SGS-CSTC Standards Technical Services Ltd.

No. 1 Workshop, M-10, Middle section, Science & Technology Park, Nanshan District, Shenzhen, Guangdong, China 518057

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FCC REPORT

Application No. :	SZEM1206003540AV
Applicant:	DAKANG HOLDING CO., LTD
Manufacturer:	SHENZHEN SAN JING ELECTRONICS CO., LTD.
Factory:	SHENZHEN SAN JING ELECTRONICS CO., LTD.
Product Name:	Active Speaker
Model No.(EUT):	SJ-S307-W
Add Model No.:	SJ-SXXX-Y (the letter "X" stands for 0~9, and the letter "Y" stands for 0~9 or A~Z) except of model No. SJ-S307-W
FCC ID:	OVI--RF915
Standards:	47 CFR PART 15, SUBPART C (2011)
Date of Receipt:	2012-06-28
Date of Test:	2012-07-03 TO 2012-08-02
Date of Issue:	2012-08-21
Test Result:	**PASS ***

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

Authorized Signature:

Jack Zhang
EMC Laboratory Manager

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
AC Power Line Conducted Emission	47 CFR Part 15, Subpart C Section 15.207	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

Remark:

Model No.: SJ-SXXX-Y (the letter "X" stands for 0~9, and the letter "Y" stands for 0~9 or A~Z)

Only the model SJ-S307-W was tested, since the electrical circuit design, layout, components used and internal wiring were identical for all above models, with difference being model number.

3 Contents

4 General Information

4.1 Client Information

Applicant:	DAKANG HOLDING CO., LTD
Address of Applicant:	Anji Economic Development Zone, Zhejiang Province, 313300, China
Manufacturer:	SHENZHEN SAN JING ELECTRONICS CO., LTD.
Address of Manufacturer:	F11, W2-A, NO.025, Gaoxin Industrial Village, Rd.4, Gaoxin South, Hi-Tech Park, Nanshan District, Shenzhen, China
Factory:	SHENZHEN SAN JING ELECTRONICS CO., LTD.
Address of Factory:	F11, W2-A, NO.025, Gaoxin Industrial Village, Rd.4, Gaoxin South, Hi-Tech Park, Nanshan District, Shenzhen, China

4.2 General Description of EUT

Name:	Active Speaker
Model No.:	SJ-SXXX-Y (the letter "X" stands for 0~9, and the letter "Y" stands for 0~9 or A~Z)
Frequency Range:	914M-915MHz
Modulation Type:	FSK
Sample Type:	Portable production
Antenna Type:	Integral
PowerSupply:	3.0V DC (1.5V x 2 "AAA" Size Batteries)
Test Voltage:	3.0V DC

Operation Frequency each of channel	
Channel	Frequency
Band 1	914MHz
Band 2	914.5MHz
Band 3	915MHz

Note:

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)	914MHz
The Middle channel(CH2)	914.5MHz
The Highest channel(CH3)	915MHz

4.3 Test Environment and Mode

Operating Environment:	
Temperature:	27.0 °C
Humidity:	50 % RH
Atmospheric Pressure:	995mbar
Test mode:	
Transmitting mode:	Keep the EUT in transmitting mode.

4.4 Description of Support Units

The EUT has been tested with associated equipment below.

Description	Manufacturer	Model No.
AC/DC Adapter INPUT: AC100-240V OUTPUT: DC 3V 1A	ACYZ	ADC1201

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

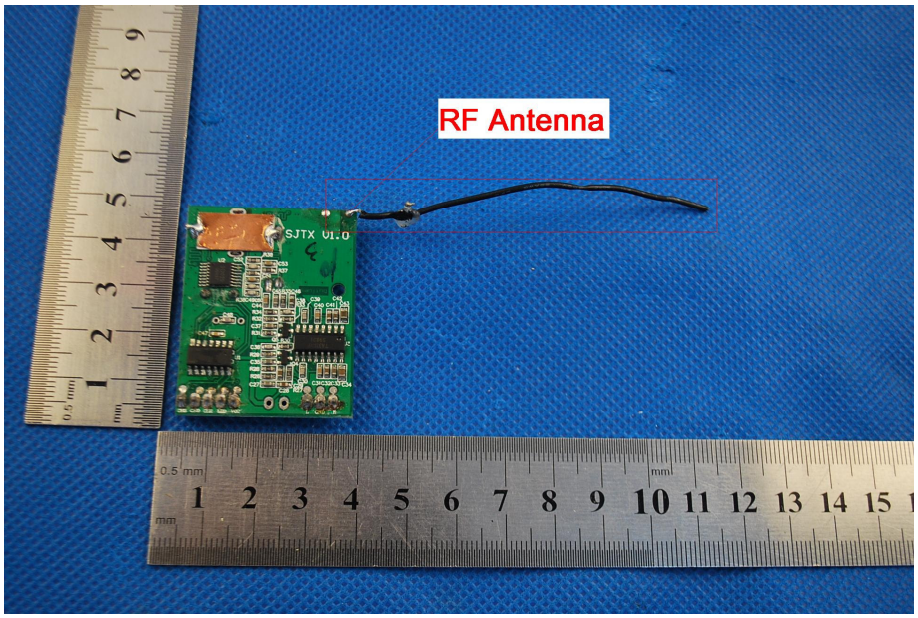
RE in Chamber					
Item	**Test Equipment**	**Manufacturer**	**Model No.**	**Inventory No.**	**Cal.Due date (yyyy-mm-dd)**
1	3m Semi-Anechoic Chamber	ETS-LINDGREN	N/A	SEL0017	2013-06-10
2	EMI Test Receiver	Rohde & Schwarz	ESIB26	SEL0023	2013-05-17
3	EMI Test software	AUDIX	E3	SEL0050	N/A
4	BiConiLog Antenna (26-3000MHz)	ETS-LINDGREN	3142C	SEL0015	2012-10-29
5	Double-ridged horn (1-18GHz)	ETS-LINDGREN	3117	SEL0006	2012-10-29
6	Horn Antenna (18-26GHz)	ETS-LINDGREN	3160	SEL0076	2012-10-29
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	2012-11-26
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	2012-10-23
16	Humidity/ Temperature Indicator	Shanhai Qixiang	ZJ1-2B	SEL0103	2012-10-27
17	Signal Generator (10M-27GHz)	Rohde & Schwarz	SMR27	SEL0067	2013-05-17
18	Signal Generator	Rohde & Schwarz	SMY01	SEL0155	2012-10-23
19	Loop Antenna	Beijing Daze	ZN30401	SEL0203	2013-6-4

Conducted Emission					
Item	**Test Equipment**	**Manufacturer**	**Model No.**	**Inventory No.**	**Cal.Due date (yyyy-mm-dd)**
1	Shielding Room	ZhongYu Electron	GB-88	SEL0042	2013-06-10
2	LISN	Rohde & Schwarz	ENV216	SEL0152	2012-10-23
3	LISN	ETS-LINDGREN	3816/2	SEL0021	2013-5-17
4	8 Line ISN	Fischer Custom Communications Inc.	FCC-TLISN-T8-02	SEL0162	2012-11-11
5	4 Line ISN	Fischer Custom Communications Inc.	FCC-TLISN-T4-02	SEL0163	2012-11-11
6	2 Line ISN	Fischer Custom Communications Inc.	FCC-TLISN-T2-02	SEL0164	2012-11-11
7	EMI Test Receiver	Rohde & Schwarz	ESCI	SEL0022	2013-5-17
8	Coaxial Cable	SGS	N/A	SEL0025	2013-05-29
9	DC Power Supply	Zhao Xin	RXN-305D	SEL0117	2012-10-23
10	Humidity/ Temperature Indicator	Shanhai Qixiang	ZJ1-2B	SEL0103	2012-10-27
11	Barometer	Chang Chun	DYM3	SEL0088	2013-05-24

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	2012-10-23
2	Humidity/ Temperature Indicator	HYGRO	ZJ1-2B	SEL0033	2012-10-27
3	Spectrum Analyzer	Rohde & Schwarz	FSP	SEL0154	2012-10-23
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	2012-10-23
10	Attenuator	Beijin feihang taida	TST-2-6dB	SEL0205	2013-05-17
11	Power Divider(splitter)	Agilent Technologies	11636B	SEL0130	2012-11-29

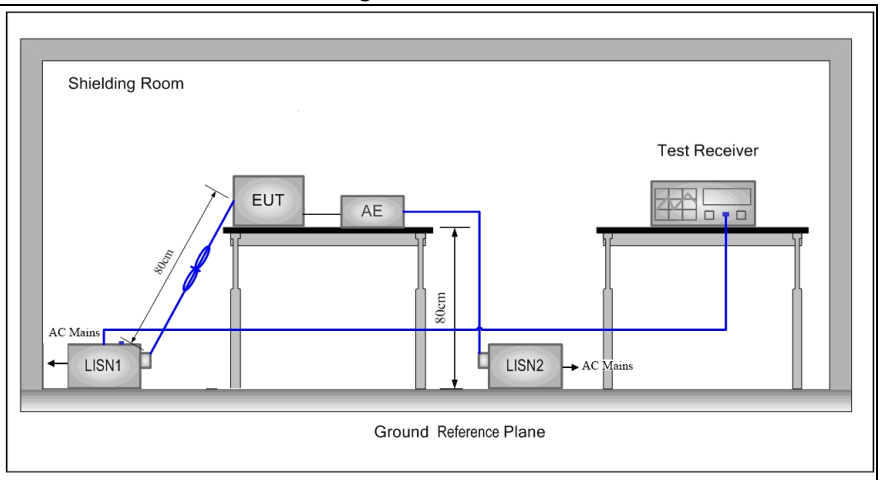
5 Test results and Measurement Data

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.	
	

5.2 Conducted Emissions

<table>
<tr><td>Test Requirement:</td><td>47 CFR Part 15C Section 15.207</td></tr>
<tr><td>Test Method:</td><td>ANSI C63.10: 2009</td></tr>
<tr><td>Test Frequency Range:</td><td>150kHz to 30MHz</td></tr>
<tr><td>Limit:</td><td>
<table>
<tr><th rowspan="2">Frequency range (MHz)</th><th colspan="2">Limit (dBuV)</th></tr>
<tr><th>Quasi-peak</th><th>Average</th></tr>
<tr><td>0.15-0.5</td><td>66 to 56*</td><td>56 to 46*</td></tr>
<tr><td>0.5-5</td><td>56</td><td>46</td></tr>
<tr><td>5-30</td><td>60</td><td>50</td></tr>
</table>
* Decreases with the logarithm of the frequency.
</td></tr>
<tr><td>Test Procedure:</td><td>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: 2009 on conducted measurement.</td></tr>
</table>

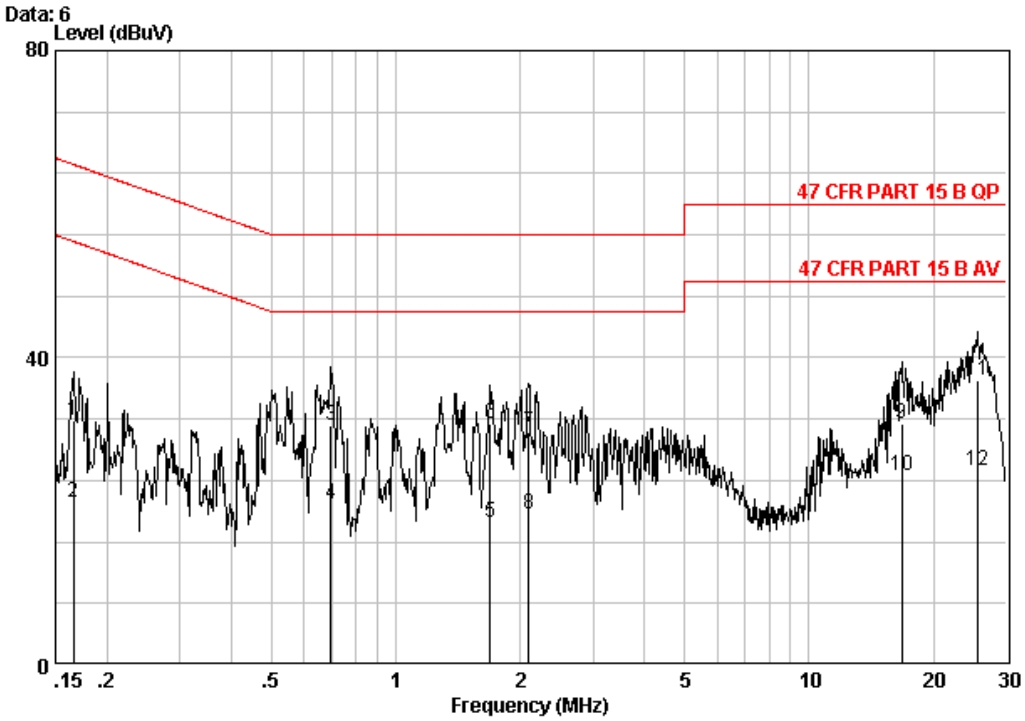
Test Setup:	
Test Mode:	Transmitting mode
Instruments Used:	Refer to section 4.10 for details
Test Results:	Pass

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.

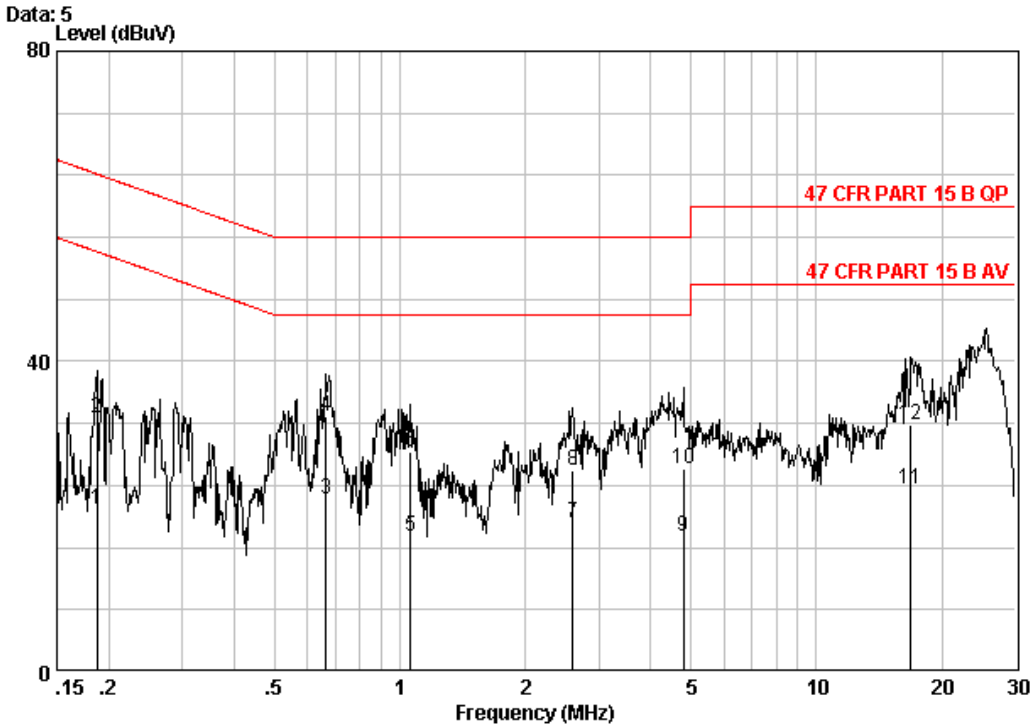
Live Line:



Site : Shielding Room
Condition : 47 CFR PART 15 B QP CE LINE
Job No. : 3540AV
Mode : Transmitting

		Freq	Cable Loss	LISN Factor	Read Level	Level	Limit Line	Over Limit	Remark
		MHz	dB	dB	dBuV	dBuV	dBuV	dB	
1		0.16589	0.02	9.70	22.15	31.87	65.16	-33.29	QP
2		0.16589	0.02	9.70	11.44	21.16	55.16	-34.01	Average
3		0.69725	0.02	9.80	21.37	31.19	56.00	-24.81	QP
4		0.69725	0.02	9.80	11.05	20.87	46.00	-25.13	Average
5		1.689	0.02	9.80	8.64	18.46	46.00	-27.54	Average
6		1.689	0.02	9.80	21.51	31.33	56.00	-24.67	QP
7		2.099	0.02	9.81	20.53	30.36	56.00	-25.64	QP
8		2.099	0.02	9.81	9.83	19.66	46.00	-26.34	Average
9		16.750	0.02	10.10	21.35	31.47	60.00	-28.53	QP
10		16.750	0.02	10.10	14.41	24.52	50.00	-25.48	Average
11	@	25.591	0.03	10.10	26.86	36.99	60.00	-23.01	QP
12		25.591	0.03	10.10	15.16	25.29	50.00	-24.71	Average

Neutral Line:



Site : Shielding Room
Condition : 47 CFR PART 15 B QP CE NEUTRAL
Job No. : 3540AV
Mode : Transmitting

	Freq	Cable Loss	LISN Factor	Read Level	Level	Limit Line	Over Limit	Remark
	MHz	dB	dB	dBuV	dBuV	dBuV	dB	
1	0.18738	0.02	9.70	11.10	20.82	54.15	-33.33	Average
2	0.18738	0.02	9.70	22.95	32.67	64.15	-31.48	QP
3	0.66478	0.02	9.80	12.49	22.31	46.00	-23.69	Average
4	0.66478	0.02	9.80	23.08	32.90	56.00	-23.10	QP
5	1.060	0.02	9.80	7.52	17.34	46.00	-28.66	Average
6	1.060	0.02	9.80	18.47	28.29	56.00	-27.71	QP
7	2.594	0.02	9.83	9.23	19.08	46.00	-26.92	Average
8	2.594	0.02	9.83	16.19	26.04	56.00	-29.96	QP
9	4.797	0.01	9.90	7.61	17.52	46.00	-28.48	Average
10	4.797	0.01	9.90	16.15	26.06	56.00	-29.94	QP
11	16.839	0.02	10.04	13.45	23.51	50.00	-26.49	Average
12	16.839	0.02	10.04	21.82	31.88	60.00	-28.12	QP

Notes:

1. The following Quasi-Peak and Average measurements were performed on the EUT:

2. Final Test Level =Receiver Reading + LISN Factor + Cable Loss.

5.3 Radiated Emission

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	100kHz	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
902-928MHz	94.0	Quasi-peak

Test Setup:

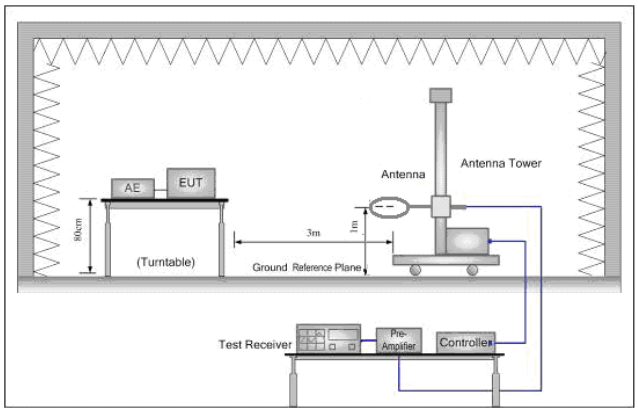


Figure 1. Below 30MHz

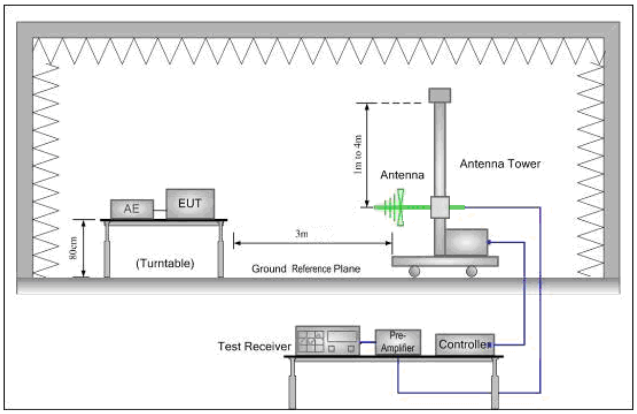


Figure 2. 30MHz to 1GHz

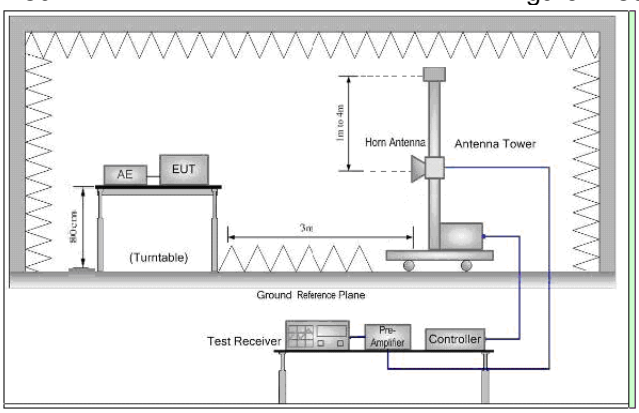


Figure 3. Above 1 GHz

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

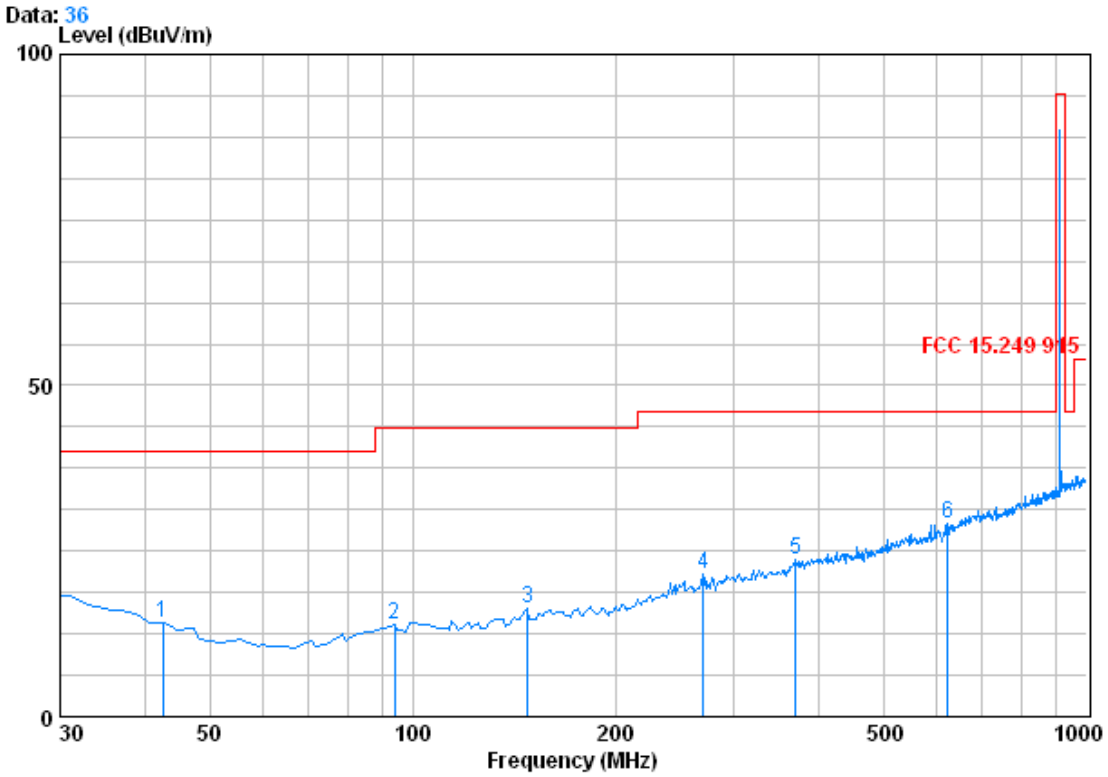
5.3.1.1 Field Strength Of The Fundamental Signal

QP 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
914	3.62	23.26	26.71	90.36	90.53	94	-3.47	Horizontal
914	3.62	23.26	26.71	88.61	88.78	94	-5.22	Vertical
914.5	3.62	23.26	26.71	90.66	90.83	94	-3.17	Horizontal
914.5	3.62	23.26	26.71	88.52	88.69	94	-5.31	Vertical
915	3.62	23.26	26.71	90.34	90.51	94	-3.49	Horizontal
915	3.62	23.26	26.71	90.24	90.41	94	-3.59	Vertical

5.3.1.2 Spurious Emissions

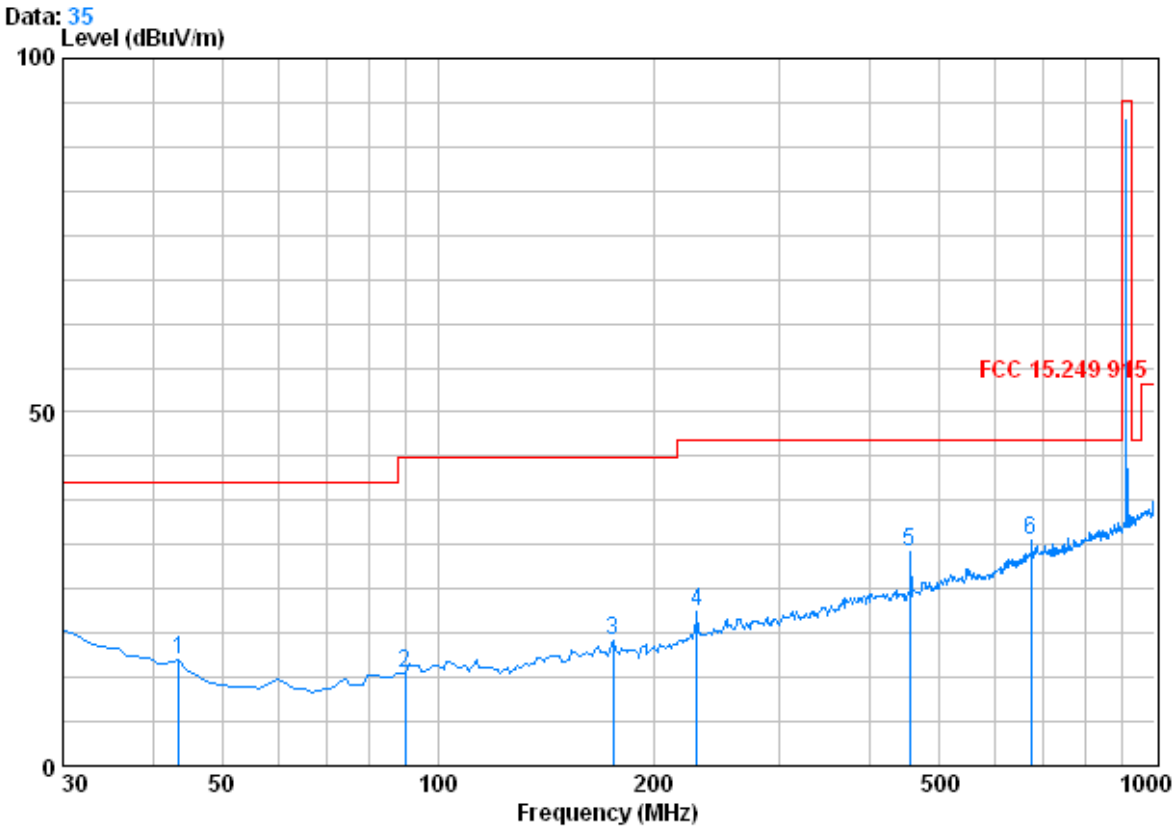
30MHz~1GHz			
Test mode:	Transmitting	914MHz	Vertical



Condition : FCC 15.249 915 3m 3142C VERTICAL
Job No. : 3540AV
test mode : TX ON band 1

	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	42.610	0.66	10.24	27.31	30.52	14.11	40.00	-25.89
2	94.020	1.14	8.87	27.21	31.16	13.96	43.50	-29.54
3	148.340	1.32	8.86	26.91	33.21	16.47	43.50	-27.03
4	269.590	1.77	12.70	26.48	33.40	21.40	46.00	-24.60
5	369.500	2.12	15.87	26.93	32.70	23.76	46.00	-22.24
6	622.670	2.75	20.44	27.51	33.43	29.10	46.00	-16.90

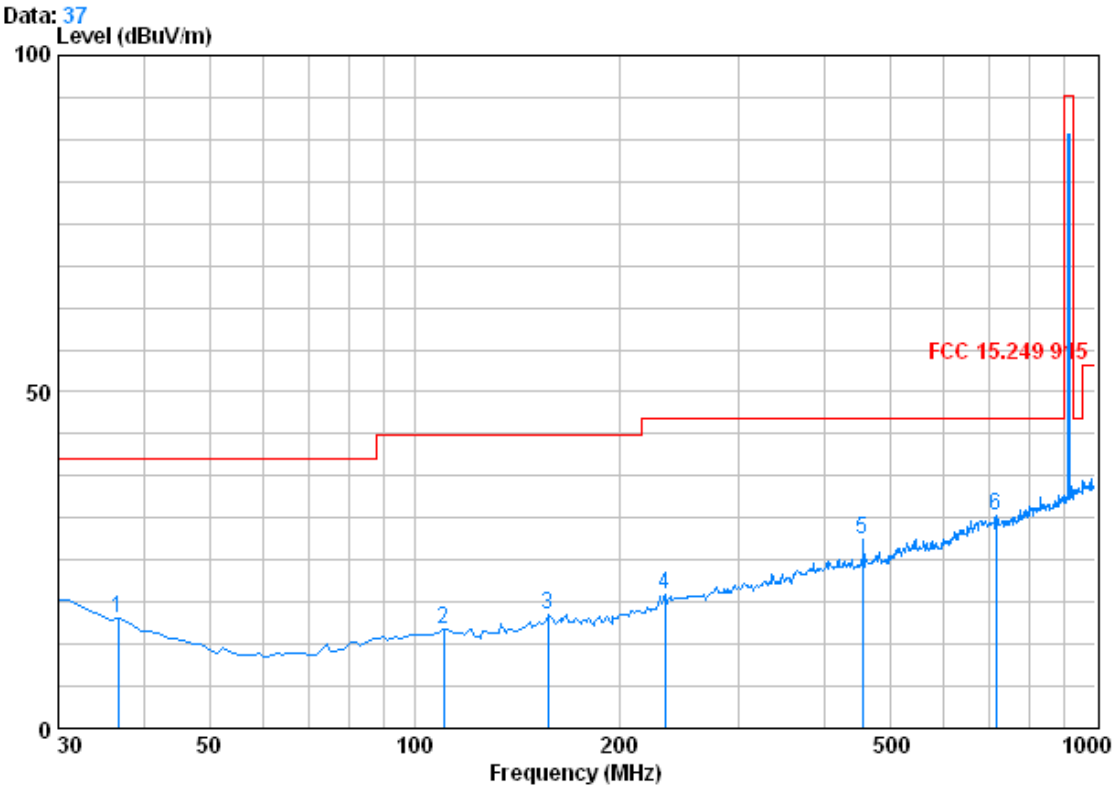
Test mode:	Transmitting	914MHz	Horizontal



Condition : FCC 15.249 915 3m 3142C HORIZONTAL
Job No. : 3540AV
test mode : TX ON band 1

	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	43.580	0.68	10.53	27.31	30.98	14.88	40.00	-25.12
2	90.140	1.10	8.71	27.21	30.56	13.16	43.50	-30.34
3	175.500	1.36	9.71	26.79	33.51	17.79	43.50	-25.71
4	229.820	1.57	11.64	26.59	35.15	21.77	46.00	-24.23
5	455.830	2.43	17.09	27.48	38.09	30.14	46.00	-15.86
6	673.110	2.85	21.40	27.45	35.17	31.97	46.00	-14.03

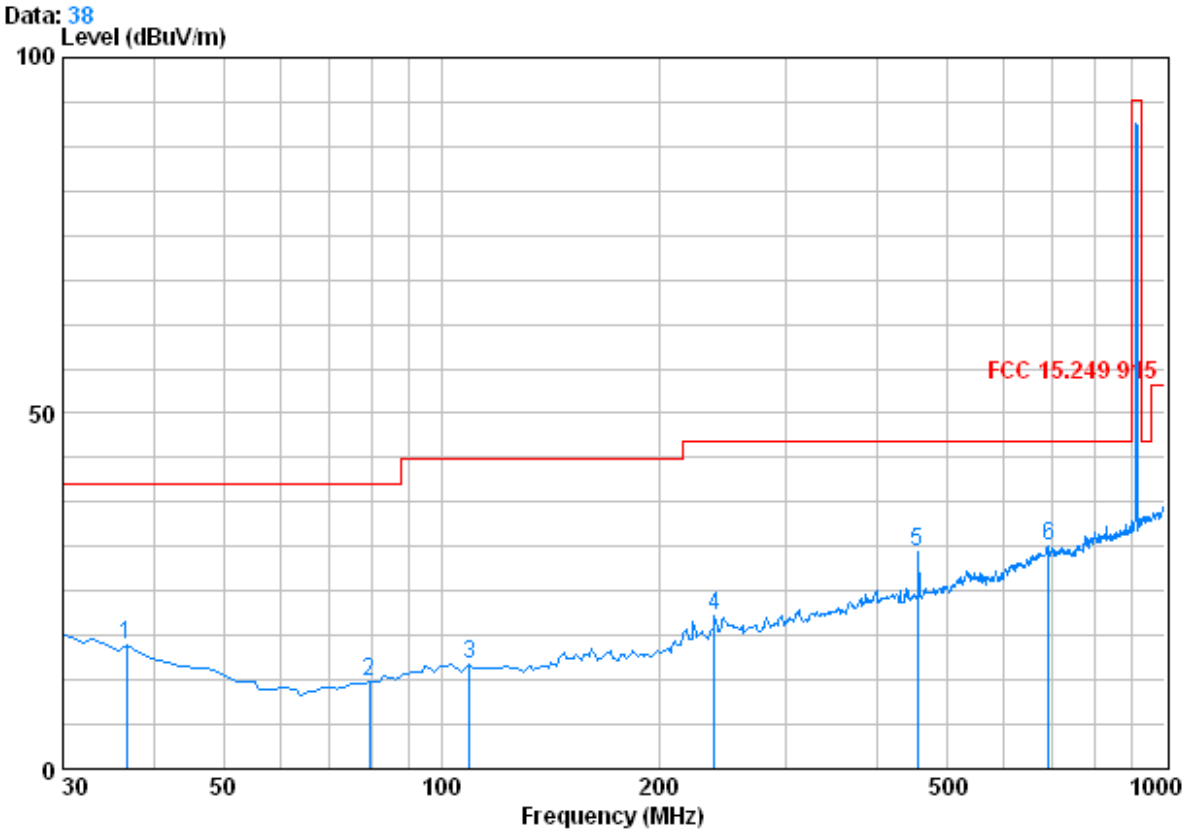
Test mode:	Transmitting	914.5MHz	Vertical



Condition : FCC 15.249 915 3m 3142C VERTICAL
Job No. : 3540AV
test mode : TX ON band 2

	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	36.790	0.60	12.30	27.33	30.90	16.47	40.00	-23.53
2	110.510	1.23	8.57	27.13	32.08	14.76	43.50	-28.74
3	157.070	1.33	9.42	26.87	33.04	16.92	43.50	-26.58
4	233.700	1.59	11.79	26.58	33.22	20.02	46.00	-25.98
5	455.830	2.43	17.09	27.48	35.98	28.03	46.00	-17.97
6	714.820	2.95	21.60	27.39	34.44	31.59	46.00	-14.41

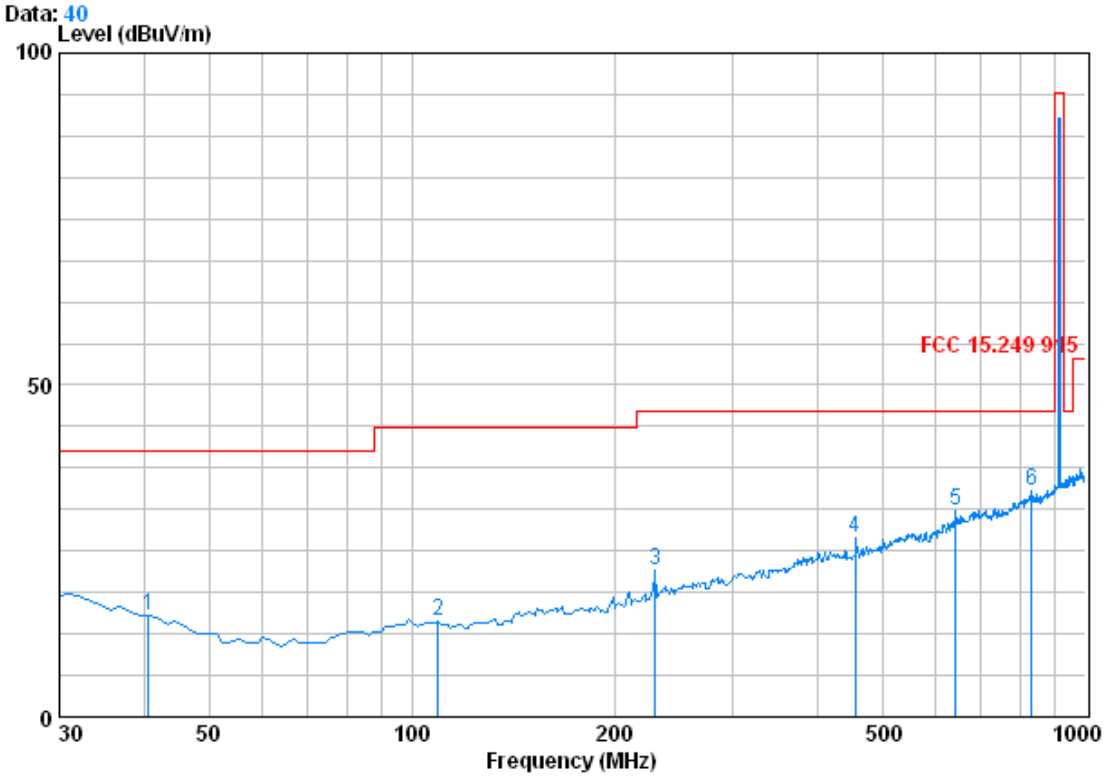
Test mode:	Transmitting	914.5MHz	Horizontal



Condition : FCC 15.249 915 3m 3142C HORIZONTAL
Job No. : 3540AV
test mode : TX ON band 2

	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	36.790	0.60	12.53	27.33	31.53	17.33	40.00	-22.67
2	79.470	1.08	7.68	27.23	30.64	12.17	40.00	-27.83
3	109.540	1.23	8.62	27.14	32.06	14.77	43.50	-28.73
4	238.550	1.62	11.93	26.57	34.60	21.58	46.00	-24.42
5	455.830	2.43	17.09	27.48	38.51	30.56	46.00	-15.44
6	691.540	2.88	21.54	27.42	34.37	31.37	46.00	-14.63

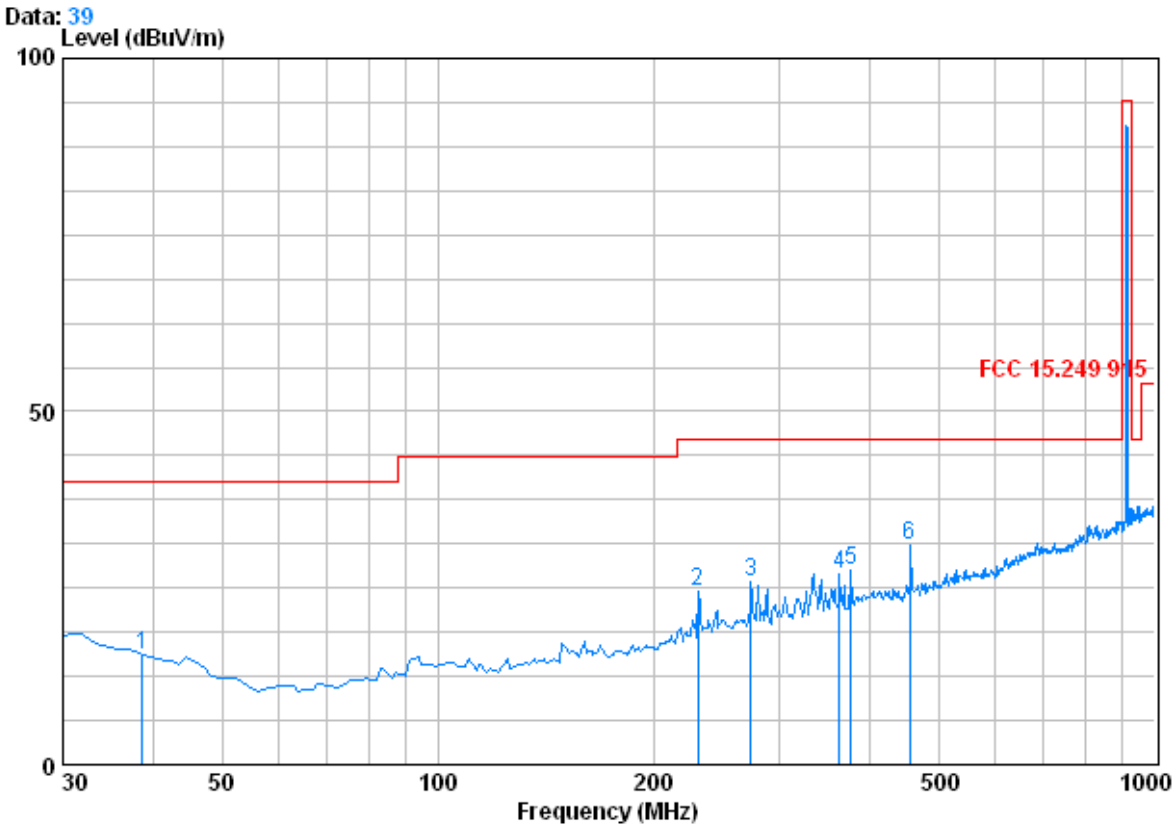
Test mode:	Transmitting	915MHz	Vertical



Condition : FCC 15.249 915 3m 3142C VERTICAL
Job No. : 3540AV
test mode : TX ON band 3

	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	40.670	0.61	10.93	27.32	31.14	15.37	40.00	-24.63
2	109.540	1.23	8.62	27.14	31.72	14.43	43.50	-29.07
3	229.820	1.57	11.64	26.59	35.52	22.14	46.00	-23.86
4	455.830	2.43	17.09	27.48	34.83	26.88	46.00	-19.12
5	641.100	2.78	20.56	27.49	35.18	31.04	46.00	-14.96
6	831.220	3.34	22.40	27.13	35.32	33.93	46.00	-12.07

Test mode:	Transmitting	915MHz	Horizontal



Condition : FCC 15.249 915 3m 3142C HORIZONTAL
Job No. : 3540AV
test mode : TX ON band 3

	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	38.730	0.60	12.07	27.32	30.32	15.66	40.00	-24.34
2	230.790	1.58	11.70	26.59	37.76	24.44	46.00	-21.56
3	273.470	1.78	12.78	26.47	37.90	25.99	46.00	-20.01
4	362.710	2.10	15.72	26.89	35.98	26.91	46.00	-19.09
5	377.260	2.14	16.03	26.99	36.30	27.49	46.00	-18.51
6	455.830	2.43	17.09	27.48	38.88	30.93	46.00	-15.07

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
1364.583	2.43	27.85	39.29	56.51	47.50	74	-26.50	Vertical
1828.100	2.73	30.57	39.50	51.89	45.69	74	-28.31	Vertical
3176.874	3.46	33.33	40.44	49.42	45.77	74	-28.23	Vertical
4477.133	4.48	35.15	41.39	49.26	47.50	74	-26.50	Vertical
6353.309	5.22	36.12	40.61	50.72	51.45	74	-22.55	Vertical
8128.305	6.20	36.05	39.08	49.51	52.68	74	-21.32	Vertical
1364.583	2.43	27.85	39.29	54.23	45.22	74	-28.78	Horizontal
1823.896	2.72	30.44	39.49	52.92	46.59	74	-27.41	Horizontal
2349.633	2.97	32.42	39.82	49.20	44.77	74	-29.23	Horizontal
2741.574	3.17	33.03	40.12	55.18	51.26	74	-22.74	Horizontal
4083.194	4.22	34.03	41.09	49.22	46.38	74	-27.62	Horizontal
6353.309	5.22	36.12	40.61	49.62	50.35	74	-23.65	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
1364.583	2.43	27.85	39.29	55.14	46.13	74	-27.87	Vertical
1828.100	2.73	30.57	39.50	58.84	52.64	74	-21.36	Vertical
3013.006	3.32	33.40	40.31	48.53	44.94	74	-29.06	Vertical
3962.780	4.13	33.76	41.01	49.74	46.62	74	-27.38	Vertical
6109.420	5.15	35.84	40.83	50.39	50.55	74	-23.45	Vertical
7550.922	6.17	36.00	39.57	49.73	52.33	74	-21.67	Vertical
1364.583	2.43	27.85	39.29	52.25	43.24	74	-30.76	Horizontal
1828.100	2.73	30.57	39.50	55.47	49.27	74	-24.73	Horizontal
3069.022	3.38	33.37	40.35	49.11	45.51	74	-28.49	Horizontal
4477.133	4.48	35.15	41.39	49.31	47.55	74	-26.45	Horizontal
5888.437	5.09	35.53	41.02	49.75	49.35	74	-24.65	Horizontal
7550.922	6.17	36.00	39.57	49.30	51.90	74	-22.10	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
1364.583	2.43	27.85	39.29	56.90	47.89	74	-26.11	Vertical
1828.100	2.73	30.57	39.50	58.39	52.19	74	-21.81	Vertical
2741.574	3.17	33.03	40.12	57.16	53.24	74	-20.76	Vertical
4549.880	4.53	35.12	41.44	50.19	48.40	74	-25.60	Vertical
6471.426	5.25	36.26	40.51	49.64	50.64	74	-23.36	Vertical
8222.427	6.19	36.09	39.00	48.76	52.04	74	-21.96	Vertical
1364.583	2.43	27.85	39.29	53.34	44.33	74	-29.67	Horizontal
1828.100	2.73	30.57	39.50	55.83	49.63	74	-24.37	Horizontal
2971.666	3.30	33.35	40.28	47.52	43.89	74	-30.11	Horizontal
3715.352	3.91	33.47	40.83	49.14	45.69	74	-28.31	Horizontal
4518.560	4.50	35.17	41.42	50.07	48.32	74	-25.68	Horizontal
6792.036	5.33	36.01	40.23	48.80	49.91	74	-24.09	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 9GHz and 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.

5.4 Band edge (Radiated Emission)

<table>
<tr><td>Test Requirement:</td><td>47 CFR Part 15C Section 15.209 and 15.205</td></tr>
<tr><td>Test Method:</td><td>ANSI C63.10: 2009</td></tr>
<tr><td>Test Site:</td><td>Measurement Distance: 3m (Semi-Anechoic Chamber)</td></tr>
<tr><td>Limit(Band Edge):</td><td>Emissions radiated outside of the specified frequency bands, except for harmonics, shall be attenuated by at least 50 dB below the level of the fundamental or to the general radiated emission limits in Section 15.209, whichever is the lesser attenuation.
<table>
<tr><th>Frequency</th><th>Limit (dBuV/m @3m)</th><th>Remark</th></tr>
<tr><td>30MHz-88MHz</td><td>40.0</td><td>Quasi-peak Value</td></tr>
<tr><td>88MHz-216MHz</td><td>43.5</td><td>Quasi-peak Value</td></tr>
<tr><td>216MHz-960MHz</td><td>46.0</td><td>Quasi-peak Value</td></tr>
<tr><td>960MHz-1GHz</td><td>54.0</td><td>Quasi-peak Value</td></tr>
<tr><td rowspan="2">Above 1GHz</td><td>54.0</td><td>Average Value</td></tr>
<tr><td>74.0</td><td>Peak Value</td></tr>
</table></td></tr>
<tr><td>Test Setup:</td><td></td></tr>
</table>

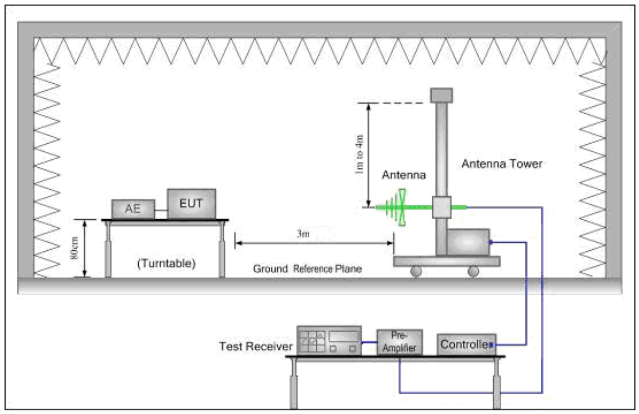


Figure 1. 30MHz to 1GHz

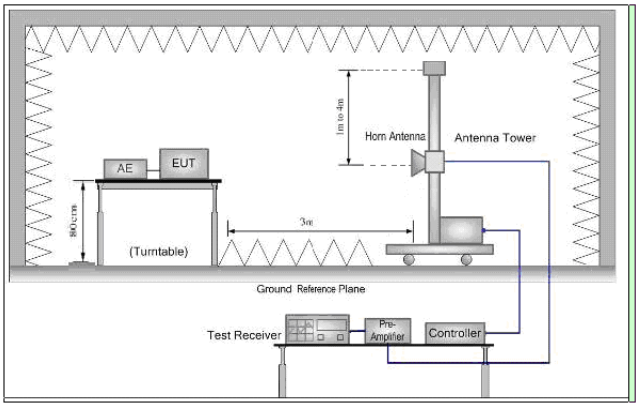


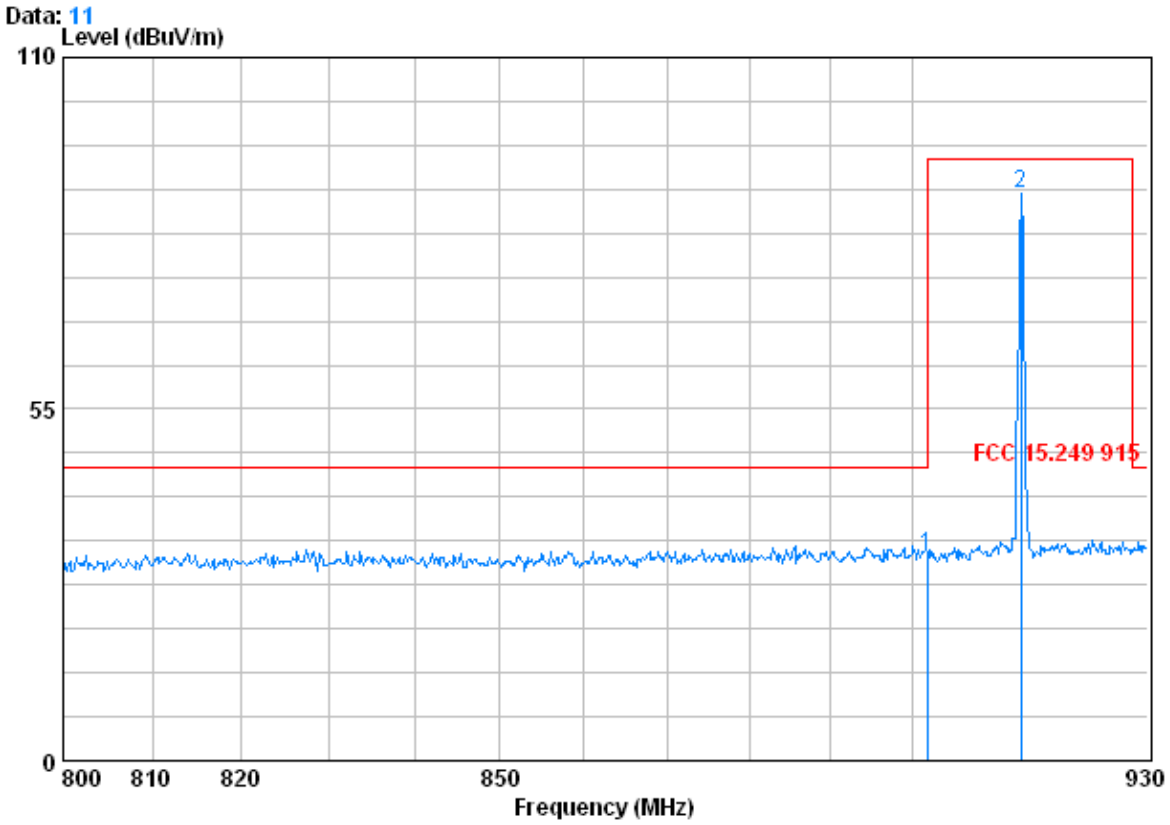
Figure 2. Above 1 GHz

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.
Instruments Used:	Refer to section 4.10 for details
Test Mode:	Transmitting mode
Test Results:	Pass

Test plot as follows:

Test mode:	Transmitting	Test channel:	Lowest	Remark:	Peak

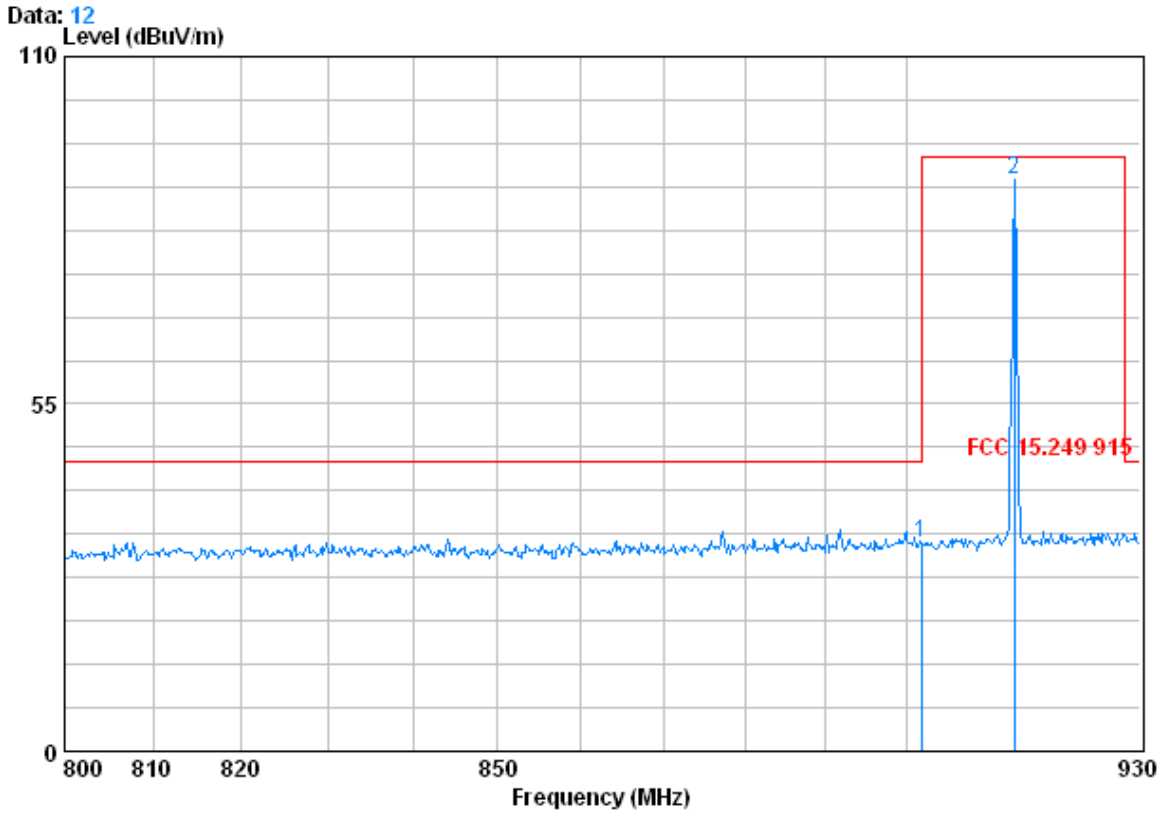
Vertical:



Condition : FCC 15.249 915 3m 3142C VERTICAL
Job No. : 3540AV
test mode : TX ON band 1

	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	902.000	3.60	23.21	26.75	32.12	32.18	46.00	-13.82
2 @	913.750	3.61	23.26	26.71	88.65	88.81	94.00	-5.19

Horizontal:

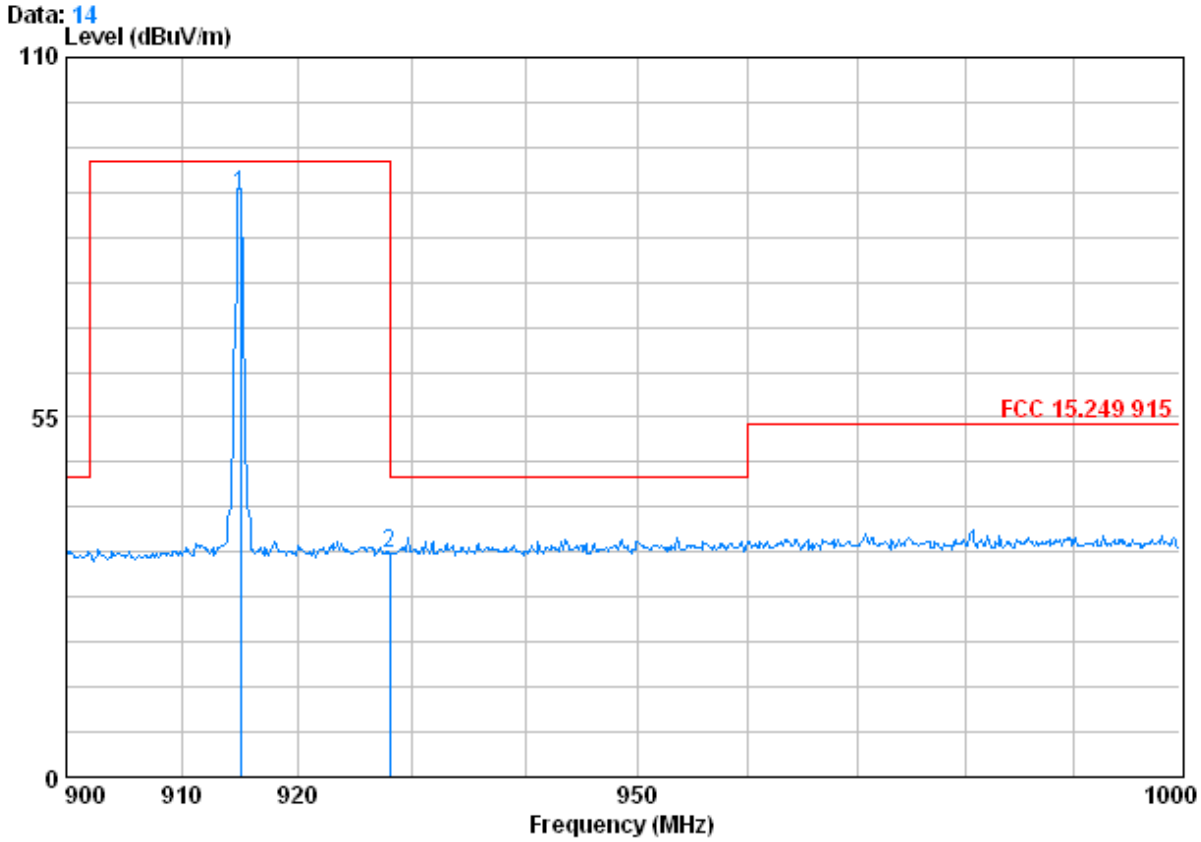


Condition : FCC 15.249 915 3m 3142C HORIZONTAL
Job No. : 3540AV
test mode : TX ON band 1

	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	902.000	3.60	23.21	26.75	32.88	32.95	46.00	-13.05
2 @	913.750	3.61	23.26	26.71	90.31	90.47	94.00	-3.53

Test mode:	Transmitting	Test channel:	Highest	Remark:	Peak

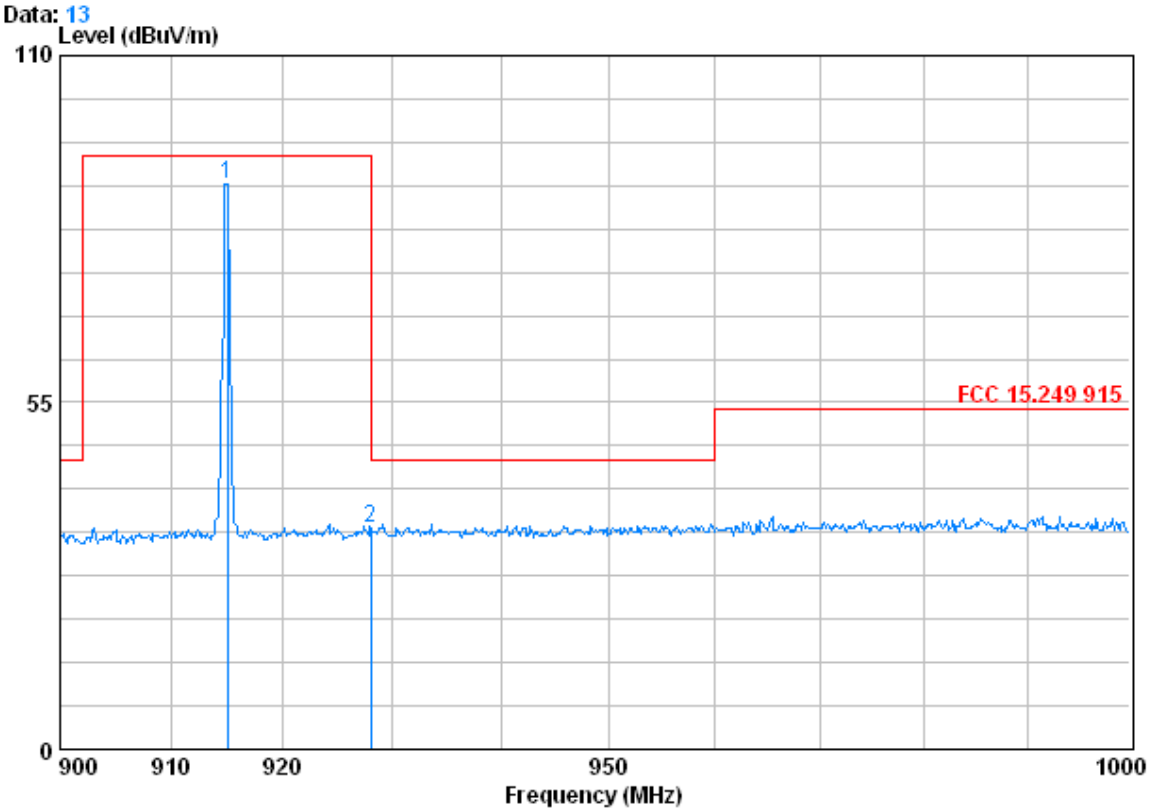
Vertical:



Condition : FCC 15.249 915 3m 3142C VERTICAL
Job No. : 3540AV
test mode : TX ON band 3

	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 @	915.000	3.62	23.26	26.71	88.73	88.89	94.00	-5.11
2	928.000	3.63	23.30	26.64	33.83	34.11	46.00	-11.89

Horizontal:



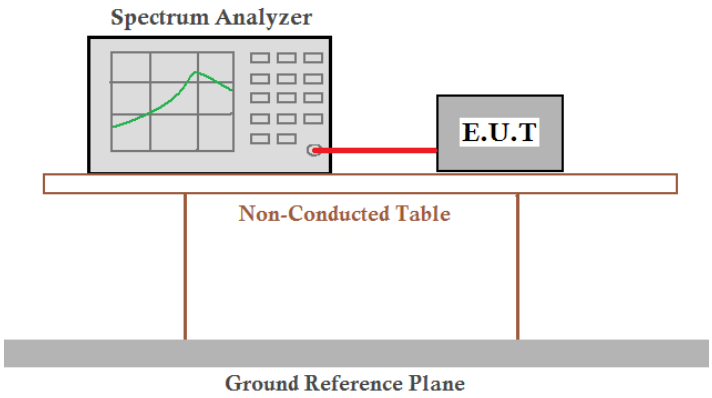
Condition : FCC 15.249 915 3m 3142C HORIZONTAL
Job No. : 3540AV
test mode : TX ON band 3

	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 @	915.000	3.62	23.26	26.71	89.49	89.66	94.00	-4.34
2	928.000	3.63	23.30	26.64	34.76	35.04	46.00	-10.96

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

5.5 20dB Bandwidth

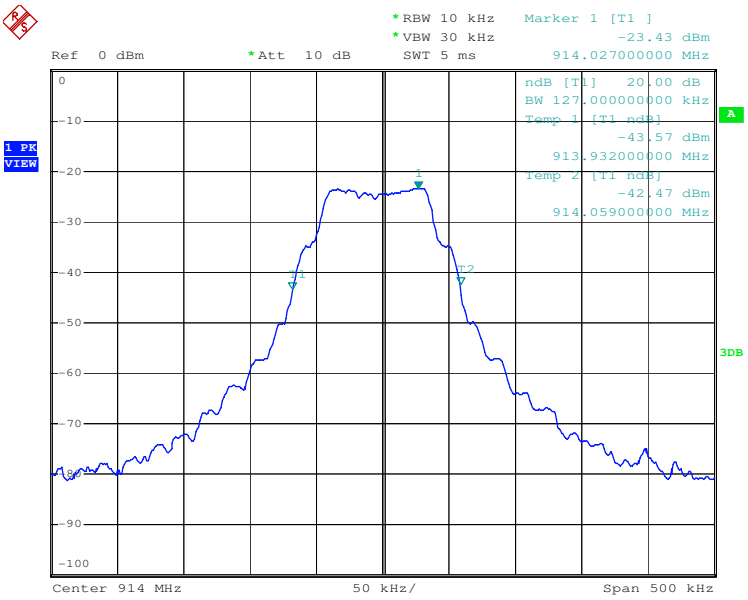
Test Requirement:	47 CFR Part 15C Section 15.215
Test Method:	ANSI C63.10:2009
Test Setup:	
Test Mode:	Transmitting mode
Limit:	N/A
Instruments Used:	Refer to section 4.10 for details
Test Results:	Pass

Measurement Data

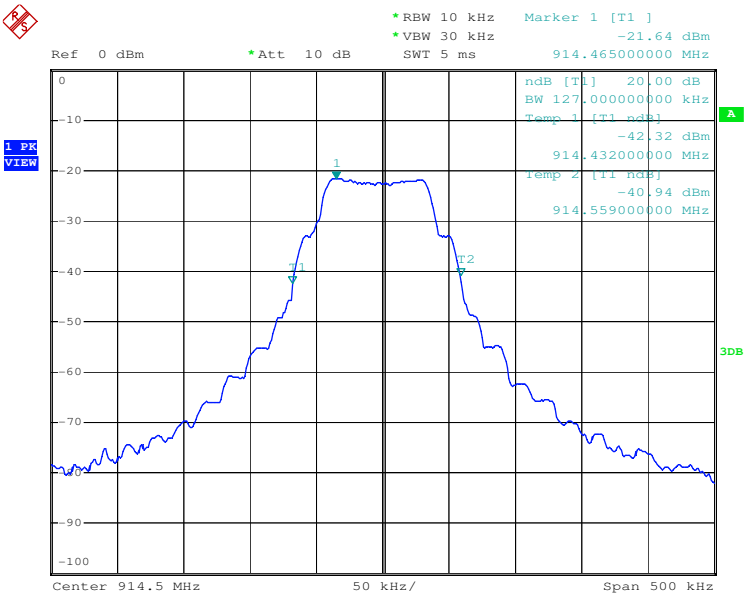
Test Channel	20dB bandwidth (MHz)	Results
Lowest	0.127	Pass
Middle	0.127	Pass
Highest	0.128	Pass

Test plot as follows:

Test channel:	Lowest



Test channel:	Middle



Test channel:	Highest