Test Report

Report No.:	MTi231109003-07E4
Date of issue:	2024-01-18
Applicant:	SHENZHEN POWEROAK NEWENER CO., LTD
Product:	EMS Controller
Model(s):	SEC-G1
FCC ID:	2AYT3-SEC-G1

Shenzhen Microtest Co., Ltd.

http://www.mtitest.com

Address: 101, No. 7, Zone 2, Xinxing Industrial Park, Fuhai Avenue, Xinhe Community, Fuhai Street, Bao'an District, Shenzhen, Guangdong, China
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Instructions

1. This test report shall not be partially reproduced without the written consent of the laboratory.

2. The test results in this test report are only responsible for the samples submitted

3. This test report is invalid without the seal and signature of the laboratory.

4. This test report is invalid if transferred, altered, or tampered with in any form without authorization.

5. Any objection to this test report shall be submitted to the laboratory within 15 days from the date of receipt of the report.

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Test Result Certification	
Applicant:	SHENZHEN POWEROAK NEWENER CO., LTD
Address:	F19, BLD No.1, Kaidaer, Tongsha Rd No.168, Xili Street, Nanshan, Shenzhen, China
Manufacturer:	SHENZHEN POWEROAK NEWENER CO., LTD
Address:	F19, BLD No.1, Kaidaer, Tongsha Rd No.168, Xili Street, Nanshan, Shenzhen, China
Product description	
Product name:	EMS Controller
Trademark:	BLUETTI
Model name:	SEC-G1
Series Model(s):	N/A
Standards:	47 CFR Part 15.249
Test Method:	ANSI C63.10-2013
Date of Test	
Date of test:	2024-01-02 to 2024-01-18
Test result:	Pass

Test Engineer	:	David. Lee
		(David Lee)
Reviewed By	:	Leon chen
		(Leon Chen)
Approved By	:	Tom Xue
		(Tom Xue)

1 General Description

1.1 Description of the EUT

Product name:	EMS Controller
Model name:	SEC-G1
Series Model(s):	N/A
Model difference:	N/A
Electrical rating:	Input: DC 9-15V, 0.6A Max, power by POE
Accessories:	N/A
Hardware version:	V6.0
Software version:	905209
Test sample(s) number:	MTi231109003-07S1001
RF specification	
Operating frequency range:	5800-5860MHz
Channel number:	97
Modulation type:	CW
Antenna(s) type:	planar Antenna
Antenna(s) gain:	2dBi

1.2 Description of test modes

No.	Emission test modes
Mode1	TX

1.2.1 Operation channel list

Channel	Frequency (MHz)	Channel	Frequency (MHz)	Channel	Frequency (MHz)
1	5800	2	5800.625	3	5801.25
…	…	…	…	…	…
49	5830	50	5830.625	51	5831.25
…	…	…	…	…	…
97	5860	/			
Note: Channel separation is 625KHz					

Test Channel List
Operation Band: 5800 MHz to 5860 MHz

Lowest Channel (LCH) (MHz)	Middle Channel (MCH) (MHz)	Highest Channel (HCH) (MHz)
5800	5830	5860

Note: The test software provided by manufacturer is used to control EUT for working in engineering mode, that enables selectable channel, and capable of continuous transmitting mode.

Test Software:
For power setting, refer to below table.

Test Software		RF TOOL	
Mode	5800MHz	5830MHz	5860MHz
TX	63	63	63

1.3 Environmental Conditions

During the measurement the environmental conditions were within the listed ranges:

Temperature:	15°C ~ 35°C
Humidity:	20% RH ~ 75% RH
Atmospheric pressure:	98 kPa ~ 101 kPa

1.4 Description of support units

Support equipment list			
Description	Model	Serial No.	Manufacturer
DC power source	RNX-305D	/	SHENZHEN ZHAOXIN ELECTRONIC INSTRUMENT EQUIPMENT CO., LTD.
Battery	DC 12V	/	camel
Support cable list			
Description	Length (m)	From	To
/	/	/	/

1.5 Measurement uncertainty

Measurement	Uncertainty
Occupied channel bandwidth	±3 %
Radiated spurious emissions (above 1GHz)	±5.3dB
Radiated spurious emissions (9kHz~30MHz)	±4.3dB
Radiated spurious emissions (30MHz~1GHz)	±4.7dB
Temperature	±1 °C
Humidity	± 5 %

This uncertainty represents an expanded uncertainty expressed at approximately the 95% confidence level using a coverage factor of k=2.

2 Summary of Test Result

No.	Item	Standard	Requirement	Result
1	Antenna requirement	47 CFR Part 15.249	47 CFR Part 15.203	Pass
	Conducted Emission at AC power line	47 CFR Part 15.249	47 CFR 15.207(a)	Pass
2	20dB Bandwidth	47 CFR Part 15.249	47 CFR 15.215(c)	Pass
3	Field strength of fundamental	47 CFR Part 15.249	47 CFR 15.249(a) 47 CFR 15.249(b)(1)	Pass
4	Band edge emissions (Radiated)	47 CFR Part 15.249	47 CFR 15.249(d)	Pass
5	Emissions in frequency bands (below 1GHz)	47 CFR Part 15.249	47 CFR 15.249(a) 47 CFR 15.249(d) 47 CFR 15.249(e)	Pass
6	Emissions in frequency bands (above 1GHz)	47 CFR Part 15.249	47 CFR 15.249(a) 47 CFR 15.249(d) 47 CFR 15.249(e)	Pass

3 Test Facilities and accreditations

3.1 Test laboratory

Test laboratory:	Shenzhen Microtest Co., Ltd.
Test site location:	101, No.7, Zone 2, Xinxing Industrial Park, Fuhai Avenue, Xinhe Community, Fuhai Street, Bao'an District, Shenzhen, Guangdong, China
Telephone:	(86-755)88850135
Fax:	(86-755)88850136
CNAS Registration No.:	CNAS L5868
FCC Registration No.:	448573
IC Registration No.:	21760
CABID:	CN0093

4 List of test equipment

No.	Equipment	Manufacturer	Model	Serial No.	Cal. date	Cal. Due
20dB Bandwidth						
1	Wideband Radio Communication Tester	Rohde&schwarz	CMW500	149155	2023-04-26	2024-04-25
2	ESG Series Analog Ssignal Generator	Agilent	E4421B	GB40051240	2023-04-25	2024-04-24
3	PXA Signal Analyzer	Agilent	N9030A	MY51350296	2023-04-25	2024-04-24
4	Synthesized Sweeper	Agilent	83752A	3610A01957	2023-04-25	2024-04-24
5	MXA Signal Analyzer	Agilent	N9020A	MY50143483	2023-04-26	2024-04-25
6	RF Control Unit	Tonscend	JS0806-1	19D8060152	2023-04-26	2024-04-25
7	Band Reject Filter Group	Tonscend	JS0806-F	19D8060160	2023-05-05	2024-05-04
8	ESG Vector Signal Generator	Agilent	N5182A	MY50143762	2023-04-25	2024-04-24
9	DC Power Supply	Agilent	E3632A	MY40027695	2023-05-05	2024-05-04
Field strength of fundamental Band edge emissions (Radiated) Emissions in frequency bands (above 1GHz)						
1	EMI Test Receiver	Rohde&schwarz	ESCI7	101166	2023-04-26	2024-04-25
2	Double Ridged Broadband Horn Antenna	schwarabeck	BBHA 9120 D	2278	2023-06-17	2025-06-16
3	Amplifier	Agilent	8449B	3008A01120	2023-06-26	2024-06-25
4	MXA signal analyzer	Agilent	N9020A	MY54440859	2023-06-01	2024-05-31
5	Horn antenna	Schwarzbeck	BBHA 9170	00987	2023-06-17	2025-06-16
6	Pre-amplifier	Space-Dtronics	EWLAN1840 G	210405001	2023-05-04	2024-05-03
7	PXA Signal Analyzer	Agilent	N9030A	MY51350296	2023-04-25	2024-04-24
Emissions in frequency bands (below 1GHz)						
1	EMI Test Receiver	Rohde&schwarz	ESCI7	101166	2023-04-26	2024-04-25
2	TRILOG Broadband Antenna	schwarabeck	VULB 9163	9163-1338	2023-06-11	2025-06-10
3	Active Loop Antenna	Schwarzbeck	FMZB 1519 B	00066	2023-06-11	2025-06-10
4	Amplifier	Hewlett-Packard	8447F	3113A06184	2023-04-25	2024-04-24
5	Multi-device Controller	TuoPu	TPMDC	/	2023-05-04	2024-05-03

5 Radio Spectrum Matter Test Results (RF)

5.1 Antenna requirement

Test Requirement:	Refer to 47 CFR Part 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.
Description of the antenna of EUT:	The antenna of the EUT is permanently attached.
Conclusion:	The EUT complies with the requirement of FCC PART 15.203.

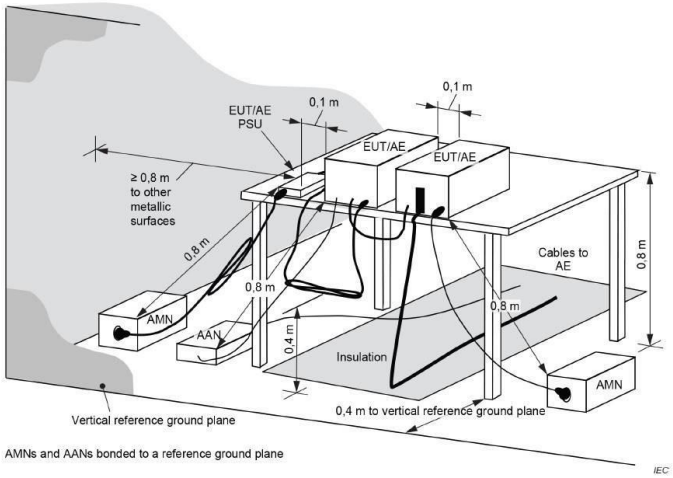
5.1 Conducted Emission at AC power line

Test Requirement:	Refer to 47 CFR 15.207(a), Except as shown in paragraphs (b)and (c)of this section, for 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 μH/50 ohms line impedance stabilization network (LISN).
Test Limit:	Frequency of emission (MHz) / Conducted limit (dBμV): Quasi-peak / Average 0.15-0.5: 66 to 56* / 56 to 46* 0.5-5: 56 / 46 5-30: 60 / 50 *Decreases with the logarithm of the frequency.
Test Method:	ANSI C63.10-2013 section 6.2
Procedure:	Refer to ANSI C63.10-2013 section 6.2, standard test method for ac power-line conducted emissions from unlicensed wireless devices

5.1.1 E.U.T. Operation:

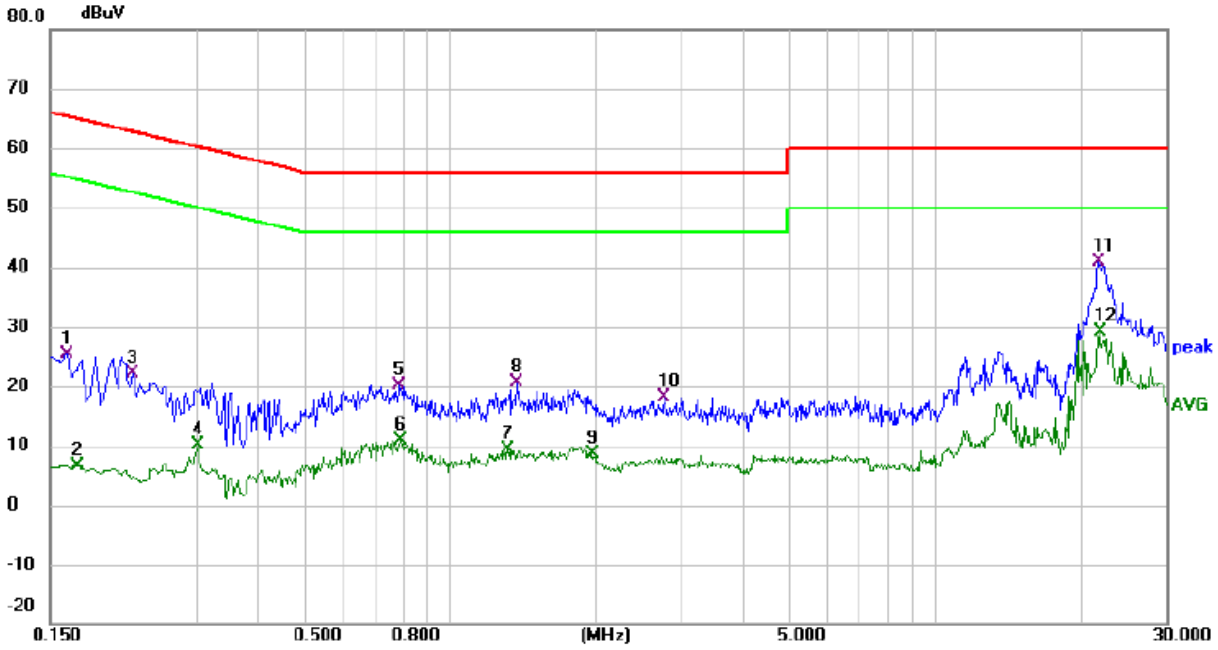
Operating Environment:					
Temperature:	24.8 °C	Humidity:	42 %	Atmospheric Pressure:	101 kPa
Pre test mode:	Mode1				
Final test mode:	Mode1				

5.1.2 Test Setup Diagram:



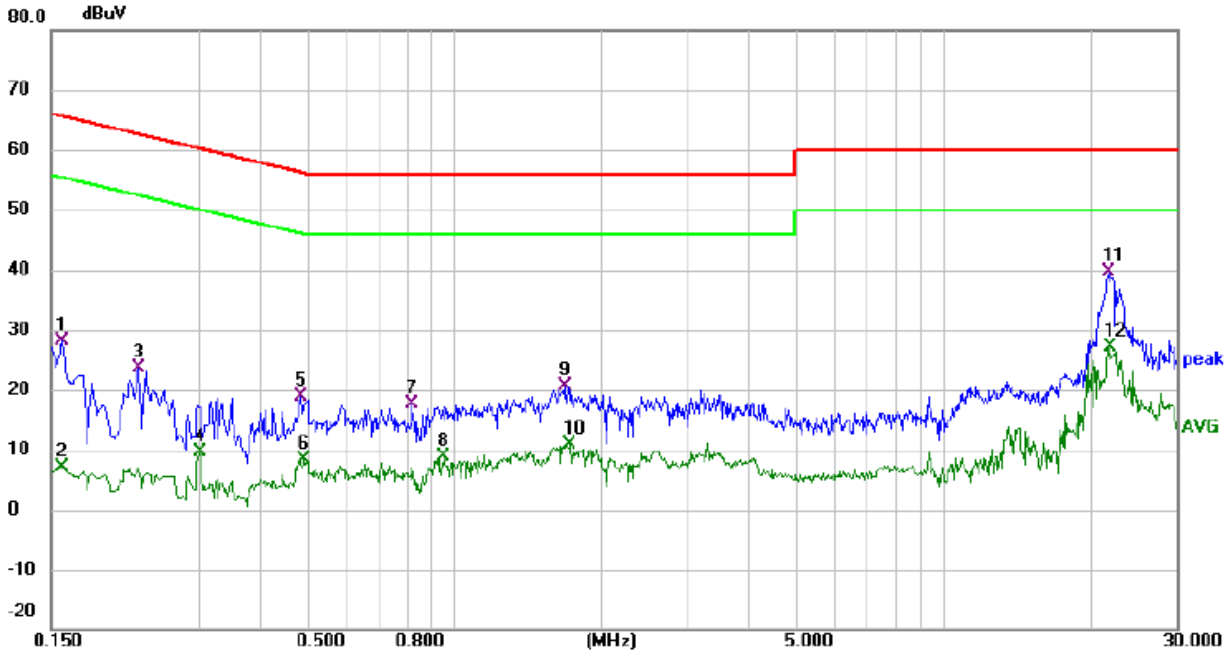
5.1.3 Test Data:

Mode1 / Line: Line / CH: L



No.	Mk.	Freq.	Reading Level	Correct Factor	Measure-ment	Limit	Over		
		MHz	dBuV	dB	dBuV	dBuV	dB	Detector	Comment
1		0.1620	15.11	10.28	25.39	65.36	-39.97	QP	
2		0.1700	-3.64	10.28	6.64	54.96	-48.32	AVG	
3		0.2220	11.50	10.72	22.22	62.74	-40.52	QP	
4		0.3019	-0.69	10.87	10.18	50.19	-40.01	AVG	
5		0.7900	8.17	11.96	20.13	56.00	-35.87	QP	
6		0.7940	-1.02	11.96	10.94	46.00	-35.06	AVG	
7		1.3180	-3.48	12.92	9.44	46.00	-36.56	AVG	
8		1.3740	7.63	12.99	20.62	56.00	-35.38	QP	
9		1.9617	-1.32	10.01	8.69	46.00	-37.31	AVG	
10		2.7780	7.94	10.22	18.16	56.00	-37.84	QP	
11	*	21.6617	30.22	10.69	40.91	60.00	-19.09	QP	
12		21.9057	18.42	10.71	29.13	50.00	-20.87	AVG	

Mode1 / Line: Neutral / CH: L



No.	Mk.	Freq.	Reading Level	Correct Factor	Measure-ment	Limit	Over		
		MHz	dBuV	dB	dBuV	dBuV	dB	Detector	Comment
1		0.1580	17.76	10.28	28.04	65.57	-37.53	QP	
2		0.1580	-3.07	10.28	7.21	55.57	-48.36	AVG	
3		0.2260	12.97	10.67	23.64	62.60	-38.96	QP	
4		0.3019	-1.15	10.84	9.69	50.19	-40.50	AVG	
5		0.4858	7.55	11.29	18.84	56.24	-37.40	QP	
6		0.4939	-2.81	11.30	8.49	46.10	-37.61	AVG	
7		0.8256	5.49	12.03	17.52	56.00	-38.48	QP	
8		0.9576	-3.38	12.26	8.88	46.00	-37.12	AVG	
9		1.6856	6.75	13.80	20.55	56.00	-35.45	QP	
10		1.7338	-2.98	13.89	10.91	46.00	-35.09	AVG	
11	*	21.7220	28.79	10.72	39.51	60.00	-20.49	QP	
12		21.9056	16.50	10.74	27.24	50.00	-22.76	AVG	

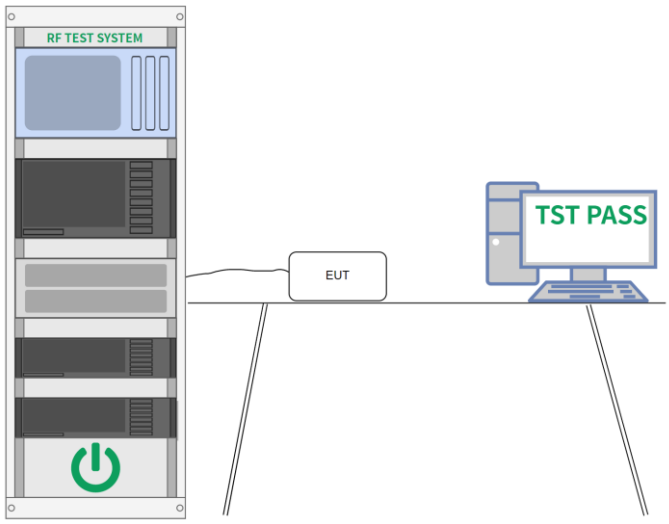
5.2 20dB Bandwidth

Test Requirement:	47 CFR 15.215(c)
Test Limit:	Refer to 47 CFR 15.215(c), intentional radiators operating under the alternative provisions to the general emission limits, as contained in §§ 15.217 through 15.257 and in subpart E of this part, must be designed to ensure that the 20 dB bandwidth of the emission, or whatever bandwidth may otherwise be specified in the specific rule section under which the equipment operates, is contained within the frequency band designated in the rule section under which the equipment is operated.
Test Method:	ANSI C63.10-2013, section 6.9.2
Procedure:	a) The spectrum analyzer center frequency is set to the nominal EUT channel center frequency. The span range for the EMI receiver or spectrum analyzer shall be between two times and five times the OBW. b) The nominal IF filter bandwidth (3 dB RBW) shall be in the range of 1% to 5% of the OBW and video bandwidth (VBW) shall be approximately three times RBW, unless otherwise specified by the applicable requirement. c) Set the reference level of the instrument as required, keeping the signal from exceeding the maximum input mixer level for linear operation. In general, the peak of the spectral envelope shall be more than [10 log (OBW/RBW)] below the reference level. Specific guidance is given in 4.1.5.2. d) Steps a) through c) might require iteration to adjust within the specified tolerances. e) The dynamic range of the instrument at the selected RBW shall be more than 10 dB below the target “−xx dB down” requirement; that is, if the requirement calls for measuring the −20 dB OBW, the instrument noise floor at the selected RBW shall be at least 30 dB below the reference value. f) Set detection mode to peak and trace mode to max hold. g) Determine the reference value: Set the EUT to transmit an unmodulated carrier or modulated signal, as applicable. Allow the trace to stabilize. Set the spectrum analyzer marker to the highest level of the displayed trace (this is the reference value). h) Determine the “−xx dB down amplitude” using [(reference value) − xx]. Alternatively, this calculation may be made by using the marker-delta function of the instrument. i) If the reference value is determined by an unmodulated carrier, then turn the EUT modulation ON, and either clear the existing trace or start a new trace on the spectrum analyzer and allow the new trace to stabilize. Otherwise, the trace from step g) shall be used for step j). j) Place two markers, one at the lowest frequency and the other at the highest frequency of the envelope of the spectral display, such that each marker is at or slightly below the “-xx dB down amplitude” determined in step h). If a marker is below this “−xx dB down amplitude” value, then it shall be as close as possible to this value. The occupied bandwidth is the frequency difference between the two markers. Alternatively, set a marker at the lowest frequency of the envelope of the spectral display, such that the marker is at or slightly below the “-xx dB down amplitude” determined in step h). Reset the marker-delta function and move the marker to the other side of the emission until the delta marker amplitude is at the same level as the reference marker amplitude. The marker-delta frequency reading at this point is the specified emission bandwidth. k) The occupied bandwidth shall be reported by providing plot(s) of the measuring instrument display; the plot axes and the scale units per division shall be clearly labeled. Tabular data may be reported in addition to the plot(s).

5.2.1 E.U.T. Operation:

Operating Environment:					
Temperature:	24 °C	Humidity:	50 %	Atmospheric Pressure:	100 kPa
Pre test mode:	Mode1				
Final test mode:	Mode1				

5.2.2 Test Setup Diagram:



5.2.3 Test Data:

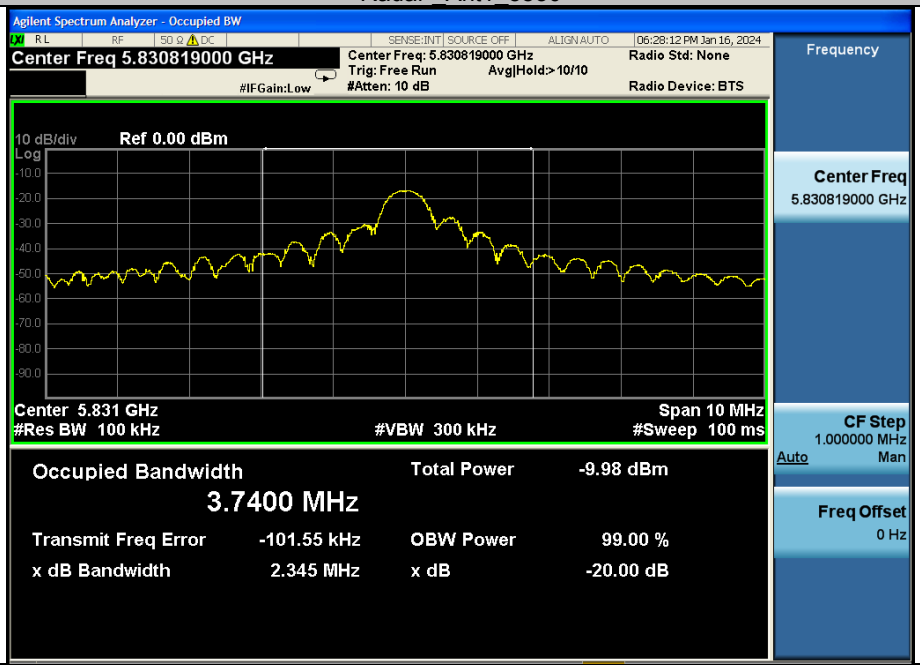
Test Result

Test Mode	Antenna	Frequency [MHz]	20db EBW [MHz]
Radar	Ant1	5800	2.561
		5830	2.345
		5860	2.325

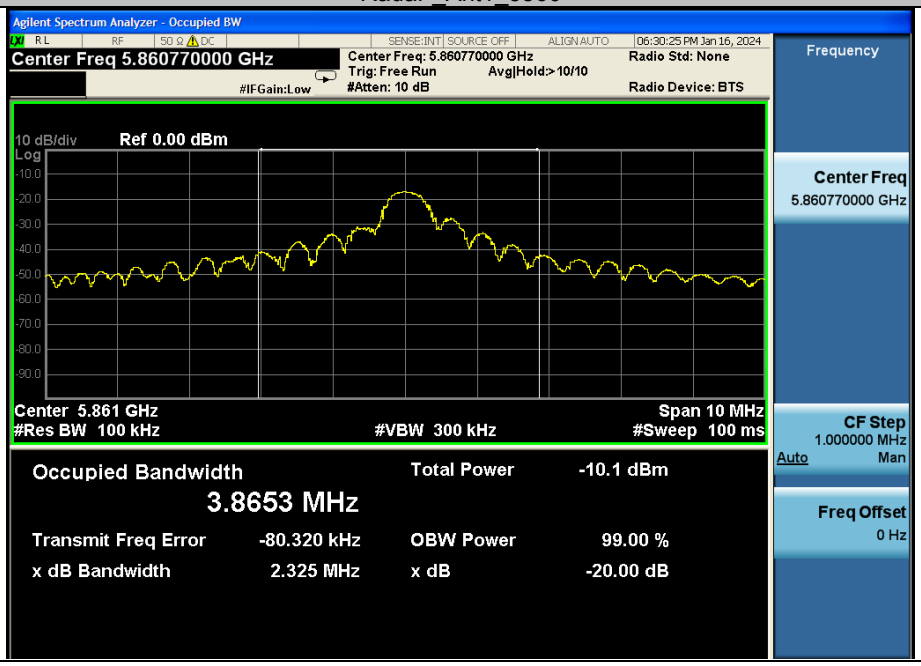
Test Graphs

Radar _Ant1_5800

Radar _Ant1_5830



Radar _Ant1_5860



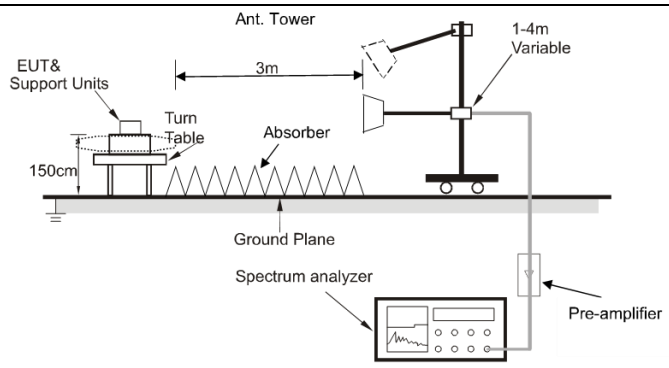
5.3 Field strength of fundamental

Test Requirement:	Except as provided in paragraph (b)of this section, the field strength of emissions from intentional radiators operated within these frequency bands shall comply with the following: Fundamental frequency / Field strength of fundamental (millivolts/meter) / Field strength of harmonics (microvolts/meter) 902-928 MHz / 50 / 500 2400-2483.5 MHz / 50 / 500 5725-5875 MHz / 50 / 500 24.0-24.25 GHz / 250 / 2500 The field strength of emissions in this band shall not exceed 2500 millivolts/meter.
Test Method:	ANSI C63.10-2013 section 6.6
Procedure:	ANSI C63.10-2013 section 6.6

5.3.1 E.U.T. Operation:

Operating Environment:					
Temperature:	26 °C	Humidity:	54 %	Atmospheric Pressure:	100 kPa
Pre test mode:	Mode1				
Final test mode:	Mode1				

5.3.2 Test Setup Diagram:



5.3.3 Test Data:

Frequency	Ant. Polarization	Emission level	Limits	Detector	Result
(MHz)	H / V	dBμV/m	dBμV/m		
5800	H	91.64	114	PK	PASS
5800	H	57.63	94	AV	PASS
5800	V	90.49	114	PK	PASS
5800	V	56.85	94	AV	PASS

Frequency	Ant. Polarization	Emission level	Limits	Detector	Result
(MHz)	H / V	dBμV/m	dBμV/m		
5830	H	91.18	114	PK	PASS
5830	H	57.12	94	AV	PASS
5830	V	90.43	114	PK	PASS
5830	V	56.34	94	AV	PASS

Frequency	Ant. Polarization	Emission level	Limits	Detector	Result
(MHz)	H / V	dBμV/m	dBμV/m		
5860	H	91.62	114	PK	PASS
5860	H	58.13	94	AV	PASS
5860	V	91.28	114	PK	PASS
5860	V	57.55	94	AV	PASS

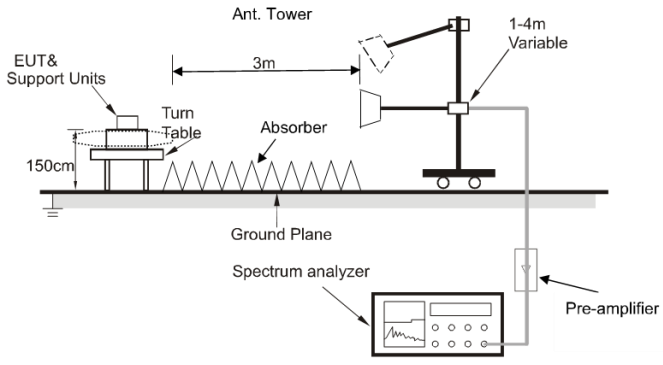
5.4 Band edge emissions (Radiated)

<table>
<tr><td>Test Requirement:</td><td>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 § 15.209, whichever is the lesser attenuation.</td></tr>
<tr><td>Test Limit:</td><td>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 § 15.209, whichever is the lesser attenuation.
<table>
<tr><td>Frequency (MHz)</td><td>Field strength (microvolts/meter)</td><td>Measurement distance (meters)</td></tr>
<tr><td>0.009-0.490</td><td>2400/F(kHz)</td><td>300</td></tr>
<tr><td>0.490-1.705</td><td>24000/F(kHz)</td><td>30</td></tr>
<tr><td>1.705-30.0</td><td>30</td><td>30</td></tr>
<tr><td>30-88</td><td>100 **</td><td>3</td></tr>
<tr><td>88-216</td><td>150 **</td><td>3</td></tr>
<tr><td>216-960</td><td>200 **</td><td>3</td></tr>
<tr><td>Above 960</td><td>500</td><td>3</td></tr>
</table>
** Except as provided in paragraph (g), fundamental emissions from intentional radiators operating under this section shall not be located in the frequency bands 54-72 MHz, 76-88 MHz, 174-216 MHz or 470-806 MHz. However, operation within these frequency bands is permitted under other sections of this part, e.g., §§ 15.231 and 15.241.
In the emission table above, the tighter limit applies at the band edges.
The emission limits shown in the above table are based on measurements employing a CISPR quasi-peak detector except for the frequency bands 9–90 kHz, 110–490 kHz and above 1000 MHz. Radiated emission limits in these three bands are based on measurements employing an average detector.</td></tr>
<tr><td>Test Method:</td><td>ANSI C63.10-2013 section 6.6.4</td></tr>
<tr><td>Procedure:</td><td>ANSI C63.10-2013 section 6.6.4</td></tr>
</table>

5.4.1 E.U.T. Operation:

<table>
<tr><td colspan="6">Operating Environment:</td></tr>
<tr><td>Temperature:</td><td>26 °C</td><td>Humidity:</td><td>54 %</td><td>Atmospheric Pressure:</td><td>100 kPa</td></tr>
<tr><td>Pre test mode:</td><td colspan="5">Mode1</td></tr>
<tr><td>Final test mode:</td><td colspan="5">Mode1</td></tr>
</table>

5.4.2 Test Setup Diagram:



5.4.3 Test Data:

Mode1 / Polarization: Horizontal / CH: L

No.	Mk.	Freq.	Reading Level	Correct Factor	Measure-ment	Limit	Over	
		MHz	dBuV	dB	dBuV/m	dBuV/m	dB	Detector
1		5700.000	50.00	-4.07	45.93	74.00	-28.07	peak
2		5700.000	47.39	-4.07	43.32	54.00	-10.68	AVG
3		5720.000	50.64	-4.23	46.41	74.00	-27.59	peak
4	*	5720.000	48.59	-4.23	44.36	54.00	-9.64	AVG
5		5725.000	49.93	-4.27	45.66	74.00	-28.34	peak
6		5725.000	47.89	-4.27	43.62	54.00	-10.38	AVG

Mode1 / Polarization: Vertical / CH: L

No.	Mk.	Freq.	Reading Level	Correct Factor	Measure-ment	Limit	Over	
		MHz	dBuV	dB	dBuV/m	dBuV/m	dB	Detector
1		5700.000	50.73	-4.07	46.66	74.00	-27.34	peak
2		5700.000	47.32	-4.07	43.25	54.00	-10.75	AVG
3		5720.000	51.11	-4.23	46.88	74.00	-27.12	peak
4	*	5720.000	47.90	-4.23	43.67	54.00	-10.33	AVG
5		5725.000	50.00	-4.27	45.73	74.00	-28.27	peak
6		5725.000	46.63	-4.27	42.36	54.00	-11.64	AVG

Mode1 / Polarization: Horizontal / CH: H

No.	Mk.	Freq.	Reading Level	Correct Factor	Measure-ment	Limit	Over	
		MHz	dBuV	dB	dBuV/m	dBuV/m	dB	Detector
1		5875.000	59.29	-3.93	55.36	74.00	-18.64	peak
2		5875.000	53.27	-3.93	49.34	54.00	-4.66	AVG
3		5880.000	57.76	-3.85	53.91	74.00	-20.09	peak
4		5880.000	52.40	-3.85	48.55	54.00	-5.45	AVG
5		5885.000	57.89	-3.77	54.12	74.00	-19.88	peak
6	*	5885.000	53.60	-3.77	49.83	54.00	-4.17	AVG

Mode1 / Polarization: Vertical / CH: H

No.	Mk.	Freq.	Reading Level	Correct Factor	Measure-ment	Limit	Over	
		MHz	dBuV	dB	dBuV/m	dBuV/m	dB	Detector
1		5875.000	58.36	-3.93	54.43	74.00	-19.57	peak
2	*	5875.000	53.80	-3.93	49.87	54.00	-4.13	AVG
3		5880.000	57.25	-3.85	53.40	74.00	-20.60	peak
4		5880.000	52.97	-3.85	49.12	54.00	-4.88	AVG
5		5885.000	54.92	-3.77	51.15	74.00	-22.85	peak
6		5885.000	50.08	-3.77	46.31	54.00	-7.69	AVG

5.5 Emissions in frequency bands (below 1GHz)

<table>
<tr><td>Test Requirement:</td><td>47 CFR 15.249(a)
47 CFR 15.249(d)
47 CFR 15.249(e)</td></tr>
<tr><td>Test Limit:</td><td>Except as provided in paragraph (b)of this section, the field strength of emissions from intentional radiators operated within these frequency bands shall comply with the following:

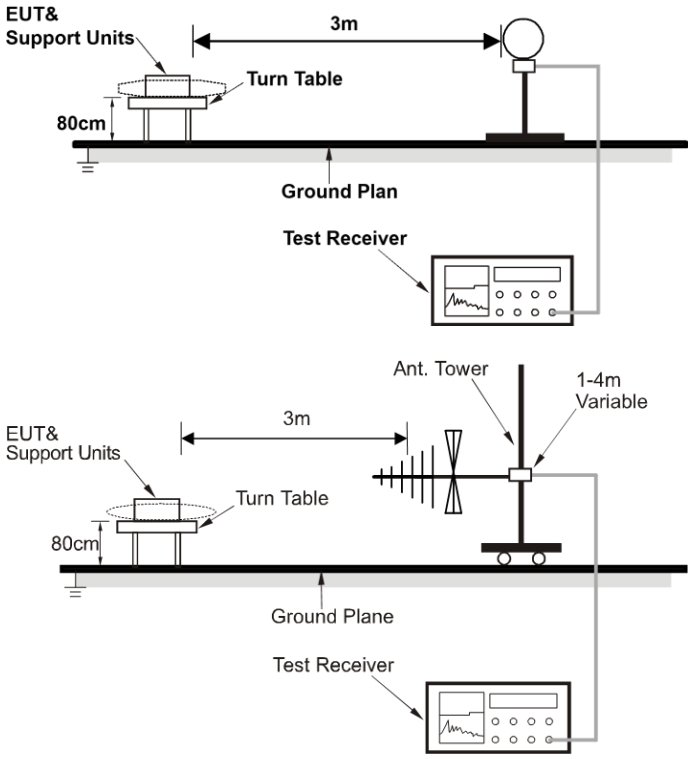
<table>
<tr><th>Fundamental frequency</th><th>Field strength of fundamental (millivolts/meter)</th><th>Field strength of harmonics (microvolts/meter)</th></tr>
<tr><td>902-928 MHz</td><td>50</td><td>500</td></tr>
<tr><td>2400-2483.5 MHz</td><td>50</td><td>500</td></tr>
<tr><td>5725-5875 MHz</td><td>50</td><td>500</td></tr>
<tr><td>24.0-24.25 GHz</td><td>250</td><td>2500</td></tr>
</table>

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 § 15.209, whichever is the lesser attenuation.
<table>
<tr><th>Frequency (MHz)</th><th>Field strength (microvolts/meter)</th><th>Measurement distance (meters)</th></tr>
<tr><td>0.009-0.490</td><td>2400/F(kHz)</td><td>300</td></tr>
<tr><td>0.490-1.705</td><td>24000/F(kHz)</td><td>30</td></tr>
<tr><td>1.705-30.0</td><td>30</td><td>30</td></tr>
<tr><td>30-88</td><td>100 **</td><td>3</td></tr>
<tr><td>88-216</td><td>150 **</td><td>3</td></tr>
<tr><td>216-960</td><td>200 **</td><td>3</td></tr>
<tr><td>Above 960</td><td>500</td><td>3</td></tr>
</table>
** Except as provided in paragraph (g), fundamental emissions from intentional radiators operating under this section shall not be located in the frequency bands 54-72 MHz, 76-88 MHz, 174-216 MHz or 470-806 MHz. However, operation within these frequency bands is permitted under other sections of this part, e.g., §§ 15.231 and 15.241.
In the emission table above, the tighter limit applies at the band edges.
The emission limits shown in the above table are based on measurements employing a CISPR quasi-peak detector except for the frequency bands 9–90 kHz, 110–490 kHz and above 1000 MHz. Radiated emission limits in these three bands are based on measurements employing an average detector.
As shown in § 15.35(b), for frequencies above 1000 MHz, the field strength limits in paragraphs (a)and (b)of this section are based on average limits. 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. For point-to-point operation under paragraph (b)of this section, the peak field strength shall not exceed 2500 millivolts/meter at 3 meters along the antenna azimuth.</td></tr>
<tr><td>Test Method:</td><td>ANSI C63.10-2013 section 6.5</td></tr>
<tr><td>Procedure:</td><td>ANSI C63.10-2013 section 6.5</td></tr>
</table>

5.5.1 E.U.T. Operation:

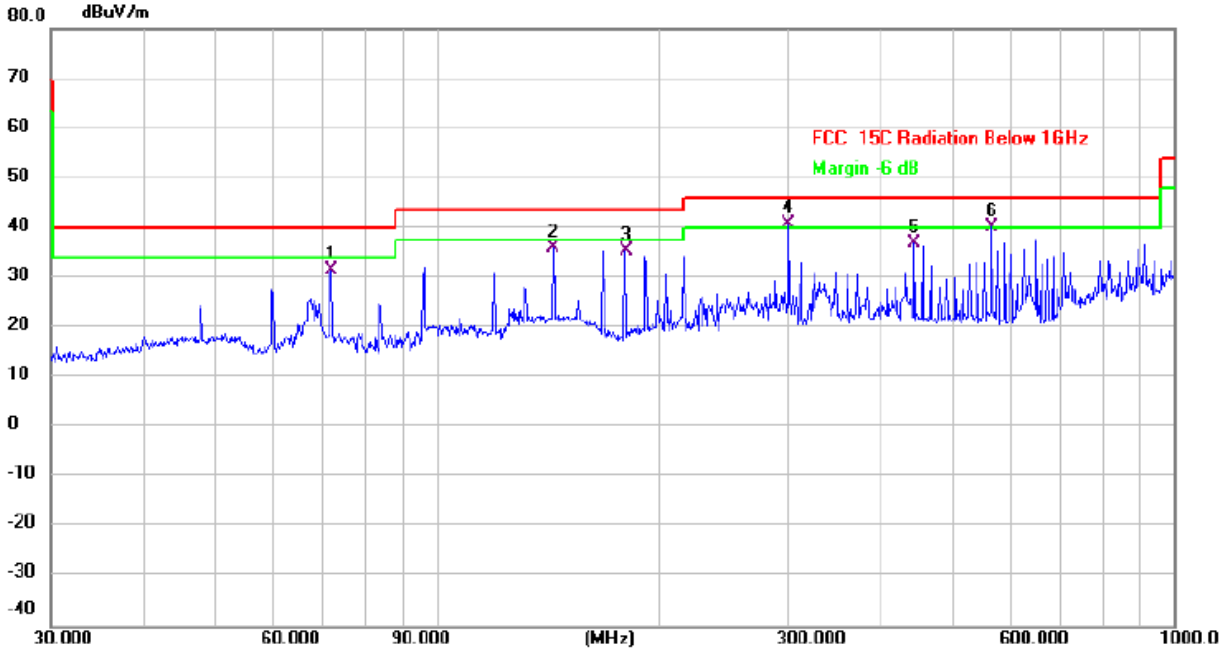
Operating Environment:					
Temperature:	26 °C	Humidity:	54 %	Atmospheric Pressure:	100 kPa
Pre test mode:	Mode1				
Final test mode:	Mode1				

5.5.2 Test Setup Diagram:



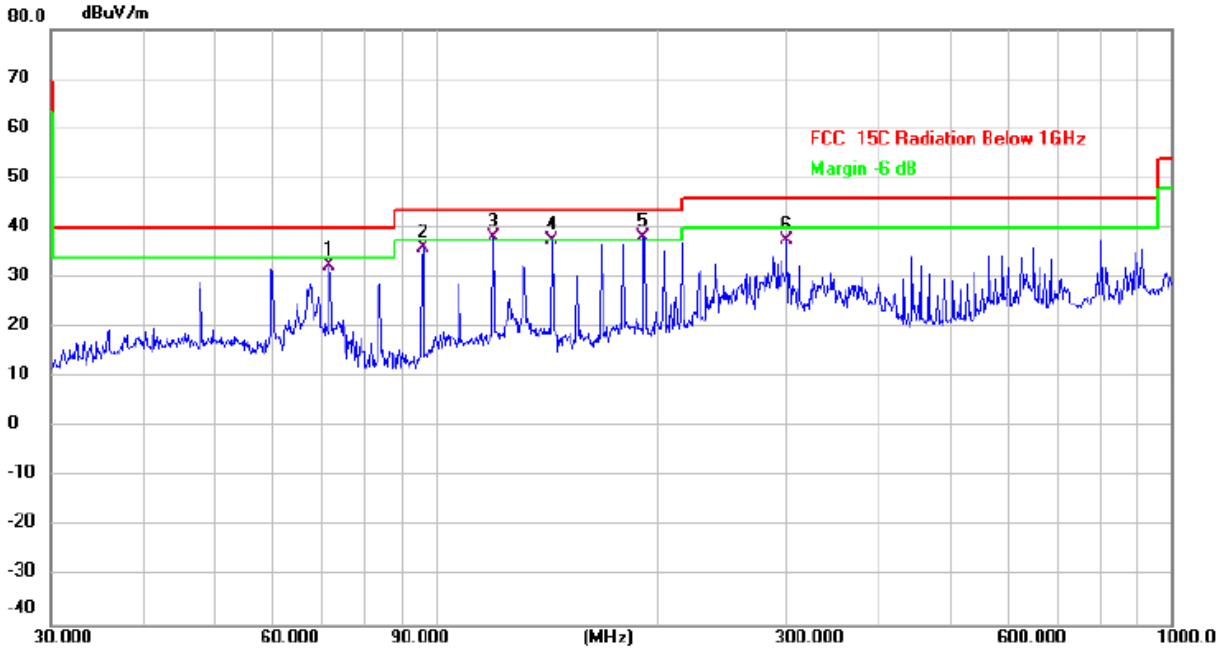
5.5.3 Test Data:

Mode1 / Polarization: Horizontal / CH: H



No.	Mk.	Freq.	Reading Level	Correct Factor	Measure-ment	Limit	Over		
		MHz	dBuV	dB	dBuV/m	dBuV/m	dB	Detector	Comment
1		72.0843	42.76	-11.27	31.49	40.00	-8.51	QP	
2		143.8295	46.57	-10.56	36.01	43.50	-7.49	QP	
3		180.0165	45.45	-9.96	35.49	43.50	-8.01	QP	
4	*	300.3672	45.61	-4.75	40.86	46.00	-5.14	QP	
5		444.8514	41.21	-4.27	36.94	46.00	-9.06	QP	
6	!	564.6389	41.93	-1.75	40.18	46.00	-5.82	QP	

Mode1 / Polarization: Vertical / CH: H



No.	Mk.	Freq.	Reading Level	Correct Factor	Measure-ment	Limit	Over		
		MHz	dBuV	dB	dBuV/m	dBuV/m	dB	Detector	Comment
1		71.8320	43.68	-11.26	32.42	40.00	-7.58	QP	
2		96.0986	46.67	-10.55	36.12	43.50	-7.38	QP	
3	!	119.8556	47.32	-9.22	38.10	43.50	-5.40	QP	
4	!	143.8295	48.24	-10.56	37.68	43.50	-5.82	QP	
5	*	191.7450	48.06	-9.86	38.20	43.50	-5.30	QP	
6		300.3672	42.36	-4.75	37.61	46.00	-8.39	QP	

5.6 Emissions in frequency bands (above 1GHz)

<table>
<tr><td>Test Requirement:</td><td>47 CFR 15.249(a)
47 CFR 15.249(d)
47 CFR 15.249(e)</td></tr>
<tr><td>Test Limit:</td><td>Except as provided in paragraph (b)of this section, the field strength of emissions from intentional radiators operated within these frequency bands shall comply with the following:

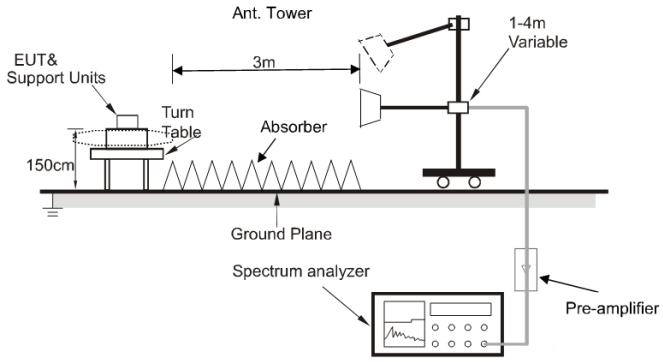
<table>
<tr><th>Fundamental frequency</th><th>Field strength of fundamental (millivolts/meter)</th><th>Field strength of harmonics (microvolts/meter)</th></tr>
<tr><td>902-928 MHz</td><td>50</td><td>500</td></tr>
<tr><td>2400-2483.5 MHz</td><td>50</td><td>500</td></tr>
<tr><td>5725-5875 MHz</td><td>50</td><td>500</td></tr>
<tr><td>24.0-24.25 GHz</td><td>250</td><td>2500</td></tr>
</table>

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 § 15.209, whichever is the lesser attenuation.
<table>
<tr><th>Frequency (MHz)</th><th>Field strength (microvolts/meter)</th><th>Measurement distance (meters)</th></tr>
<tr><td>0.009-0.490</td><td>2400/F(kHz)</td><td>300</td></tr>
<tr><td>0.490-1.705</td><td>24000/F(kHz)</td><td>30</td></tr>
<tr><td>1.705-30.0</td><td>30</td><td>30</td></tr>
<tr><td>30-88</td><td>100 **</td><td>3</td></tr>
<tr><td>88-216</td><td>150 **</td><td>3</td></tr>
<tr><td>216-960</td><td>200 **</td><td>3</td></tr>
<tr><td>Above 960</td><td>500</td><td>3</td></tr>
</table>
** Except as provided in paragraph (g), fundamental emissions from intentional radiators operating under this section shall not be located in the frequency bands 54-72 MHz, 76-88 MHz, 174-216 MHz or 470-806 MHz. However, operation within these frequency bands is permitted under other sections of this part, e.g., §§ 15.231 and 15.241.
In the emission table above, the tighter limit applies at the band edges.
The emission limits shown in the above table are based on measurements employing a CISPR quasi-peak detector except for the frequency bands 9–90 kHz, 110–490 kHz and above 1000 MHz. Radiated emission limits in these three bands are based on measurements employing an average detector.
As shown in § 15.35(b), for frequencies above 1000 MHz, the field strength limits in paragraphs (a)and (b)of this section are based on average limits. 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. For point-to-point operation under paragraph (b)of this section, the peak field strength shall not exceed 2500 millivolts/meter at 3 meters along the antenna azimuth.</td></tr>
<tr><td>Test Method:</td><td>ANSI C63.10-2013 section 6.6</td></tr>
<tr><td>Procedure:</td><td>ANSI C63.10-2013 section 6.6</td></tr>
</table>

5.6.1 E.U.T. Operation:

Operating Environment:					
Temperature:	26 °C	Humidity:	54 %	Atmospheric Pressure:	100 kPa
Pre test mode:	Mode1				
Final test mode:	Mode1				

5.6.2 Test Setup Diagram:



5.6.3 Test Data:

Mode1 / Polarization: Horizontal / CH: L

No.	Mk.	Freq.	Reading Level	Correct Factor	Measure-ment	Limit	Over	
		MHz	dBuV	dB	dBuV/m	dBuV/m	dB	Detector
1		11600.000	12.16	48.19	60.35	74.00	-13.65	peak
2	*	11600.000	-3.81	48.19	44.38	54.00	-9.62	AVG
3		17400.000	7.72	48.54	56.26	74.00	-17.74	peak
4		17400.000	-6.19	48.54	42.35	54.00	-11.65	AVG

Mode1 / Polarization: Vertical / CH: L

No.	Mk.	Freq.	Reading Level	Correct Factor	Measure-ment	Limit	Over	
		MHz	dBuV	dB	dBuV/m	dBuV/m	dB	Detector
1		11600.000	8.43	48.19	56.62	74.00	-17.38	peak
2	*	11600.000	-5.87	48.19	42.32	54.00	-11.68	AVG
3		17400.000	7.16	48.54	55.70	74.00	-18.30	peak
4		17400.000	-6.89	48.54	41.65	54.00	-12.35	AVG

Mode1 / Polarization: Horizontal / CH: M

No.	Mk.	Freq.	Reading Level	Correct Factor	Measure-ment	Limit	Over	
		MHz	dBuV	dB	dBuV/m	dBuV/m	dB	Detector
1		11660.000	5.88	47.92	53.80	74.00	-20.20	peak
2		11660.000	-9.67	47.92	38.25	54.00	-15.75	AVG
3		17490.000	7.86	49.03	56.89	74.00	-17.11	peak
4	*	17490.000	-8.82	49.03	40.21	54.00	-13.79	AVG

Mode1 / Polarization: Vertical / CH: M

No.	Mk.	Freq.	Reading Level	Correct Factor	Measure-ment	Limit	Over	
		MHz	dBuV	dB	dBuV/m	dBuV/m	dB	Detector
1		11660.000	6.49	47.92	54.41	74.00	-19.59	peak
2		11660.000	-8.57	47.92	39.35	54.00	-14.65	AVG
3		17490.000	7.84	49.03	56.87	74.00	-17.13	peak
4	*	17490.000	-7.78	49.03	41.25	54.00	-12.75	AVG

Mode1 / Polarization: Horizontal / CH: H

No.	Mk.	Freq.	Reading Level	Correct Factor	Measure-ment	Limit	Over	
		MHz	dBuV	dB	dBuV/m	dBuV/m	dB	Detector
1		11720.000	7.14	47.80	54.94	74.00	-19.06	peak
2		11720.000	-8.15	47.80	39.65	54.00	-14.35	AVG
3		17580.000	7.93	49.23	57.16	74.00	-16.84	peak
4	*	17580.000	-7.98	49.23	41.25	54.00	-12.75	AVG

Mode1 / Polarization: Vertical / CH: H

No.	Mk.	Freq.	Reading Level	Correct Factor	Measure-ment	Limit	Over	
		MHz	dBuV	dB	dBuV/m	dBuV/m	dB	Detector
1		11720.000	11.30	47.80	59.10	74.00	-14.90	peak
2	*	11720.000	-4.55	47.80	43.25	54.00	-10.75	AVG
3		17580.000	8.13	49.23	57.36	74.00	-16.64	peak
4		17580.000	-7.98	49.23	41.25	54.00	-12.75	AVG

Note:

1.The testing has been conformed to 40GHz

2. All other emissions more than 30dB below the limit.

3. Factor = Antenna Factor + Cable Loss – Pre-amplifier.
Emission Level = Reading + Factor
Margin=Emission Level-Limit

4. All the modes have tested and recorded the worst mode in the report. Test frequency are from 1GHz to 40GHz, the amplitude of spurious emissions which are attenuated more than 20 dB below the limits are not reported.

Photographs of the test setup

Refer to Appendix - Test Setup Photos

Photographs of the EUT

Refer to Appendix - EUT Photos

----End of Report----