

**FCC PART 15 SUBPART C TEST REPORT**

**for**

**2.4 Ghz Wireless Headphone**

**Model No.: RX-W003**

**FCC ID: WSZRX-W003A24G**

**of**

Applicant: Raxconn Technology Co., Ltd.  
Address: 14F-2, No.293-2, Sec.1, Chung Shan Road, Panchiao City,  
Taiwan, R.O.C.

**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.: W6M20809-9312-P-15**



# Worldwide Testing Services(Taiwan) Co., Ltd.

Registration number: W6M20809-9312-P-15  
FCC ID: WSZRX-W003A24G

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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 its 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.

Reproduction or publication of extracts from the report requires the prior written approval of the Worldwide Testing Services (Taiwan) Co., Ltd.

### **Tester:**

October 31, 2008

Danny

*Danny*

---

Date

WTS-Lab.

Name

Signature

### **Technical responsibility for area of testing:**

October 31, 2008

Chang Tse-Ming

*Chang Tse-ming*

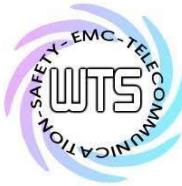
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Date

WTS

Name

Signature



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## **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**

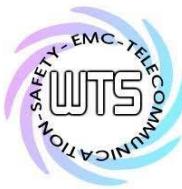
**A2LA accredited number: 2732.01**

**FCC filed test laboratory Reg. No. 930600**

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

## **1.3 Details of approval holder**

Name:	Raxconn Technology Co., Ltd.
Street:	14F-2, No.293-2, Sec.1, Chung Shan Road,
Town:	Panchiao City,
Country:	Taiwan, R.O.C.
Telephone:	+886-2-2952-2660
Fax:	+886-2-2952-2680



# Worldwide Testing Services(Taiwan) Co., Ltd.

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## **1.4 Application details**

Date of receipt of test item: October 08, 2008  
Date of test: from October 09, 2008 to October 31, 2008

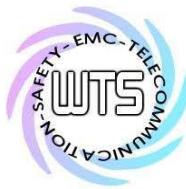
## **1.5 General information of Test item**

Type of test item: 2.4 Ghz Wireless Headphone  
Model Number: RX-W003  
Brand Name: ./.  
Multi-listing model number: ./.  
Photos: see Annex

## **Technical data**

Frequency band: 2406 - 2472 MHz  
Frequency ( ch A): 2406 MHz  
Frequency ( ch B): 2440 MHz  
Frequency ( ch C): 2472 MHz

<u>Transmitter</u>	<u>Unom</u>
Power ( ch A):	Conducted: 16.10 dBm
Power ( ch B):	Conducted: 17.05 dBm
Power ( ch C):	Conducted: 16.77 dBm
Number of channels:	34
Power supply:	Transmitter: Adaptor ( I/P: AC 100-240 V / 50-60 Hz / 0.3 A, O/P: 5 Vdc / 0.5 A ) 5 Vdc ( Power from PC ) Receiver: Battery (3A*2)
Operation modes:	simplex
Modulation Type:	GFSK
Antenna Type:	PIFA Antenna
Antenna gain:	1.7 dBi
Host device:	none



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Classification:

Fixed Device	<input checked="" type="checkbox"/>
Mobile Device (Human Body distance > 20cm)	<input type="checkbox"/>
Portable Device (Human Body distance < 20cm)	<input type="checkbox"/>
Modular Radio Device	<input type="checkbox"/>

**Manufacturer: (if applicable)**

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

Additional information: ./.

## **1.6 Test standards**

Technical standard : FCC RULES PART 15 SUBPART C § 15.247 (2008-07)



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## **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 3 were ascertained in the course of the tests performed.

### **2.2 Test environment**

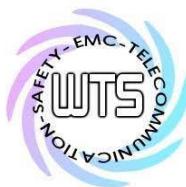
Temperature: 23 °C

Relative humidity content: 20 ... 75 %

Air pressure: 86 ... 103 kPa

Details of power supply Transmitter: Adaptor ( I/P: AC 100-240 V / 50-60 Hz / 0.3 A, O/P: 5 Vdc / 0.5 A )  
5 Vdc ( Power from PC )  
Receiver: Battery (3A\*2)

Extreme conditions parameters: test voltage : -- extreme  
min : -- V  
max : -- V

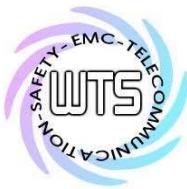


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## 2.3 Test Equipment List

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

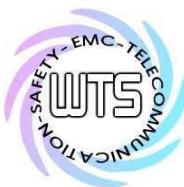


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ETSTW-RE 048	Triple Loop Antenna	HXYZ 9170	HXYZ 9170-134	Schwarzbeck	2005/3/22	2009/3/21
ETSTW-RE 049	TRILOG Super Broadband test Antenna	VULB 9160	9160-3185	Schwarzbeck	2007/5/2	2009/5/1
ETSTW-RE 055	SPECTRUM ANALYZER	FSU-26	200074	R&S	2008/7/1	2009/6/30
ETSTW-RE 064	Bluetooth Test Set	MT8852B-042	6K00005709	Anritsu	2008/9/1	2009/8/31
ETSTW-RE 072	CELL SITE TEST SET	8921A	3339A00375	HP	2008/10/28	2009/10/27
ETSTW-RE 105	Match Pad	MDC1500	None	WOKEN	2008/10/9	2009/10/8
ETSTW-RE 106	Match Pad	MDC1510	None	WOKEN	2008/10/9	2009/10/8



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## 2.4 General Test Procedure

**POWER LINE CONDUCTED INTERFERENCE:** The procedure used was ANSI STANDARD C63.4-2003 using a 50 $\mu$ H 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. The ambient. temperature of the UUT was 23°C with a humidity of 40 %.

**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 dB $\mu$ V) to the antenna correction factor supplied by the antenna manufacturer. The antenna correction factors are stated in terms of dB.

Example:

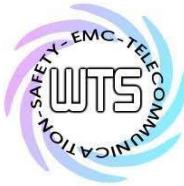
Freq (MHz)	METER READING + ACF + CABLE LOSS (to the receiver) = FS
33	20 dB $\mu$ V + 10.36 dB + 6 dB = 36.36 dB $\mu$ V/m @3m

The EUT was placed on a table 80 cm high and with dimensions of 1m by 1.5m (non metallic table) and arranged according to ANSI C63.4-2003 Section 13.1.2. The table used for radiated measurements is capable of continuous rotation. The spectrum was scanned from 30 MHz to the frequency specified as follows:

- (1) If the intentional radiator operates below 10 GHz: to the tenth harmonic of the highest fundamental frequency or to 40 GHz, whichever is lower.
- (2) If the intentional radiator operates at or above 10 GHz and below 30 GHz: to the fifth harmonic of the highest fundamental frequency or to 100 GHz, whichever is lower.
- (3) If the intentional radiator operates at or above 30 GHz: to the fifth harmonic of the highest fundamental frequency or to 200 GHz, whichever is lower, unless specified otherwise elsewhere in the rules.
- (4) If the intentional radiator contains a digital device, regardless of whether this digital device controls the functions of the intentional radiator or the digital device is used for additional control or function purposes other than to enable the operation of the intentional radiator, the frequency range shall be investigated up to the range specified in paragraphs (a)(1)-(a)(3) of this section or the range applicable to the digital device, as shown in paragraph (b)(1) of this Section, whichever is the higher frequency range of investigation.

For hand-held devices, a exploratory test was performed with three (3) orthogonal planes to determine the highest emissions.

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



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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.

When the radiated emission limits are expressed in terms of the average value of the emission, and pulsed operation is employed, the measurement field strength shall be determined by averaging over one complete pulse train, including blanking intervals, as long as the pulse train does not exceed 0.1 seconds. As an alternative (provided the transmitter operates for longer than 0.1 seconds) or in cases where the pulse train exceeds 0.1 seconds, the measured field strength shall be determined from the average absolute voltage during a 0.1 second interval during which the field strength is at its maximum value.

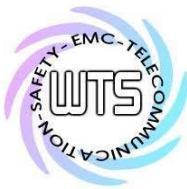
The formula is as follows:

Average = Peak + Duty Factor

Duty Factor =  $20 \log (\text{dwell time}/T)$

T = 100ms when the pulse train period is over 100 ms or the period of the pulse train.

Modified Limits for peak according to 15.35 (b) = Max Permitted average Limits + 20dB



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## 3 Test results (enclosure)

TEST CASE	Para. Number	Required	Test passed	Test failed
Peak Output Power	15.247(b)	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>
Equivalent radiated Power	15.247(b)	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>
Spurious Emissions radiated – Transmitter operating	15.247(c)	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>
Spurious Emissions conducted – Transmitter operating	15.247	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Carrier Frequency Separation	15.247(a) (1)	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>
Number of Hopping Frequencies	15.247(a) (1)(i)	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>
Time of Occupancy (Dwell Time)	15.247(a) (1)(i)	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>
20 dB Bandwidth	15.247(a) (1)(i)	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>
Band-edge Compliance of RF Emission	15.247(c)	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>
Radiated Emission from Digital and Receiver Part	15.109	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Power Line Conducted Emission	15.207(a)	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>

The follows is intended to leave blank.



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## 3.1 Peak Output Power (transmitter)

FCC Rule: 15.247

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	Conducted Power		
	Channel A	Channel B	Channel C
	[dBm]	[dBm]	[dBm]
T <sub>nom</sub> = 23°C   V <sub>nom</sub> = 120 V	16.10	17.05	16.77

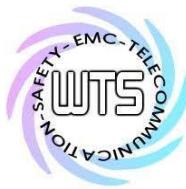
Test conditions T <sub>nom</sub> = --°C, V <sub>nom</sub> = -- V Frequency[MHz]	Signal Field strength TX highest power mode dB $\mu$ V/m
--	--
Measurement uncertainty	< 3 dB

The diagrams for the field strength measurements are included in Appendix.

## Maximum Peak Output Power

Limits:

Frequency MHz	Number of hopping channels			
	≥ 75	≥ 50	49 ≥ 25	74 ≥ 15
902-928		30 dBm	24 dBm	
2400-2483.5 MHz	30 dBm	-		21 dBm
5725-5850 MHz	30 dBm	-		



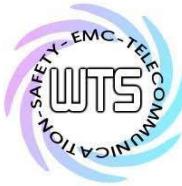
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In case of employing transmitter antennas having antenna gain >dB<sub>i</sub> and using fixed point-to point operation consider §15.247 (b)(4).

Test equipment used: ETSTW-RE 003 ETSTW-RE 004 ETSTW-RE 055 ETSTW-RE 064

Explanation: See attached diagrams in appendix.



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## **3.2 RF Exposure Compliance Requirements**

According to Supplement C, Edition 01-01 to OET Bulletin 65, Edition 97-01 this spread spectrum transmitter is categorically excluded from routine environmental evaluation because of the low power level, where there is a high likelihood of compliance with RF exposure standards.

The antenna used for this Bluetooth transceiver module must not be co-located or operating in conjunction with any other antenna or transmitter.

## **3.3 Out of Band Radiated Emissions**

FCC Rule: 15.247(c) , 15.35

For out of band emissions that are close to or that exceed the 20 dB attenuation requirement described in the specification, radiated measurements were performed at a 3 m separation distance to determine whether these emissions complied with the general radiated emission requirement.

Limits:

For frequencies below 1GHz :

Max. reading – 20 dB

Guidance on Measurement of FHSS Systems:

“If the emission is pulsed, modify the unit for continuous operation , use the settings shown above, then correct the reading by subtracting the peak-average correction factor, derived from the appropriate duty cycle calculation.” Here the correction was added to the limit instead subtracted from the reading.

Duty Cycle correction =  $20 \log (\text{dwell time}/100\text{ms})$

For frequencies above 1GHz (Peak measurements).

Limit = max. aver. reading-20dB +20dB(because Peak detector is used)

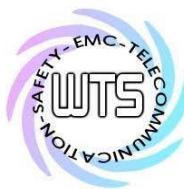
For frequencies above 1GHz (Average measurements).

Max. reading – 20 dB - duty cycle correction:

No duty cycle correction was added to the reading

Test equipment used: ETSTW-RE 003 ETSTW-RE 004 ETSTW-RE 017 ETSTW-RE 021  
ETSTW-RE 028 ETSTW-RE 030 ETSTW-RE 043 ETSTW-RE 044  
ETSTW-RE 064

Explanation: See attached diagrams in appendix.



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### **3.4 Transmitter Radiated Emissions in restricted Bands**

FCC Rules: 15.247 (c), 15.205, 15.209, 15.35

Radiated emission measurements were performed from 30 MHz to 26000 MHz.

For radiated emission tests, the analyzer setting was as followings:

RES BW VID BW

Frequency <1 GHz 100 kHz 100 kHz (Peak measurements)

Frequency >1 GHz 1 MHz 1 MHz (Peak measurements)

1 MHz 1 MHz (Average measurements)

Limits:

For frequencies below 1GHz :

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	46.0
Above 960	500	54.0

For frequencies above 1GHz (Average measurements).

Guidance on Measurement of FHSS Systems:

“If the emission is pulsed, modify the unit for continues operation , use the settings shown above, then correct the reading by subtracting the peak-average correction factor, derived from the appropriate duty cycle calculation.” Here the correction was added to the limit instead subtracted from the reading.

Duty cycle correction =  $20 \log (\text{dwell time}/100\text{ms})$

For frequencies above 1GHz (Average measurements).

Limit – duty cycle correction

No duty cycle correction was added to the reading.

54.0dB $\mu$ V/m

For frequencies above 1GHz (Peak measurements).

Limit + 20dB

$54.0\text{dB}\mu\text{V/m} + 20 \text{ dB} = 74 \text{ dB}\mu\text{V/m}$

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 ETSTW-RE 064

Explanation: See attached diagrams in appendix.



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### 3.5 Spurious emissions (tx)

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

In any 100 kHz bandwidth outside the frequency band in which the intentional radiator is operating, the radio frequency power that is produced by the intentional radiator shall be at least 20dB 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. Attenuation below the general limits specified in § 15.209(a) is not required. In addition, radiated emissions which fall in the restricted bands, as defined in § 15.205(a), must also comply with the radiated emission limits specified in § 15.209(a) (see § 15.205(c))

**SAMPLE CALCULATION OF LIMIT.** All results will be updated by an automatic measuring system in accordance to point 2.3.

Calculation of test results:

Such factors like antenna correction, cable loss, external attenuation etc. are already included in the provided measurement results. This is done by using validated test software and calibrated test system according the accreditation requirements.

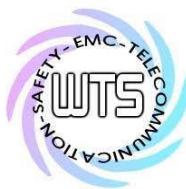
The peak and average spurious emission plots was measured with the average limits.

In the Table being listed the critical peak and average value an exhibit the compliance with the above calculated Limits.

If in the column's correction factor states a value then the max. Field strength in the same row is corrected by a value gained from the "Marker-Delta-Method" or the „Duty-Cycle Correction Factor“.

Model:	RX-W003		Date:	2008/10/10				
Mode:	Tx_2406MHz		Temperature:	26 °C		Engineer:	Danny	
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)
171.222	14.88	peak	14.85	29.73	43.50	-13.77	110	150
608.617	7.37	peak	22.22	29.59	46.00	-16.41	125	150

Frequency (MHz)	Reading (dBuV) Peak	Factor (dB)		Result @3m (dBuV/m) Peak Ave.		Limit @3m (dBuV/m) Peak Ave.		Margin (dB)	Table Degree (Deg.)	Ant. High (cm)
		Corr.	Duty	Peak	Ave.	Peak	Ave.			
2374.152	65.78	-5.23	-22.92	60.55	37.63	74.00	54.00	-13.45	130	150
4809.619	51.10	-1.30	-22.92	49.80	26.88	74.00	54.00	-24.20	130	150
7222.445	54.34	1.88	-22.92	56.22	33.30	74.00	54.00	-17.78	135	150
9624.000	19.94	25.23	-22.92	39.17	16.25	74.00	54.00	-34.83	140	150
12030.000	19.28	29.37	-22.92	42.65	19.73	74.00	54.00	-31.35	140	150



# Worldwide Testing Services(Taiwan) Co., Ltd.

Registration number: W6M20809-9312-P-15  
FCC ID: WSZRX-W003A24G

Polarization: Vertical

Frequency (MHz)	Reading (dBuV)	Detector	Factor (dB)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Table Degree (Deg.)	Ant. High (cm)
165.271	14.83	peak	15.20	30.03	43.50	-13.47	115	150
610.020	6.89	peak	22.22	29.11	46.00	-16.89	120	150

Frequency (MHz)	Reading (dBuV) Peak	Factor (dB)		Result @3m (dBuV/m)		Limit @3m (dBuV/m)		Margin (dB)	Table Degree (Deg.)	Ant. High (cm)
		Corr.	Duty	Peak	Ave.	Peak	Ave.			
2331.029	60.35	-5.44	-22.92	54.91	31.99	74.00	54.00	-19.09	140	150
4809.619	53.38	-1.30	-22.92	52.08	29.16	74.00	54.00	-21.92	145	150
7222.445	53.97	1.88	-22.92	55.85	32.93	74.00	54.00	-18.15	140	150
9624.000	20.52	25.23	-22.92	39.75	16.83	74.00	54.00	-34.25	135	150
12030.000	20.12	29.37	-22.92	43.49	20.57	74.00	54.00	-30.51	140	150

Mode: Tx\_2440 MHz

Polarization: Horizontal

Frequency (MHz)	Reading (dBuV)	Detector	Factor (dB)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Table Degree (Deg.)	Ant. High (cm)
172.305	14.62	peak	14.75	29.37	43.50	-14.13	115	150
608.617	6.74	peak	22.22	28.96	46.00	-17.04	120	150

Frequency (MHz)	Reading (dBuV) Peak	Factor (dB)		Result @3m (dBuV/m)		Limit @3m (dBuV/m)		Margin (dB)	Table Degree (Deg.)	Ant. High (cm)
		Corr.	Duty	Peak	Ave.	Peak	Ave.			
2364.064	63.99	-5.28	-22.92	58.71	35.79	74.00	54.00	-15.29	130	150
4880.004	58.40	-1.30	-22.92	57.10	34.18	74.00	54.00	-16.90	135	150
7319.722	56.52	1.84	-22.92	58.36	35.44	74.00	54.00	-15.64	140	150
9760.000	19.14	25.00	-22.92	38.14	15.22	74.00	54.00	-35.86	140	150
12200.000	19.10	29.78	-22.92	42.88	19.96	74.00	54.00	-31.12	145	150

Polarization: Vertical

Frequency (MHz)	Reading (dBuV)	Detector	Factor (dB)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Table Degree (Deg.)	Ant. High (cm)
166.353	12.45	peak	15.15	27.60	43.50	-15.90	110	150
612.826	7.88	peak	22.24	30.12	46.00	-15.88	125	150



# Worldwide Testing Services(Taiwan) Co., Ltd.

Registration number: W6M20809-9312-P-15  
FCC ID: WSZRX-W003A24G

Frequency (MHz)	Reading (dBuV) Peak	Factor (dB) Corr. Duty		Result @3m (dBuV/m) Peak Ave.		Limit @3m (dBuV/m) Peak Ave.		Margin (dB)	Table Degree (Deg.)	Ant. High (cm)
2364.018	59.88	-5.28	-22.92	54.60	31.68	74.00	54.00	-19.40	140	150
4879.993	56.95	-1.30	-22.92	55.65	32.73	74.00	54.00	-18.35	140	150
7319.652	56.81	1.84	-22.92	58.65	35.73	74.00	54.00	-15.35	145	150
9760.000	22.48	25.00	-22.92	41.48	18.56	74.00	54.00	-32.52	150	150
12200.000	20.77	29.78	-22.92	44.55	21.63	74.00	54.00	-29.45	145	150

Mode: Tx\_2472 MHz

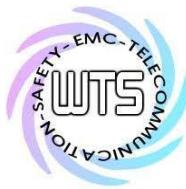
Polarization: Horizontal

Frequency (MHz)	Reading (dBuV)	Detector	Factor (dB)	Result (dBuV/m)	Limit (dBuV/m)		Margin (dB)	Table Degree (Deg.)	Ant. High (cm)
166.353	14.00	peak	15.15	29.15	43.50	-14.35	110	150	
608.617	6.25	peak	22.22	28.47	46.00	-17.53	120	150	

Frequency (MHz)	Reading (dBuV) Peak	Factor (dB) Corr. Duty		Result @3m (dBuV/m) Peak Ave.		Limit @3m (dBuV/m) Peak Ave.		Margin (dB)	Table Degree (Deg.)	Ant. High (cm)
2549.098	65.34	-4.76	-22.92	60.58	37.66	74.00	54.00	-13.42	135	150
4944.037	59.05	-1.12	-22.92	57.93	35.01	74.00	54.00	-16.07	140	150
7415.759	56.86	1.92	-22.92	58.78	35.86	74.00	54.00	-15.22	145	150
9888.000	20.39	25.73	-22.92	40.12	17.20	74.00	54.00	-33.88	140	150
12360.000	20.99	30.16	-22.92	45.15	22.23	74.00	54.00	-28.85	140	150

Polarization: Vertical

Frequency (MHz)	Reading (dBuV)	Detector	Factor (dB)	Result (dBuV/m)	Limit (dBuV/m)		Margin (dB)	Table Degree (Deg.)	Ant. High (cm)
167.976	15.46	peak	15.07	30.53	43.50	-12.97	105	150	
610.020	7.15	peak	22.22	29.37	46.00	-16.63	115	150	



# Worldwide Testing Services(Taiwan) Co., Ltd.

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FCC ID: WSZRX-W003A24G

Frequency (MHz)	Reading (dBuV) Peak	Factor (dB) Corr.      Duty		Result @3m (dBuV/m) Peak      Ave.		Limit @3m (dBuV/m) Peak      Ave.		Margin (dB)	Table Degree (Deg.)	Ant. High (cm)
2549.098	63.70	-4.76	-22.92	58.94	36.02	74.00	54.00	-15.06	130	150
4944.025	62.64	-1.12	-22.92	61.52	38.60	74.00	54.00	-12.48	135	150
7415.772	56.13	1.92	-22.92	58.05	35.13	74.00	54.00	-15.95	140	150
9888.000	20.17	25.73	-22.92	39.90	16.98	74.00	54.00	-34.10	145	150
12360.000	20.74	30.16	-22.92	44.90	21.98	74.00	54.00	-29.10	140	150

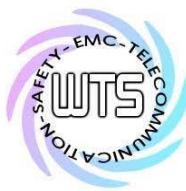
**Note**

- 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.**

All other not noted test plots do not contain significant test results in relation to the limits.

**TEST RESULT (Transmitter):** The unit DOES meet the FCC requirements.

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 ETSTW-RE 064



# Worldwide Testing Services(Taiwan) Co., Ltd.

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## **3.6 Carrier Frequency Separation**

Carrier Frequency Separation was measured with modulation (declared by manufacturer).

According to FCC rules part 15 subpart C §15.247 frequency hopping systems shall have hopping channel carrier frequencies separated by a minimum of 25 kHz or 20 dB bandwidth of the hopping channel, whichever is greater.

Test conditions	Channel Separation	
	Channel A	Channel A+1
T <sub>nom</sub> = 23°C    V <sub>nom</sub> = 120 V		1.987179487 MHz

Test conditions	Channel Separation	
	Channel B	Channel B+1
T <sub>nom</sub> = 23°C    V <sub>nom</sub> = 120 V		1.987179487 MHz

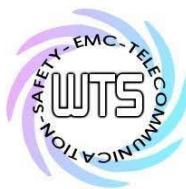
Test conditions	Channel Separation	
	Channel C	Channel C-1
T <sub>nom</sub> = 23°C    V <sub>nom</sub> = 120 V		1.987179487 MHz

### **Limits:**

Frequency Range MHz	Limits	
	20 dB bandwidth < 25 kHz	20 dB bandwidth > 25 kHz
902-928	25 kHz	20 dB bandwidth
2400-2483.5		
5725-5850.0	25 kHz	20 dB bandwidth

Test equipment used: ETSTW-RE 003 ETSTW-RE 004 ETSTW-RE 055 ETSTW-RE 064

Explanation: See attached diagrams in appendix.



Registration number: W6M20809-9312-P-15  
FCC ID: WSZRX-W003A24G

### **3.7 Number of Hopping Frequencies**

According to FCC rules part 15 subpart C §15.247 frequency hopping systems operating in the 2400-2483.5 MHz band shall use at least 15 hopping frequencies. Frequency hopping systems in 5725-5850 MHz bands shall use least 75 hopping frequencies.

For frequency hopping systems operating in the 902-928 MHz band: if the 20dB bandwidth of the hopping channel is less than 250 kHz, the system shall use at least 50 hopping frequencies; if the 20dB bandwidth of the hopping channel 250 kHz or greater, the system shall use at least 25 hopping frequencies.

<b>Test conditions</b>	<b>Operating Mode</b>	<b>Number of Channels</b>
$T_{nom} = 23^{\circ}C$	$V_{nom} = 120 V$	normal transmitting

#### **Limits:**

Frequency Range MHz	Limit	
	20dB Bandwidth	Number of Channels
902-928 MHz	Bandwidth < 250 kHz	$\geq 50$
	Bandwidth $\geq 250$ kHz	$\geq 25$
2400-2483.5	not defined	15
5725-5850.0 MHz	1 MHz	75

Test equipment used: ETSTW-RE 003 ETSTW-RE 004 ETSTW-RE 055 ETSTW-RE 064

Explanation: See attached diagrams in appendix.



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### **3.7.1 Pseudorandom Frequency Hopping Sequence**

This EUT is controlled by a microchip (IA2 embedded uP) to generate the Pseudorandom Frequency Hopping Sequence. The RF module of this EUT normal operation mode support 15 hopping channel/Per Sequence. There are four hopping sequences listed below:

Sequence A : 2406, 2420, 2422, 2424, 2426, 2428, 2444, 2446, 2448, 2450, 2452, 2456, 2468, 2470, 2472 MHz

Sequence B : 2406, 2408, 2410, 2412, 2414, 2416, 2418, 2420, 2422, 2424, 2426, 2428, 2430, 2438, 2446 MHz

Sequence C : 2432, 2440, 2448, 2450, 2452, 2454, 2458, 2460, 2462, 2464, 2466, 2462, 2468, 2470, 2472 MHz

Sequence D : 2406, 2408, 2410, 2412, 2414, 2416, 2418, 2426, 2454, 2462, 2464, 2466, 2468, 2470, 2472 MHz

### **3.7.2 Coordination of hopping sequences to other transmitters**

This transmitter does not have the ability of being coordinated with other FHSS system for as soon as the transmitter is in operation, the GFSK of modulation of hopping frequency will follow the selected hopping sequence to transmit independently and no coordination is possible. Especially, this transmitter is used as a PC's peripheral device, so no coordination of hopping frequency is required.

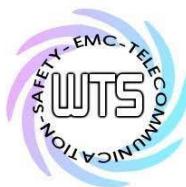
### **3.7.3 System Receiver Hopping Capability**

There is one step to make the receiver to shift the frequencies in synchronization with the transmitted signals:

When simultaneously press the buttons both on Tx and ID\_LED blinks by 0.25s on /0.25s off, ID\_learning process will continue 15s, and Rx module longer than 3 seconds, the ID learning process will be enable, so the receiver will be able to shift the receiving frequencies in synchronization with the transmitted signals.

### **3.7.4 Equal Hopping Frequency Use**

Due to each the GFSK of modulation of hopping frequency will be transmitted in accordance to the frequency tables described above, there is no any frequency will be able to hop more times than others. Therefore each frequency will be used equally.



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FCC ID: WSZRX-W003A24G

## **3.8 Time of Occupancy (Dwell Time)**

Frequency hopping systems operating in the 5725-5850 MHz band shall use an average time of occupancy on any frequency not greater than 0.4 seconds within a 30 second period.

In 2400-2483,5 MHz band the average time of occupancy on any channel shall not be greater than 0,4 seconds multiplied by the number of hopping channels employed.

For frequency hopping systems operating in the 902-928 MHz band: if the 20dB bandwidth of the hopping channel is less than 250 kHz, the average time of occupancy on any frequency shall not greater than 0.4 seconds within a 20 second period; if the 20dB bandwidth of the hopping channel is 250 kHz or greater, the average time of occupancy on any frequency shall not be greater than 0.4 seconds within a 10 second period.

Test conditions	Operating mode	Measurement period	Time of Occupancy
$T_{\text{nom}} = 23^{\circ}\text{C}$ $V_{\text{nom}} = 120 \text{ V}$ 2406 MHz	normal transmitting	6 s	373.4 ms

Test conditions	Operating mode	Measurement period	Time of Occupancy
$T_{\text{nom}} = 23^{\circ}\text{C}$ $V_{\text{nom}} = 120 \text{ V}$ 2440 MHz	normal transmitting	6 s	372.6 ms

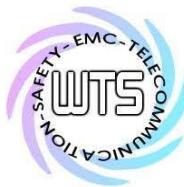
Test conditions	Operating mode	Measurement period	Time of Occupancy
$T_{\text{nom}} = 23^{\circ}\text{C}$ $V_{\text{nom}} = 120 \text{ V}$ 2472 MHz	normal transmitting	6 s	373.4 ms

### **Limits and measurement periods:**

Frequency MHz	Number of channels	Measurement Period	Limit
902 – 928	$\geq 50$	20 s	0,4 s
	$49 \geq 25$	10 s	0,4 s
2400 – 2483,5	$\geq 15$	0,4 s * number of used channels	0,4 s
5725- 5850	$\geq 75$	30 s	0,4s

Test equipment used: ETSTW-RE 003 ETSTW-RE 004 ETSTW-RE 055 ETSTW-RE 064

Explanation: See attached diagrams in appendix, which show the On-time and the number of counted events during the measurement period



# Worldwide Testing Services(Taiwan) Co., Ltd.

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FCC ID: WSZRX-W003A24G

## 3.9 20dB Bandwidth

Frequency hopping systems operating in the 5725-5850 MHz bands shall use a maximum 20dB bandwidth of 1 MHz.

The 20dB bandwidth is measured on the lowest, middle and highest hopping channel.

For frequency hopping systems operating in the 902-928 MHz band the maximum 20dB bandwidth of the hopping channel is 500 kHz.

Test conditions	20 dB Bandwidth			
	Channel A	Channel B	Channel C	
$T_{\text{nom}} = 23^{\circ}\text{C}$	$V_{\text{nom}} = 120 \text{ V}$	1.730769231 MHz	1.634615385 MHz	1.608974359 MHz

## Limits:

Frequency Range / MHz	Limit
902-928	$\leq 500 \text{ kHz}$
2400-2483.5	not defined
5725-5850	$\leq 1 \text{ MHz}$

Test equipment used: ETSTW-RE 003 ETSTW-RE 004 ETSTW-RE 055 ETSTW-RE 064

Explanation: See attached diagrams in appendix.



# Worldwide Testing Services(Taiwan) Co., Ltd.

Registration number: W6M20809-9312-P-15  
FCC ID: WSZRX-W003A24G

## **3.10 Band-edge Compliance of RF Emissions**

According to FCC rules part 15 subpart C §15.247(c) in any 100 kHz bandwidth outside the frequency band in which the intentional radiator is operating, the radio frequency power that is produced by the intentional radiator shall be at least 20dB 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. Attenuation below the general limits specified in § 15.209(a) is not required.

In addition radiated emission which fall in the restricted bands, as defined in section 15.205(a), must also with the radiated emission limits.

Test conditions		Attenuation at or outside band-edges Single Frequency	
		Lower Band-edge	Upper Band-edge
T <sub>nom</sub> = 23°C	V <sub>nom</sub> = 120 V	36.22 dB	41.60 dB

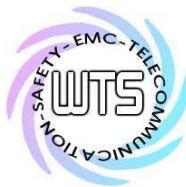
Test conditions		Attenuation at or outside band-edges Hopping Frequency	
		Lower Band-edge	Upper Band-edge
T <sub>nom</sub> = 23°C	V <sub>nom</sub> = 120 V	36.16 dB	41.55 dB

## **Limits:**

Frequency Range / MHz	Limit
902 –928	
2400 – 2483.5	- 20 dB
5725 - 5850	

Test equipment used: ETSTW-RE 003 ETSTW-RE 004 ETSTW-RE 017 ETSTW-RE 028  
ETSTW-RE 030 ETSTW-RE 043 ETSTW-RE 044 ETSTW-RE 064

Explanation: See attached diagrams in appendix.



# Worldwide Testing Services(Taiwan) Co., Ltd.

Registration number: W6M20809-9312-P-15  
FCC ID: WSZRX-W003A24G

## **3.11 Radiated Emission from Digital and Receiver Part**

FCC Rule: 15.109

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 ETSTW-RE 064

Explanation: The test results are listed in the separated test report no. W6M20809-9312-P-15B.



# Worldwide Testing Services(Taiwan) Co., Ltd.

Registration number: W6M20809-9312-P-15  
FCC ID: WSZRX-W003A24G

## 3.12 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.

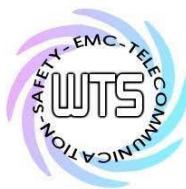
Frequency	Level (dB $\mu$ V)	
	quasi-peak	average
150 kHz	lower limit line	Lower limit line

Model: RX-W003 Date: 2008/10/15  
Mode: PC mode Temperature: 26 °C Engineer: Leon  
Polarization: N Humidity: 60 %

Frequency (MHz)	Reading (dB $\mu$ V)		Factor (dB)	Result (dB $\mu$ V)		Limit (dB $\mu$ V)		Margin (dB)
	QP	Ave.	Corr.	QP	Ave.	QP	Ave.	
0.1987	44.05	31.96	10.07	54.12	42.03	63.66	53.66	-9.54
0.2977	32.97	--	10.00	42.97	--	60.31	--	-17.34
0.4179	23.69	--	10.09	33.78	--	57.49	--	-23.71
2.4550	17.25	--	10.07	27.32	--	56.00	--	-28.68
11.8056	19.27	--	10.49	29.76	--	60.00	--	-30.24
17.0278	26.27	--	10.46	36.73	--	60.00	--	-23.27

Polarization: L1

Frequency (MHz)	Reading (dB $\mu$ V)		Factor (dB)	Result (dB $\mu$ V)		Limit (dB $\mu$ V)		Margin (dB)
	QP	Ave.	Corr.	QP	Ave.	QP	Ave.	
0.1872	42.09	--	10.10	52.19	--	64.16	--	-11.97
0.3082	19.92	--	10.01	29.93	--	60.02	--	-30.09
0.4541	23.37	--	10.17	33.54	--	56.80	--	-23.26
8.4722	17.63	--	10.45	28.08	--	60.00	--	-31.92
12.0556	21.41	--	10.49	31.90	--	60.00	--	-28.10
16.9444	25.97	--	10.46	36.43	--	60.00	--	-23.57



# Worldwide Testing Services(Taiwan) Co., Ltd.

Registration number: W6M20809-9312-P-15  
FCC ID: WSZRX-W003A24G

Mode: MP3 mode

Polarization: N

Frequency (MHz)	Reading (dBuV)		Factor (dB) Corr.	Result (dBuV)		Limit (dBuV)		Margin (dB)
	QP	Ave.		QP	Ave.	QP	Ave.	
0.1519	5.39	-0.30	10.19	15.58	9.89	65.90	55.90	-46.01
0.4704	27.68	15.19	10.17	37.85	25.36	56.51	46.51	-18.66
0.7350	22.33	9.26	10.14	32.47	19.40	56.00	46.00	-23.53
1.3650	15.76	3.06	10.09	25.85	13.15	56.00	46.00	-30.15
1.9100	14.02	2.38	10.07	24.09	12.45	56.00	46.00	-31.91
9.5556	21.70	13.33	10.50	32.20	23.83	60.00	50.00	-26.17

Polarization: L1

Frequency (MHz)	Reading (dBuV)		Factor (dB) Corr.	Result (dBuV)		Limit (dBuV)		Margin (dB)
	QP	Ave.		QP	Ave.	QP	Ave.	
0.2002	24.20	15.70	10.07	34.27	25.77	63.60	53.60	-27.83
0.4786	31.15	21.02	10.17	41.32	31.19	56.36	46.36	-15.04
0.6600	26.11	14.40	10.15	36.26	24.55	56.00	46.00	-19.74
1.2900	20.51	9.53	10.09	30.60	19.62	56.00	46.00	-25.40
1.9100	17.49	7.19	10.07	27.56	17.26	56.00	46.00	-28.44
9.9722	25.44	16.80	10.52	35.96	27.32	60.00	50.00	-22.68

**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**

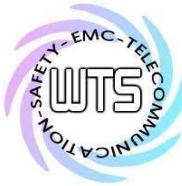
**4.All not in the table noted test results are more than 20 dB below the relevant limits.**

**5.See attached diagrams in 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 ETSTW-RE 064



Registration number: W6M20809-9312-P-15  
FCC ID: WSZRX-W003A24G

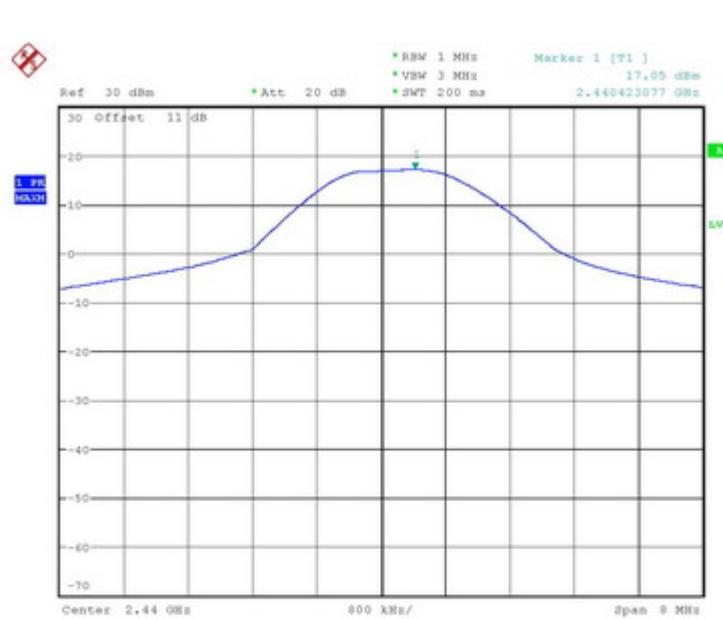
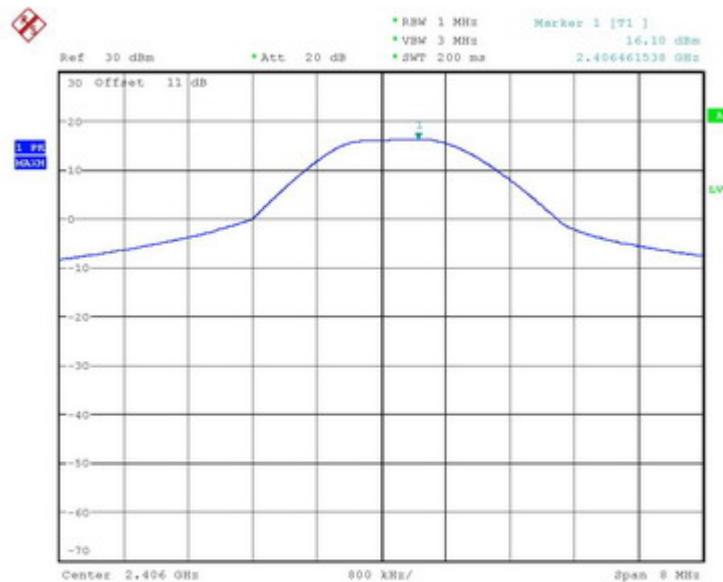
## **Appendix**

### **Measurement diagrams**

1. Peak Output Power
2. Spurious Emissions radiated
3. Carrier Frequency Separation
4. Number of Hopping Frequencies
5. Time of Occupancy (Dwell Time)
6. 20dB Bandwidth
7. Band-edge Compliance of RF Conducted Emissions
8. Power Line Conducted Emission

Registration number: W6M20809-9312-P-15  
 FCC ID: WSZRX-W003A24G

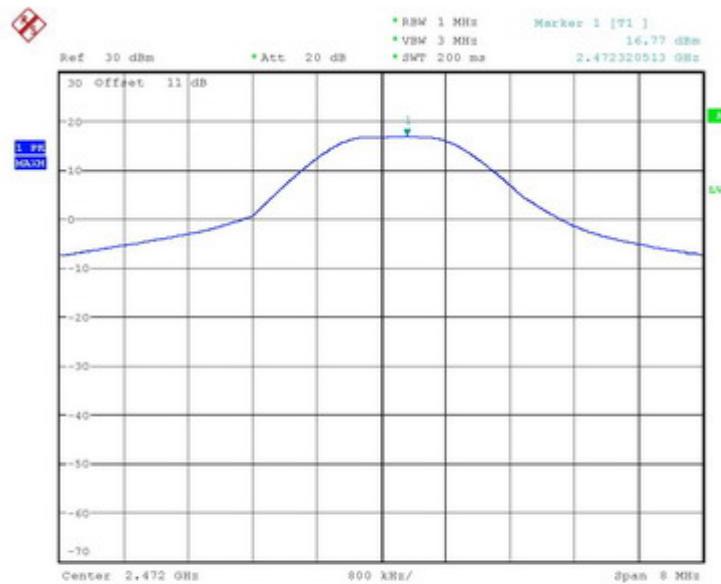
## Peak Output Power





# Worldwide Testing Services(Taiwan) Co., Ltd.

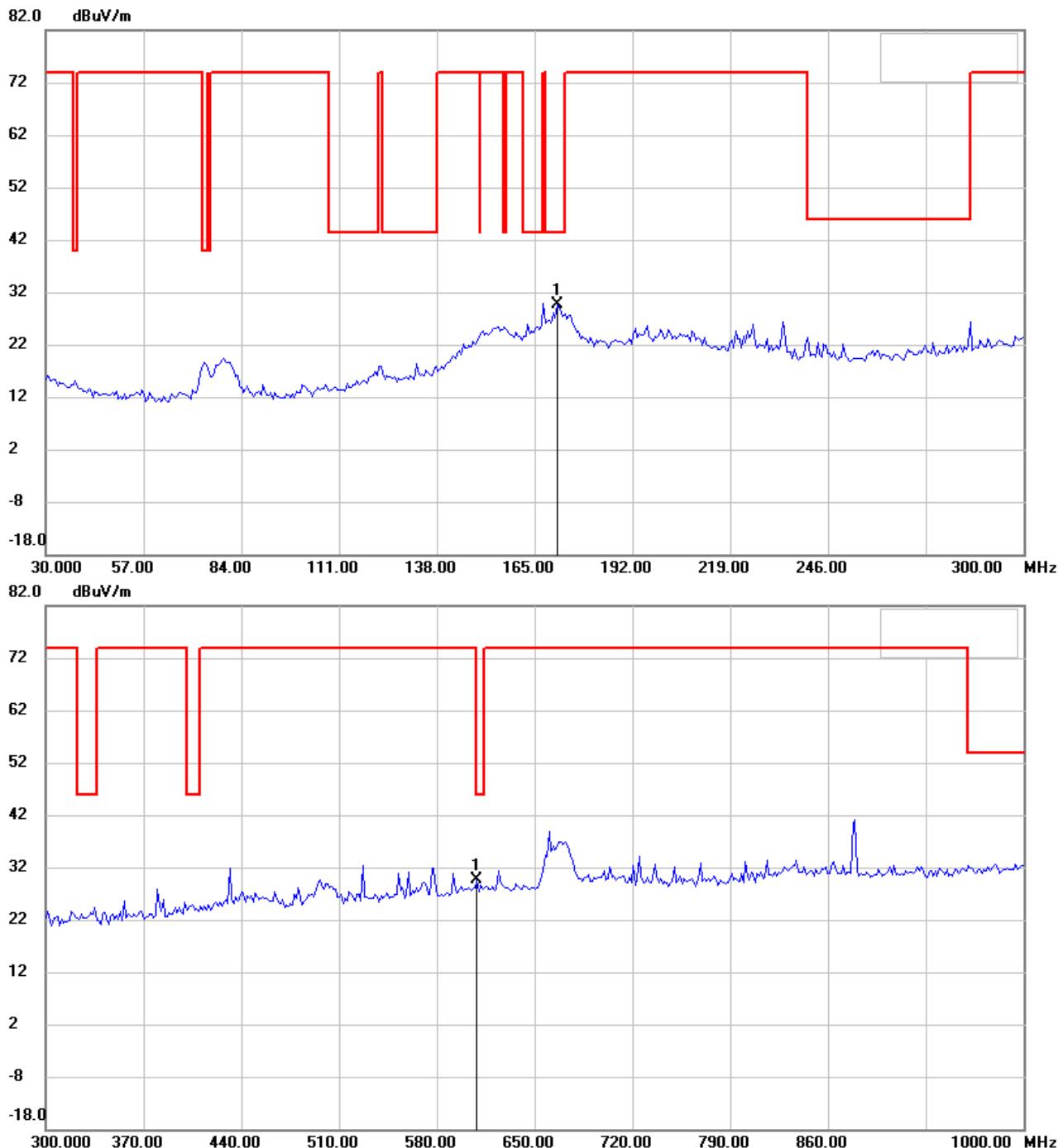
Registration number: W6M20809-9312-P-15  
FCC ID: WSZRX-W003A24G



MAX OUTPUT POWER 2472MHz  
Date: 6.NOV.2008 13:12:37

Registration number: W6M20809-9312-P-15  
 FCC ID: WSZRX-W003A24G

Spurious Emissions radiated  
 Channel A 2406 MHz  
 Antenna Polarization H

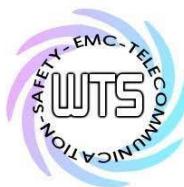


Up Line: Peak Limit Line

Down Line: Ave Limit Line

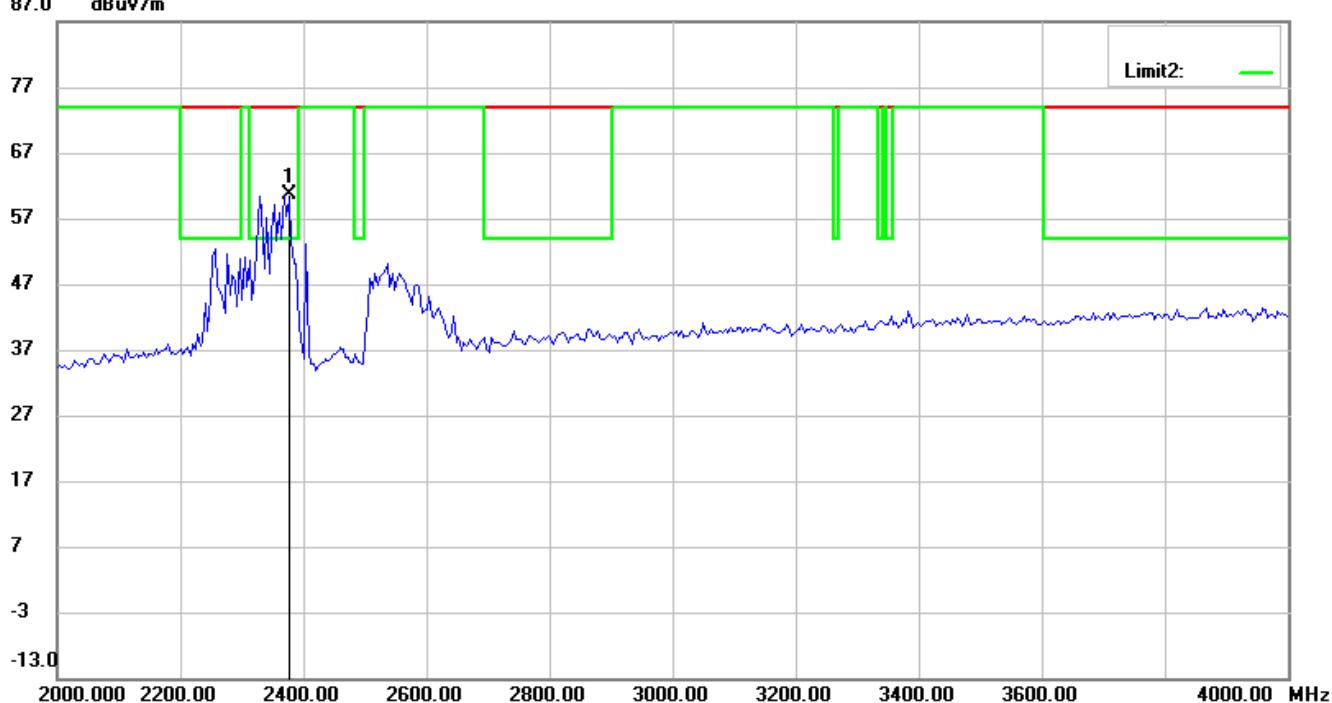
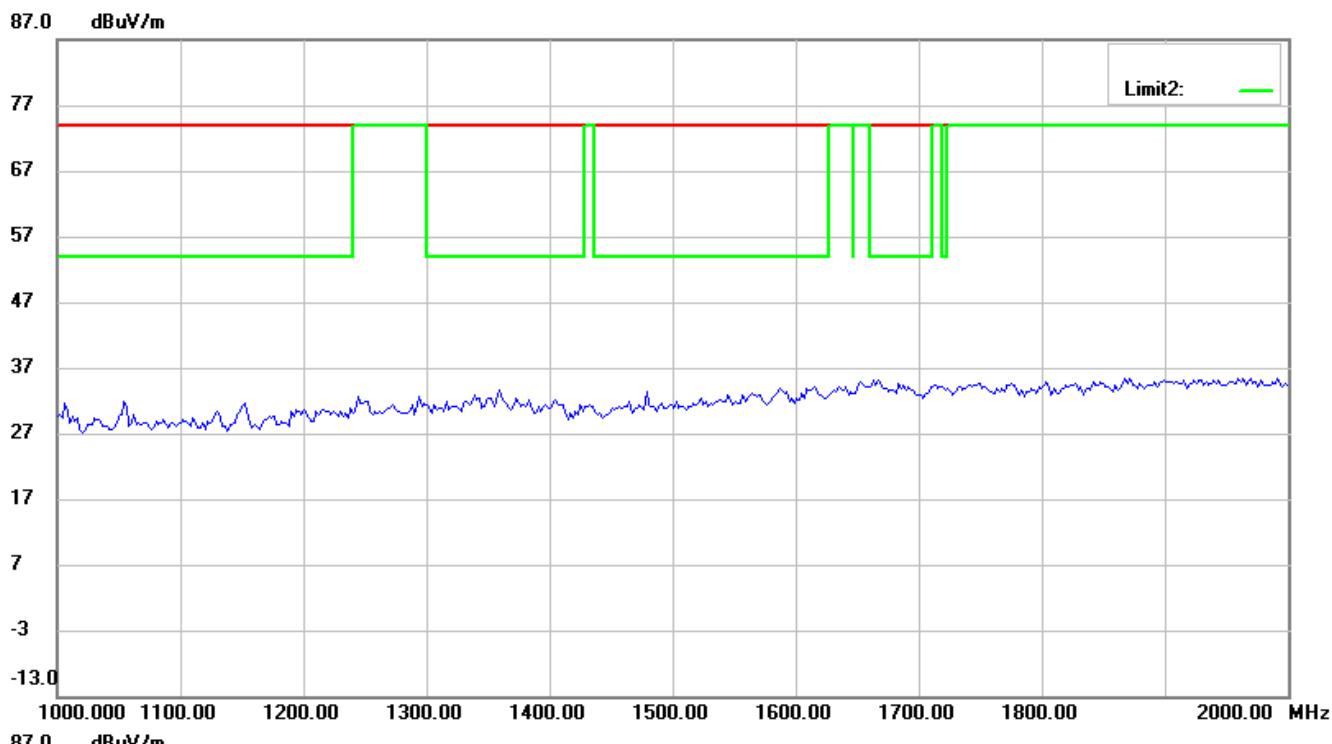
Note:

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



# Worldwide Testing Services(Taiwan) Co., Ltd.

Registration number: W6M20809-9312-P-15  
FCC ID: WSZRX-W003A24G



Up Line: Peak Limit Line

Down Line: Ave Limit Line

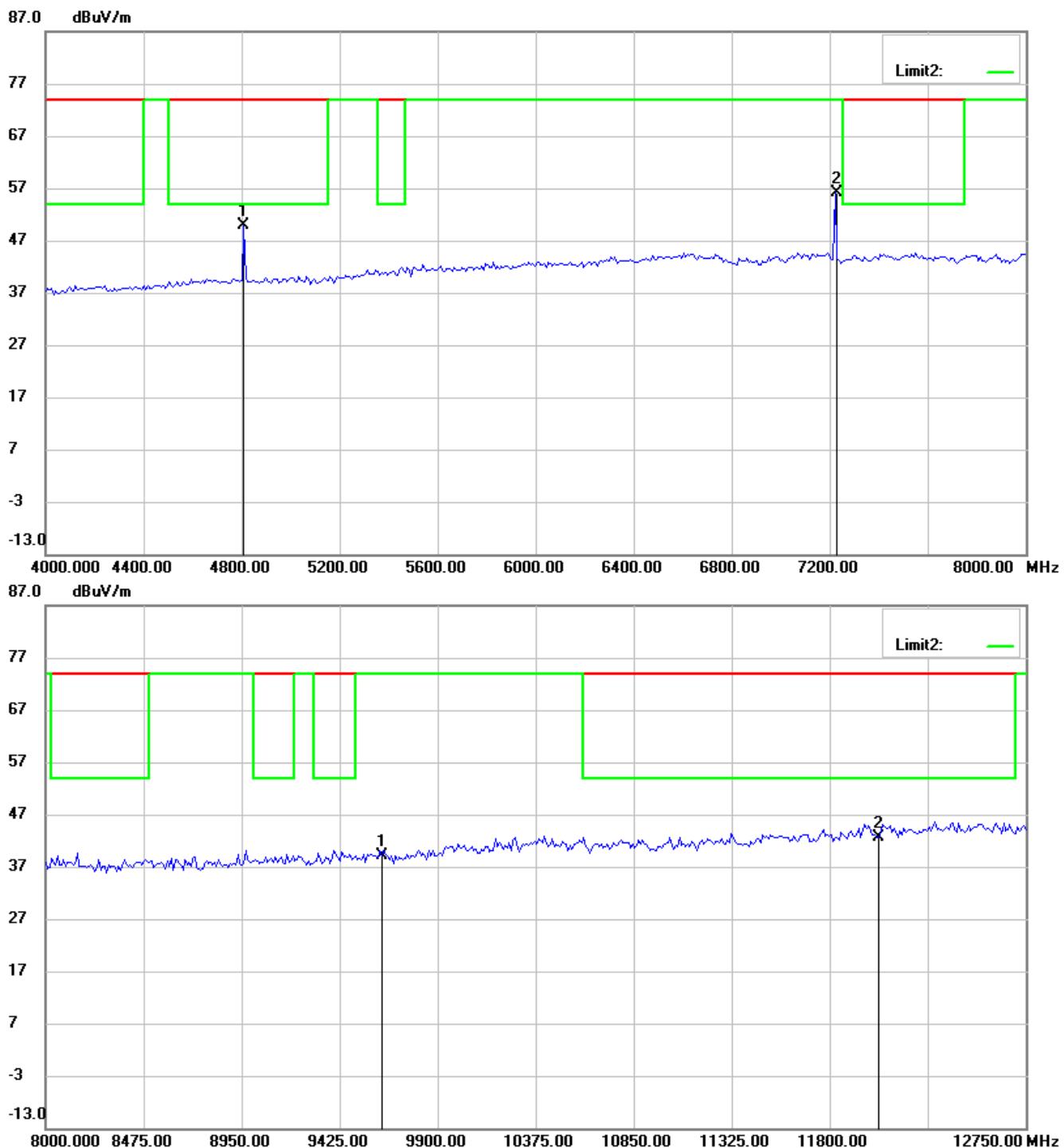
Note:

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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# Worldwide Testing Services(Taiwan) Co., Ltd.

Registration number: W6M20809-9312-P-15  
FCC ID: WSZRX-W003A24G



Up Line: Peak Limit Line

Down Line: Ave Limit Line

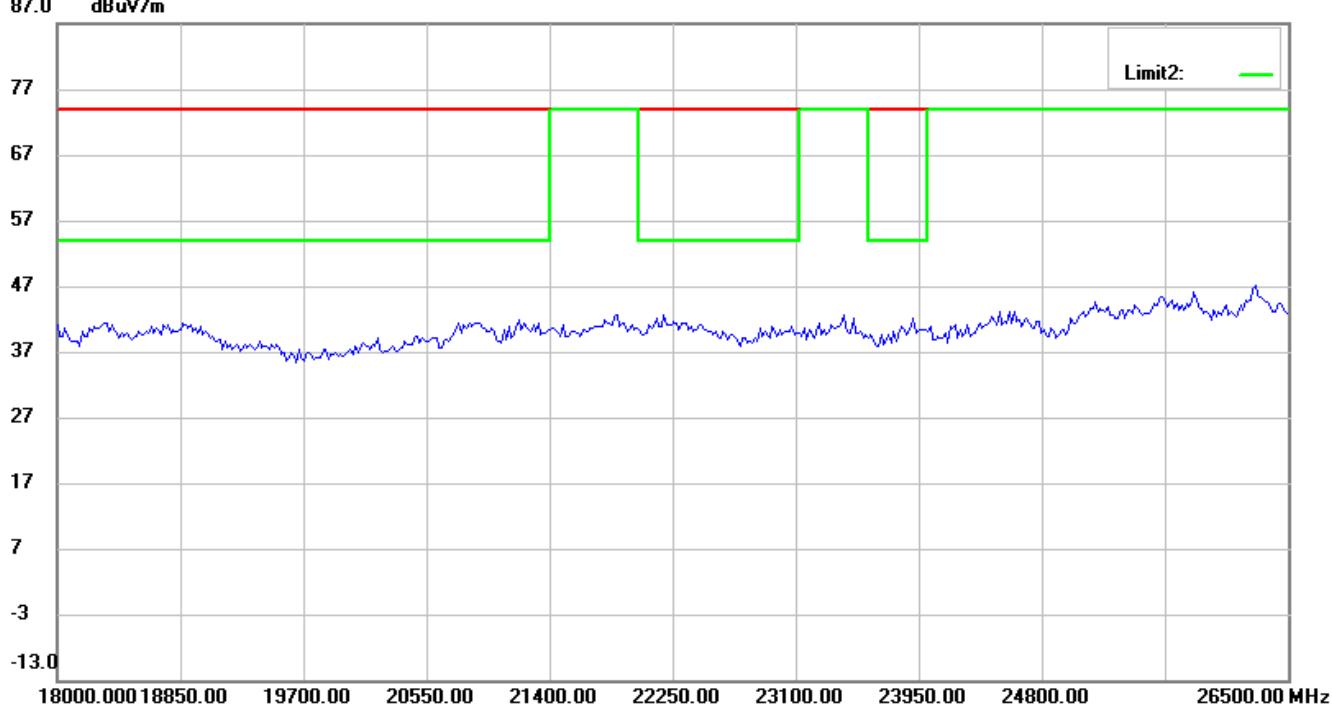
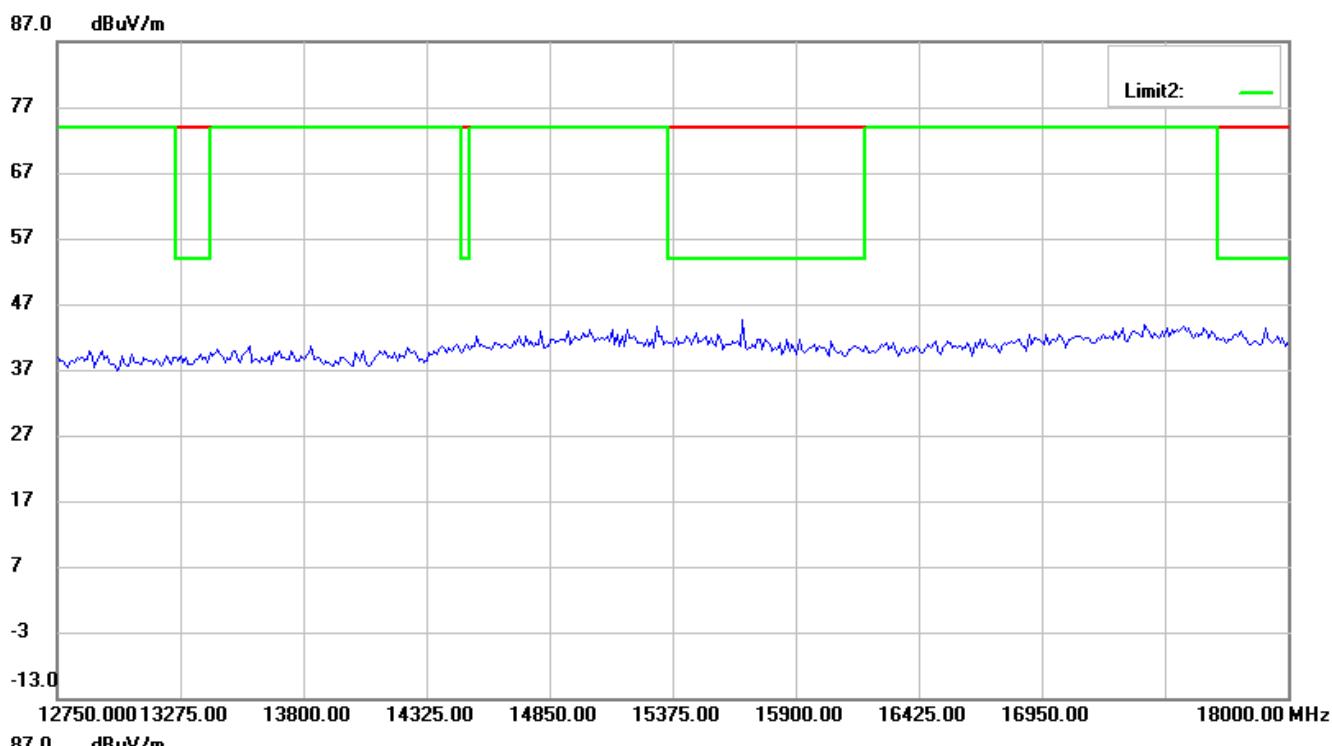
Note:

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# Worldwide Testing Services(Taiwan) Co., Ltd.

Registration number: W6M20809-9312-P-15  
FCC ID: WSZRX-W003A24G



Up Line: Peak Limit Line

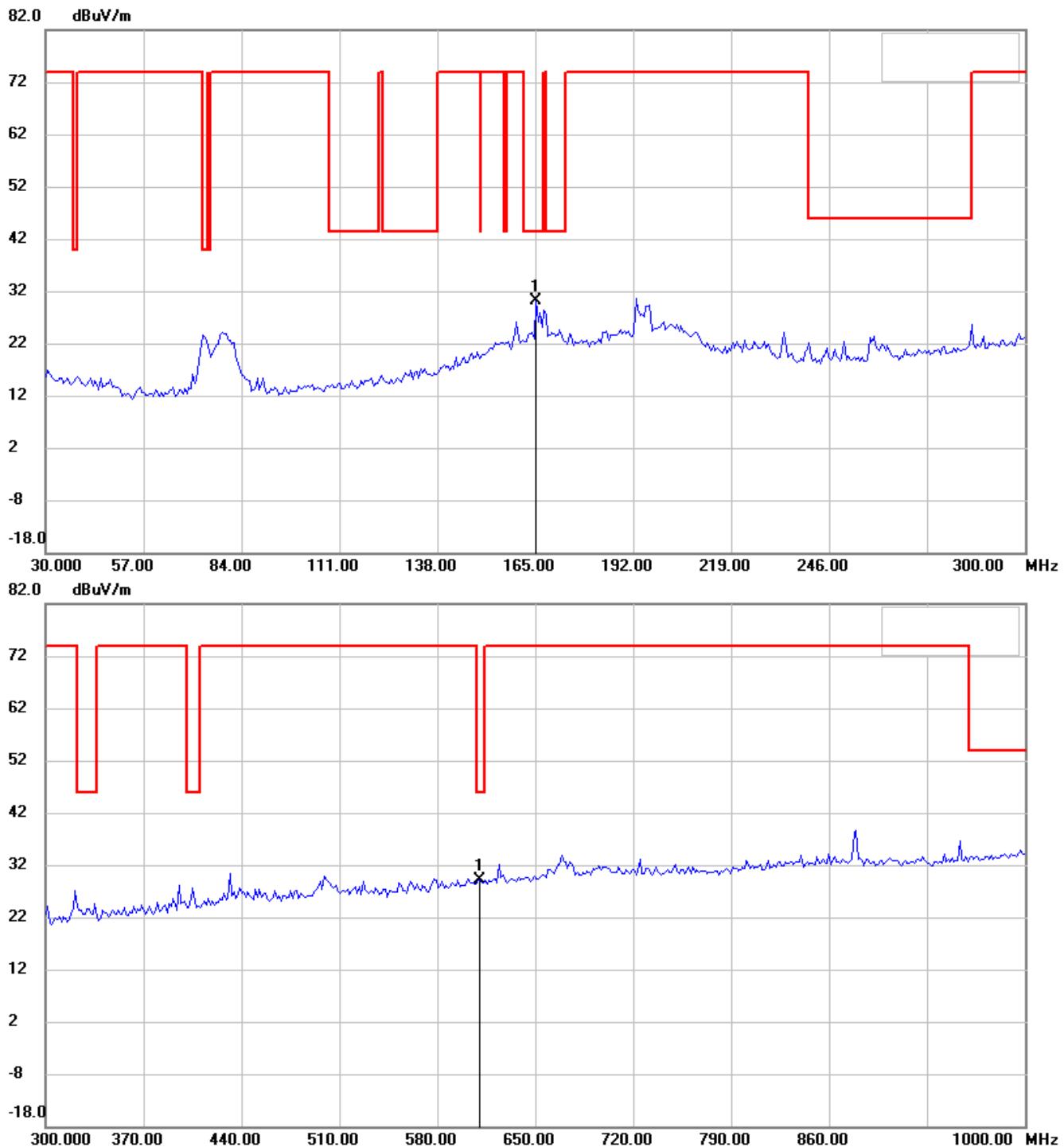
Down Line: Ave Limit Line

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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Registration number: W6M20809-9312-P-15  
 FCC ID: WSZRX-W003A24G

## Antenna Polarization V



Up Line: Peak Limit Line

Down Line: Ave Limit Line

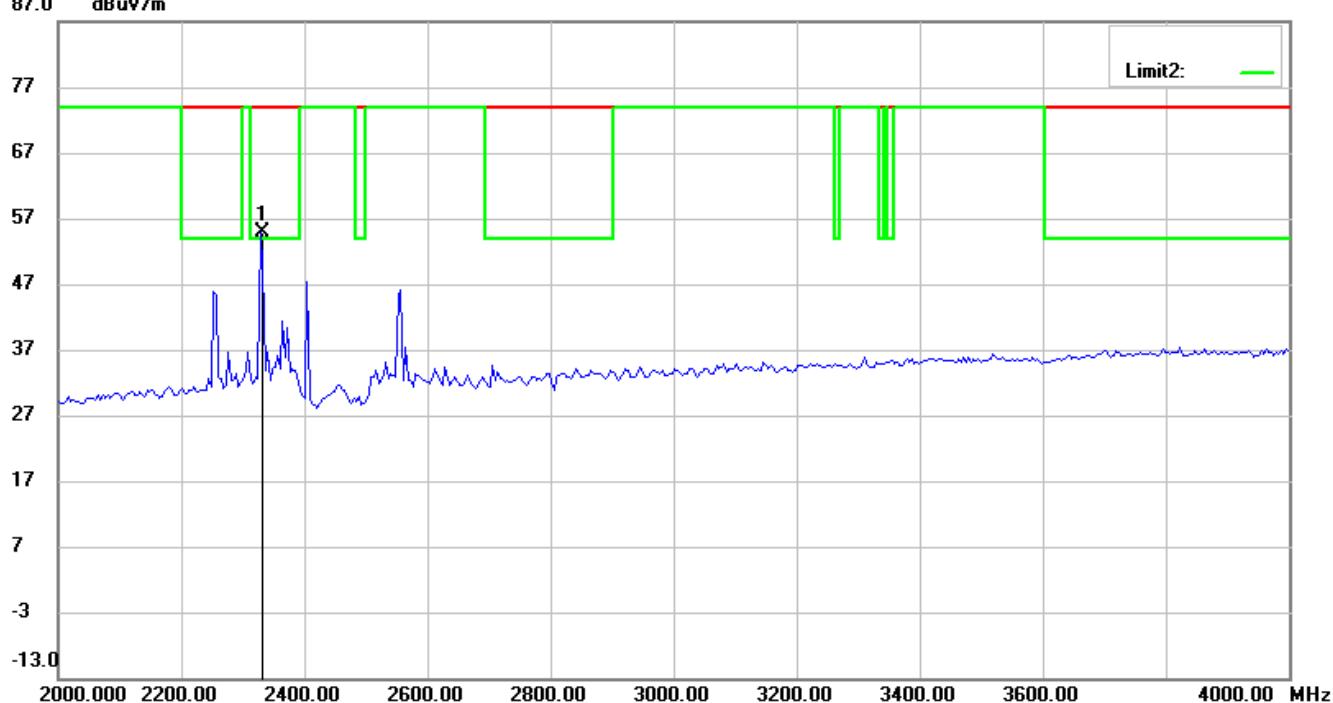
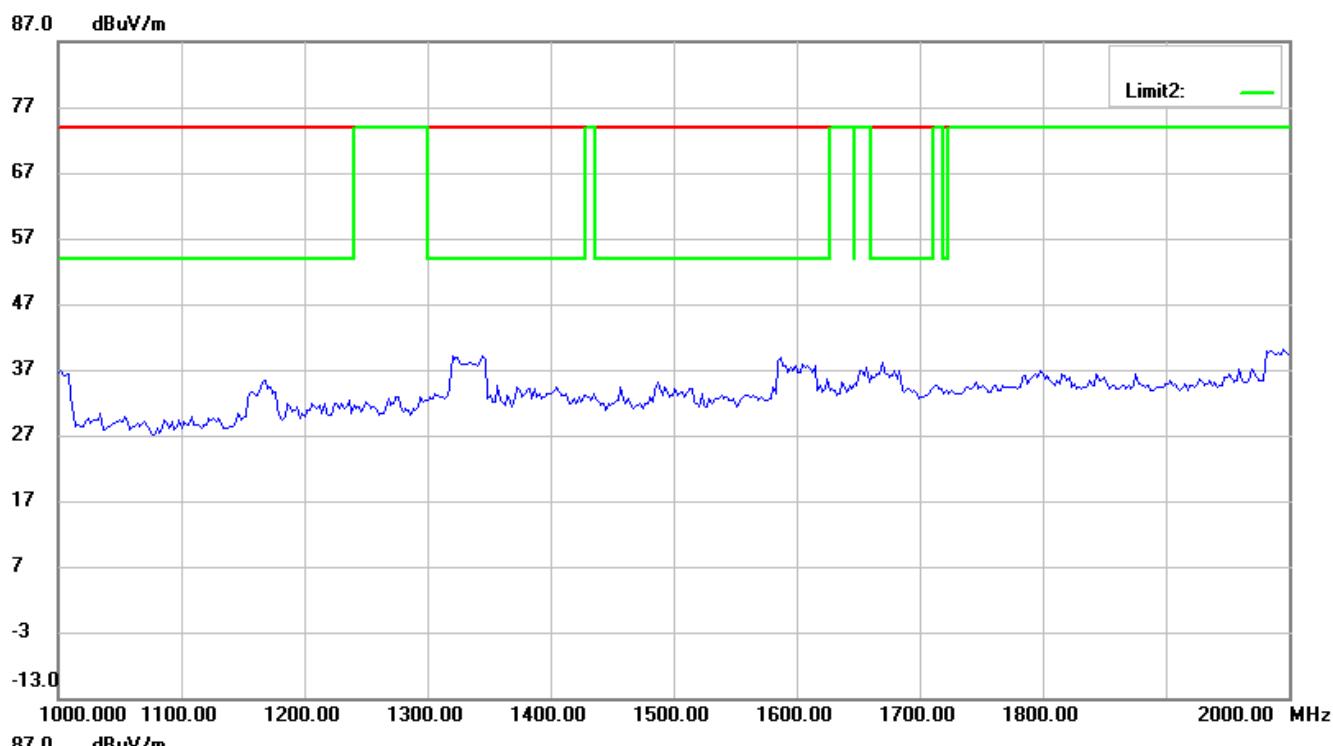
Note:

1. The attached measurement plots are preliminarily pre-scanned with peak detector for determining the final checking frequencies and are for reference only.
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3. For corrected test results are listed in the relevant table of radiated test data of this test report.



# Worldwide Testing Services(Taiwan) Co., Ltd.

Registration number: W6M20809-9312-P-15  
FCC ID: WSZRX-W003A24G

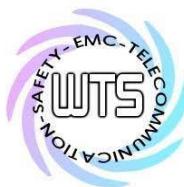


Up Line: Peak Limit Line

Down Line: Ave Limit Line

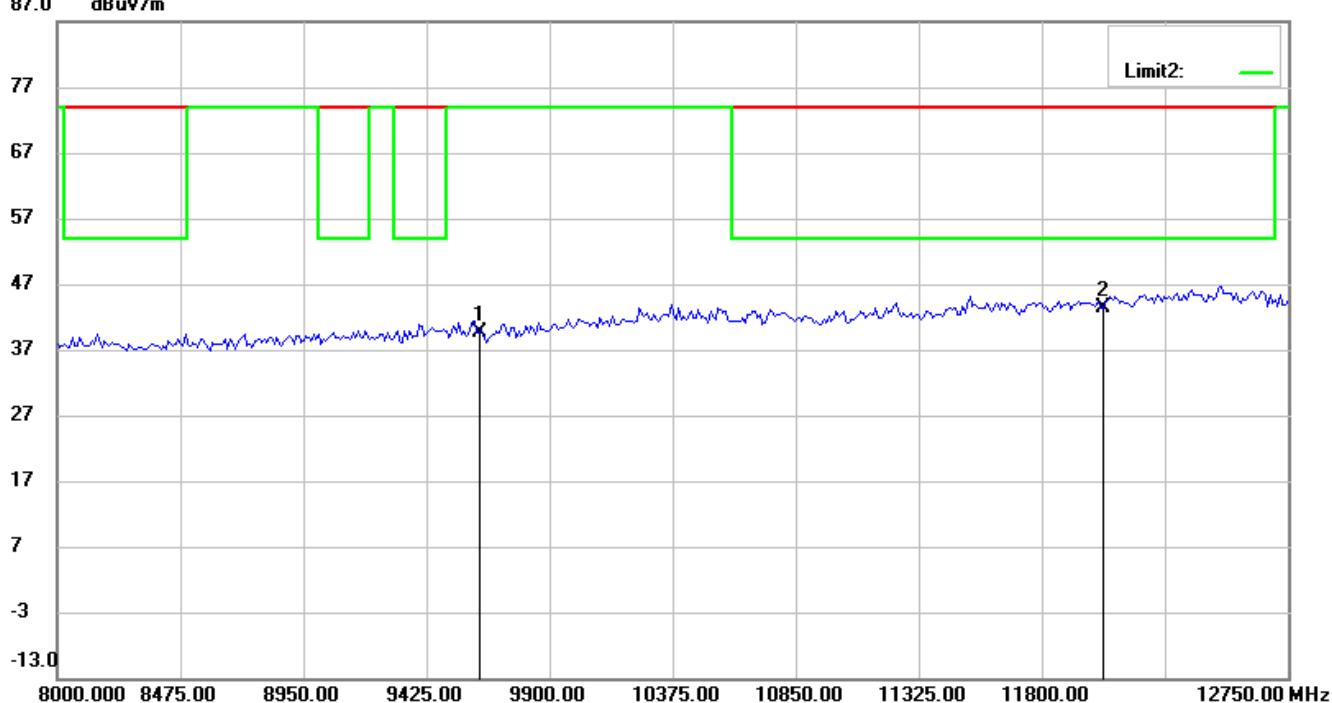
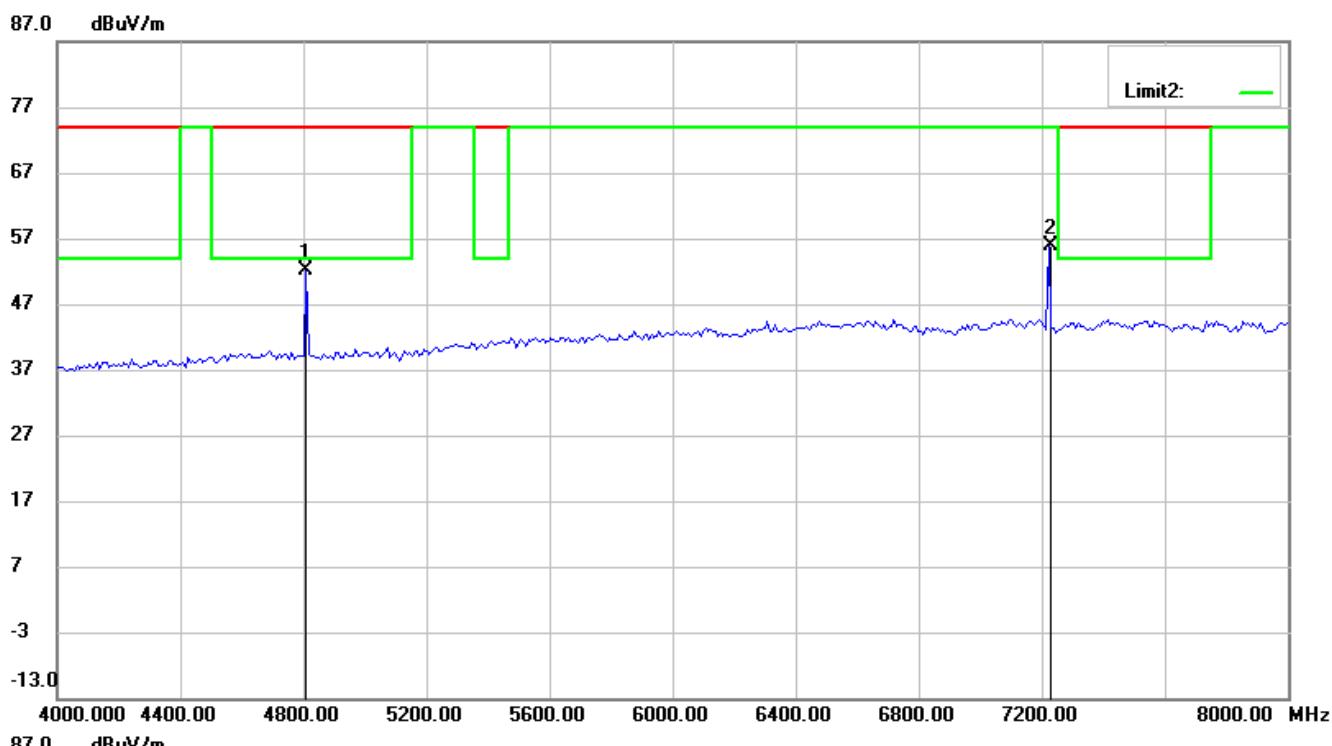
Note:

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# Worldwide Testing Services(Taiwan) Co., Ltd.

Registration number: W6M20809-9312-P-15  
FCC ID: WSZRX-W003A24G

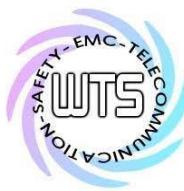


Up Line: Peak Limit Line

Down Line: Ave Limit Line

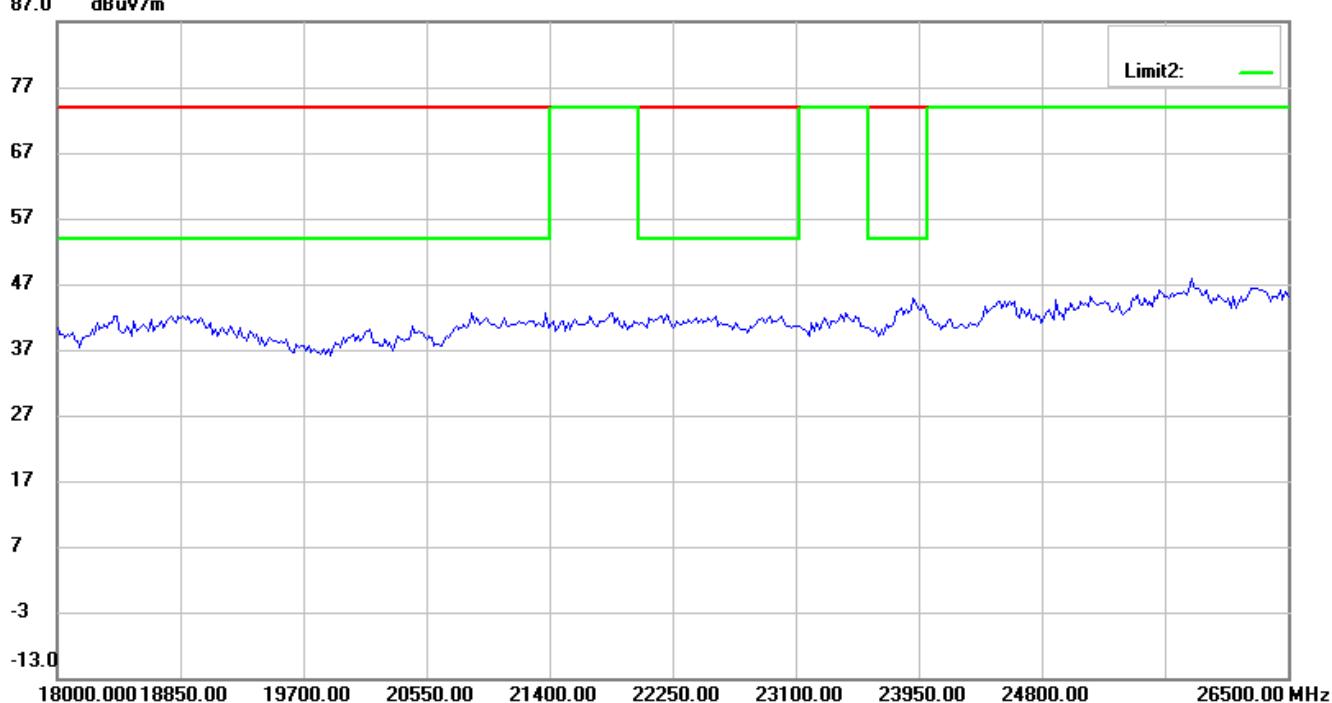
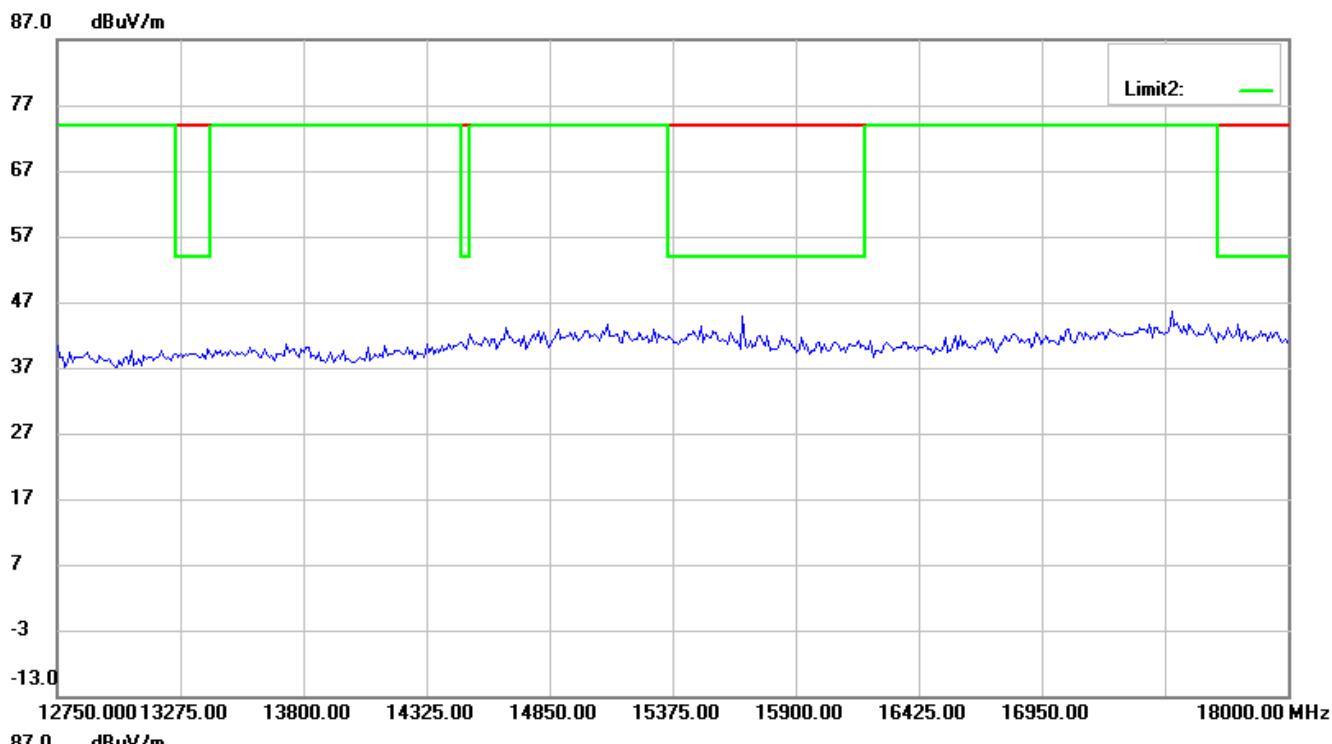
Note:

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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.
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# Worldwide Testing Services(Taiwan) Co., Ltd.

Registration number: W6M20809-9312-P-15  
FCC ID: WSZRX-W003A24G



Up Line: Peak Limit Line

Down Line: Ave Limit Line

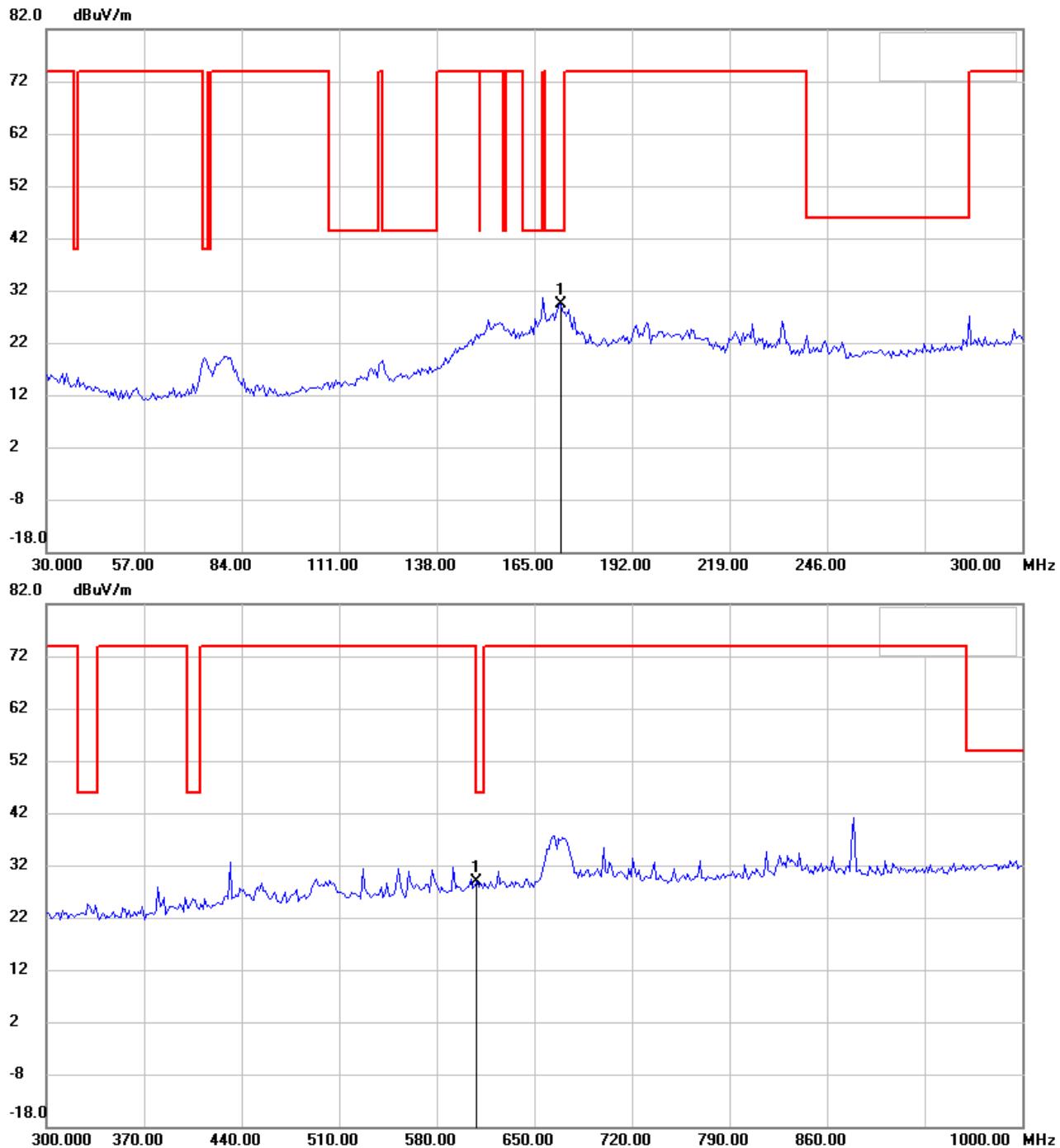
Note:

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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Registration number: W6M20809-9312-P-15  
 FCC ID: WSZRX-W003A24G

## Channel B\_2440 MHz

### Antenna Polarization H

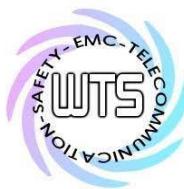


Up Line: Peak Limit Line

Down Line: Ave Limit Line

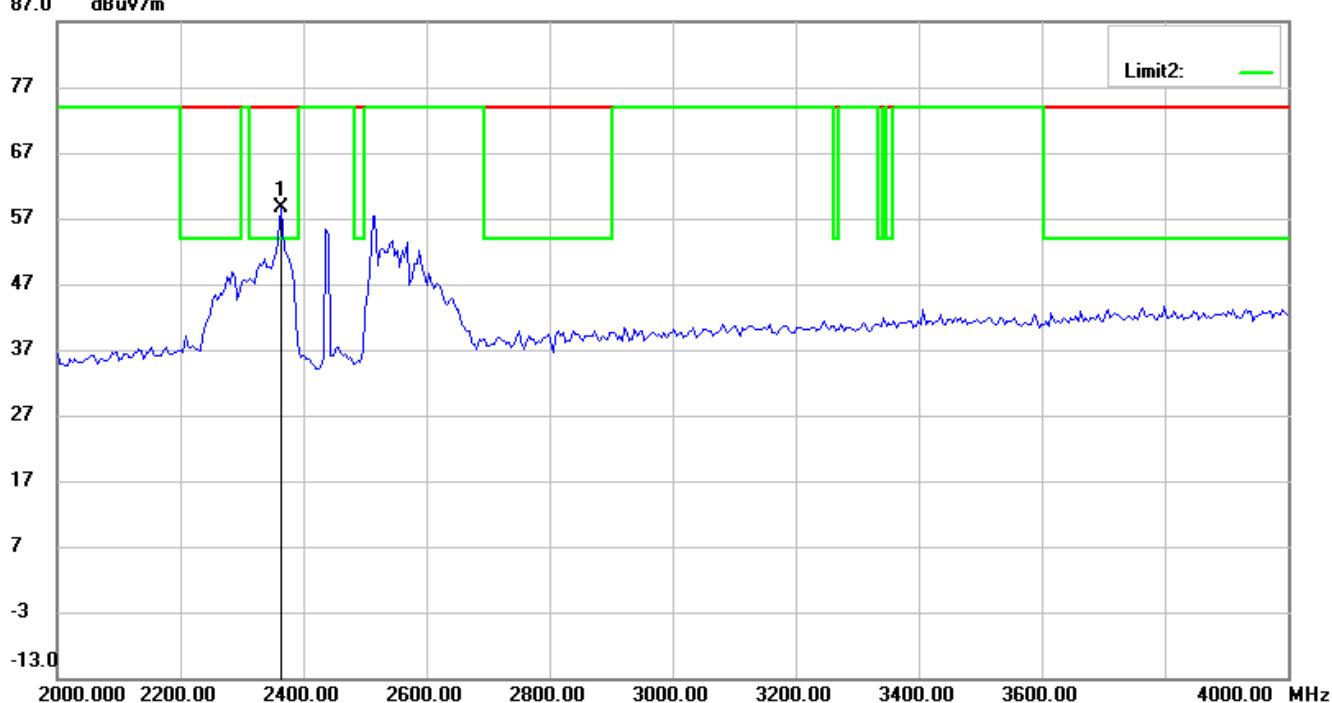
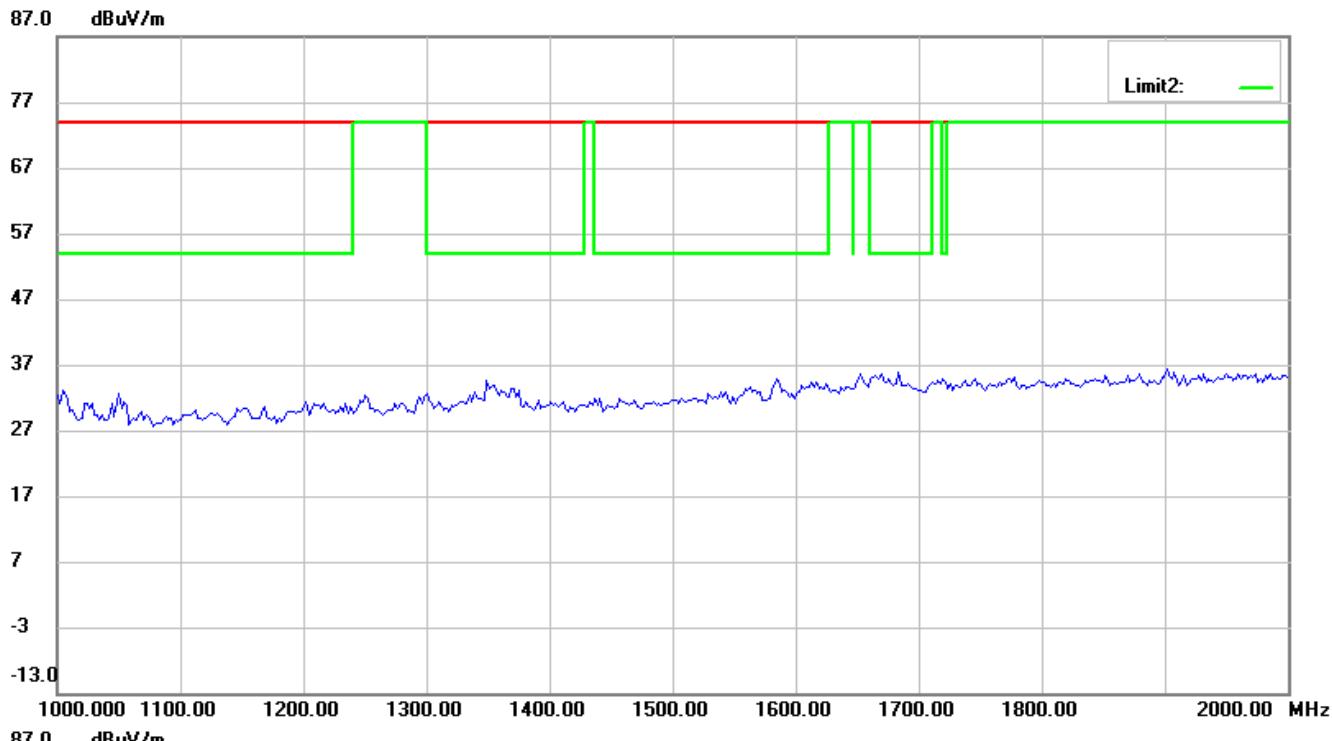
Note:

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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.



# Worldwide Testing Services(Taiwan) Co., Ltd.

Registration number: W6M20809-9312-P-15  
FCC ID: WSZRX-W003A24G

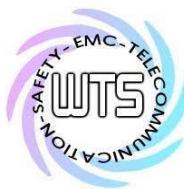


Up Line: Peak Limit Line

Down Line: Ave Limit Line

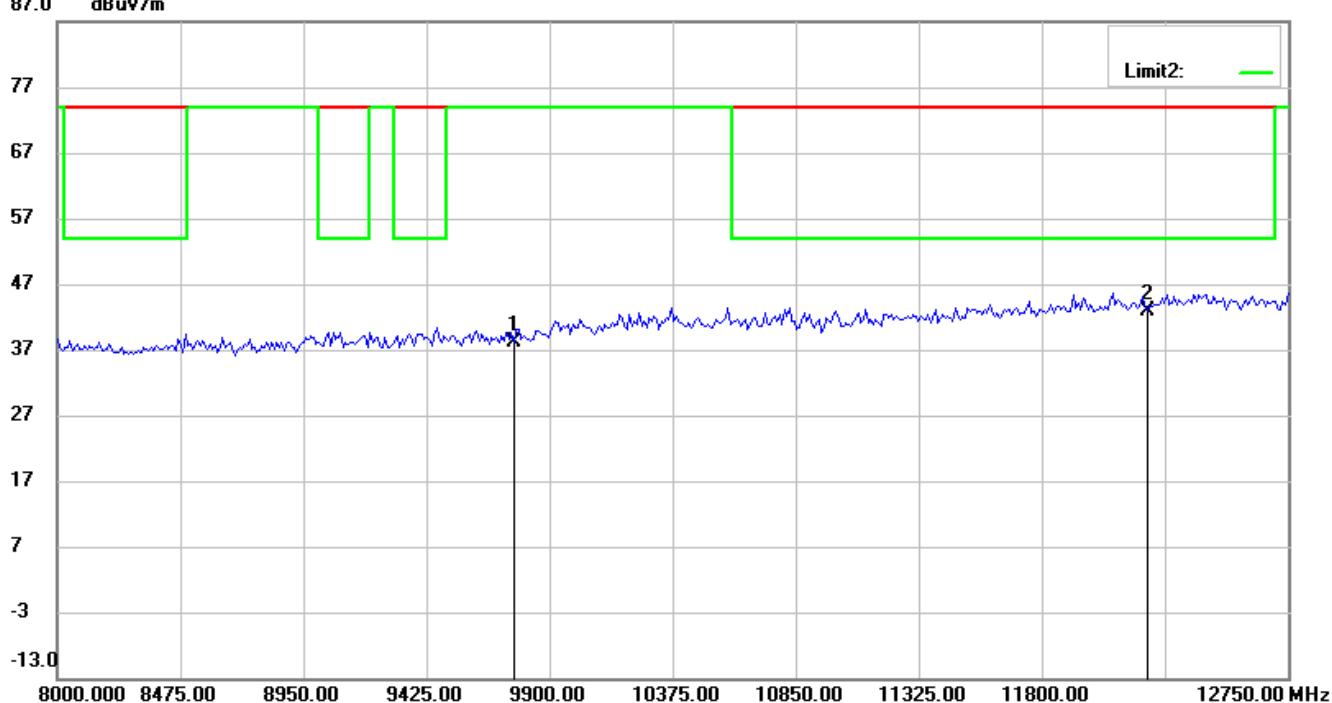
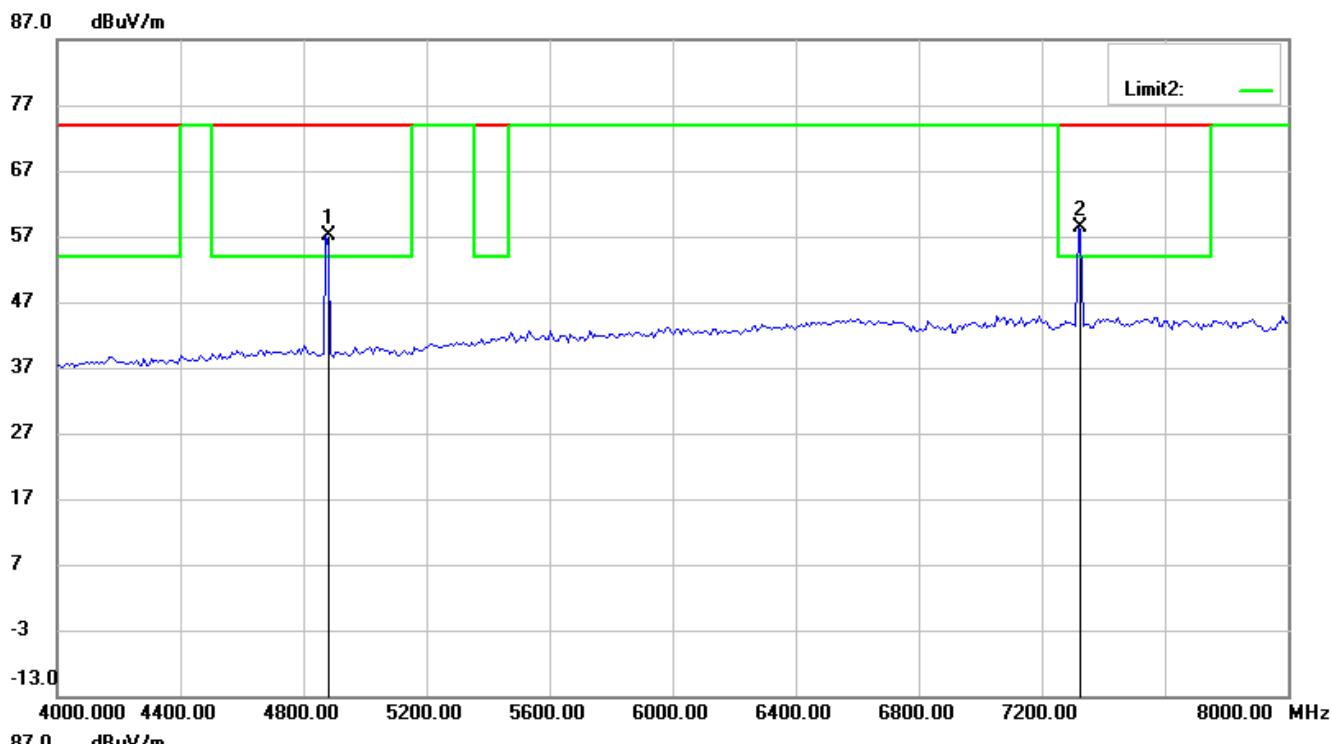
Note:

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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.
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# Worldwide Testing Services(Taiwan) Co., Ltd.

Registration number: W6M20809-9312-P-15  
FCC ID: WSZRX-W003A24G



Up Line: Peak Limit Line

Down Line: Ave Limit Line

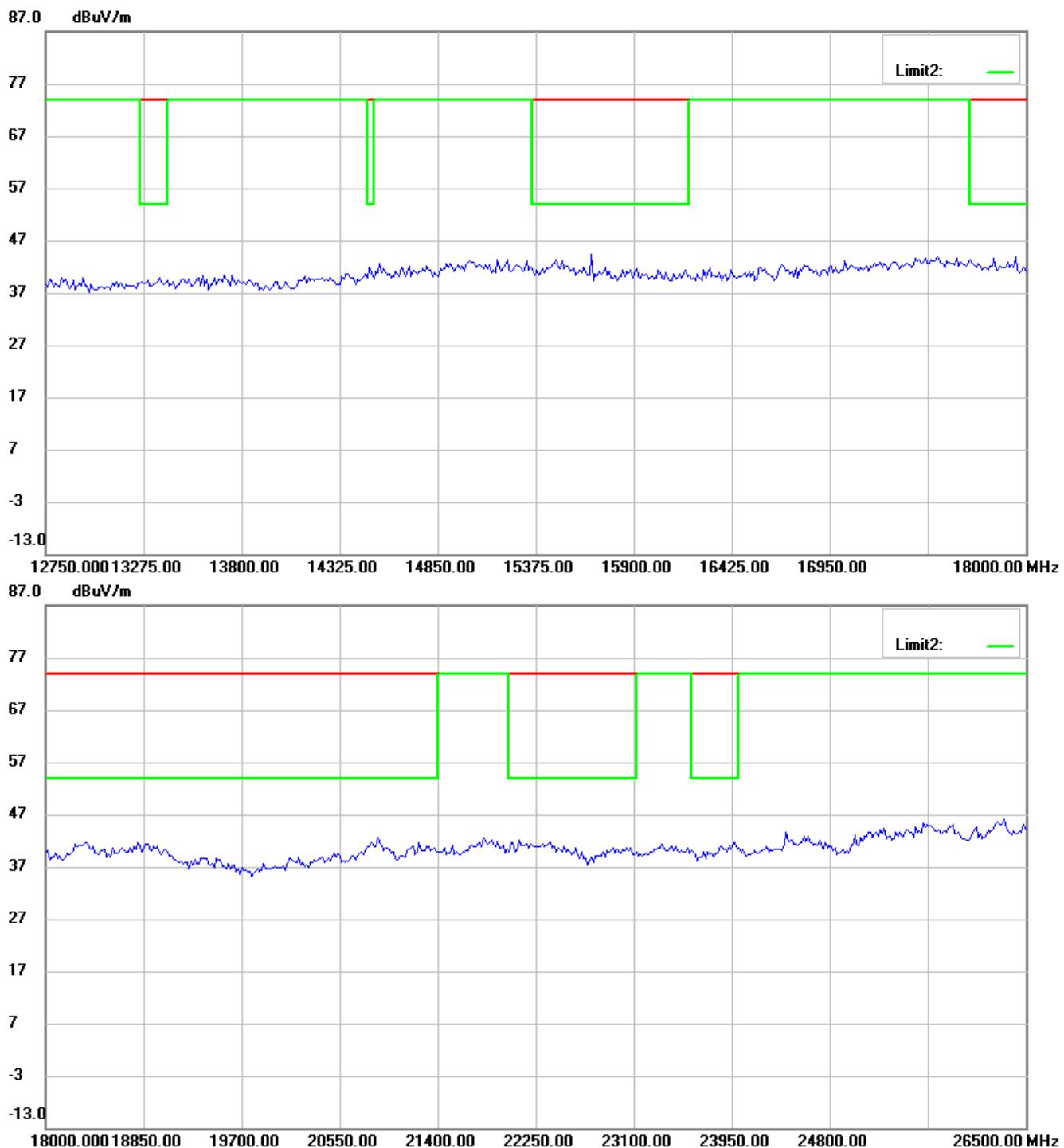
Note:

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# Worldwide Testing Services(Taiwan) Co., Ltd.

Registration number: W6M20809-9312-P-15  
FCC ID: WSZRX-W003A24G



Up Line: Peak Limit Line

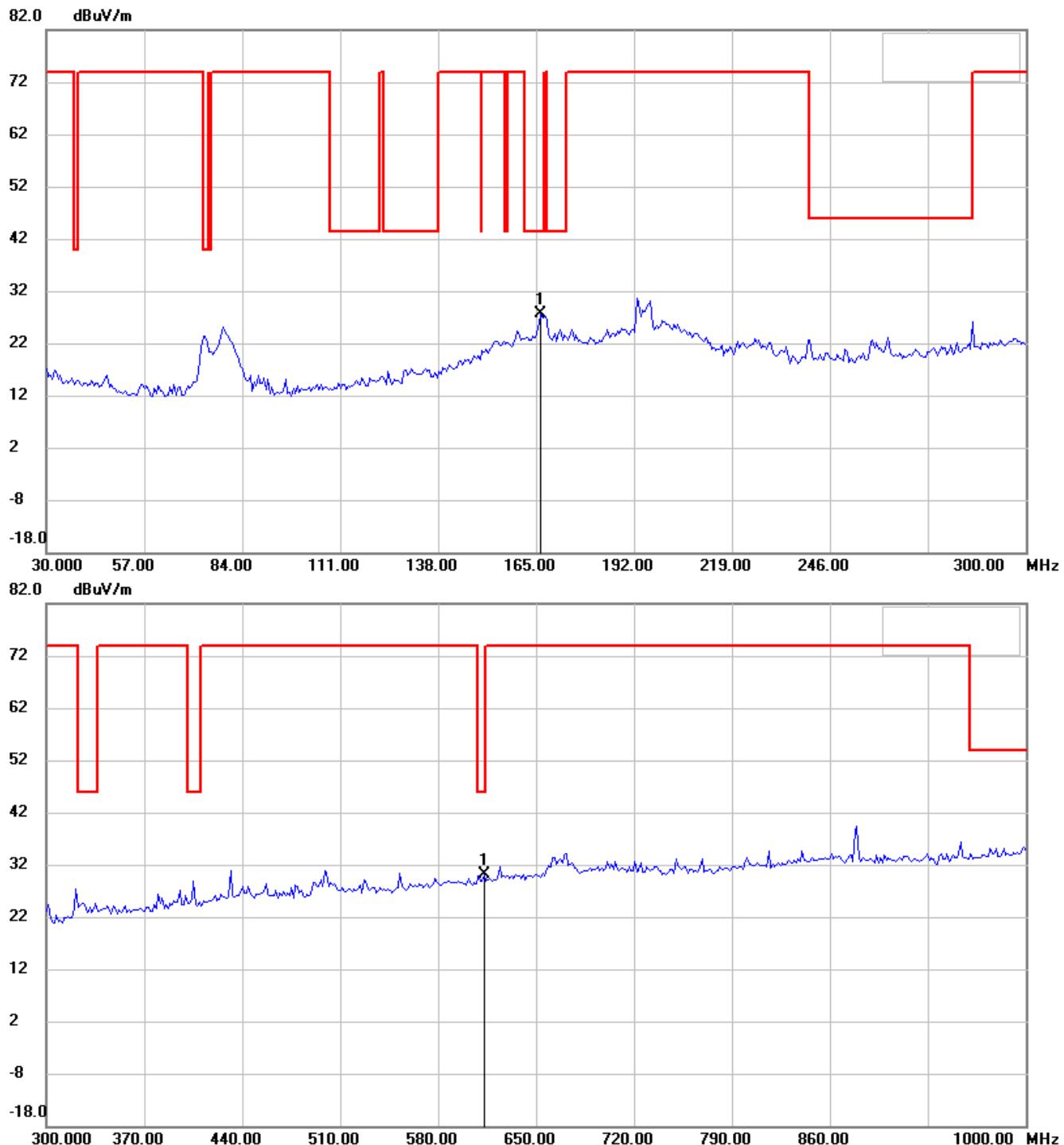
Down Line: Ave Limit Line

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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Registration number: W6M20809-9312-P-15  
 FCC ID: WSZRX-W003A24G

## Antenna Polarization V

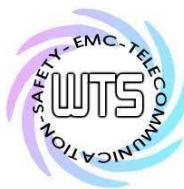


Up Line: Peak Limit Line

Down Line: Ave Limit Line

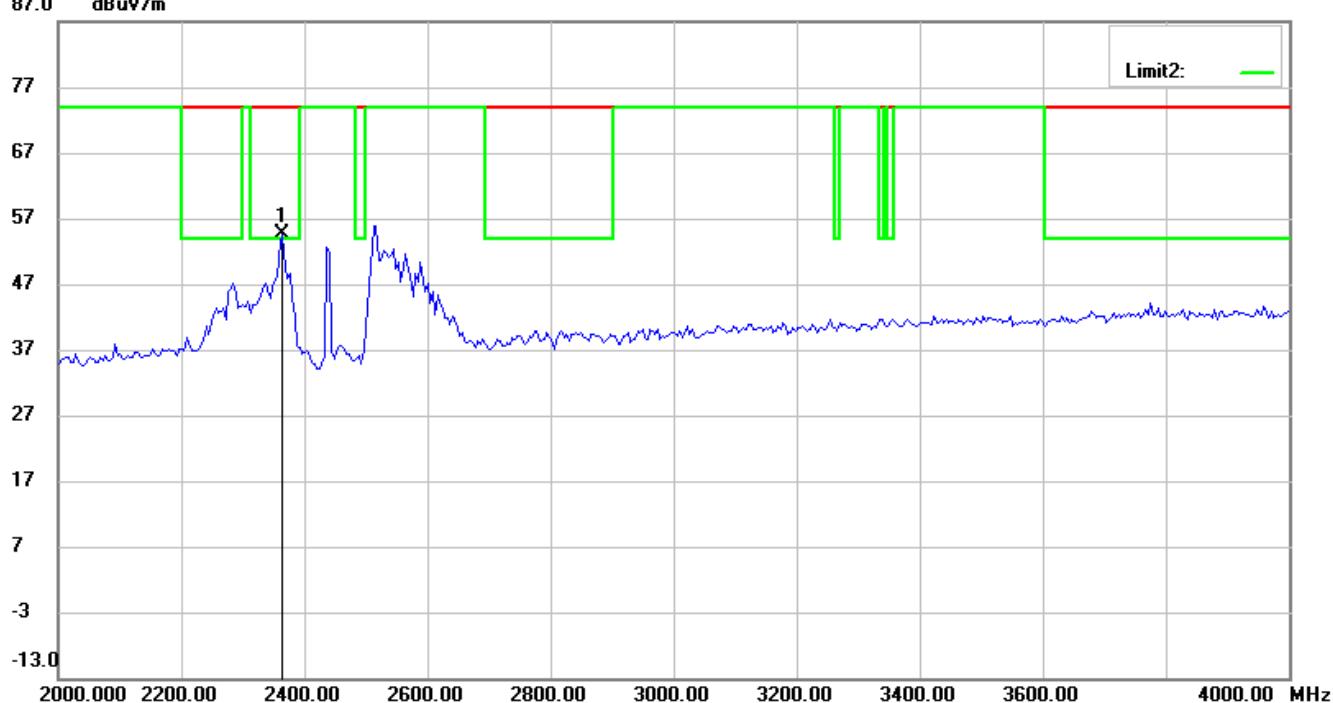
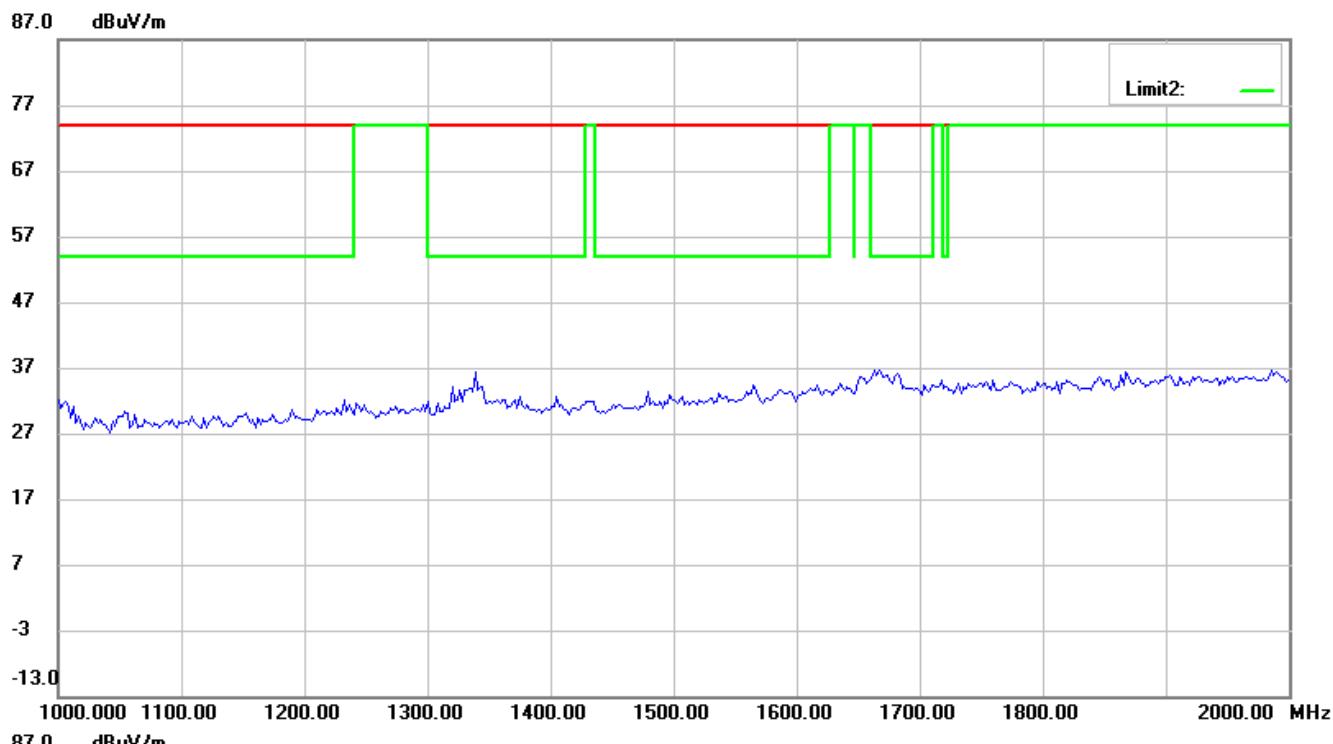
Note:

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# Worldwide Testing Services(Taiwan) Co., Ltd.

Registration number: W6M20809-9312-P-15  
FCC ID: WSZRX-W003A24G

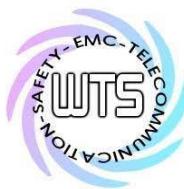


Up Line: Peak Limit Line

Down Line: Ave Limit Line

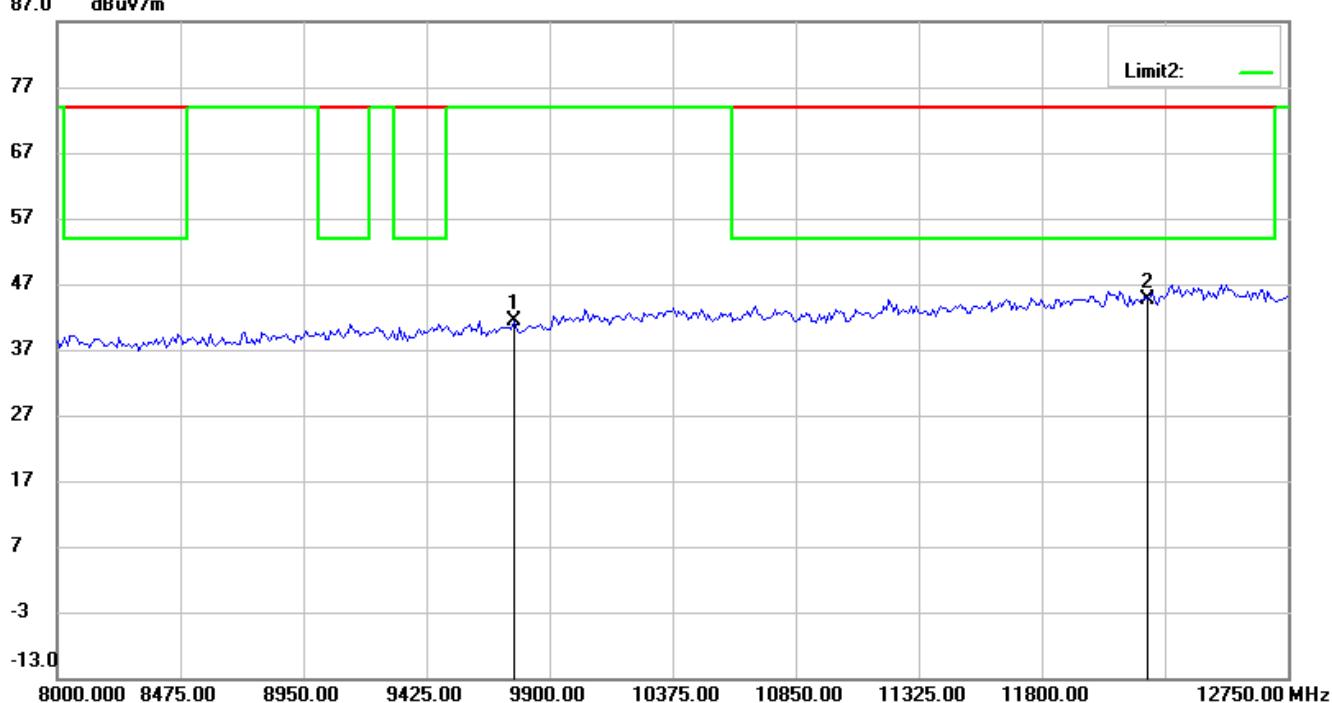
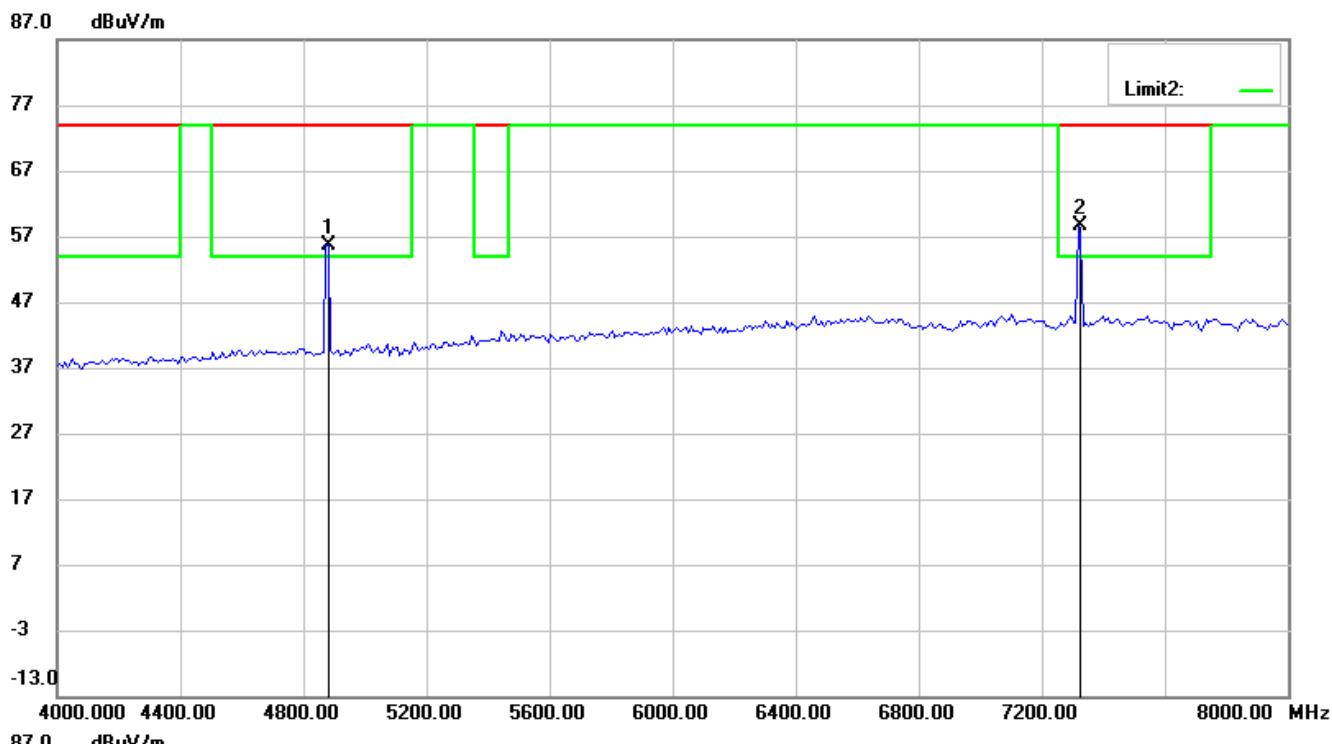
Note:

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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# Worldwide Testing Services(Taiwan) Co., Ltd.

Registration number: W6M20809-9312-P-15  
FCC ID: WSZRX-W003A24G



Up Line: Peak Limit Line

Down Line: Ave Limit Line

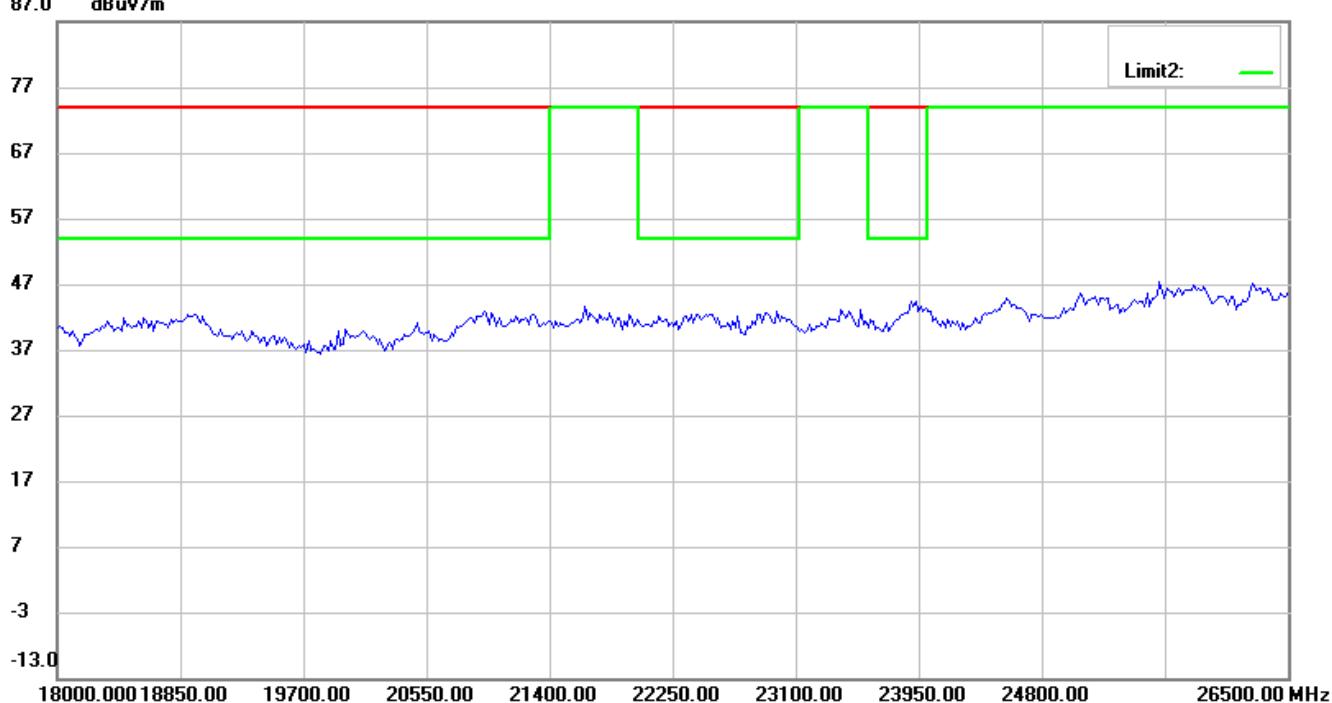
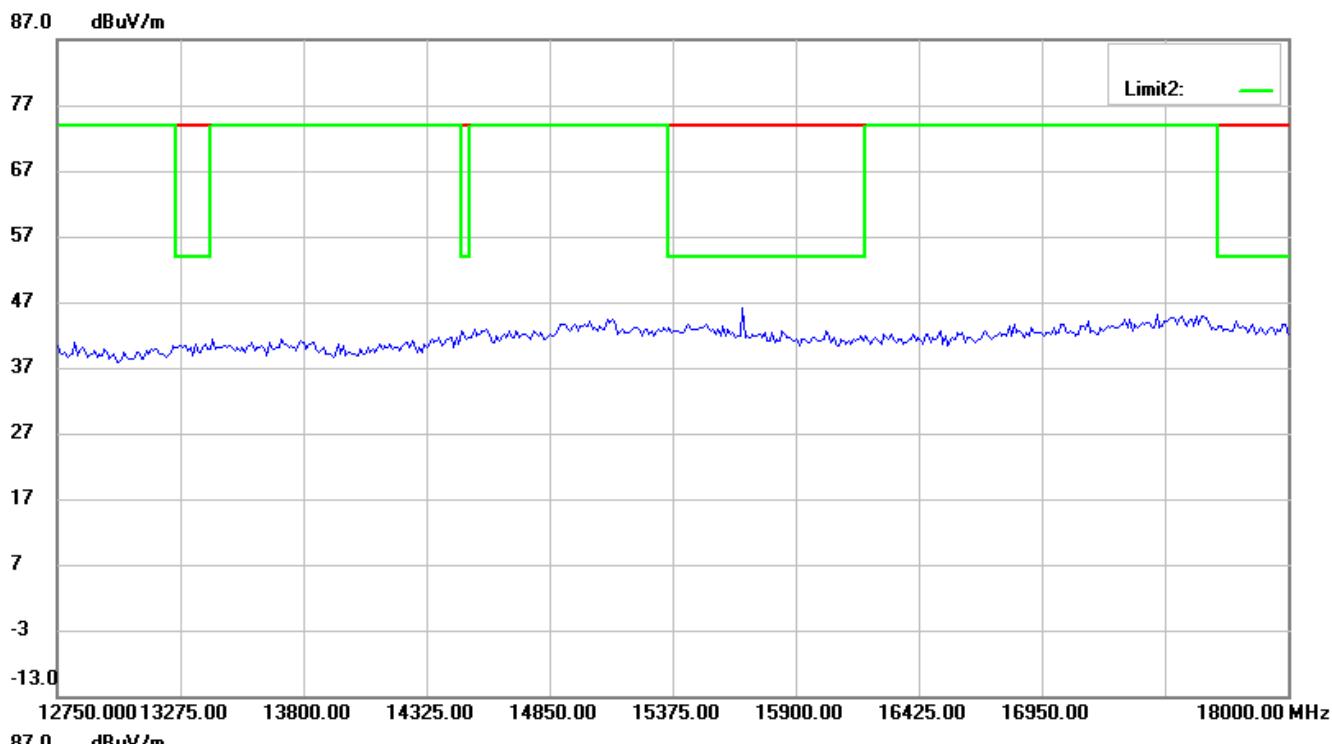
Note:

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# Worldwide Testing Services(Taiwan) Co., Ltd.

Registration number: W6M20809-9312-P-15  
FCC ID: WSZRX-W003A24G



Up Line: Peak Limit Line

Down Line: Ave Limit Line

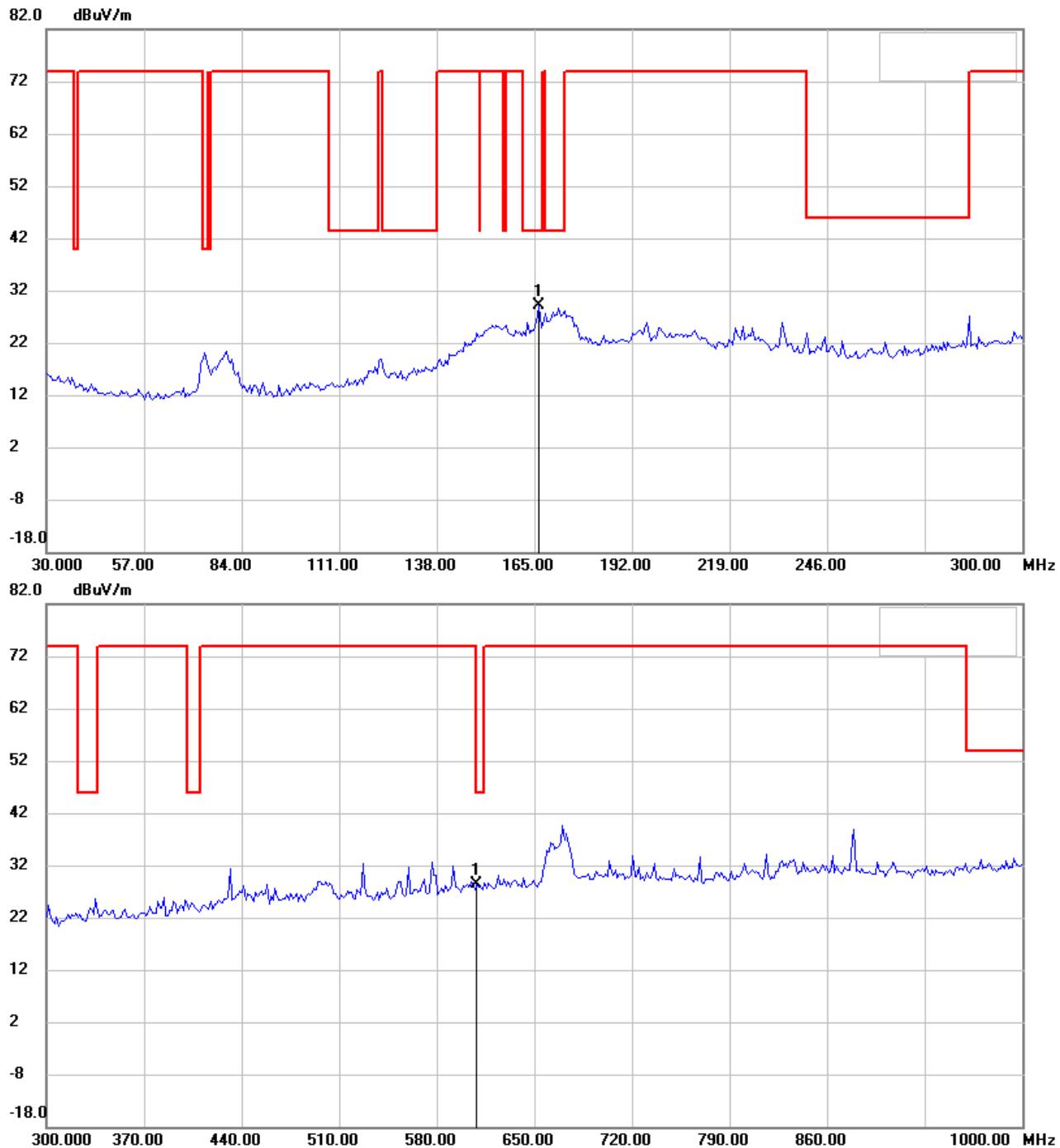
Note:

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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Registration number: W6M20809-9312-P-15  
 FCC ID: WSZRX-W003A24G

## Channel C\_2472 MHz

### Antenna Polarization H

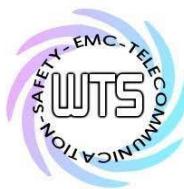


Up Line: Peak Limit Line

Down Line: Ave Limit Line

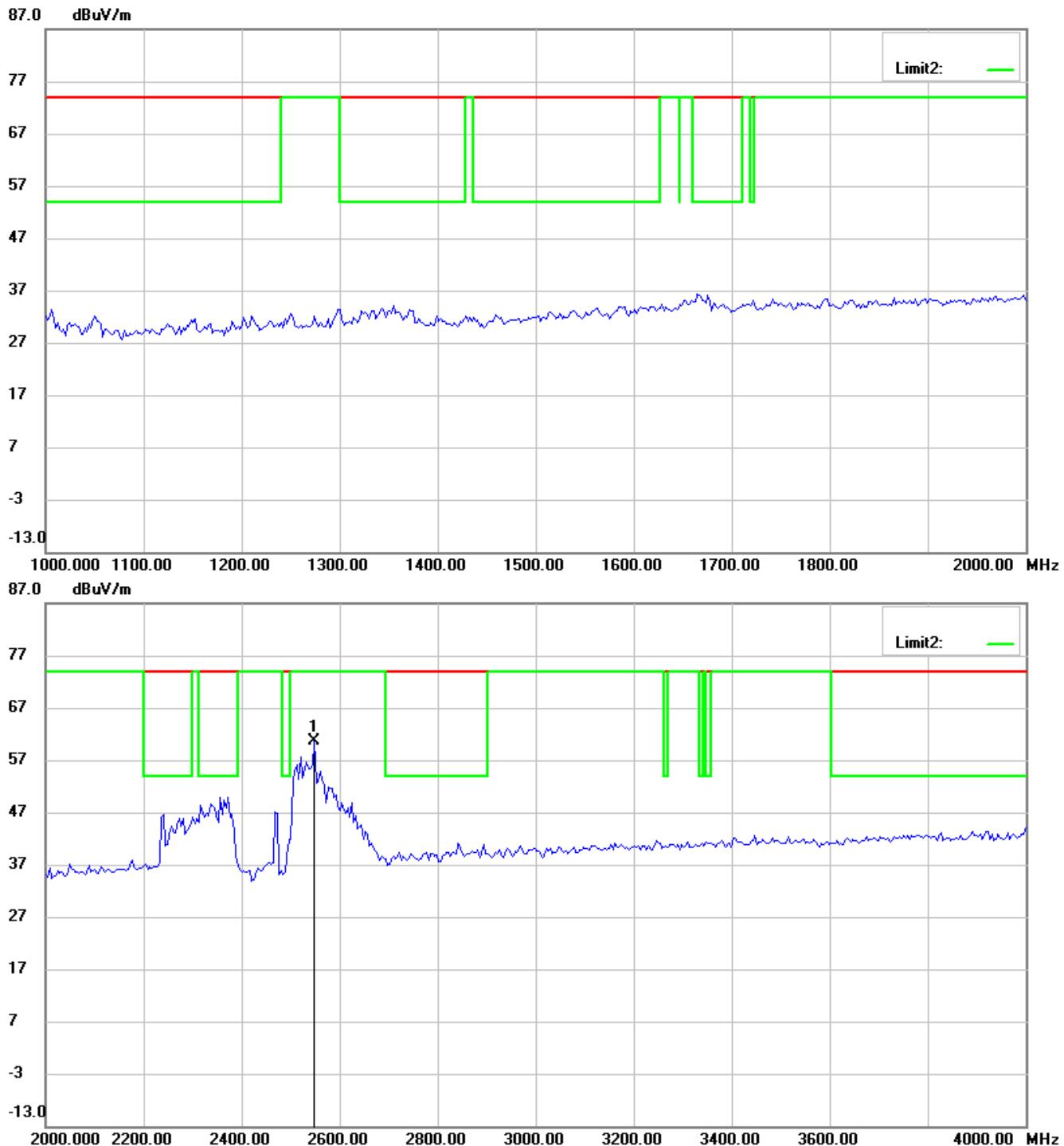
Note:

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



# Worldwide Testing Services(Taiwan) Co., Ltd.

Registration number: W6M20809-9312-P-15  
FCC ID: WSZRX-W003A24G

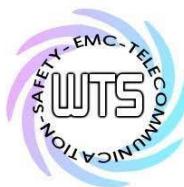


Up Line: Peak Limit Line

Down Line: Ave Limit Line

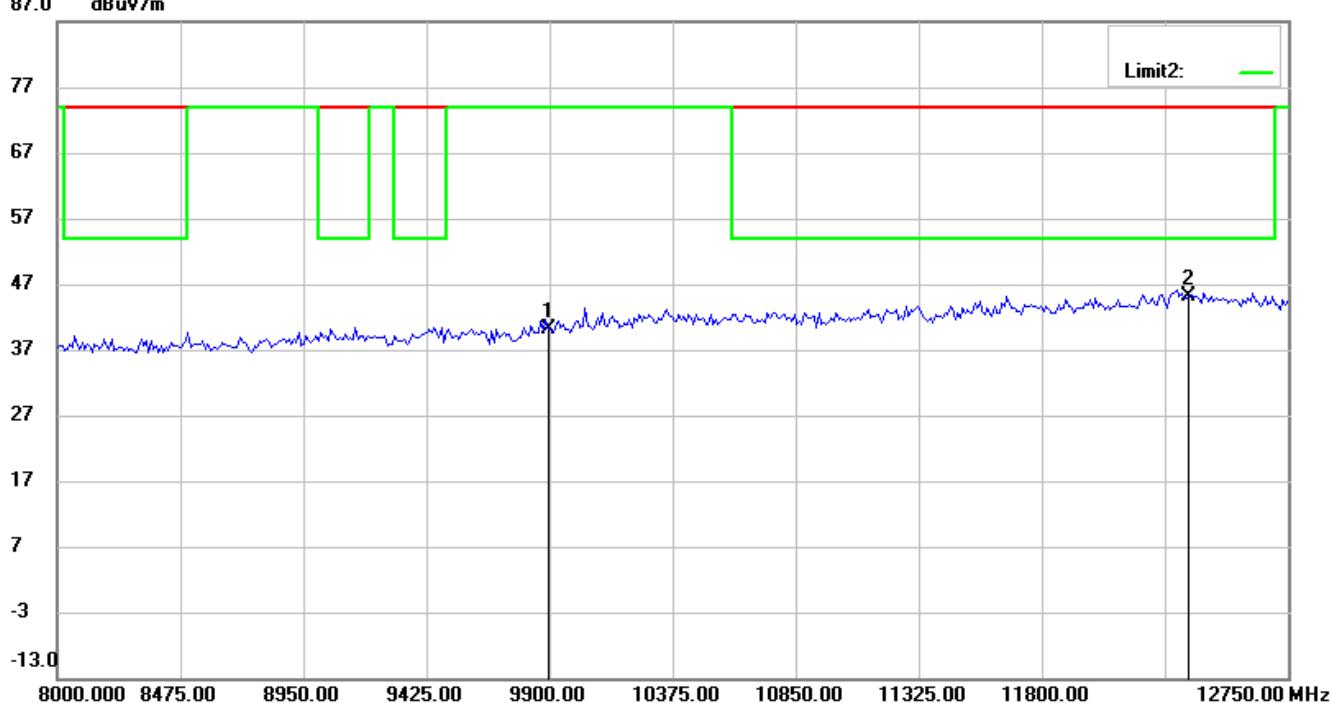
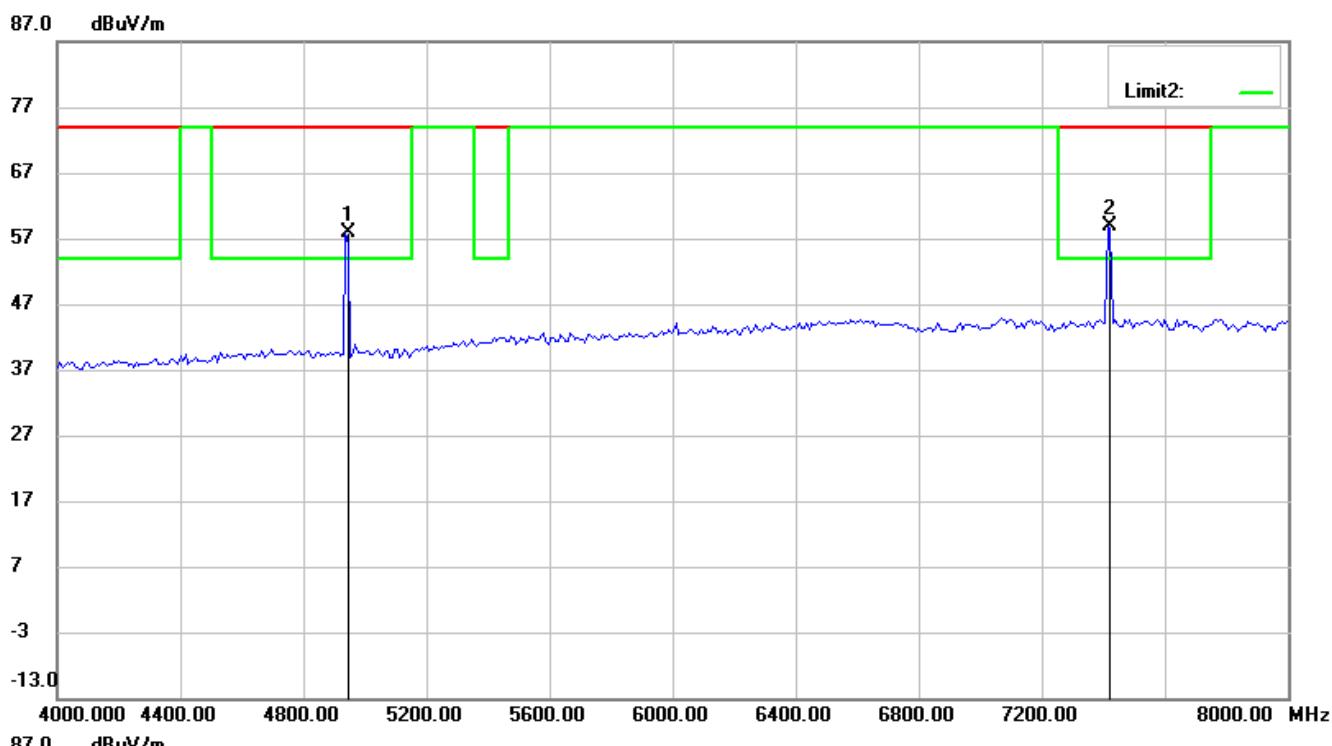
Note:

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Registration number: W6M20809-9312-P-15  
FCC ID: WSZRX-W003A24G

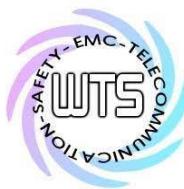


Up Line: Peak Limit Line

Down Line: Ave Limit Line

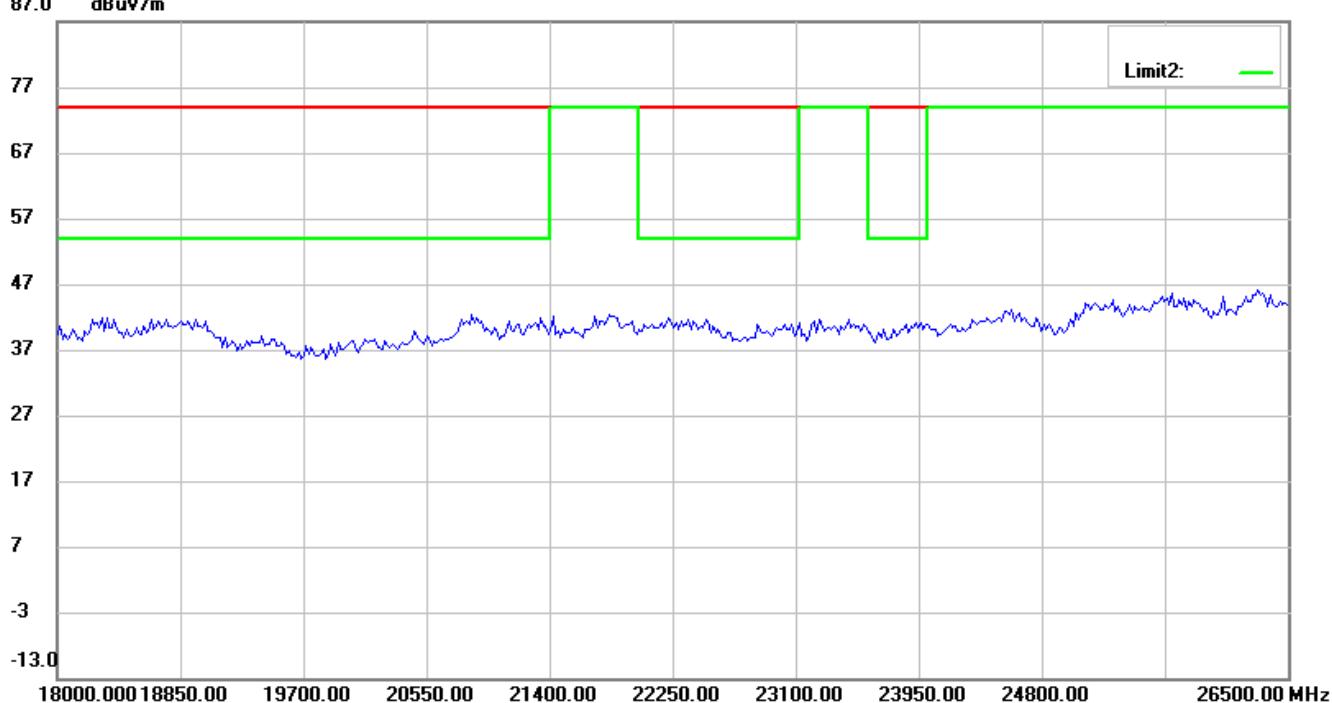
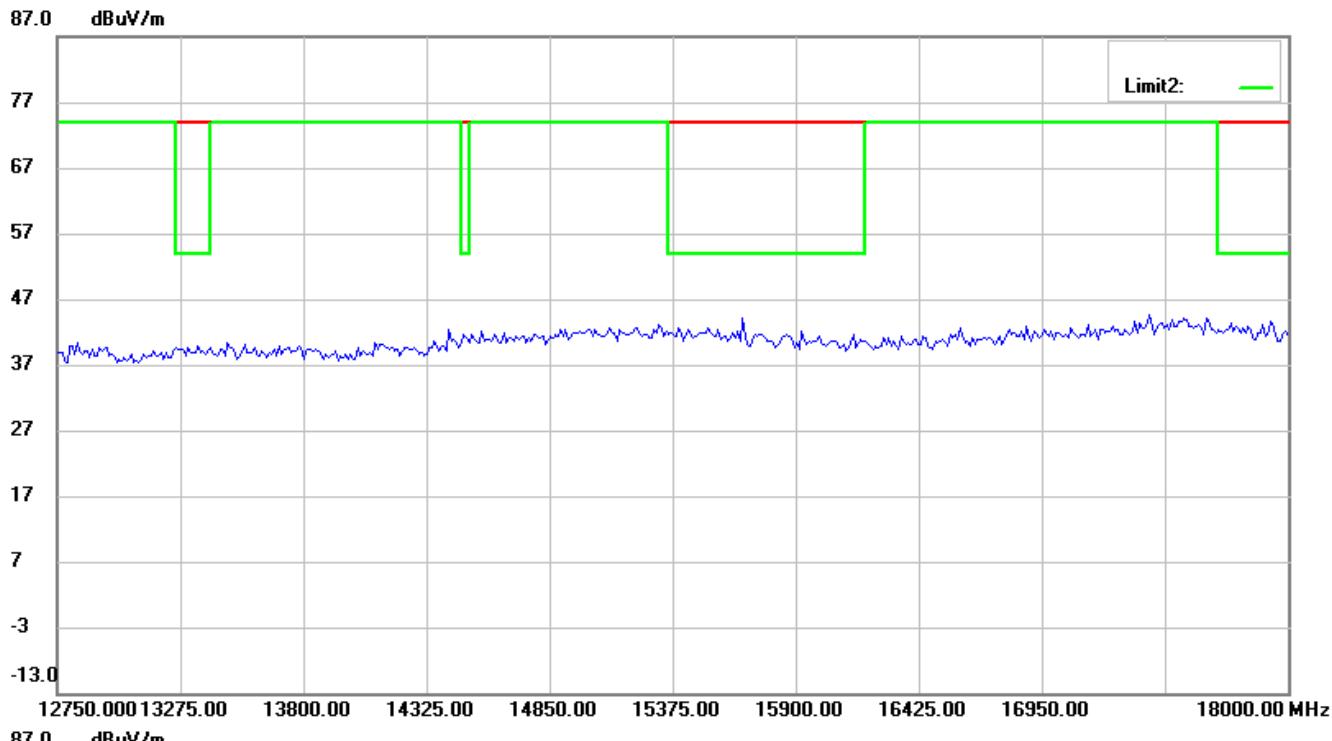
Note:

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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# Worldwide Testing Services(Taiwan) Co., Ltd.

Registration number: W6M20809-9312-P-15  
FCC ID: WSZRX-W003A24G



**Up Line: Peak Limit Line**

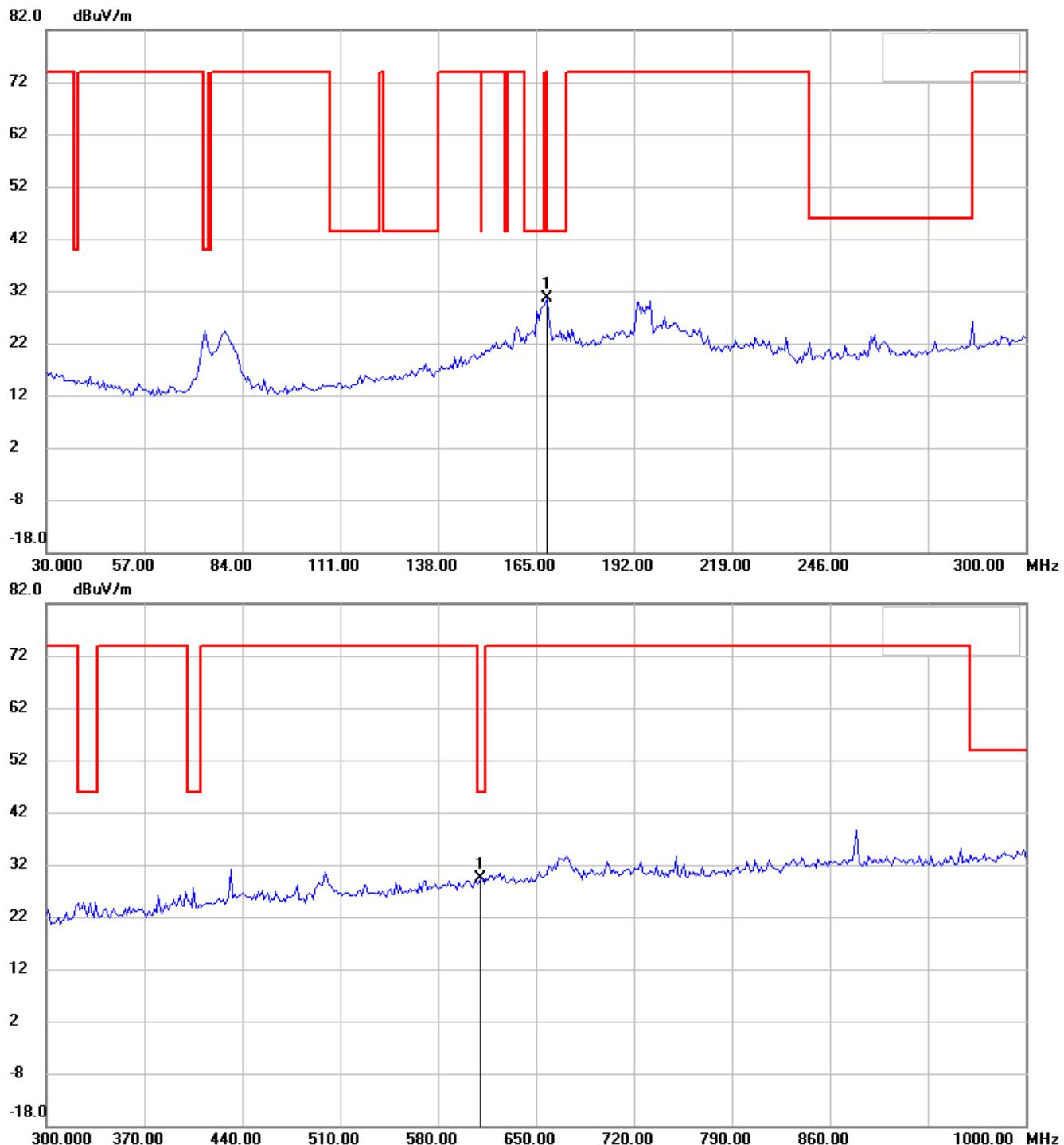
**Down Line: Ave Limit Line**

**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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Registration number: W6M20809-9312-P-15  
 FCC ID: WSZRX-W003A24G

## Antenna Polarization V

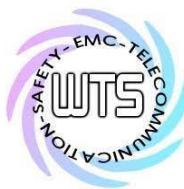


Up Line: Peak Limit Line

Down Line: Ave Limit Line

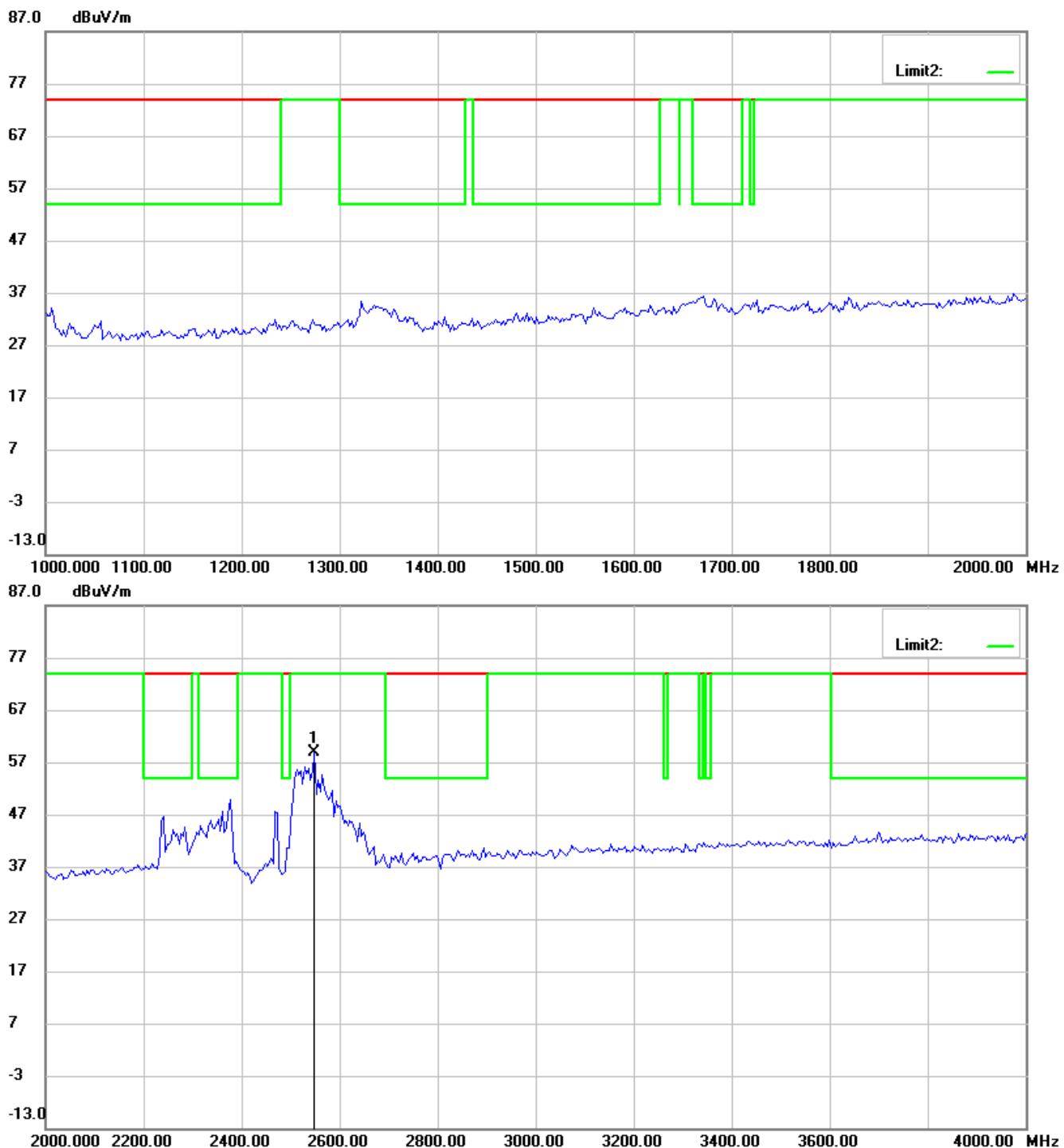
Note:

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.



# Worldwide Testing Services(Taiwan) Co., Ltd.

Registration number: W6M20809-9312-P-15  
FCC ID: WSZRX-W003A24G



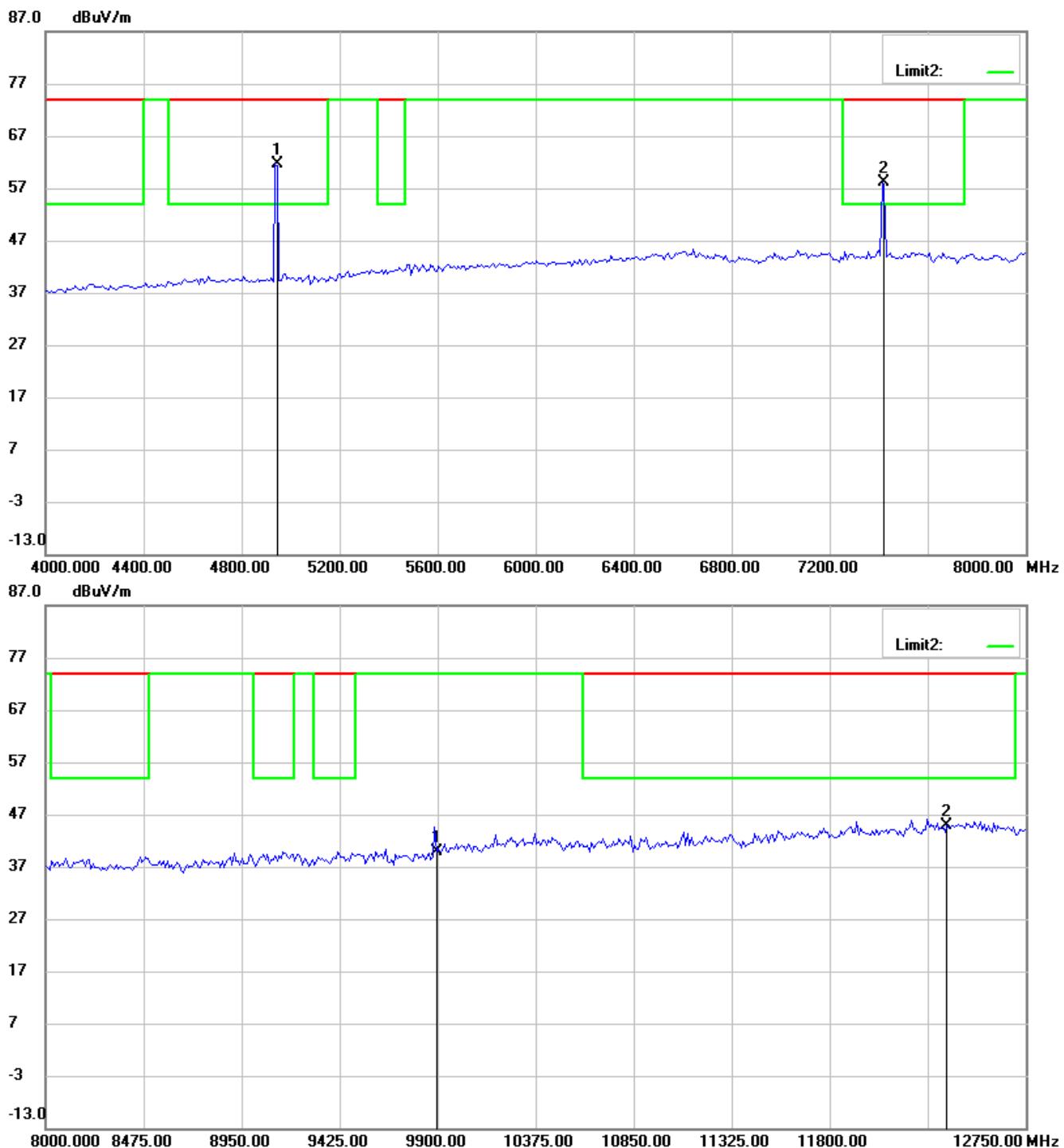
**Note:**

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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.
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Registration number: W6M20809-9312-P-15  
FCC ID: WSZRX-W003A24G



Up Line: Peak Limit Line

Down Line: Ave Limit Line

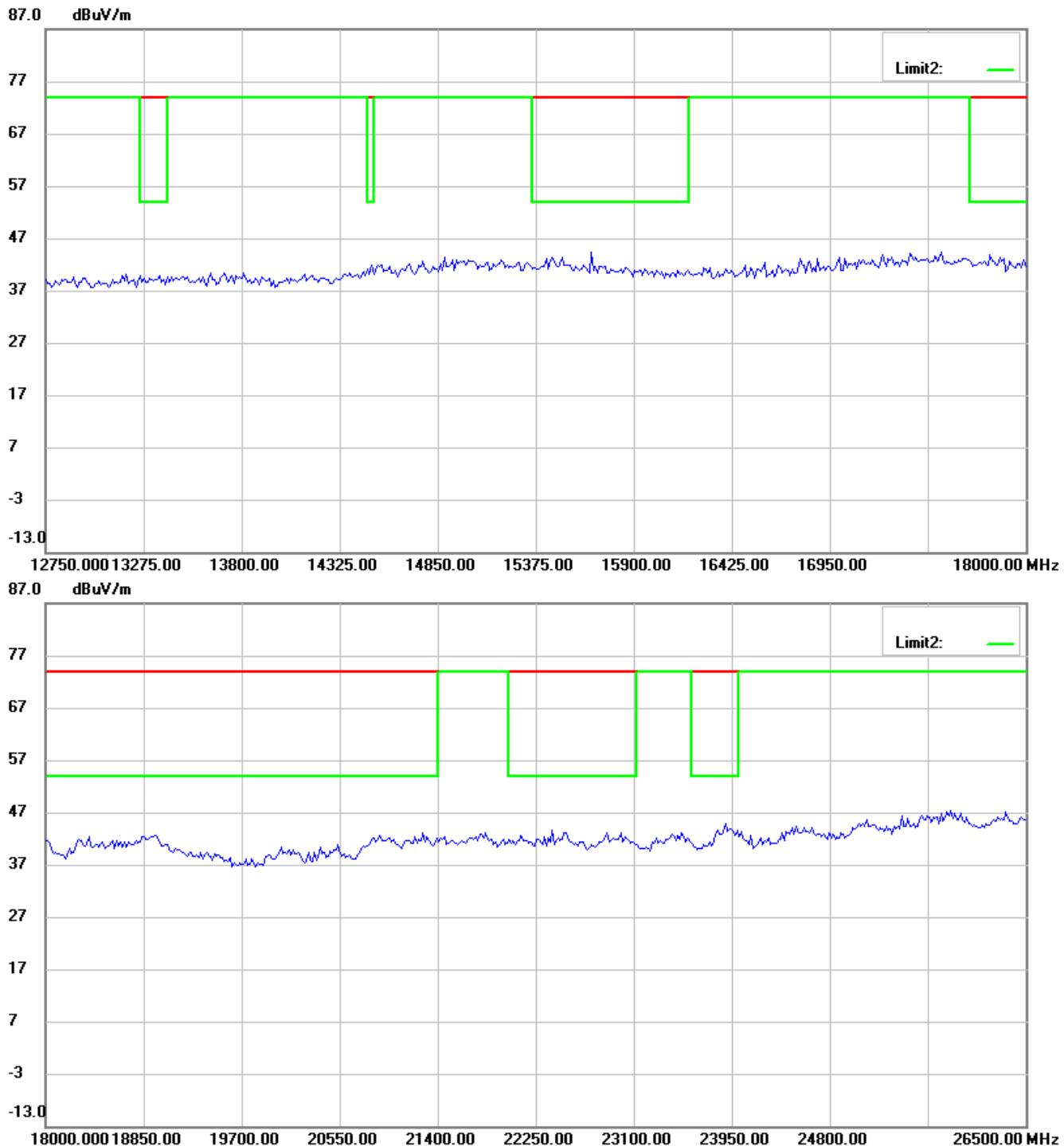
Note:

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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.
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# Worldwide Testing Services(Taiwan) Co., Ltd.

Registration number: W6M20809-9312-P-15  
FCC ID: WSZRX-W003A24G



Up Line: Peak Limit Line

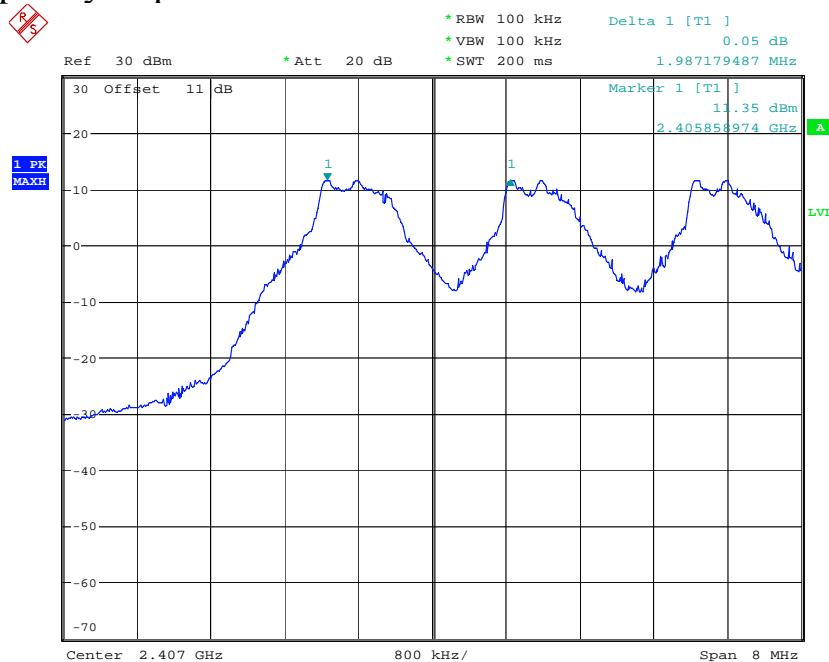
Down Line: Ave Limit Line

Note:

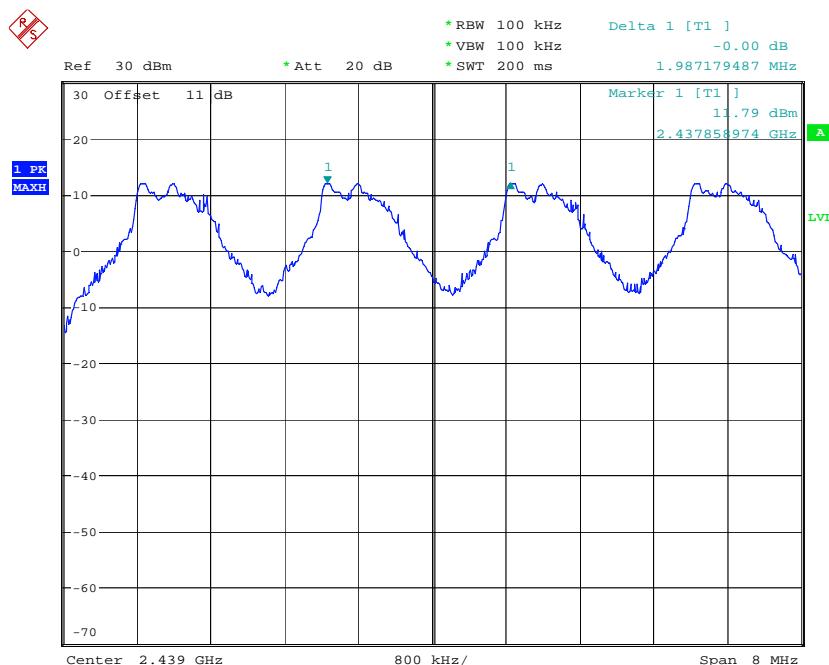
1. The attached measurement plots are preliminarily pre-scanned with peak detector for determining the final checking frequencies and are for reference only.
2. The some frequencies may exceed the limit line without the specified detectors, but that cannot present the results are failed to the specification of test standard.
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Registration number: W6M20809-9312-P-15  
 FCC ID: WSZRX-W003A24G

## Carrier Frequency Separation



FREQUENCY SEPARATION 2406MHz  
 Date: 13.OCT.2008 19:06:04

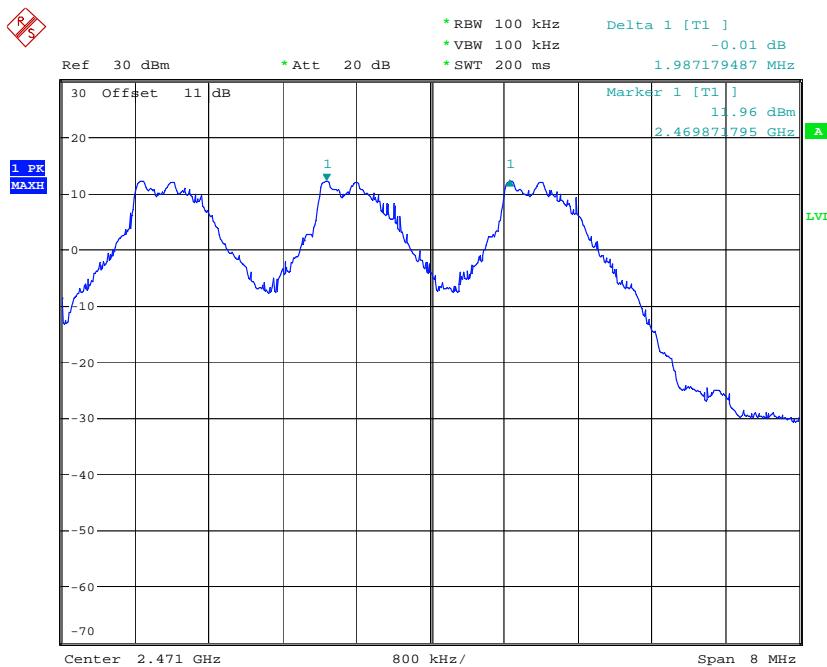


FREQUENCY SEPARATION 2440MHz  
 Date: 13.OCT.2008 19:08:03



# Worldwide Testing Services(Taiwan) Co., Ltd.

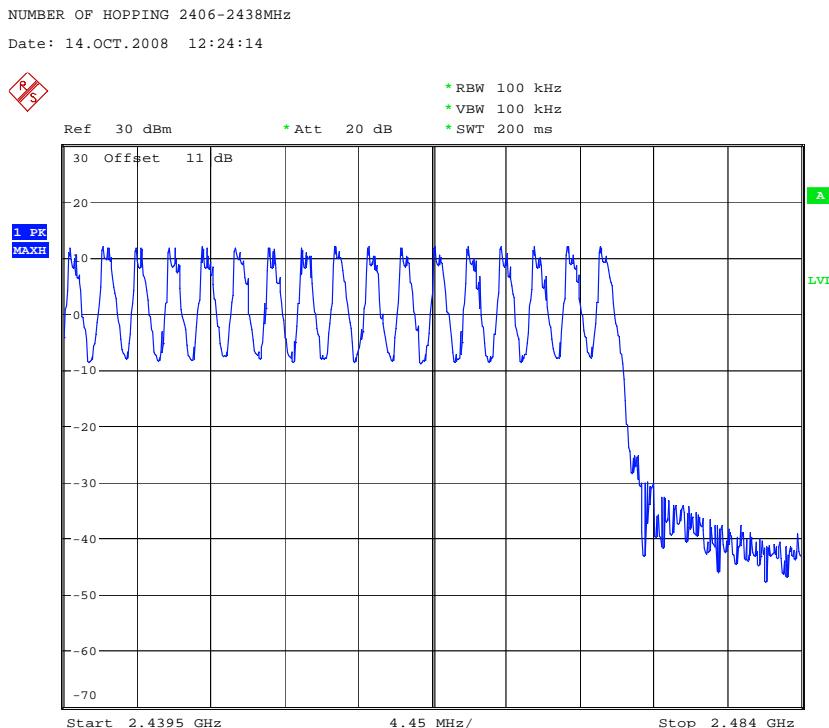
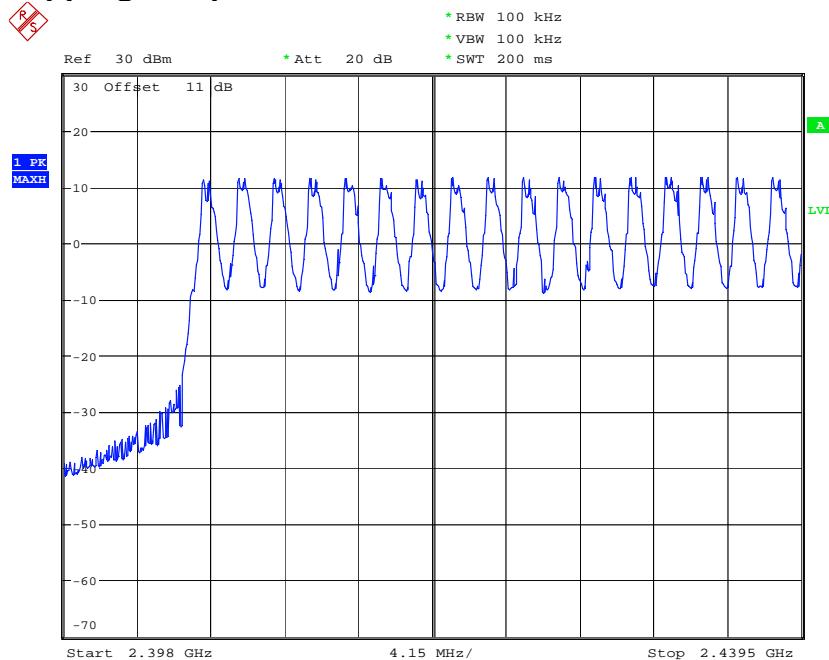
Registration number: W6M20809-9312-P-15  
FCC ID: WSZRX-W003A24G



FREQUENCY SEPARATION 2472MHz  
Date: 13.OCT.2008 19:11:32

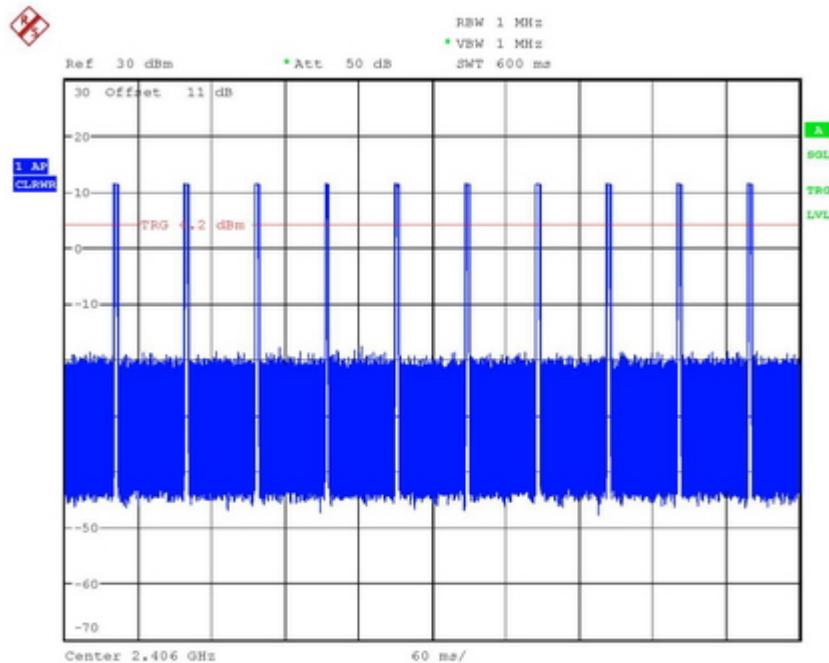
Registration number: W6M20809-9312-P-15  
 FCC ID: WSZRX-W003A24G

## Number of Hopping Frequencies

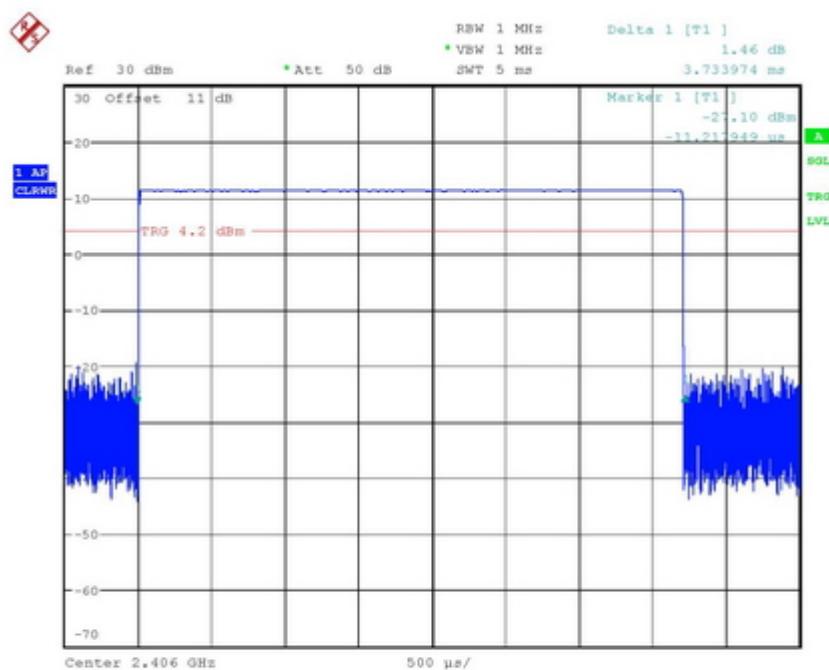


Registration number: W6M20809-9312-P-15  
 FCC ID: WSZRX-W003A24G

## Time of Occupancy (Dwell Time)

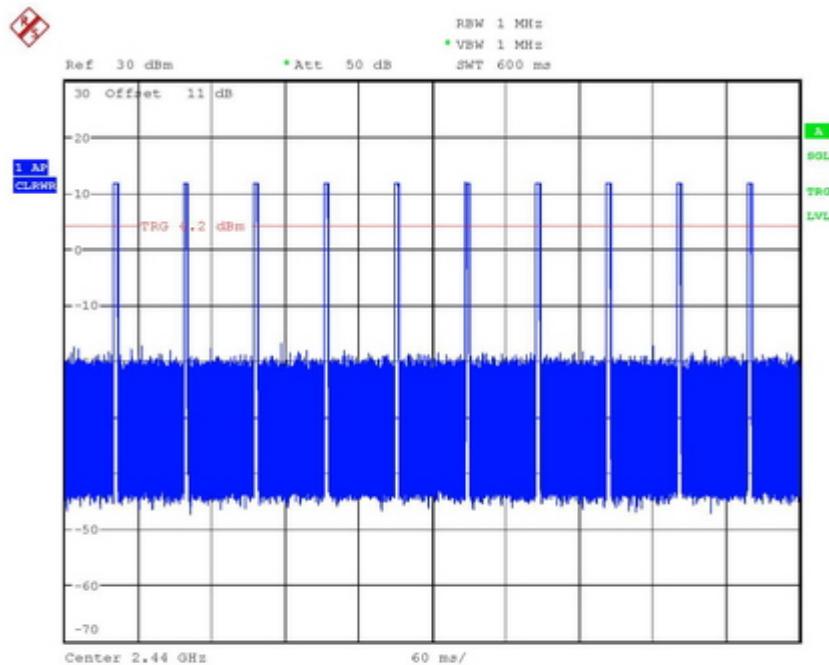


DWELL TIME 2406MHz  
 Date: 14.OCT.2008 11:55:34

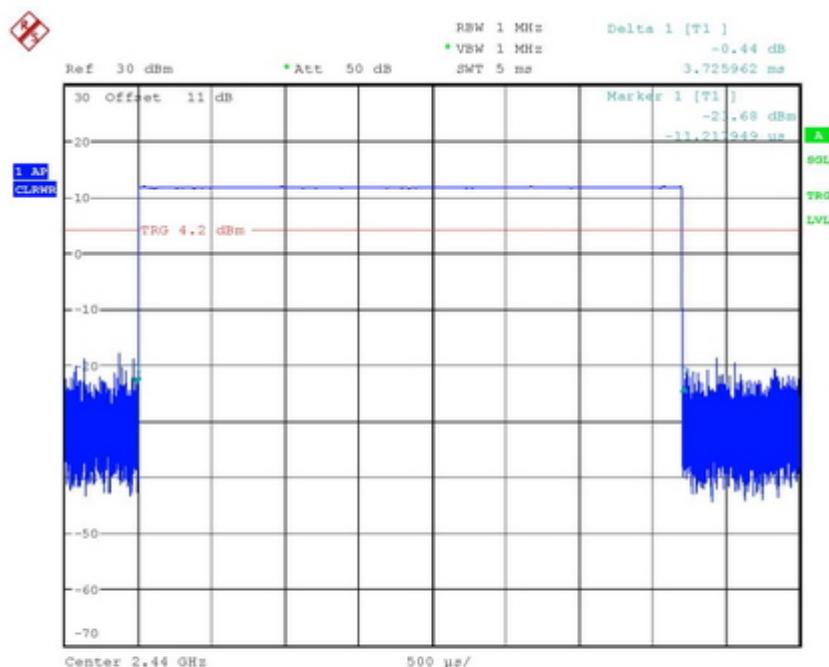


DWELL TIME 2406MHz (3.734ms \* 100event = 373.4ms)  
 Date: 13.OCT.2008 18:43:05

Registration number: W6M20809-9312-P-15  
 FCC ID: WSZRX-W003A24G

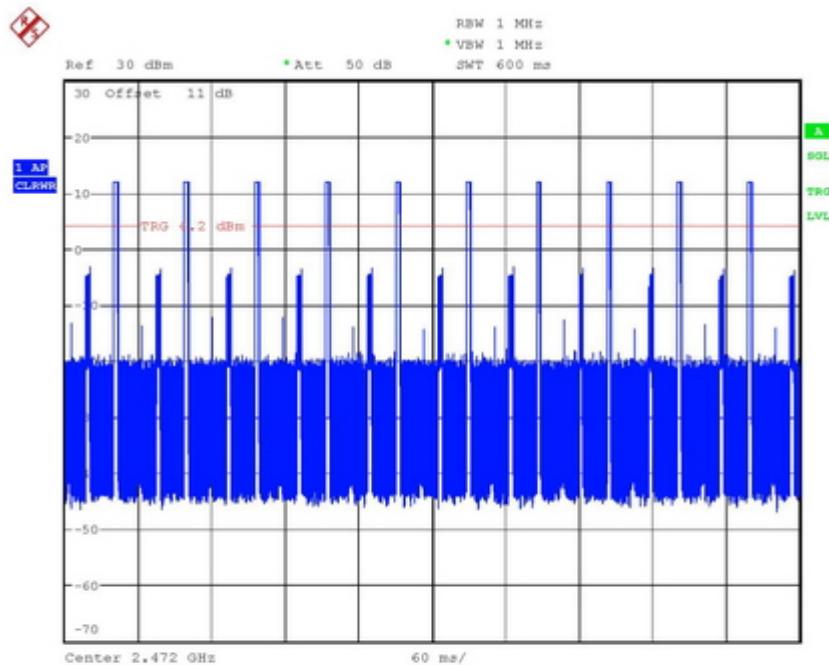


DWELL TIME 2440MHz  
 Date: 14.OCT.2008 11:54:45

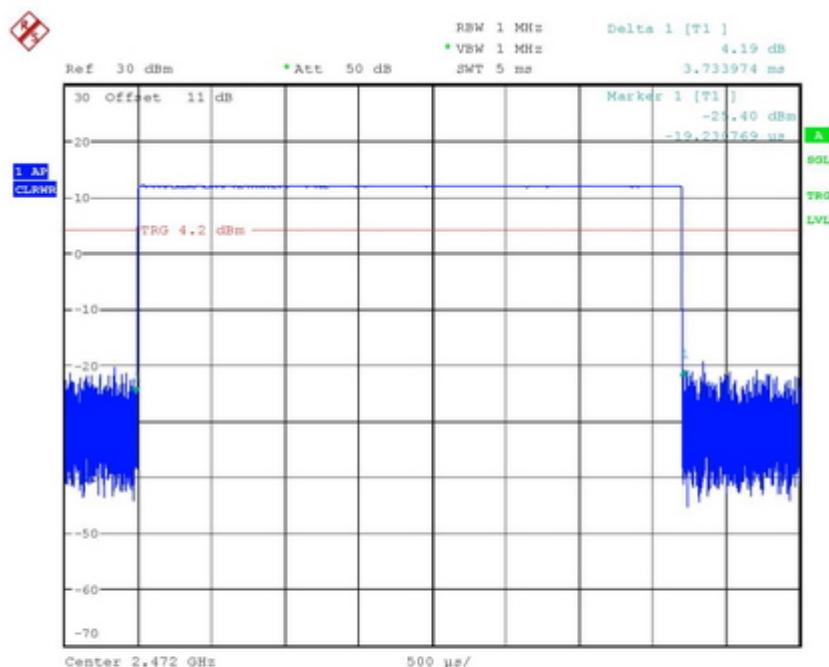


DWELL TIME 2440MHz (3.726ms \* 100event = 372.6ms)  
 Date: 13.OCT.2008 18:52:09

Registration number: W6M20809-9312-P-15  
 FCC ID: WSZRX-W003A24G



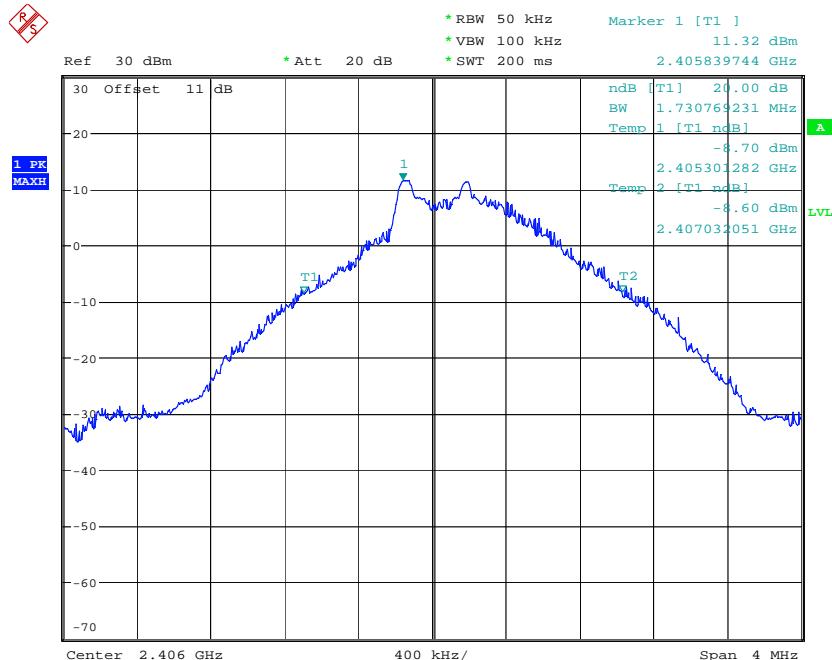
DWELL TIME 2472MHz  
 Date: 14.OCT.2008 11:55:50



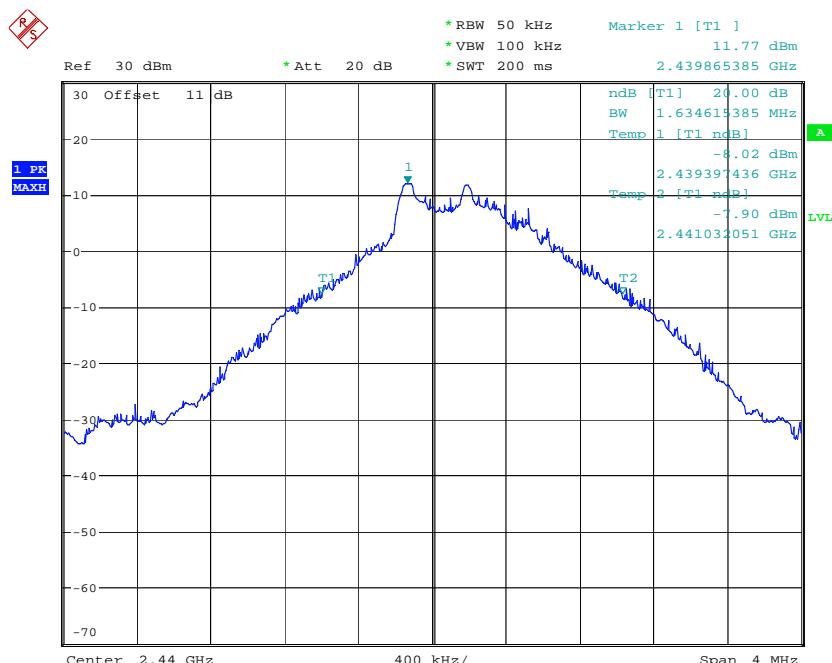
DWELL TIME 2472MHz (3.734ms \* 100event = 373.4ms)  
 Date: 13.OCT.2008 18:50:09

Registration number: W6M20809-9312-P-15  
 FCC ID: WSZRX-W003A24G

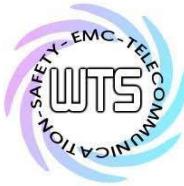
## 20dB Bandwidth



20DB BANDWIDTH 2406MHz  
 Date: 13.OCT.2008 18:38:56

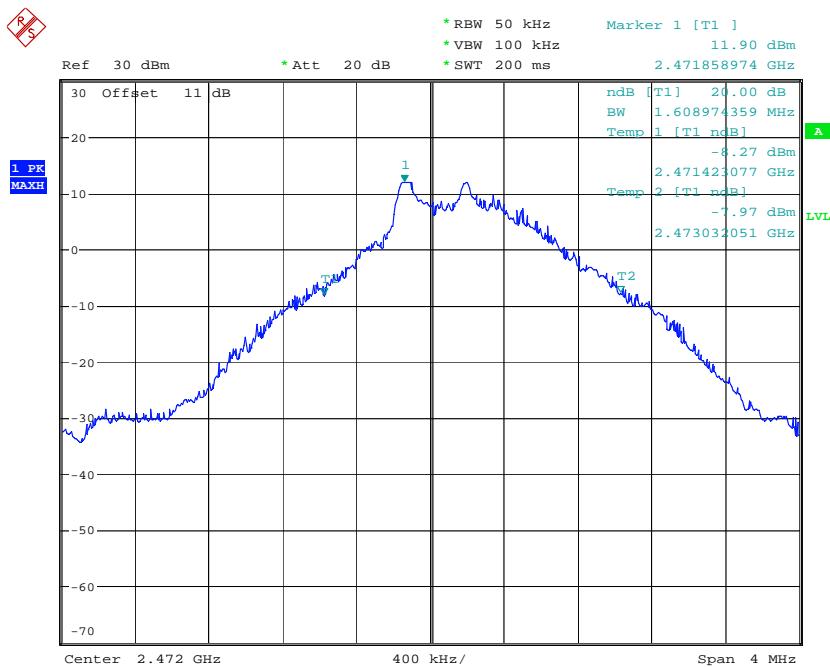


20DB BANDWIDTH 2440MHz  
 Date: 13.OCT.2008 18:37:57



# Worldwide Testing Services(Taiwan) Co., Ltd.

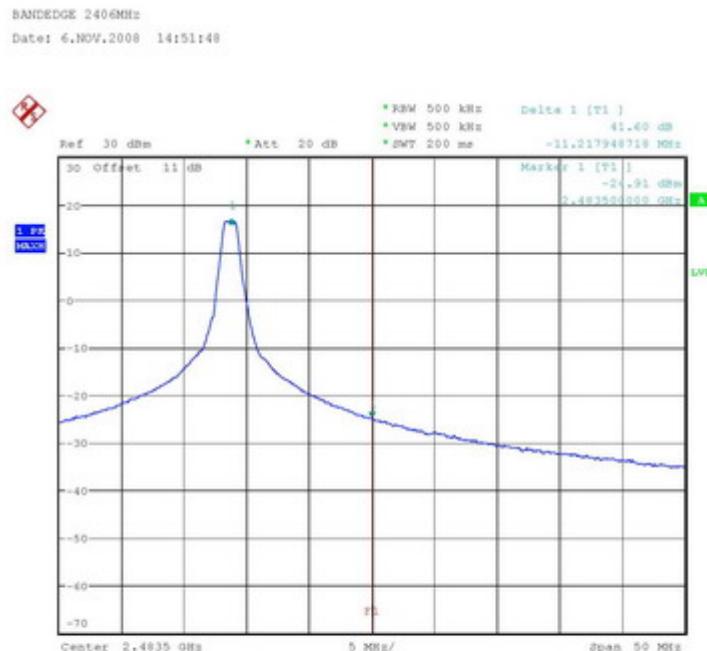
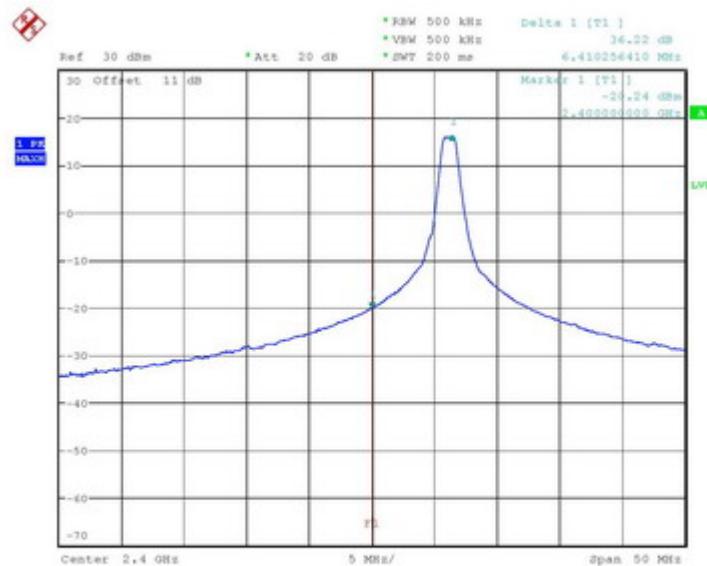
Registration number: W6M20809-9312-P-15  
FCC ID: WSZRX-W003A24G



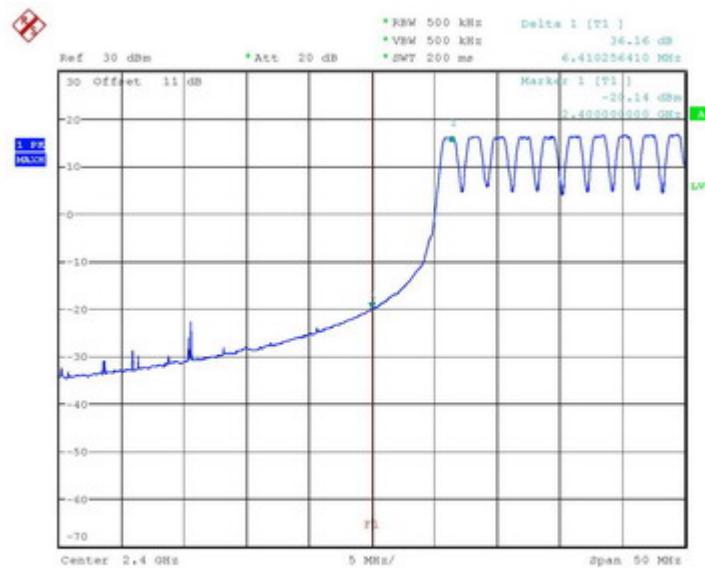
20DB BANDWIDTH 2472MHz  
Date: 13.OCT.2008 18:37:21

Registration number: W6M20809-9312-P-15  
 FCC ID: WSZRX-W003A24G

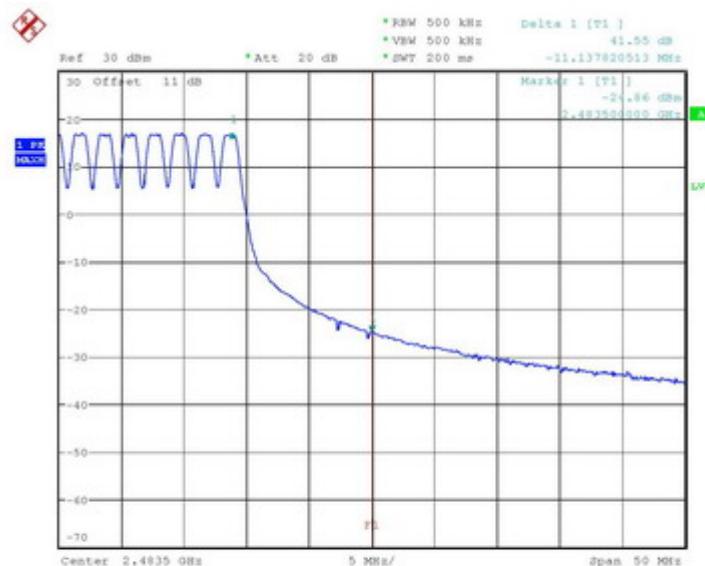
## Band-edge Compliance of RF Conducted Emissions



Registration number: W6M20809-9312-P-15  
 FCC ID: WSZRX-W003A24G



BANDEdge 240MHz HOPPING MODE  
 Date: 6.NOV.2008 14:55:24



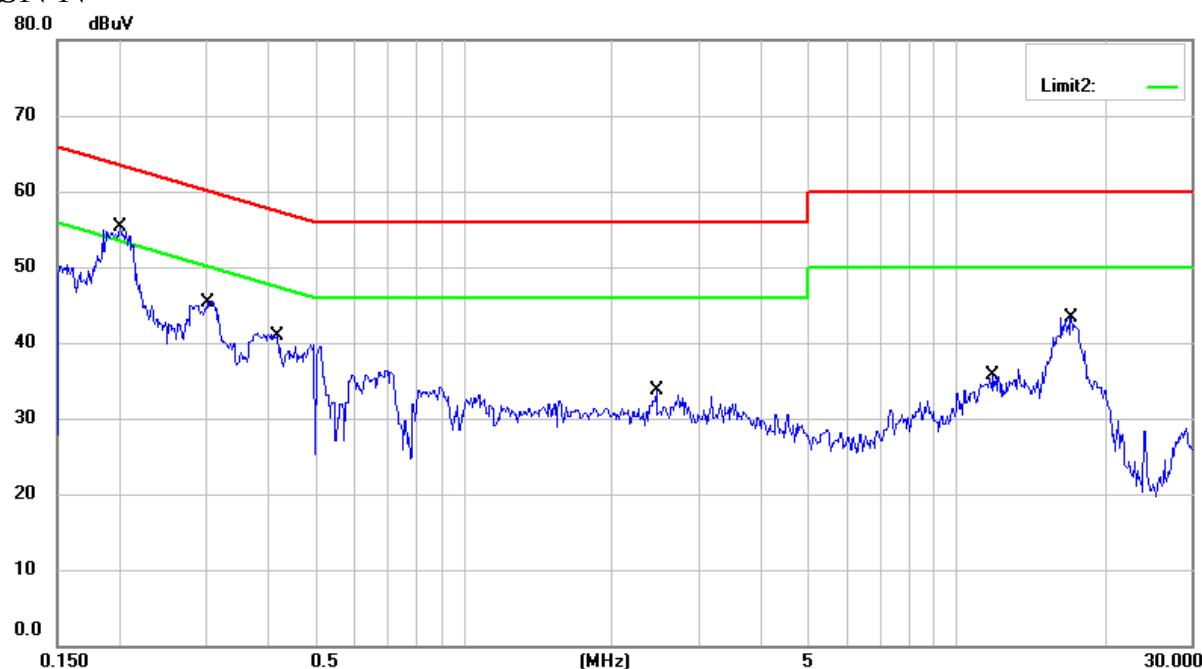
BANDEdge 2472MHz HOPPING MODE  
 Date: 6.NOV.2008 14:58:09

Registration number: W6M20809-9312-P-15  
 FCC ID: WSZRX-W003A24G

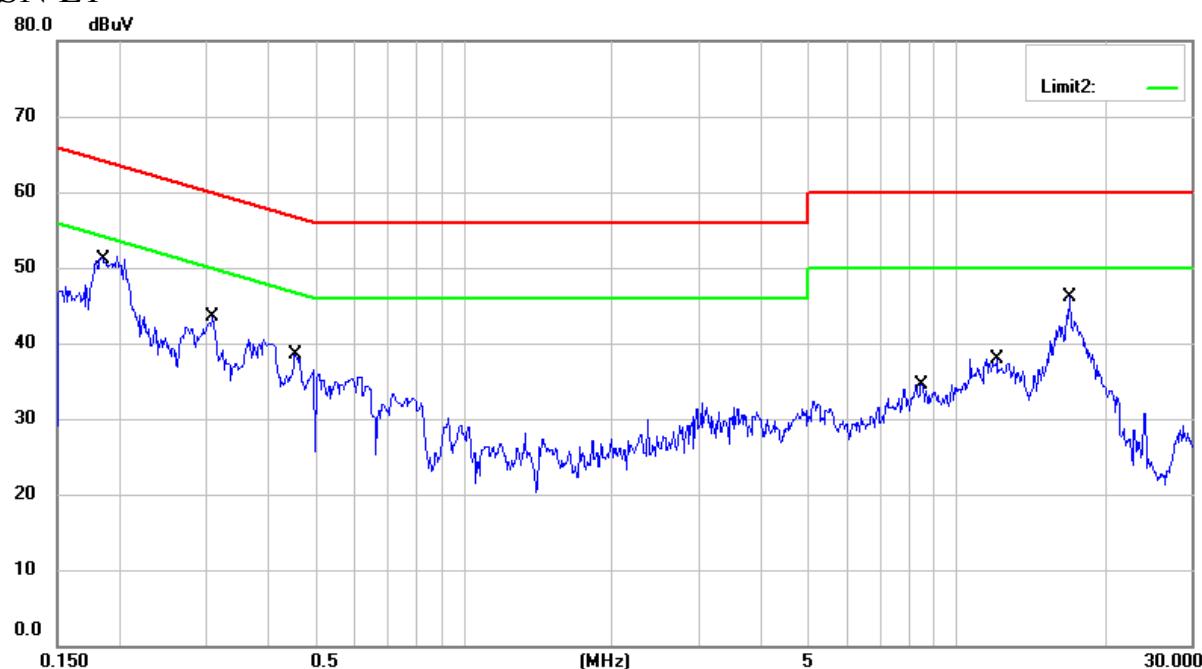
## Power Line Conducted Emission

PC Mode

LISN N



LISN L1



Up Line: QP Limit Line

Down Line: Ave Limit Line

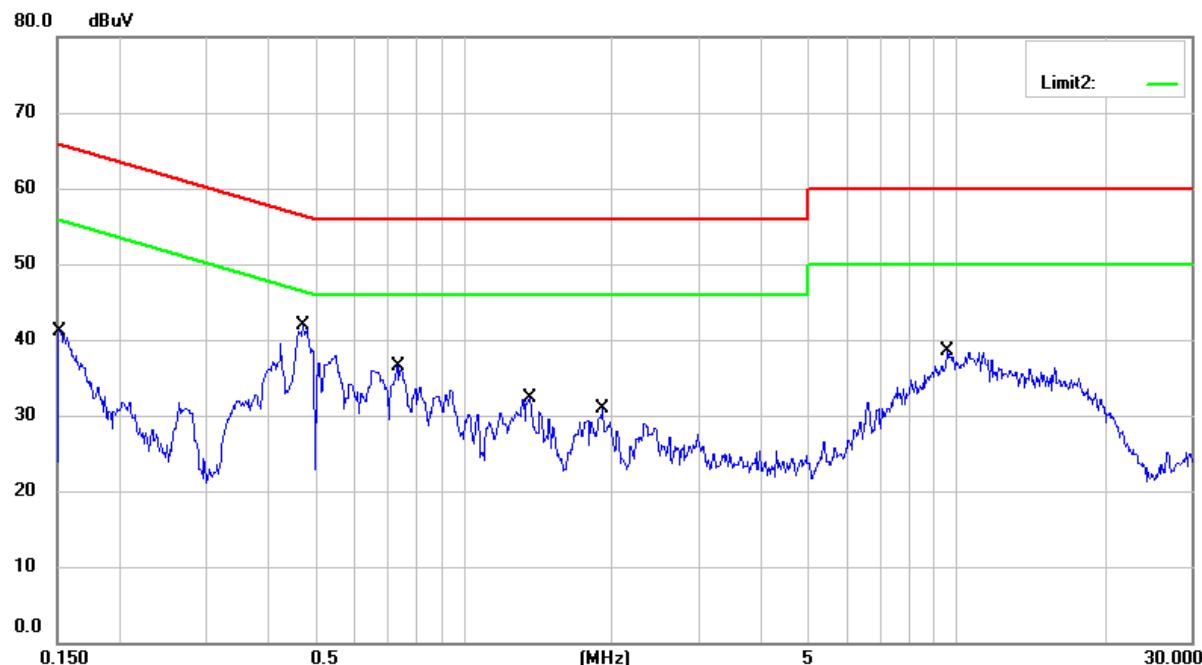
Note:

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Registration number: W6M20809-9312-P-15  
 FCC ID: WSZRX-W003A24G

MP3 Mode

LISN N



LISN L1



Up Line: QP Limit Line

Down Line: Ave Limit Line

Note:

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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 AC conducted test data of this test report.