

# FCC Radio Test Report

## FCC ID: 2AG7N-MA-WIFI-AZ-V1

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

**Project No.** : 1512C237  
**Equipment** : MA\_WiFi  
**Model Name** : MA\_WiFi  
**Applicant** : ST Electronics (Info-Security) Pte Ltd  
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**Date of Receipt** : Dec. 24, 2015  
**Date of Test** : Dec. 24, 2015 ~ Jan. 27, 2016  
**Issued Date** : Jan. 28, 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.

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**REPORT ISSUED HISTORY**

Issued No.	Description	Issued Date
BTL-FCCP-1-1512C237	Original Issue.	Jan. 28, 2016

## 1. CERTIFICATION

Equipment : MA\_WiFi  
Brand Name : N/A  
Model Name : MA\_WiFi  
Applicant : ST Electronics (Info-Security) Pte Ltd  
Date of Test : Dec. 24, 2015 ~ Jan. 27, 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 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-1-1512C237) 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
	15.207	Conducted Emission	N/A
	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 is at the location of No.3, Jinshagang 1st Road, Shixia, Dalang Town, Dongguan, Guangdong, China.

BTL's test firm number for FCC: 319330

## 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  $U_{cisp}$  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. Radiated Measurement:

Test Site	Method	Measurement Frequency Range	Ant. H / V	$U$ ,(dB)
DG-CB03 (3m)	CISPR	9KHz ~ 30MHz	V	3.79
		9KHz ~ 30MHz	H	3.57
		30MHz ~ 200MHz	V	3.82
		30MHz ~ 200MHz	H	3.78
		200MHz ~ 1,000MHz	V	4.10
		200MHz ~ 1,000MHz	H	4.06

Test Site	Method	Measurement Frequency Range	Ant. H / V	$U$ ,(dB)
DG-CB03 (3m)	CISPR	1GHz ~ 18GHz	V	3.12
		1GHz ~ 18GHz	H	3.68
		18GHz ~ 40GHz	V	4.15
		18GHz ~ 40GHz	H	4.14

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

### 3. GENERAL INFORMATION

#### 3.1 GENERAL DESCRIPTION OF EUT

Equipment	MA_WiFi	
Brand Name	N/A	
Model Name	MA_WiFi	
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 300 Mbps
	Output Power (Max.)	802.11b: 15.32dBm 802.11g: 17.34dBm 802.11n(20MHz): 19.61dBm 802.11n(40MHz): 18.76dBm
Power Source	Supplied from DC power source.	
Power Rating	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:

CH01 – CH11 for 802.11b, 802.11g, 802.11n(20MHz) CH03 – CH11 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	WALSIN	ST MA_WIFI(AZ)	Chip	N/A	4
2	WALSIN	ST MA_WIFI(AZ)	Chip	N/A	4

Note:

1. The EUT incorporates a MIMO function. Physically, the EUT provides two completed transmitters and receivers (2T2R), all transmit signals are completely uncorrelated, then, Direction gain = GANT, that is Directional gain=4.
2. ANT 1 for 1TX was found to be the worst case and recorded.

4.

Operating Mode TX Mode	1TX	2TX
802.11b	V (ANT 1)	-
802.11g	V (ANT 1)	-
802.11n(20MHz)	-	V (ANT 1 + ANT 2)
802.11n(40MHz)	-	V (ANT 1 + ANT 2)

### 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	Normal Link

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	Normal Link

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

6dB Spectrum Bandwidth	
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

Maximum Conducted Output Power	
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

Power Spectral Density	
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:

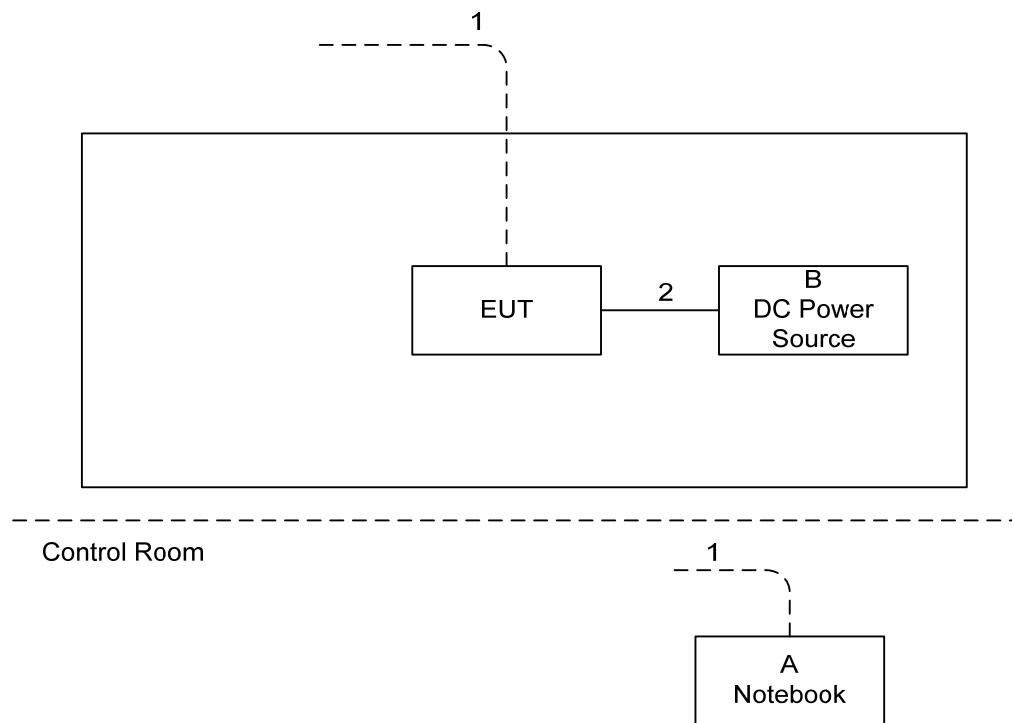
- (1) The measurements are performed at the high, middle, low available channels.
- (2) 802.11b mode: DBPSK (1Mbps)  
 802.11g mode: OFDM (6Mbps)  
 802.11n HT20 mode : BPSK (13Mbps)  
 802.11n HT40 mode : BPSK (27Mbps)  
 For radiated emission tests, the highest output powers were set for final test.
- (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	artgui		
Frequency (MHz)	2412	2437	2462
802.11b	10	9	10
802.11g	5.5	4.5	5.5
802.11n (20MHz)	5	5	5
Frequency (MHz)	2422	2437	2452
802.11n (40MHz)	4	4	4

### 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.
A	Notebook	Lenovo	H2510	DOC	SS07999198
B	DC Power Source	N/A	DPC-3030DN	N/A	N/A

Item	Shielded Type	Ferrite Core	Length	Note
1	NO	NO	10m	RJ-45 Cable
2	NO	NO	1.2m	Data 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 -0.5	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 = 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

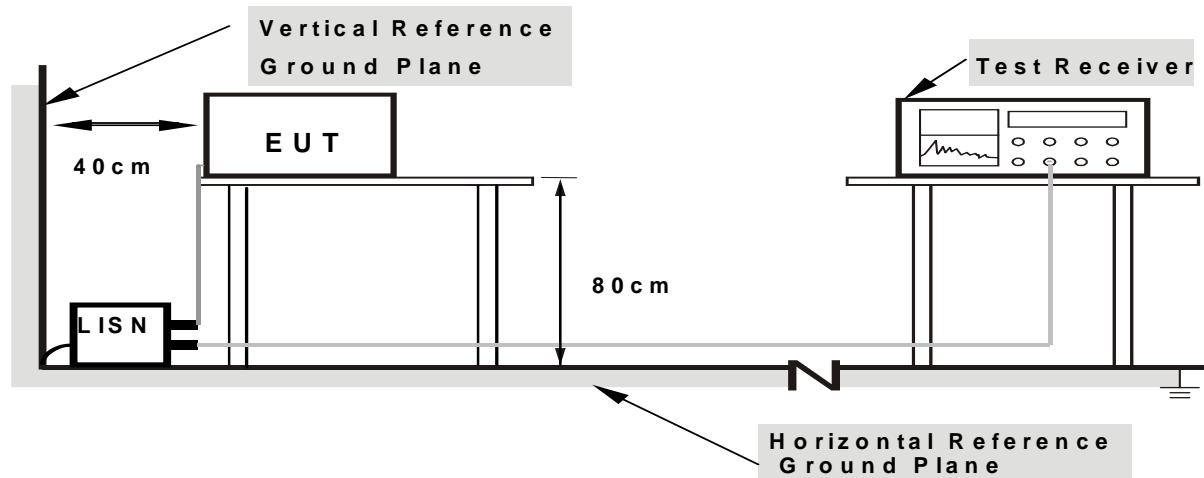
#### 4.1.2 TEST PROCEDURE

- 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: N/A    Relative Humidity: N/A    Test Voltage: N/A

#### 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

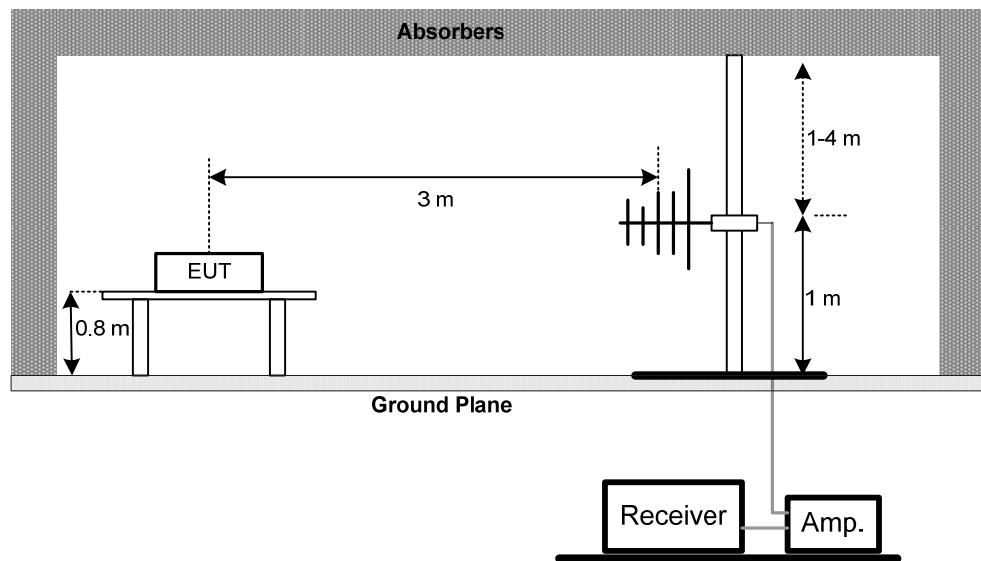
- The measuring distance of 3 m shall be used for measurements. The EUT was placed on the top of a rotating table 0.8 meter above the ground at a 3 meter semi-anechoic chamber. The table was rotated 360 degrees to determine the position of the highest radiation.(below 1GHz)
- The measuring distance of 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 0.8 m or 1.5 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.
- 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

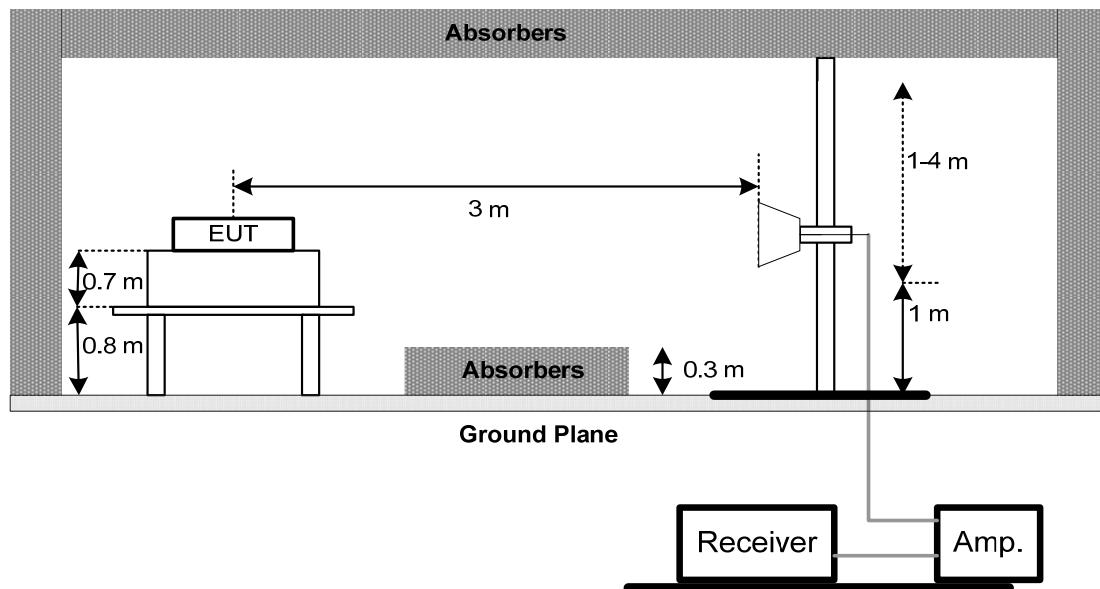
No deviation

#### 4.2.4 TEST SETUP

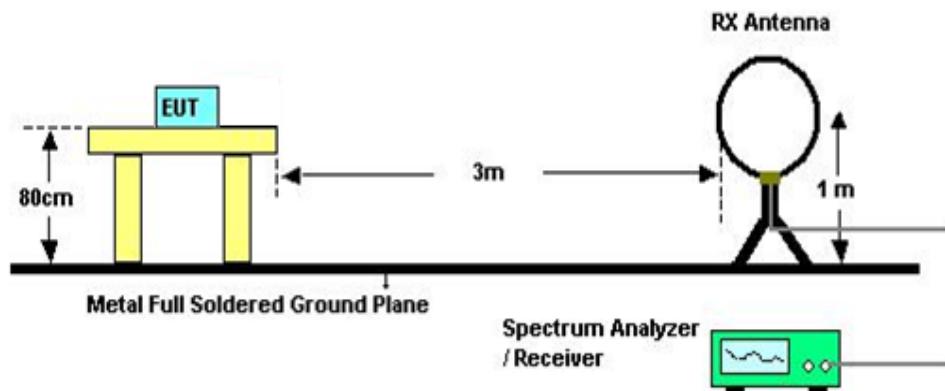
##### (A) Radiated Emission Test Set-Up Frequency Below 1 GHz



##### (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: DC 5V

**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

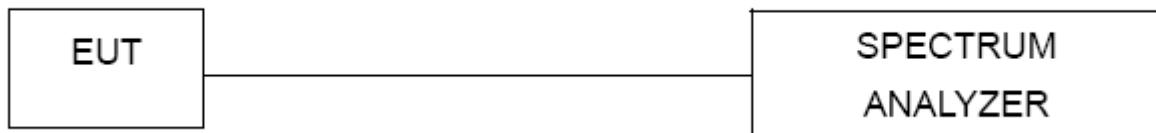
#### 5.1.1 TEST PROCEDURE

- 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: DC 5V

#### 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

- a. The EUT was directly connected to the power meter and antenna output port as show in the block diagram below,
- b. The maximum peak conducted output power was performed in accordance with method 9.1.2 of FCC KDB 558074 D01 DTS Meas Guidance v03r04.

#### 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: DC 5V

#### 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.

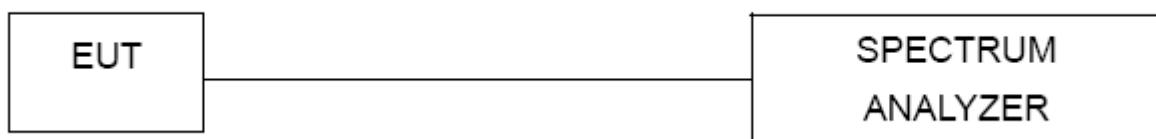
#### 7.1.1 TEST PROCEDURE

- 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: DC 5V

#### 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: DC 5V

#### 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	LISN	EMCO	3816/2	00052765	Mar. 28, 2016
2	LISN	R&S	ENV216	101447	Mar. 28, 2016
3	Test Cable	N/A	C_17	N/A	Mar. 13, 2016
4	EMI TEST RECEIVER	R&S	ESCS30	833364/017	Mar. 28, 2016
5	50Ω Terminator	SHX	TF2-3G-A	08122902	Mar. 28, 2016
6	Measurement Software	Farad	EZ-EMC Ver.NB-03A1-01	N/A	N/A

Radiated Emission Measurement					
Item	Kind of Equipment	Manufacturer	Type No.	Serial No.	Calibrated until
1	Antenna	Schwarbeck	VULB9160	9160-3232	Mar. 28, 2016
2	Amplifier	HP	8447D	2944A09673	Nov. 09, 2016
3	Receiver	AGILENT	N9038A	MY52130039	Oct. 11, 2016
4	Test Cable	emci	LMR-400(30MHz-1GHz)	C-01	Jun. 28, 2016
5	Controller	CT	SC100	N/A	N/A
6	Antenna	ETS	3115	00075789	Mar. 28, 2016
7	Amplifier	Agilent	8449B	3008A02274	Nov. 01, 2016
8	Receiver	AGILENT	N9038A	MY52130039	Oct. 11, 2016
9	Test Cable	emci	EMC104-SM-SM-10000(1GHz-26.5GHz)	C-68	Jun. 28, 2016
10	Controller	CT	SC100	N/A	N/A
11	Broad-Band Horn Antenna	Schwarzbeck	BBHA 9170	9170319	Mar. 28, 2016
12	Microwave Preamplifier With Adaptor	EMC INSTRUMENT	EMC2654045	980039 & HA01	Mar. 28, 2016
13	Active Loop Antenna	R&S	HFH2-Z2	830749/020	Sep. 07, 2016
14	Measurement Software	Farad	EZ-EMC Ver.NB-03A1-01	N/A	N/A

**6dB Bandwidth Measurement**

Item	Kind of Equipment	Manufacturer	Type No.	Serial No.	Calibrated until
1	Spectrum Analyzer	R&S	FSP 40	100185	Oct. 11, 2016

**Peak Output Power Measurement**

Item	Kind of Equipment	Manufacturer	Type No.	Serial No.	Calibrated until
1	power Meter	ANRITSU	ML2495A	1128009	Mar. 28, 2016
2	Pulse Power Sensor	ANRITSU	MA 2411B	1027500	Mar. 28, 2016

**Antenna Conducted Spurious Emission Measurement**

Item	Kind of Equipment	Manufacturer	Type No.	Serial No.	Calibrated until
1	Spectrum Analyzer	R&S	FSP 40	100185	Oct. 11, 2016

**Power Spectral Density Measurement**

Item	Kind of Equipment	Manufacturer	Type No.	Serial No.	Calibrated until
1	Spectrum Analyzer	R&S	FSP 40	100185	Oct. 11, 2016

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****Radiated Measurement Photos****9KHz to 30MHz**

### Radiated Measurement Photos

30MHz to 1000MHz



### Radiated Measurement Photos

#### Above 1000MHz



## ATTACHMENT A - CONDUCTED EMISSION

**Test Mode: N/A**

Note: "N/A" denotes test is not applicable to this device.

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

Test Mode:	TX B MODE CHANNEL 01
------------	----------------------

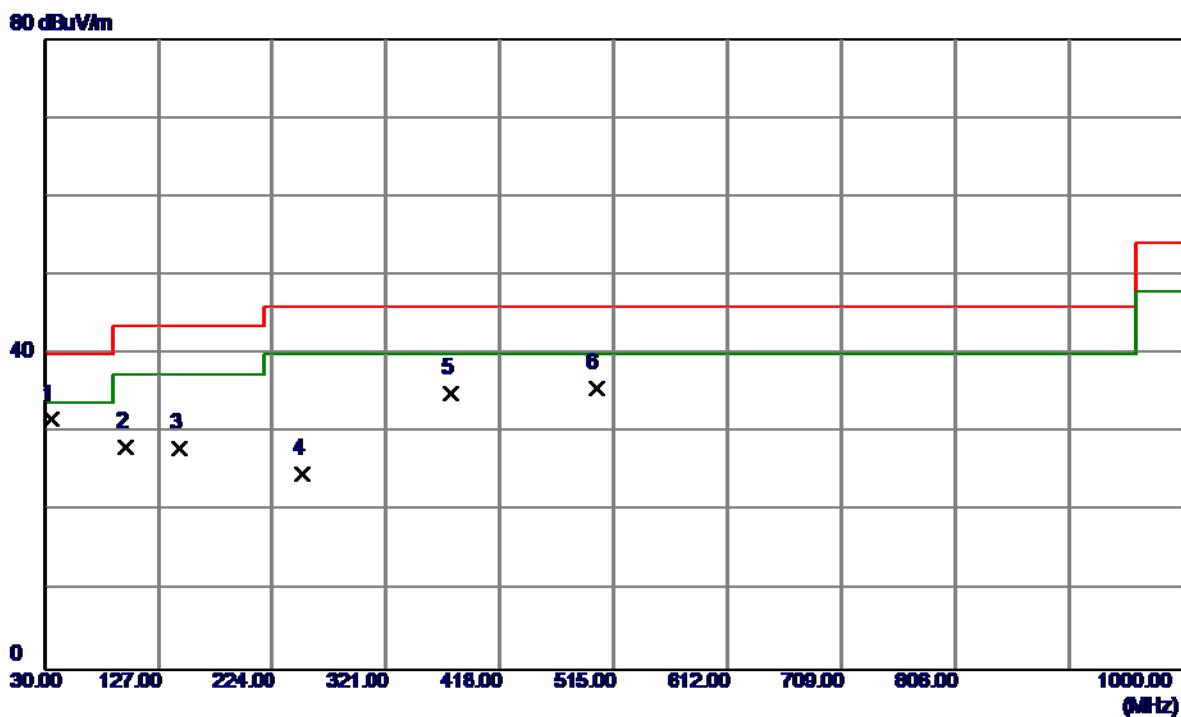
Frequency (MHz)	Ant 0°/90°	Read level dBuV/m	Factor (dB)	Measured(FS) dBuV/m)	Limit (dBuV/m)	Margin (dB)	Note
0.0124	0°	13.36	24.7813	38.1413	125.7358	-87.5945	AVG
0.0124	0°	14.24	24.7813	39.0213	145.7358	-106.7145	PEAK
0.0276	0°	6.68	23.8187	30.4987	118.7860	-88.2874	AVG
0.0276	0°	8.25	23.8187	32.0687	138.7860	-106.7174	PEAK
0.0365	0°	3.14	23.2550	26.3950	116.3584	-89.9634	AVG
0.0365	0°	5.49	23.2550	28.7450	136.3584	-107.6134	PEAK
0.0578	0°	1.12	22.2440	23.3640	112.3657	-89.0017	AVG
0.0578	0°	2.49	22.2440	24.7340	132.3657	-107.6317	PEAK
0.5092	0°	19.26	19.8294	39.0894	73.4665	-34.3770	QP
1.9514	0°	23.65	19.5049	43.1549	69.5400	-26.3851	QP

Frequency (MHz)	Ant 0°/90°	Read level dBuV/m	Factor (dB)	Measured(FS) dBuV/m)	Limit (dBuV/m)	Margin (dB)	Note
0.0123	90°	13.10	24.3000	37.4000	125.8061	-88.4061	AVG
0.0123	90°	14.78	24.3000	39.0800	145.8061	-106.7261	PEAK
0.0257	90°	7.22	23.9390	31.1590	119.4056	-88.2466	AVG
0.0257	90°	8.86	23.9390	32.7990	139.4056	-106.6066	PEAK
0.0424	90°	5.20	22.8813	28.0813	115.0569	-86.9756	AVG
0.0424	90°	6.15	22.8813	29.0313	135.0569	-106.0256	PEAK
0.0576	90°	1.40	22.2480	23.6480	112.3958	-88.7478	AVG
0.0576	90°	2.76	22.2480	25.0080	132.3958	-107.3878	PEAK
0.6208	90°	22.10	20.1866	42.2866	71.7452	-29.4586	QP
2.0540	90°	24.26	19.4676	43.7276	69.5400	-25.8124	QP

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

Test Mode: TX B MODE CHANNEL 01

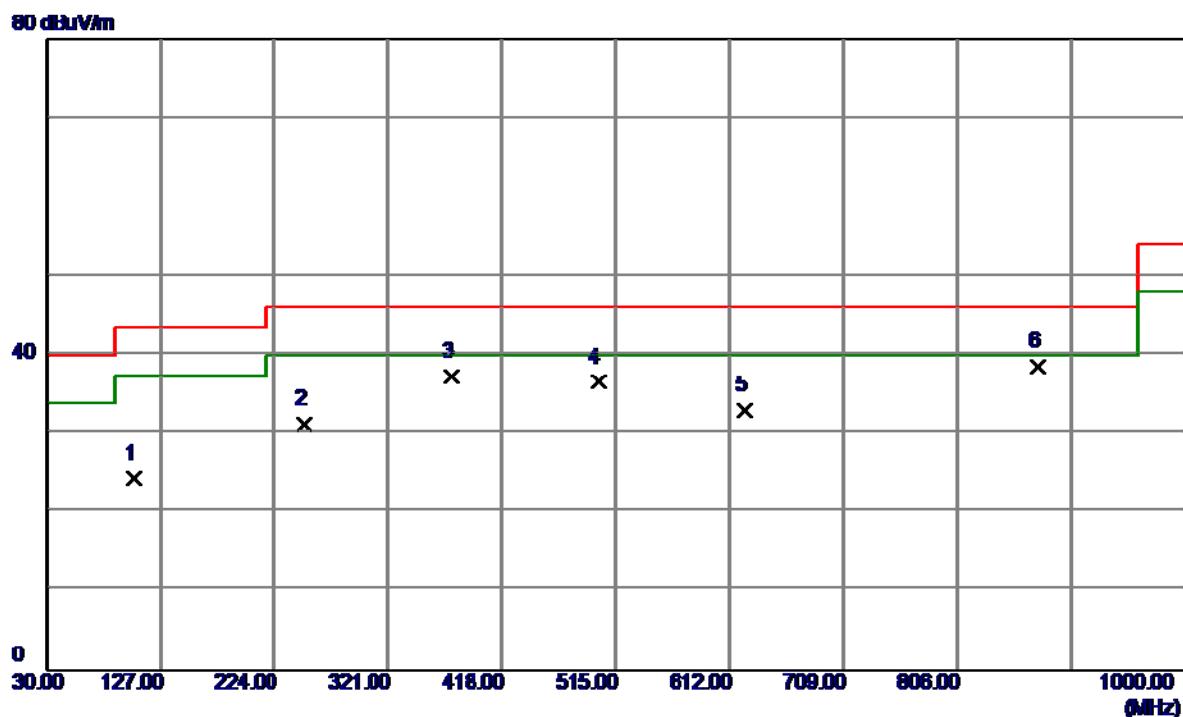
Vertical



No.	Freq.	Reading Level	Correct Factor	Measurement	Limit	Margin	Detector	Comment
	MHz	dBuV/m	dB	dBuV/m	dB			
1	35.8200	43.10	-11.38	31.72	40.00	-8.28	Peak	
2	98.8700	45.80	-17.69	28.11	43.50	-15.39	Peak	
3	145.4299	46.35	-18.42	27.93	43.50	-15.57	Peak	
4	250.1900	37.95	-13.10	24.85	46.00	-21.15	Peak	
5	376.2900	44.69	-9.72	34.97	46.00	-11.03	Peak	
6	500.4500	43.93	-8.28	35.65	46.00	-10.35	Peak	

Test Mode: TX B MODE CHANNEL 01

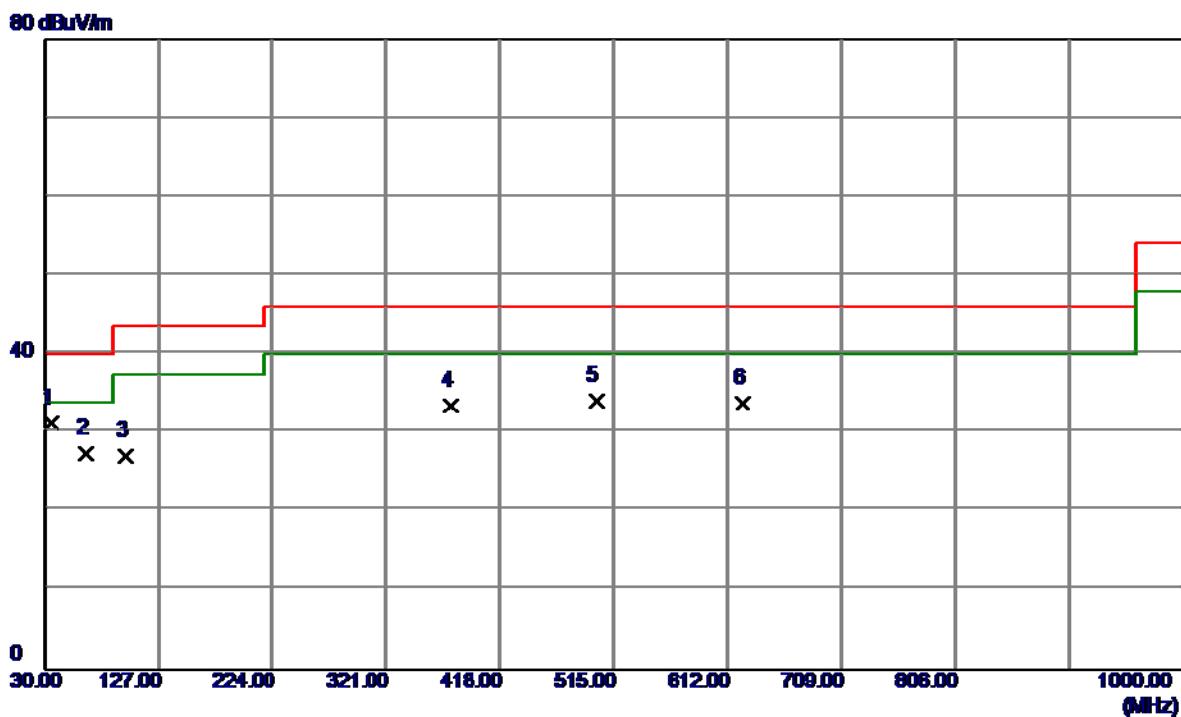
Horizontal



No.	Freq. MHz	Reading Level dBuV/m	Correct Factor dB	Measure ment dBuV/m	Limit dBuV/m	Margin dB	Detector	Comment
1	104.6900	42.23	-17.92	24.31	43.50	-19.19	Peak	
2	250.1900	44.32	-13.10	31.22	46.00	-14.78	Peak	
3	375.3200	46.94	-9.69	37.25	46.00	-8.75	Peak	
4	500.4500	44.84	-8.28	36.56	46.00	-9.44	Peak	
5	624.6100	38.87	-5.93	32.94	46.00	-13.06	Peak	
6	874.8700	40.90	-2.30	38.60	46.00	-7.40	Peak	

Test Mode: TX B MODE CHANNEL 06

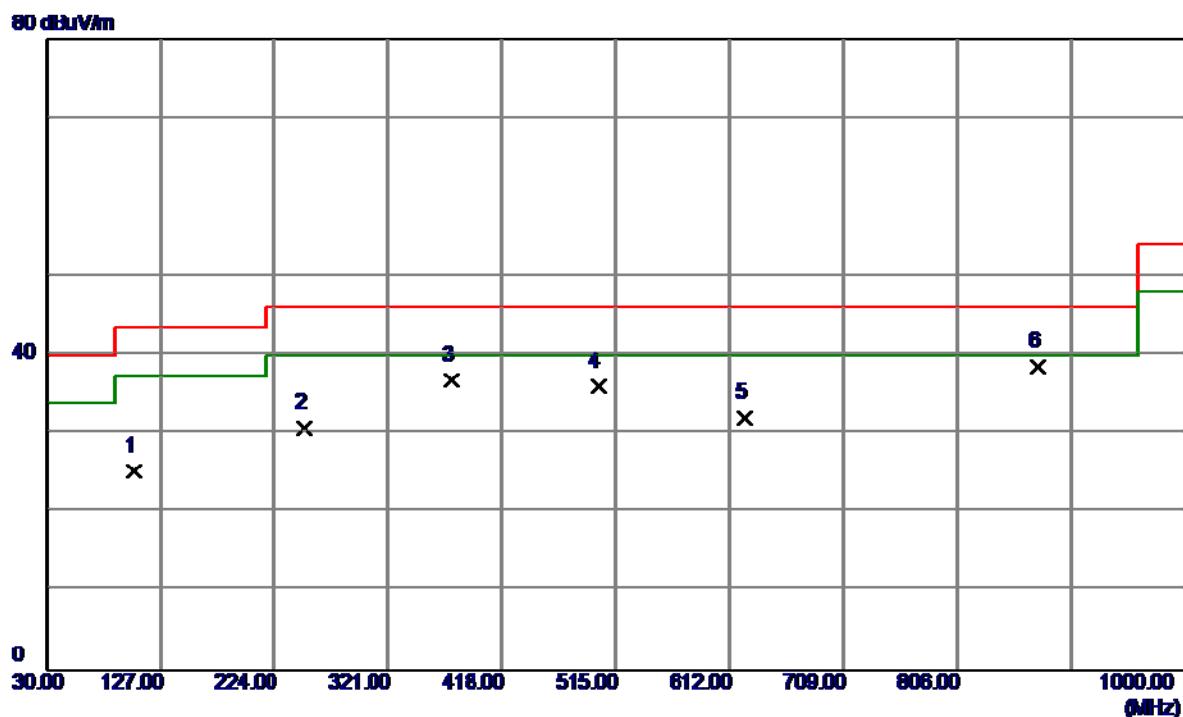
Vertical



No.	Freq.	Reading Level	Correct Factor	Measurement	Limit	Margin	Detector	Comment
	MHz	dBuV/m	dB	dBuV/m	dBuV/m	dB		
1	35.8200	42.60	-11.38	31.22	40.00	-8.78	Peak	
2	65.8900	46.94	-19.58	27.36	40.00	-12.64	Peak	
3	98.8700	44.80	-17.69	27.11	43.50	-16.39	Peak	
4	376.2900	43.19	-9.72	33.47	46.00	-12.53	Peak	
5	500.4500	42.43	-8.28	34.15	46.00	-11.85	Peak	
6	624.6100	39.62	-5.93	33.69	46.00	-12.31	Peak	

Test Mode: TX B MODE CHANNEL 06

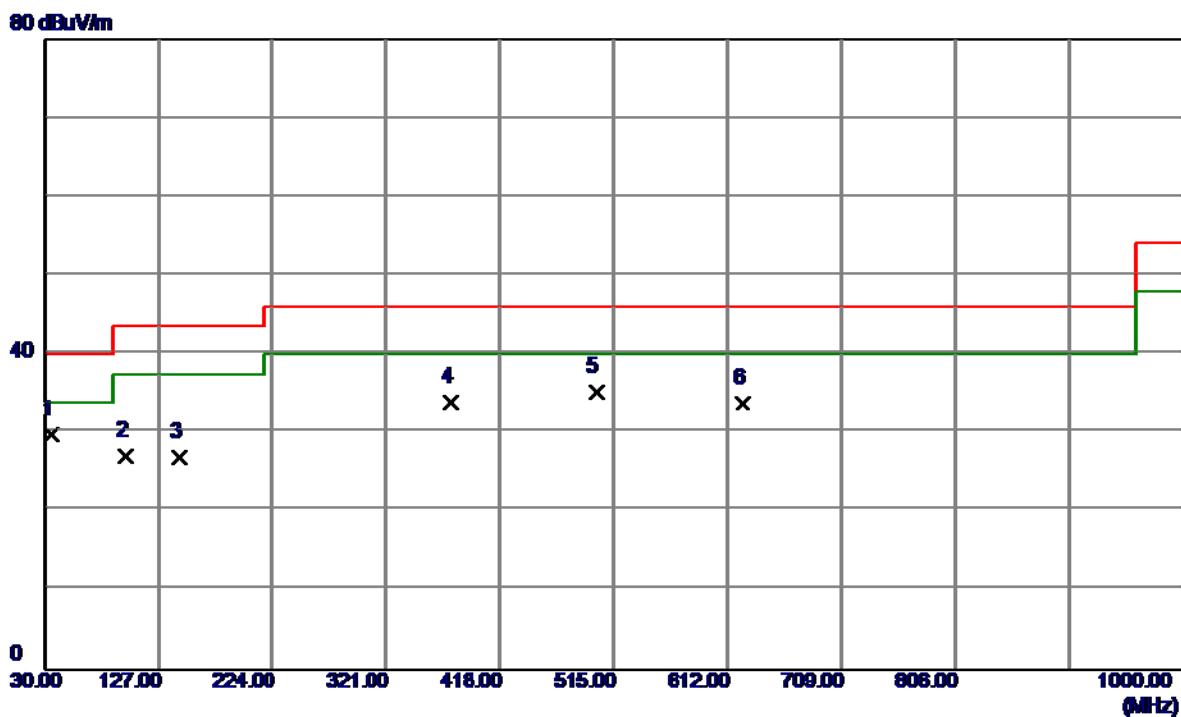
## Horizontal



No.	Freq. MHz	Reading Level dBuV/m	Correct Factor dB	Measure ment dBuV/m	Limit dBuV/m	Margin dB	Detector	Comment
1	104.6900	43.23	-17.92	25.31	43.50	-18.19	Peak	
2	250.1900	43.82	-13.10	30.72	46.00	-15.28	Peak	
3	375.3200	46.44	-9.69	36.75	46.00	-9.25	Peak	
4	500.4500	44.34	-8.28	36.06	46.00	-9.94	Peak	
5	624.6100	37.87	-5.93	31.94	46.00	-14.06	Peak	
6	874.8700	40.90	-2.30	38.60	46.00	-7.40	Peak	

Test Mode: TX B MODE CHANNEL 11

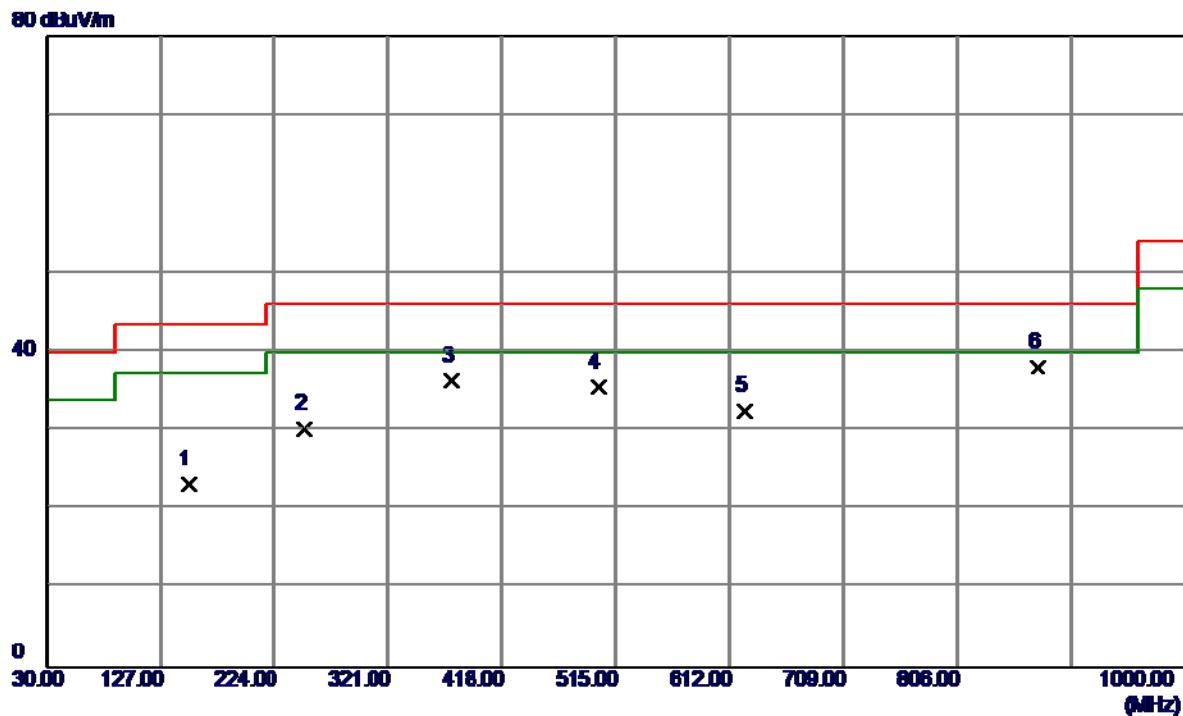
Vertical



No.	Freq.	Reading Level	Correct Factor	Measurement	Limit	Margin	Detector	Comment
	MHz	dBuV/m	dB	dBuV/m	dBuV/m	dB		
1	35.8200	41.10	-11.38	29.72	40.00	-10.28	Peak	
2	98.8700	44.80	-17.69	27.11	43.50	-16.39	Peak	
3	145.4299	45.35	-18.42	26.93	43.50	-16.57	Peak	
4	376.2900	43.69	-9.72	33.97	46.00	-12.03	Peak	
5	500.4500	43.43	-8.28	35.15	46.00	-10.85	Peak	
6	624.6100	39.62	-5.93	33.69	46.00	-12.31	Peak	

Test Mode: TX B MODE CHANNEL 11

## Horizontal

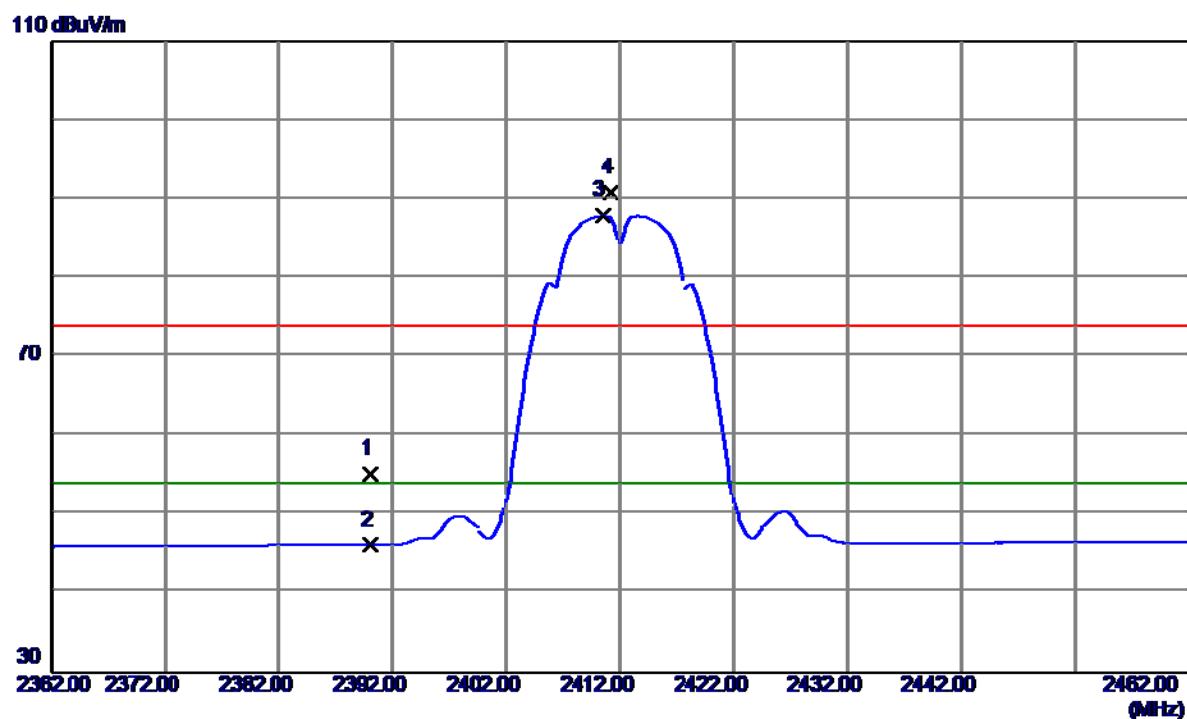


No.	Freq. MHz	Reading Level dBuV/m	Correct Factor dB	Measure ment dBuV/m	Limit dBuV/m	Margin dB	Detector	Comment
1	151.2500	41.42	-18.20	23.22	43.50	-20.28	Peak	
2	250.1900	43.32	-13.10	30.22	46.00	-15.78	Peak	
3	375.3200	45.94	-9.69	36.25	46.00	-9.75	Peak	
4	500.4500	43.84	-8.28	35.56	46.00	-10.44	Peak	
5	624.6100	38.37	-5.93	32.44	46.00	-13.56	Peak	
6	874.8700	40.40	-2.30	38.10	46.00	-7.90	Peak	

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

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

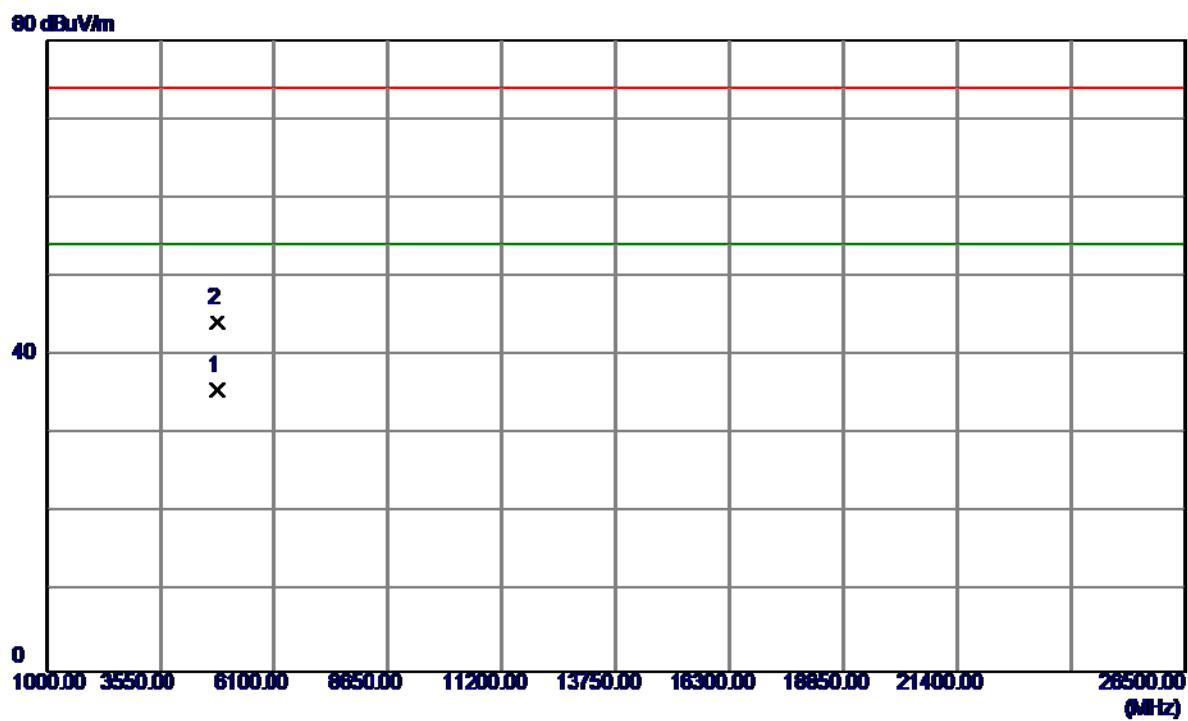
## Vertical



No.	Freq. MHz	Reading Level dBuV/m	Correct Factor dB	Measure ment dBuV/m	Limit dBuV/m	Margin dB	Detector	Comment
1	2390.0000	20.89	34.23	55.12	74.00	-18.88	Peak	
2	2390.0000	11.90	34.23	46.13	54.00	-7.87	AVG	
3	2410.5000	53.52	34.35	87.87	54.00	33.87	AVG	No Limit
4	2411.2000	56.40	34.35	90.75	74.00	16.75	Peak	No Limit

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

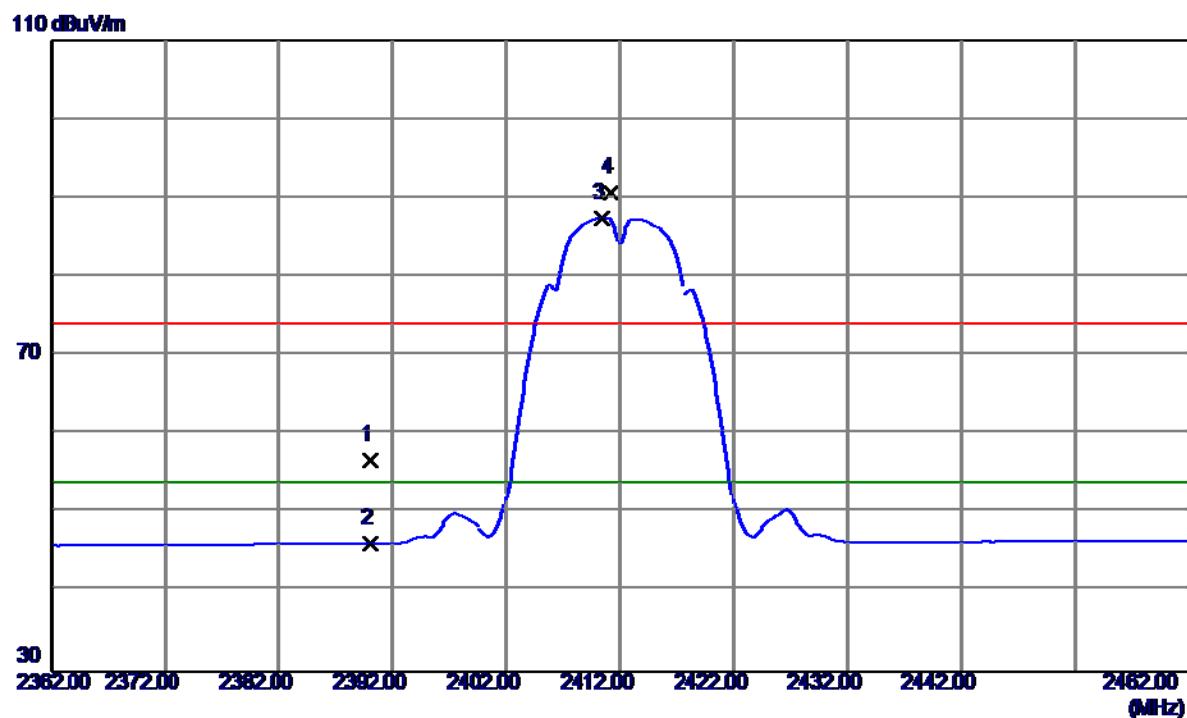
## Vertical



No.	Freq.	Reading Level	Correct Factor	Measure ment	Limit	Margin	Detector	Comment
	MHz	dBuV/m	dB	dBuV/m	dBuV/m	dB		
1	4824.0000	32.60	3.00	35.60	54.00	-18.40	AVG	
2	4824.1000	41.18	3.00	44.18	74.00	-29.82	Peak	

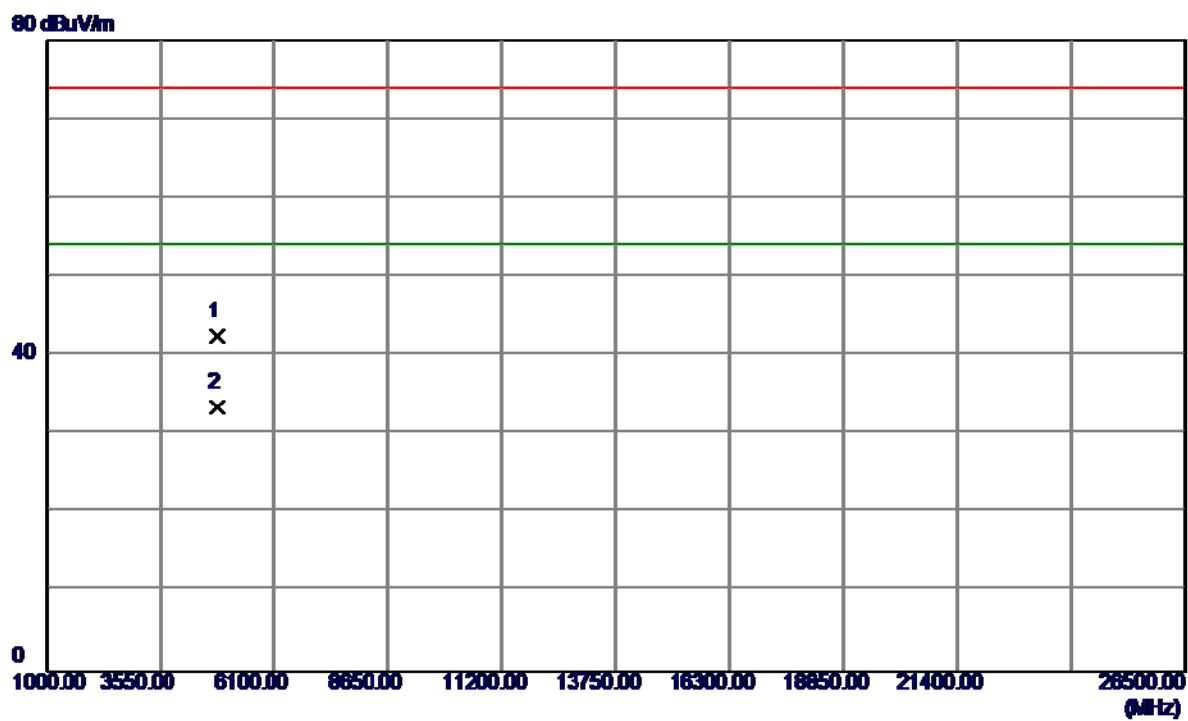
Orthogonal Axis :	X
Test Mode :	TX B MODE 2412MHz

## Horizontal



No.	Freq. MHz	Reading Level dBuV/m	Correct Factor dB	Measure ment dBuV/m	Limit dBuV/m	Margin dB	Detector		Comment
							Detector	Comment	
1	2390.0000	22.43	34.23	56.66	74.00	-17.34	Peak		
2	2390.0000	11.92	34.23	46.15	54.00	-7.85	AVG		
3	2410.4000	53.15	34.35	87.50	54.00	33.50	AVG	No Limit	
4	2411.2000	56.25	34.35	90.60	74.00	16.60	Peak	No Limit	

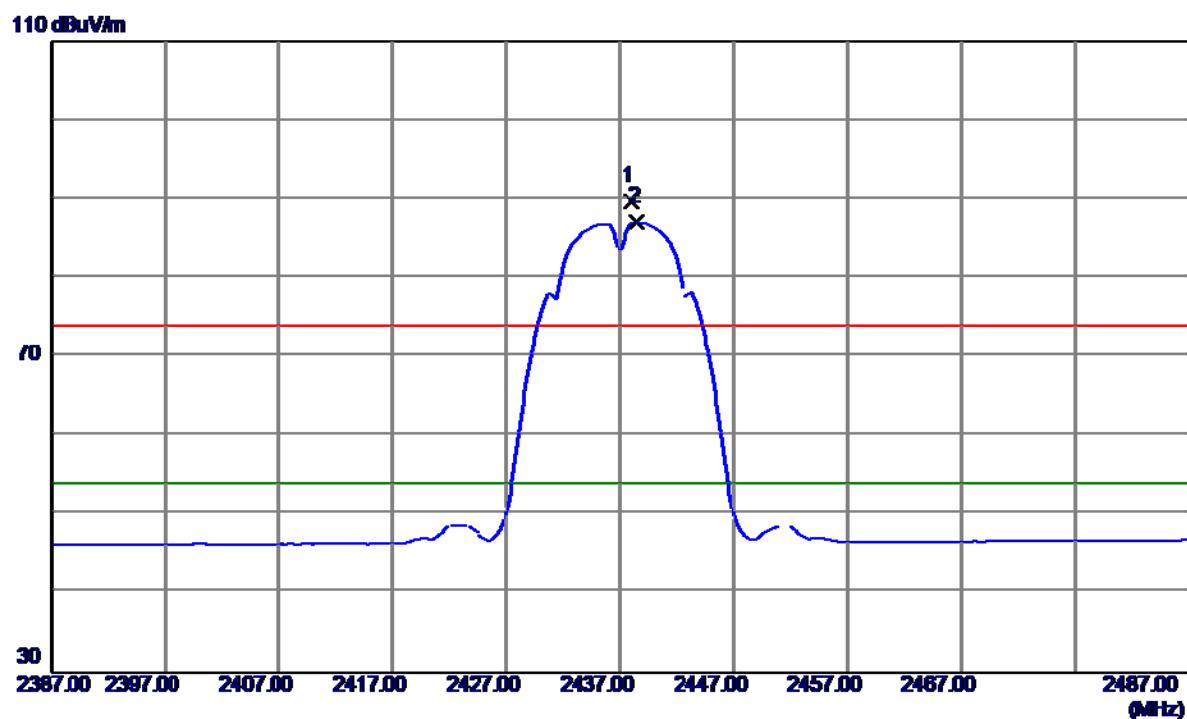
Orthogonal Axis :	X
Test Mode :	TX B MODE 2412MHz

**Horizontal**

No.	Freq. MHz	Reading Level dBuV/m	Correct Factor dB	Measure ment dBuV/m	Limit dBuV/m	Margin dB	Detector	Comment
1	4823.8000	39.34	3.00	42.34	74.00	-31.66	Peak	
2	4823.9400	30.42	3.00	33.42	54.00	-20.58	AVG	

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

## Vertical



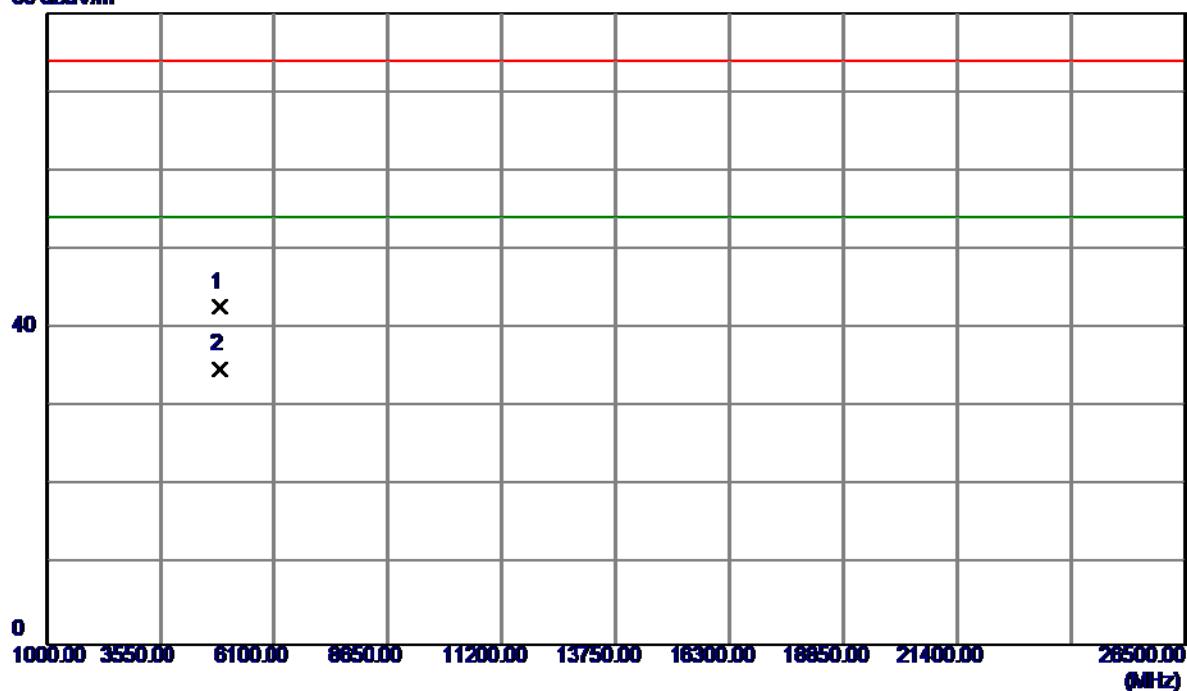
No.	Freq.	Reading Level	Correct Factor	Measurement	Limit	Margin	Detector	Comment
	MHz	dBuV/m	dB	dBuV/m	dBuV/m	dB		
1	2438.0000	55.24	34.51	89.75	74.00	15.75	Peak	No Limit
2	2438.5000	52.54	34.51	87.05	54.00	33.05	AVG	No Limit

Orthogonal Axis : X

Test Mode : TX B MODE 2437MHz

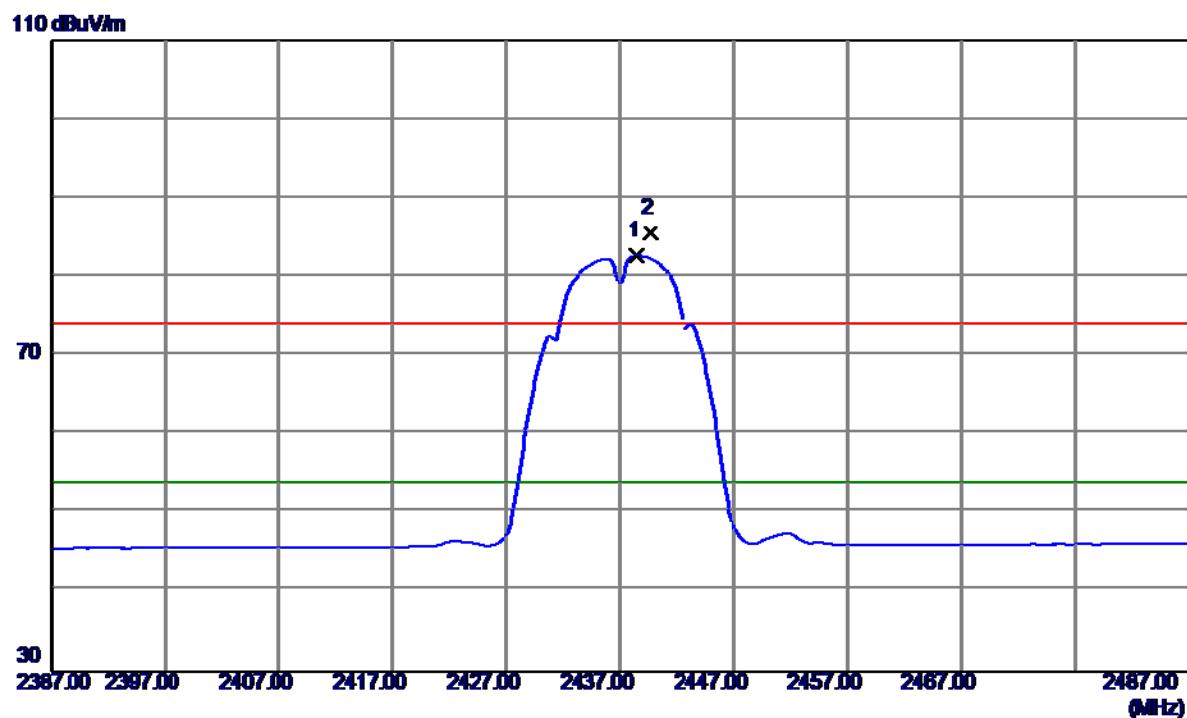
## Vertical

80 dBuV/m



No.	Freq. MHz	Reading Level dBuV/m	Correct Factor dB	Measure ment dBuV/m	Limit dBuV/m	Margin dB	Detector	Comment
1	4873.8000	39.63	3.03	42.66	74.00	-31.34	Peak	
2	4874.0000	31.89	3.03	34.92	54.00	-19.08	AVG	

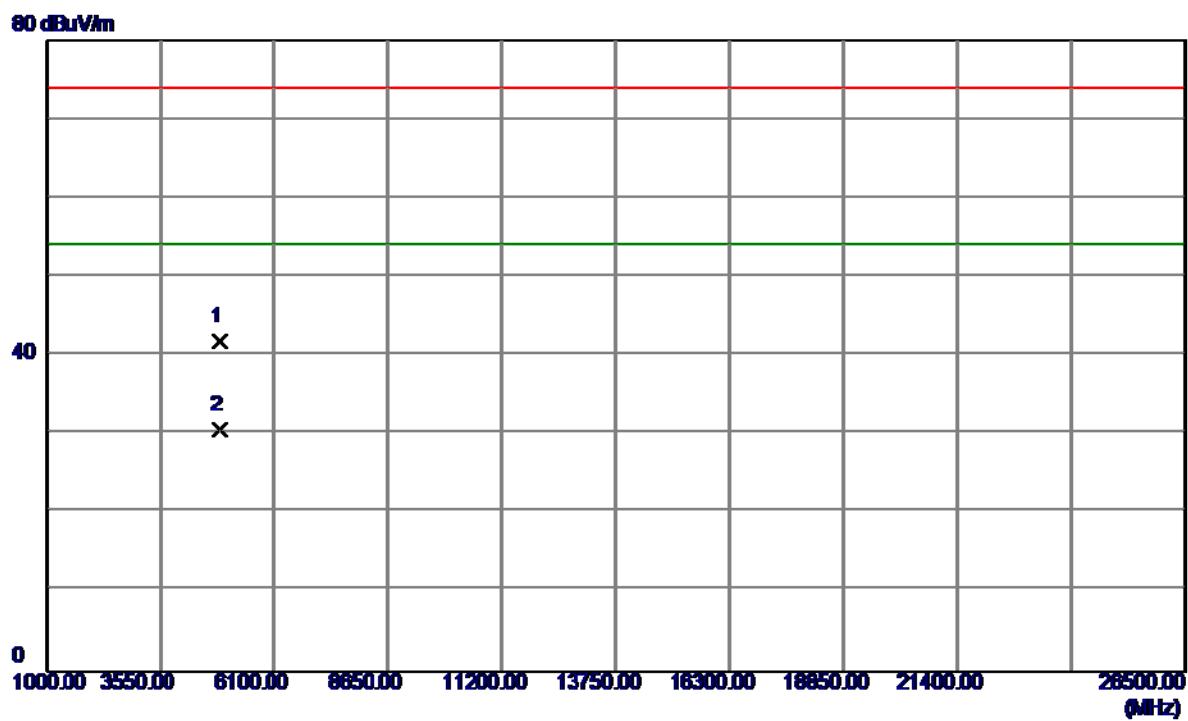
Orthogonal Axis :	X
Test Mode :	TX B MODE 2437MHz

**Horizontal**

No.	Freq.	Reading Level	Correct Factor	Measurement	Limit	Margin	Detector	Comment
	MHz	dBuV/m	dB	dBuV/m	dBuV/m	dB		
1	2438.5000	48.10	34.51	82.61	54.00	28.61	AVG	No Limit
2	2439.7000	50.99	34.52	85.51	74.00	11.51	Peak	No Limit

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

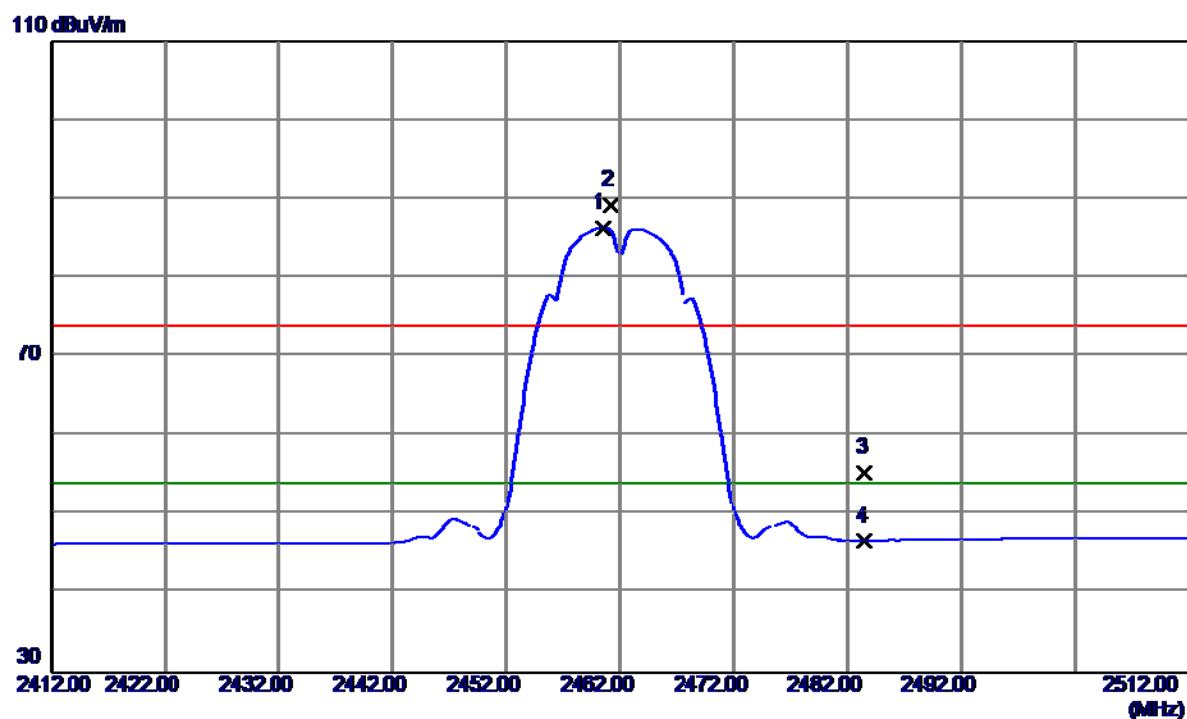
### Horizontal



No.	Freq.	Reading Level	Correct Factor	Measurement	Limit	Margin	Detector	Comment
	MHz	dBuV/m	dB	dBuV/m	dBuV/m	dB		
1	4874.2000	38.76	3.03	41.79	74.00	-32.21	Peak	
2	4874.2000	27.58	3.03	30.61	54.00	-23.39	AVG	

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

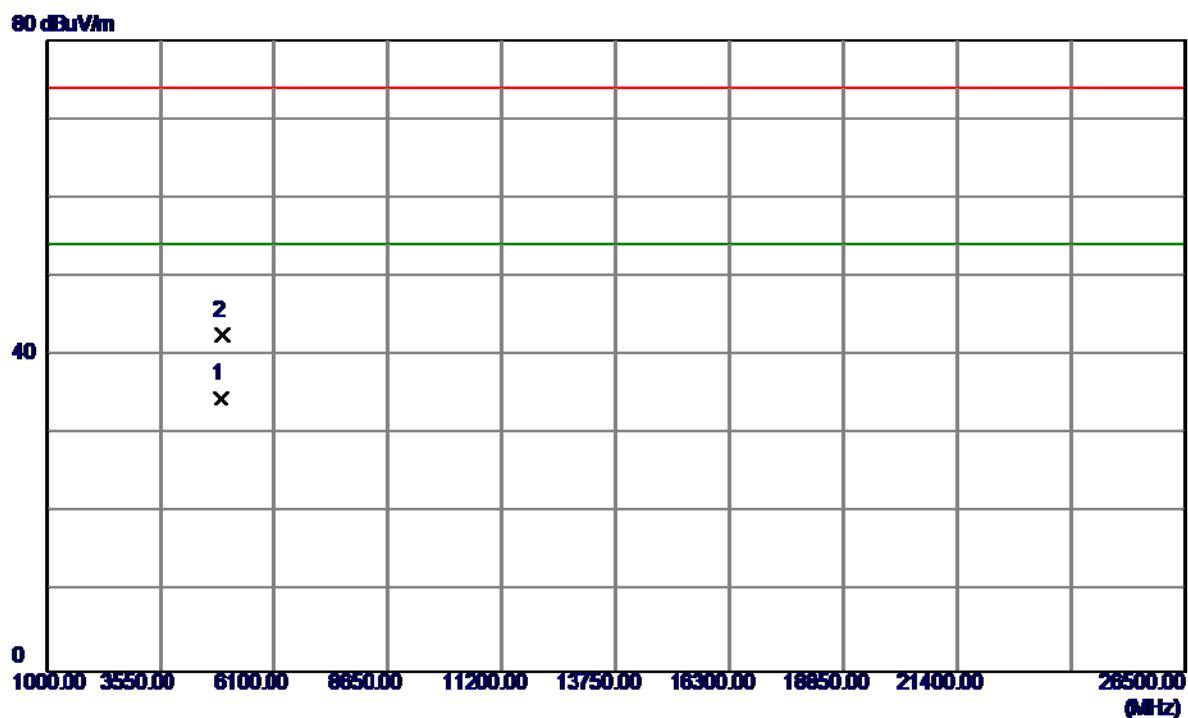
## Vertical



No.	Freq. MHz	Reading Level dBuV/m	Correct Factor dB	Measure ment dBuV/m	Limit dBuV/m	Margin dB	Detector	Comment
								Comment
1	2460.5000	51.71	34.64	86.35	54.00	32.35	AVG	No Limit
2	2461.2000	54.51	34.64	89.15	74.00	15.15	Peak	No Limit
3	2483.5000	20.55	34.77	55.32	74.00	-18.68	Peak	
4	2483.5000	11.94	34.77	46.71	54.00	-7.29	AVG	

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

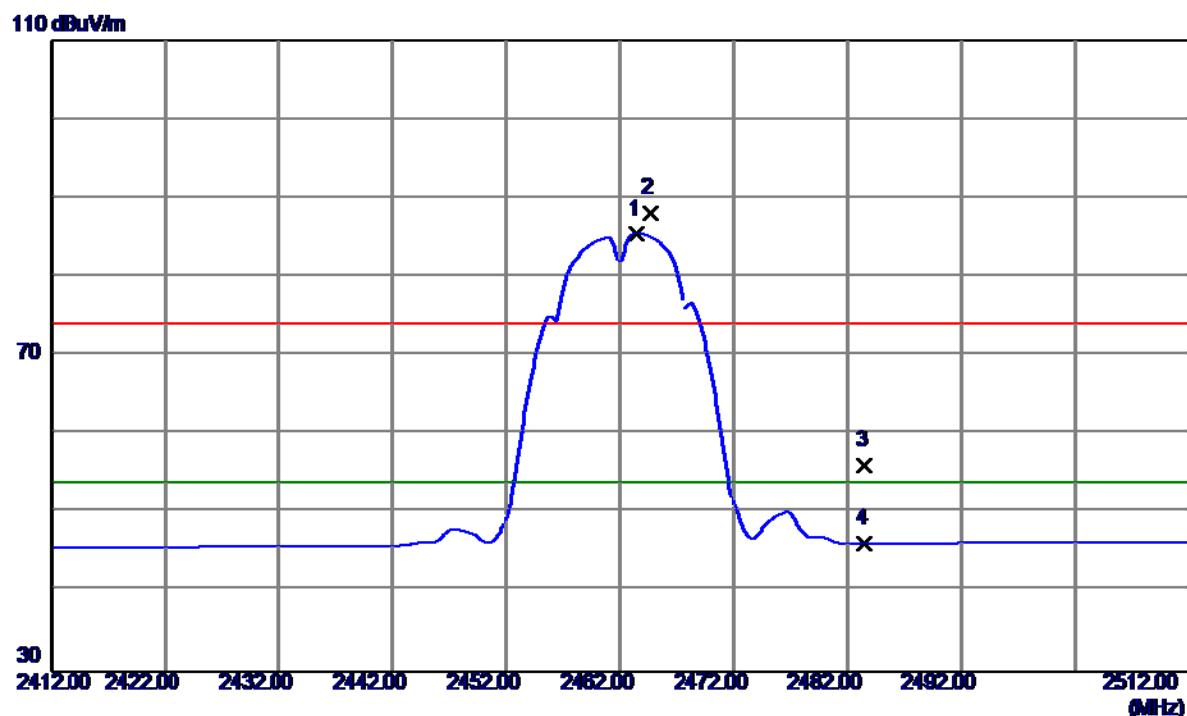
## Vertical



No.	Freq.	Reading Level	Correct Factor	Measurement	Limit	Margin	Detector	Comment
	MHz	dBuV/m	dB	dBuV/m	dBuV/m	dB		
1	4924.0000	31.48	3.05	34.53	54.00	-19.47	AVG	
2	4924.5000	39.55	3.05	42.60	74.00	-31.40	Peak	

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

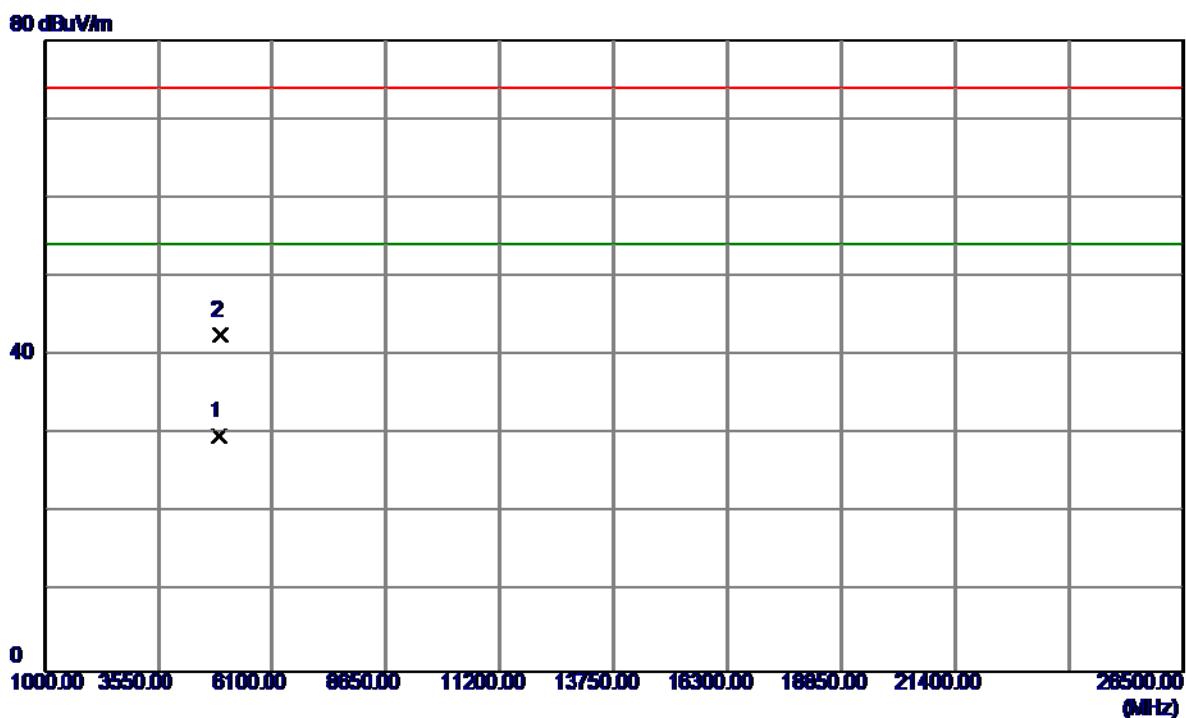
## Horizontal



No.	Freq. MHz	Reading Level dBuV/m	Correct Factor dB	Measure ment dBuV/m	Limit dBuV/m	Margin dB	Detector	Comment
1	2463.5000	50.70	34.66	85.36	54.00	31.36	AVG	No Limit
2	2464.7000	53.34	34.67	88.01	74.00	14.01	Peak	No Limit
3	2483.5000	21.38	34.77	56.15	74.00	-17.85	Peak	
4	2483.5000	11.39	34.77	46.16	54.00	-7.84	AVG	

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

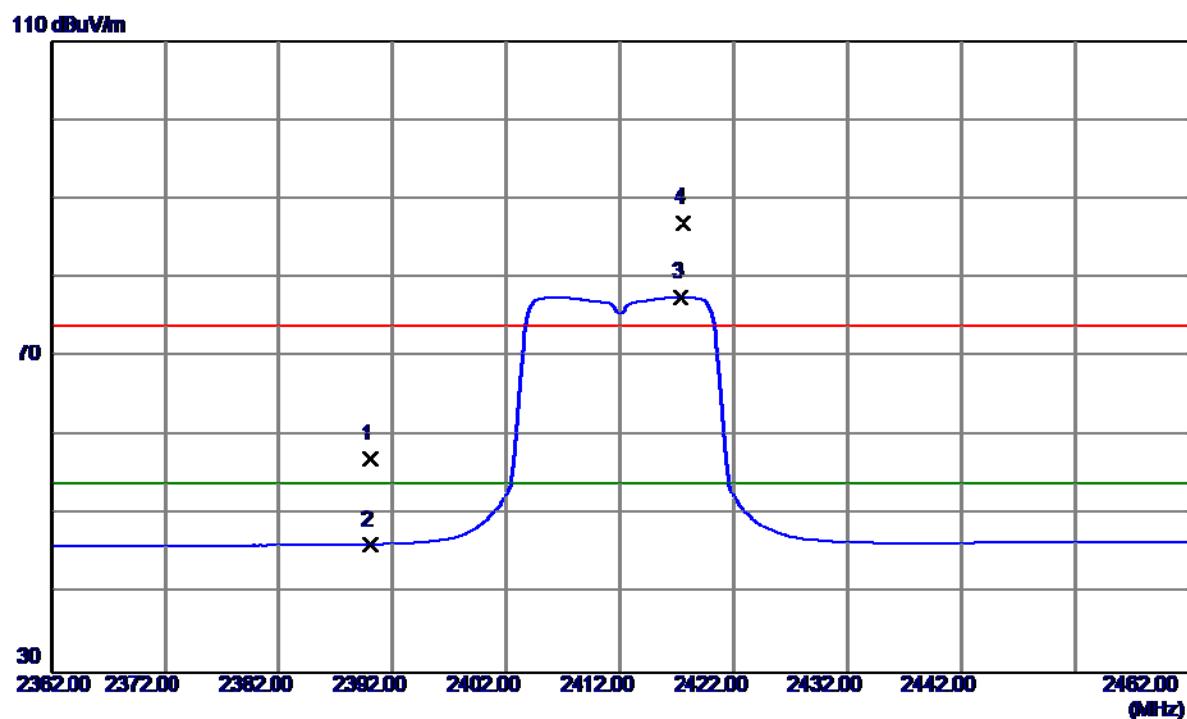
## Horizontal



No.	Freq.	Reading Level	Correct Factor	Measurement	Limit	Margin	Detector	Comment
	MHz	dBuV/m	dB	dBuV/m	dBuV/m	dB		
1	4923.8000	26.78	3.05	29.83	54.00	-24.17	AVG	
2	4924.2000	39.53	3.05	42.58	74.00	-31.42	Peak	

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

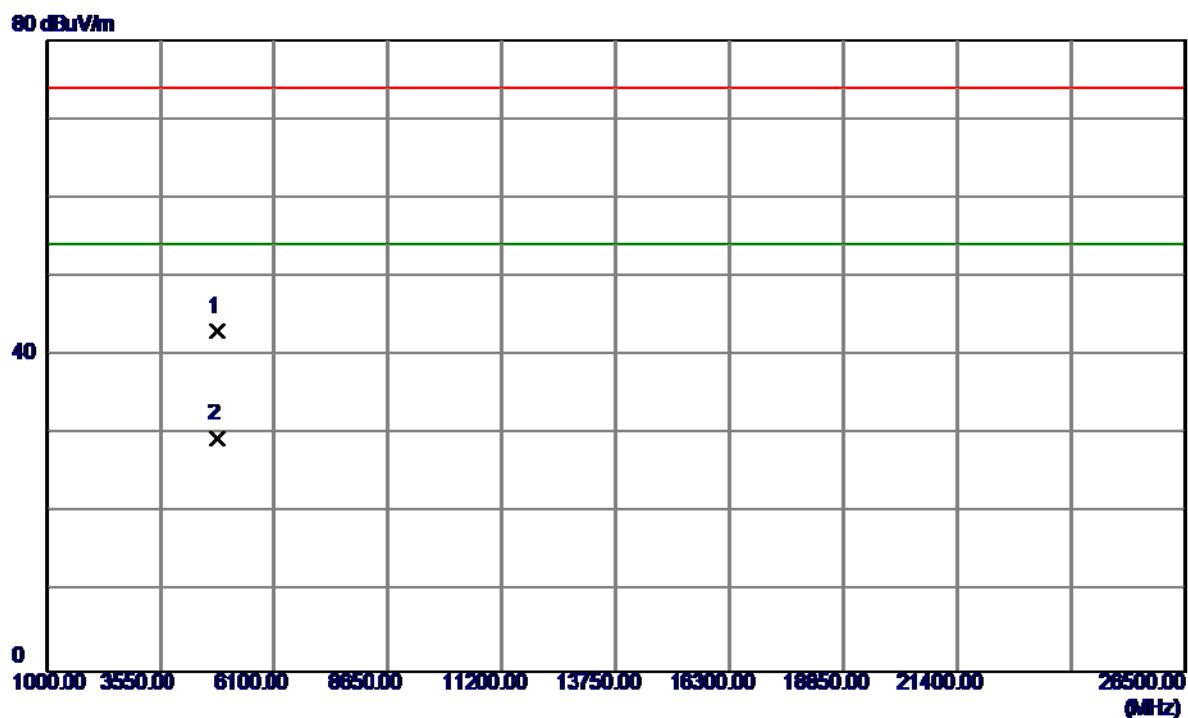
## Vertical



No.	Freq. MHz	Reading Level dBuV/m	Correct Factor dB	Measure ment dBuV/m	Limit dBuV/m	Margin dB	Detector	Comment
1	2390.0000	22.78	34.23	57.01	74.00	-16.99	Peak	
2	2390.0000	11.95	34.23	46.18	54.00	-7.82	Avg	
3	2417.3000	43.21	34.39	77.60	54.00	23.60	Avg	No Limit
4	2417.6000	52.56	34.39	86.95	74.00	12.95	Peak	No Limit

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

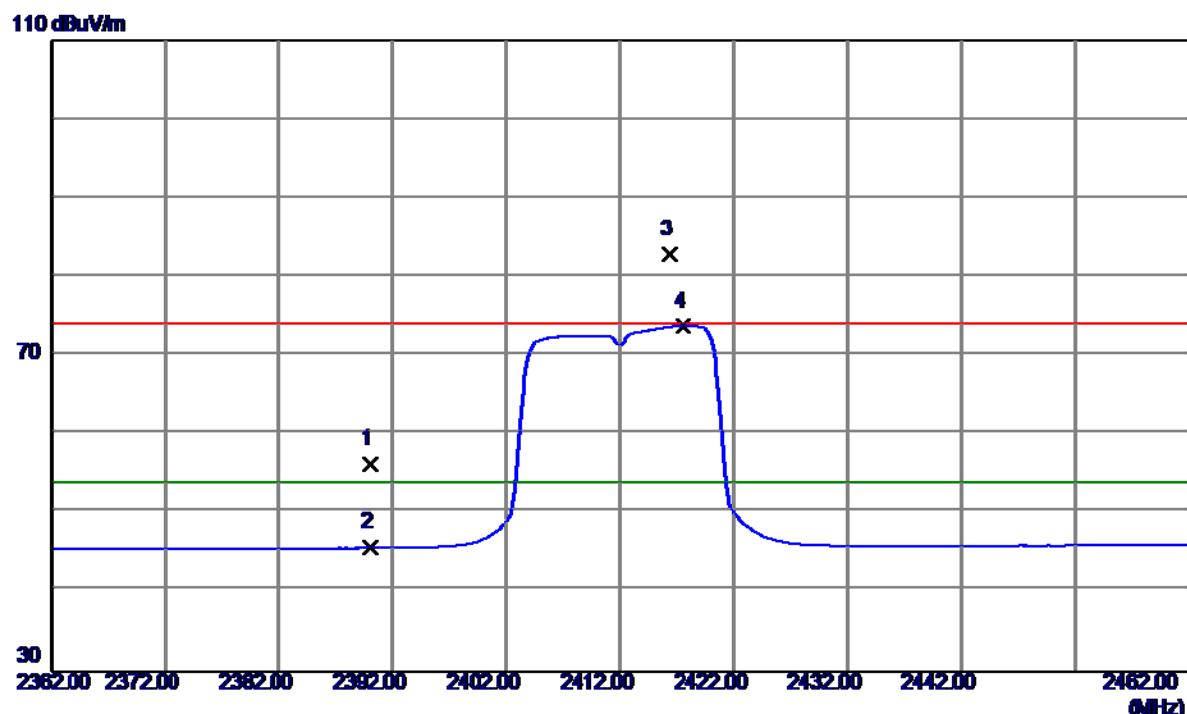
## Vertical



No.	Freq.	Reading Level	Correct Factor	Measurement	Limit	Margin	Detector	Comment
	MHz	dBuV/m	dB	dBuV/m	dBuV/m	dB		
1	4824.0000	40.11	3.00	43.11	74.00	-30.89	Peak	
2	4824.0000	26.48	3.00	29.48	54.00	-24.52	AVG	

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

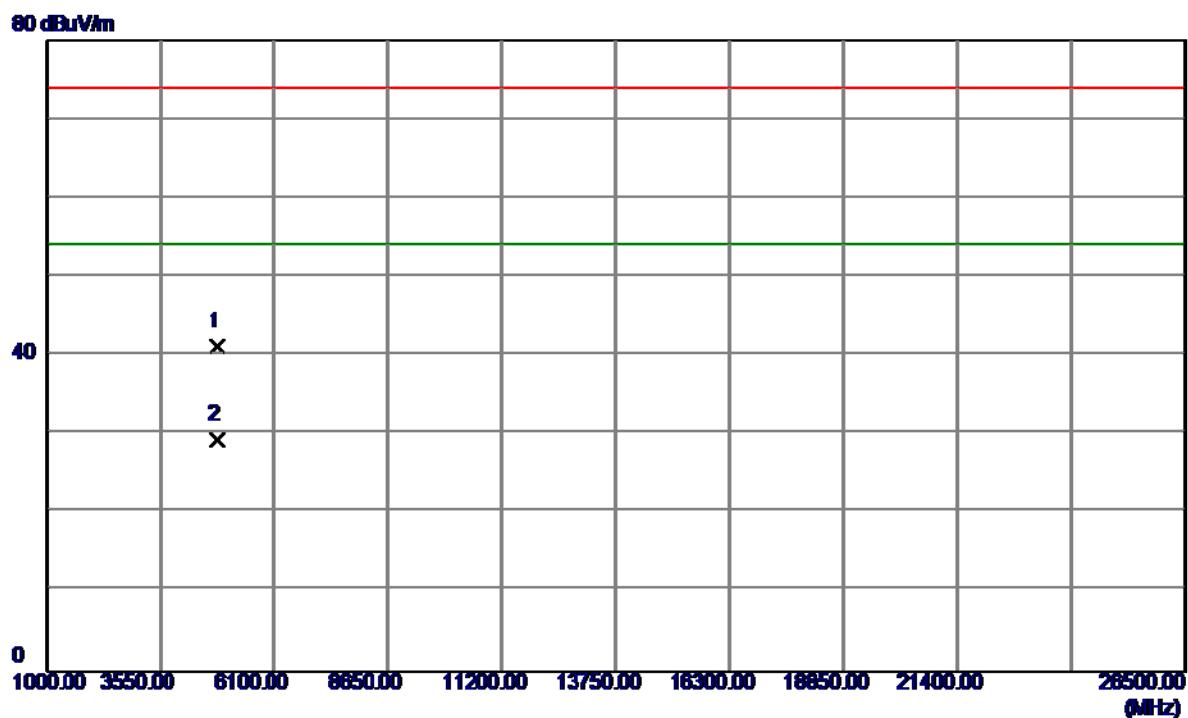
## Horizontal



No.	Freq. MHz	Reading Level dBuV/m	Correct Factor dB	Measure- ment dBuV/m	Limit dBuV/m	Margin dB	Margin	
							Detector	Comment
1	2390.0000	21.98	34.23	56.21	74.00	-17.79	Peak	
2	2390.0000	11.40	34.23	45.63	54.00	-8.37	Avg	
3	2416.3000	48.40	34.38	82.78	74.00	8.78	Peak	No Limit
4	2417.6000	39.33	34.39	73.72	54.00	19.72	Avg	No Limit

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

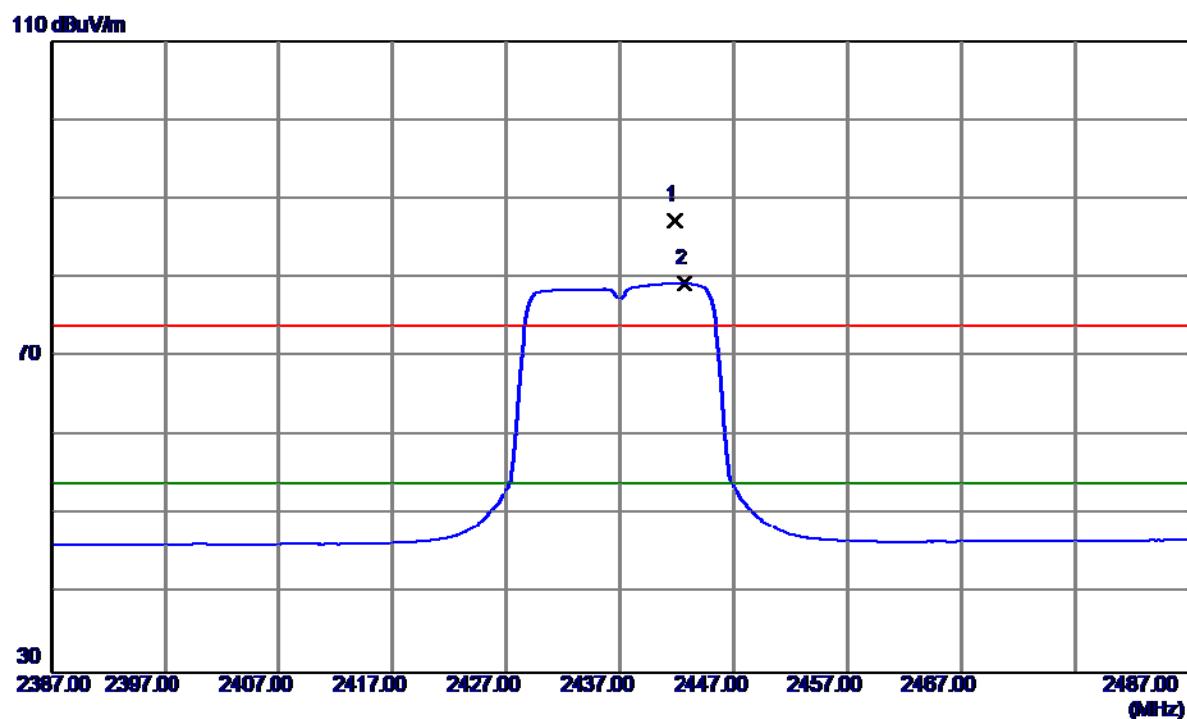
## Horizontal



No.	Freq.	Reading Level	Correct Factor	Measurement	Limit	Margin	Detector	Comment
	MHz	dBuV/m	dB	dBuV/m	dBuV/m	dB		
1	4824.9000	38.14	3.00	41.14	74.00	-32.86	Peak	
2	4825.5000	26.35	3.00	29.35	54.00	-24.65	AVG	

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

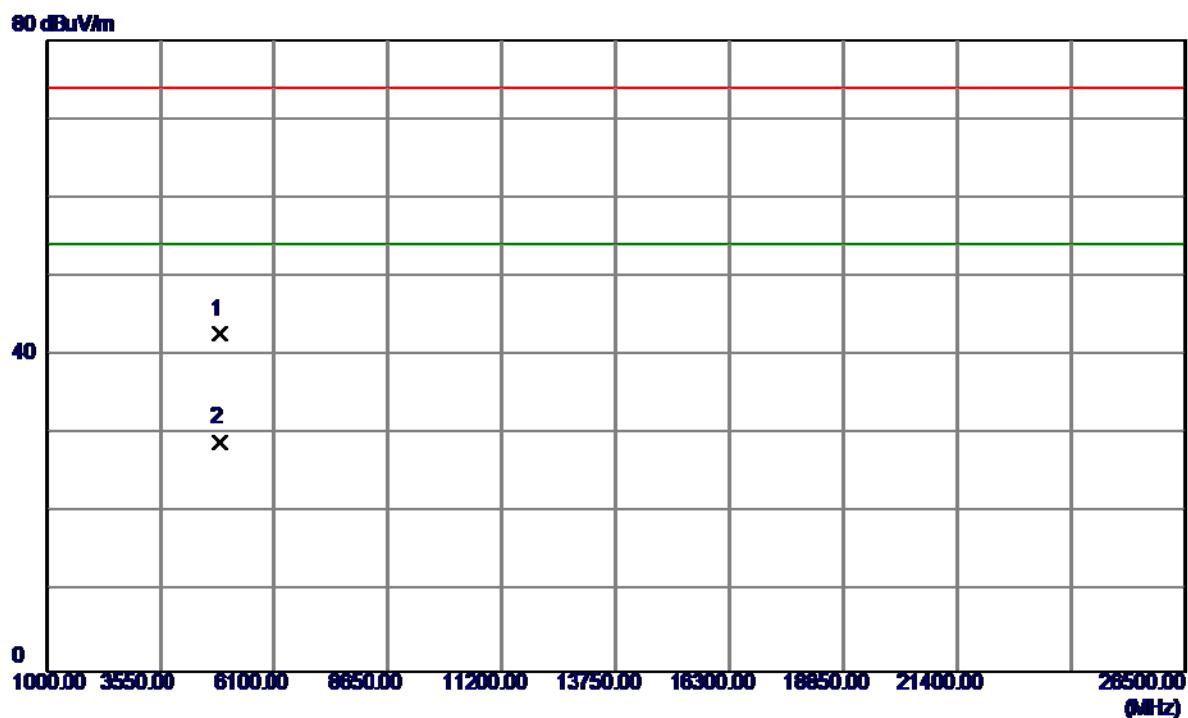
## Vertical



No.	Freq.	Reading Level	Correct Factor	Measurement	Limit	Margin	Detector	Comment
	MHz	dBuV/m	dB	dBuV/m	dBuV/m	dB		
1	2441.8000	52.75	34.53	87.28	74.00	13.28	Peak	No Limit
2	2442.7000	44.69	34.54	79.23	54.00	25.23	AVG	No Limit

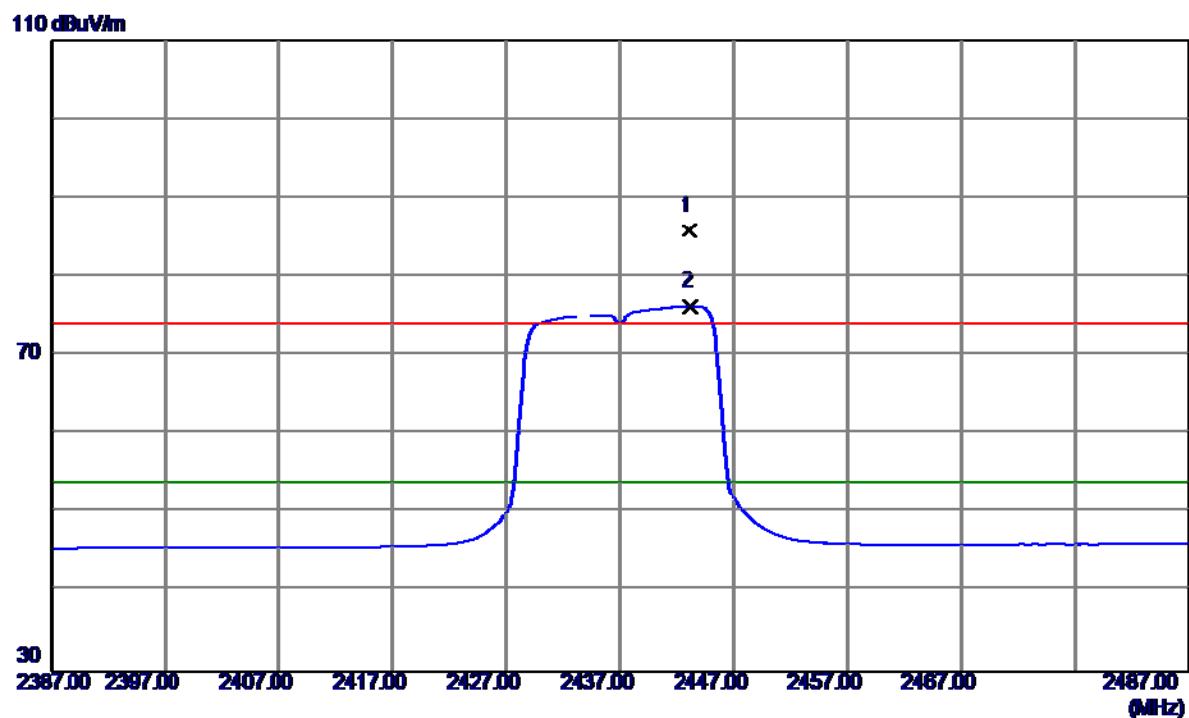
Orthogonal Axis :	X
Test Mode :	TX G MODE 2437MHz

## Vertical



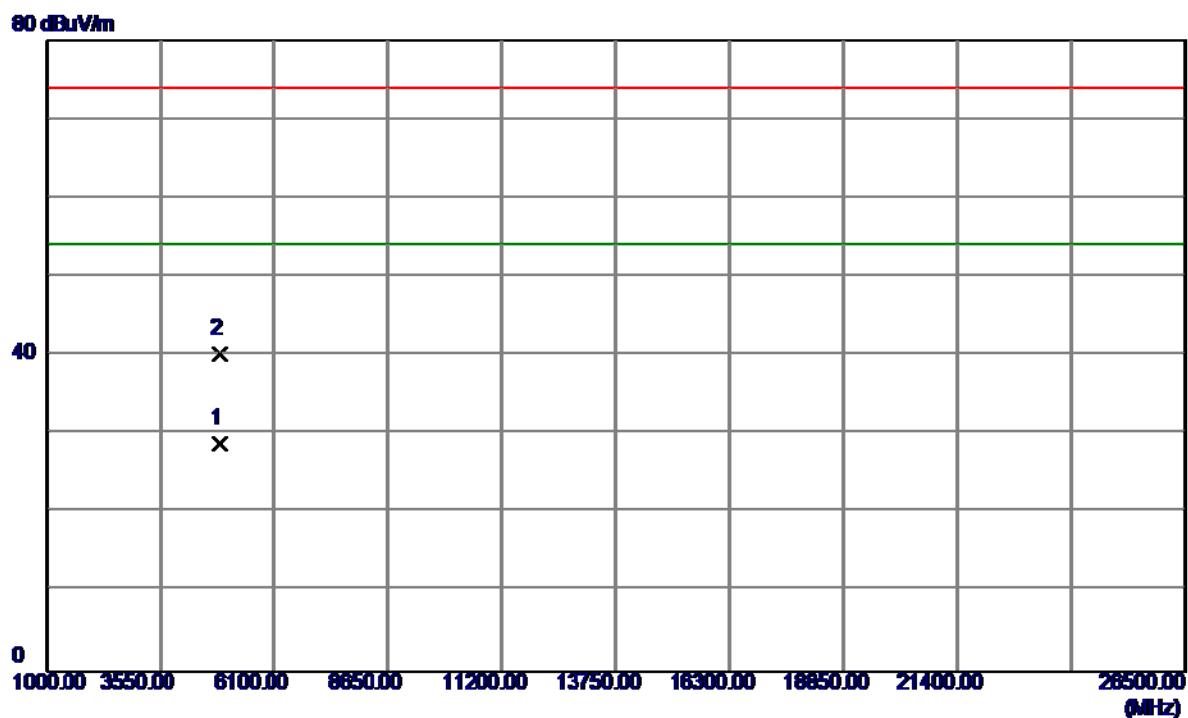
No.	Freq. MHz	Reading Level dBuV/m	Correct Factor dB	Measure ment dBuV/m	Limit dBuV/m	Margin dB	Detector	Comment
1	4873.1000	39.68	3.03	42.71	74.00	-31.29	Peak	
2	4873.5000	26.00	3.03	29.03	54.00	-24.97	AVG	

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

**Horizontal**

No.	Freq.	Reading Level	Correct Factor	Measure ment	Limit	Margin		
							MHz	dBuV/m
1	2443.1000	51.34	34.54	85.88	74.00	11.88	Peak	No Limit
2	2443.2000	41.75	34.54	76.29	54.00	22.29	AVG	No Limit

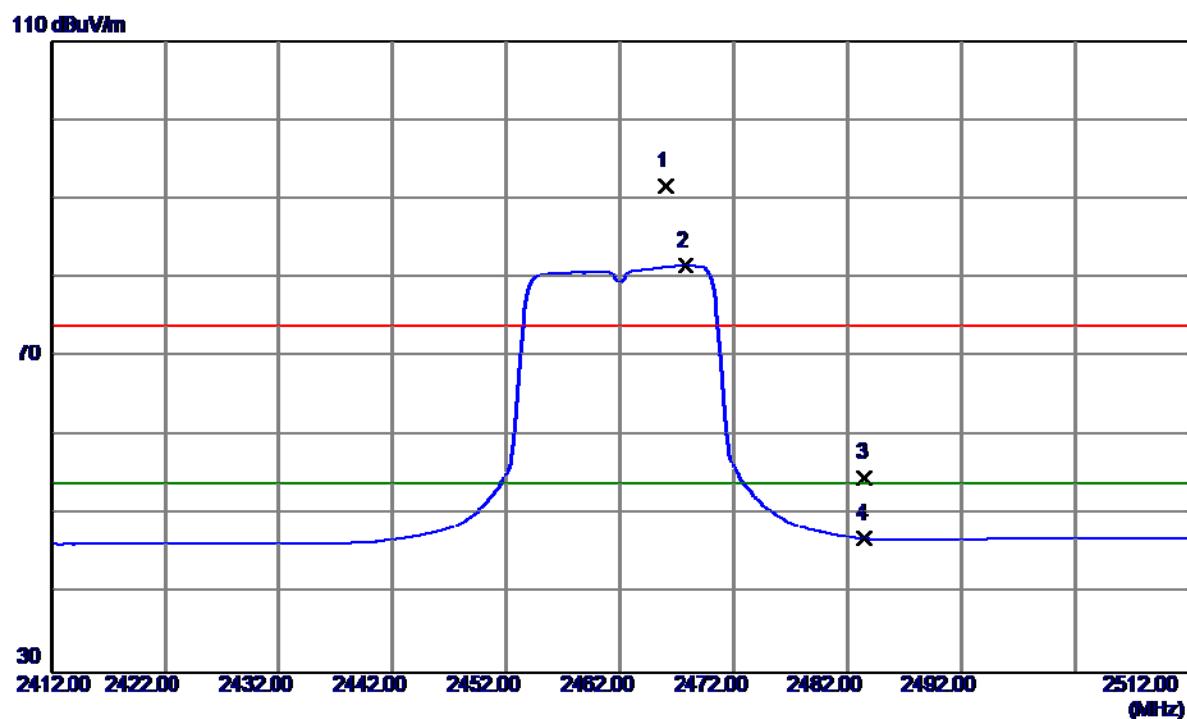
Orthogonal Axis :	X
Test Mode :	TX G MODE 2437MHz

**Horizontal**

No.	Freq.	Reading Level	Correct Factor	Measurement	Limit	Margin	Detector	Comment
	MHz	dBuV/m	dB	dBuV/m	dBuV/m	dB		
1	4874.0000	25.78	3.03	28.81	54.00	-25.19	AVG	
2	4874.1000	37.16	3.03	40.19	74.00	-33.81	Peak	

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

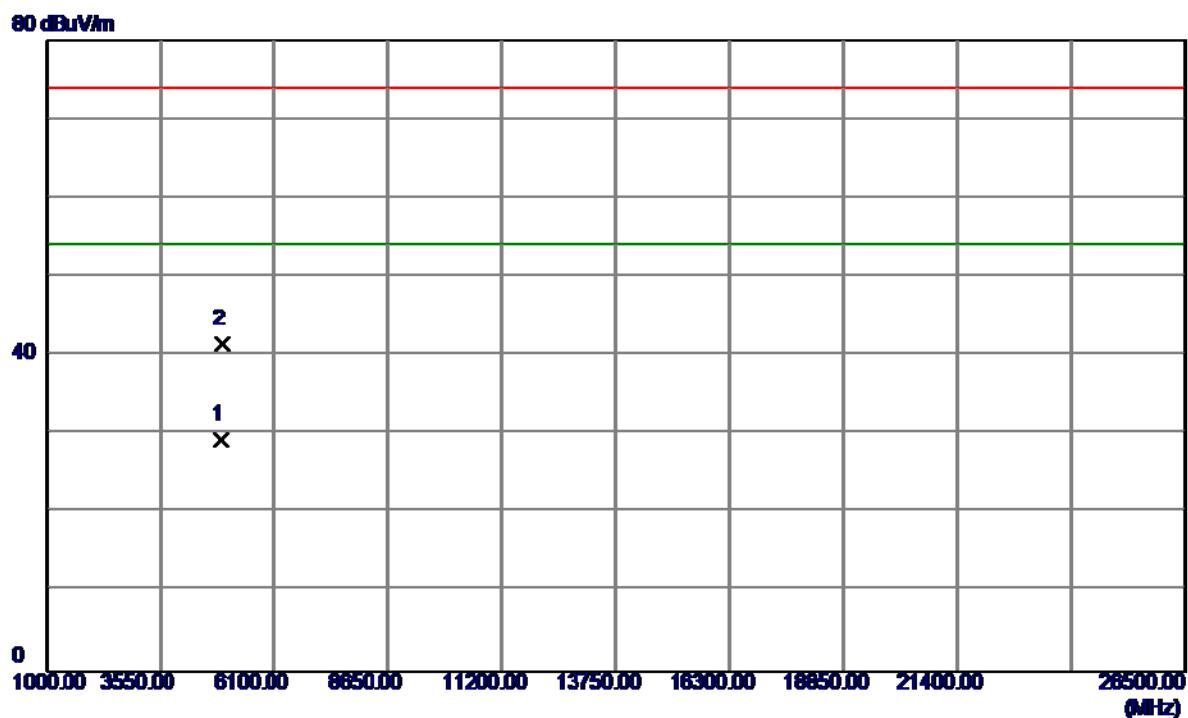
## Vertical



No.	Freq. MHz	Reading Level dBuV/m	Correct Factor dB	Measurement dBuV/m	Limit dBuV/m	Margin dB	Detector	Comment
1	2466.0000	56.86	34.67	91.53	74.00	17.53	Peak	No Limit
2	2467.8000	46.84	34.68	81.52	54.00	27.52	AVG	No Limit
3	2483.5000	19.86	34.77	54.63	74.00	-19.37	Peak	
4	2483.5000	12.15	34.77	46.92	54.00	-7.08	AVG	

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

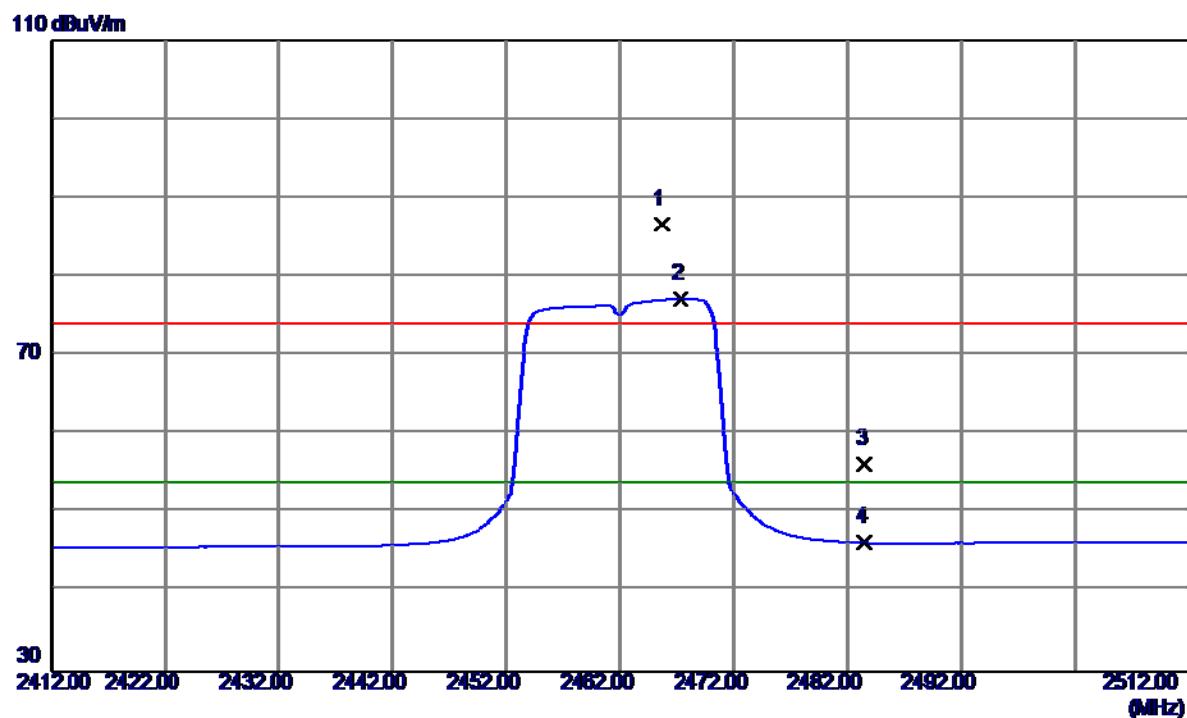
## Vertical



No.	Freq.	Reading Level	Correct Factor	Measurement	Limit	Margin	Detector	Comment
	MHz	dBuV/m	dB	dBuV/m	dBuV/m	dB		
1	4924.0000	26.26	3.05	29.31	54.00	-24.69	AVG	
2	4925.4000	38.43	3.05	41.48	74.00	-32.52	Peak	

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

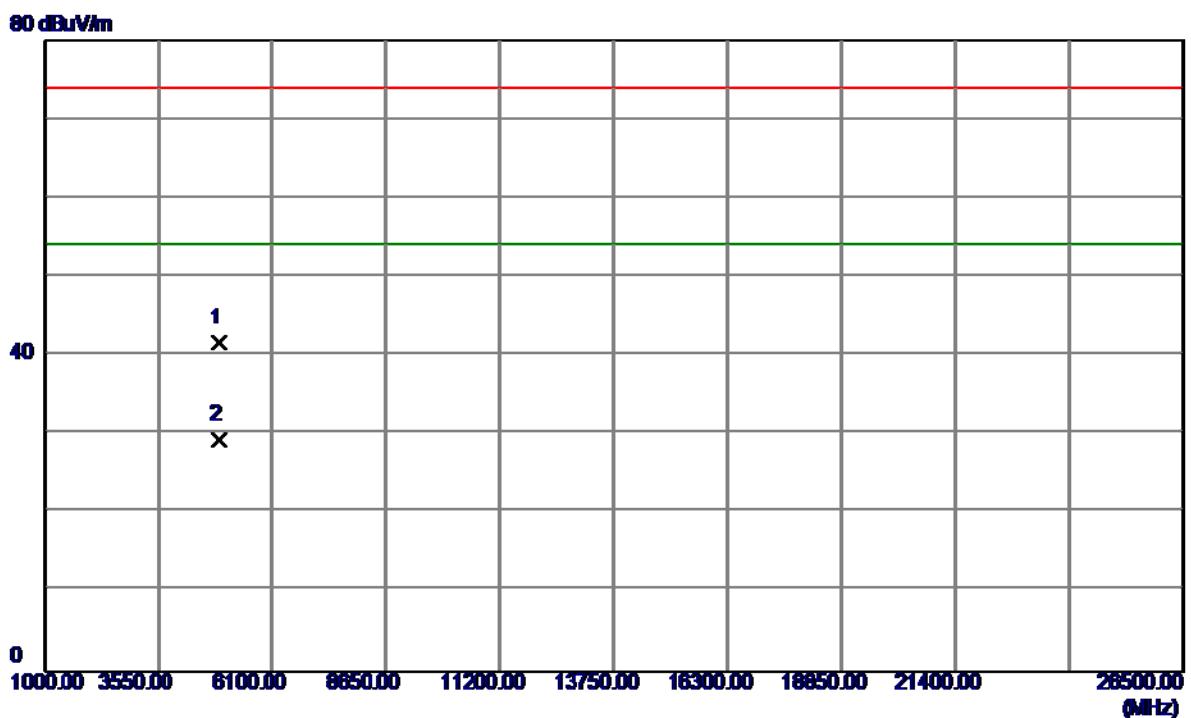
## Horizontal



No.	Freq. MHz	Reading Level dBuV/m	Correct Factor dB	Measure ment dBuV/m	Limit dBuV/m	Margin dB	Margin	
							Detector	Comment
1	2465.7000	51.95	34.67	86.62	74.00	12.62	Peak	No Limit
2	2467.3000	42.59	34.68	77.27	54.00	23.27	AVG	No Limit
3	2483.5000	21.42	34.77	56.19	74.00	-17.81	Peak	
4	2483.5000	11.48	34.77	46.25	54.00	-7.75	AVG	

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

## Horizontal



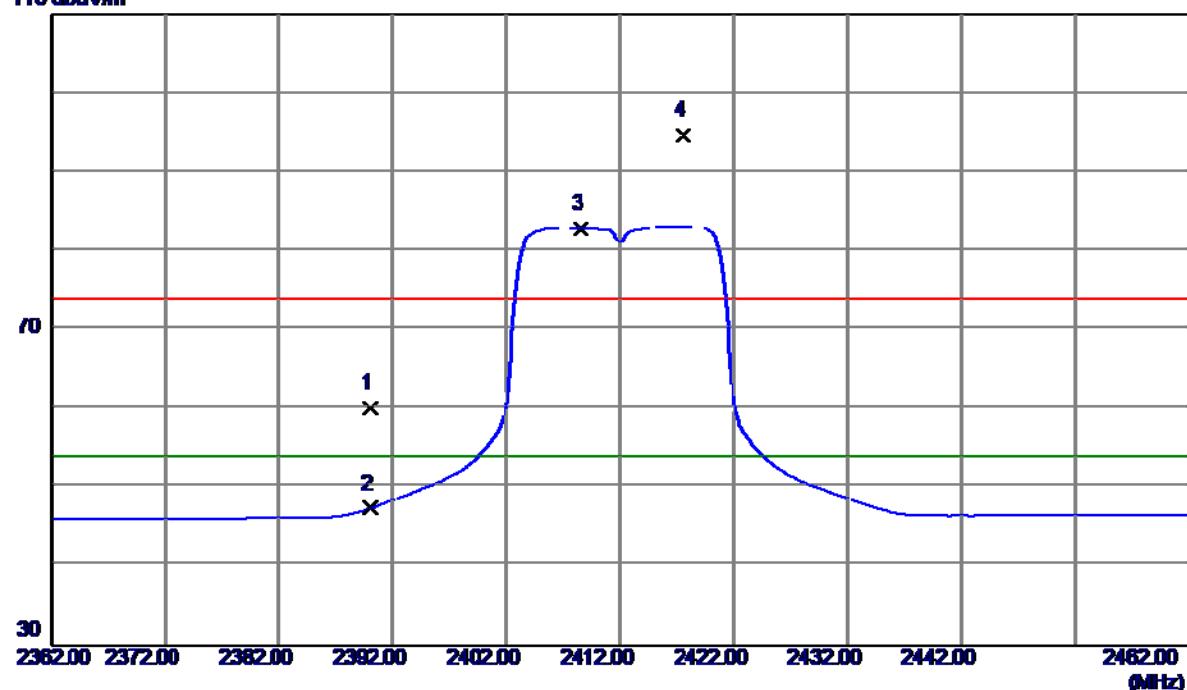
No.	Freq.	Reading	Correct	Measure	Limit	Margin	Detector	Comment
		Level	Factor	dBuV/m	dBuV/m	dB		
1	4923.8000	38.51	3.05	41.56	74.00	-32.44	Peak	
2	4924.0000	26.20	3.05	29.25	54.00	-24.75	AVG	

Orthogonal Axis : X

Test Mode : TX N-20M MODE 2412MHz

## Vertical

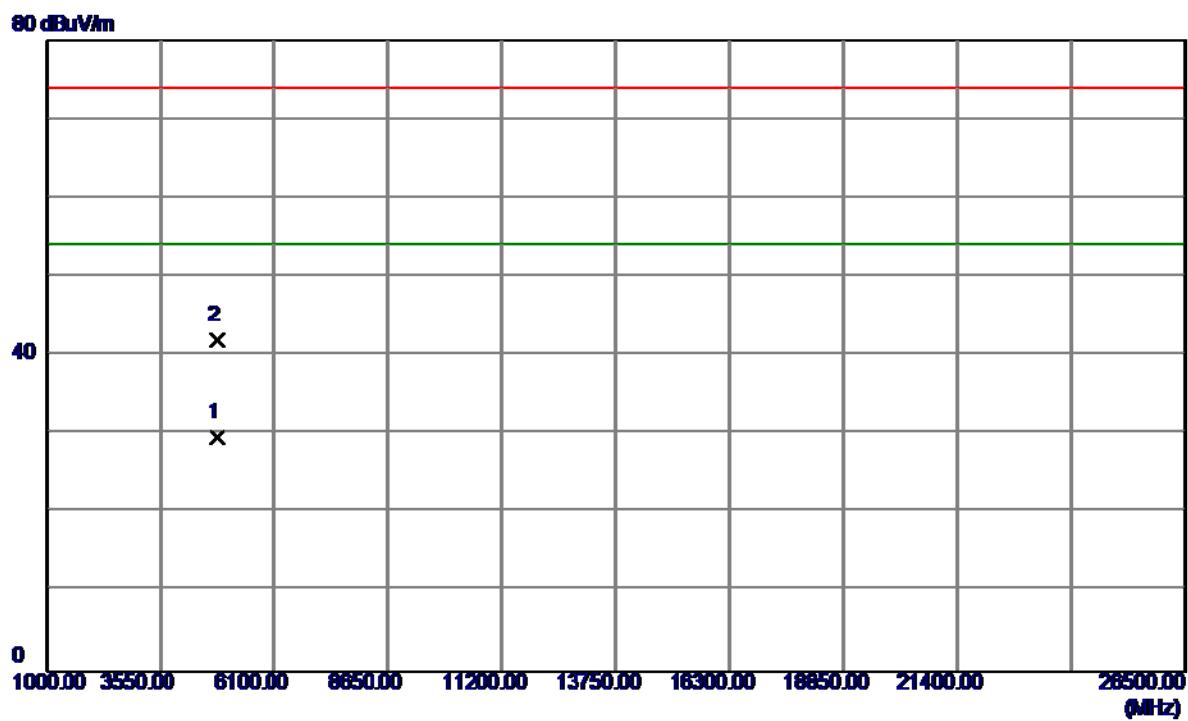
110 dBuV/m



No.	Freq. MHz	Reading Level dBuV/m	Correct Factor dB	Measure ment dBuV/m	Limit dBuV/m	Margin dB	Margin	
							Detector	Comment
1	2390.0000	25.89	34.23	60.12	74.00	-13.88	Peak	
2	2390.0000	13.13	34.23	47.36	54.00	-6.64	AVG	
3	2408.6000	48.49	34.34	82.83	54.00	28.83	AVG	No Limit
4	2417.6000	60.24	34.39	94.63	74.00	20.63	Peak	No Limit

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

## Vertical



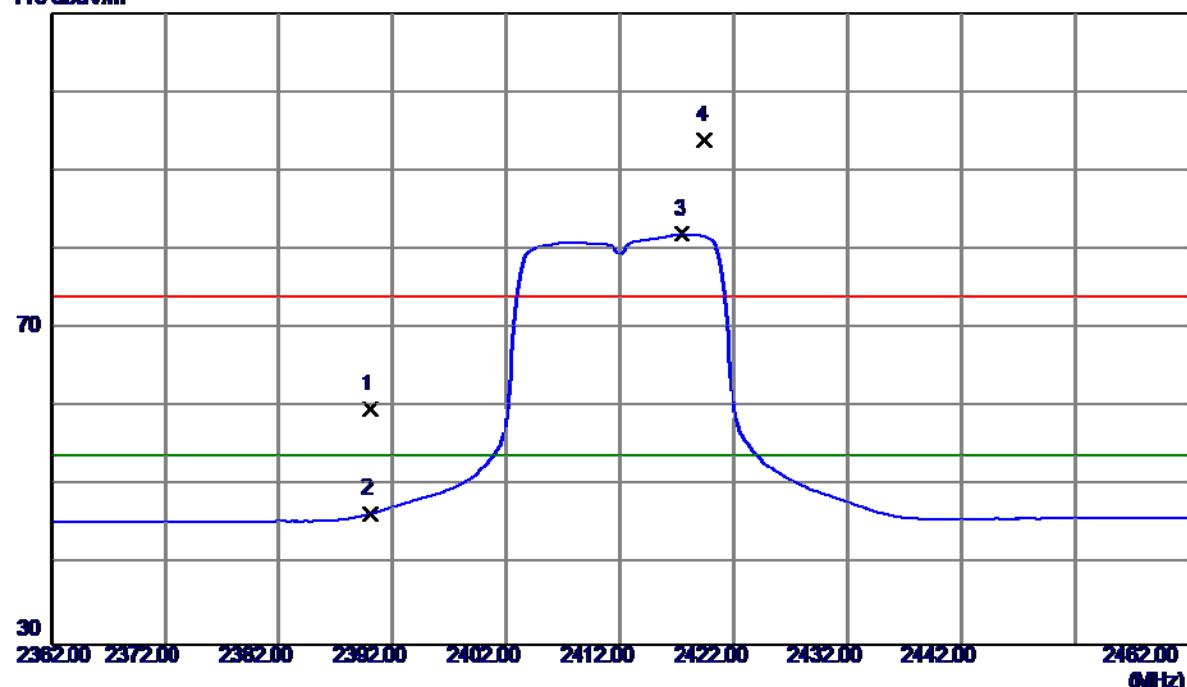
No.	Freq.	Reading Level	Correct Factor	Measure ment	Limit	Margin	Detector	Comment
	MHz	dBuV/m	dB	dBuV/m	dBuV/m	dB		
1	4824.2000	26.64	3.00	29.64	54.00	-24.36	AVG	
2	4824.7000	38.99	3.00	41.99	74.00	-32.01	Peak	

Orthogonal Axis : X

Test Mode : TX N-20M MODE 2412MHz

## Horizontal

110 dBuV/m



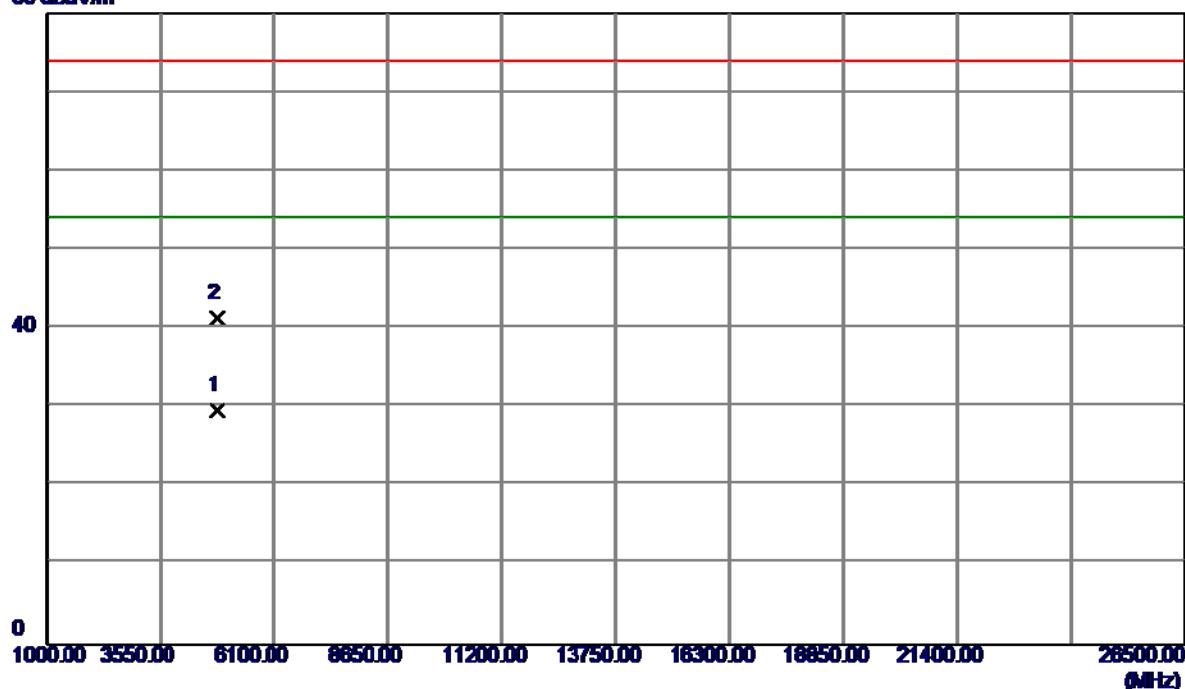
No.	Freq. MHz	Reading Level dBuV/m	Correct Factor dB	Measure ment dBuV/m	Limit dBuV/m	Margin dB	Detector		Comment
							Detector	Comment	
1	2390.0000	25.48	34.23	59.71	74.00	-14.29	Peak		
2	2390.0000	12.29	34.23	46.52	54.00	-7.48	AVG		
3	2417.5000	47.53	34.39	81.92	54.00	27.92	AVG	No Limit	
4	2419.5000	59.38	34.40	93.78	74.00	19.78	Peak	No Limit	

Orthogonal Axis : X

Test Mode : TX N-20M MODE 2412MHz

## Horizontal

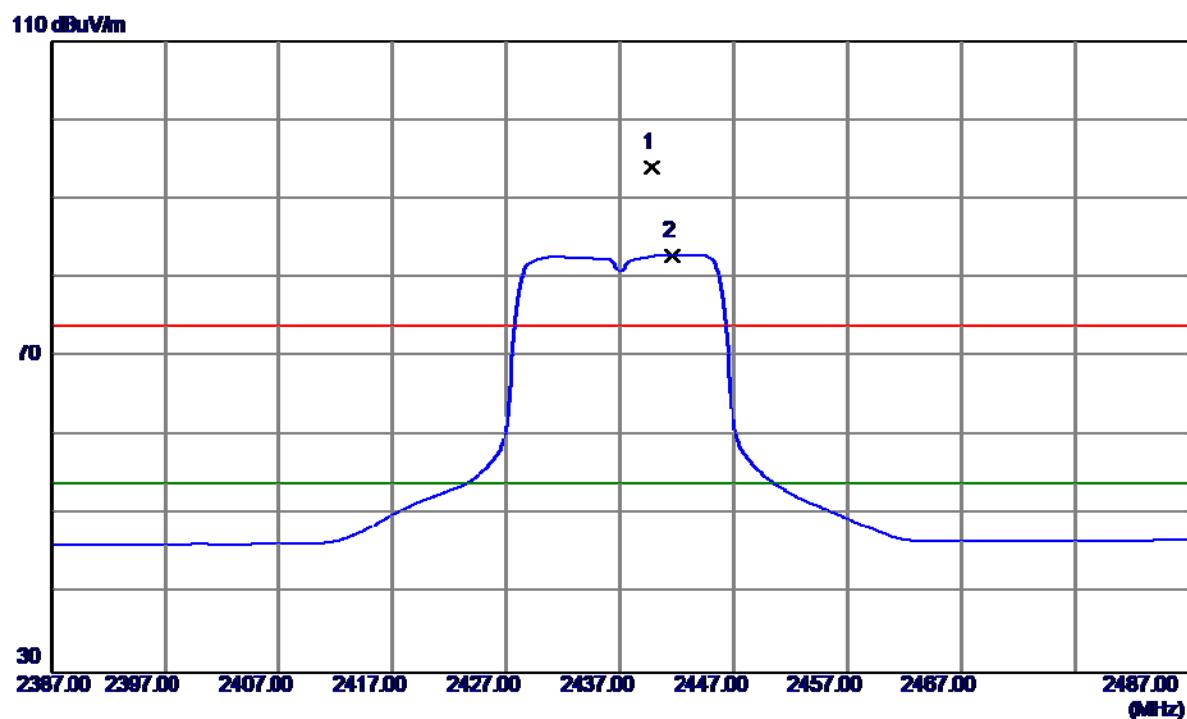
80 dBuV/m



No.	Freq. MHz	Reading Level dBuV/m	Correct Factor dB	Measure ment dBuV/m	Limit dBuV/m	Margin dB	Detector	Comment
1	4824.0000	26.53	3.00	29.53	54.00	-24.47	AVG	
2	4824.5000	38.32	3.00	41.32	74.00	-32.68	Peak	

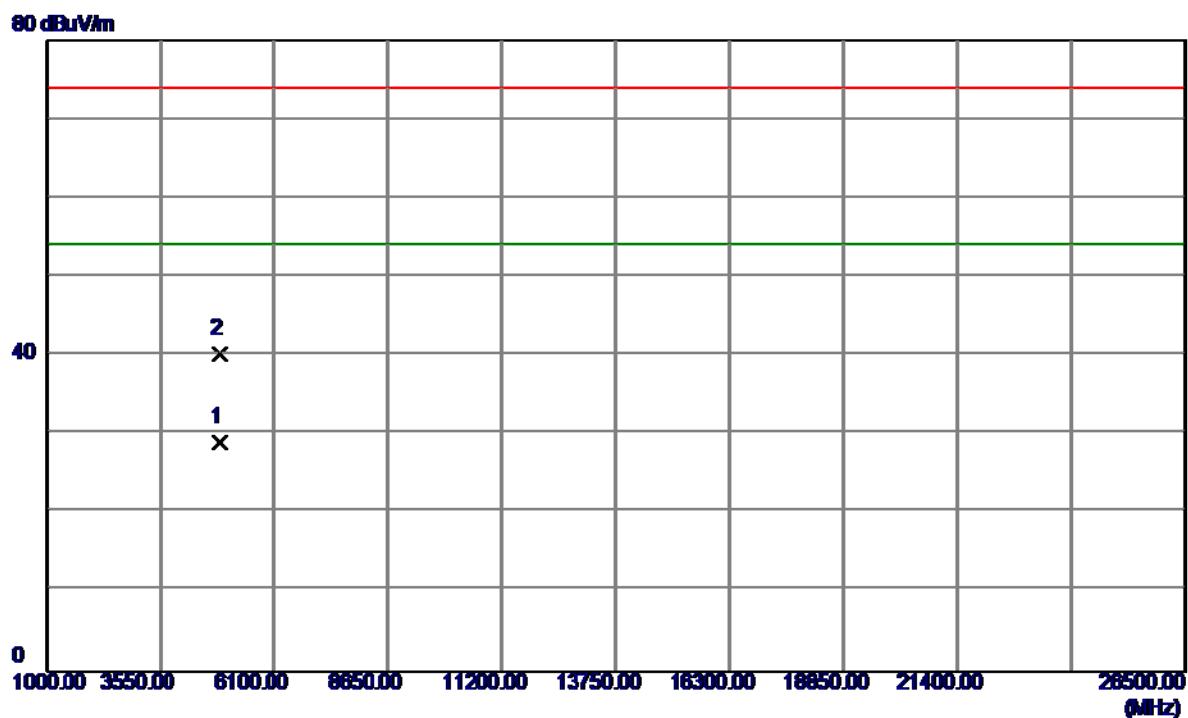
Orthogonal Axis :	X
Test Mode :	TX N-20M MODE 2437MHz

## Vertical



No.	Freq. MHz	Reading Level dBuV/m	Correct Factor dB	Measure ment dBuV/m	Limit dBuV/m	Margin dB	Margin	
							Detector	Comment
1	2439.8000	59.49	34.52	94.01	74.00	20.01	Peak	No Limit
2	2441.6000	48.31	34.53	82.84	54.00	28.84	AVG	No Limit

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

**Vertical**

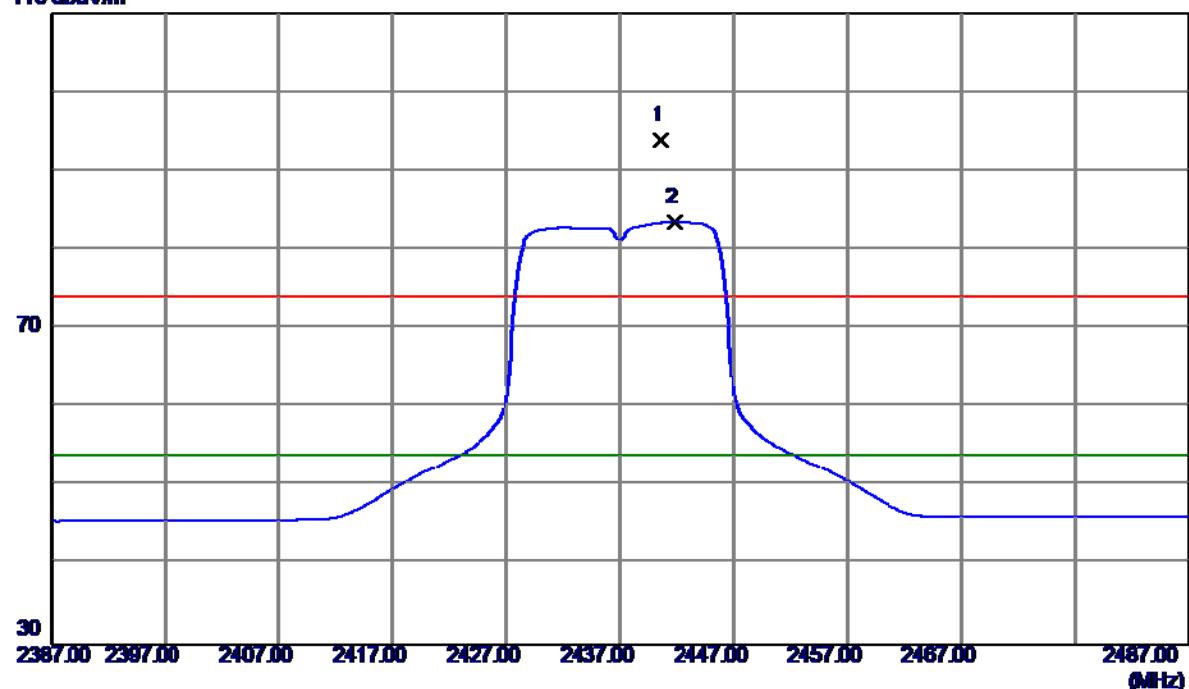
No.	Freq. MHz	Reading Level dBuV/m	Correct Factor dB	Measure ment dBuV/m	Limit dBuV/m	Margin dB	Detector	Comment
1	4874.3000	25.93	3.03	28.96	54.00	-25.04	AVG	
2	4874.7000	37.08	3.03	40.11	74.00	-33.89	Peak	

Orthogonal Axis : X

Test Mode : TX N-20M MODE 2437MHz

## Horizontal

110 dBuV/m



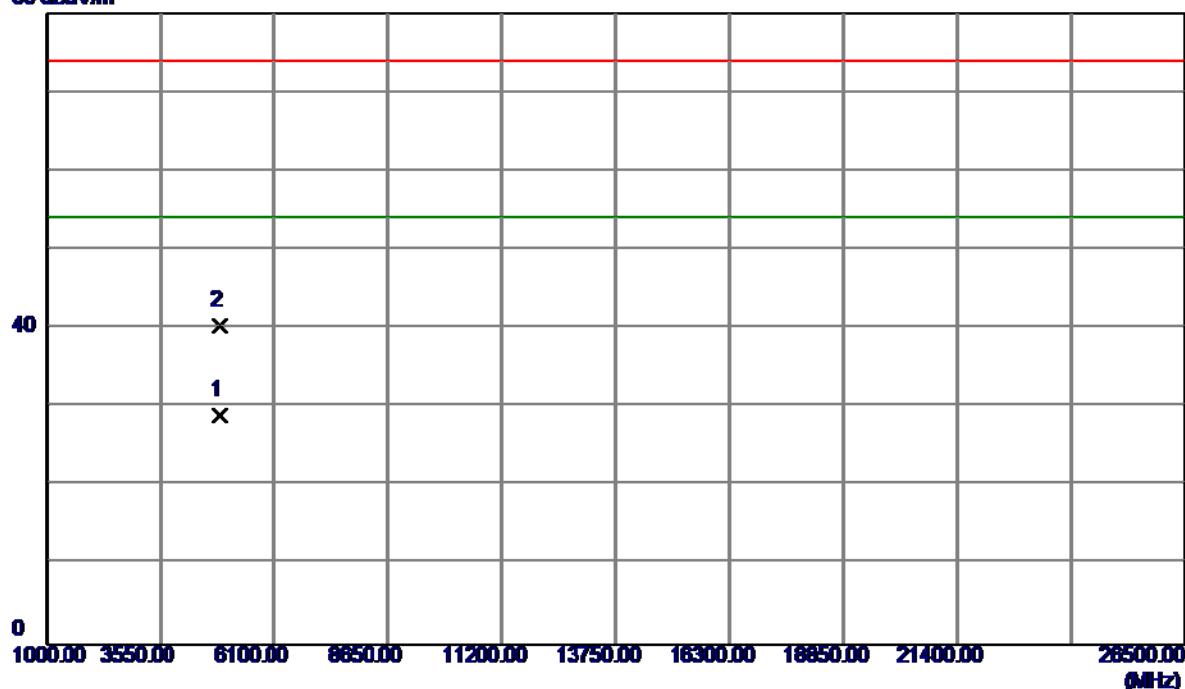
No.	Freq. MHz	Reading Level dBuV/m	Correct Factor dB	Measure ment dBuV/m	Limit dBuV/m	Margin dB	Detector	Comment
1	2440.6000	59.32	34.53	93.85	74.00	19.85	Peak	No Limit
2	2441.8000	48.98	34.53	83.51	54.00	29.51	AVG	No Limit

Orthogonal Axis : X

Test Mode : TX N-20M MODE 2437MHz

## Horizontal

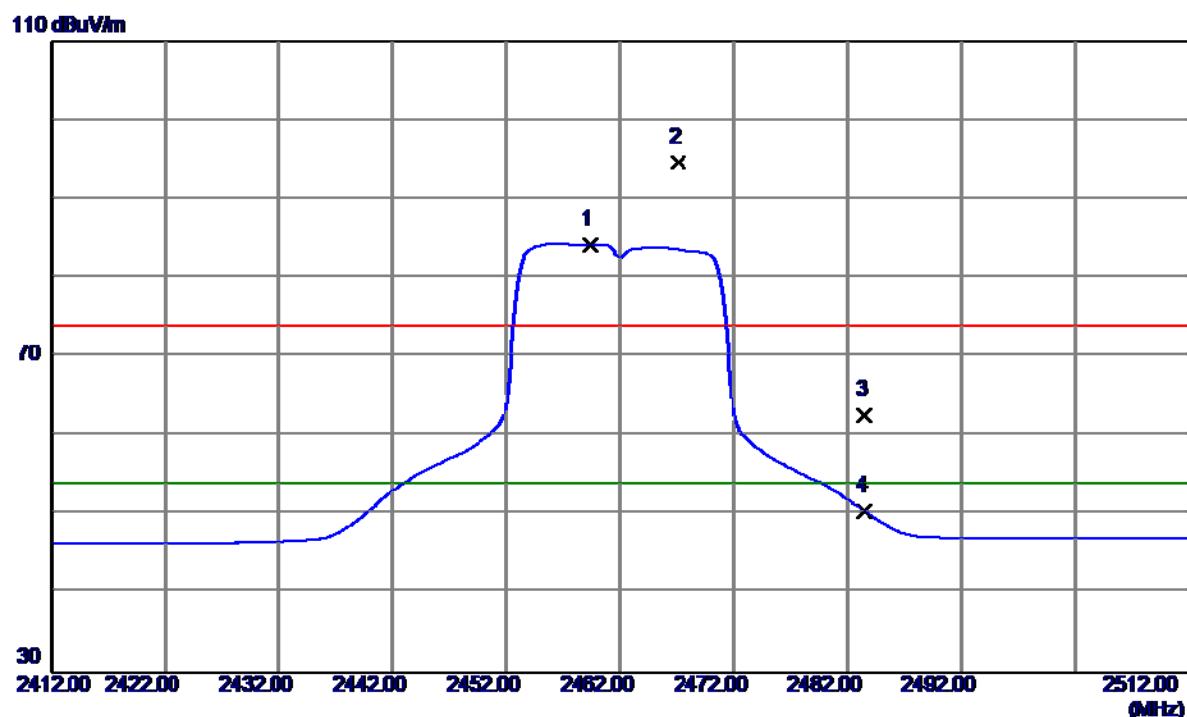
80 dBuV/m



No.	Freq.	Reading Level	Correct Factor	Measurement	Limit	Margin	Detector	Comment
	MHz	dBuV/m	dB	dBuV/m	dBuV/m	dB		
1	4874.0000	25.91	3.03	28.94	54.00	-25.06	AVG	
2	4875.7000	37.33	3.03	40.36	74.00	-33.64	Peak	

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

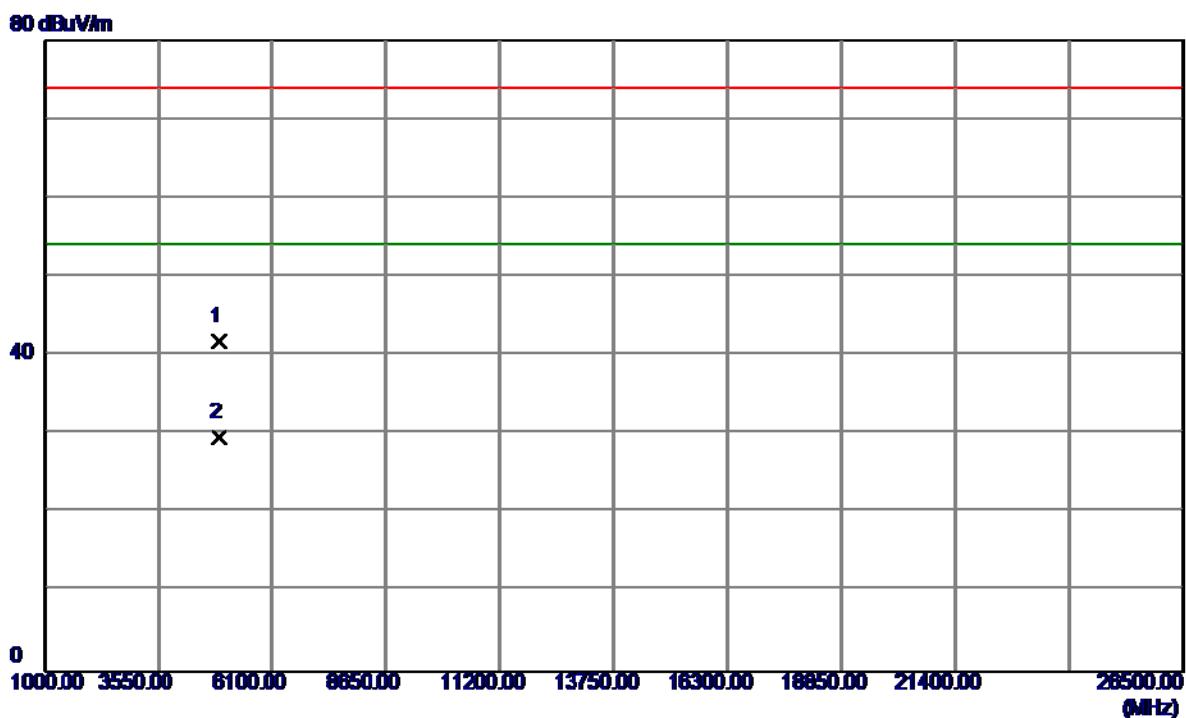
## Vertical



No.	Freq.	Reading Level	Correct Factor	Measurement	Limit	Margin	Detector	Comment
	MHz	dBuV/m	dB	dBuV/m	dBuV/m	dB		
1	2459.4000	49.68	34.63	84.31	54.00	30.31	AVG	No Limit
2	2467.1000	60.01	34.68	94.69	74.00	20.69	Peak	No Limit
3	2483.5000	27.81	34.77	62.58	74.00	-11.42	Peak	
4	2483.5000	15.69	34.77	50.46	54.00	-3.54	AVG	

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

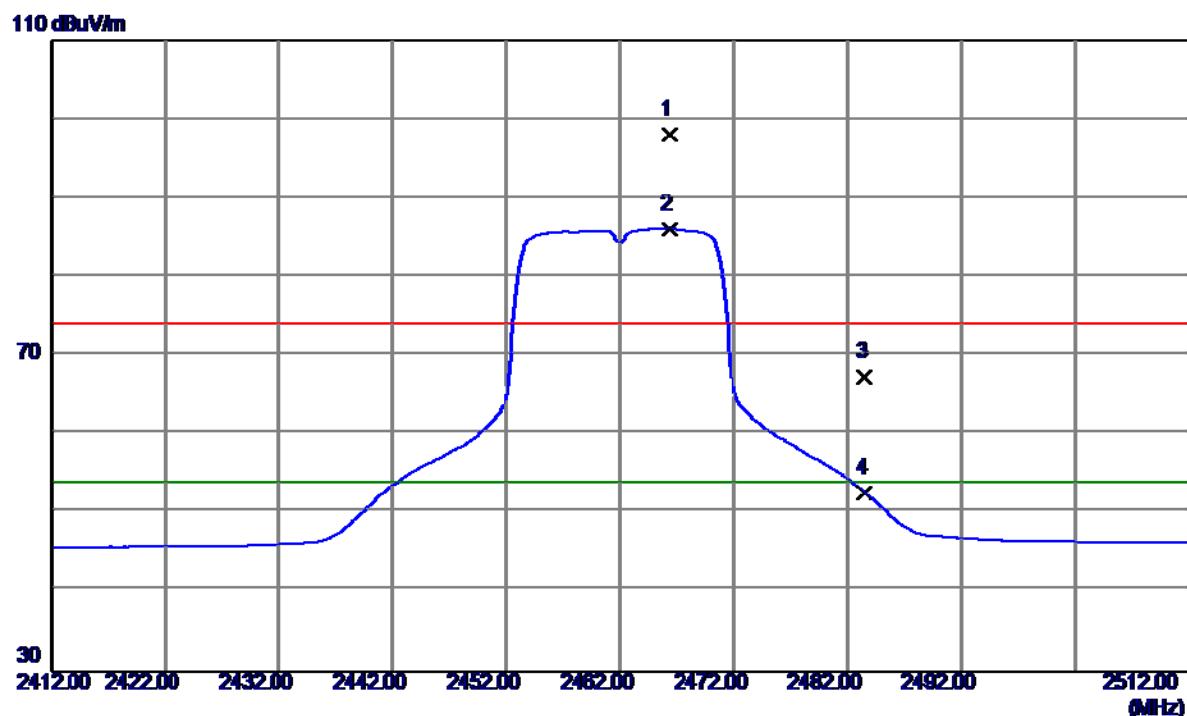
## Vertical



No.	Freq.	Reading Level	Correct Factor	Measurement	Limit	Margin	Detector	Comment
	MHz	dBuV/m	dB	dBuV/m	dBuV/m	dB		
1	4923.6000	38.71	3.05	41.76	74.00	-32.24	Peak	
2	4924.1000	26.49	3.05	29.54	54.00	-24.46	AVG	

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

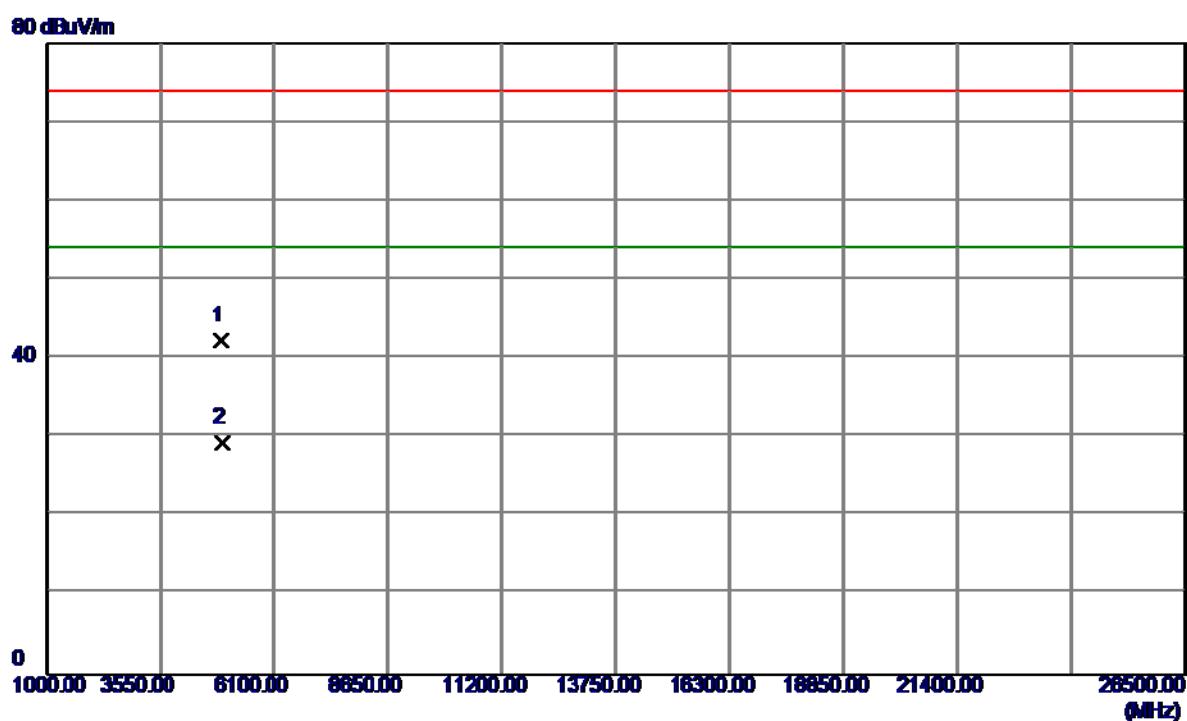
## Horizontal



No.	Freq.	Reading	Correct	Measure	Limit	Margin	Detector	Comment
		Level	Factor	ment	dBuV/m	dB		
1	2466.3000	63.27	34.67	97.94	74.00	23.94	Peak	No Limit
2	2466.3000	51.31	34.67	85.98	54.00	31.98	AVG	No Limit
3	2483.5000	32.50	34.77	67.27	74.00	-6.73	Peak	
4	2483.5000	17.86	34.77	52.63	54.00	-1.37	AVG	

Orthogonal Axis : X

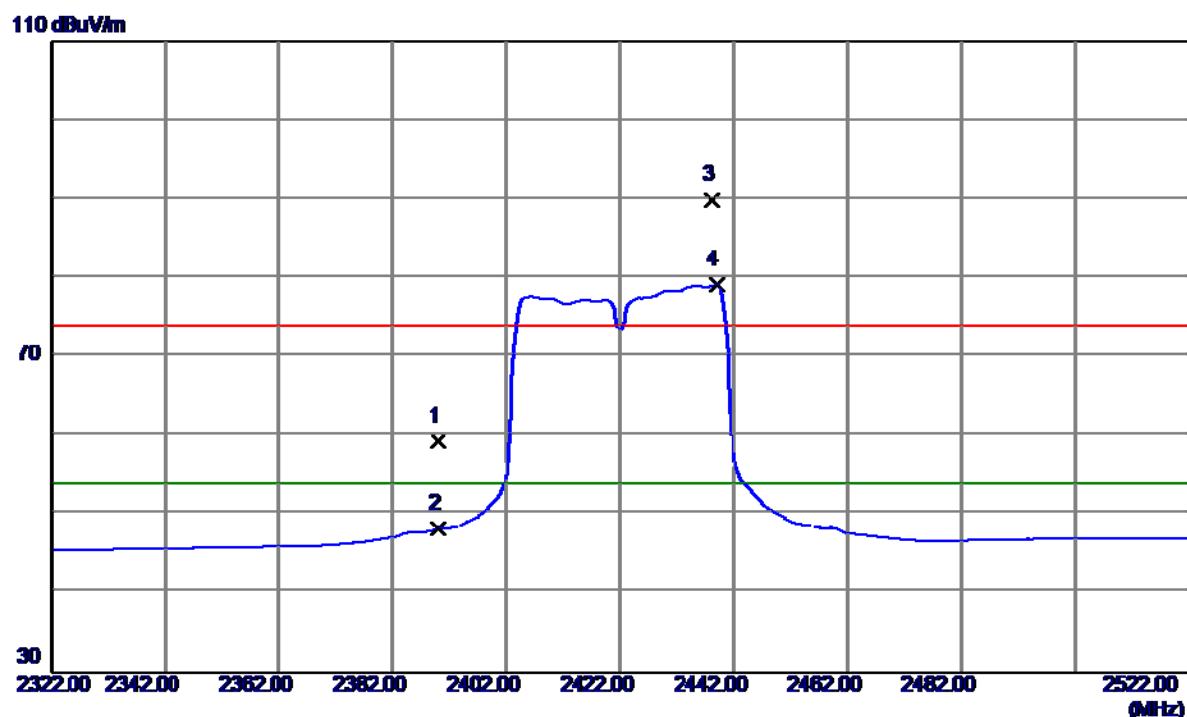
Test Mode : TX N-20M MODE 2462MHz

**Horizontal**

No.	Freq.	Reading Level	Correct Factor	Measurement	Limit	Margin	Detector	Comment
	MHz	dBuV/m	dB	dBuV/m	dBuV/m	dB		
1	4923.2000	39.14	3.05	42.19	74.00	-31.81	Peak	
2	4924.2000	26.27	3.05	29.32	54.00	-24.68	AVG	

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

## Vertical



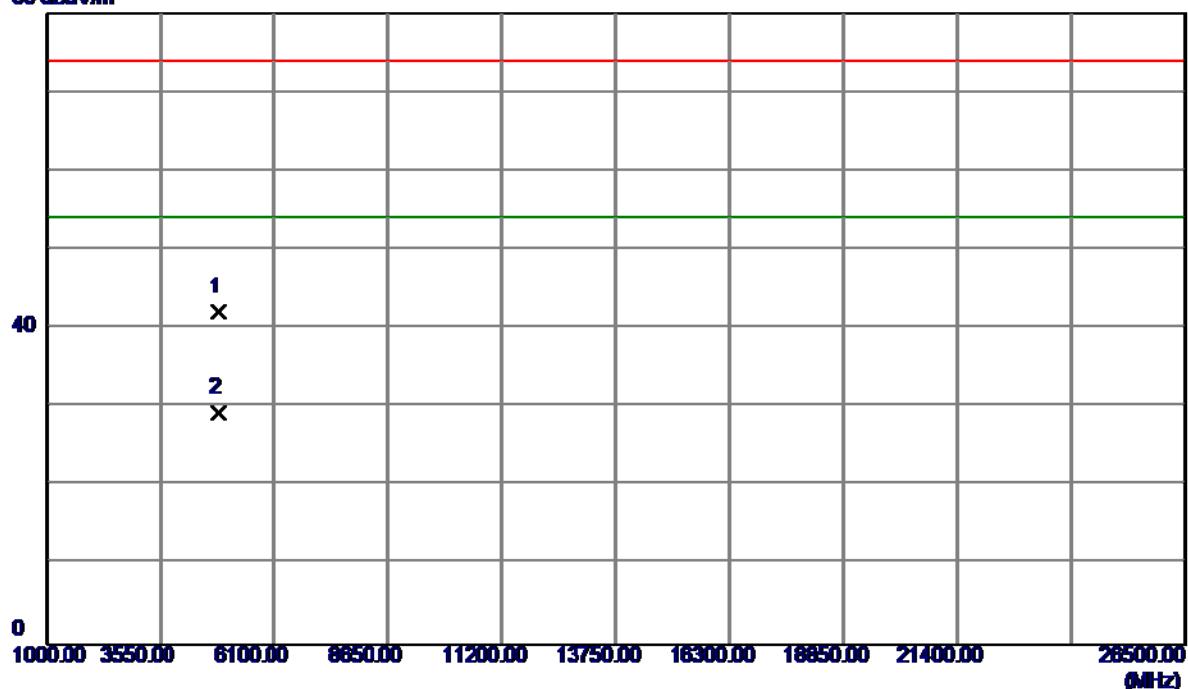
No.	Freq.	Reading Level	Correct Factor	Measurement	Limit	Margin	Detector	Comment
	MHz	dBuV/m	dB	dBuV/m	dBuV/m	dB		
1	2390.0000	24.98	34.23	59.21	74.00	-14.79	Peak	
2	2390.0000	13.94	34.23	48.17	54.00	-5.83	AVG	
3	2438.2000	55.30	34.51	89.81	74.00	15.81	Peak	No Limit
4	2439.0000	44.65	34.52	79.17	54.00	25.17	AVG	No Limit

Orthogonal Axis : X

Test Mode : TX N-40M MODE 2422MHz

## Vertical

80 dBuV/m



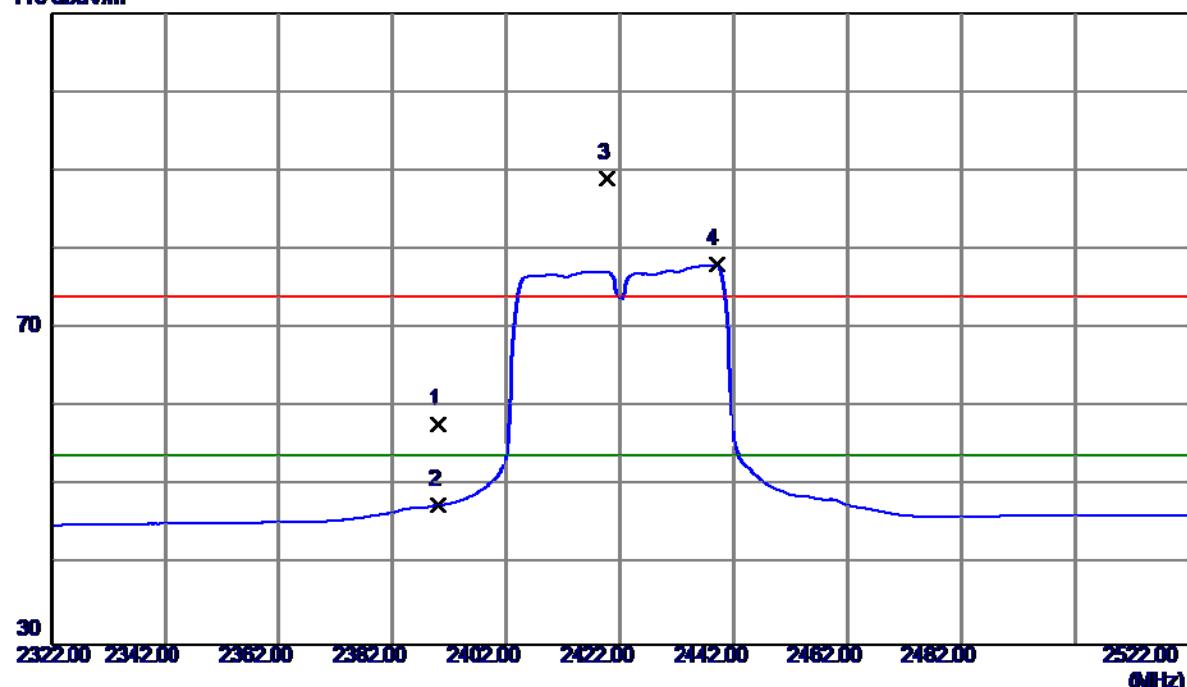
No.	Freq.	Reading Level	Correct Factor	Measurement	Limit	Margin	Detector	Comment
	MHz	dBuV/m	dB	dBuV/m	dBuV/m	dB		
1	4842.6000	39.03	3.01	42.04	74.00	-31.96	Peak	
2	4842.7000	26.28	3.01	29.29	54.00	-24.71	AVG	

Orthogonal Axis : X

Test Mode : TX N-40M MODE 2422MHz

## Horizontal

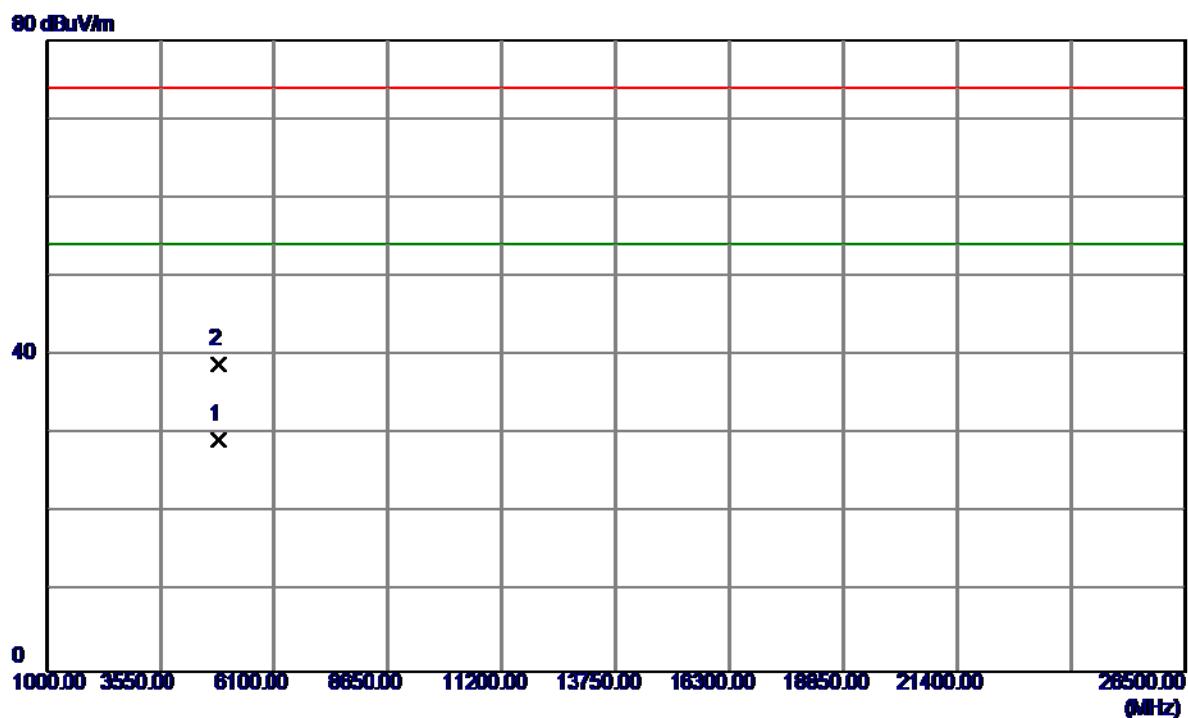
110 dBuV/m



No.	Freq. MHz	Reading Level dBuV/m	Correct Factor dB	Measure ment dBuV/m	Limit dBuV/m	Margin dB	Detector	Comment
1	2390.0000	23.61	34.23	57.84	74.00	-16.16	Peak	
2	2390.0000	13.37	34.23	47.60	54.00	-6.40	Avg	
3	2419.8000	54.66	34.40	89.06	74.00	15.06	Peak	No Limit
4	2439.0000	43.57	34.52	78.09	54.00	24.09	Avg	No Limit

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

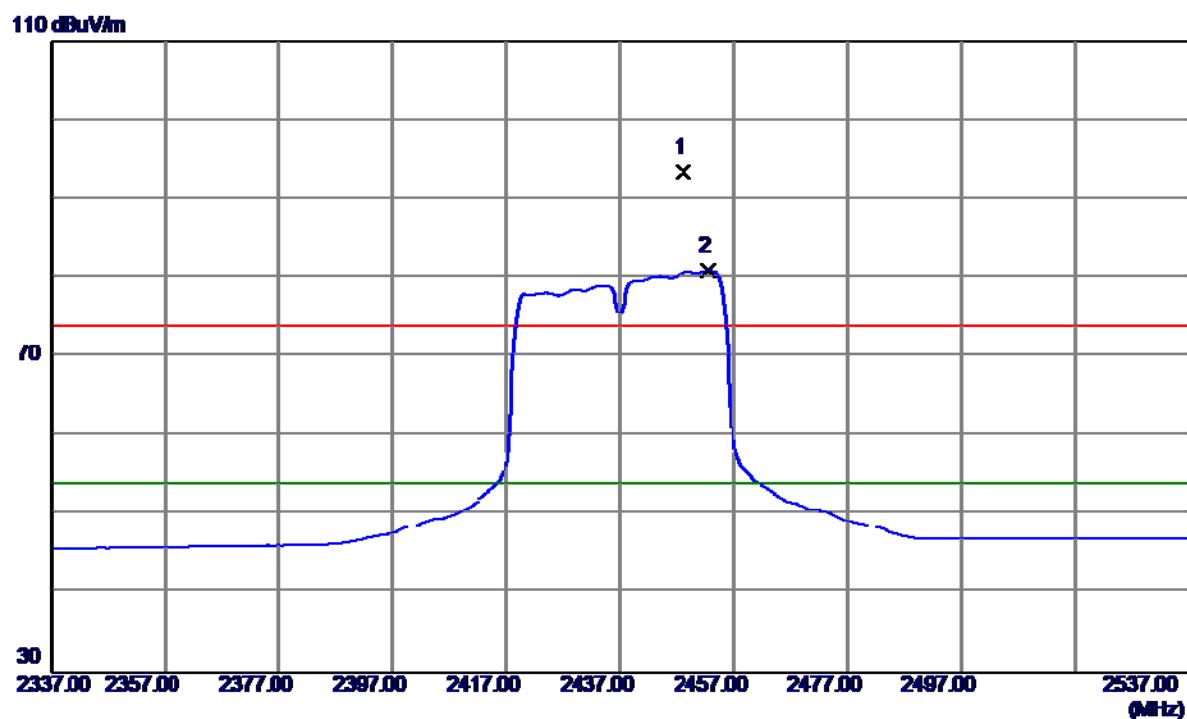
### Horizontal



No.	Freq.	Reading Level	Correct Factor	Measurement	Limit	Margin	Detector	Comment
	MHz	dBuV/m	dB	dBuV/m	dBuV/m	dB		
1	4844.0000	26.24	3.01	29.25	54.00	-24.75	AVG	
2	4845.8000	35.90	3.01	38.91	74.00	-35.09	Peak	

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

## Vertical



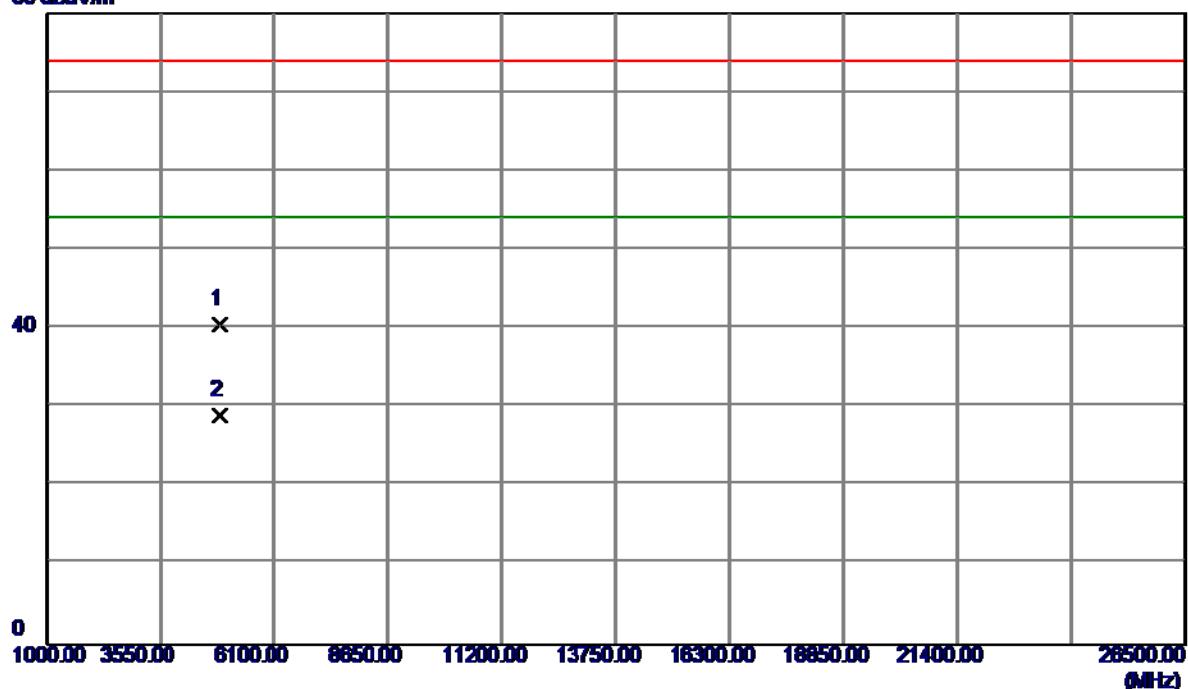
No.	Freq.	Reading Level	Correct Factor	Measurement	Limit	Margin	Detector	Comment
	MHz	dBuV/m	dB	dBuV/m	dBuV/m	dB		
1	2448.2000	58.78	34.57	93.35	74.00	19.35	Peak	No Limit
2	2452.6000	46.27	34.60	80.87	54.00	26.87	AVG	No Limit

Orthogonal Axis : X

Test Mode : TX N-40M MODE 2437MHz

## Vertical

80 dBuV/m



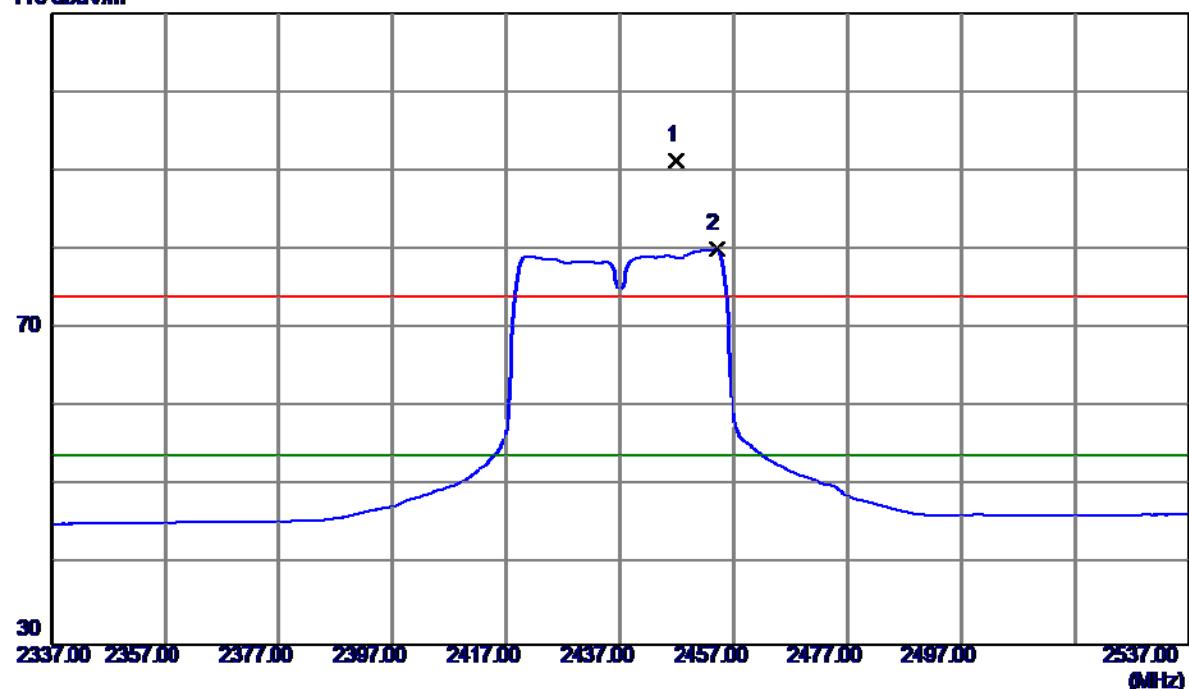
No.	Freq. MHz	Reading Level dBuV/m	Correct Factor dB	Measure ment dBuV/m	Limit dBuV/m	Margin dB	Detector	Comment
1	4872.2000	37.49	3.03	40.52	74.00	-33.48	Peak	
2	4874.3000	25.91	3.03	28.94	54.00	-25.06	AVG	

Orthogonal Axis : X

Test Mode : TX N-40M MODE 2437MHz

## Horizontal

110 dBuV/m

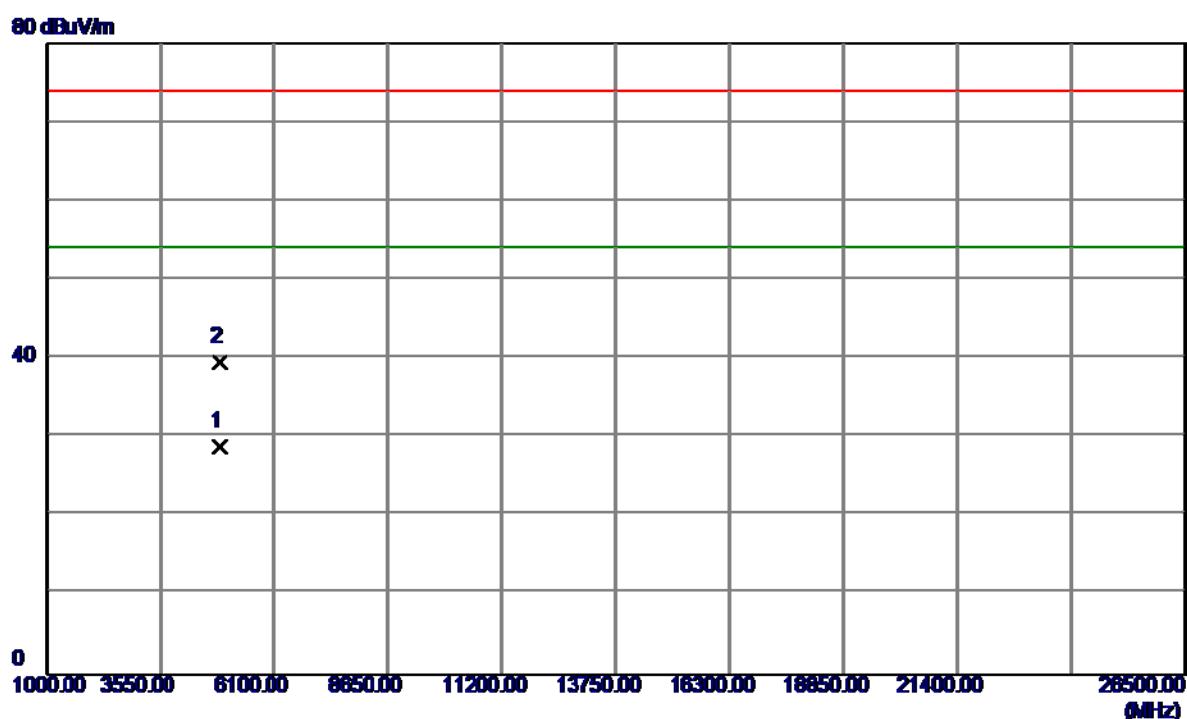


No.	Freq. MHz	Reading Level dBuV/m	Correct Factor dB	Measure ment dBuV/m	Limit dBuV/m	Margin dB	Detector	Comment
1	2446.8000	56.79	34.56	91.35	74.00	17.35	Peak	No Limit
2	2454.0000	45.47	34.60	80.07	54.00	26.07	AVG	No Limit

Orthogonal Axis : X

Test Mode : TX N-40M MODE 2437MHz

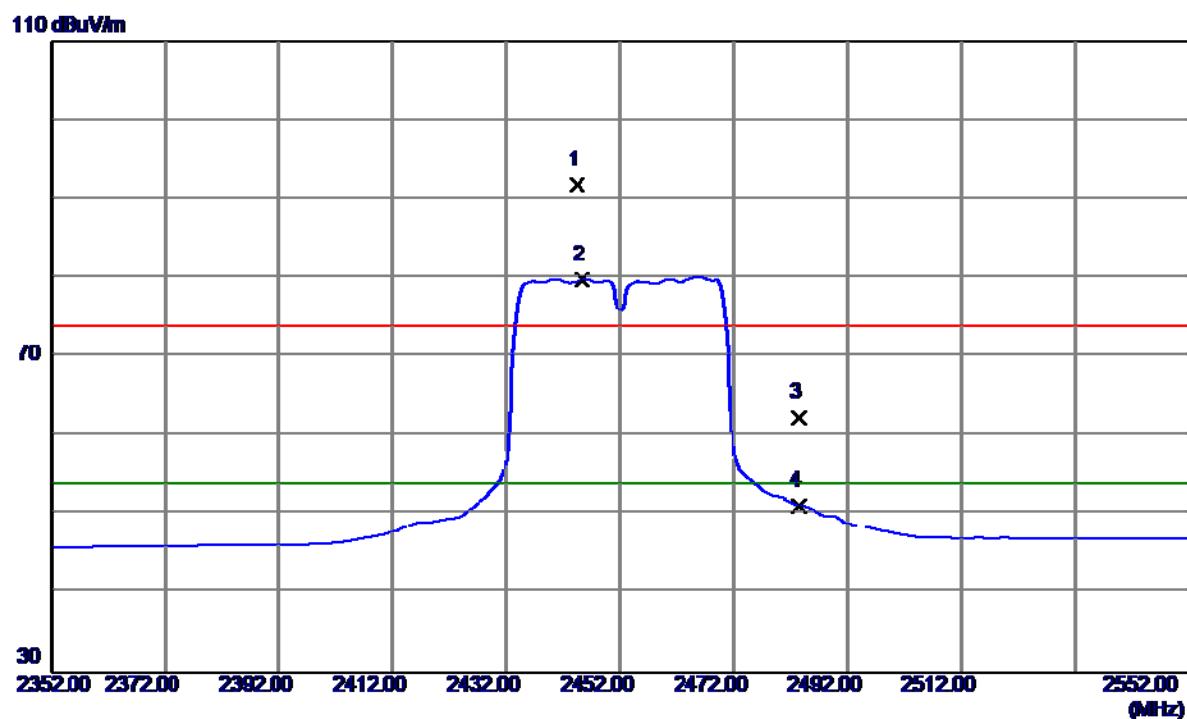
## Horizontal



No.	Freq.	Reading Level	Correct Factor	Measurement	Limit	Margin	Detector	Comment
	MHz	dBuV/m	dB	dBuV/m	dBuV/m	dB		
1	4874.0000	25.79	3.03	28.82	54.00	-25.18	AVG	
2	4874.6000	36.50	3.03	39.53	74.00	-34.47	Peak	

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

## Vertical



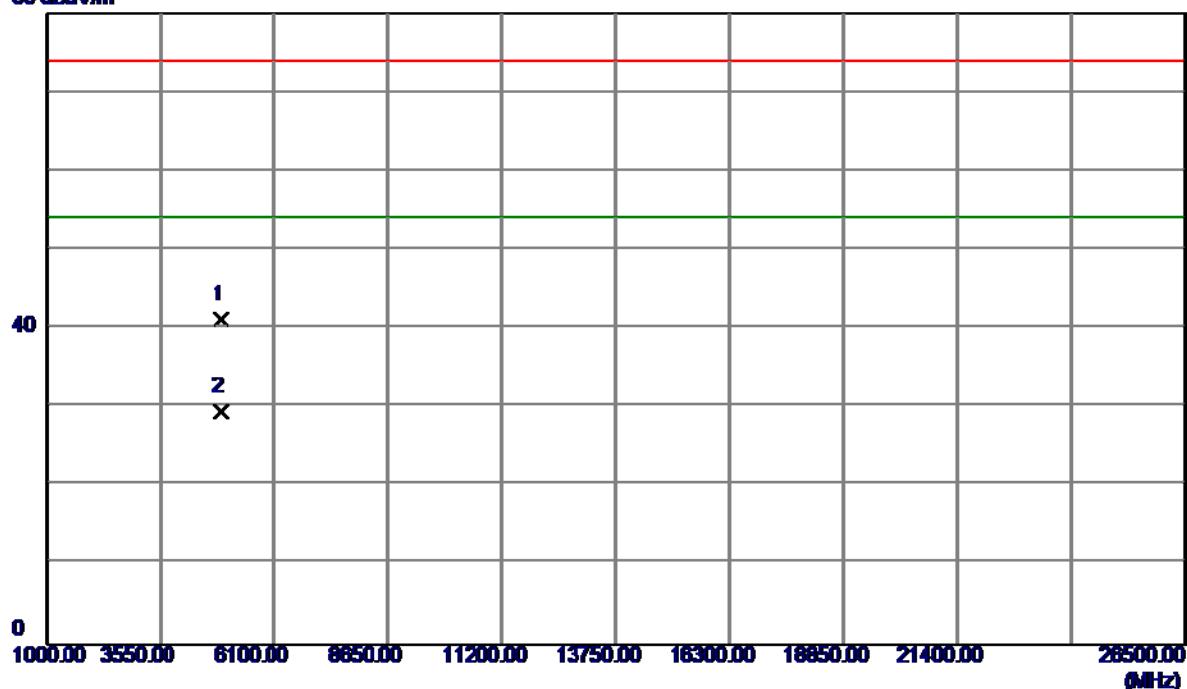
No.	Freq. MHz	Reading Level dBuV/m	Correct Factor dB	Measure ment dBuV/m	Limit dBuV/m	Margin dB	Detector	Comment
1	2444.4000	57.15	34.55	91.70	74.00	17.70	Peak	No Limit
2	2445.4000	45.18	34.55	79.73	54.00	25.73	AVG	No Limit
3	2483.5000	27.59	34.77	62.36	74.00	-11.64	Peak	
4	2483.5000	16.35	34.77	51.12	54.00	-2.88	AVG	

Orthogonal Axis : X

Test Mode : TX N-40M MODE 2452MHz

## Vertical

80 dBuV/m



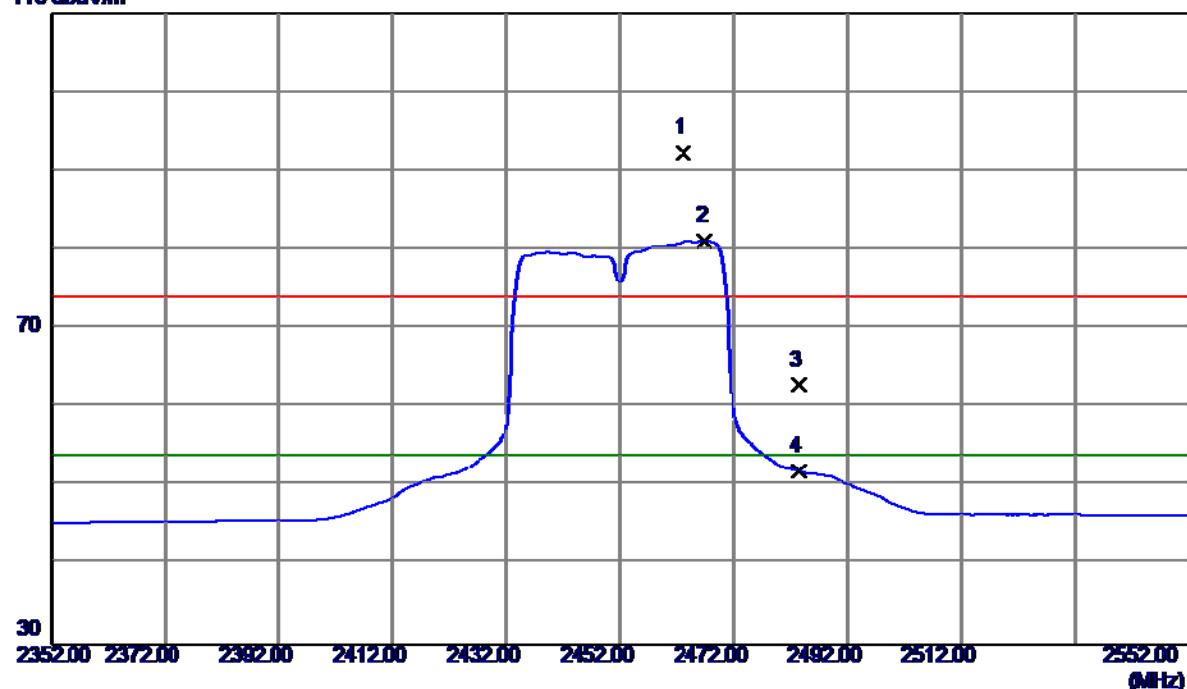
No.	Freq. MHz	Reading Level dBuV/m	Correct Factor dB	Measure ment dBuV/m	Limit dBuV/m	Margin dB	Detector	Comment
1	4903.8000	38.10	3.04	41.14	74.00	-32.86	Peak	
2	4904.2000	26.44	3.04	29.48	54.00	-24.52	AVG	

Orthogonal Axis : X

Test Mode : TX N-40M MODE 2452MHz

## Horizontal

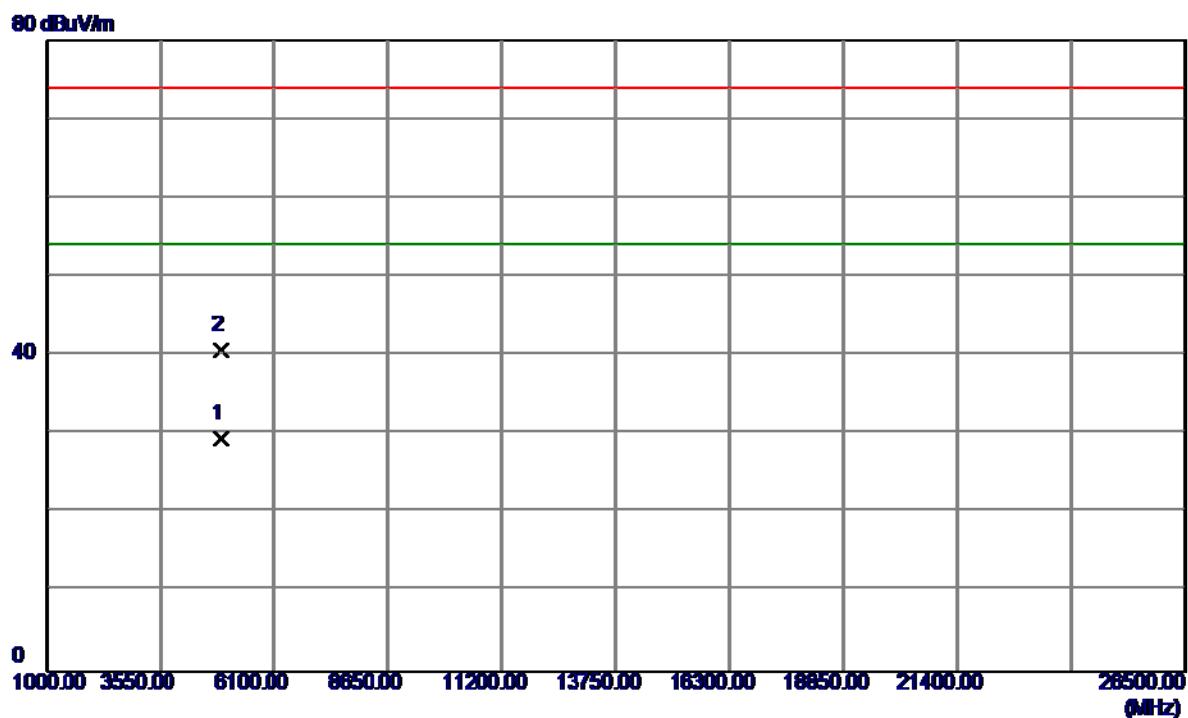
110 dBuV/m



No.	Freq. MHz	Reading Level dBuV/m	Correct Factor dB	Measure ment dBuV/m	Limit dBuV/m	Margin dB	Detector	Comment
1	2463.2000	57.58	34.66	92.24	74.00	18.24	Peak	No Limit
2	2467.0000	46.39	34.68	81.07	54.00	27.07	AVG	No Limit
3	2483.5000	28.07	34.77	62.84	74.00	-11.16	Peak	
4	2483.5000	17.13	34.77	51.90	54.00	-2.10	AVG	

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

### Horizontal



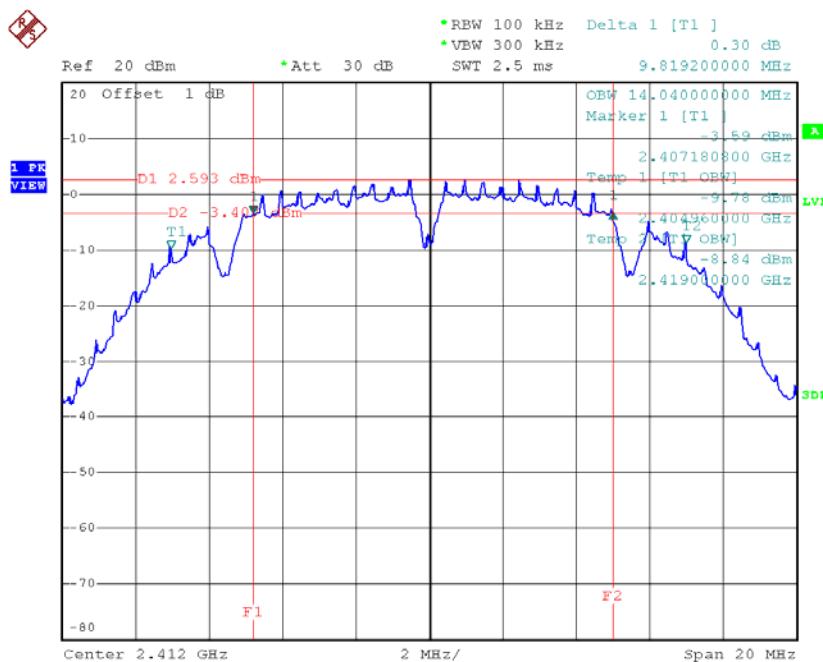
No.	Freq. MHz	Reading Level dBuV/m	Correct Factor dB	Measure ment dBuV/m	Limit dBuV/m	Margin dB	Detector	Comment
1	4904.0000	26.33	3.04	29.37	54.00	-24.63	AVG	
2	4905.4000	37.58	3.04	40.62	74.00	-33.38	Peak	

## ATTACHMENT E - BANDWIDTH

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

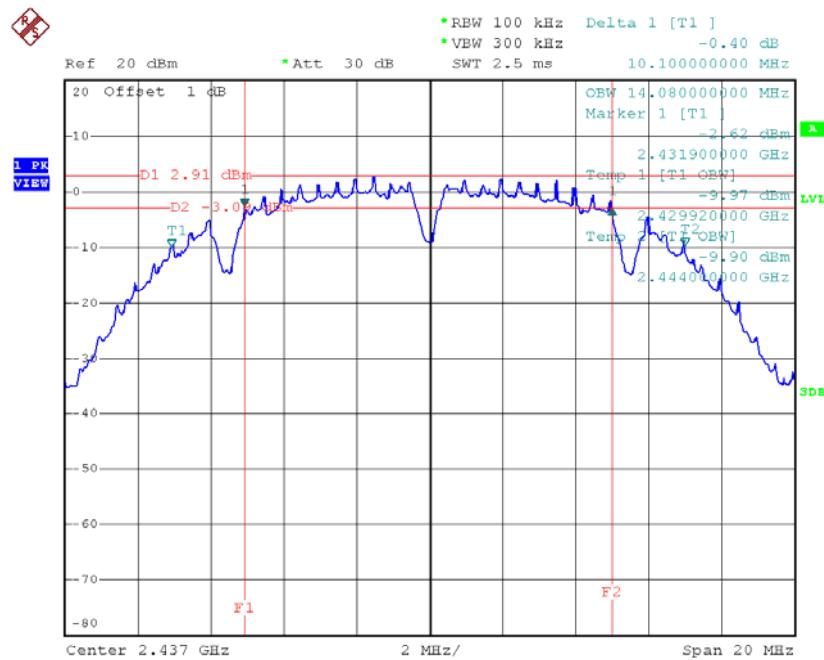
Frequency (MHz)	6dB Bandwidth (MHz)	99% Occupied BW (MHz)	Min. Limit (kHz)	Test Result
2412	9.82	14.04	500	Complies
2437	10.10	14.08	500	Complies
2462	10.10	14.32	500	Complies

## TX CH01



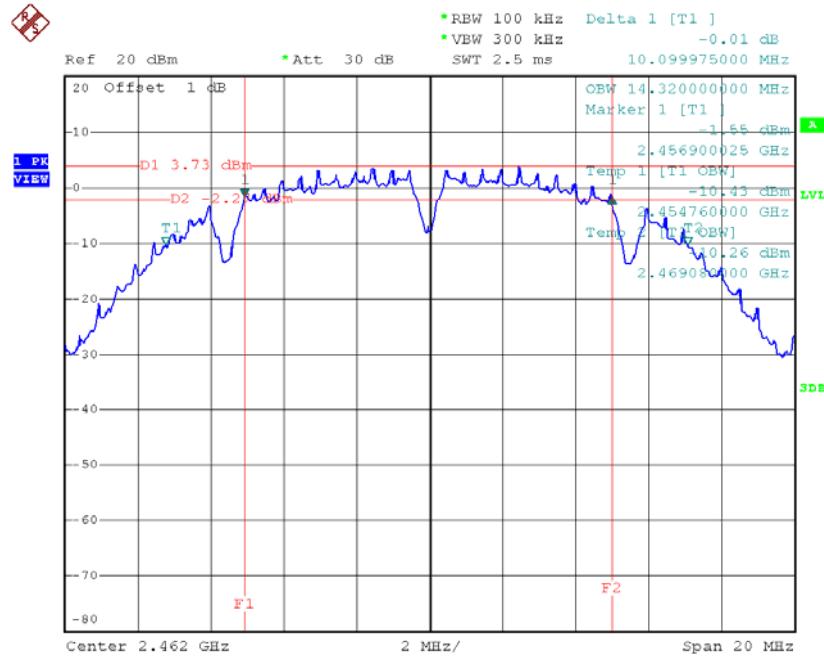
Date: 4.JAN.2016 14:04:17

## TX CH06



Date: 4.JAN.2016 14:06:01

## TX CH11

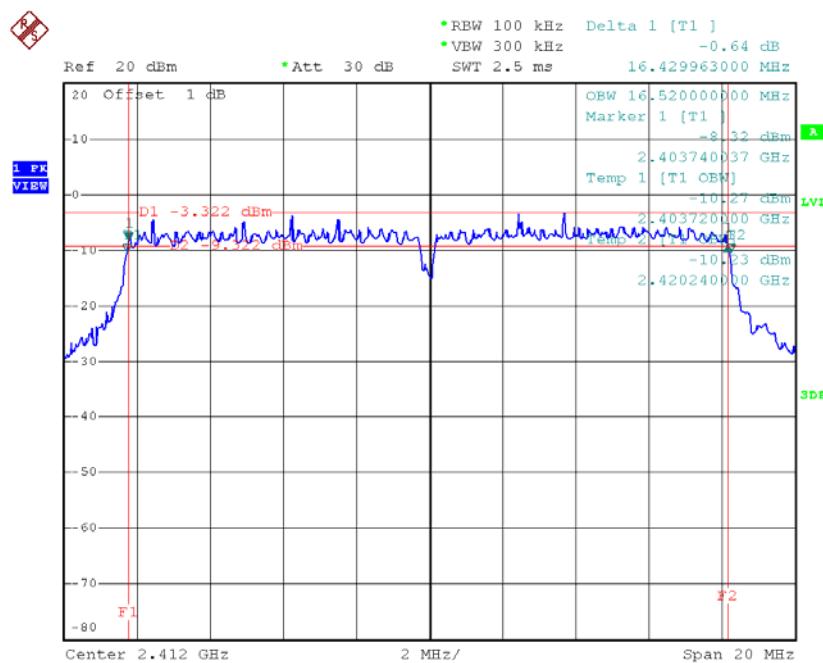


Date: 4.JAN.2016 14:07:17

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

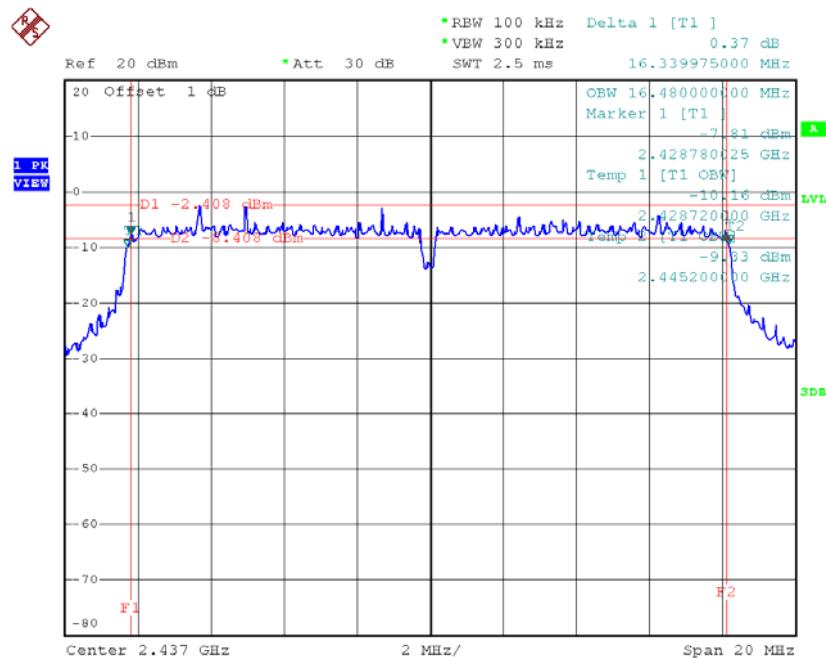
Frequency (MHz)	6dB Bandwidth (MHz)	99% Occupied BW (MHz)	Min. Limit (kHz)	Test Result
2412	16.43	16.52	500	Complies
2437	16.34	16.48	500	Complies
2462	16.38	16.52	500	Complies

## TX CH01



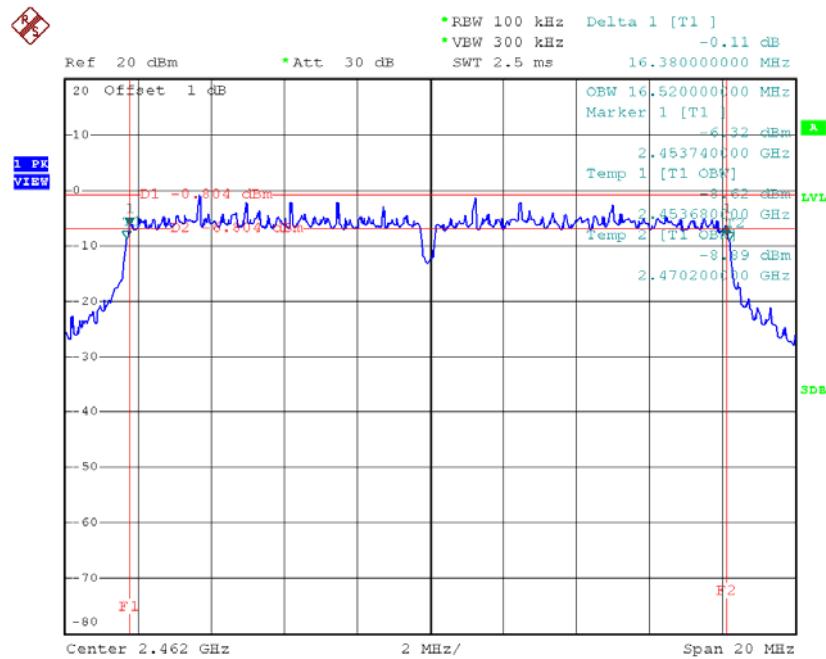
Date: 4.JAN.2016 14:10:09

## TX CH06



Date: 4.JAN.2016 14:11:32

## TX CH11

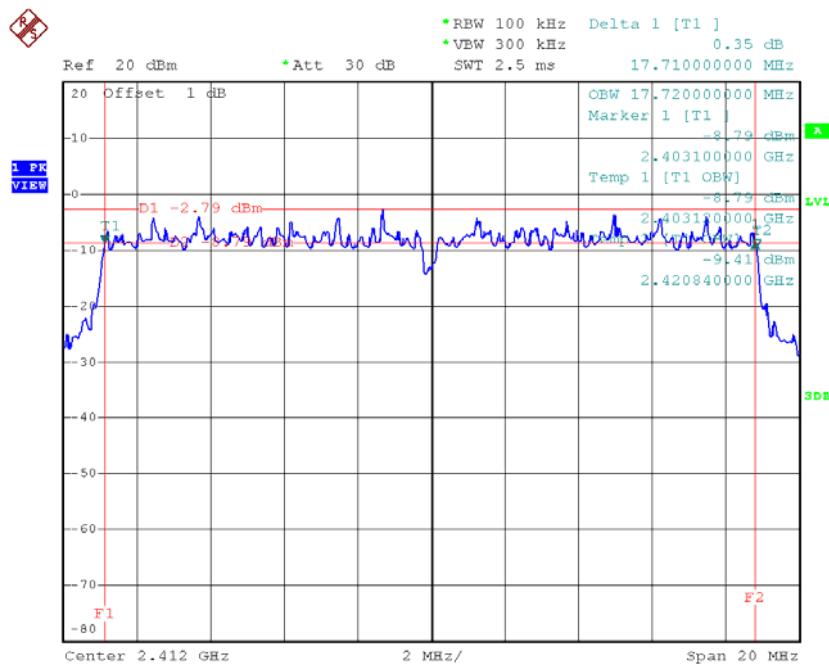


Date: 4.JAN.2016 14:13:13

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

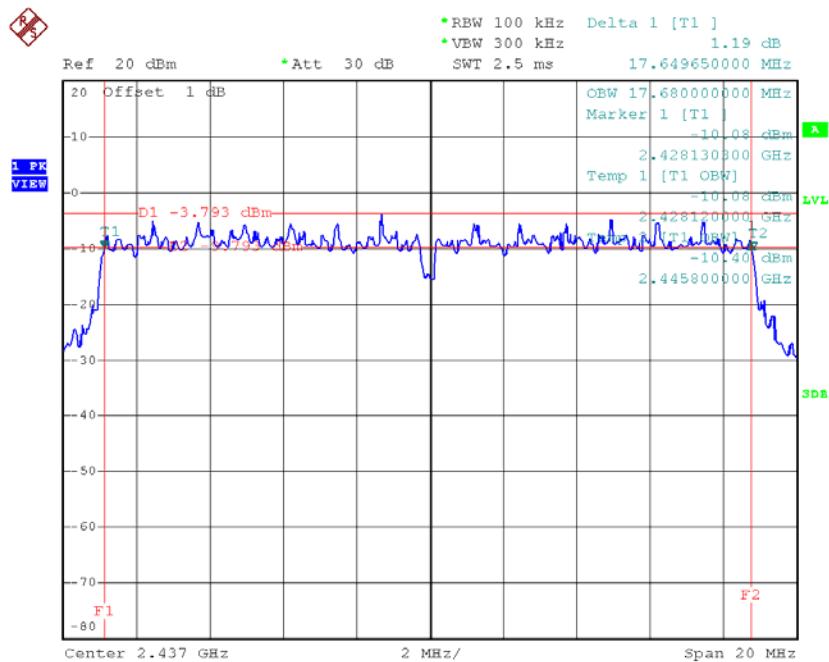
Frequency (MHz)	6dB Bandwidth (MHz)	99% Occupied BW (MHz)	Min. Limit (kHz)	Test Result
2412	17.71	17.72	500	Complies
2437	17.65	17.68	500	Complies
2462	17.70	17.68	500	Complies

## TX CH01



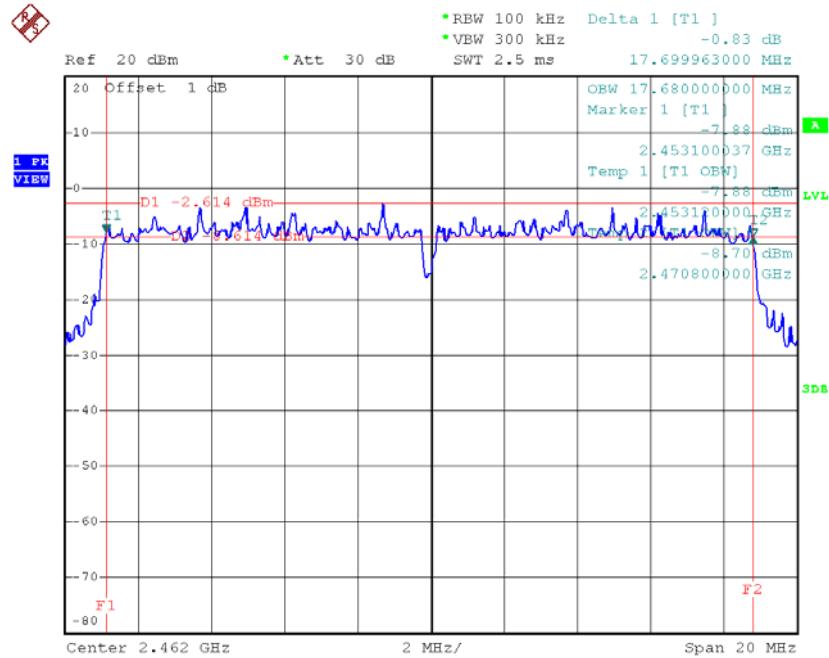
Date: 5.JAN.2016 14:35:06

## TX CH06



Date: 5.JAN.2016 14:36:11

## TX CH11

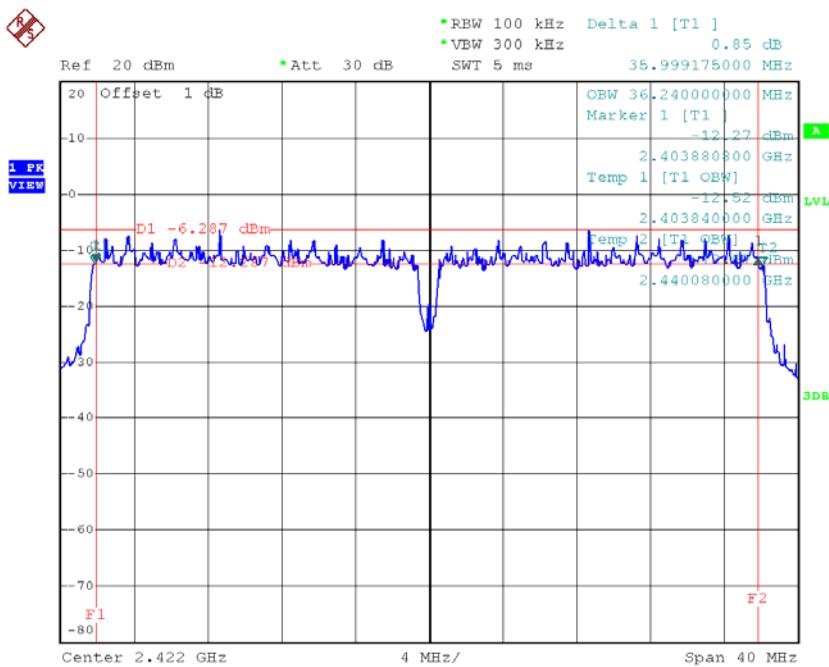


Date: 5.JAN.2016 14:37:48

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

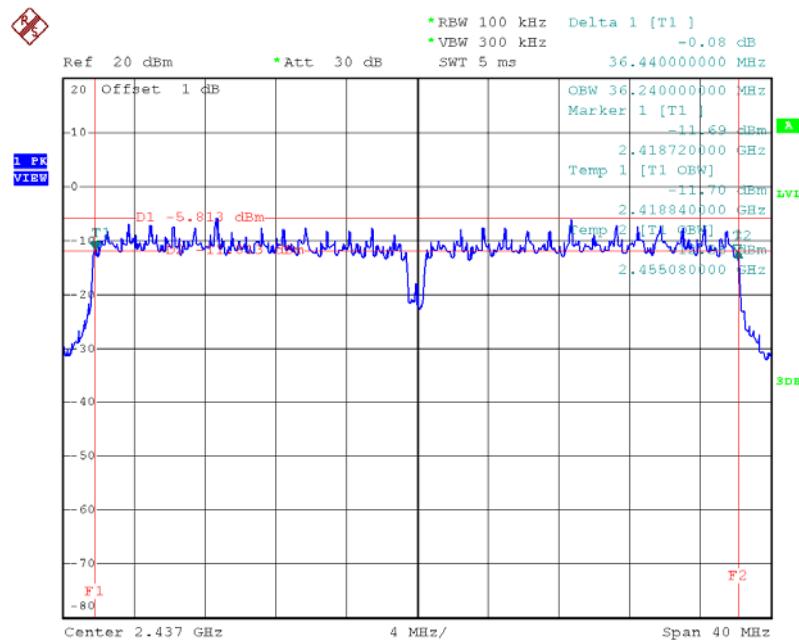
Frequency (MHz)	6dB Bandwidth (MHz)	99% Occupied BW (MHz)	Min. Limit (kHz)	Test Result
2422	36.00	36.24	500	Complies
2437	36.44	36.24	500	Complies
2452	36.00	36.24	500	Complies

## TX CH03



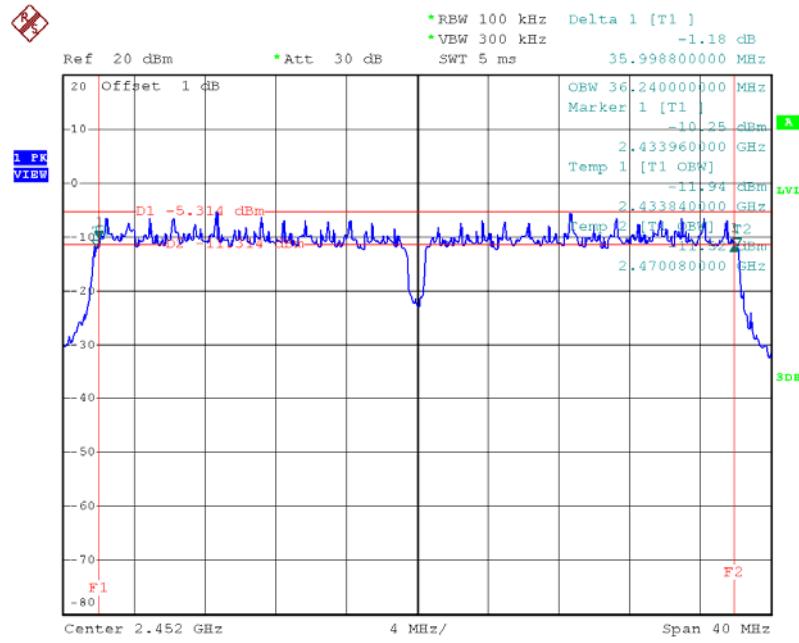
Date: 5.JAN.2016 14:43:45

## TX CH06



Date: 5.JAN.2016 14:45:44

## TX CH09



Date: 5.JAN.2016 14:46:39

## **ATTACHMENT F – MAXIMUM PEAK CONDUCTED OUTPUT POWER**

<b>Test Mode :TX B Mode_CH01/06/11</b>					
Frequency (MHz)	Conducted Power (dBm)	Conducted Power (W)	Max. Limit (dBm)	Max. Limit (W)	Result
2412	15.32	0.03	30.00	1.00	Complies
2437	14.82	0.03	30.00	1.00	Complies
2462	14.69	0.03	30.00	1.00	Complies

<b>Test Mode :TX G Mode_CH01/06/11</b>					
Frequency (MHz)	Conducted Power (dBm)	Conducted Power (W)	Max. Limit (dBm)	Max. Limit (W)	Result
2412	17.24	0.05	30.00	1.00	Complies
2437	16.69	0.05	30.00	1.00	Complies
2462	17.34	0.05	30.00	1.00	Complies

Test Mode :TX N20 Mode_CH01/06/11_ANT 1					
Frequency (MHz)	Conducted Power (dBm)	Conducted Power (W)	Max. Limit (dBm)	Max. Limit (W)	Result
2412	15.91	0.04	30.00	1.00	Complies
2437	16.16	0.04	30.00	1.00	Complies
2462	14.78	0.03	30.00	1.00	Complies

Test Mode :TX N20 Mode_CH01/06/11_ANT 2					
Frequency (MHz)	Conducted Power (dBm)	Conducted Power (W)	Max. Limit (dBm)	Max. Limit (W)	Result
2412	17.19	0.05	30.00	1.00	Complies
2437	16.82	0.05	30.00	1.00	Complies
2462	15.82	0.04	30.00	1.00	Complies

Test Mode :TX N20 Mode_CH01/06/11_Total					
Frequency (MHz)	Conducted Power (dBm)	Conducted Power (W)	Max. Limit (dBm)	Max. Limit (W)	Result
2412	19.61	0.09	30.00	1.00	Complies
2437	19.51	0.09	30.00	1.00	Complies
2462	18.34	0.07	30.00	1.00	Complies

Test Mode :TX N40 Mode_CH03/06/09_ANT 1					
Frequency (MHz)	Conducted Power (dBm)	Conducted Power (W)	Max. Limit (dBm)	Max. Limit (W)	Result
2422	15.53	0.04	30.00	1.00	Complies
2437	14.78	0.03	30.00	1.00	Complies
2452	14.34	0.03	30.00	1.00	Complies

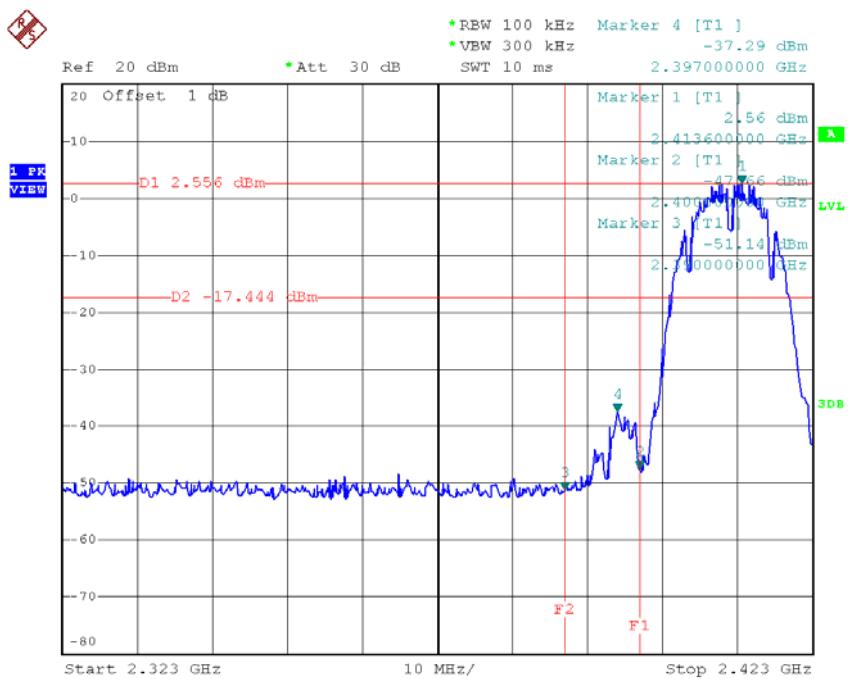
Test Mode :TX N40 Mode_CH03/06/09_ANT 2					
Frequency (MHz)	Conducted Power (dBm)	Conducted Power (W)	Max. Limit (dBm)	Max. Limit (W)	Result
2422	15.95	0.04	30.00	1.00	Complies
2437	15.41	0.03	30.00	1.00	Complies
2452	14.88	0.03	30.00	1.00	Complies

Test Mode :TX N40 Mode_CH03/06/09_Total					
Frequency (MHz)	Conducted Power (dBm)	Conducted Power (W)	Max. Limit (dBm)	Max. Limit (W)	Result
2422	18.76	0.08	30.00	1.00	Complies
2437	18.12	0.06	30.00	1.00	Complies
2452	17.63	0.06	30.00	1.00	Complies

**ATTACHMENT G - ANTENNA CONDUCTED SPURIOUS  
EMISSION**

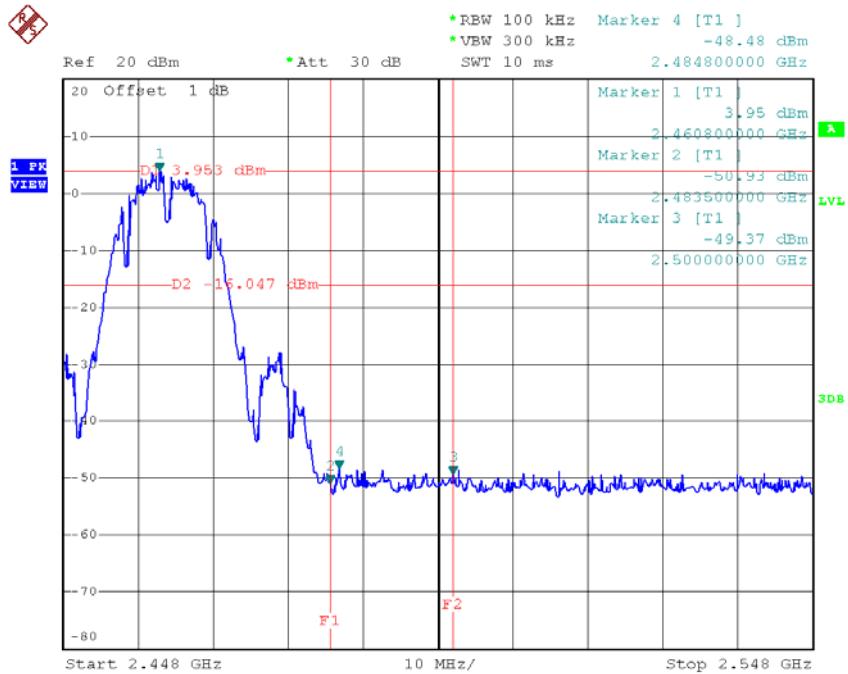
Test Mode : TX B Mode

## TX B mode CH01

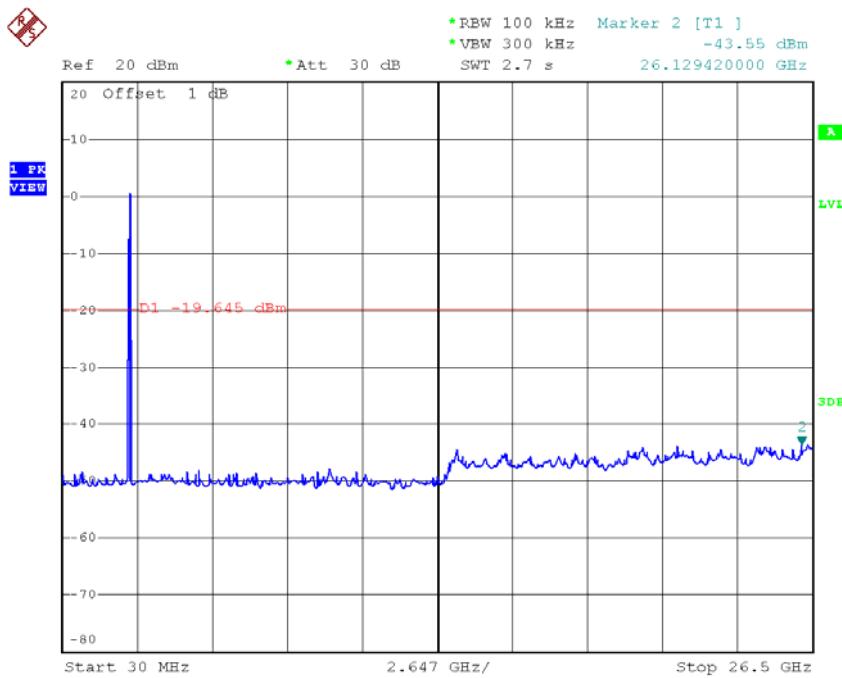


Date: 4.JAN.2016 14:04:39

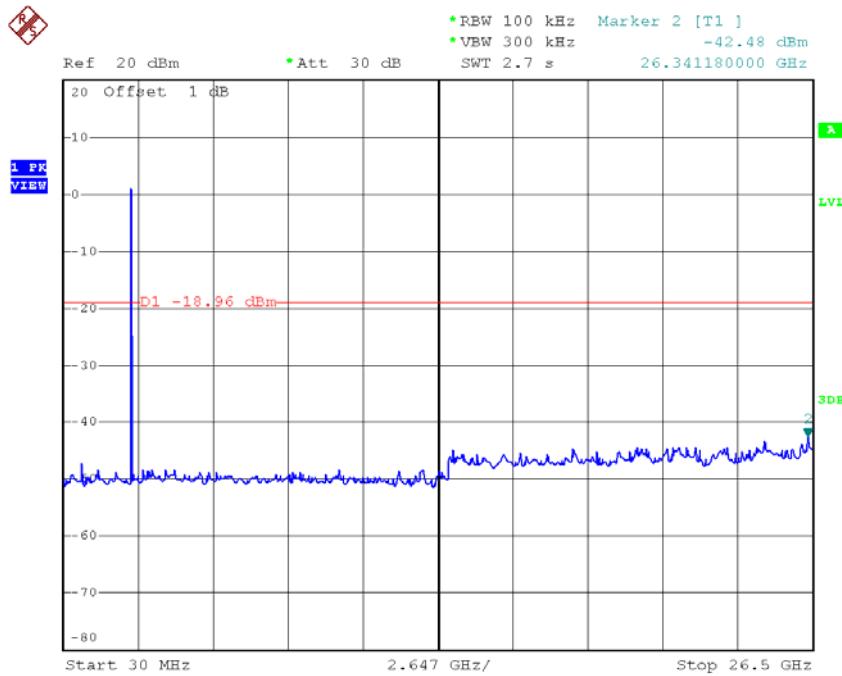
## TX B mode CH11



Date: 4.JAN.2016 14:07:39

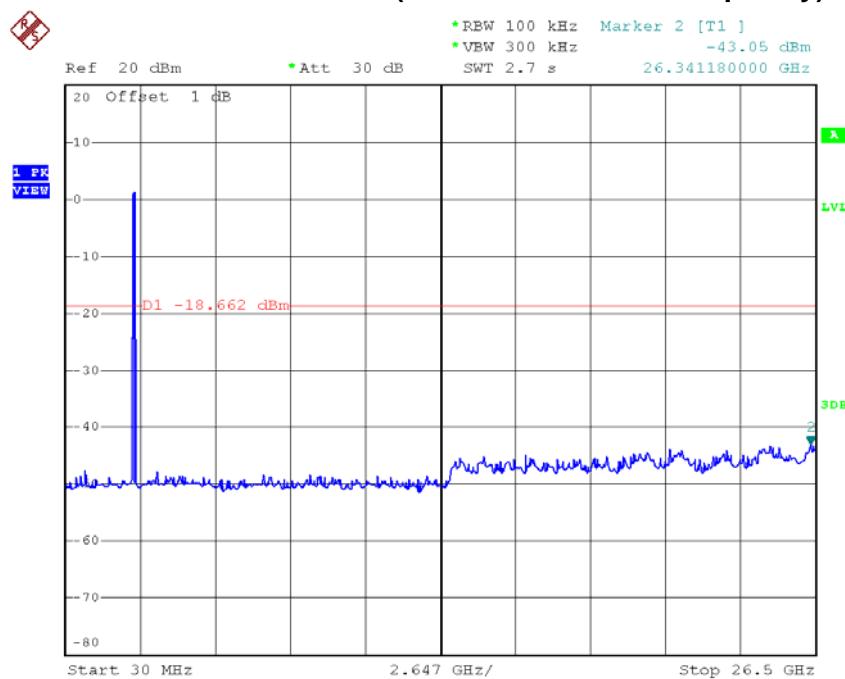
**TX B mode CH01 (10 Harmonic of the frequency)**

Date: 4.JAN.2016 14:04:32

**TX B mode CH06 (10 Harmonic of the frequency)**

Date: 4.JAN.2016 14:06:15

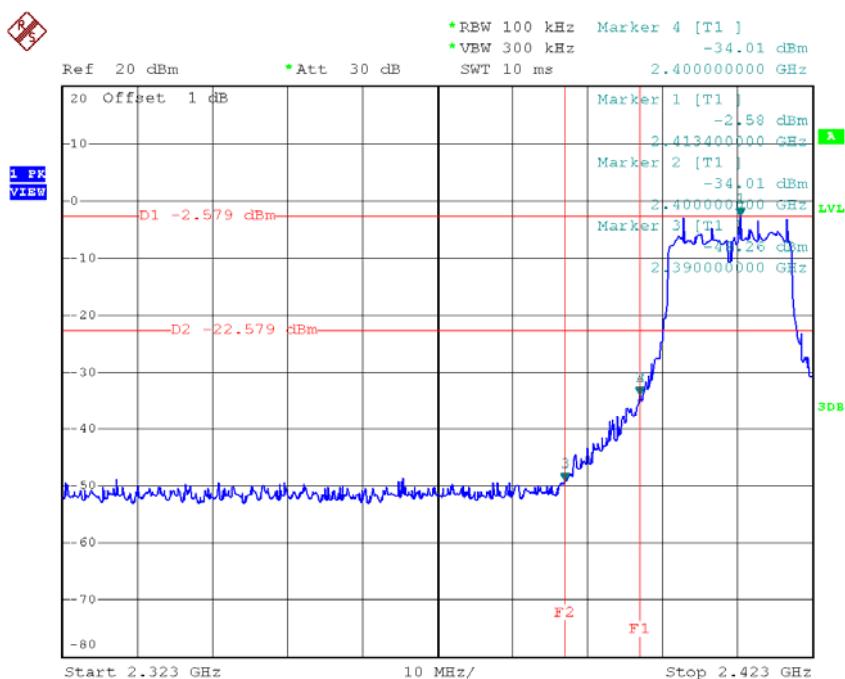
## TX B mode CH11 (10 Harmonic of the frequency)



Date: 4.JAN.2016 14:07:31

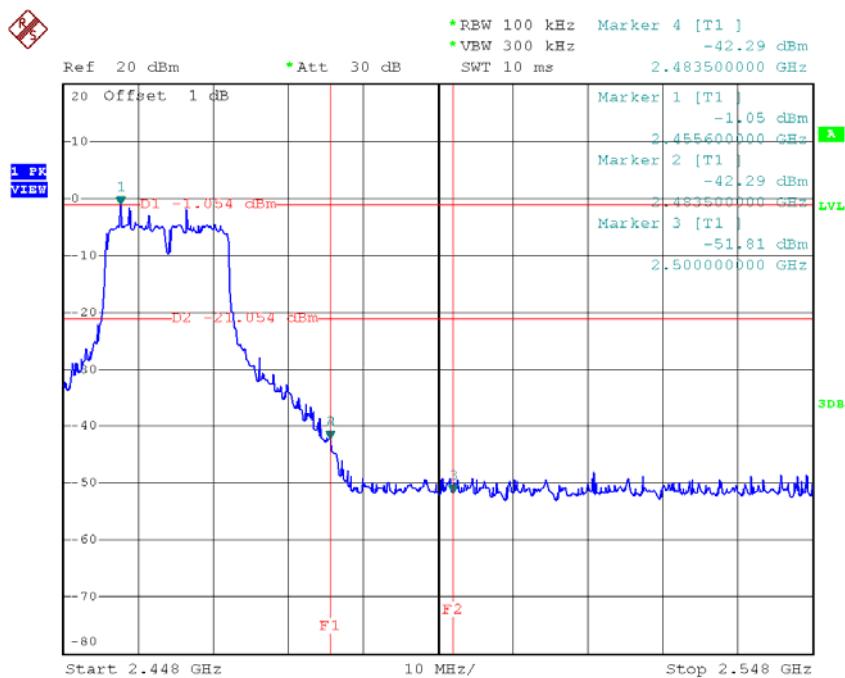
Test Mode : TX G Mode

### TX G mode CH01

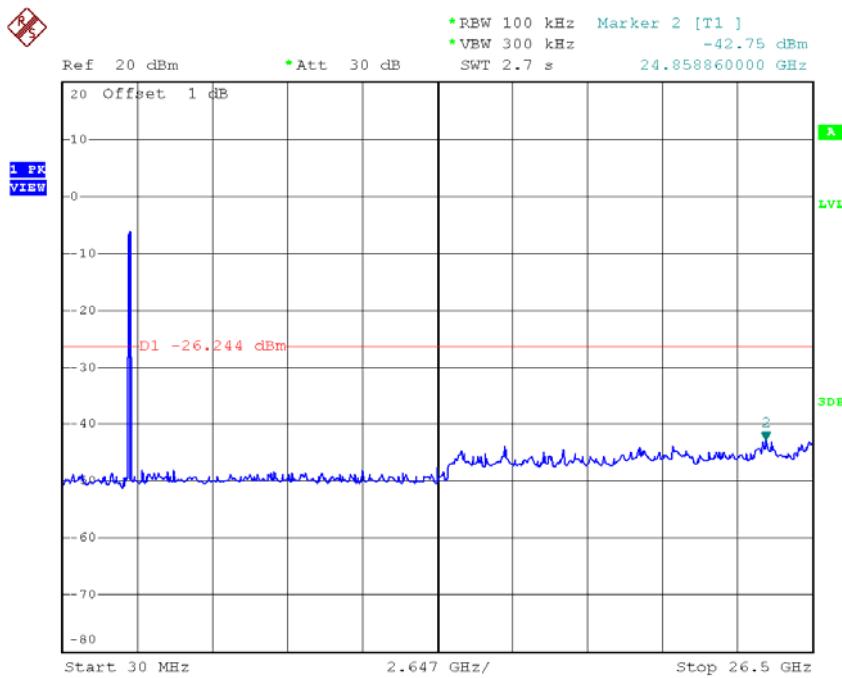


Date: 4.JAN.2016 14:10:40

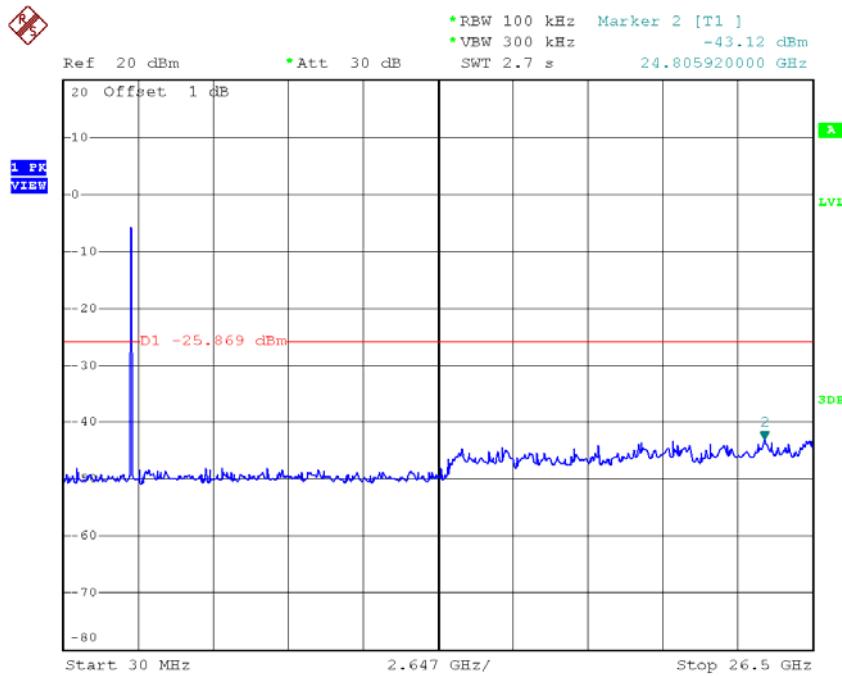
### TX G mode CH11



Date: 4.JAN.2016 14:13:44

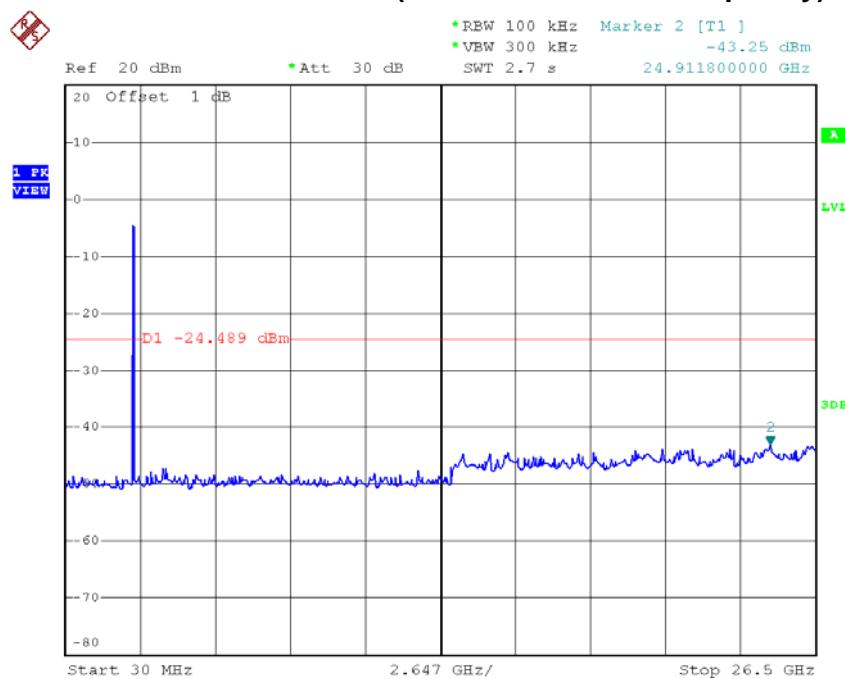
**TX G mode CH01 (10 Harmonic of the frequency)**

Date: 4.JAN.2016 14:10:33

**TX G mode CH06 (10 Harmonic of the frequency)**

Date: 4.JAN.2016 14:11:55

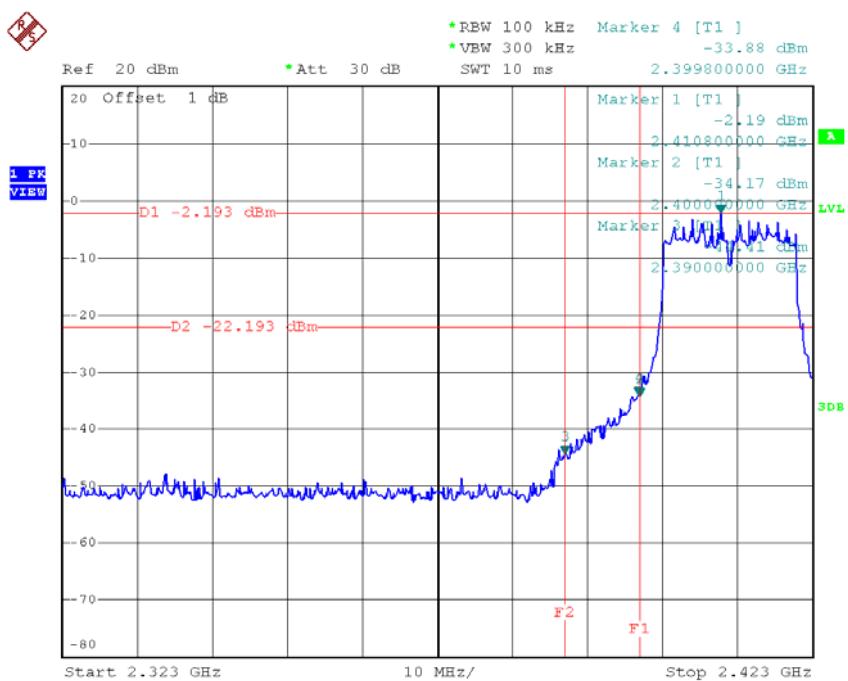
## TX G mode CH11 (10 Harmonic of the frequency)



Date: 4.JAN.2016 14:13:37

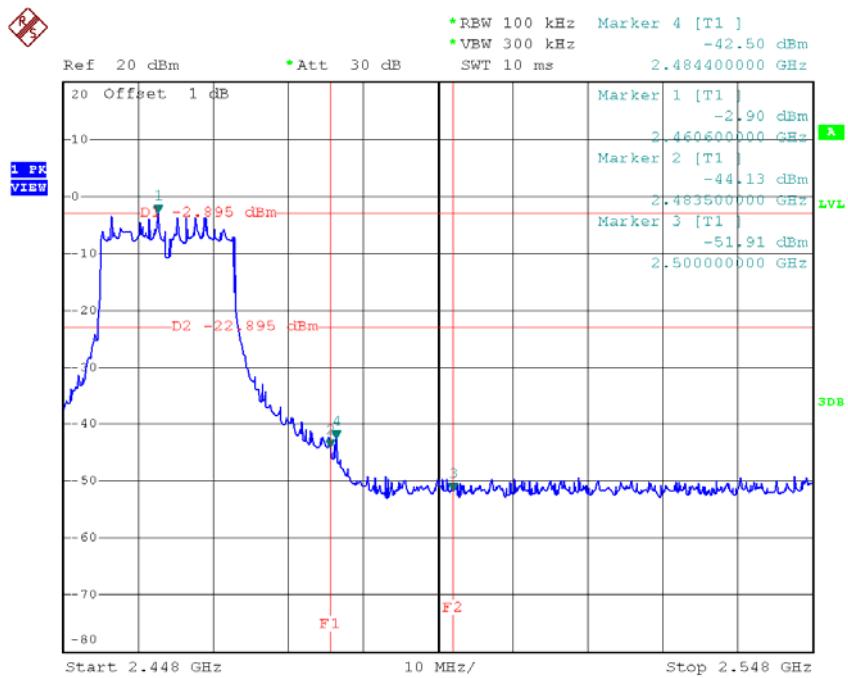
Test Mode : TX N-20M Mode\_ANT 1

### TX HT20 mode CH01

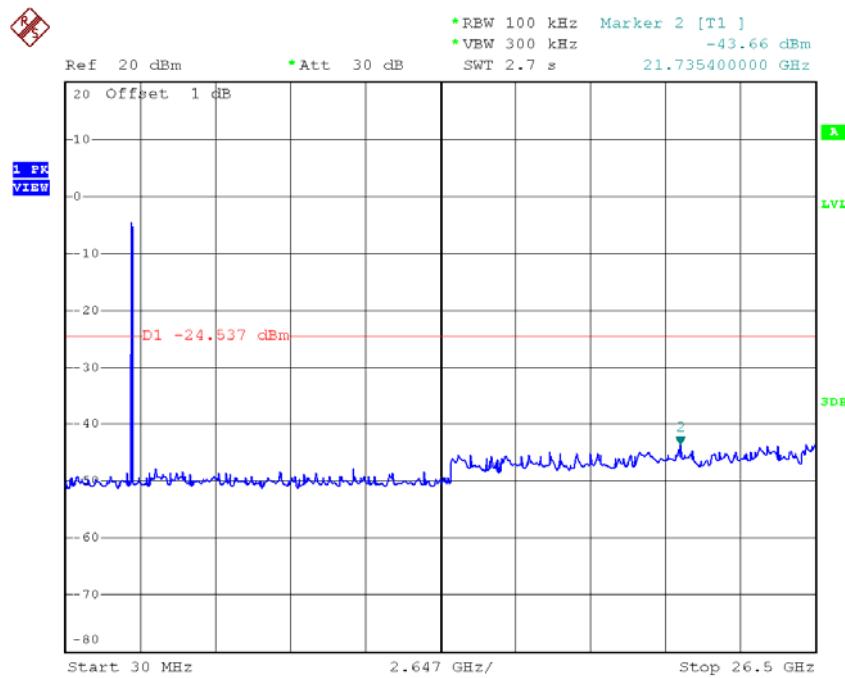


Date: 5.JAN.2016 14:35:28

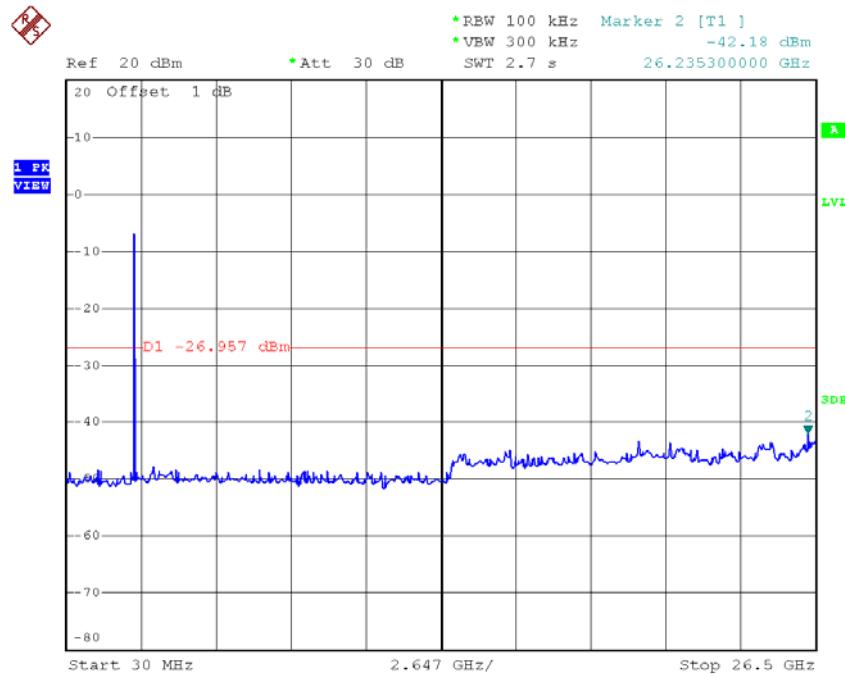
### TX HT20 mode CH11



Date: 5.JAN.2016 14:38:10

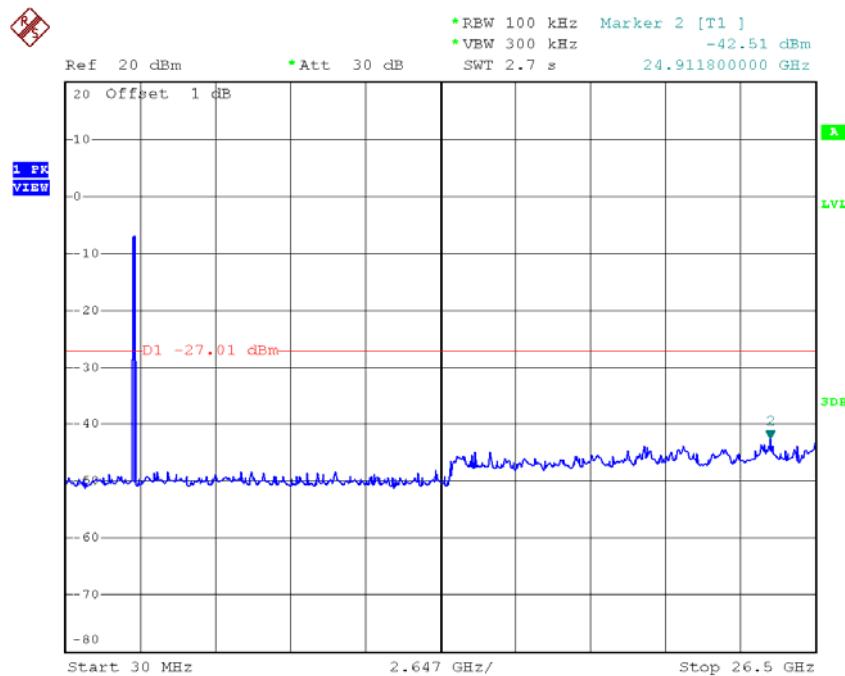
**TX HT20 mode CH01 (10 Harmonic of the frequency)**

Date: 5.JAN.2016 14:35:20

**TX HT20 mode CH06 (10 Harmonic of the frequency)**

Date: 5.JAN.2016 14:36:25

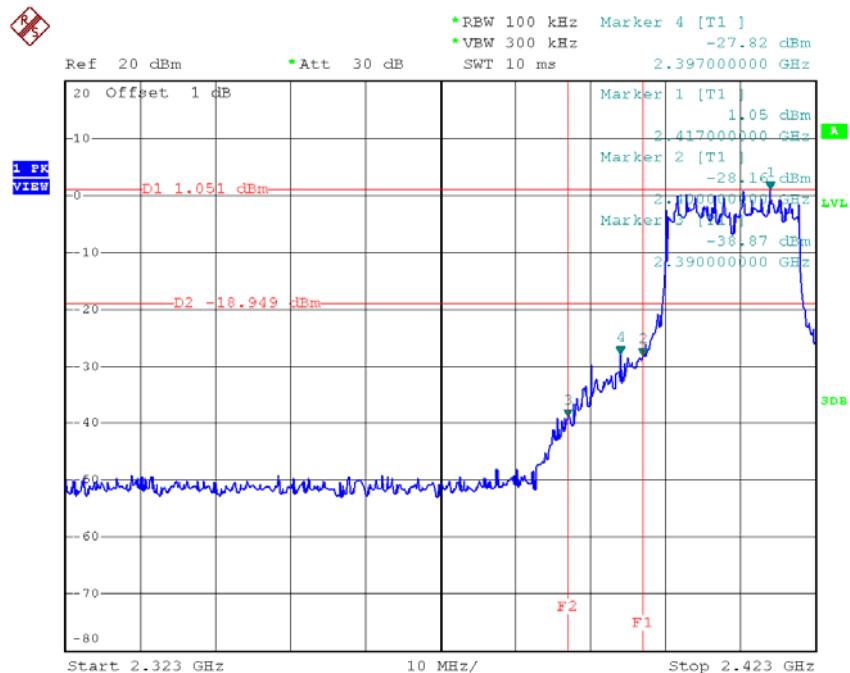
## TX HT20 mode CH11 (10 Harmonic of the frequency)



Date: 5.JAN.2016 14:38:02

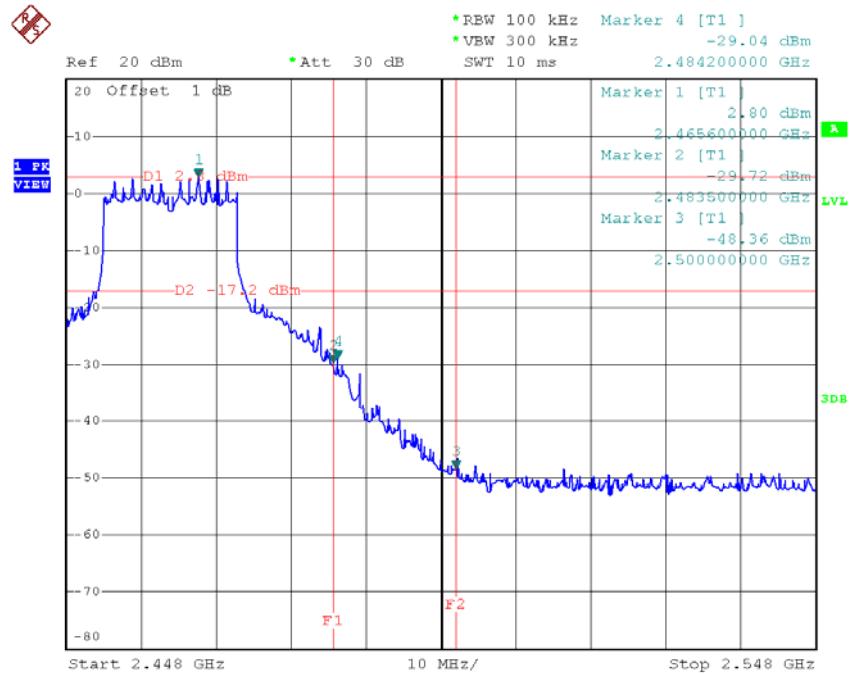
**Test Mode : TX N-20M Mode ANT 2**

## TX HT20 mode CH01



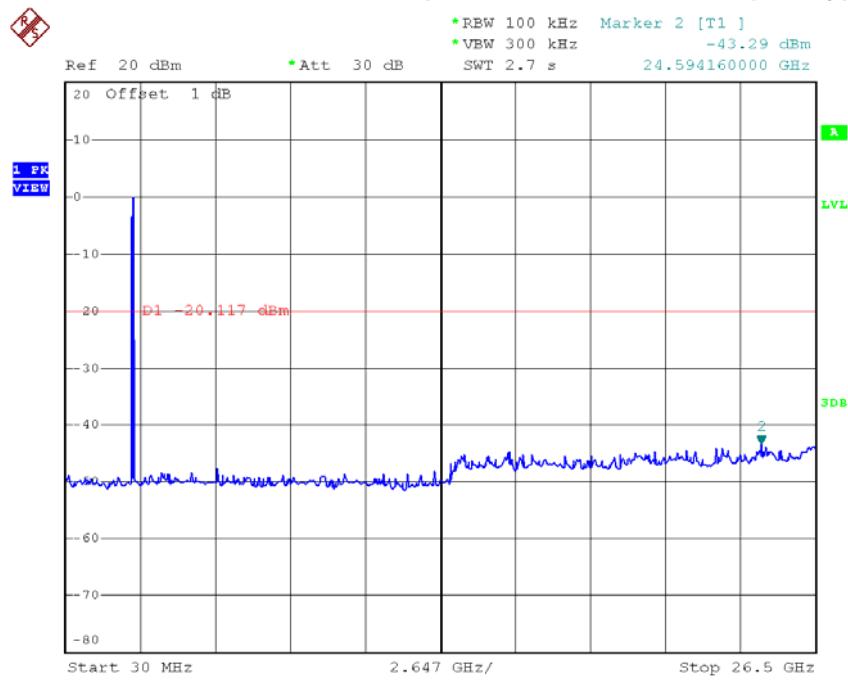
Date: 5.JAN.2016 14:40:07

TX HT20 mode CH11



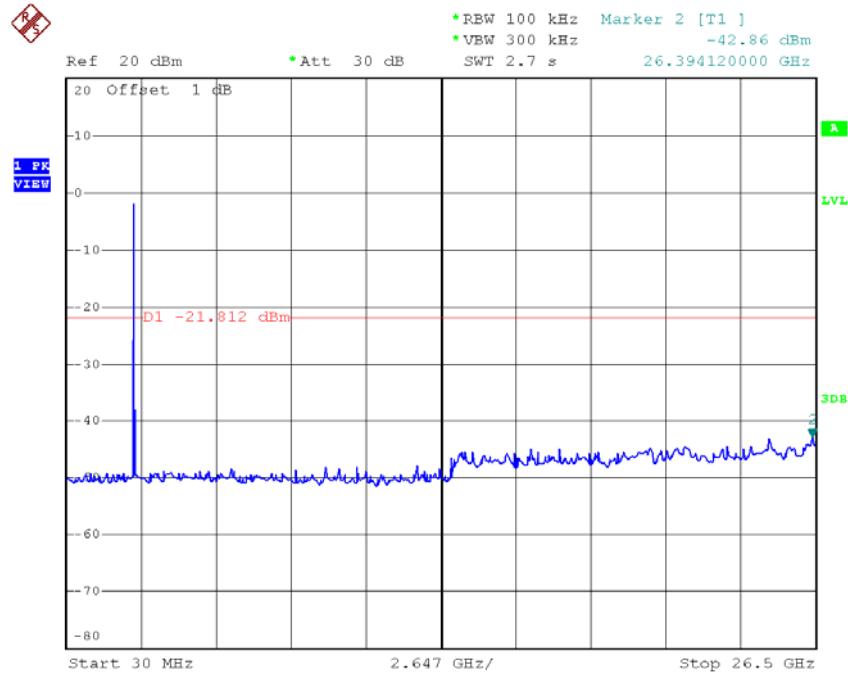
Date: 5.JAN.2016 14:42:01

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



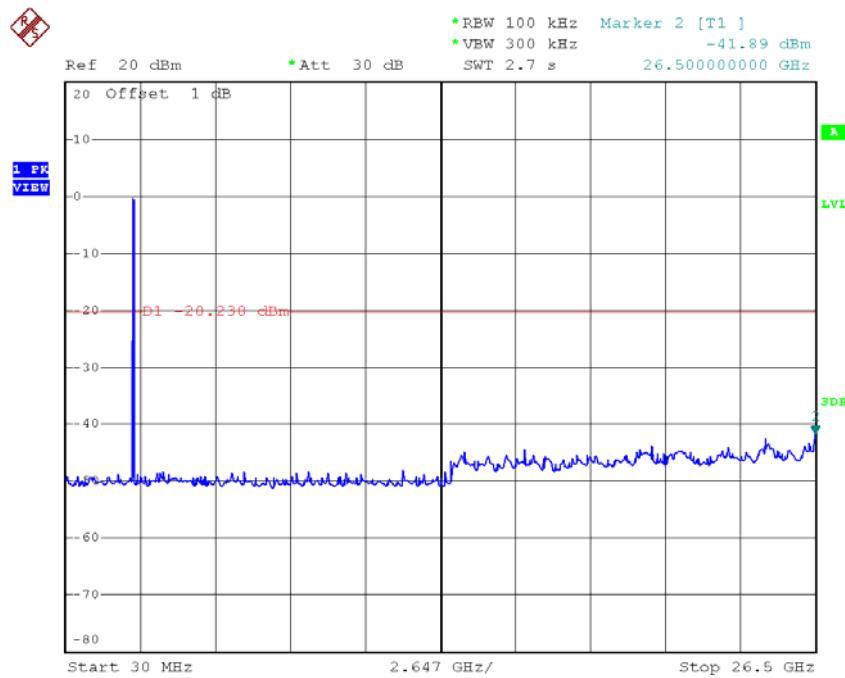
Date: 5.JAN.2016 14:39:59

## TX HT20 mode CH06 (10 Harmonic of the frequency)



Date: 5.JAN.2016 14:40:57

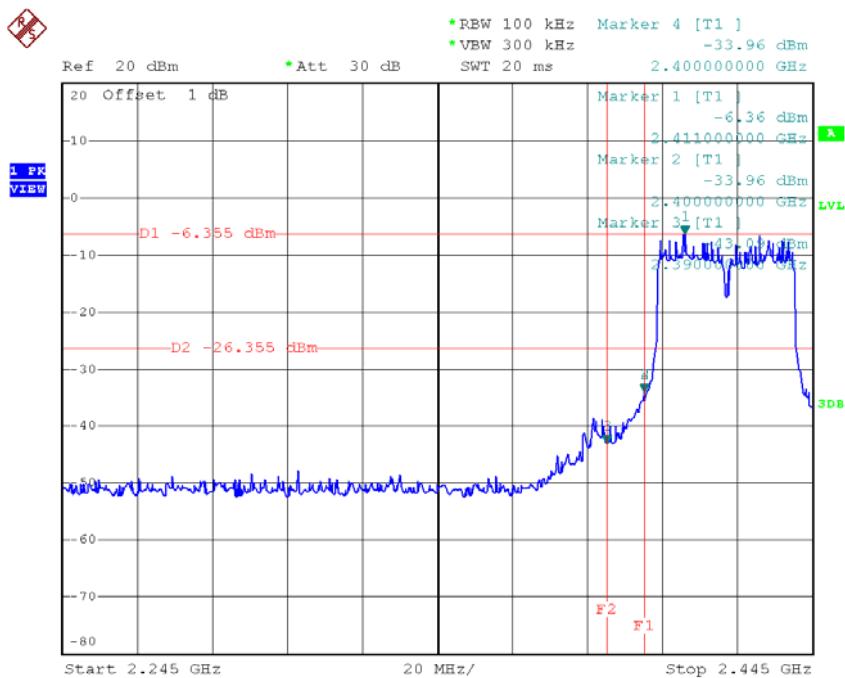
## TX HT20 mode CH11 (10 Harmonic of the frequency)



Date: 5.JAN.2016 14:41:53

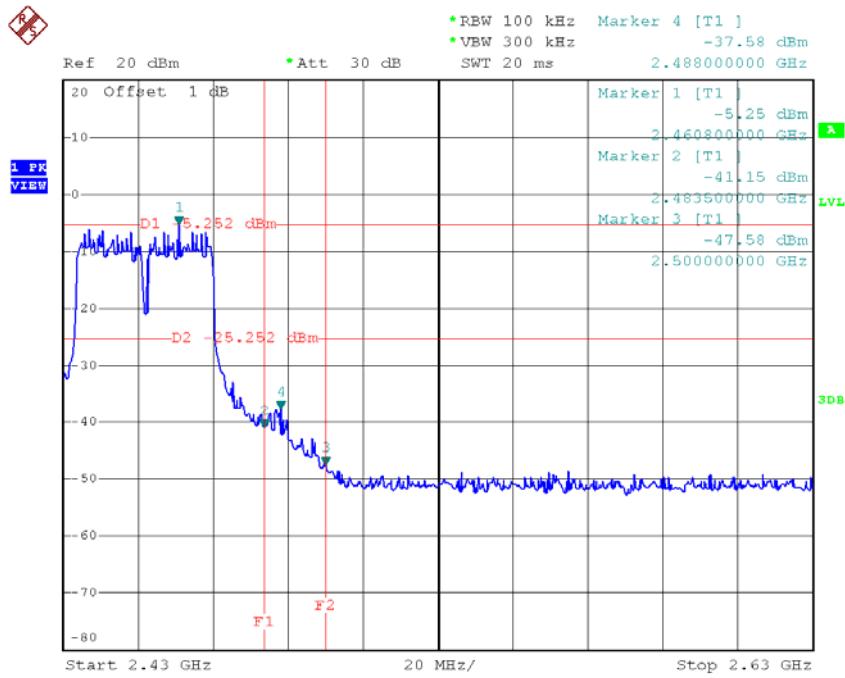
Test Mode : TX N-40M Mode\_ANT 1

### TX HT40 mode CH03

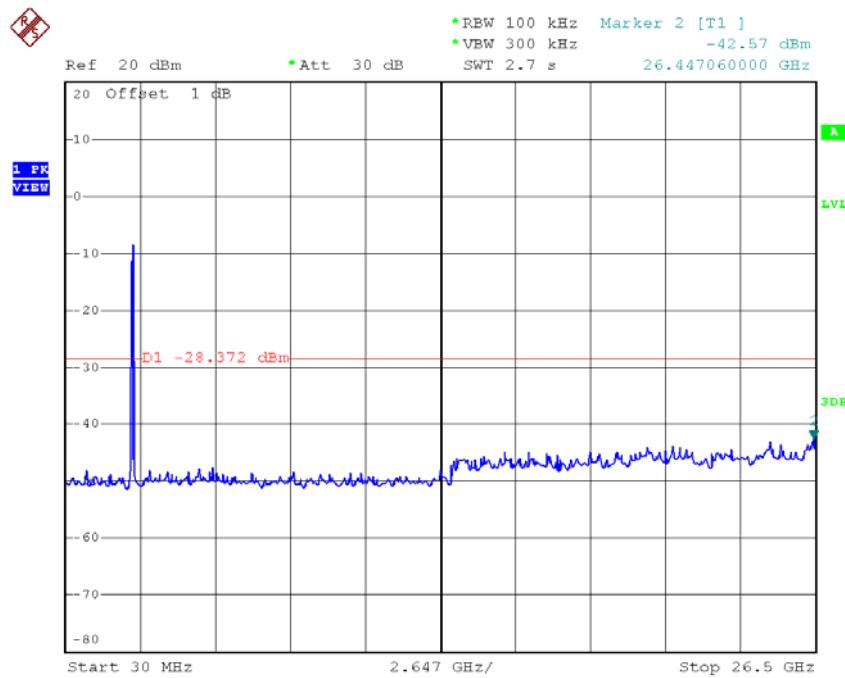


Date: 5.JAN.2016 14:44:07

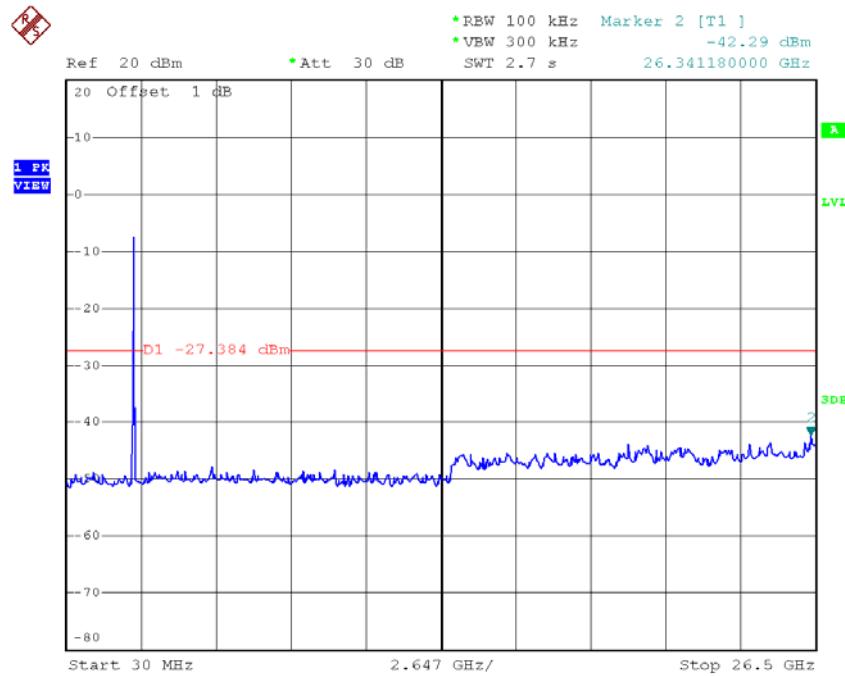
### TX HT40 mode CH09



Date: 5.JAN.2016 14:47:00

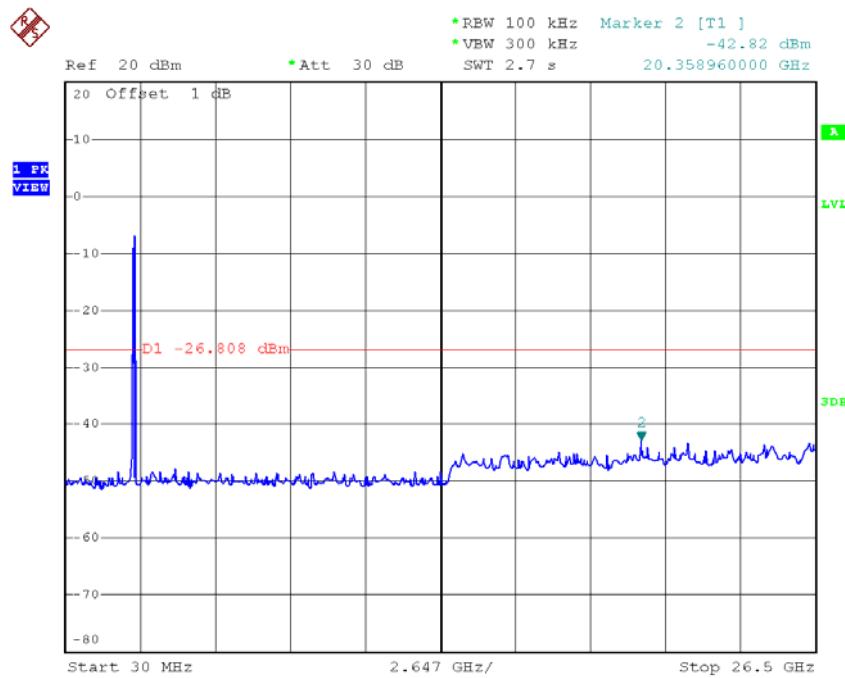
**TX HT40 mode CH03 (10 Harmonic of the frequency)**

Date: 5.JAN.2016 14:43:59

**TX HT40 mode CH06 (10 Harmonic of the frequency)**

Date: 5.JAN.2016 14:45:58

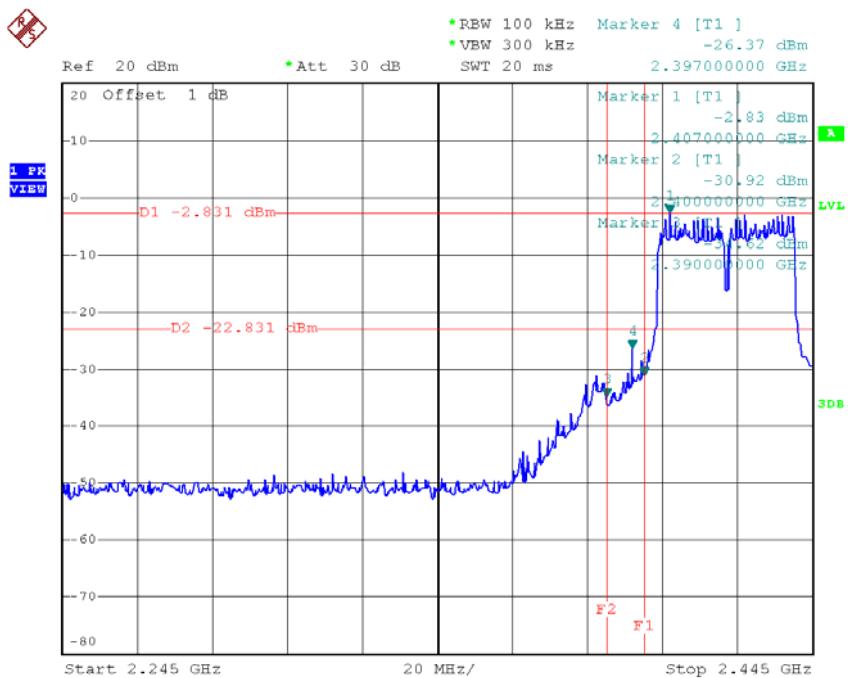
## TX HT40 mode CH09 (10 Harmonic of the frequency)



Date: 5.JAN.2016 14:46:52

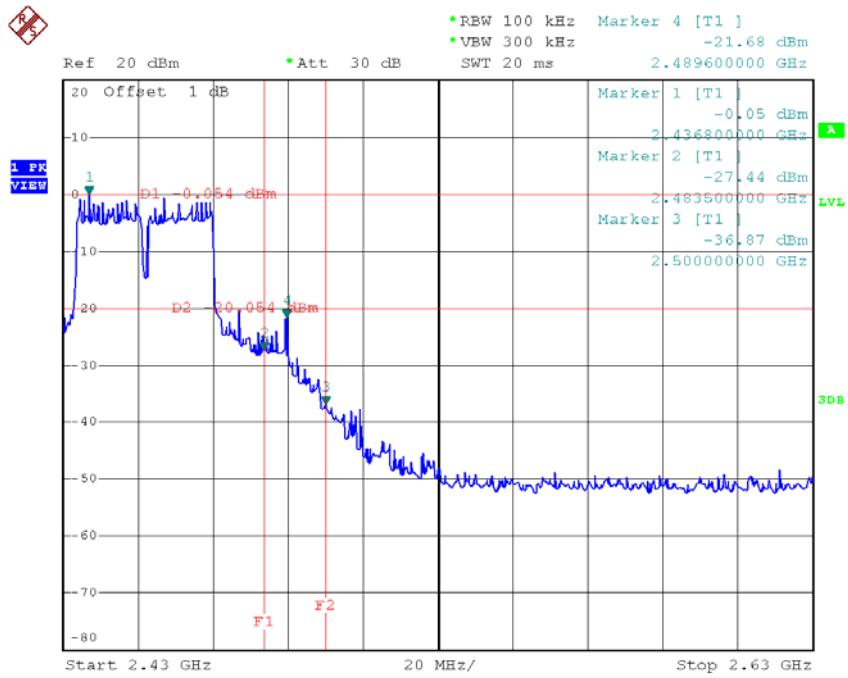
Test Mode : TX N-40M Mode\_ANT 2

### TX HT40 mode CH03

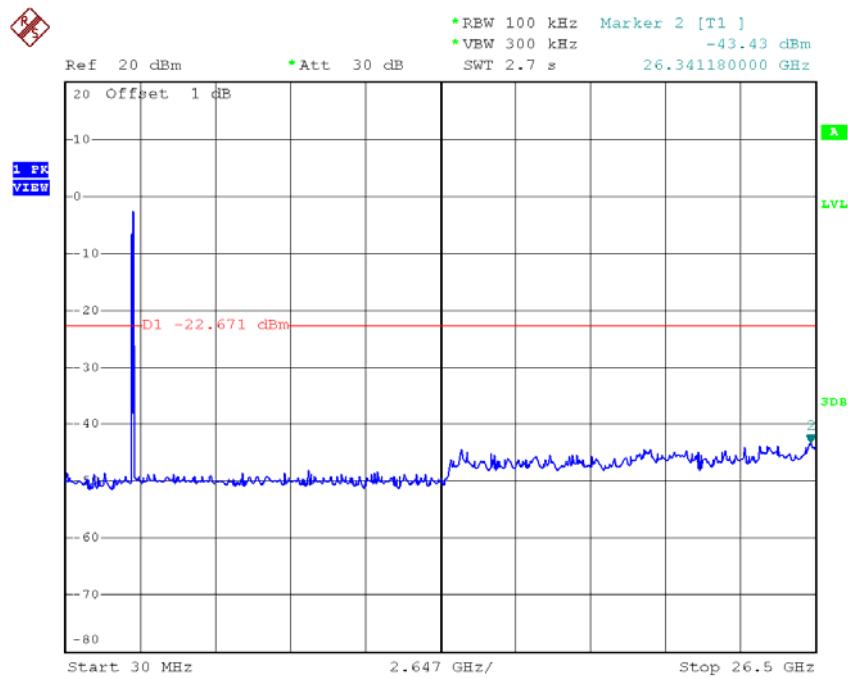


Date: 5.JAN.2016 14:48:34

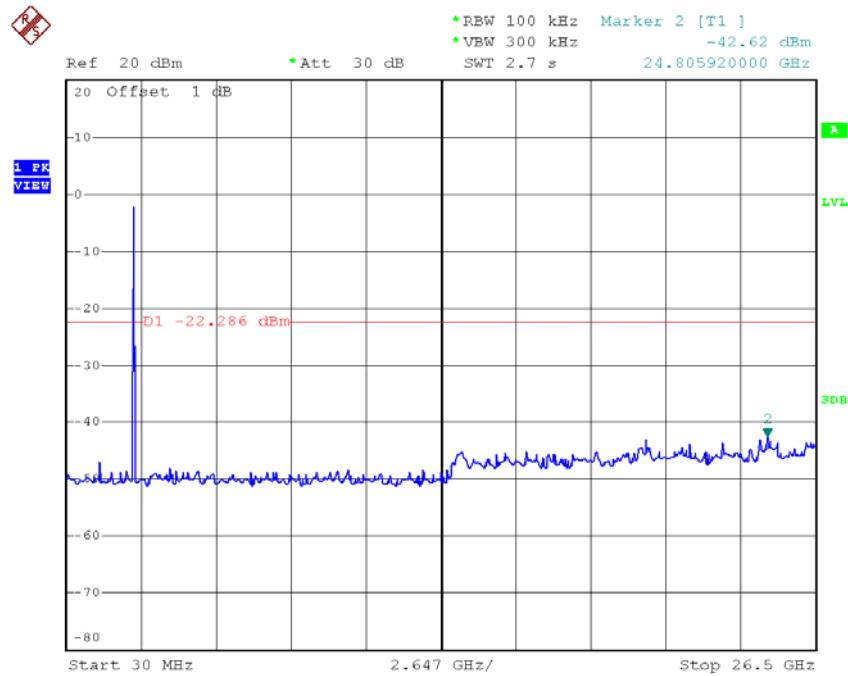
### TX HT40 mode CH09



Date: 5.JAN.2016 14:52:56

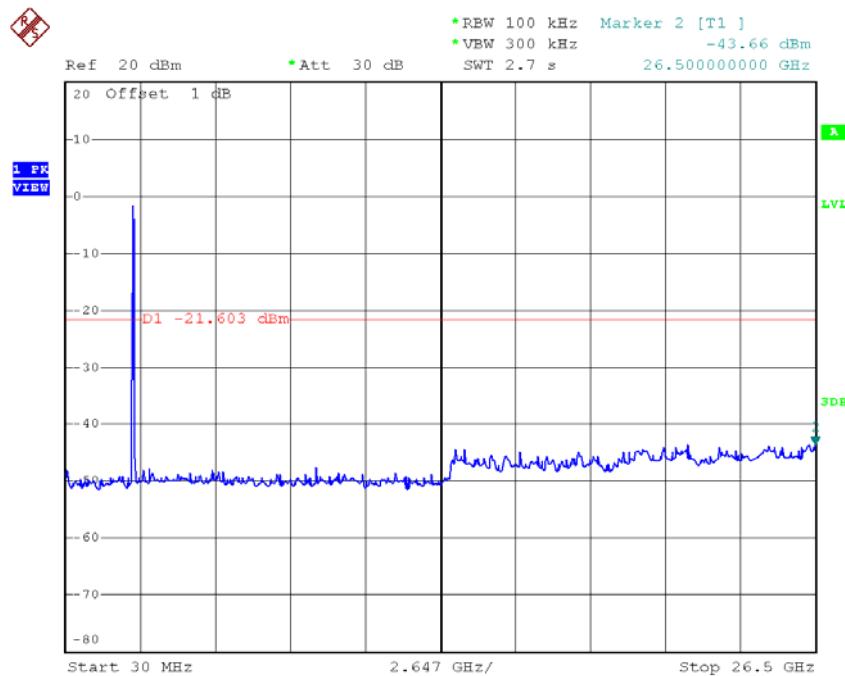
**TX HT40 mode CH03 (10 Harmonic of the frequency)**

Date: 5.JAN.2016 14:48:27

**TX HT40 mode CH06 (10 Harmonic of the frequency)**

Date: 5.JAN.2016 14:51:43

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



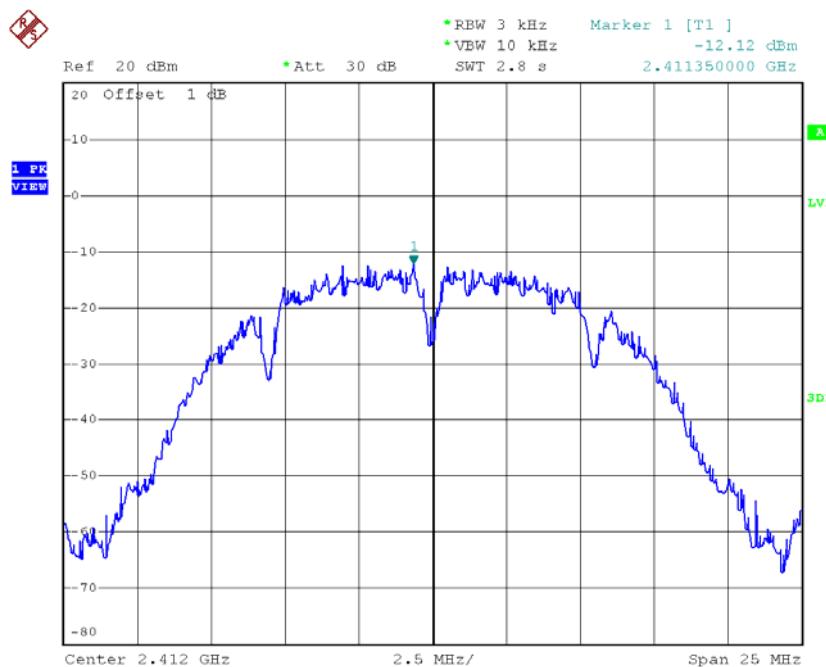
Date: 5.JAN.2016 14:52:48

## ATTACHMENT H - POWER SPECTRAL DENSITY

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

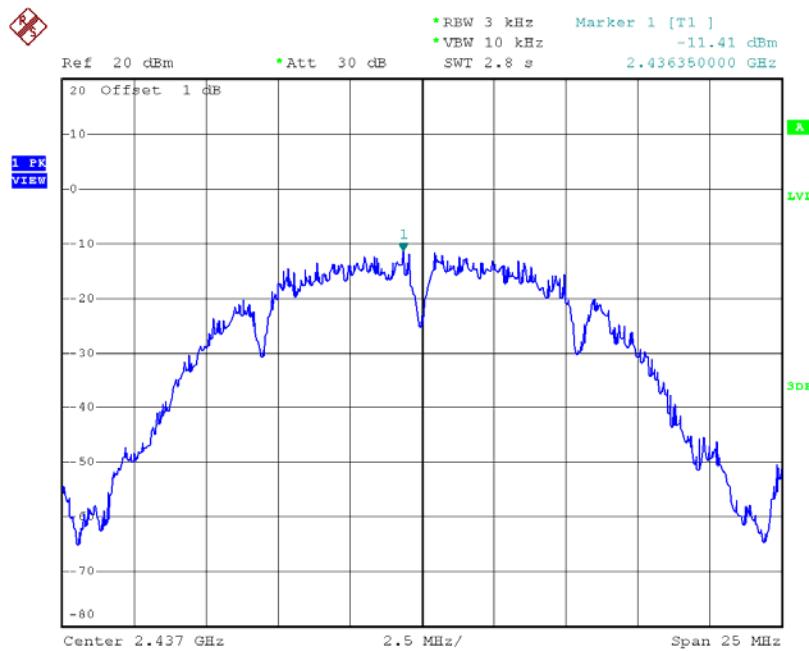
Frequency (MHz)	Power Density (dBm/3kHz)	Power Density (mW/3kHz)	Max. Limit (dBm/3kHz)	Result
2412	-12.12	0.06	8.00	Complies
2437	-11.41	0.07	8.00	Complies
2462	-10.68	0.09	8.00	Complies

## TX CH01



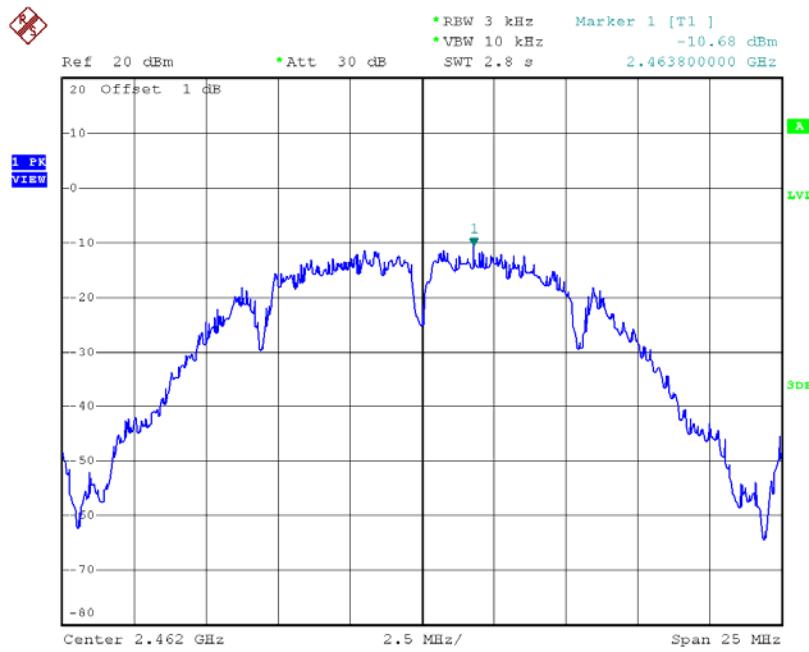
Date: 4.JAN.2016 14:04:49

## TX CH06



Date: 4.JAN.2016 14:06:24

## TX CH11

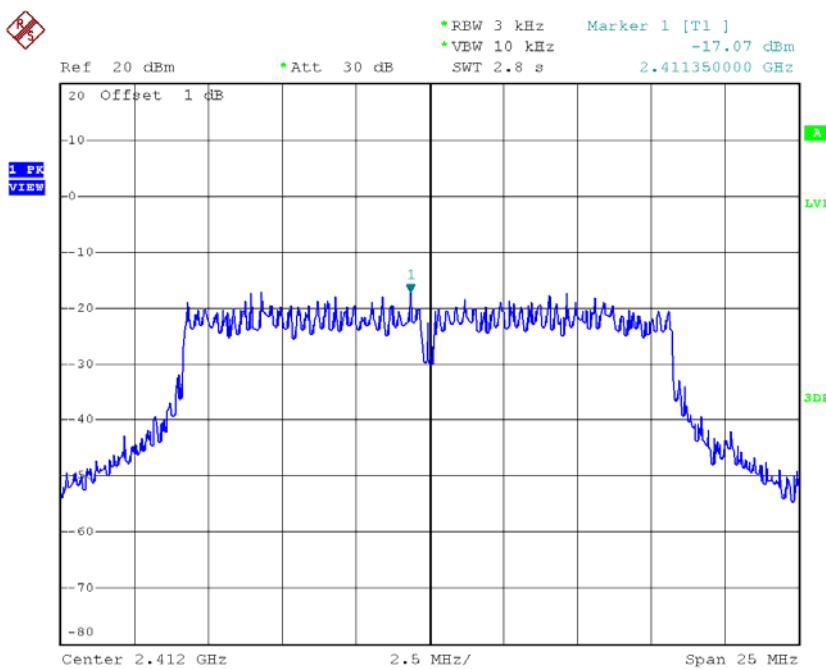


Date: 4.JAN.2016 14:07:48

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

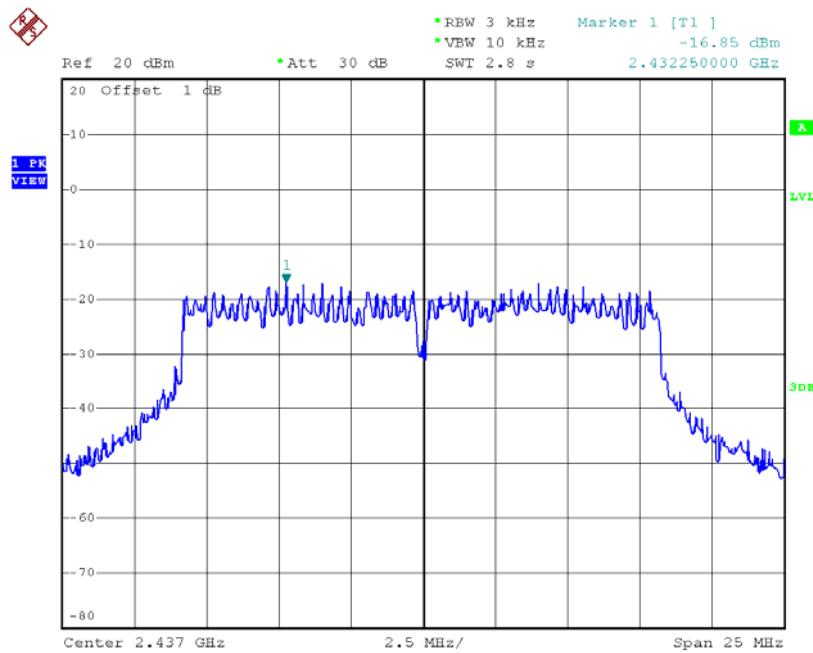
Frequency (MHz)	Power Density (dBm/3kHz)	Power Density (mW/3kHz)	Max. Limit (dBm/3kHz)	Result
2412	-17.07	0.02	8.00	Complies
2437	-16.85	0.02	8.00	Complies
2462	-15.48	0.03	8.00	Complies

## TX CH01



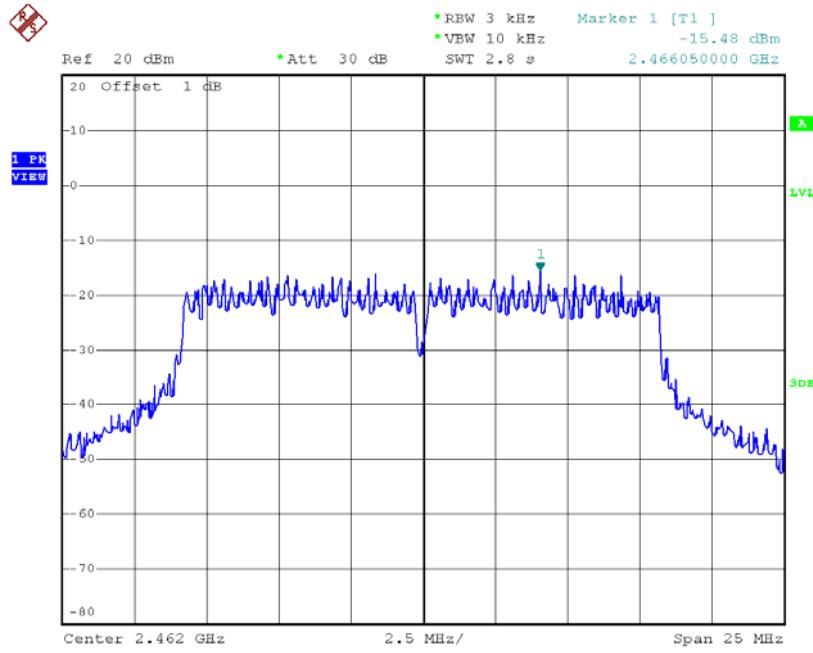
Date: 4.JAN.2016 14:10:49

## TX CH06



Date: 4.JAN.2016 14:12:04

## TX CH11

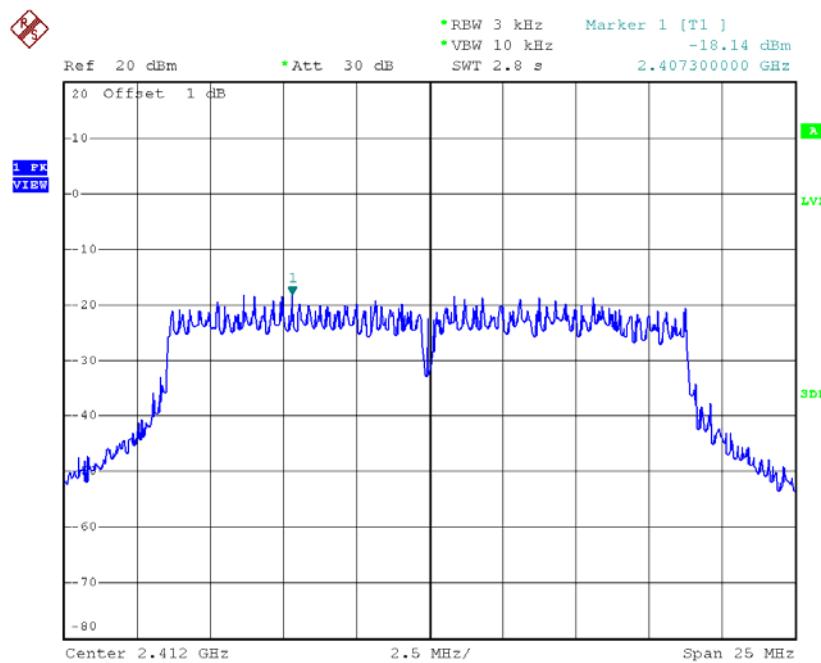


Date: 4.JAN.2016 14:13:54

## Test Mode : TX N-20M Mode\_CH01/06/11\_ANT 1

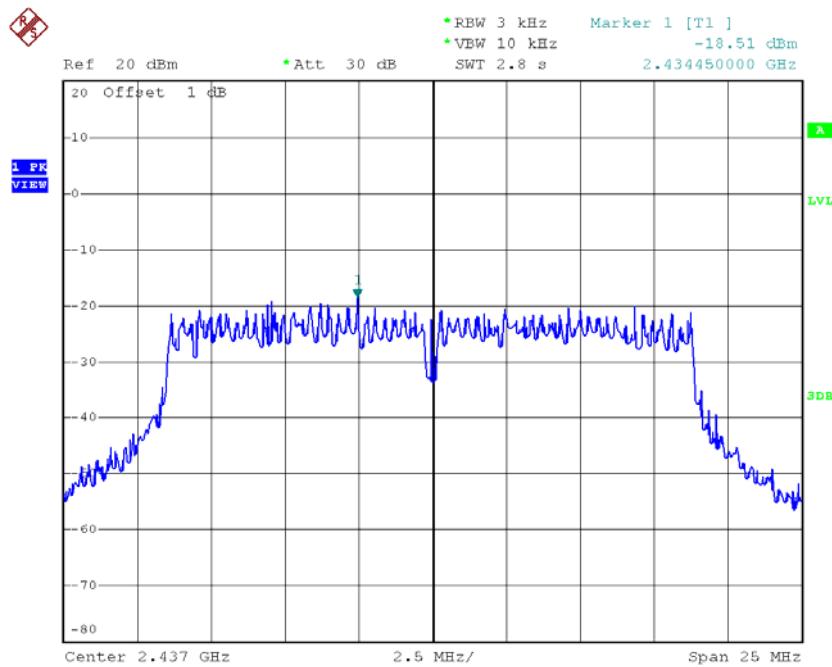
Frequency (MHz)	Power Density (dBm/3kHz)	Power Density (mW/3kHz)	Max. Limit (dBm/3kHz)	Result
2412	-18.14	0.02	8.00	Complies
2437	-18.51	0.01	8.00	Complies
2462	-18.36	0.01	8.00	Complies

## TX CH01



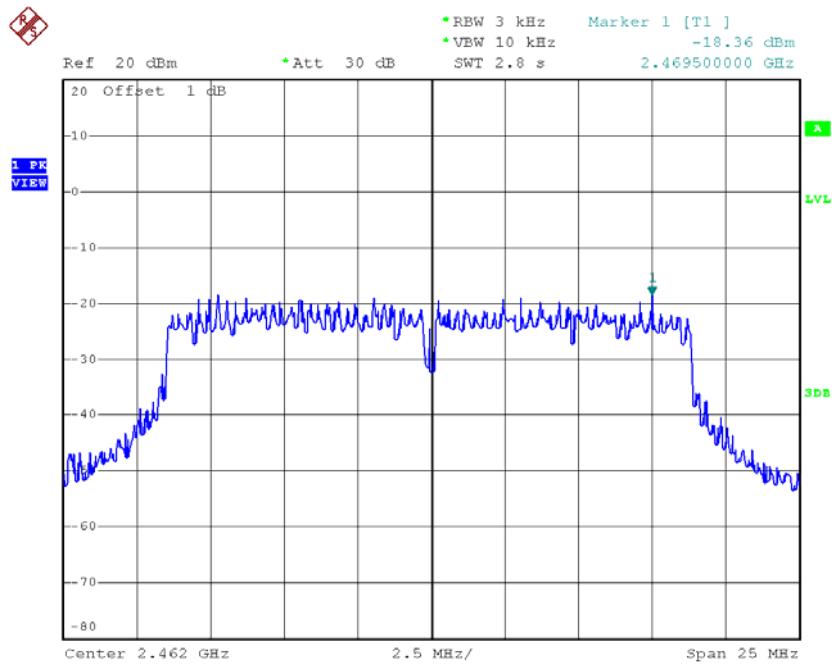
Date: 5.JAN.2016 14:35:37

## TX CH06



Date: 5.JAN.2016 14:36:34

## TX CH11

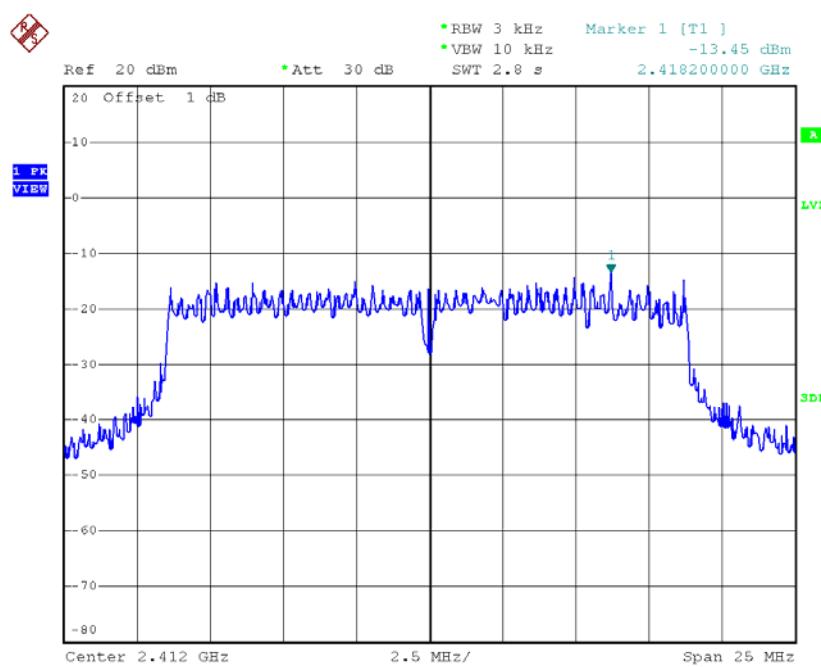


Date: 5.JAN.2016 14:38:19

## Test Mode : TX N-20M Mode\_CH01/06/11\_ANT 2

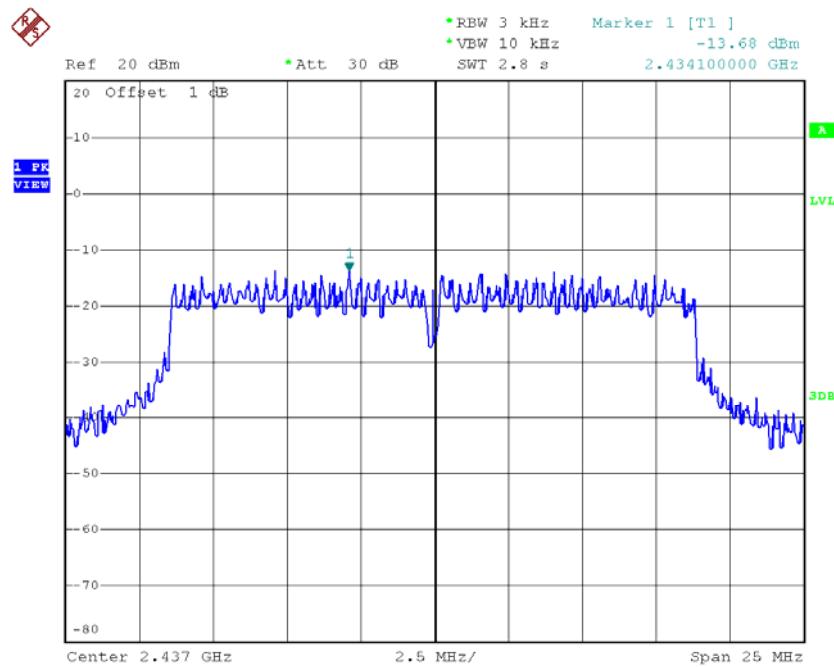
Frequency (MHz)	Power Density (dBm/3kHz)	Power Density (mW/3kHz)	Max. Limit (dBm/3kHz)	Result
2412	-13.45	0.05	8.00	Complies
2437	-13.68	0.04	8.00	Complies
2462	-11.83	0.07	8.00	Complies

## TX CH01



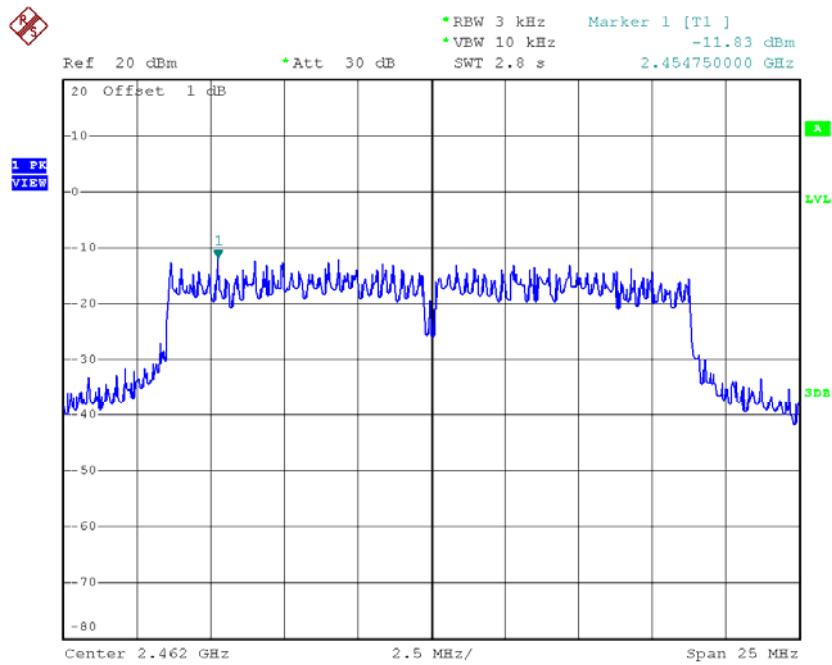
Date: 5.JAN.2016 14:40:16

## TX CH06



Date: 5.JAN.2016 14:41:06

## TX CH11



Date: 5.JAN.2016 14:42:10

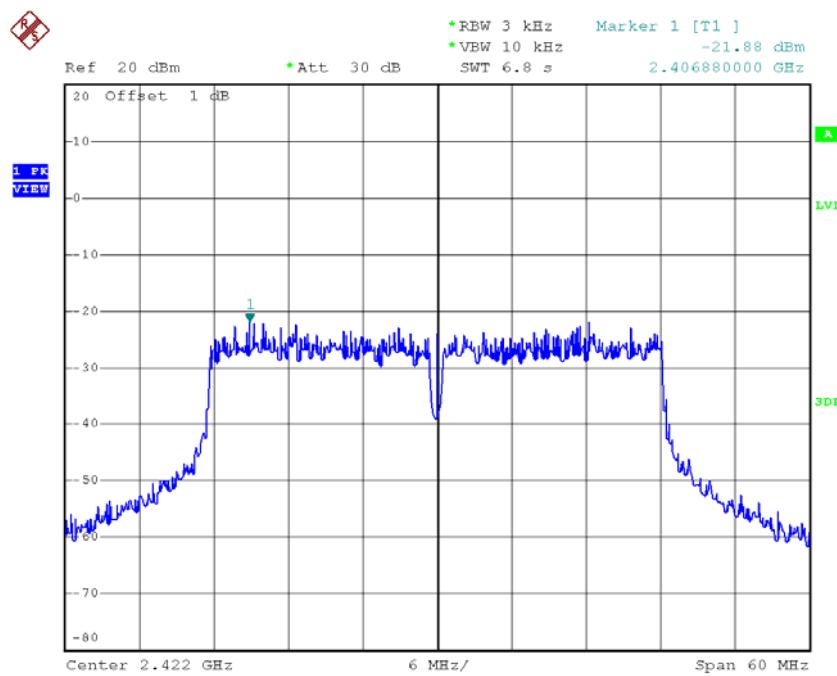
**Test Mode : TX N-20M Mode\_CH01/06/11\_Total**

Frequency (MHz)	Power Density (dBm/3kHz)	Power Density (mW/3kHz)	Max. Limit (dBm/3kHz)	Result
2412	-11.55	0.07	8.00	Complies
2437	-13.01	0.05	8.00	Complies
2462	-10.97	0.08	8.00	Complies

## Test Mode : TX N-40M Mode\_CH03/06/09\_ANT 1

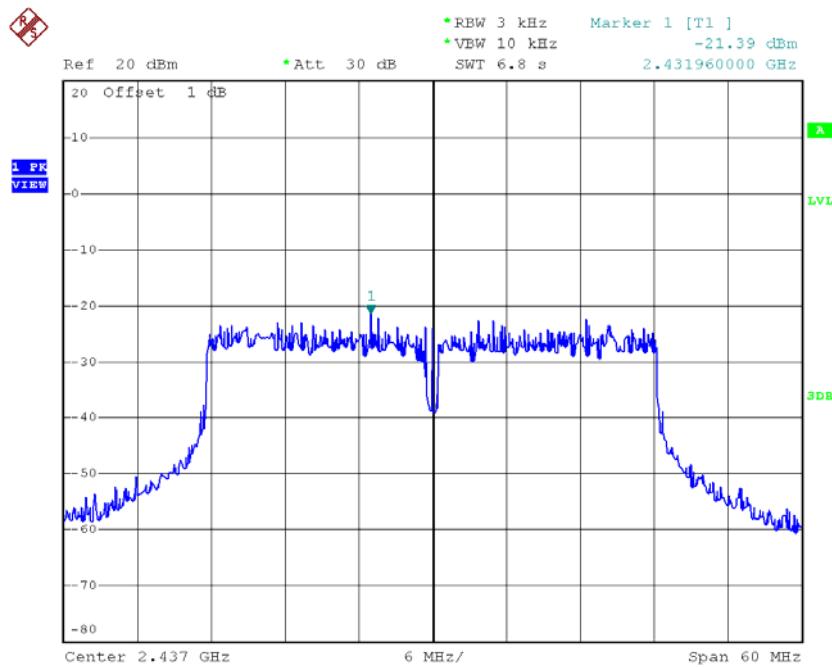
Frequency (MHz)	Power Density (dBm/3kHz)	Power Density (mW/3kHz)	Max. Limit (dBm/3kHz)	Result
2422	-21.88	0.01	8.00	Complies
2437	-21.39	0.01	8.00	Complies
2452	-20.11	0.01	8.00	Complies

## TX CH03



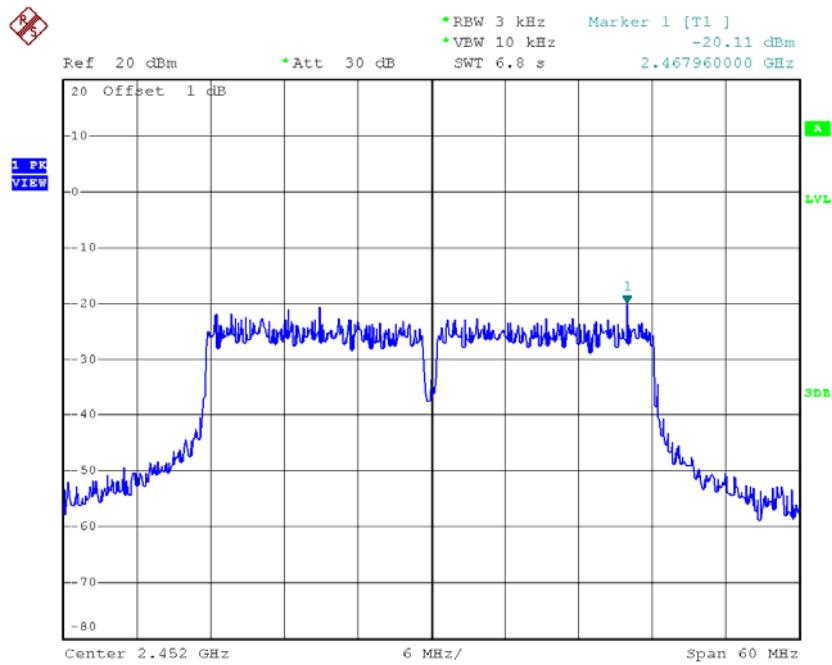
Date: 5.JAN.2016 14:44:19

## TX CH06



Date: 5.JAN.2016 14:46:10

## TX CH09

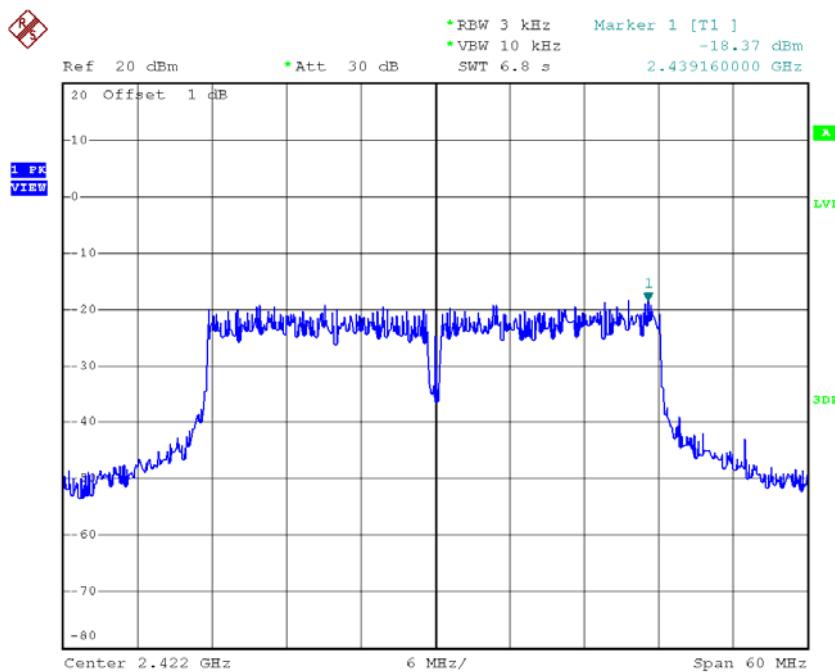


Date: 5.JAN.2016 14:47:12

## Test Mode : TX N-40M Mode\_CH03/06/09\_ANT 2

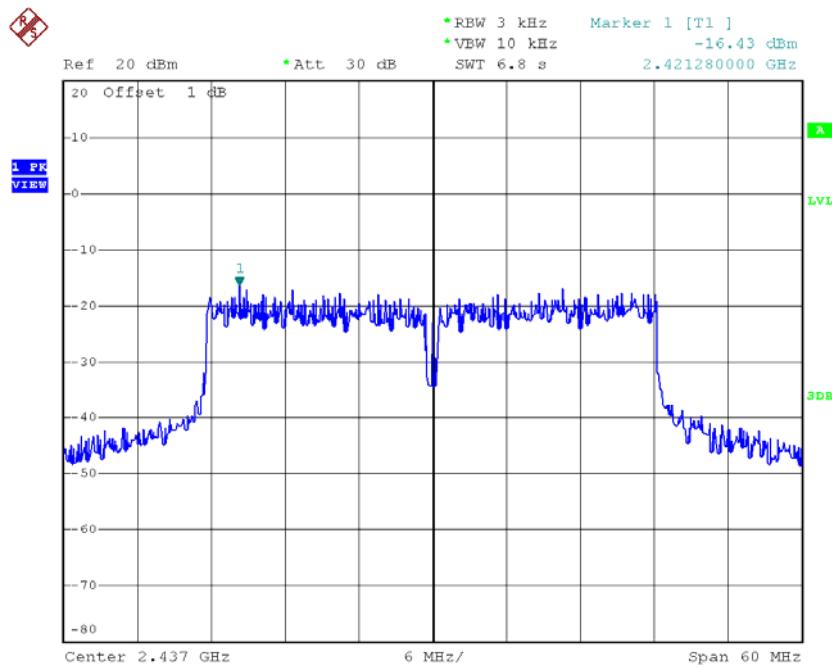
Frequency (MHz)	Power Density (dBm/3kHz)	Power Density (mW/3kHz)	Max. Limit (dBm/3kHz)	Result
2422	-18.37	0.01	8.00	Complies
2437	-16.43	0.02	8.00	Complies
2452	-15.73	0.03	8.00	Complies

## TX CH03



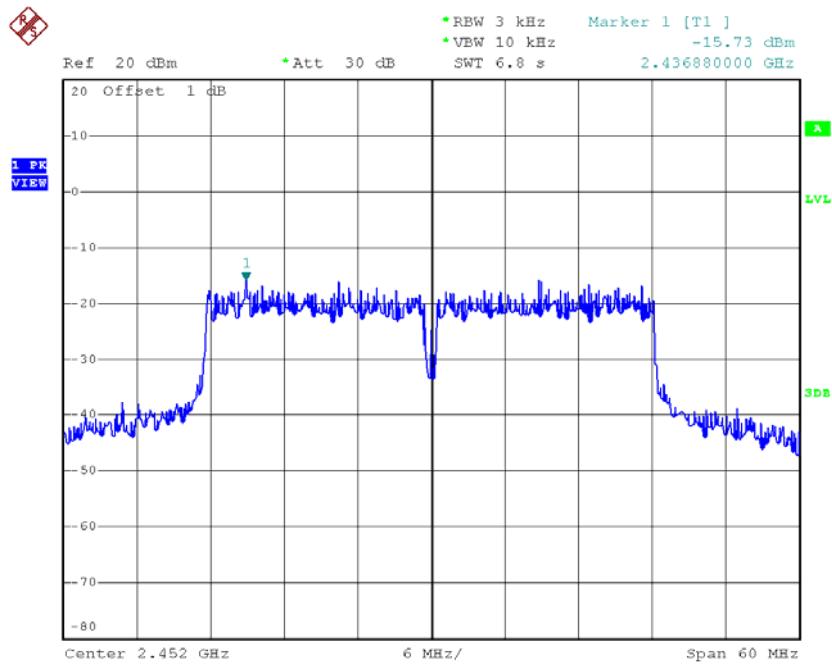
Date: 5.JAN.2016 14:48:47

## TX CH06



Date: 5.JAN.2016 14:51:55

## TX CH09



Date: 5.JAN.2016 14:53:08

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

Frequency (MHz)	Power Density (dBm/3kHz)	Power Density (mW/3kHz)	Max. Limit (dBm/3kHz)	Result
2422	-16.99	0.02	8.00	Complies
2437	-15.23	0.03	8.00	Complies
2452	-13.98	0.04	8.00	Complies