

FCC SAR Test Report

Applicant: POINT MOBILE Co., Ltd.

EUT Description: mobile computer

Model: MF52e

FCC ID: V2X-MF52E

Standards: FCC 47 CFR §2.1093

Date of Receipt: 2026/05/06

Date of Test: 2026/06/02 to 2026/07/31

Date of Issue: 2026/08/05

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

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



Jim Huang
Approved By:



Jack Li
Reviewed By:

Revision History

Rev.	Issue Date	Description	Revised by
01	2026/08/05	Original	Jack Li

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1 Summary of Test Results

Band	Highest SAR(W/kg)	
	Head	Body
WCDMA Band II	1.19	1.19
WCDMA Band IV	1.18	1.14
WCDMA Band V	0.25	1.14
LTE Band 7	1.30	1.35
LTE Band 12/17	0.28	1.08
LTE Band 13	0.19	0.96
LTE Band 14	0.19	1.06
LTE Band 25/2	1.33	1.32
LTE Band 26/5	0.28	1.10
LTE Band 66/4	1.26	1.37
LTE Band 71	0.28	0.97
LTE Band 41/38	1.16	1.35
LTE Band 42	1.24	1.26
LTE Band 43	1.35	1.38
LTE Band 48	1.36	1.21
NR N7	1.20	1.34
NR N12	0.10	1.34
NR N13	0.13	0.91
NR N14	0.14	1.03
NR N25/2	1.25	1.25
NR N26/5	0.18	1.30
NR N41/38	1.19	1.29
NR N48	1.31	1.39
NR N66	1.29	1.22
NR N71	0.33	1.06
NR N77/78	1.39	1.43
WIFI 2.4G	1.06	0.97
WIFI 5G	1.41	1.50
WIFI 6G	0.36	0.26
BT	0.05	0.02
NFC	-	0.02
SAR Limited(W/kg)	1.6	
Maximum Simultaneous Transmission SAR (W/kg)		
Scenario	Head	Body
Sum SAR	1.59	1.59
SAR Limited(W/kg)	1.6	

Remark:

- 1) This device supports LTE B2/B4/B5/B7/B12/B13/B14/B17/B25/B26/B38/B41/B42/B43/B48/B66/B71. Since the supported frequency span for LTE B2/B4/B5/B17/B38 falls completely within the support's frequency span for LTE B25/B66/B26/B12/B41, both LTE bands have the same target power, and both LTE bands share the same transmission path, therefore SAR was only assessed for LTE B25/B66/B26/B12/B41.
- 2) This device supports 5G NR n2/n5/n7/n12/n13/n14/n25/n26/n38/n41/n48/n66/n77/n78. Since the supported frequency span for 5G NR n2/n5/n38/n78 falls completely within the support's frequency span for 5G NR n25/n26/n41/n77, both 5G NR bands have the same target power, and both LTE bands share the same transmission path, therefore SAR was only assessed for 5G NR n25/n26/n41/n77.

Band	Highest PD (W/m^2)
WIFI 6G	9.87
Limit	10.0

2 Guidance Applied

FCC 47CFR §2.1093

ANSI/IEEE C95.1-1992

IEEE 1528-2013

FCC KDB 941225 D01 3G SAR Measurement Procedures v03r01

FCC KDB 941225 D05 SAR for LTE Devices v02r05

FCC KDB 941225 D05A LTE Rel.10 KDB Inquiry Sheet v01r02

FCC KDB 941225 D06 Hotspot Mode SAR v02r01

FCC KDB 248227 D01 SAR Guidance for IEEE 802.11 Wi-Fi SAR v02r02

FCC KDB 648474 D04 Handset SAR v01r03

FCC KDB 447498 D01 General RF Exposure Guidance v06

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

FCC KDB 865664 D02 RF Exposure Reporting v01r02

FCC KDB 616217 D04 SAR for laptop and tablets v01r02

3 Lab Information

3.1 Testing Location

These measurement tests were conducted at the Sushi TOWE Wireless Testing (Shenzhen) Co., Ltd. facility located at F 401 and F 101, Building E, Hongwei Industrial Zone, No. 6, Liuxian 3rd Road, Zone 70, Xingdong Community, Xin'an Street, Bao'an District, Shenzhen, People's Republic of China. The measurement facility is compliant with the test site requirements specified in ANSI C63.4-2014

Tel.: +86-755-27212361

Contact Email: info@towewireless.com

3.2 Test Facility / Accreditations

A2LA (Certificate Number: 7088.01)

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

FCC Designation No.: CN1353

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

Test Firm Registration Number: 684095

Designation Number: CN1353.

ISED CAB identifier: CN0152

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

CAB identifier: CN0152

Company Number: 31000

3.3 Ambient Condition

Temperature: 18°C~25°C

Relative Humidity: 30%~75%

4 Client Information

4.1 Applicant

Applicant:	POINT MOBILE Co., Ltd.
Address:	A-26F, Building Gasan Publik 178, Digital-ro, Geumcheon-gu Seoul, 08513 Republic of Korea

4.2 Manufacturer

Manufacturer:	POINT MOBILE Co., Ltd.
Address:	A-26F, Building Gasan Publik 178, Digital-ro, Geumcheon-gu Seoul, 08513 Republic of Korea

5 Product Information

EUT Description:	mobile computer	
Model:	MF52e	
Hardware Version:	MP	
Software Version:	MF52EG15.00	
IMEI:	354396340007545 354396340007628 354396340007560 354396340007446 354396340008246	
Device Capabilities:		
Band	Frequency Range (MHz)	Modulation Type
WCDMA Band II	1850~1910	RMC, HSUPA, HSDPA, HSPA+, BPSK, QPSK
WCDMA Band IV	1710~1755	
WCDMA Band V	824~849	
LTE Band 2	1850~1910	QPSK, 16QAM, 64QAM, 256QAM
LTE Band 4	1710~1755	
LTE Band 5	824~849	
LTE Band 7	2500~2570	
LTE Band 12	699~716	
LTE Band 13	777~787	
LTE Band 14	788~798	
LTE Band 17	704~716	
LTE Band 25	1850~1915	
LTE Band 26	814~849	
LTE Band 38	2570~2620	
LTE Band 41	2496~2690	
LTE Band 42	3450~3550	
	3550~3600	
LTE Band 43	3600~3700	
LTE Band 48	3550~3700	
LTE Band 66	1710~1780	
LTE Band 71	663~698	
NR Band n2	1850~1910	DFT-s-OFDM(PI/2 BPSK, QPSK, 16QAM, 64QAM, 256QAM) CP-OFDM(QPSK, 16QAM, 64QAM, 256QAM)
NR Band n5	824~849	
NR Band n7	2500~2570	
NR Band n12	699~716	
NR Band n13	777~787	
NR Band n14	788~798	
NR Band n25	1850~1915	
NR Band n26	814~849	

NR Band n38	2570~2620	
NR Band n41	2496~2690	
NR Band n48	3550~3700	
NR Band n66	1710~1780	
NR Band n71	663~698	
NR Band n77	3450~3550	
	3700~3980	
NR Band n78	3450~3550	
	3700~3800	
NFC	13.56	ASK
Bluetooth	2400~2483.5	GFSK, π/4DQPSK, 8DPSK
Wi-Fi 2.4G	2400~2483.5	802.11b/g/n/ax
Wi-Fi 5G	5150~5250	802.11a/n/ac/ax
	5250~5350	
	5470~5725	
	5725~5850	
Wi-Fi 6G	5925~6425	802.11a/ax
	6425~6525	
	6525~6875	
	6875~7125	
Antenna Type:	☐ External, ☒ Integrated	
Remark: The above EUT's information was declared by applicant, please refer to the specifications or user's manual for more detailed description.		

5.1 Antenna Locations

The detailed antenna location information can refer to Appendix D.

Note:

- 1) The overall dimensions of this device are $> 9 \times 5$ cm. A diagram showing the location of the device antennas can be found in DUT Antenna Diagram & SAR Test Setup Photographs Appendix D. Since the display diagonal dimensions of this device is > 150 mm and < 200 mm, it is considered a "phablet." Exact antenna dimensions and separation distances are shown in the Appendix D.
- 2) SAR is not required because the distance from the antenna to the edge is > 25 mm as per KDB 941225 D06 Hotspot Mode.

According to the distance between antennas and the sides of the EUT we can draw the conclusion that:

EUT Sides for SAR Testing							
Antenna	Exposure Conditions	Front	Back	Left	Right	Top	Bottom
Ant0	Body	Yes	Yes	Yes	Yes	No	Yes
Ant1	Body	Yes	Yes	Yes	No	No	Yes
Ant3	Body	Yes	Yes	Yes	No	Yes	No
Ant4	Body	Yes	Yes	Yes	No	Yes	No
Ant6	Body	Yes	Yes	No	Yes	Yes	No
Ant7	Body	Yes	Yes	No	Yes	Yes	No

Table 1: EUT Sides for SAR Test

5.2 Power reduction specification

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

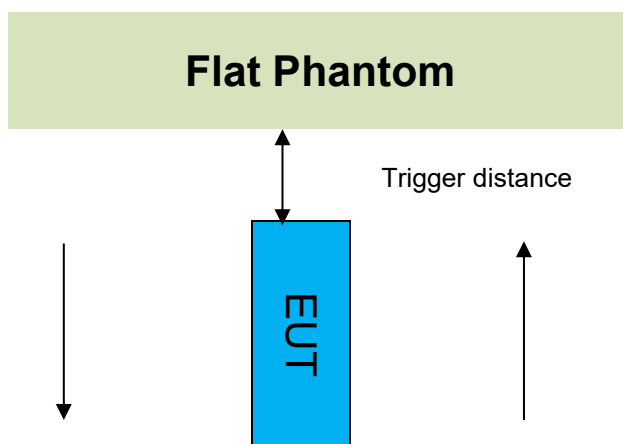
- 1) This device uses the receiver to indicate whether the user is making a voice call in head scenario or not. The selection between head and body power levels is based on the receiver detection mechanism. A fixed level power reduction is applied for some frequency bands when the audio receiver is on.
- 2) The proximity sensor is used to indicate when the device is held close to a user's body exposure condition. It utilizes the proximity sensor to reduce the output power in specific wireless and operating modes WWAN antenna to ensure SAR compliance.
- 3) A fixed level power reduction is applied for some frequency bands when simultaneously transmitting with the other antennas in certain simultaneous transmission conditions. The standalone SAR compliance still uses the standalone SAR results tested at the maximum output power level without any power reduction.

The detailed power reduction information can refer to the conducted RF output power table.

5.3 Proximity Sensor Triggering Test

1) Proximity sensor triggering distances

The Proximity sensor triggering was applied to WWAN antenna. Proximity sensor triggering distance testing was performed in which the EUT moving further away from the flat phantom and EUT moving toward the flat phantom were both assessed.

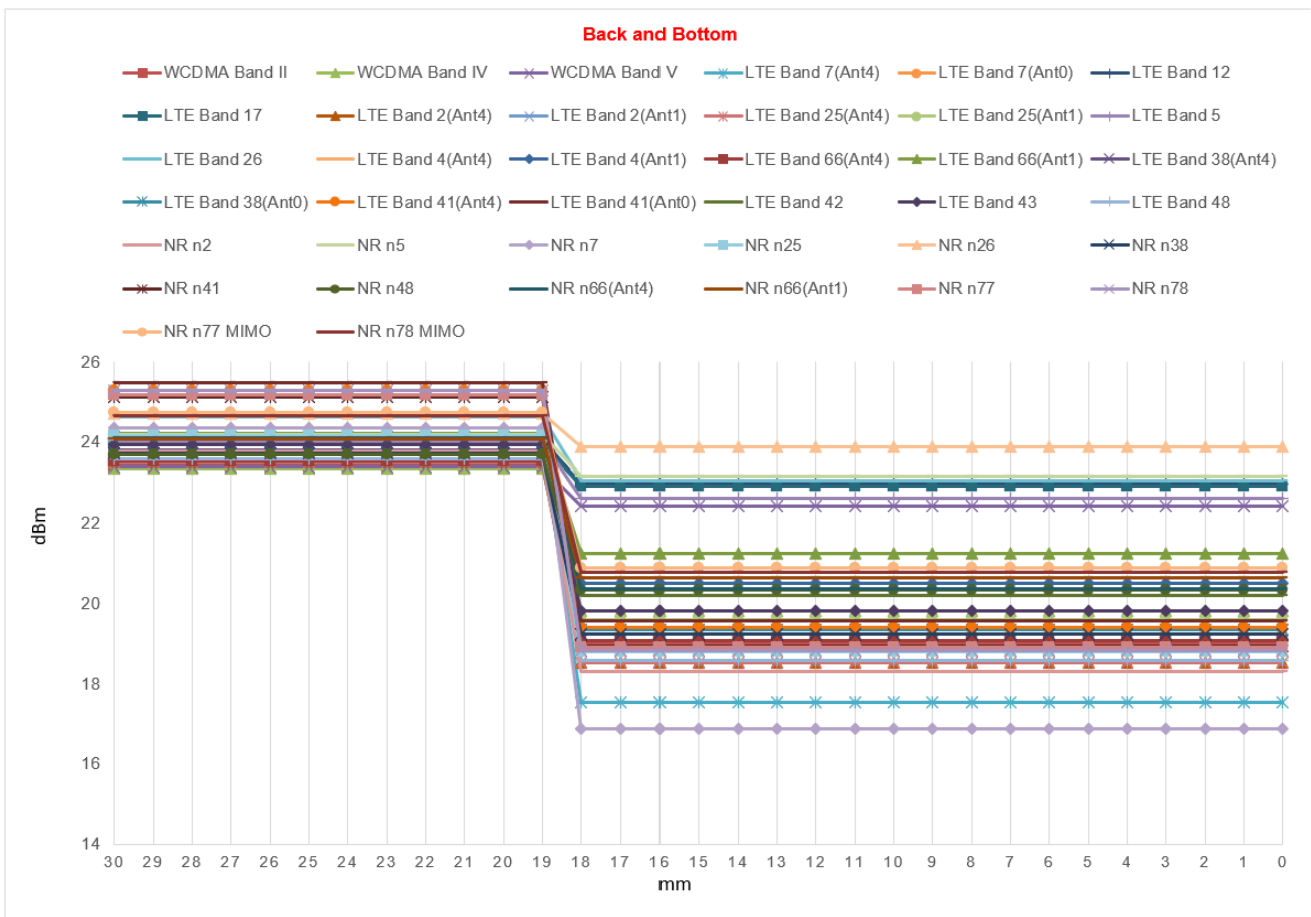
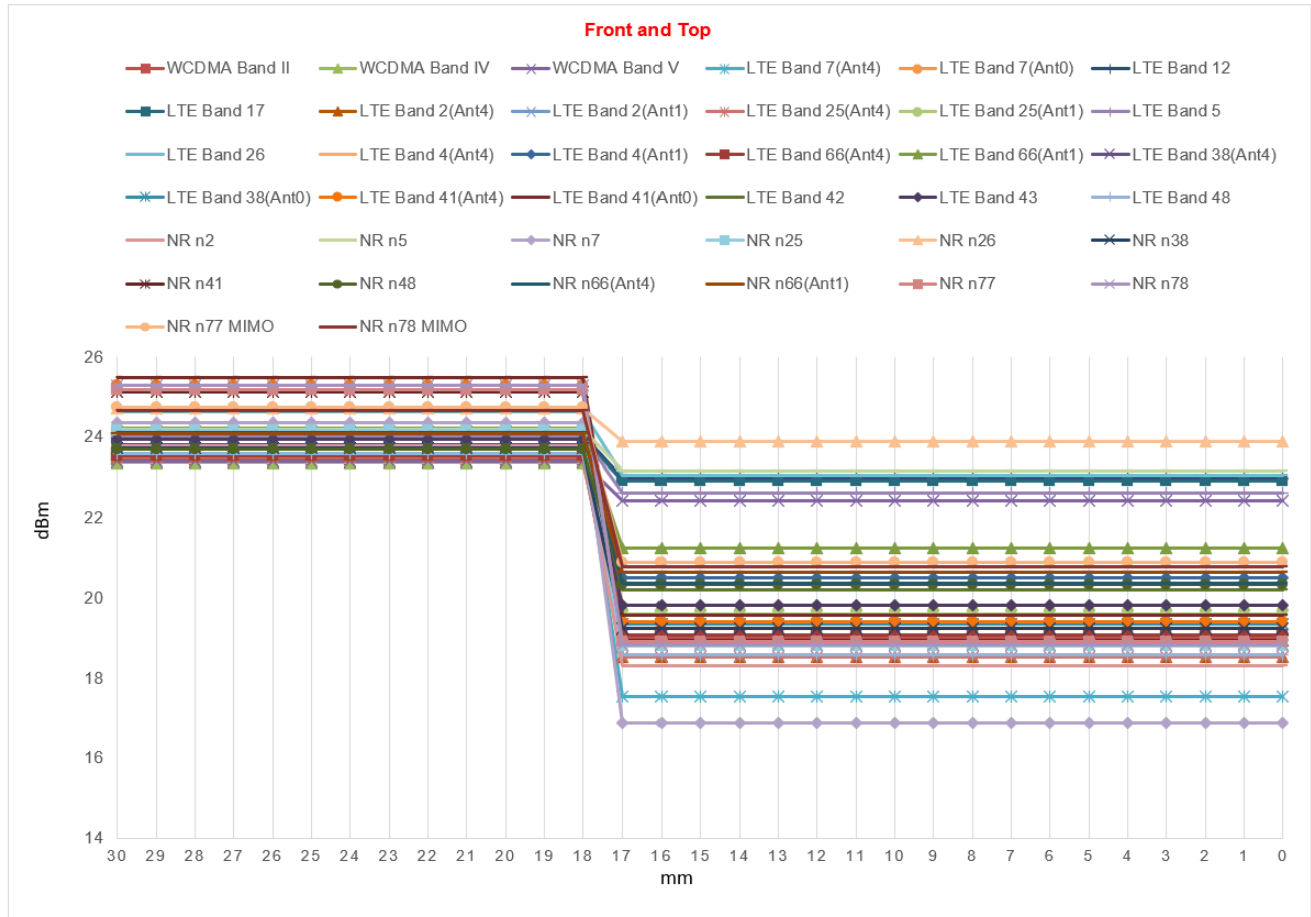


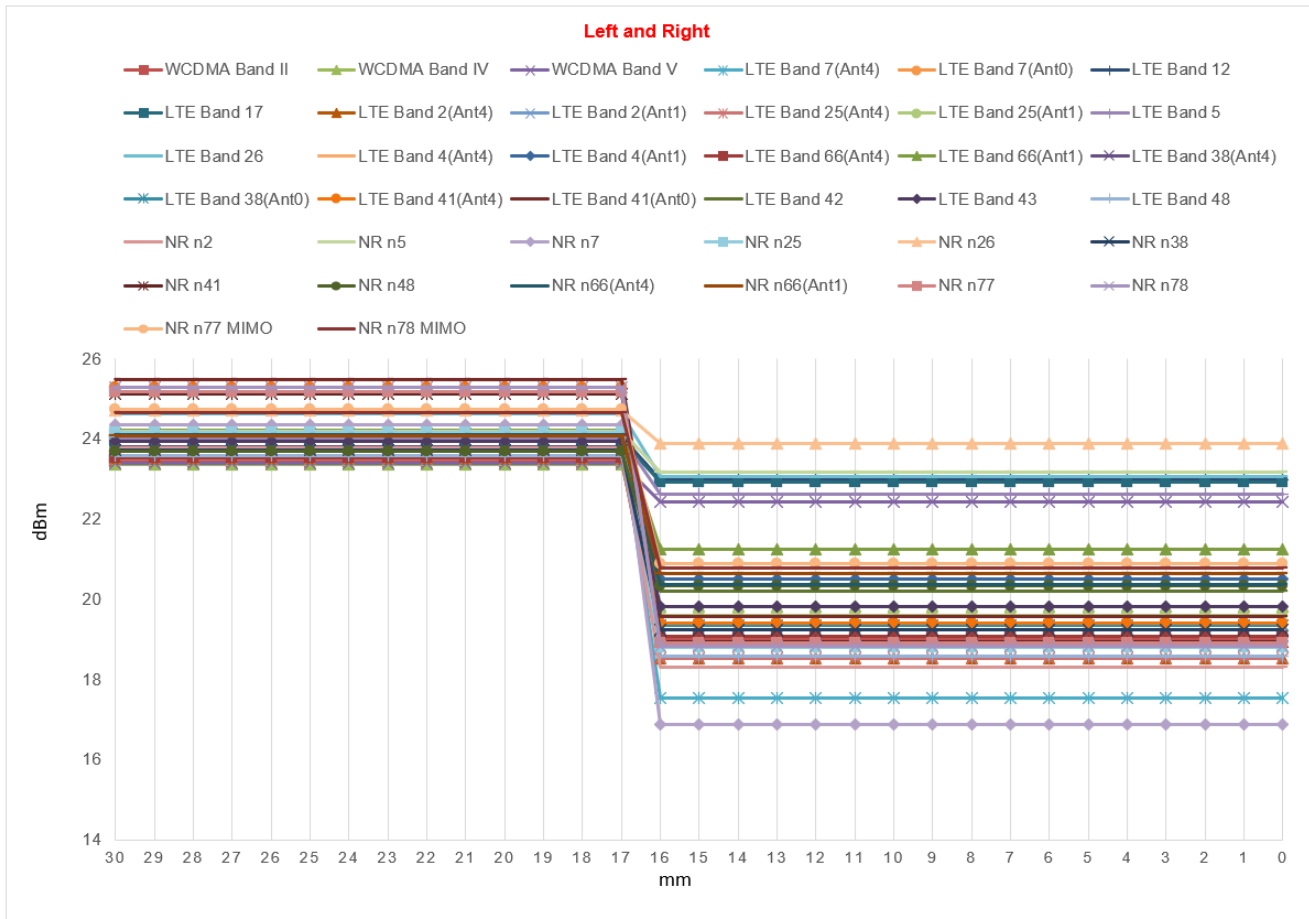
Proximity Sensor Triggering Distance(mm)						
Antenna	WWAN Ant					
Band	WCDMA Band II/IV/V LTE Band 2/4/5/7/12/17/25/26/38/41/42/43/48/66 NR n2/5/7/25/26/38/41/48/66/77/78/					
Position	Front	Back	Left	Right	Top	Bottom
Minimum	17	18	16	16	17	18

Note:

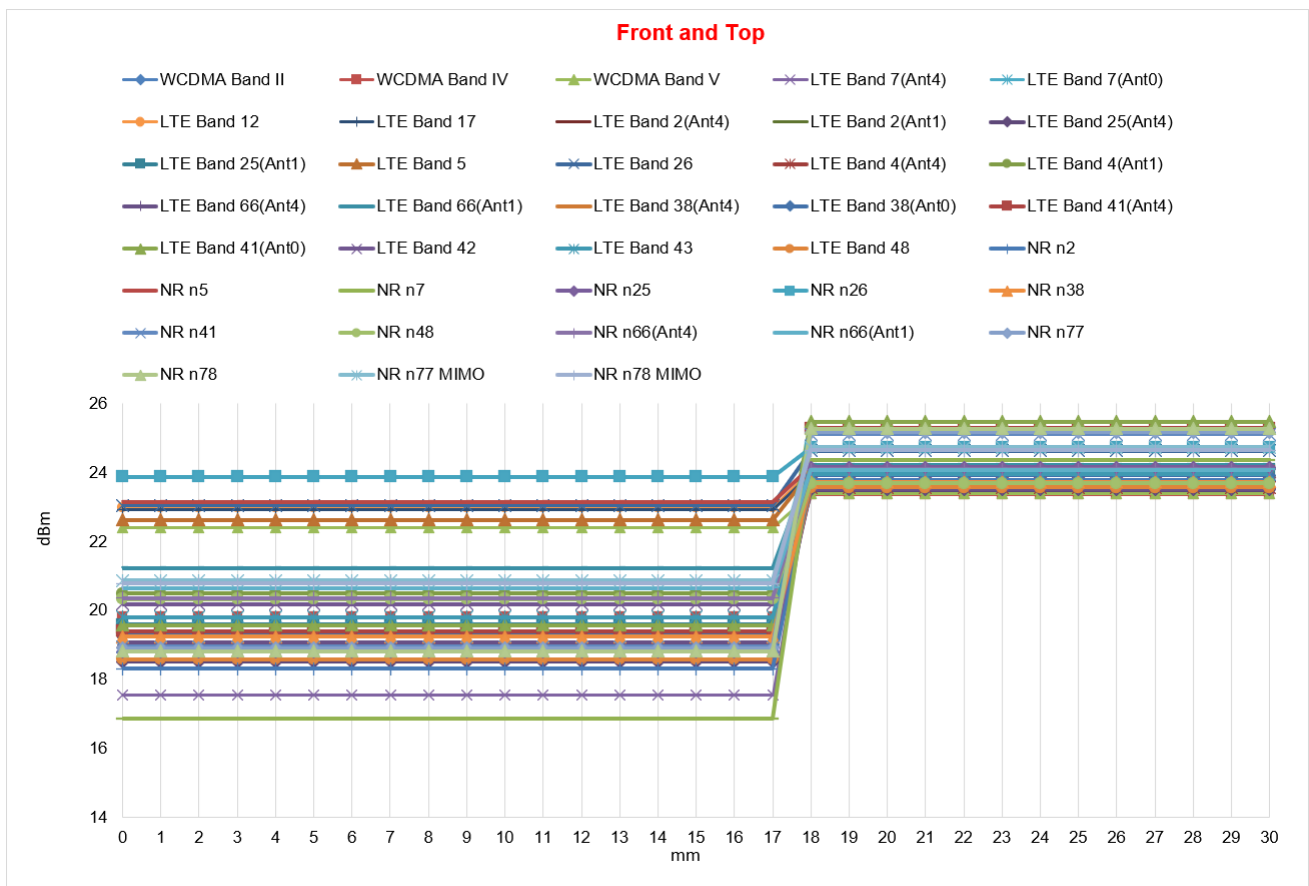
SAR tests with proximity sensor power reduction are only required for the sides of frequency bands in the table above. For the other sides or other frequency bands of the device, SAR is still tested at the maximum power level with sensor off.

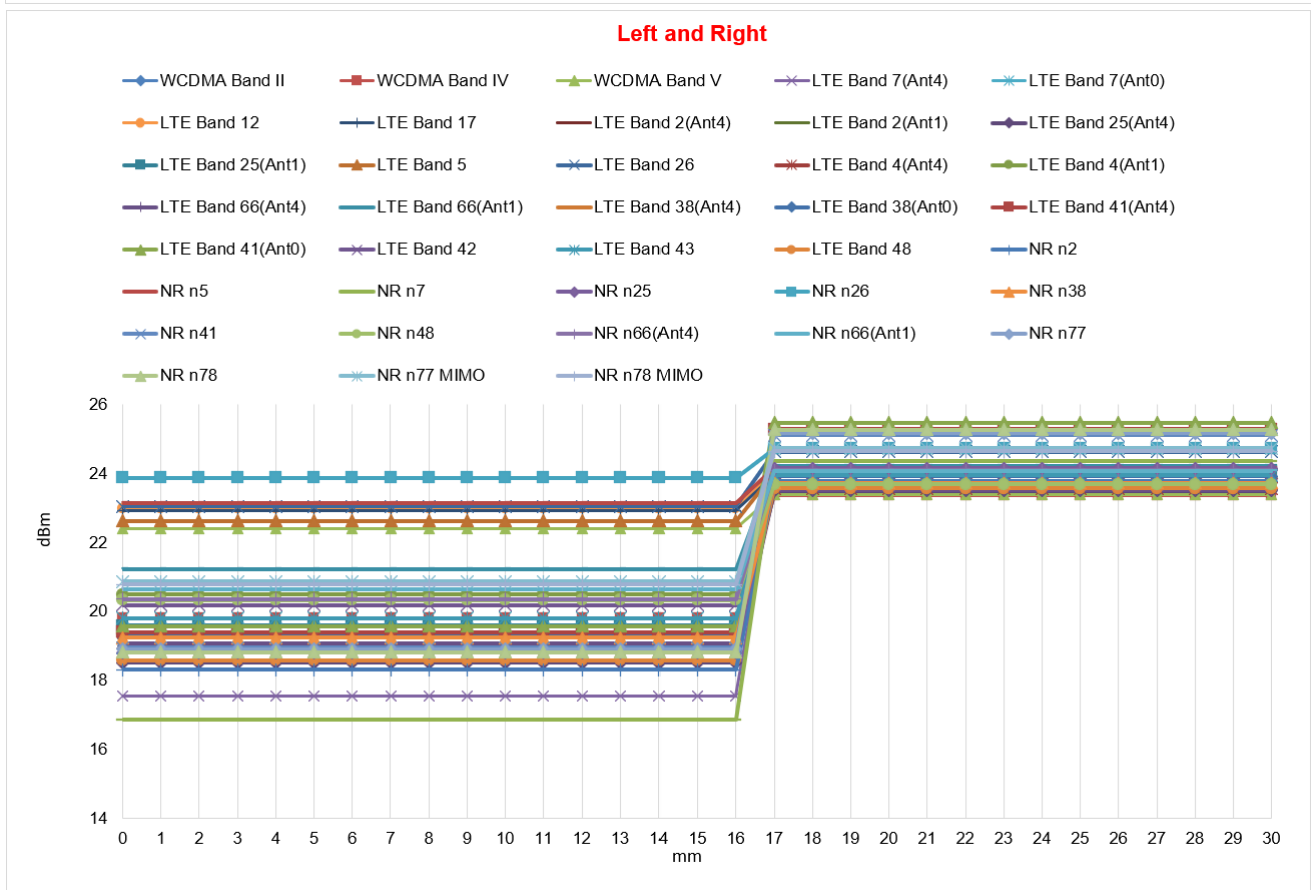
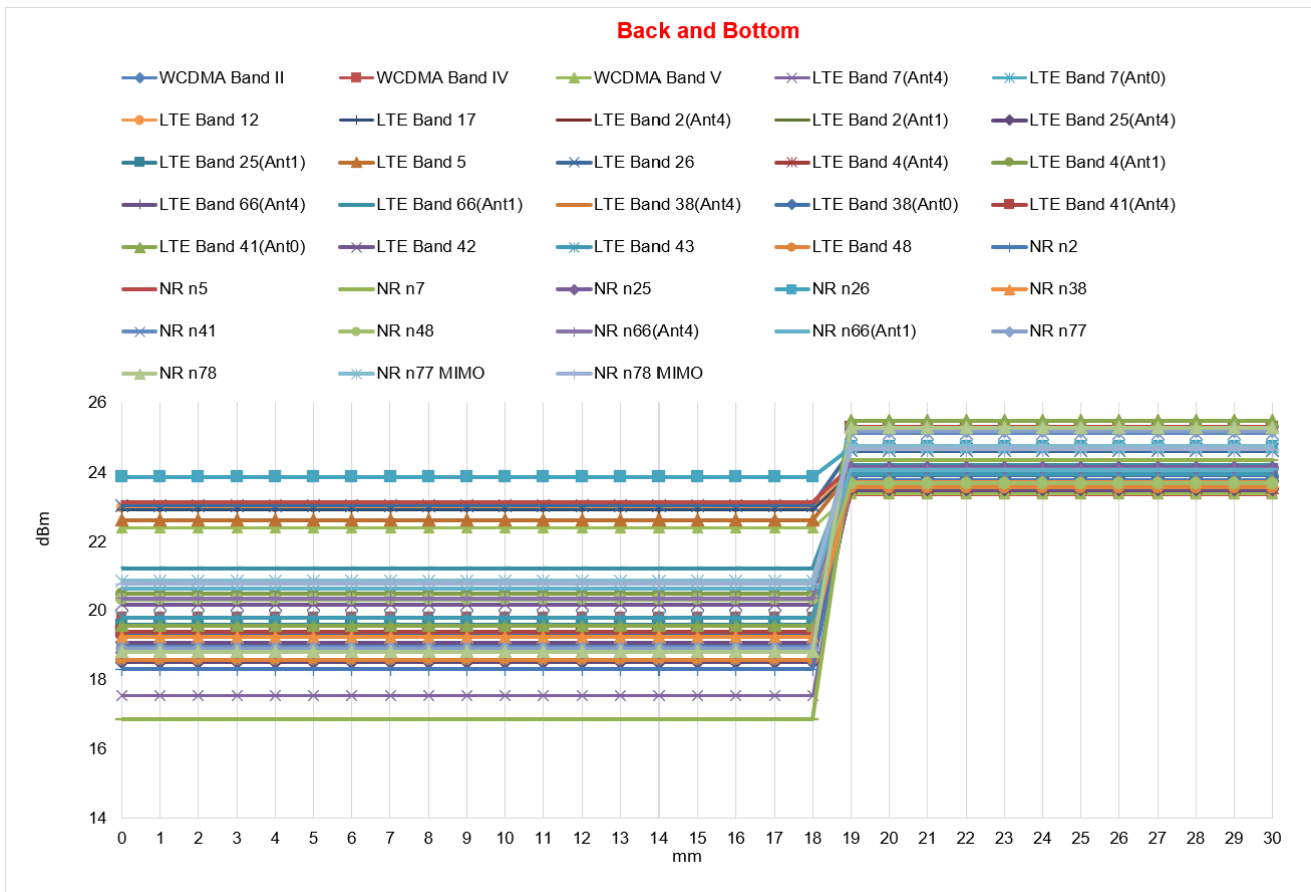
● DUT Moving Toward (Trigger) the Phantom:





● DUT Moving Away (Release) from the Phantom





2) Proximity sensor coverage

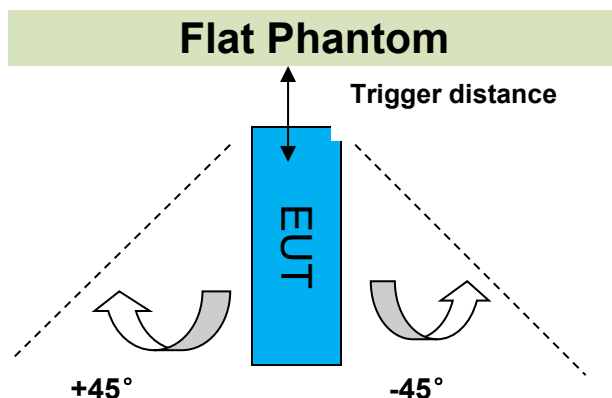
If a sensor is spatially offset from the antenna(s), it is necessary to verify sensor triggering for conditions where the antenna is next to the user but the sensor is laterally further away to ensure sensor coverage is sufficient for reducing the power to maintain compliance. For p-sensor coverage testing, the device is moved and “along the direction of maximum antenna and sensor offset”.

The proximity sensor and main antenna use same metallic electrode, so there is no spatial offset.

3) Device tilt angle influences to proximity sensor triggering

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

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



The Sensor Triggering Distance(mm)				
Antenna	WWAN Ant			
Position	Left	Right	Top	Bottom
Minimum	16	16	17	18

Summary of Tablet Tilt Angle Influence to Proximity Sensor Triggering for Bottom Side												
Ant	Minimum trigger distance at which power reduction was maintained over $\pm 45^\circ$	Power Reduction Status										
		-45°	-35°	-25°	-15°	-5°	0°	5°	15°	25°	35°	45°
WWAN Ant	Left 16mm Right 16mm Top 17mm Bottom 18mm	on	on	on	on	on	on	on	on	on	on	on

6 RF Exposure Limits

Human Exposure	Uncontrolled Environment General Population (W/kg) or (mW/g)	Controlled Environment Occupational (W/kg) or (mW/g)
Spatial Peak SAR¹ (Brain/Trunk)	1.6	8.0
Spatial Average SAR² (Whole Body)	0.08	0.4
Spatial Peak SAR³ (Hands/Feet/Ankle/Wrist)	4.0	20.0

Note:

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

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

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

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

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

RF Exposure Limit for above 6GHz

Per §1.1310 (d)(3), the MPE limits are applied for frequencies above 6 GHz. Power Density is expressed in units of W/m² or mW/cm².

Peak Spatially Averaged Power Density was evaluated over a circular area of 4cm² per interim FCC Guidance for near-field power density evaluations per October 2018 TCB Workshop notes.

Human Exposure to Radiofrequency (RF) Radiation Limits		
Frequency Range (MHz)	Power Density (mW/cm ²)	Average Time (Minutes)
(A)Limits for Occupational/Controlled Environments		
1,500-100,000	5.0	6
(B)Limits for General Population/Uncontrolled Environments		
1,500-100,000	1.0	30

Note: 1.0 mW/cm² is 10.0 W/m².

7 Introduction

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

7.1 SAR Definition

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

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

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

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

Where:

σ is the conductivity of the tissue material (S/m)

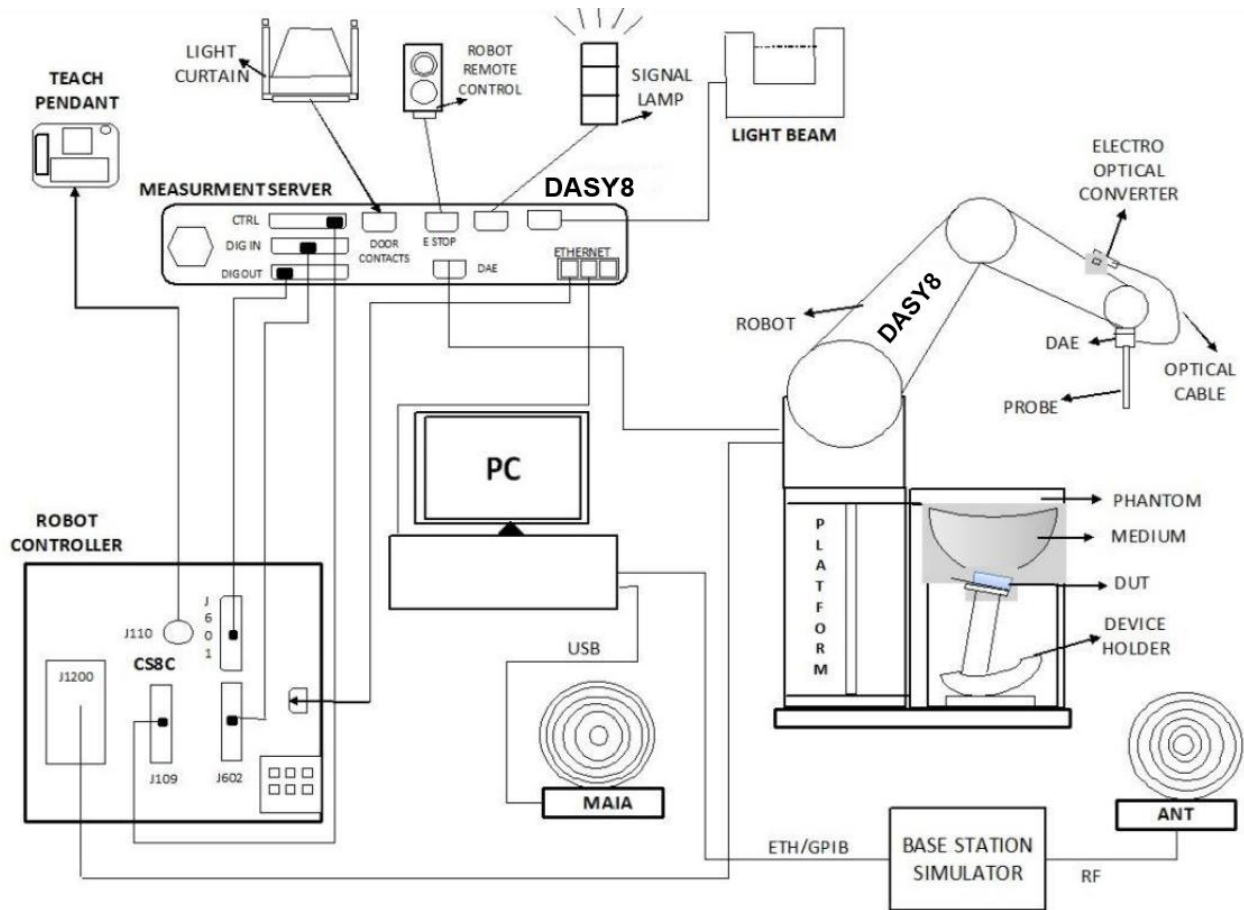
ρ is the mass density of the tissue material (kg/m³)

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

8 SAR Measurements System

8.1 The SAR Measurement Set-up

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

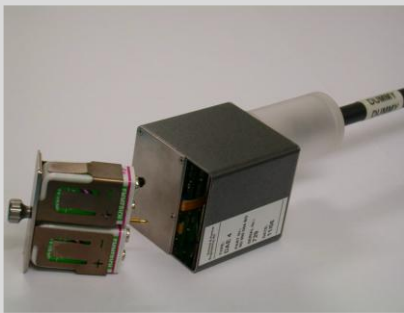


- A standard high precision 6-axis robot with controller, teach pendant and software. An arm extension for accommodating the data acquisition electronics (DAE).
- An isotropic Field probe optimized and calibrated for the targeted measurement.
- A data acquisition electronics (DAE) which performs the signal amplification, signal multiplexing, AD-conversion, offset measurements, mechanical surface detection, collision detection, etc. The unit is battery powered with standard or rechargeable batteries. The signal is optically transmitted to the EOC.
- The Electro-optical converter (EOC) performs the conversion from optical to electrical signals for the digital communication to the DAE. To use optical surface detection, a special version of the EOC is required. The EOC signal is transmitted to the measurement server.
- The function of the measurement server is to perform the time critical tasks such as signal filtering, control of the robot operation and fast movement interrupts.
- The Light Beam used is for probe alignment. This improves the (absolute) accuracy of the probe positioning.
- A computer running Windows 11 and the DASY8 software.
- Remote control and teach pendant as well as additional circuitry for robot safety such as warning lamps, etc.
- The phantom, the device holder and other accessories according to the targeted measurement.

8.2 E-Field Probe

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

8.3 Data Acquisition Electronics (DAE)

	The data acquisition electronics (DAE) consists of a highly sensitive electrometer-grade preamplifier with auto-zeroing, a channel and gain switching multiplexer, a fast 16 bit AD-converter and a command decoder and control logic unit. Transmission to the measurement server is accomplished through an optical downlink for data and status information as well as an optical uplink for commands and the clock. The input impedance of the DAE is 200 MOhm; the inputs are symmetrical and floating. Common mode rejection is above 80 dB.
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8.4 Phantom

SAM Twin Phantom:

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

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

ELI Phantom:

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

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

8.5 Device Holder

The SAR measured in the phantom is approximately inversely proportional to the square of the distance between the source and the liquid surface. For a source at 5mm distance, a positioning uncertainty of $\pm 0.5\text{mm}$ would produce uncertainty in the SAR of $\pm 20\%$. Accurate device positioning is therefore crucial for accurate and repeatable measurements. The positions at which the devices must be measured are defined by the standards. The DASY8 device holder along with the associated adaptors / options is designed to accommodate different types & sizes (laptops, tablets, phones) of test devices and yet provide accurate and repeatable positioning as described in the test standards.

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



(a) MD4HHTV5



(b) MD4LAPV5

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

8.6 Measurement procedure

8.6.1 Power reference measurement

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

8.6.2 Area scan

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

Area scan parameters measurement as below:

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

8.6.3 Zoom Scan

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

Zoom Scan parameters measurement as below:

Parameter	DUT transmit frequency being tested	
	$f \leq 3 \text{ GHz}$	$3 \text{ GHz} < f \leq 10 \text{ GHz}$
Maximum distance between the closest measured points and the phantom surface (z_{M1} in Figure 20 and Table 3, in mm)	5	$\delta \ln(2)/2^a$
Maximum angle between the probe axis and the phantom surface normal (α in Figure 20)	5° (flat phantom only) 30° (other phantoms)	5° (flat phantom only) 20° (other phantoms)
Maximum spacing between measured points in the x - and y -directions (Δx and Δy , in mm)	8	$24/f^b$
For uniform grids: Maximum spacing between measured points in the direction normal to the phantom shell (Δz_1 in Figure 20, in mm)	5	$10/(f - 1)$
For graded grids: Maximum spacing between the two closest measured points in the direction normal to the phantom shell (Δz_1 in Figure 20, in mm)	4	$12/f$
For graded grids: Maximum incremental increase in the spacing between measured points in the direction normal to the phantom shell ($R_z = \Delta z_2/\Delta z_1$ in Figure 20)	1,5	1,5
Minimum edge length of the zoom scan volume in the x - and y -directions (L_z in O.8.3.2, in mm)	30	22
Minimum edge length of the zoom scan volume in the direction normal to the phantom shell (L_h in O.8.3.2 in mm)	30	22
Tolerance in the probe angle	1°	1°
^a δ is the penetration depth for a plane-wave incident normally on a planar half-space.		
^b This is the maximum spacing allowed, which might not work for all circumstances.		

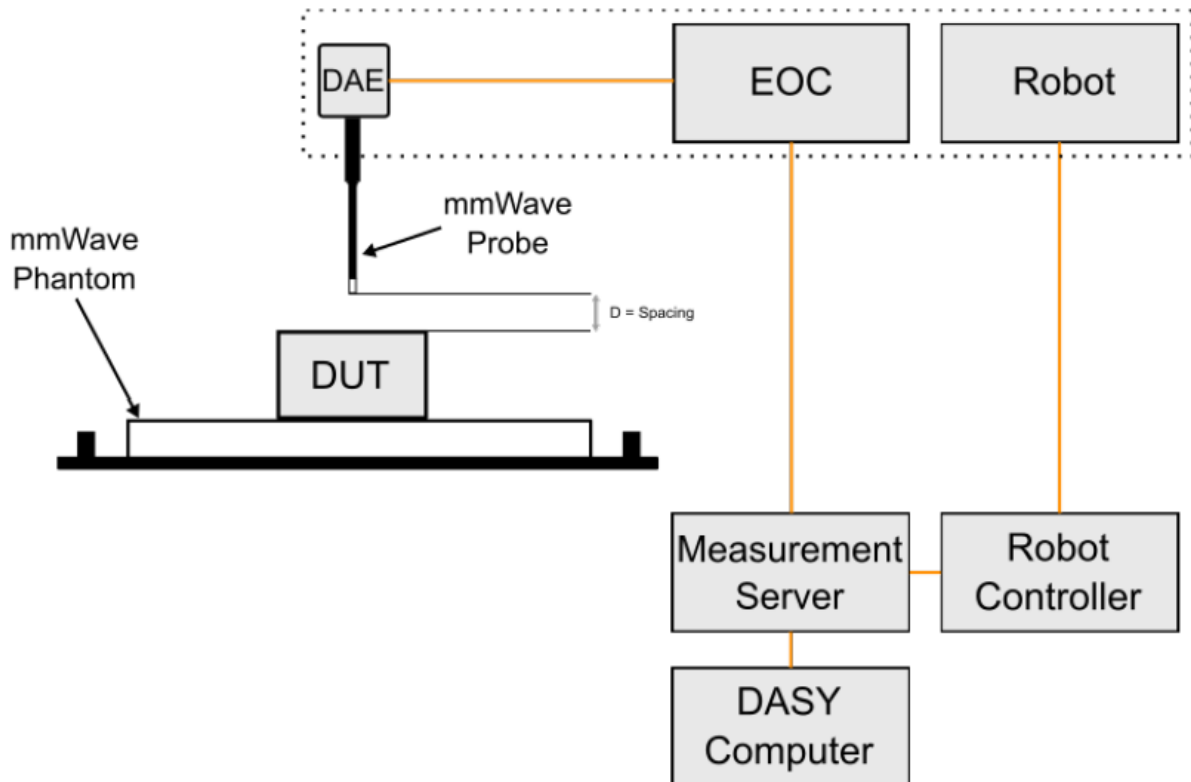
8.6.4 Power Drift Measurement

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

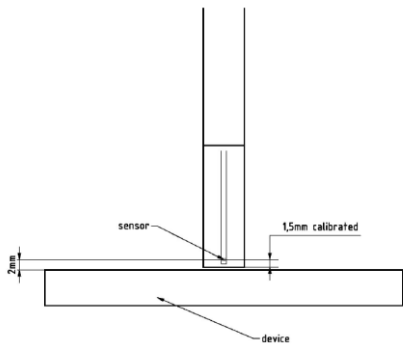
9 PD Measurements System

9.1 The PD Measurement Set-up

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



9.2 EUmWVe Probe

	The EUmWVe probe is based on the pseudo-vector probe design, which not only measures the field magnitude but also derives its polarization ellipse. This probe concept is advantageous because the sensor angle errors or distortions of the field by the substrate can be largely nullified by calibration. This is particularly important as field distortions by the substrate are dependent on the wavelength at these very high frequencies. The probe contains two small 0.8mm dipole sensors mechanically protected by high-density foam, printed on both sides of a 0.9mm wide and 0.12mm thick glass substrate. The body of the probe is specifically constructed to minimize distortion by the scattered fields. The probe consists of two sensors with different angles (γ_1 and γ_2) arranged in the same plane in the probe axis. Three measurements of the two sensors are taken for different probe rotational angles to derive the amplitude and polarization information. The probe design allows measurements at distances as small as 2mm from the sensors to the surface of the DUT. The typical sensor to the probe tip distance is 1.5 mm. The exact distance is calibrated.
Frequency	750MHz ~ 110GHz
Probe Body Diameter	8.0 mm
Probe Overall Length	320 mm
Tip Length	23.0 mm
Tip Diameter	8.0 mm
Probe's two dipoles length	0.9 mm ~ Diode loaded
Dynamic Range	< 20 V/m - 10000 V/m with PRE-10 (min < 50 V/m - 3000 V/m)
Position Precision	< 0.2 mm
Distance between diode sensors and probe's tip	1.5 mm
Minimum Mechanical separation between probe tip and a Surface	0.5 mm

9.3 Data Acquisition Electronics (DAE)

	The data acquisition electronics (DAE) consists of a highly sensitive electrometer-grade preamplifier with auto-zeroing, a channel and gain switching multiplexer, a fast 16 bit AD-converter and a command decoder and control logic unit. Transmission to the measurement server is accomplished through an optical downlink for data and status information as well as an optical uplink for commands and the clock. The input impedance of the DAE is 200 MOhm; the inputs are symmetrical and floating. Common mode rejection is above 80 dB.
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10 Test Equipment list

Manufacturer	Equipment Name	Model	Serial Number	Calibration Date	Due Date of calibration
SPEAG	ELI	ELI V8.0	2222	NCR	NCR
SPEAG	mmWave Phantom	mmWave	1121	NCR	NCR
SPEAG	Twin Phantom	SAM	2168	NCR	NCR
SPEAG	Twin Phantom	SAM	2173	NCR	NCR
SPEAG	E-Field Probe	EX3DV4	7858	2026/02/20	2027/02/19
SPEAG	E-Field Probe	EX3DV4	7812	2026/01/19	2027/01/18
SPEAG	EUmmWV Probe Tip Protection	EUmmWV4	9455	2025/06/30	2026/06/29
SPEAG	Data Acquisition Electronics	DAE4	1846	2026/01/07	2027/01/06
SPEAG	Data Acquisition Electronics	DAE4	1847	2026/03/17	2027/03/16
SPEAG	System Validation Kits	CLA13	1043	2024/01/03	2027/01/02
SPEAG	System Validation Kits	D750V3	1231	2026/05/18	2029/05/17
SPEAG	System Validation Kits	D835V2	4d302	2026/02/03	2029/02/02
SPEAG	System Validation Kits	D1750V2	1115	2026/02/05	2029/02/04
SPEAG	System Validation Kits	D1900V2	512	2026/02/04	2029/02/03
SPEAG	System Validation Kits	D1950V3	1266	2026/02/03	2029/02/02
SPEAG	System Validation Kits	D2450V2	1099	2026/02/05	2029/02/04
SPEAG	System Validation Kits	D2600V2	1094	2026/02/04	2029/02/03
SPEAG	System Validation Kits	D3500V2	1150	2026/05/19	2029/05/18
SPEAG	System Validation Kits	D3700V2	1127	2026/05/15	2029/05/14
SPEAG	System Validation Kits	D3900V2	1099	2026/05/19	2029/05/18
SPEAG	System Validation Kits	D5GHzV2	1371	2026/02/09	2029/02/08
SPEAG	System Validation Kits	D6.5GHzV2	1096	2026/05/15	2029/05/14
SPEAG	5G Verification Source	10GHz	1055	2024/09/16	2027/09/15
SPEAG	Dielectric parameter probes	DAK	1199	2026/01/13	2027/01/12
Agilent	Network Analyzer	E5071B	MY42302220	2026/03/05	2027/03/04
Anritsu	Radio Communication Analyzer	MT8821C	6262170463	2026/03/05	2027/03/04
Anritsu	Radio Communication Analyzer	MT8821C	6261991091	2026/03/05	2027/03/04
R&S	Wideband Radio Communication Tester	CMW500	153024	2026/03/05	2027/03/04
Talent Microwave	Directional Coupler	TC-05180-10S	220420003	NCR	NCR
R&S	Signal Generator	SMR20	100648	2026/03/05	2027/03/04
QiJi	Preamplifier	YX28982302	TOWE-EQ-SR-020	NCR	NCR
QiJi	Preamplifier	YX28982301	TOWE-EQ-SR-021	NCR	NCR
R&S	Power Sensor	NRP-Z21	101651	2026/03/05	2027/03/04
R&S	Power Sensor	NRP-Z21	104189	2026/03/05	2027/03/04

HiSiDiKe	Thermometer	TP300	TOWE-EQ-SR-023	2026/03/09	2027/03/08
BingYu	Temperature and Humidity Indicator	HTC-1	TOWE-EQ-SR-024	2026/03/09	2027/03/08
BingYu	Temperature and Humidity Indicator	HTC-1	TOWE-EQ-SR-025	2026/06/01	2027/05/31

Note:

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

11 SAR measurement variability

SAR measurement variability must be assessed for each frequency band, which is determined by the SAR probe calibration point and tissue-equivalent medium used for the device measurements. When both head and body tissue-equivalent media are required for SAR measurements in a frequency band, the variability measurement procedures should be applied to the tissue medium with the highest measured SAR, using the highest measured SAR configuration for that tissue equivalent medium.

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

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

12 Description of Test Position

12.1 Ear Reference Point

Figure 11-2 shows the front, back and side views of the SAM Twin Phantom. The point “M” is the reference point for the center of the mouth, “LE” is the left ear reference point (ERP), and “RE” is the right ERP. The ERP is 15mm posterior to the entrance to the ear canal (EEC) along the B-M line (Back-Mouth), as shown in Figure 11-1. The plane passing through the two ear canals and M is defined as the Reference Plane. The line N-F (Neck-Front), also called the Reference Pivoting Line, is not perpendicular to the reference plane (see Figure 11-1). Line B-M is perpendicular to the N-F line. Both N-F and B-M lines are marked on the external phantom shell to facilitate handset positioning.

12.2 Handset Reference Point

Two imaginary lines on the handset were established: the vertical centerline and the horizontal line. The device under test was placed in a normal operating position with the acoustic output located along the “vertical centerline” on the front of the device aligned to the “ear reference point” (see Figure 11-3). The acoustic output was then located at the same level as the center of the ear reference point. The device under test was positioned so that the “vertical centerline” was bisecting the front surface of the handset at its top and bottom edges, positioning the “ear reference point” on the outer surface of the both the left and right head phantoms on the ear reference point.

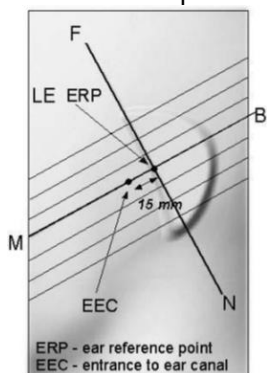


Figure 11-1: Close-up side view of phantom showing the ear region, N-F and B-M lines, and seven cross-sectional plane locations.



Figure 11-2: Front, back and side view of SAM Twin Phantom.

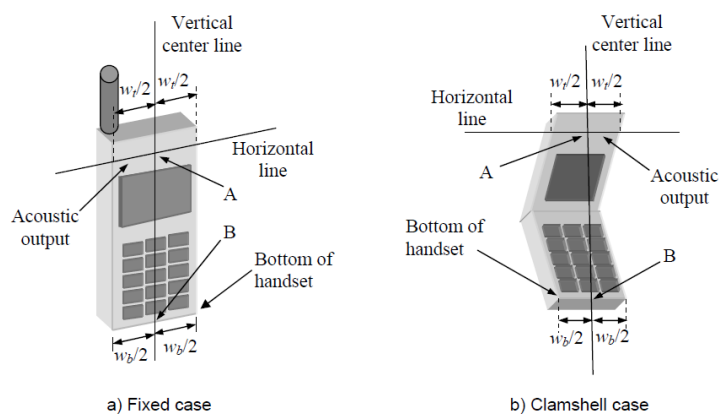


Figure 11-3: Handset vertical and horizontal reference lines

12.3 Definition of the cheek position

The test device was positioned with the device close to the surface of the phantom such that point A is on the (virtual) extension of the line passing through points RE and LE on the phantom (see Figure 11-4), such that the plane defined by the vertical center line and the horizontal line of the phone is approximately parallel to the sagittal plane of the phantom.

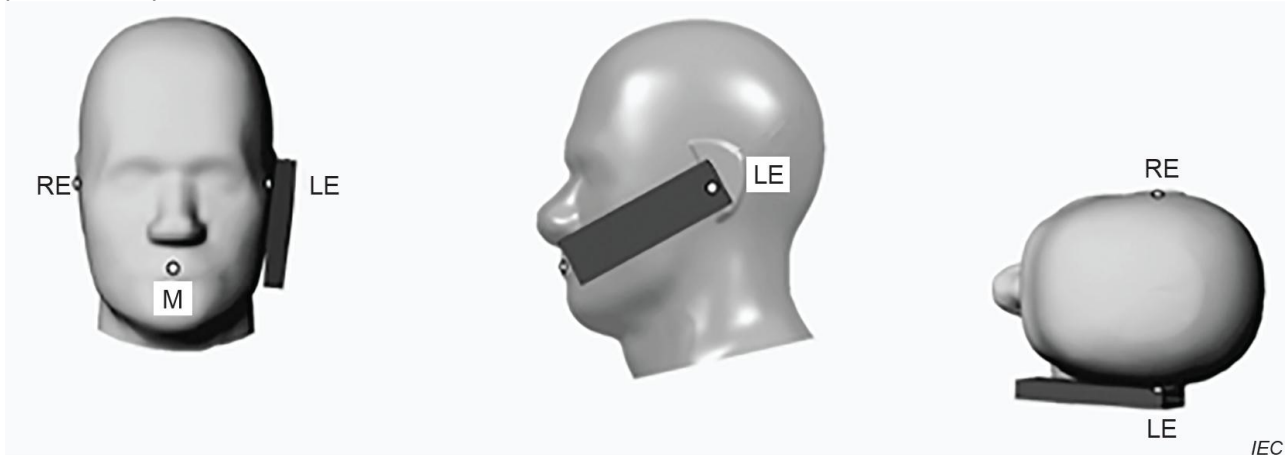


Figure 11-4: Front, Side and Top View of Cheek or Touch Position

- 1) Position the handset close to the surface of the phantom such that point A is on the (virtual) extension of the line passing through points RE and LE on the phantom (see Figure 11-4), such that the plane defined by the vertical centerline and the horizontal line of the handset is approximately parallel to the sagittal plane of the phantom.
- 2) Translate the handset towards the phantom along the line passing through RE and LE until handset point A touches the pinna at the ERP.
- 3) While maintaining the handset in this plane, rotate it around the LE-RE line until the vertical centerline is in the plane normal to the plane containing B-M and N-F lines, i.e., the Reference Plane.
- 4) Rotate the handset around the vertical centerline until the handset (horizontal line) is parallel to the N-F line.
- 5) While maintaining the vertical centerline in the Reference Plane, keeping point A on the line passing through RE and LE, and maintaining the handset contact with the pinna, rotate the handset about the N-F line until any point on the handset is in contact with a phantom point below the pinna on the cheek. See Figure 11-4. The actual rotation angles should be documented in the test report.

12.4 Definition of the tilt position

Figure 11-5. shows tilted position. Place the device in the cheek position. Then while maintaining the orientation of the device, retract the device parallel to the reference plane far enough away from the phantom to enable a rotation of the device by 15°.

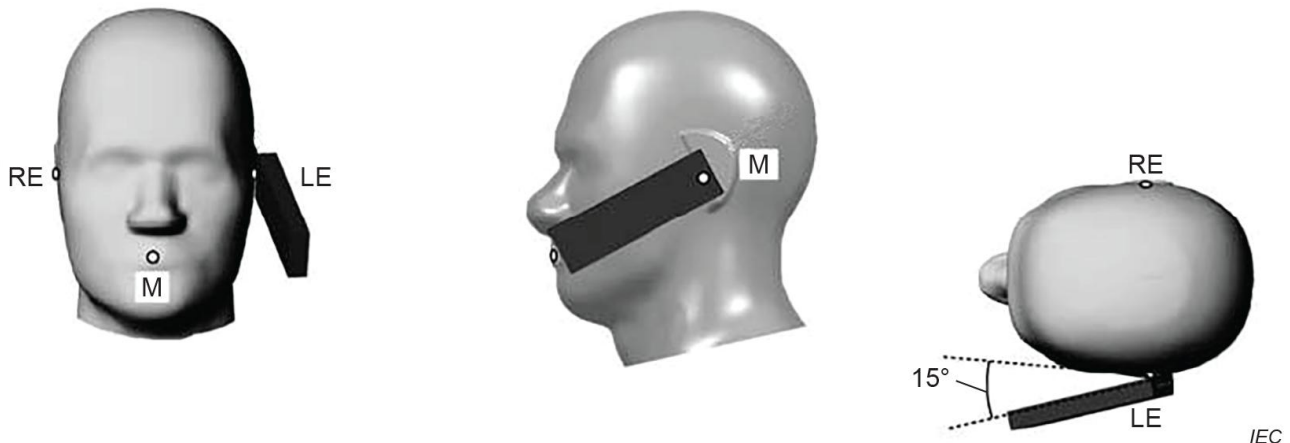


Figure 11-5: Front, Side and Top View of Tilt 15° Position

12.5 Body-worn accessory exposure conditions

Body-worn operating configurations are tested with the belt-clips and holsters attached to the device and positioned against a flat phantom in a normal use configuration (see Figure 11-6). Per FCC KDB Publication 648474 D04, Body-worn accessory exposure is typically related to voice mode operations when handsets are carried in body-worn accessories. The body-worn accessory procedures in FCC KDB Publication 447498 D01 should be used to test for body-worn accessory SAR compliance, without a headset connected to it. This enables the test results for such configuration to be compatible with that required for hotspot mode when the body-worn accessory test separation distance is greater than or equal to that required for hotspot mode, when applicable. When the reported SAR for a body-worn accessory, measured without a headset connected to the handset, is $> 1.2 \text{ W/kg}$, the highest reported SAR configuration for that wireless mode and frequency band should be repeated for that body-worn accessory with a headset attached to the handset.

Accessories for Body-worn operation configurations are divided into two categories: those that do not contain metallic components and those that do contain metallic components. When multiple accessories that do not contain metallic components are supplied with the device, the device is tested with only the accessory that dictates the closest spacing to the body. Then multiple accessories that contain metallic components are tested with the device with each accessory. If multiple accessories share an identical metallic component (i.e. the same metallic belt-clip used with different holsters with no other metallic components) only the accessory that dictates the closest spacing to the body is tested.

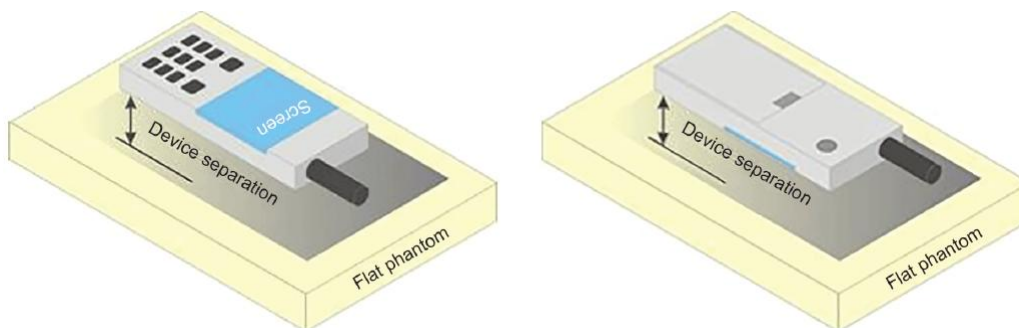


Figure 11-6: Test positions for body-worn devices

12.6 Wireless Router exposure conditions

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

When the user enables the personal wireless router functions for the handset, actual operations include simultaneous transmission of both the WIFI transmitter and another licensed transmitter. Both transmitters often do not transmit at the same transmitting frequency and thus cannot be evaluated for SAR under actual use conditions due to the limitations of the SAR assessment probes. Therefore, SAR must be evaluated for each frequency transmission and mode separately and spatially summed with the WIFI transmitter according to FCC KDB Publication 447498 D01 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.

12.7 Product Specific 10g SAR exposure conditions

Devices that are designed or intended for use on extremities or mainly operated in extremity only exposure conditions, i.e., hands, wrists, feet and ankles, may require extremity SAR evaluation. When the device also operates in close proximity to the user's body, SAR compliance for the body is also required. The 1g body and 10g extremity SAR Exclusion Thresholds found in KDB Publication 447498 D01 should be applied to determine SAR test requirements.

For smart phones with a display diagonal dimension $> 15.0 \text{ cm}$ or an overall diagonal dimension $> 16.0 \text{ cm}$ that provide similar mobile web access and multimedia support found in mini-tablets or UMPC mini-tablets that support voice calls next to the ear. UMPC mini-tablet devices must be tested for 1-g SAR on all surfaces and side edges with a transmitting antenna located at $\leq 25 \text{ mm}$ from that surface or edge, at 5 mm separation from a flat phantom, for the data modes, wireless technologies and frequency bands supported by the device to determine SAR compliance. When 1-g SAR is tested at 5 mm, 10-g SAR is not required.

13 System Verification

13.1 Tissue Verification

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

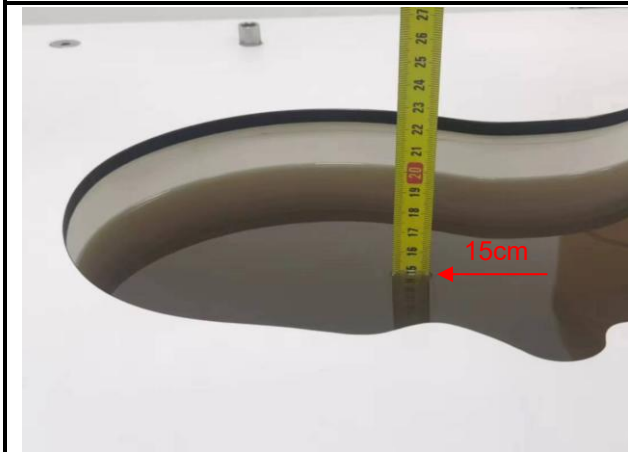


Figure 12-1 Liquid depth in the Head Phantom

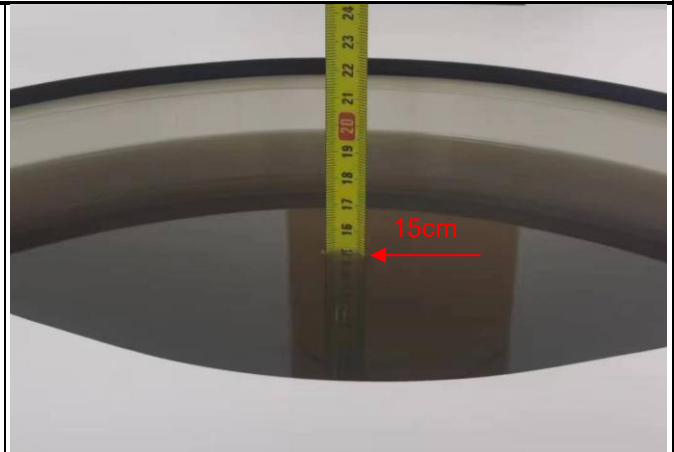


Figure 12-2 Liquid depth in the Flat Phantom

Frequency (MHz)	Tissue Type	Liquid Temp. ($^{\circ}\text{C}$)	Target Tissue		Measured Tissue		Deviation (Limit $\pm 5\%$)		Date
			Permittivity $\epsilon_r(\text{F/m})$	Conductivity $\sigma(\text{S/m})$	Permittivity $\epsilon_r(\text{F/m})$	Conductivity $\sigma(\text{S/m})$	$\Delta\epsilon_r$	$\Delta\sigma$	
13	Head	21.8	55.00	0.75	56.000	0.764	1.82%	1.87%	2026/07/03
750	Head	22.1	41.90	0.89	43.000	0.904	2.63%	1.57%	2026/06/12
750	Head	21.9	41.90	0.89	42.200	0.897	0.72%	0.79%	2026/06/13
750	Head	22.2	41.90	0.89	42.800	0.900	2.15%	1.12%	2026/06/16
835	Head	21.8	41.50	0.90	42.400	0.907	2.17%	0.78%	2026/06/11
1750	Head	22.1	40.10	1.37	40.000	1.380	-0.25%	0.73%	2026/07/17
1750	Head	22.1	40.10	1.37	40.600	1.360	1.25%	-0.73%	2026/07/19
1750	Head	21.9	40.10	1.37	40.200	1.400	0.25%	2.19%	2026/07/28
1750	Head	22.3	40.10	1.37	40.500	1.380	1.00%	0.73%	2026/07/29
1900	Head	21.9	40.00	1.40	40.900	1.430	2.25%	2.14%	2026/07/13
1900	Head	22.2	40.00	1.40	40.400	1.410	1.00%	0.71%	2026/07/18
1950	Head	22.1	40.00	1.40	40.600	1.420	1.50%	1.43%	2026/07/28
2450	Head	21.7	39.20	1.80	39.400	1.790	0.51%	-0.56%	2026/06/02
2600	Head	22.0	39.00	1.96	39.900	2.000	2.31%	2.04%	2026/07/15
2600	Head	21.9	39.00	1.96	39.300	1.980	0.77%	1.02%	2026/07/16
2600	Head	21.8	39.00	1.96	39.700	1.970	1.79%	0.51%	2026/07/17
2600	Head	22.1	39.00	1.96	38.900	1.970	-0.26%	0.51%	2026/07/30
2600	Head	22.1	39.00	1.96	38.900	1.990	-0.26%	1.53%	2026/07/31
3500	Head	22.2	37.90	2.91	38.400	2.920	1.32%	0.34%	2026/07/10
3500	Head	21.8	37.90	2.91	38.400	2.950	1.32%	1.37%	2026/07/14
3500	Head	21.7	37.90	2.91	38.200	2.940	0.79%	1.03%	2026/07/21
3700	Head	22.2	37.70	3.12	38.300	3.160	1.59%	1.28%	2026/07/11
3700	Head	22.2	37.70	3.12	38.400	3.180	1.86%	1.92%	2026/07/12
3700	Head	21.9	37.70	3.12	38.200	3.160	1.33%	1.28%	2026/07/15
3700	Head	21.8	37.70	3.12	38.200	3.170	1.33%	1.60%	2026/07/22
3900	Head	21.7	37.50	3.32	38.200	3.350	1.87%	0.90%	2026/07/09
3900	Head	22.1	37.50	3.32	38.000	3.380	1.33%	1.81%	2026/07/23
5200	Head	22.2	36.00	4.66	36.500	4.760	1.39%	2.15%	2026/06/26
5300	Head	22.2	35.90	4.76	36.500	4.870	1.67%	2.31%	2026/06/26
5600	Head	22.1	35.50	5.07	35.600	5.230	0.28%	3.16%	2026/06/27
5800	Head	22.1	35.30	5.27	35.500	5.410	0.57%	2.66%	2026/06/27
6500	Head	21.9	34.50	6.07	34.300	6.080	-0.58%	0.16%	2026/06/14

Table 2: Measurement Tissue Parameters

13.2 SAR System Check

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

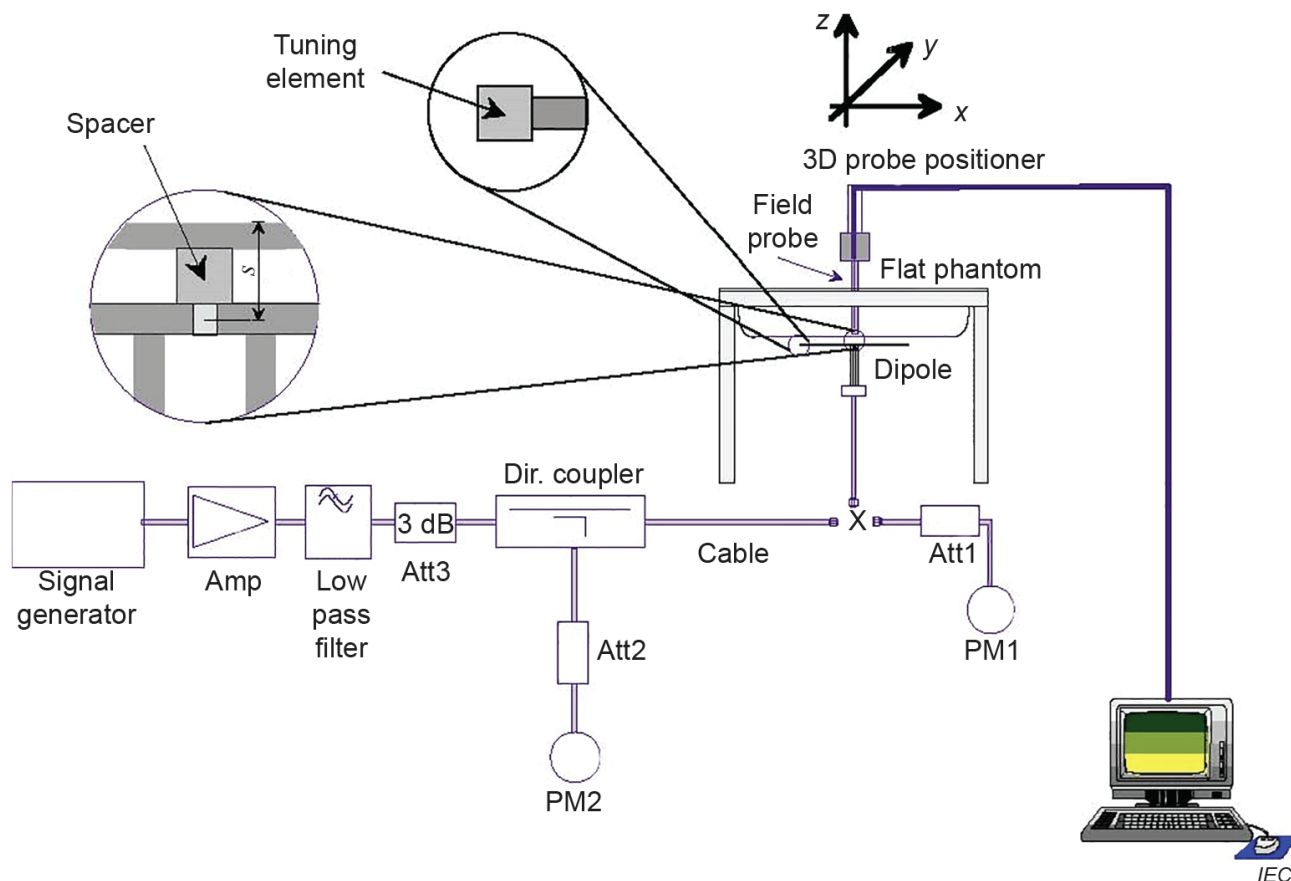


Figure 12-3 System Performance Check Setup

13.2.1 System Check Result

Frequency (MHz)	Tissue Type	Dipole	S/N	Target SAR (1W)		Measured SAR (200mW)		Measured SAR (normalized to 1W)		Deviation (Limit $\pm 10\%$)		Date
				1g (W/kg)	10g (W/kg)	1g (W/kg)	10g (W/kg)	1g (W/kg)	10g (W/kg)	$\Delta 1g$	$\Delta 10g$	
13	Head	CLA-13	1043	0.484	0.297	0.046	0.029	0.46	0.29	-4.96%	-2.36%	2026/07/03
750	Head	D750V3	1231	8.54	5.58	0.890	0.592	8.90	5.92	4.22%	6.09%	2026/06/12
750	Head	D750V3	1231	8.54	5.58	0.878	0.570	8.78	5.70	2.81%	2.15%	2026/06/13
750	Head	D750V3	1231	8.54	5.58	0.843	0.548	8.43	5.48	-1.29%	-1.79%	2026/06/16
835	Head	D835V2	4d302	9.50	6.16	0.979	0.631	9.79	6.31	3.05%	2.44%	2026/06/11
1750	Head	D1750V2	1115	36.70	19.50	3.720	2.010	37.20	20.10	1.36%	3.08%	2026/07/17
1750	Head	D1750V2	1115	36.70	19.50	3.500	1.890	35.00	18.90	-4.63%	-3.08%	2026/07/19
1750	Head	D1750V2	1115	36.70	19.50	3.720	1.960	37.20	19.60	1.36%	0.51%	2026/07/28
1750	Head	D1750V2	1115	36.70	19.50	3.610	1.900	36.10	19.00	-1.63%	-2.56%	2026/07/29
1900	Head	D1900V2	512	39.90	20.80	4.020	2.100	40.20	21.00	0.75%	0.96%	2026/07/13
1900	Head	D1900V2	512	39.90	20.80	4.020	2.100	40.20	21.00	0.75%	0.96%	2026/07/18
1950	Head	D1950V3	1266	40.40	20.80	4.120	2.090	41.20	20.90	1.98%	0.48%	2026/07/28
2450	Head	D2450V2	1099	52.70	24.70	5.320	2.470	53.20	24.70	0.95%	0.00%	2026/06/02
2600	Head	D2600V2	1094	55.90	25.00	5.520	2.490	55.20	24.90	-1.25%	-0.40%	2026/07/15
2600	Head	D2600V2	1094	55.90	25.00	5.820	2.620	58.20	26.20	4.11%	4.80%	2026/07/16
2600	Head	D2600V2	1094	55.90	25.00	5.700	2.570	57.00	25.70	1.97%	2.80%	2026/07/17
2600	Head	D2600V2	1094	55.90	25.00	5.350	2.410	53.50	24.10	-4.29%	-3.60%	2026/07/30
2600	Head	D2600V2	1094	55.90	25.00	5.360	2.410	53.60	24.10	-4.11%	-3.60%	2026/07/31
3500	Head	D3500V2	1150	66.40	25.70	6.850	2.630	68.50	26.30	3.16%	2.33%	2026/07/10
3500	Head	D3500V2	1150	66.40	25.70	6.730	2.590	67.30	25.90	1.36%	0.78%	2026/07/14
3500	Head	D3500V2	1150	66.40	25.70	6.670	2.570	66.70	25.70	0.45%	0.00%	2026/07/21
3700	Head	D3700V2	1127	67.40	25.20	7.150	2.680	71.50	26.80	6.08%	6.35%	2026/07/11
3700	Head	D3700V2	1127	67.40	25.20	7.030	2.630	70.30	26.30	4.30%	4.37%	2026/07/12
3700	Head	D3700V2	1127	67.40	25.20	6.310	2.370	63.10	23.70	-6.38%	-5.95%	2026/07/15
3700	Head	D3700V2	1127	67.40	25.20	6.590	2.470	65.90	24.70	-2.23%	-1.98%	2026/07/22
3900	Head	D3900V2	1099	68.30	24.40	7.010	2.500	70.10	25.00	2.64%	2.46%	2026/07/09
3900	Head	D3900V2	1099	68.30	24.40	7.090	2.530	70.90	25.30	3.81%	3.69%	2026/07/23
5200	Head	D5GHzV2	1371	76.50	21.50	7.930	2.300	79.30	23.00	3.66%	6.98%	2026/06/26
5300	Head	D5GHzV2	1371	79.50	22.50	7.850	2.270	78.50	22.70	-1.26%	0.89%	2026/06/26
5600	Head	D5GHzV2	1371	82.10	23.10	8.340	2.390	83.40	23.90	1.58%	3.46%	2026/06/27
5800	Head	D5GHzV2	1371	78.60	22.10	7.380	2.120	73.80	21.20	-6.11%	-4.07%	2026/06/27
6500	Head	D6.5GHzV2	1096	308.00	56.90	30.200	5.780	302.00	57.80	-1.95%	1.58%	2026/06/14

Table 3: SAR System Check Result

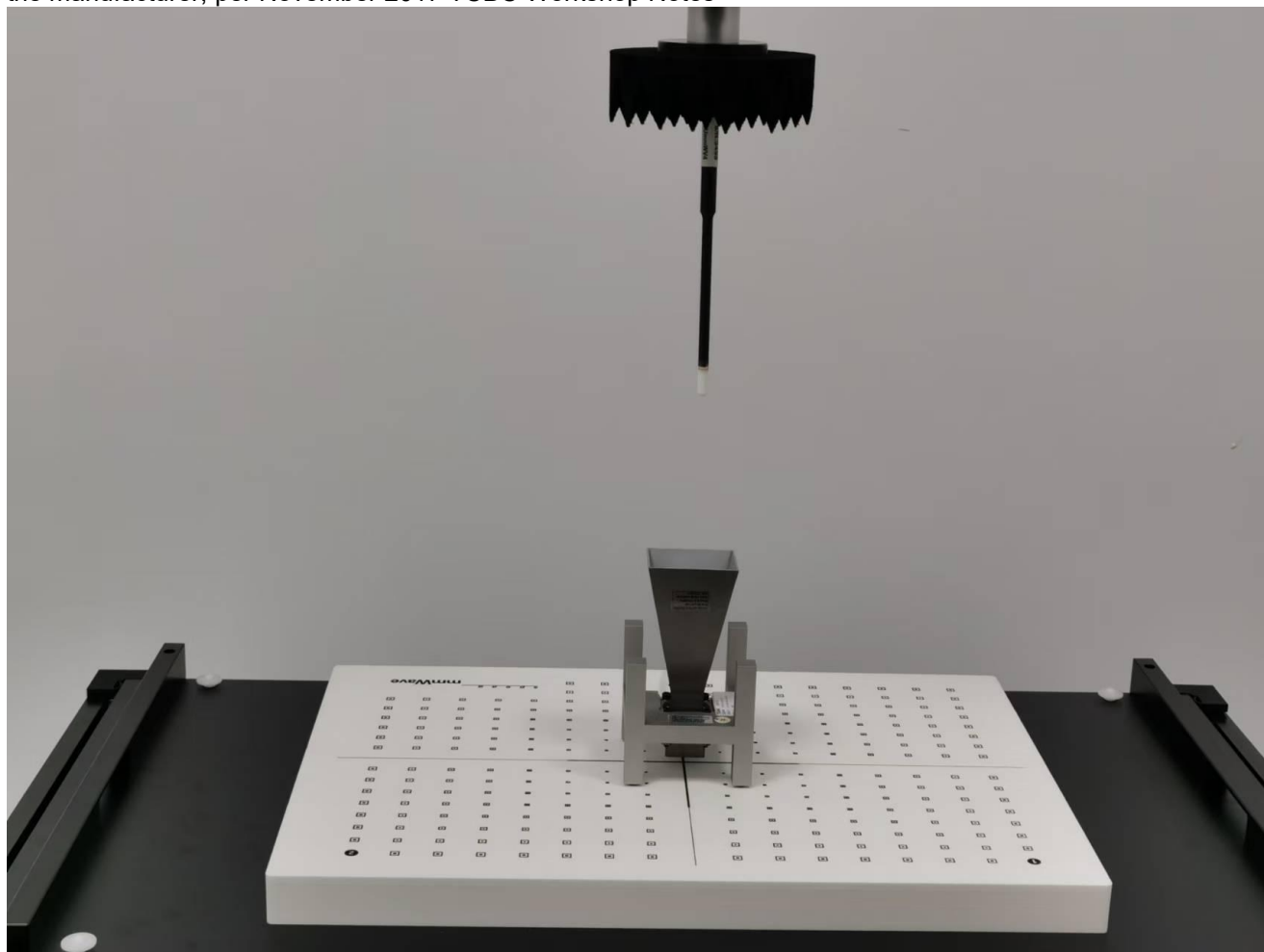
13.2.2 Detailed System Check Result

Please see Appendix A

13.3 PD System Verification

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

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



System Verification Setup Photo

Frequency (GHz)	PD Verification Source	Distance (mm)	Measured 4cm^2 (W/m^2)	Target 4cm^2 (W/m^2)	Deviation (dB)	Measured Date
10G	10GHz_1055	10	52.70	56.20	-0.28	2026/06/24
10G	10GHz_1055	10	52.90	56.20	-0.26	2026/06/25

Detailed System Check Results Please see Appendix A.

14 SAR General Measurement Procedures

14.1 3G SAR Test Reduction Procedure

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

14.2 SAR Measurement Conditions for UMTS

14.2.1 Output Power Verification

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

14.2.2 Head SAR Measurements

SAR for next to the ear head exposure is measured using a 12.2 kbps RMC with TPC bits configured to all "1's". The 3G SAR test reduction procedure is applied to AMR configurations with 12.2 kbps RMC as the primary mode. Otherwise, SAR is measured for 12.2 kbps AMR in 3.4 kbps SRB (signaling radio bearer) using the highest reported SAR configuration in 12.2 kbps RMC for head exposure.

14.2.3 Body SAR Measurements

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

14.2.4 SAR Measurements with Rel. 5 HSDPA

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

14.2.5 SAR Measurements with Rel. 6 HSUPA

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

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

14.2.6 SAR Measurement Conditions for DC-HSDPA

SAR is required for Rel. 8 DC-HSDPA when SAR is required for Rel. 5 HSDPA; otherwise, the 3G SAR test reduction procedure is applied to DC-HSDPA with 12.2 kbps RMC as the primary mode. Power is measured for DC-HSDPA according to the H-Set 12, FRC configuration in Table C.8.1.12 of 3GPP TS 34.121-1 to determine SAR test reduction. A primary and a secondary serving HS-DSCH Cell are required to perform the power measurement and for the results to be acceptable.

14.2.7 SAR Measurement Conditions for HSPA+(16QAM)

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

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

Sub-test	β_{cc} (Note3)	β_{d}	β_{HS} (Note1)	β_{ec}	β_{ed1} (2xSF2) (Note 4)	β_{ed3} (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_{ed1} : 30/15 β_{ed2} : 30/15	β_{ed3} : 24/15 β_{ed4} : 24/15	3.5	2.5	14	105	105
Note 1: $\Delta_{\text{ACK}}, \Delta_{\text{NACK}}$ and $\Delta_{\text{CQI}} = 30/15$ with $\beta_{\text{HS}} = 30/15 * \beta_{\text{c}}$. Note 2: CM = 3.5 and the MPR is based on the relative CM difference, $\text{MPR} = \text{MAX}(\text{CM}-1, 0)$. Note 3: DPDCH is not configured, therefore the β_{c} is set to 1 and $\beta_{\text{d}} = 0$ 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 signalled to use the extrapolation algorithm.											

14.3 SAR Measurement Conditions for LTE

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

14.3.1 Spectrum Plots for RB Configurations

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

14.3.2 MPR

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

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

14.3.3 A-MPR

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

14.3.4 Largest channel bandwidth standalone SAR test requirements

A. QPSK with 1 RB allocation

Start with the largest channel bandwidth and measure SAR for QPSK with 1 RB allocation, using the RB offset and required test channel combination with the highest maximum output power for RB offsets at the upper edge, middle and lower edge of each required test channel. When the reported SAR is ≤ 0.8 W/kg, testing of the remaining RB offset configurations and required test channels is not required for 1 RB allocation; otherwise, SAR is required for the remaining required test channels and only for the RB offset configuration with the highest output power for that channel. When the reported SAR of a required test channel is > 1.45 W/kg, SAR is required for all three RB offset configurations for that required test channel.

B. QPSK with 50% RB allocation

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

C. QPSK with 100% RB allocation

For QPSK with 100% RB allocation, SAR is not required when the highest maximum output power for 100 % RB allocation is less than the highest maximum output power in 50% and 1 RB allocations and the highest reported SAR for 1 RB and 50% RB allocation in A and B are ≤ 0.8 W/kg. Otherwise, SAR is measured for the highest output power channel and if the reported SAR is > 1.45 W/kg, the remaining required test channels must also be tested.

D. Higher order modulations

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

14.3.5 Other channel bandwidth standalone SAR test requirements

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

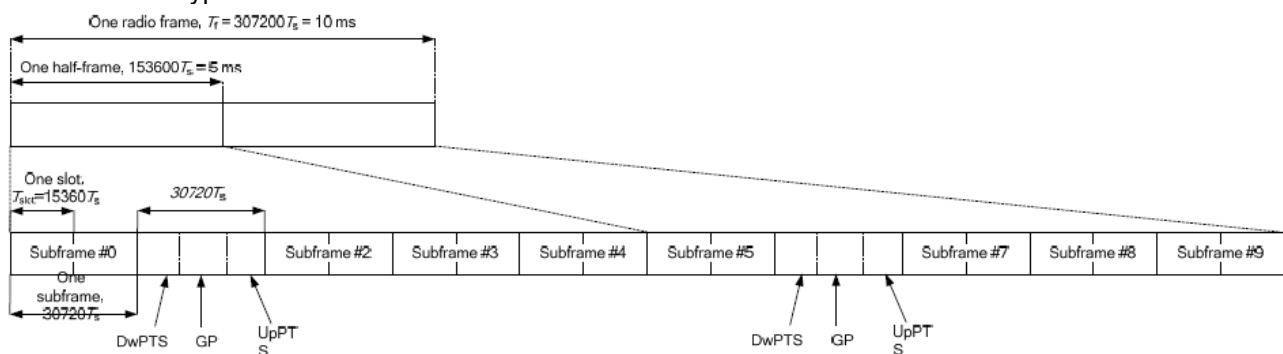
14.3.6 LTE TDD Considerations

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

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

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

Frame structure type 2:



Uplink-downlink configurations

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

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

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

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

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

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

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

Where

T_s = 1/(15000 x 2048) seconds

HPUE:

Calculated Duty Cycle for Uplink-Downlink Configuration 1:

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

14.4 SAR Testing with 802.11 Transmitters

The normal network operating configurations of 802.11 transmitters are not suitable for SAR measurements. Unpredictable fluctuations in network traffic and antenna diversity conditions can introduce undesirable variations in SAR results. The SAR for these devices should be measured using chipset based test mode software to ensure the results are consistent and reliable. See KDB Publication 248227 D01 for more details.

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

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

14.4.1 Initial Test Position Procedure

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

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

14.4.2 Initial Test Configuration Procedure

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

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

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

14.4.3 Subsequent Test Configuration Procedures

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

14.4.4 2.4 GHz SAR Procedures

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

A) 802.11b DSSS SAR Test Requirements

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

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

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

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

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

C) SAR Test Requirements for OFDM configurations

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

14.4.5 5 GHz SAR Procedures

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

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

- 1) When the same maximum output power is specified for both bands, begin SAR measurement in U-NII-2A band by applying the OFDM SAR requirements. If the highest reported SAR for a test configuration is ≤ 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. 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.

14.4.5.2 U-NII-2C and U-NII-3 Bands

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

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

14.4.6 OFDM Transmission Mode and SAR Test Channel Selection

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

14.4.7 MIMO SAR Considerations

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

1. NR Band operation does not have the fixed UL/DL frame structure, but during the transmitting/receiving it can be operated in the slot structure of 100% UL duty cycle, we are proposing the conservative way to evaluate SAR at 100% duty cycle. For the purpose of test NR Band standalone SAR and also test SAR level at 100% TX duty cycle.
2. NR Band operation does not have the fixed UL/DL frame structure, but during the transmitting/receiving it can be operated in the slot structure of 100% UL duty cycle, we are proposing the conservative way to evaluate SAR at 100% duty cycle. For the purpose of test NR Band standalone SAR and also test SAR level at 100% TX duty cycle.

14.5 SAR Measurement Conditions for NR

Operation Bandwidth:	NR Band	SCS (kHz)	Bandwidth (MHz)													
			5	10	15	20	25	30	35	40	50	60	70	80	90	100
SA	n2	15	√	√	√	√	-	-	-	-	-	-	-	-	-	-
	n5	15	√	√	√	√	-	-	-	-	-	-	-	-	-	-
	n7	15	√	√	√	√	√	√	√	√	-	-	-	-	-	-
	n12	15	√	√	√	-	-	-	-	-	-	-	-	-	-	-
	n13	15	√	√	-	-	-	-	-	-	-	-	-	-	-	-
	n14	15	√	√	-	-	-	-	-	-	-	-	-	-	-	-
	n25	15	√	√	√	√	√	√	√	√	-	-	-	-	-	-
	n26	15	√	√	√	√	-	-	-	-	-	-	-	-	-	-
	n38	30	-	√	√	√	-	√	-	√	-	-	-	-	-	-
	n41	30	-	√	√	√	-	√	-	√	-	√	√	√	√	√
	n48	30	-	√	-	√	-	√	-	√	-	-	-	-	-	-
	n66	15	√	√	√	√	√	√	√	√	-	-	-	-	-	-
	n71	15	√	√	√	√	-	-	-	-	-	-	-	-	-	-
	n77	30	-	√	√	√	√	√	-	√	√	√	√	√	√	√
	n78	30	-	√	√	√	√	√	-	√	√	√	√	√	√	√

14.5.1 5G NR test procedure

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

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

- G. Smaller SCS/bandwidth output power for each RB allocation configuration for this device will not $\frac{1}{2}$ dB higher than the same configuration in the largest supported bandwidth, and the reported SAR for the largest supported bandwidth is ≤ 1.45 W/kg, smaller bandwidth SAR testing is not required for this device.

H. MPR

MPR is permanently implemented for this device by the manufacturer. The specific manufacturer target MPR is indicated alongside the SAR results. MPR is enabled for this device, according to 3GPP TS 38.101-1 Section 6.2.2 under Table 6.2.2 -1.

Modulation		MPR (dB)		
		Edge RB allocations	Outer RB allocations	Inner RB allocations
DFT-s-OFDM	PI/2 BPSK	$\leq 3.5^1$	$\leq 1.2^1$	$\leq 0.2^1$
		$\leq 0.5^2$	$\leq 0.5^2$	0^2
	QPSK	≤ 1		0
	16 QAM	≤ 2		≤ 1
	64 QAM	≤ 2.5		
	256 QAM	≤ 4.5		
CP-OFDM	QPSK	≤ 3		≤ 1.5
	16 QAM	≤ 3		≤ 2
	64 QAM	≤ 3.5		
	256 QAM	≤ 6.5		
NOTE 1: Applicable for UE operating in TDD mode with Pi/2 BPSK modulation and UE indicates support for UE capability powerBoosting-pi2BPSK and if the IE powerBoostPi2BPSK is set to 1 and 40 % or less slots in radio frame are used for UL transmission for bands n40, n41, n77, n78 and n79. The reference power of 0 dB MPR is 26dBm.				
NOTE 2: Applicable for UE operating in FDD mode, or in TDD mode in bands other than n40, n41, n77, n78 and n79 with Pi/2 BPSK modulation and if the IE powerBoostPi2BPSK is set to 0 and if more than 40 % of slots in radio frame are used for UL transmission for bands n40, n41, n77, n78 and n79.				

- I. For 5G NR test, using FTM (Factory Test Mode) to perform SAR test. For 5G NR TDD band, the maximum duty cycle is 62.9%, for the SAR test using FTM to perform SAR with 50% transmission and the SAR scaled to 62.9%.

15 Conducted Power

The detailed conducted power table can refer to Appendix E.

16 SAR Data Summary

General Notes:

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

Wi-Fi 5G Notes:

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

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

- 1) For WIFI 6G doesn't support wireless router capability.
- 2) Per October 2020 TCB Workshop interim procedures, start instead with a minimum of 5 test channels across the full band, then adapt and apply conducted power and SAR test reduction procedures of KDB 248227 v02r02.
- 3) Absorbed power density (APD) using a 4cm^2 averaging area is reported based on SAR measurements.
- 4) Per FCC guidance and equipment manufacturer guidance, the power density results were scaled according to IEC 62479:2010 for the portion of the measurement uncertainty $> 30\%$. Total expanded uncertainty of 2.67 dB (84.93%) was used to determine the psPD measurement scaling factor.
- 5) Per April 2021 TCB Workshop, For the highest SAR test configurations also measure incident PD (total) using power-density reconstruction method in 2 mm closest measurement plane.
- 6) IPD is measured for all edges and surfaces of the device with a transmitting antenna located within 25 mm from that surface or edge.
- 7) The measurement procedure consists of measuring the PD_{inc} at two different distances: 2 mm (compliance distance) and $\lambda/5$. The grid extents should be large enough to fully capture the transmitted energy. The grid step should be fine enough to demonstrate that the integrated Power Density iPD_n fulfil the criterion described below. Since iPD ratio between the two distances is $\geq -1\text{dB}$, the grid step (0.0625) was sufficient for determining compliance at $d=2\text{mm}$.

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

16.1 SAR Measurement Result of WCDMA Band II

Ant 4 Test Results								
Test position	Test Distance (mm)	Mode	Ch./Freq. (MHz)	SAR (W/kg) 1-g	Conducted Power(dBm)	Tune up Limit(dBm)	Scaling Factor	Reported 1g SAR (W/kg)
Head								
Left cheek	0	RMC	9262/1852.4	0.508	19.90	20.50	1.148	0.583
Left tilted	0	RMC	9262/1852.4	0.308	19.90	20.50	1.148	0.354
Right cheek	0	RMC	9262/1852.4	1.040	19.90	20.50	1.148	1.194
Right cheek Repeat	0	RMC	9262/1852.4	1.010	19.90	20.50	1.148	1.160
Right tilted	0	RMC	9262/1852.4	0.649	19.90	20.50	1.148	0.745
Right cheek	0	RMC	9400/1880	0.993	19.87	20.50	1.156	1.148
Right cheek	0	RMC	9538/1907.6	0.992	19.83	20.50	1.167	1.157
Head (WCDMA+WLAN)								
Right cheek	0	RMC	9262/1852.4	0.815	19.00	19.50	1.122	0.914
Right cheek	0	RMC	9400/1880	0.794	18.91	19.50	1.146	0.910
Right cheek	0	RMC	9538/1907.6	0.796	18.99	19.50	1.125	0.895
Body								
Front side	5	RMC	9262/1852.4	0.413	19.00	19.50	1.122	0.463
Back side	5	RMC	9262/1852.4	0.865	19.00	19.50	1.122	0.971
Left side	5	RMC	9262/1852.4	0.415	19.00	19.50	1.122	0.466
Top side	5	RMC	9262/1852.4	0.157	19.00	19.50	1.122	0.176
Front side	16	RMC	9262/1852.4	0.246	23.41	24.00	1.146	0.282
Back side	17	RMC	9262/1852.4	0.316	23.41	24.00	1.146	0.362
Left side	15	RMC	9262/1852.4	0.282	23.41	24.00	1.146	0.323
Top side	16	RMC	9262/1852.4	0.142	23.41	24.00	1.146	0.163
Back side	5	RMC	9400/1880	1.000	18.91	19.50	1.146	1.146
Back side	5	RMC	9538/1907.6	1.060	18.99	19.50	1.125	1.192
Back side Repeat	5	RMC	9538/1907.6	0.988	18.99	19.50	1.125	1.111
Body (WCDMA+WLAN)								
Back side	5	RMC	9262/1852.4	0.696	17.96	18.50	1.132	0.788

Table 4: SAR of WCDMA Band II.

Test Position	Channel/ Frequency	Measured SAR (1g)	1 st Repeated	Ratio	2 nd Repeated	3 rd Repeated
	(MHz)		SAR (1g)		SAR (1g)	SAR (1g)
Right cheek	9262/1852.4	1.040	1.010	1.030	N/A	N/A
Back side	9538/1907.6	1.060	0.988	1.073	N/A	N/A
Note: 1) When the original highest measured SAR is ≥ 0.80 W/kg, the measurement was repeated once.						
2) A second repeated measurement was performed only if the ratio of largest to smallest SAR for the original and first repeated measurements was > 1.20 or when the original or repeated measurement was ≥ 1.45 W/kg ($\sim 10\%$ from the 1-g SAR limit).						
3) A third repeated measurement was performed only if the original, first or second repeated measurement was ≥ 1.5 W/kg and the ratio of largest to smallest SAR for the original, first and second repeated measurements is > 1.20 .						
4) Repeated measurements are not required when the original highest measured SAR is < 0.80 W/kg						

16.2 SAR Measurement Result of WCDMA Band IV

Ant 4 Test Results								
Test position	Test Distance (mm)	Mode	Ch./Freq. (MHz)	SAR (W/kg) 1-g	Conducted Power(dBm)	Tune up Limit(dBm)	Scaling Factor	Reported 1g SAR (W/kg)
Head								
Left cheek	0	RMC	1412/1732.4	0.453	19.82	20.50	1.169	0.530
Left tilted	0	RMC	1412/1732.4	0.260	19.82	20.50	1.169	0.304
Right cheek	0	RMC	1412/1732.4	0.865	19.82	20.50	1.169	1.012
Right tilted	0	RMC	1412/1732.4	0.508	19.82	20.50	1.169	0.594
Right cheek	0	RMC	1312/1712.4	0.824	19.81	20.50	1.172	0.966
Right cheek	0	RMC	1513/1752.6	1.000	19.79	20.50	1.178	1.178
Right cheek Repeat	0	RMC	1513/1752.6	0.969	19.79	20.50	1.178	1.141
Head (WCDMA+WLAN)								
Right cheek	0	RMC	1412/1732.4	0.692	18.85	19.50	1.161	0.804
Right cheek	0	RMC	1312/1712.4	0.664	18.83	19.50	1.167	0.775
Right cheek	0	RMC	1513/1752.6	0.796	18.82	19.50	1.169	0.931
Body								
Front side	5	RMC	1412/1732.4	0.434	19.82	20.50	1.169	0.508
Back side	5	RMC	1412/1732.4	0.796	19.82	20.50	1.169	0.931
Left side	5	RMC	1412/1732.4	0.316	19.82	20.50	1.169	0.370
Top side	5	RMC	1412/1732.4	0.257	19.82	20.50	1.169	0.301
Back side	5	RMC	1312/1712.4	0.973	19.81	20.50	1.172	1.141
Back side Repeat	5	RMC	1312/1712.4	0.968	19.81	20.50	1.172	1.135
Back side	5	RMC	1513/1752.6	0.793	19.79	20.50	1.178	0.934
Front side	16	RMC	1412/1732.4	0.217	23.37	24.00	1.156	0.251
Back side	17	RMC	1412/1732.4	0.302	23.37	24.00	1.156	0.349
Left side	15	RMC	1412/1732.4	0.261	23.37	24.00	1.156	0.302
Top side	16	RMC	1412/1732.4	0.098	23.37	24.00	1.156	0.113
Body (WCDMA+WLAN)								
Back side	5	RMC	1412/1732.4	0.663	18.85	19.50	1.161	0.770

Table 5: SAR of WCDMA Band IV.

Test Position	Channel/ Frequency	Measured SAR (1g)	1 st Repeated	Ratio	2 nd Repeated	3 rd Repeated
	(MHz)		SAR (1g)		SAR (1g)	SAR (1g)
Right cheek	1513/1752.6	1.000	0.969	1.032	N/A	N/A
Back side	1312/1712.4	0.973	0.968	1.005	N/A	N/A
Note: 1) When the original highest measured SAR is ≥ 0.80 W/kg, the measurement was repeated once.						
2) A second repeated measurement was performed only if the ratio of largest to smallest SAR for the original and first repeated measurements was > 1.20 or when the original or repeated measurement was ≥ 1.45 W/kg ($\sim 10\%$ from the 1-g SAR limit).						
3) A third repeated measurement was performed only if the original, first or second repeated measurement was ≥ 1.5 W/kg and the ratio of largest to smallest SAR for the original, first and second repeated measurements is > 1.20 .						
4) Repeated measurements are not required when the original highest measured SAR is < 0.80 W/kg						

16.3 SAR Measurement Result of WCDMA Band V

Ant 0 Test Results								
Test position	Test Distance (mm)	Mode	Ch./Freq. (MHz)	SAR (W/kg) 1-g	Conducted Power(dBm)	Tune up Limit(dBm)	Scaling Factor	Reported 1g SAR (W/kg)
Head								
Left cheek	0	RMC	4233/846.6	0.163	23.39	24.00	1.151	0.188
Left tilted	0	RMC	4233/846.6	0.090	23.39	24.00	1.151	0.104
Right cheek	0	RMC	4233/846.6	0.216	23.39	24.00	1.151	0.249
Right tilted	0	RMC	4233/846.6	0.098	23.39	24.00	1.151	0.113
Body								
Front side	5	RMC	4233/846.6	0.288	22.42	23.00	1.143	0.329
Back side	5	RMC	4233/846.6	0.993	22.42	23.00	1.143	1.135
Back side Repeat	5	RMC	4233/846.6	0.986	22.42	23.00	1.143	1.127
Left side	5	RMC	4233/846.6	0.098	22.42	23.00	1.143	0.112
Right side	5	RMC	4233/846.6	0.277	22.42	23.00	1.143	0.317
Bottom side	5	RMC	4233/846.6	0.546	22.42	23.00	1.143	0.624
Back side	5	RMC	4132/826.4	0.889	22.32	23.00	1.169	1.040
Back side	5	RMC	4182/836.4	0.960	22.35	23.00	1.161	1.115
Front side	16	RMC	4233/846.6	0.154	23.39	24.00	1.151	0.177
Back side	17	RMC	4233/846.6	0.205	23.39	24.00	1.151	0.236
Left side	15	RMC	4233/846.6	0.055	23.39	24.00	1.151	0.063
Right side	15	RMC	4233/846.6	0.136	23.39	24.00	1.151	0.157
Bottom side	17	RMC	4233/846.6	0.122	23.39	24.00	1.151	0.140
Body								
Back side	5	RMC	4233/846.6	0.635	20.47	21.00	1.130	0.717

Table 6: SAR of WCDMA Band V.

Test Position	Channel/ Frequency	Measured SAR (1g)	1 st Repeated	Ratio	2 nd Repeated	3 rd Repeated
	(MHz)		SAR (1g)		SAR (1g)	SAR (1g)
Back side	4233/846.6	0.993	0.986	1.007	N/A	N/A

Note: 1) When the original highest measured SAR is ≥ 0.80 W/kg, the measurement was repeated once.
2) A second repeated measurement was performed only if the ratio of largest to smallest SAR for the original and first repeated measurements was > 1.20 or when the original or repeated measurement was ≥ 1.45 W/kg ($\sim 10\%$ from the 1-g SAR limit).
3) A third repeated measurement was performed only if the original, first or second repeated measurement was ≥ 1.5 W/kg and the ratio of largest to smallest SAR for the original, first and second repeated measurements is > 1.20 .
4) Repeated measurements are not required when the original highest measured SAR is < 0.80 W/kg

16.4 SAR Measurement Result of LTE Band 7

Ant 4 Test Results									
Test position	Test Distance (mm)	BW. (MHz)	Mode	Ch./Freq. (MHz)	SAR (W/kg) 1-g	Conducted Power (dBm)	Tune up Limit (dBm)	Scaling Factor	Reported 1g SAR (W/kg)
Head 1RB									
Left cheek	0	20	QPSK 1_50	21100/2535	0.614	23.04	23.50	1.112	0.683
Left tilted	0	20	QPSK 1_50	21100/2535	0.668	23.04	23.50	1.112	0.743
Right cheek	0	20	QPSK 1_50	21100/2535	1.010	23.04	23.50	1.112	1.123
Right tilted	0	20	QPSK 1_50	21100/2535	0.980	23.04	23.50	1.112	1.089
Right cheek	0	20	QPSK 1_50	20850/2510	1.020	23.02	23.50	1.117	1.139
Right cheek	0	20	QPSK 1_50	21350/2560	1.160	23.01	23.50	1.119	1.299
Right cheek Repeat	0	20	QPSK 1_50	21350/2560	1.070	23.01	23.50	1.119	1.198
Right tilted	0	20	QPSK 1_50	20850/2510	0.984	23.02	23.50	1.117	1.099
Right tilted	0	20	QPSK 1_50	21350/2560	1.020	23.01	23.50	1.119	1.142
Head 50%RB									
Left cheek	0	20	QPSK 50_0	21100/2535	0.502	23.08	23.50	1.102	0.553
Left tilted	0	20	QPSK 50_0	21100/2535	0.553	23.08	23.50	1.102	0.609
Right cheek	0	20	QPSK 50_0	21100/2535	0.930	23.08	23.50	1.102	1.024
Right tilted	0	20	QPSK 50_0	21100/2535	0.989	23.08	23.50	1.102	1.089
Right cheek	0	20	QPSK 50_0	20850/2510	0.910	23.05	23.50	1.109	1.009
Right cheek	0	20	QPSK 50_0	21350/2560	0.971	23.06	23.50	1.107	1.075
Right tilted	0	20	QPSK 50_0	20850/2510	0.972	23.05	23.50	1.109	1.078
Right tilted	0	20	QPSK 50_0	21350/2560	0.983	23.06	23.50	1.107	1.088
Head 100%RB									
Right cheek	0	20	QPSK 100_0	21100/2535	0.994	23.02	23.50	1.117	1.110
Right tilted	0	20	QPSK 100_0	21100/2535	0.954	23.02	23.50	1.117	1.065
Head 1RB (LTE+NR, LTE+WLAN)									
Right cheek	0	20	QPSK 1_50	21100/2535	0.813	22.05	22.50	1.109	0.902
Right tilted	0	20	QPSK 1_50	21100/2535	0.769	22.05	22.50	1.109	0.853
Right cheek	0	20	QPSK 1_50	20850/2510	0.832	22.03	22.50	1.114	0.927
Right cheek	0	20	QPSK 1_50	21350/2560	0.916	22.02	22.50	1.117	1.023
Right tilted	0	20	QPSK 1_50	20850/2510	0.793	22.03	22.50	1.114	0.884
Right tilted	0	20	QPSK 1_50	21350/2560	0.804	22.02	22.50	1.117	0.898
Head 50%RB (LTE+NR, LTE+WLAN)									
Right cheek	0	20	QPSK 50_0	21100/2535	0.742	22.06	22.50	1.107	0.821
Right tilted	0	20	QPSK 50_0	21100/2535	0.781	22.06	22.50	1.107	0.864
Right cheek	0	20	QPSK 50_0	20850/2510	0.731	22.04	22.50	1.112	0.813
Right cheek	0	20	QPSK 50_0	21350/2560	0.765	22.01	22.50	1.119	0.856
Right tilted	0	20	QPSK 50_0	20850/2510	0.778	22.04	22.50	1.112	0.865
Right tilted	0	20	QPSK 50_0	21350/2560	0.789	22.01	22.50	1.119	0.883
Head 100%RB (LTE+NR, LTE+WLAN)									
Right cheek	0	20	QPSK 100_0	21100/2535	0.785	21.99	22.50	1.125	0.883
Right tilted	0	20	QPSK 100_0	21100/2535	0.763	21.99	22.50	1.125	0.858
Head 1RB (LTE+NR+WLAN)									
Left cheek	0	20	QPSK 1_50	21100/2535	0.271	19.58	20.00	1.102	0.299
Right cheek	0	20	QPSK 1_50	21100/2535	0.448	19.58	20.00	1.102	0.493
Right tilted	0	20	QPSK 1_50	21100/2535	0.439	19.58	20.00	1.102	0.484
Head 50%RB (LTE+NR+WLAN)									
Left cheek	0	20	QPSK 50_0	21100/2535	0.222	19.60	20.00	1.096	0.243
Right cheek	0	20	QPSK 50_0	21100/2535	0.414	19.60	20.00	1.096	0.454
Right tilted	0	20	QPSK 50_0	21100/2535	0.438	19.60	20.00	1.096	0.480
Body 1RB									
Front side	5	20	QPSK 1_50	21100/2535	0.166	17.54	18.00	1.112	0.185
Back side	5	20	QPSK 1_50	21100/2535	1.080	17.54	18.00	1.112	1.201
Left side	5	20	QPSK 1_50	21100/2535	0.188	17.54	18.00	1.112	0.209
Top side	5	20	QPSK 1_50	21100/2535	0.451	17.54	18.00	1.112	0.501
Back side	5	20	QPSK 1_50	20850/2510	1.210	17.52	18.00	1.117	1.351
Back side Repeat	5	20	QPSK 1_50	20850/2510	1.150	17.52	18.00	1.117	1.284
Back side	5	20	QPSK 1_50	21350/2560	0.903	17.50	18.00	1.122	1.013
Front side	16	20	QPSK 1_50	21100/2535	0.184	23.95	24.50	1.135	0.209

Back side	17	20	QPSK 1_50	21100/2535	0.774	23.95	24.50	1.135	0.878
Left side	15	20	QPSK 1_50	21100/2535	0.312	23.95	24.50	1.135	0.354
Top side	16	20	QPSK 1_50	21100/2535	0.493	23.95	24.50	1.135	0.560
Back side	17	20	QPSK 1_50	20850/2510	0.766	23.91	24.50	1.146	0.877
Back side	17	20	QPSK 1_50	21350/2560	0.769	23.90	24.50	1.148	0.883
Body 50%RB									
Front side	5	20	QPSK 50_0	21100/2535	0.168	17.53	18.00	1.114	0.187
Back side	5	20	QPSK 50_0	21100/2535	1.110	17.53	18.00	1.114	1.237
Left side	5	20	QPSK 50_0	21100/2535	0.181	17.53	18.00	1.114	0.202
Top side	5	20	QPSK 50_0	21100/2535	0.461	17.53	18.00	1.114	0.514
Back side	5	20	QPSK 50_0	20850/2510	1.170	17.49	18.00	1.125	1.316
Back side	5	20	QPSK 50_0	21350/2560	0.984	17.51	18.00	1.119	1.102
Front side	16	20	QPSK 50_0	21100/2535	0.153	23.12	23.50	1.091	0.167
Back side	17	20	QPSK 50_0	21100/2535	0.634	23.12	23.50	1.091	0.692
Left side	15	20	QPSK 50_0	21100/2535	0.259	23.12	23.50	1.091	0.283
Top side	16	20	QPSK 50_0	21100/2535	0.401	23.12	23.50	1.091	0.438
Body 100%RB									
Back side	5	20	QPSK 100_0	21100/2535	1.060	17.55	18.00	1.109	1.176
Back side	17	20	QPSK 100_0	21100/2535	0.628	23.03	23.50	1.114	0.700
Body 1RB (LTE+NR, LTE+WLAN)									
Back side	5	20	QPSK 1_50	21100/2535	0.707	15.62	16.00	1.091	0.772
Body 50%RB (LTE+NR, LTE+WLAN)									
Back side	5	20	QPSK 50_0	21100/2535	0.698	15.58	16.00	1.102	0.769
Body 1RB (LTE+NR+WLAN)									
Back side	5	20	QPSK 1_50	21100/2535	0.421	13.62	14.00	1.091	0.459
Body 50%RB (LTE+NR+WLAN)									
Back side	5	20	QPSK 50_0	21100/2535	0.419	13.59	14.00	1.099	0.460

Table 7: SAR of LTE Band 7 Ant4.

Test Position	Channel/ Frequency	Measured SAR (1g)	1 st Repeated	Ratio	2 nd Repeated	3 rd Repeated
	(MHz)		SAR (1g)		SAR (1g)	SAR (1g)
Right cheek	21350/2560	1.160	1.070	1.084	N/A	N/A
Back side	20850/2510	1.210	1.150	1.052	N/A	N/A
Note: 1) When the original highest measured SAR is ≥ 0.80 W/kg, the measurement was repeated once.						
2) A second repeated measurement was performed only if the ratio of largest to smallest SAR for the original and first repeated measurements was > 1.20 or when the original or repeated measurement was ≥ 1.45 W/kg ($\sim 10\%$ from the 1-g SAR limit).						
3) A third repeated measurement was performed only if the original, first or second repeated measurement was ≥ 1.5 W/kg and the ratio of largest to smallest SAR for the original, first and second repeated measurements is > 1.20 .						
4) Repeated measurements are not required when the original highest measured SAR is < 0.80 W/kg						

Ant 0 Test Results									
Test position	Test Distance (mm)	BW. (MHz)	Mode	Ch./Freq. (MHz)	SAR (W/kg) 1-g	Conducted Power(dBm)	Tune up Limit(dBm)	Scaling Factor	Reported 1g SAR (W/kg)
Head 1RB									
Left cheek	0	20	QPSK 1_50	21100/2535	0.109	23.75	24.50	1.189	0.130
Left tilted	0	20	QPSK 1_50	21100/2535	0.090	23.75	24.50	1.189	0.107
Right cheek	0	20	QPSK 1_50	21100/2535	0.120	23.75	24.50	1.189	0.143
Right tilted	0	20	QPSK 1_50	21100/2535	0.052	23.75	24.50	1.189	0.062
Head 50%RB									
Left cheek	0	20	QPSK 50_25	21100/2535	0.099	22.93	23.50	1.140	0.113
Left tilted	0	20	QPSK 50_25	21100/2535	0.078	22.93	23.50	1.140	0.089
Right cheek	0	20	QPSK 50_25	21100/2535	0.114	22.93	23.50	1.140	0.130
Right tilted	0	20	QPSK 50_25	21100/2535	0.049	22.93	23.50	1.140	0.056
Body 1RB									
Front side	5	20	QPSK 1_50	20850/2510	0.316	19.36	20.00	1.159	0.366
Back side	5	20	QPSK 1_50	20850/2510	0.627	19.36	20.00	1.159	0.727
Left side	5	20	QPSK 1_50	20850/2510	0.053	19.36	20.00	1.159	0.061
Right side	5	20	QPSK 1_50	20850/2510	0.286	19.36	20.00	1.159	0.331
Bottom side	5	20	QPSK 1_50	20850/2510	0.526	19.36	20.00	1.159	0.610
Front side	16	20	QPSK 1_50	21100/2535	0.176	23.75	24.50	1.189	0.209
Back side	17	20	QPSK 1_50	21100/2535	0.287	23.75	24.50	1.189	0.341
Left side	15	20	QPSK 1_50	21100/2535	0.015	23.75	24.50	1.189	0.018
Right side	15	20	QPSK 1_50	21100/2535	0.089	23.75	24.50	1.189	0.106
Bottom side	17	20	QPSK 1_50	21100/2535	0.260	23.75	24.50	1.189	0.309
Body 50%RB									
Front side	5	20	QPSK 50_25	21100/2535	0.274	19.44	20.00	1.138	0.312
Back side	5	20	QPSK 50_25	21100/2535	0.516	19.44	20.00	1.138	0.587
Left side	5	20	QPSK 50_25	21100/2535	0.049	19.44	20.00	1.138	0.056
Right side	5	20	QPSK 50_25	21100/2535	0.191	19.44	20.00	1.138	0.217
Bottom side	5	20	QPSK 50_25	21100/2535	0.386	19.44	20.00	1.138	0.439
Front side	16	20	QPSK 50_25	21100/2535	0.148	22.93	23.50	1.140	0.169
Back side	17	20	QPSK 50_25	21100/2535	0.232	22.93	23.50	1.140	0.265
Left side	15	20	QPSK 50_25	21100/2535	0.012	22.93	23.50	1.140	0.014
Right side	15	20	QPSK 50_25	21100/2535	0.077	22.93	23.50	1.140	0.088
Bottom side	17	20	QPSK 50_25	21100/2535	0.211	22.93	23.50	1.140	0.241
Body 1RB (LTE+NR+WLAN)									
Back side	5	20	QPSK 1_50	20850/2510	0.356	16.92	17.50	1.143	0.407
Body 50%RB (LTE+NR+WLAN)									
Back side	5	20	QPSK 50_25	21100/2535	0.297	16.91	17.50	1.146	0.340

Table 8: SAR of LTE Band 7 Ant0.

16.5 SAR Measurement Result of LTE Band 12

Ant 0 Test Results									
Test position	Test Distance (mm)	BW. (MHz)	Mode	Ch./Freq. (MHz)	SAR (W/kg) 1-g	Conducted Power(dBm)	Tune up Limit(dBm)	Scaling Factor	Reported 1g SAR (W/kg)
Head 1RB									
Left cheek	0	10	QPSK 1_0	23095/707.5	0.202	24.06	25.00	1.242	0.251
Left tilted	0	10	QPSK 1_0	23095/707.5	0.101	24.06	25.00	1.242	0.125
Right cheek	0	10	QPSK 1_0	23095/707.5	0.225	24.06	25.00	1.242	0.279
Right tilted	0	10	QPSK 1_0	23095/707.5	0.109	24.06	25.00	1.242	0.135
Head 50%RB									
Left cheek	0	10	QPSK 25_0	23095/707.5	0.195	22.97	24.00	1.268	0.247
Left tilted	0	10	QPSK 25_0	23095/707.5	0.103	22.97	24.00	1.268	0.131
Right cheek	0	10	QPSK 25_0	23095/707.5	0.216	22.97	24.00	1.268	0.274
Right tilted	0	10	QPSK 25_0	23095/707.5	0.117	22.97	24.00	1.268	0.148
Body 1RB									
Front side	5	10	QPSK 1_0	23095/707.5	0.206	22.99	24.00	1.262	0.260
Back side	5	10	QPSK 1_0	23095/707.5	0.815	22.99	24.00	1.262	1.028
Left side	5	10	QPSK 1_0	23095/707.5	0.181	22.99	24.00	1.262	0.228
Right side	5	10	QPSK 1_0	23095/707.5	0.373	22.99	24.00	1.262	0.471
Bottom side	5	10	QPSK 1_0	23095/707.5	0.316	22.99	24.00	1.262	0.399
Back side	5	10	QPSK 1_0	23060/704	0.710	22.93	24.00	1.279	0.908
Back side	5	10	QPSK 1_0	23130/711	0.762	22.95	24.00	1.274	0.970
Front side	16	10	QPSK 1_0	23095/707.5	0.187	24.06	25.00	1.242	0.232
Back side	17	10	QPSK 1_0	23095/707.5	0.243	24.06	25.00	1.242	0.302
Left side	15	10	QPSK 1_0	23095/707.5	0.066	24.06	25.00	1.242	0.082
Right side	15	10	QPSK 1_0	23095/707.5	0.166	24.06	25.00	1.242	0.206
Bottom side	17	10	QPSK 1_0	23095/707.5	0.063	24.06	25.00	1.242	0.078
Body 50%RB									
Front side	5	10	QPSK 25_0	23095/707.5	0.232	22.91	24.00	1.285	0.298
Back side	5	10	QPSK 25_0	23095/707.5	0.825	22.91	24.00	1.285	1.060
Left side	5	10	QPSK 25_0	23095/707.5	0.194	22.91	24.00	1.285	0.249
Right side	5	10	QPSK 25_0	23095/707.5	0.412	22.91	24.00	1.285	0.530
Bottom side	5	10	QPSK 25_0	23095/707.5	0.345	22.91	24.00	1.285	0.443
Back side	5	10	QPSK 25_0	23060/704	0.811	22.89	24.00	1.291	1.047
Back side	5	10	QPSK 25_0	23130/711	0.833	22.88	24.00	1.294	1.078
Back side Repeat	5	10	QPSK 25_0	23130/711	0.829	22.88	24.00	1.294	1.073
Front side	16	10	QPSK 25_0	23095/707.5	0.160	22.97	24.00	1.268	0.203
Back side	17	10	QPSK 25_0	23095/707.5	0.205	22.97	24.00	1.268	0.260
Left side	15	10	QPSK 25_0	23095/707.5	0.065	22.97	24.00	1.268	0.082
Right side	15	10	QPSK 25_0	23095/707.5	0.144	22.97	24.00	1.268	0.183
Bottom side	17	10	QPSK 25_0	23095/707.5	0.053	22.97	24.00	1.268	0.067
Body 100%RB									
Back side	5	10	QPSK 50_0	23095/707.5	0.812	22.88	24.00	1.294	1.051
Body 1RB (LTE+NR, LTE+WLAN)									
Back side	5	10	QPSK 1_0	23095/707.5	0.521	21.05	22.00	1.245	0.648
Body 50%RB (LTE+NR, LTE+WLAN)									
Back side	5	10	QPSK 25_0	23095/707.5	0.539	21.03	22.00	1.250	0.674
Body 1RB (LTE+NR+WLAN)									
Back side	5	10	QPSK 1_0	23095/707.5	0.233	17.62	18.50	1.225	0.285
Body 50%RB (LTE+NR+WLAN)									
Back side	5	10	QPSK 25_0	23095/707.5	0.231	17.60	18.50	1.230	0.284

Table 9: SAR of LTE Band 12.

Test Position	Channel/ Frequency	Measured SAR (1g)	1 st Repeated	Ratio	2 nd Repeated	3 rd Repeated
	(MHz)		SAR (1g)		SAR (1g)	SAR (1g)
Back side	23130/711	0.833	0.829	1.005	N/A	N/A
Note: 1) When the original highest measured SAR is ≥ 0.80 W/kg, the measurement was repeated once.						
2) A second repeated measurement was preformed only if the ratio of largest to smallest SAR for the original and first repeated measurements was > 1.20 or when the original or repeated measurement was ≥ 1.45 W/kg ($\sim 10\%$ from the 1-g SAR limit).						
3) A third repeated measurement was performed only if the original, first or second repeated measurement was ≥ 1.5 W/kg and the ratio of largest to smallest SAR for the original, first and second repeated measurements is > 1.20 .						
4) Repeated measurements are not required when the original highest measured SAR is < 0.80 W/kg						

16.6 SAR Measurement Result of LTE Band 13

Ant 0 Test Results									
Test position	Test Distance (mm)	BW. (MHz)	Mode	Ch./Freq. (MHz)	SAR (W/kg) 1-g	Conducted Power(dBm)	Tune up Limit(dBm)	Scaling Factor	Reported 1g SAR (W/kg)
Head 1RB									
Left cheek	0	10	QPSK 1_0	23230/782	0.128	24.06	25.00	1.242	0.159
Left tilted	0	10	QPSK 1_0	23230/782	0.070	24.06	25.00	1.242	0.087
Right cheek	0	10	QPSK 1_0	23230/782	0.154	24.06	25.00	1.242	0.191
Right tilted	0	10	QPSK 1_0	23230/782	0.080	24.06	25.00	1.242	0.099
Head 50%RB									
Left cheek	0	10	QPSK 25_0	23230/782	0.095	23.01	24.00	1.256	0.119
Left tilted	0	10	QPSK 25_0	23230/782	0.053	23.01	24.00	1.256	0.067
Right cheek	0	10	QPSK 25_0	23230/782	0.113	23.01	24.00	1.256	0.142
Right tilted	0	10	QPSK 25_0	23230/782	0.059	23.01	24.00	1.256	0.074
Body 1RB									
Front side	5	10	QPSK 1_0	23230/782	0.199	24.06	25.00	1.242	0.247
Back side	5	10	QPSK 1_0	23230/782	0.769	24.06	25.00	1.242	0.955
Left side	5	10	QPSK 1_0	23230/782	0.065	24.06	25.00	1.242	0.081
Right side	5	10	QPSK 1_0	23230/782	0.197	24.06	25.00	1.242	0.245
Bottom side	5	10	QPSK 1_0	23230/782	0.351	24.06	25.00	1.242	0.436
Body 50%RB									
Front side	5	10	QPSK 25_0	23230/782	0.161	23.01	24.00	1.256	0.202
Back side	5	10	QPSK 25_0	23230/782	0.548	23.01	24.00	1.256	0.688
Left side	5	10	QPSK 25_0	23230/782	0.052	23.01	24.00	1.256	0.065
Right side	5	10	QPSK 25_0	23230/782	0.159	23.01	24.00	1.256	0.200
Bottom side	5	10	QPSK 25_0	23230/782	0.276	23.01	24.00	1.256	0.347
Body 100%RB									
Back side	5	10	QPSK 50_0	23230/782	0.555	22.92	24.00	1.282	0.712
Body 1RB (LTE+NR, LTE+WLAN)									
Back side	5	10	QPSK 1_0	23230/782	0.492	22.09	23.00	1.233	0.607
Body 50%RB (LTE+NR, LTE+WLAN)									
Back side	5	10	QPSK 25_0	23230/782	0.443	22.05	23.00	1.245	0.551
Body 1RB (LTE+NR, LTE+WLAN)									
Back side	5	10	QPSK 1_0	23230/782	0.231	18.66	19.50	1.213	0.280
Body 50%RB (LTE+NR, LTE+WLAN)									
Back side	5	10	QPSK 25_0	23230/782	0.207	18.62	19.50	1.225	0.253

Table 10: SAR of LTE Band 13.

16.7 SAR Measurement Result of LTE Band 14

Ant 0 Test Results									
Test position	Test Distance (mm)	BW. (MHz)	Mode	Ch./Freq.(MHz)	SAR (W/kg) 1-g	Conducted Power (dBm)	Tune up Limit (dBm)	Scaling Factor	Reported 1g SAR (W/kg)
Head 1RB									
Left cheek	0	10	QPSK 1_0	23330/793	0.125	24.02	25.00	1.253	0.157
Left tilted	0	10	QPSK 1_0	23330/793	0.068	24.02	25.00	1.253	0.085
Right cheek	0	10	QPSK 1_0	23330/793	0.151	24.02	25.00	1.253	0.189
Right tilted	0	10	QPSK 1_0	23330/793	0.076	24.02	25.00	1.253	0.095
Head 50%RB									
Left cheek	0	10	QPSK 25_0	23330/793	0.090	22.97	24.00	1.268	0.114
Left tilted	0	10	QPSK 25_0	23330/793	0.049	22.97	24.00	1.268	0.062
Right cheek	0	10	QPSK 25_0	23330/793	0.110	22.97	24.00	1.268	0.139
Right tilted	0	10	QPSK 25_0	23330/793	0.057	22.97	24.00	1.268	0.072
Body 1RB									
Front side	5	10	QPSK 1_0	23330/793	0.203	24.02	25.00	1.253	0.254
Back side	5	10	QPSK 1_0	23330/793	0.846	24.02	25.00	1.253	1.060
Back side Repeat	5	10	QPSK 1_0	23330/793	0.808	24.02	25.00	1.253	1.013
Left side	5	10	QPSK 1_0	23330/793	0.057	24.02	25.00	1.253	0.071
Right side	5	10	QPSK 1_0	23330/793	0.164	24.02	25.00	1.253	0.206
Bottom side	5	10	QPSK 1_0	23330/793	0.372	24.02	25.00	1.253	0.466
Body 50%RB									
Front side	5	10	QPSK 25_0	23330/793	0.161	22.97	24.00	1.268	0.204
Back side	5	10	QPSK 25_0	23330/793	0.584	22.97	24.00	1.268	0.740
Left side	5	10	QPSK 25_0	23330/793	0.038	22.97	24.00	1.268	0.048
Right side	5	10	QPSK 25_0	23330/793	0.138	22.97	24.00	1.268	0.175
Bottom side	5	10	QPSK 25_0	23330/793	0.308	22.97	24.00	1.268	0.390
Body 100%RB									
Back side	5	10	QPSK 50_0	23330/793	0.581	22.88	24.00	1.294	0.752
Body 1RB (LTE+NR, LTE+WLAN)									
Back side	5	10	QPSK 1_0	23330/793	0.542	22.06	23.00	1.242	0.673
Body 50%RB (LTE+NR, LTE+WLAN)									
Back side	5	10	QPSK 25_0	23330/793	0.471	22.03	23.00	1.250	0.589
Body 1RB (LTE+NR+WLAN)									
Back side	5	10	QPSK 1_0	23330/793	0.278	18.99	20.00	1.262	0.351
Body 50%RB (LTE+NR+WLAN)									
Back side	5	10	QPSK 25_0	23330/793	0.242	18.95	20.00	1.274	0.308

Table 11: SAR of LTE Band 14.

Test Position	Channel/ Frequency	Measured SAR (1g)	1 st Repeated	Ratio	2 nd Repeated	3 rd Repeated
	(MHz)		SAR (1g)		SAR (1g)	SAR (1g)
Back side	23330/793	0.846	0.808	1.047	N/A	N/A

Note: 1) When the original highest measured SAR is ≥ 0.80 W/kg, the measurement was repeated once.
2) A second repeated measurement was performed only if the ratio of largest to smallest SAR for the original and first repeated measurements was > 1.20 or when the original or repeated measurement was ≥ 1.45 W/kg ($\sim 10\%$ from the 1-g SAR limit).
3) A third repeated measurement was performed only if the original, first or second repeated measurement was ≥ 1.5 W/kg and the ratio of largest to smallest SAR for the original, first and second repeated measurements is > 1.20 .
4) Repeated measurements are not required when the original highest measured SAR is < 0.80 W/kg

16.8 SAR Measurement Result of LTE Band 25

Ant 4 Test Results									
Test position	Test Distance (mm)	BW. (MHz)	Mode	Ch./Freq. (MHz)	SAR (W/kg) 1-g	Conducted Power(dBm)	Tune up Limit (dBm)	Scaling Factor	Reported 1g SAR (W/kg)
Head 1RB									
Left cheek	0	20	QPSK 1_0	26365/1882.5	0.268	20.03	21.00	1.250	0.335
Left tilted	0	20	QPSK 1_0	26365/1882.5	0.193	20.03	21.00	1.250	0.241
Right cheek	0	20	QPSK 1_0	26365/1882.5	1.010	20.03	21.00	1.250	1.263
Right tilted	0	20	QPSK 1_0	26365/1882.5	0.643	20.03	21.00	1.250	0.804
Right cheek	0	20	QPSK 1_0	26140/1860	1.060	20.01	21.00	1.256	1.331
Right cheek Repeat	0	20	QPSK 1_0	26140/1860	1.020	20.01	21.00	1.256	1.281
Right cheek	0	20	QPSK 1_0	26590/1905	0.997	19.98	21.00	1.265	1.261
Right tilted	0	20	QPSK 1_0	26140/1860	0.653	20.01	21.00	1.256	0.820
Right tilted	0	20	QPSK 1_0	26590/1905	0.659	19.98	21.00	1.265	0.833
Head 50%RB									
Left cheek	0	20	QPSK 50_0	26365/1882.5	0.307	20.01	21.00	1.256	0.386
Left tilted	0	20	QPSK 50_0	26365/1882.5	0.199	20.01	21.00	1.256	0.250
Right cheek	0	20	QPSK 50_0	26365/1882.5	1.020	20.01	21.00	1.256	1.281
Right tilted	0	20	QPSK 50_0	26365/1882.5	0.653	20.01	21.00	1.256	0.820
Right cheek	0	20	QPSK 50_0	26140/1860	1.030	19.97	21.00	1.268	1.306
Right cheek	0	20	QPSK 50_0	26590/1905	1.020	19.96	21.00	1.271	1.296
Right tilted	0	20	QPSK 50_0	26140/1860	0.635	19.97	21.00	1.268	0.805
Right tilted	0	20	QPSK 50_0	26590/1905	0.641	19.96	21.00	1.271	0.814
Head 100%RB									
Right cheek	0	20	QPSK 100_0	26365/1882.5	0.816	19.97	21.00	1.268	1.034
Right tilted	0	20	QPSK 100_0	26365/1882.5	0.689	19.97	21.00	1.268	0.873
Head 1RB (LTE+NR, LTE+WLAN)									
Right cheek	0	20	QPSK 1_0	26365/1882.5	0.805	19.05	20.00	1.245	1.002
Right cheek	0	20	QPSK 1_0	26140/1860	0.836	19.03	20.00	1.250	1.045
Right cheek	0	20	QPSK 1_0	26590/1905	0.796	19.01	20.00	1.256	1.000
Head 50%RB									
Right cheek	0	20	QPSK 50_0	26365/1882.5	0.810	19.03	20.00	1.250	1.013
Right cheek	0	20	QPSK 50_0	26140/1860	0.818	19.00	20.00	1.259	1.030
Right cheek	0	20	QPSK 50_0	26590/1905	0.810	19.01	20.00	1.256	1.017
Head 100%RB									
Right cheek	0	20	QPSK 100_0	26365/1882.5	0.637	19.02	20.00	1.253	0.798
Head 1RB (LTE+NR+WLAN)									
Left cheek	0	20	QPSK 1_0	26365/1882.5	0.153	17.62	18.50	1.225	0.187
Right cheek	0	20	QPSK 1_0	26365/1882.5	0.570	17.62	18.50	1.225	0.698
Right tilted	0	20	QPSK 1_0	26365/1882.5	0.363	17.62	18.50	1.225	0.445
Head 50%RB (LTE+NR+WLAN)									
Left cheek	0	20	QPSK 50_0	26365/1882.5	0.175	17.58	18.50	1.236	0.216
Right cheek	0	20	QPSK 50_0	26365/1882.5	0.572	17.58	18.50	1.236	0.707
Right tilted	0	20	QPSK 50_0	26365/1882.5	0.368	17.58	18.50	1.236	0.455
Body 1RB									
Front side	5	20	QPSK 1_0	26365/1882.5	0.375	18.52	19.50	1.253	0.470
Back side	5	20	QPSK 1_0	26365/1882.5	0.906	18.52	19.50	1.253	1.135
Left side	5	20	QPSK 1_0	26365/1882.5	0.331	18.52	19.50	1.253	0.415
Top side	5	20	QPSK 1_0	26365/1882.5	0.135	18.52	19.50	1.253	0.169
Back side	5	20	QPSK 1_0	26140/1860	0.864	18.50	19.50	1.259	1.088
Back side	5	20	QPSK 1_0	26590/1905	1.040	18.48	19.50	1.265	1.315
Back side Repeat	5	20	QPSK 1_0	26590/1905	1.010	18.48	19.50	1.265	1.277
Front side	16	20	QPSK 1_0	26365/1882.5	0.221	23.51	24.50	1.256	0.278
Back side	17	20	QPSK 1_0	26365/1882.5	0.369	23.51	24.50	1.256	0.463
Left side	15	20	QPSK 1_0	26365/1882.5	0.266	23.51	24.50	1.256	0.334
Top side	16	20	QPSK 1_0	26365/1882.5	0.134	23.51	24.50	1.256	0.168
Body 50%RB									
Front side	5	20	QPSK 50_0	26365/1882.5	0.378	18.56	19.50	1.242	0.469
Back side	5	20	QPSK 50_0	26365/1882.5	0.817	18.56	19.50	1.242	1.014

Left side	5	20	QPSK 50_0	26365/1882.5	0.314	18.56	19.50	1.242	0.390
Top side	5	20	QPSK 50_0	26365/1882.5	0.136	18.56	19.50	1.242	0.169
Back side	5	20	QPSK 50_0	26140/1860	0.769	18.53	19.50	1.250	0.961
Back side	5	20	QPSK 50_0	26590/1905	0.895	18.52	19.50	1.253	1.122
Front side	16	20	QPSK 50_0	26365/1882.5	0.182	22.68	23.50	1.208	0.220
Back side	17	20	QPSK 50_0	26365/1882.5	0.310	22.68	23.50	1.208	0.374
Left side	15	20	QPSK 50_0	26365/1882.5	0.208	22.68	23.50	1.208	0.251
Top side	16	20	QPSK 50_0	26365/1882.5	0.107	22.68	23.50	1.208	0.129
Body 100%RB									
Back side	5	20	QPSK 100_0	26365/1882.5	0.931	18.57	19.50	1.239	1.153
Body 1RB (LTE+NR, LTE+WLAN)									
Back side	5	20	QPSK 1_0	26365/1882.5	0.568	16.60	17.50	1.230	0.699
Body 50%RB (LTE+NR, LTE+WLAN)									
Back side	5	20	QPSK 50_0	26365/1882.5	0.525	16.59	17.50	1.233	0.647
Body 1RB (LTE+NR+WLAN)									
Back side	5	20	QPSK 1_0	26365/1882.5	0.326	14.08	15.00	1.236	0.403
Body 50%RB (LTE+NR+WLAN)									
Back side	5	20	QPSK 50_0	26365/1882.5	0.298	14.05	15.00	1.245	0.371

Table 12: SAR of LTE Band 25 Ant4.

Test Position	Channel/ Frequency	Measured SAR (1g)	1 st Repeated	Ratio	2 nd Repeated	3 rd Repeated
	(MHz)		SAR (1g)		SAR (1g)	SAR (1g)
Right cheek	26140/1860	1.060	1.020	1.039	N/A	N/A
Back side	26590/1905	1.040	1.010	1.030	N/A	N/A
Note: 1) When the original highest measured SAR is ≥ 0.80 W/kg, the measurement was repeated once.						
2) A second repeated measurement was performed only if the ratio of largest to smallest SAR for the original and first repeated measurements was > 1.20 or when the original or repeated measurement was ≥ 1.45 W/kg ($\sim 10\%$ from the 1-g SAR limit).						
3) A third repeated measurement was performed only if the original, first or second repeated measurement was ≥ 1.5 W/kg and the ratio of largest to smallest SAR for the original, first and second repeated measurements is > 1.20 .						
4) Repeated measurements are not required when the original highest measured SAR is < 0.80 W/kg						

Ant 1 Test Results									
Test position	Test Distance (mm)	BW. (MHz)	Mode	Ch./Freq. (MHz)	SAR (W/kg) 1-g	Conducted Power(dBm)	Tune up Limit(dBm)	Scaling Factor	Reported 1g SAR (W/kg)
Head 1RB									
Left cheek	0	20	QPSK 1_0	26365/1882.5	0.303	24.09	24.50	1.099	0.333
Left tilted	0	20	QPSK 1_0	26365/1882.5	0.142	24.09	24.50	1.099	0.156
Right cheek	0	20	QPSK 1_0	26365/1882.5	0.196	24.09	24.50	1.099	0.215
Right tilted	0	20	QPSK 1_0	26365/1882.5	0.133	24.09	24.50	1.099	0.146
Head 50%RB									
Left cheek	0	20	QPSK 50_0	26365/1882.5	0.256	23.17	23.50	1.079	0.276
Left tilted	0	20	QPSK 50_0	26365/1882.5	0.118	23.17	23.50	1.079	0.127
Right cheek	0	20	QPSK 50_0	26365/1882.5	0.158	23.17	23.50	1.079	0.170
Right tilted	0	20	QPSK 50_0	26365/1882.5	0.106	23.17	23.50	1.079	0.114
Body 1RB									
Front side	5	20	QPSK 1_0	26365/1882.5	0.443	19.59	20.00	1.099	0.487
Back side	5	20	QPSK 1_0	26365/1882.5	0.671	19.59	20.00	1.099	0.737
Left side	5	20	QPSK 1_0	26365/1882.5	0.387	19.59	20.00	1.099	0.425
Bottom side	5	20	QPSK 1_0	26365/1882.5	0.330	19.59	20.00	1.099	0.363
Front side	16	20	QPSK 1_0	26365/1882.5	0.229	24.09	24.50	1.099	0.252
Back side	17	20	QPSK 1_0	26365/1882.5	0.325	24.09	24.50	1.099	0.357
Left side	15	20	QPSK 1_0	26365/1882.5	0.200	24.09	24.50	1.099	0.220
Bottom side	17	20	QPSK 1_0	26365/1882.5	0.234	24.09	24.50	1.099	0.257
Body 50%RB									
Front side	5	20	QPSK 50_0	26365/1882.5	0.424	19.55	20.00	1.109	0.470
Back side	5	20	QPSK 50_0	26365/1882.5	0.659	19.55	20.00	1.109	0.731
Left side	5	20	QPSK 50_0	26365/1882.5	0.403	19.55	20.00	1.109	0.447
Bottom side	5	20	QPSK 50_0	26365/1882.5	0.357	19.55	20.00	1.109	0.396
Front side	16	20	QPSK 50_0	26365/1882.5	0.202	23.17	23.50	1.079	0.218
Back side	17	20	QPSK 50_0	26365/1882.5	0.272	23.17	23.50	1.079	0.293
Left side	15	20	QPSK 50_0	26365/1882.5	0.174	23.17	23.50	1.079	0.188
Bottom side	17	20	QPSK 50_0	26365/1882.5	0.184	23.17	23.50	1.079	0.199
Body 1RB (LTE+NR+WLAN)									
Back side	5	20	QPSK 1_0	26365/1882.5	0.372	17.12	17.50	1.091	0.406
Body 50%RB (LTE+NR+WLAN)									
Back side	5	20	QPSK 50_0	26365/1882.5	0.368	17.10	17.50	1.096	0.404

Table 13: SAR of LTE Band 25 Ant1.

16.9 SAR Measurement Result of LTE Band 26

Ant 0 Test Results									
Test position	Test Distance (mm)	BW. (MHz)	Mode	Ch./Freq. (MHz)	SAR (W/kg) 1-g	Conducted Power (dBm)	Tune up Limit (dBm)	Scaling Factor	Reported 1g SAR (W/kg)
Head 1RB									
Left cheek	0	15	QPSK 1_0	26865/831.5	0.201	24.64	25.00	1.086	0.218
Left tilted	0	15	QPSK 1_0	26865/831.5	0.111	24.64	25.00	1.086	0.121
Right cheek	0	15	QPSK 1_0	26865/831.5	0.256	24.64	25.00	1.086	0.278
Right tilted	0	15	QPSK 1_0	26865/831.5	0.122	24.64	25.00	1.086	0.133
Head 50%RB									
Left cheek	0	15	QPSK 36_0	26865/831.5	0.165	23.72	24.00	1.067	0.176
Left tilted	0	15	QPSK 36_0	26865/831.5	0.088	23.72	24.00	1.067	0.094
Right cheek	0	15	QPSK 36_0	26865/831.5	0.211	23.72	24.00	1.067	0.225
Right tilted	0	15	QPSK 36_0	26865/831.5	0.104	23.72	24.00	1.067	0.111
Body 1RB									
Front side	5	15	QPSK 1_0	26865/831.5	0.402	23.06	23.50	1.107	0.445
Back side	5	15	QPSK 1_0	26865/831.5	0.996	23.06	23.50	1.107	1.102
Back side Repeat	5	15	QPSK 1_0	26865/831.5	0.990	23.06	23.50	1.107	1.096
Left side	5	15	QPSK 1_0	26865/831.5	0.107	23.06	23.50	1.107	0.118
Right side	5	15	QPSK 1_0	26865/831.5	0.375	23.06	23.50	1.107	0.415
Bottom side	5	15	QPSK 1_0	26865/831.5	0.452	23.06	23.50	1.107	0.500
Back side	5	15	QPSK 1_0	26765/821.5	0.645	22.02	23.50	1.406	0.907
Back side	5	15	QPSK 1_0	26965/841.5	0.926	22.76	23.50	1.186	1.098
Front side	16	15	QPSK 1_0	26865/831.5	0.189	24.64	25.00	1.086	0.205
Back side	17	15	QPSK 1_0	26865/831.5	0.210	24.64	25.00	1.086	0.228
Left side	15	15	QPSK 1_0	26865/831.5	0.090	24.64	25.00	1.086	0.098
Right side	15	15	QPSK 1_0	26865/831.5	0.163	24.64	25.00	1.086	0.177
Bottom side	17	15	QPSK 1_0	26865/831.5	0.150	24.64	25.00	1.086	0.163
Body 50%RB									
Front side	5	15	QPSK 36_0	26865/831.5	0.322	23.05	23.50	1.109	0.357
Back side	5	15	QPSK 36_0	26865/831.5	0.920	23.05	23.50	1.109	1.020
Left side	5	15	QPSK 36_0	26865/831.5	0.074	23.05	23.50	1.109	0.082
Right side	5	15	QPSK 36_0	26865/831.5	0.237	23.05	23.50	1.109	0.263
Bottom side	5	15	QPSK 36_0	26865/831.5	0.461	23.05	23.50	1.109	0.511
Back side	5	15	QPSK 36_39	26765/821.5	0.794	22.31	23.50	1.315	1.044
Back side	5	15	QPSK 36_39	26965/841.5	0.838	22.36	23.50	1.300	1.090
Front side	16	15	QPSK 36_0	26865/831.5	0.151	23.72	24.00	1.067	0.161
Back side	17	15	QPSK 36_0	26865/831.5	0.173	23.72	24.00	1.067	0.185
Left side	15	15	QPSK 36_0	26865/831.5	0.056	23.72	24.00	1.067	0.060
Right side	15	15	QPSK 36_0	26865/831.5	0.125	23.72	24.00	1.067	0.133
Bottom side	17	15	QPSK 36_0	26865/831.5	0.112	23.72	24.00	1.067	0.119
Body 100%RB									
Back side	5	15	QPSK 75_0	26865/831.5	0.932	22.90	23.50	1.148	1.070
Body 1RB (LTE+NR, LTE+WLAN)									
Back side	5	15	QPSK 1_0	26865/831.5	0.624	21.11	21.50	1.094	0.683
Body 50%RB (LTE+NR, LTE+WLAN)									
Back side	5	15	QPSK 36_0	26865/831.5	0.589	21.09	21.50	1.099	0.647
Body 1RB (LTE+NR+WLAN)									
Back side	5	15	QPSK 1_0	26865/831.5	0.272	17.65	18.00	1.084	0.295
Body 50%RB (LTE+NR+WLAN)									
Back side	5	15	QPSK 36_0	26865/831.5	0.270	17.61	18.00	1.094	0.295

Table 14: SAR of LTE Band 26.

Test Position	Channel/ Frequency	Measured SAR (1g)	1 st Repeated	Ratio	2 nd Repeated	3 rd Repeated
	(MHz)		SAR (1g)		SAR (1g)	SAR (1g)
Back side	26865/831.5	0.996	0.990	1.006	N/A	N/A
Note: 1) When the original highest measured SAR is ≥ 0.80 W/kg, the measurement was repeated once.						
2) A second repeated measurement was performed only if the ratio of largest to smallest SAR for the original and first repeated measurements was > 1.20 or when the original or repeated measurement was ≥ 1.45 W/kg ($\sim 10\%$ from the 1-g SAR limit).						
3) A third repeated measurement was performed only if the original, first or second repeated measurement was ≥ 1.5 W/kg and the ratio of largest to smallest SAR for the original, first and second repeated measurements is > 1.20 .						
4) Repeated measurements are not required when the original highest measured SAR is < 0.80 W/kg						

16.10 SAR Measurement Result of LTE Band 41

Ant 4 Test Results										
Test position	Test Distance (mm)	BW. (MHz)	Mode	Duty Cycle	Ch./Freq. (MHz)	SAR (W/kg) 1-g	Conducted Power (dBm)	Tune up Limit (dBm)	Scaling Factor	Reported 1g SAR (W/kg)
Head 1RB										
Left cheek	0	20	QPSK 1_0	1:1.58	40620/2593	0.516	25.29	25.50	1.050	0.542
Left tilted	0	20	QPSK 1_0	1:1.58	40620/2593	0.555	25.29	25.50	1.050	0.582
Right cheek	0	20	QPSK 1_0	1:1.58	40620/2593	0.935	25.29	25.50	1.050	0.981
Right tilted	0	20	QPSK 1_0	1:1.58	40620/2593	0.928	25.29	25.50	1.050	0.974
Right cheek	0	20	QPSK 1_0	1:1.58	39750/2506	0.955	24.95	25.50	1.135	1.084
Right cheek	0	20	QPSK 1_0	1:1.58	40185/2549.5	1.060	25.10	25.50	1.096	1.162
Right cheek Repeat	0	20	QPSK 1_0	1:1.58	40185/2549.5	1.050	25.10	25.50	1.096	1.151
Right cheek PC2	0	20	QPSK 1_0	1:1.58	40185/2549.5	0.735	25.13	26.00	1.222	0.898
Right cheek	0	20	QPSK 1_0	1:1.58	41055/2636.5	0.854	25.20	25.50	1.072	0.915
Right cheek	0	20	QPSK 1_0	1:1.58	41490/2680	0.807	25.13	25.50	1.089	0.879
Right tilted	0	20	QPSK 1_0	1:1.58	39750/2506	0.911	24.95	25.50	1.135	1.034
Right tilted	0	20	QPSK 1_0	1:1.58	40185/2549.5	0.986	25.10	25.50	1.096	1.081
Right tilted	0	20	QPSK 1_0	1:1.58	41055/2636.5	0.849	25.20	25.50	1.072	0.910
Right tilted	0	20	QPSK 1_0	1:1.58	41490/2680	0.805	25.13	25.50	1.089	0.877
Head 50%RB										
Left cheek	0	20	QPSK 50_0	1:1.58	40620/2593	0.412	24.42	24.50	1.019	0.420
Left tilted	0	20	QPSK 50_0	1:1.58	40620/2593	0.464	24.42	24.50	1.019	0.473
Right cheek	0	20	QPSK 50_0	1:1.58	40620/2593	0.770	24.42	24.50	1.019	0.784
Right tilted	0	20	QPSK 50_0	1:1.58	40620/2593	0.741	24.42	24.50	1.019	0.755
Right cheek	0	20	QPSK 50_0	1:1.58	39750/2506	0.795	24.38	24.50	1.028	0.817
Right cheek	0	20	QPSK 50_0	1:1.58	40185/2549.5	0.828	24.36	24.50	1.033	0.855
Right cheek	0	20	QPSK 50_0	1:1.58	41055/2636.5	0.683	24.30	24.50	1.047	0.715
Right cheek	0	20	QPSK 50_0	1:1.58	41490/2680	0.666	24.37	24.50	1.030	0.686
Right tilted	0	20	QPSK 50_0	1:1.58	39750/2506	0.789	24.38	24.50	1.028	0.811
Right tilted	0	20	QPSK 50_0	1:1.58	40185/2549.5	0.813	24.36	24.50	1.033	0.840
Right tilted	0	20	QPSK 50_0	1:1.58	41055/2636.5	0.657	24.30	24.50	1.047	0.688
Right tilted	0	20	QPSK 50_0	1:1.58	41490/2680	0.649	24.37	24.50	1.030	0.669
Head 100%RB										
Right cheek	0	20	QPSK 100_0	1:1.58	40620/2593	0.715	24.32	24.50	1.042	0.745
Right tilted	0	20	QPSK 100_0	1:1.58	40620/2593	0.711	24.32	24.50	1.042	0.741
Head 1RB (LTE+WLAN)										
Right cheek	0	20	QPSK 1_0	1:1.58	40620/2593	0.615	23.21	23.50	1.069	0.657
Right tilted	0	20	QPSK 1_0	1:1.58	40620/2593	0.591	23.21	23.50	1.069	0.632
Head 50%RB										
Right cheek	0	20	QPSK 50_0	1:1.58	40620/2593	0.611	23.34	23.50	1.038	0.634
Right tilted	0	20	QPSK 50_0	1:1.58	40620/2593	0.587	23.34	23.50	1.038	0.609
Body 1RB										
Front side	5	20	QPSK 1_0	1:1.58	40620/2593	0.174	19.41	20.00	1.146	0.199
Back side	5	20	QPSK 1_0	1:1.58	40620/2593	0.985	19.41	20.00	1.146	1.128
Left side	5	20	QPSK 1_0	1:1.58	40620/2593	0.172	19.41	20.00	1.146	0.197
Top side	5	20	QPSK 1_0	1:1.58	40620/2593	0.515	19.41	20.00	1.146	0.590
Back side	5	20	QPSK 1_0	1:1.58	39750/2506	1.160	19.35	20.00	1.161	1.347
Back side Repeat	5	20	QPSK 1_0	1:1.58	39750/2506	1.100	19.35	20.00	1.161	1.278
Back side PC2	5	20	QPSK 1_0	1:1.58	39750/2506	0.843	19.35	20.00	1.161	0.979
Back side	5	20	QPSK 1_0	1:1.58	40185/2549.5	0.978	19.38	20.00	1.153	1.128
Back side	5	20	QPSK 1_0	1:1.58	41055/2636.5	0.821	19.36	20.00	1.159	0.951
Back side	5	20	QPSK 1_0	1:1.58	41490/2680	0.832	19.33	20.00	1.167	0.971
Front side	16	20	QPSK 1_0	1:1.58	40620/2593	0.147	25.29	25.50	1.050	0.154
Back side	17	20	QPSK 1_0	1:1.58	40620/2593	0.582	25.29	25.50	1.050	0.611
Left side	15	20	QPSK 1_0	1:1.58	40620/2593	0.258	25.29	25.50	1.050	0.271
Top side	16	20	QPSK 1_0	1:1.58	40620/2593	0.435	25.29	25.50	1.050	0.457
Back side	17	20	QPSK 50_0	1:1.58	39750/2506	0.519	24.95	25.50	1.135	0.589
Back side	17	20	QPSK 50_0	1:1.58	40185/2549.5	0.599	25.10	25.50	1.096	0.657
Back side	17	20	QPSK 50_0	1:1.58	41055/2636.5	0.506	25.20	25.50	1.072	0.542
Back side	17	20	QPSK 50_0	1:1.58	41490/2680	0.490	25.13	25.50	1.089	0.534
Body 50%RB										
Front side	5	20	QPSK 50_0	1:1.58	40620/2593	0.173	19.37	20.00	1.156	0.200
Back side	5	20	QPSK 50_0	1:1.58	40620/2593	0.992	19.37	20.00	1.156	1.147
Left side	5	20	QPSK 50_0	1:1.58	40620/2593	0.164	19.37	20.00	1.156	0.190
Top side	5	20	QPSK 50_0	1:1.58	40620/2593	0.509	19.37	20.00	1.156	0.588
Back side	5	20	QPSK 50_0	1:1.58	39750/2506	0.996	19.30	20.00	1.175	1.170
Back side	5	20	QPSK 50_0	1:1.58	40185/2549.5	0.973	19.32	20.00	1.169	1.138
Back side	5	20	QPSK 50_0	1:1.58	41055/2636.5	0.824	19.28	20.00	1.180	0.973

Back side	5	20	QPSK 50_0	1:1.58	41490/2680	0.833	19.31	20.00	1.172	0.976
Front side	16	20	QPSK 50_0	1:1.58	40620/2593	0.123	24.42	24.50	1.019	0.125
Back side	17	20	QPSK 50_0	1:1.58	40620/2593	0.480	24.42	24.50	1.019	0.489
Left side	15	20	QPSK 50_0	1:1.58	40620/2593	0.207	24.42	24.50	1.019	0.211
Top side	16	20	QPSK 50_0	1:1.58	40620/2593	0.351	24.42	24.50	1.019	0.358
Body 100%RB										
Back side	5	20	QPSK 100_0	1:1.58	40620/2593	0.960	19.33	20.00	1.167	1.120
Body 1RB (LTW+WLAN)										
Back side	5	20	QPSK 1_0	1:1.58	40620/2593	0.631	17.45	18.00	1.135	0.716
Body 50%RB (LTW+WLAN)										
Back side	5	20	QPSK 50_0	1:1.58	40620/2593	0.621	17.43	18.00	1.140	0.708

Table 15: SAR of LTE Band 41 Ant4.

Test Position	Channel/ Frequency	Measured SAR (1g)	1 st Repeated	Ratio	2 nd Repeated	3 rd Repeated
	(MHz)		SAR (1g)		SAR (1g)	SAR (1g)
Right cheek	40185/2549.5	1.060	1.050	1.010	N/A	N/A
Back side	39750/2506	1.160	1.100	1.055	N/A	N/A
Note: 1) When the original highest measured SAR is ≥ 0.80 W/kg, the measurement was repeated once.						
2) A second repeated measurement was performed only if the ratio of largest to smallest SAR for the original and first repeated measurements was > 1.20 or when the original or repeated measurement was ≥ 1.45 W/kg (~ 10% from the 1-g SAR limit).						
3) A third repeated measurement was performed only if the original, first or second repeated measurement was ≥ 1.5 W/kg and the ratio of largest to smallest SAR for the original, first and second repeated measurements is > 1.20 .						
4) Repeated measurements are not required when the original highest measured SAR is < 0.80 W/kg						

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

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

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

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

LTE Band 41 Linearity Data:

	Head		Body	
	Power Class 3	Power Class 2	Power Class 3	Power Class 2
Tune-up(dBm)	25.50	26.00	20.00	20.00
Measured power(dBm)	25.10	25.13	19.35	19.35
Measured SAR(W/kg)	1.060	0.735	1.160	0.843
Measured power(mw)	323.59	325.84	86.10	86.10
Duty Cycle	63.3%	43.3%	63.3%	43.3%
Frame Average power(mw)	204.83	141.09	54.50	37.28
% deviation from expected linearity		0.67%		6.24%

Ant 0 Test Results										
Test position	Test Distance (mm)	BW. (MHz)	Mode	Duty Cycle	Ch./Freq. (MHz)	SAR (W/kg) 1-g	Conducted Power (dBm)	Tune up Limit (dBm)	Scaling Factor	Reported 1g SAR (W/kg)
Head 1RB										
Left cheek	0	20	QPSK 1_0	1:1.58	41490/2680	0.100	25.48	25.50	1.005	0.100
Left tilted	0	20	QPSK 1_0	1:1.58	41490/2680	0.075	25.48	25.50	1.005	0.075
Right cheek	0	20	QPSK 1_0	1:1.58	41490/2680	0.161	25.48	25.50	1.005	0.162
Right tilted	0	20	QPSK 1_0	1:1.58	41490/2680	0.068	25.48	25.50	1.005	0.068
Head 50%RB										
Left cheek	0	20	QPSK 50_25	1:1.58	41490/2680	0.074	24.46	24.50	1.009	0.075
Left tilted	0	20	QPSK 50_25	1:1.58	41490/2680	0.061	24.46	24.50	1.009	0.062
Right cheek	0	20	QPSK 50_25	1:1.58	41490/2680	0.134	24.46	24.50	1.009	0.135
Right tilted	0	20	QPSK 50_25	1:1.58	41490/2680	0.064	24.46	24.50	1.009	0.065
Body 1RB										
Front side	5	20	QPSK 1_0	1:1.58	41490/2680	0.196	19.58	20.00	1.102	0.216
Back side	5	20	QPSK 1_0	1:1.58	41490/2680	0.585	19.58	20.00	1.102	0.644
Left side	5	20	QPSK 1_0	1:1.58	41490/2680	0.060	19.58	20.00	1.102	0.066
Right side	5	20	QPSK 1_0	1:1.58	41490/2680	0.172	19.58	20.00	1.102	0.189
Bottom side	5	20	QPSK 1_0	1:1.58	41490/2680	0.280	19.58	20.00	1.102	0.308
Back side	5	20	QPSK 1_0	1:1.58	39750/2506	0.633	19.48	20.00	1.127	0.714
Back side	5	20	QPSK 1_0	1:1.58	40185/2549.5	0.596	19.46	20.00	1.132	0.675
Back side	5	20	QPSK 1_0	1:1.58	40620/2593	0.591	19.42	20.00	1.143	0.675
Back side	5	20	QPSK 1_0	1:1.58	41055/2636.5	0.593	19.43	20.00	1.140	0.676
Front side	16	20	QPSK 1_0	1:1.58	41490/2680	0.225	25.48	25.50	1.005	0.226
Back side	17	20	QPSK 1_0	1:1.58	41490/2680	0.337	25.48	25.50	1.005	0.339
Left side	15	20	QPSK 1_0	1:1.58	41490/2680	0.025	25.48	25.50	1.005	0.025
Right side	15	20	QPSK 1_0	1:1.58	41490/2680	0.134	25.48	25.50	1.005	0.135
Bottom side	17	20	QPSK 1_0	1:1.58	41490/2680	0.206	25.48	25.50	1.005	0.207
Body 50%RB										
Front side	5	20	QPSK 50_25	1:1.58	41490/2680	0.205	19.67	20.00	1.079	0.221
Back side	5	20	QPSK 50_25	1:1.58	41490/2680	0.472	19.67	20.00	1.079	0.509
Left side	5	20	QPSK 50_25	1:1.58	41490/2680	0.057	19.67	20.00	1.079	0.061
Right side	5	20	QPSK 50_25	1:1.58	41490/2680	0.153	19.67	20.00	1.079	0.165
Bottom side	5	20	QPSK 50_25	1:1.58	41490/2680	0.274	19.67	20.00	1.079	0.296
Front side	16	20	QPSK 50_25	1:1.58	41490/2680	0.185	24.46	24.50	1.009	0.187
Back side	17	20	QPSK 50_25	1:1.58	41490/2680	0.291	24.46	24.50	1.009	0.294
Left side	15	20	QPSK 50_25	1:1.58	41490/2680	0.021	24.46	24.50	1.009	0.021
Right side	15	20	QPSK 50_25	1:1.58	41490/2680	0.115	24.46	24.50	1.009	0.116
Bottom side	17	20	QPSK 50_25	1:1.58	41490/2680	0.177	24.46	24.50	1.009	0.179
Body 1RB (LTE+NR+WLAN)										
Back side	5	20	QPSK 1_0	1:1.58	41490/2680	0.334	17.10	17.50	1.096	0.366
Body 50%RB (LTE+NR+WLAN)										
Back side	5	20	QPSK 50_25	1:1.58	41490/2680	0.275	17.09	17.50	1.099	0.302

Table 16: SAR of LTE Band 41 Ant0.

16.11 SAR Measurement Result of LTE Band 42

Ant 3 Test Results										
Test position	Test Distance (mm)	BW. (MHz)	Mode	Duty Cycle	Ch./Freq. (MHz)	SAR (W/kg) 1-g	Conducted Power (dBm)	Tune up Limit (dBm)	Scaling Factor	Reported 1g SAR (W/kg)
Head 1RB										
Left cheek	0	20	QPSK 1_0	1:1.58	42590/3500	0.295	21.21	22.00	1.199	0.354
Left tilted	0	20	QPSK 1_0	1:1.58	42590/3500	0.294	21.21	22.00	1.199	0.353
Right cheek	0	20	QPSK 1_0	1:1.58	42590/3500	0.793	21.21	22.00	1.199	0.951
Right tilted	0	20	QPSK 1_0	1:1.58	42590/3500	0.452	21.21	22.00	1.199	0.542
Right cheek	0	20	QPSK 1_0	1:1.58	41690/3410	1.020	21.16	22.00	1.213	1.238
Right cheek Repeat	0	20	QPSK 1_0	1:1.58	41690/3410	0.953	21.16	22.00	1.213	1.156
Right cheek	0	20	QPSK 1_0	1:1.58	42140/3455	1.010	21.13	22.00	1.222	1.234
Right cheek	0	20	QPSK 1_0	1:1.58	43040/3545	0.855	21.14	22.00	1.219	1.042
Right cheek	0	20	QPSK 1_0	1:1.58	43490/3590	0.849	21.09	22.00	1.233	1.047
Head 50%RB										
Left cheek	0	20	QPSK 50_25	1:1.58	42590/3500	0.294	21.20	22.00	1.202	0.353
Left tilted	0	20	QPSK 50_25	1:1.58	42590/3500	0.299	21.20	22.00	1.202	0.359
Right cheek	0	20	QPSK 50_25	1:1.58	42590/3500	0.968	21.20	22.00	1.202	1.164
Right tilted	0	20	QPSK 50_25	1:1.58	42590/3500	0.441	21.20	22.00	1.202	0.530
Right cheek	0	20	QPSK 50_25	1:1.58	41690/3410	1.010	21.14	22.00	1.219	1.231
Right cheek	0	20	QPSK 50_25	1:1.58	42140/3455	0.980	21.11	22.00	1.227	1.203
Right cheek	0	20	QPSK 50_25	1:1.58	43040/3545	0.899	21.09	22.00	1.233	1.109
Right cheek	0	20	QPSK 50_25	1:1.58	43490/3590	0.864	21.06	22.00	1.242	1.073
Head 100%RB										
Right cheek	0	20	QPSK 100_0	1:1.58	42590/3500	0.971	21.19	22.00	1.205	1.170
Head 1RB (LTE+WLAN)										
Right cheek	0	20	QPSK 1_0	1:1.58	42590/3500	0.652	20.19	21.00	1.205	0.786
Right cheek	0	20	QPSK 1_0	1:1.58	41690/3410	0.815	20.13	21.00	1.222	0.996
Right cheek	0	20	QPSK 1_0	1:1.58	42140/3455	0.808	20.14	21.00	1.219	0.985
Right cheek	0	20	QPSK 1_0	1:1.58	43040/3545	0.686	20.16	21.00	1.213	0.832
Right cheek	0	20	QPSK 1_0	1:1.58	43490/3590	0.681	20.11	21.00	1.227	0.836
Head 50%RB (LTE+WLAN)										
Right cheek	0	20	QPSK 50_25	1:1.58	42590/3500	0.772	20.18	21.00	1.208	0.932
Right cheek	0	20	QPSK 50_25	1:1.58	41690/3410	0.809	20.13	21.00	1.222	0.988
Right cheek	0	20	QPSK 50_25	1:1.58	42140/3455	0.774	20.15	21.00	1.216	0.941
Right cheek	0	20	QPSK 50_25	1:1.58	43040/3545	0.708	20.14	21.00	1.219	0.863
Right cheek	0	20	QPSK 50_25	1:1.58	43490/3590	0.673	20.12	21.00	1.225	0.824
Head 100%RB (LTE+WLAN)										
Right cheek	0	20	QPSK 100_0	1:1.58	42590/3500	0.782	20.18	21.00	1.208	0.945
Body 1RB										
Front side	5	20	QPSK 1_0	1:1.58	42590/3500	0.317	20.19	21.00	1.205	0.382
Back side	5	20	QPSK 1_0	1:1.58	42590/3500	0.872	20.19	21.00	1.205	1.051
Left side	5	20	QPSK 1_0	1:1.58	42590/3500	0.895	20.19	21.00	1.205	1.079
Top side	5	20	QPSK 1_0	1:1.58	42590/3500	0.290	20.19	21.00	1.205	0.349
Back side	5	20	QPSK 1_0	1:1.58	41690/3410	1.030	20.13	21.00	1.222	1.258
Back side Repeat	5	20	QPSK 1_0	1:1.58	41690/3410	0.952	20.13	21.00	1.222	1.163
Back side	5	20	QPSK 1_0	1:1.58	42140/3455	0.920	20.14	21.00	1.219	1.121
Back side	5	20	QPSK 1_0	1:1.58	43040/3545	0.847	20.16	21.00	1.213	1.028
Back side	5	20	QPSK 1_0	1:1.58	43490/3590	0.864	20.11	21.00	1.227	1.061
Left side	5	20	QPSK 1_0	1:1.58	41690/3410	0.833	20.13	21.00	1.222	1.018
Left side	5	20	QPSK 1_0	1:1.58	42140/3455	0.876	20.14	21.00	1.219	1.068
Left side	5	20	QPSK 1_0	1:1.58	43040/3545	0.898	20.16	21.00	1.213	1.090
Left side	5	20	QPSK 1_0	1:1.58	43490/3590	0.890	20.11	21.00	1.227	1.092
Front side	16	20	QPSK 1_0	1:1.58	42590/3500	0.176	23.69	24.50	1.205	0.212
Back side	17	20	QPSK 1_0	1:1.58	42590/3500	0.421	23.69	24.50	1.205	0.507
Left side	15	20	QPSK 1_0	1:1.58	42590/3500	0.492	23.69	24.50	1.205	0.593
Top side	16	20	QPSK 1_0	1:1.58	42590/3500	0.312	23.69	24.50	1.205	0.376
Body 50%RB										

Front side	5	20	QPSK 50_25	1:1.58	42590/3500	0.321	20.18	21.00	1.208	0.388
Back side	5	20	QPSK 50_25	1:1.58	42590/3500	0.894	20.18	21.00	1.208	1.080
Left side	5	20	QPSK 50_25	1:1.58	42590/3500	0.882	20.18	21.00	1.208	1.065
Top side	5	20	QPSK 50_25	1:1.58	42590/3500	0.302	20.18	21.00	1.208	0.365
Back side	5	20	QPSK 50_25	1:1.58	41690/3410	0.992	20.13	21.00	1.222	1.212
Back side	5	20	QPSK 50_25	1:1.58	42140/3455	0.956	20.15	21.00	1.216	1.163
Back side	5	20	QPSK 50_25	1:1.58	43040/3545	0.873	20.14	21.00	1.219	1.064
Back side	5	20	QPSK 50_25	1:1.58	43490/3590	0.920	20.12	21.00	1.225	1.127
Left side	5	20	QPSK 50_25	1:1.58	41690/3410	0.964	20.13	21.00	1.222	1.178
Left side	5	20	QPSK 50_25	1:1.58	42140/3455	1.020	20.15	21.00	1.216	1.241
Left side	5	20	QPSK 50_25	1:1.58	43040/3545	0.980	20.14	21.00	1.219	1.195
Left side	5	20	QPSK 50_25	1:1.58	43490/3590	0.927	20.12	21.00	1.225	1.135
Front side	16	20	QPSK 50_25	1:1.58	42590/3500	0.143	22.88	23.50	1.153	0.165
Back side	17	20	QPSK 50_25	1:1.58	42590/3500	0.337	22.88	23.50	1.153	0.389
Left side	15	20	QPSK 50_25	1:1.58	42590/3500	0.418	22.88	23.50	1.153	0.482
Top side	16	20	QPSK 50_25	1:1.58	42590/3500	0.265	22.88	23.50	1.153	0.306
Body 100%RB										
Back side	5	20	QPSK 100_0	1:1.58	42590/3500	0.975	20.18	21.00	1.208	1.178
Left side	5	20	QPSK 100_0	1:1.58	42590/3500	0.899	20.18	21.00	1.208	1.086
Body 1RB (LTE+WLAN)										
Back side	5	20	QPSK 1_0	1:1.58	42590/3500	0.552	17.72	18.50	1.197	0.661
Body 50%RB (LTE+WLAN)										
Back side	5	20	QPSK 50_25	1:1.58	42590/3500	0.533	17.70	18.50	1.202	0.641

Table 17: SAR of LTE Band 42.

Test Position	Channel/ Frequency	Measured SAR (1g)	1 st Repeated	Ratio	2 nd Repeated	3 rd Repeated
	(MHz)		SAR (1g)		SAR (1g)	SAR (1g)
Right cheek	41690/3410	1.020	0.953	1.070	N/A	N/A
Back side	41690/3410	1.030	0.952	1.082	N/A	N/A
Note: 1) When the original highest measured SAR is ≥ 0.80 W/kg, the measurement was repeated once.						
2) A second repeated measurement was performed only if the ratio of largest to smallest SAR for the original and first repeated measurements was > 1.20 or when the original or repeated measurement was ≥ 1.45 W/kg ($\sim 10\%$ from the 1-g SAR limit).						
3) A third repeated measurement was performed only if the original, first or second repeated measurement was ≥ 1.5 W/kg and the ratio of largest to smallest SAR for the original, first and second repeated measurements is > 1.20 .						
4) Repeated measurements are not required when the original highest measured SAR is < 0.80 W/kg						