TEST REPORT

Product	:	PowerEgg X 8K
Trade mark	:	PowerEgg™
Model/Type reference	:	PEX20
Serial Number	:	N/A
Report Number	:	EED39N80209404
FCC ID	:	2AKBMPEX20
Date of Issue	:	July 15, 2021

Test Standards	Results
47 CFR Part 15 Subpart E	PASS

Prepared for:

Powervision Tech Inc.
Zone E,Ocean Venture Valley, No.40, Yangguang Rd, Nanhai new District, Weihai, Shandong,China. 264200

Prepared by:

Centre Testing International (Suzhou) CO., LTD.
Building 18, Zhihui New Town Ecological Industrial Park, No. 1206, Jinyang East Road, Lujia Town, Kunshan, Jiangsu, China
TEL: +86-0512-5015 8288

Compiled by: Jenny. Yu Reviewed by: Lily. Wang

Approved by: Jeff Fang Date: July 15, 2021

Check No.: 7824090421

Modification Record

No.	Last Report No.	Modification Description
1	EED39N80209404	First report

TABLE OF CONTENTS

1 Test Summary

Test Item	Test Requirement	Test method	Result
26dB Emission Bandwidth	Part15E Section 15.407 (a)	ANSI C63.10-2013	PASS
Min 6dB emission bandwidth	Part15E Section 15.407 (e)	ANSI C63.10-2013	PASS
Occupied channel bandwidth	Part15E Section 15.407	ANSI C63.10-2013	PASS
Maximum Conduct Output Power	Part15E Section 15.407 (a)(1)(2)(4)(h)(1)	ANSI C63.10-2013	PASS
Power Spectral Density	Part15E Section 15.407 (a)(1)(2)(5)	ANSI C63.10-2013	PASS
Frequency stability	Part15E Section 15.407 (g)	ANSI C63.10-2013	PASS
Duty cycle	Part15E Section 15.407	ANSI C63.10-2013	/
Antenna Requirement	Part15C Section 15.203	ANSI C63.10-2013	PASS
Operation in the absence of information to the transmit	Part15E Section 15.407 (c)	47 CFR Part 15 Subpart E	PASS
AC Power Line Conducted Emission	Part15E Section 15.407 (b)(6)	ANSI C63.10-2013	N/A
Restricted bands around fundamental frequency (Radiated Emission)	Part15E Section 15.407 (b)(6)(7)(8)	ANSI C63.10-2013	PASS
Unwanted Emissions in the Restricted Bands	Part15E Section 15.407 (b)(6)(7)(8)	ANSI C63.10-2013	PASS
Unwanted Emissions that fall Outside of the Restricted Bands	Part15E Section 15.407 (b)(1)(2)(3)(5)	ANSI C63.10-2013	PASS

2 Test Requirement

2.1 Test Environment

Operating Environment:	
Temperature:	22.3 °C
Humidity:	48.7 % RH
Atmospheric Pressure:	1010mbar

2.2 Test Condition

Test channel:

Test Mode	Tx/Rx	RF Channel		
		Low(L)	Middle(M)	High(H)
Other	5740MHz ~5830 MHz	5740MHz	5780MHz	5830MHz

3 General Information

3.1 Client Information

Applicant:	Powervision Tech Inc.
Address of Applicant:	Zone E,Ocean Venture Valley, No.40, Yangguang Rd, Nanhai new District, Weihai, Shandong,China. 264200
Manufacturer:	Powervision Tech Inc.
Address of Manufacturer:	Zone E,Ocean Venture Valley, No.40, Yangguang Rd, Nanhai new District, Weihai, Shandong,China. 264200
Factory:	Powervision (Suzhou) Technology Co.,Ltd.
Address of Factory:	Building 3,No.15, Zhujing Road,Changshu High-tech Industrial Development Zone,Suzhou,China

3.2 General Description of EUT

Product Name:	PowerEgg X 8K	
Model No.(EUT):	PEX20	
Serial Model:	/	
Trade Mark:	PowerEgg™	
EUT Supports Radios application:	2.4G WIFI: IEEE802.11b/g/n(20MHz), 2412MHz-2462MHz 5G WIFI: IEEE802.Other/an(HT20)5725-5850MHz. 2.4G: 2406MHz~2466MHz 5G:5740MHz~5830MHz	
Power Supply:	Adapter:	Model:PAD20 INPUT:100-240V 1.4A 50-60Hz OUTPUT:DC 13.3V 3.76A DC 5V 2A
	Battery:	Model: PEMIB10 Rated voltage:11.4V Rated capacity:3800mAh
Sample Received Date:	2021.05.14	
Sample tested Date:	2021.5.18 to 2021.06.02	

3.3 Product Specification subjective to this standard

Operation Frequency:	5740MHz ~5830 MHz
Channel Numbers:	10 channel
Type of Modulation:	BPSK/QPSK/16QAM/64QAM
Sample Type:	Mobile production
Test Software of EUT:	Artosyn8020PCTool (manufacturer declare)
Antenna Type :	PCB antenna
Antenna Type and Gain①:	ANT1 Gain :0.25dBi ANT2 Gain :0.25dBi
Test Voltage:	DC 11.4V

Note: 1 The antenna gain is provided by the client and we Centre Testing International (Suzhou) CO., LTD. test lab is not responsible for the accuracy of the antenna gain information.

3.4 Description of Support Units

The EUT has been tested with associated equipment below.

1）support equipment

Description	Manufacturer	Model No.	Certification	Supplied by
NB	ThinkPad	E490	FCC ID and DOC	CTI

3.5 Test Location

All test facilities used to collect the test data are located at Building 18, Zhihui New Town Ecological Industrial Park, No. 1206, Jinyang East Road, Lujia Town, Kunshan, Jiangsu, China.

3.6 Test Facility

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

A2LA-Lab Cert. No. 5734.01

Centre Testing International (Suzhou) CO., LTD. EMC Laboratory 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.

FCC-Designation No.:CN1290

Centre Testing International Group Co., Ltd EMC Laboratory has been registered and fully described in a report filed with the FCC (Federal Communications Commission). The American association for Centre Testing International Group Co., Ltd. EMC laboratory accreditation Designation No.:CN1290

3.7 Deviation from Standards

None.

3.8 Abnormalities from Standard Conditions

None.

3.9 Other Information Requested by the Customer

None.

3.10 Measurement Uncertainty (95% confidence levels, k=2)

No.	Item	Measurement Uncertainty
1	Radio Frequency	7.9×10^{-8}
2	Occupied Bandwidth	0.56%
3	RF Power conducted	0.59 dB
4	Power Spectral Density, conducted	2.37 dB
5	Unwanted Emission, conducted	2.68 dB
6	All Emission, radiated	4.41 dB(30MHz-1GHz)
		4.99 dB(1GHz-18GHz)
		5.307 dB(18GHz-40GHz)
7	Temperature test	0.54°C
8	Humidity test	1.62%
9	DC and low frequency voltages test	1.14%

4 Equipment List

RF test system					
Equipment	**Manufacturer**	**Mode No.**	**Serial Number**	**Cal. Date (yyyy-mm-dd)**	**Cal. Due date (yyyy-mm-dd)**
Signal Generator	R&S	SMB100A	182002	2020-10-23	2021-10-22
Communication test set test set	R&S	CMW500	107929	2021-04-29	2022-04-28
Spectrum Analyzer	R&S	FSV40	101588	2020-10-23	2021-10-22
Vector signal generator	R&S	SMBV100B	101985	2020-10-23	2021-10-22
Temperature/ Humidity Indicator	testo	608-H1	1945222628	2020-11-09	2021-11-08
Switch Automatic control	R&S	OSP-B157W8	101111	2020-10-23	2021-10-22
High-low temperature chamber	GIANT FORCE	GTH-800-40-CP	MAA1908-003	2020-12-08	2021-12-07
Automatic test software	Shenzhen JS TONSCEND	/	V2.6.77.0518	/	/

966 Semi-anechoic Chamber					
Equipment	**Manufacturer**	**Mode No.**	**Serial Number**	**Cal. Date (yyyy-mm-dd)**	**Cal. Due date (yyyy-mm-dd)**
Receiver	R&S	ESU8	100537	2020-12-10	2021-12-09
Spectrum analyzer	R&S	FSV40	101185	2020-12-10	2021-12-09
Preamplifier (30MHz~1GHz)	SONOMA	317	393347	2020-12-04	2021-12-03
Preamplifier (1GHz~18GHz)	R&S	SCU-18D	1987397	2020-12-10	2021-12-09
Preamplifier (18GHz~40GHz)	/	MTLNA1804003 0235	12009007	2020-10-23	2021-10-22
Loop Antenna (9kHz~30MHz)	TESEQ	HLA6121	54575	2021-02-27	2022-02-26
Antenna (30MHz~1GHz)	SCHWARZBEC K	VULB9163	9163-965	2020-10-16	2021-10-15
Antenna (1GHz~18GHz)	R&S	HF907	102524	2020-12-15	2021-12-14
Antenna (18GHz~40GHz)	R&S	BBHA9170	1032	2020-10-23	2021-10-22
Band rejection filter	Xi'an xingbo	XBLBQ-DZA81	200827-1-02	/	/
Band rejection filter	Xi'an xingbo	XBLBQ-DZA104	200827-1-11	/	/
Band rejection filter	Xi'an xingbo	XBLBQ-DZA118	200827-1-10	/	/
Band rejection filter	Xi'an xingbo	XBLBQ-DZA105	200827-1-12	/	/

5 Radio Technical Requirements Specification

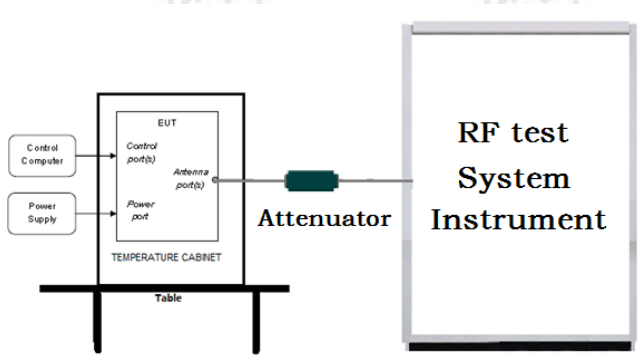
5.1 Reference Documents for Testing

No.	Identity	Document Title
1	FCC Part15E	Subpart C-Intentional Radiators
2	ANSI C63.10-2013	American National Standard for Testing Unlicensed Wireless Devices
3	KDB789033 D02 General UNII Test Procedures New Rules v01	Guidelines for compliance testing of unlicensed national information infrastructure (U-NII) device part 15 subpart E

5.2 Test Results List

Test Requirement	Test method	Test item	Verdict	Note
Part15E Section 15.407 (e)	ANSI C63.10-2013	Min 6dB emission bandwidth	PASS	Appendix A)
Part15E Section 15.407	ANSI C63.10-2013	Occupied channel bandwidth	/	Appendix B)
Part15E Section 15.407 (a)(1)(2)(4)(h)(1)	ANSI C63.10-2013	Maximum Conduct Output Power	PASS	Appendix C)
Part15E Section 15.407 (a)(1)(2)(5)	ANSI C63.10-2013	Power Spectral Density	PASS	Appendix D)
Part15E Section 15.407 (g)	ANSI C63.10-2013	Frequency stability	PASS	Appendix E)
Part15E Section 15.407	ANSI C63.10-2013	Duty cycle	/	Appendix F)
Part15C Section 15.203	ANSI C63.10-2013	Antenna Requirement	PASS	Appendix G)
Part15E Section 15.407 (c)	47 CFR Part 15 Subpart E	Operation in the absence of information to the transmit	PASS	Appendix H)
Part15E Section 15.407 (b)(6)	ANSI C63.10-2013	AC Power Line Conducted Emission	PASS	Appendix I)
Part15E Section 15.407 (b)(6)(7)(8)	ANSI C63.10-2013	Restricted bands around fundamental frequency (Radiated Emission)	PASS	Appendix J)
Part15E Section 15.407 (b)(6)(7)(8)	ANSI C63.10-2013	Unwanted Emissions in the Restricted Bands	PASS	Appendix K)
Part15E Section 15.407 (b)(1)(2)(3)(5)	ANSI C63.10-2013	Unwanted Emissions that fall Outside of the Restricted Bands	PASS	Appendix L)

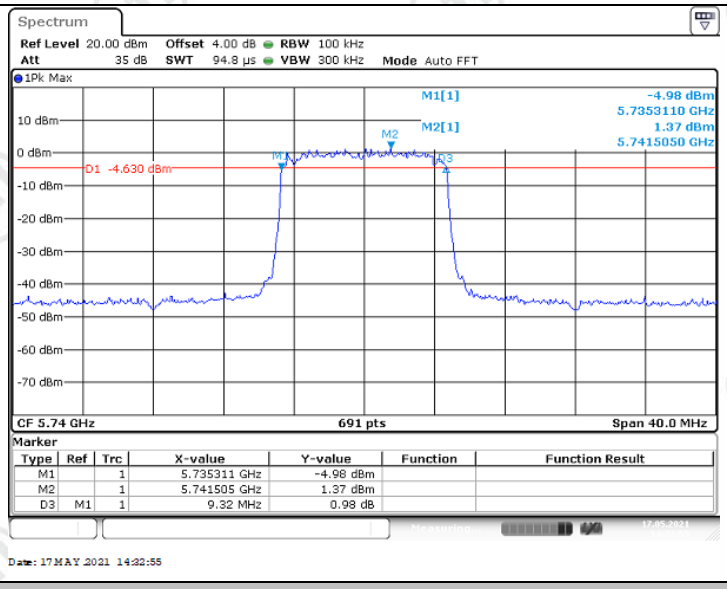
Appendix A): Min 6dB emission bandwidth

Test Requirement:	47 CFR Part 15C Section 15.407 (e)
Test Method:	KDB789033 D02 General UNII Test Procedures New Rules v02r01 Section C
Test Setup:	 Remark: Offset=Cable loss+ attenuation factor.
Test Procedure:	1. KDB789033 D02 General UNII Test Procedures New Rules v02r01 Section C 2. Set to the maximum power setting and enable the EUT transmit continuously. 3. Make the measurement with the spectrum analyzer's resolution bandwidth (RBW) = 100 kHz. Set the Video bandwidth (VBW) = 300 kHz. In order to make an accurate measurement. The 6dB bandwidth must be greater than 500 kHz. 4. Measure and record the results in the test report.
Limit:	≥ 500 kHz
Test Mode:	Transmitting mode with modulation
Test Results:	Pass

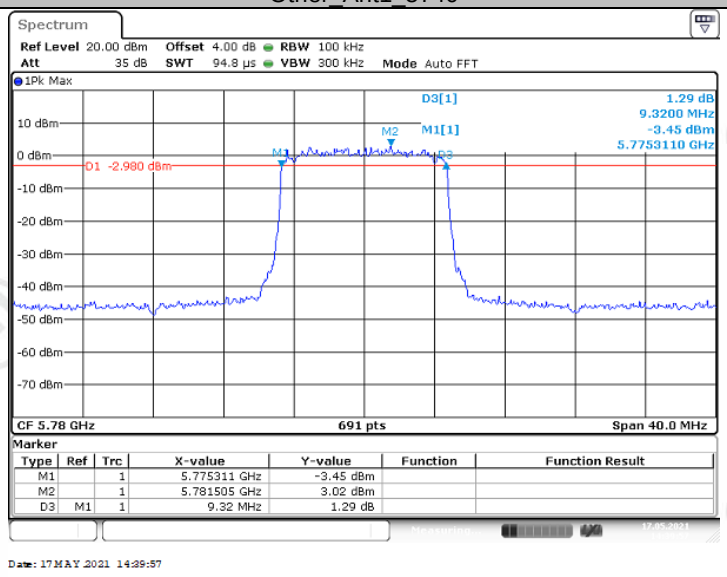
Result Table:

Test Mode	Antenna	Channel	6db EBW [MHz]	Limit[MHz]	Verdict
Other	Ant1	5740	9.32	0.5	PASS
		5780	9.32	0.5	PASS
		5830	9.38	0.5	PASS
	Ant2	5740	9.32	0.5	PASS
		5780	9.32	0.5	PASS
		5830	9.21	0.5	PASS

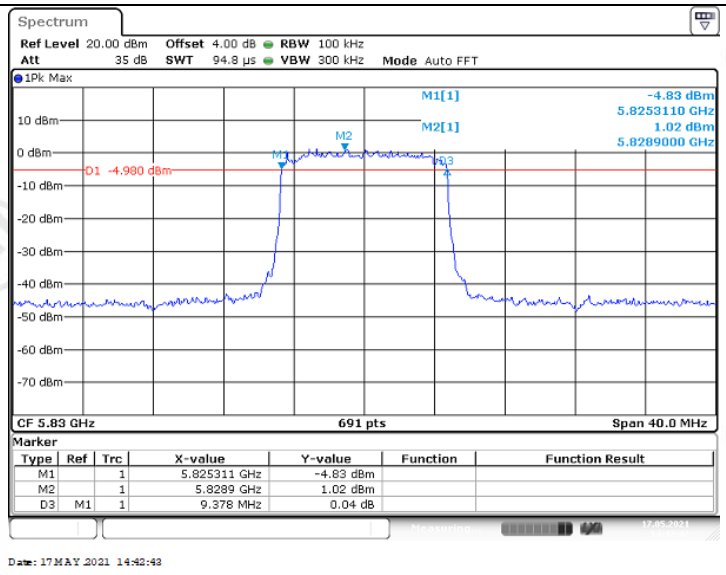
Test Graphs:



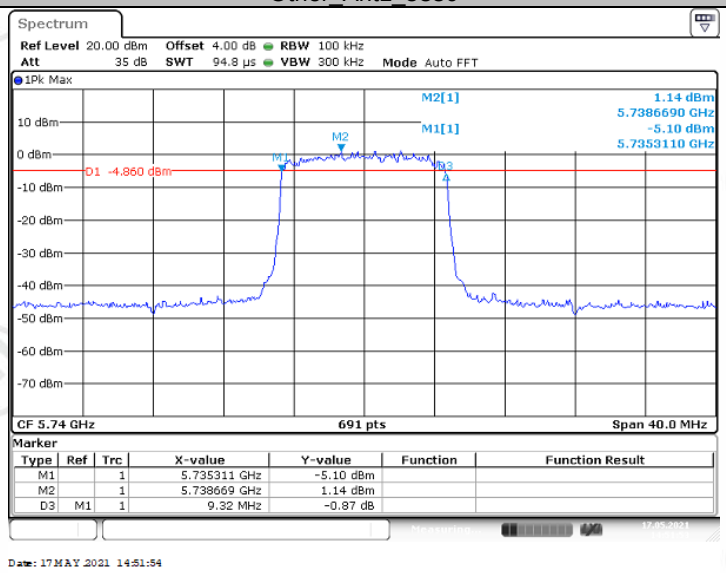
Other_Ant1_5740



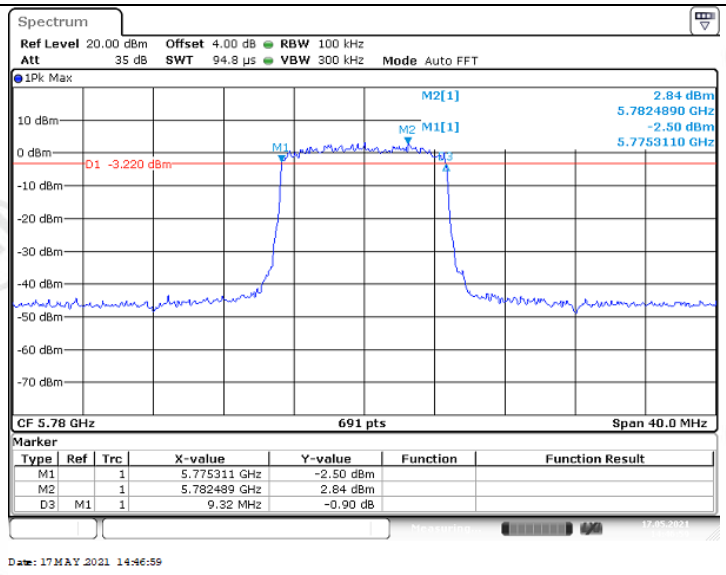
Other_Ant1_5780



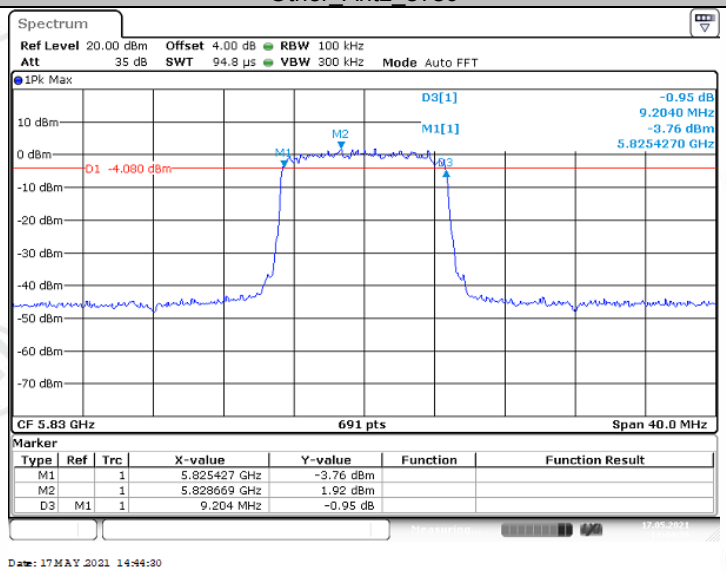
Other_Ant1_5830



Other_Ant2_5740

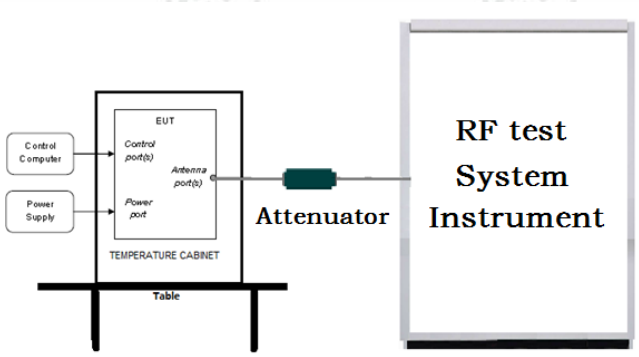


Other_Ant2_5780



Other_Ant2_5830

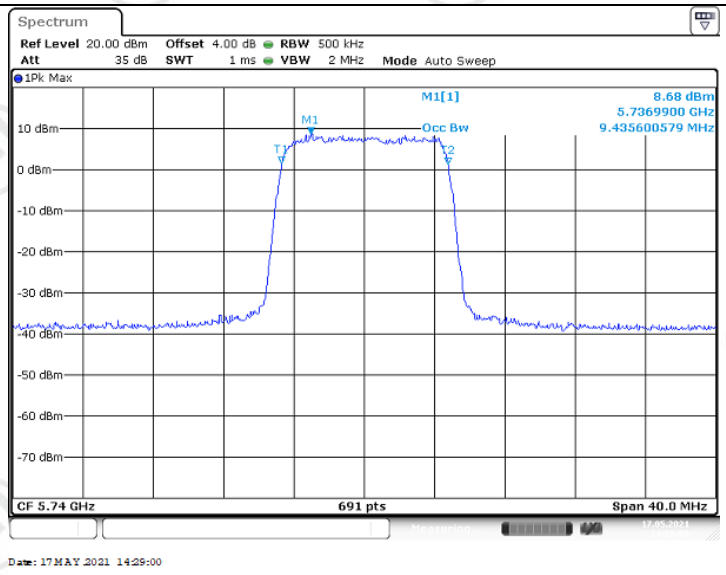
Appendix B): Occupied channel bandwidth

Test Requirement:	47 CFR Part 15C Section 15.407 (a)
Test Method:	KDB789033 D02 General UNII Test Procedures New Rules v02r01 Section D
Test Setup:	 Remark: Offset=Cable loss+ attenuation factor.
Test Procedure:	1. Set center frequency to the nominal EUT channel center frequency. 2. Set span = 1.5 times to 5.0 times the OBW. 3. Set RBW = 1% to 5% of the OBW 4. Set VBW ≥ 3 RBW 5. Video averaging is not permitted. Where practical, a sample detection and single sweep mode shall be used. Otherwise, peak detection and max hold mode (until the trace stabilizes) shall be used. 6. Use the 99% power bandwidth function of the instrument (if available). 7. If the instrument does not have a 99% power bandwidth function, the trace data points are recovered and directly summed in power units. The recovered amplitude data points, beginning at the lowest frequency, are placed in a running sum until 0.5% of the total is reached; that frequency is recorded as the lower frequency. The process is repeated until 99.5% of the total is reached; that frequency is recorded as the upper frequency. The 99% occupied bandwidth is the difference between these two frequencies.
Limit:	No restriction limits
Test Mode:	Transmitting mode with modulation
Test Results:	Pass

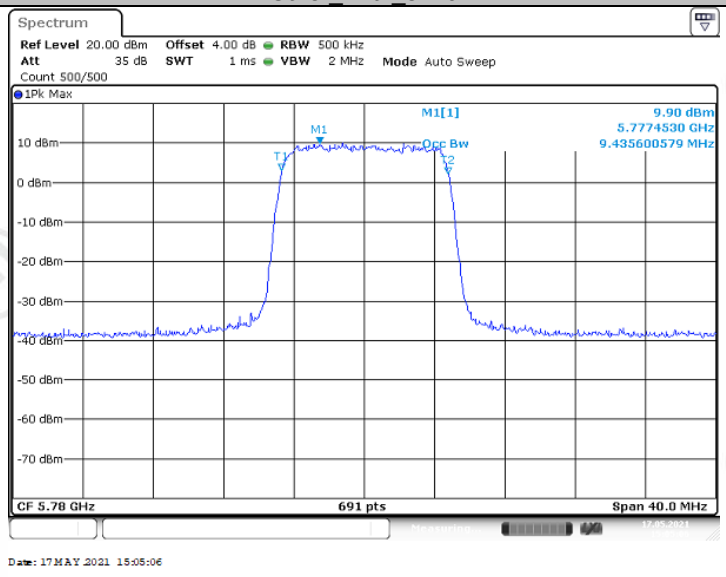
Result Table:

Test Mode	Antenna	Channel	OCB [MHz]	Limit[MHz]	Verdict
Other	Ant1	5740	9.44	---	PASS
		5780	9.44	---	PASS
		5830	9.44	---	PASS
	Ant2	5740	9.44	---	PASS
		5780	9.44	---	PASS
		5830	9.44	---	PASS

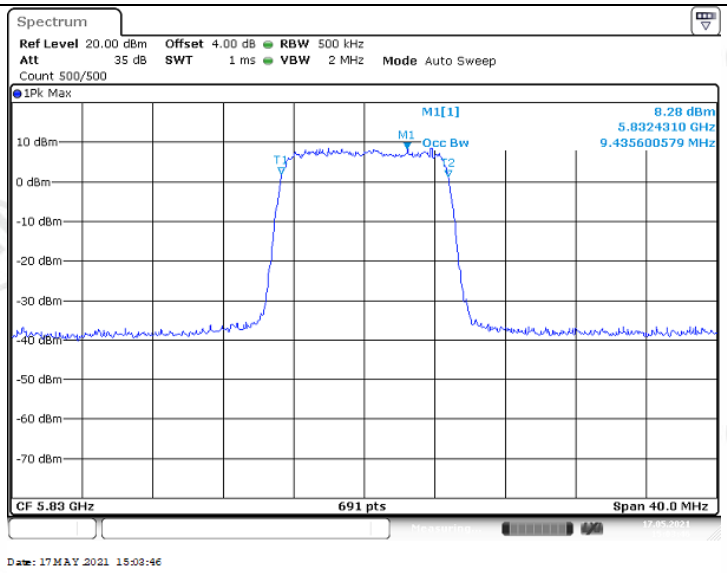
Test Graphs:



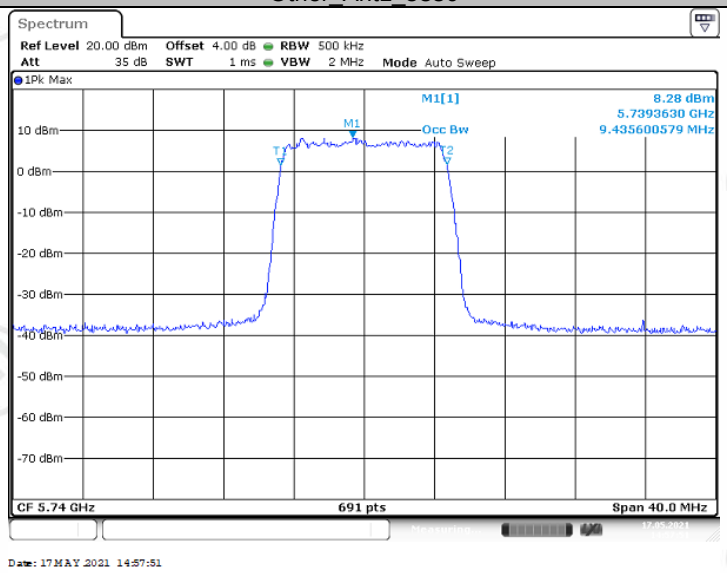
Other_Ant1_5740



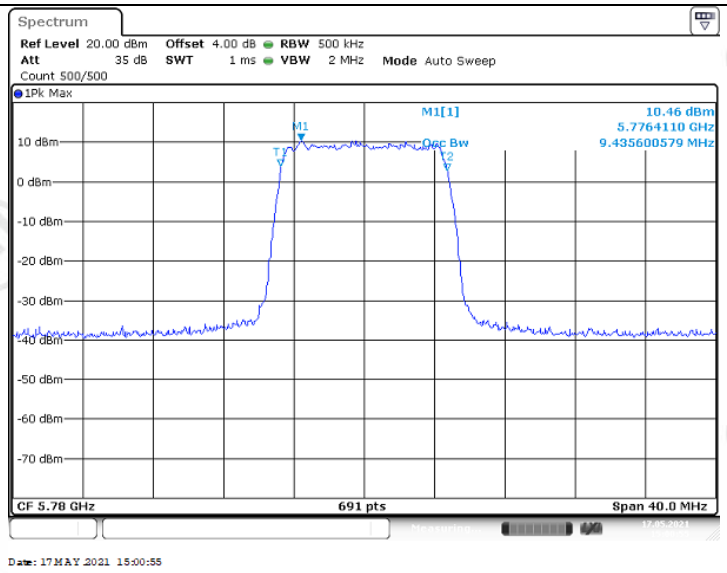
Other_Ant1_5780



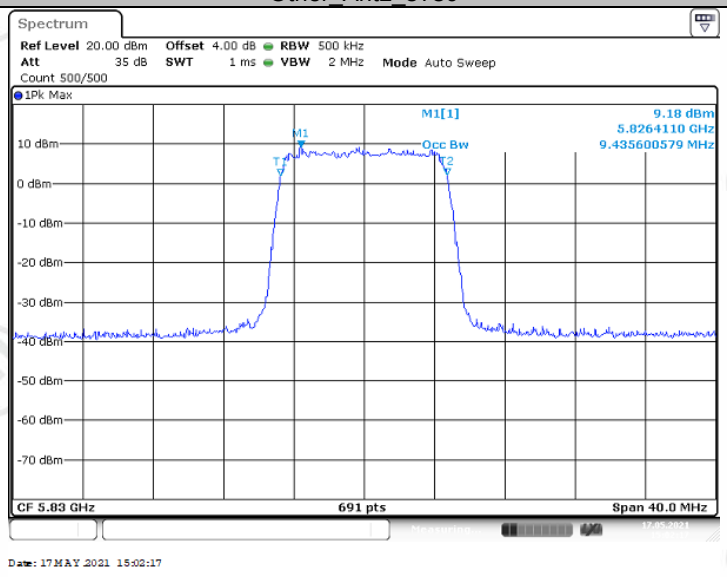
Other_Ant1_5830



Other_Ant2_5740

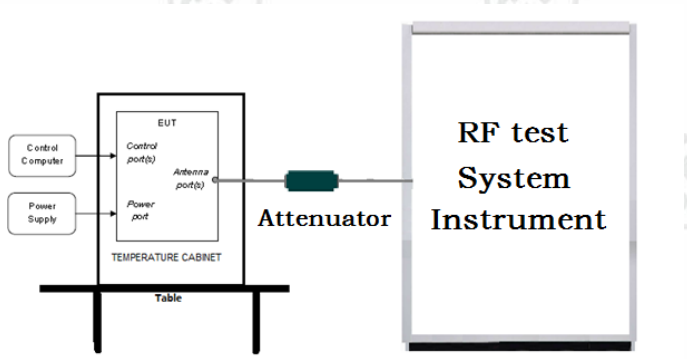


Other_Ant2_5780



Other_Ant2_5830

Appendix C): Maximum Conduct Output Power

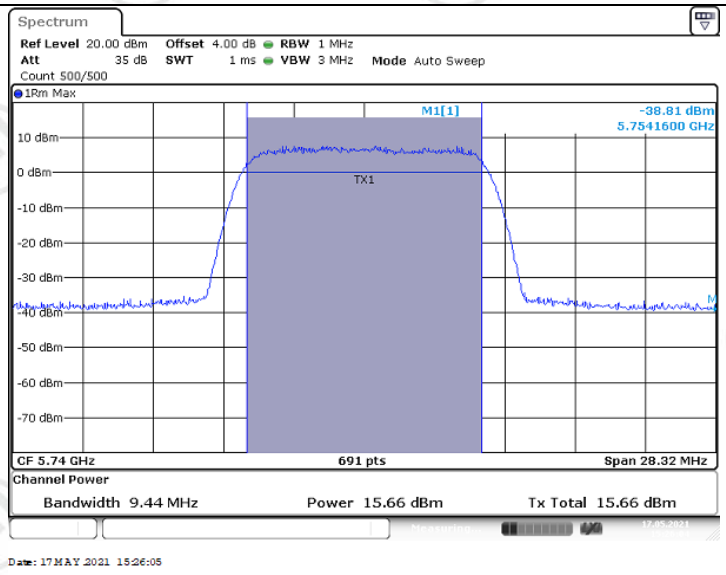
<table>
<tr><td>Test Requirement:</td><td>47 CFR Part 15C Section 15.407 (a)</td></tr>
<tr><td>Test Method:</td><td>KDB789033 D02 General UNII Test Procedures New Rules v02r01 Section E</td></tr>
<tr><td>Test Setup:</td><td> 
</td></tr>
<tr><td>Test Procedure:</td><td>1. The testing follows the Measurement Procedure of KDB789033 D02 General UNII Test Procedures New Rules v02r01 Section E, 3, a
2. The RF output of EUT was connected to the power meter by RF cable and attenuator. The path loss was compensated to the results for each measurement.
3. Set to the maximum power setting and enable the EUT transmit continuously.
4. Measure the conducted output power and record the results in the test report.</td></tr>
<tr><td>Limit:</td><td>
<table>
<tr><td>Frequency band (MHz)</td><td>Limit</td></tr>
<tr><td rowspan="2">5150-5250</td><td>≤1W(30dBm) for master device</td></tr>
<tr><td>≤250mW(24dBm) for client device</td></tr>
<tr><td>5250-5350</td><td>≤250mW(24dBm) for client device or 11dBm+10logB*</td></tr>
<tr><td>5470-5725</td><td>≤250mW(24dBm) for client device or 11dBm+10logB*</td></tr>
<tr><td>5725-5850</td><td>≤1W(30dBm)</td></tr>
<tr><td>Remark:</td><td>* Where B is the 26dB emission bandwidth in MHz
The maximum conducted output power must be measured over any interval of continuous transmission using instrumentation calibrated in terms of an rms-equivalent voltage.</td></tr>
</table>
</td></tr>
<tr><td>Test Mode:</td><td>Transmitting mode with modulation</td></tr>
<tr><td>Test Results:</td><td>Pass</td></tr>
</table>

Result Table:

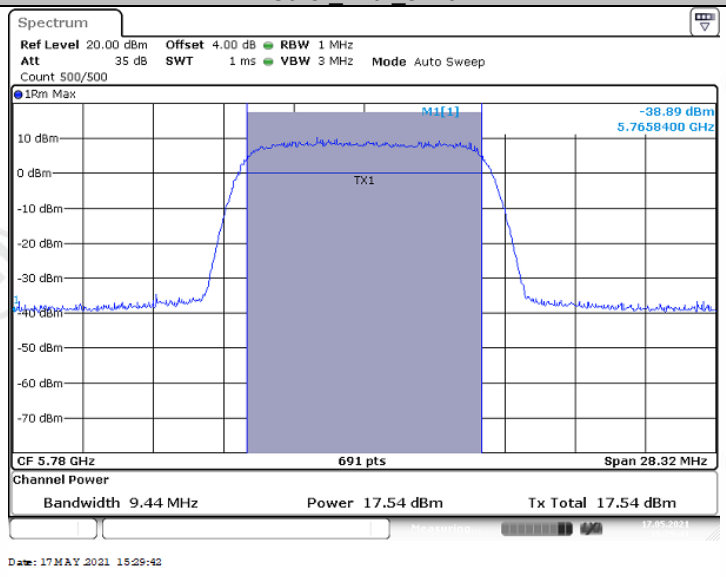
Test Mode	Antenna	Channel	Result[dBm]	Limit[dBm]	Verdict
Other	Ant1	5740	15.66	<=30	PASS
		5780	17.54	<=30	PASS
		5830	16.90	<=30	PASS
	Ant2	5740	15.01	<=30	PASS
		5780	17.83	<=30	PASS
		5830	16.97	<=30	PASS
	Total	5740	18.36	<=30	PASS
		5780	20.70	<=30	PASS
		5830	19.95	<=30	PASS

Note：The Duty Cycle Factor is compensated in the graph.

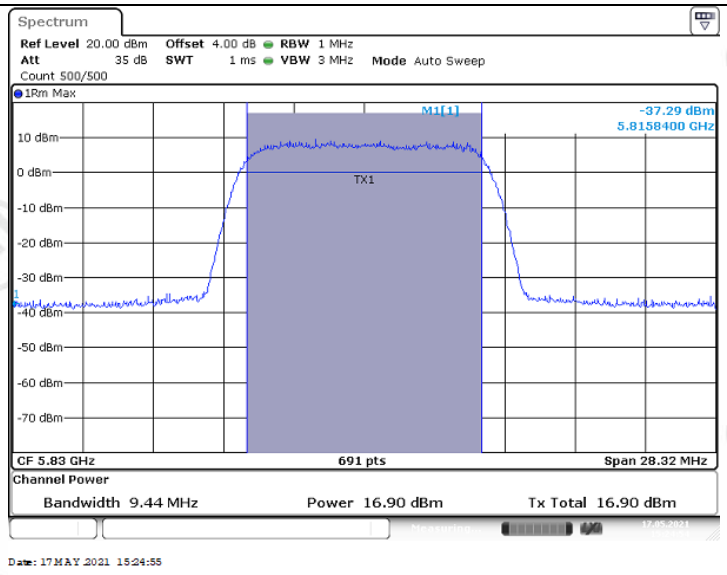
Test Graphs:



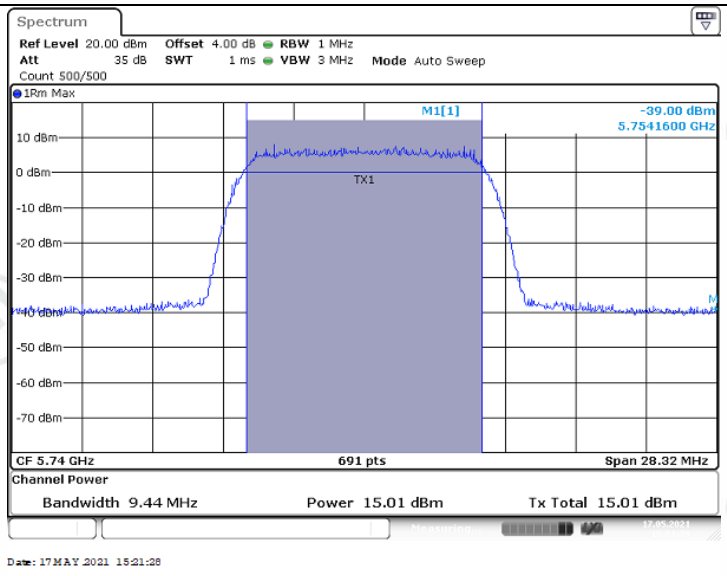
Other_Ant1_5740



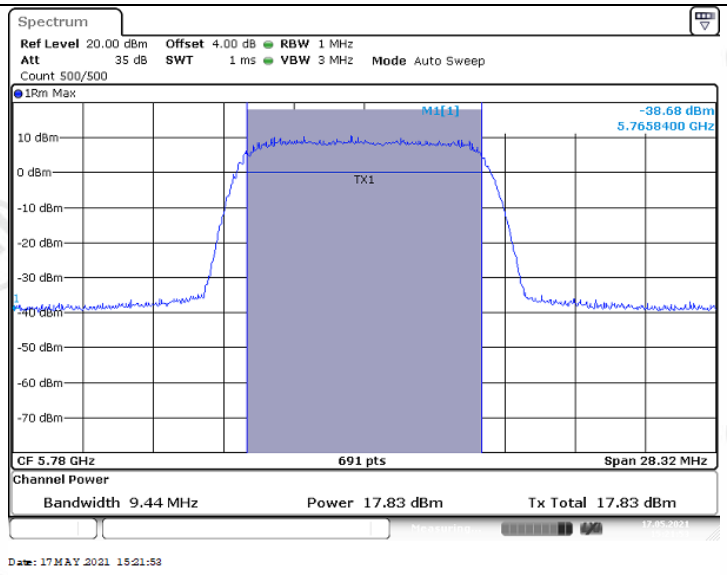
Other_Ant1_5780



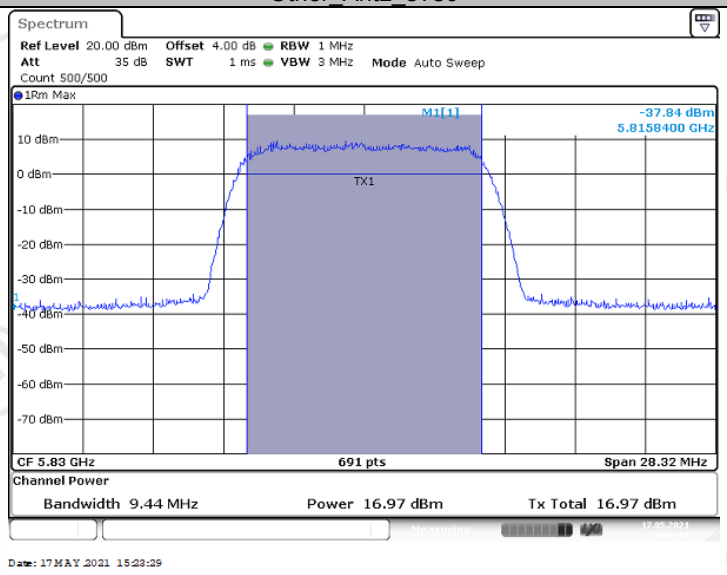
Other_Ant1_5830



Other_Ant2_5740

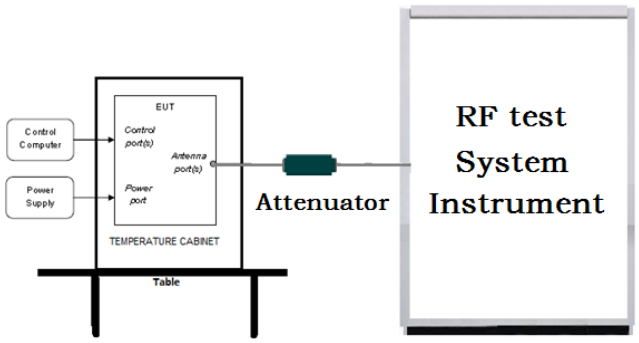


Other_Ant2_5780



Other_Ant2_5830

Appendix D): Power Spectral Density

<table>
<tr><td>Test Requirement:</td><td>47 CFR Part 15C Section 15.407 (a)</td></tr>
<tr><td>Test Method:</td><td>KDB789033 D02 General UNII Test Procedures New Rules v02r01 Section F</td></tr>
<tr><td>Test Setup:</td><td> 

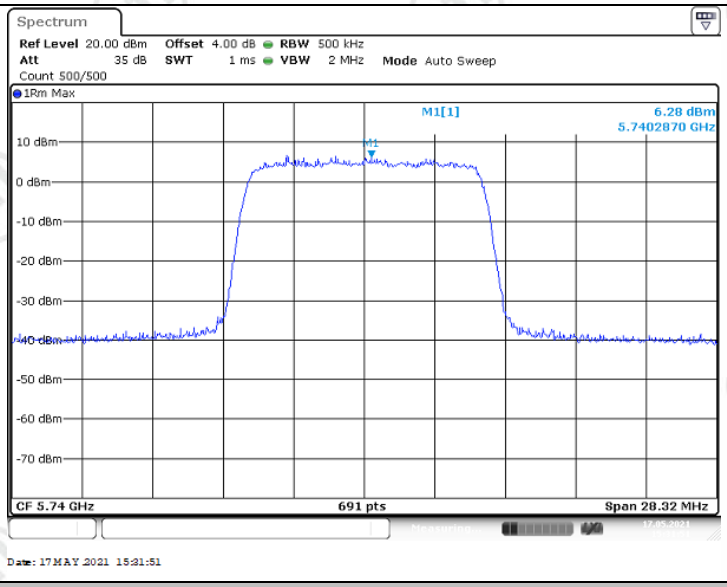
Remark: Offset=Cable loss+ attenuation factor.</td></tr>
<tr><td>Test Procedure:</td><td>1. Set the spectrum analyzer or EMI receiver span to view the entire emission bandwidth. 1. Set RBW = 500 kHz/1 MHz, VBW ≥ 3*RBW, Sweep time = Auto, Detector = RMS.
2. Allow the sweeps to continue until the trace stabilizes.
3. Use the peak marker function to determine the maximum amplitude level.</td></tr>
<tr><td>Limit:</td><td>
<table>
<tr><td>Frequency band (MHz)</td><td>Limit</td></tr>
<tr><td rowspan="2">5150-5250</td><td>≤17dBm in 1MHz for master device</td></tr>
<tr><td>≤11dBm in 1MHz for client device</td></tr>
<tr><td>5250-5350</td><td>≤11dBm in 1MHz for client device</td></tr>
<tr><td>5470-5725</td><td>≤11dBm in 1MHz for client device</td></tr>
<tr><td>5725-5850</td><td>≤30dBm in 500kHz</td></tr>
<tr><td>Remark:</td><td>The maximum power spectral density is measured as a conducted emission by direct connection of a calibrated test instrument to the equipment under test.</td></tr>
</table>
</td></tr>
<tr><td>Test Mode:</td><td>Transmitting mode with modulation</td></tr>
<tr><td>Test Results:</td><td>Pass</td></tr>
</table>

Result Table:

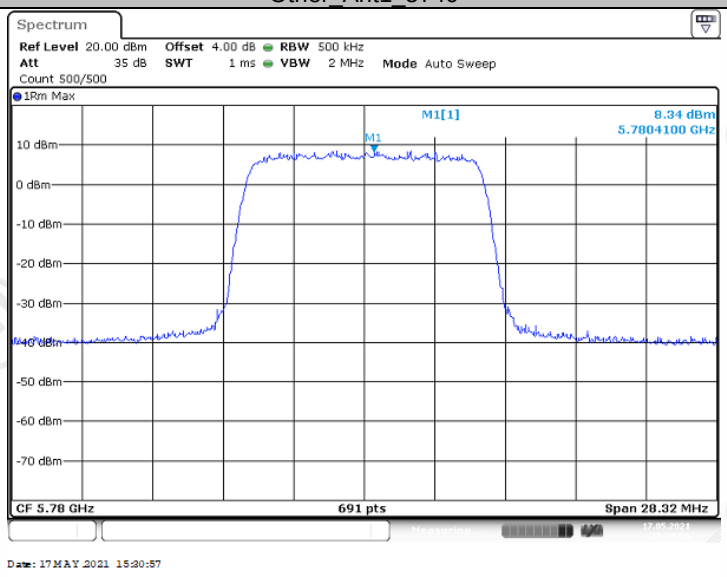
Test Mode	Antenna	Channel	Result [dBm/500kHz]	Limit[dBm/500kHz]	Verdict
Other	Ant1	5740	6.28	<=30	PASS
		5780	8.34	<=30	PASS
		5830	8.55	<=30	PASS
	Ant2	5740	6.53	<=30	PASS
		5780	8.99	<=30	PASS
		5830	8.22	<=30	PASS
	Total	5740	9.42	<=30	PASS
		5780	11.69	<=30	PASS
		5830	11.40	<=30	PASS

Note：1.The Result and Limit Unit is dBm/500 kHz in the band 5.725–5.85 GHz.
2.The Duty Cycle Factor and RBW Factor is compensated in the graph.

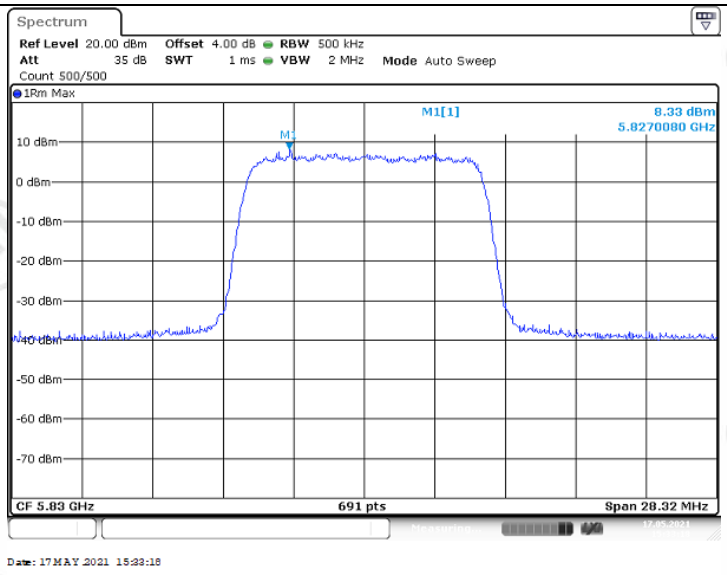
Test Graphs:



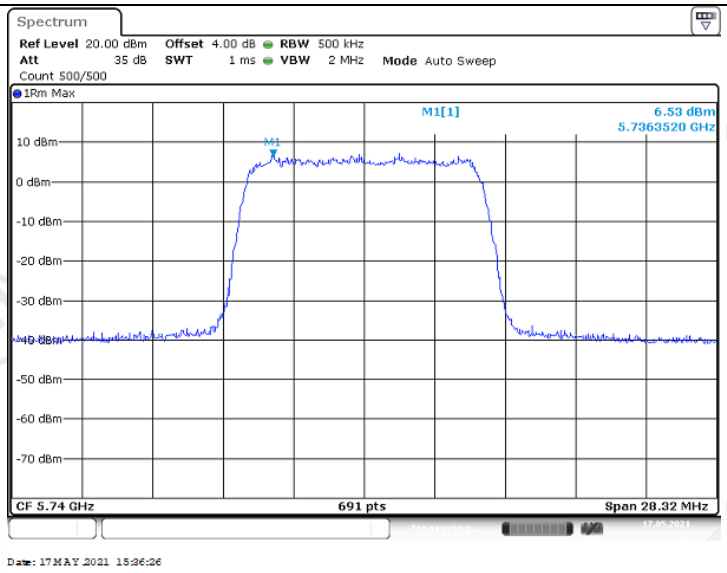
Other_Ant1_5740



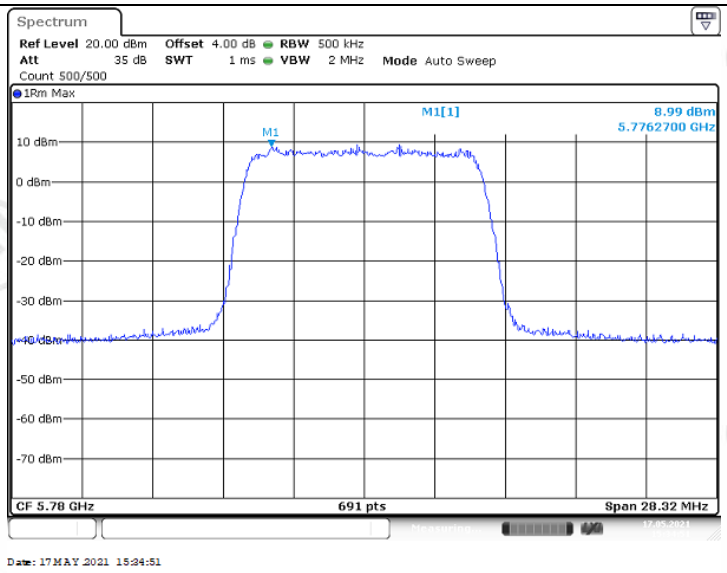
Other_Ant1_5780



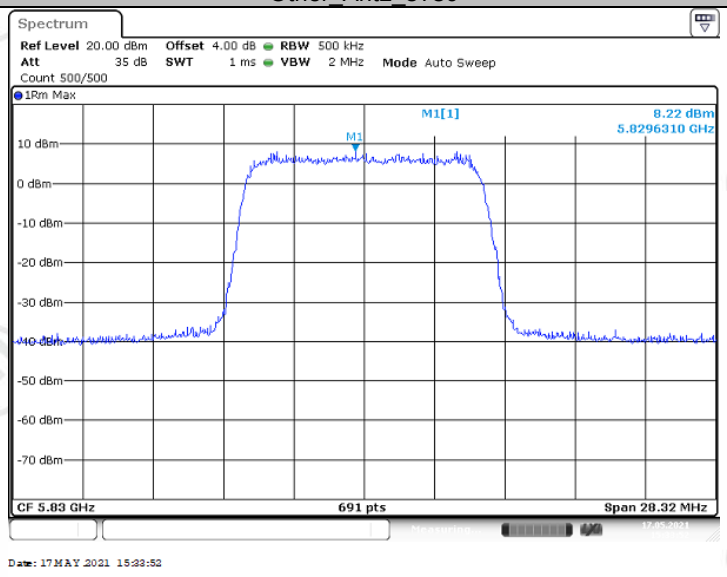
Other_Ant1_5830



Other_Ant2_5740

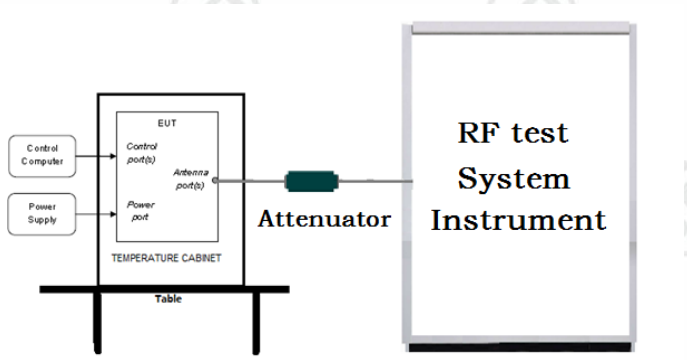


Other_Ant2_5780



Other_Ant2_5830

Appendix E): Frequency Stability

Test Requirement:	47 CFR Part 15C Section 15.407 (g)
Test Method:	ANSI C63.10: 2013
Test Setup:	 Remark: Offset=Cable loss+ attenuation factor.
Test Procedure:	1.The EUT was placed inside the environmental test chamber and powered by nominal AC/DC voltage. 2. Turn the EUT on and couple its output to a spectrum analyzer. 3. Turn the EUT off and set the chamber to the highest temperature specified. d. Allow sufficient time (approximately 30 min) for the temperature of the chamber to stabilize. 4. Repeat step 2 and 3 with the temperature chamber set to the lowest temperature. 5. The test chamber was allowed to stabilize at +20 degree C for a minimum of 30 minutes. The supply voltage was then adjusted on the EUT from 85% to 115% and the frequency record.
Limit:	The frequency tolerance shall be maintained within the band of operation frequency over a temperature variation of 0 degrees to 45 degrees C at normal supply voltage, and for a variation in the primary supply voltage from 85% to 115% of the rated supply voltage at a temperature of 20 degrees C.
Test Mode:	Transmitting mode with modulation
Test Results:	Pass

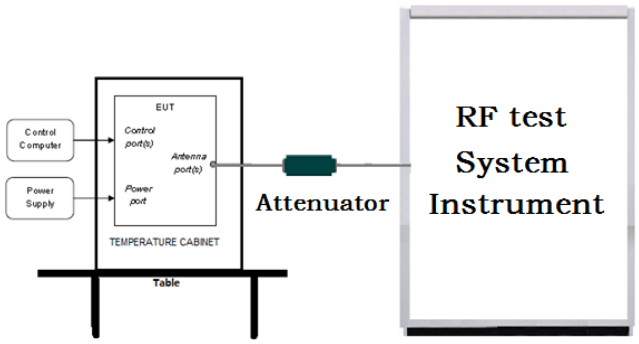
Test Result:

Voltage								
Test Mode	Antenna	Channel	Voltage [Vdc]	Temperature (℃)	Deviation (Hz)	Deviation (ppm)	Limit (ppm)	Verdict
Other	Ant1	5740	NV	NT	-13000	-2.264808	20	PASS
			LV	NT	-13000	-2.264808	20	PASS
			HV	NT	-13000	-2.264808	20	PASS
		5780	NV	NT	-10000	-1.730104	20	PASS
			LV	NT	-6000	-1.038062	20	PASS
			HV	NT	0	0	20	PASS
		5830	NV	NT	-10000	-1.715266	20	PASS
			LV	NT	-5000	-0.857633	20	PASS
			HV	NT	1000	0.171527	20	PASS
	Ant2	5740	NV	NT	3000	0.522648	20	PASS
			LV	NT	12000	2.090592	20	PASS
			HV	NT	23000	4.006969	20	PASS
		5780	NV	NT	-14000	-2.422145	20	PASS
			LV	NT	-14000	-2.422145	20	PASS
			HV	NT	-13000	-2.249135	20	PASS
		5830	NV	NT	33000	5.660377	20	PASS
			LV	NT	38000	6.51801	20	PASS
			HV	NT	43000	7.375643	20	PASS

Temperature								
Test Mode	Antenna	Channel	Voltage [Vdc]	Temperature (℃)	Deviation (Hz)	Deviation (ppm)	Limit (ppm)	Verdict
Other	Ant1	5740	NV	-30	-12000	-2.090592	20	PASS
			NV	-20	-10000	-1.74216	20	PASS
			NV	-10	-7000	-1.219512	20	PASS
			NV	0	-3000	-0.522648	20	PASS
			NV	10	1000	0.174216	20	PASS
			NV	20	5000	0.87108	20	PASS
			NV	30	10000	1.74216	20	PASS
			NV	40	16000	2.787456	20	PASS
			NV	50	20000	3.484321	20	PASS
		5780	NV	-30	6000	1.038062	20	PASS
			NV	-20	14000	2.422145	20	PASS
			NV	-10	20000	3.460208	20	PASS
			NV	0	28000	4.844291	20	PASS
			NV	10	35000	6.055363	20	PASS
			NV	20	42000	7.266436	20	PASS
			NV	30	49000	8.477509	20	PASS
			NV	40	55900	9.67128	20	PASS
			NV	50	60900	10.536332	20	PASS
		5830	NV	-30	7000	1.200686	20	PASS
			NV	-20	14000	2.401372	20	PASS
			NV	-10	20000	3.430532	20	PASS
			NV	0	26000	4.459691	20	PASS
			NV	10	31000	5.317324	20	PASS
			NV	20	37000	6.346484	20	PASS
			NV	30	42000	7.204117	20	PASS
			NV	40	45000	7.718696	20	PASS
			NV	50	49000	8.404803	20	PASS
	Ant2	5740	NV	-30	33000	5.749129	20	PASS
			NV	-20	43000	7.491289	20	PASS
			NV	-10	51900	9.041812	20	PASS
			NV	0	58900	10.261324	20	PASS
			NV	10	65900	11.480836	20	PASS

			NV	20	71900	12.526132	20	PASS
			NV	30	78900	13.745645	20	PASS
			NV	40	83900	14.616725	20	PASS
			NV	50	88900	15.487805	20	PASS
		5780	NV	-30	-10000	-1.730104	20	PASS
			NV	-20	-4000	-0.692042	20	PASS
			NV	-10	2000	0.346021	20	PASS
			NV	0	10000	1.730104	20	PASS
			NV	10	18000	3.114187	20	PASS
			NV	20	26000	4.49827	20	PASS
			NV	30	34000	5.882353	20	PASS
			NV	40	39000	6.747405	20	PASS
			NV	50	47000	8.131488	20	PASS
		5830	NV	-30	47000	8.06175	20	PASS
			NV	-20	50900	8.730703	20	PASS
			NV	-10	55900	9.588336	20	PASS
			NV	0	59900	10.274443	20	PASS
			NV	10	62900	10.789022	20	PASS
			NV	20	66900	11.475129	20	PASS
			NV	30	69900	11.989708	20	PASS
			NV	40	72900	12.504288	20	PASS
			NV	50	75900	13.018868	20	PASS

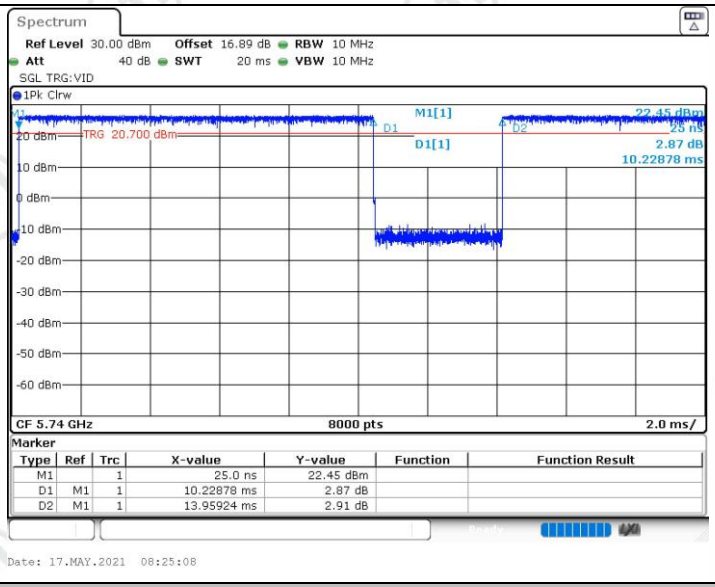
Appendix F): Duty cycle

Test Requirement:	47 CFR Part15C Section 15.407
Test Method:	ANSI C63.10 2013
Test Setup:	 Remark: Offset=Cable loss+ attenuation factor.
Test Procedure:	a) Set RBW ≥ OBW if possible; otherwise, set RBW to the largest available value. b) Set VBW ≥ RBW. c) detector = peak or average. d) The zero-span measurement method shall not be used unless both RBW and VBW are > 50/T, where T is defined in II.B.1.a), and the number of sweep points across duration T exceeds 100.
Limit:	---
Test Mode:	Refer to clause 2.2
Test Results:	Pass

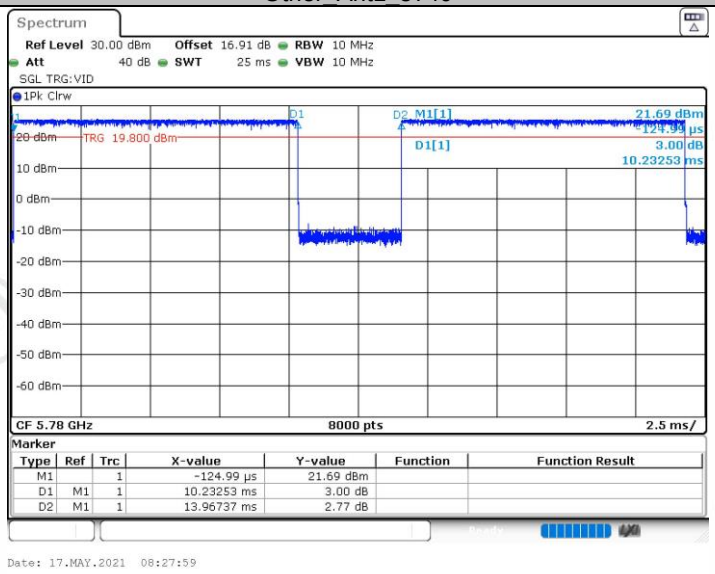
Test Result:

Test Mode	Antenna	Channel	Transmission Duration [ms]	Transmission Period [ms]	Duty Cycle [%]
Other	Ant1	5740	10.23	13.96	73.28
		5780	10.23	13.97	73.23
		5830	10.23	13.97	73.23
	Ant2	5740	10.24	13.97	73.30
		5780	10.22	13.94	73.31
		5830	10.22	13.94	73.31

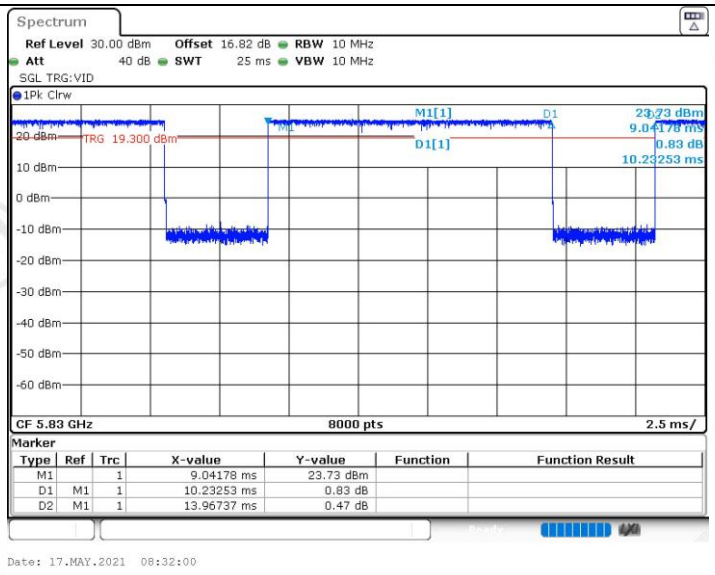
Test Graphs



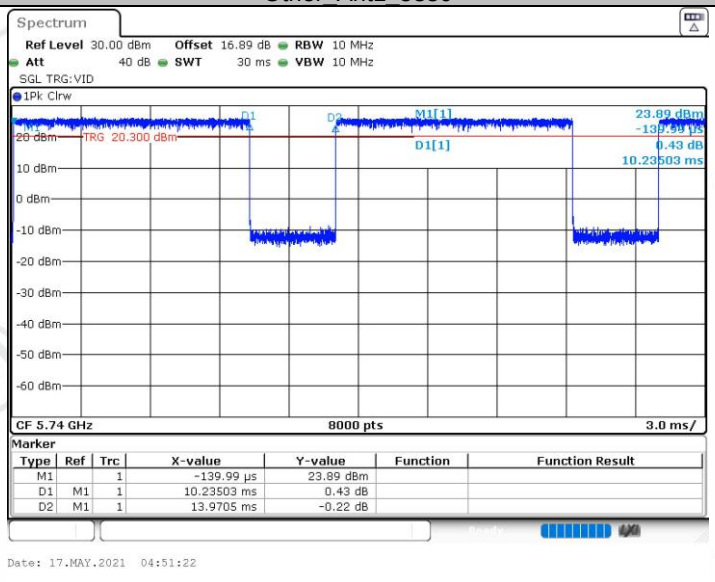
Other_Ant1_5740



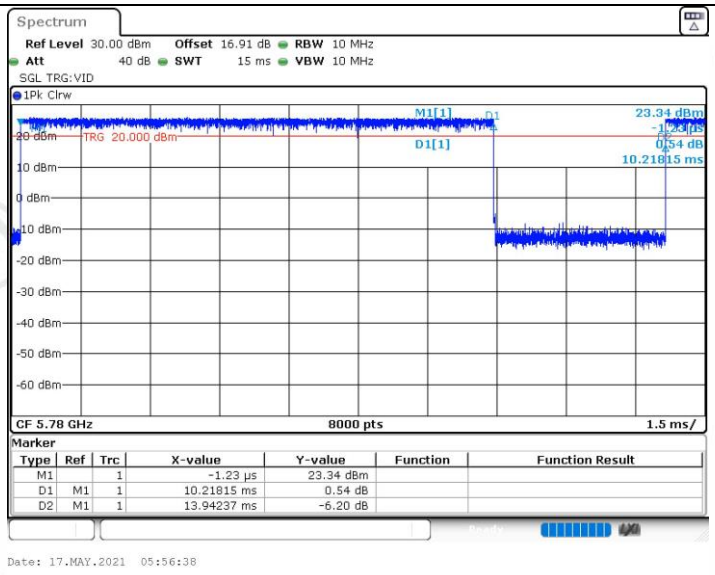
Other_Ant1_5780



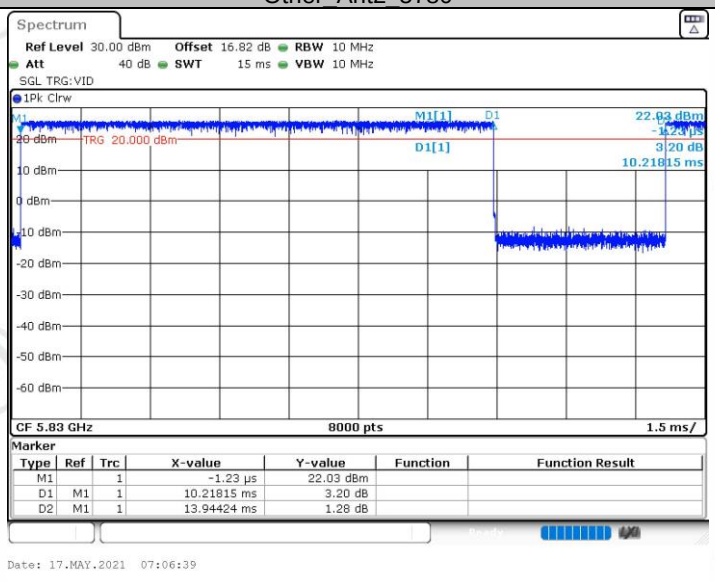
Other_Ant1_5830



Other_Ant2_5740



Other_Ant2_5780

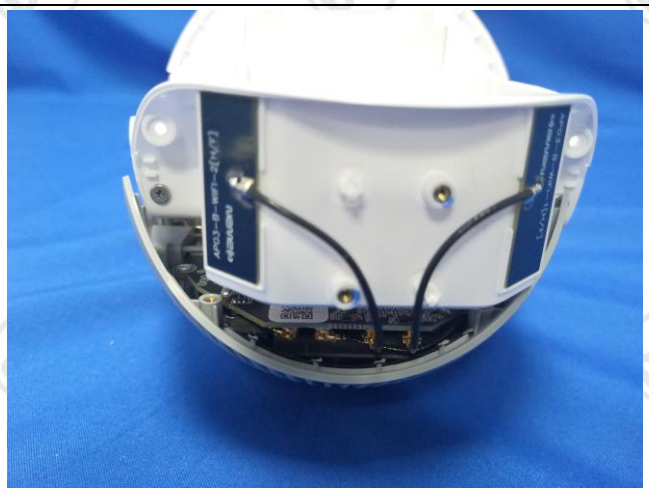


Other_Ant2_5830

Appendix G): Antenna 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.

15.407(a)(1) (2) requirement:
The conducted output power limit specified in paragraph (a) of this section is based on the use of antennas with directional gains that do not exceed 6 dBi. Except as shown in paragraph (a) of this section, if transmitting antennas of directional gain greater than 6 dBi are used, the conducted output power and the peak power spectral density shall be reduced by the by the amount in dB that the directional gain of the antenna exceeds 6 dBi.

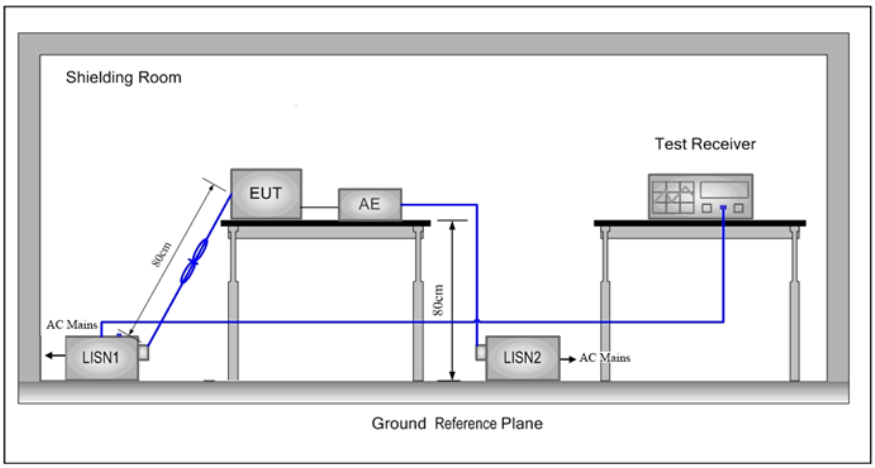
EUT Antenna:	

The antenna is integrated on the main PCB and no consideration of replacement.

Appendix H): Operation in the absence of information to the transmit

15.407(c) requirement: The device shall automatically discontinue transmission in case of either absence of information to transmit or operational failure. These provisions are not intended to preclude the transmission of control or signal ling information or the use of repetitive codes used by certain digital technologies to complete frame or burst intervals. Applicants shall include in their application for equipment authorization a description of how this requirement is met.
Operation in the absence of information to the transmit
Operation never ceases as information from cell town is always present. (manufacturer declare)

Appendix I): AC Power Line Conducted Emission

<table>
<tr><td>Test Requirement:</td><td>47 CFR Part 15C Section 15.207</td></tr>
<tr><td>Test Method:</td><td>ANSI C63.10: 2013</td></tr>
<tr><td>Test Frequency Range:</td><td>150kHz to 30MHz</td></tr>
<tr><td>Receiver setup:</td><td>RBW=9 kHz, VBW=30 kHz, Sweep time=auto</td></tr>
<tr><td>Limit:</td><td>
<table>
<tr><td rowspan="2">Frequency range (MHz)</td><td colspan="2">Limit (dBuV)</td></tr>
<tr><td>Quasi-peak</td><td>Average</td></tr>
<tr><td>0.15-0.5</td><td>66 to 56*</td><td>56 to 46*</td></tr>
<tr><td>0.5-5</td><td>56</td><td>46</td></tr>
<tr><td>5-30</td><td>60</td><td>50</td></tr>
</table>
* Decreases with the logarithm of the frequency.
</td></tr>
<tr><td>Test Setup:</td><td> 
</td></tr>
<tr><td>Test Procedure:</td><td>1) The mains terminal disturbance voltage test was conducted in a shielded room.
2) The EUT was connected to AC power source through a LISN 1 (Line Impedance Stabilization Network) which provides a 50Ω/50μH + 5Ω linear impedance. The power cables of all other units of the EUT were connected to a second LISN 2, which was bonded to the ground reference plane in the same way as the LISN 1 for the unit being measured. A multiple socket outlet strip was used to connect multiple power cables to a single LISN provided the rating of the LISN was not exceeded.
3) The tabletop EUT was placed upon a non-metallic table 0.8m above the ground reference plane. And for floor-standing arrangement, the EUT was placed on the horizontal ground reference plane.
4) The test was performed with a vertical ground reference plane. The rear of the EUT shall be 0.4 m from the vertical ground reference plane. The vertical ground reference plane was bonded to the horizontal ground reference plane. The LISN 1 was placed 0.8 m from the boundary of the unit under test and bonded to a ground reference plane for LISNs mounted on top of the ground reference plane. This distance was between the closest points of the LISN 1 and the EUT. All other units of the EUT and associated equipment was at least 0.8 m from the LISN 2.</td></tr>
</table>

	5) In order to find the maximum emission, the relative positions of equipment and all of the interface cables must be changed according to ANSI C63.10: 2013 on conducted measurement.
Test Mode:	/
Test Results:	N/A

Measurement Data
The product is supplied by DC power.

Appendix J): Restricted bands around fundamental frequency (Radiated Emission)

Test Requirement: 47 CFR Part 15C Section 15.209 and 15.407 (b)

Test Method: ANSI C63.10 2013

Receiver Setup:

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

Limit:

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

*(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 e.i.r.p. 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 e.i.r.p. of −27 dBm/MHz.
(4) For transmitters operating in the 5.725-5.85 GHz band:
(i) 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.

	Remark: The emission limits shown in the above table are based on measurements employing a CISPR quasi-peak detector except for the frequency bands 9-90kHz, 110-490kHz and above 1000 MHz. Radiated emission limits in these three bands are based on measurements employing an average detector, 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. Note: (i) EIRP = ((E*d)^2) / 30 where: • E is the field strength in V/m; • d is the measurement distance in meters; • EIRP is the equivalent isotropically radiated power in watts. (ii) Working in dB units, the above equation is equivalent to: EIRP[dBm] = E[dBμV/m] + 20 log(d[meters]) - 104.77 (iii) Or, if d is 3 meters: EIRP[dBm] = E[dBμV/m] - 95.2
Test Setup:	

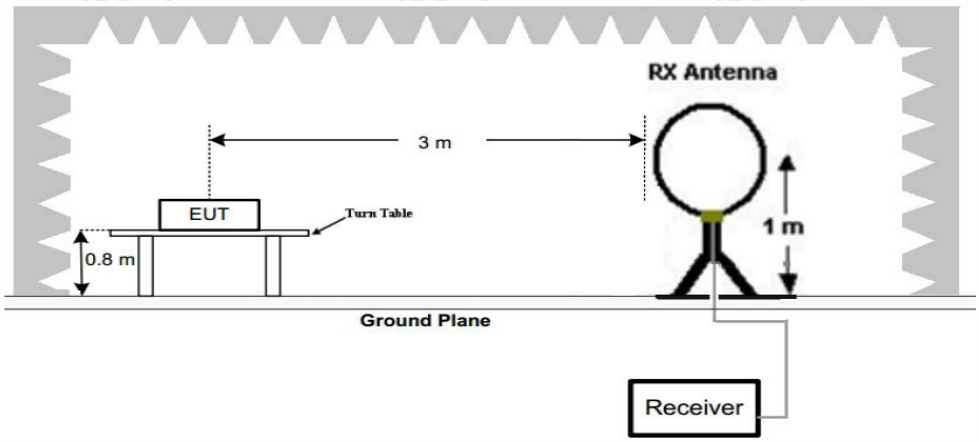


Figure 1. Below 30MHz

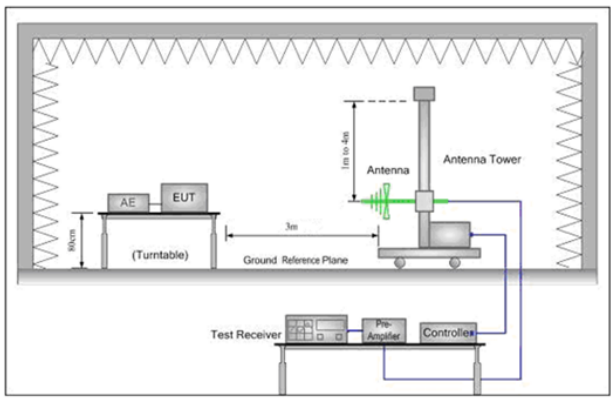


Figure 2. 30MHz to 1GHz

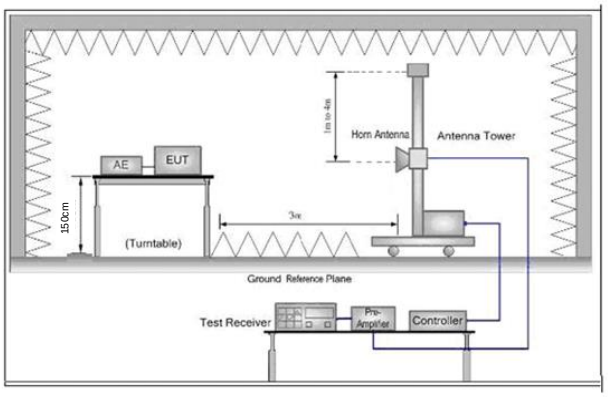


Figure 3. Above 1 GHz

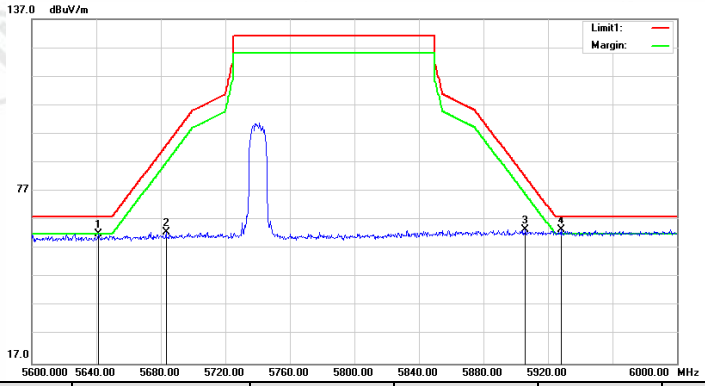
Test Procedure:	a. 1) Below 1G: The EUT was placed on the top of a rotating table 0.8 meters above the ground at a 3 meter semi-anechoic camber. The table was rotated 360 degrees to determine the position of the highest radiation. 2) Above 1G: The EUT was placed on the top of a rotating table 1.5 meters above the ground at a 3 meter semi-anechoic camber. The

	table was rotated 360 degrees to determine the position of the highest radiation. Note: For the radiated emission test above 1GHz: Place the measurement antenna away from each area of the EUT determined to be a source of emissions at the specified measurement distance, while keeping the measurement antenna aimed at the source of emissions at each frequency of significant emissions, with polarization oriented for maximum response. The measurement antenna may have to be higher or lower than the EUT, depending on the radiation pattern of the emission and staying aimed at the emission source for receiving the maximum signal. The final measurement antenna elevation shall be that which maximizes the emissions. The measurement antenna elevation for maximum emissions shall be restricted to a range of heights of from 1 m to 4 m above the ground or reference ground plane. b. The EUT was set 3 meters away from the interference-receiving antenna, which was mounted on the top of a variable-height antenna tower. c. 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. d. 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 rotatable table was turned from 0 degrees to 360 degrees to find the maximum reading. e. The test-receiver system was set to Peak Detect Function and Specified Bandwidth with Maximum Hold Mode. f. 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. g. Test the EUT in the lowest channel, the Highest channel h. The radiation measurements are performed in X, Y, Z axis positioning for Transmitting mode, and found the X axis positioning which it is the worst case. i. Repeat above procedures until all frequencies measured was complete.
Test Mode:	Transmitting mode with modulation
Test Results:	Pass

Test plot as follows:

Mode:	Transmitting	Channel:	Low
Remark:	Horizontal		

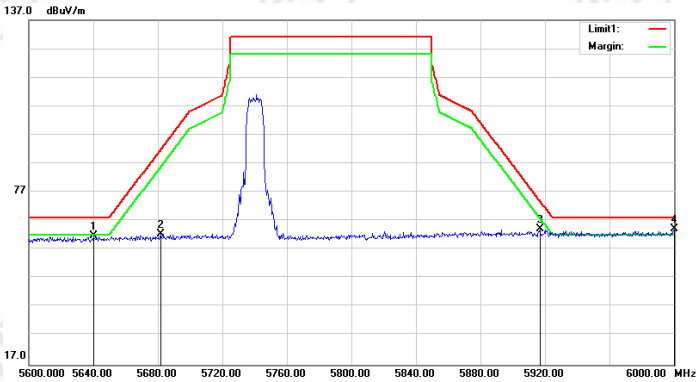
Test Graph



No.	Frequency (MHz)	Reading (dBuV)	Correct Factor(dB/m)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Height (cm)	Degree (deg.)	Remark
1	5641.200	52.34	9.75	62.09	68.20	-6.11	200	87	peak
2	5683.200	52.92	9.85	62.77	92.77	-30.00	200	328	peak
3	5906.000	53.49	10.18	63.67	82.26	-18.59	100	232	peak
4	5928.400	53.35	10.19	63.54	68.20	-4.66	100	144	peak

Mode:	Transmitting	Channel:	Low
Remark:	Vertical		

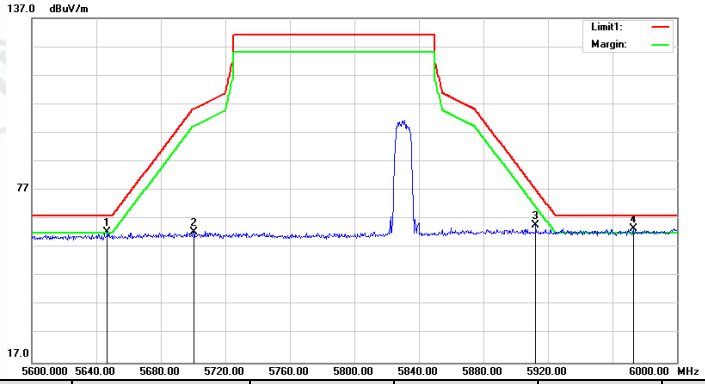
Test Graph



No.	Frequency (MHz)	Reading (dBuV)	Correct Factor(dB/m)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Height (cm)	Degree (deg.)	Remark
1	5640.000	52.05	9.75	61.80	68.20	-6.40	200	241	peak
2	5681.600	52.63	9.84	62.47	91.58	-29.11	200	241	peak
3	5916.800	54.15	10.19	64.34	74.27	-9.93	100	355	peak
4	6000.000	54.09	10.24	64.33	68.20	-3.87	100	85	peak

Mode:	Transmitting	Channel:	High
Remark:	Horizontal		

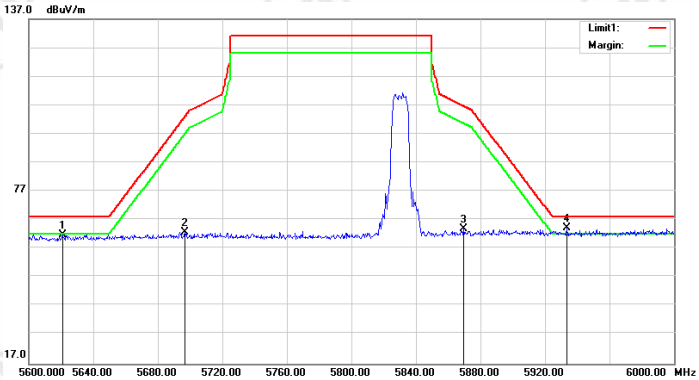
Test Graph



No.	Frequency (MHz)	Reading (dBuV)	Correct Factor(dB/m)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Height (cm)	Degree (deg.)	Remark
1	5646.800	52.55	9.77	62.32	68.20	-5.88	185	0	peak
2	5700.400	52.69	9.89	62.58	105.31	-42.73	100	116	peak
3	5912.400	54.54	10.18	64.72	77.52	-12.80	100	87	peak
4	5972.800	53.43	10.22	63.65	68.20	-4.55	100	166	peak

Mode:	Transmitting	Channel:	High
Remark:	Vertical		

Test Graph



No.	Frequency (MHz)	Reading (dBuV)	Correct Factor(dB/m)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Height (cm)	Degree (deg.)	Remark
1	5620.800	52.18	9.71	61.89	68.20	-6.31	100	17	peak
2	5696.800	52.85	9.88	62.73	102.83	-40.10	100	257	peak
3	5869.600	53.93	10.16	64.09	106.71	-42.62	200	122	peak
4	5933.600	54.07	10.20	64.27	68.20	-3.93	100	346	peak

Appendix K): Unwanted Emissions in the Restricted Bands (Radiated Emission)

Test Requirement:	47 CFR Part 15C Section 15.209 and 15.407 (b)
Test Method:	ANSI C63.10 2013
Receiver Setup:	

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

Limit:

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

*(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 e.i.r.p. 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 e.i.r.p. of −27 dBm/MHz.
(4) For transmitters operating in the 5.725-5.85 GHz band:
(i) 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.
Remark: The emission limits shown in the above table are based on measurements employing a CISPR quasi-peak detector except for the frequency bands 9-90kHz, 110-490kHz and above 1000 MHz. Radiated

	emission limits in these three bands are based on measurements employing an average detector, 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. Note: (i) EIRP = ((E*d)^2) / 30 where: • E is the field strength in V/m; • d is the measurement distance in meters; • EIRP is the equivalent isotropically radiated power in watts. (ii) Working in dB units, the above equation is equivalent to: EIRP[dBm] = E[dBμV/m] + 20 log(d[meters]) - 104.77 (iii) Or, if d is 3 meters: EIRP[dBm] = E[dBμV/m] - 95.2
Test Setup:	

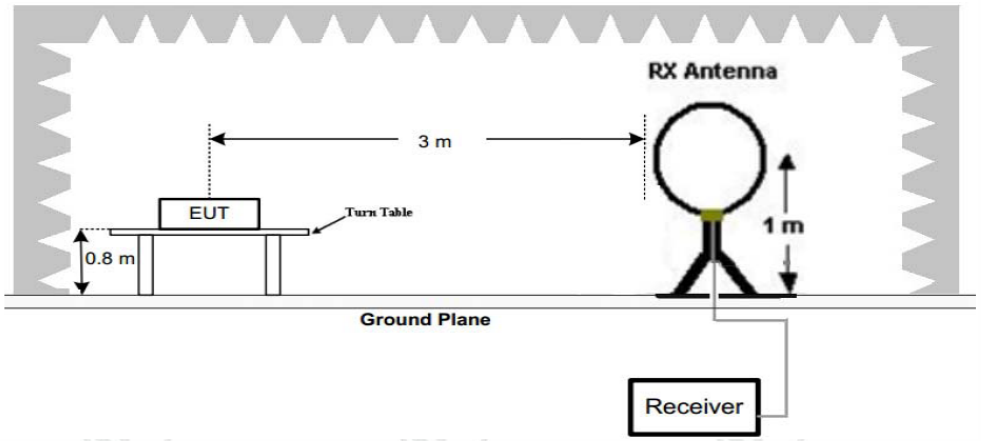


Figure 1. Below 30MHz

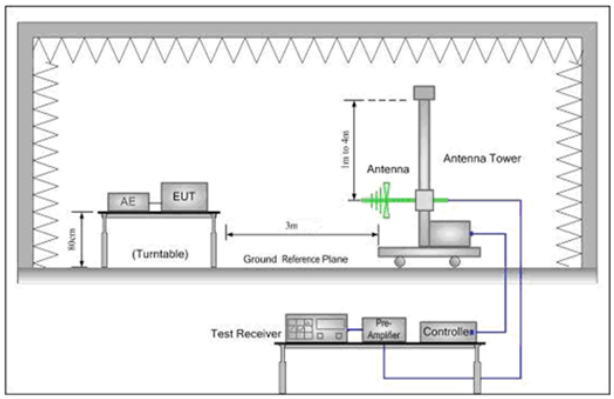


Figure 2. 30MHz to 1GHz

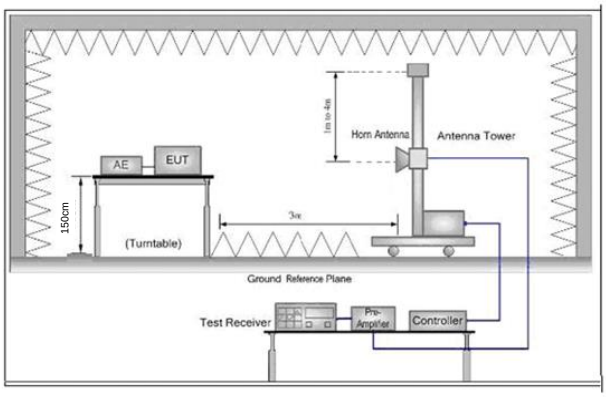


Figure 3. Above 1 GHz

Test Procedure:	a. 1) Below 1G: 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) Above 1G: The EUT was placed on the top of a rotating table 1.5 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.

	Note: For the radiated emission test above 1GHz: Place the measurement antenna away from each area of the EUT determined to be a source of emissions at the specified measurement distance, while keeping the measurement antenna aimed at the source of emissions at each frequency of significant emissions, with polarization oriented for maximum response. The measurement antenna may have to be higher or lower than the EUT, depending on the radiation pattern of the emission and staying aimed at the emission source for receiving the maximum signal. The final measurement antenna elevation shall be that which maximizes the emissions. The measurement antenna elevation for maximum emissions shall be restricted to a range of heights of from 1 m to 4 m above the ground or reference ground plane. b. The EUT was set 3 meters away from the interference-receiving antenna, which was mounted on the top of a variable-height antenna tower. c. 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. d. 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 rotatable table was turned from 0 degrees to 360 degrees to find the maximum reading. e. The test-receiver system was set to Peak Detect Function and Specified Bandwidth with Maximum Hold Mode. f. 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. g. Test the EUT in the lowest channel, the middle channel and the highest channel h. The radiation measurements are performed in X, Y, Z axis positioning for Transmitting mode, and found the X axis positioning which it is the worst case. i. Repeat above procedures until all frequencies measured was complete.
Test Mode:	Transmitting mode with modulation
Test Results:	Pass

Radiated Spurious Emissions test Data:

Radiated Emission below 1GHz:

Mode:	Transmitting	Channel:	Low
Remark:			

Frequency (MHz)	Ant. Pol. (H/V)	Reading (dBuV)	Correction Factor (dB/m)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Remark
76.5600	V	53.26	-27.96	25.30	40.00	-14.70	QP
240.4900	V	47.51	-21.42	26.09	46.00	-19.91	QP
389.8700	V	42.59	-18.20	24.39	46.00	-21.61	QP
600.3600	V	38.94	-13.48	25.46	46.00	-20.54	QP
800.1800	V	45.57	-11.66	33.91	46.00	-12.09	QP
996.1200	V	43.25	-9.17	34.08	54.00	-19.92	QP
76.5600	H	64.15	-27.96	36.19	40.00	-3.81	QP
144.4600	H	57.54	-24.23	33.31	43.50	-10.19	QP
201.6900	H	54.69	-22.55	32.14	43.50	-11.36	QP
239.5200	H	56.58	-21.45	35.13	46.00	-10.87	QP
372.4100	H	48.91	-18.84	30.07	46.00	-15.93	QP
800.1800	H	47.88	-11.66	36.22	46.00	-9.78	QP

Notes:
1) Through Pre-scan then find the CH low is the worst case mode and only the worst data was recorded.

Transmitter Emission above 1GHz
U-NII-3

Mode:	Transmitting	Channel:	Low
Remark:			

Horizontal

No.	Frequency (MHz)	Reading (dBuV)	Correct Factor(dB/m)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Height (cm)	Degree (deg.)	Remark
1	11064.000	30.37	16.62	46.99	74.00	-27.01	120	360	peak
2	15977.000	29.48	23.58	53.06	74.00	-20.94	200	151	peak

Vertical

No.	Frequency (MHz)	Reading (dBuV)	Correct Factor(dB/m)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Height (cm)	Degree (deg.)	Remark
1	11710.000	29.08	17.13	46.21	74.00	-27.79	100	70	peak
2	14821.000	30.38	22.87	53.25	74.00	-20.75	147	360	peak

Mode:	Transmitting	Channel:	Mid
Remark:			

Horizontal

No.	Frequency (MHz)	Reading (dBuV)	Correct Factor(dB/m)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Height (cm)	Degree (deg.)	Remark
1	11251.000	29.51	16.91	46.42	74.00	-27.58	200	331	peak
2	15977.000	29.54	23.58	53.12	74.00	-20.88	200	122	peak

Vertical

No.	Frequency (MHz)	Reading (dBuV)	Correct Factor(dB/m)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Height (cm)	Degree (deg.)	Remark
1	11200.000	29.72	16.85	46.57	74.00	-27.43	100	331	peak
2	16079.000	29.52	23.66	53.18	74.00	-20.82	199	360	peak

Mode:	Transmitting	Channel:	High
Remark:			

Horizontal

No.	Frequency (MHz)	Reading (dBuV)	Correct Factor(dB/m)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Height (cm)	Degree (deg.)	Remark
1	11574.000	29.08	17.26	46.34	74.00	-27.66	200	153	peak
2	16980.000	27.31	25.61	52.92	74.00	-21.08	100	155	peak

Vertical

No.	Frequency (MHz)	Reading (dBuV)	Correct Factor(dB/m)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Height (cm)	Degree (deg.)	Remark
1	12118.000	29.32	17.38	46.70	74.00	-27.30	100	317	peak
2	16555.000	29.70	24.21	53.91	74.00	-20.09	200	0	peak

Note:

1) The field strength is calculated by adding the Antenna Factor, Cable Factor & Preamplifier. The basic equation with a sample calculation is as follows:

Final Test Level =Receiver Reading - Correct Factor

Correct Factor = Preamplifier Factor– Antenna Factor–Cable Factor

2) Scan from 9kHz to 25GHz, the disturbance above 13GHz and below 30MHz was very low, and the above harmonics were the highest point could be found when testing, so only the above harmonics had been displayed. The amplitude of spurious emissions from the radiator which are attenuated more than 20dB below the limit need not be reported.

Appendix L): Unwanted Emissions that fall Outside of the Restricted Bands

<table>
<tr><td>Test Requirement:</td><td>47 CFR Part 15C Section 15.209 and 15.407 (b)</td></tr>
<tr><td>Test Method:</td><td>ANSI C63.10 2013</td></tr>
<tr><td>Receiver Setup:</td><td>
<table>
<tr><th>Frequency</th><th>Detector</th><th>RBW</th><th>VBW</th><th>Remark</th></tr>
<tr><td>0.009MHz-0.090MHz</td><td>Peak</td><td>10kHz</td><td>30kHz</td><td>Peak</td></tr>
<tr><td>0.009MHz-0.090MHz</td><td>Average</td><td>10kHz</td><td>30kHz</td><td>Average</td></tr>
<tr><td>0.090MHz-0.110MHz</td><td>Quasi-peak</td><td>10kHz</td><td>30kHz</td><td>Quasi-peak</td></tr>
<tr><td>0.110MHz-0.490MHz</td><td>Peak</td><td>10kHz</td><td>30kHz</td><td>Peak</td></tr>
<tr><td>0.110MHz-0.490MHz</td><td>Average</td><td>10kHz</td><td>30kHz</td><td>Average</td></tr>
<tr><td>0.490MHz -30MHz</td><td>Quasi-peak</td><td>10kHz</td><td>30kHz</td><td>Quasi-peak</td></tr>
<tr><td>30MHz-1GHz</td><td>Quasi-peak</td><td>100 kHz</td><td>300kHz</td><td>Quasi-peak</td></tr>
<tr><td rowspan="2">Above 1GHz</td><td>Peak</td><td>1MHz</td><td>3MHz</td><td>Peak</td></tr>
<tr><td>Peak</td><td>1MHz</td><td>10kHz</td><td>Average</td></tr>
</table>
</td></tr>
<tr><td>Limit:</td><td>
<table>
<tr><th>Frequency</th><th>Field strength (microvolt/meter)</th><th>Limit (dBuV/m)</th><th>Remark</th><th>Measurement distance (m)</th></tr>
<tr><td>0.009MHz-0.490MHz</td><td>2400/F(kHz)</td><td>-</td><td>-</td><td>300</td></tr>
<tr><td>0.490MHz-1.705MHz</td><td>24000/F(kHz)</td><td>-</td><td>-</td><td>30</td></tr>
<tr><td>1.705MHz-30MHz</td><td>30</td><td>-</td><td>-</td><td>30</td></tr>
<tr><td>30MHz-88MHz</td><td>100</td><td>40.0</td><td>Quasi-peak</td><td>3</td></tr>
<tr><td>88MHz-216MHz</td><td>150</td><td>43.5</td><td>Quasi-peak</td><td>3</td></tr>
<tr><td>216MHz-960MHz</td><td>200</td><td>46.0</td><td>Quasi-peak</td><td>3</td></tr>
<tr><td>960MHz-1GHz</td><td>500</td><td>54.0</td><td>Quasi-peak</td><td>3</td></tr>
<tr><td>Above 1GHz</td><td>500</td><td>54.0</td><td>Average</td><td>3</td></tr>
</table>
*(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 e.i.r.p. 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 e.i.r.p. of −27 dBm/MHz.
(4) For transmitters operating in the 5.725-5.85 GHz band:
(i) 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.
Remark: The emission limits shown in the above table are based on measurements employing a CISPR quasi-peak detector except for the
</td></tr>
</table>

	frequency bands 9-90kHz, 110-490kHz and above 1000 MHz. Radiated emission limits in these three bands are based on measurements employing an average detector, 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. Note: (i) EIRP = ((E*d)^2) / 30 where: • E is the field strength in V/m; • d is the measurement distance in meters; • EIRP is the equivalent isotropically radiated power in watts. (ii) Working in dB units, the above equation is equivalent to: EIRP[dBm] = E[dBμV/m] + 20 log(d[meters]) - 104.77 (iii) Or, if d is 3 meters: EIRP[dBm] = E[dBμV/m] - 95.2
Test Setup:	

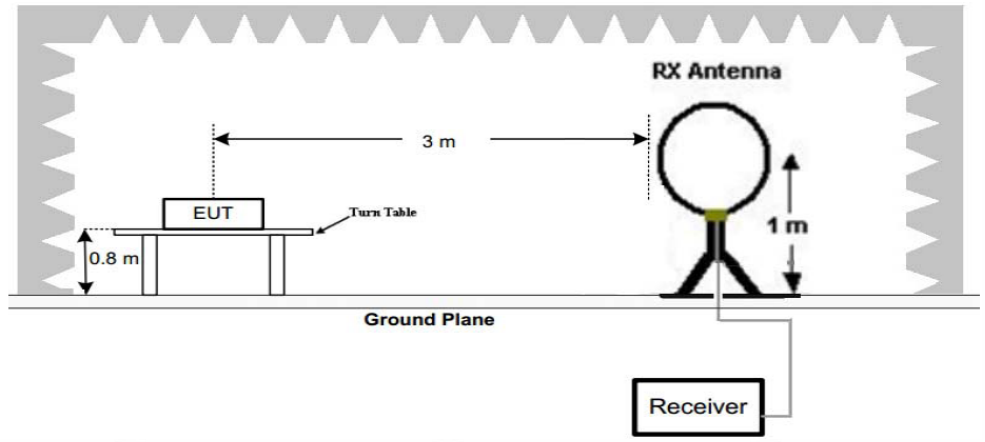


Figure 1. Below 30MHz

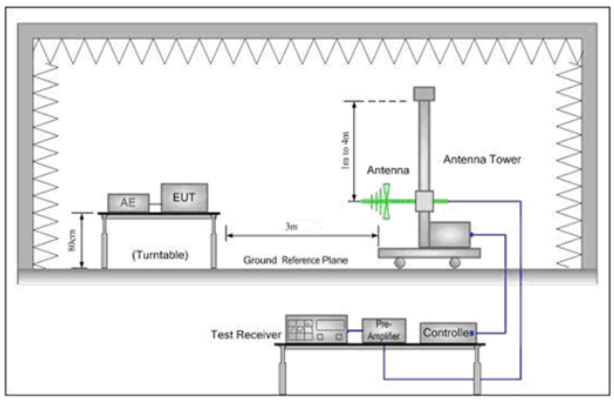


Figure 2. 30MHz to 1GHz

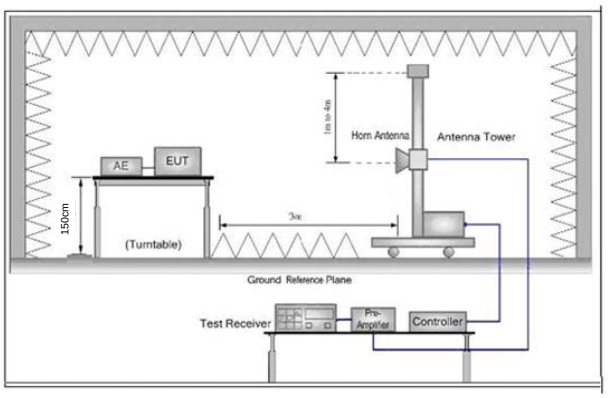


Figure 3. Above 1 GHz

Test Procedure:	a. 1) Below 1G: 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) Above 1G: The EUT was placed on the top of a rotating table 1.5 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. Note: For the radiated emission test above 1GHz: Place the measurement antenna away from each area of the EUT determined to be a source of emissions at the specified measurement distance, while keeping the measurement antenna aimed at the source of emissions at each frequency of significant emissions, with polarization oriented for maximum response. The measurement antenna may have to be higher or lower than the EUT, depending on the radiation pattern of the emission and staying aimed at the emission source for receiving the maximum signal. The final measurement antenna elevation shall be that which maximizes the emissions. The measurement antenna elevation for maximum emissions shall be restricted to a range of heights of from 1 m to 4 m above the ground or reference ground plane. b. The EUT was set 3 meters away from the interference-receiving antenna, which was mounted on the top of a variable-height antenna tower. c. 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. d. 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 rotatable table was turned from 0 degrees to 360 degrees to find the maximum reading. e. The test-receiver system was set to Peak Detect Function and Specified Bandwidth with Maximum Hold Mode. f. 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. g. Test the EUT in the lowest channel, the middle channel and the highest channel h. The radiation measurements are performed in X, Y, Z axis positioning for Transmitting mode, and found the X axis positioning which it is the worst case. i. Repeat above procedures until all frequencies measured was complete.
Test Mode:	Transmitting mode with modulation
Test Results:	Pass

Test Data:
For the all emission out-of-band emission that complies with both the peak and average limits of § 15.209 is not required to satisfy the -27 dBm/MHz or -17 dBm/MHz maximum emission limit. Refer to test item“Unwanted Emissions in the Restricted Bands (Radiated Emission)” test result.

U-NII-3

Mode:	Transmitting	Channel:	Low
Remark:			

Horizontal

No.	Frequency (MHz)	Reading (dBuV)	Correct Factor(dB/m)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Height (cm)	Degree (deg.)	Remark
1	11064.000	30.37	16.62	46.99	68.20	-21.21	120	360	peak
2	15977.000	29.48	23.58	53.06	68.20	-15.14	200	151	peak

Vertical

No.	Frequency (MHz)	Reading (dBuV)	Correct Factor(dB/m)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Height (cm)	Degree (deg.)	Remark
1	11710.000	29.08	17.13	46.21	68.20	-21.99	100	70	peak
2	14821.000	30.38	22.87	53.25	68.20	-14.95	147	360	peak

Mode:	Transmitting	Channel:	Mid
Remark:			

Horizontal

No.	Frequency (MHz)	Reading (dBuV)	Correct Factor(dB/m)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Height (cm)	Degree (deg.)	Remark
1	11251.000	29.51	16.91	46.42	68.20	-21.78	200	331	peak
2	15977.000	29.54	23.58	53.12	68.20	-15.08	200	122	peak

Vertical

No.	Frequency (MHz)	Reading (dBuV)	Correct Factor(dB/m)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Height (cm)	Degree (deg.)	Remark
1	11200.000	29.72	16.85	46.57	68.20	-21.63	100	331	peak
2	16079.000	29.52	23.66	53.18	68.20	-15.02	199	360	peak

Mode:	Transmitting	Channel:	High
Remark:			

Horizontal

No.	Frequency (MHz)	Reading (dBuV)	Correct Factor(dB/m)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Height (cm)	Degree (deg.)	Remark
1	11574.000	29.08	17.26	46.34	68.20	-21.86	200	153	peak
2	16980.000	27.31	25.61	52.92	68.20	-15.28	100	155	peak

Vertical

No.	Frequency (MHz)	Reading (dBuV)	Correct Factor(dB/m)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Height (cm)	Degree (deg.)	Remark
1	12118.000	29.32	17.38	46.70	68.20	-21.50	100	317	peak
2	16555.000	29.70	24.21	53.91	68.20	-14.29	200	0	peak

APPENDIX 1 PHOTOGRAPHS OF TEST SETUP

Refer to Report No. EED39N80209401 for test setup photos.

APPENDIX 2 PHOTOGRAPHS OF EUT CONSTRUCTIONAL DETAILS

Refer to Report No. EED39N80209401 for EUT external and internal photos.

The testing data and results in this report are just for scientific research, education, internal quality control and product development etc.

*** End of Report ***