FCC 47 CFR § 2.1093
IEC/IEEE Std 62209-1528 : 2020
IEC/IEEE Std 63195-1: 2022

RF EVALUATION REPORT (Above 6GHz)
(Part 1 : Test in Static Transmission Condition)

FOR

GSM/WCDMA/LTE/5G NR Phone + BT/BLE, DTS/UNII a/b/g/n/ac/ax, NFC, WPT and UWB

MODEL NUMBER: SM-F956U, SM-F956U1

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TL-637

Revision History

Rev.	Date	Revisions	Revised By
V1	4/26/2024	Initial Issue	--
V2	5/2/2024	Revised MIMO target power in Sec.6.3. Removed comments that explain hotspot mode in Sec.10.1. Added DSI scenario table in Sec.6.4. Revised comments note in Sec.7.	Seungyeon.Kim
V3	5/23/2024	Revised Simultaneous TX SAR results of UMPC-mini tablet in Sec.1.1.	Seungyeon.Kim

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1. Attestation of Test Results

Applicant Name		SAMSUNG ELECTRONICS CO.,LTD.					
FCC ID		A3LSMF956U					
Model Number		SM-F956U, SM-F956U1					
Applicable Standards		FCC 47 CFR § 2.1093 IEC/IEEE Std 62209-1528 : 2020 IEC/IEEE Std 63195-1: 2022					
Exposure Category		SAR Limits (W/Kg)		Power Density Limits (mW/cm²)			
		1g SAR	10g SAR	APD		IPD	
General population / Uncontrolled exposure		1.6	4.0	N/A		1.0	
RF Exposure Conditions		Equipment Class – 6CD (The Highest Reported SAR/APD/IPD)					
		SAR (W/kg)		APD (mW/cm²)		IPD (mW/cm²)	
		6CD	UWB	6CD	UWB	6CD	UWB
Phablet	Head	0.31	N/A	0.15	N/A	0.95	0.03
	Body-worn	0.29	N/A	0.18	N/A		
	Product Specific 10g	0.70	<0.01	1.22	<0.01		
UMPC-mini tablet	Body	0.29	N/A	0.14	N/A	0.79	0.02
	Extremity 10g	0.50	<0.01	1.03	<0.01		
Simultaneous TX of Phablet	Head	1.58	N/A				
	Body-worn	1.54	N/A				
	Product Specific 10g	1.05	1.05				
Simultaneous TX of UMPC-mini tablet	Body	1.58	N/A				
	Extremity 10g	3.99	3.99				
Date Tested		3/26/2024 to 4/24/2024					
Test Results		Pass					

UL Korea, Ltd. tested the above equipment in accordance with the requirements set forth in the above standards. All indications of Pass/Fail in this report are opinions expressed by UL Korea, Ltd. based on interpretations and/or observations of test results. Measurement Uncertainties were not taken into account and are published for informational purposes only. The test results show that the equipment tested is capable of demonstrating compliance with the requirements as documented in this report.

Note: The results documented in this report apply only to the tested sample, under the conditions and modes of operation as described herein. This document may not be altered or revised in any way unless done so by UL Korea, Ltd. and all revisions are duly noted in the revisions section. Any alteration of this document not carried out by UL Korea, Ltd. will constitute fraud and shall nullify the document. This report must not be used by the client to claim product certification, approval, or endorsement by IAS, any agency of the Federal Government, or any agency of any government.

Approved & Released By:	Prepared By:
	
Justin Park Operations Leader UL Korea, Ltd. Suwon Laboratory	Seungyeon Kim Laboratory Engineer UL Korea, Ltd. Suwon Laboratory

2. Test Specification, Methods and Procedures

The tests documented in this report were performed in accordance with FCC 47 CFR § 2.1093, IEEE Std 1528-2013, IEC 62479:2010, IEC/IEEE 63195-1:2022 the following FCC Published RF exposure KDB procedures:

- 248227 D01 802.11 Wi-Fi SAR v02r02
- 447498 D04 Interim General RF Exposure Guidance v01
- 648474 D04 Handset SAR v01r03
- 865664 D01 SAR measurement 100 MHz to 6 GHz v01r04
- 941225 D07 UMPC Mini Tablet v01r02

In addition to the above, the following information was used:

- TCB workshop April, 2021; RF Exposure Policies (U-NII 6-7 GHz Interim Procedures)
- TCB workshop Oct, 2022; Mobile and Portable Device RF Exposure Policies and Procedures(IPD and SAR evaluation of f-above-6 GHz portable devices)
- SPEAG, DASY8 Module mmWave Manual, April 2023
- SPEAG DASY6 Application Note : Interim Procedures (Version 9.0) for Devices Operating at 6 – 10 GHz

3. Facilities and Accreditation

The test sites and measurement facilities used to collect data are located at

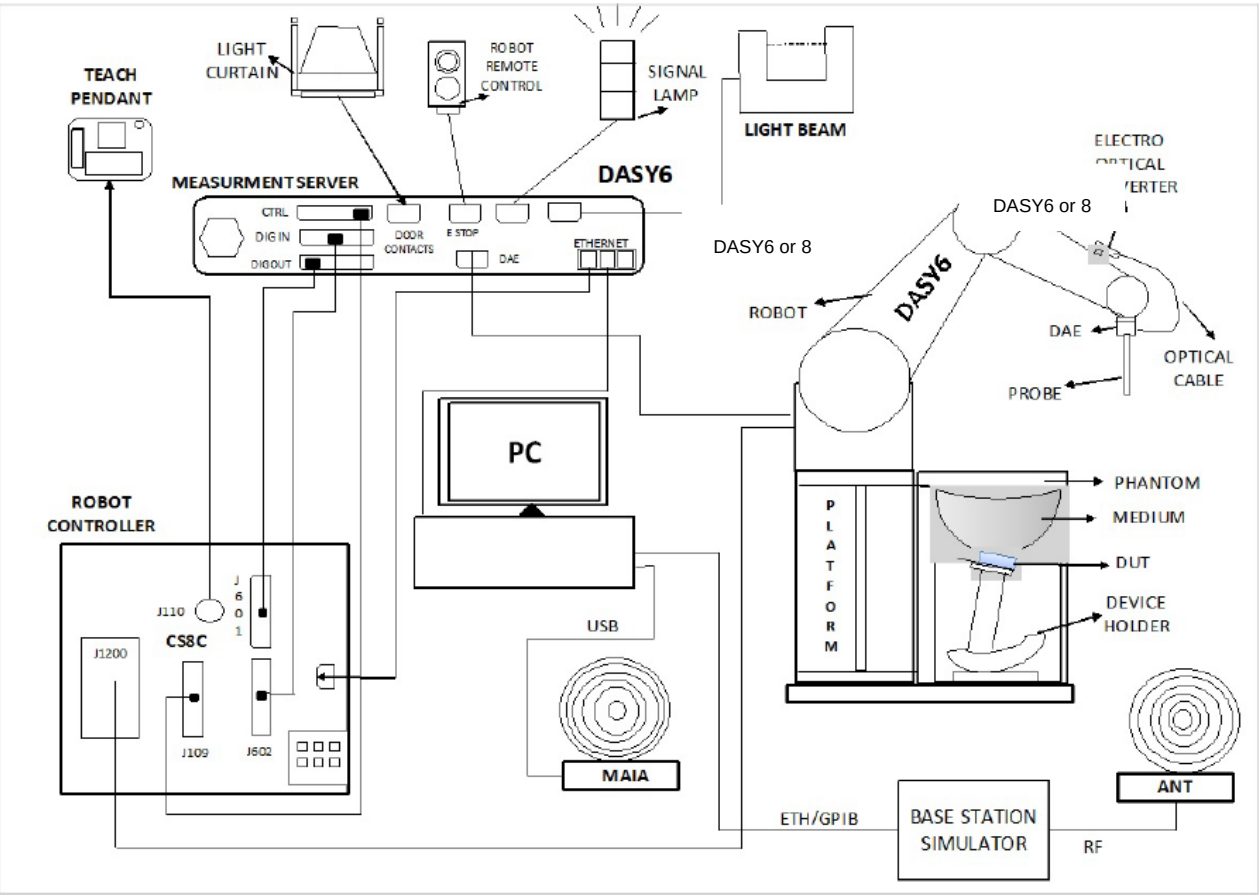
Suwon
SAR 7 Room
SAR 8 Room
SAR 9 Room

UL Korea, Ltd. is accredited by IAS, Laboratory Code TL-637.
The full scope of accreditation can be viewed at https://www.iasonline.org/wp-content/uploads/2017/05/TL-637-cert-New.pdf.

4. SAR and Power Density Measurement System & Test Equipment

4.1. SAR Measurement System

The DASY6 & 8 system used for performing compliance tests consists of the following items:



- A standard high precision 6-axis robot with controller, teach pendant and software. An arm extension for accommodating the data acquisition electronics (DAE).
- An isotropic Field probe optimized and calibrated for the targeted measurement.
- A data acquisition electronics (DAE) which performs the signal amplification, signal multiplexing, AD-conversion, offset measurements, mechanical surface detection, collision detection, etc. The unit is battery powered with standard or rechargeable batteries. The signal is optically transmitted to the EOC.
- The Electro-optical converter (EOC) performs the conversion from optical to electrical signals for the digital communication to the DAE. To use optical surface detection, a special version of the EOC is required. The EOC signal is transmitted to the measurement server.
- The function of the measurement server is to perform the time critical tasks such as signal filtering, control of the robot operation and fast movement interrupts.
- The Light Beam used is for probe alignment. This improves the (absolute) accuracy of the probe positioning.
- A computer running Win10 and the DASY6 or 8 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.

4.1.1. SAR Scan Procedures

Step 1: 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. The minimum distance of probe sensors to surface is 2.1 mm. This distance cannot be smaller than the distance of sensor calibration points to probe tip as defined in the probe properties.

Step 2: 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 locations even in relatively coarse grids. When an Area Scan has measured all reachable points, it computes the field maximal 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 IEC/IEEE Standard 62209-1528, 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 IEC/IEEE Standard 62209-1528.

Parameter	DUT transmit frequency being tested	
	$f \leq 3$ GHz	3 GHz < $f \leq 10$ GHz
Maximum distance between the measured points (geometric centre of the sensors) and the inner phantom surface (z_{M1} in Figure 20 in mm)	5 ± 1	$\delta \ln(2)/2 \pm 0{,}5$ [a]
Maximum spacing between adjacent measured points in mm (see O.8.3.1)[b]	20, or half of the corresponding zoom scan length, whichever is smaller	$60/f$, or half of the corresponding zoom scan length, whichever is smaller
Maximum angle between the probe axis and the phantom surface normal (α in Figure 20)[c]	5° (flat phantom only) 30° (other phantoms)	5° (flat phantom only) 20° (other phantoms)
Tolerance in the probe angle	1°	1°

[a] δ is the penetration depth for a plane-wave incident normally on a planar half-space.

[b] See Clause O.8 on how Δx and Δy may be selected for individual area scan requirements.

[c] The probe angle relative to the phantom surface normal is restricted due to the degradation in the measurement accuracy in fields with steep spatial gradients. The measurement accuracy decreases with increasing probe angle and increasing frequency. This is the reason for the tighter probe angle restriction at frequencies above 3 GHz.

Step 3: Zoom Scan

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

Zoom Scan Parameters extracted from IEC/IEEE Standard 62209-1528.

Parameter	DUT transmit frequency being tested	
	$f \leq 3$ GHz	3 GHz < $f \leq 10$ GHz
Maximum distance between the closest measured points and the phantom surface (z_{M1} in Figure 20 and Table 3, in mm)	5	$\delta \ln(2)/2$ [a]
Maximum angle between the probe axis and the phantom surface normal (α in Figure 20)	5° (flat phantom only) 30° (other phantoms)	5° (flat phantom only) 20° (other phantoms)
Maximum spacing between measured points in the x- and y-directions (Δx and Δy, in mm)	8	$24/f$ [b]
For uniform grids: Maximum spacing between measured points in the direction normal to the phantom shell (Δz_1 in Figure 20, in mm)	5	$10/(f-1)$
For graded grids: Maximum spacing between the two closest measured points in the direction normal to the phantom shell (Δz_1 in Figure 20, in mm)	4	$12/f$
For graded grids: Maximum incremental increase in the spacing between measured points in the direction normal to the phantom shell ($R_z = \Delta z_2/\Delta z_1$ in Figure 20)	1,5	1,5
Minimum edge length of the zoom scan volume in the x- and y-directions (L_z in O.8.3.2, in mm)	30	22
Minimum edge length of the zoom scan volume in the direction normal to the phantom shell (L_h in O.8.3.2 in mm)	30	22
Tolerance in the probe angle	1°	1°

[a] δ is the penetration depth for a plane-wave incident normally on a planar half-space.

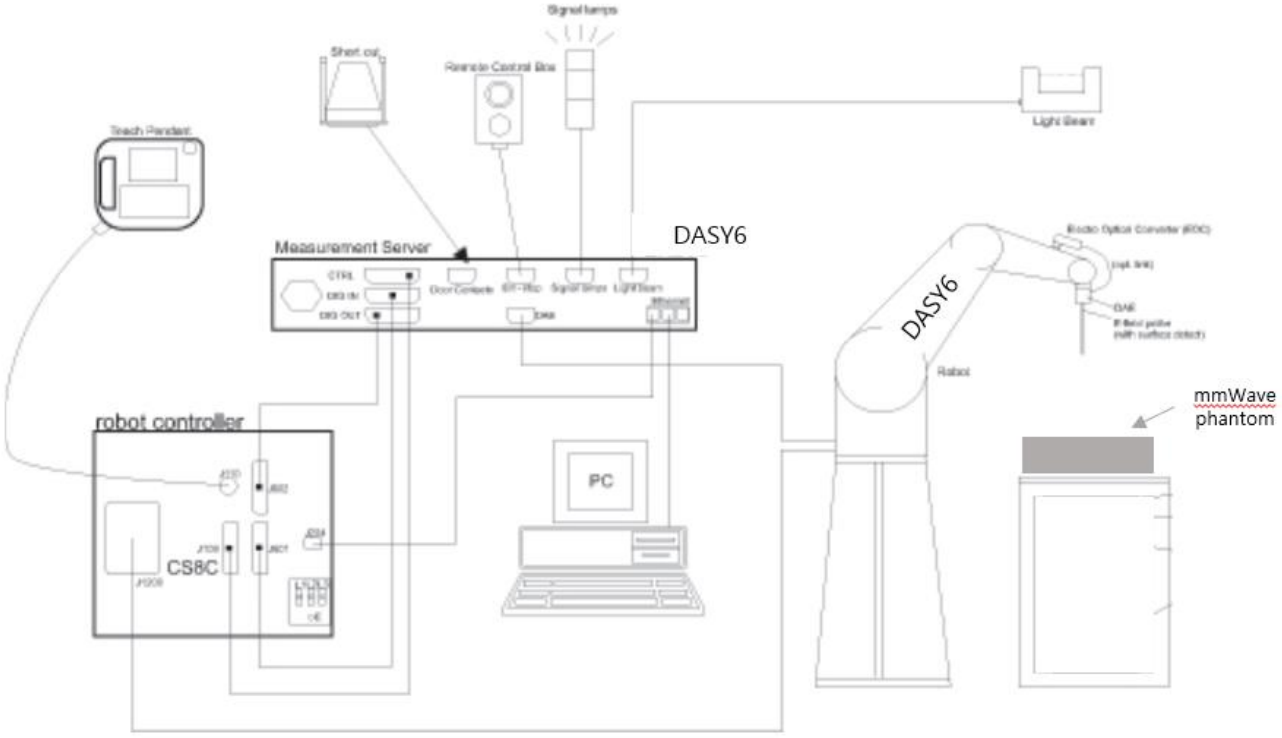
[b] This is the maximum spacing allowed, which might not work for all circumstances.

Step 4: Power drift measurement

The Power Drift Measurement measures the field at the same location as the most recent power reference measurement within the same procedure, and with the same settings. The Power Drift Measurement gives the field difference in dB from the reading conducted within the last Power Reference Measurement. This allows a user to monitor the power drift of the device under test within a batch process. The measurement procedure is the same as Step 1.

4.2. Incident Power Density(IPD) Measurement System

The DASY6 & 8 system used for performing compliance tests consists of the following items:



- A standard high precision 6-axis robot with controller, teach pendant and software. An arm extension for accommodating the data acquisition electronics (DAE).
- The EUmmWVx probe is based on the pseudo-vector probe design, which not only measures the field magnitude but also derives its polarization ellipse.
- 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 Win10 and the DASY6 or 8 software.
- Remote control and teach pendant as well as additional circuitry for robot safety such as warning lamps, etc.
- The phantom which is specialized for 5G other accessories according to the targeted measurement.

4.2.1. Power Density Scan Procedures

Step 1: 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 devise under test.

Step 2: 5G Scan
The steps in the X, Y, and Z directions are specified in terms of fractions of the signal wavelength ,lambda.
Area Scan Parameters extracted from DASY6/8 Module mmWave Manual.

Recommended settings for measurement of verification sources

Frequency [GHz]	Grid step	Grid extent X/Y [mm]	Measurement points
10	0.125 ($\frac{\lambda}{8}$)	60/60	18 × 18
30	0.25 ($\frac{\lambda}{4}$)	60/60	26 × 26
45	0.25 ($\frac{\lambda}{4}$)	42/42	28 × 28
60	0.25 ($\frac{\lambda}{4}$)	32.5/32.5	28 × 28
90	0.25 ($\frac{\lambda}{4}$)	30/30	38 × 38

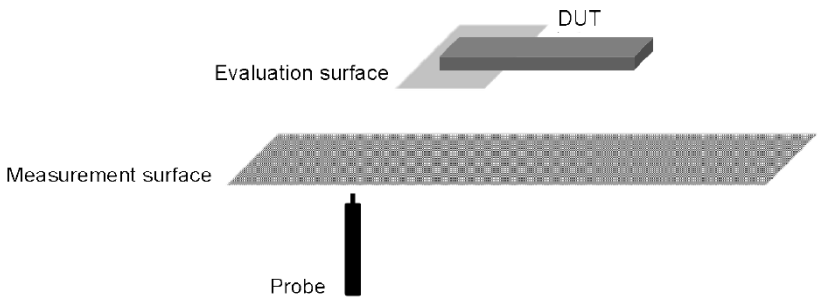
The minimum distance of probe sensors to verification source surface, horn antenna, is 10 mm.

Per equipment manufacturer guidance for 6 – 10GHz, DUT's Power density was measured at d=2mm.

Step 3: Power drift measurement
The Power Drift Measurement measures the field at the same location as the most recent power reference measurement within the same procedure, and with the same settings. The Power Drift Measurement gives the field difference in dB from the reading conducted within the last Power Reference Measurement. This allows a user to monitor the power drift of the device under test within a batch process. The measurement procedure is the same as Step 1. when the drift is larger than ± 5 %, test is repeated from step1.

4.2.2. Total Field and Power Flux Density Reconstruction (measurement distance)

Reconstruction algorithms are used to project or transform the measured fields from the measurement surface to the evaluation surface (below fig) in order to determine power density or to compute spatial-average and/or local power density with known uncertainty.
Manufacture has developed a reconstruction approach based on the Gerchberg-Saxton algorithm, which benefits from the availability of the E-field polarization ellipse information obtained with the EUmmWVx probe. This reconstruction algorithm, together with the ability of the probe to measure extremely close to the source without perturbing the field, permits reconstruction of the E- and H-fields, as well as of the power density, on measurement planes.



4.3. Test Equipment

The measuring equipment used to perform the tests documented in this report has been calibrated in accordance with the manufacturers' recommendations, and is traceable to recognized national standards.

4.3.1. SAR Test Equipment

Dielectric Property Measurements

Name of Equipment	Manufacturer	Type/Model	Serial No.	Cal. Due Date
Network Analyzer	ROHDE & SCHWARZ	ZNB 20	102256	7-24-2024
Dielectric Assessment Kit	SPEAG	DAK-3.5	1133	3-12-2025
Dielectric Assessment Kit	SPEAG	DAK-3.5	1134	**4-24-2024**
Dielectric Assessment Kit	SPEAG	DAK-3.5	1196	7-17-2024
Vector Network Analyzer	SPEAG	DAKS_VNA R140	SN0050221	**4-26-2024**
Vector Network Analyzer	SPEAG	DAKS_VNA R140	SN0060221	3-21-2025
Shorting block	SPEAG	DAK-3.5 Short	SM DAK 200 BA	N/A
Thermometer	LKM	DTM3000	3851	7-25-2024
Thermometer	LKM	DTM3000	3862	7-25-2024

System Check

Name of Equipment	Manufacturer	Type/Model	Serial No.	Cal. Due Date
MXG Analog Signal Generator	Keysight	N5173B	MY59101083	7-27-2024
Power Sensor	KEYSIGHT	U2000A	MY60180020	7-26-2024
Power Sensor	KEYSIGHT	U2000A	MY61010010	7-25-2024
Power Amplifier	EXODUS	AMP2027ADB	10002	1-5-2025
Directional Coupler	KRYTAR	100318010	215541	1-4-2025
Low Pass Filter	KRYTAR	WLKX10-11000-13640-21000-60TS	1	7-25-2024
Attenuator	KEYSIGHT	BW-S3W10+	N/A	1-4-2025
Attenuator	KEYSIGHT	8491B/010	MY39272011	7-25-2024
Attenuator	KEYSIGHT	8491B/020	MY39271973	7-25-2024
E-Field Probe	SPEAG	EX3DV4	7376	7-25-2024
E-Field Probe	SPEAG	EX3DV4	7646	3-15-2025
E-Field Probe	SPEAG	EX3DV4	7645	9-20-2024
E-Field Probe	SPEAG	EX3DV4	7545	8-25-2024
Data Acquisition Electronics	SPEAG	DAE4	912	11-17-2024
Data Acquisition Electronics	SPEAG	DAE4	1670	5-23-2024
System Validation Dipole	SPEAG	D6.5GHz	1010	5-27-2024
System Validation Dipole	SPEAG	D8GHzV2	1012	11-1-2024
Thermometer	Lutron	MHB-382SD	AK.18789	7-27-2024

Note(s):

1. For System Validation Dipole, Calibration interval applied every 2 years according to referencing KDB 865664 guidance.
2. Refer to Appendix F that mentioned about justification for Extended SAR Dipole Calibrations (for blue box item).
3. All equipments were used until Cal.Due date.

4.3.2 Incident Power Density Test Equipment

PD System Check

Name of Equipment	Manufacturer	Type/Model	Serial No.	Cal. Due Date
MXG Analog Signal Generator	Keysight	N5173B	MY59101083	7-27-2024
Power Sensor	KEYSIGHT	U2000A	MY60180020	7-26-2024
Power Sensor	KEYSIGHT	U2000A	MY61010010	7-25-2024
Power Amplifier	EXODUS	AMP2027ADB	10002	1-5-2025
Directional Coupler	KRYTAR	100318010	215541	1-4-2025
Low Pass Filter	KRYTAR	WLKX10-11000-13640-21000-60TS	1	4-25-2024
Attenuator	KEYSIGHT	BW-S3W10+	N/A	1-4-2025
Attenuator	KEYSIGHT	8491B/010	MY39272011	7-25-2024
Attenuator	KEYSIGHT	8491B/020	MY39271973	7-25-2024
5G probe	SPEAG	EummWV4	9536	2-15-2025
Data Acquisition Electronics	SPEAG	DAE4	474	11-10-2024
Verification kit	SPEAG	5G verification source_10GHz	1022	2-19-2025
Thermometer	Lutron	MHB-382SD	AK.12102	7-31-2024

5. Measurement Uncertainty

5.1. SAR Measurement Uncertainty

Measurement uncertainty for 6 GHz to 10 GHz

(According to IEEE 62209-1528)

a	b	c		d	e f(d,k)	f	g	h = *c×f/e*	l = *c×g/e*	k
Uncertainty component	Reference	Tol. 1 g (±%)	Tol. 10 g (±%)	Prob. Dist.	Div.	*ci* (1 g)	*ci* (10 g)	1 g *ui* (± %)	10 g *ui* (± %)	vi
Measurement System Errors										
Probe Calibration	8.4.1.1	18.6		Normal	2	1	1	9.3	9.3	∞
Probe Calibration Drift	8.4.1.2	1.7		Rectangular	1.732	1	1	1.0	1.0	∞
Probe Linearity	8.4.1.3	4.7		Rectangular	1.732	1	1	2.7	2.7	∞
Broadband Signal	8.4.1.4	2.8		Rectangular	1.732	1	1	1.6	1.6	∞
Probe Isotropy	8.4.1.5	7.6		Rectangular	1.732	1	1	4.4	4.4	∞
Data Acquisition	8.4.1.6	0.3		Normal	1	1	1	0.3	0.3	∞
RF Ambient	8.4.1.7	1.8		Normal	1	1	1	1.8	1.8	∞
Probe Positioning	8.4.1.8	0.005		Normal	1	0.50	0.50	0.25	0.25	∞
Data Processing	8.4.1.9	3.5		Normal	1	1	1	3.5	3.5	∞
Phantom and Device Errors										
Conductivity (meas.)DAK	8.4.2.1	2.5		Normal	1	0.78	0.71	2.0	1.8	∞
Conductivity (temp.)BB	8.4.2.2	2.4		Rectangular	1.732	0.78	0.71	1.1	1.0	∞
Phantom Permittivity	8.4.2.3	14.0		Rectangular	1.732	0	0	0.0	0.0	∞
Distance DUT -TSL	8.4.2.4	2.0		Normal	1	2	2	4.0	4.0	∞
Device Positioning	8.4.2.5	3.4	2.8	Normal	1	1	1	3.4	2.8	50
Device Holder	8.4.2.6	3.6		Normal	1	1	1	3.6	3.6	∞
DUT Modulation	8.4.2.7	2.4		Rectangular	1.732	1	1	1.4	1.4	∞
Time-average SAR	8.4.2.8	1.7		Rectangular	1.732	1	1	1.0	1.0	∞
DUT drift	8.4.2.9	5.0		Normal	1	1	1	5.0	5.0	∞
Correction to the SAR results										
Deviation to Target	8.4.3.1	1.9		Normal	1	1	0.84	1.9	1.6	∞
Combined Standard Uncertainty Uc(y) =				RSS				14.47	14.26	
Expanded Uncertainty U, Coverage Factor = 2, > 95 % Confidence =								**28.94**	**28.53**	

5.2. APD Measurement Uncertainty

Uncertainty Budget for psSAR / psAPD Assessments
(Frequency band : 6 - 10GHz range)

Symbol	Error Description	Uncert.	Prob. Dist	Div.	ci (1g) / (1 cm2)	ci (8g/10g) / (4 cm2)	Std. Unc. (1 g) / (1 cm2)	Std. Unc. (8g/10g) / (4 cm2)
psSAR	Module SAR V16.2 (Table 6.3.3)	±14.2/14.1%	N	1	1	1	±14.2%	±14.1%
PDC	Power Density Conversion	±13.5%	R	1.732	1	1	±7.8%	±7.8%
u(ΔSAR)	Combined Uncertainty						±16.2%	±16.9%
U	**Expanded Uncertainty** in dB						±32.4% ±1.2dB	±32.2% ±1.2dB

5.3. IPD Measurement Uncertainty

Measurement Uncertainty for cDASY6 Module mmWave

Error Description	Uncertainty value (±dB)	Probe Dist.	Divisor	(Ci)	Std. Unc. (±dB)	(Vi)
Uncertainty terms dependent on the measurement system						
Calibration	**0.49**	Normal	1	1	0.49	Infinity
Probe correction	**0.00**	Rectangular	1.73	1	0.00	Infinity
Frequency response (BW =< 1 GHz)	**0.20**	Rectangular	1.73	1	0.12	Infinity
Sensor cross coupling	**0.00**	Rectangular	1.73	1	0.00	Infinity
Isotropy	**0.50**	Rectangular	1.73	1	0.29	Infinity
Linearity	**0.20**	Rectangular	1.73	1	0.12	Infinity
Probe scattering	**0.00**	Rectangular	1.73	1	0.00	Infinity
Probe positioning offset	**0.30**	Rectangular	1.73	1	0.17	Infinity
Probe positioning repeatability	**0.04**	Rectangular	1.73	1	0.02	Infinity
Sensor mechanical offset	**0.00**	Rectangular	1.73	1	0.00	Infinity
Probe spatial resolution	**0.00**	Rectangular	1.73	1	0.00	Infinity
Field impedance dependance	**0.00**	Rectangular	1.73	1	0.00	Infinity
Measurement drift	**0.05**	Rectangular	1.73	1	0.03	Infinity
Amplitude and phase noise	**0.04**	Rectangular	1.73	1	0.02	Infinity
Measurement area truncation	**0.10**	Rectangular	1.73	1	0.06	Infinity
Data acquisition	**0.03**	Normal	1.00	1	0.03	Infinity
Sampling	**0.00**	Rectangular	1.73	1	0.00	Infinity
Field reconstruction	**0.60**	Rectangular	1.73	1	0.35	Infinity
Signal-to-Noise Ratio	**0.00**	Rectangular	1.73	1	0.00	Infinity
FTE/MEO	**0.00**	Rectangular	1.73	1	0.00	Infinity
Power density scaling	**0.00**	Rectangular	1.73	1	0.00	Infinity
Spatial averaging	**0.10**	Rectangular	1.73	1	0.06	Infinity
Uncertainty terms dependent on the DUT and environmental factors						
Probe coupling with DUT	**0.00**	Rectangular	1.73	1	0.00	Infinity
Modulation response	**0.40**	Rectangular	1.73	1	0.23	Infinity
Integration time	**0.00**	Rectangular	1.73	1	0.00	Infinity
Response time	**0.00**	Rectangular	1.73	1	0.00	Infinity
Device holder influence	**0.10**	Rectangular	1.73	1	0.06	Infinity
DUT alignment	**0.00**	Rectangular	1.73	1	0.00	Infinity
RF ambient conditions	**0.04**	Rectangular	1.73	1	0.02	Infinity
Laboratory Temperature	**0.05**	Rectangular	1.73	1	0.03	Infinity
Laboratory Reflections	**0.04**	Rectangular	1.73	1	0.02	Infinity
Immunity / secondary reception	**0.00**	Rectangular	1.73	1	0.00	Infinity
Drift of the DUT	**0.20**	Rectangular	1.73	1	0.12	Infinity
Combined Std. Uncertainty					0.76	
Expanded Standard Uncertainty (95%)					**1.53**	

5.4. Decision rule

Measurement Uncertainty is not applied when providing statements of conformity in accordance with IEC Guide 115:2023, 4.3.3.

6. Device Under Test (DUT) Information

6.1. DUT Description

Device Dimension	Refer to Appendix A.		
Back Cover	☒ The Back Cover is not removable.		
Battery Options	☒ The rechargeable battery is not user accessible		
Test Sample Information	**No.**	**S/N**	**Notes**
	1	7b456b5517507ece	Conducted
	2	R3CX10W6KFA	Radiated
	3	R3CX10W6HGN	Radiated
	4	R3CX10W6FGD	Radiated
	5	R3CX309QRAJ	Radiated

6.2. Wireless Technologies

Wireless technologies	Frequency bands	Operating mode	Duty Cycle used for SAR & PD testing
Wi-Fi_UNII 6e (Above 6GHz)	UNII Band 5 (5925-6425 MHz) UNII Band 6 (6425-6525 MHz) UNII Band 7 (6525-6885 MHz) UNII Band 8 (6885-7125 MHz)	802.11a 802.11ax (HE20) 802.11ax (HE40) 802.11ax (HE80) 802.11ax (HE160)	99.63% (802.11ax (HE160))
UWB	Ch.5 (6489.6MHz) Ch.9 (7987.2MHz)	Signal Configurations (0/1/3), PRF modes (BPRF/HPRF)	100%

Notes:

Duty cycle for Wi-Fi is referenced in Section 9.

6.3. Maximum Allowed Output power

Maximum allowed output power means that Pmax or PLimit + 1dB device uncertainty for each DSI.

RF Air interface	Mode	Indoor AP								
		Pmax			Plimit (DSI=0)			Plimit (DSI=1, 2, 3)		
		WLAN Ant.1	WLAN Ant.2	MIMO (Ant.1 + Ant.2)	WLAN Ant.1	WLAN Ant.2	MIMO (Ant.1 + Ant.2)	WLAN Ant.1	WLAN Ant.2	MIMO (Ant.1 + Ant.2)
WiFi 6 GHz (UNII - 5)	802.11a	10.0	10.0	13.0	10.0	10.0	13.0	10.0	10.0	13.0
	802.11ax HE20	10.0	10.0	13.0	10.0	10.0	13.0	10.0	10.0	13.0
	802.11ax HE40	12.0	12.0	15.0	10.0	10.0	13.0	12.0	12.0	15.0
	802.11ax HE80	15.0	15.0	18.0	10.0	10.0	13.0	12.0	12.0	15.0
	802.11ax HE160	16.0	16.0	19.0	10.0	10.0	13.0	12.0	12.0	15.0
WiFi 6 GHz (UNII - 6)	802.11a	10.0	10.0	13.0	10.0	10.0	13.0	10.0	10.0	13.0
	802.11ax HE20	10.0	10.0	13.0	10.0	10.0	13.0	10.0	10.0	13.0
	802.11ax HE40	12.0	12.0	15.0	10.0	10.0	13.0	12.0	12.0	15.0
	802.11ax HE80	15.0	15.0	18.0	10.0	10.0	13.0	12.0	12.0	15.0
	802.11ax HE160	16.0	16.0	19.0	10.0	10.0	13.0	12.0	12.0	15.0
WiFi 6 GHz (UNII - 7)	802.11a	10.0	10.0	13.0	10.0	10.0	13.0	10.0	10.0	13.0
	802.11ax HE20	10.0	10.0	13.0	10.0	10.0	13.0	10.0	10.0	13.0
	802.11ax HE40	12.0	12.0	15.0	10.0	10.0	13.0	12.0	12.0	15.0
	802.11ax HE80	15.0	15.0	18.0	10.0	10.0	13.0	12.0	12.0	15.0
	802.11ax HE160	16.0	16.0	19.0	10.0	10.0	13.0	12.0	12.0	15.0
WiFi 6 GHz (UNII - 8)	802.11a	10.0	10.0	13.0	10.0	10.0	13.0	10.0	10.0	13.0
	802.11ax HE20	10.0	10.0	13.0	10.0	10.0	13.0	10.0	10.0	13.0
	802.11ax HE40	12.0	12.0	15.0	10.0	10.0	13.0	12.0	12.0	15.0
	802.11ax HE80	15.0	15.0	18.0	10.0	10.0	13.0	12.0	12.0	15.0
	802.11ax HE160	16.0	16.0	19.0	10.0	10.0	13.0	12.0	12.0	15.0

RF Air interface	Mode	Standard AP								
		Pmax			Plimit (DSI=0)			Plimit (DSI=1,2,3)		
		WLAN Ant.1	WLAN Ant.2	MIMO (Ant.1 + Ant.2)	WLAN Ant.1	WLAN Ant.2	MIMO (Ant.1 + Ant.2)	WLAN Ant.1	WLAN Ant.2	MIMO (Ant.1 + Ant.2)
WiFi 6 GHz (UNII - 5)	802.11a	16.0	16.0	19.0	10.0	10.0	13.0	12.0	12.0	15.0
	802.11ax HE20	16.0	16.0	19.0	10.0	10.0	13.0	12.0	12.0	15.0
	802.11ax HE40	16.0	16.0	19.0	10.0	10.0	13.0	12.0	12.0	15.0
	802.11ax HE80	16.0	16.0	19.0	10.0	10.0	13.0	12.0	12.0	15.0
	802.11ax HE160	16.0	16.0	19.0	10.0	10.0	13.0	12.0	12.0	15.0
WiFi 6 GHz (UNII - 7)	802.11a	16.0	16.0	19.0	10.0	10.0	13.0	12.0	12.0	15.0
	802.11ax HE20	16.0	16.0	19.0	10.0	10.0	13.0	12.0	12.0	15.0
	802.11ax HE40	16.0	16.0	19.0	10.0	10.0	13.0	12.0	12.0	15.0
	802.11ax HE80	16.0	16.0	19.0	10.0	10.0	13.0	12.0	12.0	15.0
	802.11ax HE160	16.0	16.0	19.0	10.0	10.0	13.0	12.0	12.0	15.0

Notes:

1. This device has support Dual Client (6CD) in UNII 6-7GHz. So Indoor AP support to UNII 5-8, and Standard AP supports to UNII 5, 7.

6.4. DSI (Device State Index) Scenarios

This device supports multiple DSI Scenarios and Each DSIs operate to each RF exposure Conditions.

Please below table;

RF exposure Conditions	Technologuies Supported	DSI conditions	DUT Configuration	Description
Head	WWAN/WLAN/BT bands	DSI = 3	Folder Closed	1. Next to the ear exposure condition. 2. Handset's Receiver(ear piece) is active during voice or VoIP call.
	WWAN/WLAN/BT bands	DSI = 2	Folder Opened	1. Next to the ear exposure condition. 2. Handset's Receiver(ear piece) is active during voice or VoIP call.
Body-worn & Hotspot	WWAN/WLAN/BT bands	DSI = 1	Folder Closed	1. Handsets supports Hotspot mode that Active near body. 2. Handsets are carried in body-worn accessories. 3. Hand use conditions for Handsets(Phablet).
Product Specific 10-g	WWAN/WLAN/BT bands			
Body	WWAN/WLAN/BT bands	DSI = 0	Folder Opened	1. UMPC-mini Tablet are designed for interactive hand-held use next to or near the body of users.
Extremity 10-g	WWAN/WLAN/BT bands	DSI = 0	Folder Opened	

7. RF Exposure Conditions (Test Configurations)

Refer to Appendix A for the specific details of the antenna-to-antenna and antenna-to-edge(s) distances.

Folder Closed (Phablet)

Wireless technologies	RF Exposure Conditions	Antenaa	DUT-to-User Separation	Test Positions			
				Right Touch	Right Tilt	Left Touch	Left Tilt
WLAN(UNII 6e)	Head	WLAN(UNII 6e) Antennas (Ant.G/D)	0 mm	**Yes**	**Yes**	**Yes**	**Yes**

Wireless technologies	RF Exposure Conditions	Antenaa	DUT-to-User Separation	Test Positions					
				Rear	Front	Top	Left	Bottom	Right
WLAN (UNII 6e)	Body-worn	Ant.D	10 mm	**Yes**	**Yes**	**Yes**	**No**	**No**	**Yes**
		Ant.G	10 mm	**Yes**	**Yes**	**No**	**No**	**No**	**Yes**
	Product Specific 10-g	All WLAN/BT Antennas (Ant.D/G)	0 mm	**Refer to note 2 and 4.**					
UWB	Product Specific 10-g	UWB Ant.(Ant.F)	0 mm	**Yes**	**Yes**	**Yes**	**Yes**	**No**	**Yes**

Notes:

1. For Hotspot exposure condition, SAR is not required because the distance from the antenna to the edge is > 25 mm as per KDB 941225 D06 Hot Spot SAR.
2. For Phablet devices: When hotspot mode applies, Product specific 10-g SAR is required only for the surfaces and edges with hotspot mode 1-g reported SAR > 1.2 W/kg.
3. For Phablet devices: When hotspot mode applies and power reduction applies to hotspot mode, Product specific 10-g SAR is required for each test position that has and adjusted SAR to maximum power that is > 1.2 W/kg.
4. For Phablet devices: When hotspot mode is not supported, Product specific 10-g SAR is required for all surfaces and edges with an antenna located at ≤ 25mm from that surface or edge in direct contact with a flat phantom, to address interactive hand use exposure conditions.
5. Per manufacturer guide, UWB SAR was considered about only hand held condition (Product Specific 10-g).
6. For Body-worn exposure condition, SAR test is considered for Rear and Front test positions.
7. UWB was evaluated for only hand held condition because UWB mainly used in the hand to interact with other device.

Forder Opened (UMPC mini tablet)

Wireless technologies	RF Exposure Conditions	Antenaa	DUT-to-User Separation	Test Positions					
				Rear	Front	Top	Left	Bottom	Right
WLAN (UNII 6e)	1g Body / 10g Extremity	Ant.D	10 mm / 0mm	**Yes**	**Yes**	**Yes**	**No**	**No**	**Yes**
		Ant.G	10 mm / 0mm	**Yes**	**Yes**	**No**	**No**	**No**	**Yes**
UWB	10g Extremity	UWB Ant(Ant.F)	0 mm	**Yes**	**Yes**	**Yes**	**No**	**No**	**Yes**

Notes:

1. SAR is not required because the distance from the antenna to the edge is > 25 mm as per KDB 941225 D07 UMPC mini-tablet SAR.
2. Per FCC guide, UMPC mini-tablet SAR evaluated at 1-g body at 10mm and 10-g extremity at 0mm.
3. UWB was evaluated for only hand held condition because UWB mainly used in the hand to interact with other device.

8. System Check with Dielectric Property Measurements

8.1. SAR system

8.1.1. Dielectric Property Measurements

The temperature of the tissue-equivalent medium used during measurement must also be within 18°C to 25°C and within ± 2°C of the temperature when the tissue parameters are characterized.
The dielectric parameters must be measured before the tissue-equivalent medium is used in a series of SAR measurements. The parameters should be re-measured after 1 days of use; for example, when the parameters are marginal at the beginning of the measurement series. Tissue dielectric parameters were measured at the low, middle and high frequency of each operating frequency range of the test device.

Tissue Dielectric Parameters

Refer to Table 2 within the IEC/IEEE Std 62209-1528 : 2020

Target Frequency (MHz)	Tissue parameters	
	ε_r	σ (S/m)
5800	35.3	5.27
6000	35.1	5.48
6500	34.5	6.07
7000	33.9	6.65

Dielectric Property Measurements Results:

SAR 7 Room

Date	Freq. (MHz)	Liquid Parameters			Measured	Target	Delta (%)	Limit ±(%)
2024-03-26	Head 6000	e'	34.6800	Relative Permittivity (ϵ_r):	34.68	35.10	-1.20	5
		e"	15.9300	Conductivity (σ):	5.31	5.48	-3.02	5
	Head 6200	e'	34.5400	Relative Permittivity (ϵ_r):	34.54	34.86	-0.92	5
		e"	16.0900	Conductivity (σ):	5.55	5.72	-2.96	5
	Head 6500	e'	34.1000	Relative Permittivity (ϵ_r):	34.10	34.50	-1.16	5
		e"	16.6400	Conductivity (σ):	6.01	6.07	-0.92	5
	Head 6600	e'	33.7100	Relative Permittivity (ϵ_r):	33.71	34.38	-1.95	5
		e"	16.5900	Conductivity (σ):	6.09	6.19	-1.58	5
	Head 6800	e'	33.3100	Relative Permittivity (ϵ_r):	33.31	34.14	-2.43	5
		e"	16.8300	Conductivity (σ):	6.36	6.42	-0.85	5
	Head 7000	e'	33.0700	Relative Permittivity (ϵ_r):	33.07	33.90	-2.45	5
		e"	16.7200	Conductivity (σ):	6.51	6.65	-2.14	5
2024-03-27	Head 6000	e'	34.8100	Relative Permittivity (ϵ_r):	34.81	35.10	-0.83	5
		e"	16.5200	Conductivity (σ):	5.51	5.48	0.57	5
	Head 6200	e'	34.8300	Relative Permittivity (ϵ_r):	34.83	34.86	-0.09	5
		e"	16.6600	Conductivity (σ):	5.74	5.72	0.48	5
	Head 6500	e'	34.3300	Relative Permittivity (ϵ_r):	34.33	34.50	-0.49	5
		e"	17.4000	Conductivity (σ):	6.29	6.07	3.60	5
	Head 6600	e'	33.9900	Relative Permittivity (ϵ_r):	33.99	34.38	-1.13	5
		e"	17.3400	Conductivity (σ):	6.36	6.19	2.87	5
	Head 6800	e'	33.6200	Relative Permittivity (ϵ_r):	33.62	34.14	-1.52	5
		e"	17.5500	Conductivity (σ):	6.64	6.42	3.39	5
	Head 7000	e'	33.0200	Relative Permittivity (ϵ_r):	33.02	33.90	-2.60	5
		e"	17.6100	Conductivity (σ):	6.85	6.65	3.07	5
2024-03-28	Head 6000	e'	35.1300	Relative Permittivity (ϵ_r):	35.13	35.10	0.09	5
		e"	15.9200	Conductivity (σ):	5.31	5.48	-3.08	5
	Head 6200	e'	35.1700	Relative Permittivity (ϵ_r):	35.17	34.86	0.89	5
		e"	16.3000	Conductivity (σ):	5.62	5.72	-1.69	5
	Head 6500	e'	34.5200	Relative Permittivity (ϵ_r):	34.52	34.50	0.06	5
		e"	16.8400	Conductivity (σ):	6.09	6.07	0.27	5
	Head 6600	e'	34.3300	Relative Permittivity (ϵ_r):	34.33	34.38	-0.15	5
		e"	16.7600	Conductivity (σ):	6.15	6.19	-0.57	5
	Head 6800	e'	33.7900	Relative Permittivity (ϵ_r):	33.79	34.14	-1.03	5
		e"	17.1500	Conductivity (σ):	6.48	6.42	1.04	5
	Head 7000	e'	33.7600	Relative Permittivity (ϵ_r):	33.76	33.90	-0.41	5
		e"	17.2200	Conductivity (σ):	6.70	6.65	0.79	5

2024-04-02	Head 6000	e'	35.6100	Relative Permittivity (ϵ_r):	35.61	35.10	1.45	5
		e''	16.5000	Conductivity (σ):	5.50	5.48	0.45	5
	Head 6200	e'	35.6800	Relative Permittivity (ϵ_r):	35.68	34.86	2.35	5
		e''	16.9200	Conductivity (σ):	5.83	5.72	2.05	5
	Head 6500	e'	34.8800	Relative Permittivity (ϵ_r):	34.88	34.50	1.10	5
		e''	17.3100	Conductivity (σ):	6.26	6.07	3.07	5
	Head 6600	e'	34.5600	Relative Permittivity (ϵ_r):	34.56	34.38	0.52	5
		e''	17.2200	Conductivity (σ):	6.32	6.19	2.16	5
	Head 6800	e'	34.0300	Relative Permittivity (ϵ_r):	34.03	34.14	-0.32	5
		e''	17.6600	Conductivity (σ):	6.68	6.42	4.04	5
	Head 7000	e'	33.7400	Relative Permittivity (ϵ_r):	33.74	33.90	-0.47	5
		e''	17.4600	Conductivity (σ):	6.80	6.65	2.19	5
2024-04-05	Head 6000	e'	35.9500	Relative Permittivity (ϵ_r):	35.95	35.10	2.42	5
		e''	15.8500	Conductivity (σ):	5.29	5.48	-3.51	5
	Head 6200	e'	36.1200	Relative Permittivity (ϵ_r):	36.12	34.86	3.61	5
		e''	16.1500	Conductivity (σ):	5.57	5.72	-2.60	5
	Head 6500	e'	35.4000	Relative Permittivity (ϵ_r):	35.40	34.50	2.61	5
		e''	16.6700	Conductivity (σ):	6.02	6.07	-0.74	5
	Head 6600	e'	35.1800	Relative Permittivity (ϵ_r):	35.18	34.38	2.33	5
		e''	16.5700	Conductivity (σ):	6.08	6.19	-1.70	5
	Head 6800	e'	34.8900	Relative Permittivity (ϵ_r):	34.89	34.14	2.20	5
		e''	16.8900	Conductivity (σ):	6.39	6.42	-0.50	5
	Head 7000	e'	34.6400	Relative Permittivity (ϵ_r):	34.64	33.90	2.18	5
		e''	16.5000	Conductivity (σ):	6.42	6.65	-3.43	5
2024-04-18	Head 6000	e'	35.1600	Relative Permittivity (ϵ_r):	35.16	35.10	0.17	5
		e''	16.9200	Conductivity (σ):	5.64	5.48	3.01	5
	Head 6200	e'	35.2700	Relative Permittivity (ϵ_r):	35.27	34.86	1.18	5
		e''	16.8700	Conductivity (σ):	5.82	5.72	1.75	5
	Head 6500	e'	34.3600	Relative Permittivity (ϵ_r):	34.36	34.50	-0.41	5
		e''	17.1200	Conductivity (σ):	6.19	6.07	1.94	5
	Head 6600	e'	34.0200	Relative Permittivity (ϵ_r):	34.02	34.38	-1.05	5
		e''	16.8800	Conductivity (σ):	6.19	6.19	0.14	5
	Head 6800	e'	33.4500	Relative Permittivity (ϵ_r):	33.45	34.14	-2.02	5
		e''	16.9600	Conductivity (σ):	6.41	6.42	-0.08	5
	Head 7000	e'	33.3200	Relative Permittivity (ϵ_r):	33.32	33.90	-1.71	5
		e''	16.6400	Conductivity (σ):	6.48	6.65	-2.61	5
2024-04-19	Head 6000	e'	35.0500	Relative Permittivity (ϵ_r):	35.05	35.10	-0.14	5
		e''	17.0100	Conductivity (σ):	5.67	5.48	3.56	5
	Head 6200	e'	35.1300	Relative Permittivity (ϵ_r):	35.13	34.86	0.77	5
		e''	16.9700	Conductivity (σ):	5.85	5.72	2.35	5
	Head 6500	e'	34.2300	Relative Permittivity (ϵ_r):	34.23	34.50	-0.78	5
		e''	17.1900	Conductivity (σ):	6.21	6.07	2.35	5
	Head 6600	e'	33.8800	Relative Permittivity (ϵ_r):	33.88	34.38	-1.45	5
		e''	16.9800	Conductivity (σ):	6.23	6.19	0.73	5
	Head 6800	e'	33.3100	Relative Permittivity (ϵ_r):	33.31	34.14	-2.43	5
		e''	17.0500	Conductivity (σ):	6.45	6.42	0.45	5
	Head 7000	e'	33.1800	Relative Permittivity (ϵ_r):	33.18	33.90	-2.12	5
		e''	16.7300	Conductivity (σ):	6.51	6.65	-2.08	5
2024-04-22	Head 6000	e'	34.8700	Relative Permittivity (ϵ_r):	34.87	35.10	-0.66	5
		e''	16.6700	Conductivity (σ):	5.56	5.48	1.49	5
	Head 6200	e'	34.6800	Relative Permittivity (ϵ_r):	34.68	34.86	-0.52	5
		e''	16.8900	Conductivity (σ):	5.82	5.72	1.87	5
	Head 6500	e'	34.2100	Relative Permittivity (ϵ_r):	34.21	34.50	-0.84	5
		e''	17.1900	Conductivity (σ):	6.21	6.07	2.35	5
	Head 6600	e'	33.8800	Relative Permittivity (ϵ_r):	33.88	34.38	-1.45	5
		e''	16.9800	Conductivity (σ):	6.23	6.19	0.73	5
	Head 6800	e'	33.6500	Relative Permittivity (ϵ_r):	33.65	34.14	-1.44	5
		e''	17.1900	Conductivity (σ):	6.50	6.42	1.27	5
	Head 7000	e'	33.4100	Relative Permittivity (ϵ_r):	33.41	33.90	-1.45	5
		e''	17.2800	Conductivity (σ):	6.73	6.65	1.14	5
2024-04-23	Head 7000	e'	33.8700	Relative Permittivity (ϵ_r):	33.87	33.90	-0.09	5
		e''	17.0200	Conductivity (σ):	6.62	6.65	-0.38	5
	Head 7250	e'	33.7300	Relative Permittivity (ϵ_r):	33.73	33.60	0.39	5
		e''	17.2900	Conductivity (σ):	6.97	6.95	0.36	5
	Head 7500	e'	33.3900	Relative Permittivity (ϵ_r):	33.39	33.30	0.27	5
		e''	17.4700	Conductivity (σ):	7.29	7.24	0.63	5
	Head 7800	e'	32.7600	Relative Permittivity (ϵ_r):	32.76	32.94	-0.55	5
		e''	17.7700	Conductivity (σ):	7.71	7.60	1.41	5
	Head 8000	e'	32.4700	Relative Permittivity (ϵ_r):	32.47	32.70	-0.70	5
		e''	17.6100	Conductivity (σ):	7.83	7.84	-0.08	5
	Head 8100	e'	32.3600	Relative Permittivity (ϵ_r):	32.36	32.58	-0.68	5
		e''	17.8000	Conductivity (σ):	8.02	7.96	0.66	5

SAR 8 Room

Date	Freq. (MHz)	Liquid Parameters			Measured	Target	Delta (%)	Limit ±(%)
2024-03-14	Head 6000	e'	35.1100	Relative Permittivity (ε_r):	35.11	35.10	0.03	5
		e''	16.5200	Conductivity (σ):	5.51	5.48	0.57	5
	Head 6200	e'	34.9600	Relative Permittivity (ε_r):	34.96	34.86	0.29	5
		e''	16.5600	Conductivity (σ):	5.71	5.72	-0.12	5
	Head 6500	e'	34.3400	Relative Permittivity (ε_r):	34.34	34.50	-0.46	5
		e''	16.9700	Conductivity (σ):	6.13	6.07	1.04	5
	Head 6600	e'	34.1100	Relative Permittivity (ε_r):	34.11	34.38	-0.79	5
		e''	16.8800	Conductivity (σ):	6.19	6.19	0.14	5
	Head 6800	e'	33.8100	Relative Permittivity (ε_r):	33.81	34.14	-0.97	5
		e''	17.1500	Conductivity (σ):	6.48	6.42	1.04	5
	Head 7000	e'	33.6800	Relative Permittivity (ε_r):	33.68	33.90	-0.65	5
		e''	17.1100	Conductivity (σ):	6.66	6.65	0.14	5
2024-03-15	Head 6000	e'	34.7100	Relative Permittivity (ε_r):	34.71	35.10	-1.11	5
		e''	16.2700	Conductivity (σ):	5.43	5.48	-0.95	5
	Head 6200	e'	34.6800	Relative Permittivity (ε_r):	34.68	34.86	-0.52	5
		e''	16.5200	Conductivity (σ):	5.70	5.72	-0.37	5
	Head 6500	e'	34.1700	Relative Permittivity (ε_r):	34.17	34.50	-0.96	5
		e''	16.9400	Conductivity (σ):	6.12	6.07	0.86	5
	Head 6600	e'	33.8300	Relative Permittivity (ε_r):	33.83	34.38	-1.60	5
		e''	16.9400	Conductivity (σ):	6.22	6.19	0.50	5
	Head 6800	e'	33.5600	Relative Permittivity (ε_r):	33.56	34.14	-1.70	5
		e''	17.3000	Conductivity (σ):	6.54	6.42	1.92	5
	Head 7000	e'	33.1800	Relative Permittivity (ε_r):	33.18	33.90	-2.12	5
		e''	16.2500	Conductivity (σ):	6.32	6.65	-4.89	5
2024-03-18	Head 6000	e'	34.9400	Relative Permittivity (ε_r):	34.94	35.10	-0.46	5
		e''	15.8700	Conductivity (σ):	5.29	5.48	-3.38	5
	Head 6200	e'	35.0000	Relative Permittivity (ε_r):	35.00	34.86	0.40	5
		e''	16.1600	Conductivity (σ):	5.57	5.72	-2.54	5
	Head 6500	e'	34.3700	Relative Permittivity (ε_r):	34.37	34.50	-0.38	5
		e''	16.5900	Conductivity (σ):	6.00	6.07	-1.22	5
	Head 6600	e'	34.0500	Relative Permittivity (ε_r):	34.05	34.38	-0.96	5
		e''	16.6900	Conductivity (σ):	6.12	6.19	-0.99	5
	Head 6800	e'	33.6900	Relative Permittivity (ε_r):	33.69	34.14	-1.32	5
		e''	16.7700	Conductivity (σ):	6.34	6.42	-1.20	5
	Head 7000	e'	33.5000	Relative Permittivity (ε_r):	33.50	33.90	-1.18	5
		e''	16.6700	Conductivity (σ):	6.49	6.65	-2.43	5
2024-03-19	Head 6000	e'	33.9100	Relative Permittivity (ε_r):	33.91	35.10	-3.39	5
		e''	15.7800	Conductivity (σ):	5.26	5.48	-3.93	5
	Head 6200	e'	33.7700	Relative Permittivity (ε_r):	33.77	34.86	-3.13	5
		e''	15.9400	Conductivity (σ):	5.50	5.72	-3.86	5
	Head 6500	e'	33.3000	Relative Permittivity (ε_r):	33.30	34.50	-3.48	5
		e''	16.3300	Conductivity (σ):	5.90	6.07	-2.77	5
	Head 6600	e'	32.9500	Relative Permittivity (ε_r):	32.95	34.38	-4.16	5
		e''	16.3600	Conductivity (σ):	6.00	6.19	-2.95	5
	Head 6800	e'	32.7100	Relative Permittivity (ε_r):	32.71	34.14	-4.19	5
		e''	16.7100	Conductivity (σ):	6.32	6.42	-1.56	5
	Head 7000	e'	32.5300	Relative Permittivity (ε_r):	32.53	33.90	-4.04	5
		e''	16.3800	Conductivity (σ):	6.38	6.65	-4.13	5
2024-03-20	Head 6000	e'	36.0100	Relative Permittivity (ε_r):	36.01	35.10	2.59	5
		e''	15.6900	Conductivity (σ):	5.23	5.48	-4.48	5
	Head 6200	e'	36.0700	Relative Permittivity (ε_r):	36.07	34.86	3.47	5
		e''	15.9000	Conductivity (σ):	5.48	5.72	-4.11	5
	Head 6500	e'	35.4300	Relative Permittivity (ε_r):	35.43	34.50	2.70	5
		e''	16.4900	Conductivity (σ):	5.96	6.07	-1.82	5
	Head 6600	e'	35.0700	Relative Permittivity (ε_r):	35.07	34.38	2.01	5
		e''	16.4100	Conductivity (σ):	6.02	6.19	-2.65	5
	Head 6800	e'	34.6600	Relative Permittivity (ε_r):	34.66	34.14	1.52	5
		e''	16.7900	Conductivity (σ):	6.35	6.42	-1.09	5
	Head 7000	e'	34.1800	Relative Permittivity (ε_r):	34.18	33.90	0.83	5
		e''	16.7300	Conductivity (σ):	6.51	6.65	-2.08	5

2024-03-21	Head 6000	e'	35.4000	Relative Permittivity (ϵ_r):	35.40	35.10	0.85	5
		e''	16.2100	Conductivity (σ):	5.41	5.48	-1.31	5
	Head 6200	e'	35.2900	Relative Permittivity (ϵ_r):	35.29	34.86	1.23	5
		e''	16.4000	Conductivity (σ):	5.65	5.72	-1.09	5
	Head 6500	e'	34.8200	Relative Permittivity (ϵ_r):	34.82	34.50	0.93	5
		e''	16.9700	Conductivity (σ):	6.13	6.07	1.04	5
	Head 6600	e'	34.3600	Relative Permittivity (ϵ_r):	34.36	34.38	-0.06	5
		e''	16.9100	Conductivity (σ):	6.21	6.19	0.32	5
	Head 6800	e'	34.0600	Relative Permittivity (ϵ_r):	34.06	34.14	-0.23	5
		e''	17.2500	Conductivity (σ):	6.52	6.42	1.62	5
	Head 7000	e'	33.6600	Relative Permittivity (ϵ_r):	33.66	33.90	-0.71	5
		e''	17.0500	Conductivity (σ):	6.64	6.65	-0.21	5
2024-03-26	Head 6000	e'	34.6600	Relative Permittivity (ϵ_r):	34.66	35.10	-1.25	5
		e''	15.7500	Conductivity (σ):	5.25	5.48	-4.12	5
	Head 6200	e'	34.6300	Relative Permittivity (ϵ_r):	34.63	34.86	-0.66	5
		e''	15.9500	Conductivity (σ):	5.50	5.72	-3.80	5
	Head 6500	e'	34.1100	Relative Permittivity (ϵ_r):	34.11	34.50	-1.13	5
		e''	16.5200	Conductivity (σ):	5.97	6.07	-1.64	5
	Head 6600	e'	33.7700	Relative Permittivity (ϵ_r):	33.77	34.38	-1.77	5
		e''	16.4800	Conductivity (σ):	6.05	6.19	-2.23	5
	Head 6800	e'	33.4700	Relative Permittivity (ϵ_r):	33.47	34.14	-1.96	5
		e''	16.6600	Conductivity (σ):	6.30	6.42	-1.85	5
	Head 7000	e'	33.0700	Relative Permittivity (ϵ_r):	33.07	33.90	-2.45	5
		e''	16.6400	Conductivity (σ):	6.48	6.65	-2.61	5
2024-04-13	Head 7000	e'	33.6200	Relative Permittivity (ϵ_r):	33.62	33.90	-0.83	5
		e''	17.5500	Conductivity (σ):	6.83	6.65	2.72	5
	Head 7250	e'	33.2600	Relative Permittivity (ϵ_r):	33.26	33.60	-1.01	5
		e''	17.7400	Conductivity (σ):	7.15	6.95	2.97	5
	Head 7500	e'	32.8000	Relative Permittivity (ϵ_r):	32.80	33.30	-1.50	5
		e''	18.0300	Conductivity (σ):	7.52	7.24	3.85	5
	Head 7800	e'	32.1800	Relative Permittivity (ϵ_r):	32.18	32.94	-2.31	5
		e''	18.2800	Conductivity (σ):	7.93	7.60	4.32	5
	Head 8000	e'	31.8300	Relative Permittivity (ϵ_r):	31.83	32.70	-2.66	5
		e''	18.1200	Conductivity (σ):	8.06	7.84	2.81	5
	Head 8100	e'	31.4900	Relative Permittivity (ϵ_r):	31.49	32.58	-3.35	5
		e''	18.4600	Conductivity (σ):	8.31	7.96	4.40	5
2024-04-23	Head 6000	e'	35.4400	Relative Permittivity (ϵ_r):	35.44	35.10	0.97	5
		e''	15.8800	Conductivity (σ):	5.30	5.48	-3.32	5
	Head 6200	e'	35.4400	Relative Permittivity (ϵ_r):	35.44	34.86	1.66	5
		e''	16.0400	Conductivity (σ):	5.53	5.72	-3.26	5
	Head 6500	e'	34.8200	Relative Permittivity (ϵ_r):	34.82	34.50	0.93	5
		e''	16.6500	Conductivity (σ):	6.02	6.07	-0.86	5
	Head 6600	e'	34.5800	Relative Permittivity (ϵ_r):	34.58	34.38	0.58	5
		e''	16.5900	Conductivity (σ):	6.09	6.19	-1.58	5
	Head 6800	e'	34.1700	Relative Permittivity (ϵ_r):	34.17	34.14	0.09	5
		e''	16.7500	Conductivity (σ):	6.33	6.42	-1.32	5
	Head 7000	e'	33.5900	Relative Permittivity (ϵ_r):	33.59	33.90	-0.91	5
		e''	16.7300	Conductivity (σ):	6.51	6.65	-2.08	5
2024-04-24	Head 6000	e'	35.0300	Relative Permittivity (ϵ_r):	35.03	35.10	-0.20	5
		e''	15.8700	Conductivity (σ):	5.29	5.48	-3.38	5
	Head 6200	e'	34.7900	Relative Permittivity (ϵ_r):	34.79	34.86	-0.20	5
		e''	15.9600	Conductivity (σ):	5.50	5.72	-3.74	5
	Head 6500	e'	34.1900	Relative Permittivity (ϵ_r):	34.19	34.50	-0.90	5
		e''	16.4000	Conductivity (σ):	5.93	6.07	-2.35	5
	Head 6600	e'	33.7200	Relative Permittivity (ϵ_r):	33.72	34.38	-1.92	5
		e''	16.1800	Conductivity (σ):	5.94	6.19	-4.01	5
	Head 6800	e'	33.4200	Relative Permittivity (ϵ_r):	33.42	34.14	-2.11	5
		e''	16.4500	Conductivity (σ):	6.22	6.42	-3.09	5
	Head 7000	e'	33.1400	Relative Permittivity (ϵ_r):	33.14	33.90	-2.24	5
		e''	16.4200	Conductivity (σ):	6.39	6.65	-3.89	5

8.1.2. SAR System Check

SAR system verification is required to confirm measurement accuracy, according to the tissue dielectric media, probe calibration points and other system operating parameters required for measuring the SAR of a test device. The system verification must be performed for each frequency band and within the valid range of each probe calibration point required for testing the device. The same SAR probe(s) and tissue-equivalent media combinations used with each specific SAR system for system verification must be used for device testing. When multiple probe calibration points are required to cover substantially large transmission bands, independent system verifications are required for each probe calibration point. A system verification must be performed before each series of SAR measurements using the same probe calibration point and tissue-equivalent medium. Additional system verification should be considered according to the conditions of the tissue-equivalent medium and measured tissue dielectric parameters, typically every days.

System Performance Check Measurement Conditions:

- The measurements were performed in the flat section of the TWIN SAM or ELI phantom, shell thickness: 2.0 ±0.2 mm (bottom plate) filled with Simulating liquid of the following parameters.
- The depth of tissue-equivalent liquid in a phantom must be ≥ 10.0 cm for measurements > 6 GHz.
- The DASY system with an E-Field Probe was used for the measurements.
- The dipole was mounted on the small tripod so that the dipole feed point was positioned below the center marking of the flat phantom section and the dipole was oriented parallel to the body axis (the long side of the phantom). The standard measuring distance was 5 mm (above 6GHz) from dipole center to the simulating liquid surface.
- The dipole input power (forward power) was 100 mW.
- The results are normalized to 1 W input power.

Reference Target SAR Values

The reference SAR values can be obtained from the calibration certificate of system validation dipoles.

System Dipole	Serial No.	Cal. Date	Freq. (MHz)	Target SAR Values (W/kg)	
				1g/10g	Head
D6.5GHzV2	1010	2022-05-27	6500	1g	285.00
				10g	52.90
				APD(4cm^2)	1300.00
D8GHzV2	1012	2022-11-01	8000	1g	267.00
				10g	44.80
				APD(4cm^2)	1100.00

System Check Results

The 1-g and 10-g SAR measured with a reference dipole, using the required tissue-equivalent medium at the test frequency, must be within 10% of the manufacturer calibrated dipole SAR target.

SAR 7 Room

Date Tested	System Dipole		T.S. Liquid		Measured Results		Target (Ref. Value)	Delta ±10 %	Plot No.
	Type	Serial #			Zoom Scan to 100 mW	Normalize to 1 W			
3-26-2024	D6.5GHzV2	1010	Head	1g	29.60	296.0	285.00	3.86	
				10g	5.48	54.8	52.90	3.59	
				APD(4cm^2)	134.00	1340.0	1300.00	3.08	
3-27-2024	D6.5GHzV2	1010	Head	1g	28.60	286.0	285.00	0.35	
				10g	5.38	53.8	52.90	1.70	
				APD(4cm^2)	131.00	1310.0	1300.00	0.77	
3-28-2024	D6.5GHzV2	1010	Head	1g	30.80	308.0	285.00	8.07	1
				10g	5.64	56.4	52.90	6.62	
				APD(4cm^2)	137.00	1370.0	1300.00	5.38	
4-2-2024	D6.5GHzV2	1010	Head	1g	29.10	291.0	285.00	2.11	
				10g	5.36	53.6	52.90	1.32	
				APD(4cm^2)	131.00	1310.0	1300.00	0.77	
4-5-2024	D6.5GHzV2	1010	Head	1g	27.40	274.0	285.00	-3.86	
				10g	5.15	51.5	52.90	-2.65	
				APD(4cm^2)	125.00	1250.0	1300.00	-3.85	
4-18-2024	D6.5GHzV2	1010	Head	1g	28.00	280.0	285.00	-1.75	
				10g	5.50	55.0	52.90	3.97	
				APD(4cm^2)	134.00	1340.0	1300.00	3.08	
4-19-2024	D6.5GHzV2	1010	Head	1g	28.30	283.0	285.00	-0.70	
				10g	5.54	55.4	52.90	4.73	
				APD(4cm^2)	135.00	1350.0	1300.00	3.85	
4-22-2024	D6.5GHzV2	1010	Head	1g	28.50	285.0	285.00	0.00	
				10g	5.47	54.7	52.90	3.40	
				APD(4cm^2)	133.00	1330.0	1300.00	2.31	
4-23-2024	D8GHzV2	1012	Head	1g	25.40	254.0	267.00	-4.87	2
				10g	4.37	43.7	44.80	-2.46	
				APD(4cm^2)	107.00	1070.0	1100.00	-2.73	

SAR 8 Room

Date Tested	System Dipole		T.S. Liquid		Measured Results		Target (Ref. Value)	Delta ±10 %	Plot No.
	Type	Serial #			Zoom Scan to 100 mW	Normalize to 1 W			
2024-03-14	D6.5GHzV2	1010	Head	1g	29.60	296.0	285.00	3.86	
				10g	5.55	55.5	52.90	4.91	
				APD(4cm^2)	135.00	1350.0	1300.00	3.85	
2024-03-15	D6.5GHzV2	1010	Head	1g	28.50	285.0	285.00	0.00	
				10g	5.40	54.0	52.90	2.08	
				APD(4cm^2)	132.00	1320.0	1300.00	1.54	
2024-03-18	D6.5GHzV2	1010	Head	1g	29.30	293.0	285.00	2.81	
				10g	5.65	56.5	52.90	6.81	
				APD(4cm^2)	137.00	1370.0	1300.00	5.38	
2024-03-19	D6.5GHzV2	1010	Head	1g	27.20	272.0	285.00	-4.56	
				10g	5.26	52.6	52.90	-0.57	
				APD(4cm^2)	128.00	1280.0	1300.00	-1.54	
2024-03-20	D6.5GHzV2	1010	Head	1g	28.90	289.0	285.00	1.40	
				10g	5.62	56.2	52.90	6.24	
				APD(4cm^2)	136.00	1360.0	1300.00	4.62	
2024-03-21	D6.5GHzV2	1010	Head	1g	29.40	294.0	285.00	3.16	3
				10g	5.80	58.0	52.90	9.64	
				APD(4cm^2)	141.00	1410.0	1300.00	8.46	
2024-03-26	D6.5GHzV2	1010	Head	1g	28.60	286.0	285.00	0.35	
				10g	5.56	55.6	52.90	5.10	
				APD(4cm^2)	135.00	1350.0	1300.00	3.85	
2024-04-13	D8GHzV2	1012	Head	1g	25.00	250.0	267.00	-6.37	4
				10g	4.34	43.4	44.80	-3.13	
				APD(4cm^2)	106.00	1060.0	1100.00	-3.64	
2024-04-23	D6.5GHzV2	1010	Head	1g	27.00	270.0	285.00	-5.26	
				10g	5.33	53.3	52.90	0.76	
				APD(4cm^2)	129.00	1290.0	1300.00	-0.77	
2024-04-24	D6.5GHzV2	1010	Head	1g	26.00	260.0	285.00	-8.77	
				10g	4.90	49.0	52.90	-7.37	
				APD(4cm^2)	119.00	1190.0	1300.00	-8.46	

8.2. IPD(Incident Power Density) System

8.2.1. Dielectric Property

Media is air so Relative Permittivity (ɛr) and Conductivity (σ) is 1

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8.2.2. IPD System Check

Per Nov 2017,TCB Workshop

System validation is required before a system is deployed for measurement
System check is also required before each series of continuous measurement and, as applicable, repeated at least weekly
Peak and spatially averaged power density at the peak location(s) must be compared to calibrated results according to the defined test conditions

- the same spatial resolution and measurement region used in the waveguide calibration should be applied to system validation and system check
- 4 cm^2 spatial averaging have been used according to FCC requirement.
- power density distribution should also be verified, both spatially (shape) and numerically (level) through visual inspection for noticeable differences
- The Horn antenna input power (forward power) was 100mW.
- The measured psPDn+, psPDtot+, and psPDmod+ values over 1 cm2 or 4 cm2 for the desired averaging geometry are compared to the calibrated value and expected to be within ± 10%.

Reference Target PD Values

Per the manufacturer's guide, the target value of the calibration report was converted to a value of 100mW input power.

5G verification Source	Serial No.	Cal. Date	Freq. (MHz)	Averaging area	Prad (mW)	Input power (mW)	Target PD Values (W/m^2)		Note
							1 cm^2	4 cm^2	
10GHz	1022	2/19/2024	10000	Circular	93.3		62.40	58.40	Cal.report target
10GHz	1022	2/19/2024	10000	Circular		100	66.88	62.59	Convert target from Cal.report

SAR 9 Room

Date	Sorce SN	Sorce Cal. Due Data	Input Power (mW)	Measured Results for 1cm^2 (W/m^2)	**Target** (Ref. Value) (W/m^2)	**Delta** ±10 %	Measured Total psPD for 4cm^2 (W/m^2)	**Target** (Ref. Value) (W/m^2)	**Delta** ±10 %	visual inspection	Plot No.
2024-03-15	1022	2/24/2024	100.0	66.3	66.88	-0.87	61.0	62.59	-2.54	confirmed	
2024-03-18	1022	2/24/2024	100.0	66.7	66.88	-0.27	61.6	62.59	-1.58	confirmed	
2024-03-19	1022	2/24/2024	100.0	65.6	66.88	-1.91	60.9	62.59	-2.70	confirmed	
2024-03-20	1022	2/24/2024	100.0	68.2	66.88	1.97	62.3	62.59	-0.46	confirmed	
2024-03-21	1022	2/24/2024	100.0	64.7	66.88	-3.26	59.1	62.59	-5.58	confirmed	
2024-03-22	1022	2/24/2024	100.0	67.6	66.88	1.08	61.9	62.59	-1.10	confirmed	
2024-03-26	1022	2/24/2024	100.0	65.3	66.88	-2.36	59.6	62.59	-4.78	confirmed	
2024-03-27	1022	2/24/2024	100.0	66.6	66.88	-0.42	61.0	62.59	-2.54	confirmed	
2024-03-28	1022	2/24/2024	100.0	64.7	66.88	-3.26	59.2	62.59	-5.42	confirmed	
2024-03-29	1022	2/24/2024	100.0	62.7	66.88	-6.25	58.0	62.59	-7.33	confirmed	
2024-04-01	1022	2/24/2024	100.0	62.0	66.88	-7.30	57.7	62.59	-7.81	confirmed	
2024-04-02	1022	2/24/2024	100.0	62.6	66.88	-6.40	57.9	62.59	-7.49	confirmed	
2024-04-03	1022	2/24/2024	100.0	64.5	66.88	-3.56	58.7	62.59	-6.22	confirmed	
2024-04-04	1022	2/24/2024	100.0	65.2	66.88	-2.51	59.4	62.59	-5.10	confirmed	
2024-04-08	1022	2/24/2024	100.0	68.5	66.88	2.42	62.0	62.59	-0.94	confirmed	
2024-04-09	1022	2/24/2024	100.0	62.3	66.88	-6.85	57.4	62.59	-8.29	confirmed	
2024-04-18	1022	2/24/2024	100.0	65.6	66.88	-1.91	60.0	62.59	-4.14	confirmed	
2024-04-19	1022	2/24/2024	100.0	63.6	66.88	-4.90	57.6	62.59	-7.97	confirmed	
2024-04-22	1022	2/24/2024	100.0	61.9	66.88	-7.45	57.1	62.59	-8.77	confirmed	5
2024-04-23	1022	2/24/2024	100.0	63.2	66.88	-5.50	57.9	62.59	-7.49	confirmed	

Note(s):

psPD value used the ps_{tot} avg value of test result plot.

9. Conducted Output Power Measurements

WLAN SISO Ant 1, 2

SP / LPI

Band (GHz)	Mode	Data Rate	Ch #	Freq. (MHz)	Plimit (DSI=0) Average Power				SAR Test (Yes/No)	Plimit (DSI=1,2,3) Average Power				SAR Test (Yes/No)
					WLAN SISO Ant.1		WLAN SISO Ant.2			WLAN SISO Ant.1		WLAN SISO Ant.2		
					Avg Pwr (dBm)	Max. Tune-up Limit (dBm)	Avg Pwr (dBm)	Max. Tune-up Limit (dBm)		Avg Pwr (dBm)	Max. Tune-up Limit (dBm)	Avg Pwr (dBm)	Max. Tune-up Limit (dBm)	
UNII 5 (5.925 - 6.425 GHz)	802.11a	6 Mbps	1	5955	Not Required	11.00	Not Required	11.00	No	Not Required	13.00	Not Required	13.00	No
			45	6175										
			93	6415										
	802.11ax (HE20)	7.3 Mbps	1	5935	Not Required	11.00	Not Required	11.00	No	Not Required	13.00	Not Required	13.00	No
			45	6175										
			93	6415										
	802.11ax (HE40)	14.6 Mbps	3	5965	Not Required	11.00	Not Required	11.00	No	Not Required	13.00	Not Required	13.00	No
			43	6165										
			91	6405										
	802.11ax (HE80)	36.0 Mbps	7	5985	Not Required	11.00	Not Required	11.00	No	Not Required	13.00	Not Required	13.00	No
			39	6145										
			87	6385										
	802.11ax (HE160)	72.0 Mbps	15	6025	10.38	11.00	10.58	11.00	Yes	12.60	13.00	12.40	13.00	Yes
			47	6185	10.39		10.76			12.51		12.76		
			79	6345	10.61		10.98			12.40		12.78		
UNII 6 (6.425 - 6.525 GHz)	802.11a	6 Mbps	97	6435	Not Required	11.00	Not Required	11.00	No	Not Required	13.00	Not Required	13.00	No
			105	6475										
			113	6515										
	802.11ax (HE20)	7.3 Mbps	97	6435	Not Required	11.00	Not Required	11.00	No	Not Required	13.00	Not Required	13.00	No
			105	6475										
			113	6515										
	802.11ax (HE40)	14.6 Mbps	99	6445	Not Required	11.00	Not Required	11.00	No	Not Required	13.00	Not Required	13.00	No
			115	6525										
	802.11ax (HE80)	36.0 Mbps	103	6465	Not Required	11.00	Not Required	11.00	No	Not Required	13.00	Not Required	13.00	No
	802.11ax (HE160)	72.0 Mbps	111	6505	10.48	11.00	10.77	11.00	Yes	12.38	13.00	12.74	13.00	Yes
UNII 7 (6.525 - 6.885 GHz)	802.11a	6 Mbps	117	6535	Not Required	11.00	Not Required	11.00	No	Not Required	13.00	Not Required	13.00	No
			149	6695										
			185	6875										
	802.11ax (HE20)	7.3 Mbps	117	6535	Not Required	11.00	Not Required	11.00	No	Not Required	13.00	Not Required	13.00	No
			149	6695										
			185	6875										
	802.11ax (HE40)	14.6 Mbps	123	6565	Not Required	11.00	Not Required	11.00	No	Not Required	13.00	Not Required	13.00	No
			147	6685										
			179	6845										
	802.11ax (HE80)	36.0 Mbps	119	6545	Not Required	11.00	Not Required	11.00	No	Not Required	13.00	Not Required	13.00	No
			151	6705										
			183	6865										
	802.11ax (HE160)	72.0 Mbps	143	6665	10.31	11.00	10.50	11.00	Yes	12.28	13.00	12.50	13.00	Yes
			175	6825	10.30		10.51			12.11		12.54		
UNII 8 (6.885 - 7.125 GHz)	802.11a	6 Mbps	189	5955	Not Required	11.00	Not Required	11.00	No	Not Required	13.00	Not Required	13.00	No
			209	6175										
			233	6415										
	802.11ax (HE20)	7.3 Mbps	189	5955	Not Required	11.00	Not Required	11.00	No	Not Required	13.00	Not Required	13.00	No
			209	6175										
			233	6415										
	802.11ax (HE40)	14.6 Mbps	187	6885	Not Required	11.00	Not Required	11.00	No	Not Required	13.00	Not Required	13.00	No
			203	6965										
			227	7085										
	802.11ax (HE80)	36.0 Mbps	199	6945	Not Required	11.00	Not Required	11.00	No	Not Required	13.00	Not Required	13.00	No
			215	7025										
	802.11ax (HE160)	72.0 Mbps	207	6985	10.23	11.00	10.99	11.00	Yes	11.98	13.00	12.88	13.00	Yes

Note(s):

1. Indoor AP for Plimit(DSI=0,1,2,3) target power is equal to Standard AP related all RF exposure conditions.
2. Per TCB workshop April.2021's guide, Channel power verification was performed for UNII 6e (5925MHz-7125MHz). So, 5 test channels of 802.11ax (HE160) were determined for SAR test. Refer to blue box in table.

WLAN MIMO Ant

SP / LPI

Band (GHz)	Mode	Data Rate	Ch #	Freq. (MHz)	Plimit (DSI=0) Average Power				SAR Test (Yes/No)	Plimit (DSI=1,2,3) Average Power				SAR Test (Yes/No)
					WLAN MIMO Ant.1		WLAN MIMO Ant.2			WLAN MIMO Ant.1		WLAN MIMO Ant.2		
					Avg Pwr (dBm)	Max. Tune-up Limit (dBm)	Avg Pwr (dBm)	Max. Tune-up Limit (dBm)		Avg Pwr (dBm)	Max. Tune-up Limit (dBm)	Avg Pwr (dBm)	Max. Tune-up Limit (dBm)	
UNII 5 (5.925 - 6.425 GHz)	802.11a	6 Mbps	1	5955	Not Required	11.00	Not Required	11.00	No	Not Required	13.00	Not Required	13.00	No
			45	6175										
			93	6415										
	802.11ax (HE20)	7.3 Mbps	1	5935	Not Required	11.00	Not Required	11.00	No	Not Required	13.00	Not Required	13.00	No
			45	6175										
			93	6415										
	802.11ax (HE40)	14.6 Mbps	3	5965	Not Required	11.00	Not Required	11.00	No	Not Required	13.00	Not Required	13.00	No
			43	6165										
			91	6405										
	802.11ax (HE80)	36.0 Mbps	7	5985	Not Required	11.00	Not Required	11.00	No	Not Required	13.00	Not Required	13.00	No
			39	6145										
			87	6385										
	802.11ax (HE160)	72.0 Mbps	15	6025	10.03	11.00	10.64	11.00	Yes	12.42	13.00	12.57	13.00	Yes
			47	6185	10.02		10.86			12.30		12.83		
			79	6345	10.60		10.98			12.09		12.86		
UNII 6 (6.425 - 6.525 GHz)	802.11a	6 Mbps	97	6435	Not Required	11.00	Not Required	11.00	No	Not Required	13.00	Not Required	13.00	No
			105	6475										
			113	6515										
	802.11ax (HE20)	7.3 Mbps	97	6435	Not Required	11.00	Not Required	11.00	No	Not Required	13.00	Not Required	13.00	No
			105	6475										
			113	6515										
	802.11ax (HE40)	14.6 Mbps	99	6445	Not Required	11.00	Not Required	11.00	No	Not Required	13.00	Not Required	13.00	No
			115	6525										
	802.11ax (HE80)	36.0 Mbps	103	6465	Not Required	11.00	Not Required	11.00	No	Not Required	13.00	Not Required	13.00	No
	802.11ax (HE160)	72.0 Mbps	111	6505	10.30	11.00	10.81	11.00	Yes	11.84	13.00	12.78	13.00	Yes
UNII 7 (6.525 - 6.885 GHz)	802.11a	6 Mbps	117	6535	Not Required	11.00	Not Required	11.00	No	Not Required	13.00	Not Required	13.00	No
			149	6695										
			185	6875										
	802.11ax (HE20)	7.3 Mbps	117	6535	Not Required	11.00	Not Required	11.00	No	Not Required	13.00	Not Required	13.00	No
			149	6695										
			185	6875										
	802.11ax (HE40)	14.6 Mbps	123	6565	Not Required	11.00	Not Required	11.00	No	Not Required	13.00	Not Required	13.00	No
			147	6685										
			179	6845										
	802.11ax (HE80)	36.0 Mbps	119	6545	Not Required	11.00	Not Required	11.00	No	Not Required	13.00	Not Required	13.00	No
			151	6705										
			183	6865										
	802.11ax (HE160)	72.0 Mbps	143	6665	10.45	11.00	10.51	11.00	Yes	11.78	13.00	12.86	13.00	Yes
			175	6825	10.30		10.58			11.60		12.60		
UNII 8 (6.885 - 7.125 GHz)	802.11a	6 Mbps	189	5955	Not Required	11.00	Not Required	11.00	No	Not Required	13.00	Not Required	13.00	No
			209	6175										
			233	6415										
	802.11ax (HE20)	7.3 Mbps	189	5955	Not Required	11.00	Not Required	11.00	No	Not Required	13.00	Not Required	13.00	No
			209	6175										
			233	6415										
	802.11ax (HE40)	14.6 Mbps	187	6885	Not Required	11.00	Not Required	11.00	No	Not Required	13.00	Not Required	13.00	No
			203	6965										
			227	7085										
	802.11ax (HE80)	36.0 Mbps	199	6945	Not Required	11.00	Not Required	11.00	No	Not Required	13.00	Not Required	13.00	No
			215	7025										
	802.11ax (HE160)	72.0 Mbps	207	6985	9.80	11.00	10.98	11.00	Yes	11.80	13.00	12.95	13.00	Yes

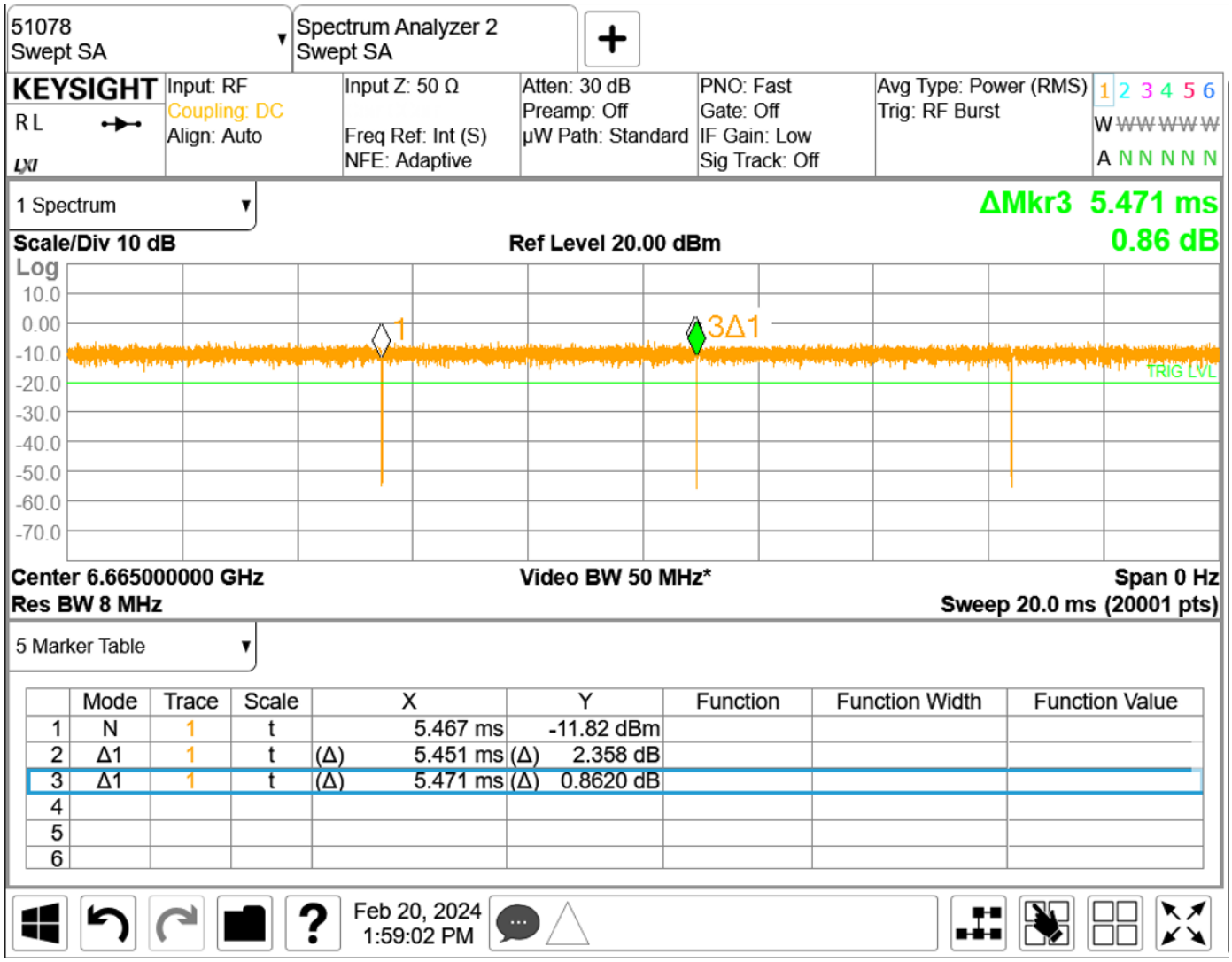
Note(s):

1. Indoor AP for Plimit(DSI=0,1,2,3) target power is equal to Standard AP related all RF exposure conditions.
2. Per TCB workshop April.2021's guide, Channel power verification was performed for UNII 6e (5925MHz-7125MHz). So, 5 test channels of 802.11ax (HE160) were determined for SAR test. Refer to blue box in table.

Duty Factor Measured Results (MIMO mode)

Mode	Data Rate	T on (ms)	Period (ms)	Duty Cycle	Crest Factor (1/duty cycle)
802.11ax (HE 160)	29.3 Mbps	5.451	5.471	99.63%	1.00

802.11ax (HE160)



10. SAR and APD(Absorbed Power Density) Results

SAR Test Reduction criteria are as follows:

- Reported SAR(W/kg) for Wi-Fi = Measured SAR * Tune-up scaling factor * Duty Cycle scaling factor
- Duty Cycle scaling factor = 1 / Duty cycle (%)

KDB 447498 D04 Interim General RF Exposure Guidance:

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

KDB 648474 D04 Handset SAR:

With headset attached, when the reported SAR for body-worn accessory, measured without a headset connected to the handset, is > 1.2 W/kg, the highest reported SAR configuration for that wireless mode and frequency band should be repeated for that body-worn accessory with a headset attached to the handset.

KDB 648474 D04 Handset SAR (Phablet Only):

For smart phones, with a display diagonal dimension > 15.0 cm or an overall diagonal dimension > 16.0 cm.
When hotspot mode does not apply, 10-g extremity SAR is required for all surfaces and edges with an antenna located at ≤ 25mm From that surface or edge in direct contact with a flat phantom, to address interactive hand use exposure conditions. When hotspot mode applies, 10-g extremity SAR is required only for the surfaces and edges with hotspot mode 1-g reported SAR > 1.2 W/kg; However, when power reduction applies to hotspot mode the measured SAR must be scaled to the maximum output power, Including tolerance, allowed for phablet modes to compare with the 1.2 W/kg SAR test reduction threshold.

10.1. WiFi (UNII Bands-Above 6GHz)

Forder Closed configuration

SISO Ant SAR test results

Antenna	RF Exposure Conditions	Mode	PWR Back-off	Dist. (mm)	Test Position	Ch #.	Freq. (MHz)	Duty Cycle (%)	Power (dBm)		1-g SAR (W/kg)		10-g SAR (W/kg)		Plot No.
									Tune-up limit	Meas.	Meas.	Scaled	Meas.	Scaled	
WLAN SISO Ant.1	Head	802.11ax HE160 72.0 Mbps	N/A	0	Left Touch	15	6025.0	99.6%	13.00	12.60	0.182	0.200			1
						79	6345.0	99.6%	13.00	12.40	0.065	0.075			
						111	6505.0	99.6%	13.00	12.38	0.064	0.074			
						143	6665.0	99.6%	13.00	12.28	0.089	0.105			
						207	6985.0	99.6%	13.00	11.98	0.017	0.022			
					Left Tilt	15	6025.0	99.6%	13.00	12.60	0.034	0.037			
					Right touch	15	6025.0	99.6%	13.00	12.60	0.124	0.136			
					Right Tilt	15	6025.0	99.6%	13.00	12.60	0.025	0.028			
	Body-worn		N/A	10	Rear	15	6025.0	99.6%	13.00	12.60	0.025	0.028			
						79	6345.0	99.6%	13.00	12.40	0.102	0.118			2
						111	6505.0	99.6%	13.00	12.38	0.059	0.068			
						143	6665.0	99.6%	13.00	12.28	0.067	0.079			
						207	6985.0	99.6%	13.00	11.98	0.040	0.051			
					Front	15	6025.0	99.6%	13.00	12.60	0.024	0.026			
	Product Specific 10-g		N/A	0	Rear	15	6025.0	99.6%	13.00	12.60			0.175	0.193	
					Front	15	6025.0	99.6%	13.00	12.60			0.084	0.092	
					Right	15	6025.0	99.6%	13.00	12.60			0.256	0.282	
						79	6345.0	99.6%	13.00	12.40			0.280	0.323	3
						111	6505.0	99.6%	13.00	12.38			0.213	0.247	
						143	6665.0	99.6%	13.00	12.28			0.216	0.256	
						207	6985.0	99.6%	13.00	11.98			0.210	0.267	
WLAN SISO Ant.2	Head	802.11ax HE160 72.0 Mbps	N/A	0	Left Touch	207	6985.0	99.6%	13.00	12.88	0.091	0.094			
					Left Tilt	15	6025.0	99.6%	13.00	12.40	0.022	0.025			
						79	6345.0	99.6%	13.00	12.78	0.096	0.101			
						111	6505.0	99.6%	13.00	12.74	0.085	0.091			
						143	6665.0	99.6%	13.00	12.50	0.121	0.136			4
						207	6985.0	99.6%	13.00	12.88	0.094	0.097			
					Right touch	207	6985.0	99.6%	13.00	12.88	0.057	0.059			
					Right tilt	207	6985.0	99.6%	13.00	12.88	0.056	0.058			
	Body-worn		N/A	10	Rear	15	6025.0	99.6%	13.00	12.40	0.086	0.099			
						79	6345.0	99.6%	13.00	12.78	0.061	0.064			
						111	6505.0	99.6%	13.00	12.74	0.14	0.149			
						143	6665.0	99.6%	13.00	12.50	0.257	0.289			5
						207	6985.0	99.6%	13.00	12.88	0.193	0.199			
					Front	207	6985.0	99.6%	13.00	12.88	0.004	0.004			
	Product Specific 10-g		N/A	0	Rear	15	6025.0	99.6%	13.00	12.40			0.148	0.171	
						79	6345.0	99.6%	13.00	12.78			0.154	0.163	
						111	6505.0	99.6%	13.00	12.74			0.193	0.206	
						143	6665.0	99.6%	13.00	12.50			0.201	0.226	6
						207	6985.0	99.6%	13.00	12.88			0.199	0.205	
					Front	207	6985.0	99.6%	13.00	12.88			0.014	0.014	
					Top	207	6985.0	99.6%	13.00	12.88			0.123	0.127	
					Right	207	6985.0	99.6%	13.00	12.88			0.037	0.038	

Forder Closed configuration

MIMO Ant SAR test results

Antenna	RF Exposure Conditions	Mode	PWR Back-off	Dist. (mm)	Test Position	Ch #.	Freq. (MHz)	Duty Cycle (%)	Power (dBm)		1-g SAR (W/kg)		10-g SAR (W/kg)		Plot No.
									Tune-up limit	Meas.	Meas.	Scaled	Meas.	Scaled	
WLAN MIMO Ant.1	Head	802.11ax HE160 72.0 Mbps	N/A	0	Left Touch	15	6025.0	99.6%	13.00	12.42	0.217	0.249			
						79	6345.0	99.6%	13.00	12.09	0.248	0.307			7
						111	6505.0	99.6%							
						143	6665.0	99.6%							
						207	6985.0	99.6%	13.00	11.80	0.093	0.123			
					Left Tilt	207	6985.0	99.6%							
					Right touch	207	6985.0	99.6%							
					Right Tilt	207	6985.0	99.6%							
	Body-worn			10	Rear	15	6025.0	99.6%							
						79	6345.0	99.6%							
						111	6505.0	99.6%							
						143	6665.0	99.6%							
						207	6985.0	99.6%							
					Front	207	6985.0	99.6%	13.00	11.80	0.002	0.003			
	Product Specific 10-g			0	Rear	207	6985.0	99.6%							
					Front	207	6985.0	99.6%							
					Top	207	6985.0	99.6%	13.00	11.80			0.156	0.206	
					Right	15	6025.0	99.6%	13.00	12.42			0.456	0.523	
						79	6345.0	99.6%	13.00	12.09			0.428	0.530	
						111	6505.0	99.6%	13.00	11.84			0.262	0.343	
						143	6665.0	99.6%	13.00	11.78			0.277	0.368	
						207	6985.0	99.6%	13.00	11.80			0.526	0.696	8
WLAN MIMO Ant.2	Head	802.11ax HE160 72.0 Mbps	N/A	0	Left Touch	15	6025.0	99.6%							
						79	6345.0	99.6%							
						111	6505.0	99.6%	13.00	12.78	0.081	0.086			
						143	6665.0	99.6%	13.00	12.86	0.068	0.070			
						207	6985.0	99.6%							
					Left Tilt	207	6985.0	99.6%	13.00	12.95	0.077	0.078			
					Right touch	207	6985.0	99.6%	13.00	12.95	0.041	0.042			
					Right Tilt	207	6985.0	99.6%	13.00	12.95	0.017	0.017			
	Body-worn		N/A	10	Rear	15	6025.0	99.6%	13.00	12.57	0.120	0.133			
						79	6345.0	99.6%	13.00	12.86	0.125	0.130			
						111	6505.0	99.6%	13.00	12.78	0.143	0.151			
						143	6665.0	99.6%	13.00	12.86	0.194	0.201			
						207	6985.0	99.6%	13.00	12.95	0.199	0.202			9
					Front	207	6985.0	99.6%	13.00	12.95					
	Product Specific 10-g		N/A	0	Rear	207	6985.0	99.6%	13.00	12.95			0.273	0.277	
					Front	207	6985.0	99.6%	13.00	12.95			0.048	0.049	
					Top	207	6985.0	99.6%							
					Right	15	6025.0	99.6%							
						79	6345.0	99.6%							
						111	6505.0	99.6%							
						143	6665.0	99.6%							
						207	6985.0	99.6%							

Note(s):

1. APD (Absorbed Power Density) over 4cm^2 averaging area is reported based on SAR measurements.

Forder Opened configuration

SISO Ant SAR test results

Antenna	RF Exposure Conditions	Mode	Dist. (mm)	Test Position	Ch #.	Freq. (MHz)	Duty Cycle (%)	Power (dBm)		1-g SAR (W/kg)		10-g SAR (W/kg)		Plot No.
								Tune-up limit	Meas.	Meas.	Scaled	Meas.	Scaled	
WLAN SISO Ant.1	Body 1-g	802.11ax HE160 72.0 Mbps	10	Rear	79	6345.0	99.6%	11.00	10.61	0.019	0.021			
				Front	15	6025.0	99.6%	11.00	10.38	0.080	0.093			
					79	6345.0	99.6%	11.00	10.61	0.112	0.123			
					111	6505.0	99.6%	11.00	10.48	0.120	0.136			
					143	6665.0	99.6%	11.00	10.31	0.136	0.160			10
					207	6985.0	99.6%	11.00	10.30	0.134	0.158			
				Top	79	6345.0	99.6%	11.00	10.61	0.029	0.032			
				Right	79	6345.0	99.6%	11.00	10.61	0.098	0.108			
	Extremity 10-g		0	Rear	79	6345.0	99.6%	11.00	10.61			0.065	0.071	
				Front	15	6025.0	99.6%	11.00	10.38			0.319	0.369	
					79	6345.0	99.6%	11.00	10.61			0.396	0.435	
					111	6505.0	99.6%	11.00	10.48			0.403	0.456	
					143	6665.0	99.6%	11.00	10.31			0.412	0.485	11
					207	6985.0	99.6%	11.00	10.30			0.339	0.400	
				Top	79	6345.0	99.6%	11.00	10.61			0.220	0.242	
				Right	79	6345.0	99.6%	11.00	10.61			0.194	0.213	
WLAN SISO Ant.2	Body 1-g	802.11ax HE160 72.0 Mbps	10	Rear	15	6025.0	99.6%	11.00	10.58	0.117	0.129			
					79	6345.0	99.6%	11.00	10.98	0.122	0.123			
					111	6505.0	99.6%	11.00	10.77	0.156	0.165			
					143	6665.0	99.6%	11.00	10.50	0.253	0.285			12
					207	6985.0	99.6%	11.00	10.99	0.161	0.162			
				Front	207	6985.0	99.6%	11.00	10.99	0.052	0.052			
				Top	207	6985.0	99.6%	11.00	10.99	0.045	0.045			
				Right	207	6985.0	99.6%	11.00	10.99	0.048	0.048			
	Extremity 10-g		0	Rear	207	6985.0	99.6%	11.00	10.99			0.101	0.102	
				Front	15	6025.0	99.6%	11.00	10.58			0.308	0.341	
					79	6345.0	99.6%	11.00	10.98			0.428	0.432	13
					111	6505.0	99.6%	11.00	10.77			0.376	0.398	
					143	6665.0	99.6%	11.00	10.50			0.331	0.373	
					207	6985.0	99.6%	11.00	10.99			0.184	0.185	
				Top	207	6985.0	99.6%	11.00	10.99			0.084	0.085	
				Right	207	6985.0	99.6%	11.00	10.99			0.065	0.065	

MIMO Ant SAR test results

Antenna	RF Exposure Conditions	Mode	Dist. (mm)	Test Position	Ch #.	Freq. (MHz)	Duty Cycle (%)	Power (dBm)		1-g SAR (W/kg)		10-g SAR (W/kg)		Plot No.
								Tune-up limit	Meas.	Meas.	Scaled	Meas.	Scaled	
WLAN MIMO Ant.1	Body 1-g	802.11ax HE160 72.0 Mbps	10	Rear	15	6025.0	99.6%	11.00	10.03					
					79	6345.0	99.6%	11.00	10.60					
					111	6505.0	99.6%	11.00	10.30					
					143	6665.0	99.6%	11.00	10.45					
					207	6985.0	99.6%	11.00	9.80					
				Front	79	6345.0	99.6%	11.00	10.60	0.154	0.169			
				Top	79	6345.0	99.6%	11.00	10.60					
				Right	79	6345.0	99.6%	11.00	10.60	0.085	0.094			
	Extremity 10-g		0	Rear	79	6345.0	99.6%	11.00	10.60					
				Front	15	6025.0	99.6%	11.00	10.03					
					79	6345.0	99.6%	11.00	10.60					
					111	6505.0	99.6%	11.00	10.30					
					143	6665.0	99.6%	11.00	10.45					
					207	6985.0	99.6%	11.00	9.80					
				Top	79	6345.0	99.6%	11.00	10.60					
				Right	79	6345.0	99.6%	11.00	10.60			0.258	0.284	
WLAN MIMO Ant.2	Body 1-g	802.11ax HE160 72.0 Mbps	10	Rear	15	6025.0	99.6%	11.00	10.64	0.108	0.118			
					79	6345.0	99.6%	11.00	10.98	0.195	0.197			
					111	6505.0	99.6%	11.00	10.81	0.156	0.164			
					143	6665.0	99.6%	11.00	10.51	0.186	0.209			14
					207	6985.0	99.6%	11.00	10.98	0.147	0.148			
				Front	79	6345.0	99.6%	11.00	10.64					
				Top	79	6345.0	99.6%	11.00	10.64	0.110	0.120			
				Right	79	6345.0	99.6%	11.00	10.98					
	Extremity 10-g		0	Rear	79	6345.0	99.6%	11.00	10.98			0.136	0.137	
				Front	15	6025.0	99.6%	11.00	10.64			0.369	0.402	
					79	6345.0	99.6%	11.00	10.98			0.049	0.049	
					111	6505.0	99.6%	11.00	10.81			0.107	0.112	
					143	6665.0	99.6%	11.00	10.51			0.360	0.404	15
					207	6985.0	99.6%	11.00	10.98			0.185	0.187	
				Top	79	6345.0	99.6%	11.00	10.98			0.215	0.217	
				Right	79	6345.0	99.6%	11.00	10.98					

Forder Closed configuration

SISO Ant APD (Absorbed Power Density) test results

Antenna	RF Exposure Conditions	Mode	PWR Back-off	Dist. (mm)	Test Position	Ch #.	Freq. (MHz)	Duty Cycle (%)	Power (dBm)		Measured APD (mW/cm^2 over 4cm^2	Plot No.
									Tune-up limit	Meas.		
WLAN SISO Ant.1	Head	802.11ax HE160 72.0 Mbps	N/A	0	Left Touch	15	6025.0	99.6%	13.00	12.60	0.1150	16
						79	6345.0	99.6%	13.00	12.40	0.0204	
						111	6505.0	99.6%	13.00	12.38	0.0234	
						143	6665.0	99.6%	13.00	12.28	0.0433	
						207	6985.0	99.6%	13.00	11.98	0.0041	
					Left Tilt	15	6025.0	99.6%	13.00	12.60	0.0098	
					Right touch	15	6025.0	99.6%	13.00	12.60	0.0777	
					Right Tilt	15	6025.0	99.6%	13.00	12.60	0.0095	
	Body-worn		N/A	10	Rear	15	6025.0	99.6%	13.00	12.60	0.0147	
						79	6345.0	99.6%	13.00	12.40	0.0546	17
						111	6505.0	99.6%	13.00	12.38	0.0164	
						143	6665.0	99.6%	13.00	12.28	0.0210	
						207	6985.0	99.6%	13.00	11.98	0.0010	
					Front	15	6025.0	99.6%	13.00	12.60	0.0120	
	Product Specific 10-g		N/A	0	Rear	15	6025.0	99.6%	13.00	12.60	0.4120	
					Front	15	6025.0	99.6%	13.00	12.60	0.2010	
					Right	15	6025.0	99.6%	13.00	12.60	0.6070	
						79	6345.0	99.6%	13.00	12.40	0.6550	18
						111	6505.0	99.6%	13.00	12.38	0.4990	
						143	6665.0	99.6%	13.00	12.28	0.5160	
						207	6985.0	99.6%	13.00	11.98	0.4960	
WLAN SISO Ant.2	Head	802.11ax HE160 72.0 Mbps	N/A	0	Left Touch	207	6985.0	99.6%	13.00	12.88	0.0019	
					Left Tilt	15	6025.0	99.6%	13.00	12.40	0.0446	
						79	6345.0	99.6%	13.00	12.78	0.0019	
						111	6505.0	99.6%	13.00	12.74	0.0552	
						143	6665.0	99.6%	13.00	12.50	0.0307	
						207	6985.0	99.6%	13.00	12.88	0.0695	19
					Right touch	207	6985.0	99.6%	13.00	12.88	0.0497	
					Right tilt	207	6985.0	99.6%	13.00	12.88	0.0312	
	Body-worn & Hotspot		N/A	10	Rear	15	6025.0	99.6%	13.00	12.40	0.0570	
						79	6345.0	99.6%	13.00	12.78	0.0417	
						111	6505.0	99.6%	13.00	12.74	0.1000	
						143	6665.0	99.6%	13.00	12.50	0.1840	20
						207	6985.0	99.6%	13.00	12.88	0.1340	
					Front	207	6985.0	99.6%	13.00	12.88	0.0025	
	Product Specific 10-g		N/A	0	Rear	15	6025.0	99.6%	13.00	12.40	0.3550	
						79	6345.0	99.6%	13.00	12.78	0.3680	
						111	6505.0	99.6%	13.00	12.74	0.4600	
						143	6665.0	99.6%	13.00	12.50	0.4790	21
						207	6985.0	99.6%	13.00	12.88	0.4780	
					Front	207	6985.0	99.6%	13.00	12.88	0.0357	
					Top	207	6985.0	99.6%	13.00	12.88	0.2990	
					Right	207	6985.0	99.6%	13.00	12.88	0.1050	

Note(s):

1. APD (Absorbed Power Density) over 4cm^2 averaging area is reported based on SAR measurements.
2. 10 W/m^2 = 1.0 mW/cm^2

Forder Closed configuration

MIMO Ant APD (Absorbed Power Density) SAR test results

Antenna	RF Exposure Conditions	Mode	PWR Back-off	Dist. (mm)	Test Position	Ch #.	Freq. (MHz)	Duty Cycle (%)	Power (dBm)		Measured APD (mW/cm^2 over 4cm^2)	Plot No.
									Tune-up limit	Meas.		
WLAN MIMO Ant.1	Head	802.11ax HE160 72.0 Mbps	N/A	0	Left Touch	15	6025.0	99.6%	13.00	12.42	0.1340	
						79	6345.0	99.6%	13.00	12.09	0.1540	22
						111	6505.0	99.6%				
						143	6665.0	99.6%				
						207	6985.0	99.6%	13.00	11.80	0.0236	
					Left Tilt	207	6985.0	99.6%				
					Right touch	207	6985.0	99.6%				
					Right Tilt	207	6985.0	99.6%				
	Body-worn			10	Rear	15	6025.0	99.6%				
						79	6345.0	99.6%				
						111	6505.0	99.6%				
						143	6665.0	99.6%				
						207	6985.0	99.6%				
					Front	143	6665.0	99.6%	13.00	11.80	0.0022	
	Product Specific 10-g			0	Rear	207	6985.0	99.6%				
					Front	207	6985.0	99.6%				
					Top	207	6985.0	99.6%	13.00	11.80	0.3760	
					Right	15	6025.0	99.6%	13.00	12.42	1.0600	
						79	6345.0	99.6%	13.00	12.09	0.9980	
						111	6505.0	99.6%	13.00	11.84	0.6250	
						143	6665.0	99.6%	13.00	11.78	0.6620	
						207	6985.0	99.6%	13.00	11.80	1.2200	23
WLAN MIMO Ant.2	Head	802.11ax HE160 72.0 Mbps	N/A	0	Left Touch	15	6025.0	99.6%				
						79	6345.0	99.6%				
						111	6505.0	99.6%	13.00	12.78	0.0213	
						143	6665.0	99.6%	13.00	12.86	0.0035	
						207	6985.0	99.6%				
					Left Tilt	207	6985.0	99.6%	13.00	12.95	0.0279	
					Right touch	207	6985.0	99.6%	13.00	12.95	0.0161	
					Right Tilt	207	6985.0	99.6%	13.00	12.95	0.0035	
	Body-worn		N/A	10	Rear	15	6025.0	99.6%	13.00	12.57	0.0823	
						79	6345.0	99.6%	13.00	12.86	0.0886	
						111	6505.0	99.6%	13.00	12.78	0.1020	
						143	6665.0	99.6%	13.00	12.86	0.1360	
						207	6985.0	99.6%	13.00	12.95	0.1430	24
					Front	143	6665.0	99.6%				
	Product Specific 10-g		N/A	0	Rear	207	6985.0	99.6%	13.00	12.95	0.6590	
					Front	207	6985.0	99.6%	13.00	12.95	0.1170	
					Top	207	6985.0	99.6%				
					Right	15	6025.0	99.6%				
						79	6345.0	99.6%				
						111	6505.0	99.6%				
						143	6665.0	99.6%				
						207	6985.0	99.6%				

Note(s):

1. APD (Absorbed Power Density) over 4cm^2 averaging area is reported based on SAR measurements.
2. 10 W/m^2 = 1.0 mW/cm^2

Forder Opened configuration

SISO Ant APD (Absorbed Power Density) test results

Antenna	RF Exposure Conditions	Mode	Dist. (mm)	Test Position	Ch #.	Freq. (MHz)	Duty Cycle (%)	Power (dBm)		Measured APD (mW/cm^2 over 4cm^2)	Plot No.
								Tune-up limit	Meas.		
WLAN SISO Ant.1	Body 1-g	802.11ax HE160 72.0 Mbps	10	Rear	79	6345.0	99.6%	11.00	10.61	0.0086	
				Front	15	6025.0	99.6%	11.00	10.38	0.0631	
					79	6345.0	99.6%	11.00	10.61	0.0866	
					111	6505.0	99.6%	11.00	10.48	0.0900	
					143	6665.0	99.6%	11.00	10.31	0.1030	25
					207	6985.0	99.6%	11.00	10.23	0.0974	
				Top	79	6345.0	99.6%	11.00	10.61	0.0241	
				Right	79	6345.0	99.6%	11.00	10.61	0.0697	
	Extremity 10-g		0	Rear	79	6345.0	99.6%	11.00	10.61	0.1490	
				Front	15	6025.0	99.6%	11.00	10.38	0.7410	
					79	6345.0	99.6%	11.00	10.61	0.9190	
					111	6505.0	99.6%	11.00	10.48	0.9330	
					143	6665.0	99.6%	11.00	10.31	0.9550	26
					207	6985.0	99.6%	11.00	10.23	0.7930	
				Top	79	6345.0	99.6%	11.00	10.61	0.5290	
				Right	79	6345.0	99.6%	11.00	10.61	0.4750	
WLAN SISO Ant.2	Body 1-g	802.11ax HE160 72.0 Mbps	10	Rear	15	6025.0	99.6%	11.00	10.58	0.0855	
					79	6345.0	99.6%	11.00	10.98	0.0892	
					111	6505.0	99.6%	11.00	10.77	0.1120	
					143	6665.0	99.6%	11.00	10.50	0.1740	27
					207	6985.0	99.6%	11.00	10.99	0.1180	
				Front	207	6985.0	99.6%	11.00	10.99	0.0264	
				Top	207	6985.0	99.6%	11.00	10.99	0.0371	
				Right	207	6985.0	99.6%	11.00	10.99	0.0270	
	Extremity 10-g		0	Rear	207	6985.0	99.6%	11.00	10.99	0.2400	
				Front	15	6025.0	99.6%	11.00	10.58	0.7290	
					79	6345.0	99.6%	11.00	10.98	1.0300	28
					111	6505.0	99.6%	11.00	10.77	0.9030	
					143	6665.0	99.6%	11.00	10.50	0.8110	
					207	6985.0	99.6%	11.00	10.99	0.4400	
				Top	207	6985.0	99.6%	11.00	10.99	0.1930	
				Right	207	6985.0	99.6%	11.00	10.99	0.0455	

MIMO Ant APD (Absorbed Power Density) test results

Antenna	RF Exposure Conditions	Mode	Dist. (mm)	Test Position	Ch #.	Freq. (MHz)	Duty Cycle (%)	Power (dBm)		Measured APD (mW/cm^2 over 4cm^2)	Plot No.
								Tune-up limit	Meas.		
WLAN MIMO Ant.1	Body 1-g	802.11ax HE160 72.0 Mbps	10	Rear	15	6025.0	99.6%	11.00	10.03		
					79	6345.0	99.6%	11.00	10.60		
					111	6505.0	99.6%	11.00	10.30		
					143	6665.0	99.6%	11.00	10.45		
					207	6985.0	99.6%	11.00	9.80		
				Front	79	6345.0	99.6%	11.00	10.60	0.1100	
				Top	79	6345.0	99.6%	11.00	10.60		
				Right	79	6345.0	99.6%	11.00	10.60	0.0572	
	Extremity 10-g		0	Rear	79	6345.0	99.6%	11.00	10.60		
				Front	15	6025.0	99.6%	11.00	10.03	0.8740	
					79	6345.0	99.6%	11.00	10.60	1.1700	29
					111	6505.0	99.6%	11.00	10.30	0.9830	
					143	6665.0	99.6%	11.00	10.45	0.8610	
					207	6985.0	99.6%	11.00	9.80	0.4410	
				Top	79	6345.0	99.6%	11.00	10.60	0.5110	
				Right	79	6345.0	99.6%	11.00	10.60	0.6000	
WLAN MIMO Ant.2	Body 1-g	802.11ax HE160 72.0 Mbps	10	Rear	15	6025.0	99.6%	11.00	10.64	0.0793	
					79	6345.0	99.6%	11.00	10.98	0.1260	
					111	6505.0	99.6%	11.00	10.81	0.1120	
					143	6665.0	99.6%	11.00	10.51	0.1370	30
					207	6985.0	99.6%	11.00	10.98	0.0985	
				Front	79	6345.0	99.6%	11.00	10.64		
				Top	79	6345.0	99.6%	11.00	10.64	0.0838	
				Right	79	6345.0	99.6%	11.00	10.98		
	Extremity 10-g		0	Rear	79	6345.0	99.6%	11.00	10.98	0.3170	
				Front	15	6025.0	99.6%	11.00	10.64		
					79	6345.0	99.6%	11.00	10.98		
					111	6505.0	99.6%	11.00	10.81		
					143	6665.0	99.6%	11.00	10.51		
					207	6985.0	99.6%	11.00	10.98		
				Top	79	6345.0	99.6%	11.00	10.98		
				Right	79	6345.0	99.6%	11.00	10.64		

10.2. UWB (Ultra Wide Band)

SAR test results

Forder Closed configuration

Antenna	RF Exposure Conditions	Mode	Dist. (mm)	Test Position	Ch #.	Freq. (MHz)	10-g SAR (W/kg) Meas.	Plot No.
UWB Ant	Product Specific 10-g	CW	0	Rear	5	6489.6	0.002	
					9	7987.2	0.002	
				Front	5	6489.6	0.001	
					9	7987.2	0.000	
				Top	5	6489.6	0.002	
					9	7987.2	0.001	
				Left	5	6489.6	0.003	31
					9	7987.2	0.001	
				Right	5	6489.6	0.002	
					9	7987.2	0.002	

Forder Opened configuration

Antenna	RF Exposure Conditions	Mode	Dist. (mm)	Test Position	Ch #.	Freq. (MHz)	10-g SAR (W/kg) Meas.	Plot No.
UWB Ant	UMPC Extremity 19g	CW	0	Rear	5	6489.6	0.001	32
					9	7987.2	0.000	
				Front	5	6489.6	0.000	
					9	7987.2	0.000	
				Top	5	6489.6	0.000	
					9	7987.2	0.000	
				Right	5	6489.6	0.000	
					9	7987.2	0.000	

APD (Absorbed Power Density) test results

Forder Closed configuration

Antenna	RF Exposure Conditions	Mode	Dist. (mm)	Test Position	Ch #.	Freq. (MHz)	Measured APD (mW/cm^2 over 4cm^2)	Plot No.
UWB Ant	Product Specific 10-g	CW	0	Rear	5	6489.6	0.0042	
					9	7987.2	0.0043	
				Front	5	6489.6	0.0028	
					9	7987.2	0.0021	
				Top	5	6489.6	0.0042	
					9	7987.2	0.0027	
				Left	5	6489.6	0.0058	31
					9	7987.2	0.0025	
				Right	5	6489.6	0.0039	
					9	7987.2	0.0057	

Forder Opened configuration

Antenna	RF Exposure Conditions	Mode	Dist. (mm)	Test Position	Ch #.	Freq. (MHz)	Measured APD (mW/cm^2 over 4cm^2)	Plot No.
UWB Ant	Product Specific 10-g	CW	0	Rear	5	6489.6	0.0024	32
					9	7987.2	0.0000	
				Front	5	6489.6	0.0005	
					9	7987.2	0.0000	
				Top	5	6489.6	0.0002	
					9	7987.2	0.0000	
				Right	5	6489.6	0.0003	
					9	7987.2	0.0000	

11. IPD(Incident Power density) Results

11.1. WiFi (UNII Bands-Above 6GHz)

Forder Closed configuration

SISO Ant IPD(Incident Power density) test results

Antenna	Mode	Test Position	Dist. (mm)	Ch.	Freq. (MHz)	Duty Cycle	Grid Step (Lamda)	Power (dBm)		Measured. Normal psPD	Measured. Total psPD	Reported. Normal psPD Note.3	Reported. Total psPD Note.3	Scailing factor for Measurement Uncertainty per IEC 62479 Note.2	Scaled Normal psPD	Scaled Total psPD	Plot No.
								Tune-up limit	Meas.	mW/cm^2	mW/cm^2	mW/cm^2	mW/cm^2		mW/cm^2	mW/cm^2	
WLAN SISO Ant.1	802.11ax HE 160	Right	2.00	79	6345.0	99.6%	0.043	13.00	12.40	0.1830	0.3960	0.2100	0.4540	1.123	0.2358	0.5098	33
WLAN SISO Ant.2	802.11ax HE 160	Rear	2.00	143	6665.0	99.6%	0.048	13.00	12.50	0.4460	0.6420	0.5000	0.7210	1.123	0.5615	0.8097	34

MIMO Ant IPD(Incident Power density) test results

Antenna	Mode	Test Position	Dist. (mm)	Ch.	Freq. (MHz)	Duty Cycle	Grid Step (Lamda)	Power (dBm)		Measured. Normal psPD	Measured. Total psPD	Reported. Normal psPD Note.3	Reported. Total psPD Note.3	Scailing factor for Measurement Uncertainty per IEC 62479 Note.2	Scaled Normal psPD	Scaled Total psPD	Plot No.
								Tune-up limit	Meas.	mW/cm^2	mW/cm^2	mW/cm^2	mW/cm^2		mW/cm^2	mW/cm^2	
WLAN MIMO Ant.1	802.11ax HE 160	Rear	2.00	207	6985.0	99.6%	0.048	13.00	11.80					1.123			
		Front		207	6985.0	99.6%	0.048	13.00	11.80	0.0907	0.2220	0.1200	0.2930	1.123	0.1348	0.3290	
		Top		207	6985.0	99.6%	0.048	13.00	11.80					1.123			
		Right		15	6025.0	99.6%	0.048	13.00	12.42	0.2970	0.6340	0.3400	0.7240	1.123	0.3818	0.8131	
				79	6345.0	99.6%	0.048	13.00	12.09	0.2530	0.4990	0.3120	0.6150	1.123	0.3504	0.6906	
				111	6505.0	99.6%	0.048	13.00	11.84	0.2350	0.4220	0.3070	0.5520	1.123	0.3448	0.6199	
				143	6665.0	99.6%	0.048	13.00	11.78	0.2500	0.4900	0.3310	0.6490	1.123	0.3717	0.7288	
				207	6985.0	99.6%	0.048	13.00	11.80	0.2820	0.6420	0.3710	0.8460	1.123	0.4166	0.9501	35
WLAN MIMO Ant.2	802.11ax HE 160	Rear	2.00	207	6985.0	99.6%	0.048	13.00	12.95	0.1950	0.3960	0.1980	0.4010	1.123	0.2224	0.4503	
		Front		207	6985.0	99.6%	0.048	13.00	12.95					1.123			
		Top		207	6985.0	99.6%	0.048	13.00	12.95	0.1700	0.3570	0.1720	0.3610	1.123	0.1932	0.4054	
		Right		15	6025.0	99.6%	0.048	13.00	12.57					1.123			
				79	6345.0	99.6%	0.048	13.00	12.86					1.123			
				111	6505.0	99.6%	0.048	13.00	12.78					1.123			
				143	6665.0	99.6%	0.048	13.00	12.86					1.123			
				207	6985.0	99.6%	0.048	13.00	12.95					1.123			

Note(s):

1. 10 W/m^2 = 1.0 mW/cm^2
2. Per TCBC workshop guide, Incident power density results were scaled according to IEC 62479:2010 for the portion of the measurement uncertainty > 30%. Total expanded uncertainty of 1.53 dB (42.3%) was used to determine the psPD measurement scailing factor.
3. Power density test data were scaled to tune-up limit using measurement system tool.
4. Per manufacturer guide, Grid Step setting were using the automatic grid step function of measurement system tool.
5. Per manufacturer guide, Incident power density was measured at d=2mm.
6. ESR Algorithm was used during psPD measurement and calculations.
7. SISO Ant mode was evaluated in the worst case configuration of SAR test results.
8. MIMO Ant mode was evaluated for the entire measurement positions in the worst case configuration of SAR test results. And All test channels were evaluated at worst test position.

Forder Opened configuration

SISO Ant IPD(Incident Power density) test results

Antenna	Mode	Test Position	Dist. (mm)	Ch.	Freq. (MHz)	Duty Cycle	Grid Step (Lamda)	Power (dBm)		Measured. Normal psPD	Measured. Total psPD	Reported. Normal psPD Note.3	Reported. Total psPD Note.3	Scailing factor for Measurement Uncertainty per IEC 62479 Note.2	Scaled Normal psPD	Scaled Total psPD	Plot No.
								Tune-up limit	Meas.	mW/cm^2	mW/cm^2	mW/cm^2	mW/cm^2		mW/cm^2	mW/cm^2	
WLAN SISO Ant.1	802.11ax HE 160	Front	2.00	143	6665.0	99.6%	0.048	11.00	10.31	0.1800	0.3360	0.2110	0.3940	1.123	0.2370	0.4425	36
		Right	2.00	143	6665.0	99.6%	0.048	11.00	10.31	0.1910	0.2990	0.2240	0.3510	1.123	0.2516	0.3942	
WLAN SISO Ant.2	802.11ax HE 160	Rear	2.00	143	6665.0	99.6%	0.048	11.00	10.50	0.1610	0.2640	0.1810	0.2960	1.123	0.2033	0.3324	37
		Right	2.00	143	6665.0	99.6%	0.048	11.00	10.50	0.0610	0.0905	0.0685	0.1020	1.123	0.0769	0.1145	

MIMO Ant IPD(Incident Power density) test results

Antenna	Mode	Test Position	Dist. (mm)	Ch.	Freq. (MHz)	Duty Cycle	Grid Step (Lamda)	Power (dBm)		Measured. Normal psPD	Measured. Total psPD	Reported. Normal psPD Note.3	Reported. Total psPD Note.3	Scailing factor for Measurement Uncertainty per IEC 62479 Note.2	Scaled Normal psPD	Scaled Total psPD	Plot No.
								Tune-up limit	Meas.	mW/cm^2	mW/cm^2	mW/cm^2	mW/cm^2		mW/cm^2	mW/cm^2	
WLAN MIMO Ant.1	802.11ax HE 160	Rear	2.00	79	6345.0	99.6%	0.043	11.00	10.60					1.123			
		Front		79	6345.0	99.6%	0.043	11.00	10.60	0.2070	0.3680	0.2270	0.4030	1.123	0.2549	0.4526	
		Top		79	6345.0	99.6%	0.043	11.00	10.60					1.123			
		Right		15	6025.0	99.6%	0.041	11.00	10.03	0.2750	0.4530	0.3440	0.5660	1.123	0.3863	0.6356	
				79	6345.0	99.6%	0.043	11.00	10.60	0.2570	0.5470	0.3000	0.6000	1.123	0.3369	0.6738	
				111	6505.0	99.6%	0.044	11.00	10.30	0.2290	0.3870	0.2690	0.4540	1.123	0.3021	0.5098	
				143	6665.0	99.6%	0.045	11.00	10.45	0.3010	0.6170	0.3410	0.7000	1.123	0.3829	0.7861	38
				207	6985.0	99.6%	0.048	11.00	9.80	0.1370	0.3270	0.1800	0.4310	1.123	0.2021	0.4840	
WLAN MIMO Ant.2	802.11ax HE 160	Rear	2.00	79	6345.0	99.6%	0.043	11.00	10.98	0.1490	0.3240	0.1500	0.3250	1.123	0.1685	0.3650	
		Front		79	6345.0	99.6%	0.043	11.00	10.98					1.123			
		Top		79	6345.0	99.6%	0.043	11.00	10.98	0.2510	0.4300	0.2520	0.4320	1.123	0.2830	0.4851	
		Right		15	6025.0	99.6%	0.041	11.00	10.64					1.123			
				79	6345.0	99.6%	0.043	11.00	10.98					1.123			
				111	6505.0	99.6%	0.044	11.00	10.81					1.123			
				143	6665.0	99.6%	0.045	11.00	10.51					1.123			
				207	6985.0	99.6%	0.048	11.00	10.98					1.123			

Note(s):

1. 10 W/m^2 = 1.0 mW/cm^2
2. Per TCBC workshop guide, Incident power density results were scaled according to IEC 62479:2010 for the portion of the measurement uncertainty > 30%. Total expanded uncertainty of 1.53 dB (42.3%) was used to determine the psPD measurement scailing factor.
3. Power density test data were scaled to tune-up limit using measurement system tool.
4. Per manufacturer guide, Grid Step setting were using the automatic grid step function of measurement system tool.
5. Per manufacturer guide, Incident power density was measured at d=2mm.
6. ESR Algorithm was used during psPD measurement and calculations.
7. SISO Ant mode was evaluated in the worst case configuration of SAR test results.
8. MIMO Ant mode was evaluated for the entire measurement positions in the worst case configuration of SAR test results. And All test channels were evaluated at worst test position.

11.2. UWB (Ultra Wide Band)

Forder Closed configuration

IPD(Incident Power density) test results

Antenna	Mode	Test Position	Dist. (mm)	Ch.	Freq. (MHz)	Grid Step (Lamda)	Meas. Normal psPD	Meas. Total psPD	Scailing factor for Measurement Uncertainty per IEC 62479 Note.2	Scaled Normal psPD	Scaled Total psPD	Note.	Plot No.
							mW/cm^2	mW/cm^2		mW/cm^2	mW/cm^2		
UWB Ant	CW	Left	2.00	5	6489.60	0.04	0.0120	0.0261	1.123	0.0135	0.0293		39
		Right		9	7987.20	0.05	0.0135	0.0222	1.123	0.0152	0.0249		40

Forder Opened configuration

IPD(Incident Power density) test results

Antenna	Mode	Test Position	Dist. (mm)	Ch.	Freq. (MHz)	Grid Step (Lamda)	Meas. Normal psPD	Meas. Total psPD	Scailing factor for Measurement Uncertainty per IEC 62479 Note.2	Scaled Normal psPD	Scaled Total psPD	Note.	Plot No.
							mW/cm^2	mW/cm^2		mW/cm^2	mW/cm^2		
UWB Ant	CW	Rear	2.00	5	6489.60	0.04	0.0040	0.0063	1.123	0.0045	0.0071		41
				9	7987.20	0.05	0.0090	0.0209	1.123	0.0101	0.0235		42

Note(s):

1. 10 W/m^2 = 1.0 mW/cm^2
2. Per TCBC workshop guide, Incident power density results were scaled according to IEC 62479:2010 for the portion of the measurement uncertainty > 30%. Total expanded uncertainty of 1.53 dB (42.3%) was used to determine the psPD measurement scailing factor.
3. Per manufacturer guide, Grid Step setting were using the automatic grid step function of measurement system tool.
4. Per manufacturer guide, Incident power density was measured at d=2mm.
5. ESR Algorithm was used during psPD measurement and calculations.
6. UWB IPD is performed at worst positions of SAR RF exposure results.

12. Simultaneous Transmission Analysis

Please refer to section.12 in FCC SAR report S1.

Appendixes

Refer to separated files for the following appendixes.

4791196575-S2 FCC Report Above 6GHz_App A_PD Photos & Ant. Locations

4791196575-S2 FCC Report Above 6GHz _App B_Highest SAR and PD Test Plots

4791196575S2 FCC Report Above 6GHz _App C_System Check Plots

4791196575-S2 FCC Report Above 6GHz _App D_SAR Tissue Ingredients

4791196575-S2 FCC Report Above 6GHz _App E_Probe Cal. Certificates

4791196575-S2 FCC Report Above 6GHz _App F_Dipole and Horn antenna Cal. Certificates

END OF REPORT