

# FCC Radio Test Report

## FCC ID: VIXSP880B

This report concerns (check one): Original Grant Class II Change

**Project No.** : 1409042  
**Equipment** : Bluetooth Wireless Speaker  
**Model Name** : SP880B  
**Applicant** : Voxx Accessories Corp  
**Address** : 3502 Woodview Trace, Suite 220 Indianapolis,  
IN 46268 USA

**Date of Receipt** : Sep. 09, 2014  
**Date of Test** : Sep. 09, 2014 ~ Dec. 02, 2014  
**Issued Date** : Dec. 04, 2014  
**Tested by** : BTL Inc.

**Testing Engineer** : Rush Kao  
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### **Declaration**

**BTL** represents to the client that testing is done in accordance with standard procedures as applicable and that test instruments used has been calibrated with the standards traceable to National Measurement Laboratory (**NML**) of **CHINA**, or National Institute of Standards and Technology (**NIST**) of **U.S.A.**

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### **Limitation**

For the use of the authority's logo is limited unless the Test Standard(s)/Scope(s)/Item(s) mentioned in this test report is (are) included in the conformity assessment authorities acceptance respective.

<b>Table of Contents</b>	<b>Page</b>
<b>1 . CERTIFICATION</b>	<b>7</b>
<b>2 . SUMMARY OF TEST RESULTS</b>	<b>8</b>
2.1 TEST FACILITY	9
2.2 MEASUREMENT UNCERTAINTY	9
<b>3 . GENERAL INFORMATION</b>	<b>10</b>
3.1 GENERAL DESCRIPTION OF EUT	10
3.2 DESCRIPTION OF TEST MODES	12
3.3 TABLE OF PARAMETERS OF TEXT SOFTWARE SETTING	12
3.4 BLOCK DIAGRAM SHOWING THE CONFIGURATION OF SYSTEM TESTED	13
3.5 DESCRIPTION OF SUPPORT UNITS	13
<b>4 . EMC EMISSION TEST</b>	<b>14</b>
4.1 CONDUCTED EMISSION MEASUREMENT	14
4.1.1 POWER LINE CONDUCTED EMISSION LIMITS	14
4.1.2 TEST PROCEDURE	14
4.1.3 DEVIATION FROM TEST STANDARD	14
4.1.4 TEST SETUP	15
4.1.5 EUT OPERATING CONDITIONS	15
4.1.6 EUT TEST CONDITIONS	15
4.1.7 TEST RESULTS	15
4.2 RADIATED EMISSION MEASUREMENT	16
4.2.1 RADIATED EMISSION LIMITS	16
4.2.2 TEST PROCEDURE	17
4.2.3 DEVIATION FROM TEST STANDARD	17
4.2.4 TEST SETUP	18
4.2.5 EUT OPERATING CONDITIONS	19
4.2.6 EUT TEST CONDITIONS	19
4.2.7 TEST RESULTS (9KHZ TO 30MHZ)	19
4.2.8 TEST RESULTS (BETWEEN 30MHZ TO 1000 MHZ)	20
4.2.9 TEST RESULTS (ABOVE 1000 MHZ)	20
<b>5 . NUMBER OF HOPPING CHANNEL</b>	<b>21</b>
5.1 APPLIED PROCEDURES	21
5.1.1 TEST PROCEDURE	21
5.1.2 DEVIATION FROM STANDARD	21
5.1.3 TEST SETUP	21
5.1.4 EUT OPERATION CONDITIONS	21
5.1.5 EUT TEST CONDITIONS	21
5.1.6 TEST RESULTS	21

<b>Table of Contents</b>	<b>Page</b>
<b>6 . AVERAGE TIME OF OCCUPANCY</b>	<b>22</b>
<b>6.1 APPLIED PROCEDURES / LIMIT</b>	<b>22</b>
6.1.1 TEST PROCEDURE	22
6.1.2 DEVIATION FROM STANDARD	22
6.1.3 TEST SETUP	22
6.1.4 EUT OPERATION CONDITIONS	23
6.1.5 EUT TEST CONDITIONS	23
6.1.6 TEST RESULTS	23
<b>7 . HOPPING CHANNEL SEPARATION MEASUREMENT</b>	<b>24</b>
<b>7.1 APPLIED PROCEDURES / LIMIT</b>	<b>24</b>
7.1.1 TEST PROCEDURE	24
7.1.2 DEVIATION FROM STANDARD	24
7.1.3 TEST SETUP	24
7.1.4 EUT TEST CONDITIONS	24
7.1.5 TEST RESULTS	24
<b>8 . BANDWIDTH TEST</b>	<b>25</b>
<b>8.1 APPLIED PROCEDURES</b>	<b>25</b>
8.1.1 TEST PROCEDURE	25
8.1.2 DEVIATION FROM STANDARD	25
8.1.3 TEST SETUP	25
8.1.4 EUT OPERATION CONDITIONS	25
8.1.5 EUT TEST CONDITIONS	25
8.1.6 TEST RESULTS	25
<b>9 . PEAK OUTPUT POWER TEST</b>	<b>26</b>
<b>9.1 APPLIED PROCEDURES / LIMIT</b>	<b>26</b>
9.1.1 TEST PROCEDURE	26
9.1.2 DEVIATION FROM STANDARD	26
9.1.3 TEST SETUP	26
9.1.4 EUT OPERATION CONDITIONS	26
9.1.5 EUT TEST CONDITIONS	26
9.1.6 TEST RESULTS	26
<b>10 . ANTENNA CONDUCTED SPURIOUS EMISSION</b>	<b>27</b>
<b>10.1 APPLIED PROCEDURES / LIMIT</b>	<b>27</b>
10.1.1 TEST PROCEDURE	27
10.1.2 DEVIATION FROM STANDARD	27
10.1.3 TEST SETUP	27
10.1.4 EUT OPERATION CONDITIONS	27
10.1.5 EUT TEST CONDITIONS	27
10.1.6 TEST RESULTS	27
<b>11 . MEASUREMENT INSTRUMENTS LIST</b>	<b>28</b>

<b>Table of Contents</b>	<b>Page</b>
<b>12 . EUT TEST PHOTO</b>	<b>30</b>
<b>ATTACHMENT A - CONDUCTED EMISSION</b>	<b>34</b>
<b>ATTACHMENT B - RADIATED EMISSION (9KHZ-30MHZ)</b>	<b>37</b>
<b>ATTACHMENT C - RADIATED EMISSION (30MHZ TO 1000MHZ)</b>	<b>39</b>
<b>ATTACHMENT D - RADIATED EMISSION (ABOVE 1000MHZ)</b>	<b>42</b>
<b>ATTACHMENT E - NUMBER OF HOPPING CHANNEL</b>	<b>67</b>
<b>ATTACHMENT F - AVERAGE TIME OF OCCUPANCY</b>	<b>69</b>
<b>ATTACHMENT G - HOPPING CHANNEL SEPARATION MEASUREMENT</b>	<b>82</b>
<b>ATTACHMENT H - BANDWIDTH</b>	<b>87</b>
<b>ATTACHMENT I - PEAK OUTPUT POWER</b>	<b>92</b>
<b>ATTACHMENT J - ANTENNA CONDUCTED SPURIOUS EMISSION</b>	<b>97</b>

### REPORT ISSUED HISTORY

Issued No.	Description	Issued Date
BTL-FCCP-1-1409042	Original Issue.	Dec. 04, 2014

## 1. CERTIFICATION

Equipment : Bluetooth Wireless Speaker  
Brand Name : 808  
Model Name : SP880B  
Applicant : Voxx Accessories Corp  
Manufacturer : Dong Guan Lightion Electronics Co., LTD.  
Address : Meilin District 523823, Dalingshan, Dongguan City, Guangdong Province, China  
Factory : Dong Guan Lightion Electronics Co., LTD.  
Address : Meilin District 523823, Dalingshan, Dongguan City, Guangdong Province, China  
Date of Test : Sep. 09, 2014 ~ Dec. 02, 2014  
Test Sample : ENGINEERING SAMPLE  
Standard(s) : FCC Part15, Subpart C : 2013 (15.247) / ANSI C63.4 : 2009 /  
FCC Public Notice DA 00-705, March 30, 2000.

The above equipment has been tested and found compliance with the requirement of the relative standards by BTL Inc.

The test data, data evaluation, and equipment configuration contained in our test report (Ref No. BTL-FCCP-1-1409042) were obtained utilizing the test procedures, test instruments, test sites that has been accredited by the Authority of TAF according to the ISO-17025 quality assessment standard and technical standard(s).

## 2. SUMMARY OF TEST RESULTS

Test procedures according to the technical standard(s):

<b>Applied Standard(s): 47 CFR Part 15, Subpart C: 2013</b>			
Standard(s) Section	Test Item	Judgment	Remark
<b>FCC</b>			
15.207	Conducted Emission	N/A	
15.247(d)	Antenna conducted Spurious Emission	PASS	
15.247 (a)(1)	Hopping Channel Separation	PASS	
15.247 (b)(1)	Peak Output Power	PASS	
15.247(d) 15.209	Radiated Spurious Emission	PASS	
15.247 (a)(1)(iii)	Number of Hopping Frequency	PASS	
15.247 (a)(1)(iii)	Dwell Time	PASS	
15.205	Restricted Bands	PASS	
15.203	Antenna Requirement	PASS	

Note:

- (1) "N/A" denotes test is not applicable in this test report
- (2) According to FCC Public Notice DA 00-705, March 30, 2000.



## 2.1 TEST FACILITY

### Radiated emission Test (Below 1 GHz):

**CB08:** (FCC RN: 614388; FCC DN: TW1054; IC Assigned Code: 4428C-1)  
1F., No. 61, Ln. 77, Sing-ai Rd., Neihu Dist., Taipei City 114, Taiwan (R.O.C.)

### Radiated emission Test (Above 1 GHz):

**CB08:** (VCCI RN: G-91; FCC RN: 614388; FCC DN: TW1054; IC Assigned Code: 4428C-1)  
1F., No. 61, Ln. 77, Sing-ai Rd., Neihu Dist., Taipei City 114, Taiwan (R.O.C.)

## 2.2 MEASUREMENT UNCERTAINTY

**The measurement uncertainty is not specified by FCC rules and Canada Industry for reference only.**

The reported uncertainty of measurement  $y \pm U$ , where expanded uncertainty  $U$  is based on a standard uncertainty multiplied by a coverage factor of  $k=2$ , providing a level of confidence of approximately **95%**.

The measurement instrumentation uncertainty considerations contained in CISPR 16-4-2.

### A. Radiated emission test:

Test Site	Item	Measurement Frequency Range	Uncertainty	NOTE	
CB08	Radiated emission at 3m	Horizontal Polarization	30 - 200MHz	3.35 dB	
			200 - 1000MHz	3.11 dB	
			1 - 18GHz	3.97 dB	
			18 - 40GHz	4.01 dB	
		Vertical Polarization	30 - 200MHz	3.22 dB	
			200 - 1000MHz	3.24 dB	
			1 - 18GHz	4.05 dB	
			18 - 40GHz	4.04 dB	

Our calculated Measurement Instrumentation Uncertainty is shown in the tables above. These are our  $U_{lab}$  values in CISPR 16-4-2 terminology.

Since Table 1 of CISPR 16-4-2 has values of measurement instrumentation uncertainty, called  $U_{CISPR}$ , as follows:

Conducted Disturbance (mains port) – 150 kHz – 30 MHz : 3.6 dB

Radiated Disturbance (electric field strength on an open area test site or alternative test site) – 30 MHz – 1000 MHz : 5.2 dB

It can be seen that our  $U_{lab}$  values are smaller than  $U_{CISPR}$ .

### 3. GENERAL INFORMATION

#### 3.1 GENERAL DESCRIPTION OF EUT

Equipment	Bluetooth Wireless Speaker	
Brand Name	808	
Model Name	SP880B	
Model Difference	The EUT comes in many colors all are identical in construction mechanically and electrically the only difference is the color More details of the EUT technical specification please refer to the user manual.	
Output Power (Max.)	Operation Frequency	2402~2480 MHz
	Modulation Technology	GFSK(1Mbps) $\pi$ /4-DQPSK(2Mbps)
	Bit Rate of Transmitter	8-DPSK(3Mbps)
	Output Power Max.	-0.56 dBm (1Mbps) -0.53 dBm (3Mbps)
Power Source	#1 Supplied from Lithium battery. #2 Supplied from USB Port for charging.	
Power Rating	#1 DC 3.7V #2 DC 5V	

Note:

1. For a more detailed features description, please refer to the manufacturer's specifications or the User's Manual.

2.

Channel List					
Channel	Frequency (MHz)	Channel	Frequency (MHz)	Channel	Frequency (MHz)
00	2402	27	2429	54	2456
01	2403	28	2430	55	2457
02	2404	29	2431	56	2458
03	2405	30	2432	57	2459
04	2406	31	2433	58	2460
05	2407	32	2434	59	2461
06	2408	33	2435	60	2462
07	2409	34	2436	61	2463
08	2410	35	2437	62	2464
09	2411	36	2438	63	2465
10	2412	37	2439	64	2466
11	2413	38	2440	65	2467
12	2414	39	2441	66	2468
13	2415	40	2442	67	2469
14	2416	41	2443	68	2470
15	2417	42	2444	69	2471
16	2418	43	2445	70	2472
17	2419	44	2446	71	2473
18	2420	45	2447	72	2474
19	2421	46	2448	73	2475
20	2422	47	2449	74	2476
21	2423	48	2450	75	2477
22	2424	49	2451	76	2478
23	2425	50	2452	77	2479
24	2426	51	2453	78	2480
25	2427	52	2454		
26	2428	53	2455		

3. Table for Filed Antenna

Ant.	Brand	Model Name	Antenna Type	Connector	Gain (dBi)
1	N/A	N/A	printed	N/A	-0.94

### 3.2 DESCRIPTION OF TEST MODES

To investigate the maximum EMI emission characteristics generates from EUT, the test system was pre-scanning tested base on the consideration of following EUT operation mode or test configuration mode which possible have effect on EMI emission level. Each of these EUT operation mode(s) or test configuration mode(s) mentioned above was evaluated respectively.

Pretest Mode	Description
Mode 1	TX Mode <b>Note (1)</b>
Mode 2	Bluetooth

The EUT system operated these modes were found to be the worst case during the pre-scanning test as following:

For Conducted Emission	
Final Test Mode	Description
Mode 2	Bluetooth

For Radiated Emission	
Final Test Mode	Description
Mode 1	TX Mode <b>Note (1)</b>

**Note:**

- (1) The measurements are performed at the high, middle, low available channels.
- (2) The measurements for Hopping Channel Separation, Bandwidth and Peak Output Power were tested during 1Mbps, 2Mbps and 3Mbps, the worst case are 1Mbps and 3Mbps, only worst case was documented.

### 3.3 TABLE OF PARAMETERS OF TEXT SOFTWARE SETTING

During testing, channel & power controlling software provided by the customer was used to control the operating channel as well as the output power level. The RF output power selection is for the setting of RF output power expected by the customer and is going to be fixed on the firmware of the final end product power parameters of FHSS

1Mbps

Test Software Version	BK3256 RF Test_V1.3.exe		
Frequency (MHz)	2402	2441	2480
Parameters	3	3	3

3Mbps

Test Software Version	BK3256 RF Test_V1.3.exe		
Frequency (MHz)	2402	2441	2480
Parameters	3	3	3

### 3.4 BLOCK DIAGRAM SHOWING THE CONFIGURATION OF SYSTEM TESTED

Radiated TX Mode:



### 3.5 DESCRIPTION OF SUPPORT UNITS

The EUT has been tested as an independent unit together with other necessary accessories or support units. The following support units or accessories were used to form a representative test configuration during the tests.

Item	Equipment	Mfr/Brand	Model/Type No.	FCC ID/IC	Series No.	Note
-	-	-	-	-	-	-

Item	Shielded Type	Ferrite Core	Length	Note
-	-	-	-	-

## 4. EMC EMISSION TEST

### 4.1 CONDUCTED EMISSION MEASUREMENT

#### 4.1.1 POWER LINE CONDUCTED EMISSION Limits (Frequency Range 150KHz-30MHz)

Frequency of Emission (MHz)	Conducted Limit (dB $\mu$ V)	
	Quasi-peak	Average
0.15 -0 5	66 to 56*	56 to 46*
0.50 -5.0	56	46
5.0 -30.0	60	50

Note:

- (1) The limit of " \* " decreases with the logarithm of the frequency
- (2) The test result calculated as following:  
 Measurement Value = Reading Level + Correct Factor  
 Correct Factor = Antenna Factor + Cable Loss - Amplifier Gain(if use)  
 Margin Level = Measurement Value - Limit Value

The following table is the setting of the receiver

Receiver Parameters	Setting
Attenuation	10 dB
Start Frequency	0.15 MHz
Stop Frequency	30 MHz
IF Bandwidth	9 KHz

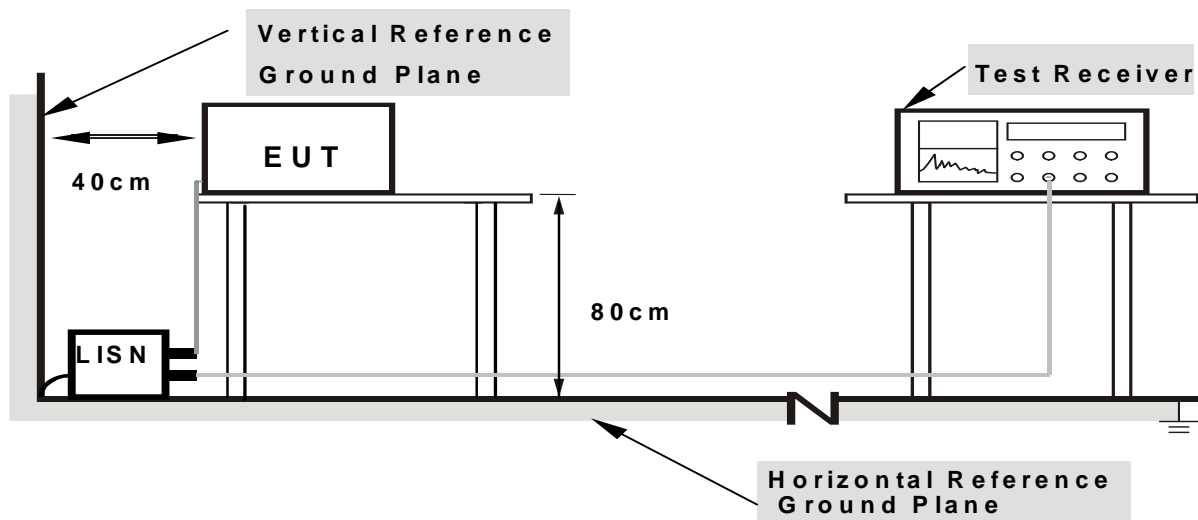
#### 4.1.2 TEST PROCEDURE

- a. The EUT was placed 0.8 meters from the horizontal ground plane with EUT being connected to the power mains through a line impedance stabilization network (LISN). All other support equipments powered from additional LISN(s). The LISN provide 50 Ohm/ 50uH of coupling impedance for the measuring instrument.
- b. Interconnecting cables that hang closer than 40 cm to the ground plane shall be folded back and forth in the center forming a bundle 30 to 40 cm long.
- c. I/O cables that are not connected to a peripheral shall be bundled in the center. The end of the cable may be terminated, if required, using the correct terminating impedance. The overall length shall not exceed 1 m.
- d. LISN at least 80 cm from nearest part of EUT chassis.
- e. For the actual test configuration, please refer to the related Item –EUT Test Photos.

#### 4.1.3 DEVIATION FROM TEST STANDARD

No deviation

#### 4.1.4 TEST SETUP



- Note:**
1. Support units were connected to second LISN.
  2. Both of LISNs (AMN) are 80 cm from EUT and at least 80 from other units and other metal planes

#### 4.1.5 EUT OPERATING CONDITIONS

The EUT was configured for testing in a typical function (as a customer would normally use it), EUT was programmed to be in continuously transmitting/receiving data or hopping on mode.

#### 4.1.6 EUT TEST CONDITIONS

Temperature: N/A°C  
 Relative Humidity: N/A %  
 Test Voltage: N/A

#### 4.1.7 TEST RESULTS

Please refer to the Attachment A.

Remark:

- (1) All readings are QP Mode value unless otherwise stated AVG in column of 'Note'. If the QP Mode Measured value compliance with the QP Limits and lower than AVG Limits, the EUT shall be deemed to meet both QP & AVG Limits and then only QP Mode was measured, but AVG Mode didn't perform in this case, a "\*" marked in AVG Mode column of Interference Voltage Measured.
- (2) Measuring frequency range from 150KHz to 30MHz.

## 4.2 RADIATED EMISSION MEASUREMENT

### 4.2.1 RADIATED EMISSION LIMITS (Frequency Range 9KHz -1000MHz)

20dB in any 100 KHz bandwidth outside the operating frequency band. In case the emission fall within the restricted band specified on 15.205(a), then the 15.209(a) limit in the table below has to be followed.

Frequency (MHz)	Field Strength (microvolts/meter)	Measurement Distance (meters)
0.009~0.490	2400/F(KHz)	300
0.490~1.705	24000/F(KHz)	30
1.705~30.0	30	30
30~88	100	3
88~216	150	3
216~960	200	3
960~1000	500	3

### LIMITS OF RADIATED EMISSION MEASUREMENT (Above 1000MHz)

Frequency (MHz)	dB(uV/m) (at 3 meters)	
	Peak	Average
Above 1000	74	54

Notes:

- (1) The limit for radiated test was performed according to FCC PART 15C.
- (2) The tighter limit applies at the band edges.
- (3) Emission level (dBuV/m) =20log Emission level (uV/m).

Spectrum Parameter	Setting
Attenuation	Auto
Start Frequency	1000 MHz
Stop Frequency	10th carrier harmonic
RBW / VBW (emission in restricted band)	1 MHz / 1 MHz for Peak, 1 MHz / 10Hz for Average

Spectrum Receiver Parameter	Setting
Attenuation	Auto
Start ~ Stop Frequency	9KHz ~90KHz for PK/AVG detector
Start ~ Stop Frequency	90KHz ~110KHz for QP detector
Start ~ Stop Frequency	110KHz ~490KHz for PK/AVG detector
Start ~ Stop Frequency	490KHz ~30MHz for QP detector
Start ~ Stop Frequency	30MHz~1000MHz for QP detector



#### **4.2.2 TEST PROCEDURE**

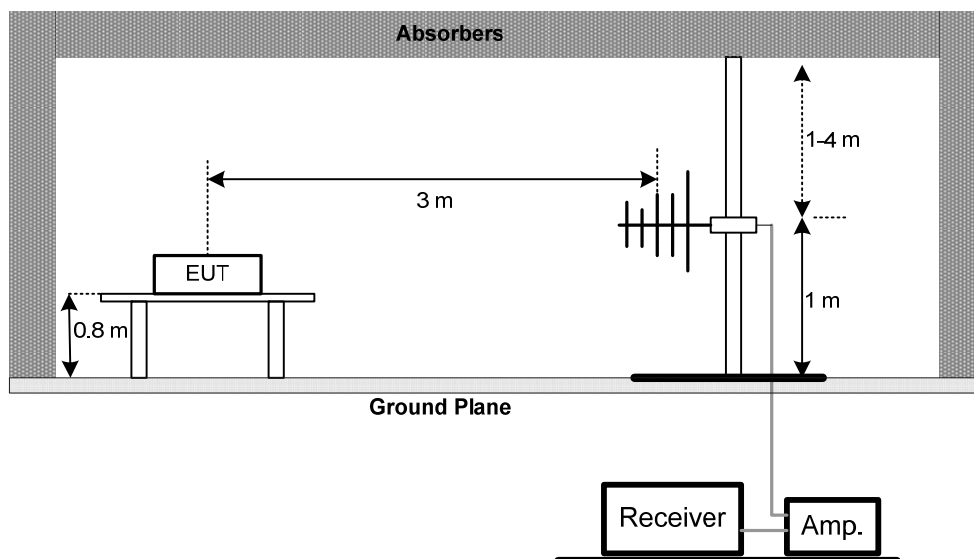
- a. The EUT was placed on the top of a rotating table 0.8 meters above the ground at a 3 meter semi-anechoic chamber. The table was rotated 360 degrees to determine the position of the highest radiation.(below 1GHz)
- b. The EUT was placed on the top of a rotating table 0.8 meters above the ground at a 3 meter semi-anechoic chamber. The table was rotated 360 degrees to determine the position of the highest radiation.(above 1GHz)
- c. The height of the equipment or of the substitution antenna shall be 0.8 m; the height of the test antenna shall vary between 1 m to 4 m. Both horizontal and vertical polarizations of the antenna are set to make the measurement.
- d. The initial step in collecting conducted emission data is a spectrum analyzer peak detector mode pre-scanning the measurement frequency range. Significant peaks are then marked and then Quasi Peak detector mode re-measured.
- e. If the Peak Mode measured value compliance with and lower than Quasi Peak Mode Limit, the EUT shall be deemed to meet QP Limits and then no additional QP Mode measurement performed.
- f. For the actual test configuration, please refer to the related Item –EUT Test Photos.

#### **4.2.3 DEVIATION FROM TEST STANDARD**

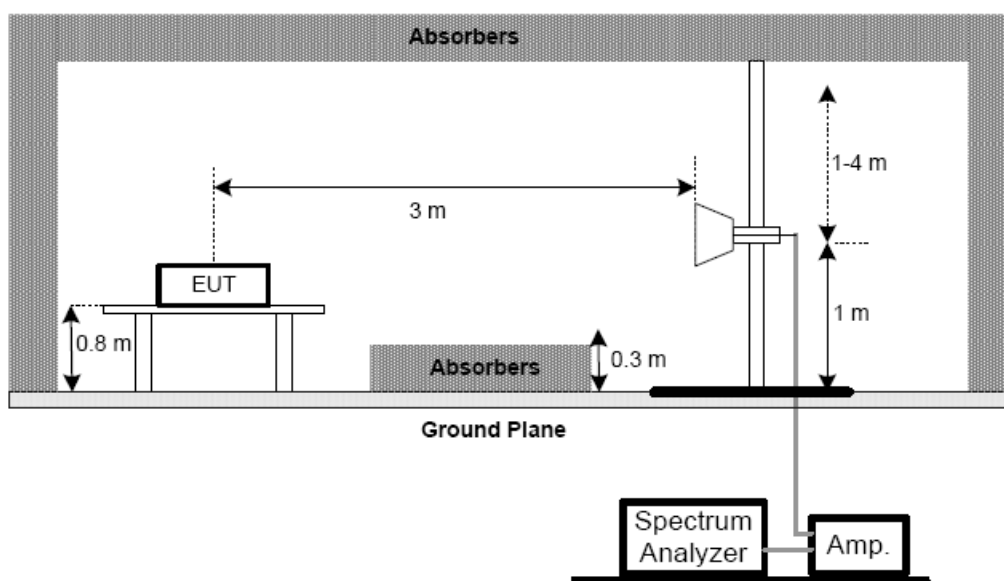
No deviation

#### 4.2.4 TEST SETUP

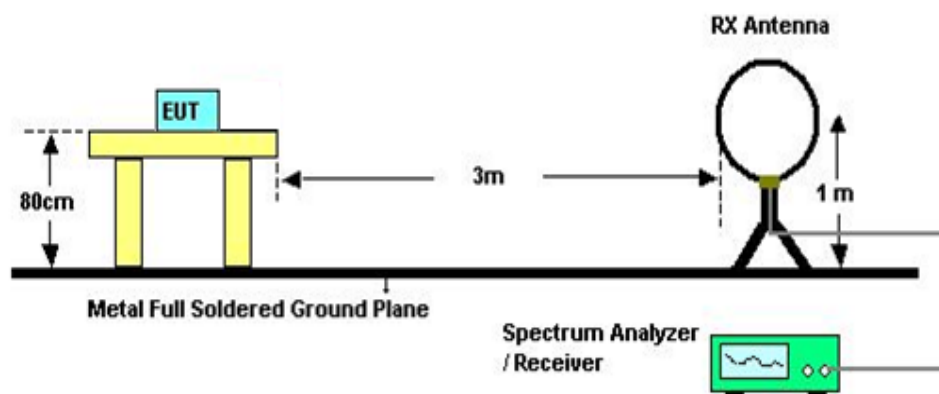
(A) Radiated Emission Test Set-Up Frequency Below 1 GHz



(B) Radiated Emission Test Set-Up Frequency Above 1 GHz



(C) For radiated emissions below 30MHz



#### 4.2.5 EUT OPERATING CONDITIONS

The EUT tested system was configured as the statements of 4.1.5 Unless otherwise a special operating condition is specified in the follows during the testing

#### 4.2.6 EUT TEST CONDITIONS

Temperature: 21°C

Relative Humidity: 62%

Test Voltage: DC 3.7V

#### 4.2.7 TEST RESULTS (9KHZ TO 30MHZ)

Please refer to the Attachment B

Remark:

- (1) The amplitude of spurious emissions which are attenuated by more than 20 dB below the permissible value has no need to be reported.
- (2) Distance extrapolation factor =  $40 \log(\text{specific distance} / \text{test distance})$  (dB).
- (3) Limit line = specific limits (dBuV) + distance extrapolation factor.

#### **4.2.8 TEST RESULTS (BETWEEN 30MHZ TO 1000 MHZ)**

**Please refer to the Attachment C.**

Remark:

- (1) Reading in which marked as QP or Peak means measurements by using are Quasi-Peak Mode or Peak Mode with Detector BW=120KHz ; SPA setting in RBW=120KHz, VBW =120KHz, Swp. Time = 0.3 sec./MHz.
- (2) All readings are Peak unless otherwise stated QP in column of 『Note』 . Peak denotes that the Peak reading compliance with the QP Limits and then QP Mode measurement didn't perform.
- (3) Measuring frequency range from 30MHz to 1000MHz.
- (4) If the peak scan value lower limit more than 20dB, then this signal data does not show in table.

#### **4.2.9 TEST RESULTS (ABOVE 1000 MHZ)**

**Please refer to the Attachment D.**

Remark:

- (1) All readings are Peak unless otherwise stated QP in column of 『Note』 . Peak denotes that the Peak reading compliance with the QP Limits and then QP Mode measurement didn't perform.
- (2) Radiated emissions measured in frequency range above 1000MHz were made with an instrument using Peak detector mode and AV detector mode of the emission
- (3) A preamp and high pass filter were used for this test in order to provide sufficient measurement sensitivity.
- (4) EUT Orthogonal Axis:  
"X" - denotes Laid on Table ; "Y" - denotes Vertical Stand ; "Z" - denotes Side Stand
- (5) During the measurements above 1 GHz it is taken care of that the EUT is always within the 3 dB cone of radiation BW of the used antenna
- (6) No limit: This is fundamental signal, the judgment is not applicable.  
For fundamental signal judgment was referred to Peak output test.

## 5. NUMBER OF HOPPING CHANNEL

### 5.1 APPLIED PROCEDURES

FCC Part15 (15.247) , Subpart C			
Section	Test Item	Frequency Range (MHz)	Result
15.247(a)(1)(iii)	Number of Hopping Channel	2400-2483.5	PASS

Spectrum Parameters	Setting
Attenuation	Auto
Span Frequency	> Operating Frequency Range
RBW	100 KHz
VBW	100 KHz
Detector	Peak
Trace	Max Hold
Sweep Time	Auto

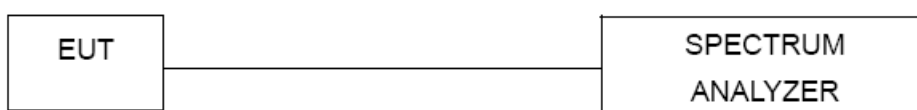
#### 5.1.1 TEST PROCEDURE

- a. The EUT was directly connected to the spectrum analyzer and antenna output port as show in the block diagram below,
- b. Spectrum Setting: RBW=100KHz, VBW=100KHz, Sweep time = Auto.

#### 5.1.2 DEVIATION FROM STANDARD

No deviation.

#### 5.1.3 TEST SETUP



#### 5.1.4 EUT OPERATION CONDITIONS

The EUT tested system was configured as the statements of 4.1.5 Unless otherwise a special operating condition is specified in the follows during the testing.

#### 5.1.5 EUT TEST CONDITIONS

Temperature: 25°C  
 Relative Humidity: 55%  
 Test Voltage: DC 3.7V

#### 5.1.6 TEST RESULTS

Please refer to the Attachment E

## 6. AVERAGE TIME OF OCCUPANCY

### 6.1 APPLIED PROCEDURES / LIMIT

FCC Part15 (15.247) , Subpart C				
Section	Test Item	Limit	Frequency Range (MHz)	Result
15.247(a)(1)(iii)	Average Time of Occupancy	0.4sec	2400-2483.5	PASS

#### 6.1.1 TEST PROCEDURE

- a. The transmitter output (antenna port) was connected to the spectrum analyzer
- b. Set RBW of spectrum analyzer to 1MHz and VBW to 1MHz.
- c. Use a video trigger with the trigger level set to enable triggering only on full pulses.
- d. Sweep Time is more than once pulse time.
- e. Set the center frequency on any frequency would be measure and set the frequency span to zero span.
- f. Measure the maximum time duration of one single pulse.
- g. Set the EUT for DH5, DH3 and DH1 packet transmitting.
- h. Measure the maximum time duration of one single pulse.
- i. DH5 Packet permit maximum  $1600 / 79 / 6 = 3.37$  hops per second in each channel (5 time slots TX, 1 time slot RX). So, the dwell time is the time duration of the pulse times  $3.37 \times 31.6 = 106.6$  within 31.6 seconds.
- j. DH3 Packet permit maximum  $1600 / 79 / 4 = 5.06$  hops per second in each channel (3 time slots TX, 1 time slot RX). So, the dwell time is the time duration of the pulse times  $5.06 \times 31.6 = 160$  within 31.6 seconds.
- k. DH1 Packet permit maximum  $1600 / 79 / 2 = 10.12$  hops per second in each channel (1 time slot TX, 1 time slot RX). So, the dwell time is the time duration of the pulse times  $10.12 \times 31.6 = 320$  within 31.6 seconds.

#### 6.1.2 DEVIATION FROM STANDARD

No deviation.

#### 6.1.3 TEST SETUP



#### **6.1.4 EUT OPERATION CONDITIONS**

The EUT tested system was configured as the statements of 4.1.5 Unless otherwise a special operating condition is specified in the follows during the testing.

#### **6.1.5 EUT TEST CONDITIONS**

Temperature: 25°C

Relative Humidity: 55%

Test Voltage: DC 3.7V

#### **6.1.6 TEST RESULTS**

**Please refer to the Attachment F**

## 7. HOPPING CHANNEL SEPARATION MEASUREMENT

### 7.1 APPLIED PROCEDURES / LIMIT

Frequency hopping systems operating in the 2400-2483.5 MHz band may have hopping channel carrier frequencies that are separated by 25 KHz or two-thirds of the 20 dB bandwidth of the hopping channel, whichever is greater.

Spectrum Parameter	Setting
Attenuation	Auto
Span Frequency	> Measurement Bandwidth or Channel Separation
RBW	30 KHz
VBW	100 KHz
Detector	Peak
Trace	Max Hold
Sweep Time	Auto

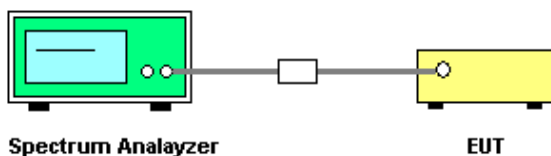
#### 7.1.1 TEST PROCEDURE

- a. The EUT must have its hopping function enabled
- b. Span = wide enough to capture the peaks of two adjacent channels  
 Resolution (or IF) Bandwidth (RBW)  $\geq$  1% of the span  
 Video (or Average) Bandwidth (VBW)  $\geq$  RBW  
 Sweep = Auto  
 Detector function = Peak  
 Trace = Max Hold

#### 7.1.2 DEVIATION FROM STANDARD

No deviation.

#### 7.1.3 TEST SETUP



#### 7.1.4 EUT TEST CONDITIONS

Temperature: 25°C  
 Relative Humidity: 55%  
 Test Voltage: DC 3.7V

#### 7.1.5 TEST RESULTS

Please refer to the Attachment G



## 8. BANDWIDTH TEST

### 8.1 APPLIED PROCEDURES

FCC Part15 (15.247) , Subpart C		
Section	Test Item	Frequency Range (MHz)
15.247(a)(2)	Bandwidth	2400-2483.5

Spectrum Parameter	Setting
Attenuation	Auto
Span Frequency	> Measurement Bandwidth or Channel Separation
RBW	30 KHz (20dB Bandwidth) / 30 KHz (Channel Separation)
VBW	100 KHz (20dB Bandwidth) / 100 KHz (Channel Separation)
Detector	Peak
Trace	Max Hold
Sweep Time	Auto

#### 8.1.1 TEST PROCEDURE

- a. The EUT was directly connected to the spectrum analyzer and antenna output port as show in the block diagram below,
- b. Spectrum Setting: RBW= 30KHz, VBW=100KHz, Sweep Time = Auto.

#### 8.1.2 DEVIATION FROM STANDARD

No deviation.

#### 8.1.3 TEST SETUP



#### 8.1.4 EUT OPERATION CONDITIONS

The EUT tested system was configured as the statements of 4.1.5 Unless otherwise a special operating condition is specified in the follows during the testing.

#### 8.1.5 EUT TEST CONDITIONS

Temperature: 25°C  
 Relative Humidity: 55%  
 Test Voltage: DC 3.7V

#### 8.1.6 TEST RESULTS

Please refer to the Attachment H

## 9. PEAK OUTPUT POWER TEST

### 9.1 APPLIED PROCEDURES / LIMIT

FCC Part15 (15.247) , Subpart C				
Section	Test Item	Limit	Frequency Range (MHz)	Result
15.247(b)(1)	Peak Output Power	1 Watt or 30dBm	2400-2483.5	PASS

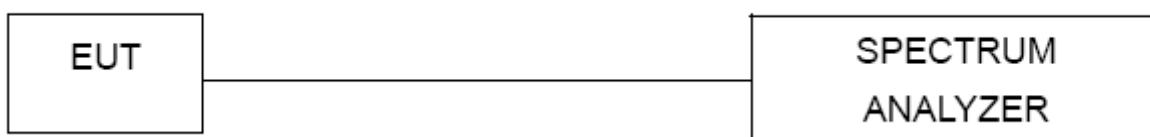
#### 9.1.1 TEST PROCEDURE

- a. The EUT was directly connected to the spectrum analyzer and antenna output port as show in the block diagram below,
- b. Spectrum Setting: RBW= 1MHz/3MHz, VBW= 1MHz/3MHz, Sweep time = Auto.

#### 9.1.2 DEVIATION FROM STANDARD

No deviation.

#### 9.1.3 TEST SETUP



#### 9.1.4 EUT OPERATION CONDITIONS

The EUT tested system was configured as the statements of 4.1.5 Unless otherwise a special operating condition is specified in the follows during the testing.

#### 9.1.5 EUT TEST CONDITIONS

Temperature: 25°C  
 Relative Humidity: 55%  
 Test Voltage: DC 3.7V

#### 9.1.6 TEST RESULTS

Please refer to the Attachment I

## **10. ANTENNA CONDUCTED SPURIOUS EMISSION**

### **10.1 APPLIED PROCEDURES / LIMIT**

In any 100 kHz bandwidth outside the frequency band in which the spread spectrum or digitally modulated intentional radiator is operating, the radio frequency power that is produced by the intentional radiator shall be at least 20 dB below that in the 100 kHz bandwidth within the band that contains the highest level of the desired power, based on either an RF conducted measurement, provided the transmitter demonstrates compliance with the peak conducted power limits.

#### **10.1.1 TEST PROCEDURE**

- a. The EUT was directly connected to the spectrum analyzer and antenna output port as show in the block diagram below,
- b. Spectrum Setting: RBW= 100KHz, VBW=100KHz, Sweep time = Auto.

#### **10.1.2 DEVIATION FROM STANDARD**

No deviation.

#### **10.1.3 TEST SETUP**



#### **10.1.4 EUT OPERATION CONDITIONS**

The EUT tested system was configured as the statements of 4.1.5 Unless otherwise a special operating condition is specified in the follows during the testing.

#### **10.1.5 EUT TEST CONDITIONS**

Temperature: 25°C  
Relative Humidity: 55%  
Test Voltage: DC 3.7V

#### **10.1.6 TEST RESULTS**

**Please refer to the Attachment J**

## 11. MEASUREMENT INSTRUMENTS LIST

Radiated Emission Measurement					
Item	Kind of Equipment	Manufacturer	Type No.	Serial No.	Calibrated until
1	Spectrum Analyzer	R&S	FSP-40	100129	Oct. 13, 2015
2	Horn Antenna	Schwarzbeck	BBHA 9120	D-325	Jun. 14, 2015
3	Microwave Pre_amplifier	Agilent	8449B	3008A01714	Apr. 15, 2015
4	Microflex Cable	Harbour industries	27478LL142	1m	May. 12, 2015
5	Microflex Cable	EMC	S104-SMA	8m	May. 14, 2015
6	Microflex Cable	Harbour industries	27478LL142	3m	May. 12, 2015
7	Test Cable	LMR	LMR-400	12m	May. 13, 2015
8	Test Cable	LMR	LMR-400	3m	May. 13, 2015
9	Pre-Amplifier	Anritsu	MH648A	M92649	Jun. 17, 2015
10	Log-Bicon Antenna	Schwarzbeck	VULB9168-35 2	9168-352	July. 10, 2015

Number of Hopping Channel					
Item	Kind of Equipment	Manufacturer	Type No.	Serial No.	Calibrated until
1	Spectrum Analyzer	R&S	FSP-40	100129	Oct. 13, 2015

Average Time of Occupancy					
Item	Kind of Equipment	Manufacturer	Type No.	Serial No.	Calibrated until
1	Spectrum Analyzer	R&S	FSP-40	100129	Oct. 13, 2015

Hopping Channel Separation Measurement					
Item	Kind of Equipment	Manufacturer	Type No.	Serial No.	Calibrated until
1	Spectrum Analyzer	R&S	FSP-40	100129	Oct. 13, 2015

Bandwidth					
Item	Kind of Equipment	Manufacturer	Type No.	Serial No.	Calibrated until
1	Spectrum Analyzer	R&S	FSP-40	100129	Oct. 13, 2015

**Peak Output Power**

Item	Kind of Equipment	Manufacturer	Type No.	Serial No.	Calibrated until
1	Spectrum Analyzer	R&S	FSP-40	100129	Oct. 13, 2015

**Antenna Conducted Spurious Emission**

Item	Kind of Equipment	Manufacturer	Type No.	Serial No.	Calibrated until
1	Spectrum Analyzer	R&S	FSP-40	100129	Oct. 13, 2015

Remark: "N/A" denotes no model name, serial no. or calibration specified.  
All calibration period of equipment list is one year.

## 12. EUT TEST PHOTO

### Conducted Measurement Photos



## Radiated Measurement Photos

9K-30MHz





## Radiated Measurement Photos

30MHz-1G





## Radiated Measurement Photos

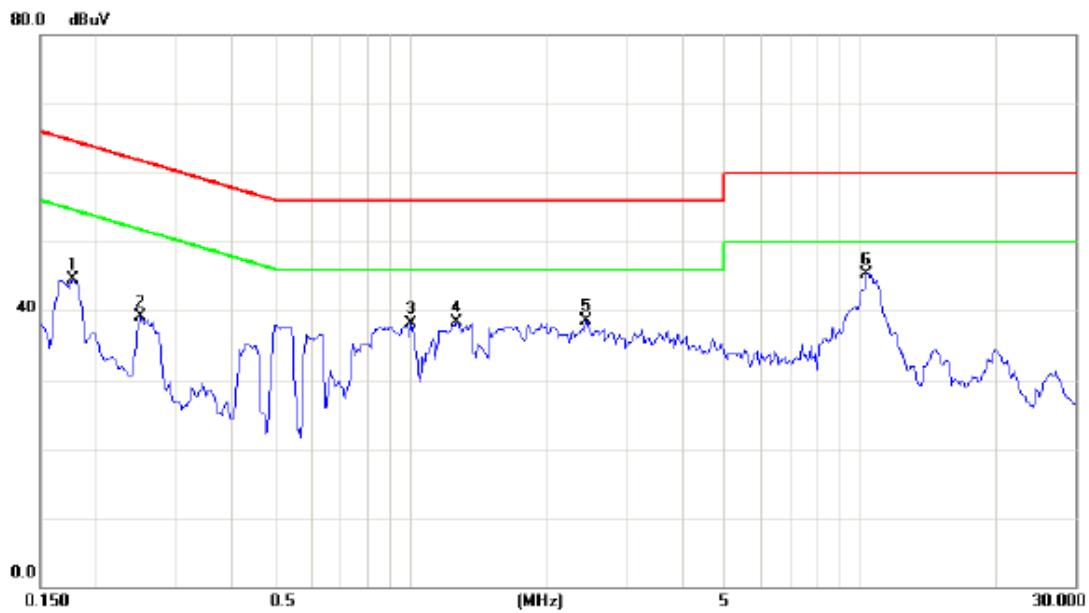
Above 1G



## ATTACHMENT A - CONDUCTED EMISSION

Test Mode:	TX Mode
------------	---------

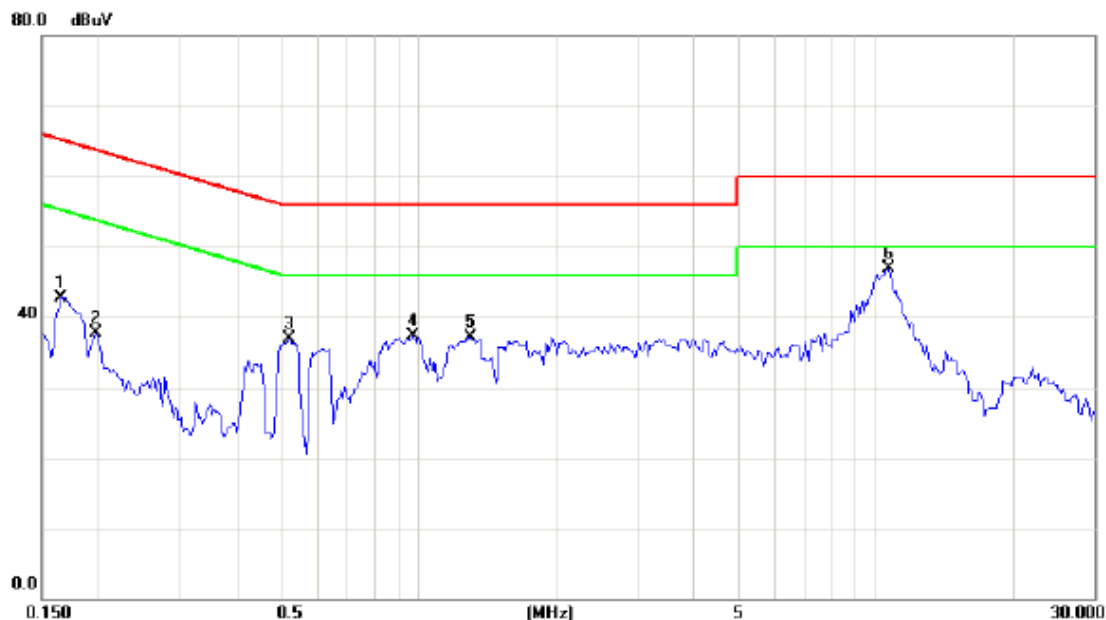
### Line



No.	Mk.	Freq.	Reading Level	Correct Factor	Measurement	Limit	Over	Detector	Comment
		MHz	dBuV	dB	dBuV	dBuV	dB		
1		0.1773	35.06	9.53	44.59	64.61	-20.02	peak	
2		0.2516	29.50	9.57	39.07	61.70	-22.63	peak	
3		1.0016	28.47	9.70	38.17	56.00	-17.83	peak	
4		1.2672	28.59	9.70	38.29	56.00	-17.71	peak	
5		2.4586	28.77	9.73	38.50	56.00	-17.50	peak	
6	*	10.3086	35.30	10.10	45.40	60.00	-14.60	peak	

Test Mode:	TX Mode
------------	---------

### Neutral



No.	Mk.	Freq. MHz	Reading Level dBuV	Correct Factor dB	Measure- ment dBuV	Limit dBuV	Over dB	Detector	Comment
1		0.1655	33.18	9.62	42.80	65.18	-22.38	peak	
2		0.1970	28.02	9.61	37.63	63.74	-26.11	peak	
3		0.5211	27.33	9.64	36.97	56.00	-19.03	peak	
4		0.9742	27.55	9.67	37.22	56.00	-18.78	peak	
5		1.2984	27.49	9.69	37.18	56.00	-18.82	peak	
6	*	10.6602	36.82	10.11	46.93	60.00	-13.07	peak	

**ATTACHMENT B - RADIATED EMISSION (9KHZ-30MHZ)**

Test Mode:	TX Mode
------------	---------

Frequency (MHz)	Ant 0°/90°	Read level dBuV/m	Factor (dB)	Measured(FS) (dBuV/m)	Limit(QP) (dBuV/m)	Margin (dB)	Note
0.0105	0°	6.80	24.90	31.70	107.18	-75.48	AVG
0.0105	0°	9.53	24.90	34.43	127.18	-92.75	PEAK
0.0258	0°	7.81	23.93	31.74	99.37	-67.63	AVG
0.0258	0°	10.72	23.93	34.65	119.37	-84.72	PEAK
0.0622	0°	8.96	22.16	31.12	91.73	-60.61	AVG
0.0622	0°	12.70	22.16	34.86	111.73	-76.87	PEAK
0.0745	0°	9.43	21.91	31.34	90.16	-58.82	AVG
0.0745	0°	14.20	21.91	36.11	110.16	-74.05	PEAK
0.4981	0°	18.15	19.80	37.95	73.66	-35.70	QP
1.7022	0°	21.46	19.53	40.99	62.98	-21.99	QP

Frequency (MHz)	Ant 0°/90°	Read level dBuV/m	Factor (dB)	Measured(FS) (dBuV/m)	Limit(QP) (dBuV/m)	Margin (dB)	Note
0.0104	90°	7.25	24.30	31.55	127.26	-95.71	AVG
0.0104	90°	10.61	24.30	34.91	147.26	-112.35	PEAK
0.0255	90°	8.03	23.95	31.98	119.47	-87.49	AVG
0.0255	90°	11.69	23.95	35.64	139.47	-103.83	PEAK
0.0442	90°	9.14	22.77	31.91	114.70	-82.79	AVG
0.0442	90°	13.65	22.77	36.42	134.70	-98.28	PEAK
0.0862	90°	11.38	21.68	33.06	108.89	-75.84	AVG
0.0862	90°	15.87	21.68	37.55	128.89	-91.35	PEAK
0.4989	90°	19.64	19.80	39.44	73.64	-34.20	QP
1.6537	90°	22.89	19.53	42.42	63.24	-20.81	QP

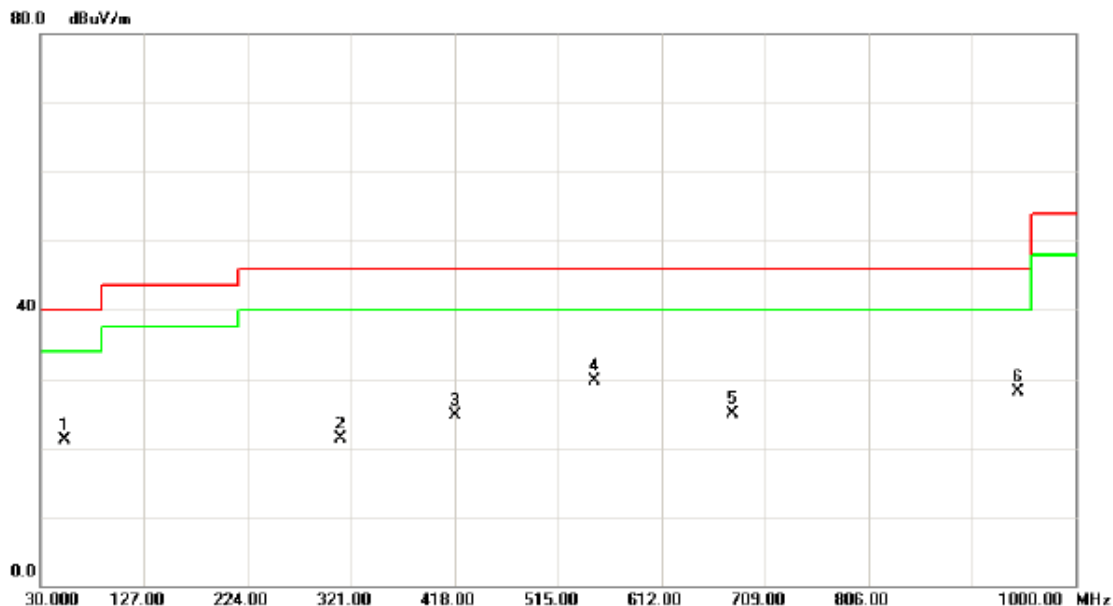
Remark:

- (1) The amplitude of spurious emissions which are attenuated by more than 20 dB below the permissible value has no need to be reported.
- (2) Distance extrapolation factor =  $40 \log(\text{specific distance} / \text{test distance})$  (dB);
- (3) Limit line = specific limits (dBuV) + distance extrapolation factor.

**ATTACHMENT C - RADIATED EMISSION (30MHZ TO 1000MHZ)**

Test Mode: TX 2441MHz\_CH39\_1Mbps

### Vertical

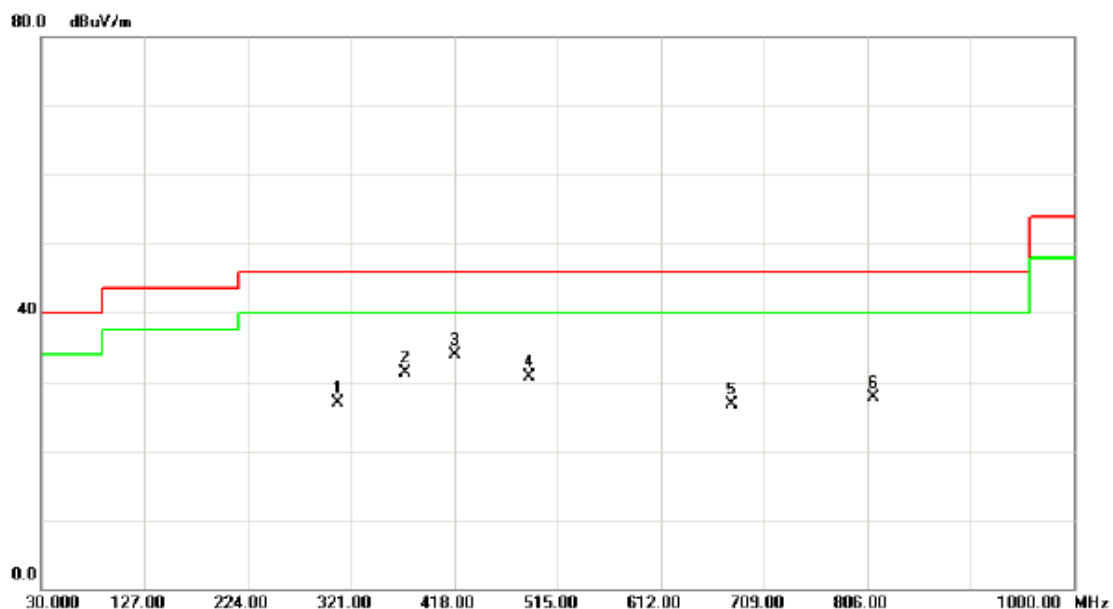


No.	Mk.	Freq. MHz	Reading Level dBuV	Correct Factor dB	Measure- ment dBuV/m	Limit dBuV/m	Over dB	Detector	Comment
1		52.3100	35.14	-14.05	21.09	40.00	-18.91	peak	
2		311.3000	32.53	-11.17	21.36	46.00	-24.64	peak	
3		418.0000	33.92	-9.21	24.71	46.00	-21.29	peak	
4	*	548.9500	37.69	-7.99	29.70	46.00	-16.30	peak	
5		678.9300	29.84	-5.02	24.82	46.00	-21.18	peak	
6		945.6800	28.43	-0.33	28.10	46.00	-17.90	peak	



Test Mode: TX 2441MHz\_CH39\_1Mbps

### Horizontal

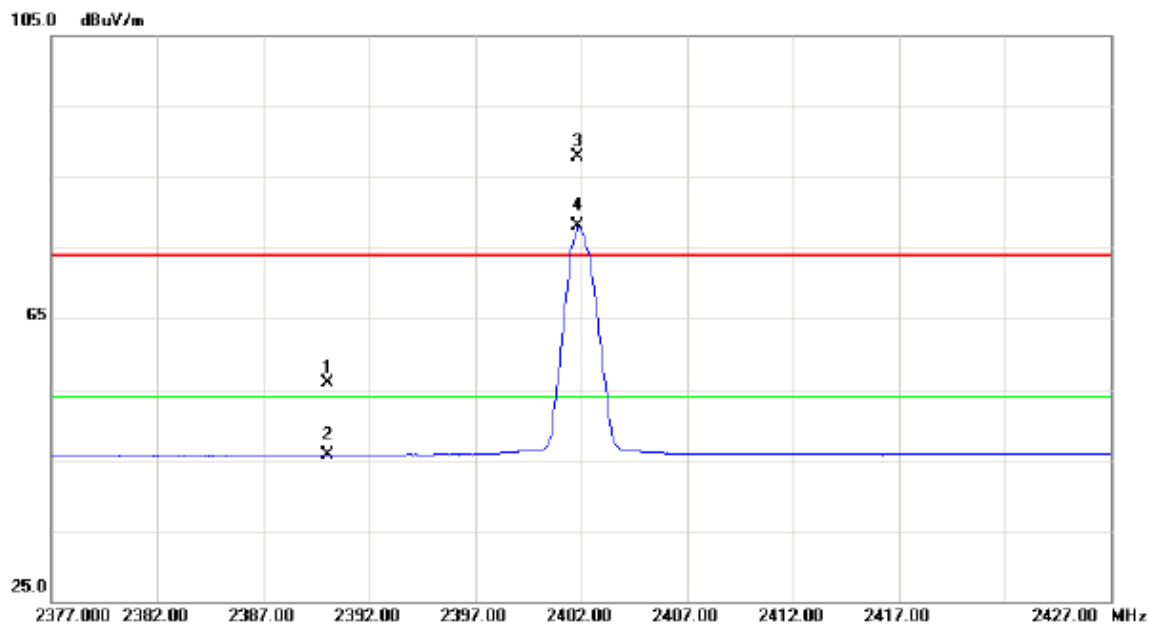


No.	Mk.	Freq. MHz	Reading Level dBuV	Correct Factor dB	Measure- ment dBuV/m	Limit dBuV/m	Over dB	Detector	Comment
1		308.3900	37.98	-11.12	26.86	46.00	-19.14	peak	
2		371.4400	42.10	-10.82	31.28	46.00	-14.72	peak	
3	*	418.0000	43.02	-9.21	33.81	46.00	-12.19	peak	
4		488.8100	40.82	-10.09	30.73	46.00	-15.27	peak	
5		677.9600	31.82	-5.02	26.80	46.00	-19.20	peak	
6		811.8200	30.57	-2.95	27.62	46.00	-18.38	peak	

## **ATTACHMENT D - RADIATED EMISSION (ABOVE 1000MHZ)**

Orthogonal Axis :	X
Test Mode :	TX 2402MHz _CH00_1Mbps

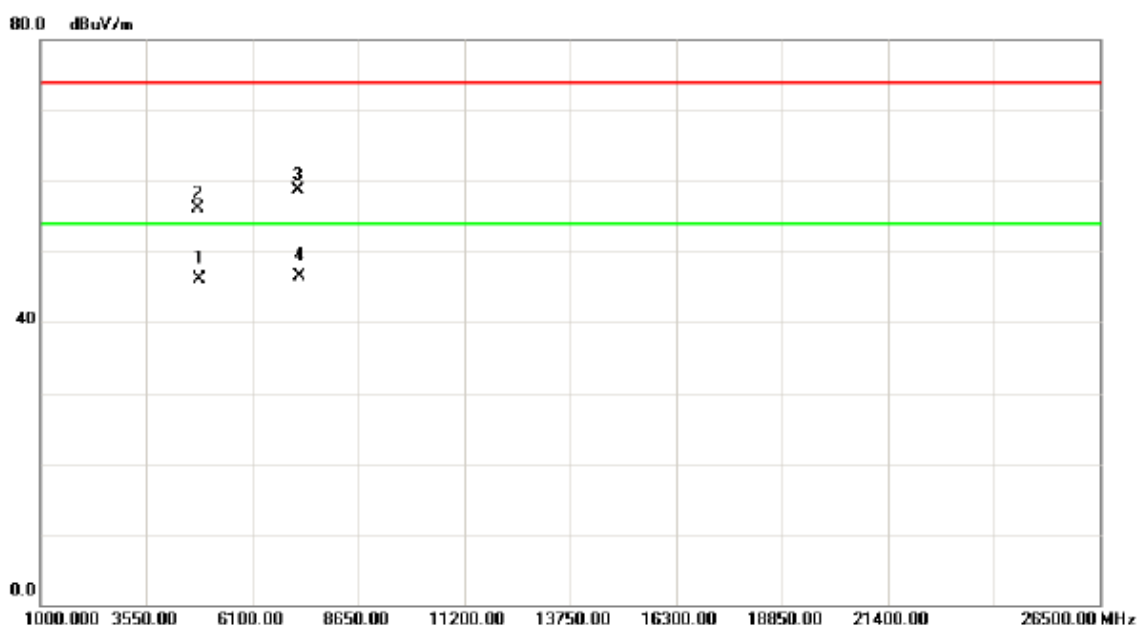
### Vertical



No.	Mk.	Freq. MHz	Reading Level dBuV	Correct Factor dB	Measure- ment dBuV/m	Limit dBuV/m	Over dB	Detector	Comment
1		2390.000	23.94	31.88	55.82	74.00	-18.18	peak	
2		2390.000	13.86	31.88	45.74	54.00	-8.26	AVG	
3	X	2401.800	55.98	31.89	87.87	74.00	13.87	peak	no limit
4	*	2401.800	46.14	31.89	78.03	54.00	24.03	AVG	no limit

Orthogonal Axis :	X
Test Mode :	TX 2402MHz _CH00_1Mbps

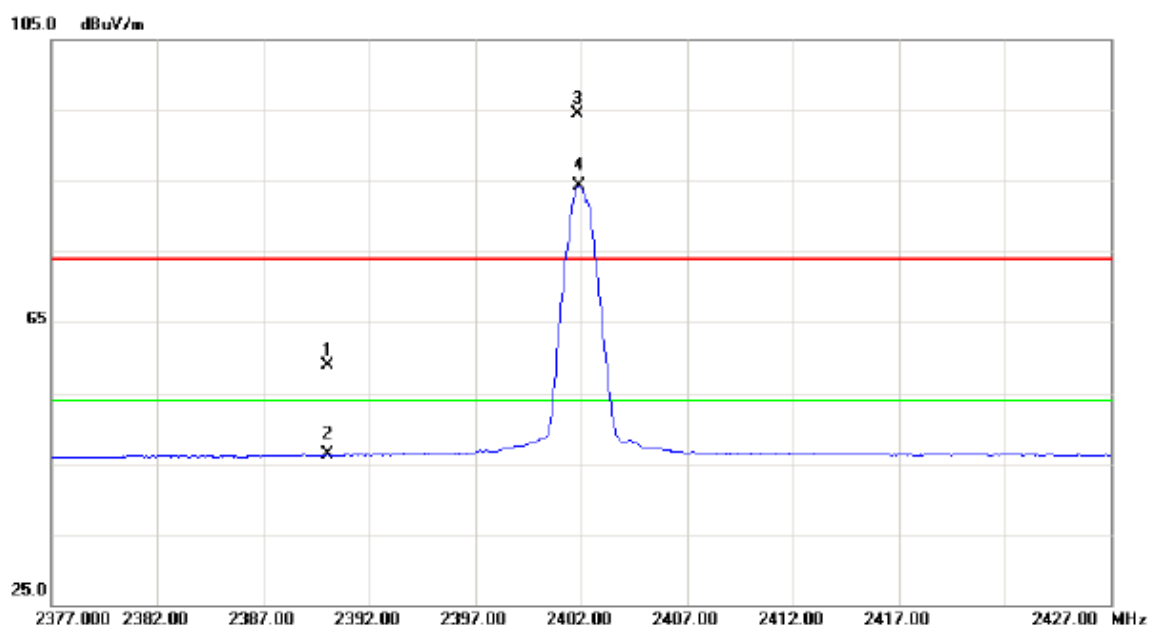
### Vertical



No.	Mk.	Freq. MHz	Reading Level dBuV	Correct Factor dB	Measure- ment dBuV/m	Limit dBuV/m	Over dB	Detector	Comment
1		4803.720	42.52	3.58	46.10	54.00	-7.90	AVG	
2		4803.745	52.53	3.58	56.11	74.00	-17.89	peak	
3		7205.425	49.18	9.45	58.63	74.00	-15.37	peak	
4	*	7206.085	37.13	9.45	46.58	54.00	-7.42	AVG	

Orthogonal Axis :	X
Test Mode :	TX 2402MHz_CH00_1Mbps

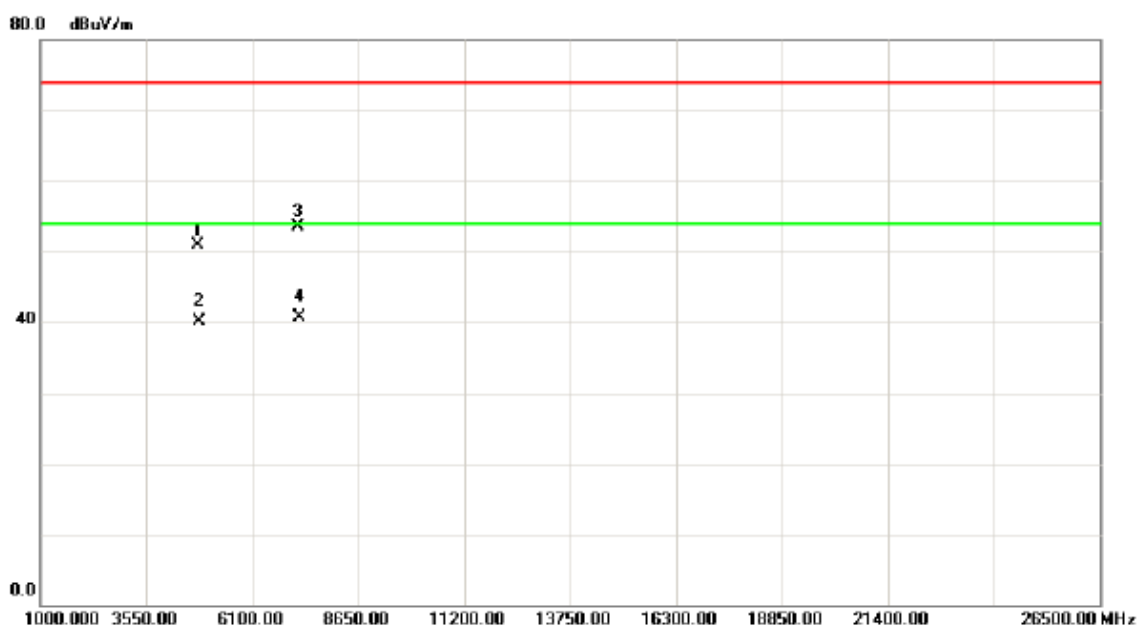
### Horizontal



No.	Mk.	Freq.	Reading	Correct	Measure-	Limit	Over		
		MHz	Level	Factor	ment			Detector	Comment
			dBuV	dB	dBuV/m	dBuV/m	dB		
1		2390.000	27.06	31.88	58.94	74.00	-15.06	peak	
2		2390.000	14.35	31.88	46.23	54.00	-7.77	AVG	
3	X	2401.800	62.54	31.89	94.43	74.00	20.43	peak	no limit
4	*	2401.900	52.44	31.89	84.33	54.00	30.33	AVG	no limit

Orthogonal Axis :	X
Test Mode :	TX 2402MHz _CH00_1Mbps

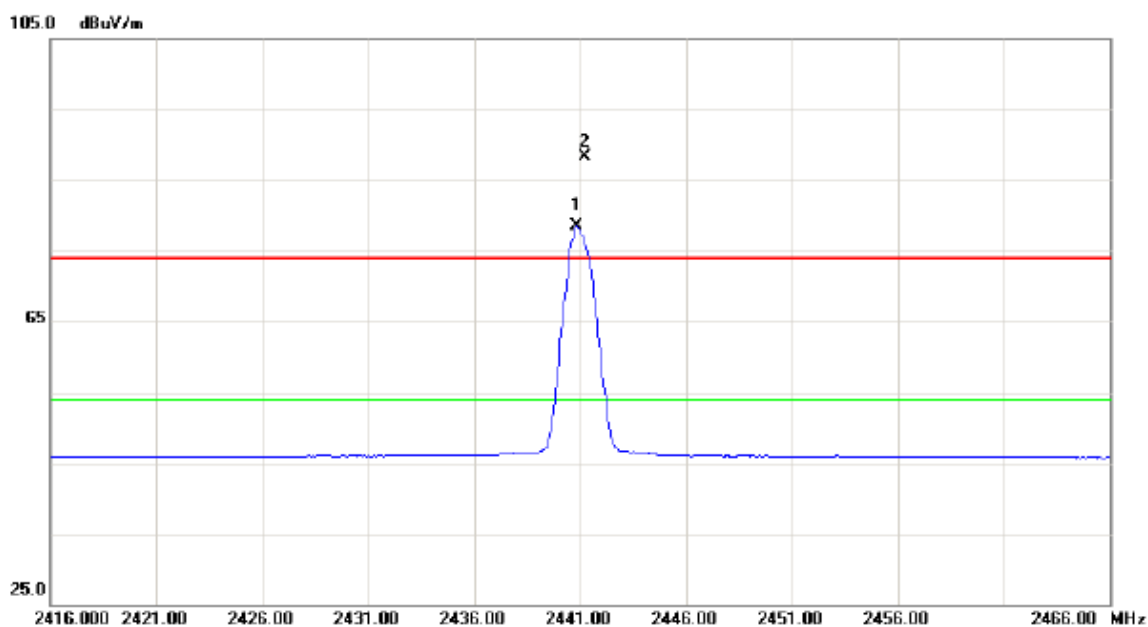
### Horizontal



No.	Mk.	Freq. MHz	Reading Level dBuV	Correct Factor dB	Measure- ment dBuV/m	Limit dBuV/m	Over dB	Detector	Comment
1		4803.705	47.26	3.58	50.84	74.00	-23.16	peak	
2		4803.965	36.47	3.58	40.05	54.00	-13.95	AVG	
3		7205.470	44.02	9.45	53.47	74.00	-20.53	peak	
4	*	7206.290	31.25	9.45	40.70	54.00	-13.30	AVG	

Orthogonal Axis :	X
Test Mode :	TX 2441MHz_CH39_1Mbps

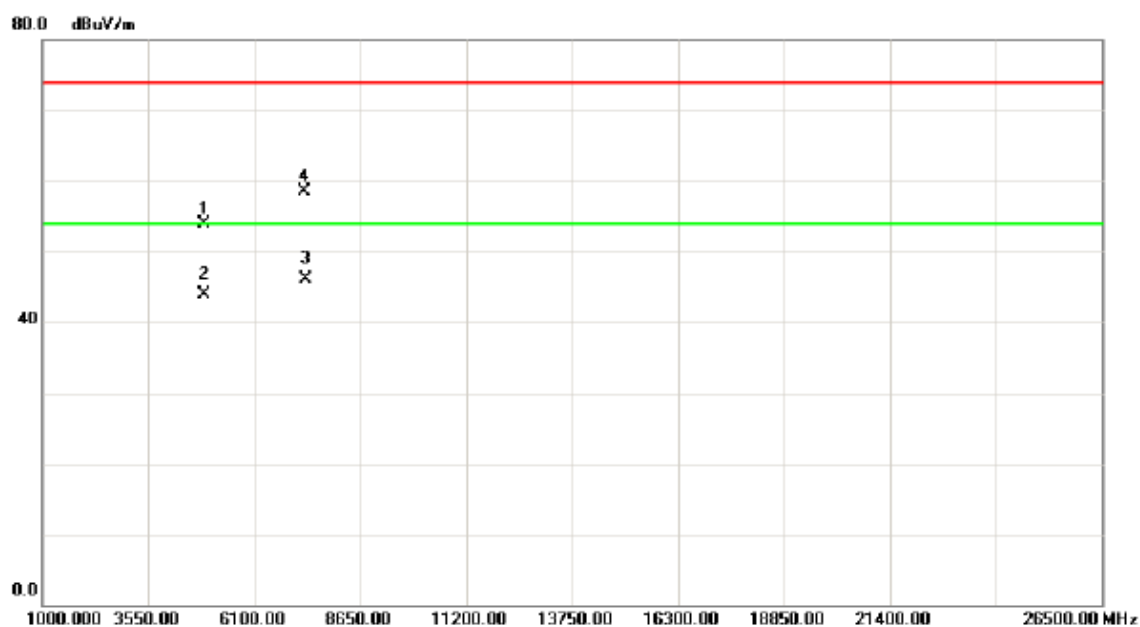
### Vertical



No.	Mk.	Freq. MHz	Reading Level dBuV	Correct Factor dB	Measure- ment dBuV/m	Limit dBuV/m	Over dB	Detector	Comment
1	*	2440.800	46.63	31.95	78.58	54.00	24.58	AVG	no limit
2	X	2441.200	56.39	31.95	88.34	74.00	14.34	peak	no limit

Orthogonal Axis :	X
Test Mode :	TX 2441MHz _CH39_1Mbps

### Vertical

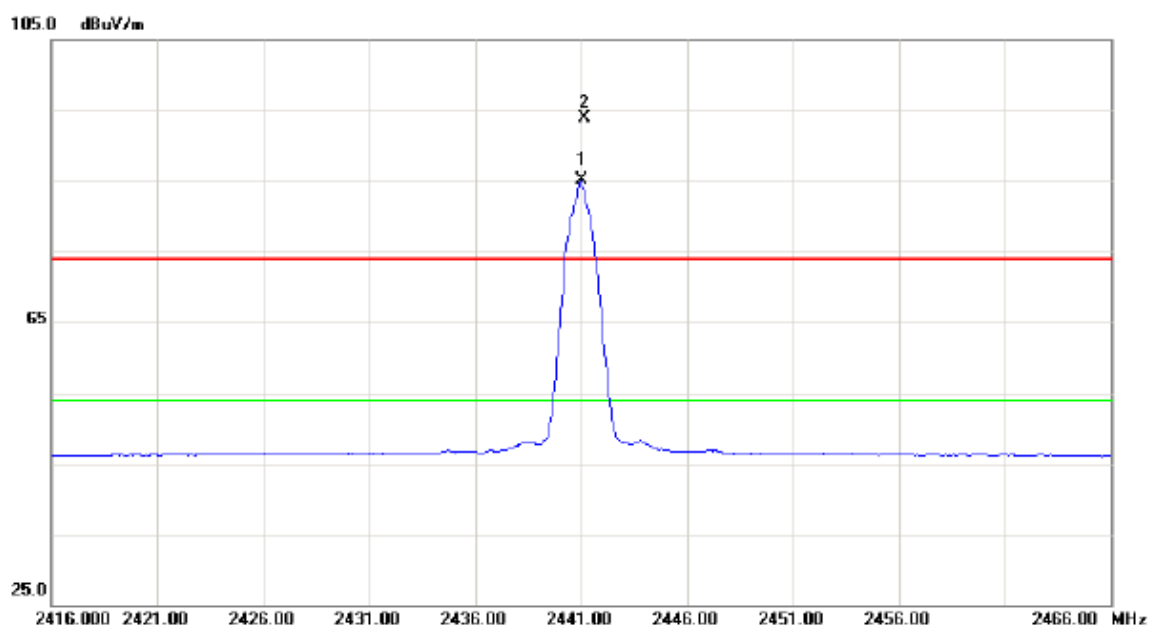


No.	Mk.	Freq.	Reading Level	Correct Factor	Measurement	Limit	Over	Detector	Comment
		MHz	dBuV	dB	dBuV/m	dBuV/m	dB		
1		4881.595	50.16	3.73	53.89	74.00	-20.11	peak	
2		4881.670	40.23	3.73	43.96	54.00	-10.04	AVG	
3	*	7323.660	36.25	9.88	46.13	54.00	-7.87	AVG	
4		7323.720	48.61	9.88	58.49	74.00	-15.51	peak	



Orthogonal Axis :	X
Test Mode :	TX 2441MHz _CH39_1Mbps

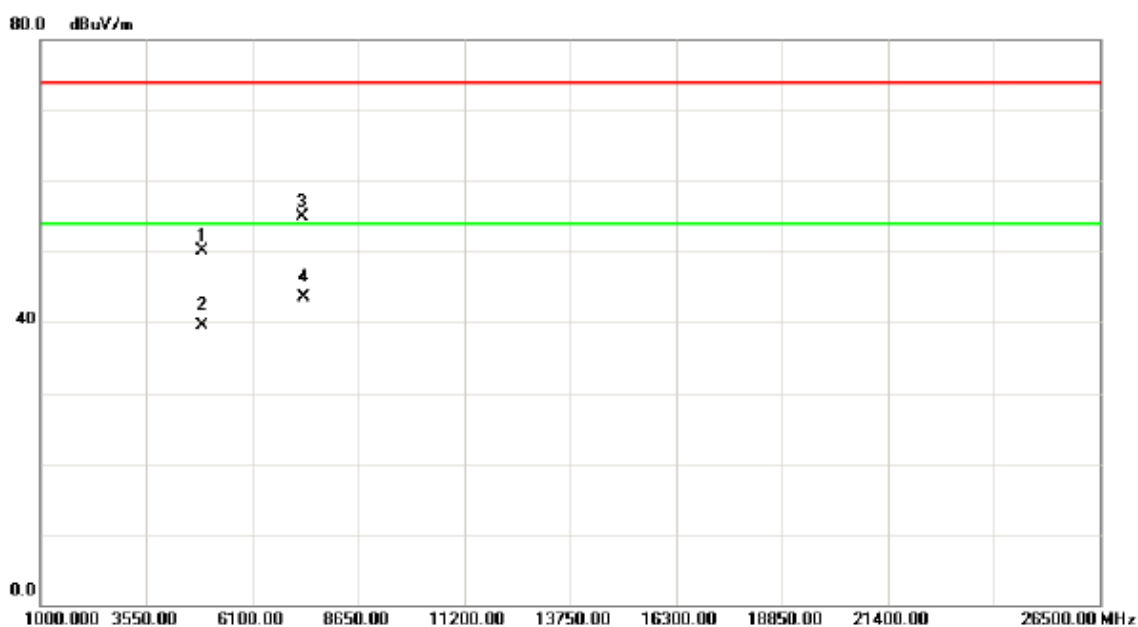
### Horizontal



No.	Mk.	Freq.	Reading Level	Correct Factor	Measurement	Limit	Over	Detector	Comment
		MHz	dBuV	dB	dBuV/m	dBuV/m	dB		
1	*	2441.000	53.24	31.95	85.19	54.00	31.19	AVG	no limit
2	X	2441.150	61.98	31.95	93.93	74.00	19.93	peak	no limit

Orthogonal Axis :	X
Test Mode :	TX 2441MHz _CH39_1Mbps

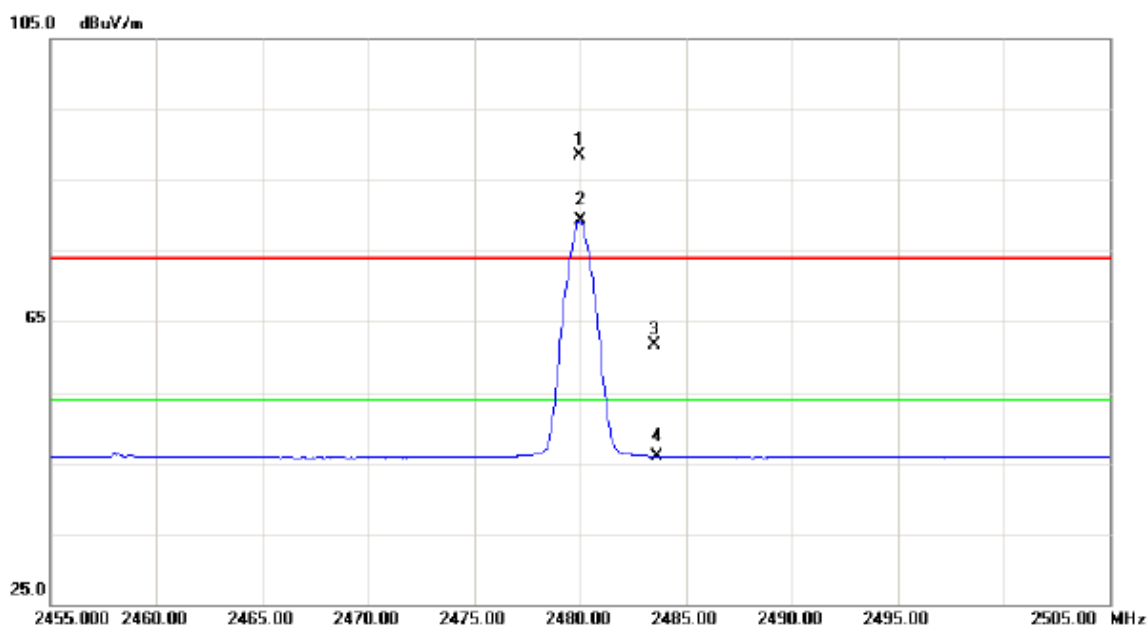
### Horizontal



No.	Mk.	Freq.	Reading Level	Correct Factor	Measurement	Limit	Over	Detector	Comment
		MHz	dBuV	dB	dBuV/m	dBuV/m	dB		
1		4881.655	46.38	3.73	50.11	74.00	-23.89	peak	
2		4881.985	35.79	3.73	39.52	54.00	-14.48	AVG	
3		7323.740	45.02	9.88	54.90	74.00	-19.10	peak	
4	*	7323.780	33.57	9.88	43.45	54.00	-10.55	AVG	

Orthogonal Axis :	X
Test Mode :	TX 2480MHz_CH78_1Mbps

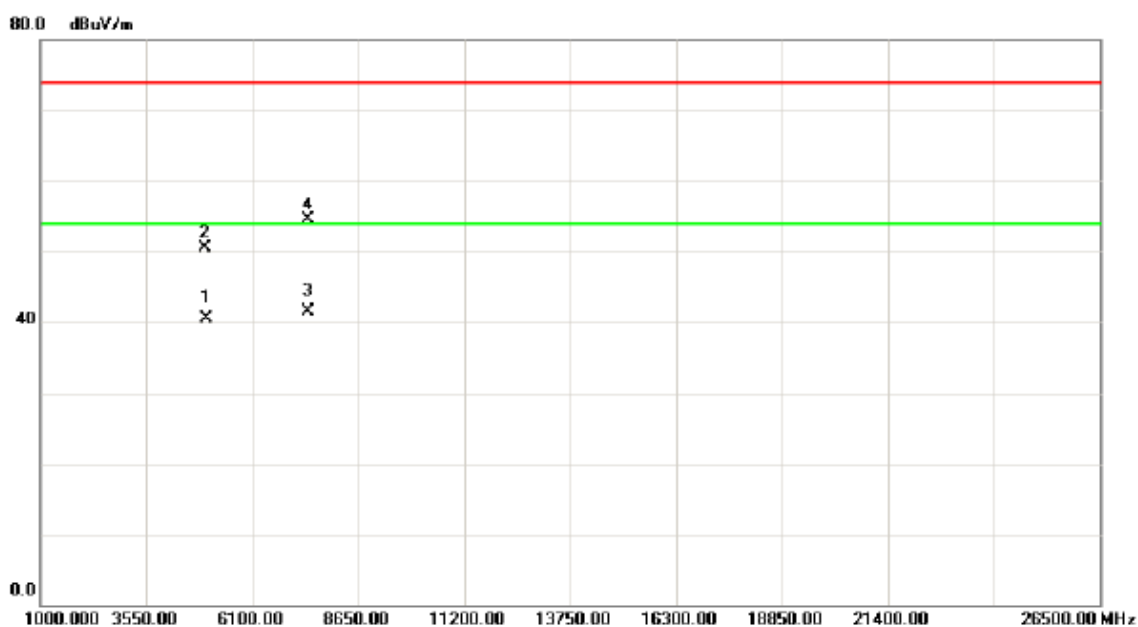
### Vertical



No.	Mk.	Freq. MHz	Reading Level dBuV	Correct Factor dB	Measure- ment dBuV/m	Limit dBuV/m	Over dB	Detector	Comment
1	X	2479.950	56.41	32.00	88.41	74.00	14.41	peak	no limit
2	*	2480.050	47.35	32.00	79.35	54.00	25.35	AVG	no limit
3		2483.500	29.71	32.01	61.72	74.00	-12.28	peak	
4		2483.500	13.94	32.01	45.95	54.00	-8.05	AVG	

Orthogonal Axis :	X
Test Mode :	TX 2480MHz _CH78_1Mbps

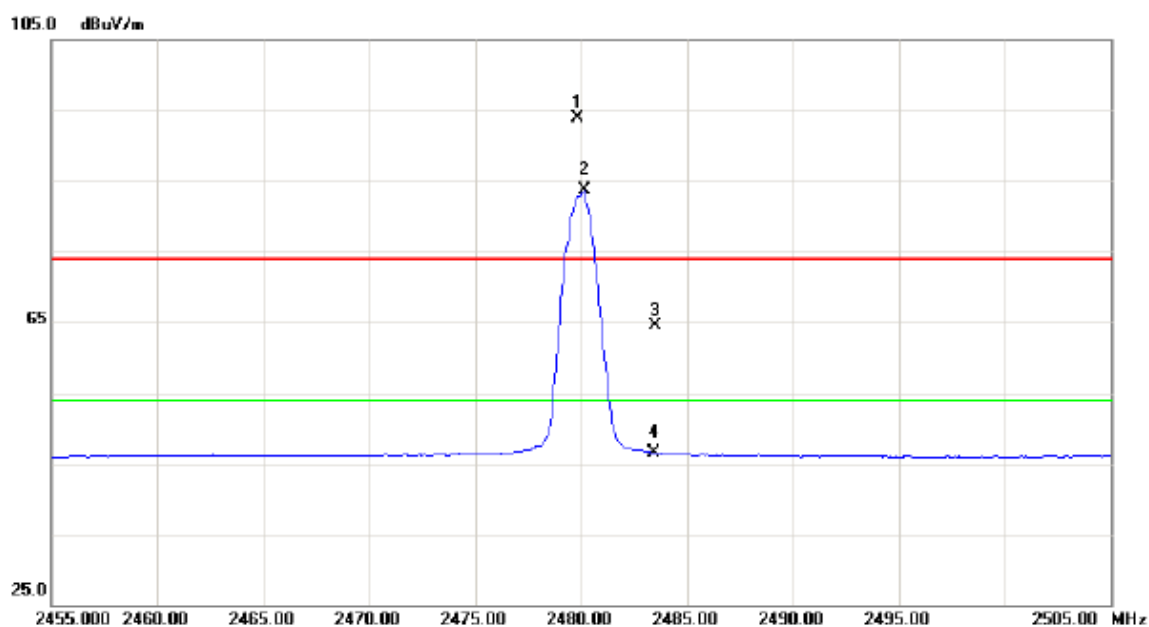
### Vertical



No.	Mk.	Freq.	Reading Level	Correct Factor	Measurement	Limit	Over	Detector	Comment
		MHz	dBuV	dB	dBuV/m	dBuV/m	dB		
1		4959.750	36.58	3.88	40.46	54.00	-13.54	AVG	
2		4960.260	46.65	3.88	50.53	74.00	-23.47	peak	
3	*	7440.620	31.18	10.29	41.47	54.00	-12.53	AVG	
4		7440.970	44.21	10.29	54.50	74.00	-19.50	peak	

Orthogonal Axis :	X
Test Mode :	TX 2480MHz _CH78_1Mbps

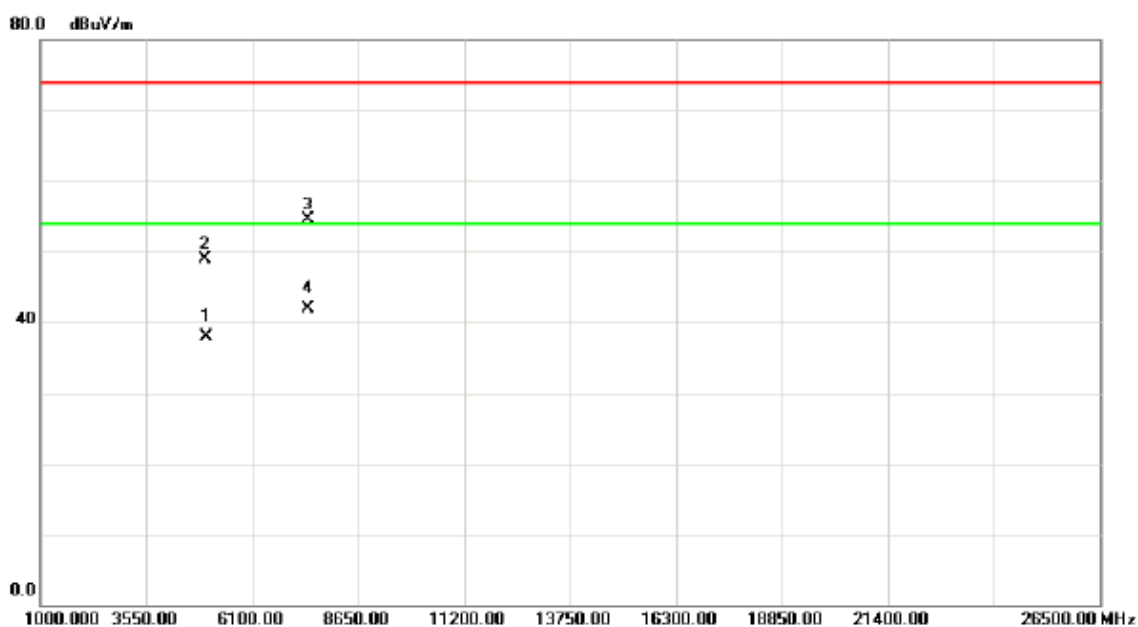
### Horizontal



No.	Mk.	Freq. MHz	Reading Level dBuV	Correct Factor dB	Measure- ment dBuV/m	Limit dBuV/m	Over dB	Detector	Comment
1	X	2479.800	61.85	32.00	93.85	74.00	19.85	peak	no limit
2	*	2480.150	51.66	32.00	83.66	54.00	29.66	AVG	no limit
3		2483.500	32.47	32.01	64.48	74.00	-9.52	peak	
4		2483.500	14.41	32.01	46.42	54.00	-7.58	AVG	

Orthogonal Axis :	X
Test Mode :	TX 2480MHz _CH78_1Mbps

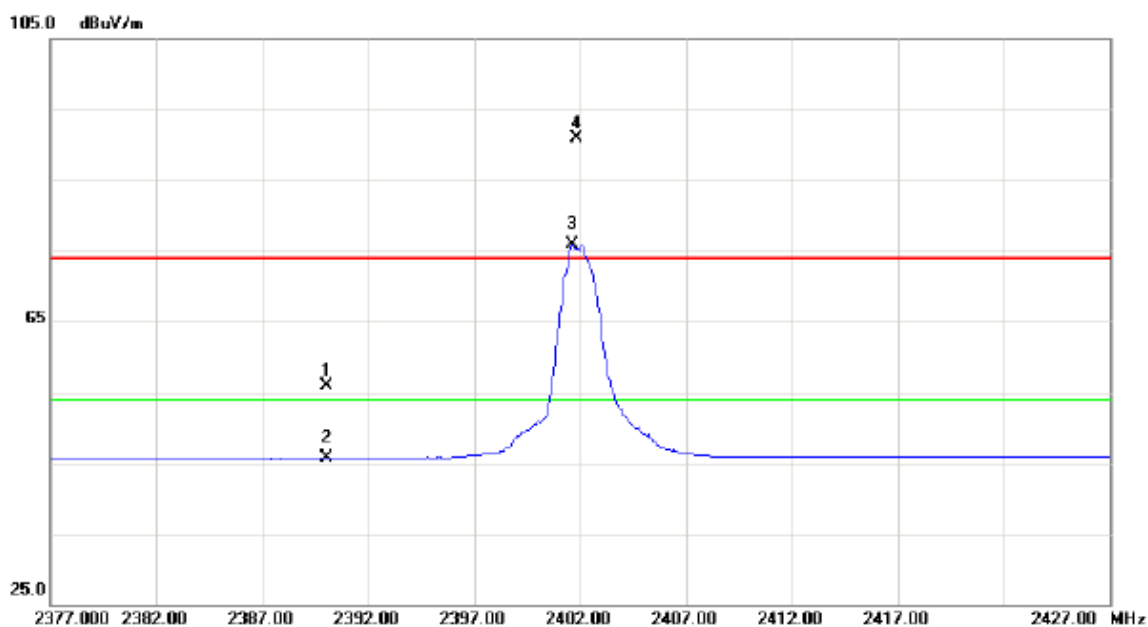
### Horizontal



No.	Mk.	Freq.	Reading Level	Correct Factor	Measurement	Limit	Over	Detector	Comment
		MHz	dBuV	dB	dBuV/m	dBuV/m	dB		
1		4959.980	34.01	3.88	37.89	54.00	-16.11	AVG	
2		4960.080	45.02	3.88	48.90	74.00	-25.10	peak	
3		7439.700	44.26	10.29	54.55	74.00	-19.45	peak	
4	*	7440.510	31.64	10.29	41.93	54.00	-12.07	AVG	

Orthogonal Axis :	X
Test Mode :	TX 2402MHz_CH00_3Mbps

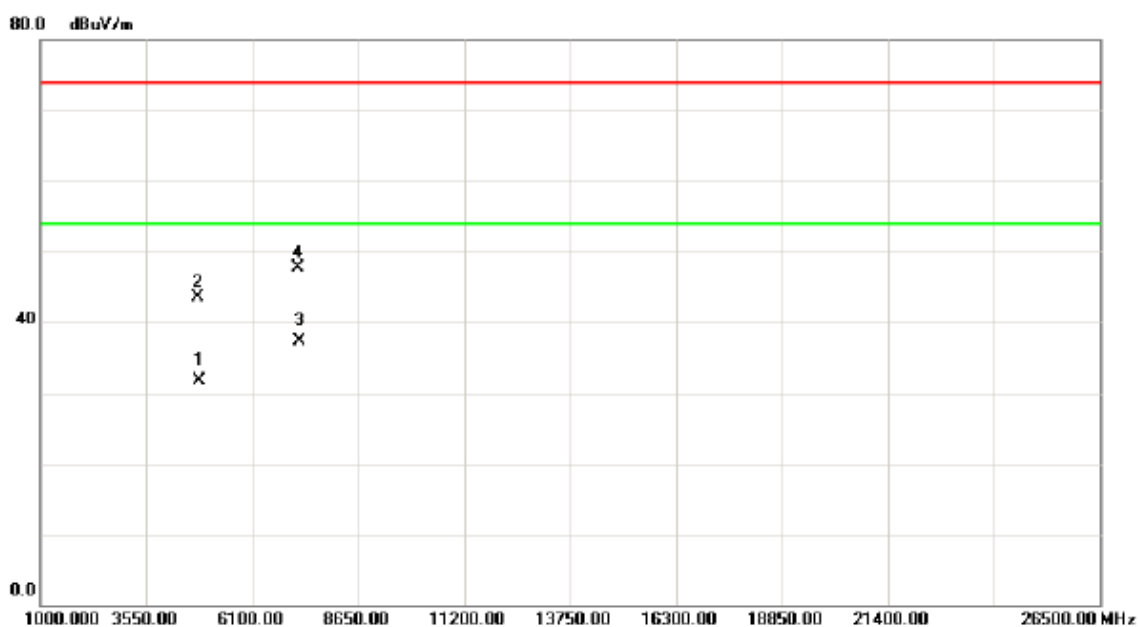
### Vertical



No.	Mk.	Freq. MHz	Reading Level dBuV	Correct Factor dB	Measure- ment dBuV/m	Limit dBuV/m	Over dB	Detector	Comment
1		2390.000	24.10	31.88	55.98	74.00	-18.02	peak	
2		2390.000	13.76	31.88	45.64	54.00	-8.36	AVG	
3	*	2401.600	44.06	31.89	75.95	54.00	21.95	AVG	no limit
4	X	2401.800	58.95	31.89	90.84	74.00	16.84	peak	no limit

Orthogonal Axis :	X
Test Mode :	TX 2402MHz _CH00_3Mbps

### Vertical

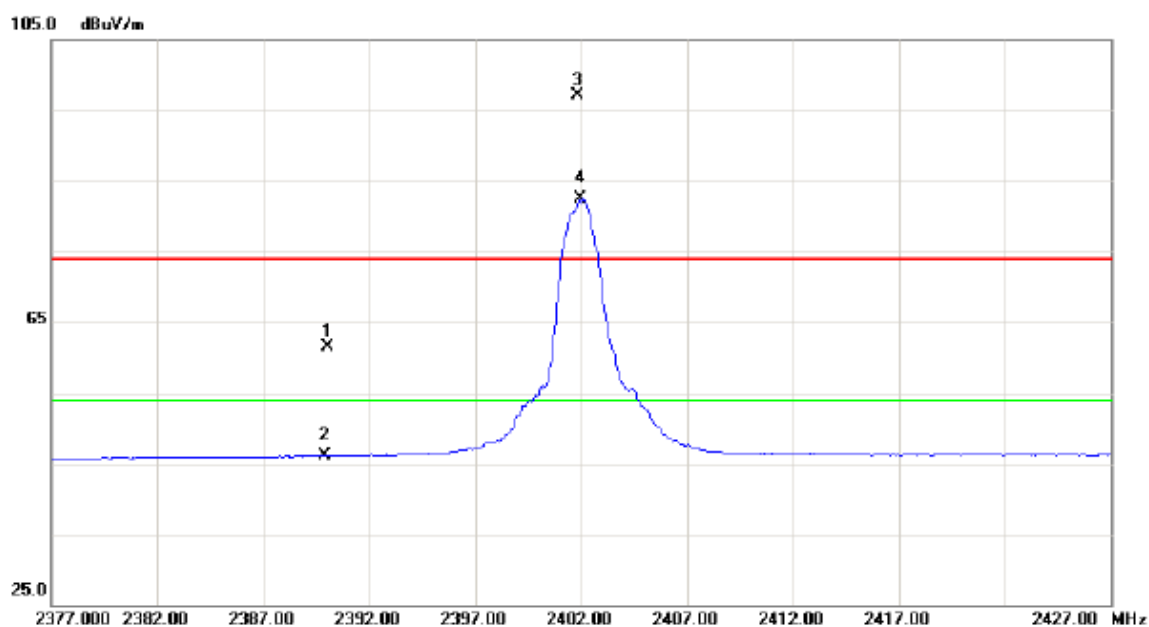


No.	Mk.	Freq.	Reading Level	Correct Factor	Measurement	Limit	Over	Detector	Comment
		MHz	dBuV	dB	dBuV/m	dBuV/m	dB		
1		4803.545	28.19	3.58	31.77	54.00	-22.23	AVG	
2		4803.620	39.99	3.58	43.57	74.00	-30.43	peak	
3	*	7206.140	27.87	9.45	37.32	54.00	-16.68	AVG	
4		7206.590	38.20	9.45	47.65	74.00	-26.35	peak	



Orthogonal Axis :	X
Test Mode :	TX 2402MHz _CH00_3Mbps

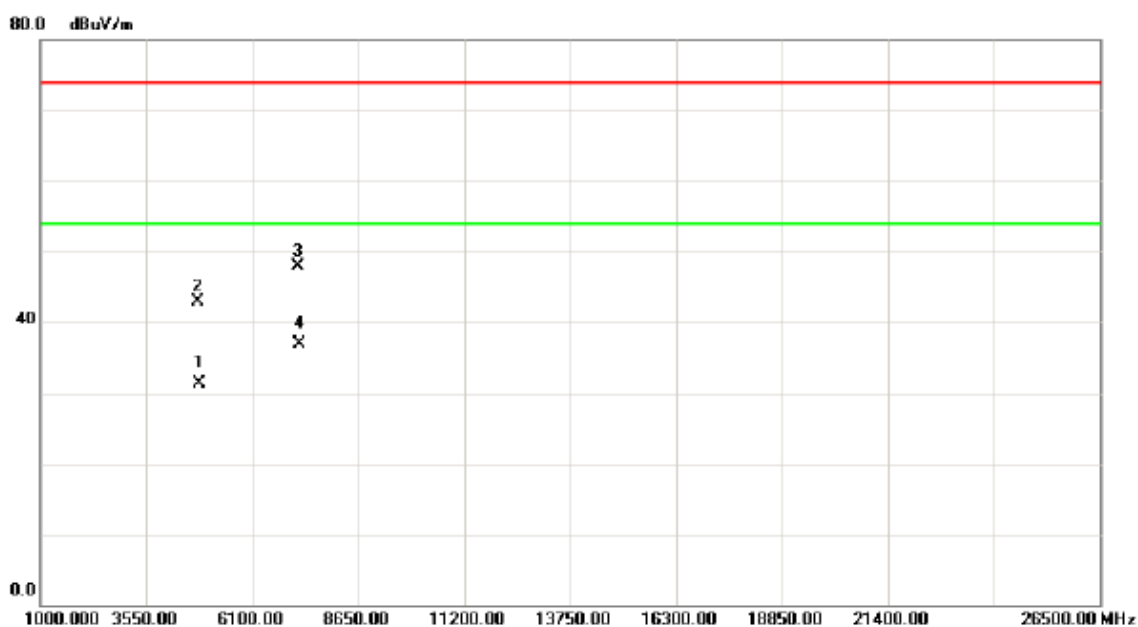
### Horizontal



No.	Mk.	Freq.	Reading Level	Correct Factor	Measurement	Limit	Over	Detector	Comment
		MHz	dBuV	dB	dBuV/m	dBuV/m	dB		
1		2390.000	29.59	31.88	61.47	74.00	-12.53	peak	
2		2390.000	14.14	31.88	46.02	54.00	-7.98	AVG	
3	X	2401.800	65.24	31.89	97.13	74.00	23.13	peak	no limit
4	*	2401.950	50.69	31.89	82.58	54.00	28.58	AVG	no limit

Orthogonal Axis :	X
Test Mode :	TX 2402MHz _CH00_3Mbps

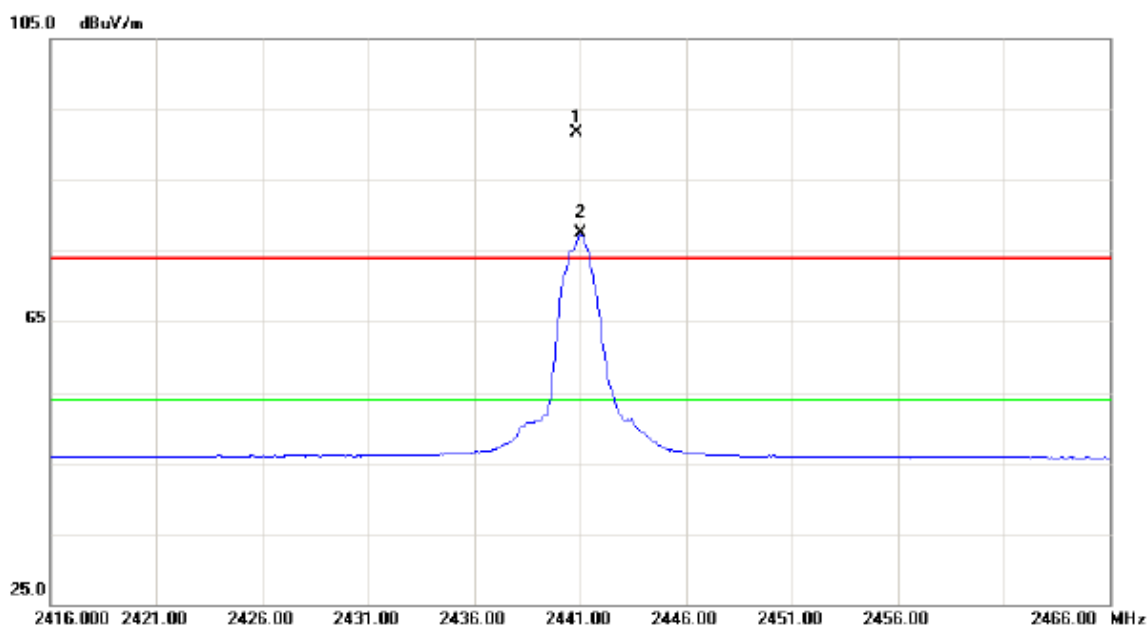
### Horizontal



No.	Mk.	Freq.	Reading Level	Correct Factor	Measurement	Limit	Over	Detector	Comment
		MHz	dBuV	dB	dBuV/m	dBuV/m	dB		
1		4803.270	27.71	3.58	31.29	54.00	-22.71	AVG	
2		4803.455	39.31	3.58	42.89	74.00	-31.11	peak	
3		7205.420	38.55	9.45	48.00	74.00	-26.00	peak	
4	*	7206.890	27.45	9.45	36.90	54.00	-17.10	AVG	

Orthogonal Axis :	X
Test Mode :	TX 2441MHz_CH39_3Mbps

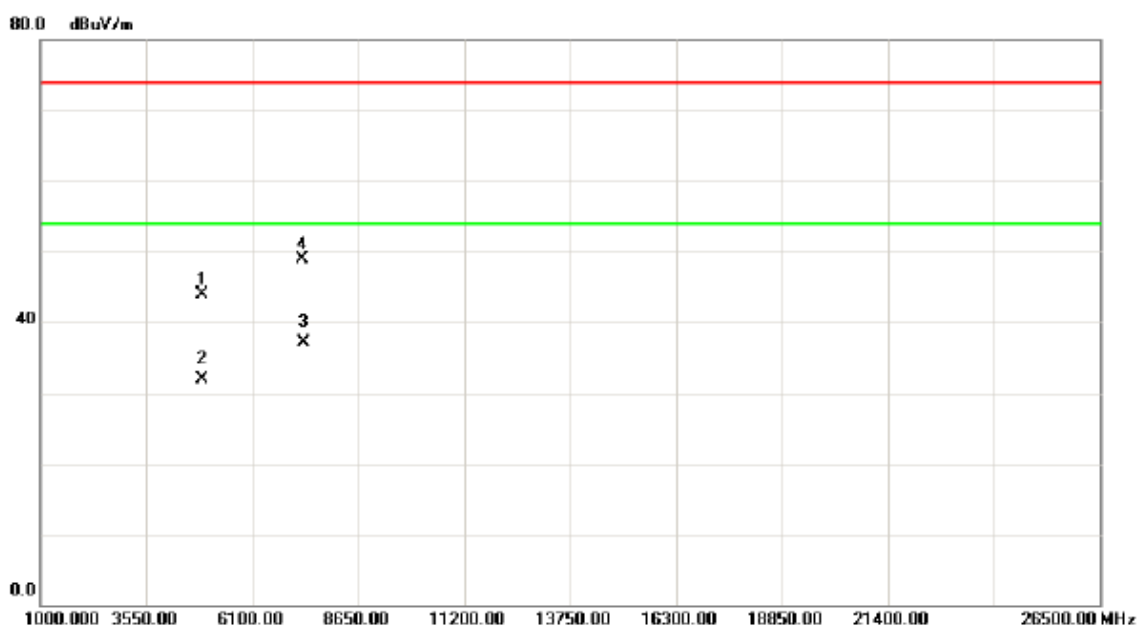
### Vertical



No.	Mk.	Freq.	Reading Level	Correct Factor	Measurement	Limit	Over	Detector	Comment
		MHz	dBuV	dB	dBuV/m	dBuV/m	dB		
1	X	2440.800	59.66	31.95	91.61	74.00	17.61	peak	no limit
2	*	2441.000	45.50	31.95	77.45	54.00	23.45	AVG	no limit

Orthogonal Axis :	X
Test Mode :	TX 2441MHz _CH39_3Mbps

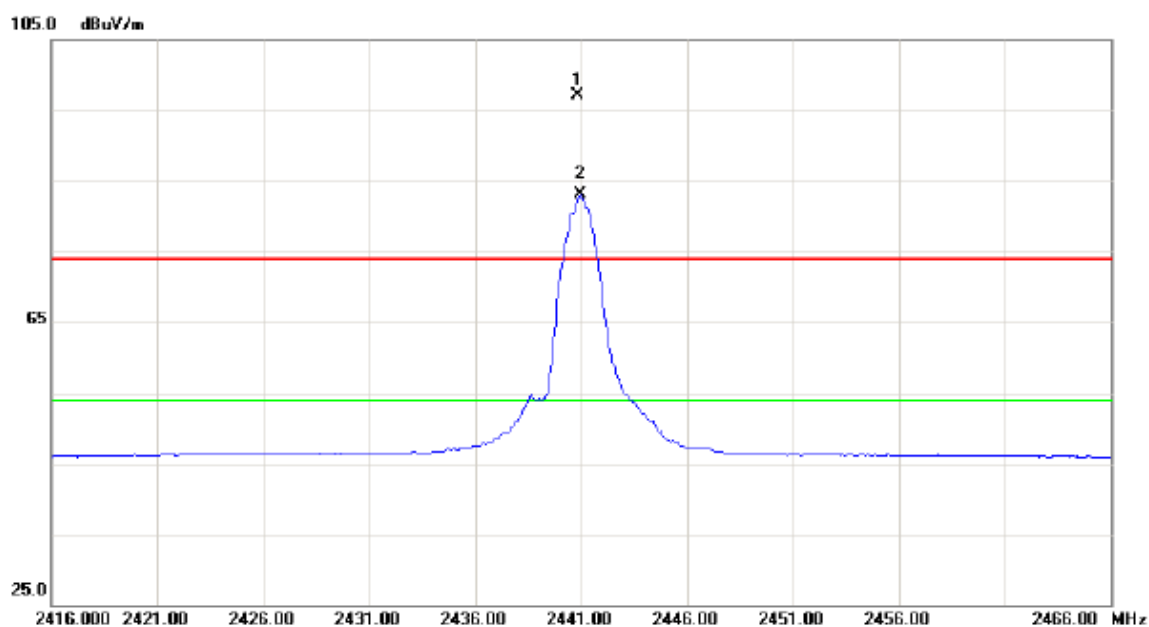
### Vertical



No.	Mk.	Freq.	Reading Level	Correct Factor	Measurement	Limit	Over	Detector	Comment
		MHz	dBuV	dB	dBuV/m	dBuV/m	dB		
1		4881.050	40.18	3.73	43.91	74.00	-30.09	peak	
2		4881.560	28.24	3.73	31.97	54.00	-22.03	AVG	
3	*	7322.910	27.32	9.88	37.20	54.00	-16.80	AVG	
4		7323.750	39.08	9.88	48.96	74.00	-25.04	peak	

Orthogonal Axis :	X
Test Mode :	TX 2441MHz _CH39_3Mbps

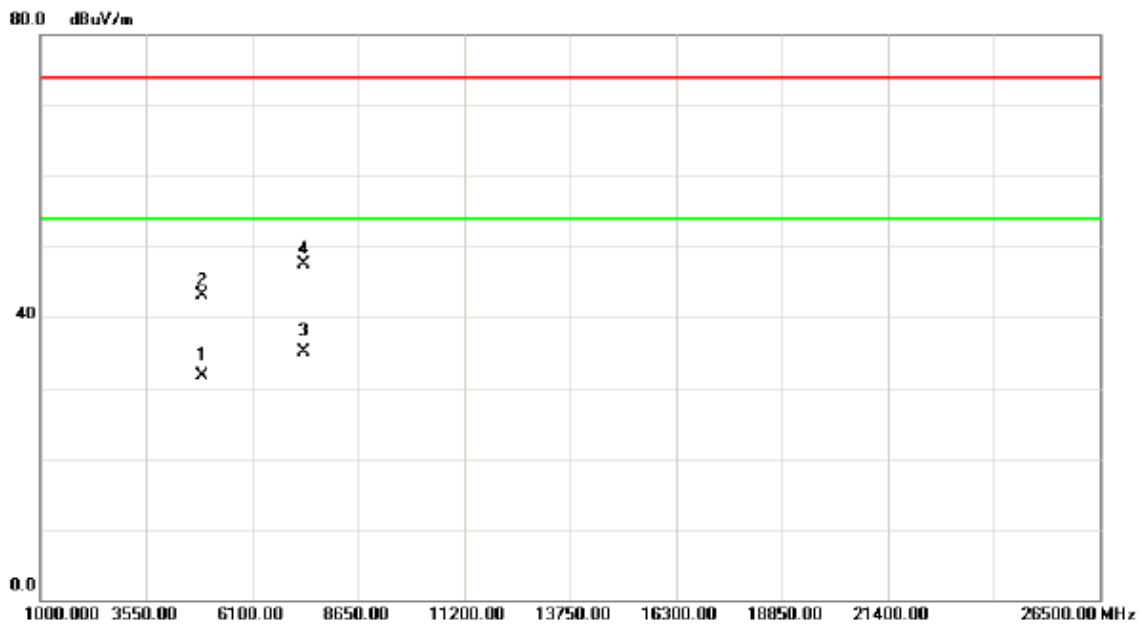
### Horizontal



No.	Mk.	Freq.	Reading Level	Correct Factor	Measurement	Limit	Over	Detector	Comment
		MHz	dBuV	dB	dBuV/m	dBuV/m	dB		
1	X	2440.800	65.14	31.95	97.09	74.00	23.09	peak	no limit
2	*	2440.950	51.13	31.95	83.08	54.00	29.08	AVG	no limit

Orthogonal Axis :	X
Test Mode :	TX 2441MHz _CH39_3Mbps

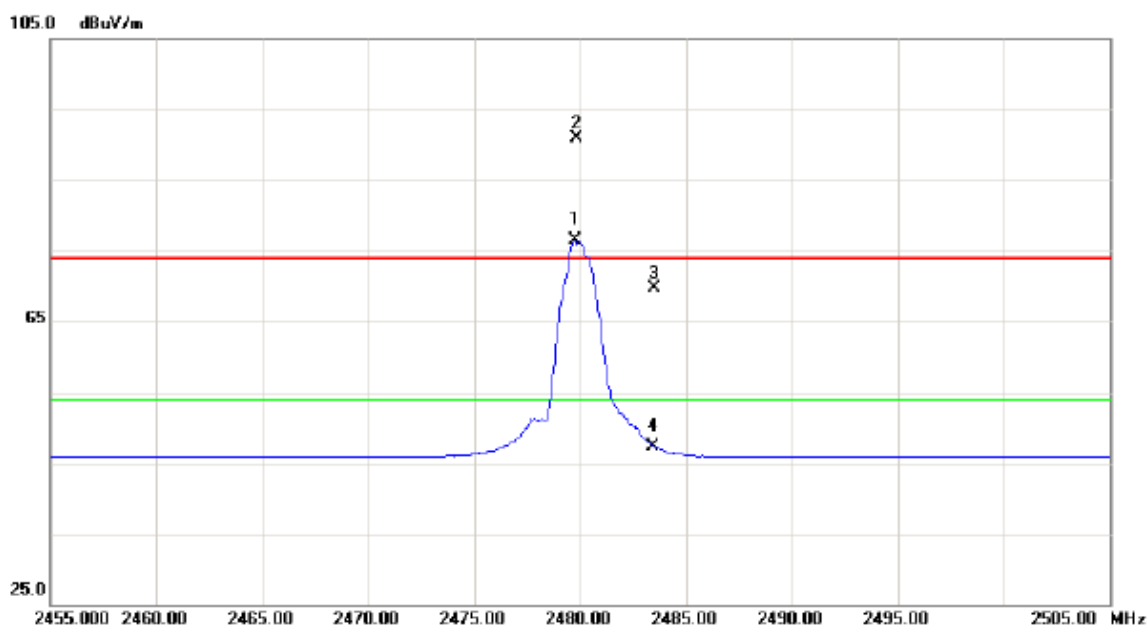
### Horizontal



No.	Mk.	Freq.	Reading Level	Correct Factor	Measurement	Limit	Over	Detector	Comment
		MHz	dBuV	dB	dBuV/m	dBuV/m	dB		
1		4881.340	27.94	3.73	31.67	54.00	-22.33	AVG	
2		4881.930	39.43	3.73	43.16	74.00	-30.84	peak	
3	*	7324.850	25.23	9.88	35.11	54.00	-18.89	AVG	
4		7324.940	37.61	9.88	47.49	74.00	-26.51	peak	

Orthogonal Axis :	X
Test Mode :	TX 2480MHz _CH78_3Mbps

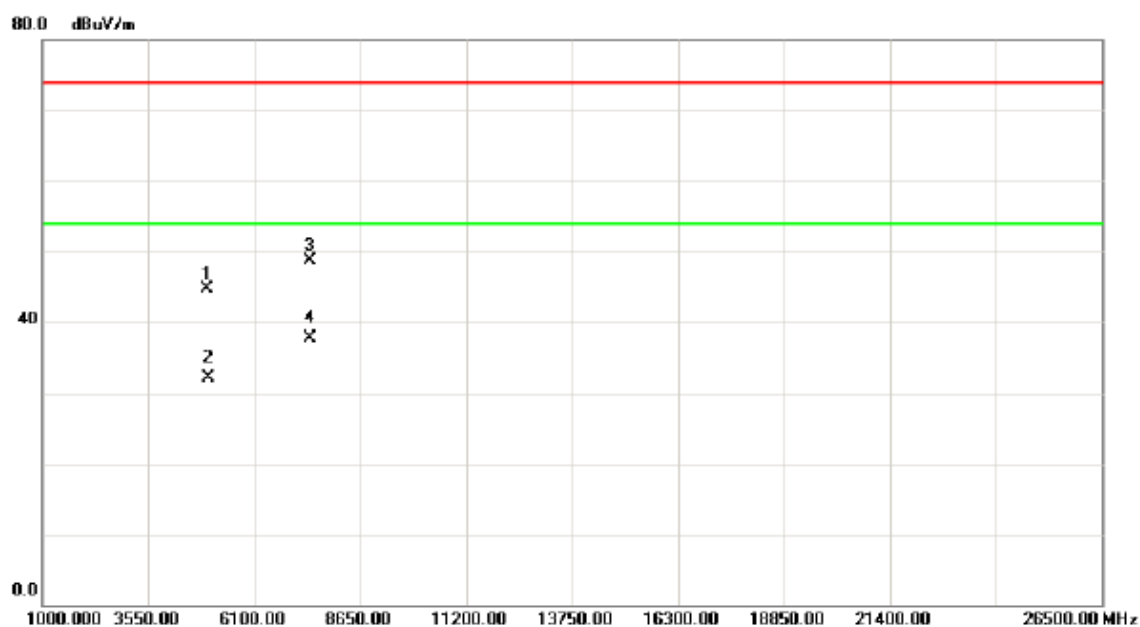
### Vertical



No.	Mk.	Freq. MHz	Reading Level dBuV	Correct Factor dB	Measure- ment dBuV/m	Limit dBuV/m	Over dB	Detector	Comment
1	*	2479.750	44.54	32.00	76.54	54.00	22.54	AVG	no limit
2	X	2479.800	58.95	32.00	90.95	74.00	16.95	peak	no limit
3		2483.500	37.74	32.01	69.75	74.00	-4.25	peak	
4		2483.500	15.30	32.01	47.31	54.00	-6.69	AVG	

Orthogonal Axis :	X
Test Mode :	TX 2480MHz _CH78_3Mbps

### Vertical

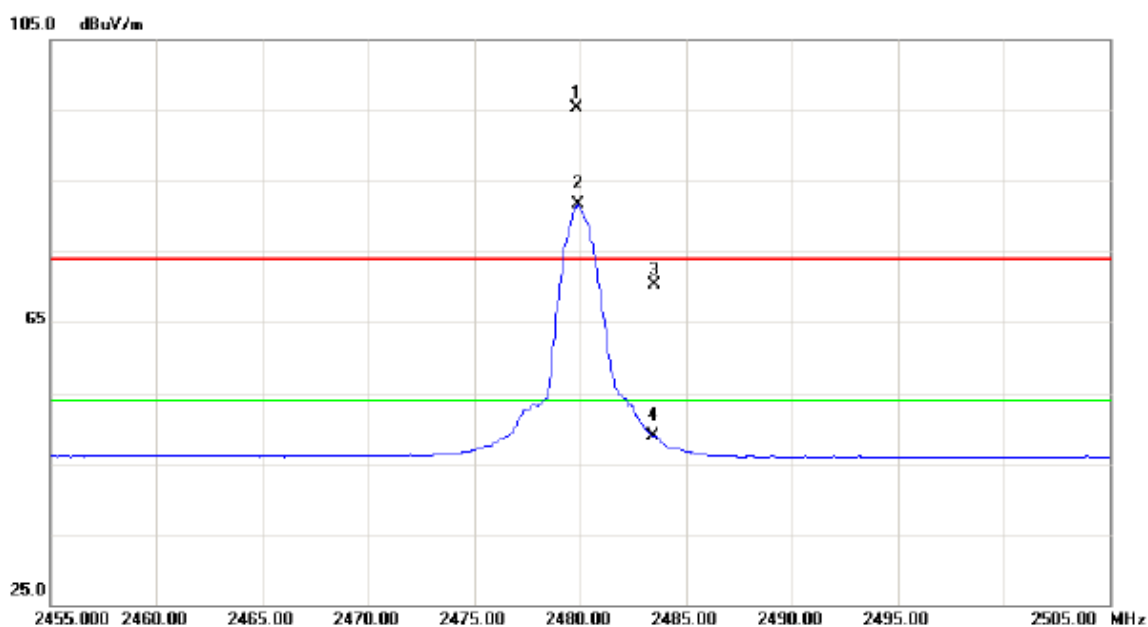


No.	Mk.	Freq. MHz	Reading Level dBuV	Correct Factor dB	Measure- ment dBuV/m	Limit dBuV/m	Over dB	Detector	Comment
1		4959.440	40.78	3.88	44.66	74.00	-29.34	peak	
2		4959.675	28.30	3.88	32.18	54.00	-21.82	AVG	
3		7440.160	38.50	10.29	48.79	74.00	-25.21	peak	
4	*	7440.180	27.40	10.29	37.69	54.00	-16.31	AVG	



Orthogonal Axis :	X
Test Mode :	TX 2480MHz _CH78_3Mbps

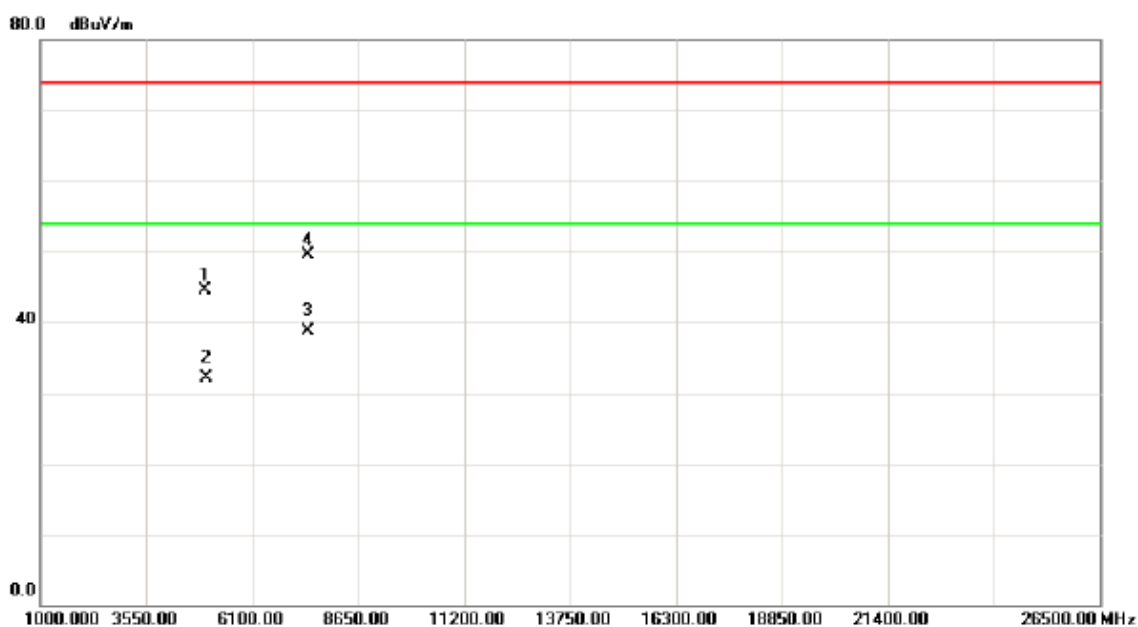
### Horizontal



No.	Mk.	Freq.	Reading	Correct	Measure-	Limit	Over		
		MHz	Level	Factor	ment			Detector	Comment
			dBuV	dB	dBuV/m	dBuV/m	dB		
1	X	2479.800	63.36	32.00	95.36	74.00	21.36	peak	no limit
2	*	2479.900	49.62	32.00	81.62	54.00	27.62	AVG	no limit
3		2483.500	38.32	32.01	70.33	74.00	-3.67	peak	
4		2483.500	16.89	32.01	48.90	54.00	-5.10	AVG	

Orthogonal Axis :	X
Test Mode :	TX 2480MHz _CH78_3Mbps

### Horizontal

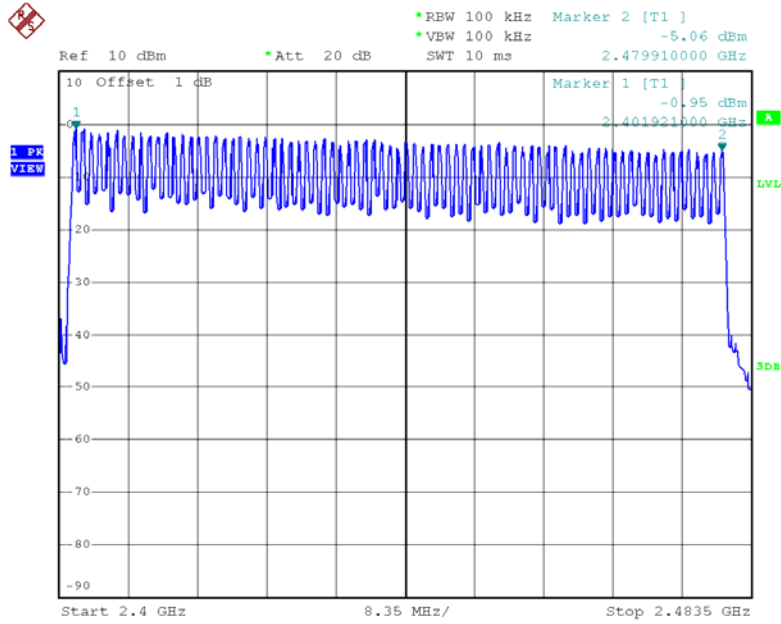


No.	Mk.	Freq. MHz	Reading Level dBuV	Correct Factor dB	Measure- ment dBuV/m	Limit dBuV/m	Over dB	Detector	Comment
1		4959.350	40.56	3.87	44.43	74.00	-29.57	peak	
2		4959.710	28.26	3.88	32.14	54.00	-21.86	AVG	
3	*	7440.410	28.32	10.29	38.61	54.00	-15.39	AVG	
4		7440.800	39.13	10.29	49.42	74.00	-24.58	peak	

## **ATTACHMENT E - NUMBER OF HOPPING CHANNEL**

**Test Mode**      **Hopping Mode\_1Mbps**

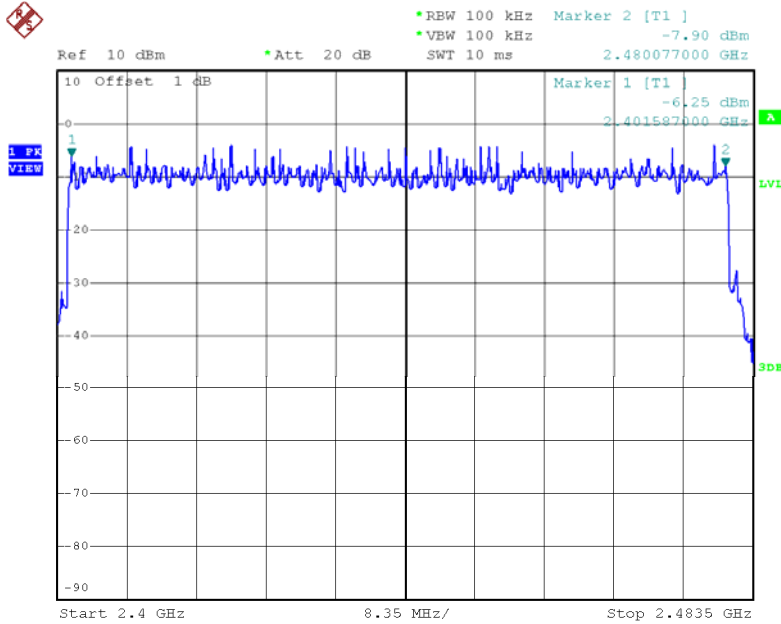
Number of Hopping Channel      79



Date: 2.DEC.2014 10:26:57

**Test Mode**      **Hopping Mode\_3Mbps**

Number of Hopping Channel      79



Date: 2.DEC.2014 11:09:01

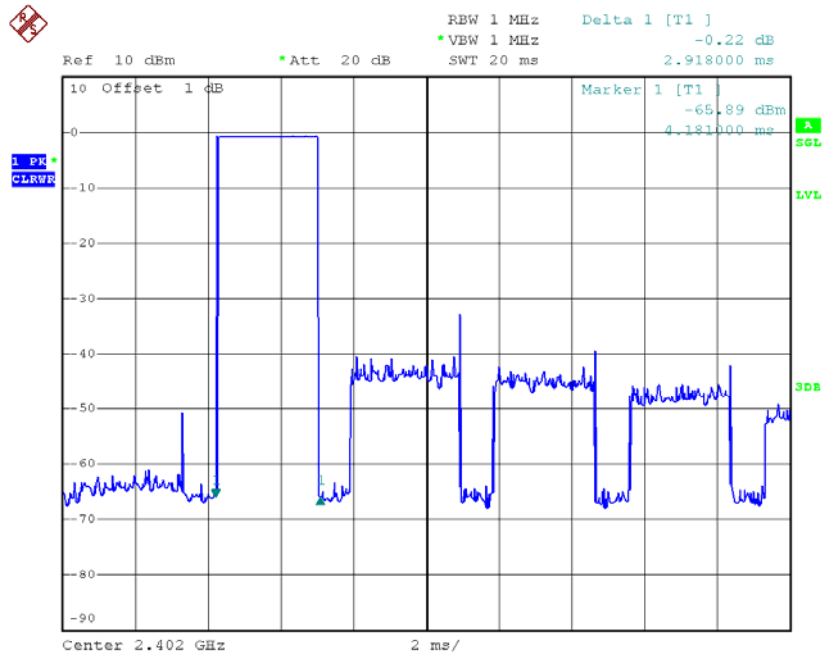
## ATTACHMENT F - AVERAGE TIME OF OCCUPANCY

Test Mode :	TX Mode_1Mbps
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Data Packet	Frequency (MHz)	Pulse Duration (ms)	Dwell Time (s)	Limits (s)	Test Result
DH5	2402	2.9180	0.3113	0.4000	Complies
DH3	2402	1.8200	0.2912	0.4000	Complies
DH1	2402	0.3740	0.1197	0.4000	Complies
DH5	2441	2.9590	0.3156	0.4000	Complies
DH3	2441	1.7990	0.2878	0.4000	Complies
DH1	2441	0.3990	0.1277	0.4000	Complies
DH5	2480	3.0390	0.3242	0.4000	Complies
DH3	2480	1.7790	0.2846	0.4000	Complies
DH1	2480	0.5740	0.1837	0.4000	Complies

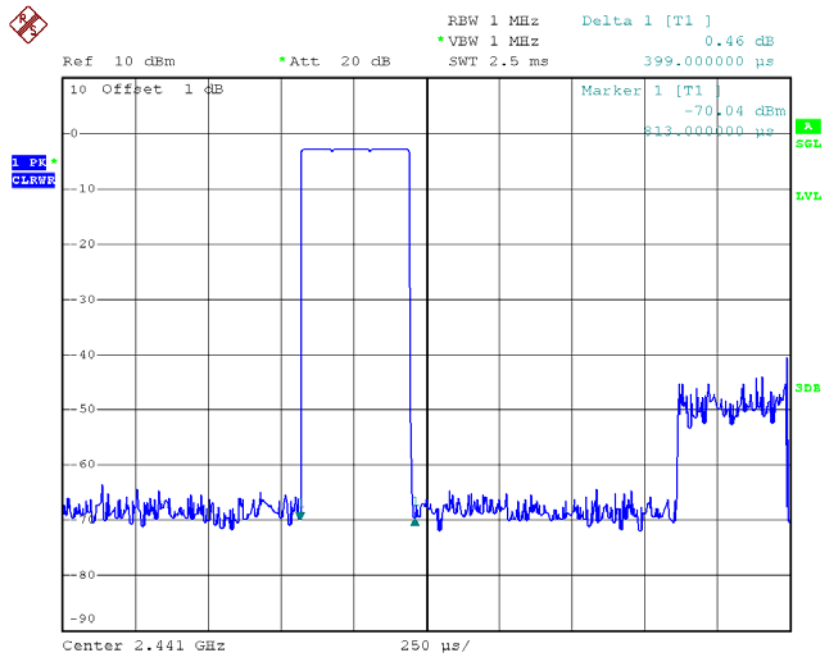


### CH00-DH5



Date: 2.DEC.2014 10:34:30

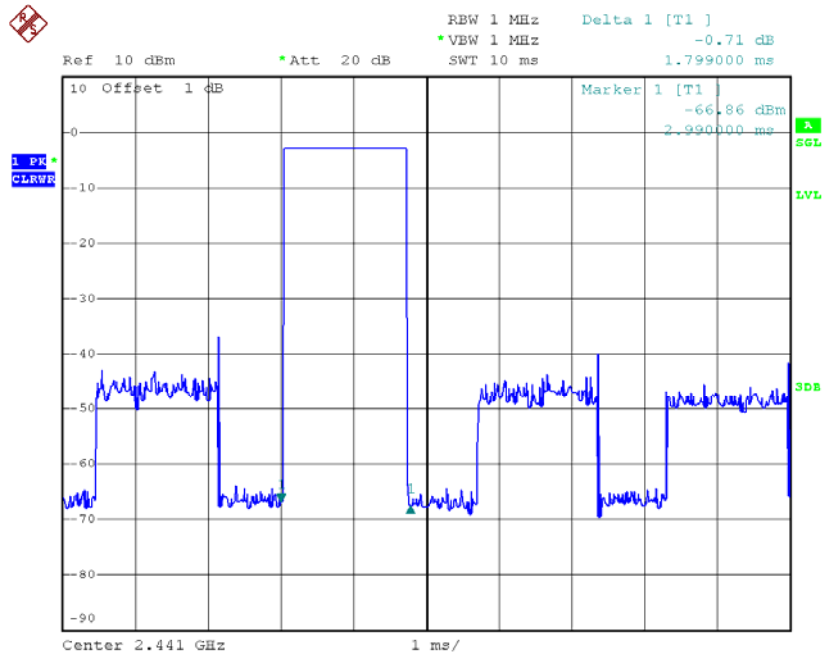
### CH39-DH1



Date: 2.DEC.2014 10:20:43

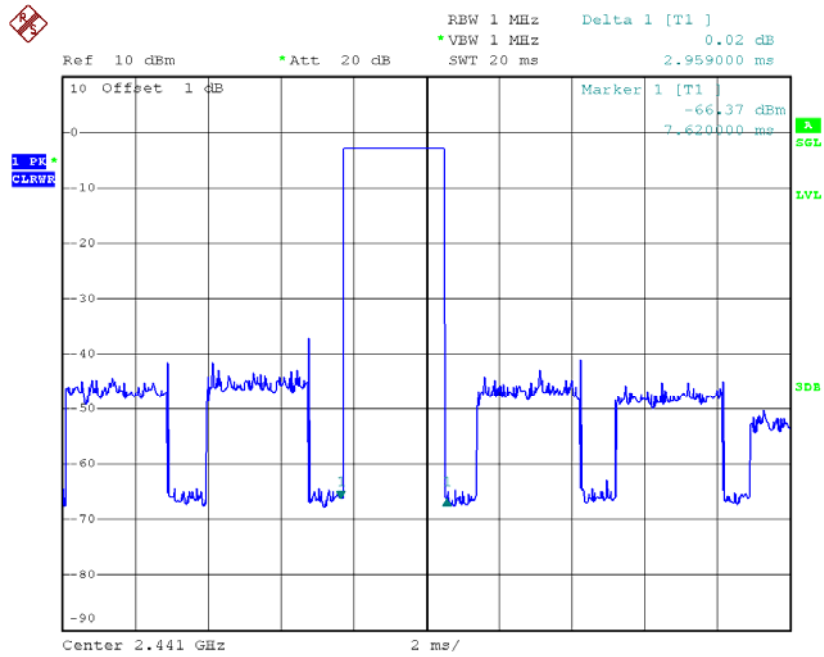


### CH39-DH3



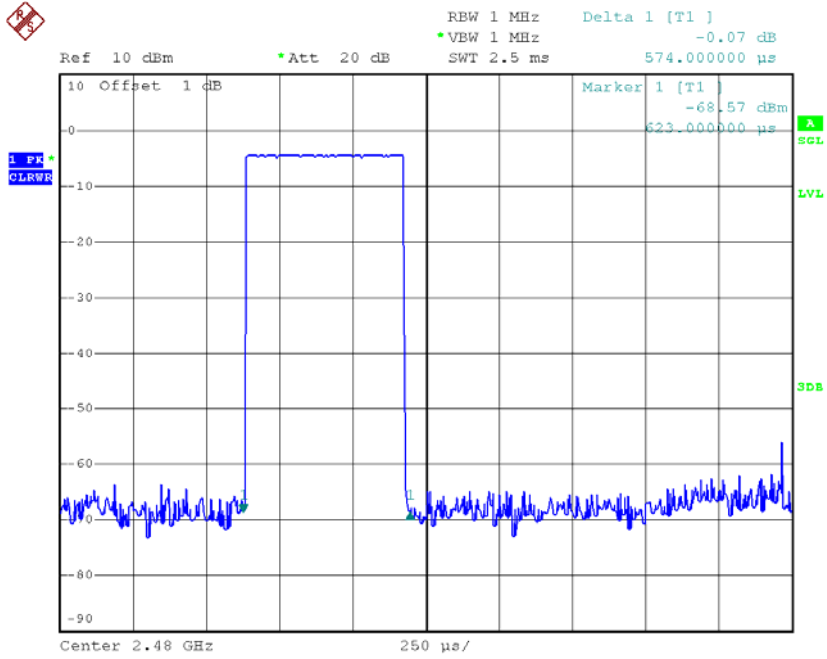
Date: 2.DEC.2014 10:33:39

### CH39-DH5



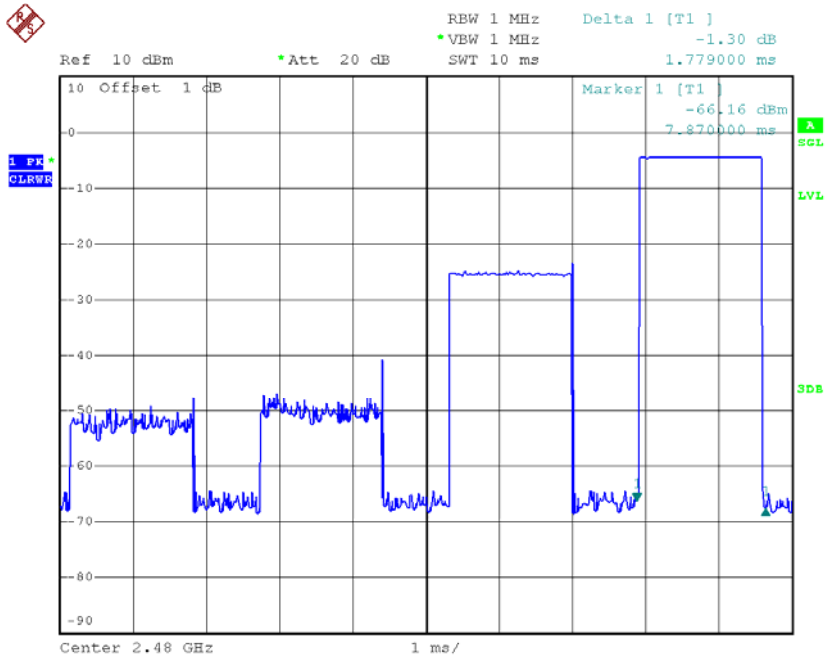
Date: 2.DEC.2014 10:34:45

### CH78-DH1



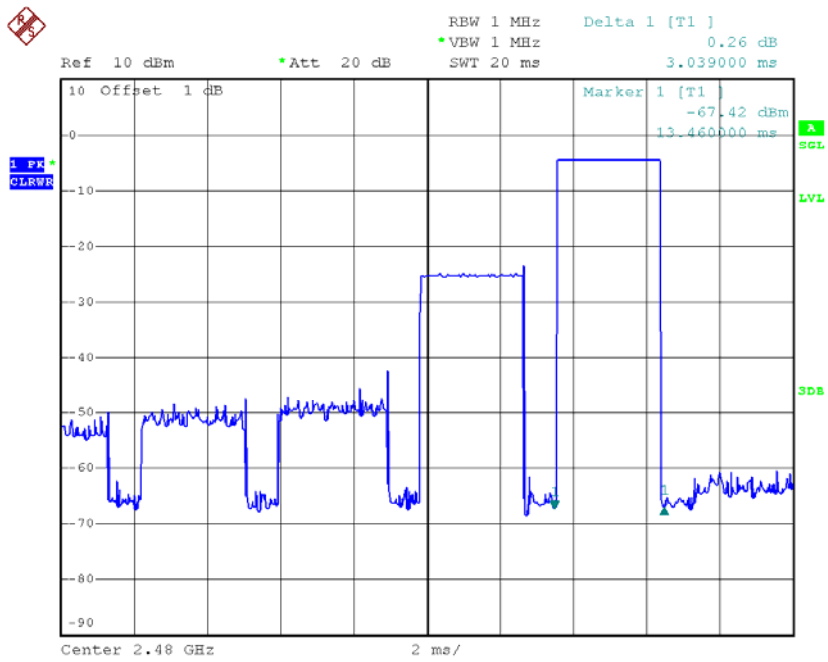
Date: 2.DEC.2014 10:20:56

### CH78-DH3



Date: 2.DEC.2014 10:33:51

### CH78-DH5

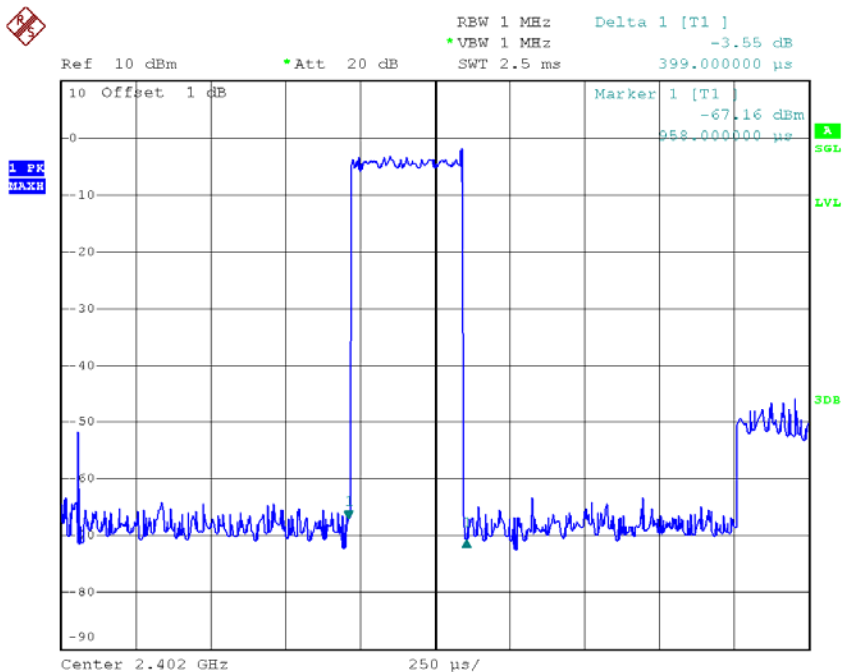


Date: 2.DEC.2014 10:34:56

Test Mode :	TX Mode_3Mbps
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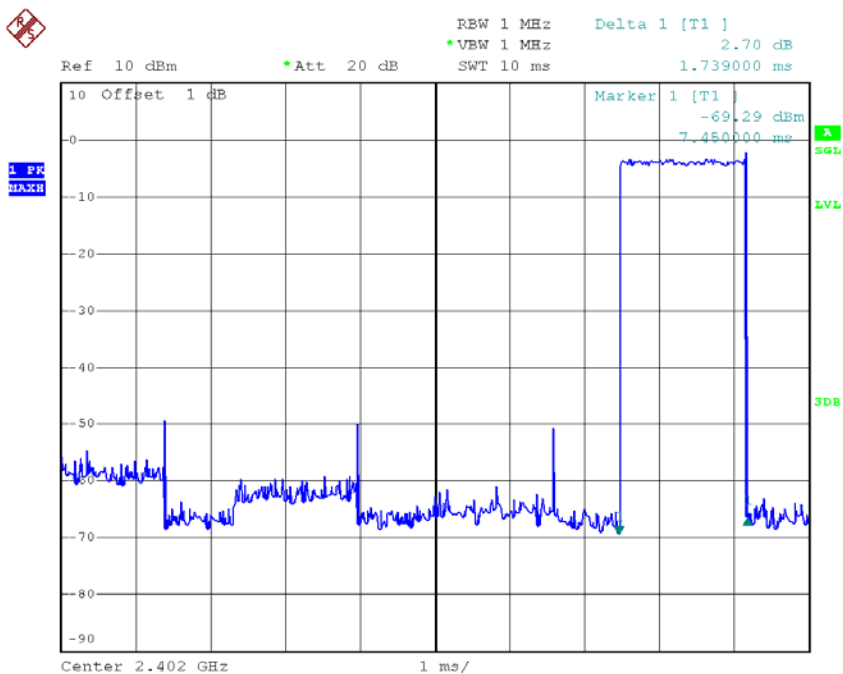
Data Packet	Frequency (MHz)	Pulse Duration (ms)	Dwell Time (s)	Limits (s)	Test Result
DH5	2402	2.9990	0.3199	0.4000	Complies
DH3	2402	1.7390	0.2782	0.4000	Complies
DH1	2402	0.3990	0.1277	0.4000	Complies
DH5	2441	3.2790	0.3498	0.4000	Complies
DH3	2441	1.7590	0.2814	0.4000	Complies
DH1	2441	0.3890	0.1245	0.4000	Complies
DH5	2480	3.2390	0.3455	0.4000	Complies
DH3	2480	1.7790	0.2846	0.4000	Complies
DH1	2480	0.3740	0.1197	0.4000	Complies

### CH00-DH1



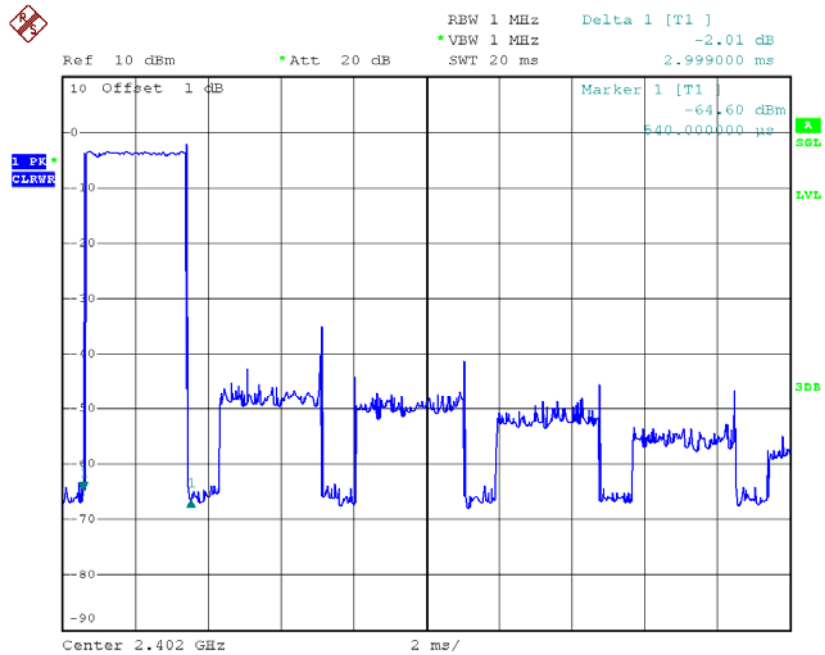
Date: 2.DEC.2014 10:59:57

### CH00-DH3



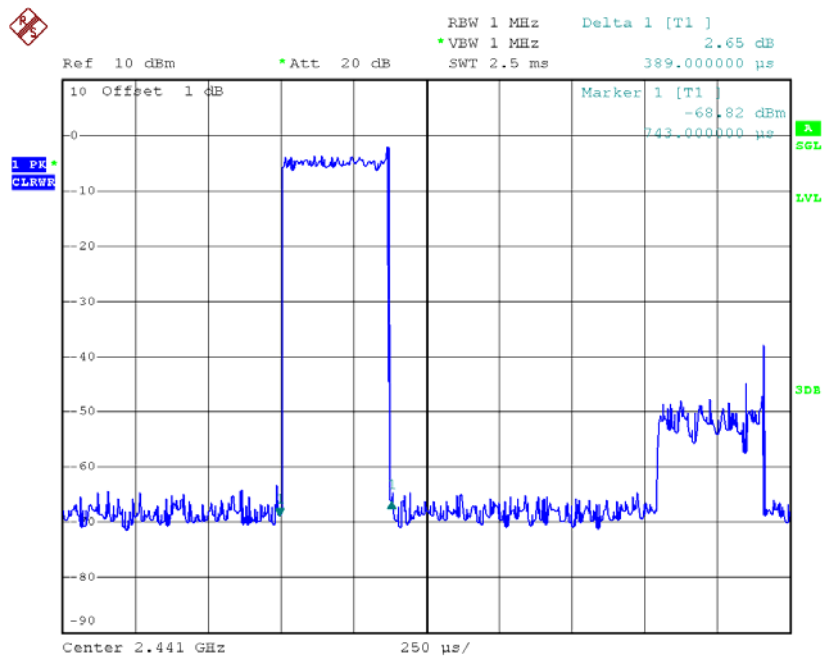
Date: 2.DEC.2014 11:11:04

### CH00-DH5



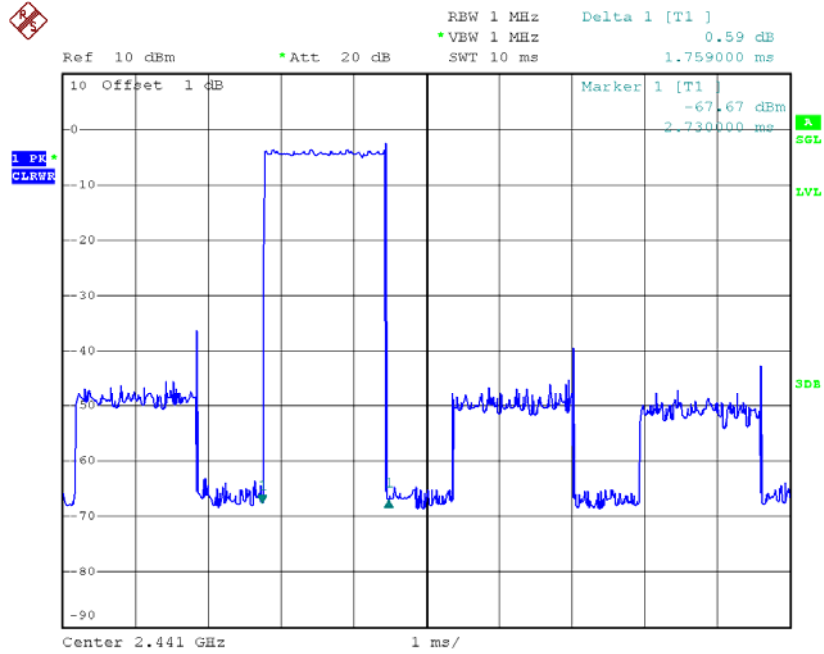
Date: 2.DEC.2014 11:12:25

### CH39-DH1



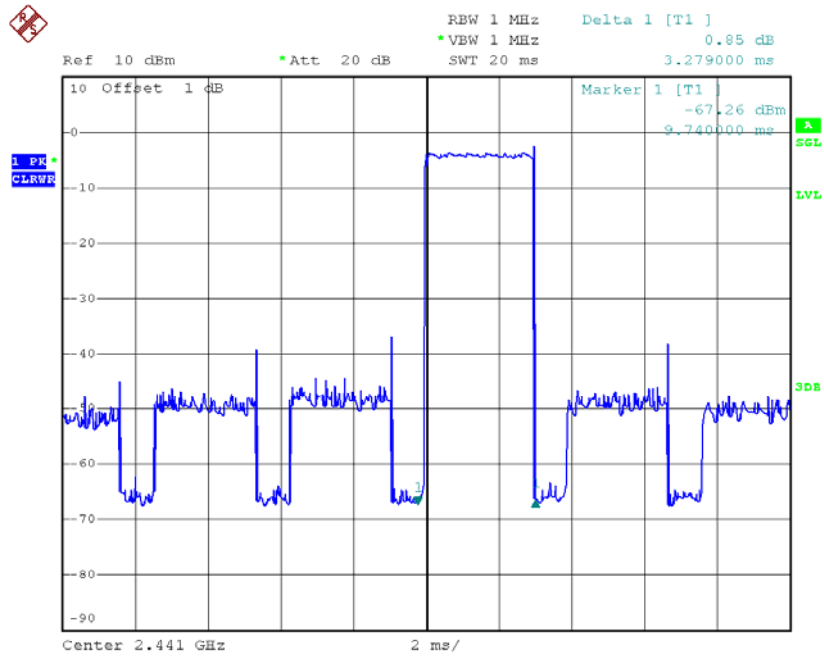
Date: 2.DEC.2014 11:00:06

### CH39-DH3



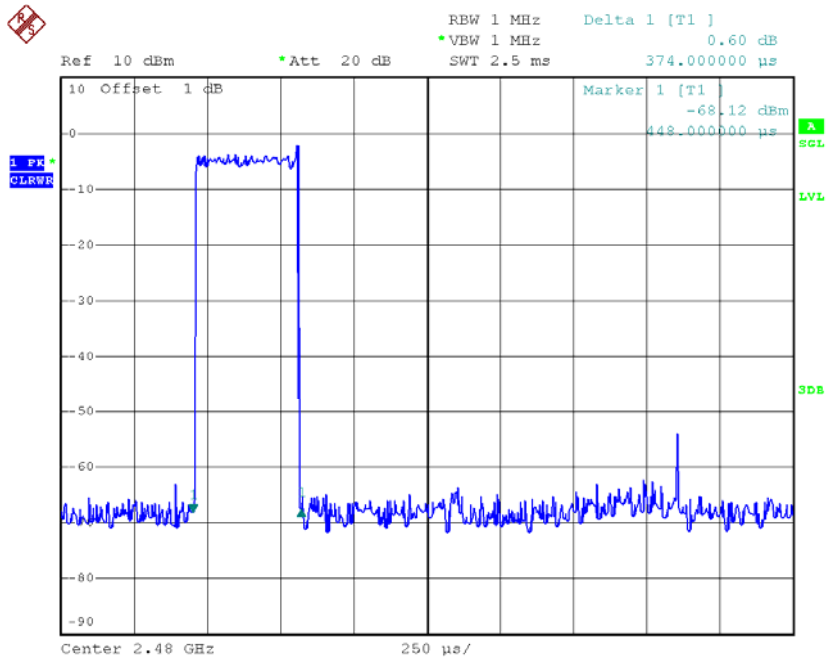
Date: 2.DEC.2014 11:11:26

### CH39-DH5



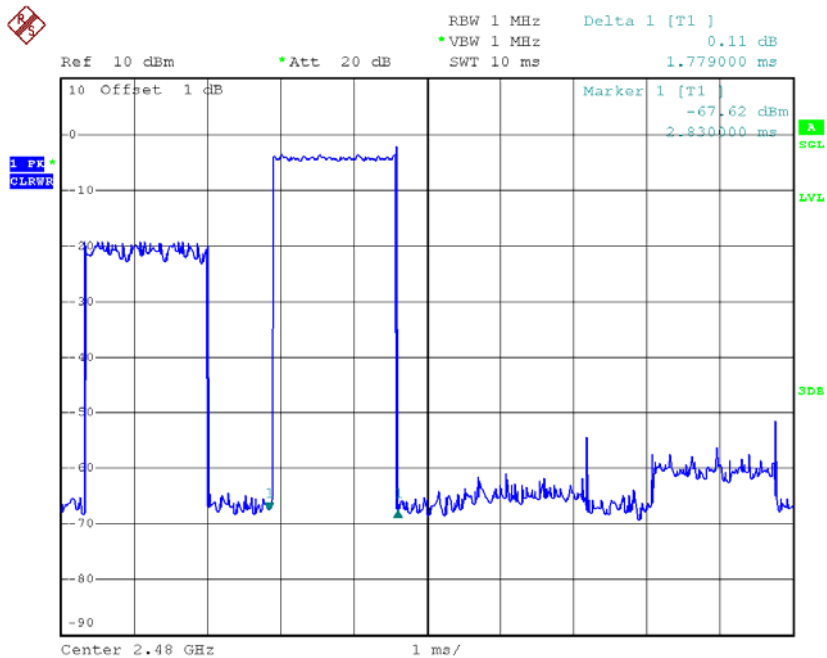
Date: 2.DEC.2014 11:12:54

### CH78-DH1



Date: 2.DEC.2014 11:00:11

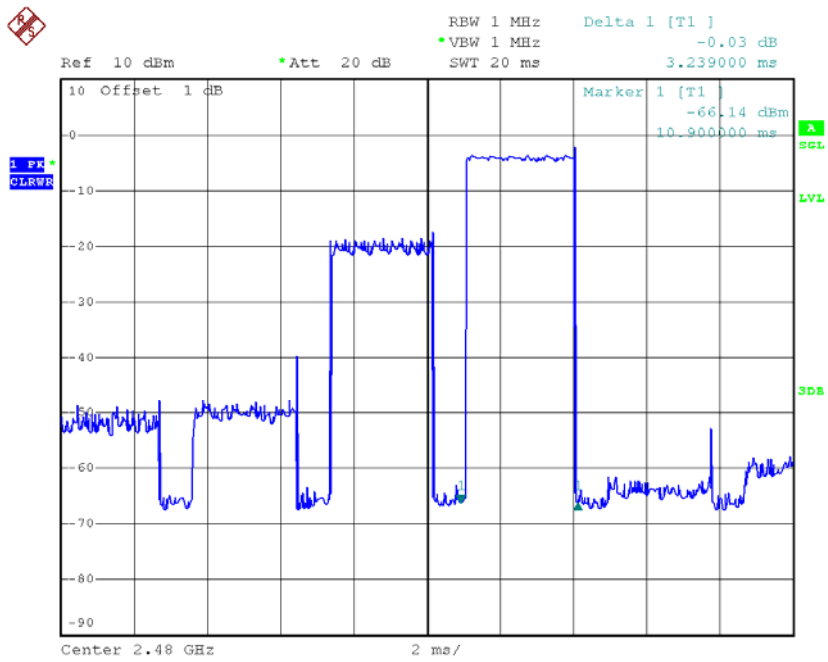
### CH78-DH3



Date: 2.DEC.2014 11:11:41



### CH78-DH5

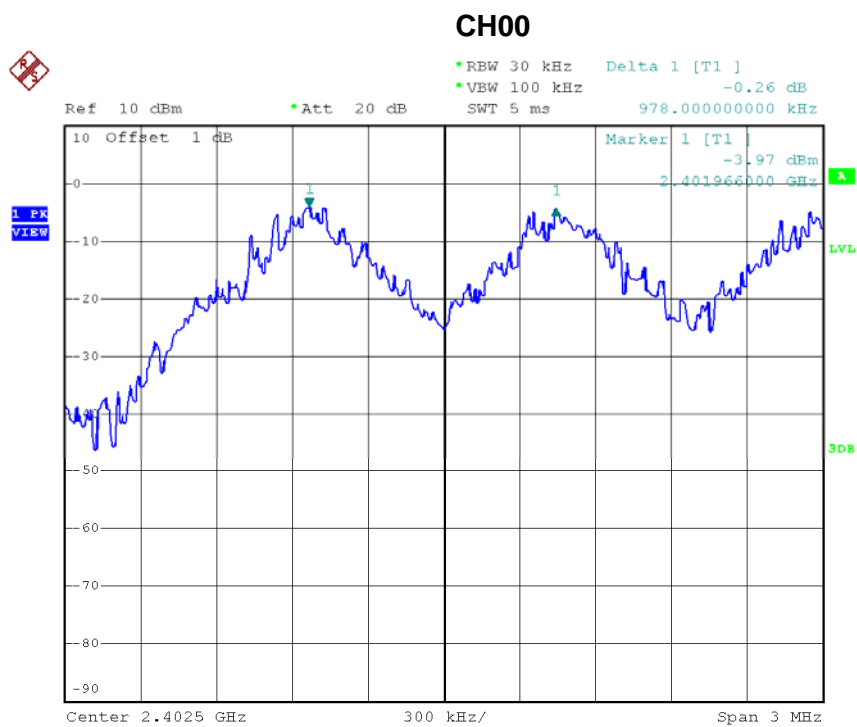


Date: 2.DEC.2014 11:13:13

## **ATTACHMENT G - HOPPING CHANNEL SEPARATION MEASUREMENT**

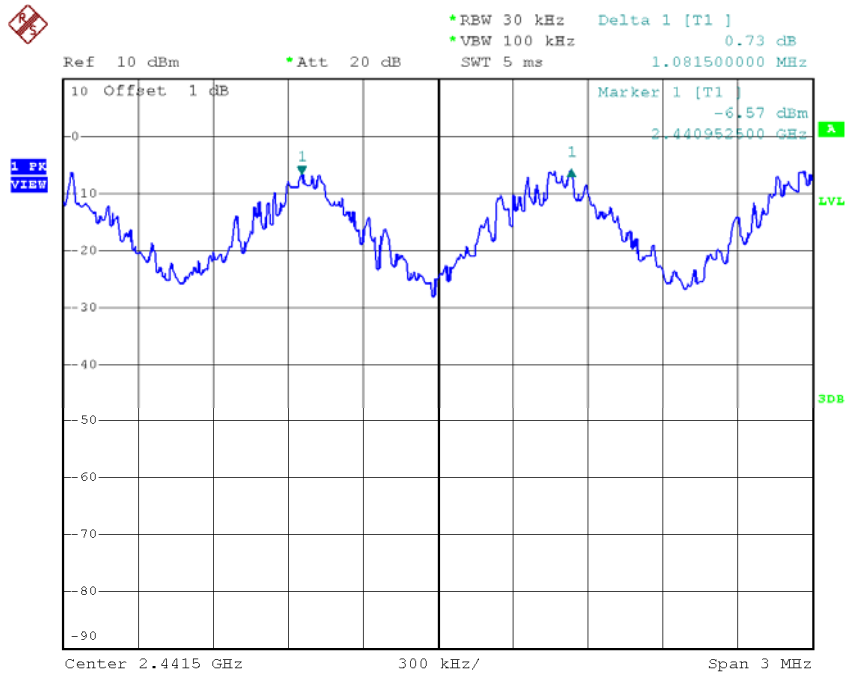
Test Mode : Hopping on \_1Mbps

Frequency (MHz)	Channel Separation (MHz)	2/3 of 20dB Bandwidth (MHz)	Test Result
2402	0.978	0.684	Complies
2441	1.082	0.648	Complies
2480	1.092	0.668	Complies



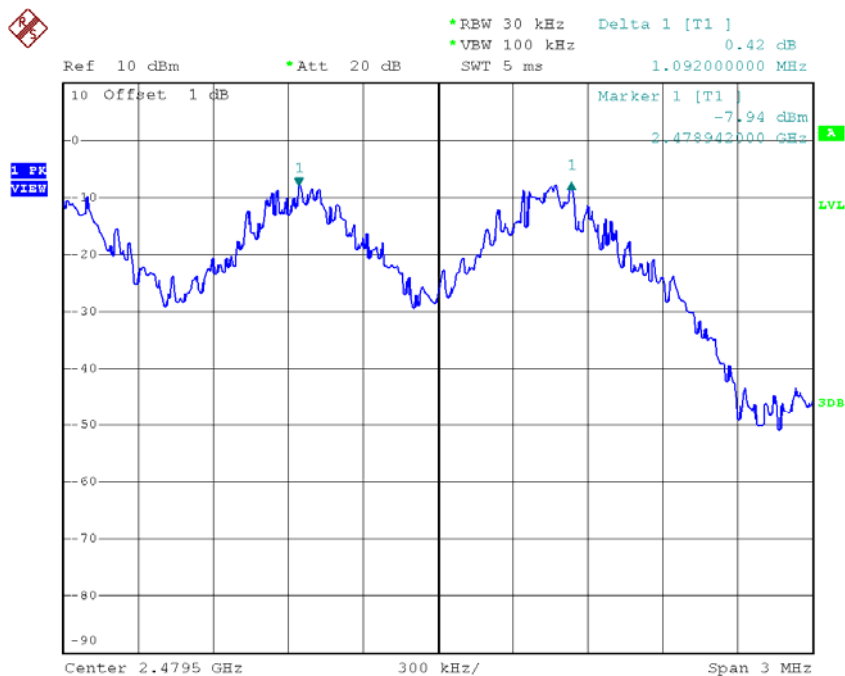
Date: 2.DEC.2014 10:22:01

### CH39



Date: 2.DEC.2014 10:23:08

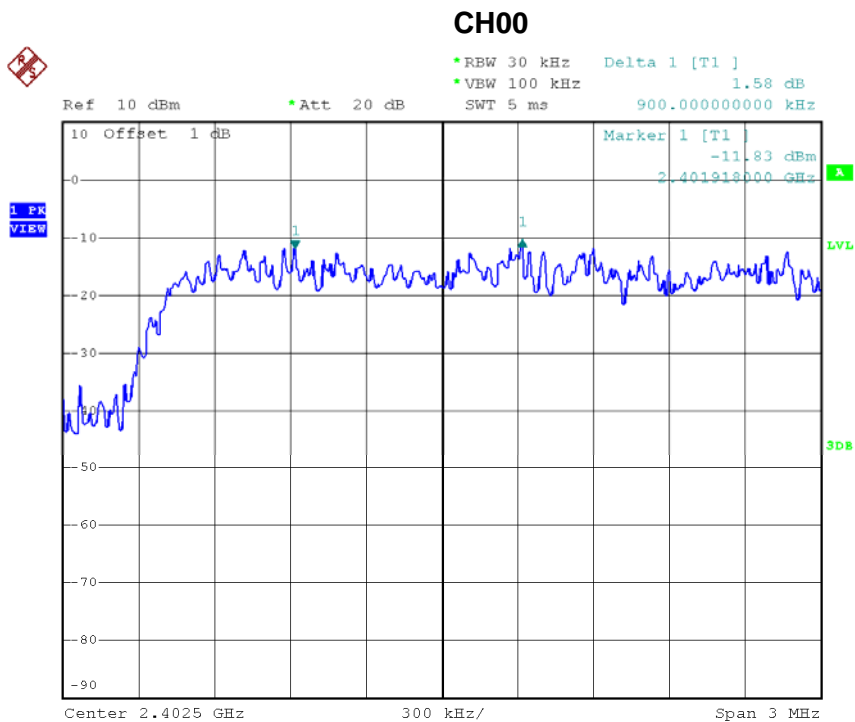
### CH78



Date: 2.DEC.2014 10:24:11

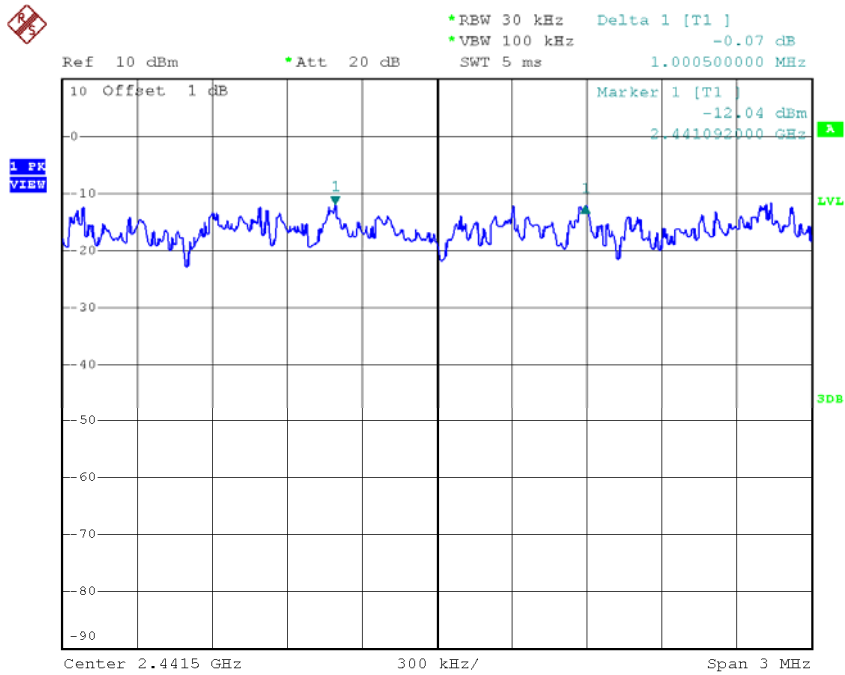
Test Mode : Hopping on \_3Mbps

Frequency (MHz)	Channel Separation (MHz)	2/3 of 20dB Bandwidth (MHz)	Test Result
2402	0.900	0.904	Complies
2441	1.000	0.900	Complies
2480	0.966	0.892	Complies



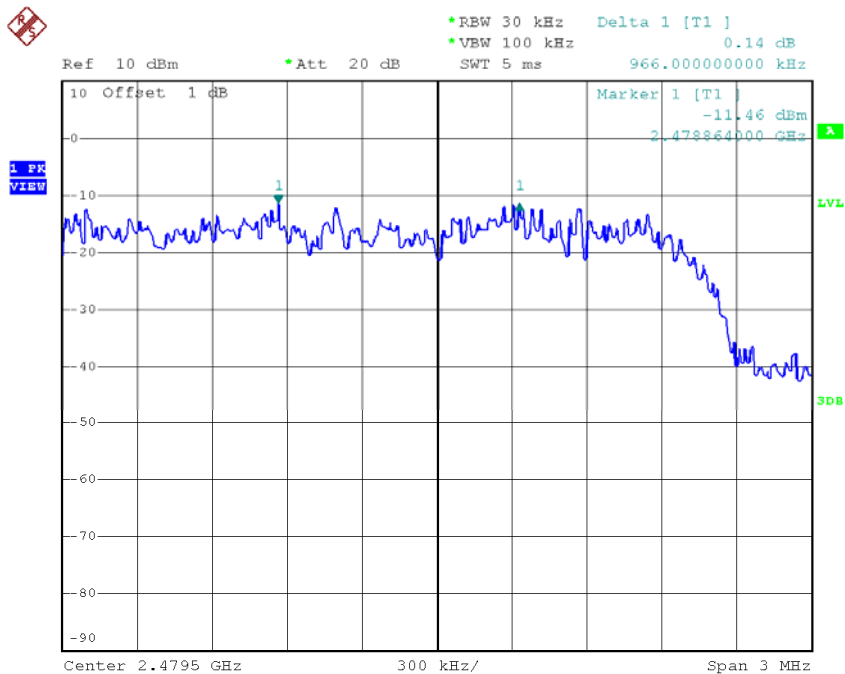
Date: 2.DEC.2014 11:04:04

### CH39



Date: 2.DEC.2014 11:05:12

### CH78

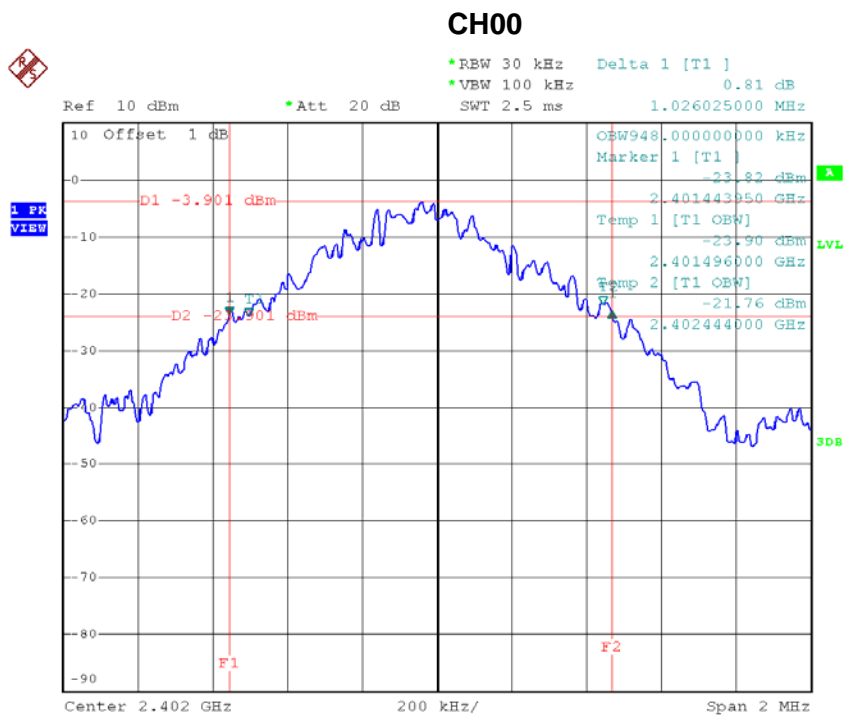


Date: 2.DEC.2014 11:06:16

## ATTACHMENT H - BANDWIDTH

Test Mode : TX Mode \_1Mbps

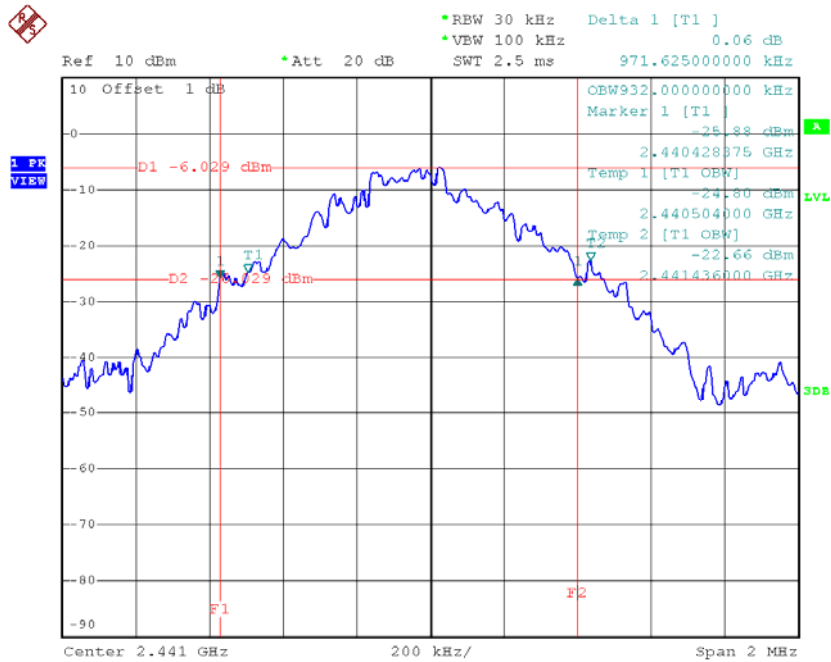
Frequency (MHz)	20dB Bandwidth (MHz)	99% Occupied BW (MHz)	Test Result
2402	1.026	0.948	Complies
2441	0.972	0.932	Complies
2480	1.001	0.932	Complies



Date: 2.DEC.2014 10:15:38

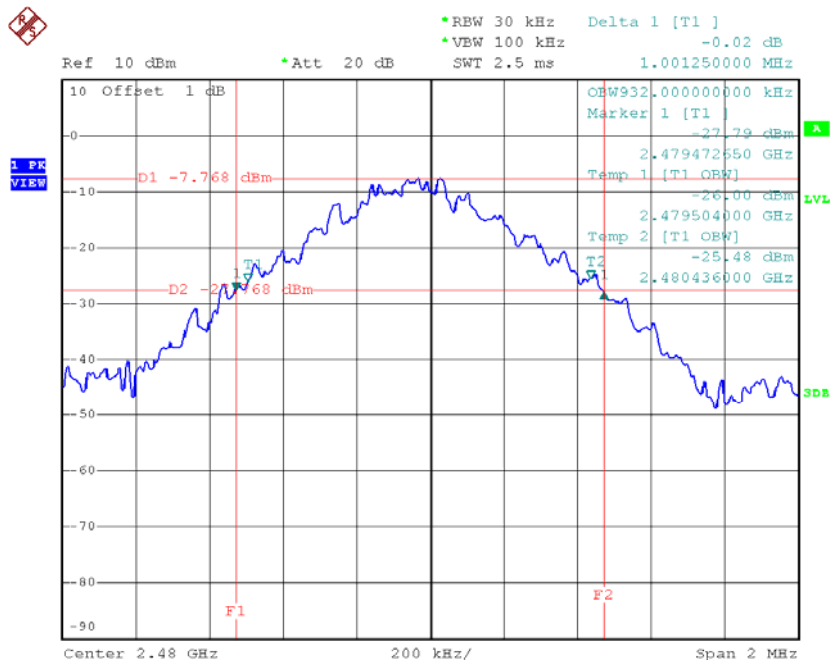


### CH39



Date: 2.DEC.2014 10:17:13

### CH78

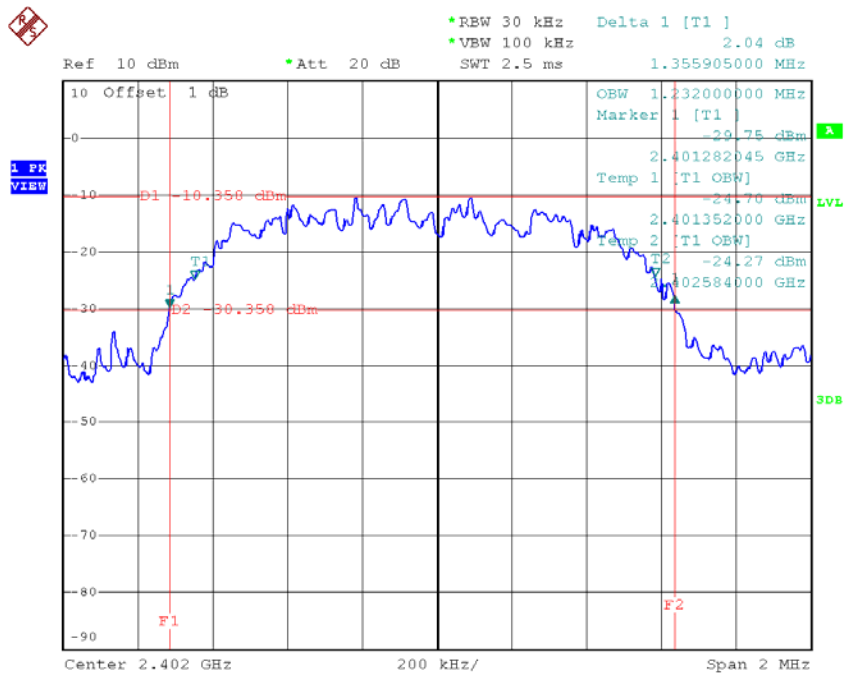


Date: 2.DEC.2014 10:18:03

Test Mode : TX Mode\_3Mbps

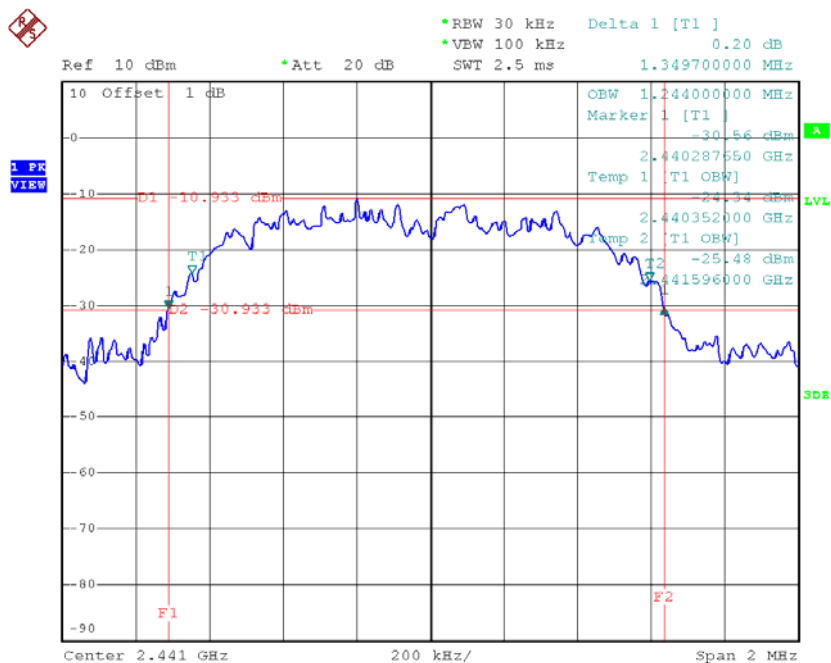
Frequency (MHz)	20dB Bandwidth (MHz)	99% Occupied BW (MHz)	Test Result
2402	1.356	1.232	Complies
2441	1.350	1.244	Complies
2480	1.338	1.236	Complies

### CH00



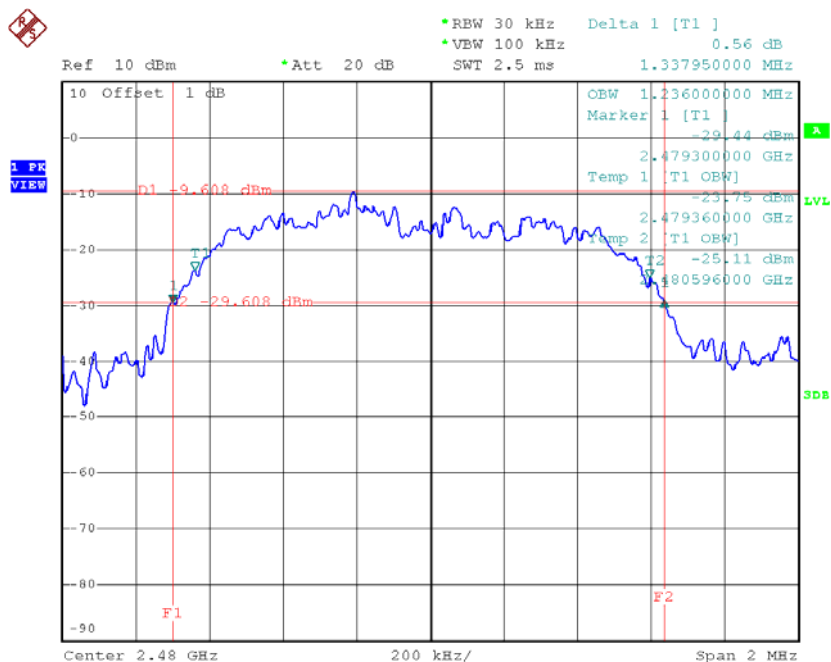
Date: 2.DEC.2014 10:53:44

### CH39



Date: 2.DEC.2014 10:55:46

### CH78

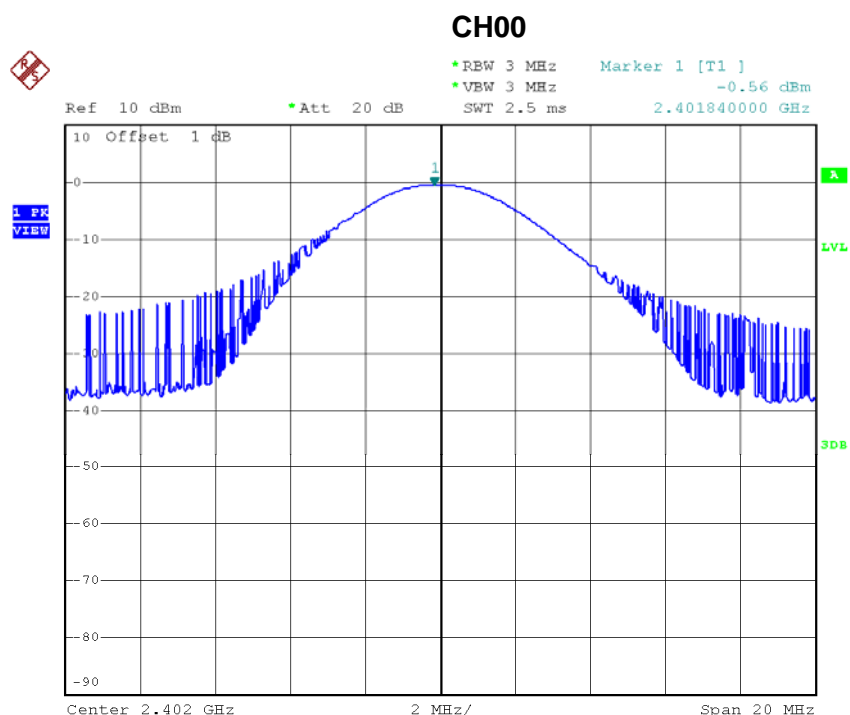


Date: 2.DEC.2014 10:56:26

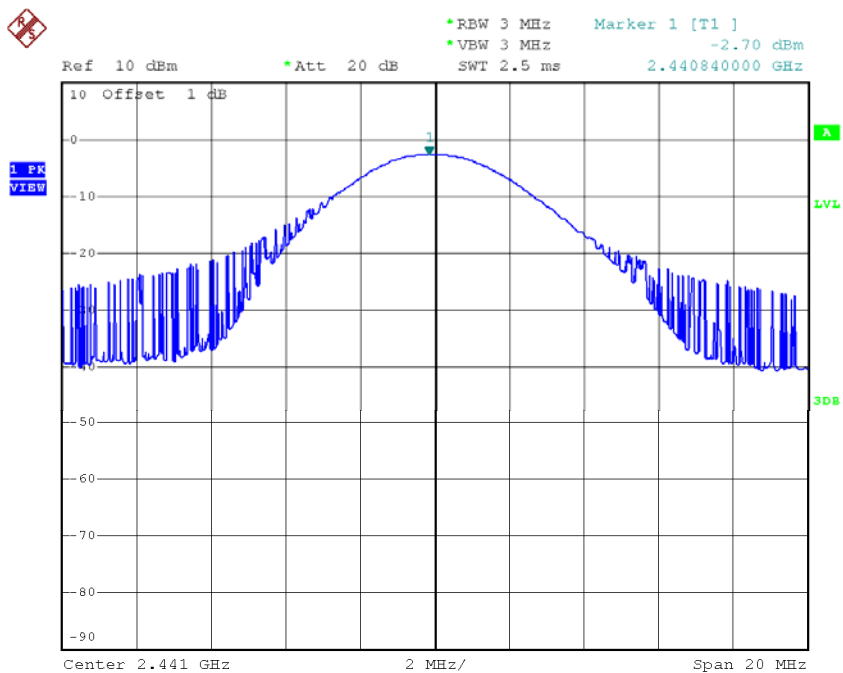
## ATTACHMENT I - PEAK OUTPUT POWER

Test Mode : TX Mode \_1Mbps

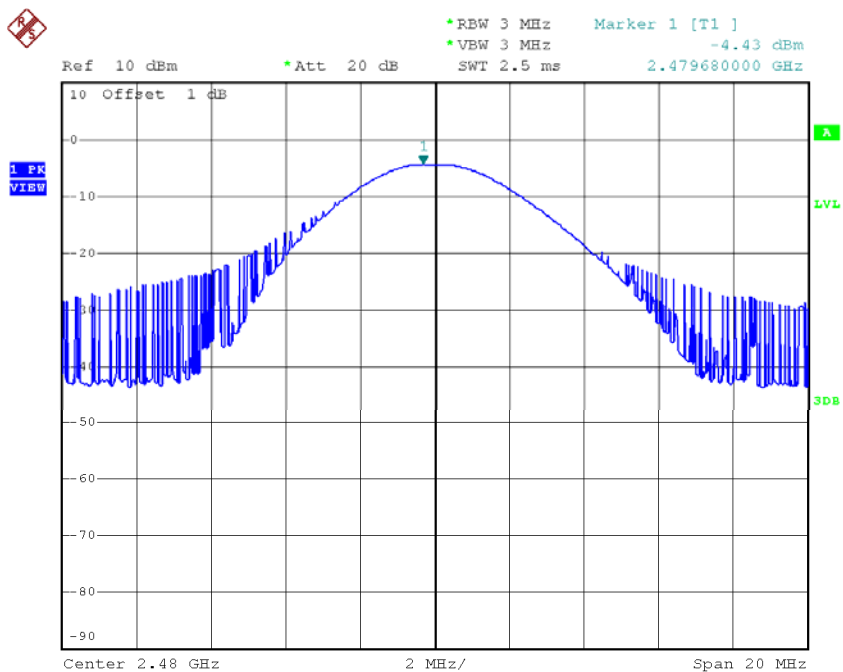
Frequency (MHz)	Conducted Power (dBm)	Conducted Power (Watt)	Max. Limit (dBm)	Max. Limit (Watt)	Test Result
2402	-0.56	0.0009	30.00	1.0000	Complies
2441	-2.70	0.0005	30.00	1.0000	Complies
2480	-4.43	0.0004	30.00	1.0000	Complies



Date: 2.DEC.2014 10:16:09

**CH39**

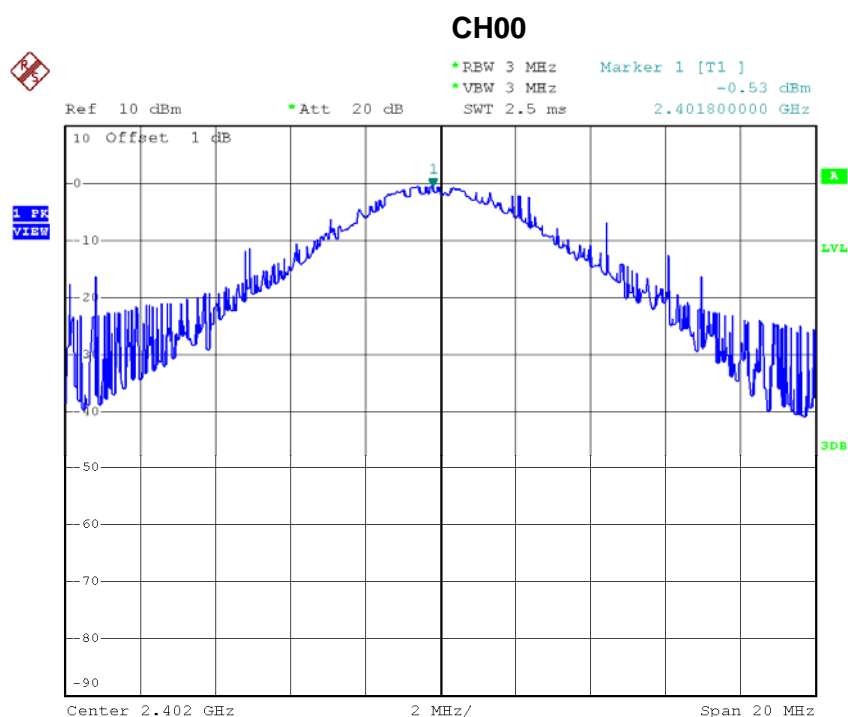
Date: 2.DEC.2014 10:17:19

**CH78**

Date: 2.DEC.2014 10:18:22

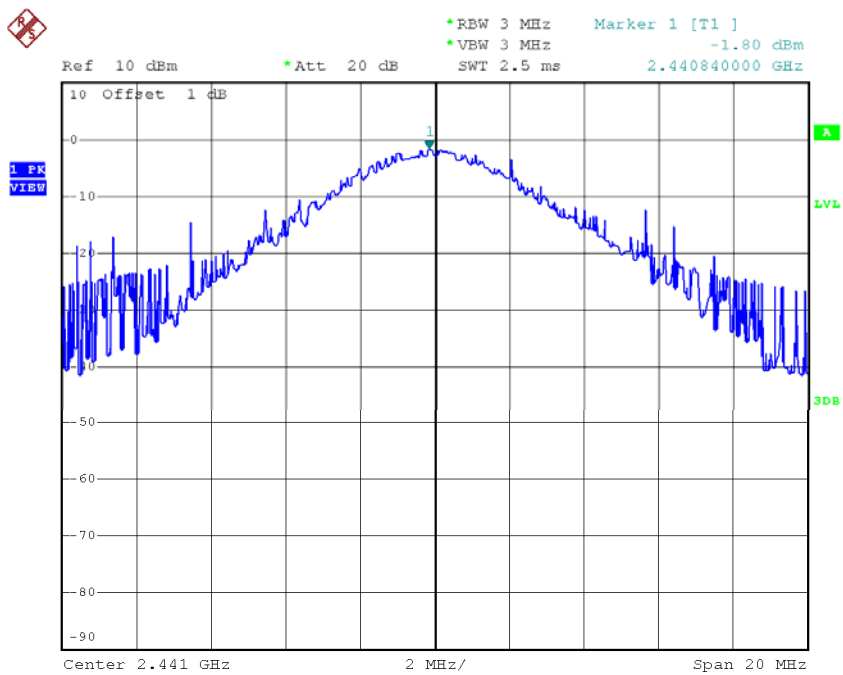
Test Mode : TX Mode \_3Mbps

Frequency (MHz)	Conducted Power (dBm)	Conducted Power (Watt)	Max. Limit (dBm)	Max. Limit (Watt)	Test Result
2402	-0.53	0.0009	30.00	1.0000	Complies
2441	-1.80	0.0007	30.00	1.0000	Complies
2480	-1.75	0.0007	30.00	1.0000	Complies



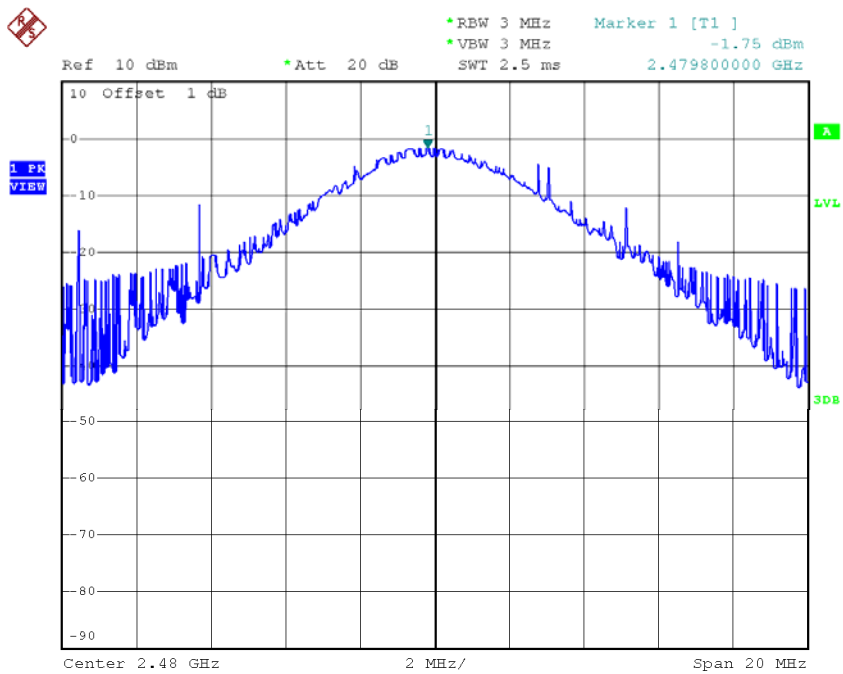
Date: 2.DEC.2014 10:54:03

### CH39



Date: 2.DEC.2014 10:55:52

### CH78

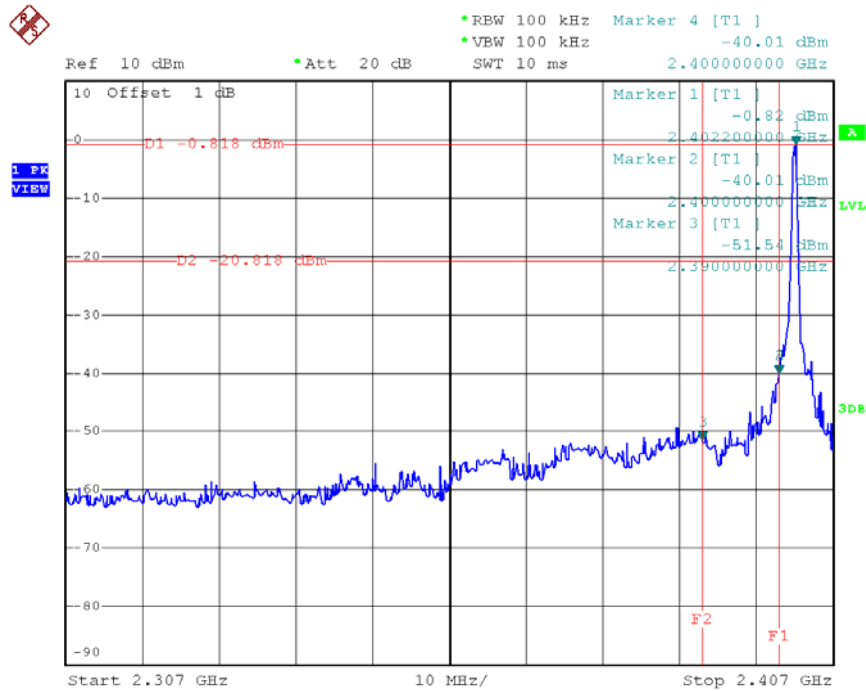


Date: 2.DEC.2014 10:56:57



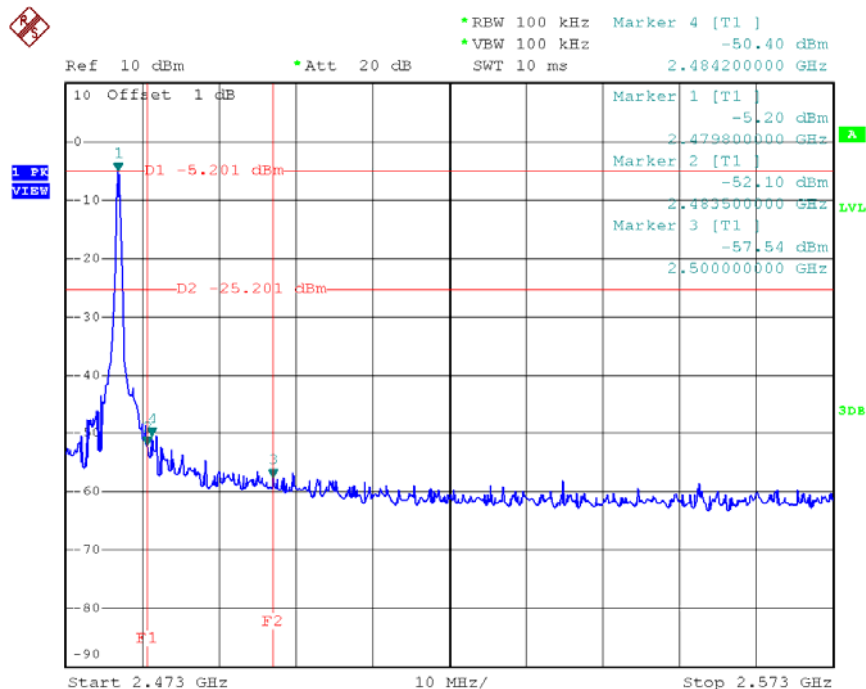
## **ATTACHMENT J - ANTENNA CONDUCTED SPURIOUS EMISSION**

### CH00 (Lower)\_1Mbps



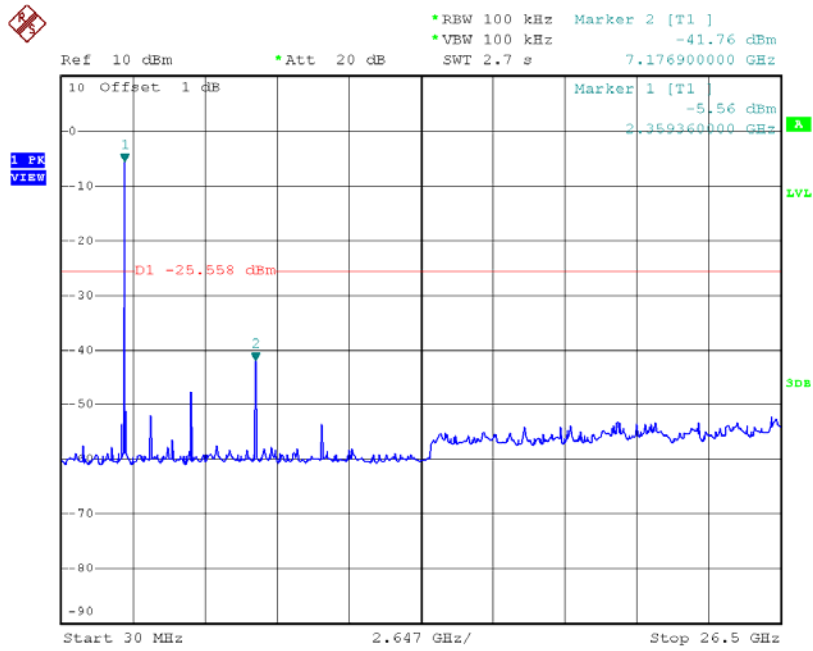
Date: 2.DEC.2014 10:15:30

### CH78 (Upper)\_1Mbps



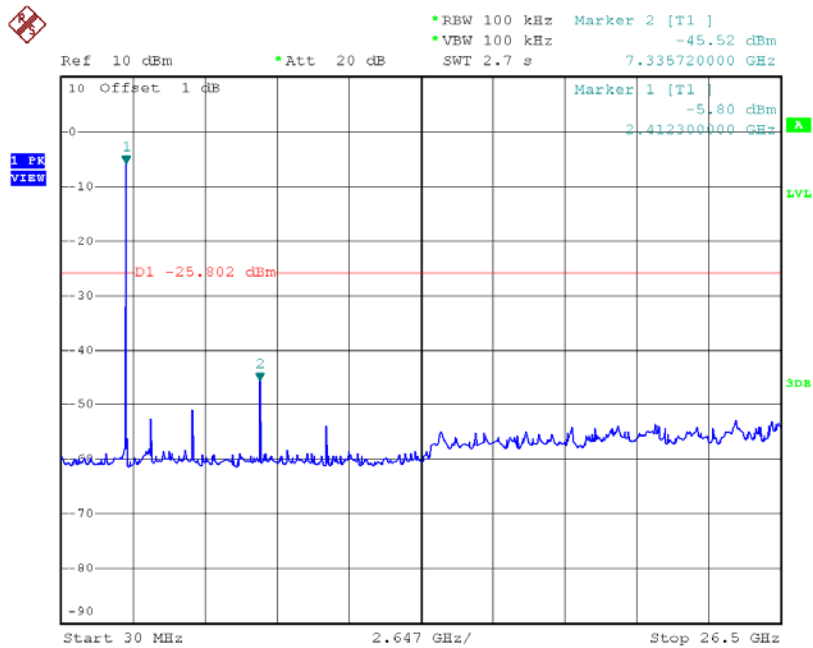
Date: 2.DEC.2014 10:17:56

### CH00 (10 Harmonic of the frequency) \_1Mbps



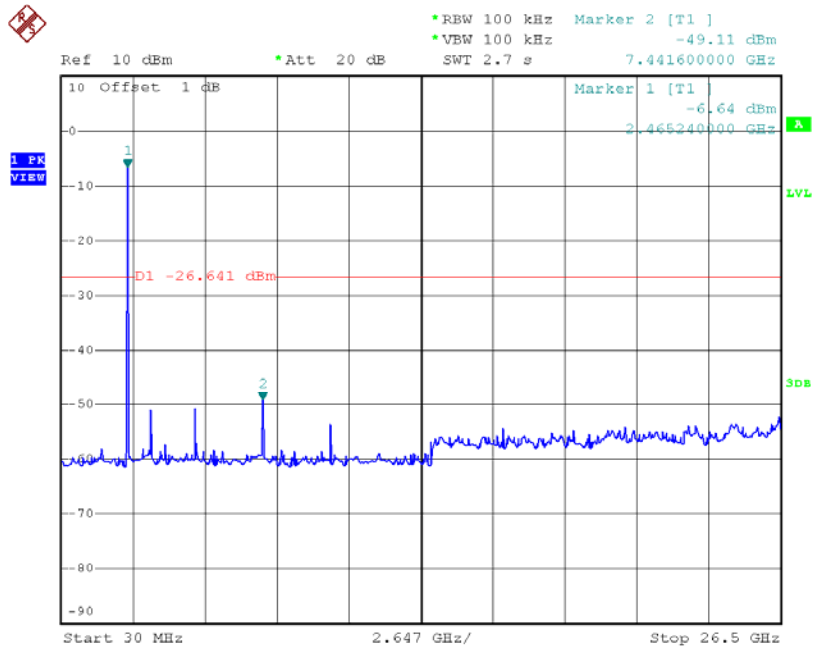
Date: 2.DEC.2014 10:16:03

### CH39 (10 Harmonic of the frequency) \_1Mbps



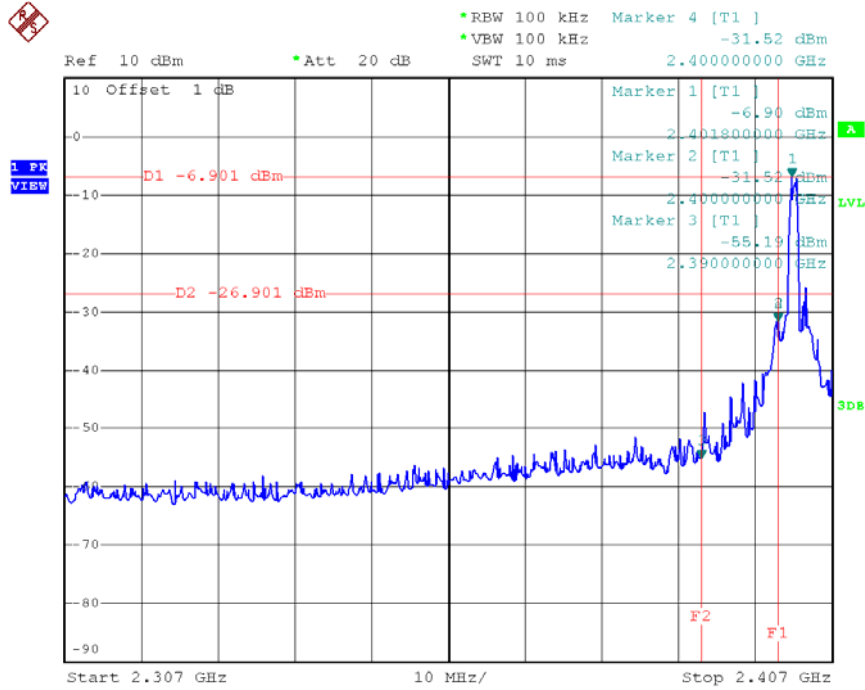
Date: 2.DEC.2014 10:17:06

### CH78 (10 Harmonic of the frequency) \_1Mbps



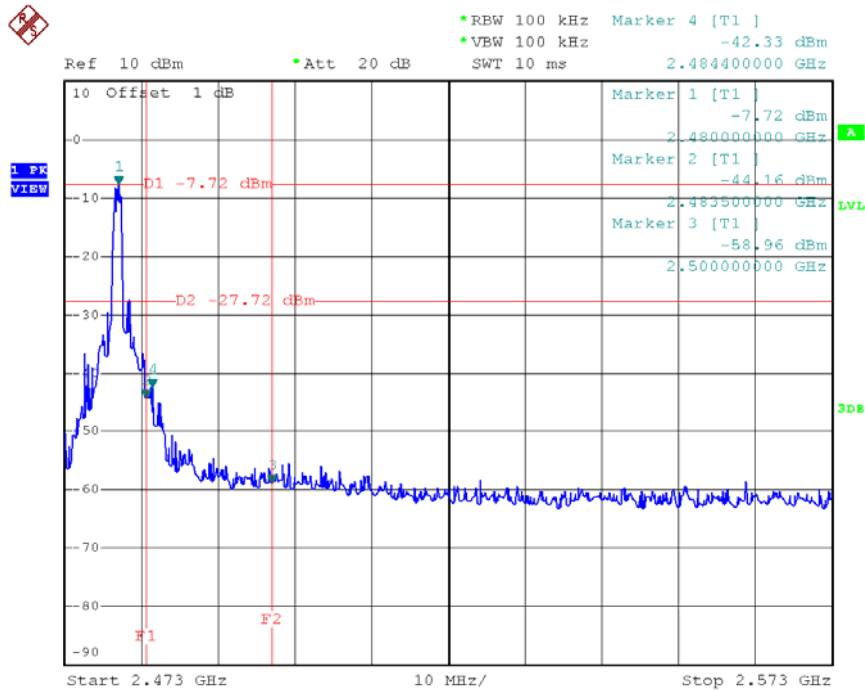
Date: 2.DEC.2014 10:18:16

### CH00 (Lower) \_3Mbps



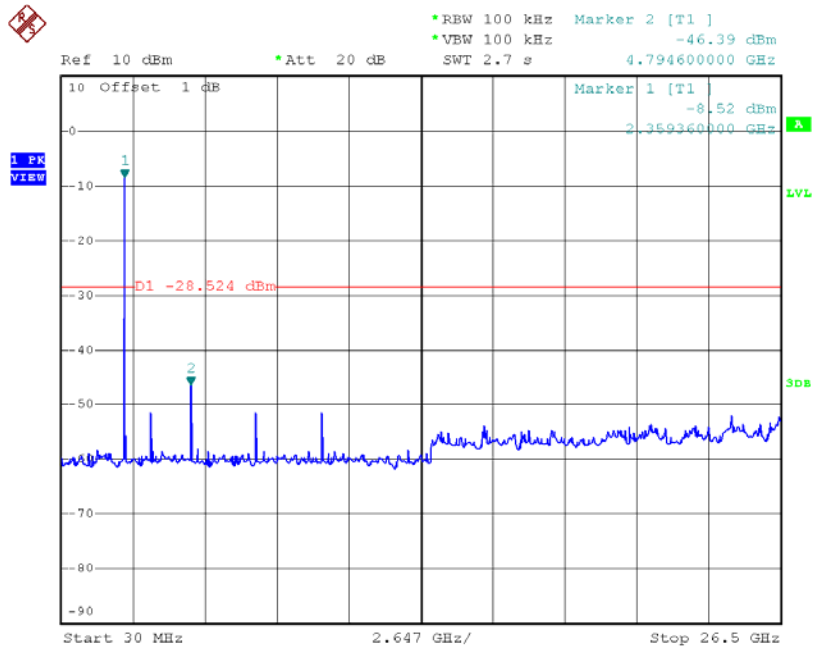
Date: 2.DEC.2014 10:53:35

### CH78 (Upper) \_3Mbps



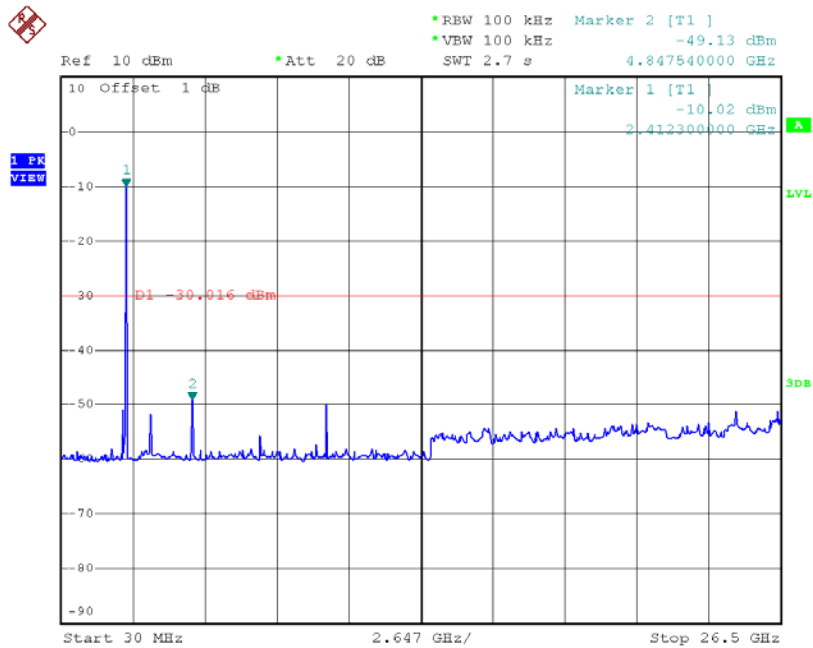
Date: 2.DEC.2014 10:56:18

### CH00 (10 Harmonic of the frequency) \_3Mbps



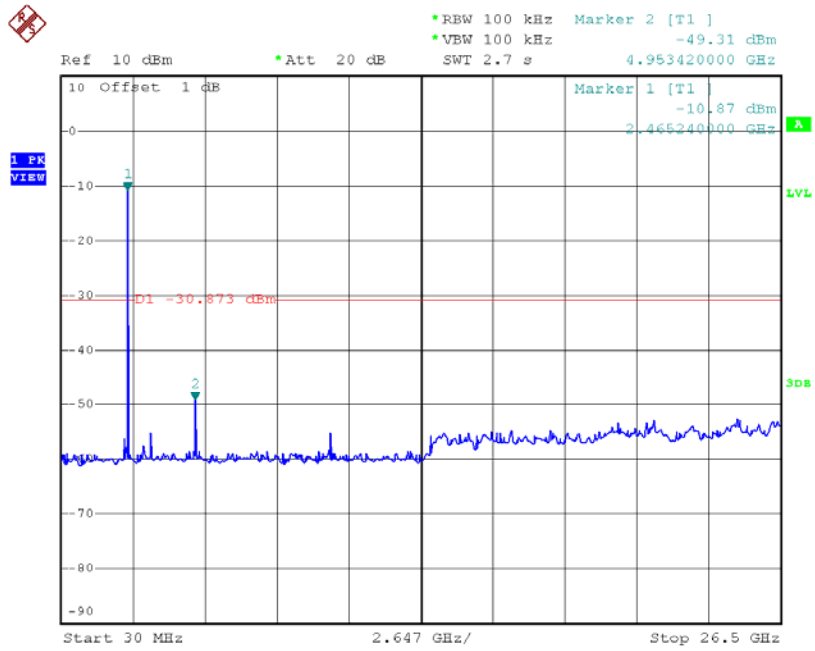
Date: 2.DEC.2014 10:53:57

### CH39 (10 Harmonic of the frequency) \_3Mbps



Date: 2.DEC.2014 10:55:39

### CH78 (10 Harmonic of the frequency) \_3Mbps



Date: 2.DEC.2014 10:56:51