

FCC SAR TEST REPORT

FCC ID : UZ7MC3401
Equipment : Mobile Computer
Brand Name : ZEBRA
Model Name : MC3401
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 May 10, 2024 and testing was started from May 15, 2024 and completed on Jun. 04, 2024. 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. 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



Table of Contents

1. Statement of Compliance 4
2. Guidance Applied..... 4
3. Equipment Under Test (EUT) Information 5
3.1 General Information 5
4. RF Exposure Limits..... 7
4.1 Uncontrolled Environment..... 7
4.2 Controlled Environment..... 7
4.3 RF Exposure limit for above 6GHz..... 8
5. Specific Absorption Rate (SAR)..... 9
5.1 Introduction 9
5.2 SAR Definition..... 9
6. System Description and Setup10
6.1 Test Site Location.....10
6.2 E-Field Probe11
6.3 Data Acquisition Electronics (DAE)11
6.4 Phantom.....12
6.5 Device Holder.....13
7. Measurement Procedures14
7.1 Spatial Peak SAR Evaluation.....14
7.2 Power Reference Measurement.....15
7.3 Area Scan15
7.4 Zoom Scan.....16
7.5 Volume Scan Procedures.....16
7.6 Power Drift Monitoring.....16
8. Test Equipment List.....17
9. System Verification18
9.1 Tissue Verification18
9.2 System Performance Check Results.....19
9.3 PD System Performance Check Results.....20
10. RF Exposure Positions21
10.1 Body Worn Accessory21
10.2 Extremity Exposure21
10.3 Wireless Router.....22
11. WiFi/Bluetooth Output Power (Unit: dBm).....23
12. Antenna Location38
13. SAR Test Results39
13.1 Hotspot SAR41
13.2 Body Worn Accessory SAR.....42
13.3 Extremity SAR.....46
13.1 6GHz PD SAR Result49
13.2 Repeated SAR Measurement50
14. Simultaneous Transmission Analysis51
14.1 Hotspot Exposure Conditions.....52
14.2 Body-Worn Accessory Exposure Conditions53
14.3 Extremity Exposure Conditions54
15. Uncertainty Assessment55
16. References.....58
Appendix A. Plots of SAR System Performance Check
Appendix B. Plots of PD System Performance Check
Appendix C. Plots of High SAR Measurement
Appendix D. Plots of High PD Measurement
Appendix E. DASYS Calibration Certificate
Appendix F. Sensor Supplemental SAR Test Results and Power Verification
Appendix G. Test Setup Photos



History of this test report

Report No.	Version	Description	Issued Date
FA443061	01	Initial issue of report	Jun. 28, 2024



1. Statement of Compliance

The maximum results of Specific Absorption Rate (SAR) for **Zebra Technologies Corporation, Mobile Computer, MC3401**, are as follows.

Equipment Class	Frequency Band	Highest SAR Summary			Highest Simultaneous Transmission 1g SAR (W/kg)	Highest Simultaneous Transmission 10g SAR (W/kg)
		Hotspot	Body-worn	Extremity		
		1g SAR (W/kg)		10g SAR (W/kg)		
DTS	2.4GHz WLAN	0.52	0.33	0.32	1.27	1.02
NII	5GHz WLAN		1.10	2.74	1.27	2.75
6CD	6GHz WLAN		0.16	0.32	1.27	2.75
DSS	Bluetooth	0.01	< 0.01	< 0.01	1.25	0.98
DXX	NFC			0.02		2.75
Equipment Class	Frequency Band	Body-worn Reported APD (mW/cm ²)		Extremity Reported APD (mW/cm ²)	Reported PD (mW/cm ²)	
6CD	6GHz WLAN	0.14		0.75	0.75	
Date of Testing:		2024/05/15 ~ 2024/06/04				

Sporton Lab is accredited to ISO 17025 by Taiwan Accreditation Foundation 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) general population/uncontrolled exposure limits (1.6 W/kg for Partial-Body 1g SAR) specified in FCC 47 CFR part 2 (2.1093), Human Exposure to RF Radiation Limits (1.0 mW/cm²=10 W/m²) specified in FCC 47 CFR part 1.1310 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: Daisy Peng

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 248227 D01 802.11 Wi-Fi SAR v02r02
- FCC KDB 941225 D06 Hotspot Mode SAR v02r01
- IEC/IEEE 62209-1528:2020
- SPEAG DASY6 System Handbook
- SPEAG DASY6 Application Note (Interim Procedure for Device Operation at 6GHz-10GHz)



3. Equipment Under Test (EUT) Information

3.1 General Information

Product Feature & Specification	
Equipment Name	Mobile Computer
Brand Name	ZEBRA
Model Name	MC3401
FCC ID	UZ7MC3401
Wireless Technology and Frequency Range	WLAN 2.4 GHz Band: 2400 MHz ~ 2483.5 MHz WLAN 5.2 GHz Band: 5150 MHz ~ 5250 MHz WLAN 5.3 GHz Band: 5250 MHz ~ 5350 MHz WLAN 5.6 GHz Band: 5470 MHz ~ 5725 MHz WLAN 5.8 GHz Band: 5725 MHz ~ 5850 MHz WLAN 6E: 5925 MHz ~ 6425 MHz, 6425 MHz ~ 6525 MHz, 6525 MHz ~ 6875 MHz, 6875 MHz ~ 7125 MHz Bluetooth: 2400 MHz ~ 2483.5 MHz NFC : 13.56 MHz
Mode	WLAN: 802.11a/b/g/n/ac/ax HT20/HT40/VHT20/VHT40/VHT80/VHT160/HE20/HE40/HE80/HE160 Bluetooth BR/EDR/LE NFC: ASK
HW Version	EV
MFD	23MAR24
EUT Stage	Identical Prototype

Remark:

- The device 2.4GHz WLAN/BT support hotspot operation via 5GHz receive signal.
- The SKU List is below table. For Brick Type, SKU13 as main test and SKU8 will spot check from SKU13. For Gun Type, SKU9 as mail test and SKU5/6/7/11 will spot check from SKU9.
- There are three batteries. RF exposure is selected battery 1 as main test and battery2/3 will spot check worst case found battery 1.
- The device support motion sensor detection and the power verification include in appendix E, for the power reduction logic include in operational description.

MC34 WLAN SKU list							
Configuration	SKU5	SKU6	SKU7	SKU8	SKU9	SKU11	SKU13
WW/WL	WLAN	WLAN	WLAN	WLAN	WLAN	WLAN	WLAN
Form Factor	FA	FA	FA	FA	FA	FA	FA
SKU	Prem	Prem	Prem	Prem	Prem+	Prem+	Prem+
Brick / Gun	Gun	Gun	Gun	Brick	Gun	Gun	Brick
DDR size	6GB	6GB	6GB	6GB	6GB	6GB	6GB
UFS size	64GB	64GB	64GB	64GB	128GB	128GB	128GB
Scan engine	SE4770	SE5500	SE5800	SE4770	SE5500	SE5800	SE5800
FF Camera	None	None	None	None	5MP (PN)	5MP (PN)	5MP (PN)
RF Camera					13MP (PN)	13MP (PN)	13MP (PN)
Keypad	38	38	47	38	47	47	38
Battery	7000mAh	7000mAh	7000mAh	7000mAh	7000mAh	7000mAh	7000mAh
Region (ROW or NA)	RW	RW	NA	RW	RW	RW	RW



Accessories Information				
Adapter 1 USB Wall Charger	Brand Name	Zebra	Model Number	PWR-WUA5V12W0US
Battery 1 Standard Battery (7000mAh)	Brand Name	Zebra	Model Number	BT-000375
Battery 2 Standard Battery (7000mAh)	Brand Name	Zebra	Model Number	BT-000375
Battery 2 BLE Battery (7000mAh)	Brand Name	Zebra	Model Number	BT-000444
Type C USB Cable	Brand Name	Zebra	Model Number	CBL-TC5X-USBC2A-01
USB Cable Cup	Brand Name	Zebra	Model Number	CBL-MC33-USBCHG-01
Soft Holster for Gun Type	Brand Name	Zebra	Model Number	SG-MC3021212-01R
Soft Holster for Brick Type	Brand Name	Zebra	Model Number	SG-MC3X-SHLSTB-01
USB-C PTT Headset	Brand Name	Zebra	Model Number	HDST-USBC-PTT1-01
USB-C to 3.5mm adapter	Brand Name	Zebra	Model Number	ADP-USBC-35MM1-01
3.5mm To Quick Disconnect (QD) Adapter Cable	Brand Name	Zebra	Model Number	ADP-35M-QDCBL1-01
3.5mm PTT Headset	Brand Name	Zebra	Model Number	HDST-35MM-PTT1-01
3.5mm PTT HS2100 Headset	Brand Name	Zebra	Model Number	HS2100
Quick Disconnect (QD) Cable	Brand Name	Zebra	Model Number	CBL-HS2100-QDC1-01



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.



4.3 RF Exposure limit for above 6GHz

According to ANSI/IEEE C95.1-1992, the criteria listed in Table 1 shall be used to evaluate the environmental impact of human exposure to radio frequency (RF) radiation as specified in §1.1310.

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

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



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:

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

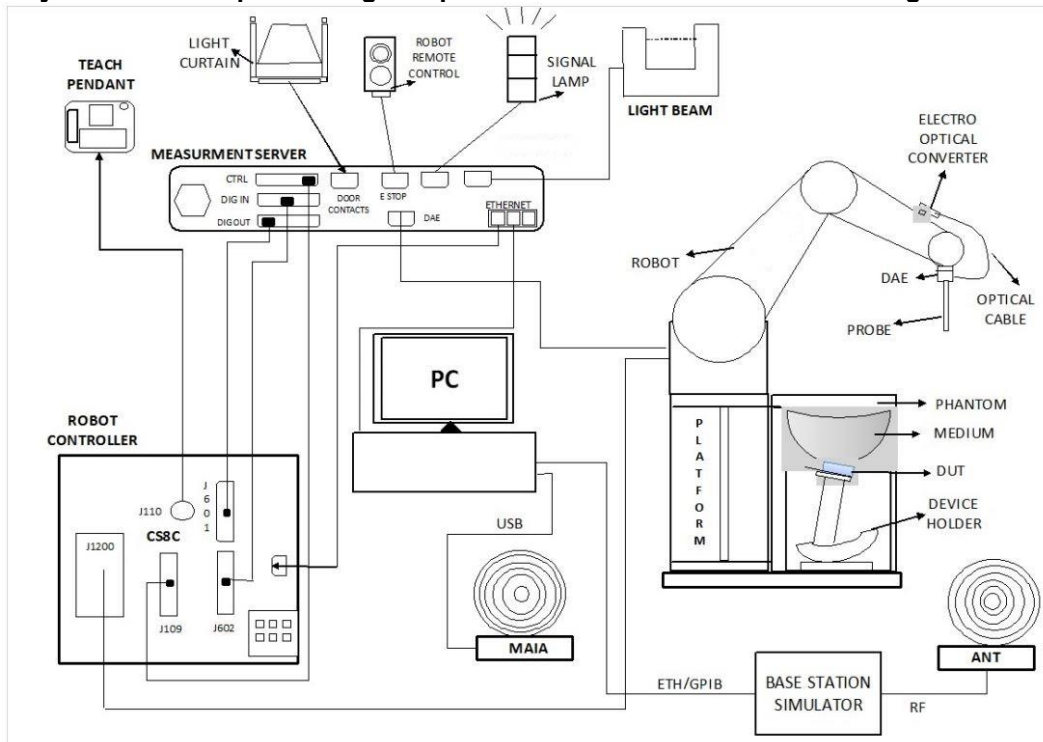
SAR is expressed in units of Watts per kilogram (W/kg)

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

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

6. System Description and Setup

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



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

Laboratory	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	SAR18-HY	SAR21-HY
	SAR04-HY	SAR05-HY	SAR11-HY	SAR12-HY	SAR16-HY	SAR19-HY	SAR22-HY
	SAR06-HY	SAR10-HY	SAR13-HY	SAR14-HY	SAR17-HY	SAR20-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	4 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 μ W/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	4 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 μ W/g – >100 mW/g Linearity: ± 0.2 dB (noise: typically <1 μ W/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

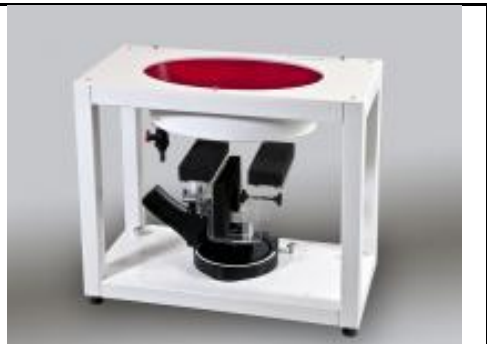
6.4 Phantom

<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:

- (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 from the measurement grid to the high-resolution grid
- (e) Extrapolation of the entire 3-D field distribution to the phantom surface over the distance from sensor to surface
- (f) Calculation of the averaged SAR within masses of 1g and 10g

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 dB) 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	$\frac{1}{2} \cdot \delta \cdot \ln(2) \pm 0.5$ mm
Maximum probe angle from probe axis to phantom surface normal at the measurement location	30° ± 1°	20° ± 1°
Maximum area scan spatial resolution: $\Delta x_{Area}, \Delta y_{Area}$	≤ 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: $\Delta x_{Zoom}, \Delta y_{Zoom}$		≤ 2 GHz: ≤ 8 mm 2 – 3 GHz: ≤ 5 mm*	3 – 4 GHz: ≤ 5 mm* 4 – 6 GHz: ≤ 4 mm*	
Maximum zoom scan spatial resolution, normal to phantom surface	uniform grid: $\Delta z_{Zoom}(n)$	≤ 5 mm	3 – 4 GHz: ≤ 4 mm 4 – 5 GHz: ≤ 3 mm 5 – 6 GHz: ≤ 2 mm	
	graded grid	$\Delta z_{Zoom}(1)$: between 1 st two points closest to phantom surface	≤ 4 mm	3 – 4 GHz: ≤ 3 mm 4 – 5 GHz: ≤ 2.5 mm 5 – 6 GHz: ≤ 2 mm
		$\Delta z_{Zoom}(n>1)$: between subsequent points	$\leq 1.5 \cdot \Delta z_{Zoom}(n-1)$	
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 <i>reported</i> SAR from the <i>area scan based 1-g SAR estimation</i> 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	2450MHz System Validation Kit ⁽²⁾	D2450V2	736	Aug. 17, 2021	Aug. 14, 2024
SPEAG	2450MHz System Validation Kit ⁽²⁾	D2450V2	929	Nov. 21, 2022	Nov. 18, 2025
SPEAG	5GHz System Validation Kit ⁽²⁾	D5GHzV2	1006	May. 25, 2023	May. 23, 2025
SPEAG	6500MHz System Validation Kit	D6.5GHzV2	1083	Oct. 20, 2023	Oct. 19, 2024
SPEAG	13MHz System Validation Kit ⁽²⁾	CLA13	1022	Sep. 01, 2022	Aug. 30, 2024
SPEAG	5G Verification Source	10GHz	1020	Jan. 18, 2024	Jan. 17, 2025
SPEAG	EUmmWV Probe Tip Protection	EUmmWV3	9424	Mar. 12, 2024	Mar. 11, 2025
SPEAG	EUmmWV Probe Tip Protection	EUmmWV4	9461	Oct. 12, 2023	Oct. 11, 2024
SPEAG	Data Acquisition Electronics	DAE4	778	Jan. 22, 2024	Jan. 21, 2025
SPEAG	Data Acquisition Electronics	DAE4	853	Jul. 14, 2023	Jul. 13, 2024
SPEAG	Data Acquisition Electronics	DAE4ip	1823	Jul. 31, 2023	Jul. 30, 2024
SPEAG	Dosimetric E-Field Probe	EX3DV4	3642	Apr. 25, 2024	Apr. 24, 2025
SPEAG	Dosimetric E-Field Probe	EX3DV4	7822	Aug. 02, 2023	Aug. 01, 2024
Testo	Hygro meter	608-H1	45196600	Nov. 02, 2023	Nov. 01, 2024
R&S	BT Base Station	CBT	101136	Oct. 22, 2023	Oct. 21, 2024
SPEAG	Device Holder	N/A	N/A	N/A	N/A
Anritsu	Signal Generator	MG3710A	6201502524	Sep. 27, 2023	Sep. 26, 2024
Keysight	ENA Network Analyzer	E5071C	MY46104758	Oct. 30, 2023	Oct. 29, 2024
SPEAG	Dielectric Probe Kit	DAK-3.5	1126	Sep. 19, 2023	Sep. 18, 2024
SPEAG	Dielectric Probe Kit	DAK-12	1156	Jul. 17, 2023	Jul. 16, 2024
LINE SEIKI	Digital Thermometer	DTM3000-spezial	3690	Aug. 09, 2023	Aug. 08, 2024
Anritsu	Power Meter	ML2495A	1419002	Aug. 17, 2023	Aug. 16, 2024
Anritsu	Power Sensor	MA2411B	1911176	Aug. 18, 2023	Aug. 17, 2024
Anritsu	Spectrum Analyzer	MS2830A	6201396378	Jul. 10, 2023	Jul. 09, 2024
Mini-Circuits	Power Amplifier	ZVE-8G+	6418	Oct. 16, 2023	Oct. 15, 2024
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°C to 25°C, 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°C to 25°C and within ± 2°C 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. (°C)	Conductivity (σ)	Permittivity (ε _r)	Conductivity Target (σ)	Permittivity Target (ε _r)	Delta (σ) (%)	Delta (ε _r) (%)	Limit (%)	Date
13	22.6	0.757	54.635	0.75	55.00	0.93	-0.66	±5	2024/6/4
2450	22.4	1.790	39.100	1.80	39.20	-0.56	-0.26	±5	2024/5/17
2450	22.6	1.840	38.800	1.80	39.20	2.22	-1.02	±5	2024/5/20
2450	22.3	1.840	39.400	1.80	39.20	2.22	0.51	±5	2024/5/27
2450	22.5	1.850	39.500	1.80	39.20	2.78	0.77	±5	2024/5/28
5250	22.5	4.690	35.600	4.71	35.95	-0.42	-0.97	±5	2024/5/15
5600	22.5	5.030	35.100	5.07	35.50	-0.79	-1.13	±5	2024/5/15
5750	22.6	5.310	36.100	5.22	35.35	1.72	2.12	±5	2024/5/16
6500	22.6	6.100	34.500	6.07	34.50	0.49	0.00	±5	2024/5/18

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.

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 (%)	Measured 10g SAR (W/kg)	Targeted 10g SAR (W/kg)	Normalized 10g SAR (W/kg)	Deviation (%)	Test Site
2024/6/4	13	1000	CLA13-1022	EX3DV4 - SN3642	DAE4 Sn778	0.603	0.560	0.603	7.68	0.356	0.349	0.356	1.71	SAR-05
2024/5/17	2450	100	D2450V2-929	EX3DV4 - SN7822	DAE4ip Sn1823	5.340	52.400	53.4	1.91	2.530	24.700	25.3	2.43	SAR-04
2024/5/20	2450	50	D2450V2-736	EX3DV4 - SN7822	DAE4ip Sn1823	2.460	54.200	49.2	-9.23	1.150	25.300	23	-9.09	SAR-04
2024/5/27	2450	50	D2450V2-736	EX3DV4 - SN7822	DAE4ip Sn1823	2.480	54.200	49.6	-8.49	1.170	25.300	23.4	-7.51	SAR-04
2024/5/28	2450	50	D2450V2-736	EX3DV4 - SN7822	DAE4ip Sn1823	2.490	54.200	49.8	-8.12	1.170	25.300	23.4	-7.51	SAR-04
2024/5/15	5250	100	D5GHzV2-1006-5250	EX3DV4 - SN7822	DAE4ip Sn1823	7.620	81.200	76.2	-6.16	2.210	23.200	22.1	-4.74	SAR-04
2024/5/15	5600	100	D5GHzV2-1006-5600	EX3DV4 - SN7822	DAE4ip Sn1823	8.510	84.700	85.1	0.47	2.450	24.200	24.5	1.24	SAR-04
2024/5/16	5750	100	D5GHzV2-1006-5750	EX3DV4 - SN7822	DAE4ip Sn1823	7.810	80.900	78.1	-3.46	2.210	22.900	22.1	-3.49	SAR-04
2024/5/18	6500	100	D6.5GHzV2-1083	EX3DV4 - SN7822	DAE4ip Sn1823	28.600	292.000	286	-2.05	5.450	54.000	54.5	0.93	SAR-04

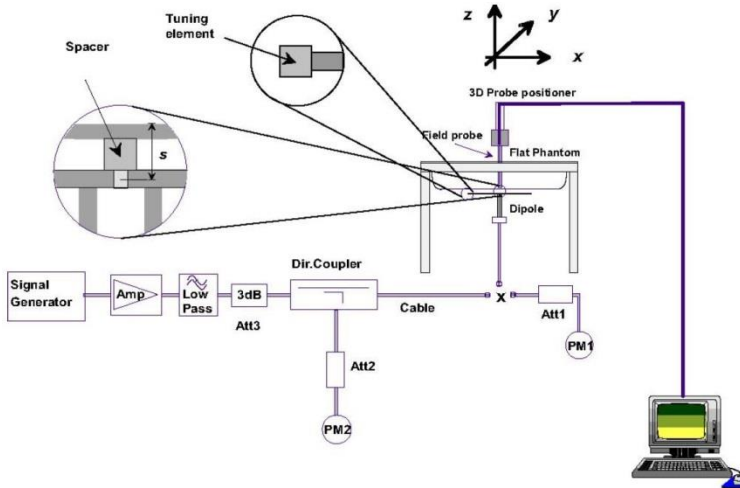


Fig 8.3.1 System Performance Check Setup



Fig 8.3.2 Setup Photo

9.3 PD System Performance Check Results

The system was verified to be within ± 0.66 dB of the power density targets on the calibration certificate according to the test system specification in the user’s manual and calibration facility recommendation. The 0.66 dB deviation threshold represents the expanded uncertainty for system performance checks using SPEAG’s mmWave verification sources. The same spatial resolution and measurement region used in the source calibration was applied during the system check. The measured power density distribution of verification source was also confirmed through visual inspection to have no noticeable differences, both spatially (shape) and numerically (level) from the distribution provided by the manufacturer, per November 2017 TCBC Workshop Notes

Test Site	Frequency (GHz)	5G Verification Source	Probe S/N	DAE S/N	Distance (mm)	Measured 4 cm ² (W/m ²)	Targeted 4 cm ² (W/m ²)	Deviation (dB)	Date
SAR10	10G	10GHz_1020	9461	853	10	57.9	55.8	0.16	2024/5/15
SAR04	10G	10GHz_1020	9424	1823	10	59.8	55.8	0.30	2024/5/27

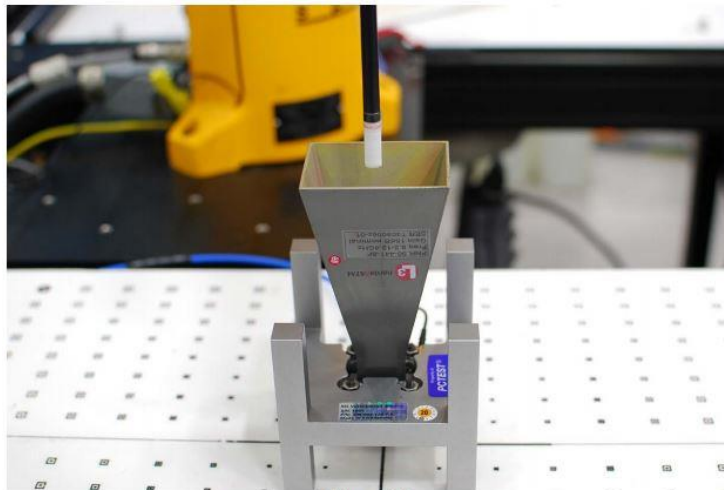


Figure 4-3
System Verification Setup Photo

System Performance Check Setup

10. RF Exposure Positions

10.1 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 $> 1.2 \text{ W/kg}$, the highest reported SAR configuration for that wireless mode and frequency band should be repeated for that body-worn accessory with a headset attached to the handset.

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

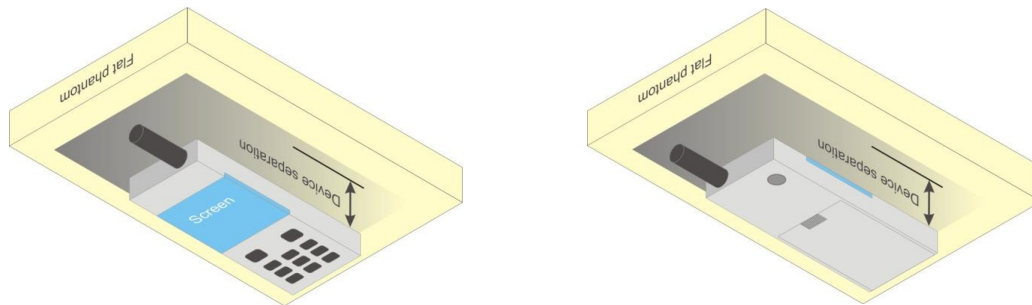


Fig 9.4 Body Worn Position

10.2 Extremity Exposure

For smart phones with a display diagonal dimension $> 15.0 \text{ cm}$ or an overall diagonal dimension $> 16.0 \text{ cm}$ that provide similar mobile web access and multimedia support found in mini-tablets or UMPC mini-tablets that support voice calls next to the ear, According to KDB648474 D04v01r03, the following phablet procedures should be applied to evaluate SAR compliance for each applicable wireless modes and frequency band. Devices marketed as phablets, regardless of form factors and operating characteristics must be tested as a phablet to determine SAR compliance

1. The normally required head and body-worn accessory SAR test procedures for handsets, including hotspot mode, must be applied.
2. The UMPC mini-tablet procedures must also be applied to test the SAR of all surfaces and edges with an antenna located at $\leq 25 \text{ mm}$ from that surface or edge, in direct contact with a flat phantom, for 10-g extremity SAR according to the body-equivalent tissue dielectric parameters in KDB 865664 to address interactive hand use exposure conditions.6 The UMPC mini-tablet 1-g SAR at 5 mm is not required. When hotspot mode applies, 10-g extremity SAR is required only for the surfaces and edges with hotspot mode 1-g reported SAR $> 1.2 \text{ W/kg}$.



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

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



11. WiFi/Bluetooth Output Power (Unit: dBm)

General Note:

1. For each antenna, maximum transmit power in SISO operation is equal to the power in MIMO operation, RF exposure was perform MIMO mode only
2. Additional 2.4GHz WLAN SISO operation was using perform Sim-Tx analysis with Bluetooth transmitter.
3. The maximum output power specified for production units are determined for all applicable 802.11 transmission modes in each standalone and aggregated frequency band. Maximum output power is measured for the highest maximum output power configuration(s) in each frequency band according to the default power measurement procedures. For "Not required", SAR Test reduction was applied from KDB 248227 guidance, Sec. 2.1, b), 1) when the same maximum power is specified for multiple transmission modes in a frequency band, the largest channel bandwidth, lowest order modulation, lowest data rate and lowest order 802.11a/g/n/ac mode is used for SAR measurement, on the highest measured output power channel in the initial test configuration, additional output power measurements were not necessary.
4. Per KDB 248227 D01v02r02, SAR test reduction is determined according to 802.11 transmission mode configurations and certain exposure conditions with multiple test positions. In the 2.4 GHz band, separate SAR procedures are applied to DSSS and OFDM configurations to simplify DSSS test requirements. For OFDM, in both 2.4 and 5 GHz bands, an initial test configuration must be determined for each standalone and aggregated frequency band, according to the transmission mode configuration with the highest maximum output power specified for production units to perform SAR measurements. If the same highest maximum output power applies to different combinations of channel bandwidths, modulations and data rates, additional procedures are applied to determine which test configurations require SAR measurement. When applicable, an initial test position may be applied to reduce the number of SAR measurements required for next to the ear, UMPC mini-tablet or hotspot mode configurations with multiple test positions.
5. For 2.4 GHz 802.11b DSSS, either the initial test position procedure for multiple exposure test positions or the DSSS procedure for fixed exposure position is applied; these are mutually exclusive. For 2.4 GHz and 5 GHz OFDM configurations, the initial test configuration is applied to measure SAR using either the initial test position procedure for multiple exposure test position configurations or the initial test configuration procedures for fixed exposure test conditions. Based on the reported SAR of the measured configurations and maximum output power of the transmission mode configurations that are not included in the initial test configuration, the subsequent test configuration and initial test position procedures are applied to determine if SAR measurements are required for the remaining OFDM transmission configurations. In general, the number of test channels that require SAR measurement is minimized based on maximum output power measured for the test sample(s).
6. For OFDM transmission configurations in the 2.4 GHz and 5 GHz bands, When the same maximum power is specified for multiple transmission modes in a frequency band, the largest channel bandwidth, lowest order modulation, lowest data rate and lowest order 802.11a/g/n/ac mode is used for SAR measurement, on the highest measured output power channel for each frequency band.
7. DSSS and OFDM configurations are considered separately according to the required SAR procedures. SAR is measured in the initial test position using the 802.11 transmission mode configuration required by the DSSS procedure or initial test configuration and subsequent test configuration(s) according to the OFDM procedures. 18 The initial test position procedure is described in the following:
 - a. When the reported SAR of the initial test position is ≤ 0.4 W/kg, further SAR measurement is not required for the other test positions in that exposure configuration and 802.11 transmission mode combinations within the frequency band or aggregated band.
 - b. When the reported SAR of the test position is > 0.4 W/kg, SAR is repeated for the 802.11 transmission mode configuration tested in the initial test position to measure the subsequent next closet/smallest test separation distance and maximum coupling test position on the highest maximum output power channel, until the report SAR is ≤ 0.8 W/kg or all required test position are tested.
 - c. For all positions/configurations, when the reported SAR is > 0.8 W/kg, SAR is measured for these test positions/configurations on the subsequent next highest measured output power channel(s) until the reported SAR is ≤ 1.2 W/kg or all required channels are tested.
8. Per 201904 TCBC workshops, General principles of FCC KDB Publication 248227 D01 can be applied to determine the SAR Initial Test Configurations and test reduction for 802.11ax SAR testing. For the table below the 802.11ax maximum power is SU (non-OFDMA), and the SU maximum power also higher than RU (OFDMA)
9. In applying the test guidance, the IEEE 802.11 mode with the maximum output power (out of all modes) should be considered for testing
10. For modes with the same maximum output power, the guidance from section 5.3.2 a) of FCC KDB Publication 248227 D01 should be applied, with 802.11ax being considered as the highest 802.11 mode for the appropriate frequency bands
11. When SAR testing for 802.11ax is required
 - a. If the maximum output power is highest for OFDMA scenarios, choose the tone size with the maximum number of tones and the highest maximum output power
 - b. Otherwise, consider the fully allocated channel for SAR testing
 - c. When SAR testing is required on RU sizes less than the fully allocated channel, use the RU number closest to the middle of the channel, choosing the higher RU number when two RUs are equidistant to the middle of the channel



Index 0

<2.4GHz WLAN_Index 0>																	
	Mode	Channel	Frequency (MHz)	Ant 6			Ant 7			Ant 6+7 (6)		Ant 6+7 (7)		Ant 6+7			
				Average power (dBm)	Tune-Up Limit	Duty Cycle %	Average power (dBm)	Tune-Up Limit	Duty Cycle %	Average power (dBm)	Tune-Up Limit	Average power (dBm)	Tune-Up Limit	Average power (dBm)	Tune-Up Limit	Duty Cycle %	
2.4GHz WLAN	802.11b 1Mbps	1	2412	20.48	20.50	97.87	19.68	20.50	97.87	19.98	20.50	20.38	20.50	23.19	23.50	97.87	
		6	2437	19.78	20.00		19.68	20.00		19.38	20.00	19.78	20.00	22.59	23.00		
		11	2462	18.88	19.00		18.78	19.00		17.98	19.00	18.68	19.00	21.35	22.00		
	802.11g 6Mbps	1	2412	Not Required	20.00	Not Required	Not Required	20.00	Not Required	Not Required	20.00	Not Required	20.00	Not Required	20.00	Not Required	23.00
		6	2437		20.00			20.00			20.00		20.00		23.00		
		11	2462		18.00			18.00			18.00		18.00		21.00		
	802.11n-HT20 MCS0	1	2412		18.00			18.00			18.00		18.00		21.00		
		6	2437		20.00			20.00			20.00		20.00		23.00		
		11	2462		17.50			17.50			17.50		17.50		20.50		
	802.11ac-VHT20 MCS0	1	2412		18.00			18.00			18.00		18.00		21.00		
		6	2437		20.00			20.00			20.00		20.00		23.00		
		11	2462		17.50			17.50			17.50		17.50		20.50		
	802.11ax-HE20 MCS0	1	2412		18.00			18.00			18.00		18.00		21.00		
		6	2437		20.00			20.00			20.00		20.00		23.00		
		11	2462		17.50			17.50			17.50		17.50		20.50		

<5.2GHz WLAN_Index 0>																
	Mode	Channel	Frequency (MHz)	Ant 6			Ant 7			Ant 6+7 (6)		Ant 6+7 (7)		Ant 6+7		
				Average power (dBm)	Tune-Up Limit	Duty Cycle %	Average power (dBm)	Tune-Up Limit	Duty Cycle %	Average power (dBm)	Tune-Up Limit	Average power (dBm)	Tune-Up Limit	Average power (dBm)	Tune-Up Limit	Duty Cycle %
5.2GHz WLAN	802.11a 6Mbps	36	5180	Not Required	18.00	Not Required	Not Required	18.00	Not Required	Not Required	18.00	Not Required	18.00	Not Required	21.00	Not Required
		40	5200		20.00			20.00			20.00		23.00			
		44	5220		20.00			20.00			20.00		23.00			
		48	5240		20.00			20.00			20.00		23.00			
	802.11n-HT20 MCS0	36	5180		18.00			18.00			18.00		21.00			
		40	5200		20.00			20.00			20.00		23.00			
		44	5220		20.00			20.00			20.00		23.00			
		48	5240		20.00			20.00			20.00		23.00			
	802.11n-HT40 MCS0	38	5190		16.00			16.00			16.00		19.00			
		46	5230		19.00			19.00			19.00		22.00			
	802.11ac-VHT20 MCS0	36	5180		18.00			18.00			18.00		21.00			
		40	5200		20.00			20.00			20.00		23.00			
		44	5220		20.00			20.00			20.00		23.00			
		48	5240		20.00			20.00			20.00		23.00			
	802.11ac-VHT40 MCS0	38	5190		16.00			16.00			16.00		19.00			
		46	5230		19.00			19.00			19.00		22.00			
	802.11ac-VHT80 MCS0	42	5210		15.50			15.50			15.50		18.50			
	802.11ax-HE20 MCS0	36	5180		18.00			18.00			18.00		21.00			
		40	5200		20.00			20.00			20.00		23.00			
		44	5220		20.00			20.00			20.00		23.00			
		48	5240		20.00			20.00			20.00		23.00			
	802.11ax-HE40 MCS0	38	5190		16.00			16.00			16.00		19.00			
		46	5230		19.00			19.00			19.00		22.00			
	802.11ax-HE80 MCS0	42	5210		15.50			15.50			15.50		18.50			



<5.3GHz WLAN_Index 0>																				
				Ant 6			Ant 7			Ant 6+7 (6)		Ant 6+7 (7)		Ant 6+7						
	Mode	Channel	Frequency (MHz)	Average power (dBm)	Tune-Up Limit	Duty Cycle %	Average power (dBm)	Tune-Up Limit	Duty Cycle %	Average power (dBm)	Tune-Up Limit	Average power (dBm)	Tune-Up Limit	Average power (dBm)	Tune-Up Limit	Duty Cycle %				
5.3GHz WLAN	802.11a 6Mbps	52	5260	Not Required	20.00	Not Required	Not Required	20.00	Not Required	19.40	20.00	19.60	20.00	22.51	23.00	100.00				
		56	5280		20.00			20.00		19.40	20.00	19.60	20.00	22.51	23.00					
		60	5300		19.50			19.50		19.30	19.50	19.00	19.50	22.16	22.50					
		64	5320		17.00			17.00		16.90	17.00	16.70	17.00	19.81	20.00					
	802.11n-HT20 MCS0	52	5260		20.00			20.00		20.00	20.00	20.00	20.00	20.00	20.00	20.00	20.00	20.00	23.00	Not Required
		56	5280		20.00			20.00		20.00	20.00	20.00	20.00	20.00	20.00	20.00	20.00	23.00		
		60	5300		19.50			19.50		19.50	19.50	19.50	19.50	19.50	19.50	19.50	19.50	22.50		
		64	5320		18.00			18.00		18.00	18.00	18.00	18.00	18.00	18.00	18.00	18.00	21.00		
	802.11n-HT40 MCS0	54	5270		19.00			19.00		19.00	19.00	19.00	19.00	19.00	19.00	19.00	19.00	19.00	22.00	
		62	5310		15.50			15.50		15.50	15.50	15.50	15.50	15.50	15.50	15.50	15.50	18.50		
	802.11ac-VHT20 MCS0	52	5260		20.00			20.00		20.00	20.00	20.00	20.00	20.00	20.00	20.00	20.00	20.00	23.00	
		56	5280		20.00			20.00		20.00	20.00	20.00	20.00	20.00	20.00	20.00	20.00	20.00	23.00	
		60	5300		19.50			19.50		19.50	19.50	19.50	19.50	19.50	19.50	19.50	19.50	22.50		
	802.11ac-VHT40 MCS0	54	5270		19.00			19.00		19.00	19.00	19.00	19.00	19.00	19.00	19.00	19.00	19.00	22.00	
		62	5310		15.50			15.50		15.50	15.50	15.50	15.50	15.50	15.50	15.50	15.50	18.50		
	802.11ac-VHT80 MCS0	58	5290		15.00			15.00		15.00	15.00	15.00	15.00	15.00	15.00	15.00	15.00	15.00	18.00	
	802.11ac-VHT160 MCS0	50	5250		13.50			13.50		13.50	13.50	13.50	13.50	13.50	13.50	13.50	13.50	13.50	16.50	
	802.11ax-HE20 MCS0	52	5260		20.00			20.00		20.00	20.00	20.00	20.00	20.00	20.00	20.00	20.00	20.00	23.00	
		56	5280		20.00			20.00		20.00	20.00	20.00	20.00	20.00	20.00	20.00	20.00	20.00	23.00	
		60	5300		19.50			19.50		19.50	19.50	19.50	19.50	19.50	19.50	19.50	19.50	22.50		
64		5320	18.00	18.00	18.00	18.00	18.00	18.00	18.00	18.00	18.00	18.00	21.00							
802.11ax-HE40 MCS0	54	5270	19.00	19.00	19.00	19.00	19.00	19.00	19.00	19.00	19.00	19.00	19.00	22.00						
	62	5310	15.50	15.50	15.50	15.50	15.50	15.50	15.50	15.50	15.50	15.50	18.50							
802.11ax-HE80 MCS0	58	5290	15.00	15.00	15.00	15.00	15.00	15.00	15.00	15.00	15.00	15.00	15.00	18.00						
802.11ax-HE160 MCS0	50	5250	13.50	13.50	13.50	13.50	13.50	13.50	13.50	13.50	13.50	13.50	13.50	16.50						



<5.5GHz WLAN_Index 0>																
				Ant 6			Ant 7			Ant 6+7 (6)		Ant 6+7 (7)		Ant 6+7		
Mode	Channel	Frequency (MHz)	Average power (dBm)	Tune-Up Limit	Duty Cycle %	Average power (dBm)	Tune-Up Limit	Duty Cycle %	Average power (dBm)	Tune-Up Limit	Average power (dBm)	Tune-Up Limit	Average power (dBm)	Tune-Up Limit	Duty Cycle %	
802.11a 6Mbps	100	5500	Not Required	18.50	Not Required	Not Required	18.50	Not Required	Not Required	18.50	Not Required	18.50	Not Required	21.50	Not Required	
	116	5580		20.50			20.50									
	124	5620		20.50			20.50									
	132	5660		17.00			17.00									
	144	5720		20.00			20.00									
	100	5500		18.50			18.50									
	116	5580		20.50			20.50									
	124	5620		20.50			20.50									
	132	5660		18.00			18.00									
	144	5720		20.00			20.00									
802.11n-HT20 MCS0	102	5510	Not Required	18.00	Not Required	Not Required	18.00	Not Required	Not Required	17.70	18.00	17.70	18.00	20.71	21.00	
	110	5550		19.50			19.50									
	126	5630		19.50			19.50									
	134	5670		19.50			19.50									
	142	5710		20.50			20.50									
802.11n-HT40 MCS0	102	5510	Not Required	18.00	Not Required	Not Required	18.00	Not Required	Not Required	19.10	19.50	19.10	19.50	22.11	22.50	
	110	5550		19.50			19.50									
	126	5630		19.50			19.50									
	134	5670		19.50			19.50									
	142	5710		20.50			20.50									
802.11ac-VHT20 MCS0	100	5500	Not Required	18.50	Not Required	Not Required	18.50	Not Required	Not Required	18.50	Not Required	18.50	Not Required	21.50	Not Required	
	116	5580		20.50			20.50									
	124	5620		20.50			20.50									
	132	5660		18.00			18.00									
	144	5720		20.00			20.00									
802.11ac-VHT40 MCS0	102	5510	Not Required	18.00	Not Required	Not Required	18.00	Not Required	Not Required	19.50	Not Required	19.50	Not Required	22.50	Not Required	
	110	5550		19.50			19.50									
	126	5630		19.50			19.50									
	134	5670		20.50			20.50									
802.11ac-VHT80 MCS0	106	5530	Not Required	15.50	Not Required	Not Required	15.50	Not Required	Not Required	15.50	Not Required	15.50	Not Required	18.50	Not Required	
	122	5610		18.50			18.50									
	138	5690		18.50			18.50									
802.11ac-VHT160 MCS0	114	5570	Not Required	13.00	Not Required	Not Required	13.00	Not Required	Not Required	13.00	Not Required	13.00	Not Required	16.00	Not Required	
802.11ax-HE20 MCS0	100	5500		18.50			18.50									
	116	5580		20.50			20.50									
	124	5620		20.50			20.50									
	132	5660		18.00			18.00									
	144	5720		20.00			20.00									
802.11ax-HE40 MCS0	102	5510		18.00			18.00									
	110	5550		19.50			19.50									
	126	5630		19.50			19.50									
	134	5670		19.50			19.50									
	142	5710	20.50	20.50												
802.11ax-HE80 MCS0	106	5530	15.50	15.50												
	122	5610	18.50	18.50												
	138	5690	18.50	18.50												
802.11ax-HE160 MCS0	114	5570	Not Required	13.00	Not Required	Not Required	13.00	Not Required	Not Required	13.00	Not Required	13.00	Not Required	16.00	Not Required	

5.5GHz WLAN



<5.8GHz WLAN_Index 0>																																																																																																												
5.8GHz WLAN	Mode	Channel	Frequency (MHz)	Ant 6			Ant 7			Ant 6+7 (6)		Ant 6+7 (7)		Ant 6+7																																																																																														
				Average power (dBm)	Tune-Up Limit	Duty Cycle %	Average power (dBm)	Tune-Up Limit	Duty Cycle %	Average power (dBm)	Tune-Up Limit	Average power (dBm)	Tune-Up Limit	Average power (dBm)	Tune-Up Limit	Duty Cycle %																																																																																												
5.8GHz WLAN	802.11a 6Mbps	149	5745	Not Required	21.50	Not Required	Not Required	Not Required	21.50	Not Required	21.20	21.50	21.40	21.50	24.31	24.50	100.00																																																																																											
		157	5785		21.50				21.50		21.20	21.50	21.40	21.50	24.31	24.50																																																																																												
		165	5825		22.00				22.00		21.20	22.00	21.70	22.00	24.47	25.00																																																																																												
	802.11n-HT20 MCS0	149	5745		21.00				21.00		Not Required	Not Required	Not Required	Not Required	Not Required	Not Required	Not Required	Not Required	Not Required	Not Required	Not Required	Not Required	Not Required																																																																																					
		157	5785		21.00				21.00															21.00	21.00	21.00	21.00	24.00	24.00																																																																															
		165	5825		21.00				21.00															21.00	21.00	21.00	21.00	24.00	24.00																																																																															
	802.11n-HT40 MCS0	151	5755		19.50				19.50															Not Required	Not Required	Not Required	Not Required	Not Required	Not Required	Not Required	Not Required	Not Required	Not Required	Not Required	Not Required	Not Required																																																																								
		159	5795		20.00				20.00																												20.00	20.00	20.00	20.00	23.00	23.00																																																																		
	802.11ac-VHT20 MCS0	149	5745		21.00				21.00																												Not Required	Not Required	Not Required	Not Required	Not Required	Not Required	Not Required	Not Required	Not Required	Not Required	Not Required	Not Required	Not Required																																																											
		157	5785		21.00				21.00																																									21.00	21.00	21.00	21.00	24.00	24.00																																																					
		165	5825		21.00				21.00																																									21.00	21.00	21.00	21.00	24.00	24.00																																																					
	802.11ac-VHT40 MCS0	151	5755		19.50				19.50																																									Not Required	Not Required	Not Required	Not Required	Not Required	Not Required	Not Required	Not Required	Not Required	Not Required	Not Required	Not Required	Not Required																																														
		159	5795		20.00				20.00																																																						20.00	20.00	20.00	20.00	23.00	23.00																																								
	802.11ac-VHT80 MCS0	155	5775		18.50				18.50																																																						Not Required	Not Required	Not Required	Not Required	Not Required	Not Required	Not Required	Not Required	Not Required	Not Required	Not Required	Not Required	Not Required																																	
		155	5775		18.50				18.50																																																																			18.50	18.50	18.50	18.50	21.50	21.50																											
	802.11ax-HE20 MCS0	149	5745		21.00				21.00																																																																			Not Required	Not Required	Not Required	Not Required	Not Required	Not Required	Not Required	Not Required	Not Required	Not Required	Not Required	Not Required	Not Required																				
		157	5785		21.00				21.00																																																																																21.00	21.00	21.00	21.00	24.00	24.00														
		165	5825		21.00				21.00																																																																																21.00	21.00	21.00	21.00	24.00	24.00														
802.11ax-HE40 MCS0	151	5755	19.50	19.50	Not Required	Not Required	Not Required	Not Required	Not Required	Not Required																																																																															Not Required	Not Required	Not Required	Not Required	Not Required	Not Required	Not Required													
	159	5795	20.00	20.00																																																																																												20.00	20.00	20.00	20.00	23.00	23.00							
802.11ax-HE80 MCS0	151	5755	19.50	19.50																																																																																												Not Required	Not Required	Not Required	Not Required	Not Required	Not Required	Not Required	Not Required	Not Required	Not Required	Not Required	Not Required	Not Required
	159	5795	20.00	20.00							20.00	20.00	20.00	20.00	23.00	23.00																																																																																												
802.11ax-HE80 MCS0	155	5775	18.50	18.50							Not Required	Not Required	Not Required	Not Required	Not Required	Not Required	Not Required	Not Required	Not Required	Not Required	Not Required	Not Required	Not Required																																																																																					
	155	5775	18.50	18.50																																																																																																								

<WiFi 6E_Index 0>																																																																																		
WiFi 6E_SP	Mode	Channel	Frequency (MHz)	Ant 6			Ant 7			Ant 6+7 (6)		Ant 6+7 (7)		Ant 6+7																																																																				
				Average power (dBm)	Tune-Up Limit	Duty Cycle %	Average power (dBm)	Tune-Up Limit	Duty Cycle %	Average power (dBm)	Tune-Up Limit	Average power (dBm)	Tune-Up Limit	Average power (dBm)	Tune-Up Limit	Duty Cycle %																																																																		
WiFi 6E_SP	802.11a 6Mbps	1	5955	Not Required	17.00	Not Required	Not Required	Not Required	Not Required	Not Required	Not Required	Not Required	Not Required	Not Required	Not Required	Not Required	Not Required																																																																	
		57	6235		17.00													17.00	17.00	17.00	20.00	20.00																																																												
		173	6815		16.50													16.50	16.50	16.50	19.50	19.50																																																												
	802.11ax-HE20 MCS0	1	5955		17.00													17.00	Not Required	Not Required	Not Required	Not Required	Not Required	Not Required	Not Required	Not Required	Not Required	Not Required	Not Required	Not Required																																																				
		57	6235		17.00													17.00													17.00	17.00	20.00	20.00																																																
		173	6815		16.50													16.50													16.50	16.50	19.50	19.50																																																
	802.11ax-HE40 MCS0	3	5965		17.00													17.00													Not Required	Not Required	Not Required	Not Required	Not Required	Not Required	Not Required	Not Required	Not Required	Not Required	Not Required	Not Required																																								
		59	6245		17.00													17.00																									17.00	17.00	20.00	20.00																																				
		171	6805		16.50													16.50																									16.50	16.50	19.50	19.50																																				
	802.11ax-HE80 MCS0	7	5985		17.00													17.00																									Not Required	Not Required	Not Required	Not Required	Not Required	Not Required	Not Required	Not Required	Not Required	Not Required	Not Required	Not Required																												
		71	6305		17.00													17.00																																					17.00	17.00	20.00	20.00																								
		167	6785		16.50													16.50																																					16.50	16.50	19.50	19.50																								
	802.11ax-HE160 MCS0	15	6025		17.00													17.00																																					Not Required	Not Required	Not Required	Not Required	Not Required	Not Required	Not Required	Not Required	Not Required	Not Required	Not Required	Not Required																
		47	6185		17.00													17.00																																																	17.00	17.00	20.00	20.00												
		143	6665		16.50													16.50																																																	16.50	16.50	19.50	19.50												
	802.11ax-HE160 MCS0	15	6025		17.00													17.00																																																	Not Required	Not Required	Not Required	Not Required	Not Required	Not Required	Not Required	Not Required	Not Required	Not Required	Not Required	Not Required				
		47	6185		17.00													17.00																																																													17.00	17.00	20.00	20.00
		143	6665		16.50													16.50																																																													16.50	16.50	19.50	19.50



<WiFi 6E_Index 0 (Indoor)>																				
				Ant 6			Ant 7			Ant 6+7 (6)		Ant 6+7 (7)		Ant 6+7						
Mode	Channel	Frequency (MHz)	Average power (dBm)	Tune-Up Limit	Duty Cycle %	Average power (dBm)	Tune-Up Limit	Duty Cycle %	Average power (dBm)	Tune-Up Limit	Average power (dBm)	Tune-Up Limit	Average power (dBm)	Tune-Up Limit	Duty Cycle %					
WiFi 6E	802.11a 6Mbps	1	5955	Not Required	Not Required	Not Required	Not Required	Not Required	Not Required	Not Required	Not Required	Not Required	Not Required	Not Required	Not Required					
		57	6235													3.50	3.50	3.50	3.50	6.50
		113	6515													3.50	3.50	3.50	3.50	6.50
		173	6815													4.00	4.00	4.00	4.00	7.00
		233	7115													4.50	4.50	4.50	4.50	7.50
	802.11ax-HE20 MCS0	1	5955													5.00	5.00	5.00	5.00	8.00
		57	6235													7.50	7.50	7.50	7.50	10.50
		113	6515													7.50	7.50	7.50	7.50	10.50
		173	6815													7.50	7.50	7.50	7.50	10.50
		233	7115													8.00	8.00	8.00	8.00	11.00
	802.11ax-HE40 MCS0	3	5965													10.00	10.00	10.00	10.00	13.00
		59	6245													10.00	10.00	10.00	10.00	13.00
		107	6485													10.50	10.50	10.50	10.50	13.50
		171	6805													11.00	11.00	11.00	11.00	14.00
		227	7085													11.50	11.50	11.50	11.50	14.50
	802.11ax-HE80 MCS0	7	5985													14.00	14.00	14.00	14.00	17.00
		71	6305													14.00	14.00	14.00	14.00	17.00
		119	6545													12.50	12.50	12.50	12.50	15.50
		167	6785													13.50	13.50	13.50	13.50	16.50
		215	7025													12.00	12.00	12.00	12.00	15.00
	802.11ax-HE160 MCS0	15	6025													16.00	16.00	16.00	16.00	19.00
		47	6185													16.00	16.00	16.00	16.00	19.00
		111	6505													16.50	16.50	16.50	16.50	19.50
		143	6665													16.50	16.50	16.50	16.50	19.50
		207	6985													16.00	16.00	16.00	16.00	19.00



Index 1

<2.4GHz WLAN_Index 1>																														
				Ant 6			Ant 7			Ant 6+7 (6)		Ant 6+7 (7)		Ant 6+7																
2.4GHz WLAN	Mode	Channel	Frequency (MHz)	Average power (dBm)	Tune-Up Limit	Duty Cycle %	Average power (dBm)	Tune-Up Limit	Duty Cycle %	Average power (dBm)	Tune-Up Limit	Average power (dBm)	Tune-Up Limit	Average power (dBm)	Tune-Up Limit	Duty Cycle %														
	2.4GHz WLAN	802.11b 1Mbps	1	2412	20.48	20.50	97.87	19.68	20.50	97.87	19.98	20.50	20.38	20.50	23.19	23.50	97.87													
6			2437	19.78	20.00	19.68		20.00	19.38		20.00	19.78	20.00	22.59	23.00															
11			2462	18.88	19.00	18.78		19.00	17.98		19.00	18.68	19.00	21.35	22.00															
802.11g 6Mbps		1	2412	Not Required	18.00	Not Required	Not Required	17.50	Not Required	Not Required	17.50	Not Required	17.50	Not Required	18.00	Not Required	21.00													
		6	2437															20.00	20.00	20.00	20.00	20.00	23.00							
		11	2462															18.00	18.00	18.00	18.00	18.00	21.00							
802.11n-HT20 MCS0		1	2412															18.00	18.00	18.00	18.00	18.00	18.00	18.00	18.00	18.00	18.00	18.00	18.00	21.00
		6	2437															20.00	20.00	20.00	20.00	20.00	23.00							
		11	2462															17.50	17.50	17.50	17.50	17.50	20.50							
802.11ac-VHT20 MCS0		1	2412															18.00	18.00	18.00	18.00	18.00	18.00	18.00	18.00	18.00	18.00	18.00	18.00	21.00
		6	2437															20.00	20.00	20.00	20.00	20.00	23.00							
		11	2462															17.50	17.50	17.50	17.50	17.50	20.50							
802.11ax-HE20 MCS0		1	2412															18.00	18.00	18.00	18.00	18.00	18.00	18.00	18.00	18.00	18.00	18.00	18.00	21.00
		6	2437															20.00	20.00	20.00	20.00	20.00	23.00							
		11	2462															17.50	17.50	17.50	17.50	17.50	20.50							



Index 2

<2.4GHz WLAN_Index 2>																	
	Mode	Channel	Frequency (MHz)	Ant 6			Ant 7			Ant 6+7 (6)		Ant 6+7 (7)		Ant 6+7			
				Average power (dBm)	Tune-Up Limit	Duty Cycle %	Average power (dBm)	Tune-Up Limit	Duty Cycle %	Average power (dBm)	Tune-Up Limit	Average power (dBm)	Tune-Up Limit	Average power (dBm)	Tune-Up Limit	Duty Cycle %	
2.4GHz WLAN	802.11b 1Mbps	1	2412	20.48	20.50	97.87	19.68	20.50	97.87	19.98	20.50	20.38	20.50	23.19	23.50	97.87	
		6	2437	19.78	20.00		19.68	20.00		19.38	20.00	19.78	20.00	22.59	23.00		
		11	2462	18.88	19.00		18.78	19.00		17.98	19.00	18.68	19.00	21.35	22.00		
	802.11g 6Mbps	1	2412	Not Required	20.00	Not Required	Not Required	20.00	Not Required	Not Required	20.00	Not Required	20.00	Not Required	20.00	Not Required	23.00
		6	2437		20.00			20.00			20.00		20.00		23.00		
		11	2462		18.00			18.00			18.00		18.00		21.00		
	802.11n-HT20 MCS0	1	2412		18.00			18.00			18.00		21.00				
		6	2437		20.00			20.00			20.00		23.00				
		11	2462		17.50			17.50			17.50		20.50				
	802.11ac-VHT20 MCS0	1	2412		18.00			18.00			18.00		21.00				
		6	2437		20.00			20.00			20.00		23.00				
		11	2462		17.50			17.50			17.50		20.50				
	802.11ax-HE20 MCS0	1	2412		18.00			18.00			18.00		21.00				
		6	2437		20.00			20.00			20.00		23.00				
		11	2462		17.50			17.50			17.50		20.50				

<5.2GHz WLAN_Index 2>																
	Mode	Channel	Frequency (MHz)	Ant 6			Ant 7			Ant 6+7 (6)		Ant 6+7 (7)		Ant 6+7		
				Average power (dBm)	Tune-Up Limit	Duty Cycle %	Average power (dBm)	Tune-Up Limit	Duty Cycle %	Average power (dBm)	Tune-Up Limit	Average power (dBm)	Tune-Up Limit	Average power (dBm)	Tune-Up Limit	Duty Cycle %
5.2GHz WLAN	802.11a 6Mbps	36	5180	Not Required	18.00	Not Required	Not Required	18.00	Not Required	Not Required	18.00	Not Required	18.00	Not Required	21.00	Not Required
		40	5200		18.50			18.50			18.50		21.50			
		44	5220		18.50			18.50			18.50		21.50			
		48	5240		18.50			18.50			18.50		21.50			
	802.11n-HT20 MCS0	36	5180		18.00			18.00			18.00		21.00			
		40	5200		18.50			18.50			18.50		21.50			
		44	5220		18.50			18.50			18.50		21.50			
	802.11n-HT40 MCS0	38	5190		16.00			16.00			16.00		19.00			
		46	5230		18.50			18.50			18.50		21.50			
		48	5240		18.50			18.50			18.50		21.50			
	802.11ac-VHT20 MCS0	36	5180		18.00			18.00			18.00		21.00			
		40	5200		18.50			18.50			18.50		21.50			
		44	5220		18.50			18.50			18.50		21.50			
		48	5240		18.50			18.50			18.50		21.50			
	802.11ac-VHT40 MCS0	38	5190		16.00			16.00			16.00		19.00			
		46	5230		18.50			18.50			18.50		21.50			
	802.11ac-VHT80 MCS0	42	5210		15.50			15.50			15.50		18.50			
	802.11ax-HE20 MCS0	36	5180		18.00			18.00			18.00		21.00			
		40	5200		18.50			18.50			18.50		21.50			
		44	5220		18.50			18.50			18.50		21.50			
		48	5240		18.50			18.50			18.50		21.50			
	802.11ax-HE40 MCS0	38	5190		16.00			16.00			16.00		19.00			
		46	5230		18.50			18.50			18.50		21.50			
	802.11ax-HE80 MCS0	42	5210		15.50			15.50			15.50		18.50			



<5.3GHz WLAN_Index 2>																				
				Ant 6			Ant 7			Ant 6+7 (6)		Ant 6+7 (7)		Ant 6+7						
	Mode	Channel	Frequency (MHz)	Average power (dBm)	Tune-Up Limit	Duty Cycle %	Average power (dBm)	Tune-Up Limit	Duty Cycle %	Average power (dBm)	Tune-Up Limit	Average power (dBm)	Tune-Up Limit	Average power (dBm)	Tune-Up Limit	Duty Cycle %				
5.3GHz WLAN	802.11a 6Mbps	52	5260	Not Required	18.50	Not Required	Not Required	18.50	Not Required	18.00	18.50	18.10	18.50	21.06	21.50	100.00				
		56	5280		18.50			17.90		18.50	17.80	18.50	20.86	21.50						
		60	5300		18.50			18.00		18.50	17.90	18.50	20.96	21.50						
		64	5320		17.00			17.00		16.70	17.00	19.81	20.00							
	802.11n-HT20 MCS0	52	5260		18.50			18.50		18.50	18.50	18.50	18.50	18.50	18.50	18.50	18.50	18.50	21.50	Not Required
		56	5280		18.50			18.50		18.50	18.50	18.50	18.50	18.50	18.50	18.50	18.50	21.50		
		60	5300		18.50			18.50		18.50	18.50	18.50	18.50	18.50	18.50	18.50	18.50	21.50		
	802.11n-HT40 MCS0	54	5270		18.50			18.50		18.50	18.50	18.50	18.50	18.50	18.50	18.50	18.50	18.50	21.50	100.00
		62	5310		15.50			15.50		14.90	15.50	18.06	18.50							
	802.11ac-VHT20 MCS0	52	5260		18.50			18.50		18.50	18.50	18.50	18.50	18.50	18.50	18.50	18.50	18.50	21.50	Not Required
		56	5280		18.50			18.50		18.50	18.50	18.50	18.50	18.50	18.50	18.50	18.50	21.50		
		60	5300		18.50			18.50		18.50	18.50	18.50	18.50	18.50	18.50	18.50	18.50	21.50		
	802.11ac-VHT40 MCS0	54	5270		18.50			18.50		18.50	18.50	18.50	18.50	18.50	18.50	18.50	18.50	18.50	21.50	Not Required
		62	5310		15.50			15.50		15.50	15.50	15.50	15.50	15.50	15.50	15.50	15.50	18.50		
	802.11ac-VHT80 MCS0	58	5290		15.00			15.00		15.00	15.00	15.00	15.00	15.00	15.00	15.00	15.00	18.00	Not Required	
	802.11ac-VHT160 MCS0	50	5250		13.50			13.50		13.50	13.50	13.50	13.50	13.50	13.50	13.50	13.50	16.50		
	802.11ax-HE20 MCS0	52	5260		18.50			18.50		18.50	18.50	18.50	18.50	18.50	18.50	18.50	18.50	18.50	21.50	Not Required
		56	5280		18.50			18.50		18.50	18.50	18.50	18.50	18.50	18.50	18.50	18.50	21.50		
		60	5300		18.50			18.50		18.50	18.50	18.50	18.50	18.50	18.50	18.50	18.50	21.50		
		64	5320		18.00			18.00		18.00	18.00	18.00	18.00	18.00	18.00	18.00	18.00	21.00		
802.11ax-HE40 MCS0	54	5270	18.50	18.50	18.50	18.50	18.50	18.50	18.50	18.50	18.50	18.50	18.50	21.50	Not Required					
	62	5310	15.50	15.50	15.50	15.50	15.50	15.50	15.50	15.50	15.50	15.50	18.50							
802.11ax-HE80 MCS0	58	5290	15.00	15.00	15.00	15.00	15.00	15.00	15.00	15.00	15.00	15.00	18.00	Not Required						
802.11ax-HE160 MCS0	50	5250	13.50	13.50	13.50	13.50	13.50	13.50	13.50	13.50	13.50	13.50	16.50							



<5.5GHz WLAN_Index 2>																
				Ant 6			Ant 7			Ant 6+7 (6)		Ant 6+7 (7)		Ant 6+7		
Mode	Channel	Frequency (MHz)	Average power (dBm)	Tune-Up Limit	Duty Cycle %	Average power (dBm)	Tune-Up Limit	Duty Cycle %	Average power (dBm)	Tune-Up Limit	Average power (dBm)	Tune-Up Limit	Average power (dBm)	Tune-Up Limit	Duty Cycle %	
5.5GHz WLAN	802.11a 6Mbps	100	5500	Not Required	Not Required	Not Required	Not Required	Not Required	Not Required	Not Required	Not Required	Not Required	Not Required	Not Required	Not Required	18.50
		116	5580													18.50
		124	5620													18.50
		132	5660													17.00
		144	5720													18.50
	802.11n-HT20 MCS0	100	5500													18.50
		116	5580													18.50
		124	5620													18.50
		132	5660													18.00
	802.11n-HT40 MCS0	102	5510													18.00
		110	5550													18.50
		126	5630													18.50
	802.11ac-VHT20 MCS0	100	5500													18.50
		116	5580													18.50
		124	5620													18.50
		132	5660													18.00
	802.11ac-VHT40 MCS0	102	5510													18.00
		110	5550													18.50
		126	5630													18.50
		134	5670													18.50
	802.11ac-VHT80 MCS0	106	5530													15.50
		122	5610													18.50
		138	5690													18.50
		802.11ac-VHT160 MCS0	114													5570
	802.11ax-HE20 MCS0	100	5500													18.50
		116	5580													18.50
		124	5620													18.50
		132	5660													18.00
		144	5720													18.50
	802.11ax-HE40 MCS0	102	5510													18.00
		110	5550													18.50
		126	5630													18.50
		134	5670													18.50
	802.11ax-HE80 MCS0	106	5530													18.50
		122	5610													18.50
		138	5690													18.50
	802.11ax-HE160 MCS0	114	5570													13.00



<5.8GHz WLAN_Index 2>																																	
5.8GHz WLAN	Mode	Channel	Frequency (MHz)	Ant 6			Ant 7			Ant 6+7 (6)		Ant 6+7 (7)		Ant 6+7																			
				Average power (dBm)	Tune-Up Limit	Duty Cycle %	Average power (dBm)	Tune-Up Limit	Duty Cycle %	Average power (dBm)	Tune-Up Limit	Average power (dBm)	Tune-Up Limit	Average power (dBm)	Tune-Up Limit	Duty Cycle %																	
5.8GHz WLAN	802.11a 6Mbps	149	5745	Not Required	18.50	Not Required	Not Required	18.50	Not Required	Not Required	18.50	18.50	Not Required	18.50	Not Required	21.50	Not Required																
		157	5785		18.50						18.50	21.50																					
		165	5825		18.50						18.50	21.50																					
	802.11n-HT20 MCS0	149	5745		18.50						18.50	21.50																					
		157	5785		18.50						18.50	21.50																					
		165	5825		18.50						18.50	21.50																					
	802.11n-HT40 MCS0	151	5755		18.50						18.50	21.50		18.50		18.50		18.10	18.50	21.31	21.50	100.00											
		159	5795		18.50						18.50	21.50		18.40		18.50		18.10	18.50	21.26	21.50												
	802.11ac-VHT20 MCS0	149	5745		18.50						18.50	21.50		Not Required		18.50		Not Required	Not Required	18.50	18.50	Not Required	18.50	Not Required	21.50	Not Required							
		157	5785		18.50						18.50	21.50																					
		165	5825		18.50						18.50	21.50																					
	802.11ac-VHT40 MCS0	151	5755		18.50						18.50	21.50								18.50	18.50		18.50		18.50		21.50	21.50	100.00				
		159	5795		18.50						18.50	21.50								18.50	18.50		18.50		18.50		21.50	21.50					
	802.11ac-VHT80 MCS0	155	5775		18.50						18.50	21.50								18.50	18.50		18.20		18.50		21.36	21.50	100.00				
		149	5745		18.50						18.50	21.50								Not Required	18.50		Not Required		Not Required		18.50	18.50	Not Required	18.50	Not Required	21.50	Not Required
	802.11ax-HE20 MCS0	157	5785		18.50						18.50	21.50																					
		165	5825		18.50						18.50	21.50																					
		151	5755		18.50						18.50	21.50																					
802.11ax-HE40 MCS0	159	5795	18.50	18.50	21.50	18.50	18.50	18.50	18.50	21.50	21.50	100.00																					
	155	5775	18.50	18.50	21.50	18.50	18.50	18.50	18.50	21.50	21.50																						
802.11ax-HE80 MCS0	149	5745	18.50	18.50	21.50	Not Required	18.50	Not Required	Not Required	18.50	18.50	Not Required	18.50		Not Required		21.50										Not Required						
	157	5785	18.50	18.50	21.50																												
165	5825	18.50	18.50	21.50																													
802.11ax-HE40 MCS0	151	5755	18.50	18.50	21.50					18.50	18.50		18.50				18.50											21.50		21.50		100.00	
	159	5795	18.50	18.50	21.50					18.50	18.50		18.50				18.50											21.50		21.50			
802.11ax-HE80 MCS0	155	5775	18.50	18.50	21.50					18.50	18.50		18.50				18.50											21.50		21.50		100.00	
	149	5745	18.50	18.50	21.50					Not Required	18.50		Not Required	Not Required		18.50	18.50	Not Required	18.50			Not Required		21.50		Not Required							
802.11ax-HE20 MCS0	157	5785	18.50	18.50	21.50																												
	165	5825	18.50	18.50	21.50																												
	151	5755	18.50	18.50	21.50																												
802.11ax-HE40 MCS0	159	5795	18.50	18.50	21.50											18.50	18.50		18.50					18.50				21.50		21.50		100.00	
	155	5775	18.50	18.50	21.50											18.50	18.50		18.50					18.50				21.50		21.50			

<WiFi 6E_Index 2>																													
WiFi 6E_SP	Mode	Channel	Frequency (MHz)	Ant 6			Ant 7			Ant 6+7 (6)		Ant 6+7 (7)		Ant 6+7															
				Average power (dBm)	Tune-Up Limit	Duty Cycle %	Average power (dBm)	Tune-Up Limit	Duty Cycle %	Average power (dBm)	Tune-Up Limit	Average power (dBm)	Tune-Up Limit	Average power (dBm)	Tune-Up Limit	Duty Cycle %													
WiFi 6E_SP	802.11a 6Mbps	1	5955	Not Required	9.00	Not Required	Not Required	9.00	Not Required	Not Required	9.00	9.00	Not Required	9.00	Not Required	12.00	Not Required												
		57	6235		9.00						9.00	12.00																	
		173	6815		9.00						9.00	12.00																	
	802.11ax-HE20 MCS0	1	5955		9.00						9.00	12.00																	
		57	6235		9.00						9.00	12.00																	
		173	6815		9.00						9.00	12.00																	
	802.11ax-HE40 MCS0	3	5965		9.00						9.00	12.00		Not Required		9.00		Not Required	Not Required	9.00	9.00	Not Required	9.00	Not Required	12.00	Not Required			
		59	6245		9.00						9.00	12.00																	
		171	6805		9.00						9.00	12.00																	
	802.11ax-HE80 MCS0	7	5985		9.00						9.00	12.00								9.00	9.00		9.00		9.00		12.00	12.00	100.00
		71	6305		9.00						9.00	12.00								9.00	9.00		9.00		9.00		12.00	12.00	
		167	6785		9.00						9.00	12.00								9.00	9.00		9.00		9.00		12.00	12.00	
	802.11ax-HE160 MCS0	15	6025		9.00						9.00	12.00								8.80	9.00		8.50		9.00		11.66	12.00	98.19
		47	6185		9.00						9.00	12.00								8.60	9.00		8.60		9.00		11.61	12.00	
		143	6665		9.00						9.00	12.00								8.90	9.00		8.10		9.00		11.53	12.00	



<WiFi 6E_Index 2 (Indoor)>																				
				Ant 6			Ant 7			Ant 6+7 (6)		Ant 6+7 (7)		Ant 6+7						
Mode	Channel	Frequency (MHz)	Average power (dBm)	Tune-Up Limit	Duty Cycle %	Average power (dBm)	Tune-Up Limit	Duty Cycle %	Average power (dBm)	Tune-Up Limit	Average power (dBm)	Tune-Up Limit	Average power (dBm)	Tune-Up Limit	Duty Cycle %					
WiFi 6E	802.11a 6Mbps	1	5955	Not Required	Not Required	Not Required	Not Required	Not Required	Not Required	Not Required	Not Required	Not Required	Not Required	Not Required	Not Required					
		57	6235													3.50	3.50	3.50	3.50	6.50
		113	6515													3.50	3.50	3.50	3.50	6.50
		173	6815													4.00	4.00	4.00	4.00	7.00
		233	7115													4.50	4.50	4.50	4.50	7.50
	802.11ax-HE20 MCS0	1	5955													5.00	5.00	5.00	5.00	8.00
		57	6235													7.50	7.50	7.50	7.50	10.50
		113	6515													7.50	7.50	7.50	7.50	10.50
		173	6815													7.50	7.50	7.50	7.50	10.50
		233	7115													8.00	8.00	8.00	8.00	11.00
	802.11ax-HE40 MCS0	3	5965													9.00	9.00	9.00	9.00	12.00
		59	6245													9.00	9.00	9.00	9.00	12.00
		107	6485													9.00	9.00	9.00	9.00	12.00
		171	6805													9.00	9.00	9.00	9.00	12.00
		227	7085													9.00	9.00	9.00	9.00	12.00
	802.11ax-HE80 MCS0	7	5985													9.00	9.00	9.00	9.00	12.00
		71	6305													9.00	9.00	9.00	9.00	12.00
		119	6545													9.00	9.00	9.00	9.00	12.00
		167	6785													9.00	9.00	9.00	9.00	12.00
		215	7025													9.00	9.00	9.00	9.00	12.00
	802.11ax-HE160 MCS0	15	6025													9.00	9.00	9.00	9.00	12.00
		47	6185													9.00	9.00	9.00	9.00	12.00
		111	6505													9.00	9.00	9.00	9.00	12.00
		143	6665													9.00	9.00	9.00	9.00	12.00
		207	6985													9.00	9.00	9.00	9.00	12.00
															98.19					



<2.4GHz Bluetooth>

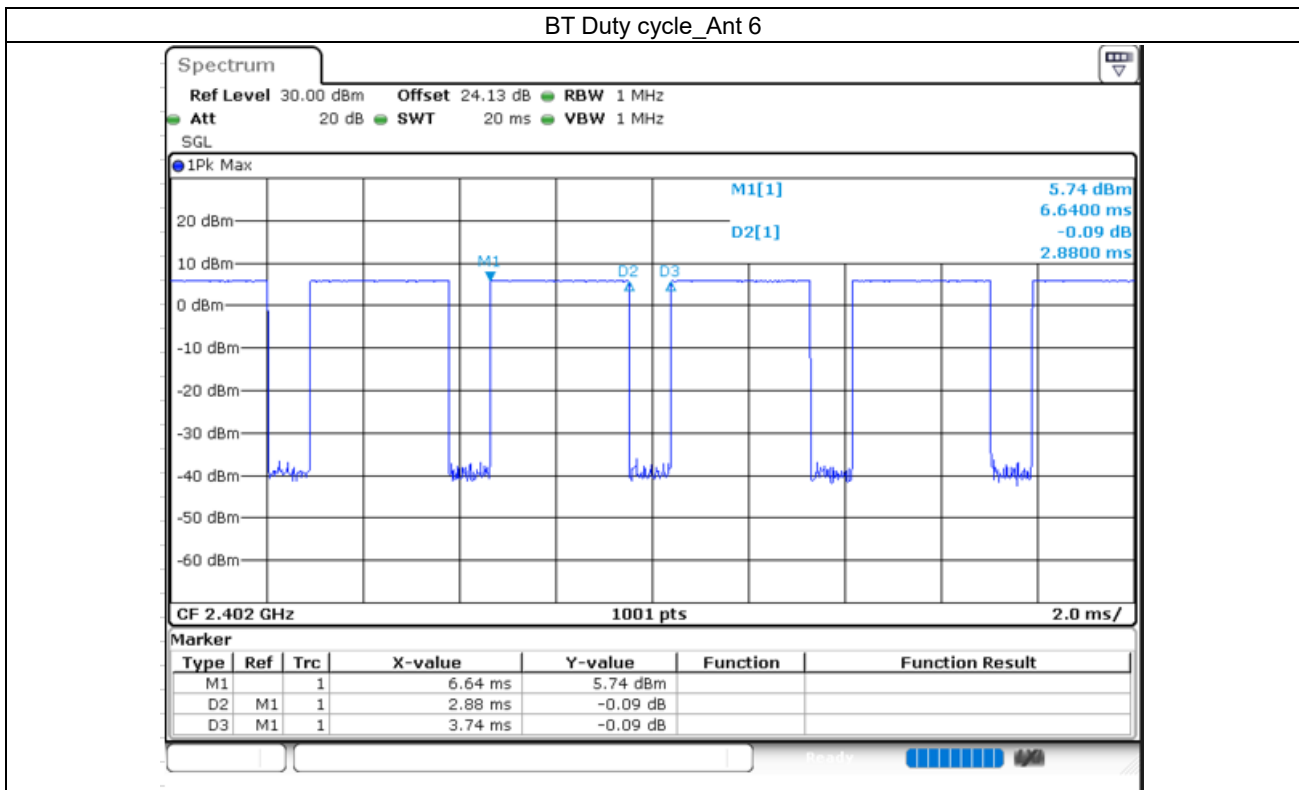
<Bluetooth_Index 0>											
Bluetooth	Mode	Channel	Frequency (MHz)	Ant 6			Ant 7				
				Average power (dBm)	Tune-Up Limit	Duty Cycle %	Average power (dBm)	Tune-Up Limit	Duty Cycle %		
Bluetooth	BR / EDR 1Mbps	0	2402	6.37	7.00	77.01	4.69	5.50	77.13		
		39	2441	6.67	7.00		5.46	5.50			
		78	2480	6.91	7.00		5.09	5.50			
	BR / EDR 2Mbps	0	2402	Not Required	Not Required	Not Required	Not Required	Not Required	Not Required		
		39	2441							5.50	4.50
		78	2480							5.50	4.50
	BR / EDR 3Mbps	0	2402							5.50	4.50
		39	2441							5.50	4.50
		78	2480							5.50	4.50
	LE 1Mbps	0	2402							6.50	4.50
		19	2440							6.50	4.50
		39	2480							6.50	4.50
	LE 2Mbps	0	2402							6.50	4.50
		19	2440							6.50	4.50
		39	2480							6.50	4.50

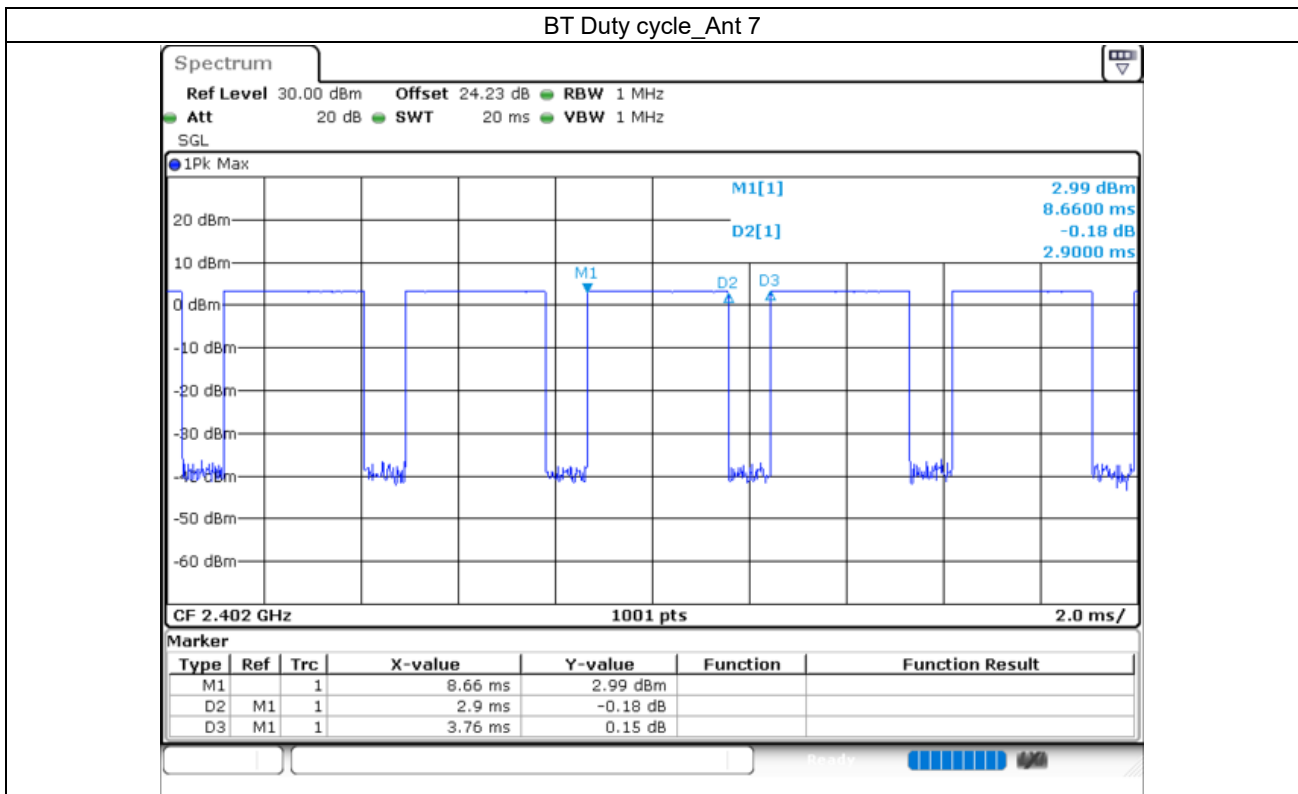
<Bluetooth_Index 1>											
Bluetooth	Mode	Channel	Frequency (MHz)	Ant 6			Ant 7				
				Average power (dBm)	Tune-Up Limit	Duty Cycle %	Average power (dBm)	Tune-Up Limit	Duty Cycle %		
Bluetooth	BR / EDR 1Mbps	0	2402	6.37	7.00	77.01	4.69	5.50	77.13		
		39	2441	6.67	7.00		5.46	5.50			
		78	2480	6.91	7.00		5.09	5.50			
	BR / EDR 2Mbps	0	2402	Not Required	Not Required	Not Required	Not Required	Not Required	Not Required		
		39	2441							5.50	4.50
		78	2480							5.50	4.50
	BR / EDR 3Mbps	0	2402							5.50	4.50
		39	2441							5.50	4.50
		78	2480							5.50	4.50
	LE 1Mbps	0	2402							6.50	4.50
		19	2440							6.50	4.50
		39	2480							6.50	4.50
	LE 2Mbps	0	2402							6.50	4.50
		19	2440							6.50	4.50
		39	2480							6.50	4.50

<Bluetooth_Index 2>									
Bluetooth	Mode	Channel	Frequency (MHz)	Ant 6			Ant 7		
				Average power (dBm)	Tune-Up Limit	Duty Cycle %	Average power (dBm)	Tune-Up Limit	Duty Cycle %
Bluetooth	BR / EDR 1Mbps	0	2402	6.37	7.00	77.01	4.69	5.50	77.13
		39	2441	6.67	7.00		5.46	5.50	
		78	2480	6.91	7.00		5.09	5.50	
	BR / EDR 2Mbps	0	2402	Not Required	Not Required	Not Required	Not Required	4.50	Not Required
		39	2441					4.50	
		78	2480					4.50	
	BR / EDR 3Mbps	0	2402					4.50	
		39	2441					4.50	
		78	2480					4.50	
	LE 1Mbps	0	2402					6.50	
		19	2440					6.50	
		39	2480					6.50	
LE 2Mbps	0	2402	6.50						
	19	2440	6.50						
	39	2480	6.50						

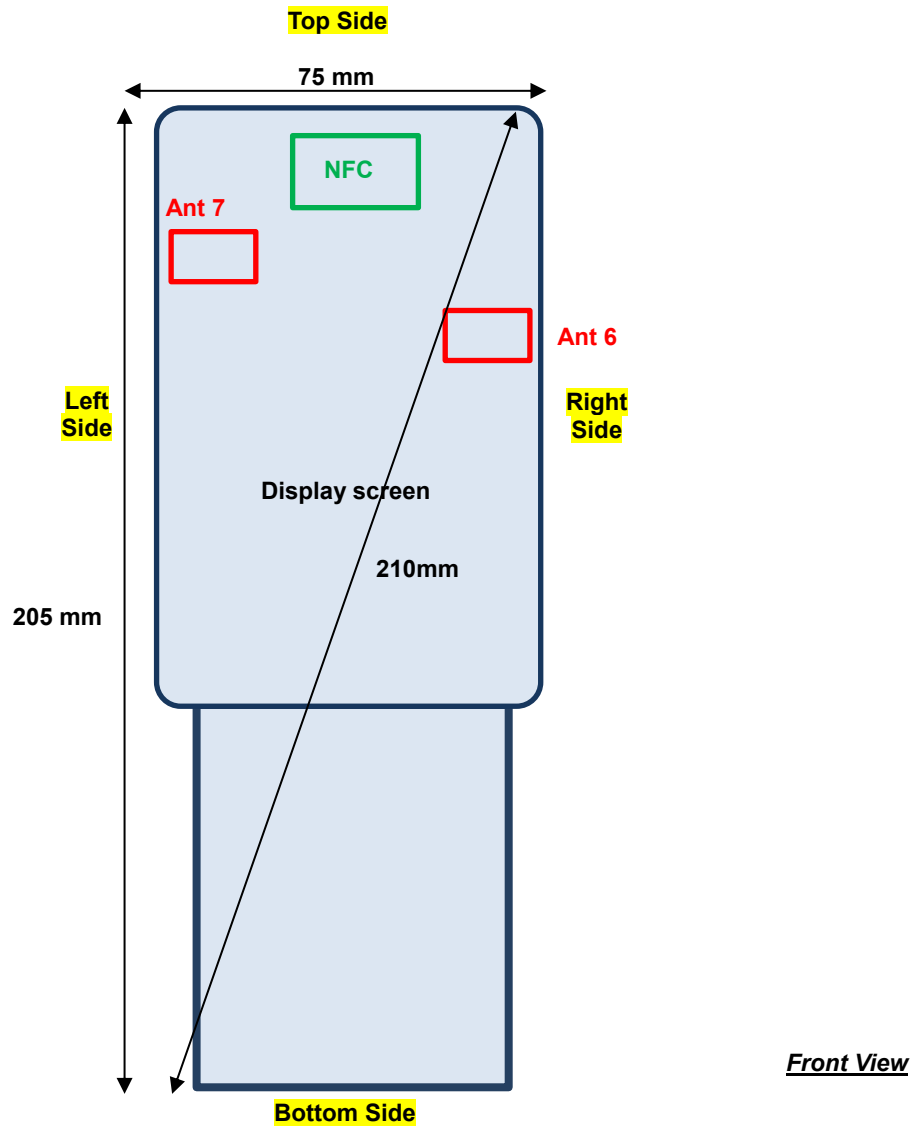
General Note:

1. For 2.4GHz Bluetooth SAR Ant 6 testing was selected 1Mbps due to its highest average power and duty cycle is 77.01% considered in SAR testing, and the duty cycle would be scaled to theoretical 83.3% in reported SAR calculation.
2. For 2.4GHz Bluetooth SAR Ant 7 testing was selected 1Mbps due to its highest average power and duty cycle is 77.13% considered in SAR testing, and the duty cycle would be scaled to theoretical 83.3% in reported SAR calculation.





12. Antenna Location



Distance of the Antenna to the EUT surface/edge						
Antennas	Back	Front	Top Side	Bottom Side	Right Side	Left Side
BT&WLAN Ant 6	≤ 25mm	≤ 25mm	>25mm	>25mm	≤ 25mm	>25mm
BT&WLAN Ant 7	≤ 25mm	≤ 25mm	>25mm	>25mm	>25mm	≤ 25mm

Positions for SAR tests; Hotspot mode						
Antennas	Back	Front	Top Side	Bottom Side	Right Side	Left Side
BT&WLAN Ant 6	Yes	Yes	No	No	Yes	Yes
BT&WLAN Ant 7	Yes	Yes	No	No	No	Yes

General Note:

- Referring to KDB 941225 D06 v02r01, when the overall device length and width are $\geq 9\text{cm} \times 5\text{cm}$, the test distance is 10 mm. SAR must be measured for all sides and surfaces with a transmitting antenna located within 25mm from that surface or edge



13. 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 WLAN/Bluetooth: Reported SAR(W/kg)= Measured SAR(W/kg)* Duty Cycle scaling factor * Tune-up scaling factor
2. Per KDB 447498 D01v06, for each exposure position, testing of other required channels within the operating mode of a frequency band is not required when the *reported* 1-g or 10-g SAR for the mid-band or highest output power channel is:
 - ≤ 0.8 W/kg or 2.0 W/kg, for 1-g or 10-g respectively, when the transmission band is ≤ 100 MHz
 - ≤ 0.6 W/kg or 1.5 W/kg, for 1-g or 10-g respectively, when the transmission band is between 100 MHz and 200 MHz
 - ≤ 0.4 W/kg or 1.0 W/kg, for 1-g or 10-g respectively, when the transmission band is ≥ 200 MHz
3. Per KDB 865664 D01v01r04, for each frequency band, repeated SAR measurement is required only when the measured SAR is ≥ 0.8 W/kg.
4. For WLAN/BT Extremity SAR is necessary too, due to an overall diagonal dimension is > 16 cm. Per KDB648474 D04v01r03, for device with a display diagonal dimension > 15.0 cm or an overall diagonal dimension > 16.0 cm, when hotspot mode applies, 10-g product specific SAR is required only for the surfaces and edges with hotspot mode 1-g reported SAR > 1.2 W/kg.
5. The device support DBS mode (Dual band simultaneous) for WLAN operation

WLAN Note:

1. Per KDB 248227 D01v02r02, for 2.4GHz 802.11g/n SAR testing is not required when the highest reported SAR for DSSS is adjusted by the ratio of OFDM to DSSS specified maximum output power and the adjusted SAR is ≤ 1.2 W/kg.
2. Per KDB 248227 D01v02r02, WLAN5.2GHz SAR testing is not required when the WLAN5.3GHz band highest reported SAR for a test configuration is ≤ 1.2 W/kg, SAR is not required for WLAN5.2GHz band.
3. When the reported SAR of the test position is > 0.4 W/kg, SAR is repeated for the 802.11 transmission mode configuration tested in the initial test position to measure the subsequent next closet/smallest test separation distance and maximum coupling test position on the highest maximum output power channel, until the report SAR is ≤ 0.8 W/kg or all required test position are tested.
4. For all positions / configurations, when the reported SAR is > 0.8 W/kg, SAR is measured for these test positions / configurations on the subsequent next highest measured output power channel(s) until the reported SAR is ≤ 1.2 W/kg or all required channels are tested.
5. For determination of the scaling factor for report SAR of MIMO mode, if the hot spots are separated the scaling factors are individually determined from each transmit chain. If the hot spots are not spatially separated, the scaling factor is determined from the worst number of each transmit chain
6. Additional 2.4GHz WLAN SISO operation was using perform Sim-Tx analysis with Bluetooth transmitter.
7. During SAR testing the WLAN transmission was verified using a spectrum analyzer.

WLAN PD Note:

1. The WiFi 6E PD was performed according 2020 TCB workshop RF Exposure 5G RFX Policies Interim Procedures.
2. First, evaluate SAR using 6-7 GHz parameters per IEC/IEEE 62209-1528:2020 and evaluate incident PD using the mmw near-field probe and total-field/power-density reconstruction method.
3. Per Interim Procedures. The power density results were scaled according to IEC 62479:2010 for the portion of the measurement uncertainty > 30%. Total expanded uncertainty of 2.68 dB (85.4%) was used to determine the psPD measurement scaling factor
4. The manufacturer has confirmed that the devices tested have the same physical, mechanical and thermal characteristics and are within operational tolerances expected for production units.
5. The WiFi 6E RF Exposure results are used for simultaneous transmission analysis with the other transmitters and total exposure ratio, the analysis can be found in this report section 14
6. Absorbed power density (APD) using a 4cm² averaging area is reported based on SAR measurements.
7. Power density was calculated by repeated E-field measurements on two measurement planes separated by $\lambda/4$.
8. The device was configured to transmit continuously at the required data rate, channel bandwidth and signal modulation, using the highest transmission duty factor supported by the test mode tools.
9. The measurement procedure consists of measuring the PD_{inc} at two different distances: 2 mm (compliance distance) and $\lambda/5$. The grid extents should be large enough to fully capture the transmitted energy. The grid step should be fine enough to demonstrate that the integrated Power Density iPD_n fulfill the criterion described below. Since iPD ratio between the two distances is ≥ -1 dB, the grid step (0.0625) was sufficient for determining compliance at d=2mm.

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

NFC Note:

1. NFC mainly operate in hand-held extremity exposure conditions, therefore Standalone 10-g extremity SAR testing for NFC will be performed with active mode, with 100% duty cycle at 0mm separation distance.
2. NFC SAR is measured for all surface edges of the device with a transmitting antenna located within 25 mm.
3. NFC 13.56MHz antenna port is not available on the device to support conducted power measurement, therefore the measured results are referred to as reported SAR.
4. NFC SAR test tissue-simulating liquid parameter: refer to IEC/IEEE 62209-1528 2020.



13.1 Hotspot SAR

<WLAN SAR>

Plot No.	Band	Mode	Test Position	Gap (mm)	Antenna	SKU	Brick / Gun Type	Battery	Power State	Ch.	Freq. (MHz)	Average Power (dBm)	Tune-Up Limit (dBm)	Duty Cycle %	Duty Cycle Scaling Factor	Power Drift (dB)	Measured 1g SAR (W/kg)	Reported 1g SAR (W/kg)
	WLAN2.4GHz	802.11b 1Mbps	Front	10mm	Ant 6	SKU 13	Brick	1	Index 1	1	2412	20.48	20.50	97.87	1.022	0.07	0.215	0.221
	WLAN2.4GHz	802.11b 1Mbps	Back	10mm	Ant 6	SKU 13	Brick	1	Index 1	1	2412	20.48	20.50	97.87	1.022	0.08	0.244	0.251
	WLAN2.4GHz	802.11b 1Mbps	Right Side	10mm	Ant 6	SKU 13	Brick	1	Index 1	1	2412	20.48	20.50	97.87	1.022	0.07	0.447	0.459
	WLAN2.4GHz	802.11b 1Mbps	Right Side	10mm	Ant 6	SKU 8	Brick	2	Index 1	1	2412	20.48	20.50	97.87	1.022	-0.08	0.444	0.456
	WLAN2.4GHz	802.11b 1Mbps	Right Side	10mm	Ant 6	SKU 8	Brick	3	Index 1	1	2412	20.48	20.50	97.87	1.022	0.1	0.430	0.441
	WLAN2.4GHz	802.11b 1Mbps	Front	10mm	Ant 6	SKU 9	Gun	1	Index 1	1	2412	20.48	20.50	97.87	1.022	0.1	0.201	0.206
01	WLAN2.4GHz	802.11b 1Mbps	Right Side	10mm	Ant 6	SKU 9	Gun	1	Index 1	1	2412	20.48	20.50	97.87	1.022	0.08	0.502	0.515
	WLAN2.4GHz	802.11b 1Mbps	Right Side	10mm	Ant 6	SKU 5	Gun	1	Index 1	1	2412	20.48	20.50	97.87	1.022	0.14	0.487	0.500
	WLAN2.4GHz	802.11b 1Mbps	Right Side	10mm	Ant 6	SKU 6	Gun	1	Index 1	1	2412	20.48	20.50	97.87	1.022	0.11	0.470	0.483
	WLAN2.4GHz	802.11b 1Mbps	Right Side	10mm	Ant 6	SKU 7	Gun	2	Index 1	1	2412	20.48	20.50	97.87	1.022	-0.05	0.489	0.502
	WLAN2.4GHz	802.11b 1Mbps	Right Side	10mm	Ant 6	SKU 11	Gun	3	Index 1	1	2412	20.48	20.50	97.87	1.022	0.18	0.475	0.488
	WLAN2.4GHz	802.11b 1Mbps	Front	10mm	Ant 7	SKU 13	Brick	1	Index 1	1	2412	19.68	20.50	97.87	1.022	0.14	0.161	0.199
	WLAN2.4GHz	802.11b 1Mbps	Back	10mm	Ant 7	SKU 13	Brick	1	Index 1	1	2412	19.68	20.50	97.87	1.022	-0.17	0.127	0.157
	WLAN2.4GHz	802.11b 1Mbps	Left Side	10mm	Ant 7	SKU 13	Brick	1	Index 1	1	2412	19.68	20.50	97.87	1.022	-0.01	0.309	0.381
	WLAN2.4GHz	802.11b 1Mbps	Left Side	10mm	Ant 7	SKU 8	Brick	2	Index 1	1	2412	19.68	20.50	97.87	1.022	0.1	0.296	0.365
	WLAN2.4GHz	802.11b 1Mbps	Left Side	10mm	Ant 7	SKU 8	Brick	3	Index 1	1	2412	19.68	20.50	97.87	1.022	-0.17	0.293	0.362
	WLAN2.4GHz	802.11b 1Mbps	Front	10mm	Ant 7	SKU 9	Gun	1	Index 1	1	2412	19.68	20.50	97.87	1.022	0.04	0.119	0.147
	WLAN2.4GHz	802.11b 1Mbps	Left Side	10mm	Ant 7	SKU 9	Gun	1	Index 1	1	2412	19.68	20.50	97.87	1.022	0.01	0.186	0.230
	WLAN2.4GHz	802.11b 1Mbps	Left Side	10mm	Ant 7	SKU 5	Gun	1	Index 1	1	2412	19.68	20.50	97.87	1.022	-0.08	0.173	0.214
	WLAN2.4GHz	802.11b 1Mbps	Left Side	10mm	Ant 7	SKU 6	Gun	1	Index 1	1	2412	19.68	20.50	97.87	1.022	0.13	0.180	0.222
	WLAN2.4GHz	802.11b 1Mbps	Left Side	10mm	Ant 7	SKU 7	Gun	2	Index 1	1	2412	19.68	20.50	97.87	1.022	0.12	0.178	0.220
	WLAN2.4GHz	802.11b 1Mbps	Left Side	10mm	Ant 7	SKU 11	Gun	3	Index 1	1	2412	19.68	20.50	97.87	1.022	0.03	0.173	0.214

<Bluetooth SAR>

Plot No.	Band	Mode	Test Position	Gap (mm)	Antenna	SKU	Brick / Gun Type	Battery	Power State	Ch.	Freq. (MHz)	Average Power (dBm)	Tune-Up Limit (dBm)	Duty Cycle %	Duty Cycle Scaling Factor	Power Drift (dB)	Measured 1g SAR (W/kg)	Reported 1g SAR (W/kg)
	Bluetooth	1Mbps	Front	10mm	Ant 6	SKU 13	Brick	1	Index 1	78	2480	6.91	7.00	77.01	1.082	0.08	0.001	0.001
	Bluetooth	1Mbps	Back	10mm	Ant 6	SKU 13	Brick	1	Index 1	78	2480	6.91	7.00	77.01	1.082	0.01	0.001	0.001
	Bluetooth	1Mbps	Right Side	10mm	Ant 6	SKU 13	Brick	1	Index 1	78	2480	6.91	7.00	77.01	1.082	0.08	0.005	0.006
	Bluetooth	1Mbps	Right Side	10mm	Ant 6	SKU 8	Brick	2	Index 1	78	2480	6.91	7.00	77.01	1.082	0.1	0.001	0.001
	Bluetooth	1Mbps	Right Side	10mm	Ant 6	SKU 8	Brick	3	Index 1	78	2480	6.91	7.00	77.01	1.082	-0.18	0.001	0.001
	Bluetooth	1Mbps	Front	10mm	Ant 6	SKU 9	Gun	1	Index 1	78	2480	6.91	7.00	77.01	1.082	0.12	0.001	0.001
02	Bluetooth	1Mbps	Right Side	10mm	Ant 6	SKU 9	Gun	1	Index 1	78	2480	6.91	7.00	77.01	1.082	0.07	0.012	0.013
	Bluetooth	1Mbps	Right Side	10mm	Ant 6	SKU 5	Gun	1	Index 1	78	2480	6.91	7.00	77.01	1.082	-0.05	0.001	0.001
	Bluetooth	1Mbps	Right Side	10mm	Ant 6	SKU 6	Gun	1	Index 1	78	2480	6.91	7.00	77.01	1.082	0.18	0.001	0.001
	Bluetooth	1Mbps	Right Side	10mm	Ant 6	SKU 7	Gun	2	Index 1	78	2480	6.91	7.00	77.01	1.082	0.14	0.001	0.001
	Bluetooth	1Mbps	Right Side	10mm	Ant 6	SKU 11	Gun	3	Index 1	78	2480	6.91	7.00	77.01	1.082	-0.17	0.001	0.001
	Bluetooth	1Mbps	Front	10mm	Ant 7	SKU 13	Brick	1	Index 1	39	2441	5.46	5.50	77.13	1.080	0.17	0.001	0.001
	Bluetooth	1Mbps	Back	10mm	Ant 7	SKU 13	Brick	1	Index 1	39	2441	5.46	5.50	77.13	1.080	-0.05	0.001	0.001
	Bluetooth	1Mbps	Left Side	10mm	Ant 7	SKU 13	Brick	1	Index 1	39	2441	5.46	5.50	77.13	1.080	0.04	0.001	0.001
	Bluetooth	1Mbps	Left Side	10mm	Ant 7	SKU 8	Brick	2	Index 1	39	2441	5.46	5.50	77.13	1.080	-0.01	0.001	0.001
	Bluetooth	1Mbps	Left Side	10mm	Ant 7	SKU 8	Brick	3	Index 1	39	2441	5.46	5.50	77.13	1.080	-0.08	0.001	0.001
	Bluetooth	1Mbps	Front	10mm	Ant 7	SKU 9	Gun	1	Index 1	39	2441	5.46	5.50	77.13	1.080	0.05	0.001	0.001
	Bluetooth	1Mbps	Left Side	10mm	Ant 7	SKU 9	Gun	1	Index 1	39	2441	5.46	5.50	77.13	1.080	0	0.001	0.001
	Bluetooth	1Mbps	Left Side	10mm	Ant 7	SKU 5	Gun	1	Index 1	39	2441	5.46	5.50	77.13	1.080	0.18	0.001	0.001
	Bluetooth	1Mbps	Left Side	10mm	Ant 7	SKU 6	Gun	1	Index 1	39	2441	5.46	5.50	77.13	1.080	0.16	0.001	0.001
	Bluetooth	1Mbps	Left Side	10mm	Ant 7	SKU 7	Gun	2	Index 1	39	2441	5.46	5.50	77.13	1.080	-0.1	0.001	0.001
	Bluetooth	1Mbps	Left Side	10mm	Ant 7	SKU 11	Gun	3	Index 1	39	2441	5.46	5.50	77.13	1.080	0.07	0.001	0.001



13.2 Body Worn Accessory SAR

<WLAN SAR>

Plot No.	Band	Mode	Test Position	Gap (mm)	Antenna	SKU	Brick / Gun Type	Accessories	Battery	Power State	Ch.	Freq. (MHz)	Average Power (dBm)	Tune-Up Limit (dBm)	Duty Cycle %	Duty Cycle Scaling Factor	Power Drift (dB)	Measured 1g SAR (W/kg)	Reported 1g SAR (W/kg)
	WLAN2.4GHz	802.11b 1Mbps	Front	15mm	Ant 6	SKU 13	Brick	-	1	Index 2	1	2412	20.48	20.50	97.87	1.022	0.18	0.100	0.103
	WLAN2.4GHz	802.11b 1Mbps	Back	15mm	Ant 6	SKU 13	Brick	-	1	Index 2	1	2412	20.48	20.50	97.87	1.022	0.16	0.119	0.122
	WLAN2.4GHz	802.11b 1Mbps	Back	0mm	Ant 6	SKU 13	Brick	Soft holster	1	Index 2	1	2412	20.48	20.50	97.87	1.022	-0.02	0.124	0.127
	WLAN2.4GHz	802.11b 1Mbps	Back	0mm	Ant 6	SKU 8	Brick	Soft holster	2	Index 2	1	2412	20.48	20.50	97.87	1.022	0.18	0.101	0.104
	WLAN2.4GHz	802.11b 1Mbps	Back	0mm	Ant 6	SKU 8	Brick	Soft holster	3	Index 2	1	2412	20.48	20.50	97.87	1.022	-0.1	0.111	0.114
	WLAN2.4GHz	802.11b 1Mbps	Front	15mm	Ant 6	SKU 9	Gun	-	1	Index 2	1	2412	20.48	20.50	97.87	1.022	-0.15	0.142	0.146
	WLAN2.4GHz	802.11b 1Mbps	Back	15mm	Ant 6	SKU 9	Gun	-	1	Index 2	1	2412	20.48	20.50	97.87	1.022	0.18	0.169	0.174
	WLAN2.4GHz	802.11b 1Mbps	Right Side	0mm	Ant 6	SKU 9	Gun	Soft holster	1	Index 2	1	2412	20.48	20.50	97.87	1.022	0.06	0.231	0.237
	WLAN2.4GHz	802.11b 1Mbps	Right Side	0mm	Ant 6	SKU 5	Gun	Soft holster	1	Index 2	1	2412	20.48	20.50	97.87	1.022	0.03	0.203	0.208
	WLAN2.4GHz	802.11b 1Mbps	Right Side	0mm	Ant 6	SKU 6	Gun	Soft holster	1	Index 2	1	2412	20.48	20.50	97.87	1.022	-0.15	0.215	0.221
	WLAN2.4GHz	802.11b 1Mbps	Right Side	0mm	Ant 6	SKU 7	Gun	Soft holster	2	Index 2	1	2412	20.48	20.50	97.87	1.022	-0.15	0.221	0.227
	WLAN2.4GHz	802.11b 1Mbps	Right Side	0mm	Ant 6	SKU 11	Gun	Soft holster	3	Index 2	1	2412	20.48	20.50	97.87	1.022	0.11	0.197	0.202
	WLAN2.4GHz	802.11b 1Mbps	Front	15mm	Ant 7	SKU 13	Brick	-	1	Index 2	1	2412	19.68	20.50	97.87	1.022	-0.08	0.078	0.096
	WLAN2.4GHz	802.11b 1Mbps	Back	15mm	Ant 7	SKU 13	Brick	-	1	Index 2	1	2412	19.68	20.50	97.87	1.022	-0.17	0.072	0.089
	WLAN2.4GHz	802.11b 1Mbps	Front	0mm	Ant 7	SKU 13	Brick	Soft holster	1	Index 2	1	2412	19.68	20.50	97.87	1.022	0.09	0.108	0.133
	WLAN2.4GHz	802.11b 1Mbps	Front	0mm	Ant 7	SKU 8	Brick	Soft holster	2	Index 2	1	2412	19.68	20.50	97.87	1.022	-0.04	0.101	0.125
	WLAN2.4GHz	802.11b 1Mbps	Front	0mm	Ant 7	SKU 8	Brick	Soft holster	3	Index 2	1	2412	19.68	20.50	97.87	1.022	-0.08	0.104	0.128
	WLAN2.4GHz	802.11b 1Mbps	Front	15mm	Ant 7	SKU 9	Gun	-	1	Index 2	1	2412	19.68	20.50	97.87	1.022	0.18	0.084	0.104
	WLAN2.4GHz	802.11b 1Mbps	Back	15mm	Ant 7	SKU 9	Gun	-	1	Index 2	1	2412	19.68	20.50	97.87	1.022	-0.1	0.072	0.089
	WLAN2.4GHz	802.11b 1Mbps	Left Side	0mm	Ant 7	SKU 9	Gun	Soft holster	1	Index 2	1	2412	19.68	20.50	97.87	1.022	-0.07	0.121	0.149
	WLAN2.4GHz	802.11b 1Mbps	Left Side	0mm	Ant 7	SKU 5	Gun	Soft holster	1	Index 2	1	2412	19.68	20.50	97.87	1.022	0.06	0.109	0.135
	WLAN2.4GHz	802.11b 1Mbps	Left Side	0mm	Ant 7	SKU 6	Gun	Soft holster	1	Index 2	1	2412	19.68	20.50	97.87	1.022	-0.03	0.116	0.143
	WLAN2.4GHz	802.11b 1Mbps	Left Side	0mm	Ant 7	SKU 7	Gun	Soft holster	2	Index 2	1	2412	19.68	20.50	97.87	1.022	-0.03	0.115	0.142
	WLAN2.4GHz	802.11b 1Mbps	Left Side	0mm	Ant 7	SKU 11	Gun	Soft holster	3	Index 2	1	2412	19.68	20.50	97.87	1.022	0.08	0.107	0.132
	WLAN2.4GHz	802.11b 1Mbps	Front	15mm	Ant 6+7(6)	SKU 13	Brick	-	1	Index 2	1	2412	19.98	20.50	97.87	1.022	-0.07	0.220	0.253
	WLAN2.4GHz	802.11b 1Mbps	Back	15mm	Ant 6+7(6)	SKU 13	Brick	-	1	Index 2	1	2412	19.98	20.50	97.87	1.022	0.05	0.219	0.252
03	WLAN2.4GHz	802.11b 1Mbps	Front	0mm	Ant 6+7(6)	SKU 13	Brick	Soft holster	1	Index 2	1	2412	19.98	20.50	97.87	1.022	-0.01	0.286	0.329
	WLAN2.4GHz	802.11b 1Mbps	Front	0mm	Ant 6+7(6)	SKU 8	Brick	Soft holster	2	Index 2	1	2412	19.98	20.50	97.87	1.022	-0.12	0.256	0.295
	WLAN2.4GHz	802.11b 1Mbps	Front	0mm	Ant 6+7(6)	SKU 8	Brick	Soft holster	3	Index 2	1	2412	19.98	20.50	97.87	1.022	0.03	0.268	0.309
	WLAN2.4GHz	802.11b 1Mbps	Front	15mm	Ant 6+7(6)	SKU 9	Gun	-	1	Index 2	1	2412	19.98	20.50	97.87	1.022	-0.02	0.200	0.230
	WLAN2.4GHz	802.11b 1Mbps	Back	15mm	Ant 6+7(6)	SKU 9	Gun	-	1	Index 2	1	2412	19.98	20.50	97.87	1.022	0.01	0.215	0.248
	WLAN2.4GHz	802.11b 1Mbps	Left Side	0mm	Ant 6+7(6)	SKU 9	Gun	Soft holster	1	Index 2	1	2412	19.98	20.50	97.87	1.022	0.15	0.148	0.170
	WLAN2.4GHz	802.11b 1Mbps	Right Side	0mm	Ant 6+7(6)	SKU 9	Gun	Soft holster	1	Index 2	1	2412	19.98	20.50	97.87	1.022	-0.01	0.227	0.262
	WLAN2.4GHz	802.11b 1Mbps	Right Side	0mm	Ant 6+7(6)	SKU 5	Gun	Soft holster	1	Index 2	1	2412	19.98	20.50	97.87	1.022	-0.08	0.216	0.249
	WLAN2.4GHz	802.11b 1Mbps	Right Side	0mm	Ant 6+7(6)	SKU 6	Gun	Soft holster	1	Index 2	1	2412	19.98	20.50	97.87	1.022	0.16	0.205	0.236
	WLAN2.4GHz	802.11b 1Mbps	Right Side	0mm	Ant 6+7(6)	SKU 7	Gun	Soft holster	2	Index 2	1	2412	19.98	20.50	97.87	1.022	0.05	0.211	0.243
	WLAN2.4GHz	802.11b 1Mbps	Right Side	0mm	Ant 6+7(6)	SKU 11	Gun	Soft holster	3	Index 2	1	2412	19.98	20.50	97.87	1.022	0.05	0.201	0.232
	WLAN5GHz	802.11n-HT40 MCS0	Front	15mm	Ant 6+7(6)	SKU 13	Brick	-	1	Index 2	54	5270	18.10	18.50	100	1.000	-0.03	0.162	0.178
	WLAN5GHz	802.11n-HT40 MCS0	Back	15mm	Ant 6+7(6)	SKU 13	Brick	-	1	Index 2	54	5270	18.10	18.50	100	1.000	0.04	0.493	0.541
	WLAN5GHz	802.11n-HT40 MCS0	Back	0mm	Ant 6+7(6)	SKU 13	Brick	Soft holster	1	Index 2	54	5270	18.10	18.50	100	1.000	0.02	0.424	0.465
	WLAN5GHz	802.11n-HT40 MCS0	Back	15mm	Ant 6+7(6)	SKU 8	Brick	-	2	Index 2	54	5270	18.10	18.50	100	1.000	0.16	0.452	0.496
	WLAN5GHz	802.11n-HT40 MCS0	Back	15mm	Ant 6+7(6)	SKU 8	Brick	-	3	Index 2	54	5270	18.10	18.50	100	1.000	0.13	0.456	0.500
	WLAN5GHz	802.11n-HT40 MCS0	Front	15mm	Ant 6+7(6)	SKU 9	Gun	-	1	Index 2	54	5270	18.10	18.50	100	1.000	0.02	0.223	0.245
	WLAN5GHz	802.11n-HT40 MCS0	Back	15mm	Ant 6+7(6)	SKU 9	Gun	-	1	Index 2	54	5270	18.10	18.50	100	1.000	-0.15	0.676	0.741
04	WLAN5GHz	802.11n-HT40 MCS0	Left Side	0mm	Ant 6+7(6)	SKU 9	Gun	Soft holster	1	Index 2	54	5270	18.10	18.50	100	1.000	0	0.974	1.068
	WLAN5GHz	802.11a 6Mbps	Left Side	0mm	Ant 6+7(6)	SKU 9	Gun	Soft holster	1	Index 2	52	5260	18.00	18.50	100	1.000	0.08	0.935	1.049
	WLAN5GHz	802.11n-HT40 MCS0	Right Side	0mm	Ant 6+7(6)	SKU 9	Gun	Soft holster	1	Index 2	54	5270	18.10	18.50	100	1.000	0.16	0.315	0.345
	WLAN5GHz	802.11n-HT40 MCS0	Left Side	0mm	Ant 6+7(6)	SKU 5	Gun	Soft holster	1	Index 2	54	5270	18.10	18.50	100	1.000	0	0.968	1.061



FCC SAR TEST REPORT

Report No. : FA443061

	WLAN5GHz	802.11n-HT40 MCS0	Left Side	0mm	Ant 6+7(6)	SKU 6	Gun	Soft holster	1	Index 2	54	5270	18.10	18.50	100	1.000	0.01	0.877	0.962
	WLAN5GHz	802.11n-HT40 MCS0	Left Side	0mm	Ant 6+7(6)	SKU 7	Gun	Soft holster	2	Index 2	54	5270	18.10	18.50	100	1.000	-0.01	0.962	1.055
	WLAN5GHz	802.11n-HT40 MCS0	Left Side	0mm	Ant 6+7(6)	SKU 11	Gun	Soft holster	3	Index 2	54	5270	18.10	18.50	100	1.000	-0.06	0.907	0.995
	WLAN5GHz	802.11ac-VHT80 MCS0	Front	15mm	Ant 6+7(7)	SKU 13	Brick	-	1	Index 2	138	5690	17.90	18.50	100	1.000	-0.04	0.211	0.242
	WLAN5GHz	802.11ac-VHT80 MCS0	Back	15mm	Ant 6+7(7)	SKU 13	Brick	-	1	Index 2	138	5690	17.90	18.50	100	1.000	-0.03	0.435	0.499
	WLAN5GHz	802.11ac-VHT80 MCS0	Back	0mm	Ant 6+7(7)	SKU 13	Brick	Soft holster	1	Index 2	138	5690	17.90	18.50	100	1.000	-0.15	0.485	0.557
	WLAN5GHz	802.11ac-VHT80 MCS0	Back	15mm	Ant 6+7(7)	SKU 8	Brick	Soft holster	2	Index 2	138	5690	17.90	18.50	100	1.000	0.18	0.421	0.483
	WLAN5GHz	802.11ac-VHT80 MCS0	Back	15mm	Ant 6+7(7)	SKU 8	Brick	Soft holster	3	Index 2	138	5690	17.90	18.50	100	1.000	-0.17	0.425	0.488
	WLAN5GHz	802.11ac-VHT80 MCS0	Front	15mm	Ant 6+7(7)	SKU 9	Gun	-	1	Index 2	138	5690	17.90	18.50	100	1.000	-0.05	0.209	0.240
	WLAN5GHz	802.11ac-VHT80 MCS0	Back	15mm	Ant 6+7(7)	SKU 9	Gun	-	1	Index 2	138	5690	17.90	18.50	100	1.000	0.19	0.410	0.471
05	WLAN5GHz	802.11ac-VHT80 MCS0	Left Side	0mm	Ant 6+7(7)	SKU 9	Gun	Soft holster	1	Index 2	138	5690	17.90	18.50	100	1.000	0.04	0.946	1.086
	WLAN5GHz	802.11ac-VHT80 MCS0	Left Side	0mm	Ant 6+7(6)	SKU 9	Gun	Soft holster	1	Index 2	122	5610	17.50	18.50	100	1.000	-0.08	0.798	1.005
	WLAN5GHz	802.11ac-VHT80 MCS0	Right Side	0mm	Ant 6+7(7)	SKU 9	Gun	Soft holster	1	Index 2	138	5690	17.90	18.50	100	1.000	0	0.351	0.403
	WLAN5GHz	802.11ac-VHT80 MCS0	Left Side	0mm	Ant 6+7(7)	SKU 5	Gun	Soft holster	1	Index 2	138	5690	17.90	18.50	100	1.000	-0.09	0.842	0.967
	WLAN5GHz	802.11ac-VHT80 MCS0	Left Side	0mm	Ant 6+7(7)	SKU 6	Gun	Soft holster	1	Index 2	138	5690	17.90	18.50	100	1.000	0.05	0.867	0.995
	WLAN5GHz	802.11ac-VHT80 MCS0	Left Side	0mm	Ant 6+7(7)	SKU 7	Gun	Soft holster	2	Index 2	138	5690	17.90	18.50	100	1.000	0.02	0.830	0.953
	WLAN5GHz	802.11ac-VHT80 MCS0	Left Side	0mm	Ant 6+7(7)	SKU 11	Gun	Soft holster	3	Index 2	138	5690	17.90	18.50	100	1.000	-0.13	0.812	0.932
	WLAN5GHz	802.11ac-VHT80 MCS0	Front	15mm	Ant 6+7(7)	SKU 13	Brick	-	1	Index 2	155	5775	18.20	18.50	100	1.000	0.17	0.336	0.360
	WLAN5GHz	802.11ac-VHT80 MCS0	Back	15mm	Ant 6+7(7)	SKU 13	Brick	-	1	Index 2	155	5775	18.20	18.50	100	1.000	-0.11	0.538	0.576
	WLAN5GHz	802.11ac-VHT80 MCS0	Back	0mm	Ant 6+7(7)	SKU 13	Brick	Soft holster	1	Index 2	155	5775	18.20	18.50	100	1.000	-0.06	0.489	0.524
	WLAN5GHz	802.11ac-VHT80 MCS0	Back	15mm	Ant 6+7(7)	SKU 8	Brick	-	2	Index 2	155	5775	18.20	18.50	100	1.000	-0.15	0.523	0.560
	WLAN5GHz	802.11ac-VHT80 MCS0	Back	15mm	Ant 6+7(7)	SKU 8	Brick	-	3	Index 2	155	5775	18.20	18.50	100	1.000	0.11	0.515	0.552
	WLAN5GHz	802.11ac-VHT80 MCS0	Front	15mm	Ant 6+7(7)	SKU 9	Gun	-	1	Index 2	155	5775	18.20	18.50	100	1.000	0.1	0.329	0.353
	WLAN5GHz	802.11ac-VHT80 MCS0	Back	15mm	Ant 6+7(7)	SKU 9	Gun	-	1	Index 2	155	5775	18.20	18.50	100	1.000	0.07	0.527	0.565
06	WLAN5GHz	802.11ac-VHT80 MCS0	Left Side	0mm	Ant 6+7(7)	SKU 9	Gun	Soft holster	1	Index 2	155	5775	18.20	18.50	100	1.000	0.01	1.030	1.104
	WLAN5GHz	802.11n-HT40 MCS0	Left Side	0mm	Ant 6+7(7)	SKU 9	Gun	Soft holsterr	1	Index 2	151	5755	18.10	18.50	100	1.000	0	0.996	1.092
	WLAN5GHz	802.11ac-VHT80 MCS0	Right Side	0mm	Ant 6+7(7)	SKU 9	Gun	Soft holster	1	Index 2	155	5775	18.20	18.50	100	1.000	0.04	0.397	0.425
	WLAN5GHz	802.11ac-VHT80 MCS0	Left Side	0mm	Ant 6+7(7)	SKU 5	Gun	Soft holster	1	Index 2	155	5775	18.20	18.50	100	1.000	-0.11	0.936	1.003
	WLAN5GHz	802.11ac-VHT80 MCS0	Left Side	0mm	Ant 6+7(7)	SKU 6	Gun	Soft holster	1	Index 2	155	5775	18.20	18.50	100	1.000	-0.16	0.963	1.032
	WLAN5GHz	802.11ac-VHT80 MCS0	Left Side	0mm	Ant 6+7(7)	SKU 7	Gun	Soft holster	2	Index 2	155	5775	18.20	18.50	100	1.000	-0.15	0.996	1.067
	WLAN5GHz	802.11ac-VHT80 MCS0	Left Side	0mm	Ant 6+7(7)	SKU 11	Gun	Soft holster	3	Index 2	155	5775	18.20	18.50	100	1.000	-0.06	0.902	0.967



Plot No.	Band	Mode	Test Position	Gap (mm)	Antenna	SKU	Brick / Gun Type	Accessories	Battery	Power State	Ch.	Freq. (MHz)	Average Power (dBm)	Tune-Up Limit (dBm)	Duty Cycle %	Duty Cycle Scaling Factor	Power Drift (dB)	Measured 1g SAR (W/kg)	Reported 1g SAR (W/kg)	Measured APD (W/m^2)	Reported APD (W/m^2)
	WLAN6GHz	802.11ax-HE160 MCS0	Front	15mm	Ant 6+7(7)	SKU 13	Brick	-	1	Index 2	15	6025	8.50	9.00	98.19	1.018	-0.14	0.032	0.037	0.260	0.297
	WLAN6GHz	802.11ax-HE160 MCS0	Back	15mm	Ant 6+7(7)	SKU 13	Brick	-	1	Index 2	15	6025	8.50	9.00	98.19	1.018	-0.19	0.040	0.046	0.333	0.380
	WLAN6GHz	802.11ax-HE160 MCS0	Back	0mm	Ant 6+7(7)	SKU 13	Brick	Soft holster	1	Index 2	15	6025	8.50	9.00	98.19	1.018	0.05	0.055	0.063	0.453	0.517
	WLAN6GHz	802.11ax-HE160 MCS0	Back	0mm	Ant 6+7(7)	SKU 13	Brick	Soft holster	1	Index 2	47	6185	8.60	9.00	98.19	1.018	0.06	0.091	0.102	0.550	0.614
	WLAN6GHz	802.11ax-HE160 MCS0	Back	0mm	Ant 6+7(7)	SKU 13	Brick	Soft holster	1	Index 2	111	6505	8.20	9.00	98.19	1.018	-0.12	0.085	0.104	0.506	0.619
	WLAN6GHz	802.11ax-HE160 MCS0	Back	0mm	Ant 6+7(7)	SKU 13	Brick	Soft holster	1	Index 2	143	6665	8.10	9.00	98.19	1.018	0.12	0.072	0.090	0.453	0.567
	WLAN6GHz	802.11ax-HE160 MCS0	Back	0mm	Ant 6+7(7)	SKU 13	Brick	Soft holster	1	Index 2	207	6985	8.60	9.00	98.19	1.018	-0.16	0.058	0.065	0.356	0.397
	WLAN6GHz	802.11ax-HE160 MCS0	Worst	0mm	Ant 6+7(7)	SKU 8	Brick	Soft holster	2	Index 2	111	6505	8.20	9.00	98.19	1.018	0.07	0.080	0.098	0.476	0.583
	WLAN6GHz	802.11ax-HE160 MCS0	Worst	0mm	Ant 6+7(7)	SKU 8	Brick	Soft holster	3	Index 2	111	6505	8.20	9.00	98.19	1.018	-0.02	0.082	0.100	0.488	0.597
	WLAN6GHz	802.11ax-HE160 MCS0	Front	15mm	Ant 6+7(7)	SKU 9	Gun	-	1	Index 2	15	6025	8.50	9.00	98.19	1.018	-0.05	0.045	0.051	0.437	0.499
	WLAN6GHz	802.11ax-HE160 MCS0	Back	15mm	Ant 6+7(7)	SKU 9	Gun	-	1	Index 2	15	6025	8.50	9.00	98.19	1.018	-0.07	0.058	0.066	0.521	0.595
	WLAN6GHz	802.11ax-HE160 MCS0	Left Side	0mm	Ant 6+7(7)	SKU 9	Gun	Soft holster	1	Index 2	15	6025	8.50	9.00	98.19	1.018	-0.13	0.117	0.134	0.776	0.886
	WLAN6GHz	802.11ax-HE160 MCS0	Right Side	0mm	Ant 6+7(7)	SKU 9	Gun	Soft holster	1	Index 2	15	6025	8.50	9.00	98.19	1.018	0.08	0.066	0.075	0.477	0.545
	WLAN6GHz	802.11ax-HE160 MCS0	Left Side	0mm	Ant 6+7(7)	SKU 9	Gun	Soft holster	1	Index 2	47	6185	8.60	9.00	98.19	1.018	0.16	0.121	0.135	0.804	0.897
	WLAN6GHz	802.11ax-HE160 MCS0	Left Side	0mm	Ant 6+7(7)	SKU 9	Gun	Soft holster	1	Index 2	111	6505	8.20	9.00	98.19	1.018	0.01	0.104	0.127	0.727	0.890
07	WLAN6GHz	802.11ax-HE160 MCS0	Left Side	0mm	Ant 6+7(7)	SKU 9	Gun	Soft holster	1	Index 2	143	6665	8.10	9.00	98.19	1.018	-0.1	0.128	0.160	1.110	1.390
	WLAN6GHz	802.11ax-HE160 MCS0	Left Side	0mm	Ant 6+7(7)	SKU 9	Gun	Soft holster	1	Index 2	207	6985	8.60	9.00	98.19	1.018	0.1	0.119	0.133	0.941	1.050
	WLAN6GHz	802.11ax-HE160 MCS0	Left Side	0mm	Ant 6+7(7)	SKU 5	Gun	Soft holster	1	Index 2	143	6665	8.10	9.00	98.19	1.018	-0.04	0.111	0.139	0.962	1.205
	WLAN6GHz	802.11ax-HE160 MCS0	Left Side	0mm	Ant 6+7(7)	SKU 6	Gun	Soft holster	1	Index 2	143	6665	8.10	9.00	98.19	1.018	-0.01	0.108	0.135	0.854	1.070
	WLAN6GHz	802.11ax-HE160 MCS0	Left Side	0mm	Ant 6+7(7)	SKU 7	Gun	Soft holster	2	Index 2	143	6665	8.10	9.00	98.19	1.018	0	0.113	0.142	0.979	1.226
	WLAN6GHz	802.11ax-HE160 MCS0	Left Side	0mm	Ant 6+7(7)	SKU 11	Gun	Soft holster	3	Index 2	143	6665	8.10	9.00	98.19	1.018	-0.11	0.118	0.148	0.933	1.169



<Bluetooth SAR>

Plot No.	Band	Mode	Test Position	Gap (mm)	Antenna	SKU	Brick / Gun Type	Accessories	Battery	Power State	Ch.	Freq. (MHz)	Average Power (dBm)	Tune-Up Limit (dBm)	Duty Cycle %	Duty Cycle Scaling Factor	Power Drift (dB)	Measured 1g SAR (W/kg)	Reported 1g SAR (W/kg)
	Bluetooth	1Mbps	Front	15mm	Ant 6	SKU 13	Brick	-	1	Index 2	78	2480	6.91	7.00	77.01	1.082	-0.18	0.001	0.001
	Bluetooth	1Mbps	Back	15mm	Ant 6	SKU 13	Brick	-	1	Index 2	78	2480	6.91	7.00	77.01	1.082	0.03	0.001	0.001
	Bluetooth	1Mbps	Back	0mm	Ant 6	SKU 13	Brick	Soft holster	1	Index 2	78	2480	6.91	7.00	77.01	1.082	-0.01	0.001	0.001
	Bluetooth	1Mbps	Back	0mm	Ant 6	SKU 8	Brick	Soft holster	2	Index 2	78	2480	6.91	7.00	77.01	1.082	0.11	0.001	0.001
	Bluetooth	1Mbps	Back	0mm	Ant 6	SKU 8	Brick	Soft holster	3	Index 2	78	2480	6.91	7.00	77.01	1.082	-0.08	0.001	0.001
	Bluetooth	1Mbps	Front	15mm	Ant 6	SKU 9	Gun	-	1	Index 2	78	2480	6.91	7.00	77.01	1.082	-0.08	0.001	0.001
	Bluetooth	1Mbps	Back	15mm	Ant 6	SKU 9	Gun	-	1	Index 2	78	2480	6.91	7.00	77.01	1.082	-0.04	0.001	0.001
	Bluetooth	1Mbps	Left Side	0mm	Ant 6	SKU 9	Gun	Soft holster	1	Index 2	78	2480	6.91	7.00	77.01	1.082	-0.08	0.001	0.001
08	Bluetooth	1Mbps	Right Side	0mm	Ant 6	SKU 9	Gun	Soft holster	1	Index 2	78	2480	6.91	7.00	77.01	1.082	-0.07	0.005	0.006
	Bluetooth	1Mbps	Right Side	0mm	Ant 6	SKU 5	Gun	Soft holster	1	Index 2	78	2480	6.91	7.00	77.01	1.082	-0.08	0.001	0.001
	Bluetooth	1Mbps	Right Side	0mm	Ant 6	SKU 6	Gun	Soft holster	1	Index 2	78	2480	6.91	7.00	77.01	1.082	-0.13	0.001	0.001
	Bluetooth	1Mbps	Right Side	0mm	Ant 6	SKU 7	Gun	Soft holster	2	Index 2	78	2480	6.91	7.00	77.01	1.082	-0.13	0.001	0.001
	Bluetooth	1Mbps	Right Side	0mm	Ant 6	SKU 11	Gun	Soft holster	3	Index 2	78	2480	6.91	7.00	77.01	1.082	0.06	0.001	0.001
	Bluetooth	1Mbps	Front	15mm	Ant 7	SKU 13	Brick	-	1	Index 2	39	2441	5.46	5.50	77.13	1.080	-0.03	0.001	0.001
	Bluetooth	1Mbps	Front	0mm	Ant 7	SKU 13	Brick	Soft holster	1	Index 2	39	2441	5.46	5.50	77.13	1.080	0.08	0.001	0.001
	Bluetooth	1Mbps	Back	0mm	Ant 7	SKU 13	Brick	Soft holster	1	Index 2	39	2441	5.46	5.50	77.13	1.080	-0.14	0.002	0.002
	Bluetooth	1Mbps	Back	0mm	Ant 7	SKU 8	Brick	Soft holster	2	Index 2	39	2441	5.46	5.50	77.13	1.080	0.05	0.001	0.001
	Bluetooth	1Mbps	Back	0mm	Ant 7	SKU 8	Brick	Soft holster	3	Index 2	39	2441	5.46	5.50	77.13	1.080	-0.11	0.001	0.001
	Bluetooth	1Mbps	Front	15mm	Ant 7	SKU 9	Gun	-	1	Index 2	39	2441	5.46	5.50	77.13	1.080	-0.16	0.001	0.001
	Bluetooth	1Mbps	Back	15mm	Ant 7	SKU 9	Gun	-	1	Index 2	39	2441	5.46	5.50	77.13	1.080	-0.02	0.001	0.001
	Bluetooth	1Mbps	Left Side	0mm	Ant 7	SKU 9	Gun	Soft holster	1	Index 2	39	2441	5.46	5.50	77.13	1.080	0	0.001	0.001
	Bluetooth	1Mbps	Right Side	0mm	Ant 7	SKU 9	Gun	Soft holster	1	Index 2	39	2441	5.46	5.50	77.13	1.080	-0.09	0.001	0.001
	Bluetooth	1Mbps	Left Side	0mm	Ant 7	SKU 5	Gun	Soft holster	1	Index 2	39	2441	5.46	5.50	77.13	1.080	-0.08	0.001	0.001
	Bluetooth	1Mbps	Left Side	0mm	Ant 7	SKU 6	Gun	Soft holster	1	Index 2	39	2441	5.46	5.50	77.13	1.080	0.16	0.001	0.001
	Bluetooth	1Mbps	Left Side	0mm	Ant 7	SKU 7	Gun	Soft holster	2	Index 2	39	2441	5.46	5.50	77.13	1.080	0.05	0.001	0.001
	Bluetooth	1Mbps	Left Side	0mm	Ant 7	SKU 11	Gun	Soft holster	3	Index 2	39	2441	5.46	5.50	77.13	1.080	0.05	0.001	0.001



13.3 Extremity SAR

<WLAN SAR>

Table with 18 columns: Plot No., Band, Mode, Test Position, Gap (mm), Antenna, SKU, Brick / Gun Type, Battery, Power State, Ch., Freq. (MHz), Average Power (dBm), Tune-Up Limit (dBm), Duty Cycle %, Duty Cycle Scaling Factor, Power Drift (dB), Measured 10g SAR (W/kg), Reported 10g SAR (W/kg). Rows include WLAN2.4GHz and WLAN5GHz configurations for various antennas and test positions.



Plot No.	Band	Mode	Test Position	Gap (mm)	Antenna	SKU	Brick / Gun Type	Battery	Power State	Ch.	Freq. (MHz)	Average Power (dBm)	Tune-Up Limit (dBm)	Duty Cycle %	Duty Cycle Scaling Factor	Power Drift (dB)	Measured 10g SAR (W/kg)	Reported 10g SAR (W/kg)	Measured APD (W/m^2)	Reported APD (W/m^2)
	WLAN6GHZ	802.11ax-HE160 MCS0	Front	0mm	Ant 6+7(7)	SKU 13	Brick	1	Index 2	15	6025	8.50	9.00	98.19	1.018	0.12	0.048	0.055	0.906	1.035
	WLAN6GHZ	802.11ax-HE160 MCS0	Back	0mm	Ant 6+7(7)	SKU 13	Brick	1	Index 2	15	6025	8.50	9.00	98.19	1.018	-0.11	0.087	0.099	1.510	1.725
	WLAN6GHZ	802.11ax-HE160 MCS0	Left Side	0mm	Ant 6+7(7)	SKU 13	Brick	1	Index 2	15	6025	8.50	9.00	98.19	1.018	-0.14	0.201	0.230	4.210	4.809
	WLAN6GHZ	802.11ax-HE160 MCS0	Right Side	0mm	Ant 6+7(7)	SKU 13	Brick	1	Index 2	15	6025	8.50	9.00	98.19	1.018	-0.16	0.181	0.207	2.700	3.084
	WLAN6GHZ	802.11ax-HE160 MCS0	Left Side	0mm	Ant 6+7(7)	SKU 13	Brick	1	Index 2	47	6185	8.60	9.00	98.19	1.018	0.11	0.277	0.309	4.600	5.135
13	WLAN6GHZ	802.11ax-HE160 MCS0	Left Side	0mm	Ant 6+7(7)	SKU 13	Brick	1	Index 2	111	6505	8.20	9.00	98.19	1.018	0.03	0.257	0.315	6.130	7.503
	WLAN6GHZ	802.11ax-HE160 MCS0	Left Side	0mm	Ant 6+7(7)	SKU 13	Brick	1	Index 2	143	6665	8.10	9.00	98.19	1.018	-0.01	0.250	0.313	4.250	5.323
	WLAN6GHZ	802.11ax-HE160 MCS0	Left Side	0mm	Ant 6+7(7)	SKU 13	Brick	1	Index 2	207	6985	8.60	9.00	98.19	1.018	-0.14	0.281	0.314	4.950	5.525
	WLAN6GHZ	802.11ax-HE160 MCS0	Left Side	0mm	Ant 6+7(7)	SKU 8	Brick	2	Index 2	111	6505	8.20	9.00	98.19	1.018	-0.15	0.242	0.296	5.770	7.062
	WLAN6GHZ	802.11ax-HE160 MCS0	Left Side	0mm	Ant 6+7(7)	SKU 8	Brick	3	Index 2	111	6505	8.20	9.00	98.19	1.018	-0.12	0.237	0.290	5.650	6.915
	WLAN6GHZ	802.11ax-HE160 MCS0	Back	0mm	Ant 6+7(7)	SKU 9	Gun	1	Index 2	15	6025	8.50	9.00	98.19	1.018	0.08	0.040	0.046	1.410	1.611
	WLAN6GHZ	802.11ax-HE160 MCS0	Back	0mm	Ant 6+7(7)	SKU 9	Gun	1	Index 2	47	6185	8.60	9.00	98.19	1.018	0.01	0.038	0.042	1.400	1.563
	WLAN6GHZ	802.11ax-HE160 MCS0	Back	0mm	Ant 6+7(7)	SKU 9	Gun	1	Index 2	111	6505	8.20	9.00	98.19	1.018	0.02	0.045	0.055	1.820	2.228
	WLAN6GHZ	802.11ax-HE160 MCS0	Back	0mm	Ant 6+7(7)	SKU 9	Gun	1	Index 2	143	6665	8.10	9.00	98.19	1.018	-0.11	0.037	0.046	1.370	1.716
	WLAN6GHZ	802.11ax-HE160 MCS0	Back	0mm	Ant 6+7(7)	SKU 9	Gun	1	Index 2	207	6985	8.60	9.00	98.19	1.018	-0.01	0.041	0.046	1.420	1.585
	WLAN6GHZ	802.11ax-HE160 MCS0	Back	0mm	Ant 6+7(7)	SKU 5	Gun	2	Index 2	111	6505	8.20	9.00	98.19	1.018	0.09	0.034	0.042	1.360	1.665
	WLAN6GHZ	802.11ax-HE160 MCS0	Back	0mm	Ant 6+7(7)	SKU 6	Gun	3	Index 2	111	6505	8.20	9.00	98.19	1.018	0.1	0.041	0.050	1.640	2.007
	WLAN6GHZ	802.11ax-HE160 MCS0	Back	0mm	Ant 6+7(7)	SKU 7	Gun	1	Index 2	111	6505	8.20	9.00	98.19	1.018	-0.04	0.038	0.047	1.520	1.860
	WLAN6GHZ	802.11ax-HE160 MCS0	Back	0mm	Ant 6+7(7)	SKU 11	Gun	1	Index 2	111	6505	8.20	9.00	98.19	1.018	0.15	0.042	0.051	1.680	2.056

<Bluetooth SAR>

Plot No.	Band	Mode	Test Position	Gap (mm)	Antenna	SKU	Brick / Gun Type	Battery	Power State	Ch.	Freq. (MHz)	Average Power (dBm)	Tune-Up Limit (dBm)	Duty Cycle %	Duty Cycle Scaling Factor	Power Drift (dB)	Measured 10g SAR (W/kg)	Reported 10g SAR (W/kg)
14	Bluetooth	1Mbps	Back	0mm	Ant 6	SKU 9	Gun	1	Index 2	78	2480	6.91	7.00	77.01	1.082	-0.16	0.004	0.004
	Bluetooth	1Mbps	Back	0mm	Ant 6	SKU 5	Gun	1	Index 2	78	2480	6.91	7.00	77.01	1.082	0.13	0.001	0.001
	Bluetooth	1Mbps	Back	0mm	Ant 6	SKU 6	Gun	1	Index 2	78	2480	6.91	7.00	77.01	1.082	0.1	0.001	0.001
	Bluetooth	1Mbps	Back	0mm	Ant 6	SKU 7	Gun	2	Index 2	78	2480	6.91	7.00	77.01	1.082	-0.17	0.001	0.001
	Bluetooth	1Mbps	Back	0mm	Ant 6	SKU 11	Gun	3	Index 2	78	2480	6.91	7.00	77.01	1.082	0.17	0.001	0.001
	Bluetooth	1Mbps	Back	0mm	Ant 7	SKU 9	Gun	1	Index 2	39	2441	5.46	5.50	77.13	1.080	-0.09	0.002	0.002
	Bluetooth	1Mbps	Back	0mm	Ant 7	SKU 5	Gun	1	Index 2	39	2441	5.46	5.50	77.13	1.080	0.02	0.001	0.001
	Bluetooth	1Mbps	Back	0mm	Ant 7	SKU 6	Gun	1	Index 2	39	2441	5.46	5.50	77.13	1.080	0.08	0.001	0.001
	Bluetooth	1Mbps	Back	0mm	Ant 7	SKU 7	Gun	2	Index 2	39	2441	5.46	5.50	77.13	1.080	0.13	0.001	0.001
	Bluetooth	1Mbps	Back	0mm	Ant 7	SKU 11	Gun	3	Index 2	39	2441	5.46	5.50	77.13	1.080	-0.08	0.001	0.001



<NFC SAR>

Plot No.	Band	Test Position	Gap (mm)	SKU	Brick / Gun Type	Battery	Freq. (MHz)	Power Drift (dB)	Measured 10g SAR (W/kg)
	NFC	Front	0mm	SKU 13	Brick	1	13.56	0.08	0.001
15	NFC	Back	0mm	SKU 13	Brick	1	13.56	-0.07	0.020
	NFC	Left Side	0mm	SKU 13	Brick	1	13.56	0.01	0.001
	NFC	Right Side	0mm	SKU 13	Brick	1	13.56	0.03	0.001
	NFC	Top Side	0mm	SKU 13	Brick	1	13.56	-0.08	0.001
	NFC	Left Side	0mm	SKU 8	Brick	2	13.56	-0.08	0.005
	NFC	Left Side	0mm	SKU 8	Brick	3	13.56	0.1	0.009
	NFC	Back	0mm	SKU 9	Gun	1	13.56	-0.18	0.010
	NFC	Back	0mm	SKU 5	Gun	1	13.56	0.1	0.005
	NFC	Back	0mm	SKU 6	Gun	1	13.56	0.12	0.008
	NFC	Back	0mm	SKU 7	Gun	2	13.56	0.08	0.009
	NFC	Back	0mm	SKU 11	Gun	3	13.56	-0.17	0.006



13.1 6GHz PD SAR Result

Band	Mode	Test Position	Gap (mm)	Antenna	SKU	Brick / Gun Type	Ch.	Freq. (MHz)	Average Power (dBm)	Grid Step (λ)	iPDn	iPD ratio (≥ -1)	Normal psPD (W/m ²)	Total psPD (W/m ²)
WLAN6GHz	802.11ax-HE160 MCS0	Left Side	2mm	Ant 6+7(7)	SKU 13	Brick	15	6025	8.50	0.0625	1.63	-0.86665472	2.180	2.350
WLAN6GHz	802.11ax-HE160 MCS0	Left Side	10mm	Ant 6+7(7)	SKU 13	Brick	15	6025	8.50	0.25	1.99		1.200	1.350
WLAN6GHz	802.11ax-HE160 MCS0	Left Side	2mm	Ant 6+7(7)	SKU 13	Brick	207	6985	8.60	0.0625	2.71	-0.84226607	3.720	4.310
WLAN6GHz	802.11ax-HE160 MCS0	Left Side	8.59mm	Ant 6+7(7)	SKU 13	Brick	207	6985	8.60	0.25	3.29		2.300	2.420

Plot No.	Band	Mode	Test Position	Gap (mm)	Antenna	SKU	Brick / Gun Type	Ch.	Freq. (MHz)	Average Power (dBm)	Tune-Up Limit (dBm)	Tune-up Scaling Factor	Duty Cycle %	Duty Cycle Scaling Factor	Scaling Factor for Measurement Uncertainty	Power Drift (dB)	Normal psPD (W/m ²)	Scaled Normal psPD (W/m ²)	Total psPD (W/m ²)	Scaled Total psPD (W/m ²)
	WLAN6GHz	802.11ax-HE160 MCS0	Front	2mm	Ant 6+7(7)	SKU 13	Brick	15	6025	8.50	9.00	1.122	98.18	1.019	1.5535	0.03	2.040	3.623	2.110	3.748
	WLAN6GHz	802.11ax-HE160 MCS0	Back	2mm	Ant 6+7(7)	SKU 13	Brick	15	6025	8.50	9.00	1.122	98.18	1.019	1.5535	-0.04	2.750	4.884	2.850	5.062
	WLAN6GHz	802.11ax-HE160 MCS0	Left Side	2mm	Ant 6+7(7)	SKU 13	Brick	15	6025	8.50	9.00	1.122	98.18	1.019	1.5535	0.1	2.180	3.872	2.350	4.174
	WLAN6GHz	802.11ax-HE160 MCS0	Left Side	2mm	Ant 6+7(7)	SKU 13	Brick	47	6185	8.60	9.00	1.096	98.18	1.019	1.5535	0.03	3.250	5.641	3.860	6.700
	WLAN6GHz	802.11ax-HE160 MCS0	Left Side	2mm	Ant 6+7(7)	SKU 13	Brick	111	6505	8.20	9.00	1.202	98.18	1.019	1.5535	0.04	2.760	5.253	3.210	6.109
	WLAN6GHz	802.11ax-HE160 MCS0	Left Side	2mm	Ant 6+7(7)	SKU 13	Brick	143	6665	8.10	9.00	1.230	98.18	1.019	1.5535	-0.07	3.470	6.758	3.840	7.479
01	WLAN6GHz	802.11ax-HE160 MCS0	Left Side	2mm	Ant 6+7(7)	SKU 13	Brick	207	6985	8.60	9.00	1.096	98.18	1.019	1.5535	0.03	3.720	6.457	4.310	7.481
	WLAN6GHz	802.11ax-HE160 MCS0	Right Side	2mm	Ant 6+7(7)	SKU 13	Brick	15	6025	8.50	9.00	1.122	98.18	1.019	1.5535	0.19	2.320	4.121	2.680	4.760
	WLAN6GHz	802.11ax-HE160 MCS0	Left Side	2mm	Ant 6+7(7)	SKU 8	Brick	207	6985	8.60	9.00	1.096	98.18	1.019	1.5535	0.08	3.580	6.214	3.800	6.596
	WLAN6GHz	802.11ax-HE160 MCS0	Left Side	2mm	Ant 6+7(7)	SKU 8	Brick	207	6985	8.60	9.00	1.096	98.18	1.019	1.5535	0.02	3.270	5.676	3.740	6.492
	WLAN6GHz	802.11ax-HE160 MCS0	Front	2mm	Ant 6+7(7)	SKU 9	Gun	15	6025	8.50	9.00	1.122	98.18	1.019	1.5535	0.13	1.890	3.357	1.930	3.428
	WLAN6GHz	802.11ax-HE160 MCS0	Back	2mm	Ant 6+7(7)	SKU 9	Gun	15	6025	8.50	9.00	1.122	98.18	1.019	1.5535	-0.09	1.980	3.517	2.020	3.588
	WLAN6GHz	802.11ax-HE160 MCS0	Left Side	2mm	Ant 6+7(7)	SKU 9	Gun	15	6025	8.50	9.00	1.122	98.18	1.019	1.5535	0.08	3.790	6.732	4.130	7.336
	WLAN6GHz	802.11ax-HE160 MCS0	Left Side	2mm	Ant 6+7(7)	SKU 9	Gun	47	6185	8.60	9.00	1.096	98.18	1.019	1.5535	-0.04	4.090	7.099	4.280	7.429
	WLAN6GHz	802.11ax-HE160 MCS0	Left Side	2mm	Ant 6+7(7)	SKU 9	Gun	111	6505	8.20	9.00	1.202	98.18	1.019	1.5535	0.14	3.740	7.118	3.920	7.461
	WLAN6GHz	802.11ax-HE160 MCS0	Left Side	2mm	Ant 6+7(7)	SKU 9	Gun	143	6665	8.10	9.00	1.230	98.18	1.019	1.5535	0.08	3.500	6.816	3.660	7.128
	WLAN6GHz	802.11ax-HE160 MCS0	Left Side	2mm	Ant 6+7(7)	SKU 9	Gun	207	6985	8.60	9.00	1.096	98.18	1.019	1.5535	0.05	4.120	7.151	4.300	7.464
	WLAN6GHz	802.11ax-HE160 MCS0	Right Side	2mm	Ant 6+7(7)	SKU 9	Gun	15	6025	8.50	9.00	1.122	98.18	1.019	1.5535	0.17	1.200	2.131	1.400	2.487
	WLAN6GHz	802.11ax-HE160 MCS0	Left Side	2mm	Ant 6+7(7)	SKU 5	Gun	207	6985	8.60	9.00	1.096	98.18	1.019	1.5535	0.09	2.940	5.103	3.170	5.502
	WLAN6GHz	802.11ax-HE160 MCS0	Left Side	2mm	Ant 6+7(7)	SKU 6	Gun	207	6985	8.60	9.00	1.096	98.18	1.019	1.5535	0.06	3.350	5.815	4.280	7.429
	WLAN6GHz	802.11ax-HE160 MCS0	Left Side	2mm	Ant 6+7(7)	SKU 7	Gun	207	6985	8.60	9.00	1.096	98.18	1.019	1.5535	0.07	2.570	4.461	2.770	4.808
	WLAN6GHz	802.11ax-HE160 MCS0	Left Side	2mm	Ant 6+7(7)	SKU 11	Gun	207	6985	8.60	9.00	1.096	98.18	1.019	1.5535	0.03	2.940	5.103	3.610	6.266
	WLAN6GHz	802.11ax-HE160 MCS0	Left Side	25mm	Ant 6+7(7)	SKU 13	Brick	15	6025	16.60	17.00	1.096	98.18	1.019	1.5535	0.15	3.720	6.457	3.880	6.735
	WLAN6GHz	802.11ax-HE160 MCS0	Left Side	25mm	Ant 6+7(7)	SKU 13	Brick	47	6185	16.70	17.00	1.072	98.18	1.019	1.5535	-0.07	4.160	7.056	4.280	7.260
	WLAN6GHz	802.11ax-HE160 MCS0	Left Side	25mm	Ant 6+7(7)	SKU 13	Brick	111	6505	15.40	16.50	1.288	98.18	1.019	1.5535	-0.05	3.600	7.342	3.650	7.444
	WLAN6GHz	802.11ax-HE160 MCS0	Left Side	25mm	Ant 6+7(7)	SKU 13	Brick	143	6665	15.50	16.50	1.259	98.18	1.019	1.5535	-0.08	3.270	6.517	3.400	6.776
	WLAN6GHz	802.11ax-HE160 MCS0	Left Side	25mm	Ant 6+7(7)	SKU 13	Brick	207	6985	15.60	16.00	1.096	98.18	1.019	1.5535	0.09	3.900	6.769	3.950	6.856
	WLAN6GHz	802.11ax-HE160 MCS0	Left Side	25mm	Ant 6+7(7)	SKU 9	Gun	15	6025	16.60	17.00	1.096	98.18	1.019	1.5535	0.06	3.140	5.450	3.290	5.711
	WLAN6GHz	802.11ax-HE160 MCS0	Left Side	25mm	Ant 6+7(7)	SKU 9	Gun	47	6185	16.70	17.00	1.072	98.18	1.019	1.5535	-0.06	4.050	6.870	4.250	7.209
	WLAN6GHz	802.11ax-HE160 MCS0	Left Side	25mm	Ant 6+7(7)	SKU 9	Gun	111	6505	15.40	16.50	1.288	98.18	1.019	1.5535	0.15	3.180	6.485	3.300	6.730
	WLAN6GHz	802.11ax-HE160 MCS0	Left Side	25mm	Ant 6+7(7)	SKU 9	Gun	143	6665	15.50	16.50	1.259	98.18	1.019	1.5535	0.02	3.370	6.716	3.420	6.816
	WLAN6GHz	802.11ax-HE160 MCS0	Left Side	25mm	Ant 6+7(7)	SKU 9	Gun	207	6985	15.60	16.00	1.096	98.18	1.019	1.5535	0.02	3.230	5.606	3.350	5.815

13.2 Repeated SAR Measurement

No.	Band	Mode	Test Position	Gap (mm)	Antenna	SKU	Brick / Gun Type	Accessories	Battery	Power State	Ch.	Freq. (MHz)	Average Power (dBm)	Tune-Up Limit (dBm)	Duty Cycle %	Duty Cycle Scaling Factor	Power Drift (dB)	Measured 1g SAR (W/kg)	Ratio	Reported 1g SAR (W/kg)
1st	WLAN5GHz	802.11n-HT40 MCS0	Left Side	0mm	Ant 6+7(6)	SKU 9	Gun	Soft holster	1	Index 2	54	5270	18.10	18.50	100	1.000	0	0.974	-	1.068
2nd	WLAN5GHz	802.11n-HT40 MCS0	Left Side	0mm	Ant 6+7(6)	SKU 9	Gun	Soft holster	1	Index 2	54	5270	18.10	18.50	100	1.000	0.02	0.958	1.02	1.050
1st	WLAN5GHz	802.11ac-VHT80 MCS0	Left Side	0mm	Ant 6+7(7)	SKU 9	Gun	Soft holster	1	Index 2	138	5690	17.90	18.50	100	1.000	0.04	0.946	-	1.086
2nd	WLAN5GHz	802.11ac-VHT80 MCS0	Left Side	0mm	Ant 6+7(7)	SKU 9	Gun	Soft holster	1	Index 2	138	5690	17.90	18.50	100	1.000	-0.18	0.928	1.02	1.065
1st	WLAN5GHz	802.11ac-VHT80 MCS0	Left Side	0mm	Ant 6+7(7)	SKU 9	Gun	Soft holster	1	Index 2	155	5775	18.20	18.50	100	1.000	0.01	1.030	-	1.104
2nd	WLAN5GHz	802.11ac-VHT80 MCS0	Left Side	0mm	Ant 6+7(7)	SKU 9	Gun	Soft holster	1	Index 2	155	5775	18.20	18.50	100	1.000	-0.11	0.989	1.04	1.060

No.	Band	Mode	Test Position	Gap (mm)	Antenna	SKU	Brick / Gun Type	Battery	Power State	Ch.	Freq. (MHz)	Average Power (dBm)	Tune-Up Limit (dBm)	Duty Cycle %	Duty Cycle Scaling Factor	Power Drift (dB)	Measured 10g SAR (W/kg)	Ratio	Reported 10g SAR (W/kg)
1st	WLAN5GHz	802.11n-HT40 MCS0	Left Side	0mm	Ant 6+7(6)	SKU 13	Brick	1	Index 2	54	5270	18.10	18.50	100	1.000	0.02	2.230	-	2.445
2nd	WLAN5GHz	802.11n-HT40 MCS0	Left Side	0mm	Ant 6+7(6)	SKU 13	Brick	1	Index 2	54	5270	18.10	18.50	100	1.000	-0.08	2.150	1.04	2.357
1st	WLAN5GHz	802.11ac-VHT80 MCS0	Left Side	0mm	Ant 6+7(7)	SKU 13	Brick	1	Index 2	155	5775	18.20	18.50	100	1.000	0.03	2.560	-	2.743
2nd	WLAN5GHz	802.11ac-VHT80 MCS0	Left Side	0mm	Ant 6+7(7)	SKU 13	Brick	1	Index 2	155	5775	18.20	18.50	100	1.000	0.02	2.490	1.03	2.668

General Note:

1. Per KDB 865664 D01v01r04, for each frequency band, repeated SAR measurement is required only when the measured SAR is ≥ 0.8 W/kg.
2. Per KDB 865664 D01v01r04, if the ratio among the repeated measurement is ≤ 1.2 and the measured SAR < 1.45 W/kg, only one repeated measurement is required.
3. Per KDB 865664 D01v01r04, if the extremity repeated SAR is necessary, the same procedures should be adapted for measurements according to extremity and occupational exposure limits by applying a factor of 2.5 for extremity exposure and a factor of 5 for occupational exposure to the corresponding SAR thresholds.
4. The ratio is the difference in percentage between original and repeated *measured SAR*.
5. All measurement SAR result is scaled-up to account for tune-up tolerance and is compliant.

14. Simultaneous Transmission Analysis

NO.	Simultaneous Transmission Configurations	Body-worn	Hotspot	Extremity
Non DBS				
1.	WLAN2.4GHz Ant 6 + Bluetooth Ant 7	Yes		
2.	WLAN2.4GHz Ant 7 + Bluetooth Ant 6	Yes		
3.	WLAN5/6GHz Ant 6+7 + Bluetooth Ant 6	Yes	Yes	
4.	WLAN5/6GHz Ant 6+7 + Bluetooth Ant 7	Yes	Yes	
5.	WLAN5/6GHz Ant 6+7 + NFC			Yes
6.	WLAN2.4GHz Ant 6 + Bluetooth Ant 7 + NFC			Yes
7.	WLAN2.4GHz Ant 7 + Bluetooth Ant 6 + NFC			Yes
8.	WLAN5/6GHz Ant 6+7 + Bluetooth Ant 6 + NFC			Yes
9.	WLAN5/6GHz Ant 6+7 + Bluetooth Ant 7 + NFC			Yes
DBS				
10.	WLAN2.4GHz Ant 6 + WLAN5/6GHz Ant 6+7 +Bluetooth Ant 7	Yes	Yes	
11.	WLAN2.4GHz Ant 7 + WLAN5/6GHz Ant 6+7 + Bluetooth Ant 6	Yes	Yes	
12.	WLAN2.4GHz Ant 6+7 + WLAN5/6GHz Ant 6+7	Yes	Yes	
13.	WLAN2.4GHz Ant 6 + WLAN5/6GHz Ant 6+7 + Bluetooth Ant 7 + NFC			Yes
14.	WLAN2.4GHz Ant 7 + WLAN5/6GHz Ant 6+7 + Bluetooth Ant 6 + NFC			Yes
15.	WLAN2.4GHz Ant 6+7 + WLAN5/6GHz Ant 6+7 + NFC			Yes

General Note:

1. The device 2.4GHz WLAN/BT support hotspot operation via 5GHz receive signal
2. The worst case WLAN reported SAR for each configuration was used for SAR summation. Therefore, the following summations represent the absolute worst cases for simultaneous transmission with WLAN.
3. The Scaled SAR summation is calculated based on the same configuration and test position.
4. Per KDB 447498 D01v06, simultaneous transmission SAR is compliant if,
 - i) Scalar SAR summation < 1.6W/kg.
 - ii) $SPLSR = (SAR1 + SAR2)^{1.5} / (\text{min. separation distance, mm})$, 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 $SPLSR \leq 0.04$, simultaneously transmission SAR measurement is not necessary.
 - iv) Simultaneously transmission SAR measurement, and the reported multi-band SAR < 1.6W/kg.

14.1 Hotspot Exposure Conditions

<Non-DBS_Brick>

Exposure Position	2	3	6	7	2+7 Summed 1g SAR (W/kg)	3+6 Summed 1g SAR (W/kg)
	WLAN2.4GHz Ant 6 1g SAR (W/kg)	WLAN2.4GHz Ant 7 1g SAR (W/kg)	Bluetooth Ant 6 1g SAR (W/kg)	Bluetooth Ant 7 1g SAR (W/kg)		
Front	0.221	0.199	0.001	0.001	0.222	0.200
Back	0.251	0.157	0.001	0.001	0.252	0.158
Left Side		0.381		0.001	0.001	0.381
Right Side	0.459		0.006		0.459	0.006

<Non-DBS_Gun>

Exposure Position	2	3	6	7	2+7 Summed 1g SAR (W/kg)	3+6 Summed 1g SAR (W/kg)
	WLAN2.4GHz Ant 6 1g SAR (W/kg)	WLAN2.4GHz Ant 7 1g SAR (W/kg)	Bluetooth Ant 6 1g SAR (W/kg)	Bluetooth Ant 7 1g SAR (W/kg)		
Front	0.206	0.147	0.001	0.001	0.207	0.148
Left Side		0.230		0.001	0.001	0.230
Right Side	0.515		0.013		0.515	0.013

14.2 Body-Worn Accessory Exposure Conditions

<Non-DBS_Brick>

Exposure Position	2	3	4	5	6	7	2+7 Summed 1g SAR (W/kg)	3+6 Summed 1g SAR (W/kg)	5+6 Summed 1g SAR (W/kg)	5+7 Summed 1g SAR (W/kg)
	WLAN2.4GHz Ant 6 1g SAR (W/kg)	WLAN2.4GHz Ant 7 1g SAR (W/kg)	WLAN2.4GHz Ant 6+7 1g SAR (W/kg)	WLAN5/6GHz Ant 6+7 1g SAR (W/kg)	Bluetooth Ant 6 1g SAR (W/kg)	Bluetooth Ant 7 1g SAR (W/kg)				
Front	0.103	0.133	0.329	0.360	0.001	0.001	0.104	0.134	0.361	0.361
Back	0.127	0.089	0.252	0.576	0.001	0.002	0.129	0.090	0.577	0.578

<DBS_Brick>

Exposure Position	2	3	4	5	6	7	2+5+7 Summed 1g SAR (W/kg)	3+5+6 Summed 1g SAR (W/kg)	4+5 Summed 1g SAR (W/kg)
	WLAN2.4GHz Ant 6 1g SAR (W/kg)	WLAN2.4GHz Ant 7 1g SAR (W/kg)	WLAN2.4GHz Ant 6+7 1g SAR (W/kg)	WLAN5/6GHz Ant 6+7 1g SAR (W/kg)	Bluetooth Ant 6 1g SAR (W/kg)	Bluetooth Ant 7 1g SAR (W/kg)			
Front	0.103	0.133	0.329	0.360	0.001	0.001	0.464	0.494	0.689
Back	0.127	0.089	0.252	0.576	0.001	0.002	0.705	0.666	0.828

<Non-DBS_Gun>

Exposure Position	2	3	4	5	6	7	2+7 Summed 1g SAR (W/kg)	3+6 Summed 1g SAR (W/kg)	5+6 Summed 1g SAR (W/kg)	5+7 Summed 1g SAR (W/kg)
	WLAN2.4GHz Ant 6 1g SAR (W/kg)	WLAN2.4GHz Ant 7 1g SAR (W/kg)	WLAN2.4GHz Ant 6+7 1g SAR (W/kg)	WLAN5/6GHz Ant 6+7 1g SAR (W/kg)	Bluetooth Ant 6 1g SAR (W/kg)	Bluetooth Ant 7 1g SAR (W/kg)				
Front	0.146	0.104	0.230	0.353	0.001	0.001	0.147	0.105	0.354	0.354
Back	0.174	0.089	0.248	0.741	0.001	0.001	0.175	0.090	0.742	0.742
Left side		0.149	0.170	1.104	0.001	0.001	0.001	0.150	1.105	1.105
Right side	0.237		0.262	0.425	0.006	0.001	0.238	0.006	0.431	0.426

<DBS_Gun>

Exposure Position	2	3	4	5	6	7	2+5+7 Summed 1g SAR (W/kg)	3+5+6 Summed 1g SAR (W/kg)	4+5 Summed 1g SAR (W/kg)
	WLAN2.4GHz Ant 6 1g SAR (W/kg)	WLAN2.4GHz Ant 7 1g SAR (W/kg)	WLAN2.4GHz Ant 6+7 1g SAR (W/kg)	WLAN5/6GHz Ant 6+7 1g SAR (W/kg)	Bluetooth Ant 6 1g SAR (W/kg)	Bluetooth Ant 7 1g SAR (W/kg)			
Front	0.146	0.104	0.230	0.353	0.001	0.001	0.500	0.458	0.583
Back	0.174	0.089	0.248	0.741	0.001	0.001	0.916	0.831	0.989
Left side		0.149	0.170	1.104	0.001	0.001	1.105	1.254	1.274
Right side	0.237		0.262	0.425	0.006	0.001	0.663	0.431	0.687

14.3 Extremity Exposure Conditions

<Non-DBS_Brick>

Exposure Position	5	8	5+8 Summed 10g SAR (W/kg)
	WLAN5/6GHz Ant 6+7	NFC	
	10g SAR (W/kg)	10g SAR (W/kg)	
Front	0.457	0.001	0.458
Back	0.713	0.020	0.733
Left side	2.743	0.009	2.752
Right side	1.458	0.001	1.459

<DBS_Brick>

Exposure Position	5	8	5+8 Summed 10g SAR (W/kg)
	WLAN5/6GHz Ant 6+7	NFC	
	10g SAR (W/kg)	10g SAR (W/kg)	
Front	0.457	0.001	0.458
Back	0.713	0.020	0.733
Left side	2.743	0.009	2.752
Right side	1.458	0.001	1.459

<Non-DBS_Gun>

Exposure Position	2	3	4	5	6	7	8	2+7+8 Summed 10g SAR (W/kg)	3+6+8 Summed 10g SAR (W/kg)	5+6+8 Summed 10g SAR (W/kg)	5+7+8 Summed 10g SAR (W/kg)
	WLAN 2.4GHz Ant 6	WLAN 2.4GHz Ant 7	WLAN 2.4GHz Ant 6+7	WLAN 5/6GHz Ant 6+7	Bluetooth Ant 6	Bluetooth Ant 7	NFC				
	10g SAR (W/kg)	10g SAR (W/kg)	10g SAR (W/kg)	10g SAR (W/kg)	10g SAR (W/kg)	10g SAR (W/kg)	10g SAR (W/kg)				
Back	0.277	0.220	0.319	0.686	0.004	0.002	0.010	0.289	0.234	0.700	0.698

<DBS_Gun>

Exposure Position	2	3	4	5	6	7	8	2+5+7+8 Summed 10g SAR (W/kg)	3+5+6+8 Summed 10g SAR (W/kg)	4+5+8 Summed 10g SAR (W/kg)
	WLAN 2.4GHz Ant 6	WLAN 2.4GHz Ant 7	WLAN 2.4GHz Ant 6+7	WLAN 5/6GHz Ant 6+7	Bluetooth Ant 6	Bluetooth Ant 7	NFC			
	10g SAR (W/kg)	10g SAR (W/kg)	10g SAR (W/kg)	10g SAR (W/kg)	10g SAR (W/kg)	10g SAR (W/kg)	10g SAR (W/kg)			
Back	0.277	0.220	0.319	0.686	0.004	0.002	0.010	0.975	0.920	1.015

Test Engineer : Dennis Hsieh and Carter Jhuang

15. 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 and highest measured 10-g SAR is less 3.75W/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.

The component of uncertainty may generally be categorized according to the methods used to evaluate them. The evaluation of uncertainty by the statistical analysis of a series of observations is termed a Type A evaluation of uncertainty. The evaluation of uncertainty by means other than the statistical analysis of a series of observation is termed a Type B evaluation of uncertainty. Each component of uncertainty, however evaluated, is represented by an estimated standard deviation, termed standard uncertainty, which is determined by the positive square root of the estimated variance.

A Type A evaluation of standard uncertainty may be based on any valid statistical method for treating data. This includes calculating the standard deviation of the mean of a series of independent observations; using the method of least squares to fit a curve to the data in order to estimate the parameter of the curve and their standard deviations; or carrying out an analysis of variance in order to identify and quantify random effects in certain kinds of measurement.

A type B evaluation of standard uncertainty is typically based on scientific judgment using all of the relevant information available. These may include previous measurement data, experience, and knowledge of the behavior and properties of relevant materials and instruments, manufacture’s specification, data provided in calibration reports and uncertainties assigned to reference data taken from handbooks. Broadly speaking, the uncertainty is either obtained from an outdoor source or obtained from an assumed distribution, such as the normal distribution, rectangular or triangular distributions indicated in table below.

Uncertainty Distributions	Normal	Rectangular	Triangular	U-Shape
Multi-plying Factor ^(a)	1/k ^(b)	1/√3	1/√6	1/√2

(a) standard uncertainty is determined as the product of the multiplying factor and the estimated range of variations in the measured quantity

(b) κ is the coverage factor

Standard Uncertainty for Assumed Distribution

The combined standard uncertainty of the measurement result represents the estimated standard deviation of the result. It is obtained by combining the individual standard uncertainties of both Type A and Type B evaluation using the usual “root-sum-squares” (RSS) methods of combining standard deviations by taking the positive square root of the estimated variances.

Expanded uncertainty is a measure of uncertainty that defines an interval about the measurement result within which the measured value is confidently believed to lie. It is obtained by multiplying the combined standard uncertainty by a coverage factor. Typically, the coverage factor ranges from 2 to 3. Using a coverage factor allows the true value of a measured quantity to be specified with a defined probability within the specified uncertainty range. For purpose of this document, a coverage factor two is used, which corresponds to confidence interval of about 95 %. The DASY uncertainty Budget is shown in the following tables.

The judgment of conformity in the report is based on the measurement results excluding the measurement uncertainty.



Applicable for SAR Measurements:

Uncertainty Budget (4 MHz - 10 GHz range)							
Error Description	Uncertainty Value (±%)	Probability	Divisor	(C1) 1g	(C1) 10g	Standard Uncertainty (1g) (±%)	Standard Uncertainty (10g) (±%)
Measurement System							
Probe Calibration	18.60	N	2	1	1	9.3	9.3
Axial Isotropy	4.70	R	1.732	0.7	0.7	1.9	1.9
Hemispherical Isotropy	9.60	R	1.732	0.7	0.7	3.9	3.9
Linearity	4.70	R	1.732	1	1	2.7	2.7
Modulation Response	4.68	R	1.732	1	1	2.7	2.7
System Detection Limits	1.00	R	1.732	1	1	0.6	0.6
Boundary Effects	2.00	R	1.732	1	1	1.2	1.2
Readout Electronics	0.30	N	1	1	1	0.3	0.3
Response Time	0.00	R	1.732	1	1	0.0	0.0
Integration Time	2.60	R	1.732	1	1	1.5	1.5
RF Ambient Noise	3.00	R	1.732	1	1	1.7	1.7
RF Ambient Reflections	3.00	R	1.732	1	1	1.7	1.7
Probe Positioner	0.40	R	1.732	1	1	0.2	0.2
Probe Positioning	6.70	R	1.732	1	1	3.9	3.9
Post-processing	4.00	R	1.732	1	1	2.3	2.3
Test Sample Related							
Device Holder	3.60	N	1	1	1	3.6	3.6
Test sample Positioning	3.03	N	1	1	1	3.0	3.0
Power Scaling	0.00	R	1.732	1	1	0.0	0.0
Power Drift	5.00	R	1.732	1	1	2.9	2.9
Phantom and Setup							
Phantom Uncertainty	7.60	R	1.732	1	1	4.4	4.4
SAR correction	0.00	R	1.732	1	0.84	0.0	0.0
Liquid Conductivity Repeatability	0.03	N	1	0.78	0.77	0.0	0.0
Liquid Conductivity (target)	5.00	R	1.732	0.78	0.77	2.3	2.2
Liquid Conductivity (mea.)	2.50	R	1.732	0.78	0.77	1.1	1.1
Temp. unc. - Conductivity	3.68	R	1.732	0.78	0.77	1.7	1.6
Liquid Permittivity Repeatability	0.02	N	1	0.23	0.26	0.0	0.0
Liquid Permittivity (target)	5.00	R	1.732	0.23	0.26	0.7	0.8
Liquid Permittivity (mea.)	2.50	R	1.732	0.23	0.26	0.3	0.4
Temp. unc. - Permittivity	0.84	R	1.732	0.23	0.26	0.1	0.1
Combined Std. Uncertainty						14.5%	14.2%
Coverage Factor for 95 %						K=2	K=2
Expanded STD Uncertainty						29.0%	28.4%

Applicable for Power Density Measurements:

Error Description	Uncertainty Value (±dB)	Probability	Divisor	(Ci)	Standard Uncertainty (±dB)
Probe Calibration	0.49	N	1	1	0.49
Probe correction	0.00	R	1.732	1	0.00
Frequency response (BW ≤ 1 GHz)	0.20	R	1.732	1	0.12
Sensor cross coupling	0.00	R	1.732	1	0.00
Isotropy	0.50	R	1.732	1	0.29
Linearity	0.20	R	1.732	1	0.12
Probe scattering	0.00	R	1.732	1	0.00
Probe positioning offset	0.30	R	1.732	1	0.17
Probe positioning repeatability	0.04	R	1.732	1	0.02
Sensor mechanical offset	0.00	R	1.732	1	0.00
Probe spatial resolution	0.00	R	1.732	1	0.00
Field impedance dependence	0.00	R	1.732	1	0.00
Amplitude and phase drift	0.00	R	1.732	1	0.00
Amplitude and phase noise	0.04	R	1.732	1	0.02
Measurement area truncation	0.00	R	1.732	1	0.00
Data acquisition	0.03	N	1	1	0.03
Sampling	0.00	R	1.732	1	0.00
Field reconstruction	2.00	R	1.732	1	1.15
Forward transformation	0.00	R	1.732	1	0.00
Power density scaling	0.00	R	1.732	1	0.00
Spatial averaging	0.10	R	1.732	1	0.06
System detection limit	0.04	R	1.732	1	0.02
Uncertainty terms dependent on the DUT and environmental factors					
Probe coupling with DUT	0.00	R	1.732	1	0.0
Modulation response	0.40	R	1.732	1	0.2
Integration time	0.00	R	1.732	1	0.0
Response time	0.00	R	1.732	1	0.0
Device holder influence	0.10	R	1.732	1	0.1
DUT alignment	0.00	R	1.732	1	0.0
RF ambient conditions	0.04	R	1.732	1	0.0
Ambient reflections	0.04	R	1.732	1	0.0
Immunity / secondary reception	0.00	R	1.732	1	0.0
Drift of the DUT		R	1.732	1	
Combined Std. Uncertainty					1.34
Expanded STD Uncertainty (95%)					2.68



16. 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 941225 D06 v02r01, "SAR Evaluation Procedures for Portable Devices with Wireless Router Capabilities", Oct 2015.
- [8] FCC KDB 865664 D01 v01r04, "SAR Measurement Requirements for 100 MHz to 6 GHz", Aug 2015.
- [9] FCC KDB 865664 D02 v01r02, "RF Exposure Compliance Reporting and Documentation Considerations" Oct 2015.
- [10] IEC/IEEE 62209-1528:2020, "Measurement procedure for the assessment of specific absorption rate of human exposure to radio frequency fields from hand-held and body-mounted wireless communication devices – Part 1528: Human models, instrumentation, and procedures (Frequency range of 4 MHz to 10 GHz)", Oct. 2020
- [11] SPEAG DASY6 System Handbook
- [12] SPEAG DASY6 Application Note (Interim Procedure for Device Operation at 6GHz-10GHz)