SGS-CSTC Standards Technical Services Ltd.

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

Application No.:	SZEMO110401505RF
Applicant:	Shenzhen Fuyeda Industry Development Corp., Ltd.
Manufacturer/ Factory:	Shenzhen Fuyeda Industry Development Corp., Ltd.
Product Name:	Mouse
FCC ID:	V4P-MS205OR
Frequency:	2403MHz-2477MHz
Standards:	FCC CFR Title 47 Part 15 Subpart C Section 15.249: 2009
Date of Receipt:	2011-04-06
Date of Test:	2011-04-18 to 2011-04-21
Date of Issue:	2011-04-22
Test Result:	**PASS ***

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

Authorized Signature:

Jack Zhang
EMC Laboratory Manager

2 Contents

3 Test Summary

Test Item	Section in CFR 47	Result
Antenna requirement	15.203	Pass
Field strength of the fundamental signal	15.249 (a)	Pass
Spurious emissions	15.249 (a)/15.209	Pass
Band edge (Radiated Emission)	15.249(a)/15.205	Pass
20dB Occupied Bandwidth	15.215 (c)	Pass

Remark: Pass: The EUT complies with the essential requirements in the standard.

Fail: The EUT does not comply with the essential requirements in the standard.

4 General Information

4.1 Client Information

Applicant:	Shenzhen Fuyeda Industry Development Corp., Ltd.
Address of Applicant:	No.1 NEWMEN ROAD. TONGSHENG VILLAGE, DALANG STREET, BAO'AN, SHENZHEN, CHINA
Manufacturer/Factory:	Shenzhen Fuyeda Industry Development Corp., Ltd.
Address of Manufacturer/ Factory:	No.1 NEWMEN ROAD. TONGSHENG VILLAGE, DALANG STREET, BAO'AN, SHENZHEN, CHINA

4.2 General Description of E.U.T.

Product Name:	Mouse
Trade mark:	Newmen
Item No.:	MS-205OR
Operation Frequency:	2403MHz-2477MHz
Channel numbers:	16
Channel separation:	5MHz
Modulation type:	GFSK
Antenna Type:	PCB on board
Antenna gain:	1.86dBi
Power supply:	1.5V DC (1.5V x 1 "AA"Size Battery)

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	2403 MHz
The middle channel	2442 MHz
The Highest channel	2477 MHz

4.3 E.U.T Operation mode

Operating Environment:

Temperature:	24.0 °C
Humidity:	52 % RH
Atmospheric Pressure:	1008 mbar

Test mode:

Transmitting mode:	Keep the EUT in Transmitting mode.

4.4 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 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 and C-2383 respectively.
  Date of Registration: September 29, 2008. Valid until September 28, 2011.
- **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 556682, June 27, 2008.
- **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.

4.5 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

Telephone: +86 (0) 755 2601 2053 Fax: +86 (0) 755 2671 0594

No tests were sub-contracted.

4.6 Other Information Requested by the Customer

None.

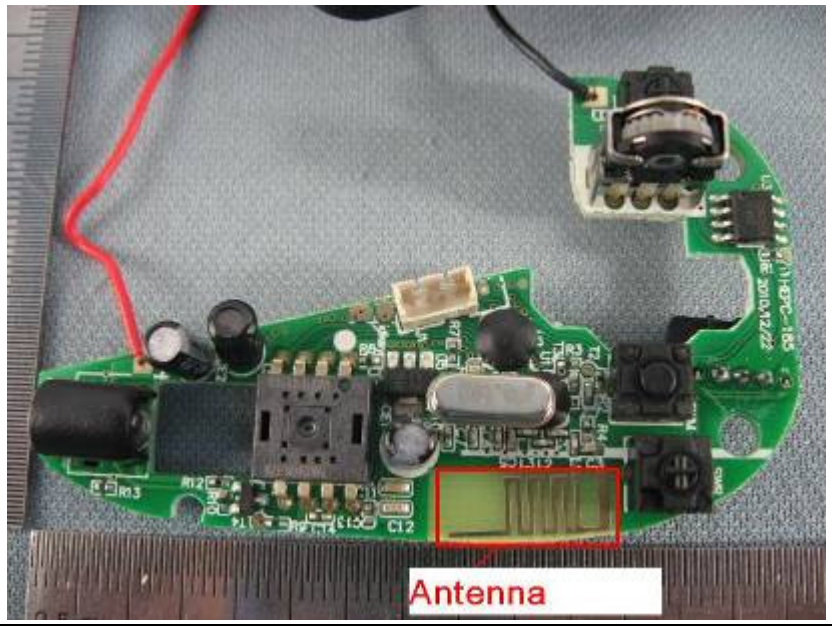
4.7 Test Instruments list:

RE in Chamber						
Item	**Test Equipment**	**Manufacturer**	**Model No.**	**Inventory No.**	**Cal.Date (yyyy-mm-dd)**	**Cal.Due date (yyyy-mm-dd)**
1	3m Semi-Anechoic Chamber	ETS-LINDGREN	N/A	SEL0017	2010-06-17	2011-06-17
2	EMI Test Receiver	Rohde & Schwarz	ESIB26	SEL0023	2010-11-05	2011-11-05
3	EMI Test software	AUDIX	E3	SEL0050	N/A	N/A
4	Coaxial cable	SGS	N/A	SEL0028	2008-06-18	2011-06-18
5	BiConiLog Antenna (26-3000MHz)	ETS-LINDGREN	3142C	SEL0015	2010-11-09	2011-11-09
6	Double-ridged horn (1-18GHz)	ETS-LINDGREN	3117	SEL0006	2010-11-09	2011-11-09
7	Horn Antenna (18-26GHz)	ETS-LINDGREN	3160	SEL0076	2010-11-09	2011-11-09
8	Pre-amplifier (0.1-1300MHz)	Agilent Technologies	8447D	SEL0053	2010-06-02	2011-06-02
9	Pre-Amplifier (0.1-26.5GHz)	Compliance Directions Systems Inc.	PAP-0126	SEL0168	2010-10-27	2011-10-27
10	Pre-amplifier (18-26GHz)	Rohde & Schwarz	AFS33-18002 650-30-8P-44	SEL0080	2010-06-04	2011-06-04
11	Band filter	Amindeon	82346	SEL0094	2010-06-02	2011-06-02

5 Test results and Measurement Data

5.1 Antenna requirement:

Standard requirement:	FCC Part15 C 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.*	
E.U.T Antenna:	The antenna is integrated on the main PCB and no consideration of replacement. The maximum gain of the antenna is 1.86dBi.



5.2 Radiated Emission

Test Requirement:	FCC Part15 C Section 15.249 and 15.209
Test Method:	ANSI C63.10: 2009
Test Frequency Range:	30MHz to 25000MHz
Test site:	Measurement Distance: 3m (Semi-Anechoic Chamber)

Receiver setup:

Frequency	Detector	RBW	VBW	Remark
30MHz-1GHz	Quasi-peak	100KHz	300KHz	Quasi-peak Value
Above 1GHz	Peak	1MHz	3MHz	Peak Value
	Peak	1MHz	10Hz	Average Value

Limit:
(Field strength of the fundamental signal)

Frequency	Limit (dBuV/m @3m)	Remark
2400MHz-2483.5MHz	94.0	Average Value
	114.0	Peak Value

Limit:
(Spurious Emissions)

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

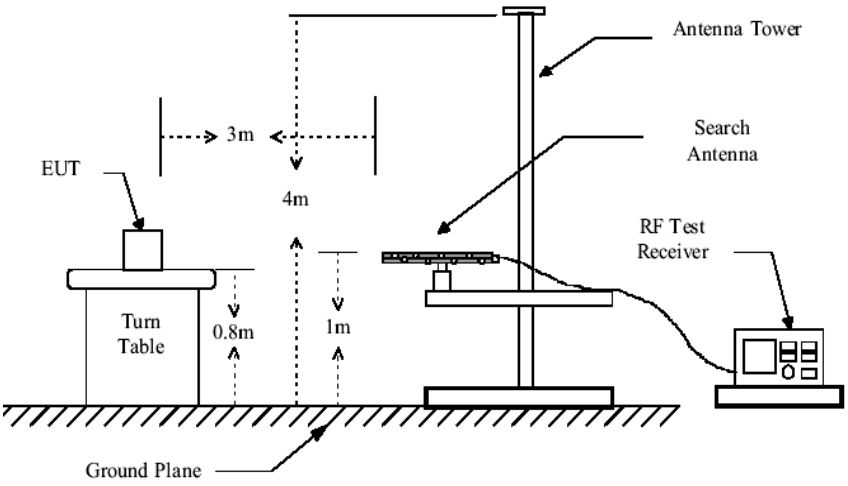
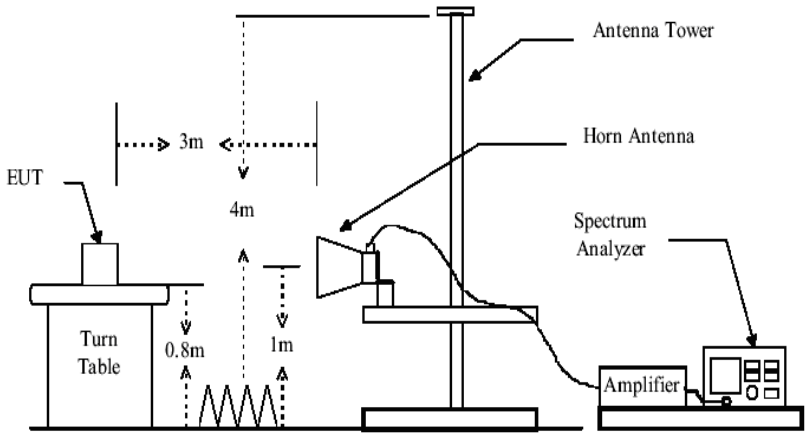
Limit:
(band edge)

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.

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 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. 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.

The radiation measurements are performed in X, Y, Z axis positioning. Only the worst case is shown in the report.

Test Instruments:	Refer to section 4.7 for details
Test setup:	Below 1GHz  Above 1GHz 
Test mode:	Transmitting mode
Test results:	Pass

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

Measurement Data

5.2.1 Field Strength Of The Fundamental Signal

Peak value:

Frequency (MHz)	Cable Loss (dB)	Antenna Factor (dB/m)	Preamp Factor (dB)	Read Level (dBuV)	Peak Level (dBuV/m)	Peak Limit (dBuV/m)	Over Limit (dB)	polarization
2403.00	2.98	32.54	39.86	96.60	92.26	114.00	-21.74	Horizontal
2403.00	2.98	32.54	39.86	95.45	91.11	114.00	-22.89	Vertical
2442.00	3.01	32.61	39.89	97.65	93.38	114.00	-20.62	Horizontal
2442.00	3.01	32.61	39.89	95.30	91.03	114.00	-22.97	Vertical
2477.00	3.03	32.67	39.92	95.55	91.33	114.00	-22.67	Horizontal
2477.00	3.03	32.67	39.92	94.63	90.41	114.00	-23.59	Vertical

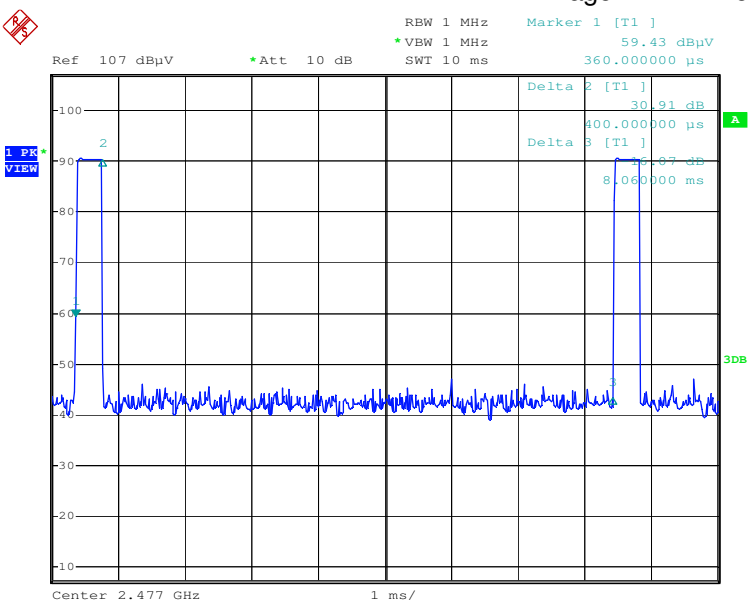
Note:

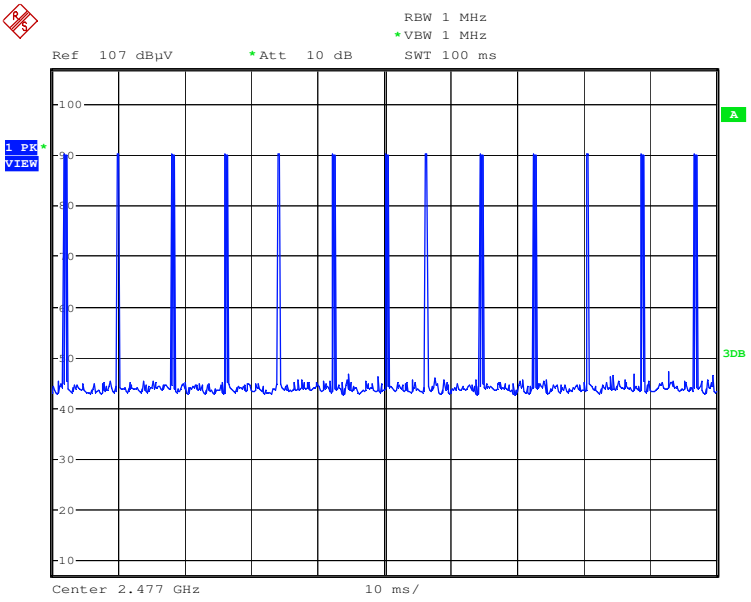
Peak Level (Final Level)= Reading Level + Antenna Factor + Cable Loss - Preamp Factor

Average value:

Frequency (MHz)	Peak Level (dBuV/m)	PDCF (dB)	Average Level (dBuV/m)	Average Limit (dBuV/m)	Over Limit (dB)	polarization
2403.00	92.26	-26.08	66.18	94.00	-27.82	Horizontal
2403.00	91.11	-26.08	65.03	94.00	-28.97	Vertical
2442.00	93.38	-26.08	67.30	94.00	-26.70	Horizontal
2442.00	91.03	-26.08	64.95	94.00	-29.05	Vertical
2477.00	91.33	-26.08	65.25	94.00	-28.75	Horizontal
2477.00	90.41	-26.08	64.33	94.00	-29.67	Vertical

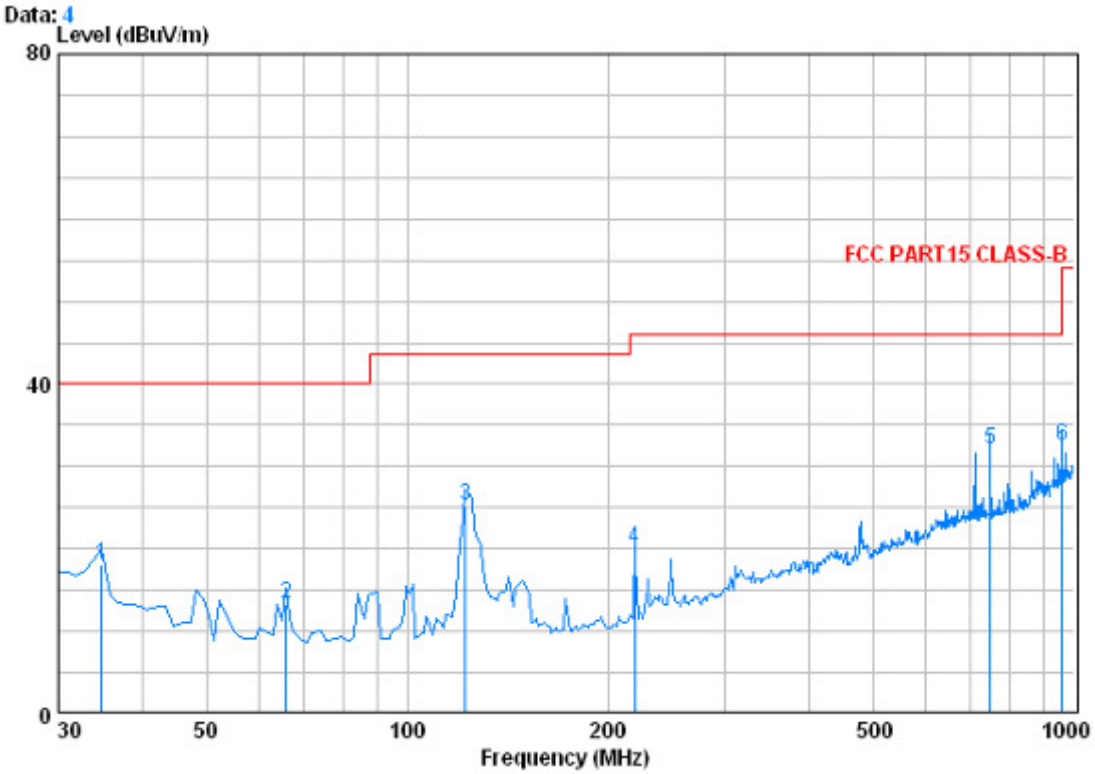
PDCF Calculate Formula:
Average value=Peak value + PDCF(pulse desensitization correction factor)
PDCF=20 log(Duty cycle)= -26.08dB
Duty cycle= T on time / T period = 0.0496
Ton time = 400μs
T period = 8060μs





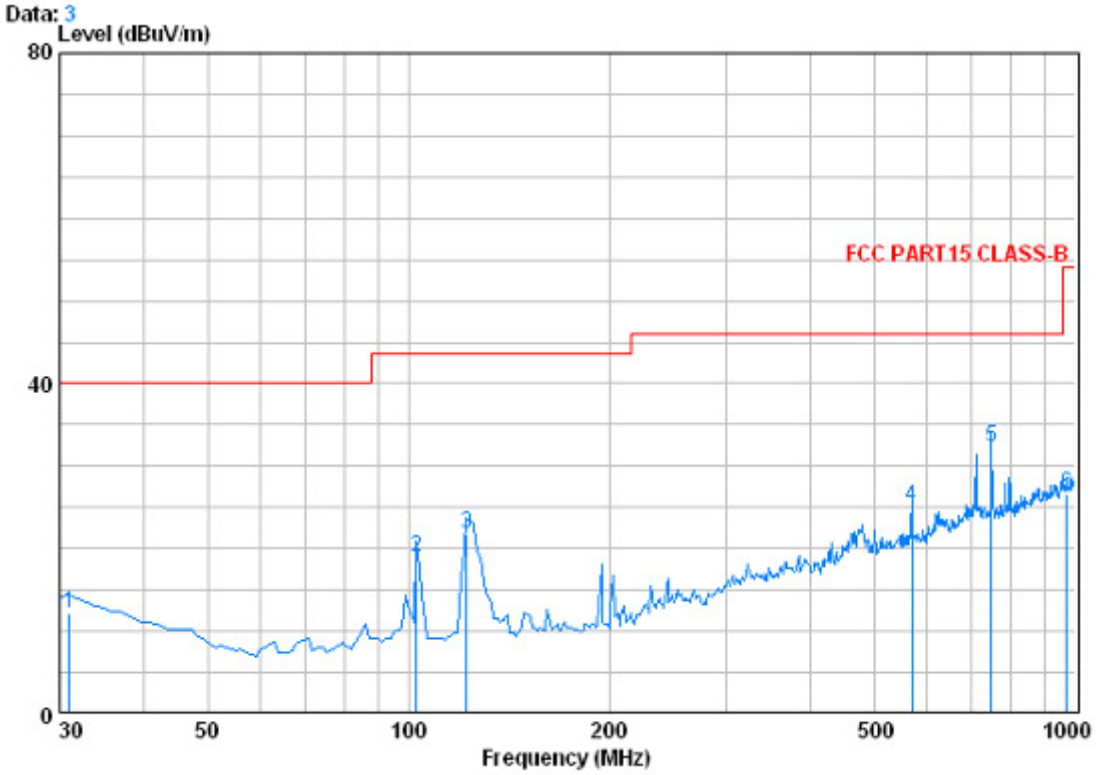
5.2.2 Spurious Emissions

30MHz~1GHz		
Test mode:	Transmitting	Vertical



	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	34.850	0.60	13.06	27.34	31.77	18.09	40.00	-21.91
2	65.890	0.80	7.01	27.25	32.75	13.31	40.00	-26.69
3	122.150	1.26	7.85	27.06	43.25	25.31	43.50	-18.19
4	219.150	1.51	11.18	26.63	34.00	20.06	46.00	-25.94
5	748.770	3.05	21.70	27.35	34.66	32.05	46.00	-13.95
6	959.260	3.66	23.60	26.51	31.69	32.44	46.00	-13.56

Test mode:	Transmitting	Horizontal



	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	30.970	0.60	14.73	27.35	24.31	12.28	40.00	-27.72
2	102.750	1.21	8.97	27.18	36.04	19.03	43.50	-24.47
3	122.150	1.26	7.85	27.06	39.65	21.71	43.50	-21.79
4	568.350	2.67	19.05	27.59	30.96	25.10	46.00	-20.90
5	749.740	3.06	21.70	27.35	34.79	32.20	46.00	-13.80
6	970.900	3.67	23.90	26.44	25.50	26.63	54.00	-27.37

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
4783.500	4.68	34.73	41.61	53.68	51.48	74.00	-22.52	Vertical
6193.500	5.18	35.94	40.76	52.03	52.39	74.00	-21.61	Vertical
7380.250	5.98	35.95	39.72	49.83	52.04	74.00	-21.96	Vertical
8026.500	6.20	36.01	39.16	49.52	52.57	74.00	-21.43	Vertical
9389.500	6.04	37.08	37.98	47.15	52.29	74.00	-21.71	Vertical
11892.250	6.44	38.80	38.23	46.94	53.95	74.00	-20.05	Vertical
3056.250	3.36	33.38	40.34	49.20	45.60	74.00	-28.40	Horizontal
4783.500	4.68	34.73	41.61	54.65	52.45	74.00	-21.55	Horizontal
6205.250	5.18	35.94	40.74	51.19	51.57	74.00	-22.43	Horizontal
7192.250	5.77	35.88	39.89	52.10	53.86	74.00	-20.14	Horizontal
8590.500	6.18	36.27	38.67	48.49	52.27	74.00	-21.73	Horizontal
11880.500	6.44	38.78	38.23	46.46	53.45	74.00	-20.55	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
4877.500	4.72	34.59	41.68	55.66	53.29	74.00	-20.71	Vertical
5958.500	5.11	35.64	40.96	50.50	50.29	74.00	-23.71	Vertical
6863.250	5.39	35.94	40.17	50.56	51.72	74.00	-22.28	Vertical
7756.250	6.22	36.00	39.39	49.49	52.32	74.00	-21.68	Vertical
10012.250	5.97	37.72	37.45	46.62	52.86	74.00	-21.14	Vertical
12350.500	6.56	39.26	38.42	45.69	53.09	74.00	-20.91	Vertical
4877.500	4.72	34.59	41.68	55.74	53.37	74.00	-20.63	Horizontal
5664.750	5.01	35.15	41.20	49.39	48.35	74.00	-25.65	Horizontal
6534.250	5.27	36.27	40.46	50.41	51.49	74.00	-22.51	Horizontal
7803.250	6.22	36.00	39.36	49.76	52.62	74.00	-21.38	Horizontal
8825.500	6.16	36.45	38.47	48.07	52.21	74.00	-21.79	Horizontal
10329.500	6.05	38.10	37.58	46.00	52.57	74.00	-21.43	Horizontal

Test mode:	Transmitting	Test channel:	Highest	Remark:	Peak

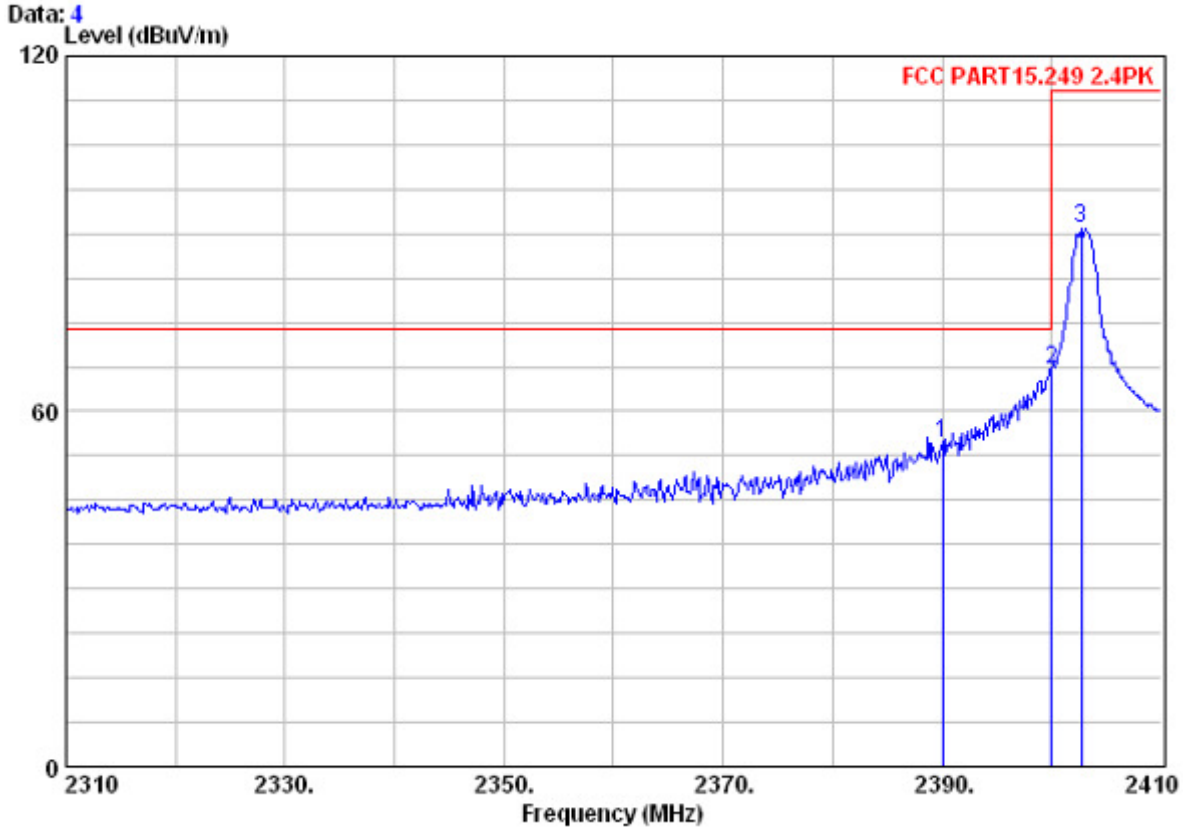
Frequency (MHz)	Cable Loss (dB)	Antenna Factor (dB/m)	Preamp Factor (dB)	Read Level (dBuV)	Level (dBuV/m)	Limit Line (dBuV/m)	Over Limit (dB)	polarization
4936.250	4.75	34.48	41.72	55.91	53.42	74.00	-20.58	Vertical
6475.500	5.25	36.26	40.51	50.93	51.93	74.00	-22.07	Vertical
7897.250	6.21	36.00	39.28	50.58	53.51	74.00	-20.49	Vertical
9295.500	6.07	36.95	38.06	47.17	52.13	74.00	-21.87	Vertical
10388.250	6.07	38.16	37.61	46.16	52.78	74.00	-21.22	Vertical
11563.250	6.36	38.45	38.10	47.12	53.83	74.00	-20.17	Vertical
3949.250	4.11	33.74	41.00	50.00	46.85	74.00	-27.15	Horizontal
4936.250	4.75	34.48	41.72	55.51	53.02	74.00	-20.98	Horizontal
5923.250	5.10	35.59	40.99	50.59	50.29	74.00	-23.71	Horizontal
7474.250	6.08	35.99	39.64	50.24	52.67	74.00	-21.33	Horizontal
8731.500	6.17	36.39	38.55	48.54	52.55	74.00	-21.45	Horizontal
11046.250	6.23	38.49	37.88	46.76	53.60	74.00	-20.40	Horizontal

Remark:

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.

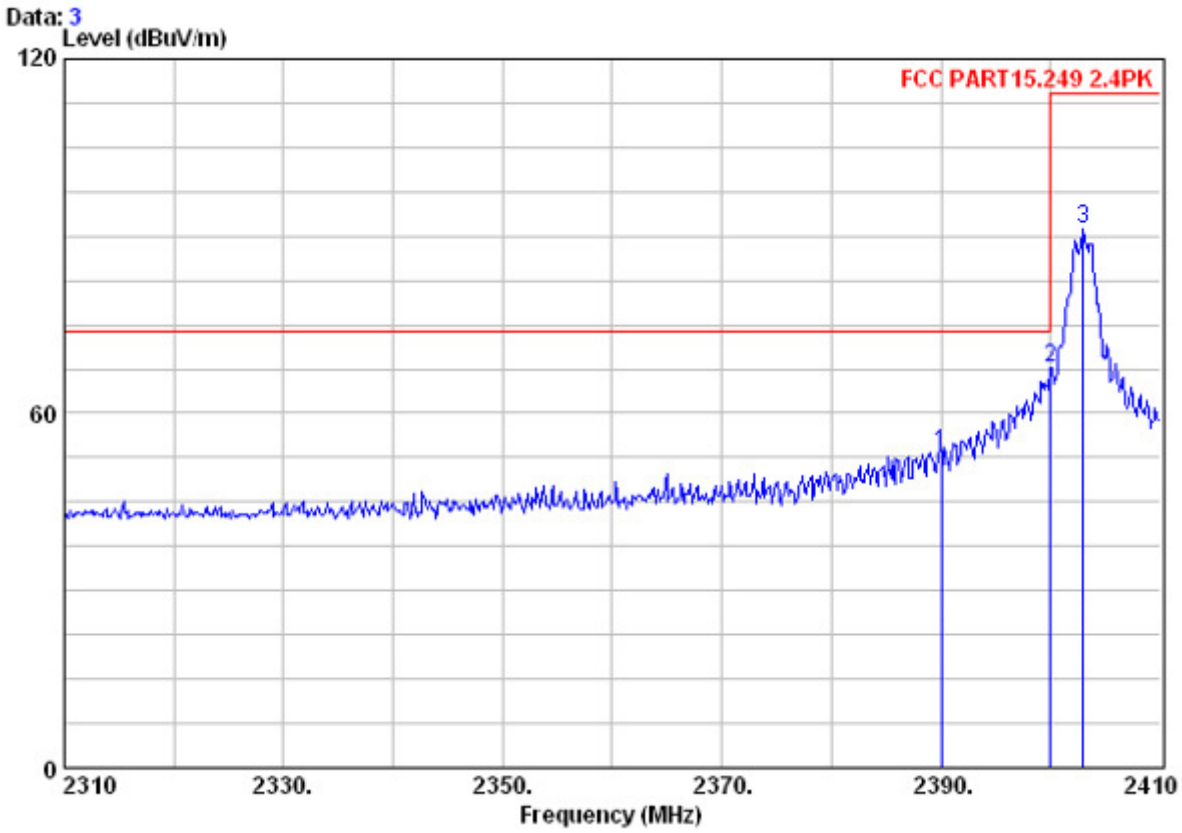
5.2.3 Band edge (Radiated Emission)

Test mode:	Transmitting	Test channel:	Lowest	Remark:	Vertical



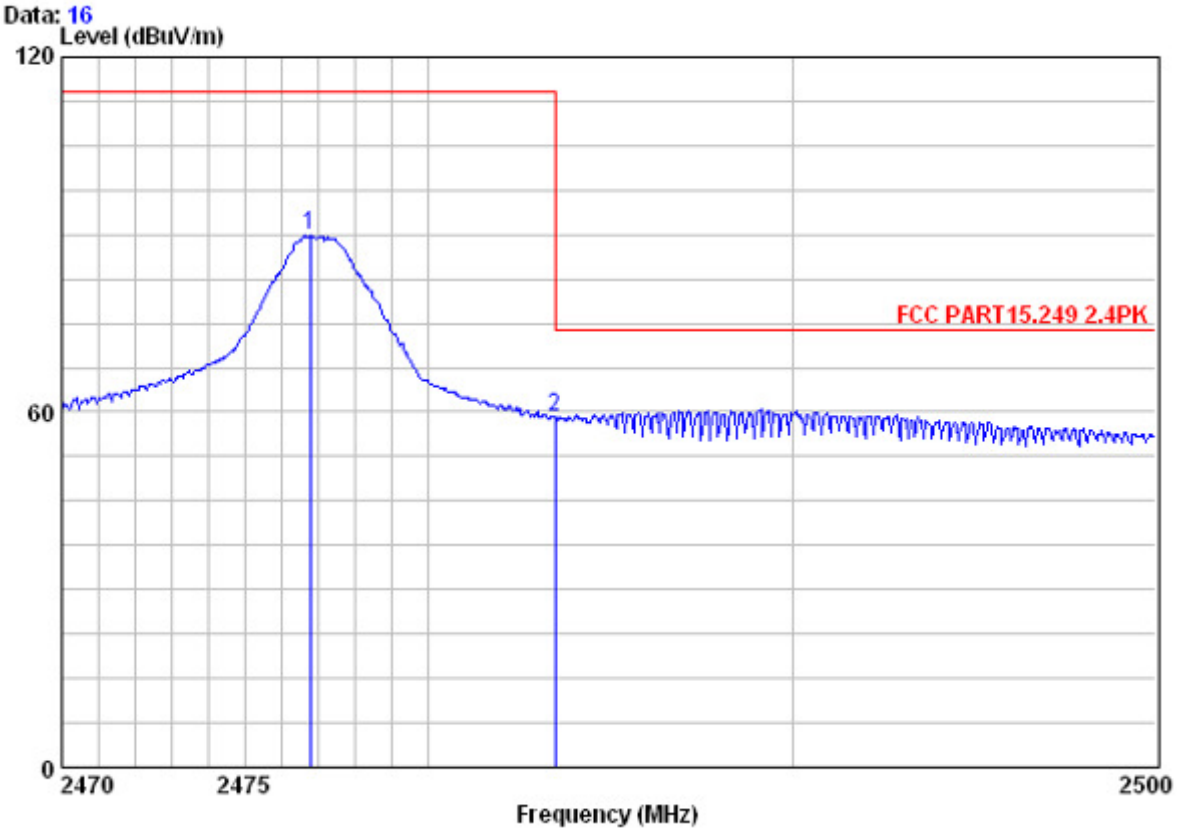
	Freq	Cable Loss	Antenna Factor	Preamp Factor	Read Level	Level	Limit Line	Over Limit
	MHz	dB	dB/m	dB	dBuV	dBuV/m	dBuV/m	dB
1	2390.000	2.98	32.51	39.85	58.86	54.51	74.00	-19.49
2	2400.000	2.98	32.51	39.86	71.54	67.17	74.00	-6.83
3	2402.700	2.98	32.54	39.86	95.22	90.88	114.00	-23.12

Test mode:	Transmitting	Test channel:	Lowest	Remark:	Horizontal



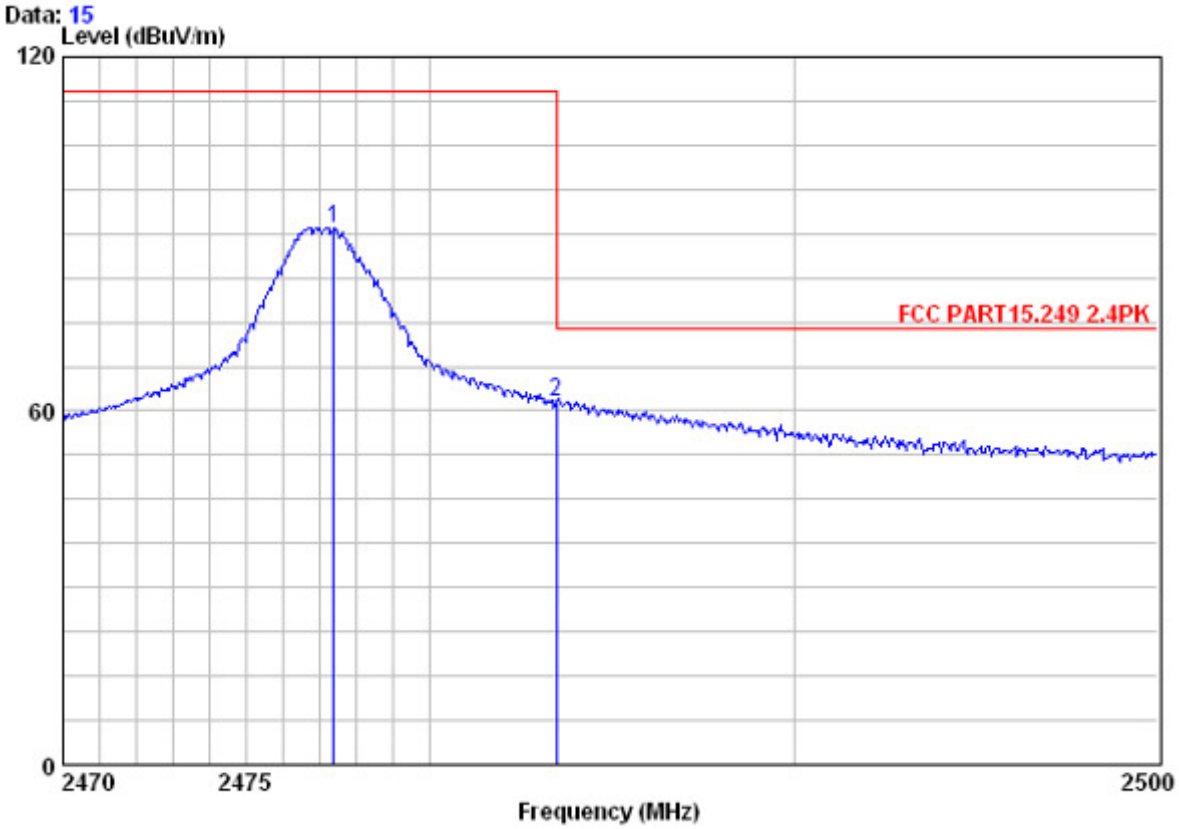
	Freq	Cable Loss	Antenna Factor	Preamp Factor	Read Level	Level	Limit Line	Over Limit
	MHz	dB	dB/m	dB	dBuV	dBuV/m	dBuV/m	dB
1	2390.000	2.98	32.51	39.85	57.66	53.31	74.00	-20.69
2 @	2400.000	2.98	32.51	39.86	71.99	67.62	74.00	-6.38
3	2403.000	2.98	32.54	39.86	95.51	91.17	114.00	-22.83

Test mode:	Transmitting	Test channel:	Highest	Remark:	Vertical



	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	2476.780	3.03	32.67	39.92	94.04	89.82	114.00	-24.18
2	2483.500	3.03	32.67	39.92	63.47	59.25	74.00	-14.75

Test mode:	Transmitting	Test channel:	Highest	Remark:	Horizontal



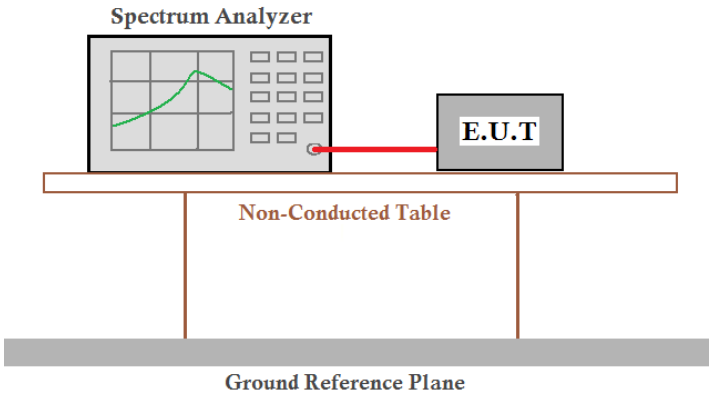
	Freq	Cable Loss	Antenna Factor	Preamp Factor	Read Level	Level	Limit Line	Over Limit
	MHz	dB	dB/m	dB	dBuV	dBuV/m	dBuV/m	dB
1	2477.380	3.03	32.67	39.92	95.12	90.90	114.00	-23.10
2 @	2483.500	3.03	32.67	39.92	65.77	61.55	74.00	-12.45

Remark:

For the pulse emissions measurement,Average value =Peak value+PDCF and Average limit=Peak limit-20dB. Since the device is pulse emission, PDCF=-26.08dB< -20dB and Peak value has met Peak limit.

Base on the above state,average value should meet average limit. So, only the peak measurements were shown in the report.

5.2.4 20dB Bandwidth

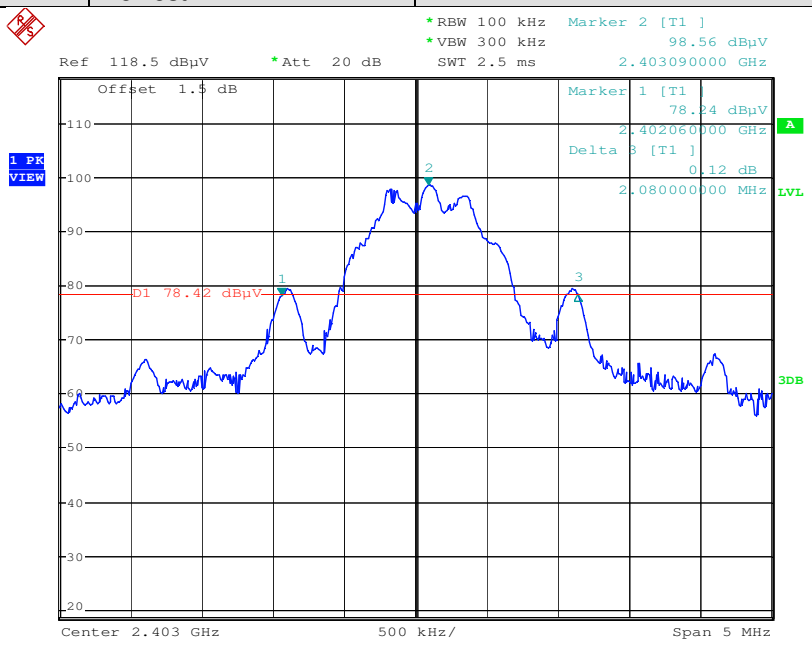
Test Requirement:	FCC Part15 C Section 15.249/15.215
Test Method:	ANSI C63.10:2009
Receiver setup:	RBW=100KHz, VBW=300KHz, detector: Peak
Limit:	Operation Frequency range 2400MHz-2483.5MHz
Test Procedure:	1. According to the follow Test-setup, keep the relative position between the artificial antenna and the EUT. 2. Set the EUT to proper test channel. 3. Max hold the radiated emissions, mark the peak power frequency point and the -20dB upper and lower frequency points. 4. Read 20dB bandwidth.
Test setup:	
Test Instruments:	Refer to section 4.7 for details
Test results:	Pass

Measurement Data

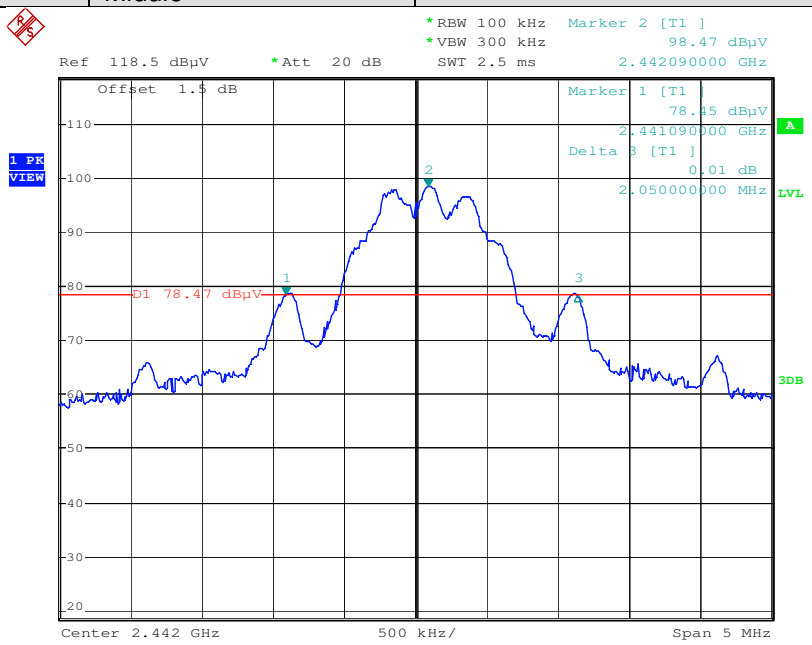
Test channel	20dB bandwidth (MHz)	Results
Lowest	2.08	Pass
Middle	2.05	Pass
Highest	2.08	Pass

Test plot as follows:

Test channel:	Lowest	



Test channel:	Middle	



Test channel:	Highest