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Report No.: SZEM160300154401
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FCC REPORT

Application No. :	SZEM1603001544CR
Applicant:	EXTREME TOYS LTD
Manufacturer:	EXTREME TOYS LTD
Factory:	EXTREME TOYS LTD
Product Name:	MICRO DRONE
Model No.(EUT):	EFMD30
Add Model No.:	EFMD20, EFMD20+, EFMD30+, EFMD40, EFMD40+, EFMD50, EFMD50+
FCC ID:	2AHQ4EFMD3040057
Standards:	47 CFR Part 15, Subpart C (2015)
Date of Receipt:	2016-03-21
Date of Test:	2016-04-26 to 2016-05-03
Date of Issue:	2016-05-06
Test Result:	PASS *

* In the configuration tested, the EUT complied with the standards specified above.

Authorized Signature:



Jack Zhang
EMC Laboratory Manager

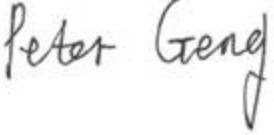
The manufacturer should ensure that all products in series production are in conformity with the product sample detailed in this report. If the product in this report is used in any configuration other than that detailed in the report, the manufacturer must ensure the new system complies with all relevant standards. Any mention of SGS International Electrical Approvals or testing done by SGS International Electrical Approvals in connection with, distribution or use of the product described in this report must be approved by SGS International Electrical Approvals in writing.

The report must not be used by the client to claim product certification, approval, or endorsement by NVLAP, NIST, or any agency of the federal government. All test results in this report can be traceable to National or International Standards.

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2 Version

Revision Record				
Version	Chapter	Date	Modifier	Remark
00		2016-05-06		Original

Authorized for issue by:			
Tested By		2016-05-03	
	(Peter Geng) /Project Engineer	Date	
Prepared By		2016-05-06	
	(Iris Zhou) /Clerk	Date	
Checked By		2016-05-06	
	(Eric Fu) /Reviewer	Date	

3 Test Summary

Test Item	Test Requirement	Test method	Result
Antenna Requirement	47 CFR Part 15, Subpart C Section 15.203	ANSI C63.10 (2013)	PASS
AC Power Line Conducted Emission	47 CFR Part 15, Subpart C Section 15.207	ANSI C63.10 (2013)	PASS
Field Strength of the Fundamental Signal	47 CFR Part 15, Subpart C Section 15.249 (a)	ANSI C63.10 (2013)	PASS
Spurious Emissions	47 CFR Part 15, Subpart C Section 15.249 (a)/15.209	ANSI C63.10 (2013)	PASS
Restricted bands around fundamental frequency (Radiated Emission)	47 CFR Part 15, Subpart C Section 15.249(a)/15.205	ANSI C63.10 (2013)	PASS
20dB Occupied Bandwidth	47 CFR Part 15, Subpart C Section 15.215 (c)	ANSI C63.10 (2013)	PASS

Remark:

Model No.: EFMD20, EFMD20+, EFMD30, EFMD30+, EFMD40, EFMD40+, EFMD50, EFMD50+

Only the model EFMD30 was tested, since the electrical circuit design, layout, components used and internal wiring were identical for all above models. Only different on model name...

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5 General Information

5.1 Client Information

Applicant:	EXTREME TOYS LTD
Address of Applicant:	12 Deer Park Road, London, SW19 3FB, UK
Manufacturer:	EXTREME TOYS LTD
Address of Manufacturer:	12 Deer Park Road, London, SW19 3FB, UK
Factory:	EXTREME TOYS LTD
Address of Factory:	12 Deer Park Road, London, SW19 3FB, UK

5.2 General Description of EUT

Name:	MICRO DRONE
Model No.:	EFMD30
Carrier Frequency	2405-2475 MHz
Channel spacing	1MHz
Channel number	71
Modulation Type	FSK
Antenna Type:	Integral antenna
Antenna Gain:	0dBi
Power Supply:	Tx : DC 6V(4 x 1.5V "AA" batteries) ;



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In section 15.31(m), regards to the operating frequency range over 10 MHz, the Lowest frequency, the middle frequency, and the highest frequency of channel were selected to perform the test, and the selected channel see below:

Channel	Frequency
The Lowest channel(CH1)	2405MHz
The Middle channel(CH41)	2445MHz
The Highest channel(CH71)	2475MHz

5.3 Test Environment and Mode

Operating Environment:	
Temperature:	25.0 °C
Humidity:	50 % RH
Atmospheric Pressure:	1015 mbar

5.4 Description of Support Units

The EUT has been tested independent unit.

5.5 Test Location

All tests were performed at:

SGS-CSTC Standards Technical Services Co., Ltd., Shenzhen Branch E&E Lab,
No. 1 Workshop, M-10, Middle Section, Science & Technology Park, Shenzhen, Guangdong, China.
518057.

Tel: +86 755 2601 2053 Fax: +86 755 2671 0594

No tests were sub-contracted.

5.6 Test Facility

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

- CNAS (No. CNAS L2929)**

CNAS has accredited SGS-CSTC Standards Technical Services Co., Ltd. Shenzhen Branch EMC Lab to ISO/IEC 17025:2005 General Requirements for the Competence of Testing and Calibration Laboratories (CNAS-CL01 Accreditation Criteria for the Competence of Testing and Calibration Laboratories) for the competence in the field of testing.

- A2LA (Certificate No. 3816.01)**

SGS-CSTC Standards Technical Services Co., Ltd., Shenzhen EMC Laboratory is accredited by the American Association for Laboratory Accreditation(A2LA). Certificate No. 3816.01.

- VCCI**

The 10m Semi-anechoic chamber and Shielded Room of SGS-CSTC Standards Technical Services Co., Ltd. have been registered in accordance with the Regulations for Voluntary Control Measures with Registration No.: G-823, R-4188, T-1153 and C-2383 respectively.

- FCC – Registration No.: 556682**

SGS-CSTC Standards Technical Services Co., Ltd., Shenzhen EMC Laboratory has been registered and fully described in a report filed with the (FCC) Federal Communications Commission. The acceptance letter from the FCC is maintained in our files. Registration No.: 556682.

- Industry Canada (IC)**

The 10m Semi-anechoic chambers of SGS-CSTC Standards Technical Services Co., Ltd. Shenzhen Branch EMC Lab has been registered by Certification and Engineering Bureau of Industry Canada for radio equipment testing with Registration No.: 4620C-3.

5.7 Deviation from Standards

None.

5.8 Abnormalities from Standard Conditions

None.

5.9 Other Information Requested by the Customer

None.

5.10 Equipment List

RE in Chamber						
Item	Test Equipment	Manufacturer	Model No.	Inventory No.	Cal. date (yyyy-mm-dd)	Cal.Due date (yyyy-mm-dd)
1	10m Semi-Anechoic Chamber	SAEMC	FSAC1018	SEL0303	2015-08-01	2016-08-01
2	EMI Test Receiver (9k-3GHz)	Rohde & Schwarz	ESCI	SEL0175	2015-05-13	2016-05-13
3	EMI Test software	AUDIX	E3	SEL0050	N/A	N/A
4	Coaxial cable	SGS	N/A	SEL0288	2015-05-13	2016-05-13
5	Coaxial cable	SGS	N/A	SEL0275	2015-05-13	2016-05-13
6	Coaxial cable	SGS	N/A	SEL0274	2015-05-13	2016-05-13
8	BiConiLog Antenna (30M-1GHz)	Schwarzbeck	VULB9160	SEL0309	2015-10-17	2018-10-17
9	Pre-amplifier	Sonoma Instrument Co	310N	SEL0298	2015-05-13	2016-05-13
10	Loop Antenna	ETS-LINDGREN	6502	SEL0802	2015-08-14	2016-08-14

RE in Chamber						
Item	Test Equipment	Manufacturer	Model No.	Inventory No.	Cal. date (yyyy-mm-dd)	Cal.Due date (yyyy-mm-dd)
1	3m Semi-Anechoic Chamber	AUDIX	N/A	SEL0198	2015-05-13	2016-05-13
2	EMI Test Receiver	Rohde & Schwarz	ESIB26	SEL0023	2015-05-13	2016-05-13
3	EMI Test software	AUDIX	E3	SEL0201	N/A	N/A
4	Coaxial cable	SGS	N/A	SEL0202	2016-02-25	2017-02-25
5	BiConiLog Antenna (26-3000MHz)	ETS-LINDGREN	3142C	SEL0015	2014-11-15	2017-11-15
6	Amplifier (0.1-1300MHz)	HP	8447D	SEL0153	2015-10-09	2016-10-09
7	Horn Antenna (1-18GHz)	Rohde & Schwarz	HF907	SEL0311	2015-06-14	2018-06-14
8	Low Noise Amplifier	Black Diamond Series	BDLNA-0118-352810	SEL0319	2015-10-09	2016-10-09
9	Band filter	Amindeon	Asi 3314	SEL0094	2015-05-13	2016-05-13



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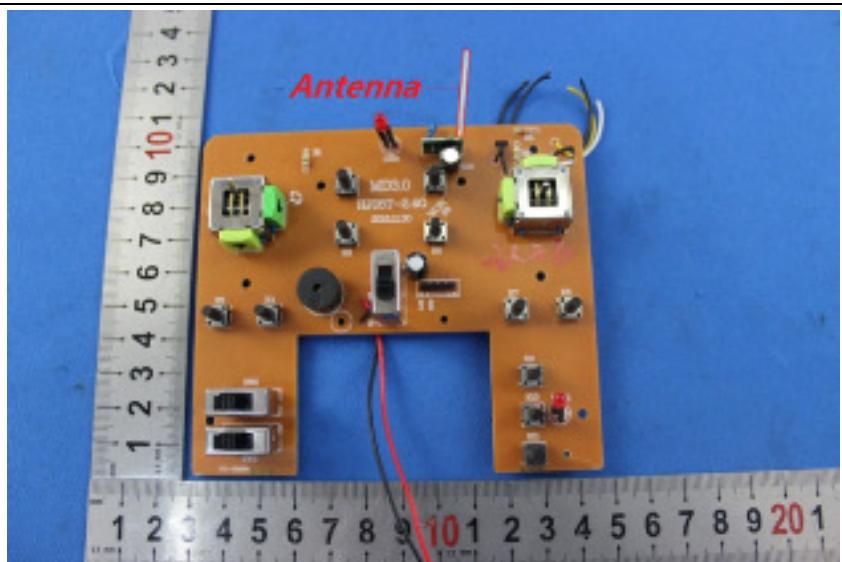
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RF connected test						
Item	Test Equipment	Manufacturer	Model No.	Inventory No.	Cal. date (yyyy-mm-dd)	Cal.Due date (yyyy-mm-dd)
1	DC Power Supply	Zhao Xin	RXN-305D	SEL0117	2015-10-09	2016-10-09
2	Humidity/ Temperature Indicator	HYGRO	ZJ1-2B	SEL0033	2015-10-24	2016-10-24
3	Spectrum Analyzer	Rohde & Schwarz	FSP	SEL0154	2015-10-17	2016-10-17
4	Coaxial cable	SGS	N/A	SEL0178	2015-05-13	2016-05-13
5	Coaxial cable	SGS	N/A	SEL0179	2015-05-13	2016-05-13
6	Barometer	ChangChun	DYM3	SEL0088	2015-05-13	2016-05-13
7	Signal Generator	Rohde & Schwarz	SML03	SEL0068	2016-04-25	2017-04-25
8	Power Meter	R & S	NRVS	SEL0144	2015-10-09	2016-10-09
9	Attenuator	Beijin feihang taida	TST-2-6dB	SEL0205	2016-04-25	2017-04-25

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6 Test results and Measurement Data

6.1 Antenna Requirement

Standard requirement:	47 CFR Part 15C Section 15.203
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.
EUT Antenna:	

The antenna is integrated on the main PCB and no consideration of replacement. The best case gain of the antenna is 0dBi.

6.2 Radiated Emission

Test Requirement:	47 CFR Part 15C Section 15.249 and 15.209				
Test Method:	ANSI C63.10: 2013				
Test Site:	Measurement Distance: 3m (Semi-Anechoic Chamber) Measurement Distance: 10m (Semi-Anechoic Chamber)				
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	10Hz	Average
Limit: (Spurious Emissions)	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	29.9	40.0	Quasi-peak	10
	88MHz-216MHz	44.7	43.5	Quasi-peak	10
	216MHz-960MHz	60.3	46.0	Quasi-peak	10
	960MHz-1GHz	100	54.0	Quasi-peak	10
	Above 1GHz	500	54.0	Average	3
Note: 15.35(b), Unless otherwise specified, the limit on peak radio frequency emissions is 20dB above the maximum permitted average emission limit applicable to the equipment under test. This peak limit applies to the total peak emission level radiated by the device.					
Limit: (Field strength of the fundamental signal)	Frequency	Limit (dBuV/m @3m)		Remark	
	2400MHz-2483.5MHz	94.0		Average Value	
		114.0		Peak Value	
Test Setup:					

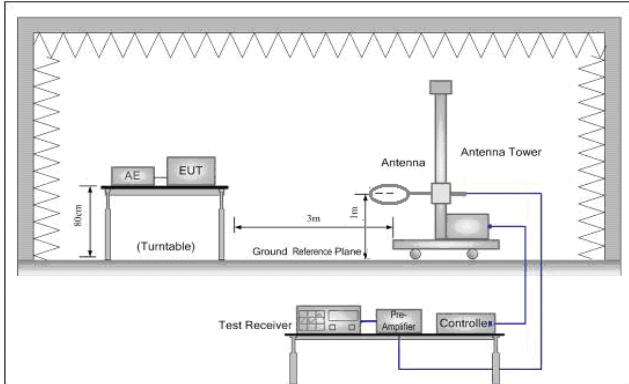


Figure 1. Below 30MHz

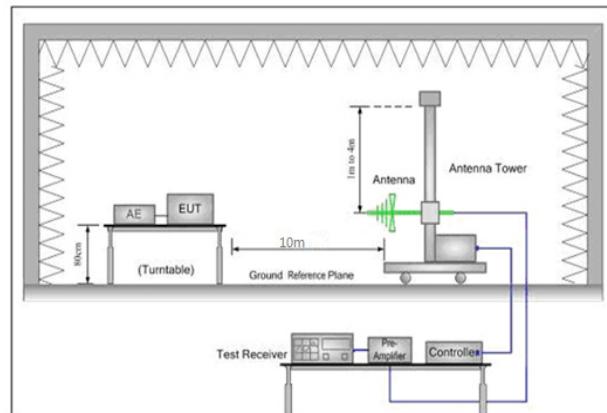


Figure 2. 30MHz to 1GHz

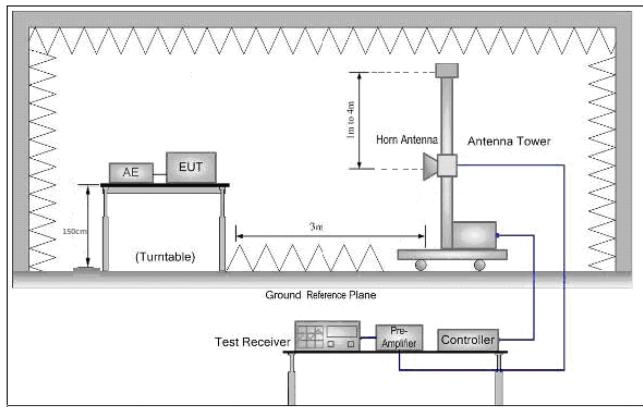


Figure 3. Above 1 GHz

Test Procedure:	<ol style="list-style-type: none"> For below 1GHz, the EUT was placed on the top of a rotating table 0.8 meters above the ground at a 3 and 10meter semi-anechoic chamber. The table was rotated 360 degrees to determine the position of the highest radiation. For above 1GHz, the EUT was placed on the top of a rotating table 1.5 meters above the ground at a 3 meter semi-anechoic chamber. The table was rotated 360 degrees to determine the position of the highest radiation. The EUT was set 3 or 10 meters away from the interference-receiving antenna, which was mounted on the top of a variable-height antenna tower. 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. 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. The test-receiver system was set to Peak Detect Function and Specified Bandwidth with Maximum Hold Mode. 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. Test the EUT in the lowest channel, the middle channel, the Highest channel
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Shenzhen Branch**

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	i. The radiation measurements are performed in X, Y, Z axis positioning for Transmitting mode, And found the X axis positioning which it is worse case. j. Repeat above procedures until all frequencies measured was complete.
Instruments Used:	Refer to section 5.10 for details
Test Mode:	Transmitting mode
Test Results:	Pass

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Measurement Data**6.2.1.1 Field Strength Of The Fundamental Signal**

Peak value:

Frequency (MHz)	Cable Loss (dB)	Antenna Factor (dB/m)	Preamp Factor (dB)	Read Level (dBuV)	Level (dBuV/m)	Limit Line (dBuV/m)	Over Limit (dB)	Polarization
2405.001	5.35	28.62	38.11	98.80	94.66	114.00	-19.34	Horizontal
2405.205	5.35	28.62	38.11	96.46	92.32	114.00	-21.68	Vertical
2445.084	5.38	28.81	38.11	99.10	95.18	114.00	-18.82	Horizontal
2445.084	5.38	28.81	38.11	96.56	92.64	114.00	-21.36	Vertical
2474.925	5.40	28.95	38.12	98.27	94.50	114.00	-19.50	Horizontal
2475.224	5.40	28.95	38.12	97.33	93.56	114.00	-20.44	Vertical

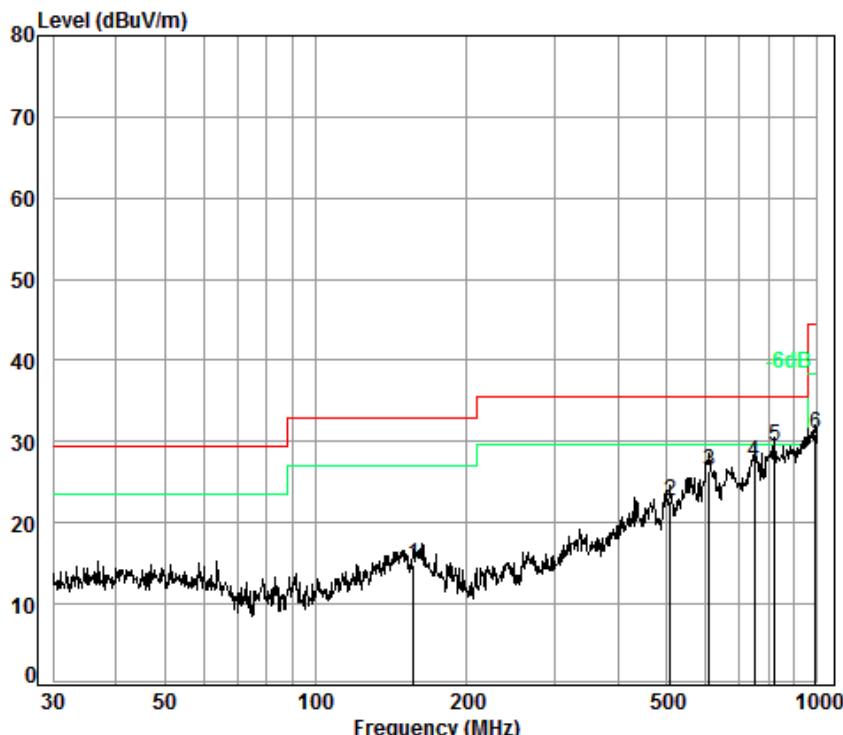
Average value:

Frequency (MHz)	Cable Loss (dB)	Antenna Factor (dB/m)	Preamp Factor (dB)	Read Level (dBuV)	Level (dBuV/m)	Limit Line (dBuV/m)	Over Limit (dB)	Polarization
2405.001	5.35	28.62	38.11	79.60	75.46	94.00	-18.54	Horizontal
2405.205	5.35	28.62	38.11	77.66	73.52	94.00	-20.48	Vertical
2445.084	5.38	28.81	38.11	80.70	76.78	94.00	-17.22	Horizontal
2445.084	5.38	28.81	38.11	77.66	73.74	94.00	-20.26	Vertical
2474.925	5.40	28.95	38.12	79.27	75.50	94.00	-18.50	Horizontal
2475.224	5.40	28.95	38.12	79.43	75.66	94.00	-18.34	Vertical



6.2.1.2 Spurious Emissions

30MHz~1GHz (QP)		
Test mode:	Transmitting	Vertical



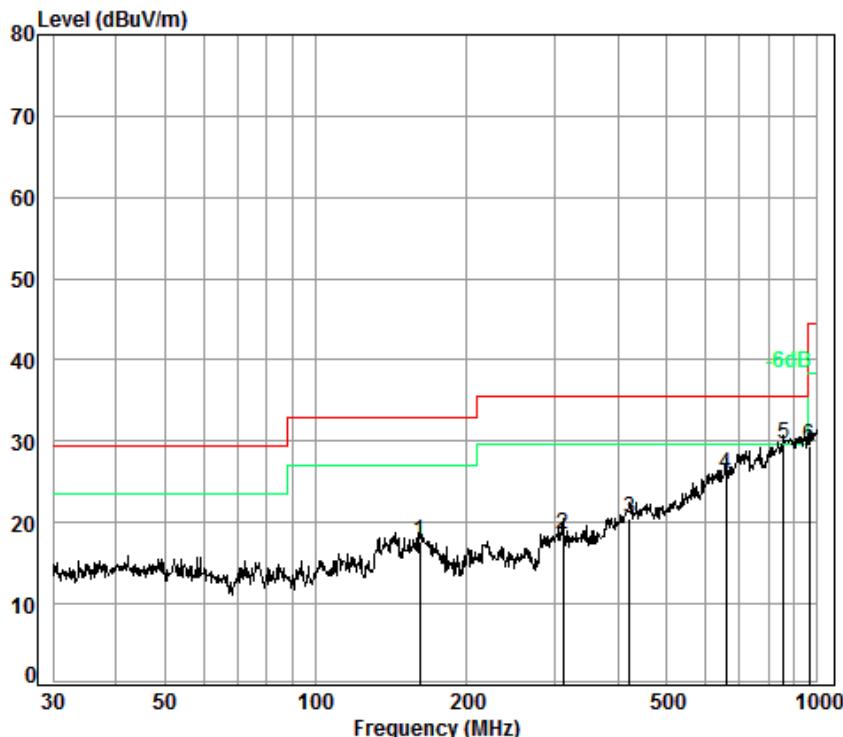
Condition: 10m Vertical

Job No. : 1544CR

Test Mode: 3

Freq	Cable	Ant	Preamp	Read	Limit	Over	Limit	
	Loss	Factor	Factor	Level	Level	Line		
	MHz	dB	dB/m	dB	dBuV	dBuV/m	dBuV/m	dB
1	157.01	8.53	13.40	32.80	25.69	14.82	33.00	-18.18
2	508.26	10.12	16.95	32.81	28.33	22.59	35.60	-13.01
3	607.79	10.43	18.87	32.89	30.05	26.46	35.60	-9.14
4	750.11	10.80	20.77	32.75	28.55	27.37	35.60	-8.23
5 pp	821.71	11.28	21.39	32.68	29.46	29.45	35.60	-6.15
6	989.54	12.84	22.83	32.60	27.99	31.06	44.40	-13.34

Test mode:	Transmitting	Horizontal
------------	--------------	------------



Condition: 10m Horizontal

Job No. : 1544CR

Test Mode: 3

1	Freq	Cable	Ant	Preamp	Read	Limit	Over	
		Loss	Factor	Factor	Level			
	MHz	dB	dB/m	dB	dBuV	dBuV/m	dBuV/m	dB
1	161.47	8.55	13.24	32.80	28.67	17.66	33.00	-15.34
2	311.09	9.35	12.98	32.79	28.90	18.44	35.60	-17.16
3	422.06	9.74	15.47	32.72	28.03	20.52	35.60	-15.08
4	658.84	10.62	19.64	32.84	28.49	25.91	35.60	-9.69
5 pp	857.02	11.54	21.68	32.64	29.16	29.74	35.60	-5.86
6	962.16	12.40	22.77	32.60	26.82	29.39	44.40	-15.01



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Above 1GHz								
Test mode:	Transmitting		Test channel:		Lowest	Remark:		Peak
Frequency (MHz)	Cable Loss (dB)	Antenna Factor (dB/m)	Preamp Factor (dB)	Read Level (dBuV)	Level (dBuV/m)	Limit Line (dBuV/m)	Over Limit (dB)	Polarization
4810.000	8.88	34.11	38.75	65.60	69.84	74.00	-4.16	Vertical
7215.000	10.68	35.59	37.63	40.88	49.52	74.00	-24.48	Vertical
9620.000	12.51	37.10	36.33	38.16	51.44	74.00	-22.56	Vertical
11128.630	13.60	37.30	36.31	35.95	50.54	74.00	-23.46	Vertical
11757.650	14.30	37.50	36.94	35.00	49.86	74.00	-24.14	Vertical
4810.000	8.88	35.59	38.75	66.40	70.64	74.00	-3.36	Horizontal
7215.000	10.68	37.10	37.63	42.77	51.41	74.00	-22.59	Horizontal
9620.000	12.51	37.20	36.33	36.72	50.00	74.00	-24.00	Horizontal
9900.000	12.66	37.90	35.96	38.01	51.91	74.00	-22.09	Horizontal
12603.270	14.44	34.11	37.75	35.12	49.71	74.00	-24.29	Horizontal

Test mode:	Transmitting		Test channel:		Lowest	Remark:		Average
Frequency (MHz)	Cable Loss (dB)	Antenna Factor (dB/m)	Preamp Factor (dB)	Read Level (dBuV)	Level (dBuV/m)	Limit Line (dBuV/m)	Over Limit (dB)	Polarization
4810.000	8.88	34.11	38.75	45.60	49.84	54.00	-4.16	Vertical
4810.000	8.88	34.11	38.75	47.40	50.84	54.00	-3.16	Horizontal



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Test mode:		Transmitting		Test channel:		Middle		Remark:		Peak
Frequency (MHz)	Cable Loss (dB)	Antenna Factor (dB/m)	Preamp Factor (dB)	Read Level (dBuV)	Level (dBuV/m)	Limit Line (dBuV/m)	Over Limit (dB)	Polarization		
4890.000	8.99	34.19	38.77	65.81	70.22	74.00	-3.78	Vertical		
7335.000	10.73	35.53	37.58	42.80	51.48	74.00	-22.52	Vertical		
9780.000	12.59	37.10	36.12	34.81	48.38	74.00	-25.62	Vertical		
11128.630	13.60	37.30	36.31	33.20	47.79	74.00	-26.21	Vertical		
11757.650	14.30	37.50	36.94	37.01	51.87	74.00	-22.13	Vertical		
12603.270	14.44	37.90	37.75	35.49	50.08	74.00	-23.92	Horizontal		
4890.000	8.99	34.19	38.77	66.49	70.90	74.00	-3.10	Horizontal		
7335.000	10.73	35.53	37.58	42.40	51.08	74.00	-22.92	Horizontal		
9780.000	12.59	37.10	36.12	37.71	51.28	74.00	-22.72	Horizontal		
11128.630	13.60	34.19	36.31	34.62	49.21	74.00	-24.79	Horizontal		

Test mode:		Transmitting		Test channel:		Middle		Remark:		Average
Frequency (MHz)	Cable Loss (dB)	Antenna Factor (dB/m)	Preamp Factor (dB)	Read Level (dBuV)	Level (dBuV/m)	Limit Line (dBuV/m)	Over Limit (dB)	Polarization		
4890.000	8.99	34.19	38.77	45.81	50.22	54.00	-3.78	Vertical		
4890.000	8.99	34.19	38.77	46.49	50.90	54.00	-3.10	Horizontal		

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Test mode:	Transmitting		Test channel:		Highest	Remark:	Peak	
Frequency (MHz)	Cable Loss (dB)	Antenna Factor (dB/m)	Preamp Factor (dB)	Read Level (dBuV)	Level (dBuV/m)	Limit Line (dBuV/m)	Over Limit (dB)	Polarization
4950.000	9.07	34.25	38.78	66.03	70.47	74.00	-3.53	Vertical
7425.000	10.76	35.56	37.54	42.98	51.76	74.00	-22.24	Vertical
9741.590	12.57	37.1	36.17	38.55	52.05	74.00	-21.95	Vertical
9900.000	12.66	37.2	35.96	37.94	51.84	74.00	-22.16	Vertical
11128.630	13.60	37.3	36.31	36.93	51.52	74.00	-22.48	Vertical
4950.000	8.99	34.19	38.77	65.81	70.22	74.00	-3.78	Horizontal
7335.000	10.73	35.53	37.58	42.80	51.48	74.00	-22.52	Horizontal
9780.000	12.59	37.1	36.12	34.81	48.38	74.00	-25.62	Horizontal
11128.630	13.60	37.3	36.31	33.20	47.79	74.00	-26.21	Horizontal
11757.650	14.30	37.5	36.94	37.11	51.97	74.00	-22.03	Horizontal

Test mode:	Transmitting		Test channel:		Highest	Remark:	Average	
Frequency (MHz)	Cable Loss (dB)	Antenna Factor (dB/m)	Preamp Factor (dB)	Read Level (dBuV)	Level (dBuV/m)	Limit Line (dBuV/m)	Over Limit (dB)	Polarization
4950.000	9.07	34.25	38.78	47.03	51.57	54.00	-2.43	Vertical
4950.000	8.99	34.25	38.77	45.81	49.22	54.00	-4.78	Horizontal

Remark:

- 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 + Antenna Factor + Cable Factor – Preamplifier 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 .
- 3) As shown in this section, for frequencies above 1GHz, the field strength limits 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. So, only the above measurement data were shown in the report.

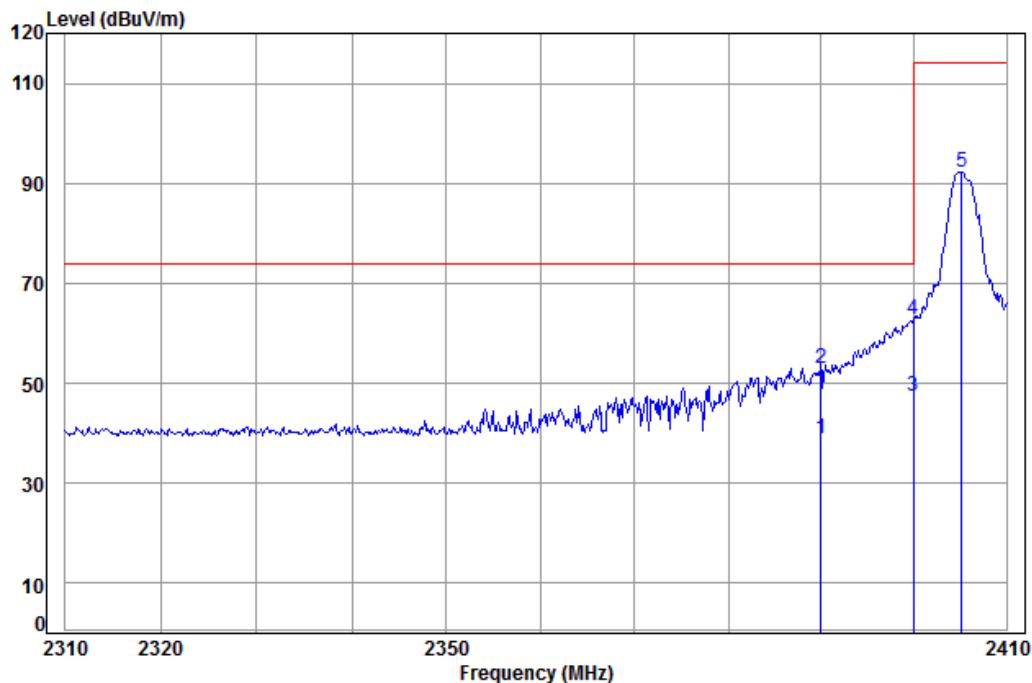
6.3 Restricted bands around fundamental frequency

Test Requirement:	47 CFR Part 15C Section 15.209 and 15.205			
Test Method:	ANSI C63.10: 2013			
Test Site:	Measurement Distance: 3m (Semi-Anechoic Chamber)			
Limit(band edge):	Emissions radiated outside of the specified frequency bands, except for harmonics, shall be attenuated by at least 50 dB below the level of the fundamental or to the general radiated emission limits in Section 15.209, whichever is the lesser attenuation.			
Frequency	Limit (dBuV/m @3m)	Remark		
30MHz-88MHz	40.0	Quasi-peak Value		
88MHz-216MHz	43.5	Quasi-peak Value		
216MHz-960MHz	46.0	Quasi-peak Value		
960MHz-1GHz	54.0	Quasi-peak Value		
Above 1GHz	54.0	Average Value		
	74.0	Peak Value		
Test Setup:				
Figure 1. 30MHz to 1GHz		Figure 2. Above 1 GHz		

Test Procedure:	<ul style="list-style-type: none">a. For below 1GHz, the EUT was placed on the top of a rotating table 0.8 meters above the ground at a 3 meter semi-anechoic chamber. The table was rotated 360 degrees to determine the position of the highest radiation.b. For above 1GHz, the EUT was placed on the top of a rotating table 1.5 meters above the ground at a 3 meter semi-anechoic chamber. The table was rotated 360 degrees to determine the position of the highest radiationc. The EUT was set 3 meters away from the interference-receiving antenna, which was mounted on the top of a variable-height antenna tower.d. 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.e. 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 and the rotatable table was turned from 0 degrees to 360 degrees to find the maximum reading.f. The test-receiver system was set to Peak Detect Function and Specified Bandwidth with Maximum Hold Mode.g. Place a marker at the end of the restricted band closest to the transmit frequency to show compliance. Also measure any emissions in the restricted bands. Save the spectrum analyzer plot. Repeat for each power and modulation for lowest and highest channelh. Test the EUT in the lowest channel , the Highest channeli. The radiation measurements are performed in X, Y, Z axis positioning for Transmitting mode, And found the X axis positioning which it is worse case.j. Repeat above procedures until all frequencies measured was complete.
Instruments Used:	Refer to section 5.10 for details
Test Mode:	Transmitting mode
Test Results:	Pass

Band edge test data (Radiated Emission)

Test mode:	Transmitting	Test channel:	Lowest	Remark:	Vertical
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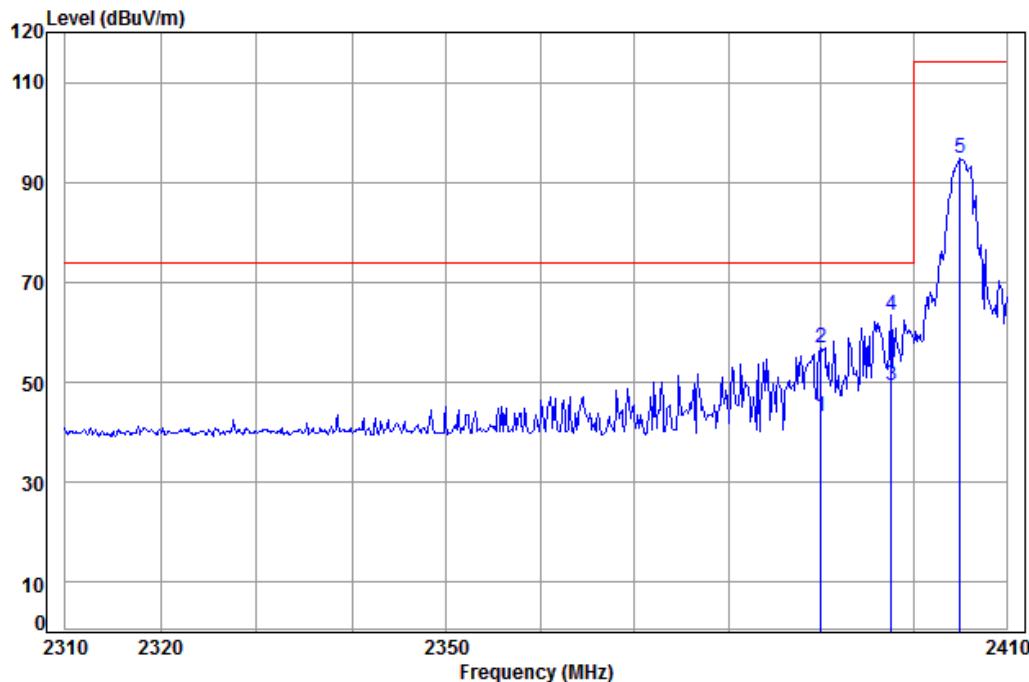
Condition: 3m Vertical

Job No.: 1544CR

Mode: 2405 Band edge

		Cable Loss	Ant Factor	Preamp Factor	Read Level	Level	Limit Line	Over Limit	
	Freq	MHz	dB	dB/m	dB	dBuV	dBuV/m	dBuV/m	dB
1	2390.00	5.34	28.57	38.11	43.15	38.95	54.00	-15.05	
2	2390.00	5.34	28.57	38.11	57.30	53.10	74.00	-20.90	
3 pp	2399.91	5.34	28.60	38.11	51.60	47.43	54.00	-6.57	
4 pk	2399.91	5.34	28.60	38.11	66.84	62.67	74.00	-11.33	
5	2405.21	5.35	28.62	38.11	96.46	92.32	114.00	-21.68	

Test mode:	Transmitting	Test channel:	Lowest	Remark:	Horizontal
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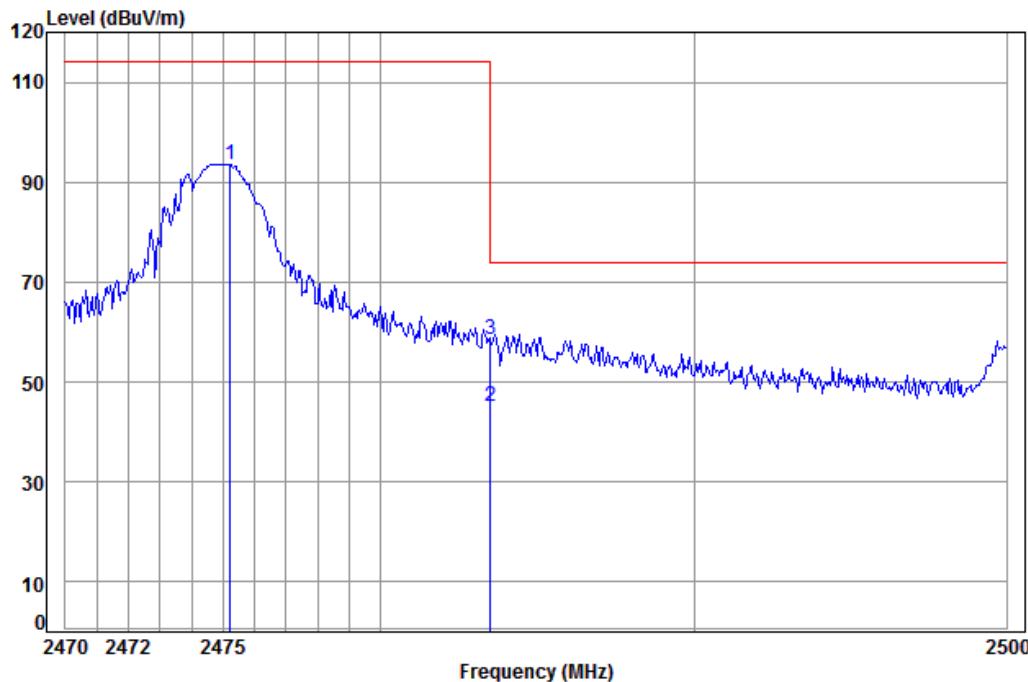
Condition: 3m Horizontal

Job No: : 1544CR

Mode: : 2405 Band edge

	Freq	Cable Loss	Ant Factor	Preamp Factor	Read Level	Limit Level	Limit Line	Over Limit
	MHz	dB	dB/m	dB	dBuV	dBuV/m	dBuV/m	dB
1	2390.00	5.34	28.57	38.11	47.42	43.22	54.00	-10.78
2	2390.00	5.34	28.57	38.11	61.19	56.99	74.00	-17.01
3 pp	2397.57	5.34	28.59	38.11	53.60	49.42	54.00	-4.58
4 pk	2397.57	5.34	28.59	38.11	67.77	63.59	74.00	-10.41
5	2405.00	5.35	28.62	38.11	98.80	94.66	114.00	-19.34

Test mode:	Transmitting	Test channel:	Highest	Remark:	Vertical
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Condition: 3m Vertical

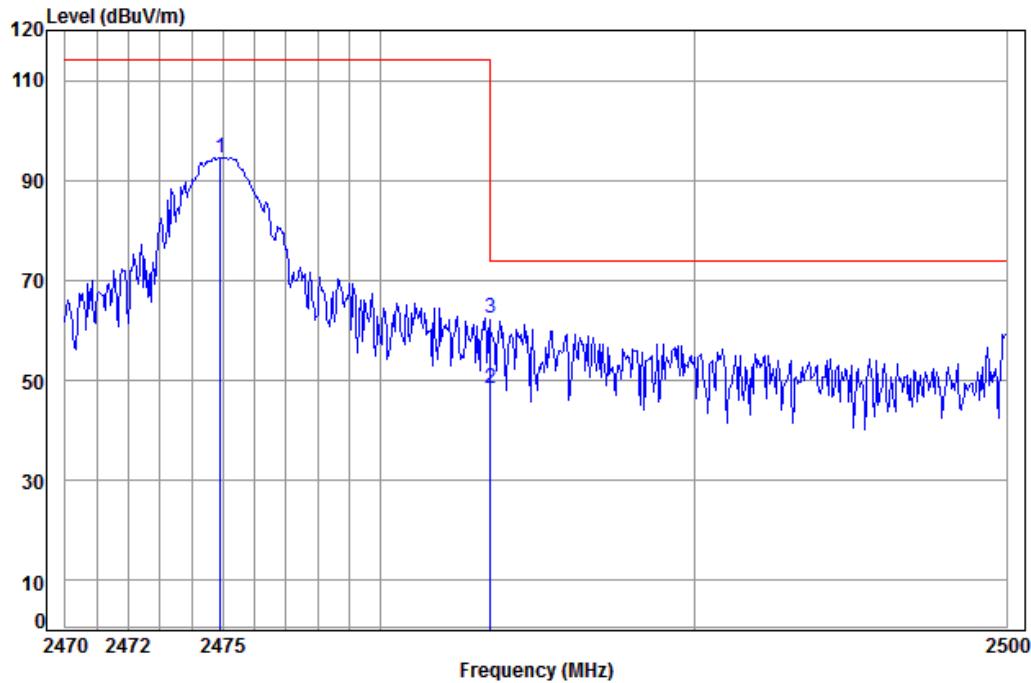
Job No: : 1544CR

Mode: : 2475 Band edge

	Freq	Cable Loss	Ant Factor	Preamp Factor	Read Level	Limit Level	Limit Line	Over Limit
	MHz	dB	dB/m		dBuV	dBuV/m	dBuV/m	dB
1	2475.22	5.40	28.95	38.12	97.33	93.56	114.00	-20.44
2 pp	2483.50	5.41	28.98	38.12	48.91	45.18	54.00	-8.82
3 pk	2483.50	5.41	28.98	38.12	62.37	58.64	74.00	-15.36



Test mode:	Transmitting	Test channel:	Highest	Remark:	Horizontal
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Condition: 3m Horizontal

Job No: : 1544CR

Mode: : 2475 Band edge

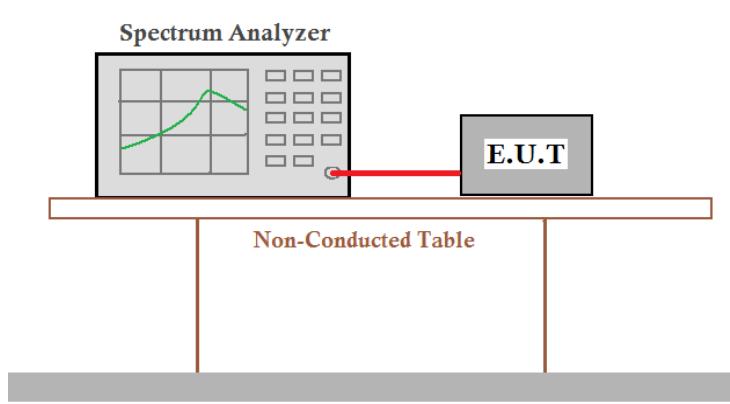
	Freq	Cable Loss	Ant Factor	Preamp Factor	Read Level	Limit Level	Limit Line	Over Limit
	MHz	dB	dB/m		dBuV	dBuV/m	dBuV/m	dB
1	2474.93	5.40	28.95	38.12	98.27	94.50	114.00	-19.50
2 pp	2483.50	5.41	28.98	38.12	52.21	48.48	54.00	-5.52
3 pk	2483.50	5.41	28.98	38.12	66.03	62.30	74.00	-11.70

Note:

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 + Antenna Factor + Cable Factor - Preamplifier Factor

6.4 20dB Bandwidth

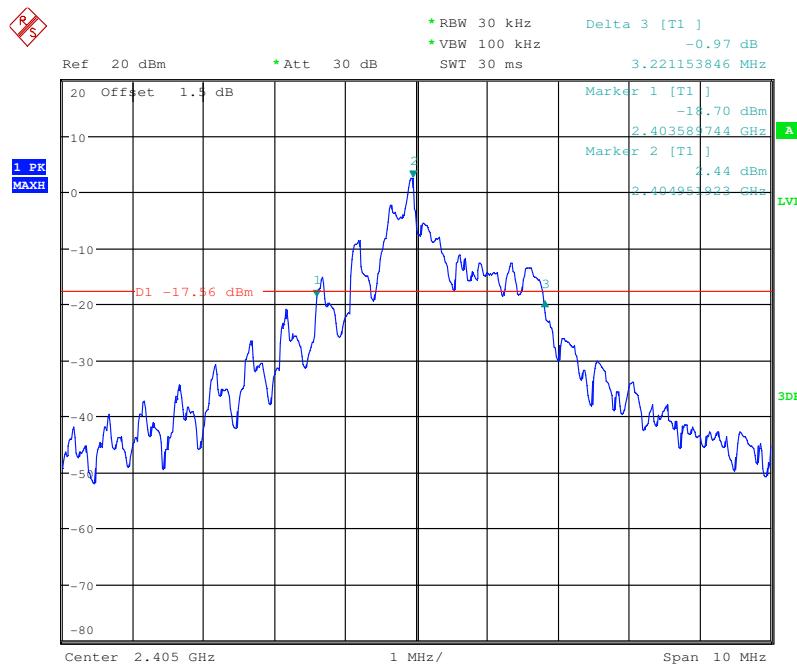
Test Requirement:	47 CFR Part 15C Section 15.215
Test Method:	ANSI C63.10:2013
Test Setup:	
Instruments Used:	Refer to section 5.10 for details
Exploratory Test Mode:	Non-hopping transmitting mode with all kind of modulation and all kind of data type
Final Test Mode:	Through Pre-scan, find the DH3 of date type is the worse case of 8DPSK modulation type
Limit:	N/A
Test Results:	Pass

Measurement Data

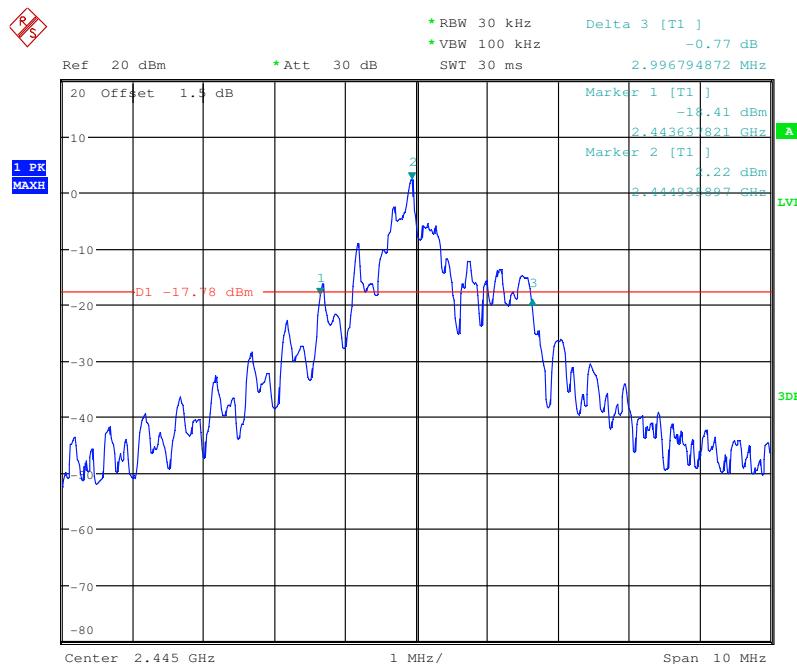
Test channel	20dB bandwidth (MHz)	Results
Lowest	3.221	Pass
Middle	2.996	Pass
Highest	2.948	Pass

Test plot as follows:

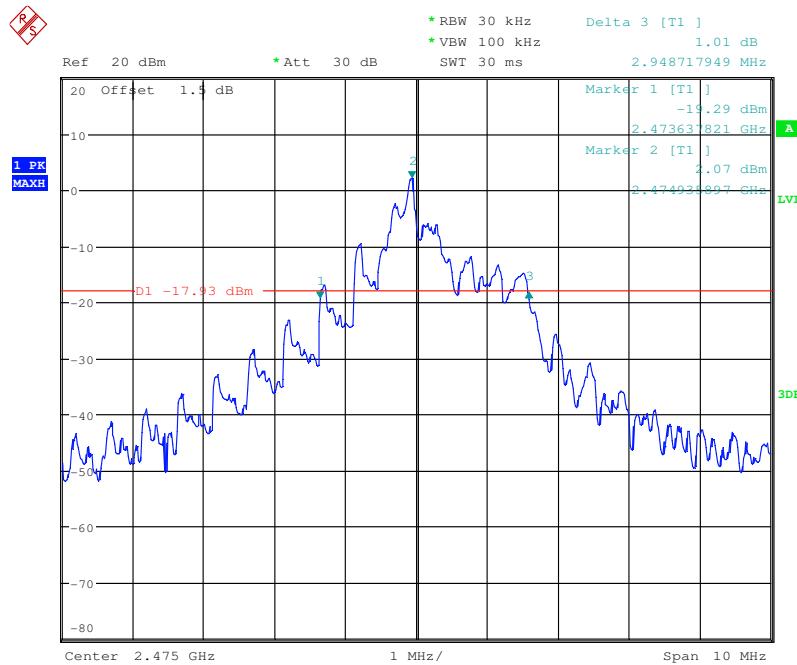
Test channel:	Lowest
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Test channel:	Middle
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Test channel:	Highest
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7 Photographs

Test model No.: EFMD30

7.1 Radiated Emission Test Setup



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7.2 EUT Constructional Details

Refer to Appendix A - Photographs of EUT Constructional Details for SZEM1603001544CR.