

FCC SAR Test Report

FCC ID: RWO-RZ090368QCNFA

Report No. : BTL-FCC SAR-1-2212C001
Equipment : Notebook PC
Model Name : RZ09-0482
Applicant : Razer Inc.
Address : 9 Pasteur, Suite 100, Irvine, CA92618, USA.
Radio Function : Bluetooth, WLAN 2.4G, WLAN 5G, WLAN 6E
Standard(s) : **KDB447498 D04** Interim General RF Exposure Guidance v01
KDB248227 D01 802.11 Wi-Fi SAR v02r02
KDB865664 D01 SAR measurement 100 MHz to 6 GHz v01r04
KDB865664 D02 SAR Reporting v01r02
KDB616217 D04 SAR for laptop and Tablets v01r02
FCC§2.1093 Radiofrequency radiation exposure evaluation: portable devices
IEEE C95.1:2019 Safety Levels with Respect to Human Exposure to Radio Frequency Electromagnetic Fields, 3 kHz – 300 GHz.
IEC/IEEE 62209-1528:2020 Measurement procedure for the assessment of specific absorption rate of human exposure to radio frequency fields from hand-held and body-mounted wireless communication devices - Part 1528: Human models, instrumentation, and procedures(Frequency range of 4 MHz to 10 GHz)
Date of Receipt : Oct. 19, 2022
Date of Test : Jan. 13, 2023 ~ Feb 4, 2023
Issued Date : Apr. 24, 2023
 The above equipment has been tested and found in compliance with the requirement of the above standards by BTL Inc.

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Declaration

BTL represents to the client that testing is done in accordance with standard procedures as applicable and that test instruments used has been calibrated with standards traceable to international standard(s) and/or national standard(s).

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BTL's laboratory quality assurance procedures are in compliance with the **ISO/IEC 17025** requirements, and accredited by the conformity assessment authorities listed in this test report.

BTL is not responsible for the sampling stage, so the results only apply to the sample as received.

The information, data and test plan are provided by manufacturer which may affect the validity of results, so it is manufacturer's responsibility to ensure that the apparatus meets the essential requirements of applied standards and in all the possible configurations as representative of its intended use.

Limitation

For the use of the authority's logo is limited unless the Test Standard(s)/Scope(s)/Item(s) mentioned in this test report is (are) included in the conformity assessment authorities acceptance respective.

Please note that the measurement uncertainty is provided for informational purpose only and are not use in determining the Pass/Fail results.

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REPORT ISSUED HISTORY

Report Version	Description	Issued Date
R00	Original Issue.	2023/2/7
R01	Revised Uncertainty, Add APD and iPD ratio	2023/4/24

1. GENERAL INFORMATION

1.1. GENERAL DESCRIPTION OF EUT

Equipment	Notebook PC		
Model Name	RZ09-0482		
Brand Name	RAZER		
Power Rating	Model Name:RC30-024801 AC Input :100V-240V~3.6A 50/60Hz DC Output:19.5V		
Battery Information	Model Name:RC30-0482 Rated Capacity:4422mAh/68.1Wh Rated Voltage:15.4V		
WIFI+BT Module	Qualcomm / QCNFA765		
Operation Frequency	Function	Band	Frequency (MHz)
	WiFi	2.4G	TX : 2412 - 2472 MHz
		5G_UNII 1	TX : 5180 - 5250 MHz
		5G_UNII 2a	TX : 5250 - 5350 MHz
		5G_UNII 2c	TX : 5500 - 5700 MHz
		5G_UNII 3	TX : 5745 - 5825 MHz
		5G_UNII 4	TX : 5850 - 5895 MHz
		6E_UNII 5	TX : 5925 – 6425 MHz
		6E_UNII 6	TX : 6425 – 6525 MHz
		6E_UNII 7	TX : 6525 – 6875 MHz
		6E_UNII 8	TX : 6875 – 7125 MHz
	Bluetooth	Basic Rate (BR)	TX : 2402 - 2480 MHz
		Enhance Data Rate	TX : 2402 - 2480 MHz
		Bluetooth Low Energy	TX : 2402 - 2480 MHz
Sample Status	Engineering Sample		
EUT Modification(s)	N/A		

The above equipment has been tested and found compliance with the requirement of the relative standards by BTL Inc. The test data, data evaluation, and equipment configuration contained in our test report were obtained utilizing the test procedures, test instruments, test sites that has been accredited by the Authority of TAF according to the ISO/IEC 17025 quality assessment standard and technical standard(s).

2. RF EMISSIONS MEASUREMENT

2.1. TEST FACILITY

The test facilities used to collect the test data in this report is **SAR Test room** at the location of No. 68-1, Ln. 169, Sec.2, Datong Rd., Xizhi Dist., New Taipei City 221, Taiwan.

2.2. MEASUREMENT UNCERTAINTY

Uncertainty Budget for Frequency range of 300 MHz to 3 GHz

Error Description	Uncertainty Value ($\pm$ %)	Probability Distribution	Divisor	Ci (1g)	Ci (10g)	Standard Uncertainty (1g)	Standard Uncertainty (10g)	Vi V _{eff}
Measurement System								
Probe Calibration	6.0	Normal	1	1	1	± 6.0 %	± 6.0 %	∞
Axial Isotropy	4.7	Rectangular	$\sqrt{3}$	0.7	0.7	± 1.9 %	± 1.9 %	∞
Hemispherical Isotropy	9.6	Rectangular	$\sqrt{3}$	0.7	0.7	± 3.9 %	± 3.9 %	∞
Boundary Effects	1	Rectangular	$\sqrt{3}$	1	1	± 0.6 %	± 0.6 %	∞
Linearity	4.7	Rectangular	$\sqrt{3}$	1	1	± 2.7 %	± 2.7 %	∞
Detection Limits	1	Rectangular	$\sqrt{3}$	1	1	± 0.6 %	± 0.6 %	∞
Modulation response	2.4	Rectangular	$\sqrt{3}$	1	1	± 1.4 %	± 1.4 %	∞
Readout Electronics	0.3	Normal	1	1	1	± 0.3 %	± 0.3 %	∞
Response Time	0.8	Rectangular	$\sqrt{3}$	1	1	± 0.5 %	± 0.5 %	∞
Integration Time	2.6	Rectangular	$\sqrt{3}$	1	1	± 1.5 %	± 1.5 %	∞
RF Ambient – Noise	3	Rectangular	$\sqrt{3}$	1	1	± 1.7 %	± 1.7 %	∞
RF Ambient– Reflections	3	Rectangular	$\sqrt{3}$	1	1	± 1.7 %	± 1.7 %	∞
Probe Positioner	0.02	Rectangular	$\sqrt{3}$	1	1	± 0.0 %	± 0.0 %	∞
Probe Positioning	0.4	Rectangular	$\sqrt{3}$	1	1	± 0.2 %	± 0.2 %	∞
Max.SAR Evaluation	2	Rectangular	$\sqrt{3}$	1	1	± 1.2 %	± 1.2 %	∞
Test Sample Related								
Device Positioning	2.9	Normal	1	1	1	± 2.9 %	± 2.9 %	145
Device Holder	3.6	Normal	1	1	1	± 3.6 %	± 3.6 %	5
Power Drift	5.0	Rectangular	$\sqrt{3}$	1	1	± 2.9 %	± 2.9 %	∞
Phantom and Setup								
Phantom Production Tolerances	6.1	Rectangular	$\sqrt{3}$	1	1	± 3.5 %	± 3.5 %	∞
SAR correction	1.9	Rectangular	$\sqrt{3}$	1	0.84	± 1.9 %	± 1.6 %	
Liquid Conductivity (mea.)	2.5	Rectangular	$\sqrt{3}$	0.78	0.71	± 2.0 %	± 1.8 %	∞
Liquid Permittivity (mea.)	2.5	Rectangular	$\sqrt{3}$	0.26	0.26	± 0.6 %	± 0.7 %	∞
Temp. unc. - Conductivity	3.4	Rectangular	$\sqrt{3}$	0.78	0.71	± 1.5 %	± 1.4 %	∞
Temp. unc. - Permittivity	0.4	Rectangular	$\sqrt{3}$	0.23	0.26	± 0.1 %	± 0.1 %	∞
Combined Standard Uncertainty (K = 1)						± 11.28 %	± 11.19 %	361
Expanded Uncertainty (K = 2)						± 22.56 %	± 22.37 %	

Uncertainty Budget for Frequency range of 3 GHz to 6 GHz

Error Description	Uncertainty Value (± %)	Probability Distribution	Divisor	Ci (1g)	Ci (10g)	Standard Uncertainty (1g)	Standard Uncertainty (10g)	Vi V _{eff}
Measurement System								
Probe Calibration	6.55	Normal	1	1	1	± 6.55 %	± 6.55 %	∞
Axial Isotropy	4.7	Rectangular	$\sqrt{3}$	0.7	0.7	± 1.9 %	± 1.9 %	∞
Hemispherical Isotropy	9.6	Rectangular	$\sqrt{3}$	0.7	0.7	± 3.9 %	± 3.9 %	∞
Boundary Effects	2	Rectangular	$\sqrt{3}$	1	1	± 1.2 %	± 1.2 %	∞
Linearity	4.7	Rectangular	$\sqrt{3}$	1	1	± 2.7 %	± 2.7 %	∞
Detection Limits	1	Rectangular	$\sqrt{3}$	1	1	± 0.6 %	± 0.6 %	∞
Modulation response	2.4	Rectangular	$\sqrt{3}$	1	1	± 1.4 %	± 1.4 %	∞
Readout Electronics	0.3	Normal	1	1	1	± 0.3 %	± 0.3 %	∞
Response Time	0.8	Rectangular	$\sqrt{3}$	1	1	± 0.5 %	± 0.5 %	∞
Integration Time	2.6	Rectangular	$\sqrt{3}$	1	1	± 1.5 %	± 1.5 %	∞
RF Ambient – Noise	3	Rectangular	$\sqrt{3}$	1	1	± 1.7 %	± 1.7 %	∞
RF Ambient– Reflections	3	Rectangular	$\sqrt{3}$	1	1	± 1.7 %	± 1.7 %	∞
Probe Positioner	0.04	Rectangular	$\sqrt{3}$	1	1	± 0.0 %	± 0.0 %	∞
Probe Positioning	0.8	Rectangular	$\sqrt{3}$	1	1	± 0.5 %	± 0.5 %	∞
Max.SAR Evaluation	4	Rectangular	$\sqrt{3}$	1	1	± 2.3 %	± 2.3 %	∞
Test Sample Related								
Device Positioning	2.9	Normal	1	1	1	± 2.9 %	± 2.9 %	145
Device Holder	3.6	Normal	1	1	1	± 3.6 %	± 3.6 %	5
Power Drift	5.0	Rectangular	$\sqrt{3}$	1	1	± 2.9 %	± 2.9 %	∞
Phantom and Setup								
Phantom Production Tolerances	6.6	Rectangular	$\sqrt{3}$	1	1	± 3.8 %	± 3.8 %	∞
SAR correction	1.9	Rectangular	$\sqrt{3}$	1	0.84	± 1.9 %	± 1.6 %	
Liquid Conductivity (mea.)	2.5	Rectangular	$\sqrt{3}$	0.78	0.71	± 2.0 %	± 1.8 %	∞
Liquid Permittivity (mea.)	2.5	Rectangular	$\sqrt{3}$	0.26	0.26	± 0.6 %	± 0.7 %	∞
Temp. unc. - Conductivity	3.4	Rectangular	$\sqrt{3}$	0.78	0.71	± 1.5 %	± 1.4 %	∞
Temp. unc. - Permittivity	0.4	Rectangular	$\sqrt{3}$	0.23	0.26	± 0.1 %	± 0.1 %	∞
Combined Standard Uncertainty (K = 1)						± 11.89 %	± 11.80 %	361
Expanded Uncertainty (K = 2)						± 23.78 %	± 23.61 %	

Uncertainty Budget for Frequency range of 6 GHz to 10 GHz

Error Description	Uncertainty Value (±%)	Probability Distribution	Divisor	Ci (1g)	Ci (10g)	Standard Uncertainty (1g)	Standard Uncertainty (10g)	Vi V _{eff}
Measurement System								
Probe Calibration	18.6	Normal	2	1	1	± 9.3 %	± 9.3 %	∞
Probe Calibration Drift	1.7	Rectangular	$\sqrt{3}$	1	1	± 1.0 %	± 1.0 %	∞
Probe Linearity	4.7	Rectangular	$\sqrt{3}$	1	1	± 2.7 %	± 2.7 %	∞
Broadband Signal	2.8	Rectangular	$\sqrt{3}$	1	1	± 1.6 %	± 1.6 %	∞
Probe Isotropy	7.6	Rectangular	$\sqrt{3}$	1	1	± 4.4 %	± 4.4 %	∞
Other Probe+Electronic	2.4	Normal	1	1	1	± 2.4%	± 2.4%	∞
RF Ambient	1.8	Normal	1	1	1	± 1.8 %	± 1.8 %	∞
Probe Positioning	±0.005mm	Normal	1	0.5	0.5	± 0.25 %	± 0.25 %	∞
Data Processing	3.5	Normal	1	1	1	± 3.5 %	± 3.5 %	∞
Phantom and Device Errors								
Conductivity(meas.)	2.5	Normal	1	0.78	0.71	± 2.0 %	± 1.8 %	∞
Conductivity(temp.)	2.4	Rectangular	$\sqrt{3}$	0.78	0.71	± 1.1 %	± 1.0 %	∞
PhantomPermittivity	14.0	Rectangular	$\sqrt{3}$	0.5	0.5	± 4.0 %	± 4.0 %	∞
Distance DUT - TSL	2.0	Normal	1	2	2	± 4.0 %	± 4.0 %	∞
Device Positioning	1.0	Normal	1	1	1	± 1.0 %	± 1.0 %	145
Device Holder	3.6	Normal	1	1	1	± 3.6 %	± 3.6 %	5
DUT Modulation	2.4	Rectangular	$\sqrt{3}$	1	1	± 1.4 %	± 1.4 %	∞
Time-average SAR	1.7	Rectangular	$\sqrt{3}$	1	1	± 1.0 %	± 1.0 %	∞
DUT drift	2.5	Normal	1	1	1	± 2.5 %	± 2.5 %	∞
Val Antenna Unc.	0	Normal	1	1	1	± 0 %	± 0 %	∞
Unc. Input Power	0	Normal	1	1	1	± 0 %	± 0 %	∞
Correction to the SAR results								
Deviation to Target	1.9	Normal	1	1	0.84	± 1.9 %	± 1.6 %	∞
SAR scaling	0	Rectangular	$\sqrt{3}$	1	1	± 0 %	± 0 %	∞
Combined Standard Uncertainty (K = 1)						± 14.23 %	± 14.16 %	361
Expanded Uncertainty (K = 2)						± 28.46 %	± 28.32 %	

Uncertainty Budget for psSAR / psAPD Assessments

UncertaintyBudgetforpsSAR/psAPDAssessments

(Frequency band: 6 – 10 GHz range)

Symbol	Error Description	Uncert.	Prob. Dist.	Div.	ci (1g) / (1 cm2)	ci (8 g/10 g) / (4 cm2)	Std. Unc. (1 g) / (1 cm2)	Std. Unc. (8 g/10 g) / (4 cm2)
psSAR	Module SAR V16.0 (Table 6.3.3)	±14.23/14.16%	N	1	1	1	±14.23%	±14.16%
PDC	Power Density Conversion	±13.5%	R	$\sqrt{3}$	1	1	±7.8%	±7.8%
u(Δ SAR)	Combined Uncertainty						±15.6%	±15.5 %
U	Expanded Uncertainty in dB						±31.2% ±1.2 dB	±31.0% ±1.2 dB

Uncertainty Budget for mmWave

Error Description	Uncertainty Value (±dB)	Probability Distribution	Divisor	Ci	Standard Uncertainty	Vi V _{eff}
Uncertainty terms dependent on the measurement system						
Probe Calibration	0.49	Normal	1	1	± 0.49dB	∞
Probe correction	0	Rectangular	$\sqrt{3}$	1	± 0dB	∞
Frequency response(BW≤1GHz)	0.20	Rectangular	$\sqrt{3}$	1	± 0.12 dB	∞
Sensor cross coupling	0	Rectangular	$\sqrt{3}$	1	± 0 dB	∞
Isotropy	0.50	Rectangular	$\sqrt{3}$	1	± 0.29 dB	∞
Linearity	0.20	Rectangular	$\sqrt{3}$	1	± 0.12 dB	∞
Probe scattering	0	Rectangular	$\sqrt{3}$	1	± 0 dB	∞
Probe Positioning offset	0.30	Rectangular	$\sqrt{3}$	1	± 0.17 dB	∞
Probe Positioning repeatability	0.04	Rectangular	$\sqrt{3}$	1	± 0.02 dB	∞
Sensor mechanical offset	0	Rectangular	$\sqrt{3}$	1	± 0 dB	∞
Probe spatial resolution	0	Rectangular	$\sqrt{3}$	1	± 0 dB	∞
Field impedance dependance	0	Rectangular	$\sqrt{3}$	1	± 0 dB	∞
Amplitude and phase drift	0	Rectangular	$\sqrt{3}$	1	± 0 dB	∞
Amplitude and phase noise	0.04	Rectangular	$\sqrt{3}$	1	± 0.02 dB	∞
Measurement area truncation	0	Rectangular	$\sqrt{3}$	1	± 0 dB	∞
Data acquisition	0.03	Normal	1	1	± 0.03 dB	∞
Sampling	0	Rectangular	$\sqrt{3}$	1	± 0 dB	∞
Field reconstruction	2.00	Rectangular	$\sqrt{3}$	1	± 1.15 dB	∞
Forward transformation	0	Rectangular	$\sqrt{3}$	1	± 0 dB	∞
Power density scaling	-	Rectangular	$\sqrt{3}$	1	± 0 dB	∞
Spatial averaging	0.10	Rectangular	$\sqrt{3}$	1	± 0.06 dB	∞
System detection limit	0.04	Rectangular	$\sqrt{3}$	1	± 0.02 dB	∞
Uncertainty terms dependent on the DUT and environmental factors						
Probe coupling with DUT	0	Rectangular	$\sqrt{3}$	1	± 0 dB	∞
Modulation response	0.40	Rectangular	$\sqrt{3}$	1	± 0.2 dB	∞
Integration time	0	Rectangular	$\sqrt{3}$	1	± 0 dB	∞
Response time	0	Rectangular	$\sqrt{3}$	1	± 0 dB	∞
Device holder influence	0.10	Rectangular	$\sqrt{3}$	1	± 0.1 dB	∞
DUT alignment	0	Rectangular	$\sqrt{3}$	1	± 0 dB	∞
RF ambient conditions	0.04	Rectangular	$\sqrt{3}$	1	±0.02 dB	∞
Ambient Reflections	0.04	Rectangular	$\sqrt{3}$	1	±0.02 dB	∞
Immunity / secondary reception	0	Rectangular	$\sqrt{3}$	1	±0 dB	∞
Drift of the DUT	0.10	Rectangular	$\sqrt{3}$	1	±0.06 dB	∞
Combined Standard Uncertainty (K = 1)					± 1.34dB	∞
Expanded Uncertainty (K = 2)					± 2.68dB	

2.3. WLAN ANTENNA INFORMATION:

Ant.	Brand	Model	Type	Connector type	Frequency Range (MHz)	Gain (dBi)
Main	Amphenol Taiwan Corporation	BY5964-16-001-C	PIFA	IPX4	2400-2500	3.16
					5150-5350	2.76
					5470-5725	4.24
					5725-5850	3.94
					5850-5895	3.45
					5925-6425	4.57
					6425-6525	4.11
					6525-6875	3.71
					6875-7125	4.37
Aux	Amphenol Taiwan Corporation	BY5964-16-002-C	PIFA	IPX4	2400-2500	3.09
					5150-5350	2.71
					5470-5725	4.33
					5725-5850	3.96
					5850-5895	3.72
					5925-6425	3.27
					6425-6525	3.25
					6525-6875	3.46
					6875-7125	2.95

2.4. THE MAXIMUM SAR-1G VALUES

Band	Mode	Highest Body Reported SAR-1g(W/kg)
FHSS	Bluetooth_DH5	0.104
DTS	Wi-Fi 2.4G	0.867
UNII	Wi-Fi 5.2 & 5.3G	0.917
	Wi-Fi 5.6G	1.029
	Wi-Fi 5.8G	1.110
	Wi-Fi 5.9G	0.769
	Wi-Fi 6.2G	0.262
	Wi-Fi 6.5G	0.296
	Wi-Fi 6.7G	0.315
	Wi-Fi 7.0G	0.248

Band	Mode	APD (W/m ²)	Highest Averaged Power Density(W/m ²)
6E	Wi-Fi 6.5G	2.11	4.615

Note:

- 1) The device is in compliance with Specific Absorption Rate(SAR)for general population uncontrolled exposure limits according to the FCC rule §2.1093, the ANSI C95.1:2019/IEEE C95.1:2019, the NCRP Report Number 86 for uncontrolled environment and had been tested in accordance with the measurement methods and procedures specified in IEC/IEEE 62209-1528:2020 .

2.5. LABORATORY ENVIRONMENT

Temperature	Min. = 18°C, Max. = 25°C
Relative humidity	Min. = 30%, Max. = 70%
Ground system resistance	< 0.5 Ω
Ambient noise is checked and found very low and in compliance with requirement of standards. Reflection of surrounding objects is minimized and in compliance with requirement of standards.	

2.6. MAIN TEST INSTRUMENTS

Item	Equipment	Manufacturer	Model	Serial No.	Cal. Date	Cal. Interval
1	Data Acquisition Electronics	Speag	DAE4	1486	May. 31, 2022	1 Year
2	E-field Probe	Speag	EX3DV4	7369	May. 28, 2022	1 Year
3	System Validation Dipole	Speag	D2450V2	973	Feb. 08, 2021	3 Year
4	System Validation Dipole	Speag	D5GHzV2	1221	Feb. 09, 2021	3 Year
5	System Validation Dipole	Speag	D6.5GHzV2	1041	Sep 02, 2021	3 Year
6	E-Field probe	Speag	EUmmWV4	9583	Sep 27, 2022	1 Year
7	5G Verification Source	Speag	5G Verification Source 10GHz	2011	Sep 28, 2022	1 Year
8	ELI4 Phantom	Speag	ELI4 Phantom V5.0	1240	N/A	N/A
9	mmWave Phantom	Speag	QD 015 025 CA	1085	N/A	N/A
10	ENA Network Analyzer	Agilent	E5071C	MY46524658	Mar. 21, 2022	1 Year
11	Signal Generator	Agilent	E8257C	US42340383	Jun. 29, 2022	1 Year
12	Spectrum Analyzer	Keysight	N9020A	MY57120120	Mar. 7, 2022	1 Year
13	Power Meter	Anritsu	ML2495A	1128008	Jun. 1, 2022	1 Year
14	Power Sensor	Anritsu	MA2411B	1126001	Jun. 1, 2022	1 Year
15	Dielectric Probe Kit	Agilent	85070E	2593	N/A	N/A
16	Low pass filter	Mini-Circuits	SLP-2950+	M108294	N/A	N/A
17	Power Amplifier	Mini-Circuits	ZVE-2W-272+	N650001538	N/A	N/A
18	Power Amplifier	Mini-Circuits	ZVE-8G+	N628801631	N/A	N/A
19	Power Amplifier	EMCI	EMC053035	980869	N/A	N/A
20	Thermometer	PA	O-230PK	N/A	Mar. 10, 2022	1 Year
21	Directional Coupler	Woken	50W Coupler	DOM5CIW3E2	N/A	N/A
22	Attenuator	Woken	WATT-518FS-10	N/A	N/A	N/A

Remark: "N/A" denotes no model name, serial No. or calibration specified.

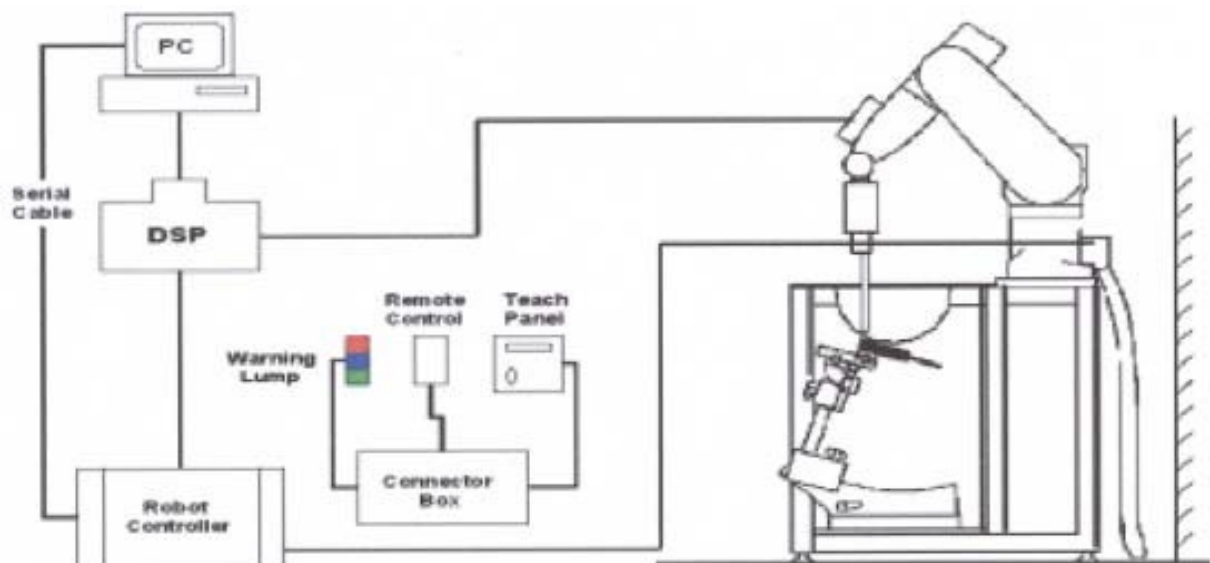
3. SAR MEASUREMENTS SYSTEM CONFIGURATION

3.1. SAR MEASUREMENT SETUP

The DASY5 system for performing compliance tests consists of the following items:

1. A standard high precision 6-axis robot (Stäubli RX family) with controller and software. An arm extension for accommodating the data acquisition electronics (DAE).
2. A dosimetric probe, i.e. an isotropic E-field probe optimized and calibrated for usage in tissue simulating liquid. The probe is equipped with an optical surface detector system.
3. A data acquisition electronic (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.
4. A unit to operate the optical surface detector which is connected to the EOC.
5. The Electro-Optical Coupler (EOC) performs the conversion from the optical into a digital electric signal of the DAE. The EOC is connected to the DASY5 measurement server.
6. The DASY5 measurement server, which performs all real-time data evaluation for field measurements and surface detection, controls robot movements and handles safety operation. A computer operating Windows.
7. DASY5 software and SEMCAD data evaluation software.
8. Remote control with teach panel and additional circuitry for robot safety such as warning lamps, etc.
9. The generic twin phantom enabling the testing of left-hand and right-hand usage.
10. The device holder for handheld mobile phones.
11. Tissue simulating liquid mixed according to the given recipes.
12. System validation dipoles allowing to validate the proper functioning of the system.

3.1.1. TEST SETUP LAYOUT

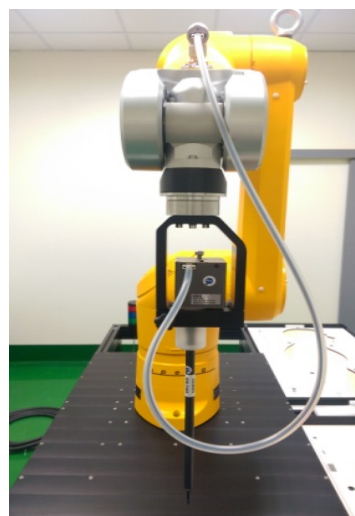


3.2. DASY5 E-FIELD PROBE SYSTEM

The SAR measurements were conducted with the dosimetric probe EX3DV4 (manufactured by SPEAG), designed in the classical triangular configuration and optimized for dosimetric evaluation.

3.2.1. EX3DV4 PROBE SPECIFICATION

Construction	Symmetrical design with triangular core Interleaved sensors Built-in shielding against static charges PEEK enclosure material (resistant to organic solvents, e.g., DGBE)
Calibration	ISO/IEC 17025 calibration service available
Frequency	10 MHz to 6 GHz Linearity: ± 0.2 dB (30 MHz to 6 GHz)
Directivity	± 0.3 dB in HSL (rotation around probe axis) ± 0.5 dB in tissue material (rotation normal to probe axis)
Dynamic Range	10 μ W/g to > 100 mW/g Linearity: ± 0.2 dB
Dimensions	Overall length: 330 mm (Tip: 20 mm) Tip diameter: 2.5 mm (Body: 12 mm) Distance from probe tip to dipole centers: 1.0 mm



EX3DV4 E-field Probe

3.2.2. E-FIELD PROBE CALIBRATION

Each probe is calibrated according to a dosimetric assessment procedure with accuracy better than $\pm 10\%$. The spherical isotropy was evaluated and found to be better than $\pm 0.25\text{dB}$. The sensitivity parameters (NormX, NormY, NormZ), the diode compression parameter (DCP) and the conversion factor (ConvF) of the probe are tested.

The free space E-field from amplified probe outputs is determined in a test chamber. This is performed in a TEM cell for frequencies below 1 GHz, and in a wave guide above 1 GHz for free space. For the free space calibration, the probe is placed in the volumetric center of the cavity and at the proper orientation with the field. The probe is then rotated 360 degrees.

E-field temperature correlation calibration is performed in a flat phantom filled with the appropriate simulated brain tissue. The measured free space E-field in the medium correlates to temperature rise in a dielectric medium. For temperature correlation calibration a RF transparent thermistor-based temperature probe is used in conjunction with the E-field probe.

$$\text{SAR} = C \frac{\Delta T}{\Delta t}$$

Where: Δt = Exposure time (30 seconds),

C = Heat capacity of tissue (brain or muscle),

ΔT = Temperature increase due to RF exposure.

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

Where: σ = Simulated tissue conductivity,

ρ = Tissue density (kg/m³).

3.2.3. OTHER TEST EQUIPMENT

3.2.3.1. DEVICE HOLDER FOR TRANSMITTERS

Construction: Simple but effective and easy-to-use extension for Mounting Device that facilitates the testing of larger devices according to IEC 62209-2 (e.g., laptops, cameras, etc.) It is lightweight and fits easily on the upper part of the Mounting Device in place of the phone positioner. The extension is fully compatible with the Twin SAM, ELI4 and SAM v6.0 Phantoms.

Material: POM, Acrylic glass, Foam

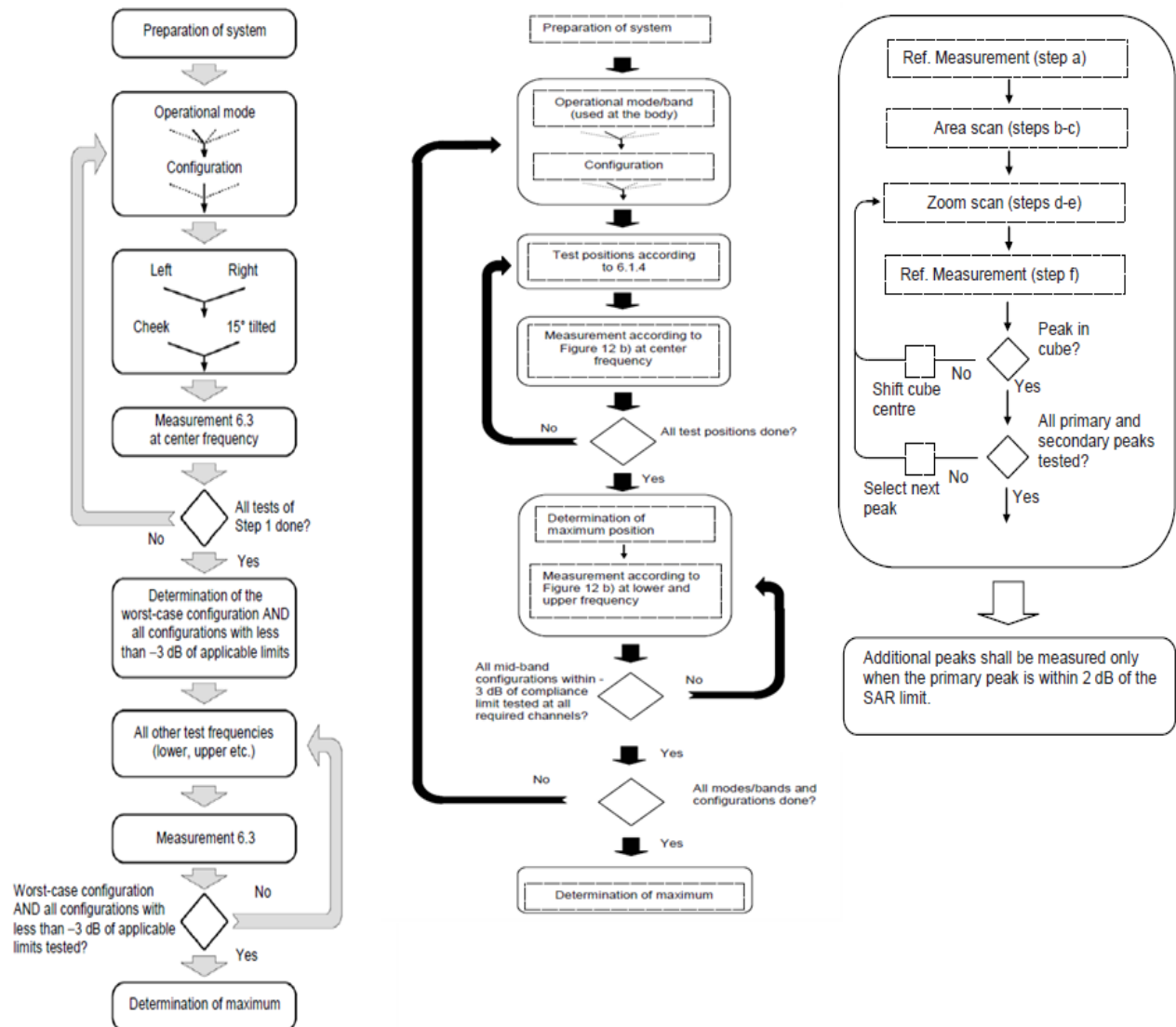
3.2.3.2 PHANTOM

Model	ELI4 Phantom	
Construction	Phantom for compliance testing of handheld and body-mounted wireless devices in the frequency range of 30 MHz to 6 GHz. ELI is fully compatible with the IEC 62209-2 standard and all known tissue simulating liquids. ELI has been optimized regarding its performance and can be integrated into our standard phantom tables. A cover prevents evaporation of the liquid. Reference markings on the phantom allow installation of the complete setup, including all predefined phantom positions and measurement grids, by teaching three points. The phantom is compatible with all SPEAG dosimetric probes and dipoles.	
Shell Thickness	2±0.1 mm	
Filling Volume	Approx. 30 liters	
Dimensions	Length: 600 mm ; Width: 190mm Height: adjustable feet	
Available	Special	

Model	Twin SAM	
Construction	The shell corresponds to the specifications of the Specific Anthropomorphic Mannequin (SAM) phantom defined in IEEE 1528 and IEC 62209-1. It enables the dosimetric evaluation of left and right hand phone usage as well as body mounted usage at the flat phantom region. A cover prevents evaporation of the liquid. Reference markings on the phantom allow the complete setup of all predefined phantom positions and measurement grids by teaching three points with the robot.	
Shell Thickness	2 ± 0.2 mm	
Filling Volume	Approx. 25 liters	
Dimensions	Length:1000mm; Width: 500mm Height: adjustable feet	
Available	Special	

3.2.4. SCANNING PROCEDURE

The SAR test against the head and body-worn phantom was carried out as follow:



After an area scan has been done at a fixed distance of 1.4mm from the surface of the phantom on the source side, a 3D scan is set up around the location of the maximum spot SAR. First, a point within the scan area is visited by the probe and a SAR reading taken at the start of testing. At the end of testing, the probe is returned to the same point and a second reading is taken. Comparison between these start and end readings enables the power drift during measurement to be assessed.

Above is the scanning procedure flow chart and table from the IEEE1528 standard.

This is the procedure for which all compliant testing should be carried out to ensure that all variations of the device position and transmission behavior are tested.

3.2.5. DATA STORAGE AND EVALUATION

3.2.5.1 DATA STORAGE

The DASY5 software stores the acquired data from the data acquisition electronics as raw data (in microvolt readings from the probe sensors), together with all necessary software parameters for the data evaluation (probe calibration data, liquid parameters and device frequency and modulation data) in measurement files with the extension "DAE4". The software evaluates the desired unit and format for output each time the data is visualized or exported. This allows verification of the complete software setup even after the measurement and allows correction of incorrect parameter settings. For example, if a measurement has been performed with a wrong crest factor parameter in the device setup, the parameter can be corrected afterwards and the data can be re-evaluated.

The measured data can be visualized or exported in different units or formats, depending on the selected probe type ([V/m], [A/m], [°C], [mW/g], [mW/cm²], [dBrel], etc.). Some of these units are not available in certain situations or show meaningless results, e.g., a SAR output in a lossless media will always be zero. Raw data can also be exported to perform the evaluation with other software packages.

3.2.6. DATA EVALUATION BY SEMCAD

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

Probe parameters:	Sensitivity	$\text{Norm}_i, a_{i0}, a_{i1}, a_{i2}$
	Conversion factor	ConvF_i
	Diode compression point	Dcp_i
Device parameters:	Frequency	f
	Crest factor	cf
Media parameters:	Conductivity	
	Density	

These parameters must be set correctly in the software. They can be found in the component documents or they can be imported into the software from the configuration files issued for the DASY5 components. In the direct measuring mode of the multimeter option, the parameters of the actual system setup are used. In the scan visualization and export modes, the parameters stored in the corresponding document files are used.

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

If the exciting field is pulsed, the crest factor of the signal must be known to correctly compensate for peak power. The formula for each channel can be given as:

$$V_i = U_i + U_i^2 \cdot cf / dcp_i$$

With	V_i = compensated signal of channel i	($i = x, y, z$)
	U_i = input signal of channel i	($i = x, y, z$)
	cf = crest factor of exciting field	(DASY parameter)
	dcp_i = diode compression point	(DASY parameter)

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

$$\text{E-field probes: } E_i = (V_i / \text{Norm}_i \cdot \text{ConvF})^{1/2}$$

$$\text{H-field probes: } H_i = (V_i)^{1/2} \cdot (a_{i0} + a_{i1} f + a_{i2} f^2) / f$$

With V_i = compensated signal of channel i ($i = x, y, z$)

Norm_i = sensor sensitivity of channel i ($i = x, y, z$)
[mV/(V/m)²] for E-field Probes

ConvF = sensitivity enhancement in solution

a_{ij} = sensor sensitivity factors for H-field probes

f = carrier frequency [GHz]

E_i = electric field strength of channel i in V/m

H_i = magnetic field strength of channel i in A/m

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

$$E_{\text{tot}} = (E_x^2 + E_y^2 + E_z^2)^{1/2}$$

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

$$\text{SAR} = (E_{\text{tot}})^2 \cdot \sigma / (\rho \cdot 1000)$$

With SAR = local specific absorption rate in mW/g

E_{tot} = total field strength in V/m
= conductivity in [mho/m] or [Siemens/m]
= equivalent tissue density in g/cm³

Note that the density is normally set to 1 (or 1.06), to account for actual brain density rather than the density of the simulation liquid. The power flow density is calculated assuming the excitation field to be a free space field.

$$P_{\text{pwe}} = E_{\text{tot}}^2 / 3770 \text{ or } P_{\text{pwe}} = H_{\text{tot}}^2 \cdot 37.7$$

With P_{pwe} = equivalent power density of a plane wave in mW/cm²

E_{tot} = total field strength in V/m

H_{tot} = total magnetic field strength in A/m

4. TISSUE-EQUIVALENT LIQUID

4.1. TISSUE-EQUIVALENT LIQUID INGREDIENTS

The liquid is consisted of water, salt and Glycol, Sugar, Preventol and Cellulose. The liquid has previously been proven to be suited for worst-case. The measured conductivity and relative permittivity should be within $\pm 5\%$ of the target values. The below table shows the detail solution. It's satisfying the latest tissue dielectric parameters requirements proposed by the IEC 62209.

Composition of the Tissue Equivalent Matter

Tissue Type	Bactericide	DGBE	HEC	NaCl	Sucrose	Triton X-100	Water	Diethylene Glycol Mono-hexylether
Head 2450	-	45.0	-	0.1	-	-	54.9	-
Head 5G	-	-	-	-	-	17.2	65.5	17.3

4.2. TISSUE-EQUIVALENT LIQUID PROPERTIES

Dielectric Performance of Tissue Simulating Liquid

Tissue Verification									
Date	Tissue Type	Frequency (MHz)	Conductivity (σ)	Permittivity (ϵ_r)	Targeted Conductivity (σ)	Targeted Permittivity (ϵ_r)	Deviation Conductivity (σ) (%)	Deviation Permittivity (ϵ_r) (%)	Limit (%) ± 5
2023/1/13	Head	2402	1.79	40.88	1.76	39.29	1.65	4.04	± 5
2023/1/13	Head	2412	1.80	40.85	1.77	39.27	1.82	4.03	± 5
2023/1/13	Head	2422	1.81	40.83	1.78	39.25	2.02	4.03	± 5
2023/1/13	Head	2437	1.83	40.80	1.79	39.22	2.21	4.02	± 5
2023/1/13	Head	2441	1.83	40.78	1.79	39.21	2.21	4.01	± 5
2023/1/13	Head	2450	1.84	40.75	1.80	39.20	2.28	3.96	± 5
2023/1/13	Head	2452	1.84	40.75	1.80	39.19	2.28	3.97	± 5
2023/1/13	Head	2457	1.85	40.72	1.81	39.19	2.29	3.91	± 5
2023/1/13	Head	2462	1.85	40.70	1.81	39.18	2.30	3.88	± 5
2023/1/13	Head	2467	1.86	40.68	1.82	39.17	2.26	3.84	± 5
2023/1/13	Head	2472	1.86	40.65	1.82	39.17	2.28	3.78	± 5
2023/1/13	Head	2480	1.87	40.61	1.83	39.16	2.28	3.70	± 5
2023/1/16	Head	5180	4.75	35.59	4.64	36.02	2.40	-1.20	± 5
2023/1/16	Head	5200	4.77	35.54	4.66	36.00	2.43	-1.28	± 5
2023/1/16	Head	5220	4.79	35.48	4.68	35.98	2.44	-1.38	± 5
2023/1/16	Head	5240	4.82	35.43	4.70	35.96	2.51	-1.49	± 5
2023/1/16	Head	5260	4.84	35.37	4.72	35.94	2.60	-1.58	± 5
2023/1/16	Head	5280	4.87	35.33	4.74	35.92	2.70	-1.65	± 5
2023/1/16	Head	5300	4.89	35.29	4.76	35.90	2.75	-1.71	± 5
2023/1/16	Head	5320	4.91	35.24	4.78	35.88	2.76	-1.78	± 5
2023/1/16	Head	5500	5.12	34.80	4.96	35.60	3.19	-2.26	± 5
2023/1/16	Head	5520	5.14	34.76	4.98	35.58	3.21	-2.32	± 5
2023/1/16	Head	5540	5.16	34.71	5.00	35.56	3.21	-2.40	± 5
2023/1/16	Head	5560	5.19	34.65	5.03	35.54	3.21	-2.50	± 5
2023/1/16	Head	5580	5.21	34.60	5.05	35.52	3.26	-2.59	± 5
2023/1/16	Head	5600	5.24	34.55	5.07	35.50	3.31	-2.67	± 5
2023/1/16	Head	5620	5.26	34.51	5.09	35.48	3.41	-2.74	± 5
2023/1/16	Head	5640	5.29	34.47	5.11	35.46	3.43	-2.80	± 5
2023/1/16	Head	5660	5.31	34.41	5.13	35.44	3.48	-2.90	± 5
2023/1/16	Head	5680	5.33	34.37	5.15	35.42	3.55	-2.98	± 5
2023/1/16	Head	5700	5.36	34.32	5.17	35.40	3.61	-3.04	± 5
2023/1/16	Head	5720	5.38	34.27	5.19	35.38	3.71	-3.13	± 5
2023/1/16	Head	5745	5.41	34.22	5.22	35.35	3.71	-3.20	± 5
2023/1/16	Head	5765	5.43	34.17	5.24	35.33	3.76	-3.29	± 5
2023/1/16	Head	5785	5.46	34.12	5.26	35.31	3.81	-3.37	± 5
2023/1/16	Head	5800	5.47	34.08	5.27	35.30	3.85	-3.44	± 5
2023/1/16	Head	5805	5.48	34.08	5.28	35.29	3.89	-3.44	± 5
2023/1/16	Head	5825	5.50	34.03	5.30	35.27	3.93	-3.50	± 5
2023/1/16	Head	5850	5.53	33.98	5.32	35.24	3.94	-3.58	± 6
2023/1/16	Head	5900	5.59	33.86	5.37	35.19	4.03	-3.77	± 7

Dielectric Performance of Tissue Simulating Liquid

Tissue Verification									
Date	Tissue Type	Frequency (MHz)	Conductivity (σ)	Permittivity (ϵ_r)	Targeted Conductivity (σ)	Targeted Permittivity (ϵ_r)	Deviation Conductivity (σ) (%)	Deviation Permittivity (ϵ_r) (%)	Limit (%) ± 5
2023/1/30	Head	6000	5.39	34.49	5.48	35.07	-1.71	-1.65	± 5
2023/1/30	Head	6050	5.41	34.43	5.54	35.01	-2.31	-1.65	± 5
2023/1/30	Head	6100	5.51	34.28	5.59	34.95	-1.50	-1.91	± 5
2023/1/30	Head	6150	5.54	34.26	5.65	34.89	-1.86	-1.80	± 5
2023/1/30	Head	6200	5.62	34.10	5.71	34.83	-1.59	-2.09	± 5
2023/1/30	Head	6250	5.67	34.09	5.77	34.77	-1.67	-1.95	± 5
2023/1/30	Head	6300	5.72	33.93	5.83	34.70	-1.83	-2.21	± 5
2023/1/30	Head	6350	5.80	33.88	5.89	34.64	-1.51	-2.19	± 5
2023/1/30	Head	6400	5.84	33.81	5.95	34.58	-1.92	-2.24	± 5
2023/1/30	Head	6450	5.90	33.70	6.01	34.52	-1.76	-2.38	± 5
2023/1/30	Head	6500	5.95	33.66	6.07	34.46	-2.03	-2.32	± 5
2023/1/30	Head	6550	6.01	33.52	6.13	34.40	-1.92	-2.56	± 5
2023/1/30	Head	6600	6.07	33.50	6.19	34.34	-1.90	-2.46	± 5
2023/1/30	Head	6650	6.12	33.36	6.25	34.29	-2.09	-2.72	± 5
2023/1/30	Head	6700	6.19	33.31	6.30	34.23	-1.73	-2.69	± 5
2023/1/30	Head	6750	6.24	33.22	6.36	34.17	-1.95	-2.78	± 5
2023/1/30	Head	6800	6.30	33.14	6.42	34.11	-1.82	-2.85	± 5
2023/1/30	Head	6850	6.34	33.08	6.48	34.05	-2.10	-2.84	± 5
2023/1/30	Head	6900	6.40	32.97	6.53	33.99	-1.93	-3.00	± 5
2023/1/30	Head	6950	6.46	32.95	6.59	33.94	-1.94	-2.92	± 5
2023/1/30	Head	7000	6.50	32.83	6.65	33.88	-2.18	-3.11	± 5

Note:

- 1) The dielectric parameters of the tissue-equivalent liquid should be measured under similar ambient conditions and within 2 °C of the conditions expected during the SAR evaluation to satisfy protocol requirements.
- 2) KDB 865664 was ensured to be applied for probe calibration frequencies greater than or equal to 50MHz of the EUT frequencies.
- 3) The above measured tissue parameters were used in the DASY software to perform interpolation via the DASY software to determine actual dielectric parameters at the test frequencies. The SAR test plots may slightly differ from the table above since the DASY rounds to three significant digits.
- 4) According to FCC TCB workshop April, 2019 RF Exposure Procedures Update (Effective February 19, 2019, FCC has permitted the use of single head-tissue simulating liquid specified in IEEE 62209-1- for all SAR tests.

5. SYSTEM CHECK

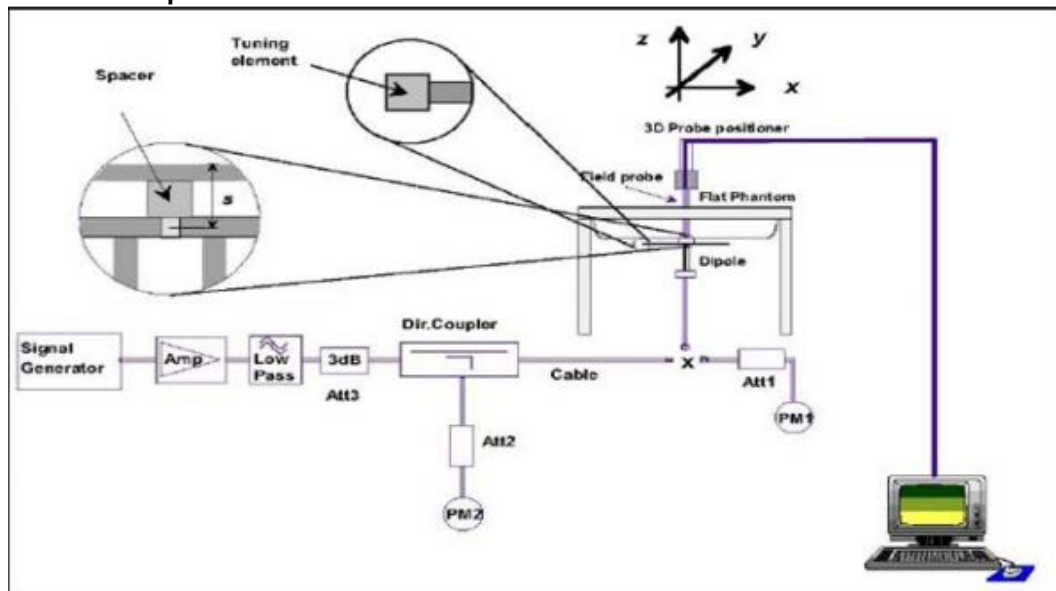
5.1. DESCRIPTION OF SYSTEM CHECK

The manufacturer calibrates the probes annually. Dielectric parameters of the tissue simulants were measured every day using the dielectric probe kit and the network analyzer. A system check measurement was made following the determination of the dielectric parameters of the simulant, using the dipole validation kit. A power level of 250 mW(below 3GHz) or 100mW(3-6GHz), which was placed under the flat section of the twin SAM phantom. The system check results (dielectric parameters and SAR values) are given in the 6.2.

System check results have to be equal or near the values determined during dipole calibration with the relevant liquids and test system ($\pm 10\%$).

System check is performed regularly on all frequency bands where tests are performed with the DASY5 system.

System Check Set-up



5.2. DESCRIPTION OF SYSTEM CHECK

System Check in Tissue Simulating Liquid

The system check is performed for verifying the accuracy of the complete measurement system and performance of the software. The system check is performed with tissue equivalent material according to IEEE P1528 (described above). The following table shows system check results for all frequency bands and tissue liquids used during the tests.

Date	System Dipole			Parameters	Target [W/kg]	Measured [W/kg]	Deviation [%]	Limited [%]
	Type	Serial No.	Liquid					
2023/1/13	D2450V2	973	Head	1g SAR	52.5	53.2	1.33	± 10
2023/1/16	D5GHzV2 (5.2GHz)	1221	Head	1g SAR	79.8	81.9	2.63	± 10
2023/1/16	D5GHzV2 (5.3GHz)	1221	Head	1g SAR	81.9	78.0	-4.76	± 10
2023/1/16	D5GHzV2 (5.6GHz)	1221	Head	1g SAR	84.5	83.3	-1.42	± 10
2023/1/16	D5GHzV2 (5.8GHz)	1221	Head	1g SAR	81.7	83.9	2.69	± 10
2023/1/30	D6.5GHzV2 (6.5GHz)	1041	Head	1g SAR	289.0	300.0	3.81	± 10

5.3. POWER DENSITY SYSTEM CHECK

System check provides a fast and reliable method to routinely verify that the measurement system is operational with no system component failures, including probe defects, drifts or deviation from target performance requirements. A system check also verifies the repeatability of the measurement system before compliance testing.

The measurement of a verification source is started from 5G probe installed and the phantom taught. The verification source is placed on the 5G phantom. Due to the internal distance from the horn to the outer surface of the verification source, the measurement distance set in the software should be offset by -4.45 mm; e.g., for measurement of the verification source at 10 mm, the measurement distance set in the software should be 5.55 mm (10 mm - 4.45 mm).

The system check is a complete measurement using simple well-defined reference sources. According to the DASY6 specification in the user's manual and SPEAG's recommendation, the deviation threshold of ±0.66 dB represents the expanded standard uncertainty for system performance check. The system check is successful if the measured results are within ±0.66 dB tolerance to the target value shown in the calibration certificate of the verification source. The instrumentation and procedures used for system check should ensure the system is ready for performing compliance tests.

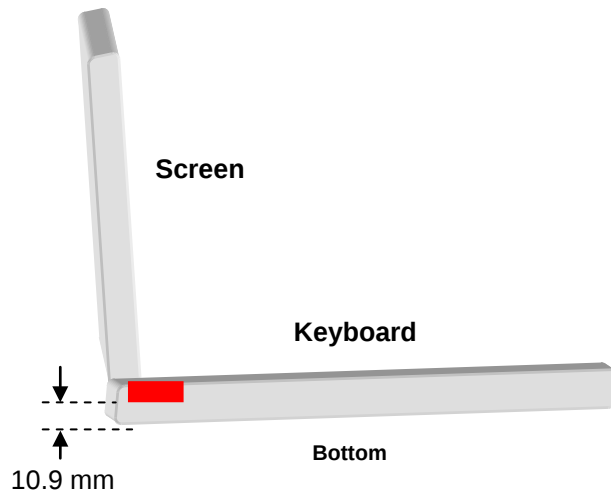
Date	5G Verification Source			Parameters	Target [W/m ²]	Measured [W/m ²]	Deviation [dB]
	Type	Serial No.	Liquid				
2023/2/4	10G	2011	Head	Avg Power Density 4cm ²	152.0	153.0	0.03

6. OPERATIONAL CONDITIONS DURING TEST

6.1. GENERAL DESCRIPTION OF TEST PROCEDURES

Connection to the EUT is established via air interface with base station An, and the EUT is Set to maximum output power by base station. The EUT battery must be fully charged and checked periodically during the test to ascertain uniform power output. The antenna connected to the output of the base station simulator shall be placed at least 50cm away from the EUT. The signal transmitted by the simulator to the antenna feeding point shall be lower than the output power level of the EUT by at least 30dB.

6.2. TEST POSITION ANTENNA LOCATION



6.3. TEST POSITION OF PORTABLE DEVICES

Minimum Separation Distance				
Mode	Antenna	Position	Distance (mm)	Evaluation Test
WiFi	Main	Bottom	10.9	Yes
	Aux	Bottom	10.9	Yes

6.4. TEST POSITION

6.4.1.BODY TEST CONFIGURATION

The SAR Exclusion Threshold in KDB 447498 D04 can be applied to determine SAR test exclusion for adjacent edge configurations. The closest distance from the antenna to an EUT edge is used to determine if SAR testing is required for the adjacent edges, with the adjacent edge positioned adjacent the phantom and the edge containing the antenna positioned perpendicular to the phantom.

SAR test reduction and exclusion guidance

(1)The SAR exclusion threshold for is defined by the following equation:

$$P_{th} \text{ (mW)} = \begin{cases} ERP_{20 \text{ cm}} (d/20 \text{ cm})^x & d \leq 20 \text{ cm} \\ ERP_{20 \text{ cm}} & 20 \text{ cm} < d \leq 40 \text{ cm} \end{cases} \quad (\text{B. 2})$$

where

$$x = -\log_{10} \left(\frac{60}{ERP_{20 \text{ cm}} \sqrt{f}} \right)$$

and f is in GHz, d is the separation distance (cm), and $ERP_{20 \text{ cm}}$ is per Formula (B.1).

Example values shown in Table B.2 are for illustration only.

Table B.2—Example Power Thresholds (mW)

Frequency (MHz)	Distance (mm)										
		5	10	15	20	25	30	35	40	45	50
	300	39	65	88	110	129	148	166	184	201	217
	450	22	44	67	89	112	135	158	180	203	226
	835	9	25	44	66	90	116	145	175	207	240
	1900	3	12	26	44	66	92	122	157	195	236
	2450	3	10	22	38	59	83	111	143	179	219
	3600	2	8	18	32	49	71	96	125	158	195
	5800	1	6	14	25	40	58	80	106	136	169

Mode	Ant	Position	Distance (mm)	f (MHz)	Max Power (dBm)	Max Power (mW)	SAR Exclusion threshold(mW)	Test required
2.4GHz	Main	Bottom	10.90	2437	20.50	112.20	10	Yes
5.2GHz	Main	Bottom	10.90	5200	19.00	79.43	6	Yes
5.3GHz	Main	Bottom	10.90	5300	19.00	79.43	6	Yes
5.6GHz	Main	Bottom	10.90	5720	19.00	79.43	6	Yes
5.8GHz	Main	Bottom	10.90	5785	19.00	79.43	6	Yes
5.9GHz	Main	Bottom	10.90	5835	17.00	50.12	6	Yes
6.2GHz	Main	Bottom	10.90	6025	12.00	15.85	6	Yes
6.5GHz	Main	Bottom	10.90	6505	12.00	15.85	6	Yes
6.7GHz	Main	Bottom	10.90	6665	12.00	15.85	6	Yes
7.0GHz	Main	Bottom	10.90	6985	12.00	15.85	6	Yes
2.4GHz	Main	Stand	10.90	2437	20.50	112.20	10	Yes
5.2GHz	Aux	Bottom	10.90	5200	19.00	79.43	6	Yes
5.3GHz	Aux	Bottom	10.90	5300	19.00	79.43	6	Yes
5.6GHz	Aux	Bottom	10.90	5720	19.00	79.43	6	Yes
5.8GHz	Aux	Bottom	10.90	5785	19.00	79.43	6	Yes
5.9GHz	Aux	Bottom	10.90	5835	17.00	50.12	6	Yes
6.2GHz	Aux	Bottom	10.90	6025	12.00	15.85	6	Yes
6.5GHz	Aux	Bottom	10.90	6505	12.00	15.85	6	Yes
6.7GHz	Aux	Bottom	10.90	6665	12.00	15.85	6	Yes
7.0GHz	Aux	Bottom	10.90	6985	12.00	15.85	6	Yes
Bluetooth	Aux	Bottom	10.90	2480	12.00	15.85	10	Yes

7. SAR MEASUREMENT VARIABILITY AND UNCERTAINTY

7.1. SAR MEASUREMENT VARIABILITY

Per KDB865664 D01 SAR measurement 100 MHz to 6 GHz, SAR measurement variability must be assessed for each frequency band, which is determined by the SAR probe calibration point and tissue-equivalent medium used for the device measurements. The additional measurements are repeated after the completion of all measurements requiring the same head or body tissue-equivalent medium in a frequency band. The test device should be returned to ambient conditions (normal room temperature) with the battery fully charged before it is re-mounted on the device holder for the repeated measurement(s) to minimize any unexpected variations in the repeated results.

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

The same procedures should be adapted for measurements according to extremity and occupational exposure limits by applying a factor of 2.5 for extremity exposure and a factor of 5 for occupational exposure to the corresponding SAR thresholds.

The detailed repeated measurement results are shown in Section 8.2.

7.2. TEST CONFIGURATION

7.2.1. WIFI Test Configuration

For WLAN SAR testing, WLAN engineering testing software installed on the DUT can provide continuous transmitting RF signal.

Wi-Fi 2.4GHz Band

Mode	802.11b	802.11g	802.11n (HT20/40)	802.11ac (VHT20/40)	802.11ax (HE20/40)
Duty cycle	100%				
Crest factor	1				

Wi-Fi 5GHz Band

Mode	802.11a	802.11n (HT20/HT40)	802.11ac (VHT/20/40/80)	802.11ax (HE20/40/80/160)
Duty cycle	100%			
Crest factor	1			

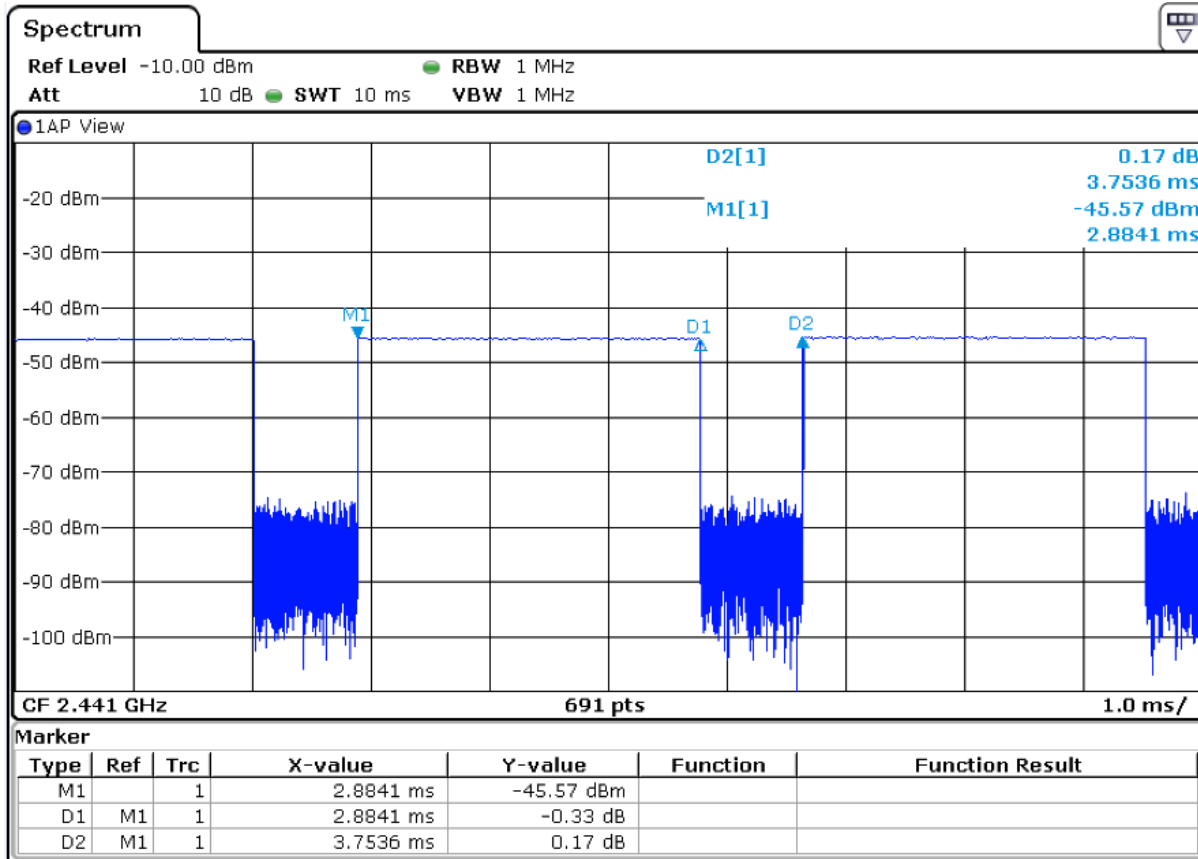
Wi-Fi 6GHz Band

Mode	802.11 a	802.11 ax20	802.11 ax40	802.11 ax80	802.11 ax160
Duty cycle	100%				
Crest factor	1				

For WiFi SAR testing, a communication link is set up with the test mode software for WiFi mode test. During the test, at the each test frequency channel, the EUT is operated at the RF continuous emission mode. The RF signal utilized in SAR measurement has 100% duty cycle and its crest factor is 1. The test procedures in KDB 248227 D01 are applied.

Bluetooth

Mode	Bluetooth DH5	Bluetooth EDR	BLE 1M	BLE 2M
Duty cycle	76.8%	76.3%	61.2%	57.0%
Crest factor	1.30	1.31	1.63	1.75



7.2.2. WLAN 2.4G SAR Test Requirements

802.11b DSSS SAR Test Requirements

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

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

2.4 GHz 802.11g/n OFDM SAR Test Exclusion Requirements

When SAR measurement is required for 2.4 GHz 802.11g/n OFDM configurations, the measurement and test reduction procedures for OFDM are applied. SAR is not required for the following 2.4 GHz OFDM conditions.

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

SAR Test Requirements for OFDM configurations

When SAR measurement is required for 2.4 GHz 802.11g/n OFDM configurations, each standalone and frequency aggregated band is considered separately for SAR test reduction. In applying the initial test configuration and subsequent test configuration procedures, the 802.11 transmission configuration with the highest specified maximum output power and the channel within a test configuration with the highest measured maximum output power should be clearly distinguished to apply the procedures.

7.2.3. WLAN 5G SAR TEST REQUIREMENTS

U-NII-1 and U-NII-2A Band

For devices that operate in both U-NII-1 and U-NII-2A bands, when the same maximum output power is specified for both bands, begin SAR measurement in U-NII-2A band by applying the OFDM SAR requirements. If the highest reported SAR for a test configuration is ≤ 1.2 W/kg, SAR is not required for U-NII-1 band for that configuration (802.11 mode and exposure condition); otherwise, both bands are tested independently for SAR. When different maximum output power is specified for the bands, begin SAR measurement in the band with higher specified maximum output power. The highest reported SAR for the tested configuration is adjusted by the ratio of lower to higher specified maximum output power for the two bands. When the adjusted SAR is ≤ 1.2 W/kg, SAR is not required for the band with lower maximum output power in that test configuration; otherwise, both bands are tested independently for SAR.

U-NII-2C, U-NII-3 Bands

The frequency range covered by these bands is 380 MHz (5.47 – 5.85 GHz), which requires a minimum of at least two SAR probe calibration frequency points to support SAR measurements. When Terminal Doppler Weather Radar (TDWR) restriction applies, the channels at 5.60 – 5.65 GHz in U-NII-2C band must be disabled with acceptable mechanisms and documented in the equipment certification.

Unless band gap channels are permanently disabled, they must be considered for SAR testing.

To maintain SAR measurement accuracy and to facilitate test reduction, the channels in U-NII-2C band above 5.65 GHz may be grouped with the 5.8 GHz channels in U-NII-3 or §15.247 band to enable two SAR probe calibration frequency points to cover the bands, including the band gap channels.¹¹ When band gap channels are supported and the bands are not aggregated for SAR testing, band gap channels must be considered independently in each band according to the normally required OFDM SAR measurement and probe calibration frequency points requirements.

7.2.4. OFDM TRANSMISSION MODE AND SAR TEST CHANNEL SELECTION

For the 2.4GHz and 5GHz bands, when the same maximum output power was specified for multiple OFDM transmission mode configurations in a frequency band or aggregated band, SAR is measured using the configuration with the largest channel bandwidth, lowest order modulation and lowest data rate. When the maximum output power of a channel is the same for equivalent OFDM configurations (for example 802.11a, 802.11n and 802.11ac, or 802.11g and 802.11n, with the same channel bandwidth, modulation, and data rate, etc.), the lower order 802.11 mode (i.e. 802.11a then 802.11n and 802.11ac, or 802.11g then 802.11n) is used for SAR measurement. When the maximum output power are the same for multiple test channels, either according to the default or additional power measurement requirements, SAR is measured using the channel closest to the middle of the frequency band or aggregated band. When there are multiple channels with the same maximum output power, SAR is measured using the higher number channel.

7.2.5. INITIAL TEST CONFIGURATION PROCEDURE

For OFDM, in both 2.4G and 5GHz bands, an initial test configuration is determined for each frequency band and aggregated band, according to the transmission mode with the highest maximum output power specified for SAR measurements. When the same maximum output power is specified for multiple OFDM transmission mode configurations in a frequency band or aggregated band, SAR is measured using the configuration(s) with the largest channel bandwidth, lowest order modulation, and lowest data rate. If the average RF output powers of the highest identical transmission modes are within 0.25 dB of each other, mid channel of the transmission mode with highest average RF output powers is the initial test channel. Otherwise, the channel of the transmission mode with the highest average RF output power will be the initial test configuration. When the reported SAR is ≤ 0.8 W/kg, no additional measurements on other test channels are required. Otherwise, SAR is evaluated using the subsequent highest average RF output channel until the reported SAR result is ≤ 1.2 W/kg or all channels are measured. When there are multiple untested channels having the same subsequent highest average RF output power, the channel with higher frequency from the lowest 802.11 mode is considered for SAR measurement.

8. CONDUCTED POWER RESULTS

8.1. CONDUCTED POWER MEASUREMENT RESULTS OF BLUETOOTH

Band	Mode	Channel	Frequency (MHz)	Max Power (dBm)	AVG Power (dBm)
DH5	DH5	0	2402	16.00	14.76
		39	2441	16.00	14.32
		78	2480	16.00	14.37
EDR	2DH5	0	2402	12.00	Not Require
		39	2441	12.00	
		78	2480	12.00	
	3DH5	0	2402	12.00	
		39	2441	12.00	
		78	2480	12.00	
BLE	1M	0	2402	7.00	
		19	2440	7.00	
		39	2480	7.00	
	2M	0	2402	7.00	
		19	2440	7.00	
		39	2480	7.00	

8.2. CONDUCTED POWER MEASUREMENTS OF WI-FI 2.4GHZ BAND

Band	Mode	Channel	Frequency (MHz)	Data Rate	Max Tune-Up Power (dBm)	AVG Power (dBm)
2.4G WIFI _1Tx _Main _ANT	802.11 b	1	2412	1	19.50	19.43
		6	2437		20.50	20.44
		11	2462		19.50	19.41
		12	2467		18.50	18.45
		13	2472		16.00	15.89
	802.11 g	1	2412	6	18.00	Not Required
		6	2437		20.50	
		11	2462		18.00	
		12	2467		16.00	
		13	2472		4.00	
	802.11n HT20	1	2412	HT0	17.50	
		6	2437		19.50	
		11	2462		16.00	
		12	2467		15.00	
		13	2472		3.50	
	802.11n HT40	3	2422	HT0	15.50	
		6	2437		16.00	
		9	2452		15.00	
		10	2457		14.00	
		11	2462		5.50	
	802.11n HT20	1	2412	VHT0	17.50	
		6	2437		19.50	
		11	2462		16.00	
		12	2467		15.00	
		13	2472		3.50	
	802.11n HT40	3	2422	VHT0	15.50	
		6	2437		16.00	
		9	2452		15.00	
		10	2457		14.00	
		11	2462		5.50	
	802.11ax HE20	1	2412	MCS0	17.50	
		6	2437		19.50	
		11	2462		16.00	
		12	2467		15.00	
		13	2472		3.50	
	802.11ax HE40	3	2422	MCS0	15.50	
		6	2437		16.00	
		9	2452		15.00	
		10	2457		14.00	
		11	2462		5.50	

Note:

- As per FCC OET KDB 248227 D01, conducted output power and SAR testing are not required for 802.11g/n20 channels when the highest reported SAR for DSSS is adjusted by the ratio of OFDM to DSSS specified maximum output power and the adjusted SAR is $\leq 1.2\text{W/kg}$.

Band	Mode	Channel	Frequency (MHz)	Data Rate	RU Setting	Max Tune-Up Power (dBm)	AVG Power (dBm)
2.4G WIFI _1Tx _Main _ANT	802.11ax HE20	1	2412	MCS0	26	16.50	Not Required
					52	16.50	
					106	16.00	
					242	15.50	
		6	2437	MCS0	26	18.50	
					52	18.50	
					106	18.50	
					242	18.50	
		11	2462	MCS0	26	15.50	
					52	14.50	
					106	14.50	
					242	13.50	
		12	2467	MCS0	26	12.50	
					52	11.50	
					106	11.50	
					242	11.50	
		13	2472	MCS0	26	-8.50	
					52	-8.50	
					106	-6.50	
					242	5.00	
	802.11ax HE40	3	2422	MCS0	26	18.50	
					52	18.50	
					106	18.50	
					242	18.50	
					484	11.00	
		6	2437	MCS0	26	18.50	
					52	18.50	
					106	18.50	
					242	18.50	
					484	15.50	
		9	2452	MCS0	26	18.50	
					52	18.50	
					106	18.50	
					242	18.50	
					484	12.50	
		10	2457	MCS0	26	15.50	
					52	14.50	
					106	14.50	
					242	16.00	
					484	11.50	
		11	2462	MCS0	26	15.50	
					52	14.50	
					106	14.50	
					242	13.50	
					484	11.50	

Band	Mode	Channel	Frequency (MHz)	Data Rate	Max Tune-Up Power (dBm)	AVG Power (dBm)
2.4G WIFI _1Tx _Aux ANT	802.11 b	1	2412	1	19.50	19.48
		6	2437		20.50	20.46
		11	2462		19.50	19.38
		12	2467		18.50	18.45
		13	2472		16.00	15.90
	802.11 g	1	2412	6	18.00	Not Required
		6	2437		20.50	
		11	2462		18.00	
		12	2467		16.00	
		13	2472		4.00	
	802.11n HT20	1	2412	HT0	17.50	
		6	2437		19.50	
		11	2462		16.00	
		12	2467		15.00	
		13	2472		3.50	
	802.11n HT40	3	2422	HT0	15.50	
		6	2437		16.00	
		9	2452		15.00	
		10	2457		14.00	
		11	2462		5.50	
	802.11n HT20	1	2412	VHT0	17.50	
		6	2437		19.50	
		11	2462		16.00	
		12	2467		15.00	
		13	2472		3.50	
	802.11n HT40	3	2422	VHT0	15.50	
		6	2437		16.00	
		9	2452		15.00	
		10	2457		14.00	
		11	2462		5.50	
	802.11ax HE20	1	2412	MCS0	17.50	
		6	2437		19.50	
		11	2462		16.00	
		12	2467		15.00	
		13	2472		3.50	
	802.11ax HE40	3	2422	MCS0	15.50	
		6	2437		16.00	
		9	2452		15.00	
		10	2457		14.00	
		11	2462		5.50	

Note:

- As per FCC OET KDB 248227 D01, conducted output power and SAR testing are not required for 802.11g/n20 channels when the highest reported SAR for DSSS is adjusted by the ratio of OFDM to DSSS specified maximum output power and the adjusted SAR is $\leq 1.2\text{W/kg}$.

Band	Mode	Channel	Frequency (MHz)	Data Rate	RU Setting	Max Tune-Up Power (dBm)	AVG Power (dBm)
2.4G WIFI _1Tx _Aux ANT	802.11ax HE20	1	2412	MCS0	26	16.50	Not Required
					52	16.50	
					106	16.00	
					242	15.50	
		6	2437	MCS0	26	18.50	
					52	18.50	
					106	18.50	
					242	18.50	
		11	2462	MCS0	26	15.50	
					52	14.50	
					106	14.50	
					242	13.50	
		12	2467	MCS0	26	12.50	
					52	11.50	
					106	11.50	
					242	11.50	
		13	2472	MCS0	26	-8.50	
					52	-8.50	
					106	-6.50	
					242	5.00	
	802.11ax HE40	3	2422	MCS0	26	18.50	
					52	18.50	
					106	18.50	
					242	18.50	
					484	11.00	
		6	2437	MCS0	26	18.50	
					52	18.50	
					106	18.50	
					242	18.50	
					484	15.50	
		9	2452	MCS0	26	18.50	
					52	18.50	
					106	18.50	
					242	18.50	
					484	12.50	
		10	2457	MCS0	26	15.50	
					52	14.50	
					106	14.50	
					242	16.00	
					484	11.50	
		11	2462	MCS0	26	15.50	
					52	14.50	
					106	14.50	
					242	13.50	
					484	11.50	

Band	Mode	Channel	Frequency (MHz)	Data Rate	ANT Main Average Power(dBm)	ANT Aux Average Power(dBm)	Max. Tune up	Total Average Power(dBm)
2.4G WIFI _2Tx _Main ANT+ Aux ANT	802.11 b	1	2412	1	20.00	18.97	23.00	22.53
		6	2437		20.49	20.19	23.50	23.35
		11	2462		19.18	18.74	22.00	21.98
		12	2467		16.66	16.77	20.00	19.73
		13	2472		14.17	14.39	17.50	17.29
	802.11 g	1	2412	6	16.01	22.49	19.50	19.29
		6	2437		19.34	24.22	22.50	22.07
		11	2462		16.63	22.67	20.00	19.66
		12	2467		14.29	20.36	17.50	17.30
		13	2472		2.17	8.49	5.50	5.34
	802.11 n20	1	2412	HT8	12.75	13.12	16.00	15.95
		6	2437		17.72	16.25	20.50	20.06
		11	2462		11.36	11.12	14.50	14.25
		12	2467		10.12	10.31	13.50	13.23
		13	2472		-1.59	-1.27	2.00	1.58
	802.11 n40	3	2422	HT8	9.49	10.08	13.00	12.81
		6	2437		10.51	10.97	14.00	13.76
		9	2452		9.11	9.40	12.50	12.27
		10	2457		8.63	8.91	12.00	11.78
		11	2462		-1.45	-0.21	2.50	2.22
	802.11 ax20	1	2412	MCS8	12.78	13.28	16.50	16.05
		6	2437		17.30	16.22	20.00	19.80
		11	2462		10.62	11.01	14.00	13.83
		12	2467		9.66	10.09	13.00	12.89
		13	2472		-2.26	-1.86	1.00	0.95
	802.11 ax40	3	2422	MCS8	9.62	10.11	13.00	12.88
		6	2437		10.52	11.04	14.00	13.80
		9	2452		9.64	9.97	13.00	12.82
		10	2457		9.04	9.44	12.50	12.25
		11	2462		-1.26	0.17	3.00	2.52

Band	Mode	Channel	Frequency (MHz)	Data Rate	RU Setting	Main Ant Average Power (dBm)	Aux Ant Average Power (dBm)	Max. Tune-up	Total Average Power (dBm)
2.4G WIFI _2Tx _Main ANT+ Aux ANT	802.11ax HE20	1	2412	MCS8	26	15.31	14.84	18.50	18.09
					52	15.25	14.79	18.50	18.04
					106	14.81	14.14	18.00	17.50
					242	14.05	13.73	17.00	16.90
		6	2437	MCS8	26	16.84	16.91	20.00	19.89
					52	17.08	16.41	20.00	19.77
					106	17.11	16.64	20.00	19.89
					242	17.04	16.53	20.00	19.80
		11	2462	MCS8	26	13.77	14.12	17.00	16.96
					52	13.05	13.08	16.50	16.08
					106	13.55	13.65	16.50	16.61
					242	12.31	12.04	15.50	15.19
		12	2467	MCS8	26	10.31	10.36	13.50	13.35
					52	9.88	9.74	13.00	12.82
					106	10.32	10.38	13.50	13.36
					242	10.38	10.34	13.50	13.37
		13	2472	MCS8	26	-11.38	-9.32	-7.00	-7.22
					52	-10.94	-9.08	-6.50	-6.90
					106	-8.82	-7.55	-5.00	-5.13
					242	-6.82	-6.08	-3.00	-3.42
	802.11ax HE40	3	2422	MCS8	484	9.94	9.12	13.00	12.56
		4	2427		484	10.33	9.64	13.50	13.01
		6	2437		484	14.22	13.35	17.00	16.82
		8	2447		484	11.42	10.96	14.50	14.21
		9	2452		484	11.63	11.41	15.00	14.53
		10	2457		484	9.68	9.94	13.00	12.82
		11	2462		484	-5.01	-4.63	-1.50	-1.82

8.3. CONDUCTED POWER MEASUREMENTS OF 5G UNII_1

Band	Mode	Channel	Frequency (MHz)	Data Rate	Max Tune-Up Power (dBm)	AVG Power (dBm)
5.2G WIFI _1Tx _Main ANT	802.11a	36	5180	6	14.50	Not Required
		40	5200		14.50	
		44	5220		14.50	
		48	5240		14.50	
	802.11 n20	36	5180	HT0	14.50	
		40	5200		14.50	
		44	5220		14.50	
		48	5240		14.50	
	802.11 n40	38	5190	HT0	15.00	
		46	5230		15.00	
	802.11 ac20	36	5180	VHT0	14.50	
		40	5200		14.50	
		44	5220		14.50	
		48	5240		14.50	
	802.11 ac40	38	5190	VHT0	15.00	
		46	5230		15.00	
	802.11 ac80	42	5210	VHT0	13.00	
	802.11 ax20	36	5180	MCS0	14.50	
		40	5200		14.50	
		44	5220		14.50	
		48	5240		14.50	
	802.11 ax40	38	5190	MCS0	15.00	
		46	5230		15.00	
	802.11 ax80	42	5210	MCS0	13.00	
	802.11 ax160	50	5250	MCS0	13.00	

Note:

1. When the same maximum output power is specified for both bands, begin SAR measurement in U-NII-2A band by applying the OFDM SAR requirements. If the highest reported SAR for a test configuration is ≤ 1.2 W/kg, SAR is not required for U-NII-1 band (see §B.5.2 in this document).
2. The initial test configuration for 2.4 GHz and 5 GHz OFDM transmission modes is determined by the 802.11 configuration with the highest maximum output power specified for production units, including tune-up tolerance, in each standalone and aggregated frequency band. SAR for the initial test configuration is measured using the highest maximum output power channel determined by the default power measurement procedures. When multiple transmission modes (802.11a/g/n/ac) have the same specified maximum output power, largest channel bandwidth, lowest order modulation and lowest data rate, lowest order 802.11 mode is selected (i.e. a, g, n, ac).

Band	Mode	Channel	Frequency (MHz)	Data Rate	RU Setting	Max Tune-Up Power (dBm)	AVG Power (dBm)
5.2G WIFI _1Tx _Main ANT	802.11 ax20	36	5180	MCS0	26	6.00	Not Required
					52	9.00	
					106	11.50	
					242	15.00	
		40	5200	MCS0	26	6.00	
					52	9.00	
					106	12.00	
					242	14.50	
		44	5220	MCS0	26	6.00	
					52	9.00	
					106	12.00	
					242	15.00	
		48	5240	MCS0	26	6.00	
					52	9.00	
					106	12.00	
					242	15.00	
	802.11 ax40	38	5190	MCS0	484	11.00	
		46	5230		484	14.50	
	802.11 ax80	42	5210	MCS0	996	9.50	
	802.11 ax160	50	5250	MCS0	1992	12.50	

Band	Mode	Channel	Frequency (MHz)	Data Rate	Max Tune-Up Power (dBm)	AVG Power (dBm)
5.2G WIFI _1Tx _Aux ANT	802.11a	36	5180	6	14.50	Not Required
		40	5200		14.50	
		44	5220		14.50	
		48	5240		14.50	
	802.11 n20	36	5180	HT0	14.50	
		40	5200		14.50	
		44	5220		14.50	
		48	5240		14.50	
	802.11 n40	38	5190	HT0	15.00	
		46	5230		15.00	
	802.11 ac20	36	5180	VHT0	14.50	
		40	5200		14.50	
		44	5220		14.50	
		48	5240		14.50	
	802.11 ac40	38	5190	VHT0	15.00	
		46	5230		15.00	
	802.11 ac80	42	5210	VHT0	13.00	
	802.11 ax20	36	5180	MCS0	14.50	
		40	5200		14.50	
		44	5220		14.50	
		48	5240		14.50	
	802.11 ax40	38	5190	MCS0	15.00	
		46	5230		15.00	
	802.11 ax80	42	5210	MCS0	13.00	
	802.11 ax160	50	5250	MCS0	13.00	

Band	Mode	Channel	Frequency (MHz)	Data Rate	RU Setting	Max Tune-Up Power (dBm)	AVG Power (dBm)
5.2G WIFI _1Tx _Aux _ANT	802.11 ax20	36	5180	MCS0	26	6.00	Not Required
					52	9.00	
					106	11.50	
					242	15.00	
		40	5200	MCS0	26	6.00	
					52	9.00	
					106	12.00	
					242	14.50	
		44	5220	MCS0	26	6.00	
					52	9.00	
					106	12.00	
					242	15.00	
		48	5240	MCS0	26	6.00	
					52	9.00	
					106	12.00	
					242	15.00	
	802.11 ax40	38	5190	MCS0	484	11.00	
		46	5230		484	14.50	
	802.11 ax80	42	5210	MCS0	996	9.50	
	802.11 ax160	50	5250	MCS0	1992	12.50	

Band	Mode	Channel	Frequency (MHz)	Data Rate	ANT Main Average Power(dBm)	ANT Aux Average Power(dBm)	Max. Tune up	Total Average Power(dBm)
5.2G WIFI _2Tx _Main ANT+ Aux ANT	802.11 a	36	5180	6	12.81	12.74	16.00	15.79
		40	5200		12.88	12.64	16.00	15.77
		48	5240		12.94	12.64	16.00	15.80
	802.11 n20	36	5180	HT8	13.41	12.88	16.50	16.16
		40	5200		13.21	13.05	16.50	16.14
		48	5240		13.38	12.94	16.50	16.18
	802.11 n40	38	5190	HT8	13.21	13.34	16.50	16.29
		46	5230		12.96	13.58	16.50	16.29
	802.11 ac20	36	5180	VHT8	13.44	12.86	16.50	16.17
		40	5200		13.23	13.08	16.50	16.17
		48	5240		13.33	12.96	16.50	16.16
	802.11 ac40	38	5190	VHT8	13.22	13.36	16.50	16.30
		46	5230		12.94	13.56	16.50	16.27
	802.11 ac80	42	5210	VHT8	11.42	11.03	14.50	14.24
	802.11 ac160	50	5250	VHT8	7.84	8.21	11.50	11.04
	802.11 ax20	36	5180	MCS8	13.42	12.84	16.50	16.15
		40	5200		13.33	13.12	16.50	16.24
		48	5240		13.38	12.94	16.50	16.18
	802.11 ax40	38	5190	MCS8	13.21	13.34	16.50	16.29
		46	5230		12.91	13.54	16.50	16.25
	802.11 ax80	42	5210	MCS8	11.38	11.08	14.50	14.24
	802.11 ax160	50	5250	MCS8	7.81	8.04	11.50	10.94

Band	Mode	Channel	Frequen cy (MHz)	Data Rate	RU Setting	Main Ant Average Power (dBm)	Aux Ant Average Power (dBm)	Max. Tune-up	Total Average Power (dBm)
5.2G WIFI _2Tx _Main ANT+ Aux ANT	802.11 ax20	36	5180	MCS8	26	4.41	4.81	8.00	7.62
					52	7.21	7.84	11.00	10.55
					106	10.62	9.88	14.00	13.28
					242	12.68	13.74	16.50	16.25
		40	5200	MCS8	26	4.78	4.91	8.00	7.86
					52	6.76	7.81	10.50	10.33
					106	10.64	9.88	13.50	13.29
					242	13.18	13.58	16.50	16.39
		48	5240	MCS8	26	4.55	4.81	8.00	7.69
					52	6.64	7.85	10.50	10.30
					106	10.71	10.21	14.00	13.48
					242	13.31	13.33	16.50	16.33
	802.11 ax40	38	5190	MCS8	26	4.22	6.09	8.50	8.27
					52	6.44	7.41	10.00	9.96
					106	9.96	10.42	13.50	13.21
					242	13.21	13.38	16.50	16.31
		46	5230	MCS8	484	9.41	9.86	13.00	12.65
					26	4.58	5.32	8.00	7.98
					52	6.78	7.56	10.50	10.20
					106	9.88	10.34	13.00	13.13
					242	12.68	13.81	16.50	16.29
					484	13.58	13.21	16.50	16.41
		42	5210	MCS8	996	7.58	8.41	11.50	11.03
					1992	9.44	9.03	12.50	12.25

8.4. CONDUCTED POWER MEASUREMENTS OF 5G UNII_2A

Band	Mode	Channel	Frequency (MHz)	Data Rate	Max Tune-Up Power (dBm)	AVG Power (dBm)
5.3G WIFI _1Tx _Main _ANT	802.11a	52	5260	6	16.00	15.88
		56	5280		19.00	18.94
		60	5300		19.00	18.96
		64	5320		16.00	15.65
	802.11 n20	52	5260	HT0	16.00	Not Required
		56	5280		17.50	
		60	5300		17.50	
		64	5320		16.00	
	802.11 n40	54	5270	HT0	17.00	
		62	5310		15.50	
	802.11 ac20	52	5260	VHT0	16.00	
		56	5280		17.50	
		60	5300		17.50	
		64	5320		16.00	
	802.11 ac40	54	5270	VHT0	17.00	
		62	5310		15.50	
	802.11 ac80	58	5290	VHT0	14.00	
	802.11 ax20	52	5260	MCS0	16.00	
		56	5280		17.50	
		60	5300		17.50	
		64	5320		16.00	
	802.11 ax40	54	5270	MCS0	17.00	
		62	5310		15.50	
	802.11 ax80	58	5290	MCS0	14.00	

Band	Mode	Channel	Frequency (MHz)	Data Rate	RU Setting	Max Tune-Up Power (dBm)	AVG Power (dBm)
5.3G WIFI _1Tx _Main ANT	802.11 ax20	52	5260	MCS0	26	13.00	Not Required
					52	16.00	
					106	16.00	
					242	16.00	
		56	5280	MCS0	26	13.50	
					52	16.00	
					106	16.00	
					242	16.00	
		60	5300	MCS0	26	13.00	
					52	13.00	
					106	13.00	
					242	13.00	
		64	5320	MCS0	26	13.00	
					52	16.00	
					106	15.00	
					242	14.00	
	802.11 ax40	54	5270	MCS0	484	16.00	
		62	5310		484	12.50	
	802.11 ax80	58	5290	MCS0	996	11.50	

Band	Mode	Channel	Frequency (MHz)	Data Rate	Max Tune-Up Power (dBm)	AVG Power (dBm)
5.3G WIFI _1Tx _Aux ANT	802.11a	52	5260	6	16.00	15.96
		56	5280		19.00	18.84
		60	5300		19.00	18.82
		64	5320		16.00	15.88
	802.11 n20	52	5260	HT0	16.00	Not Required
		56	5280		17.50	
		60	5300		17.50	
		64	5320		16.00	
	802.11 n40	54	5270	HT0	17.00	
		62	5310		15.50	
	802.11 ac20	52	5260	VHT0	16.00	
		56	5280		17.50	
		60	5300		17.50	
		64	5320		16.00	
	802.11 ac40	54	5270	VHT0	17.00	
		62	5310		15.50	
	802.11 ac80	58	5290	VHT0	14.00	
	802.11 ax20	52	5260	MCS0	16.00	
		56	5280		17.50	
		60	5300		17.50	
		64	5320		16.00	
	802.11 ax40	54	5270	MCS0	17.00	
		62	5310		15.50	
	802.11 ax80	58	5290	MCS0	14.00	

Band	Mode	Channel	Frequency (MHz)	Data Rate	RU Setting	Max Tune-Up Power (dBm)	AVG Power (dBm)
5.3G WIFI _1Tx _Aux ANT	802.11 ax20	52	5260	MCS0	26	13.00	Not Required
					52	16.00	
					106	16.00	
					242	16.00	
		56	5280	MCS0	26	13.50	
					52	16.00	
					106	16.00	
					242	16.00	
		60	5300	MCS0	26	13.00	
					52	13.00	
					106	13.00	
					242	13.00	
		64	5320	MCS0	26	13.00	
					52	16.00	
					106	15.00	
					242	14.00	
	802.11 ax40	54	5270	MCS0	484	16.00	
		62	5310		484	12.50	
	802.11 ax80	58	5290	MCS0	996	11.50	

Note:

1. When the same maximum output power is specified for both bands, begin SAR measurement in U-NII-2A band by applying the OFDM SAR requirements. If the highest reported SAR for a test configuration is ≤ 1.2 W/kg, SAR is not required for U-NII-1 band (see §B.5.2 in this document).
2. The initial test configuration for 2.4 GHz and 5 GHz OFDM transmission modes is determined by the 802.11 configuration with the highest maximum output power specified for production units, including tune-up tolerance, in each standalone and aggregated frequency band. SAR for the initial test configuration is measured using the highest maximum output power channel determined by the default power measurement procedures. When multiple transmission modes (802.11a/g/n/ac) have the same specified maximum output power, largest channel bandwidth, lowest order modulation and lowest data rate, lowest order 802.11 mode is selected (i.e. a, g, n, ac).
3. Largest channel bandwidth is worse than lowest order modulation.

Band	Mode	Channel	Frequency (MHz)	Data Rate	ANT Main Average Power(dBm)	ANT Aux Average Power(dBm)	Max. Tune up	Total Average Power(dBm)
5.3G WIFI _2Tx _Main ANT+ Aux ANT	802.11 a	52	5260	6	18.43	19.22	22.00	21.85
		60	5300		18.35	19.23	22.00	21.82
		64	5320		16.12	16.45	19.50	19.30
	802.11 n20	52	5260	HT8	16.39	15.28	19.00	18.88
		60	5300		16.08	15.43	19.00	18.78
		64	5320		16.33	15.48	19.00	18.94
	802.11 n40	54	5270	HT8	15.78	14.93	18.50	18.39
		62	5310		15.71	14.68	18.50	18.24
	802.11 ac20	52	5260	VHT8	16.32	15.38	19.00	18.89
		60	5300		16.05	15.41	19.00	18.75
		64	5320		16.25	15.44	19.00	18.87
	802.11 ac40	54	5270	VHT8	15.78	14.93	18.50	18.39
		62	5310		15.66	14.68	18.50	18.21
	802.11 ac80	58	5290	VHT8	12.94	12.08	16.00	15.54
	802.11 ac160	50	5250	VHT8	8.07	8.23	11.50	11.16
	802.11 ax20	52	5260	MCS8	16.44	15.38	19.00	18.95
		60	5300		16.12	15.56	19.00	18.86
		64	5320		16.38	15.58	19.00	19.01
	802.11 ax40	54	5270	MCS8	15.74	15.08	18.50	18.43
		62	5310		15.74	14.78	18.50	18.30
	802.11 ax80	58	5290	MCS8	13.08	12.14	16.00	15.65
	802.11 ax160	50	5250	MCS8	8.12	8.36	11.50	11.25

Band	Mode	Channel	Frequency (MHz)	Data Rate	RU Setting	Main Ant Average Power (dBm)	Aux Ant Average Power (dBm)	Max. Tune-up	Total Average Power (dBm)
5.3G WIFI _2Tx _Main ANT+ Aux ANT	802.11 ax20	52	5260	MCS8	26	12.04	11.18	15.00	14.64
					52	14.08	14.86	17.50	17.50
					106	14.08	14.62	17.50	17.37
					242	14.18	14.74	17.50	17.48
		60	5300	MCS8	26	12.78	11.19	15.00	15.07
					52	14.29	14.58	17.50	17.45
					106	14.38	14.52	17.50	17.46
					242	14.38	14.56	17.50	17.48
		64	5320	MCS8	26	12.38	10.94	15.00	14.73
					52	14.21	14.68	17.50	17.46
					106	13.28	13.39	16.50	16.35
					242	12.29	12.56	15.50	15.44
	802.11 ax40	54	5270	MCS8	26	12.98	13.05	16.00	16.03
					52	14.38	14.37	17.50	17.39
					106	14.12	14.68	17.50	17.42
					242	14.22	14.78	17.50	17.52
		62	5310	MCS8	484	14.56	14.21	17.50	17.40
					26	11.74	11.36	15.00	14.56
					52	11.59	11.58	15.00	14.60
					106	11.48	11.61	15.00	14.56
					242	11.56	11.34	14.50	14.46
		58	5290	MCS8	484	10.84	10.72	14.00	13.79
					996	9.64	9.98	13.00	12.82
	802.11 ax160	50	5250	MCS8	1992	9.47	9.08	12.50	12.29

8.5. CONDUCTED POWER MEASUREMENTS OF 5G UNII_2C

Band	Mode	Channel	Frequency (MHz)	Data Rate	Max Tune-Up Power (dBm)	AVG Power (dBm)
5.6G WIFI _1Tx _Main ANT	802.11a	100	5500	6	16.00	15.69
		104	5520		18.50	18.43
		108	5540		18.50	18.21
		112	5560		18.50	18.33
		116	5580		18.50	18.15
		120	5560		18.50	18.32
		124	5620		18.50	18.20
		128	5640		18.50	18.22
		132	5660		18.50	18.46
		136	5680		18.50	18.35
		140	5700		16.00	15.88
		144	5720		19.00	18.89
	802.11 n20	100	5500	HT0	16.00	Not Required
		104	5520		17.50	
		108	5540		17.50	
		112	5560		17.50	
		116	5580		17.50	
		120	5560		17.50	
		124	5620		17.50	
		128	5640		17.50	
		132	5660		17.50	
		136	5680		17.50	
		140	5700		16.00	
		144	5720		17.50	
	802.11 n40	102	5510	HT0	15.50	
		110	5550		17.00	
		118	5590		17.00	
		126	5630		17.00	
		134	5670		15.50	
		142	5710		17.00	
	802.11 ac20	100	5500	VHT0	16.00	
		104	5520		17.50	
		108	5540		17.50	
		112	5560		17.50	
		116	5580		17.50	
		120	5560		17.50	
		124	5620		17.50	
		128	5640		17.50	
		132	5660		17.50	
		136	5680		17.50	
		140	5700		16.00	
		144	5720		17.50	
	802.11 ac40	102	5510	VHT0	15.50	
		110	5550		17.00	
		118	5590		17.00	
		126	5630		17.00	
		134	5670		15.50	
		142	5710		17.00	
	802.11 ac80	106	5530	VHT0	15.00	
		122	5610		15.00	
		138	5690		16.50	

Band	Mode	Channel	Frequency (MHz)	Data Rate	Max Tune-Up Power (dBm)	AVG Power (dBm)
5.6G WIFI _1Tx _Main ANT	802.11 ax20	100	5500	MCS0	16.00	Not Required
		104	5520		17.50	
		108	5540		17.50	
		112	5560		17.50	
		116	5580		17.50	
		120	5560		17.50	
		124	5620		17.50	
		128	5640		17.50	
		132	5660		17.50	
		136	5680		17.50	
		140	5700		16.00	
		144	5720		17.50	
	802.11 ax40	102	5510	MCS0	15.50	
		110	5550		17.00	
		118	5590		17.00	
		126	5630		17.00	
		134	5670		15.50	
		142	5710		17.00	
	802.11 ax80	106	5530	MCS0	15.00	
		122	5610		15.00	
		138	5690		16.50	

Band	Mode	Channel	Frequency (MHz)	Data Rate	RU Setting	Max Tune-Up Power (dBm)	AVG Power (dBm)
5.6G WIFI _1Tx _Main ANT	802.11 ax20	100	5500	MCS0	26	12.00	Not Required
					52	12.00	
					106	12.00	
					242	12.00	
		104	5520	MCS0	26	11.00	
					52	11.00	
					106	10.50	
					242	10.50	
		108	5540	MCS0	26	12.00	
					52	14.50	
					106	16.00	
					242	16.00	
		112	5560	MCS0	26	12.00	
					52	14.50	
					106	16.00	
					242	16.00	
		116	5580	MCS0	26	12.00	
					52	14.50	
					106	16.00	
					242	16.00	
		120	5600	MCS0	26	12.00	
					52	14.50	
					106	16.00	
					242	16.00	
		124	5620	MCS0	26	12.00	
					52	14.50	
					106	16.00	
					242	16.00	
		128	5640	MCS0	26	12.00	
					52	14.50	
					106	16.00	
					242	16.00	
		132	5660	MCS0	26	12.00	
					52	14.50	
					106	16.00	
					242	16.00	
		136	5680	MCS0	26	12.00	
					52	12.00	
					106	12.00	
					242	11.50	

Band	Mode	Channel	Frequency (MHz)	Data Rate	RU Setting	Max Tune-Up Power (dBm)	AVG Power (dBm)
5.6G WIFI _1Tx _Main ANT	802.11 ax20	140	5700	MCS0	26	12.00	Not Required
					52	12.00	
					106	12.00	
					242	11.00	
	802.11 ax20	144	5720	MCS0	26	12.00	
					52	14.00	
					106	16.00	
					242	16.00	
	802.11 ax40	102	5510	MCS0	484	11.00	
		110	5550		484	15.00	
		118	5590		484	15.00	
		126	5630		484	15.00	
		134	5670		484	12.00	
		142	5710		484	16.00	
	802.11 ax80	106	5530	MCS0	996	10.50	
		122	5610		996	13.00	
	802.11 ax160	114	5570	MCS0	1992	16.00	

Band	Mode	Channel	Frequency (MHz)	Data Rate	Max Tune-Up Power (dBm)	AVG Power (dBm)
5.6G WIFI _1Tx _Aux ANT	802.11a	100	5500	6	16.00	15.88
		104	5520		18.50	18.41
		108	5540		18.50	18.12
		112	5560		18.50	18.19
		116	5580		18.50	18.36
		120	5560		18.50	18.34
		124	5620		18.50	18.25
		128	5640		18.50	18.37
		132	5660		18.50	18.39
		136	5680		18.50	18.36
		140	5700		16.00	15.92
		144	5720		19.00	18.72
	802.11 n20	100	5500	HT0	16.00	Not Required
		104	5520		17.50	
		108	5540		17.50	
		112	5560		17.50	
		116	5580		17.50	
		120	5560		17.50	
		124	5620		17.50	
		128	5640		17.50	
		132	5660		17.50	
		136	5680		17.50	
		140	5700		16.00	
		144	5720		17.50	
	802.11 n40	102	5510	HT0	15.50	
		110	5550		17.00	
		118	5590		17.00	
		126	5630		17.00	
		134	5670		15.50	
		142	5710		17.00	
	802.11 ac20	100	5500	VHT0	16.00	
		104	5520		17.50	
		108	5540		17.50	
		112	5560		17.50	
		116	5580		17.50	
		120	5560		17.50	
		124	5620		17.50	
		128	5640		17.50	
		132	5660		17.50	
		136	5680		17.50	
		140	5700		16.00	
		144	5720		17.50	
	802.11 ac40	102	5510	VHT0	15.50	
		110	5550		17.00	
		118	5590		17.00	
		126	5630		17.00	
		134	5670		15.50	
		142	5710		17.00	
	802.11 ac80	106	5530	VHT0	15.00	
		122	5610		15.00	
		138	5690		16.50	

Band	Mode	Channel	Frequency (MHz)	Data Rate	Max Tune-Up Power (dBm)	AVG Power (dBm)
5.6G WIFI _1Tx _Aux ANT	802.11 ax20	100	5500	MCS0	16.00	Not Required
		104	5520		17.50	
		108	5540		17.50	
		112	5560		17.50	
		116	5580		17.50	
		120	5560		17.50	
		124	5620		17.50	
		128	5640		17.50	
		132	5660		17.50	
		136	5680		17.50	
		140	5700		16.00	
		144	5720		17.50	
	802.11 ax40	102	5510	MCS0	15.50	
		110	5550		17.00	
		118	5590		17.00	
		126	5630		17.00	
		134	5670		15.50	
		142	5710		17.00	
	802.11 ax80	106	5530	MCS0	15.00	
		122	5610		15.00	
		138	5690		16.50	

Band	Mode	Channel	Frequency (MHz)	Data Rate	RU Setting	Max Tune-Up Power (dBm)	AVG Power (dBm)
5.6G WIFI _1Tx _Aux ANT	802.11 ax20	100	5500	MCS0	26	12.00	Not Required
					52	12.00	
					106	12.00	
					242	12.00	
		104	5520	MCS0	26	11.00	
					52	11.00	
					106	10.50	
					242	10.50	
		108	5540	MCS0	26	12.00	
					52	14.50	
					106	16.00	
					242	16.00	
		112	5560	MCS0	26	12.00	
					52	14.50	
					106	16.00	
					242	16.00	
		116	5580	MCS0	26	12.00	
					52	14.50	
					106	16.00	
					242	16.00	
		120	5600	MCS0	26	12.00	
					52	14.50	
					106	16.00	
					242	16.00	
		124	5620	MCS0	26	12.00	
					52	14.50	
					106	16.00	
					242	16.00	
		128	5640	MCS0	26	12.00	
					52	14.50	
					106	16.00	
					242	16.00	
		132	5660	MCS0	26	12.00	
					52	14.50	
					106	16.00	
					242	16.00	
		136	5680	MCS0	26	12.00	
					52	12.00	
					106	12.00	
					242	11.50	

Band	Mode	Channel	Frequency (MHz)	Data Rate	RU Setting	Max Tune-Up Power (dBm)	AVG Power (dBm)
5.6G WIFI _1Tx _Aux ANT	802.11 ax20	140	5700	MCS0	26	12.00	Not Required
					52	12.00	
					106	12.00	
					242	11.00	
	802.11 ax20	144	5720	MCS0	26	12.00	
					52	14.00	
					106	16.00	
					242	16.00	
	802.11 ax40	102	5510	MCS0	484	11.00	
		110	5550		484	15.00	
		118	5590		484	15.00	
		126	5630		484	15.00	
		134	5670		484	12.00	
		142	5710		484	16.00	
	802.11 ax80	106	5530	MCS0	996	10.50	
		122	5610	MCS0	996	13.00	
	802.11 ax160	114	5570	MCS0	1992	16.00	

Note:

1. The initial test configuration for 2.4 GHz and 5 GHz OFDM transmission modes is determined by the 802.11 configuration with the highest maximum output power specified for production units, including tune-up tolerance, in each standalone and aggregated frequency band. SAR for the initial test configuration is measured using the highest maximum output power channel determined by the default power measurement procedures. When multiple transmission modes (802.11a/g/n/ac) have the same specified maximum output power, largest channel bandwidth, lowest order modulation and lowest data rate, lowest order 802.11 mode is selected (i.e. a, g, n, ac).
2. Largest channel bandwidth is worse than lowest order modulation.

Band	Mode	Channel	Frequency (MHz)	Data Rate	ANT Main Average Power(dBm)	ANT Aux Average Power(dBm)	Max. Tune up	Total Average Power(dBm)
5.6G WIFI _2Tx _Main ANT+ Aux ANT	802.11 a	100	5500	6	15.14	15.21	18.50	18.19
		116	5580		18.34	18.24	21.50	21.30
		140	5700		15.14	14.44	18.00	17.81
		144	5720		16.96	16.74	20.00	19.86
	802.11 n20	100	5500	HE8	16.38	15.24	19.00	18.86
		116	5580		15.74	15.72	19.00	18.74
		140	5700		15.08	14.41	18.00	17.77
		144	5720		14.83	14.41	18.00	17.64
	802.11 n40	102	5510	HE8	13.94	14.12	17.50	17.04
		110	5550		15.08	15.44	18.50	18.27
		134	5670		15.34	15.21	18.50	18.29
		142	5710		16.64	14.98	18.00	18.90
	802.11 ac20	100	5500	VHT8	15.12	15.11	18.50	18.13
		116	5580		15.74	15.81	19.00	18.79
		140	5700		15.01	14.48	18.00	17.76
		144	5720		14.81	14.44	18.00	17.64
	802.11 ac40	102	5510	VHT8	13.94	14.18	17.50	17.07
		110	5550		15.04	15.44	18.50	18.25
		134	5670		15.32	15.10	18.50	18.22
		142	5710		14.65	14.98	18.00	17.83
	802.11 ac80	106	5530	VHT8	13.41	13.56	17.00	16.50
		138	5690		14.12	14.68	17.50	17.42
	802.11 ax20	100	5500	MCS8	15.12	15.18	18.50	18.16
		116	5580		15.94	15.83	19.00	18.90
		140	5700		15.12	14.48	18.00	17.82
		144	5720		14.81	14.44	18.00	17.64
	802.11 ax40	102	5510	MCS8	14.08	14.22	17.50	17.16
		110	5550		15.23	15.68	18.50	18.47
		134	5670		15.55	15.38	18.50	18.48
		142	5710		14.65	14.88	18.00	17.78
	802.11 ax80	106	5530	MCS8	13.32	13.64	17.50	16.49
		138	5690		14.21	14.68	17.50	17.46

Band	Mode	Channel	Frequency (MHz)	Data Rate	RU Setting	Main Ant Average Power (dBm)	Aux Ant Average Power (dBm)	Max. Tune-up	Total Average Power (dBm)
5.6G WIFI _2Tx _Main ANT+ Aux ANT	802.11 ax20	100	5500	MCS8	26	10.38	10.41	13.50	13.41
					52	10.58	10.84	14.00	13.72
					106	10.28	10.44	13.50	13.37
					242	10.23	10.46	13.50	13.36
		116	5580	MCS8	26	10.42	10.55	14.00	13.50
					52	12.84	13.11	16.00	15.99
					106	14.62	14.38	18.00	17.51
					242	14.58	14.31	17.50	17.46
		140	5700	MCS8	26	10.88	9.74	13.50	13.36
					52	11.30	11.64	14.50	14.48
					106	11.25	10.74	14.50	14.01
					242	10.08	9.02	13.00	12.59
		144	5720	MCS8	26	10.21	10.65	13.50	13.45
					52	12.88	12.44	16.00	15.68
					106	14.48	14.94	18.00	17.73
					242	13.14	13.68	16.50	16.43
	802.11 ax40	102	5510	MCS8	26	9.36	9.21	12.50	12.30
					52	9.58	9.41	13.00	12.51
					106	9.12	9.38	12.50	12.26
					242	9.18	9.02	12.50	12.11
		110	5550	MCS8	484	9.73	9.56	13.00	12.66
					26	10.51	10.94	14.00	13.74
					52	11.58	14.94	17.00	16.59
					106	14.41	14.56	17.50	17.50
					242	14.68	14.82	18.00	17.76
		134	5670	MCS8	484	13.08	13.64	16.50	16.38
					26	10.84	10.92	14.00	13.89
					52	11.26	10.08	14.00	13.72
					106	10.93	10.06	14.00	13.53
		142	5710	MCS8	242	10.46	9.26	13.00	12.91
					484	11.31	9.96	13.00	12.70
					26	10.48	11.56	14.50	14.06
					52	13.08	14.44	17.00	16.82
		106	5290	MCS8	106	14.58	15.09	18.00	17.85
					242	15.18	15.31	18.50	18.26
					484	15.36	15.37	18.50	18.38
		138	5690	MCS8	996	9.64	9.98	13.00	12.82
					996	12.94	12.31	16.00	15.65

8.6. CONDUCTED POWER MEASUREMENTS OF 5G UNII_3

Band	Mode	Channel	Frequency (MHz)	Data Rate	Max Tune-Up Power (dBm)	AVG Power (dBm)
5.8G WIFI _1Tx _Main _ANT	802.11a	149	5745	6	19.00	18.91
		153	5765		19.00	18.84
		157	5785		19.00	18.93
		161	5805		19.00	18.82
		165	5825		19.00	18.86
	802.11 n20	149	5745	HT0	17.50	Not Required
		153	5765		17.50	
		157	5785		17.50	
		161	5805		17.50	
		165	5825		17.50	
	802.11 n40	151	5755	HT0	17.00	
		159	5795		17.00	
	802.11 ac20	149	5745	VHT0	17.50	
		153	5765		17.50	
		157	5785		17.50	
		161	5805		17.50	
		165	5825		17.50	
	802.11 ac40	151	5755	VHT0	17.00	
		159	5795		17.00	
	802.11 ac80	155	5775	VHT0	16.50	
	802.11 ax20	149	5745	MCS0	17.50	
		153	5765		17.50	
		157	5785		17.50	
		161	5805		17.50	
		165	5825		17.50	
	802.11 ax40	151	5755	MCS0	17.00	
		159	5795		17.00	
	802.11 ax80	155	5775	MCS0	16.50	

Band	Mode	Channel	Frequency (MHz)	Data Rate	RU Setting	Max Tune-Up Power (dBm)	AVG Power (dBm)
5.8G WIFI _1Tx _Main ANT	802.11 ax20	149	5745	MCS0	26	16.00	Not Required
					52	16.00	
					106	16.00	
					242	16.00	
		153	5765	MCS0	26	16.00	
					52	16.00	
					106	16.00	
					242	16.00	
		157	5785	MCS0	26	16.00	
					52	16.00	
					106	16.00	
					242	16.00	
		161	5805	MCS0	26	16.00	
					52	16.00	
					106	16.00	
					242	16.00	
		165	5825	MCS0	26	16.00	
					52	16.00	
					106	16.00	
					242	16.00	
	802.11 ax40	151	5755	MCS0	484	16.00	
		159	5795		484	16.00	
	802.11 ax80	155	5775	MCS0	996	16.00	

Band	Mode	Channel	Frequency (MHz)	Data Rate	Max Tune-Up Power (dBm)	AVG Power (dBm)
5.8G WIFI _1Tx _Aux ANT	802.11a	149	5745	6	19.00	18.98
		153	5765		19.00	18.82
		157	5785		19.00	18.84
		161	5805		19.00	18.78
		165	5825		19.00	18.90
	802.11 n20	149	5745	HT0	17.50	Not Required
		153	5765		17.50	
		157	5785		17.50	
		161	5805		17.50	
		165	5825		17.50	
	802.11 n40	151	5755	HT0	17.00	
		159	5795		17.00	
	802.11 ac20	149	5745	VHT0	17.50	
		153	5765		17.50	
		157	5785		17.50	
		161	5805		17.50	
		165	5825		17.50	
	802.11 ac40	151	5755	VHT0	17.00	
		159	5795		17.00	
	802.11 ac80	155	5775	VHT0	16.50	
	802.11 ax20	149	5745	MCS0	17.50	
		153	5765		17.50	
		157	5785		17.50	
		161	5805		17.50	
		165	5825		17.50	
	802.11 ax40	151	5755	MCS0	17.00	
		159	5795		17.00	
	802.11 ax80	155	5775	MCS0	16.50	

Band	Mode	Channel	Frequency (MHz)	Data Rate	RU Setting	Max Tune-Up Power (dBm)	AVG Power (dBm)
5.8G WIFI _1Tx _Aux _ANT	802.11 ax20	149	5745	MCS0	26	16.00	Not Required
					52	16.00	
					106	16.00	
					242	16.00	
		153	5765	MCS0	26	16.00	
					52	16.00	
					106	16.00	
					242	16.00	
		157	5785	MCS0	26	16.00	
					52	16.00	
					106	16.00	
					242	16.00	
		161	5805	MCS0	26	16.00	
					52	16.00	
					106	16.00	
					242	16.00	
		165	5825	MCS0	26	16.00	
					52	16.00	
					106	16.00	
					242	16.00	
	802.11 ax40	151	5755	MCS0	484	16.00	
		159	5795		484	16.00	
	802.11 ax80	155	5775	MCS0	996	16.00	

Note:

1. The initial test configuration for 2.4 GHz and 5 GHz OFDM transmission modes is determined by the 802.11 configuration with the highest maximum output power specified for production units, including tune-up tolerance, in each standalone and aggregated frequency band. SAR for the initial test configuration is measured using the highest maximum output power channel determined by the default power measurement procedures. When multiple transmission modes (802.11a/g/n/ac) have the same specified maximum output power, largest channel bandwidth, lowest order modulation and lowest data rate, lowest order 802.11 mode is selected (i.e. a, g, n, ac).
2. Largest channel bandwidth is worse than lowest order modulation.

Band	Mode	Channel	Frequency (MHz)	Data Rate	ANT Main Average Power(dBm)	ANT Aux Average Power(dBm)	Max. Tune up	Total Average Power(dBm)
5.8G WIFI _2Tx _Main ANT+ Aux ANT	802.11 a	149	5745	6	18.74	18.76	22.00	21.76
		157	5785		18.65	18.71	22.00	21.69
		165	5825		18.84	18.76	22.00	21.81
	802.11 n20	149	5745	HE8	15.98	15.62	19.00	18.81
		157	5785		16.08	15.64	19.00	18.88
		165	5825		15.96	15.54	19.00	18.77
	802.11 n40	151	5755	HE8	15.12	15.14	18.50	18.14
		159	5795		15.14	15.32	18.50	18.24
	802.11 ac20	149	5745	VHT8	15.92	15.64	19.00	18.79
		157	5785		16.04	15.68	19.00	18.87
		165	5825		15.96	15.58	19.00	18.78
	802.11 ac40	151	5755	VHT8	15.18	15.42	18.50	18.31
		159	5795		15.12	15.38	18.50	18.26
	802.11 ac80	155	5775	VHT8	14.82	14.71	18.00	17.78
	802.11 ax20	149	5745	MCS8	16.08	15.76	19.00	18.93
		157	5785		16.08	15.72	19.00	18.91
		165	5825		16.05	15.74	19.00	18.91
	802.11 ax40	151	5755	MCS8	15.36	15.41	18.50	18.40
		159	5795		15.21	15.31	18.50	18.27
	802.11 ax80	155	5775	MCS8	14.91	14.82	18.00	17.88

Band	Mode	Channel	Frequency (MHz)	Data Rate	RU Setting	Main Ant Average Power (dBm)	Aux Ant Average Power (dBm)	Max. Tune-up	Total Average Power (dBm)
5.8G WIFI _2Tx _Main ANT+ Aux ANT	802.11 ax20	149	5745	MCS8	26	14.94	13.65	17.50	17.35
					52	15.08	13.81	18.00	17.50
					106	15.21	13.48	17.50	17.44
					242	15.27	13.59	18.00	17.52
		157	5785	MCS8	26	14.84	13.92	17.50	17.41
					52	14.62	13.98	17.50	17.32
					106	15.08	13.64	17.50	17.43
					242	14.98	13.86	17.50	17.47
		165	5825	MCS8	26	14.32	14.43	17.50	17.39
					52	14.72	14.18	17.50	17.47
					106	15.02	13.70	17.50	17.42
					242	14.96	13.84	17.50	17.45
	802.11 ax40	151	5755	MCS8	26	-34.41	-33.52	-30.50	-30.93
					52	15.23	13.34	17.50	17.40
					106	-31.54	-30.72	-28.00	-28.10
					242	15.31	13.45	17.50	17.49
					484	15.02	13.74	17.50	17.44
		159	5795	MCS8	26	15.22	13.53	17.50	17.47
					52	15.33	13.34	17.50	17.46
					106	15.34	13.21	17.50	17.41
					242	15.38	13.36	18.00	17.50
					484	15.29	13.41	17.50	17.46
	802.11 ax80	155	5775	MCS8	996	15.08	13.69	17.50	17.45

Note:

1. The initial test configuration for 2.4 GHz and 5 GHz OFDM transmission modes is determined by the 802.11 configuration with the highest maximum output power specified for production units, including tune-up tolerance, in each standalone and aggregated frequency band. SAR for the initial test configuration is measured using the highest maximum output power channel determined by the default power measurement procedures. When multiple transmission modes (802.11a/g/n/ac) have the same specified maximum output power, largest channel bandwidth, lowest order modulation and lowest data rate, lowest order 802.11 mode is selected (i.e. a, g, n, ac).
2. Largest channel bandwidth is worse than lowest order modulation.

8.7. CONDUCTED POWER MEASUREMENTS OF 5G UNII_4

Band	Mode	Channel	Frequency (MHz)	Data Rate	Max Tune-Up Power (dBm)	AVG Power (dBm)
5.9G WIFI _1Tx _Main ANT	802.11a	169	5845	6	14.50	14.42
		173	5865		14.50	Not Required
		177	5885		14.50	
	802.11 n20	169	5845	HT0	14.50	
		173	5865		14.50	
		177	5885		14.50	
	802.11 n40	167	5835	HT0	17.00	16.74
		175	5875		17.00	16.84
	802.11 ac20	169	5845	VHT0	14.50	Not Required
		173	5865		14.50	
		177	5885		14.50	
	802.11 ac40	167	5835	VHT0	17.00	
		175	5875		17.00	
	802.11 ac80	171	5855	VHT0	16.50	
	802.11 ax20	169	5845	MCS0	14.50	
		173	5865		14.50	
		177	5885		14.50	
	802.11 ax40	167	5835	MCS0	17.00	
		175	5875		17.00	
	802.11 ax80	171	5855	MCS0	16.50	

Band	Mode	Channel	Frequency (MHz)	Data Rate	RU Setting	Max Tune-Up Power (dBm)	AVG Power (dBm)
5.9G WIFI _1Tx _Main _ANT	802.11 ax20	169	5845	MCS0	26	7.50	Not Required
					52	10.50	
					106	13.50	
					242	16.00	
		173	5865	MCS0	26	7.50	
					52	10.50	
					106	13.50	
					242	16.00	
		177	5885	MCS0	26	7.50	
					52	10.50	
					106	13.50	
					242	16.00	
	802.11 ax40	167	5835	MCS0	484	16.00	
		175	5875		484	16.00	
	802.11 ax80	171	5855	MCS0	996	16.00	

Band	Mode	Channel	Frequency (MHz)	Data Rate	Max Tune-Up Power (dBm)	AVG Power (dBm)
5.9G WIFI _1Tx _Aux ANT	802.11a	169	5845	6	14.50	14.48
		173	5865		14.50	Not Required
		177	5885		14.50	
	802.11 n20	169	5845	HT0	14.50	
		173	5865		14.50	
		177	5885		14.50	
	802.11 n40	167	5835	HT0	17.00	16.88
		175	5875		17.00	16.91
	802.11 ac20	169	5845	VHT0	14.50	Not Required
		173	5865		14.50	
		177	5885		14.50	
	802.11 ac40	167	5835	VHT0	17.00	
		175	5875		17.00	
	802.11 ac80	171	5855	VHT0	16.50	
	802.11 ax20	169	5845	MCS0	14.50	
		173	5865		14.50	
		177	5885		14.50	
	802.11 ax40	167	5835	MCS0	17.00	
		175	5875		17.00	
	802.11 ax80	171	5855	MCS0	16.50	

Band	Mode	Channel	Frequency (MHz)	Data Rate	RU Setting	Max Tune-Up Power (dBm)	AVG Power (dBm)
5.9G WIFI _1Tx _Aux ANT	802.11 ax20	169	5845	MCS0	26	7.50	Not Required
					52	10.50	
					106	13.50	
					242	16.00	
		173	5865	MCS0	26	7.50	
					52	10.50	
					106	13.50	
					242	16.00	
		177	5885	MCS0	26	7.50	
					52	10.50	
					106	13.50	
					242	16.00	
	802.11 ax40	167	5835	MCS0	484	16.00	
		175	5875		484	16.00	
	802.11 ax80	171	5855	MCS0	996	16.00	

Band	Mode	Channel	Frequency (MHz)	Data Rate	ANT Main Average Power(dBm)	ANT Aux Average Power(dBm)	Max. Tune up	Total Average Power(dBm)
5.9G WIFI _2Tx _Main ANT+ Aux ANT	802.11 a	169	5845	6	Not Required	Not Required	Not Required	Not Required
		173	5865					
		177	5885					
	802.11 n20	169	5845	HE8				
		173	5865					
		177	5885					
	802.11 n40	167	5835	HE8				
		175	5875					
	802.11 ac20	169	5845	VHT8				
		173	5865					
		177	5885					
	802.11 ac40	167	5835	VHT8				
		175	5875					
	802.11 ac80	171	5885	VHT8				
	802.11 ax20	169	5845	MCS8				
		173	5865					
177		5885						
802.11 ax40	167	5835	MCS8					
	175	5875						
802.11 ax80	171	5885	MCS8					

Band	Mode	Channel	Frequency (MHz)	Data Rate	RU Setting	Main Ant Average Power (dBm)	Aux Ant Average Power (dBm)	Max. Tune-up	Total Average Power (dBm)
5.9G WIFI _2Tx _Main _ANT+ Aux ANT	802.11 ax20	169	5845	MCS8	26	Not Required	Not Required	Not Required	Not Required
					52				
					106				
					242				
		173	5865	MCS8	26				
					52				
					106				
					242				
		177	5885	MCS8	26				
					52				
					106				
					242				
	802.11 ax40	167	5835	MCS8	26				
					52				
					106				
					242				
		175	5875	MCS8	484				
					26				
					52				
					106				
					242				
					484				
	802.11 ax80	171	5885	MCS8	996				

Note:

- The initial test configuration for 2.4 GHz and 5 GHz OFDM transmission modes is determined by the 802.11 configuration with the highest maximum output power specified for production units, including tune-up tolerance, in each standalone and aggregated frequency band. SAR for the initial test configuration is measured using the highest maximum output power channel determined by the default power measurement procedures. When multiple transmission modes (802.11a/g/n/ac) have the same specified maximum output power, largest channel bandwidth, lowest order modulation and lowest data rate, lowest order 802.11 mode is selected (i.e. a, g, n, ac).
- Largest channel bandwidth is worse than lowest order modulation.

8.8. CONDUCTED POWER MEASUREMENTS OF 6E UNII_5

Band	Mode	Channel	Frequency (MHz)	Data Rate (Mbps)	Max. Tune-up	Average Power (dBm)
6E(UNII-5)_1TX_Main Ant	802.11a	1	5955	6	1.50	No Required
		5	5975		1.50	
		9	5995		1.50	
		13	6015		1.50	
		17	6035		1.50	
		21	6055		1.50	
		25	6075		1.50	
		29	6095		1.50	
		33	6115		1.50	
		37	6135		1.50	
		41	6155		1.50	
		45	6175		1.50	
		49	6195		1.50	
		53	6215		1.50	
		57	6235		1.50	
		61	6255		1.50	
		65	6275		1.50	
		69	6295		1.50	
		73	6315		1.50	
		77	6335		1.50	
		81	6355		1.50	
		85	6375		1.50	
		89	6395		1.50	
		93	6415		1.50	
	802.11ax HE20	1	5955	MCS0	2.50	
		5	5975		2.50	
		9	5995		2.50	
		13	6015		2.50	
		17	6035		2.50	
		21	6055		2.50	
		25	6075		2.50	
		29	6095		2.50	
		33	6115		2.50	
		37	6135		2.50	
		41	6155		2.50	
		45	6175		2.50	
		49	6195		2.50	
		53	6215		2.50	
		57	6235		2.50	
		61	6255		2.50	
		65	6275		2.50	
		69	6295		2.50	
		73	6315		2.50	
		77	6335		2.50	
		81	6355		2.50	
		85	6375		2.50	
		89	6395		2.50	
		93	6415		2.50	

Band	Mode	Channel	Frequency (MHz)	Data Rate (Mbps)	Max. Tune-up	Average Power (dBm)
6E(UNII-5)_ 1TX_ Main Ant	802.11ax HE40	3	5965	MCS0	5.50	No Required
		11	6005		5.50	
		19	6045		5.50	
		27	6085		5.50	
		35	6125		5.50	
		43	6165		5.50	
		51	6205		5.50	
		59	6245		5.50	
		67	6285		5.50	
		75	6325		5.50	
		83	6365		5.50	
		91	6405		5.50	
	802.11ax HE80	7	5985	MCS0	8.50	
		23	6065		8.50	
		39	6145		8.50	
		55	6225		8.50	
		71	6305		8.50	
		87	6385		8.50	
	802.11ax HE160	15	6025	MCS0	9.00	
		47	6185		9.00	
		79	6345		9.00	

Band	Mode	Channel	Frequency (MHz)	Data Rate (Mbps)	RU Setting	Max. Tune-up	Average Power(dBm)
6E(UNII-5)_ 1TX_ Main Ant	802.11ax HE20	1	5955	MCS0	26	-5.50	No Required
					52	-2.50	
					106	0.50	
					242	3.50	
		5	5975		26	-5.50	
					52	-2.50	
					106	0.50	
					242	3.50	
		9	5995		26	-5.50	
					52	-2.50	
					106	0.50	
					242	3.50	
		13	6015		26	-5.50	
					52	-2.50	
					106	0.50	
					242	3.50	
		17	6035		26	-5.50	
					52	-2.50	
					106	0.50	
					242	3.50	
		21	6055		26	-5.50	
					52	-2.50	
					106	0.50	
					242	3.50	
		25	6075		26	-5.50	
					52	-2.50	
					106	0.50	
					242	3.50	
		29	6095		26	-5.50	
					52	-2.50	
					106	0.50	
					242	3.50	
		33	6115		26	-5.50	
					52	-2.50	
					106	0.50	
					242	3.50	
		37	6135		26	-5.50	
					52	-2.50	
					106	0.50	
					242	3.50	
		41	6155		26	-5.50	
					52	-2.50	
					106	0.50	
					242	3.50	

Band	Mode	Channel	Frequency (MHz)	Data Rate (Mbps)	RU Setting	Max. Tune-up	Average Power(dBm)
6E(UNII-5)_ 1TX_ Main Ant	802.11ax HE20	45	6175	MCS0	26	-5.50	No Required
					52	-2.50	
					106	0.50	
					242	3.50	
		49	6195		26	-5.50	
					52	-2.50	
					106	0.50	
					242	3.50	
		53	6215		26	-5.50	
					52	-2.50	
					106	0.50	
					242	3.50	
		57	6235		26	-5.50	
					52	-2.50	
					106	0.50	
					242	3.50	
		61	6255		26	-5.50	
					52	-2.50	
					106	0.50	
					242	3.50	
		65	6275		26	-5.50	
					52	-2.50	
					106	0.50	
					242	3.50	
		69	6295		26	-5.50	
					52	-2.50	
					106	0.50	
					242	3.50	
		73	6315		26	-5.50	
					52	-2.50	
					106	0.50	
					242	3.50	
		77	6335		26	-5.50	
					52	-2.50	
					106	0.50	
					242	3.50	
		81	6355		26	-5.50	
					52	-2.50	
					106	0.50	
					242	3.50	
		85	6375		26	-5.50	
					52	-2.50	
					106	0.50	
					242	3.50	
		89	6395		26	-5.50	
					52	-2.50	
					106	0.50	
					242	3.50	

Band	Mode	Channel	Frequency (MHz)	Data Rate (Mbps)	RU Setting	Max. Tune-up	Average Power(dBm)
6E(UNII-5)_ 1TX_ Main Ant	802.11ax HE20	93	6415	MCS0	26	-5.50	No Required
					52	-2.50	
					106	0.50	
					242	3.50	
	802.11ax HE40	3	5965		26	-5.50	
					52	-2.50	
					106	0.50	
					242	3.50	
		11	6005		484	6.50	
					26	-5.50	
					52	-2.50	
					106	0.50	
		19	6045		242	3.50	
					484	6.50	
					26	-5.50	
					52	-2.50	
		27	6085		106	0.50	
					242	3.50	
					484	6.50	
					26	-5.50	
		35	6125		52	-2.50	
					106	0.50	
					242	3.50	
					484	6.50	
		43	6165		26	-5.50	
					52	-2.50	
					106	0.50	
					242	3.50	
		51	6205		484	6.50	
					26	-5.50	
					52	-2.50	
					106	0.50	
		59	6245		242	3.50	
					484	6.50	
					26	-5.50	
					52	-2.50	
		67	6285		106	0.50	
					242	3.50	
					484	6.50	
					26	-5.50	

Band	Mode	Channel	Frequency (MHz)	Data Rate (Mbps)	RU Setting	Max. Tune-up	Average Power(dBm)
6E(UNII-5)_ 1TX_ Main Ant	802.11ax HE40	75	6325	MCS0	26	-5.50	No Required
					52	-2.50	
					106	0.50	
					242	3.50	
					484	6.50	
		83	6365		26	-5.50	
					52	-2.50	
					106	0.50	
					242	3.50	
					484	6.50	
		91	6405		26	-5.50	
					52	-2.50	
					106	0.50	
					242	3.50	
					484	6.50	
	802.11ax HE80	7	5985	MCS0	26	-5.50	
					52	-2.50	
					106	0.50	
					242	3.50	
					484	6.50	
					996	9.50	
		23	6065		26	-5.50	
					52	-2.50	
					106	0.50	
					242	3.50	
					484	6.50	
					996	9.50	
		39	6145		26	-5.50	
					52	-2.50	
					106	0.50	
					242	3.50	
					484	6.50	
					996	9.50	
		55	6225		26	-5.50	
					52	-2.50	
					106	0.50	
					242	3.50	
					484	6.50	
					996	9.50	
		71	6305		26	-5.50	
					52	-2.50	
					106	0.50	
					242	3.50	
					484	6.50	
					996	9.50	
		87	6385		26	-5.50	
					52	-2.50	
					106	0.50	
					242	3.50	
					484	6.50	
					996	9.50	

Band	Mode	Channel	Frequency (MHz)	Data Rate (Mbps)	RU Setting	Max. Tune-up	Average Power(dBm)
6E(UNII-5)_ 1TX_ Main Ant	802.11ax HE160	15	6025	MCS0	26	-5.50	No Required
					52	-2.50	
					106	0.50	
					242	3.50	
					484	6.50	
					996	9.50	
					1992	12.00	11.92
		47	6185		26	-5.50	No Required
					52	-2.50	
					106	0.50	
					242	3.50	
					484	6.50	
					996	9.50	
					1992	12.00	11.96
		79	6345		26	-5.50	No Required
					52	-2.50	
					106	0.50	
					242	3.50	
					484	6.50	
					996	9.50	
					1992	12.00	11.94

Band	Mode	Channel	Frequency (MHz)	Data Rate (Mbps)	Max. Tune-up	Average Power (dBm)
6E(UNII-5) 1TX Aux Ant	802.11a	1	5955	6	1.50	No Required
		5	5975		1.50	
		9	5995		1.50	
		13	6015		1.50	
		17	6035		1.50	
		21	6055		1.50	
		25	6075		1.50	
		29	6095		1.50	
		33	6115		1.50	
		37	6135		1.50	
		41	6155		1.50	
		45	6175		1.50	
		49	6195		1.50	
		53	6215		1.50	
		57	6235		1.50	
		61	6255		1.50	
		65	6275		1.50	
		69	6295		1.50	
		73	6315		1.50	
		77	6335		1.50	
		81	6355		1.50	
		85	6375		1.50	
		89	6395		1.50	
		93	6415		1.50	
	802.11ax HE20	1	5955	MCS0	2.50	
		5	5975		2.50	
		9	5995		2.50	
		13	6015		2.50	
		17	6035		2.50	
		21	6055		2.50	
		25	6075		2.50	
		29	6095		2.50	
		33	6115		2.50	
		37	6135		2.50	
		41	6155		2.50	
		45	6175		2.50	
		49	6195		2.50	
		53	6215		2.50	
		57	6235		2.50	
		61	6255		2.50	
		65	6275		2.50	
		69	6295		2.50	
		73	6315		2.50	
		77	6335		2.50	
		81	6355		2.50	
		85	6375		2.50	
		89	6395		2.50	
		93	6415		2.50	

Band	Mode	Channel	Frequency (MHz)	Data Rate (Mbps)	Max. Tune-up	Average Power (dBm)
6E(UNII-5)_ 1TX_ Aux Ant	802.11ax HE40	3	5965	MCS0	5.50	No Required
		11	6005		5.50	
		19	6045		5.50	
		27	6085		5.50	
		35	6125		5.50	
		43	6165		5.50	
		51	6205		5.50	
		59	6245		5.50	
		67	6285		5.50	
		75	6325		5.50	
		83	6365		5.50	
		91	6405		5.50	
	802.11ax HE80	7	5985	MCS0	8.50	
		23	6065		8.50	
		39	6145		8.50	
		55	6225		8.50	
		71	6305		8.50	
		87	6385		8.50	
	802.11ax HE160	15	6025	MCS0	9.00	
		47	6185		9.00	
		79	6345		9.00	

Band	Mode	Channel	Frequency (MHz)	Data Rate (Mbps)	RU Setting	Max. Tune-up	Average Power(dBm)
6E(UNII-5)_ 1TX_ Aux Ant	802.11ax HE20	1	5955	MCS0	26	-5.50	No Required
					52	-2.50	
					106	0.50	
					242	3.50	
		5	5975		26	-5.50	
					52	-2.50	
					106	0.50	
					242	3.50	
		9	5995		26	-5.50	
					52	-2.50	
					106	0.50	
					242	3.50	
		13	6015		26	-5.50	
					52	-2.50	
					106	0.50	
					242	3.50	
		17	6035		26	-5.50	
					52	-2.50	
					106	0.50	
					242	3.50	
		21	6055		26	-5.50	
					52	-2.50	
					106	0.50	
					242	3.50	
		25	6075		26	-5.50	
					52	-2.50	
					106	0.50	
					242	3.50	
		29	6095		26	-5.50	
					52	-2.50	
					106	0.50	
					242	3.50	
		33	6115		26	-5.50	
					52	-2.50	
					106	0.50	
					242	3.50	
		37	6135		26	-5.50	
					52	-2.50	
					106	0.50	
					242	3.50	
		41	6155		26	-5.50	
					52	-2.50	
					106	0.50	
					242	3.50	
		45	6175		26	-5.50	
					52	-2.50	
					106	0.50	
					242	3.50	

Band	Mode	Channel	Frequency (MHz)	Data Rate (Mbps)	RU Setting	Max. Tune-up	Average Power(dBm)
6E(UNII-5)_ 1TX_ Aux Ant	802.11ax HE20	49	6195	MCS0	26	-5.50	No Required
					52	-2.50	
					106	0.50	
					242	3.50	
		53	6215		26	-5.50	
					52	-2.50	
					106	0.50	
					242	3.50	
		57	6235		26	-5.50	
					52	-2.50	
					106	0.50	
					242	3.50	
		61	6255		26	-5.50	
					52	-2.50	
					106	0.50	
					242	3.50	
		65	6275		26	-5.50	
					52	-2.50	
					106	0.50	
					242	3.50	
		69	6295		26	-5.50	
					52	-2.50	
					106	0.50	
					242	3.50	
		73	6315		26	-5.50	
					52	-2.50	
					106	0.50	
					242	3.50	
		77	6335		26	-5.50	
					52	-2.50	
					106	0.50	
					242	3.50	
		81	6355		26	-5.50	
					52	-2.50	
					106	0.50	
					242	3.50	
		85	6375		26	-5.50	
					52	-2.50	
					106	0.50	
					242	3.50	
		89	6395		26	-5.50	
					52	-2.50	
					106	0.50	
					242	3.50	
		93	6415		26	-5.50	
					52	-2.50	
					106	0.50	
					242	3.50	

Band	Mode	Channel	Frequency (MHz)	Data Rate (Mbps)	RU Setting	Max. Tune-up	Average Power(dBm)
6E(UNII-5)_ 1TX_ Aux Ant	802.11ax HE40	3	5965	MCS0	26	-5.50	No Required
					52	-2.50	
					106	0.50	
					242	3.50	
					484	6.50	
		11	6005		26	-5.50	
					52	-2.50	
					106	0.50	
					242	3.50	
					484	6.50	
		19	6045		26	-5.50	
					52	-2.50	
					106	0.50	
					242	3.50	
					484	6.50	
		27	6085		26	-5.50	
					52	-2.50	
					106	0.50	
					242	3.50	
					484	6.50	
		35	6125		26	-5.50	
					52	-2.50	
					106	0.50	
					242	3.50	
					484	6.50	
		43	6165		26	-5.50	
					52	-2.50	
					106	0.50	
					242	3.50	
					484	6.50	
		51	6205		26	-5.50	
					52	-2.50	
					106	0.50	
					242	3.50	
					484	6.50	
		59	6245		26	-5.50	
					52	-2.50	
					106	0.50	
					242	3.50	
					484	6.50	
		67	6285		26	-5.50	
					52	-2.50	
					106	0.50	
					242	3.50	
					484	6.50	
		75	6325		26	-5.50	
					52	-2.50	
					106	0.50	
					242	3.50	
					484	6.50	

Band	Mode	Channel	Frequency (MHz)	Data Rate (Mbps)	RU Setting	Max. Tune-up	Average Power(dBm)
6E(UNII-5)_ 1TX_ Aux Ant	802.11ax HE40	83	6365	MCS0	26	-5.50	No Required
					52	-2.50	
					106	0.50	
					242	3.50	
					484	6.50	
		91	6405		26	-5.50	
					52	-2.50	
					106	0.50	
					242	3.50	
					484	6.50	
	802.11ax HE80	7	5985	MCS0	26	-5.50	
					52	-2.50	
					106	0.50	
					242	3.50	
					484	6.50	
					996	9.50	
		23	6065		26	-5.50	
					52	-2.50	
					106	0.50	
					242	3.50	
					484	6.50	
					996	9.50	
		39	6145		26	-5.50	
					52	-2.50	
					106	0.50	
					242	3.50	
					484	6.50	
					996	9.50	
		55	6225		26	-5.50	
					52	-2.50	
					106	0.50	
					242	3.50	
					484	6.50	
					996	9.50	
		71	6305		26	-5.50	
52					-2.50		
106					0.50		
242					3.50		
484					6.50		
996					9.50		
87	6385	26	-5.50				
		52	-2.50				
		106	0.50				
		242	3.50				
		484	6.50				
		996	9.50				

Band	Mode	Channel	Frequency (MHz)	Data Rate (Mbps)	RU Setting	Max. Tune-up	Average Power(dBm)
6E(UNII-5)_ 1TX_ Aux Ant	802.11ax HE160	15	6025	MCS0	26	-5.50	No Required
					52	-2.50	
					106	0.50	
					242	3.50	
					484	6.50	
					996	9.50	
					1992	12.00	11.90
		47	6185		26	-5.50	No Required
					52	-2.50	
					106	0.50	
					242	3.50	
					484	6.50	
					996	9.50	
					1992	12.00	11.91
		79	6345		26	-5.50	No Required
					52	-2.50	
					106	0.50	
					242	3.50	
					484	6.50	
					996	9.50	
					1992	12.00	11.89

Band	Mode	Channel	Frequency (MHz)	Data Rate	ANT Main Average Power(dBm)	ANT Aux Average Power(dBm)	Max. Tune up	Total Average Power(dBm)
6.2G WIFI _2Tx _Main ANT+ Aux ANT	802.11 a	1	5955	6	-0.73	-1.04	2.50	2.13
		45	6175		-0.72	-1.42	2.00	1.95
		93	6415		-0.34	-0.12	3.00	2.78
	802.11 ax20	1	5955	MCS8	0.34	0.46	4.00	3.41
		45	6175		-0.18	-0.64	3.00	2.61
		93	6415		0.48	0.44	4.00	3.47
	802.11 ax40	3	5965	MCS8	2.64	2.41	6.00	5.54
		43	6165		3.74	3.42	7.00	6.59
		91	6405		3.84	3.66	7.00	6.76
	802.11 ax80	7	5985	MCS8	5.96	5.43	9.00	8.71
		39	6145		6.38	5.52	9.00	8.98
		87	6385		6.45	5.72	9.50	9.11
	802.11 ax160	15	6025	MCS8	7.43	7.78	11.00	10.62
		47	6185		7.68	7.18	10.50	10.45
		79	6345		8.24	6.89	11.00	10.63

Band	Mode	Channel	Frequency (MHz)	Data Rate	RU Setting	Main Ant Average Power (dBm)	Aux Ant Average Power (dBm)	Max. Tune-up	Total Average Power (dBm)
6.2G WIFI _2Tx _Main ANT+ Aux ANT	802.11 ax20	1	5955	MCS8	26	-15.08	-15.84	-12.00	-12.43
					52	-2.75	-6.45	-1.00	-1.21
					106	-0.52	-3.74	1.50	1.17
					242	2.14	2.09	5.50	5.13
		45	6175	MCS8	26	-6.34	-6.84	-3.50	-3.57
					52	-4.33	-4.56	-1.00	1.43
					106	-0.18	-2.04	2.00	2.00
					242	2.15	1.58	5.00	4.88
		93	6415	MCS8	26	-7.06	-7.45	-4.00	-4.24
					52	-4.56	-4.44	1.50	-1.49
					106	-1.45	-1.76	1.50	1.41
					242	2.34	1.68	5.50	5.03
	802.11 ax40	3	5965	MCS8	26	-6.84	-7.12	-3.50	-3.97
					52	-3.38	-4.42	-1.00	-0.86
					106	-1.05	-1.22	2.00	1.88
					242	2.64	2.48	6.00	5.57
		43	6165	MCS8	484	5.26	4.68	8.00	7.99
					26	-6.82	-7.24	-4.00	-4.01
					52	-4.41	-4.54	-1.00	-1.46
					106	-0.34	-2.38	2.00	1.77
					242	2.38	1.94	5.50	5.18
		91	6405	MCS8	484	5.08	4.62	8.00	7.87
					26	-7.05	-6.84	-3.50	-3.93
					52	-4.13	-3.68	-0.50	-0.89
					106	-0.64	-1.38	2.50	2.02
					242	2.64	2.08	5.50	5.38
		7	5985	MCS8	484	5.12	4.56	8.00	7.36
					996	8.19	8.04	11.50	11.13
					996	7.44	7.46	10.50	10.46
					996	8.12	7.94	11.50	11.04
	802.11 ax160	15	6025	MCS8	1992	10.12	10.18	13.50	13.16
		47	6185		1992	10.28	10.05	13.50	13.18
		79	6345		1992	11.08	10.25	14.00	13.70

8.9. CONDUCTED POWER MEASUREMENTS OF 6E UNII_6

Band	Mode	Channel	Frequency (MHz)	Data Rate (Mbps)	Max. Tune-up	Average Power (dBm)
6E(UNII-6)_ 1TX_ Main Ant	802.11a	97	6435	6	1.50	No Required
		101	6455		1.50	
		105	6475		1.50	
		109	6495		1.50	
		113	6515		1.50	
	802.11ax HE20	97	6435	MCS0	2.50	
		101	6455		2.50	
		105	6475		2.50	
		109	6495		2.50	
		113	6515		2.50	
	802.11ax HE40	99	6445	MCS0	5.50	
		107	6485		5.50	
		115	6525		5.50	
	802.11ax HE80	103	6465	MCS0	8.50	
		119	6545		8.50	
	802.11ax HE160	111	6505	MCS0	9.00	

Band	Mode	Channel	Frequency (MHz)	Data Rate (Mbps)	RU Setting	Max. Tune-up	Average Power(dBm)		
6E(UNII-6) 1TX_Main Ant	802.11ax HE20	97	6435	MCS0	26	-5.50	No Required		
					52	-2.50			
					106	0.50			
					242	3.50			
		101	6455		26	-5.50			
					52	-2.50			
					106	0.50			
					242	3.50			
		105	6475		26	-5.50			
					52	-2.50			
					106	0.50			
					242	3.50			
		109	6495		26	-5.50			
					52	-2.50			
					106	0.50			
					242	3.50			
		113	6515		26	-5.50			
					52	-2.50			
					106	0.50			
					242	3.50			
	802.11ax HE40	99	6445	MCS0	26	-5.50			
					52	-2.50			
					106	0.50			
					242	3.50			
		107	6485		484	6.50			
					26	-5.50			
					52	-2.50			
					106	0.50			
		115	6525		242	3.50			
					484	6.50			
					26	-5.50			
					52	-2.50			
		802.11ax HE80	103		6465	MCS0		106	0.50
								242	3.50
								484	6.50
							996	9.50	
	119		6545	9.43					
				26	-5.50				
				52	-2.50				
				106	0.50				
					242	3.50			
					484	6.50			
					996	9.50			
					9.46				

Band	Mode	Channel	Frequency (MHz)	Data Rate (Mbps)	RU Setting	Max. Tune-up	Average Power(dBm)
6E(UNII-6)_ 1TX_Main Ant	802.11ax HE160	111	6505	MCS0	26	-5.50	No Required
					52	-2.50	
					106	0.50	
					242	3.50	
					484	6.50	
					996	9.50	
					1992	12.00	11.84

Band	Mode	Channel	Frequency (MHz)	Data Rate (Mbps)	Max. Tune-up	Average Power (dBm)
6E(UNII-6)_ 1TX_ Aux Ant	802.11a	97	6435	6	1.50	No Required
		101	6455		1.50	
		105	6475		1.50	
		109	6495		1.50	
		113	6515		1.50	
	802.11ax HE20	97	6435	MCS0	2.50	
		101	6455		2.50	
		105	6475		2.50	
		109	6495		2.50	
		113	6515		2.50	
	802.11ax HE40	99	6445	MCS0	5.50	
		107	6485		5.50	
		115	6525		5.50	
	802.11ax HE80	103	6465	MCS0	8.50	
		119	6545		8.50	
	802.11ax HE160	111	6505	MCS0	9.00	

Band	Mode	Channel	Frequency (MHz)	Data Rate (Mbps)	RU Setting	Max. Tune-up	Average Power(dBm)		
6E(UNII-6) 1TX_Aux Ant	802.11ax HE20	97	6435	MCS0	26	-5.50	No Required		
					52	-2.50			
					106	0.50			
					242	3.50			
		101	6455		26	-5.50			
					52	-2.50			
					106	0.50			
					242	3.50			
		105	6475		26	-5.50			
					52	-2.50			
					106	0.50			
					242	3.50			
		109	6495		26	-5.50			
					52	-2.50			
					106	0.50			
					242	3.50			
		113	6515		26	-5.50			
					52	-2.50			
					106	0.50			
					242	3.50			
	802.11ax HE40	99	6445	MCS0	26	-5.50			
					52	-2.50			
					106	0.50			
					242	3.50			
		107	6485		484	6.50			
					26	-5.50			
					52	-2.50			
					106	0.50			
		115	6525		242	3.50			
					484	6.50			
					26	-5.50			
					52	-2.50			
		802.11ax HE80	103		6465	MCS0		106	0.50
								242	3.50
								484	6.50
							996	9.50	
	119		6545	9.40					
				26	-5.50				
				52	-2.50				
				106	0.50				
					242	3.50			
					484	6.50			
					996	9.50			
					9.48				

Band	Mode	Channel	Frequency (MHz)	Data Rate (Mbps)	RU Setting	Max. Tune-up	Average Power(dBm)
6E(UNII-6)_ 1TX_Aux Ant	802.11ax HE160	111	6505	MCS0	26	-5.50	No Required
					52	-2.50	
					106	0.50	
					242	3.50	
					484	6.50	
					996	9.50	
					1992	12.00	11.85

Band	Mode	Channel	Frequency (MHz)	Data Rate	ANT Main Average Power(dBm)	ANT Aux Average Power(dBm)	Max. Tune up	Total Average Power(dBm)
6.5G WIFI _2Tx _Main ANT+ Aux ANT	802.11 a	97	6435	6	-0.38	-0.12	3.00	2.76
		105	6475		-0.58	-1.46	2.50	2.01
		113	6515		-0.56	-1.68	2.00	1.93
	802.11 ax20	97	6435	MCS8	0.28	0.45	3.50	3.38
		105	6475		1.69	0.38	4.50	4.09
		113	6515		1.56	0.24	4.00	3.96
	802.11 ax40	99	6445	MCS8	4.38	3.94	7.50	7.18
		107	6485		4.21	4.18	7.50	7.21
		115	6525		4.14	3.94	7.50	7.05
	802.11 ax80	103	6465	MCS8	7.56	6.38	10.00	10.02
		119	6545		6.48	6.12	9.50	9.31
	802.11 ax160	111	6505	MCS8	7.56	7.58	11.00	10.58

Band	Mode	Channel	Frequency (MHz)	Data Rate	RU Setting	Main Ant Average Power (dBm)	Aux Ant Average Power (dBm)	Max. Tune-up	Total Average Power (dBm)
6.5G WIFI _2Tx _Main ANT+ Aux ANT	802.11 ax20	97	6435	MCS8	26	-7.21	-7.38	-4.00	-4.28
					52	-4.28	-5.14	-1.00	-1.68
					106	-1.33	-1.78	1.50	1.46
					242	2.56	2.34	5.50	5.46
		105	6475	MCS8	26	-6.08	-6.64	-3.00	-3.34
					52	-4.15	-4.48	-1.00	-1.30
					106	-0.48	-2.26	2.00	1.73
					242	3.36	2.08	5.50	5.78
		113	6515	MCS8	26	-6.31	-7.44	-3.50	-3.83
					52	-4.08	-4.98	-1.00	-1.50
					106	-0.28	-2.54	2.00	1.75
					242	2.98	0.84	5.50	5.05
	802.11 ax40	99	6445	MCS8	26	-6.34	-7.41	-3.50	-3.83
					52	-3.84	-4.41	-1.00	-1.11
					106	-0.38	-2.05	2.00	1.88
					242	2.88	1.76	5.50	5.37
					484	5.38	4.21	8.00	7.84
		107	6485	MCS8	26	-6.56	-7.81	-4.00	-4.13
					52	-3.74	-4.42	-1.00	-1.06
					106	-0.65	-2.34	2.00	1.60
					242	3.16	2.18	6.00	5.71
					484	5.46	4.12	8.00	7.85
		115	6525	MCS8	26	-7.34	-7.08	-4.00	-4.20
					52	-4.88	-4.21	-1.50	-1.52
					106	-0.54	-1.96	2.00	1.82
					242	2.81	2.06	5.00	5.46
					484	4.55	4.09	7.50	7.34
	802.11 ax80	103	6465	MCS8	996	8.67	7.14	11.00	10.98
		119	6545		996	8.34	7.29	11.00	10.86
	802.11 ax160	111	6505	MCS8	1992	10.64	10.77	14.00	13.72

8.10. CONDUCTED POWER MEASUREMENTS OF 6E UNII_7

Band	Mode	Channel	Frequency (MHz)	Data Rate (Mbps)	Max. Tune-up	Average Power (dBm)
6E(UNII-7)_ 1TX Main Ant	802.11a	117	6535	6	1.50	No Required
		121	6555		1.50	
		125	6575		1.50	
		129	6595		1.50	
		133	6615		1.50	
		137	6635		1.50	
		141	6655		1.50	
		145	6675		1.50	
		149	6695		1.50	
		153	6715		1.50	
		157	6735		1.50	
		161	6755		1.50	
		165	6775		1.50	
		169	6795		1.50	
		173	6815		1.50	
		177	6835		1.50	
		181	6855		1.50	
	802.11ax HE20	117	6535	MCS0	2.50	
		121	6555		2.50	
		125	6575		2.50	
		129	6595		2.50	
		133	6615		2.50	
		137	6635		2.50	
		141	6655		2.50	
		145	6675		2.50	
		149	6695		2.50	
		153	6715		2.50	
		157	6735		2.50	
		161	6755		2.50	
		165	6775		2.50	
		169	6795		2.50	
		173	6815		2.50	
		177	6835		2.50	
		181	6855		2.50	
	802.11ax HE40	123	6565	MCS0	5.50	
		131	6605		5.50	
		139	6645		5.50	
		147	6685		5.50	
		155	6725		5.50	
		163	6765		5.50	
		171	6805		5.50	
		179	6845		5.50	
	802.11ax HE80	135	6625	MCS0	8.50	
		151	6705		8.50	
		167	6785		8.50	
	802.11ax HE160	143	6665	MCS0	9.00	
		175	6825		9.00	

Band	Mode	Channel	Frequency (MHz)	Data Rate (Mbps)	RU Setting	Max. Tune-up	Average Power (dBm)
6E(UNII-7)_ 1TX_ Main Ant	802.11ax HE20	117	6535	MCS0	26	-5.50	No Required
					52	-2.50	
					106	0.50	
					242	3.50	
		121	6555		26	-5.50	
					52	-2.50	
					106	0.50	
					242	3.50	
		125	6575		26	-5.50	
					52	-2.50	
					106	0.50	
					242	3.50	
		129	6595		26	-5.50	
					52	-2.50	
					106	0.50	
					242	3.50	
		133	6615		26	-5.50	
					52	-2.50	
					106	0.50	
					242	3.50	
		137	6635		26	-5.50	
					52	-2.50	
					106	0.50	
					242	3.50	
		141	6655		26	-5.50	
					52	-2.50	
					106	0.50	
					242	3.50	
		145	6675		26	-5.50	
					52	-2.50	
					106	0.50	
					242	3.50	
		149	6695		26	-5.50	
					52	-2.50	
					106	0.50	
					242	3.50	
		153	6715		26	-5.50	
					52	-2.50	
					106	0.50	
					242	3.50	
		157	6735		26	-5.50	
					52	-2.50	
					106	0.50	
					242	3.50	
		161	6755		26	-5.50	
					52	-2.50	
					106	0.50	
					242	3.50	

Band	Mode	Channel	Frequency (MHz)	Data Rate (Mbps)	RU Setting	Max. Tune-up	Average Power (dBm)
6E(UNII-7)_ 1TX_ Main Ant	802.11ax HE20	165	6775	MCS0	26	-5.50	No Required
					52	-2.50	
					106	0.50	
					242	3.50	
		169	6795		26	-5.50	
					52	-2.50	
					106	0.50	
					242	3.50	
		173	6815		26	-5.50	
					52	-2.50	
					106	0.50	
					242	3.50	
		177	6835		26	-5.50	
					52	-2.50	
					106	0.50	
					242	3.50	
		181	6855		26	-5.50	
					52	-2.50	
					106	0.50	
					242	3.50	
	802.11ax HE40	123	6565	MCS0	26	-5.50	
					52	-2.50	
					106	0.50	
					242	3.50	
		131	6605		484	6.50	
					26	-5.50	
					52	-2.50	
					106	0.50	
		139	6645		242	3.50	
					484	6.50	
					26	-5.50	
					52	-2.50	
		147	6685		106	0.50	
					242	3.50	
					484	6.50	
					26	-5.50	
		155	6725		52	-2.50	
					106	0.50	
					242	3.50	
					484	6.50	
		163	6765		26	-5.50	
					52	-2.50	
					106	0.50	
					242	3.50	
					484	6.50	

Band	Mode	Channel	Frequency (MHz)	Data Rate (Mbps)	RU Setting	Max. Tune-up	Average Power (dBm)
6E(UNII-7)_ 1TX_ Main Ant	802.11ax HE40	171	6805	MCS0	26	-5.50	No Required
					52	-2.50	
					106	0.50	
					242	3.50	
					484	6.50	
		179	6845		26	-5.50	
					52	-2.50	
					106	0.50	
					242	3.50	
					484	6.50	
	802.11ax HE80	135	6625	MCS0	26	-5.50	9.46
					52	-2.50	
					106	0.50	
					242	3.50	
					484	6.50	
					996	9.50	
		151	6705		26	-5.50	No Required
					52	-2.50	
					106	0.50	
					242	3.50	
					484	6.50	
					996	9.50	
		167	6785		26	-5.50	
					52	-2.50	
					106	0.50	
					242	3.50	
					484	6.50	
					996	9.50	
	802.11ax HE160	143	6665	MCS0	26	-5.50	11.98
					52	-2.50	
					106	0.50	
					242	3.50	
					484	6.50	
					996	9.50	
					1992	12.00	
		175	6825		26	-5.50	No Required
					52	-2.50	
					106	0.50	
					242	3.50	
					484	6.50	
					996	9.50	
					1992	12.00	11.92

Band	Mode	Channel	Frequency (MHz)	Data Rate (Mbps)	Max. Tune-up	Average Power (dBm)
6E(UNII-7) 1TX Aux Ant	802.11a	117	6535	6	1.50	No Required
		121	6555		1.50	
		125	6575		1.50	
		129	6595		1.50	
		133	6615		1.50	
		137	6635		1.50	
		141	6655		1.50	
		145	6675		1.50	
		149	6695		1.50	
		153	6715		1.50	
		157	6735		1.50	
		161	6755		1.50	
		165	6775		1.50	
		169	6795		1.50	
		173	6815		1.50	
		177	6835		1.50	
		181	6855		1.50	
	802.11ax HE20	117	6535	MCS0	2.50	
		121	6555		2.50	
		125	6575		2.50	
		129	6595		2.50	
		133	6615		2.50	
		137	6635		2.50	
		141	6655		2.50	
		145	6675		2.50	
		149	6695		2.50	
		153	6715		2.50	
		157	6735		2.50	
		161	6755		2.50	
		165	6775		2.50	
		169	6795		2.50	
		173	6815		2.50	
		177	6835		2.50	
		181	6855		2.50	
	802.11ax HE40	123	6565	MCS0	5.50	
		131	6605		5.50	
		139	6645		5.50	
		147	6685		5.50	
		155	6725		5.50	
		163	6765		5.50	
		171	6805		5.50	
		179	6845		5.50	
	802.11ax HE80	135	6625	MCS0	8.50	
		151	6705		8.50	
		167	6785		8.50	
	802.11ax HE160	143	6665	MCS0	9.00	
		175	6825		9.00	

Band	Mode	Channel	Frequency (MHz)	Data Rate (Mbps)	RU Setting	Max. Tune-up	Average Power (dBm)
6E(UNII-7)_ 1TX_ Aux Ant	802.11ax HE20	117	6535	MCS0	26	-5.50	No Required
					52	-2.50	
					106	0.50	
					242	3.50	
		121	6555		26	-5.50	
					52	-2.50	
					106	0.50	
					242	3.50	
		125	6575		26	-5.50	
					52	-2.50	
					106	0.50	
					242	3.50	
		129	6595		26	-5.50	
					52	-2.50	
					106	0.50	
					242	3.50	
		133	6615		26	-5.50	
					52	-2.50	
					106	0.50	
					242	3.50	
		137	6635		26	-5.50	
					52	-2.50	
					106	0.50	
					242	3.50	
		141	6655		26	-5.50	
					52	-2.50	
					106	0.50	
					242	3.50	
		145	6675		26	-5.50	
					52	-2.50	
					106	0.50	
					242	3.50	
		149	6695		26	-5.50	
					52	-2.50	
					106	0.50	
					242	3.50	
		153	6715		26	-5.50	
					52	-2.50	
					106	0.50	
					242	3.50	
		157	6735		26	-5.50	
					52	-2.50	
					106	0.50	
					242	3.50	
		161	6755		26	-5.50	
					52	-2.50	
					106	0.50	
					242	3.50	

Band	Mode	Channel	Frequency (MHz)	Data Rate (Mbps)	RU Setting	Max. Tune-up	Average Power (dBm)
6E(UNII-7)_ 1TX_ Aux Ant	802.11ax HE20	165	6775	MCS0	26	-5.50	No Required
					52	-2.50	
					106	0.50	
					242	3.50	
		169	6795		26	-5.50	
					52	-2.50	
					106	0.50	
					242	3.50	
		173	6815		26	-5.50	
					52	-2.50	
					106	0.50	
					242	3.50	
		177	6835		26	-5.50	
					52	-2.50	
					106	0.50	
					242	3.50	
		181	6855		26	-5.50	
					52	-2.50	
					106	0.50	
					242	3.50	
	802.11ax HE40	123	6565	MCS0	26	-5.50	
					52	-2.50	
					106	0.50	
					242	3.50	
		131	6605		484	6.50	
					26	-5.50	
					52	-2.50	
					106	0.50	
		139	6645		242	3.50	
					484	6.50	
					26	-5.50	
					52	-2.50	
		147	6685		106	0.50	
					242	3.50	
					484	6.50	
					26	-5.50	
		155	6725		52	-2.50	
					106	0.50	
					242	3.50	
					484	6.50	
		163	6765		26	-5.50	
					52	-2.50	
					106	0.50	
					242	3.50	
					484	6.50	
26	-5.50						

Band	Mode	Channel	Frequency (MHz)	Data Rate (Mbps)	RU Setting	Max. Tune-up	Average Power (dBm)
6E(UNII-7)_ 1TX_ Aux Ant	802.11ax HE40	171	6805	MCS0	26	-5.50	No Required
					52	-2.50	
					106	0.50	
					242	3.50	
					484	6.50	
		179	6845		26	-5.50	
					52	-2.50	
					106	0.50	
					242	3.50	
					484	6.50	
	802.11ax HE80	135	6625	MCS0	26	-5.50	9.44
					52	-2.50	
					106	0.50	
					242	3.50	
					484	6.50	
					996	9.50	
		151	6705		26	-5.50	No Required
					52	-2.50	
					106	0.50	
					242	3.50	
					484	6.50	
					996	9.50	
		167	6785		26	-5.50	
					52	-2.50	
					106	0.50	
					242	3.50	
					484	6.50	
					996	9.50	
	802.11ax HE160	143	6665	MCS0	26	-5.50	11.95
					52	-2.50	
					106	0.50	
					242	3.50	
					484	6.50	
					996	9.50	
					1992	12.00	
		175	6825		26	-5.50	No Required
					52	-2.50	
					106	0.50	
					242	3.50	
					484	6.50	
					996	9.50	
					1992	12.00	

Band	Mode	Channel	Frequency (MHz)	Data Rate	ANT Main Average Power(dBm)	ANT Aux Average Power(dBm)	Max. Tune up	Total Average Power(dBm)
6.7G WIFI _2Tx _Main ANT+ Aux ANT	802.11 a	117	6535	6	-1.08	-0.74	2.50	2.10
		149	6695		-0.94	-0.88	2.50	2.10
		181	6855		-1.34	-1.08	2.00	1.80
	802.11 ax20	117	6535	MCS8	1.65	0.38	4.50	4.07
		149	6695		-0.18	-0.26	3.00	2.79
		181	6855		-0.38	-0.05	3.00	2.80
	802.11 ax40	123	6565	MCS8	4.21	3.84	7.50	7.04
		155	6725		2.99	3.64	6.50	6.34
		179	6845		3.38	3.44	6.50	6.42
	802.11 ax80	151	6705	MCS8	5.65	5.55	9.00	8.61
	802.11 ax160	143	6665	MCS8	7.74	6.92	10.50	10.36
		175	6825		7.31	6.95	10.50	10.14

Band	Mode	Channel	Frequency (MHz)	Data Rate	RU Setting	Main Ant Average Power (dBm)	Aux Ant Average Power (dBm)	Max. Tune-up	Total Average Power (dBm)
6.7G WIFI _2Tx _Main ANT+ Aux ANT	802.11 ax20	117	6535	MCS8	26	-6.62	-7.18	-3.50	-3.88
					52	-4.12	-5.08	-1.50	-1.56
					106	-0.58	-2.14	2.00	1.72
					242	2.94	1.65	5.50	5.35
		149	6695	MCS8	26	-6.22	-6.48	-3.00	-3.34
					52	-4.88	-4.62	-1.50	-1.74
					106	-1.14	-1.88	2.00	1.52
					242	2.34	1.58	5.00	4.99
		181	6855	MCS8	26	-7.34	-6.77	-4.00	-4.04
					52	-4.78	-4.06	-1.00	-1.39
					106	-1.33	-1.59	2.00	1.55
					242	2.24	2.18	5.50	5.22
	802.11 ax40	123	6565	MCS8	26	-6.96	-8.05	-4.00	-4.46
					52	-4.08	-5.12	-1.50	-1.56
					106	-0.64	-2.41	2.00	1.57
					242	2.65	1.58	5.50	5.16
		155	6725	MCS8	484	4.85	4.62	7.50	7.75
					26	-6.87	-7.81	-4.00	-4.30
					52	-4.18	-5.12	-1.50	-1.61
					106	-1.26	-1.14	2.00	1.81
					242	2.16	1.95	5.50	5.07
		179	6845	MCS8	484	5.26	4.44	8.00	7.88
					26	-7.21	-6.94	-4.00	-4.06
					52	-4.88	-4.32	-1.50	-1.58
					106	-1.15	-1.28	2.00	1.80
					242	1.92	1.68	5.00	4.81
					484	5.12	4.52	8.00	7.84
	802.11 ax80	135	6625	MCS8	996	7.55	7.42	10.50	10.50
		151	6705		996	7.78	7.41	11.00	10.61
		167	6785		996	7.94	7.65	11.00	10.81
	802.11 ax160	143	6665	MCS8	1992	10.84	10.58	14.00	13.72
		175	6825		1992	11.03	10.42	14.00	13.75

8.11. CONDUCTED POWER MEASUREMENTS OF 6E UNII_8

Band	Mode	Channel	Frequency (MHz)	Data Rate (Mbps)	Max. Tune-up	Average Power (dBm)
6E(UNII-8)_ 1TX_ Main Ant	802.11a	185	6875	6	1.50	No Required
		189	6895		1.50	
		193	6915		1.50	
		197	6935		1.50	
		201	6955		1.50	
		205	6975		1.50	
		209	6995		1.50	
		213	7015		1.50	
		217	7035		1.50	
		221	7055		1.50	
		225	7075		1.50	
		229	7095		1.50	
		233	7115		1.50	
	802.11ax HE20	185	6875	MCS0	2.50	
		189	6895		2.50	
		193	6915		2.50	
		197	6935		2.50	
		201	6955		2.50	
		205	6975		2.50	
		209	6995		2.50	
		213	7015		2.50	
		217	7035		2.50	
		221	7055		2.50	
		225	7075		2.50	
		229	7095		2.50	
		233	7115		2.50	
	802.11ax HE40	187	6885	MCS0	5.50	
		195	6925		5.50	
		203	6965		5.50	
		211	7005		5.50	
		219	7045		5.50	
		227	7085		5.50	
	802.11ax HE80	183	6865	MCS0	8.50	
		199	6945		8.50	
		215	7025		8.50	
	802.11ax HE160	207	6985	MCS0	9.00	

Band	Mode	Channel	Frequency (MHz)	Data Rate (Mbps)	RU Setting	Max. Tune-up	Average Power (dBm)
6E(UNII-8) 1TX_Main Ant	802.11ax HE20	185	6875	MCS0	26	-5.50	No Required
					52	-2.50	
					106	0.50	
					242	3.50	
		189	6895		26	-5.50	
					52	-2.50	
					106	0.50	
					242	3.50	
		193	6915		26	-5.50	
					52	-2.50	
					106	0.50	
					242	3.50	
		197	6935		26	-5.50	
					52	-2.50	
					106	0.50	
					242	3.50	
		201	6955		26	-5.50	
					52	-2.50	
					106	0.50	
					242	3.50	
		205	6975		26	-5.50	
					52	-2.50	
					106	0.50	
					242	3.50	
		209	6995		26	-5.50	
					52	-2.50	
					106	0.50	
					242	3.50	
		213	7015		26	-5.50	
					52	-2.50	
					106	0.50	
					242	3.50	
		217	7035		26	-5.50	
					52	-2.50	
					106	0.50	
					242	3.50	
		221	7055		26	-5.50	
					52	-2.50	
					106	0.50	
					242	3.50	
		225	7075		26	-5.50	
					52	-2.50	
					106	0.50	
					242	3.50	
		229	7095		26	-5.50	
					52	-2.50	
					106	0.50	
					242	3.50	

Band	Mode	Channel	Frequency (MHz)	Data Rate (Mbps)	RU Setting	Max. Tune-up	Average Power (dBm)
6E(UNII-8) 1TX_Main Ant	802.11ax HE20	233	7115	MCS0	26	-14.00	NoRequired
					52	-11.00	
					106	-10.00	
					242	-7.00	
	802.11ax HE40	187	6885	MCS0	26	-5.50	
					52	-2.50	
					106	0.50	
					242	3.50	
					484	6.50	
					26	-5.50	
					52	-2.50	
					106	0.50	
		195	6925		242	3.50	
					484	6.50	
					26	-5.50	
					52	-2.50	
					106	0.50	
					242	3.50	
					484	6.50	
					26	-5.50	
		203	6965		52	-2.50	
					106	0.50	
					242	3.50	
					484	6.50	
					26	-5.50	
					52	-2.50	
					106	0.50	
					242	3.50	
		211	7005		484	6.50	
					26	-5.50	
					52	-2.50	
					106	0.50	
					242	3.50	
					484	6.50	
					26	-5.50	
					52	-2.50	
	219	7045	106	0.50			
			242	3.50			
			484	6.50			
			26	-5.50			
			52	-2.50			
			106	0.50			
242			3.50				
484			6.50				
227	7085	26	-5.50				
		52	-2.50				
		106	0.50				
		242	3.50				
		484	6.50				
		26	-5.50				
		52	-2.50				
		106	0.50				
802.11ax HE80	183	6865	MCS0	242	3.50		
				484	6.50		
				996	9.50		
				26	-5.50		
				52	-2.50		
				106	0.50		
				242	3.50		
				484	6.50		
	199	6945		996	9.50		
				9.43			

Band	Mode	Channel	Frequency (MHz)	Data Rate (Mbps)	RU Setting	Max. Tune-up	Average Power (dBm)
6E(UNII-8) 1TX_Main Ant	802.11ax HE80	215	7025	MCS0	26	-5.50	No Required
					52	-2.50	
					106	0.50	
					242	3.50	
					484	6.50	
					996	9.50	9.47
	802.11ax HE160	207	6985	MCS0	26	-5.50	No Required
					52	-2.50	
					106	0.50	
					242	3.50	
					484	6.50	
					996	9.50	
					1992	12.00	11.88

Band	Mode	Channel	Frequency (MHz)	Data Rate (Mbps)	Max. Tune-up	Average Power (dBm)
6E(UNII-8)_ 1TX_ Aux Ant	802.11a	185	6875	6	1.50	No Required
		189	6895		1.50	
		193	6915		1.50	
		197	6935		1.50	
		201	6955		1.50	
		205	6975		1.50	
		209	6995		1.50	
		213	7015		1.50	
		217	7035		1.50	
		221	7055		1.50	
		225	7075		1.50	
		229	7095		1.50	
		233	7115		1.50	
	802.11ax HE20	185	6875	MCS0	2.50	
		189	6895		2.50	
		193	6915		2.50	
		197	6935		2.50	
		201	6955		2.50	
		205	6975		2.50	
		209	6995		2.50	
		213	7015		2.50	
		217	7035		2.50	
		221	7055		2.50	
		225	7075		2.50	
		229	7095		2.50	
		233	7115		2.50	
	802.11ax HE40	187	6885	MCS0	5.50	
		195	6925		5.50	
		203	6965		5.50	
		211	7005		5.50	
		219	7045		5.50	
		227	7085		5.50	
	802.11ax HE80	183	6865	MCS0	8.50	
		199	6945		8.50	
		215	7025		8.50	
	802.11ax HE160	207	6985	MCS0	9.00	

Band	Mode	Channel	Frequency (MHz)	Data Rate (Mbps)	RU Setting	Max. Tune-up	Average Power (dBm)
6E(UNII-8) 1TX_Aux Ant	802.11ax HE20	185	6875	MCS0	26	-5.50	No Required
					52	-2.50	
					106	0.50	
					242	3.50	
		189	6895		26	-5.50	
					52	-2.50	
					106	0.50	
					242	3.50	
		193	6915		26	-5.50	
					52	-2.50	
					106	0.50	
					242	3.50	
		197	6935		26	-5.50	
					52	-2.50	
					106	0.50	
					242	3.50	
		201	6955		26	-5.50	
					52	-2.50	
					106	0.50	
					242	3.50	
		205	6975		26	-5.50	
					52	-2.50	
					106	0.50	
					242	3.50	
		209	6995		26	-5.50	
					52	-2.50	
					106	0.50	
					242	3.50	
		213	7015		26	-5.50	
					52	-2.50	
					106	0.50	
					242	3.50	
		217	7035		26	-5.50	
					52	-2.50	
					106	0.50	
					242	3.50	
		221	7055		26	-5.50	
					52	-2.50	
					106	0.50	
					242	3.50	
		225	7075		26	-5.50	
					52	-2.50	
					106	0.50	
					242	3.50	
		229	7095		26	-5.50	
					52	-2.50	
					106	0.50	
					242	3.50	

Band	Mode	Channel	Frequency (MHz)	Data Rate (Mbps)	RU Setting	Max. Tune-up	Average Power (dBm)		
6E(UNII-8) 1TX_Aux Ant	802.11ax HE20	233	7115	MCS0	26	-14.00	No Required		
					52	-11.00			
					106	-10.00			
					242	-7.00			
	802.11ax HE40	187	6885	MCS0	26	-5.50			
					52	-2.50			
					106	0.50			
					242	3.50			
		195	6925		484	6.50			
					26	-5.50			
					52	-2.50			
					106	0.50			
		203	6965		242	3.50			
					484	6.50			
					26	-5.50			
					52	-2.50			
		211	7005		106	0.50			
					242	3.50			
					484	6.50			
					26	-5.50			
		219	7045		52	-2.50			
					106	0.50			
					242	3.50			
					484	6.50			
		227	7085		26	-5.50			
					52	-2.50			
					106	0.50			
					242	3.50			
		802.11ax HE80	183		6865	MCS0		484	6.50
								26	-5.50
								52	-2.50
								106	0.50
			199		6945			242	3.50
								484	6.50
								996	9.50
								26	-5.50
	52			-2.50					
	106			0.50					
	242			3.50					
	484			6.50					
	996	9.50	9.46						

Band	Mode	Channel	Frequency (MHz)	Data Rate (Mbps)	RU Setting	Max. Tune-up	Average Power (dBm)
6E(UNII-8) 1TX_Aux Ant	802.11ax HE80	215	7025	MCS0	26	-5.50	No Required
					52	-2.50	
					106	0.50	
					242	3.50	
					484	6.50	
					996	9.50	9.40
	802.11ax HE160	207	6985	MCS0	26	-5.50	No Required
					52	-2.50	
					106	0.50	
					242	3.50	
					484	6.50	
					996	9.50	
					1992	12.00	11.89

Band	Mode	Channel	Frequency (MHz)	Data Rate	ANT Main Average Power(dBm)	ANT Aux Average Power(dBm)	Max. Tune up	Total Average Power(dBm)
7.0G WIFI _2Tx _Main ANT+ Aux ANT	802.11 a	185	6875	6	-0.64	-0.29	3.00	2.54
		209	6995		-0.84	-0.33	2.50	2.41
		229	7095		-0.45	0.32	3.00	2.95
		233	7115		-0.82	0.21	3.00	2.73
	802.11 ax20	185	6875	MCS8	-0.15	0.35	3.50	3.13
		209	6995		-0.58	0.32	3.00	2.93
		229	7095		0.34	1.56	4.00	3.96
		233	7115		-3.38	-2.05	0.50	0.36
	802.11 ax40	187	6885	MCS8	3.41	4.09	7.00	6.75
		211	7005		2.88	4.16	7.00	6.53
		227	7085		3.28	4.56	7.00	6.95
	802.11 ax80	183	6865	MCS8	5.73	5.64	9.00	8.69
		199	6945		5.43	6.08	9.00	8.74
		215	7025		5.62	5.84	8.50	8.12
	802.11 ax160	207	6985	MCS8	7.38	7.64	10.50	10.42

Band	Mode	Channel	Frequency (MHz)	Data Rate	RU Setting	Main Ant Average Power (dBm)	Aux Ant Average Power (dBm)	Max. Tune-up	Total Average Power (dBm)
7.0G WIFI _2Tx _Main ANT+ Aux ANT	802.11 ax20	185	6875	MCS8	26	-7.84	-6.83	-4.00	-4.30
					52	-4.96	-4.21	-1.50	-1.56
					106	-1.72	-1.54	1.50	1.38
					242	2.41	2.46	5.50	5.45
		209	6995	MCS8	26	-6.34	-7.51	-3.50	-3.88
					52	-4.13	-5.14	-1.50	-1.60
					106	-1.74	-0.84	2.00	1.74
					242	1.84	2.56	5.50	5.23
		229	7095	MCS8	26	-5.64	-5.32	-2.00	-2.47
					52	-4.36	-3.27	-0.50	-0.77
					106	-0.84	0.15	3.00	2.69
					242	3.26	4.18	7.00	6.75
		233	7115	MCS8	26	-15.94	-15.53	-12.50	-12.72
					52	-12.24	-12.86	-9.00	-9.53
					106	-11.46	-11.42	-8.50	-8.43
					242	-8.54	-8.84	-5.50	-5.68
	802.11 ax40	187	6885	MCS8	26	-6.42	-7.15	-3.50	-3.76
					52	-4.21	-5.26	-1.50	-5.26
					106	-1.62	-1.34	2.00	1.53
					242	2.14	2.38	5.50	5.27
		211	7005	MCS8	484	4.83	4.64	8.00	7.75
					26	-6.34	-7.45	-3.50	-3.85
					52	-3.94	-3.61	-0.50	-0.76
					106	-1.26	-0.34	2.50	2.23
					242	2.23	3.21	6.00	5.76
		227	7085	MCS8	484	3.84	3.65	7.00	6.76
					26	-6.64	-5.85	-3.50	-3.22
					52	-3.84	-2.74	-0.20	-0.24
					106	-0.48	0.34	3.50	2.96
					242	3.28	3.74	7.00	6.53
					484	6.84	6.95	10.00	9.91
	802.11 ax80	183	6865	MCS8	996	7.94	7.68	11.00	10.82
		199	6945		996	7.65	7.94	11.00	10.81
		215	7025		996	7.59	8.12	11.00	10.87
	802.11 ax160	207	6985	MCS8	1992	10.43	10.45	13.50	13.45

8.12. SAR TEST RESULTS

General Notes:

1. Per KDB447498 D04, all measurement SAR results are scaled to the maximum tune-up tolerance limit to demonstrate compliant.
2. Per KDB447498 D04, 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. When the maximum output power variation across the required test channels is $> \frac{1}{2}$ dB, instead of the middle channel, the highest output power channel must be used.
3. Per KDB865664 D01, for each frequency band, repeated SAR measurement is required only when the measured SAR is ≥ 0.8 W/kg; if the deviation among the repeated measurement is $\leq 20\%$, and the measured SAR < 1.45 W/kg, only one repeated measurement is required.

WLAN Notes:

1. For exposure conditions with multiple test positions, such as handset operating next to the ear, devices with hotspot mode, procedures for initial test position can be applied. Using the transmission mode determined by the DSSS procedure or initial test configuration, area scans are measured for all positions in an exposure condition. The test position with the highest extrapolated (peak) SAR is used as the initial test position. When the reported SAR of the initial test position is ≤ 0.4 W/kg, further SAR measurement is not required for the other (remaining) test positions. Otherwise, SAR is evaluated at the subsequent highest peak SAR position until the reported SAR result is ≤ 0.8 W/kg or all test positions are measured.
2. Justification for test configurations for WLAN per KDB Publication 248227 for 2.4GHz WIFI single transmission chain operations, the highest measured maximum output power Channel for DSSS was selected for SAR measurement. SAR for OFDM modes (2.4GHz 802.11g/n) was not required due to the maximum allowed powers and the highest reported DSSS SAR. See Section 7.1.4 for more information.
3. Justification for test configurations for WLAN per KDB Publication 248227 for 5GHz WIFI single transmission chain operations, the initial test configuration was selected according to the transmission mode with the highest maximum allowed power. Other transmission mode was not investigated since the highest reported SAR for initial test configuration adjusted by the ratio of maximum output powers is less than 1.2 W/kg. See Section 7.1.4 for more information.

WLAN PD Note:

1. The manufacturer has confirmed that the devices tested have the same physical, mechanical and thermal characteristics and are within operational tolerances expected for production units.
2. Absorbed power density (APD) using a 4cm^2 averaging area is reported based on SAR measurements.
3. Power density was calculated by repeated E-field measurements on two measurement planes separated by $\lambda/4$.
4. The device was configured to transmit continuously at the required data rate, channel bandwidth and signal modulation, using the highest transmission duty factor supported by the test mode tools.
5. Per FCC guidance and equipment manufacturer guidance, power density results were scaled according to IEC 62479:2010 for the portion of the measurement uncertainty $> 30\%$. Total expanded uncertainty of 2.68 dB (85.4%) was used to determine the psPD measurement scaling factor.
6. The measurement procedure consists of measuring the PD_{inc} at two different distances: 2mm (compliance distance) and $\lambda/5$. The grid extents should be large enough to fully capture the transmitted energy. The grid step should be fine enough to demonstrate that the integrated Power Density iPD_n fulfill the criterion described below. Since iPD ratio between the two distances is $\geq -1\text{dB}$, the grid step (0.0625) was sufficient for determining compliance at $d=2\text{mm}$.

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

9. SAR TEST RESULTS

9.1. BODY SAR TEST RESULTS

SAR test results of Bluetooth

Mode	Channel	Test Position	Ant	Max Tune-up (dBm)	AVG Power (dBm)	Area Scan SAR 1g	SAR 1g	Duty Cycle %	Duty Factor	Reported SAR 1g
Bluetooth_DH5	0	Bottom	Aux	16.00	14.76	0.052	0.042	76.80%	1.30	0.073
	39	Bottom	Aux	16.00	14.32	0.033	0.033	76.80%	1.30	0.064
	78	Bottom	Aux	16.00	14.37	0.058	0.055	76.80%	1.30	0.104

SAR test results of 2.4G WiFi

Mode	Channel	Test Position	Ant	Max Tune-up (dBm)	AVG Power (dBm)	Area Scan SAR 1g	SAR 1g	Reported SAR 1g	Note
802.11b	6	Bottom	Main	20.50	20.44	0.843	0.782	0.793	
	1	Bottom	Main	19.50	19.43	0.884	0.853	0.867	
	11	Bottom	Main	19.50	19.41	0.528	0.552	0.564	
	12	Bottom	Main	18.50	18.45	0.246	0.278	0.281	
	13	Bottom	Main	16.00	15.89	0.167	0.162	0.166	
802.11b	6	Bottom	Aux	20.50	20.46	0.605	0.594	0.599	
	1	Bottom	Aux	19.50	19.48	0.394	0.485	0.487	
	11	Bottom	Aux	19.50	19.38	0.239	0.281	0.289	
	12	Bottom	Aux	18.50	18.45	0.165	0.181	0.183	
	13	Bottom	Aux	16.00	15.90	0.025	0.046	0.047	
802.11b	1	Bottom	Main	19.50	19.43	0.814	0.819	0.832	1

Note:

- Repeated measurements are required only when the measured SAR is ≥ 0.80 W/kg. If the measured SAR values are < 1.45 W/kg with $\leq 20\%$ variation, only one repeated measurement is required to reaffirm that the results are not expected to have substantial variations, which may introduce significant compliance concerns. (Per KDB 865664 D01 SAR measurement 100 MHz to 6 GHz v01r04)
Original SAR = 0.853 W/kg, therefore second times repeat SAR is required.
Repeat SAR = 0.819 W/kg < 1.45 W/kg
SAR variation= $-4.15\% < 20\%$

SAR test results of 5G WiFi

Band	Mode	Channel	Test Position	Ant	Max Tune-up (dBm)	AVG Power (dBm)	Area Scan	SAR 1g	Reported SAR 1g	Note
5G UNII 1&2a	802.11a	56	Bottom	Main	19.00	18.94	0.794	0.831	0.889	
		60	Bottom	Main	19.00	18.96	0.527	0.576	0.581	
		52	Bottom	Main	16.00	15.88	0.480	0.497	0.511	
	802.11a	56	Bottom	Aux	19.00	18.84	0.647	0.846	0.878	
		60	Bottom	Aux	19.00	18.82	0.663	0.880	0.917	
		52	Bottom	Aux	16.00	15.96	0.443	0.469	0.473	
5G UNII 2c	802.11a	144	Bottom	Main	19.00	18.89	0.521	0.847	0.869	
		104	Bottom	Main	18.50	18.43	0.591	0.749	0.761	
		132	Bottom	Main	18.50	18.46	0.478	0.827	0.835	
	802.11a	144	Bottom	Aux	19.00	18.92	0.582	1.010	1.029	
		104	Bottom	Aux	18.50	18.41	0.574	0.727	0.742	
		132	Bottom	Aux	18.50	18.39	0.712	0.968	0.993	
5G UNII 3	802.11a	149	Bottom	Main	19.00	18.91	0.477	0.666	0.680	
		157	Bottom	Main	19.00	18.93	0.558	0.691	0.698	
		165	Bottom	Main	19.00	18.86	0.758	0.703	0.710	
	802.11a	149	Bottom	Aux	19.00	18.96	0.900	1.100	1.110	
		157	Bottom	Aux	19.00	18.94	0.535	0.982	0.996	
		165	Bottom	Aux	19.00	18.90	0.585	1.010	1.034	
5G UNII 4	802.11 n40	167	Bottom	Main	17.00	16.74	0.216	0.414	0.440	
		175	Bottom	Main	17.00	16.84	0.253	0.442	0.459	
	802.11a	169	Bottom	Main	14.50	14.42	0.320	0.319	0.325	
	802.11 n40	167	Bottom	Aux	17.00	16.88	0.736	0.748	0.769	
		175	Bottom	Aux	17.00	16.91	0.535	0.686	0.700	
	802.11 a	169	Bottom	Aux	14.50	14.48	0.649	0.601	0.604	
5G UNII 3	802.11 a	149	Bottom	Aux	19.00	18.96	0.982	1.080	1.090	1

Note:

- Repeated measurements are required only when the measured SAR is ≥ 0.80 W/kg. If the measured SAR values are < 1.45 W/kg with $\leq 20\%$ variation, only one repeated measurement is required to reaffirm that the results are not expected to have substantial variations, which may introduce significant compliance concerns. (Per KDB 865664 D01 SAR measurement 100 MHz to 6 GHz v01r04)
Original SAR = 1.100 W/kg, therefore second times repeat SAR is required.
Repeat SAR = 1.080 W/kg < 1.45 W/kg
SAR variation= $-1.82\% < 20\%$

SAR test results of 6E WiFi

Band	Mode	Channel	Test Position	Ant	Ru Tone	Max Tune-up (dBm)	AVG Power (dBm)	Area Scan	SAR 1g	Reported SAR 1g	4cm^2 APD (W/m^2)
6E UNII 5	802.11 ax160	15	Bottom	Main	1992	12.00	11.92	0.170	0.176	0.179	1.13
		47	Bottom			12.00	11.96	0.175	0.180	0.182	1.17
		79	Bottom			12.00	11.94	0.176	0.182	0.185	1.20
	802.11 ax160	15	Bottom	Aux	1992	12.00	11.90	0.218	0.256	0.262	1.72
		47	Bottom			12.00	11.91	0.213	0.233	0.238	1.54
		79	Bottom			12.00	11.89	0.168	0.187	0.192	1.30
6E UNII 6	802.11 ax160	111	Bottom	Main	1992	12.00	11.84	0.194	0.190	0.197	1.28
	802.11 ax80	103	Bottom		996	9.50	9.43	0.177	0.178	0.181	1.14
		119	Bottom			9.50	9.46	0.184	0.188	0.190	1.22
	802.11 ax160	111	Bottom	Aux	1992	12.00	11.85	0.256	0.286	0.296	1.95
	802.11 ax80	103	Bottom		996	9.50	9.40	0.200	0.222	0.227	1.55
		119	Bottom			9.50	9.48	0.208	0.223	0.224	1.57
6E UNII 7	802.11 ax160	143	Bottom	Main	1992	12.00	11.98	0.221	0.215	0.216	1.43
		175	Bottom			12.00	11.92	0.231	0.231	0.235	1.56
	802.11 ax80	135	Bottom	996	9.50	9.46	0.203	0.169	0.171	1.02	
	802.11 ax160	143	Bottom	Aux	1992	12.00	11.95	0.282	0.311	0.315	2.11
		175	Bottom			12.00	11.90	0.150	0.302	0.309	1.97
	802.11 ax80	135	Bottom	996	9.50	9.44	0.105	0.123	0.125	0.764	
6E UNII 8	802.11 ax160	207	Bottom	Main	1992	12.00	11.88	0.246	0.241	0.248	1.57
	802.11 ax80	199	Bottom		996	9.50	9.43	0.194	0.183	0.186	1.11
		215	Bottom			9.50	9.47	0.204	0.184	0.185	1.12
	802.11 ax160	207	Bottom	Aux	1992	12.00	11.89	0.205	0.228	0.234	1.52
	802.11 ax80	199	Bottom		996	9.50	9.46	0.164	0.168	0.170	1.12
		215	Bottom			9.50	9.40	0.156	0.138	0.141	0.742

Power Density results of 6E WiFi

Band	Mode	Channel	Test Position	Gap (mm)	Ant	Max une-up (dBm)	AVG Power (dBm)	Grid Step	iPDn	iPD ratio (≥ -1)	Averaging Area cm ²	Avg-Total Power Density W/m ²
6E UNII5	802.11 ax160	15	Bottom	2mm	Main	12.00	11.92	0.0625	1.23	-0.07004902	4.000	1.740
6E UNII5	802.11 ax160	15	Bottom	10mm	Main	12.00	11.92	0.25	1.25		4.000	0.892
6E UNII8	802.11 ax160	207	Bottom	2mm	Aux	12.00	11.89	0.0625	1.04	0.39295118	4.000	1.350
6E UNII8	802.11 ax160	207	Bottom	8.6mm	Aux	12.00	11.89	0.25	0.95		4.000	0.676

Band	Mode	Channel	Test Position	Gap (mm)	Ant	Max une-up (dBm)	AVG Power (dBm)	Grid Step	Scaling Factor for Measurement Uncertainty	Averaging Area cm ²	Avg-Total Power Density W/m ²	Scaling Total Power Density
6E UNII5	802.11ax160	15	Bottom	2mm	Aux	12.00	11.90	0.0625	1.5535	4.000	1.740	2.766
6E UNII6	802.11ax160	111	Bottom	2mm	Aux	12.00	11.85	0.0625	1.5535	4.000	2.870	4.615
6E UNII7	802.11ax160	143	Bottom	2mm	Aux	12.00	11.95	0.0625	1.5535	4.000	2.180	3.426
6E UNII8	802.11ax160	207	Bottom	2mm	Main	12.00	11.88	0.0625	1.5535	4.000	1.350	2.156
6E UNII7	802.11ax160	175	Bottom	2mm	Main	12.00	11.92	0.0625	1.5535	4.000	0.609	0.964

Note:

We reference TCB workshop April 2021 to test Power Density.

10. SIMULTANEOUS TRANSMISSION CONDITIONS

10.1. STAND-ALONE SAR TEST EXCLUSION

SAR compliance for simultaneous transmission must be considered when the maximum duration of overlapping transmissions, including network hand-offs, is greater than 30 seconds. This device contains multiple transmitters that may operate simultaneously, and therefore requires a simultaneous transmission analysis.

The Simultaneous Transmission Possibilities of this device are as below:

No.	Configuration
1	WLAN 2.4G(Main)+BT
2	RLAN 5G(Main)+BT
3	WLAN 6G(Main)+BT
4	WLAN 2.4G(Main)+ WLAN 2.4G(Aux)
5	RLAN 5G(Main)+ RLAN 5G(Aux)
6	WLAN 6G(Main)+ WLAN 6G(Aux)

DBS mode:

No.	Configuration
1	WLAN 2.4G(Main)+ RLAN 5G(Aux)
2	WLAN 2.4G(Main)+ WLAN 6G(Aux)
3	RLAN 5G(Main)+ WLAN 2.4G(Aux)
4	WLAN 6G(Main)+ WLAN 2.4G(Aux)

10.2. SIMULTANEOUS TRANSMISSION CONDITIONS

KDB 447498 D04 Interim General RF Exposure Guidance v01, introduces a new formula for calculating the SAR to Peak Location Ratio (SPLSR) between pairs of simultaneously transmitting antennas:

$$SPLSR = (SAR_1 + SAR_2)^{1.5} / R_i$$

Where:

SAR₁ is the highest Reported or estimated SAR for the first of a pair of simultaneous transmitting antennas, in a specific test operating mode and exposure condition

SAR₂ is the highest Reported or estimated SAR for the second of a pair of simultaneous transmitting antennas, in the same test operating mode and exposure condition as the first

R_i is the separation distance between the pair of simultaneous transmitting antennas. When the SAR is measured, for both antennas in the pair, it is determined by the actual x, y and z coordinates in the 1-g SAR for each SAR peak location, based on the extrapolated and interpolated result in the zoom scan measurement, using the formula of $[(x_1-x_2)^2 + (y_1-y_2)^2 + (z_1-z_2)^2]$

A new threshold of 0.04 is also introduced in the KDB. Thus, in order for a pair of simultaneous transmitting antennas with the sum of 1-g SAR > 1.6 W/kg to qualify for exemption from Simultaneous Transmission SAR measurements, it has to satisfy the condition of:
 $(SAR_1 + SAR_2)^{1.5} / R_i \leq 0.04$

10.3. ABOUT BT/WIFI

SAR1g(W/kg)	Test Position	Bottom
	WLAN 2.4G WiFi_Main	0.867
	WLAN 2.4G WiFi_Aux	0.599
	UNII_1 & 2a WiFi_Main	0.889
	UNII_1 & 2a WiFi_Aux	0.917
	UNII_2c WiFi_Main	0.869
	UNII_2c WiFi_Aux	1.029
	UNII_3 WiFi_Main	0.710
	UNII_3 WiFi_Aux	1.110
	UNII_4 WiFi_Main	0.459
	UNII_4 WiFi_Aux	0.769
	UNII_5 WiFi_Main	0.185
	UNII_5 WiFi_Aux	0.262
	UNII_6 WiFi_Main	0.197
	UNII_6 WiFi_Aux	0.296
	UNII_7 WiFi_Main	0.235
	UNII_7 WiFi_Aux	0.315
	UNII_8 WiFi_Main	0.248
	UNII_8 WiFi_Aux	0.234
	Bluetooth_DH5	0.104

WLAN2.4G_Main+WLAN 2.4G_Aux MAX Σ SAR _{1g}	1.466
WLAN_Main+BT_Aux MAX Σ SAR _{1g}	0.993
RLAN 5G_Main+ RLAN 5G_Aux MAX Σ SAR _{1g}	1.999
Wi-Fi 6E_Main+ Wi-Fi6E_Aux MAX Σ SAR _{1g}	0.563
WLAN 2.4G(Main)+ RLAN 5G(Aux) MAX Σ SAR _{1g}	1.977
WLAN 2.4G(Main)+ WLAN 6G(Aux) MAX Σ SAR _{1g}	1.182
RLAN 5G(Main)+ WLAN 2.4G(Aux) MAX Σ SAR _{1g}	1.488
WLAN 6G(Main)+ WLAN 2.4G(Aux) MAX Σ SAR _{1g}	0.847

Note:

1. MAX. Σ SAR_{1g}= 1.999 W/Kg>1.6 W/Kg, so Peak location SAR are required.
2. Peak location SAR are 0.03 that refer Appendix E.

11. TEST LAYOUT

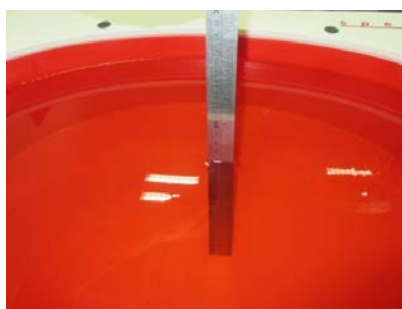
Specific Absorption Rate Test Layout



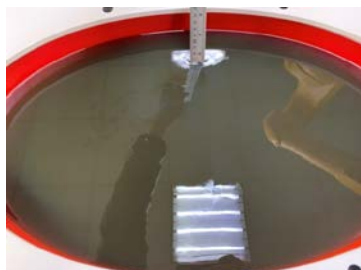
Liquid depth in the flat Phantom ($\geq 15\text{cm}$ depth)

HSL(2450MHz)

HSL(5GHz)



HSL(6.5GHz)



Appendix A. SAR Plots of System Verification

(Pls See BTL-FCC SAR-1-2212C001_Appendix A.)

Appendix B. SAR Plots of SAR Measurement

(Pls See BTL-FCC SAR-1-2212C001_Appendix B.)

Appendix C. Calibration Certificate

(Pls See BTL-FCC SAR-1-2212C001_Appendix C.)

Appendix D. Photographs of the Test Set-Up

(Pls See BTL-FCC SAR-1-2212C001_Appendix D.)

Appendix E. SAR SPLSR

(Pls See BTL-FCC SAR-1-2212C001_Appendix E.)

End of Test Report