

# FCC Radio Test Report

## FCC ID: XHM-T605000

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

**Project No.** : 1508133  
**Equipment** : Payment Terminal  
**Model Name** : T605  
**Applicant** : FLYTECH Technology Co., Ltd.  
**Address** : 1F, No. 168, Sing-Ai Rd., NeiHu District 11494, Taipei,  
Taiwan

**Date of Receipt** : Aug. 12, 2015  
**Date of Test** : Aug. 12, 2015 ~ Oct. 20, 2015  
**Issued Date** : Oct. 21, 2015  
**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-1-1508133	Original Issue.	Oct. 21, 2015

## 1. CERTIFICATION

Equipment	: Payment Terminal
Brand Name	: FLYTECH
Model Name	: T605
Applicant	: FLYTECH Technology Co., Ltd.
Manufacturer	: FLYTECH TECHNOLOGY CO., LTD.
Address	: 1F, No. 168, Sing-Ai Rd., NeiHu District 11494, Taipei, Taiwan
Factory	: FLYTECH TECHNOLOGY CO., LTD.
Address	: No.36 Huaya 3 <sup>rd</sup> Rd., Guishan Township, Taoyuan Country 33383, Taiwan
Date of Test	: Aug. 12, 2015 ~ Oct. 20, 2015
Test Sample	: Engineering Sample
Standard(s)	: FCC Part15, Subpart C :2014 (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-1-1508133) 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: 2014			
Standard(s) Section	Test Item	Judgment	Remark
15.207	Conducted Emission	PASS	
15.247(d)	Antenna conducted Spurious Emission	PASS	
15.247(a)(2)	6dB Bandwidth	PASS	
15.247(b)(3)	Peak Output Power	PASS	
15.247(e)	Power Spectral Density	PASS	
15.203	Antenna Requirement	PASS	
15.209/15.205	Transmitter Radiated Emissions	PASS	

NOTE:

(1) "N/A" denotes test is not applicable to this device.

### 2.1 TEST FACILITY

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

#### Conducted emission Test:

**C05:** (VCCI RN: C-4742; FCC RN:965108; FCC DN:TW1082)

No. 68-1, Ln. 169, Sec.2, Datong Rd., Xizhi Dist., New Taipei City 221, Taiwan

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

**CB08:** (FCC RN: 614388; FCC DN: TW1054; IC Assigned Code: 4428C-1)

1F., No. 61, Ln. 77, Sing-ai Rd., Neihu Dist., Taipei City 114, Taiwan (R.O.C.)

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

**CB08:** (VCCI RN: G-91; FCC RN: 614388; FCC DN: TW1054; IC Assigned Code: 4428C-1)

1F., No. 61, Ln. 77, Sing-ai Rd., Neihu Dist., Taipei City 114, Taiwan (R.O.C.)

## 2.2 MEASUREMENT UNCERTAINTY

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

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

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

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

### A. Conducted emission test:

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

### B. Radiated emission test:

Test Site	Method	Measurement Frequency Range	$U$ ,(dB)
CB08 (3m)	CISPR	9kHz ~ 150kHz	4.00
		150kHz ~ 30MHz	4.00

Test Site	Method	Measurement Frequency Range	Ant. H / V	$U$ ,(dB)
CB08 (3m)	CISPR	30MHz ~ 200MHz	V	3.06
		30MHz ~ 200MHz	H	2.58
		200MHz ~ 1,000MHz	V	3.50
		200MHz ~ 1,000MHz	H	3.10

Test Site	Method	Measurement Frequency Range	Ant. H / V	$U$ ,(dB)
CB08 (3m)	CISPR	1GHz ~ 6GHz	V	4.14
		1GHz ~ 6GHz	H	4.14
		6GHz ~ 18GHz	V	5.34
		6GHz ~ 18GHz	H	5.34

Our calculated Measurement Instrumentation Uncertainty is shown in the tables above.

These are our  $U_{\text{lab}}$  values in CISPR 16-4-2 terminology.

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

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

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

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

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	Payment Terminal	
Brand Name	FLYTECH	
Model Name	T605	
Model Difference	N/A	
Product Description	Operation Frequency	2402~2480 MHz
	Modulation Technology	GFSK(1Mbps)
	Bit Rate of Transmitter	
	Output Power (Max.)	6.98 dBm (1Mbps)
PowerSource	DC Voltage supplied from AC/DC adapter.	
Power Rating	I/P: 100-240V~ 1.5A 50-60Hz O/P: DC 19V 4.74A	
Products Covered	1 * Mother Board: FLYTECH/ PCB APPLE CHARGER BOARD PCB F/B EXT USB BOARD PCB F/B M-T533II PRINTER LED INDICATOR BOARD PCB F/B THERMAL PRINTER BOARD PCB IO BOARD (USB2.0/COM) 1 * External Power Supply: DELTA, ADP-90MD H	


**Note:**

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

2.

Channel List			
Channel	Frequency (MHz)	Channel	Frequency (MHz)
00	2402	20	2442
01	2404	21	2444
02	2406	22	2446
03	2408	23	2448
04	2410	24	2450
05	2412	25	2452
06	2414	26	2454
07	2416	27	2456
08	2418	28	2458
09	2420	29	2460
10	2422	30	2462
11	2424	31	2464
12	2426	32	2466
13	2428	33	2468
14	2430	34	2470
15	2432	35	2472
16	2434	36	2474
17	2436	37	2476
18	2438	38	2478
19	2440	39	2480

3. Table for Filed Antenna

Ant.	Brand	Model Name	Antenna Type	Connector	Gain (dBi)
1		WLA0EM57-I0195	Dipole	U.FL	2.46

### 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 possibly have effect on EMI emission level. Each of these EUT operation mode(s) or test configuration mode(s) mentioned above was evaluated respectively.

Pretest Mode	Description
Mode 1	TX Mode

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 1	TX Mode

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

Note:

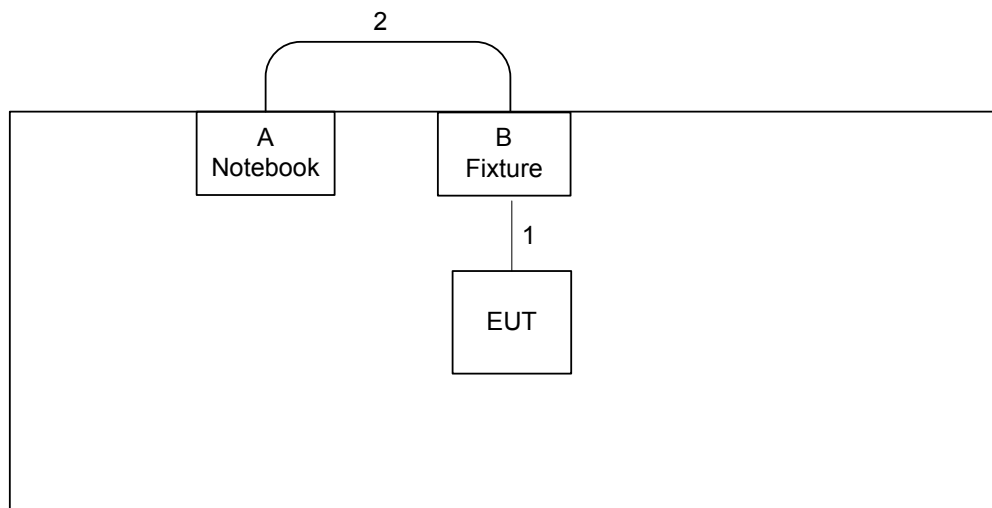
(1) The measurements are performed at the high, middle, low available channels.

### 3.3 TABLE OF PARAMETERS OF TEST 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	SmartRF Studio 7		
Frequency (MHz)	2402	2440	2480
BT LE	0	0	-6

### 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/IC	Series No.
A	Notebook	ACER	ZH2	DOC	LXTCY050356360BDV52 500
B	Fixture	N/A	N/A	N/A	N/A

Item	Shielded Type	Ferrite Core	Length	Note
1	NO	NO	0.2m	Data Cable
2	NO	NO	1.5m	Data Cable

Note:

(1) For detachable type I/O cable should be specified the length in m in 『Length』 column.

## 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 (dBμV)	
	Quasi-peak	Average
0.15 - .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
- (3) 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

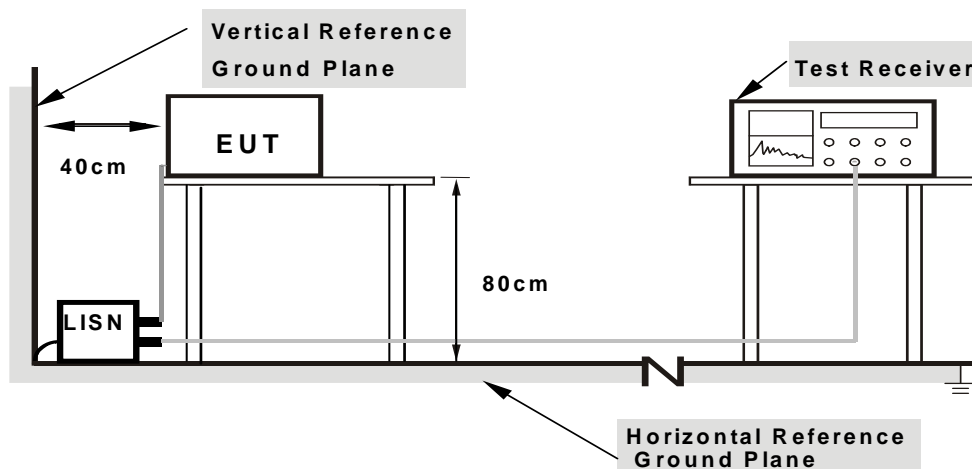
#### 4.1.2 TEST PROCEDURE

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

#### 4.1.3 DEVIATION FROM TEST STANDARD

No deviation

#### 4.1.4 TEST SETUP



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

#### 4.1.5 EUT OPERATING CONDITIONS

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

#### 4.1.6 EUT TEST CONDITIONS

Temperature: 26°C  
Relative Humidity: 59%  
Test Voltage: AC 120V/60Hz

#### 4.1.7 TEST RESULTS

Please refer to the Attachment A.

Remark:

- (1) All readings are QP Mode value unless otherwise stated AVG in column of 『Note』 . If the QP Mode Measured value compliance with the QP Limits and lower than AVG Limits, the EUT shall be deemed to meet both QP & AVG Limits and then only QP Mode was measured, but AVG Mode didn't perform.In this case, a “ \* ” marked in AVG Mode column of Interference Voltage Measured.
- (2) Measuring frequency range from 150KHz to 30MHz.
- (3) “N/A” denotes test is not applicable to this device.

## 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 1.5m, the height of the test antenna shall vary between 1 m to 4 m. Both horizontal and vertical polarizations of the antenna are set to make the measurement.
- For each suspected emission, the EUT was arranged to its worst case and then the antenna was tuned to heights find the maximum reading (used Bore sight function).
- The receiver system was set to peak and average detect function and specified bandwidth with maximum hold mode when the test frequency is above 1GHz.
- The initial step in collecting radiated emission data is a receiver peak detector mode pre-scanning the measurement frequency range. Significant peaks are then marked and then Quasi Peak detector mode re-measured.
- All readings are Peak unless otherwise stated QP in column of Note. Peak denotes that the Peak reading compliance with the QP Limits and then QP Mode measurement didn't perform. (below 1GHz)
- All readings are Peak Mode value unless otherwise stated AVG in column of Note. If the Peak Mode Measured value compliance with the Peak Limits and lower than AVG Limits, the EUT shall be deemed to meet both Peak & AVG Limits and then only Peak Mode was measured, but AVG Mode didn't perform. (above 1GHz)
- For the actual test configuration, please refer to the related Item –EUT Test Photos.

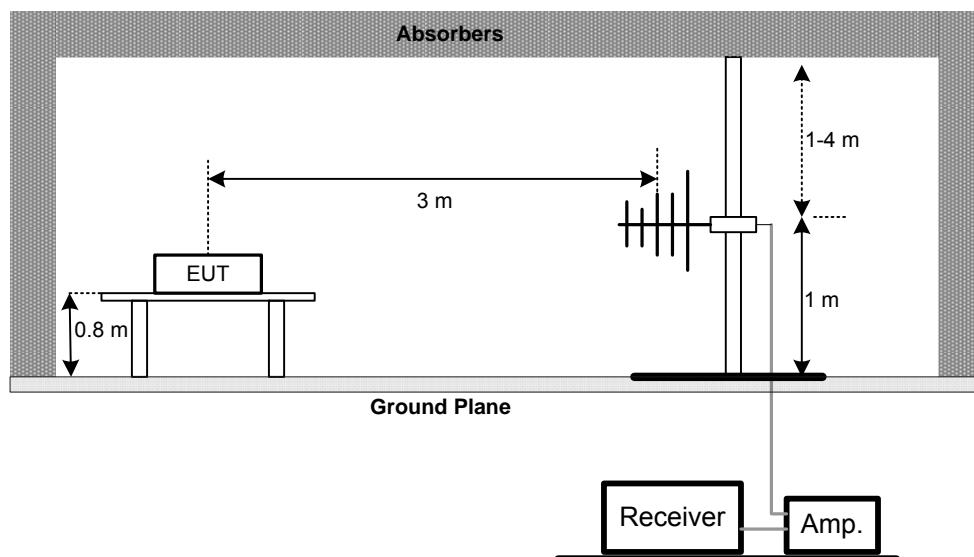
#### 4.2.3 DEVIATION FROM TEST STANDARD

No deviation

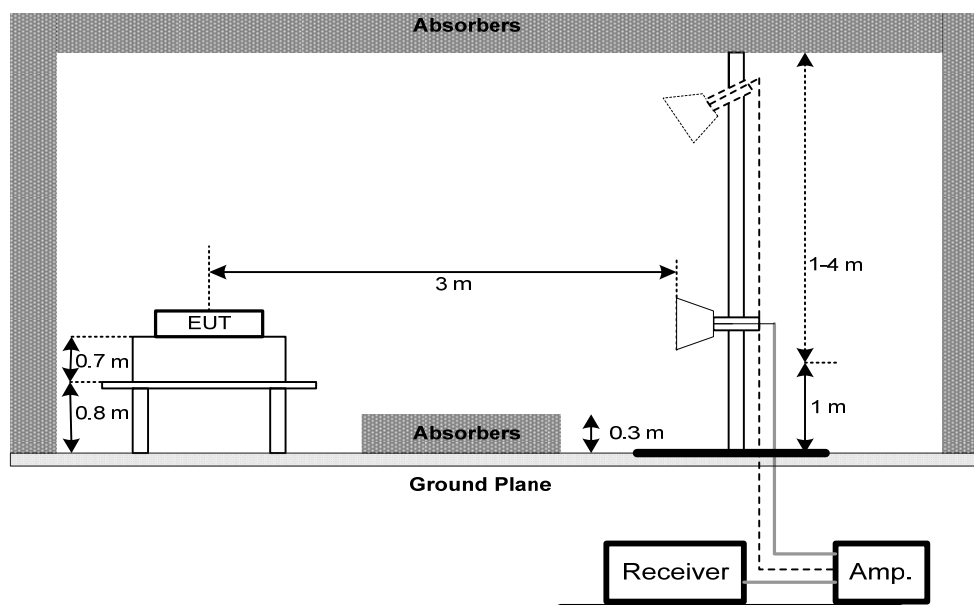


#### 4.2.4 TEST SETUP

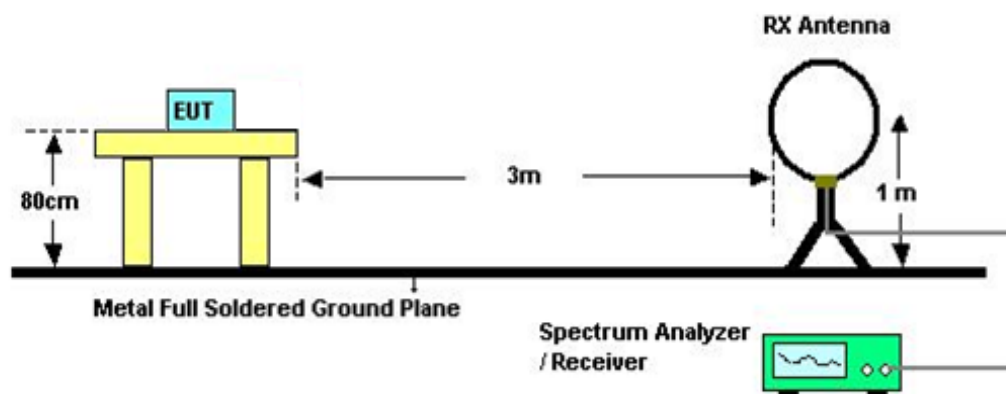
##### (A) Radiated Emission Test Set-Up Frequency Below 1 GHz



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



(C) For radiated emissions below 30MHz



#### 4.2.5 EUT OPERATING CONDITIONS

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

#### 4.2.6 EUT TEST CONDITIONS

Temperature: 24°C

Relative Humidity: 60%

Test Voltage: AC 120V/60Hz

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

Please refer to the Attachment B

Remark:

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

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

**Please refer to the Attachment C.**

Remark:

- (1) Measuring frequency range from 30MHz to 1000MHz.
- (2) If the peak scan value lower limit more than 20dB, then this signal data does not show in table.

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

**Please refer to the Attachment D.**

Remark:

- (1) Radiated emissions measured in frequency range above 1000MHz were made with an instrument using Peak detector mode and AV detector mode of the emission
- (2) A preamp and high pass filter were used for this test in order to provide sufficient measurement sensitivity.
- (3) EUT Orthogonal Axis:  
"X" - denotes Laid on Table ; "Y" - denotes Vertical Stand ; "Z" - denotes Side Stand
- (4) 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) 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 / limit

FCC Part15 (15.247) , Subpart C				
Section	Test Item	Limit	Frequency Range (MHz)	Result
15.247(a)(2)	Bandwidth	$\geq 500\text{KHz}$ (6dB 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 tested system was configured as the statements of 4.1.5 unless otherwise a special operating condition is specified in the follows during the testing.

#### 5.1.5 EUT TEST CONDITIONS

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

#### 5.1.6 TEST RESULTS

Please refer to the Attachment E.

## 6. MAXIMUM OUTPUT POWER TEST

### 6.1 Applied procedures / limit

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

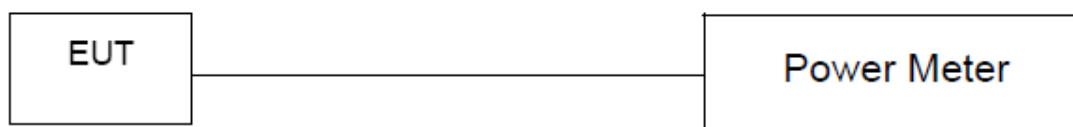
#### 6.1.1 TEST PROCEDURE

- The EUT was directly connected to the power meter and antenna output port as show in the block diagram below,
- The maximum peak conducted output power was performed in accordance with method 9.1.2 of FCC KDB 558074 D01 DTS Meas Guidance v03r02.

#### 6.1.2 DEVIATION FROM STANDARD

No deviation.

#### 6.1.3 TEST SETUP



#### 6.1.4 EUT OPERATION CONDITIONS

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

#### 6.1.5 EUT TEST CONDITIONS

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

#### 6.1.6 TEST RESULTS

Please refer to the Attachment F.

## 7. ANTENNA CONDUCTED SPURIOUS EMISSION

### 7.1 Applied procedures / limit

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

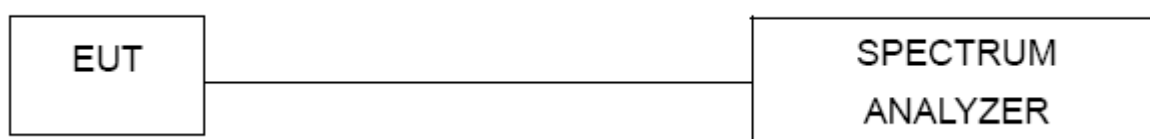
#### 7.1.1 TEST PROCEDURE

- 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 = 10 ms.
- 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 tested system was configured as the statements of 4.1.5 unless otherwise a special operating condition is specified in the follows during the testing.

#### 7.1.5 EUT OPERATION CONDITIONS

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

#### 7.1.6 TEST RESULTS

**Please refer to the Attachment G.**

## 8. POWER SPECTRAL DENSITY TEST

### 8.1 Applied procedures / limit

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

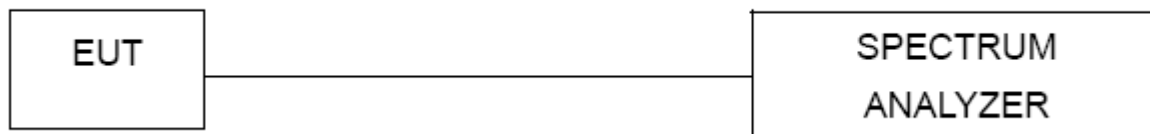
#### 8.1.1 TEST PROCEDURE

- The EUT was directly connected to the spectrum analyzer and antenna output port as show in the block diagram below,
- Spectrum Setting: RBW=3KHz, VBW=10 KHz, Sweep time = auto.

#### 8.1.2 DEVIATION FROM STANDARD

No deviation.

#### 8.1.3 TEST SETUP



#### 8.1.4 EUT OPERATION CONDITIONS

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

#### 8.1.5 EUT TEST CONDITIONS

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

#### 8.1.6 TEST RESULTS

Please refer to the Attachment H.

## 9. MEASUREMENT INSTRUMENTS LIST

Conducted Emission Measurement					
Item	Kind of Equipment	Manufacturer	Type No.	Serial No.	Calibrated until
1	TWO-LINE V-NETWORK	R&S	ENV216	101050	Jun. 01, 2016
2	Test Cable	TIMES	CFD300-NL	C03	Mar. 04, 2016
3	EMI Test Receiver	R&S	ESR3	101854	Dec. 09, 2015
4	Measurement Software	EZ	EZ EMC (Version NB-03A)	N/A	N/A

Radiated Emission Measurement					
Item	Kind of Equipment	Manufacturer	Type No.	Serial No.	Calibrated until
1	Spectrum Analyzer	Agilent	N9020A	MY51160196	Jan. 07, 2016
2	Horn Antenna	Schwarzbeck	BBHA 9120	D-325	Apr. 20, 2016
3	Microwave Pre amplifier	Agilent	8449B	3008A01714	Apr. 13, 2016
4	Microflex Cable	Harbour industries	27478LL142	1m	Apr. 13, 2016
5	Microflex Cable	EMC	S104-SMA	8m	May 14, 2016
6	Microflex Cable	Harbour industries	27478LL142	3m	May 13, 2016
7	Test Cable	LMR	LMR-400	10m	May 13, 2016
8	Test Cable	LMR	LMR-400	3m	May 13, 2016
9	Pre-Amplifier	Anritsu	MH648A	M92649	Jun. 16, 2016
10	Log-Bicon Antenna	Schwarzbeck	VULB9168-35 2	9168-352	Jul. 30, 2016
11	Loop Antenna	EMCO	6502	00042960	Nov. 06, 2015

6dB Bandwidth Measurement					
Item	Kind of Equipment	Manufacturer	Type No.	Serial No.	Calibrated until
1	Spectrum Analyzer	R&S	FSP-40	100129	Jan. 07, 2016

Peak Output Power Measurement					
Item	Kind of Equipment	Manufacturer	Type No.	Serial No.	Calibrated until
1	Power Meter	Anritsu	ML2495A	1128008	Aug. 16, 2016
2	Power Meter Sensor	Anritsu	MA2411B	1126001	Aug. 16, 2016



Antenna Conducted Spurious Emission Measurement					
Item	Kind of Equipment	Manufacturer	Type No.	Serial No.	Calibrated until
1	Spectrum Analyzer	R&S	FSP-40	100129	Jan. 07, 2016

Power Spectral Density Measurement					
Item	Kind of Equipment	Manufacturer	Type No.	Serial No.	Calibrated until
1	Spectrum Analyzer	R&S	FSP-40	100129	Jan. 07, 2016

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

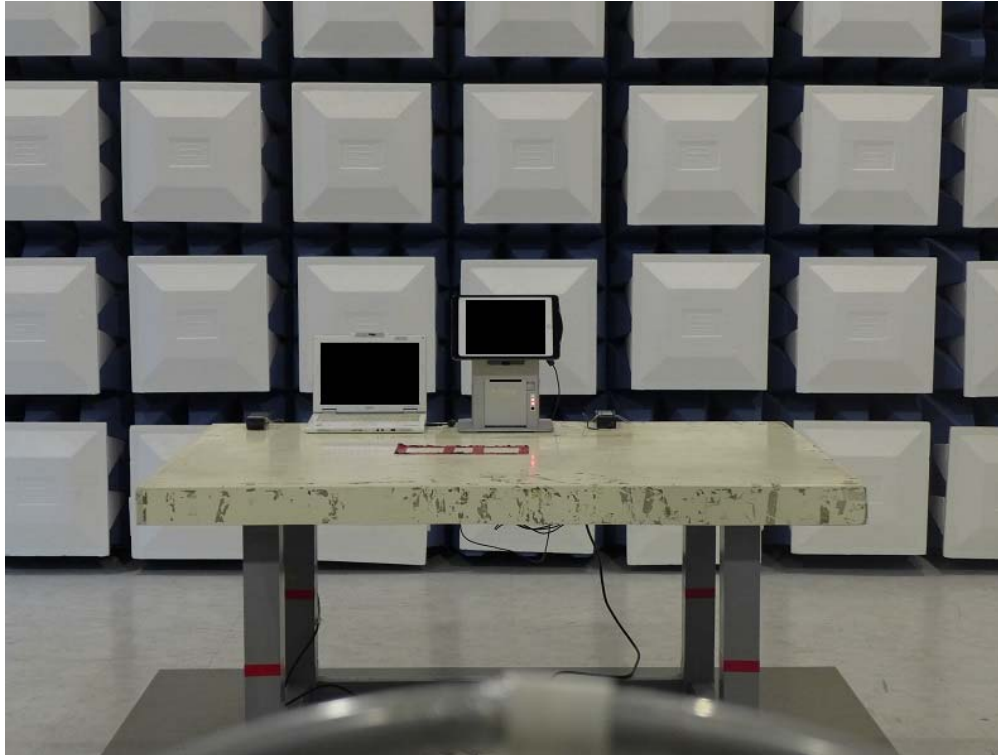
## 10. EUT TEST PHOTO

### Conducted Measurement Photos



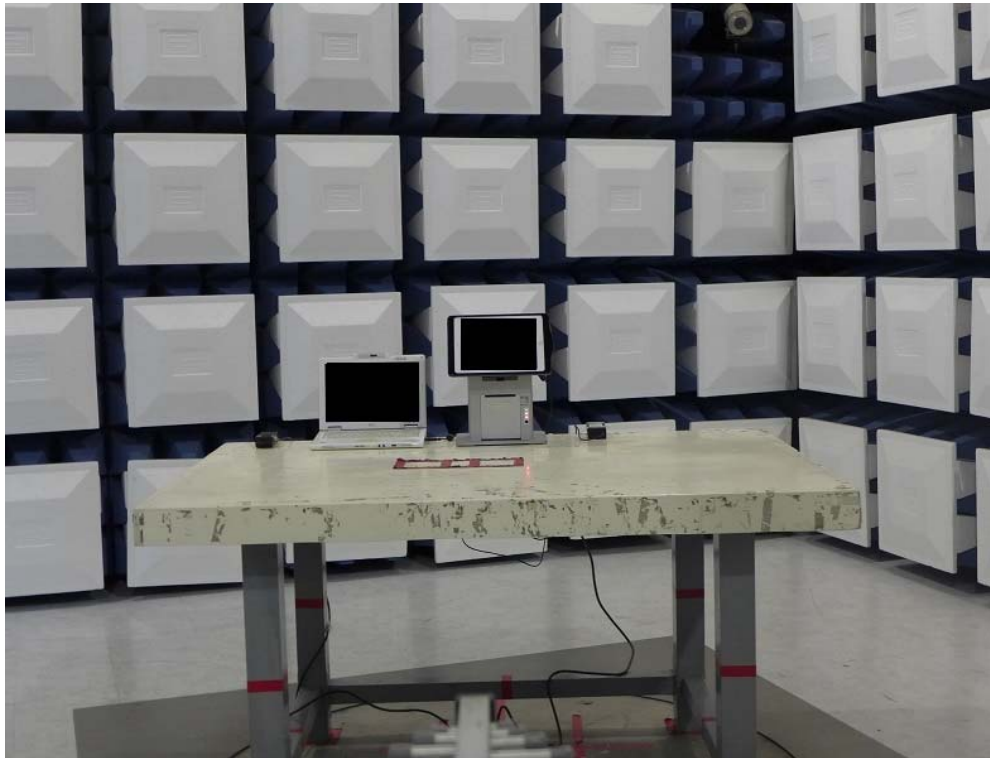
## Radiated Measurement Photos

9K-30MHz



## Radiated Measurement Photos

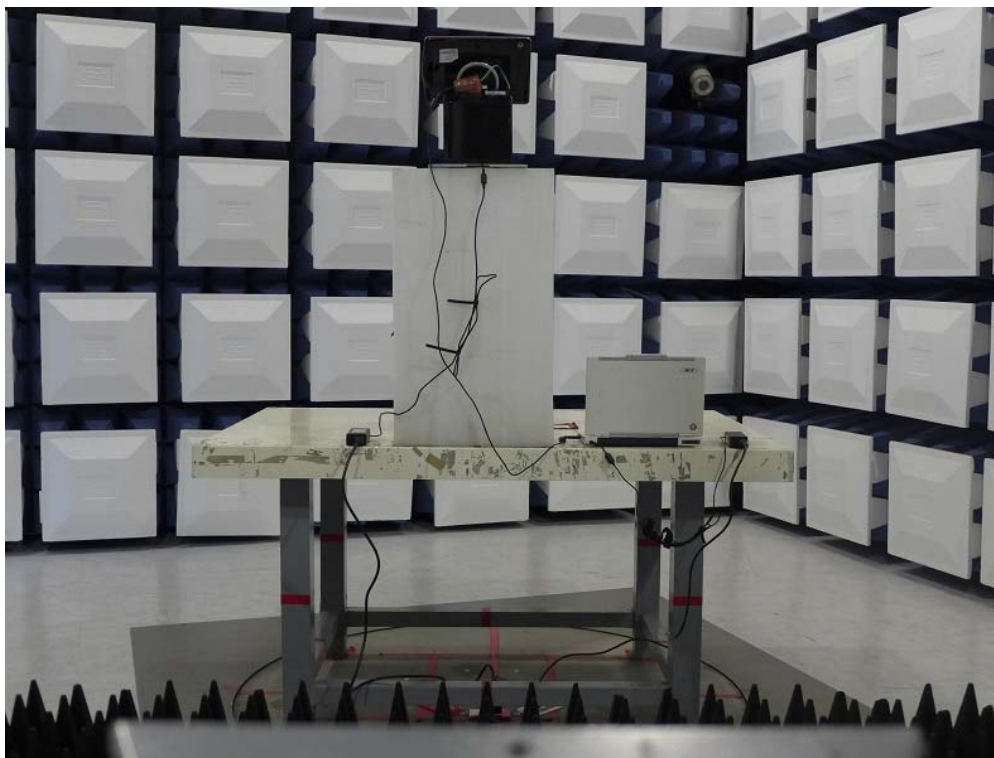
30MHz-1G





## Radiated Measurement Photos

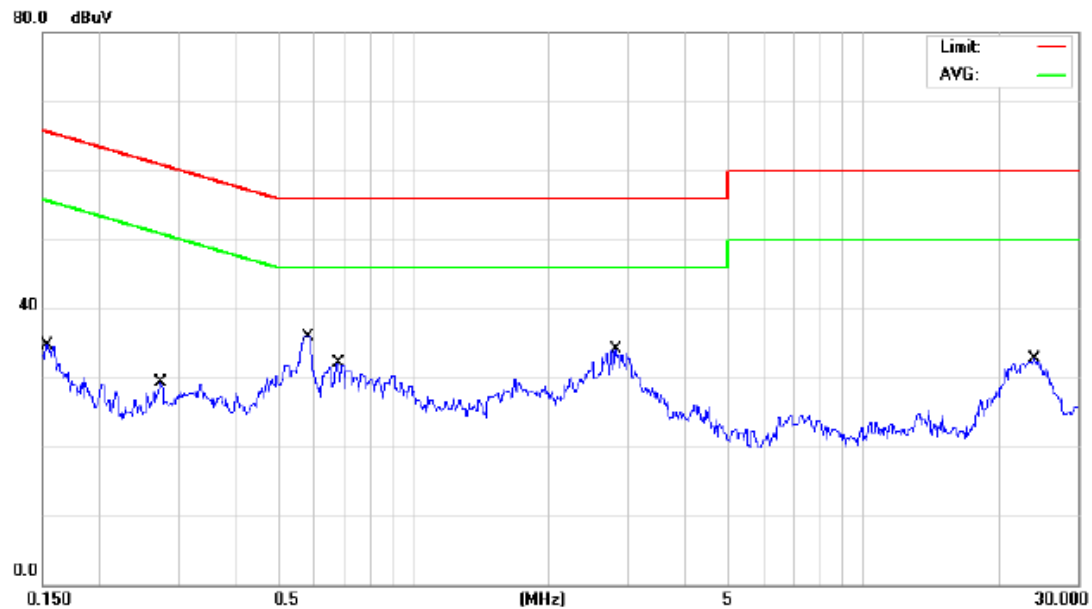
### Above 1G



## **ATTACHMENT A - CONDUCTED EMISSION**

Test Mode: TX Mode

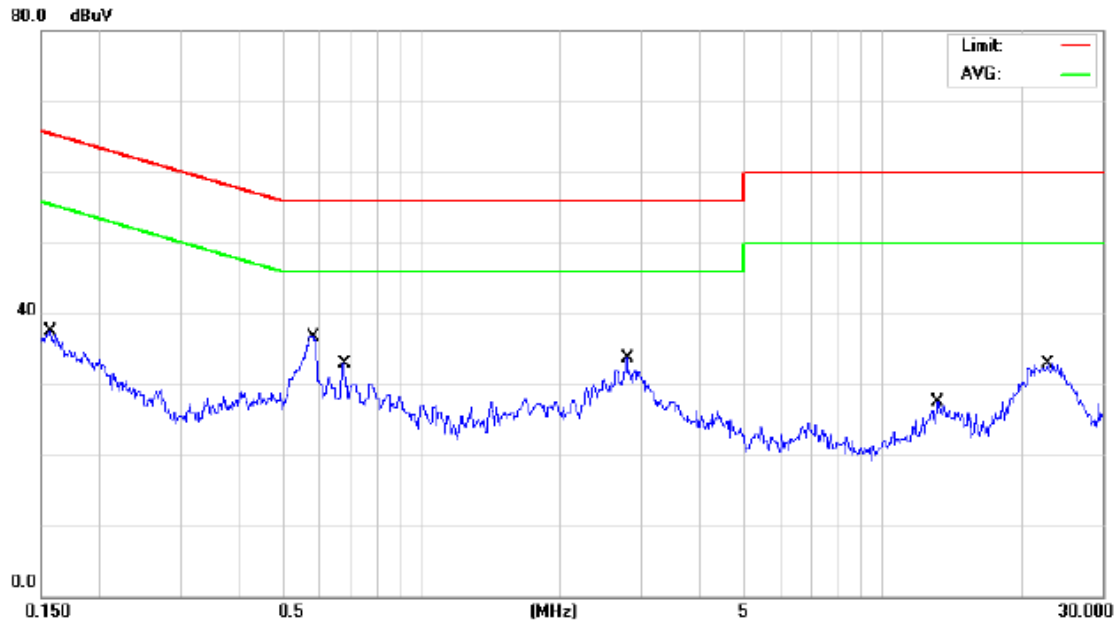
### Line



No.	Mk.	Freq.	Reading	Correct	Measure-	Limit	Margin		
		MHz	Level	Factor	ment				
			dBuV	dB	dBuV	dBuV	dB	Detector	Comment
1		0.1535	19.20	9.64	28.84	65.80	-36.96	QP	
2		0.1535	11.40	9.64	21.04	55.80	-34.76	AVG	
3		0.2732	12.70	9.63	22.33	61.02	-38.69	QP	
4		0.2732	9.00	9.63	18.63	51.02	-32.39	AVG	
5		0.5810	21.70	9.64	31.34	56.00	-24.66	QP	
6	*	0.5810	14.60	9.64	24.24	46.00	-21.76	AVG	
7		0.6800	15.70	9.65	25.35	56.00	-30.65	QP	
8		0.6800	9.60	9.65	19.25	46.00	-26.75	AVG	
9		2.8220	16.70	9.77	26.47	56.00	-29.53	QP	
10		2.8220	11.40	9.77	21.17	46.00	-24.83	AVG	
11		24.0000	16.60	9.89	26.49	60.00	-33.51	QP	
12		24.0000	12.00	9.89	21.89	50.00	-28.11	AVG	

Test Mode: TX Mode

### Neutral



No.	Mk.	Freq.	Reading	Correct	Measure-	Limit	Margin		
		MHz	Level	Factor	ment			Detector	Comment
			dBuV	dB	dBuV	dBuV	dB		
1		0.1570	22.00	9.63	31.63	65.62	-33.99	QP	
2		0.1570	15.30	9.63	24.93	55.62	-30.69	AVG	
3		0.5810	21.70	9.65	31.35	56.00	-24.65	QP	
4	*	0.5810	13.80	9.65	23.45	46.00	-22.55	AVG	
5		0.6800	13.90	9.66	23.56	56.00	-32.44	QP	
6		0.6800	7.10	9.66	16.76	46.00	-29.24	AVG	
7		2.7860	14.40	9.76	24.16	56.00	-31.84	QP	
8		2.7860	8.90	9.76	18.66	46.00	-27.34	AVG	
9		13.2000	9.20	9.85	19.05	60.00	-40.95	QP	
10		13.2000	4.00	9.85	13.85	50.00	-36.15	AVG	
11		22.8500	16.90	9.90	26.80	60.00	-33.20	QP	
12		22.8500	12.30	9.90	22.20	50.00	-27.80	AVG	



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

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

Frequency (MHz)	Ant 0°/90°	Read level dBuV/m	Factor (dB)	Measured(FS) (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Note
0.0147	0°	34.85	22.28	57.13	104.26	-47.13	AVG
0.0147	0°	42.07	22.28	64.35	124.26	-59.91	PK
0.0254	0°	28.13	22.02	50.15	99.51	-49.36	AVG
0.0254	0°	32.32	22.02	54.34	119.51	-65.17	PK
0.0468	0°	24.12	21.48	45.60	94.20	-48.60	AVG
0.0468	0°	32.85	21.48	54.33	114.20	-59.87	PK
0.0721	0°	33.78	21.05	54.83	110.45	-55.62	PK
1.3540	0°	31.89	20.25	52.14	64.97	-12.84	QP
1.6800	0°	32.78	19.92	52.70	63.10	-10.40	QP

Frequency (MHz)	Ant 0°/90°	Read level dBuV/m	Factor (dB)	Measured(FS) (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Note
0.0165	90°	36.12	22.24	58.36	103.25	-44.90	AVG
0.0165	90°	42.97	22.24	65.21	123.25	-58.05	PK
0.0210	90°	27.23	22.13	49.36	101.16	-51.80	AVG
0.0210	90°	34.05	22.13	56.18	121.16	-64.98	PK
0.0428	90°	26.88	21.58	48.46	94.98	-46.52	AVG
0.0428	90°	32.07	21.58	53.65	114.98	-61.33	PK
0.0690	90°	32.86	21.10	53.96	110.83	-56.87	PK
1.6400	90°	32.69	19.96	52.65	63.31	-10.66	QP
1.7620	90°	31.92	19.84	51.76	69.54	-17.78	QP

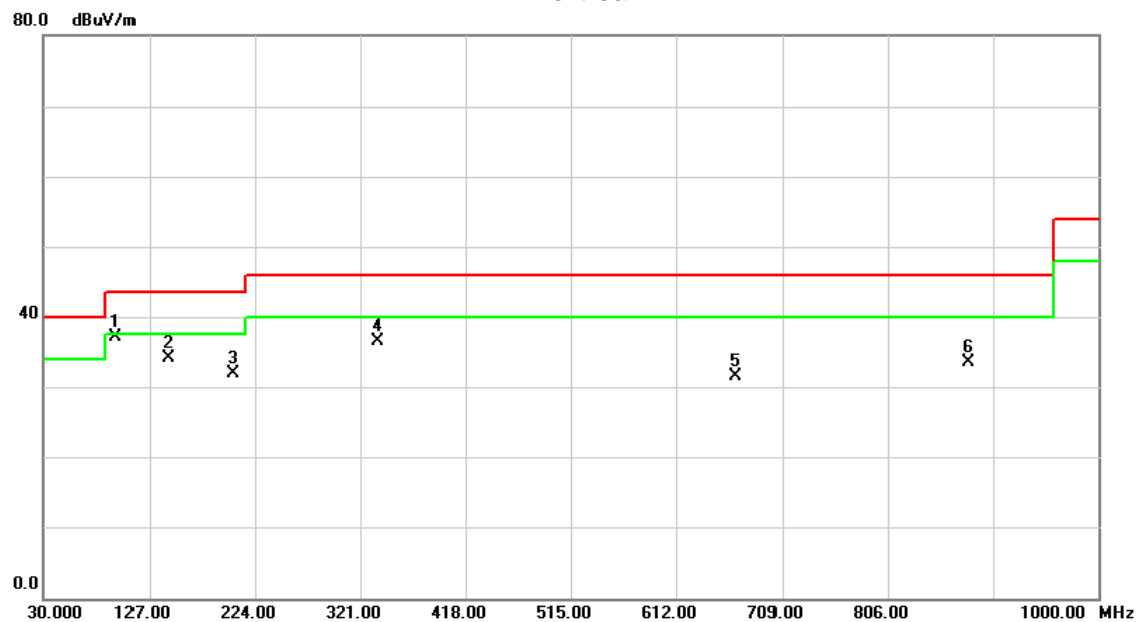
Remark:

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

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

Test Mode: TX 2440MHz -CH19 -1Mbps

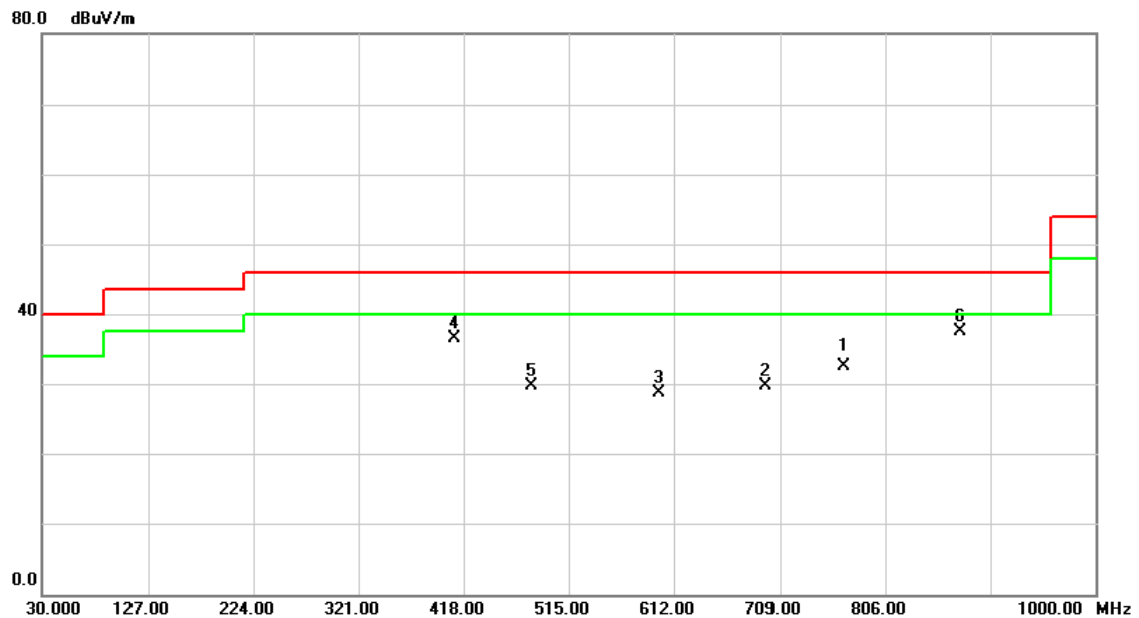
### Vertical



No.	Mk.	Freq.	Reading Level	Correct Factor	Measure-ment	Limit	Margin		
		MHz	dBuV	dB	dBuV/m	dBuV/m	dB	Detector	Comment
1	*	95.9600	54.64	-17.61	37.03	43.50	-6.47	peak	
2		144.4600	48.36	-14.34	34.02	43.50	-9.48	peak	
3		203.6300	47.03	-15.09	31.94	43.50	-11.56	peak	
4		336.5200	47.07	-10.65	36.42	46.00	-9.58	peak	
5		666.3200	36.69	-5.21	31.48	46.00	-14.52	peak	
6		880.6900	35.43	-1.89	33.54	46.00	-12.46	peak	

Test Mode: TX 2440MHz -CH19 -1Mbps

### Horizontal

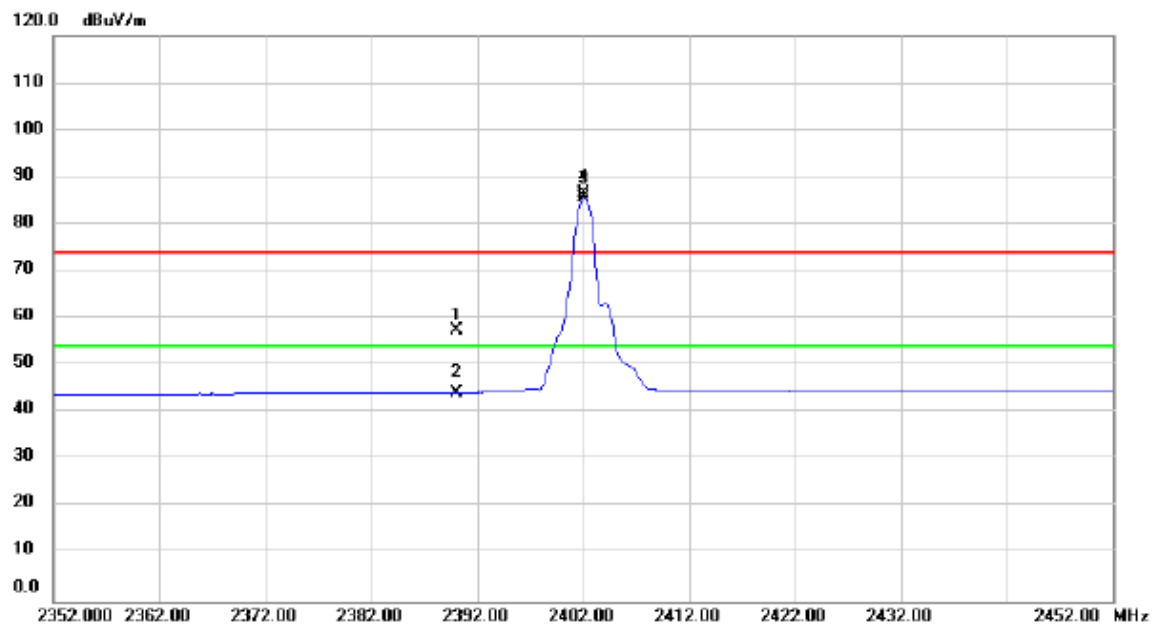


No.	Mk.	Freq. MHz	Reading Level dBuV	Correct Factor dB	Measure- ment dBuV/m	Limit dBuV/m	Margin dB	Detector	Comment
1		768.1700	36.05	-3.46	32.59	46.00	-13.41	peak	
2		696.3900	34.37	-4.58	29.79	46.00	-16.21	peak	
3		598.4200	35.44	-6.68	28.76	46.00	-17.24	peak	
4		409.2700	46.10	-9.61	36.49	46.00	-9.51	peak	
5		480.0800	38.14	-8.53	29.61	46.00	-16.39	peak	
6	*	874.8700	39.59	-2.01	37.58	46.00	-8.42	peak	

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

Orthogonal Axis :	X
Test Mode :	TX 2402MHz _CH00_1Mbps

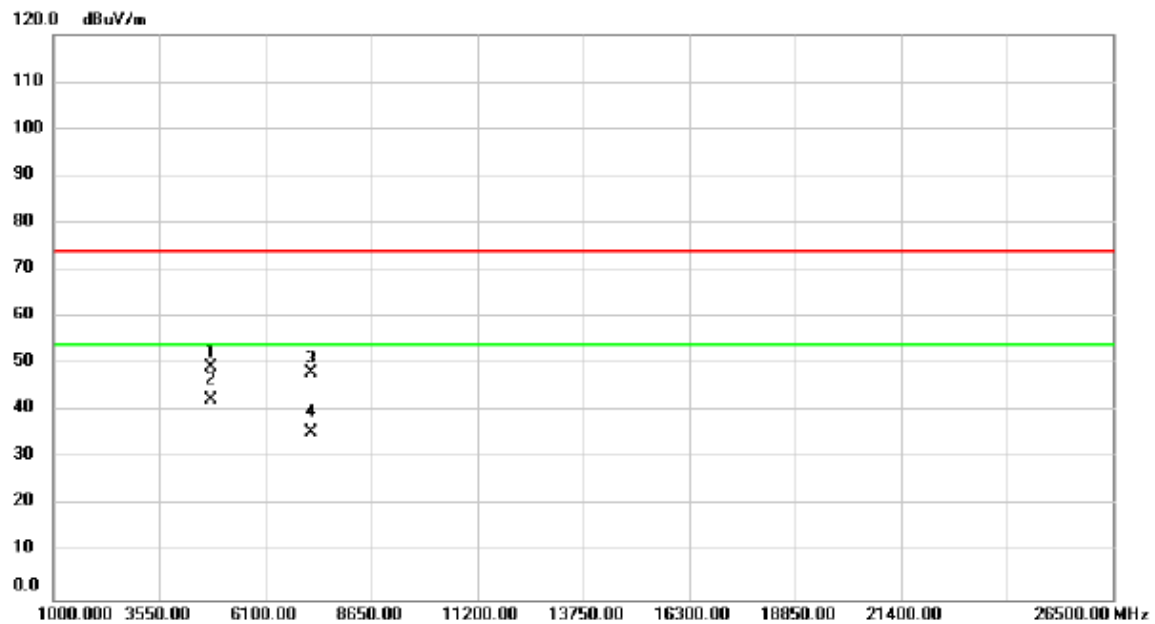
### Vertical



No.	Mk.	Freq.	Reading Level	Correct Factor	Measurement	Limit	Margin		
		MHz	dBuV	dB	dBuV/m	dBuV/m	dB	Detector	Comment
1		2390.000	26.74	30.79	57.53	74.00	-16.47	peak	
2		2390.000	13.58	30.79	44.37	54.00	-9.63	AVG	
3	X	2402.100	55.64	30.83	86.47	74.00	12.47	peak	NO LIMIT
4	*	2402.100	54.79	30.83	85.62	54.00	31.62	AVG	NO LIMIT

Orthogonal Axis :	X
Test Mode :	TX 2402MHz _CH00_1Mbps

### Vertical

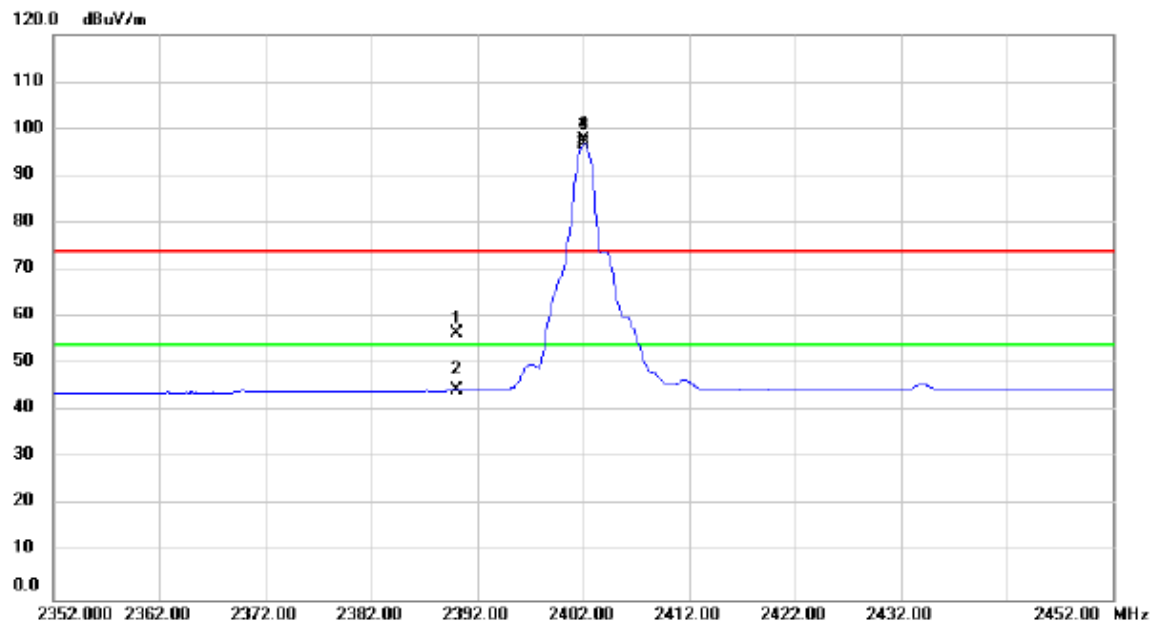


No.	Mk.	Freq.	Reading Level	Correct Factor	Measurement	Limit	Margin		
		MHz	dBuV	dB	dBuV/m	dBuV/m	dB	Detector	Comment
1		4803.920	46.12	3.32	49.44	74.00	-24.56	peak	
2	*	4803.920	39.25	3.32	42.57	54.00	-11.43	AVG	
3		7196.980	39.72	8.38	48.10	74.00	-25.90	peak	
4		7196.980	27.30	8.38	35.68	54.00	-18.32	AVG	



Orthogonal Axis :	X
Test Mode :	TX 2402MHz _CH00_1Mbps

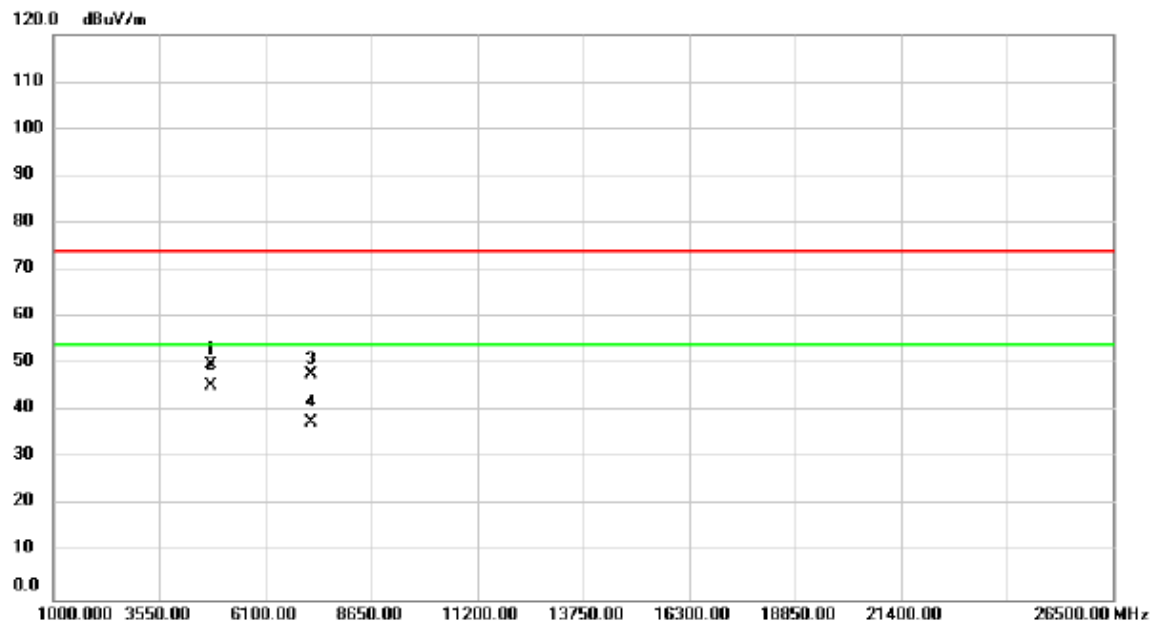
### Horizontal



No.	Mk.	Freq.	Reading	Correct	Measure-	Limit	Margin		
		MHz	Level	Factor	ment			Detector	Comment
			dBuV	dB	dBuV/m	dBuV/m	dB		
1		2390.000	25.65	30.79	56.44	74.00	-17.56	peak	
2		2390.000	13.66	30.79	44.45	54.00	-9.55	AVG	
3	X	2402.100	66.75	30.83	97.58	74.00	23.58	peak	NO LIMIT
4	*	2402.100	66.03	30.83	96.86	54.00	42.86	AVG	NO LIMIT

Orthogonal Axis :	X
Test Mode :	TX 2402MHz _CH00_1Mbps

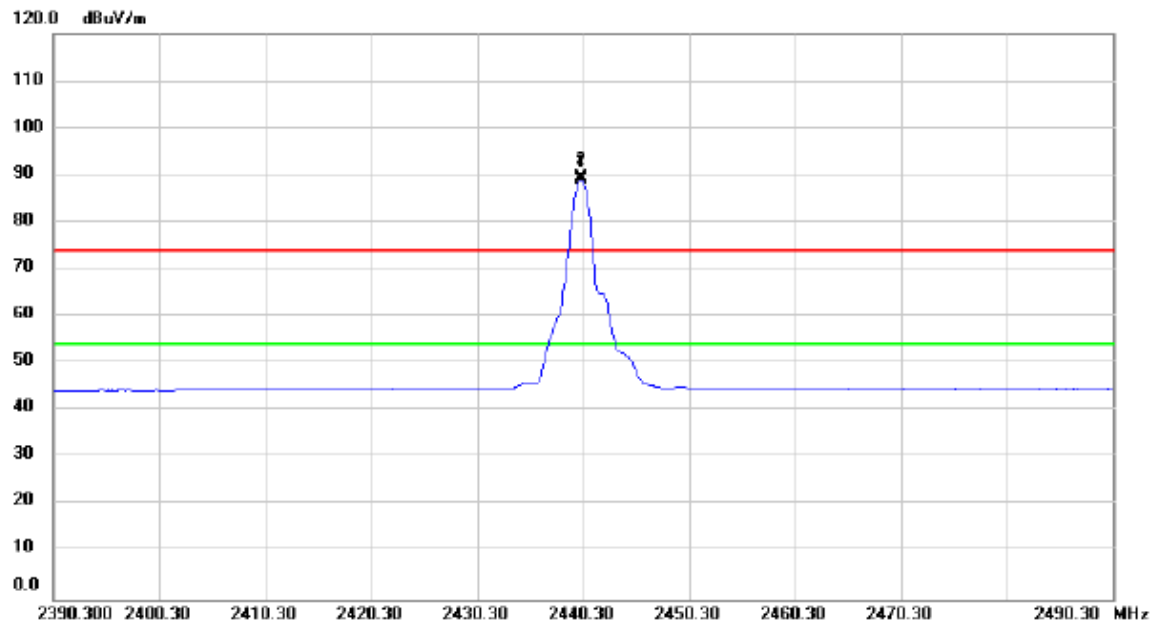
### Horizontal



No.	Mk.	Freq.	Reading Level	Correct Factor	Measurement	Limit	Margin		
		MHz	dBuV	dB	dBuV/m	dBuV/m	dB	Detector	Comment
1		4804.200	46.70	3.32	50.02	74.00	-23.98	peak	
2	*	4804.200	42.01	3.32	45.33	54.00	-8.67	AVG	
3		7196.120	39.50	8.37	47.87	74.00	-26.13	peak	
4		7196.120	29.25	8.37	37.62	54.00	-16.38	AVG	

Orthogonal Axis :	X
Test Mode :	TX 2440MHz_CH19_1Mbps

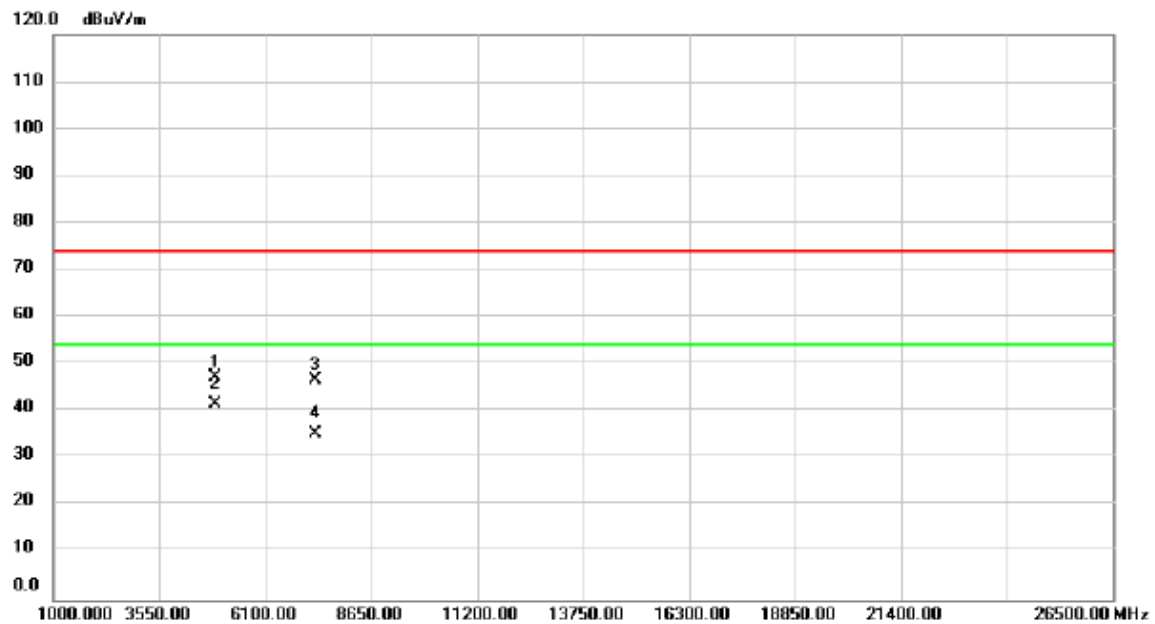
### Vertical



No.	Mk.	Freq.	Reading Level	Correct Factor	Measurement	Limit	Margin		
		MHz	dBuV	dB	dBuV/m	dBuV/m	dB	Detector	Comment
1	X	2440.100	58.74	30.96	89.70	74.00	15.70	peak	NO LIMIT
2	*	2440.100	57.90	30.96	88.86	54.00	34.86	AVG	NO LIMIT

Orthogonal Axis :	X
Test Mode :	TX 2440MHz _CH19_1Mbps

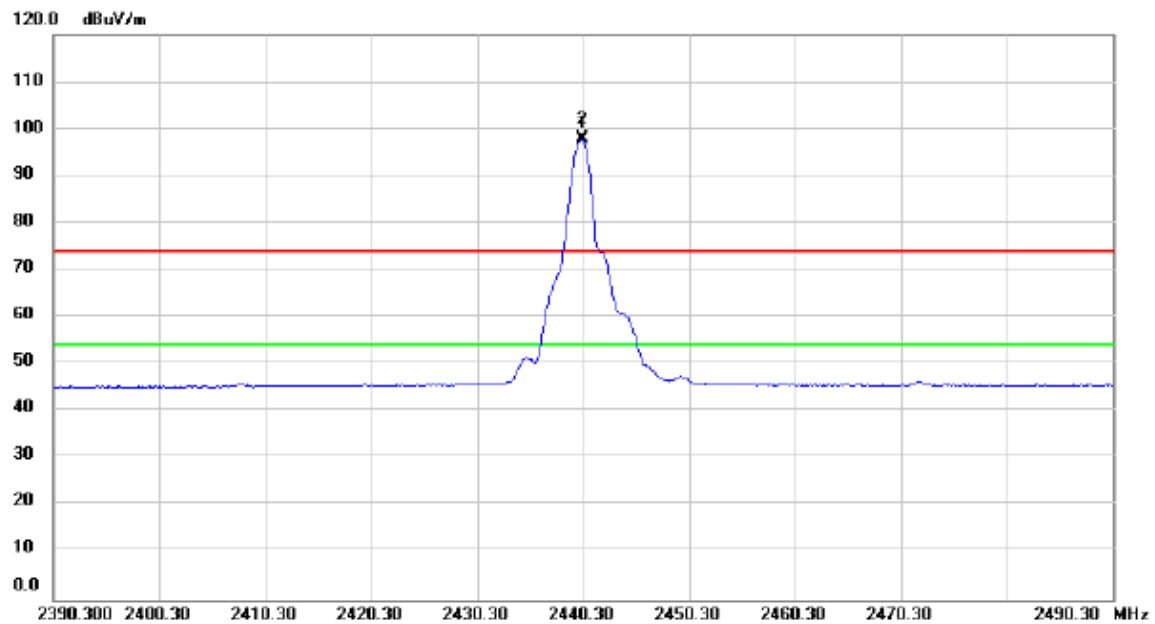
### Vertical



No.	Mk.	Freq.	Reading Level	Correct Factor	Measurement	Limit	Margin		
		MHz	dBuV	dB	dBuV/m	dBuV/m	dB	Detector	Comment
1		4880.180	43.75	3.56	47.31	74.00	-26.69	peak	
2	*	4880.180	37.92	3.56	41.48	54.00	-12.52	AVG	
3		7310.620	38.06	8.55	46.61	74.00	-27.39	peak	
4		7310.620	26.57	8.55	35.12	54.00	-18.88	AVG	

Orthogonal Axis :	X
Test Mode :	TX 2440MHz_CH19_1Mbps

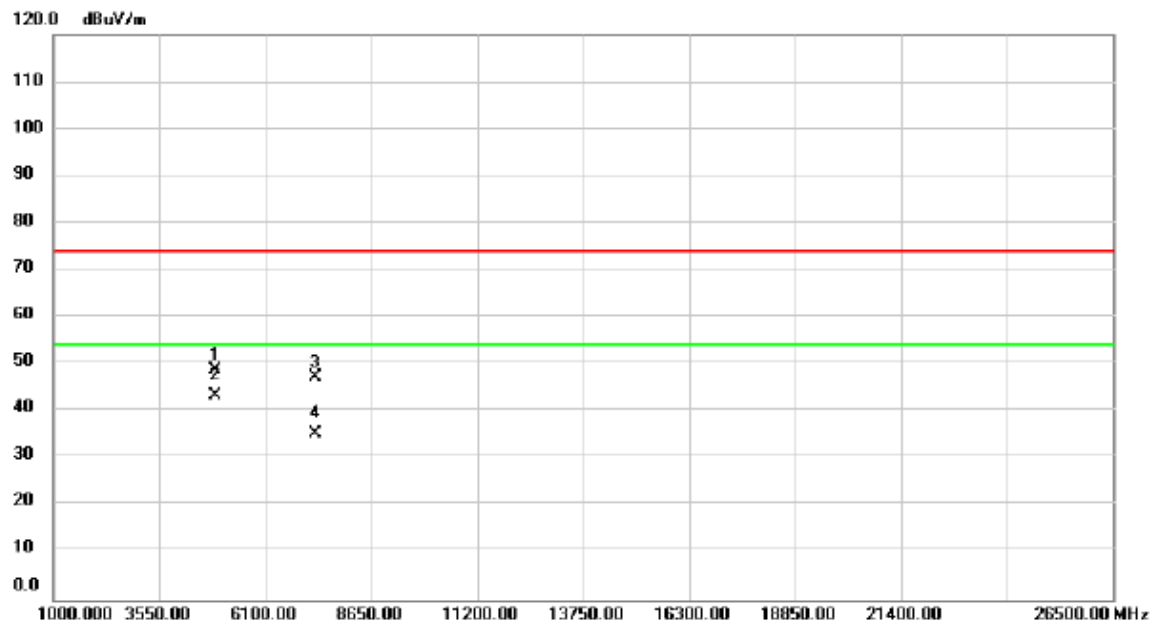
### Horizontal



No.	Mk.	Freq.	Reading Level	Correct Factor	Measurement	Limit	Margin		
		MHz	dBuV	dB	dBuV/m	dBuV/m	dB	Detector	Comment
1	X	2440.200	66.98	30.96	97.94	74.00	23.94	peak	NO LIMIT
2	*	2440.200	66.62	30.96	97.58	54.00	43.58	AVG	NO LIMIT

Orthogonal Axis :	X
Test Mode :	TX 2440MHz _CH19_1Mbps

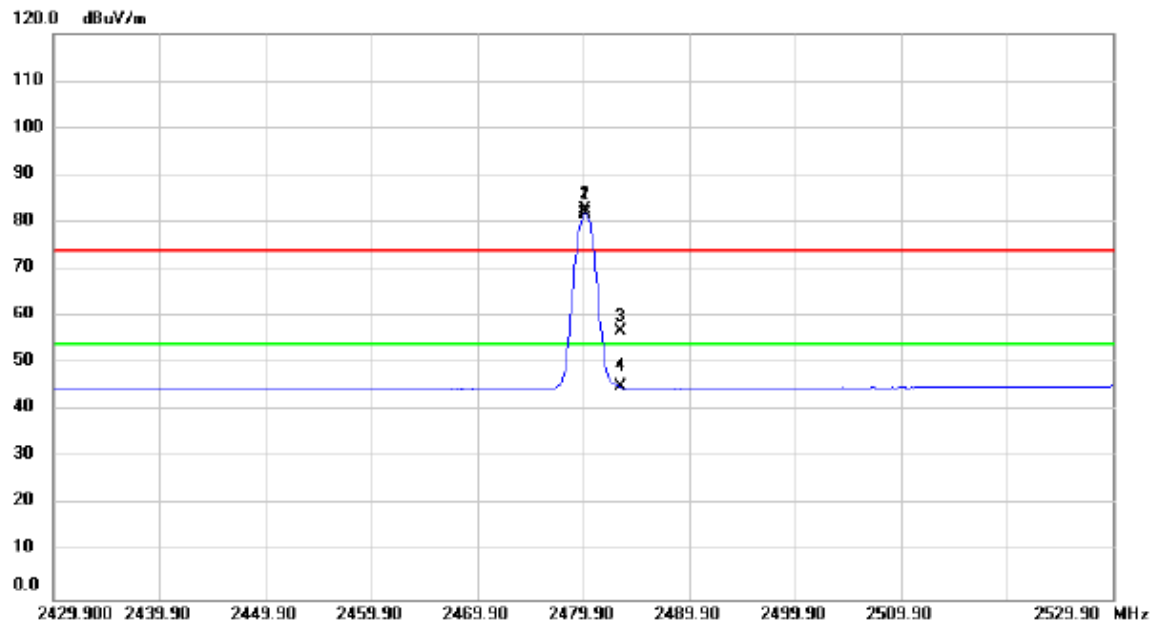
### Horizontal



No.	Mk.	Freq.	Reading Level	Correct Factor	Measurement	Limit	Margin		
		MHz	dBuV	dB	dBuV/m	dBuV/m	dB	Detector	Comment
1		4880.200	45.32	3.56	48.88	74.00	-25.12	peak	
2	*	4880.200	39.82	3.56	43.38	54.00	-10.62	AVG	
3		7310.260	38.78	8.55	47.33	74.00	-26.67	peak	
4		7310.260	26.59	8.55	35.14	54.00	-18.86	AVG	

Orthogonal Axis :	X
Test Mode :	TX 2480MHz_CH39_1Mbps

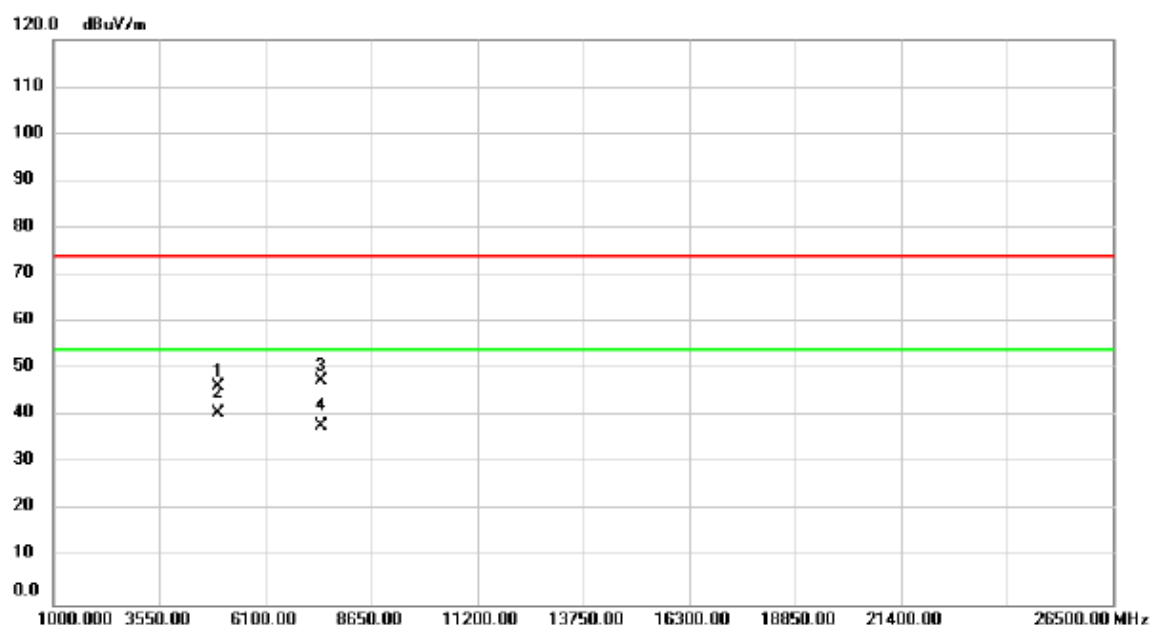
### Vertical



No.	Mk.	Freq.	Reading Level	Correct Factor	Measurement	Limit	Margin		
		MHz	dBuV	dB	dBuV/m	dBuV/m	dB	Detector	Comment
1	X	2480.100	51.55	31.10	82.65	74.00	8.65	peak	NO LIMIT
2	*	2480.100	50.60	31.10	81.70	54.00	27.70	AVG	NO LIMIT
3		2483.500	25.73	31.11	56.84	74.00	-17.16	peak	
4		2483.500	13.90	31.11	45.01	54.00	-8.99	AVG	

Orthogonal Axis :	X
Test Mode :	TX 2480MHz _CH39_1Mbps

### Vertical

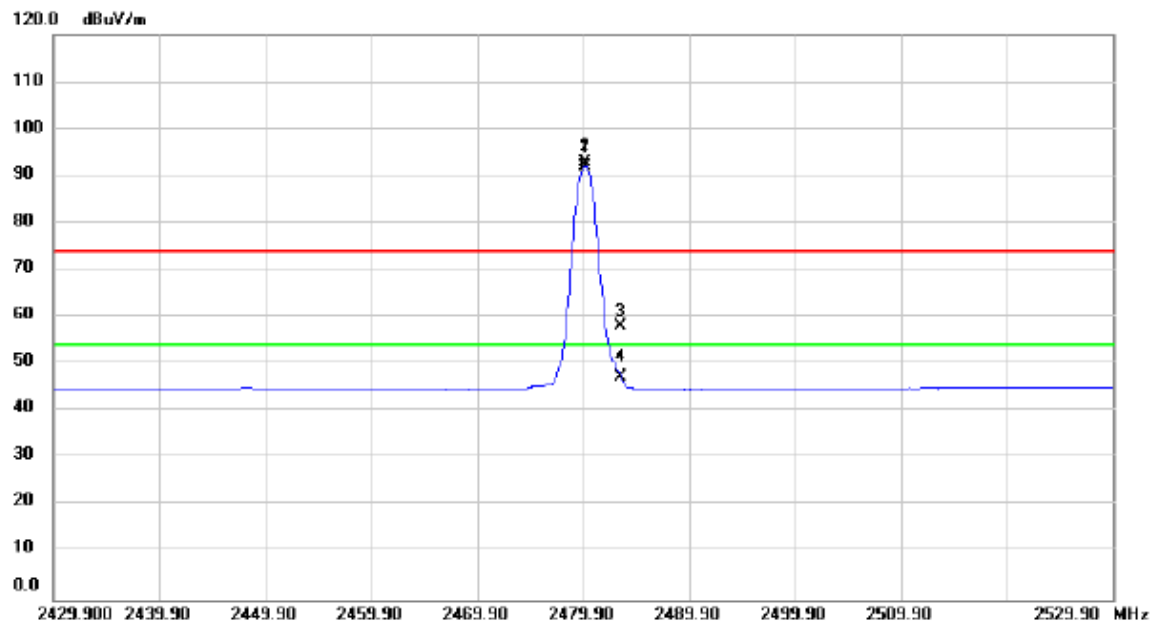


No.	Mk.	Freq.	Reading Level	Correct Factor	Measurement	Limit	Margin		
		MHz	dBuV	dB	dBuV/m	dBuV/m	dB	Detector	Comment
1		4958.220	42.63	3.81	46.44	74.00	-27.56	peak	
2	*	4958.220	36.82	3.81	40.63	54.00	-13.37	AVG	
3		7446.780	38.77	8.77	47.54	74.00	-26.46	peak	
4		7446.780	29.04	8.77	37.81	54.00	-16.19	AVG	



Orthogonal Axis :	X
Test Mode :	TX 2480MHz _CH39_1Mbps

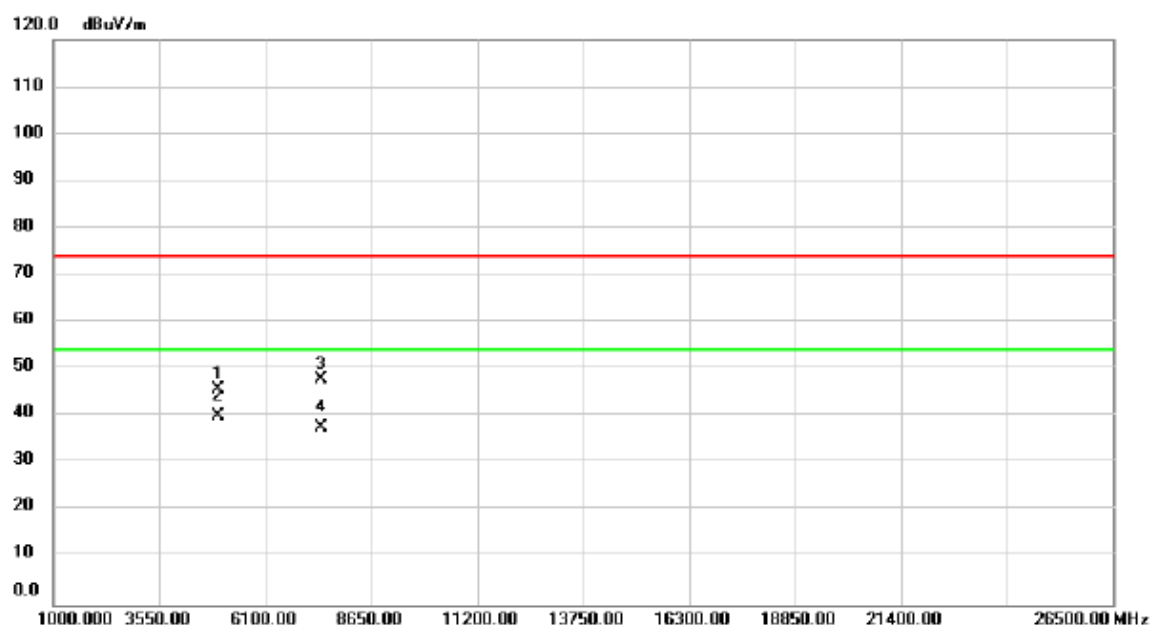
### Horizontal



No.	Mk.	Freq.	Reading Level	Correct Factor	Measurement	Limit	Margin		
		MHz	dBuV	dB	dBuV/m	dBuV/m	dB	Detector	Comment
1	X	2480.100	61.69	31.10	92.79	74.00	18.79	peak	NO LIMIT
2	*	2480.100	60.93	31.10	92.03	54.00	38.03	AVG	NO LIMIT
3		2483.500	27.05	31.11	58.16	74.00	-15.84	peak	
4		2483.500	16.13	31.11	47.24	54.00	-6.76	AVG	

Orthogonal Axis :	X
Test Mode :	TX 2480MHz _CH39_1Mbps

### Horizontal



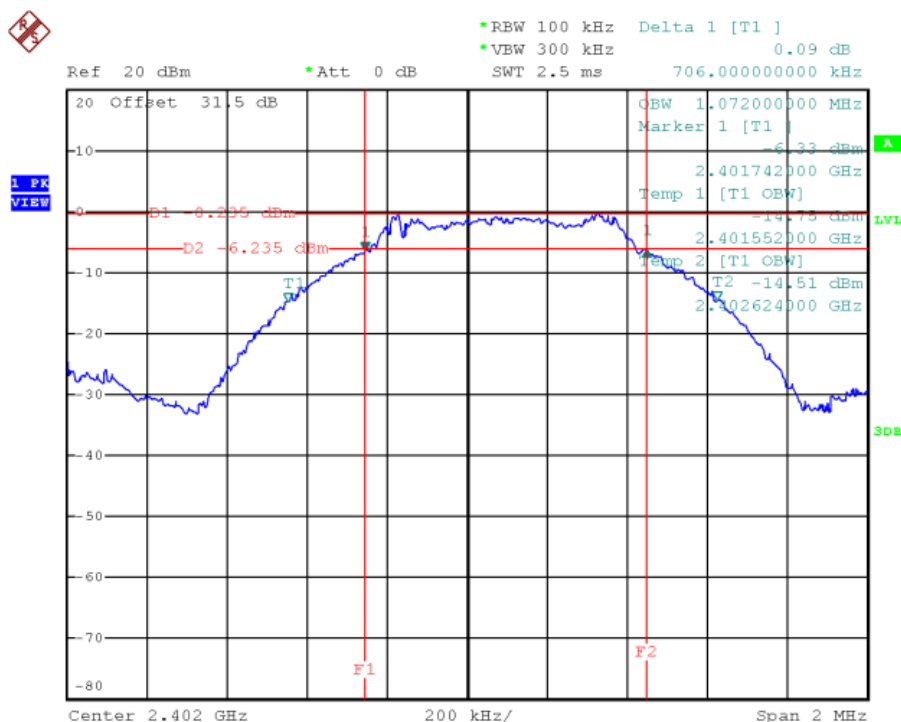
No.	Mk.	Freq.	Reading Level	Correct Factor	Measurement	Limit	Margin		
		MHz	dBuV	dB	dBuV/m	dBuV/m	dB	Detector	Comment
1		4958.180	42.02	3.81	45.83	74.00	-28.17	peak	
2	*	4958.180	36.17	3.81	39.98	54.00	-14.02	AVG	
3		7448.000	39.03	8.77	47.80	74.00	-26.20	peak	
4		7448.000	28.99	8.77	37.76	54.00	-16.24	AVG	

## **ATTACHMENT E - BANDWIDTH**

Test Mode : CH00, CH19 , CH39 - 1Mbps

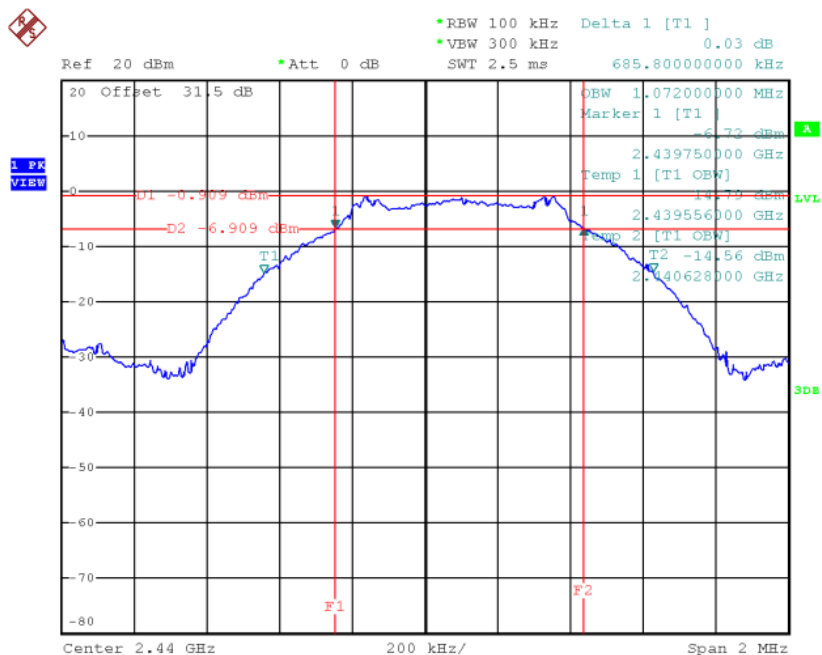
Frequency (MHz)	6dB Bandwidth (MHz)	99% Occupied BW (MHz)	Min. Limit (kHz)	Test Result
2402	0.706	1.072	500	Complies
2440	0.686	1.072	500	Complies
2480	0.654	1.068	500	Complies

### TX CH00



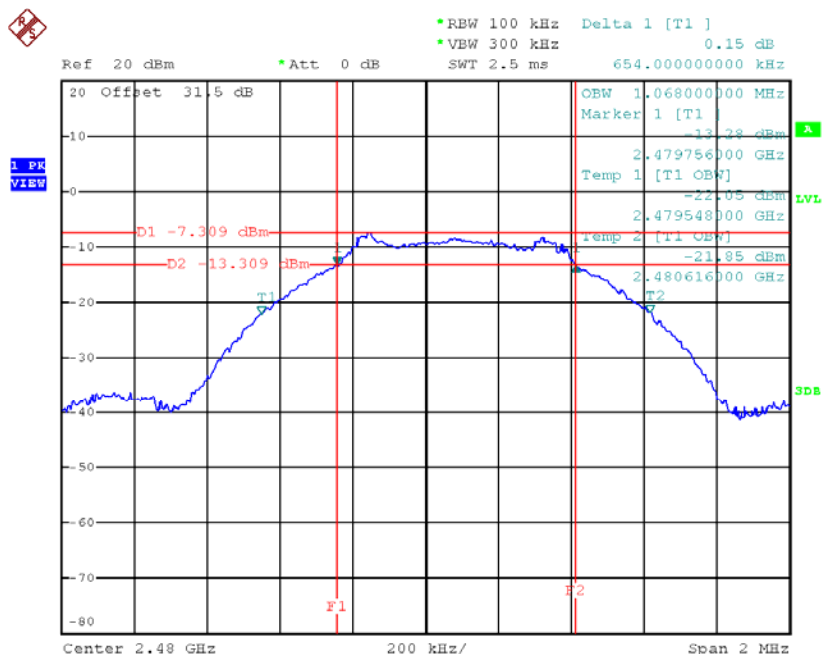
Date: 7.OCT.2015 15:38:19

# TX CH19



Date: 7.OCT.2015 15:40:25

# TX CH39



Date: 13.OCT.2015 10:49:16

## ATTACHMENT F - MAXIMUM OUTPUT POWER TEST

Test Mode :	CH00, CH19 , CH39 - 1Mbps
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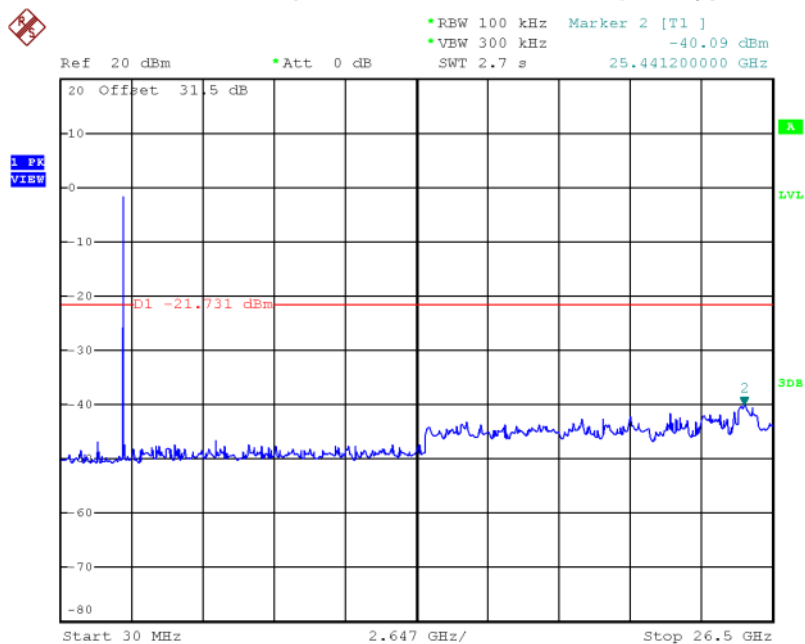
Frequency (MHz)	Conducted Power (dBm)	Conducted Power (Watt)	Max. Limit (dBm)	Max. Limit (Watt)	Test Result
2402	5.36	0.0034	30.00	1.00	Complies
2440	6.92	0.0049	30.00	1.00	Complies
2480	6.98	0.0050	30.00	1.00	Complies

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



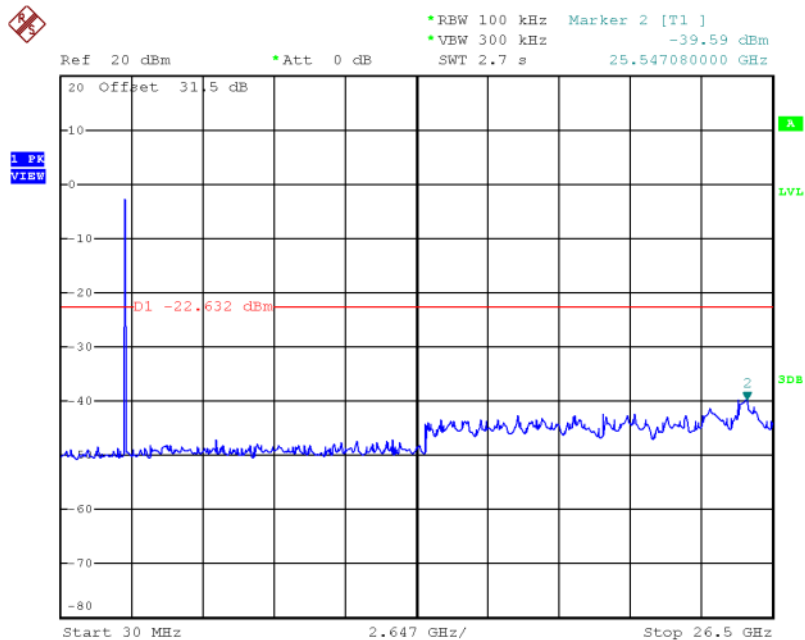


### CH00 (10 Harmonic of the frequency)



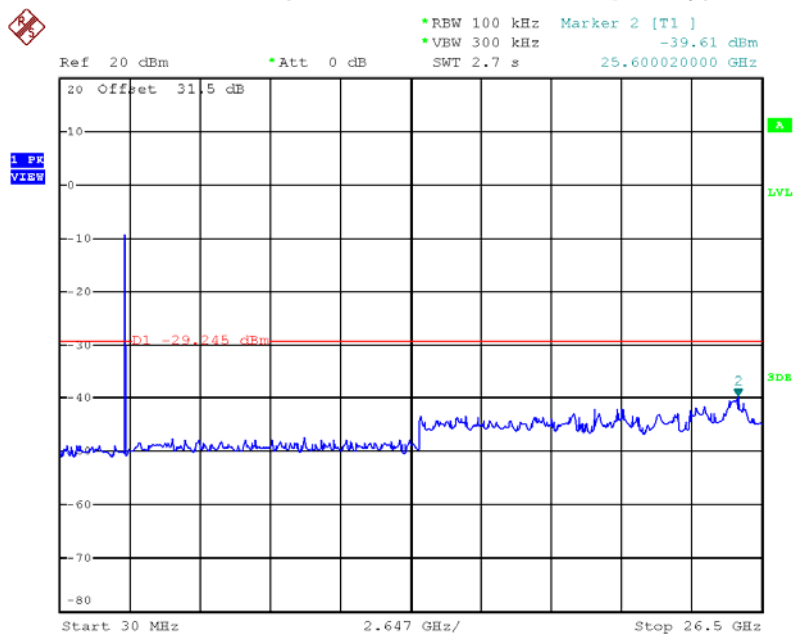
Date: 7.OCT.2015 15:38:58

### CH19 (10 Harmonic of the frequency)



Date: 7.OCT.2015 15:40:38

# CH39 (10 Harmonic of the frequency)



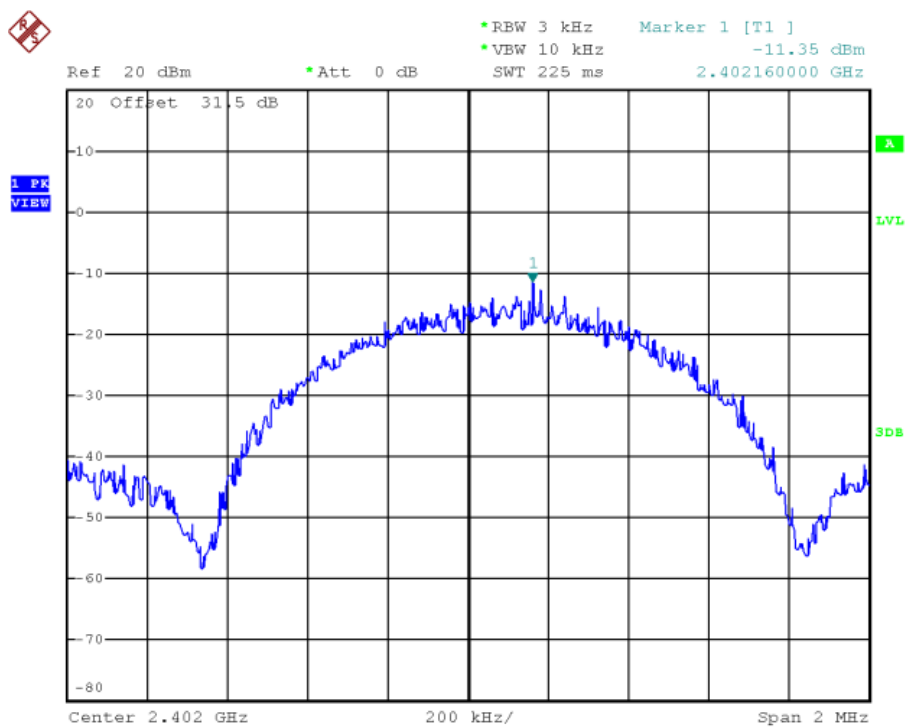
Date: 13.OCT.2015 10:49:55

## **ATTACHMENT H - POWER SPECTRAL DENSITY TEST**

Test Mode : CH00, CH19 , CH39 - 1Mbps

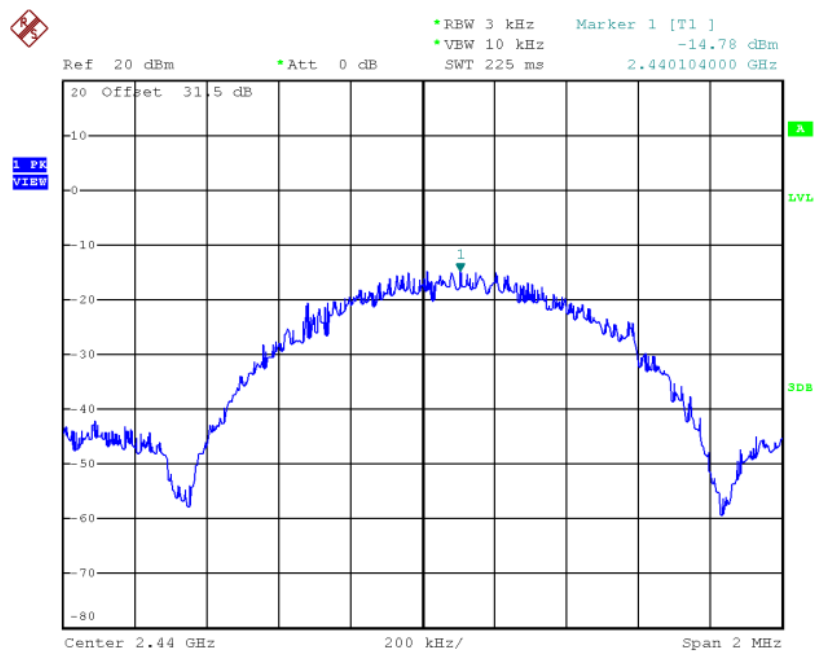
Frequency (MHz)	Power Density (dBm)	Max. Limit (dBm)	Result
2402	-11.35	8	Complies
2440	-14.78	8	Complies
2480	-19.84	8	Complies

### TX CH00



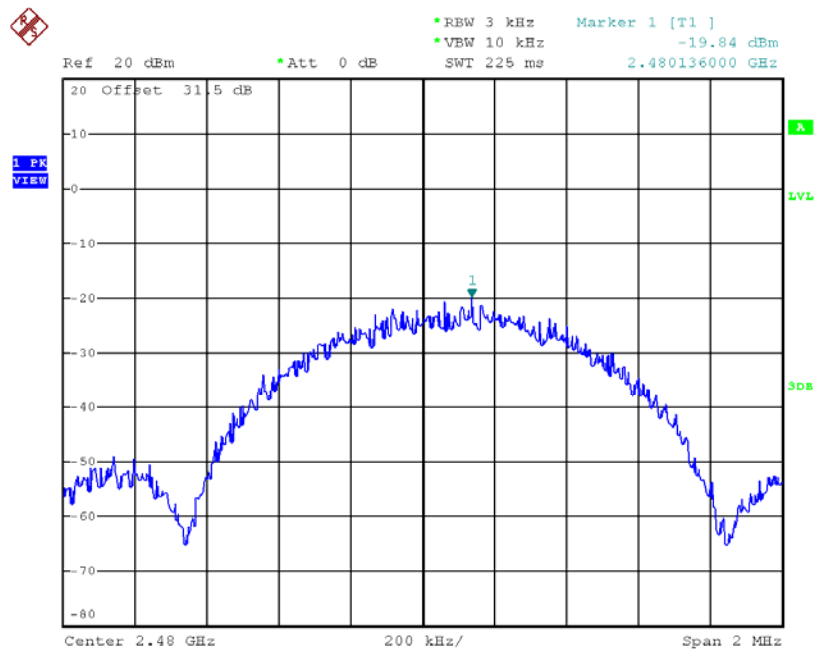
Date: 7.OCT.2015 15:39:05

# TX CH19



Date: 7.OCT.2015 15:40:45

# TX CH39



Date: 13.OCT.2015 10:50:01