FCC SAR TEST REPORT

FCC ID	:	**UZ7RFIDTC7X**
Equipment	:	**LEGIC RFID Card Reader**
Brand Name	:	**ZEBRA**
Model Name	:	**3PTY-RFID-TC7X**
Applicant	:	**Zebra Technologies Corporation 1 Zebra Plaza, Holtsville, NY 11742**
Manufacturer	:	**Zebra Technologies Corporation 1 Zebra Plaza, Holtsville, NY 11742**
Standard	:	**FCC 47 CFR Part 2 (2.1093)**

The product was received on Sep. 27, 2021 and testing was started from Sep. 27, 2021 and completed on Nov. 18, 2021. We, SPORTON INTERNATIONAL INC., would like to declare that the tested sample provide by manufacturer and the test data has been evaluated in accordance with the test procedures given in 47 CFR Part 2.1093 and FCC KDB and has been pass the FCC requirement.

The test results in this report apply exclusively to the tested model / sample. Without written approval of SPORTON INTERNATIONAL INC. EMC & Wireless Communications Laboratory, the test report shall not be reproduced except in full.

Approved by: Cona Huang / Deputy Manager

Sporton International Inc. EMC & Wireless Communications Laboratory

No.52, Huaya 1st Rd., Guishan Dist., Taoyuan City 333, Taiwan

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History of this test report

Report No.	Version	Description	Issued Date
FA192204	01	Initial issue of report	Nov. 30, 2021

1. Statement of Compliance

The maximum results of Specific Absorption Rate (SAR) found during testing for Zebra Technologies Corporation, LEGIC RFID Card Reader, 3PTY-RFID-TC7X, are as follows.

Equipment Class	Frequency Band	Highest SAR Summary		Highest Simultaneous Transmission 1g SAR (W/kg)
		Head (Separation 0mm)	Body-worn (Separation 15mm)	
		1g SAR (W/kg)		
900 MHz	RFID	0.08	0.40	1.58
Date of Testing:		2021/9/27 ~ 2021/11/18		

Sporton Lab is accredited to ISO 17025 by Taiwan Accreditation Foundation (TAF code: 1190) and the FCC designation No. TW1190 under the FCC 2.948(e) by Mutual Recognition Agreement (MRA) in FCC test. This device is in compliance with Specific Absorption Rate (SAR) for general population/uncontrolled exposure limits (1.6 W/kg for Partial-Body 1g SAR) specified in FCC 47 CFR part 2 (2.1093) and ANSI/IEEE C95.1-1992, and had been tested in accordance with the measurement methods and procedures specified in IEEE 1528-2013 and FCC KDB publications.

Reviewed by: Jason Wang
Report Producer: Wan Liu

2. Guidance Applied

The Specific Absorption Rate (SAR) testing specification, method, and procedure for this device is in accordance with the following standards, the below KDB standard may not including in the TAF code without accreditation.

- FCC 47 CFR Part 2 (2.1093)
- ANSI/IEEE C95.1-1992
- IEEE 1528-2013
- FCC KDB 865664 D01 SAR Measurement 100 MHz to 6 GHz v01r04
- FCC KDB 865664 D02 SAR Reporting v01r02
- FCC KDB 447498 D01 General RF Exposure Guidance v06
- FCC KDB 648474 D04 SAR Evaluation Considerations for Wireless Handsets v01r03
- FCC KDB 248227 D01 802.11 Wi-Fi SAR v02r02
- FCC KDB 941225 D01 3G SAR Procedures v03r01
- FCC KDB 941225 D05 SAR for LTE Devices v02r05
- FCC KDB 941225 D06 Hotspot Mode SAR v02r01

3. Equipment Under Test (EUT) Information

3.1 General Information

Product Feature & Specification	
Equipment Name	LEGIC RFID Card Reader
Brand Name	ZEBRA
Model Name	3PTY-RFID-TC7X
FCC ID	UZ7RFIDTC7X
Wireless Technology and Frequency Range	RFID: 915.45 MHz ~ 927.70 MHz
Mode	RFID: ASK
HW Version	DV
SW Version	98.26.0A
FW Version	98.26.0A
GSM / (E)GPRS Dual Transfer mode	Class A – EUT can support Packet Switched and Circuit Switched Network simultaneously.
EUT Stage	Identical Prototype

Remark:

1. The device will be attached with the Zebra TC77HL host (FCC ID: UZ7TC77HL) to do the RFID scan, Since the RFID software will always scan after it is turned on, the host is matched RFID device perform the head and body-worn SAR tested
2. When the RFID is active, the host hotspot operation is turn off.
3. In this report additional host SAR is just verification worst case found in host original Sporton SAR report number FA872506, FCC ID: UZ7TC77HL to ensure the highest SAR and simultaneous transmission is compliance when the host is attach the RFID device.

Support Unit for Testing					
Support Unit for Testing	USB Adapter	Brand Name	ZEBRA	Model Name	N/A
	Touch Computer	Brand Name	ZEBRA	Model Name	TC77HL
	TC7X SNAP ON USB CABLE	Brand Name	ZEBRA	Model Name	CBL-TC7X-USB1-01

Host information	
Equipment Name	Touch computer
Brand Name	Zebra
Model Name	TC77HL
FCC ID	UZ7TC77HL
Wireless Technology and Frequency Range	GSM850: 824.2 MHz ~ 848.8 MHz GSM1900: 1850.2 MHz ~ 1909.8 MHz WCDMA Band II: 1852.4 MHz ~ 1907.6 MHz WCDMA Band IV: 1712.4 MHz ~ 1752.6 MHz WCDMA Band V: 826.4 MHz ~ 846.6 MHz LTE Band 2: 1850.7 MHz ~ 1909.3 MHz LTE Band 4: 1710.7 MHz ~ 1754.3 MHz LTE Band 5: 824.7 MHz ~ 848.3 MHz LTE Band 7: 2502.5 MHz ~ 2567.5 MHz LTE Band 12: 699.7 MHz ~ 715.3 MHz LTE Band 13: 779.5 MHz ~ 784.5 MHz LTE Band 14: 790.5 MHz ~ 795.5 MHz LTE Band 17: 706.5 MHz ~ 713.5 MHz LTE Band 25: 1850.7 MHz ~ 1914.3 MHz LTE Band 26: 814.7 MHz ~ 848.3 MHz LTE Band 38: 2572.5 MHz ~ 2617.5 MHz LTE Band 41: 2498.5 MHz ~ 2687.5 MHz LTE Band 66: 1710.7 MHz ~ 1779.3 MHz WLAN 2.4GHz Band: 2412 MHz ~ 2462 MHz WLAN 5.2GHz Band: 5180 MHz ~ 5240 MHz WLAN 5.3GHz Band: 5260 MHz ~ 5320 MHz WLAN 5.5GHz Band: 5500 MHz ~ 5720 MHz WLAN 5.8GHz Band: 5745 MHz ~ 5825 MHz Bluetooth: 2402 MHz ~ 2480 MHz NFC : 13.56 MHz
Mode	GSM/GPRS/EGPRS/DTM RMC/AMR 12.2Kbps HSDPA HSUPA DC-HSDPA LTE: QPSK, 16QAM, 64QAM WLAN 2.4GHz : 802.11b/g/n/ac HT20/HT40/VHT20/VHT40 WLAN 5GHz : 802.11a/n/ac HT20/HT40/VHT20/VHT40/VHT80 Bluetooth BR/EDR/LE NFC:ASK

4. RF Exposure Limits

4.1 Uncontrolled Environment

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

4.2 Controlled Environment

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

Limits for Occupational/Controlled Exposure (W/kg)

Whole-Body	Partial-Body	Hands, Wrists, Feet and Ankles
0.4	8.0	20.0

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

Whole-Body	Partial-Body	Hands, Wrists, Feet and Ankles
0.08	1.6	4.0

1. Whole-Body SAR is averaged over the entire body, partial-body SAR is averaged over any 1gram of tissue defined as a tissue volume in the shape of a cube. SAR for hands, wrists, feet and ankles is averaged over any 10 grams of tissue defined as a tissue volume in the shape of a cube.

5. Specific Absorption Rate (SAR)

5.1 Introduction

SAR is related to the rate at which energy is absorbed per unit mass in an object exposed to a radio field. The SAR distribution in a biological body is complicated and is usually carried out by experimental techniques or numerical modeling. The standard recommends limits for two tiers of groups, occupational/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.

5.2 SAR Definition

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

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

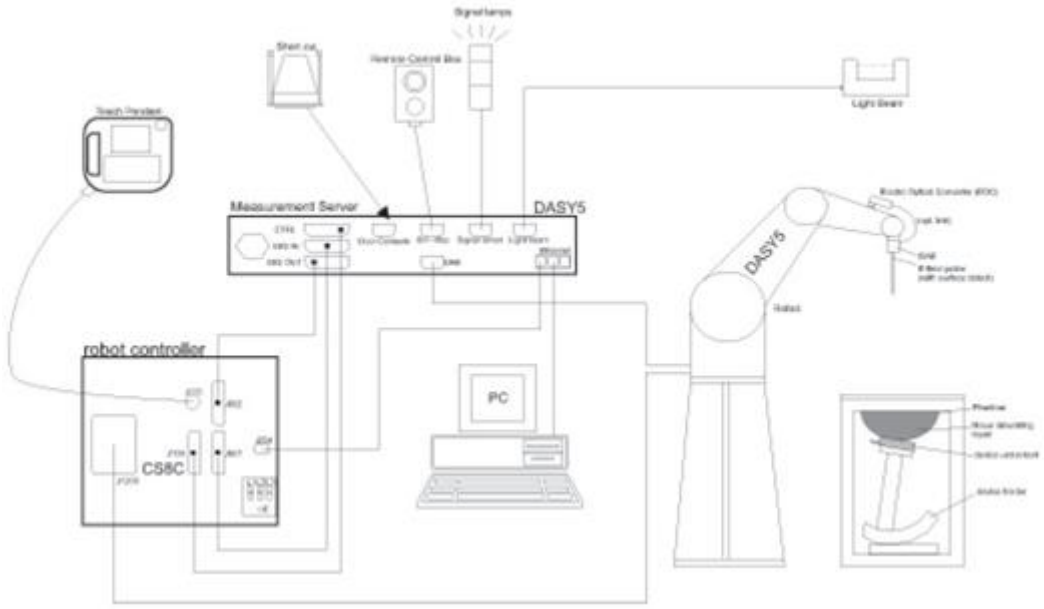
SAR is expressed in units of Watts per kilogram (W/kg)

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

Where: σ is the conductivity of the tissue, ρ is the mass density of the tissue and E is the RMS electrical field strength.

6. System Description and Setup

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 WinXP or Win7 and the DASY5 software.
- Remote control and teach pendant as well as additional circuitry for robot safety such as warning lamps, etc.
- The phantom, the device holder and other accessories according to the targeted measurement.

6.1 Test Site Location

The SAR measurement facilities used to collect data are within both Sporton Lab list below test site location are accredited to ISO 17025 by Taiwan Accreditation Foundation (TAF code: 1190 and 3786) and the FCC designation No. TW1190 and TW3786 under the FCC 2.948(e) by Mutual Recognition Agreement (MRA) in FCC test.

Test Site	EMC & Wireless Communications Laboratory		Wensan Laboratory		
Test Site Location	TW1190 No.52, Huaya 1st Rd., Guishan Dist., Taoyuan City 333, Taiwan		TW3786 No.58, Aly. 75, Ln. 564, Wenhua 3rd, Rd., Guishan Dist., Taoyuan City 333010, Taiwan		
Test Site No.	SAR01-HY	SAR03-HY	SAR08-HY	SAR09-HY	SAR15-HY
	SAR04-HY	SAR05-HY	SAR11-HY	SAR12-HY	
	SAR06-HY	SAR10-HY	SAR13-HY	SAR14-HY	

6.2 E-Field Probe

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

<ES3DV3 Probe>

Construction	Symmetric design with triangular core Interleaved sensors Built-in shielding against static charges PEEK enclosure material (resistant to organic solvents, e.g., DGBE)	
Frequency	10 MHz – 4 GHz; Linearity: ±0.2 dB (30 MHz – 4 GHz)	
Directivity	±0.2 dB in TSL (rotation around probe axis) ±0.3 dB in TSL (rotation normal to probe axis)	
Dynamic Range	5 µW/g – >100 mW/g; Linearity: ±0.2 dB	
Dimensions	Overall length: 337 mm (tip: 20 mm) Tip diameter: 3.9 mm (body: 12 mm) Distance from probe tip to dipole centers: 3.0 mm	

<EX3DV4 Probe>

Construction	Symmetric design with triangular core Built-in shielding against static charges PEEK enclosure material (resistant to organic solvents, e.g., DGBE)	
Frequency	10 MHz – >6 GHz Linearity: ±0.2 dB (30 MHz – 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 – >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	

6.3 Data Acquisition Electronics (DAE)

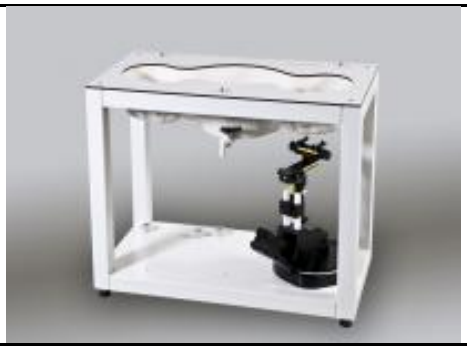
The data acquisition electronics (DAE) consists of a highly sensitive electrometer-grade preamplifier with auto-zeroing, a channel and gain-switching multiplexer, a fast 16 bit AD-converter and a command decoder and control logic unit. Transmission to the measurement server is accomplished through an 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.

Fig 5.1 Photo of DAE

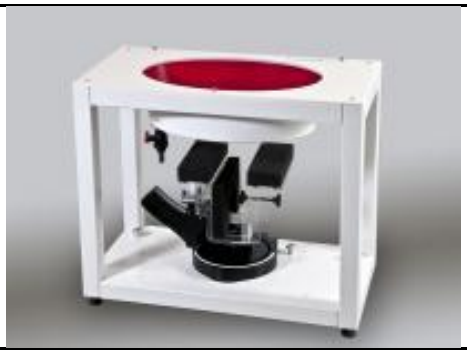
6.4 Phantom

<SAM Twin Phantom>

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

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

<ELI Phantom>

Shell Thickness	2 ± 0.2 mm (sagging: <1%)	
Filling Volume	Approx. 30 liters	
Dimensions	Major ellipse axis: 600 mm Minor axis: 400 mm	

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.

6.5 Device Holder

<Mounting Device for Hand-Held Transmitter>

In combination with the Twin SAM V5.0/V5.0c or ELI phantoms, the Mounting Device for Hand-Held Transmitters enables rotation of the mounted transmitter device to specified spherical coordinates. At the heads, the rotation axis is at the ear opening. Transmitter devices can be easily and accurately positioned according to IEC 62209-1, IEEE 1528, FCC, or other specifications. The device holder can be locked for positioning at different phantom sections (left head, right head, flat). And upgrade kit to Mounting Device to enable easy mounting of wider devices like big smart-phones, e-books, small tablets, etc. It holds devices with width up to 140 mm.

Mounting Device for Hand-Held Transmitters

Mounting Device Adaptor for Wide-Phones

<Mounting Device for Laptops and other Body-Worn Transmitters>

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

Mounting Device for Laptops

7. Measurement Procedures

The measurement procedures are as follows:

<Conducted power measurement>

(a) For WWAN power measurement, use base station simulator to configure EUT WWAN transmission in conducted connection with RF cable, at maximum power in each supported wireless interface and frequency band.
(b) Read the WWAN RF power level from the base station simulator.
(c) For WLAN/BT power measurement, use engineering software to configure EUT WLAN/BT continuously transmission, at maximum RF power in each supported wireless interface and frequency band
(d) Connect EUT RF port through RF cable to the power meter, and measure WLAN/BT output power

<SAR measurement>

(a) Use base station simulator to configure EUT WWAN transmission in radiated connection, and engineering software to configure EUT WLAN/BT continuously transmission, at maximum RF power, in the highest power channel.
(b) Place the EUT in the positions as Appendix D demonstrates.
(c) Set scan area, grid size and other setting on the DASY software.
(d) Measure SAR results for the highest power channel on each testing position.
(e) Find out the largest SAR result on these testing positions of each band
(f) Measure SAR results for other channels in worst SAR testing position if the reported SAR of highest power channel is larger than 0.8 W/kg

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

(a) Power reference measurement
(b) Area scan
(c) Zoom scan
(d) Power drift measurement

7.1 Spatial Peak SAR Evaluation

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

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

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

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

7.2 Power Reference Measurement

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

7.3 Area Scan

The area scan is used as a fast scan in two dimensions to find the area of high field values, before doing a fine measurement around the hot spot. The sophisticated interpolation routines implemented in DASY software can find the maximum found in the scanned area, within a range of the global maximum. The range (in dB0 is specified in the standards for compliance testing. For example, a 2 dB range is required in IEEE standard 1528 and IEC 62209 standards, whereby 3 dB is a requirement when compliance is assessed in accordance with the ARIB standard (Japan), if only one zoom scan follows the area scan, then only the absolute maximum will be taken as reference. For cases where multiple maximums are detected, the number of zoom scans has to be increased accordingly.

Area scan parameters extracted from FCC KDB 865664 D01v01r04 SAR measurement 100 MHz to 6 GHz.

	≤ 3 GHz	> 3 GHz
Maximum distance from closest measurement point (geometric center of probe sensors) to phantom surface	5 ± 1 mm	½·δ·ln(2) ± 0.5 mm
Maximum probe angle from probe axis to phantom surface normal at the measurement location	30° ± 1°	20° ± 1°
Maximum area scan spatial resolution: Δx_{Area}, Δy_{Area}	≤ 2 GHz: ≤ 15 mm 2 – 3 GHz: ≤ 12 mm	3 – 4 GHz: ≤ 12 mm 4 – 6 GHz: ≤ 10 mm
	When the x or y dimension of the test device, in the measurement plane orientation, is smaller than the above, the measurement resolution must be ≤ the corresponding x or y dimension of the test device with at least one measurement point on the test device.	

7.4 Zoom Scan

Zoom scans are used assess the peak spatial SAR values within a cubic averaging volume containing 1 gram and 10 gram of simulated tissue. The zoom scan measures points (refer to table below) within a cube shoes 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 gram and 10 gram and displays these values next to the job's label.

Zoom scan parameters extracted from FCC KDB 865664 D01v01r04 SAR measurement 100 MHz to 6 GHz.

			≤ 3 GHz	> 3 GHz
Maximum zoom scan spatial resolution: Δx_{Zoom}, Δy_{Zoom}			≤ 2 GHz: ≤ 8 mm 2 – 3 GHz: ≤ 5 mm*	3 – 4 GHz: ≤ 5 mm* 4 – 6 GHz: ≤ 4 mm*
Maximum zoom scan spatial resolution, normal to phantom surface	uniform grid: $\Delta z_{Zoom}(n)$		≤ 5 mm	3 – 4 GHz: ≤ 4 mm 4 – 5 GHz: ≤ 3 mm 5 – 6 GHz: ≤ 2 mm
	graded grid	$\Delta z_{Zoom}(1)$: between 1st two points closest to phantom surface	≤ 4 mm	3 – 4 GHz: ≤ 3 mm 4 – 5 GHz: ≤ 2.5 mm 5 – 6 GHz: ≤ 2 mm
		$\Delta z_{Zoom}(n>1)$: between subsequent points	≤ 1.5·$\Delta z_{Zoom}(n-1)$	
Minimum zoom scan volume	x, y, z		≥ 30 mm	3 – 4 GHz: ≥ 28 mm 4 – 5 GHz: ≥ 25 mm 5 – 6 GHz: ≥ 22 mm

Note: δ is the penetration depth of a plane-wave at normal incidence to the tissue medium; see draft standard IEEE P1528-2011 for details.

* When zoom scan is required and the *reported* SAR from the *area scan based 1-g SAR estimation* procedures of KDB 447498 is ≤ 1.4 W/kg, ≤ 8 mm, ≤ 7 mm and ≤ 5 mm zoom scan resolution may be applied, respectively, for 2 GHz to 3 GHz, 3 GHz to 4 GHz and 4 GHz to 6 GHz.

7.5 Volume Scan Procedures

The volume scan is used for assess overlapping SAR distributions for antennas transmitting in different frequency bands. It is equivalent to an oversized zoom scan used in standalone measurements. The measurement volume will be used to enclose all the simultaneous transmitting antennas. For antennas transmitting simultaneously in different frequency bands, the volume scan is measured separately in each frequency band. In order to sum correctly to compute the 1g aggregate SAR, the EUT remain in the same test position for all measurements and all volume scan use the same spatial resolution and grid spacing. When all volume scan were completed, the software, SEMCAD postprocessor can combine and subsequently superpose these measurement data to calculating the multiband SAR.

7.6 Power Drift Monitoring

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

8. Test Equipment List

Manufacturer	Name of Equipment	Type/Model	Serial Number	Calibration	
				Last Cal.	Due Date
SPEAG	750MHz System Validation Kit(2)	D750V3	1107	Mar. 08, 2019	Mar. 05, 2022
SPEAG	835MHz System Validation Kit(2)	D835V2	4d167	Nov. 25, 2019	Nov. 23, 2021
SPEAG	900MHz System Validation Kit(2)	D900V2	1d165	Mar. 08, 2019	Mar. 05, 2022
SPEAG	1750MHz System Validation Kit(2)	D1750V2	1112	Mar. 07, 2019	Mar. 04, 2022
SPEAG	1900MHz System Validation Kit	D1900V2	5d041	Aug. 19, 2021	Aug. 18, 2022
SPEAG	2450MHz System Validation Kit	D2450V2	736	Aug. 17, 2021	Aug. 17, 2022
SPEAG	2450MHz System Validation Kit(2)	D2450V2	929	Nov. 21, 2019	Nov. 19, 2021
SPEAG	2600MHz System Validation Kit	D2600V2	1008	Aug. 17, 2021	Aug. 16, 2022
SPEAG	5GHz System Validation Kit(2)	D5GHzV2	1128	Dec. 16, 2019	Dec. 14, 2021
SPEAG	Data Acquisition Electronics	DAE4	316	Jan. 19, 2021	Jan. 18, 2022
SPEAG	Data Acquisition Electronics	DAE4	699	Feb. 16, 2021	Feb. 15, 2022
SPEAG	Data Acquisition Electronics	DAE4	853	Jul. 14, 2021	Jul. 13, 2022
SPEAG	Data Acquisition Electronics	DAE4	1311	Aug. 20, 2021	Aug. 19, 2022
SPEAG	Dosimetric E-Field Probe	EX3DV4	3642	Apr. 26, 2021	Apr. 25, 2022
SPEAG	Dosimetric E-Field Probe	EX3DV4	3925	Apr. 23, 2021	Apr. 22, 2022
SPEAG	Dosimetric E-Field Probe	EX3DV4	3976	Jan. 27, 2021	Jan. 26, 2022
SPEAG	Dosimetric E-Field Probe	EX3DV4	7306	Jul. 26, 2021	Jul. 25, 2022
Testo	Hygro meter	608-H1	45196600	Oct. 22, 2021	Oct. 21, 2022
Testo	Hygro meter	608-H1	45207528	Oct. 22, 2021	Oct. 21, 2022
RCPTWN	Thermometer	HTC-1	TM685-1	Nov. 10, 2020	Nov. 09, 2021
RCPTWN	Thermometer	HTC-1	TM560-2	Nov. 10, 2020	Nov. 09, 2021
Anritsu	Radio Communication Analyzer	MT8821C	6201074414	Jul. 21, 2021	Jul. 20, 2022
Keysight	Wireless Communication Test Set	E5515C	MY50266977	May. 12, 2021	May. 11, 2022
SPEAG	Device Holder	N/A	N/A	N/A	N/A
Anritsu	Signal Generator	MG3692A	212506	Jul. 20, 2021	Jul. 19, 2022
Keysight	ENA Network Analyzer	E5071C	MY46316648	Jul. 22, 2021	Jul. 21, 2022
SPEAG	Dielectric Probe Kit	DAK-3.5	1146	Jul. 14, 2021	Jul. 13, 2022
LINE SEIKI	Digital Thermometer	DTM3000-spezial	3252	Jul. 15, 2021	Jul. 14, 2022
Anritsu	Power Meter	ML2495A	1419002	Aug. 18, 2021	Aug. 17, 2022
Anritsu	Power Sensor	MA2411B	1911176	Aug. 18, 2021	Aug. 17, 2022
Anritsu	Power Meter	ML2496A	2119003	Jun. 09, 2021	Jun. 08, 2022
Anritsu	Power Sensor	MA2411B	1911334	Jun. 01, 2021	May. 31, 2022
Anritsu	Spectrum Analyzer	MS2830A	6201396378	Jul. 16, 2021	Jul. 15, 2022
Anritsu	Spectrum Analyzer	N9010A	MY53470118	Jan. 15, 2021	Jan. 14, 2022
Mini-Circuits	Power Amplifier	ZVE-8G+	479102029	Sep. 06, 2021	Sep. 05, 2022
Mini-Circuits	Power Amplifier	ZHL-42W+	321501827	Sep. 06, 2021	Sep. 05, 2022
ATM	Dual Directional Coupler	C122H-10	P610410z-02	Note 1	
Warison	Directional Coupler	WCOU-10-50S-10	WR889BMC4B1	Note 1	
Woken	Attenuator 1	WK0602-XX	N/A	Note 1	
PE	Attenuator 2	PE7005-10	N/A	Note 1	
PE	Attenuator 3	PE7005- 3	N/A	Note 1	

General Note:

1. Prior to system verification and validation, the path loss from the signal generator to the system check source and the power meter, which includes the amplifier, cable, attenuator and directional coupler, was measured by the network analyzer. The reading of the power meter was offset by the path loss difference between the path to the power meter and the path to the system check source to monitor the actual power level fed to the system check source.
2. The dipole calibration interval can be extended to 3 years with justification according to KDB 865664 D01. The dipoles are also not physically damaged, or repaired during the interval. The justification data in appendix C can be found which the return loss is < -20dB, within 20% of prior calibration, the impedance is within 5 ohm of prior calibration for each dipole.

9. System Verification

9.1 Tissue Verification

The tissue dielectric parameters of tissue-equivalent media used for SAR measurements must be characterized within a temperature range of 18℃ to 25℃, measured with calibrated instruments and apparatuses, such as network analyzers and temperature probes. The temperature of the tissue-equivalent medium during SAR measurement must also be within 18℃ to 25℃ and within ± 2℃ of the temperature when the tissue parameters are characterized. The tissue dielectric measurement system must be calibrated before use. The dielectric parameters must be measured before the tissue-equivalent medium is used in a series of SAR measurements.
The liquid tissue depth was at least 15cm in the phantom for all SAR testing

<Tissue Dielectric Parameter Check Results>

Frequency (MHz)	Liquid Temp. (℃)	Conductivity (σ)	Permittivity (ε_r)	Conductivity Target (σ)	Permittivity Target (ε_r)	Delta (σ) (%)	Delta (ε_r) (%)	Limit (%)	Date
750	22.3	0.890	43.636	0.89	41.90	0.00	4.14	±5	2021/10/3
835	22.3	0.927	43.040	0.90	41.50	3.00	3.71	±5	2021/10/3
900	22.5	0.956	42.703	0.97	41.50	-1.44	2.90	±5	2021/11/18
1750	22.3	1.348	39.130	1.37	40.10	-1.61	-2.42	±5	2021/10/3
1900	22.3	1.396	39.791	1.40	40.00	-0.29	-0.52	±5	2021/10/3
2450	22.5	1.824	39.562	1.80	39.20	1.33	0.92	±5	2021/9/27
2450	22.3	1.839	39.495	1.80	39.20	2.17	0.75	±5	2021/9/27
2600	22.3	2.024	38.461	1.96	39.00	3.27	-1.38	±5	2021/10/3
5250	22.3	4.659	37.038	4.71	35.95	-1.08	3.03	±5	2021/9/27
5600	22.3	4.999	36.566	5.07	35.50	-1.40	3.00	±5	2021/9/27
5750	22.3	5.102	36.361	5.22	35.35	-2.26	2.86	±5	2021/9/27

9.2 System Performance Check Results

Comparing to the original SAR value provided by SPEAG, the verification data should be within its specification of 10 %. Below table shows the target SAR and measured SAR after normalized to 1W input power. The table below indicates the system performance check can meet the variation criterion and the plots can be referred to Appendix A of this report.

Test Site	Date	Frequency (MHz)	Input Power (mW)	Dipole S/N	Probe S/N	DAE S/N	Measured 1g SAR (W/kg)	Targeted 1g SAR (W/kg)	Normalized 1g SAR (W/kg)	Deviation (%)
SAR01	2021/10/3	750	250	D750V3-1107	EX3DV4 - SN3642	DAE4 Sn853	2.070	8.32	8.28	-0.48
SAR01	2021/10/3	835	250	D835V2-4d167	EX3DV4 - SN3642	DAE4 Sn853	2.540	9.55	10.16	6.39
SAR04	2021/11/18	900	50	D900V2-1d165	EX3DV4 - SN7306	DAE4 Sn1311	0.502	10.80	10.04	-7.04
SAR01	2021/10/3	1750	50	D1750V2-1112	EX3DV4 - SN3642	DAE4 Sn853	1.660	36.70	33.2	-9.54
SAR01	2021/10/3	1900	250	D1900V2-5d041	EX3DV4 - SN3642	DAE4 Sn853	9.240	40.20	36.96	-8.06
SAR05	2021/9/27	2450	50	D2450V2-929	EX3DV4 - SN3925	DAE4 Sn699	2.550	53.10	51	-3.95
SAR06	2021/9/27	2450	250	D2450V2-736	EX3DV4 - SN3976	DAE4 Sn316	13.800	52.70	55.2	4.74
SAR01	2021/10/3	2600	250	D2600V2-1008	EX3DV4 - SN3642	DAE4 Sn853	14.100	56.40	56.4	0.00
SAR06	2021/9/27	5250	50	D5GHzV2-1128-5250	EX3DV4 - SN3976	DAE4 Sn316	3.820	80.00	76.4	-4.50
SAR06	2021/9/27	5600	50	D5GHzV2-1128-5600	EX3DV4 - SN3976	DAE4 Sn316	4.040	82.40	80.8	-1.94
SAR06	2021/9/27	5750	50	D5GHzV2-1128-5750	EX3DV4 - SN3976	DAE4 Sn316	3.680	79.10	73.6	-6.95

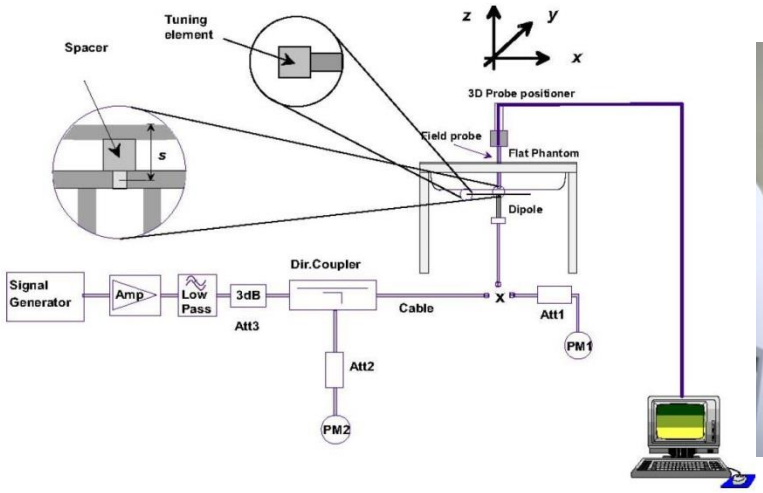


Fig 8.3.1 System Performance Check Setup

Fig 8.3.2 Setup Photo

10. RF Exposure Positions

10.1 Ear and handset reference point

Figure 9.1.1 shows the front, back, and side views of the SAM phantom. The center-of-mouth reference point is labeled “M,” the left ear reference point (ERP) is marked “LE,” and the right ERP is marked “RE.” Each ERP is 15 mm along the B-M (back-mouth) line behind the entrance-to-ear-canal (EEC) point, as shown in Figure 9.1.2 The Reference Plane is defined as passing through the two ear reference points and point M. The line N-F (neck-front), also called the reference pivoting line, is normal to the Reference Plane and perpendicular to both a line passing through RE and LE and the B-M line (see Figure 9.1.3). Both N-F and B-M lines should be marked on the exterior of the phantom shell to facilitate handset positioning. Posterior to the N-F line the ear shape is a flat surface with 6 mm thickness at each ERP, and forward of the N-F line the ear is truncated, as illustrated in Figure 9.1.2. The ear truncation is introduced to preclude the ear lobe from interfering with handset tilt, which could lead to unstable positioning at the cheek.

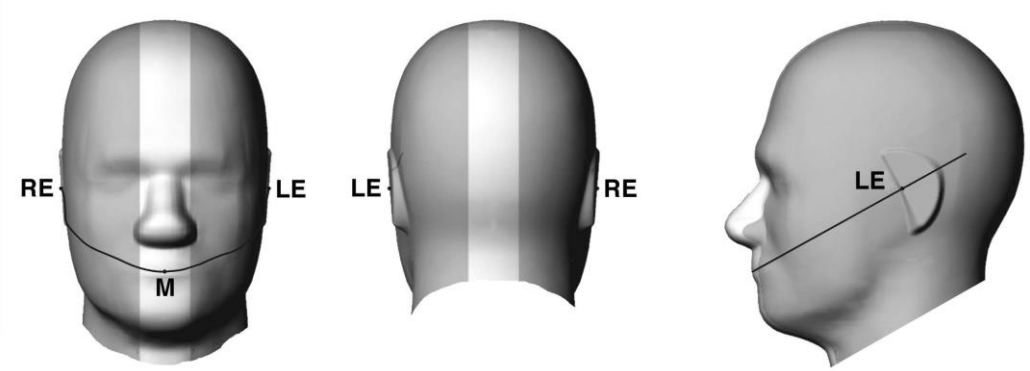


Fig 9.1.1 Front, back, and side views of SAM twin phantom

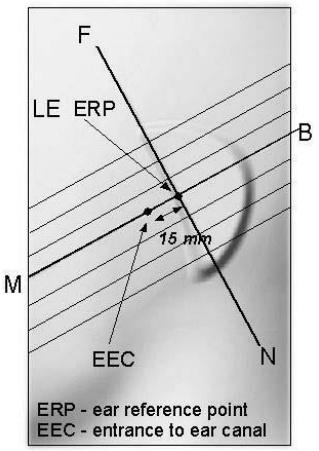


Fig 9.1.2 Close-up side view of phantom showing the ear region.

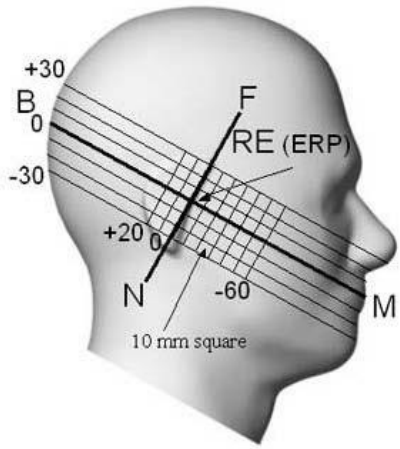


Fig 9.1.3 Side view of the phantom showing relevant markings and seven cross-sectional plane locations

10.2 Definition of the cheek position

1. Ready the handset for talk operation, if necessary. For example, for handsets with a cover piece (flip cover), open the cover. If the handset can transmit with the cover closed, both configurations must be tested.
2. Define two imaginary lines on the handset—the vertical centerline and the horizontal line. The vertical centerline passes through two points on the front side of the handset—the midpoint of the width wt of the handset at the level of the acoustic output (point A in Figure 9.2.1 and Figure 9.2.2), and the midpoint of the width wb of the bottom of the handset (point B). The horizontal line is perpendicular to the vertical centerline and passes through the center of the acoustic output (see Figure 9.2.1). The two lines intersect at point A. Note that for many handsets, point A coincides with the center of the acoustic output; however, the acoustic output may be located elsewhere on the horizontal line. Also note that the vertical centerline is not necessarily parallel to the front face of the handset (see Figure 9.2.2), especially for clamshell handsets, handsets with flip covers, and other irregularly-shaped handsets.
3. 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 9.2.3), 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.
4. Translate the handset towards the phantom along the line passing through RE and LE until handset point A touches the pinna at the ERP.
5. 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.
6. Rotate the handset around the vertical centerline until the handset (horizontal line) is parallel to the N-F line.
7. 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 9.2.3. The actual rotation angles should be documented in the test report.

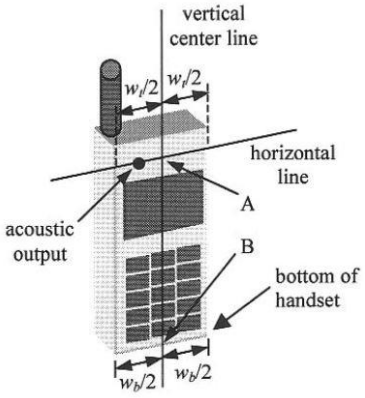


Fig 9.2.1 Handset vertical and horizontal reference lines—"fixed case

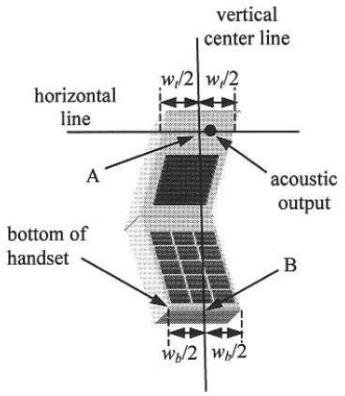


Fig 9.2.2 Handset vertical and horizontal reference lines—"clam-shell case"

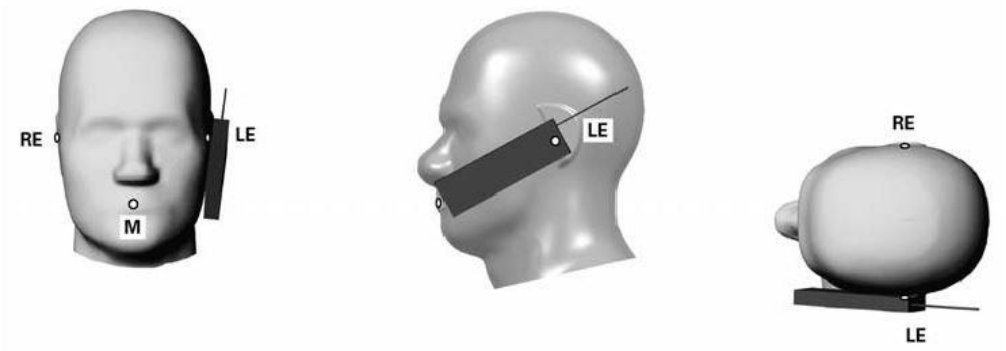


Fig 9.2.3 cheek or touch position. The reference points for the right ear (RE), left ear (LE), and mouth (M), which establish the Reference Plane for handset positioning, are indicated.

10.3 Definition of the tilt position

1. Ready the handset for talk operation, if necessary. For example, for handsets with a cover piece (flip cover), open the cover. If the handset can transmit with the cover closed, both configurations must be tested.
2. While maintaining the orientation of the handset, move the handset away from the pinna along the line passing through RE and LE far enough to allow a rotation of the handset away from the cheek by 15°.
3. Rotate the handset around the horizontal line by 15°.
4. While maintaining the orientation of the handset, move the handset towards the phantom on the line passing through RE and LE until any part of the handset touches the ear. The tilt position is obtained when the contact point is on the pinna. See Figure 9.3.1. If contact occurs at any location other than the pinna, e.g., the antenna at the back of the phantom head, the angle of the handset should be reduced. In this case, the tilt position is obtained if any point on the handset is in contact with the pinna and a second point

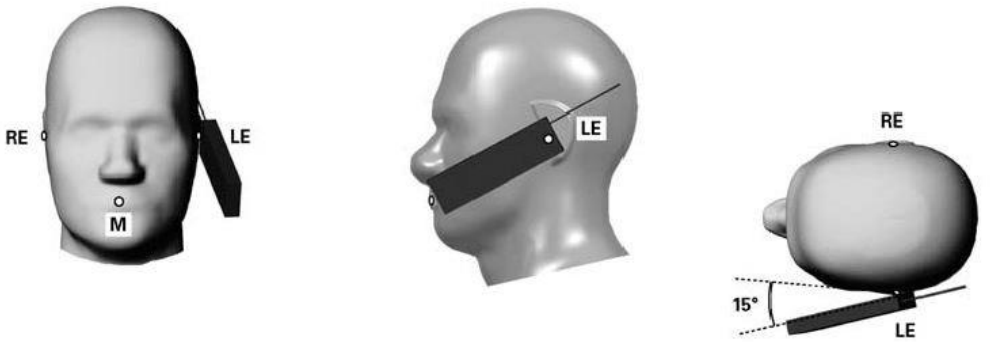


Fig 9.3.1 Tilt position. The reference points for the right ear (RE), left ear (LE), and mouth (M), which define the Reference Plane for handset positioning, are indicated.

10.4 Body Worn Accessory

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 9.4). Per KDB648474 D04v01r03, 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 447498 D01v06 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 body-worn accessory, measured without a headset connected to the handset is > 1.2 W/kg, the highest reported SAR configuration for that wireless mode and frequency band should be repeated for that body-worn accessory with a handset 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 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 test with the device with each accessory. If multiple accessories share an identical metallic component (i.e. the same metallic belt-chip used with different holsters with no other metallic components) only the accessory that dictates the closest spacing to the body is tested.

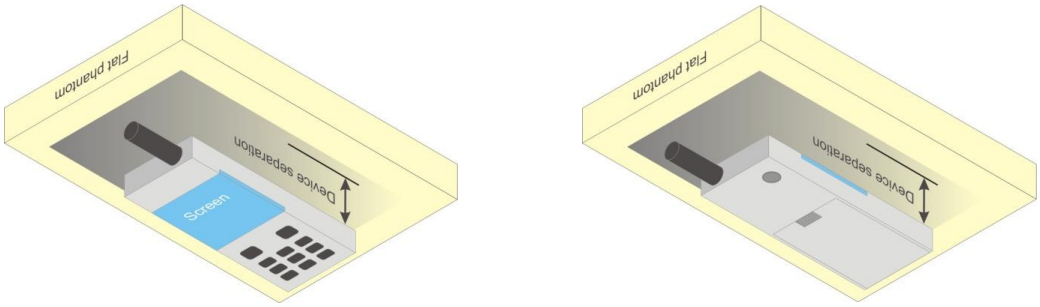


Fig 9.4 Body Worn Position

10.5 Wireless Router

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

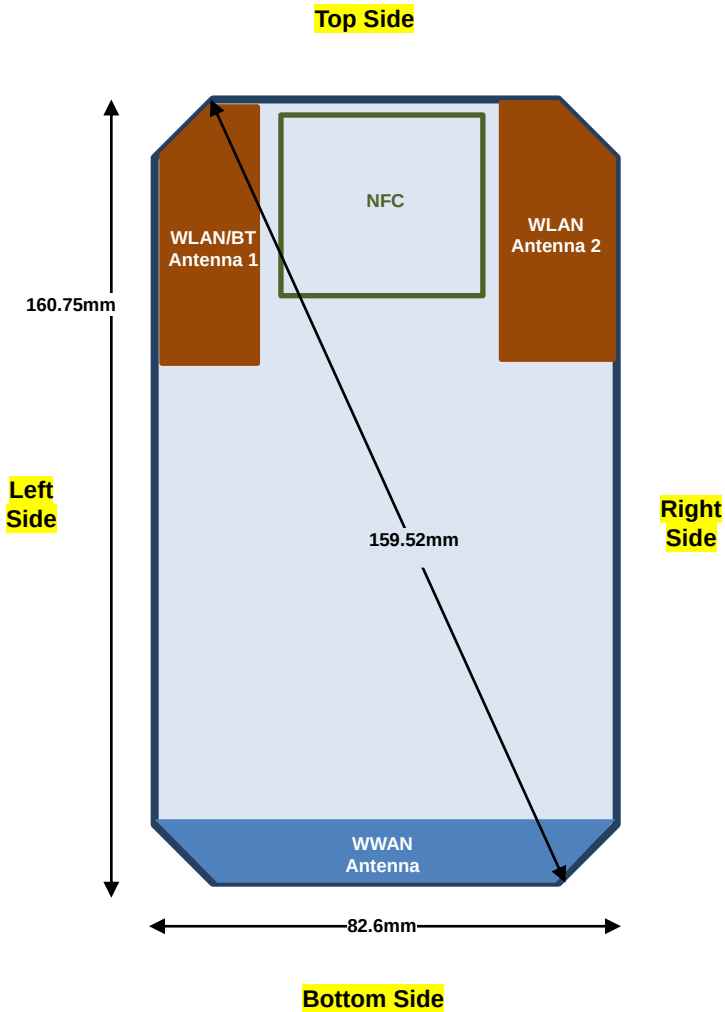
When the user enables the personal wireless router functions for the handset, actual operations include simultaneous transmission of both the WIFI transmitter and another licensed transmitter. Both transmitters often do not transmit at the same transmitting frequency and thus cannot be evaluated for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

11. RFID Output Power (Unit: dBm)

<RFID Conducted Power>

Frequency (MHz)	RFID Average Power (dBm)	Tune-Up Limit (dBm)
915.45 MHz	21.81	22.00
921.70 MHz	21.70	22.00
927.70 MHz	21.54	22.00
DUTY CYCLE:	92.41%	

12. Antenna Location



Front View

13. RFID SAR Test Results

General Note:

1. Per KDB 447498 D01v06, the reported SAR is the measured SAR value adjusted for maximum tune-up tolerance.
   a. Tune-up scaling Factor = tune-up limit power (mW) / EUT RF power (mW), where tune-up limit is the maximum rated power among all production units.
   b. For SAR testing of signal with non-100% duty cycle, the measured SAR is scaled-up by the duty cycle scaling factor which is equal to "1/(duty cycle)"
   c. For RFID: Reported SAR(W/kg)= Measured SAR(W/kg) * Tune-up Scaling Factor * Duty Cycle Scaling Factor
2. When EUT is placed into the holster, only front face of EUT will toward to the human body.

13.1 Head SAR

<RFID SAR>

Plot No.	Band	Test Position	Gap (mm)	Freq. (MHz)	Average Power (dBm)	Tune-Up Limit (dBm)	Tune-up Scaling Factor	Duty Cycle %	Duty Cycle Scaling Factor	Power Drift (dB)	Measured 1g SAR (W/kg)	Reported 1g SAR (W/kg)
	RFID	Right Cheek	0mm	921.7	21.70	22.00	1.072	92.41	1.082	-0.07	0.036	0.042
	RFID	Right Tilted	0mm	921.7	21.70	22.00	1.072	92.41	1.082	0.15	0.049	0.057
	RFID	Left Cheek	0mm	921.7	21.70	22.00	1.072	92.41	1.082	-0.04	0.058	0.067
01	RFID	Left Tilted	0mm	921.7	21.70	22.00	1.072	92.41	1.082	-0.18	0.070	0.081
	RFID	Left Tilted	0mm	915.4	21.81	22.00	1.045	92.41	1.082	-0.01	0.032	0.036
	RFID	Left Tilted	0mm	927.7	21.54	22.00	1.112	92.41	1.082	-0.01	0.037	0.044

13.2 Body-worn SAR

<RFID SAR>

Plot No.	Band	Test Position	Gap (mm)	Holster	Freq. (MHz)	Average Power (dBm)	Tune-Up Limit (dBm)	Tune-up Scaling Factor	Duty Cycle %	Duty Cycle Scaling Factor	Power Drift (dB)	Measured 1g SAR (W/kg)	Reported 1g SAR (W/kg)
	RFID	Front	15mm	-	921.7	21.70	22.00	1.072	92.41	1.082	0.02	0.001	0.001
02	RFID	Back	15mm	-	921.7	21.70	22.00	1.072	92.41	1.082	0.16	0.343	0.398
	RFID	Back	15mm	-	915.4	21.81	22.00	1.045	92.41	1.082	-0.09	0.283	0.320
	RFID	Back	15mm	-	927.7	21.54	22.00	1.112	92.41	1.082	0.01	0.329	0.396
	RFID	Front	0mm	Soft Holster	921.7	21.70	22.00	1.072	92.41	1.082	-0.16	0.039	0.045
	RFID	Front	0mm	Rigid Holster	921.7	21.70	22.00	1.072	92.41	1.082	-0.10	0.031	0.036

14. Host Spot Check SAR Test Results

General Note:

1. Per KDB 447498 D01v06, the reported SAR is the measured SAR value adjusted for maximum tune-up tolerance.
   a. Tune-up scaling Factor = tune-up limit power (mW) / EUT RF power (mW), where tune-up limit is the maximum rated power among all production units.
   b. For SAR testing of WLAN signal with non-100% duty cycle, the measured SAR is scaled-up by the duty cycle scaling factor which is equal to "1/(duty cycle)"
   c. For WWAN: Reported SAR(W/kg)= Measured SAR(W/kg)*Tune-up Scaling Factor
   d. For WLAN: Reported SAR(W/kg)= Measured SAR(W/kg)* Duty Cycle scaling factor * Tune-up scaling factor
   e. For TDD LTE SAR measurement, the duty cycle 1:1.59 (62.9 %) was used perform testing and considering the theoretical duty cycle of 63.3% for extended cyclic prefix in the uplink, and the theoretical duty cycle of 62.9% for normal cyclic prefix in uplink, a scaling factor of extended cyclic prefix 63.3%/62.9% = 1.006 is applied to scale-up the measured SAR result. The Reported TDD LTE SAR = measured SAR (W/kg)* Tune-up Scaling Factor* scaling factor for extended cyclic prefix.
2. When EUT is placed into the holster, only front face of EUT will toward to the human body.

14.1 Head SAR

<GSM SAR>

Plot No.	Band	Mode	Test Position	Gap (mm)	Ch.	Freq. (MHz)	Average Power (dBm)	Tune-Up Limit (dBm)	Tune-up Scaling Factor	Power Drift (dB)	Measured 1g SAR (W/kg)	Reported 1g SAR (W/kg)
03	GSM850	GPRS (4 Tx slots)	Right Cheek	0mm	189	836.4	29.00	30.50	1.413	-0.15	0.266	0.376
04	GSM1900	GPRS (4 Tx slots)	Left Cheek	0mm	661	1880	26.13	27.50	1.371	0.04	0.317	0.435

<WCDMA SAR>

Plot No.	Band	Mode	Test Position	Gap (mm)	Ch.	Freq. (MHz)	Average Power (dBm)	Tune-Up Limit (dBm)	Tune-up Scaling Factor	Power Drift (dB)	Measured 1g SAR (W/kg)	Reported 1g SAR (W/kg)
05	WCDMA II	RMC 12.2Kbps	Left Cheek	0mm	9400	1880	23.99	25.00	1.262	0.08	0.423	0.534
06	WCDMA IV	RMC 12.2Kbps	Left Cheek	0mm	1312	1712.4	23.60	25.00	1.380	0.01	0.314	0.433
07	WCDMA V	RMC 12.2Kbps	Right Cheek	0mm	4182	836.4	23.95	25.00	1.274	-0.02	0.241	0.307

<FDD LTE SAR>

Plot No.	Band	BW (MHz)	Modulation	RB Size	RB offset	Test Position	Gap (mm)	Ch.	Freq. (MHz)	Average Power (dBm)	Tune-Up Limit (dBm)	Tune-up Scaling Factor	Power Drift (dB)	Measured 1g SAR (W/kg)	Reported 1g SAR (W/kg)
08	LTE Band 7	20M	QPSK	1	0	Right Cheek	0mm	21350	2560	23.48	24.50	1.265	0.04	0.433	0.548
09	LTE Band 12	10M	QPSK	1	0	Right Cheek	0mm	23095	707.5	24.47	25.00	1.130	-0.17	0.236	0.267
10	LTE Band 13	10M	QPSK	1	0	Right Cheek	0mm	23230	782	24.05	24.50	1.109	-0.05	0.263	0.292
11	LTE Band 14	10M	QPSK	1	0	Right Cheek	0mm	23330	793	24.01	24.50	1.119	-0.02	0.271	0.303
12	LTE Band 25	20M	QPSK	1	0	Left Cheek	0mm	26340	1880	24.59	25.50	1.233	-0.05	0.438	0.540
13	LTE Band 26	15M	QPSK	1	0	Right Cheek	0mm	26865	831.5	23.70	24.50	1.202	-0.04	0.203	0.244
14	LTE Band 66	20M	QPSK	1	0	Left Cheek	0mm	132572	1770	24.34	25.50	1.306	0.13	0.366	0.478

<TDD LTE SAR>

Plot No.	Band	BW (MHz)	Modulation	RB Size	RB offset	Test Position	Gap (mm)	Ch.	Freq. (MHz)	Average Power (dBm)	Tune-Up Limit (dBm)	Tune-up Scaling Factor	Duty Cycle %	Duty Cycle Scaling Factor	Power Drift (dB)	Measured 1g SAR (W/kg)	Reported 1g SAR (W/kg)
15	LTE Band 41	20M	QPSK	1	0	Right Cheek	0mm	40185	2549.5	23.57	25.00	1.390	62.9	1.006	0.05	0.309	0.432

<WLAN SAR>

Plot No.	Band	Mode	Test Position	Gap (mm)	Antenna	Ch.	Freq. (MHz)	Average Power (dBm)	Tune-Up Limit (dBm)	Tune-up Scaling Factor	Duty Cycle %	Duty Cycle Scaling Factor	Power Drift (dB)	Measured 1g SAR (W/kg)	Reported 1g SAR (W/kg)
	WLAN2.4GHz	802.11g 6Mbps	Right Cheek	0mm	Ant 1	6	2437	22.63	23.00	1.089	98.59	1.014	0.02	0.101	0.112
16	WLAN2.4GHz	802.11b 1Mbps	Left Tilted	0mm	Ant 2	6	2437	22.85	23.00	1.035	98.59	1.014	0.01	0.563	0.591
17	WLAN5GHz	802.11n-HT40 MCS0	Right Cheek	0mm	Ant 1	54	5270	20.12	20.50	1.093	86.99	1.150	-0.04	0.141	0.177
	WLAN5GHz	802.11n-HT40 MCS0	Right Tilted	0mm	Ant 2	54	5270	20.16	20.50	1.083	85.6	1.168	0.09	0.063	0.080
18	WLAN5GHz	802.11ac-VHT80 MCS0	Right Cheek	0mm	Ant 1	138	5690	20.14	20.50	1.087	85.71	1.167	-0.08	0.286	0.363
	WLAN5GHz	802.11ac-VHT80 MCS0	Right Cheek	0mm	Ant 2	138	5690	20.11	20.50	1.094	85.71	1.167	0.04	0.120	0.153
19	WLAN5GHz	802.11ac-VHT80 MCS0	Right Cheek	0mm	Ant 1	155	5775	20.11	20.50	1.094	85.71	1.167	-0.14	0.289	0.369
	WLAN5GHz	802.11ac-VHT80 MCS0	Right Cheek	0mm	Ant 2	155	5775	17.11	17.50	1.094	85.71	1.167	-0.19	0.130	0.166
	WLAN5GHz	802.11ac-VHT80 MCS0	Left Tilted	0mm	MIMO Ant 2	155	5775	18.73	19.00	1.064	85.71	1.167	0.08	0.077	0.096

14.2 Hotspot SAR

<GSM SAR>

Plot No.	Band	Mode	Test Position	Gap (mm)	Ch.	Freq. (MHz)	Average Power (dBm)	Tune-Up Limit (dBm)	Tune-up Scaling Factor	Power Drift (dB)	Measured 1g SAR (W/kg)	Reported 1g SAR (W/kg)
20	GSM850	GPRS (4 Tx slots)	Bottom Side	10mm	189	836.4	29.00	30.50	1.413	-0.05	0.368	0.520
21	GSM1900	GPRS (4 Tx slots)	Bottom Side	10mm	512	1850.2	23.83	25.00	1.309	-0.12	0.891	1.166

<WCDMA SAR>

Plot No.	Band	Mode	Test Position	Gap (mm)	Ch.	Freq. (MHz)	Average Power (dBm)	Tune-Up Limit (dBm)	Tune-up Scaling Factor	Power Drift (dB)	Measured 1g SAR (W/kg)	Reported 1g SAR (W/kg)
22	WCDMA II	RMC 12.2Kbps	Bottom Side	10mm	9538	1907.6	20.62	21.00	1.091	-0.14	1.180	1.288
23	WCDMA IV	RMC 12.2Kbps	Bottom Side	10mm	1513	1752.6	21.24	22.00	1.191	0.10	1.060	1.263
24	WCDMA V	RMC 12.2Kbps	Back	10mm	4182	836.4	23.95	25.00	1.274	-0.03	0.315	0.401

<FDD LTE SAR>

Plot No.	Band	BW (MHz)	Modulation	RB Size	RB offset	Test Position	Gap (mm)	Ch.	Freq. (MHz)	Average Power (dBm)	Tune-Up Limit (dBm)	Tune-up Scaling Factor	Power Drift (dB)	Measured 1g SAR (W/kg)	Reported 1g SAR (W/kg)
25	LTE Band 7	20M	QPSK	1	0	Bottom Side	10mm	20850	2510	23.63	24.50	1.222	-0.03	1.050	1.283
26	LTE Band 12	10M	QPSK	1	0	Back	10mm	23095	707.5	24.47	25.00	1.130	-0.04	0.296	0.334
27	LTE Band 13	10M	QPSK	1	0	Right Side	10mm	23230	782	24.05	24.50	1.109	-0.06	0.469	0.520
28	LTE Band 14	10M	QPSK	1	0	Right Side	10mm	23330	793	24.01	24.50	1.119	-0.04	0.465	0.521
29	LTE Band 25	20M	QPSK	50	0	Bottom Side	10mm	26590	1905	20.20	21.50	1.349	0.11	0.939	1.267
30	LTE Band 26	15M	QPSK	1	0	Right Side	10mm	26865	831.5	23.70	24.50	1.202	-0.13	0.358	0.430
31	LTE Band 66	20M	QPSK	50	0	Bottom Side	10mm	132572	1770	21.06	22.50	1.393	0.15	0.890	1.240

<TDD LTE SAR>

Plot No.	Band	BW (MHz)	Modulation	RB Size	RB offset	Test Position	Gap (mm)	Ch.	Freq. (MHz)	Average Power (dBm)	Tune-Up Limit (dBm)	Tune-up Scaling Factor	Duty Cycle %	Duty Cycle Scaling Factor	Power Drift (dB)	Measured 1g SAR (W/kg)	Reported 1g SAR (W/kg)
32	LTE Band 41	20M	QPSK	1	0	Bottom Side	10mm	39750	2506	23.56	25.00	1.393	62.90	1.006	-0.10	0.756	1.060

<WLAN SAR>

Plot No.	Band	Mode	Test Position	Gap (mm)	Antenna	Ch.	Freq. (MHz)	Average Power (dBm)	Tune-Up Limit (dBm)	Tune-up Scaling Factor	Duty Cycle %	Duty Cycle Scaling Factor	Power Drift (dB)	Measured 1g SAR (W/kg)	Reported 1g SAR (W/kg)
	WLAN2.4GHz	802.11b 1Mbps	Left Side	10mm	Ant 1	6	2437	22.63	23.00	1.089	98.59	1.014	-0.01	0.341	0.377
33	WLAN2.4GHz	802.11b 1Mbps	Right Side	10mm	Ant 2	6	2437	22.85	23.00	1.035	98.59	1.014	-0.01	0.717	0.753
34	WLAN5GHz	802.11n-HT40 MCS0	Back	10mm	Ant 1	46	5230	20.14	20.50	1.088	86.99	1.150	-0.02	0.235	0.294
	WLAN5GHz	802.11n-HT40 MCS0	Back	10mm	Ant 2	46	5230	20.21	20.50	1.070	85.60	1.168	-0.07	0.108	0.135
35	WLAN5GHz	802.11ac-VHT80 MCS0	Left Side	10mm	Ant 1	155	5775	20.11	20.50	1.094	85.71	1.167	-0.05	0.788	1.006
	WLAN5GHz	802.11n-HT40 MCS0	Back	10mm	Ant 2	159	5795	17.09	17.50	1.100	86.99	1.150	-0.04	0.119	0.151
	WLAN5GHz	802.11ac-VHT80 MCS0	Back	10mm	MIMO Ant 2	155	5775	18.73	19.00	1.064	85.71	1.167	-0.07	0.114	0.142

14.3 Body Worn Accessory SAR

<GSM SAR>

Plot No.	Band	Mode	Test Position	Gap (mm)	Holster	Ch.	Freq. (MHz)	Average Power (dBm)	Tune-Up Limit (dBm)	Tune-up Scaling Factor	Power Drift (dB)	Measured 1g SAR (W/kg)	Reported 1g SAR (W/kg)
36	GSM850	GPRS (4 Tx slots)	Front	0mm	Soft Holster	189	836.4	29.00	30.50	1.413	-0.03	0.474	0.670
37	GSM1900	GPRS (4 Tx slots)	Back	15mm	-	661	1880	26.13	27.50	1.371	-0.06	0.645	0.884

<WCDMA SAR>

Plot No.	Band	Mode	Test Position	Gap (mm)	Holster	Ch.	Freq. (MHz)	Average Power (dBm)	Tune-Up Limit (dBm)	Tune-up Scaling Factor	Power Drift (dB)	Measured 1g SAR (W/kg)	Reported 1g SAR (W/kg)
38	WCDMA II	RMC 12.2Kbps	Back	15mm	-	9538	1907.6	23.98	25.00	1.265	0.14	0.933	1.180
39	WCDMA IV	RMC 12.2Kbps	Back	15mm	-	1513	1752.6	23.67	25.00	1.358	0.10	0.731	0.993
40	WCDMA V	RMC 12.2Kbps	Front	0mm	Soft Holster	4182	836.4	23.95	25.00	1.274	-0.11	0.567	0.722

<FDD LTE SAR>

Plot No.	Band	BW (MHz)	Modulation	RB Size	RB offset	Test Position	Gap (mm)	Holster	Ch.	Freq. (MHz)	Average Power (dBm)	Tune-Up Limit (dBm)	Tune-up Scaling Factor	Power Drift (dB)	Measured 1g SAR (W/kg)	Reported 1g SAR (W/kg)
41	LTE Band 7	20M	QPSK	1	0	Front	0mm	Soft Holster	21350	2560	23.48	24.50	1.265	0.19	0.598	0.756
42	LTE Band 12	10M	QPSK	1	0	Back	15mm	-	23095	707.5	24.47	25.00	1.130	0.00	0.239	0.270
43	LTE Band 13	10M	QPSK	1	0	Front	0mm	Soft Holster	23230	782	24.05	24.50	1.109	0.04	0.454	0.504
44	LTE Band 14	10M	QPSK	1	0	Front	0mm	Soft Holster	23330	793	24.01	24.50	1.119	0.10	0.492	0.551
45	LTE Band 25	20M	QPSK	1	0	Back	15mm	-	26340	1880	24.59	25.50	1.233	0.18	0.950	1.171
46	LTE Band 26	15M	QPSK	1	0	Front	0mm	Soft Holster	26865	831.5	23.70	24.50	1.202	0.12	0.381	0.458
47	LTE Band 66	20M	QPSK	1	0	Back	15mm	-	132322	1745	24.35	25.50	1.303	0.17	0.832	1.084

<TDD LTE SAR>

Plot No.	Band	BW (MHz)	Modulation	RB Size	RB offset	Test Position	Gap (mm)	Holster	Ch.	Freq. (MHz)	Average Power (dBm)	Tune-Up Limit (dBm)	Tune-up Scaling Factor	Duty Cycle %	Duty Cycle Scaling Factor	Power Drift (dB)	Measured 1g SAR (W/kg)	Reported 1g SAR (W/kg)
48	LTE Band 41	20M	QPSK	1	0	Front	0mm	Soft Holster	40620	2593	23.56	25.00	1.393	62.90	1.006	0.07	0.291	0.408

<WLAN SAR>

Plot No.	Band	Mode	Test Position	Gap (mm)	Antenna	Ch.	Freq. (MHz)	Average Power (dBm)	Tune-Up Limit (dBm)	Tune-up Scaling Factor	Duty Cycle %	Duty Cycle Scaling Factor	Power Drift (dB)	Measured 1g SAR (W/kg)	Reported 1g SAR (W/kg)
	WLAN2.4GHz	802.11b 1Mbps	Back	15mm	Ant 1	6	2437	22.63	23.00	1.089	98.59	1.014	-0.09	0.129	0.142
49	WLAN2.4GHz	802.11b 1Mbps	Back	15mm	Ant 2	6	2437	22.85	23.00	1.035	98.59	1.014	0.07	0.152	0.160
50	WLAN5GHz	802.11n-HT40 MCS0	Back	15mm	Ant 1	54	5270	20.12	20.50	1.093	86.99	1.150	-0.02	0.167	0.210
	WLAN5GHz	802.11n-HT40 MCS0	Back	15mm	Ant 2	54	5270	20.16	20.50	1.083	85.60	1.168	0.12	0.087	0.110
	WLAN5GHz	802.11ac-VHT80 MCS0	Back	15mm	Ant 1	138	5690	20.14	20.50	1.087	85.71	1.167	-0.10	0.082	0.104
51	WLAN5GHz	802.11ac-VHT80 MCS0	Back	15mm	Ant 2	138	5690	20.11	20.50	1.094	85.71	1.167	0.15	0.122	0.156
	WLAN5GHz	802.11ac-VHT80 MCS0	Back	15mm	Ant 1	155	5775	20.11	20.50	1.094	85.71	1.167	-0.05	0.085	0.109
	WLAN5GHz	802.11ac-VHT80 MCS0	Back	15mm	Ant 2	155	5775	17.11	17.50	1.094	85.71	1.167	-0.03	0.120	0.153
52	WLAN5GHz	802.11ac-VHT80 MCS0	Back	15mm	MIMO Ant 2	155	5775	18.73	19.00	1.064	85.71	1.167	0.13	0.131	0.163

15. Simultaneous Transmission Analysis

NO.	Simultaneous Transmission Configurations	Head	Body-worn	Hotspot(1)
1.	2.4G MIMO(Ant 1+ Ant2) + WWAN + RFID	Yes	Yes	Yes
2.	5G MIMO(Ant 1+ Ant2) + WWAN + RFID	Yes	Yes	Yes
3.	2.4G (Ant 1)+5G(Ant 2) + WWAN + RFID	Yes	Yes	Yes
4.	5G(Ant 2) + BT(Ant 1) + WWAN + RFID	Yes	Yes	Yes

General Note:

1. For hotspot simultaneous transmission analysis was performed only when the RFID is turn-off.
2. For the host device WLAN 2.4GHz / 5.2GHz / 5.8GHz supports Hotspot operation and Bluetooth support tethering applications.
3. Transmit simultaneous configuration only limit as above table.
4. Due to the output power level at 5.8GHz WLAN ant 2 are different within SISO and MIMO transmit antenna, therefore:
   a. For head and body-worn transmit simultaneous analysis is used worst case SAR from SISO and MIMO transmit antenna 2 to evaluate all SISO and MIMO operations
   b. For Hotspot condition analysis will evaluate two different SISO transmit antenna 2 and MIMO transmit antenna 2 separately.
5. The Scaled SAR summation is calculated based on the same configuration and test position.
6. Per KDB 447498 D01v06, simultaneous transmission SAR is compliant if,
   i) Scalar SAR summation < 1.6W/kg.
   ii) SPLSR = (SAR1 + SAR2)^1.5 / (min. separation distance, mm), and the peak separation distance is determined from the square root of [(x1-x2)2 + (y1-y2)2 + (z1-z2)2], where (x1, y1, z1) and (x2, y2, z2) are the coordinates of the extrapolated peak SAR locations in the zoom scan.
   iii) If SPLSR ≤ 0.04, simultaneously transmission SAR measurement is not necessary.
   iv) Simultaneously transmission SAR measurement, and the reported multi-band SAR < 1.6W/kg.
   v) The SPLSR calculated results please refer to section 15.4
7. For simultaneous transmission analysis, Bluetooth SAR is estimated per KDB 447498 D01v06 based on the formula below.
   i) (*max. power of channel, including tune-up tolerance, mW*)/(*min. test separation distance, mm*)]·[√f(GHz)/*x*] W/kg for *test separation distances* ≤ 50 mm; where *x* = 7.5 for 1-g SAR, and *x* = 18.75 for 10-g SAR.
   ii) When the minimum separation distance is < 5mm, the distance is used 5mm to determine SAR test exclusion.
   iii) 0.4 W/kg for 1-g SAR and 1.0 W/kg for 10-g SAR, when the *test separation distances* is > 50 mm.

Bluetooth Max Power	Exposure Position	Head	Hotspot	Body worn
	Test separation	0 mm	10 mm	15 mm
2.0 dBm	Estimated SAR (W/kg)	0.066 W/kg	0.033 W/kg	0.022 W/kg

15.1 Head Exposure Conditions

WWAN Band	Exposure Position	1	2	3	4	5	6	7	1+2+3+6 Summed 1g SAR (W/kg)	1+4+5+6 Summed 1g SAR (W/kg)	1+2+5+6 Summed 1g SAR (W/kg)	1+5+6+7 Summed 1g SAR (W/kg)
		WWAN	2.4GHz WLAN Ant 1	2.4GHz WLAN Ant 2	5GHz WLAN Ant 1	5GHz WLAN Ant 2	RFID	Bluetooth Ant 1				
		1g SAR (W/kg)	1g SAR (W/kg)	1g SAR (W/kg)	1g SAR (W/kg)	1g SAR (W/kg)	1g SAR (W/kg)	Estimated 1g SAR (W/kg)				
GSM850	Right Cheek at 0mm	0.376	0.112	0.369	0.369	0.166	0.042	0.066	**0.899**	**0.953**	**0.696**	**0.650**
	Right Tilted at 0mm	0.186	0.113	0.352	0.250	0.080	0.057	0.066	**0.708**	**0.573**	**0.436**	**0.389**
	Left Cheek at 0mm	0.225	0.144	0.569	0.260	0.157	0.067	0.066	**1.005**	**0.709**	**0.593**	**0.515**
	Left Tilted at 0mm	0.165	0.104	0.591	0.235	0.147	0.081	0.066	**0.941**	**0.628**	**0.497**	**0.459**
GSM1900	Right Cheek at 0mm	0.221	0.112	0.369	0.369	0.166	0.042	0.066	**0.744**	**0.798**	**0.541**	**0.495**
	Right Tilted at 0mm	0.133	0.113	0.352	0.250	0.080	0.057	0.066	**0.655**	**0.520**	**0.383**	**0.336**
	Left Cheek at 0mm	0.435	0.144	0.569	0.260	0.157	0.067	0.066	**1.215**	**0.919**	**0.803**	**0.725**
	Left Tilted at 0mm	0.100	0.104	0.591	0.235	0.147	0.081	0.066	**0.876**	**0.563**	**0.432**	**0.394**
WCDMA II	Right Cheek at 0mm	0.275	0.112	0.369	0.369	0.166	0.042	0.066	**0.798**	**0.852**	**0.595**	**0.549**
	Right Tilted at 0mm	0.198	0.113	0.352	0.250	0.080	0.057	0.066	**0.720**	**0.585**	**0.448**	**0.401**
	Left Cheek at 0mm	0.534	0.144	0.569	0.260	0.157	0.067	0.066	**1.314**	**1.018**	**0.902**	**0.824**
	Left Tilted at 0mm	0.174	0.104	0.591	0.235	0.147	0.081	0.066	**0.950**	**0.637**	**0.506**	**0.468**
WCDMA IV	Right Cheek at 0mm	0.259	0.112	0.369	0.369	0.166	0.042	0.066	**0.782**	**0.836**	**0.579**	**0.533**
	Right Tilted at 0mm	0.218	0.113	0.352	0.250	0.080	0.057	0.066	**0.740**	**0.605**	**0.468**	**0.421**
	Left Cheek at 0mm	0.433	0.144	0.569	0.260	0.157	0.067	0.066	**1.213**	**0.917**	**0.801**	**0.723**
	Left Tilted at 0mm	0.152	0.104	0.591	0.235	0.147	0.081	0.066	**0.928**	**0.615**	**0.484**	**0.446**
WCDMA V	Right Cheek at 0mm	0.307	0.112	0.369	0.369	0.166	0.042	0.066	**0.830**	**0.884**	**0.627**	**0.581**
	Right Tilted at 0mm	0.148	0.113	0.352	0.250	0.080	0.057	0.066	**0.670**	**0.535**	**0.398**	**0.351**
	Left Cheek at 0mm	0.167	0.144	0.569	0.260	0.157	0.067	0.066	**0.947**	**0.651**	**0.535**	**0.457**
	Left Tilted at 0mm	0.143	0.104	0.591	0.235	0.147	0.081	0.066	**0.919**	**0.606**	**0.475**	**0.437**
LTE Band 7	Right Cheek at 0mm	0.548	0.112	0.369	0.369	0.166	0.042	0.066	**1.071**	**1.125**	**0.868**	**0.822**
	Right Tilted at 0mm	0.132	0.113	0.352	0.250	0.080	0.057	0.066	**0.654**	**0.519**	**0.382**	**0.335**
	Left Cheek at 0mm	0.155	0.144	0.569	0.260	0.157	0.067	0.066	**0.935**	**0.639**	**0.523**	**0.445**
	Left Tilted at 0mm	0.165	0.104	0.591	0.235	0.147	0.081	0.066	**0.941**	**0.628**	**0.497**	**0.459**
LTE Band 12	Right Cheek at 0mm	0.267	0.112	0.369	0.369	0.166	0.042	0.066	**0.790**	**0.844**	**0.587**	**0.541**
	Right Tilted at 0mm	0.177	0.113	0.352	0.250	0.080	0.057	0.066	**0.699**	**0.564**	**0.427**	**0.380**
	Left Cheek at 0mm	0.225	0.144	0.569	0.260	0.157	0.067	0.066	**1.005**	**0.709**	**0.593**	**0.515**
	Left Tilted at 0mm	0.153	0.104	0.591	0.235	0.147	0.081	0.066	**0.929**	**0.616**	**0.485**	**0.447**
LTE Band 13	Right Cheek at 0mm	0.292	0.112	0.369	0.369	0.166	0.042	0.066	**0.815**	**0.869**	**0.612**	**0.566**
	Right Tilted at 0mm	0.176	0.113	0.352	0.250	0.080	0.057	0.066	**0.698**	**0.563**	**0.426**	**0.379**
	Left Cheek at 0mm	0.187	0.144	0.569	0.260	0.157	0.067	0.066	**0.967**	**0.671**	**0.555**	**0.477**
	Left Tilted at 0mm	0.145	0.104	0.591	0.235	0.147	0.081	0.066	**0.921**	**0.608**	**0.477**	**0.439**
LTE Band 14	Right Cheek at 0mm	0.303	0.112	0.369	0.369	0.166	0.042	0.066	**0.826**	**0.880**	**0.623**	**0.577**
	Right Tilted at 0mm	0.180	0.113	0.352	0.250	0.080	0.057	0.066	**0.702**	**0.567**	**0.430**	**0.383**
	Left Cheek at 0mm	0.192	0.144	0.569	0.260	0.157	0.067	0.066	**0.972**	**0.676**	**0.560**	**0.482**
	Left Tilted at 0mm	0.151	0.104	0.591	0.235	0.147	0.081	0.066	**0.927**	**0.614**	**0.483**	**0.445**
LTE Band 25	Right Cheek at 0mm	0.360	0.112	0.369	0.369	0.166	0.042	0.066	**0.883**	**0.937**	**0.680**	**0.634**
	Right Tilted at 0mm	0.221	0.113	0.352	0.250	0.080	0.057	0.066	**0.743**	**0.608**	**0.471**	**0.424**
	Left Cheek at 0mm	0.540	0.144	0.569	0.260	0.157	0.067	0.066	**1.320**	**1.024**	**0.908**	**0.830**
	Left Tilted at 0mm	0.138	0.104	0.591	0.235	0.147	0.081	0.066	**0.914**	**0.601**	**0.470**	**0.432**
LTE Band 26	Right Cheek at 0mm	0.244	0.112	0.369	0.369	0.166	0.042	0.066	**0.767**	**0.821**	**0.564**	**0.518**
	Right Tilted at 0mm	0.119	0.113	0.352	0.250	0.080	0.057	0.066	**0.641**	**0.506**	**0.369**	**0.322**
	Left Cheek at 0mm	0.133	0.144	0.569	0.260	0.157	0.067	0.066	**0.913**	**0.617**	**0.501**	**0.423**
	Left Tilted at 0mm	0.118	0.104	0.591	0.235	0.147	0.081	0.066	**0.894**	**0.581**	**0.450**	**0.412**
LTE Band 41	Right Cheek at 0mm	0.432	0.112	0.369	0.369	0.166	0.042	0.066	**0.955**	**1.009**	**0.752**	**0.706**
	Right Tilted at 0mm	0.127	0.113	0.352	0.250	0.080	0.057	0.066	**0.649**	**0.514**	**0.377**	**0.330**
	Left Cheek at 0mm	0.094	0.144	0.569	0.260	0.157	0.067	0.066	**0.874**	**0.578**	**0.462**	**0.384**
	Left Tilted at 0mm	0.083	0.104	0.591	0.235	0.147	0.081	0.066	**0.859**	**0.546**	**0.415**	**0.377**
LTE Band 66	Right Cheek at 0mm	0.186	0.112	0.369	0.369	0.166	0.042	0.066	**0.709**	**0.763**	**0.506**	**0.460**
	Right Tilted at 0mm	0.173	0.113	0.352	0.250	0.080	0.057	0.066	**0.695**	**0.560**	**0.423**	**0.376**
	Left Cheek at 0mm	0.478	0.144	0.569	0.260	0.157	0.067	0.066	**1.258**	**0.962**	**0.846**	**0.768**
	Left Tilted at 0mm	0.113	0.104	0.591	0.235	0.147	0.081	0.066	**0.889**	**0.576**	**0.445**	**0.407**

15.2 Hotspot Exposure Conditions

WWAN Band	Exposure Position	1	2	3	4	5	7	8	1+2+3 Summed 1g SAR (W/kg)	1+4+8 Summed 1g SAR (W/kg)	1+2+5 Summed 1g SAR (W/kg)	1+5+7 Summed 1g SAR (W/kg)	SPLSR	Case No
		WWAN	2.4GHz WLAN Ant 1	2.4GHz WLAN Ant 2	5GHz WLAN Ant 1	5GHz WLAN Ant 2	Bluetooth Ant 1	5GHz WLAN MIMO Ant 2						
		1g SAR (W/kg)	1g SAR (W/kg)	1g SAR (W/kg)	1g SAR (W/kg)	1g SAR (W/kg)	Estimated 1g SAR (W/kg)	1g SAR (W/kg)						
GSM850	Front at 10mm	0.351	0.056	0.204	0.101	0.051	0.033	0.049	**0.611**	**0.501**	**0.458**	**0.435**		
	Back at 10mm	0.576	0.636	0.487	0.294	0.151	0.033	0.142	**1.699**	**1.012**	**1.363**	**0.760**	0.04	Case 1
	Left side at 10mm	0.171	0.377		1.006		0.033		**0.548**	**1.177**	**0.548**	**0.204**		
	Right side at 10mm	0.516		0.753		0.676	0.033	0.830	**1.269**	**1.346**	**1.192**	**1.225**		
	Top side at 10mm		0.092	0.536	0.152	0.689	0.033	0.908	**0.628**	**1.060**	**0.781**	**0.722**		
	Bottom side at 10mm	0.520					0.033		**0.520**	**0.520**	**0.520**	**0.553**		
GSM1900	Front at 10mm	0.280	0.056	0.204	0.101	0.051	0.033	0.049	**0.540**	**0.430**	**0.387**	**0.364**		
	Back at 10mm	0.700	0.636	0.487	0.294	0.151	0.033	0.142	**1.823**	**1.136**	**1.487**	**0.884**	0.03	Case 2
	Left side at 10mm	0.124	0.377		1.006		0.033		**0.501**	**1.130**	**0.501**	**0.157**		
	Right side at 10mm	0.079		0.753		0.676	0.033	0.830	**0.832**	**0.909**	**0.755**	**0.788**		
	Top side at 10mm		0.092	0.536	0.152	0.689	0.033	0.908	**0.628**	**1.060**	**0.781**	**0.722**		
	Bottom side at 10mm	1.166					0.033		**1.166**	**1.166**	**1.166**	**1.199**		
WCDMA II	Front at 10mm	0.271	0.056	0.204	0.101	0.051	0.033	0.049	**0.531**	**0.421**	**0.378**	**0.355**		
	Back at 10mm	0.867	0.636	0.487	0.294	0.151	0.033	0.142	**1.990**	**1.303**	**1.654**	**1.051**	0.03	Case 3
	Left side at 10mm	0.129	0.377		1.006		0.033		**0.506**	**1.135**	**0.506**	**0.162**		
	Right side at 10mm	0.062		0.753		0.676	0.033	0.830	**0.815**	**0.892**	**0.738**	**0.771**		
	Top side at 10mm		0.092	0.536	0.152	0.689	0.033	0.908	**0.628**	**1.060**	**0.781**	**0.722**		
	Bottom side at 10mm	1.288					0.033		**1.288**	**1.288**	**1.288**	**1.321**		
WCDMA IV	Front at 10mm	0.227	0.056	0.204	0.101	0.051	0.033	0.049	**0.487**	**0.377**	**0.334**	**0.311**		
	Back at 10mm	0.960	0.636	0.487	0.294	0.151	0.033	0.142	**2.083**	**1.396**	**1.747**	**1.144**	0.00	Case 4
	Left side at 10mm	0.151	0.377		1.006		0.033		**0.528**	**1.157**	**0.528**	**0.184**		
	Right side at 10mm	0.064		0.753		0.676	0.033	0.830	**0.817**	**0.894**	**0.740**	**0.773**		
	Top side at 10mm		0.092	0.536	0.152	0.689	0.033	0.908	**0.628**	**1.060**	**0.781**	**0.722**		
	Bottom side at 10mm	1.263					0.033		**1.263**	**1.263**	**1.263**	**1.296**		
WCDMA V	Front at 10mm	0.376	0.056	0.204	0.101	0.051	0.033	0.049	**0.636**	**0.526**	**0.483**	**0.460**		
	Back at 10mm	0.401	0.636	0.487	0.294	0.151	0.033	0.142	**1.524**	**0.837**	**1.188**	**0.585**		
	Left side at 10mm	0.182	0.377		1.006		0.033		**0.559**	**1.188**	**0.559**	**0.215**		
	Right side at 10mm	0.516		0.753		0.676	0.033	0.830	**1.269**	**1.346**	**1.192**	**1.225**		
	Top side at 10mm		0.092	0.536	0.152	0.689	0.033	0.908	**0.628**	**1.060**	**0.781**	**0.722**		
	Bottom side at 10mm	0.544					0.033		**0.544**	**0.544**	**0.544**	**0.577**		
LTE Band 7	Front at 10mm	0.414	0.056	0.204	0.101	0.051	0.033	0.049	**0.674**	**0.564**	**0.521**	**0.498**		
	Back at 10mm	0.522	0.636	0.487	0.294	0.151	0.033	0.142	**1.645**	**0.958**	**1.309**	**0.706**	0.03	Case 6
	Left side at 10mm	0.123	0.377		1.006		0.033		**0.500**	**1.129**	**0.500**	**0.156**		
	Right side at 10mm	0.560		0.753		0.676	0.033	0.830	**1.313**	**1.390**	**1.236**	**1.269**		
	Top side at 10mm		0.092	0.536	0.152	0.689	0.033	0.908	**0.628**	**1.060**	**0.781**	**0.722**		
	Bottom side at 10mm	1.283					0.033		**1.283**	**1.283**	**1.283**	**1.316**		
LTE Band 12	Front at 10mm	0.284	0.056	0.204	0.101	0.051	0.033	0.049	**0.544**	**0.434**	**0.391**	**0.368**		
	Back at 10mm	0.334	0.636	0.487	0.294	0.151	0.033	0.142	**1.457**	**0.770**	**1.121**	**0.518**		
	Left side at 10mm	0.287	0.377		1.006		0.033		**0.664**	**1.293**	**0.664**	**0.320**		
	Right side at 10mm	0.460		0.753		0.676	0.033	0.830	**1.213**	**1.290**	**1.136**	**1.169**		
	Top side at 10mm		0.092	0.536	0.152	0.689	0.033	0.908	**0.628**	**1.060**	**0.781**	**0.722**		
	Bottom side at 10mm	0.279					0.033		**0.279**	**0.279**	**0.279**	**0.312**		
LTE Band 13	Front at 10mm	0.331	0.056	0.204	0.101	0.051	0.033	0.049	**0.591**	**0.481**	**0.438**	**0.415**		
	Back at 10mm	0.541	0.636	0.487	0.294	0.151	0.033	0.142	**1.664**	**0.977**	**1.328**	**0.725**	0.04	Case 8
	Left side at 10mm	0.252	0.377		1.006		0.033		**0.629**	**1.258**	**0.629**	**0.285**		
	Right side at 10mm	0.520		0.753		0.676	0.033	0.830	**1.273**	**1.350**	**1.196**	**1.229**		
	Top side at 10mm		0.092	0.536	0.152	0.689	0.033	0.908	**0.628**	**1.060**	**0.781**	**0.722**		
	Bottom side at 10mm	0.425					0.033		**0.425**	**0.425**	**0.425**	**0.458**		
LTE Band 14	Front at 10mm	0.334	0.056	0.204	0.101	0.051	0.033	0.049	**0.594**	**0.484**	**0.441**	**0.418**		
	Back at 10mm	0.540	0.636	0.487	0.294	0.151	0.033	0.142	**1.663**	**0.976**	**1.327**	**0.724**	0.04	Case 9
	Left side at 10mm	0.246	0.377		1.006		0.033		**0.623**	**1.252**	**0.623**	**0.279**		

	Right side at 10mm	0.521		0.753		0.676	0.033	0.830	**1.274**	**1.351**	**1.197**	**1.230**		
	Top side at 10mm		0.092	0.536	0.152	0.689	0.033	0.908	**0.628**	**1.060**	**0.781**	**0.722**		
	Bottom side at 10mm	0.441					0.033		**0.441**	**0.441**	**0.441**	**0.474**		
LTE Band 25	Front at 10mm	0.269	0.056	0.204	0.101	0.051	0.033	0.049	**0.529**	**0.419**	**0.376**	**0.353**		
	Back at 10mm	0.909	0.636	0.487	0.294	0.151	0.033	0.142	**2.032**	**1.345**	**1.696**	**1.093**	0.03	Case 10
	Left side at 10mm	0.122	0.377		1.006		0.033		**0.499**	**1.128**	**0.499**	**0.155**		
	Right side at 10mm	0.069		0.753		0.676	0.033	0.830	**0.822**	**0.899**	**0.745**	**0.778**		
	Top side at 10mm		0.092	0.536	0.152	0.689	0.033	0.908	**0.628**	**1.060**	**0.781**	**0.722**		
	Bottom side at 10mm	1.267					0.033		**1.267**	**1.267**	**1.267**	**1.300**		
LTE Band 26	Front at 10mm	0.283	0.056	0.204	0.101	0.051	0.033	0.049	**0.543**	**0.433**	**0.390**	**0.367**		
	Back at 10mm	0.456	0.636	0.487	0.294	0.151	0.033	0.142	**1.579**	**0.892**	**1.243**	**0.640**		
	Left side at 10mm	0.214	0.377		1.006		0.033		**0.591**	**1.220**	**0.591**	**0.247**		
	Right side at 10mm	0.430		0.753		0.676	0.033	0.830	**1.183**	**1.260**	**1.106**	**1.139**		
	Top side at 10mm		0.092	0.536	0.152	0.689	0.033	0.908	**0.628**	**1.060**	**0.781**	**0.722**		
	Bottom side at 10mm	0.400					0.033		**0.400**	**0.400**	**0.400**	**0.433**		
LTE Band 41	Front at 10mm	0.308	0.056	0.204	0.101	0.051	0.033	0.049	**0.568**	**0.458**	**0.415**	**0.392**		
	Back at 10mm	0.451	0.636	0.487	0.294	0.151	0.033	0.142	**1.574**	**0.887**	**1.238**	**0.635**		
	Left side at 10mm	0.088	0.377		1.006		0.033		**0.465**	**1.094**	**0.465**	**0.121**		
	Right side at 10mm	0.389		0.753		0.676	0.033	0.830	**1.142**	**1.219**	**1.065**	**1.098**		
	Top side at 10mm		0.092	0.536	0.152	0.689	0.033	0.908	**0.628**	**1.060**	**0.781**	**0.722**		
	Bottom side at 10mm	1.060					0.033		**1.060**	**1.060**	**1.060**	**1.093**		
LTE Band 66	Front at 10mm	0.230	0.056	0.204	0.101	0.051	0.033	0.049	**0.490**	**0.380**	**0.337**	**0.314**		
	Back at 10mm	1.009	0.636	0.487	0.294	0.151	0.033	0.142	**2.132**	**1.445**	**1.796**	**1.193**	0.03	Case 13
	Left side at 10mm	0.184	0.377		1.006		0.033		**0.561**	**1.190**	**0.561**	**0.217**		
	Right side at 10mm	0.068		0.753		0.676	0.033	0.830	**0.821**	**0.898**	**0.744**	**0.777**		
	Top side at 10mm		0.092	0.536	0.152	0.689	0.033	0.908	**0.628**	**1.060**	**0.781**	**0.722**		
	Bottom side at 10mm	1.240					0.033		**1.240**	**1.240**	**1.240**	**1.273**		

15.3 Body-Worn Accessory Exposure Conditions

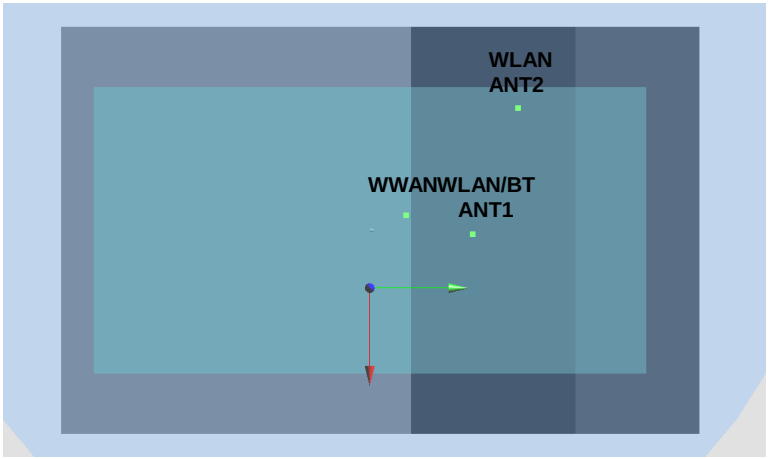
WWAN Band	Exposure Position	1	2	3	4	5	6	7	1+2+3+6 Summed 1g SAR (W/kg)	1+4+5+6 Summed 1g SAR (W/kg)	1+2+5+6 Summed 1g SAR (W/kg)	1+5+6+7 Summed 1g SAR (W/kg)	SPLSR	Case No
		WWAN	2.4GHz WLAN Ant 1	2.4GHz WLAN Ant 2	5GHz WLAN Ant 1	5GHz WLAN Ant 2	RFID	Bluetooth Ant 1						
		1g SAR (W/kg)	1g SAR (W/kg)	1g SAR (W/kg)	1g SAR (W/kg)	1g SAR (W/kg)	1g SAR (W/kg)	Estimated 1g SAR (W/kg)						
GSM850	Front with Soft Holster	0.670	0.044	0.269	0.008	0.048	0.045	0.066	1.028	0.771	0.807	0.829		
	Front with Rigid Holster	0.344	0.049	0.190	0.009	0.056	0.036	0.066	0.619	0.445	0.485	0.502		
	Front at 15mm	0.309	0.046	0.155	0.040	0.042	0.001	0.022	0.511	0.392	0.398	0.374		
	Back at 15mm	0.653	0.142	0.160	0.210	0.156	0.398	0.022	1.353	1.417	1.349	1.229		
GSM1900	Front with Soft Holster	0.765	0.044	0.269	0.008	0.048	0.045	0.066	1.123	0.866	0.902	0.924		
	Front with Rigid Holster	0.409	0.049	0.190	0.009	0.056	0.036	0.066	0.684	0.510	0.550	0.567		
	Front at 15mm	0.325	0.046	0.155	0.040	0.042	0.001	0.022	0.527	0.408	0.414	0.390		
	Back at 15mm	0.884	0.142	0.160	0.210	0.156	0.398	0.022	1.584	1.648	1.580	1.460	0.02	Case 14
WCDMA II	Front with Soft Holster	1.158	0.044	0.269	0.008	0.048	0.045	0.066	1.516	1.259	1.295	1.317		
	Front with Rigid Holster	0.962	0.049	0.190	0.009	0.056	0.036	0.066	1.237	1.063	1.103	1.120		
	Front at 15mm	0.399	0.046	0.155	0.040	0.042	0.001	0.022	0.601	0.482	0.488	0.464		
	Back at 15mm	1.180	0.142	0.160	0.210	0.156	0.398	0.022	1.880	1.944	1.876	1.756	0.02	Case 15
WCDMA IV	Front with Soft Holster	0.845	0.044	0.269	0.008	0.048	0.045	0.066	1.203	0.946	0.982	1.004		
	Front with Rigid Holster	0.579	0.049	0.190	0.009	0.056	0.036	0.066	0.854	0.680	0.720	0.737		
	Front at 15mm	0.242	0.046	0.155	0.040	0.042	0.001	0.022	0.444	0.325	0.331	0.307		
	Back at 15mm	0.993	0.142	0.160	0.210	0.156	0.398	0.022	1.693	1.757	1.689	1.569	0.02	Case 16
WCDMA V	Front with Soft Holster	0.722	0.044	0.269	0.008	0.048	0.045	0.066	1.080	0.823	0.859	0.881		
	Front with Rigid Holster	0.281	0.049	0.190	0.009	0.056	0.036	0.066	0.556	0.382	0.422	0.439		
	Front at 15mm	0.228	0.046	0.155	0.040	0.042	0.001	0.022	0.430	0.311	0.317	0.293		
	Back at 15mm	0.453	0.142	0.160	0.210	0.156	0.398	0.022	1.153	1.217	1.149	1.029		
LTE Band 7	Front with Soft Holster	0.756	0.044	0.269	0.008	0.048	0.045	0.066	1.114	0.857	0.893	0.915		
	Front with Rigid Holster	0.406	0.049	0.190	0.009	0.056	0.036	0.066	0.681	0.507	0.547	0.564		
	Front at 15mm	0.219	0.046	0.155	0.040	0.042	0.001	0.022	0.421	0.302	0.308	0.284		
	Back at 15mm	0.415	0.142	0.160	0.210	0.156	0.398	0.022	1.115	1.179	1.111	0.991		
LTE Band 12	Front with Soft Holster	0.327	0.044	0.269	0.008	0.048	0.045	0.066	0.685	0.428	0.464	0.486		
	Front with Rigid Holster	0.260	0.049	0.190	0.009	0.056	0.036	0.066	0.535	0.361	0.401	0.418		
	Front at 15mm	0.260	0.046	0.155	0.040	0.042	0.001	0.022	0.462	0.343	0.349	0.325		
	Back at 15mm	0.270	0.142	0.160	0.210	0.156	0.398	0.022	0.970	1.034	0.966	0.846		
LTE Band 13	Front with Soft Holster	0.504	0.044	0.269	0.008	0.048	0.045	0.066	0.862	0.605	0.641	0.663		
	Front with Rigid Holster	0.293	0.049	0.190	0.009	0.056	0.036	0.066	0.568	0.394	0.434	0.451		
	Front at 15mm	0.264	0.046	0.155	0.040	0.042	0.001	0.022	0.466	0.347	0.353	0.329		
	Back at 15mm	0.418	0.142	0.160	0.210	0.156	0.398	0.022	1.118	1.182	1.114	0.994		
LTE Band 14	Front with Soft Holster	0.551	0.044	0.269	0.008	0.048	0.045	0.066	0.909	0.652	0.688	0.710		
	Front with Rigid Holster	0.293	0.049	0.190	0.009	0.056	0.036	0.066	0.568	0.394	0.434	0.451		
	Front at 15mm	0.266	0.046	0.155	0.040	0.042	0.001	0.022	0.468	0.349	0.355	0.331		
	Back at 15mm	0.413	0.142	0.160	0.210	0.156	0.398	0.022	1.113	1.177	1.109	0.989		
LTE Band 25	Front with Soft Holster	1.112	0.044	0.269	0.008	0.048	0.045	0.066	1.470	1.213	1.249	1.271		
	Front with Rigid Holster	0.866	0.049	0.190	0.009	0.056	0.036	0.066	1.141	0.967	1.007	1.024		
	Front at 15mm	0.433	0.046	0.155	0.040	0.042	0.001	0.022	0.635	0.516	0.522	0.498		
	Back at 15mm	1.171	0.142	0.160	0.210	0.156	0.398	0.022	1.871	1.935	1.867	1.747	0.02	Case 17
LTE Band 26	Front with Soft Holster	0.458	0.044	0.269	0.008	0.048	0.045	0.066	0.816	0.559	0.595	0.617		
	Front with Rigid Holster	0.206	0.049	0.190	0.009	0.056	0.036	0.066	0.481	0.307	0.347	0.364		
	Front at 15mm	0.212	0.046	0.155	0.040	0.042	0.001	0.022	0.414	0.295	0.301	0.277		
	Back at 15mm	0.376	0.142	0.160	0.210	0.156	0.398	0.022	1.076	1.140	1.072	0.952		
LTE Band 41	Front with Soft Holster	0.408	0.044	0.269	0.008	0.048	0.045	0.066	0.766	0.509	0.545	0.567		
	Front with Rigid Holster	0.226	0.049	0.190	0.009	0.056	0.036	0.066	0.501	0.327	0.367	0.384		
	Front at 15mm	0.178	0.046	0.155	0.040	0.042	0.001	0.022	0.380	0.261	0.267	0.243		
	Back at 15mm	0.267	0.142	0.160	0.210	0.156	0.398	0.022	0.967	1.031	0.963	0.843		
LTE Band 66	Front with Soft Holster	0.973	0.044	0.269	0.008	0.048	0.045	0.066	1.331	1.074	1.110	1.132		
	Front with Rigid Holster	0.589	0.049	0.190	0.009	0.056	0.036	0.066	0.864	0.690	0.730	0.747		
	Front at 15mm	0.276	0.046	0.155	0.040	0.042	0.001	0.022	0.478	0.359	0.365	0.341		
	Back at 15mm	1.084	0.142	0.160	0.210	0.156	0.398	0.022	1.784	1.848	1.780	1.660	0.02	Case 18

15.4 SPLSR Evaluation and Analysis

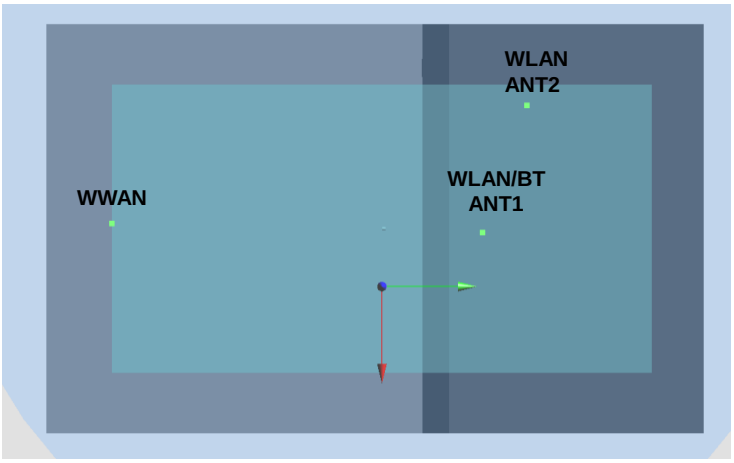
General Note:

1. SPLSR = $(SAR_1 + SAR_2)^{1.5}$ / (*min. separation distance, mm*). If SPLSR ≤ 0.04, simultaneously transmission SAR measurement is not necessary
2. The configuration of 2.4GHz Ant 1 + 5GHz Ant 2 in hotspot mode is used SISO mode worse reported SAR to evaluate SPLSR analysis, otherwise the worst 5GHz SAR is evaluated for others configuration.

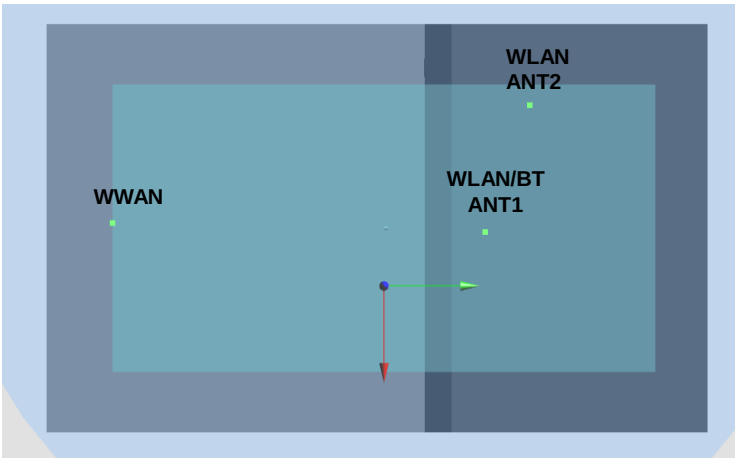
	Band	Position	SAR (W/kg)	Gap	SAR peak location (m)			3D distance (mm)	Summed SAR (W/kg)	SPLSR Results	Simultaneous SAR
				(cm)	X	Y	Z				
Case 1	GSM850	Back	0.576	10	-6.1	1.1	-1.69	30.4	1.21	0.04	Not required
	WLAN2.4G_Ant 1		0.636	10	3.2	30	-0.7				
	GSM850	Back	0.576	10	-6.1	1.1	-1.69	45.8	1.06	0.02	Not required
	WLAN2.4G_Ant 2		0.487	10	-33	38.19	-0.82				
	WLAN2.4G_Ant 1	Back	0.636	10	3.2	30	-0.7	37.1	1.12	0.03	Not required
	WLAN2.4G_Ant 2		0.487	10	-33	38.19	-0.82				



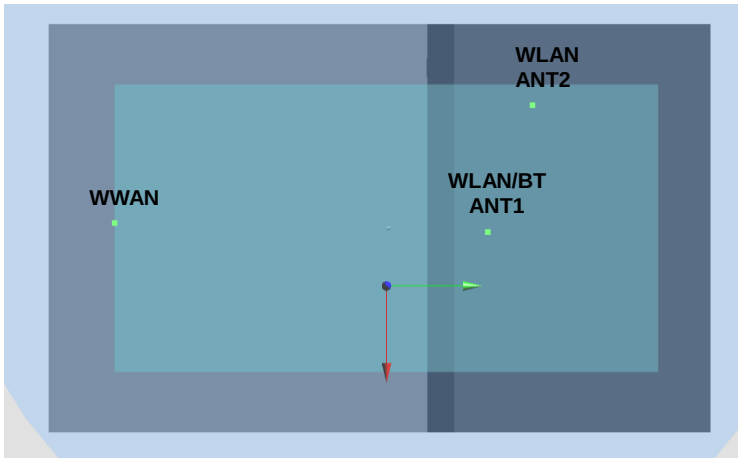
	Band	Position	SAR (W/kg)	Gap (cm)	SAR peak location (m) X	SAR peak location (m) Y	SAR peak location (m) Z	3D distance (mm)	Summed SAR (W/kg)	SPLSR Results	Simultaneous SAR
Case 2	GSM1900	Back	0.7	10	-3.1	-78.9	-1.2	109.1	1.34	0.01	Not required
	WLAN2.4G_Ant 1		0.636	10	3.2	30	-0.7				
	GSM1900	Back	0.7	10	-3.1	-78.9	-1.2	120.8	1.19	0.01	Not required
	WLAN2.4G_Ant 2		0.487	10	-33	38.19	-0.82				
	WLAN2.4G_Ant 1	Back	0.636	10	3.2	30	-0.7	37.1	1.12	0.03	Not required
	WLAN2.4G_Ant 2		0.487	10	-33	38.19	-0.82				



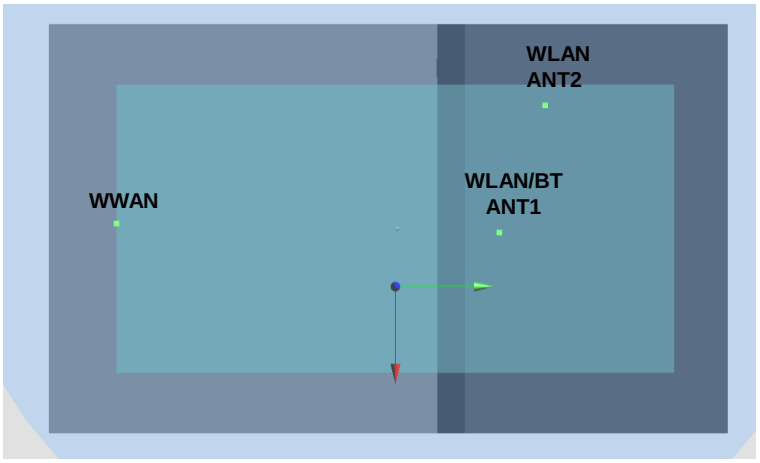
	Band	Position	SAR (W/kg)	Gap (cm)	SAR peak location (m) X	Y	Z	3D distance (mm)	Summed SAR (W/kg)	SPLSR Results	Simultaneous SAR
Case 3	WCDMA II	Back	0.867	10	-3.1	-78.9	-1.2	109.1	1.50	0.02	Not required
	WLAN2.4G_Ant 1		0.636	10	3.2	30	-0.7				
	WCDMA II	Back	0.867	10	-3.1	-78.9	-1.2	120.8	1.35	0.01	Not required
	WLAN2.4G_Ant 2		0.487	10	-33	38.19	-0.82				
	WLAN2.4G_Ant 1	Back	0.636	10	3.2	30	-0.7	37.1	1.12	0.03	Not required
	WLAN2.4G_Ant 2		0.487	10	-33	38.19	-0.82				
	WCDMA II	Back	0.867	10	-3.1	-78.9	-1.2	121.3	1.02	0.01	Not required
	WLAN5G_Ant 2		0.151	10	38	35.2	-0.77				
	WLAN2.4G_Ant 1	Back	0.636	10	3.2	30	-0.7	53.8	0.79	0.01	Not required
	WLAN5G_Ant 2		0.151	10	-25	75.8	-0.79				



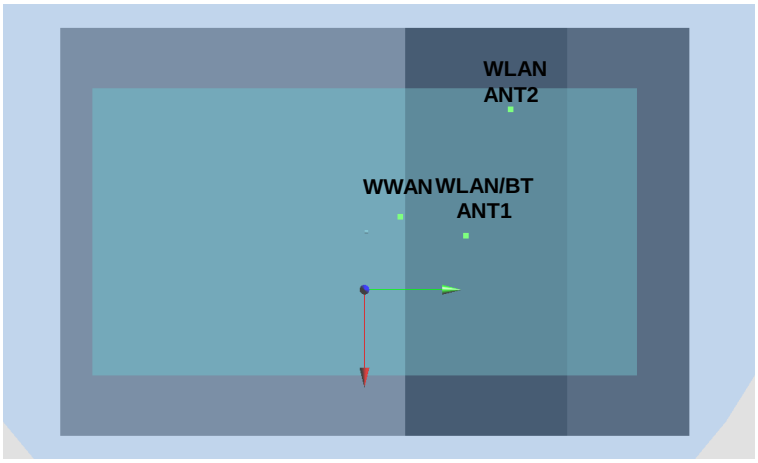
	Band	Position	SAR (W/kg)	Gap (cm)	SAR peak location (m) X	Y	Z	3D distance (mm)	Summed SAR (W/kg)	SPLSR Results	Simultaneous SAR
Case 4	WCDMA IV	Back	0.96	10	-3.1	-79	-1.18	109.2	1.60	0.02	Not required
	WLAN2.4G_Ant 1		0.636	10	3.2	30	-0.7				
	WCDMA IV	Back	0.96	10	-3.1	-79	-1.18	120.9	1.45	0.01	Not required
	WLAN2.4G_Ant 2		0.487	10	-33	38.19	-0.82				
	WLAN2.4G_Ant 1	Back	0.636	10	3.2	30	-0.7	37.1	1.12	0.03	Not required
	WLAN2.4G_Ant 2		0.487	10	-33	38.19	-0.82				
	WCDMA IV	Back	0.96	10	-3.1	-79	-1.18	121.4	1.11	0.01	Not required
	WLAN5G_Ant 2		0.151	10	38	35.2	-0.77				
	WLAN2.4G_Ant 1	Back	0.636	10	3.2	30	-0.7	53.8	0.79	0.01	Not required
	WLAN5G_Ant 2		0.151	10	-25	75.8	-0.79				



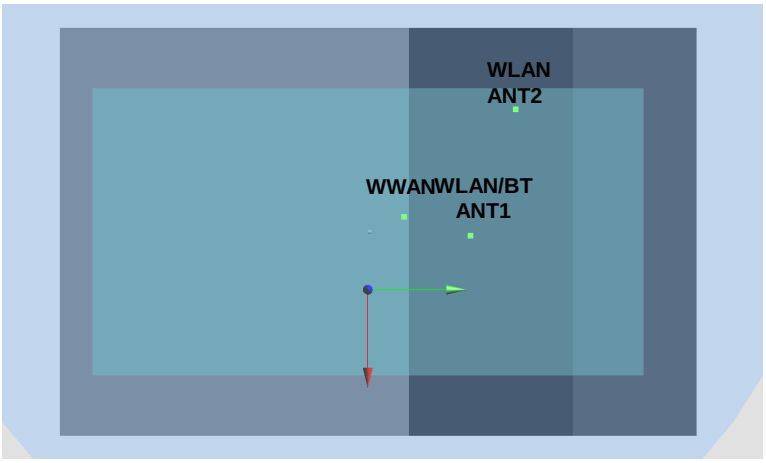
	Band	Position	SAR (W/kg)	Gap (cm)	SAR peak location (m) X	Y	Z	3D distance (mm)	Summed SAR (W/kg)	SPLSR Results	Simultaneous SAR
Case 6	LTE Band 7	Back	0.522	10	-7.2	-76.4	-1.19	106.9	1.16	0.01	Not required
	WLAN2.4G_Ant 1		0.636	10	3.2	30	-0.7				
	LTE Band 7	Back	0.522	10	-7.2	-76.4	-1.19	117.5	1.01	0.01	Not required
	WLAN2.4G_Ant 2		0.487	10	-33	38.19	-0.82				
	WLAN2.4G_Ant 1	Back	0.636	10	3.2	30	-0.7	37.1	1.12	0.03	Not required
	WLAN2.4G_Ant 2		0.487	10	-33	38.19	-0.82				



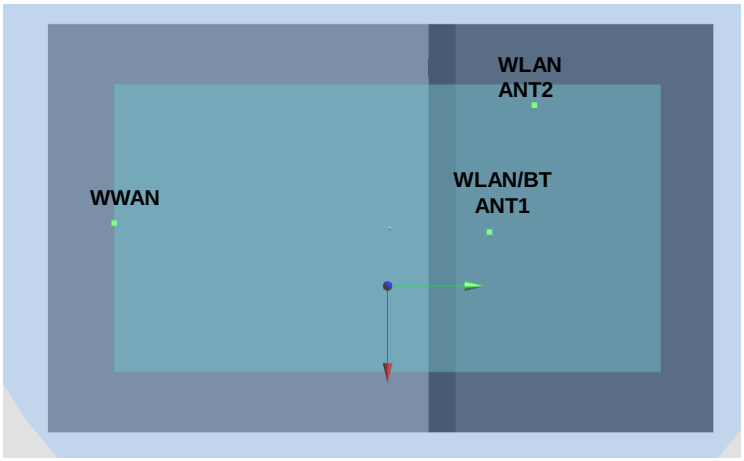
	Band	Position	SAR (W/kg)	Gap (cm)	SAR peak location (m) X	Y	Z	3D distance (mm)	Summed SAR (W/kg)	SPLSR Results	Simultaneous SAR
Case 8	LTE Band 13	Back	0.541	10	-3	-1.6	-1.83	32.2	1.18	0.04	Not required
	WLAN2.4G_Ant 1		0.636	10	3.2	30	-0.7				
	LTE Band 13	Back	0.541	10	-3	-1.6	-1.83	49.8	1.03	0.02	Not required
	WLAN2.4G_Ant 2		0.487	10	-33	38.19	-0.82				
	WLAN2.4G_Ant 1	Back	0.636	10	3.2	30	-0.7	37.1	1.12	0.03	Not required
	WLAN2.4G_Ant 2		0.487	10	-33	38.19	-0.82				



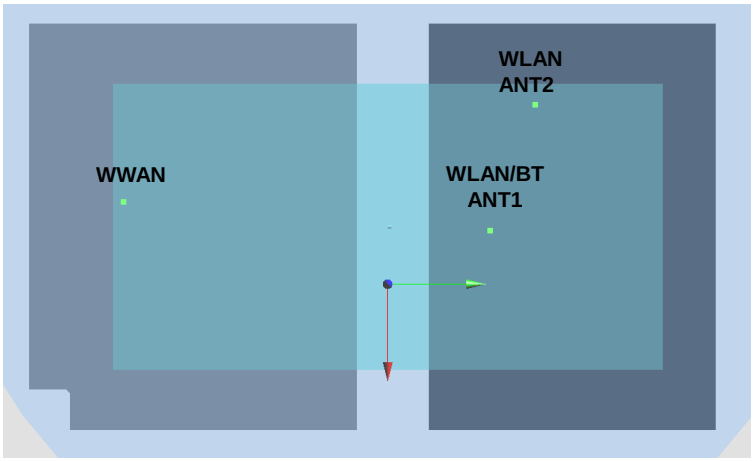
	Band	Position	SAR (W/kg)	Gap (cm)	SAR peak location (m) X	Y	Z	3D distance (mm)	Summed SAR (W/kg)	SPLSR Results	Simultaneous SAR
Case 9	LTE Band 14	Back	0.54	10	-3	0	-1.83	30.7	1.18	0.04	Not required
	WLAN2.4G_Ant 1		0.636	10	3.2	30	-0.7				
	LTE Band 14	Back	0.54	10	-3	0	-1.83	48.6	1.03	0.02	Not required
	WLAN2.4G_Ant 2		0.487	10	-33	38.19	-0.82				
	WLAN2.4G_Ant 1	Back	0.636	10	3.2	30	-0.7	37.1	1.12	0.03	Not required
	WLAN2.4G_Ant 2		0.487	10	-33	38.19	-0.82				



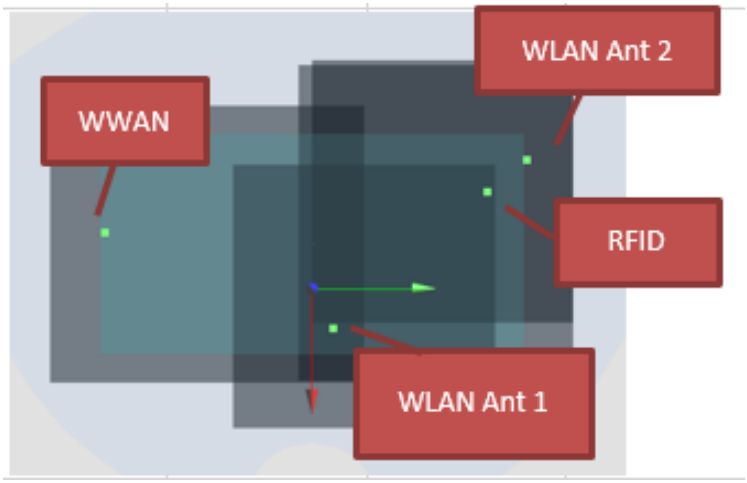
	Band	Position	SAR (W/kg)	Gap (cm)	SAR peak location (m) X	Y	Z	3D distance (mm)	Summed SAR (W/kg)	SPLSR Results	Simultaneous SAR
Case 10	LTE Band 25	Back	0.909	10	-4.5	-79.1	-1.18	109.4	1.55	0.02	Not required
	WLAN2.4G_Ant 1		0.636	10	3.2	30	-0.7				
	LTE Band 25	Back	0.909	10	-4.5	-79.1	-1.18	120.7	1.40	0.01	Not required
	WLAN2.4G_Ant 2		0.487	10	-33	38.19	-0.82				
	WLAN2.4G_Ant 1	Back	0.636	10	3.2	30	-0.7	37.1	1.12	0.03	Not required
	WLAN2.4G_Ant 2		0.487	10	-33	38.19	-0.82				
	LTE Band 25	Back	0.909	10	-4.5	-79.1	-1.18	121.9	1.06	0.01	Not required
	WLAN5G_Ant 2		0.151	10	38	35.2	-0.77				
	WLAN2.4G_Ant 1	Back	0.636	10	3.2	30	-0.7	53.8	0.79	0.01	Not required
	WLAN5G_Ant 2		0.151	10	-25	75.8	-0.79				



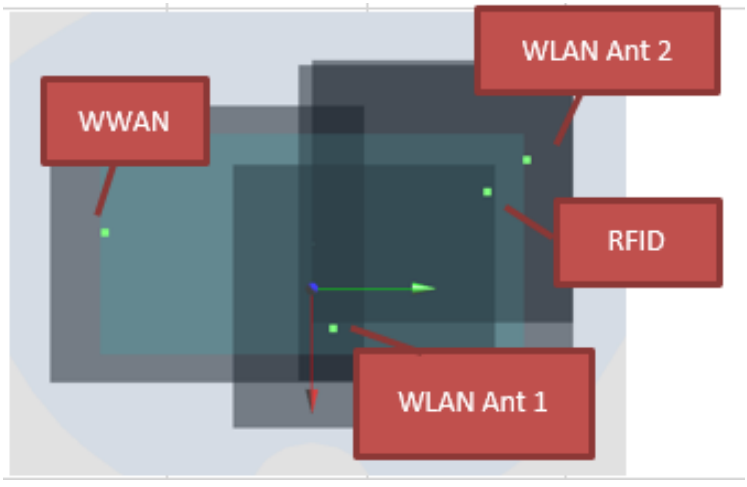
	Band	Position	SAR (W/kg)	Gap (cm)	SAR peak location (m) X	Y	Z	3D distance (mm)	Summed SAR (W/kg)	SPLSR Results	Simultaneous SAR
Case 13	LTE Band 66	Back	1.009	10	-3.1	-79	-1.16	109.2	1.65	0.02	Not required
	WLAN2.4G_Ant 1		0.636	10	3.2	30	-0.7				
	LTE Band 66	Back	1.009	10	-3.1	-79	-1.16	120.9	1.50	0.02	Not required
	WLAN2.4G_Ant 2		0.487	10	-33	38.19	-0.82				
	WLAN2.4G_Ant 1	Back	0.636	10	3.2	30	-0.7	37.1	1.12	0.03	Not required
	WLAN2.4G_Ant 2		0.487	10	-33	38.19	-0.82				
	LTE Band 66	Back	1.009	10	-3.1	-79	-1.16	121.4	1.16	0.01	Not required
	WLAN5G_Ant 2		0.151	10	38	35.2	-0.77				
	WLAN2.4G_Ant 1	Back	0.636	10	3.2	30	-0.7	53.8	0.79	0.01	Not required
	WLAN5G_Ant 2		0.151	10	-25	75.8	-0.79				



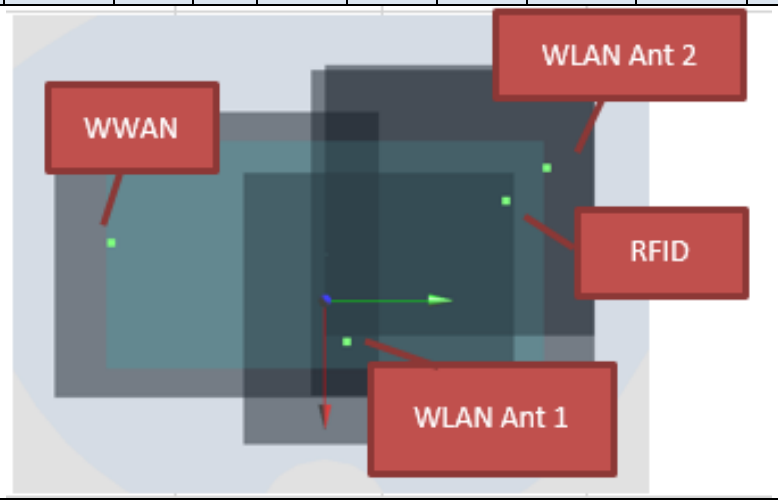
	Band	Position	SAR (W/kg)	Gap (mm)	SAR peak location (mm) X	Y	Z	3D distance (mm)	Summed SAR (W/kg)	SPLSR Results	Simultaneous SAR
Case 14	GSM1900	Back	0.884	15	-13.4	-74	-1.41	86.5	1.09	0.01	Not required
	WLAN5G_Ant 1		0.21	15	24	4	-1.24				
	GSM1900	Back	0.884	15	-13.4	-74	-1.41	153.5	1.04	0.01	Not required
	WLAN5G_Ant 2		0.156	15	-28	78.8	-1.1				
	WLAN5G_Ant 1	Back	0.21	15	24	4	-1.24	91.1	0.37	0.00	Not required
	WLAN5G_Ant 2		0.156	15	-28	78.8	-1.1				
	GSM1900	Back	0.884	15	-13.4	-74	-1.41	141.0	1.28	0.01	Not required
	RFID		0.398	15	-12	67	-1				
	WLAN5G_Ant 1	Back	0.21	15	24	4	-1.24	72.6	0.61	0.01	Not required
	RFID		0.398	15	-12	67	-1				
	WLAN5G_Ant 2	Back	0.156	15	-28	78.8	-1.1	19.9	0.55	0.02	Not required
	RFID		0.398	15	-12	67	-1				



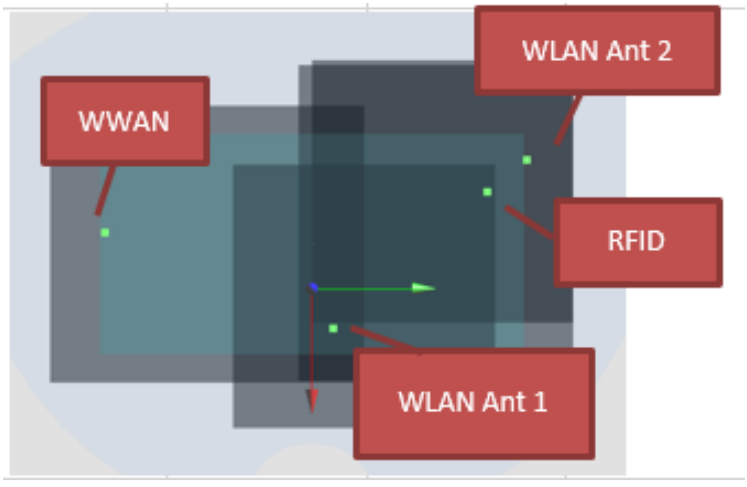
	Band	Position	SAR (W/kg)	Gap (mm)	SAR peak location (mm) X	Y	Z	3D distance (mm)	Summed SAR (W/kg)	SPLSR Results	Simultaneous SAR
Case 15	WCDMA II	Back	1.18	15	-6.1	-79	-1.39	114.4	1.32	0.01	Not required
	WLAN2.4G_Ant 1		0.142	15	3.6	35	-1.32				
	WCDMA II	Back	1.18	15	-6.1	-79	-1.39	126.0	1.34	0.01	Not required
	WLAN2.4G_Ant 2		0.16	15	-49.8	39.2	-1.36				
	WLAN2.4G_Ant 1	Back	0.142	15	3.6	35	-1.32	53.6	0.30	0.00	Not required
	WLAN2.4G_Ant 2		0.16	15	-49.8	39.2	-1.36				
	WCDMA II	Back	1.18	15	-6.1	-79	-1.39	88.3	1.39	0.02	Not required
	WLAN5G_Ant 1		0.21	15	24	4	-1.24				
	WCDMA II	Back	1.18	15	-6.1	-79	-1.39	159.3	1.34	0.01	Not required
	WLAN5G_Ant 2		0.156	15	-28	78.8	-1.1				
	WLAN5G_Ant 1	Back	0.21	15	24	4	-1.24	91.1	0.37	0.00	Not required
	WLAN5G_Ant 2		0.156	15	-28	78.8	-1.1				
	WLAN2.4G_Ant 1	Back	0.142	15	3.6	35	-1.32	54.0	0.30	0.00	Not required
	WLAN5G_Ant 2		0.156	15	-28	78.8	-1.1				
	WCDMA II	Back	1.18	15	-6.1	-79	-1.39	109.7	1.20	0.01	Not required
	Bluetooth_Ant 1		0.022	15	3.4	30.3	-0.62				
	WLAN5G_Ant 2	Back	0.156	15	-28	78.8	-1.1	57.8	0.18	0.00	Not required
	Bluetooth_Ant 1		0.022	15	3.4	30.3	-0.62				
	WCDMA II	Back	1.18	15	-6.1	-79	-1.39	146.1	1.58	0.01	Not required
	RFID		0.398	15	-12	67	-1				
	WLAN2.4G_Ant 1	Back	0.142	15	3.6	35	-1.32	35.6	0.54	0.01	Not required
	RFID		0.398	15	-12	67	-1				
	WLAN2.4G_Ant 2	Back	0.16	15	-49.8	39.2	-1.36	46.9	0.56	0.01	Not required
	RFID		0.398	15	-12	67	-1				
	WLAN5G_Ant 1	Back	0.21	15	24	4	-1.24	72.6	0.61	0.01	Not required
	RFID		0.398	15	-12	67	-1				
	WLAN5G_Ant 2	Back	0.156	15	-28	78.8	-1.1	19.9	0.55	0.02	Not required
	RFID		0.398	15	-12	67	-1				
	Bluetooth_Ant 1	Back	0.022	15	3.4	30.3	-0.62	39.8	0.42	0.01	Not required
	RFID		0.398	15	-12	67	-1				



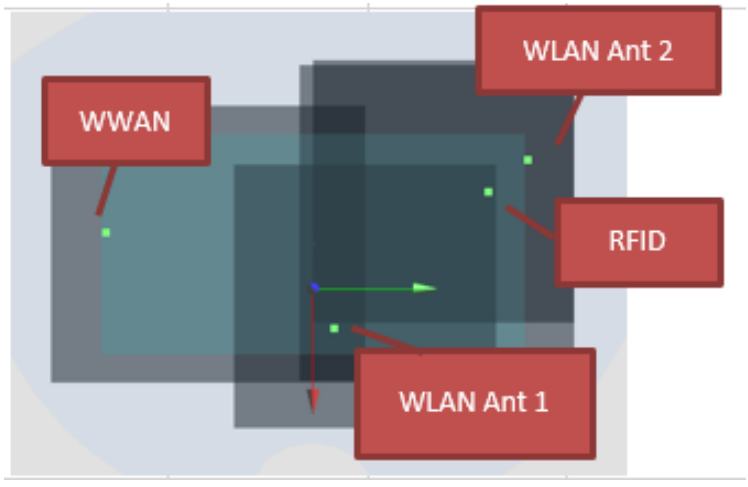
	Band	Position	SAR (W/kg)	Gap (mm)	SAR peak location (mm) X	Y	Z	3D distance (mm)	Summed SAR (W/kg)	SPLSR Results	Simultaneous SAR
Case 16	WCDMA IV	Back	0.993	15	-6.1	-77.4	-1.39	112.8	1.14	0.01	Not required
	WLAN2.4G_Ant 1		0.142	15	3.6	35	-1.32				
	WCDMA IV	Back	0.993	15	-6.1	-77.4	-1.39	124.5	1.15	0.01	Not required
	WLAN2.4G_Ant 2		0.16	15	-49.8	39.2	-1.36				
	WLAN2.4G_Ant 1	Back	0.142	15	3.6	35	-1.32	53.6	0.30	0.00	Not required
	WLAN2.4G_Ant 2		0.16	15	-49.8	39.2	-1.36				
	WCDMA IV	Back	0.993	15	-6.1	-77.4	-1.39	86.8	1.20	0.02	Not required
	WLAN5G_Ant 1		0.21	15	24	4	-1.24				
	WCDMA IV	Back	0.993	15	-6.1	-77.4	-1.39	157.7	1.15	0.01	Not required
	WLAN5G_Ant 2		0.156	15	-28	78.8	-1.1				
	WLAN5G_Ant 1	Back	0.21	15	24	4	-1.24	91.1	0.37	0.00	Not required
	WLAN5G_Ant 2		0.156	15	-28	78.8	-1.1				
	WLAN2.4G_Ant 1	Back	0.142	15	3.6	35	-1.32	54.0	0.30	0.00	Not required
	WLAN5G_Ant 2		0.156	15	-28	78.8	-1.1				
	WCDMA IV	Back	0.993	15	-6.1	-77.4	-1.39	144.5	1.39	0.01	Not required
	RFID		0.398	15	-12	67	-1				
	WLAN2.4G_Ant 1	Back	0.142	15	3.6	35	-1.32	35.6	0.54	0.01	Not required
	RFID		0.398	15	-12	67	-1				
	WLAN2.4G_Ant 2	Back	0.16	15	-49.8	39.2	-1.36	46.9	0.56	0.01	Not required
	RFID		0.398	15	-12	67	-1				
	WLAN5G_Ant 1	Back	0.21	15	24	4	-1.24	72.6	0.61	0.01	Not required
	RFID		0.398	15	-12	67	-1				
	WLAN5G_Ant 2	Back	0.156	15	-28	78.8	-1.1	19.9	0.55	0.02	Not required
	RFID		0.398	15	-12	67	-1				



	Band	Position	SAR (W/kg)	Gap (mm)	SAR peak location (mm) X	Y	Z	3D distance (mm)	Summed SAR (W/kg)	SPLSR Results	Simultaneous SAR
Case 17	LTE Band 25	Back	1.171	15	-12	-79	-1.42	115.1	1.31	0.01	Not required
	WLAN2.4G_Ant 1		0.142	15	3.6	35	-1.32				
	LTE Band 25	Back	1.171	15	-12	-79	-1.42	124.1	1.33	0.01	Not required
	WLAN2.4G_Ant 2		0.16	15	-49.8	39.2	-1.36				
	WLAN2.4G_Ant 1	Back	0.142	15	3.6	35	-1.32	53.6	0.30	0.00	Not required
	WLAN2.4G_Ant 2		0.16	15	-49.8	39.2	-1.36				
	LTE Band 25	Back	1.171	15	-12	-79	-1.42	90.5	1.38	0.02	Not required
	WLAN5G_Ant 1		0.21	15	24	4	-1.24				
	LTE Band 25	Back	1.171	15	-12	-79	-1.42	158.6	1.33	0.01	Not required
	WLAN5G_Ant 2		0.156	15	-28	78.8	-1.1				
	WLAN5G_Ant 1	Back	0.21	15	24	4	-1.24	91.1	0.37	0.00	Not required
	WLAN5G_Ant 2		0.156	15	-28	78.8	-1.1				
	WLAN2.4G_Ant 1	Back	0.142	15	3.6	35	-1.32	54.0	0.30	0.00	Not required
	WLAN5G_Ant 2		0.156	15	-28	78.8	-1.1				
	LTE Band 25	Back	1.171	15	-12	-79	-1.42	110.4	1.19	0.01	Not required
	Bluetooth_Ant 1		0.022	15	3.4	30.3	-0.62				
	WLAN5G_Ant 2	Back	0.156	15	-28	78.8	-1.1	57.8	0.18	0.00	Not required
	Bluetooth_Ant 1		0.022	15	3.4	30.3	-0.62				
	LTE Band 25	Back	1.171	15	-12	-79	-1.42	146.0	1.57	0.01	Not required
	RFID		0.398	15	-12	67	-1				
	WLAN2.4G_Ant 1	Back	0.142	15	3.6	35	-1.32	35.6	0.54	0.01	Not required
	RFID		0.398	15	-12	67	-1				
	WLAN2.4G_Ant 2	Back	0.16	15	-49.8	39.2	-1.36	46.9	0.56	0.01	Not required
	RFID		0.398	15	-12	67	-1				
	WLAN5G_Ant 1	Back	0.21	15	24	4	-1.24	72.6	0.61	0.01	Not required
	RFID		0.398	15	-12	67	-1				
	WLAN5G_Ant 2	Back	0.156	15	-28	78.8	-1.1	19.9	0.55	0.02	Not required
	RFID		0.398	15	-12	67	-1				
	Bluetooth_Ant 1	Back	0.022	15	3.4	30.3	-0.62	39.8	0.42	0.01	Not required
	RFID		0.398	15	-12	67	-1				



	Band	Position	SAR (W/kg)	Gap (mm)	SAR peak location (mm) X	Y	Z	3D distance (mm)	Summed SAR (W/kg)	SPLSR Results	Simultaneous SAR
Case 18	LTE Band 66	Back	1.084	15	-12	-77.4	-1.42	113.5	1.23	0.01	Not required
	WLAN2.4G_Ant 1		0.142	15	3.6	35	-1.32				
	LTE Band 66	Back	1.084	15	-12	-77.4	-1.42	122.6	1.24	0.01	Not required
	WLAN2.4G_Ant 2		0.16	15	-49.8	39.2	-1.36				
	WLAN2.4G_Ant 1	Back	0.142	15	3.6	35	-1.32	53.6	0.30	0.00	Not required
	WLAN2.4G_Ant 2		0.16	15	-49.8	39.2	-1.36				
	LTE Band 66	Back	1.084	15	-12	-77.4	-1.42	89.0	1.29	0.02	Not required
	WLAN5G_Ant 1		0.21	15	24	4	-1.24				
	LTE Band 66	Back	1.084	15	-12	-77.4	-1.42	157.0	1.24	0.01	Not required
	WLAN5G_Ant 2		0.156	15	-28	78.8	-1.1				
	WLAN5G_Ant 1	Back	0.21	15	24	4	-1.24	91.1	0.37	0.00	Not required
	WLAN5G_Ant 2		0.156	15	-28	78.8	-1.1				
	WLAN2.4G_Ant 1	Back	0.142	15	3.6	35	-1.32	54.0	0.30	0.00	Not required
	WLAN5G_Ant 2		0.156	15	-28	78.8	-1.1				
	LTE Band 66	Back	1.084	15	-12	-77.4	-1.42	108.8	1.11	0.01	Not required
	Bluetooth_Ant 1		0.022	15	3.4	30.3	-0.62				
	WLAN5G_Ant 2	Back	0.156	15	-28	78.8	-1.1	57.8	0.18	0.00	Not required
	Bluetooth_Ant 1		0.022	15	3.4	30.3	-0.62				
	LTE Band 66	Back	1.084	15	-12	-77.4	-1.42	144.4	1.48	0.01	Not required
	RFID		0.398	15	-12	67	-1				
	WLAN2.4G_Ant 1	Back	0.142	15	3.6	35	-1.32	35.6	0.54	0.01	Not required
	RFID		0.398	15	-12	67	-1				
	WLAN2.4G_Ant 2	Back	0.16	15	-49.8	39.2	-1.36	46.9	0.56	0.01	Not required
	RFID		0.398	15	-12	67	-1				
	WLAN5G_Ant 1	Back	0.21	15	24	4	-1.24	72.6	0.61	0.01	Not required
	RFID		0.398	15	-12	67	-1				
	WLAN5G_Ant 2	Back	0.156	15	-28	78.8	-1.1	19.9	0.55	0.02	Not required
	RFID		0.398	15	-12	67	-1				
	Bluetooth_Ant 1	Back	0.022	15	3.4	30.3	-0.62	39.8	0.42	0.01	Not required
	RFID		0.398	15	-12	67	-1				



Test Engineer： Lu Chen, Sheng Hsu, Max Jhuang, Chris Yang, Kevin Guo, and Hank Chiang

16. Uncertainty Assessment

Per KDB 865664 D01 SAR measurement 100MHz to 6GHz, when the highest measured 1-g SAR within a frequency band is < 1.5 W/kg and the measured 10-g SAR within a frequency band is < 3.75 W/kg. The expanded SAR measurement uncertainty must be ≤ 30%, for a confidence interval of k = 2. If these conditions are met, extensive SAR measurement uncertainty analysis described in IEEE Std 1528-2013 is not required in SAR reports submitted for equipment approval. For this device, the highest measured 1-g SAR is less 1.5W/kg. Therefore, the measurement uncertainty table is not required in this report.
Declaration of Conformity:
The test results with all measurement uncertainty excluded is presented in accordance with the regulation limits or requirements declared by manufacturers.
Comments and Explanations:
The declared of product specification for EUT presented in the report are provided by the manufacturer, and the manufacturer takes all the responsibilities for the accuracy of product specification.

17. References

[1] FCC 47 CFR Part 2 “Frequency Allocations and Radio Treaty Matters; General Rules and Regulations”

[2] ANSI/IEEE Std. C95.1-1992, “IEEE Standard for Safety Levels with Respect to Human Exposure to Radio Frequency Electromagnetic Fields, 3 kHz to 300 GHz”, September 1992

[3] IEEE Std. 1528-2013, “IEEE Recommended Practice for Determining the Peak Spatial-Average Specific Absorption Rate (SAR) in the Human Head from Wireless Communications Devices: Measurement Techniques”, Sep 2013

[4] SPEAG DASY System Handbook

[5] FCC KDB 248227 D01 v02r02, “SAR Guidance for IEEE 802.11 (WiFi) Transmitters”, Oct 2015.

[6] FCC KDB 447498 D01 v06, “Mobile and Portable Device RF Exposure Procedures and Equipment Authorization Policies”, Oct 2015

[7] FCC KDB 648474 D04 v01r03, “SAR Evaluation Considerations for Wireless Handsets”, Oct 2015.

[8] FCC KDB 941225 D01 v03r01, “3G SAR MEAUREMENT PROCEDURES”, Oct 2015

[9] FCC KDB 941225 D05 v02r05, “SAR Evaluation Considerations for LTE Devices”, Dec 2015

[10] FCC KDB 941225 D06 v02r01, "SAR Evaluation Procedures for Portable Devices with Wireless Router Capabilities", Oct 2015.

[11] FCC KDB 865664 D01 v01r04, "SAR Measurement Requirements for 100 MHz to 6 GHz", Aug 2015.

[12] FCC KDB 865664 D02 v01r02, “RF Exposure Compliance Reporting and Documentation Considerations” Oct 2015.