FCC Radio Test Report

FCC ID: OXM000063

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

Issued Date : Mar. 12, 2014
Project No. : 1402C152
Equipment : Wireless Blue Trace Mouse
Model Name : AMW063
Applicant : Targus Group International, Inc.
Address : 122 North Miller Street, Anaheim, Californla, 92806, United States

Tested by: Neutron Engineering Inc. EMC Laboratory
Date of Receipt: Feb. 27, 2014
Date of Test: Feb. 27, 2014~ Mar. 11, 2014

Testing Engineer : David Mao
(David Mao)

Technical Manager : Leo Hung
(Leo Hung)

Authorized Signatory : Steven Lu
(Steven Lu)

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Declaration

Neutron 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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Limitation

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REPORT ISSUED HISTORY

Issued No.	Description	Issued Date
NEI-FCCP-1-1402C152	Original Issue.	Mar. 12, 2014

1. CERTIFICATION

Equipment	:	Wireless Blue Trace Mouse
Brand Name	:	TARGUS
Model Name	:	AMW063
Applicant	:	Targus Group lnternational, Inc.
Manufacturer	:	Targus Group lnternational, Inc.
Address	:	122 North Miller Street, Anaheim, Californla, 92806, United States
Factory	:	Acrox Technologies Co., Ltd.
Address	:	Hsinmin Industria, Changan Town, Dongguan City, Guangdong, China
Date of Test	:	Feb. 27, 2014~ Mar. 11, 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 Neutron Engineering Inc. EMC Laboratory.
The test data, data evaluation, and equipment configuration contained in our test report (Ref No. NEI-FCCP-1-1402C152) 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 FCC	Test Item	Judgment	Remark
15.207	Conducted Emission	N/A	Note (1)
15.209 15.249	Radiated Spurious Emission	PASS	

NOTE:

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

(2) The EUT used new battery.

2.1 TEST FACILITY

The test facilities used to collect the test data in this report is **DG-CB03** at the location of No.3,Jinshagang 1st Road, ShiXia, Dalang Town,Dong Guan, China.523792
Neutron'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 ± U,where expended 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	Wireless Blue Trace Mouse	
Brand Name	TARGUS	
Model Name	AMW063	
Model Difference	N/A	
Product Description	Operation Frequency	2408~2474 MHz
	Modulation Technology	FSK(1Mbps)
	Data rate	
	Field Strength	81.81dBuV/m (AV Max.)
Power Source	Supplied from 2*AAA battery. (In parallel)	
Power Rating	DC 1.5V, 100mA	
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. Channel List:

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

3. Table for Filed Antenna

Ant.	Brand	Model Name	Antenna Type	Connector	Gain (dBi)
1	N/A	N/A	Printed	N/A	-5

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.

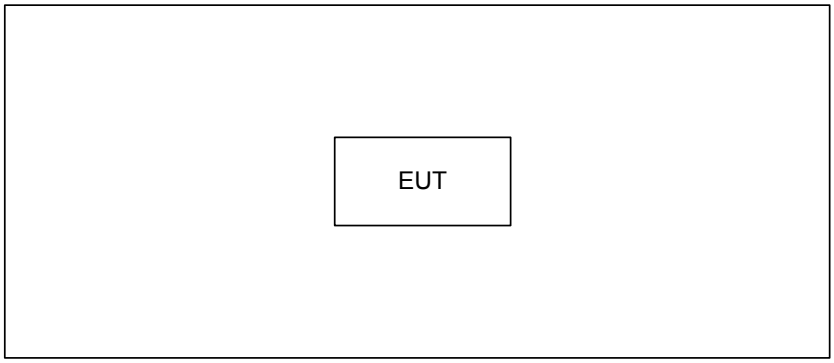
Pretest Mode	Description
Mode 1	Low – 2408MHz
Mode 2	Middle – 2440MHz
Mode 3	High -2474MHz

For Conducted Test	
Final Test Mode	Description
-	”N/A” denotes test is not applicable in this test report.

For Radiated Test	
Final Test Mode	Description
Mode 1	Low – 2408MHz
Mode 2	Middle – 2440MHz
Mode 3	High -2474MHz

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

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/IC	Series No.	Note
-	-	-	-	-	-	

Item	Shielded Type	Ferrite Core	Length	Note
-	-	-	-	

4. EMC EMISSION TEST

4.1 CONDUCTED EMISSION MEASUREMENT

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

FREQUENCY (MHz)	Class A (dBuV)		Class B (dBuV)		Standard
	Quasi-peak	Average	Quasi-peak	Average	
0.15 -0.5	79.00	66.00	66 - 56 *	56 - 46 *	CISPR
0.50 -5.0	73.00	60.00	56.00	46.00	CISPR
5.0 -30.0	73.00	60.00	60.00	50.00	CISPR
0.15 -0.5	79.00	66.00	66 - 56 *	56 - 46 *	FCC
0.50 -5.0	73.00	60.00	56.00	46.00	FCC
5.0 -30.0	73.00	60.00	60.00	50.00	FCC

Note:

(1) The tighter limit applies at the band edges.

(2) The limit of " * " marked band means the limitation decreases linearly with the logarithm of the frequency in the range.

The following table is the setting of the receiver

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

4.1.2 TEST PROCEDURE

a. The EUT was placed 0.8 meters from the horizontal ground plane with EUT being connected to the power mains through a line impedance stabilization network (LISN). All other support equipments powered from additional LISN(s). The LISN provide 50 Ohm/ 50uH of coupling impedance for the measuring instrument.

b. Interconnecting cables that hang closer than 40 cm to the ground plane shall be folded back and forth in the center forming a bundle 30 to 40 cm long.

c. I/O cables that are not connected to a peripheral shall be bundled in the center. The end of the cable may be terminated, if required, using the correct terminating impedance. The overall length shall not exceed 1 m.

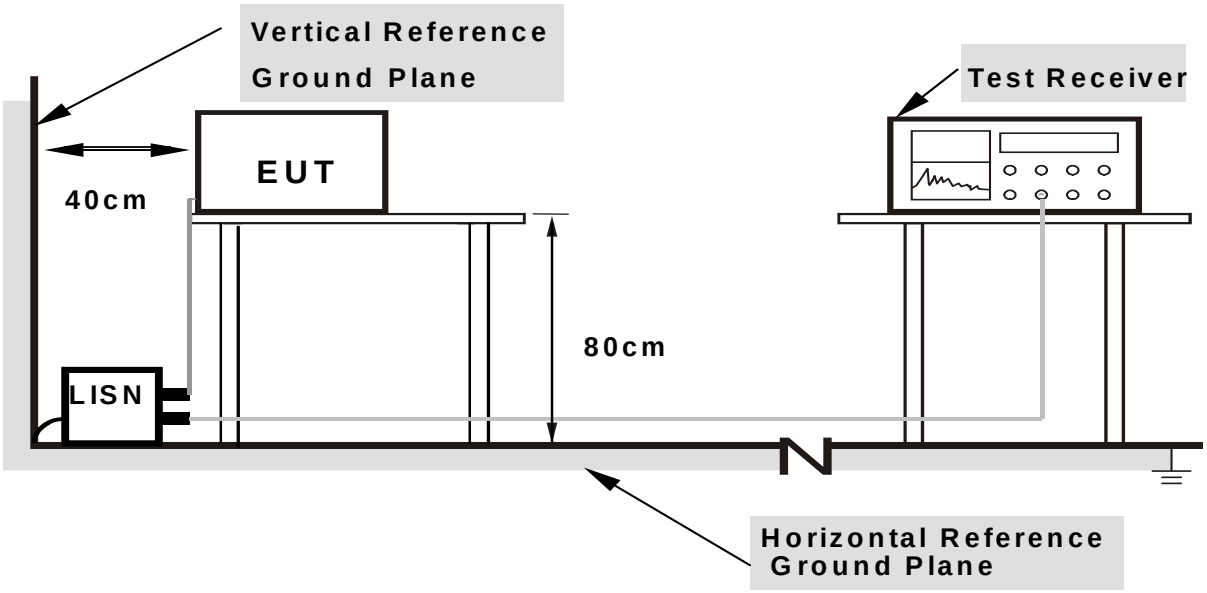
d. LISN at least 80 cm from nearest part of EUT chassis.

e. For the actual test configuration, please refer to the related Item –EUT Test Photos.

4.1.3 DEVIATION FROM TEST STANDARD

No deviation

4.1.4 TEST SETUP



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

4.1.5 EUT OPERATING CONDITIONS

The EUT was configured for testing in a typical fashion (as a customer would normally use it). The EUT has been programmed to continuously transmit during test. This operating condition was tested and used to collect the included data.
The EUT was programmed to be in continuously transmitting mode.

4.1.6 EUT TEST CONDITIONS
Temperature: 25°C
Relative Humidity: 55%
Test Voltage: DC 1.5V

4.1.7 TEST RESULTS

Test Mode:	N/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 in this test report.

4.2 RADIATED EMISSION MEASUREMENT

4.2.1 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 μV/m (94 dBμV/m) @ 3 m	2400-2483.5
Field strength of harmonics 500 μV/m (54 dBμV/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

4.2.2 TEST PROCEDURE

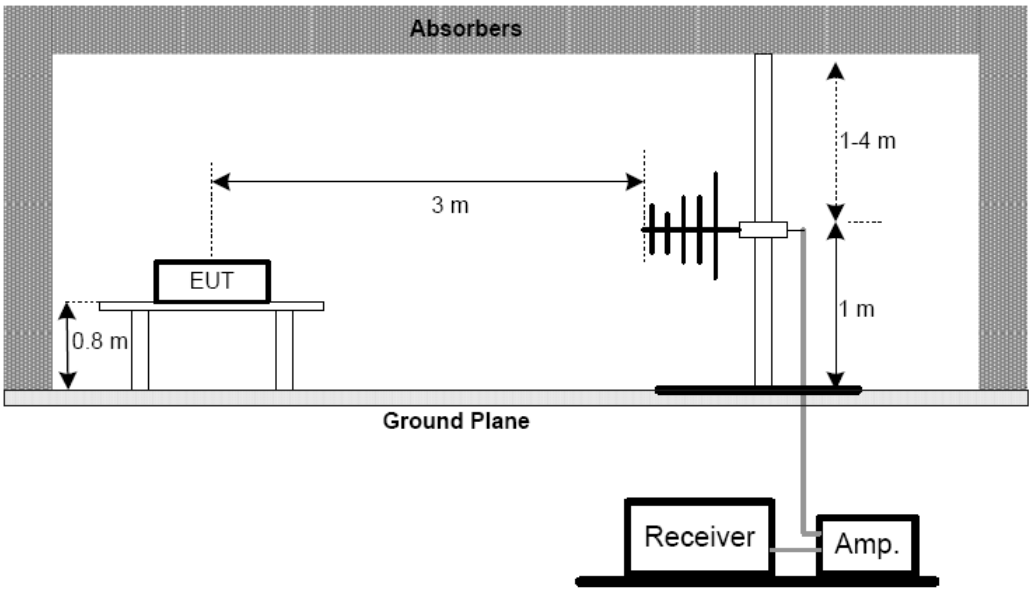
a. The EUT was placed on the top of a rotating table 0.8 meters above the ground at a 3 meter semi-anechoic chamber. The table was rotated 360 degrees to determine the position of the highest radiation.(below 1GHz)
b. The EUT was placed on the top of a rotating table 0.8 meters above the ground at a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

4.2.3 DEVIATION FROM TEST STANDARD

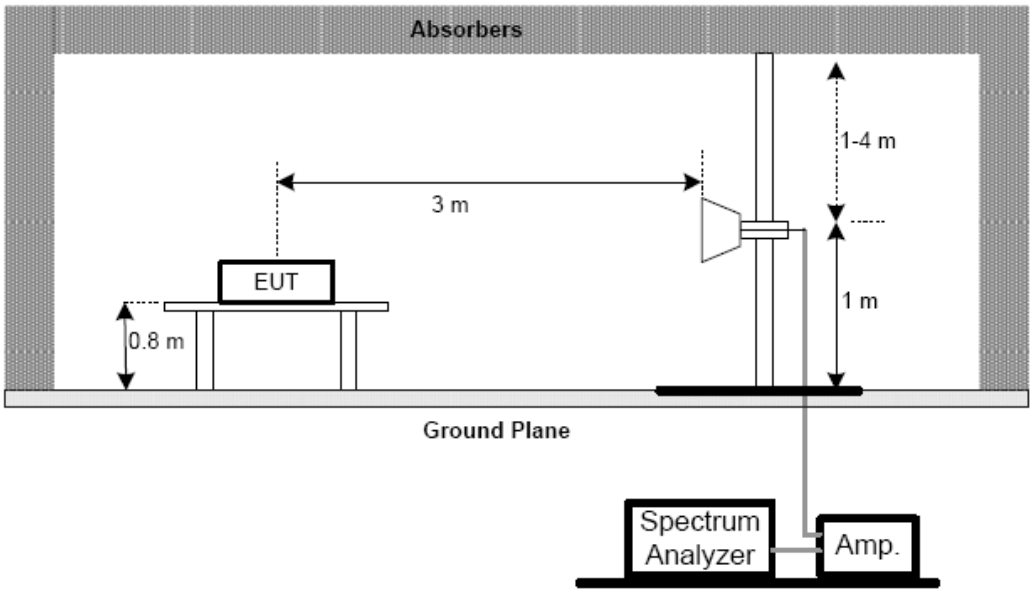
No deviation

4.2.4 TEST SETUP

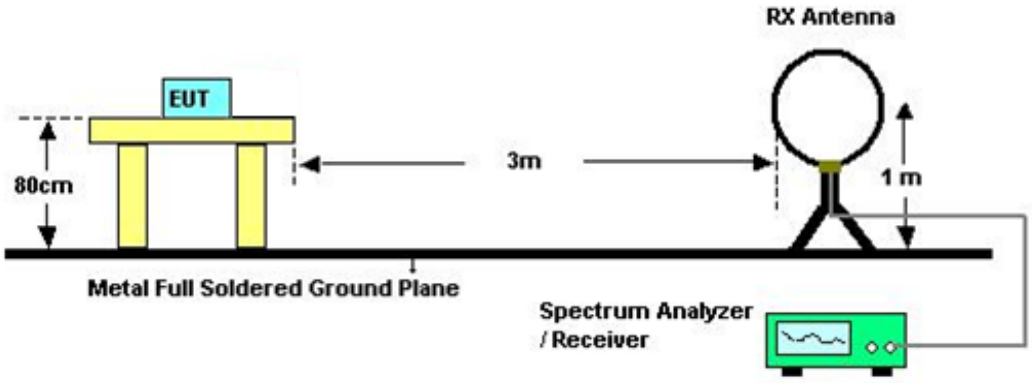
(A) Radiated Emission Test Set-Up Frequency Below 1 GHz



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



(C) For radiated emissions below 30MHz



4.2.5 EUT OPERATING CONDITIONS

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

4.2.6 EUT TEST CONDITIONS

Temperature: 25°C
Relative Humidity: 55%
Test Voltage: DC 1.5V

4.2.7 TEST RESULTS (BELOW 30MHz)

Test Mode:	TX 2408MHz

Freq. (MHz)	Ant. 0°/90°	Reading(RA) (dBuV)	Corr.Factor(CF) (dB)	Measured(FS) (dBuV/m)	Limits(QP) (dBuV/m)	Margin (dB)	Note
0.0045	0°	25.74	24.30	50.04	134.54	-84.50	AVG
0.0045	0°	29.22	24.30	53.52	154.54	-101.02	PK
0.0254	0°	21.37	23.96	45.33	119.52	-74.19	AVG
0.0254	0°	24.27	23.96	48.23	139.52	-91.29	PK
0.0387	0°	21.84	23.12	44.96	115.85	-70.90	AVG
0.0387	0°	24.34	23.12	47.46	135.85	-88.40	PK
0.0653	0°	18.19	22.09	40.28	111.31	-71.02	AVG
0.0653	0°	23.04	22.09	45.13	131.31	-86.17	PK
0.2652	0°	20.43	20.36	40.79	99.13	-58.34	AVG
0.2652	0°	22.74	20.36	43.10	119.13	-76.03	PK
1.4624	0°	27.37	19.55	46.92	64.30	-17.38	QP

Freq. (MHz)	Ant. 0°/90°	Reading(RA) (dBuV)	Corr.Factor(CF) (dB)	Measured(FS) (dBuV/m)	Limits(QP) (dBuV/m)	Margin (dB)	Note
0.0092	90°	19.03	24.30	43.33	128.38	-85.05	AVG
0.0092	90°	20.25	24.30	44.55	148.38	-103.83	PK
0.0224	90°	15.36	24.15	39.51	120.58	-81.08	AVG
0.0224	90°	17.42	24.15	41.57	140.58	-99.02	PK
0.0464	90°	18.74	22.63	41.37	114.28	-72.91	AVG
0.0464	90°	21.86	22.63	44.49	134.28	-89.79	PK
0.0775	90°	21.18	21.85	43.03	109.82	-66.79	AVG
0.0775	90°	22.52	21.85	44.37	129.82	-85.45	PK
0.3746	90°	21.36	20.10	41.46	96.13	-54.67	AVG
0.3746	90°	24.17	20.10	44.27	116.13	-71.86	PK
1.6765	90°	25.37	19.53	44.90	63.12	-18.21	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 (specific distance / test distance) (dB);.
(3) Limit line = specific limits (dBuV) + distance extrapolation factor..

4.2.8 TEST RESULTS (BETWEEN 30 – 1000 MHz)

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.

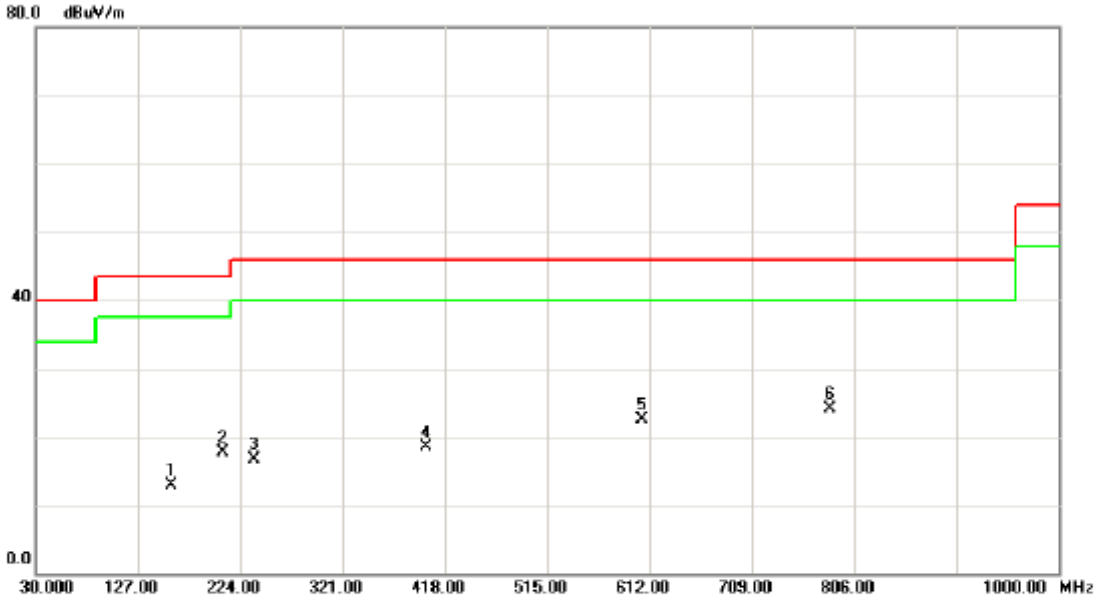
(2) Measuring frequency range from 30MHz to 1000MHz or the 10th harmonic of highest fundamental frequency."F" denotes fundamental frequency; "H" denotes spurious frequency. "E" denotes band edge frequency.

(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) 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.

Test Mode:	TX 2408MHz

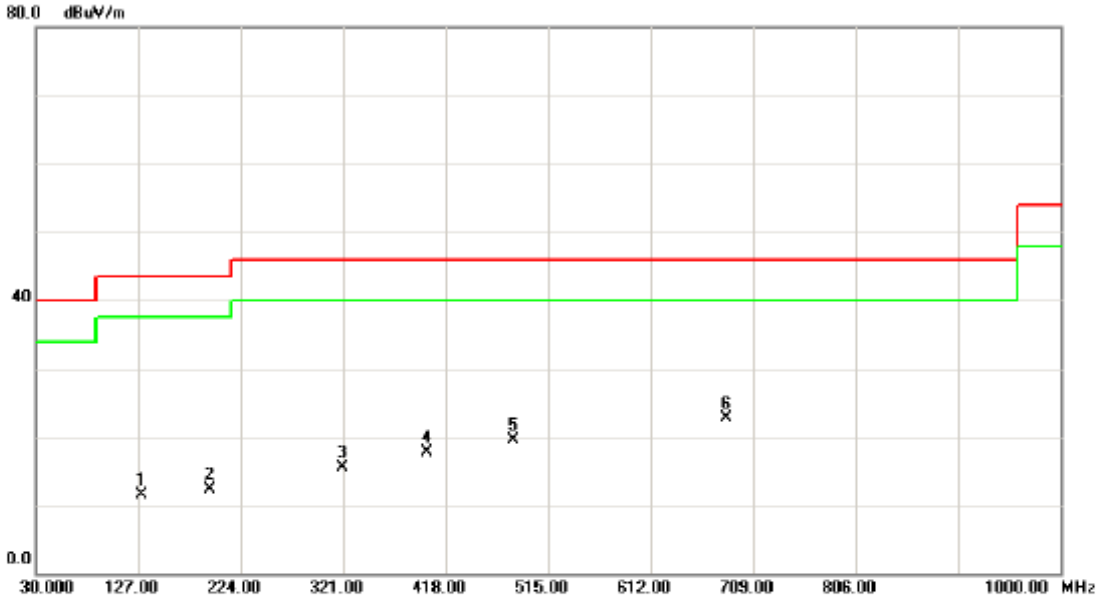
Vertical



No.	Mk.	Freq.	Reading Level	Correct Factor	Measure-ment	Limit	Over		
		MHz	dBuV	dB	dBuV/m	dBuV/m	dB	Detector	Comment
1		159.0100	32.06	-19.19	12.87	43.50	-30.63	peak	
2		207.5100	35.90	-18.17	17.73	43.50	-25.77	peak	
3		237.5800	34.02	-17.22	16.80	46.00	-29.20	peak	
4		400.5400	30.05	-11.63	18.42	46.00	-27.58	peak	
5		604.2400	30.16	-7.66	22.50	46.00	-23.50	peak	
6	*	783.6900	30.53	-6.38	24.15	46.00	-21.85	peak	

Test Mode:	TX 2408MHz

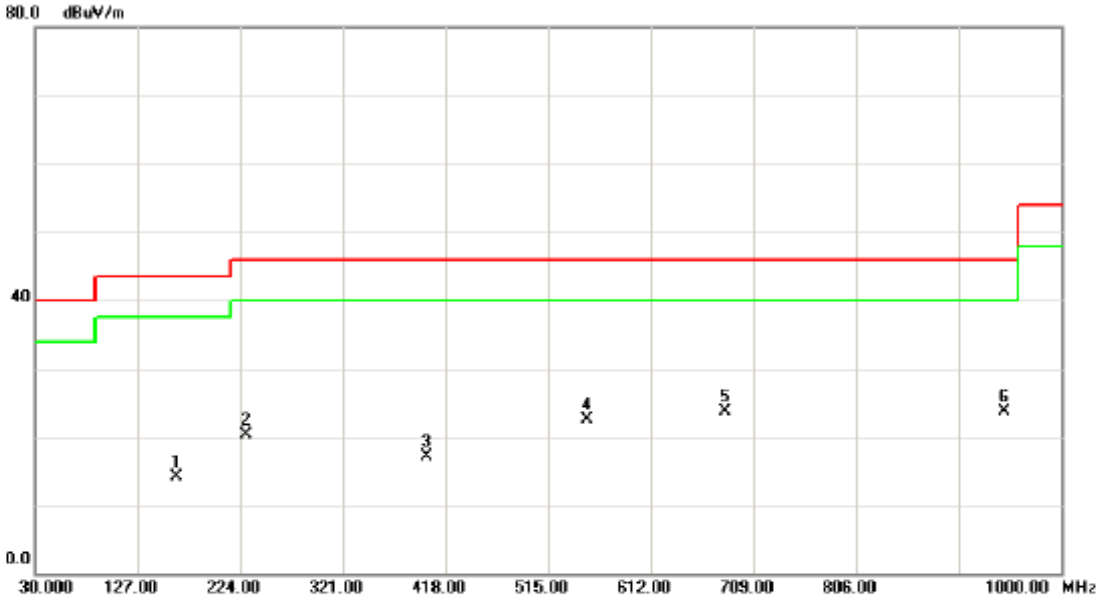
Horizontal



No.	Mk.	Freq.	Reading Level	Correct Factor	Measure-ment	Limit	Over		
		MHz	dBuV	dB	dBuV/m	dBuV/m	dB	Detector	Comment
1		129.9100	30.99	-19.50	11.49	43.50	-32.01	peak	
2		194.9000	30.74	-18.34	12.40	43.50	-31.10	peak	
3		320.0300	29.35	-13.84	15.51	46.00	-30.49	peak	
4		400.5400	29.35	-11.63	17.72	46.00	-28.28	peak	
5		482.0200	30.02	-10.61	19.41	46.00	-26.59	peak	
6	*	683.7800	29.70	-7.04	22.66	46.00	-23.34	peak	

Test Mode:	TX 2440MHz

Vertical



No.	Mk.	Freq.	Reading Level	Correct Factor	Measure-ment	Limit	Over		
		MHz	dBuV	dB	dBuV/m	dBuV/m	dB	Detector	Comment
1		163.8600	33.18	-19.07	14.11	43.50	-29.39	peak	
2		229.8200	37.81	-17.47	20.34	46.00	-25.66	peak	
3		400.5400	28.77	-11.63	17.14	46.00	-28.86	peak	
4		551.8600	31.12	-8.69	22.43	46.00	-23.57	peak	
5	*	682.8100	30.71	-7.04	23.67	46.00	-22.33	peak	
6		945.6800	27.80	-4.17	23.63	46.00	-22.37	peak	

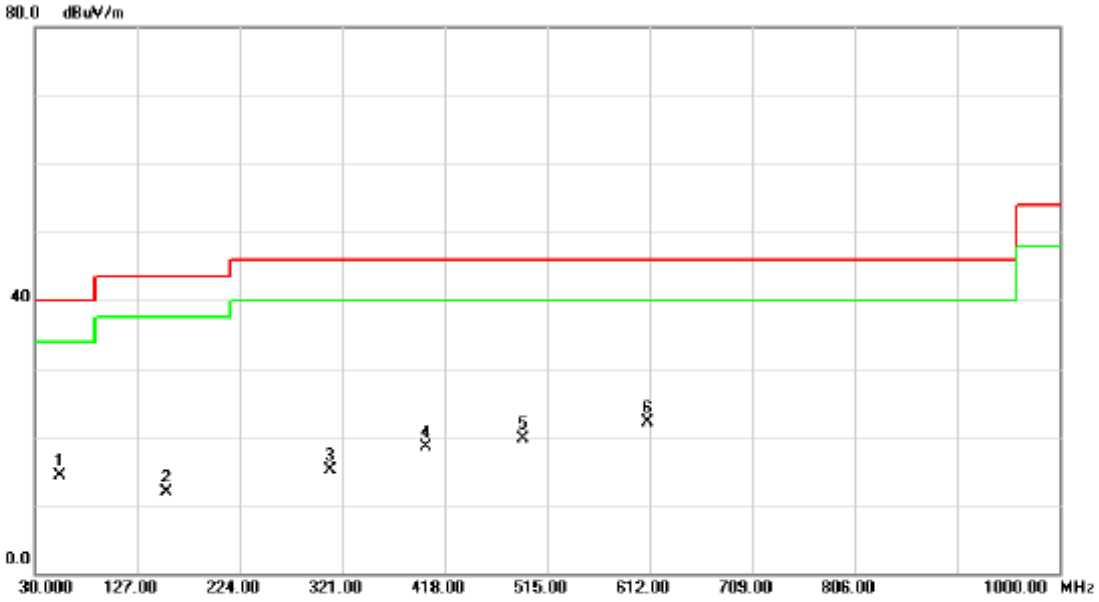
Test Mode:	TX 2440MHz

Horizontal

No.	Mk.	Freq.	Reading Level	Correct Factor	Measure-ment	Limit	Over		
		MHz	dBuV	dB	dBuV/m	dBuV/m	dB	Detector	Comment
1		40.6700	34.75	-17.59	17.16	40.00	-22.84	peak	
2		279.2900	31.31	-14.75	16.56	46.00	-29.44	peak	
3		412.1800	33.08	-11.47	21.61	46.00	-24.39	peak	
4		450.0100	33.04	-10.93	22.11	46.00	-23.89	peak	
5		585.8100	32.11	-8.01	24.10	46.00	-21.90	peak	
6	*	654.6800	32.22	-7.00	25.22	46.00	-20.78	peak	

Test Mode:	TX 2474MHz

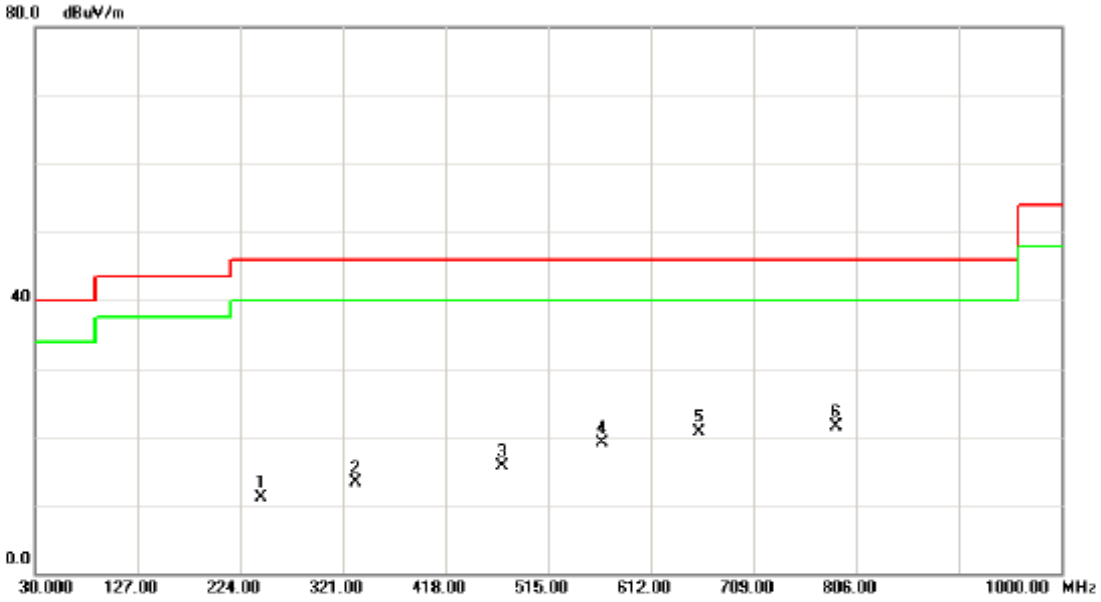
Vertical



No.	Mk.	Freq.	Reading Level	Correct Factor	Measure-ment	Limit	Over		
		MHz	dBuV	dB	dBuV/m	dBuV/m	dB	Detector	Comment
1		54.2500	32.79	-18.48	14.31	40.00	-25.69	peak	
2		155.1300	31.10	-19.12	11.98	43.50	-31.52	peak	
3		309.3600	29.12	-14.05	15.07	46.00	-30.93	peak	
4		400.5400	30.04	-11.63	18.41	46.00	-27.59	peak	
5		492.6900	30.19	-10.50	19.69	46.00	-26.31	peak	
6	*	610.0600	29.78	-7.58	22.20	46.00	-23.80	peak	

Test Mode:	TX 2474MHz

Horizontal



No.	Mk.	Freq.	Reading Level	Correct Factor	Measure-ment	Limit	Over		
		MHz	dBuV	dB	dBuV/m	dBuV/m	dB	Detector	Comment
1		243.4000	27.98	-16.93	11.05	46.00	-34.95	peak	
2		332.6400	26.90	-13.59	13.31	46.00	-32.69	peak	
3		471.3500	26.33	-10.72	15.61	46.00	-30.39	peak	
4		565.4400	27.56	-8.42	19.14	46.00	-26.86	peak	
5		657.5900	27.67	-7.00	20.67	46.00	-25.33	peak	
6	*	786.6000	27.83	-6.35	21.48	46.00	-24.52	peak	

4.2.9 TEST RESULTS (ABOVE 1000 MHz)

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. (This judgment method includes the Band Edge Requirement.)
(3) Radiated emissions measured in frequency range above 1000MHz were made with an instrument using Peak detector mode and AV detector mode of the emission .
(4) 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.
(5) A preamp and high pass filter were used for this test in order to provide sufficient measurement sensitivity.
(6) EUT Orthogonal Axis：
"X" - denotes Laid on Table；"Y" - denotes Vertical Stand；"Z" - denotes Side Stand
(7) 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
(8) The average value of fundamental frequency is:
Average = Peak value + 20log(Duty cycle) ,Final AV=PK-19.49

Test Mode:	TX 2408MHz

Freq.	Ant.Pol.	Reading		Ant./CF	Act.		Limit		Note
		Peak	AV		Peak	AV	Peak	AV	
(MHz)	H/V	(dBuV)	(dBuV)	CF(dB)	(dBuV/m)	(dBuV/m)	(dBuV/m)	(dBuV/m)	
2390.00	V	23.66	14.37	34.09	57.75	48.46	74.00	54.00	X/E
2408.50	**V**	**45.72**	**42.00**	**34.14**	**79.86**	**76.14**	**114.00**	**94.00**	**X/F**
4816.98	V	49.44	44.35	6.42	55.86	50.77	74.00	54.00	X/H

Freq.	Ant.Pol.	Reading		Ant./CF	Act.		Limit		Note
		Peak	AV		Peak	AV	Peak	AV	
(MHz)	H/V	(dBuV)	(dBuV)	CF(dB)	(dBuV/m)	(dBuV/m)	(dBuV/m)	(dBuV/m)	
2390.00	H	24.00	14.30	34.09	58.09	48.39	74.00	54.00	X/E
2407.55	**H**	**51.13**	**47.67**	**34.14**	**85.27**	**81.81**	**114.00**	**94.00**	**X/F**
4817.14	H	50.05	44.70	6.42	56.47	51.12	74.00	54.00	X/H

Test Mode:	TX 2440MHz

Freq.	Ant.Pol.	Reading		Ant./CF	Act.		Limit		Note
		Peak	AV		Peak	AV	Peak	AV	
(MHz)	H/V	(dBuV)	(dBuV)	CF(dB)	(dBuV/m)	(dBuV/m)	(dBuV/m)	(dBuV/m)	
2439.50	**V**	**45.29**	**41.49**	**34.24**	**79.53**	**75.73**	**114.00**	**94.00**	**X/F**
4879.18	V	44.44	37.49	6.60	51.04	44.09	74.00	54.00	X/H

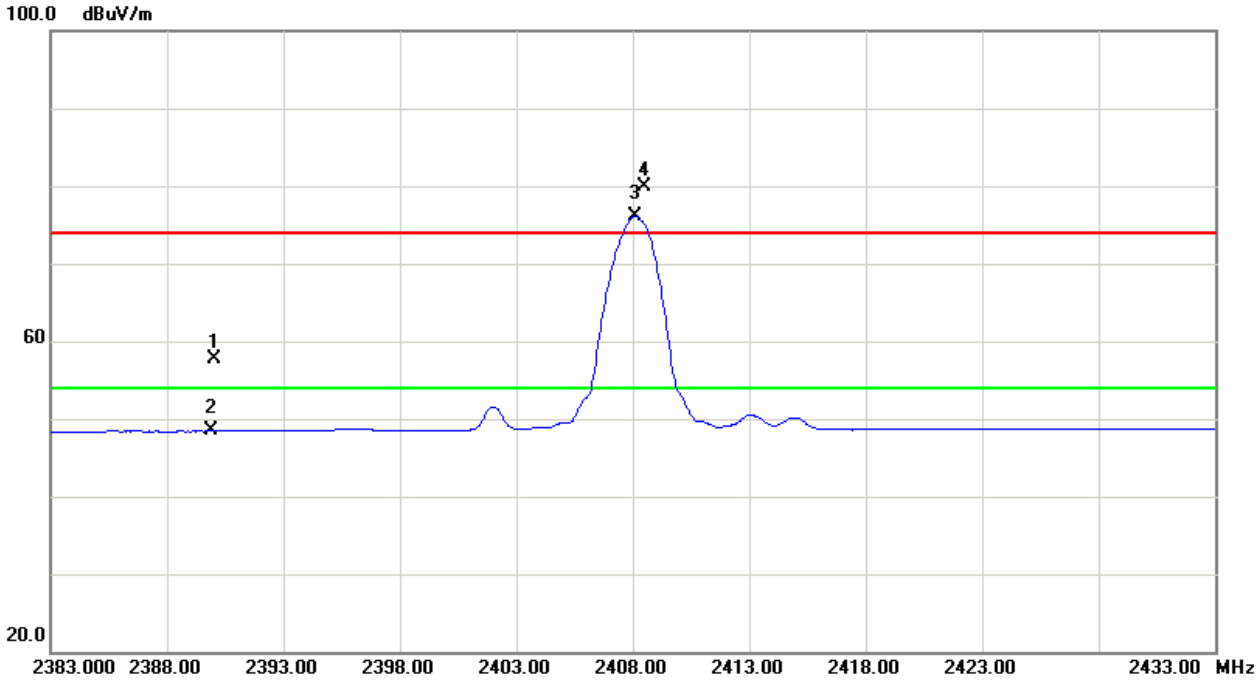
Freq.	Ant.Pol.	Reading		Ant./CF	Act.		Limit		Note
		Peak	AV		Peak	AV	Peak	AV	
(MHz)	H/V	(dBuV)	(dBuV)	CF(dB)	(dBuV/m)	(dBuV/m)	(dBuV/m)	(dBuV/m)	
2439.35	**H**	**48.94**	**45.56**	**34.24**	**83.18**	**79.80**	**114.00**	**94.00**	**X/F**
4881.24	H	44.23	37.50	6.61	50.84	44.11	74.00	54.00	X/H

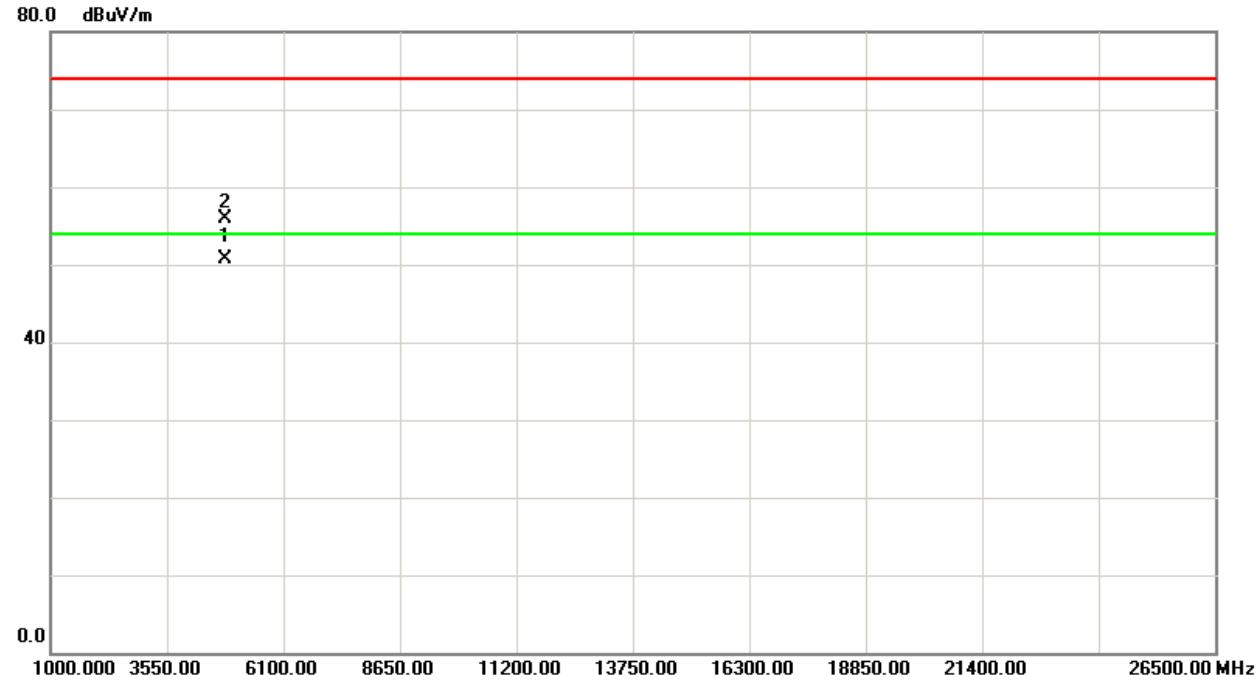
Test Mode:	TX 2474MHz

Freq.	Ant.Pol.	Reading		Ant./CF	Act.		Limit		Note
		Peak	AV		Peak	AV	Peak	AV	
(MHz)	H/V	(dBuV)	(dBuV)	CF(dB)	(dBuV/m)	(dBuV/m)	(dBuV/m)	(dBuV/m)	
2474.65	**V**	**41.54**	**37.51**	**34.34**	**75.88**	**71.85**	**114.00**	**94.00**	**X/F**
2483.50	V	24.29	14.24	34.37	58.66	48.61	74.00	54.00	X/E
4946.92	V	50.78	44.03	6.79	57.57	50.82	74.00	54.00	X/H

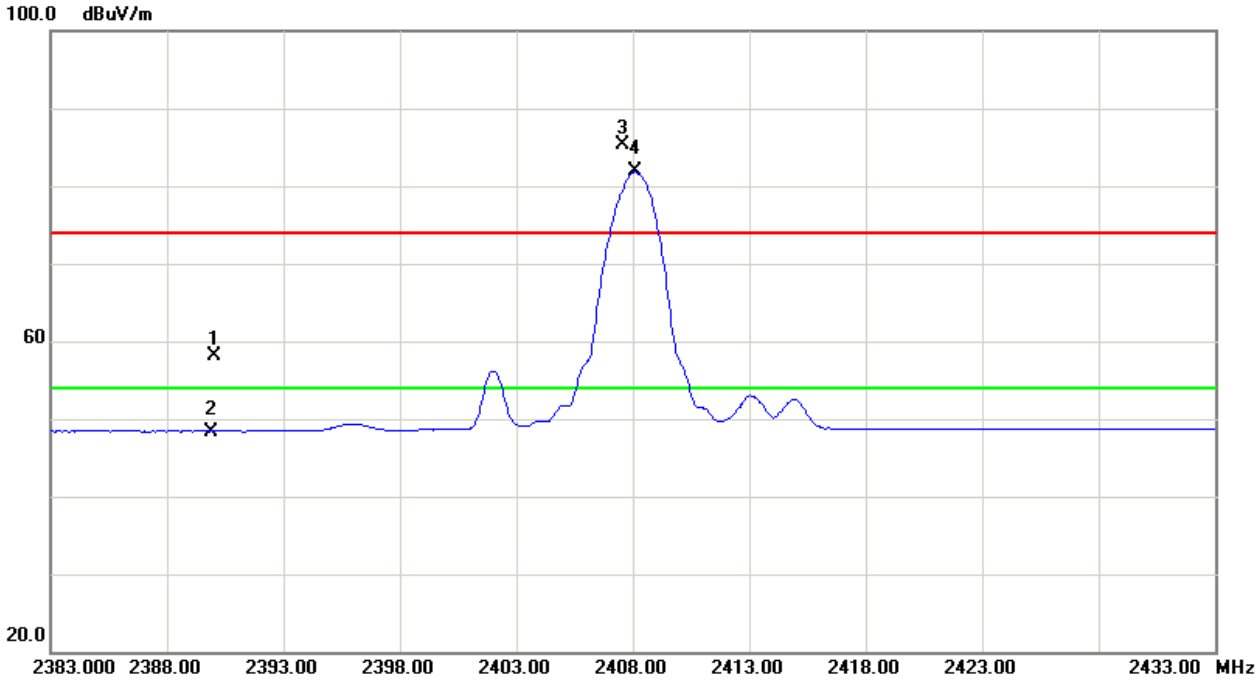
Freq.	Ant.Pol.	Reading		Ant./CF	Act.		Limit		Note
		Peak	AV		Peak	AV	Peak	AV	
(MHz)	H/V	(dBuV)	(dBuV)	CF(dB)	(dBuV/m)	(dBuV/m)	(dBuV/m)	(dBuV/m)	
2474.35	**H**	**50.51**	**46.94**	**34.34**	**84.85**	**81.28**	**114.00**	**94.00**	**X/F**
2483.50	H	24.01	14.29	34.37	58.38	48.66	74.00	54.00	X/E
4949.06	H	48.76	42.19	6.80	55.56	48.99	74.00	54.00	X/H

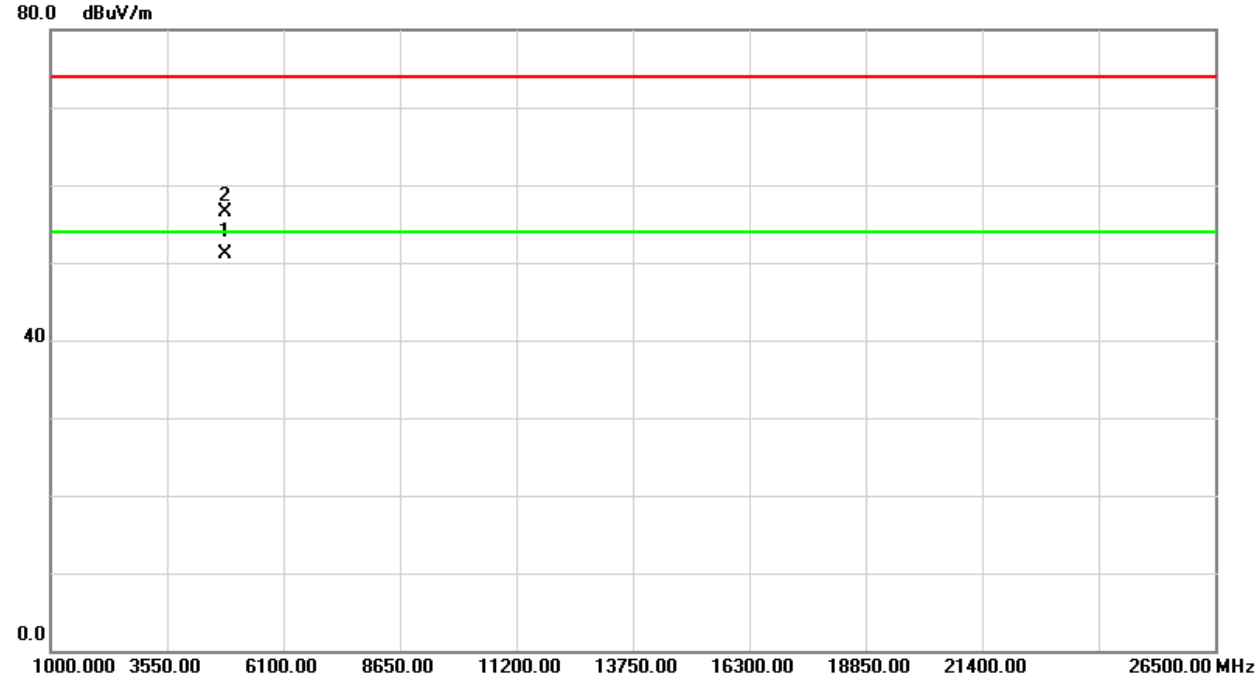
TX 2408MHz (Above 1000 MHz, Vertical)



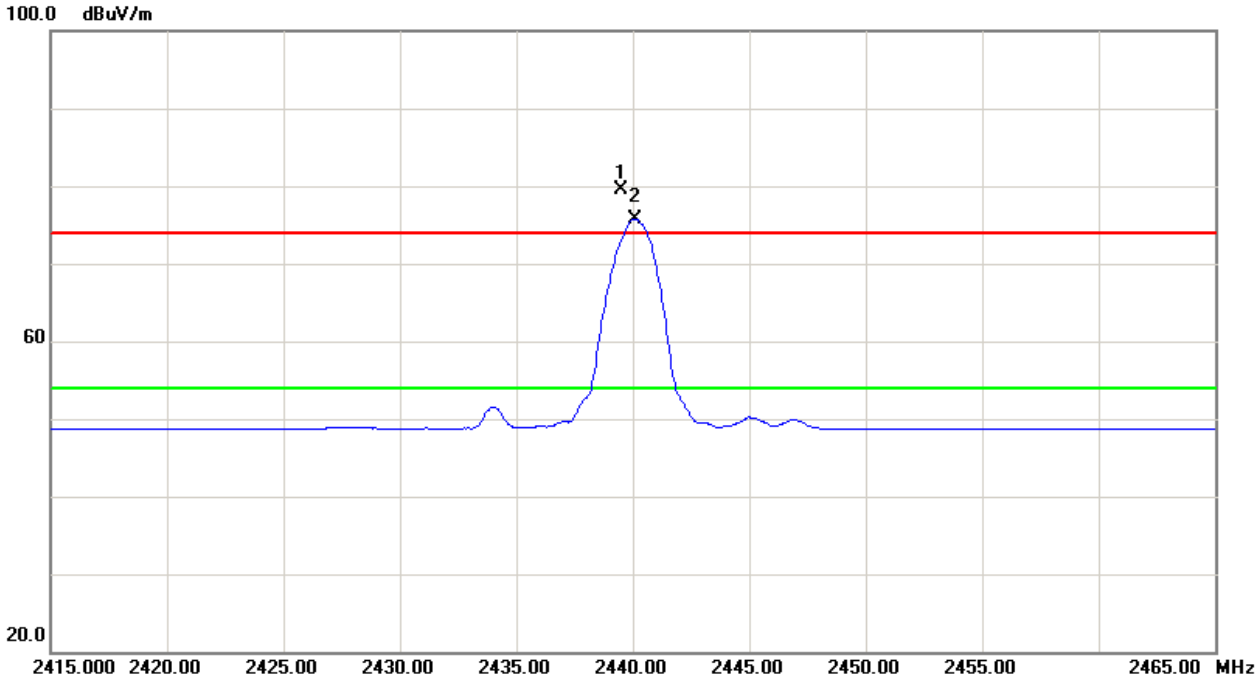


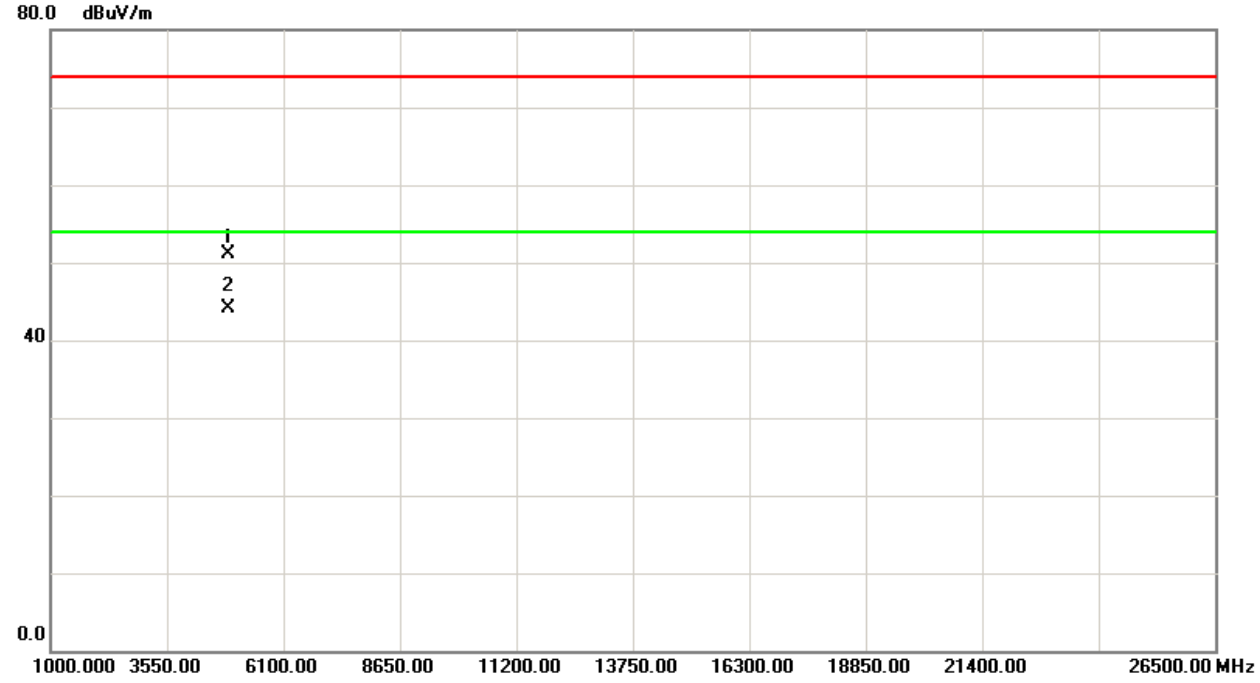
TX 2408MHz (Above 1000 MHz, Horizontal)



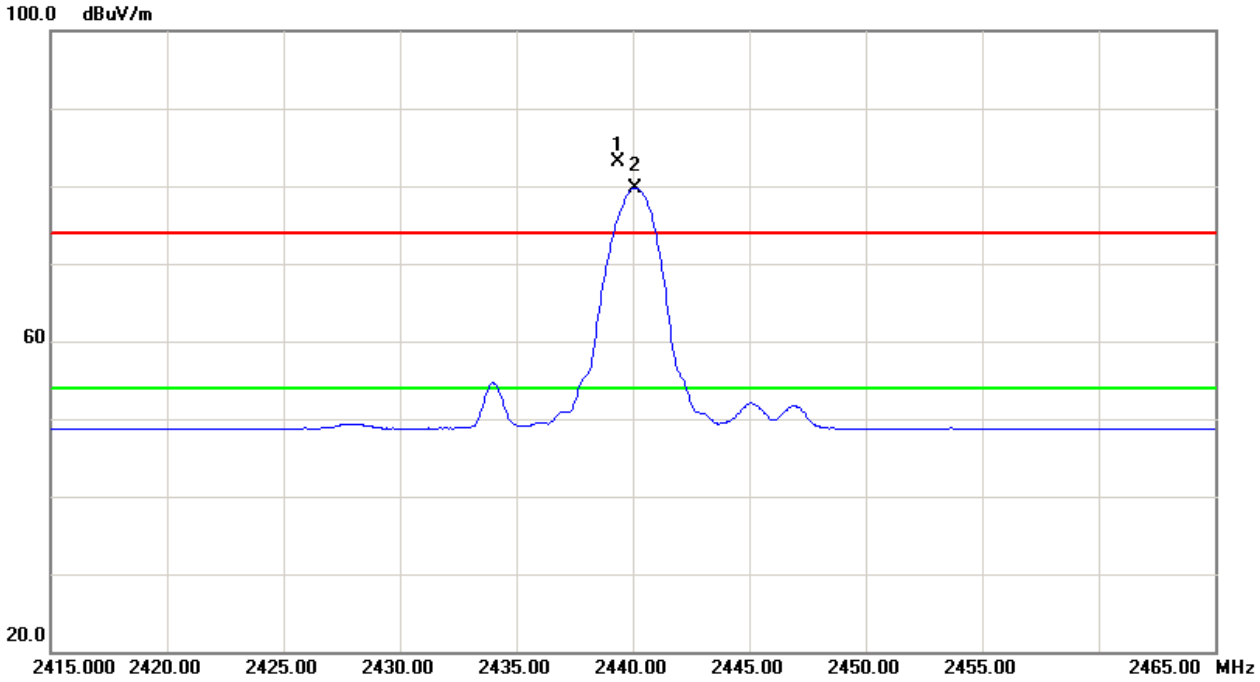


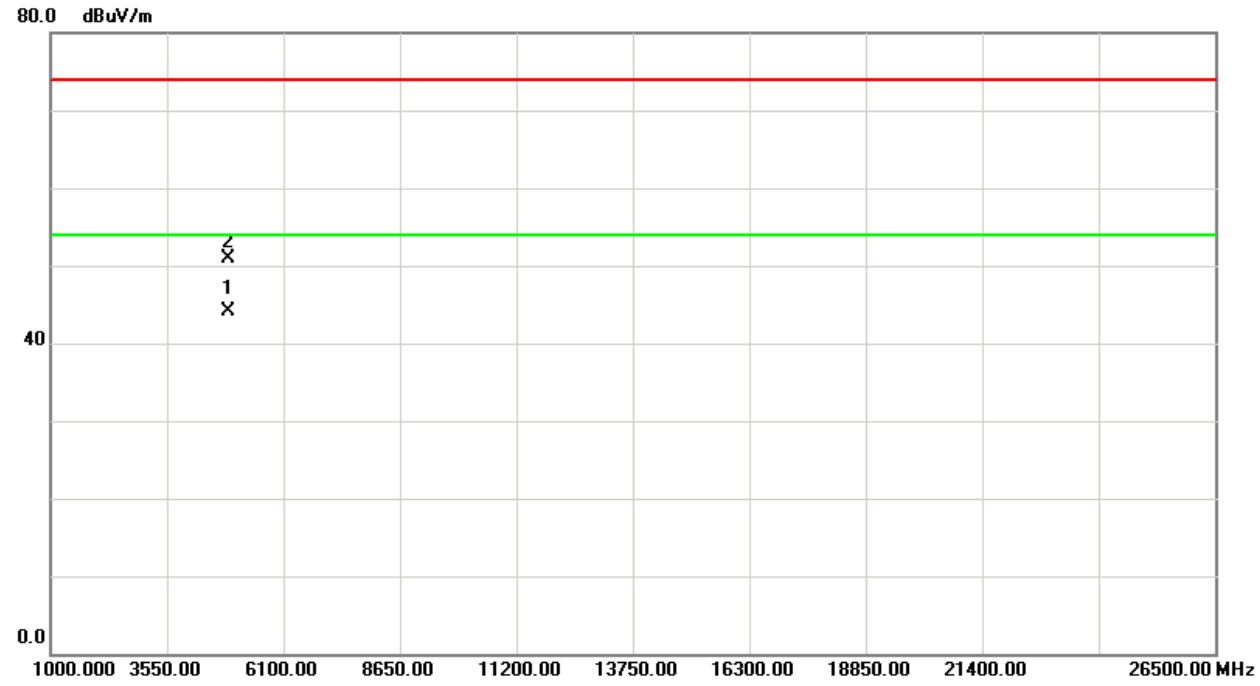
TX 2440 MHz (Above 1000 MHz, Vertical)



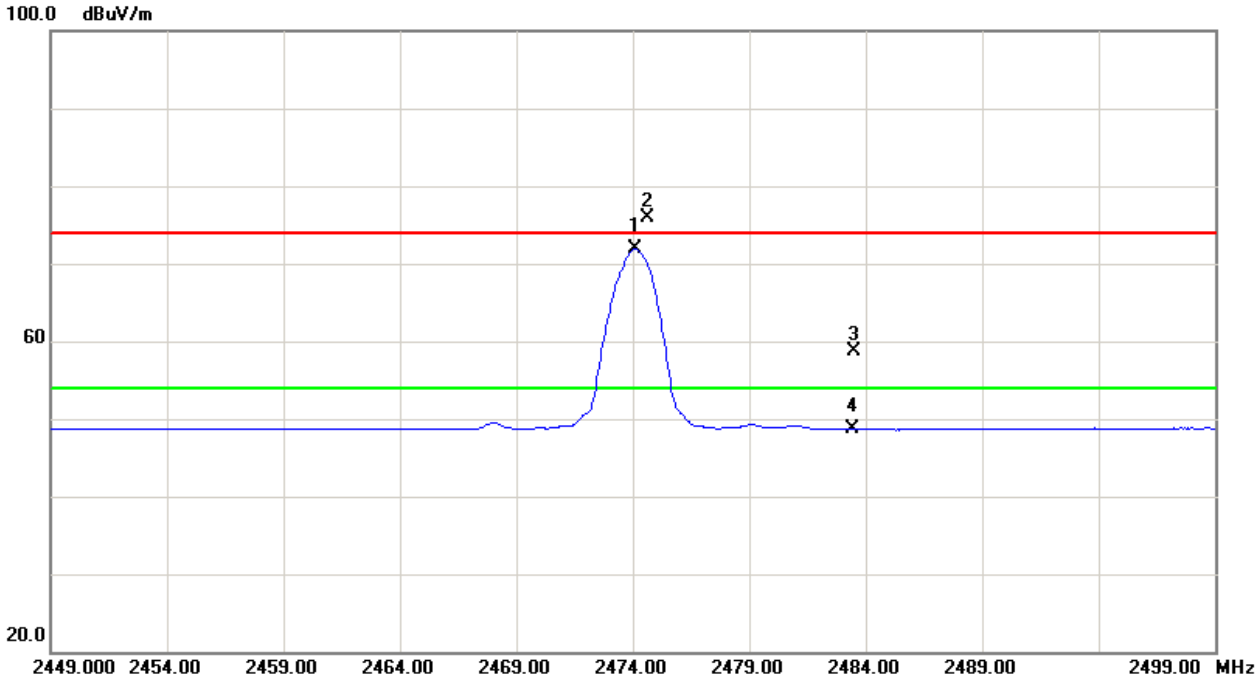


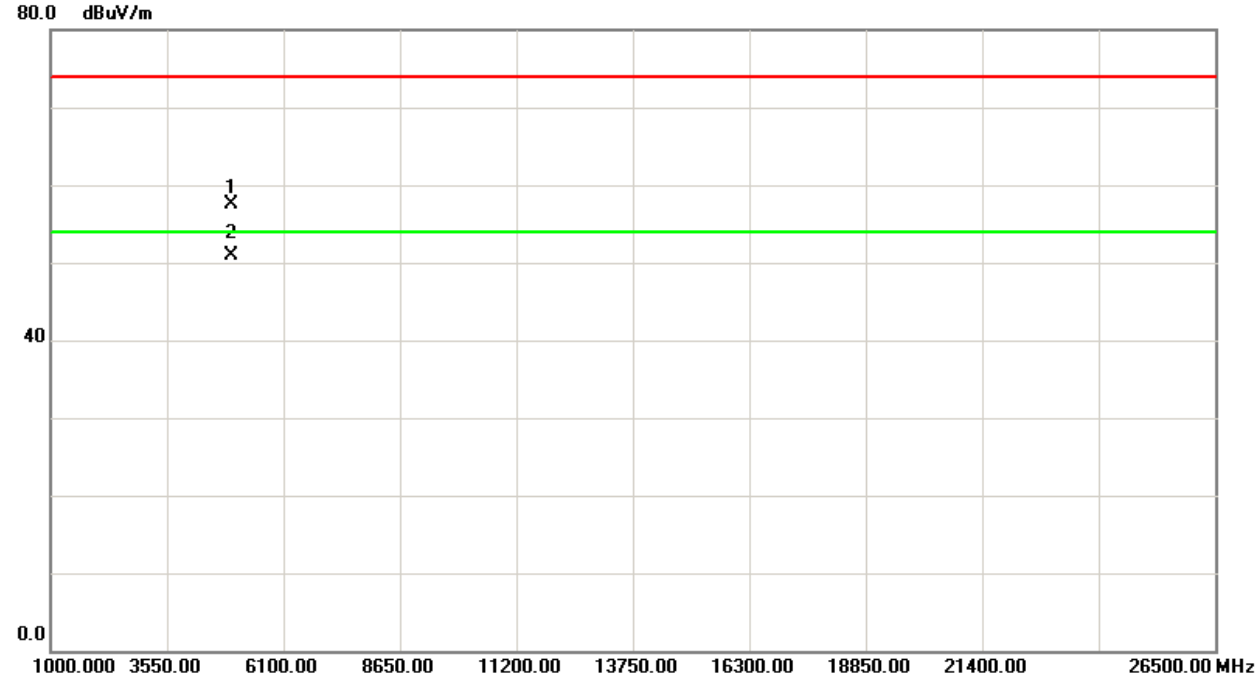
TX 2440MHz (Above 1000 MHz, Horizontal)



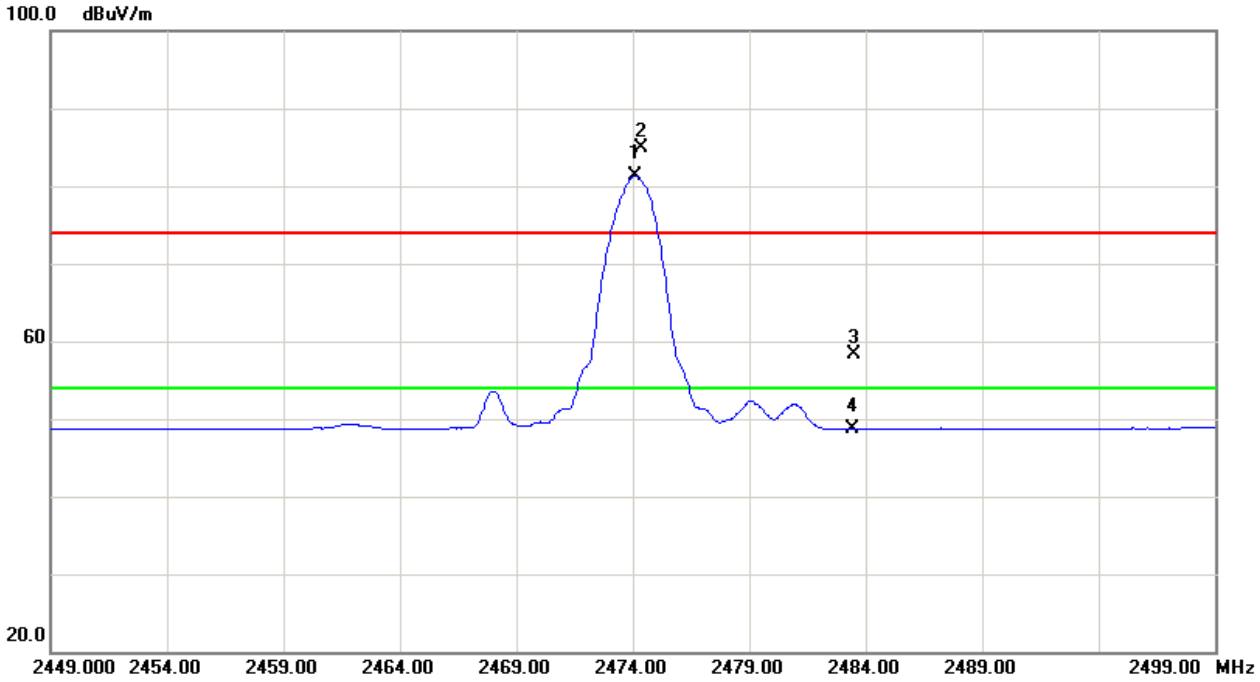


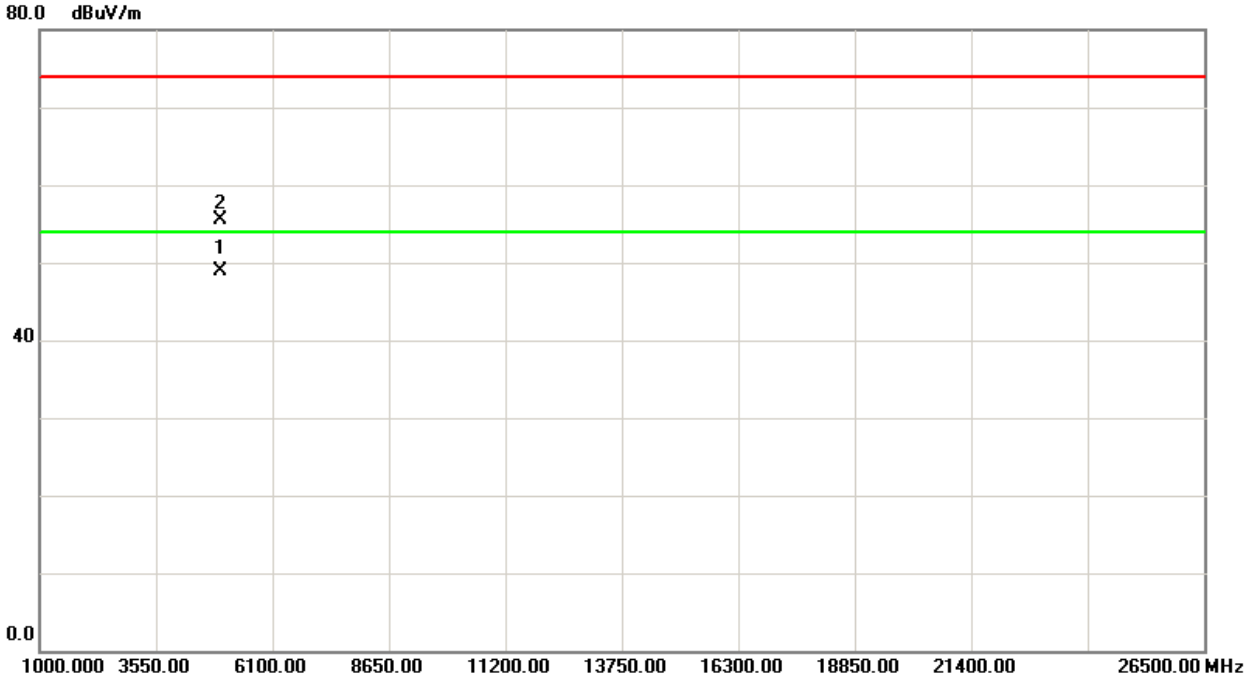
TX 2474MHz (Above 1000 MHz, Vertical)





TX 2474MHz (Above 1000 MHz, Horizontal)





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.

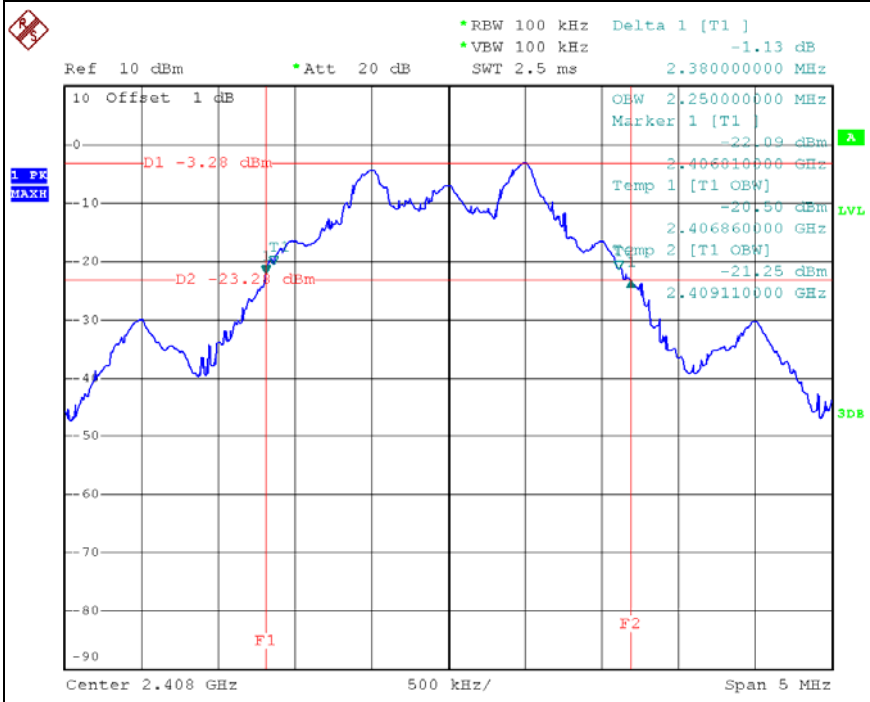
5.5 EUT TEST CONDITIONS

Temperature: 25°C
Relative Humidity: 55%
Test Voltage: DC 1.5V

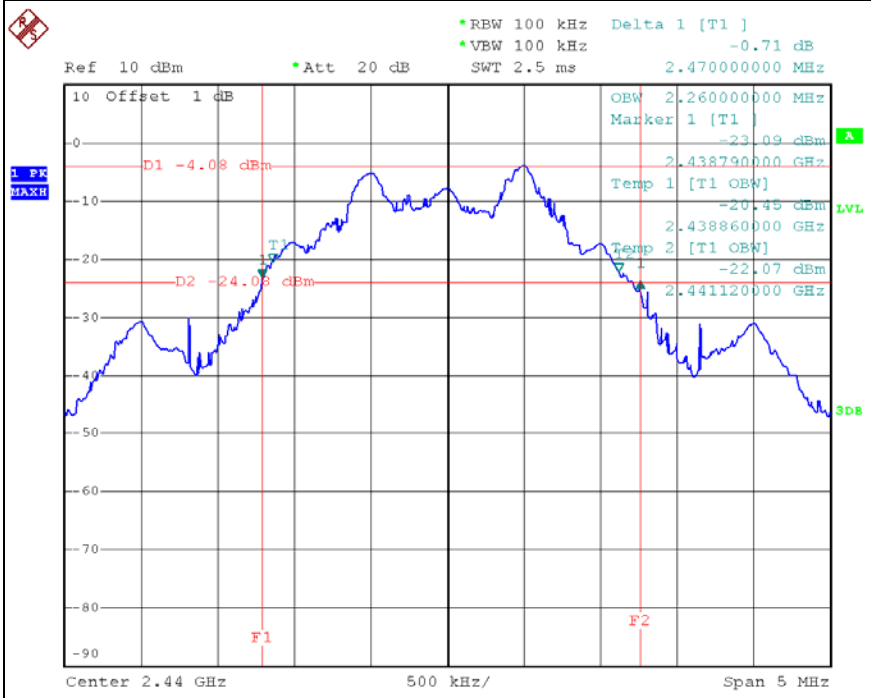
5.6 TEST RESULTS

Test Channel	Frequency (MHz)	20 dBc Bandwidth (MHz)	99% occupied Bandwidth(MHz)
CH01	2408	2.38	2.25
CH31	2440	2.47	2.26
CH64	2474	2.52	2.31

TX CH01

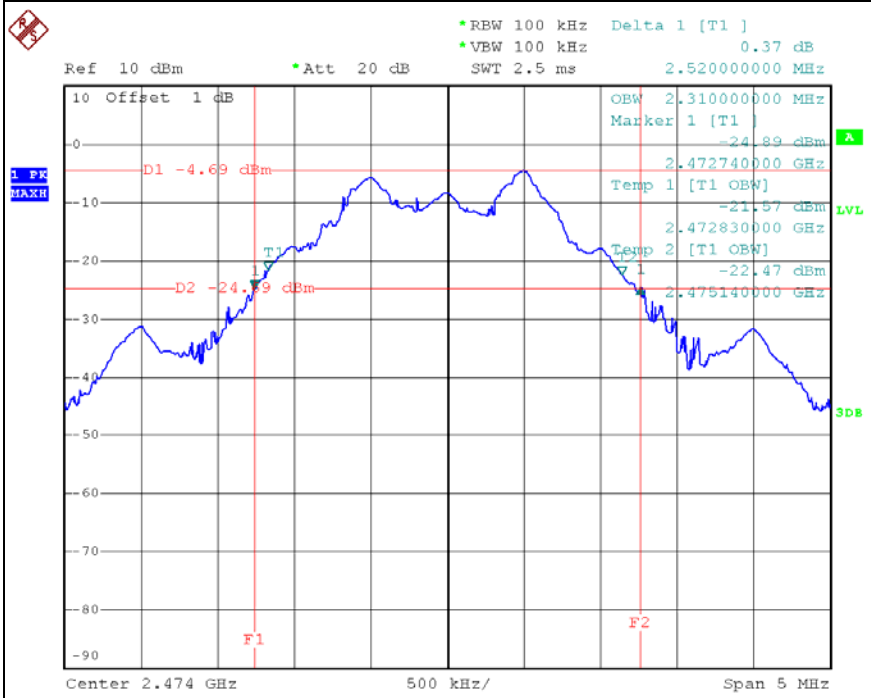


TX CH31



Date: 7.MAR.2014 20:53:46

TX CH64



Date: 7.MAR.2014 21:12:43

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.

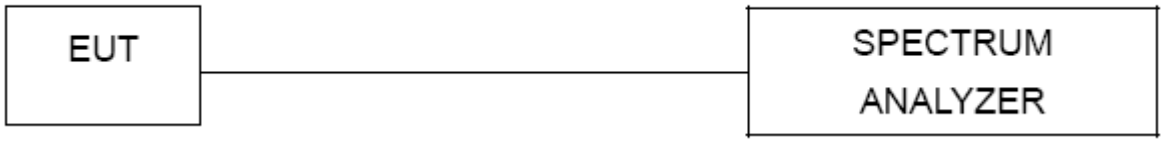
6.1.1 TEST PROCEDURE

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

6.1.2 DEVIATION FROM STANDARD

No deviation.

6.1.3 TEST SETUP



6.1.4 EUT OPERATION CONDITIONS

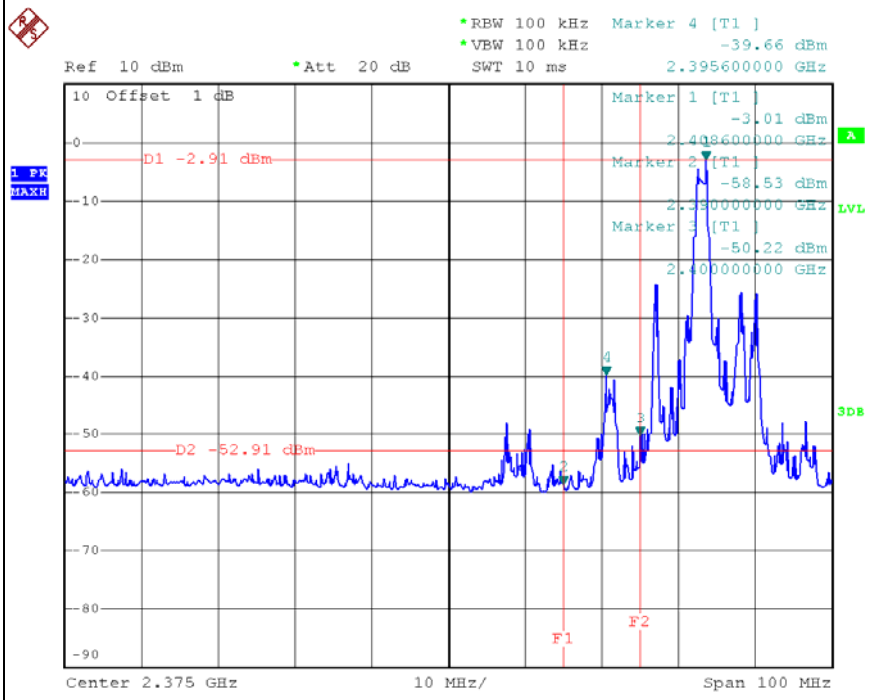
The EUT tested system was configured as the statements of 4.1.6 Unless otherwise a special operating condition is specified in the follows during the testing.

6.1.5 EUT TEST CONDITIONS

Temperature: 25°C
Relative Humidity: 55%
Test Voltage: DC 1.5V

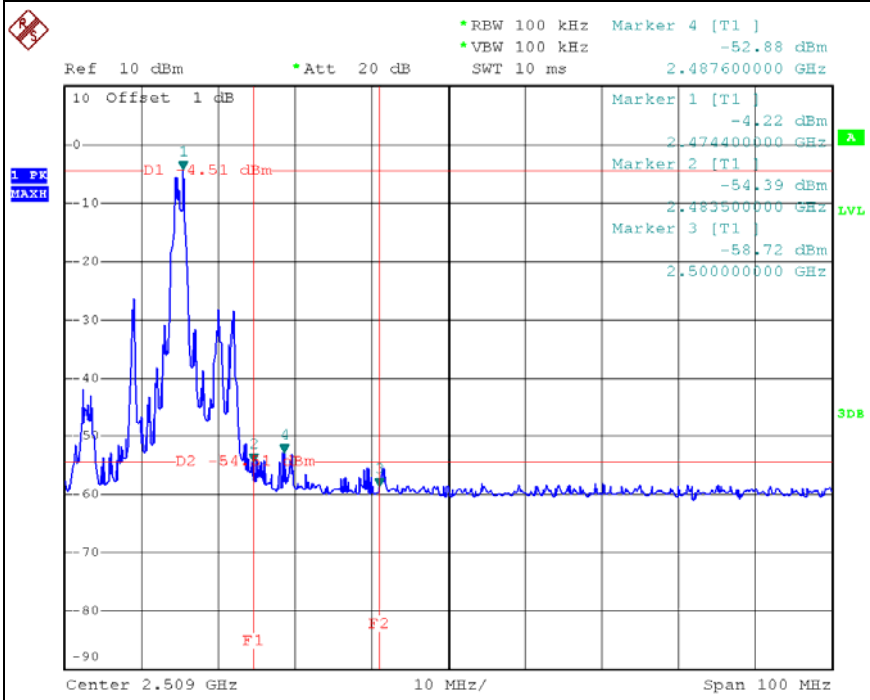
6.1.6 TEST RESULTS

TX CH01 (Lower)



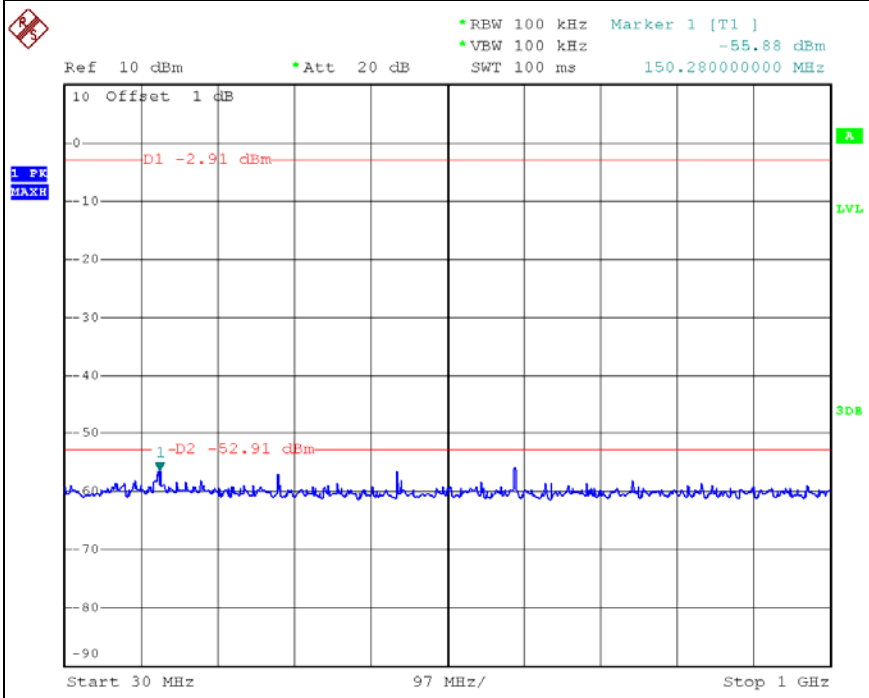
Date: 7.MAR.2014 20:45:01

TX CH64 (Upper)

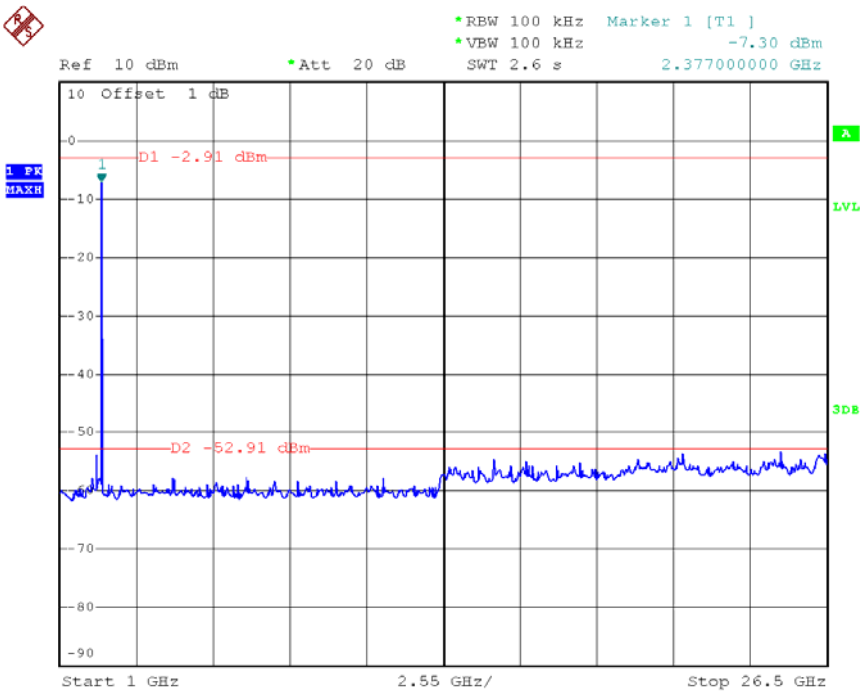


Date: 7.MAR.2014 21:17:37

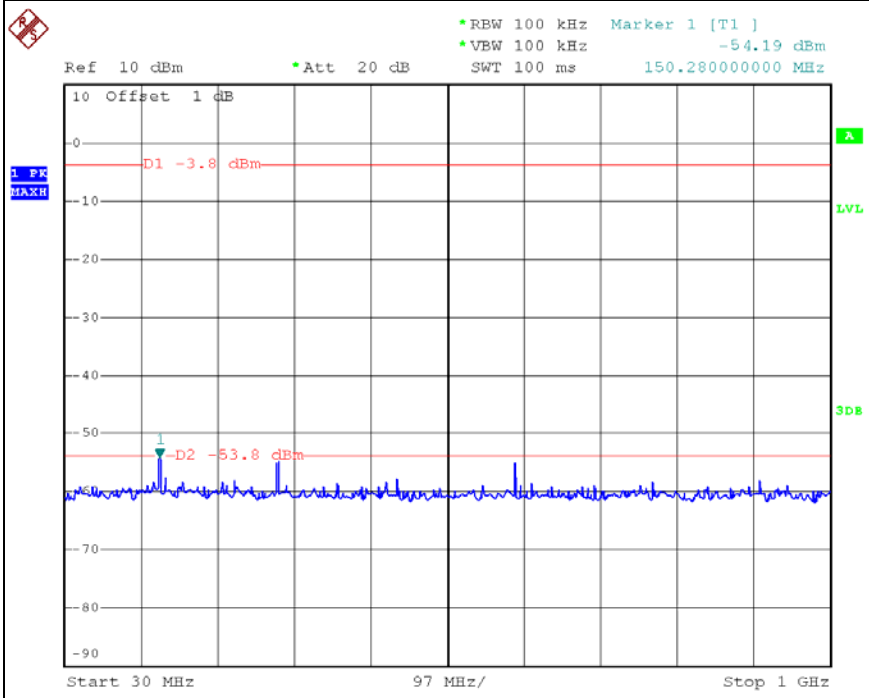
TX CH01 (30MHz~1GHz)



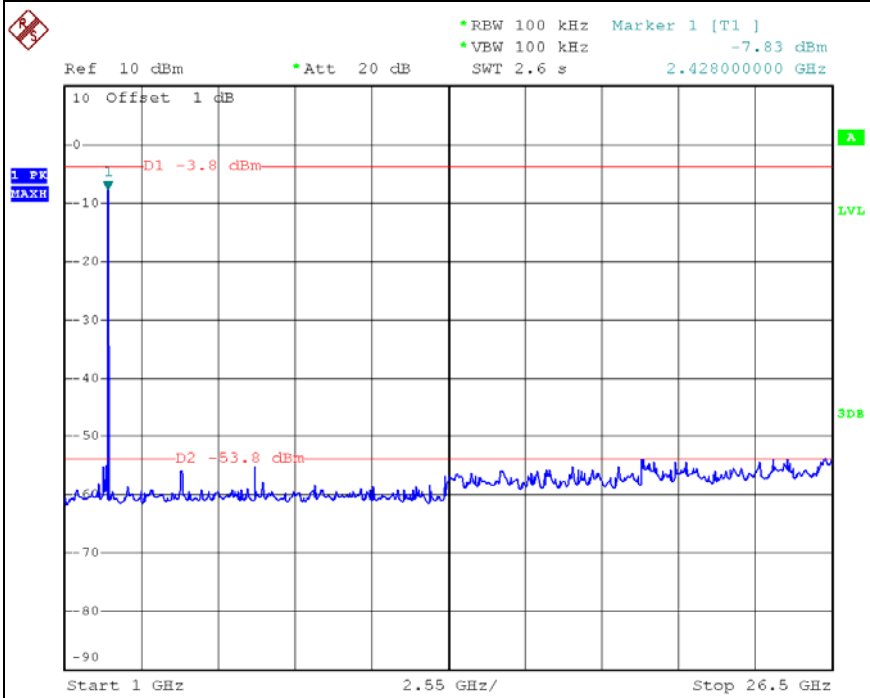
TX CH01(1GHz～10th Harmonic)



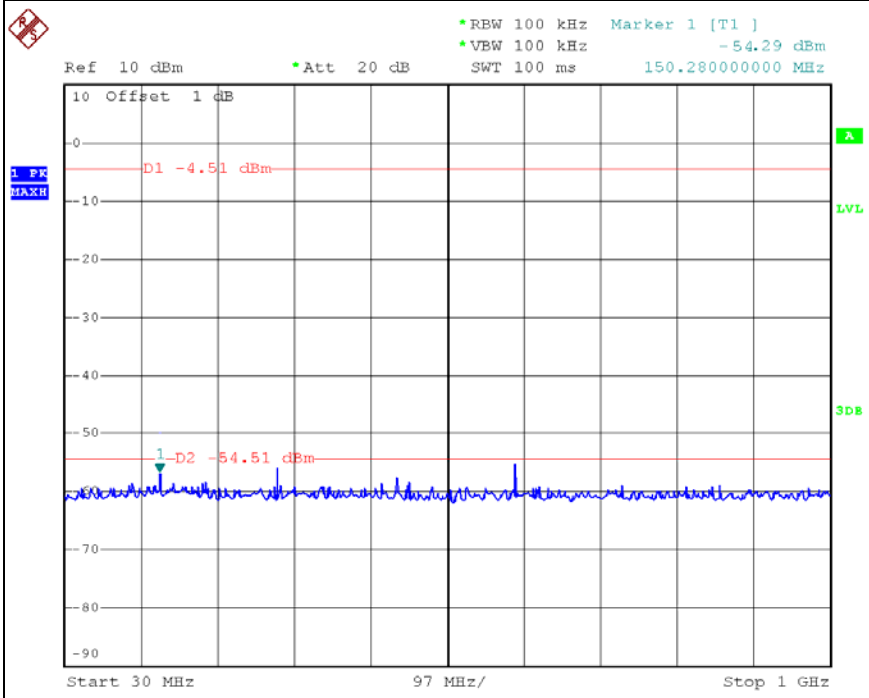
TX CH31 (30MHz~1GHz)



TX CH31(1GHz～10th Harmonic)

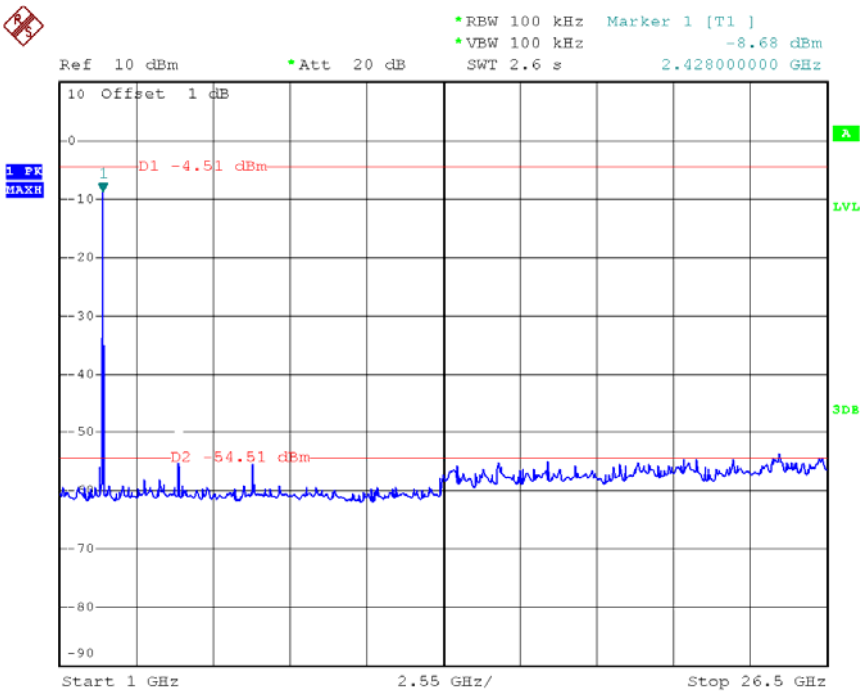


TX CH64 (30MHz~1GHz)



Date: 7.MAR.2014 21:18:42

TX CH64(1GHz～10th Harmonic)



Date: 7.MAR.2014 21:19:06

7. MEASUREMENT INSTRUMENTS LIST AND SETTING

Conducted Emission Measurement					
Item	Kind of Equipment	Manufacturer	Type No.	Serial No.	Calibrated until
1	LISN	EMCO	3816/2	00052765	Apr. 25, 2014
2	LISN	R&S	ENV216	100087	Nov.09, 2014
3	Test Cable	N/A	C_17	N/A	Mar.15, 2014
4	EMI TEST RECEIVER	R&S	ESCS30	826547/022	Apr. 25, 2014
5	50Ω Terminator	SHX	TF2-3G-A	08122902	Apr. 25, 2014

Radiated Emission Measurement					
Item	Kind of Equipment	Manufacturer	Type No.	Serial No.	Calibrated until
1	Antenna	Schwarbeck	VULB9160	9160-3232	Apr. 25, 2014
2	Amplifier	HP	8447D	2944A09673	Apr. 25, 2014
3	Test Receiver	R&S	ESCI	100382	Apr. 25, 2014
4	Test Cable	N/A	C-01_CB03	N/A	Jul. 02, 2014
5	Antenna	ETS	3115	00075789	Apr. 25, 2014
6	Amplifier	Agilent	8449B	3008A02274	Apr. 25, 2014
7	Spectrum	Agilent	E4408B	US39240143	Nov. 09, 2014
8	Test Cable	HUBER+SUHNER	C-45	N/A	Apr. 30, 2014
9	Controller	CT	SC100	N/A	N/A
10	Horn Antenna	EMCO	3115	9605-4803	Apr. 25, 2014
11	Active Loop Antenna	R&S	HFH2-Z2	830749/020	Apr. 25, 2014
12	Broad-Band Horn Antenna	Schwarzbeck	BBHA 9170	9170319	Oct. 22, 2014

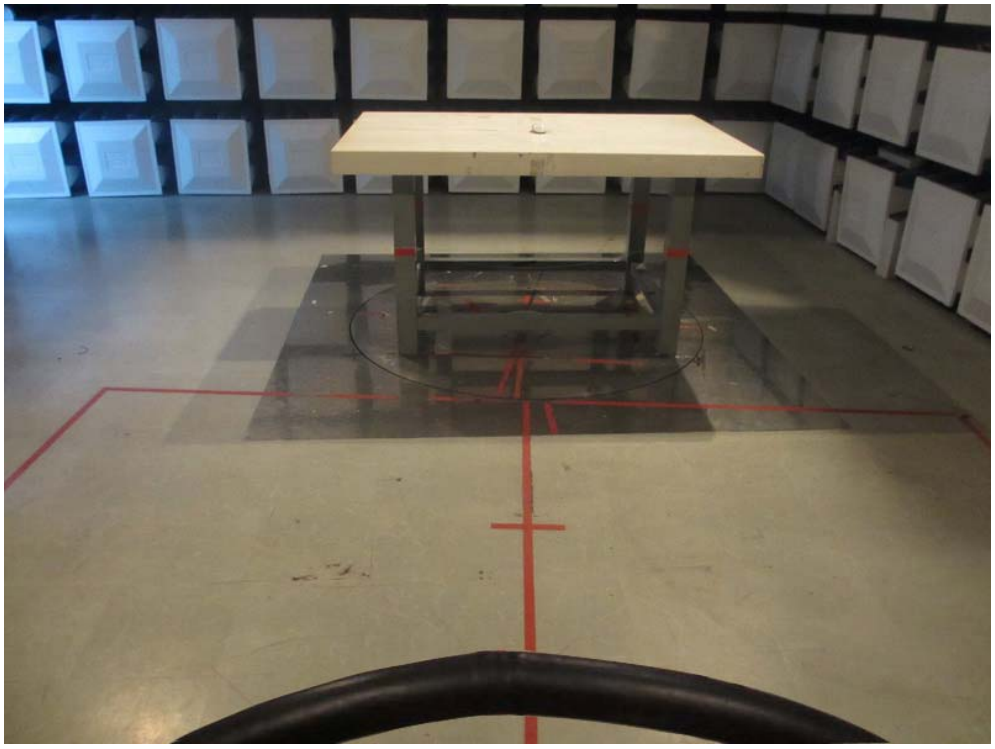
Bandwidth					
Item	Kind of Equipment	Manufacturer	Type No.	Serial No.	Calibrated until
1	Spectrum Analyzer	R&S	FSP 40	100185	Nov. 09, 2014

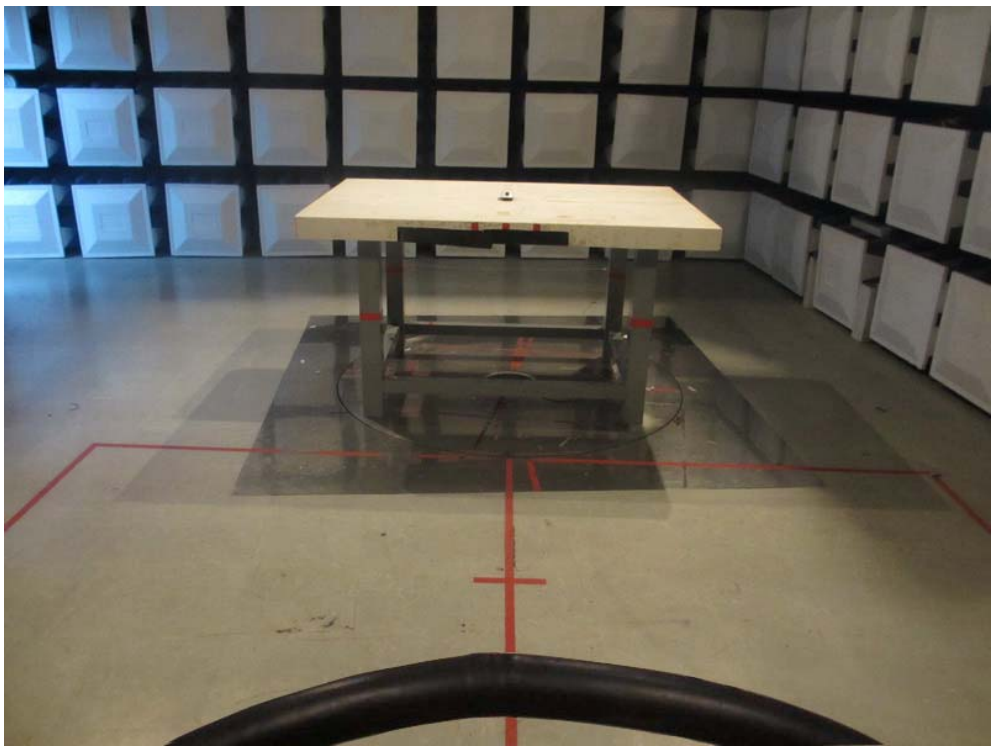
Antenna Conducted Spurious Emission					
Item	Kind of Equipment	Manufacturer	Type No.	Serial No.	Calibrated until
1	Spectrum Analyzer	R&S	FSP 40	100185	Nov. 09, 2014

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

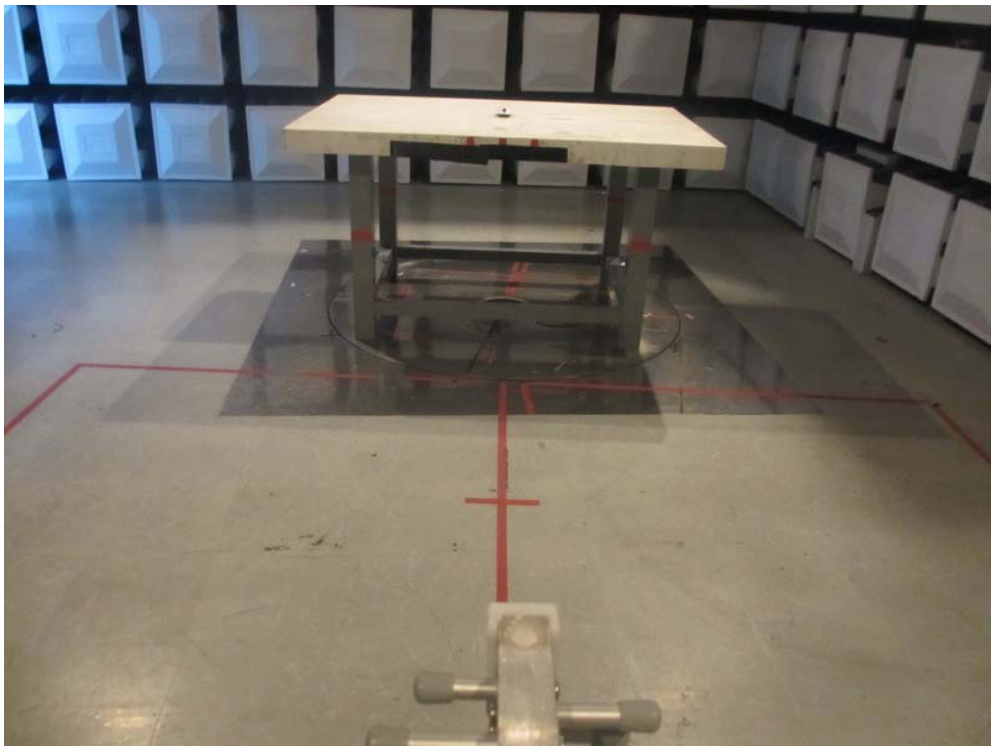
8. EUT TEST PHOTO

Radiated Measurement Photos
9K~30MHz





Radiated Measurement Photos
30~1000MHz



Radiated Measurement Photos
Above 1000MHz