

RF Test Report

Test Report Number	STA-21092042-LC-FCC-IC-5G
FCC ID IC Applicant Applicant Address Product Name Model (s) Date of Receipt Date of Test Report Issue Date Test Standards Test Result	U6YRDNA135201 216P-RDNA135201 Panasonic Avionics Corporation 26200 Enterprise Way Lake Forest, California, United States 92630 WSCU Cradle Docking station RD-NA1352-01 03/08/2022 03/25/2022- 04/06/2022 09/19/2022 47CFR Part 15.407 RSS 247 Issue 2: February 2017 RSS GEN Issue 5 Amd 2 February 2021 PASS
	Issued by: Vista Compliance Laboratories 1261 Puerta Del Sol, San Clemente, CA 92673 USA www.vista-compliance.com
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REVISION HISTORY

Report Number	Version	Description	Issued Date
STA-21092042-LC-FCC-IC-5G	Original	Initial report	09/19/2022

TABLE OF CONTENTS

1	TEST SUMMARY	4
2	GENERAL INFORMATION.....	5
2.1	Applicant.....	5
2.2	Product information.....	5
2.3	Test standard and method.....	5
3	TEST SITE INFORMATION.....	6
4	MODIFICATION OF EUT / DEVIATIONS FROM STANDARDS.....	6
5	TEST CONFIGURATION AND OPERATION	6
5.1	EUT Test Configuration	6
5.2	Supporting Equipment.....	6
6	UNCERTAINTY OF MEASUREMENT	7
7	TEST RESULTS.....	8
7.1	Antenna Requirements.....	8
7.2	Maximum Conducted Output Power	9
7.3	Radiated Spurious Emission.....	15
7.4	Conducted Emissions.....	33
8	EUT AND TEST SETUP PHOTOS.....	37
9	TEST INSTRUMENT LIST	38

1 Test Summary

Test Item	Test Requirement	Test Method	Result
Antenna Requirement	47CFR Part 15.203	N/A	Pass
26 dB Bandwidth	47CFR Part 15.407 (a) RSS-247 Issue 2, Feb 2017	ANSI C63.10 (2013)	N/A ₁₎
Occupied Bandwidth	47CFR Part 15.407 (a) RSS-Gen Issue 5, Mar 2019	ANSI C63.10 (2013) RSS-Gen Issue 5, Mar 2019	N/A ₁₎
Maximum Conducted Output Power	47CFR Part 15.407 (a) RSS-247 Issue 2, Feb 2017	ANSI C63.10 (2013)	Pass
Power Spectral Density	47CFR Part 15.407 (a) RSS-247 Issue 2, Feb 2017	ANSI C63.10 (2013)	N/A ₁₎
Radiated Spurious Emission	47CFR Part 15.407 (b) RSS-247 Issue 2, Feb 2017	ANSI C63.10 (2013)	Pass
Radiated Band-Edge into Restricted Frequency Bands	47CFR Part 15.205, 15.209 47CFR Part 15.407 (b) RSS-247 Issue 2, Feb 2017	ANSI C63.10 (2013)	N/A ₁₎
AC Power Line Conducted Emissions	47CFR Part 15.207 RSS-Gen Issue 5, Mar 2019	ANSI C63.10 (2013) RSS-Gen Issue 5, Mar 2019	Pass

Note:

1. These test cases are not tested. The device uses the certified RF module. (Model No.: SX-PCEAC2, FCC ID: N6C-SXPCEAC2; IC ID: 4908A-SXPCEAC2).
2. This device uses antenna different than in the original module. The new antenna is internal PCB antenna with lower antenna gain. Only output power, power line conducted emission and radiated spurious emission test in this report, for the other test, please refer to original module's test report.

2 General Information

2.1 Applicant

Applicant	Panasonic Avionics Corporation
Applicant address	26200 Enterprise Way Lake Forest, California, United States 92630
Manufacturer	Panasonic Avionics Corporation
Manufacturer Address	26200 Enterprise Way Lake Forest, California, United States 92630

2.2 Product information

Product Name	WSCU Cradle Docking station
Model Number	RD-NA1352-01
Family Models	N/A
Serial Number	RD12484 RD12485
Frequency Band	WLAN_5G: 5180 ~ 5240MHz; 5260 ~ 5320MHz 5500 ~ 5720MHz; 5745 ~ 5825MHz
Type of modulation	CCK, DQPSK, DBPSK for DSSS 64QAM, 16QAM, QPSK, BPSK for OFDM
Equipment Class	U-NII
Antenna Information	2 x Internal PCB antenna with 2.8 dBi Peak gain (MIMO)
Clock Frequencies	N/A
Input Power	28 Vdc 2A
Power Adapter Manufacturer/Model	N/A
Power Adapter SN	N/A
Hardware version	N/A
Software version	N/A
Simultaneous Transmission	N/A
Additional Info	EUT is installed onboard and only powered by the onboard battery or DC power line. The AC line conducted emission is evaluated additionally for reference.

2.3 Test standard and method

Test standard	47CFR Part 15.407 RSS 247 Issue 2: February 2017 RSS GEN Issue 5 Amd 2 February 2021
Test method	ANSI C63.10 (2013) 789033 D02 General UNII Test Procedures New Rules v02r01

3 Test Site Information

Lab performing tests	Vista Laboratories, Inc.
Lab Address	1261 Puerta Del Sol, San Clemente, CA 92673 USA
Phone Number	+1 (949) 393-1123
Website	www.vista-compliance.com

Test Condition	Temperature	Humidity	Atmospheric Pressure
RF Testing	23.2°C	57.5%	1002 mbar
Radiated Emission Testing	23.2°C	57.5%	1002 mbar

4 Modification of EUT / Deviations from Standards

The EUT is an engineering test sample loaded with RF testing firmware specifically designed to support the RF TX/RX measurement in different aspects.

5 Test Configuration and Operation

5.1 EUT Test Configuration

EUT is powered by external DC power supply for testing purpose. The test software is used to set EUT to different transmission mode in terms of radio mode, test channel, data rate, etc.

The following software was used for testing and to monitor EUT performance

Software	Description
EMISoft Vasona	EMC/RF Spurious emission test software used during testing
Tera Term	Send command to set the module work at different mode, channel, bandwidth, etc

5.2 Supporting Equipment

Description	Manufacturer	Model #	Serial #
AC/DC Adapter	MANGNING	WT2402500	N/A

6 Uncertainty of Measurement

Test item	Measurement Uncertainty (dB)
RF Output Power (Conducted)	± 1.2 dB
Power Spectral Density	± 0.9 dB
Unwanted Emission (conducted)	± 2.6 dB
Occupied Channel Bandwidth	± 5 %
Radiated Emission (9KHz-30MHz)	± 3.5 dB
Radiated Emission (30MHz-1GHz)	± 4.6 dB
Radiated Emission (1-18GHz)	± 4.9 dB
Radiated Emission (18-40GHz)	± 3.5 dB

7 Test Results

7.1 Antenna Requirements

7.1.1 Requirement

Per § 15.203, an intentional radiator shall be designed to ensure that no antenna other than that furnished by the responsible party shall be used with the device. The use of a permanently attached antenna or of an antenna that uses a unique coupling to the intentional radiator shall be considered sufficient to comply with the provisions of this section. The manufacturer may design the unit so that a broken antenna can be replaced by the user, but the use of a standard antenna jack or electrical connector is prohibited.

7.1.2 Conclusion

Analysis:

EUT has internal PCB antennas.

- For Internal antennas, the connector type is U.FL. No standard RF connector or coupling is used.

Conclusion:

- EUT complies with antenna requirement in § 15.203.

7.2 Maximum Conducted Output Power

7.2.1 Requirement

§ 15.407 (a)

(iv) **For client devices in the 5.15-5.25 GHz band**, the maximum conducted output power over the frequency band of operation shall not exceed 250 mW provided the maximum antenna gain does not exceed 6 dBi.

(2) **For the 5.25-5.35 GHz and 5.47-5.725 GHz bands**, the maximum conducted output power over the frequency bands of operation shall not exceed the lesser of 250 mW or 11 dBm + 10 log B, where B is the 26 dB emission bandwidth in megahertz.

(3) (i) **For the band 5.725-5.850 GHz**, the maximum conducted output power over the frequency band of operation shall not exceed 1 W.

If transmitting antennas of directional gain greater than 6 dBi are used, the maximum conducted output power from the intentional radiator shall be reduced by the amount in dB that the directional gain of the antenna exceeds 6 dBi.

Note that U-NII-2 band, devices with a maximum e.i.r.p. greater than 500 mW shall implement TPC in order to have the capability to operate at least 6 dB below the maximum permitted e.i.r.p. of 1 W.

RSS-247

6.2.1 Frequency band 5150-5250 MHz:

For OEM devices installed in vehicles, the maximum e.i.r.p. shall not exceed 30 mW or $1.76 + 10\log_{10}B$, dBm, whichever is less. Devices shall implement transmitter power control (TPC) in order to have the capability to operate at least 3 dB below the maximum permitted e.i.r.p. of 30 mW.

For other devices, the maximum e.i.r.p. shall not exceed 200 mW or $10 + 10\log_{10}B$, dBm, whichever power is less. B is the 99% emission bandwidth in megahertz. The e.i.r.p. spectral density shall not exceed 10 dBm in any 1.0 MHz band.

6.2.2 Frequency band 5250-5350 MHz:

For OEM devices installed in vehicles, the maximum e.i.r.p. shall not exceed 30 mW or $1.76 + 10\log_{10}B$, dBm, whichever is less. Devices shall implement transmitter power control (TPC) in order to have the capability to operate at least 3 dB below the maximum permitted e.i.r.p. of 30 mW.

For other than devices installed in vehicles, shall comply with the following:

- a) The maximum conducted output power shall not exceed 250 mW or $11 + 10\log_{10}B$, dBm, whichever is less.
- b) The maximum e.i.r.p. shall not exceed 1.0 W or $17 + 10\log_{10}B$, dBm, whichever is less. B is the 99% emission bandwidth in MHz.

6.2.3 Frequency bands 5470-5600 MHz and 5650-5725 MHz

The maximum conducted output power shall not exceed 250 mW or $11 + 10 \log_{10} B$, dBm, whichever is less.

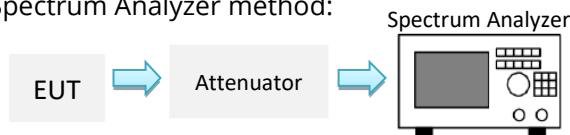
The maximum e.i.r.p. shall not exceed 1.0 W or $17 + 10 \log_{10} B$, dBm, whichever is less. B is the 99% emission bandwidth in MHz. Note that devices with a maximum e.i.r.p. greater than 500 mW shall implement TPC in order to have the capability to operate at least 6 dB below the maximum permitted e.i.r.p. of 1 W.

6.2.4 Frequency band 5725-5850 MHz

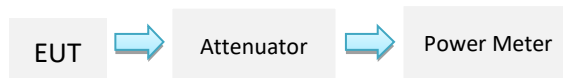
The maximum conducted output power shall not exceed 1 W. If transmitting antennas of directional gain greater than 6 dBi are used, both the maximum conducted output power and the output power spectral density shall be reduced by the amount in dB that the directional gain of the antenna exceeds 6 dBi.

7.2.2 Test Setup

Spectrum Analyzer method:



Power Meter



7.2.3 Test Procedure

Spectrum Analyzer Method (for peak power measurement)

According to subclause 12.3.2.2 of ANSI C63.10-2013:

subclause E.2.b of 789033 D02 General UNII Test Procedures New Rules v02r01

- 1) Set span to encompass the entire 26 dB EBW or 99% OBW of the signal.
- 2) Set RBW = 1 MHz
- 3) Set VBW $\geq$ 3 MHz.
- 4) Number of points in sweep $\geq [2 \times \text{span} / \text{RBW}]$. (This gives bin-to-bin spacing $\leq \text{RBW} / 2$, so that narrow band signals are not lost between frequency bins.)
- 5) Sweep time = auto
- 6) Detector = RMS (i.e., power averaging), if available. Otherwise, use sample detector mode.
- 7) If transmit duty cycle $< 98\%$, use a video trigger with the trigger level set to enable triggering only on full power pulses. The transmitter shall operate at maximum power control level for the entire duration of every sweep. If the EUT transmits continuously (i.e., with no OFF intervals) or at duty cycle $\geq 98\%$, and if each transmission is entirely at the maximum power control level, then the trigger shall be set to "free run."

- 8) Trace average at least 100 traces in power averaging (rms) mode.
- 9) Compute power by integrating the spectrum across the 26 dB EBW or 99% OBW of the signal using the instrument's band power measurement function, with band limits set equal to the EBW or OBW band edges. If the instrument does not have a band power function, then sum the spectrum levels (in power units) at 1 MHz intervals extending across the 26 dB EBW or 99% OBW of the spectrum.

Power Meter Method (for average power measurement)

According to subclause 12.3.3.2 of ANSI C63.10-2013:

subclause E.3.b of 789033 D02 General UNII Test Procedures New Rules v02r01

Method PM-G is measurement using a gated RF average power meter.

Measurements may be performed using a wideband gated RF power meter provided that the gate parameters are adjusted such that the power is measured only when the EUT is transmitting at its maximum power control level. Because the measurement is made only during the ON time of the transmitter, no duty cycle correction factor is required.

7.2.4 Test Result

Conducted Output power measurement result

UNII-1 Band

Mode	Frequency (MHz)	Data rate	Measured Average Output Power (dBm)		Highest/ Total Power (dBm)	Output Power Limit (dBm)	Result
			Chain 0	Chain 1			
11a	5180	6Mbps	13.92	14.11	14.11	23.98	PASS
	5200	6Mbps	15.23	15.89	15.89	23.98	PASS
	5240	6Mbps	15.11	15.76	15.76	23.98	PASS
11n-20M	5180	HT20-MCS0	13.55	13.83	16.70	23.98	PASS
	5200	HT20-MCS0	14.57	14.90	17.75	23.98	PASS
	5240	HT20-MCS0	13.89	14.34	17.13	23.98	PASS
11n-40M	5190	HT40-MCS0	9.48	10.25	12.89	23.98	PASS
	5230	HT40-MCS0	10.72	10.84	13.79	23.98	PASS
11ac-80M	5210	VHT80-MCS0	8.42	9.32	11.90	23.98	PASS

UNII-2a Band

Mode	Frequency (MHz)	Data rate	Measured Average Output Power (dBm)		Highest/ Total Power (dBm)	Output Power Limit (dBm)	Result
			Chain 0	Chain 1			
11a	5260	6Mbps	14.66	15.08	15.08	23.98	PASS
	5280	6Mbps	15.23	15.13	15.23	23.98	PASS
	5320	6Mbps	13.14	13.57	13.57	23.98	PASS
11n-20M	5260	HT20-MCS0	13.82	14.02	16.93	23.98	PASS
	5280	HT20-MCS0	14.02	14.89	17.49	23.98	PASS
	5320	HT20-MCS0	13.47	14.24	16.88	23.98	PASS
11n-40M	5270	HT40-MCS0	12.11	12.57	15.36	23.98	PASS
	5310	HT40-MCS0	11.42	11.48	14.46	23.98	PASS
11ac-80M	5290	VHT80-MCS0	8.99	9.32	12.17	23.98	PASS

UNII-2c Band

Mode	Frequency (MHz)	Data rate	Measured Average Output Power (dBm)		Highest/ Total Power (dBm)	Output Power Limit (dBm)	Result
			Chain 0	Chain 1			
11a	5500	6Mbps	13.29	13.84	13.84	23.98	PASS
	5580	6Mbps	14.18	14.57	14.57	23.98	PASS
	5700	6Mbps	13.47	13.41	13.47	23.98	PASS
	5720	6Mbps	9.24	9.96	9.96	23.98	PASS
11n-20M	5500	HT20-MCS0	14.13	14.42	17.29	23.98	PASS
	5580	HT20-MCS0	14.01	14.09	17.06	23.98	PASS
	5700	HT20-MCS0	13.93	14.01	16.98	23.98	PASS
	5720	HT20-MCS0	8.11	8.64	11.39	23.98	PASS
11n-40M	5510	HT40-MCS0	12.98	12.78	15.89	23.98	PASS
	5550	HT40-MCS0	11.98	12.57	15.30	23.98	PASS
	5670	HT40-MCS0	12.17	12.84	15.53	23.98	PASS
	5710	HT40-MCS0	10.79	10.87	13.84	23.98	PASS
11ac-80M	5530	VHT80-MCS0	10.72	10.21	13.48	23.98	PASS
	5690	VHT80-MCS0	9.82	10.31	13.08	23.98	PASS

UNII-3 Band

Mode	Frequency (MHz)	Data rate	Measured Peak Output Power (dBm)		Highest/ Total Power (dBm)	Output Power Limit (dBm)	Result
			Chain 0	Chain 1			
11a	5745	6Mbps	20.51	21.51	21.51	30.0	PASS
	5785	6Mbps	20.23	20.98	20.98	30.0	PASS
	5825	6Mbps	21.14	20.98	21.14	30.0	PASS
11n-20M	5745	HT20-MCS0	21.1	21.03	24.08	30.0	PASS
	5785	HT20-MCS0	21.13	21.01	24.08	30.0	PASS
	5825	HT20-MCS0	20.57	20.29	23.44	30.0	PASS
11n-40M	5755	HT40-MCS0	19.87	19.25	22.58	30.0	PASS
	5795	HT40-MCS0	19.25	19.38	22.33	30.0	PASS
11ac-80M	5775	VHT80-MCS0	17.49	17.77	20.64	30.0	PASS

Mode	Frequency (MHz)	Data rate	Measured Average Output Power (dBm)		Highest/ Total Power (dBm)	Output Power Limit (dBm)	Result
			Chain 0	Chain 1			
11a	5745	6Mbps	13.41	13.53	13.53	30.0	PASS
	5785	6Mbps	14.88	15.14	15.14	30.0	PASS
	5825	6Mbps	14.75	15.01	15.01	30.0	PASS
11n-20M	5745	HT20-MCS0	12.88	13.42	16.17	30.0	PASS
	5785	HT20-MCS0	14.09	13.48	16.81	30.0	PASS
	5825	HT20-MCS0	14.21	14.73	17.49	30.0	PASS
11n-40M	5755	HT40-MCS0	11.42	11.20	14.32	30.0	PASS
	5795	HT40-MCS0	12.72	12.83	15.79	30.0	PASS
11ac-80M	5775	VHT80-MCS0	9.89	10.25	13.08	30.0	PASS

Note:

- 1) For 802.11a, the highest output power is recorded.
- 2) For 5GHz non-11a mode, it's under 2x2 MIMO mode, the output power is combined together to compare to limit. Directional gain is calculated per KDB 662911 D01. The output power limit is reduced by the amount in dB that the directional gain of the antenna exceeds 6 dBi. After calculating, the directional gain is less than 6 dBi, no limitation reduced requirement.

EIRP measurement result (For ISSED requirement)

U-NII-1 Band

Mode	Frequency (MHz)	Data rate	Highest/ Total Power (dBm)	Antenna / Directional Gain (dBi)	EIRP (dBm)	EIRP Limit (dBm)	Result
802.11a	5180	6Mbps	14.11	1.7	15.81	23	PASS
	5200	6Mbps	15.89	1.7	17.59	23	PASS
	5240	6Mbps	15.76	1.7	17.46	23	PASS
802.11n	5180	HT20_MCS0	16.70	4.71	21.41	23	PASS
	5200	HT20_MCS0	17.75	4.71	22.46	23	PASS
	5240	HT20_MCS0	17.13	4.71	21.84	23	PASS
802.11n40	5190	HT40_MCS0	12.89	4.71	17.60	23	PASS
	5230	HT40_MCS0	13.79	4.71	18.50	23	PASS
802.11ac80	5210	VHT80_MCS0	11.90	4.71	16.61	23	PASS

U-NII-2a Band

Mode	Frequency (MHz)	Data rate	Highest/ Total Power (dBm)	Antenna / Directional Gain (dBi)	EIRP (dBm)	EIRP Limit (dBm)	Result
802.11a	5260	6Mbps	15.08	2.18	17.26	30	PASS
	5280	6Mbps	15.23	2.18	17.41	30	PASS
	5320	6Mbps	13.57	2.18	15.75	30	PASS
802.11n	5260	HT20_MCS0	16.93	5.19	22.12	30	PASS
	5280	HT20_MCS0	17.49	5.19	22.68	30	PASS
	5320	HT20_MCS0	16.88	5.19	22.07	30	PASS
802.11n40	5270	HT40_MCS0	15.36	5.19	20.55	30	PASS
	5310	HT40_MCS0	14.46	5.19	19.65	30	PASS
802.11ac80	5290	VHT80_MCS0	12.17	5.19	17.36	30	PASS

U-NII-2C Band

Mode	Frequency (MHz)	Data rate	Highest/ Total Power (dBm)	Antenna / Directional Gain (dBi)	EIRP (dBm)	EIRP Limit (dBm)	Result
802.11a	5500	6Mbps	13.84	2.27	16.11	30	PASS
	5580	6Mbps	14.57	2.27	16.84	30	PASS
	5700	6Mbps	13.47	2.27	15.74	30	PASS
	5720	6Mbps	9.96	2.27	12.23	30	PASS
802.11n	5500	HT20_MCS0	17.29	5.28	22.57	30	PASS
	5580	HT20_MCS0	17.06	5.28	22.34	30	PASS
	5700	HT20_MCS0	16.98	5.28	22.26	30	PASS
	5720	HT20_MCS0	11.39	5.28	16.67	30	PASS
802.11n40	5510	HT40_MCS0	15.89	5.28	21.17	30	PASS
	5550	HT40_MCS0	15.30	5.28	20.58	30	PASS
	5670	HT40_MCS0	15.53	5.28	20.81	30	PASS
	5710	HT40_MCS0	13.84	5.28	19.12	30	PASS
802.11ac80	5530	VHT80_MCS0	13.48	5.28	18.76	30	PASS
	5690	VHT80_MCS0	13.08	5.28	18.36	30	PASS

7.3 Radiated Spurious Emission

7.3.1 Requirement

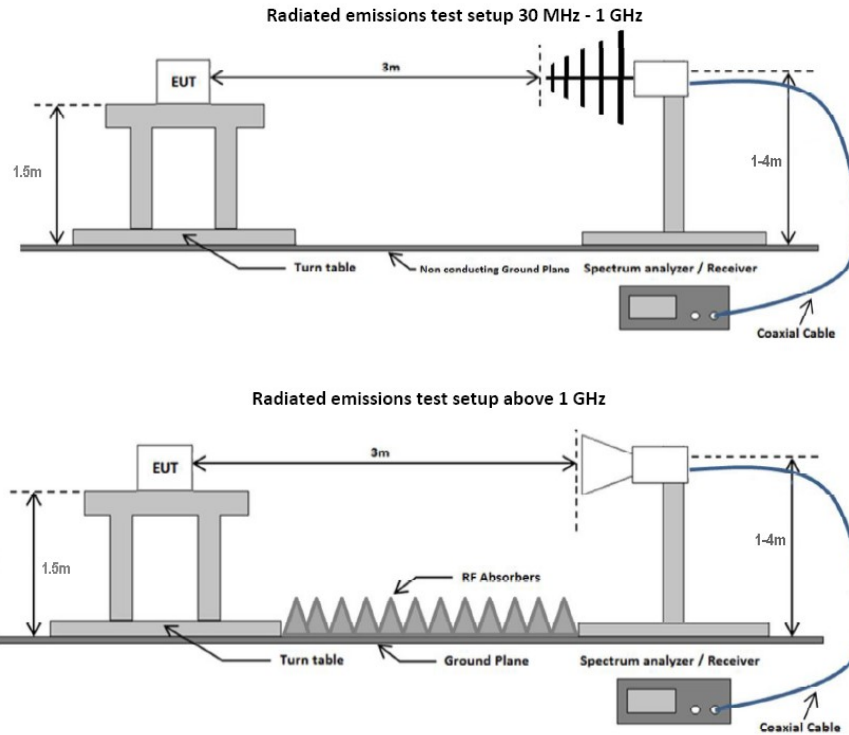
§ 15.407 (b) RSS-247 6.2

- 1) For transmitters operating in the 5.15-5.25 GHz band: all emissions outside of the 5.15-5.35 GHz band shall not exceed an EIRP of -27 dBm/MHz.
- 2) For transmitters operating in the 5.25-5.35 GHz band: all emissions outside of the 5.15-5.35 GHz band shall not exceed an e.i.r.p. of -27 dBm/MHz.
- 3) For transmitters operating in the 5.47-5.725 GHz band: all emissions outside of the 5.47-5.725 GHz band shall not exceed an EIRP of -27 dBm/MHz.
- 4) For transmitters operating in the 5.725-5.825 GHz band: all emissions shall be limited to a level of -27 dBm/MHz at 75 MHz or more above or below the band edge increasing linearly to 10 dBm/MHz at 25 MHz above or below the band edge, and from 25 MHz above or below the band edge increasing linearly to a level of 15.6 dBm/MHz at 5 MHz above or below the band edge, and from 5 MHz above or below the band edge increasing linearly to a level of 27 dBm/MHz at the band edge.
- 5) Restricted band, emission must also comply with the radiated emission limits specified in 15.209

Attenuation below the general limits specified in §15.209(a) and RSS-Gen is not required. In addition, radiated emissions which fall in the restricted bands, as defined in §15.205(a), must also comply with the radiated emission limits specified in §15.209(a) (see §15.205(c)).

Frequency Range (MHZ)	Field Strength (μV/m)	Measurement Distance (m)
0.009~0.490	2400/F(kHz)	300
0.490~1.705	24000/F(kHz)	30
1.705~30.0	30	30
30 - 88	100	3
88 - 216	150	3
216 960	200	3
Above 960	500	3

7.3.2 Test Setup



7.3.3 Test Procedure

According to subclause 12.7, radiated spurious emission measurements, in ANSI C63.10-2013:

- 1) The EUT was switched on and allowed to warm up to its normal operating condition.
- 2) The test was carried out at the selected frequency points obtained from the EUT characterization. Maximization of the emissions, was carried out by rotating the EUT, changing the antenna polarization, and adjusting the antenna height in the following manner:
 - a. Vertical or horizontal polarization (whichever gave the higher emission level over a full rotation of the EUT was chosen.
 - b. The EUT was then rotated to the direction that gave the maximum emission.
 - c. Finally, the antenna height was adjusted to the height that gave the maximum emission.
- 3) The resolution bandwidth and video bandwidth of test receiver/spectrum analyzer is 300Hz for frequencies below 150kHz.
- 4) The resolution bandwidth and video bandwidth of test receiver/spectrum analyzer is 10kHz for frequency between 150kHz-30MHz.
- 5) The resolution bandwidth and video bandwidth of test receiver/spectrum analyzer is 120kHz for quasi-peak detection at frequency between 30MHz-1GHz.
- 6) The resolution bandwidth of test receiver/spectrum analyzer is 1MHz and video bandwidth is 3MHz with peak detection for peak and average measurement at frequency above 1GHz.
- 7) Steps 2 and 3 were repeated for the next frequency point, until all selected frequency points were measured.

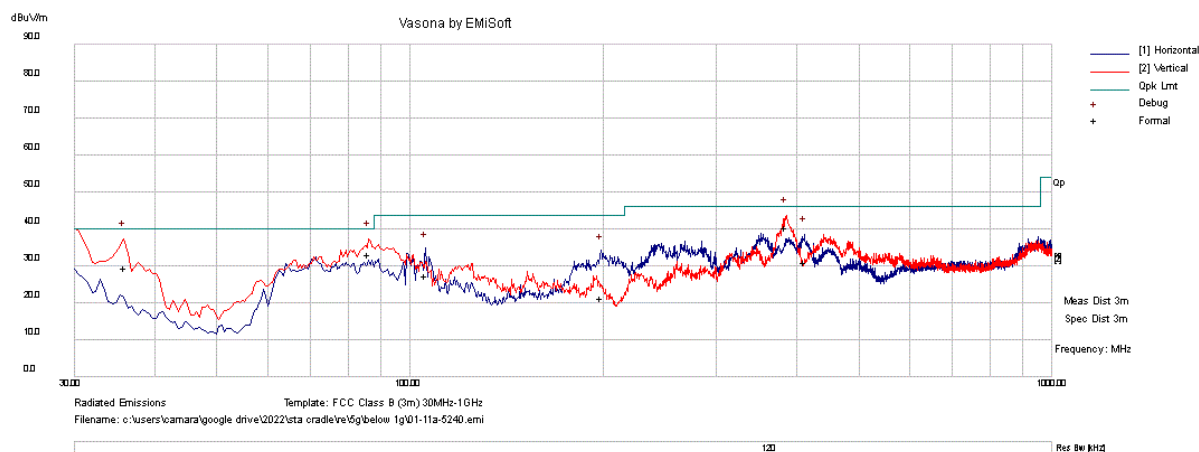
7.3.4 Test Result

Radiated Emission between 9KHz – 30MHz test result

Note: no substantial emission is found other than the noise floor. Different modes have been verified.

RADIATED SPURIOUS EMISSION BELOW 1GHZ

Test Standard:	FCC15.407, 15.209, RSS-247	Mode:	RSE-Below 1GHz_802.11a
Frequency Range:	30 MHz - 1 GHz	Test Date:	03/25/2022
Antenna Type/Polarity:	Bi-Log/Hor & Ver	Test Personnel:	Devin Tai
Remark:	Ch 48	Test Result:	Pass



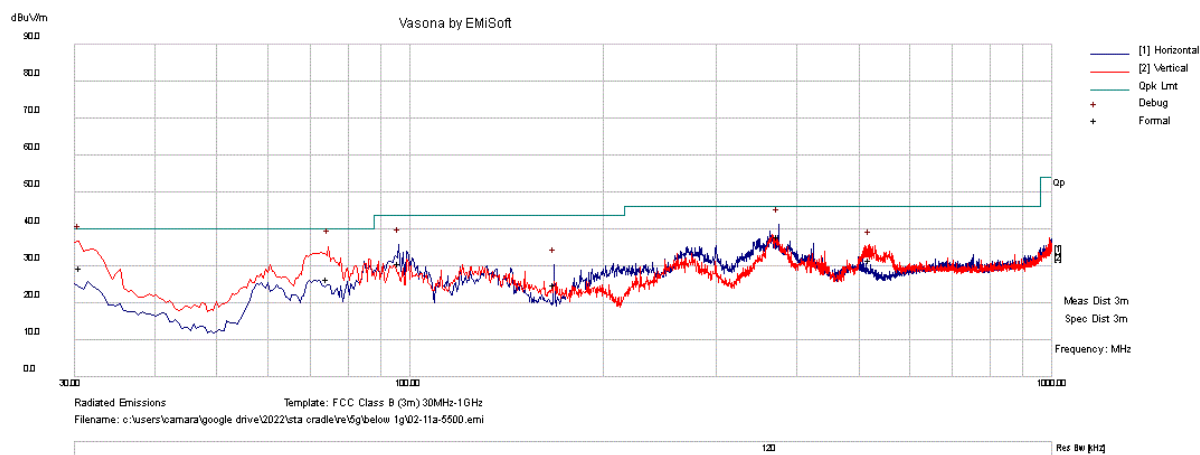
No.	Frequency MHz	Raw dBuV	Cable Loss dB	AF dB/m	Level dBuV/m	Measurement Type	Pol	Hgt cm	Azt Deg	Limit dBuV/m	Margin dB	Pass/Fail
1	385.439	42.8	6.3	-8.8	40.3	Quasi Max	V	109	0	46	-5.7	Pass
2	36.037	42	2.4	-14.9	29.6	Quasi Max	V	180	0	40	-10.4	Pass
3	86.176	50	3.4	-20.2	33.2	Quasi Max	V	137	173	40	-6.8	Pass
4	411.847	33	6.3	-8.2	31.1	Quasi Max	H	101	0	46	-14.9	Pass
5	105.685	42.8	3.7	-18.9	27.5	Quasi Max	V	114	0	43.5	-16	Pass
6	198.668	33.7	4.7	-17	21.4	Quasi Max	V	104	0	43.5	-22.1	Pass

Remarks:

1. Level (dBuV/m) = Raw (dBuV) + Cable loss(dB) + AF (dB/m).
2. AF (dB/m) = Antenna Factor (dB) - Preamplifier Gain (dB)
3. Margin = Level (dBuV/m) - Limit value(dBuV/m)

RADIATED SPURIOUS EMISSION BELOW 1GHZ

Test Standard:	FCC15.407, 15.209, RSS-247	Mode:	RSE-Below 1GHz_802.11a
Frequency Range:	30 MHz - 1 GHz	Test Date:	03/28/2022
Antenna Type/Polarity:	Bi-Log/Hor & Ver	Test Personnel:	Devin Tai
Remark:	Ch 100	Test Result:	Pass



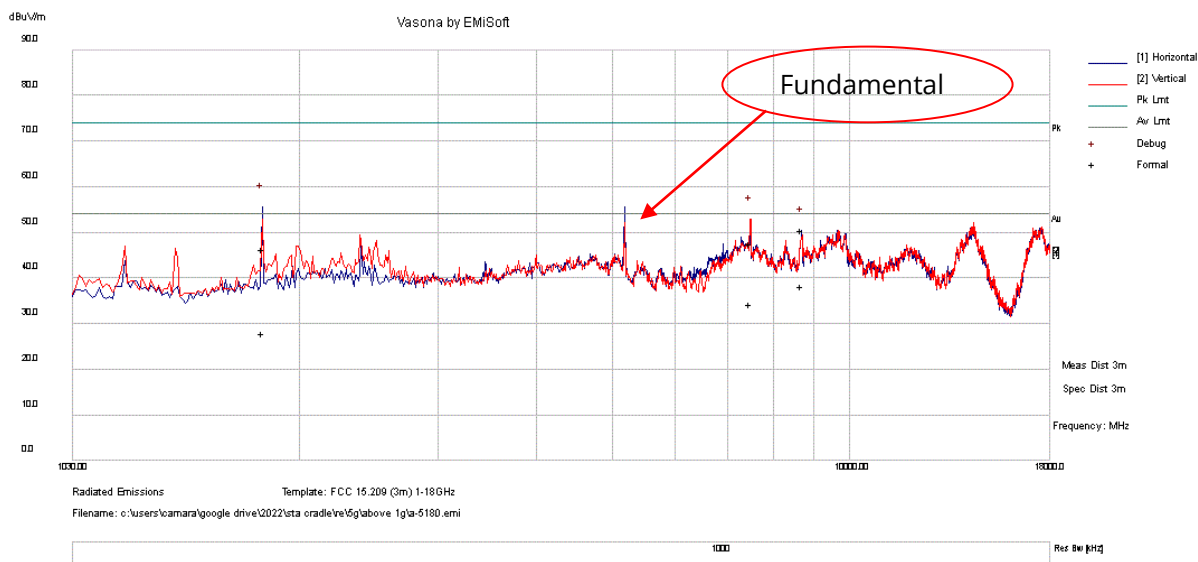
No.	Frequency MHz	Raw dBuV	Cable Loss dB	AF dB/m	Level dBuV/m	Measurement Type	Pol	Hgt cm	Azt Deg	Limit dBuV/m	Margin dB	Pass/Fail
1	30.6	39.1	2.2	-11.9	29.5	Quasi Max	V	262	146	40	-10.5	Pass
2	74.396	43.3	3.2	-20.2	26.4	Quasi Max	V	220	166	40	-13.6	Pass
3	374.976	41.3	6.2	-9.4	38.1	Quasi Max	H	100	146	46	-7.9	Pass
4	95.956	46.7	3.5	-19.5	30.8	Quasi Max	H	182	307	43.5	-12.7	Pass
5	520.129	32.8	6.3	-7.6	31.5	Quasi Max	V	146	347	46	-14.5	Pass
6	167.981	38.1	4.4	-17.5	25.1	Quasi Max	V	110	336	43.5	-18.4	Pass

Remarks:

1. Level (dBuV/m) = Raw (dBuV) + Cable loss(dB) + AF (dB/m).
2. AF (dB/m) = Antenna Factor (dB) - Preamplifier Gain (dB)
3. Margin = Level (dBuV/m) - Limit value(dBuV/m)

RADIATED EMISSIONS 1 - 18 GHZ

Test Standard:	FCC15.407, 15.209, RSS-247	Mode:	RSE-Above 1GHz_802.11a
Frequency Range:	30 MHz - 1 GHz	Test Date:	04/04/2022-04/06/2022
Antenna Type/Polarity:	Bi-Log/Hor & Ver	Test Personnel:	Devin Tai
Remark:	Ch 36 / CH 40 / CH48	Test Result:	Pass



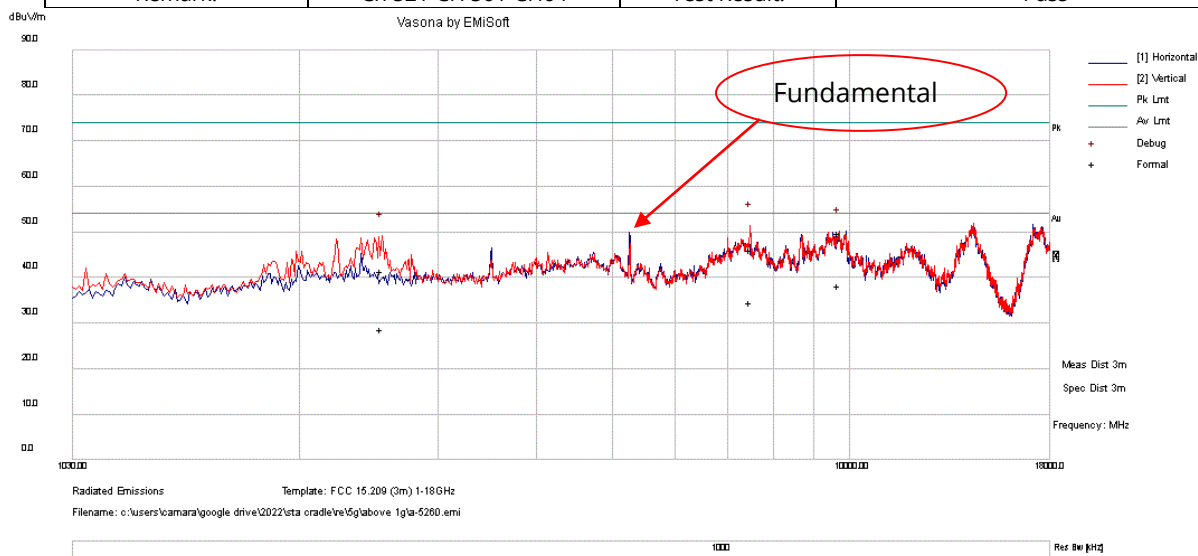
Mode: 802.11a_ch 36												
No.	Frequency MHz	Raw dBuV	Cable Loss	AF dB/m	Level dBuV/m	Measurement Type	Pol	Hgt cm	Azt Deg	Limit dBuV/m	Margin dB	Pass/Fail
1	1795.575	46.5	5.4	-5.4	46.4	Peak Max	H	177	136	74	-27.6	Pass
2	7480.11	31.2	11.9	4.6	47.7	Peak Max	V	100	344	74	-26.3	Pass
3	8696.319	27.9	17.8	5	50.7	Peak Max	H	393	120	74	-23.3	Pass
4	1795.575	28.1	5.4	-5.4	28.1	Average Max	H	177	136	54	-25.9	Pass
5	7480.11	17.9	11.9	4.6	34.4	Average Max	V	100	344	54	-19.6	Pass
6	8696.319	15.4	17.8	5	38.2	Average Max	H	393	120	54	-15.8	Pass
Mode: 802.11a_ch 40												
No.	Frequency MHz	Raw dBuV	Cable Loss	AF dB/m	Level dBuV/m	Measurement Type	Pol	Hgt cm	Azt Deg	Limit dBuV/m	Margin dB	Pass/Fail
1	7489.584	29.5	11.9	4.5	45.9	Peak Max	V	307	176	74	-28.1	Pass
2	9525.914	28.5	13.9	7.3	49.7	Peak Max	V	256	54	74	-24.3	Pass
3	2432.018	39.9	6.3	-4.3	41.8	Peak Max	V	306	279	74	-32.2	Pass
4	7489.584	17.6	11.9	4.5	34	Average Max	V	307	176	54	-20	Pass
5	9525.914	16.3	13.9	7.3	37.6	Average Max	V	256	54	54	-16.4	Pass
6	2432.018	27.6	6.3	-4.3	29.5	Average Max	V	306	279	54	-24.5	Pass
Mode: 802.11a_ch 48												
No.	Frequency MHz	Raw dBuV	Cable Loss	AF dB/m	Level dBuV/m	Measurement Type	Pol	Hgt cm	Azt Deg	Limit dBuV/m	Margin dB	Pass/Fail
1	9399.879	28.6	14.7	7.1	50.4	Peak Max	H	282	0	74	-23.6	Pass
2	9704.245	28.7	14.7	6.1	49.4	Peak Max	H	127	136	74	-24.6	Pass
3	7488.674	33.4	11.9	4.5	49.8	Peak Max	V	128	255	74	-24.2	Pass
4	9399.879	16.3	14.7	7.1	38.2	Average Max	H	282	0	54	-15.8	Pass
5	9704.245	17.5	14.7	6.1	38.2	Average Max	H	127	136	54	-15.8	Pass
6	7488.674	17.8	11.9	4.5	34.2	Average Max	V	128	255	54	-19.8	Pass

Remarks:

1. Level (dBuV/m) = Raw (dBuV) + Cable loss(dB) + AF (dB/m).
2. AF (dB/m) = Antenna Factor (dB) - Preamplifier Gain (dB)
3. Margin = Level (dBuV/m) - Limit value(dBuV/m)

RADIATED EMISSIONS 1 - 18 GHZ

Test Standard:	FCC15.407, 15.209, RSS-247	Mode:	RSE-Above 1GHz_802.11a
Frequency Range:	30 MHz - 1 GHz	Test Date:	04/04/2022-04/06/2022
Antenna Type/Polarity:	Bi-Log/Hor & Ver	Test Personnel:	Devin Tai
Remark:	Ch 52 / CH 56 / CH64	Test Result:	Pass



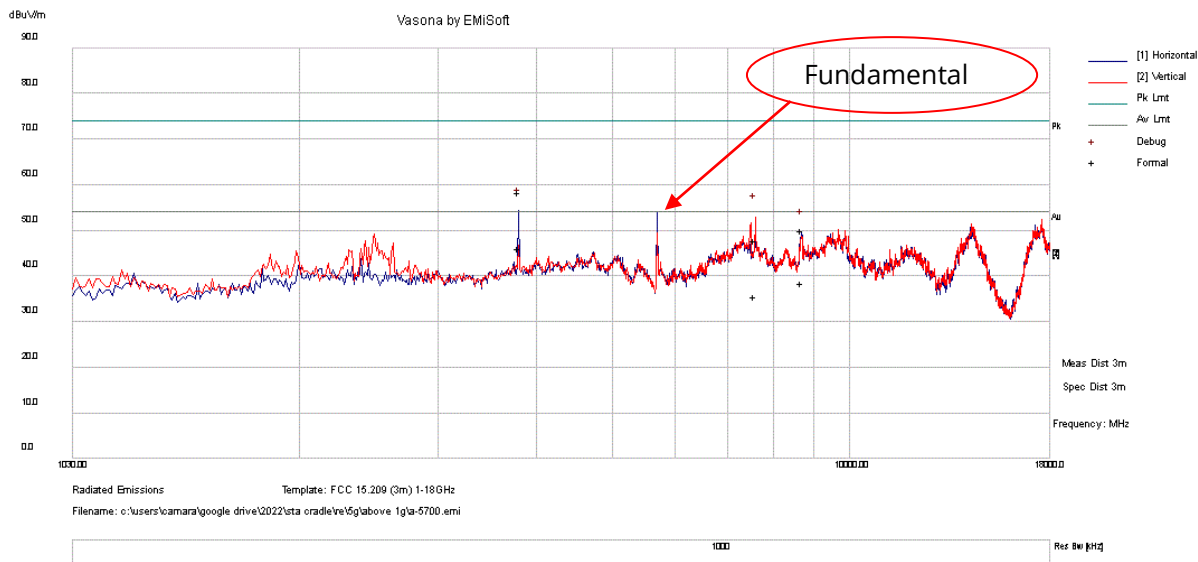
Mode: 802.11a_ch 52												
No.	Frequency MHz	Raw dBuV	Cable Loss	AF dB/m	Level dBuV/m	Measurement Type	Pol	Hgt cm	Azt Deg	Limit dBuV/m	Margin dB	Pass/Fail
1	7478.008	29.5	11.9	4.7	46.1	Peak Max	V	367	228	74	-27.9	Pass
2	9705.443	29.1	14.7	6.1	49.8	Peak Max	V	264	292	74	-24.2	Pass
3	2548.009	39.2	6.4	-4.1	41.4	Peak Max	V	203	44	74	-32.6	Pass
4	7478.008	18	11.9	4.7	34.6	Average Max	V	367	228	54	-19.4	Pass
5	9705.443	17.6	14.7	6.1	38.3	Average Max	V	264	292	54	-15.7	Pass
6	2548.009	26.4	6.4	-4.1	28.7	Average Max	V	203	44	54	-25.3	Pass
Mode: 802.11a_ch 56												
No.	Frequency MHz	Raw dBuV	Cable Loss	AF dB/m	Level dBuV/m	Measurement Type	Pol	Hgt cm	Azt Deg	Limit dBuV/m	Margin dB	Pass/Fail
1	7467.479	34.5	11.9	4.8	51.2	Peak Max	V	175	238	74	-22.8	Pass
2	8697.669	28	17.8	5	50.9	Peak Max	H	284	0	74	-23.1	Pass
3	4922.294	52	9.1	3.1	64.3	Peak Max	H	140	21	74	-9.7	Pass
4	7467.479	19	11.9	4.8	35.8	Average Max	V	175	238	54	-18.2	Pass
5	8697.669	15.6	17.8	5	38.5	Average Max	H	284	0	54	-15.5	Pass
6	4922.294	19.4	9.1	3.1	31.7	Average Max	H	140	21	54	-22.3	Pass
Mode: 802.11a_ch 64												
No.	Frequency MHz	Raw dBuV	Cable Loss	AF dB/m	Level dBuV/m	Measurement Type	Pol	Hgt cm	Azt Deg	Limit dBuV/m	Margin dB	Pass/Fail
1	7467.721	30.8	11.9	4.8	47.5	Peak Max	V	389	233	74	-26.5	Pass
2	2442.354	44.9	6.3	-4.4	46.7	Peak Max	V	139	264	74	-27.3	Pass
3	8687.413	26.6	17.4	5	49	Peak Max	H	140	195	74	-25	Pass
4	7467.721	18.8	11.9	4.8	35.5	Average Max	V	389	233	54	-18.5	Pass
5	2442.354	29.4	6.3	-4.4	31.2	Average Max	V	139	264	54	-22.8	Pass
6	8687.413	15.2	17.4	5	37.6	Average Max	H	140	195	54	-16.5	Pass

Remarks:

1. Level (dBuV/m) = Raw (dBuV) + Cable loss(dB) + AF (dB/m).
2. AF (dB/m) = Antenna Factor (dB) - Preamplifier Gain (dB)
3. Margin = Level (dBuV/m) - Limit value(dBuV/m)

RADIATED EMISSIONS 1 - 18 GHZ

Test Standard:	FCC15.407, 15.209, RSS-247	Mode:	RSE-Above 1GHz_802.11a
Frequency Range:	30 MHz - 1 GHz	Test Date:	04/04/2022-04/06/2022
Antenna Type/Polarity:	Bi-Log/Hor & Ver	Test Personnel:	Devin Tai
Remark:	Ch 100 / CH 116 / CH140	Test Result:	Pass



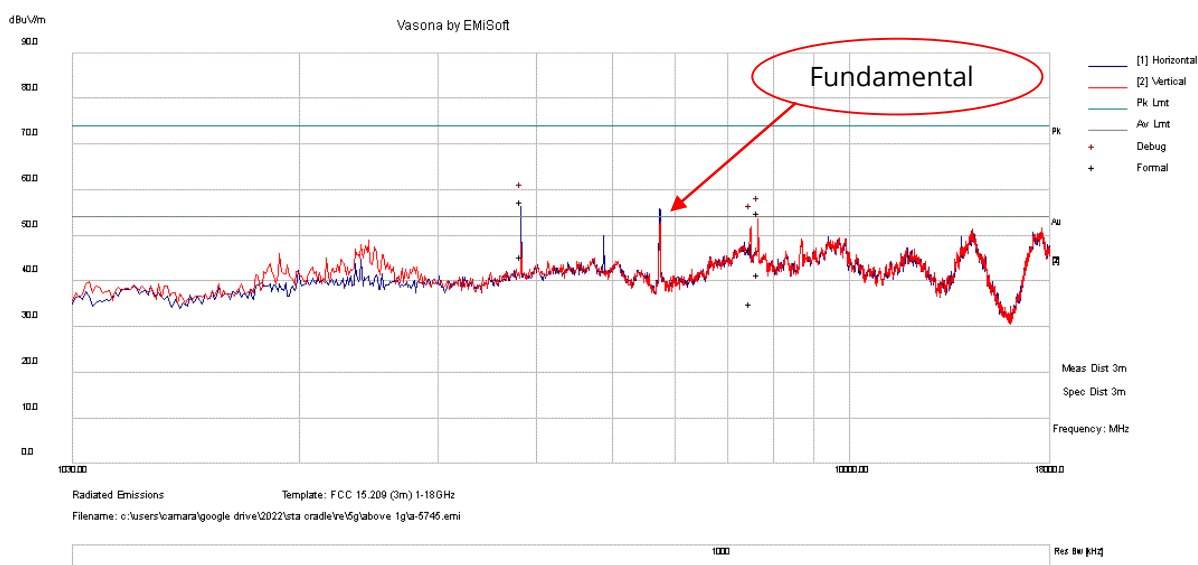
Mode: 802.11a_ch 100												
No.	Frequency MHz	Raw dBuV	Cable Loss	AF dB/m	Level dBuV/m	Measurement Type	Pol	Hgt cm	Azt Deg	Limit dBuV/m	Margin dB	Pass/Fail
1	7466.894	30.3	11.9	4.8	47.1	Peak Max	V	337	176	74	-26.9	Pass
2	5496.469	37.8	9.7	4.1	51.6	Peak Max	H	100	346	74	-22.4	Pass
3	9398.624	27.7	14.7	7.1	49.5	Peak Max	H	131	36	74	-24.5	Pass
4	7466.894	18.8	11.9	4.8	35.5	Average Max	V	337	176	54	-18.5	Pass
5	5496.469	25.8	9.7	4.1	39.6	Average Max	H	100	346	54	-14.4	Pass
6	9398.624	15.9	14.7	7.1	37.7	Average Max	H	131	36	54	-16.3	Pass
Mode: 802.11a_ch 116												
No.	Frequency MHz	Raw dBuV	Cable Loss	AF dB/m	Level dBuV/m	Measurement Type	Pol	Hgt cm	Azt Deg	Limit dBuV/m	Margin dB	Pass/Fail
1	2389.24	39.5	6.3	-4.1	41.7	Peak Max	V	387	230	74	-32.3	Pass
2	7488.744	33.8	11.9	4.5	50.2	Peak Max	V	137	254	74	-23.8	Pass
3	8710.36	27.1	17.5	5.2	49.7	Peak Max	H	281	36	74	-24.3	Pass
4	2389.24	27.1	6.3	-4.1	29.3	Average Max	V	387	230	54	-24.7	Pass
5	7488.744	19	11.9	4.5	35.4	Average Max	V	137	254	54	-18.6	Pass
6	8710.36	15.1	17.5	5.2	37.7	Average Max	H	281	36	54	-16.3	Pass
Mode: 802.11a_ch 140												
No.	Frequency MHz	Raw dBuV	Cable Loss	AF dB/m	Level dBuV/m	Measurement Type	Pol	Hgt cm	Azt Deg	Limit dBuV/m	Margin dB	Pass/Fail
1	3799.926	48.6	8.2	1.6	58.4	Peak Max	H	252	12	74	-15.6	Pass
2	7595.116	30.5	12.3	5.1	47.9	Peak Max	V	329	118	74	-26.1	Pass
3	8699.816	27	17.9	5	50	Peak Max	H	279	234	74	-24	Pass
4	3799.926	36.4	8.2	1.6	46.2	Average Max	H	252	12	54	-7.8	Pass
5	7595.116	18.2	12.3	5.1	35.6	Average Max	V	329	118	54	-18.4	Pass
6	8699.816	15.6	17.9	5	38.5	Average Max	H	279	234	54	-15.5	Pass

Remarks:

1. Level (dBuV/m) = Raw (dBuV) + Cable loss(dB) + AF (dB/m).
2. AF (dB/m) = Antenna Factor (dB) - Preamplifier Gain (dB)
3. Margin = Level (dBuV/m) - Limit value(dBuV/m)

RADIATED EMISSIONS 1 - 18 GHZ

Test Standard:	FCC15.407, 15.209, RSS-247	Mode:	RSE-Above 1GHz_802.11a
Frequency Range:	30 MHz - 1 GHz	Test Date:	04/04/2022-04/06/2022
Antenna Type/Polarity:	Bi-Log/Hor & Ver	Test Personnel:	Devin Tai
Remark:	Ch 149 / CH 157 / CH165	Test Result:	Pass



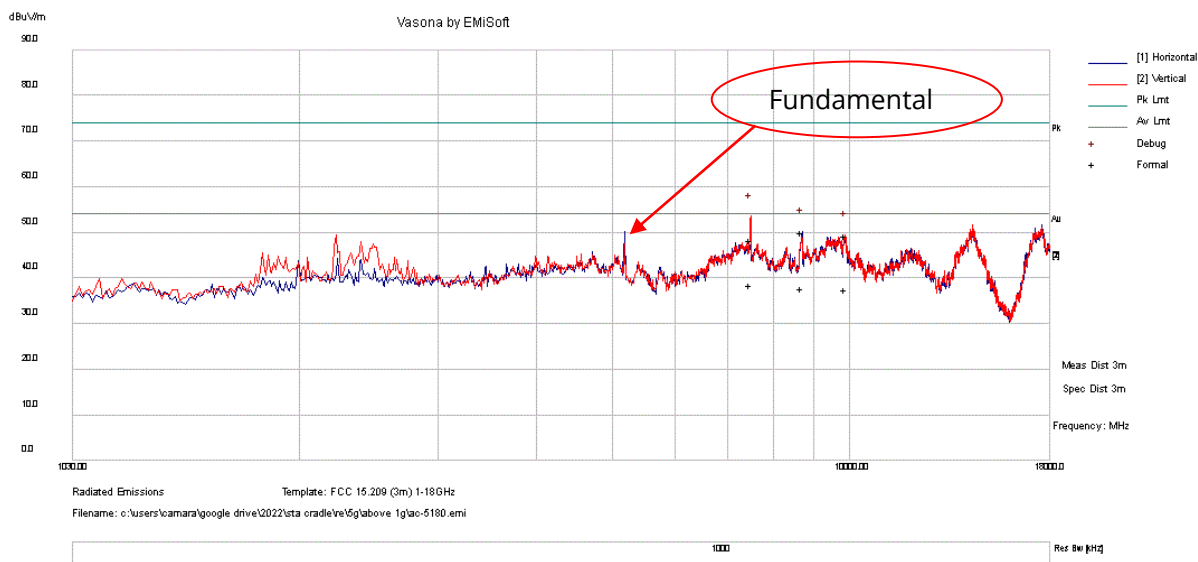
Mode: 802.11a_ch 149												
No.	Frequency MHz	Raw dBuV	Cable Loss	AF dB/m	Level dBuV/m	Measurement Type	Pol	Hgt cm	Azt Deg	Limit dBuV/m	Margin dB	Pass/Fail
1	3829.943	47.7	8.1	1.8	57.5	Peak Max	H	231	4	74	-16.5	Pass
2	7660.164	38	12.4	4.7	55	Peak Max	V	101	347	74	-19	Pass
3	7500.028	31	11.9	4.4	47.2	Peak Max	V	159	156	74	-26.8	Pass
4	3829.943	35.7	8.1	1.8	45.5	Average Max	H	231	4	54	-8.5	Pass
5	7660.164	24.3	12.4	4.7	41.4	Average Max	V	101	347	54	-12.6	Pass
6	7500.028	18.9	11.9	4.4	35.1	Average Max	V	159	156	54	-18.9	Pass
Mode: 802.11a_ch 157												
No.	Frequency MHz	Raw dBuV	Cable Loss	AF dB/m	Level dBuV/m	Measurement Type	Pol	Hgt cm	Azt Deg	Limit dBuV/m	Margin dB	Pass/Fail
1	3860.696	32.3	8	1.8	42.2	Peak Max	H	231	252	74	-31.8	Pass
2	7713.2	37.1	12.4	4.4	54	Peak Max	V	103	347	74	-20	Pass
3	7487.509	30	11.9	4.5	46.5	Peak Max	V	273	237	74	-27.5	Pass
4	3860.696	20.7	8	1.8	30.5	Average Max	H	231	252	54	-23.5	Pass
5	7713.2	28.4	12.4	4.4	45.3	Average Max	V	103	347	54	-8.7	Pass
6	7487.509	17.9	11.9	4.5	34.3	Average Max	V	273	237	54	-19.7	Pass
Mode: 802.11a_ch 165												
No.	Frequency MHz	Raw dBuV	Cable Loss	AF dB/m	Level dBuV/m	Measurement Type	Pol	Hgt cm	Azt Deg	Limit dBuV/m	Margin dB	Pass/Fail
1	3883.259	41.8	8	1.9	51.6	Peak Max	H	241	7	74	-22.4	Pass
2	7499.988	31.4	11.9	4.4	47.6	Peak Max	V	151	9	74	-26.4	Pass
3	9451.815	27.4	14.3	7.5	49.1	Peak Max	V	160	320	74	-24.9	Pass
4	3883.259	30.5	8	1.9	40.3	Average Max	H	241	7	54	-13.7	Pass
5	7499.988	19.1	11.9	4.4	35.3	Average Max	V	151	9	54	-18.7	Pass
6	9451.815	15.6	14.3	7.5	37.3	Average Max	V	160	320	54	-16.7	Pass

Remarks:

1. Level (dBuV/m) = Raw (dBuV) + Cable loss(dB) + AF (dB/m).
2. AF (dB/m) = Antenna Factor (dB) - Preamplifier Gain (dB)
3. Margin = Level (dBuV/m) - Limit value(dBuV/m)

RADIATED EMISSIONS 1 - 18 GHZ

Test Standard:	FCC15.407, 15.209, RSS-247	Mode:	RSE-Above 1GHz_802.11ac
Frequency Range:	30 MHz - 1 GHz	Test Date:	04/04/2022-04/06/2022
Antenna Type/Polarity:	Bi-Log/Hor & Ver	Test Personnel:	Devin Tai
Remark:	Ch 36 / CH 40 / CH48	Test Result:	Pass



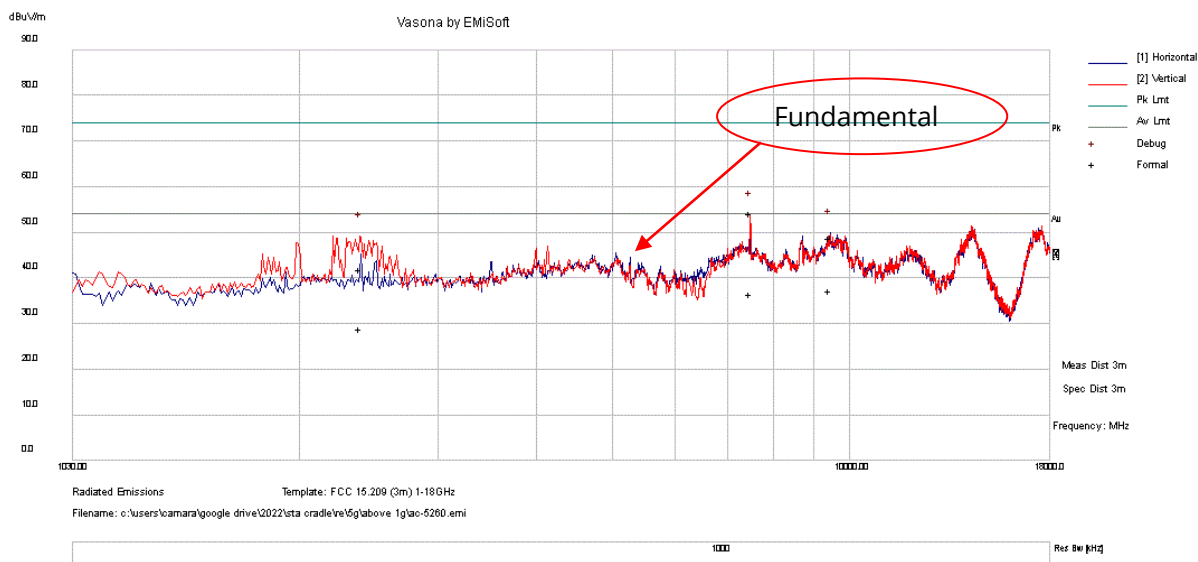
Mode: 802.11ac_ch 36												
No.	Frequency MHz	Raw dBuV	Cable Loss	AF dB/m	Level dBuV/m	Measurement Type	Pol	Hgt cm	Azt Deg	Limit dBuV/m	Margin dB	Pass/Fail
1	7500.045	32.1	11.9	4.4	48.4	Peak Max	V	100	42	74	-25.6	Pass
2	8707.633	27.3	17.6	5.1	50.1	Peak Max	H	118	15	74	-23.9	Pass
3	9884.256	27.5	14.5	7.4	49.4	Peak Max	V	144	123	74	-24.6	Pass
4	7500.045	22.3	11.9	4.4	38.5	Average Max	V	100	42	54	-15.5	Pass
5	8707.633	15.1	17.6	5.1	37.8	Average Max	H	118	15	54	-16.2	Pass
6	9884.256	15.8	14.5	7.4	37.7	Average Max	V	144	123	54	-16.3	Pass
Mode: 802.11ac_ch 40												
No.	Frequency MHz	Raw dBuV	Cable Loss	AF dB/m	Level dBuV/m	Measurement Type	Pol	Hgt cm	Azt Deg	Limit dBuV/m	Margin dB	Pass/Fail
1	7500.133	32.6	11.9	4.4	48.9	Peak Max	V	117	0	74	-25.1	Pass
2	9396.549	27.7	14.7	7	49.4	Peak Max	V	241	130	74	-24.6	Pass
3	8699.686	27.1	17.9	5	50.1	Peak Max	V	314	122	74	-23.9	Pass
4	7500.133	24.1	11.9	4.4	40.4	Average Max	V	117	0	54	-13.6	Pass
5	9396.549	15.9	14.7	7	37.7	Average Max	V	241	130	54	-16.3	Pass
6	8699.686	15	17.9	5	37.9	Average Max	V	314	122	54	-16.1	Pass
Mode: 802.11ac_ch 48												
No.	Frequency MHz	Raw dBuV	Cable Loss	AF dB/m	Level dBuV/m	Measurement Type	Pol	Hgt cm	Azt Deg	Limit dBuV/m	Margin dB	Pass/Fail
1	7500.133	32.6	11.9	4.4	48.9	Peak Max	V	117	0	74	-25.1	Pass
2	9396.549	27.7	14.7	7	49.4	Peak Max	V	241	130	74	-24.6	Pass
3	8699.686	27.1	17.9	5	50.1	Peak Max	V	314	122	74	-23.9	Pass
4	7500.133	24.1	11.9	4.4	40.4	Average Max	V	117	0	54	-13.6	Pass
5	9396.549	15.9	14.7	7	37.7	Average Max	V	241	130	54	-16.3	Pass
6	8699.686	15	17.9	5	37.9	Average Max	V	314	122	54	-16.1	Pass

Remarks:

1. Level (dBuV/m) = Raw (dBuV) + Cable loss(dB) + AF (dB/m).
2. AF (dB/m) = Antenna Factor (dB) - Preamplifier Gain (dB)
3. Margin = Level (dBuV/m) - Limit value(dBuV/m)

RADIATED EMISSIONS 1 - 18 GHZ

Test Standard:	FCC15.407, 15.209, RSS-247	Mode:	RSE-Above 1GHz_802.11ac
Frequency Range:	30 MHz - 1 GHz	Test Date:	04/04/2022-04/06/2022
Antenna Type/Polarity:	Bi-Log/Hor & Ver	Test Personnel:	Devin Tai
Remark:	Ch 52 / CH 56 / CH64	Test Result:	Pass



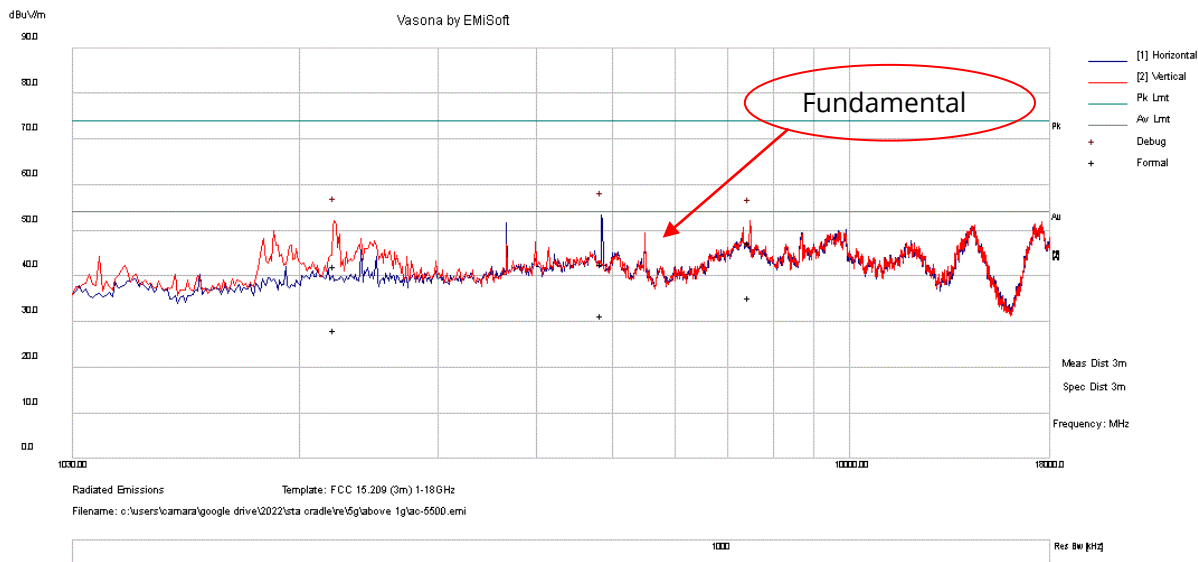
Mode: 802.11ac_ch 52												
No.	Frequency MHz	Raw dBuV	Cable Loss	AF dB/m	Level dBuV/m	Measurement Type	Pol	Hgt cm	Azt Deg	Limit dBuV/m	Margin dB	Pass/Fail
1	7489.101	37.8	11.9	4.5	54.2	Peak Max	V	100	235	74	-19.8	Pass
2	9452.35	27.1	14.3	7.5	48.8	Peak Max	H	333	188	74	-25.2	Pass
3	2386.768	39.9	6.3	-4.1	42	Peak Max	V	260	239	74	-32	Pass
4	7489.101	20.2	11.9	4.5	36.6	Average Max	V	100	235	54	-17.4	Pass
5	9452.35	15.6	14.3	7.5	37.4	Average Max	H	333	188	54	-16.6	Pass
6	2386.768	26.7	6.3	-4.1	28.9	Average Max	V	260	239	54	-25.1	Pass
Mode: 802.11ac_ch 56												
No.	Frequency MHz	Raw dBuV	Cable Loss	AF dB/m	Level dBuV/m	Measurement Type	Pol	Hgt cm	Azt Deg	Limit dBuV/m	Margin dB	Pass/Fail
1	7468.009	31.3	11.9	4.8	48.1	Peak Max	V	177	130	74	-25.9	Pass
2	9704.89	29.8	14.7	6.1	50.5	Peak Max	V	130	22	74	-23.5	Pass
3	1105.224	49	4.2	-4.9	48.3	Peak Max	V	213	170	74	-25.7	Pass
4	7468.009	18.4	11.9	4.8	35.1	Average Max	V	177	130	54	-18.9	Pass
5	9704.89	17.5	14.7	6.1	38.2	Average Max	V	130	22	54	-15.8	Pass
6	1105.224	27.8	4.2	-4.9	27.1	Average Max	V	213	170	54	-26.9	Pass
Mode: 802.11ac_ch 64												
No.	Frequency MHz	Raw dBuV	Cable Loss	AF dB/m	Level dBuV/m	Measurement Type	Pol	Hgt cm	Azt Deg	Limit dBuV/m	Margin dB	Pass/Fail
1	4848.265	31.1	9.1	3	43.1	Peak Max	H	170	0	74	-30.9	Pass
2	7467.789	33.4	11.9	4.8	50.1	Peak Max	V	160	0	74	-23.9	Pass
3	9706.255	29.1	14.6	6	49.8	Peak Max	V	335	0	74	-24.2	Pass
4	4848.265	19.3	9.1	3	31.4	Average Max	H	170	0	54	-22.6	Pass
5	7467.789	19.5	11.9	4.8	36.2	Average Max	V	160	0	54	-17.8	Pass
6	9706.255	17.5	14.6	6	38.2	Average Max	V	335	0	54	-15.8	Pass

Remarks:

1. Level (dBuV/m) = Raw (dBuV) + Cable loss(dB) + AF (dB/m).
2. AF (dB/m) = Antenna Factor (dB) - Preamplifier Gain (dB)
3. Margin = Level (dBuV/m) - Limit value(dBuV/m)

RADIATED EMISSIONS 1 - 18 GHZ

Test Standard:	FCC15.407, 15.209, RSS-247	Mode:	RSE-Above 1GHz_802.11ac
Frequency Range:	30 MHz - 1 GHz	Test Date:	04/04/2022-04/06/2022
Antenna Type/Polarity:	Bi-Log/Hor & Ver	Test Personnel:	Devin Tai
Remark:	Ch 100 / CH 116 / CH140	Test Result:	Pass



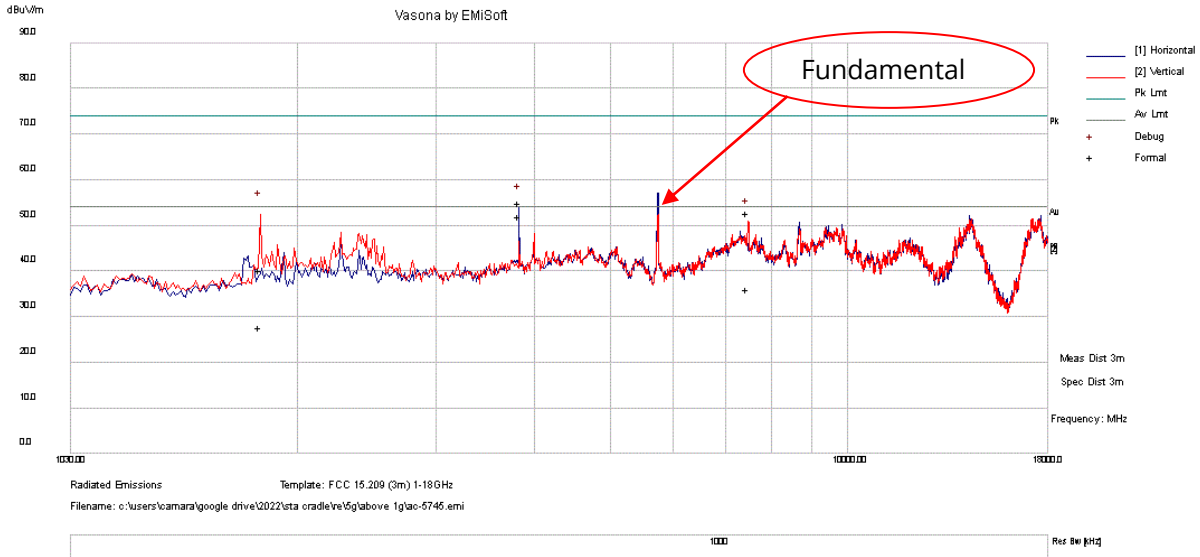
Mode: 802.11ac_ch 100												
No.	Frequency MHz	Raw dBuV	Cable Loss	AF dB/m	Level dBuV/m	Measurement Type	Pol	Hgt cm	Azt Deg	Limit dBuV/m	Margin dB	Pass/Fail
1	4847.133	30.8	9.1	2.9	42.8	Peak Max	H	155	185	74	-31.2	Pass
2	2219.9	40.2	6	-4	42.3	Peak Max	V	235	31	74	-31.7	Pass
3	7467.476	30.7	11.9	4.8	47.4	Peak Max	V	376	200	74	-26.6	Pass
4	4847.133	19.2	9.1	2.9	31.3	Average Max	H	155	185	54	-22.7	Pass
5	2219.9	26.1	6	-4	28.2	Average Max	V	235	31	54	-25.8	Pass
6	7467.476	18.7	11.9	4.8	35.5	Average Max	V	376	200	54	-18.5	Pass
Mode: 802.11ac_ch 116												
No.	Frequency MHz	Raw dBuV	Cable Loss	AF dB/m	Level dBuV/m	Measurement Type	Pol	Hgt cm	Azt Deg	Limit dBuV/m	Margin dB	Pass/Fail
1	7476.9	35.1	11.9	4.7	51.7	Peak Max	V	100	236	74	-22.3	Pass
2	3723.685	33	8	0.9	41.8	Peak Max	H	264	0	74	-32.2	Pass
3	9694.404	29.1	14.7	6.1	49.8	Peak Max	H	325	0	74	-24.2	Pass
4	7476.9	19	11.9	4.7	35.6	Average Max	V	100	236	54	-18.4	Pass
5	3723.685	21.2	8	0.9	30.1	Average Max	H	264	0	54	-23.9	Pass
6	9694.404	17.5	14.7	6.1	38.2	Average Max	H	325	0	54	-15.8	Pass
Mode: 802.11ac_ch 140												
No.	Frequency MHz	Raw dBuV	Cable Loss	AF dB/m	Level dBuV/m	Measurement Type	Pol	Hgt cm	Azt Deg	Limit dBuV/m	Margin dB	Pass/Fail
1	3799.904	48.2	8.2	1.6	58	Peak Max	H	236	160	74	-16	Pass
2	7595.164	30.2	12.3	5.1	47.5	Peak Max	V	367	0	74	-26.5	Pass
3	5697.028	39.1	10	3.9	53	Peak Max	H	171	167	74	-21	Pass
4	3799.904	35.5	8.2	1.6	45.3	Average Max	H	236	160	54	-8.7	Pass
5	7595.164	18.1	12.3	5.1	35.5	Average Max	V	367	0	54	-18.5	Pass
6	5697.028	27.7	10	3.9	41.5	Average Max	H	171	167	54	-12.5	Pass

Remarks:

1. Level (dBuV/m) = Raw (dBuV) + Cable loss(dB) + AF (dB/m).
2. AF (dB/m) = Antenna Factor (dB) - Preamplifier Gain (dB)
3. Margin = Level (dBuV/m) - Limit value(dBuV/m)

RADIATED EMISSIONS 1 - 18 GHZ

Test Standard:	FCC15.407, 15.209, RSS-247	Mode:	RSE-Above 1GHz_802.11ac
Frequency Range:	30 MHz - 1 GHz	Test Date:	04/04/2022-04/06/2022
Antenna Type/Polarity:	Bi-Log/Hor & Ver	Test Personnel:	Devin Tai
Remark:	Ch 149 / CH 157 / CH165	Test Result:	Pass



Mode: 802.11ac_ch 149

No.	Frequency MHz	Raw dBuV	Cable Loss	AF dB/m	Level dBuV/m	Measurement Type	Pol	Hgt cm	Azt Deg	Limit dBuV/m	Margin dB	Pass/Fail
1	3830.023	45.2	8.1	1.8	55.1	Peak Max	H	216	360	74	-18.9	Pass
2	1794.81	40.4	5.4	-5.4	40.3	Peak Max	V	356	0	74	-33.7	Pass
3	7466.026	36.1	11.9	4.8	52.9	Peak Max	V	100	167	74	-21.1	Pass
4	3830.023	42.3	8.1	1.8	52.1	Average Max	H	216	360	54	-1.9	Pass
5	1794.81	27.8	5.4	-5.4	27.7	Average Max	V	356	0	54	-26.3	Pass
6	7466.026	19.5	11.9	4.8	36.2	Average Max	V	100	167	54	-17.8	Pass

Mode: 802.11ac_ch 157

No.	Frequency MHz	Raw dBuV	Cable Loss	AF dB/m	Level dBuV/m	Measurement Type	Pol	Hgt cm	Azt Deg	Limit dBuV/m	Margin dB	Pass/Fail
1	3861.984	33.1	8	1.8	42.9	Peak Max	H	127	180	74	-31.1	Pass
2	7478.615	29.6	11.9	4.7	46.2	Peak Max	V	264	0	74	-27.8	Pass
3	7713.193	35.8	12.4	4.4	52.7	Peak Max	H	199	0	74	-21.3	Pass
4	3861.984	21.1	8	1.8	31	Average Max	H	127	180	54	-23	Pass
5	7478.615	17.4	11.9	4.7	34	Average Max	V	264	0	54	-20	Pass
6	7713.193	31.3	12.4	4.4	48.2	Average Max	H	199	0	54	-5.8	Pass

Mode: 802.11ac_ch 165

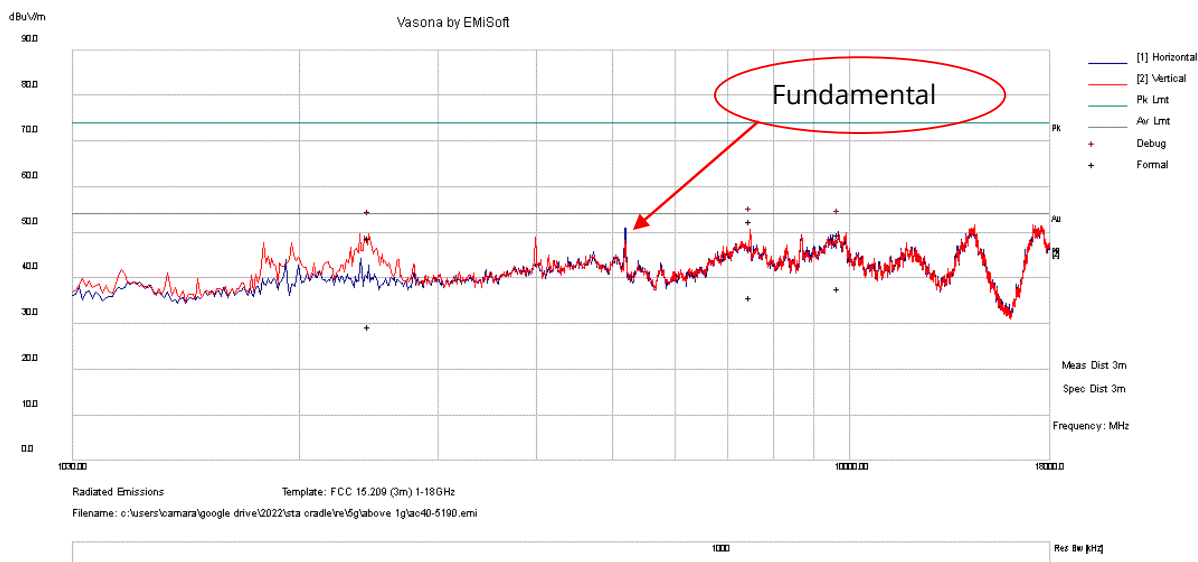
No.	Frequency MHz	Raw dBuV	Cable Loss	AF dB/m	Level dBuV/m	Measurement Type	Pol	Hgt cm	Azt Deg	Limit dBuV/m	Margin dB	Pass/Fail
1	3883.339	53.8	8	1.9	63.6	Peak Max	H	226	0	74	-10.4	Pass
2	7467.516	30.4	11.9	4.8	47.1	Peak Max	V	207	0	74	-26.9	Pass
3	7764.431	27.2	12.5	4.6	44.2	Peak Max	H	331	82	74	-29.8	Pass
4	3883.339	41.8	8	1.9	51.6	Average Max	H	226	0	54	-2.4	Pass
5	7467.516	18.6	11.9	4.8	35.4	Average Max	V	207	0	54	-18.6	Pass
6	7764.431	15.9	12.5	4.6	32.9	Average Max	H	331	82	54	-21.1	Pass

Remarks:

1. Level (dBuV/m) = Raw (dBuV) + Cable loss(dB) + AF (dB/m).
2. AF (dB/m) = Antenna Factor (dB) - Preamplifier Gain (dB)
3. Margin = Level (dBuV/m) - Limit value(dBuV/m)

RADIATED EMISSIONS 1 - 18 GHZ

Test Standard:	FCC15.407, 15.209, RSS-247	Mode:	RSE-Above 1GHz_802.11ac40
Frequency Range:	30 MHz - 1 GHz	Test Date:	04/04/2022-04/06/2022
Antenna Type/Polarity:	Bi-Log/Hor & Ver	Test Personnel:	Devin Tai
Remark:	Ch 38 / CH 46 / CH54	Test Result:	Pass



Mode: 802.11ac40_ch 38

No.	Frequency MHz	Raw dBuV	Cable Loss	AF dB/m	Level dBuV/m	Measurement Type	Pol	Hgt cm	Azt Deg	Limit dBuV/m	Margin dB	Pass/Fail
1	7479.985	36	11.9	4.6	52.5	Peak Max	V	100	142	74	-21.5	Pass
2	9683.72	29	14.6	6	49.7	Peak Max	H	307	0	74	-24.3	Pass
3	2451.363	47.1	6.3	-4.4	49	Peak Max	V	108	0	74	-25	Pass
4	7479.985	19.2	11.9	4.6	35.8	Average Max	V	100	142	54	-18.2	Pass
5	9683.72	17.1	14.6	6	37.7	Average Max	H	307	0	54	-16.3	Pass
6	2451.363	27.7	6.3	-4.4	29.5	Average Max	V	108	0	54	-24.5	Pass

Mode: 802.11ac40_ch 46

No.	Frequency MHz	Raw dBuV	Cable Loss	AF dB/m	Level dBuV/m	Measurement Type	Pol	Hgt cm	Azt Deg	Limit dBuV/m	Margin dB	Pass/Fail
1	2218.463	37.9	6	-4	39.9	Peak Max	V	280	346	74	-34.1	Pass
2	4000.015	36	8	1.8	45.9	Peak Max	V	158	302	74	-28.1	Pass
3	7466.761	30.3	11.9	4.8	47	Peak Max	V	382	150	74	-27	Pass
4	2218.463	25.7	6	-4	27.8	Average Max	V	280	346	54	-26.2	Pass
5	4000.015	27.3	8	1.8	37.1	Average Max	V	158	302	54	-16.9	Pass
6	7466.761	18.5	11.9	4.8	35.3	Average Max	V	382	150	54	-18.7	Pass

Mode: 802.11ac40_ch 54

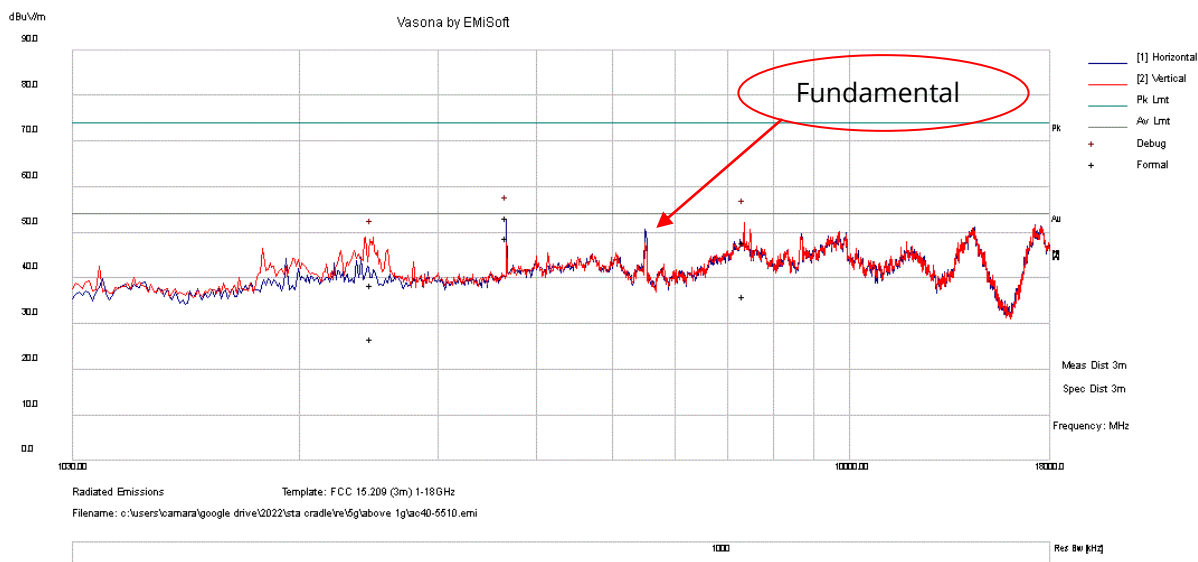
No.	Frequency MHz	Raw dBuV	Cable Loss	AF dB/m	Level dBuV/m	Measurement Type	Pol	Hgt cm	Azt Deg	Limit dBuV/m	Margin dB	Pass/Fail
1	7469.451	31.1	11.9	4.8	47.8	Peak Max	V	173	0	74	-26.2	Pass
2	9898.783	27.8	14.6	7.7	50.1	Peak Max	H	198	132	74	-23.9	Pass
3	8689.058	27.3	17.5	5	49.7	Peak Max	V	339	296	74	-24.3	Pass
4	7469.451	18.6	11.9	4.8	35.3	Average Max	V	173	0	54	-18.7	Pass
5	9898.783	15.9	14.6	7.7	38.2	Average Max	H	198	132	54	-15.8	Pass
6	8689.058	15.6	17.5	5	38	Average Max	V	339	296	54	-16	Pass

Remarks:

1. Level (dBuV/m) = Raw (dBuV) + Cable loss(dB) + AF (dB/m).
2. AF (dB/m) = Antenna Factor (dB) - Preamplifier Gain (dB)
3. Margin = Level (dBuV/m) - Limit value(dBuV/m)

RADIATED EMISSIONS 1 - 18 GHZ

Test Standard:	FCC15.407, 15.209, RSS-247	Mode:	RSE-Above 1GHz_802.11ac40
Frequency Range:	30 MHz - 1 GHz	Test Date:	04/04/2022-04/06/2022
Antenna Type/Polarity:	Bi-Log/Hor & Ver	Test Personnel:	Devin Tai
Remark:	Ch 62 / CH 102 / CH118	Test Result:	Pass


Mode: 802.11ac40_ch 62

No.	Frequency MHz	Raw dBuV	Cable Loss	AF dB/m	Level dBuV/m	Measurement Type	Pol	Hgt cm	Azt Deg	Limit dBuV/m	Margin dB	Pass/Fail
1	7480.58	29.4	11.9	4.6	45.9	Peak Max	V	316	0	74	-28.1	Pass
2	9696.901	28.7	14.7	6.1	49.4	Peak Max	H	228	152	74	-24.6	Pass
3	8699.514	28.4	17.9	5	51.3	Peak Max	H	383	0	74	-22.7	Pass
4	7480.58	17	11.9	4.6	33.6	Average Max	V	316	0	54	-20.4	Pass
5	9696.901	17.3	14.7	6.1	38.1	Average Max	H	228	152	54	-15.9	Pass
6	8699.514	15.2	17.9	5	38.2	Average Max	H	383	0	54	-15.8	Pass

Mode: 802.11ac40_ch 102

No.	Frequency MHz	Raw dBuV	Cable Loss	AF dB/m	Level dBuV/m	Measurement Type	Pol	Hgt cm	Azt Deg	Limit dBuV/m	Margin dB	Pass/Fail
1	3672.951	45.1	7.8	0.4	53.3	Peak Max	H	242	0	74	-20.7	Pass
2	7351.218	30.6	11.9	5.5	47.9	Peak Max	V	146	174	74	-26.1	Pass
3	2469.522	36.8	6.3	-4.5	38.6	Peak Max	V	345	0	74	-35.4	Pass
4	3672.951	40.8	7.8	0.4	49	Average Max	H	242	0	54	-5	Pass
5	7351.218	18.8	11.9	5.5	36.1	Average Max	V	146	174	54	-17.9	Pass
6	2469.522	24.9	6.3	-4.5	26.7	Average Max	V	345	0	54	-27.3	Pass

Mode: 802.11ac40_ch 118

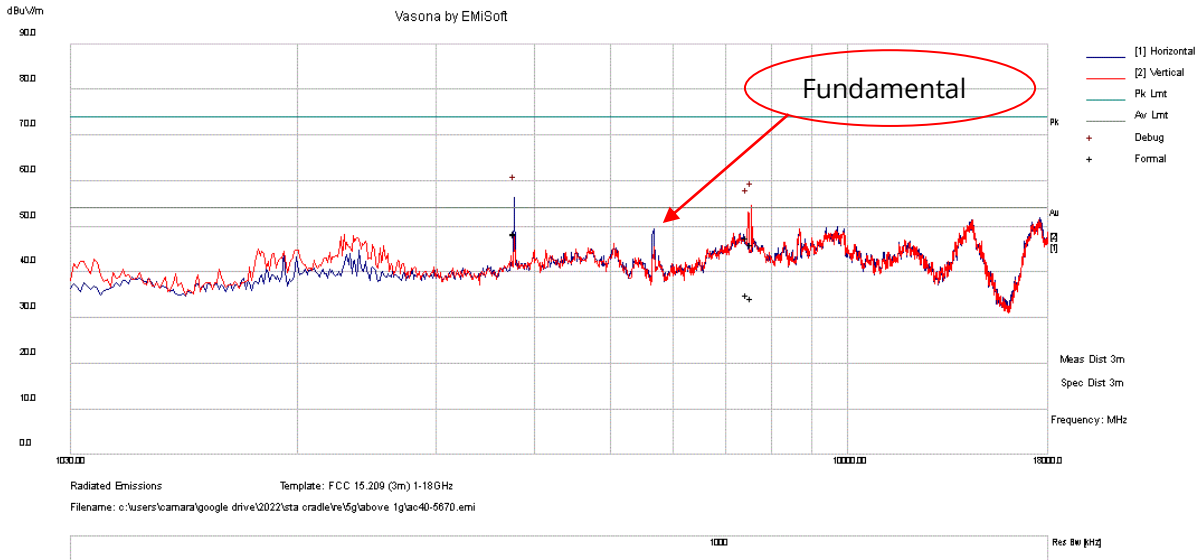
No.	Frequency MHz	Raw dBuV	Cable Loss	AF dB/m	Level dBuV/m	Measurement Type	Pol	Hgt cm	Azt Deg	Limit dBuV/m	Margin dB	Pass/Fail
1	7467.311	34.7	11.9	4.8	51.4	Peak Max	V	179	0	74	-22.6	Pass
2	3725.92	36.2	8	0.9	45.1	Peak Max	H	248	35	74	-28.9	Pass
3	9398.114	27.5	14.7	7.1	49.3	Peak Max	V	333	0	74	-24.7	Pass
4	7467.311	19.4	11.9	4.8	36.1	Average Max	V	179	0	54	-17.9	Pass
5	3725.92	26	8	0.9	34.8	Average Max	H	248	35	54	-19.2	Pass
6	9398.114	16	14.7	7.1	37.7	Average Max	V	333	0	54	-16.3	Pass

Remarks:

1. Level (dBuV/m) = Raw (dBuV) + Cable loss(dB) + AF (dB/m).
2. AF (dB/m) = Antenna Factor (dB) - Preamplifier Gain (dB)
3. Margin = Level (dBuV/m) - Limit value(dBuV/m)

RADIATED EMISSIONS 1 - 18 GHZ

Test Standard:	FCC15.407, 15.209, RSS-247	Mode:	RSE-Above 1GHz_802.11ac
Frequency Range:	30 MHz - 1 GHz	Test Date:	04/04/2022-04/06/2022
Antenna Type/Polarity:	Bi-Log/Hor & Ver	Test Personnel:	Devin Tai
Remark:	Ch 134 / CH 151 / CH159	Test Result:	Pass



Mode: 802.11ac40_ch 134

No.	Frequency MHz	Raw dBuV	Cable Loss	AF dB/m	Level dBuV/m	Measurement Type	Pol	Hgt cm	Azt Deg	Limit dBuV/m	Margin dB	Pass/Fail
1	3779.014	38.9	8.1	1.4	48.4	Peak Max	H	247	0	74	-25.6	Pass
2	7565.265	29.1	12.2	4.9	46.2	Peak Max	V	296	0	74	-27.8	Pass
3	7467.429	31	11.9	4.8	47.7	Peak Max	V	392	0	74	-26.3	Pass
4	3779.014	39	8.1	1.4	48.5	Average Max	H	247	0	54	-5.5	Pass
5	7565.265	17.5	12.2	4.9	34.5	Average Max	V	296	0	54	-19.5	Pass
6	7467.429	18.5	11.9	4.8	35.2	Average Max	V	392	0	54	-18.8	Pass

Mode: 802.11ac40_ch 151

No.	Frequency MHz	Raw dBuV	Cable Loss	AF dB/m	Level dBuV/m	Measurement Type	Pol	Hgt cm	Azt Deg	Limit dBuV/m	Margin dB	Pass/Fail
1	3840.439	42.2	8.1	1.8	52.1	Peak Max	H	202	64	74	-21.9	Pass
2	7467.359	30.4	11.9	4.8	47.2	Peak Max	V	259	0	74	-26.8	Pass
3	1985.113	45.8	5.6	-4.7	46.7	Peak Max	V	180	14	74	-27.3	Pass
4	3840.439	40.2	8.1	1.8	50.1	Average Max	H	202	64	54	-3.9	Pass
5	7467.359	18.5	11.9	4.8	35.3	Average Max	V	259	0	54	-18.7	Pass
6	1985.113	27.2	5.6	-4.7	28.1	Average Max	V	180	14	54	-25.9	Pass

Mode: 802.11ac40_ch 159

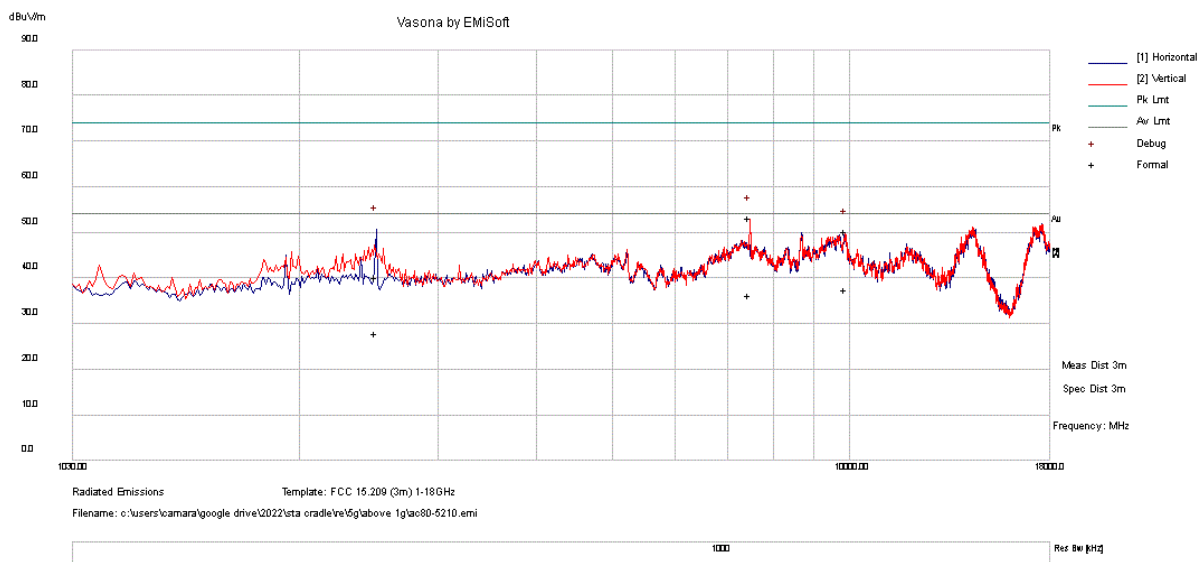
No.	Frequency MHz	Raw dBuV	Cable Loss	AF dB/m	Level dBuV/m	Measurement Type	Pol	Hgt cm	Azt Deg	Limit dBuV/m	Margin dB	Pass/Fail
1	3863.296	54	8	1.8	63.9	Peak Max	H	226	360	74	-10.1	Pass
2	2207.701	38.3	6	-4	40.3	Peak Max	V	162	186	74	-33.7	Pass
3	7489.288	30	11.9	4.5	46.4	Peak Max	V	375	0	74	-27.6	Pass
4	3863.296	41.5	8	1.8	51.3	Average Max	H	226	360	54	-2.7	Pass
5	2207.701	26.7	6	-4	28.7	Average Max	V	162	186	54	-25.3	Pass
6	7489.288	17.7	11.9	4.5	34.1	Average Max	V	375	0	54	-19.9	Pass

Remarks:

1. Level (dBuV/m) = Raw (dBuV) + Cable loss(dB) + AF (dB/m).
2. AF (dB/m) = Antenna Factor (dB) - Preamplifier Gain (dB)
3. Margin = Level (dBuV/m) - Limit value(dBuV/m)

RADIATED EMISSIONS 1 - 18 GHZ

Test Standard:	FCC15.407, 15.209, RSS-247	Mode:	RSE-Above 1GHz_802.11ac80
Frequency Range:	30 MHz - 1 GHz	Test Date:	04/04/2022-04/06/2022
Antenna Type/Polarity:	Bi-Log/Hor & Ver	Test Personnel:	Devin Tai
Remark:	Ch 42 / CH 58 / CH106	Test Result:	Pass



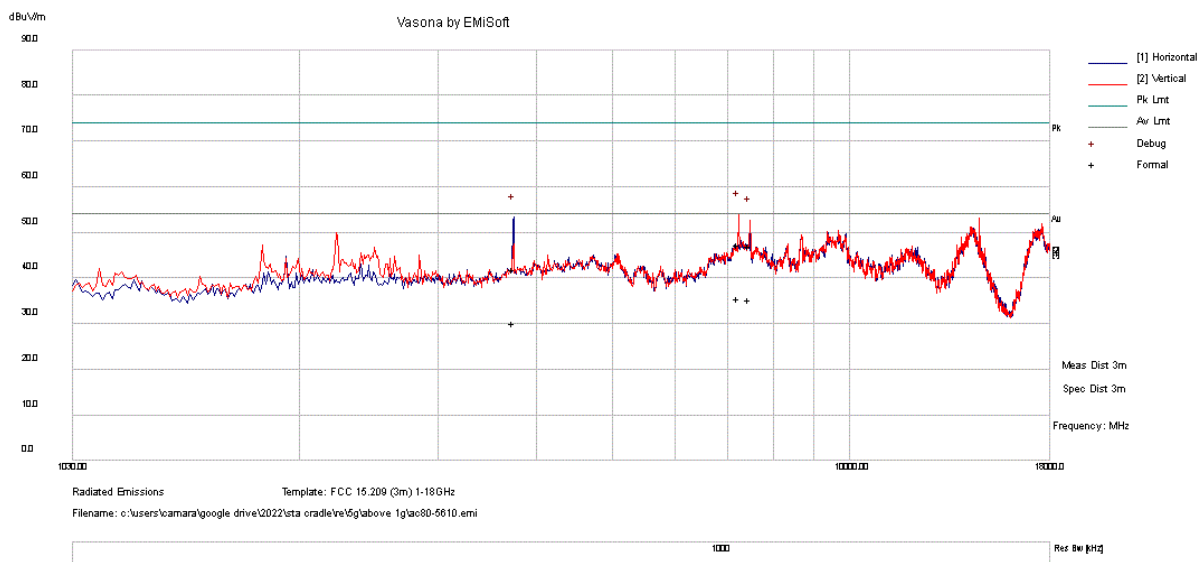
Mode: 802.11ac80_ch 42												
No.	Frequency MHz	Raw dBuV	Cable Loss	AF dB/m	Level dBuV/m	Measurement Type	Pol	Hgt cm	Azt Deg	Limit dBuV/m	Margin dB	Pass/Fail
1	7466.659	36.4	11.9	4.8	53.2	Peak Max	V	103	0	74	-20.8	Pass
2	2505.551	38.5	6.3	-4.5	40.3	Peak Max	H	387	246	74	-33.7	Pass
3	9876.085	28.7	14.4	7.2	50.4	Peak Max	V	154	301	74	-23.6	Pass
4	7466.659	19.7	11.9	4.8	36.5	Average Max	V	103	0	54	-17.5	Pass
5	2505.551	26.1	6.3	-4.5	27.9	Average Max	H	387	246	54	-26.1	Pass
6	9876.085	16	14.4	7.2	37.7	Average Max	V	154	301	54	-16.3	Pass
Mode: 802.11ac80_ch 58												
No.	Frequency MHz	Raw dBuV	Cable Loss	AF dB/m	Level dBuV/m	Measurement Type	Pol	Hgt cm	Azt Deg	Limit dBuV/m	Margin dB	Pass/Fail
1	7490.629	29.9	11.9	4.5	46.3	Peak Max	V	257	0	74	-27.7	Pass
2	2217.34	39.1	6	-4	41.2	Peak Max	V	195	318	74	-32.8	Pass
3	8689.19	27.4	17.5	5	49.8	Peak Max	V	361	0	74	-24.2	Pass
4	7490.629	18	11.9	4.5	34.4	Average Max	V	257	0	54	-19.6	Pass
5	2217.34	26	6	-4	28	Average Max	V	195	318	54	-26	Pass
6	8689.19	15.8	17.5	5	38.2	Average Max	V	361	0	54	-15.8	Pass
Mode: 802.11ac80_ch 106												
No.	Frequency MHz	Raw dBuV	Cable Loss	AF dB/m	Level dBuV/m	Measurement Type	Pol	Hgt cm	Azt Deg	Limit dBuV/m	Margin dB	Pass/Fail
1	7339.389	32.1	11.9	5.4	49.4	Peak Max	H	387	168	74	-24.6	Pass
2	8707.13	27.4	17.6	5.1	50.2	Peak Max	H	364	130	74	-23.8	Pass
3	9696.841	28.9	14.7	6.1	49.7	Peak Max	H	117	0	74	-24.3	Pass
4	7339.389	19.6	11.9	5.4	36.9	Average Max	H	387	168	54	-17.1	Pass
5	8707.13	15.4	17.6	5.1	38.1	Average Max	H	364	130	54	-15.9	Pass
6	9696.841	17.4	14.7	6.1	38.1	Average Max	H	117	0	54	-15.9	Pass

Remarks:

1. Level (dBuV/m) = Raw (dBuV) + Cable loss(dB) + AF (dB/m).
2. AF (dB/m) = Antenna Factor (dB) - Preamplifier Gain (dB)
3. Margin = Level (dBuV/m) - Limit value(dBuV/m)

RADIATED EMISSIONS 1 - 18 GHZ

Test Standard:	FCC15.407, 15.209, RSS-247	Mode:	RSE-Above 1GHz_802.11ac80
Frequency Range:	30 MHz - 1 GHz	Test Date:	04/04/2022-04/06/2022
Antenna Type/Polarity:	Bi-Log/Hor & Ver	Test Personnel:	Devin Tai
Remark:	Ch 122/ CH 138 / CH155	Test Result:	Pass



Mode: 802.11ac80_ch 122												
No.	Frequency MHz	Raw dBuV	Cable Loss	AF dB/m	Level dBuV/m	Measurement Type	Pol	Hgt cm	Azt Deg	Limit dBuV/m	Margin dB	Pass/Fail
1	7232.749	30.5	11.7	5.1	47.3	Peak Max	V	344	0	74	-26.7	Pass
2	3746.503	32.9	8	1.1	42	Peak Max	H	110	248	74	-32	Pass
3	7467.254	30.4	11.9	4.8	47.1	Peak Max	V	349	0	74	-26.9	Pass
4	7232.749	18.6	11.7	5.1	35.5	Average Max	V	344	0	54	-18.5	Pass
5	3746.503	21.2	8	1.1	30.3	Average Max	H	110	248	54	-23.7	Pass
6	7467.254	18.6	11.9	4.8	35.3	Average Max	V	349	0	54	-18.7	Pass
Mode: 802.11ac80_ch 138												
No.	Frequency MHz	Raw dBuV	Cable Loss	AF dB/m	Level dBuV/m	Measurement Type	Pol	Hgt cm	Azt Deg	Limit dBuV/m	Margin dB	Pass/Fail
1	3797.934	43.1	8.2	1.6	52.9	Peak Max	H	161	0	74	-21.1	Pass
2	7586.645	37	12.2	5	54.2	Peak Max	V	100	0	74	-19.8	Pass
3	9408.2	28	14.6	7.2	49.8	Peak Max	H	346	353	74	-24.2	Pass
4	3797.934	41.5	8.2	1.6	51.3	Average Max	H	161	0	54	-2.7	Pass
5	7586.645	32.6	12.2	5	49.9	Average Max	V	100	0	54	-4.1	Pass
6	9408.2	16	14.6	7.2	37.8	Average Max	H	346	353	54	-16.2	Pass
Mode: 802.11ac80_ch 155												
No.	Frequency MHz	Raw dBuV	Cable Loss	AF dB/m	Level dBuV/m	Measurement Type	Pol	Hgt cm	Azt Deg	Limit dBuV/m	Margin dB	Pass/Fail
1	3850	42.2	8	1.8	52.1	Peak Max	H	242	164	74	-21.9	Pass
2	2250.476	41.6	6.2	-3.9	43.9	Peak Max	V	201	168	74	-30.1	Pass
3	7466.374	37	11.9	4.8	53.7	Peak Max	V	144	180	74	-20.3	Pass
4	3850	41.9	8	1.8	51.8	Average Max	H	242	164	54	-2.2	Pass
5	2250.476	25.6	6.2	-3.9	27.9	Average Max	V	201	168	54	-26.1	Pass
6	7466.374	19.5	11.9	4.8	36.3	Average Max	V	144	180	54	-17.7	Pass

Remarks:

1. Level (dBuV/m) = Raw (dBuV) + Cable loss(dB) + AF (dB/m).
2. AF (dB/m) = Antenna Factor (dB) - Preamplifier Gain (dB)
3. Margin = Level (dBuV/m) - Limit value(dBuV/m)

18GHz – 40GHz test result

Note: no substantial emission is found other than the noise floor.

7.4 Conducted Emissions

7.4.1 Requirement

Per § 15.207 (a), RSS Gen 8.8

An intentional radiator that is designed to be connected to the public utility (AC) power line, the radio frequency voltage that is conducted back onto the AC power line on any frequency or frequencies, within the band 150 kHz to 30 MHz, shall not exceed the limits in the following table, as measured using a 50 μ H/50 ohms line impedance stabilization network (LISN).

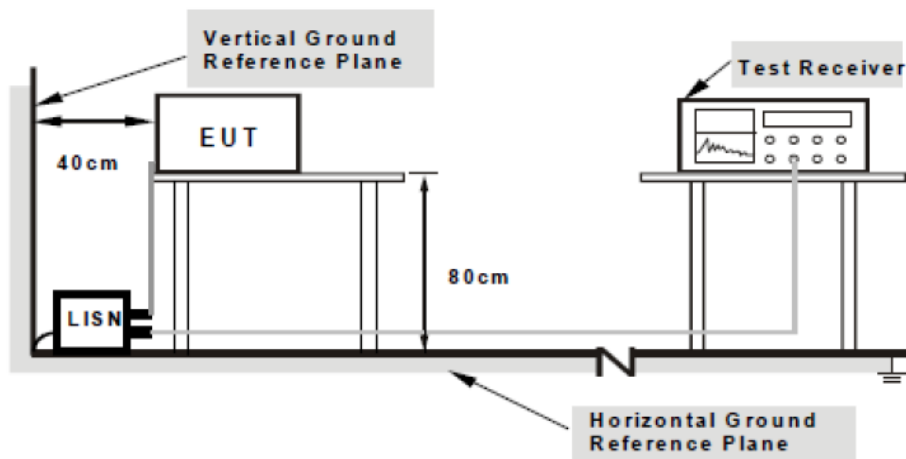
Compliance with the provisions of this paragraph shall be based on the measurement of the radio frequency voltage between each power line and ground at the power terminal. The lower limit applies at the boundary between the frequency ranges.

Limits for Conducted Emissions at the Mains Ports

Section	Frequency ranges (MHz)	Limit (dBuV)	
		QP	Average
Class B devices	0.15 – 0.5	66 – 56	56 – 46
	0.5 – 5	56	46
	5 - 30	60	50

NOTE 1 The lower limit shall apply at the transition frequencies.

7.4.2 Test setup



Note: 1.Support units were connected to second LISN.

2.Both of LISNs (AMN) are 80cm from EUT and at least 80cm from other units and other metal planes support units.

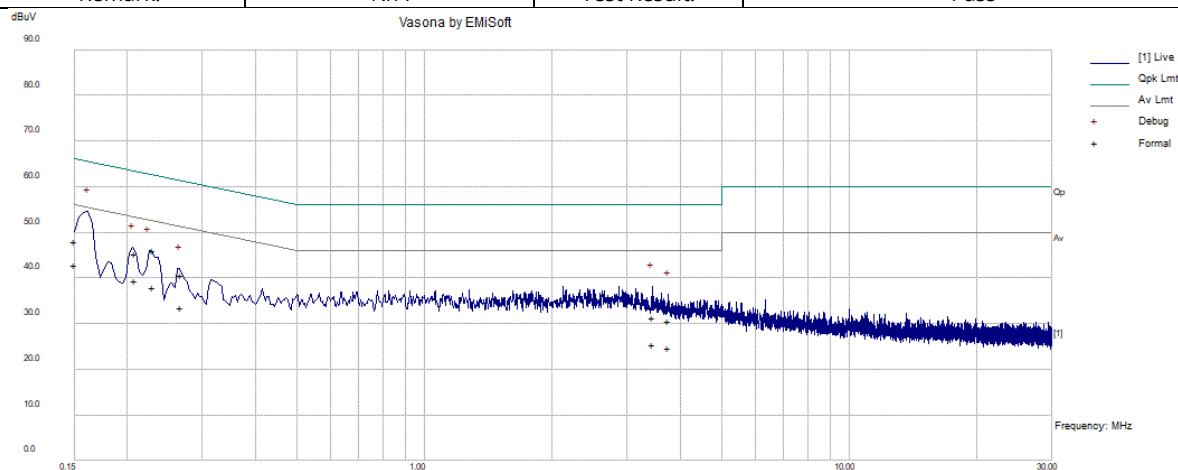
7.4.3 Test Procedure

1. The EUT and supporting equipment were set up in accordance with the requirements of the standard on top of a 1.5m x 1m x 0.8m high, non-metallic table.
2. The power supply for the EUT was fed through a 50 Ω /50 μ H EUT LISN, connected to filtered mains.
3. The RF OUT of the EUT LISN was connected to the EMI test receiver via a low-loss coaxial cable. The LISN bonded to the reference ground plane used has a direct current (dc) resistance of less than 2.5 m Ω .
4. All other supporting equipment was powered separately from another main supply.
5. The EUT was switched on and allowed to warm up to its normal operating condition.
6. A scan was made on the Live / Neutral line (for AC mains) or Earth line (for DC power) over the required frequency range using an EMI test receiver.
7. High peaks, relative to the limit line, were then selected.
8. The EMI test receiver was then tuned to the selected frequencies and the necessary measurements made with a receiver bandwidth setting of 10 kHz. For FCC tests, both Quasi-peak and Average measurements were made
9. All possible modes of operation were investigated. Only the worst case emissions were measured and reported. All other emissions were relatively insignificant.

7.4.4 Test Result

CONDUCTED EMISSIONS

Test Standard:	LISN B Cond Class B	Mode:	Normal Operation _ Charging mode
Frequency Range:	0.15 - 30MHz	Test Date:	03/22/2022
Line:	Live	Test Personnel:	Devin Tai
Remark:	N/A	Test Result:	Pass



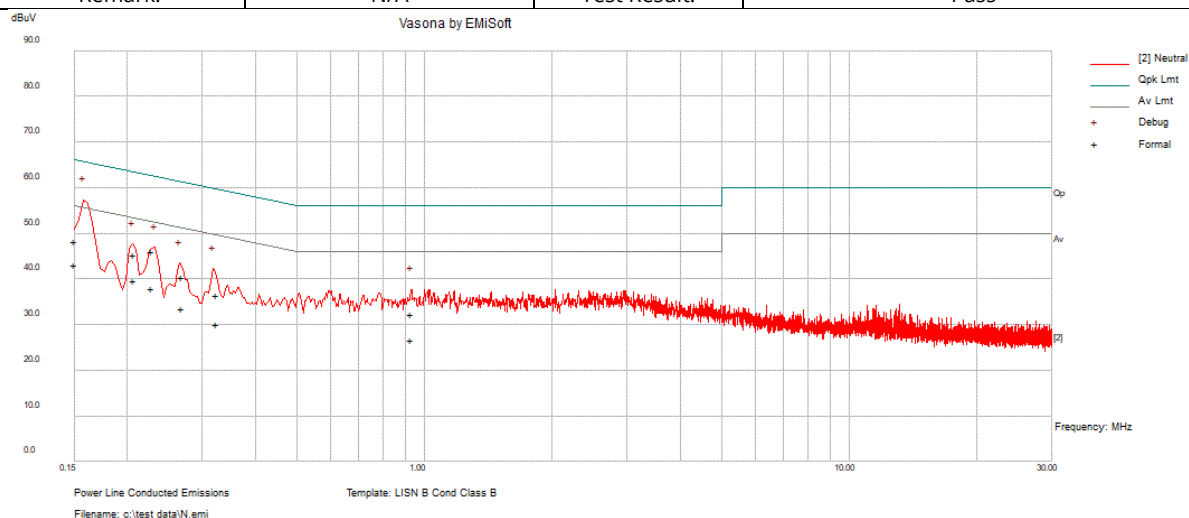
9	9	9	9	Res BW (Hz)
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No.	Frequency (MHz)	Raw (dBuV)	Cable Loss (dB)	Factors (dB)	Level (dBuV)	Meas. Type	Line	Limit (dBuV)	Margin (dB)	Pass /Fail
1	0.15	37.9	10.1	0.2	48.2	Quasi Peak	Live	66	-17.8	Pass
2	0.208	35.1	10.1	0.2	45.4	Quasi Peak	Live	63.3	-17.9	Pass
3	0.23	35.9	10.1	0.2	46.1	Quasi Peak	Live	62.5	-16.3	Pass
4	3.446	21.1	10.3	0.1	31.5	Quasi Peak	Live	56	-24.5	Pass
5	0.267	30.5	10.1	0.1	40.7	Quasi Peak	Live	61.2	-20.5	Pass
6	3.762	20.3	10.3	0.1	30.7	Quasi Peak	Live	56	-25.3	Pass
7	0.15	32.7	10.1	0.2	43	Average	Live	56	-13	Pass
8	0.208	29.4	10.1	0.2	39.6	Average	Live	53.3	-13.7	Pass
9	0.23	27.7	10.1	0.2	38	Average	Live	52.5	-14.5	Pass
10	3.446	15.2	10.3	0.1	25.6	Average	Live	46	-20.4	Pass
11	0.267	23.5	10.1	0.1	33.7	Average	Live	51.2	-17.5	Pass
12	3.762	14.4	10.3	0.1	24.8	Average	Live	46	-21.2	Pass

REMARKS:

- The emission levels of other frequencies were very low against the limit.
- Factor = Inert loss of LISN
- Margin value = Emission level - Limit value
- Emission Level = Raw Value + Cable loss + Factors Value.

Test Standard:	LISN B Cond Class B	Mode:	Normal Operation _ Charging mode
Frequency Range:	0.15 - 30MHz	Test Date:	03/22/2022
Line:	Neutral	Test Personnel:	Devin Tai
Remark:	N/A	Test Result:	Pass



No.	Frequency (MHz)	Raw (dBuV)	Cable Loss (dB)	Factors (dB)	Level (dBuV)	Meas. Type	Line	Limit (dBuV)	Margin (dB)	Pass /Fail
1	0.15	38	10.1	0.2	48.3	Quasi Peak	Neutral	66	-17.7	Pass
2	0.229	35.9	10.1	0.2	46.1	Quasi Peak	Neutral	62.5	-16.4	Pass
3	0.208	35.3	10.1	0.2	45.5	Quasi Peak	Neutral	63.3	-17.8	Pass
4	0.325	26.3	10.1	0.1	36.5	Quasi Peak	Neutral	59.6	-23	Pass
5	0.268	30.2	10.1	0.1	40.4	Quasi Peak	Neutral	61.2	-20.7	Pass
6	0.93	22.3	10.1	0.1	32.5	Quasi Peak	Neutral	56	-23.5	Pass
7	0.15	32.9	10.1	0.2	43.3	Average	Neutral	56	-12.7	Pass
8	0.229	27.9	10.1	0.2	38.1	Average	Neutral	52.5	-14.4	Pass
9	0.208	29.6	10.1	0.2	39.9	Average	Neutral	53.3	-13.4	Pass
10	0.325	20	10.1	0.1	30.2	Average	Neutral	49.6	-19.4	Pass
11	0.268	23.4	10.1	0.1	33.6	Average	Neutral	51.2	-17.5	Pass
12	0.93	16.5	10.1	0.1	26.7	Average	Neutral	46	-19.3	Pass

REMARKS:

1. The emission levels of other frequencies were very low against the limit.
2. Factor = Inert loss of LISN
3. Margin value = Emission level - Limit value
4. Emission Level = Raw Value + Cable loss + Factors Value.

8 EUT and Test Setup Photos

See FCC/ISED exhibits

9 Test Instrument List

Equipment	Manufacturer	Model	Instrument Number	Cal. Date	Cal. Due
Semi-Anechoic Chamber	ETS-Lindgren	10M	VL001	10/18/2020	10/18/2022
Shielding Control Room	ETS-Lindgren	Series 81	VL006	N/A	N/A
Spectrum Analyzer	Keysight	N9020A	MY50110074	06/17/2021	06/17/2022
Spectrum Analyser (9kHz-43GHz)	Anritsu	MS2830A	6201145210	6/9/2021	6/9/2022
EMC Test Receiver	R&S	ESL6	100230	06/14/2021	06/14/2022
LISN (9KHz – 30MHz)	EMCO	3816/2	9705-1066	05/04/2021	05/04/2022
Bi-Log Antenna	ETS-Lindgren	3142E	217921	11/15/2021	11/15/2022
Horn Antenna (1-18GHz)	Electro-Metrics	EM-6961	6292	05/14/2021	05/14/2022
Horn Antenna (18-40GHz)	Com-Power	AH-840	101109	06/24/2021	06/24/2022
Preamplifier	RF Bay, Inc.	LPA-10-20	11180621	07/16/2021	07/16/2022
True RMS Multi-meter	UNI-T	UT181A	C173014829	05/05/2021	05/05/2022
Temp / Humidity / Pressure Meter	PCE Instruments	PCE-THB 40	R062028	05/15/2021	05/15/2022
RF Attenuator	Pasternack	PE7005-3	VL061	07/16/2021	07/16/2022
Preamplifier 100KHz - 40GHz	Aeroflex	33711-392- 77150-11	064	07/16/2021	07/16/2022
EM Center Control	ETS-Lindgren	7006-001	160136	N/A	N/A
Turn Table	ETS-Lindgren	2181-3.03	VL002	N/A	N/A
Boresight Antenna Tower	ETS-Lindgren	2171B	VL003	N/A	N/A
Loop Antenna (9k-30MHz)	Com-Power	AL-130	121012	05/16/2021	05/16/2022
RE test cable(below 6GHz)	Vista	RE-6GHz-01	RE-6GHz-01	07/16/2021	07/16/2022
RE test cable (1-18GHz)	PhaseTrack	II-240	RE-18GHz-01	07/16/2021	07/16/2022
RE test cable (>18GHz)	Sucoflex	104	344903/4	07/16/2021	07/16/2022
Pulse limiter	Com-Power	LIT-930A	531727	07/16/2021	07/16/2022
CE test cable #1	FIRST RF	FRF-C-1002- 001	CE-6GHz-01	07/16/2021	07/16/2022
CE test cable#2	FIRST RF	FRF-C-1002- 001	CE-6GHz-02	07/16/2021	07/16/2022
Vector Signal Generator	Keysight	N5182A	US47080548	06/17/2021	06/17/2022
USB RF Power Sensor	ETS-Lindgren	7002-006	SN 00151268	05/15/2019	05/15/2022

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