FCC REPORT

Application No. :	HKES1511002039IT
Applicant:	Standard Merit Industrial Limited
Manufacturer:	Foshan Shunde Alford Electronics Co., Ltd, Xinjian Industrial Park, Daliang, Shunde, Foshan City, Guangdong Province, China.
Product Name:	Wireless monitor (Camera unit)
Model No.(EUT):	DXR-8 (DXR-8BU)
FCC ID:	2AAAM-DXR-8BU-1
Standards:	47 CFR Part 15, Subpart C (2014)
Date of Receipt:	2015-11-13
Date of Test:	2015-11-26 to 2015-12-30
Date of Issue:	2016-01-06
Test Result:	**PASS ***

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

CHEN Jian-feng, Jeffrey

2 Version

Revision Record				
Version	***Chapter***	***Date***	***Modifier***	***Remark***
00		2016-01-06		Original

Authorized for issue by:				
Tested By		Martin Li **(Martin Li) /Project Engineer**		2015-12-30 **Date**
Prepared By		Iris Zhou **(Iris Zhou) /Clerk**		2016-01-06 **Date**
Checked By		Eric Fu **(Eric Fu) /Reviewer**		2016-01-06 **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
Duty Cycle	47 CFR Part 15, Subpart C Section 15.35 (c)	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

4 Contents

5 General Information

5.1 Client Information

Applicant:	Standard Merit Industrial Limited
Address of Applicant:	2/A Harrison Court Stage 6, 10 Man Wan Road, Kowloon, Hong Kong
Manufacturer:	Foshan Shunde Alford Electronics Co., Ltd, Xinjian Industrial Park, Daliang, Shunde, Foshan City, Guangdong Province, China.

5.2 General Description of EUT

Name:	Wireless monitor (Camera unit)
Model No.:	DXR-8 (DXR-8BU)
Frequency Range:	2410.875 MHz ~ 2471.625MHz
Modulation Technique:	Frequency Hopping Spread Spectrum(FHSS)
Hopping Channel Type:	Adaptive Frequency Hopping systems
Modulation Type:	GFSK
Number of Channels:	19 (declared by the client)
Sample Type:	Mobile production
Antenna Type:	Integral
Antenna Gain:	0dBi
Power Supply:	Camera Unit Adapter 1 Model: CS6D059100FU Input: AC 100-240V 50/60Hz 200mA Output: DC 5.9V 1.0A Adapter 2 Model: BLJ06W059100P1-U Input: AC 100-240V 50/60Hz 0.2A Output: DC 5.9V 1.0A Camera Unit Adapter 1&2 DC cable:270cm unshielded
Test Voltage:	AC 120V 60Hz

Channel	Frequency	Channel	Frequency
1CH	2410.875	14CH	2454.750
2CH	2414.250	15CH	2458.125
3CH	2417.625	16CH	2461.500
4CH	2421.000	17CH	2464.875
5CH	2424.375	18CH	2468.250
6CH	2427.750	19CH	2471.625
7CH	2431.125		
8CH	2434.500		
9CH	2437.875		
10CH	2441.250		

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)	2410.875MHz
The middle channel (CH10)	2441.250MHz
The highest channel (CH19)	2471.625MHz

5.3 Test Environment and Mode

Operating Environment:	
Temperature:	25.0°C
Humidity:	50%RH
Atmospheric Pressure:	1025mbar

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 Deviation from Standards

None.

5.7 Abnormalities from Standard Conditions

None.

5.8 Other Information Requested by the Customer

None.

5.9 Equipment List

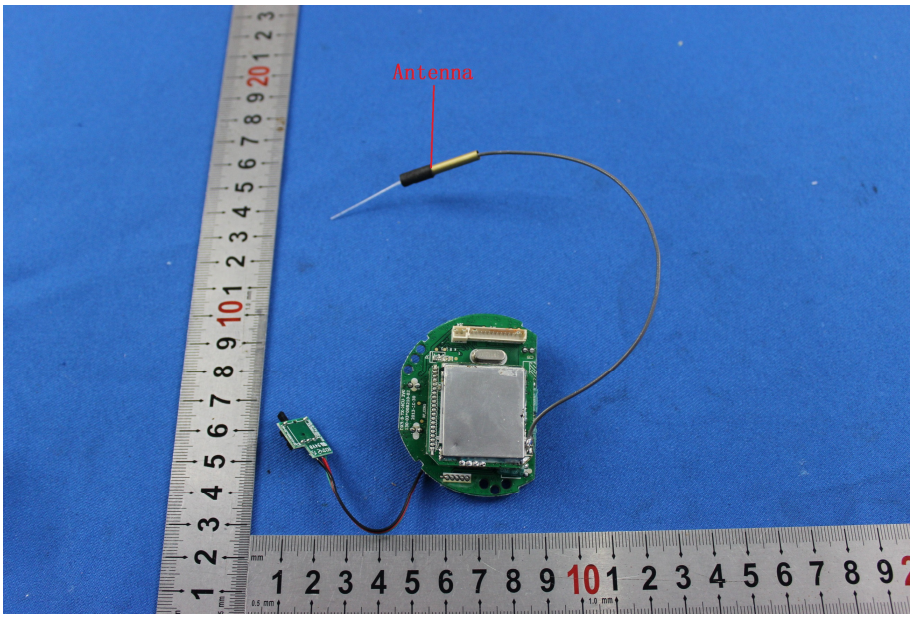
Conducted Emission						
Item	**Test Equipment**	**Manufacturer**	**Model No.**	**Inventory No.**	**Cal. date (yyyy-mm-dd)**	**Cal.Due date (yyyy-mm-dd)**
1	Shielding Room	ZhongYu Electron	GB-88	SEL0042	2015-05-13	2016-05-13
2	LISN	Rohde & Schwarz	ENV216	SEL0152	2015-10-09	2016-10-09
3	LISN	ETS-LINDGREN	3816/2	SEL0021	2015-05-13	2016-05-13
4	8 Line ISN	Fischer Custom Communications Inc.	FCC-TLISN-T8-02	SEL0162	2015-08-30	2016-08-30
5	4 Line ISN	Fischer Custom Communications Inc.	FCC-TLISN-T4-02	SEL0163	2015-08-30	2016-08-30
6	2 Line ISN	Fischer Custom Communications Inc.	FCC-TLISN-T2-02	SEL0164	2015-08-30	2016-08-30
7	EMI Test Receiver	Rohde & Schwarz	ESCI	SEL0022	2015-05-13	2016-05-13
8	Coaxial Cable	SGS	N/A	SEL0025	2015-05-13	2016-05-13
9	DC Power Supply	Zhao Xin	RXN-305D	SEL0117	2015-10-09	2016-10-09
10	Humidity/ Temperature Indicator	Shanhai Qixiang	ZJ1-2B	SEL0103	2015-10-24	2016-10-24
11	Barometer	Chang Chun	DYM3	SEL0088	2015-05-13	2016-05-13

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	ETS-LINDGREN	N/A	SEL0017	2015-05-13	2016-05-13
2	EMI Test Receiver	Agilent Technologies	N9038A	SEL0312	2015-09-16	2016-09-16
3	EMI Test software	AUDIX	E3	SEL0050	N/A	N/A
4	BiConiLog Antenna (26-3000MHz)	ETS-LINDGREN	3142C	SEL0015	2014-11-15	2017-11-15
5	Double-ridged horn (1-18GHz)	ETS-LINDGREN	3117	SEL0006	2015-10-17	2016-10-17
6	Horn Antenna (18-26GHz)	ETS-LINDGREN	3160	SEL0076	2014-11-24	2017-11-24
7	Pre-amplifier (0.1-1300MHz)	Agilent Technologies	8447D	SEL0053	2015-05-13	2016-05-13
8	Pre-Amplifier (0.1-26.5GHz)	Compliance Directions Systems Inc.	PAP-0126	SEL0168	2015-10-17	2016-10-17
9	Coaxial cable	SGS	N/A	SEL0027	2015-05-13	2016-05-13
10	Coaxial cable	SGS	N/A	SEL0189	2015-05-13	2016-05-13
11	Coaxial cable	SGS	N/A	SEL0121	2015-05-13	2016-05-13
12	Coaxial cable	SGS	N/A	SEL0178	2015-05-13	2016-05-13
13	Band filter	Amindeon	82346	SEL0094	2015-05-13	2016-05-13
14	Barometer	Chang Chun	DYM3	SEL0088	2015-05-13	2016-05-13
15	DC Power Supply	Zhao Xin	RXN-305D	SEL0117	2015-10-09	2016-10-09
16	Humidity/ Temperature Indicator	Shanhai Qixiang	ZJ1-2B	SEL0103	2015-10-24	2016-10-24
17	Signal Generator (10M-27GHz)	Rohde & Schwarz	SMR27	SEL0067	2015-05-13	2016-05-13
18	Loop Antenna	Beijing Daze	ZN30401	SEL0203	2015-05-13	2016-05-13

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	2015-04-25	2016-04-25
8	POWER METER	R & S	NRVS	SEL0144	2015-10-09	2016-10-09
9	Attenuator	Beijin feihang taida	TST-2-6dB	SEL0205	2015-04-25	2016-04-25

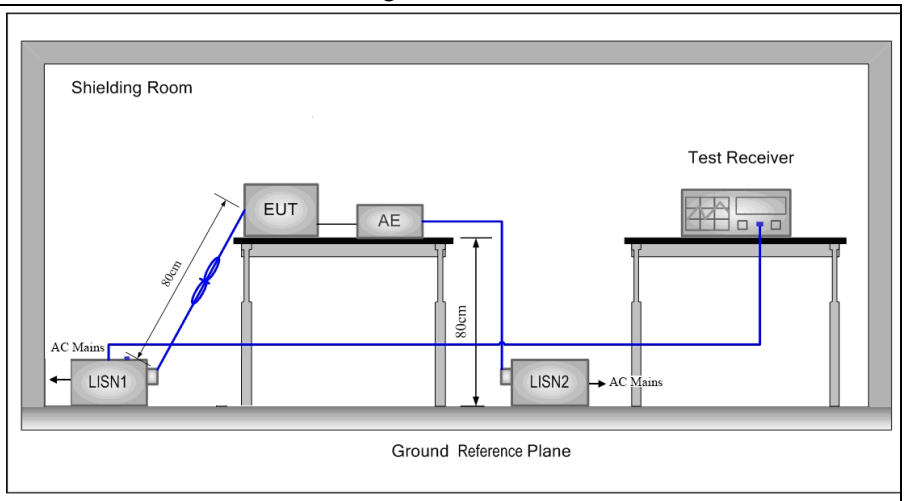
6 Test results and Measurement Data

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 Conducted Emissions

Test Requirement:	47 CFR Part 15C Section 15.207
Test Method:	ANSI C63.10: 2013
Test Frequency Range:	150KHz to 30MHz
Limit:	Frequency range (MHz) / Limit (dBuV): 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 Procedure:	1) The mains terminal disturbance voltage test was conducted in a shielded room. 2) The EUT was connected to AC power source through a LISN 1 (Line Impedance Stabilization Network) which provides a 50Ω/50μH + 5Ω linear impedance. The power cables of all other units of the EUT were connected to a second LISN 2, which was bonded to the ground reference plane in the same way as the LISN 1 for the unit being measured. A multiple socket outlet strip was used to connect multiple power cables to a single LISN provided the rating of the LISN was not exceeded. 3) The tabletop EUT was placed upon a non-metallic table 0.8m above the ground reference plane. And for floor-standing arrangement, the EUT was placed on the horizontal ground reference plane, 4) The test was performed with a vertical ground reference plane. The rear of the EUT shall be 0,4 m from the vertical ground reference plane. The vertical ground reference plane was bonded to the horizontal ground reference plane. The LISN 1 was placed 0,8 m from the boundary of the unit under test and bonded to a ground reference plane for LISNs mounted on top of the ground reference plane. This distance was between the closest points of the LISN 1 and the EUT. All other units of the EUT and associated equipment was at least 0,8 m from the LISN 2. 5) In order to find the maximum emission, the relative positions of equipment and all of the interface cables must be changed according to ANSI C63.10: 2013 on conducted measurement.

Test Setup:	
Test Mode:	Keep the EUT in transmitting mode
Instruments Used:	Refer to section 5.10 for details
Test Results:	Pass

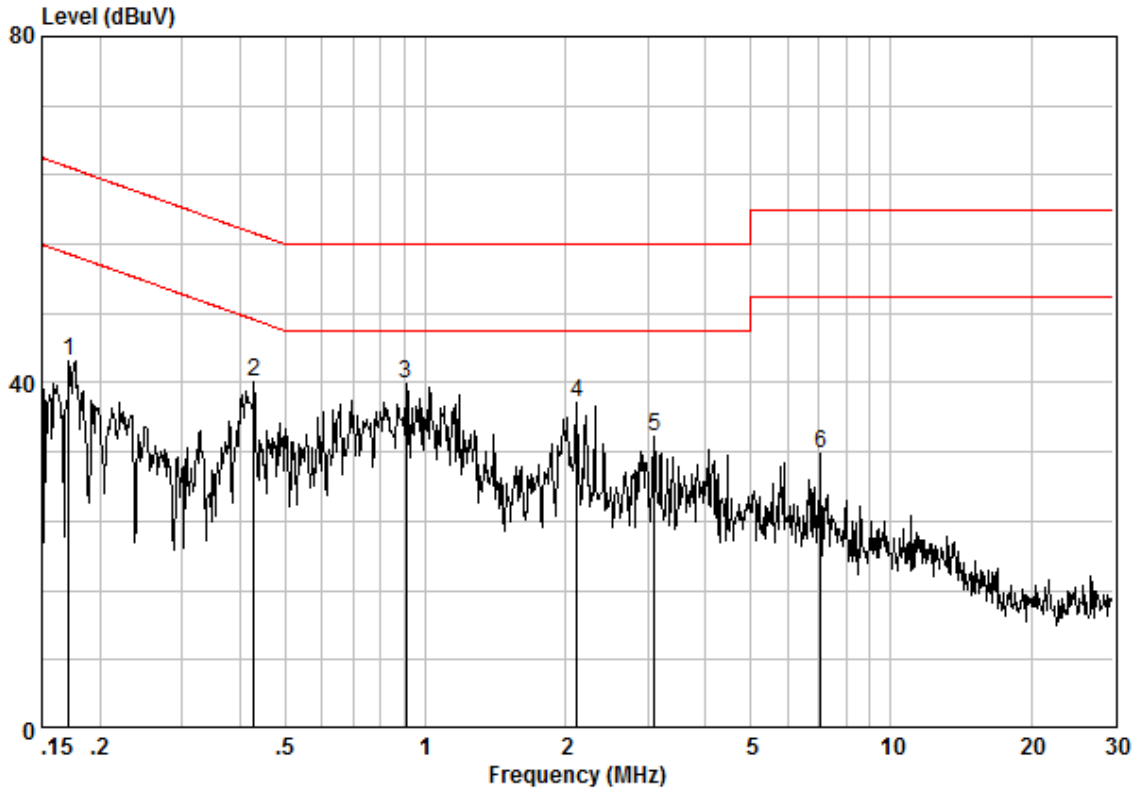
Measurement Data

An initial pre-scan was performed on the live and neutral lines with peak detector.

Quasi-Peak and Average measurement were performed at the frequencies with maximized peak emission were detected.

Adapter 1 Model: CS6D059100FU

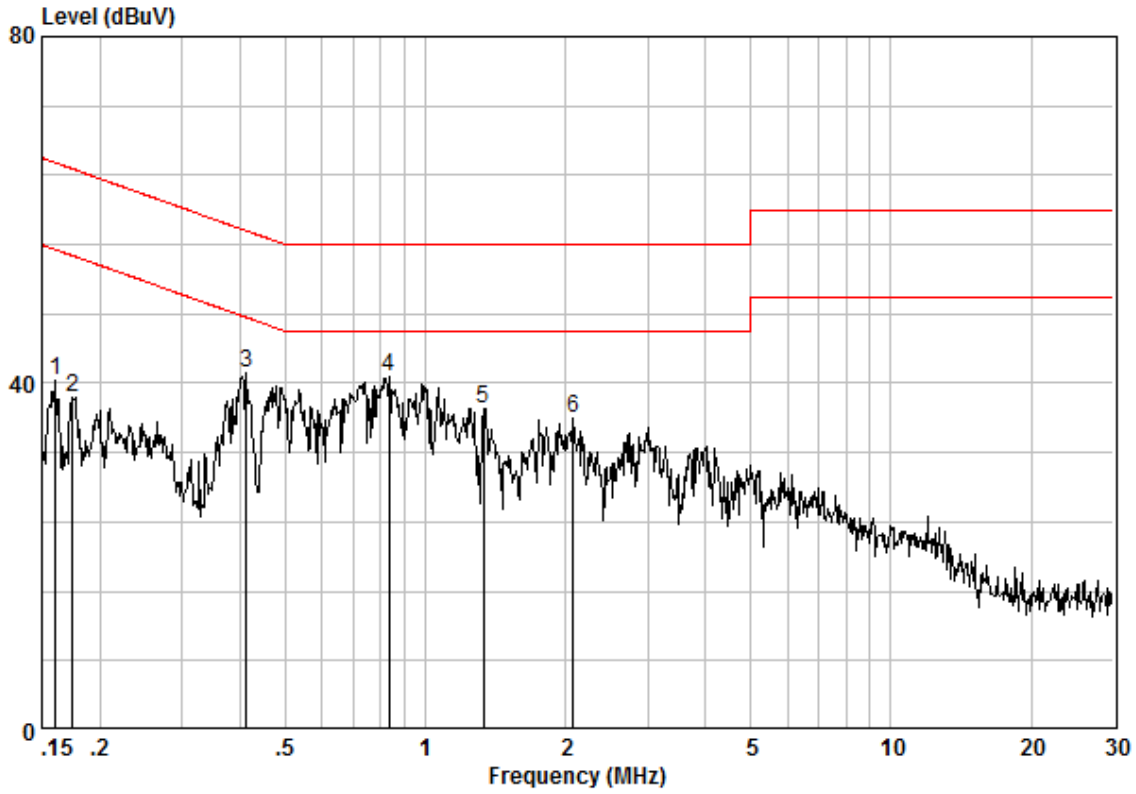
Live Line:



Site : Shielding Room
Condition : CE LINE
Job No. : 2039IT
Test Mode : Charge+TX

	Freq	Cable Loss	LISN Factor	Read Level	Level	Limit Line	Over Limit	Remark
	MHz	dB	dB	dBuV	dBuV	dBuV	dB	
1	0.17124	0.02	9.60	32.81	42.43	54.90	-12.47	Peak
2	0.42825	0.01	9.60	30.41	40.01	47.29	-7.27	Peak
3	0.90874	0.02	9.62	30.21	39.85	46.00	-6.15	Peak
4	2.121	0.02	9.64	28.14	37.80	46.00	-8.20	Peak
5	3.107	0.02	9.62	24.23	33.87	46.00	-12.13	Peak
6	7.062	0.01	9.68	22.20	31.89	50.00	-18.11	Peak

Neutral Line:

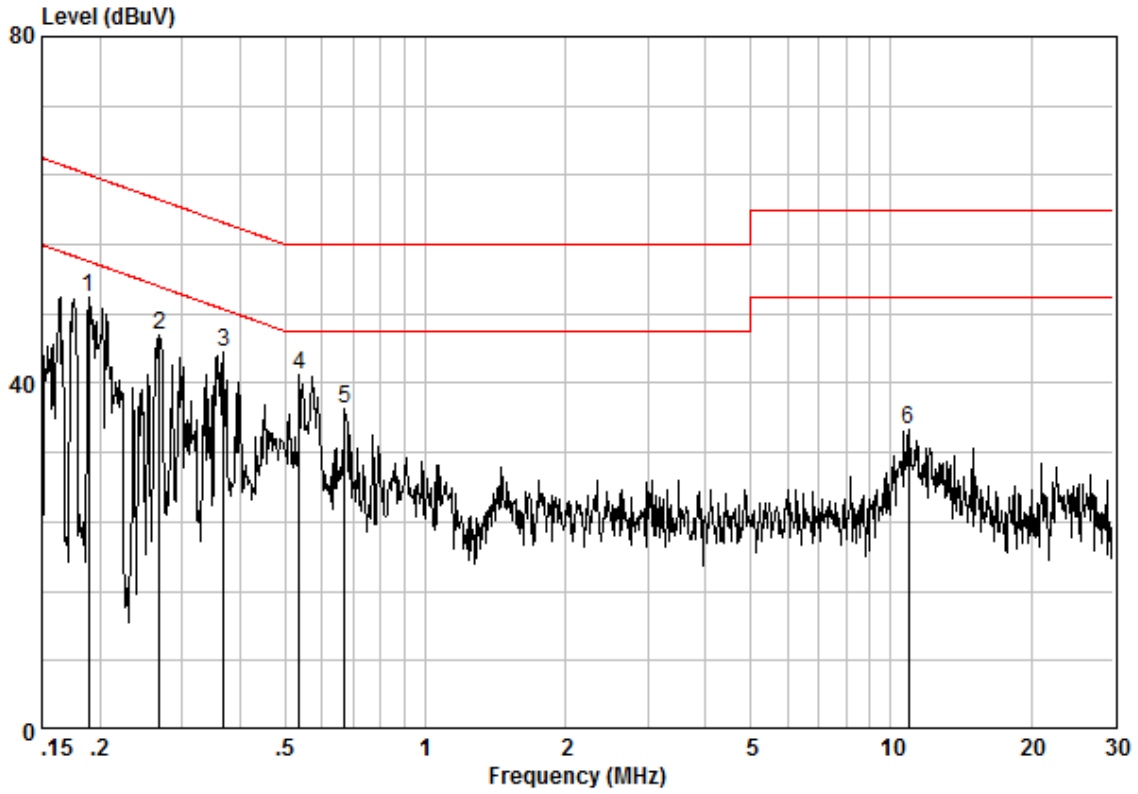


Site : Shielding Room
Condition : CE NEUTRAL
Job No. : 2039IT
Test Mode : Charge+TX

	Freq	Cable Loss	LISN Factor	Read Level	Level	Limit Line	Over Limit	Remark
	MHz	dB	dB	dBuV	dBuV	dBuV	dB	
1	0.16070	0.02	9.61	30.68	40.31	55.43	-15.12	Peak
2	0.17491	0.02	9.60	28.76	38.38	54.72	-16.34	Peak
3	0.41266	0.01	9.62	31.63	41.26	47.59	-6.33	Peak
4	0.83488	0.02	9.64	31.14	40.80	46.00	-5.20	Peak
5	1.331	0.02	9.65	27.41	37.07	46.00	-8.93	Peak
6	2.077	0.02	9.66	26.28	35.96	46.00	-10.04	Peak

Adapter 2 Model: BLJ06W059100P1-U

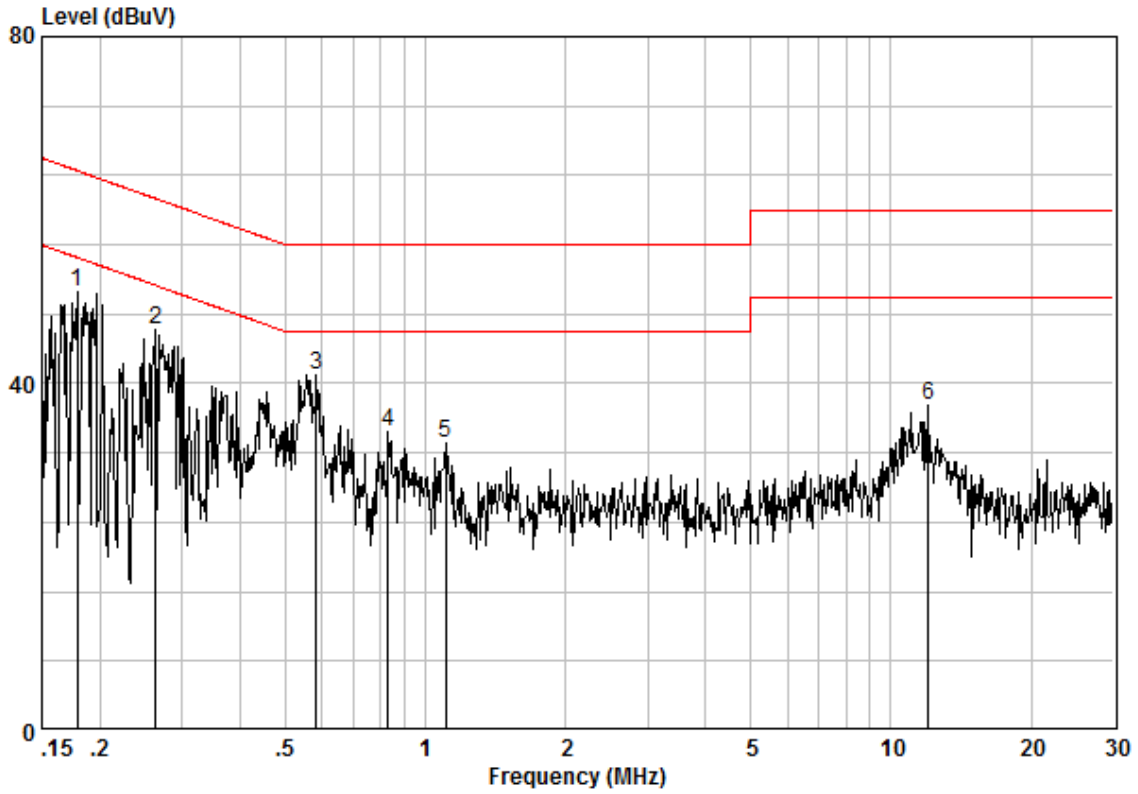
Live Line:



Site : Shielding Room
Condition : CE LINE
Job No. : 2039IT
Test Mode : Charge+TX

	Freq	Cable Loss	LISN Factor	Read Level	Level	Limit Line	Over Limit	Remark
	MHz	dB	dB	dBuV	dBuV	dBuV	dB	
1 @	0.18938	0.02	9.60	40.38	50.00	54.06	-4.07	Peak
2	0.26866	0.01	9.60	35.88	45.49	51.16	-5.67	Peak
3	0.36920	0.01	9.59	33.95	43.56	48.52	-4.96	Peak
4	0.53498	0.01	9.60	31.34	40.95	46.00	-5.05	Peak
5	0.67187	0.02	9.61	27.39	37.02	46.00	-8.98	Peak
6	10.905	0.01	9.72	25.03	34.76	50.00	-15.24	Peak

Neutral Line:



Site : Shielding Room
Condition : CE NEUTRAL
Job No. : 2039IT
Test Mode : Charge+TX

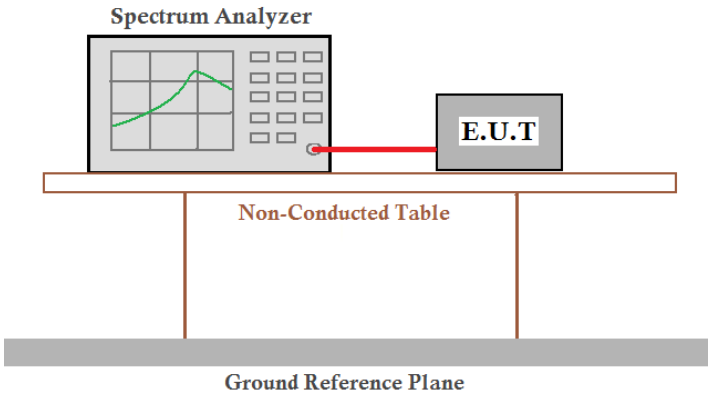
	Freq	Cable Loss	LISN Factor	Read Level	Level	Limit Line	Over Limit	Remark
	MHz	dB	dB	dBuV	dBuV	dBuV	dB	
1 @	0.17866	0.02	9.61	40.92	50.55	54.55	-4.00	Peak
2	0.26303	0.02	9.61	36.48	46.11	51.34	-5.23	Peak
3	0.58231	0.01	9.63	31.35	40.99	46.00	-5.01	Peak
4	0.83047	0.02	9.64	24.85	34.51	46.00	-11.49	Peak
5	1.106	0.02	9.65	23.57	33.24	46.00	-12.76	Peak
6	12.060	0.01	9.84	27.65	37.51	50.00	-12.49	Peak

Notes:

1. *The following Quasi-Peak and Average measurements were performed on the EUT:*
2. *Final Test Level =Receiver Reading + LISN Factor + Cable Loss.*

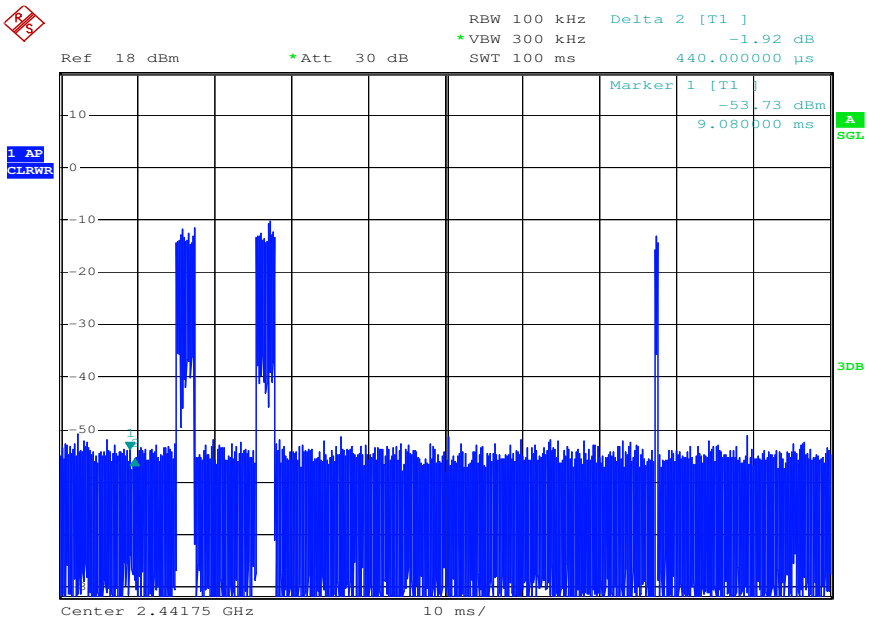
6.3 Spurious Emissions

6.3.1 Duty Cycle

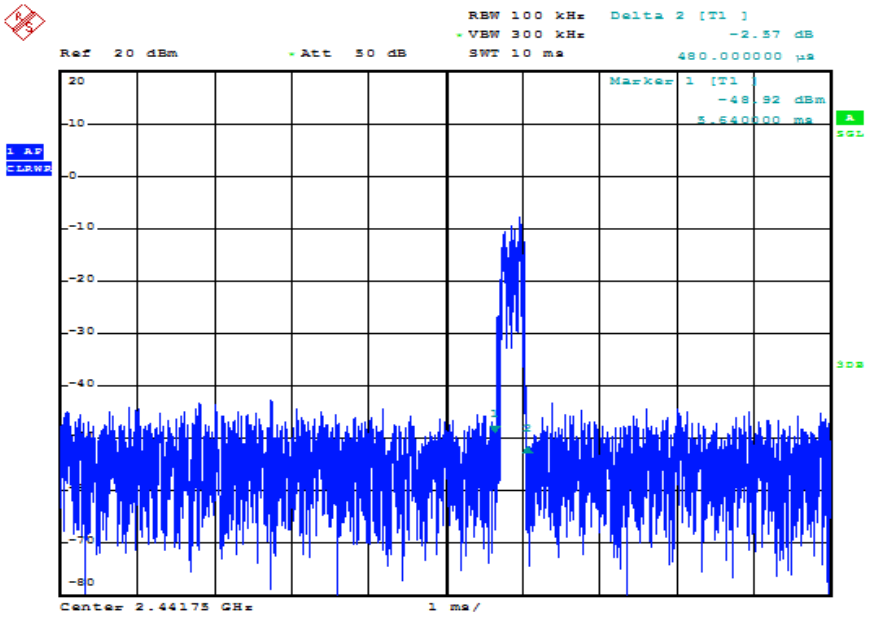
Test Requirement:	47 CFR Part 15C Section 15.35 (c)
Test Method:	ANSI C63.10:2013
Test Setup:	
Instruments Used:	Refer to section 5.10 for details
Limit:	N/A
Test Mode:	Normal transmitting mode
Test Results:	Pass

Test plot as follows:

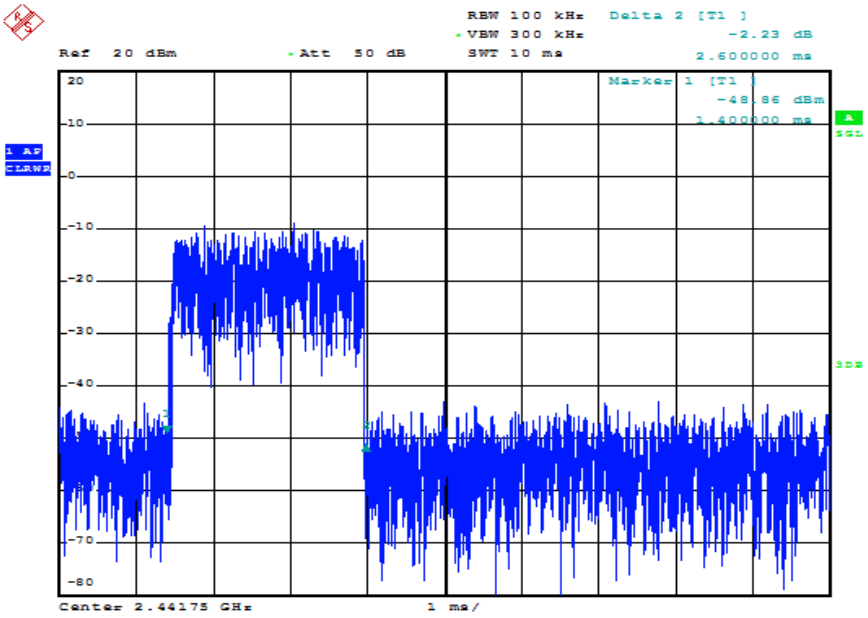
3 bursts in 100mS, 2 long “on” + 1 short “on”



Short “on” time



Long “on” time



6.3.2 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

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:

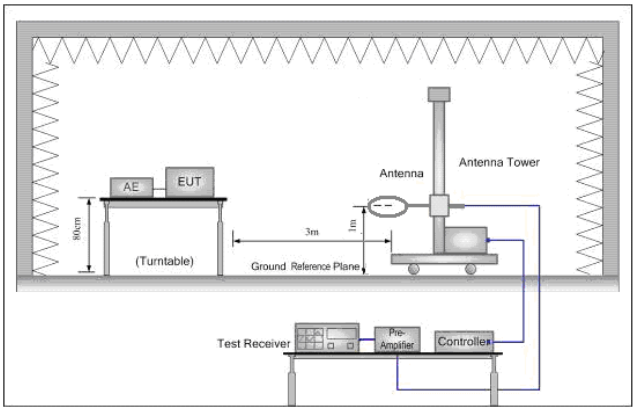


Figure 1. Below 30MHz

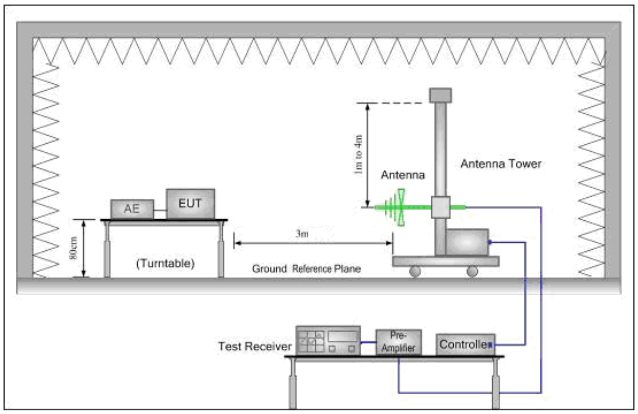


Figure 2. 30MHz to 1GHz

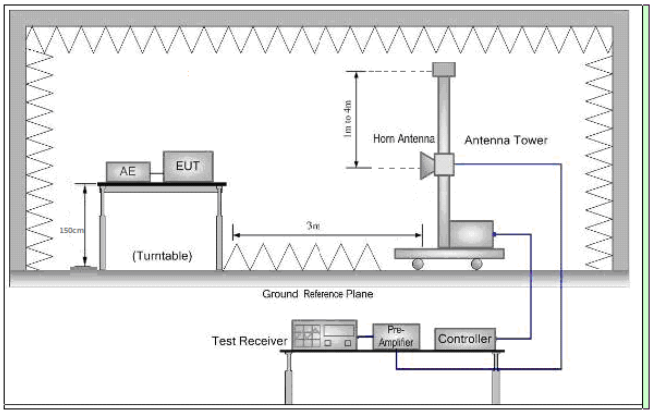


Figure 3. Above 1 GHz

Test Procedure:	a. 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 camber. 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 camber. 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 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. h. Test the EUT in the lowest channel,the middle 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.
Instruments Used:	Refer to section 5.10 for details
Exploratory Test Mode:	Transmitting mode, Charge +Transmitting mode
Final Test Mode:	Pretest the EUT at Transmitting mode and Charge +Transmitting mode, found the Charge +Transmitting mode which it is worse case Only the worst case is recorded in the report.
Test Results:	Pass

Average value:	
Calculate Formula:	Average value=Peak value + PDCF
	PDCF=20 log(Duty cycle)
	Duty cycle= T on time / T period
Test data:	Ton time =2.6*2+0.48=5.68
	T period =100
	Average value=-24.91

Measurement Data

6.3.3 Field Strength Of The Fundamental Signal

Test channel: Lowest

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
2411.57	5.35	28.65	38.11	99.33	95.22	114.00	-18.78	Horizontal
2411.57	5.35	28.65	38.11	101.20	97.09	114.00	-16.91	Vertical

Average value= Peak value+20 log(Duty cycle)

Test mode:	GFSK	Test channel:	Lowest	Remark:	Average
Frequency (MHz)	Average Factor(dB)	Level (dBuV/m)	Limit Line (dBuV/m)	Over Limit (dB)	Polarization
2411.57	-24.91	70.31	94.00	-23.69	Horizontal
2411.57	-24.91	71.18	94.00	-21.82	Vertical

Test channel: Middle

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
2440.55	5.38	28.79	38.11	99.74	95.80	114.00	-18.20	Horizontal
2440.55	5.38	28.79	38.11	101.21	97.27	114.00	-16.73	Vertical

Average value= Peak value+20 log(Duty cycle)

Test mode:	GFSK	Test channel:	Lowest	Remark:	Average
Frequency (MHz)	Average Factor(dB)	Level (dBuV/m)	Limit Line (dBuV/m)	Over Limit (dB)	Polarization
2440.55	-24.91	70.89	94.00	-23.11	Horizontal
2440.55	-24.91	73.36	94.00	-21.64	Vertical

Test channel: Highest

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
2470.63	5.40	28.93	38.12	96.69	92.90	114.00	-21.10	Horizontal
2470.63	5.40	28.93	38.12	100.08	96.29	114.00	-17.71	Vertical

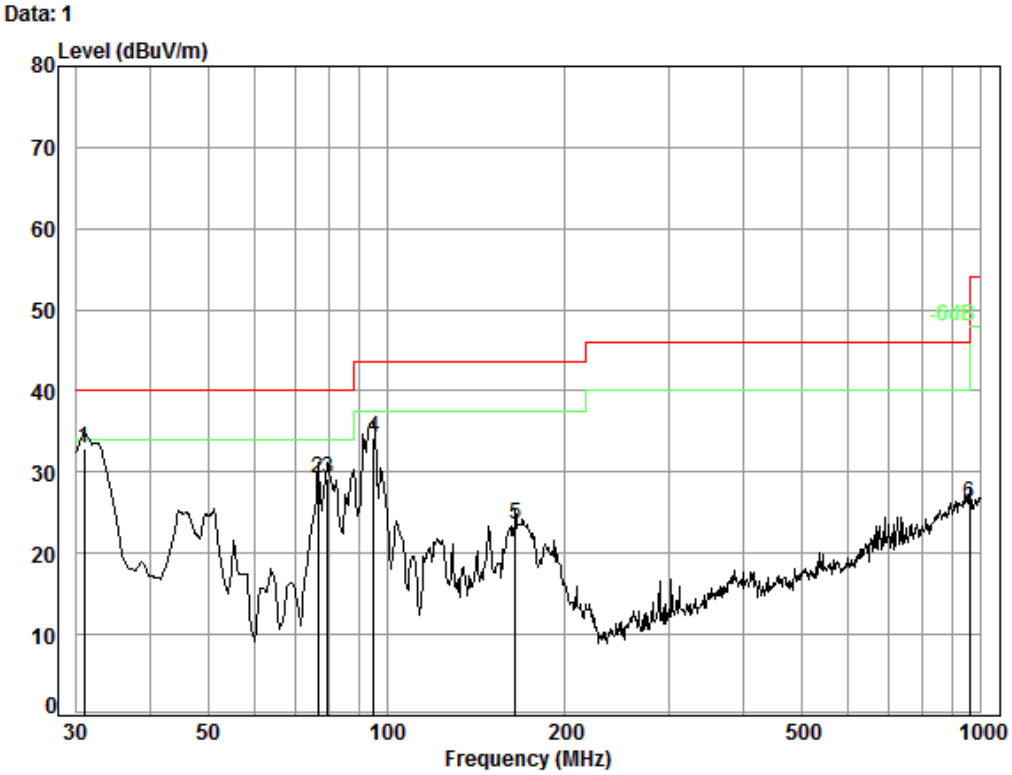
Average value= Peak value+20 log(Duty cycle)

Test mode:	GFSK	Test channel:	Lowest	Remark:	Average
Frequency (MHz)	Average Factor(dB)	Level (dBuV/m)	Limit Line (dBuV/m)	Over Limit (dB)	Polarization
2470.63	-24.91	67.99	94.00	-26.01	Horizontal
2470.63	-24.91	71.38	94.00	-22.62	Vertical

6.3.4 Spurious Emissions

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

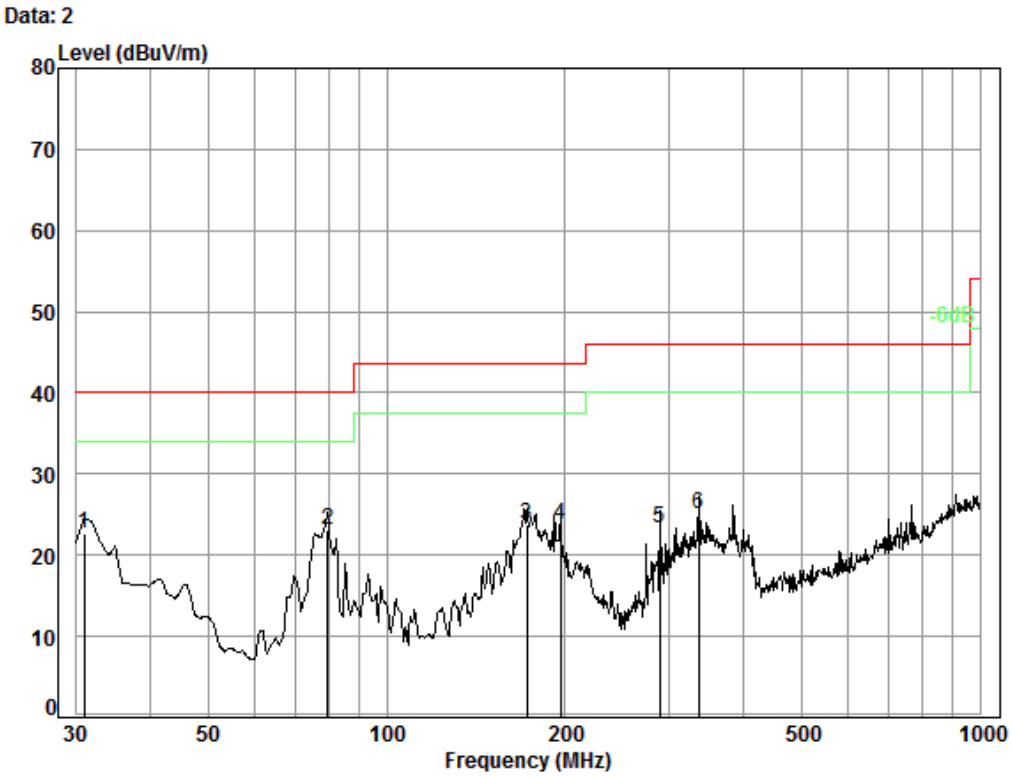
Adapter 1 Model: CS6D059100FU



Condition: 3m 3142C 2015 Vertical
Job No. : 2039IT
Test mode: Charge+TX mode

	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	30.96	0.60	17.60	26.00	40.80	33.00	40.00	-7.00
2	76.51	1.00	5.09	25.92	49.05	29.22	40.00	-10.78
3	79.52	1.08	5.44	25.92	48.62	29.22	40.00	-10.78
4	95.09	1.15	7.51	25.90	51.47	34.23	43.50	-9.27
5	164.91	1.34	9.95	25.81	38.12	23.60	43.50	-19.90
6	958.79	3.66	22.05	24.66	25.11	26.16	46.00	-19.84

Test mode:	Charge + Transmitting mode	Horizontal

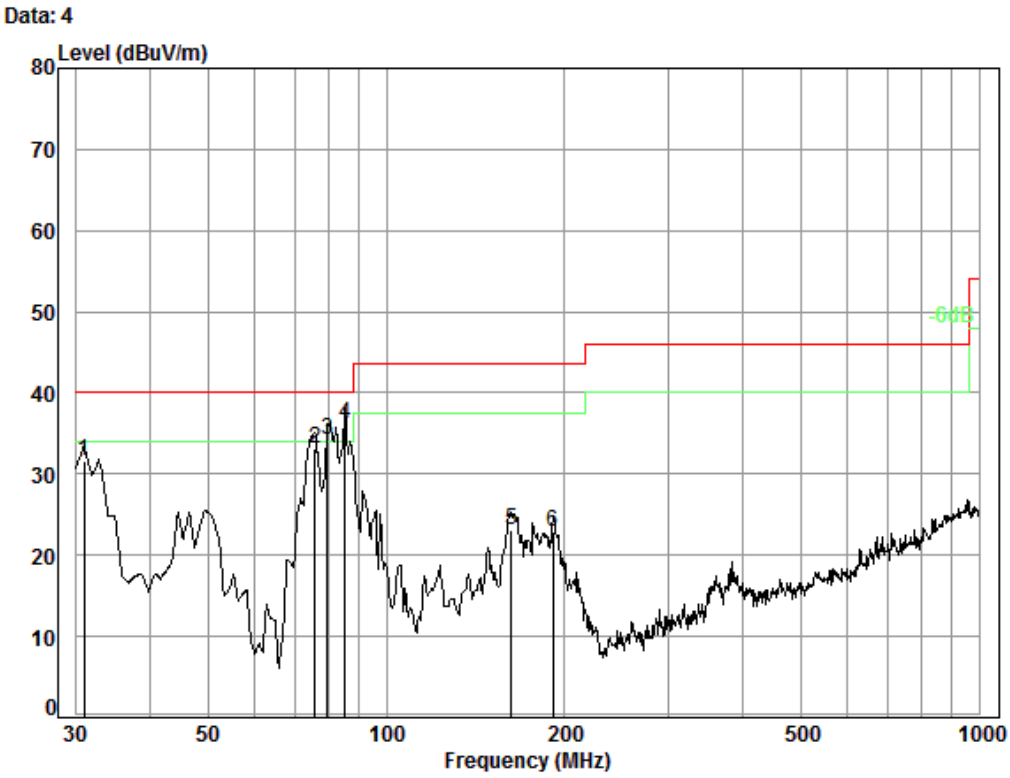


Condition: 3m 3142C 2015 HORIZONTAL
Job No. : 2039IT
Test mode: Charge+TX mode

	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	30.96	0.60	17.60	26.00	30.40	22.60	40.00	-17.40
2	79.52	1.08	5.44	25.92	42.60	23.20	40.00	-16.80
3	172.60	1.36	9.10	25.80	39.13	23.79	43.50	-19.71
4	196.51	1.39	6.40	25.78	41.68	23.69	43.50	-19.81
5	287.99	1.85	10.14	25.71	37.15	23.43	46.00	-22.57
6	336.04	2.02	11.60	25.68	37.20	25.14	46.00	-20.86

Adapter 2 Model: BLJ06W059100P1-U

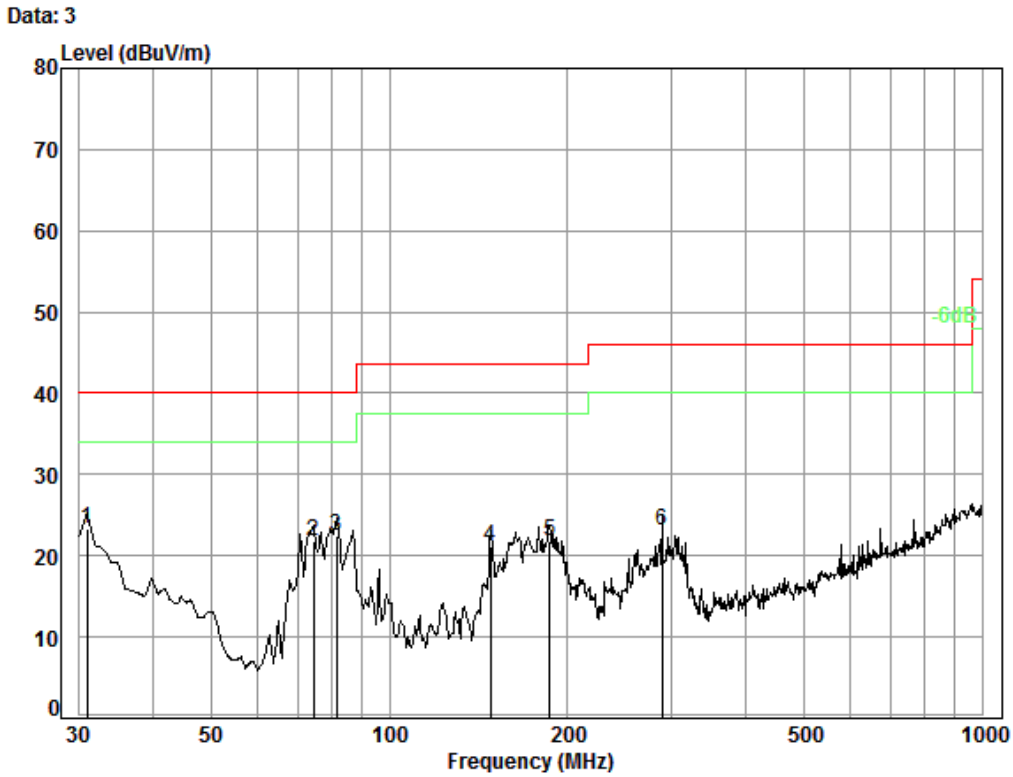
Test mode:	Charge +Transmitting	Vertical



Condition: 3m 3142C 2015 VERTICAL
Job No. : 2039IT
Test mode: Charge+TX mode

	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	30.96	0.60	17.60	26.00	39.37	31.57	40.00	-8.43
2	75.71	0.97	4.99	25.92	53.01	33.05	40.00	-6.95
3	79.52	1.08	5.44	25.92	53.55	34.15	40.00	-5.85
4	85.30	1.10	6.24	25.91	54.66	36.09	40.00	-3.91
5	162.61	1.34	10.11	25.81	37.55	23.19	43.50	-20.31
6	191.07	1.39	6.40	25.78	40.80	22.81	43.50	-20.69

Test mode:	Charge +Transmitting	Horizontal



Condition: 3m 3142C 2015 HORIZONTAL
Job No. : 2039IT
Test mode: Charge+TX mode

	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	30.96	0.60	17.60	26.00	31.07	23.27	40.00	-16.73
2	74.66	0.94	4.89	25.93	41.83	21.73	40.00	-18.27
3	81.50	1.10	5.71	25.92	41.63	22.52	40.00	-17.48
4	147.92	1.31	9.24	25.83	36.39	21.11	43.50	-22.39
5	186.44	1.38	6.85	25.79	39.34	21.78	43.50	-21.72
6	287.99	1.85	10.14	25.71	36.88	23.16	46.00	-22.84

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
3836.607	32.94	7.75	38.50	44.72	46.91	74	-27.09	Vertical
4821.750	34.12	8.89	38.75	47.38	51.64	74	-22.36	Vertical
6069.413	34.74	10.47	38.87	46.64	52.98	74	-21.02	Vertical
7232.625	35.58	10.69	37.63	40.72	49.36	74	-24.64	Vertical
9643.500	37.10	12.52	36.30	35.89	49.21	74	-24.79	Vertical
12639.790	37.92	14.55	37.79	37.87	52.55	74	-21.45	Vertical
3716.403	32.57	7.71	38.45	44.80	46.63	74	-27.37	Horizontal
4821.750	34.12	8.89	38.75	49.69	53.95	74	-20.05	Horizontal
5964.939	34.61	10.46	38.95	45.02	51.14	74	-22.86	Horizontal
7232.625	35.58	10.69	37.63	44.10	52.74	74	-21.26	Horizontal
9643.500	37.10	12.52	36.30	36.91	50.23	74	-23.77	Horizontal
12603.27	37.9	14.44	37.75	37.16	51.75	74	-22.25	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
3684.279	32.44	7.70	38.44	44.37	46.07	74	-27.93	Vertical
4882.500	34.18	8.98	38.77	48.57	52.96	74	-21.04	Vertical
6087.002	34.74	10.45	38.85	46.18	52.52	74	-21.48	Vertical
7323.750	35.54	10.72	37.59	42.80	51.47	74	-22.53	Vertical
9765.000	37.10	12.58	36.14	37.65	51.19	74	-22.81	Vertical
12566.850	37.87	14.34	37.72	37.91	52.40	74	-21.60	Vertical
3589.562	32.08	7.66	38.4	46.23	47.57	74	-26.43	Horizontal
4882.500	34.18	8.98	38.77	49.45	53.84	74	-20.16	Horizontal
6034.386	34.72	10.52	38.91	45.62	51.95	74	-22.05	Horizontal
7323.750	35.54	10.72	37.59	44.52	53.19	74	-20.81	Horizontal
9765.000	37.10	12.58	36.14	37.67	51.21	74	-22.79	Horizontal
12676.420	37.94	14.65	37.82	36.91	51.68	74	-22.32	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
3759.672	32.74	7.73	38.47	45.46	47.46	74	-26.54	Vertical
4943.250	34.24	9.06	38.78	46.19	50.71	74	-23.29	Vertical
6069.413	34.74	10.47	38.87	45.98	52.32	74	-21.68	Vertical
7414.875	35.54	10.76	37.55	39.43	48.18	74	-25.82	Vertical
9886.500	37.19	12.65	35.98	38.66	52.52	74	-21.48	Vertical
12603.270	37.90	14.44	37.75	37.37	51.96	74	-22.04	Vertical
3705.664	32.53	7.71	38.45	45.30	47.09	74	-26.91	Horizontal
4943.250	34.24	9.06	38.78	49.24	53.76	74	-20.24	Horizontal
6069.413	34.74	10.47	38.87	45.52	51.86	74	-22.14	Horizontal
7414.875	35.54	10.76	37.55	45.04	53.79	74	-20.21	Horizontal
9886.500	37.19	12.65	35.98	39.02	52.88	74	-21.12	Horizontal
12676.420	37.94	14.65	37.82	36.56	51.33	74	-22.67	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 peak measurements were shown in the report.

6.4 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:

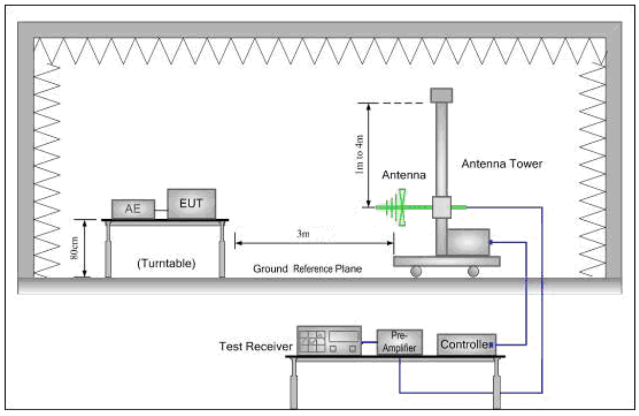


Figure 1. 30MHz to 1GHz

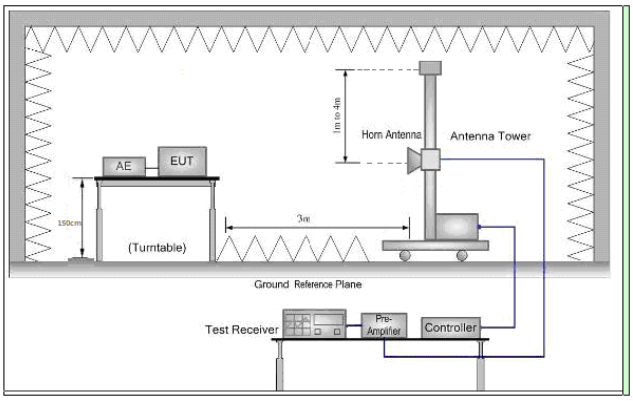
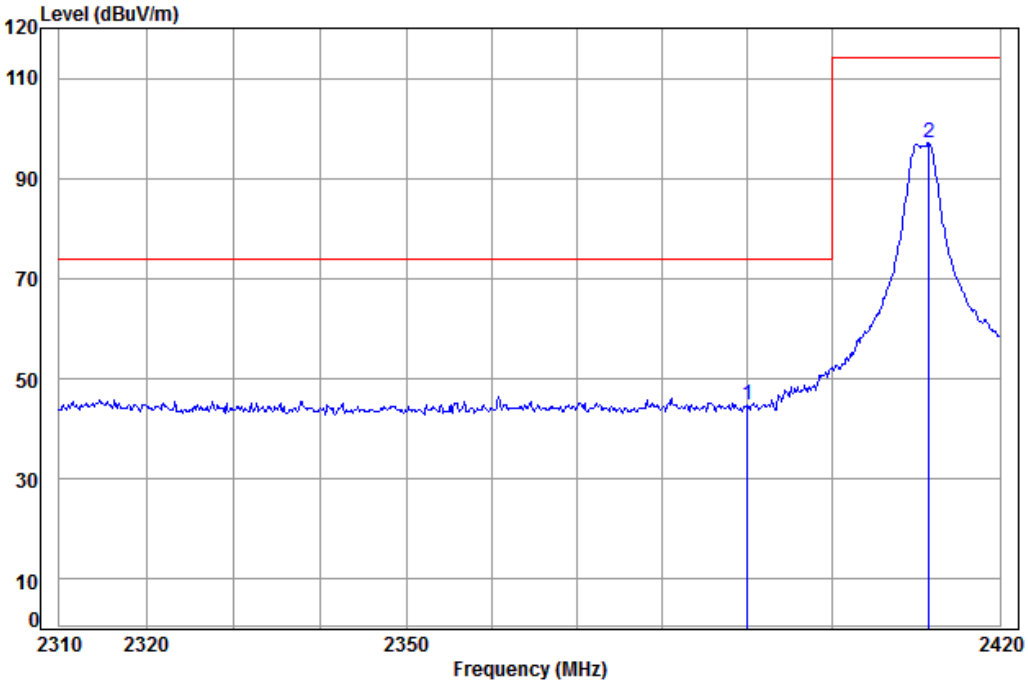


Figure 2. Above 1 GHz

Test Procedure:	a. For bleow 1GHz, 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. 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 camber. 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.
Instruments Used:	Refer to section 5.10 for details
Exploratory Test Mode:	Transmitting mode,Charge +Transmitting mode
Final Test Mode:	Pretest the EUT at Transmitting mode and Charge +Transmitting mode, found the Charge +Transmitting mode which it is worse case Only the worst case is recorded in the report.
Test Results:	Pass

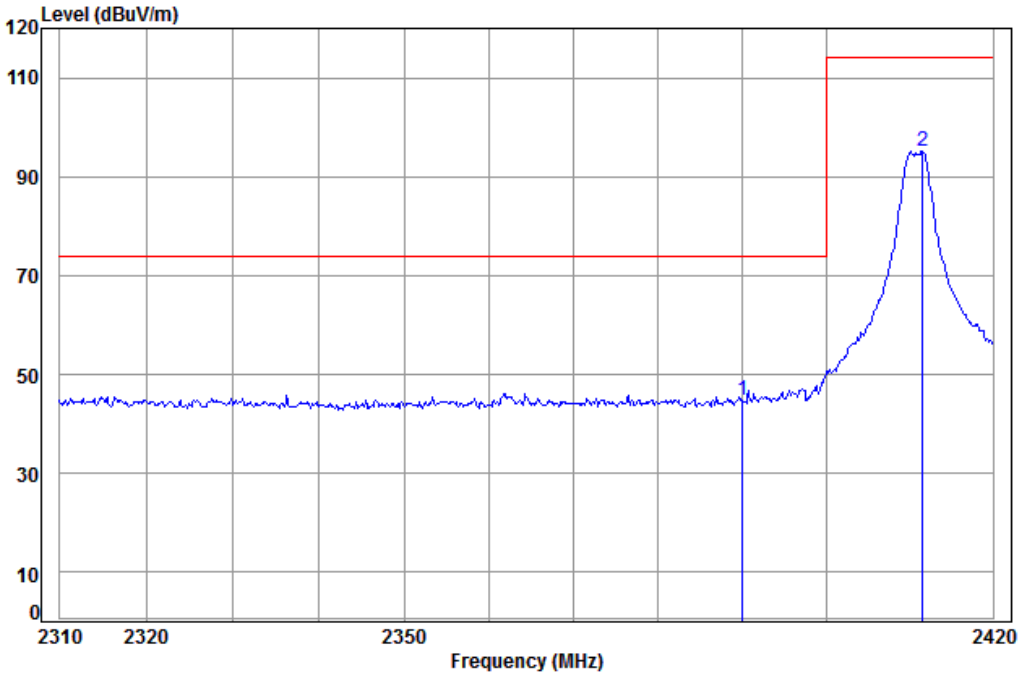
Band edge test data (Radiated Emission)						
Test mode:	Transmitting	Test channel:	Lowest	Remark:	Peak	Vertical



Condition: 3m Vertical
Job No: : 2039IT
Mode: : 2410.875 Band edge

	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 pk	2390.00	5.34	28.57	38.11	49.14	44.94	74.00	-29.06
2 pp	2411.57	5.35	28.65	38.11	101.20	97.09	114.00	-16.91

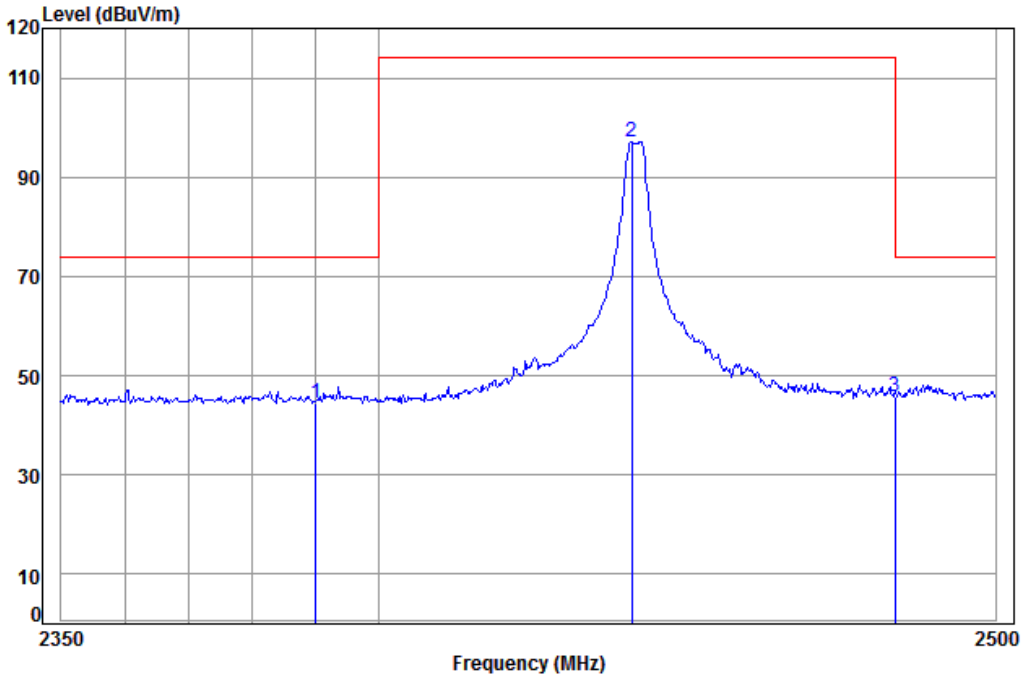
Test mode:	Transmitting	Test channel:	Lowest	Remark:	Peak	Horizontal



Condition: 3m Horizontal
Job No: : 2039IT
Mode: : 2410.875 Band edge

	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 pk	2390.00	5.34	28.57	38.11	48.87	44.67	74.00	-29.33
2 pp	2411.57	5.35	28.65	38.11	99.33	95.22	114.00	-18.78

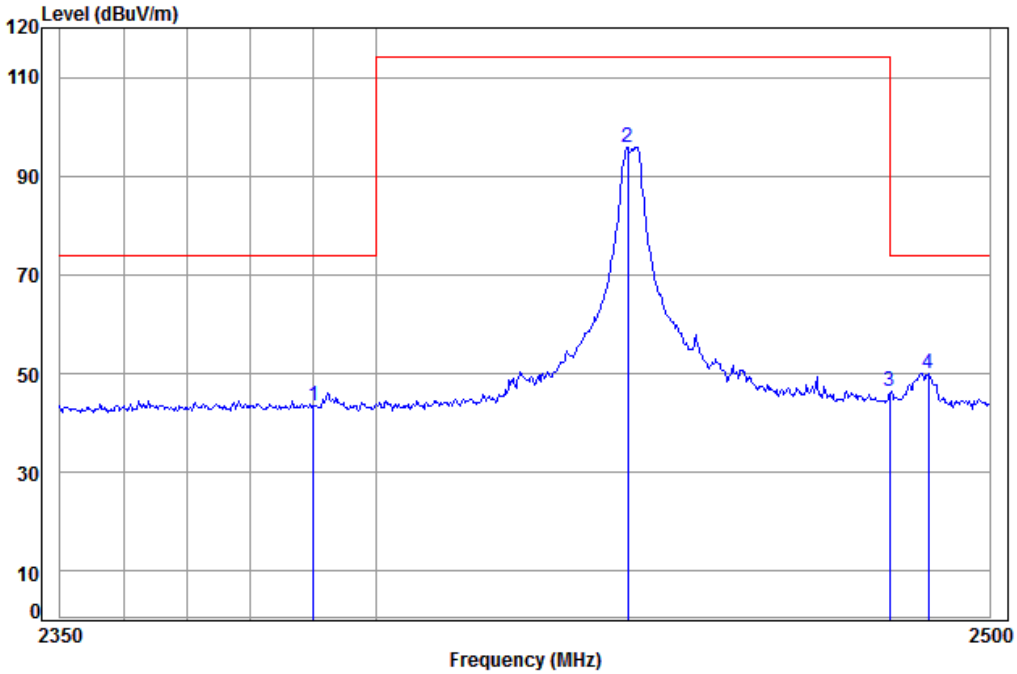
Test mode:	Transmitting	Test channel:	Middle	Remark:	Peak	Vertical



Condition: 3m Vertical
Job No: : 2039IT
Mode: : 2441.250 Band edge

	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	2390.00	5.34	28.57	38.11	48.58	44.38	74.00	-29.62
2 pp	2440.55	5.38	28.79	38.11	101.21	97.27	114.00	-16.73
3 pk	2483.50	5.41	28.98	38.12	49.58	45.85	74.00	-28.15

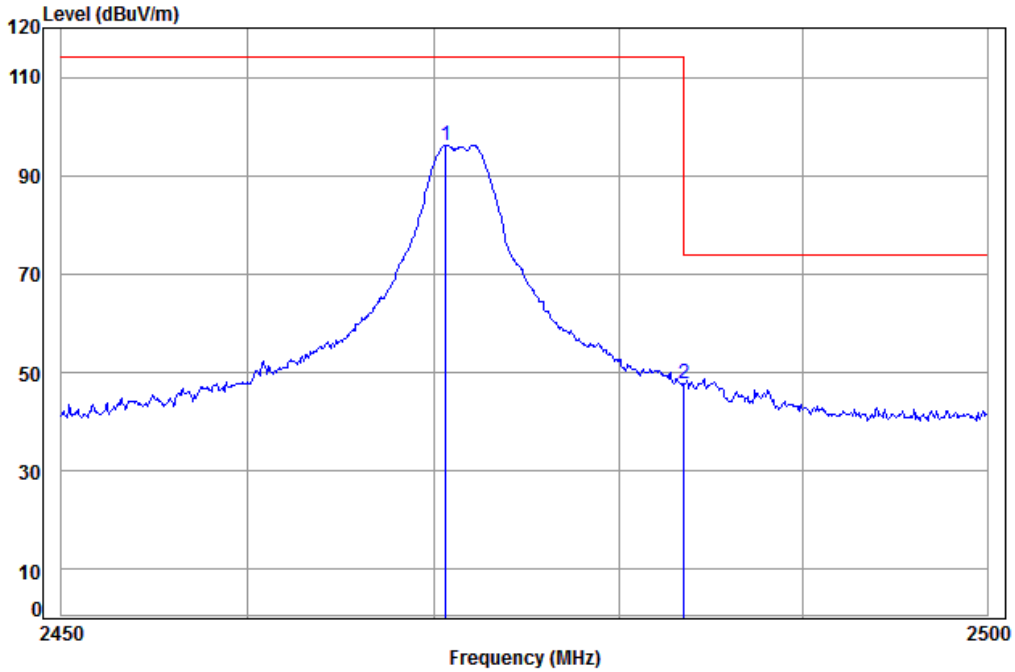
Test mode:	Transmitting	Test channel:	Middle	Remark:	Peak	Horizontal



Condition: 3m Horizontal
Job No: : 2039IT
Mode: : 2441.250 Band edge

	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	2390.00	5.34	28.57	38.11	47.66	43.46	74.00	-30.54
2 pp	2440.55	5.38	28.79	38.11	99.74	95.80	114.00	-18.20
3 pk	2483.50	5.41	28.98	38.12	50.29	46.56	74.00	-27.44
4	2489.81	5.41	29.01	38.12	53.77	50.07	74.00	-23.93

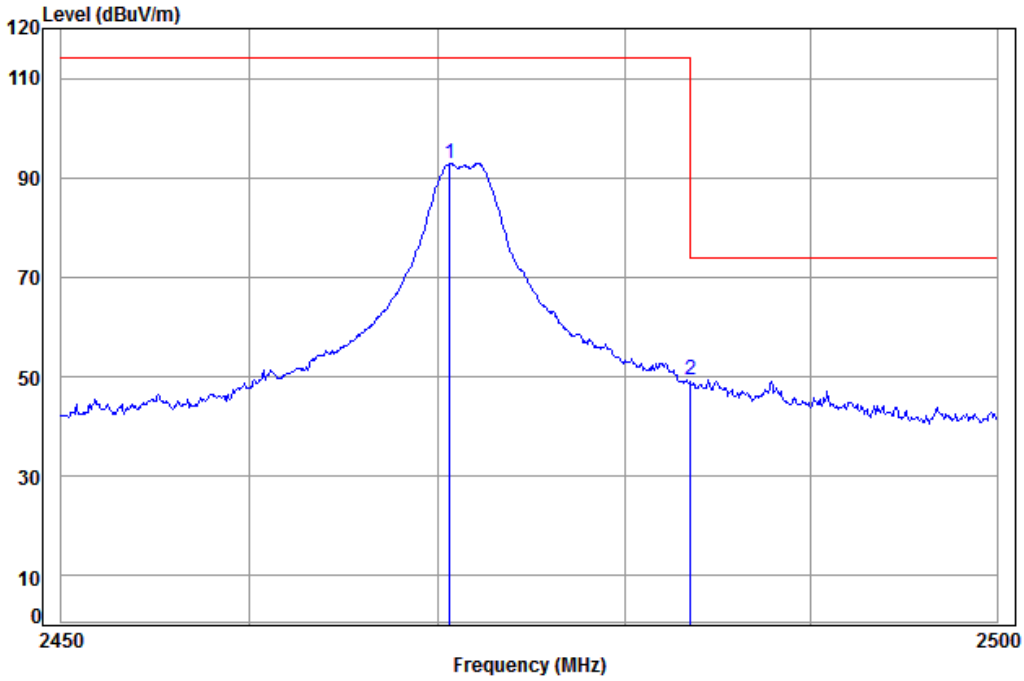
Test mode:	Transmitting	Test channel:	Highest	Remark:	Peak	Vertical



Condition: 3m Vertical
Job No: : 2039IT
Mode: : 2471.625 Band edge

	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	2470.63	5.40	28.93	38.12	100.08	96.29	114.00	-17.71
2 pk	2483.50	5.41	28.98	38.12	51.61	47.88	74.00	-26.12

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



Condition: 3m Horizontal
Job No: : 2039IT
Mode: : 2471.625 Band edge

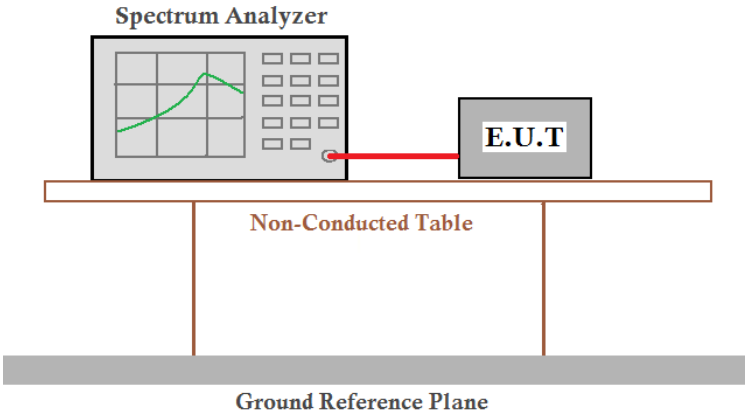
	Freq	Cable Loss	Ant Factor	Preamp Factor	Read Level	Level	Limit Line	Over Limit
	MHz	dB	dB/m	dB	dBuV	dBuV/m	dBuV/m	dB
1 pp	2470.63	5.40	28.93	38.12	96.69	92.90	114.00	-21.10
2 pk	2483.50	5.41	28.98	38.12	53.19	49.46	74.00	-24.54

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.

6.5 20dB Bandwidth

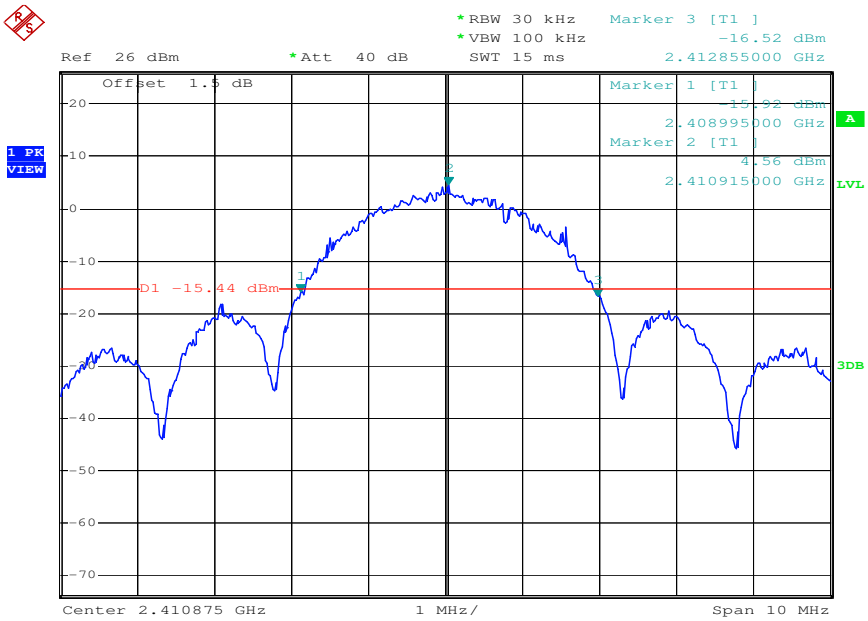
Test Requirement:	47 CFR Part 15C Section 15.215
Test Method:	ANSI C63.10:2013
Test Setup:	
Instruments Used:	Refer to section 5.10 for details
Exploratory Test Mode:	Non-hopping transmitting mode with all kind of modulation and all kind of data type
Final Test Mode:	Through Pre-scan, find the DH3 of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

Measurement Data

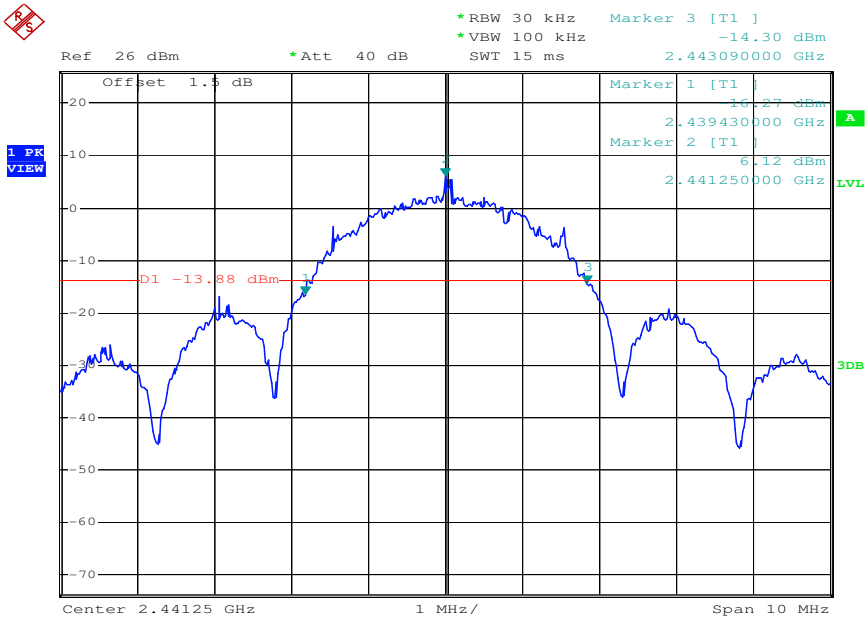
Test channel	20dB bandwidth (MHz)	Results
Lowest	3.86	Pass
Middle	3.66	Pass
Highest	3.68	Pass

Test plot as follows:

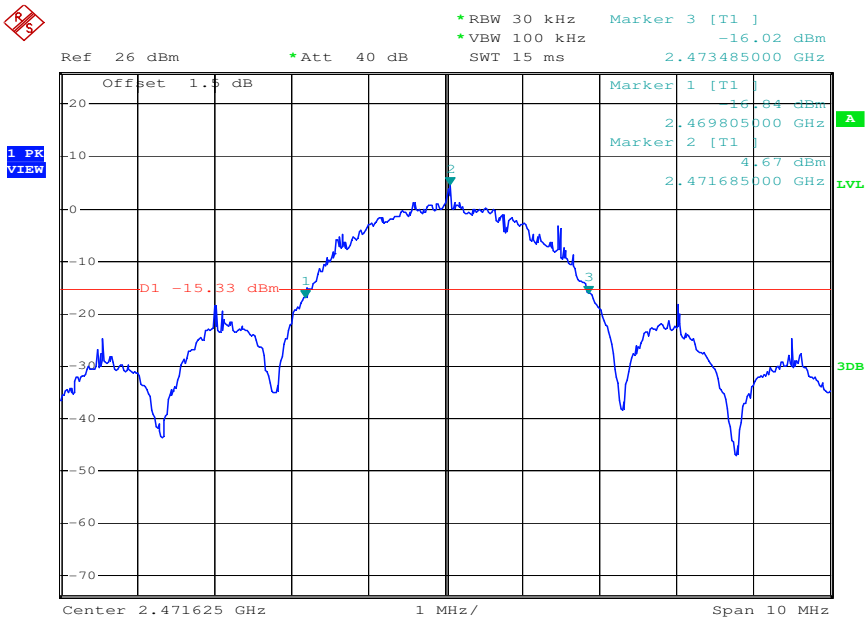
Test channel:	Lowest



Test channel:	Middle



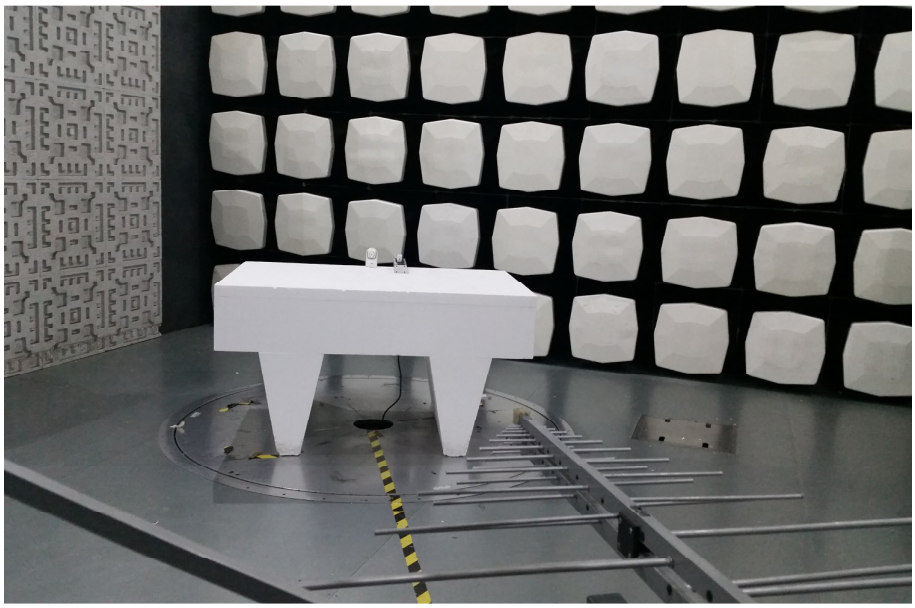
Test channel:	Highest

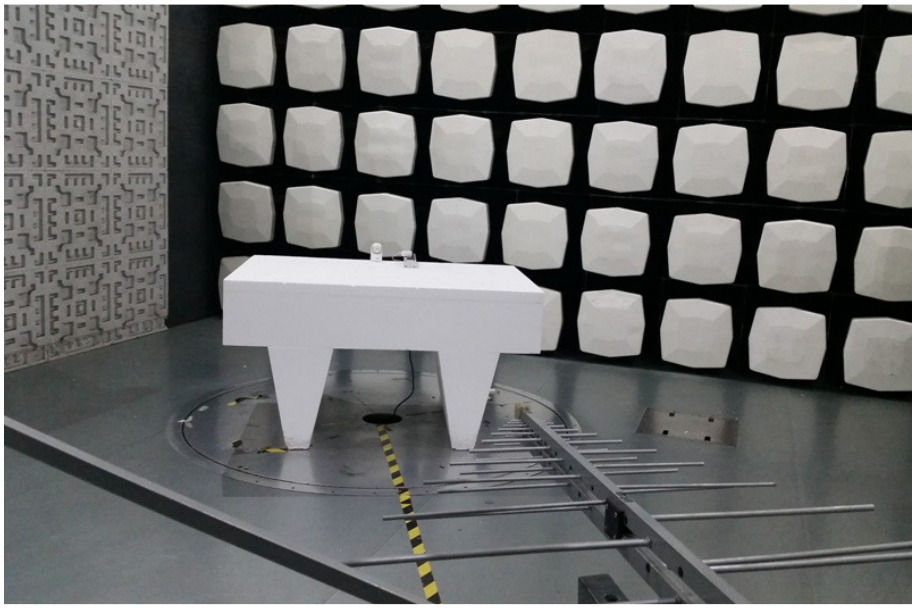


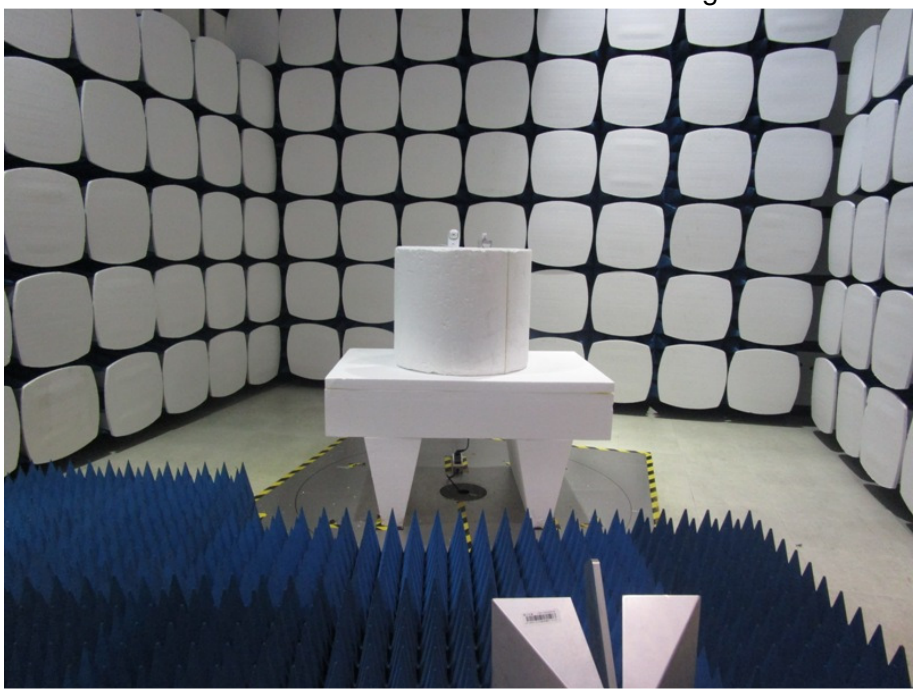
7 Photographs

Test model No.: DXR-8 (DXR-8BU)

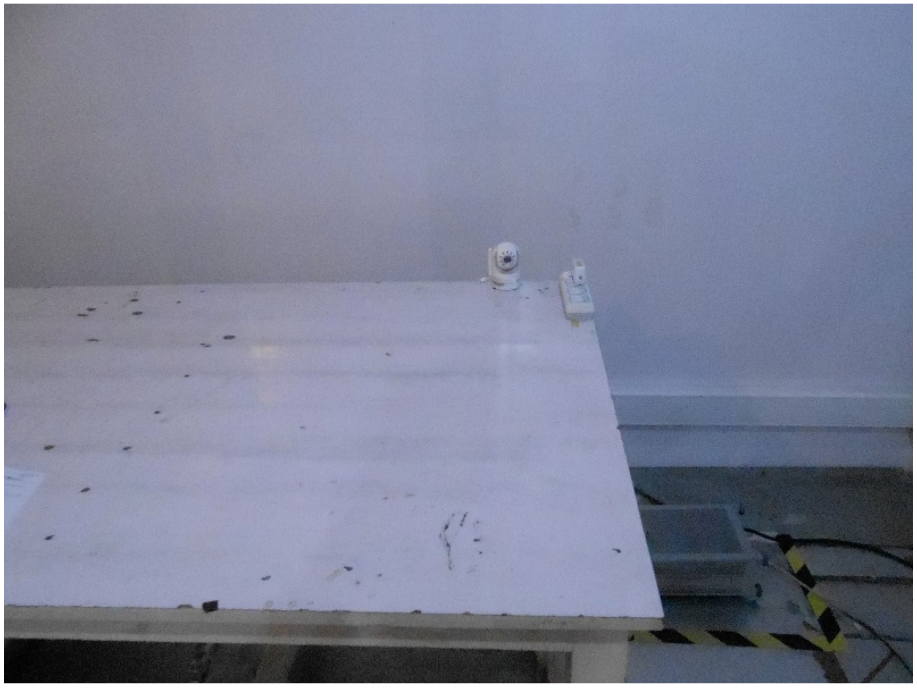
7.1 Radiated Emission Test Setup

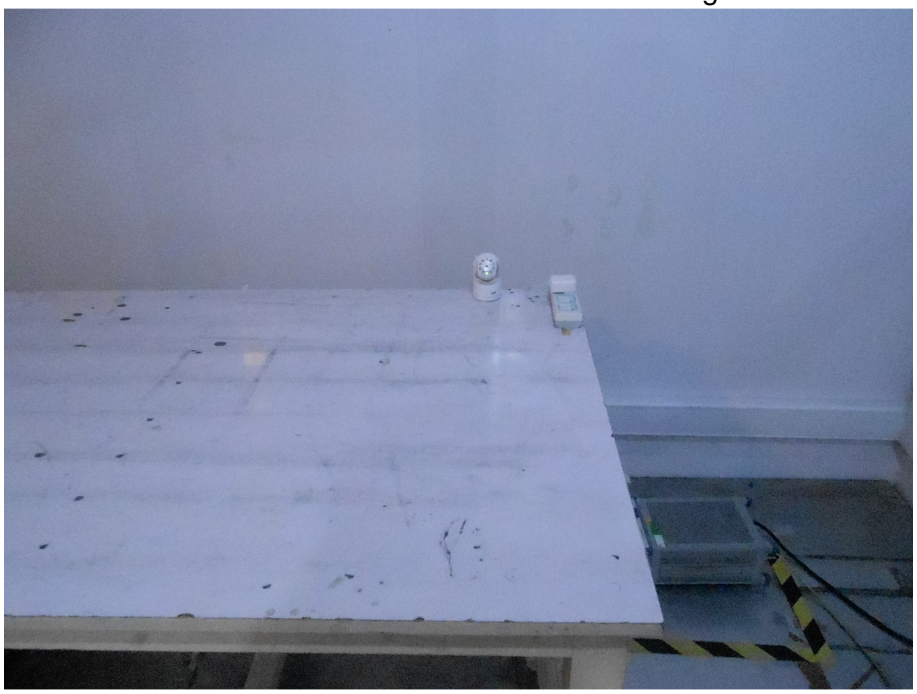






7.2 Conducted Emission





7.3 EUT Constructional Details

Refer to Appendix A - Photographs of EUT Constructional Details for HKES1511002039IT.