

# FCC Radio Test Report

## FCC ID: 2AJIF-MACH20001

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

**Project No.** : 1611100  
**Equipment** : Industrial Gateway  
**Model Name** : Mach2 Gateway  
**Applicant** : Machfu, Inc.  
**Address** : 20271 Goldenrod Ln., Germantown, MD 20876 USA

**Date of Receipt** : Nov. 23, 2016  
**Date of Test** : Nov. 23, 2016 ~ Dec. 15, 2016  
**Issued Date** : Dec. 16, 2016  
**Tested by** : BTL Inc.

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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.

## Table of Contents

	Page
<b>1 . CERTIFICATION</b>	<b>6</b>
<b>2 . SUMMARY OF TEST RESULTS</b>	<b>7</b>
<b>2.1 TEST FACILITY</b>	<b>7</b>
<b>2.2 MEASUREMENT UNCERTAINTY</b>	<b>8</b>
<b>3 . GENERAL INFORMATION</b>	<b>8</b>
<b>3.1 GENERAL DESCRIPTION OF EUT</b>	<b>8</b>
<b>3.2 DESCRIPTION OF TEST MODES</b>	<b>10</b>
<b>3.3 TABLE OF PARAMETERS OF TEXT SOFTWARE SETTING</b>	<b>12</b>
<b>3.4 BLOCK DIAGRAM SHOWING THE CONFIGURATION OF SYSTEM TESTED</b>	<b>13</b>
<b>3.5 DESCRIPTION OF SUPPORT UNITS</b>	<b>13</b>
<b>4 . EMC EMISSION TEST</b>	<b>14</b>
<b>4.1 CONDUCTED EMISSION MEASUREMENT</b>	<b>14</b>
<b>4.1.1 POWER LINE CONDUCTED EMISSION LIMITS</b>	<b>14</b>
<b>4.1.2 TEST PROCEDURE</b>	<b>14</b>
<b>4.1.3 DEVIATION FROM TEST STANDARD</b>	<b>14</b>
<b>4.1.4 TEST SETUP</b>	<b>15</b>
<b>4.1.5 EUT OPERATING CONDITIONS</b>	<b>15</b>
<b>4.1.6 EUT TEST CONDITIONS</b>	<b>15</b>
<b>4.1.7 TEST RESULTS</b>	<b>15</b>
<b>4.2 RADIATED EMISSION MEASUREMENT</b>	<b>16</b>
<b>4.2.1 RADIATED EMISSION LIMITS</b>	<b>16</b>
<b>4.2.2 TEST PROCEDURE</b>	<b>17</b>
<b>4.2.3 DEVIATION FROM TEST STANDARD</b>	<b>17</b>
<b>4.2.4 TEST SETUP</b>	<b>18</b>
<b>4.2.5 EUT OPERATING CONDITIONS</b>	<b>19</b>
<b>4.2.6 EUT TEST CONDITIONS</b>	<b>19</b>
<b>4.2.7 TEST RESULTS (9KHZ TO 30MHZ)</b>	<b>19</b>
<b>4.2.8 TEST RESULTS (30MHZ TO 1000 MHZ)</b>	<b>19</b>
<b>4.2.9 TEST RESULTS (ABOVE 1000 MHZ)</b>	<b>19</b>
<b>5 . BANDWIDTH TEST</b>	<b>20</b>
<b>5.1 APPLIED PROCEDURES</b>	<b>20</b>
<b>5.1.1 TEST PROCEDURE</b>	<b>20</b>
<b>5.1.2 DEVIATION FROM STANDARD</b>	<b>20</b>
<b>5.1.3 TEST SETUP</b>	<b>20</b>
<b>5.1.4 EUT OPERATION CONDITIONS</b>	<b>20</b>
<b>5.1.5 EUT TEST CONDITIONS</b>	<b>20</b>
<b>5.1.6 TEST RESULTS</b>	<b>20</b>
<b>6 . MAXIMUM PEAK CONDUCTED OUTPUT POWER TEST</b>	<b>21</b>
<b>6.1 APPLIED PROCEDURES / LIMIT</b>	<b>21</b>

## Table of Contents

	Page
6.1.1 TEST PROCEDURE	21
6.1.2 DEVIATION FROM STANDARD	21
6.1.3 TEST SETUP	21
6.1.4 EUT OPERATION CONDITIONS	21
6.1.5 EUT TEST CONDITIONS	21
6.1.6 TEST RESULTS	21
<b>7 . ANTENNA CONDUCTED SPURIOUS EMISSION</b>	<b>22</b>
7.1 APPLIED PROCEDURES / LIMIT	22
7.1.1 TEST PROCEDURE	22
7.1.2 DEVIATION FROM STANDARD	22
7.1.3 TEST SETUP	22
7.1.4 EUT OPERATION CONDITIONS	22
7.1.5 EUT TEST CONDITIONS	22
7.1.6 TEST RESULTS	22
<b>8 . POWER SPECTRAL DENSITY TEST</b>	<b>22</b>
8.1 APPLIED PROCEDURES / LIMIT	22
8.1.1 TEST PROCEDURE	23
8.1.2 DEVIATION FROM STANDARD	23
8.1.3 TEST SETUP	23
8.1.4 EUT OPERATION CONDITIONS	23
8.1.5 EUT TEST CONDITIONS	23
8.1.6 TEST RESULTS	23
<b>9 . MEASUREMENT INSTRUMENTS LIST</b>	<b>24</b>
<b>10 . EUT TEST PHOTO</b>	<b>26</b>
<b>ATTACHMENT A - CONDUCTED EMISSION</b>	<b>30</b>
<b>ATTACHMENT B - RADIATED EMISSION (9KHZ TO 30MHZ)</b>	<b>33</b>
<b>ATTACHMENT C - RADIATED EMISSION (30MHZ TO 1000MHZ)</b>	<b>38</b>
<b>ATTACHMENT D - RADIATED EMISSION (ABOVE 1000MHZ)</b>	<b>41</b>
<b>ATTACHMENT E - BANDWIDTH</b>	<b>90</b>
<b>ATTACHMENT F – MAXIMUM PEAK CONDUCTED OUTPUT POWER</b>	<b>99</b>
<b>ATTACHMENT G - ANTENNA CONDUCTED SPURIOUS EMISSION</b>	<b>101</b>
<b>ATTACHMENT H - POWER SPECTRAL DENSITY</b>	<b>126</b>

### REPORT ISSUED HISTORY

Issued No.	Description	Issued Date
BTL-FCCP-3-1611100	Original Issue.	Dec. 16, 2016

## 1. CERTIFICATION

Equipment : Industrial Gateway  
Brand Name : MACHFU  
Model Name : Mach2 Gateway  
Applicant : Machfu, Inc.  
Manufacturer : Machfu, Inc.  
Address : 20271 Goldenrod Ln., Germantown, MD 20876 USA  
Date of Test : Nov. 23, 2016 ~ Dec. 15, 2016  
Test Sample : Engineering Sample  
Standard(s) : FCC Part15, Subpart C:(15.247) / ANSI C63.10-2013

The above equipment has been tested and found in 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-3-1611100) 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):

Applied Standard(s): FCC Part15 (15.247) , Subpart C				
Standard(s)	Section	Test Item	Judgment	Remark
	15.207	Conducted Emission	PASS	
	15.247(d)	Antenna conducted Spurious Emission	PASS	
	15.247(a)(2)	6dB Bandwidth	PASS	
	15.247(b)(3)	Peak Output Power	PASS	
	15.247(e)	Power Spectral Density	PASS	
	15.203	Antenna Requirement	PASS	
	15.209/15.205	Transmitter Radiated Emissions	PASS	

### NOTE:

(1)" N/A" denotes test is not applicable in this test report.

### 2.1 TEST FACILITY

The test facilities used to collect the test data in this report:

#### Conducted emission Test:

**C05:** (VCCI RN: C-4742; FCC RN:949005; FCC DN:TW1082)  
No. 68-1, Ln. 169, Sec.2, Datong Rd., Xizhi Dist., New Taipei City 221, Taiwan

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

**CB11:** (VCCI RN: R-4260; FCC RN:949005; FCC DN:TW1082; IC Assigned Code:20088)  
No. 68-1, Ln. 169, Sec.2, Datong Rd., Xizhi Dist., New Taipei City 221, Taiwan

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

**CB11:** (VCCI RN: G-868; FCC RN:949005; FCC DN:TW1082; IC Assigned Code:20088)  
No. 68-1, Ln. 169, Sec.2, Datong Rd., Xizhi Dist., New Taipei City 221, Taiwan

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## 2.2 MEASUREMENT UNCERTAINTY

Where relevant, the following measurement uncertainty levels have been estimated for tests performed on the EUT as specified in CISPR 16-4-2.

The BTL measurement uncertainty is less than the CISPR 16-4-2  $U_{\text{cisp}}$  requirement.

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 %**.

### A. Conducted Measurement :

Test Site	Method	Measurement Frequency Range	$U$ , (dB)
C05	CISPR	150 kHz~30MHz	2.04

### B. Radiated Measurement :

Test Site	Method	Measurement Frequency Range	$U$ , (dB)
CB11 (3m)	CISPR	9kHz ~ 150kHz	4.00
		150kHz ~ 30MHz	4.00

Test Site	Method	Measurement Frequency Range	Ant. H / V	$U$ , (dB)
CB11 (3m)	CISPR	30 MHz ~ 200 MHz	V	3.06
		30 MHz ~ 200 MHz	H	2.58
		200 MHz ~ 1, 000 MHz	V	3.50
		200 MHz ~ 1, 000 MHz	H	3.10

Test Site	Method	Measurement Frequency Range	Ant. H / V	$U$ , (dB)
CB11 (3m)	CISPR	1GHz ~ 6GHz	V	4.14
		1GHz ~ 6GHz	H	4.14

Test Site	Method	Measurement Frequency Range	Ant. H / V	$U$ , (dB)
CB11 (1m)	CISPR	6GHz ~ 18GHz	V	5.34
		6GHz ~ 18GHz	H	5.34

Note: Unless specifically mentioned, the uncertainty of measurement has not been taken into account to declare the compliance or non-compliance to the specification.

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

Since Table 1 of CISPR 16-4-2 has values of measurement instrumentation uncertainty, called  $U_{\text{CISPR}}$ , 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  $U_{\text{lab}}$  values are smaller than  $U_{\text{CISPR}}$ .

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## 3. GENERAL INFORMATION

### 3.1 GENERAL DESCRIPTION OF EUT

Equipment		Industrial Gateway									
Brand Name		MACHFU									
Model Name		Mach2 Gateway									
Model Difference		N/A									
Product Description	Operation Frequency			2412~2462 MHz							
	Modulation Technology			802.11b:DSSS 802.11g:OFDM 802.11n:OFDM							
	Bit Rate of Transmitter			802.11b: 11/5.5/2/1 Mbps 802.11g: 54/48/36/24/18/12/9/6 Mbps 802.11n up to 150 Mbps							
	Output Power (Max.)			802.11b: 15.89dBm 802.11g: 17.68dBm 802.11n(20MHz): 17.60dBm 802.11n(40MHz): 16.80dBm							
Power Source		Supplied from AC ADAPTER.									
Power Rating		I/P: 100-240V 50-60Hz 0.31A MAX O/P: 12.0V - - - 1.0A 12.0W MAX									
WWAN Module Manufacturer		Telit	Model	LE910-NAG (FCC ID: RI7LE910NA)							
2.4GHz WiFi/Bluetooth/GNSS Module Manufacturer		JORJIN	Model	WG7871-BN							

Note:

1. For a more detailed features description, please refer to the manufacturer's specifications or the user's manual.
2. Channel List:

CH01 – CH11 for 802.11b, 802.11g, 802.11n(20MHz) CH03 – CH09 for 802.11n(40MHz)							
Channel	Frequency (MHz)	Channel	Frequency (MHz)	Channel	Frequency (MHz)	Channel	Frequency (MHz)
01	2412	04	2427	07	2442	10	2457
02	2417	05	2432	08	2447	11	2462
03	2422	06	2437	09	2452		

3. Table for Filed Antenna:

Ant.	Brand	Model Name	Antenna Type	Connector	Gain (dBi)
1	taoglas	GW.05	monopole	Standard RP-SMA(M)	1.25

### 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 B MODE CHANNEL 01/06/11
Mode 2	TX G MODE CHANNEL 01/06/11
Mode 3	TX N-20MHZ MODE CHANNEL 01/06/11
Mode 4	TX N-40MHZ MODE CHANNEL 03/06/09
Mode 5	TX MODE

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

For Conducted Test	
Final Test Mode	Description
Mode 5	TX MODE

For Radiated Test	
Final Test Mode	Description
Mode 1	TX B MODE CHANNEL 01/06/11
Mode 2	TX G MODE CHANNEL 01/06/11
Mode 3	TX N-20MHZ MODE CHANNEL 01/06/11
Mode 4	TX N-40MHZ MODE CHANNEL 03/06/09

For Band Edge Test	
Final Test Mode	Description
Mode 1	TX B MODE CHANNEL 01/06/11
Mode 2	TX G MODE CHANNEL 01/06/11
Mode 3	TX N-20MHZ MODE CHANNEL 01/06/11
Mode 4	TX N-40MHZ MODE CHANNEL 03/06/09

<b>6dB Spectrum Bandwidth</b>	
Final Test Mode	Description
Mode 1	TX B MODE CHANNEL 01/06/11
Mode 2	TX G MODE CHANNEL 01/06/11
Mode 3	TX N-20MHZ MODE CHANNEL 01/06/11
Mode 4	TX N-40MHZ MODE CHANNEL 03/06/09

<b>Maximum Conducted Output Power</b>	
Final Test Mode	Description
Mode 1	TX B MODE CHANNEL 01/06/11
Mode 2	TX G MODE CHANNEL 01/06/11
Mode 3	TX N-20MHZ MODE CHANNEL 01/06/11
Mode 4	TX N-40MHZ MODE CHANNEL 03/06/09

<b>Power Spectral Density</b>	
Final Test Mode	Description
Mode 1	TX B MODE CHANNEL 01/06/11
Mode 2	TX G MODE CHANNEL 01/06/11
Mode 3	TX N-20MHZ MODE CHANNEL 01/06/11
Mode 4	TX N-40MHZ MODE CHANNEL 03/06/09

Note:

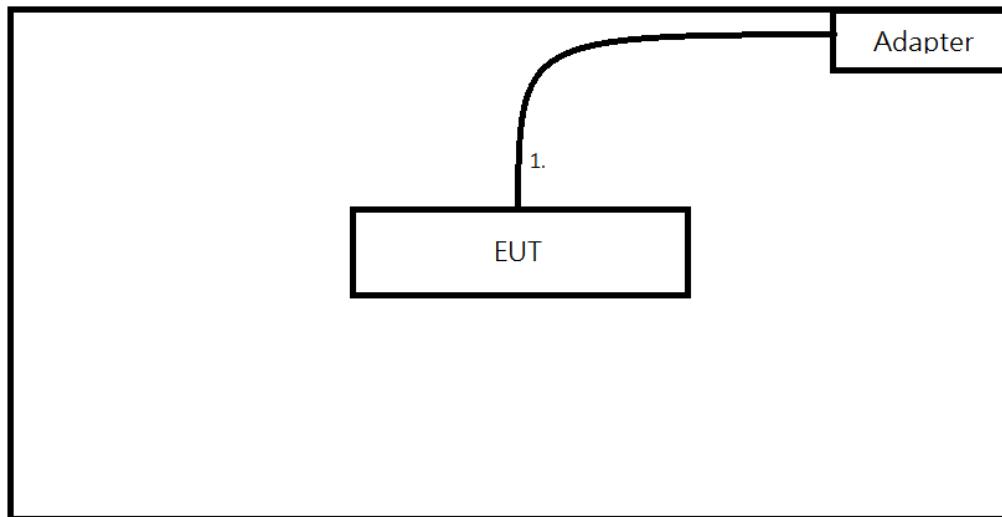
- (1) The measurements are performed at the high, middle, low available channels.
- (2) 802.11b mode: DBPSK (1Mbps)  
802.11g mode: OFDM (6Mbps)  
802.11n HT20 mode : BPSK (6.5Mbps)  
802.11n HT40 mode : BPSK (13.5Mbps)
- For radiated emission tests, the highest output powers were set for final test.
- (3) For radiated below 1G test, the 802.11b is found to be the worst case and recorded.
- (4) The EUT was programmed to be in continuously transmitting mode and the transmit duty cycle is not less than 98%.

### 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 WLAN

Test software version	putty		
Frequency (MHz)	2412	2437	2462
802.11b	16	16	16
802.11g	16	16	14
802.11n (20MHz)	16	16	13
Frequency	2422	2437	2452
802.11n (40MHz)	16	15	16

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



### 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	Series No.
-	-	-	-	-	-

Item	Shielded Type	Ferrite Core	Length	Note
1	NO	YES	1.8M	Power Cable

## 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 -0.50	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 = Insertion Loss + Cable Loss + Attenuator Factor(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

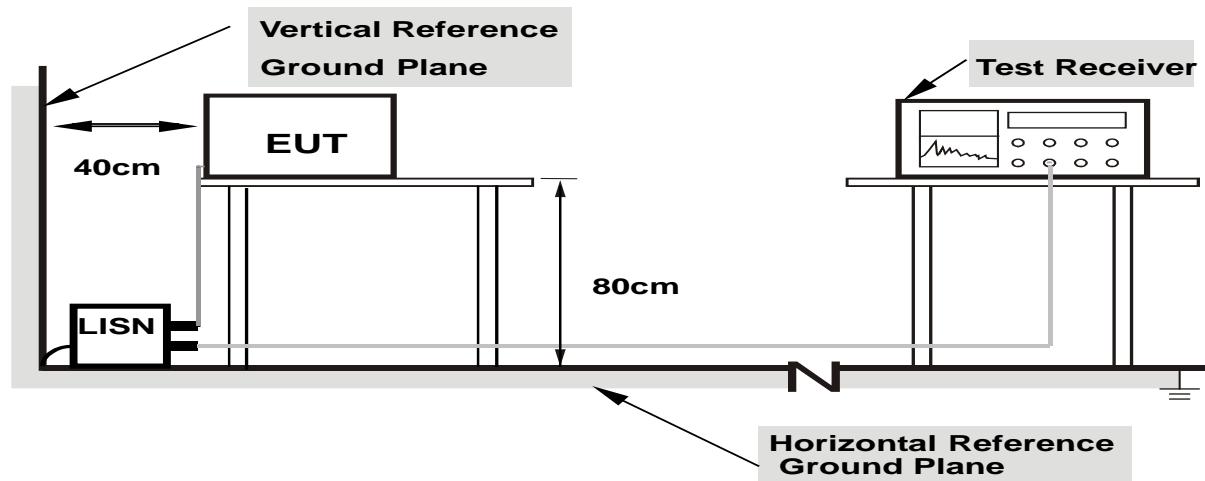
#### 4.1.2 TEST PROCEDURE

- 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.
- 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.
- 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.
- LISN at least 80 cm from nearest part of EUT chassis.
- 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 cm from other units and other metal planes

#### 4.1.5 EUT OPERATING CONDITIONS

The EUT was placed on the test table and programmed in normal function.

#### 4.1.6 EUT TEST CONDITIONS

Temperature: 25°C    Relative Humidity: 55%    Test Voltage: AC 120V/60Hz

#### 4.1.7 TEST RESULTS

Please refer to the Attachment A.

## 4.2 RADIATED EMISSION MEASUREMENT

### 4.2.1 RADIATED EMISSION LIMITS

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.

#### LIMITS OF RADIATED EMISSION MEASUREMENT (9KHz-1000MHz)

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)	(dBuV/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).
- (4) 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

Spectrum Parameter	Setting
Attenuation	Auto
Start Frequency	1000 MHz
Stop Frequency	10th carrier harmonic
RBW / VBW (Emission in restricted band)	1MHz / 3MHz for Peak, 1MHz / 1/T for Average

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

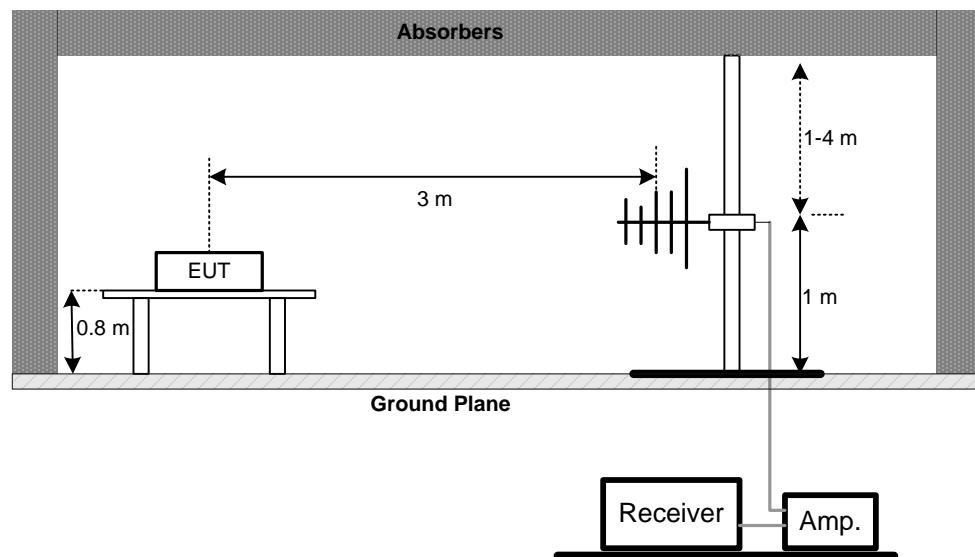
- The measuring distance of 3 m shall be used for measurements. The EUT was placed on the top of a rotating table 0.8 meter above the ground at a 3 meter semi-anechoic chamber. The table was rotated 360 degrees to determine the position of the highest radiation.(below 1GHz)
- The measuring distance of 3 m shall be used for measurements. The EUT was placed on the top of a rotating table 1.5 meter 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)
- The height of the equipment or of the substitution antenna shall be 0.8m or 1.5m; 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.
- For each suspected emission, the EUT was arranged to its worst case and then the antenna was tuned to heights find the maximum reading (used Bore sight function).
- The receiver system was set to peak and average detect function and specified bandwidth with maximum hold mode when the test frequency is above 1GHz.
- The initial step in collecting radiated emission data is a receiver peak detector mode pre-scanning the measurement frequency range. Significant peaks are then marked and then Quasi Peak detector mode re-measured.
- 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. (below 1GHz)
- All readings are Peak Mode value unless otherwise stated AVG in column of Note. If the Peak Mode Measured value compliance with the Peak Limits and lower than AVG Limits, the EUT shall be deemed to meet both Peak & AVG Limits and then only Peak Mode was measured, but AVG Mode didn't perform. (above 1GHz)
- For the actual test configuration, please refer to the related Item –EUT Test Photos.

#### 4.2.3 DEVIATION FROM TEST STANDARD

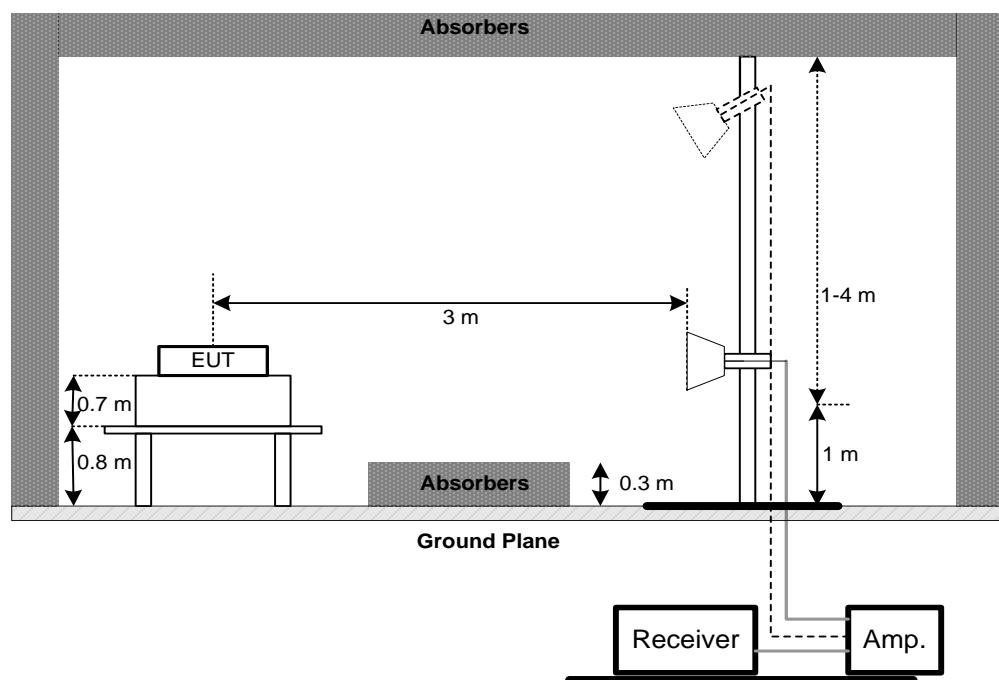
No deviation

#### 4.2.4 TEST SETUP

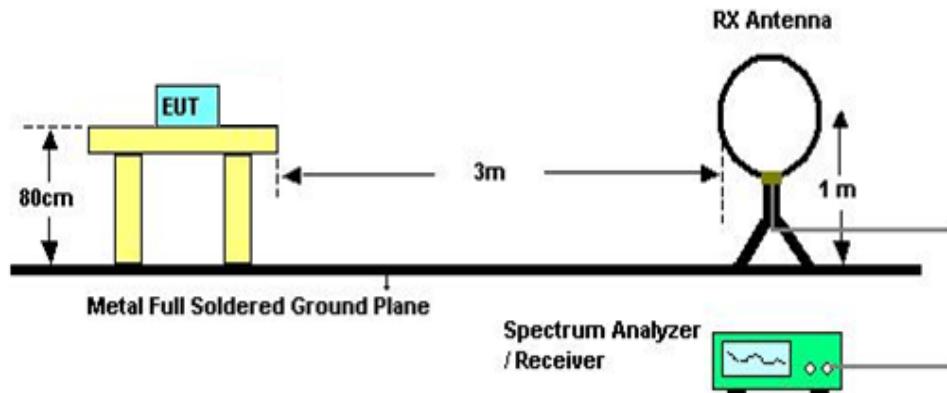
##### (A) Radiated Emission Test Set-Up Frequency Below 1 GHz



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



(C) For Radiated Emissions Below 30MHz



#### 4.2.5 EUT OPERATING CONDITIONS

The EUT was programmed to be in continuously transmitting mode.

#### 4.2.6 EUT TEST CONDITIONS

Temperature: 25°C    Relative Humidity: 55%    Test Voltage: AC 120V/60Hz

#### 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 (30MHZ TO 1000 MHZ)

Please refer to the Attachment C.

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

Please refer to the Attachment D.

Remark:

- (1) No limit: This is fundamental signal, the judgment is not applicable.  
For fundamental signal judgment was referred to Peak output test.

## 5. BANDWIDTH TEST

### 5.1 APPLIED PROCEDURES

FCC Part15 (15.247) , Subpart C

Section	Test Item	Frequency Range (MHz)	Result
15.247(a)(2)	Bandwidth	2400-2483.5	PASS

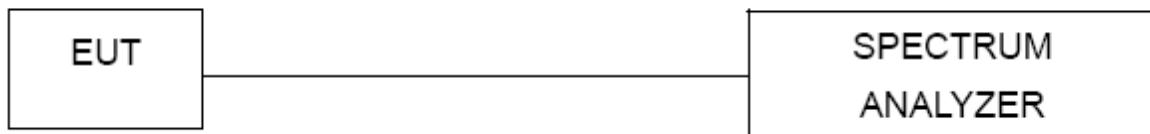
#### 5.1.1 TEST PROCEDURE

- The EUT was directly connected to the spectrum analyzer and antenna output port as show in the block diagram below,
- Spectrum Setting: RBW= 100KHz, VBW=300KHz, Sweep time = 2.5 ms.

#### 5.1.2 DEVIATION FROM STANDARD

No deviation.

#### 5.1.3 TEST SETUP



#### 5.1.4 EUT OPERATION CONDITIONS

The EUT was programmed to be in continuously transmitting mode.

#### 5.1.5 EUT TEST CONDITIONS

Temperature: 25°C    Relative Humidity: 55%    Test Voltage: AC 120V/60Hz

#### 5.1.6 TEST RESULTS

Please refer to the Attachment E.

## 6. MAXIMUM PEAK CONDUCTED OUTPUT POWER TEST

### 6.1 APPLIED PROCEDURES / LIMIT

FCC Part15 (15.247) , Subpart C				
Section	Test Item	Limit	Frequency Range (MHz)	Result
15.247(b)(3)	Maximum Output Power	1 Watt or 30dBm	2400-2483.5	PASS

#### 6.1.1 TEST PROCEDURE

- The EUT was directly connected to the power meter and antenna output port as show in the block diagram below,
- The maximum peak conducted output power was performed in accordance with method 9.1.2 of FCC KDB 558074 D01 DTS Meas Guidance.

#### 6.1.2 DEVIATION FROM STANDARD

No deviation.

#### 6.1.3 TEST SETUP



#### 6.1.4 EUT OPERATION CONDITIONS

The EUT was programmed to be in continuously transmitting mode.

#### 6.1.5 EUT TEST CONDITIONS

Temperature: 25°C    Relative Humidity: 55%    Test Voltage: AC 120V/60Hz

#### 6.1.6 TEST RESULTS

Please refer to the Attachment F.

## 7. ANTENNA CONDUCTED SPURIOUS EMISSION

### 7.1 APPLIED PROCEDURES / LIMIT

In any 100 kHz bandwidth outside the frequency band in which the spread spectrum or digitally modulated device is operating, the RF power that is produced 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 or a radiated measurement, provided that the transmitter demonstrates compliance with the peak conducted power limits.

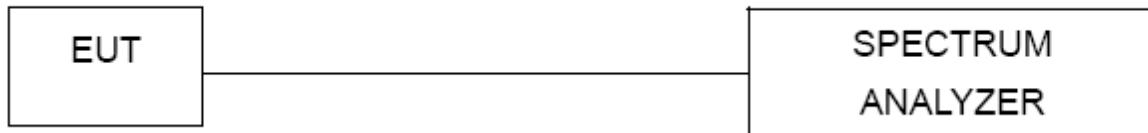
#### 7.1.1 TEST PROCEDURE

- 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=300KHz, Sweep time = Auto.
- c. Offset=antenna gain+cable loss

#### 7.1.2 DEVIATION FROM STANDARD

No deviation.

#### 7.1.3 TEST SETUP



#### 7.1.4 EUT OPERATION CONDITIONS

The EUT was programmed to be in continuously transmitting mode.

#### 7.1.5 EUT TEST CONDITIONS

Temperature: 25°C    Relative Humidity: 55%    Test Voltage: AC 120V/60Hz

#### 7.1.6 TEST RESULTS

Please refer to the Attachment G.

§

## 8. POWER SPECTRAL DENSITY TEST

### 8.1 APPLIED PROCEDURES / LIMIT

FCC Part15 (15.247) , Subpart C				
Section	Test Item	Limit	Frequency Range (MHz)	Result
15.247(e)	Power Spectral Density	8 dBm (in any 3KHz)	2400-2483.5	PASS

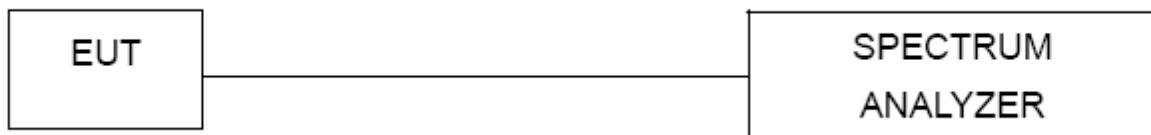
### 8.1.1 TEST PROCEDURE

- 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=3KHz, VBW=10KHz, Sweep time = Auto.

### 8.1.2 DEVIATION FROM STANDARD

No deviation.

### 8.1.3 TEST SETUP



### 8.1.4 EUT OPERATION CONDITIONS

The EUT was programmed to be in continuously transmitting mode.

### 8.1.5 EUT TEST CONDITIONS

Temperature: 25°C    Relative Humidity: 55%    Test Voltage: AC 120V/60Hz

### 8.1.6 TEST RESULTS

Please refer to the Attachment H.

## 9. MEASUREMENT INSTRUMENTS LIST

Conducted Emission Measurement					
Item	Kind of Equipment	Manufacturer	Type No.	Serial No.	Calibrated until
1	TWO-LINE V-NETWORK	R&S	ENV216	101050	Jan. 26, 2017
2	Test Cable	TIMES	CFD300-NL	C02	Jun. 15, 2017
3	EMI Test Receiver	R&S	ESR7	101433	Dec. 09, 2017
4	Measurement Software	EZ	EZ_EMC (Version NB-03A)	N/A	N/A

Radiated Emission Measurement					
Item	Kind of Equipment	Manufacturer	Type No.	Serial No.	Calibrated until
1	Trilog-Broadband Antenna	Schwarzbeck	VULB9168-352	9168-352	Feb. 04, 2017
2	Horn Antenna	Schwarzbeck	BBHA 9120	D-546	Nov. 05, 2017
3	Pre-Amplifier	HP	8447D	2944A08891	Mar. 09 2017
4	Pre-Amplifier	Agilent	8449B	3008A02331	Jan. 24, 2017
5	Test Cable	EMCI	EMC8D-NM-NM -8000	150301	Mar. 09, 2017
6	Test Cable	EMCI	EMC104-SM-S M-2500	150303	Mar. 09, 2017
7	Test Cable	EMCI	EMC104-NM-S M-1000	150304	Mar. 09, 2017
8	Test Cable	EMCI	EMC104-SM-S M-5000	150302	Mar. 29, 2017
9	Test Cable	EMCI	EMC104-SM-S M-800	150305	Mar. 29, 2017
10	EXA Spectrum Analyzer	Agilent	N9010A	MY5222099 0	Feb. 24, 2017
11	EMI Test Receiver	Agilent	N9038A	MY5121021 5	Jan. 08, 2017
12	Loop Antenna	EMCO	6502	00042960	Nov. 05. 2017
13	Horn Antenna	Schwarzbeck	BBHA-9170	187	May 12, 2017

**6dB Bandwidth Measurement**

Item	Kind of Equipment	Manufacturer	Type No.	Serial No.	Calibrated until
1	Spectrum Analyzer	R&S	FSP-40	100129	Jan. 18, 2017

**Peak Output Power Measurement**

Item	Kind of Equipment	Manufacturer	Type No.	Serial No.	Calibrated until
1	Power Meter	Anritsu	ML2487A	6K00004714	May 18, 2017
2	Power Meter Sensor	Anritsu	MA2491A	034138	May 17, 2017

**Antenna Conducted Spurious Emission Measurement**

Item	Kind of Equipment	Manufacturer	Type No.	Serial No.	Calibrated until
1	Spectrum Analyzer	R&S	FSP-40	100129	Jan. 18, 2017

**Power Spectral Density Measurement**

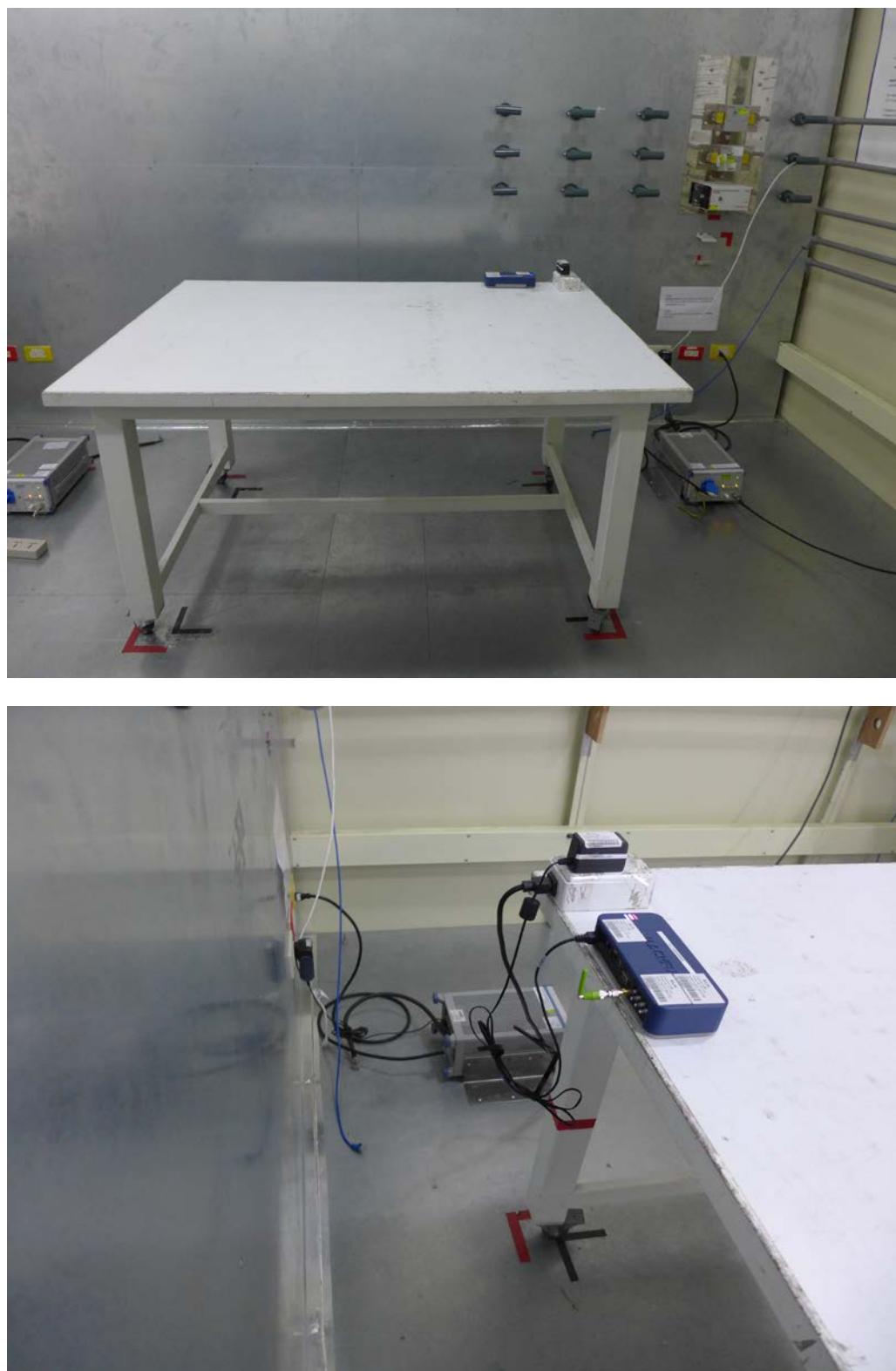
Item	Kind of Equipment	Manufacturer	Type No.	Serial No.	Calibrated until
1	Spectrum Analyzer	R&S	FSP-40	100129	Jan. 18, 2017

Remark: "N/A" denotes no model name, serial no. or calibration specified.

All calibration period of equipment list is one year.

## 10. EUT TEST PHOTO

### Conducted Measurement Photos



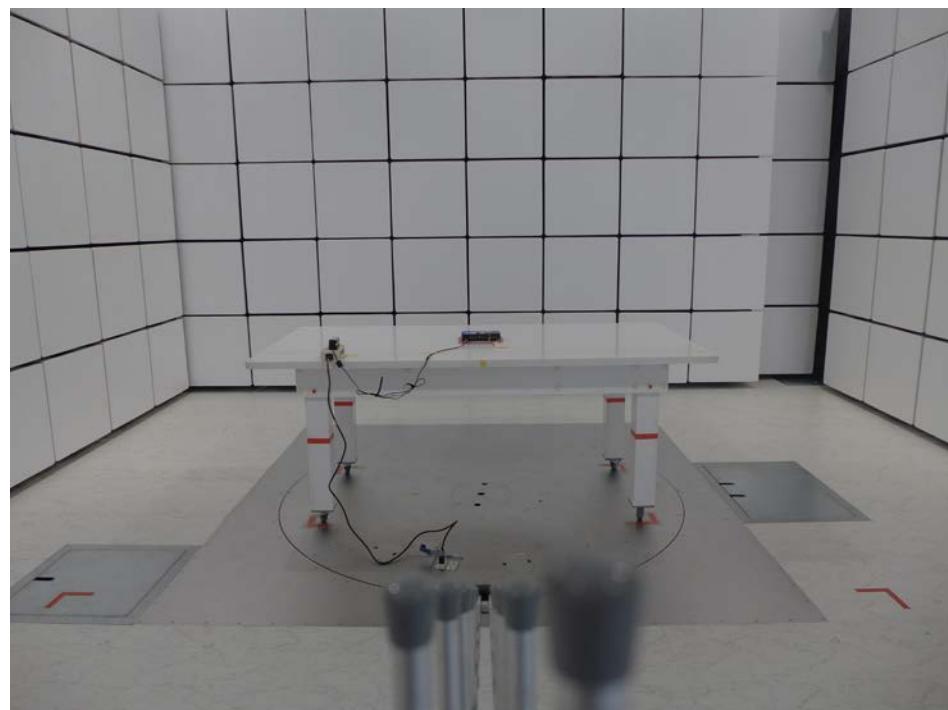
### Radiated Measurement Photos

9KHz to 30MHz



### Radiated Measurement Photos

30MHz to 1000MHz



### Radiated Measurement Photos

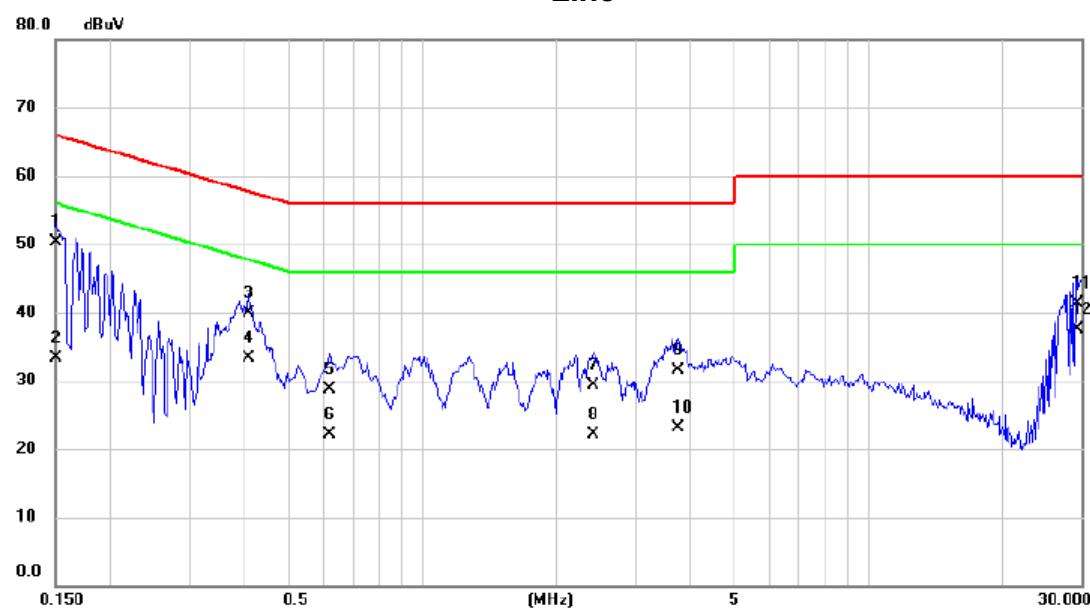
Above 1000MHz



**ATTACHMENT A - CONDUCTED EMISSION**

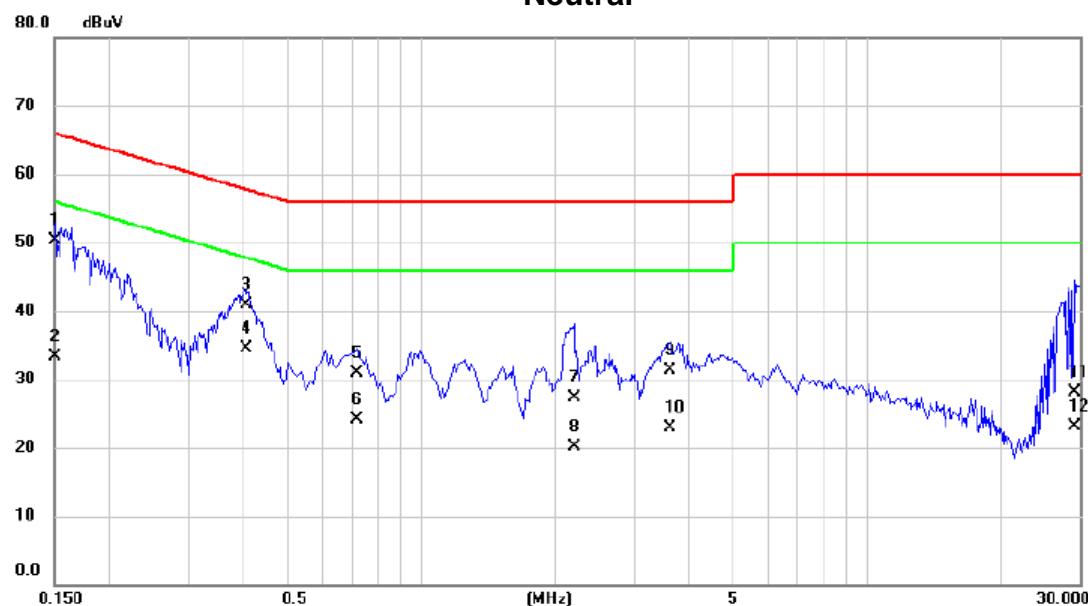
Test Mode : TX Mode

## Line



No.	Mk.	Freq. MHz	Reading Level	Correct Factor	Measure- ment	Limit dB	Margin Detector	Comment
			dBuV	dB	dBuV			
1		0.1500	40.60	9.64	50.24	66.00	-15.76	QP
2		0.1500	23.60	9.64	33.24	56.00	-22.76	Avg
3		0.4083	30.20	9.63	39.83	57.68	-17.85	QP
4		0.4083	23.60	9.63	33.23	47.68	-14.45	Avg
5		0.6170	19.10	9.63	28.73	56.00	-27.27	QP
6		0.6170	12.50	9.63	22.13	46.00	-23.87	Avg
7		2.4260	19.70	9.64	29.34	56.00	-26.66	QP
8		2.4260	12.50	9.64	22.14	46.00	-23.86	Avg
9		3.7490	21.90	9.66	31.56	56.00	-24.44	QP
10		3.7490	13.50	9.66	23.16	46.00	-22.84	Avg
11		29.5000	31.60	9.69	41.29	60.00	-18.71	QP
12	*	29.5000	27.80	9.69	37.49	50.00	-12.51	Avg

Test Mode : TX Mode

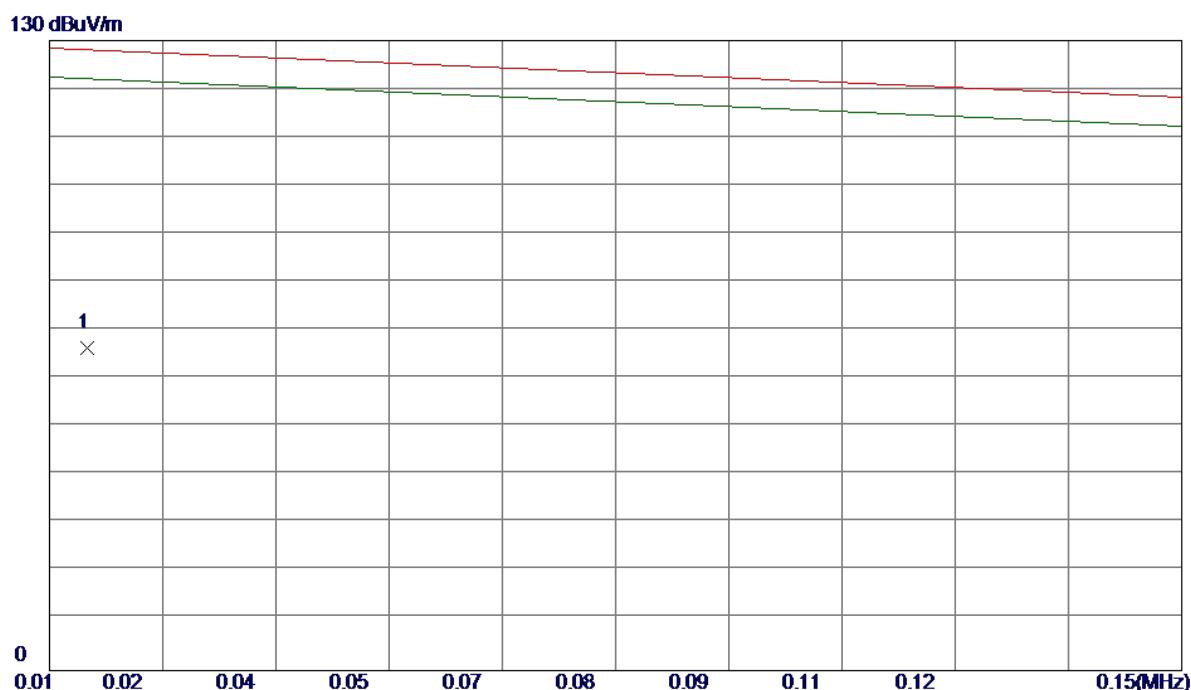
**Neutral**

No.	Mk.	Freq. MHz	Reading	Correct	Measure-	Limit	Margin	Detector	Comment
			Level dBuV	Factor dB	ment dBuV				
1		0.1500	40.60	9.65	50.25	66.00	-15.75	QP	
2		0.1500	23.60	9.65	33.25	56.00	-22.75	AVG	
3		0.4034	31.30	9.63	40.93	57.78	-16.85	QP	
4	*	0.4034	24.90	9.63	34.53	47.78	-13.25	AVG	
5		0.7160	21.30	9.64	30.94	56.00	-25.06	QP	
6		0.7160	14.40	9.64	24.04	46.00	-21.96	AVG	
7		2.2010	17.60	9.65	27.25	56.00	-28.75	QP	
8		2.2010	10.40	9.65	20.05	46.00	-25.95	AVG	
9		3.6140	21.70	9.66	31.36	56.00	-24.64	QP	
10		3.6140	13.20	9.66	22.86	46.00	-23.14	AVG	
11		29.2000	18.30	9.72	28.02	60.00	-31.98	QP	
12		29.2000	13.30	9.72	23.02	50.00	-26.98	AVG	

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

Test Mode: TX B MODE CHANNEL 01

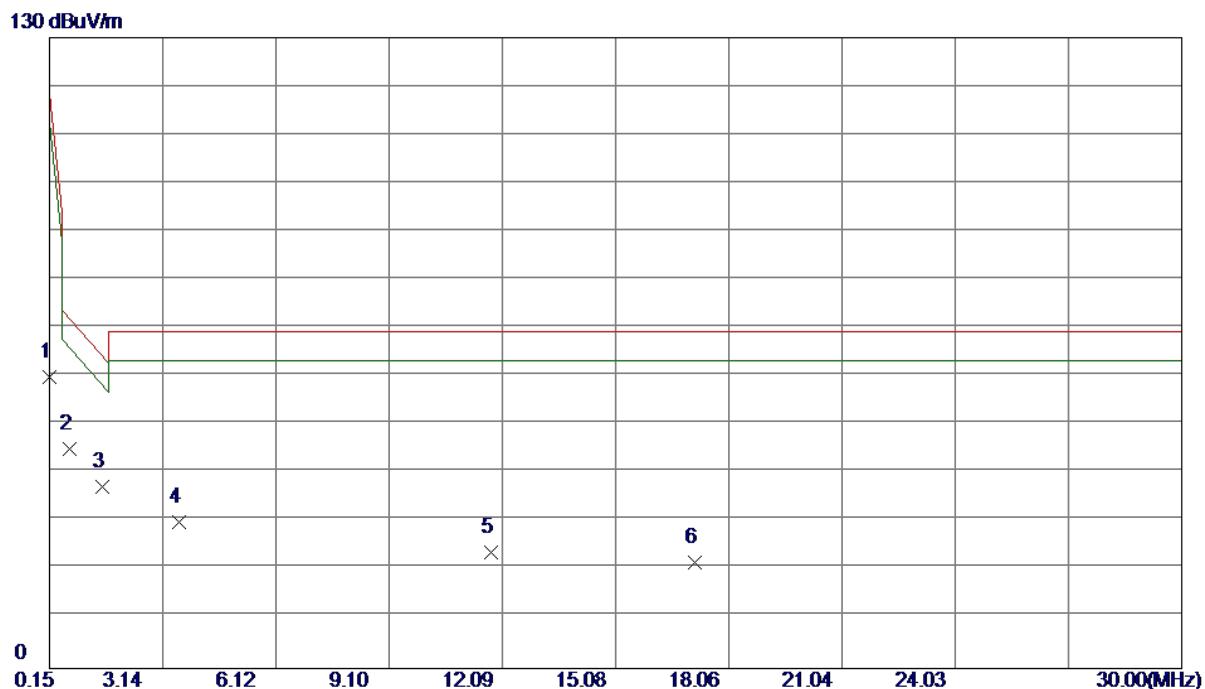
Ant 0°



No.	Freq. MHz	Reading Level dBuV/m	Correct Factor dB	Measure ment dBuV/m	Limit dBuV/m	Margin dB	Detector	Comment
1 *	0.0137	47.07	19.48	66.55	128.17	-61.62	Peak	

Test Mode: TX B MODE CHANNEL 01

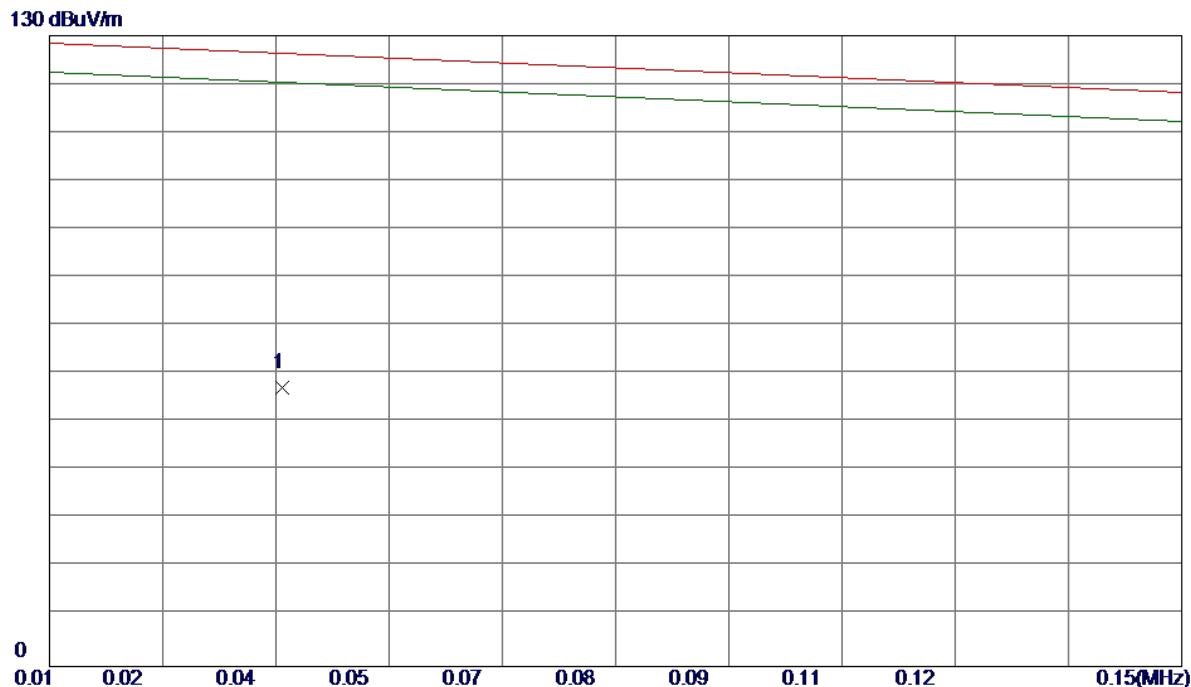
Ant 0°



No.	Freq. MHz	Reading Level dBuV/m	Correct Factor dB	Measure- ment dBuV/m	Limit dB	Margin Detector	Comment	
							Detector	Comment
1	0.1500	47.94	12.02	59.96	118.33	-58.37	Peak	
2 *	0.6873	33.26	11.87	45.13	72.04	-26.91	Peak	
3	1.5530	25.58	11.75	37.33	64.32	-26.99	Peak	
4	3.5825	18.91	11.19	30.10	69.54	-39.44	Peak	
5	11.7911	12.65	11.25	23.90	69.54	-45.64	Peak	
6	17.1645	10.77	11.09	21.86	69.54	-47.68	Peak	

Test Mode: TX B MODE CHANNEL 01

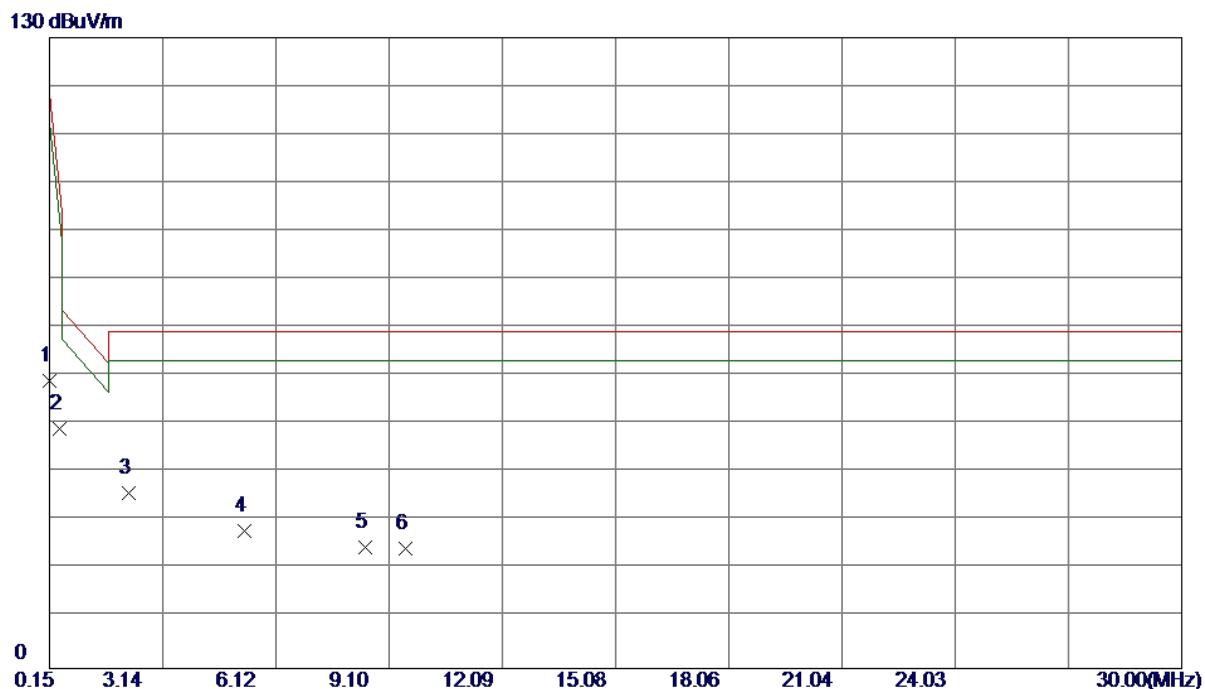
Ant 90°



No.	Freq.	Reading Level	Correct Factor	Measurement	Limit	Margin	Detector	Comment
	MHz	dBuV/m	dB	dBuV/m	dBuV/m	dB		
1 *	0.0380	43.21	14.19	57.40	126.42	-69.02	Peak	

Test Mode: TX B MODE CHANNEL 01

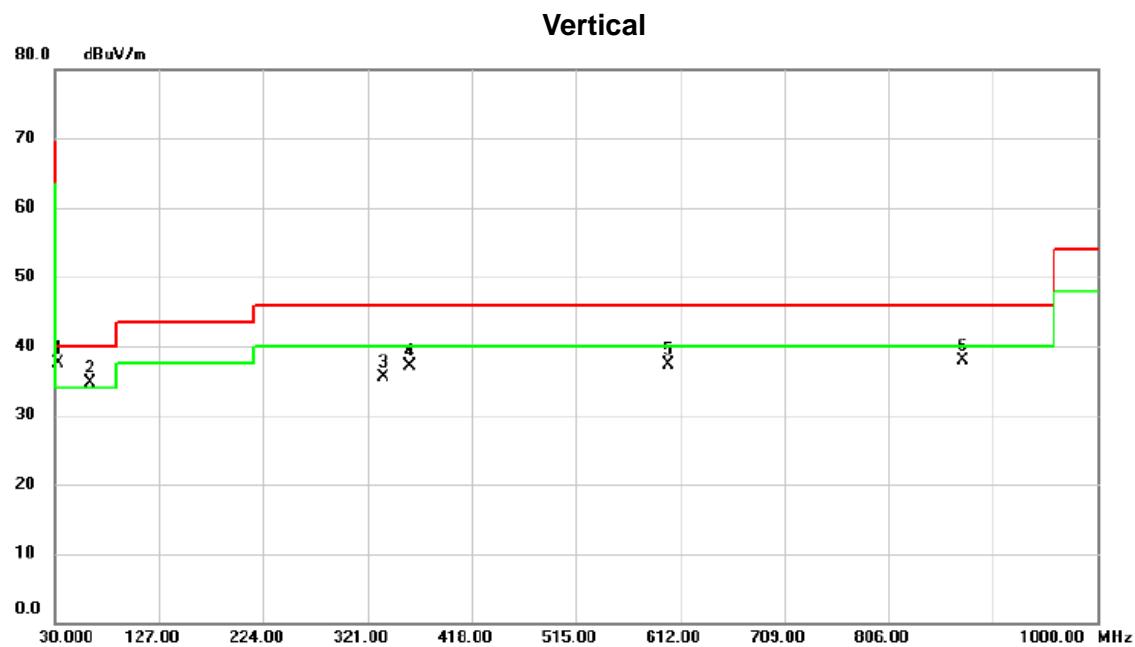
Ant 90°



No.	Freq. MHz	Reading Level dBuV/m	Correct Factor dB	Measure- ment dBuV/m	Limit dB	Margin		
							Detector	Comment
1	0.1500	47.17	12.02	59.19	118.33	-59.14	Peak	
2	0.4187	37.60	11.80	49.40	98.94	-49.54	Peak	
3 *	2.2395	24.62	11.44	36.06	69.54	-33.48	Peak	
4	5.2842	16.97	11.39	28.36	69.54	-41.18	Peak	
5	8.4780	13.54	11.33	24.87	69.54	-44.67	Peak	
6	9.5228	13.44	11.31	24.75	69.54	-44.79	Peak	

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

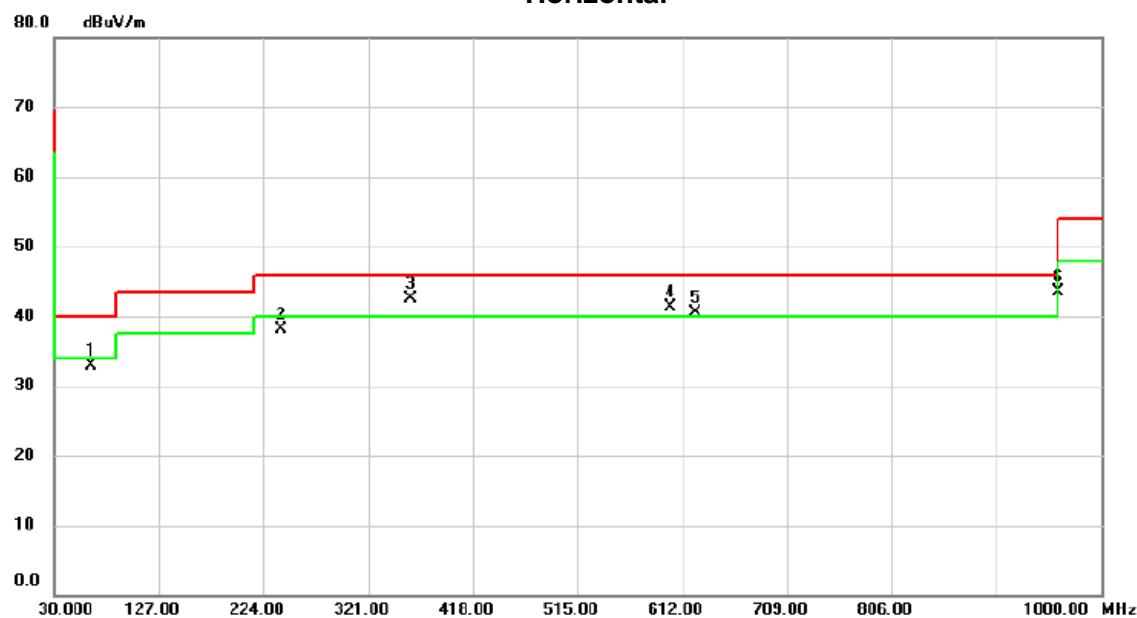
Test Mode: TX B MODE CHANNEL 11



No.	Mk.	Freq. MHz	Reading Level dBuV	Correct Factor dB	Measure- ment dBuV/m	Limit dB	Margin Detector	Comment
1	*	32.9100	46.48	-9.07	37.41	40.00	-2.59	peak
2	!	62.9800	44.19	-9.50	34.69	40.00	-5.31	peak
3		335.5500	42.18	-6.77	35.41	46.00	-10.59	peak
4		359.8000	43.21	-6.12	37.09	46.00	-8.91	peak
5		600.3600	37.94	-0.62	37.32	46.00	-8.68	peak
6		874.8700	34.20	3.61	37.81	46.00	-8.19	peak

Test Mode: TX B MODE CHANNEL 11

## Horizontal



No.	Mk.	Freq. MHz	Reading	Correct	Measure-	Limit	Margin	Comment
			Level dBuV	Factor dB	ment dBuV/m			
1		63.9500	42.53	-9.65	32.88	40.00	-7.12	peak
2		240.4900	47.73	-9.68	38.05	46.00	-7.95	peak
3	*	359.8000	48.71	-6.12	42.59	46.00	-3.41	peak
4	!	600.3600	42.01	-0.62	41.39	46.00	-4.61	peak
5	!	623.6400	40.89	-0.44	40.45	46.00	-5.55	peak
6		960.2300	38.42	5.13	43.55	54.00	-10.45	peak

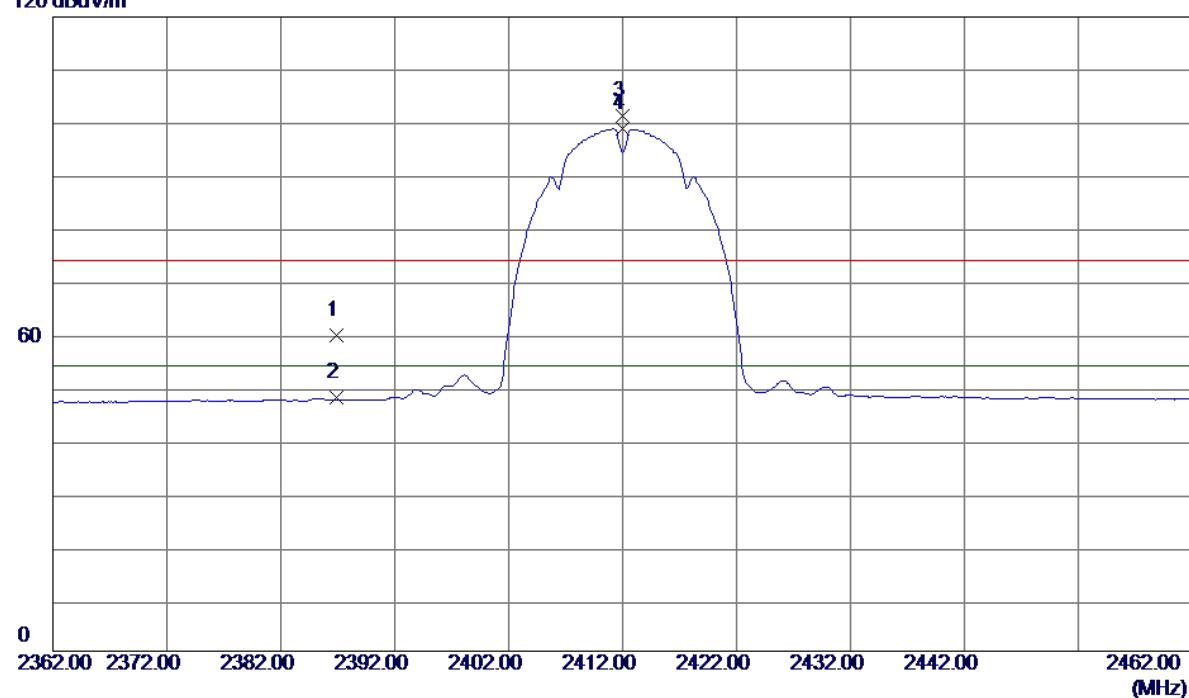
**ATTACHMENT D - RADIATED EMISSION (ABOVE 1000MHZ)**

Orthogonal Axis : X

Test Mode : TX B MODE 2412MHz

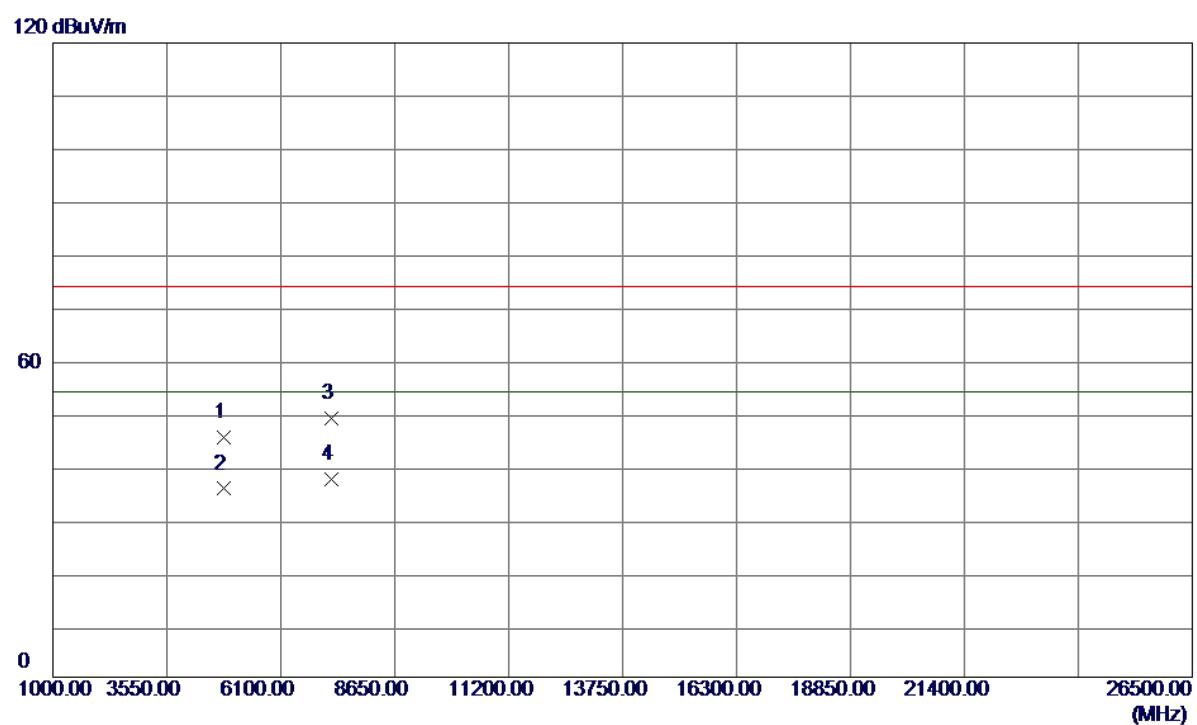
## Vertical

120 dBuV/m



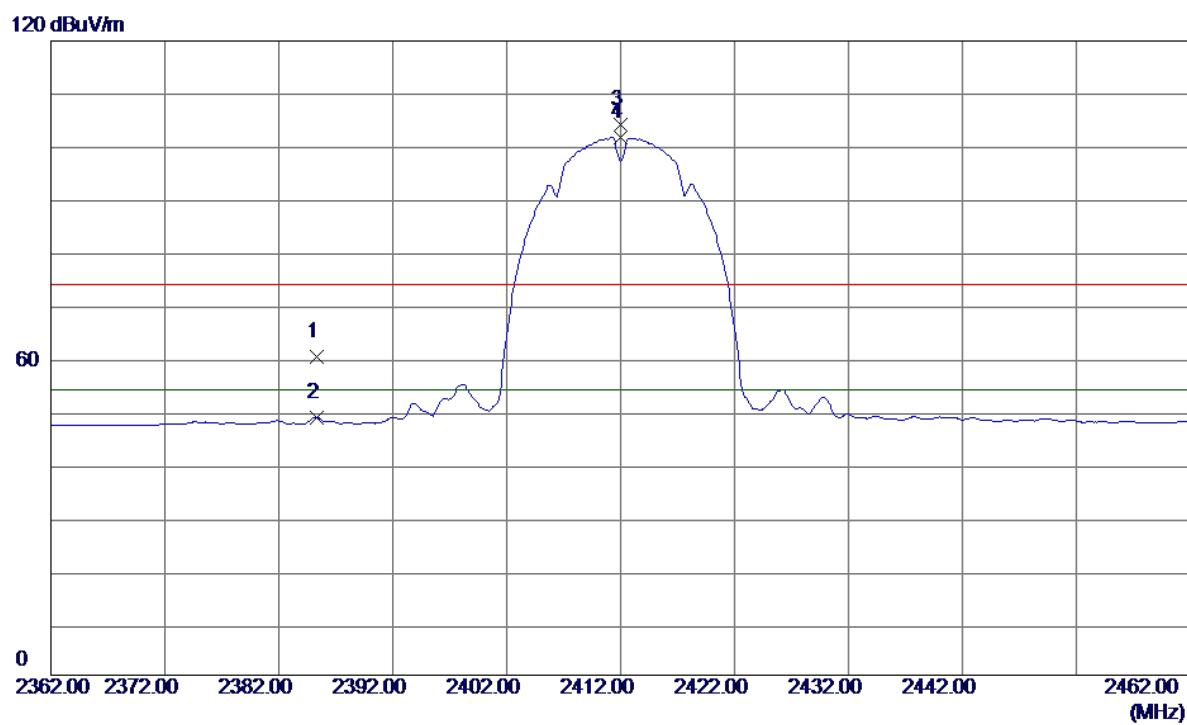
No.	Freq. MHz	Reading Level dBuV/m	Correct Factor dB	Measure ment dBuV/m	Limit dB	Margin dB	Margin	
							Detector	Comment
1	2386.8640	28.82	30.95	59.77	74.00	-14.23	Peak	
2	2386.8640	16.99	30.95	47.94	54.00	-6.06	Avg	
3	2412.0000	70.17	31.05	101.22	74.00	27.22	Peak	
4 *	2412.0000	67.80	31.05	98.85	54.00	44.85	Avg	

Orthogonal Axis :	X
Test Mode :	TX B MODE 2412MHz

**Vertical**

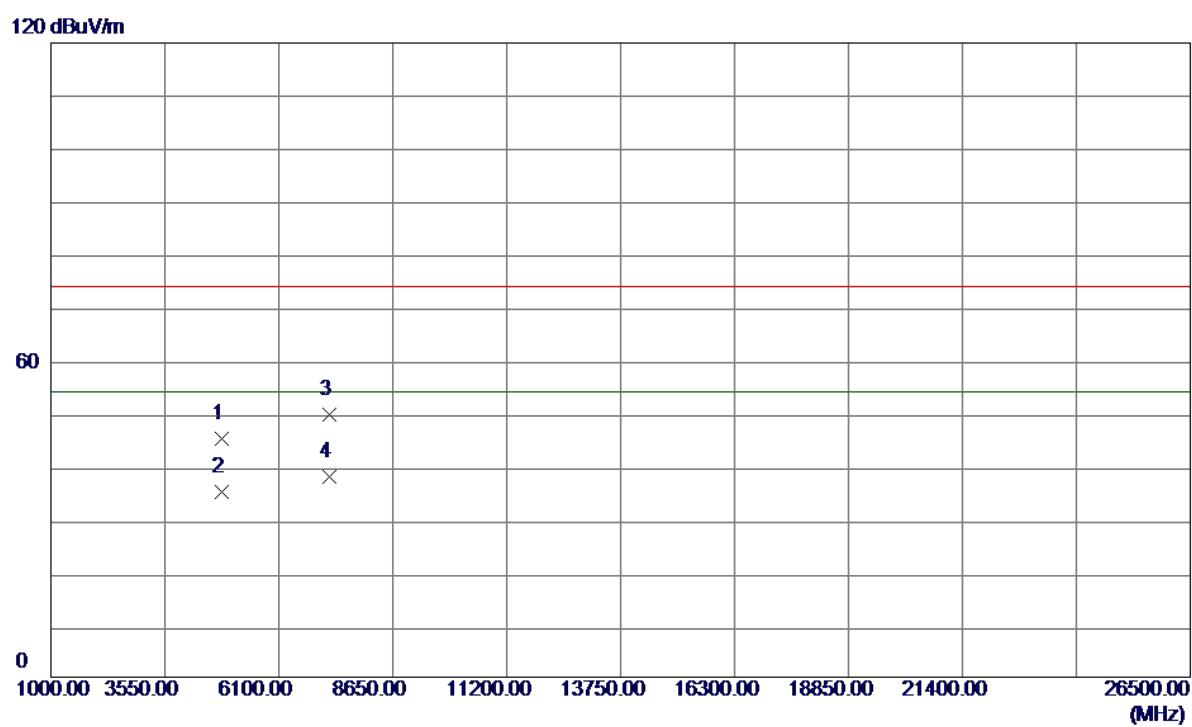
No.	Freq. MHz	Reading Level dBuV/m	Correct Factor dB	Measure ment dBuV/m	Limit dBuV/m	Margin dB	Detector		Comment
							Detector		
1	4824.0000	56.79	-11.47	45.32	74.00	-28.68	Peak		
2	4824.0000	47.11	-11.47	35.64	54.00	-18.36	AVG		
3	7236.0000	54.26	-5.36	48.90	74.00	-25.10	Peak		
4 *	7236.0000	42.90	-5.36	37.54	54.00	-16.46	AVG		

Orthogonal Axis :	X
Test Mode :	TX B MODE 2412MHz

**Horizontal**

No.	Freq. MHz	Reading Level dBuV/m	Correct Factor dB	Measure- ment dBuV/m	Limit dBuV/m	Margin dB	Detector	Comment
1	2385.3240	29.33	30.95	60.28	74.00	-13.72	Peak	
2	2385.3240	17.84	30.95	48.79	54.00	-5.21	AVG	
3	2412.0000	73.08	31.05	104.13	74.00	30.13	Peak	
4 *	2412.0000	70.70	31.05	101.75	54.00	47.75	AVG	

Orthogonal Axis :	X
Test Mode :	TX B MODE 2412MHz

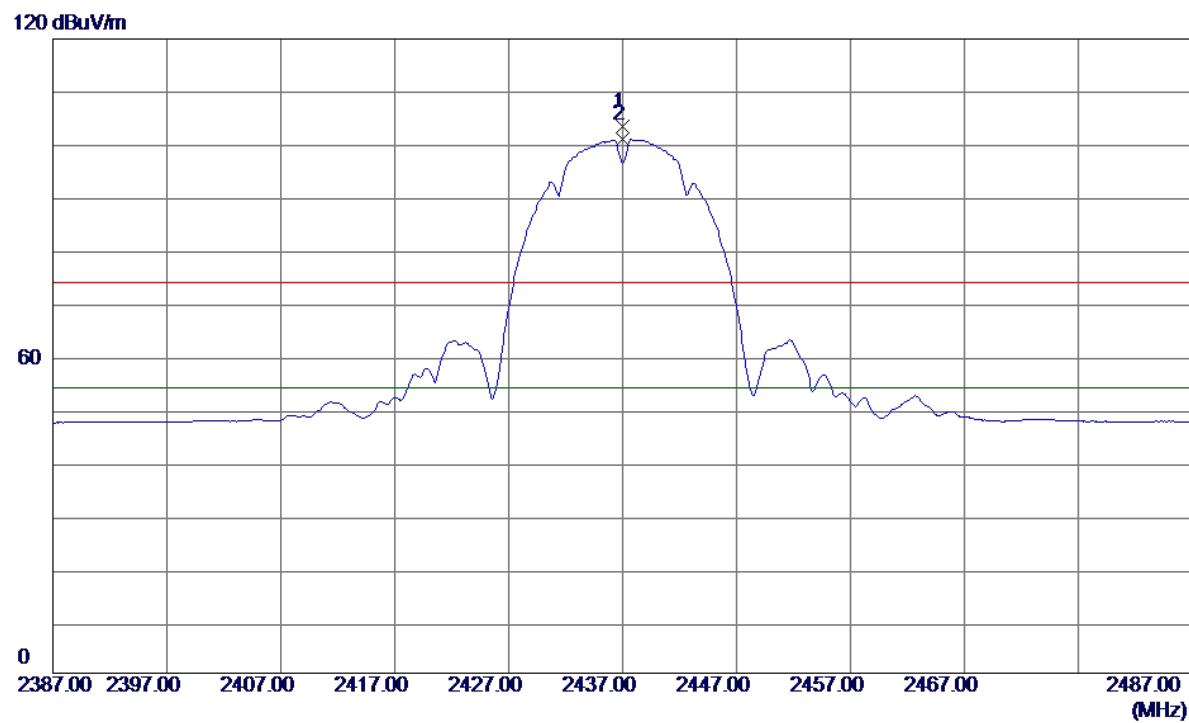
**Horizontal**

No.	Freq. MHz	Reading Level dBuV/m	Correct Factor dB	Measure ment dBuV/m	Limit dBuV/m	Margin dB	Detector	Comment
1	4824.0000	56.69	-11.47	45.22	74.00	-28.78	Peak	
2	4824.0000	46.60	-11.47	35.13	54.00	-18.87	AVG	
3	7236.0000	54.99	-5.36	49.63	74.00	-24.37	Peak	
4 *	7236.0000	43.18	-5.36	37.82	54.00	-16.18	AVG	

Orthogonal Axis : X

Test Mode : TX B MODE 2437MHz

## Vertical

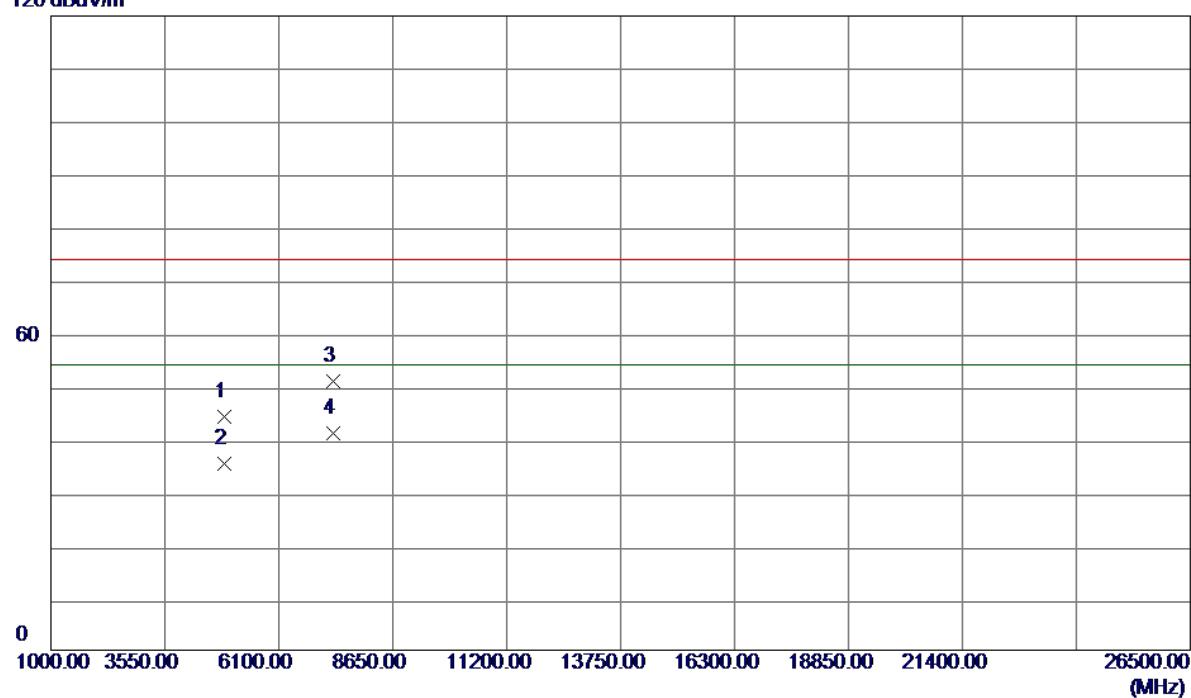


No.	Freq.	Reading Level	Correct Factor	Measurement	Limit	Margin	Detector	Comment
	MHz	dBuV/m	dB	dBuV/m	dBuV/m	dB		
1	2437.0000	72.33	31.14	103.47	74.00	29.47	Peak	
2 *	2437.0000	69.82	31.14	100.96	54.00	46.96	AVG	

Orthogonal Axis :	X
Test Mode :	TX B MODE 2437MHz

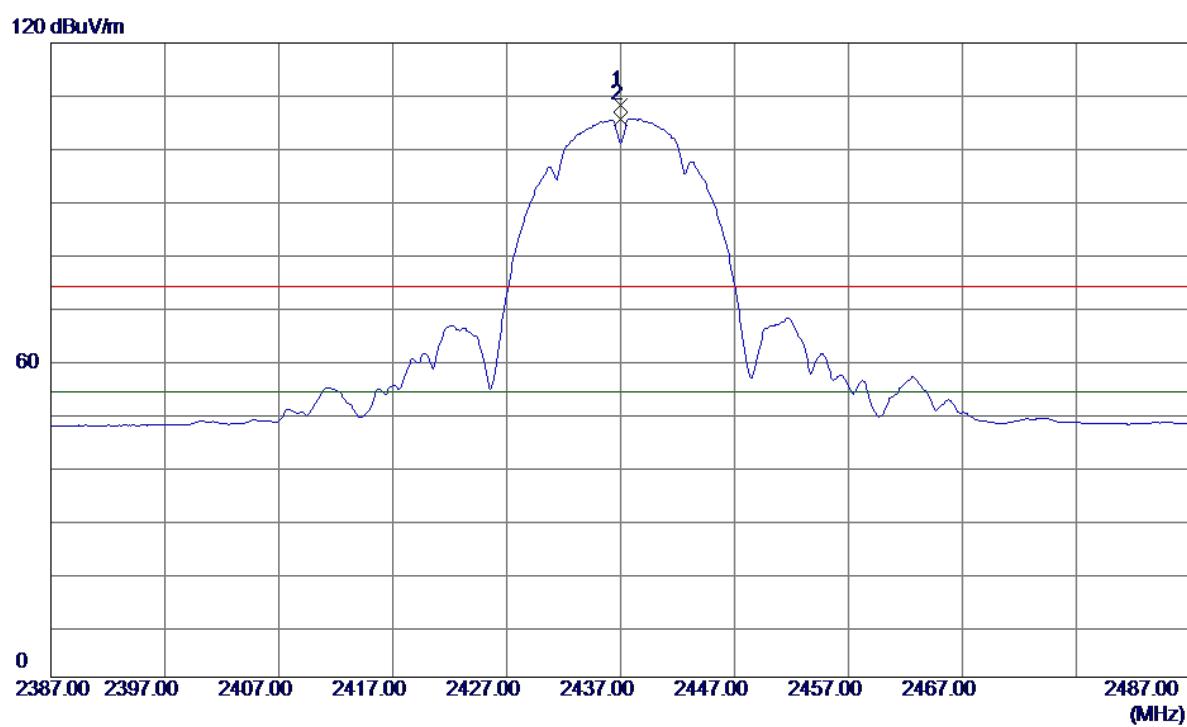
**Vertical**

120 dBuV/m



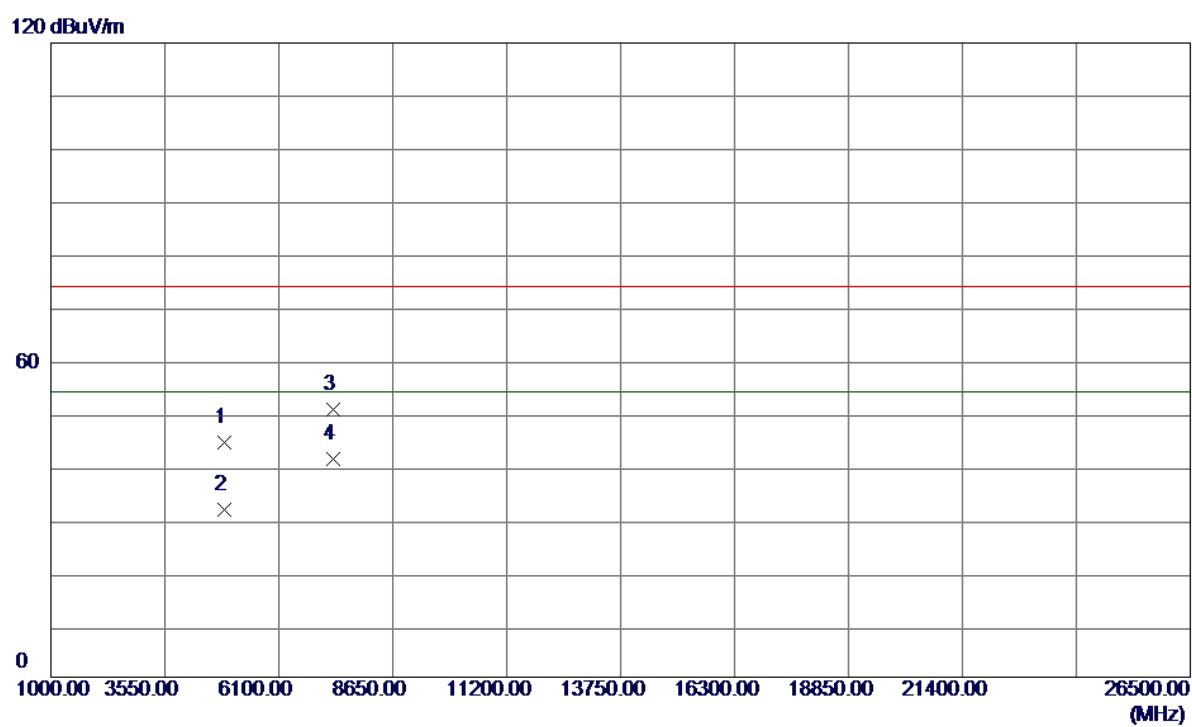
No.	Freq. MHz	Reading Level dBuV/m	Correct Factor dB	Measure ment dBuV/m	Limit dBuV/m	Margin dB	Detector	Comment
1	4874.0000	55.56	-11.39	44.17	74.00	-29.83	Peak	
2	4874.0000	46.56	-11.39	35.17	54.00	-18.83	AVG	
3	7311.0000	55.86	-5.08	50.78	74.00	-23.22	Peak	
4 *	7311.0000	46.02	-5.08	40.94	54.00	-13.06	AVG	

Orthogonal Axis :	X
Test Mode :	TX B MODE 2437MHz

**Horizontal**

No.	Freq.	Reading Level	Correct Factor	Measurement	Limit	Margin	Detector	Comment
	MHz	dBuV/m	dB	dBuV/m	dBuV/m	dB		
1	2437.0000	77.02	31.14	108.16	74.00	34.16	Peak	
2 *	2437.0000	74.51	31.14	105.65	54.00	51.65	AVG	

Orthogonal Axis :	X
Test Mode :	TX B MODE 2437MHz

**Horizontal**

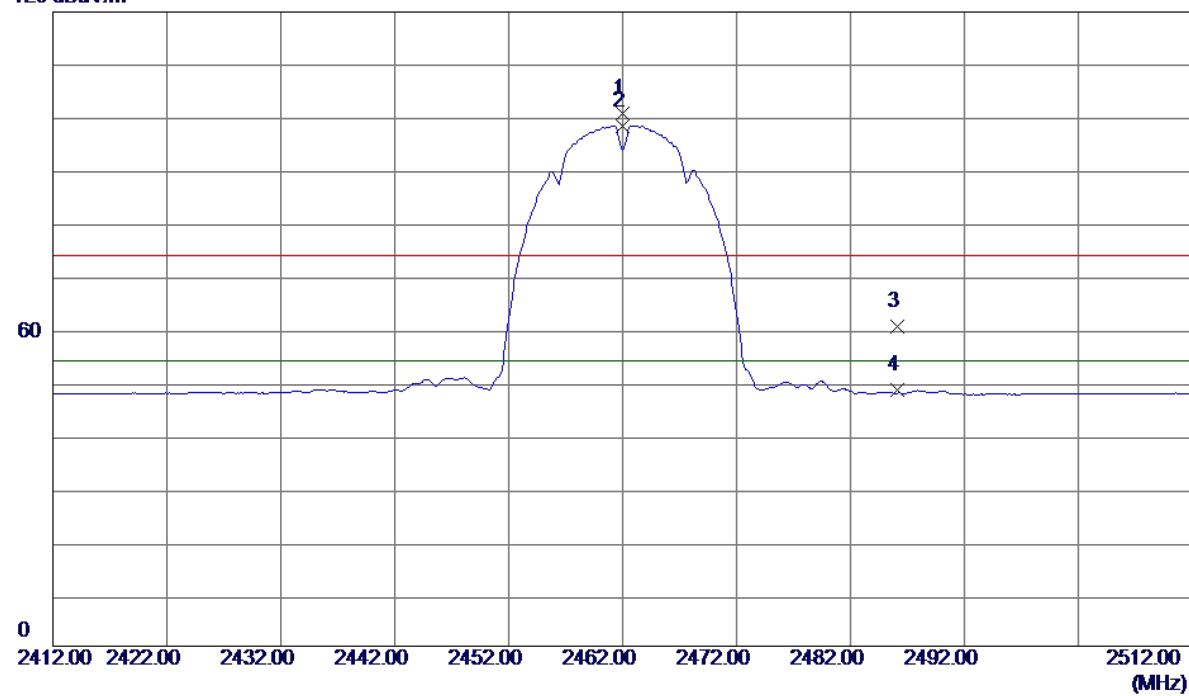
No.	Freq. MHz	Reading Level dBuV/m	Correct Factor dB	Measure ment dBuV/m	Limit dBuV/m	Margin dB	Detector	Comment
1	4874.0000	55.85	-11.39	44.46	74.00	-29.54	Peak	
2	4874.0000	43.16	-11.39	31.77	54.00	-22.23	AVG	
3	7311.0000	55.84	-5.08	50.76	74.00	-23.24	Peak	
4 *	7311.0000	46.32	-5.08	41.24	54.00	-12.76	AVG	

Orthogonal Axis : X

Test Mode : TX B MODE 2462MHz

## Vertical

120 dBuV/m

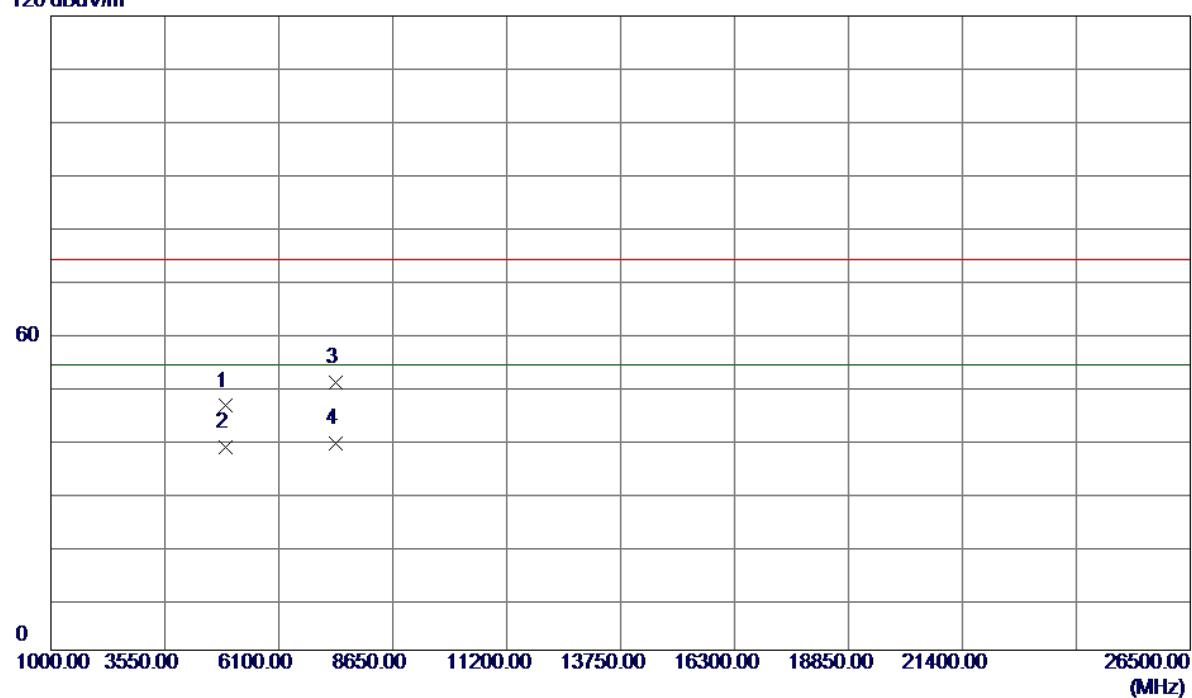


No.	Freq.	Reading Level	Correct Factor	Measurement	Limit	Margin	Detector	Comment
	MHz	dBuV/m	dB	dBuV/m	dBuV/m	dB		
1	2462.0000	69.67	31.23	100.90	74.00	26.90	Peak	
2 *	2462.0000	67.27	31.23	98.50	54.00	44.50	AVG	
3	2486.1070	29.21	31.32	60.53	74.00	-13.47	Peak	
4	2486.1070	17.06	31.32	48.38	54.00	-5.62	AVG	

Orthogonal Axis :	X
Test Mode :	TX B MODE 2462MHz

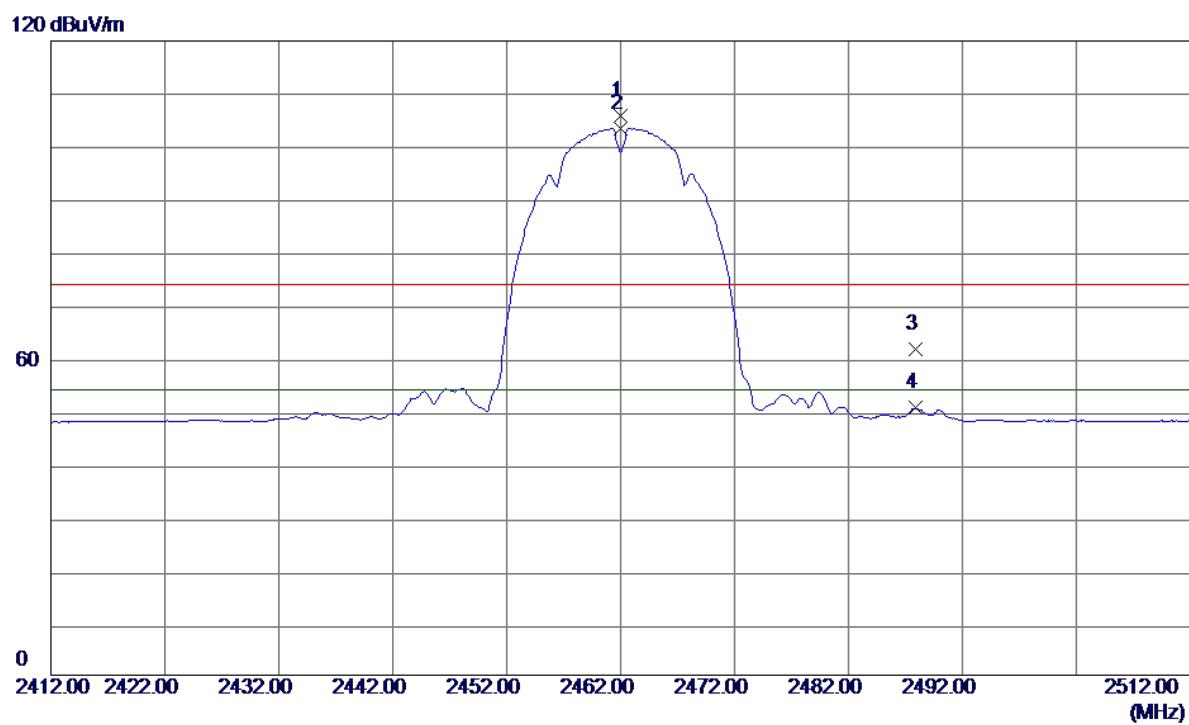
**Vertical**

120 dBuV/m



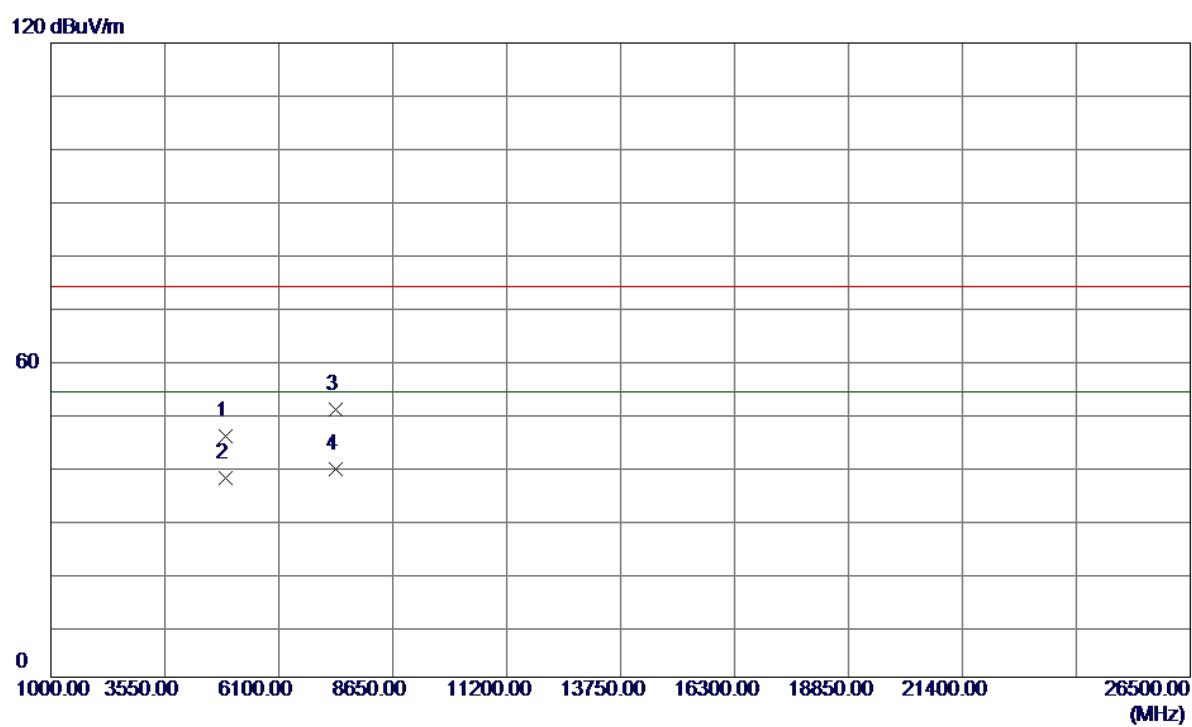
No.	Freq. MHz	Reading Level dBuV/m	Correct Factor dB	Measure ment dBuV/m	Limit dBuV/m	Margin dB	Detector	Comment
1	4924.0000	57.52	-11.32	46.20	74.00	-27.80	Peak	
2	4924.0000	49.64	-11.32	38.32	54.00	-15.68	AVG	
3	7386.0000	55.43	-4.80	50.63	74.00	-23.37	Peak	
4 *	7386.0000	43.99	-4.80	39.19	54.00	-14.81	AVG	

Orthogonal Axis :	X
Test Mode :	TX B MODE 2462MHz

**Horizontal**

No.	Freq. MHz	Reading Level dBuV/m	Correct Factor dB	Measure ment dBuV/m	Limit dBuV/m	Margin dB	Detector	Comment
1	2462.0000	74.65	31.23	105.88	74.00	31.88	Peak	
2 *	2462.0000	72.20	31.23	103.43	54.00	49.43	AVG	
3	2487.8890	30.39	31.33	61.72	74.00	-12.28	Peak	
4	2487.8890	19.22	31.33	50.55	54.00	-3.45	AVG	

Orthogonal Axis :	X
Test Mode :	TX B MODE 2462MHz

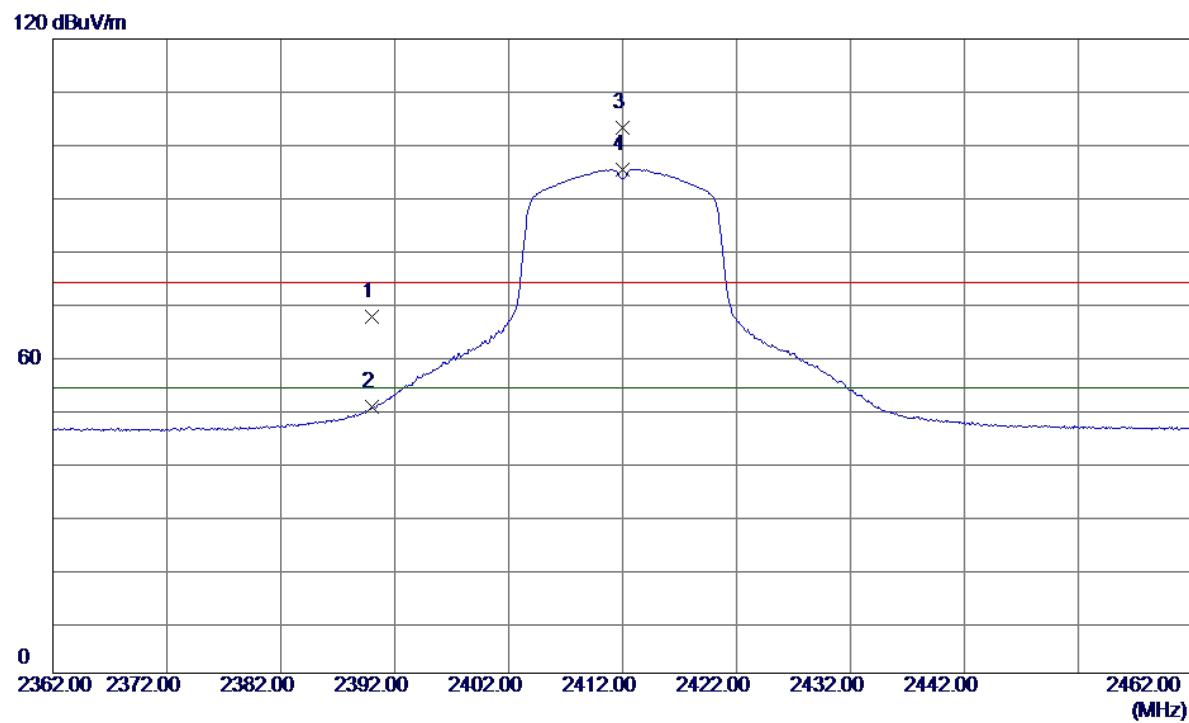
**Horizontal**

No.	Freq. MHz	Reading Level dBuV/m	Correct Factor dB	Measure ment dBuV/m	Limit dBuV/m	Margin dB	Detector	Comment
1	4924.0000	56.93	-11.32	45.61	74.00	-28.39	Peak	
2	4924.0000	49.01	-11.32	37.69	54.00	-16.31	AVG	
3	7386.0000	55.50	-4.80	50.70	74.00	-23.30	Peak	
4 *	7386.0000	44.16	-4.80	39.36	54.00	-14.64	AVG	

Orthogonal Axis : X

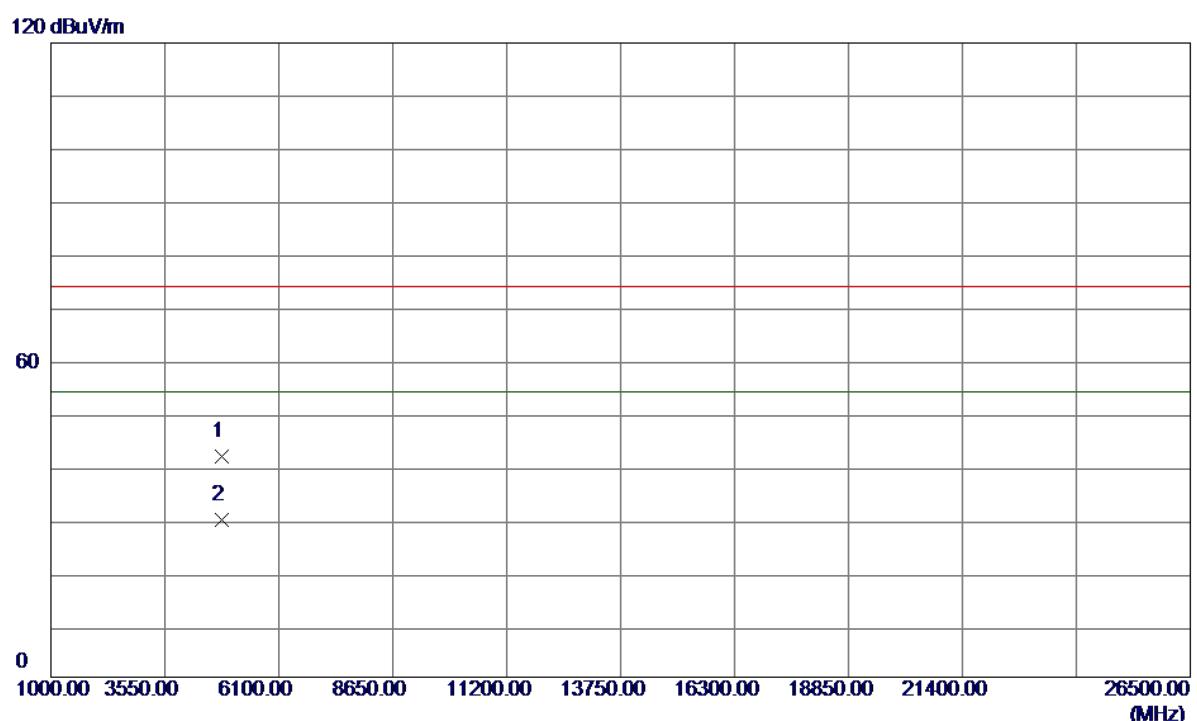
Test Mode : TX G MODE 2412MHz

## Vertical



No.	Freq. MHz	Reading Level dBuV/m	Correct Factor dB	Measure- ment dBuV/m	Limit dBuV/m	Margin dB	Detector	Comment
1	2389.9720	36.48	30.96	67.44	74.00	-6.56	Peak	
2	2389.9720	19.33	30.96	50.29	54.00	-3.71	AVG	
3	2412.0000	72.18	31.05	103.23	74.00	29.23	Peak	
4 *	2412.0000	64.28	31.05	95.33	54.00	41.33	AVG	

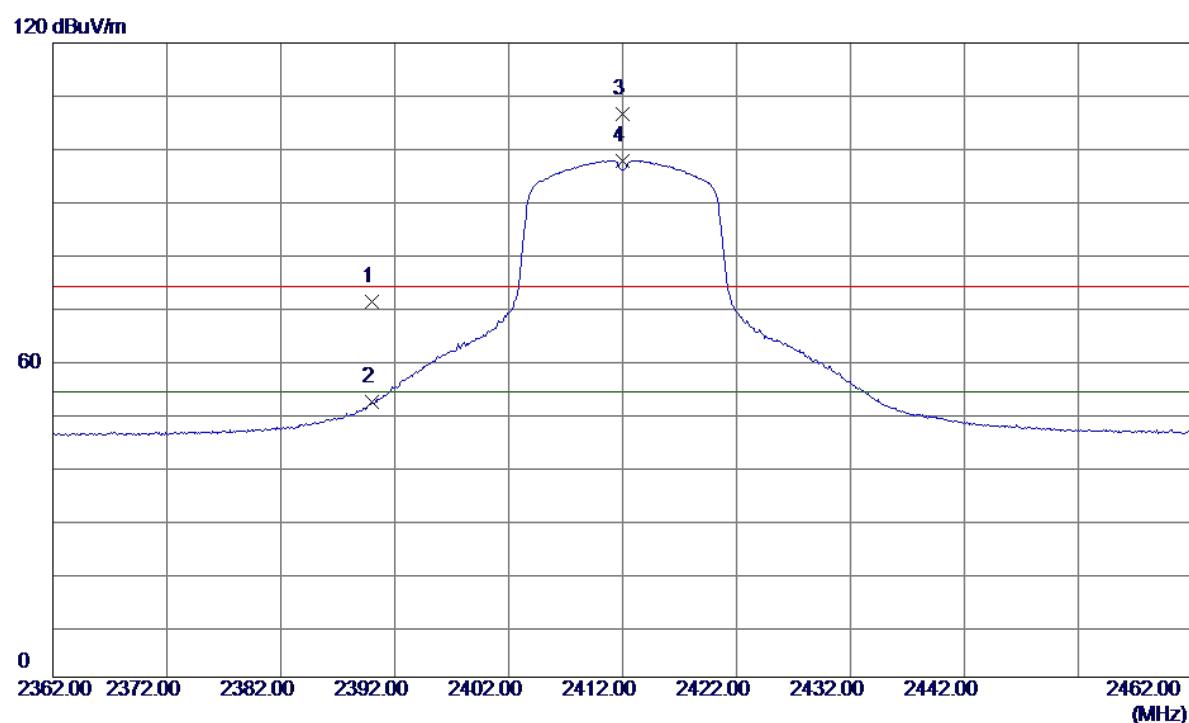
Orthogonal Axis :	X
Test Mode :	TX G MODE 2412MHz

**Vertical**

No.	Freq.	Reading Level	Correct Factor	Measurement	Limit	Margin	Detector	Comment
	MHz	dBuV/m	dB	dBuV/m	dBuV/m	dB		
1	4824.0000	53.27	-11.47	41.80	74.00	-32.20	Peak	
2 *	4824.0000	41.15	-11.47	29.68	54.00	-24.32	AVG	

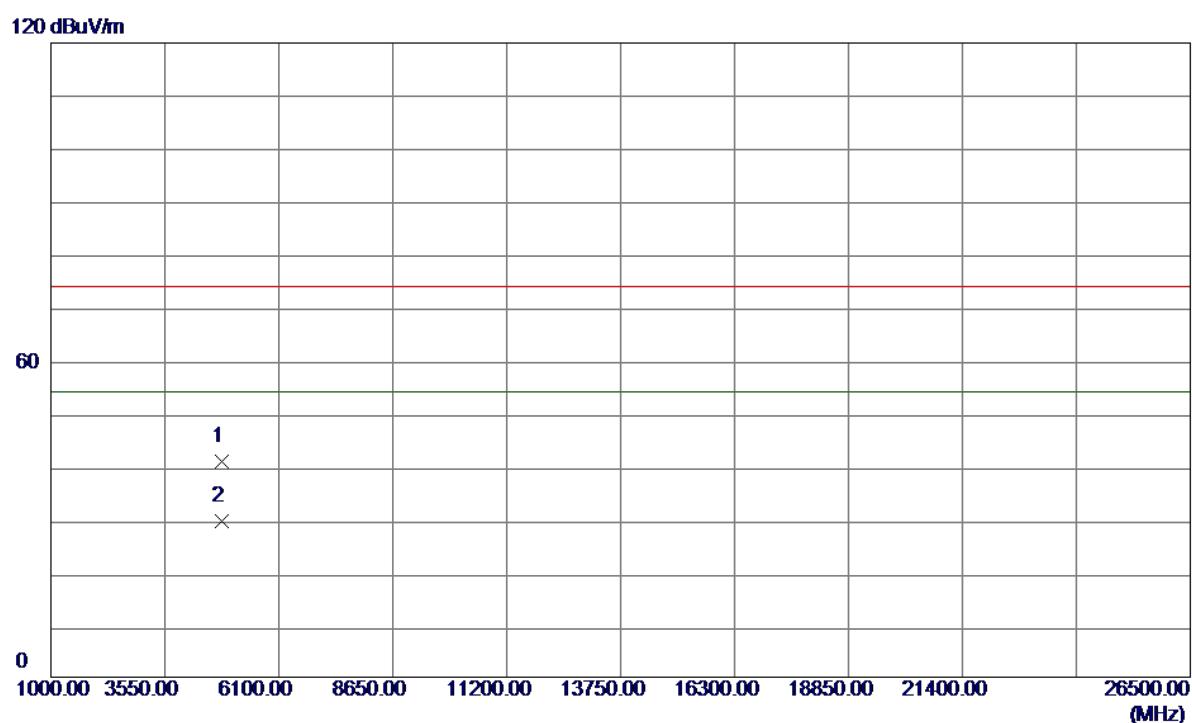
Orthogonal Axis : X

Test Mode : TX G MODE 2412MHz

**Horizontal**

No.	Freq. MHz	Reading Level dBuV/m	Correct Factor dB	Measure ment dBuV/m	Limit dBuV/m	Margin dB	Detector	Comment
1	2390.0000	39.97	30.97	70.94	74.00	-3.06	Peak	
2	2390.0000	21.10	30.97	52.07	54.00	-1.93	AVG	
3	2412.0000	75.41	31.05	106.46	74.00	32.46	Peak	
4 *	2412.0000	66.64	31.05	97.69	54.00	43.69	AVG	

Orthogonal Axis :	X
Test Mode :	TX G MODE 2412MHz

**Horizontal**

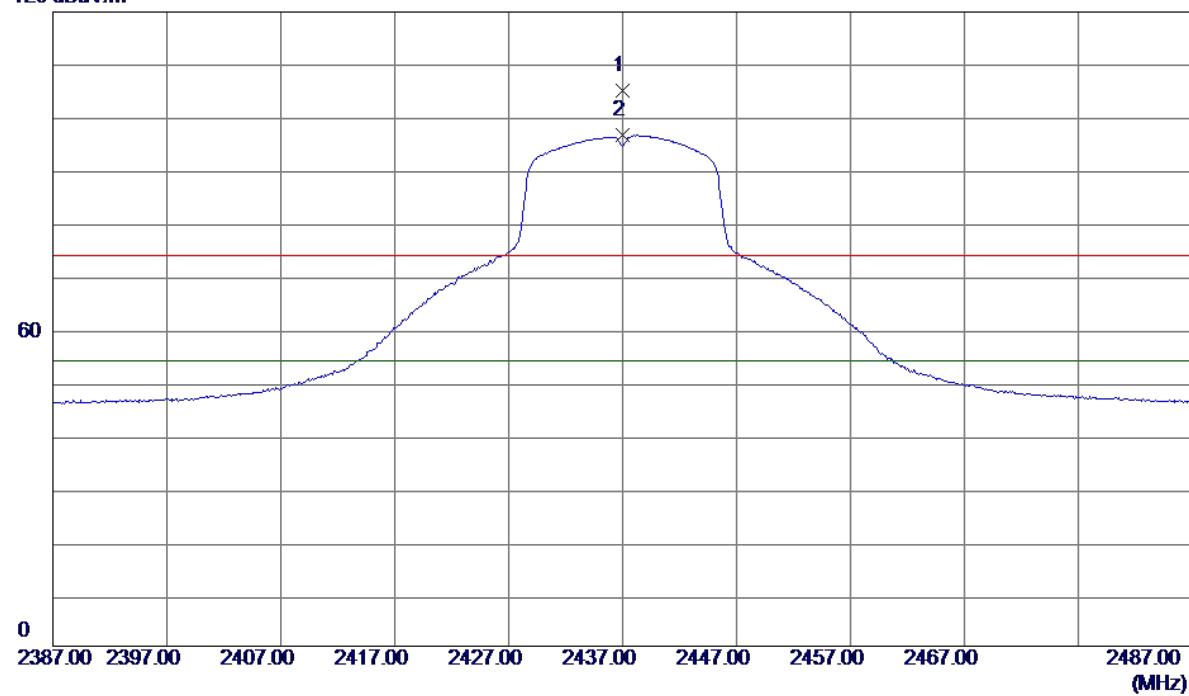
No.	Freq. MHz	Reading Level	Correct Factor	Measure ment	Limit	Margin	Detector	Comment
		dBuV/m	dB	dBuV/m	dBuV/m	dB		
1	4824.0000	52.26	-11.47	40.79	74.00	-33.21	Peak	
2 *	4824.0000	41.00	-11.47	29.53	54.00	-24.47	AVG	

Orthogonal Axis : X

Test Mode : TX G MODE 2437MHz

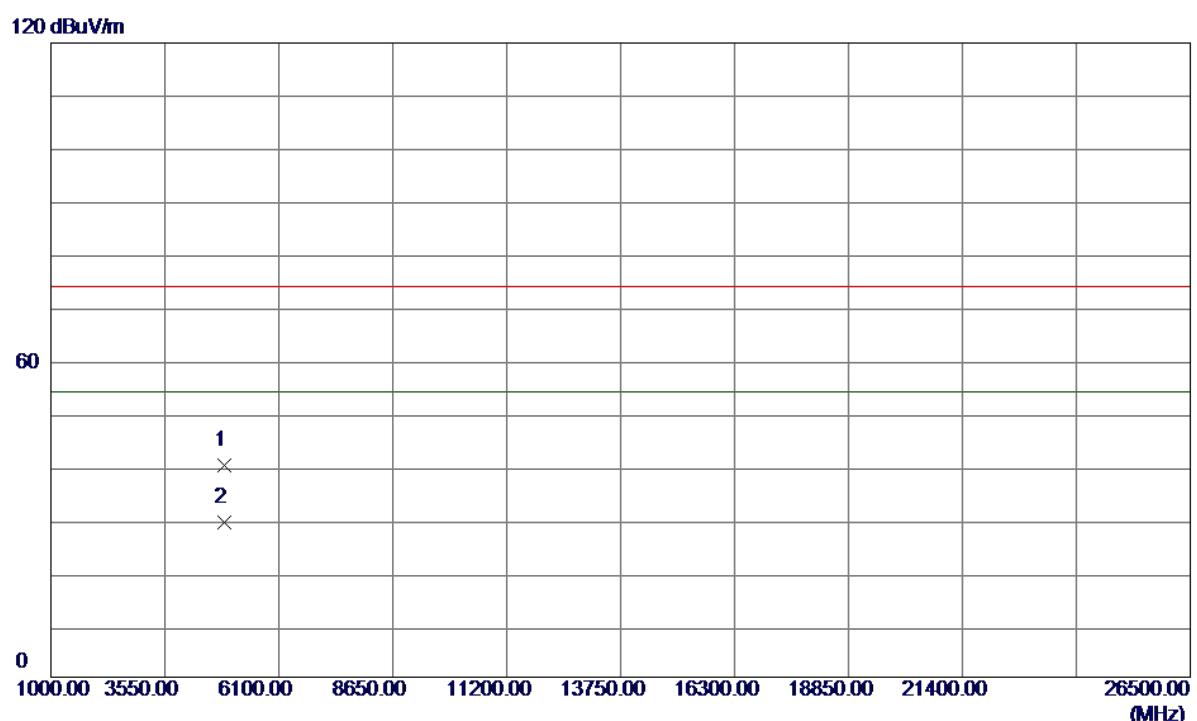
## Vertical

120 dBuV/m



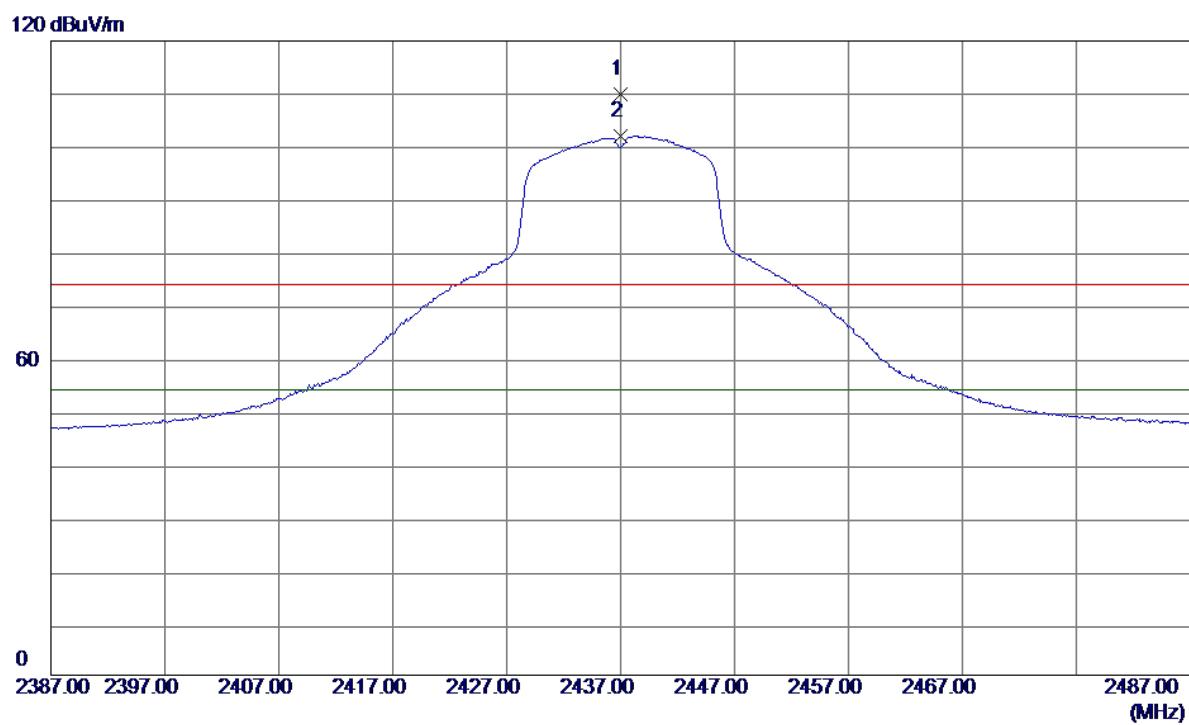
No.	Freq. MHz	Reading Level dBuV/m	Correct Factor dB	Measure- ment dBuV/m	Limit dBuV/m	Margin dB	Detector	Comment
1	2437.0000	73.93	31.14	105.07	74.00	31.07	Peak	
2 *	2437.0000	65.52	31.14	96.66	54.00	42.66	Avg	

Orthogonal Axis :	X
Test Mode :	TX G MODE 2437MHz

**Vertical**

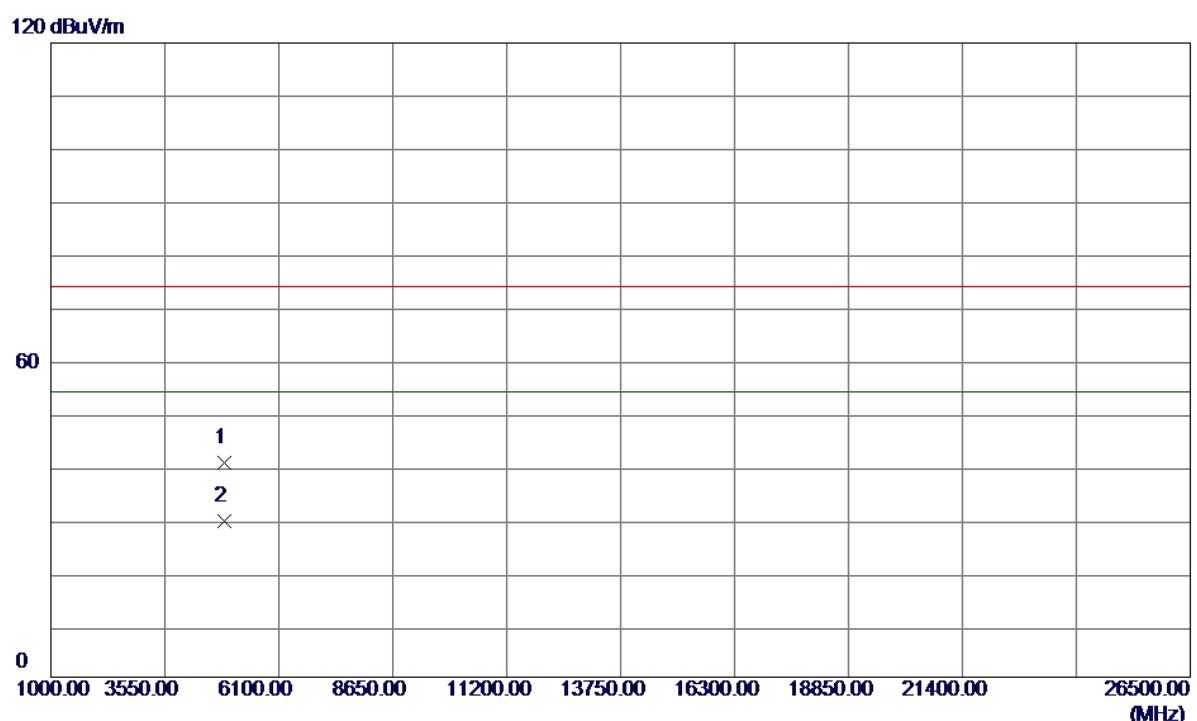
No.	Freq.	Reading	Correct	Measure	Limit	Margin	Detector	Comment
		Level	Factor	ment	dBuV/m	dB		
1	4874.0000	51.49	-11.39	40.10	74.00	-33.90	Peak	
2 *	4874.0000	40.57	-11.39	29.18	54.00	-24.82	AVG	

Orthogonal Axis :	X
Test Mode :	TX G MODE 2437MHz

**Horizontal**

No.	Freq.	Reading Level	Correct Factor	Measure ment	Limit	Margin	Detector	Comment
	MHz	dBuV/m	dB	dBuV/m	dBuV/m	dB		
1	2437.0000	78.71	31.14	109.85	74.00	35.85	Peak	
2 *	2437.0000	70.88	31.14	102.02	54.00	48.02	AVG	

Orthogonal Axis :	X
Test Mode :	TX G MODE 2437MHz

**Horizontal**

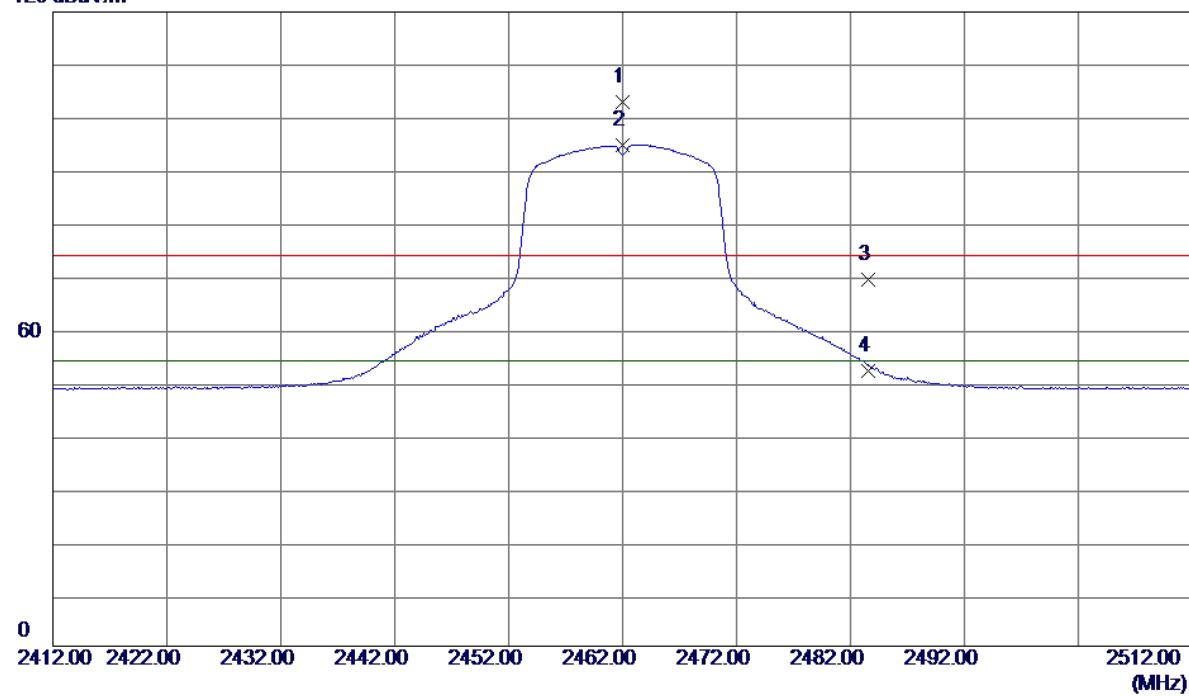
No.	Freq. MHz	Reading Level	Correct Factor	Measure ment	Limit	Margin	Detector	Comment
		dBuV/m	dB	dBuV/m	dBuV/m	dB		
1	4874.0000	51.91	-11.39	40.52	74.00	-33.48	Peak	
2 *	4874.0000	41.02	-11.39	29.63	54.00	-24.37	AVG	

Orthogonal Axis : X

Test Mode : TX G MODE 2462MHz

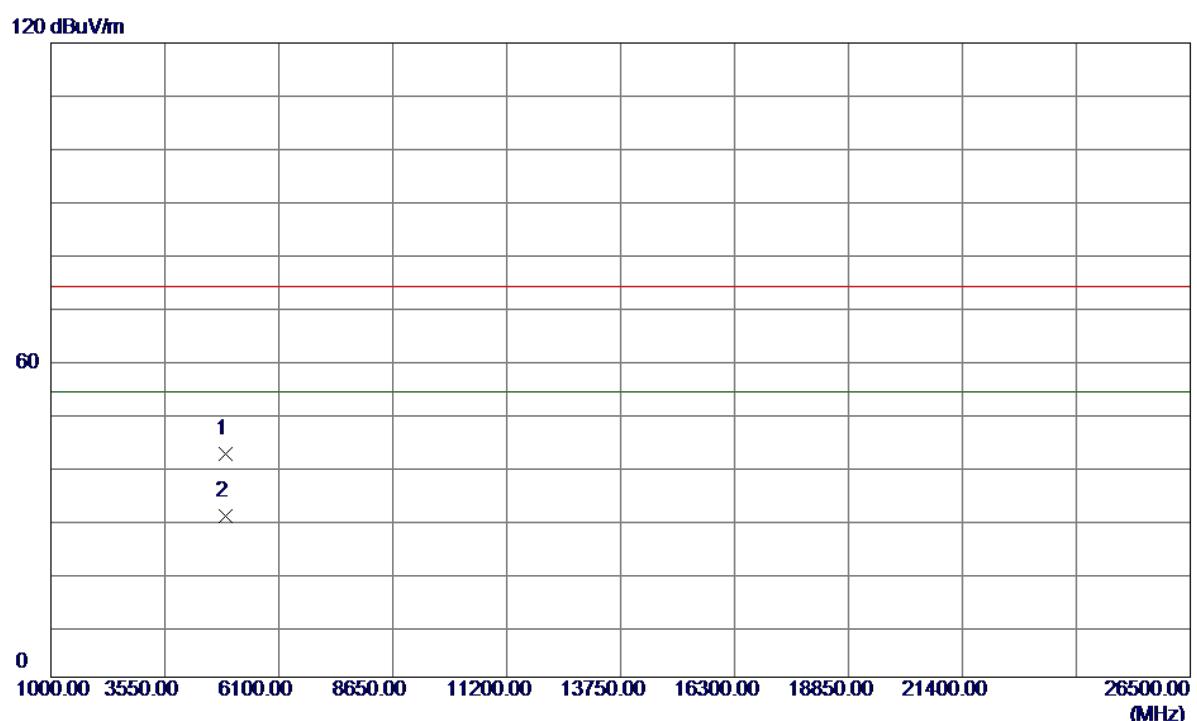
## Vertical

120 dBuV/m



No.	Freq.	Reading Level	Correct Factor	Measurement	Limit	Margin	Detector	Comment
	MHz	dBuV/m	dB	dBuV/m	dBuV/m	dB		
1	2462.0000	71.83	31.23	103.06	74.00	29.06	Peak	
2 *	2462.0000	63.59	31.23	94.82	54.00	40.82	AVG	
3	2483.5330	37.96	31.31	69.27	74.00	-4.73	Peak	
4	2483.5330	20.69	31.31	52.00	54.00	-2.00	AVG	

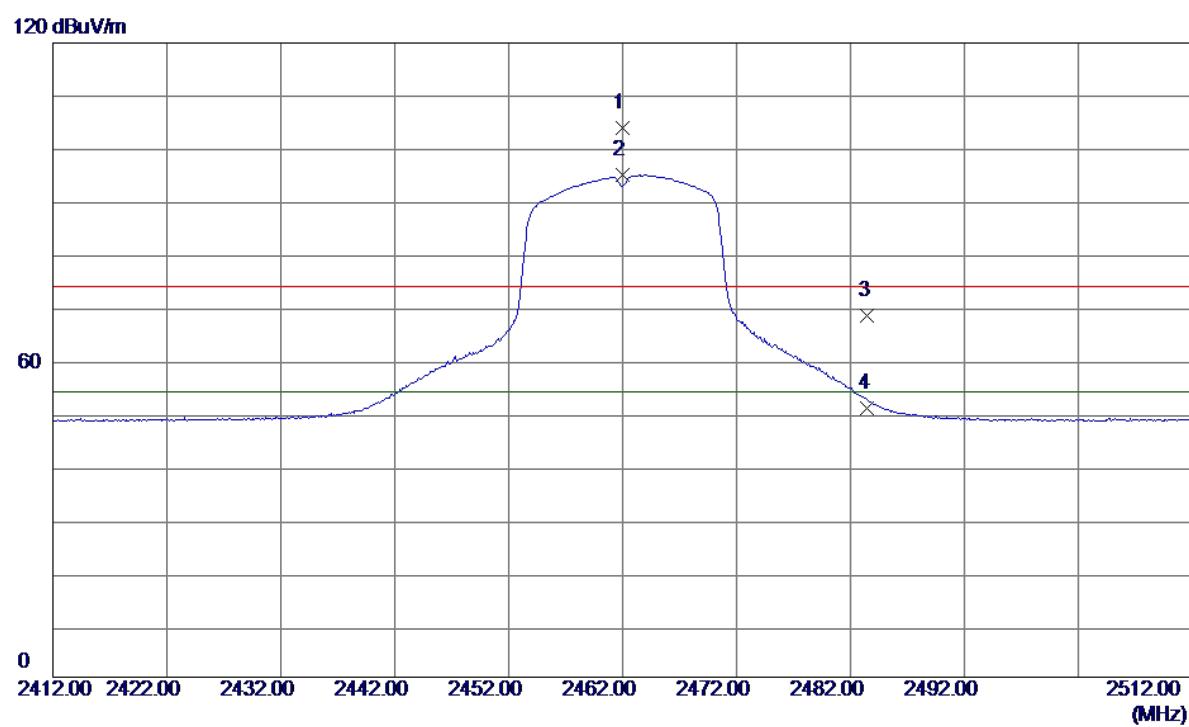
Orthogonal Axis :	X
Test Mode :	TX G MODE 2462MHz

**Vertical**

No.	Freq.	Reading Level	Correct Factor	Measurement	Limit	Margin	Detector	Comment
	MHz	dBuV/m	dB	dBuV/m	dBuV/m	dB		
1	4924.0000	53.57	-11.32	42.25	74.00	-31.75	Peak	
2 *	4924.0000	41.91	-11.32	30.59	54.00	-23.41	AVG	

Orthogonal Axis : X

Test Mode : TX G MODE 2462MHz

**Horizontal**

No.	Freq. MHz	Reading Level dBuV/m	Correct Factor dB	Measure ment dBuV/m	Limit dBuV/m	Margin dB	Detector	Comment
1	2462.0000	72.58	31.23	103.81	74.00	29.81	Peak	
2 *	2462.0000	63.86	31.23	95.09	54.00	41.09	AVG	
3	2483.5000	37.21	31.31	68.52	74.00	-5.48	Peak	
4	2483.5000	19.61	31.31	50.92	54.00	-3.08	AVG	

Orthogonal Axis :	X
Test Mode :	TX G MODE 2462MHz

**Horizontal**

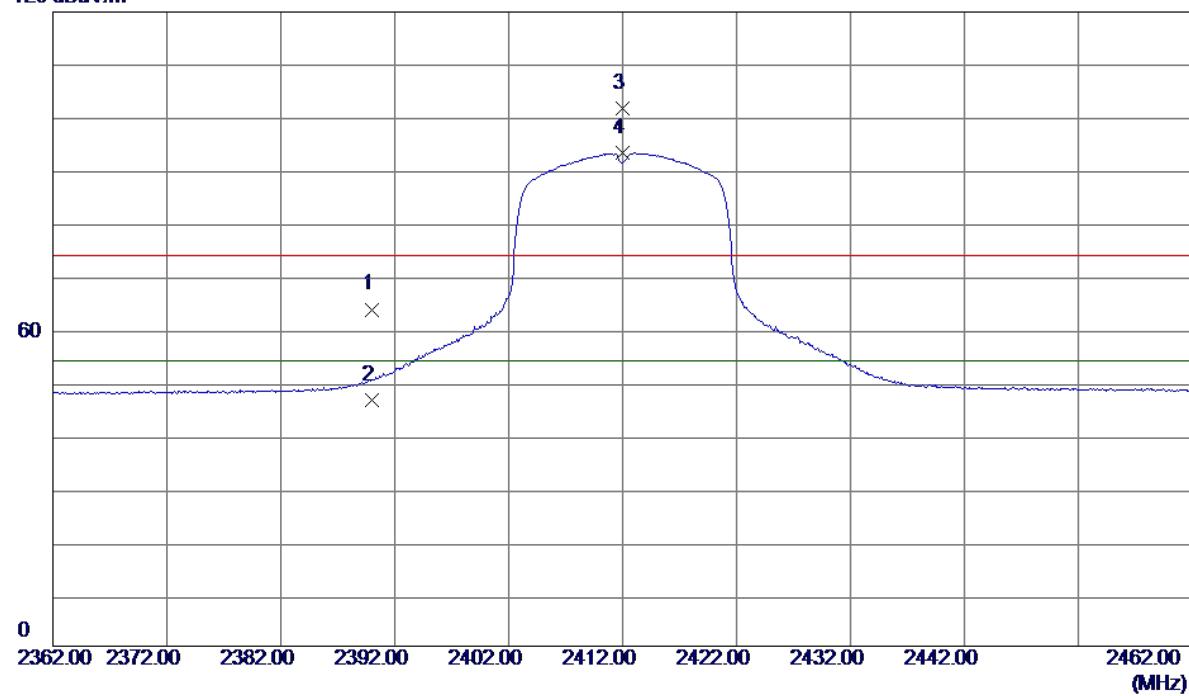
No.	Freq. MHz	Reading Level	Correct Factor	Measure ment	Limit	Margin	Detector	Comment
		dBuV/m	dB	dBuV/m	dBuV/m	dB		
1	4924.0000	53.06	-11.32	41.74	74.00	-32.26	Peak	
2 *	4924.0000	41.77	-11.32	30.45	54.00	-23.55	AVG	

Orthogonal Axis : X

Test Mode : TX N-20M MODE 2412MHz

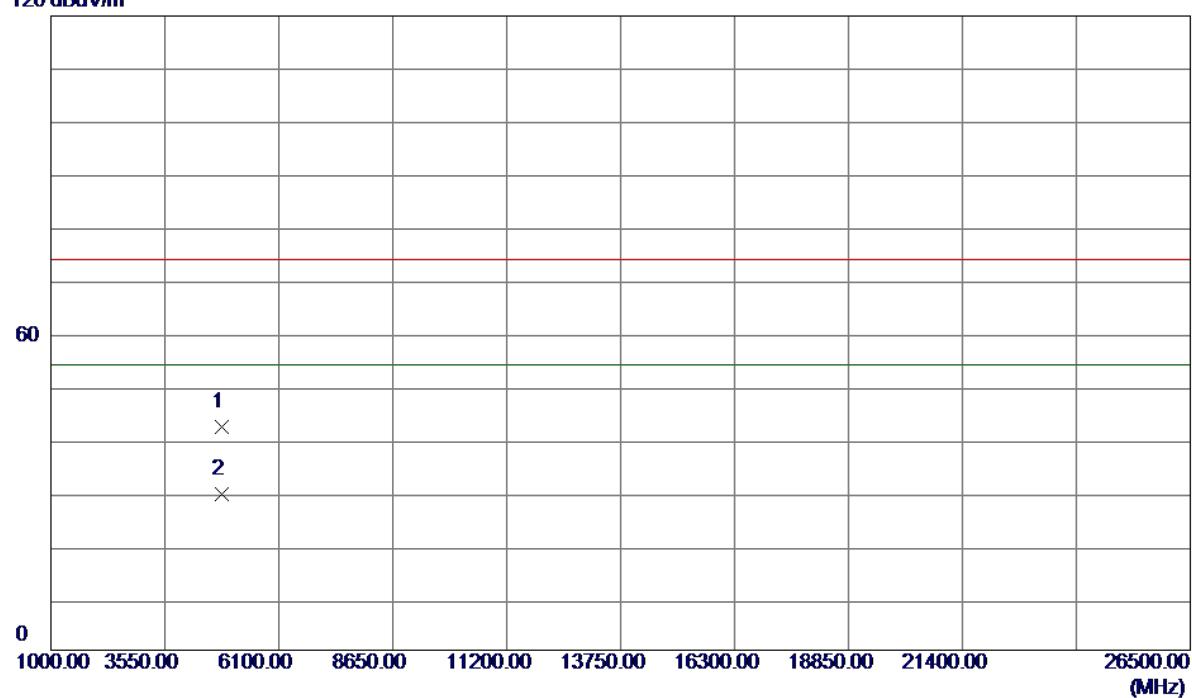
## Vertical

120 dBuV/m



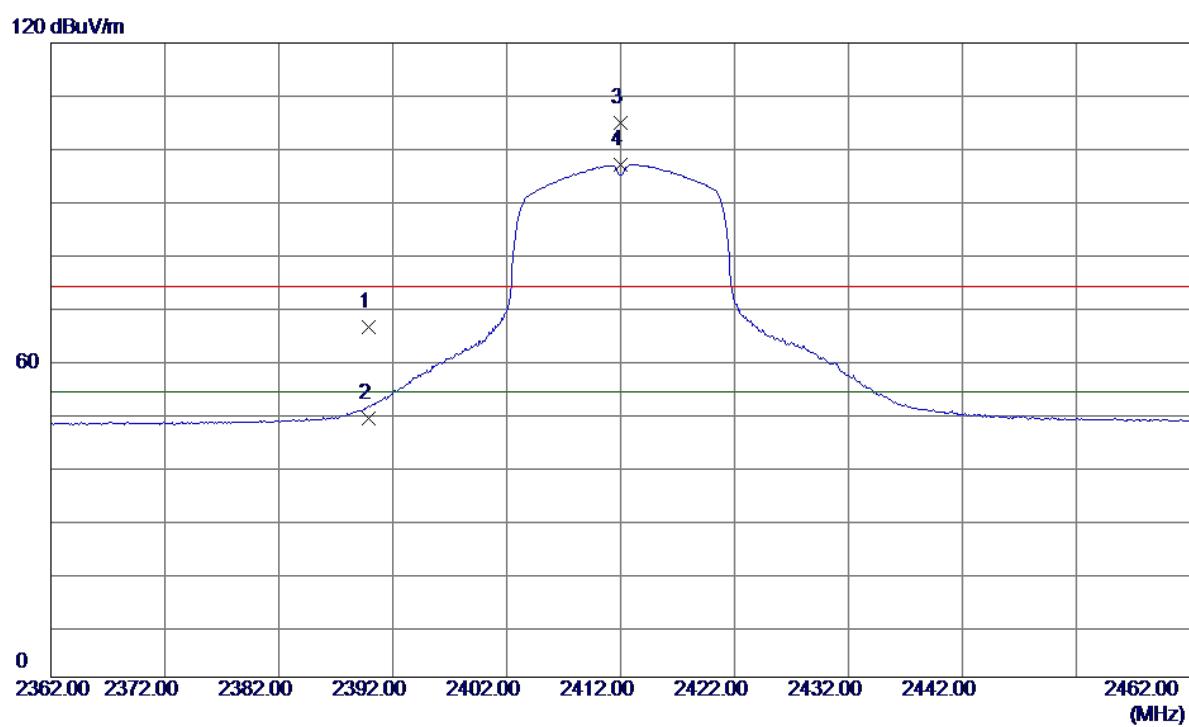
No.	Freq. MHz	Reading Level dBuV/m	Correct Factor dB	Measure- ment dBuV/m	Limit dBuV/m	Margin dB	Detector	Comment
1	2389.9720	32.76	30.96	63.72	74.00	-10.28	Peak	
2	2389.9720	15.69	30.96	46.65	54.00	-7.35	AVG	
3	2412.0000	70.72	31.05	101.77	74.00	27.77	Peak	
4 *	2412.0000	62.22	31.05	93.27	54.00	39.27	AVG	

Orthogonal Axis :	X
Test Mode :	TX N-20M MODE 2412MHz

**Vertical****120 dBuV/m**

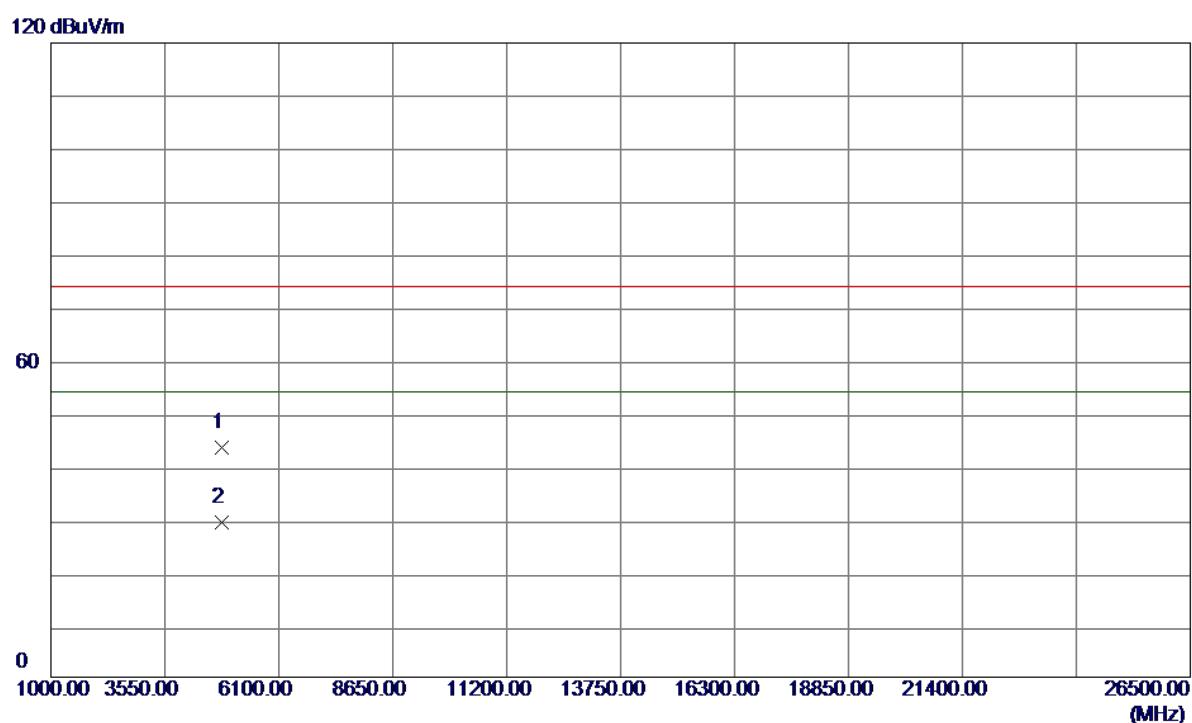
No.	Freq. MHz	Reading Level	Correct Factor	Measure ment	Limit	Margin	Detector	Comment
		dBuV/m	dB	dBuV/m	dBuV/m	dB		
1	4824.0000	53.72	-11.47	42.25	74.00	-31.75	Peak	
2 *	4824.0000	41.08	-11.47	29.61	54.00	-24.39	AVG	

Orthogonal Axis :	X
Test Mode :	TX N-20M MODE 2412MHz

**Horizontal**

No.	Freq. MHz	Reading Level dBuV/m	Correct Factor dB	Measure- ment dBuV/m	Limit dBuV/m	Margin dB	Detector	Comment
1	2389.8879	35.23	30.96	66.19	74.00	-7.81	Peak	
2	2389.8879	18.06	30.96	49.02	54.00	-4.98	AVG	
3	2412.0000	73.91	31.05	104.96	74.00	30.96	Peak	
4 *	2412.0000	65.96	31.05	97.01	54.00	43.01	AVG	

Orthogonal Axis :	X
Test Mode :	TX N-20M MODE 2412MHz

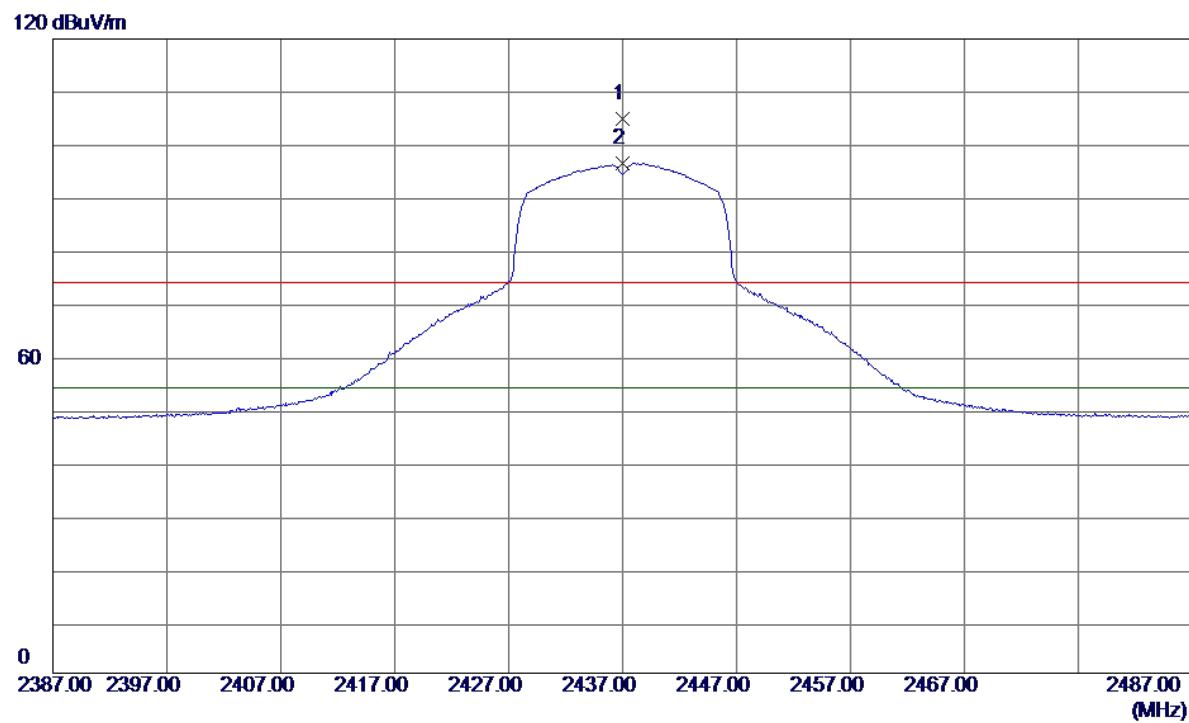
**Horizontal**

No.	Freq.	Reading Level	Correct Factor	Measurement	Limit	Margin	Detector	Comment
	MHz	dBuV/m	dB	dBuV/m	dBuV/m	dB		
1	4824.0000	54.83	-11.47	43.36	74.00	-30.64	Peak	
2 *	4824.0000	40.76	-11.47	29.29	54.00	-24.71	AVG	

Orthogonal Axis : X

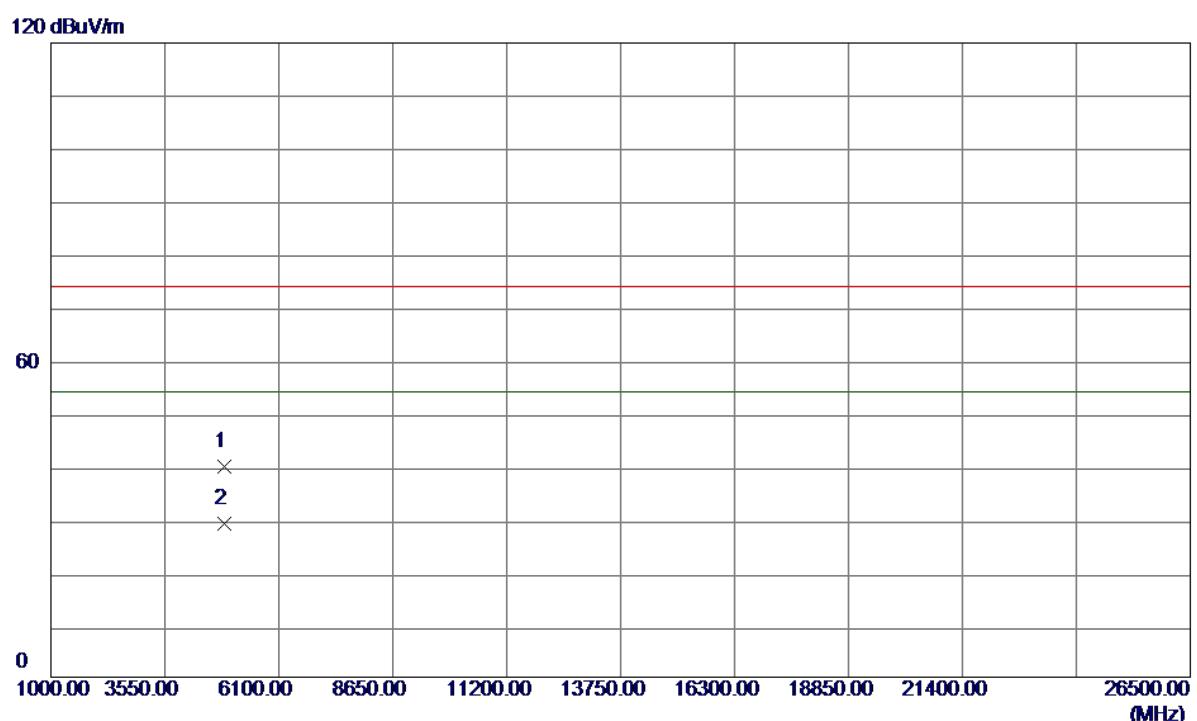
Test Mode : TX N-20M MODE 2437MHz

## Vertical



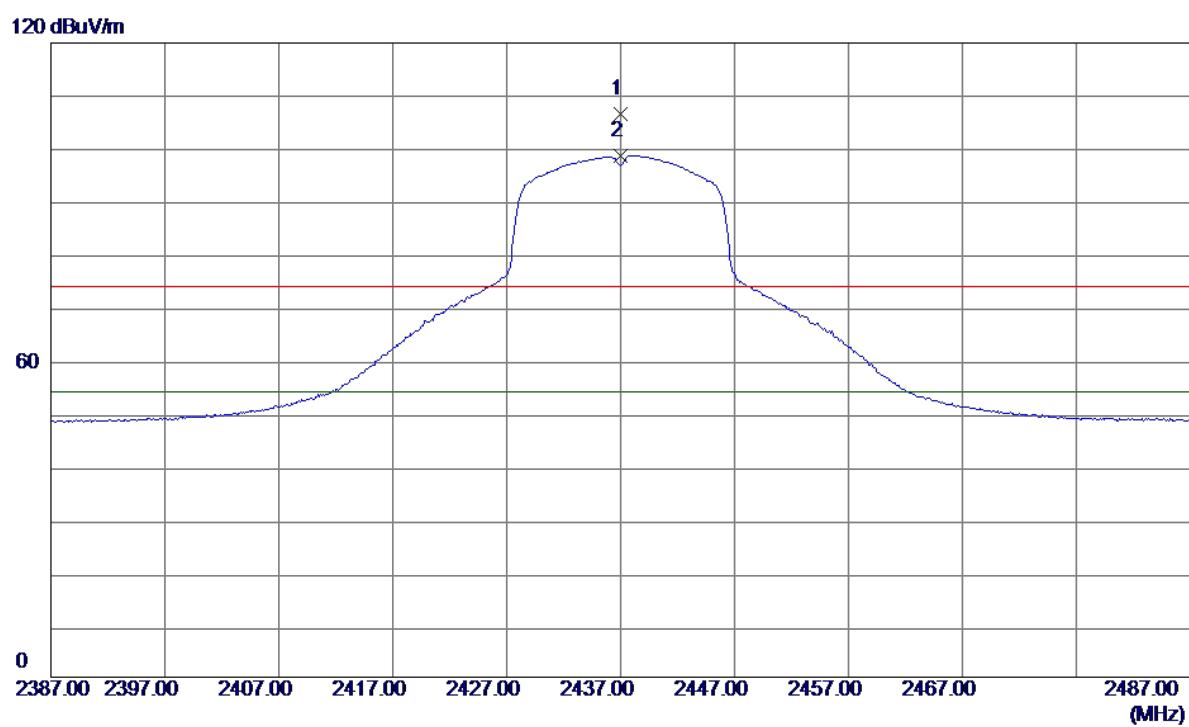
No.	Freq.	Reading Level	Correct Factor	Measurement	Limit	Margin	Detector	Comment
	MHz	dBuV/m	dB	dBuV/m	dBuV/m	dB		
1	2437.0000	73.67	31.14	104.81	74.00	30.81	Peak	
2 *	2437.0000	65.29	31.14	96.43	54.00	42.43	AVG	

Orthogonal Axis :	X
Test Mode :	TX N-20M MODE 2437MHz

**Vertical**

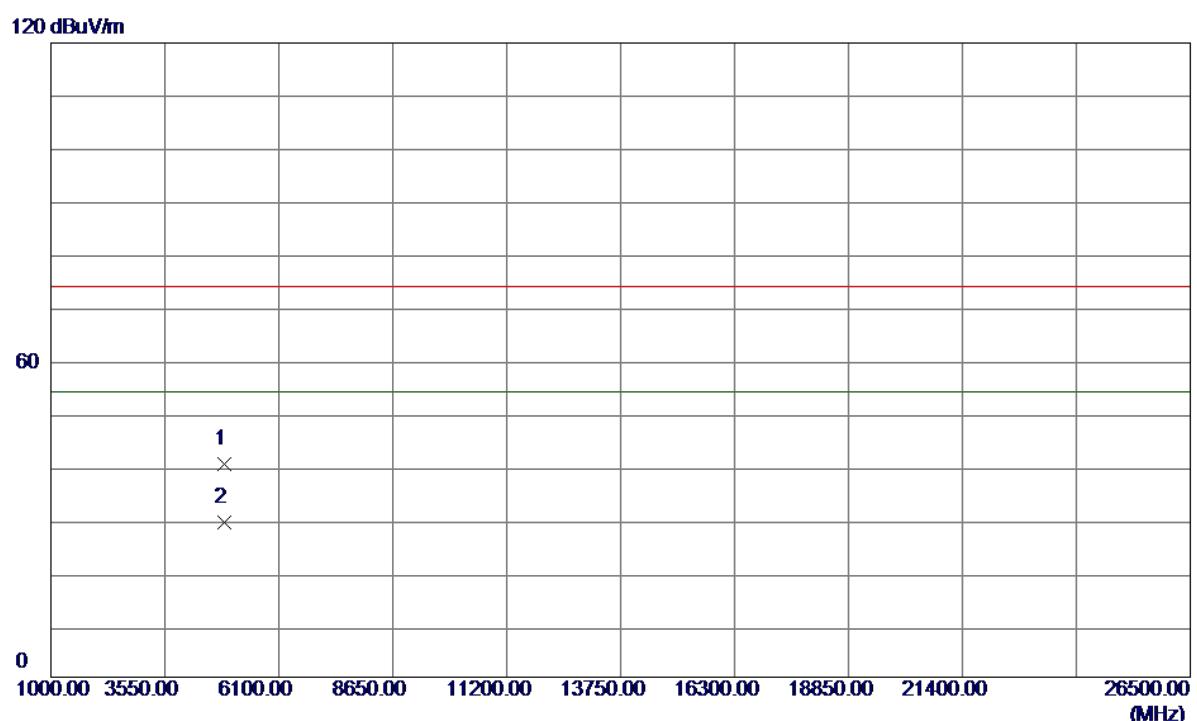
No.	Freq.	Reading Level	Correct Factor	Measurement	Limit	Margin	Detector	Comment
	MHz	dBuV/m	dB	dBuV/m	dBuV/m	dB		
1	4874.0000	51.17	-11.39	39.78	74.00	-34.22	Peak	
2 *	4874.0000	40.47	-11.39	29.08	54.00	-24.92	AVG	

Orthogonal Axis :	X
Test Mode :	TX N-20M MODE 2437MHz

**Horizontal**

No.	Freq.	Reading Level	Correct Factor	Measurement	Limit	Margin	Detector	Comment
	MHz	dBuV/m	dB	dBuV/m	dBuV/m	dB		
1	2437.0000	75.44	31.14	106.58	74.00	32.58	Peak	
2 *	2437.0000	67.59	31.14	98.73	54.00	44.73	AVG	

Orthogonal Axis :	X
Test Mode :	TX N-20M MODE 2437MHz

**Horizontal**

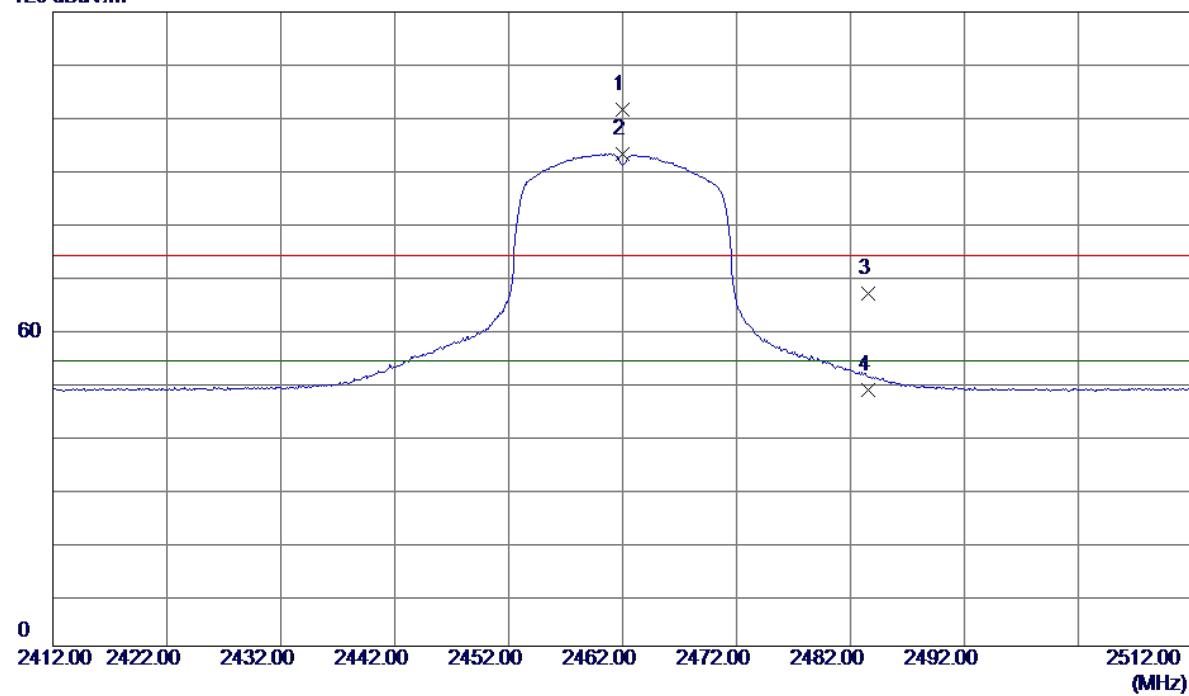
No.	Freq.	Reading	Correct	Measure	Limit	Margin	Detector	Comment
		Level	Factor	ment	dBuV/m	dB		
1	4874.0000	51.79	-11.39	40.40	74.00	-33.60	Peak	
2 *	4874.0000	40.62	-11.39	29.23	54.00	-24.77	AVG	

Orthogonal Axis : X

Test Mode : TX N-20M MODE 2462MHz

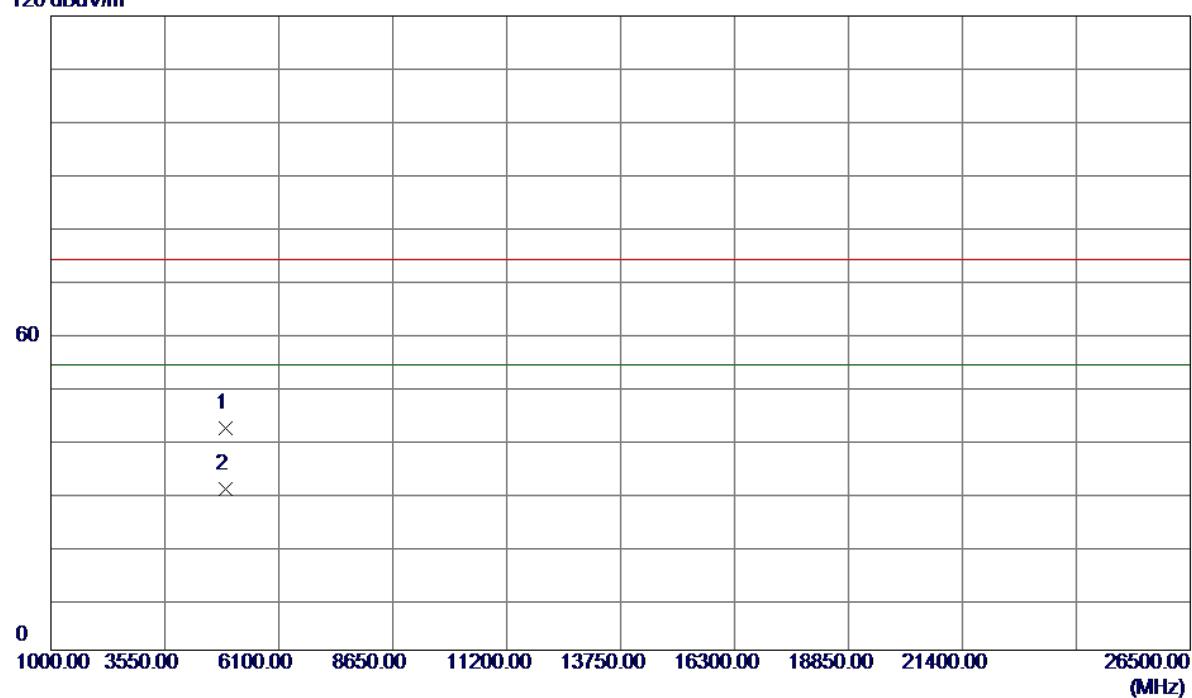
## Vertical

120 dBuV/m



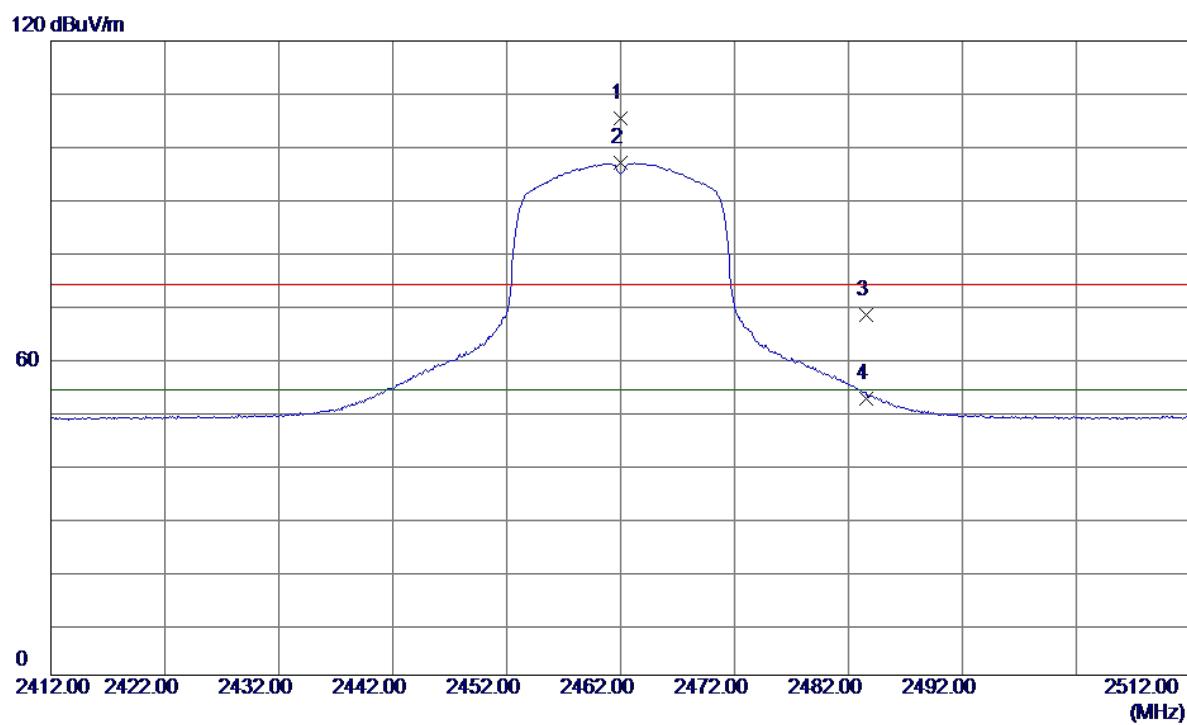
No.	Freq. MHz	Reading Level dBuV/m	Correct Factor dB	Measure- ment dBuV/m	Limit dBuV/m	Margin dB	Detector	Comment
1	2462.0000	70.36	31.23	101.59	74.00	27.59	Peak	
2 *	2462.0000	61.83	31.23	93.06	54.00	39.06	AVG	
3	2483.5500	35.36	31.31	66.67	74.00	-7.33	Peak	
4	2483.5500	17.19	31.31	48.50	54.00	-5.50	AVG	

Orthogonal Axis :	X
Test Mode :	TX N-20M MODE 2462MHz

**Vertical****120 dBuV/m**

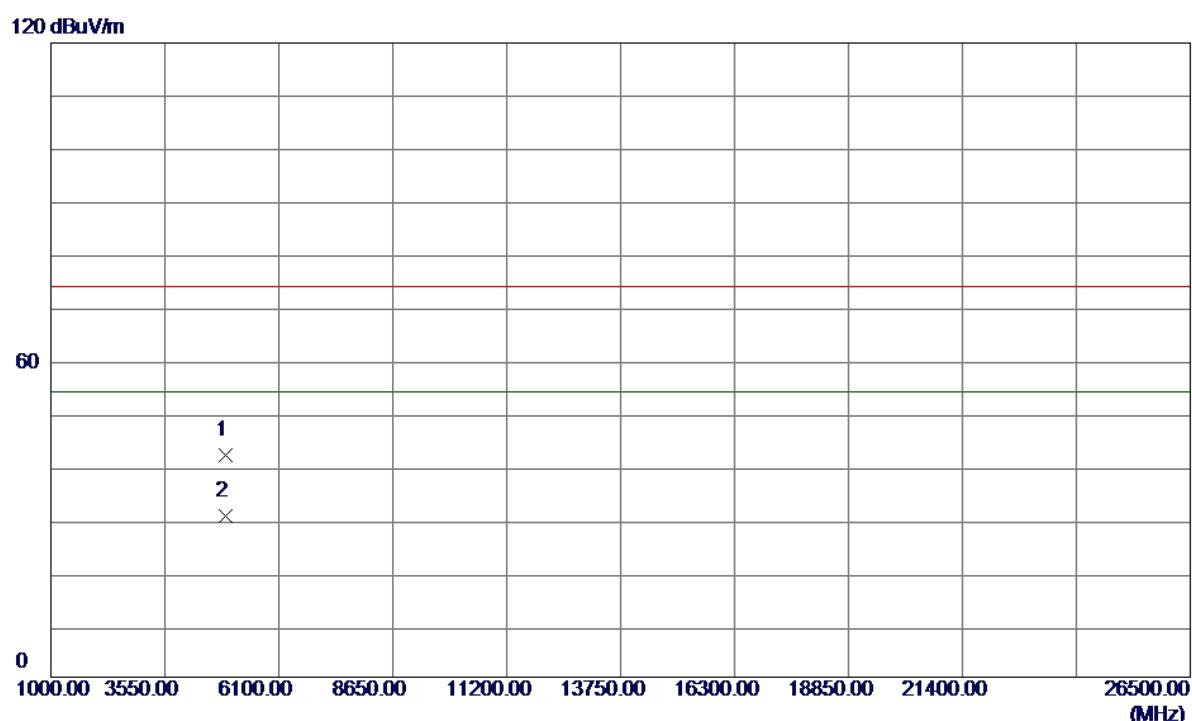
No.	Freq. MHz	Reading Level dBuV/m	Correct Factor dB	Measure ment dBuV/m	Limit dBuV/m	Margin dB	Detector	Comment
1	4924.0000	53.24	-11.32	41.92	74.00	-32.08	Peak	
2 *	4924.0000	41.73	-11.32	30.41	54.00	-23.59	AVG	

Orthogonal Axis :	X
Test Mode :	TX N-20M MODE 2462MHz

**Horizontal**

No.	Freq. MHz	Reading Level dBuV/m	Correct Factor dB	Measure- ment dBuV/m	Limit dBuV/m	Margin dB	Detector	Comment
1	2462.0000	74.23	31.23	105.46	74.00	31.46	Peak	
2 *	2462.0000	65.63	31.23	96.86	54.00	42.86	AVG	
3	2483.5660	36.83	31.31	68.14	74.00	-5.86	Peak	
4	2483.5660	21.06	31.31	52.37	54.00	-1.63	AVG	

Orthogonal Axis :	X
Test Mode :	TX N-20M MODE 2462MHz

**Horizontal**

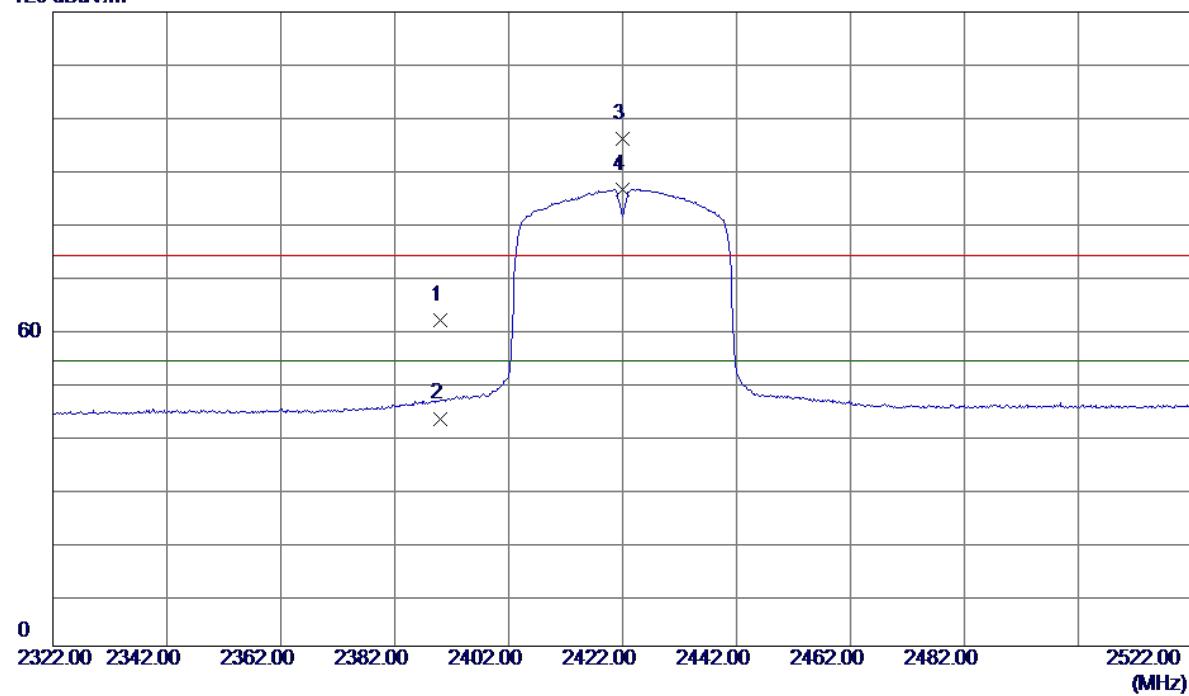
No.	Freq.	Reading Level	Correct Factor	Measurement	Limit	Margin	Detector	Comment
	MHz	dBuV/m	dB	dBuV/m	dBuV/m	dB		
1	4924.0000	53.30	-11.32	41.98	74.00	-32.02	Peak	
2 *	4924.0000	41.87	-11.32	30.55	54.00	-23.45	AVG	

Orthogonal Axis : X

Test Mode : TX N-40M MODE 2422MHz

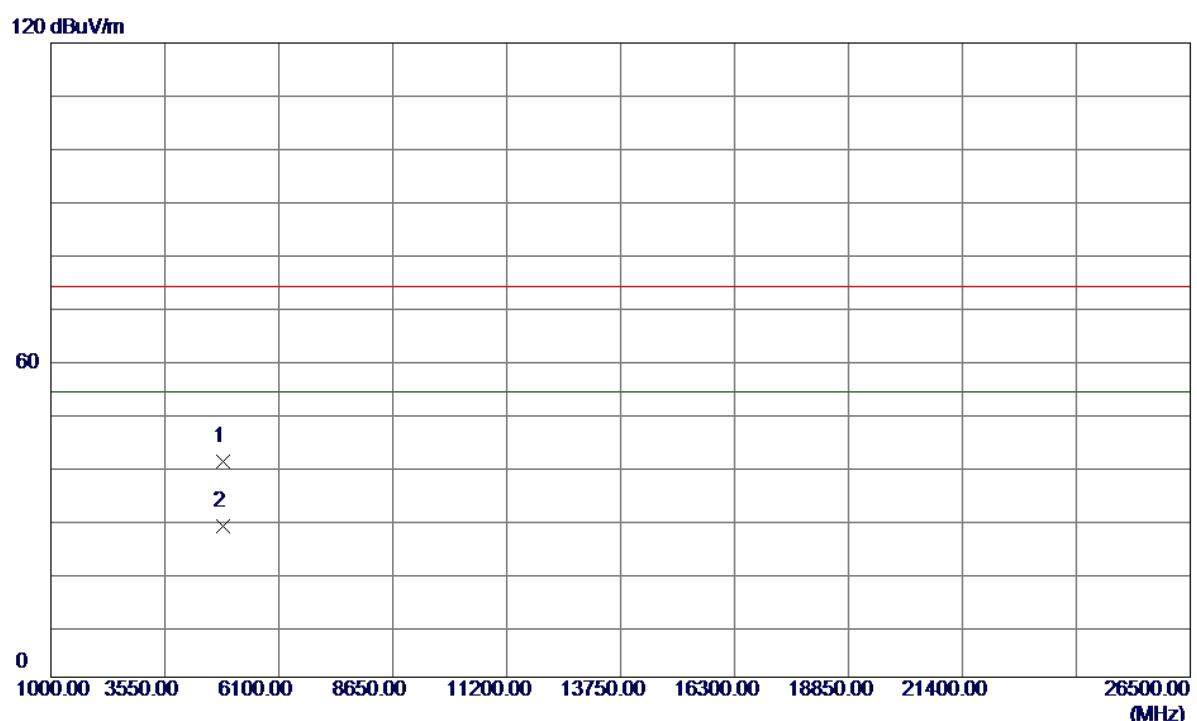
## Vertical

120 dBuV/m

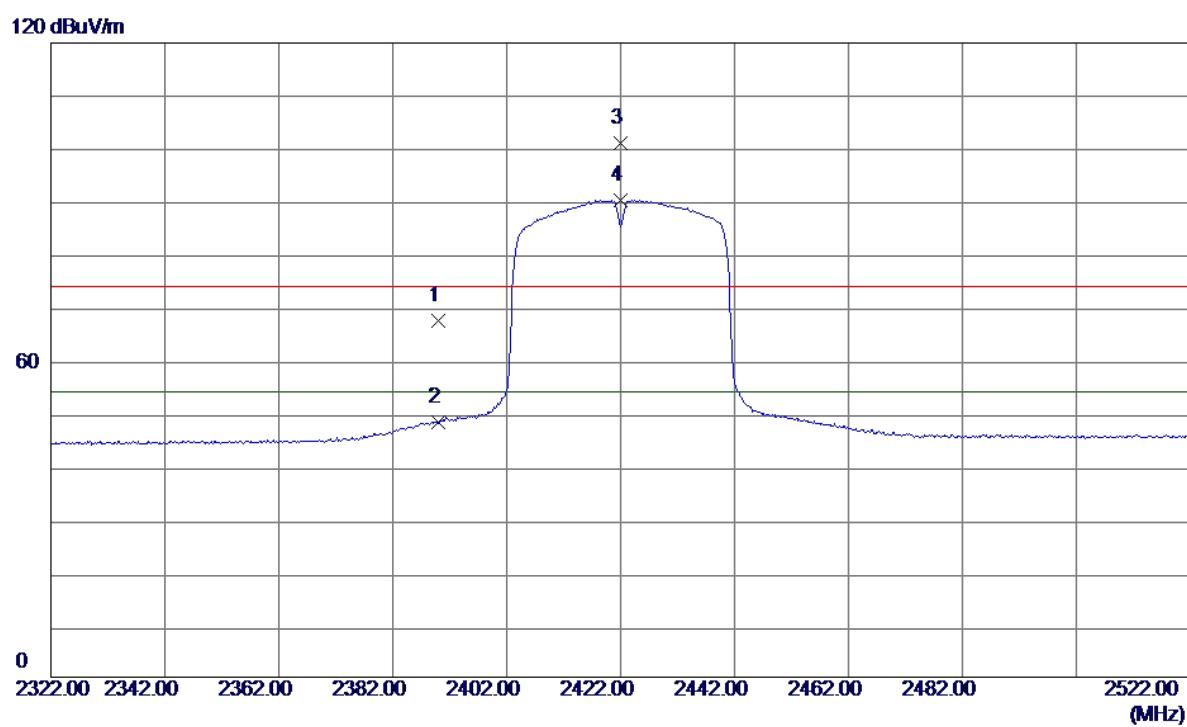


No.	Freq. MHz	Reading Level dBuV/m	Correct Factor dB	Measure- ment dBuV/m	Limit dBuV/m	Margin dB	Detector	Comment
1	2390.0000	30.74	30.97	61.71	74.00	-12.29	Peak	
2	2390.0000	12.11	30.97	43.08	54.00	-10.92	AVG	
3	2422.0000	64.98	31.08	96.06	74.00	22.06	Peak	
4 *	2422.0000	55.34	31.08	86.42	54.00	32.42	AVG	

Orthogonal Axis :	X
Test Mode :	TX N-40M MODE 2422MHz

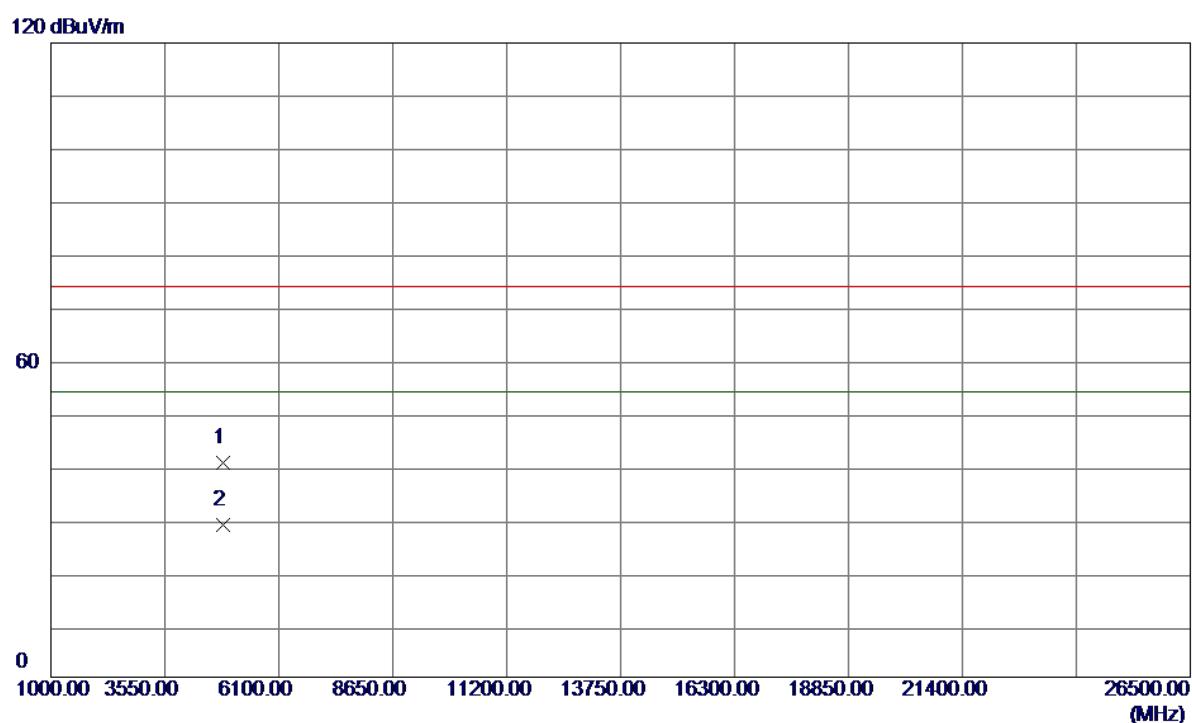
**Vertical**

Orthogonal Axis :	X
Test Mode :	TX N-40M MODE 2422MHz

**Horizontal**

No.	Freq. MHz	Reading Level dBuV/m	Correct Factor dB	Measure ment dBuV/m	Limit dBuV/m	Margin dB	Detector	Comment
1	2390.0000	36.48	30.97	67.45	74.00	-6.55	Peak	
2	2390.0000	17.33	30.97	48.30	54.00	-5.70	AVG	
3	2422.0000	69.86	31.08	100.94	74.00	26.94	Peak	
4 *	2422.0000	59.13	31.08	90.21	54.00	36.21	AVG	

Orthogonal Axis :	X
Test Mode :	TX N-40M MODE 2422MHz

**Horizontal**

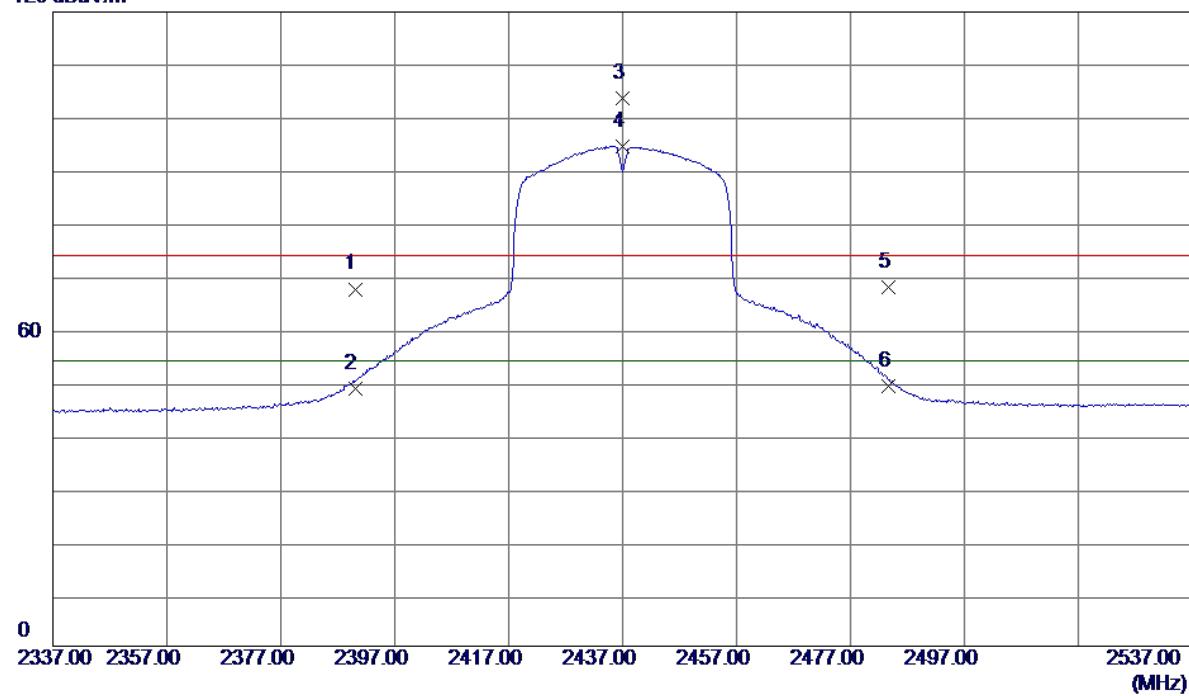
No.	Freq.	Reading Level	Correct Factor	Measurement	Limit	Margin	Detector	Comment
	MHz	dBuV/m	dB	dBuV/m	dBuV/m	dB		
1	4844.0000	52.04	-11.44	40.60	74.00	-33.40	Peak	
2 *	4844.0000	40.17	-11.44	28.73	54.00	-25.27	AVG	

Orthogonal Axis : X

Test Mode : TX N-40M MODE 2437MHz

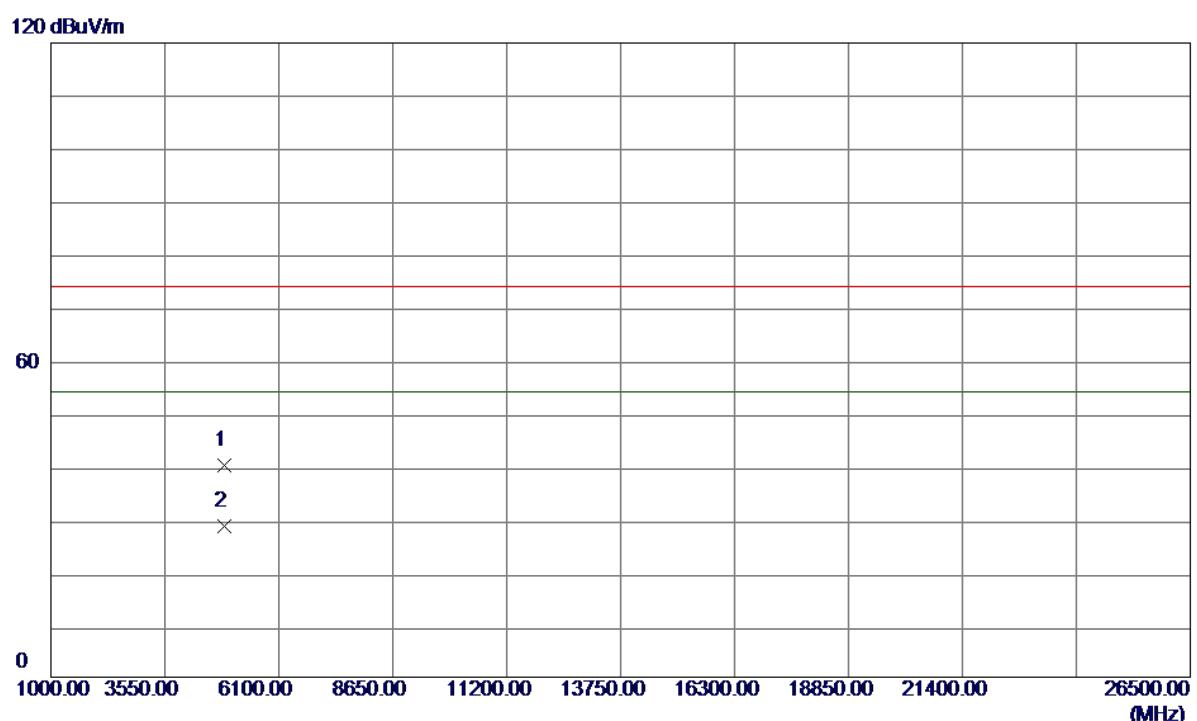
**Vertical**

120 dBuV/m

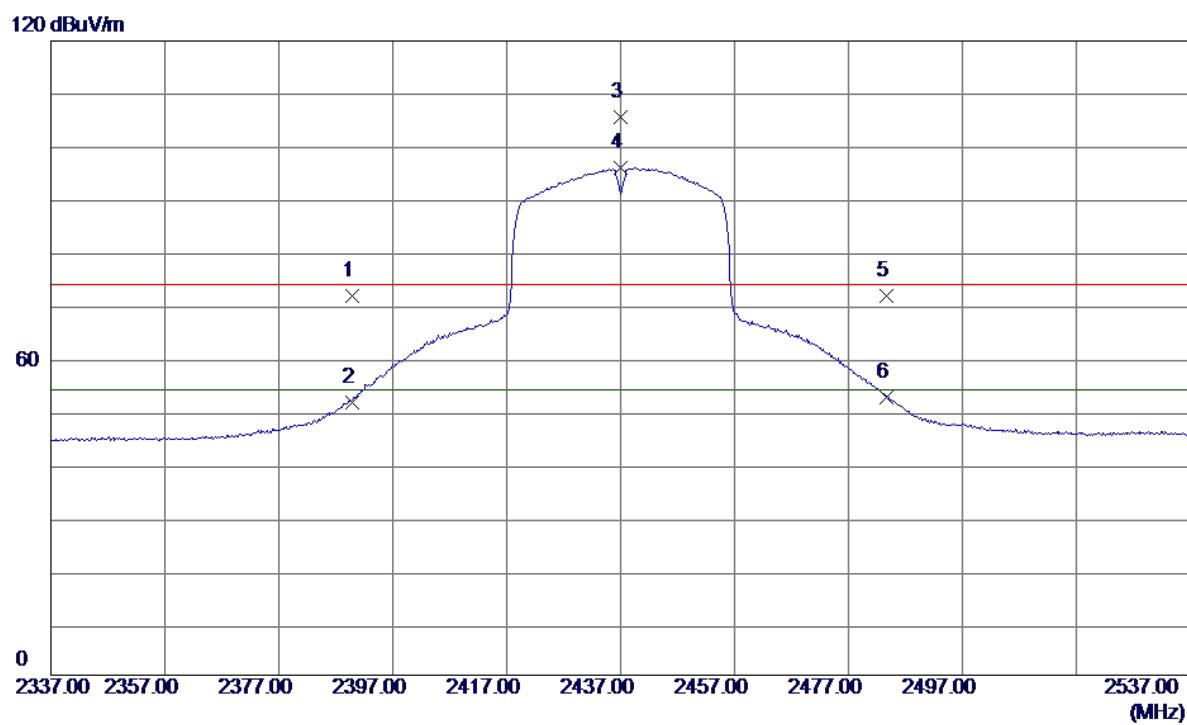


No.	Freq.	Reading Level	Correct Factor	Measurement	Limit	Margin	Detector	Comment
	MHz	dBuV/m	dB	dBuV/m	dBuV/m	dB		
1	2390.0000	36.59	30.97	67.56	74.00	-6.44	Peak	
2	2390.0000	17.75	30.97	48.72	54.00	-5.28	AVG	
3	2437.0000	72.53	31.14	103.67	74.00	29.67	Peak	
4 *	2437.0000	63.46	31.14	94.60	54.00	40.60	AVG	
5	2483.6480	36.65	31.31	67.96	74.00	-6.04	Peak	
6	2483.6480	17.81	31.31	49.12	54.00	-4.88	AVG	

Orthogonal Axis :	X
Test Mode :	TX N-40M MODE 2437MHz

**Vertical**

Orthogonal Axis :	X
Test Mode :	TX N-40M MODE 2437MHz

**Horizontal**

No.	Freq. MHz	Reading Level dBuV/m	Correct Factor dB	Measure ment dBuV/m	Limit dBuV/m	Margin dB	Detector	Comment
1	2389.7880	40.71	30.96	71.67	74.00	-2.33	Peak	
2	2389.7880	20.62	30.96	51.58	54.00	-2.42	AVG	
3	2437.0000	74.42	31.14	105.56	74.00	31.56	Peak	
4 *	2437.0000	64.90	31.14	96.04	54.00	42.04	AVG	
5	2483.5820	40.46	31.31	71.77	74.00	-2.23	Peak	
6	2483.5820	21.15	31.31	52.46	54.00	-1.54	AVG	

Orthogonal Axis :	X
Test Mode :	TX N-40M MODE 2437MHz

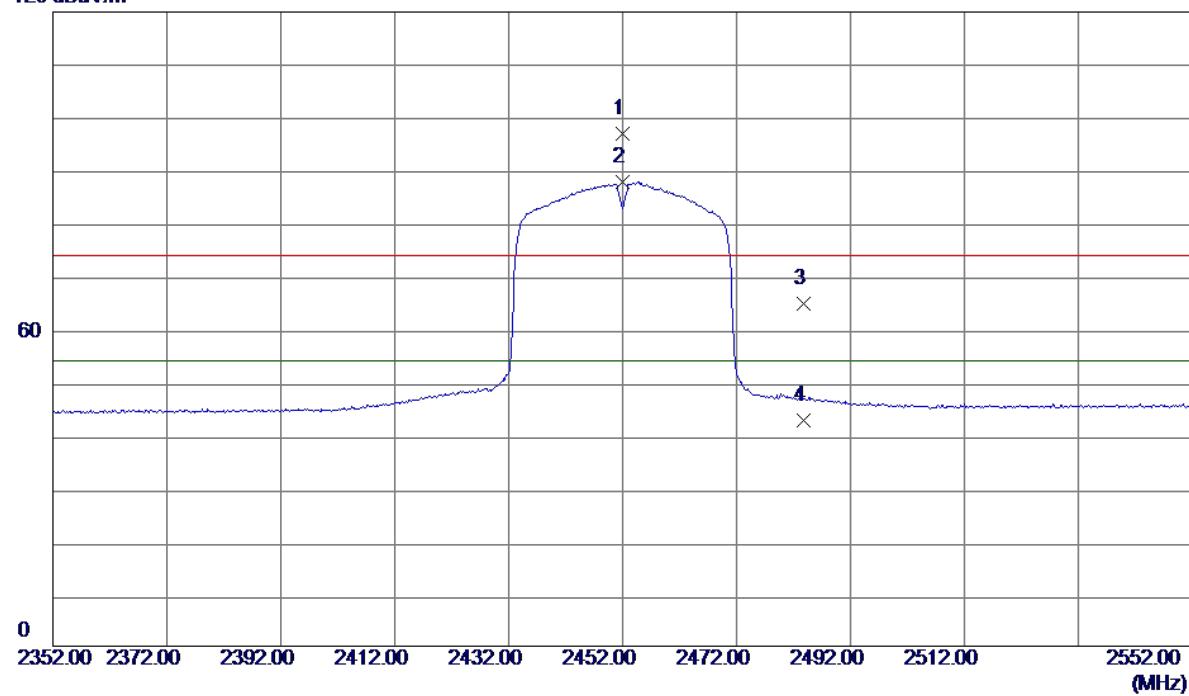
**Horizontal**

Orthogonal Axis : X

Test Mode : TX N-40M MODE 2452MHz

## Vertical

120 dBuV/m

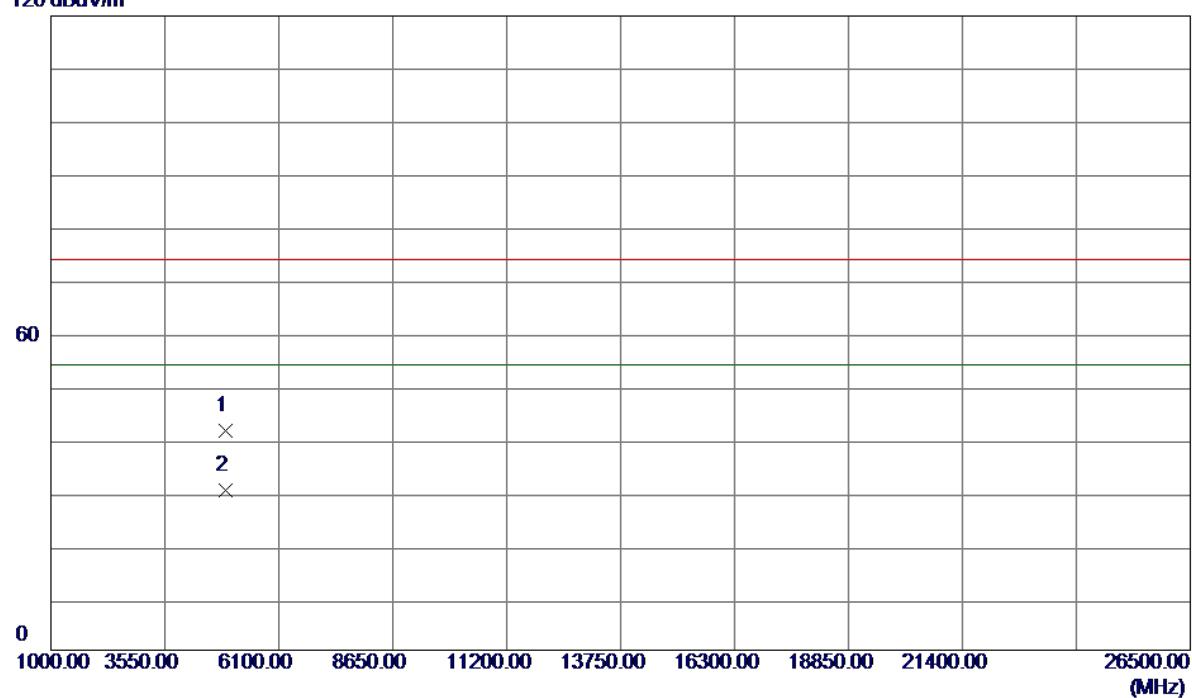


No.	Freq.	Reading Level	Correct Factor	Measurement	Limit	Margin	Detector	Comment
	MHz	dBuV/m	dB	dBuV/m	dBuV/m	dB		
1	2452.0000	65.78	31.19	96.97	74.00	22.97	Peak	
2 *	2452.0000	56.59	31.19	87.78	54.00	33.78	AVG	
3	2483.7970	33.37	31.31	64.68	74.00	-9.32	Peak	
4	2483.7970	11.40	31.31	42.71	54.00	-11.29	AVG	

Orthogonal Axis :	X
Test Mode :	TX N-40M MODE 2452MHz

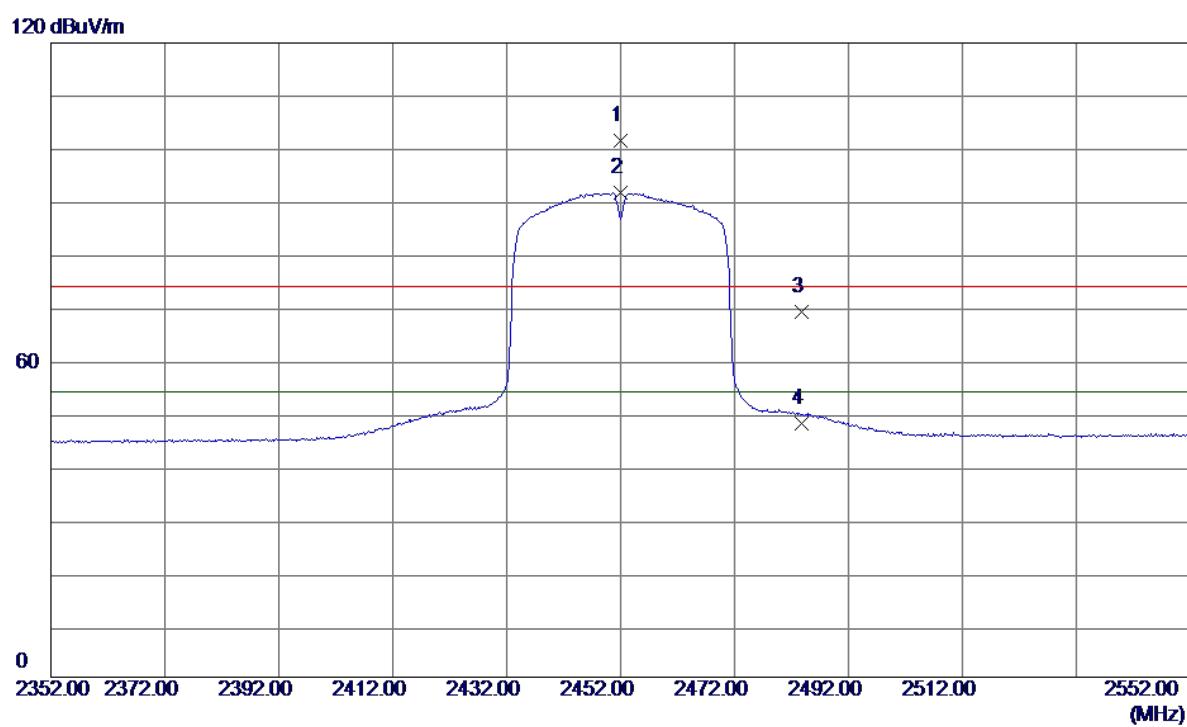
**Vertical**

120 dBuV/m



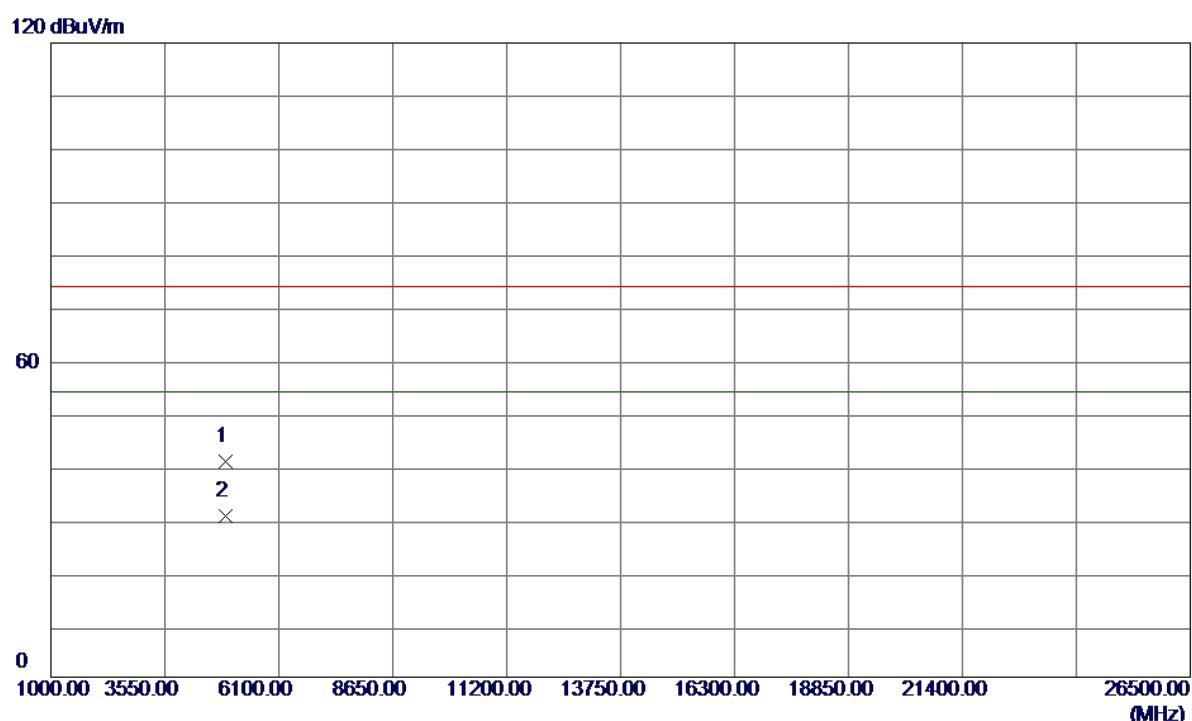
No.	Freq. MHz	Reading Level	Correct Factor	Measure ment	Limit	Margin	Detector	Comment
		dBuV/m	dB	dBuV/m	dBuV/m	dB		
1	4904.0000	52.87	-11.35	41.52	74.00	-32.48	Peak	
2 *	4904.0000	41.57	-11.35	30.22	54.00	-23.78	AVG	

Orthogonal Axis :	X
Test Mode :	TX N-40M MODE 2452MHz

**Horizontal**

No.	Freq. MHz	Reading Level dBuV/m	Correct Factor dB	Measure ment dBuV/m	Limit dBuV/m	Margin dB	Detector	Comment
1	2452.0000	70.43	31.19	101.62	74.00	27.62	Peak	
2 *	2452.0000	60.41	31.19	91.60	54.00	37.60	AVG	
3	2483.8470	37.81	31.31	69.12	74.00	-4.88	Peak	
4	2483.8470	16.78	31.31	48.09	54.00	-5.91	AVG	

Orthogonal Axis :	X
Test Mode :	TX N-40M MODE 2452MHz

**Horizontal**

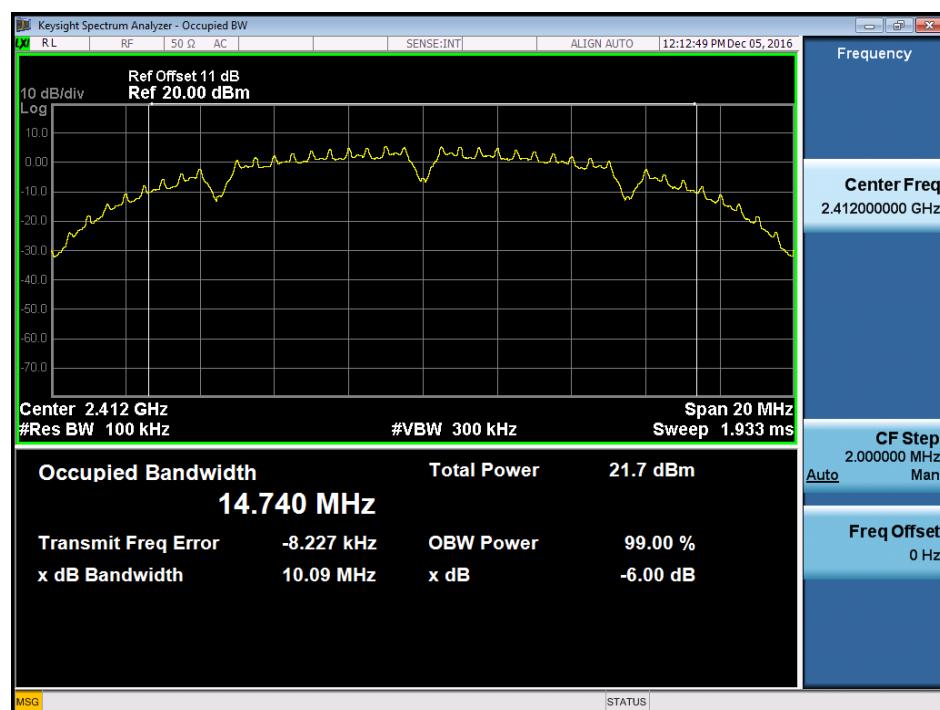
No.	Freq.	Reading Level	Correct Factor	Measurement	Limit	Margin	Detector	Comment
	MHz	dBuV/m	dB	dBuV/m	dBuV/m	dB		
1	4904.0000	52.23	-11.35	40.88	74.00	-33.12	Peak	
2 *	4904.0000	41.72	-11.35	30.37	54.00	-23.63	AVG	

## ATTACHMENT E - BANDWIDTH

## Test Mode : TX B Mode\_CH01/06/11

Frequency (MHz)	6dB Bandwidth (MHz)	99% Occupied BW (MHz)	Min. Limit (kHz)	Test Result
2412	10.09	14.74	500	Complies
2437	10.08	14.84	500	Complies
2462	10.08	14.82	500	Complies

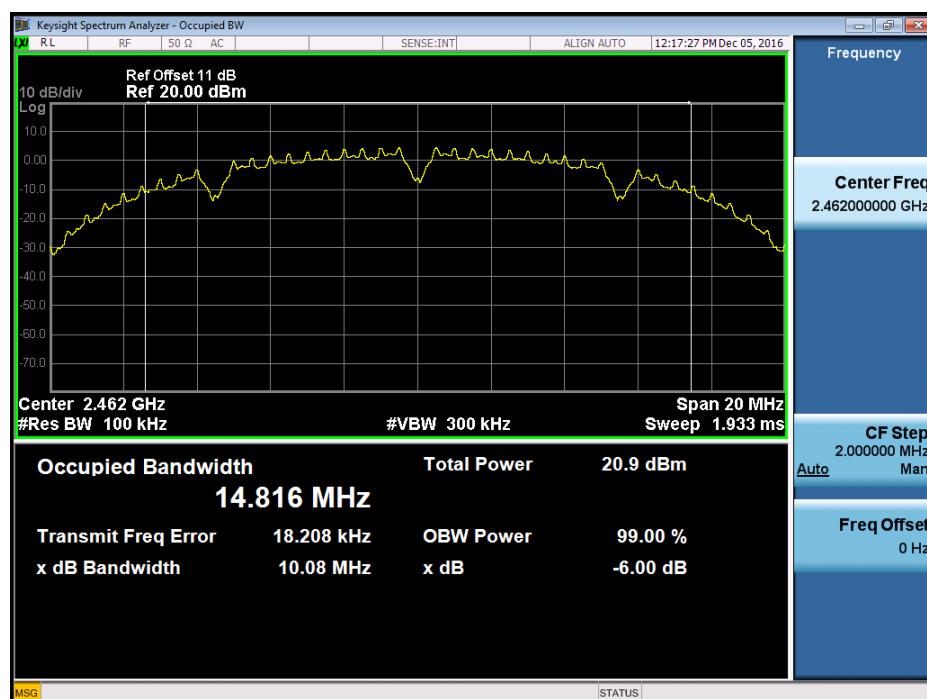
## TX CH01



## TX CH06

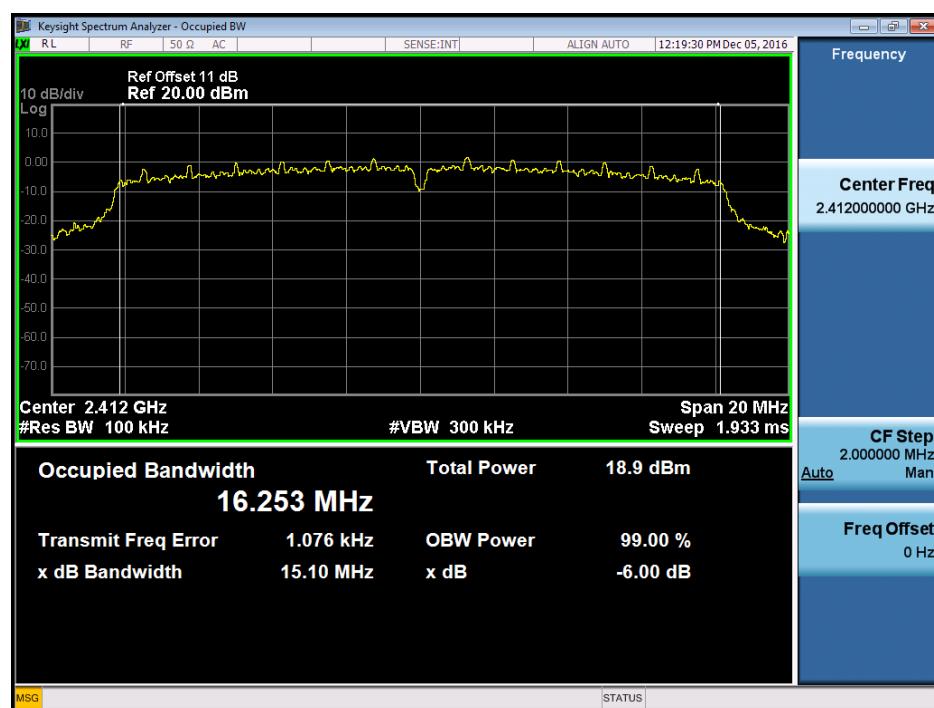


## TX CH11

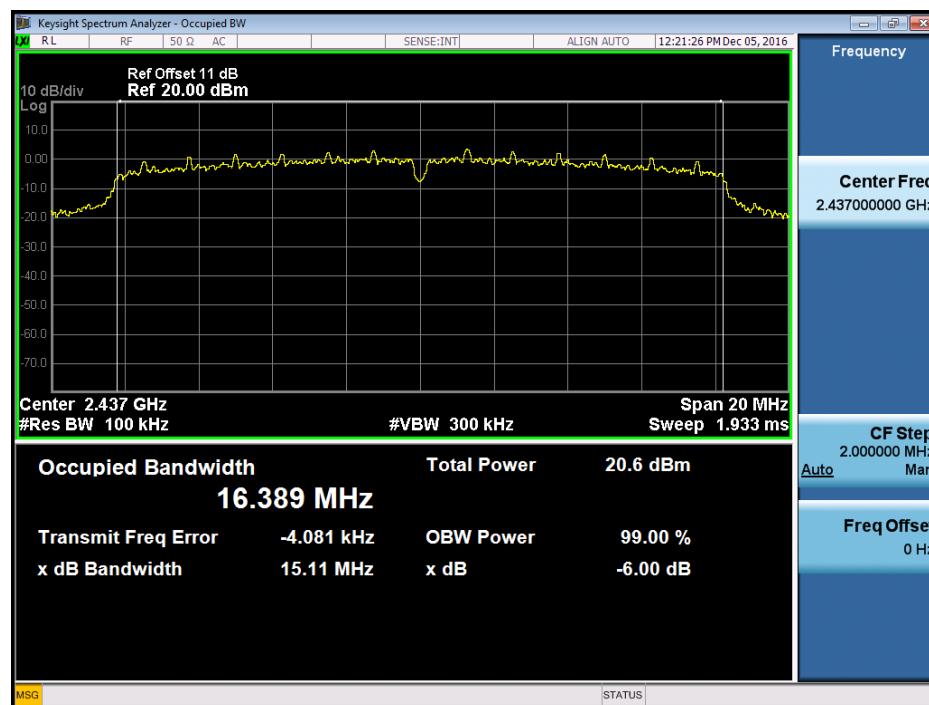


**Test Mode: TX G Mode\_CH01/06/11**

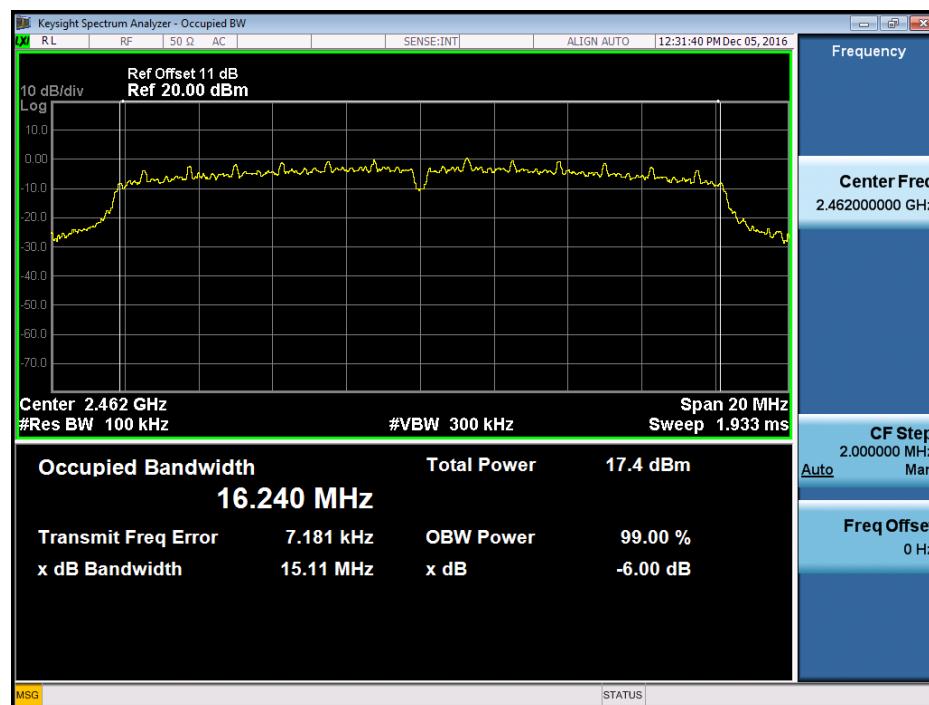
Frequency (MHz)	6dB Bandwidth (MHz)	99% Occupied BW (MHz)	Min. Limit (kHz)	Test Result
2412	15.10	16.25	500	Complies
2437	15.11	16.39	500	Complies
2462	15.11	16.24	500	Complies

**TX CH01**

## TX CH06



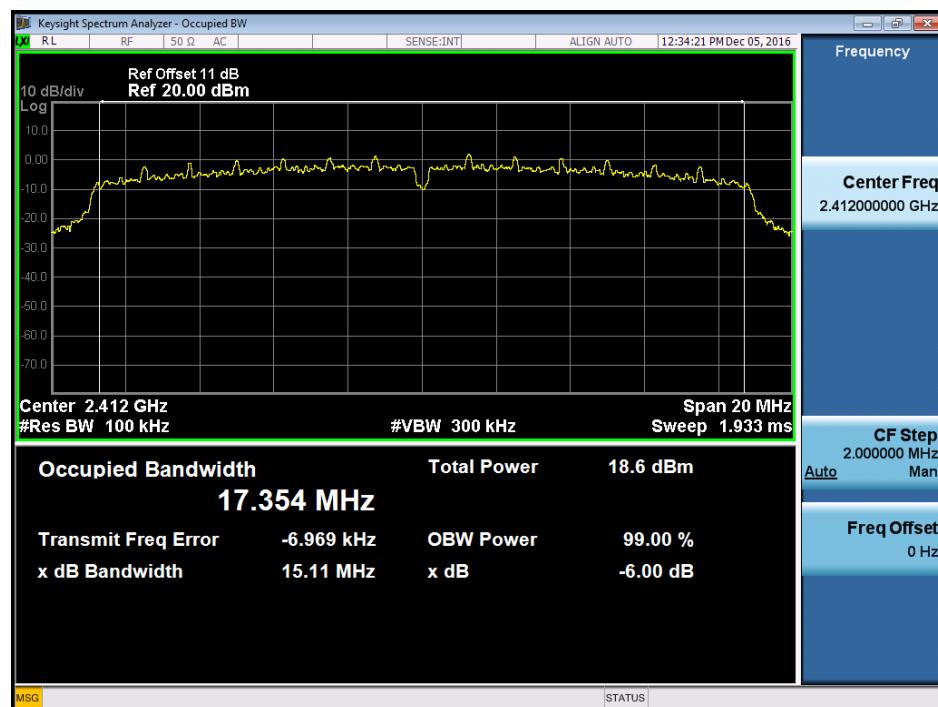
## TX CH11



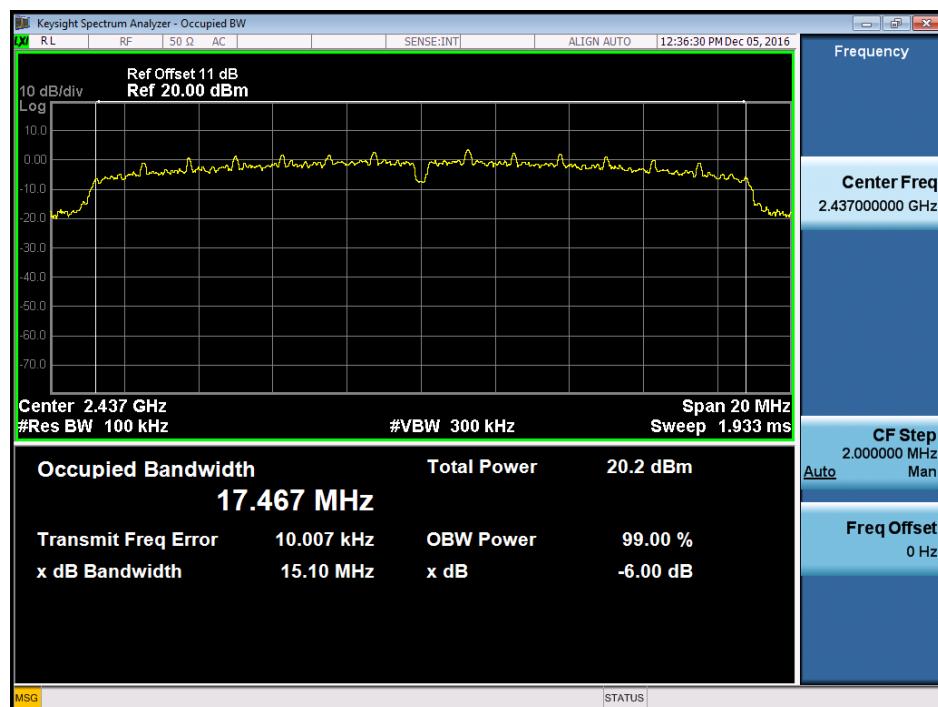
## Test Mode : TX N-20MHz Mode\_CH01/06/11

Frequency (MHz)	6dB Bandwidth (MHz)	99% Occupied BW (MHz)	Min. Limit (kHz)	Test Result
2412	15.11	17.35	500	Complies
2437	15.10	17.47	500	Complies
2462	15.11	17.37	500	Complies

## TX CH01



## TX CH06

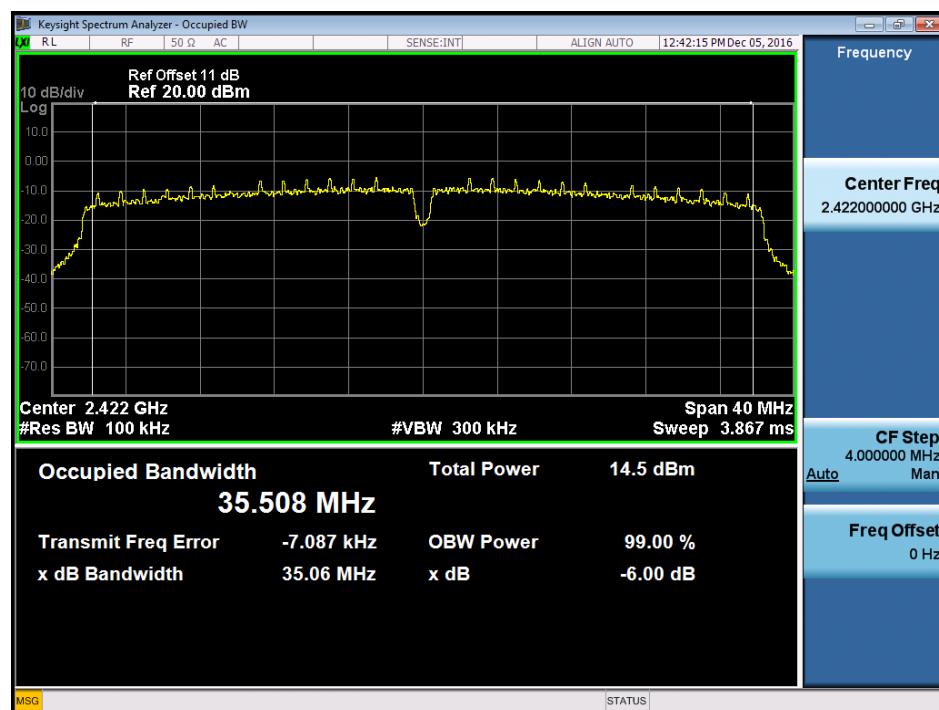


## TX CH11

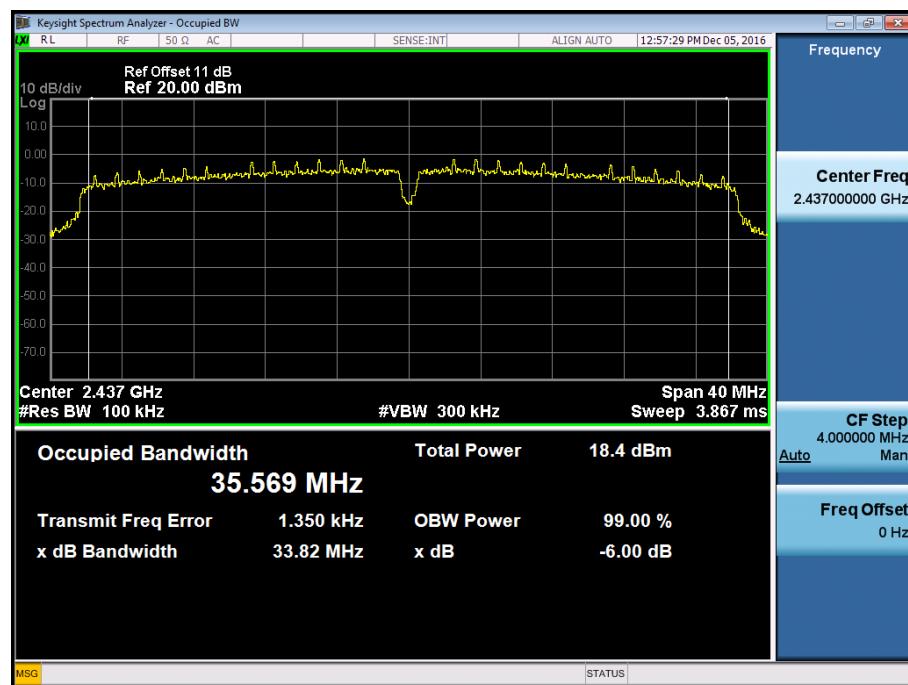


**Test Mode : TX N-40MHz Mode\_CH03/06/09**

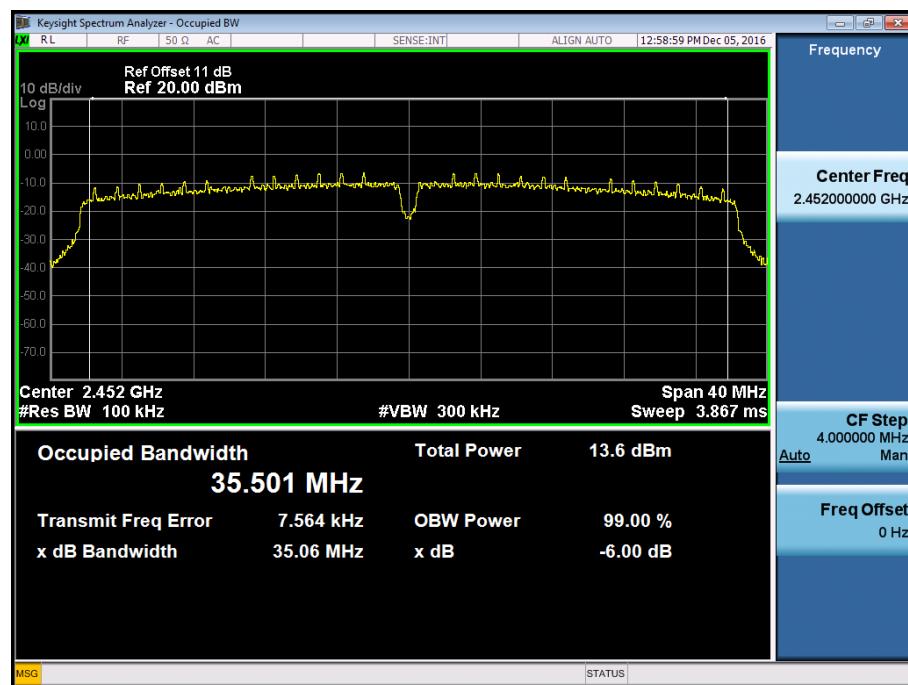
Frequency (MHz)	6dB Bandwidth (MHz)	99% Occupied BW (MHz)	Min. Limit (kHz)	Test Result
2422	35.06	35.51	500	Complies
2437	33.82	35.57	500	Complies
2452	35.06	35.50	500	Complies

**TX CH03**

## TX CH06



## TX CH09



## ATTACHMENT F – MAXIMUM PEAK CONDUCTED OUTPUT POWER

**Test Mode :TX B Mode\_CH01/06/11**

Frequency (MHz)	Conducted Power (dBm)	Conducted Power (W)	Max. Limit (dBm)	Max. Limit (W)	Result
2412	15.89	0.04	30.00	1.00	Complies
2437	15.56	0.04	30.00	1.00	Complies
2462	15.06	0.03	30.00	1.00	Complies

**Test Mode :TX G Mode\_CH01/06/11**

Frequency (MHz)	Conducted Power (dBm)	Conducted Power (W)	Max. Limit (dBm)	Max. Limit (W)	Result
2412	17.57	0.06	30.00	1.00	Complies
2437	17.68	0.06	30.00	1.00	Complies
2462	16.63	0.05	30.00	1.00	Complies

**Test Mode :TX N20 Mode\_CH01/06/11**

Frequency (MHz)	Conducted Power (dBm)	Conducted Power (W)	Max. Limit (dBm)	Max. Limit (W)	Result
2412	17.60	0.06	30.00	1.00	Complies
2437	17.49	0.06	30.00	1.00	Complies
2462	16.47	0.04	30.00	1.00	Complies

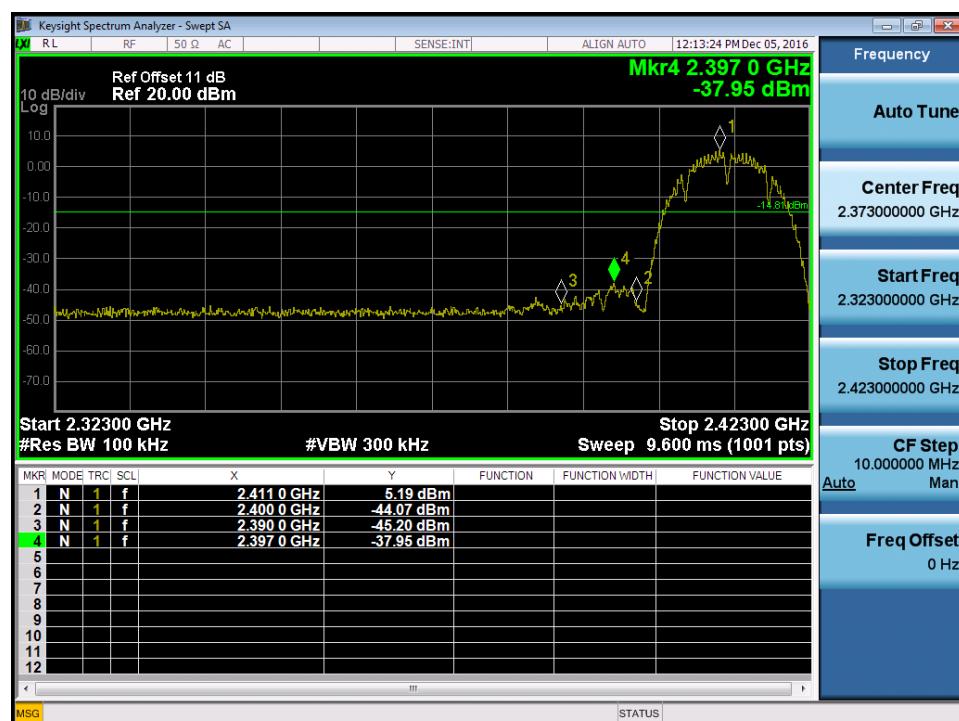
**Test Mode :TX N40 Mode\_CH03/06/09**

Frequency (MHz)	Conducted Power (dBm)	Conducted Power (W)	Max. Limit (dBm)	Max. Limit (W)	Result
2422	15.54	0.04	30.00	1.00	Complies
2437	16.80	0.05	30.00	1.00	Complies
2452	14.96	0.03	30.00	1.00	Complies

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

**Test Mode : TX B Mode**

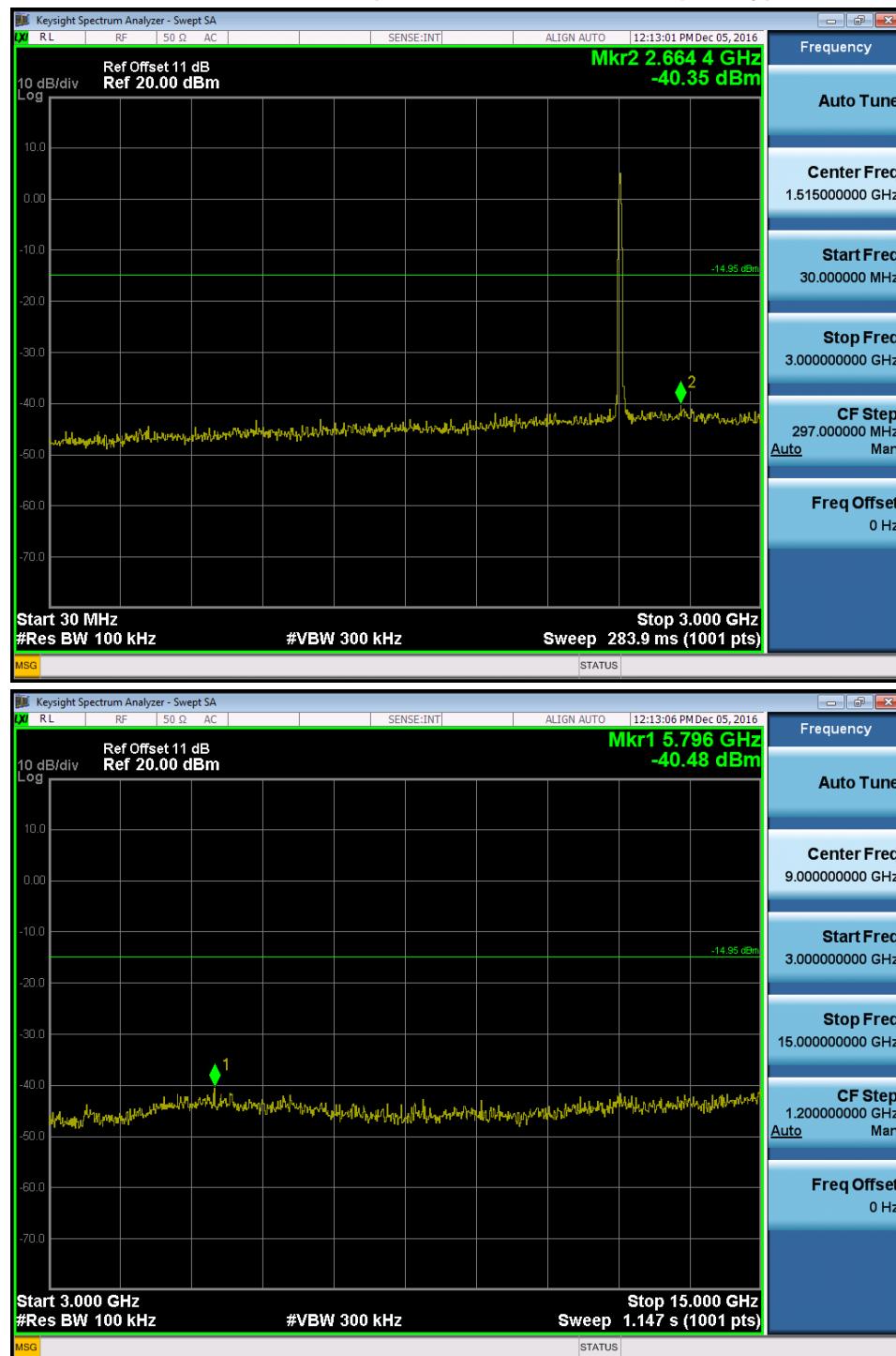
### TX B mode CH01



### TX B mode CH11

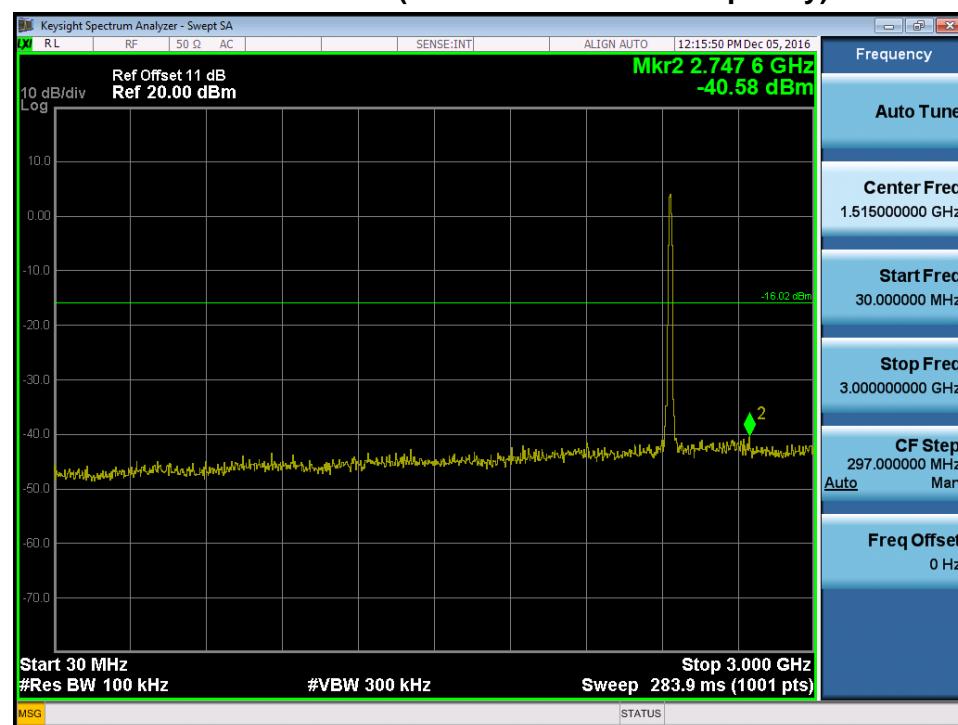


## TX B mode CH01 (10 Harmonic of the frequency)





TX B mode CH06 (10 Harmonic of the frequency)





## TX B mode CH11 (10 Harmonic of the frequency)





Test Mode :	TX G Mode
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### TX G mode CH01



### TX G mode CH11

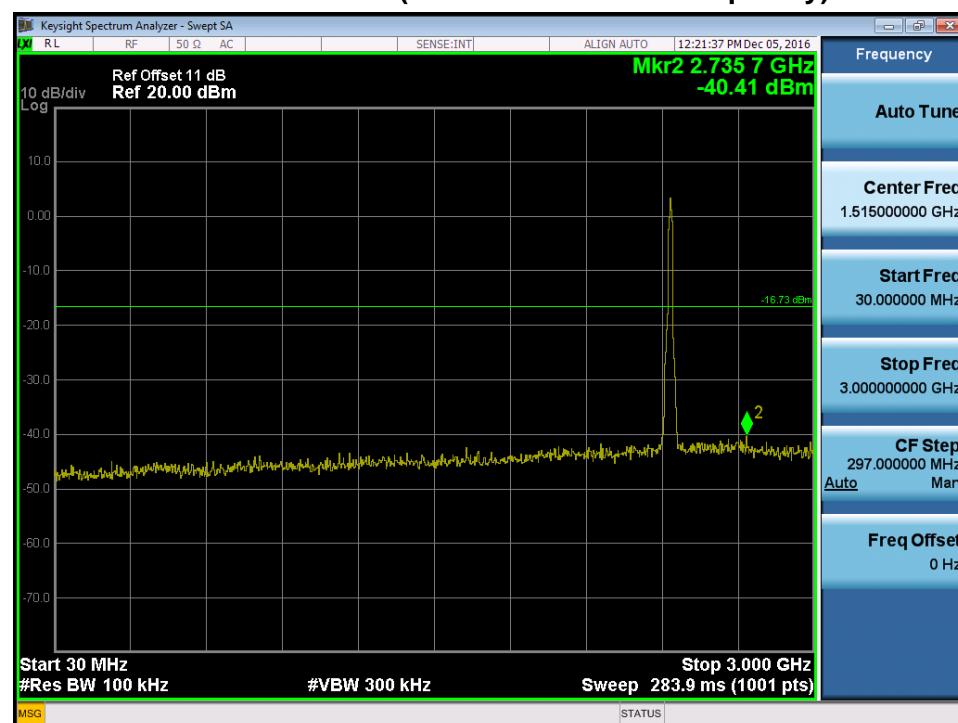


## TX G mode CH01 (10 Harmonic of the frequency)





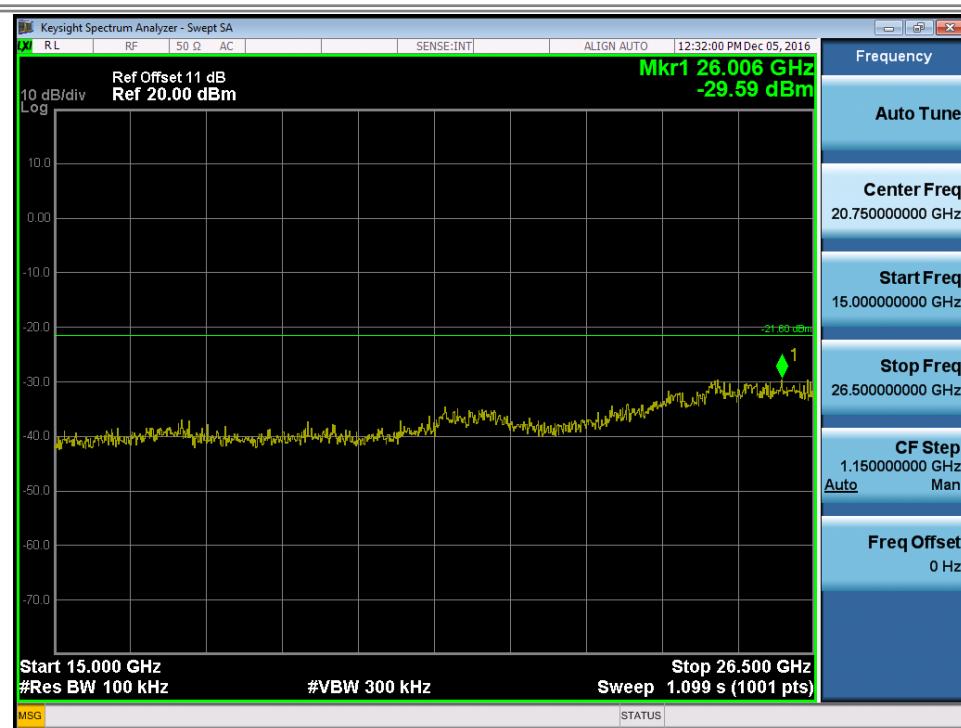
TX G mode CH06 (10 Harmonic of the frequency)





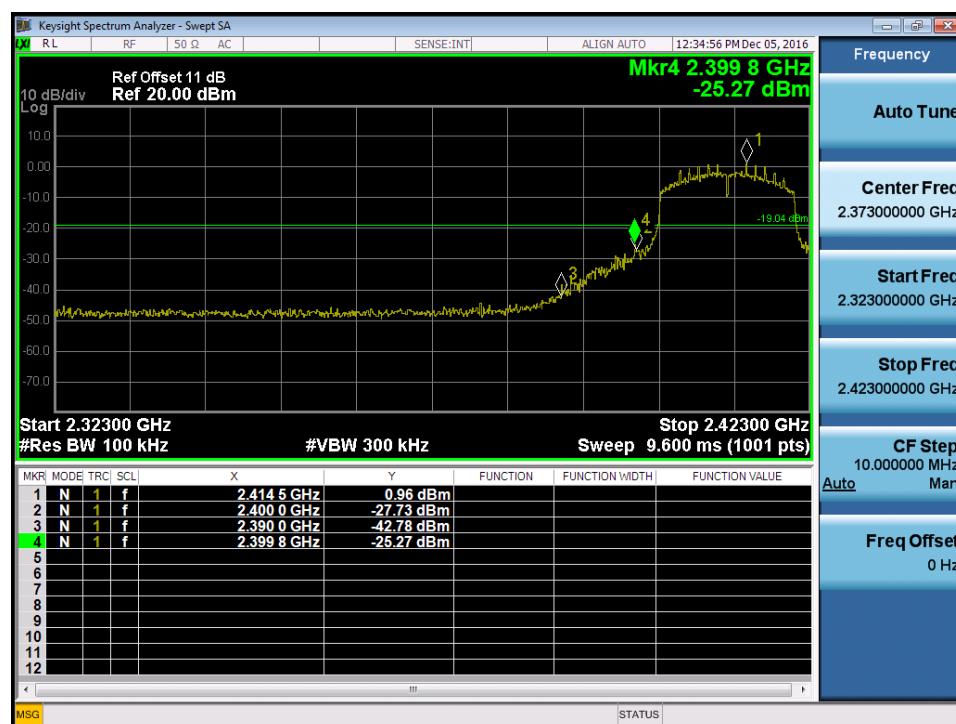
## TX G mode CH11 (10 Harmonic of the frequency)



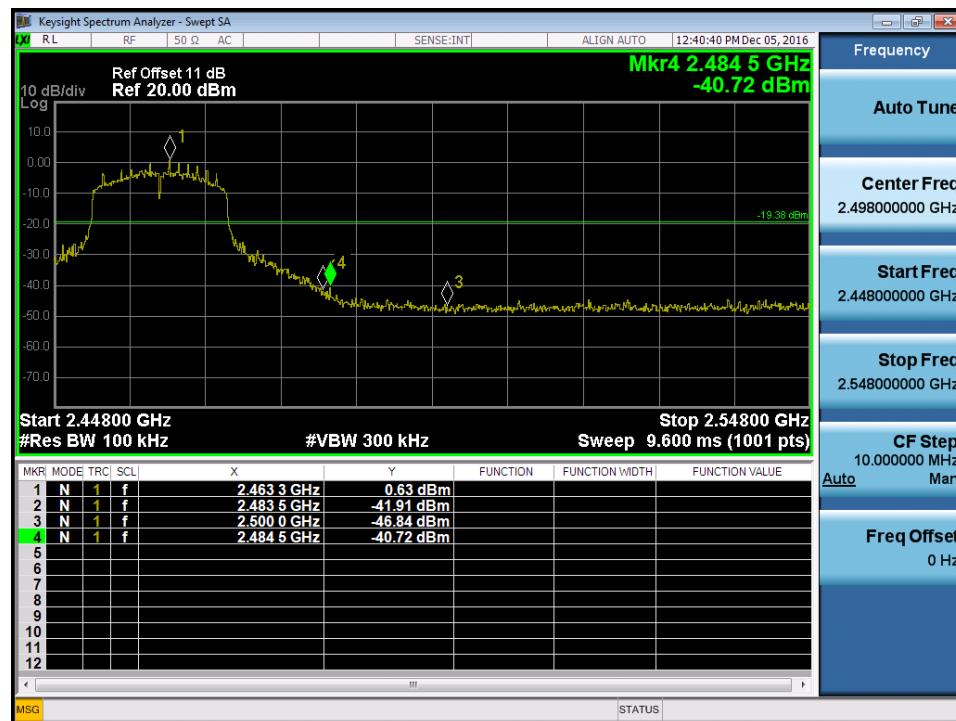


Test Mode :	TX N-20M Mode
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### TX HT20 mode CH01

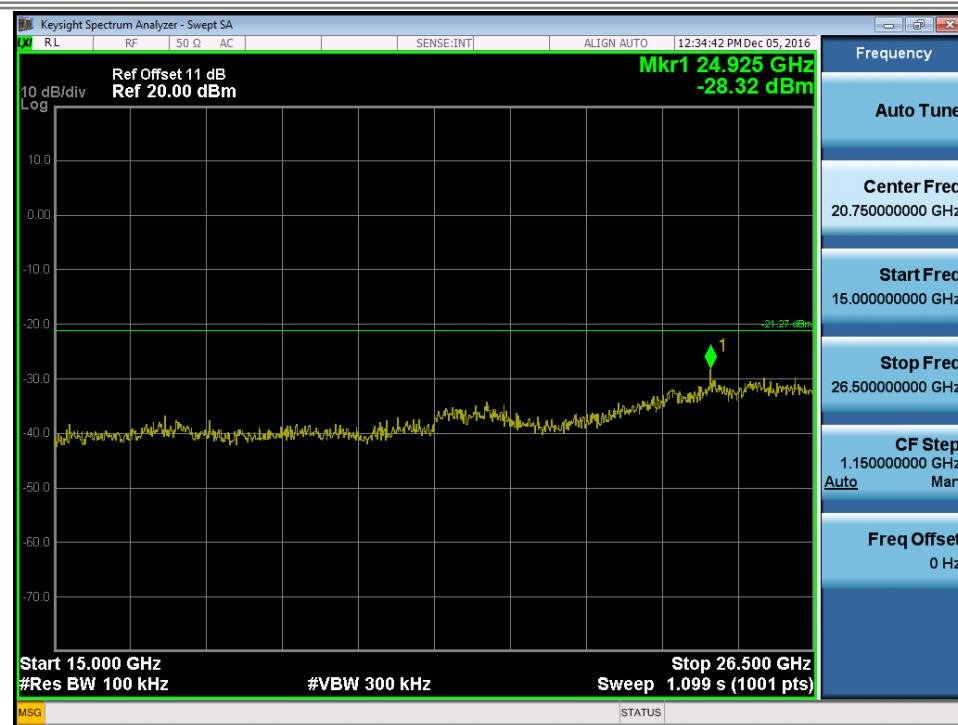


### TX HT20 mode CH11

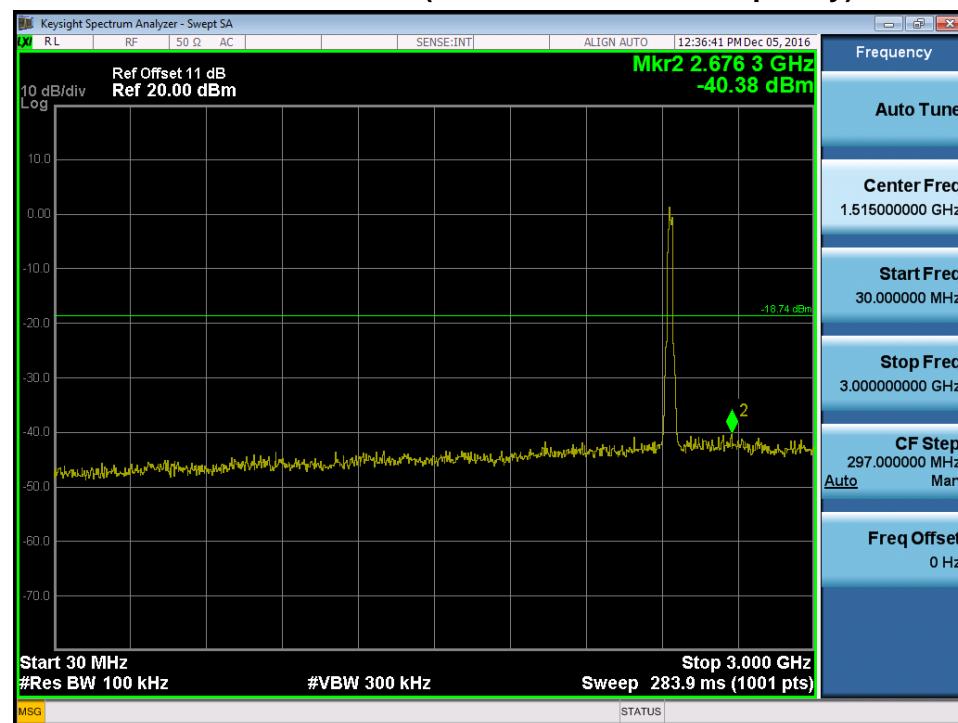


## TX HT20 mode CH01 (10 Harmonic of the frequency)



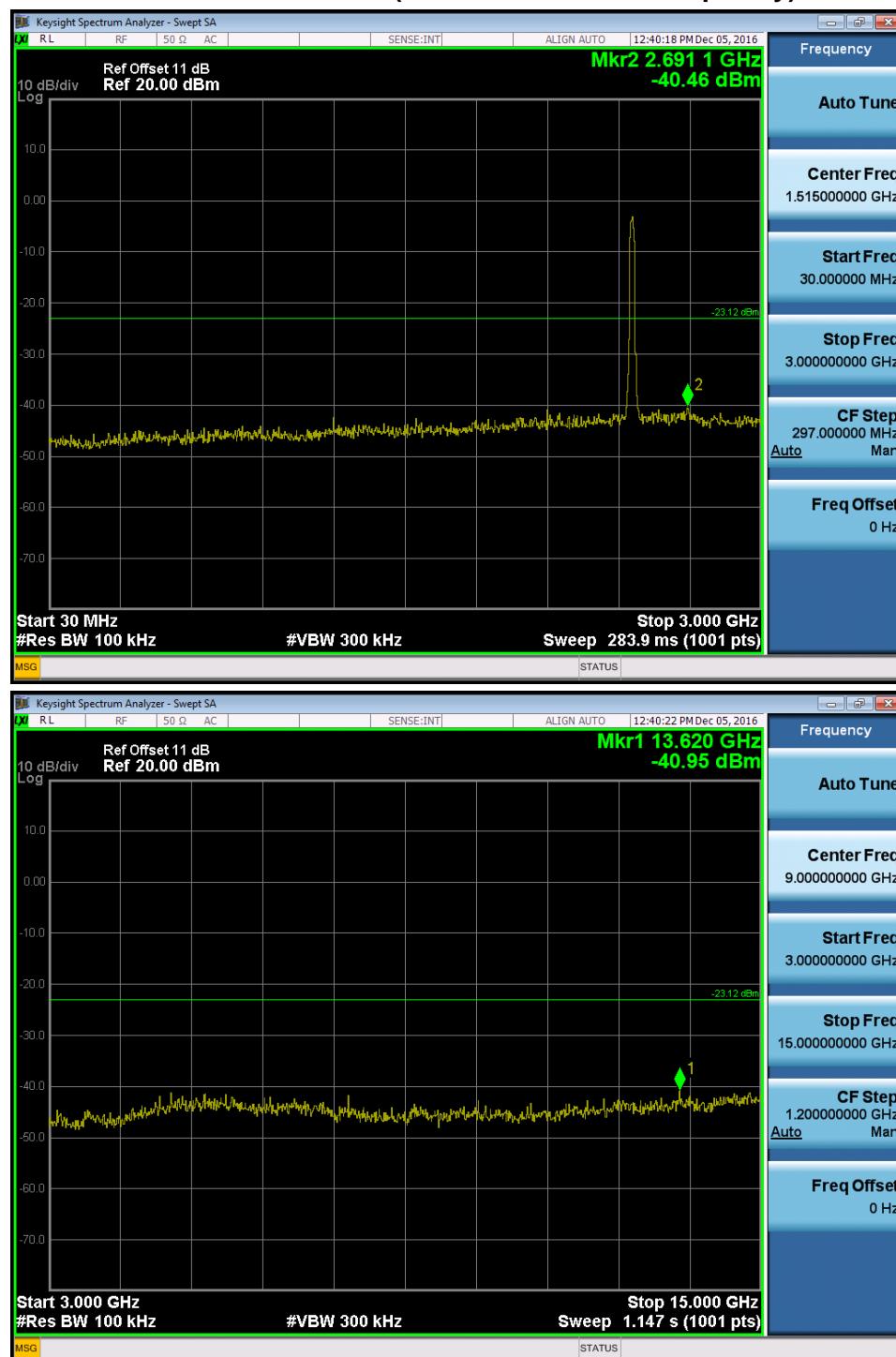


TX HT20 mode CH06 (10 Harmonic of the frequency)





## TX HT20 mode CH11 (10 Harmonic of the frequency)





**Test Mode : TX N-40M Mode**

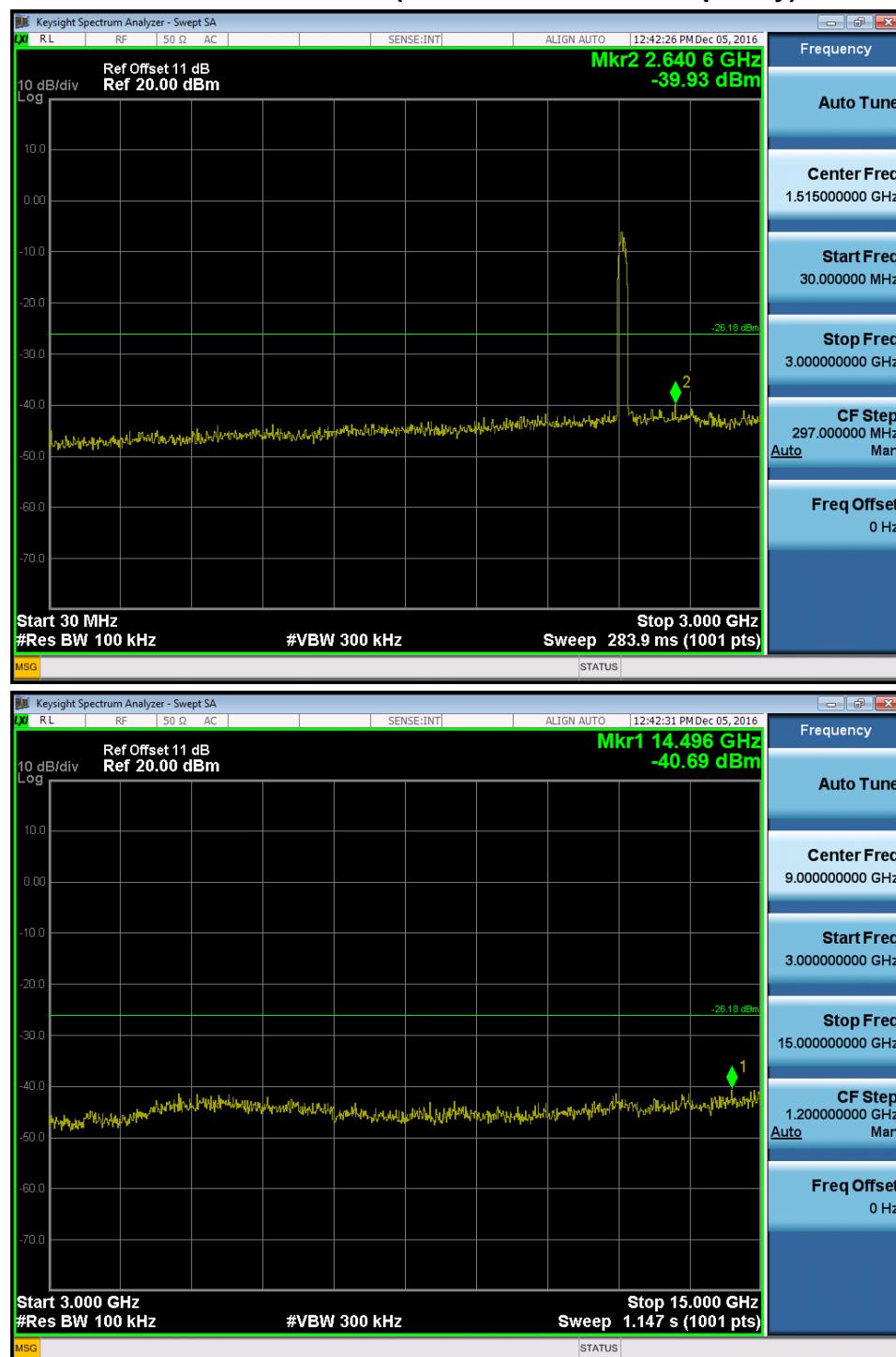
### TX HT40 mode CH03



### TX HT40 mode CH09

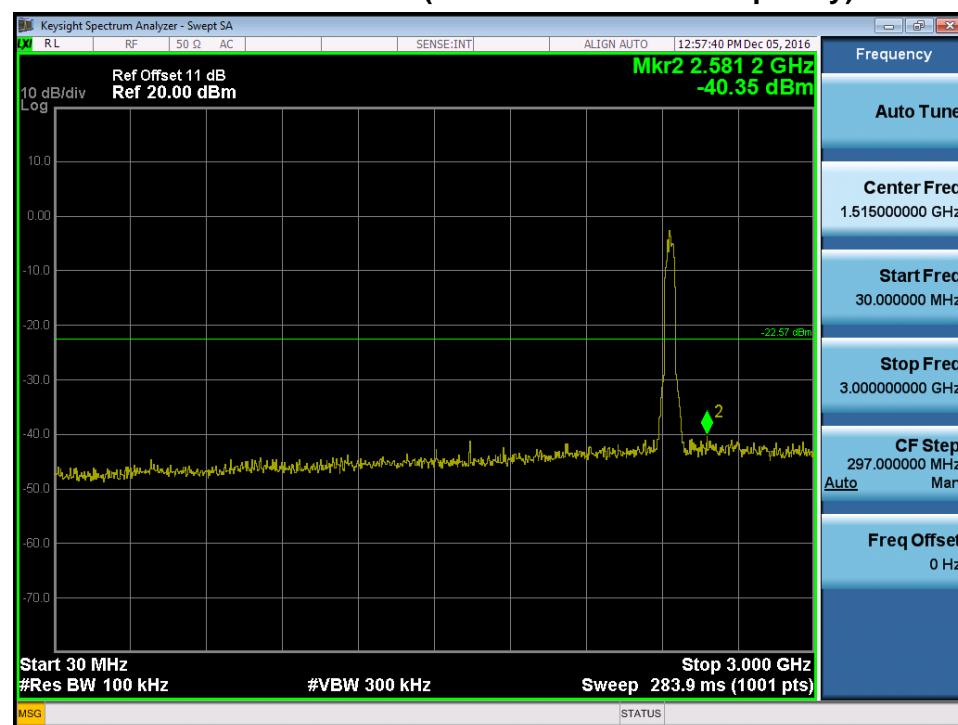


## TX HT40 mode CH03 (10 Harmonic of the frequency)



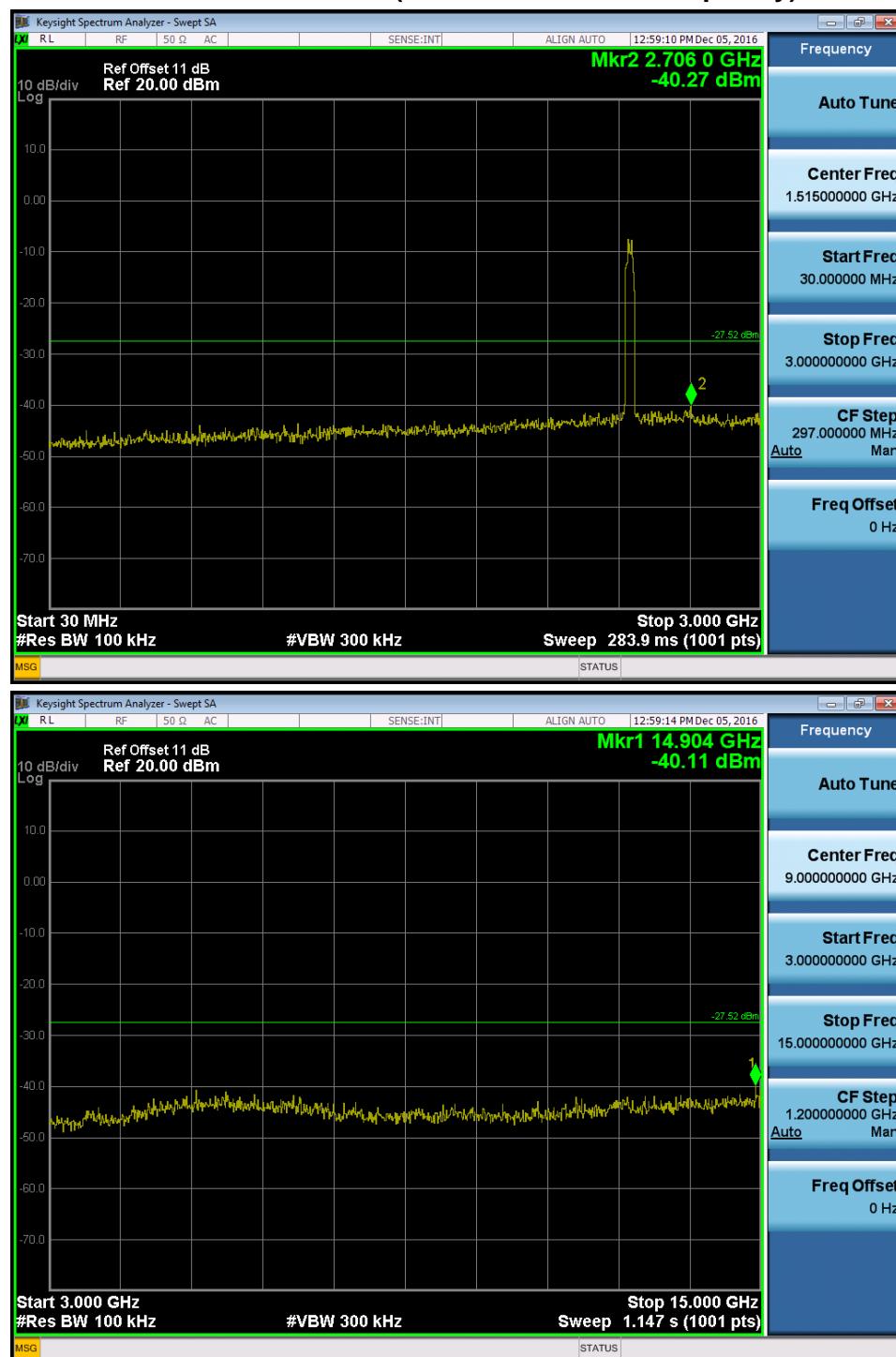


TX HT40 mode CH06 (10 Harmonic of the frequency)





## TX HT40 mode CH09 (10 Harmonic of the frequency)



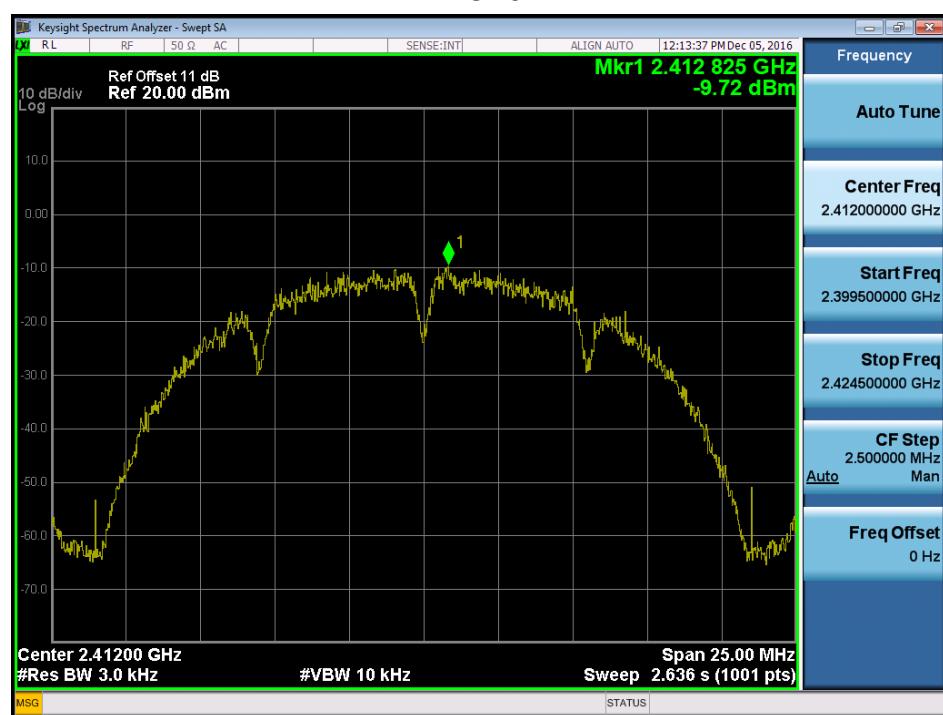


## ATTACHMENT H - POWER SPECTRAL DENSITY

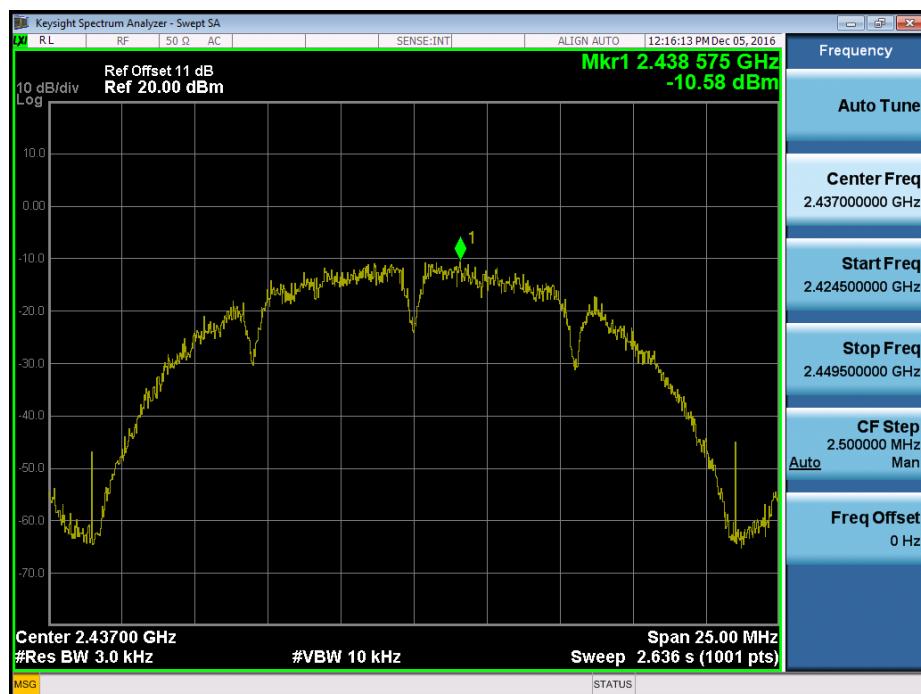
## Test Mode :TX B Mode\_CH01/06/11

Frequency (MHz)	Power Density (dBm/3kHz)	Power Density (mW/3kHz)	Max. Limit (dBm/3kHz)	Result
2412	-9.72	0.1067	8.00	Complies
2437	-10.58	0.0875	8.00	Complies
2462	-10.31	0.0931	8.00	Complies

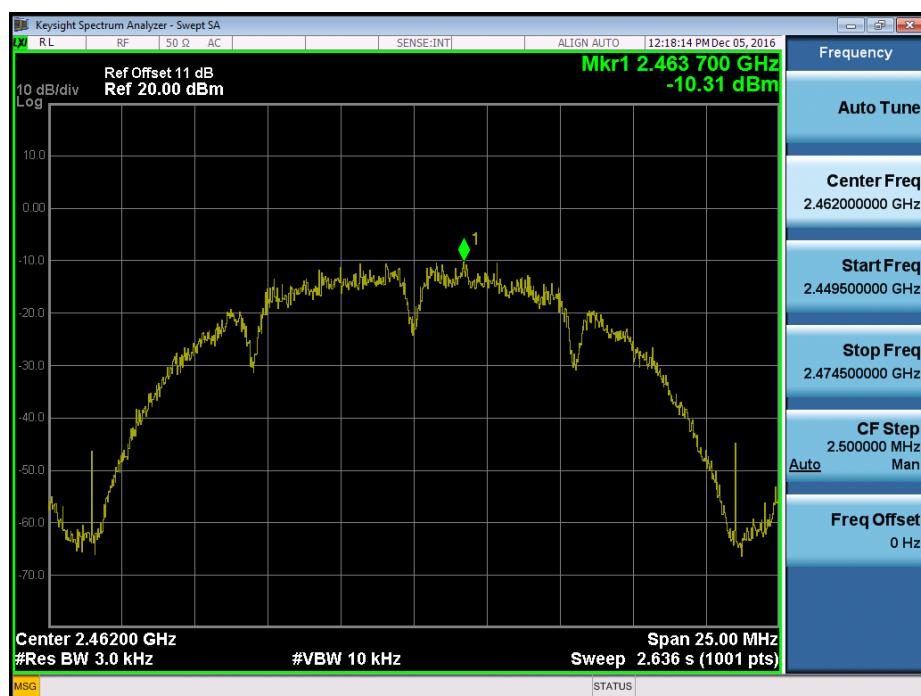
TX CH01



## TX CH06



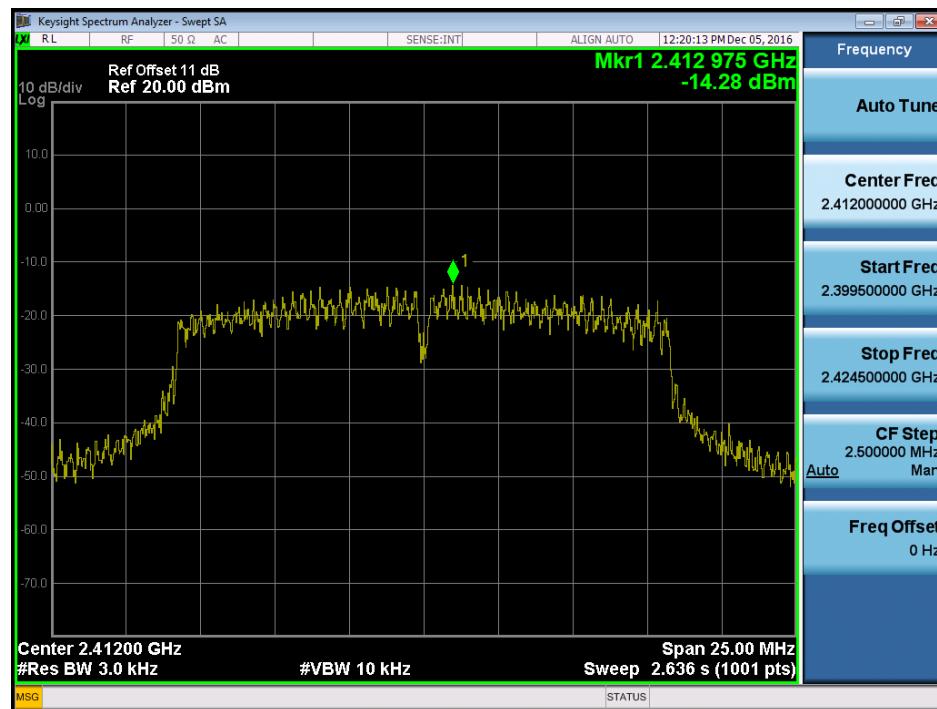
## TX CH11



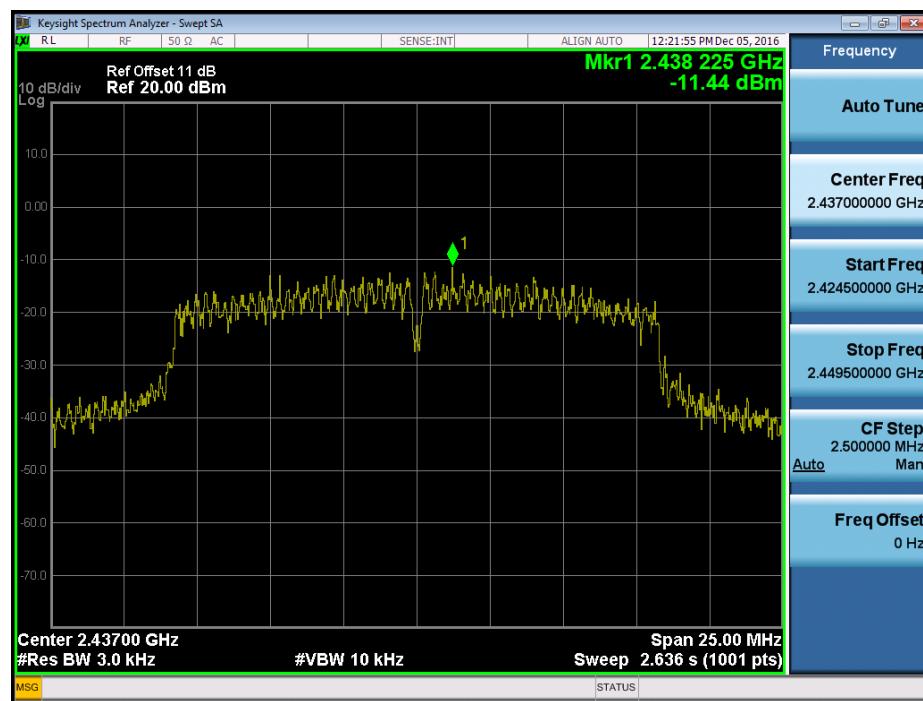
## Test Mode :TX G Mode\_CH01/06/11

Frequency (MHz)	Power Density (dBm/3kHz)	Power Density (mW/3kHz)	Max. Limit (dBm/3kHz)	Result
2412	-14.28	0.0373	8.00	Complies
2437	-11.44	0.0716	8.00	Complies
2462	-14.21	0.0379	8.00	Complies

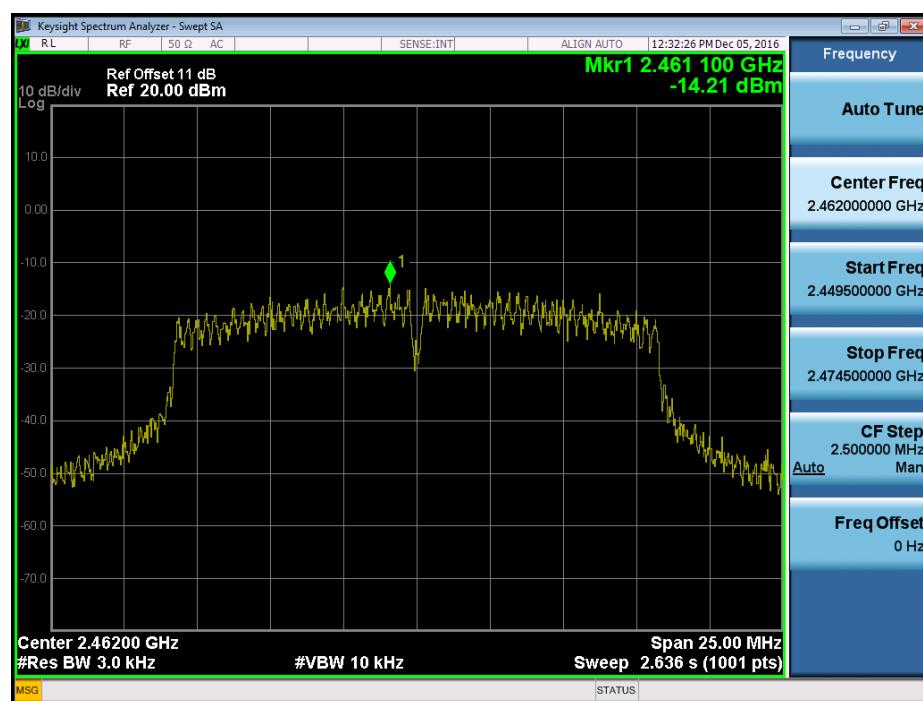
## TX CH01



## TX CH06



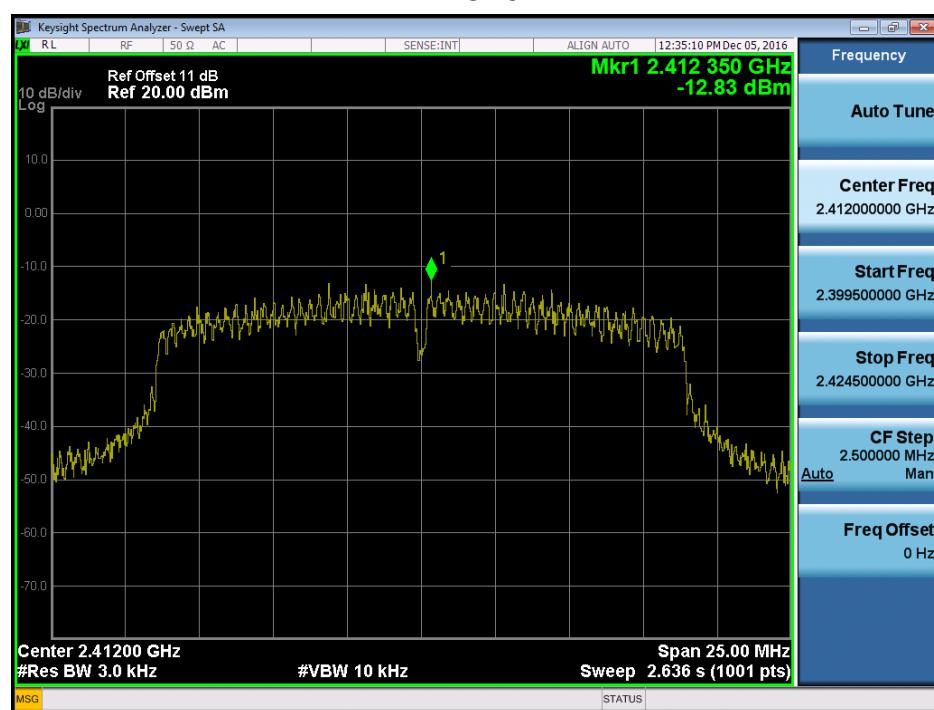
## TX CH11



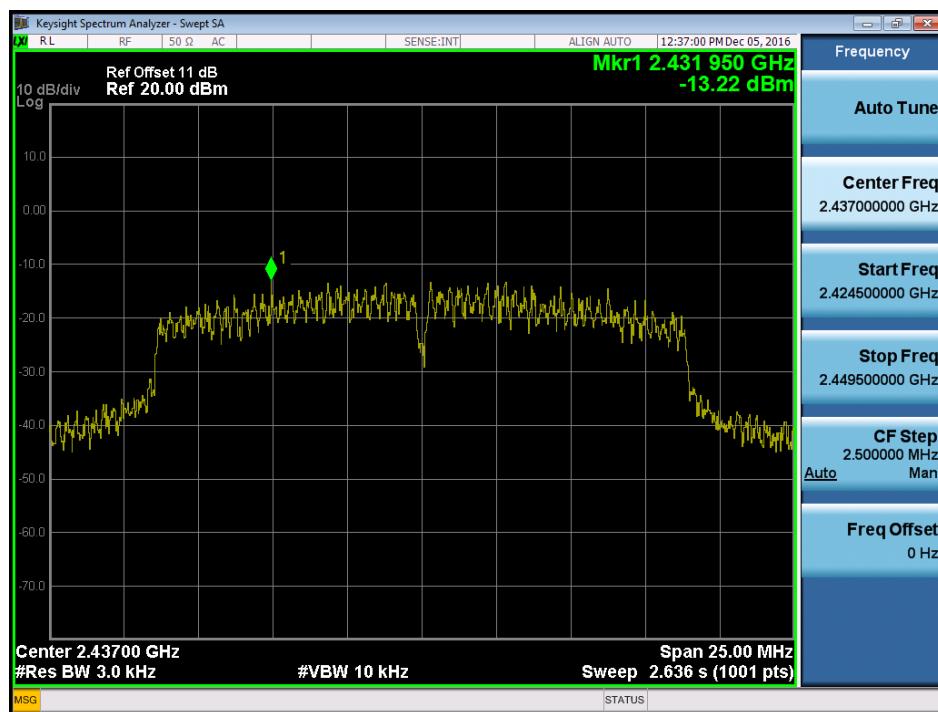
## Test Mode : TX N-20M Mode\_CH01/06/11

Frequency (MHz)	Power Density (dBm/3kHz)	Power Density (mW/3kHz)	Max. Limit (dBm/3kHz)	Result
2412	-12.83	0.0521	8.00	Complies
2437	-13.22	0.0476	8.00	Complies
2462	-14.30	0.0372	8.00	Complies

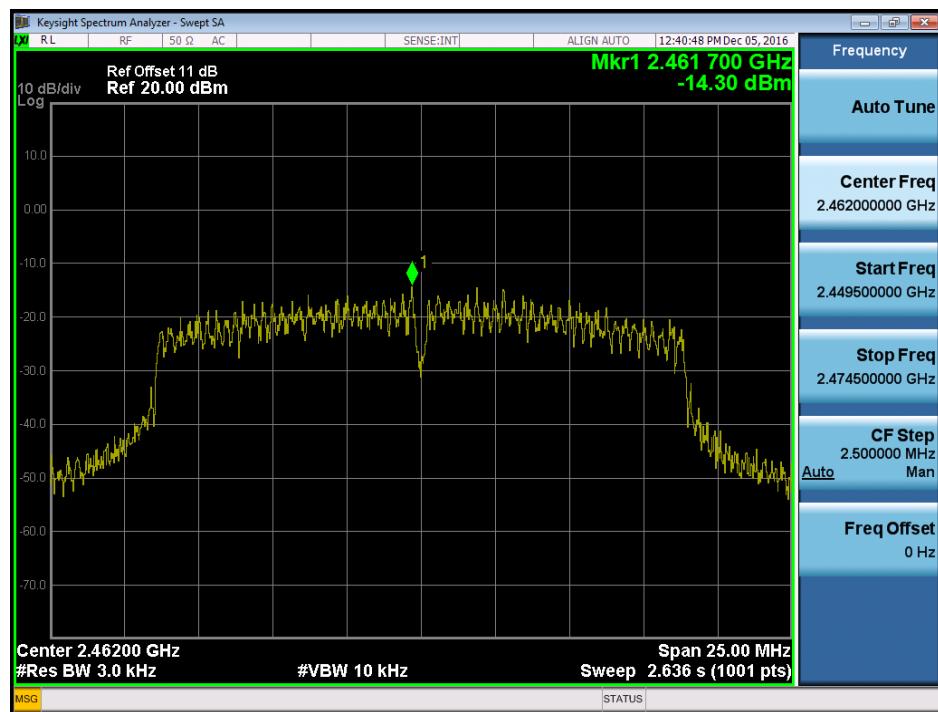
## TX CH01



## TX CH06



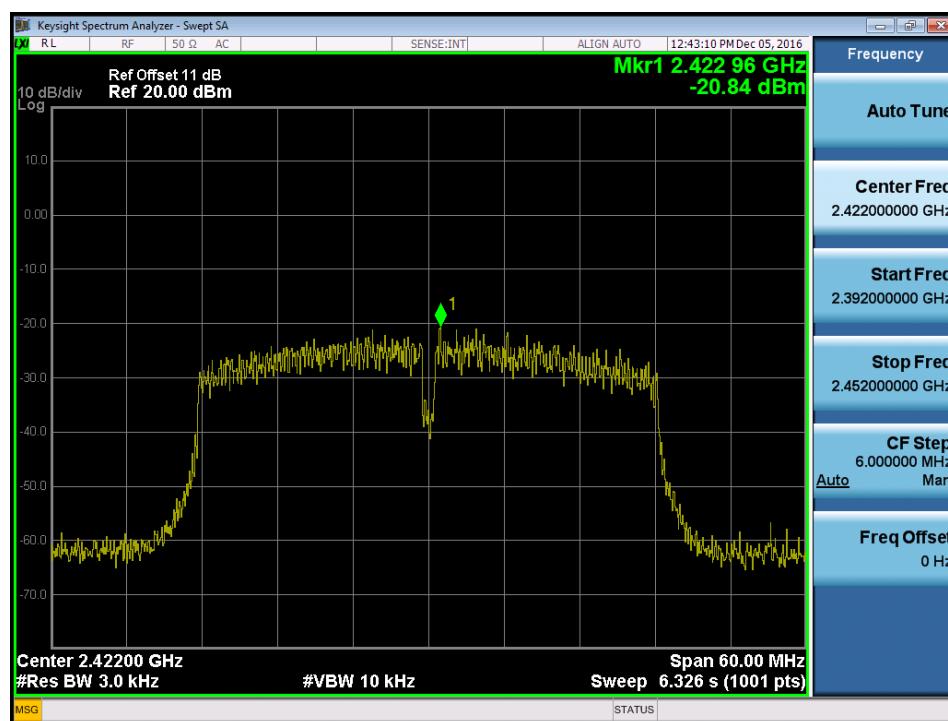
## TX CH11



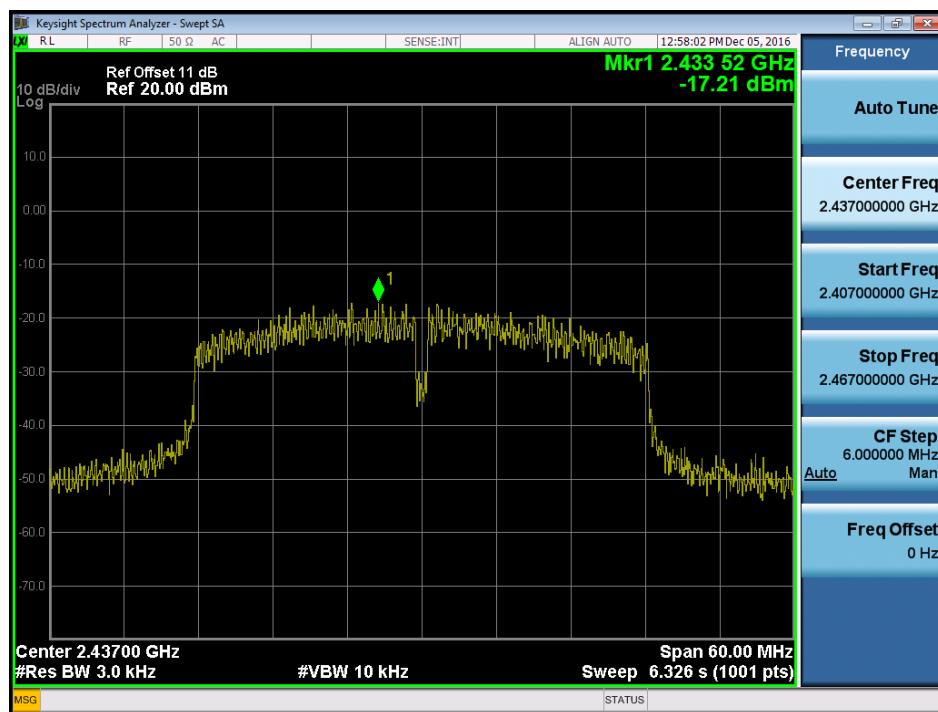
## Test Mode : TX N-40M Mode\_CH03/06/09

Frequency (MHz)	Power Density (dBm/3kHz)	Power Density (mW/3kHz)	Max. Limit (dBm/3kHz)	Result
2422	-20.84	0.0082	8.00	Complies
2437	-17.21	0.0190	8.00	Complies
2452	-21.63	0.0069	8.00	Complies

## TX CH03



## TX CH06



## TX CH09

