SGS-CSTC Standards Technical Services Ltd.

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FCC REPORT

Application No. :	SZEM1208004794ET(SGS SZ NO.:SZTY1208000816EM)
Applicant:	Sifteo Inc.
Manufacturer:	Sifteo Inc.
Supplier:	Sifteo Inc.
Product Name:	Sifteo Cube
Item No.(EUT):	CB01
FCC ID:	Y3Q-SIFTCB01
Standards:	47 CFR Part 15, Subpart C (2011)
Date of Receipt:	2012-08-24
Date of Test:	2012-10-08 to 2012-10-18
Date of Issue:	2012-11-29
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.

2 Test Summary

Test Item	Test Requirement	Test method	Result
Antenna Requirement	47 CFR Part 15, Subpart C Section 15.203	ANSI C63.10 (2009)	PASS
Field Strength of the Fundamental Signal	47 CFR Part 15, Subpart C Section 15.249 (a)	ANSI C63.10 (2009)	PASS
Spurious Emissions	47 CFR Part 15, Subpart C Section 15.249 (a)/15.209	ANSI C63.10 (2009)	PASS
Band Edge (Radiated Emission)	47 CFR Part 15, Subpart C Section 15.249(a)/15.205	ANSI C63.10 (2009)	PASS
20dB Occupied Bandwidth	47 CFR Part 15, Subpart C Section 15.215 (c)	ANSI C63.10 (2009)	PASS

3 Contents

4 General Information

4.1 Client Information

Applicant:	Sifteo Inc.
Address of Applicant:	2475 3rd Street, Suite 252, San Francisco, CA.
Manufacturer:	Sifteo Inc.
Supplier:	Sifteo Inc.

4.2 General Description of EUT

Name:	Sifteo Cube
Item No.:	CB01
Request Age Grading:	7+
Country of Origin:	China
Country of Destination:	US, EU
Frequency Range:	2404MHz ~ 2479MHz
Modulation Type:	GFSK
Number of Channels:	76 (declared by the client)
Sample Type:	Portable production
Antenna Type:	Integral
Antenna Gain:	0dBi
Power Supply:	DC 1.5V (1.5V x 1 "AAA" Size Battery)
Test Voltage:	DC 1.5V

Channel	Frequency	Channel	Frequency	Channel	Frequency	Channel	Frequency
1	2404MHz	21	2424MHz	41	2444MHz	61	2464MHz
2	2405MHz	22	2425MHz	42	2445MHz	62	2465MHz
3	2406MHz	23	2426MHz	43	2446MHz	63	2466MHz
4	2407MHz	24	2427MHz	44	2447MHz	64	2467MHz
5	2408MHz	25	2428MHz	45	2448MHz	65	2468MHz
6	2409MHz	26	2429MHz	46	2449MHz	66	2469MHz
7	2410MHz	27	2430MHz	47	2450MHz	67	2470MHz
8	2411MHz	28	2431MHz	48	2451MHz	68	2471MHz
9	2412MHz	29	2432MHz	49	2452MHz	69	2472MHz
10	2413MHz	30	2433MHz	50	2453MHz	70	2473MHz
11	2414MHz	31	2434MHz	51	2454MHz	71	2474MHz
12	2415MHz	32	2435MHz	52	2455MHz	72	2475MHz
13	2416MHz	33	2436MHz	53	2456MHz	73	2476MHz
14	2417MHz	34	2437MHz	54	2457MHz	74	2477MHz
15	2418MHz	35	2438MHz	55	2458MHz	75	2478MHz
16	2419MHz	36	2439MHz	56	2459MHz	76	2479MHz
17	2420MHz	37	2440MHz	57	2460MHz		
18	2421MHz	38	2441MHz	58	2461MHz		
19	2422MHz	39	2442MHz	59	2462MHz		
20	2423MHz	40	2443MHz	60	2463MHz		

Note:

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)	2404MHz
The Middle channel(CH20)	2441MHz
The Highest channel(CH39)	2479MHz

4.3 Test Environment and Mode

Operating Environment:	
Temperature:	23.0 °C
Humidity:	50 % RH
Atmospheric Pressure:	1010 mbar
Test mode:	
Transmitting mode:	Keep the EUT in transmitting mode with GFSK modulation

4.4 Description of Support Units

The EUT has been tested independent unit.

4.5 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.

4.6 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.
- **VCCI**
  The 3m Semi-anechoic chamber, Full-anechoic Chamber and Shielded Room (7.5m x 4.0m x 3.0m) of SGS-CSTC Standards Technical Services Co., Ltd. have been registered in accordance with the Regulations for Voluntary Control Measures with Registration No.: R-2197, G-416, 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 3m Semi-anechoic chamber of SGS-CSTC Standards Technical Services Co., Ltd. has been registered by Certification and Engineering Bureau of Industry Canada for radio equipment testing with Registration No.: 4620C-1.

4.7 Deviation from Standards

None.

4.8 Abnormalities from Standard Conditions

None.

4.9 Other Information Requested by the Customer

None.

4.10 Test Instruments List

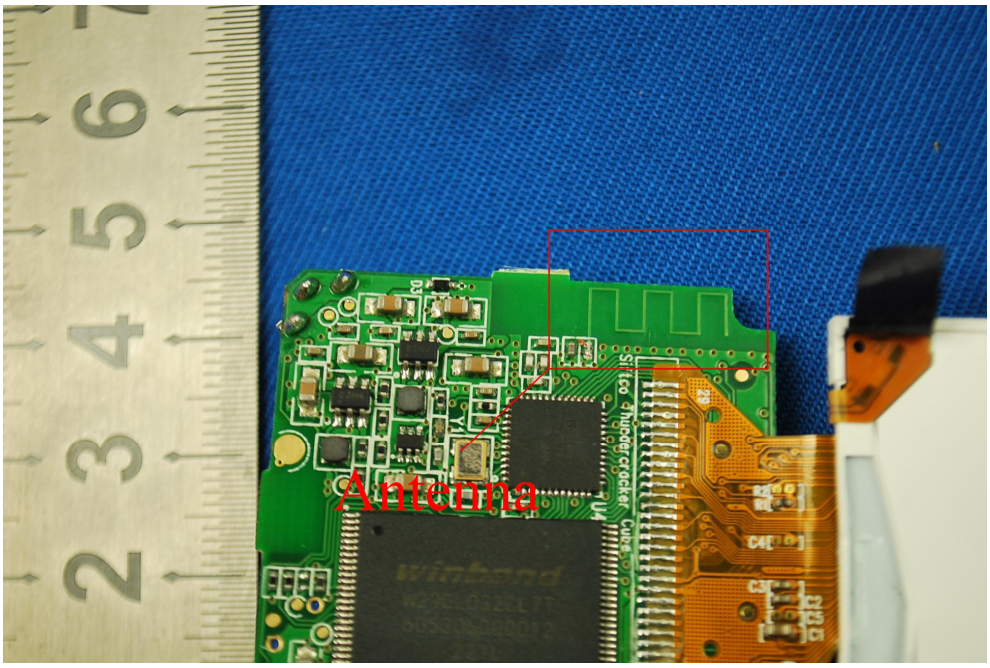
RE in Chamber					
Item	**Test Equipment**	**Manufacturer**	**Model No.**	**Inventory No.**	**Cal.Due date (yyyy-mm-dd)**
1	3m Semi-Anechoic Chamber	ETS-LINDGREN	N/A	SEL0017	2013-06-10
2	EMI Test Receiver	Rohde & Schwarz	ESIB26	SEL0023	2013-05-17
3	EMI Test software	AUDIX	E3	SEL0050	N/A
4	BiConiLog Antenna (26-3000MHz)	ETS-LINDGREN	3142C	SEL0015	2013-10-24
5	Double-ridged horn (1-18GHz)	ETS-LINDGREN	3117	SEL0006	2013-10-24
6	Horn Antenna (18-26GHz)	ETS-LINDGREN	3160	SEL0076	2013-10-24
7	Pre-amplifier (0.1-1300MHz)	Agilent Technologies	8447D	SEL0053	2013-05-17
8	Pre-Amplifier (0.1-26.5GHz)	Compliance Directions Systems Inc.	PAP-0126	SEL0168	2013-10-24
9	Coaxial cable	SGS	N/A	SEL0027	2013-05-59
10	Coaxial cable	SGS	N/A	SEL0189	2013-05-29
11	Coaxial cable	SGS	N/A	SEL0121	2013-05-29
12	Coaxial cable	SGS	N/A	SEL0178	2013-05-29
13	Band filter	Amindeon	82346	SEL0094	2013-05-17
14	Barometer	Chang Chun	DYM3	SEL0088	2013-05-24
15	DC Power Supply	Zhao Xin	RXN-305D	SEL0117	2013-10-24
16	Humidity/ Temperature Indicator	Shanhai Qixiang	ZJ1-2B	SEL0103	2013-10-24
17	Signal Generator (10M-27GHz)	Rohde & Schwarz	SMR27	SEL0067	2013-05-17
18	Signal Generator	Rohde & Schwarz	SMY01	SEL0155	2013-10-24
19	Loop Antenna	Beijing Daze	ZN30401	SEL0203	2013-06-04

RF connected test					
Item	**Test Equipment**	**Manufacturer**	**Model No.**	**Inventory No.**	**Cal.Due date (yyyy-mm-dd))**
1	DC Power Supply	Zhao Xin	RXN-305D	SEL0117	2013-10-24
2	Humidity/ Temperature Indicator	HYGRO	ZJ1-2B	SEL0033	2013-10-24
3	Spectrum Analyzer	Rohde & Schwarz	FSP	SEL0154	2013-10-24
4	Coaxial cable	SGS	N/A	SEL0178	2013-05-29
5	Coaxial cable	SGS	N/A	SEL0179	2013-05-29
6	Barometer	ChangChun	DYM3	SEL0088	2013-05-24
7	Signal Generator	Rohde & Schwarz	SML03	SEL0068	2013-05-17
8	Band filter	amideon	82346	SEL0094	2013-05-17
9	POWER METER	R & S	NRVS	SEL0144	2013-10-24
10	Attenuator	Beijin feihang taida	TST-2-6dB	SEL0205	2013-05-17
11	Power Divider(splitter)	Agilent Technologies	11636B	SEL0130	2013-10-24

Note: The calibration interval is one year, all the instruments are valid.

5 Test results and Measurement Data

5.1 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.	
	

5.2 Radiated Spurious Emissions

Test Requirement:	47 CFR Part 15C Section 15.249 and 15.209
Test Method:	ANSI C63.10: 2009
Test Site:	Measurement Distance: 3m (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	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

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:

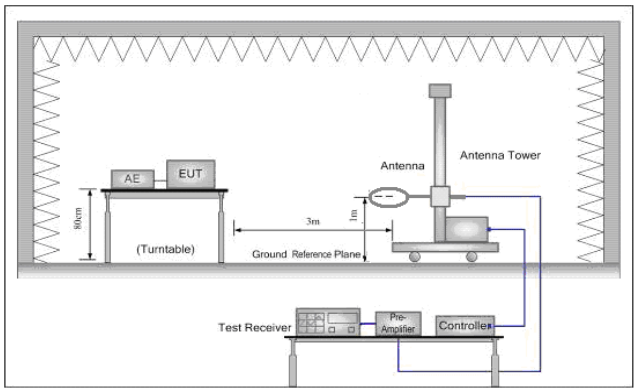


Figure 1. Below 30MHz

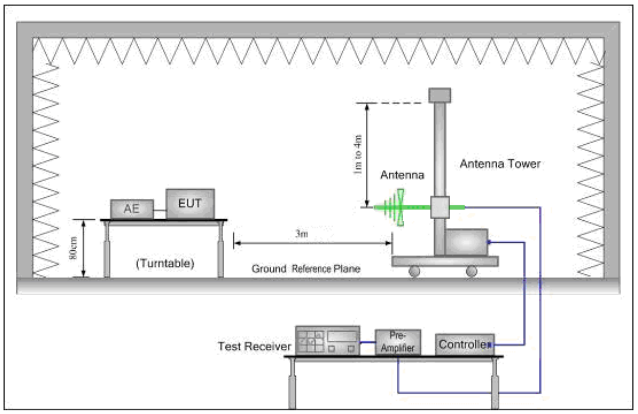


Figure 2. 30MHz to 1GHz

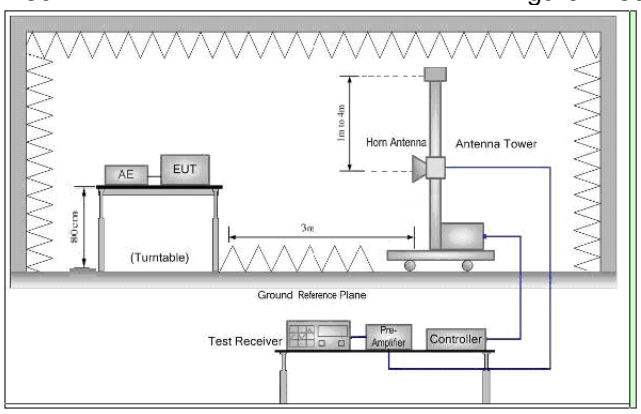


Figure 3. Above 1 GHz

Test Procedure:	a. 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. 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,the Highest channel h. The radiation measurements are performed in X, Y, Z axis positioning. And found the X axis positioning which it is worse case, Only the test worst case mode is recorded in the report. i. Repeat above procedures until all frequencies measured was complete.
Test Mode:	Transmitting mode
Instruments Used:	Refer to section 4.10 for details
Test Results:	Pass

Measurement Data

5.2.1.1 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
2404.272	2.99	32.54	39.86	96.81	92.48	114	-21.52	Horizontal
2404.272	2.99	32.54	39.86	93.79	89.46	114	-24.54	Vertical
2441.110	3.01	32.61	39.89	97.45	93.18	114	-20.82	Horizontal
2441.140	3.01	32.61	39.89	94.93	90.66	114	-23.34	Vertical
2479.120	3.03	32.67	39.92	92.48	88.26	114	-25.74	Horizontal
2479.048	3.03	32.67	39.92	93.78	89.56	114	-24.44	Vertical

Remark:

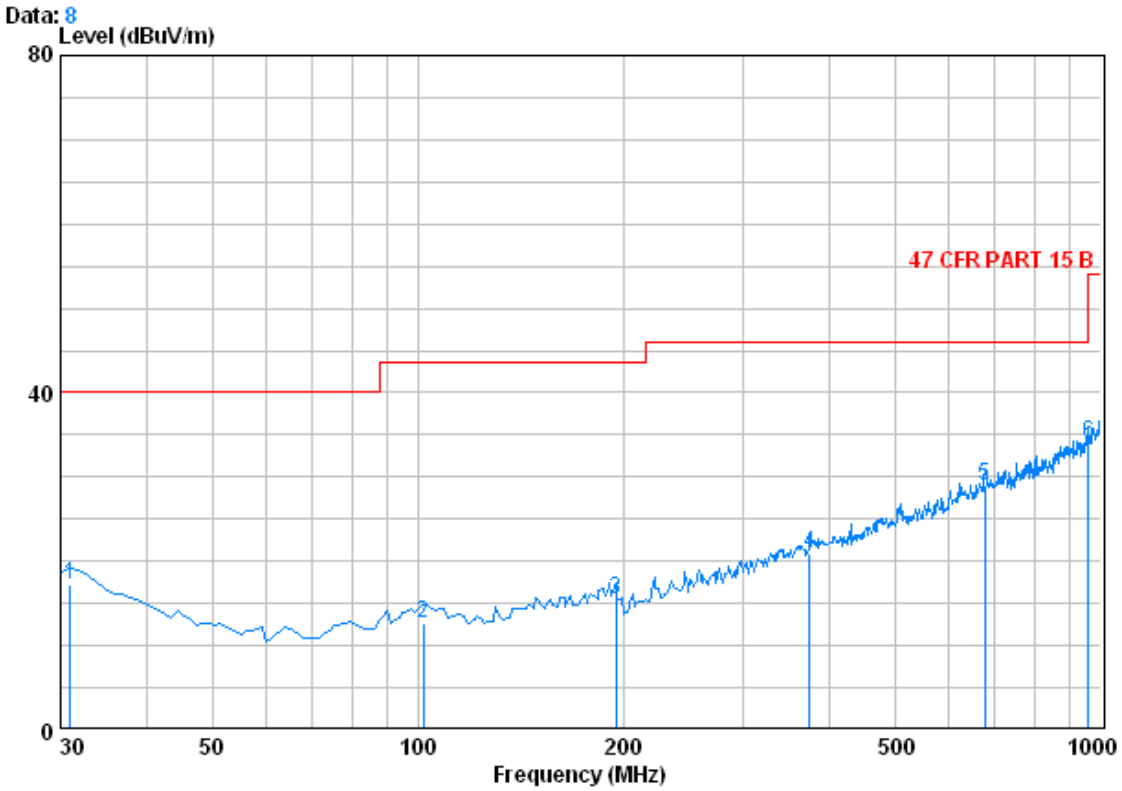
As shown in this section, for frequencies above 1GHz, the field strength limits are based on average limits. However, the peak field strength of any emission shall not exceed the maximum permitted average limits specified above by more than 20 dB under any condition of modulation. So, only the peak measurements were shown in the report.

5.2.1.2 Spurious Emissions

30MHz~1GHz	
Test mode:	Transmitting

QP value:

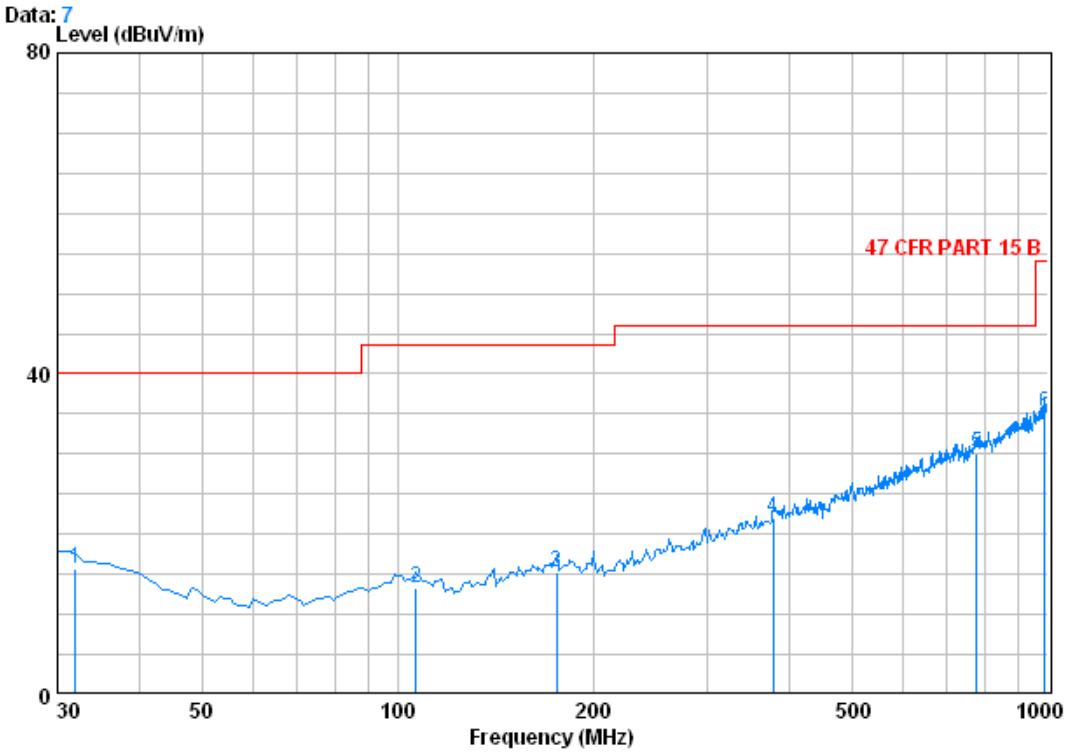
Vertical:



Condition : 47 CFR PART 15 B 3m 3142C VERTICAL
Job No. : 4794ET
Mode : Transmitting
: cube

	Freq	Cable Loss	Antenna Factor	Preamp Factor	Read Level	Level	Limit Line	Over Limit
	MHz	dB	dB/m	dB	dBuV	dBuV/m	dBuV/m	dB
1	30.970	0.60	14.89	27.35	28.99	17.12	40.00	-22.88
2	101.780	1.21	9.00	27.19	29.71	12.73	43.50	-30.77
3	194.900	1.39	10.15	26.71	30.58	15.41	43.50	-28.09
4	374.350	2.13	16.00	26.97	29.81	20.97	46.00	-25.03
5	676.990	2.86	21.42	27.44	32.21	29.05	46.00	-16.95
6 @	959.260	3.66	23.60	26.51	33.22	33.97	46.00	-12.03

Horizontal:



Condition : 47 CFR PART 15 B 3m 3142C HORIZONTAL
Job No. : 4794ET
Mode : Transmitting
: cube

	Freq	Cable Loss	Antenna Factor	Preamp Factor	Read Level	Level	Limit Line	Over Limit
	MHz	dB	dB/m	dB	dBuV	dBuV/m	dBuV/m	dB
1	31.940	0.60	14.31	27.35	28.06	15.62	40.00	-24.38
2	106.630	1.22	8.77	27.15	30.48	13.32	43.50	-30.18
3	175.500	1.36	9.71	26.79	31.06	15.34	43.50	-28.16
4	378.230	2.14	16.03	26.99	30.73	21.91	46.00	-24.09
5	777.870	3.14	22.01	27.32	32.15	29.98	46.00	-16.02
6	990.300	3.69	24.17	26.37	33.64	35.13	54.00	-18.87

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
2995.538	3.31	33.38	40.30	47.99	44.38	74	-29.62	Vertical
4107.316	4.23	34.13	41.12	48.54	45.78	74	-28.22	Vertical
4821.757	4.70	34.68	41.64	54.59	52.33	74	-21.67	Vertical
6903.705	5.45	35.90	40.13	49.54	50.76	74	-23.24	Vertical
10480.590	6.09	38.28	37.65	46.26	52.98	74	-21.02	Vertical
12334.980	6.55	39.24	38.42	46.47	53.84	74	-20.16	Vertical
2029.233	2.85	31.86	39.58	47.30	42.43	74	-31.57	Horizontal
3026.195	3.33	33.39	40.33	48.90	45.29	74	-28.71	Horizontal
4138.802	4.25	34.22	41.14	48.10	45.43	74	-28.57	Horizontal
4821.757	4.70	34.68	41.64	56.09	53.83	74	-20.17	Horizontal
6956.627	5.48	35.85	40.08	48.85	50.10	74	-23.90	Horizontal
10165.290	6.01	37.90	37.51	46.79	53.19	74	-20.81	Horizontal

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
1968.184	2.81	31.55	39.55	46.34	41.15	74	-32.85	Vertical
3151.992	3.44	33.34	40.41	47.98	44.35	74	-29.65	Vertical
4883.519	4.72	34.59	41.68	55.25	52.88	74	-21.12	Vertical
7470.558	6.08	35.99	39.64	48.39	50.82	74	-23.18	Vertical
9562.854	6.00	37.27	37.83	46.05	51.49	74	-22.51	Vertical
12024.960	6.47	38.93	38.28	46.08	53.20	74	-20.80	Vertical
1856.261	2.74	30.69	39.51	45.22	39.14	74	-34.86	Horizontal
2927.691	3.28	33.28	40.24	46.28	42.60	74	-31.40	Horizontal
4883.519	4.72	34.59	41.68	53.88	51.51	74	-22.49	Horizontal
7413.726	6.02	35.97	39.69	48.40	50.70	74	-23.30	Horizontal
9884.602	5.98	37.60	37.55	45.06	51.09	74	-22.91	Horizontal
11933.470	6.45	38.83	38.24	46.96	54.00	74	-20.00	Horizontal
11933.470	6.45	38.83	38.24	45.06	52.00	54	-2.00	Horizontal (Average)

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
2980.327	3.31	33.35	40.28	46.54	42.92	74	-31.08	Vertical
3893.520	4.07	33.68	40.95	46.77	43.57	74	-30.43	Vertical
4971.316	4.76	34.43	41.75	51.50	48.94	74	-25.06	Vertical
7800.936	6.22	36.00	39.36	48.24	51.10	74	-22.90	Vertical
9960.375	5.98	37.67	37.48	45.48	51.65	74	-22.35	Vertical
12429.540	6.58	39.33	38.46	45.56	53.01	74	-20.99	Vertical
2050.000	2.86	31.89	39.60	45.95	41.10	74	-32.90	Horizontal
3064.958	3.36	33.38	40.35	46.43	42.82	74	-31.18	Horizontal
4065.707	4.21	33.99	41.08	48.21	45.33	74	-28.67	Horizontal
4971.316	4.76	34.43	41.75	51.32	48.76	74	-25.24	Horizontal
7781.104	6.22	36.00	39.38	48.35	51.19	74	-22.81	Horizontal
10453.950	6.09	38.24	37.64	46.37	53.06	74	-20.94	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) 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.

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 peak measurements were shown in the report.

5.3 Band Edge (Radiated Emission)

Test Requirement:	47 CFR Part 15C Section 15.209 and 15.205
Test Method:	ANSI C63.10: 2009
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:

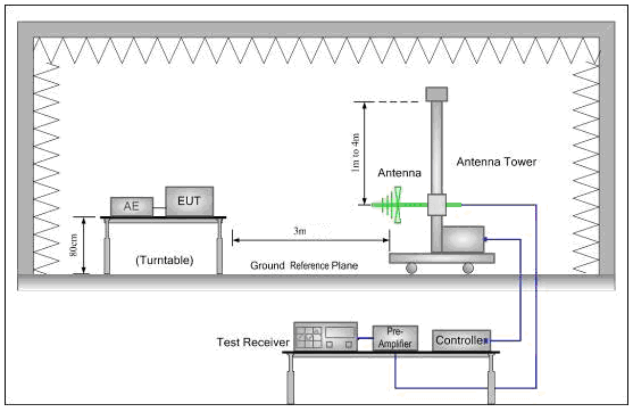


Figure 1. 30MHz to 1GHz

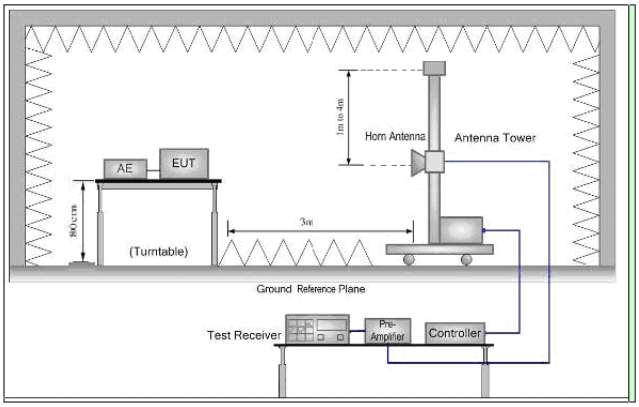
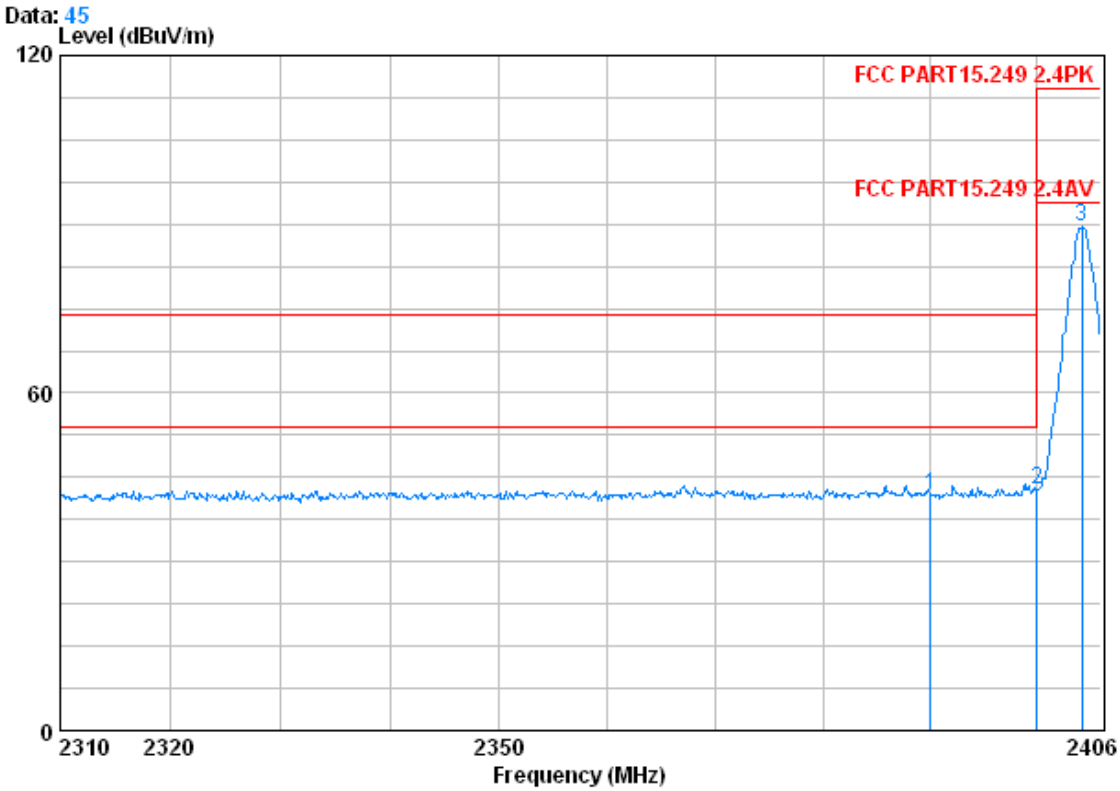


Figure 2. Above 1 GHz

Test Procedure:	a. 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. 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 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. 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 channel g. Test the EUT in the lowest channel , the Highest channel h. The radiation measurements are performed in X, Y, Z axis positioning. And found the X axis positioning which it is worse case, Only the test worst case mode is recorded in the report. i. Repeat above procedures until all frequencies measured was complete.
Test Mode:	Transmitting mode
Instruments Used:	Refer to section 4.10 for details
Test Results:	Pass

Test plot as follows:

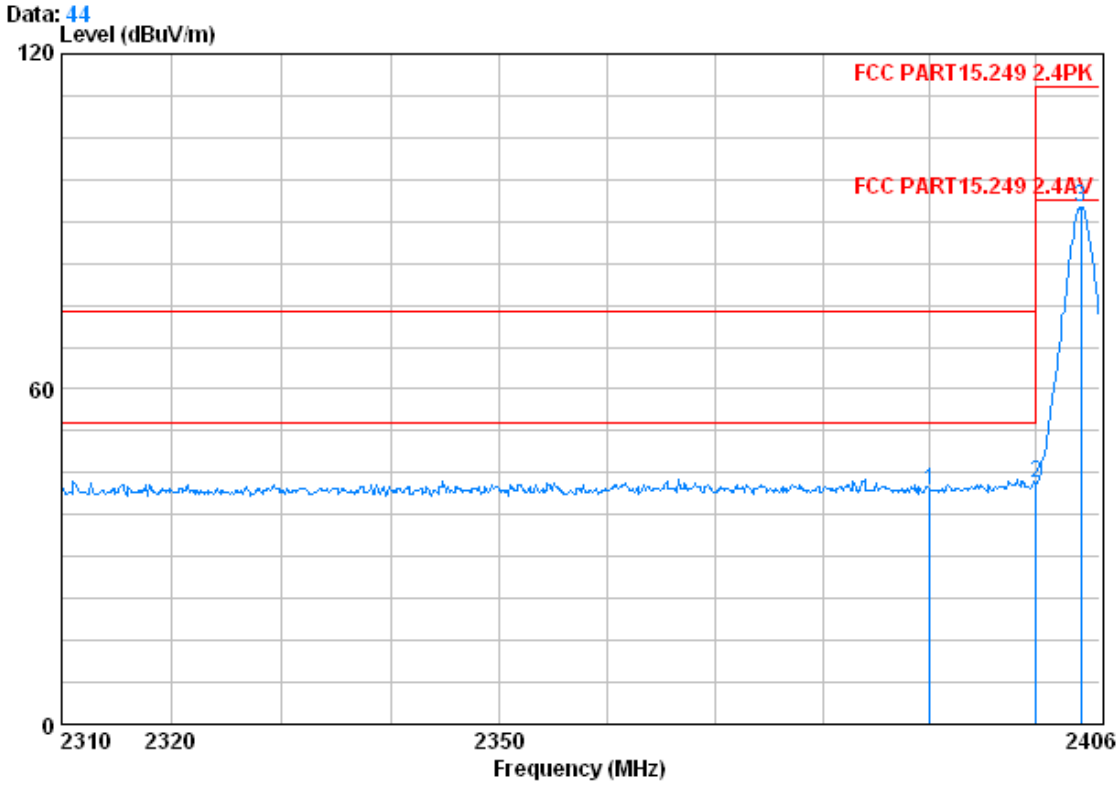
Test mode:	Transmitting	Test channel:	Lowest	Remark:	Peak	Vertical



Condition : FCC PART15.249 2.4PK 3m VERTICAL
Job No. : 4794ET
Mode : 2404 Bandedge
: cube

	Freq	Cable Loss	Antenna Factor	Preamp Factor	Read Level	Level	Limit Line	Over Limit
	MHz	dB	dB/m	dB	dBuV	dBuV/m	dBuV/m	dB
1	2390.000	2.98	32.51	39.85	46.06	41.70	74.00	-32.30
2	2400.000	2.98	32.51	39.86	47.24	42.87	74.00	-31.13
3	2404.272	2.99	32.54	39.86	93.79	89.46	114.00	-24.54

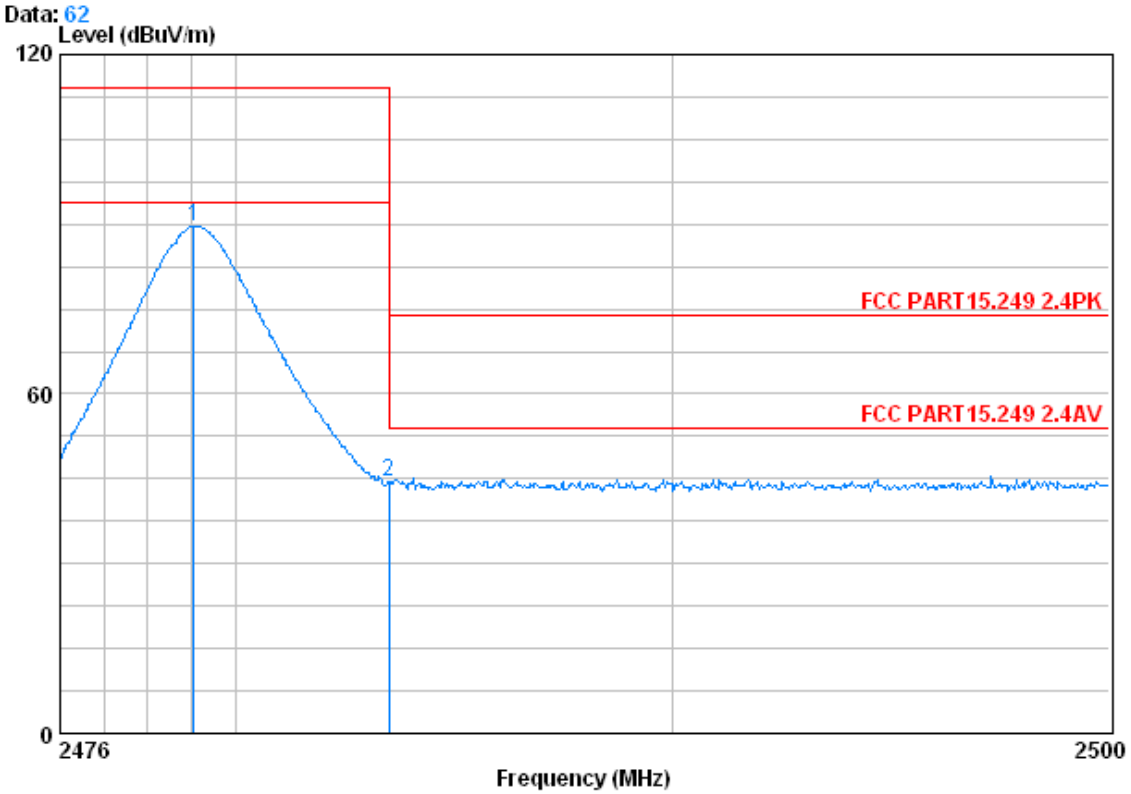
Test mode:	Transmitting	Test channel:	Lowest	Remark:	Peak	Horizontal



Condition : FCC PART15.249 2.4PK 3m HORIZONTAL
Job No. : 4794ET
Mode : 2404 Bandedge
: cube

	Freq	Cable Loss	Antenna Factor	Preamp Factor	Read Level	Level	Limit Line	Over Limit
	MHz	dB	dB/m	dB	dBuV	dBuV/m	dBuV/m	dB
1	2390.000	2.98	32.51	39.85	46.36	42.01	74.00	-31.99
2	2400.000	2.98	32.51	39.86	47.56	43.19	74.00	-30.81
3 @	2404.272	2.99	32.54	39.86	96.81	92.48	114.00	-21.52

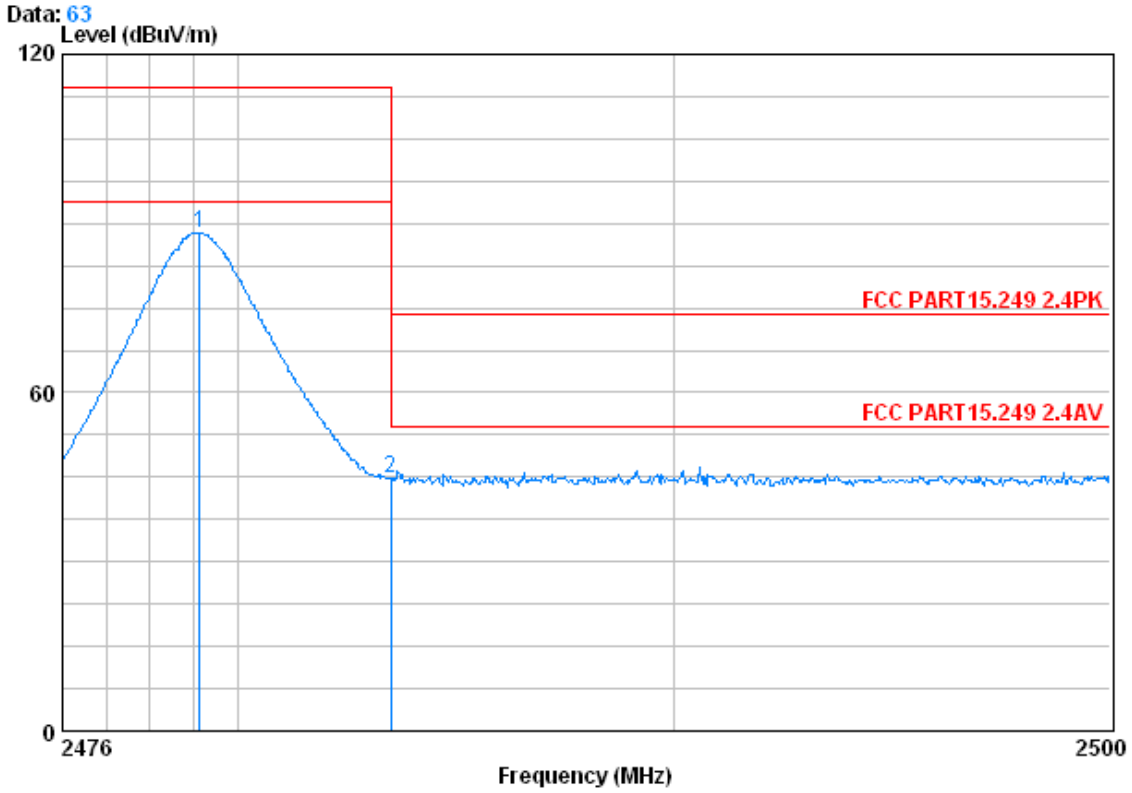
Test mode:	Transmitting	Test channel:	Highest	Remark:	Peak	Vertical



Condition : FCC PART15.249 2.4PK 3m VERTICAL
Job No. : 4794ET
Mode : 2479 Bandedge
: cube

	Freq	Cable Loss	Antenna Factor	Preamp Factor	Read Level	Level	Limit Line	Over Limit
	MHz	dB	dB/m	dB	dBuV	dBuV/m	dBuV/m	dB
1 @	2479.048	3.03	32.67	39.92	93.78	89.56	114.00	-24.44
2	2483.500	3.03	32.67	39.92	48.70	44.48	74.00	-29.52

Test mode:	Transmitting	Test channel:	Highest	Remark:	Peak	Horizontal



Condition : FCC PART15.249 2.4PK 3m HORIZONTAL
Job No. : 4794ET
Mode : 2479 Bandedge
: cube

	Freq	Cable Loss	Antenna Factor	Preamp Factor	Read Level	Level	Limit Line	Over Limit
	MHz	dB	dB/m	dB	dBuV	dBuV/m	dBuV/m	dB
1	2479.120	3.03	32.67	39.92	92.48	88.26	114.00	-25.74
2	2483.500	3.03	32.67	39.92	49.00	44.78	74.00	-29.22

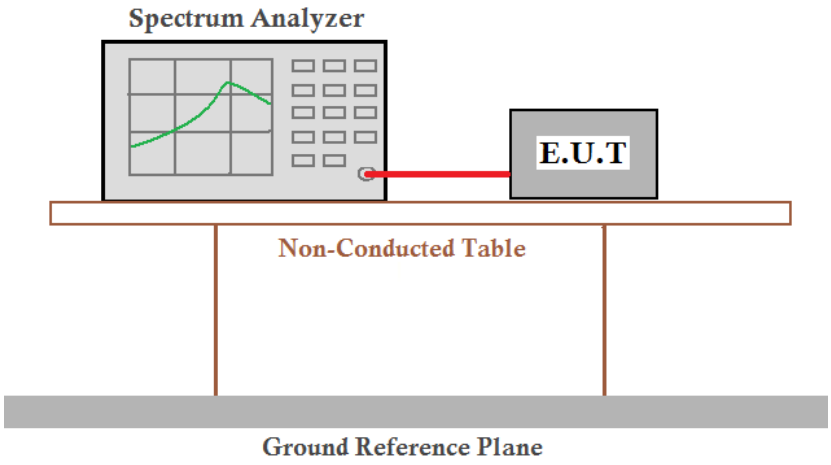
Note:

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

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 peak measurements were shown in the report.

5.5 20dB Bandwidth

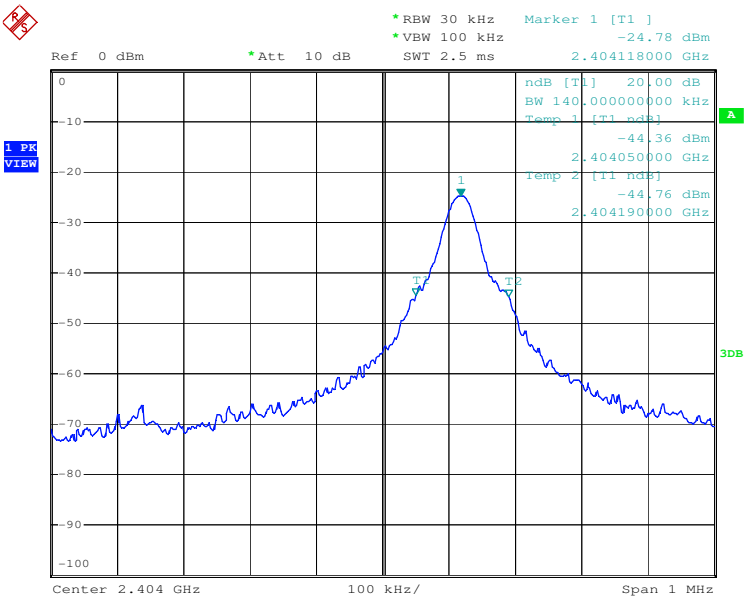
Test Requirement:	47 CFR Part 15C Section 15.215
Test Method:	ANSI C63.10:2009
Test Setup:	
Limit:	N/A
Test Mode:	Transmitting mode
Instruments Used:	Refer to section 4.10 for details
Test Results:	Pass

Measurement Data

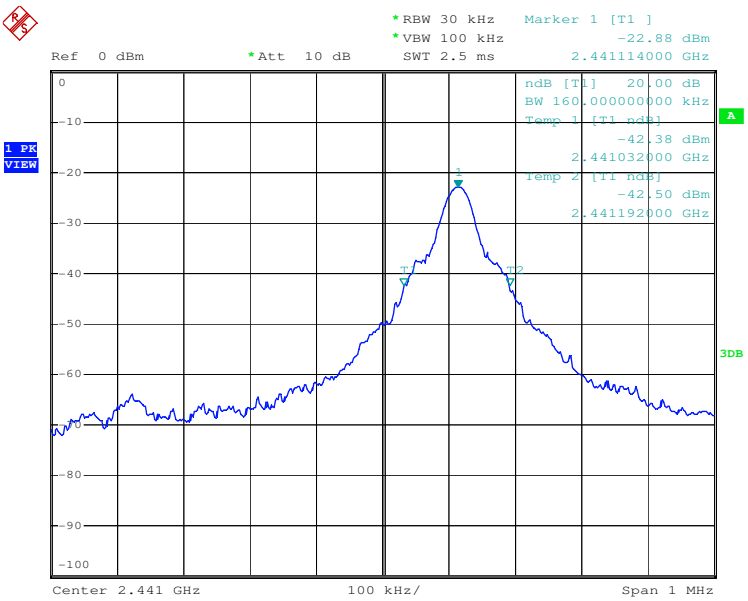
Test Channel	20dB bandwidth (MHz)	Results
Lowest	0.140	Pass
Middle	0.160	Pass
Highest	0.154	Pass

Test plot as follows:

Test channel:	Lowest



Test channel:	Middle



Test channel:	Highest