilt	23095	23.55	24.50	1.245	0.086	0.107
	LTE Band 12/1RB#0 10M	Left Cheek	23095	23.55	24.50	1.245	0.072	0.090
	LTE Band 12/1RB#0 10M	Left Tilt	23095	23.55	24.50	1.245	0.062	0.077
	LTE Band 12/25RB#0 10M	Right Cheek	23095	22.74	23.50	1.191	0.089	0.106
	LTE Band 12/25RB#0 10M	Right Tilt	23095	22.74	23.50	1.191	0.066	0.079
	LTE Band 12/25RB#0 10M	Left Cheek	23095	22.74	23.50	1.191	0.051	0.061
	LTE Band 12/25RB#0 10M	Left Tilt	23095	22.74	23.50	1.191	0.047	0.056
Reduced Power Level 1 for ANT 1								
13#	LTE Band 26/1RB#0 15M	Right Cheek	26865	21.54	22.50	1.247	0.359	0.448
	LTE Band 26/1RB#0 15M	Right Tilt	26865	21.54	22.50	1.247	0.264	0.329
	LTE Band 26/1RB#0 15M	Left Cheek	26865	21.54	22.50	1.247	0.133	0.166
	LTE Band 26/1RB#0 15M	Left Tilt	26865	21.54	22.50	1.247	0.120	0.150
	LTE Band 26/36RB#0 15M	Right Cheek	26865	20.90	21.50	1.148	0.300	0.344
	LTE Band 26/36RB#0 15M	Right Tilt	26865	20.90	21.50	1.148	0.211	0.242
	LTE Band 26/36RB#0 15M	Left Cheek	26865	20.90	21.50	1.148	0.100	0.115
	LTE Band 26/36RB#0 15M	Left Tilt	26865	20.90	21.50	1.148	0.086	0.099
Full Power for ANT 0								
	LTE Band 26/1RB#0 15M	Right Cheek	26865	23.54	24.50	1.247	0.114	0.142
	LTE Band 26/1RB#0 15M	Right Tilt	26865	23.54	24.50	1.247	0.092	0.115
	LTE Band 26/1RB#0 15M	Left Cheek	26865	23.54	24.50	1.247	0.086	0.107
	LTE Band 26/1RB#0 15M	Left Tilt	26865	23.54	24.50	1.247	0.071	0.089
	LTE Band 26/36RB#0 15M	Right Cheek	26865	22.90	23.50	1.148	0.080	0.092
	LTE Band 26/36RB#0 15M	Right Tilt	26865	22.90	23.50	1.148	0.079	0.091
	LTE Band 26/36RB#0 15M	Left Cheek	26865	22.90	23.50	1.148	0.066	0.076
	LTE Band 26/36RB#0 15M	Left Tilt	26865	22.90	23.50	1.148	0.052	0.060
Reduced Power Level 1 for ANT 1								
14#	LTE Band 38/1RB#0 20M	Right Cheek	38000	18.07	19.00	1.239	0.809	1.008
	LTE Band 38/1RB#0 20M	Right Tilt	38000	18.07	19.00	1.239	0.787	0.981

	LTE Band 38/1RB#0 20M	Left Cheek	38000	18.07	19.00	1.239	0.185	0.231
	LTE Band 38/1RB#0 20M	Left Tilt	38000	18.07	19.00	1.239	0.113	0.141
	LTE Band 38/1RB#0 20M	Right Cheek	37850	18.00	19.00	1.259	0.624	0.790
	LTE Band 38/1RB#0 20M	Right Cheek	38150	18.04	19.00	1.247	0.653	0.819
	LTE Band 38/50RB#0 20M	Right Cheek	38000	17.33	18.00	1.167	0.605	0.710
	LTE Band 38/50RB#0 20M	Right Tilt	38000	17.33	18.00	1.167	0.461	0.541
	LTE Band 38/50RB#0 20M	Left Cheek	38000	17.33	18.00	1.167	0.145	0.170
	LTE Band 38/50RB#0 20M	Left Tilt	38000	17.33	18.00	1.167	0.087	0.102
Reduced Power Level 5 for simultaneous transmission								
	LTE Band 38/1RB#0 20M	Right Cheek	38000	17.07	18.00	1.239	0.409	0.510
	LTE Band 38/1RB#0 20M	Right Tilt	38000	17.07	18.00	1.239	0.351	0.437
	LTE Band 38/1RB#0 20M	Left Cheek	38000	17.07	18.00	1.239	0.108	0.135
	LTE Band 38/1RB#0 20M	Left Tilt	38000	17.07	18.00	1.239	0.092	0.115
	LTE Band 38/50RB#0 20M	Right Cheek	38000	16.33	17.00	1.167	0.322	0.378
	LTE Band 38/50RB#0 20M	Right Tilt	38000	16.33	17.00	1.167	0.216	0.254
	LTE Band 38/50RB#0 20M	Left Cheek	38000	16.33	17.00	1.167	0.086	0.101
	LTE Band 38/50RB#0 20M	Left Tilt	38000	16.33	17.00	1.167	0.075	0.088
Full Power for ANT 0								
	LTE Band 38/1RB#0 20M	Right Cheek	38000	23.07	24.00	1.239	0.252	0.314
	LTE Band 38/1RB#0 20M	Right Tilt	38000	23.07	24.00	1.239	0.211	0.263
	LTE Band 38/1RB#0 20M	Left Cheek	38000	23.07	24.00	1.239	0.172	0.214
	LTE Band 38/1RB#0 20M	Left Tilt	38000	23.07	24.00	1.239	0.163	0.203
	LTE Band 38/50RB#0 20M	Right Cheek	38000	22.33	23.00	1.167	0.241	0.283
	LTE Band 38/50RB#0 20M	Right Tilt	38000	22.33	23.00	1.167	0.200	0.235
	LTE Band 38/50RB#0 20M	Left Cheek	38000	22.33	23.00	1.167	0.155	0.182
	LTE Band 38/50RB#0 20M	Left Tilt	38000	22.33	23.00	1.167	0.122	0.143
Reduced Power Level 1 for ANT 1								
	LTE Band 40A/1RB#0 10M	Right Cheek	38750	18.04	19.00	1.247	0.301	0.378
	LTE Band 40A/1RB#0 10M	Right Tilt	38750	18.04	19.00	1.247	0.293	0.368
	LTE Band 40A/1RB#0 10M	Left Cheek	38750	18.04	19.00	1.247	0.089	0.112
	LTE Band 40A/1RB#0 10M	Left Tilt	38750	18.04	19.00	1.247	0.064	0.080
	LTE Band 40A/25RB#0 10M	Right Cheek	38750	17.34	18.00	1.164	0.216	0.253
	LTE Band 40A/25RB#0 10M	Right Tilt	38750	17.34	18.00	1.164	0.189	0.221
	LTE Band 40A/25RB#0 10M	Left Cheek	38750	17.34	18.00	1.164	0.060	0.070
	LTE Band 40A/25RB#0 10M	Left Tilt	38750	17.34	18.00	1.164	0.047	0.055
Full Power for ANT 0								
	LTE Band 40A/1RB#0 10M	Right Cheek	38750	23.04	24.00	1.247	0.121	0.152
	LTE Band 40A/1RB#0 10M	Right Tilt	38750	23.04	24.00	1.247	0.106	0.133

	LTE Band 40A/1RB#0 10M	Left Cheek	38750	23.04	24.00	1.247	0.073	0.092
	LTE Band 40A/1RB#0 10M	Left Tilt	38750	23.04	24.00	1.247	0.066	0.083
	LTE Band 40A/25RB#0 10M	Right Cheek	38750	22.34	23.00	1.164	0.097	0.114
	LTE Band 40A/25RB#0 10M	Right Tilt	38750	22.34	23.00	1.164	0.072	0.084
	LTE Band 40A/25RB#0 10M	Left Cheek	38750	22.34	23.00	1.164	0.066	0.077
	LTE Band 40A/25RB#0 10M	Left Tilt	38750	22.34	23.00	1.164	0.054	0.063
Reduced Power Level 1 for ANT 1								
15#	LTE Band 40B/1RB#0 10M	Right Cheek	39200	18.03	19.00	1.250	0.424	0.533
	LTE Band 40B/1RB#0 10M	Right Tilt	39200	18.03	19.00	1.250	0.392	0.493
	LTE Band 40B/1RB#0 10M	Left Cheek	39200	18.03	19.00	1.250	0.109	0.137
	LTE Band 40B/1RB#0 10M	Left Tilt	39200	18.03	19.00	1.250	0.072	0.091
	LTE Band 40B/25RB#0 10M	Right Cheek	39200	17.24	18.00	1.191	0.233	0.279
	LTE Band 40B/25RB#0 10M	Right Tilt	39200	17.24	18.00	1.191	0.189	0.226
	LTE Band 40B/25RB#0 10M	Left Cheek	39200	17.24	18.00	1.191	0.079	0.095
	LTE Band 40B/25RB#0 10M	Left Tilt	39200	17.24	18.00	1.191	0.042	0.050
Full Power for ANT 0								
	LTE Band 40B/1RB#0 10M	Right Cheek	39200	23.03	24.00	1.250	0.131	0.165
	LTE Band 40B/1RB#0 10M	Right Tilt	39200	23.03	24.00	1.250	0.077	0.097
	LTE Band 40B/1RB#0 10M	Left Cheek	39200	23.03	24.00	1.250	0.063	0.079
	LTE Band 40B/1RB#0 10M	Left Tilt	39200	23.03	24.00	1.250	0.058	0.073
	LTE Band 40B/25RB#0 10M	Right Cheek	39200	22.24	23.00	1.191	0.108	0.129
	LTE Band 40B/25RB#0 10M	Right Tilt	39200	22.24	23.00	1.191	0.062	0.074
	LTE Band 40B/25RB#0 10M	Left Cheek	39200	22.24	23.00	1.191	0.055	0.066
	LTE Band 40B/25RB#0 10M	Left Tilt	39200	22.24	23.00	1.191	0.043	0.052
Reduced Power Level 1 for ANT 1								
16#	LTE Band 41/1RB#0 20M	Right Cheek	40640	18.10	19.00	1.230	0.634	0.785
	LTE Band 41/1RB#0 20M	Right Tilt	40640	18.10	19.00	1.230	0.520	0.644
	LTE Band 41/1RB#0 20M	Left Cheek	40640	18.10	19.00	1.230	0.180	0.223
	LTE Band 41/1RB#0 20M	Left Tilt	40640	18.10	19.00	1.230	0.142	0.176
	LTE Band 41/50RB#0 20M	Right Cheek	40640	17.20	18.00	1.202	0.429	0.519
	LTE Band 41/50RB#0 20M	Right Tilt	40640	17.20	18.00	1.202	0.259	0.313
	LTE Band 41/50RB#0 20M	Left Cheek	40640	17.20	18.00	1.202	0.100	0.121
	LTE Band 41/50RB#0 20M	Left Tilt	40640	17.20	18.00	1.202	0.062	0.075
Full Power for ANT 0								
	LTE Band 41/1RB#0 20M	Right Cheek	40640	23.10	24.00	1.230	0.251	0.311
	LTE Band 41/1RB#0 20M	Right Tilt	40640	23.10	24.00	1.230	0.192	0.238
	LTE Band 41/1RB#0 20M	Left Cheek	40640	23.10	24.00	1.230	0.173	0.214
	LTE Band 41/1RB#0 20M	Left Tilt	40640	23.10	24.00	1.230	0.164	0.203

	LTE Band 41/50RB#0 20M	Right Cheek	40640	22.20	23.00	1.202	0.200	0.242
	LTE Band 41/50RB#0 20M	Right Tilt	40640	22.20	23.00	1.202	0.177	0.214
	LTE Band 41/50RB#0 20M	Left Cheek	40640	22.20	23.00	1.202	0.155	0.187
	LTE Band 41/50RB#0 20M	Left Tilt	40640	22.20	23.00	1.202	0.136	0.164
Reduced Power Level 1 for ANT 1								
17#	LTE Band 66/1RB#0 20M	Right Cheek	132322	15.04	16.00	1.247	0.501	0.625
	LTE Band 66/1RB#0 20M	Right Tilt	132322	15.04	16.00	1.247	0.466	0.581
	LTE Band 66/1RB#0 20M	Left Cheek	132322	15.04	16.00	1.247	0.216	0.269
	LTE Band 66/1RB#0 20M	Left Tilt	132322	15.04	16.00	1.247	0.183	0.228
	LTE Band 66/50RB#0 20M	Right Cheek	132322	14.28	15.00	1.180	0.438	0.517
	LTE Band 66/50RB#0 20M	Right Tilt	132322	14.28	15.00	1.180	0.346	0.408
	LTE Band 66/50RB#0 20M	Left Cheek	132322	14.28	15.00	1.180	0.149	0.176
	LTE Band 66/50RB#0 20M	Left Tilt	132322	14.28	15.00	1.180	0.122	0.144
Full Power for ANT 0								
	LTE Band 66/1RB#0 20M	Right Cheek	132322	23.04	24.00	1.247	0.159	0.198
	LTE Band 66/1RB#0 20M	Right Tilt	132322	23.04	24.00	1.247	0.138	0.172
	LTE Band 66/1RB#0 20M	Left Cheek	132322	23.04	24.00	1.247	0.141	0.176
	LTE Band 66/1RB#0 20M	Left Tilt	132322	23.04	24.00	1.247	0.126	0.157
	LTE Band 66/50RB#0 20M	Right Cheek	132322	22.28	23.00	1.180	0.100	0.118
	LTE Band 66/50RB#0 20M	Right Tilt	132322	22.28	23.00	1.180	0.086	0.102
	LTE Band 66/50RB#0 20M	Left Cheek	132322	22.28	23.00	1.180	0.092	0.109
	LTE Band 66/50RB#0 20M	Left Tilt	132322	22.28	23.00	1.180	0.070	0.083

➢ WLAN Head 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)
Reduced Power Level 1 for ANT 2								
	WLAN2.4GHz/802.11b	Right Cheek	6	16.65	18.00	1.365	0.268	0.370
	WLAN2.4GHz/802.11b	Right Tilt	6	16.65	18.00	1.365	0.159	0.220
18#	WLAN2.4GHz/802.11b	Left Cheek	6	16.65	18.00	1.365	0.755	1.043
	WLAN2.4GHz/802.11b	Left Tilt	6	16.65	18.00	1.365	0.522	0.721
	WLAN2.4GHz/802.11b	Left Cheek	1	15.67	17.00	1.358	0.710	0.976
	WLAN2.4GHz/802.11b	Left Cheek	11	15.43	17.00	1.435	0.700	1.017
Reduced Power Level 6 for Simultaneous Transmission								
	WLAN2.4GHz/802.11b	Right Cheek	6	14.65	16.00	1.365	0.145	0.200
	WLAN2.4GHz/802.11b	Right Tilt	6	14.65	16.00	1.365	0.122	0.168
	WLAN2.4GHz/802.11b	Left Cheek	6	14.65	16.00	1.365	0.455	0.628
	WLAN2.4GHz/802.11b	Left Tilt	6	14.65	16.00	1.365	0.322	0.445

Reduced Power Level 1 for ANT 2								
	WLAN5.2GHz/802.11a	Right Cheek	48	13.76	15.00	1.330	0.261	0.381
	WLAN5.2GHz/802.11a	Right Tilt	48	13.76	15.00	1.330	0.166	0.242
19#	WLAN5.2GHz/802.11a	Left Cheek	48	13.76	15.00	1.330	0.740	1.081
	WLAN5.2GHz/802.11a	Left Tilt	48	13.76	15.00	1.330	0.366	0.535
	WLAN5.2GHz/802.11a	Left Cheek	36	13.31	15.00	1.476	0.643	1.042
	WLAN5.2GHz/802.11a	Left Cheek	44	13.35	15.00	1.462	0.615	0.987
Reduced Power Level 6 for Simultaneous Transmission								
	WLAN5.2GHz/802.11a	Right Cheek	48	11.76	13.00	1.330	0.122	0.178
	WLAN5.2GHz/802.11a	Right Tilt	48	11.76	13.00	1.330	0.106	0.155
	WLAN5.2GHz/802.11a	Left Cheek	48	11.76	13.00	1.330	0.433	0.633
	WLAN5.2GHz/802.11a	Left Tilt	48	11.76	13.00	1.330	0.258	0.377
Reduced Power Level 1 for ANT 2								
	WLAN5.3GHz/802.11a	Right Cheek	60	12.03	14.00	1.574	0.161	0.278
	WLAN5.3GHz/802.11a	Right Tilt	60	12.03	14.00	1.574	0.122	0.211
20#	WLAN5.3GHz/802.11a	Left Cheek	60	12.03	14.00	1.574	0.587	1.014
	WLAN5.3GHz/802.11a	Left Tilt	60	12.03	14.00	1.574	0.422	0.729
	WLAN5.3GHz/802.11a	Left Cheek	52	11.86	13.00	1.300	0.520	0.742
	WLAN5.3GHz/802.11a	Left Cheek	64	11.88	13.00	1.294	0.534	0.759
Reduced Power Level 6 for Simultaneous Transmission								
	WLAN5.3GHz/802.11a	Right Cheek	60	10.03	12.00	1.574	0.161	0.278
	WLAN5.3GHz/802.11a	Right Tilt	60	10.03	12.00	1.574	0.122	0.211
	WLAN5.3GHz/802.11a	Left Cheek	60	10.03	12.00	1.574	0.366	0.633
	WLAN5.3GHz/802.11a	Left Tilt	60	10.03	12.00	1.574	0.422	0.729
Reduced Power Level 1 for ANT 2								
	WLAN5.5GHz/802.11n40	Right Cheek	126	13.83	15.50	1.469	0.156	0.258
	WLAN5.5GHz/802.11n40	Right Tilt	126	13.83	15.50	1.469	0.132	0.219
21#	WLAN5.5GHz/802.11n40	Left Cheek	126	13.83	15.50	1.469	0.555	0.919
	WLAN5.5GHz/802.11n40	Left Tilt	126	13.83	15.50	1.469	0.322	0.533
	WLAN5.5GHz/802.11n40	Left Cheek	102	12.86	14.50	1.459	0.510	0.838
	WLAN5.5GHz/802.11n40	Left Cheek	134	13.21	15.00	1.510	0.513	0.873
Reduced Power Level 6 for Simultaneous Transmission								
	WLAN5.5GHz/802.11a	Right Cheek	126	11.83	13.50	1.469	0.100	0.166
	WLAN5.5GHz/802.11a	Right Tilt	126	11.83	13.50	1.469	0.082	0.136
	WLAN5.5GHz/802.11a	Left Cheek	126	11.83	13.50	1.469	0.358	0.593
	WLAN5.5GHz/802.11a	Left Tilt	126	11.83	13.50	1.469	0.266	0.440
Reduced Power Level 1 for ANT 2								
	WLAN5.8GHz/802.11n40	Right Cheek	151	13.17	15.00	1.524	0.322	0.553

	WLAN5.8GHz/802.11n40	Right Tilt	151	13.17	15.00	1.524	0.215	0.369
22#	WLAN5.8GHz/802.11n40	Left Cheek	151	13.17	15.00	1.524	0.611	1.049
	WLAN5.8GHz/802.11n40	Left Tilt	151	13.17	15.00	1.524	0.581	0.998
	WLAN5.8GHz/802.11n40	Left Cheek	159	12.82	14.00	1.312	0.594	0.878
Reduced Power Level 6 for Simultaneous Transmission								
	WLAN5.8GHz/802.11n40	Right Cheek	151	11.17	13.00	1.524	0.155	0.266
	WLAN5.8GHz/802.11n40	Right Tilt	151	11.17	13.00	1.524	0.143	0.246
	WLAN5.8GHz/802.11n40	Left Cheek	151	11.17	13.00	1.524	0.368	0.632
	WLAN5.8GHz/802.11n40	Left Tilt	151	11.17	13.00	1.524	0.211	0.362

Note:

1. Per KDB 447498 D01v06, for each exposure position, if the highest output power channel Reported SAR ≤ 0.8W/kg, other channels SAR testing is not necessary.
2. Per KDB 865664 D01v01r04, for each frequency band, repeated SAR measurement is required when the measured SAR is ≥ 0.8W/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 ≤ 0.8 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 ≤ 0.8 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 ≤ 1.2 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 2.4G WLAN reported 1g SAR (W/kg) should be scaled with the duty cycle scaling factor 1.012, 5G WLAN 802.11a with 1.098 and 802.11n40 with 1.127.

16.3. Body SAR Data

➢ GSM Body SAR

Plot No.	Band/Mode	Test Position	CH.	Ave. Power (dBm)	Tune-up Limit (dBm)	Tune-up Scaling Factor	Meas. SAR_{1g} (W/kg)	Reported SAR_{1g} (W/kg)
Full Power for ANT 1								
	GPRS 850(2 TX slots)	Front Side	189	30.56	31.50	1.242	0.144	0.179
	GPRS 850(2 TX slots)	Back Side	189	30.56	31.50	1.242	0.149	0.185
	GPRS 850(2 TX slots)	Left Side	189	30.56	31.50	1.242	0.055	0.068
	GPRS 850(2 TX slots)	Right Side	189	30.56	31.50	1.242	0.015	0.018
	GPRS 850(2 TX slots)	Top Side	189	30.56	31.50	1.242	0.116	0.144
Full Power for ANT 0								
	GPRS 850(2 TX slots)	Front Side	189	30.56	31.50	1.242	0.162	0.201
23#	GPRS 850(2 TX slots)	Back Side	189	30.56	31.50	1.242	0.228	0.283
	GPRS 850(2 TX slots)	Left Side	189	30.56	31.50	1.242	0.155	0.192
	GPRS 850(2 TX slots)	Right Side	189	30.56	31.50	1.242	0.090	0.112
	GPRS 850(2 TX slots)	Bottom Side	189	30.56	31.50	1.242	0.165	0.205
Reduced Power Level 2 for ANT 1								
	GPRS 1900(3 TX slots)	Front Side	661	23.69	24.50	1.205	0.128	0.154
24#	GPRS 1900(3 TX slots)	Back Side	661	23.69	24.50	1.205	0.177	0.213
	GPRS 1900(3 TX slots)	Left Side	661	23.69	24.50	1.205	0.035	0.043
	GPRS 1900(3 TX slots)	Right Side	661	23.69	24.50	1.205	0.068	0.081
25#	GPRS 1900(3 TX slots)	Top Side	661	23.69	24.50	1.205	0.311	0.375
Reduced Power Level 3 for ANT 0								
	GPRS 1900(3 TX slots)	Front Side	661	21.69	22.50	1.205	0.139	0.167
	GPRS 1900(3 TX slots)	Back Side	661	21.69	22.50	1.205	0.173	0.208
	GPRS 1900(3 TX slots)	Left Side	661	21.69	22.50	1.205	0.030	0.036
	GPRS 1900(3 TX slots)	Right Side	661	21.69	22.50	1.205	0.060	0.073
	GPRS 1900(3 TX slots)	Bottom Side	661	21.69	22.50	1.205	0.285	0.343

➢ WCDMA 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)
Reduced Power Level 2 for ANT 1								
	Band II/RMC 12.2Kbps	Front Side	9538	19.05	20.00	1.245	0.214	0.266
26#	Band II/RMC 12.2Kbps	Back Side	9538	19.05	20.00	1.245	0.368	0.458
	Band II/RMC 12.2Kbps	Left Side	9538	19.05	20.00	1.245	0.046	0.057
	Band II/RMC 12.2Kbps	Right Side	9538	19.05	20.00	1.245	0.072	0.090
27#	Band II/RMC 12.2Kbps	Top Side	9538	19.05	20.00	1.245	0.479	0.596
Reduced Power Level 3 for ANT 0								
	Band II/RMC 12.2Kbps	Front Side	9400	19.05	20.00	1.245	0.022	0.027
	Band II/RMC 12.2Kbps	Back Side	9400	19.05	20.00	1.245	0.029	0.036
	Band II/RMC 12.2Kbps	Left Side	9400	19.05	20.00	1.245	0.020	0.025
	Band II/RMC 12.2Kbps	Right Side	9400	19.05	20.00	1.245	0.023	0.029
	Band II/RMC 12.2Kbps	Bottom Side	9400	19.05	20.00	1.245	0.321	0.399
Reduced Power Level 2 for ANT 1								
	Band IV/RMC 12.2Kbps	Front Side	1413	20.16	21.00	1.213	0.266	0.323
28#	Band IV/RMC 12.2Kbps	Back Side	1413	20.16	21.00	1.213	0.434	0.527
	Band IV/RMC 12.2Kbps	Left Side	1413	20.16	21.00	1.213	0.055	0.067
	Band IV/RMC 12.2Kbps	Right Side	1413	20.16	21.00	1.213	0.092	0.112
29#	Band IV/RMC 12.2Kbps	Top Side	1413	20.16	21.00	1.213	0.540	0.655
Reduced Power Level 3 for Ant 0								
	Band IV/RMC 12.2Kbps	Front Side	1413	19.16	20.00	1.213	0.037	0.045
	Band IV/RMC 12.2Kbps	Back Side	1413	19.16	20.00	1.213	0.042	0.051
	Band IV/RMC 12.2Kbps	Left Side	1413	19.16	20.00	1.213	0.021	0.025
	Band IV/RMC 12.2Kbps	Right Side	1413	19.16	20.00	1.213	0.026	0.032
	Band IV/RMC 12.2Kbps	Bottom Side	1413	19.16	20.00	1.213	0.459	0.557
Full Power for ANT 1								
	Band V/RMC 12.2Kbps	Front Side	4182	23.17	24.00	1.211	0.122	0.148
	Band V/RMC 12.2Kbps	Back Side	4182	23.17	24.00	1.211	0.160	0.194
	Band V/RMC 12.2Kbps	Left Side	4182	23.17	24.00	1.211	0.056	0.068
	Band V/RMC 12.2Kbps	Right Side	4182	23.17	24.00	1.211	0.040	0.048
	Band V/RMC 12.2Kbps	Top Side	4182	23.17	24.00	1.211	0.122	0.148
Full Power for Ant 0								
	Band V/RMC 12.2Kbps	Front Side	4182	23.17	24.00	1.211	0.189	0.229
30#	Band V/RMC 12.2Kbps	Back Side	4182	23.17	24.00	1.211	0.251	0.304
	Band V/RMC 12.2Kbps	Left Side	4182	23.17	24.00	1.211	0.092	0.111
	Band V/RMC 12.2Kbps	Right Side	4182	23.17	24.00	1.211	0.077	0.093

	Band V/RMC 12.2Kbps	Bottom Side	4182	23.17	24.00	1.211	0.181	0.219

➢ 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)
Reduced Power Level 2 for ANT 1								
	LTE Band 2/1RB#0 20M	Front Side	18900	19.14	20.00	1.219	0.622	0.758
31#	LTE Band 2/1RB#0 20M	Back Side	18900	19.14	20.00	1.219	0.729	0.889
	LTE Band 2/1RB#0 20M	Left Side	18900	19.14	20.00	1.219	0.142	0.173
	LTE Band 2/1RB#0 20M	Right Side	18900	19.14	20.00	1.219	0.163	0.199
	LTE Band 2/1RB#0 20M	Top Side	18900	19.14	20.00	1.219	0.602	0.734
	LTE Band 2/1RB#0 20M	Back Side	18700	19.11	20.00	1.227	0.642	0.788
	LTE Band 2/1RB#0 20M	Back Side	19100	19.08	20.00	1.236	0.626	0.774
	LTE Band 2/50RB#0 20M	Front Side	18900	18.28	19.00	1.180	0.445	0.525
	LTE Band 2/50RB#0 20M	Back Side	18900	18.28	19.00	1.180	0.516	0.609
	LTE Band 2/50RB#0 20M	Left Side	18900	18.28	19.00	1.180	0.100	0.118
	LTE Band 2/50RB#0 20M	Right Side	18900	18.28	19.00	1.180	0.110	0.130
	LTE Band 2/50RB#0 20M	Top Side	18900	18.28	19.00	1.180	0.506	0.597
	LTE Band 2/**100RB**#0 20M	Back Side	18900	18.27	19.00	1.183	0.542	0.641
Reduced Power Level 3 for ANT 0								
	LTE Band 2/1RB#0 20M	Front Side	18900	19.14	20.00	1.219	0.166	0.202
	LTE Band 2/1RB#0 20M	Back Side	18900	19.14	20.00	1.219	0.278	0.339
	LTE Band 2/1RB#0 20M	Left Side	18900	19.14	20.00	1.219	0.125	0.152
	LTE Band 2/1RB#0 20M	Right Side	18900	19.14	20.00	1.219	0.142	0.173
	LTE Band 2/1RB#0 20M	Bottom Side	18900	19.14	20.00	1.219	0.382	0.466
	LTE Band 2/50RB#0 20M	Front Side	18900	18.28	19.00	1.180	0.145	0.171
	LTE Band 2/50RB#0 20M	Back Side	18900	18.28	19.00	1.180	0.216	0.255
	LTE Band 2/50RB#0 20M	Left Side	18900	18.28	19.00	1.180	0.100	0.118
	LTE Band 2/50RB#0 20M	Right Side	18900	18.28	19.00	1.180	0.133	0.157
	LTE Band 2/50RB#0 20M	Bottom Side	18900	18.28	19.00	1.180	0.287	0.339
Reduced Power Level 2 for ANT 1								
	LTE Band 4/1RB#0 20M	Front Side	20175	20.08	21.00	1.236	0.255	0.315
32#	LTE Band 4/1RB#0 20M	Back Side	20175	20.08	21.00	1.236	0.386	0.477
	LTE Band 4/1RB#0 20M	Left Side	20175	20.08	21.00	1.236	0.082	0.101
	LTE Band 4/1RB#0 20M	Right Side	20175	20.08	21.00	1.236	0.096	0.119
33#	LTE Band 4/1RB#0 20M	Top Side	20175	20.08	21.00	1.236	0.469	0.580
	LTE Band 4/50RB#0 20M	Front Side	20175	19.20	20.00	1.202	0.200	0.240
	LTE Band 4/50RB#0 20M	Back Side	20175	19.20	20.00	1.202	0.312	0.375

	LTE Band 4/50RB#0 20M	Left Side	20175	19.20	20.00	1.202	0.065	0.078
	LTE Band 4/50RB#0 20M	Right Side	20175	19.20	20.00	1.202	0.077	0.093
	LTE Band 4/50RB#0 20M	Top Side	20175	19.20	20.00	1.202	0.326	0.392
Reduced Power Level 3 for ANT 0								
	LTE Band 4/1RB#0 20M	Front Side	20175	19.08	20.00	1.236	0.266	0.329
	LTE Band 4/1RB#0 20M	Back Side	20175	19.08	20.00	1.236	0.347	0.429
	LTE Band 4/1RB#0 20M	Left Side	20175	19.08	20.00	1.236	0.052	0.064
	LTE Band 4/1RB#0 20M	Right Side	20175	19.08	20.00	1.236	0.061	0.075
	LTE Band 4/1RB#0 20M	Bottom Side	20175	19.08	20.00	1.236	0.398	0.492
	LTE Band 4/50RB#0 20M	Front Side	20175	18.20	19.00	1.202	0.189	0.227
	LTE Band 4/50RB#0 20M	Back Side	20175	18.20	19.00	1.202	0.214	0.257
	LTE Band 4/50RB#0 20M	Left Side	20175	18.20	19.00	1.202	0.039	0.047
	LTE Band 4/50RB#0 20M	Right Side	20175	18.20	19.00	1.202	0.046	0.055
	LTE Band 4/50RB#0 20M	Bottom Side	20175	18.20	19.00	1.202	0.300	0.361
Full Power for ANT 1								
	LTE Band 5/1RB#0 10M	Front Side	20525	23.52	24.50	1.253	0.149	0.187
34#	LTE Band 5/1RB#0 10M	Back Side	20525	23.52	24.50	1.253	0.270	0.338
	LTE Band 5/1RB#0 10M	Left Side	20525	23.52	24.50	1.253	0.066	0.083
	LTE Band 5/1RB#0 10M	Right Side	20525	23.52	24.50	1.253	0.046	0.058
	LTE Band 5/1RB#0 10M	Top Side	20525	23.52	24.50	1.253	0.163	0.204
	LTE Band 5/25RB#0 10M	Front Side	20525	22.84	23.50	1.164	0.116	0.135
	LTE Band 5/25RB#0 10M	Back Side	20525	22.84	23.50	1.164	0.228	0.265
	LTE Band 5/25RB#0 10M	Left Side	20525	22.84	23.50	1.164	0.059	0.069
	LTE Band 5/25RB#0 10M	Right Side	20525	22.84	23.50	1.164	0.038	0.044
	LTE Band 5/25RB#0 10M	Top Side	20525	22.84	23.50	1.164	0.120	0.140
Reduced Power Level 3 for ANT 0								
	LTE Band 5/1RB#0 10M	Front Side	20525	22.52	23.50	1.253	0.144	0.180
	LTE Band 5/1RB#0 10M	Back Side	20525	22.52	23.50	1.253	0.230	0.288
	LTE Band 5/1RB#0 10M	Left Side	20525	22.52	23.50	1.253	0.045	0.056
	LTE Band 5/1RB#0 10M	Right Side	20525	22.52	23.50	1.253	0.033	0.041
	LTE Band 5/1RB#0 10M	Bottom Side	20525	22.52	23.50	1.253	0.151	0.189
	LTE Band 5/25RB#0 10M	Front Side	20525	21.84	22.50	1.164	0.106	0.123
	LTE Band 5/25RB#0 10M	Back Side	20525	21.84	22.50	1.164	0.180	0.210
	LTE Band 5/25RB#0 10M	Left Side	20525	21.84	22.50	1.164	0.036	0.042
	LTE Band 5/25RB#0 10M	Right Side	20525	21.84	22.50	1.164	0.026	0.030
	LTE Band 5/25RB#0 10M	Bottom Side	20525	21.84	22.50	1.164	0.100	0.116
Reduced Power Level 2 for ANT 1								
	LTE Band 7/1RB#0 10M	Front Side	21100	17.11	18.00	1.227	0.263	0.323

35#	LTE Band 7/1RB#0 10M	Back Side	21100	17.11	18.00	1.227	0.355	0.436
	LTE Band 7/1RB#0 10M	Left Side	21100	17.11	18.00	1.227	0.062	0.076
	LTE Band 7/1RB#0 10M	Right Side	21100	17.11	18.00	1.227	0.070	0.086
36#	LTE Band 7/1RB#0 10M	Top Side	21100	17.11	18.00	1.227	0.466	0.572
	LTE Band 7/50RB#0 10M	Front Side	21100	16.23	17.00	1.194	0.196	0.234
	LTE Band 7/50RB#0 10M	Back Side	21100	16.23	17.00	1.194	0.268	0.320
	LTE Band 7/50RB#0 10M	Left Side	21100	16.23	17.00	1.194	0.050	0.060
	LTE Band 7/50RB#0 10M	Right Side	21100	16.23	17.00	1.194	0.066	0.079
	LTE Band 7/50RB#0 10M	Top Side	21100	16.23	17.00	1.194	0.352	0.420
Reduced Power Level 3 for ANT 0								
	LTE Band 7/1RB#0 10M	Front Side	21100	20.11	21.00	1.227	0.245	0.301
	LTE Band 7/1RB#0 10M	Back Side	21100	20.11	21.00	1.227	0.354	0.436
	LTE Band 7/1RB#0 10M	Left Side	21100	20.11	21.00	1.227	0.072	0.088
	LTE Band 7/1RB#0 10M	Right Side	21100	20.11	21.00	1.227	0.082	0.101
	LTE Band 7/1RB#0 10M	Bottom Side	21100	20.11	21.00	1.227	0.236	0.290
	LTE Band 7/50RB#0 10M	Front Side	21100	19.23	20.00	1.194	0.138	0.165
	LTE Band 7/50RB#0 10M	Back Side	21100	19.23	20.00	1.194	0.268	0.320
	LTE Band 7/50RB#0 10M	Left Side	21100	19.23	20.00	1.194	0.064	0.076
	LTE Band 7/50RB#0 10M	Right Side	21100	19.23	20.00	1.194	0.071	0.085
	LTE Band 7/50RB#0 10M	Bottom Side	21100	19.23	20.00	1.194	0.186	0.222
Full Power for ANT 1								
	LTE Band 12/1RB#0 10M	Front Side	23095	23.55	24.50	1.245	0.155	0.193
	LTE Band 12/1RB#0 10M	Back Side	23095	23.55	24.50	1.245	0.162	0.202
	LTE Band 12/1RB#0 10M	Left Side	23095	23.55	24.50	1.245	0.051	0.063
	LTE Band 12/1RB#0 10M	Right Side	23095	23.55	24.50	1.245	0.042	0.052
	LTE Band 12/1RB#0 10M	Top Side	23095	23.55	24.50	1.245	0.118	0.147
	LTE Band 12/25RB#0 10M	Front Side	23095	22.74	23.50	1.191	0.111	0.132
	LTE Band 12/25RB#0 10M	Back Side	23095	22.74	23.50	1.191	0.125	0.149
	LTE Band 12/25RB#0 10M	Left Side	23095	22.74	23.50	1.191	0.045	0.054
	LTE Band 12/25RB#0 10M	Right Side	23095	22.74	23.50	1.191	0.036	0.043
	LTE Band 12/25RB#0 10M	Top Side	23095	22.74	23.50	1.191	0.098	0.117
Full Power for ANT 0								
	LTE Band 12/1RB#0 10M	Front Side	23095	23.55	24.50	1.245	0.162	0.202
37#	LTE Band 12/1RB#0 10M	Back Side	23095	23.55	24.50	1.245	0.185	0.230
	LTE Band 12/1RB#0 10M	Left Side	23095	23.55	24.50	1.245	0.058	0.072
	LTE Band 12/1RB#0 10M	Right Side	23095	23.55	24.50	1.245	0.047	0.058
	LTE Band 12/1RB#0 10M	Bottom Side	23095	23.55	24.50	1.245	0.063	0.078
	LTE Band 12/25RB#0 10M	Front Side	23095	22.74	23.50	1.191	0.146	0.174

	LTE Band 12/25RB#0 10M	Back Side	23095	22.74	23.50	1.191	0.166	0.198
	LTE Band 12/25RB#0 10M	Left Side	23095	22.74	23.50	1.191	0.044	0.052
	LTE Band 12/25RB#0 10M	Right Side	23095	22.74	23.50	1.191	0.026	0.031
	LTE Band 12/25RB#0 10M	Bottom Side	23095	22.74	23.50	1.191	0.054	0.064
Full Power for ANT 1								
	LTE Band 26/1RB#0 15M	Front Side	26865	23.54	24.50	1.247	0.166	0.207
	LTE Band 26/1RB#0 15M	Back Side	26865	23.54	24.50	1.247	0.199	0.248
	LTE Band 26/1RB#0 15M	Left Side	26865	23.54	24.50	1.247	0.069	0.086
	LTE Band 26/1RB#0 15M	Right Side	26865	23.54	24.50	1.247	0.052	0.065
	LTE Band 26/1RB#0 15M	Top Side	26865	23.54	24.50	1.247	0.110	0.137
	LTE Band 26/36RB#0 15M	Front Side	26865	22.90	23.50	1.148	0.142	0.163
	LTE Band 26/36RB#0 15M	Back Side	26865	22.90	23.50	1.148	0.162	0.186
	LTE Band 26/36RB#0 15M	Left Side	26865	22.90	23.50	1.148	0.053	0.061
	LTE Band 26/36RB#0 15M	Right Side	26865	22.90	23.50	1.148	0.041	0.047
	LTE Band 26/36RB#0 15M	Top Side	26865	22.90	23.50	1.148	0.100	0.115
Full Power for ANT 0								
	LTE Band 26/1RB#0 15M	Front Side	26865	23.54	24.50	1.247	0.241	0.301
38#	LTE Band 26/1RB#0 15M	Back Side	26865	23.54	24.50	1.247	0.314	0.392
	LTE Band 26/1RB#0 15M	Left Side	26865	23.54	24.50	1.247	0.077	0.096
	LTE Band 26/1RB#0 15M	Right Side	26865	23.54	24.50	1.247	0.061	0.076
	LTE Band 26/1RB#0 15M	Bottom Side	26865	23.54	24.50	1.247	0.187	0.233
	LTE Band 26/36RB#0 15M	Front Side	26865	22.90	23.50	1.148	0.202	0.232
	LTE Band 26/36RB#0 15M	Back Side	26865	22.90	23.50	1.148	0.266	0.305
	LTE Band 26/36RB#0 15M	Left Side	26865	22.90	23.50	1.148	0.069	0.079
	LTE Band 26/36RB#0 15M	Right Side	26865	22.90	23.50	1.148	0.055	0.063
	LTE Band 26/36RB#0 15M	Bottom Side	26865	22.90	23.50	1.148	0.162	0.186
Full Power for ANT 1								
	LTE Band 38/1RB#0 20M	Front Side	38000	23.07	24.00	1.239	0.422	0.526
39#	LTE Band 38/1RB#0 20M	Back Side	38000	23.07	24.00	1.239	0.575	0.717
	LTE Band 38/1RB#0 20M	Left Side	38000	23.07	24.00	1.239	0.199	0.248
	LTE Band 38/1RB#0 20M	Right Side	38000	23.07	24.00	1.239	0.212	0.264
40#	LTE Band 38/1RB#0 20M	Top Side	38000	23.07	24.00	1.239	0.640	0.798
	LTE Band 38/50RB#0 20M	Front Side	38000	22.33	23.00	1.167	0.315	0.370
	LTE Band 38/50RB#0 20M	Back Side	38000	22.33	23.00	1.167	0.466	0.547
	LTE Band 38/50RB#0 20M	Left Side	38000	22.33	23.00	1.167	0.162	0.190
	LTE Band 38/50RB#0 20M	Right Side	38000	22.33	23.00	1.167	0.178	0.209
	LTE Band 38/50RB#0 20M	Top Side	38000	22.33	23.00	1.167	0.522	0.613
Full Power for ANT 0								

	LTE Band 38/1RB#0 20M	Front Side	38000	23.07	24.00	1.239	0.160	0.199
	LTE Band 38/1RB#0 20M	Back Side	38000	23.07	24.00	1.239	0.231	0.288
	LTE Band 38/1RB#0 20M	Left Side	38000	23.07	24.00	1.239	0.092	0.115
	LTE Band 38/1RB#0 20M	Right Side	38000	23.07	24.00	1.239	0.100	0.125
	LTE Band 38/1RB#0 20M	Bottom Side	38000	23.07	24.00	1.239	0.130	0.162
	LTE Band 38/50RB#0 20M	Front Side	38000	22.33	23.00	1.167	0.133	0.156
	LTE Band 38/50RB#0 20M	Back Side	38000	22.33	23.00	1.167	0.175	0.205
	LTE Band 38/50RB#0 20M	Left Side	38000	22.33	23.00	1.167	0.060	0.070
	LTE Band 38/50RB#0 20M	Right Side	38000	22.33	23.00	1.167	0.077	0.090
	LTE Band 38/50RB#0 20M	Bottom Side	38000	22.33	23.00	1.167	0.100	0.117
Reduced Power Level 2 for ANT 1								
	LTE Band 40A/1RB#0 10M	Front Side	38750	20.04	21.00	1.247	0.211	0.265
	LTE Band 40A/1RB#0 10M	Back Side	38750	20.04	21.00	1.247	0.245	0.307
	LTE Band 40A/1RB#0 10M	Left Side	38750	20.04	21.00	1.247	0.077	0.097
	LTE Band 40A/1RB#0 10M	Right Side	38750	20.04	21.00	1.247	0.082	0.103
	LTE Band 40A/1RB#0 10M	Top Side	38750	20.04	21.00	1.247	0.332	0.417
	LTE Band 40A/25RB#0 10M	Front Side	38750	19.34	20.00	1.164	0.155	0.182
	LTE Band 40A/25RB#0 10M	Back Side	38750	19.34	20.00	1.164	0.192	0.225
	LTE Band 40A/25RB#0 10M	Left Side	38750	19.34	20.00	1.164	0.057	0.067
	LTE Band 40A/25RB#0 10M	Right Side	38750	19.34	20.00	1.164	0.070	0.082
	LTE Band 40A/25RB#0 10M	Top Side	38750	19.34	20.00	1.164	0.255	0.299
Reduced Power Level 3 for ANT 0								
	LTE Band 40A/1RB#0 10M	Front Side	38750	20.04	21.00	1.247	0.062	0.078
	LTE Band 40A/1RB#0 10M	Back Side	38750	20.04	21.00	1.247	0.102	0.128
	LTE Band 40A/1RB#0 10M	Left Side	38750	20.04	21.00	1.247	0.055	0.069
	LTE Band 40A/1RB#0 10M	Right Side	38750	20.04	21.00	1.247	0.061	0.077
	LTE Band 40A/1RB#0 10M	Bottom Side	38750	20.04	21.00	1.247	0.079	0.099
	LTE Band 40A/25RB#0 10M	Front Side	38750	19.34	20.00	1.164	0.055	0.064
	LTE Band 40A/25RB#0 10M	Back Side	38750	19.34	20.00	1.164	0.092	0.108
	LTE Band 40A/25RB#0 10M	Left Side	38750	19.34	20.00	1.164	0.042	0.049
	LTE Band 40A/25RB#0 10M	Right Side	38750	19.34	20.00	1.164	0.051	0.060
	LTE Band 40A/25RB#0 10M	Bottom Side	38750	19.34	20.00	1.164	0.063	0.074
Reduced Power Level 2 for ANT 1								
	LTE Band 40B/1RB#0 10M	Front Side	39200	20.03	21.00	1.250	0.224	0.282
41#	LTE Band 40B/1RB#0 10M	Back Side	39200	20.03	21.00	1.250	0.265	0.333
	LTE Band 40B/1RB#0 10M	Left Side	39200	20.03	21.00	1.250	0.085	0.107
	LTE Band 40B/1RB#0 10M	Right Side	39200	20.03	21.00	1.250	0.099	0.125
42#	LTE Band 40B/1RB#0 10M	Top Side	39200	20.03	21.00	1.250	0.376	0.473

	LTE Band 40B/25RB#0 10M	Front Side	39200	19.24	20.00	1.191	0.183	0.219
	LTE Band 40B/25RB#0 10M	Back Side	39200	19.24	20.00	1.191	0.199	0.238
	LTE Band 40B/25RB#0 10M	Left Side	39200	19.24	20.00	1.191	0.066	0.079
	LTE Band 40B/25RB#0 10M	Right Side	39200	19.24	20.00	1.191	0.073	0.087
	LTE Band 40B/25RB#0 10M	Top Side	39200	19.24	20.00	1.191	0.300	0.360
Reduced Power Level 3 for ANT 0								
	LTE Band 40B/1RB#0 10M	Front Side	39200	20.03	21.00	1.250	0.072	0.091
	LTE Band 40B/1RB#0 10M	Back Side	39200	20.03	21.00	1.250	0.116	0.146
	LTE Band 40B/1RB#0 10M	Left Side	39200	20.03	21.00	1.250	0.044	0.055
	LTE Band 40B/1RB#0 10M	Right Side	39200	20.03	21.00	1.250	0.039	0.049
	LTE Band 40B/1RB#0 10M	Bottom Side	39200	20.03	21.00	1.250	0.099	0.124
	LTE Band 40B/25RB#0 10M	Front Side	39200	19.24	20.00	1.191	0.065	0.078
	LTE Band 40B/25RB#0 10M	Back Side	39200	19.24	20.00	1.191	0.082	0.098
	LTE Band 40B/25RB#0 10M	Left Side	39200	19.24	20.00	1.191	0.030	0.036
	LTE Band 40B/25RB#0 10M	Right Side	39200	19.24	20.00	1.191	0.022	0.026
	LTE Band 40B/25RB#0 10M	Bottom Side	39200	19.24	20.00	1.191	0.080	0.096
Full Power for ANT 1								
	LTE Band 41/1RB#0 20M	Front Side	40640	23.10	24.00	1.230	0.440	0.545
43#	LTE Band 41/1RB#0 20M	Back Side	40640	23.10	24.00	1.230	0.553	0.684
	LTE Band 41/1RB#0 20M	Left Side	40640	23.10	24.00	1.230	0.142	0.176
	LTE Band 41/1RB#0 20M	Right Side	40640	23.10	24.00	1.230	0.162	0.200
44#	LTE Band 41/1RB#0 20M	Top Side	40640	23.10	24.00	1.230	0.632	0.782
	LTE Band 41/50RB#0 20M	Front Side	40640	22.20	23.00	1.202	0.366	0.443
	LTE Band 41/50RB#0 20M	Back Side	40640	22.20	23.00	1.202	0.454	0.549
	LTE Band 41/50RB#0 20M	Left Side	40640	22.20	23.00	1.202	0.132	0.160
	LTE Band 41/50RB#0 20M	Right Side	40640	22.20	23.00	1.202	0.155	0.187
	LTE Band 41/50RB#0 20M	Top Side	40640	22.20	23.00	1.202	0.552	0.668
Full Power for ANT 0								
	LTE Band 41/1RB#0 20M	Front Side	40640	23.10	24.00	1.230	0.110	0.136
	LTE Band 41/1RB#0 20M	Back Side	40640	23.10	24.00	1.230	0.221	0.274
	LTE Band 41/1RB#0 20M	Left Side	40640	23.10	24.00	1.230	0.077	0.095
	LTE Band 41/1RB#0 20M	Right Side	40640	23.10	24.00	1.230	0.080	0.099
	LTE Band 41/1RB#0 20M	Bottom Side	40640	23.10	24.00	1.230	0.136	0.168
	LTE Band 41/50RB#0 20M	Front Side	40640	22.20	23.00	1.202	0.088	0.106
	LTE Band 41/50RB#0 20M	Back Side	40640	22.20	23.00	1.202	0.145	0.175
	LTE Band 41/50RB#0 20M	Left Side	40640	22.20	23.00	1.202	0.070	0.085
	LTE Band 41/50RB#0 20M	Right Side	40640	22.20	23.00	1.202	0.075	0.091
	LTE Band 41/50RB#0 20M	Bottom Side	40640	22.20	23.00	1.202	0.092	0.111

Reduced Power Level 2 for ANT 1								
	LTE Band 66/1RB#0 20M	Front Side	132322	20.04	21.00	1.247	0.388	0.484
45#	LTE Band 66/1RB#0 20M	Back Side	132322	20.04	21.00	1.247	0.406	0.506
	LTE Band 66/1RB#0 20M	Left Side	132322	20.04	21.00	1.247	0.095	0.119
	LTE Band 66/1RB#0 20M	Right Side	132322	20.04	21.00	1.247	0.100	0.125
46#	LTE Band 66/1RB#0 20M	Top Side	132322	20.04	21.00	1.247	0.529	0.660
	LTE Band 66/50RB#0 20M	Front Side	132322	19.28	20.00	1.180	0.259	0.306
	LTE Band 66/50RB#0 20M	Back Side	132322	19.28	20.00	1.180	0.322	0.380
	LTE Band 66/50RB#0 20M	Left Side	132322	19.28	20.00	1.180	0.082	0.097
	LTE Band 66/50RB#0 20M	Right Side	132322	19.28	20.00	1.180	0.090	0.106
	LTE Band 66/50RB#0 20M	Top Side	132322	19.28	20.00	1.180	0.462	0.545
Reduced Power Level 3 for ANT 0								
	LTE Band 66/1RB#0 20M	Front Side	132322	19.04	20.00	1.247	0.268	0.334
	LTE Band 66/1RB#0 20M	Back Side	132322	19.04	20.00	1.247	0.377	0.470
	LTE Band 66/1RB#0 20M	Left Side	132322	19.04	20.00	1.247	0.071	0.089
	LTE Band 66/1RB#0 20M	Right Side	132322	19.04	20.00	1.247	0.080	0.100
	LTE Band 66/1RB#0 20M	Bottom Side	132322	19.04	20.00	1.247	0.393	0.490
	LTE Band 66/50RB#0 20M	Front Side	132322	18.28	19.00	1.180	0.192	0.227
	LTE Band 66/50RB#0 20M	Back Side	132322	18.28	19.00	1.180	0.284	0.335
	LTE Band 66/50RB#0 20M	Left Side	132322	18.28	19.00	1.180	0.062	0.073
	LTE Band 66/50RB#0 20M	Right Side	132322	18.28	19.00	1.180	0.075	0.089
	LTE Band 66/50RB#0 20M	Bottom Side	132322	18.28	19.00	1.180	0.292	0.345

➢ WLAN Body SAR

Plot No.	Band/Mode	Test Position	CH.	Ave. Power (dBm)	Tune-up Limit (dBm)	Tune-up Scaling Factor	Meas. SAR_{1g} (W/kg)	Reported SAR_{1g} (W/kg)
Full Power for ANT 2								
	WLAN2.4GHz/802.11b	Front Side	6	18.69	20.00	1.352	0.126	0.172
47#	WLAN2.4GHz/802.11b	Back Side	6	18.69	20.00	1.352	0.245	0.335
	WLAN2.4GHz/802.11b	Left Side	6	18.69	20.00	1.352	0.067	0.092
	WLAN2.4GHz/802.11b	Right Side	6	18.69	20.00	1.352	0.162	0.222
	WLAN2.4GHz/802.11b	Top Side	6	18.69	20.00	1.352	0.144	0.197
Full Power for ANT 2								
	WLAN5.2GHz/802.11a	Front Side	48	16.80	18.00	1.318	0.322	0.466
48#	WLAN5.2GHz/802.11a	Back Side	48	16.80	18.00	1.318	0.730	1.057
	WLAN5.2GHz/802.11a	Left Side	48	16.80	18.00	1.318	0.049	0.071
	WLAN5.2GHz/802.11a	Right Side	48	16.80	18.00	1.318	0.530	0.767
	WLAN5.2GHz/802.11a	Top Side	48	16.80	18.00	1.318	0.420	0.608

	WLAN5.2GHz/802.11a	Back Side	36	16.35	18.00	1.462	0.622	0.999
	WLAN5.2GHz/802.11a	Back Side	44	16.39	18.00	1.449	0.631	1.004
Reduced Power Level 7 for simultaneous transmission								
	WLAN5.2GHz/802.11a	Front Side	48	13.76	15.00	1.330	0.145	0.212
	WLAN5.2GHz/802.11a	Back Side	48	13.76	15.00	1.330	0.316	0.462
	WLAN5.2GHz/802.11a	Left Side	48	13.76	15.00	1.330	0.036	0.053
	WLAN5.2GHz/802.11a	Right Side	48	13.76	15.00	1.330	0.166	0.242
	WLAN5.2GHz/802.11a	Top Side	48	13.76	15.00	1.330	0.224	0.327
Reduced Power Level 4 for ANT 2								
	WLAN5.3GHz/802.11a	Front Side	60	14.03	16.00	1.574	0.262	0.453
49#	WLAN5.3GHz/802.11a	Back Side	60	14.03	16.00	1.574	0.654	1.130
	WLAN5.3GHz/802.11a	Back Side	52	13.86	15.00	1.300	0.578	0.825
	WLAN5.3GHz/802.11a	Back Side	64	13.88	15.00	1.294	0.592	0.841
Reduced Power Level 7 for simultaneous transmission								
	WLAN5.3GHz/802.11a	Front Side	60	12.03	14.00	1.574	0.122	0.211
	WLAN5.3GHz/802.11a	Back Side	60	12.03	14.00	1.574	0.289	0.499
Full Power for ANT 2								
	WLAN5.5GHz/802.11n40	Front Side	126	16.90	18.50	1.445	0.236	0.384
	WLAN5.5GHz/802.11n40	Back Side	126	16.90	18.50	1.445	0.566	0.922
50#	WLAN5.5GHz/802.11n40	Back Side	102	15.93	17.50	1.435	0.662	1.071
	WLAN5.5GHz/802.11n40	Back Side	134	16.28	18.00	1.486	0.573	0.960
Reduced Power Level 7 for simultaneous transmission								
	WLAN5.5GHz/802.11n40	Front Side	126	13.83	15.50	1.469	0.136	0.225
	WLAN5.5GHz/802.11n40	Back Side	126	13.83	15.50	1.469	0.261	0.432
Full Power for ANT 2								
	WLAN5.8GHz/802.11n40	Front Side	151	16.21	18.00	1.510	0.251	0.427
51#	WLAN5.8GHz/802.11n40	Back Side	151	16.21	18.00	1.510	0.658	1.120
	WLAN5.8GHz/802.11n40	Left Side	151	16.21	18.00	1.510	0.045	0.077
	WLAN5.8GHz/802.11n40	Right Side	151	16.21	18.00	1.510	0.140	0.238
	WLAN5.8GHz/802.11n40	Top Side	151	16.21	18.00	1.510	0.232	0.395
	WLAN5.8GHz/802.11n40	Back Side	159	15.86	17.00	1.300	0.600	0.879
Reduced Power Level 7 for simultaneous transmission								
	WLAN5.8GHz/802.11n40	Front Side	151	13.17	15.00	1.524	0.120	0.206
	WLAN5.8GHz/802.11n40	Back Side	151	13.17	15.00	1.524	0.249	0.428
	WLAN5.8GHz/802.11n40	Left Side	151	13.17	15.00	1.524	0.026	0.045
	WLAN5.8GHz/802.11n40	Right Side	151	13.17	15.00	1.524	0.082	0.141
	WLAN5.8GHz/802.11n40	Top Side	151	13.17	15.00	1.524	0.122	0.210
ANT 2								

	Bluetooth/DH5	Front Side	78	8.26	10.00	1.493	0.024	0.046
52#	Bluetooth/DH5	Back Side	78	8.26	10.00	1.493	0.031	0.060
	Bluetooth/DH5	Left Side	78	8.26	10.00	1.493	0.009	0.017
	Bluetooth/DH5	Right Side	78	8.26	10.00	1.493	0.015	0.029
	Bluetooth/DH5	Top Side	78	8.26	10.00	1.493	0.026	0.050

Note:

1. For TDD-LTE, the reported SAR should be scaled with the duty cycle scaling factor 1.006.
2. The 2.4G WLAN reported 1g SAR (W/kg) should be scaled with the duty cycle scaling factor 1.012, 5G WLAN 802.11a with 1.098 and 802.11n40 with 1.127.

16.4. Repeated SAR Assessment

➢ **General Note**

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

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

➢ **Test Results**

Plot No.	Band/Mode	Test Position	CH.	Ave. Power (dBm)	Tune-up Limit (dBm)	Tune-up Scaling Factor	Meas. SAR_{1g} (W/kg)	Reported SAR_{1g} (W/kg)
Reduced Power Level 1 for ANT 1								
OR.	Band II/RMC 12.2Kbps	Right Cheek	9400	15.05	16.00	1.245	0.951	1.184
1st	Band II/RMC 12.2Kbps	Right Cheek	9400	15.05	16.00	1.245	0.897	1.117

16.5. Extremity SAR Assessment

➢ **General Guidance**

1. According to KDB 648747 D04v01r03 The UMPC mini-tablet procedures must also be applied to test the SAR of all surfaces and edges with an antenna located at ≤ 25 mm from that surface or edge, in direct contact with a flat phantom, for 10-g extremity SAR according to the body-equivalent tissue dielectric parameters in KDB Publication 865664 D01 to address interactive hand use exposure conditions.
2. 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.
3. According to the user manual, the EUT diagonal size is greater than 16cm, therefore the 0mm extremity SAR of WLAN 5GHz is required. There are two types of antennas in this device, only the worst antenna was tested the extremity SAR in this report.

➢ **Test Results**

Plot No.	Band/Mode	Test Position	CH.	Ave. Power (dBm)	Tune-up Limit (dBm)	Tune-up Scaling Factor	Meas. SAR_{10g} (W/kg)	Reported SAR_{10g} (W/kg)
ANT 2								
	WLAN5.3GHz/802.11a	Front Side	60	14.03	16.00	1.574	0.422	0.729
53#	WLAN5.3GHz/802.11a	Back Side	60	14.03	16.00	1.574	0.730	1.262
	WLAN5.3GHz/802.11a	Back Side	52	13.86	15.00	1.300	0.700	0.999
	WLAN5.3GHz/802.11a	Back Side	64	13.88	15.00	1.294	0.716	1.017
ANT 2								
	WLAN5.5GHz/802.11n40	Front Side	126	16.90	18.50	1.445	0.624	0.767
	WLAN5.5GHz/802.11n40	Back Side	126	16.90	18.50	1.445	0.679	0.835
54#	WLAN5.5GHz/802.11n40	Back Side	102	15.93	17.50	1.435	0.671	1.086
	WLAN5.5GHz/802.11n40	Back Side	134	16.28	18.00	1.486	0.580	0.971

Note:

The 5G WLAN 802.11a reported 1g SAR (W/kg) should be scaled with the duty cycle scaling factor 1.012, and 802.11n40 with 1.127.

17. Simultaneous Transmission Evaluation

17.1. Simultaneous Transmission Consideration

No.	Simultaneous Transmission Consideration	Head	Body-Worn	Hotspot
1	WWAN+WLAN 2.4GHz/5GHz	Yes	Yes	Yes
2	WWAN+WLAN 5.2GHz/5.8GHz	Yes	Yes	Yes
3	WWAN+WLAN 5.3GHz/5.5GHz	Yes	Yes	No
4	WWAN+Bluetooth	No	Yes	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. Simultaneous Transmission SAR evaluation is not required for BT and WLAN, because the software mechanism have been incorporated to guarantee that the WLAN and Bluetooth transmitters would not simultaneously operate.
4. Per KDB 447498D01v06, simultaneous transmission SAR evaluation procedures is as followed:
   Step 1: If sum of 1 g SAR < 1.6 W/kg, Simultaneous SAR measurement is not required.
   Step 2: If sum of 1 g SAR > 1.6 W/kg, ratio of SAR to peak separation distance for pair of transmitters calculated.
   Step 3: If the ratio of SAR to peak separation distance is ≤ 0.04, Simultaneous SAR measurement is not required.
   Step 4: If the ratio of SAR to peak separation distance is > 0.04, Simultaneous SAR measurement is required and simultaneous transmission SAR value is calculated.
   (The ratio is determined by: (SAR1 + SAR2) ^ 1.5/Ri ≤ 0.04,
   Ri is the separation distance between the peak SAR locations for the antenna pair in mm.
5. This device does not support the combination of WWAN+WLAN 2.4GHz+WLAN 5GHz.

17.2. Simultaneous Transmission Analysis

➢ **Head Simultaneous Transmission for WWAN(2/3/4G)+WLAN**

WWAN Band	Exposure Position	1	2	3	1+2 Summed 1g SAR (W/kg)	1+3 Summed 1g SAR (W/kg)
		WWAN	2.4GHz WLAN	5GHz WLAN		
		1g SAR (W/kg)	1g SAR (W/kg)	1g SAR (W/kg)		
GSM 850	Right Cheek	0.494	0.200	0.278	0.694	0.772
	Right Tilt	0.328	0.168	0.246	0.496	0.574
	Left Cheek	0.192	0.628	0.633	0.820	0.825
	Left Tilt	0.144	0.445	0.729	0.589	0.873
GSM 1900	Right Cheek	0.791	0.200	0.278	0.991	1.069
	Right Tilt	0.741	0.168	0.246	0.909	0.987
	Left Cheek	0.511	0.628	0.633	1.139	1.144
	Left Tilt	0.392	0.445	0.729	0.837	1.121
WCDMA II	Right Cheek	0.614	0.200	0.278	0.814	0.892
	Right Tilt	0.454	0.168	0.246	0.622	0.700
	Left Cheek	0.205	0.628	0.633	0.833	0.838
	Left Tilt	0.124	0.445	0.729	0.569	0.853
WCDMA IV	Right Cheek	0.530	0.200	0.278	0.730	0.808
	Right Tilt	0.439	0.168	0.246	0.607	0.685
	Left Cheek	0.178	0.628	0.633	0.806	0.811
	Left Tilt	0.153	0.445	0.729	0.598	0.882
WCDMA V	Right Cheek	0.523	0.200	0.278	0.723	0.801
	Right Tilt	0.506	0.168	0.246	0.674	0.752
	Left Cheek	0.299	0.628	0.633	0.927	0.932
	Left Tilt	0.283	0.445	0.729	0.728	1.012
LTE Band 2	Right Cheek	0.769	0.200	0.278	0.969	1.047
	Right Tilt	0.567	0.168	0.246	0.735	0.813
	Left Cheek	0.269	0.628	0.633	0.897	0.902
	Left Tilt	0.173	0.445	0.729	0.618	0.902
LTE Band 4	Right Cheek	0.616	0.200	0.278	0.816	0.894
	Right Tilt	0.440	0.168	0.246	0.608	0.686
	Left Cheek	0.250	0.628	0.633	0.878	0.883
	Left Tilt	0.168	0.445	0.729	0.613	0.897
LTE Band 5	Right Cheek	0.415	0.200	0.278	0.615	0.693
	Right Tilt	0.332	0.168	0.246	0.500	0.578
	Left Cheek	0.139	0.628	0.633	0.767	0.772
	Left Tilt	0.118	0.445	0.729	0.563	0.847
LTE Band 7	Right Cheek	0.694	0.200	0.278	0.894	0.972

	Right Tilt	0.685	0.168	0.246	0.853	0.931
	Left Cheek	0.156	0.628	0.633	0.784	0.789
	Left Tilt	0.113	0.445	0.729	0.558	0.842
LTE Band 12/17	Right Cheek	0.169	0.200	0.278	0.369	0.447
	Right Tilt	0.107	0.168	0.246	0.275	0.353
	Left Cheek	0.090	0.628	0.633	0.718	0.723
	Left Tilt	0.077	0.445	0.729	0.522	0.806
LTE Band 26	Right Cheek	0.448	0.200	0.278	0.648	0.726
	Right Tilt	0.329	0.168	0.246	0.497	0.575
	Left Cheek	0.166	0.628	0.633	0.794	0.799
	Left Tilt	0.150	0.445	0.729	0.595	0.879
LTE Band 38	Right Cheek	0.510	0.200	0.278	0.710	0.788
	Right Tilt	0.437	0.168	0.246	0.605	0.683
	Left Cheek	0.214	0.628	0.633	0.842	0.847
	Left Tilt	0.203	0.445	0.729	0.648	0.932
LTE Band 40A	Right Cheek	0.378	0.200	0.278	0.578	0.656
	Right Tilt	0.368	0.168	0.246	0.536	0.614
	Left Cheek	0.112	0.628	0.633	0.740	0.745
	Left Tilt	0.083	0.445	0.729	0.528	0.812
LTE Band 40B	Right Cheek	0.533	0.200	0.278	0.733	0.811
	Right Tilt	0.493	0.168	0.246	0.661	0.739
	Left Cheek	0.137	0.628	0.633	0.765	0.770
	Left Tilt	0.091	0.445	0.729	0.536	0.820
LTE Band 41	Right Cheek	0.785	0.200	0.278	0.985	1.063
	Right Tilt	0.644	0.168	0.246	0.812	0.890
	Left Cheek	0.223	0.628	0.633	0.851	0.856
	Left Tilt	0.203	0.445	0.729	0.648	0.932
LTE Band 66	Right Cheek	0.625	0.200	0.278	0.825	0.903
	Right Tilt	0.581	0.168	0.246	0.749	0.827
	Left Cheek	0.269	0.628	0.633	0.897	0.902
	Left Tilt	0.228	0.445	0.729	0.673	0.957

➢ Body Simultaneous Transmission for WWAN+WLAN

WWAN Band	Exposure Position	1	2	3	1+2 Summed 1g SAR (W/kg)	1+3 Summed 1g SAR (W/kg)
		WWAN	2.4GHz WLAN	5GHz WLAN		
		1g SAR (W/kg)	1g SAR (W/kg)	1g SAR (W/kg)		
GSM 850	Front Side	0.201	0.172	0.225	0.373	0.426
	Back Side	0.283	0.335	0.499	0.618	0.782
	Left Side	0.192	0.092	0.053	0.284	0.245
	Right Side	0.112	0.222	0.242	0.334	0.354
	Top Side	0.144	0.197	0.327	0.341	0.471
	Bottom Side	0.205			0.205	0.205
GSM 1900	Front Side	0.167	0.172	0.225	0.339	0.392
	Back Side	0.213	0.335	0.499	0.548	0.712
	Left Side	0.043	0.092	0.053	0.135	0.096
	Right Side	0.081	0.222	0.242	0.303	0.323
	Top Side	0.375	0.197	0.327	0.572	0.702
	Bottom Side	0.343			0.343	0.343
WCDMA II	Front Side	0.266	0.172	0.225	0.438	0.491
	Back Side	0.458	0.335	0.499	0.793	0.957
	Left Side	0.057	0.092	0.053	0.149	0.110
	Right Side	0.090	0.222	0.242	0.312	0.332
	Top Side	0.596	0.197	0.327	0.793	0.923
	Bottom Side	0.399			0.399	0.399
WCDMA IV	Front Side	0.323	0.172	0.225	0.495	0.548
	Back Side	0.527	0.335	0.499	0.862	1.026
	Left Side	0.067	0.092	0.053	0.159	0.120
	Right Side	0.112	0.222	0.242	0.334	0.354
	Top Side	0.655	0.197	0.327	0.852	0.982
	Bottom Side	0.557			0.557	0.557
WCDMA V	Front Side	0.229	0.172	0.225	0.401	0.454
	Back Side	0.304	0.335	0.499	0.639	0.803
	Left Side	0.111	0.092	0.053	0.203	0.164
	Right Side	0.093	0.222	0.242	0.315	0.335
	Top Side	0.148	0.197	0.327	0.345	0.475
	Bottom Side	0.219			0.219	0.219
LTE Band 2	Front Side	0.758	0.172	0.225	0.930	0.983
	Back Side	0.889	0.335	0.499	1.224	1.388
	Left Side	0.173	0.092	0.053	0.265	0.226
	Right Side	0.199	0.222	0.242	0.421	0.441
	Top Side	0.734	0.197	0.327	0.931	1.061
	Bottom Side	0.466			0.466	0.466

LTE Band 4	Front Side	0.329	0.172	0.225	0.501	0.554
	Back Side	0.477	0.335	0.499	0.812	0.976
	Left Side	0.101	0.092	0.053	0.193	0.154
	Right Side	0.119	0.222	0.242	0.341	0.361
	Top Side	0.580	0.197	0.327	0.777	0.907
	Bottom Side	0.492			0.492	0.492
LTE Band 5	Front Side	0.187	0.172	0.225	0.359	0.412
	Back Side	0.338	0.335	0.499	0.673	0.837
	Left Side	0.083	0.092	0.053	0.175	0.136
	Right Side	0.058	0.222	0.242	0.280	0.300
	Top Side	0.204	0.197	0.327	0.401	0.531
	Bottom Side	0.189			0.189	0.189
LTE Band 7	Front Side	0.323	0.172	0.225	0.495	0.548
	Back Side	0.436	0.335	0.499	0.771	0.935
	Left Side	0.088	0.092	0.053	0.180	0.141
	Right Side	0.101	0.222	0.242	0.323	0.343
	Top Side	0.572	0.197	0.327	0.769	0.899
	Bottom Side	0.290			0.290	0.290
LTE Band 12/17	Front Side	0.202	0.172	0.225	0.374	0.427
	Back Side	0.230	0.335	0.499	0.565	0.729
	Left Side	0.072	0.092	0.053	0.164	0.125
	Right Side	0.058	0.222	0.242	0.280	0.300
	Top Side	0.147	0.197	0.327	0.344	0.474
	Bottom Side	0.078			0.078	0.078
LTE Band 26	Front Side	0.301	0.172	0.225	0.473	0.526
	Back Side	0.392	0.335	0.499	0.727	0.891
	Left Side	0.096	0.092	0.053	0.188	0.149
	Right Side	0.076	0.222	0.242	0.298	0.318
	Top Side	0.137	0.197	0.327	0.334	0.464
	Bottom Side	0.233			0.233	0.233
LTE Band 38	Front Side	0.526	0.172	0.225	0.698	0.751
	Back Side	0.717	0.335	0.499	1.052	1.216
	Left Side	0.248	0.092	0.053	0.340	0.301
	Right Side	0.264	0.222	0.242	0.486	0.506
	Top Side	0.798	0.197	0.327	0.995	1.125
	Bottom Side	0.162			0.162	0.162
LTE Band 40A	Front Side	0.265	0.172	0.225	0.437	0.490
	Back Side	0.307	0.335	0.499	0.642	0.806
	Left Side	0.097	0.092	0.053	0.189	0.150
	Right Side	0.103	0.222	0.242	0.325	0.345
	Top Side	0.417	0.197	0.327	0.614	0.744

	Bottom Side	0.099			0.099	0.099
LTE Band 40B	Front Side	0.282	0.172	0.225	0.454	0.507
	Back Side	0.333	0.335	0.499	0.668	0.832
	Left Side	0.107	0.092	0.053	0.199	0.160
	Right Side	0.125	0.222	0.242	0.347	0.367
	Top Side	0.473	0.197	0.327	0.670	0.800
	Bottom Side	0.124			0.124	0.124
LTE Band 41	Front Side	0.545	0.172	0.225	0.717	0.770
	Back Side	0.684	0.335	0.499	1.019	1.183
	Left Side	0.176	0.092	0.053	0.268	0.229
	Right Side	0.200	0.222	0.242	0.422	0.442
	Top Side	0.782	0.197	0.327	0.979	1.109
	Bottom Side	0.168			0.168	0.168
LTE Band 66	Front Side	0.484	0.172	0.225	0.656	0.709
	Back Side	0.506	0.335	0.499	0.841	1.005
	Left Side	0.119	0.092	0.053	0.211	0.172
	Right Side	0.125	0.222	0.242	0.347	0.367
	Top Side	0.660	0.197	0.327	0.857	0.987
	Bottom Side	0.490			0.490	0.490

➢ Body Simultaneous Transmission for WWAN+Bluetooth

WWAN Band	Exposure Position	1	2	1+2 Summed 1g SAR (W/kg)
		WWAN	Bluetooth	
		1g SAR (W/kg)	1g SAR (W/kg)	
GSM 850	Front Side	0.201	0.046	0.247
	Back Side	0.283	0.060	0.343
	Left Side	0.192	0.017	0.209
	Right Side	0.112	0.029	0.141
	Top Side	0.144	0.050	0.194
	Bottom Side	0.205		0.205
GSM 1900	Front Side	0.167	0.046	0.213
	Back Side	0.213	0.060	0.273
	Left Side	0.043	0.017	0.060
	Right Side	0.081	0.029	0.110
	Top Side	0.375	0.050	0.425
	Bottom Side	0.343		0.343
WCDMA II	Front Side	0.266	0.046	0.312
	Back Side	0.458	0.060	0.518
	Left Side	0.057	0.017	0.074
	Right Side	0.090	0.029	0.119

	Top Side	0.596	0.050	0.646
	Bottom Side	0.399		0.399
WCDMA IV	Front Side	0.323	0.046	0.369
	Back Side	0.527	0.060	0.587
	Left Side	0.067	0.017	0.084
	Right Side	0.112	0.029	0.141
	Top Side	0.655	0.050	0.705
	Bottom Side	0.557		0.557
WCDMA V	Front Side	0.229	0.046	0.275
	Back Side	0.304	0.060	0.364
	Left Side	0.111	0.017	0.128
	Right Side	0.093	0.029	0.122
	Top Side	0.148	0.050	0.198
	Bottom Side	0.219		0.219
LTE Band 2	Front Side	0.758	0.046	0.804
	Back Side	0.889	0.060	0.949
	Left Side	0.173	0.017	0.190
	Right Side	0.199	0.029	0.228
	Top Side	0.734	0.050	0.784
	Bottom Side	0.466		0.466
LTE Band 4	Front Side	0.329	0.046	0.375
	Back Side	0.477	0.060	0.537
	Left Side	0.101	0.017	0.118
	Right Side	0.119	0.029	0.148
	Top Side	0.580	0.050	0.630
	Bottom Side	0.492		0.492
LTE Band 5	Front Side	0.187	0.046	0.233
	Back Side	0.338	0.060	0.398
	Left Side	0.083	0.017	0.100
	Right Side	0.058	0.029	0.087
	Top Side	0.204	0.050	0.254
	Bottom Side	0.189		0.189
LTE Band 7	Front Side	0.323	0.046	0.369
	Back Side	0.436	0.060	0.496
	Left Side	0.088	0.017	0.105
	Right Side	0.101	0.029	0.130
	Top Side	0.572	0.050	0.622
	Bottom Side	0.290		0.290
LTE Band 12/17	Front Side	0.202	0.046	0.248
	Back Side	0.230	0.060	0.290
	Left Side	0.072	0.017	0.089

	Right Side	0.058	0.029	0.087
	Top Side	0.147	0.050	0.197
	Bottom Side	0.078		0.078
LTE Band 26	Front Side	0.301	0.046	0.347
	Back Side	0.392	0.060	0.452
	Left Side	0.096	0.017	0.113
	Right Side	0.076	0.029	0.105
	Top Side	0.137	0.050	0.187
	Bottom Side	0.233		0.233
LTE Band 38	Front Side	0.526	0.046	0.572
	Back Side	0.717	0.060	0.777
	Left Side	0.248	0.017	0.265
	Right Side	0.264	0.029	0.293
	Top Side	0.798	0.050	0.848
	Bottom Side	0.162		0.162
LTE Band 40A	Front Side	0.265	0.046	0.311
	Back Side	0.307	0.060	0.367
	Left Side	0.097	0.017	0.114
	Right Side	0.103	0.029	0.132
	Top Side	0.417	0.050	0.467
	Bottom Side	0.099		0.099
LTE Band 40B	Front Side	0.282	0.046	0.328
	Back Side	0.333	0.060	0.393
	Left Side	0.107	0.017	0.124
	Right Side	0.125	0.029	0.154
	Top Side	0.473	0.050	0.523
	Bottom Side	0.124		0.124
LTE Band 41	Front Side	0.545	0.046	0.591
	Back Side	0.684	0.060	0.744
	Left Side	0.176	0.017	0.193
	Right Side	0.200	0.029	0.229
	Top Side	0.782	0.050	0.832
	Bottom Side	0.168		0.168
LTE Band 66	Front Side	0.484	0.046	0.530
	Back Side	0.506	0.060	0.566
	Left Side	0.119	0.017	0.136
	Right Side	0.125	0.029	0.154
	Top Side	0.660	0.050	0.710
	Bottom Side	0.490		0.490

18. Uncertainty Assessment

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

Annex A General Information

1. Identification of the Responsible Testing Laboratory

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

2. Identification of the Responsible Testing Location

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

3. Facilities and Accreditations

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

Note：

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

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