



SGS-CSTC Standards Technical Services Ltd.

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Report No.: SZEM140400184103
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FCC REPORT

Application No. : SZEM1404001841RF
Applicant: Add Inc. Ltd.
Manufacturer: AB. BA E-TECH LTD
Factory: AB. BA E-TECH LTD
Product Name: Add Me smart watches
Model No.(EUT): AMW001
Trade Mark: Add Me+
FCC ID: 2ACA2-AMW001
Standards: 47 CFR Part 15, Subpart C (2013)
Date of Receipt: 2014-04-25
Date of Test: 2014-06-05 to 2014-06-10
Date of Issue: 2014-06-16

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

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

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

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2 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
Restricted bands around fundamental frequency (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.: AMW001

The product has eight kinds of color: AMW001(Grey), AMW001(Red), AMW001(Purple), AMW001(Green), AMW001(White), AMW001(Orange), AMW001(Blue), AMW001(Black). Only the Model AMW001(Black) was tested, since the circuit design, PCB layout, electrical components used, internal wiring and functions were identical for the above models, with difference of colors.



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4 General Information

4.1 Client Information

Applicant:	Add Inc. Ltd.
Address of Applicant:	905, 9/F, Tung Lee Industrial building, 9 Lai Yip Street, Kwun Tong, Kowloon, Hong Kong
Manufacturer:	AB. BA E-TECH LTD
Address of Manufacturer:	Flat 2103, Riley House, 88 Lei Muk Road, Kwai Chung, NT, Hong Kong
Factory:	AB. BA E-TECH LTD
Address of Factory:	The Industrial Development Zone of Hexi, Yi Long Lu, JinSha, Changan, Dongguan, China

4.2 General Description of EUT

Product Name:	Add Me smart watches
Model No.:	AMW001
Trade Mark:	Add Me+
Frequency Range:	2405MHz ~ 2475MHz
Modulation Type:	GFSK
Number of Channels:	71 (declared by the client)
Sample Type:	Portable production
Antenna Type:	Integral
Antenna Gain:	0dBi
Battery:	DC 3.7V 180mAh (Li-ion Rechargeable Battery)
Test Voltage:	AC 120V 60Hz DC 3.7V battery fully charged
USB Charging Cable:	100cm (Unshield)



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

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(CH41)	2445MHz
The Highest channel(CH71)	2475MHz



4.3 Test Environment and Mode

Operating Environment:	
Temperature:	23.0 °C
Humidity:	50 % RH
Atmospheric Pressure:	1005 mbar
Test mode:	
Transmitting mode:	Keep the EUT in transmitting mode.
Charge + Transmitting mode:	Keep the EUT in transmitting mode, and charging via USB.

4.4 Description of Support Units

The EUT has been tested with associated equipment below.

Description	Manufacturer	Model No.
Adapter	Supply by SGS	N/A

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)**

Two 3m Semi-anechoic chambers of SGS-CSTC Standards Technical Services Co., Ltd. have been registered by Certification and Engineering Bureau of Industry Canada for radio equipment testing with Registration No.: 4620C-1 & 4620C-2.

4.7 Deviation from Standards

None.

4.8 Abnormalities from Standard Conditions

None.

4.9 Other Information Requested by the Customer

None.

**4.10 Equipment List**

Conducted Emission					
Item	Test Equipment	Manufacturer	Model No.	Inventory No.	Cal.Due date (yyyy-mm-dd)
1	Shielding Room	ZhongYu Electron	GB-88	SEL0042	2015-06-10
2	LISN	Rohde & Schwarz	ENV216	SEL0152	2014-10-24
3	LISN	ETS-LINDGREN	3816/2	SEL0021	2015-05-16
4	8 Line ISN	Fischer Custom Communications Inc.	FCC-TLISN-T8-02	SEL0162	2014-11-10
5	4 Line ISN	Fischer Custom Communications Inc.	FCC-TLISN-T4-02	SEL0163	2014-11-10
6	2 Line ISN	Fischer Custom Communications Inc.	FCC-TLISN-T2-02	SEL0164	2014-11-10
7	EMI Test Receiver	Rohde & Schwarz	ESCI	SEL0022	2015-05-16
8	Coaxial Cable	SGS	N/A	SEL0025	2015-05-29
9	DC Power Supply	Zhao Xin	RXN-305D	SEL0117	2014-10-24
10	Humidity/ Temperature Indicator	Shanghai Qixiang	ZJ1-2B	SEL0103	2014-10-24
11	Barometer	Chang Chun	DYM3	SEL0088	2015-05-16



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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	2015-06-10
2	EMI Test Receiver	Rohde & Schwarz	ESIB26	SEL0023	2015-05-16
3	EMI Test software	AUDIX	E3	SEL0050	N/A
4	BiConiLog Antenna (26-3000MHz)	ETS-LINDGREN	3142C	SEL0015	2014-10-24
5	Double-ridged horn (1-18GHz)	ETS-LINDGREN	3117	SEL0006	2014-10-24
6	Horn Antenna (18-26GHz)	ETS-LINDGREN	3160	SEL0076	2014-10-24
7	Pre-amplifier (0.1-1300MHz)	Agilent Technologies	8447D	SEL0053	2015-05-16
8	Pre-Amplifier (0.1-26.5GHz)	Compliance Directions Systems Inc.	PAP-0126	SEL0168	2014-10-24
9	Coaxial cable	SGS	N/A	SEL0027	2015-05-29
10	Coaxial cable	SGS	N/A	SEL0189	2015-05-29
11	Coaxial cable	SGS	N/A	SEL0121	2015-05-29
12	Coaxial cable	SGS	N/A	SEL0178	2015-05-29
13	Band filter	Amindeon	82346	SEL0094	2015-05-16
14	Barometer	Chang Chun	DYM3	SEL0088	2015-05-16
15	DC Power Supply	Zhao Xin	RXN-305D	SEL0117	2014-10-24
16	Humidity/ Temperature Indicator	Shanghai Qixiang	ZJ1-2B	SEL0103	2014-10-24
17	Signal Generator (10M-27GHz)	Rohde & Schwarz	SMR27	SEL0067	2015-05-16
18	Signal Generator	Rohde & Schwarz	SMY01	SEL0155	2014-10-24
19	Loop Antenna	Beijing Daze	ZN30401	SEL0203	2015-06-04

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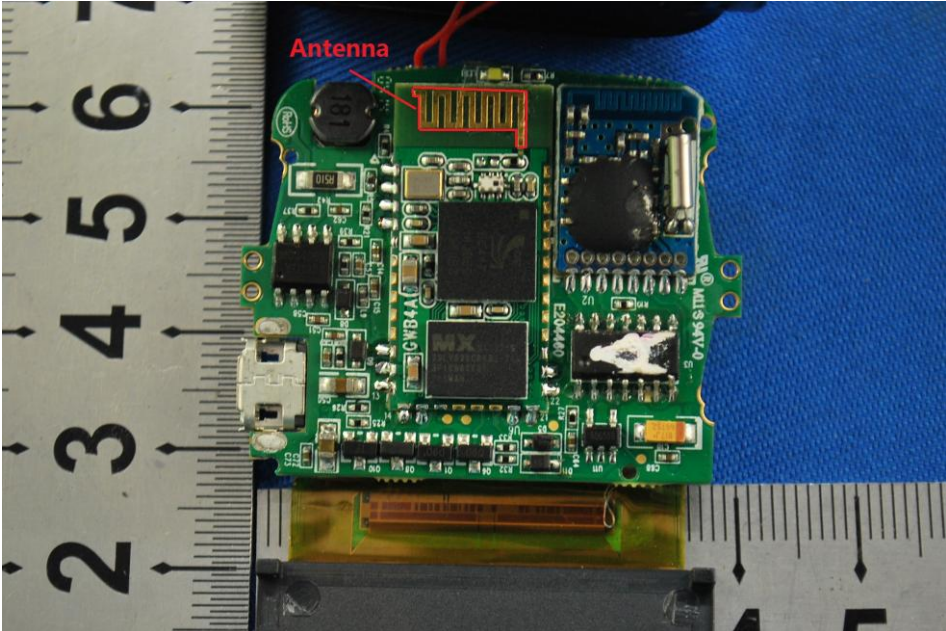
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RF connected test					
Item	Test Equipment	Manufacturer	Model No.	Inventory No.	Cal.Due date (yyyy-mm-dd)
1	DC Power Supply	Zhao Xin	RXN-305D	SEL0117	2014-10-24
2	Humidity/ Temperature Indicator	HYGRO	ZJ1-2B	SEL0033	2014-10-24
3	Spectrum Analyzer	Rohde & Schwarz	FSP	SEL0154	2014-10-24
4	Coaxial cable	SGS	N/A	SEL0178	2015-05-29
5	Coaxial cable	SGS	N/A	SEL0179	2015-05-29
6	Barometer	ChangChun	DYM3	SEL0088	2015-05-16
7	Signal Generator	Rohde & Schwarz	SML03	SEL0068	2015-05-16
8	Band filter	amideon	82346	SEL0094	2015-05-16
9	POWER METER	R & S	NRVS	SEL0144	2014-10-24
10	Attenuator	Beijin feihang taida	TST-2-6dB	SEL0205	2015-05-16
11	Power Divider(splitter)	Agilent Technologies	11636B	SEL0130	2014-10-24

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

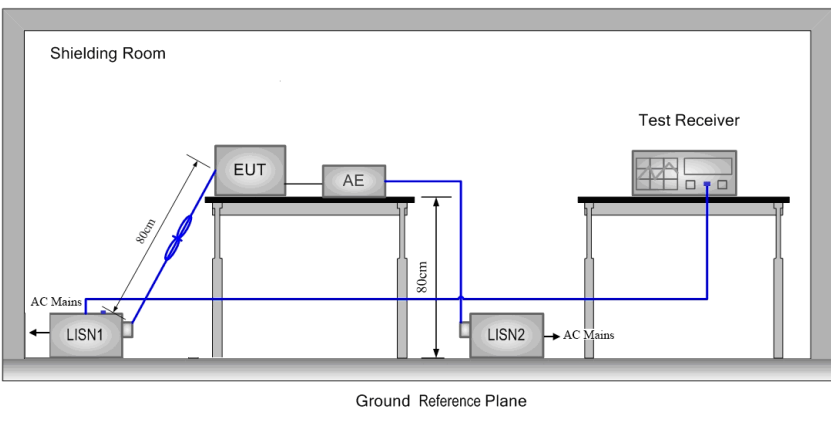
5 Test results and Measurement Data

5.1 Antenna Requirement

Standard requirement:	47 CFR Part 15C Section 15.203
<p>15.203 requirement:</p> <p>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>	
	

5.2 Conducted Emissions

Test Requirement:	47 CFR Part 15C Section 15.207		
Test Method:	ANSI C63.10: 2009		
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:	<ol style="list-style-type: none"> 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. 		

<p>Test Setup:</p>	
<p>Test Mode:</p>	<p>Charge + Transmitting mode</p>
<p>Instruments Used:</p>	<p>Refer to section 4.10 for details</p>
<p>Test Results:</p>	<p>Pass</p>

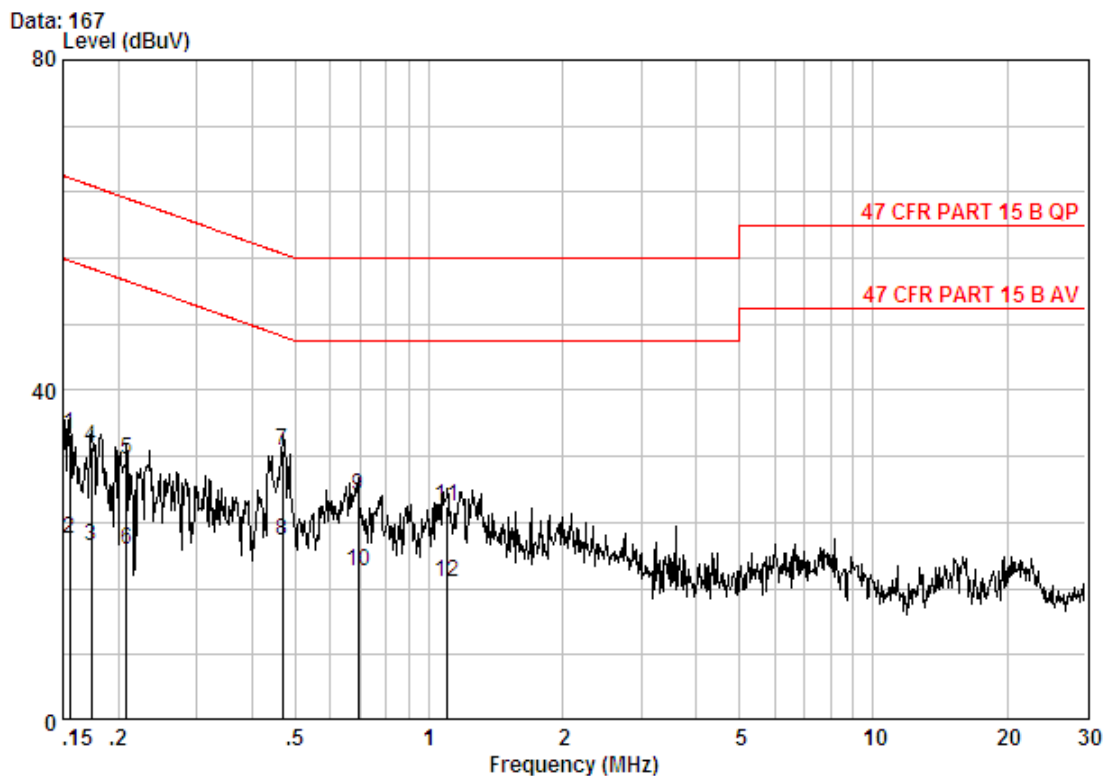


Measurement Data

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:

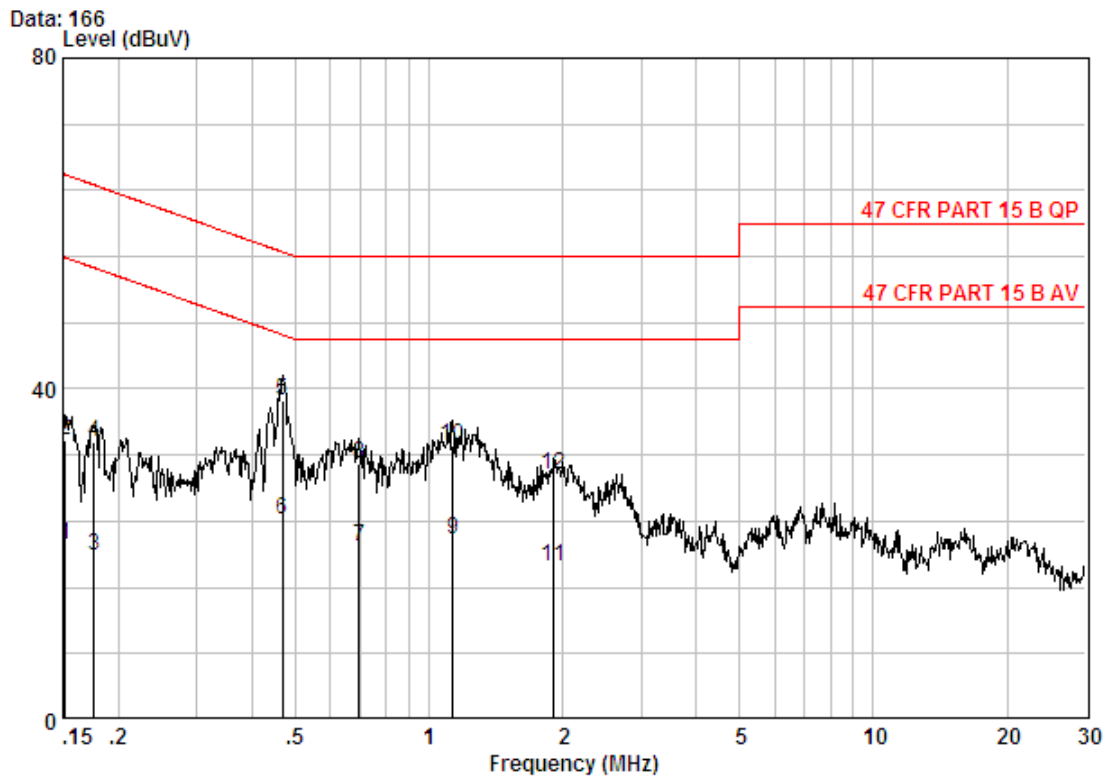


Site : Shielding Room
Condition : 47 CFR PART 15 B QP CE LINE
Job No. : 1841RF
Test mode : Charge + TX

	Freq	Cable Loss	LISN Factor	Read Level	Level	Limit Line	Over Limit	Remark
	MHz	dB	dB	dBuV	dBuV	dBuV	dB	
1	0.15567	0.02	9.70	24.84	34.56	65.69	-31.14	QP
2	0.15567	0.02	9.70	12.35	22.07	55.69	-33.62	Average
3	0.17399	0.02	9.70	11.50	21.22	54.77	-33.54	Average
4	0.17399	0.02	9.70	23.35	33.07	64.77	-31.70	QP
5	0.20833	0.02	9.70	21.79	31.51	63.27	-31.76	QP
6	0.20833	0.02	9.70	10.95	20.67	53.27	-32.61	Average
7	0.46861	0.01	9.80	22.89	32.70	56.54	-23.84	QP
8	0.46861	0.01	9.80	11.88	21.69	46.54	-24.85	Average
9	0.69357	0.02	9.80	17.53	27.35	56.00	-28.65	QP
10	0.69357	0.02	9.80	8.25	18.07	46.00	-27.93	Average
11	1.100	0.02	9.80	16.20	26.02	56.00	-29.98	QP
12	1.100	0.02	9.80	6.95	16.77	46.00	-29.23	Average



Neutral Line:



Site : Shielding Room
Condition : 47 CFR PART 15 B QP CE NEUTRAL
Job No. : 1841RF
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	0.15160	0.02	9.70	11.34	21.06	55.91	-34.85	Average
2	0.15160	0.02	9.70	24.13	33.85	65.91	-32.06	QP
3	0.17584	0.02	9.70	10.15	19.87	54.68	-34.81	Average
4	0.17584	0.02	9.70	23.92	33.64	64.68	-31.04	QP
5 @	0.46861	0.01	9.80	28.74	38.55	56.54	-17.99	QP
6 @	0.46861	0.01	9.80	14.41	24.22	46.54	-22.32	Average
7	0.69725	0.02	9.80	11.09	20.91	46.00	-25.09	Average
8	0.69725	0.02	9.80	21.11	30.93	56.00	-25.07	QP
9	1.129	0.02	9.80	11.94	21.76	46.00	-24.24	Average
10	1.129	0.02	9.80	23.29	33.11	56.00	-22.89	QP
11	1.908	0.02	9.80	8.80	18.62	46.00	-27.38	Average
12	1.908	0.02	9.80	19.88	29.70	56.00	-26.30	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.



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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	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:

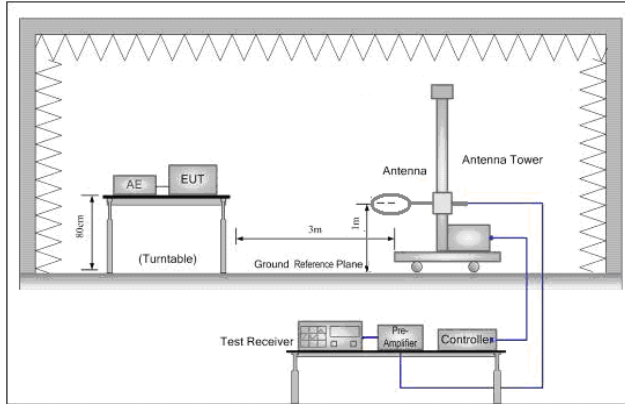


Figure 1. Below 30MHz

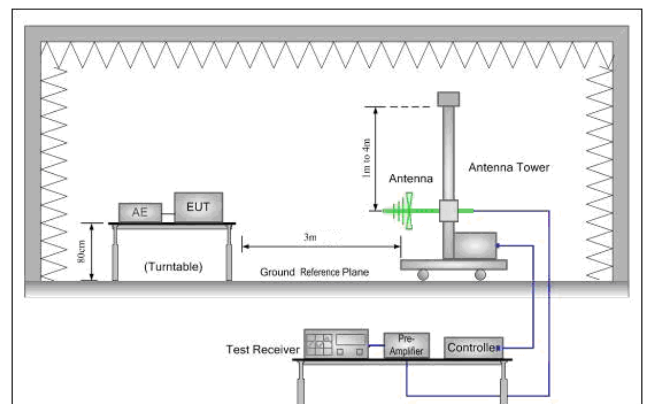


Figure 2. 30MHz to 1GHz

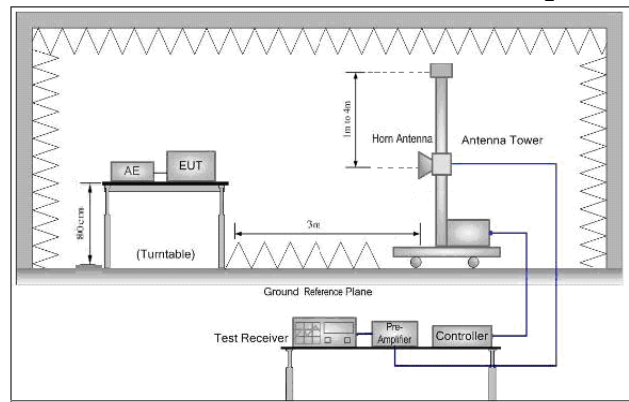


Figure 3. Above 1 GHz

Test Procedure:

- 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.
- The EUT was set 3 meters away from the interference-receiving antenna, which was mounted on the top of a variable-height antenna tower.
- The antenna height is varied from one meter to four meters above the ground to determine the maximum value of the field strength. Both horizontal and vertical polarizations of the antenna are set to make the measurement.
- For each suspected emission, the EUT was arranged to its worst case and then the antenna was tuned to heights from 1 meter to 4 meters (for the test frequency of below 30MHz, the antenna was tuned to heights 1 meter) and the rotatable table was turned from 0 degrees to 360 degrees to find the maximum reading.
- The test-receiver system was set to Peak Detect Function and Specified Bandwidth with Maximum Hold Mode.
- If the emission level of the EUT in peak mode was 10dB lower than



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	<p>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.</p> <p>g. Test the EUT in the lowest channel,the middle channel,the Highest channel</p> <p>h. The radiation measurements are performed in X, Y, Z axis positioning for Transmitting mode, and found the X axis positioning which it is the worst case .</p> <p>i. Repeat above procedures until all frequencies measured was complete.</p>
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.
Instruments Used:	Refer to section 4.10 for details
Test Results:	Pass



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Measurement Data

5.3.1.1 Field Strength Of The Fundamental Signal

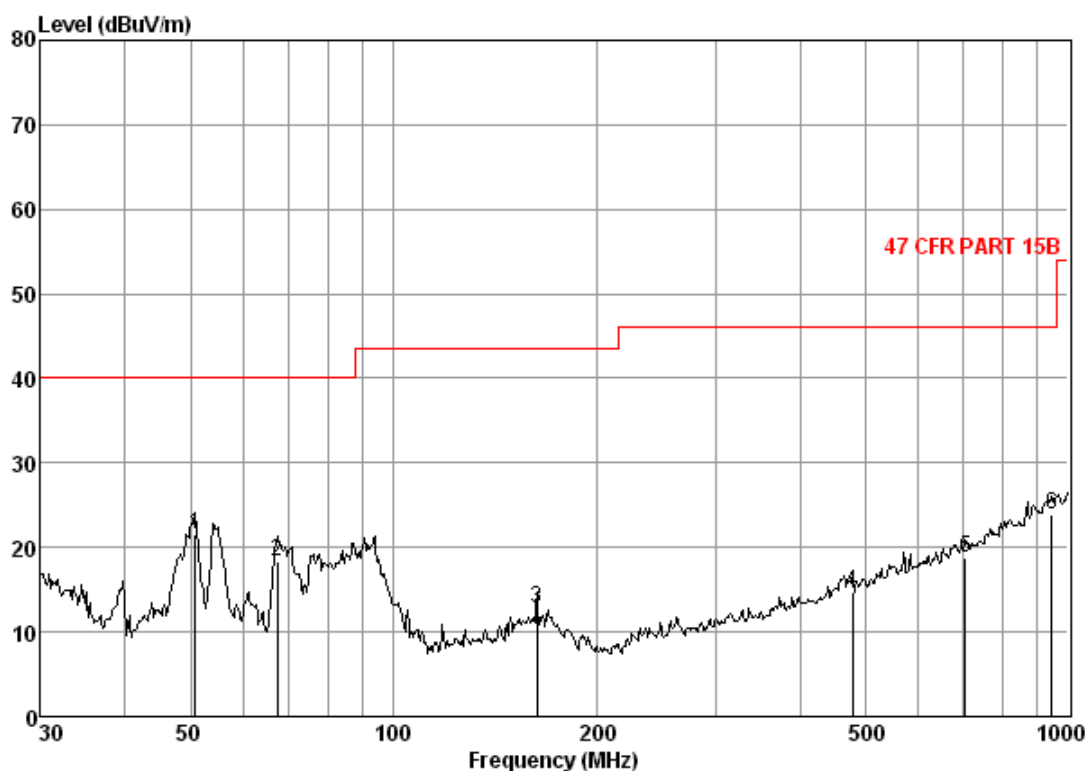
Frequency (MHz)	Cable Loss (dB)	Antenna Factor (dB/m)	Preamp Factor (dB)	Read Level (dBuV)	Peak Level (dBuV/m)	Average Limit Line (dBuV/m)	Over Limit (dB)
2405	4.6	32.54	39.86	83.55	80.83	94.00	-13.17
2445	4.62	32.61	39.89	85.16	82.50	94.00	-11.50
2475	4.64	32.67	39.92	91.43	88.82	94.00	-5.18

Remark:

As shown in this section, for field strength of the fundamental signal measurements, 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. So, only the peak measurements were shown in the report.

5.3.1.2 Spurious Emissions

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



Condition: 47 CFR PART 15B 3m 3142C VERTICAL

Job No. : 1841RF

Mode : charge+TX mode

	Freq	Cable	Antenna	Preamp	Read	Limit	Over
	MHz	Loss	Factor	Factor	Level	Line	Limit
	MHz	dB	dB/m	dB	dBuV	dBuV/m	dB
1	50.76	0.80	6.98	27.29	41.15	21.64	40.00 -18.36
2	67.20	0.80	4.51	27.25	40.25	18.31	40.00 -21.69
3	163.18	1.34	9.50	26.85	28.75	12.74	43.50 -30.76
4	478.85	2.52	13.37	27.60	26.39	14.68	46.00 -31.32
5	704.23	2.92	16.95	27.41	26.38	18.84	46.00 -27.16
6	945.44	3.65	21.13	26.58	25.74	23.94	46.00 -22.06

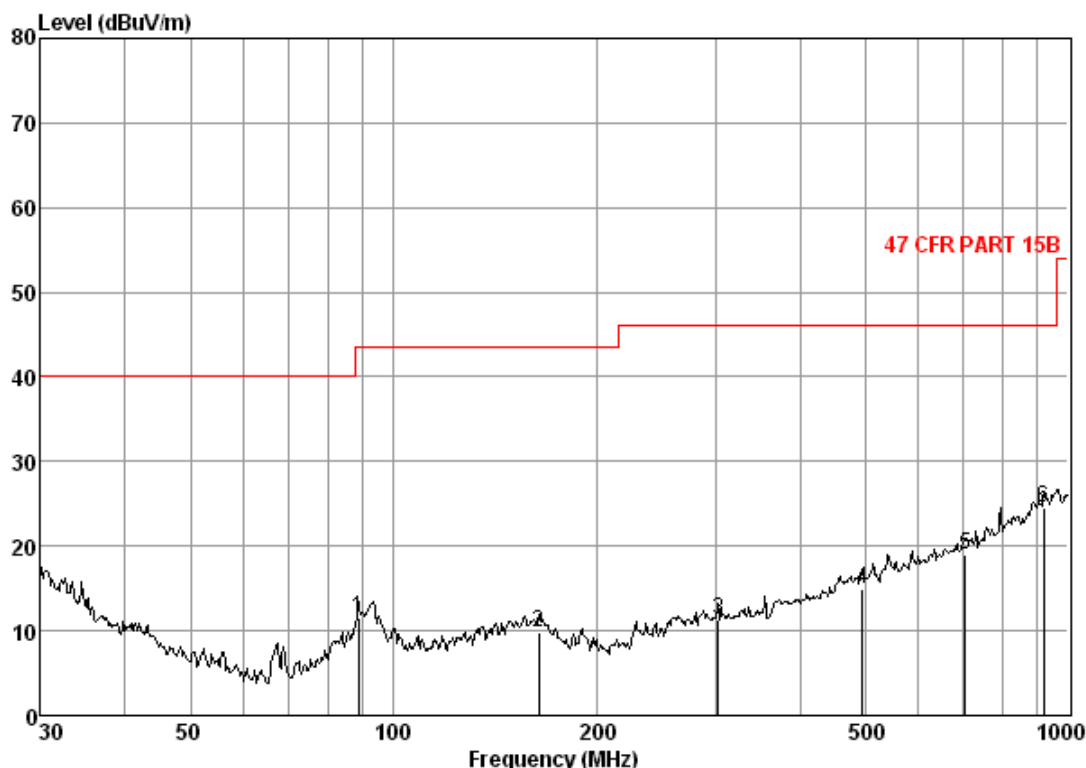


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Test mode:	Charge + Transmitting mode	Horizontal
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Condition: 47 CFR PART 15B 3m 3142C HORIZONTAL

Job No. : 1841RF

Mode : charge+TX mode

	Freq	Cable	Antenna	Preamp	Read	Limit	Over
		Loss	Factor	Factor	Level	Line	Limit
	MHz	dB	dB/m	dB	dBuV	dBuV/m	dBuV/m
1	88.65	1.10	6.05	27.22	31.49	11.42	43.50
2	164.33	1.34	9.50	26.84	25.90	9.90	43.50
3	302.48	1.91	9.74	26.42	26.09	11.32	46.00
4	495.93	2.59	13.44	27.68	26.55	14.90	46.00
5	704.23	2.92	16.95	27.41	26.50	18.96	46.00
6	919.29	3.62	20.80	26.68	26.78	24.52	46.00



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Above 1GHz								
Test mode:		Transmitting	Test channel:		Lowest	Remark:		Peak
Frequency (MHz)	Cable Loss (dB)	Antenna Factor (dB/m)	Preamplifier Factor (dB)	Read Level (dBuV)	Level (dBuV/m)	Limit Line (dBuV/m)	Over Limit (dB)	Polarization
2803.700	4.91	33.12	40.16	43.65	41.52	74	-32.48	Vertical
3953.443	6.41	33.76	41.00	43.92	43.09	74	-30.91	Vertical
4810.000	7.44	34.70	41.64	46.09	46.59	74	-27.41	Vertical
7215.000	8.74	35.89	39.87	44.59	49.35	74	-24.65	Vertical
9620.000	9.68	37.32	37.78	41.99	51.21	74	-22.79	Vertical
11933.470	11.24	38.83	38.24	40.68	52.51	74	-21.49	Vertical
2980.327	5.05	33.35	40.28	45.73	43.85	74	-30.15	Horizontal
3943.392	6.38	33.74	41.00	46.03	45.15	74	-28.85	Horizontal
4810.000	7.44	34.70	41.64	46.48	46.98	74	-27.02	Horizontal
7215.000	8.74	35.89	39.87	44.51	49.27	74	-24.73	Horizontal
9620.000	9.68	37.32	37.78	41.21	50.43	74	-23.57	Horizontal
11722.720	11.08	38.62	38.16	40.69	52.23	74	-21.77	Horizontal

Test mode:		Transmitting	Test channel:		Middle	Remark:		Peak
Frequency (MHz)	Cable Loss (dB)	Antenna Factor (dB/m)	Preamplifier Factor (dB)	Read Level (dBuV)	Level (dBuV/m)	Limit Line (dBuV/m)	Over Limit (dB)	Polarization
2950.135	5.02	33.33	40.27	43.88	41.96	74	-32.04	Vertical
3923.367	6.36	33.72	40.98	46.22	45.32	74	-28.68	Vertical
4890.000	7.49	34.57	41.70	51.25	51.61	74	-22.39	Vertical
7335.000	8.87	35.94	39.77	45.25	50.29	74	-23.71	Vertical
9780.000	9.75	37.48	37.65	40.53	50.11	74	-23.89	Vertical
12055.600	11.31	38.95	38.30	40.96	52.92	74	-21.08	Vertical
2927.691	5.01	33.28	40.24	45.02	43.07	74	-30.93	Horizontal
3973.622	6.43	33.78	41.02	47.32	46.51	74	-27.49	Horizontal
4890.000	7.49	34.57	41.70	51.25	51.61	74	-22.39	Horizontal
7335.000	8.87	35.94	39.77	45.25	50.29	74	-23.71	Horizontal
9780.000	9.75	37.48	37.65	40.53	50.11	74	-23.89	Horizontal
12055.600	11.31	38.95	38.30	40.96	52.92	74	-21.08	Horizontal

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Test mode:		Transmitting		Test channel:		Highest		Remark:	Peak
Frequency (MHz)	Cable Loss (dB)	Antenna Factor (dB/m)	Preamp Factor (dB)	Read Level (dBuV)	Level (dBuV/m)	Limit Line (dBuV/m)	Over Limit (dB)	Polarization	
2957.654	5.02	33.33	40.27	45.01	43.09	74	-30.91	Vertical	
3943.392	6.38	33.74	41.00	45.14	44.26	74	-29.74	Vertical	
4950.000	7.52	34.48	41.74	50.64	50.90	74	-23.10	Vertical	
7425.000	8.99	35.97	39.69	45.34	50.61	74	-23.39	Vertical	
9900.000	9.80	37.61	37.55	40.29	50.15	74	-23.85	Vertical	
12024.960	11.30	38.93	38.28	40.46	52.41	74	-21.59	Vertical	
3003.173	5.07	33.40	40.30	44.84	43.01	74	-30.99	Horizontal	
3933.367	6.38	33.74	40.98	45.74	44.88	74	-29.12	Horizontal	
4950.000	7.52	34.48	41.74	50.11	50.37	74	-23.63	Horizontal	
7425.000	8.99	35.97	39.69	42.99	48.26	74	-25.74	Horizontal	
9900.000	9.80	37.61	37.55	40.45	50.31	74	-23.69	Horizontal	
11933.470	11.24	38.83	38.24	40.71	52.54	74	-21.46	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.

5.4 Restricted bands around fundamental frequency

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

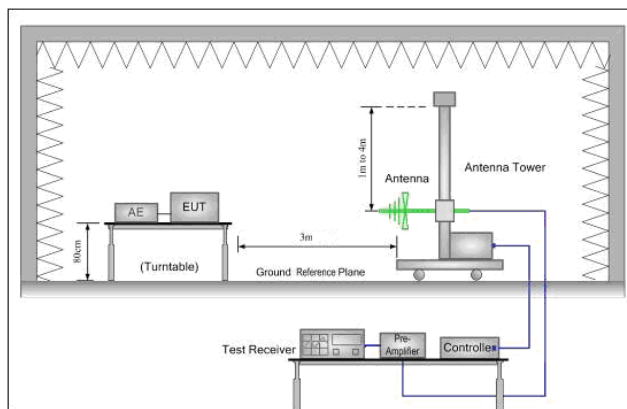


Figure 1. 30MHz to 1GHz

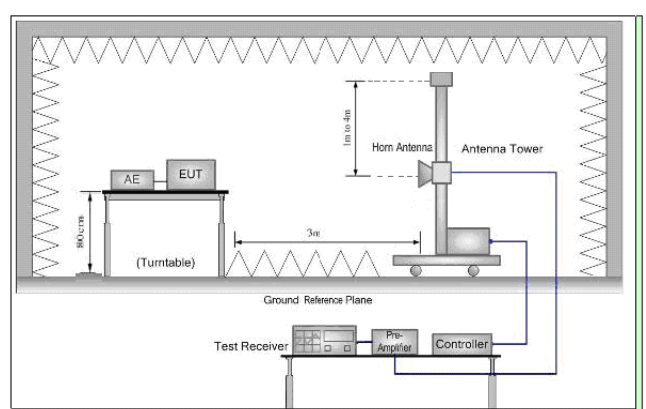


Figure 2. Above 1 GHz



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Test Procedure:	<ul style="list-style-type: none">a. 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. 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 channelg. Test the EUT in the lowest channel , the Highest channelh. The radiation measurements are performed in X, Y, Z axis positioning for transmitting mode, and found the X axis positioning which it is the worst case.i. Repeat above procedures until all frequencies measured was complete.
Instruments Used:	Refer to section 4.10 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



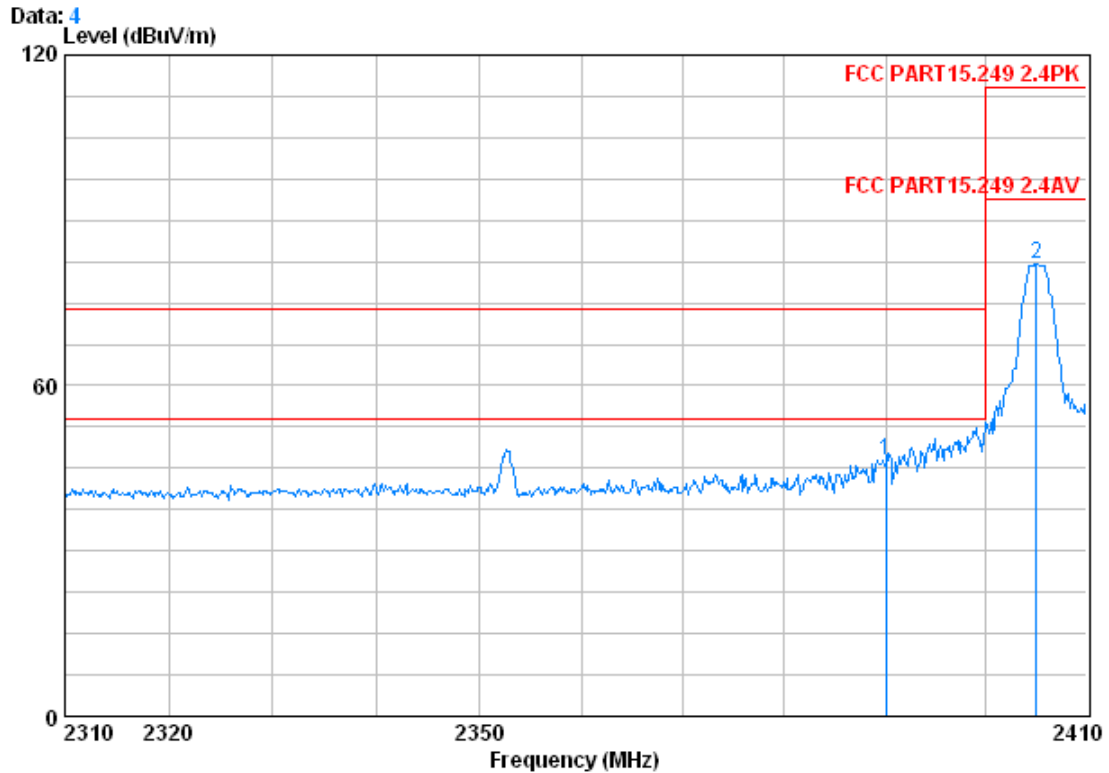
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Test plot as follows:

Test mode:	Transmitting mode	Test channel:	Lowest	Remark:	Horizontal
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Condition : FCC PART15.249 2.4PK 3m HORIZONTAL

Job No. : 1841RF

Mode : 2405

	Freq	Cable	Antenna	Preamp	Read		Limit	Over
		Loss	Factor	Factor	Level	Level	Line	Limit
	MHz	dB	dB/m	dB	dBuV	dBuV/m	dBuV/m	dB
1	0	2390.000	2.98	32.51	39.85	50.72	46.36	74.00 -27.64
2	0	2405.000	2.99	32.54	39.86	86.35	82.02	114.00 -31.98



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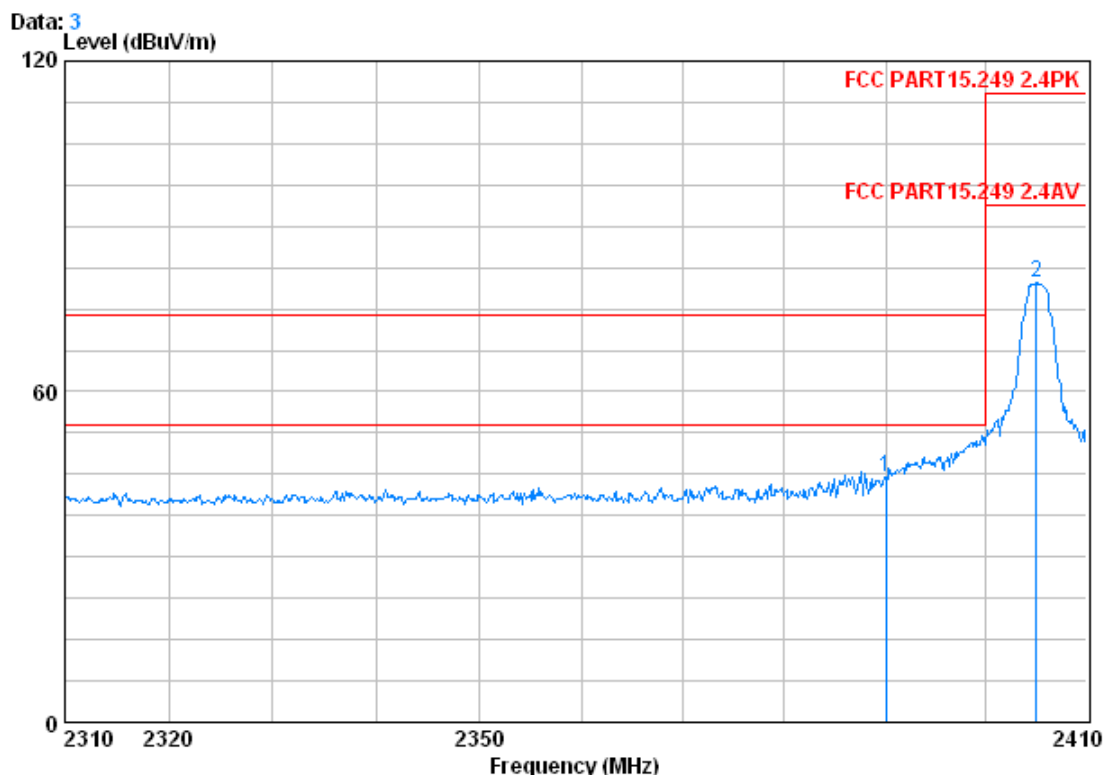


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Test mode:	Transmitting mode	Test channel:	Lowest	Remark:	Vertical
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Condition : FCC PART15.249 2.4PK 3m VERTICAL

Job No. : 1841RF

Mode : 2405

		CableAntenna Preamp			Read		Limit	Over
	Freq	Loss	Factor	Factor	Level	Level	Line	Limit
	MHz	dB	dB/m	dB	dBuV	dBuV/m	dBuV/m	dB
1	0	2390.000	2.98	32.51	39.85	48.71	44.36	74.00 -29.64
2	0	2405.000	2.99	32.54	39.86	84.01	79.69	114.00 -34.31

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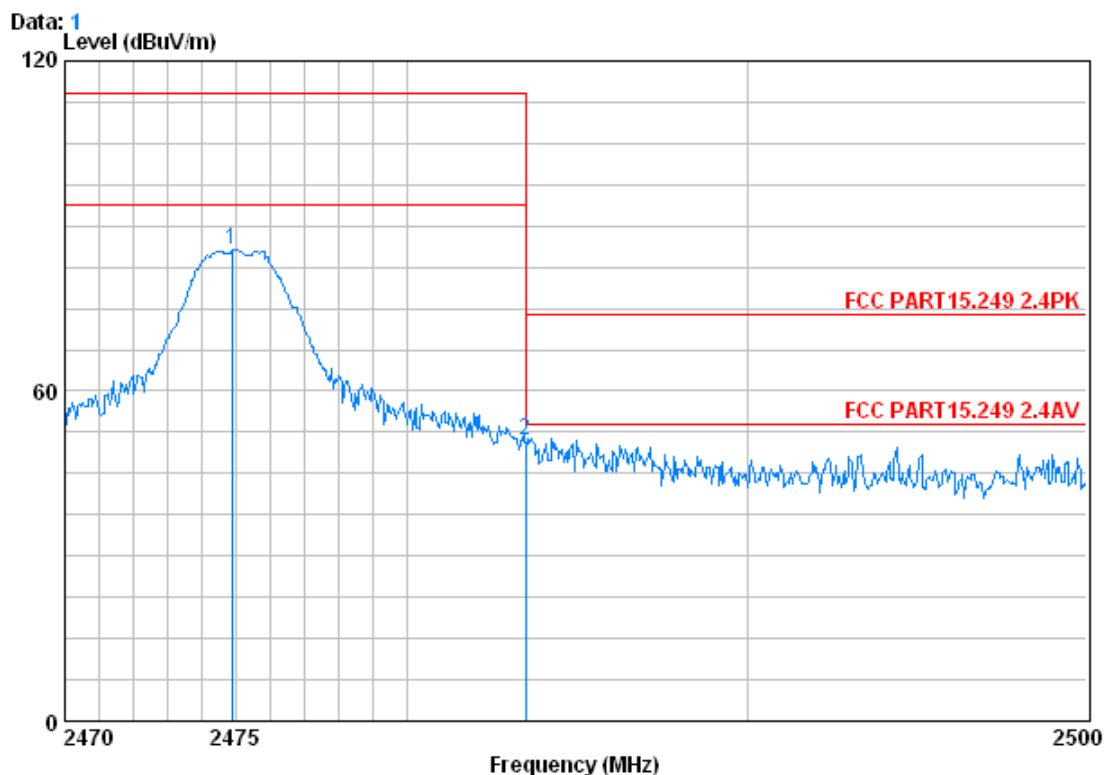


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Test mode:	Transmitting mode	Test channel:	Highest	Remark:	Horizontal
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Condition : FCC PART15.249 2.4PK 3m HORIZONTAL

Job No. : 1841RF

Mode : 2475

	Freq	Cable	Antenna	Preamp	Read	Limit	Over
	MHz	Loss	Factor	Factor	Level	Line	Limit
	MHz	dB	dB/m	dB	dBuV	dBuV/m	dBuV/m
1 @	2474.890	3.02	32.67	39.92	89.85	85.62	114.00
2 @	2483.500	3.03	32.67	39.92	55.37	51.15	74.00

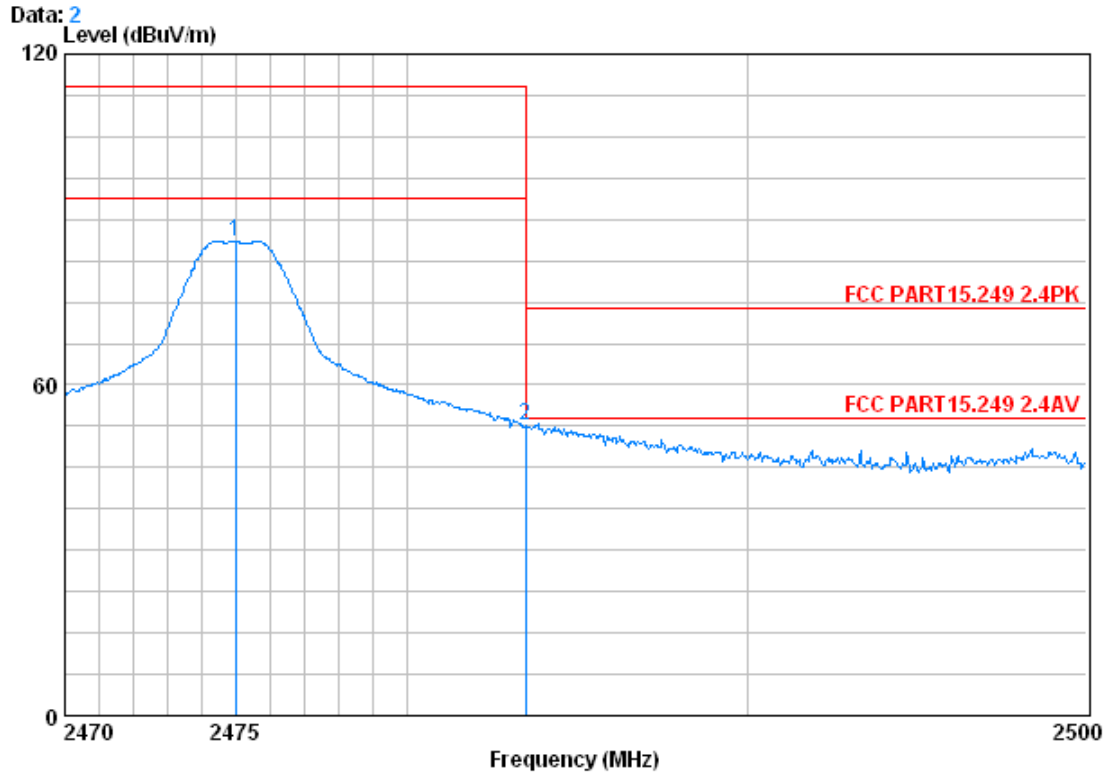


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Test mode:	Transmitting mode	Test channel:	Highest	Remark:	Vertical
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Condition : FCC PART15.249 2.4PK 3m VERTICAL
Job No. : 1841RF
Mode : 2475

	Freq	Cable	Antenna	Preamp	Read	Limit	Over
	MHz	Loss	Factor	Factor	Level	Line	Limit
	MHz	dB	dB/m	dB	dBuV	dBuV/m	dBuV/m
1 @	2474.980	3.02	32.67	39.92	90.32	86.09	114.00
2 @	2483.500	3.03	32.67	39.92	56.78	52.56	74.00

Note:

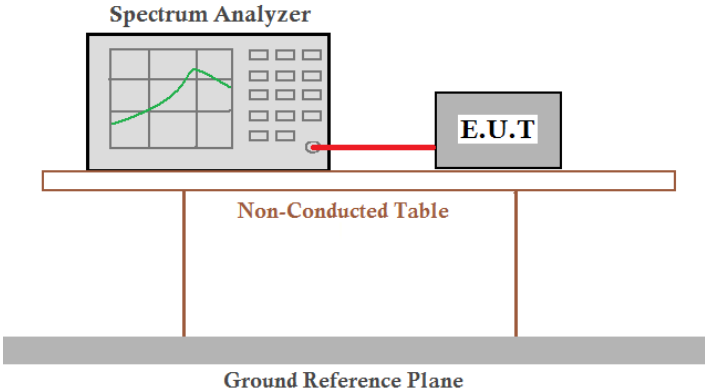
The field strength is calculated by adding the Antenna Factor, Cable Factor & Preamplifier. The basic equation with a sample calculation is as follows:

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

Remark:

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

5.5 20dB Bandwidth

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

Measurement Data

Test Channel	20dB bandwidth (MHz)	Results
Lowest	1.879807692	N/A
Middle	1.951923077	N/A
Highest	1.942307692	N/A



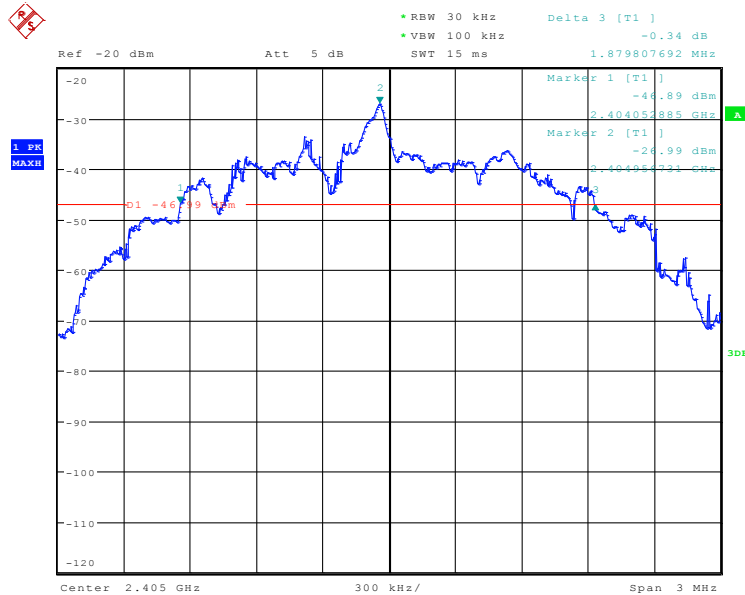
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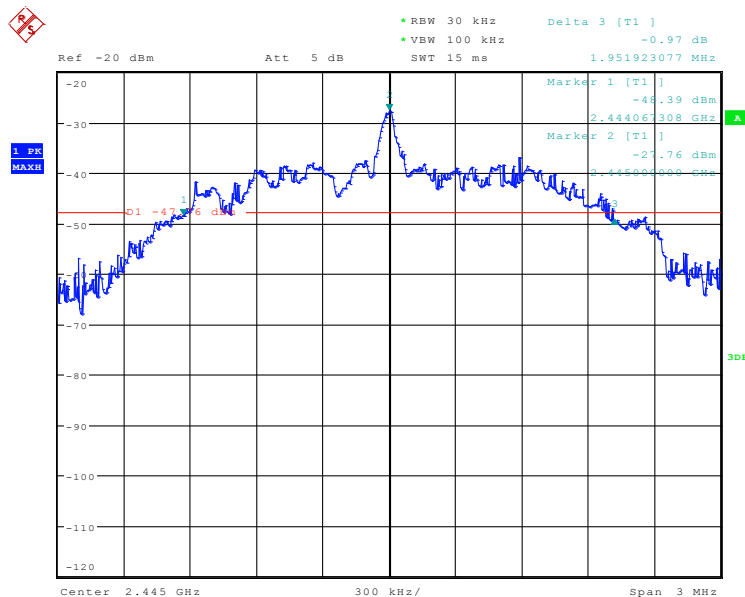
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Test plot as follows:

Test channel:	Lowest
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Test channel:	Middle
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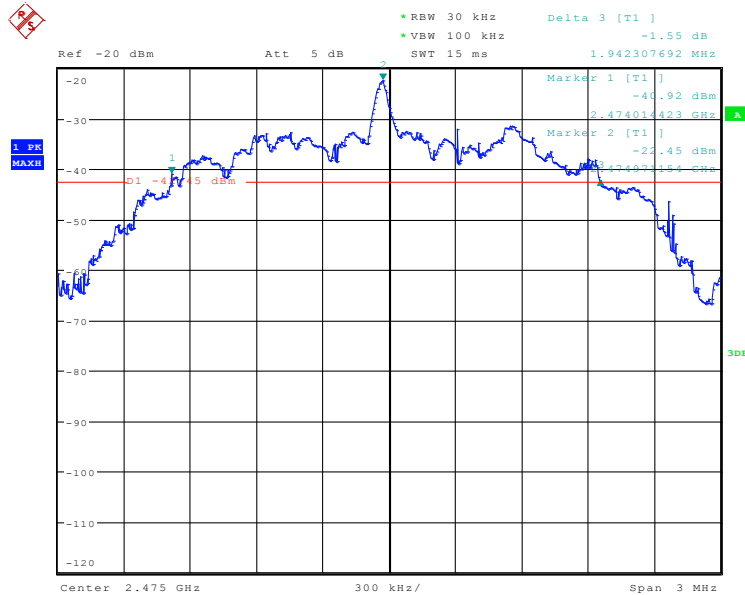


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Test channel:	Highest
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6 Photographs

Test model No.: AMW001

6.1 Radiated Emission Test Setup



6.2 Conducted Emission Test Setup



6.3 EUT Constructional Details

Refer to Report No. SZEM140400184101 for EUT external and internal photos.