FCC PART 15 SUBPART C TEST REPORT

for

2.4G USB Nano Dongle

Model No.: CC2511

FCC ID: WXQCC2511

of

Applicant: **POLOSTAR TECHNOLOGY CORPORATION**

Address: **2F,No.351,Yangguang St.,Neihu Dist Taipei 11491, Taiwan**

Tested and Prepared

by

Worldwide Testing Services (Taiwan) Co., Ltd.

FCC Registration No.: 930600

Industry Canada filed test laboratory Reg. No. IC 5679A-1

A2LA Accredited No.: 2732.01

Report No.: W6M20811-9437-P-15

6F, NO. 58, LANE 188, RUEY-KUANG RD., NEIHU TAIPEI 114, TAIWAN, R.O.C.
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1 General Information

1.1 Notes

The purpose of conformity testing is to increase the probability of adherence to the essential requirements or conformity specifications, as appropriate.

The complexity of the technical specifications, however, means that full and thorough testing is impractical for both technical and economic reasons.

Furthermore, there is no guarantee that a test sample which has passed all the relevant tests conforms to a specification.

Neither is there any guarantee that such a test sample will interwork with other genuinely open systems. The existence of the tests nevertheless provides the confidence that the test sample possesses the qualities as maintained and that is performance generally conforms to representative cases of communications equipment.

The test results of this test report relate exclusively to the item tested as specified in 1.5.
The test report may only be reproduced or published in full.
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Tester:

December 01, 2008		Jeff	Jeff
Date	WTS-Lab.	Name	Signature

Technical responsibility for area of testing:

December 01, 2008		Chang Tse-Ming	Chang Tse-ming
Date	WTS	Name	Signature

1.2 Testing laboratory

1.2.1 Location

OATS
No.5-1, Shuang Sing Village,
LiShuei Rd., Wanli Township,
Taipei County 207, Taiwan (R.O.C.)

Company
Worldwide Testing Services(Taiwan) Co., Ltd.
6F, NO. 58, LANE 188, RUEY-KUANG RD.
NEIHU, TAIPEI 114, TAIWAN R.O.C.
Tel : 886-2-66068877
Fax : 886-2-66068879

1.2.2 Details of accreditation status

Accredited testing laboratory

A2LA accredited number: 2730.01

FCC filed test laboratory Reg. No. 930600

Industry Canada filed test laboratory Reg. No. IC 5679A-1

1.3 Details of approval holder

Name:	POLOSTAR TECHNOLOGY CORPORATION
Street:	2F,No.351,Yangguang St.,Neihu Dist
Town:	Taipei 11491,
Country:	Taiwan
Telephone:	+886-2-2657-5069
Fax:	+886-2-2657-4569
Teletex:	./.

1.4 Application details

Date of receipt of test item: November 17, 2008

Date of test: From November 18, 2008 to November 28, 2008

1.5 General information of Test item

Type of test item: 2.4G USB Nano Dongle

Model Number: CC2511

Multi-listing model number: without

Photos: see Annex

Technical data

Frequency band: 2.400-2.483GHz

Operation Frequency: 2.410-2.472 GHz

Frequency 1: 2.410 GHz

Frequency 2: 2.442 GHz

Frequency 3: 2.472 GHz

Operation modes: simplex

Modulation Type: GFSK

Antenna type: Printed antenna

Power supply: 5 Vdc from PC

Registration number: W6M20811-9437-P-15
FCC ID: WXQCC2511

Manufacturer: (if different from applicant)

Name:	./.
Street:	./.
Town:	./.
Country:	./.

Additional information: ./.

1.6 Test standards

Technical standard : FCC RULES PART 15 SUBPART C § 15.249 (2008-07)

2 Technical test

2.1 Summary of test results

No deviations from the technical specification(s) were ascertained in the course of the tests performed. ☒

or

The deviations as specified in 2.5 were ascertained in the course of the tests performed. ☐

2.2 Test environment

Temperature:	23 °C
Relative humidity content:	20 ... 75 %
Air pressure:	86 ... 103 kPa
Details Power supply:	5 Vdc from PC
Extreme conditions parameters:	Not required

2.3 Test Equipment List

No.	Test equipment	Type	Serial No.	Manufacturer	Cal. Date	Next Cal. Date
ETSTW-CE 001	EMI TEST RECEIVER	ESHS10	842121/013	R&S	2008/9/18	2009/9/17
ETSTW-CE 002	PREREULATOR MODE DC POWER SUPPLY	None	None		Function Test	
ETSTW-CE 003	AC POWER SOURCE	APS-9102	D161137	GW	Function Test	
ETSTW-CE 004	ZWEILEITER-V-NETZNACHBILDUNG TWO-LINE V-NETWORK	ESH3-Z5	840731/011	R&S	2008/9/15	2009/9/14
ETSTW-CE 005	Line-Impedance Stabilisation Network	NNBM 8126D	137	Schwarzbeck	2008/9/15	2009/9/14
ETSTW-CE 006	IMPULSBEGRENZER PULSE LIMITER	ESH3-Z2	100226	R&S	2008/5/10	2009/5/09
ETSTW-CE 008	ABSORBING CLAMP	MDS 21	3469	Schwarzbeck	2008/9/18	2009/9/17
ETSTW-CE 009	TEMP.&HUMIDITY CHAMBER	GTH-225-40-1P-U	MAA0305-009	GIANT FORCE	2008/7/25	2009/7/24
ETSTW-CE 015	CISPR 22 TWO BALANCED TELECOM PAIRS IMPEDANCE STABILIZATION NETWORK	FCC-TLISN-T8-02	20307	FCC	2008/9/22	2009/9/21
ETSTW-CE 016	TWO-LINE V-NETWORK	ENV216	100050	R&S	2008/9/24	2009/9/23
ETSTW-RE 003	EMI TEST RECEIVER	ESI 26	831438/001	R&S	2008/10/8	2009/10/7
ETSTW-RE 004	EMI TEST RECEIVER	ESI 40	832427/004	R&S	2008/9/22	2009/9/21
ETSTW-RE 005	EMI TEST RECEIVER	ESVS10	843207/020	R&S	2008/9/18	2009/9/17
ETSTW-RE 011	PROGRAMMABLE LINEAR POWER SUPPLY	LPS-305	30503070165	MOTECH	Function Test	
ETSTW-RE 017	Log-Periodic Antenna	HL025	352886/001	R&S	2008/5/5	2009/5/4
ETSTW-RE 018	MICROWAVE HORN ANTENNA	AT4560	27212	AR	2008/10/27	2009/10/26
ETSTW-RE 020	MICROWAVE HORN ANTENNA	AT4002A	306915	AR	Function Test	
ETSTW-RE 021	SWEEP GENERATOR	SWM05	835130/010	R&S	2008/8/27	2009/8/26
ETSTW-RE 028	Log-Periodic DipoleArray Antenna	3148	34429	EMCO	2008/4/23	2009/4/22
ETSTW-RE 029	Biconical Antenna	3109	33524	EMCO	2008/4/23	2009/4/22
ETSTW-RE 030	Double-Ridged Guide Horn Antenna	3117	00035224	EMCO	2008/3/26	2009/3/25
ETSTW-RE 032	Millivoltmeter	URV 55	849086/013	R&S	2008/9/1	2009/8/31
ETSTW-RE 033	WaveRunner 6000A Serise Oscilloscope	WAVERUNNER 6100A	LCRY0604P14508	LeCroy	2008/6/27	2009/6/26
ETSTW-RE 034	Power Sensor	URV5-Z4	839313/006	R&S	2008/9/1	2009/8/31
ETSTW-RE 042	Biconical Antenna	HK116	100172	R&S	2007/1/11	2009/1/10
ETSTW-RE 043	Log-Periodic Dipole Antenna	HL223	100166	R&S	2008/5/2	2009/5/1
ETSTW-RE 044	Log-Periodic Antenna	HL050	100094	R&S	2008/5/22	2009/5/21
ETSTW-RE 047	ESA-E SERIES SPECTRUM ANALYZER	E4445A	MY46181369	Agilent	2008/6/26	2009/6/25
ETSTW-RE 048	Triple Loop Antenna	HXYZ 9170	HXYZ 9170-134	Schwarzbeck	2008/9/1	2009/8/31
ETSTW-RE 049	TRILOG Super Broadband test Antenna	VULB 9160	9160-3185	Schwarzbeck	2007/5/2	2009/5/1
ETSTW-RE 055	SPECTRUM ANALYZER	FSU-26	200074	R&S	2008/7/1	2009/6/30
ETSTW-RE 064	Bluetooth Test Set	MT8852B-042	6K00005709	Anritsu	2008/9/1	2009/8/31

Registration number: W6M20811-9437-P-15
FCC ID: WXQCC2511

ETSTW-RE 072	CELL SITE TEST SET	8921A	3339A00375	HP	2008/10/28	2009/10/27
ETSTW-RE 105	Match Pad	MDCS1500	None	WOKEN	2008/10/9	2009/10/8
ETSTW-RE 106	Match Pad	MDCS1510	None	WOKEN	2008/10/9	2009/10/8
ETSTW-GSM 02	Universal Radio Communication Tester	CMU 200	109439	R&S	2008/9/23	2009/9/22
ETSTW-GSM 23	SPLITTER	4901.19.A	None	SUHNER	2008/9/22	2009/9/21

2.4 General Test Procedure

POWER LINE CONDUCTED INTERFERENCE: The procedure used was ANSI STANDARD C63.4-2003 using a 50µH LISN (if necessary). Both lines were observed. The bandwidth of the spectrum analyzer was 10 kHz with an appropriate sweep speed.

RADIATION INTERFERENCE: The test procedure used was according to ANSI STANDARD C63.4-2003 employing a spectrum analyzer. For investigated frequency is equal to or below 1GHz, the RBW and VBW of the spectrum analyzer was 100 kHz and 100kHz respectively with an appropriate sweep speed. For investigated frequency is above 1GHz, both of RBW and VBW of the spectrum analyzer were 1 MHz with an appropriate sweep speed. The analyzer was calibrated in dB above a microvolt at the output of the antenna.

FORMULA OF CONVERSION FACTORS: The Field Strength at 3m was established by adding the meter reading of the spectrum analyzer (which is set to read in units of dBµV) to the antenna correction factor supplied by the antenna manufacturer. The antenna correction factors are stated in terms of dB.

Example:

Freq (MHz)	METER READING + ACF + CABLE LOSS (to the receiver) = FS
33	20 dBµV + 10.36 dB + 6 dB = 36.36 dBµV/m @3m

ANSI STANDARD C63.4-2003 10.1.7 MEASUREMENT PROCEDURES: The EUT was placed on a table 80 cm height and with dimensions of 1m by 1.5m (non metallic table). The EUT was placed in the centre of the table. The table used for radiated measurements is capable of continuous rotation. The spectrum was scanned from 30 MHz to 10th harmonic of the fundamental.

Peak readings were taken in three (3) orthogonal planes and the highest readings.
Measurements were made by Worldwide Testing Services(Taiwan) Co., Ltd. at the registered open field test site located at No.5-1, Shuang Sing Village, LiShuei Rd., Wanli Township, Taipei County 207, Taiwan (R.O.C.) The Registration Number: 930600.

When an emission was found, the table was rotated to produce the maximum signal strength. At this point, the antenna was raised and lowered from 1m to 4m. The antenna was placed in both the horizontal and vertical planes.

3 Test results (enclosure)

Test case	Para. Number	Required	Test passed	Test failed
Peak Output Power	15.249 (a)	☒	☒	☐
Spurious Emissions radiated – Transmitter operating	15.249 (e)	☒	☒	☐
Spurious Emissions conducted – Transmitter operating	15.249 (e)	☐	☐	☐
Radiated Emission from Digital Part	15.109	☐	☐	☐
Out of Band Spurious Emission, Band edge-Transmitter operating	15.249 (e)	☒	☒	☐
Power Line Conducted Emission	15.207	☒	☒	☐

The follows is intended to leave blank.

3.1 Peak Output Power (transmitter)

FCC Rule: 15.249 (b)

This measurement applies to equipment with an integral antenna and to equipment with an antenna connector and equipped with an antenna as declared by the applicant.

The power was measured with modulation (declared by the applicant).

Test conditions Frequency 1		Transmitter field strength of fundamental [dBµV/m]	Transmitter field strength of harmonics [dBµV/m]
T_{nom} = 26° C	V_{nom} = 5V	90.75	--

Test conditions Frequency 2		Transmitter field strength of fundamental [dBµV/m]	Transmitter field strength of harmonics [dBµV/m]
T_{nom} = 26° C	V_{nom} = 5 V	91.84	--

Test conditions Frequency 3		Transmitter field strength of fundamental [dBµV/m]	Transmitter field strength of harmonics [dBµV/m]
T_{nom} = 26° C	V_{nom} = 5 V	92.78	--

Test equipment used: ETSTW-RE 003 ETSTW-RE 004 ETSTW-RE 017 ETSTW-RE 028 ETSTW-RE 030 ETSTW-RE 043 ETSTW-RE 044

Explanation: The diagrams for the field strength measurements are included in appendix.

3.2 Equivalent isotropic radiated power

Because using an permanent antenna there are no deviations from the radiated test results according 3.1.

3.3 RF Exposure Compliance Requirements

Not applicable for this 2.4G USB Nano Dongle for the low power level.

3.4 Out of Band Radiated Emissions

FCC Rule: 15.249 (d)(e), 15.35(b)

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 to the general radiated emission limits in Section 15.209, whichever is the lesser attenuation.

For frequency above 1000 MHz, the field strength limits are based on average limits. However, the peak field strength of any emission shall not exceed the maximum permitted average limits specified above by more than 20 dB under any condition of modulation. For point-to-point operation, the peak field strength shall not exceed 2500 millivolts/meter at 3 meters along the antenna azimuth.

Limits:

Frequency of Emission (MHz)	Field strength (microvolts/meter)	Field Strength (dB microvolts/meter)
30 - 88	100	40.0
88 – 216	150	43.5
216 – 960	200	46.5
Above 960	500	54.0

For frequencies above 1 GHz (Peak measurements).

Limit + 20 dB 54.0 dBµV/m + 20 dB= 74dBµV/m
Or
Must be attenuated at least 50dB below the level of fundament

Test equipment used: ETSTW-RE 003 ETSTW-RE 004 ETSTW-RE 017 ETSTW-RE 028 ETSTW-RE 029 ETSTW-RE 030 ETSTW-RE 042 ETSTW-RE 043 ETSTW-RE 044

Explanation: Please see attached diagram as appendix.

3.5 Spurious emission (tx)

Spurious emission was measured with modulation (declared by manufacturer).

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 to the general radiated emission limits in Section 15.209, whichever is the lesser attenuation.

For frequencies above 1000 MHz, the field strength limits are based on average limits. However, the peak field strength of any emission shall not exceed the maximum permitted average limits specified above by more than 20 dB under any condition of modulation. For point-to-point operation, the peak field strength shall not exceed 2500 millivolts/meter at 3 meters along the antenna azimuth.

SAMPLE CALCULATION OF LIMIT. ALL results will be updated by an automatic measuring system in accordance with point 2.3.

The peak and average spurious emission plots was measured with the average limits.
The critical peak value listed in the table agree with the above calculated limits.

Summary table with radiated data of the test plots

Model: CC2511 Date: 2008/11/20
Mode: TX 2410 MHz Temperature: 26 °C Engineer: Jeff
Polarization: Horizontal Humidity: 60 %

Frequency (MHz)	Reading (dBuV)	Detector	Factor (dB)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Table Degree (Deg.)	Ant. High (cm)
82.485	16.37	peak	9.93	26.30	40.00	-13.70	314	150
268.076	19.67	peak	14.39	34.06	46.00	-11.94	220	150
527.255	9.79	peak	20.25	30.04	46.00	-15.96	321	150
664.730	16.04	peak	22.88	38.92	46.00	-7.08	134	150

Frequency (MHz)	Reading (dBuV)		Factor (dB)	Result @3m (dBuV/m)		Limit @3m (dBuV/m)		Margin (dB)	Table Degree (Deg.)	Ant. High (cm)
	Peak	Ave.	Corr.	Peak	Ave.	Peak	Ave.			
4881.764	52.27	--	-1.30	50.97	--	74.00	--	-23.03	334	150
7326.653	51.95	41.87	1.85	53.80	43.72	74.00	54.00	-10.28	241	150
9640.000	20.39	--	25.12	39.51	--	74.00	--	-34.49	324	150
12050.000	20.92	--	29.42	44.34	--	74.00	--	-29.66	104	150

Polarization: Vertical

Frequency (MHz)	Reading (dBuV)	Detector	Factor (dB)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Table Degree (Deg.)	Ant. High (cm)
84.649	15.20	peak	9.89	25.09	40.00	-14.91	321	150
196.653	23.23	peak	12.35	35.58	43.50	-7.92	106	150
500.601	9.80	peak	19.82	29.62	46.00	-16.38	321	150
664.730	12.23	peak	22.88	35.11	46.00	-10.89	106	150

Frequency (MHz)	Reading (dBuV)		Factor (dB)	Result @3m (dBuV/m)		Limit @3m (dBuV/m)		Margin (dB)	Table Degree (Deg.)	Ant. High (cm)
	Peak	Ave.	Corr.	Peak	Ave.	Peak	Ave.			
4881.764	54.10	--	-1.30	52.80	--	74.00	--	-21.20	341	150
7326.653	52.67	41.99	1.85	54.52	43.84	74.00	54.00	-10.16	312	150
9640.000	19.14	--	25.12	38.26	--	74.00	--	-35.74	127	150
12505.000	20.15	--	30.48	44.63	--	74.00	--	-29.37	64	150

Mode: TX 2442 MHz
Polarization: Horizontal

Frequency (MHz)	Reading (dBuV)	Detector	Factor (dB)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Table Degree (Deg.)	Ant. High (cm)
83.026	16.57	peak	9.92	26.49	40.00	-13.51	137	150
201.523	23.98	peak	12.17	36.15	43.50	-7.35	120	150
527.255	9.38	peak	20.25	29.63	46.00	-16.37	302	150
659.118	14.61	peak	22.84	37.45	46.00	-8.55	107	150

Frequency (MHz)	Reading (dBuV)		Factor (dB)	Result @3m (dBuV/m)		Limit @3m (dBuV/m)		Margin (dB)	Table Degree (Deg.)	Ant. High (cm)
	Peak	Ave.	Corr.	Peak	Ave.	Peak	Ave.			
4881.764	56.50	45.43	-1.30	55.20	44.13	74.00	54.00	-9.87	301	150
7326.653	48.51	--	1.85	50.36	--	74.00	--	-23.64	214	150
9768.000	19.90	--	25.04	38.94	--	74.00	--	-35.06	341	150
12210.000	19.95	--	29.80	43.75	--	74.00	--	-30.25	99	150

Polarization: Vertical

Frequency (MHz)	Reading (dBuV)	Detector	Factor (dB)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Table Degree (Deg.)	Ant. High (cm)
82.485	15.35	peak	9.93	25.28	40.00	-14.72	124	150
196.653	25.55	peak	12.35	37.90	43.50	-5.60	137	150
321.042	11.17	peak	15.90	27.07	46.00	-18.93	201	150
666.132	11.22	peak	22.89	34.11	46.00	-11.89	314	150

Frequency (MHz)	Reading (dBuV) Peak	Ave.	Factor (dB) Corr.	Result @3m (dBuV/m) Peak	Ave.	Limit @3m (dBuV/m) Peak	Ave.	Margin (dB)	Table Degree (Deg.)	Ant. High (cm)
4881.764	52.38	--	-1.30	51.08	--	74.00	--	-22.92	241	150
7326.653	49.89	--	1.85	51.74	--	74.00	--	-22.26	187	150
9768.000	19.85	--	25.04	38.89	--	74.00	--	-35.11	324	150
12210.000	19.92	--	29.80	43.72	--	74.00	--	-30.28	64	150

Mode: TX 2472 MHz

Polarization: Horizontal

Frequency (MHz)	Reading (dBuV)	Detector	Factor (dB)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Table Degree (Deg.)	Ant. High (cm)
81.944	16.06	peak	9.93	25.99	40.00	-14.01	134	150
200.441	24.05	peak	12.15	36.20	43.50	-7.30	129	150
671.744	12.04	peak	22.93	34.97	46.00	-11.03	304	150
816.233	8.35	peak	25.39	33.74	46.00	-12.26	107	150

Frequency (MHz)	Reading (dBuV) Peak	Ave.	Factor (dB) Corr.	Result @3m (dBuV/m) Peak	Ave.	Limit @3m (dBuV/m) Peak	Ave.	Margin (dB)	Table Degree (Deg.)	Ant. High (cm)
4937.876	53.47	41.32	-1.15	52.32	40.17	74.00	54.00	-13.83	249	150
7422.846	53.06	39.61	1.89	54.95	41.50	74.00	54.00	-12.50	334	150
9888.000	20.64	--	25.73	40.37	--	74.00	---	-33.63	324	150
12360.000	20.96	--	30.16	45.12	--	74.00	--	-28.88	91	150

Polarization: Vertical

Frequency (MHz)	Reading (dBuV)	Detector	Factor (dB)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Table Degree (Deg.)	Ant. High (cm)
82.485	18.90	peak	9.93	28.83	40.00	-11.17	149	150
196.653	24.95	peak	12.35	37.30	43.50	-6.20	123	150
499.198	9.98	peak	19.80	29.78	46.00	-16.22	297	150
661.924	9.99	peak	22.86	32.85	46.00	-13.15	167	150

Frequency (MHz)	Reading (dBuV)		Factor (dB)	Result @3m (dBuV/m)		Limit @3m (dBuV/m)		Margin (dB)	Table Degree (Deg.)	Ant. High (cm)
	Peak	Ave.	Corr.	Peak	Ave.	Peak	Ave.			
4937.876	54.29	40.98	-1.15	53.14	39.83	74.00	54.00	-14.17	134	150
7422.846	52.38	39.41	1.89	54.27	41.30	74.00	54.00	-12.70	328	150
9888.000	20.26	--	25.73	39.99	--	74.00	--	-34.01	197	150
12360.000	20.95	--	30.16	45.11	--	74.00	--	-28.89	306	150

Note
1. **Correction Factor = Antenna factor + Cable loss - Preamplifier**
2. **The formula of measured value as: Test Result = Reading + Correction Factor**
3. **Detector function in the form : PK = Peak, QP = Quasi Peak, AV = Average**
4. **All not in the table noted test results are more than 20 dB below the relevant limits.**
5. **See the attached diagram as appendix.**

TEST RESULT (Transmitter): The unit DOES meet the FCC requirements.
Test equipment used: ETSTW-RE 003 ETSTW-RE 004 ETSTW-RE 055

3.6 Radiated Emissions from Digital Part

Except for Class A digital devices, the field strength of radiated emissions from unintentional radiators at a distance of 3 meters shall not exceed the following values:

Frequency of Emission (MHz)	Field Strength (microvolts/meter)	Field Strength (dBmicrovolts/meter)
30 – 88	100	40.0
88 – 216	150	43.5
216 – 960	200	46.0
Above 960	500	54.0

Test equipment used: ETSTW-RE 003, ETSTW-RE 004, ETSTW-RE 017, ETSTW-RE 028, ETSTW-RE 029, ETSTW-RE 030, ETSTW-RE 042, ETSTW-RE 043, ETSTW-RE 044

Explanation: The test results are listed in the separated test report no.: W6M20811-9437-P-15B.

3.7 Radiated Emission on the band edge

From the following plots, they show that the fundamental emissions are confined in the specified band and hey at least 50 dB below the carrier level at band edge (2400 and 2483.5 MHz). It meets the requirement of section 15.249(d).

Test conditions Tnom = 26°C, Vnom = 5V Frequency [MHz]	Transmitter field strength of Radiated Emission (Peak Detector) [dBµV/m]	Transmitter field strength of Radiated Emission (Average Detector) [dBµV/m]
2400	--	--
2483.5	--	--

Limit:

Frequency Range (MHz)	Limit (dBµV/m)	
	Peak	Average
902 – 928 2400 – 2483.5 5725 – 5875 24000 - 24250	74	54

Test equipment used: ETSTW-RE 003 ETSTW-RE 004 ETSTW-RE 017 ETSTW-RE 028
ETSTW-RE 030 ETSTW-RE 043 ETSTW-RE 044

Explanation: This test is not required. The frequency of 2.4G USB Nano Dongle is far away from limit and bandwidth of 2.4G USB Nano Dongle is 1.07 MHz. Please see attached diagram as appendix.

3.8 Power Line Conducted Emission

For an intentional radiator which is designed to be connected to the public utility (AC) power line, the radio frequency voltage that is conducted back onto the AC line on any frequency or frequencies within the band 150 kHz to 30 MHz shall not exceed the limits in the table bellows with this provision shall be based on the measurement of the radio frequency voltage between each power line and ground at the power terminals.
This measurement was transact first with instrumentation using an average and peak detector and a 10 kHz bandwidth. If the peak detector achieves a calculated level, the measurement is repeated by an instrumentation using a quasi-peak detector.

Frequency	Level (dBμV)	
	quasi-peak	average
150 kHz	lower limit line	Lower limit line

Model: CC2511 Date: 2008/11/19
Mode: Temperture: 24 °C Engineer: Jeff
Polarization: N Humidity: 60 %

Frequency (MHz)	Reading (dBuV) QP	Reading (dBuV) Ave.	Factor (dB) Corr.	Result (dBuV) QP	Result (dBuV) Ave.	Limit (dBuV) QP	Limit (dBuV) Ave.	Margin (dB)
0.2048	49.86	37.99	10.07	59.93	48.06	63.41	53.41	-3.48
0.2958	37.30	24.00	10.01	47.31	34.01	60.36	50.36	-13.05
0.5250	24.00	11.01	10.17	34.17	21.18	56.00	46.00	-21.83
4.0450	18.62	11.85	10.16	28.78	22.01	56.00	46.00	-23.99
11.8889	25.40	18.25	10.49	35.89	28.74	60.00	50.00	-21.26
16.3888	27.03	18.14	10.45	37.48	28.59	60.00	50.00	-21.41

Polarization: L1

Frequency (MHz)	Reading (dBuV) QP	Reading (dBuV) Ave.	Factor (dB) Corr.	Result (dBuV) QP	Result (dBuV) Ave.	Limit (dBuV) QP	Limit (dBuV) Ave.	Margin (dB)
0.1966	47.40	35.00	10.08	57.48	45.08	63.75	53.75	-6.27
0.2974	35.90	24.70	10.00	45.90	34.70	60.32	50.32	-14.42
0.5900	23.60	11.50	10.16	33.76	21.66	56.00	46.00	-22.24
3.7400	11.81	11.68	10.13	21.94	21.81	56.00	46.00	-24.19
11.3611	26.54	19.16	10.50	37.04	29.66	60.00	50.00	-20.34
16.6666	27.71	19.19	10.45	38.16	29.64	60.00	50.00	-20.36

Note
1. The formula of measured value as: Test Result = Reading + Correction Factor
2. The Correction Factor = Cable Loss + LISN Insertion Loss + Pulse Limit Loss
3. Detector function in the form : PK = Peak, QP = Quasi Peak, AV = Average
4. All not in the table noted test results are more than 20 dB below the relevant limits.
5. See attached diagrams as appendix.

Limits:

Frequency of Emission (MHz)	Conducted Limit (dBuV)	
	Quasi Peak	Average
0.15-0.5	66 to 56	56 to 46
0.5-5	56	46
5-30	60	50

Test equipment used: ETSTW-CE 001 ETSTW-CE 003 ETSTW-CE 004 ETSTW-CE 006

Explanation: Please see attached diagram as appendix.

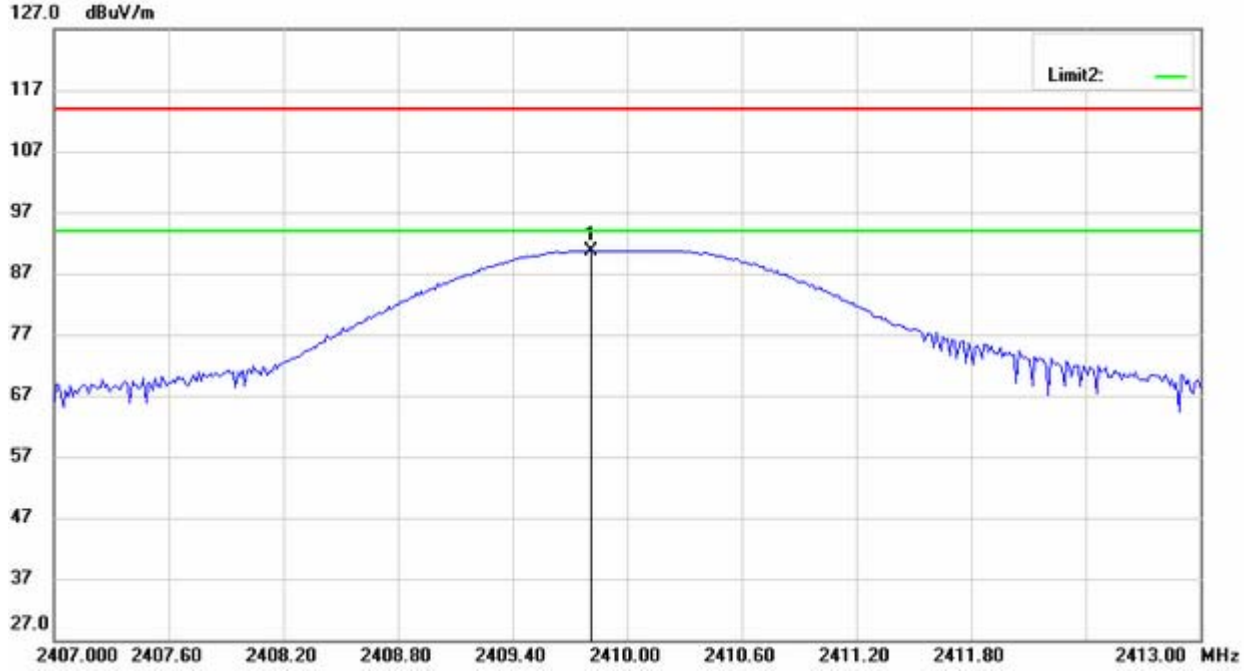
Appendix

Measurement diagrams

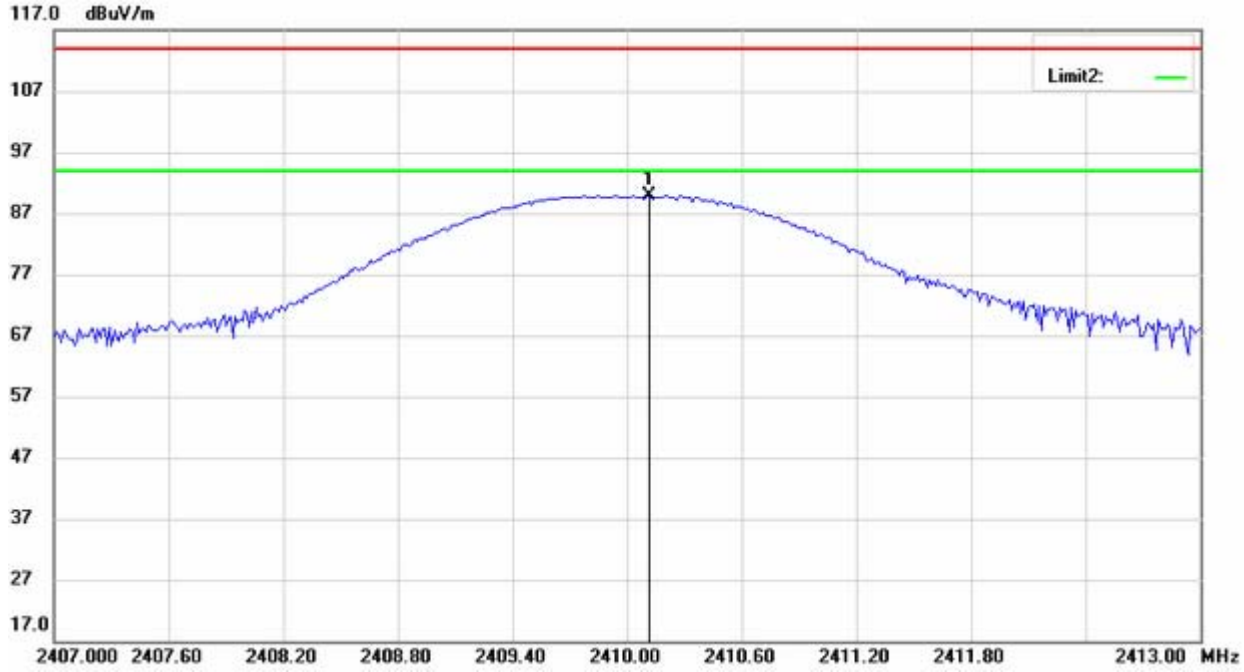
1. Fundamental Field Strength
2. Spurious Emissions radiated
3. Radiated Emission on the band edge
4. Occupied Bandwidth
5. Power Line Conducted Emission

Registration number: W6M20811-9437-P-15
FCC ID: WXQCC2511

Fundamental Field Strength
2410 MHz
Antenna Polarization H



Antenna Polarization V



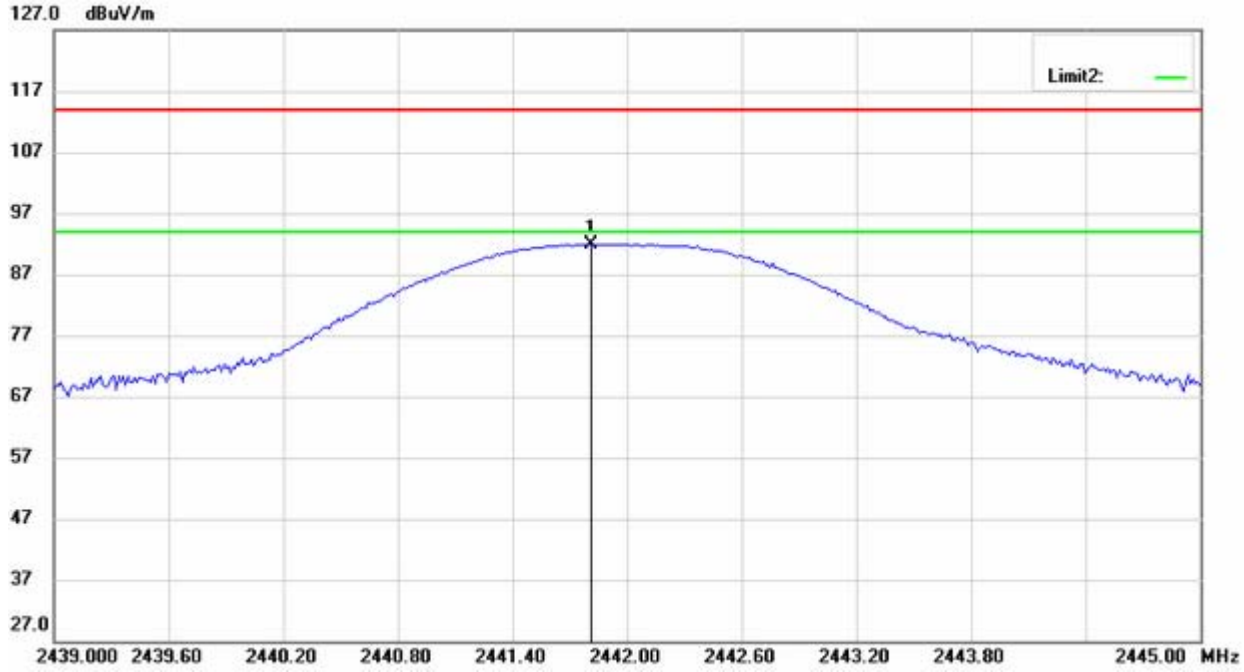
Up Line: Peak Limit Line
Down Line: Ave Limit Line
Note:

1. **The attached measurement plots are preliminarily pre-scanned with peak detector for determining the final checking frequencies and are for reference only.**
2. **The some frequencies may exceed the limit line without the specified detectors, but that cannot present the results are failed to the specification of test standard.**
3. **For corrected test results are listed in the relevant table of radiated test data of this test report.**

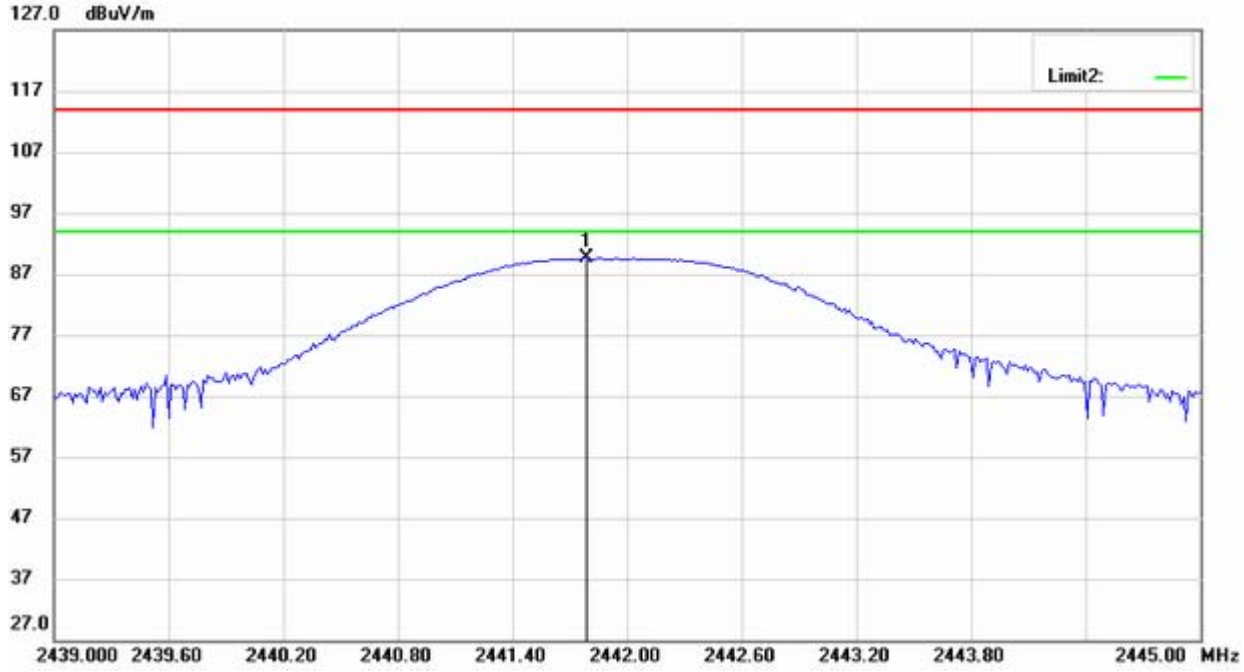
Registration number: W6M20811-9437-P-15
FCC ID: WXQCC2511

2442 MHz

Antenna Polarization H



Antenna Polarization V



Up Line: Peak Limit Line
Down Line: Ave Limit Line
Note:

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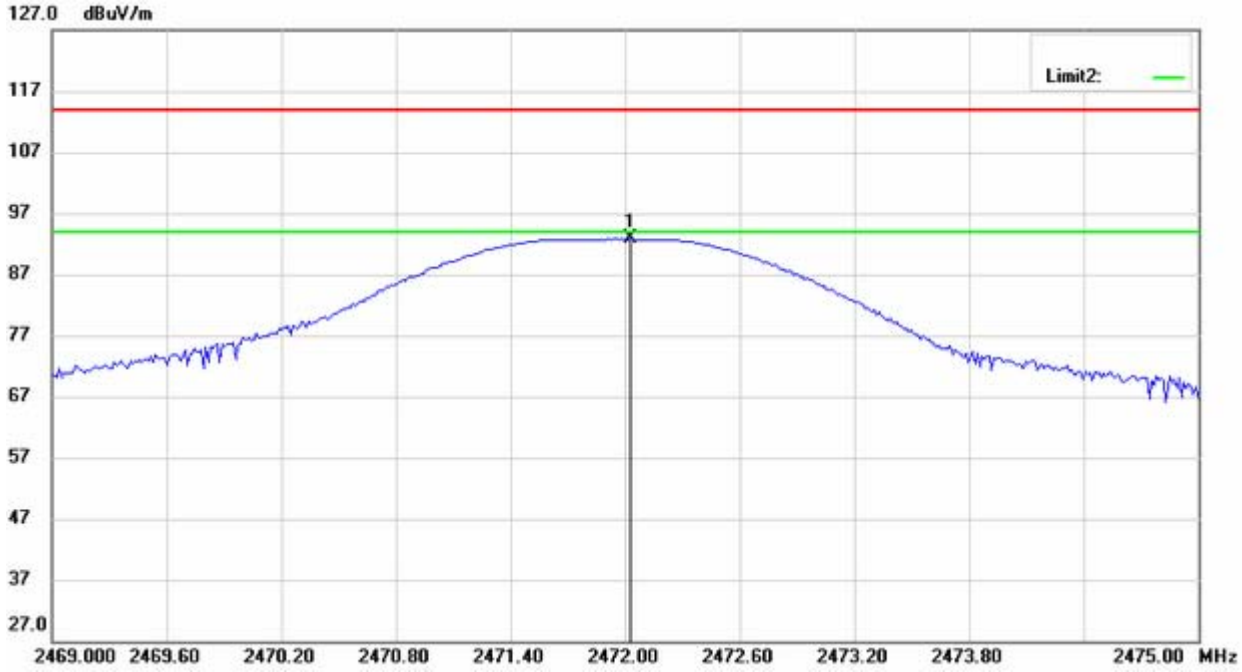
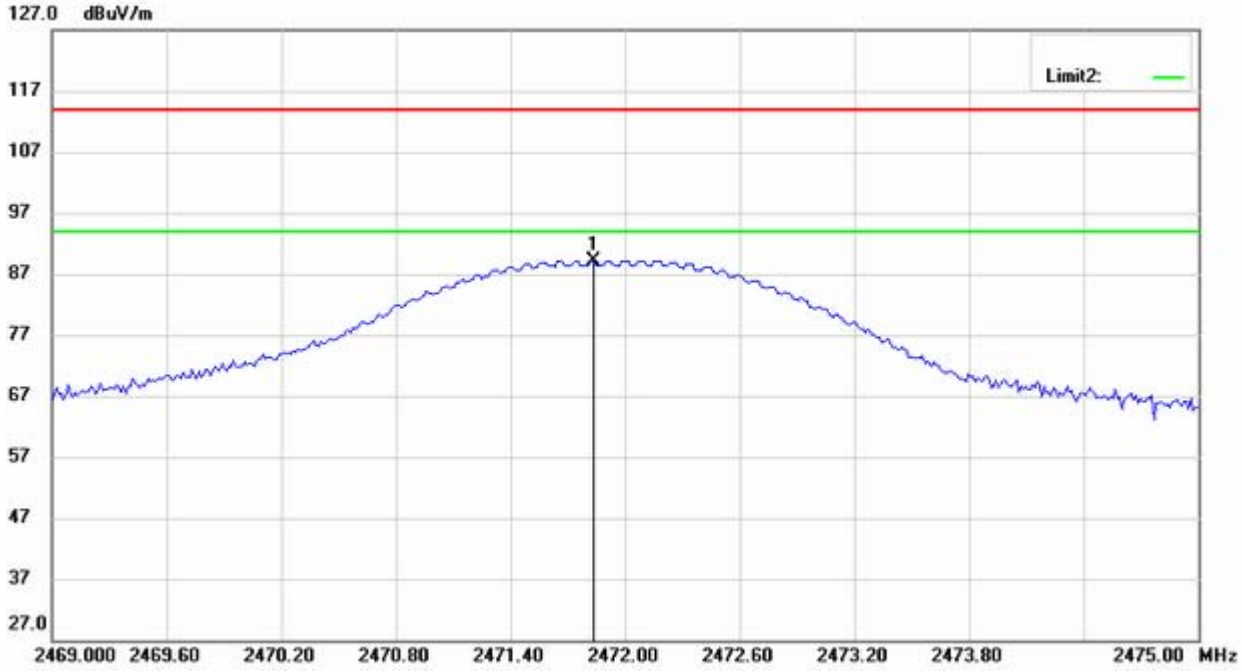
Registration number: W6M20811-9437-P-15
FCC ID: WXQCC2511

2472 MHz

Antenna Polarization H



Antenna Polarization V



Up Line: Peak Limit Line
Down Line: Ave Limit Line
Note:

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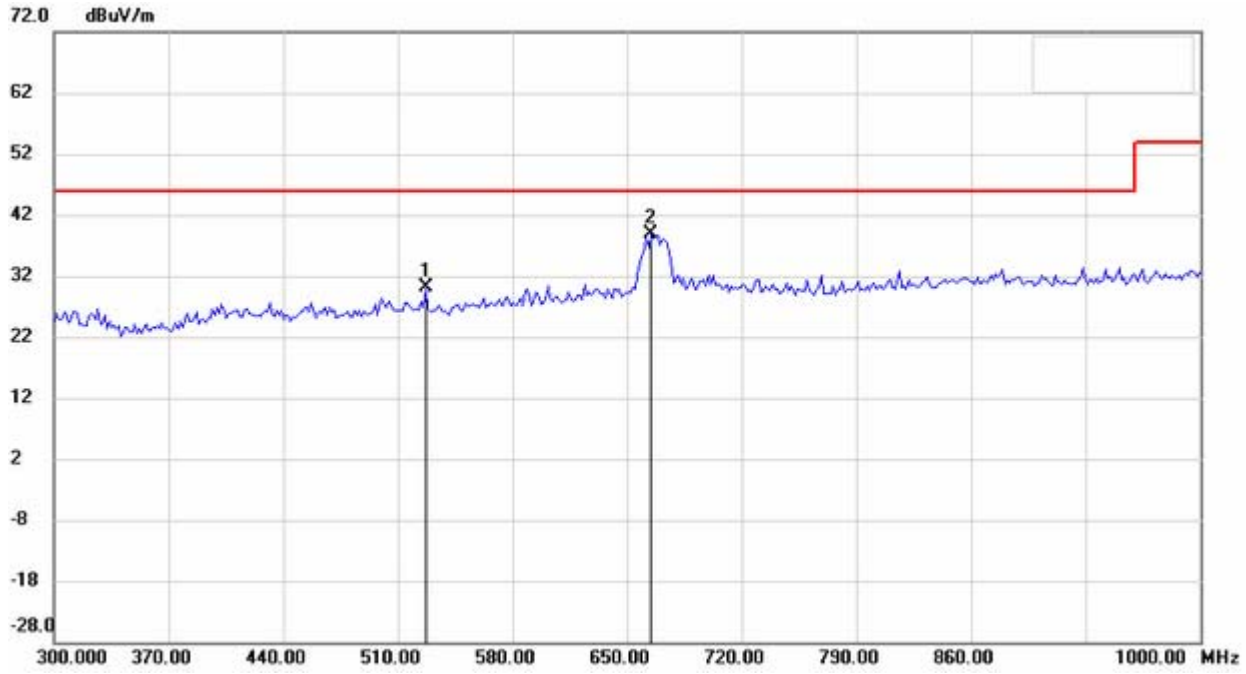
3. **For corrected test results are listed in the relevant table of radiated test data of this test report.**

Registration number: W6M20811-9437-P-15
FCC ID: WXQCC2511

Spurious Emissions radiated
Transmitter_2410 MHz
Antenna Polarization H



Up Line: Peak Limit Line
Down Line: Ave Limit Line
Note:

1. **The attached measurement plots are preliminarily pre-scanned with peak detector for determining the final checking frequencies and are for reference only.**
2. **The some frequencies may exceed the limit line without the specified detectors, but that cannot present the results are failed to the specification of test standard.**
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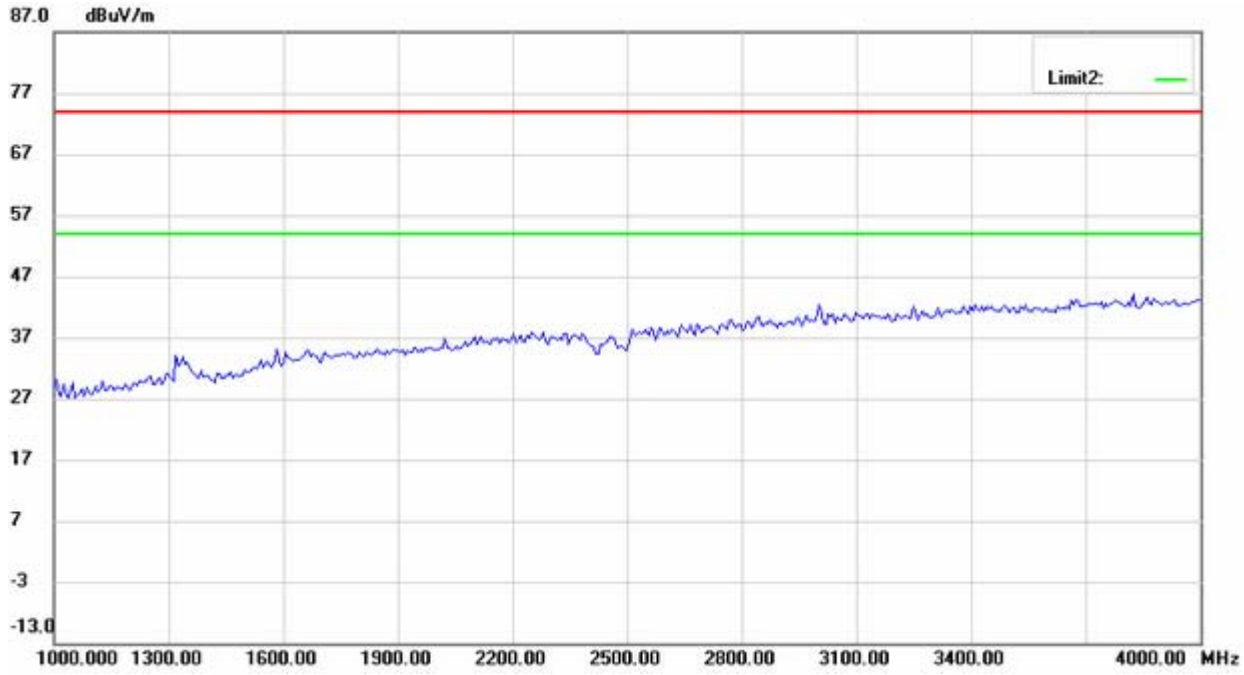

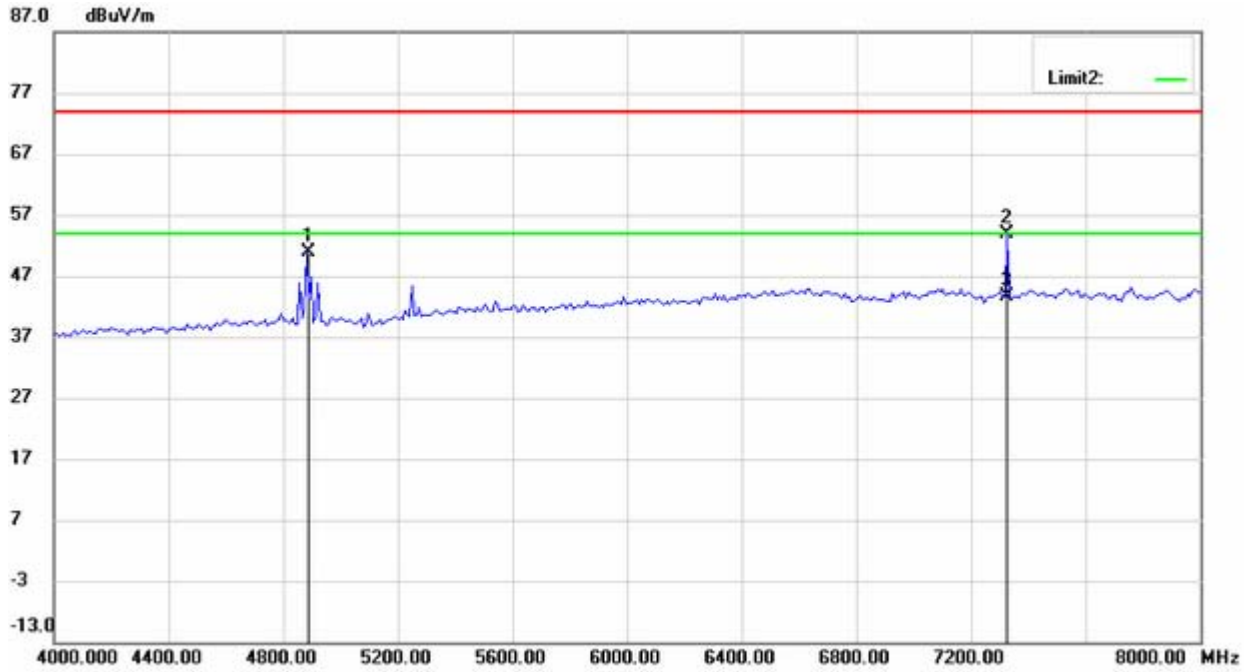

Up Line: Peak Limit Line
Down Line: Ave Limit Line
Note:

1. **The attached measurement plots are preliminarily pre-scanned with peak detector for determining the final checking frequencies and are for reference only.**
2. **The some frequencies may exceed the limit line without the specified detectors, but that cannot present the results are failed to the specification of test standard.**
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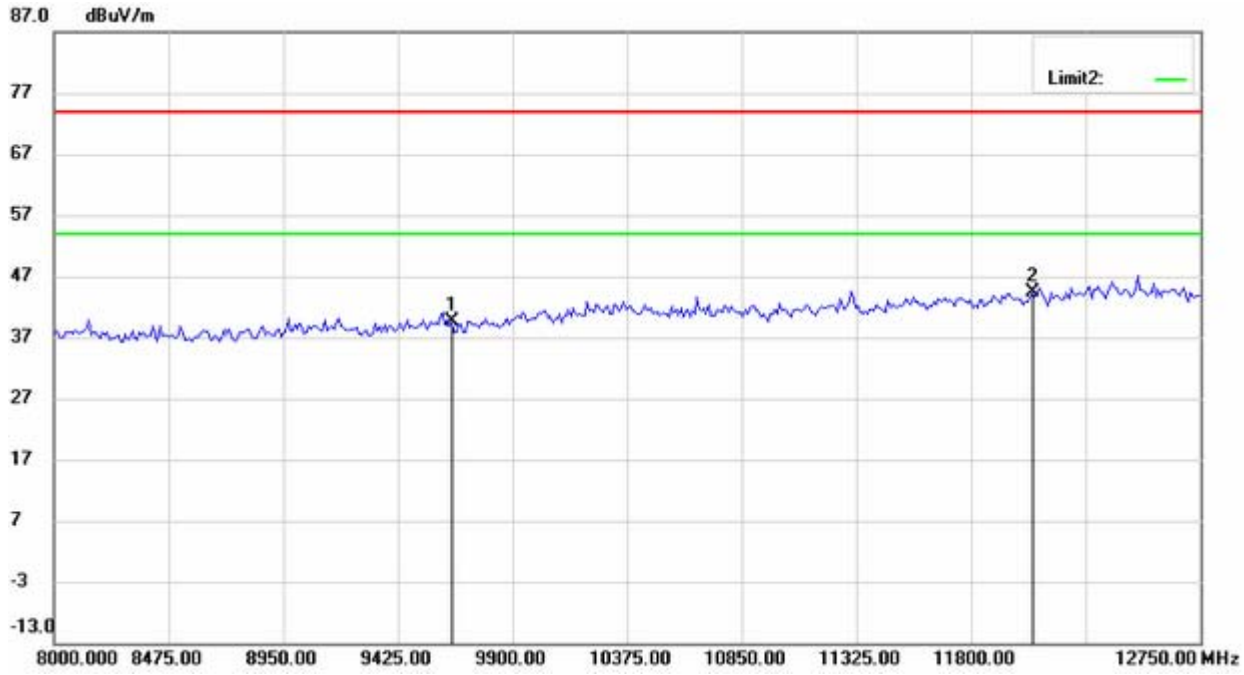

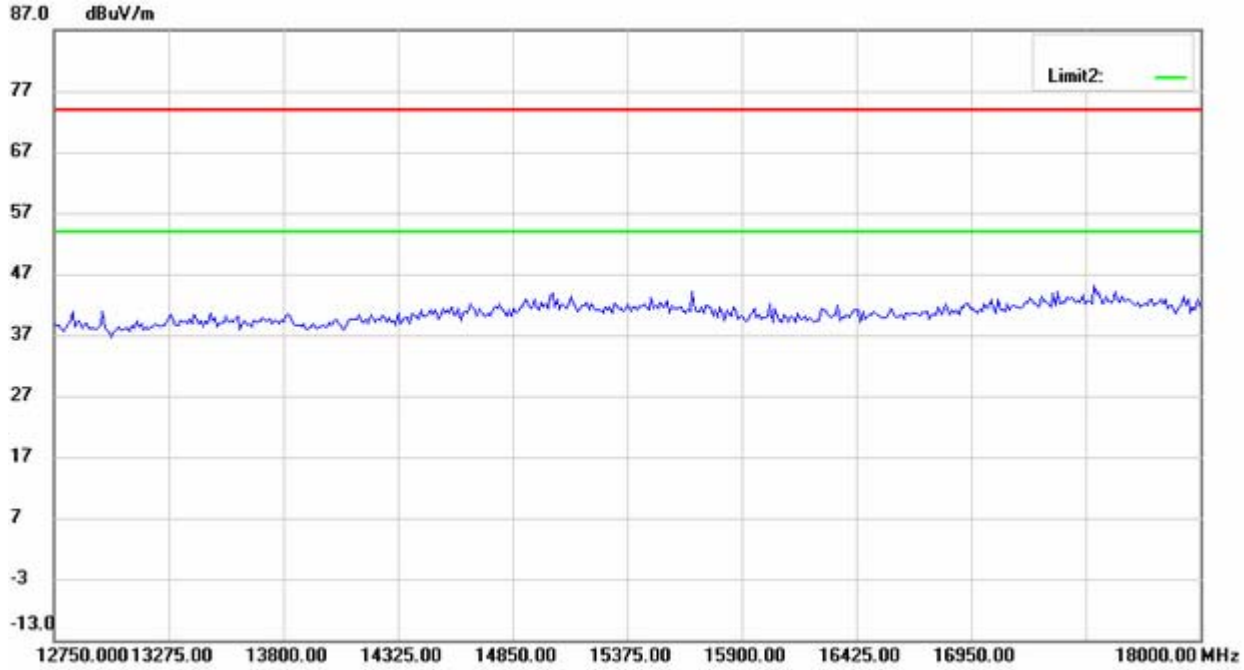

Up Line: Peak Limit Line
Down Line: Ave Limit Line
Note:

1. **The attached measurement plots are preliminarily pre-scanned with peak detector for determining the final checking frequencies and are for reference only.**
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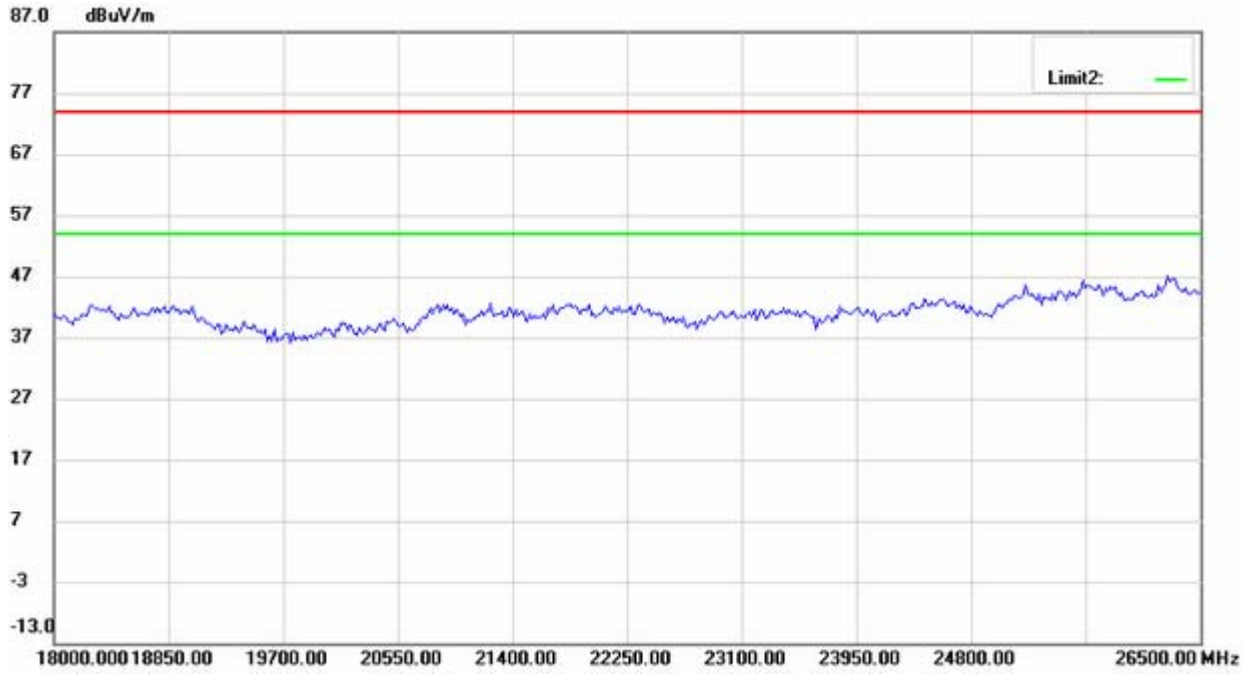
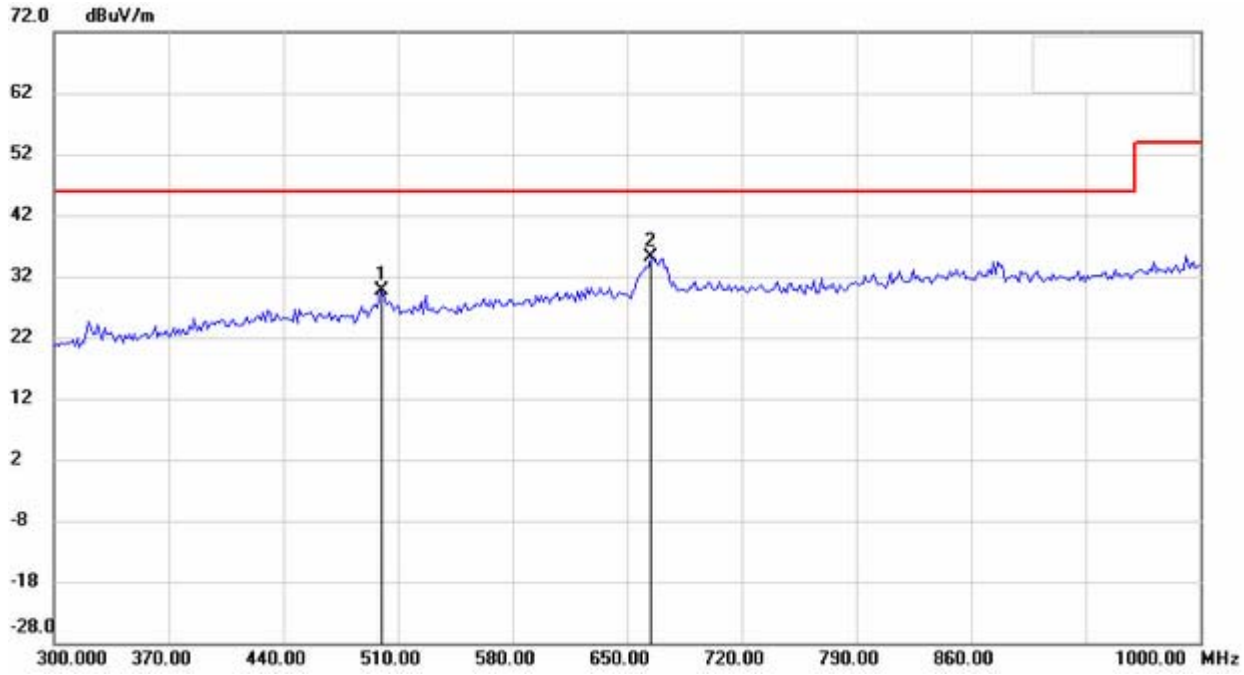
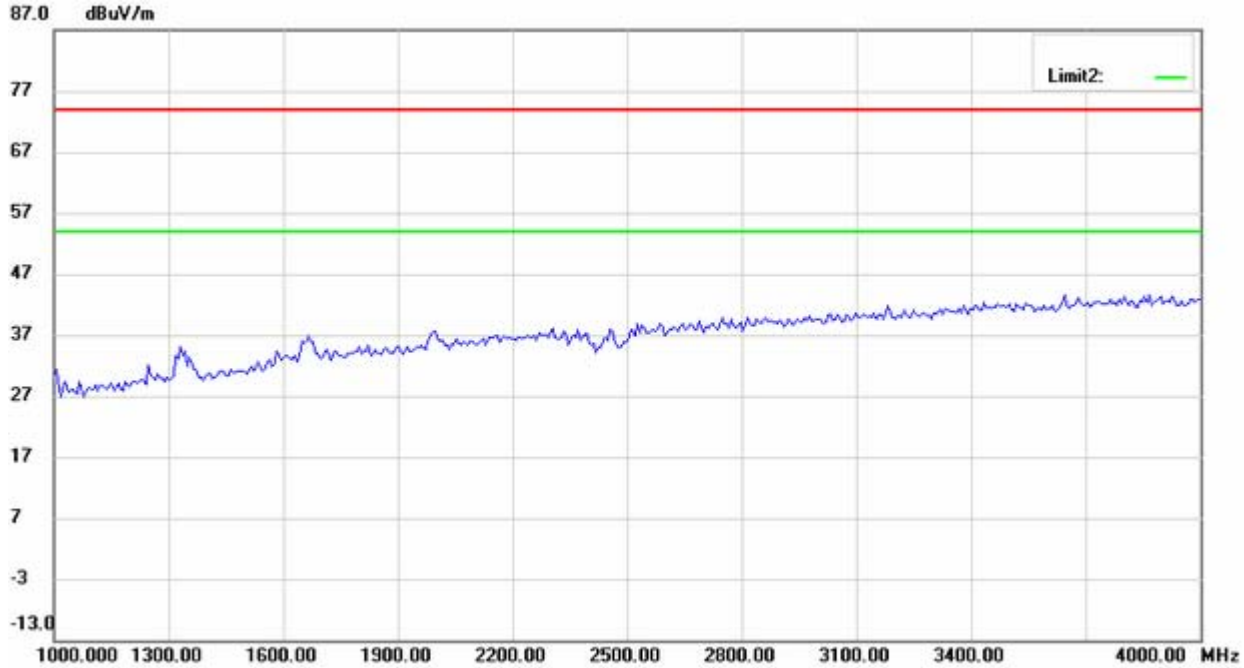


Antenna Polarization V

Up Line: Peak Limit Line
Down Line: Ave Limit Line
Note:

1. **The attached measurement plots are preliminarily pre-scanned with peak detector for determining the final checking frequencies and are for reference only.**
2. **The some frequencies may exceed the limit line without the specified detectors, but that cannot present the results are failed to the specification of test standard.**
3. **For corrected test results are listed in the relevant table of radiated test data of this test report.**





Up Line: Peak Limit Line
Down Line: Ave Limit Line
Note:

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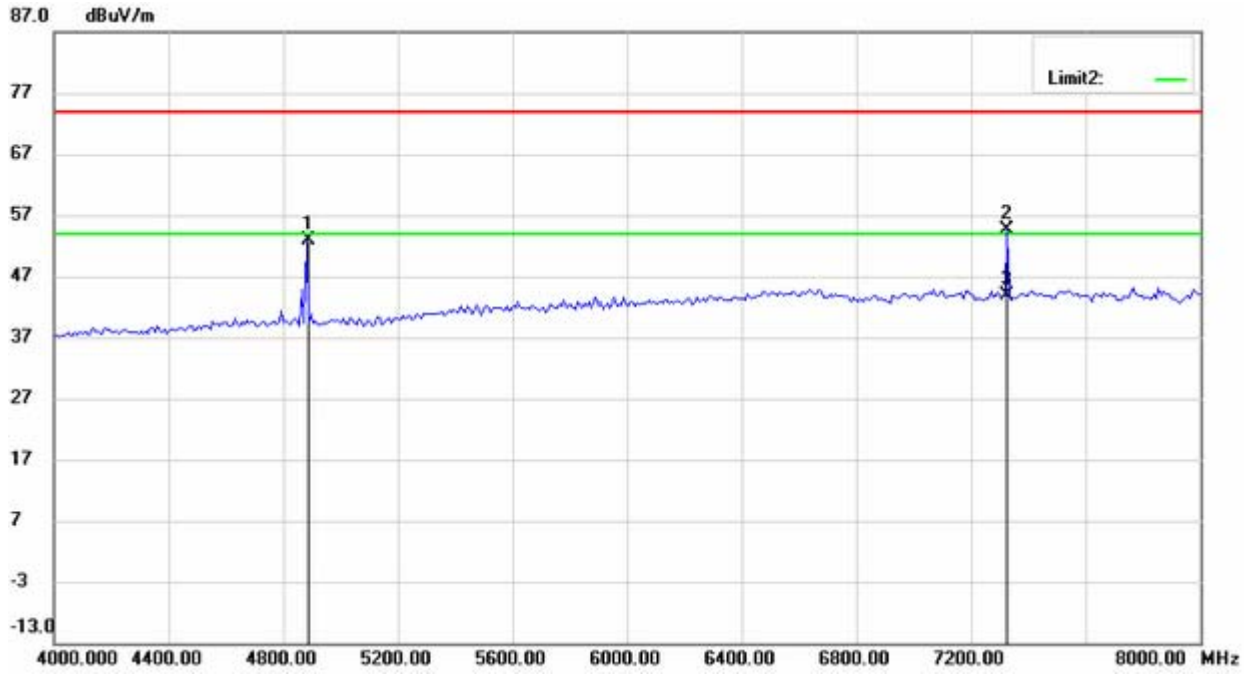

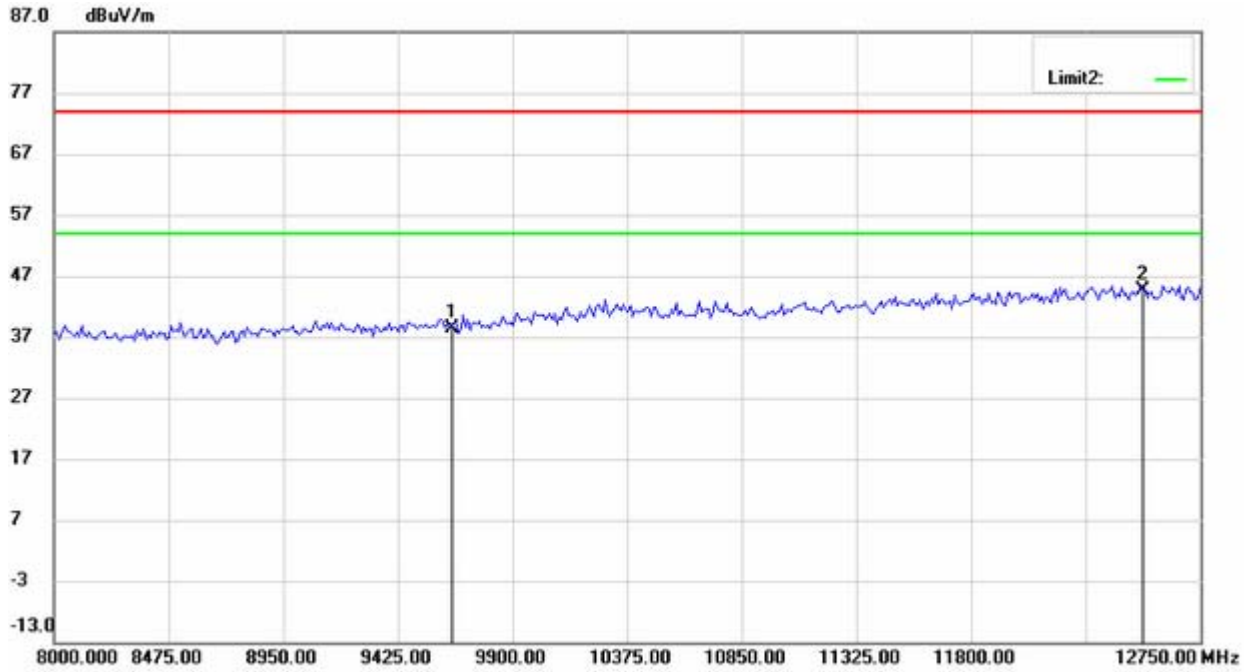

Up Line: Peak Limit Line
Down Line: Ave Limit Line
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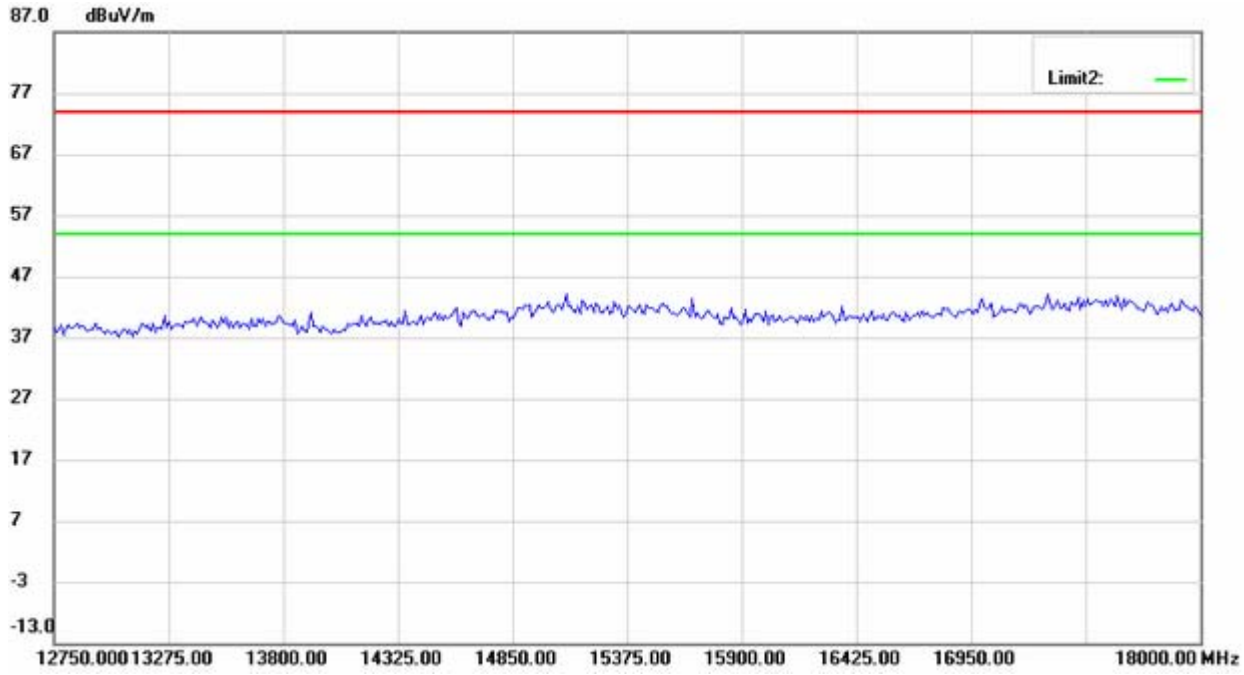

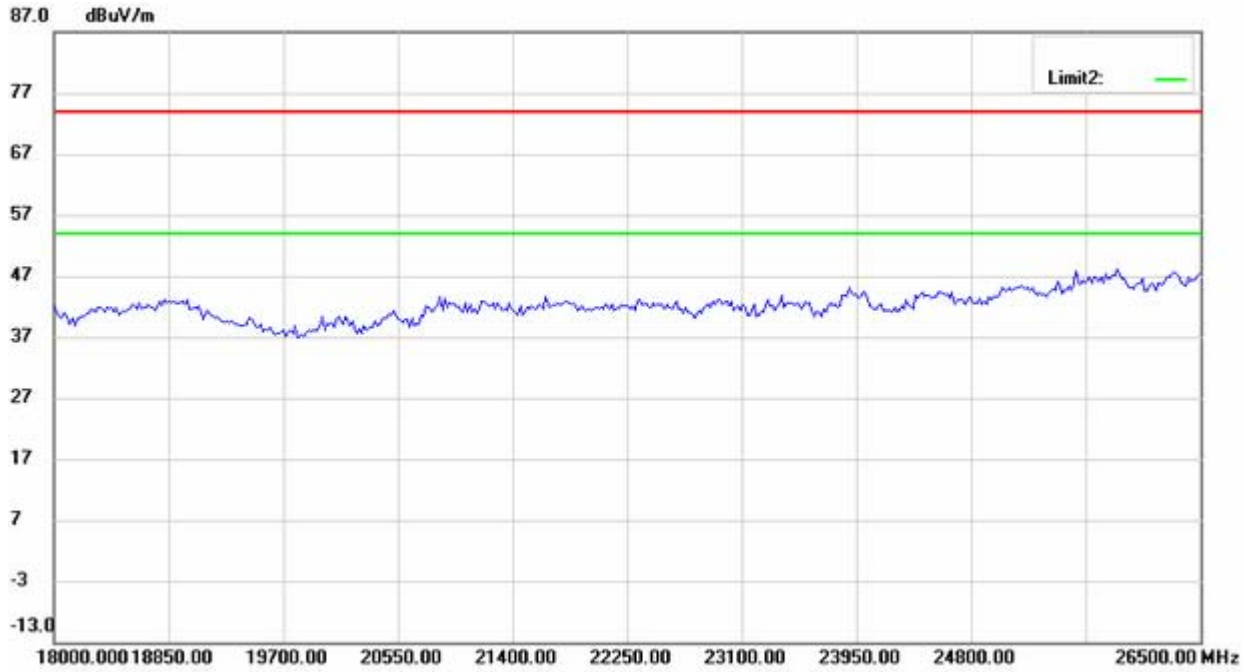

Up Line: Peak Limit Line
Down Line: Ave Limit Line
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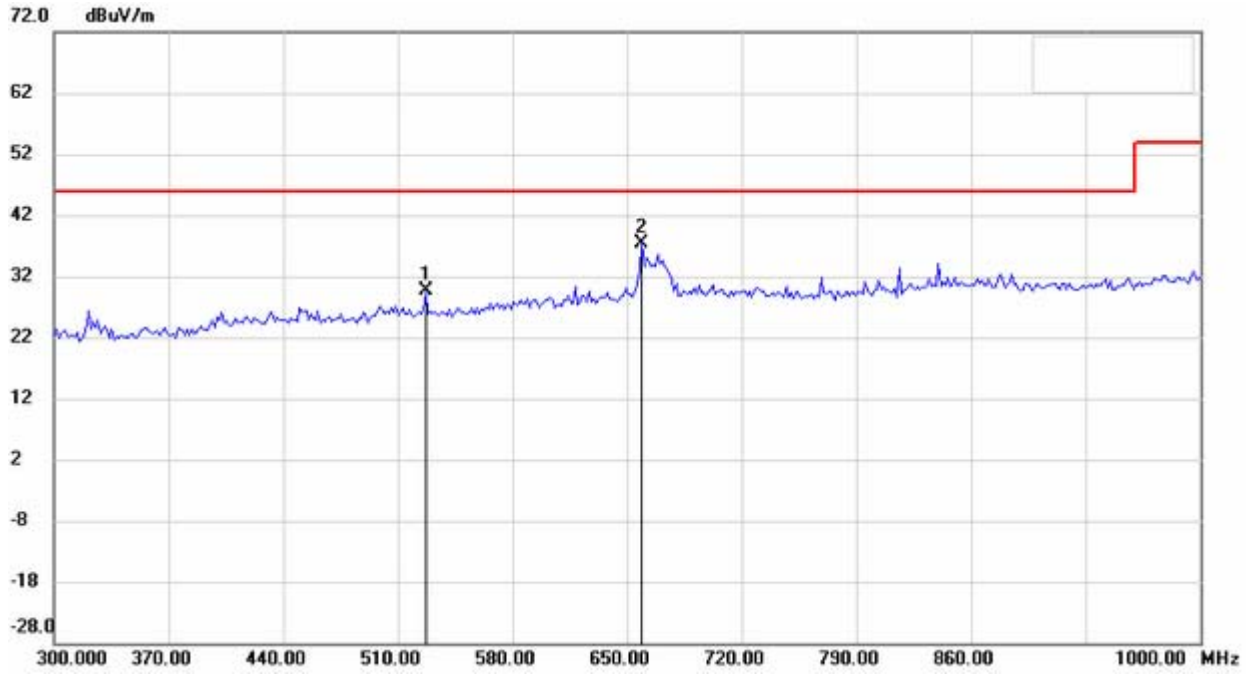
Registration number: W6M20811-9437-P-15
FCC ID: WXQCC2511

Transmitter_2442 MHz

Antenna Polarization H



Up Line: Peak Limit Line
Down Line: Ave Limit Line
Note:

1. **The attached measurement plots are preliminarily pre-scanned with peak detector for determining the final checking frequencies and are for reference only.**
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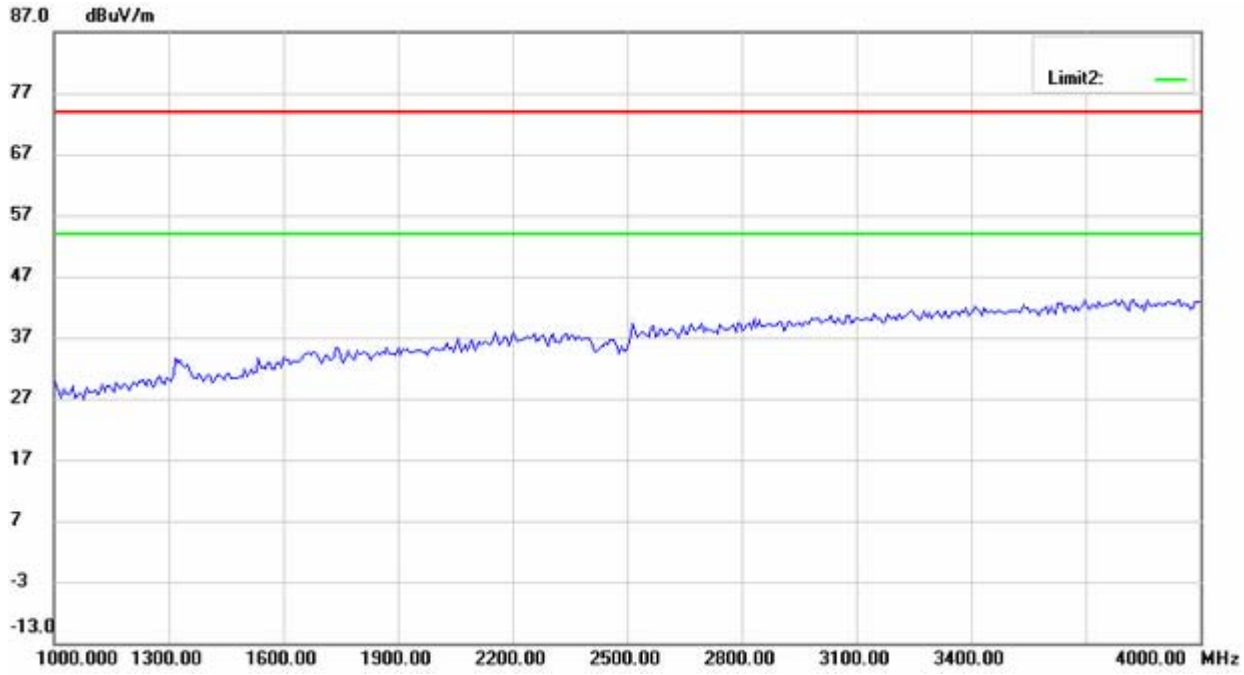

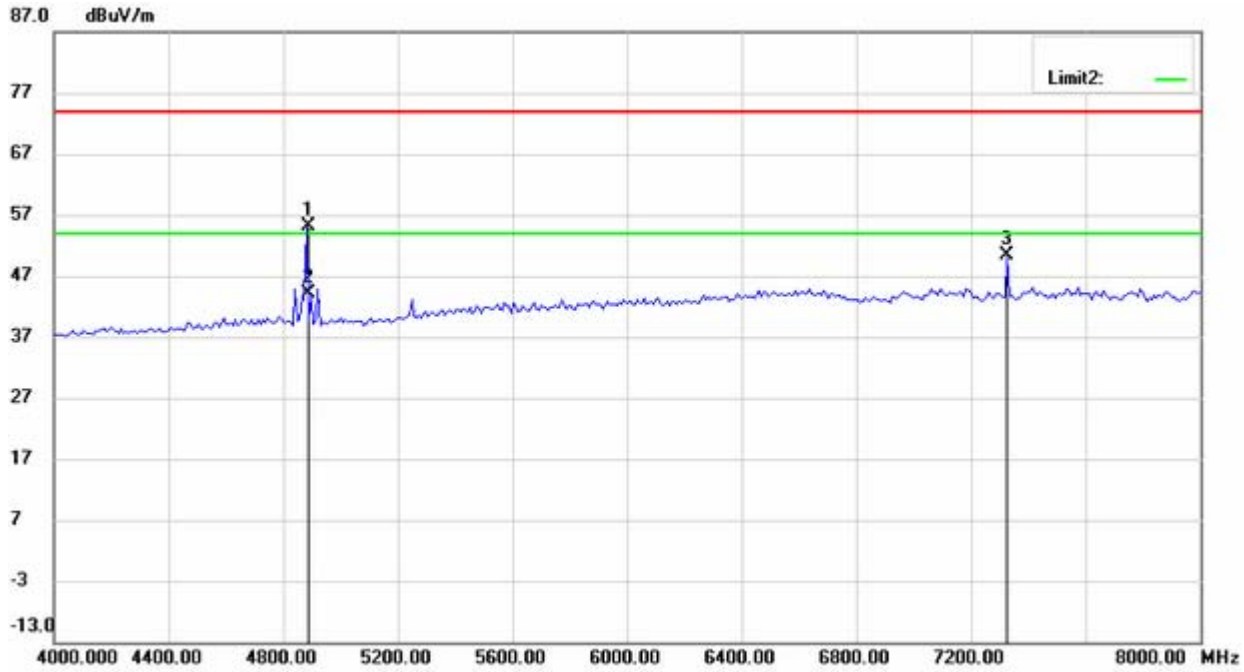

Up Line: Peak Limit Line
Down Line: Ave Limit Line
Note:

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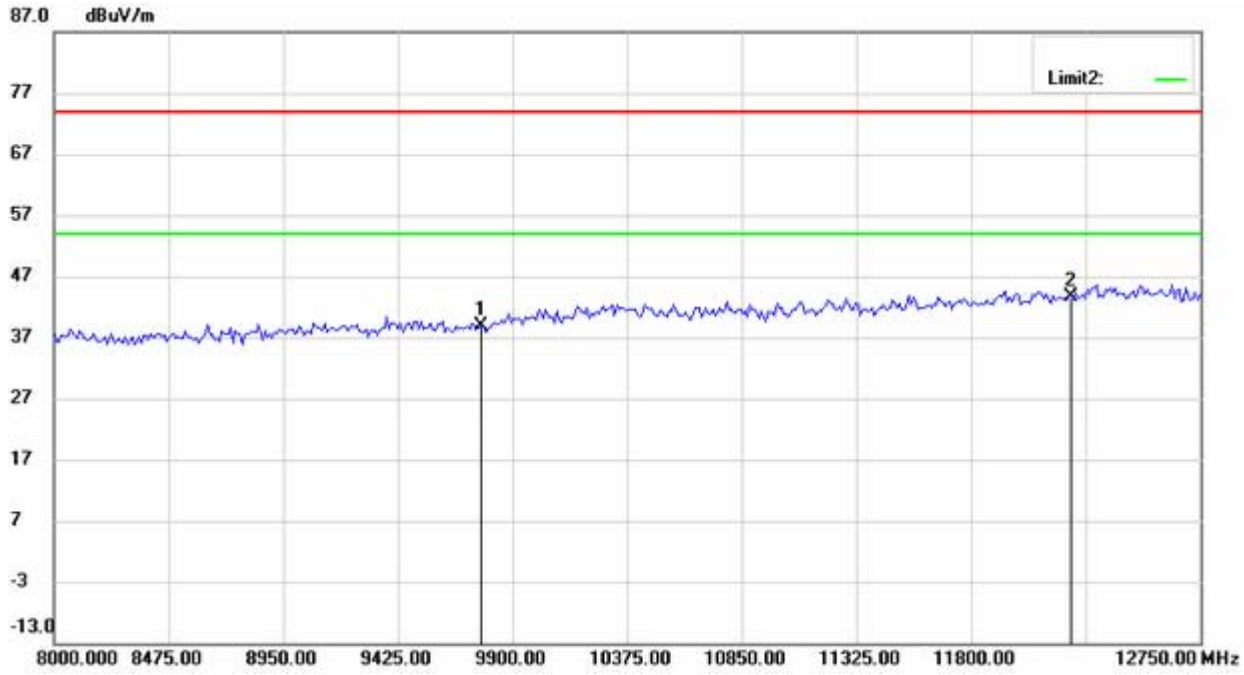

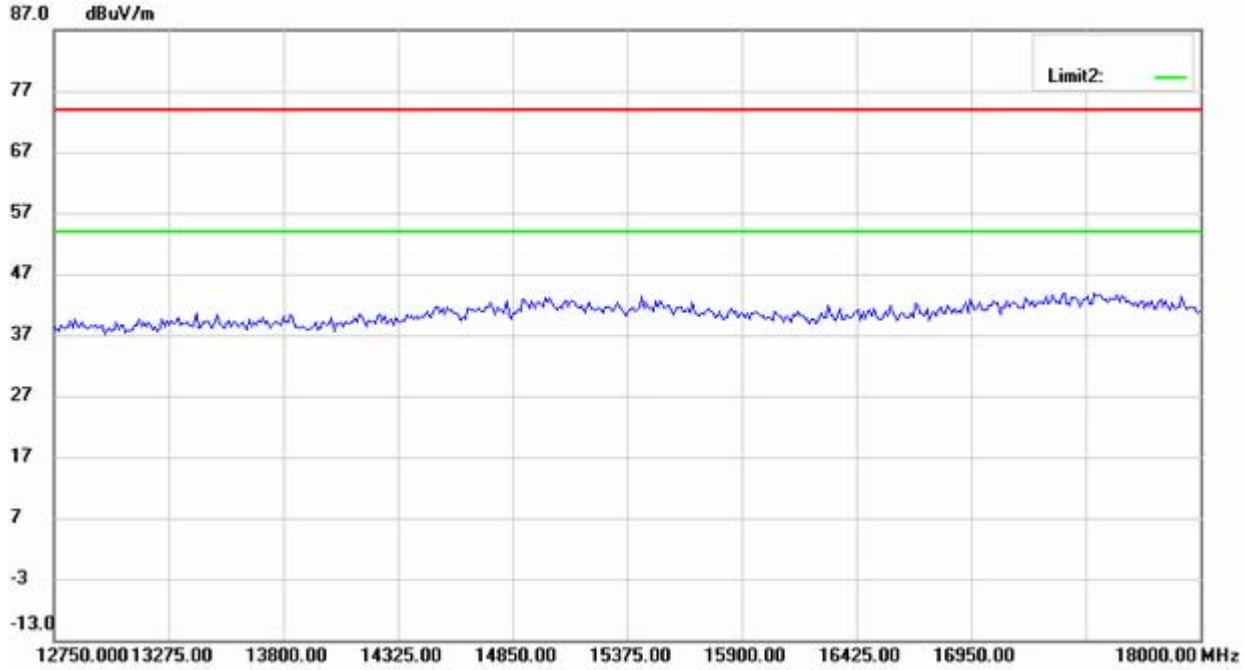

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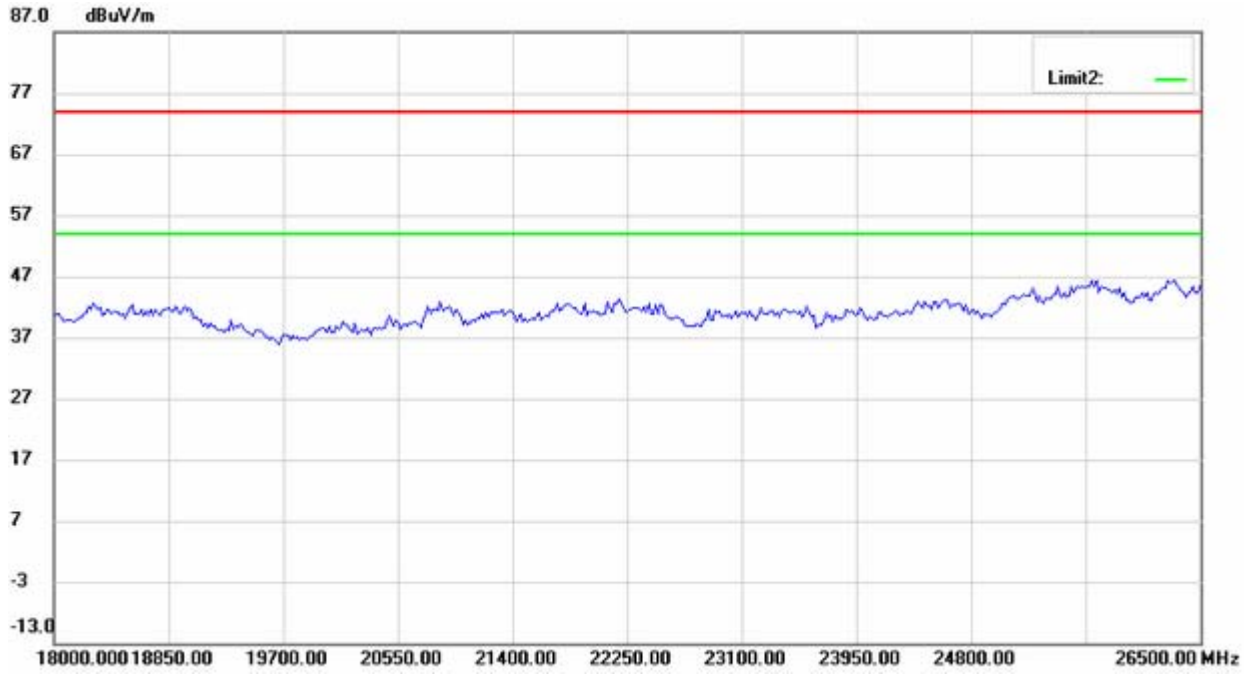
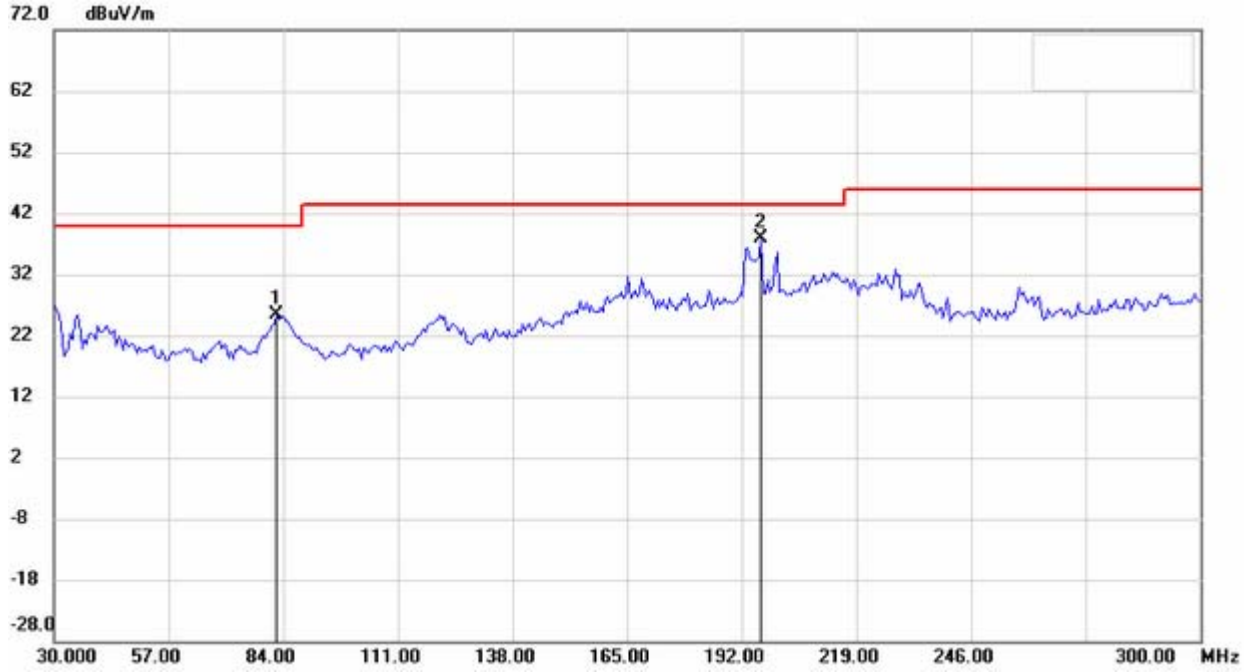


Antenna Polarization V



Up Line: Peak Limit Line
Down Line: Ave Limit Line
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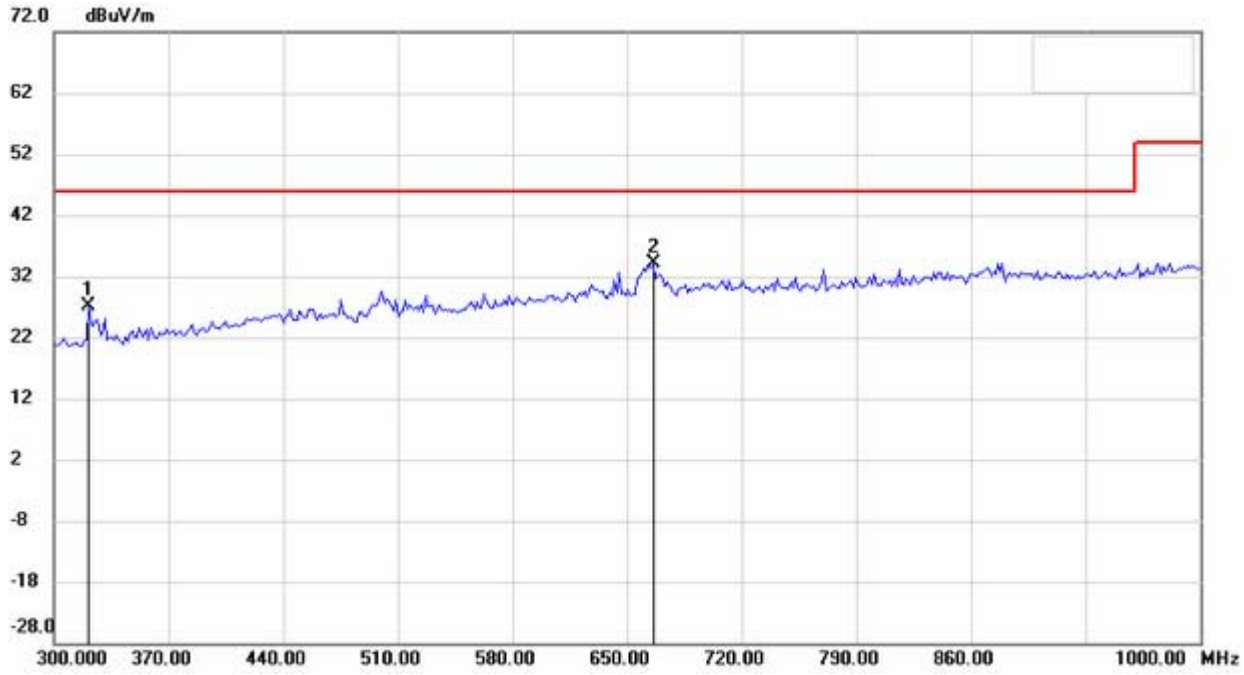

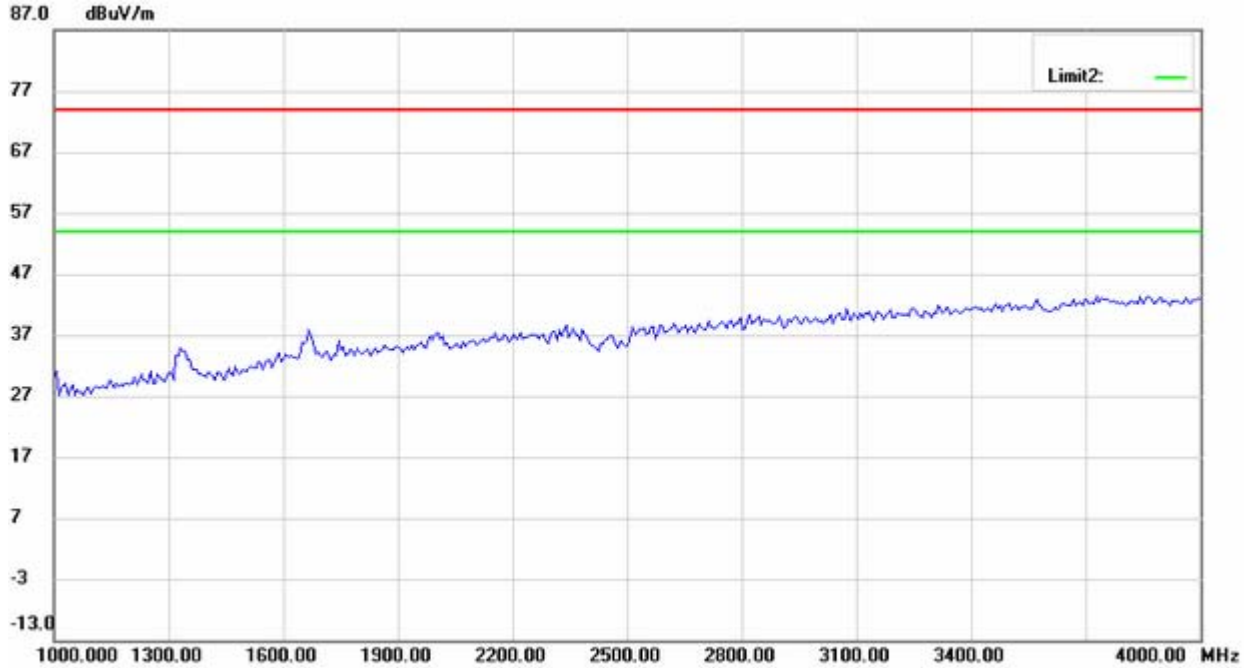

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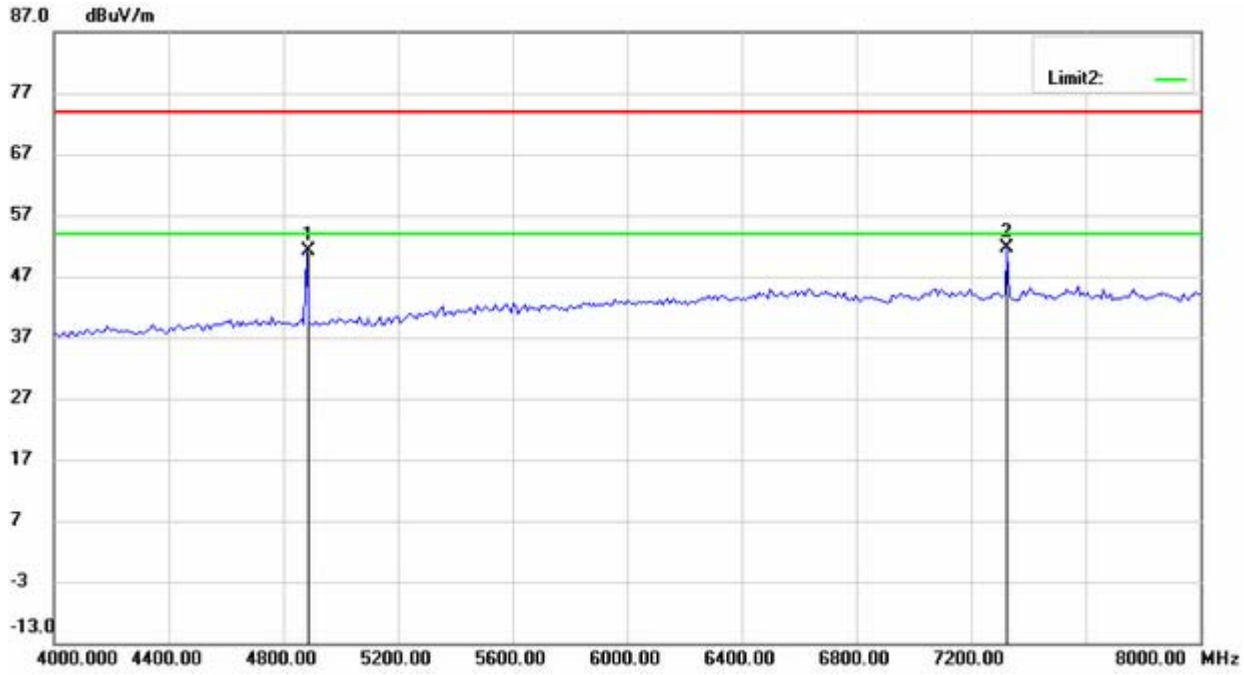

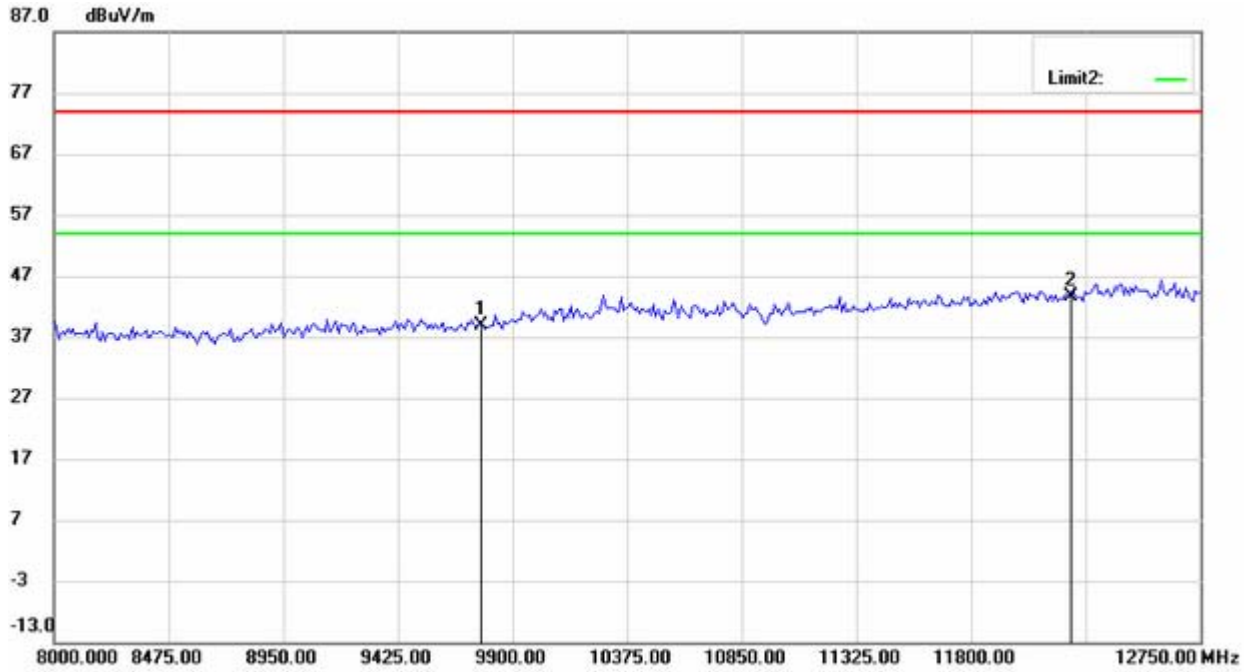

Up Line: Peak Limit Line
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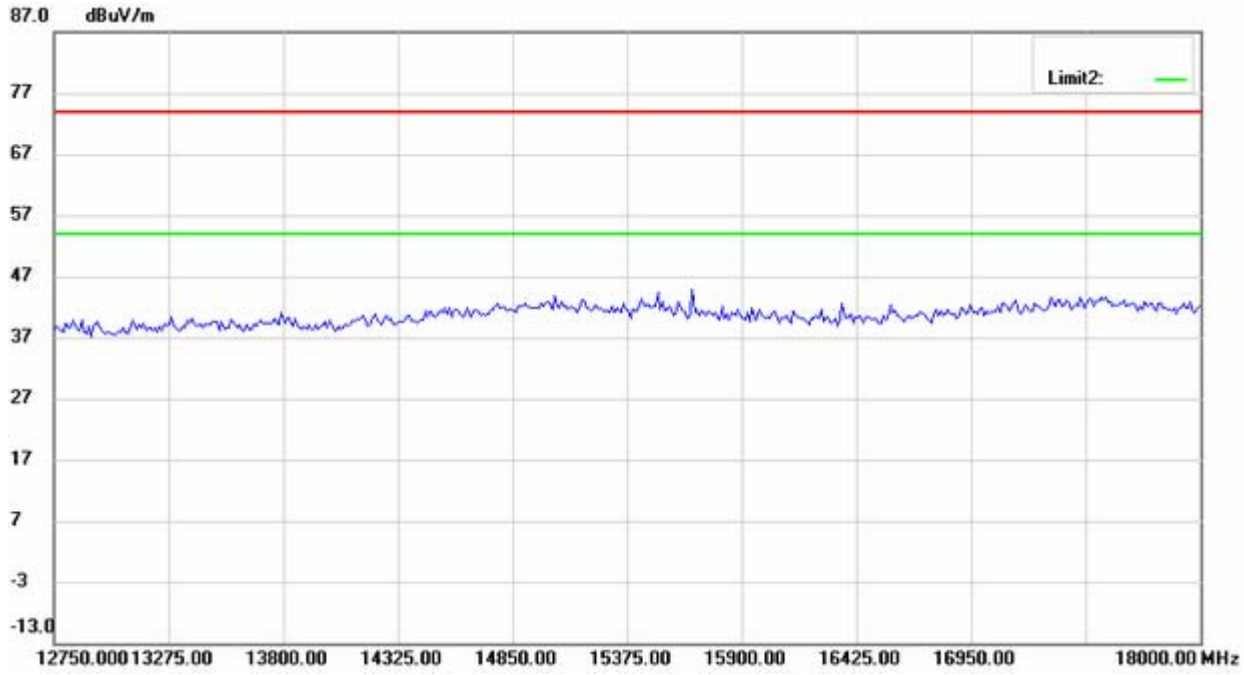

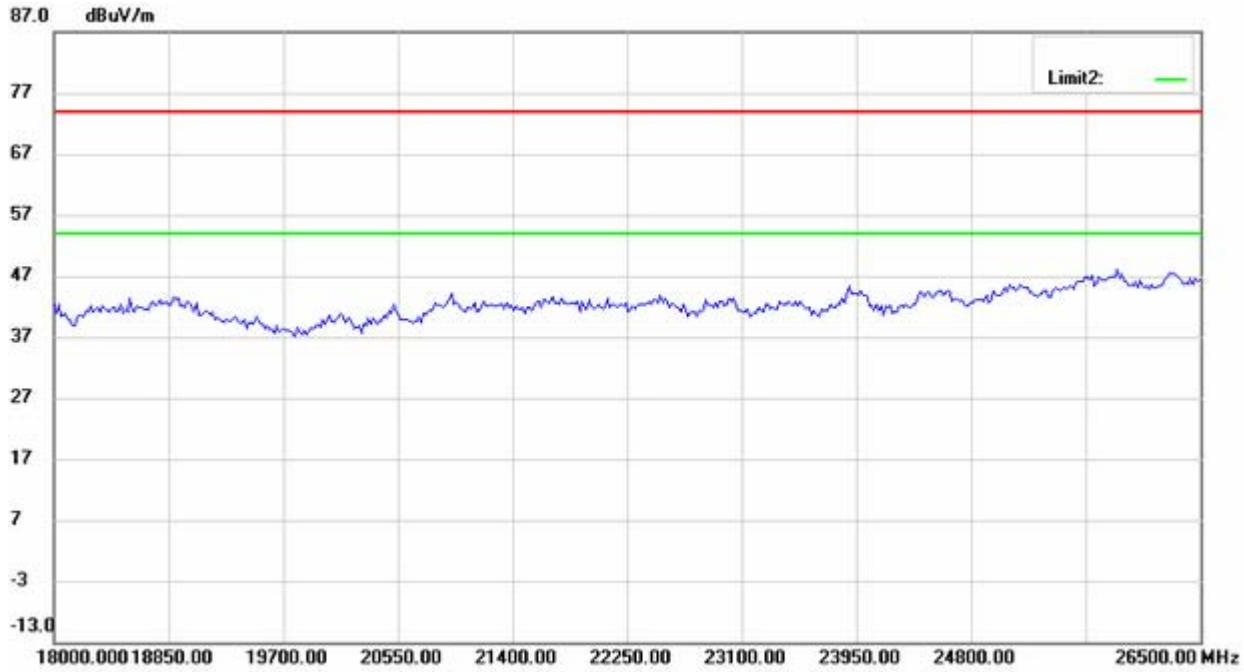

Up Line: Peak Limit Line
Down Line: Ave Limit Line
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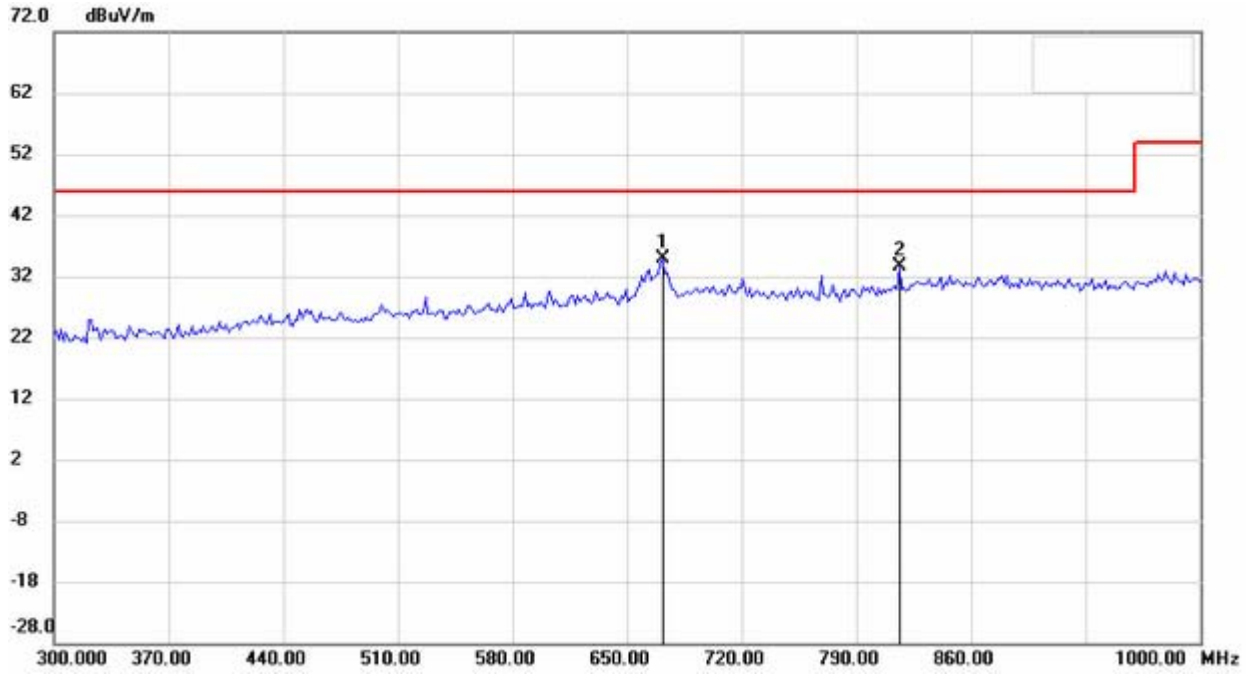
Registration number: W6M20811-9437-P-15
FCC ID: WXQCC2511

Transmitter_2472 MHz

Antenna Polarization H



Up Line: Peak Limit Line
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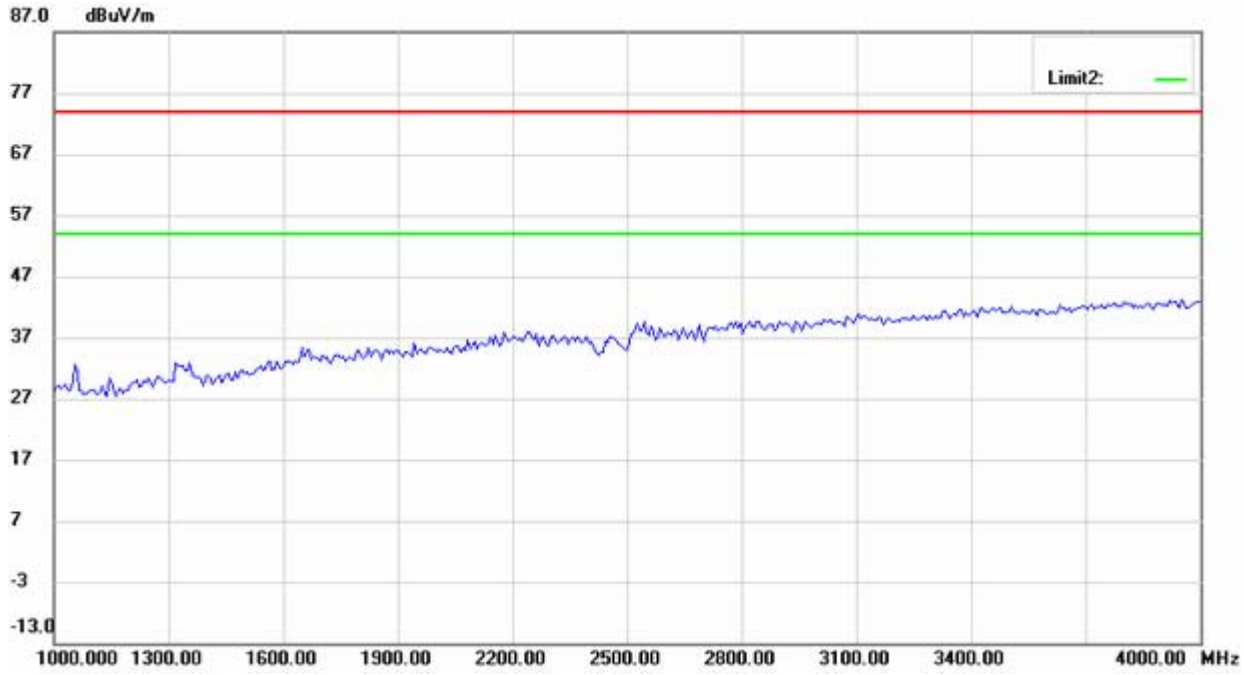

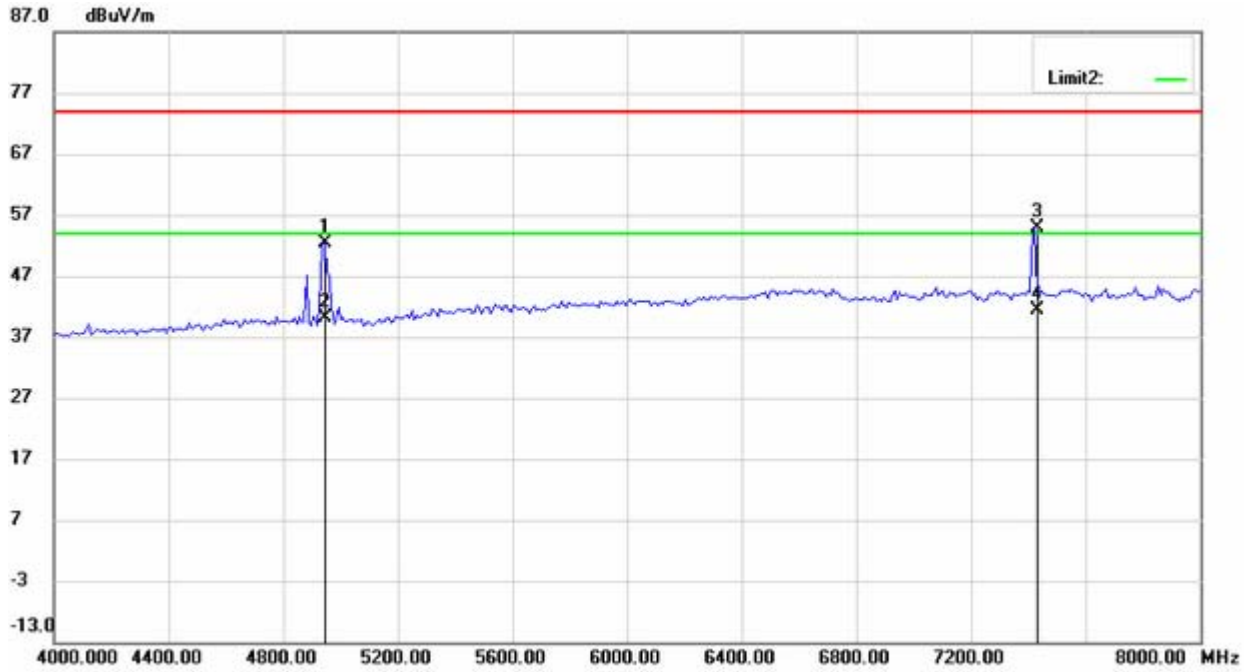

Up Line: Peak Limit Line
Down Line: Ave Limit Line
Note:

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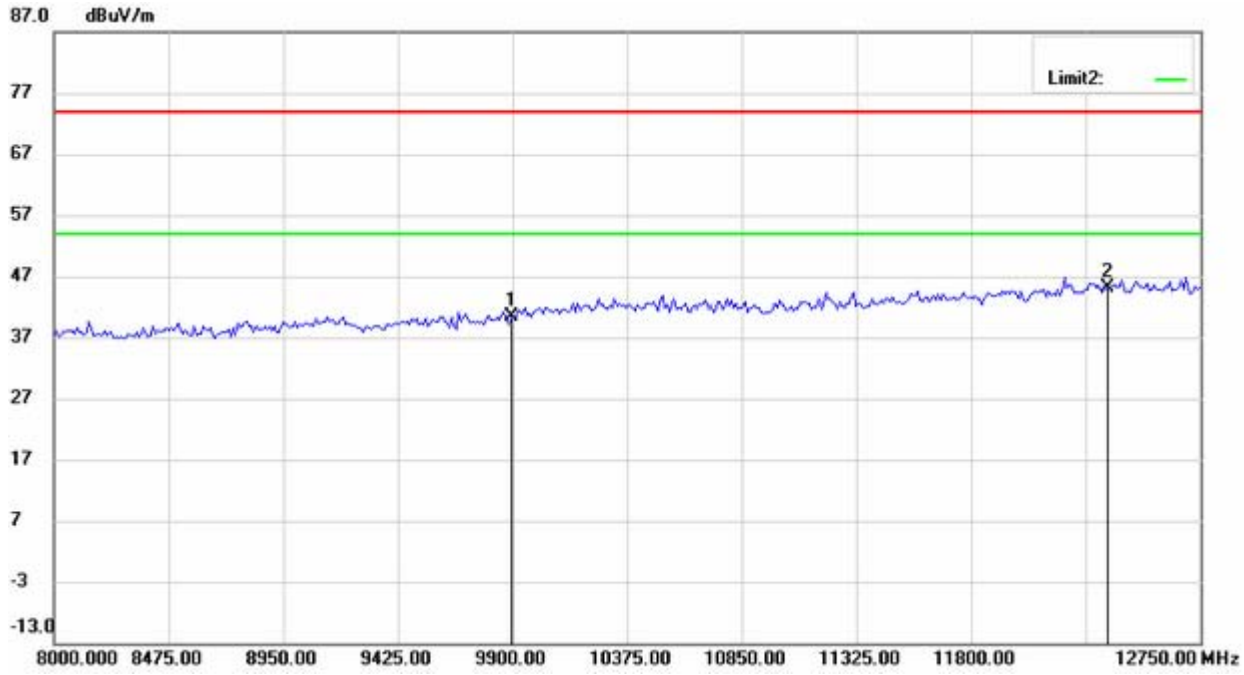

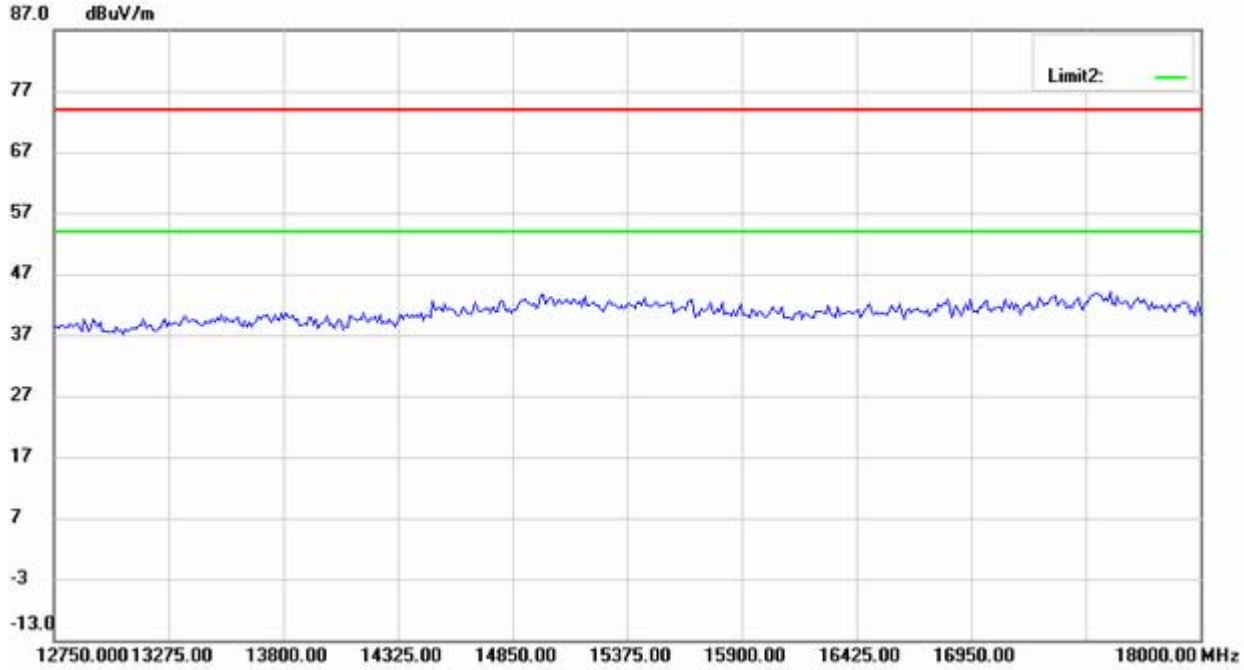

Up Line: Peak Limit Line
Down Line: Ave Limit Line
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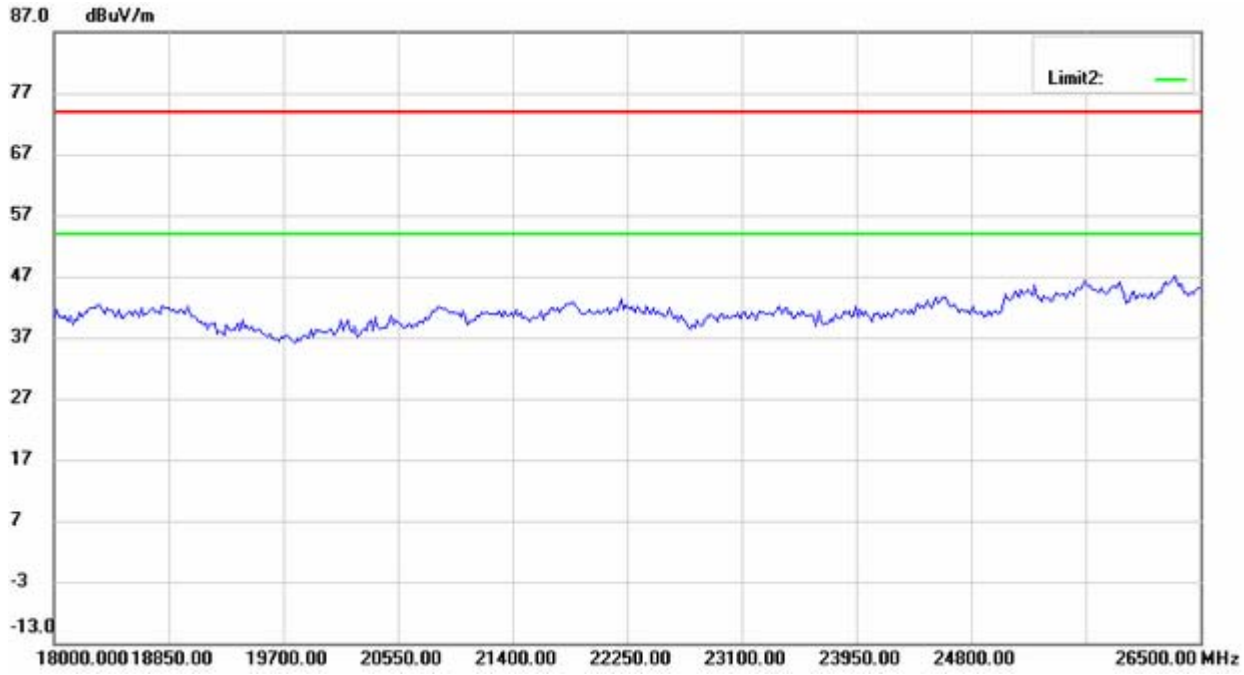
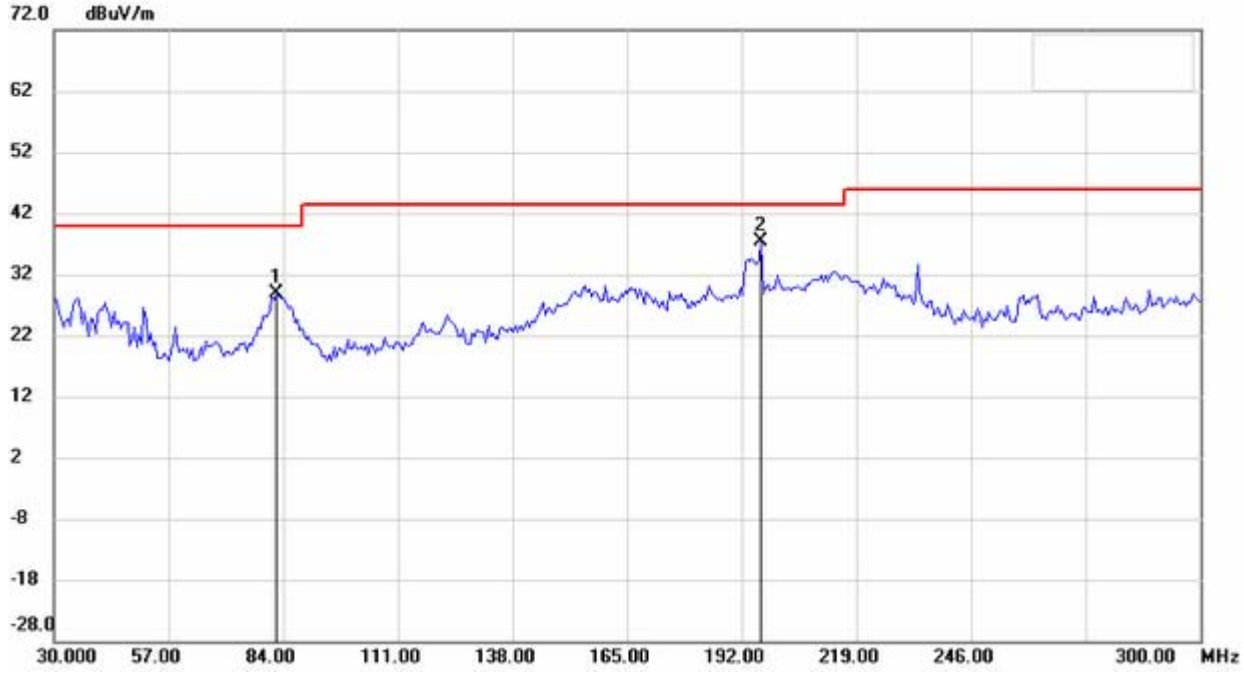
2. **The some frequencies may exceed the limit line without the specified detectors, but that cannot present the results are failed to the specification of test standard.**
3. **For corrected test results are listed in the relevant table of radiated test data of this test report.**

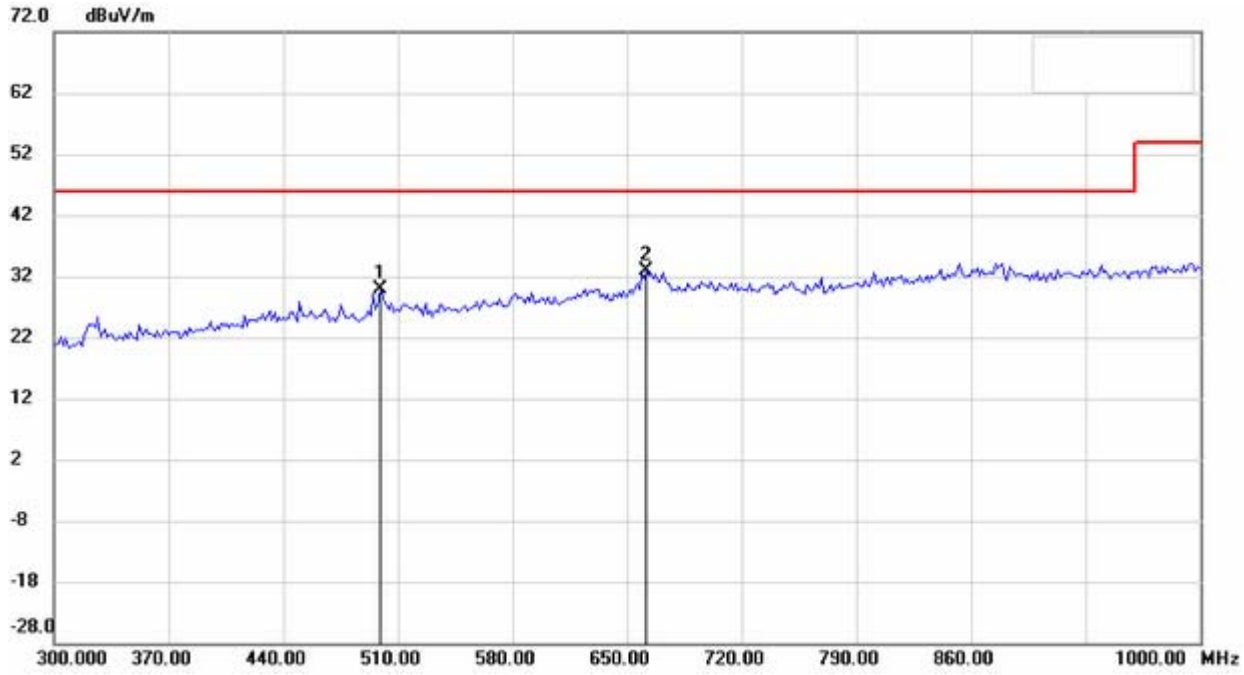


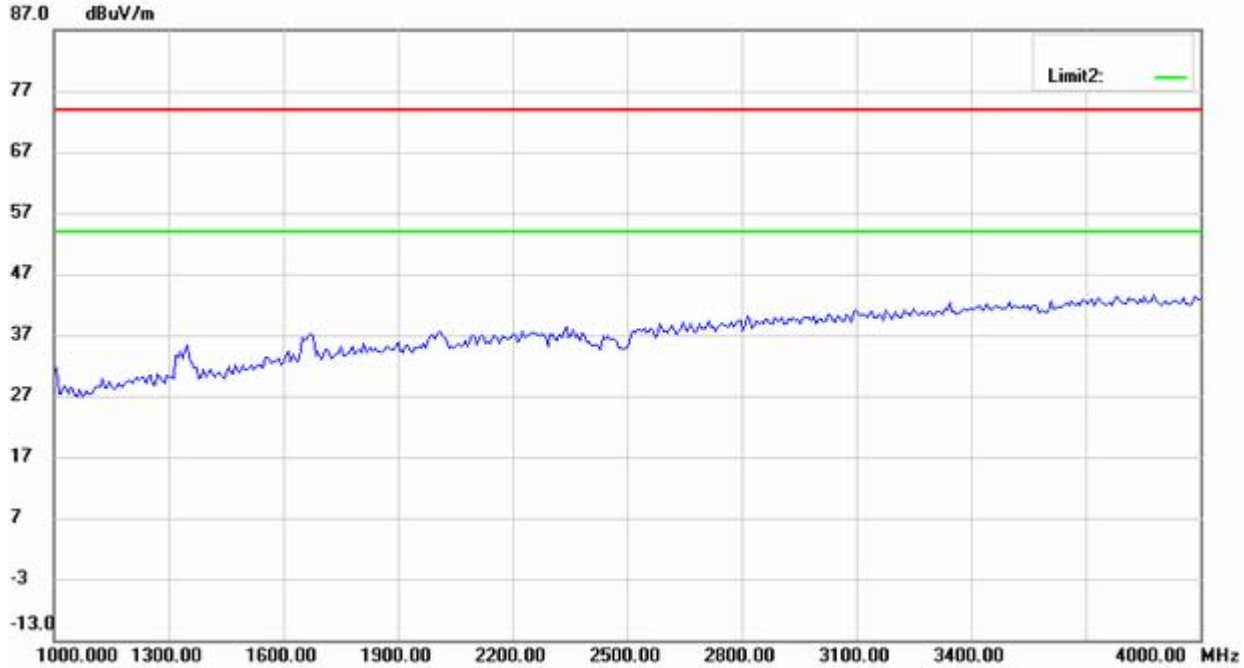
Antenna Polarization V



Up Line: Peak Limit Line
Down Line: Ave Limit Line
Note:

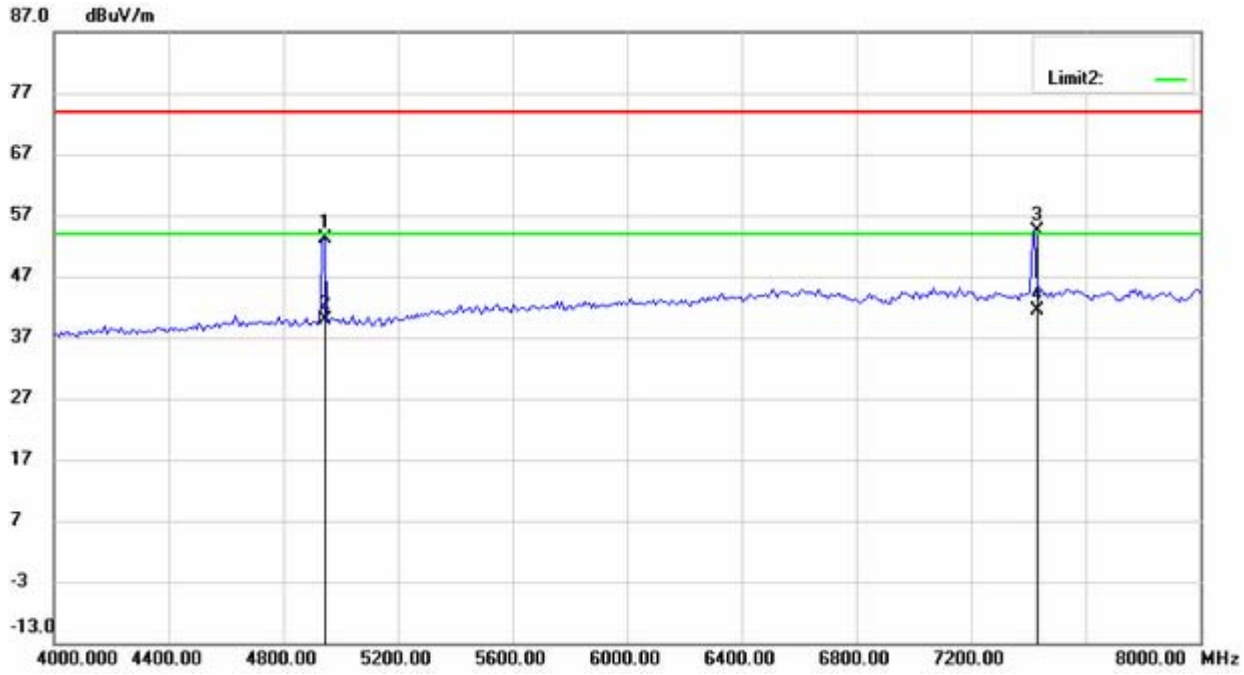
1. **The attached measurement plots are preliminarily pre-scanned with peak detector for determining the final checking frequencies and are for reference only.**
2. **The some frequencies may exceed the limit line without the specified detectors, but that cannot present the results are failed to the specification of test standard.**
3. **For corrected test results are listed in the relevant table of radiated test data of this test report.**

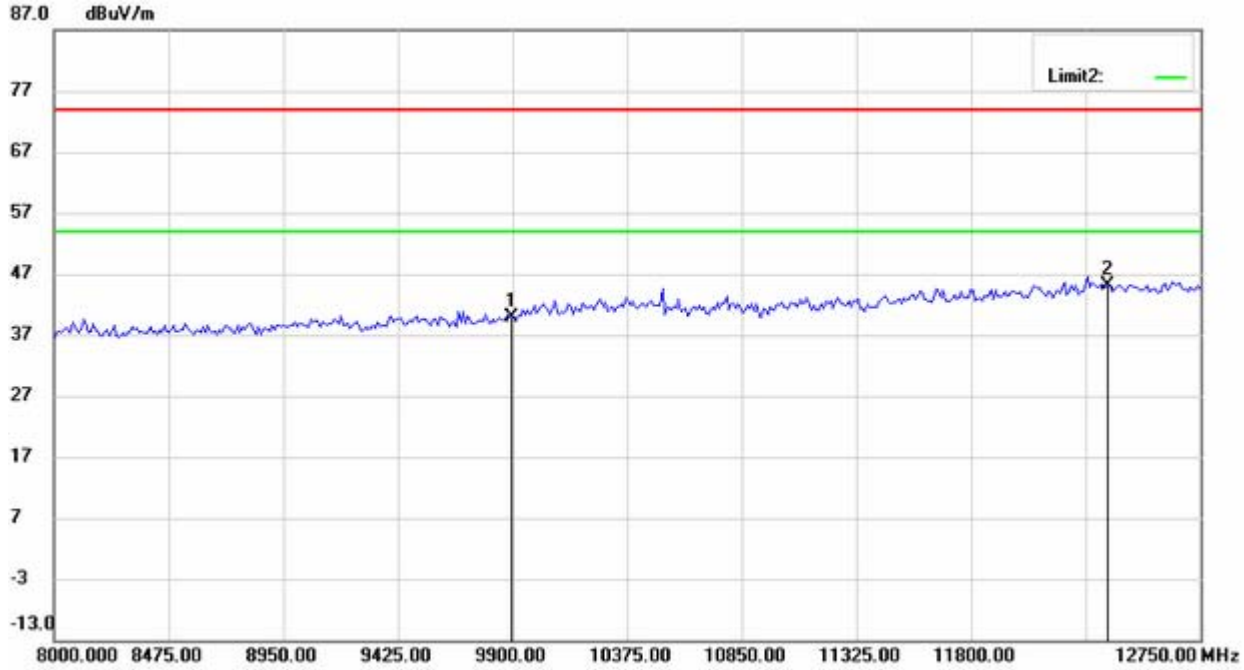




Up Line: Peak Limit Line
Down Line: Ave Limit Line
Note:

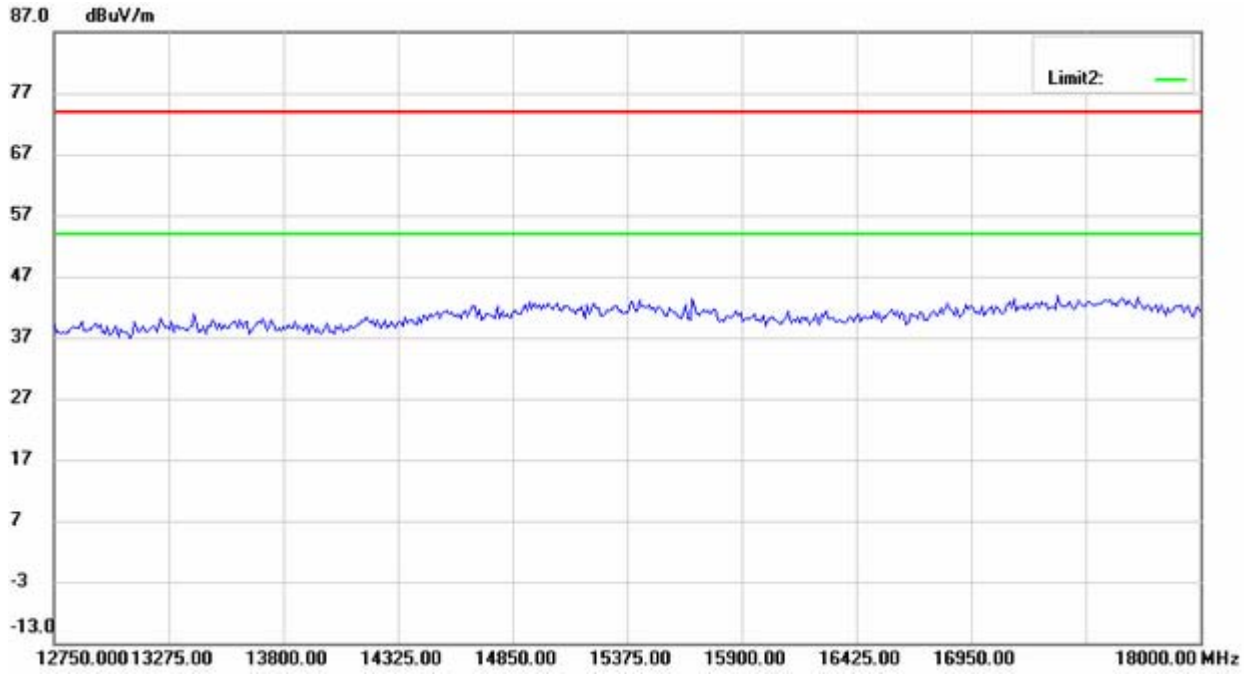
1. **The attached measurement plots are preliminarily pre-scanned with peak detector for determining the final checking frequencies and are for reference only.**
2. **The some frequencies may exceed the limit line without the specified detectors, but that cannot present the results are failed to the specification of test standard.**
3. **For corrected test results are listed in the relevant table of radiated test data of this test report.**

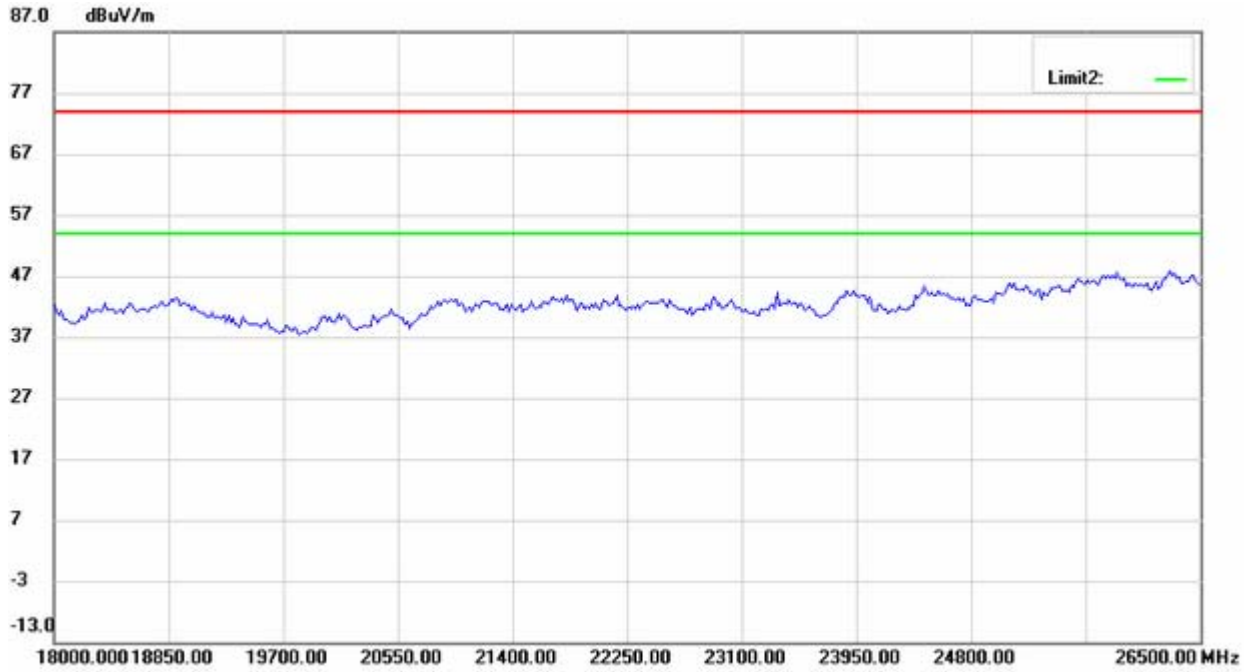




Up Line: Peak Limit Line
Down Line: Ave Limit Line
Note:

1. **The attached measurement plots are preliminarily pre-scanned with peak detector for determining the final checking frequencies and are for reference only.**
2. **The some frequencies may exceed the limit line without the specified detectors, but that cannot present the results are failed to the specification of test standard.**
3. **For corrected test results are listed in the relevant table of radiated test data of this test report.**



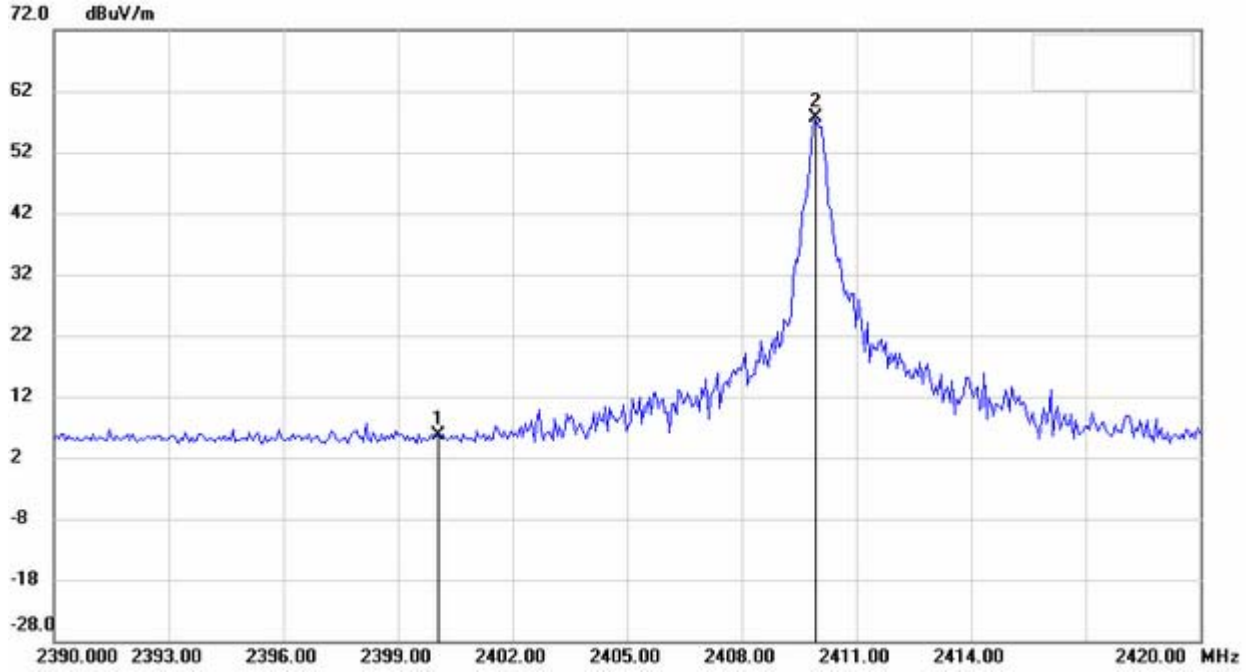


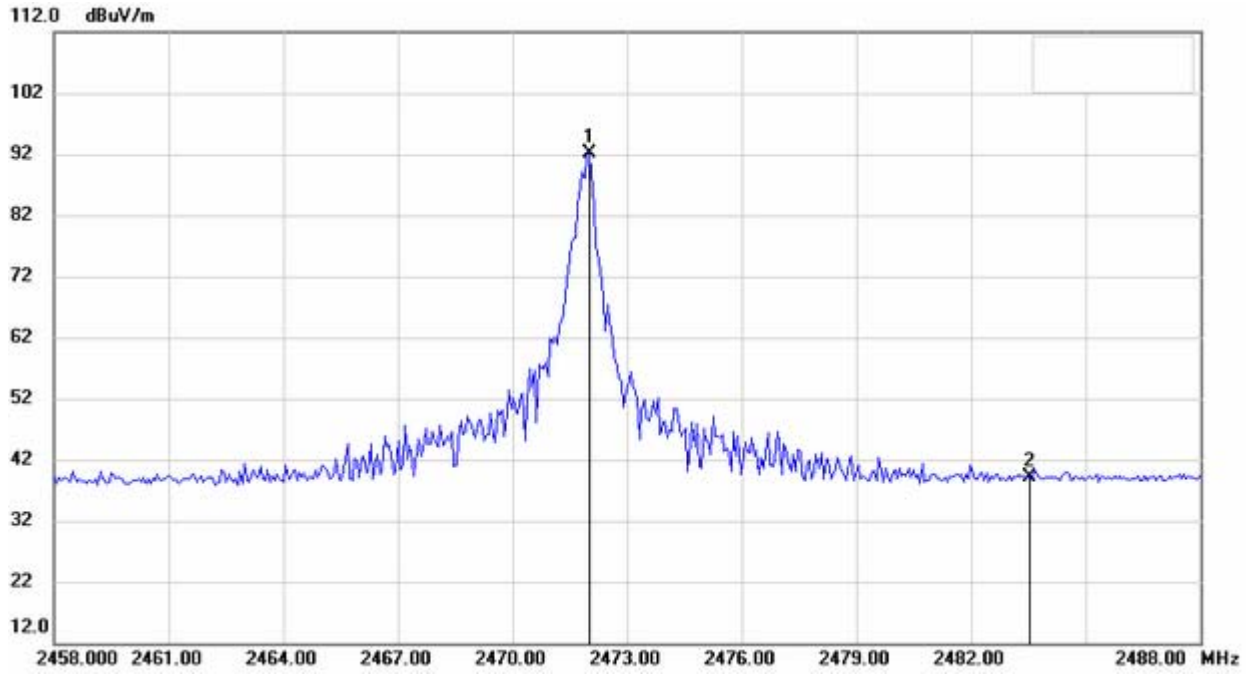
Up Line: Peak Limit Line
Down Line: Ave Limit Line
Note:

1. **The attached measurement plots are preliminarily pre-scanned with peak detector for determining the final checking frequencies and are for reference only.**
2. **The some frequencies may exceed the limit line without the specified detectors, but that cannot present the results are failed to the specification of test standard.**
3. **For corrected test results are listed in the relevant table of radiated test data of this test report.**

Registration number: W6M20811-9437-P-15
FCC ID: WXQCC2511

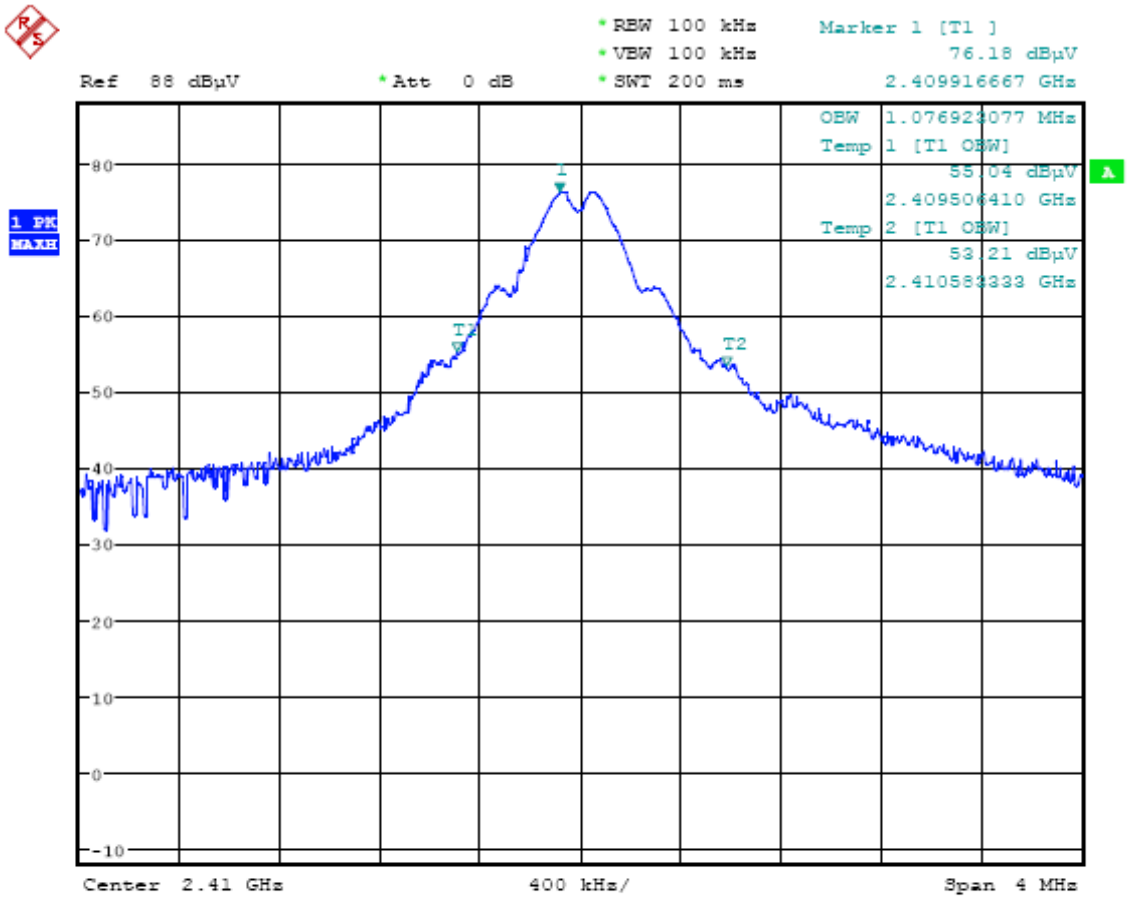
Radiated Emission on the band edge





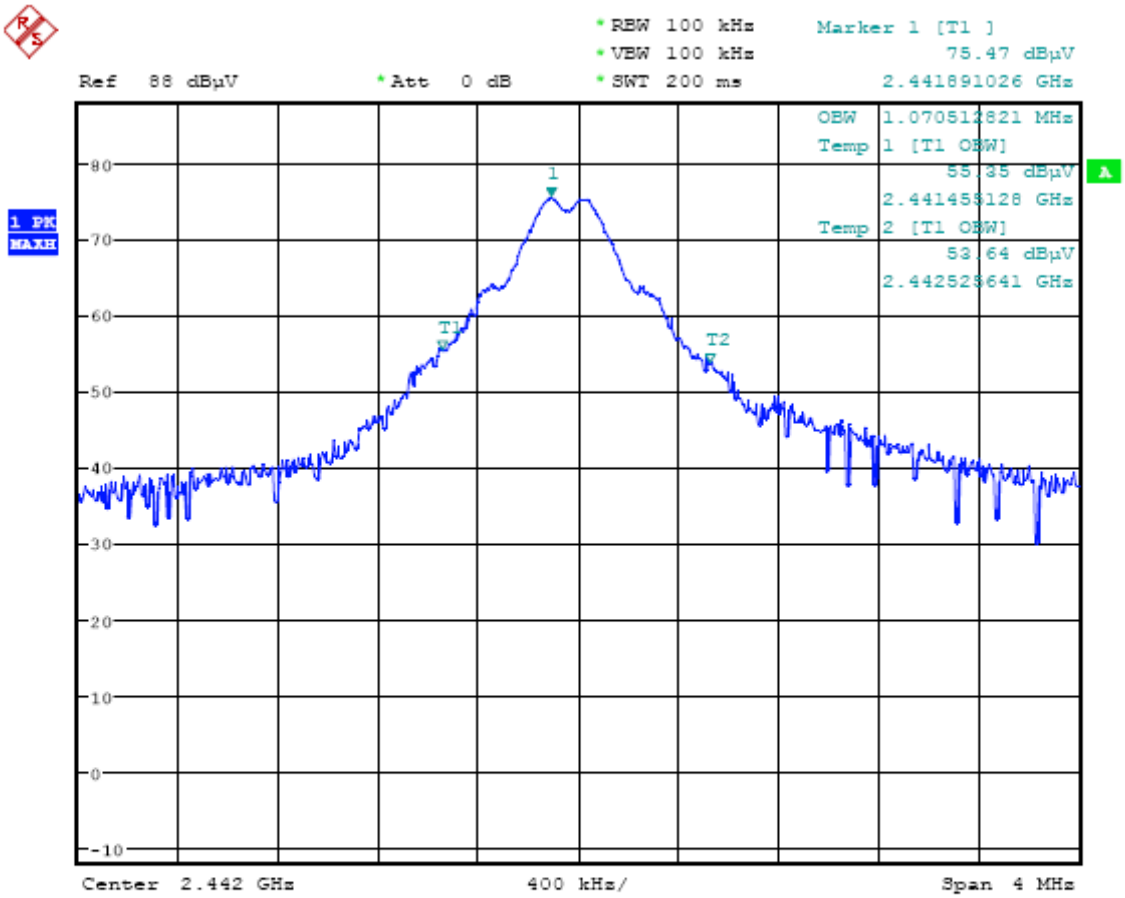
Registration number: W6M20811-9437-P-15
FCC ID: WXQCC2511

Occupied Bandwidth



OCCUPIED BANDWIDTH 2410MHz

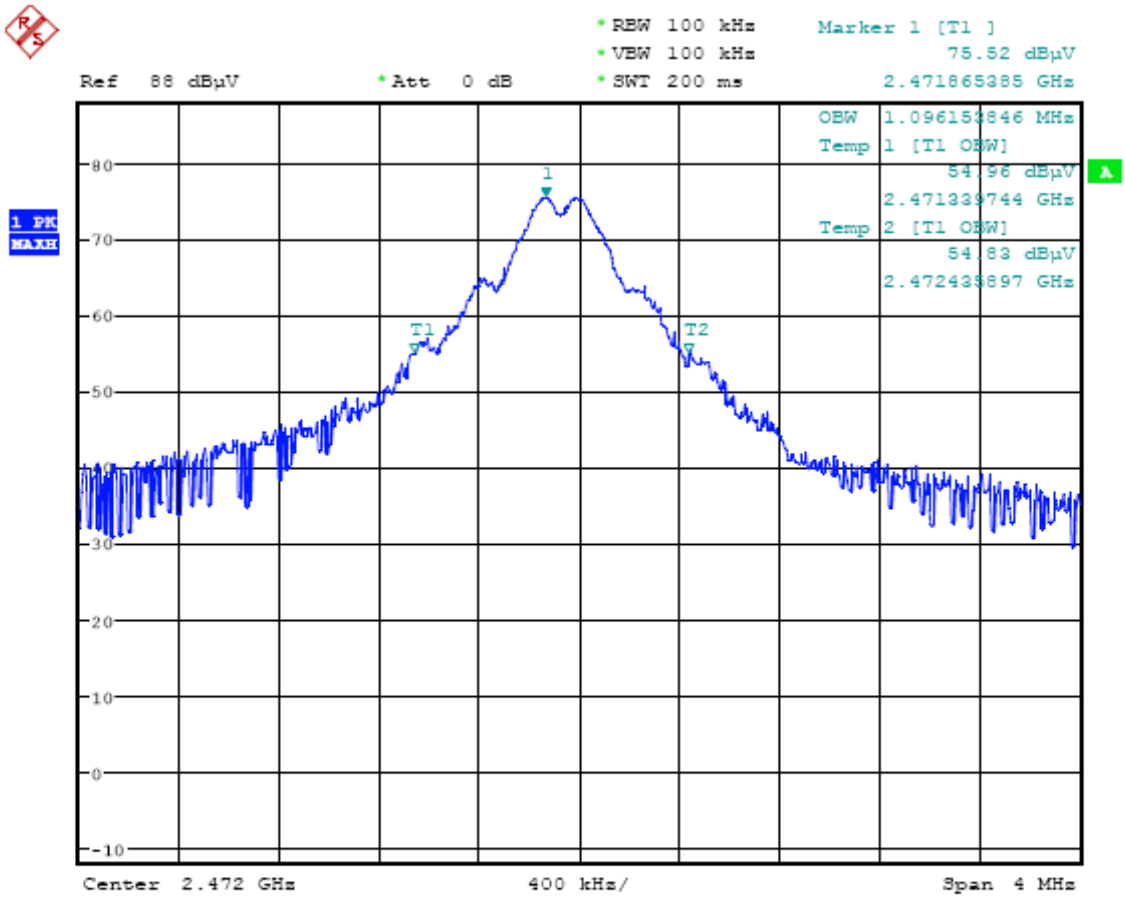
Date: 20.NOV.2008 07:19:26



OCCUPIED BANDWIDTH 2442MHz

Date: 20.NOV.2008 07:18:28

Registration number: W6M20811-9437-P-15
FCC ID: WXQCC2511



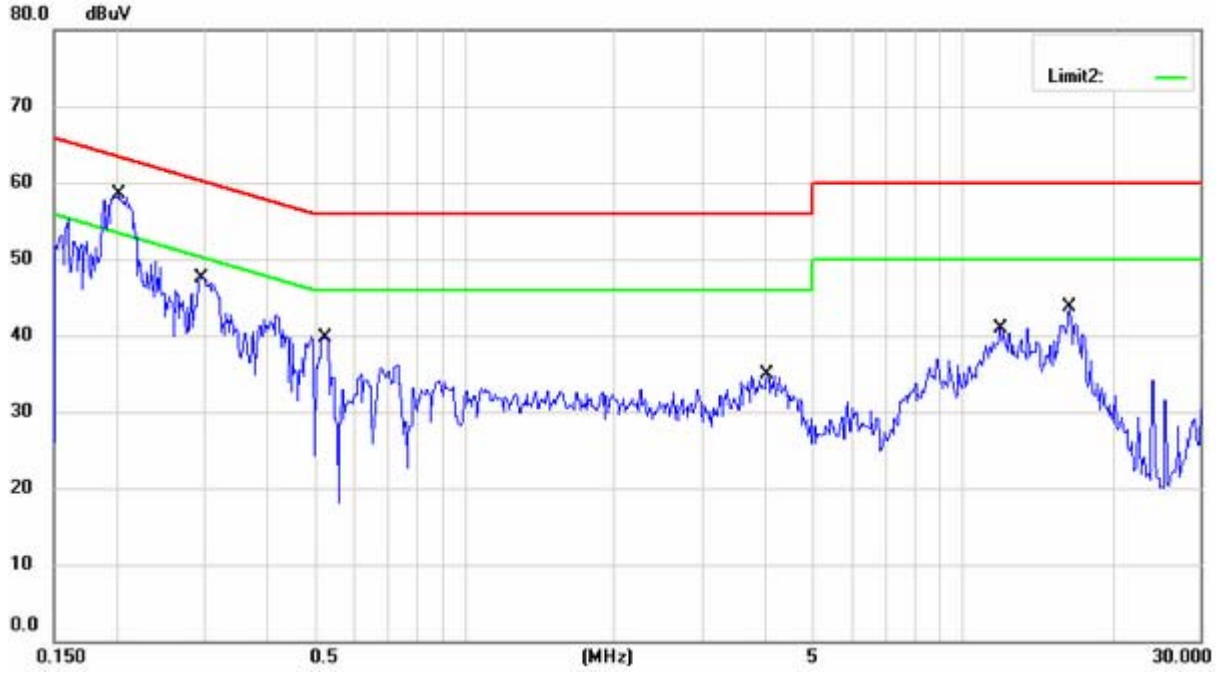
OCCUPIED BANDWIDTH 2472MHz

Date: 20.NOV.2008 07:17:00

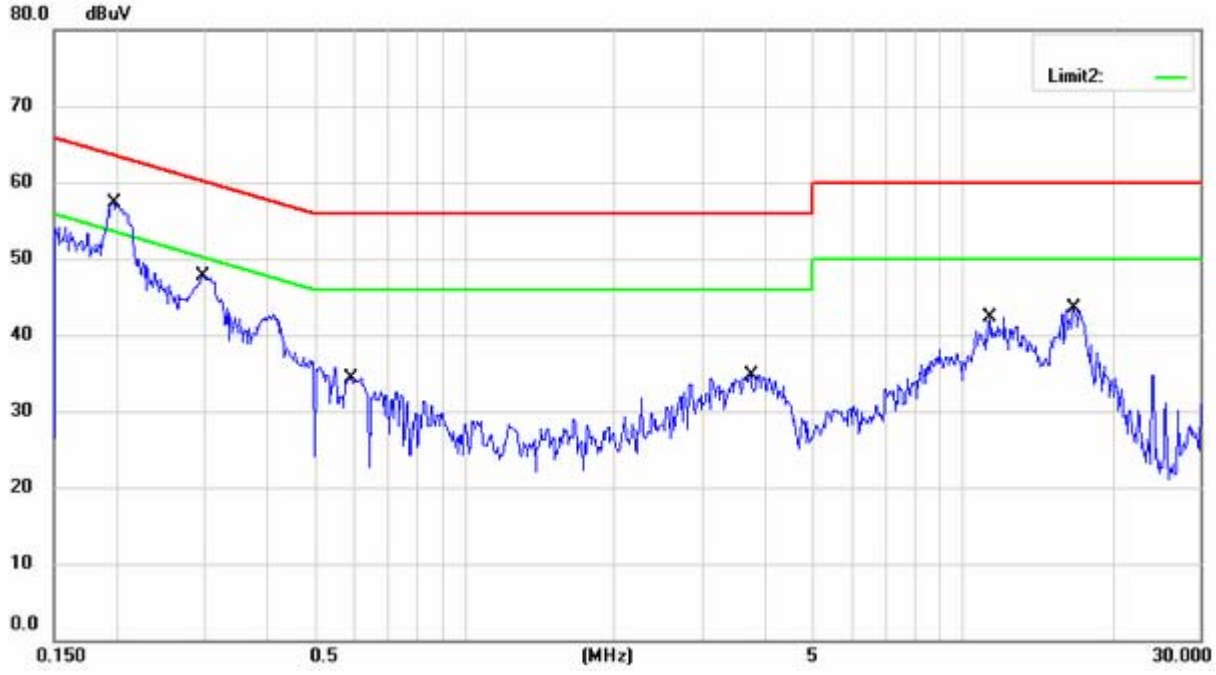
Registration number: W6M20811-9437-P-15
FCC ID: WXQCC2511

Power Line Conducted Emission

LISN N



LISN L1



Up Line: QP Limit Line
Down Line: Ave Limit Line
Note:

1. **The attached measurement plots are preliminarily pre-scanned with peak detector for determining the final checking frequencies and are for reference only.**
2. **The some frequencies may exceed the limit line without the specified detectors, but that cannot present the results are failed to the specification of test standard.**
3. **For corrected test results are listed in the relevant table of AC conducted test data of this test report.**