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Report No.: SZEM161100976301
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FCC REPORT

Application No. : SZEM1611009763CR
Applicant: GUANGDONG ATTOP TECHNOLOGY CO., LTD
Manufacturer: GUANGDONG ATTOP TECHNOLOGY CO., LTD
Factory: GUANGDONG ATTOP TECHNOLOGY CO., LTD
Product Name: RC TOYS
Model No.(EUT): 2410
Add Model No.: Please refer to section 3.
FCC ID: 2AEVN075485509034
Standards: 47 CFR Part 15, Subpart C (2015)
Date of Receipt: 2016-11-18
Date of Test: 2016-11-22 to 2016-11-25
Date of Issue: 2016-11-29

Test Result:	PASS *
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* In the configuration tested, the EUT complied with the standards specified above.

Authorized Signature:



Jack Zhang
EMC Laboratory Manager

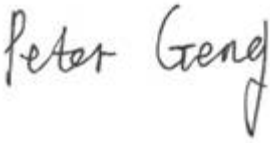
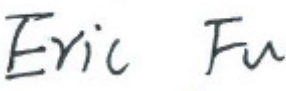
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2 Version

Revision Record				
Version	Chapter	Date	Modifier	Remark
00		2016-11-29		Original

Authorized for issue by:			
Tested By			2016-11-25
	<hr/>		<hr/>
	(Peter Geng) /Project Engineer		Date
Checked By			2016-11-29
	<hr/>		<hr/>
	(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 (2009)	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.: 2410, 2411, 2412, 2413, 2415, 2416, 2417, 2418, 2419, 2420, 2421, 2422, 2423, 2425, 2426, 2427, 2428, 2429, 2430, 1810, 1812, 1813, 1815, 1816, 1817, 1818, 1819, 1820, 1821, 1822, 1823, 1824, 1825, 1826, 1827, 1828, 1829, 1830, YD-001, YD-002, YD-003, YD-005, YD-006, YD-007, YD-008, YD-009, YD-010, YD-011, YD-012, YD-013, YD-015, YD-016, YD-017, YD-018, YD-019, YD-020, YD-021, YD-022, YD-023, YD-025, YD-026, YD-027, YD-028, YD-029, YD-030, YD-216, YD-211, 669058.

Only the Model 2410 was tested, since the electrical circuit design, layout, components used and internal wiring were identical for all above models. Only different on model names and colours.



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5 General Information

5.1 Client Information

Applicant:	GUANGDONG ATTOP TECHNOLOGY CO., LTD
Address of Applicant:	LINGHAI INDUSTRY ZONE, LAIMEI ROAD, CHENGHAI DISTRICT, SHANTOU CITY, GUANGDONG.
Manufacturer:	GUANGDONG ATTOP TECHNOLOGY CO., LTD
Address of Manufacturer:	LINGHAI INDUSTRY ZONE, LAIMEI ROAD, CHENGHAI DISTRICT, SHANTOU CITY, GUANGDONG.
Factory:	GUANGDONG ATTOP TECHNOLOGY CO., LTD
Address of Factory:	LINGHAI INDUSTRY ZONE, LAIMEI ROAD, CHENGHAI DISTRICT, SHANTOU CITY, GUANGDONG.

5.2 General Description of EUT

Name:	RC TOYS
Model No.:	2410
Frequency Range:	2405-2475MHz
Modulation Type:	GFSK
Number of Channels:	71
Channel separation	1MHz
Antenna Type:	Integral
Antenna Gain:	0dBi
Power Supply:	Remote : 3V DC (1.5V x 2 "AA" Size Batteries)



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

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)	2405MHz
The Middle channel(CH36)	2440MHz
The Highest channel(CH71)	2475MHz



5.3 Test Environment and Mode

Operating Environment:	
Temperature:	25.0 °C
Humidity:	55 % RH
Atmospheric Pressure:	1010 mbar
Test mode:	
Transmitting mode:	Keep the EUT in transmitting mode with all kind of modulation and all kind of data rate.

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,
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)**

Two 3m Semi-anechoic chambers and the 10m Semi-anechoic chamber of SGS-CSTC Standards Technical Services Co., Ltd. Shenzhen Branch EMC Lab have been registered by Certification and Engineering Bureau of Industry Canada for radio equipment testing with Registration No.: 4620C-1, 4620C-2, 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	SEM001-03	2016-05-13	2017-05-13
2	EMI Test Receiver (9k-7GHz)	Rohde & Schwarz	ESR	SEM004-03	2016-04-25	2017-04-25
3	Trilog-Broadband Antenna(30M-1GHz)	Schwarzbeck	VULB9168	SEM003-18	2016-06-29	2019-06-29
4	Pre-amplifier	Sonoma Instrument Co	310N	SEM005-03	2016-07-06	2017-07-06
5	Loop Antenna	ETS-Lindgren	6502	SEM003-08	2015-08-14	2018-08-14

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	SEM001-02	2016-05-13	2017-05-13
2	EXA Spectrum Analyzer	Agilent Technologies Inc	N9010A	SEM004-09	2016-07-19	2017-07-19
3	BiConiLog Antenna (26-3000MHz)	ETS-Lindgren	3142C	SEM003-02	2014-11-15	2017-11-15
4	Amplifier (0.1-1300MHz)	HP	8447D	SEM005-02	2016-10-09	2017-10-09
5	Horn Antenna (1-18GHz)	Rohde & Schwarz	HF907	SEM003-07	2015-06-14	2018-06-14
6	Horn Antenna (18-26GHz)	ETS-Lindgren	3160	SEM003-12	2014-11-24	2017-11-24
7	Horn Antenna(26GHz- 40GHz)	A.H.Systems, inc.	SAS-573	SEM003-13	2015-02-12	2018-02-12
8	Low Noise Amplifier	Black Diamond Series	BDLNA-0118- 352810	SEM005-05	2016-10-09	2017-10-09
9	Band filter	Amindeon	Asi 3314	SEM023-01	N/A	N/A



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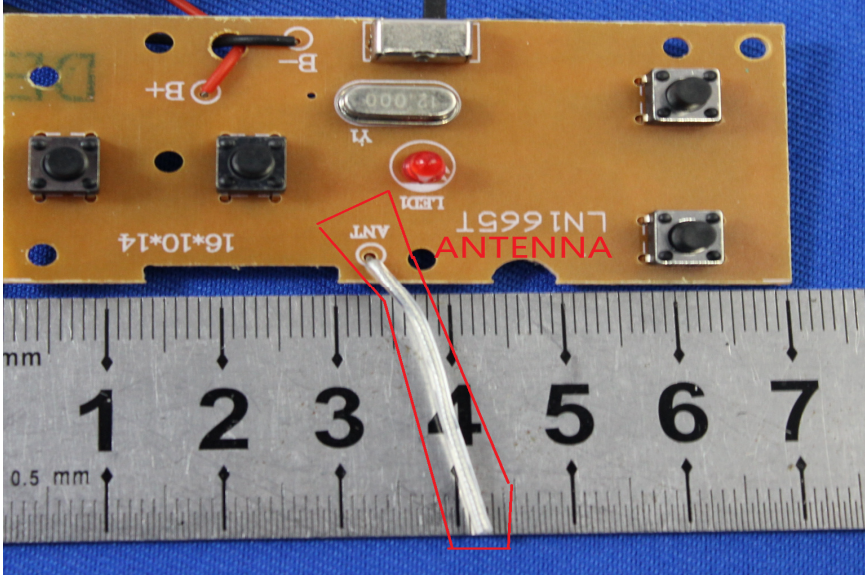
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RF connected test						
Item	Test Equipment	Manufacturer	Model No.	Inventory No.	Cal. Date (yyyy-mm-dd)	Cal. Due date (yyyy-mm-dd)
1	DC Power Supply	ZhaoXin	RXN-305D	SEM011-02	2016-10-09	2017-10-09
2	Spectrum Analyzer	Rohde & Schwarz	FSP	SEM004-06	2016-10-09	2017-10-09
3	Signal Generator	Rohde & Schwarz	SML03	SEM006-02	2016-04-25	2017-04-25
4	Power Meter	Rohde & Schwarz	NRVS	SEM014-02	2016-10-09	2017-10-09

6 Test results and Measurement Data

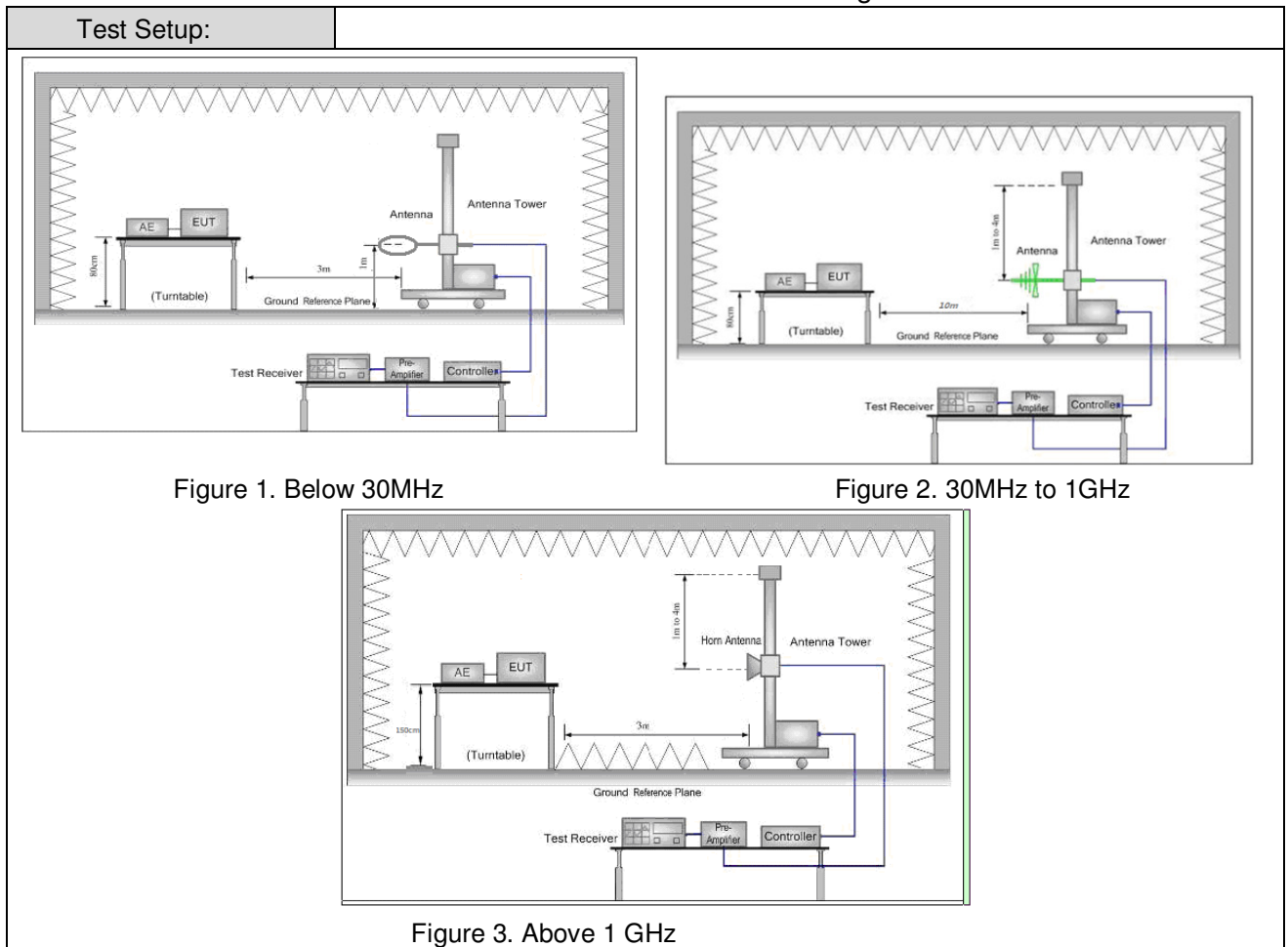
6.1 Antenna Requirement

Standard requirement:	47 CFR Part 15C Section 15.203
<p>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.</p>	
EUT Antenna:	
<p>The antenna is integrated on the main PCB and no consideration of replacement. The best case gain of the antenna is 0dBi.</p>	



6.2 Radiated Spurious Emissions

Test Requirement:	47 CFR Part 15C Section 15.249 and 15.209				
Test Method:	ANSI C63.10: 2013				
Test Site:	Below 1GHz: Measurement Distance: 10m (Semi-Anechoic Chamber) Above 1GHz: Measurement Distance: 3m (Full-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 Procedure:	
	<ol 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 fully-anechoic chamber. The table was rotated 360 degrees to determine the position of the highest radiation. c. 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 (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. f. The test-receiver system was set to Peak Detect Function and Specified Bandwidth with Maximum Hold Mode. g. If the emission level of the EUT in peak mode was 10dB lower than the



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Shenzhen Branch**

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	<p>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.</p> <p>h. Test the EUT in the lowest channel,the middle channel,the Highest channel</p> <p>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.</p> <p>j. Repeat above procedures until all frequencies measured was complete.</p>
Exploratory Test Mode:	Transmitting mode
Final Test Mode:	Transmitting mode
Instruments Used:	Refer to section 5.10 for details
Test Results:	Pass



Measurement Data

6.3.1 Field Strength Of The Fundamental Signal

Peak value:

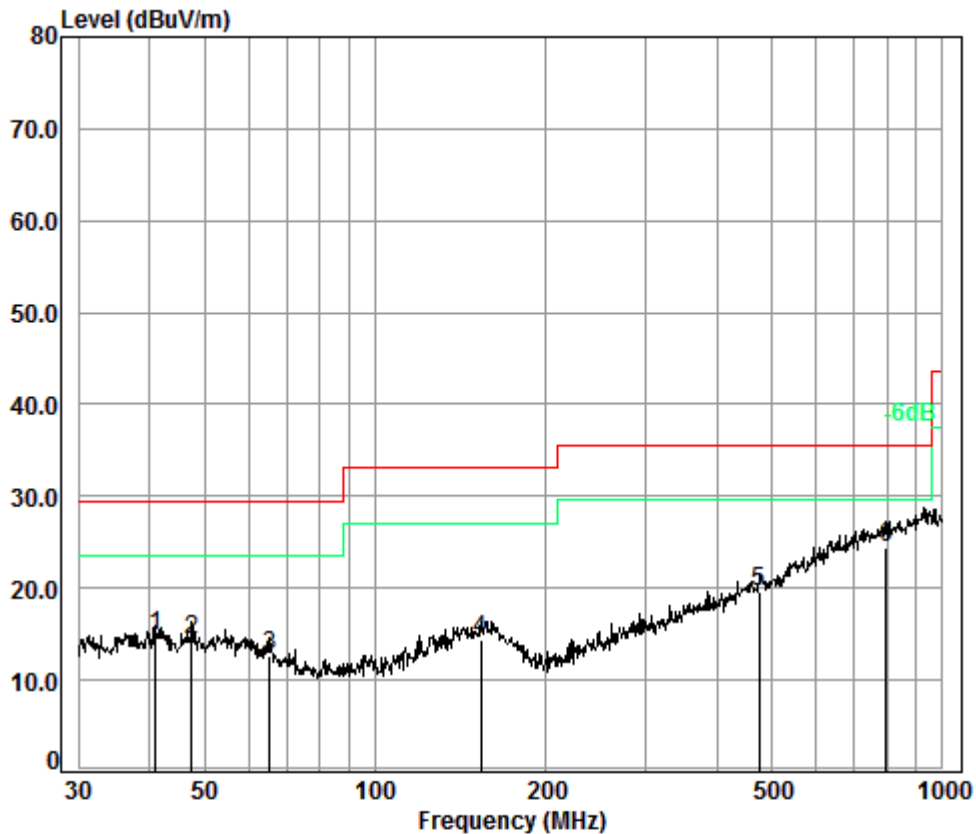
Frequency (MHz)	Cable Loss (dB)	Antenna Factor (dB/m)	Preamp Factor (dB)	Read Level (dBuV)	Level (dBuV/m)	Limit Line (dBuV/m)	Over Limit (dB)	Polarization
2405.510	5.35	29.12	38.15	89.49	85.81	114.00	-28.19	Horizontal
2405.001	5.35	29.12	38.15	95.78	92.10	114.00	-21.90	Vertical
2439.958	5.38	29.23	38.15	91.42	87.88	114.00	-26.12	Horizontal
2439.918	5.38	29.23	38.15	94.14	90.60	114.00	-23.40	Vertical
2475.493	5.40	29.33	38.15	89.83	86.41	114.00	-27.59	Horizontal
2475.463	5.40	29.33	38.15	94.04	90.62	114.00	-23.38	Vertical



6.3.2 Spurious Emissions

30MHz~1GHz		
Test mode:	Transmitting	Vertical

QP value:



Condition: 10m VERTICAL

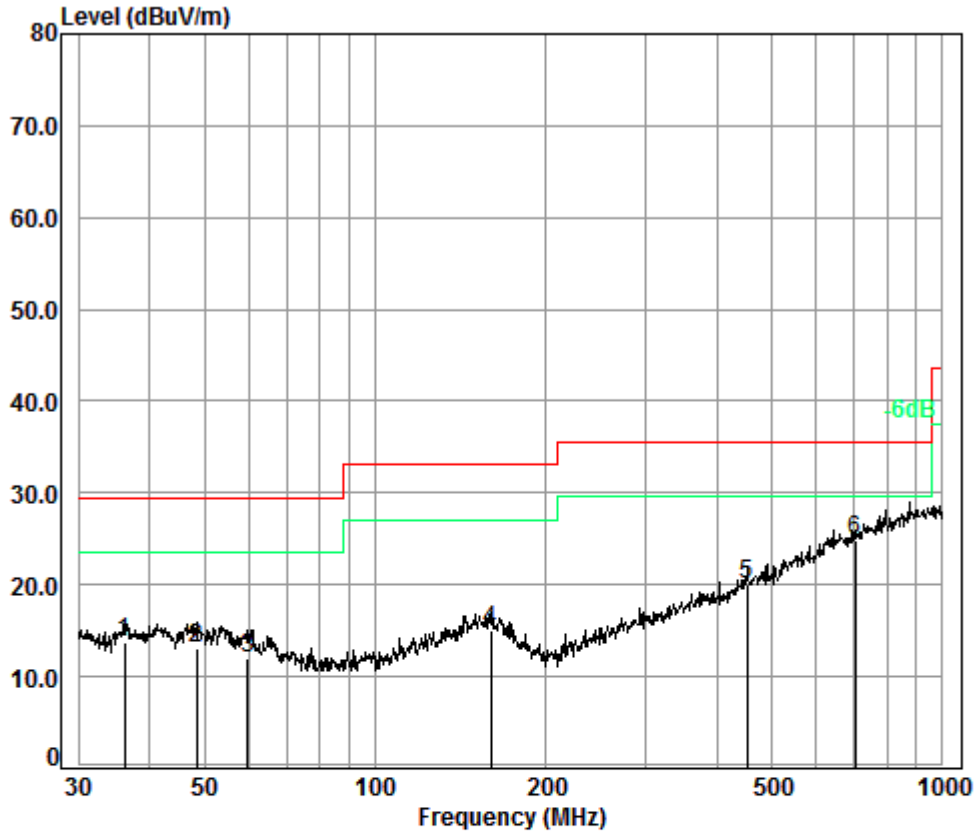
Job No. : 9763CR

Test Mode: a

	Freq	Cable Loss	Ant Factor	Preamp Factor	Read Level	Level	Limit Line	Over Limit
	MHz	dB	dB/m	dB	dBuV	dBuV/m	dBuV/m	dB
1	40.99	6.80	13.23	32.99	27.85	14.89	29.50	-14.61
2	47.49	6.85	12.84	33.00	27.64	14.33	29.50	-15.17
3	65.34	6.99	10.93	32.92	27.61	12.61	29.50	-16.89
4	153.74	7.47	13.40	32.74	26.32	14.45	33.10	-18.65
5	475.50	8.49	16.46	32.60	27.33	19.68	35.60	-15.92
6 pp	796.18	9.29	21.20	32.60	26.42	24.31	35.60	-11.29



Test mode:	Transmitting	Horizontal
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Condition: 10m HORIZONTAL

Job No. : 9763CR

Test Mode: a

	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	36.13	6.72	12.80	32.98	27.12	13.66	29.50	-15.84
2	48.50	6.87	12.81	33.00	26.33	13.01	29.50	-16.49
3	59.65	7.00	12.03	32.95	25.98	12.06	29.50	-17.44
4	159.78	7.50	13.39	32.73	26.79	14.95	33.10	-18.15
5	452.72	8.43	16.21	32.60	27.98	20.02	35.60	-15.58
6 pp	701.76	9.16	20.14	32.60	28.25	24.95	35.60	-10.65



Below 1GHz

The test was performed at a 10m test site. According to below formulate and the test data at 10m test distance,

$$L_3 / L_{10} = D_{10} / D_3$$

Note:

L₃: Level @ 3m distance. Unit: uV/m;

L₁₀: Level @ 10m distance. Unit: uV/m;

D₃: 3m distance. Unit: m

D₁₀: 10m distance. Unit: m

The level at 3m test distance is below:

Frequency (MHz)	Level @ 10m (dBuV/m)	Level @ 10m (uV/m)	Level @ 3m (uV/m)	Level @ 3m (dBuV/m)	Limit @ 3m (dBuV/m)	Margin (dB)	Ant. Polarization
40.99	14.89	5.55	18.51	25.35	40.00	-14.65	V
47.49	14.33	5.21	17.35	24.79	40.00	-15.21	V
65.34	12.61	4.27	14.24	23.07	40.00	-16.93	V
153.74	14.45	5.28	17.59	24.91	43.50	-18.59	V
475.50	19.68	9.64	32.13	30.14	46.00	-15.86	V
796.18	24.31	16.42	54.75	34.77	46.00	-11.23	V
36.13	13.66	4.82	16.06	24.12	40.00	-15.88	H
48.50	13.01	4.47	14.91	23.47	40.00	-16.53	H
59.65	12.06	4.01	13.36	22.52	40.00	-17.48	H
159.78	14.95	5.59	18.64	25.41	43.50	-18.09	H
452.72	20.02	10.02	33.41	30.48	46.00	-15.52	H
701.76	24.95	17.68	58.94	35.41	46.00	-10.59	H



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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	
3579.190	7.66	32.43	38.51	45.16	46.74	74.00	-27.26	Vertical	
4810.000	8.88	34.17	39.03	51.86	55.88	74.00	-18.12	Vertical	
5786.418	9.96	34.58	39.02	44.84	50.36	74.00	-23.64	Vertical	
7215.000	10.68	36.41	38.17	49.39	58.31	74.00	-15.69	Vertical	
9620.000	12.51	37.52	36.98	39.79	52.84	74.00	-21.16	Vertical	
11946.280	14.50	38.55	38.25	38.54	53.34	74.00	-20.66	Vertical	
3842.163	7.76	33.18	38.63	45.75	48.06	74.00	-25.94	Horizontal	
4810.000	8.88	34.17	39.03	56.41	60.43	74.00	-13.57	Horizontal	
5811.590	10.03	34.59	39.02	45.04	50.64	74.00	-23.36	Horizontal	
7215.000	10.68	36.41	38.17	51.06	59.98	74.00	-14.02	Horizontal	
9620.000	12.51	37.52	36.98	39.65	52.70	74.00	-21.30	Horizontal	
12155.510	14.43	38.69	38.46	38.63	53.29	74.00	-20.71	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	34.17	39.03	34.42	38.44	54.00	-15.56	Vertical	
7215.000	10.68	36.41	38.17	32.42	41.34	54.00	-12.66	Vertical	
4810.000	8.88	34.17	39.03	35.09	39.11	54.00	-14.89	Horizontal	
7215.000	10.68	36.41	38.17	32.99	41.91	54.00	-12.09	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		
3579.190	7.66	32.43	38.51	45.29	46.87	74.00	-27.13	Vertical		
4880.000	8.97	34.29	39.06	52.89	57.09	74.00	-16.91	Vertical		
6069.413	10.47	34.76	38.96	44.46	50.73	74.00	-23.27	Vertical		
7320.000	10.72	36.37	38.07	47.63	56.65	74.00	-17.35	Vertical		
9760.000	12.58	37.55	36.92	39.09	52.30	74.00	-21.70	Vertical		
12120.390	14.46	38.67	38.42	38.39	53.10	74.00	-20.90	Vertical		
4030.070	7.85	33.60	38.71	44.69	47.43	74.00	-26.57	Horizontal		
4880.000	8.97	34.29	39.06	54.50	58.70	74.00	-15.30	Horizontal		
6016.949	10.54	34.71	38.99	44.08	50.34	74.00	-23.66	Horizontal		
7320.000	10.72	36.37	38.07	51.61	60.63	74.00	-13.37	Horizontal		
9760.000	12.58	37.55	36.92	39.87	53.08	74.00	-20.92	Horizontal		
11843.020	14.39	38.45	38.15	38.80	53.49	74.00	-20.51	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		
4880.000	8.97	34.29	39.06	34.13	38.33	54.00	-15.67	Vertical		
7320.000	10.72	36.37	38.07	31.99	41.01	54.00	-12.99	Vertical		
4880.000	8.97	34.29	39.06	34.52	38.72	54.00	-15.28	Horizontal		
7320.000	10.72	36.37	38.07	32.46	41.48	54.00	-12.52	Horizontal		



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		
3836.607	7.75	33.16	38.63	44.83	47.11	74.00	-26.89	Vertical		
4950.000	9.07	34.41	39.08	54.83	59.23	74.00	-14.77	Vertical		
6078.201	10.46	34.76	38.95	44.92	51.19	74.00	-22.81	Vertical		
7425.000	10.76	36.33	37.96	47.98	57.11	74.00	-16.89	Vertical		
9900.000	12.66	37.58	36.85	39.41	52.80	74.00	-21.20	Vertical		
12102.870	14.47	38.66	38.41	39.11	53.83	74.00	-20.17	Vertical		
3765.116	7.73	32.97	38.59	44.32	46.43	74.00	-27.57	Horizontal		
4950.000	9.07	34.41	39.08	55.56	59.96	74.00	-14.04	Horizontal		
6087.002	10.45	34.77	38.94	44.66	50.94	74.00	-23.06	Horizontal		
7425.000	10.76	36.33	37.96	49.84	58.97	74.00	-15.03	Horizontal		
9900.000	12.66	37.58	36.85	39.52	52.91	74.00	-21.09	Horizontal		
12085.370	14.49	38.65	38.39	38.95	53.70	74.00	-20.30	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	34.41	39.08	34.92	39.32	54.00	-14.68	Vertical		
7425.000	10.76	36.33	37.96	32.29	41.42	54.00	-12.58	Vertical		
4950.000	9.07	34.41	39.08	34.99	39.39	54.00	-14.61	Horizontal		
7425.000	10.76	36.33	37.96	32.58	41.71	54.00	-12.29	Horizontal		

Remark:

- 1) The field strength is calculated by adding the Antenna Factor, Cable Factor & Pre-amplifier. The basic equation with a sample calculation is as follows:
Final Test Level = Receiver Reading + Antenna Factor + Cable Factor – Pre-amplifier 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	
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)
	30MHz-88MHz	40.0
	88MHz-216MHz	43.5
	216MHz-960MHz	46.0
	960MHz-1GHz	54.0
Above 1GHz	54.0	Average Value
	74.0	Peak Value
Test Setup:		

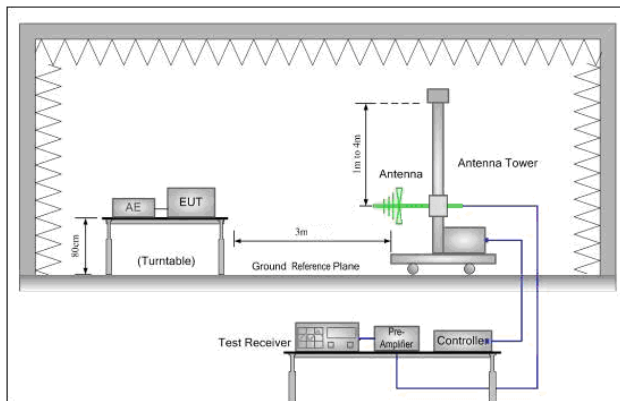


Figure 1. 30MHz to 1GHz

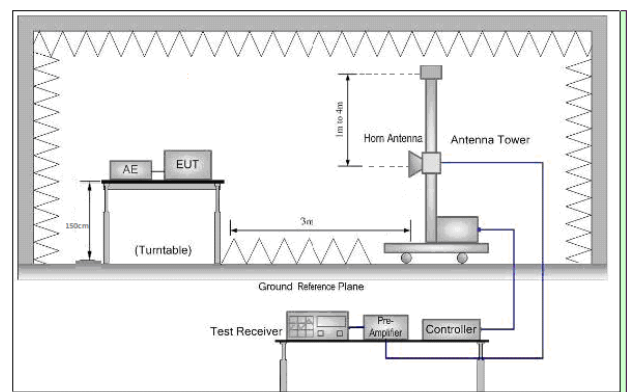


Figure 2. Above 1 GHz

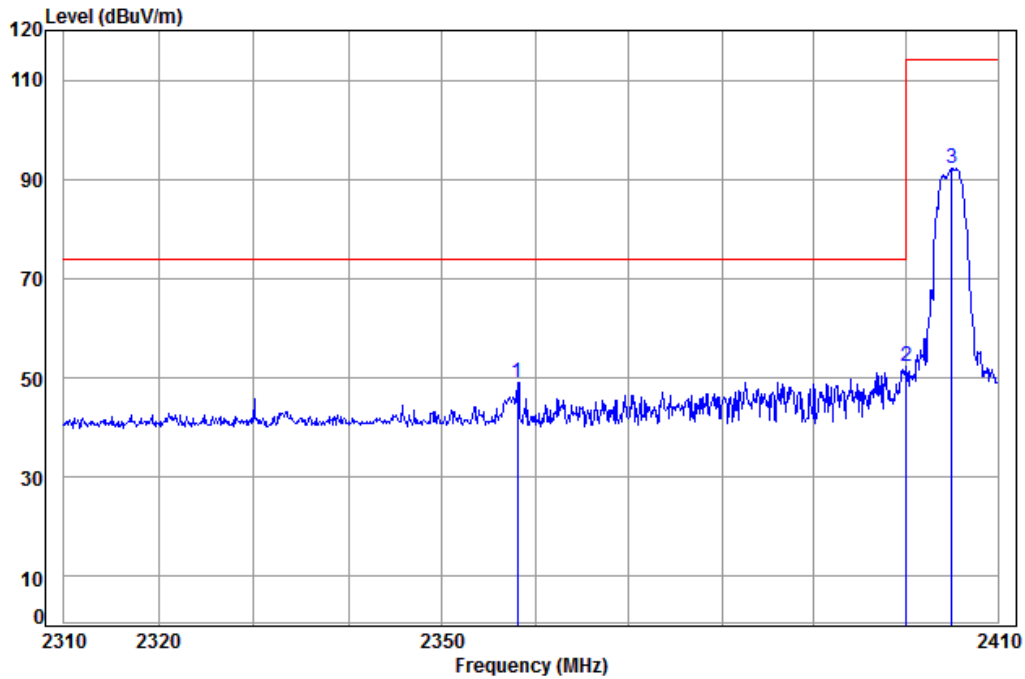


<p>Test Procedure:</p>	<ol style="list-style-type: none"> a. For below 1GHz, the EUT was placed on the top of a rotating table 0.8 meters above the ground at a 3 meter semi-anechoic chamber. The table was rotated 360 degrees to determine the position of the highest radiation. b. For above 1GHz, the EUT was placed on the top of a rotating table 1.5 meters above the ground at a 3 meter fully-anechoic chamber. The table was rotated 360 degrees to determine the position of the highest radiation. c. 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 channel h. Test the EUT in the lowest channel , the Highest channel 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.
<p>Exploratory Test Mode:</p>	<p>Transmitting mode</p>
<p>Final Test Mode:</p>	<p>Transmitting mode</p>
<p>Instruments Used:</p>	<p>Refer to section 5.10 for details</p>
<p>Test Results:</p>	<p>Pass</p>



Test plot as follows:

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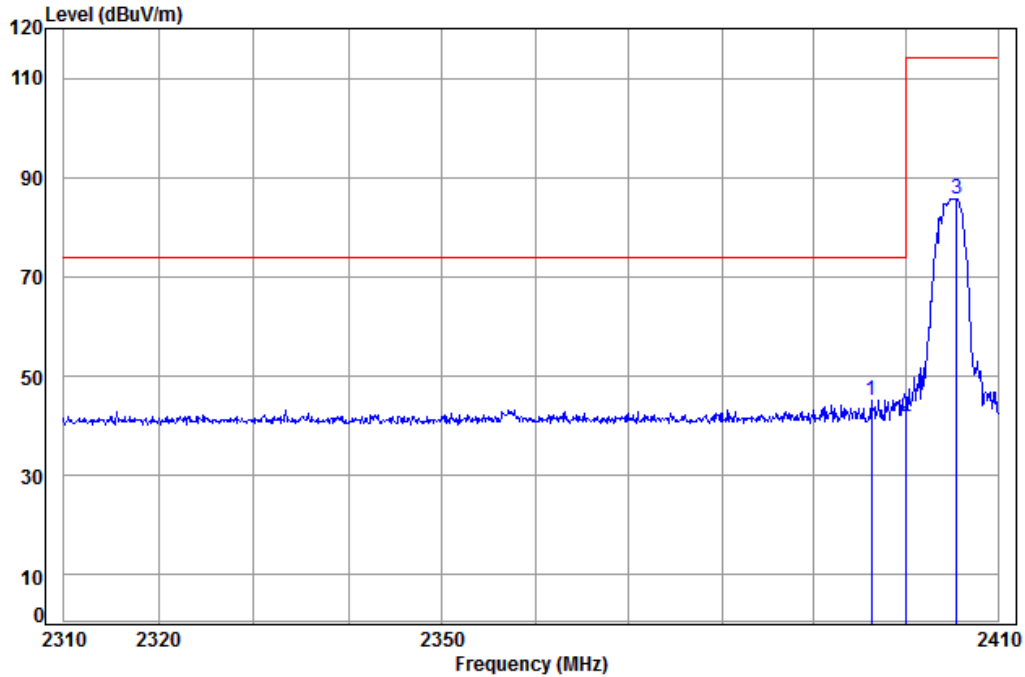


Condition: 3m Vertical
Job No: : 9763CR
Mode: : 2405 Band edge
: 2.4G

	Freq	Cable Loss	Ant Factor	Preamp Factor	Read Level	Limit Level	Over Line	Over Limit
	MHz	dB	dB/m	dB	dBuV	dBuV/m	dBuV/m	dB
1	2358.071	5.31	28.98	38.14	53.04	49.19	74.00	-24.81
2 pp	2400.000	5.35	29.11	38.14	56.02	52.34	74.00	-21.66
3	2405.001	5.35	29.12	38.15	95.78	92.10	114.00	-21.90



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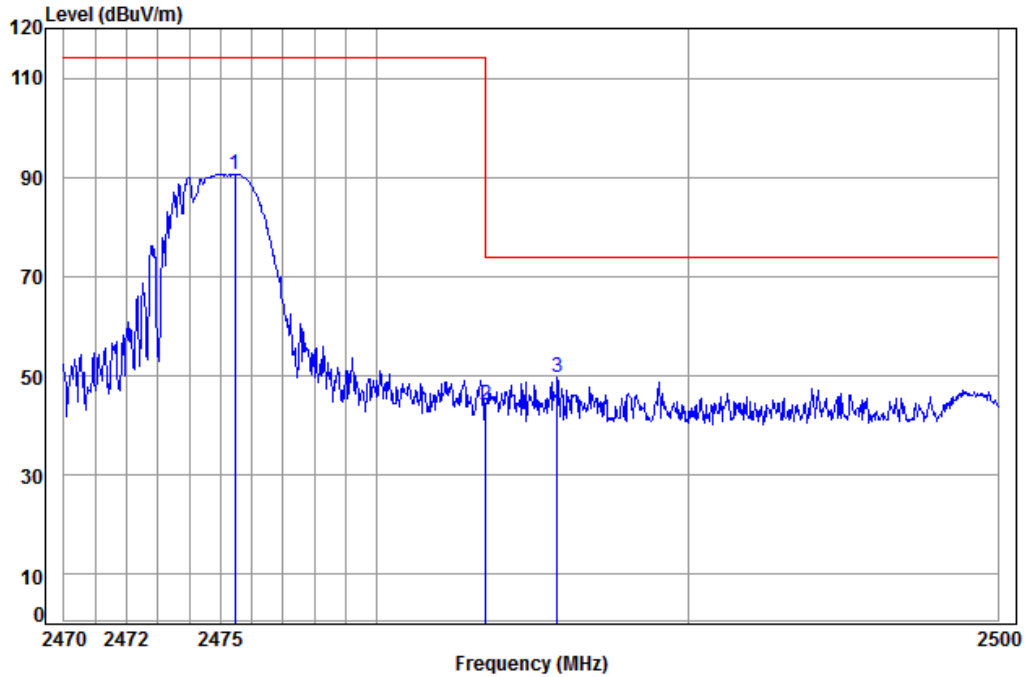


Condition: 3m HORIZONTAL
Job No: : 9763CR
Mode: : 2405 Band edge
: 2.4G

	Freq	Cable Loss	Ant Factor	Preamp Factor	Read Level	Limit Level	Over Limit
	MHz	dB	dB/m	dB	dBuV	dBuV/m	dB
1	2396.251	5.34	29.10	38.14	48.77	74.00	-28.93
2	2400.000	5.34	29.11	38.14	45.49	74.00	-32.20
3 pp	2405.510	5.35	29.12	38.15	89.49	114.00	-28.19



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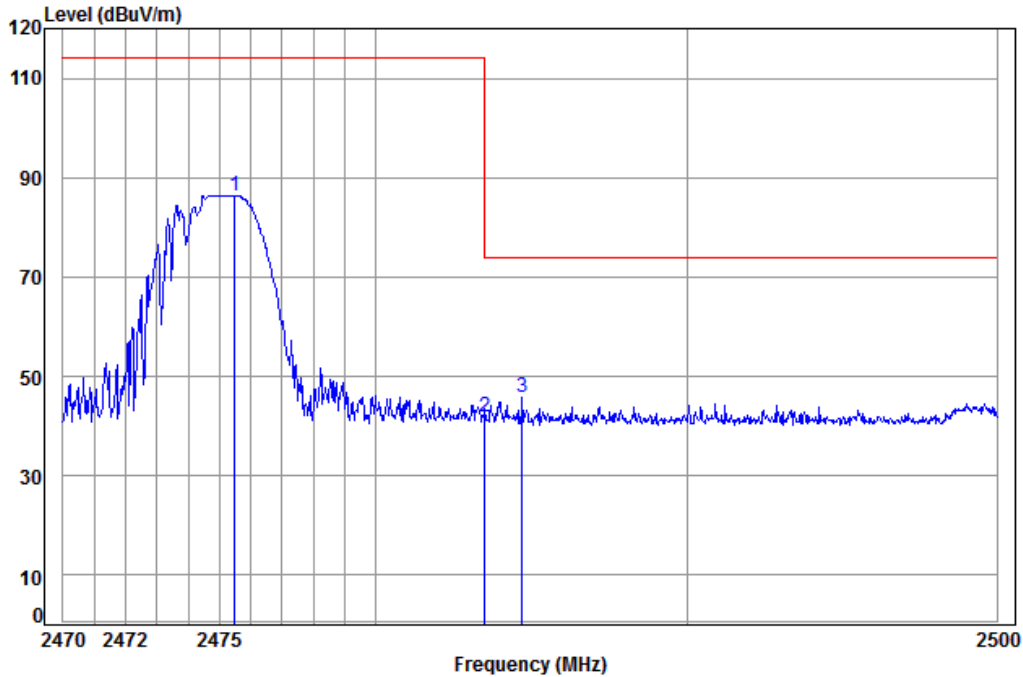


Condition: 3m VERTICAL
Job No: : 9763CR
Mode: : 2475 Band edge
: 2.4G

	Freq	Cable Loss	Ant Factor	Preamp Factor	Read Level	Limit Level	Over Limit
	MHz	dB	dB/m	dB	dBuV	dBuV/m	dB
1 pp	2475.463	5.40	29.33	38.15	94.04	114.00	-23.38
2	2483.500	5.41	29.35	38.15	47.41	74.00	-29.98
3	2485.795	5.41	29.36	38.15	53.22	74.00	-24.16



Test mode:	Transmitting	Test channel:	Highest	Remark:	Peak	Horizontal
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Condition: 3m Horizontal
Job No: : 9763CR
Mode: : 2475 Band edge
: 2.4G

	Freq	Cable Loss	Ant Factor	Preamp Factor	Read Level	Level	Limit Line	Over Limit
	MHz	dB	dB/m	dB	dBuV	dBuV/m	dBuV/m	dB
1 pp	2475.493	5.40	29.33	38.15	89.83	86.41	114.00	-27.59
2	2483.500	5.41	29.35	38.15	45.20	41.81	74.00	-32.19
3	2484.715	5.41	29.36	38.15	49.01	45.63	74.00	-28.37

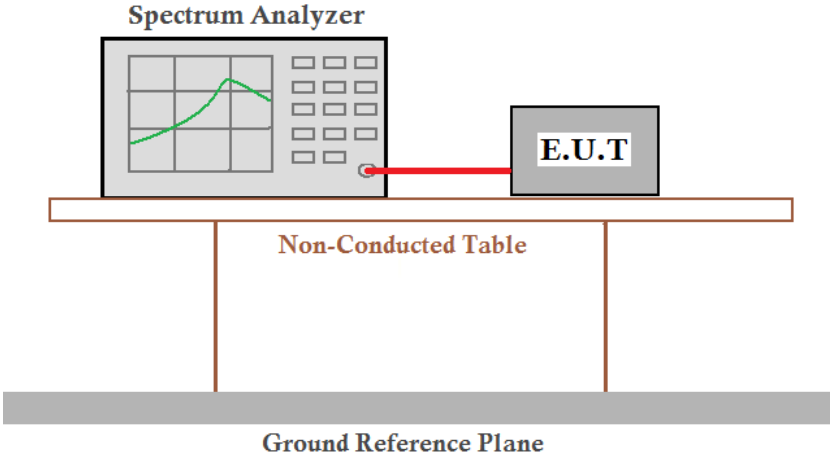
Note:

The field strength is calculated by adding the Antenna Factor, Cable Factor & Preamplifier. The basic equation

with a sample calculation is as follows:

$$\text{Final Test Level} = \text{Receiver Reading} + \text{Antenna Factor} + \text{Cable Factor} - \text{Preamplifier Factor}$$

6.4 20dB Bandwidth

Test Requirement:	47 CFR Part 15C Section 15.215
Test Method:	ANSI C63.10:2013
Test Setup:	
Limit:	N/A
Exploratory Test Mode:	Transmitter mode
Instruments Used:	Refer to section 5.10 for details
Test Results:	Pass

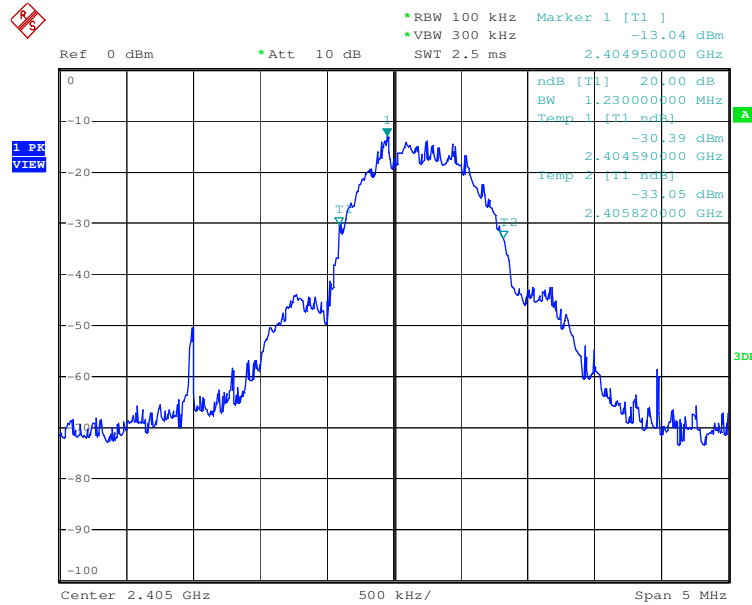
Measurement Data

Test Channel	20dB bandwidth (MHz)	Results
Lowest	1.23	Pass
Middle	1.23	Pass
Highest	1.27	Pass

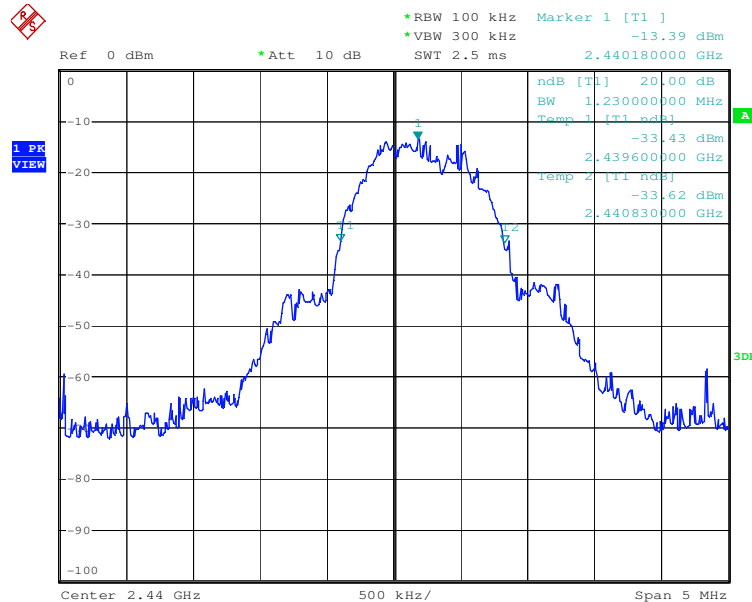


Test plot as follows:

Test channel: Lowest



Test channel: Middle

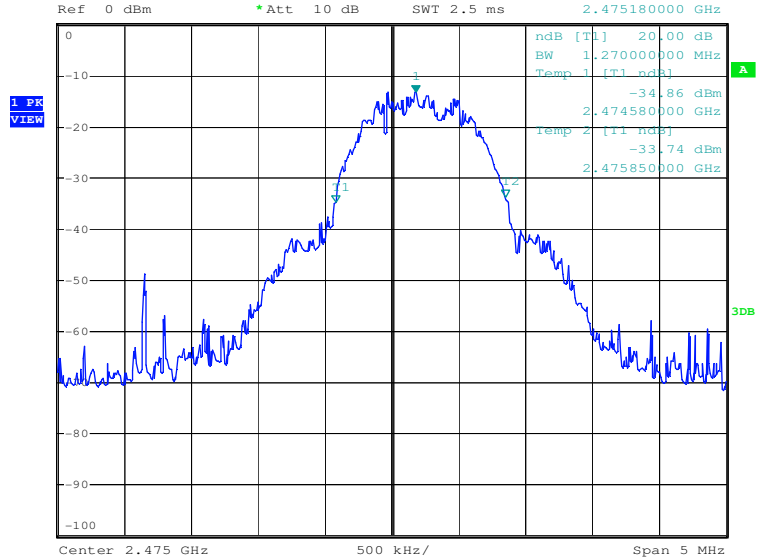




Test channel: Highest



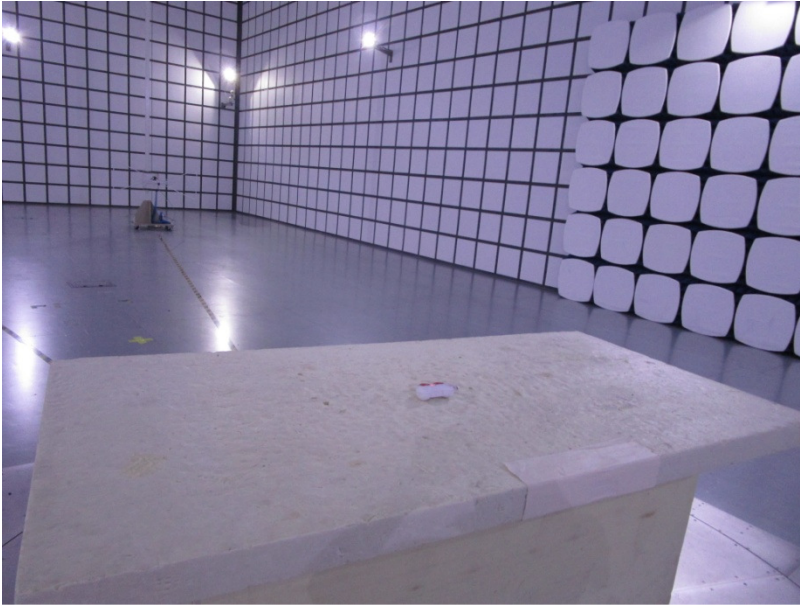
*RBW 100 kHz Marker 1 [T1]
*VBW 300 kHz -13.26 dBm
SWT 2.5 ms 2.475180000 GHz



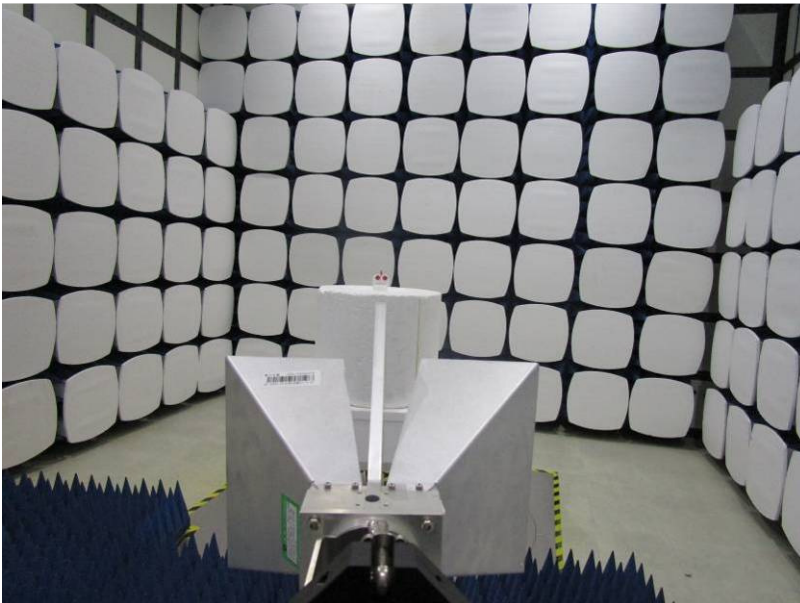
7 Photographs - EUT Test Setup

Test model No.: 2410

7.1 Radiated Emission



7.2 Radiated Spurious Emissions



8 Photographs - EUT Constructional Details



