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Report No.: SZEM141000582301
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FCC REPORT

Application No. : SZEM1410005823CR
Applicant: ACCO Brands, Inc.
Manufacturer: Dongguan Newmen Electronics Technology Co., LTD
Factory: Dongguan Newmen Electronics Technology Co., LTD
Product Name: Pro Fit® Wireless Mobile Mouse Receiver
Model No.(EUT): M01293-D
Trade Mark: Kensington
FCC ID: GV3M01293-D
Standards: 47 CFR Part 15, Subpart C (2013)
Date of Receipt: 2014-10-30
Date of Test: 2014-11-06 to 2014-11-11
Date of Issue: 2014-11-17

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.

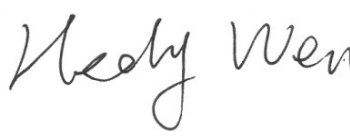
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2 Version

Revision Record				
Version	Chapter	Date	Modifier	Remark
00		2014-11-17		Original

Authorized for issue by:				
Tested By				2014-11-11
				Date
Prepared By				2014-11-17
				Date
Checked By				2014-11-19
				Date



3 Test Summary

Test Item	Test Requirement	Test method	Result
Antenna Requirement	47 CFR Part 15, Subpart C Section 15.203	ANSI C63.10 (2009)	PASS
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



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5 General Information

5.1 Client Information

Applicant:	ACCO Brands, Inc.
Address of Applicant:	333 Twin Dolphin Dr. 6F, Redwood City, California, 94065, USA
Manufacturer:	Dongguan Newmen Electronics Technology Co., LTD
Address of Manufacturer:	No.5, Xifa Road, Lin Village, Tangxia Town, Dongguan, Guangdong, China
Factory:	Dongguan Newmen Electronics Technology Co., LTD
Address of Factory:	No.5, Xifa Road, Lin Village, Tangxia Town, Dongguan, Guangdong, China

5.2 General Description of EUT

Product Name:	Pro Fit® Wireless Mobile Mouse Receiver
Model No.:	M01293-D
Trade Mark:	Kensington
Frequency Range:	2406MHz~2476MHz
Modulation Type:	FSK
Number of Channels:	16 (declared by the client)
Sample Type:	fixed production
EUT Function:	WIRELESS MOBILE MOUSE RECEIVER
Antenna Type:	Integral
Antenna Gain:	2.3dBi
Power Supply:	PC SUPPLY
Test Voltage:	AC 230V



Operation Frequency each of channel			
Channel	Frequency	Channel	Frequency
1CH	2406 MHz	14CH	2469 MHz
2CH	2411 MHz	15CH	2473 MHz
3CH	2414 MHz	16CH	2476MHz
4CH	2417 MHz		
5CH	2424 MHz		
6CH	2429 MHz		
7CH	2433 MHz		
8CH	2436 MHz		
9CH	2447 MHz		
10CH	2451 MHz		
11CH	2455 MHz		
12CH	2459 MHz		
13CH	2467 MHz		

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)	2406MHz
The Middle channel(CH9)	2447MHz
The Highest channel(CH16)	2476MHz



5.3 Test Environment and Mode

Operating Environment:	
Temperature:	20.0 °C
Humidity:	50 % RH
Atmospheric Pressure:	1020 mbar
Test mode:	
Transmitter mode	Keep the EUT in transmitting mode.
Receiving mode:	Keep the EUT in receiving mode.
Connection mode:	Keep the EUT communicate with the mouse.

5.4 Description of Support Units

The EUT has been tested with associated equipment below.

Description	Manufacturer	Model No.
PC	LENOVO	6234
PC	IBM	8184
LCD-displaying	HP	L1506s
KEYBOARD	IBM	KB-0225
MOUSE	IBM	MO28UOL
Coder	HengTong ELECTRON	HT4000
Printer	Canon	BJC-1000SP

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 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.

5.7 Deviation from Standards

None.

5.8 Abnormalities from Standard Conditions

None.

5.9 Other Information Requested by the Customer

None.

**5.10 Equipment List**

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	2015-10-24
3	LISN	ETS-LINDGREN	3816/2	SEL0021	2015-05-16
4	8 Line ISN	Fischer Custom Communications Inc.	FCC-TLISN-T8-02	SEL0162	2015-08-30
5	4 Line ISN	Fischer Custom Communications Inc.	FCC-TLISN-T4-02	SEL0163	2015-08-30
6	2 Line ISN	Fischer Custom Communications Inc.	FCC-TLISN-T2-02	SEL0164	2015-08-30
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	2015-10-24
10	Humidity/ Temperature Indicator	Shanghai Qixiang	ZJ1-2B	SEL0103	2015-10-24
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	Agilent Technologies	N9038A	SEL0312	2015-09-16
3	EMI Test software	AUDIX	E3	SEL0050	N/A
4	BiConiLog Antenna (26-3000MHz)	ETS-LINDGREN	3142C	SEL0015	2015-10-24
5	Double-ridged horn (1-18GHz)	ETS-LINDGREN	3117	SEL0006	2015-10-24
6	Horn Antenna (18-26GHz)	ETS-LINDGREN	3160	SEL0076	2015-10-24
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	2015-10-24
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	2015-10-24
16	Humidity/ Temperature Indicator	Shanghai Qixiang	ZJ1-2B	SEL0103	2015-10-24
17	Signal Generator (10M-27GHz)	Rohde & Schwarz	SMR27	SEL0067	2015-05-16
18	Signal Generator	Rohde & Schwarz	SMY01	SEL0155	2015-10-24
19	Loop Antenna	Beijing Daze	ZN30401	SEL0203	2015-06-04

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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	2015-10-24
2	Humidity/ Temperature Indicator	HYGRO	ZJ1-2B	SEL0033	2015-10-24
3	Spectrum Analyzer	Rohde & Schwarz	FSP	SEL0154	2015-10-24
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	2015-10-24
10	Attenuator	Beijin feihang taida	TST-2-6dB	SEL0205	2015-05-16
11	Power Divider(splitter)	Agilent Technologies	11636B	SEL0130	2015-10-24

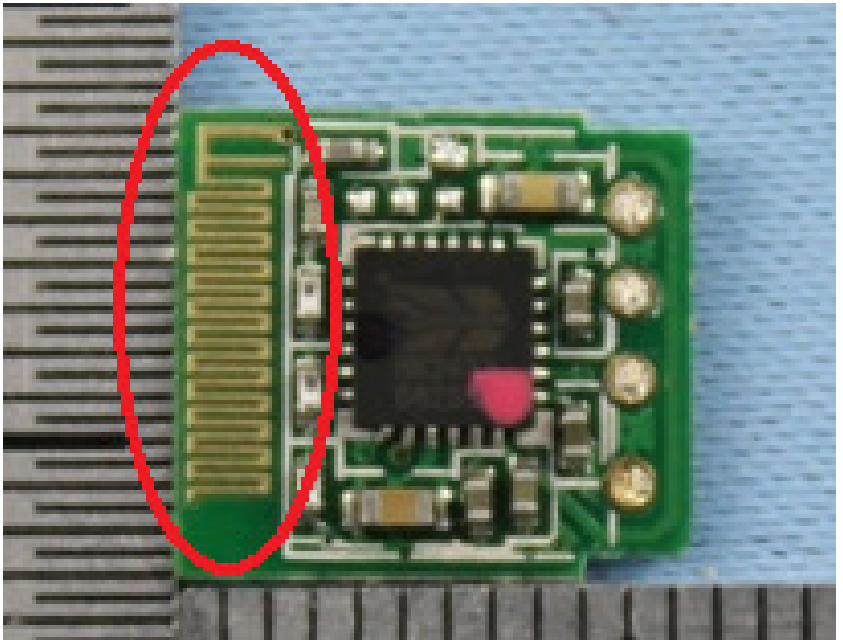
Note: The calibration interval is one year, all the instruments are valid.



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6 Test results and Measurement Data

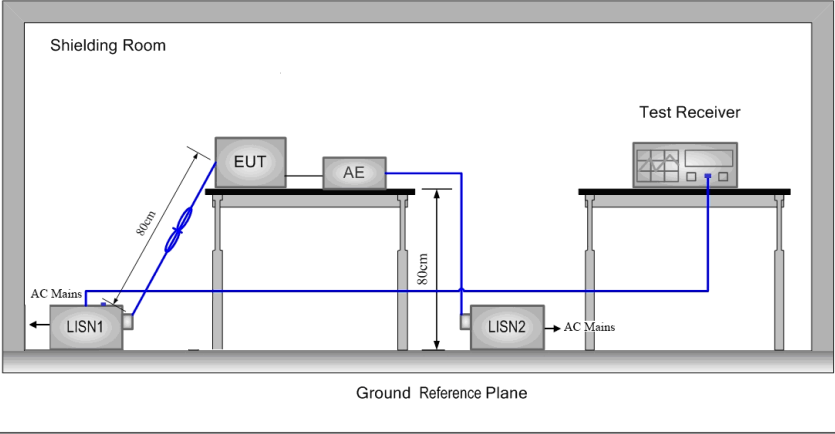
6.1 Antenna Requirement

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 2.3dBi.	



6.2 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:	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.		

Test Setup:	
Test Mode:	Transmitting mode
Instruments Used:	Refer to section 5.10 for details
Test Results:	Pass



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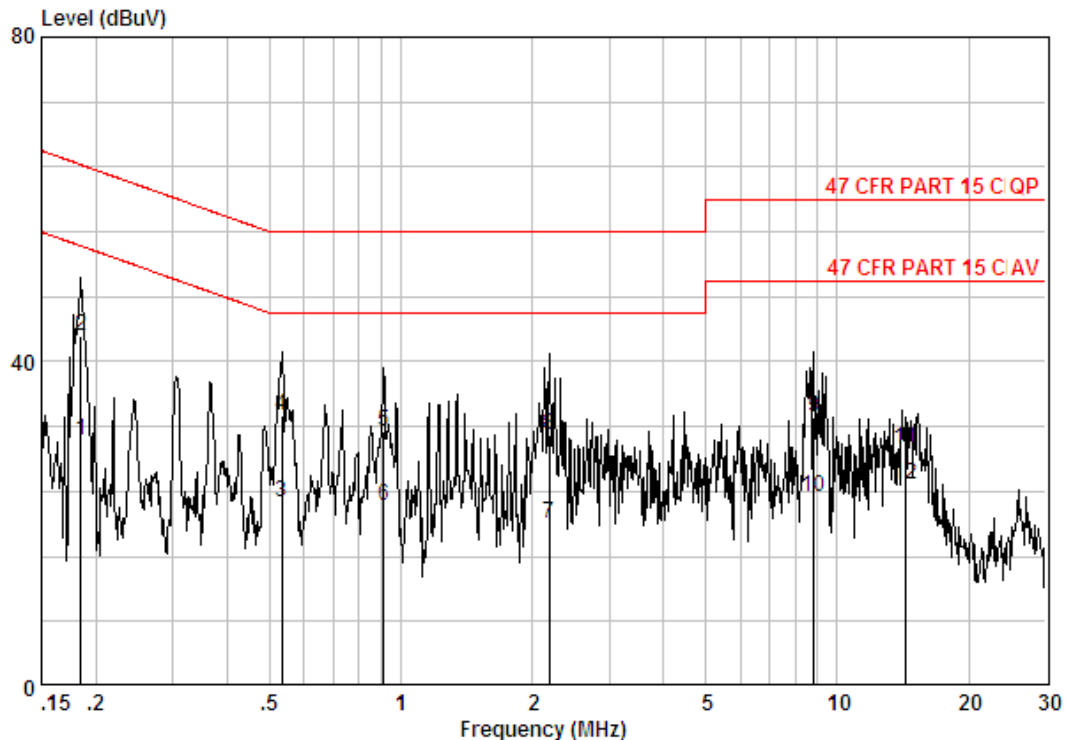
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Measurement Data

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. : 5823CR
Mode : Connect

	Freq	Cable Loss	LISN Factor	Read Level	Level	Limit Line	Over Limit	Remark
	MHz	dB	dB	dBuV	dBuV	dBuV	dB	
1	0.18443	0.02	9.70	20.54	30.26	54.28	-24.02	Average
2 @	0.18443	0.02	9.70	33.54	43.26	64.28	-21.03	QP
3	0.53215	0.01	9.80	12.77	22.58	46.00	-23.42	Average
4	0.53215	0.01	9.80	23.45	33.26	56.00	-22.74	QP
5	0.91357	0.02	9.80	21.50	31.32	56.00	-24.68	QP
6	0.91357	0.02	9.80	12.43	22.25	46.00	-23.75	Average
7	2.190	0.02	9.81	10.25	20.08	46.00	-25.92	Average
8	2.190	0.02	9.81	21.21	31.04	56.00	-24.96	QP
9	8.822	0.01	9.90	23.18	33.09	60.00	-26.91	QP
10	8.822	0.01	9.90	13.47	23.38	50.00	-26.62	Average
11	14.364	0.01	10.08	19.15	29.24	60.00	-30.76	QP
12	14.364	0.01	10.08	14.80	24.89	50.00	-25.11	Average

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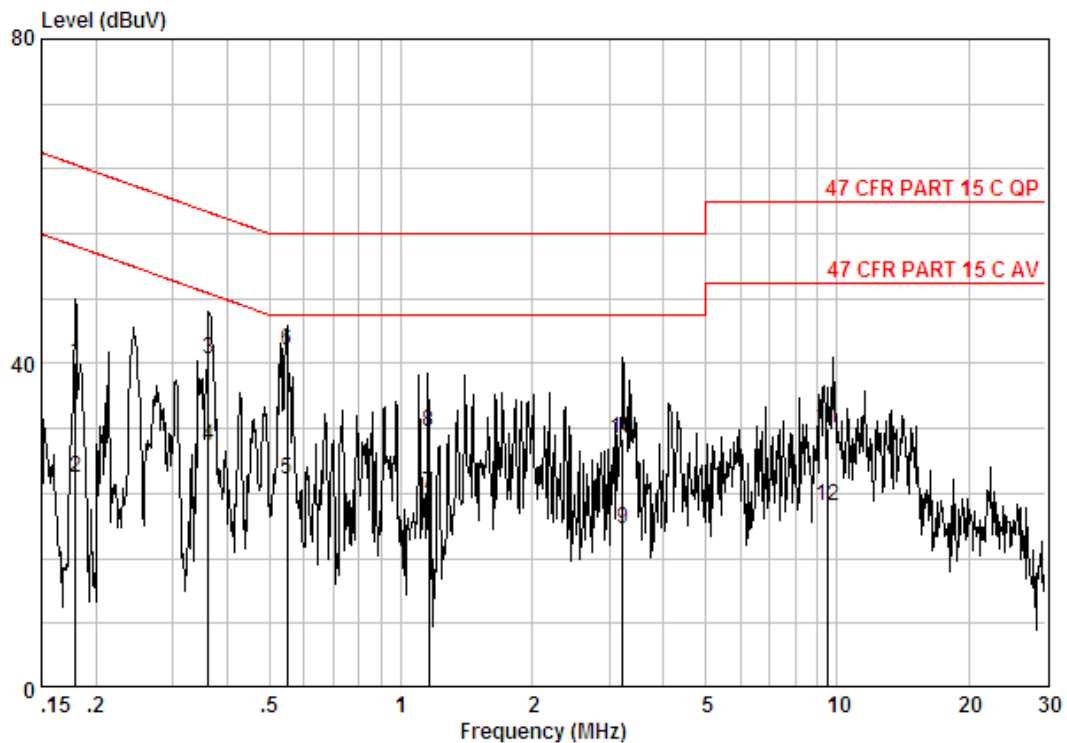


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Neutral Line:



Site : Shielding Room
Condition : 47 CFR PART 15 B QP CE NEUTRAL
Job No. : 5823CR
Mode : Connect

	Freq	Cable Loss	LISN Factor	Read Level	Level	Limit Line	Over Limit	Remark
	MHz	dB	dB	dBuV	dBuV	dBuV	dB	
1	0.17961	0.02	9.70	30.30	40.02	64.50	-24.48	QP
2	0.17961	0.02	9.70	16.22	25.94	54.50	-28.56	Average
3 @	0.36146	0.01	9.76	30.67	40.44	58.69	-18.25	QP
4 @	0.36146	0.01	9.76	20.02	29.79	48.69	-18.90	Average
5 @	0.54934	0.01	9.80	15.88	25.69	46.00	-20.31	Average
6 @	0.54934	0.01	9.80	31.78	41.59	56.00	-14.41	QP
7	1.160	0.02	9.80	14.25	24.07	46.00	-21.93	Average
8	1.160	0.02	9.80	21.72	31.54	56.00	-24.46	QP
9	3.224	0.02	9.85	9.79	19.66	46.00	-26.34	Average
10	3.224	0.02	9.85	20.87	30.74	56.00	-25.26	QP
11	9.502	0.01	10.00	22.10	32.11	60.00	-27.89	QP
12	9.502	0.01	10.00	12.34	22.35	50.00	-27.65	Average

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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6.3 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	

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Test Setup:

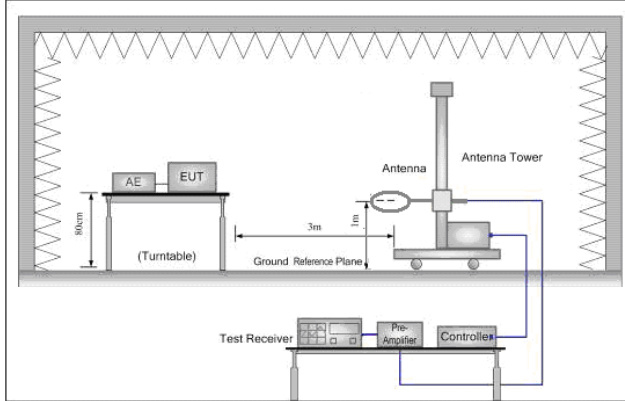


Figure 1. Below 30MHz

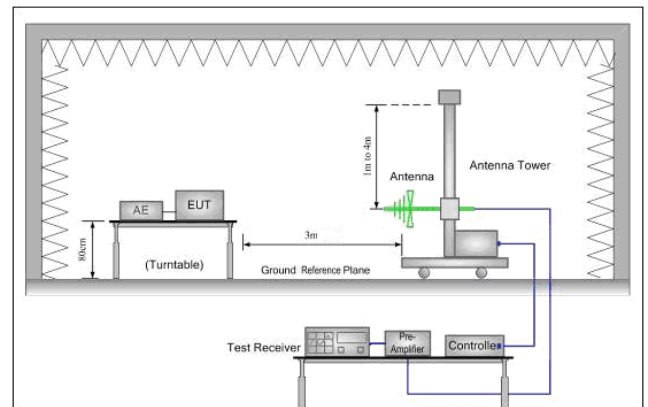


Figure 2. 30MHz to 1GHz

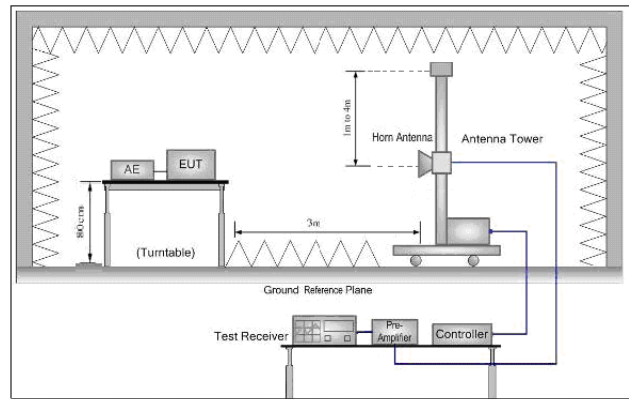


Figure 3. Above 1 GHz

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.



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	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 for Transmitting mode,And found the X axis positioning which it is worse case. i. Repeat above procedures until all frequencies measured was complete.
Test Mode:	Transmitting mode
Instruments Used:	Refer to section 5.10 for details
Test Results:	Pass



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Measurement Data

6.3.1.1 Field Strength Of The Fundamental Signal

Peak value:

Frequency (MHz)	Cable Loss (dB)	Antenna Factor (dB/m)	Preamp Factor (dB)	Read Level (dBuV)	Level (dBuV/m)	Limit Line (dBuV/m)	Over Limit (dB)	Polarization
2406.000	4.92	32.41	38.46	89.09	87.96	114	-26.04	Horizontal
2406.000	4.92	32.41	38.46	79.33	78.20	114	-35.80	Vertical
2447.000	4.98	32.43	38.46	91.47	90.42	114	-23.58	Horizontal
2447.000	4.98	32.43	38.46	83.75	82.70	114	-31.30	Vertical
2476.000	5.02	32.44	38.47	93.36	92.35	114	-21.65	Horizontal
2476.000	5.02	32.44	38.47	83.07	82.06	114	-31.94	Vertical

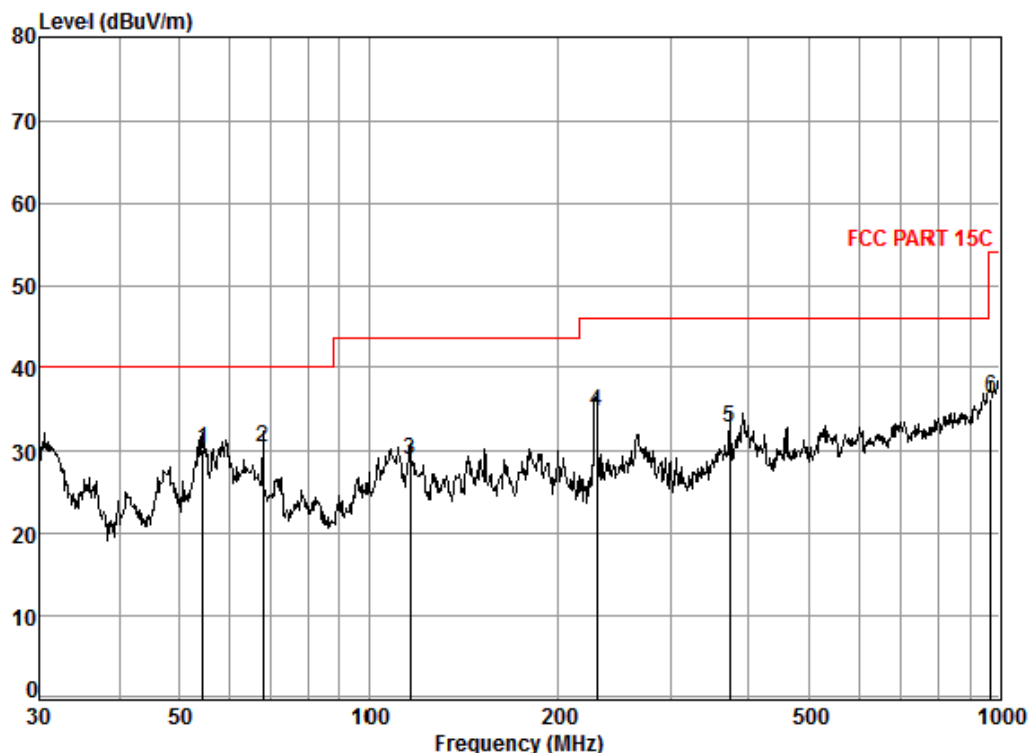
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6.3.1.2 Spurious Emissions

30MHz~1GHz

Test mode:	Transmitting mode	Polarization:	Vertical
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Condition: FCC PART 15C 3m VULB 9160 3M Vertical

Job No. : 5823CR

Test Mode: TX mode

	Freq	Cable Loss	Ant Factor	Preamp Factor	Read Level	Level	Limit Line	Over Limit	Remark
	MHz	dB	dB/m	dB	dBuV	dBuV/m	dBuV/m	dB	
1	54.45	0.85	12.42	32.66	49.70	30.31	40.00	-9.69	
2	67.91	0.94	11.54	32.64	50.66	30.50	40.00	-9.50	
3	116.13	1.22	11.67	32.64	48.77	29.02	43.50	-14.48	
4	230.10	1.74	11.25	32.58	54.55	34.96	46.00	-11.04	
5	373.31	2.22	14.72	32.53	48.54	32.95	46.00	-13.05	
6	968.93	3.56	23.43	31.19	40.66	36.46	54.00	-17.54	



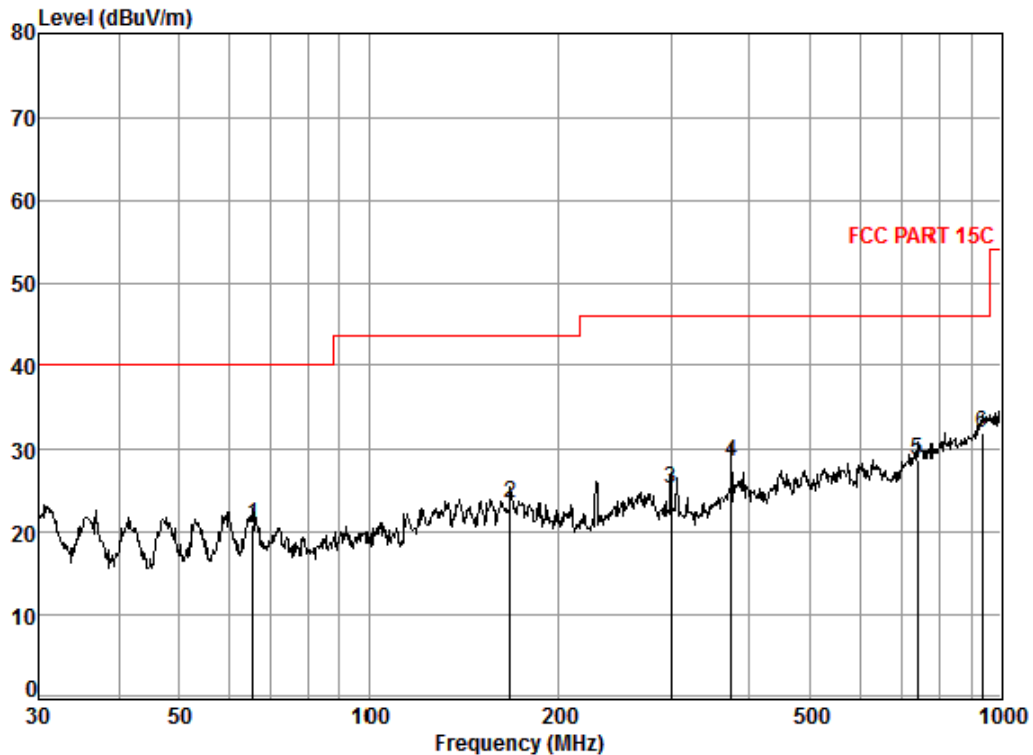


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Test mode:	Transmitting mode	Polarization:	Horizontal
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Condition: FCC PART 15C 3m VULB 9160 3M Horizontal

Job No. : 5823CR

Test Mode: TX mode

	Freq	Cable Loss	Ant Factor	Preamp Factor	Read Level	Limit Level	Over Limit	Remark
	MHz	dB	dB/m	dB	dBuV	dBuV/m	dB	
1	65.57	0.92	12.18	32.65	40.39	20.84	40.00	-19.16
2	167.24	1.46	13.48	32.61	41.17	23.50	43.50	-20.00
3	300.37	2.03	13.20	32.55	42.50	25.18	46.00	-20.82
4	374.62	2.22	14.75	32.53	44.22	28.66	46.00	-17.34
5	742.26	3.08	21.12	32.49	37.15	28.86	46.00	-17.14
6	935.55	3.49	23.15	31.52	37.02	32.14	46.00	-13.86

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Above 1GHz								
Test mode:		Transmitting	Test channel:		Lowest	Remark:		Peak
Frequency (MHz)	Cable Loss (dB)	Antenna Factor (dB/m)	Preamp Factor (dB)	Read Level (dBuV)	Level (dBuV/m)	Limit Line (dBuV/m)	Over Limit (dB)	Polarization
3561.636	5.87	32.96	38.77	49.03	49.09	74	-24.91	Vertical
4812.000	5.51	34.71	39.24	51.50	52.48	74	-21.52	Vertical
6063.190	7.46	36.23	39.18	50.37	54.88	74	-19.12	Vertical
7218.000	8.29	35.62	39.07	52.10	56.94	74	-17.06	Vertical
9624.000	9.25	37.38	37.92	44.60	53.31	74	-20.69	Vertical
11933.470	10.23	38.63	38.67	45.58	55.77	74	-18.23	Vertical
3616.451	5.83	33.01	38.79	48.76	48.81	74	-25.19	Horizontal
4812.000	5.51	34.71	39.24	55.33	56.31	74	-17.69	Horizontal
6109.670	7.43	36.18	39.17	50.67	55.11	74	-18.89	Horizontal
7218.000	8.29	35.62	39.07	53.76	58.60	74	-15.40	Horizontal
9624.000	9.25	37.38	37.92	44.25	52.96	74	-21.04	Horizontal
11692.920	10.14	38.39	38.56	46.06	56.03	74	-17.97	Horizontal

Test mode:		Transmitting	Test channel:		Lowest	Remark:		Average
Frequency (MHz)	Cable Loss (dB)	Antenna Factor (dB/m)	Preamp Factor (dB)	Read Level (dBuV)	Level (dBuV/m)	Limit Line (dBuV/m)	Over Limit (dB)	Polarization
3561.636	5.87	32.96	38.77	32.16	32.22	54	-21.78	Vertical
4812.000	5.51	34.71	39.24	40.66	41.64	54	-12.36	Vertical
6063.190	7.46	36.23	39.18	39.13	43.64	54	-10.36	Vertical
7218.000	8.29	35.62	39.07	41.65	46.49	54	-7.51	Vertical
9624.000	9.25	37.38	37.92	33.58	42.29	54	-11.71	Vertical
11933.470	10.23	38.63	38.67	34.56	44.75	54	-9.25	Vertical
3616.451	5.83	33.01	38.79	30.56	30.61	54	-23.39	Horizontal
4812.000	5.51	34.71	39.24	37.69	38.67	54	-15.33	Horizontal
6109.670	7.43	36.18	39.17	32.68	37.12	74	-36.88	Horizontal
7218.000	8.29	35.62	39.07	36.89	41.73	54	-12.27	Horizontal
9624.000	9.25	37.38	37.92	26.88	35.59	54	-18.41	Horizontal
11692.920	10.14	38.39	38.56	27.66	37.63	54	-16.37	Horizontal

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Test mode:		Transmitting		Test channel:		Middle		Remark:		Peak	
Frequency (MHz)	Cable Loss (dB)	Antenna Factor (dB/m)	Preamp Factor (dB)	Read Level (dBuV)	Level (dBuV/m)	Limit Line (dBuV/m)	Over Limit (dB)	Polarization			
3598.087	5.85	33.00	38.78	49.02	49.09	74	-24.91	Vertical			
4894.000	5.72	34.80	39.27	52.99	54.24	74	-19.76	Vertical			
6078.644	7.45	36.21	39.18	51.02	55.50	74	-18.50	Vertical			
7341.000	8.43	35.48	39.05	52.42	57.28	74	-16.72	Vertical			
9788.000	9.16	37.88	37.82	43.25	52.47	74	-21.53	Vertical			
11872.880	10.20	38.57	38.64	45.99	56.12	74	-17.88	Vertical			
3384.850	5.88	32.74	38.69	49.78	49.71	74	-24.29	Horizontal			
4894.000	5.72	34.80	39.27	55.12	56.37	74	-17.63	Horizontal			
5956.109	7.41	36.22	39.19	50.61	55.05	74	-18.95	Horizontal			
7341.000	8.43	35.48	39.05	55.23	60.09	74	-13.91	Horizontal			
9788.000	9.16	37.88	37.82	44.77	53.99	74	-20.01	Horizontal			
11812.580	10.18	38.51	38.61	45.54	55.62	74	-18.38	Horizontal			

Test mode:		Transmitting		Test channel:		Middle		Remark:		Average	
Frequency (MHz)	Cable Loss (dB)	Antenna Factor (dB/m)	Preamp Factor (dB)	Read Level (dBuV)	Level (dBuV/m)	Limit Line (dBuV/m)	Over Limit (dB)	Polarization			
3598.087	5.85	33.00	38.78	31.57	31.64	54	-22.36	Vertical			
4894.000	5.72	34.80	39.27	24.68	25.93	54	-28.07	Vertical			
6078.644	7.45	36.21	39.18	33.90	38.38	54	-15.62	Vertical			
7341.000	8.43	35.48	39.05	40.56	45.42	54	-8.58	Vertical			
9788.000	9.16	37.88	37.82	31.26	40.48	54	-13.52	Vertical			
11872.880	10.20	38.57	38.64	34.66	44.79	54	-9.21	Vertical			
3384.850	5.88	32.74	38.69	32.52	32.45	54	-21.55	Horizontal			
4894.000	5.72	34.80	39.27	34.21	35.46	54	-18.54	Horizontal			
5956.109	7.41	36.22	39.19	32.98	37.42	54	-16.58	Horizontal			
7341.000	8.43	35.48	39.05	34.65	39.51	54	-14.49	Horizontal			
9788.000	9.16	37.88	37.82	27.42	36.64	54	-17.36	Horizontal			
11812.580	10.18	38.51	38.61	34.12	44.20	54	-9.80	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			
3548.251	5.88	32.94	38.76	49.26	49.32	74	-24.68	Vertical			
4952.000	5.87	34.85	39.28	54.24	55.68	74	-18.32	Vertical			
5999.562	7.51	36.30	39.18	50.30	54.93	74	-19.07	Vertical			
7428.000	8.53	35.43	39.05	58.14	63.05	74	-10.95	Vertical			
9904.000	9.10	38.22	37.76	45.96	55.52	74	-18.48	Vertical			
11791.720	10.18	38.49	38.60	45.56	55.63	74	-18.37	Vertical			
3358.425	5.87	32.67	38.68	50.31	50.17	74	-23.83	Horizontal			
4952.000	5.87	34.85	39.28	48.43	49.87	74	-24.13	Horizontal			
5982.226	7.47	36.27	39.19	50.44	54.99	74	-19.01	Horizontal			
7428.000	8.53	35.43	39.05	50.96	55.87	74	-18.13	Horizontal			
9904.000	9.10	38.22	37.76	44.98	54.54	74	-19.46	Horizontal			
11825.890	10.19	38.53	38.62	45.48	55.58	74	-18.42	Horizontal			

Test mode:		Transmitting		Test channel:		Highest		Remark:		Average	
Frequency (MHz)	Cable Loss (dB)	Antenna Factor (dB/m)	Preamp Factor (dB)	Read Level (dBuV)	Level (dBuV/m)	Limit Line (dBuV/m)	Over Limit (dB)	Polarization			
3548.251	5.88	32.94	38.76	38.52	38.58	54	-15.42	Vertical			
4952.000	5.87	34.85	39.28	43.65	45.09	54	-8.91	Vertical			
5999.562	7.51	36.30	39.18	39.11	43.74	54	-10.26	Vertical			
7428.000	8.53	35.43	39.05	42.69	47.60	54	-6.40	Vertical			
9904.000	9.10	38.22	37.76	34.66	44.22	54	-9.78	Vertical			
11791.720	10.18	38.49	38.60	34.56	44.63	54	-9.37	Vertical			
3358.425	5.87	32.67	38.68	39.26	39.12	54	-14.88	Horizontal			
4952.000	5.87	34.85	39.28	37.56	39.00	54	-15.00	Horizontal			
5982.226	7.47	36.27	39.19	38.69	43.24	54	-10.76	Horizontal			
7428.000	8.53	35.43	39.05	39.12	44.03	54	-9.97	Horizontal			
9904.000	9.10	38.22	37.76	33.66	43.22	54	-10.78	Horizontal			
11825.890	10.19	38.53	38.62	34.65	44.75	54	-9.25	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.

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6.4 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.																					
	<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>	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	
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:																						

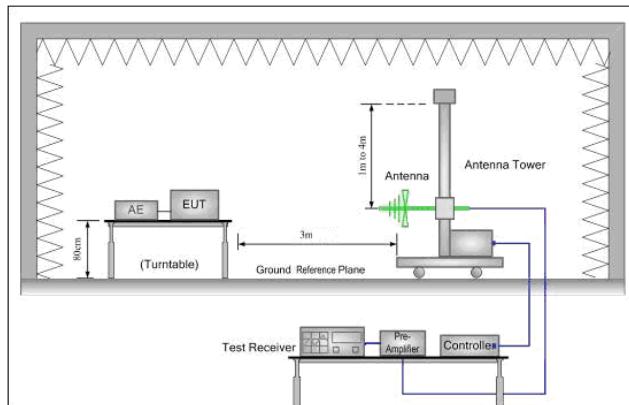


Figure 1. 30MHz to 1GHz

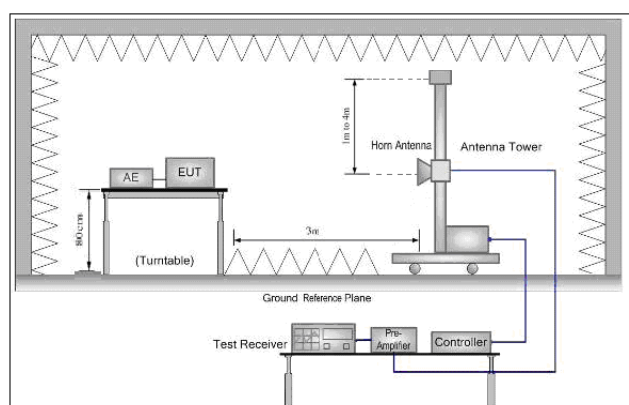


Figure 2. Above 1 GHz



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Test Procedure:	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 channel. g. Test the EUT in the lowest channel , the Highest channel. h. 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. i. Repeat above procedures until all frequencies measured was complete.
Instruments Used:	Refer to section 5.10 for details
Test Mode:	Transmitting mode
Test Results:	Pass



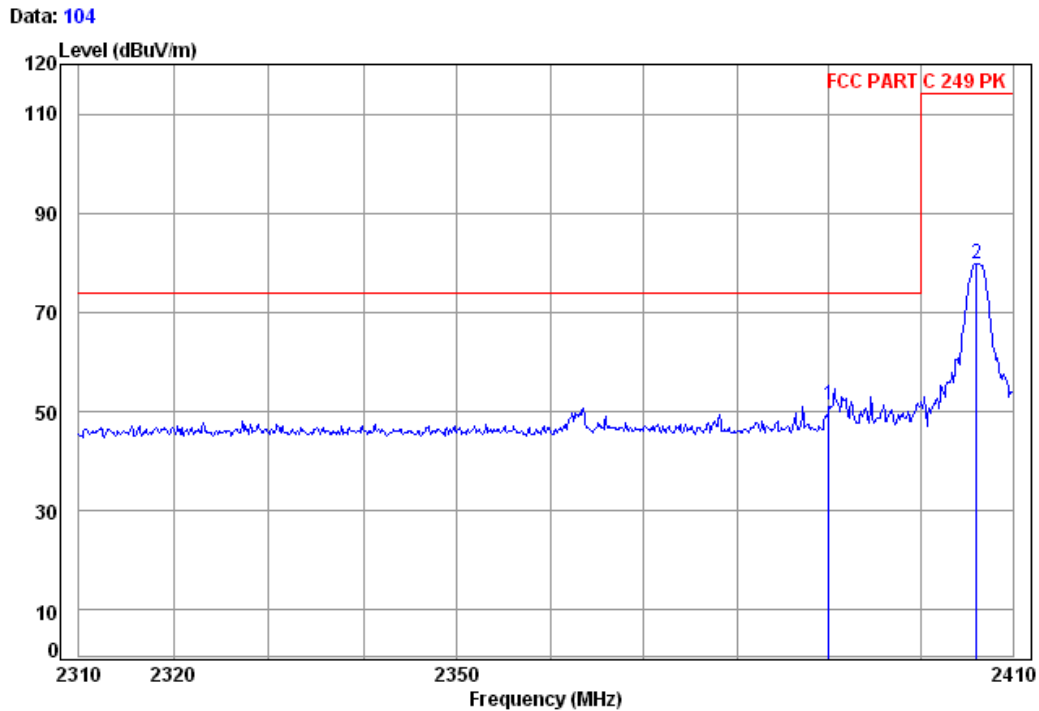
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Test plot as follows:

Test mode:	Transmitting mode	Test channel:	Lowest	Remark:	Peak	Vertical
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Site : chamber
Condition: FCC PART C 249 PK 3m Vertical
Job No: : 5823CR
Mode: : 2406 Band edge

		Cable	Ant	Preamp	Read		Limit	Over
	Freq	Loss	Factor	Factor	Level	Level	Line	Limit
	MHz	dB	dB/m	dB	dBuV	dBuV/m	dBuV/m	dB
1	pp	2390.00	4.90	32.35	38.46	52.52	51.31	74.00
2		2406.02	4.92	32.41	38.46	80.83	79.70	114.00

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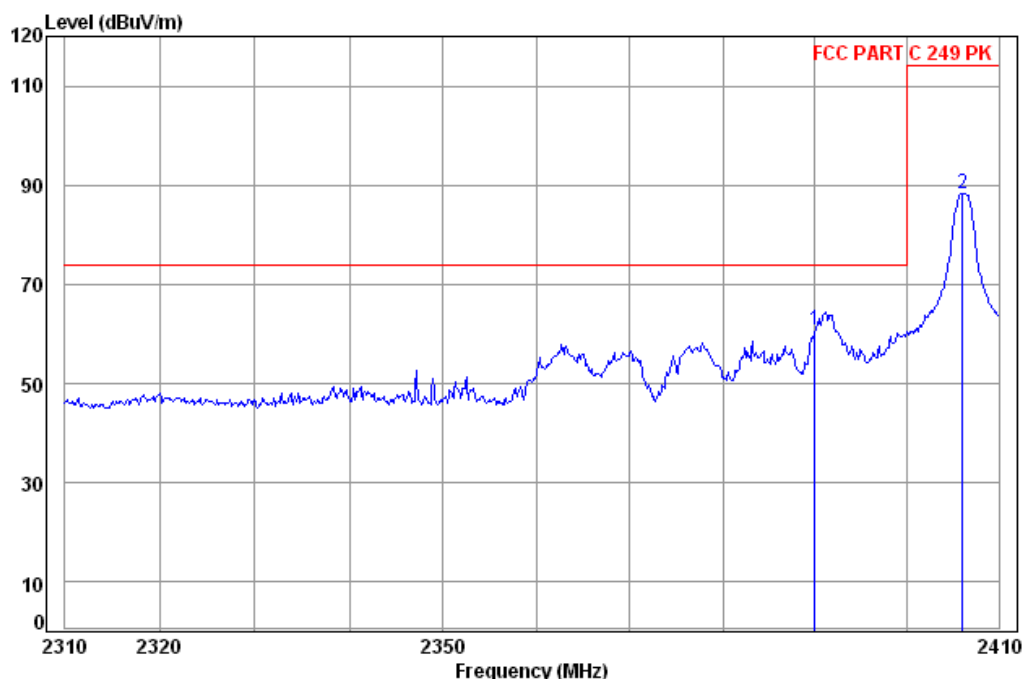
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Test mode:	Transmitting mode	Test channel:	Lowest	Remark:	Peak	Horizontal
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Data: 105



Site : chamber
Condition: FCC PART C 249 PK 3m Horizontal
Job No: : 5823CR
Mode: : 2406 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	2390.00	4.90	32.35	38.46	61.97	60.76	74.00	-13.24
2	2406.02	4.92	32.41	38.46	89.41	88.28	114.00	-25.72

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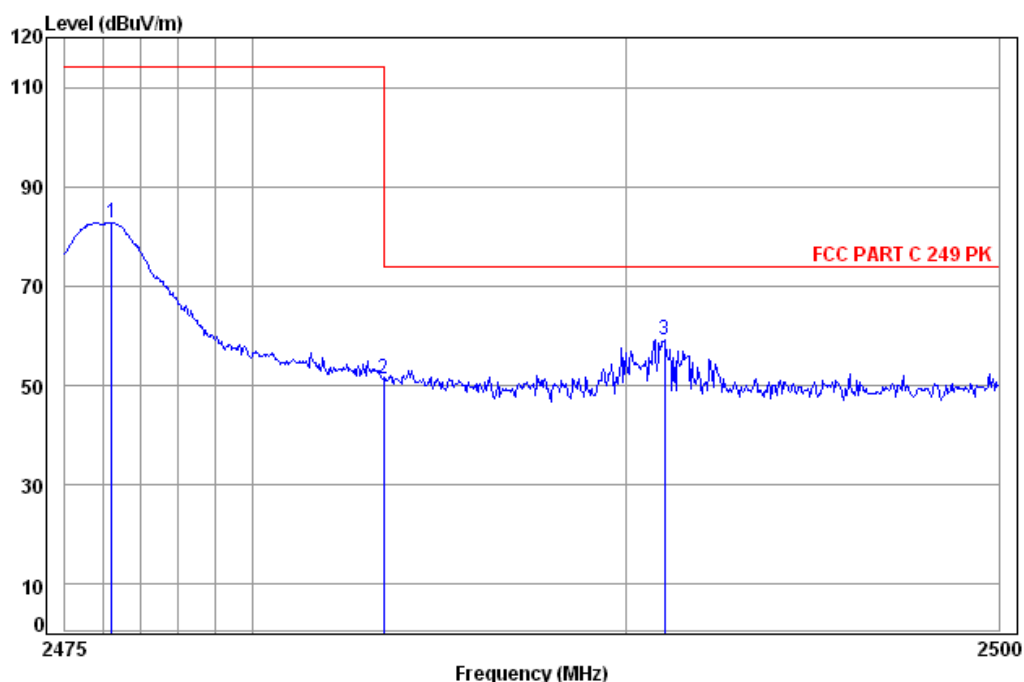
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Test mode:	Transmitting mode	Test channel:	Highest	Remark:	Peak	Vertical
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Data: 103



Site : chamber
Condition: FCC PART C 249 PK 3m Vertical
Job No: : 5823CR
Mode: : 2476 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	2476.24	5.02	32.44	38.47	83.75	82.74	114.00	-31.26
2	2483.50	5.03	32.44	38.47	52.43	51.43	74.00	-22.57
3 pp	2491.02	5.04	32.44	38.47	60.14	59.15	74.00	-14.85

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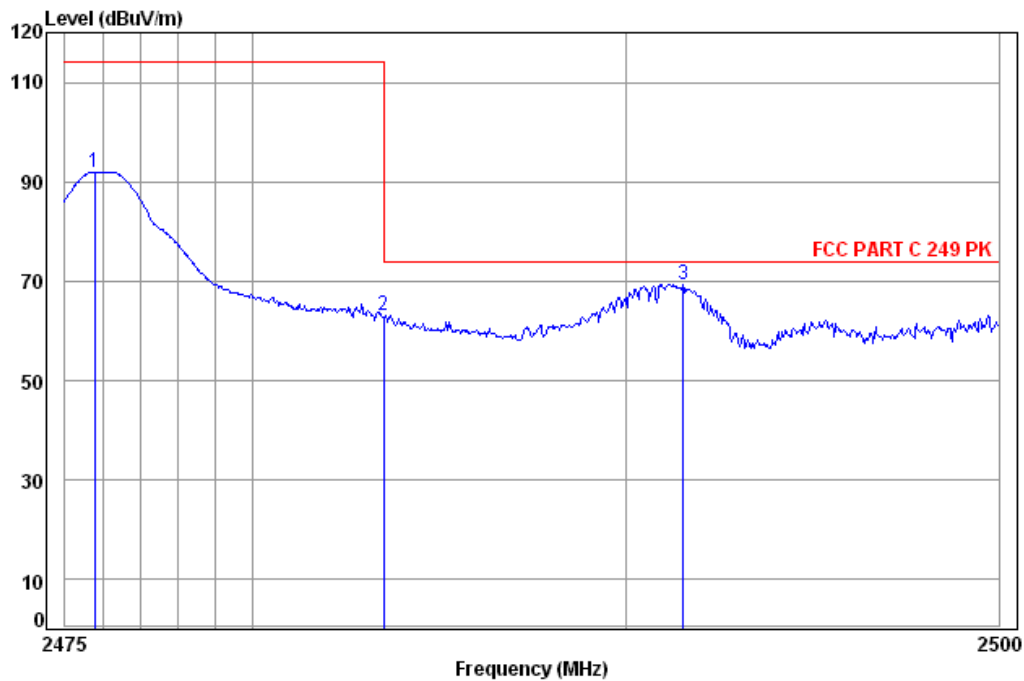
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Test mode:	Transmitting mode	Test channel:	Highest	Remark:	Peak	Horizontal
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Data: 102



Site : chamber
Condition: FCC PART C 249 PK 3m Horizontal
Job No: : 5823CR
Mode: : 2476 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	2475.80	5.02	32.44	38.47	93.00	91.99	114.00	-22.01
2	2483.50	5.03	32.44	38.47	64.10	63.10	74.00	-10.90
3 pp	2491.52	5.04	32.44	38.47	70.28	69.29	74.00	-4.71

Note:

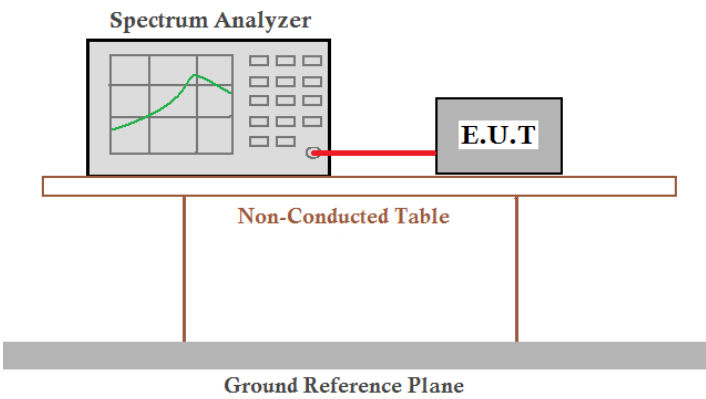
The field strength is calculated by adding the Antenna Factor, Cable Factor & Preamplifier. The basic equation with a sample calculation is as follows:

Final Test Level = Receiver Reading + Antenna Factor + Cable Factor – Preamplifier Factor



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6.5 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 5.10 for details
Test Results:	Pass

Measurement Data

Test Channel	20dB bandwidth (MHz)	Results
Lowest	1.076923077	Pass
Middle	1.076923077	Pass
Highest	1.086538462	Pass



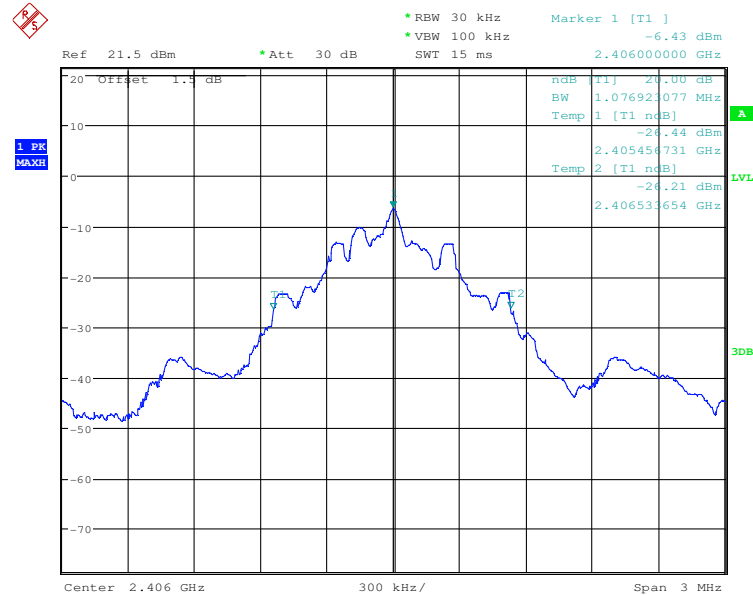
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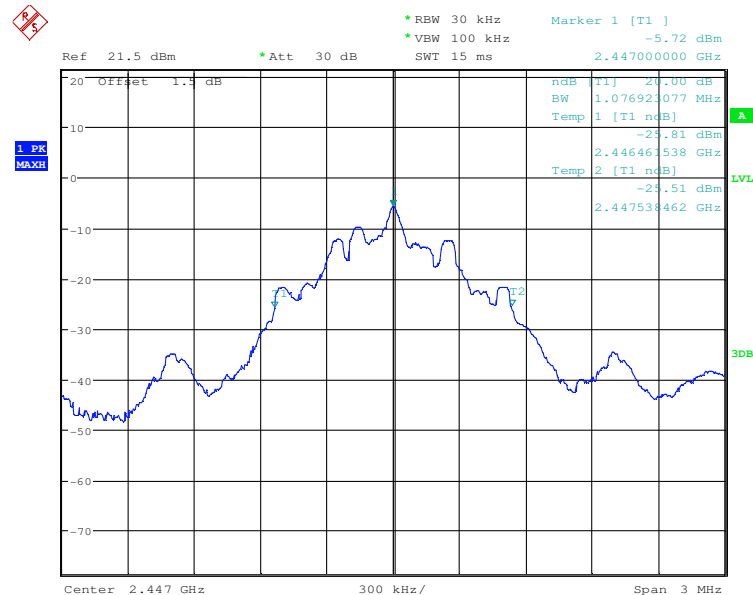
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Test plot as follows:

Test channel:	Lowest
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Test channel:	Middle
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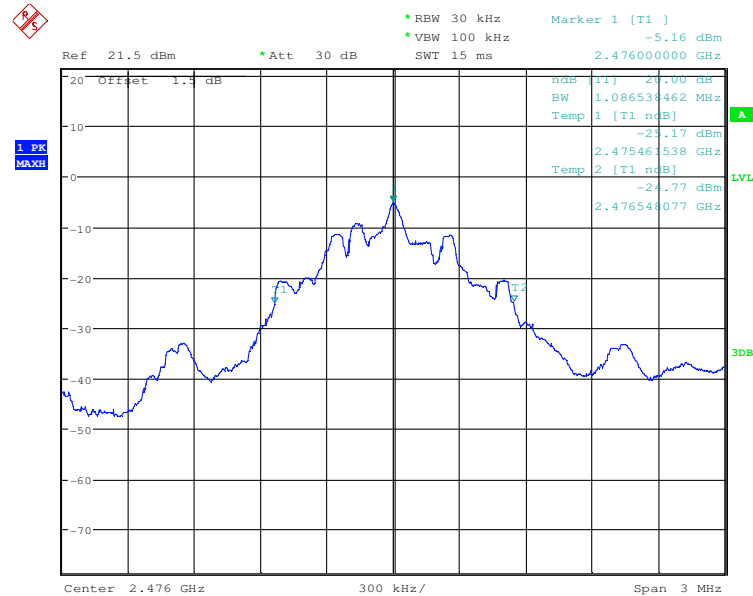


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Test channel:	Highest
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