

# FCC&IC Radio Test Report

## FCC ID: PKNCM-198N

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

**Project No.** : 1407C004  
**Equipment** : Optical 2.4GHz Wireless Mouse  
**Model Name** : CM-198;OM4750W;OM6750W  
**Applicant** : ZhuoHeng Electronic Co.,Ltd  
**Address** : No.8 ,Lane 5 , ShangNan Road .The 5th Industrial Area,NanCe, HuMen Town ,DongGuan City,China.

**Date of Receipt** : Jun. 30, 2014  
**Date of Test** : Jun. 30, 2014 ~ Jul. 16, 2014  
**Issued Date** : Jul. 17, 2014  
**Tested by** : BTL Inc.

**Testing Engineer**

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(David Mao)

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# **B T L I N C .**

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Testing Laboratory  
2640

### **Declaration**

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

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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
NEI-FCCP-1-1407C004	Original Issue.	Jul. 17, 2014

## 1. CERTIFICATION

Equipment : Optical 2.4GHz Wireless Mouse  
Brand Name : N/A  
Model Name : CM-198;OM4750W;OM6750W  
Applicant : ZhuoHeng Electronic Co.,Ltd  
Manufacturer : YiBang Electronic Technology Co.,Ltd  
Address : No.8 ,Lane 5 , ShangNan Road .The 5th Industrial Area,NanCe, HuMen  
Town ,DongGuan City,China.  
Factory : YiBang Electronic Technology Co.,Ltd  
Address : No.8 ,Lane 5 , ShangNan Road .The 5th Industrial Area,NanCe, HuMen  
Town ,DongGuan City,China.  
Date of Test : Jun. 30, 2014 ~ Jul. 16, 2014  
Test Sample : Engineering Sample  
Standard(s) : FCC Part15, Subpart C(15.249)/ ANSI C63.4-2009

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

The test data, data evaluation, and equipment configuration contained in our test report (Ref No. NEI-FCCP-1-1407C004) 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):

FCC Part15, Subpart C (15.249)			
StandardSection	Test Item	Judgment	Remark
FCC			
15.207	Conducted Emission	N/A	
15.209 15.249	Radiated Spurious Emission	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 **DG-C02/DG-CB03** at the location of No.3,Jinshagang 1st Road, ShiXia, Dalang Town,Dong Guan, China.523792  
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 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)	NOTE
DG-C02	CISPR	150 KHz ~ 30MHz	1.94	

### B. Radiated Measurement :

Test Site	Method	Measurement Frequency Range	Ant. H / V	U,(dB)	NOTE
DG-CB03	CISPR	9KHz~30MHz	V	3.79	
		9KHz~30MHz	H	3.57	
		30MHz ~ 200MHz	V	3.82	
		30MHz ~ 200MHz	H	3.60	
		200MHz ~ 1,000MHz	V	3.86	
		200MHz ~ 1,000MHz	H	3.94	
		1GHz~18GHz	V	3.12	
		1GHz~18GHz	H	3.68	
		18GHz~40GHz	V	4.15	
		18GHz~40GHz	H	4.14	



### 3. GENERAL INFORMATION

#### 3.1 GENERAL DESCRIPTION OF EUT

Equipment	Optical 2.4GHz Wireless Mouse	
Brand Name	N/A	
Model Name	CM-198;OM4750W;OM6750W	
Model Difference	Only differ in model name.	
Product Description	Operation Frequency	2409~2476 MHz
	Modulation Technology	MSK(2Mbps)
	Data rate	
	Field Strength	87.62dBuV/m(AV Max)
Power Source	Supplier from 2*AA battery	
Power Rating	DC 3V	
Connecting I/O Port(s)	Please refer to the User's Manual	

Note:

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

2.

Frequency Channel	
Channel	Frequency (MHz)
01	2409
02	2417
03	2426
04	2440
05	2445
06	2455
07	2460
08	2476

#### 3. Table for Filed Antenna

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

### 3.2 DESCRIPTION OF TEST MODES

To investigate the maximum EMI emission characteristics generated from EUT, the test system was pre-scanning tested based 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.

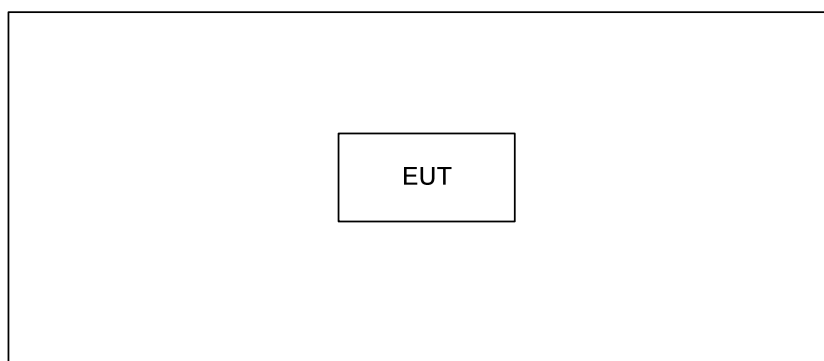
Pretest Mode	Description
Mode 1	Low – TX 2409MHz
Mode 2	Middle – TX 2440MHz
Mode 3	High -TX 2476MHz

For Radiated Test	
Final Test Mode	Description
Mode 1	Low – TX 2409MHz
Mode 2	Middle – TX 2440MHz
Mode 3	High -TX 2476MHz

Note:

- (1) The measurements are performed at the high, middle, low available channels.
- (2) Due to this EUT is powered by batteries only, this test item is not applicable.
- (3) The new battery is used during the measurement.

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



### 3.4 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.	Note
-	-	-	-	-	-	-

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

## 4. EMC EMISSION TEST

### 4.1 RADIATED EMISSION MEASUREMENT

#### 4.1.1 RADIATED EMISSION LIMITS ( FCC 15.209 )

Frequencies (MHz)	Field Strength (micorvolts/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

Harmonic emissions limits comply with below 54 dBuV/m at 3m. Other emissions radiated outside of the specified frequency bands, except for harmonics, shall be attenuated by at least 50 dB below the level of the fundamental or comply with the radiated emissions limits specified in section 15.209(a) limit in the table below has to be followed.

Note:

- (1) The tighter limit applies at the band edges.
- (2) Emission level (dBuV/m)=20log Emission level (uV/m).

#### LIMITS OF RADIATED EMISSION MEASUREMENT ( FCC 15.209 )

FREQUENCY (MHz)	(dBuV/m) (at 3m)	
	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).

#### LIMITS OF RADIATED EMISSION MEASUREMENT (FCC Part 15.249)

FCC Part15 (15.249) , Subpart C	
Limit	Frequency Range (MHz)
Field strength of fundamental 50000 $\mu$ V/m (94 dB $\mu$ V/m) @ 3 m	2400-2483.5
Field strength of harmonics 500 $\mu$ V/m (54 dB $\mu$ V/m) @ 3 m	Above 2483.5

Spectrum Parameter	Setting
Attenuation	Auto
Start Frequency	1000 MHz
Stop Frequency	10th carrier harmonic

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

#### 4.1.2 TEST PROCEDURE

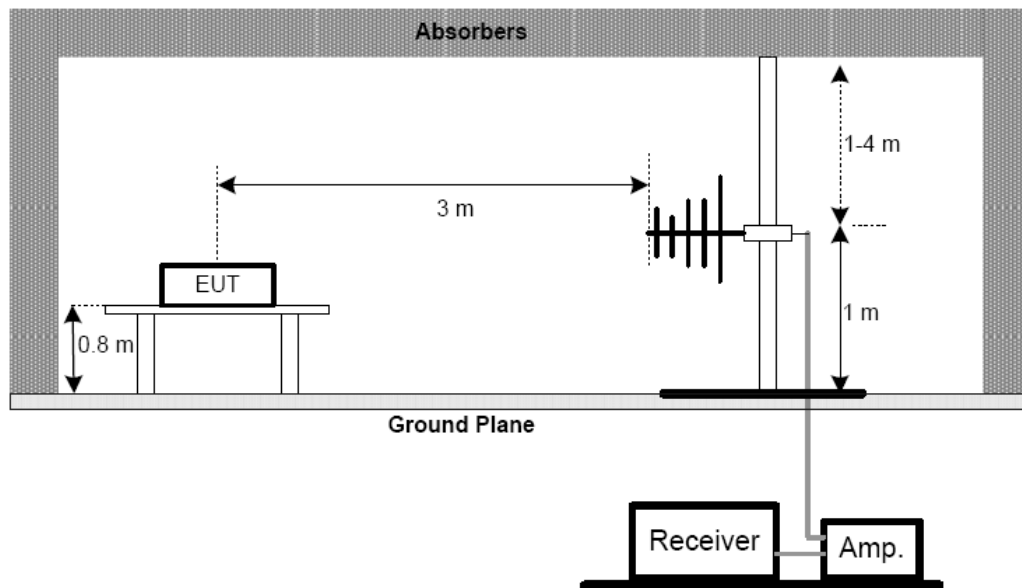
- The EUT was placed on the top of a rotating table 0.8 meters above the ground at a 3 meter semi-anechoic chamber. The table was rotated 360 degrees to determine the position of the highest radiation.(below 1GHz)
- The EUT was placed on the top of a rotating table 0.8 meters above the ground at a 3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

#### 4.1.3 DEVIATION FROM TEST STANDARD

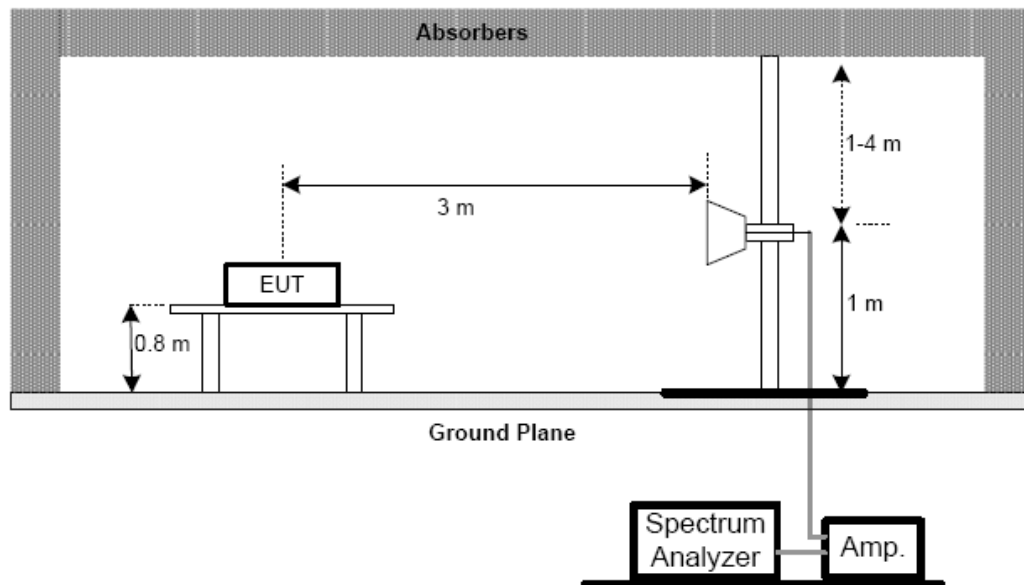
No deviation

#### 4.1.4 TEST SETUP

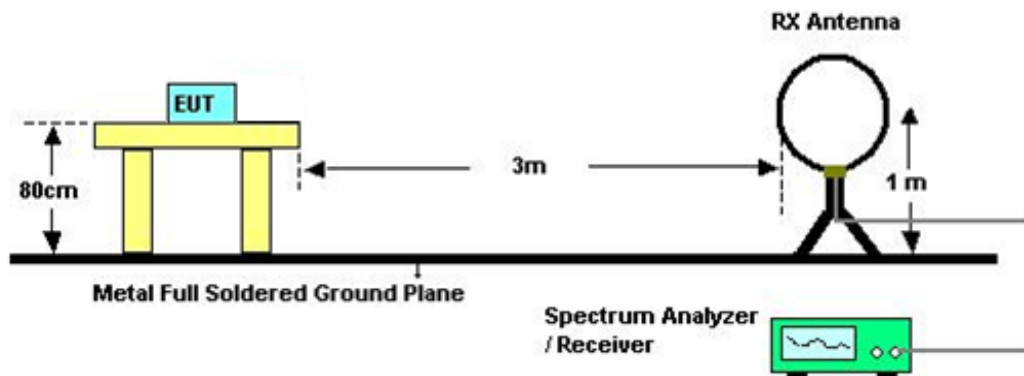
##### (A) Radiated Emission Test Set-Up Frequency Below 1 GHz



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



(C) For radiated emissions below 30MHz



#### 4.1.5 EUT OPERATING CONDITIONS

The EUT tested system was configured as the statements of 4.1.6 Unless otherwise a special operating condition is specified in the follows during the testing.

#### 4.1.6 EUT TEST CONDITIONS

Temperature: 25°C

Relative Humidity: 55%

Test Voltage: DC 3V

#### 4.1.7 TEST RESULTS (BELOW 30MHz)

Please refer to the Attachment A.

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..

#### 4.1.8 TEST RESULTS (BETWEEN 30 – 1000 MHz)

Please refer to the Attachment B.

Remark :

- (1) All readings are Peak unless otherwise stated QP in column of 『Note』 . Peak denotes that the Peak reading compliance with the QP Limits and then QP Mode measurement didn't perform.
- (2) Measuring frequency range from 30MHz to 1000MHz or the 10th harmonic of highest fundamental frequency. "F" denotes fundamental frequency; "H" denotes spurious frequency. "E" denotes band edge frequency.
- (3) Radiated emissions measured in frequency range from 30 MHz to 1000 MHz were made with an instrument using Peak detector mode or QP detector mode of the emission .

#### **4.1.9 TEST RESULTS (ABOVE 1000 MHz)**

Please refer to the Attachment C

Remark :

- (1) All readings are Peak unless otherwise stated QP in column of 『Note』 . Peak denotes that the Peak reading compliance with the QP Limits and then QP Mode measurement didn't perform.
- (2) Radiated emissions measured in frequency range above 1000MHz were made with an instrument using Peak detector mode and AV detector mode of the emission .
- (3) Data of measurement within this frequency range shown “ \* ” in the table above means the reading of emissions are attenuated more than 20dB below the permissible limits or the field strength is too small to be measured.
- (4) A preamp and high pass filter were used for this test in order to provide sufficient measurement sensitivity.
- (5) EUT Orthogonal Axis :  
“X” - denotes Laid on Table ; “Y” - denotes Vertical Stand ; “Z” - denotes Side Stand
- (6) During the measurements above 1 GHz it is taken care of that the EUT is always within the 3 dB cone of radiation BW of the used antenna



## **5. BANDWIDTH TEST**

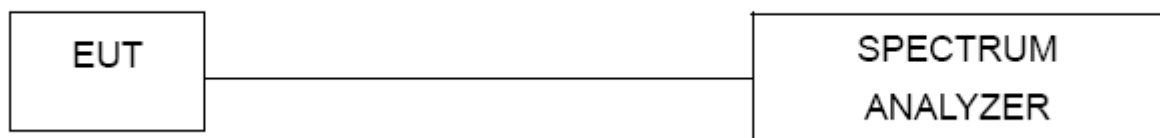
### **5.1 TEST PROCEDURE**

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

### **5.2 DEVIATION FROM STANDARD**

No deviation.

### **5.3 TEST SETUP**



### **5.4 EUT OPERATION CONDITIONS**

The EUT tested system was configured as the statements of 4.1.6 Unless otherwise a special operating condition is specified in the follows during the testing.

### **5.5 EUT TEST CONDITIONS**

Temperature: 25°C  
Relative Humidity: 55%  
Test Voltage: DC 3V

### **5.6 TEST RESULTS**

Please refer to the Attachment D

## **6. ANTENNA CONDUCTED SPURIOUS EMISSION**

### **6.1 APPLIED PROCEDURES / LIMIT**

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

### **6.2 TEST PROCEDURE**

- a. The EUT was directly connected to the spectrum analyzer and antenna output port as show in the block diagram below,
- b. Spectrum Setting: RBW= 100KHz, VBW=100KHz, Sweep time = 10 ms.

### **6.3 DEVIATION FROM STANDARD**

No deviation.

### **6.4 TEST SETUP**



## **6.5 EUT OPERATION CONDITIONS**

The EUT tested system was configured as the statements of 4.1.6 Unless otherwise a special operating condition is specified in the follows during the testing.

## **6.6 EUT TEST CONDITIONS**

Temperature: 25°C  
Relative Humidity: 55%  
Test Voltage: DC 3V

## **6.7 TEST RESULTS**

Please refer to the Attachment E

## 7. MEASUREMENT INSTRUMENTS LIST AND SETTING

Radiated Emission Measurement					
Item	Kind of Equipment	Manufacturer	Type No.	Serial No.	Calibrated until
1	Antenna	Schwarbeck	VULB9160	9160-3232	Mar. 29, 2015
2	Amplifier	HP	8447D	2944A09673	Mar. 29, 2015
3	Test Receiver	R&S	ESCI	100382	Mar. 29, 2015
4	Test Cable	N/A	C-01_CB03	N/A	Jul. 01, 2015
5	Antenna	ETS	3115	00075789	Mar. 29, 2015
6	Amplifier	Agilent	8449B	3008A02274	Mar. 29, 2015
7	Spectrum	Agilent	E4408B	US39240143	Nov. 09, 2014
8	Test Cable	HUBER+SUHNER	C-45	N/A	Jan. 14, 2015
9	Controller	CT	SC100	N/A	N/A
10	Horn Antenna	EMCO	3115	9605-4803	Mar. 29, 2015
11	Active Loop Antenna	R&S	HFH2-Z2	830749/020	Mar. 29, 2015
12	Broad-Band Horn Antenna	Schwarzbeck	BBHA 9170	9170319	Oct. 22, 2014

Bandwidth					
Item	Kind of Equipment	Manufacturer	Type No.	Serial No.	Calibrated until
1	Spectrum Analyzer	R&S	FSP 40	100185	Nov. 11, 2014

Antenna Conducted Spurious Emission					
Item	Kind of Equipment	Manufacturer	Type No.	Serial No.	Calibrated until
1	Spectrum Analyzer	R&S	FSP 40	100185	Nov. 11, 2014

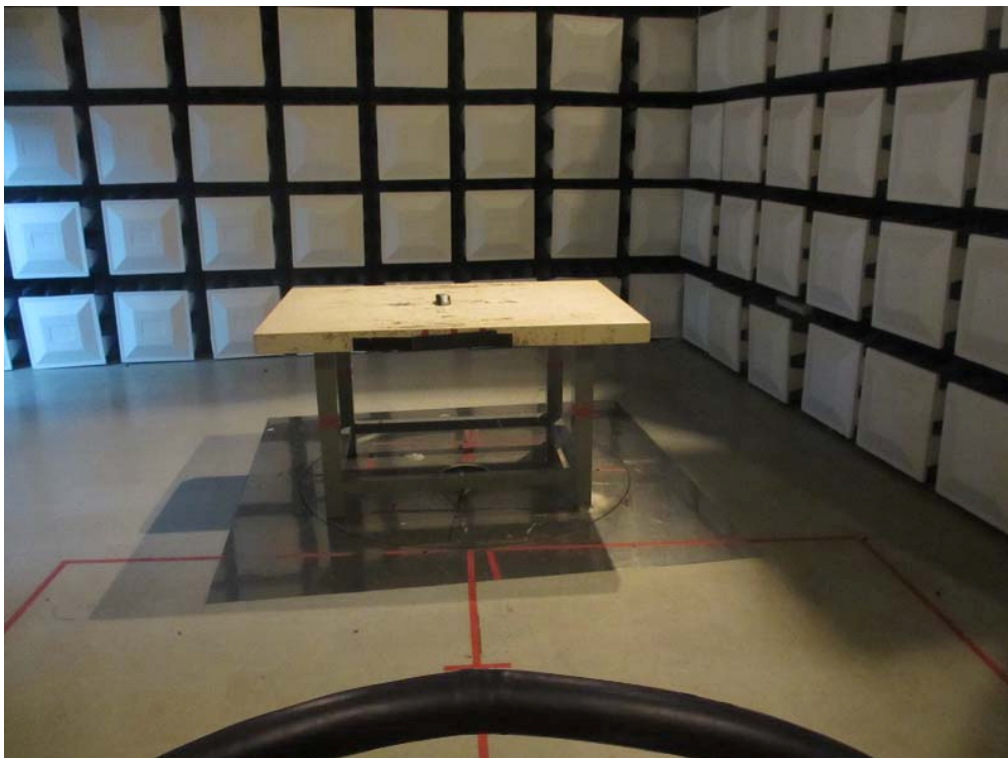
Remark: "N/A" denotes no model name, serial no. or calibration specified.

All calibration period of equipment list is one year.

## 8. EUT TEST PHOTO

### Radiated Measurement Photos

9K~30MHz



### Radiated Measurement Photos

30~1000MHz





## Radiated Measurement Photos

### Above 1GHz



## **ATTACHMENT A - RADIATED EMISSION (9KHZ to 30MHZ)**



Test Mode: TX Mode TX 2409MHz

Freq. (MHz)	Ant. 0°/90°	Reading(RA) (dBuV)	Corr.Factor(CF) (dB)	Measured(FS) (dBuV/m)	Limits(QP) (dBuV/m)	Margin (dB)	Note
0.0186	0°	75.15	24.39	99.54	102.21	-2.68	AVG
0.0186	0°	83.26	24.39	107.65	122.21	-14.57	PEAK
0.0256	0°	57.38	23.95	81.33	99.44	-18.11	AVG
0.0256	0°	62.15	23.95	86.10	119.44	-33.34	PEAK
0.0369	0°	57.45	23.23	80.68	96.26	-15.58	AVG
0.0369	0°	63.25	23.23	86.48	116.26	-29.78	PEAK
0.0472	0°	58.16	22.58	80.74	94.13	-13.39	AVG
0.0468	0°	62.75	22.58	85.33	114.13	-28.80	PEAK
0.4985	0°	19.82	19.80	39.62	73.65	-34.03	QP
1.7176	0°	18.53	19.53	38.06	69.54	-31.48	QP

Freq. (MHz)	Ant. 0°/90°	Reading(RA) (dBuV)	Corr.Factor(CF) (dB)	Measured(FS) (dBuV/m)	Limits(QP) (dBuV/m)	Margin (dB)	Note
0.0203	90°	72.35	24.28	96.63	121.45	-24.82	AVG
0.0203	90°	84.66	24.28	108.94	141.45	-32.51	PEAK
0.0276	90°	58.16	23.82	81.98	118.79	-36.81	AVG
0.0276	90°	61.75	23.82	85.57	138.79	-53.22	PEAK
0.0352	90°	57.35	23.34	80.69	116.67	-35.99	AVG
0.0352	90°	56.65	23.34	79.99	136.67	-56.69	PEAK
0.0467	90°	58.25	22.61	80.86	114.22	-33.36	AVG
0.0467	90°	67.35	22.61	89.96	134.22	-44.26	PEAK
0.4935	90°	17.15	19.82	36.97	73.74	-36.77	QP
1.7158	90°	18.69	19.53	38.22	69.54	-31.32	QP

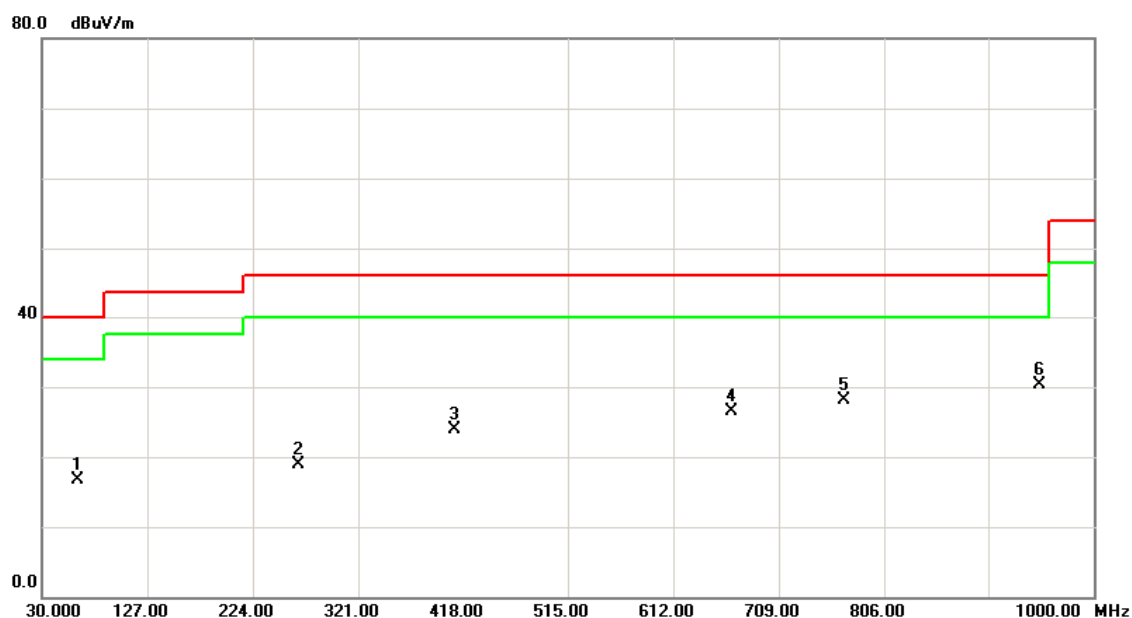
Remark:

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

## **ATTACHMENT B - RADIATED EMISSION (30MHZ TO 1000MHZ)**

Test Mode: TX 2409MHz

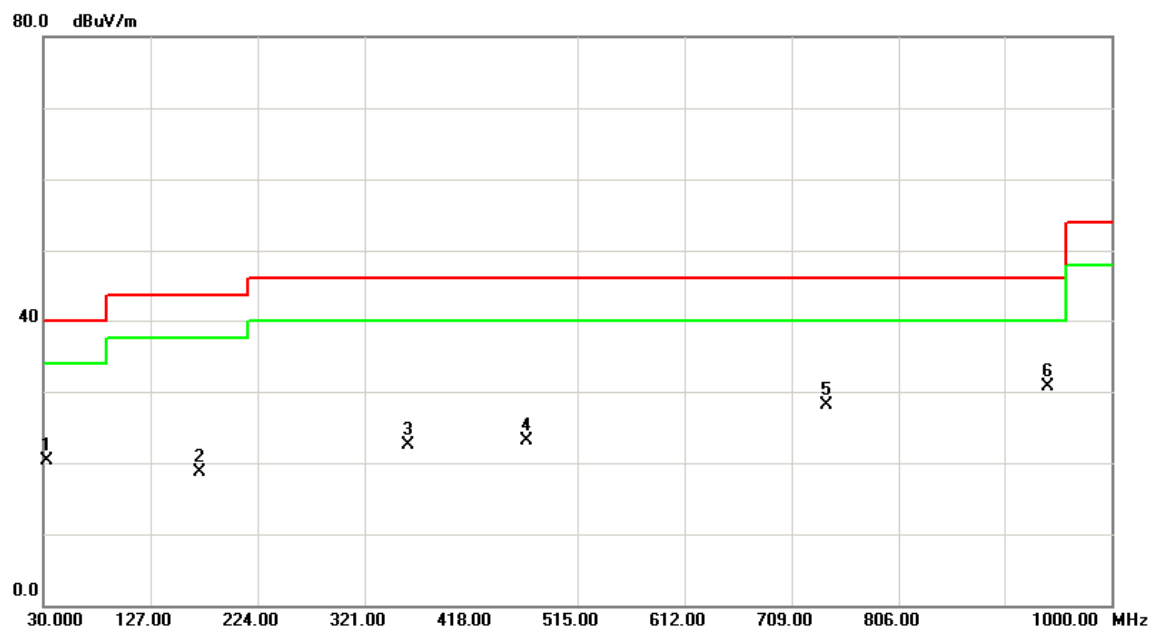
## Vertical



No.	Mk.	Freq. MHz	Reading Level dBuV	Correct Factor dB	Measure- ment dBuV/m	Limit dBuV/m	Over dB	Detector	Comment
1		62.9800	32.31	-15.56	16.75	40.00	-23.25	peak	
2		265.7100	32.55	-13.59	18.96	46.00	-27.04	peak	
3		409.2700	33.50	-9.50	24.00	46.00	-22.00	peak	
4		665.3500	31.66	-5.12	26.54	46.00	-19.46	peak	
5		769.1400	32.11	-4.00	28.11	46.00	-17.89	peak	
6	*	950.5300	30.61	-0.30	30.31	46.00	-15.69	peak	

Test Mode: TX 2409MHz

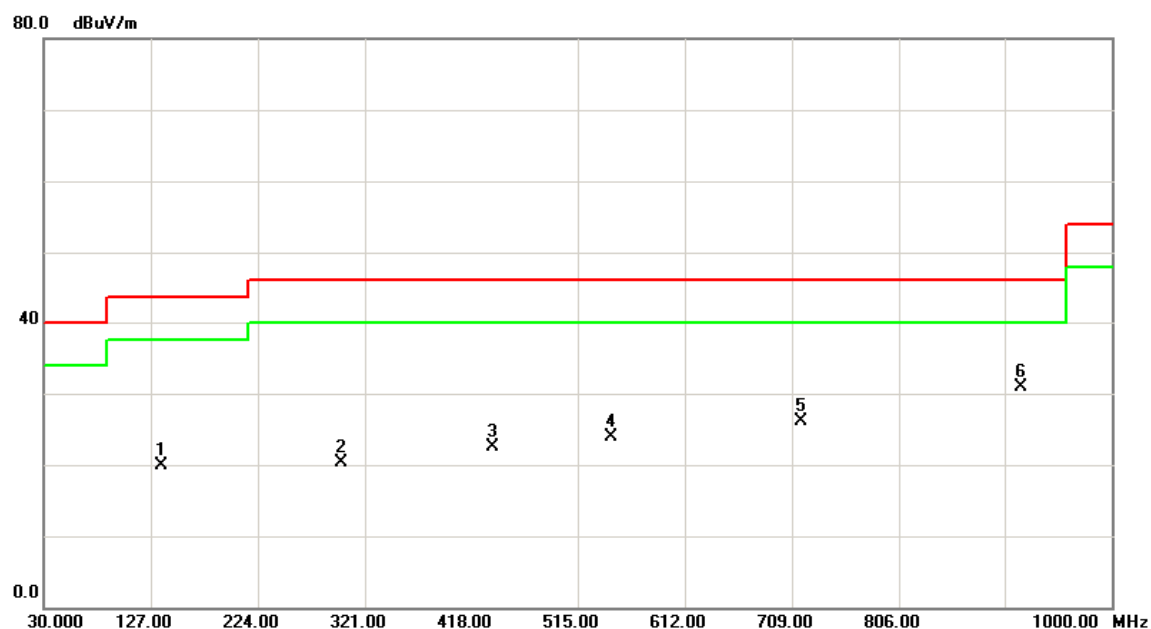
## Horizontal



No.	Mk.	Freq. MHz	Reading Level dBuV	Correct Factor dB	Measure- ment dBuV/m	Limit dBuV/m	Over dB	Detector	Comment
1		32.9100	35.49	-15.28	20.21	40.00	-19.79	peak	
2		171.6200	31.57	-12.81	18.76	43.50	-24.74	peak	
3		359.8000	33.88	-11.39	22.49	46.00	-23.51	peak	
4		468.4400	32.43	-9.36	23.07	46.00	-22.93	peak	
5		740.0400	32.83	-4.74	28.09	46.00	-17.91	peak	
6	*	941.8000	31.30	-0.51	30.79	46.00	-15.21	peak	

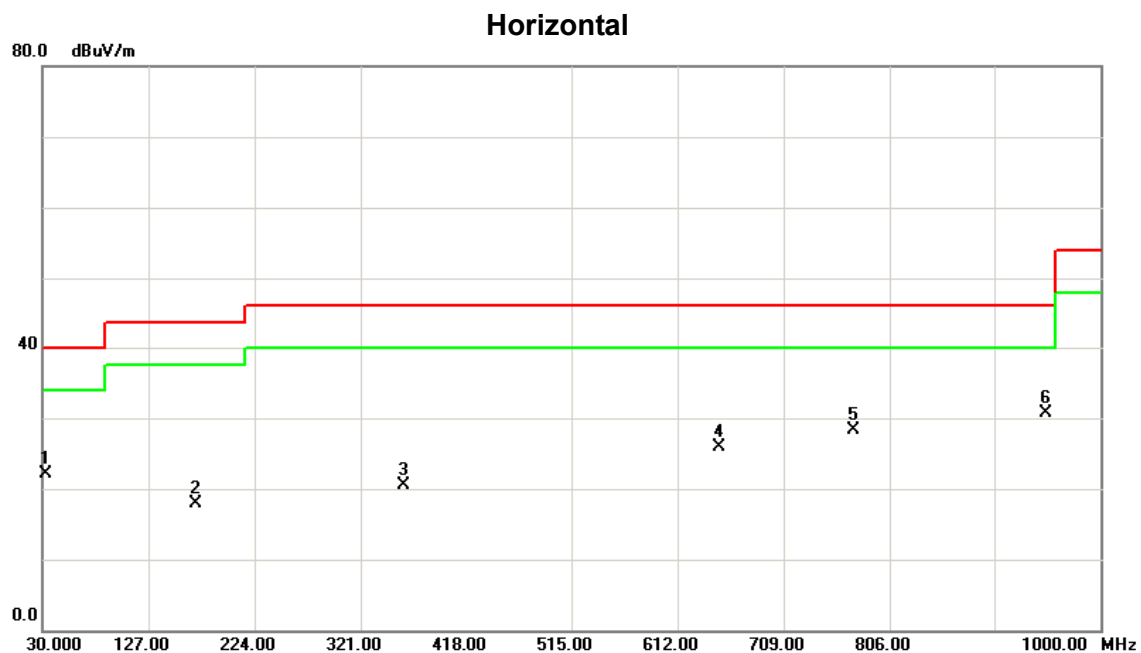
Test Mode: TX 2440MHz

## Vertical



No.	Mk.	Freq. MHz	Reading Level dBuV	Correct Factor dB	Measure- ment dBuV/m	Limit dBuV/m	Over dB	Detector	Comment
1		136.7000	33.07	-13.20	19.87	43.50	-23.63	peak	
2		299.6600	31.35	-11.05	20.30	46.00	-25.70	peak	
3		438.3700	31.45	-8.90	22.55	46.00	-23.45	peak	
4		545.0700	32.27	-8.34	23.93	46.00	-22.07	peak	
5		717.7300	30.99	-4.85	26.14	46.00	-19.86	peak	
6	*	917.5500	32.08	-1.16	30.92	46.00	-15.08	peak	

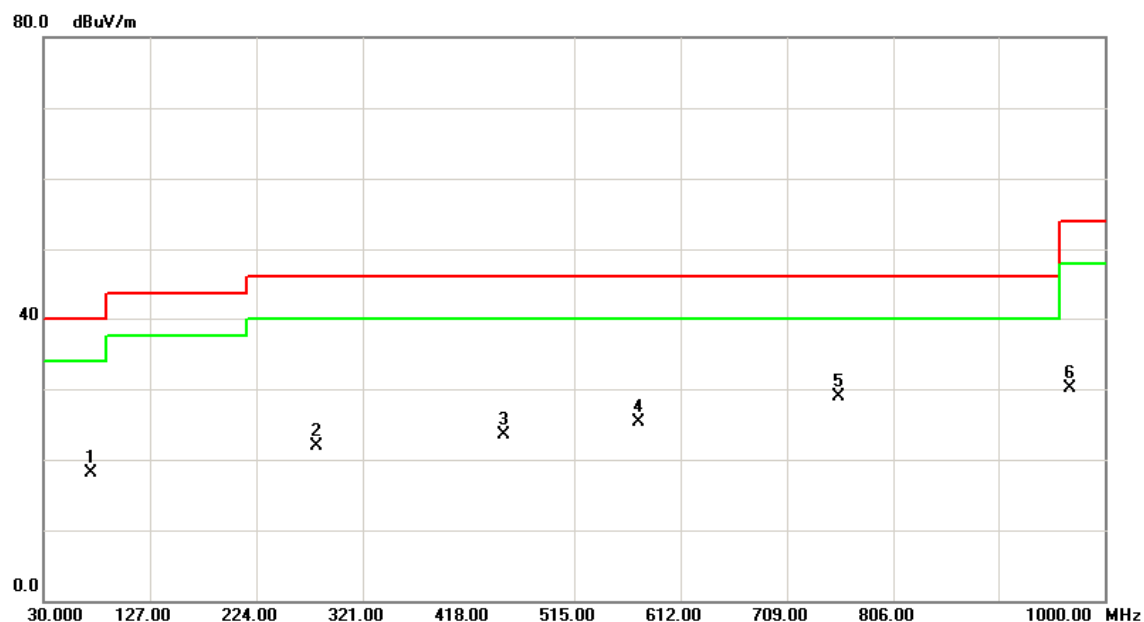
Test Mode: TX 2440MHz



No.	Mk.	Freq.	Reading Level	Correct Factor	Measurement	Limit	Over		
		MHz	dBuV	dB	dBuV/m	dBuV/m	dB	Detector	Comment
1		32.9100	37.44	-15.28	22.16	40.00	-17.84	peak	
2		169.6800	30.63	-12.79	17.84	43.50	-25.66	peak	
3		359.8000	31.82	-11.39	20.43	46.00	-25.57	peak	
4		649.8300	31.07	-5.20	25.87	46.00	-20.13	peak	
5		773.0200	32.25	-3.86	28.39	46.00	-17.61	peak	
6	*	950.5300	31.10	-0.30	30.80	46.00	-15.20	peak	

Test Mode: TX 2476MHz

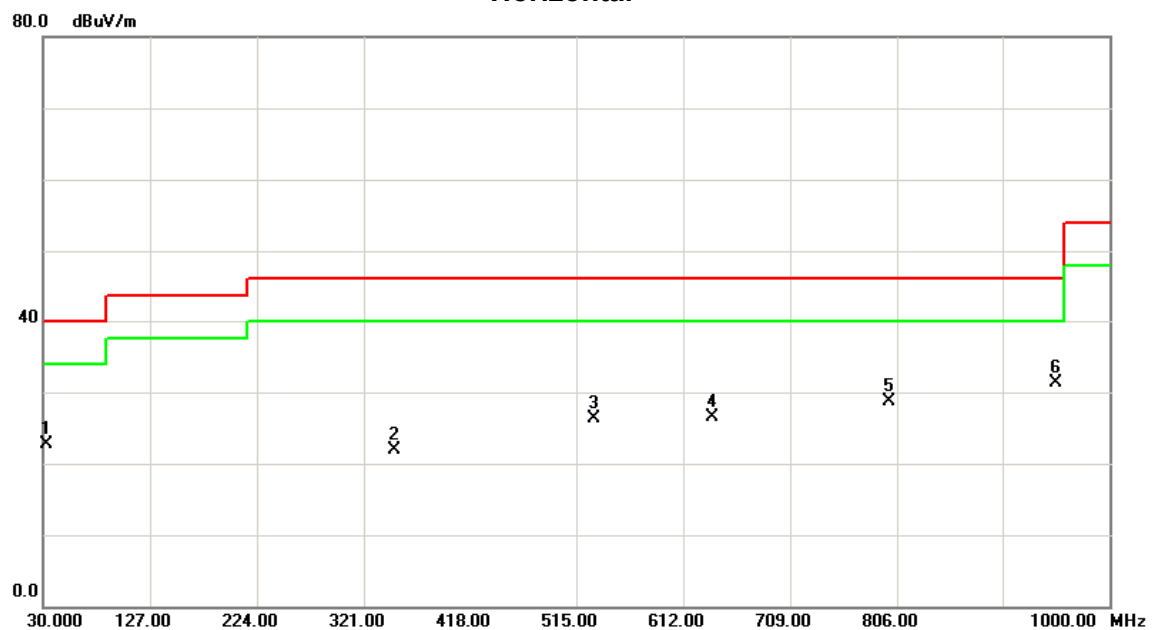
## Vertical



No.	Mk.	Freq. MHz	Reading Level dBuV	Correct Factor dB	Measure- ment dBuV/m	Limit dBuV/m	Over dB	Detector	Comment
1		73.6500	34.74	-16.67	18.07	40.00	-21.93	peak	
2		279.2900	34.36	-12.51	21.85	46.00	-24.15	peak	
3		450.9800	32.17	-8.70	23.47	46.00	-22.53	peak	
4		573.2000	33.49	-8.10	25.39	46.00	-20.61	peak	
5	*	756.5300	33.31	-4.45	28.86	46.00	-17.14	peak	
6		967.9900	30.37	-0.35	30.02	54.00	-23.98	peak	

Test Mode: TX 2476MHz

### Horizontal



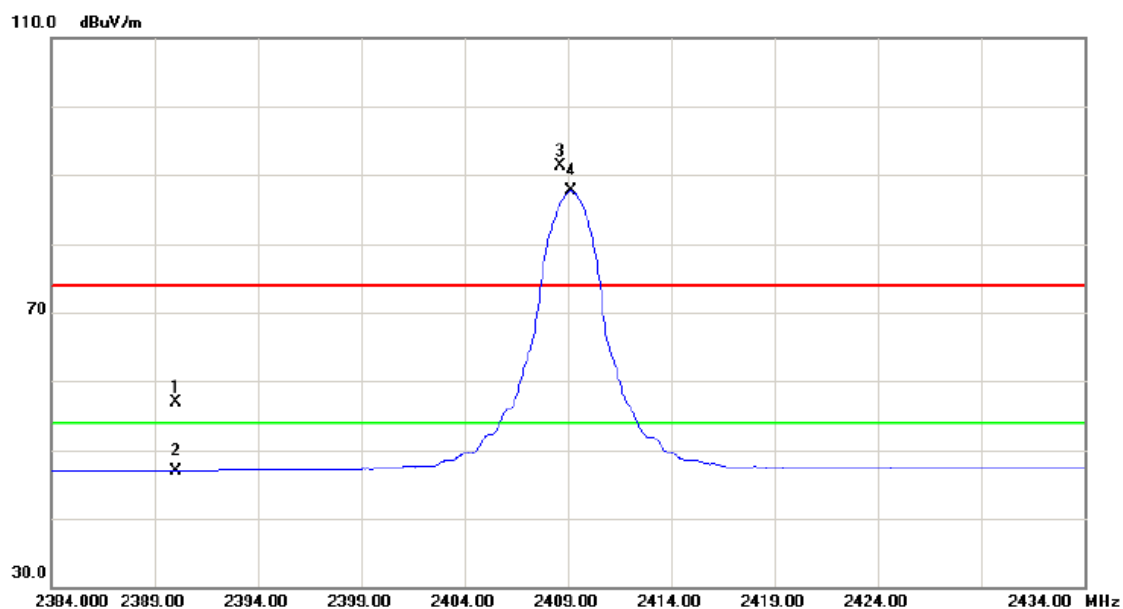
No.	Mk.	Freq.	Reading Level	Correct Factor	Measurement	Limit	Over	Detector	Comment
		MHz	dBuV	dB	dBuV/m	dBuV/m	dB		
1		32.9100	37.91	-15.28	22.63	40.00	-17.37	peak	
2		348.1600	33.70	-11.79	21.91	46.00	-24.09	peak	
3		531.4900	35.22	-9.00	26.22	46.00	-19.78	peak	
4		638.1900	32.38	-5.88	26.50	46.00	-19.50	peak	
5		798.2400	31.69	-2.97	28.72	46.00	-17.28	peak	
6	*	951.5000	31.57	-0.30	31.27	46.00	-14.73	peak	



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

Orthogonal Axis :	X
Test Mode :	TX 2409MHz

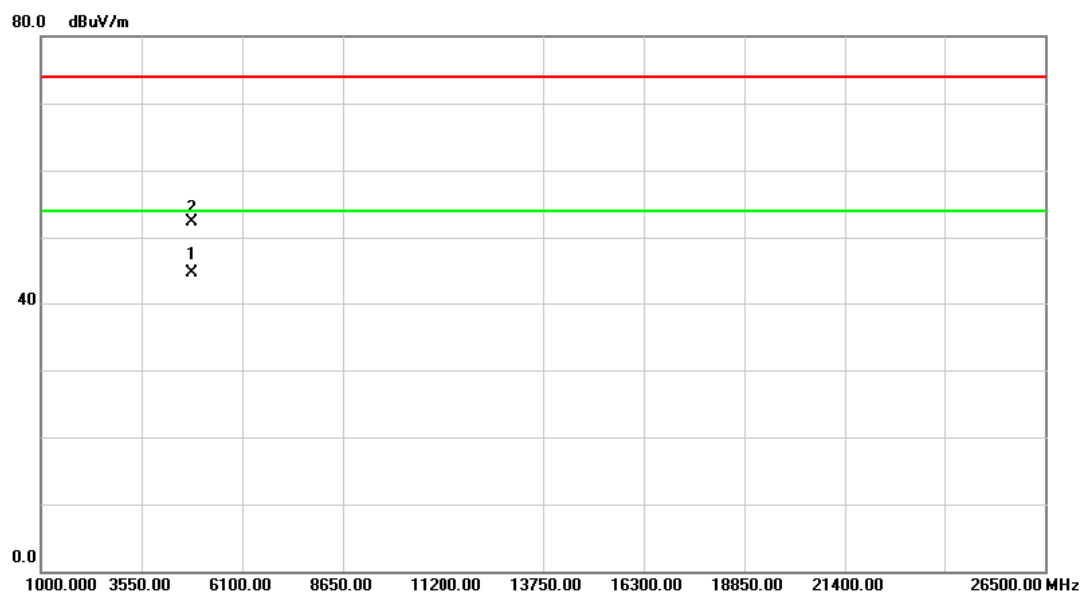
### Vertical



No.	Mk.	Freq. MHz	Reading Level dBuV	Correct Factor dB	Measure- ment dBuV/m	Limit dBuV/m	Over dB	Detector	Comment
1		2390.000	23.61	33.38	56.99	74.00	-17.01	peak	
2		2390.000	13.57	33.38	46.95	54.00	-7.05	AVG	
3	X	2408.600	57.89	33.43	91.32	74.00	17.32	peak	Fundamental frequency, no limit
4	*	2409.150	54.19	33.43	87.62	54.00	33.62	AVG	Fundamental frequency, no limit

Orthogonal Axis :	X
Test Mode :	TX 2409MHz

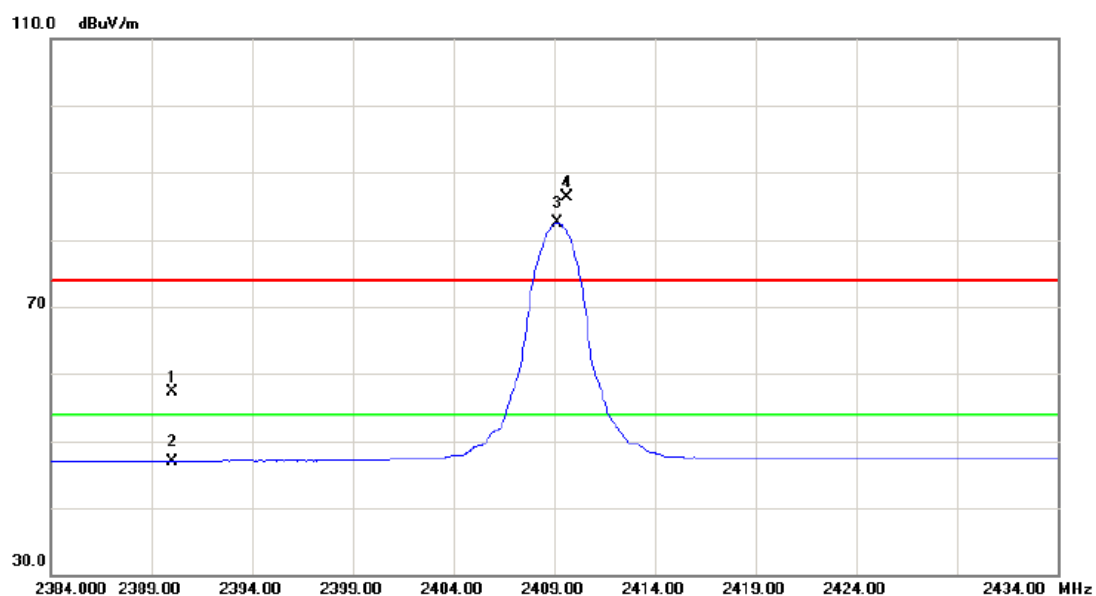
### Vertical



No.	Mk.	Freq. MHz	Reading Level dBuV	Correct Factor dB	Measure- ment dBuV/m	Limit dBuV/m	Over dB	Detector	Comment
1	*	4817.930	38.16	6.42	44.58	54.00	-9.42	AVG	
2		4818.020	45.94	6.42	52.36	74.00	-21.64	peak	

Orthogonal Axis :	X
Test Mode :	TX 2409MHz

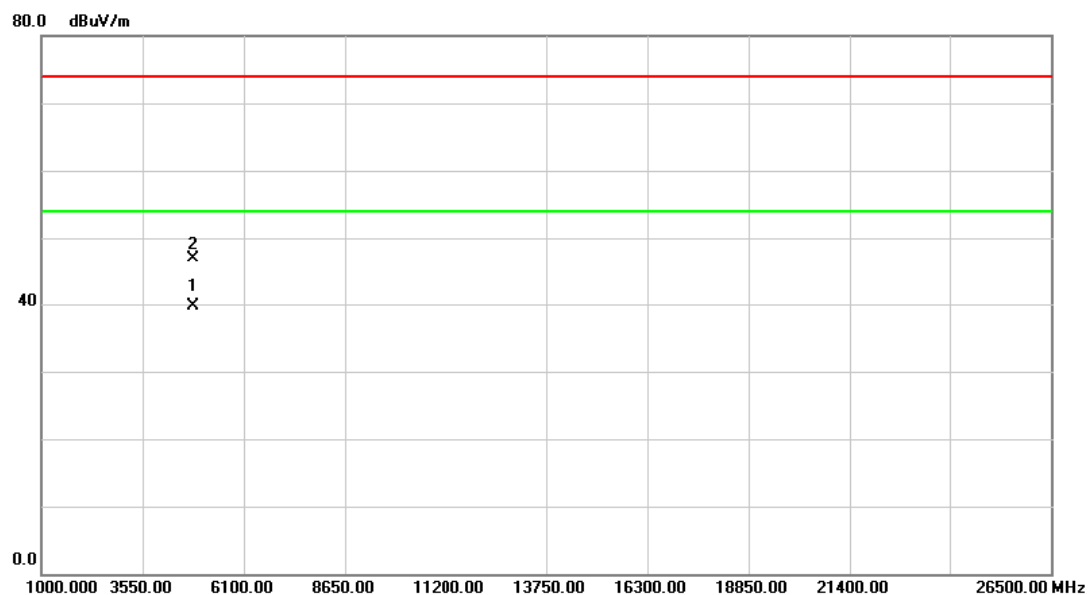
### Horizontal



No.	Mk.	Freq. MHz	Reading Level dBuV	Correct Factor dB	Measure- ment dBuV/m	Limit dBuV/m	Over dB	Detector	Comment
1		2390.000	24.02	33.38	57.40	74.00	-16.60	peak	
2		2390.000	13.57	33.38	46.95	54.00	-7.05	AVG	
3	*	2409.150	49.13	33.43	82.56	54.00	28.56	AVG	Fundamental frequency, no limit
4	X	2409.600	52.86	33.43	86.29	74.00	12.29	peak	Fundamental frequency, no limit

Orthogonal Axis :	X
Test Mode :	TX 2409MHz

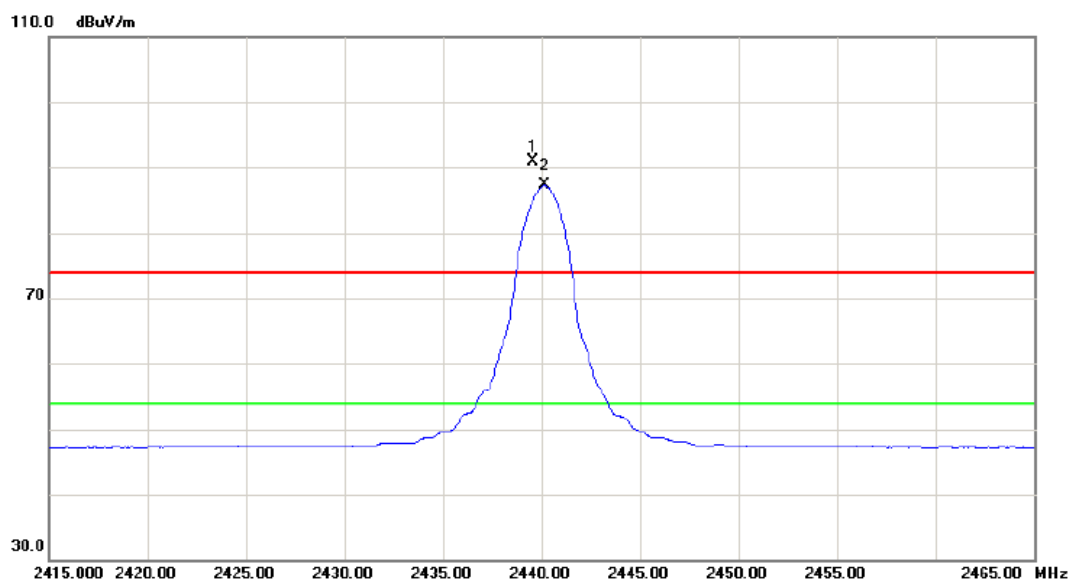
### Horizontal



No.	Mk.	Freq.	Reading Level	Correct Factor	Measurement	Limit	Over		
		MHz	dBuV	dB	dBuV/m	dBuV/m	dB	Detector	Comment
1	*	4818.020	33.33	6.42	39.75	54.00	-14.25	AVG	
2		4818.050	40.55	6.42	46.97	74.00	-27.03	peak	

Orthogonal Axis :	X
Test Mode :	TX 2440MHz

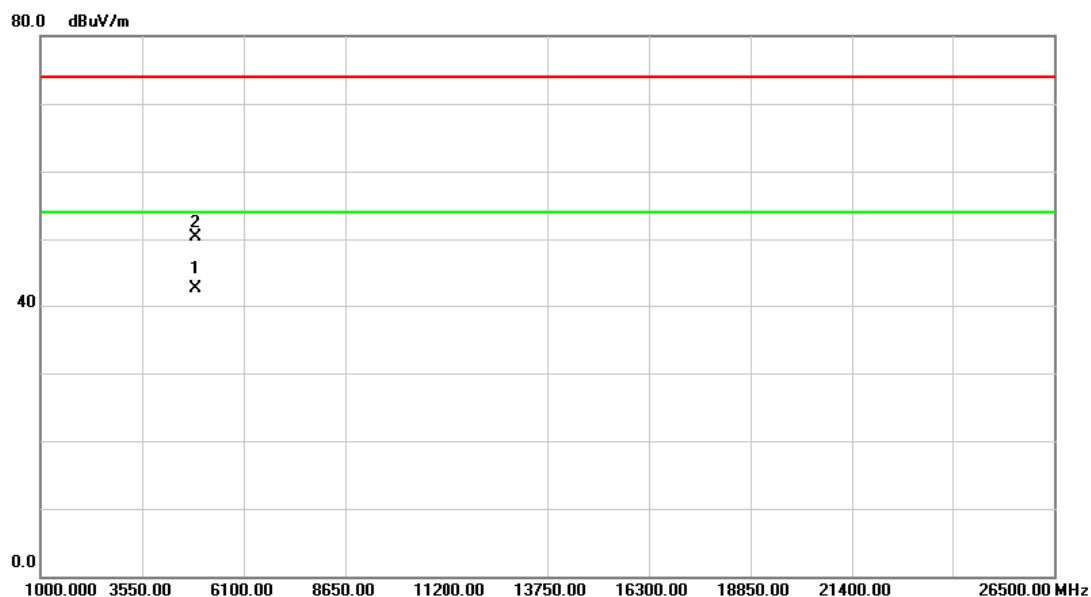
### Vertical



No.	Mk.	Freq.	Reading Level	Correct Factor	Measurement	Limit	Over		
		MHz	dBuV	dB	dBuV/m	dBuV/m	dB	Detector	Comment
1	X	2439.550	57.46	33.51	90.97	74.00	16.97	peak	Fundamental frequency, no limit
2	*	2440.150	53.73	33.51	87.24	54.00	33.24	AVG	Fundamental frequency, no limit

Orthogonal Axis :	X
Test Mode :	TX 2440MHz

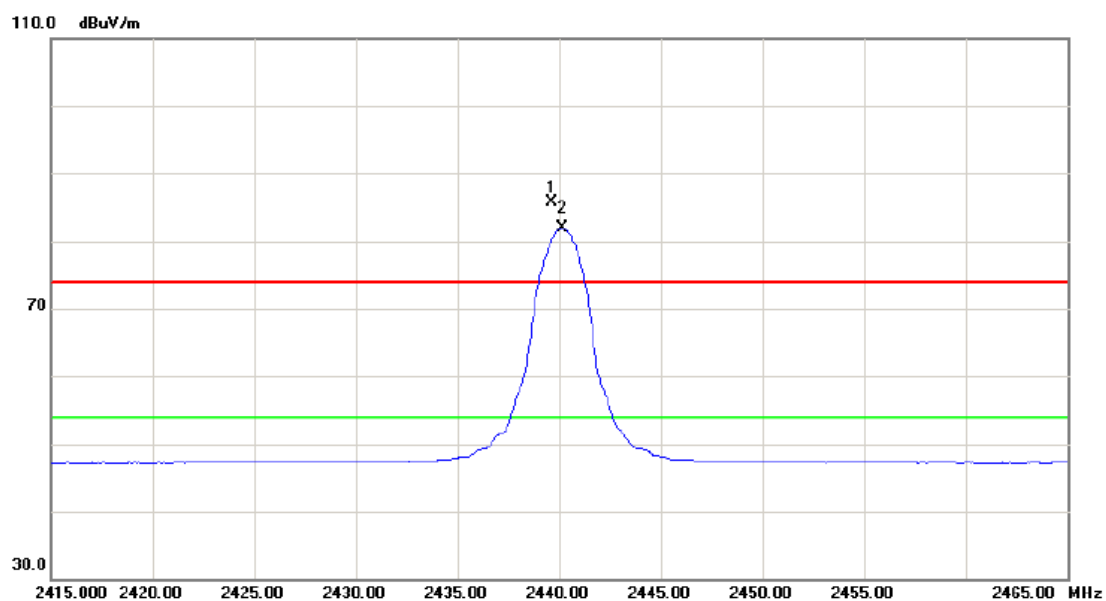
### Vertical



No.	Mk.	Freq. MHz	Reading Level dBuV	Correct Factor dB	Measure- ment dBuV/m	Limit dBuV/m	Over dB	Detector	Comment
1	*	4880.010	35.97	6.57	42.54	54.00	-11.46	AVG	
2		4880.050	43.72	6.57	50.29	74.00	-23.71	peak	

Orthogonal Axis :	X
Test Mode :	TX 2440MHz

### Horizontal

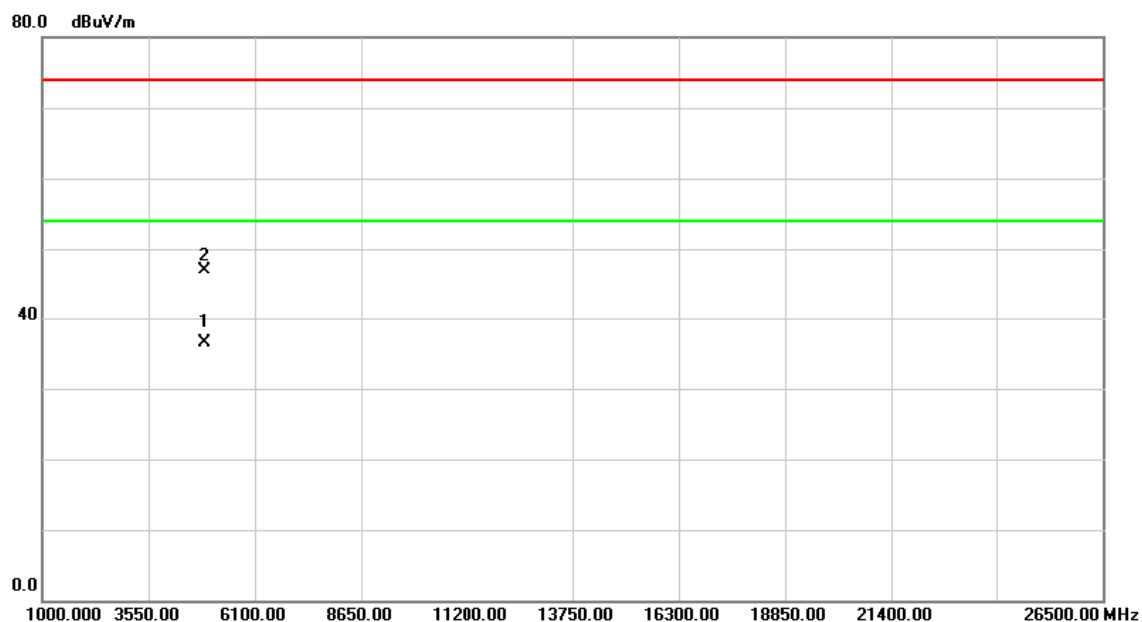


No.	Mk.	Freq. MHz	Reading Level dBuV	Correct Factor dB	Measure- ment dBuV/m	Limit dBuV/m	Over dB	Detector	Comment
1	X	2439.600	52.22	33.51	85.73	74.00	11.73	peak	Fundamental frequency, no limit
2	*	2440.150	48.46	33.51	81.97	54.00	27.97	AVG	Fundamental frequency, no limit



Orthogonal Axis :	X
Test Mode :	TX 2440MHz

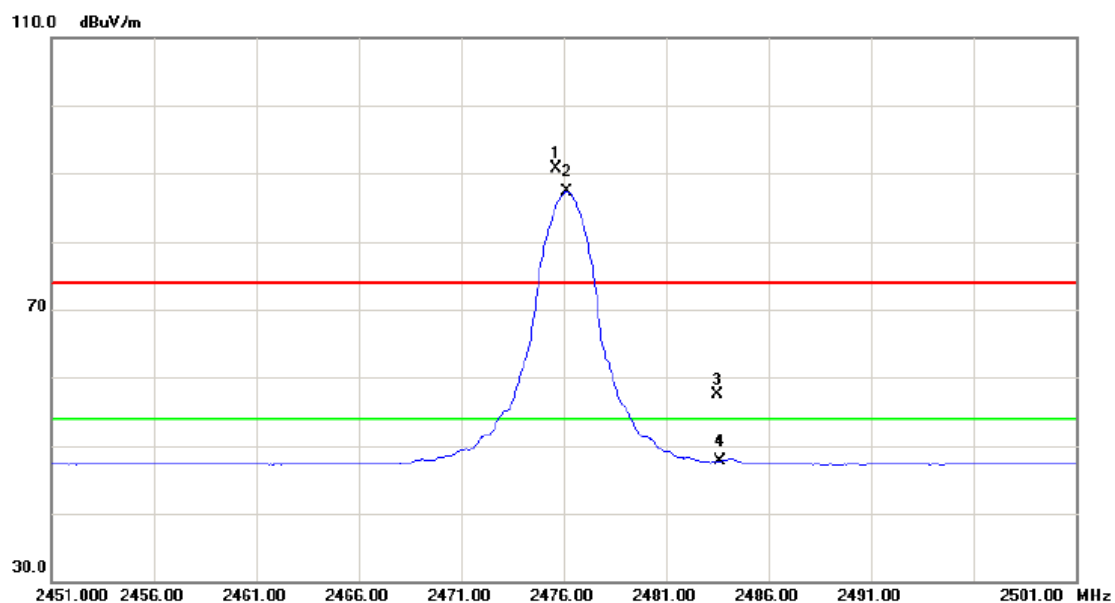
### Horizontal



No.	Mk.	Freq. MHz	Reading Level dBuV	Correct Factor dB	Measure- ment dBuV/m	Limit dBuV/m	Over dB	Detector	Comment
1	*	4879.980	30.03	6.57	36.60	54.00	-17.40	AVG	
2		4880.180	40.27	6.57	46.84	74.00	-27.16	peak	

Orthogonal Axis :	X
Test Mode :	TX 2476MHz

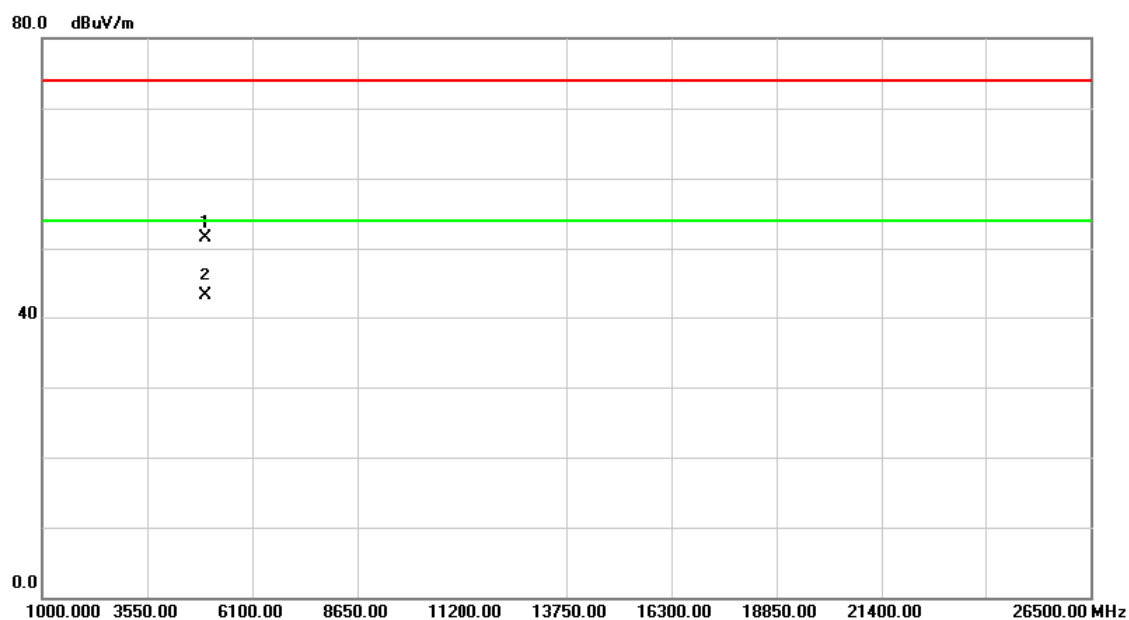
### Vertical



No.	Mk.	Freq. MHz	Reading Level dBuV	Correct Factor dB	Measure- ment dBuV/m	Limit dBuV/m	Over dB	Detector	Comment
1	X	2475.600	57.08	33.60	90.68	74.00	16.68	peak	Fundamental frequency, no limit
2	*	2476.150	53.73	33.60	87.33	54.00	33.33	AVG	Fundamental frequency, no limit
3		2483.500	23.82	33.62	57.44	74.00	-16.56	peak	
4		2483.500	14.00	33.62	47.62	54.00	-6.38	AVG	

Orthogonal Axis :	X
Test Mode :	TX 2476MHz

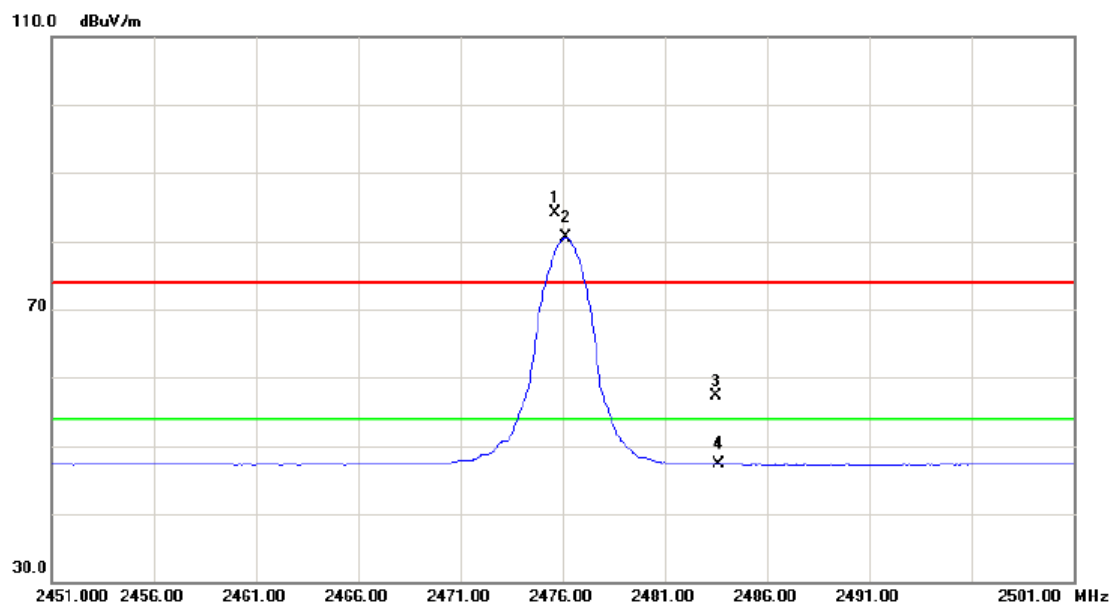
### Vertical



No.	Mk.	Freq. MHz	Reading Level dBuV	Correct Factor dB	Measure- ment dBuV/m	Limit dBuV/m	Over dB	Detector	Comment
1		4951.960	44.80	6.72	51.52	74.00	-22.48	peak	
2	*	4951.980	36.45	6.72	43.17	54.00	-10.83	AVG	

Orthogonal Axis :	X
Test Mode :	TX 2476MHz

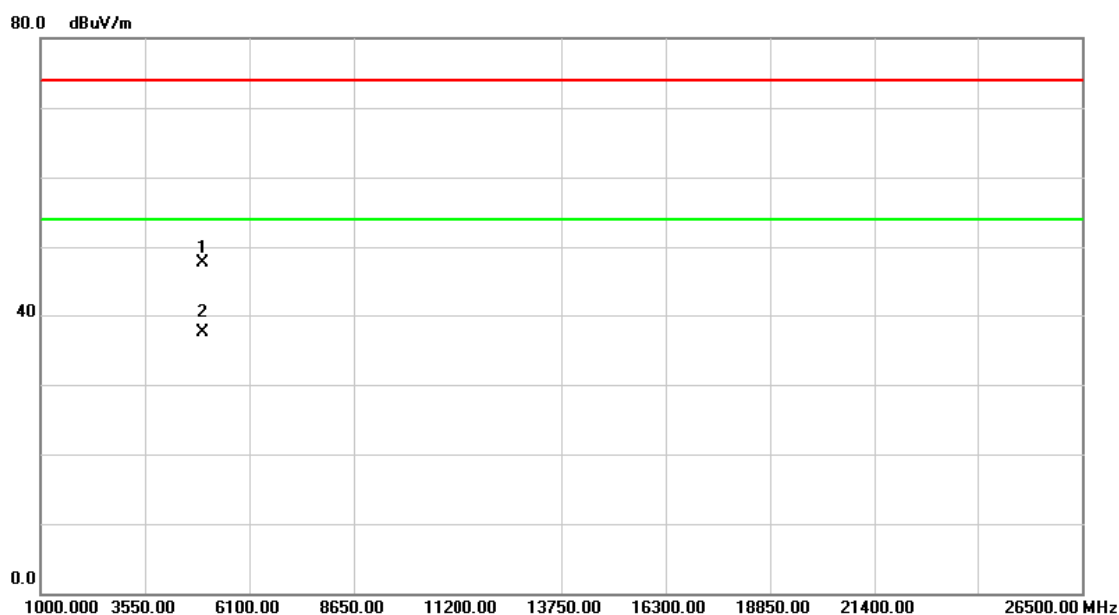
### Horizontal



No.	Mk.	Freq. MHz	Reading Level dBuV	Correct Factor dB	Measure- ment dBuV/m	Limit dBuV/m	Over dB	Detector	Comment
1	X	2475.650	50.45	33.60	84.05	74.00	10.05	peak	Fundamental frequency, no limit
2	*	2476.150	46.95	33.60	80.55	54.00	26.55	AVG	Fundamental frequency, no limit
3		2483.500	23.71	33.62	57.33	74.00	-16.67	peak	
4		2483.500	13.61	33.62	47.23	54.00	-6.77	AVG	

Orthogonal Axis :	X
Test Mode :	TX 2476MHz

### Horizontal

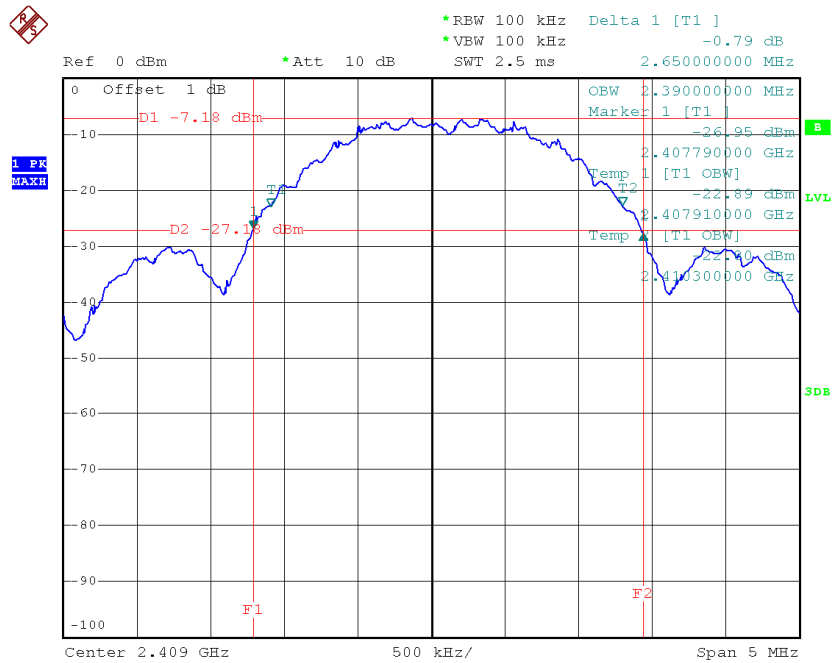


No.	Mk.	Freq. MHz	Reading Level dBuV	Correct Factor dB	Measure- ment dBuV/m	Limit dBuV/m	Over dB	Detector	Comment
1		4951.850	41.05	6.72	47.77	74.00	-26.23	peak	
2	*	4952.500	30.85	6.72	37.57	54.00	-16.43	AVG	

## **ATTACHMENT D - BANDWIDTH**

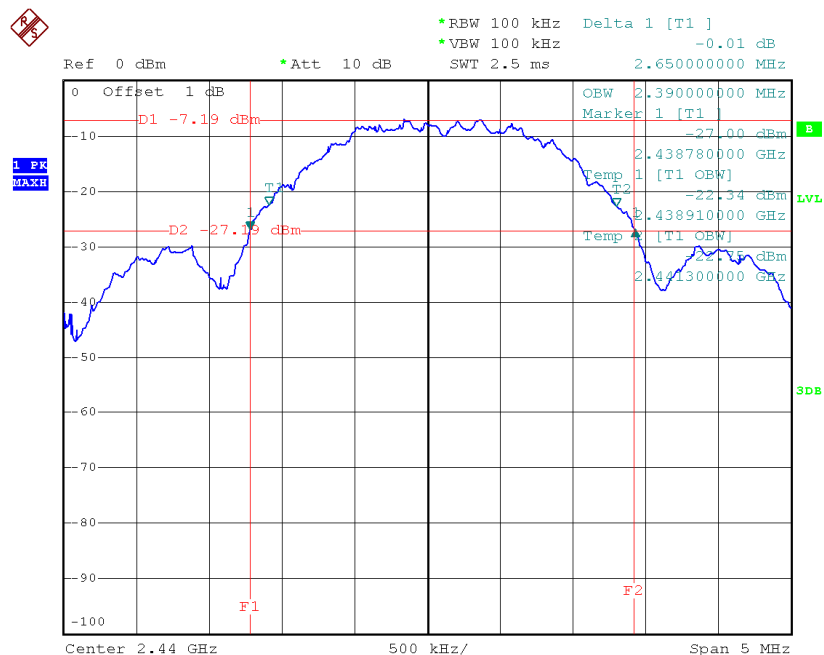
## Test Mode : TX

2409MHz



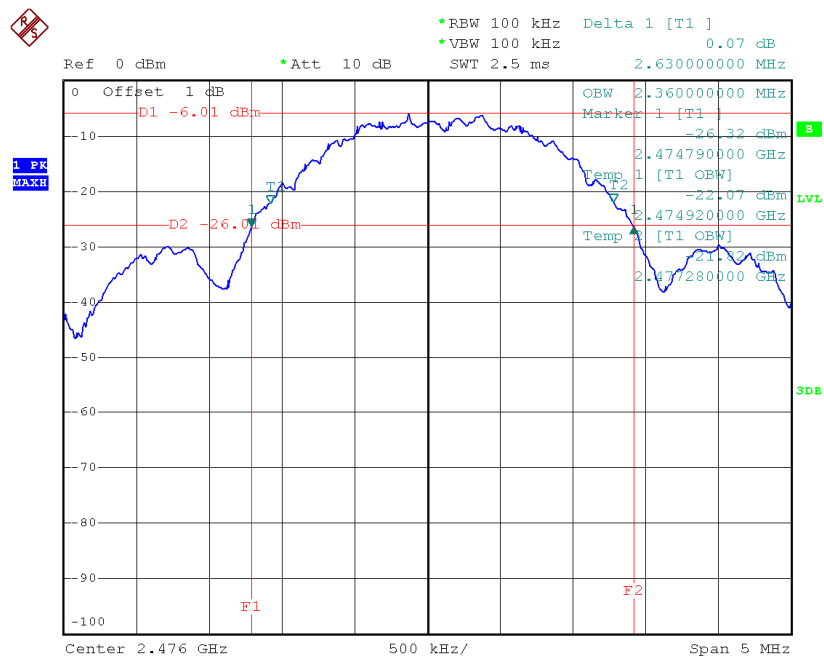
Date: 15.JUL.2014 19:30:37

## 2440MHz



Date: 15.JUL.2014 19:32:52

## 2476MHz



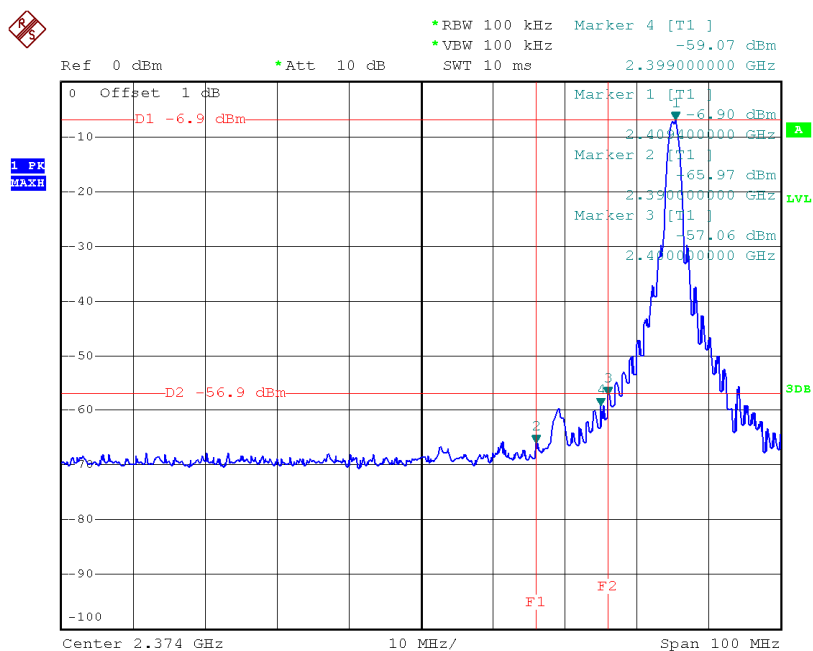
Date: 15.JUL.2014 19:34:35



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

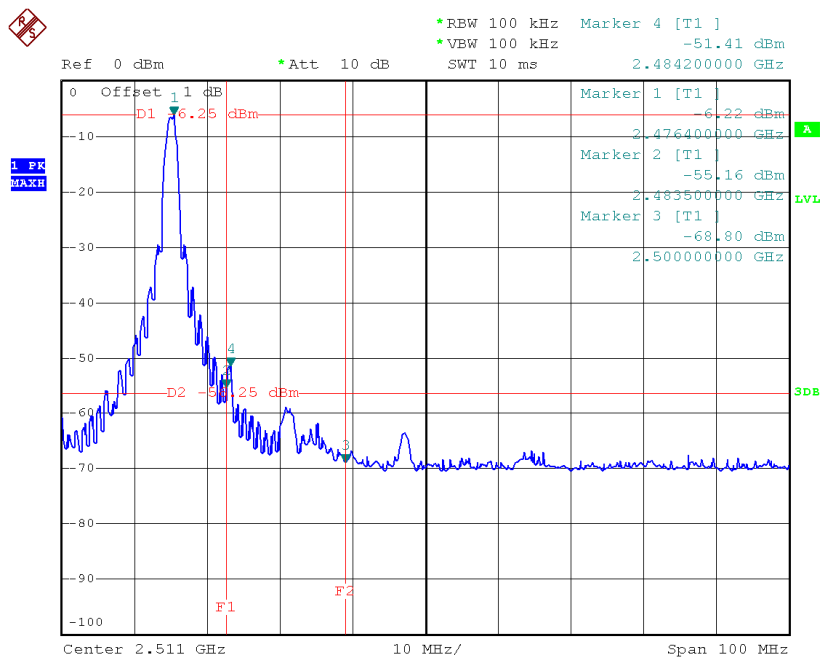
Test Mode :	TX
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## 2409MHz Mode



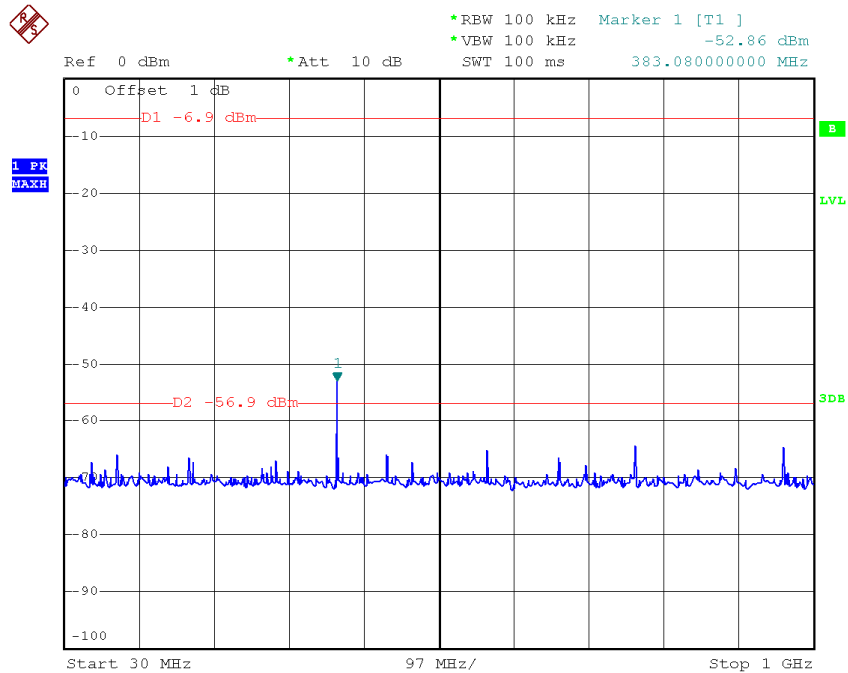
Date: 15.JUL.2014 19:27:30

## 2476MHz Mode



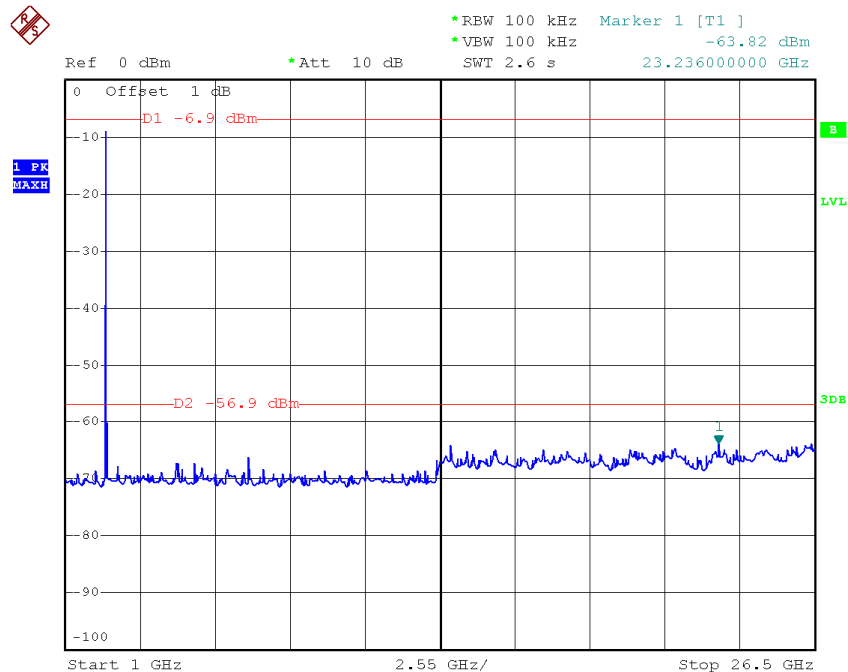
Date: 15.JUL.2014 19:19:54

### 2409MHz (30MHz to 1000MHz)



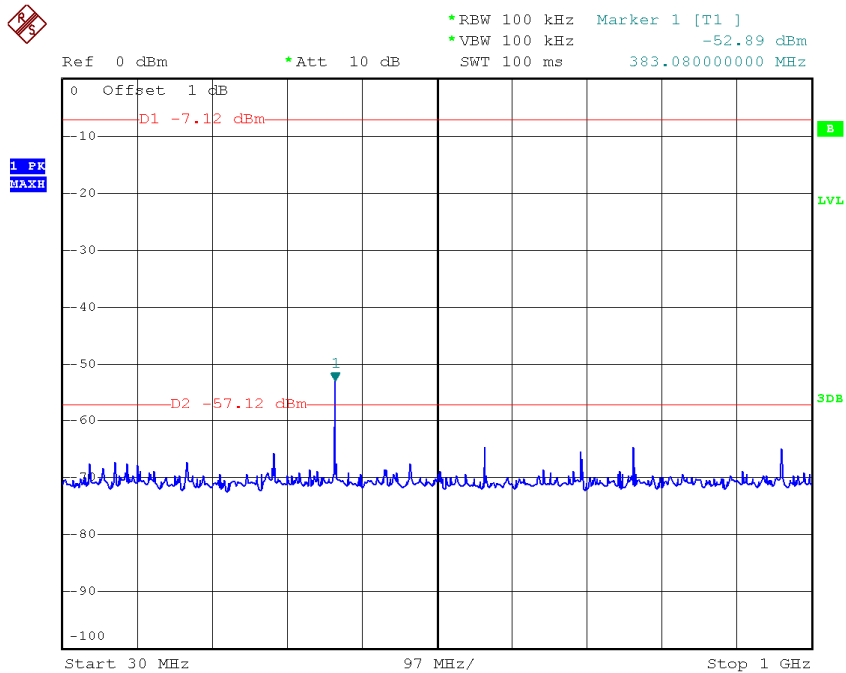
Date: 15.JUL.2014 19:28:26

### 2409MHz (1000MHz to 10<sup>th</sup> Harmonic)



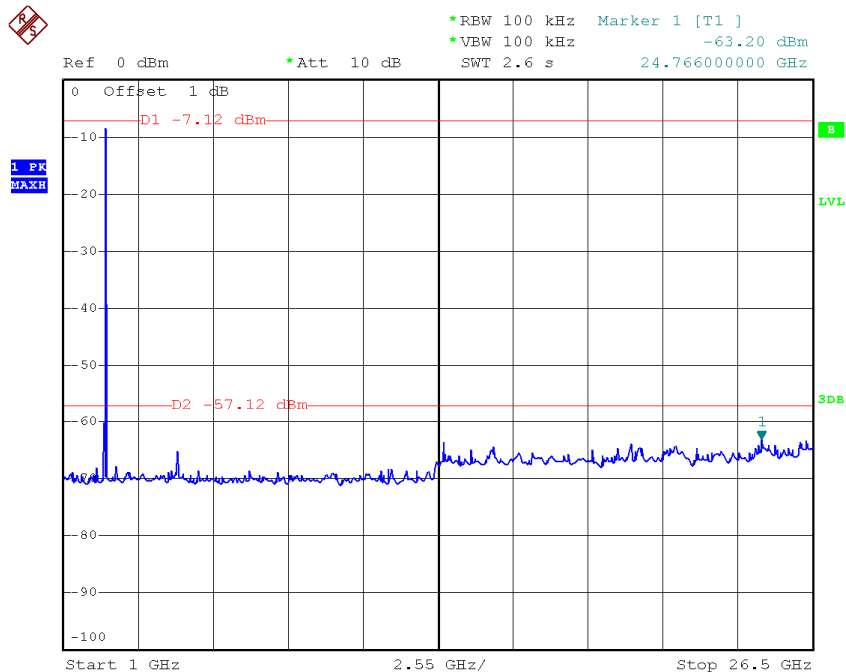
Date: 15.JUL.2014 19:28:46

### 2440MHz (30MHz to 1000MHz)



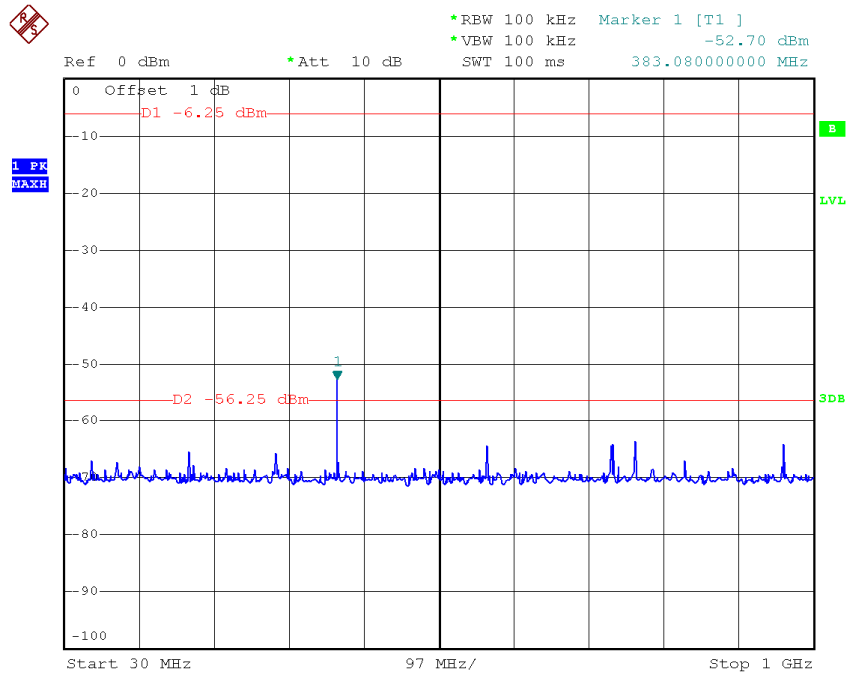
Date: 15.JUL.2014 19:23:34

### 2440MHz (1000MHz to 10<sup>th</sup> Harmonic)



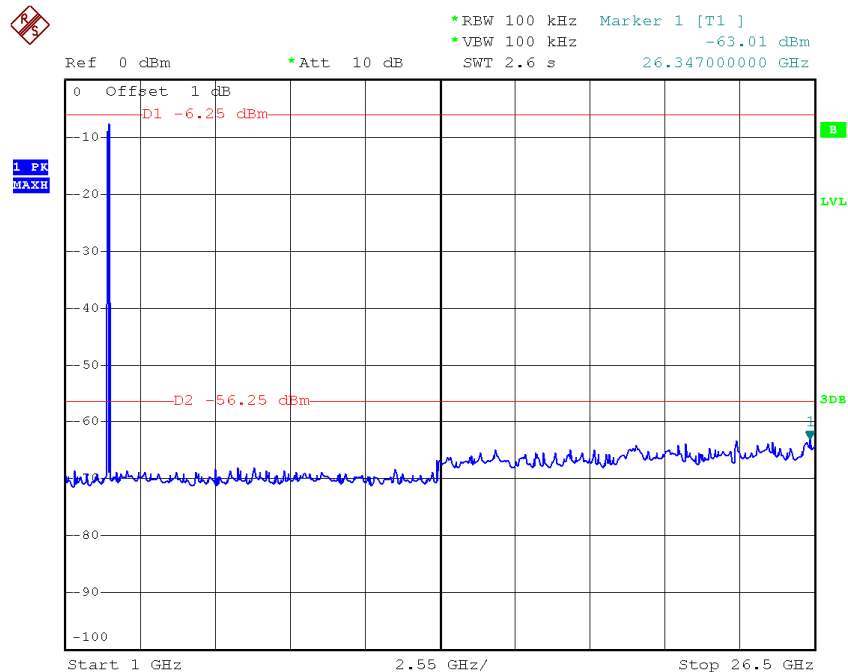
Date: 15.JUL.2014 19:23:54

### 2476MHz (30MHz to 1000MHz)



Date: 15.JUL.2014 19:21:45

### 2476MHz (1000MHz to 10<sup>th</sup> Harmonic)



Date: 15.JUL.2014 19:22:06