TEST REPORT

Product Name:	AX-1250 WIRELESS HEADSET
Trade Mark:	ATRIX
Model No. / HVIN:	GSHP57
Add. Model No. / HVIN:	N/A
Report Number:	210604001RFC-1
Test Standards:	FCC 47 CFR Part 15 Subpart C RSS-210 Issue 10 RSS-Gen Issue 5
FCC ID:	2AO23-GSHP57
IC:	26424-GSHP57
Test Result:	PASS
Date of Issue:	August 2, 2021

Prepared for:

Chug, Inc.
7157 Shady Oak Road, Eden Prairie, MN 55344, USA

Prepared by:

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Date: August 2, 2021

Version

Version No.	Date	Description
V1.0	August 2, 2021	Original

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1. GENERAL INFORMATION

1.1 CLIENT INFORMATION

Applicant:	Chug, Inc.
Address of Applicant:	7157 Shady Oak Road, Eden Prairie, MN 55344, USA
Manufacturer:	Chug, Inc.
Address of Manufacturer:	7157 Shady Oak Road, Eden Prairie, MN 55344, USA
Factory:	Dongguan Ruihe Electronic Technology Co.,Ltd
Address of Factory:	12 shatang street, Puxin Industrial Zone, Shipai Town, Dongguan, China

1.2 EUT INFORMATION

1.2.1 General Description of EUT

Product Name:	AX-1250 WIRELESS HEADSET
Model No. / HVIN:	GSHP57
Add. Model No. / HVIN:	N/A
Trade Mark:	ATRIX
DUT Stage:	Production Unit
EUT Supports Function:	General 5.8GHz Technique
Power Supply:	☒ Battery: 3.7Vdc (1 x 3.7 Li-ion Rechargeable battery)
	☒ Powered by USB port
Software Version:	V0122
Hardware Version:	V11
Sample Received Date:	June 11, 2021
Sample Tested Date:	June 25, 2021 to July 1, 2021
Note: The EUT tested was headset.	

1.2.2 Description of Accessories

Battery	
Model No.:	803450
Battery Type:	Lithium-ion Polymer Rechargeable Battery
Rated Voltage:	3.7 Vdc
Rated Capacity:	1500 mAh

Cable (1)	
Description:	USB Type-C Plug Cable
Cable Type:	Unshielded without ferrite
Length:	0.2 Meter

Cable (2)	
Description:	AUX Cable
Cable Type:	Unshielded without ferrite
Length:	1.2 Meter

1.3 PRODUCT SPECIFICATION SUBJECTIVE TO THIS STANDARD

Frequency Band:	5725 MHz to 5875 MHz
Frequency Range:	5729 MHz to 5849 MHz
Modulation Technique:	General 5.8GHz Technique
Type of Modulation:	GFSK
Number of Channels:	31
Channel Separation:	4 MHz
Antenna Type:	PCB Antenna
Antenna Gain:	0.0 dBi
Maximum Field Strength:	91.17 dBμV/m
Normal Test Voltage:	3.7 Vdc

1.4 OTHER INFORMATION

Operation Frequency Each of Channel	
f = 5729 + k*4 MHz, k = 0…,30	
Note:	
f	is the operating frequency (MHz);
k	is the operating channel.

1.5 DESCRIPTION OF SUPPORT UNITS

The EUT has been tested with associated equipment below.

1) Support Equipment

Description	Manufacturer	Model No.	Serial Number	Supplied by
Notebook	Lenovo	E450	SL10G10780	UnionTrust
Mouse	DELL	MS111	CN-011D3V-73826-62N-0LK	UnionTrust

2) Support Cable

Cable No.	Description	Connector	Length	Supplied by
1	Antenna Cable	SMA	0.3 Meter	UnionTrust

1.6 TEST LOCATION

Shenzhen UnionTrust Quality and Technology Co., Ltd.

Address: Unit D/E of 9/F and 16/F, Block A, Building 6, Baoneng science and technology park, Longhua district, Shenzhen, China, China 518109
Telephone: +86 (0) 755 2823 0888
Fax: +86 (0) 755 2823 0886

1.7 TEST FACILITY

The test facility is recognized, certified, or accredited by the following organizations:

CNAS-Lab Code: L9069
The measuring equipment utilized to perform the tests documented in this report has been calibrated once a year or in accordance with the manufacturer's recommendations, and is traceable under the ISO/IEC/EN 17025 to international or national standards. Equipment has been calibrated by accredited calibration laboratories.

A2LA-Lab Certificate No.: 4312.01
Shenzhen UnionTrust Quality and Technology Co., Ltd. has been accredited by A2LA for technical competence in the field of electrical testing, and proved to be in compliance with ISO/IEC 17025: 2005 General Requirements for the Competence of Testing and Calibration Laboratories and any additional program requirements in the identified field of testing.

ISED Wireless Device Testing Laboratories
CAB identifier: CN0032

FCC Accredited Lab.
Designation Number: CN1194
Test Firm Registration Number: 259480

1.8 DEVIATION FROM STANDARDS
None.

1.9 ABNORMALITIES FROM STANDARD CONDITIONS
None.

1.10 OTHER INFORMATION REQUESTED BY THE CUSTOMER
None.

1.11 MEASUREMENT UNCERTAINTY
Where relevant, the following measurement uncertainty levels have been estimated for tests performed on the Product as specified in CISPR 16-4-2. This uncertainty represents an expanded uncertainty expressed at approximately the 95% confidence level using a coverage factor of k=2.

No.	Item	Measurement Uncertainty
1	Conducted emission 9kHz-150kHz	±3.2 dB
2	Conducted emission 150kHz-30MHz	±2.7 dB
3	Radiated emission 9kHz-30MHz	± 4.7 dB
4	Radiated emission 30MHz-1GHz	± 4.6 dB
5	Radiated emission 1GHz-18GHz	± 4.4 dB
6	Radiated emission 18GHz-26GHz	± 4.6 dB
7	Radiated emission 26GHz-40GHz	± 4.6 dB

2. TEST SUMMARY

FCC 47 CFR Part 15 Subpart C Test Cases			
Test Item	**Test Requirement**	**Test Method**	**Result**
Antenna Requirement	FCC 47 CFR Part 15 Subpart C Section 15.203 RSS-Gen Issue 5, Section 6.8	N/A	PASS
Conducted Emission	FCC 47 CFR Part 15 Subpart C Section 15.207 RSS-Gen Issue 5, Section 8.8	ANSI C63.10-2013	N/A (Note 1, 2)
Radiated Emission	FCC 47 CFR Part 15 Subpart C Section 15.249 (a)/15.209 RSS-210 Issue 10 Section B.10 RSS-Gen Issue 5, Section 6.13/8.9	ANSI C63.10-2013	PASS
Restricted bands around fundamental frequency (Radiated Emission)	FCC 47 CFR Part 15 Subpart C Section 15.249(a)/15.205 RSS-Gen Issue 5, Section 6.13/8.9/8.10	ANSI C63.10-2013	PASS
20dB Occupied Bandwidth & 99% Occupied Bandwidth	FCC 47 CFR Part 15 Subpart C Section 15.215 (c) RSS-Gen Issue 5, Section 6.7	ANSI C63.10-2013	PASS

Note:

1) N/A: In this whole report not applicable.
2) The wireless feature of the headset does not work properly while the headset is charged

3. EQUIPMENT LIST

Radiated Emission Test Equipment List						
Used	**Equipment**	**Manufacturer**	**Model No.**	**Serial Number**	**Cal. date (mm dd, yyyy)**	**Cal. Due date (mm dd, yyyy)**
☒	3 m SAC	ETS-LINDGREN	3m	N/A	Jan. 22, 2021	Jan. 21, 2024
☒	Receiver	R&S	ESIB26	100114	Nov. 18, 2020	Nov. 17, 2021
☒	Broadband Antenna	ETS-LINDGREN	3142E	00201566	Nov. 14, 2020	Nov. 13, 2022
☒	Loop Antenna	ETS-LINDGREN	6502	00202525	Nov. 14, 2020	Nov. 13, 2022
☒	6dB Attenuator	Talent	RA6A5-N-18	18103001	Nov. 14, 2020	Nov. 13, 2022
☒	Preamplifier	HP	8447F	2805A02960	Nov. 10, 2020	Nov. 9, 2021
☒	Double-Ridged Waveguide Horn Antenna (Pre-amplifier)	ETS-LINDGREN	3117-PA	00201541	Apr. 30, 2021	Apr. 29, 2023
☒	Preamplifier	ETS-LINDGREN	118385	00201874	Nov. 10, 2020	Nov. 9, 2021
☒	Horn Antenna (Pre-amplifier)	ETS-LINDGREN	3116C-PA	00202652	Nov. 14, 2020	Nov. 13, 2022
☒	Pre-amplifier	ETS-Lindgren	00118384	00202652	Nov. 17, 2020	Nov. 16, 2022
☒	Multi device Controller	ETS-LINDGREN	7006-001	00160105	N/A	N/A
☒	Test Software	Audix	e3	Software Version: 9.160323		

Conducted RF test Equipment List						
Used	**Equipment**	**Manufacturer**	**Model No.**	**Serial Number**	**Cal. date (mm dd, yyyy)**	**Cal. Due date (mm dd, yyyy)**
☒	EXA Spectrum Analyzer	KEYSIGHT	N9010A	MY51440197	Apr. 22, 2021	Apr. 21, 2022
☒	USB Wideband Power Sensor	KEYSIGHT	U2021XA	MY55430035	Nov. 10, 2020	Nov. 9, 2021
☐	USB Wideband Power Sensor	KEYSIGHT	U2021XA	MY55430023	Nov. 10, 2020	Nov. 9, 2021
☐	MXG X-Series RF Vector Signal Generator	KEYSIGHT	N5182B	MY51350267	Nov. 10, 2020	Nov. 9, 2021
☒	Shielding room	ETS-Lindgren	333	Euroshiedpn-TJ2343-S1608	Jun. 5, 2020	Jun. 4, 2023

4. TEST CONFIGURATION

4.1 ENVIRONMENTAL CONDITIONS FOR TESTING

4.1.1 Normal or Extreme Test Conditions

Environment Parameter	Selected Values During Tests		
Test Condition	Ambient		
	Temperature (°C)	Voltage (V)	Relative Humidity (%)
NT/NV	+15 to +35	3.7	20 to 75
Remark: 1) NV: Normal Voltage; NT: Normal Temperature			

4.1.2 Record of Normal Environment

Test Item	Temperature (°C)	Relative Humidity (%)	Pressure (kPa)	Tested by
Radiated Emission	24.9	59	99.0	Fire Huo
Restricted bands around fundamental frequency (Radiated Emission)	24.9	59	99.0	Fire Huo
20dB Occupied Bandwidth	25.8	46	99.8	Rocky Li

4.2 TEST CHANNELS

Type of Modulation	Tx/Rx Frequency	Test RF Channel Lists		
		Lowest(L)	Middle(M)	Highest(H)
GFSK	5729 MHz to 5849 MHz	Channel 0	Channel 15	Channel 30
		5729MHz	5789 MHz	5849 MHz

4.3 EUT TEST STATUS

Modulation Mode	Tx Function	Description
GFSK	1Tx	Keep the EUT in continuously transmitting with modulation test single.

Power Setting
Power Setting: power level is 3

Test Software
Test software name: WN803XEmi.exe;

4.4 TEST SETUP

4.4.1 For Radiated Emissions test setup

Figure 1. Below 30MHz

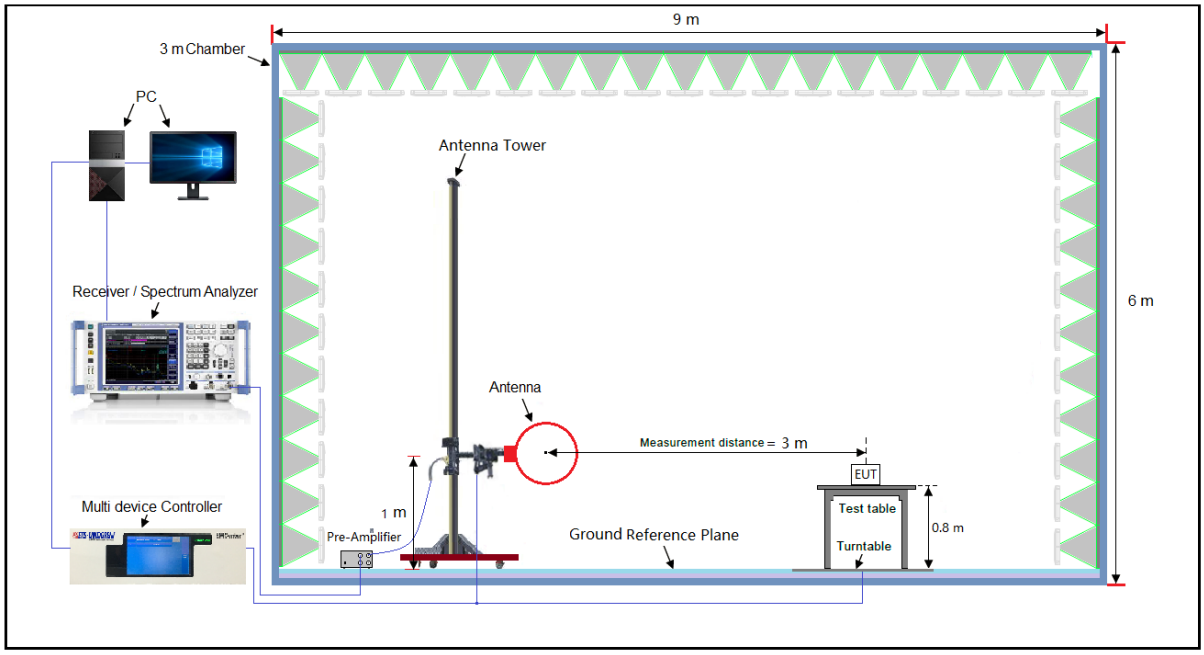


Figure 2. 30MHz to 1GHz

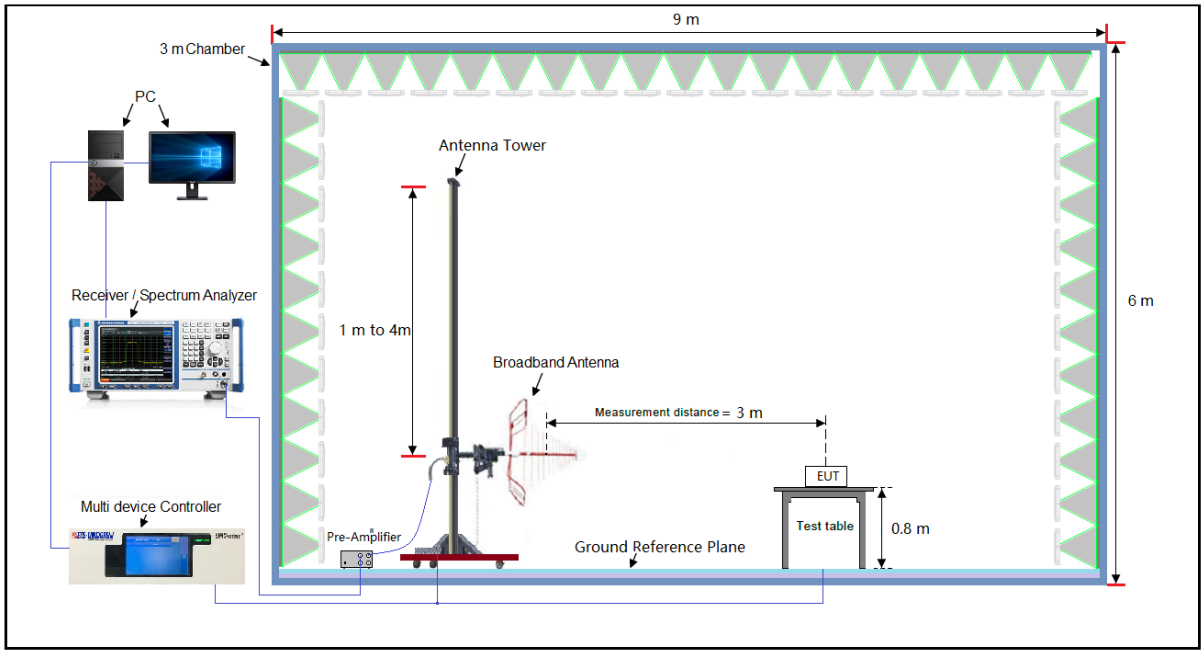
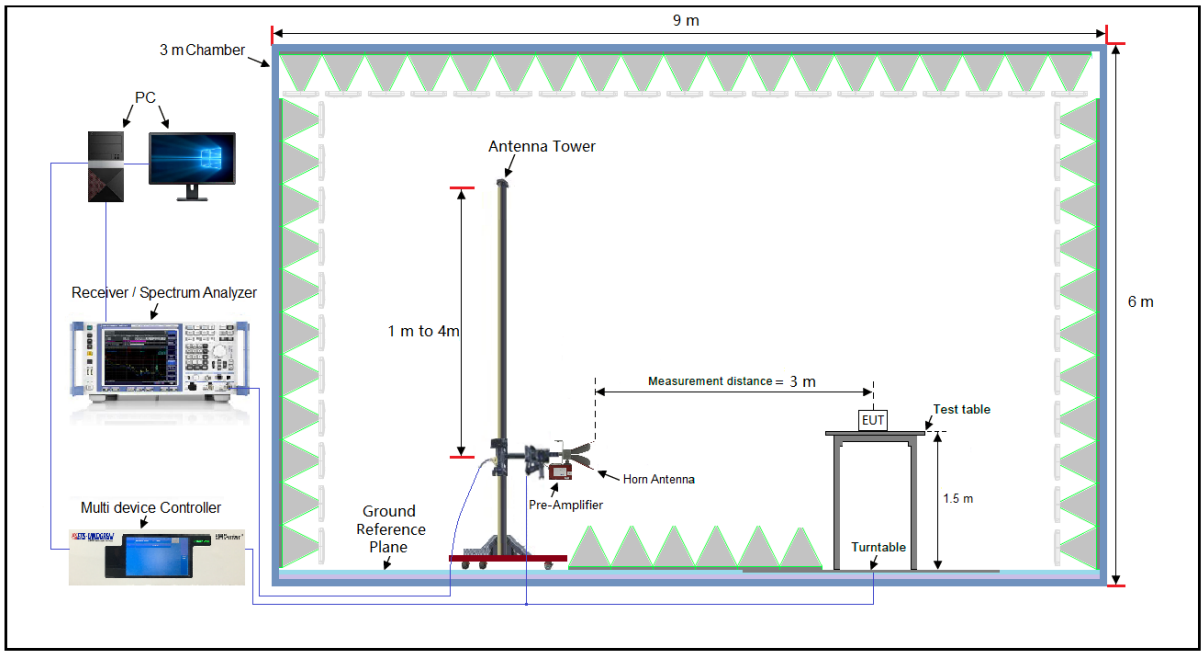
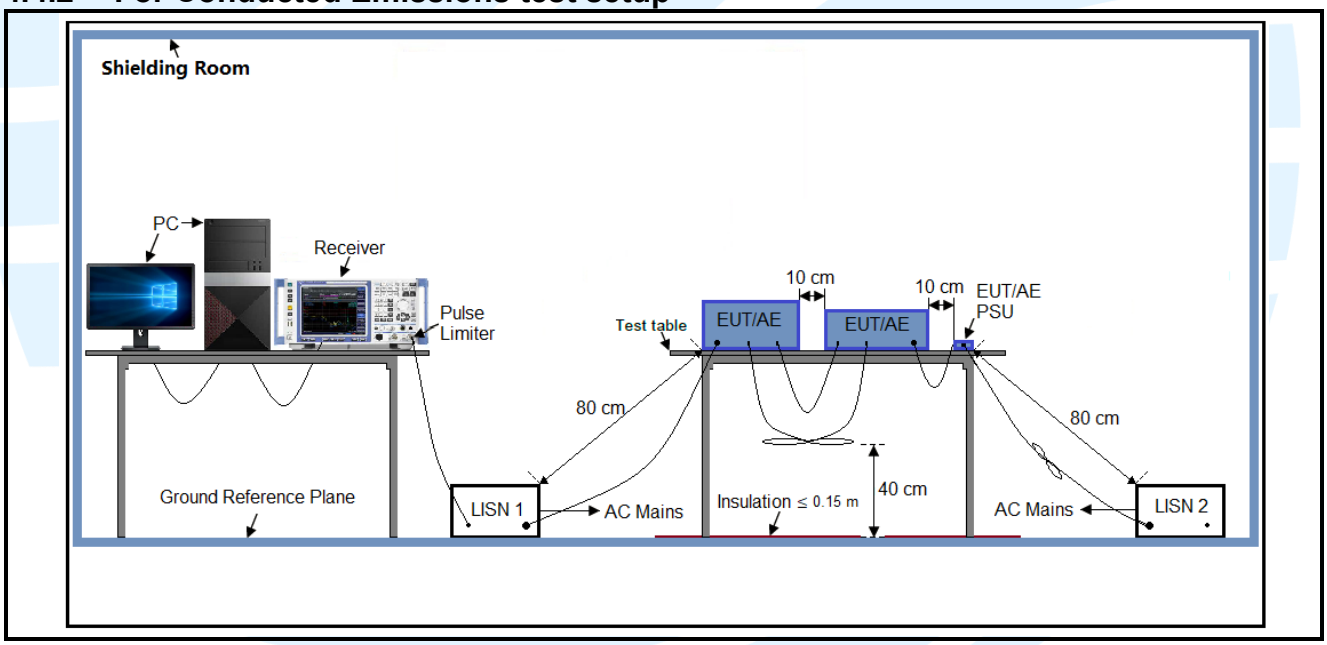


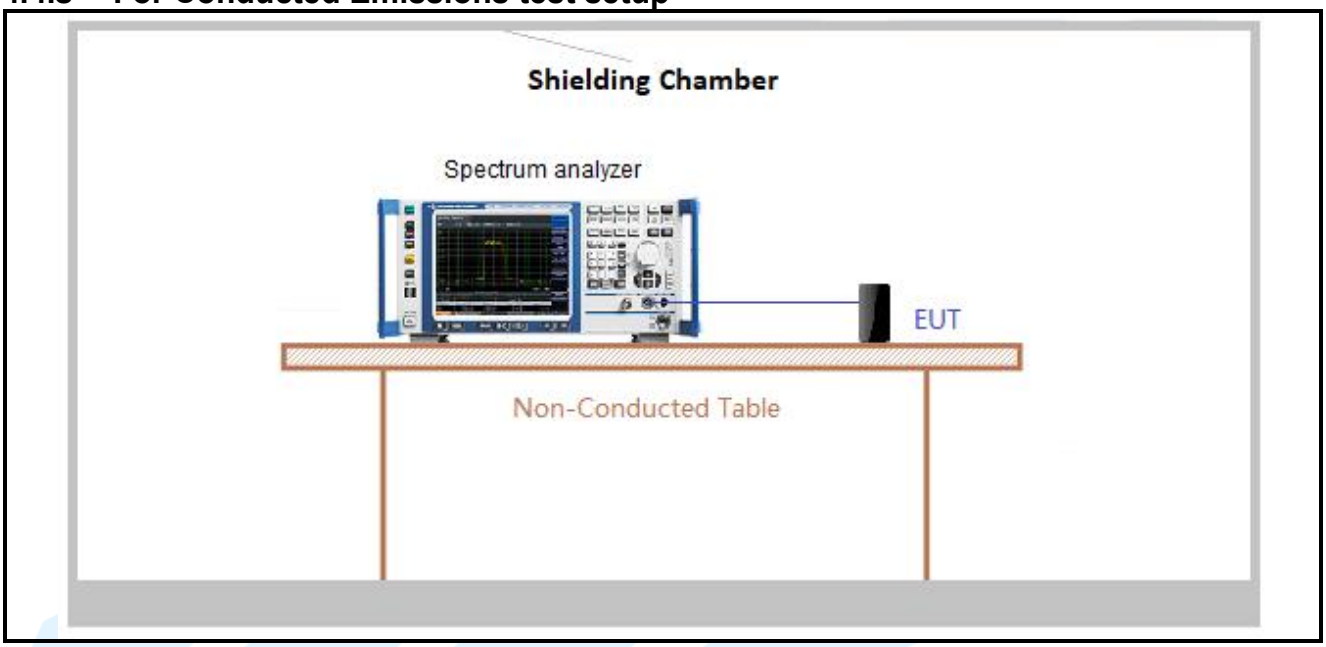
Figure 3. Above 1GHz



4.4.2 For Conducted Emissions test setup



4.4.3 For Conducted Emissions test setup



4.5 SYSTEM TEST CONFIGURATION

For emissions testing, the equipment under test (EUT) setup to transmit continuously to simplify the measurement methodology. Care was taken to ensure proper power supply voltages during testing. During testing, radiated emission were performed with the EUT set to transmit at the channel with highest output power as worst-case scenario. It was powered by a 3.7Vdc rechargeable Li-on battery. Only the worst case data were recorded in this test report.

The signal is maximized through rotation and placement in the three orthogonal axes. The antenna height and polarization are varied during the search for maximum signal level. The antenna height is varied from 1 to 4 meters. Radiated emissions are taken at three meters unless the signal level is too low for measurement at that distance. If necessary, a pre-amplifier is used and/or the test is conducted at a closer distance. Therefore, all final radiated testing was performed with the EUT in (see table below) orientation.

Frequency	Mode	Antenna Port	Worst-case axis positioning
Above 1GHz	1TX	Chain 0	Z axis

All readings are extrapolated back to the equivalent three-meter reading using inverse scaling with distance. Analyzer resolution is 100 kHz or greater for frequencies below 1000 MHz. The resolution is 1 MHz or greater for frequencies above 1000 MHz. The spurious emissions more than 20 dB below the permissible value are not reported.

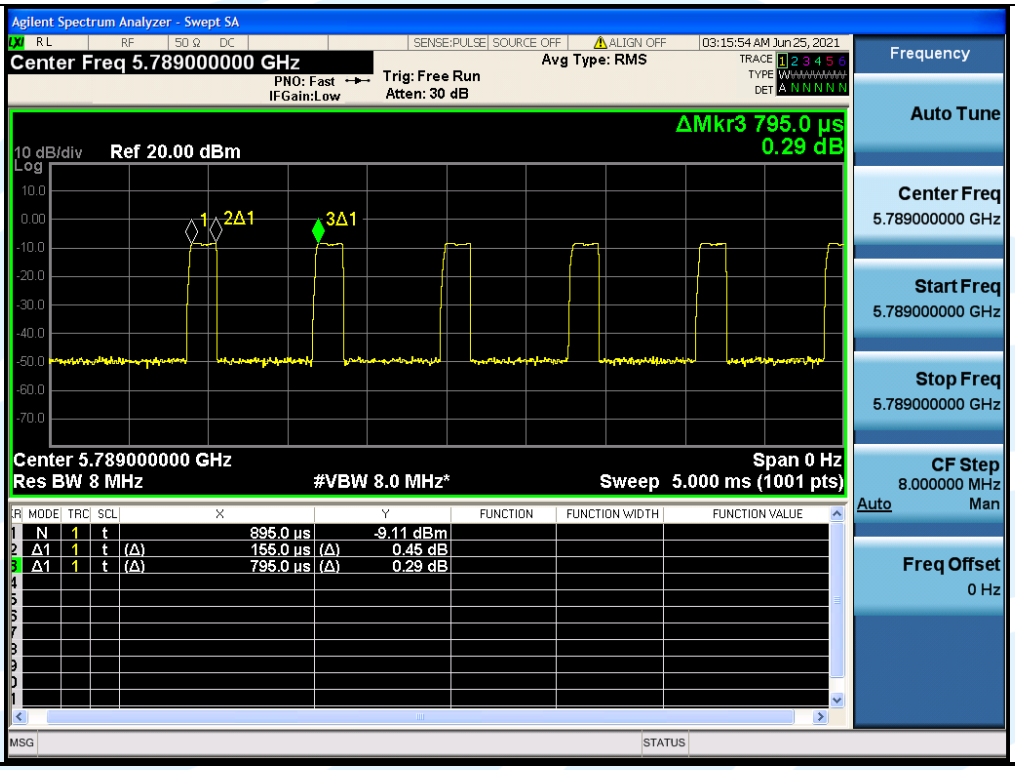
Radiated emission measurement were performed from the lowest radio frequency signal generated in the device which is greater than 9 kHz to the tenth harmonic of the highest fundamental frequency or to 40 GHz, whichever is lower.

4.6 DUTY CYCLE

Type of Modulation	On Time (msec)	Period (msec)	Duty Cycle (linear)	Duty Cycle (%)	Average Factor (dB)
GFSK	0.155	0.795	0.19	19.50	-14.42

Remark:
1) Duty cycle= On Time/ Period;
2) Duty Cycle factor = 10 * log(1/ Duty cycle);
3) Average factor = 20 $\log_{10}$ Duty Cycle.

The test plot as follows



5. RADIO TECHNICAL REQUIREMENTS SPECIFICATION

5.1 REFERENCE DOCUMENTS FOR TESTING

No.	Identity	Document Title
1	FCC 47 CFR Part 15	Radio Frequency Devices
2	RSS-Gen Issue 5	General Requirements for Compliance of Radio Apparatus
3	RSS-210 Issue 10	Licence-Exempt Radio Apparatus: Category I Equipment
4	ANSI C63.10-2013	American National Standard for Testing Unlicesed Wireless Devices

5.2 ANTENNA REQUIREMENT

Standard Requirement
15.203 Requirement: 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, 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. **RSS-Gen Issue 5, Section 6.8 requirement:** According to RSS-Gen Issue 5, Section 6.8, a transmitter can only be sold or operated with antennas with which it was certified. A transmitter may be certified with multiple antenna types. An antenna type comprises antennas having similar in-band and out-of-band radiation patterns.
EUT Antenna:
Antenna in the interior of the equipment and no consideration of replacement. The gain of the antenna is 0.0Bi.

5.3 RADIATED EMISSION

Test Requirement: FCC 47 CFR Part 15.209 and 15.249
RSS-210 Issue 10 Section B.10
RSS-Gen Issue 5, Section 6.13/8.9

Test Method: ANSI C63.10-2013 Section 6.6.4.3

Receiver Setup:

Frequency	Detector	RBW	VBW	Remark
0.009 MHz-0.090 MHz	Peak	10 kHz	30 KHz	Peak
0.009 MHz-0.090 MHz	Average	10 kHz	30 KHz	Average
0.090 MHz-0.110 MHz	Quasi-peak	10 kHz	30 KHz	Quasi-peak
0.110 MHz-0.490 MHz	Peak	10 kHz	30 KHz	Peak
0.110 MHz-0.490 MHz	Average	10 kHz	30 KHz	Average
0.490 MHz -30 MHz	Quasi-peak	10 kHz	30 kHz	Quasi-peak
30 MHz-1 GHz	Quasi-peak	100 kHz	300 KHz	Quasi-peak
Above 1 GHz	Peak	1 MHz	3 MHz	Peak
	Peak	1 MHz	10 Hz	Average

Limits:

Spurious Emissions

Frequency	Field strength (microvolt/meter)	Limit (dBμV/m)	Remark	Measurement distance (m)
0.009 MHz-0.490 MHz	2400/F(kHz)	--	--	300
0.490 MHz-1.705 MHz	24000/F(kHz)	--	--	30
1.705 MHz-30 MHz	30	--	--	30
30 MHz-88 MHz	100	40.0	Quasi-peak	3
88 MHz-216 MHz	150	43.5	Quasi-peak	3
216 MHz-960 MHz	200	46.0	Quasi-peak	3
960MHz-1GHz	500	54.0	Quasi-peak	3
Above 1 GHz	500	54.0	Average	3

Field strength of the fundamental signal

Frequency	Limit (dBμV/m @3m)	Remark
5725 MHz-5875 MHz	94.0	Average
	114.0	Peak

Remark:

1. The lower limit shall apply at the transition frequencies.
2. Emission level (dBuV/m) = 20 log Emission level (uV/m).
3. For frequencies above 1000 MHz, the field strength limits are based on average detector, however, the peak field strength of any emission shall not exceed the maximum permitted average limits, specified above by more than 20 dB under any condition of modulation.

Test Setup: Refer to section 4.4.1 for details.

Test Procedures:

1. From 30 MHz to 1GHz test procedure as below:

1) The EUT was placed on the top of a rotating table 0.8 meters above the ground at a 3-meter semi-anechoic camber. The table was rotated 360 degrees to determine the position of the highest radiation.
2) The EUT was set 3 meters away from the interference-receiving antenna, which was mounted on the top of a variable-height antenna tower.
3) The antenna height is varied from one meter to four meters above the ground to determine the maximum value of the field strength. Both horizontal and vertical polarizations of the antenna are set to make the measurement.
4) For each suspected emission, the EUT was arranged to its worst case and then the antenna was tuned to heights from 1 meter to 4 meters (for the test frequency of below 30MHz, the antenna was tuned to heights 1 meter) and the rota table table was turned from 0 degrees to 360 degrees to find the maximum reading.
5) The test-receiver system was set to Peak Detect Function and Specified Bandwidth with Maximum Hold Mode.
6) If the emission level of the EUT in peak mode was 10dB lower than the limit specified, then testing could be stopped and the peak values of the EUT would be reported. Otherwise the emissions that did not have 10dB margin would be re-tested one by one using peak, quasi-peak or average method as specified and then reported in a data sheet.

2. Above 1GHz test procedure as below:

1) Different between above is the test site, change from Semi- Anechoic Chamber to fully Anechoic Chamber and change form table 0.8 meter to 1.5 meter(Above 18GHz the distance is 1 meter and table is 1.5 meter).
2) Test the EUT in the lowest channel ,middle channel, the Highest channel
3) The radiation measurements are performed in X, Y, Z axis positioning for Transmitting mode, and found the Z axis positioning which it is worse case.
4) Repeat above procedures until all frequencies measured was complete.

Equipment Used: Refer to section 3 for details.

Test Result: Pass

The measurement data as follows:

Field Strength of the Fundamental Signal					
Result (dBμV/m)	**Limit (dBμV/m)**	**Margin (dB)**	**Remark**	**Antenna Polaxis**	**Pass/Fail**
Lowest Channel					
76.03	94.00	-17.97	Average	Horizontal	Pass
90.45	114.00	-23.55	Peak	Horizontal	Pass
72.97	94.00	-21.03	Average	Vertical	Pass
87.39	114.00	-26.61	Peak	Vertical	Pass
Middle Channel					
75.23	94.00	-18.77	Average	Horizontal	Pass
89.65	114.00	-24.35	Peak	Horizontal	Pass
71.04	94.00	-22.96	Average	Vertical	Pass
85.46	114.00	-28.54	Peak	Vertical	Pass
Highest Channel					
76.75	94.00	-17.25	Average	Horizontal	Pass
91.17	114.00	-22.83	Peak	Horizontal	Pass
73.36	94.00	-20.64	Average	Vertical	Pass
87.78	114.00	-26.22	Peak	Vertical	Pass

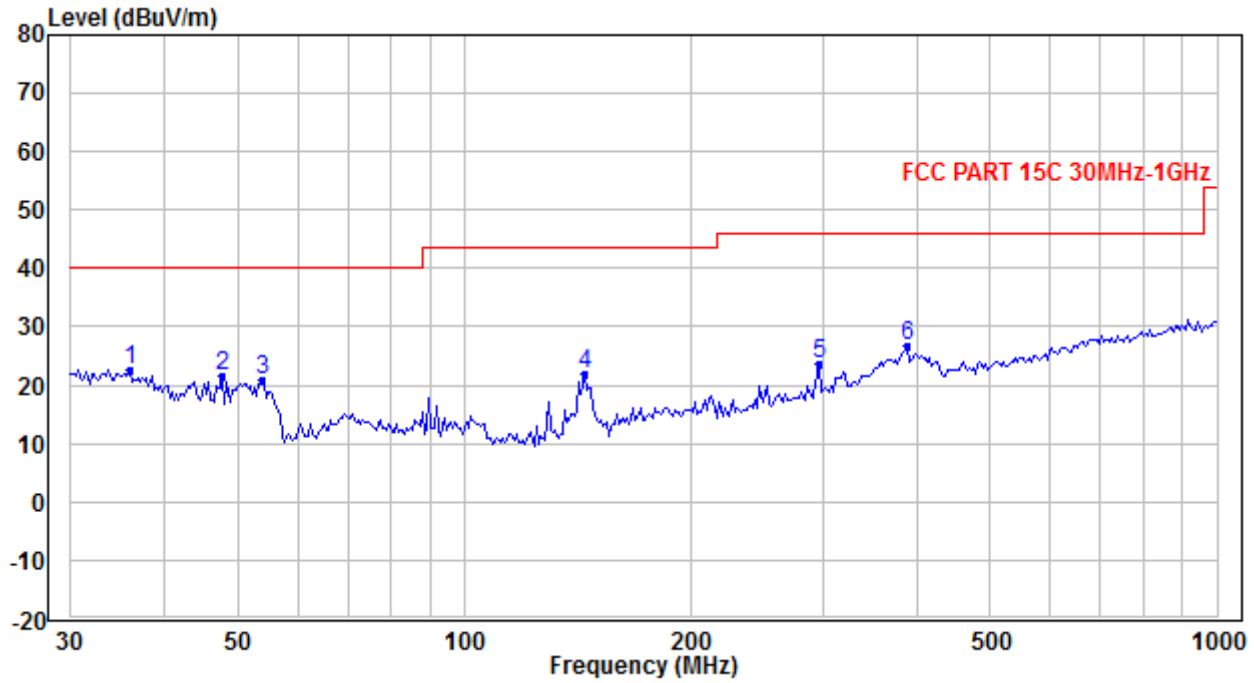
Remark: Average result = Peak result + Average Factor

Radiated Emission Test Data (9 KHz ~ 30 MHz):
The amplitude of spurious emissions attenuated more than 20 dB below the permissible value is not required to be report.

Radiated Emission Test Data (30 MHz ~ 1 GHz):

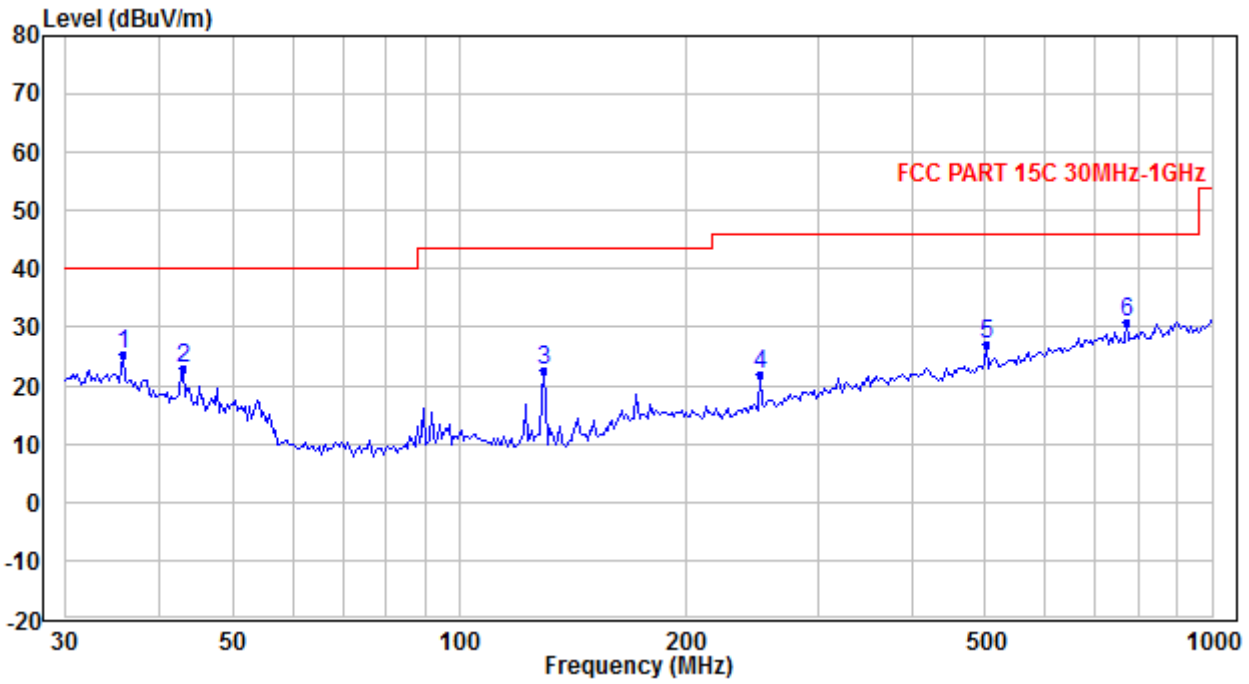
5.8G Link

Horizontal



No.	Frequency (MHz)	Reading (dBuV)	Correction factor (dB/m)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Remark
1	36.014	28.12	-5.53	22.59	40.00	-17.41	QP
2	47.703	34.75	-13.14	21.61	40.00	-18.39	QP
3	53.756	37.75	-16.79	20.96	40.00	-19.04	QP
4	144.790	37.57	-15.62	21.95	43.50	-21.55	QP
5	296.502	30.19	-6.72	23.47	46.00	-22.53	QP
6	387.257	31.75	-5.00	26.75	46.00	-19.25	QP

Vertical



No.	Frequency (MHz)	Reading (dBuV)	Correction factor (dB/m)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Remark
1	35.762	30.79	-5.43	25.36	40.00	-14.64	QP
2	42.931	32.71	-9.81	22.90	40.00	-17.10	QP
3	129.392	38.34	-15.89	22.45	43.50	-21.05	QP
4	250.486	30.84	-8.93	21.91	46.00	-24.09	QP
5	502.247	30.06	-2.85	27.21	46.00	-18.79	QP
6	771.047	28.68	2.01	30.69	46.00	-15.31	QP

Remark:

1. Correct Factor = Antenna Factor + Cable Loss - Amplifier Gain, the value was added to Original Receiver Reading by the software automatically.
2. Result = Reading + Correct Factor.
3. Margin = Result – Limit

Radiated Emission Test Data (Above 1GHz):

Lowest Channel:

No.	Frequency (MHz)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Detector	Antenna Polaxis
1	11458.00	55.16	74.00	-18.84	Peak	Horizontal
2	11458.00	35.85	54.00	-18.15	Average	Horizontal
3	17187.00	53.62	74.00	-20.38	Peak	Horizontal
4	17187.00	38.07	54.00	-15.93	Average	Horizontal
5	11458.00	57.69	74.00	-16.31	Peak	Vertical
6	11458.00	35.30	54.00	-18.70	Average	Vertical
7	17187.00	62.32	74.00	-11.68	Peak	Vertical
8	17187.00	38.15	54.00	-15.85	Average	Vertical

Middle Channel:

No.	Frequency (MHz)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Detector	Antenna Polaxis
1	11578.00	56.27	74.00	-17.73	Peak	Horizontal
2	11578.00	34.52	54.00	-19.48	Average	Horizontal
3	17367.00	57.34	74.00	-16.66	Peak	Horizontal
4	17367.00	39.13	54.00	-14.87	Average	Horizontal
5	11578.00	58.88	74.00	-15.12	Peak	Vertical
6	11578.00	35.24	54.00	-18.76	Average	Vertical
7	17367.00	60.01	74.00	-13.99	Peak	Vertical
8	17367.00	38.29	54.00	-15.71	Average	Vertical

Highest Channel:

No.	Frequency (MHz)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Detector	Antenna Polaxis
1	11698.00	51.59	74.00	-22.41	Peak	Horizontal
2	11698.00	34.72	54.00	-19.28	Average	Horizontal
3	17547.00	53.29	74.00	-20.71	Peak	Horizontal
4	17547.00	37.61	54.00	-16.39	Average	Horizontal
5	11698.00	58.13	74.00	-15.87	Peak	Vertical
6	11698.00	34.60	54.00	-19.40	Average	Vertical
7	17547.00	54.44	74.00	-19.56	Peak	Vertical
8	17547.00	37.79	54.00	-16.21	Average	Vertical

Remark:

1. Correct Factor = Antenna Factor + Cable Loss - Amplifier Gain, the value was added to Original Receiver Reading by the software automatically.
2. Result = Reading + Correct Factor.
3. Margin = Result – Limit
4. All other emissions above 1GHz are attenuated 20dB below the limit, so it does not record.

5.4 RESTRICTED BANDS AROUND FUNDAMENTAL FREQUENCY

Test Requirement: FCC 47 CFR Part 15.209 and 15.205
RSS-Gen Issue 5, Section 6.13/8.9/8.10

Test Method: ANSI C63.10-2013

Limits:

Emissions radiated outside of the specified frequency bands, except for harmonics, shall be attenuated by at least 50 dB below the level of the fundamental or to the general radiated emission limits in Section 15.209, whichever is the lesser attenuation.

Frequency	Limit (dBμV/m @3m)	Remark
30 MHz-88 MHz	40.0	Quasi-peak Value
88 MHz-216 MHz	43.5	Quasi-peak Value
216 MHz-960 MHz	46.0	Quasi-peak Value
960 MHz-1 GHz	54.0	Quasi-peak Value
Above 1 GHz	54.0	Average Value
	74.0	Peak Value

Test Setup: Refer to section 4.4.1 for details.

Test Procedures:

Radiated band edge measurements at 2400 MHz and 2483.5 MHz were made with the unit transmitting in the low end of the channel range and the high end closest to the restricted bands respectively. The emissions were made on the 966 Semi-Chamber. Use (resolution bandwidth (RBW) = 1 MHz, video bandwidth (VBW) = 3 MHz for peak levels and RBW = 1 MHz and VBW = 10 Hz or 1/T for average levels).

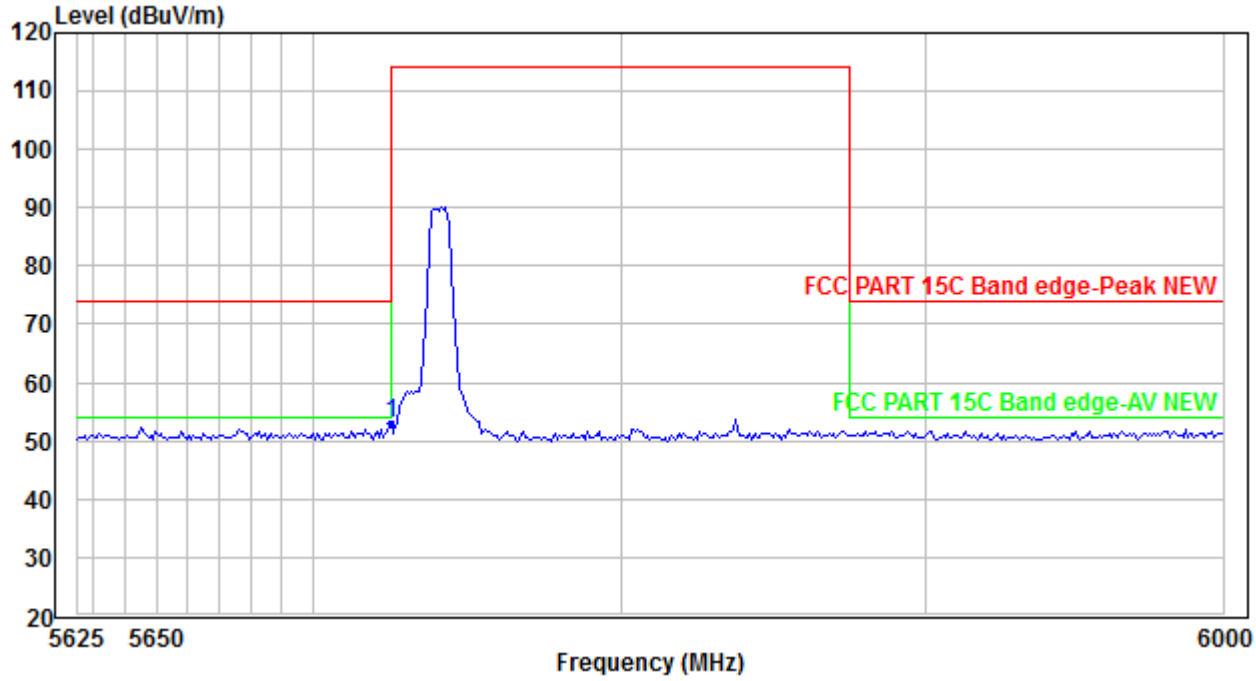
1. Use radiated spurious emission test procedure described in clause 5.3. The transmitter output (antenna port) was connected to the test receiver.
2. Set the PK and AV limit line.
3. Record the fundamental emission and emissions out of the band-edge.
4. Determine band-edge compliance as required.

Equipment Used: Refer to section 3 for details.

Test Result: Pass

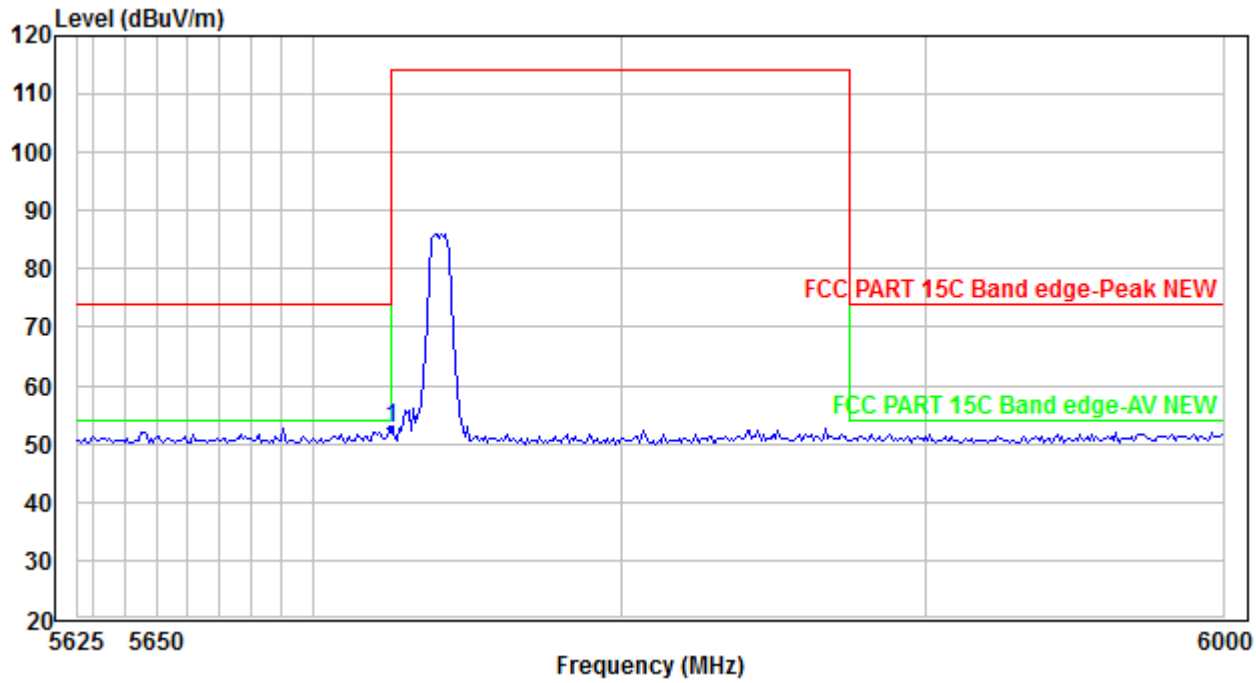
The measurement data as follows:

Test Channel:	Lowest Channel	Ant. Polar. :	Horizontal



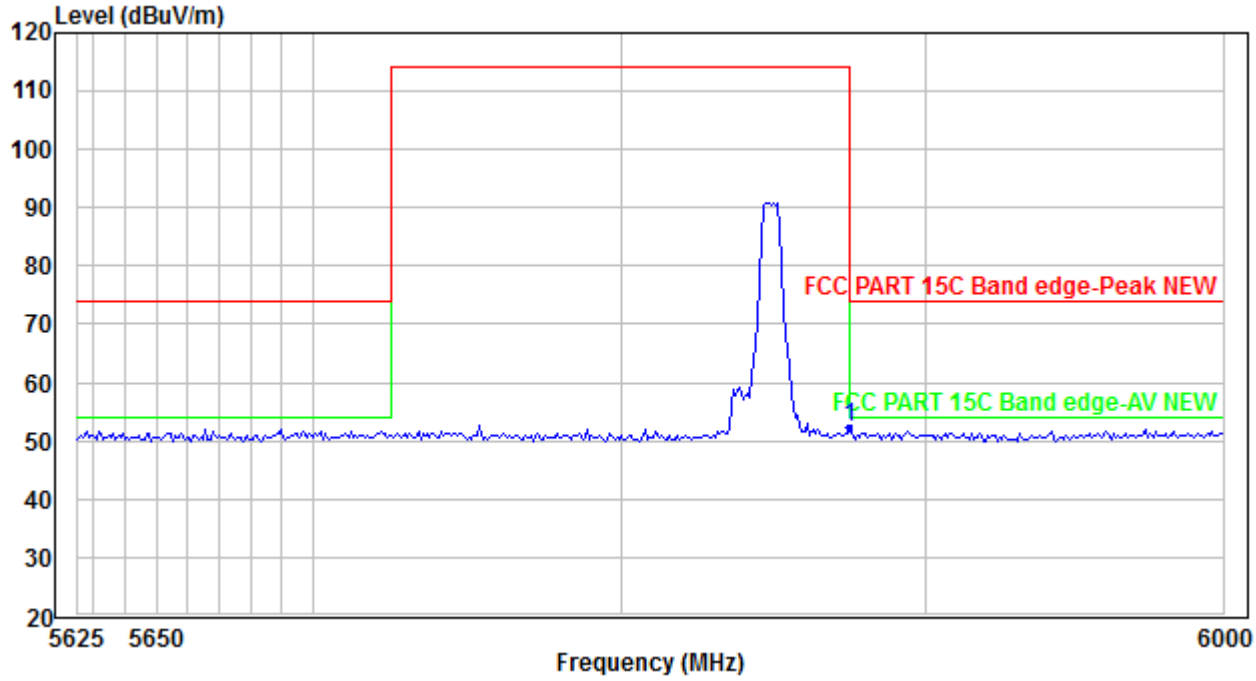
Frequency (MHz)	Peak level (dBuv/m)	Peak Limit (dBuv/m)	AV level (dBuv/m)	AV Limit (dBuv/m)	Conclusion
5725.000	52.88	74	38.46	54	Pass

Test Channel:	Lowest Channel	Ant. Polar. :	Vertical



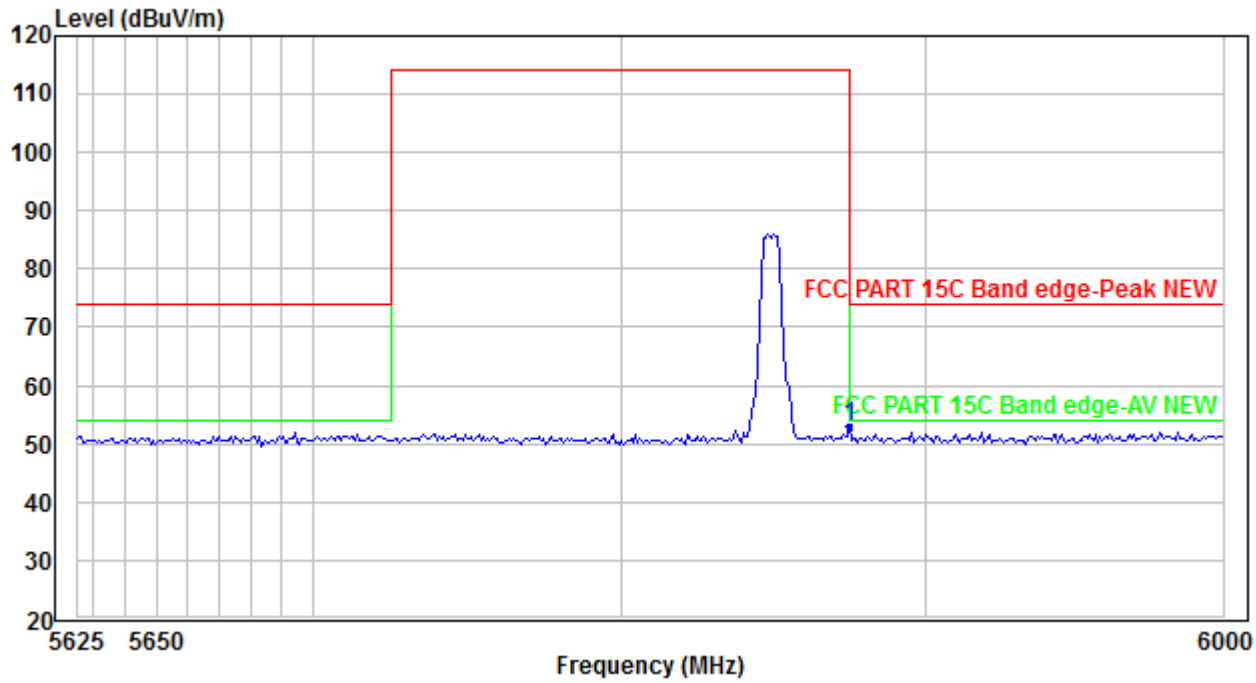
Frequency (MHz)	Peak level (dBuv/m)	Peak Limit (dBuv/m)	AV level (dBuv/m)	AV Limit (dBuv/m)	Conclusion
5725.000	52.62	74	38.20	54	Pass

Test Channel:	Highest Channel	Ant. Polar. :	Horizontal



Frequency (MHz)	Peak level (dBuv/m)	Peak Limit (dBuv/m)	AV level (dBuv/m)	AV Limit (dBuv/m)	Conclusion
5875.000	52.17	74	37.75	54	Pass

Test Channel:	Highest Channel	Ant. Polar. :	Vertical



Frequency (MHz)	Peak level (dBuv/m)	Peak Limit (dBuv/m)	AV level (dBuv/m)	AV Limit (dBuv/m)	Conclusion
5875.000	53.05	74	38.63	54	Pass

Remark: Average level = Peak level + Average Factor

5.5 20DB OCCUPIED BANDWIDTH & OCCUPIED BANDWIDTH

Test Requirement:	FCC 47 CFR Part 15.215 RSS-Gen Issue 5, Section 6.7
Test Method:	ANSI C63.10-2013 RSS-Gen Issue 5, Section 6.7
Test Setup:	Refer to section 4.4.3 for details.
Limits:	N/A
Equipment Used:	Refer to section 3 for details.
Test Result:	Pass

The measurement procedure shall be as follows:

Remove the antenna from the EUT and then connect a low loss RF cable from the antenna port to the spectrum analyzer.
Use the following spectrum analyzer settings:

a) Span = approximately 2 to 3 times the 20 dB bandwidth, centered on a hopping channel
b) RBW ≥ 1% of the 20 dB bandwidth
c) VBW ≥ RBW
d) Sweep = auto;
e) Detector function = peak
f) Trace = max hold
g) All the trace to stabilize, use the marker-to-peak function to set the marker to the peak of the emission, use the marker-delta function to measure and record the 20dB down bandwidth of the emission.

Note: The cable loss and attenuator loss were offset into measure device as an amplitude offset.

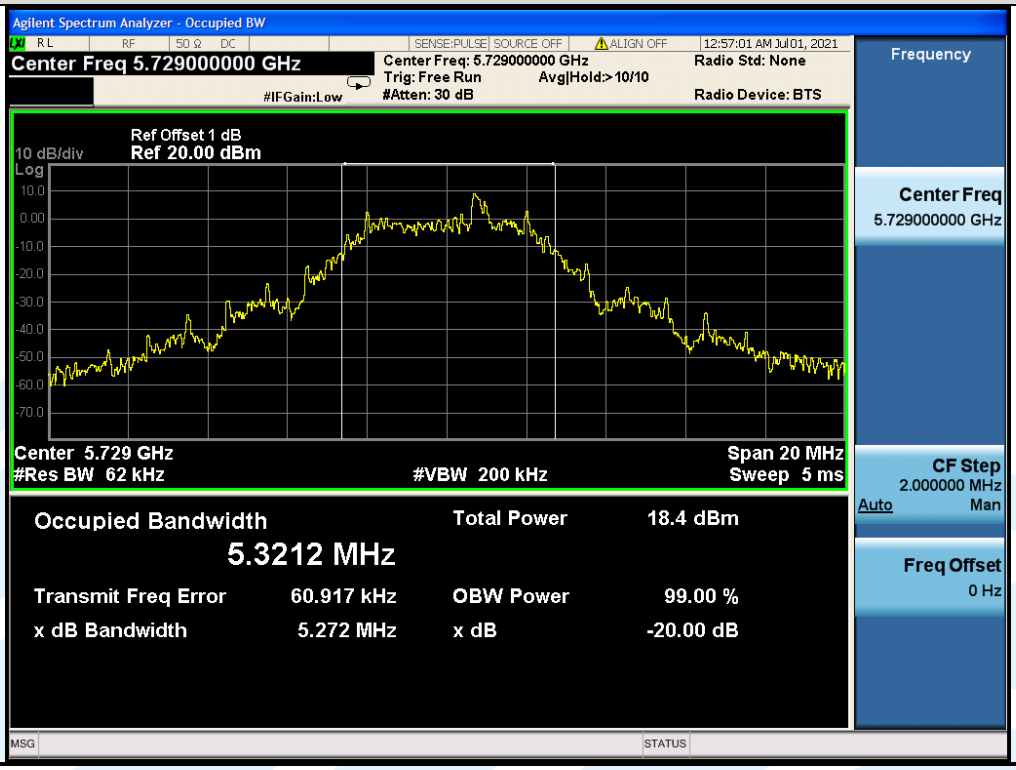
Test Result: Pass

The measurement data as follows:

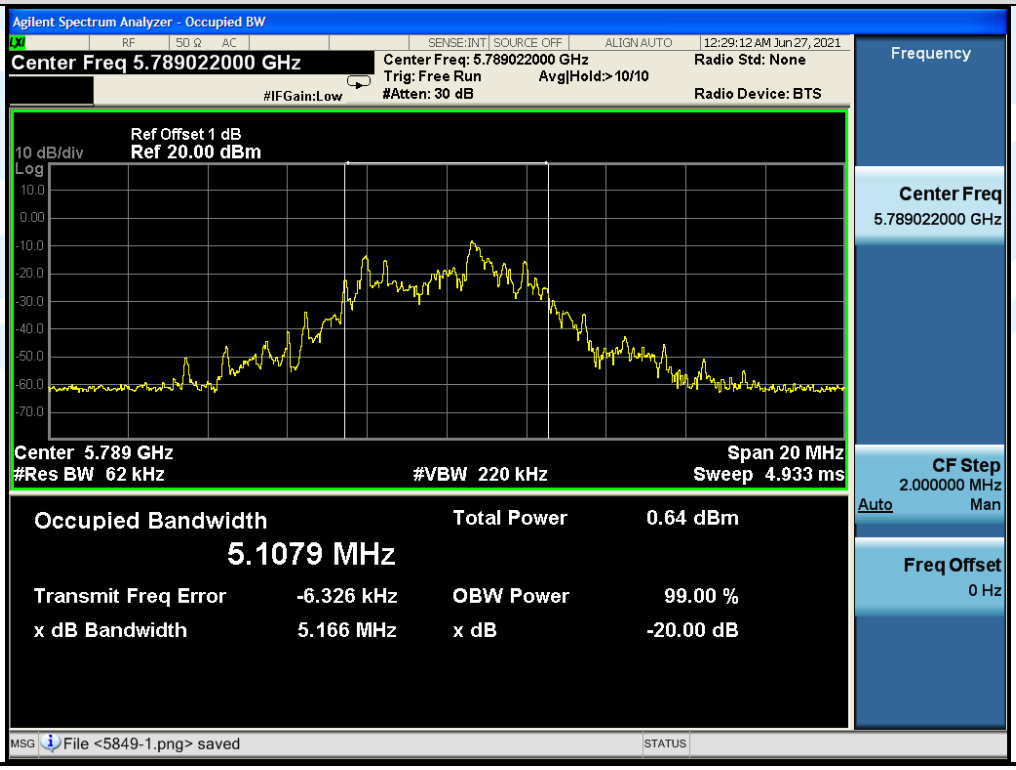
Test Channel	20 dB Bandwidth (MHz)	99% Occupied Bandwidth (MHz)
Lowest	5.272	5.3212
Middle	5.166	5.1079
Highest	5.148	5.2669

The test plot as follows:

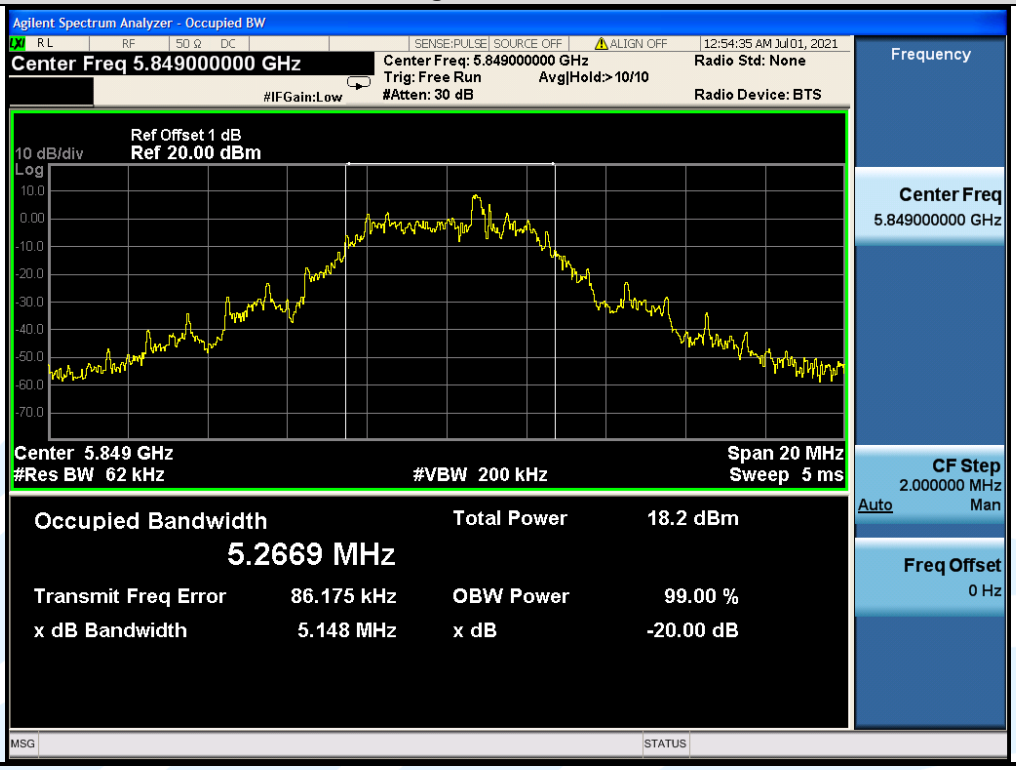
Lowest Channel



Middle Channel



Highest Channel



APPENDIX 1 PHOTOS OF TEST SETUP

See test photos attached in Appendix 1 for the actual connections between Product and support equipment.

APPENDIX 2 PHOTOS OF EUT CONSTRUCTIONAL DETAILS

Refer to Appendix 2 for EUT external and internal photos.

*** End of Report ***

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