

**FCC PART 15 SUBPART C TEST REPORT**

**for**

**Bluetooth Module**

**Model No.: RN24**

**FCC ID: T9J-RN24**

**of**

**Applicant: ROVING NETWORKS, INC.**

**Address: 809 UNIVERSITY AVENUE. LOS GATOS, CA 95032  
U.S.A.**

**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.: W6M20902-9574-P-15**

6F, NO. 58, LANE 188, RUEY-KUANG RD., NEIHU TAIPEI 114, TAIWAN, R.O.C.  
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Registration number: W6M20902-9574-P-15  
FCC ID: T9J-RN24

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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:**

March 18, 2009

Danny

Date

WTS-Lab.

Name

Signature

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

March 18, 2009

Chang Tse-Ming

Date

WTS

Name

Signature



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

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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

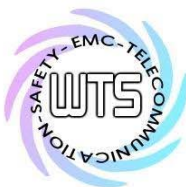


### **Test location, where different from Worldwide Testing Services (Taiwan) Co., Ltd. :**

Name: ./.  
Accredited number: ./.  
Street: ./.  
Town: ./.  
Country: ./.  
Telephone: ./.  
Fax: ./.

### **1.3 Details of approval holder**

Name: ROVING NETWORKS, INC.  
Street: 809 UNIVERSITY AVENUE. LOS GATOS, CA 95032  
Town: ./.  
Country: U.S.A.  
Telephone: 408-395-6539  
Fax: 603-843-7550



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## 1.4 Application details

Date of receipt of test item: February 18, 2009  
Date of test: from February 19, 2009 to March 18, 2009

## 1.5 General information of Test item

Type of test item: Bluetooth Module  
Model Number: RN24  
Multi-listing model number: ./.  
Photos: see Appendix

### Technical data

Frequency band: 2402 - 2480 MHz  
Frequency ( ch A): 2.402 GHz  
Frequency ( ch B): 2.441 GHz  
Frequency ( ch C): 2.480 GHz

### Transmitter

### Unom

#### Normal Mode

Power ( ch A or ch 0): Conducted: 5.44 dBm  
Power ( ch B or ch 39): Conducted: 4.84 dBm  
Power ( ch C or ch 78): Conducted: 4.59 dBm

#### EDR Mode

Power ( ch A or ch 0): Conducted: 4.99 dBm  
Power ( ch B or ch 39): Conducted: 3.95 dBm  
Power ( ch C or ch 78): Conducted: 3.88 dBm

Power supply: 3.3 Vdc

Operation modes: duplex

Modulation Type: FHSS (GFSK、 $\pi/4$ DQPSK、8DPSK)

Antenna Type: Antenna A: 2.4 GHz OMNI Antenna  
Antenna B: Monopole Antenna  
Antenna C: Chip Antenna

Antenna gain: Antenna A: 3 dBi  
Antenna B: -2.77 dBi  
Antenna C: 4.1 dBi



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

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Host device: none

Classification:

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

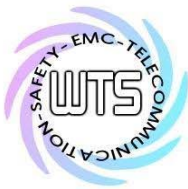
## **Manufacturer: (if applicable)**

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

Additional information: There are three antennas in this test reports. The long one is Antenna A. The short one is Antenna B. The Chip antenna is Antenna C. Please refer to EUT photos in the appendix.

## **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	3.3 Vdc
Extreme conditions parameters:	test voltage : -- extreme min : -- V max : -- V

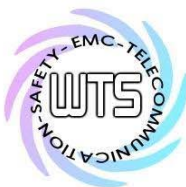


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## 2.3 Test Equipment List

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	PREREGULATOR MODE DC POWER SUPPLY	None	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 002	Function Generator	33220A	MY43004982	Agilent	2007/10/12	2009/10/11
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 Serie 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	2009/1/8	2011/1/7
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





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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-RE 107	LUMPED ELEMENT POWER DIVIDER	PL2-10	146	MCLI	2008/11/24	2009/11/23
ETSTW-GSM 02	Universal Radio Communication Tester	CMU 200	109439	R&S	2008/9/23	2009/9/22
ETSTW-GSM 23	Power Divider	4901.19.A	None	SUHNER	2008/9/22	2009/9/21



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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.

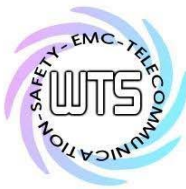
The formula is as follows:

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



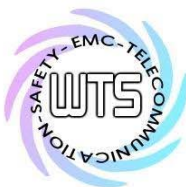
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### 3 Test results (enclosure)

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 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).

**Normal mode**

Test conditions		Conducted Power		
		Channel A [dBm]	Channel B [dBm]	Channel C [dBm]
$T_{nom} = 23^{\circ}C$	$V_{nom} = 3.3 V$	5.44	4.84	4.59

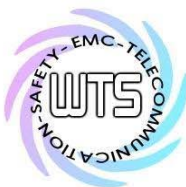
**EDR mode**

Test conditions		Conducted Power		
		Channel A [dBm]	Channel B [dBm]	Channel C [dBm]
$T_{nom} = 23^{\circ}C$	$V_{nom} = 3.3 V$	4.99	3.95	3.88

Test conditions		Radiated Power		
		Channel A [dBm]	Channel B [dBm]	Channel C [dBm]
$T_{nom} = 23^{\circ}C$	$V_{nom} = 3.3 V$	--	--	--

Test conditions	Signal Field strength TX highest power mode
$T_{nom} = --^{\circ}C, V_{nom} = -- V$	dB $\mu$ V/m
Frequency[MHz]	
--	--
Measurement uncertainty	< 3 dB

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



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## Maximum Peak Output Power

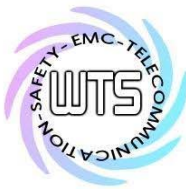
Limits:

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

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

Test equipment used: 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)

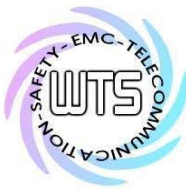
For frequencies above 1GHz (Average measurements).

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 018, ETSTW-RE 021, ETSTW-RE 028, ETSTW-RE 030, ETSTW-RE 043, 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 (dwell time/100ms)

For frequencies above 1GHz (Average measurements).

Limit – duty cycle correction

No duty cycle correction was added to the reading.

54.0dBμV/m

For frequencies above 1GHz (Peak measurements).

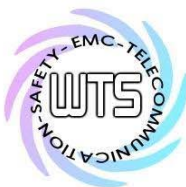
Limit + 20dB

54.0dBμV/m + 20 dB= 74 dBμV/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 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“.

#### Summary table with radiated data of the test plots

Model: RN24 Date: 2009/2/21  
 Mode: TX CH0\_Antenna A Temperature: 24 °C Engineer: Danny  
 Polarization: Horizontal Humidity: 51 %

Frequency (MHz)	Reading (dBuV)	Detector	Factor (dB)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Table Degree (Deg.)	Ant. High (cm)
240.481	25.52	peak	13.58	39.10	46.00	-6.90	110	150
333.667	18.84	peak	16.20	35.04	46.00	-10.96	120	150

Frequency (MHz)	Reading (dBuV)		Factor (dB) Corr.	Result @3m (dBuV/m)		Limit @3m (dBuV/m)		Margin (dB)	Table Degree (Deg.)	Ant. High (cm)
	Peak	Ave.		Peak	Ave.	Peak	Ave.			
1601.202	55.48	---	-9.40	46.08	---	74.00	54.00	-27.92	135	150
2354.051	61.66	42.71	-5.33	56.33	37.38	74.00	54.00	-16.62	135	150
3202.405	55.64	---	-2.28	53.36	---	74.00	54.00	-20.64	130	150
4000.000	58.37	33.85	-2.90	59.57	35.05	74.00	54.00	-18.95	145	150
4803.987	72.33	47.83	-1.30	71.03	46.53	74.00	54.00	-7.47	140	150
6404.810	53.88	---	3.83	57.71	---	74.00	54.00	-16.29	135	150
7206.413	65.67	---	1.89	67.56	---	74.00	54.00	-6.44	135	150



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

Registration number: W6M20902-9574-P-15  
 FCC ID: T9J-RN24

Polarization: Vertical

Frequency (MHz)	Reading (dBuV)	Detector	Factor (dB)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Table Degree (Deg.)	Ant. High (cm)
166.894	19.13	peak	15.12	34.25	43.50	-9.25	105	150
332.264	20.77	peak	16.16	36.93	46.00	-9.07	125	150

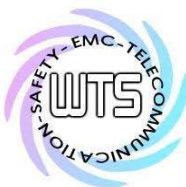
Frequency (MHz)	Reading (dBuV)		Factor (dB) Corr.	Result @3m (dBuV/m)		Limit @3m (dBuV/m)		Margin (dB)	Table Degree (Deg.)	Ant. High (cm)
	Peak	Ave.		Peak	Ave.	Peak	Ave.			
1601.202	56.48	---	-9.40	47.08	---	74.00	54.00	-26.92	135	150
2354.027	61.66	41.08	-5.33	56.33	35.75	74.00	54.00	-18.25	130	150
3202.405	53.99	---	-2.28	51.71	---	74.00	54.00	-22.29	135	150
4004.003	60.01	43.64	-2.90	57.11	40.74	74.00	54.00	-13.26	140	150
4804.009	69.11	46.76	-1.30	67.81	45.46	74.00	54.00	-8.54	145	150
6404.810	54.23	---	3.83	58.06	---	74.00	54.00	-15.94	135	150
7205.969	67.55	---	1.89	69.44	---	74.00	54.00	-4.56	140	150

Mode: TX CH39\_Antenna A

Polarization: Horizontal

Frequency (MHz)	Reading (dBuV)	Detector	Factor (dB)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Table Degree (Deg.)	Ant. High (cm)
240.481	24.96	peak	13.58	38.54	46.00	-7.46	115	150
333.667	18.45	peak	16.20	34.65	46.00	-11.35	120	150

Frequency (MHz)	Reading (dBuV)		Factor (dB) Corr.	Result @3m (dBuV/m)		Limit @3m (dBuV/m)		Margin (dB)	Table Degree (Deg.)	Ant. High (cm)
	Peak	Ave.		Peak	Ave.	Peak	Ave.			
1629.259	57.86	---	-9.28	48.58	---	74.00	54.00	-25.42	130	150
2377.027	60.77	40.47	-5.21	55.56	35.26	74.00	54.00	-18.74	140	150
3254.509	54.24	---	-1.92	52.32	---	74.00	54.00	-21.68	135	150
4069.015	58.99	42.98	-2.83	56.16	40.15	74.00	54.00	-13.85	135	150
4881.999	71.27	47.74	-1.30	69.97	46.44	74.00	54.00	-7.56	145	150
5699.399	43.05	---	2.70	45.75	---	74.00	54.00	-28.25	130	150
6509.018	53.22	---	4.53	57.75	---	74.00	54.00	-16.25	135	150
7323.013	68.78	45.82	1.85	70.63	47.67	74.00	54.00	-6.33	140	150
9761.022	32.23	---	25.01	51.24	---	74.00	54.00	-22.76	145	150



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

Registration number: W6M20902-9574-P-15  
 FCC ID: T9J-RN24

Polarization: Vertical

Frequency (MHz)	Reading (dBuV)	Detector	Factor (dB)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Table Degree (Deg.)	Ant. High (cm)
166.894	17.45	peak	15.12	32.57	43.50	-10.93	110	150
332.264	20.85	peak	16.16	37.01	46.00	-8.99	125	150

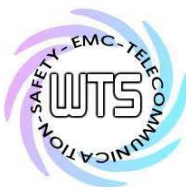
Frequency (MHz)	Reading (dBuV)		Factor (dB) Corr.	Result @3m (dBuV/m)		Limit @3m (dBuV/m)		Margin (dB)	Table Degree (Deg.)	Ant. High (cm)
	Peak	Ave.		Peak	Ave.	Peak	Ave.			
1627.255	55.47	---	-9.29	46.18	---	74.00	54.00	-27.82	135	150
2376.753	58.79	---	-5.22	53.57	---	74.00	54.00	-20.43	140	150
3254.509	54.64	---	-1.92	52.72	---	74.00	54.00	-21.28	130	150
4069.107	57.93	42.31	-2.83	55.10	39.48	74.00	54.00	-14.52	140	150
4882.016	69.49	46.33	-1.30	68.19	45.03	74.00	54.00	-8.97	135	150
5699.399	40.34	---	2.70	43.04	---	74.00	54.00	-30.96	130	150
6509.018	50.53	---	4.53	55.06	---	74.00	54.00	-18.94	145	150
7323.027	67.09	45.27	1.85	68.94	47.12	74.00	54.00	-6.88	150	150
9761.022	32.52	---	25.01	51.53	---	74.00	54.00	-22.47	140	150

Mode: TX CH78\_Antenna A

Polarization: Horizontal

Frequency (MHz)	Reading (dBuV)	Detector	Factor (dB)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Table Degree (Deg.)	Ant. High (cm)
240.481	25.91	peak	13.58	39.49	46.00	-6.51	115	150
332.264	18.50	peak	16.16	34.66	46.00	-11.34	125	150

Frequency (MHz)	Reading (dBuV)		Factor (dB) Corr.	Result @3m (dBuV/m)		Limit @3m (dBuV/m)		Margin (dB)	Table Degree (Deg.)	Ant. High (cm)
	Peak	Ave.		Peak	Ave.	Peak	Ave.			
1653.307	57.17	---	-9.19	47.98	---	74.00	54.00	-26.02	135	150
2384.770	52.26	---	-5.18	47.08	---	74.00	54.00	-26.92	140	150
3306.613	53.53	---	-1.55	51.98	---	74.00	54.00	-22.02	130	150
4128.257	55.46	---	-2.72	52.74	---	74.00	54.00	-21.26	140	150
4960.043	73.31	47.28	-1.06	72.25	46.22	74.00	54.00	-7.78	130	150
5787.575	48.1	---	3.31	51.41	---	74.00	54.00	-22.59	135	150
6613.227	51.54	---	4.72	56.26	---	74.00	54.00	-17.74	140	150
7439.951	68.68	46.58	1.80	70.48	48.38	74.00	54.00	-5.62	135	150
9922.846	33.4	---	26.07	53.47	---	74.00	54.00	-20.53	150	150



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

Registration number: W6M20902-9574-P-15  
 FCC ID: T9J-RN24

Polarization: Vertical

Frequency (MHz)	Reading (dBuV)	Detector	Factor (dB)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Table Degree (Deg.)	Ant. High (cm)
168.517	12.04	peak	15.04	27.08	43.50	-16.42	110	150
332.264	19.64	peak	16.16	35.80	46.00	-10.20	120	150

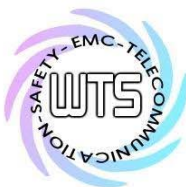
Frequency (MHz)	Reading (dBuV)		Factor (dB) Corr.	Result @3m (dBuV/m)		Limit @3m (dBuV/m)		Margin (dB)	Table Degree (Deg.)	Ant. High (cm)
	Peak	Ave.		Peak	Ave.	Peak	Ave.			
1653.307	56.11	---	-9.19	46.92	---	74.00	54.00	-27.08	140	150
2348.697	51.25	---	-5.36	45.89	---	74.00	54.00	-28.11	140	150
3306.613	52.77	---	-1.55	51.22	---	74.00	54.00	-22.78	135	150
4128.257	52.73	---	-2.72	50.01	---	74.00	54.00	-23.99	135	150
4959.967	69.52	46.01	-1.06	68.46	44.95	74.00	54.00	-9.05	145	150
5787.575	43.21	---	3.31	46.52	---	74.00	54.00	-27.48	140	150
6613.227	49.72	---	4.72	54.44	---	74.00	54.00	-19.56	130	150
7440.041	62.11	45.05	1.80	63.91	46.85	74.00	54.00	-7.15	135	150
9922.846	36.44	---	26.07	56.51	---	74.00	54.00	-17.49	145	150

Mode: TX CH0\_Antenna B

Polarization: Horizontal

Frequency (MHz)	Reading (dBuV)	Detector	Factor (dB)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Table Degree (Deg.)	Ant. High (cm)
134.970	22.40	peak	14.45	36.85	43.50	-6.65	105	150
332.264	18.07	peak	16.16	34.23	46.00	-11.77	125	150

Frequency (MHz)	Reading (dBuV)		Factor (dB) Corr.	Result @3m (dBuV/m)		Limit @3m (dBuV/m)		Margin (dB)	Table Degree (Deg.)	Ant. High (cm)
	Peak	Ave.		Peak	Ave.	Peak	Ave.			
1601.202	55.86	---	-9.40	46.46	---	74.00	54.00	-27.54	130	150
2336.673	60.65	36.27	-5.42	55.23	30.85	74.00	54.00	-23.15	135	150
3202.405	49.06	---	-2.28	46.78	---	74.00	54.00	-27.22	140	150
4000.000	49.92	---	-2.90	51.12	---	74.00	54.00	-22.88	135	150
4804.013	72.66	48.27	-1.30	71.36	46.97	74.00	54.00	-7.03	130	150
5603.206	40.72	---	2.89	43.61	---	74.00	54.00	-30.39	135	150
6404.810	51.84	---	3.83	55.67	---	74.00	54.00	-18.33	140	150
7206.413	63.87	---	1.89	65.76	---	74.00	54.00	-8.24	140	150
9608.717	29.91	---	25.34	49.25	---	74.00	54.00	-24.75	135	150



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

Registration number: W6M20902-9574-P-15  
 FCC ID: T9J-RN24

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	15.33	peak	15.15	30.48	43.50	-13.02	110	150
332.264	20.07	peak	16.16	36.23	46.00	-9.77	120	150

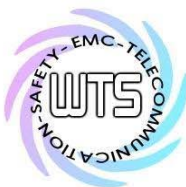
Frequency (MHz)	Reading (dBuV)		Factor (dB) Corr.	Result @3m (dBuV/m)		Limit @3m (dBuV/m)		Margin (dB)	Table Degree (Deg.)	Ant. High (cm)
	Peak	Ave.		Peak	Ave.	Peak	Ave.			
1601.202	50.20	---	-9.40	40.80	---	74.00	54.00	-33.20	130	150
2336.673	54.27	---	-5.42	48.85	---	74.00	54.00	-25.15	135	150
3202.405	46.73	---	-2.28	44.45	---	74.00	54.00	-29.55	140	150
4000.000	45.74	---	-2.90	46.94	---	74.00	54.00	-27.06	135	150
4801.603	71.05	46.66	-1.30	69.75	45.36	74.00	54.00	-8.64	140	150
6404.810	53.21	---	3.83	57.04	---	74.00	54.00	-16.96	130	150
7206.413	67.45	---	1.89	69.34	---	74.00	54.00	-4.66	135	150
9608.717	27.33	---	25.34	46.67	---	74.00	54.00	-27.33	135	150

Mode: TX CH39\_Antenna B

Polarization: Horizontal

Frequency (MHz)	Reading (dBuV)	Detector	Factor (dB)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Table Degree (Deg.)	Ant. High (cm)
241.022	24.67	peak	13.60	38.27	46.00	-7.73	115	150
332.264	18.29	peak	16.16	34.45	46.00	-11.55	125	150

Frequency (MHz)	Reading (dBuV)		Factor (dB) Corr.	Result @3m (dBuV/m)		Limit @3m (dBuV/m)		Margin (dB)	Table Degree (Deg.)	Ant. High (cm)
	Peak	Ave.		Peak	Ave.	Peak	Ave.			
1627.255	54.95	---	-9.29	45.66	---	74.00	54.00	-28.34	135	150
2376.753	55.83	---	-5.22	50.61	---	74.00	54.00	-23.39	135	150
3254.509	49.93	---	-1.92	48.01	---	74.00	54.00	-25.99	140	150
4064.128	51.61	---	-2.84	48.77	---	74.00	54.00	-25.23	130	150
4882.066	73.5	48.12	-1.30	72.2	46.82	74.00	54.00	-7.18	140	150
5699.399	46.06	---	2.70	48.76	---	74.00	54.00	-25.24	135	150
6509.018	55.92	---	4.53	60.45	---	74.00	54.00	-13.55	140	150
7322.995	70.26	47.5	1.85	72.11	49.35	74.00	54.00	-4.65	145	150
9761.022	32.74	---	25.01	51.75	---	74.00	54.00	-22.25	135	150



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

Registration number: W6M20902-9574-P-15  
 FCC ID: T9J-RN24

Polarization: Vertical

Frequency (MHz)	Reading (dBuV)	Detector	Factor (dB)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Table Degree (Deg.)	Ant. High (cm)
166.894	15.05	peak	15.12	30.17	43.50	-13.33	110	150
332.264	20.51	peak	16.16	36.67	46.00	-9.33	120	150

Frequency (MHz)	Reading (dBuV)		Factor (dB) Corr.	Result @3m (dBuV/m)		Limit @3m (dBuV/m)		Margin (dB)	Table Degree (Deg.)	Ant. High (cm)
	Peak	Ave.		Peak	Ave.	Peak	Ave.			
1629.259	52.23	---	-9.28	42.95	---	74.00	54.00	-31.05	130	150
2376.753	49.58	---	-5.22	44.36	---	74.00	54.00	-29.64	140	150
3254.509	45.59	---	-1.92	43.67	---	74.00	54.00	-30.33	135	150
4064.128	47.55	---	-2.84	44.71	---	74.00	54.00	-29.29	145	150
4882.066	71.94	46.56	-1.30	70.64	45.26	74.00	54.00	-8.74	130	150
5691.383	41.23	---	2.72	43.95	---	74.00	54.00	-30.05	135	150
6509.018	54.68	---	4.53	59.21	---	74.00	54.00	-14.79	140	150
7322.995	68.13	45.37	1.85	69.98	47.22	74.00	54.00	-6.78	140	150
9761.022	27.9	---	25.01	46.91	---	74.00	54.00	-27.09	140	150

Mode: TX CH78\_Antenna B

Polarization: Horizontal

Frequency (MHz)	Reading (dBuV)	Detector	Factor (dB)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Table Degree (Deg.)	Ant. High (cm)
241.563	24.01	peak	13.61	37.62	46.00	-8.38	105	150
333.667	18.88	peak	16.20	35.08	46.00	-10.92	120	150

Frequency (MHz)	Reading (dBuV)		Factor (dB) Corr.	Result @3m (dBuV/m)		Limit @3m (dBuV/m)		Margin (dB)	Table Degree (Deg.)	Ant. High (cm)
	Peak	Ave.		Peak	Ave.	Peak	Ave.			
1653.307	56.31	---	-9.19	47.12	---	74.00	54.00	-26.88	135	150
2529.058	62.55	---	-4.90	57.65	---	74.00	54.00	-16.35	140	150
3306.613	49.49	---	-1.55	47.94	---	74.00	54.00	-26.06	130	150
4128.257	49.12	---	-2.72	46.40	---	74.00	54.00	-27.60	145	150
4960.119	72.51	47.6	-1.06	71.45	46.54	74.00	54.00	-7.46	140	150
5787.575	49.28	---	3.31	52.59	---	74.00	54.00	-21.41	140	150
6613.227	54.29	---	4.72	59.01	---	74.00	54.00	-14.99	130	150
7440.041	67.72	47.33	1.80	69.52	49.13	74.00	54.00	-4.87	135	150
9922.846	33.61	---	26.07	53.68	---	74.00	54.00	-20.32	150	150



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

Registration number: W6M20902-9574-P-15  
 FCC ID: T9J-RN24

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	15.04	peak	15.15	30.19	43.50	-13.31	110	150
332.264	20.80	peak	16.16	36.96	46.00	-9.04	125	150

Frequency (MHz)	Reading (dBuV)		Factor (dB) Corr.	Result @3m (dBuV/m)		Limit @3m (dBuV/m)		Margin (dB)	Table Degree (Deg.)	Ant. High (cm)
	Peak	Ave.		Peak	Ave.	Peak	Ave.			
1653.307	53.76	---	-9.19	44.57	---	74.00	54.00	-29.43	140	150
2529.058	57.33	---	-4.90	52.43	---	74.00	54.00	-21.57	145	150
4128.257	43.55	---	-2.72	40.83	---	74.00	54.00	-33.17	150	150
4960.061	70.80	46.71	-1.06	69.74	45.65	74.00	54.00	-8.35	140	150
5787.575	44.55	---	3.31	47.86	---	74.00	54.00	-26.14	130	150
6613.227	49.47	---	4.72	54.19	---	74.00	54.00	-19.81	140	150
7440.063	65.4	46.43	1.80	67.2	48.23	74.00	54.00	-5.77	135	150
9922.846	33.91	---	26.07	53.98	---	74.00	54.00	-20.02	145	150

Mode: TX CH0\_Antenna C

Polarization: Horizontal

Frequency (MHz)	Reading (dBuV)	Detector	Factor (dB)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Table Degree (Deg.)	Ant. High (cm)
74.369	23.13	peak	11.15	34.28	40.00	-5.72	105	150
998.597	15.28	peak	27.39	42.67	54.00	-11.33	120	150

Frequency (MHz)	Reading (dBuV)		Factor (dB) Corr.	Result @3m (dBuV/m)		Limit @3m (dBuV/m)		Margin (dB)	Table Degree (Deg.)	Ant. High (cm)
	Peak	Ave.		Peak	Ave.	Peak	Ave.			
1601.202	59.93	---	-11.21	48.72	---	74.00	54.00	-25.28	135	150
4000.000	50.38	---	-4.40	45.98	---	74.00	54.00	-28.02	145	150
4803.961	63.55	45.71	-2.50	61.05	43.21	74.00	54.00	-10.79	135	150
6404.810	49.00	---	0.12	49.12	---	74.00	54.00	-24.88	140	150
7206.413	61.07	---	2.00	63.07	---	74.00	54.00	-10.93	135	150



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

Registration number: W6M20902-9574-P-15  
 FCC ID: T9J-RN24

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	19.44	peak	15.15	34.59	43.50	-8.91	110	150
997.194	13.17	peak	27.38	40.55	54.00	-13.45	125	150

Frequency (MHz)	Reading (dBuV)		Factor (dB) Corr.	Result @3m (dBuV/m)		Limit @3m (dBuV/m)		Margin (dB)	Table Degree (Deg.)	Ant. High (cm)
	Peak	Ave.		Peak	Ave.	Peak	Ave.			
1603.206	60.89	---	-11.20	49.69	---	74.00	54.00	-24.31	140	150
4801.603	65.24	47.40	-2.51	62.73	44.89	74.00	54.00	-9.11	135	150
6404.810	51.58	---	0.12	51.70	---	74.00	54.00	-22.30	140	150
7206.413	57.97	---	2.00	59.97	---	74.00	54.00	-14.03	135	150

Mode: TX CH39\_Antenna C

Polarization: Horizontal

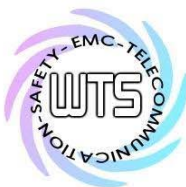
Frequency (MHz)	Reading (dBuV)	Detector	Factor (dB)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Table Degree (Deg.)	Ant. High (cm)
73.828	23.31	peak	11.27	34.58	40.00	-5.42	115	150
997.194	14.27	peak	27.38	41.65	54.00	-12.35	120	150

Frequency (MHz)	Reading (dBuV)		Factor (dB) Corr.	Result @3m (dBuV/m)		Limit @3m (dBuV/m)		Margin (dB)	Table Degree (Deg.)	Ant. High (cm)
	Peak	Ave.		Peak	Ave.	Peak	Ave.			
1627.255	59.42	---	-11.03	48.39	---	74.00	54.00	-25.61	140	150
4064.128	48.66	---	-4.34	44.32	---	74.00	54.00	-29.68	130	150
4882.052	64.28	45.81	-2.14	62.14	43.67	74.00	54.00	-10.33	145	150
6509.018	50.72	---	0.13	50.85	---	74.00	54.00	-23.15	135	150
7322.986	62.71	43.18	2.28	64.99	45.46	74.00	54.00	-8.54	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)
166.353	22.07	peak	15.15	37.22	43.50	-6.28	110	150
997.194	11.83	peak	27.38	39.21	54.00	-14.79	125	150





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

Registration number: W6M20902-9574-P-15  
 FCC ID: T9J-RN24

Frequency (MHz)	Reading (dBuV)		Factor (dB) Corr.	Result @3m (dBuV/m)		Limit @3m (dBuV/m)		Margin (dB)	Table Degree (Deg.)	Ant. High (cm)
	Peak	Ave.		Peak	Ave.	Peak	Ave.			
1629.259	60.81	---	-11.02	49.79	---	74.00	54.00	-24.21	140	150
4882.054	67.35	46.73	-2.14	65.21	44.59	74.00	54.00	-9.41	140	150
6509.018	50.13	---	0.13	50.26	---	74.00	54.00	-23.74	130	150
7323.021	56.30	42.85	2.28	58.58	45.13	74.00	54.00	-8.87	135	150

Mode: TX CH78\_Antenna C

Polarization: Horizontal

Frequency (MHz)	Reading (dBuV)	Detector	Factor (dB)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Table Degree (Deg.)	Ant. High (cm)
74.369	23.14	peak	11.15	34.29	40.00	-5.71	105	150
997.194	15.11	peak	27.38	42.49	54.00	-11.51	120	150

Frequency (MHz)	Reading (dBuV)		Factor (dB) Corr.	Result @3m (dBuV/m)		Limit @3m (dBuV/m)		Margin (dB)	Table Degree (Deg.)	Ant. High (cm)
	Peak	Ave.		Peak	Ave.	Peak	Ave.			
1655.311	60.41	---	-10.84	49.57	---	74.00	54.00	-24.43	135	150
4128.257	48.37	---	-4.27	44.10	---	74.00	54.00	-29.90	150	150
4959.987	65.49	46.88	-1.78	63.71	45.10	74.00	54.00	-8.90	145	150
5787.575	47.36	---	-0.35	47.01	---	74.00	54.00	-26.99	140	150
6613.227	54.04	---	0.42	54.46	---	74.00	54.00	-19.54	130	150
7439.929	61.29	44.58	2.56	63.85	47.14	74.00	54.00	-6.86	135	150

Polarization: Vertical

Frequency (MHz)	Reading (dBuV)	Detector	Factor (dB)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Table Degree (Deg.)	Ant. High (cm)
165.812	19.45	peak	15.18	34.63	43.50	-8.87	110	150
998.597	11.42	peak	27.39	38.81	54.00	-15.19	130	150

Frequency (MHz)	Reading (dBuV)		Factor (dB) Corr.	Result @3m (dBuV/m)		Limit @3m (dBuV/m)		Margin (dB)	Table Degree (Deg.)	Ant. High (cm)
	Peak	Ave.		Peak	Ave.	Peak	Ave.			
1653.307	59.13	---	-10.86	48.27	---	74.00	54.00	-25.73	145	150
4960.071	68.33	47.11	-1.78	66.55	45.33	74.00	54.00	-8.67	135	150
5787.575	45.27	---	-0.35	44.92	---	74.00	54.00	-29.08	130	150
6613.226	50.89	---	0.42	51.31	---	74.00	54.00	-22.69	140	150
7439.929	56.89	42.69	2.56	59.45	45.25	74.00	54.00	-8.75	145	150



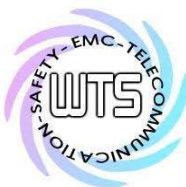
Registration number: W6M20902-9574-P-15  
FCC ID: T9J-RN24

- 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 018, ETSTW-RE 021,  
ETSTW-RE 028, ETSTW-RE 030, ETSTW-RE 043, ETSTW-RE 064



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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 0	Channel 0+1
T <sub>nom</sub> = 23°C	V <sub>nom</sub> = 3.3V	1000.000 kHz	

Test conditions		Channel Separation	
		Channel 39	Channel 39+1
T <sub>nom</sub> = 23°C	V <sub>nom</sub> = 3.3V	1000.000 kHz	

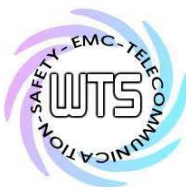
Test conditions		Channel Separation	
		Channel 78	Channel 78+1
T <sub>nom</sub> = 23°C	V <sub>nom</sub> = 3.3V	1000.000 kHz	

#### 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 055, ETSTW-RE 064

Explanation: See attached diagrams in appendix.



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### 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.

Test conditions		Operating Mode	Number of Channels
$T_{nom} = 23^{\circ}C$	$V_{nom} = 3.3 V$	normal transmitting	79

#### 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 055, ETSTW-RE 064

Explanation: See attached diagrams in appendix.

#### 3.7.1 Pseudorandom Frequency Hopping Sequence

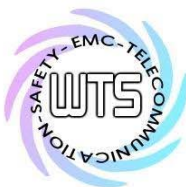
The generation of the hopping sequence is determined by the Bluetooth cord specification and complies with the FCC requirements.

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

According to the Bluetooth core specification V1.1 such a coordination is not possible. During scatternet function only one of the two hopping sequences will be used at a definite moment.

#### 3.7.3 System Receiver Hopping Capability

According to the Bluetooth core specification. The system receivers shift frequencies in synchronization with the transmitted signals.



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### 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
$T_{nom} = 23^{\circ}C$ $V_{nom} = 3.3 V$ Channel 0	normal transmitting-DH 1	31.6 s	139.20 ms
	normal transmitting-DH 3	31.6 s	271.68 ms
	normal transmitting-DH 5	31.6 s	325.05 ms

Test conditions	Operating mode	Measurement period	Time of Occupancy
$T_{nom} = 23^{\circ}C$ $V_{nom} = 3.3 V$ Channel 39	normal transmitting-DH 1	31.6 s	139.20 ms
	normal transmitting-DH 3	31.6 s	271.68 ms
	normal transmitting-DH 5	31.6 s	325.05 ms

Test conditions	Operating mode	Measurement period	Time of Occupancy
$T_{nom} = 23^{\circ}C$ $V_{nom} = 3.3 V$ Channel 78	normal transmitting-DH 1	31.6 s	139.20 ms
	normal transmitting-DH 3	31.6 s	272.80 ms
	normal transmitting-DH 5	31.6 s	325.05 ms



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**Limits and measurement periods:**

Frequency MHz	Number of channels	Measurement Periode	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 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



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### 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.

#### Normal mode

Test conditions		20 dB Bandwidth		
		Channel A	Channel B	Channel C
$T_{nom} = 23^{\circ}C$	$V_{nom} = 3.3 V$	1000.000 kHz	1000.000 kHz	1000.000 kHz

#### EDR mode

Test conditions		20 dB Bandwidth		
		Channel A	Channel B	Channel C
$T_{nom} = 23^{\circ}C$	$V_{nom} = 3.3 V$	1.282051282 MHz	1.288461538 MHz	1.288461538 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 055, ETSTW-RE 064

Explanation: See attached diagrams in appendix.

#### 3.9.1 System Receiver Input Bandwidth

It is determined in the Bluetooth core specification. The value matches to the bandwidth of transmitter signal.



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### 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.

#### Normal mode

Test conditions		Attenuation at or outside band-edges Single Frequency	
		Lower Band-edge	Upper Band-edge
$T_{nom} = 23^{\circ}\text{C}$	$V_{nom} = 3.3 \text{ V}$	30.94 dB	42.97 dB

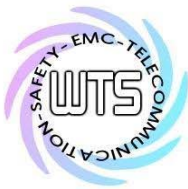
Test conditions		Attenuation at or outside band-edges Hopping Frequency	
		Lower Band-edge	Upper Band-edge
$T_{nom} = 23^{\circ}\text{C}$	$V_{nom} = 3.3 \text{ V}$	30.73 dB	42.97 dB

#### EDR mode

Test conditions		Attenuation at or outside band-edges Single Frequency	
		Lower Band-edge	Upper Band-edge
$T_{nom} = 23^{\circ}\text{C}$	$V_{nom} = 3.3 \text{ V}$	28.01 dB	37.39 dB

Test conditions		Attenuation at or outside band-edges Hopping Frequency	
		Lower Band-edge	Upper Band-edge
$T_{nom} = 23^{\circ}\text{C}$	$V_{nom} = 3.3 \text{ V}$	28.05 dB	38.62 dB





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## Limits:

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

Test equipment used: ETSTW-RE 055, ETSTW-RE 064

Explanation: See attached diagrams in appendix.



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**3.11 Radiated Emissions from Digital Part**

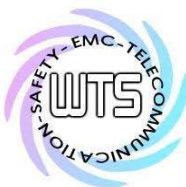
FCC Rule: 15.109

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. W6M20902-9574-P-15B.



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### 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.

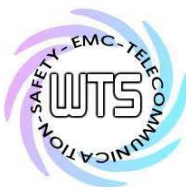
Frequency	Level (dB $\mu$ V)	
	quasi-peak	average
150 kHz	lower limit line	Lower limit line

Model: RN24      Date: 2009/2/23  
 Mode: Antenna A      Temperature: 24 °C      Engineer: Danny  
 Polarization: N      Humidity: 51 %

Frequency (MHz)	Reading (dBuV)		Factor (dB) Corr.	Result (dBuV)		Limit (dBuV)		Margin (dB)
	QP	Ave.		QP	Ave.	QP	Ave.	
0.1500	33.95	9.80	10.19	44.14	19.99	66.00	56.00	-21.86
0.2010	42.99	34.35	10.07	53.06	44.42	63.57	53.57	-9.15
0.5350	25.17	--	10.17	35.34	--	56.00	--	-20.66
3.6850	22.94	--	10.13	33.07	--	56.00	--	-22.93
5.5556	26.75	--	10.14	36.89	--	60.00	--	-23.11
15.5556	30.24	--	10.44	40.68	--	60.00	--	-19.32

Polarization: L1

Frequency (MHz)	Reading (dBuV)		Factor (dB) Corr.	Result (dBuV)		Limit (dBuV)		Margin (dB)
	QP	Ave.		QP	Ave.	QP	Ave.	
0.1500	32.53	7.92	10.19	42.72	18.11	66.00	56.00	-23.28
0.2000	42.11	32.75	10.07	52.18	42.82	63.61	53.61	-10.79
0.5350	23.22	--	10.17	33.39	--	56.00	--	-22.61
3.5500	22.53	--	10.12	32.65	--	56.00	--	-23.35
5.3611	24.74	--	10.13	34.87	--	60.00	--	-25.13
15.9444	31.40	--	10.45	41.85	--	60.00	--	-18.15



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Registration number: W6M20902-9574-P-15  
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Mode: Antenna B  
 Polarization: N

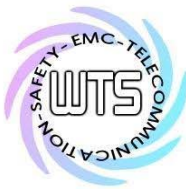
Frequency (MHz)	Reading (dBuV)		Factor (dB) Corr.	Result (dBuV)		Limit (dBuV)		Margin (dB)
	QP	Ave.		QP	Ave.	QP	Ave.	
0.1508	43.71	--	10.19	53.90	--	65.96	--	-12.06
0.1986	42.32	--	10.07	52.39	--	63.67	--	-11.28
1.0050	26.62	--	10.10	36.72	--	56.00	--	-19.28
1.3350	26.90	--	10.09	36.99	--	56.00	--	-19.01
9.3611	25.10	--	10.49	35.59	--	60.00	--	-24.41
15.8611	28.02	--	10.45	38.47	--	60.00	--	-21.53

Polarization: L1

Frequency (MHz)	Reading (dBuV)		Factor (dB) Corr.	Result (dBuV)		Limit (dBuV)		Margin (dB)
	QP	Ave.		QP	Ave.	QP	Ave.	
0.1504	44.32	--	10.19	54.51	--	65.98	--	-11.47
0.2010	41.19	31.33	10.07	51.26	41.40	63.57	53.57	-12.17
0.5350	22.92	--	10.17	33.09	--	56.00	--	-22.91
2.4750	22.56	--	10.07	32.63	--	56.00	--	-23.37
5.4167	22.79	--	10.13	32.92	--	60.00	--	-27.08
14.4722	31.09	--	10.45	41.54	--	60.00	--	-18.46

Mode: Antenna C  
 Polarization: N

Frequency (MHz)	Reading (dBuV)		Factor (dB) Corr.	Result (dBuV)		Limit (dBuV)		Margin (dB)
	QP	Ave.		QP	Ave.	QP	Ave.	
0.1508	43.71	--	10.19	53.90	--	65.96	--	-12.06
0.1986	42.32	--	10.07	52.39	--	63.67	--	-11.28
1.0050	26.62	--	10.10	36.72	--	56.00	--	-19.28
1.3350	26.90	--	10.09	36.99	--	56.00	--	-19.01
9.3611	25.10	--	10.49	35.59	--	60.00	--	-24.41
15.8611	28.02	--	10.45	38.47	--	60.00	--	-21.53



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

Registration number: W6M20902-9574-P-15  
 FCC ID: T9J-RN24

Polarization: L1

Frequency (MHz)	Reading (dBuV)		Factor (dB) Corr.	Result (dBuV)		Limit (dBuV)		Margin (dB)
	QP	Ave.		QP	Ave.	QP	Ave.	
0.1504	44.32	--	10.19	54.51	--	65.98	--	-11.47
0.2010	41.19	31.33	10.07	51.26	41.40	63.57	53.57	-12.17
0.5350	22.92	--	10.17	33.09	--	56.00	--	-22.91
2.4750	22.56	--	10.07	32.63	--	56.00	--	-23.37
5.4167	22.79	--	10.13	32.92	--	60.00	--	-27.08
14.4722	31.09	--	10.45	41.54	--	60.00	--	-18.46

- 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

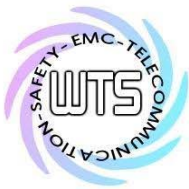
Test equipment used: ETSTW-CE 001, ETSTW-CE 003, ETSTW-CE 004, ETSTW-CE 006, ETSTW-RE 064



## **Appendix**

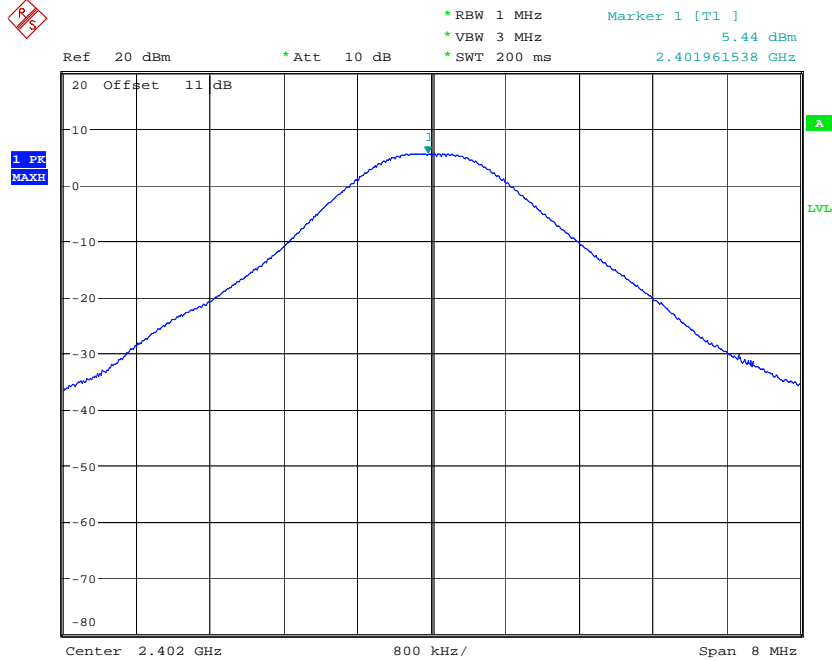
### **Measurement diagrams**

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

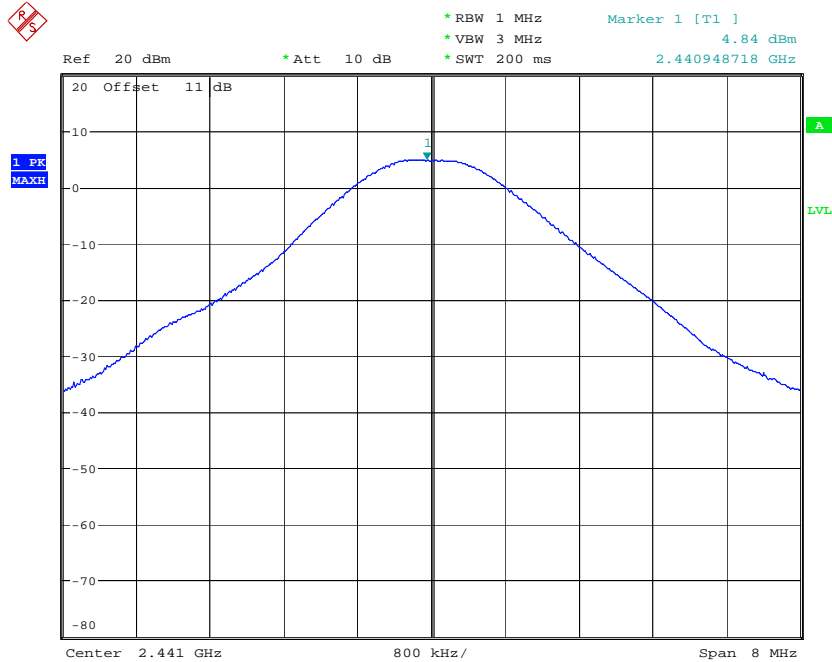


Registration number: W6M20902-9574-P-15  
FCC ID: T9J-RN24

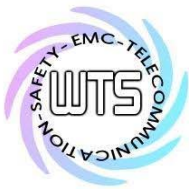
## Peak Output Power



MAX OUTPUT POWER CH0  
Date: 21.FEB.2009 09:28:17

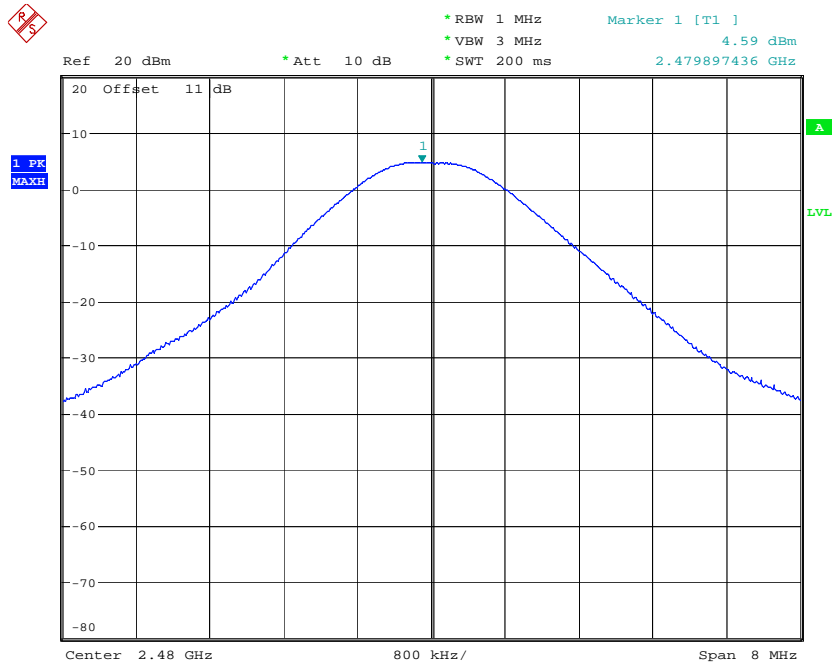


MAX OUTPUT POWER CH39  
Date: 21.FEB.2009 09:28:51

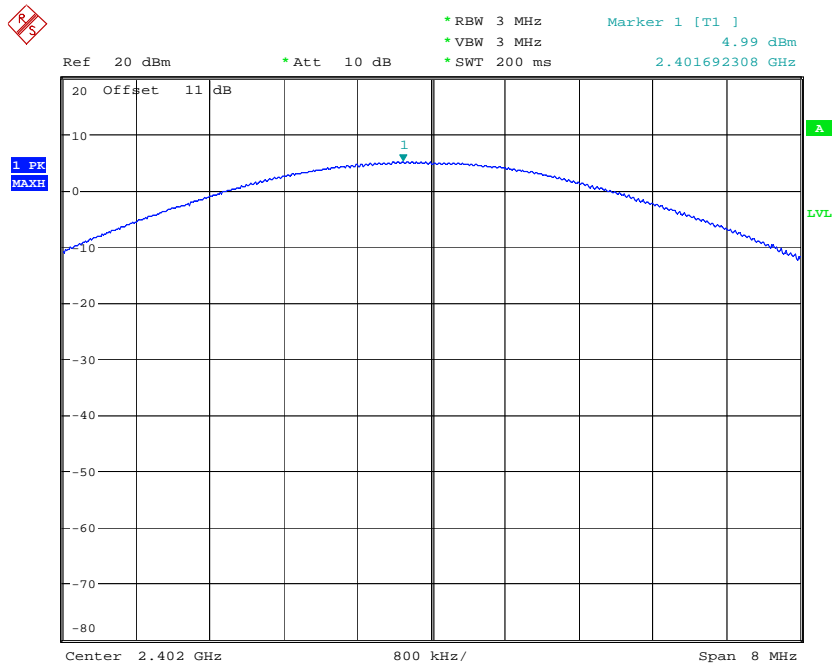


# Worldwide Testing Services(Taiwan) Co., Ltd.

Registration number: W6M20902-9574-P-15  
FCC ID: T9J-RN24

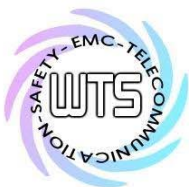


MAX OUTPUT POWER CH78  
Date: 21.FEB.2009 09:29:19



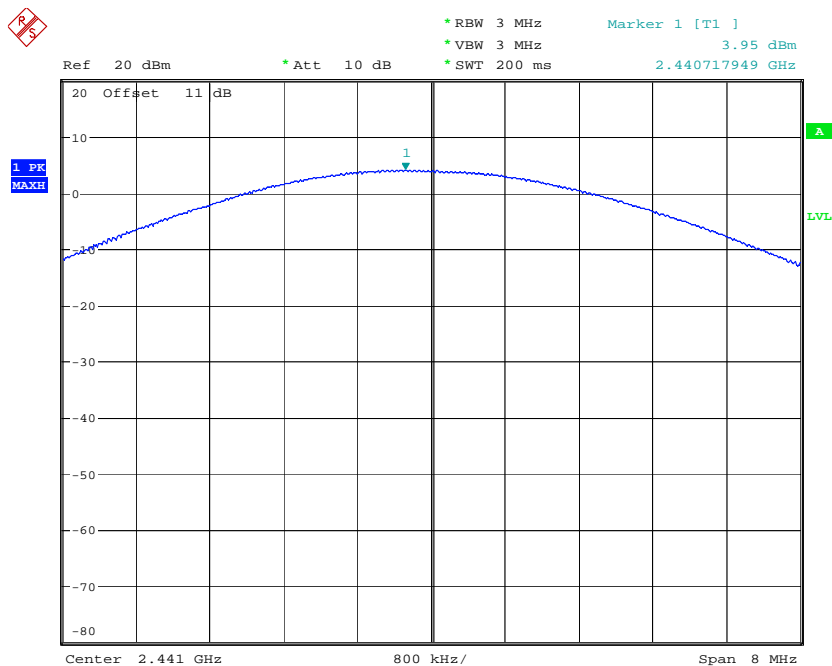
MAX OUTPUT POWER CH0 EDR MODE  
Date: 21.FEB.2009 09:31:57



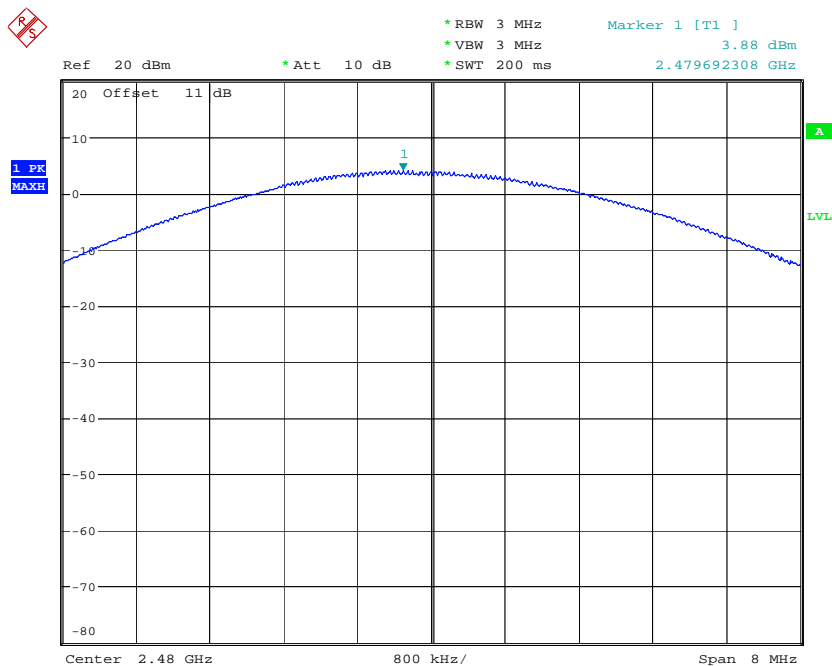


# Worldwide Testing Services(Taiwan) Co., Ltd.

Registration number: W6M20902-9574-P-15  
FCC ID: T9J-RN24



MAX OUTPUT POWER CH39 EDR MODE  
Date: 21.FEB.2009 09:31:28

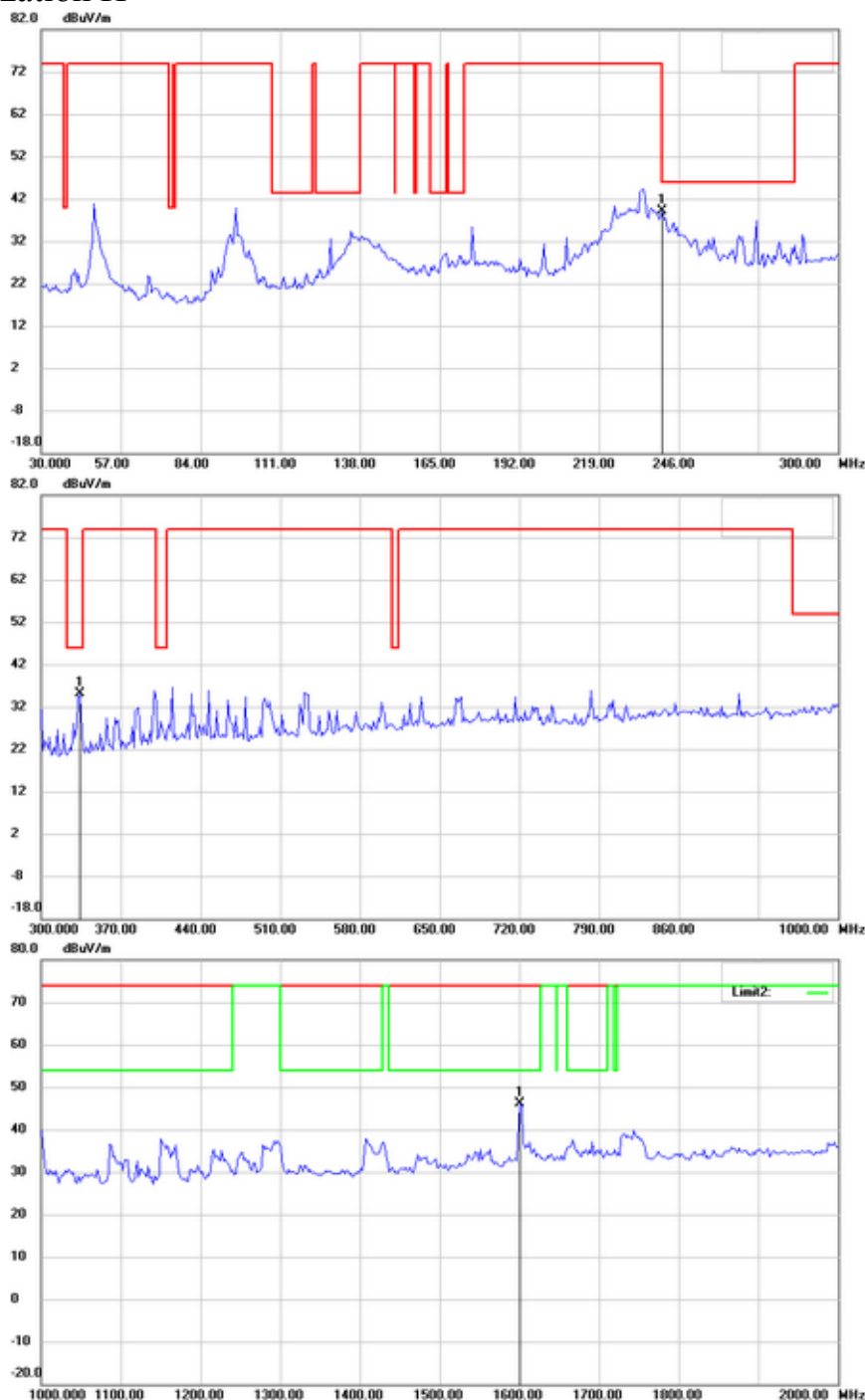


MAX OUTPUT POWER CH78 EDR MODE  
Date: 21.FEB.2009 09:31:02



Registration number: W6M20902-9574-P-15  
FCC ID: T9J-RN24

## Spurious Emissions radiated CH 0\_Antenna A Antenna Polarization H



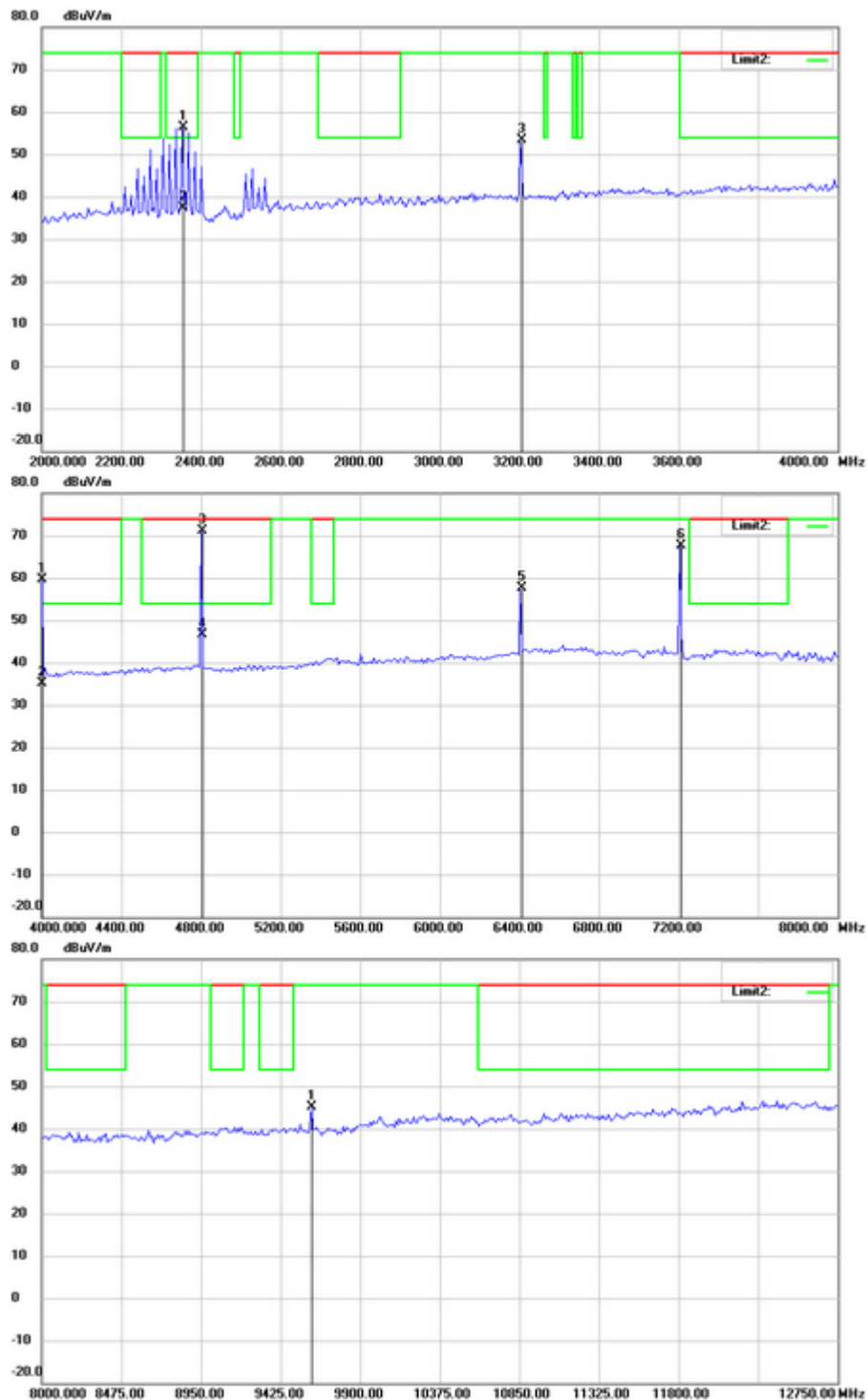
Up Line: Peak Limit Line  
Down Line: Ave Limit Line  
Note:

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.



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Registration number: W6M20902-9574-P-15  
 FCC ID: T9J-RN24

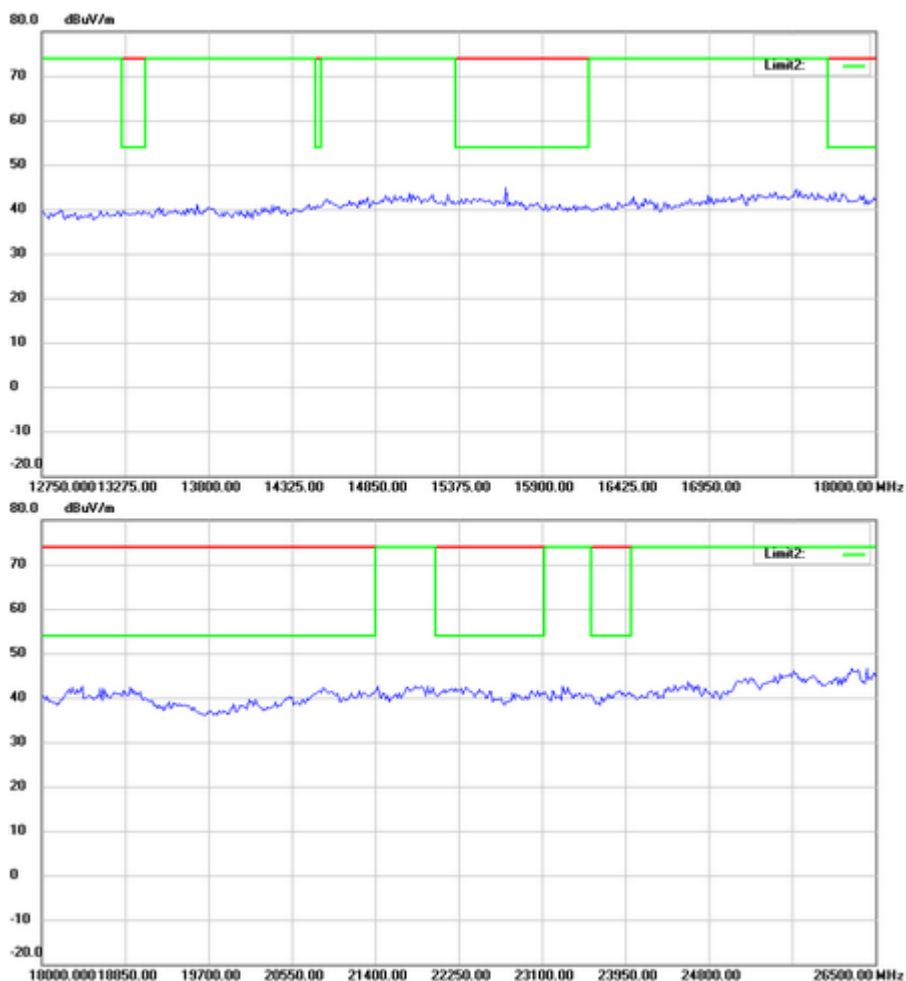


**Up Line: Peak Limit Line**  
**Down Line: Ave Limit Line**  
**Note:**

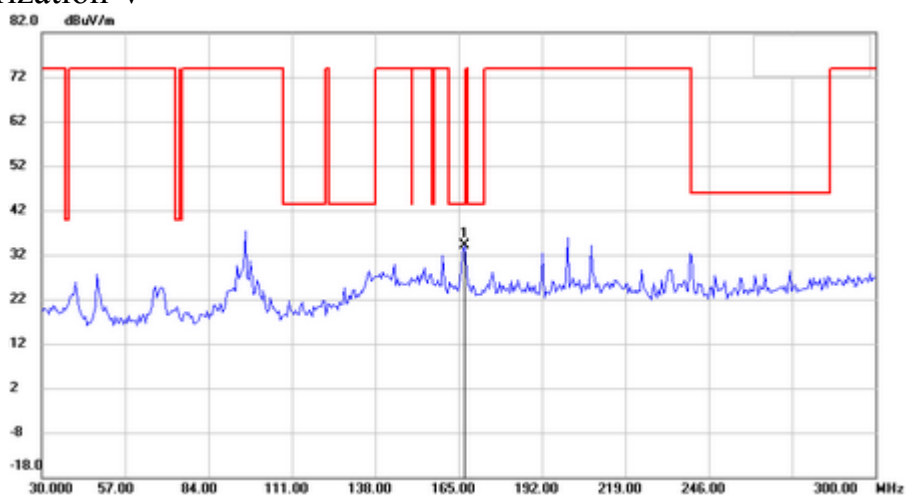
1. The attached measurement plots are preliminarily pre-scanned with peak detector for determining the final checking frequencies and are for reference only.
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3. For corrected test results are listed in the relevant table of radiated test data of this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



Registration number: W6M20902-9574-P-15  
 FCC ID: T9J-RN24

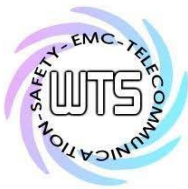


## Antenna Polarization V

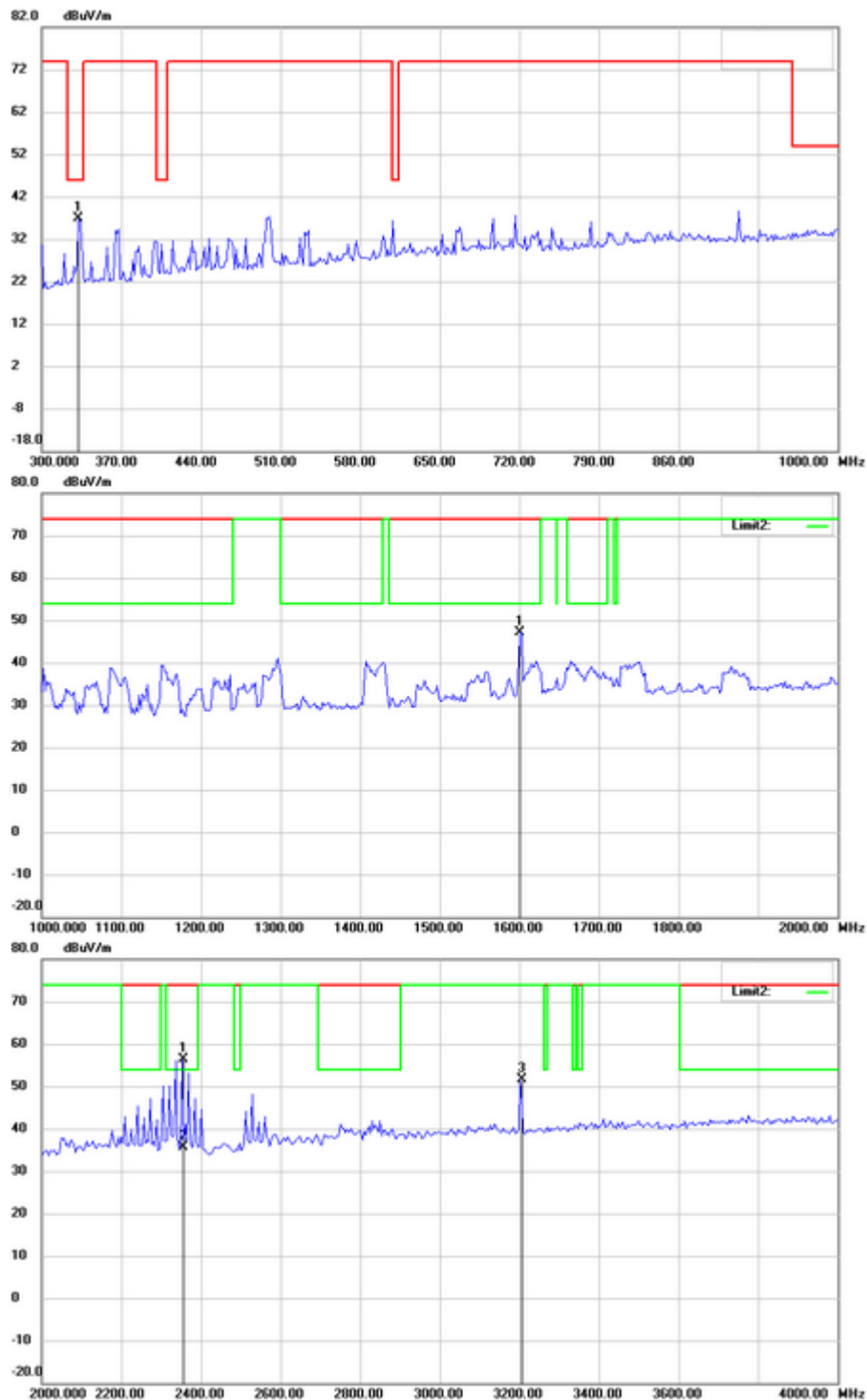


**Up Line: Peak Limit Line**  
**Down Line: Ave Limit Line**  
**Note:**

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.

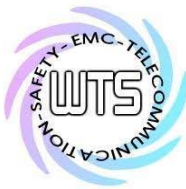


Registration number: W6M20902-9574-P-15  
 FCC ID: T9J-RN24



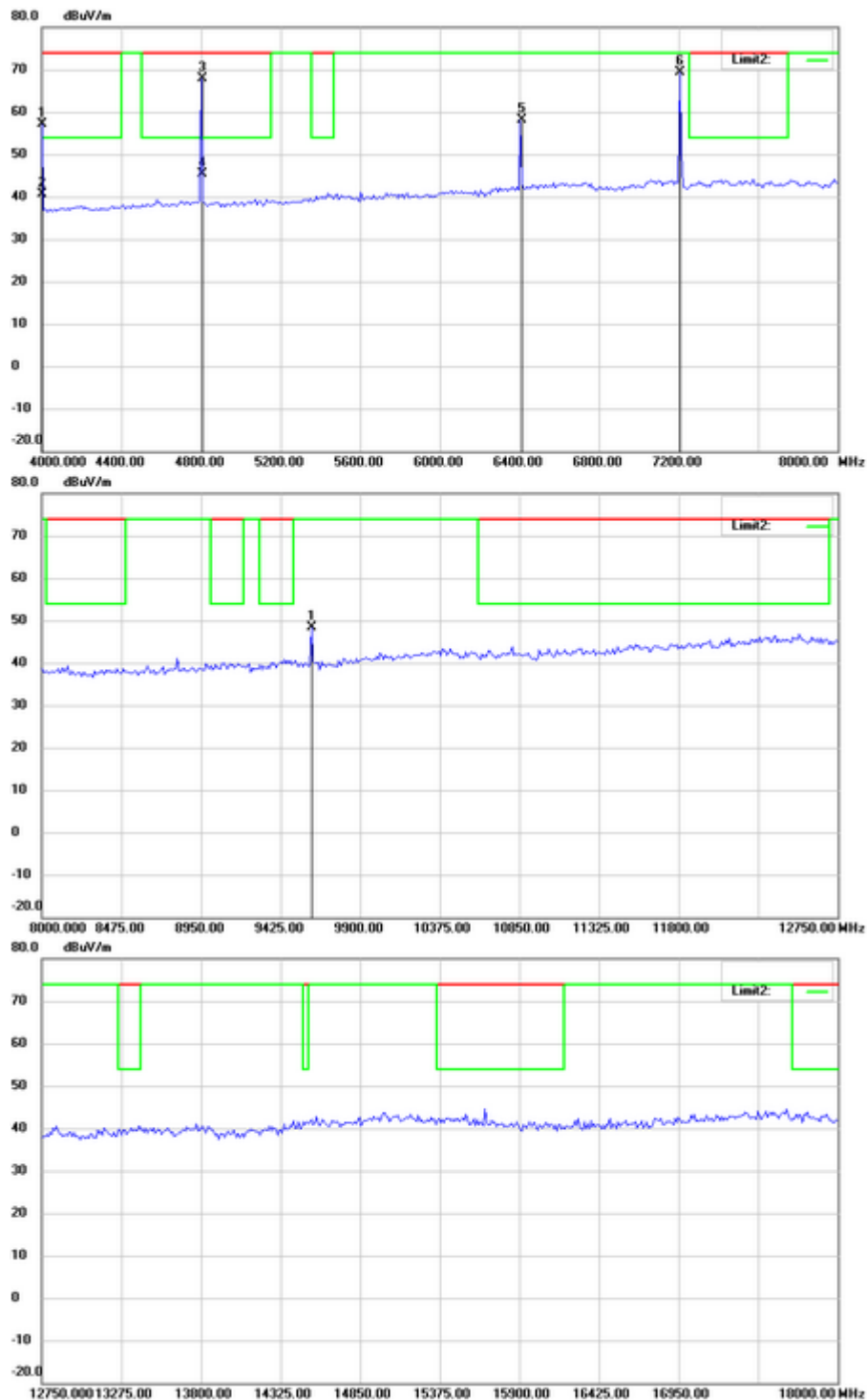
**Up Line: Peak Limit Line**  
**Down Line: Ave Limit Line**  
**Note:**

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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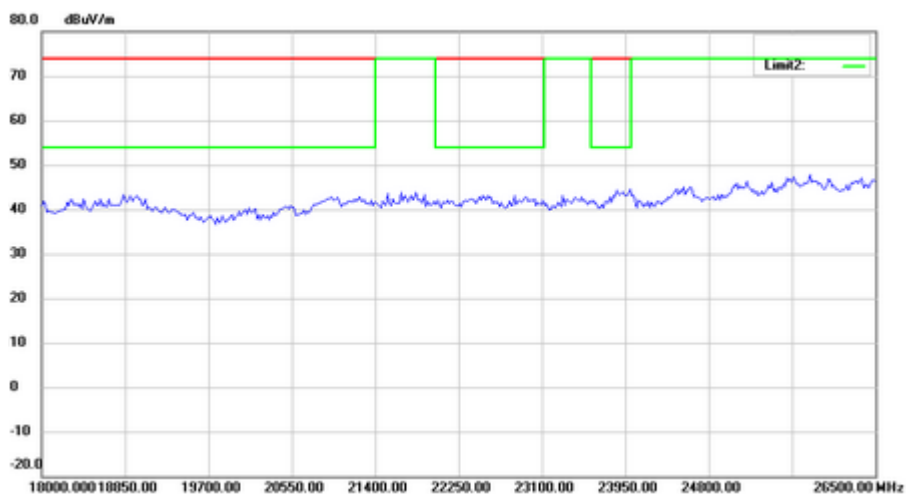


**Up Line: Peak Limit Line**  
**Down Line: Ave Limit Line**  
**Note:**

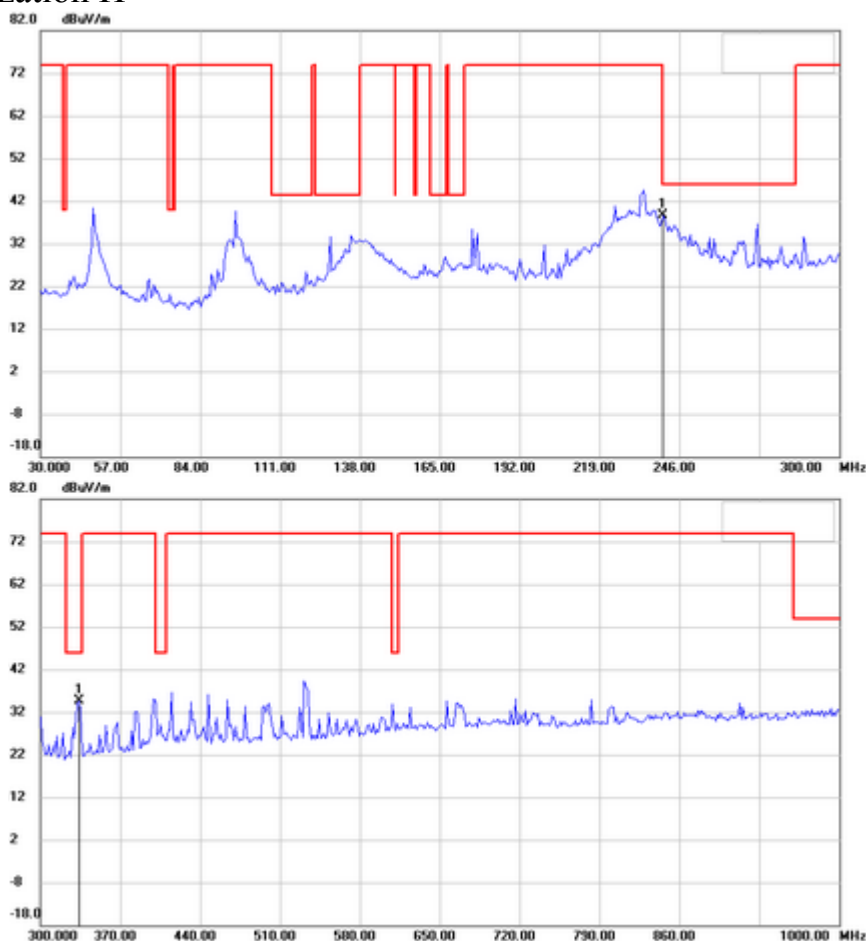
1. The attached measurement plots are preliminarily pre-scanned with peak detector for determining the final checking frequencies and are for reference only.
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Registration number: W6M20902-9574-P-15  
 FCC ID: T9J-RN24

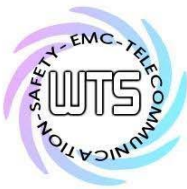


CH 39\_Antenna A  
 Antenna Polarization H



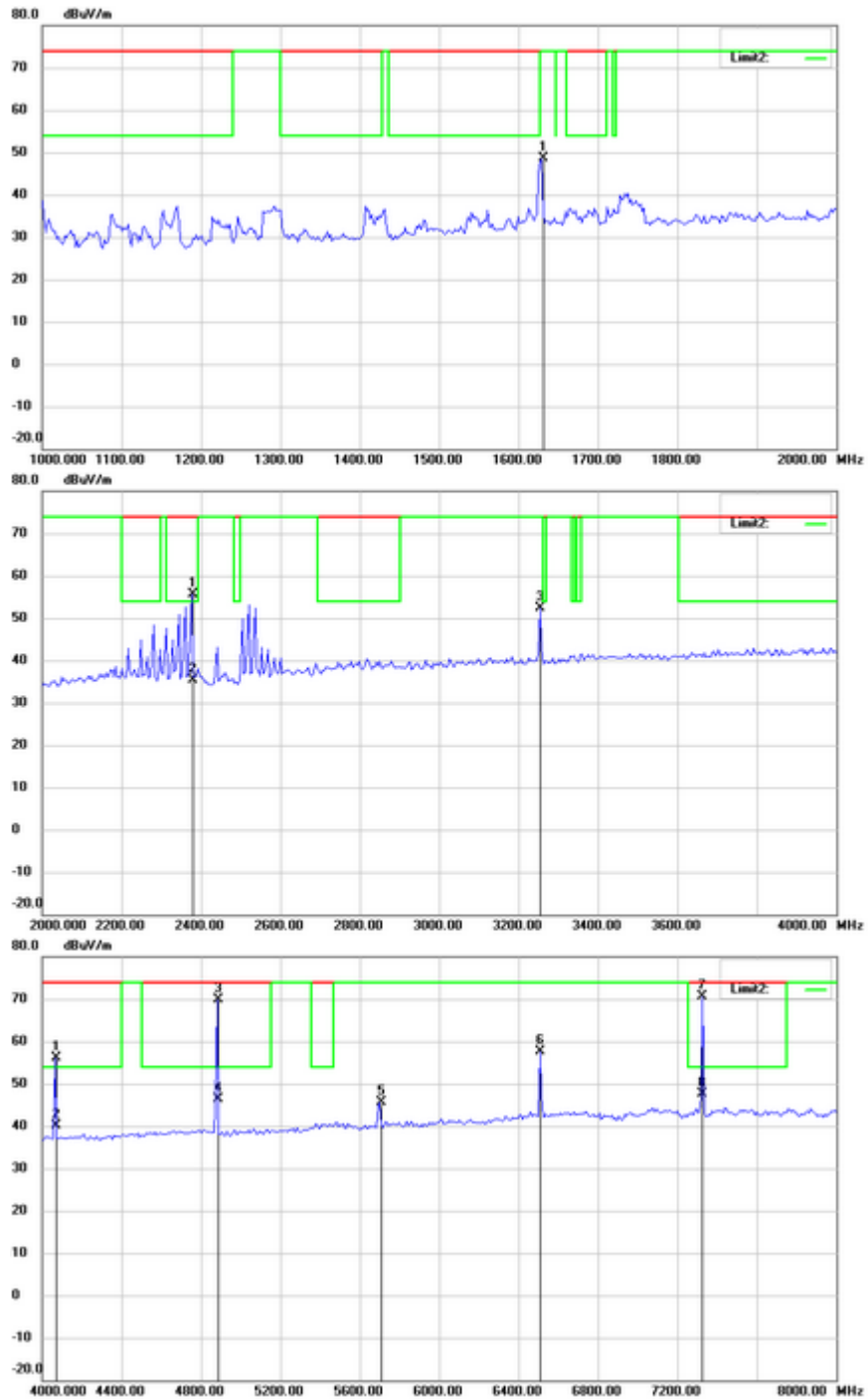
**Up Line: Peak Limit Line**  
**Down Line: Ave Limit Line**  
**Note:**

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

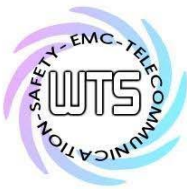
Registration number: W6M20902-9574-P-15  
 FCC ID: T9J-RN24



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

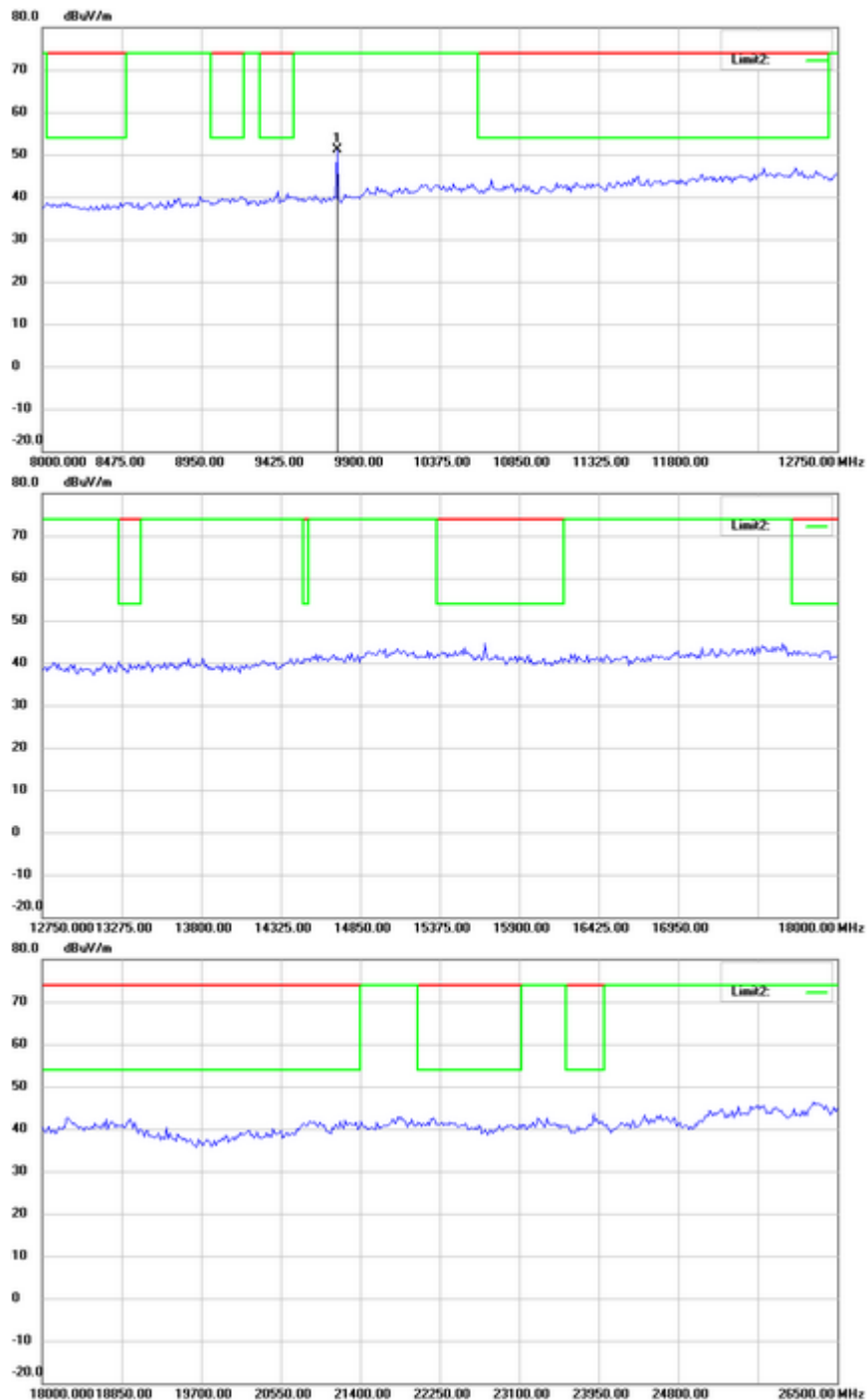
1. The attached measurement plots are preliminarily pre-scanned with peak detector for determining the final checking frequencies and are for reference only.
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# Worldwide Testing Services(Taiwan) Co., Ltd.

Registration number: W6M20902-9574-P-15  
FCC ID: T9J-RN24



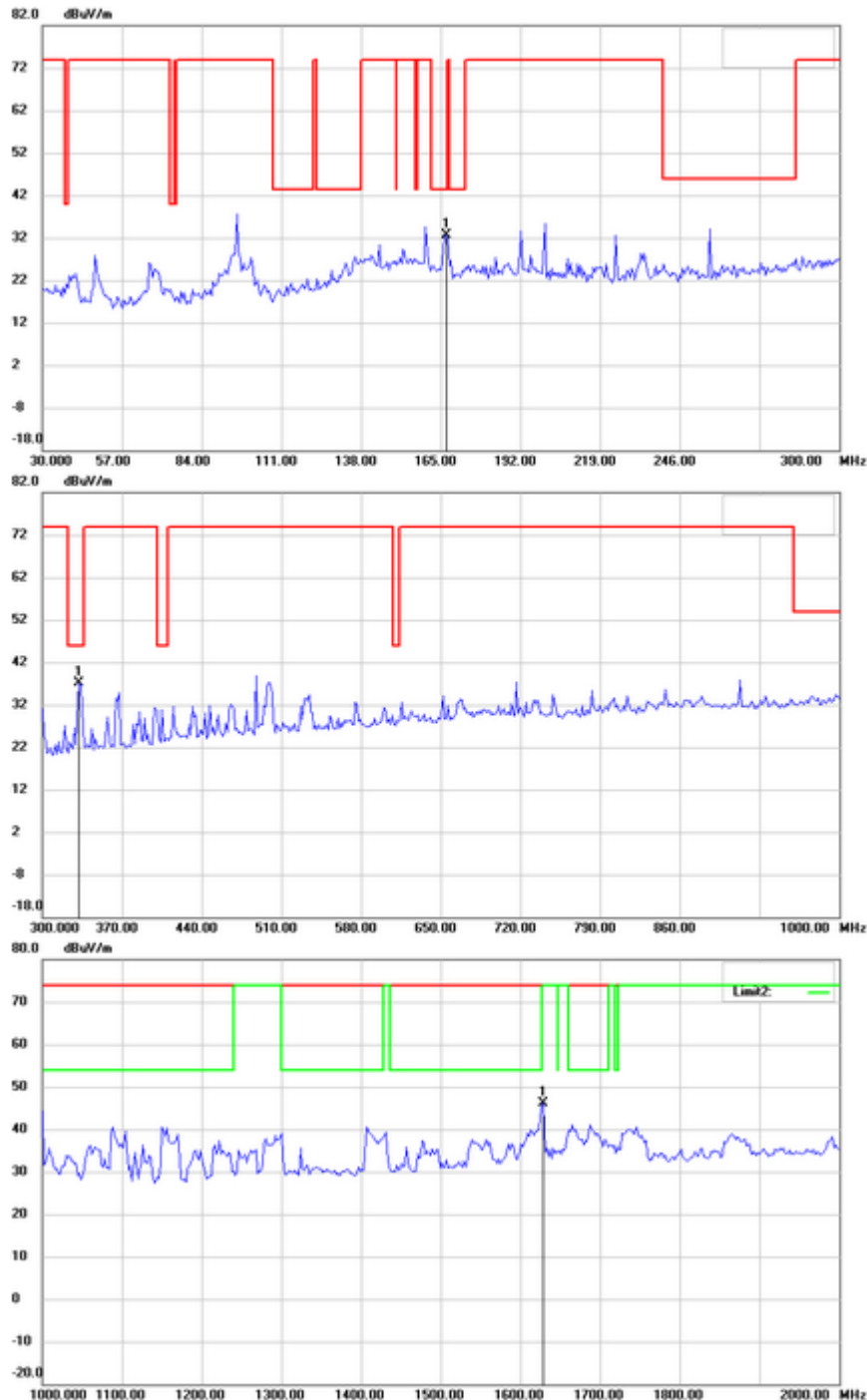
**Up Line: Peak Limit Line**  
**Down Line: Ave Limit Line**  
**Note:**

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.



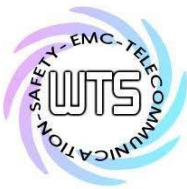
Registration number: W6M20902-9574-P-15  
FCC ID: T9J-RN24

## Antenna Polarization V

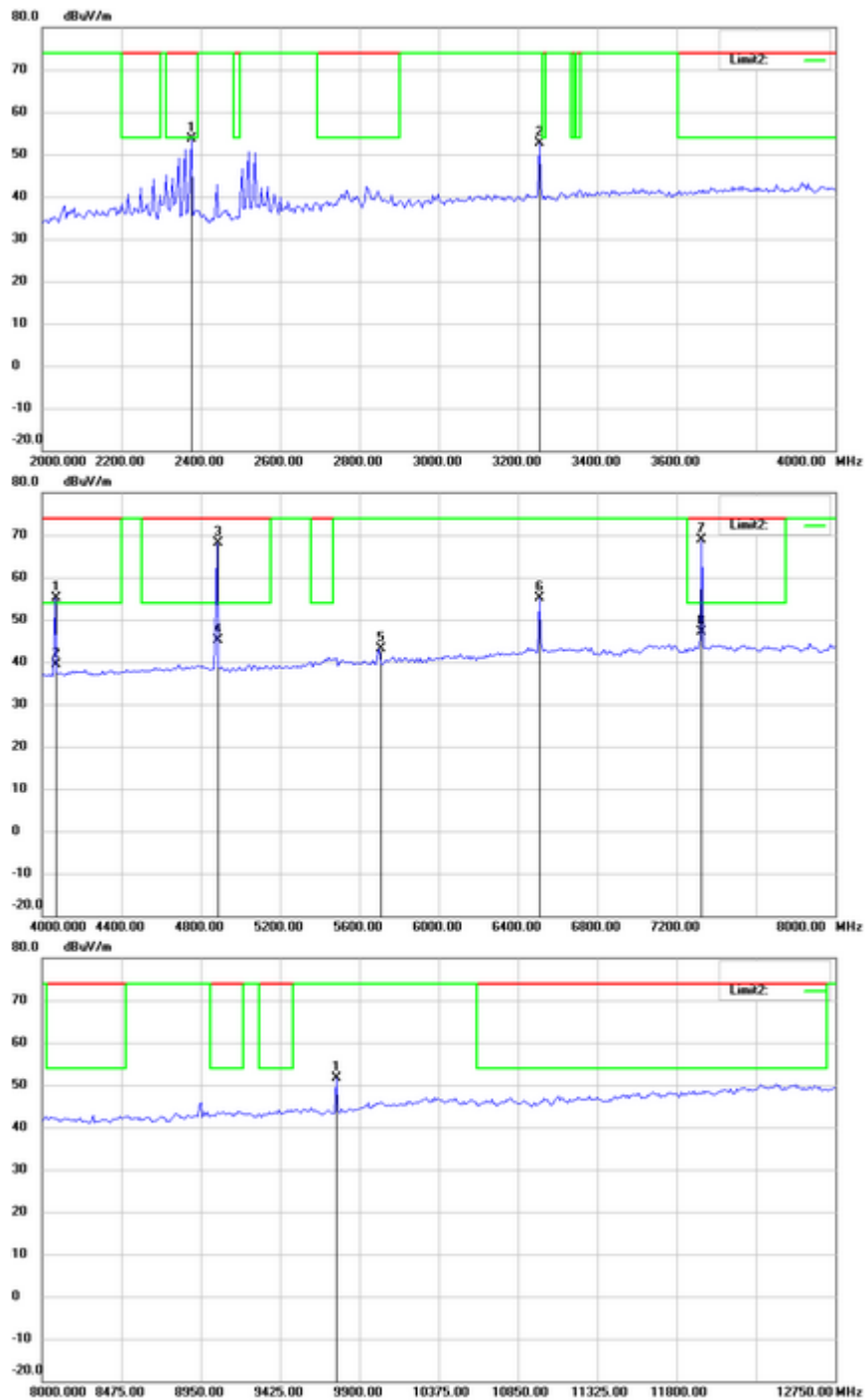


**Up Line: Peak Limit Line**  
**Down Line: Ave Limit Line**  
**Note:**

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.

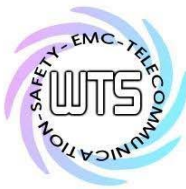


Registration number: W6M20902-9574-P-15  
FCC ID: T9J-RN24

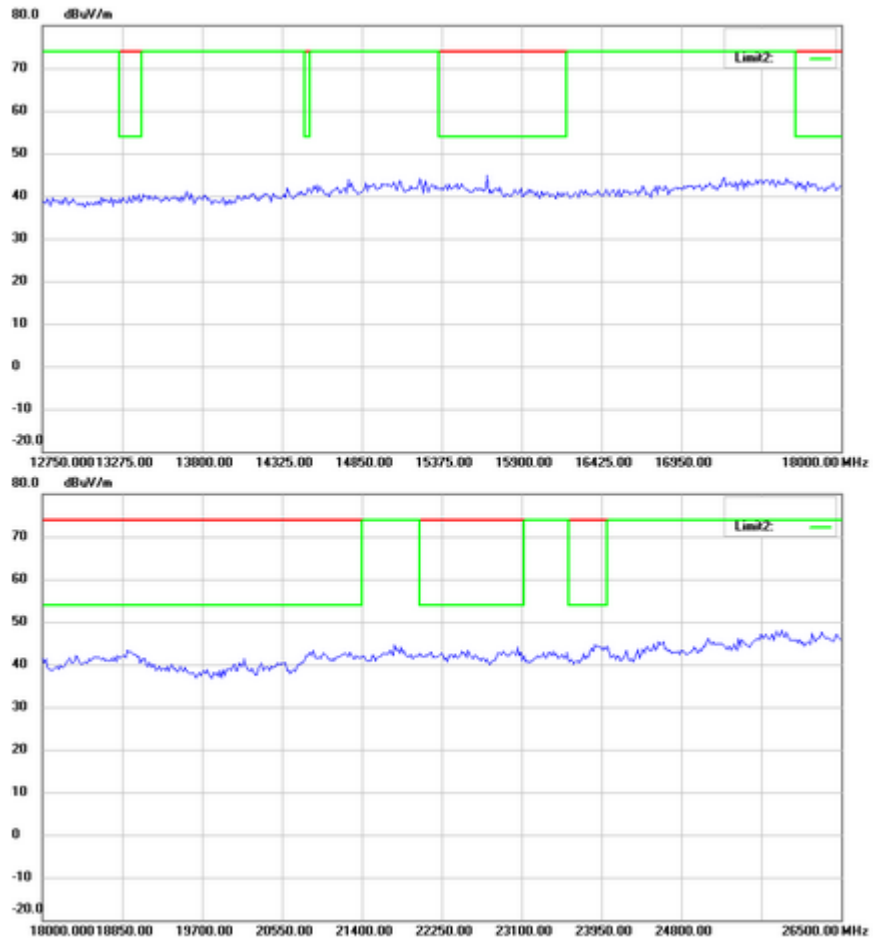


Up Line: Peak Limit Line  
Down Line: Ave Limit Line  
Note:

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: W6M20902-9574-P-15  
 FCC ID: T9J-RN24

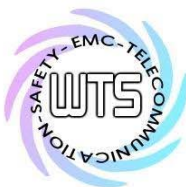


CH 78\_Antenna A  
 Antenna Polarization H



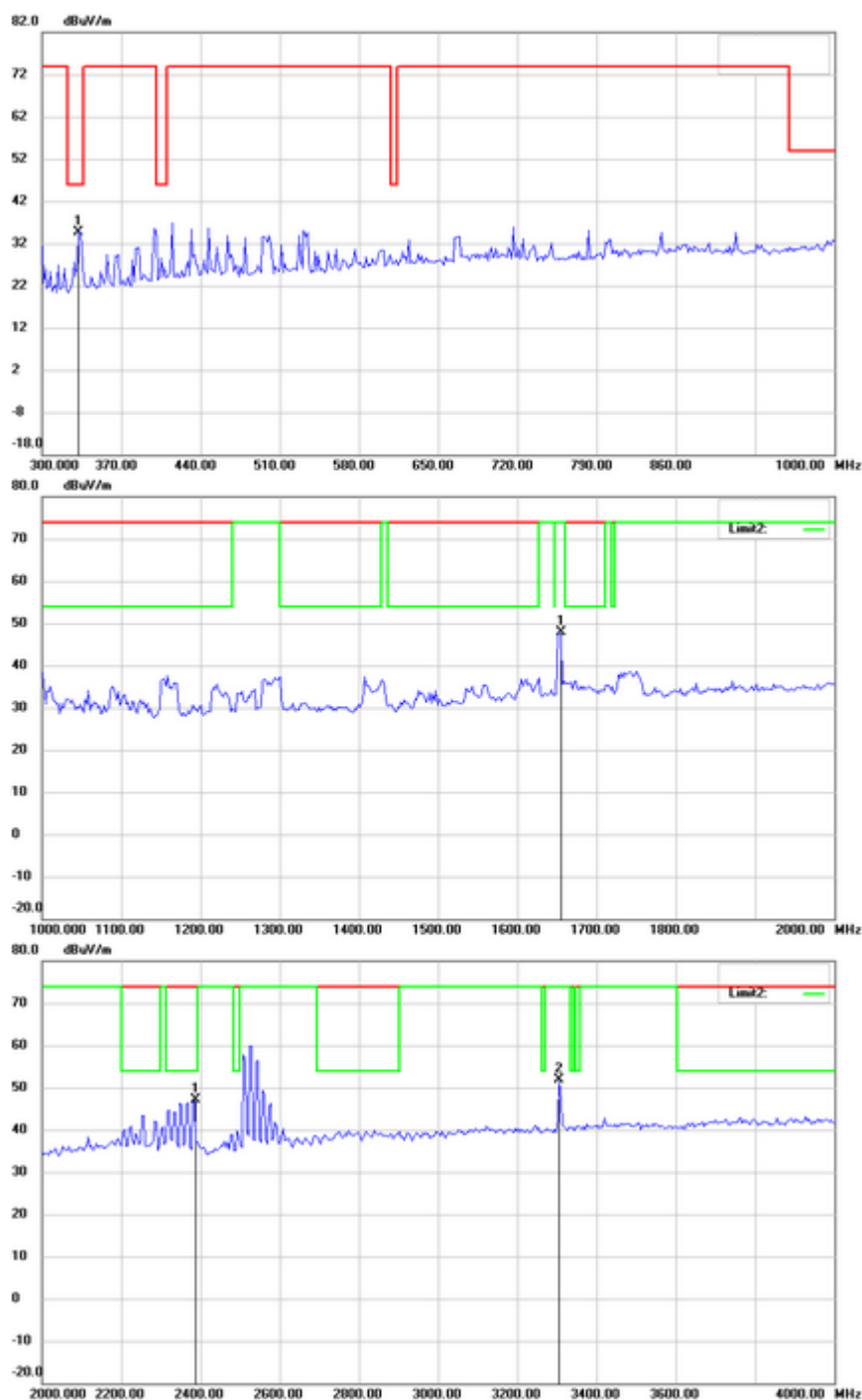
**Up Line: Peak Limit Line**  
**Down Line: Ave Limit Line**  
**Note:**

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.



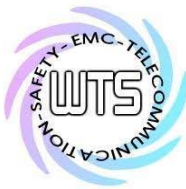
# Worldwide Testing Services(Taiwan) Co., Ltd.

Registration number: W6M20902-9574-P-15  
FCC ID: T9J-RN24

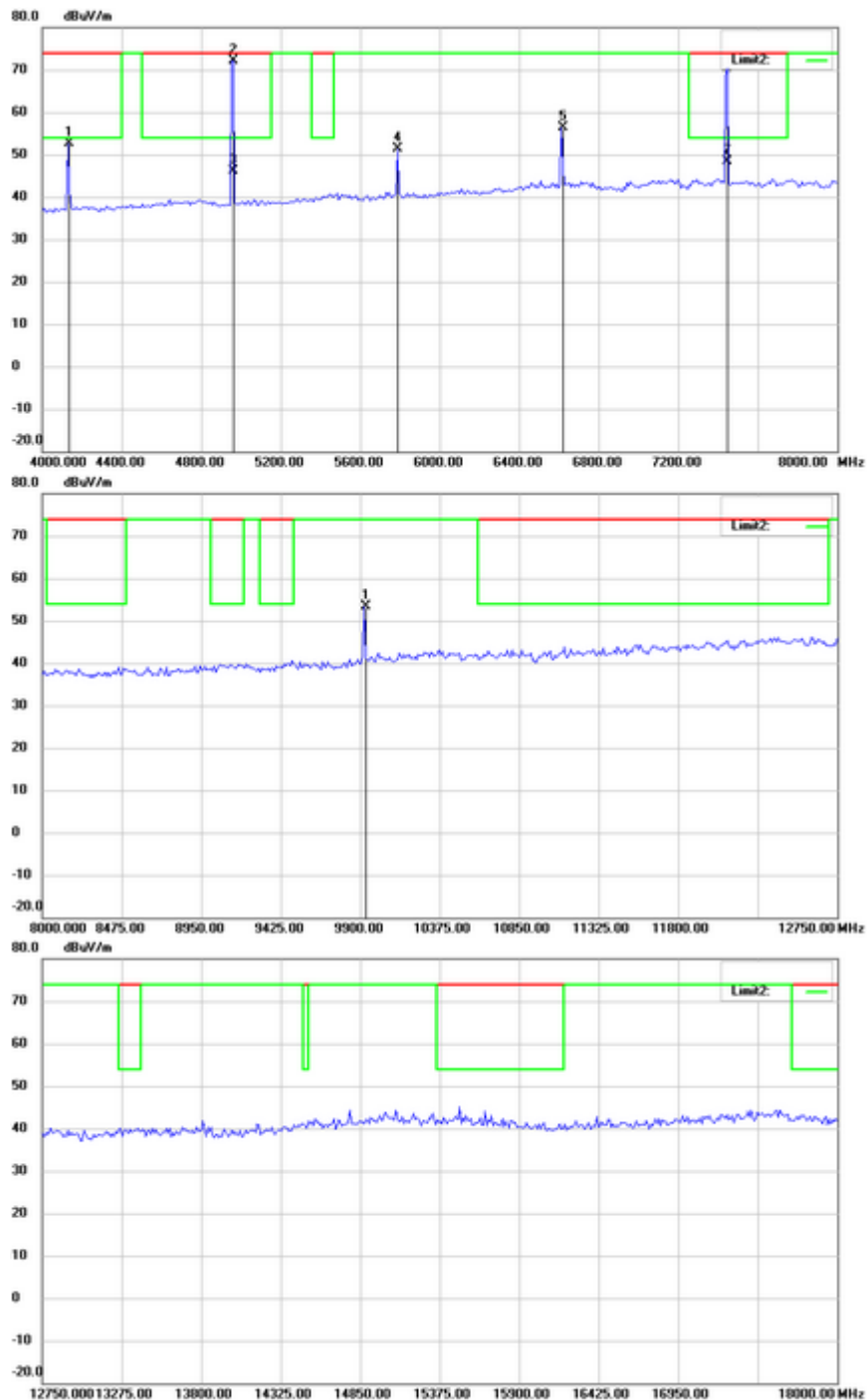


Up Line: Peak Limit Line  
Down Line: Ave Limit Line  
Note:

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: W6M20902-9574-P-15  
FCC ID: T9J-RN24

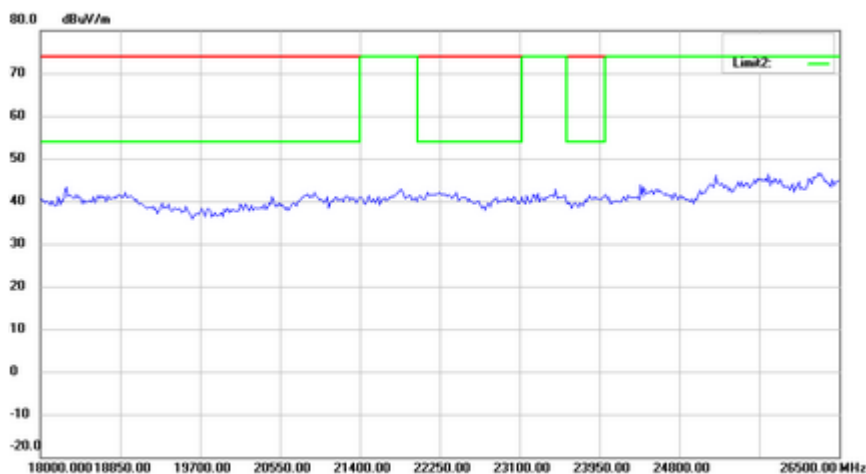


**Up Line: Peak Limit Line**  
**Down Line: Ave Limit Line**  
**Note:**

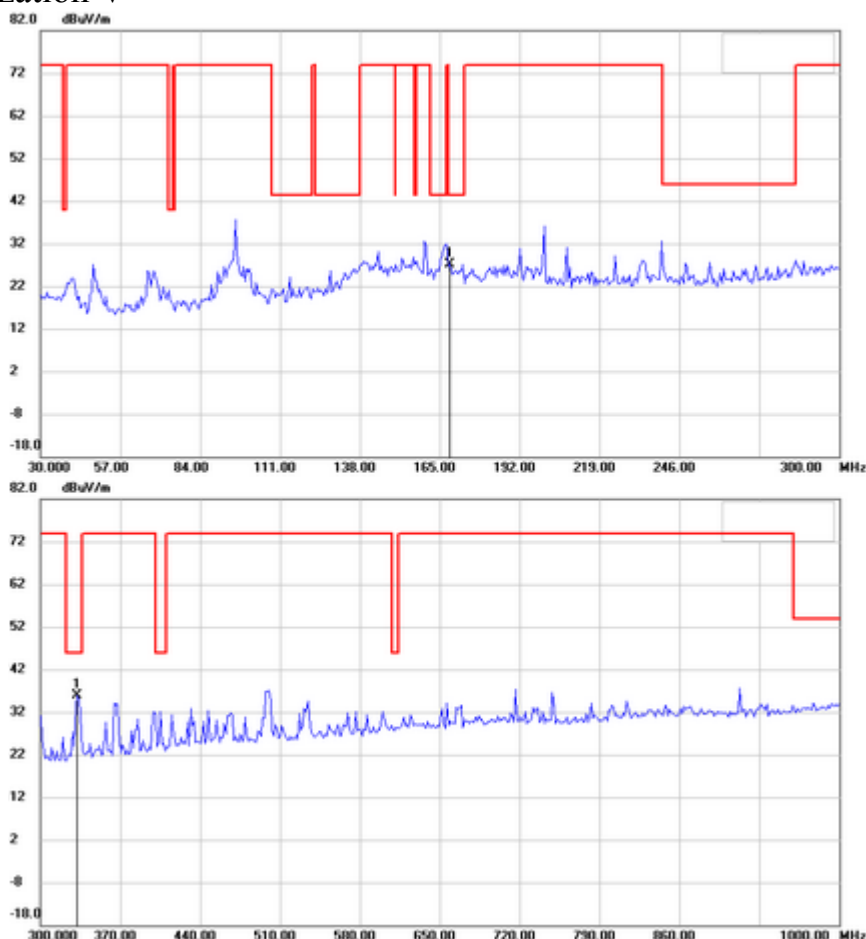
1. The attached measurement plots are preliminarily pre-scanned with peak detector for determining the final checking frequencies and are for reference only.
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Registration number: W6M20902-9574-P-15  
 FCC ID: T9J-RN24

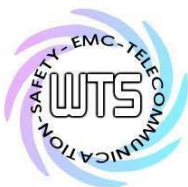


## Antenna Polarization V

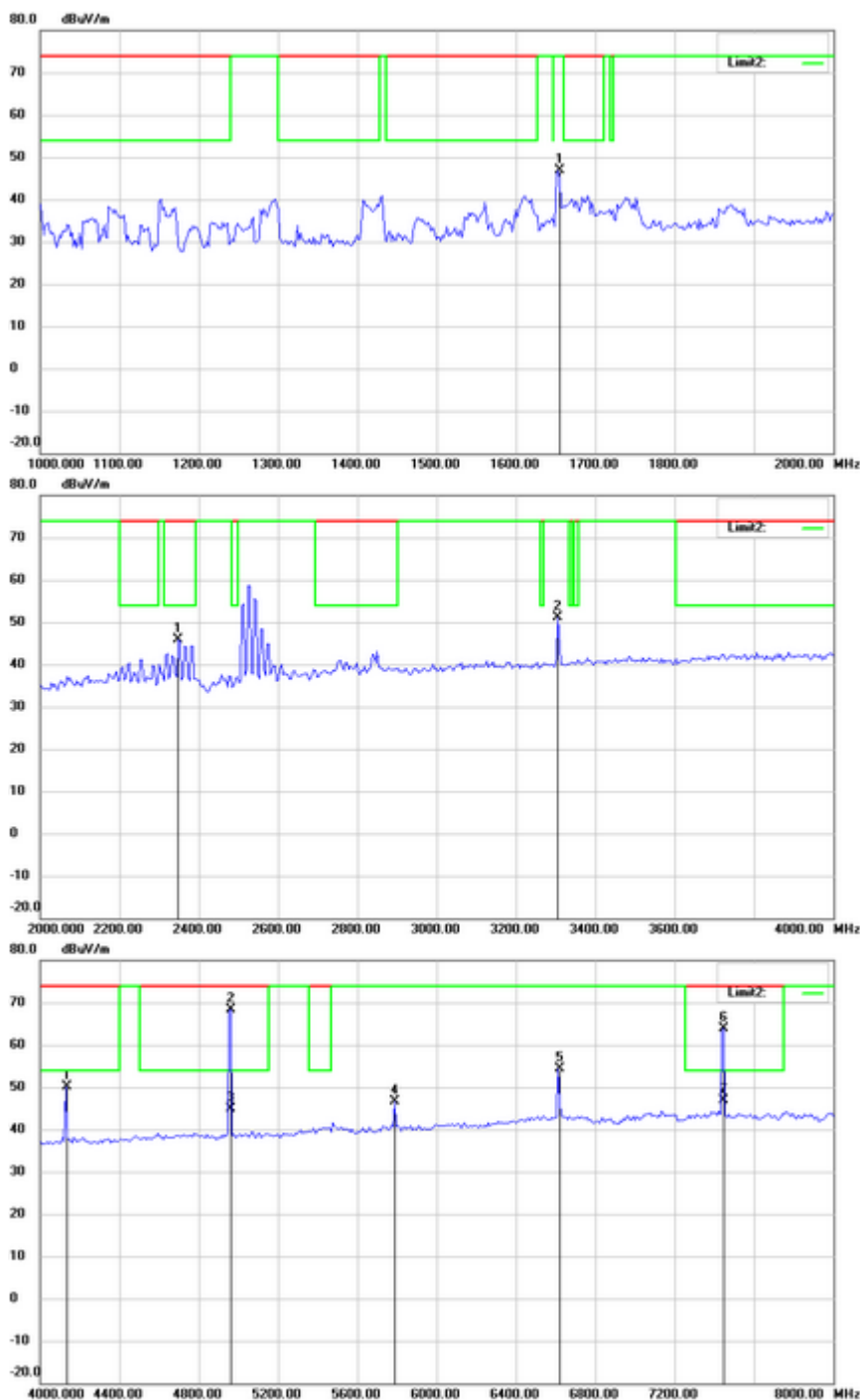


**Up Line: Peak Limit Line**  
**Down Line: Ave Limit Line**  
**Note:**

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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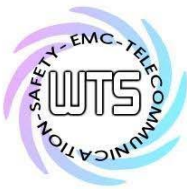
Registration number: W6M20902-9574-P-15  
 FCC ID: T9J-RN24



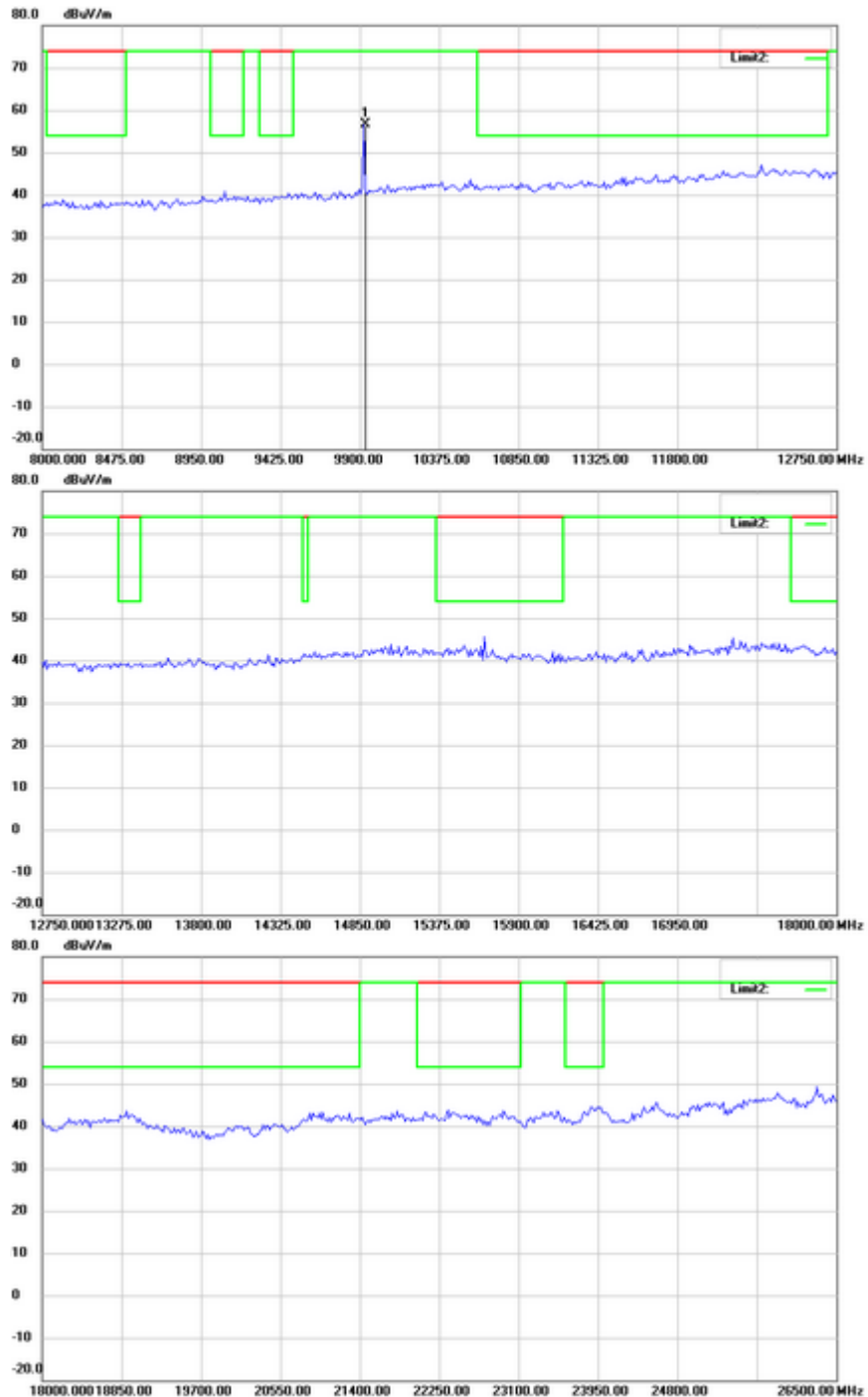
**Up Line: Peak Limit Line**  
**Down Line: Ave Limit Line**  
**Note:**

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: W6M20902-9574-P-15  
FCC ID: T9J-RN24



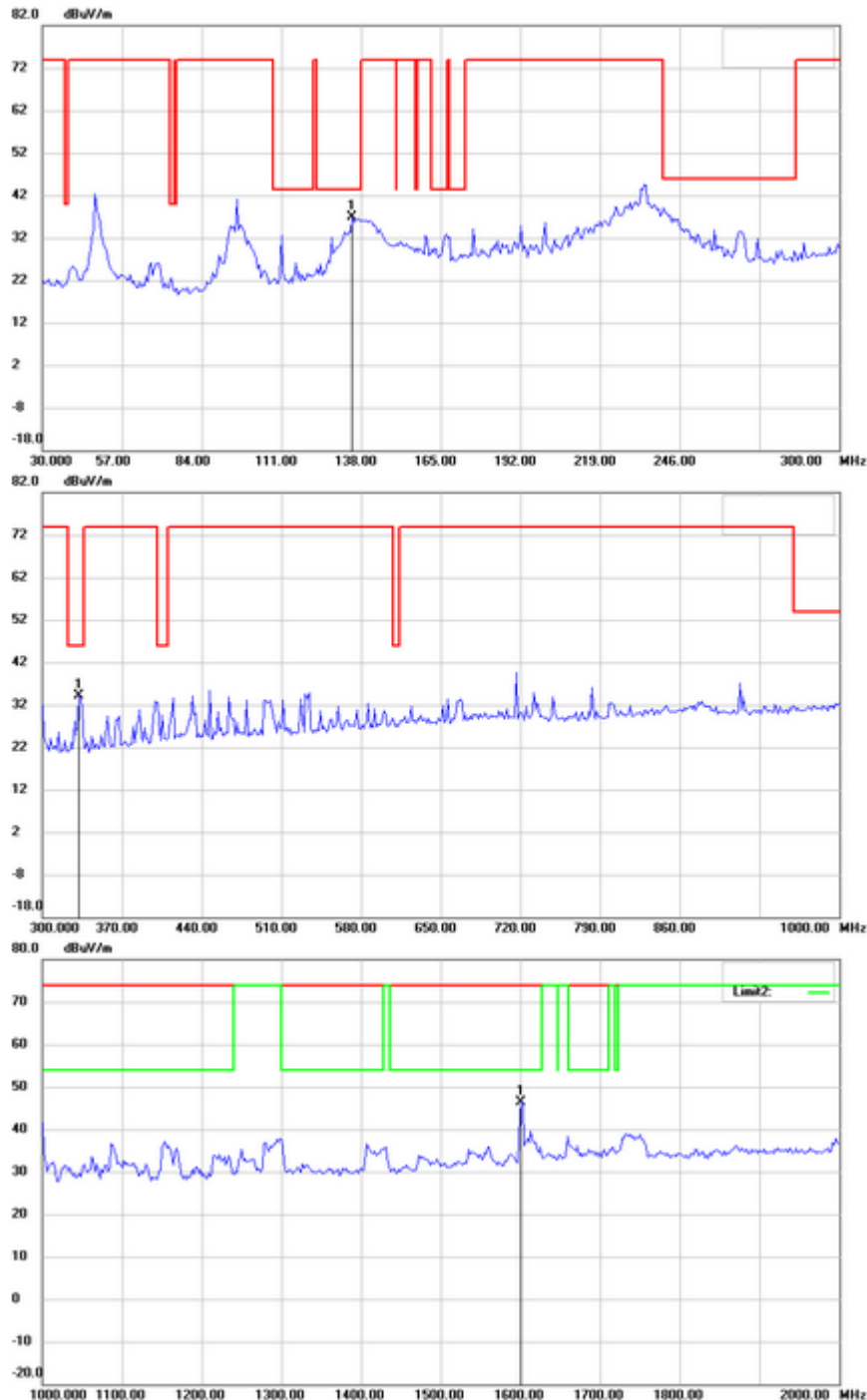
**Up Line: Peak Limit Line**  
**Down Line: Ave Limit Line**  
**Note:**

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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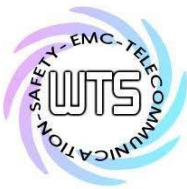
Registration number: W6M20902-9574-P-15  
FCC ID: T9J-RN24

## CH 0\_Antenna B Antenna Polarization H

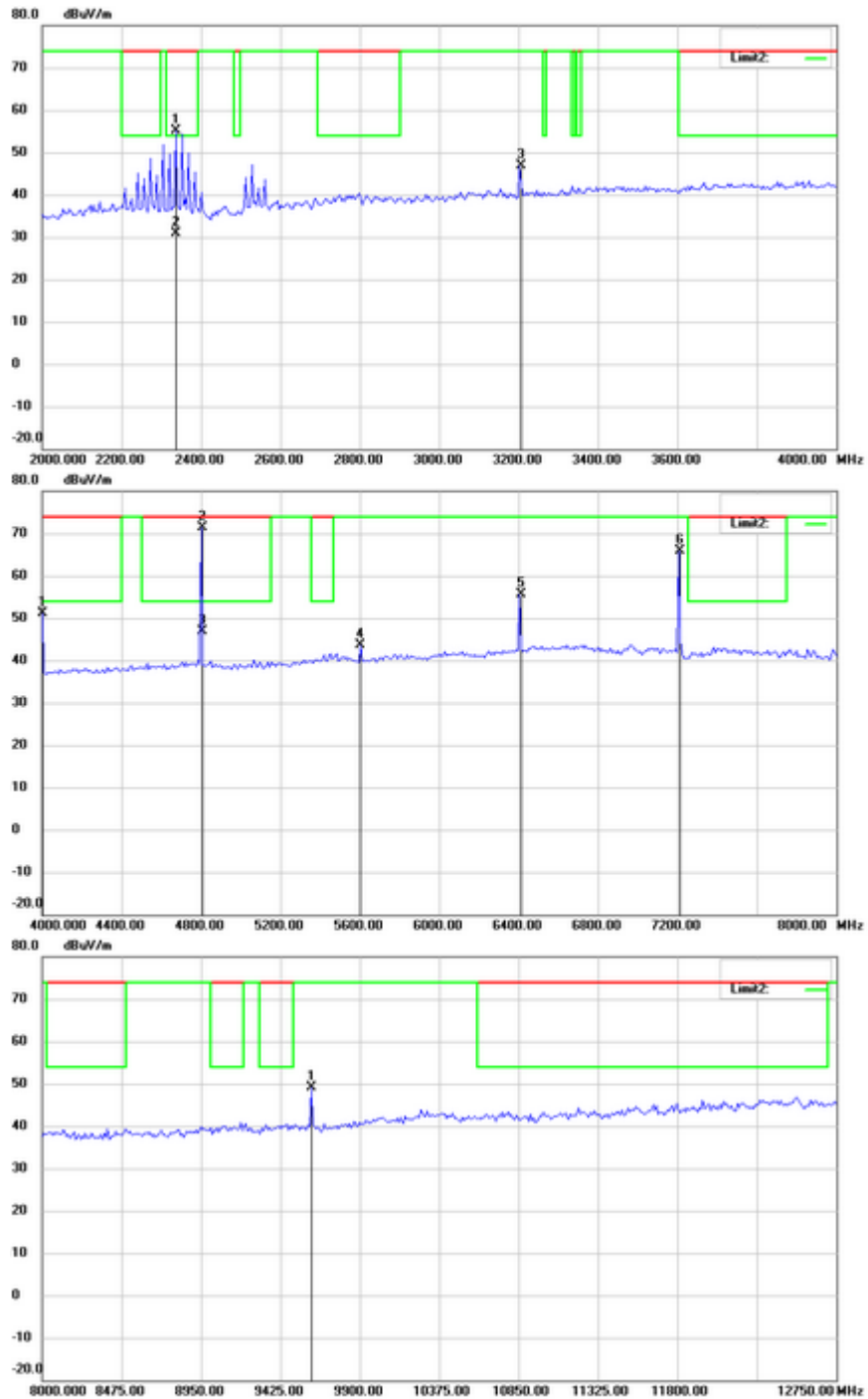


**Up Line: Peak Limit Line**  
**Down Line: Ave Limit Line**  
**Note:**

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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Registration number: W6M20902-9574-P-15  
 FCC ID: T9J-RN24

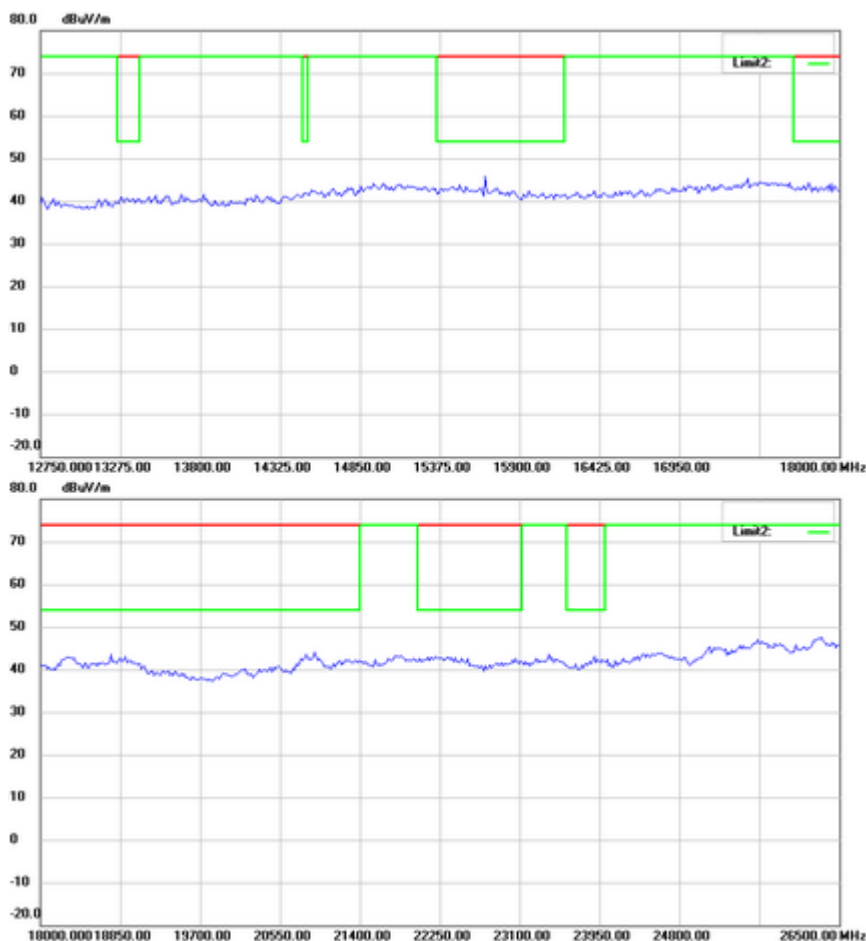


**Up Line: Peak Limit Line**  
**Down Line: Ave Limit Line**  
**Note:**

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: W6M20902-9574-P-15  
 FCC ID: T9J-RN24

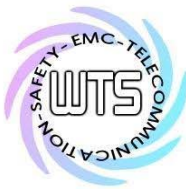


## Antenna Polarization V



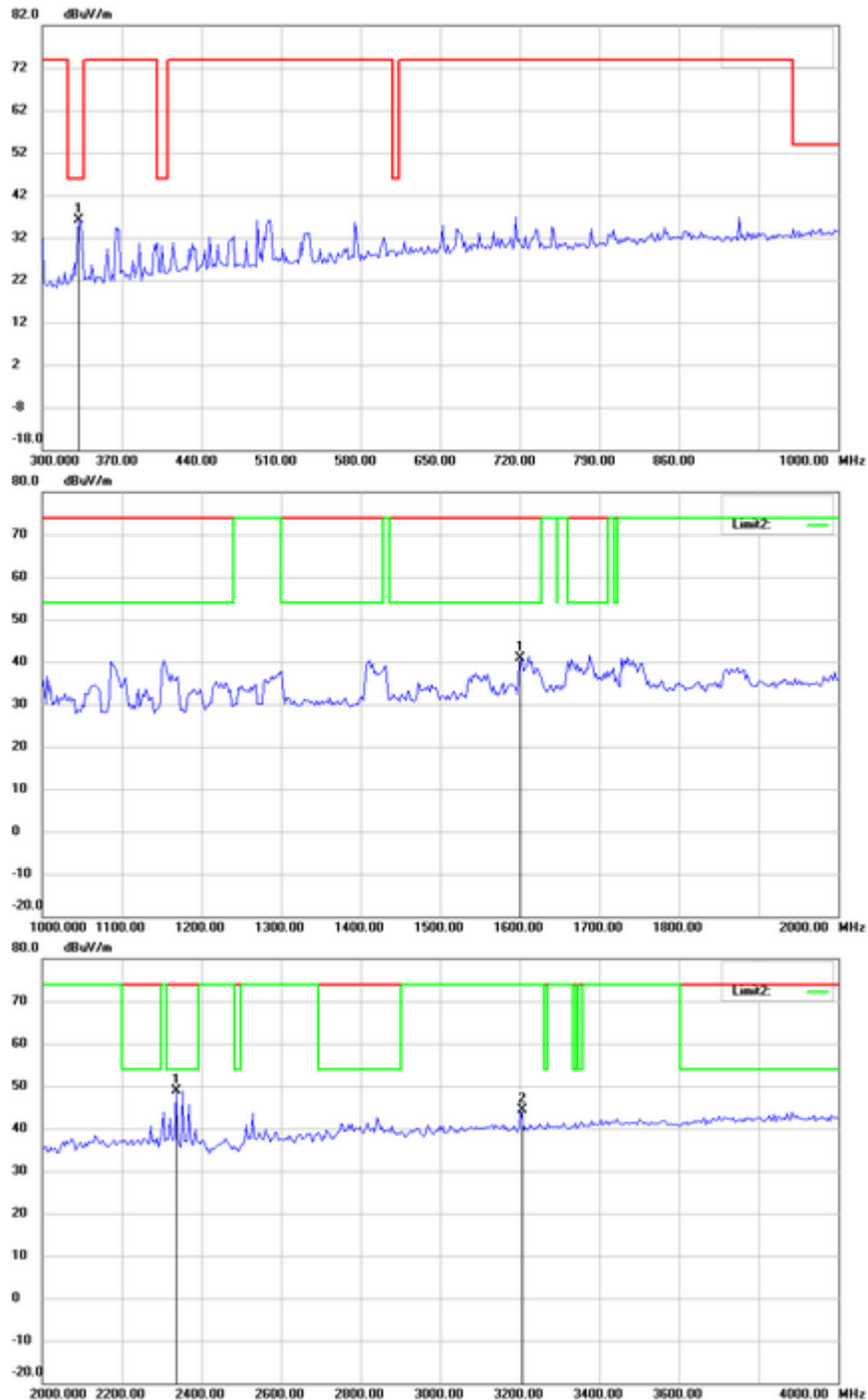
**Up Line: Peak Limit Line**  
**Down Line: Ave Limit Line**  
**Note:**

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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FCC ID: T9J-RN24

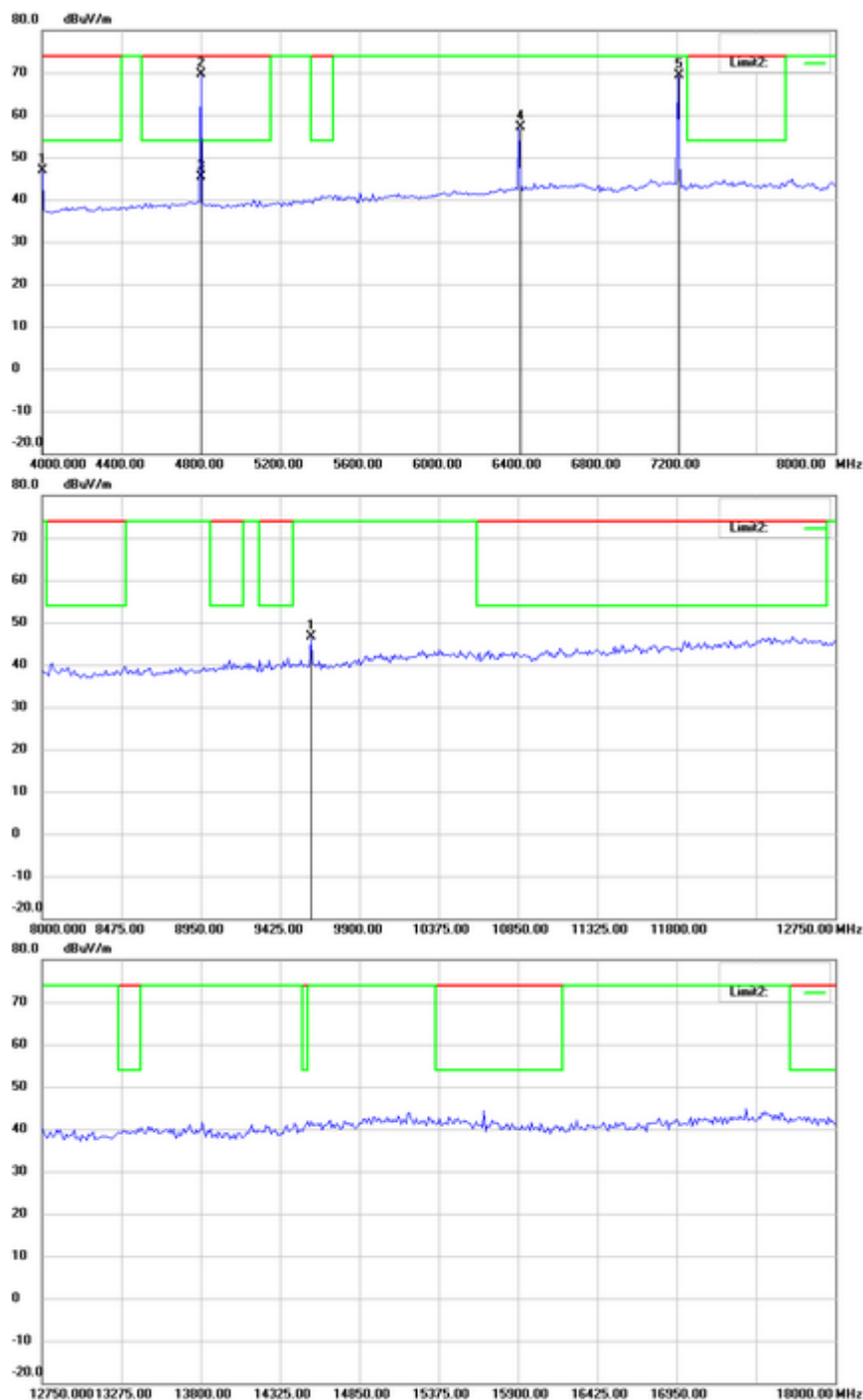


**Up Line: Peak Limit Line**  
**Down Line: Ave Limit Line**  
**Note:**

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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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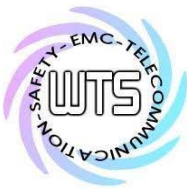


Registration number: W6M20902-9574-P-15  
FCC ID: T9J-RN24

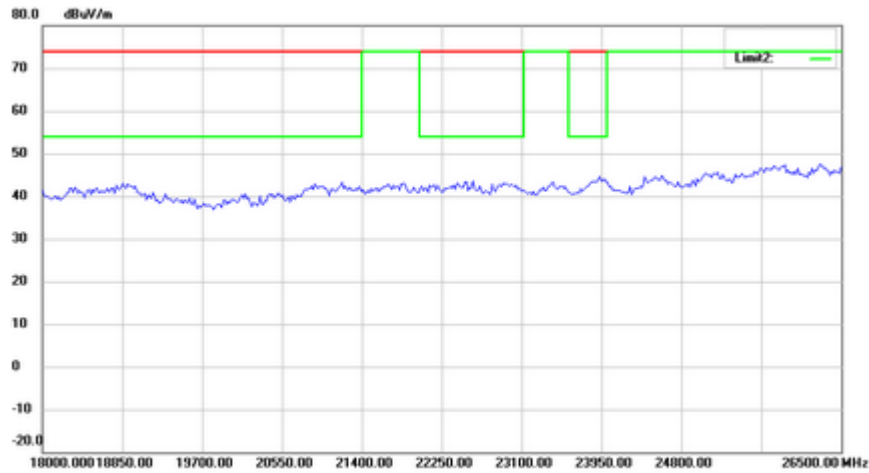


Up Line: Peak Limit Line  
Down Line: Ave Limit Line  
Note:

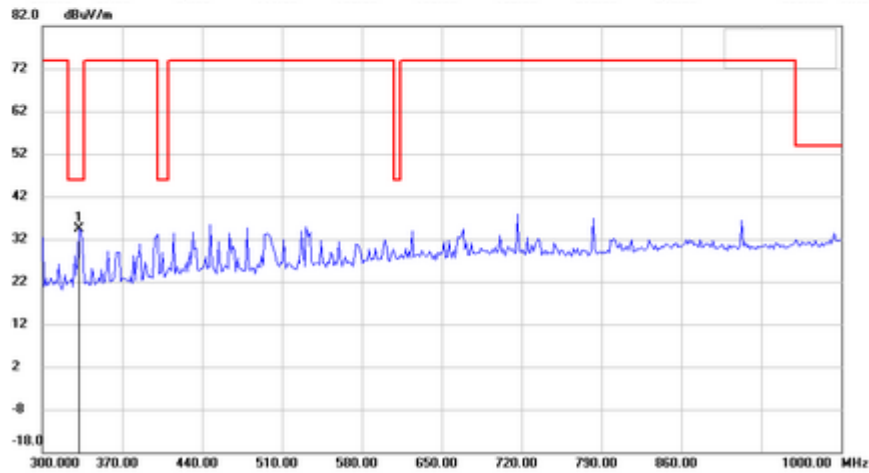
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Registration number: W6M20902-9574-P-15  
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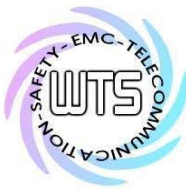


CH 39\_Antenna B  
 Antenna Polarization H

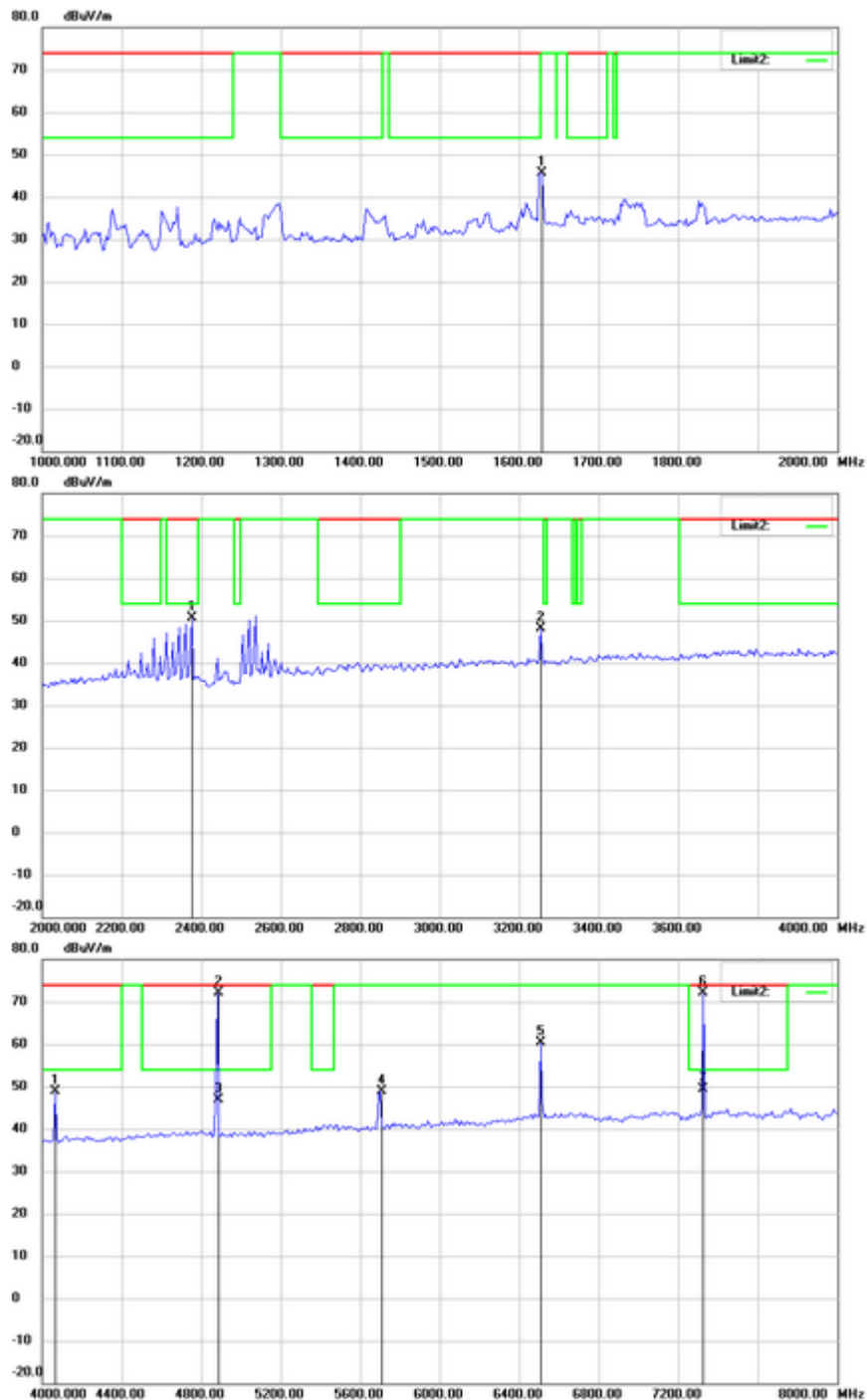


**Up Line: Peak Limit Line**  
**Down Line: Ave Limit Line**  
**Note:**

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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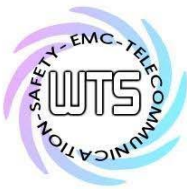
Registration number: W6M20902-9574-P-15  
FCC ID: T9J-RN24



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

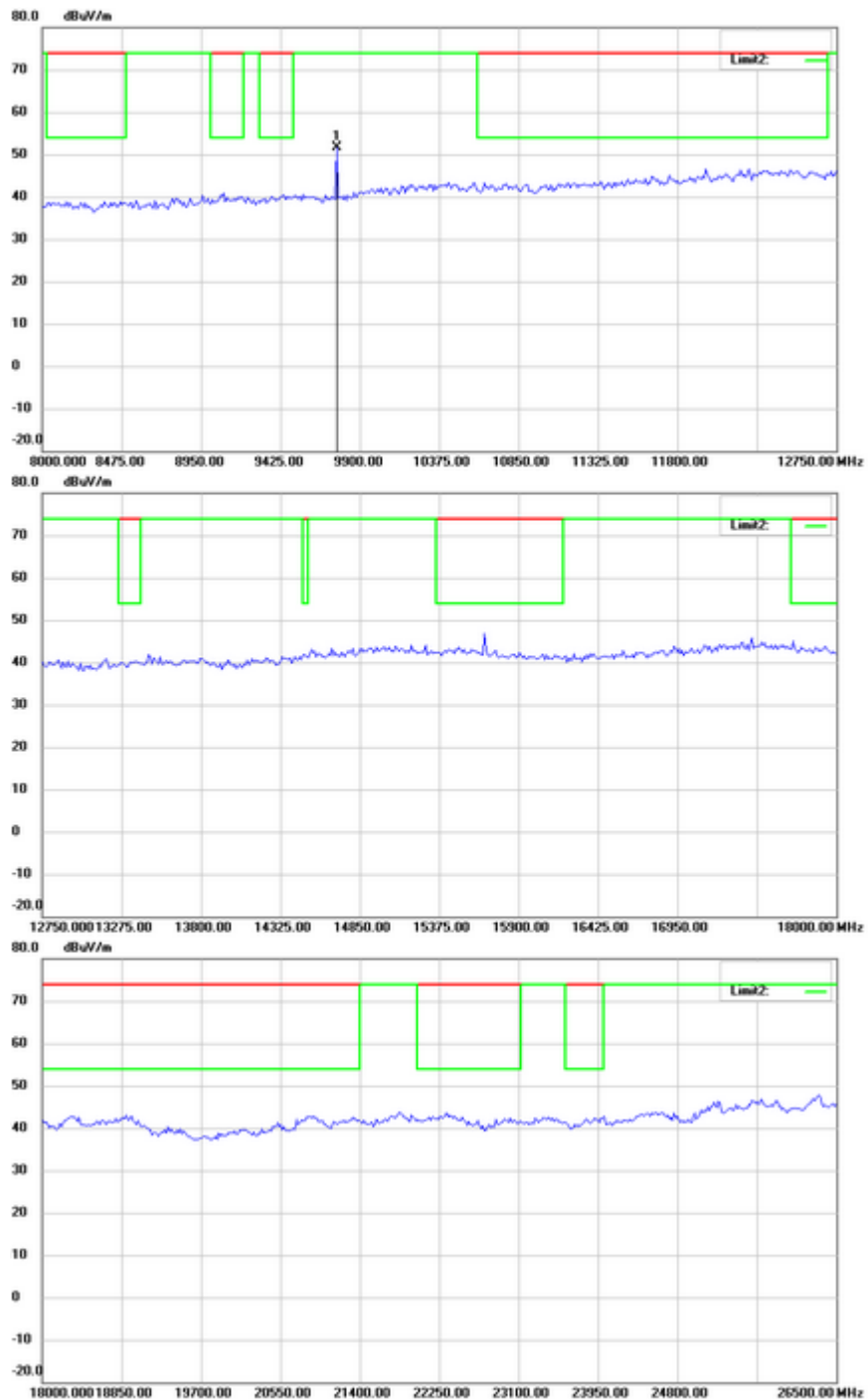
1. The attached measurement plots are preliminarily pre-scanned with peak detector for determining the final checking frequencies and are for reference only.
2. The some frequencies may exceed the limit line without the specified detectors, but that cannot present the results are failed to the specification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

Registration number: W6M20902-9574-P-15  
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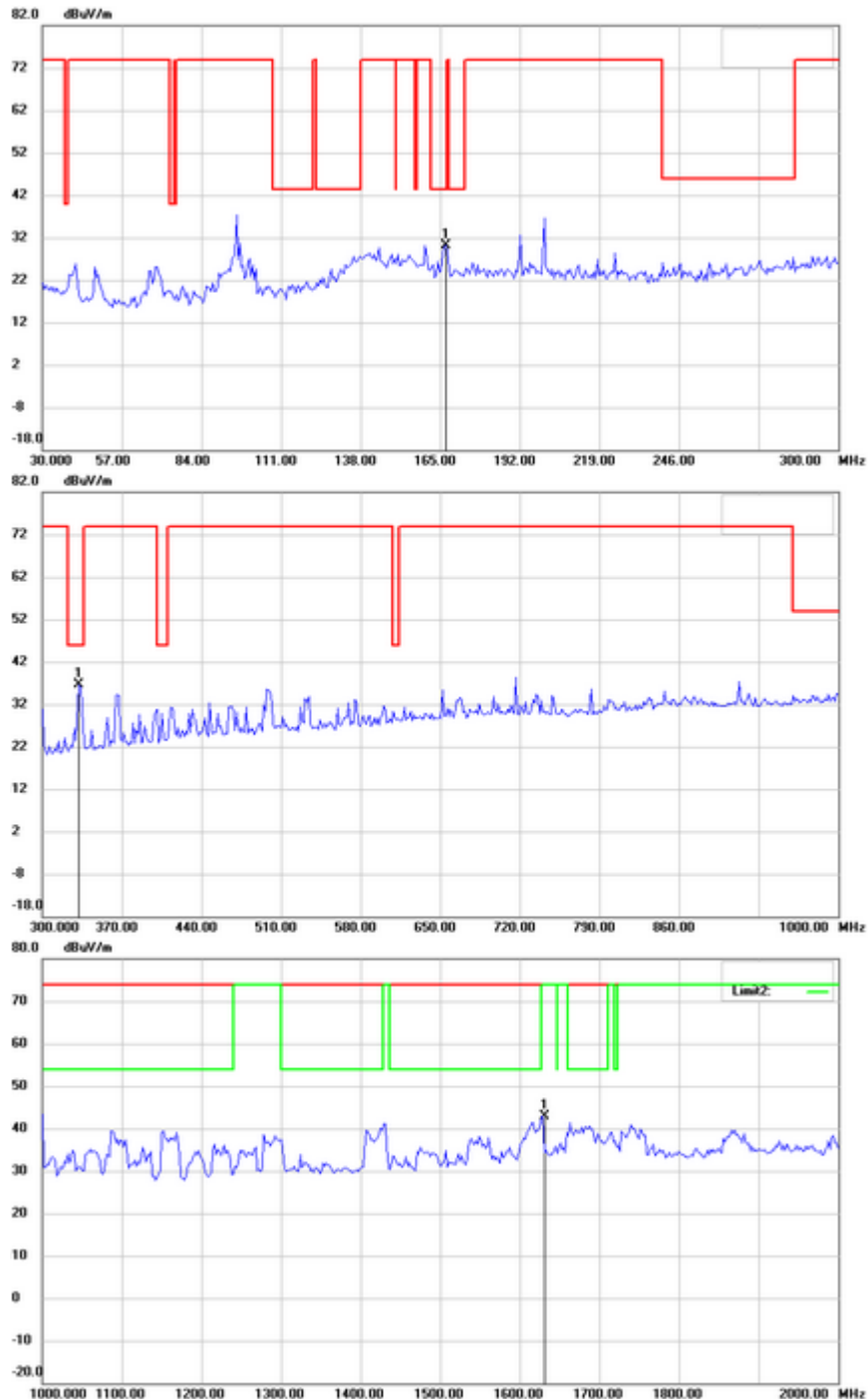
**Up Line: Peak Limit Line**  
**Down Line: Ave Limit Line**  
**Note:**

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



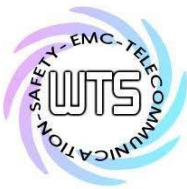
Registration number: W6M20902-9574-P-15  
FCC ID: T9J-RN24

## Antenna Polarization V



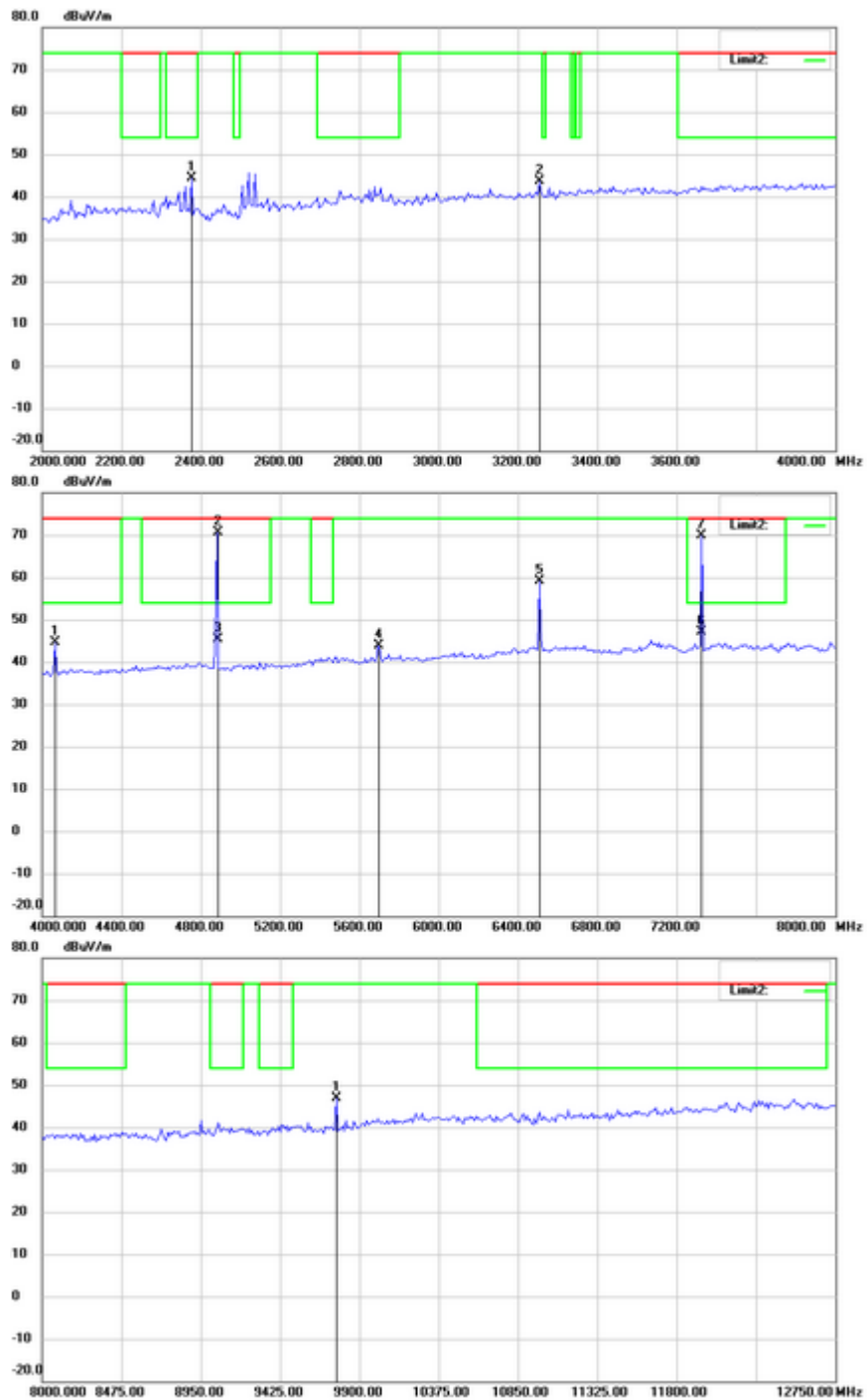
**Up Line: Peak Limit Line**  
**Down Line: Ave Limit Line**  
**Note:**

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

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 FCC ID: T9J-RN24

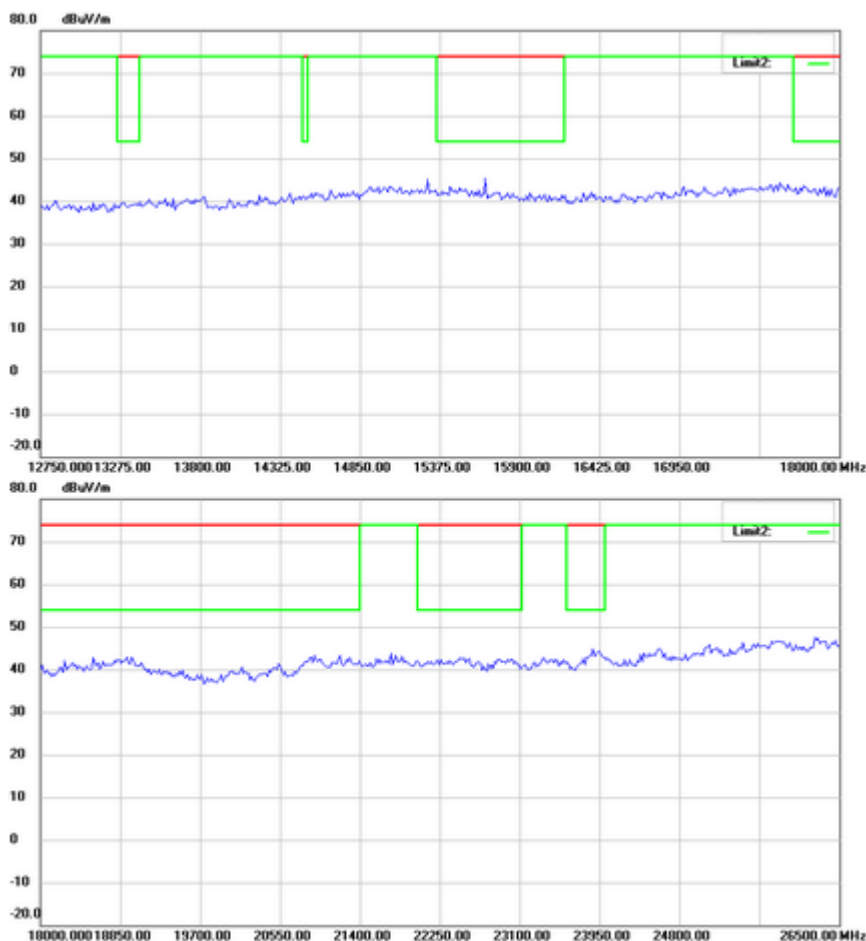


**Up Line: Peak Limit Line**  
**Down Line: Ave Limit Line**  
**Note:**

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: W6M20902-9574-P-15  
FCC ID: T9J-RN24

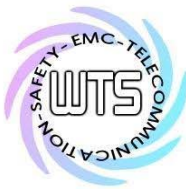


CH 78\_Antenna B  
Antenna Polarization H

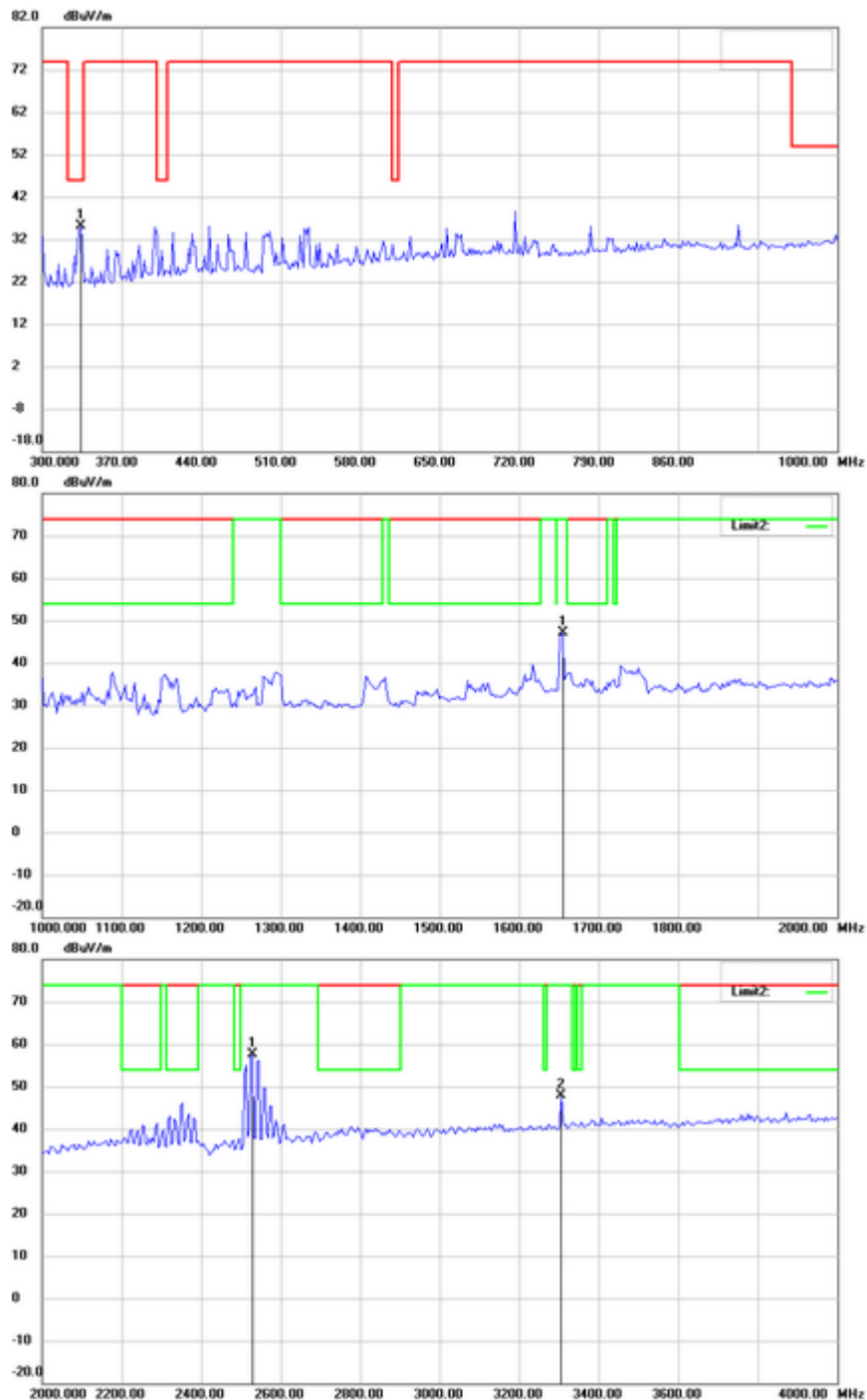


Up Line: Peak Limit Line  
Down Line: Ave Limit Line  
Note:

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.

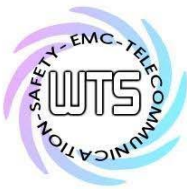


Registration number: W6M20902-9574-P-15  
FCC ID: T9J-RN24



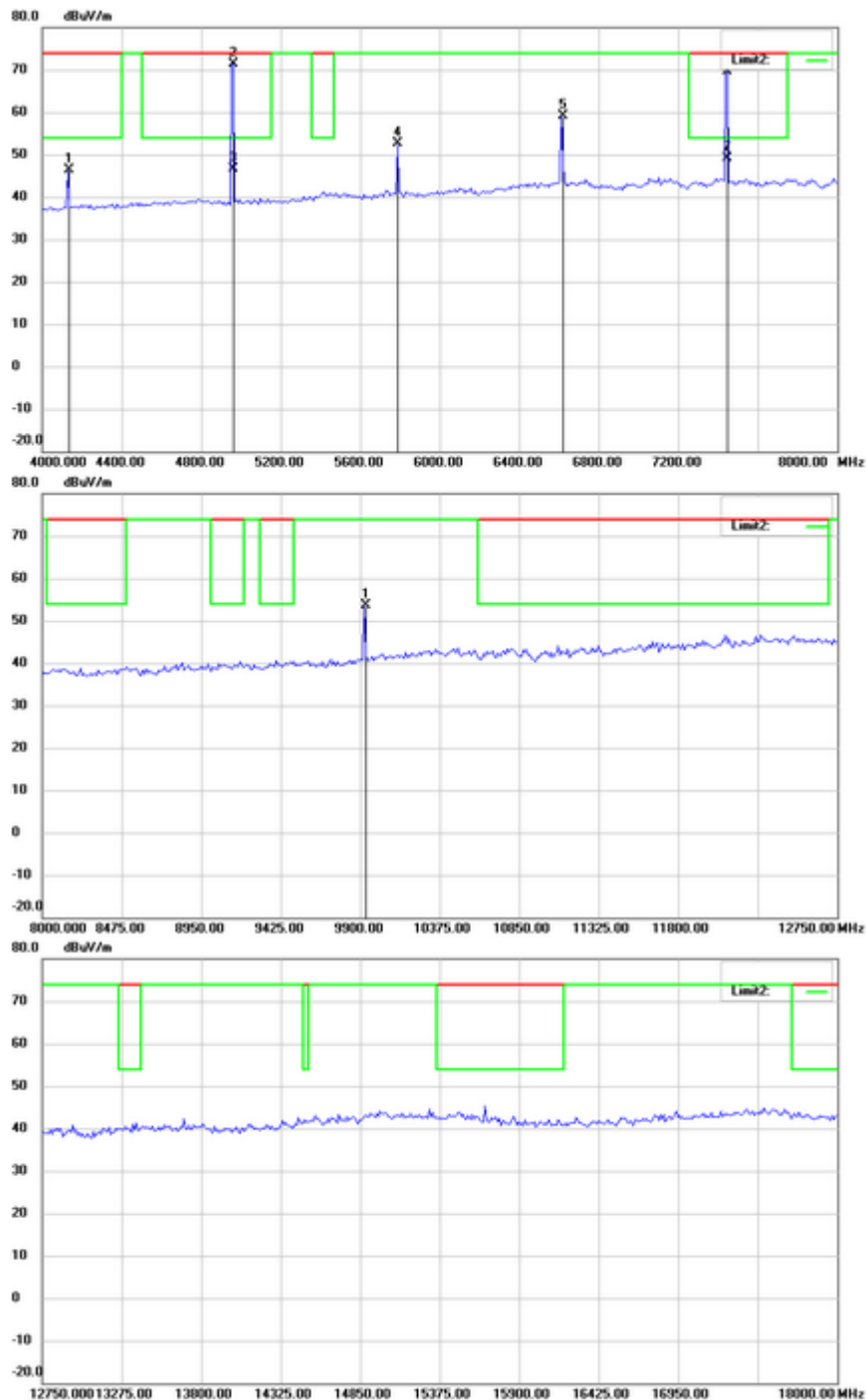
Up Line: Peak Limit Line  
Down Line: Ave Limit Line  
Note:

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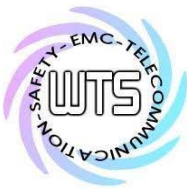
# Worldwide Testing Services(Taiwan) Co., Ltd.

Registration number: W6M20902-9574-P-15  
FCC ID: T9J-RN24

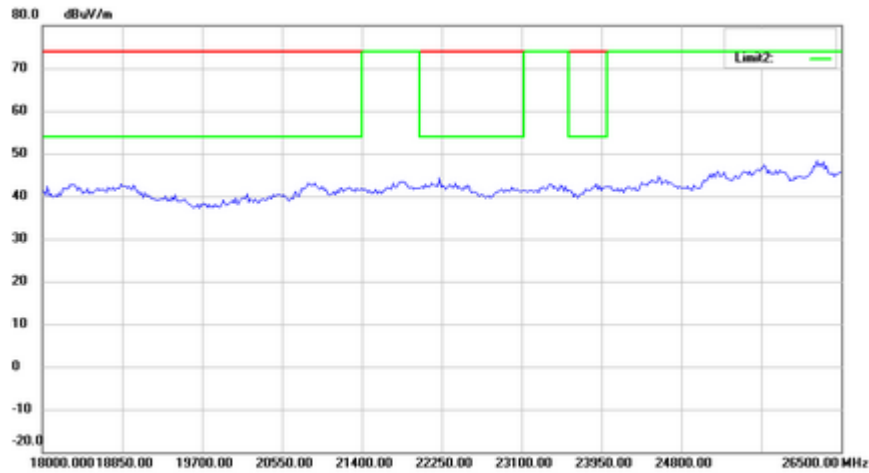


Up Line: Peak Limit Line  
Down Line: Ave Limit Line  
Note:

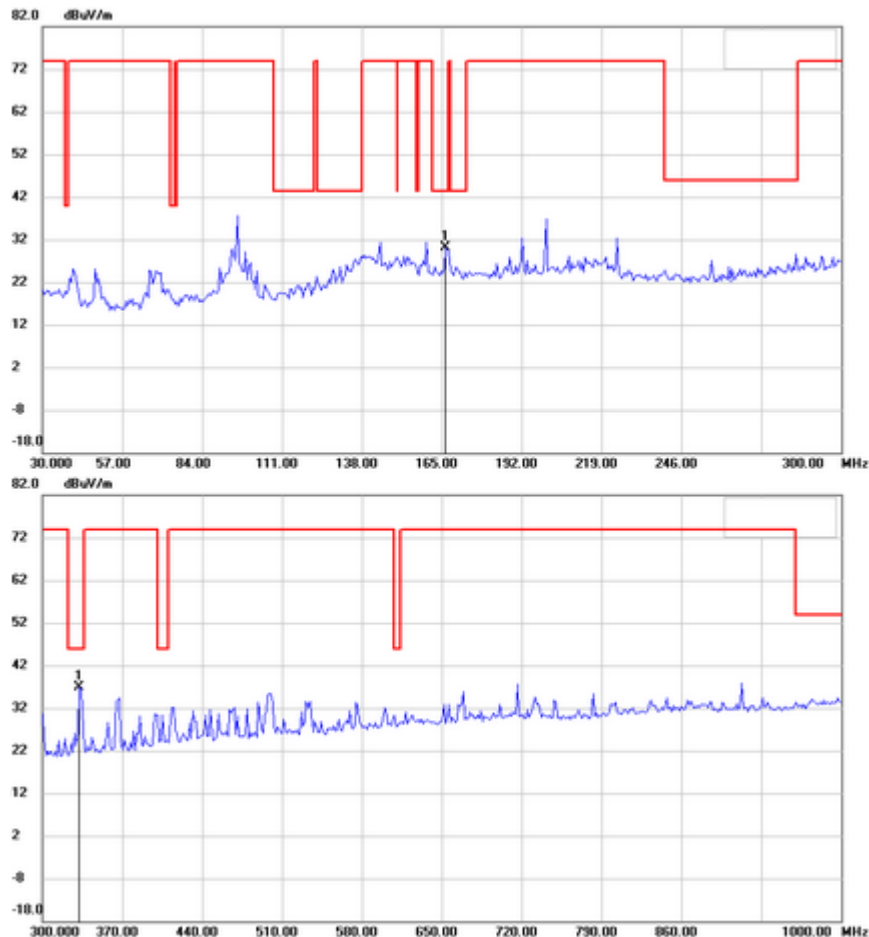
1. The attached measurement plots are preliminarily pre-scanned with peak detector for determining the final checking frequencies and are for reference only.
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Registration number: W6M20902-9574-P-15  
 FCC ID: T9J-RN24



## Antenna Polarization V

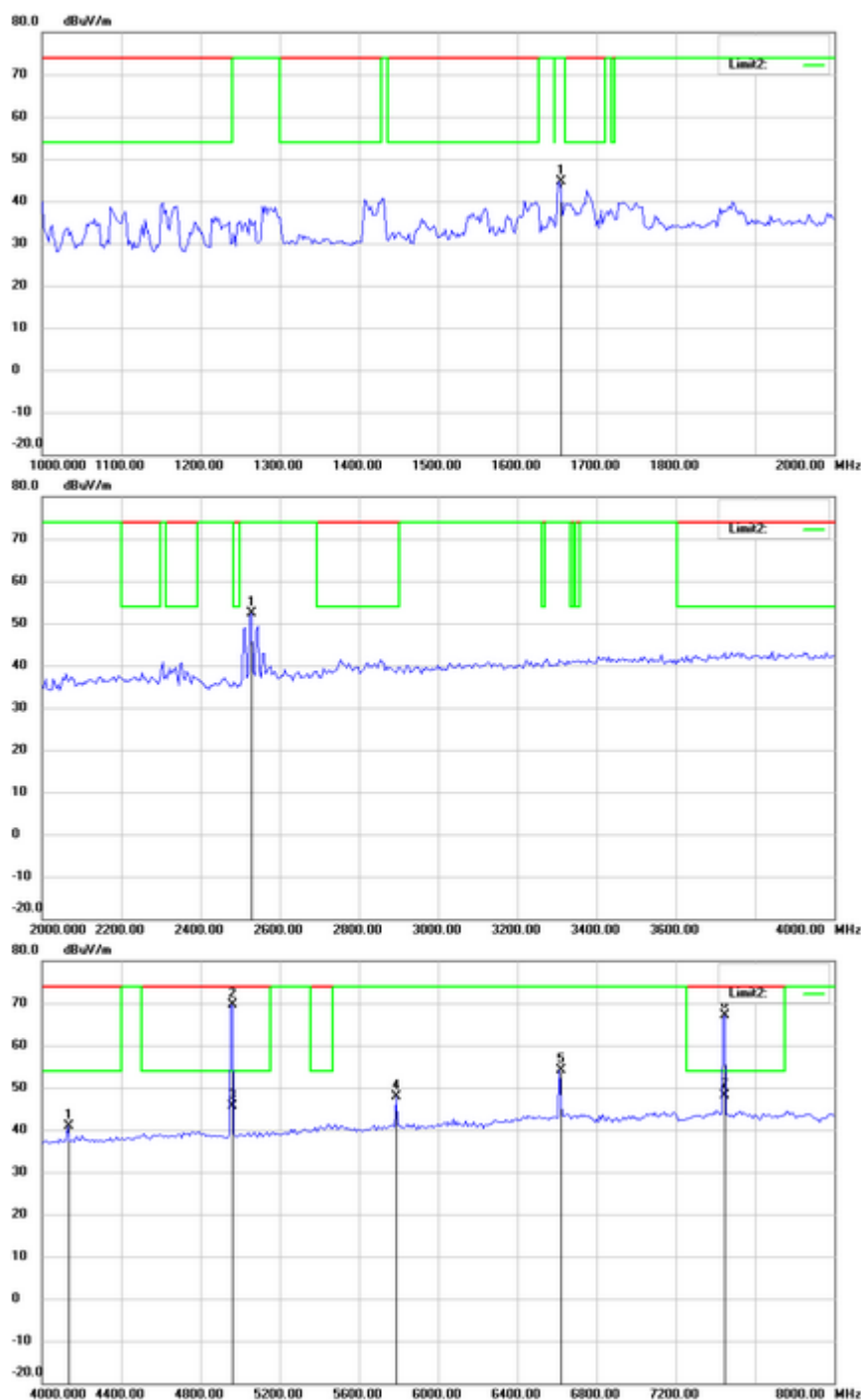


**Up Line: Peak Limit Line**  
**Down Line: Ave Limit Line**  
**Note:**

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.



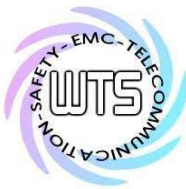
Registration number: W6M20902-9574-P-15  
FCC ID: T9J-RN24



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

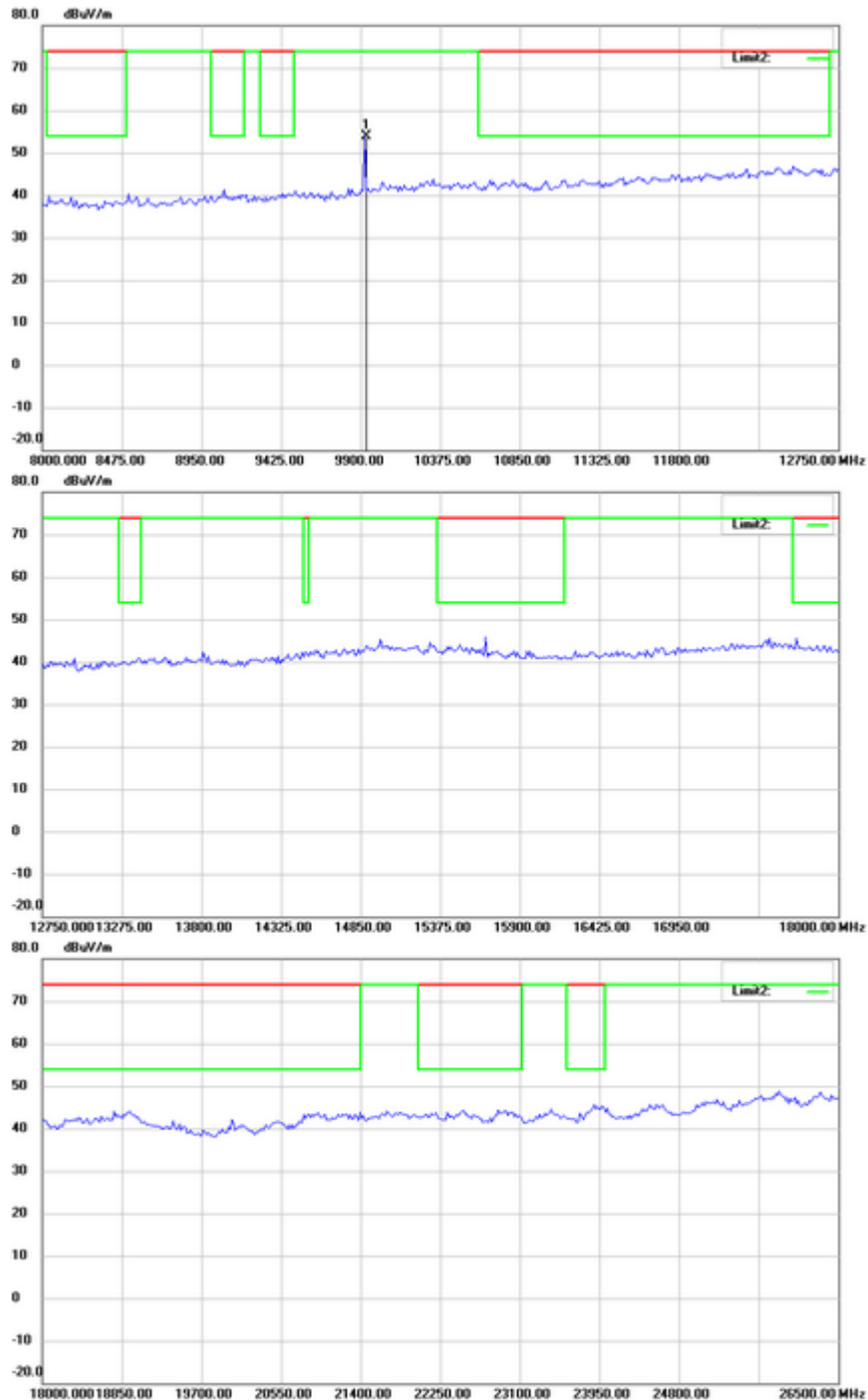
1. The attached measurement plots are preliminarily pre-scanned with peak detector for determining the final checking frequencies and are for reference only.
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# Worldwide Testing Services(Taiwan) Co., Ltd.

Registration number: W6M20902-9574-P-15  
FCC ID: T9J-RN24



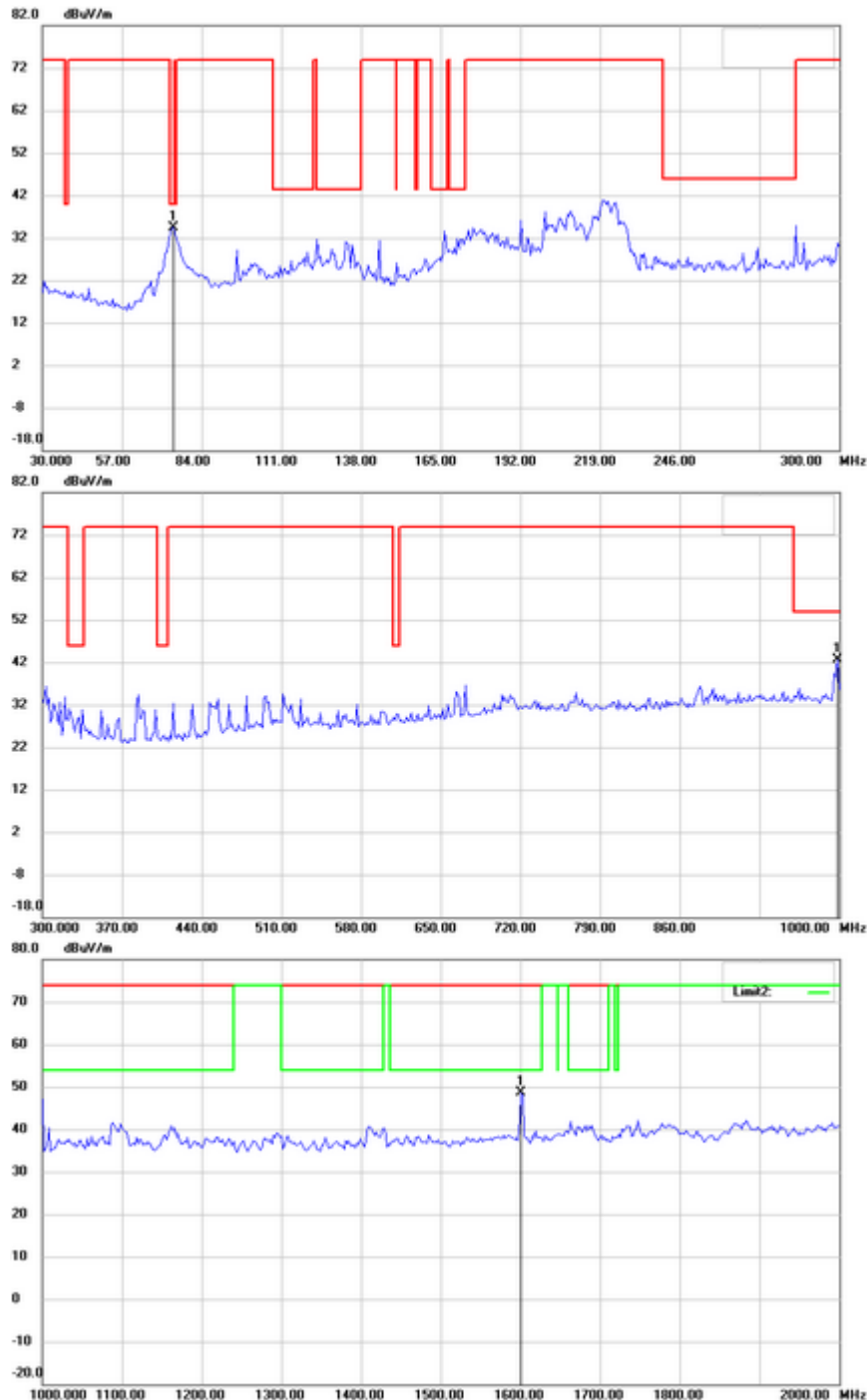
**Up Line: Peak Limit Line**  
**Down Line: Ave Limit Line**  
**Note:**

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: W6M20902-9574-P-15  
FCC ID: T9J-RN24

## CH 0\_Antenna C Antenna Polarization H

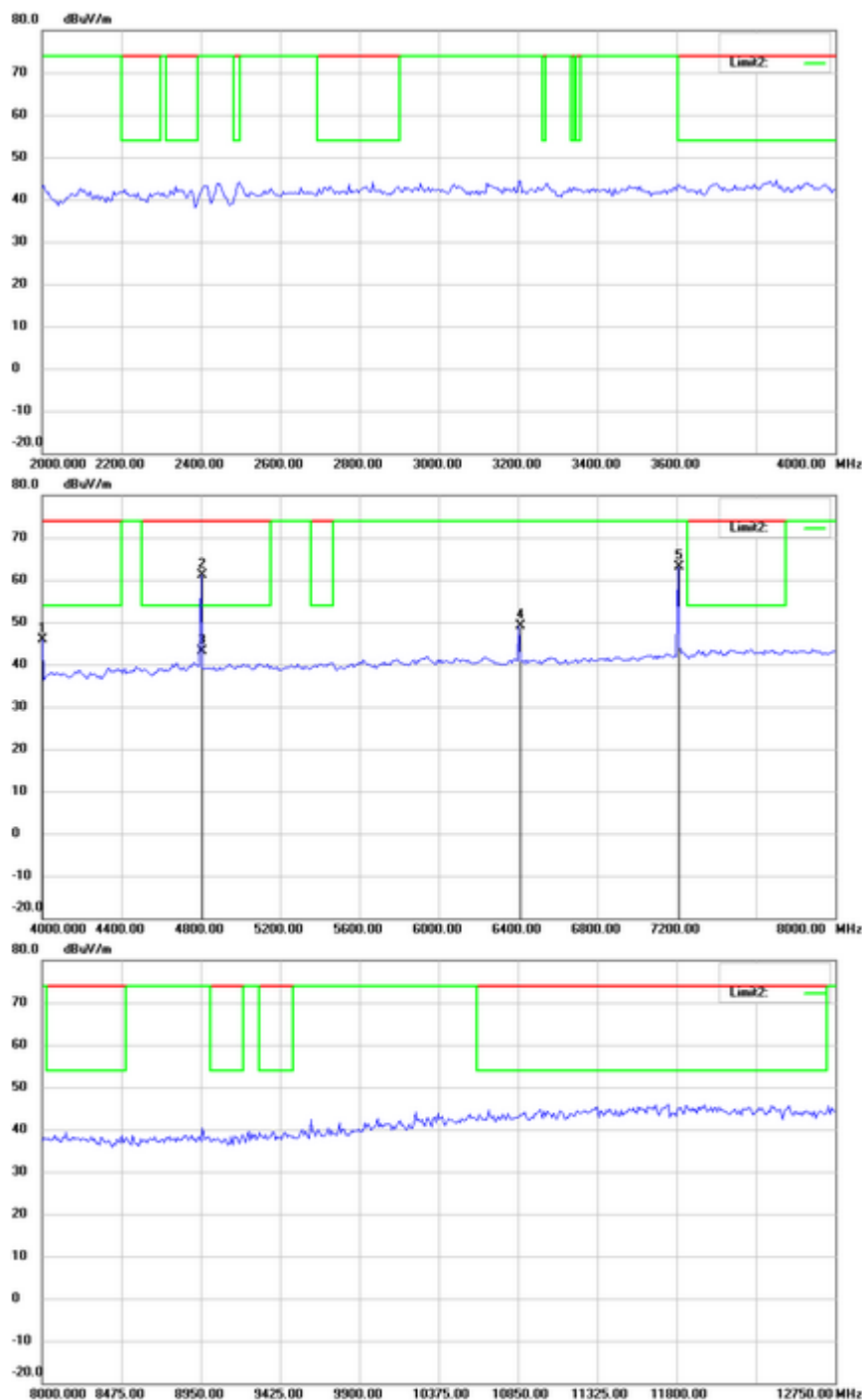


**Up Line: Peak Limit Line**  
**Down Line: Ave Limit Line**  
**Note:**

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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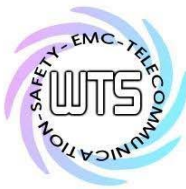


Registration number: W6M20902-9574-P-15  
FCC ID: T9J-RN24

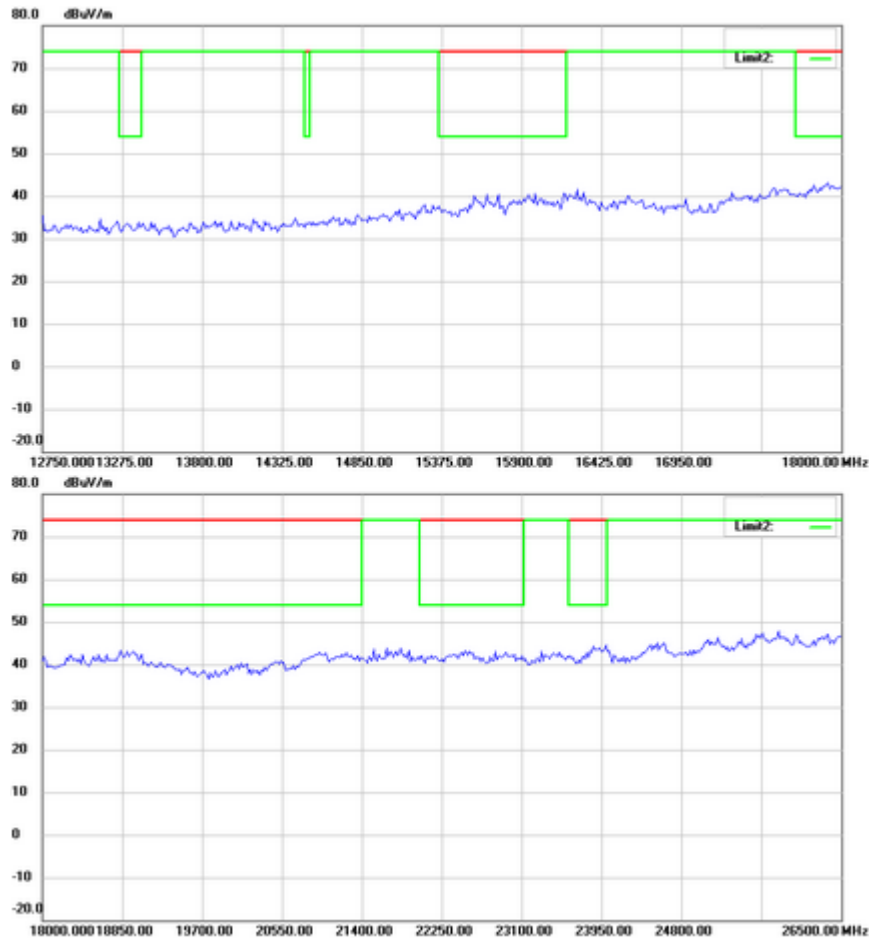


**Up Line: Peak Limit Line**  
**Down Line: Ave Limit Line**  
**Note:**

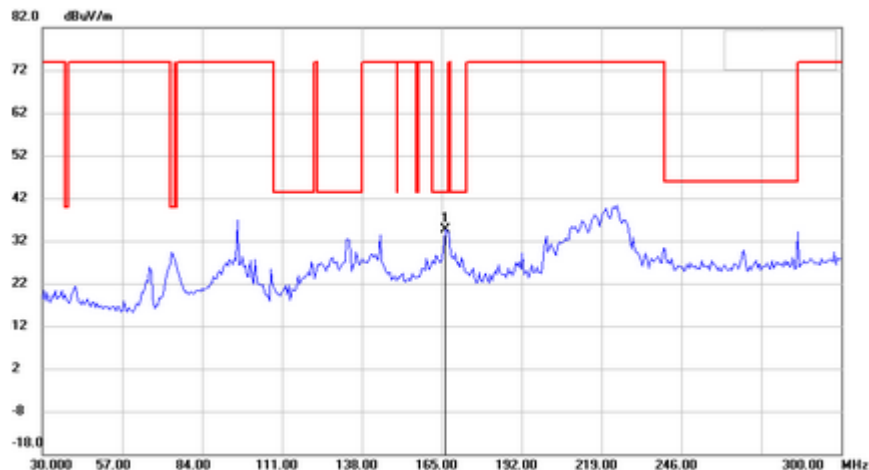
1. The attached measurement plots are preliminarily pre-scanned with peak detector for determining the final checking frequencies and are for reference only.
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Registration number: W6M20902-9574-P-15  
 FCC ID: T9J-RN24

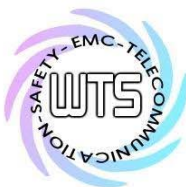


**Antenna Polarization V**

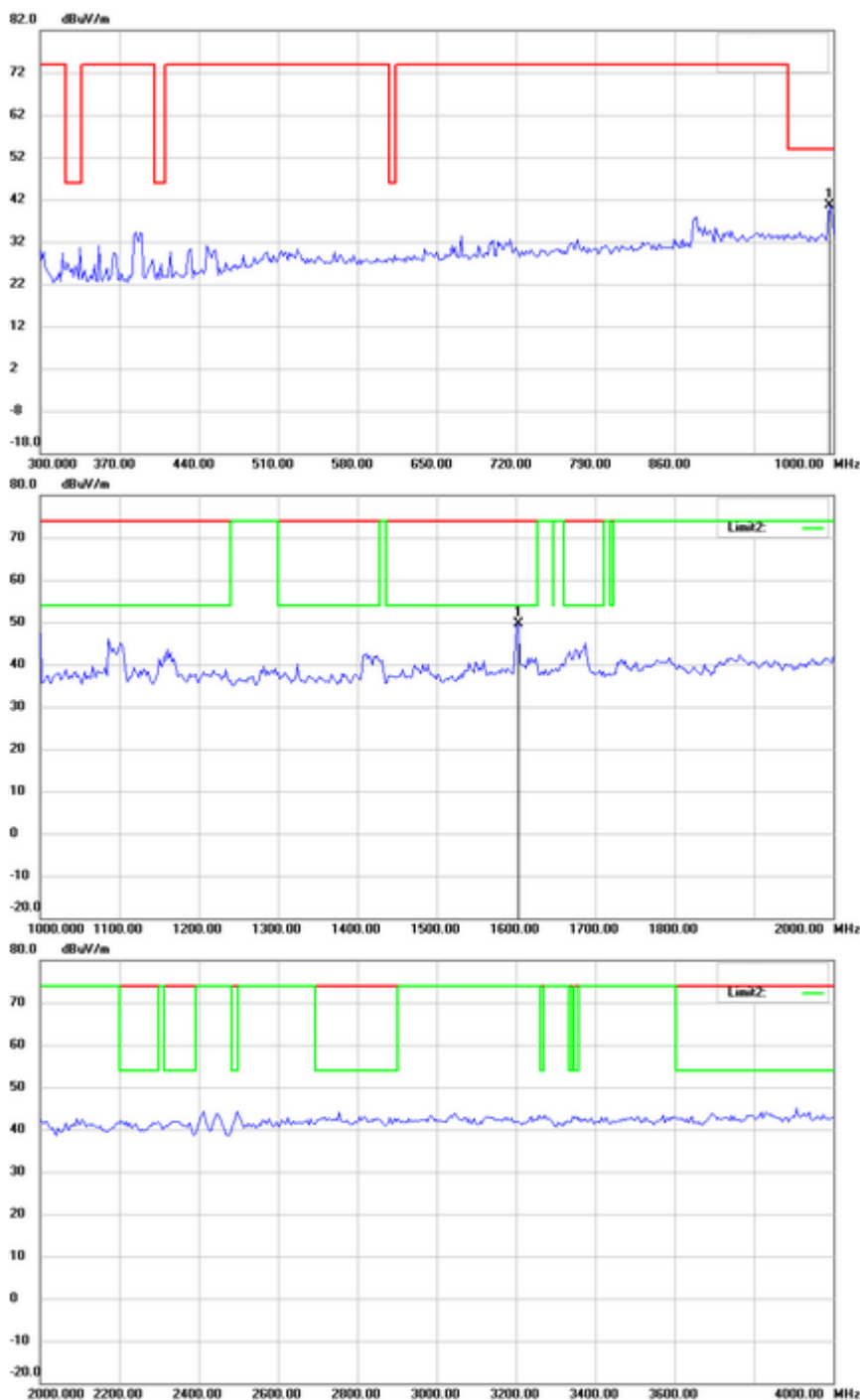


**Up Line: Peak Limit Line**  
**Down Line: Ave Limit Line**  
**Note:**

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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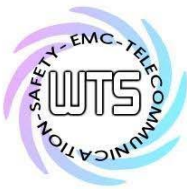


Registration number: W6M20902-9574-P-15  
FCC ID: T9J-RN24

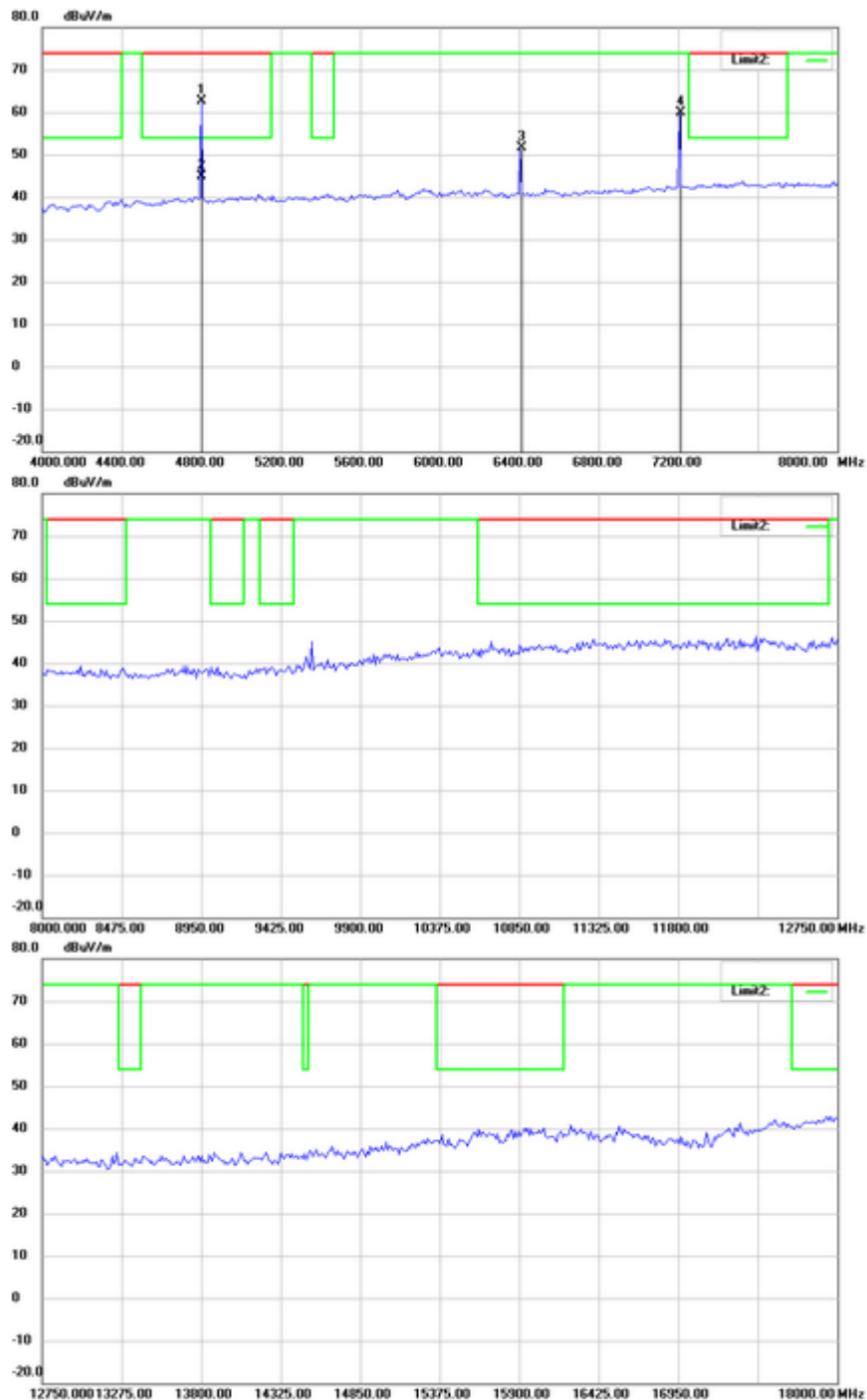


**Up Line: Peak Limit Line**  
**Down Line: Ave Limit Line**  
**Note:**

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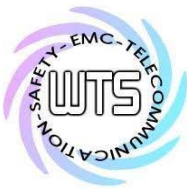


Registration number: W6M20902-9574-P-15  
FCC ID: T9J-RN24

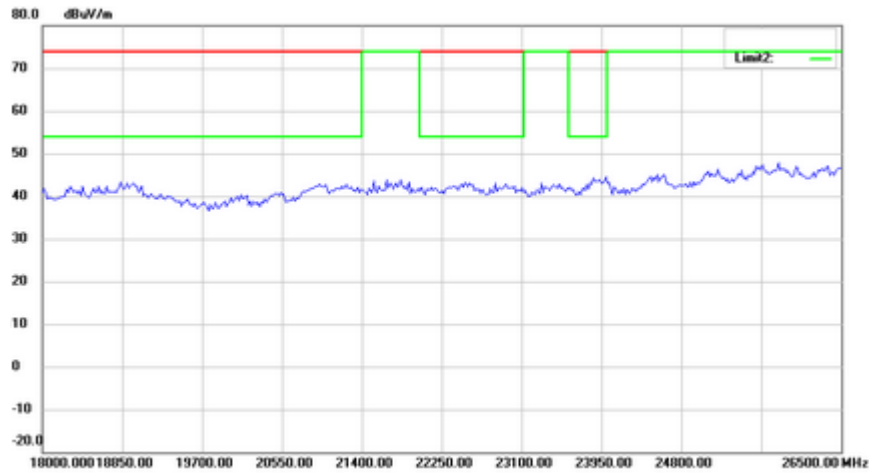


**Up Line: Peak Limit Line**  
**Down Line: Ave Limit Line**  
**Note:**

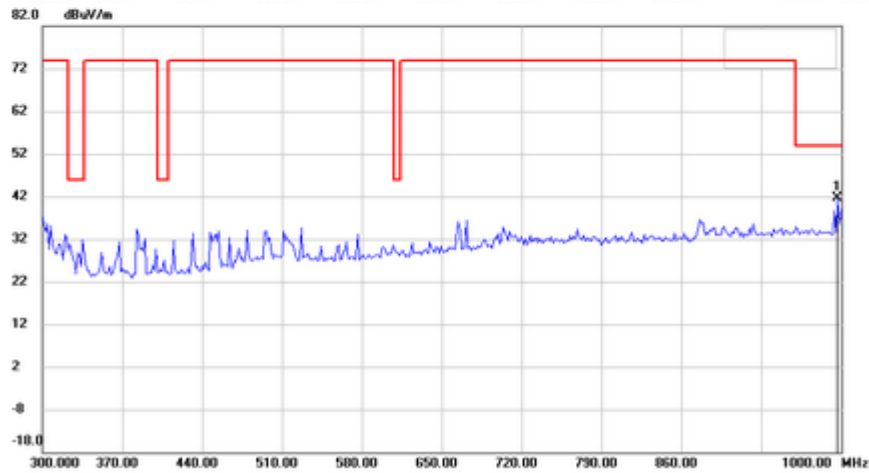
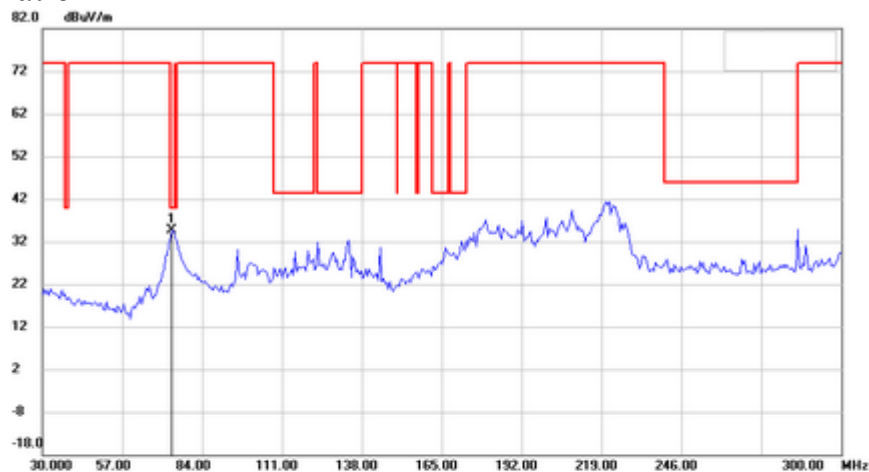
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Registration number: W6M20902-9574-P-15  
 FCC ID: T9J-RN24

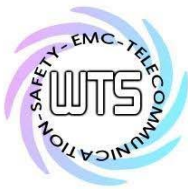


CH 39\_Antenna C  
 Antenna Polarization H



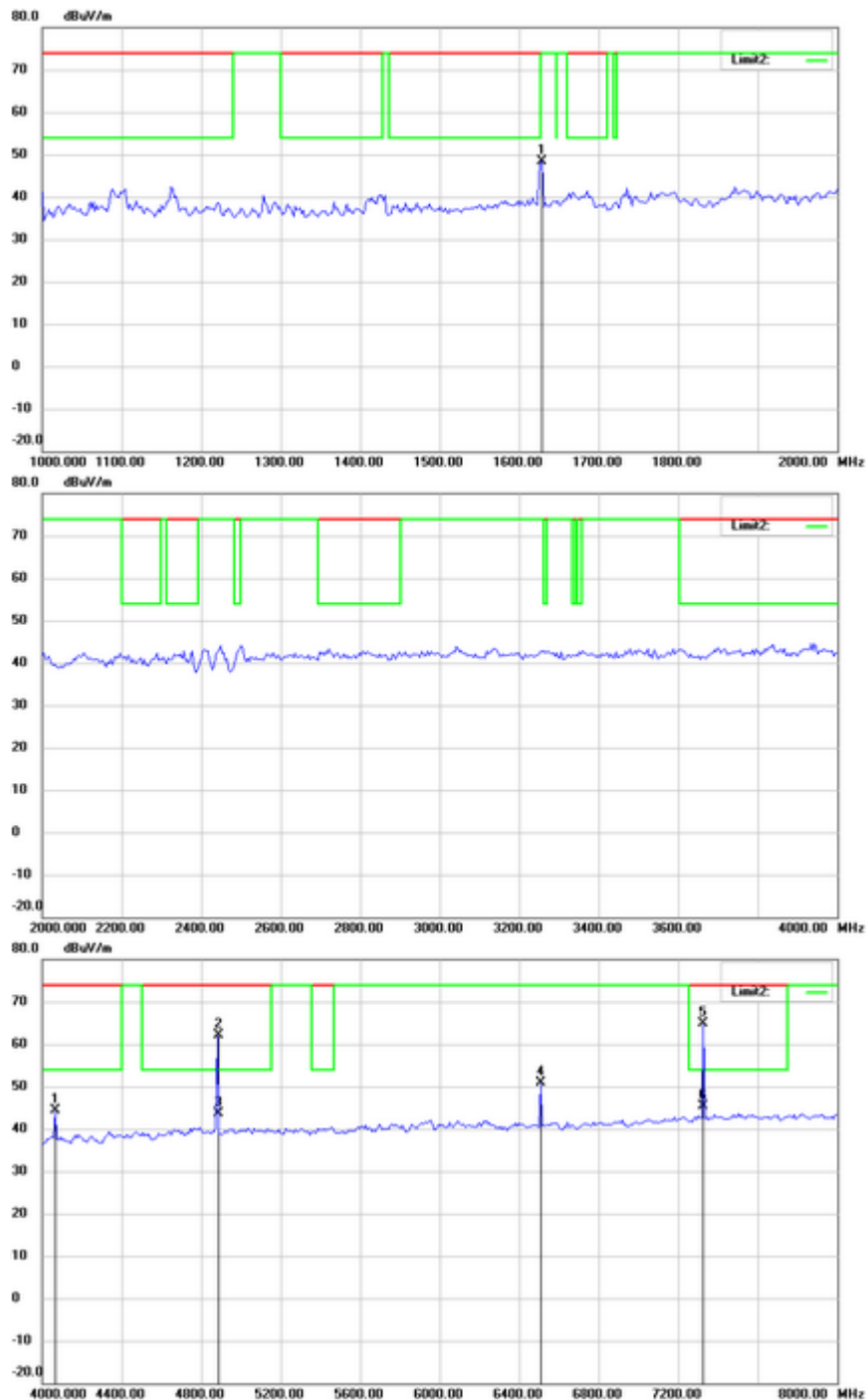
**Up Line: Peak Limit Line**  
**Down Line: Ave Limit Line**  
**Note:**

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

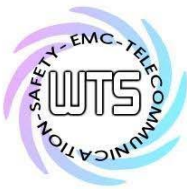
Registration number: W6M20902-9574-P-15  
FCC ID: T9J-RN24



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

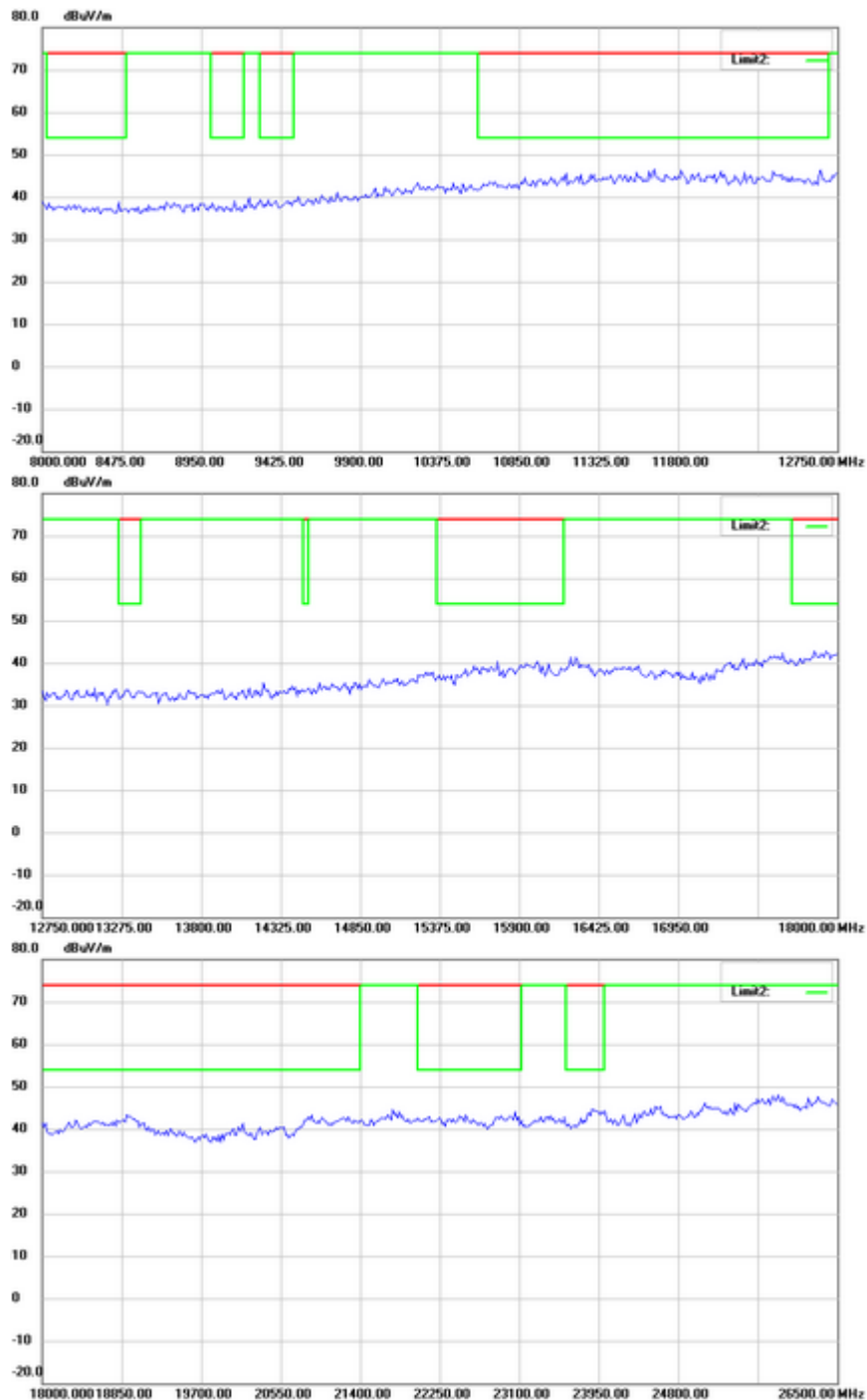
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# Worldwide Testing Services(Taiwan) Co., Ltd.

Registration number: W6M20902-9574-P-15  
FCC ID: T9J-RN24



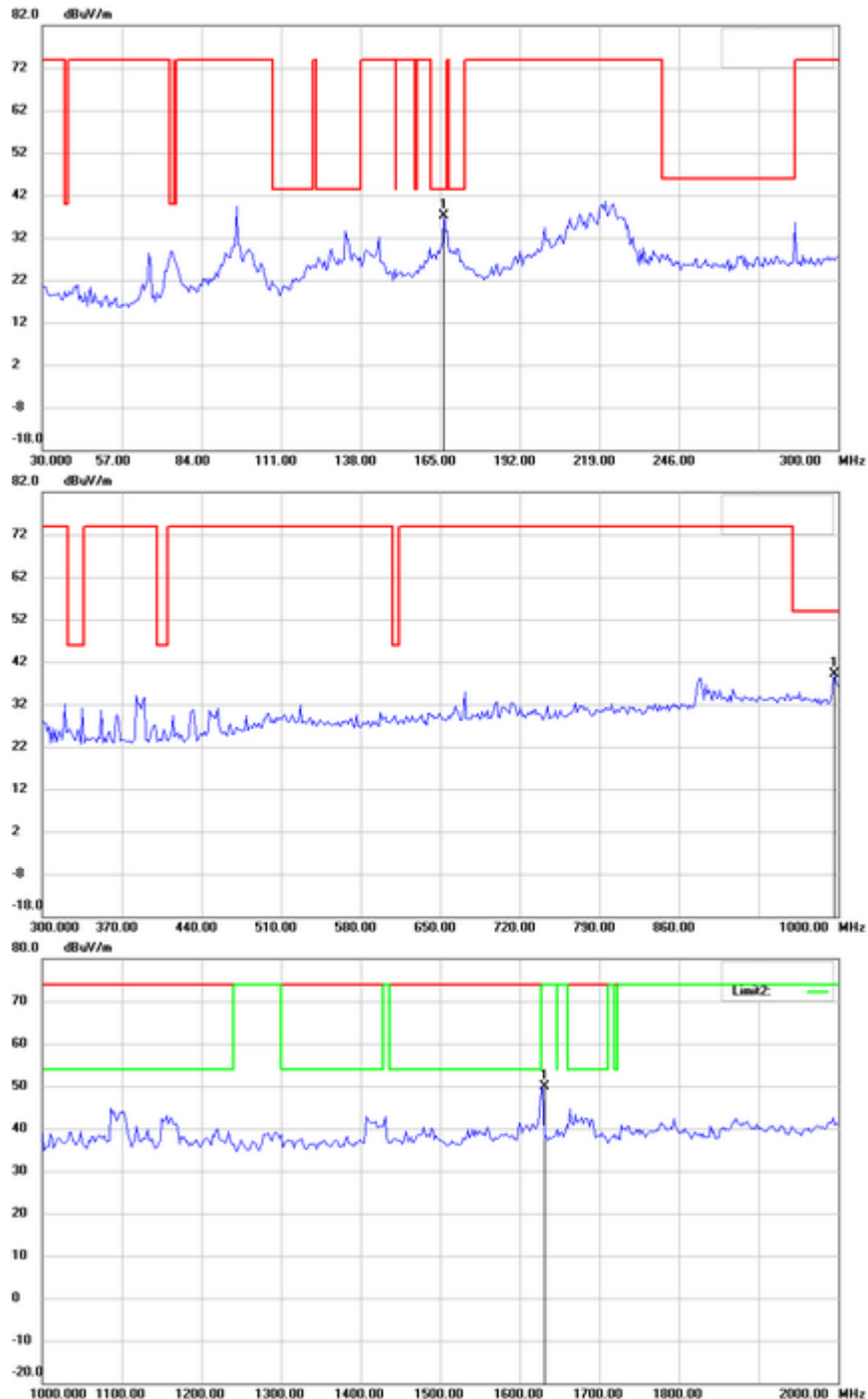
**Up Line: Peak Limit Line**  
**Down Line: Ave Limit Line**  
**Note:**

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Registration number: W6M20902-9574-P-15  
FCC ID: T9J-RN24

## Antenna Polarization V



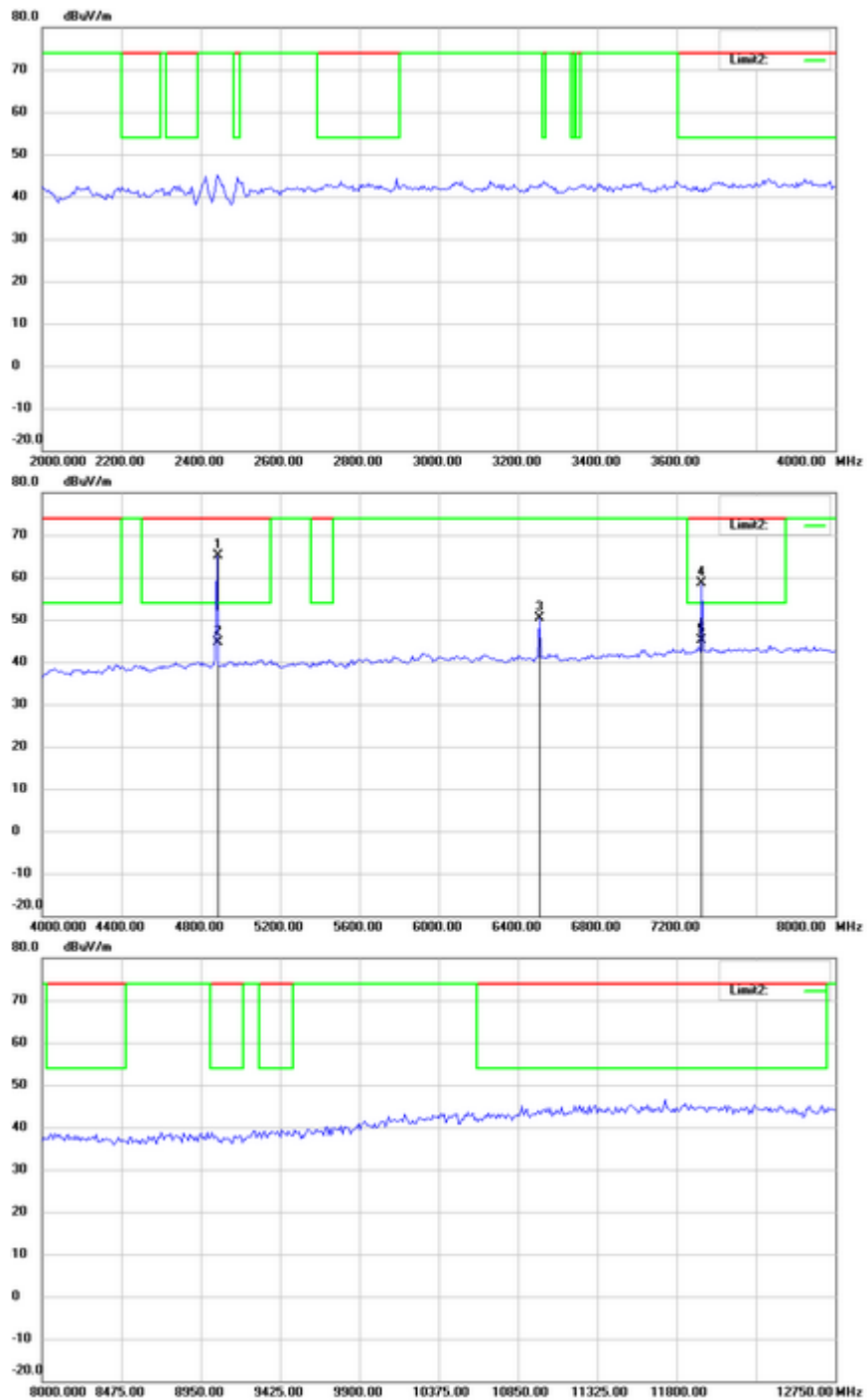
**Up Line: Peak Limit Line**  
**Down Line: Ave Limit Line**  
**Note:**

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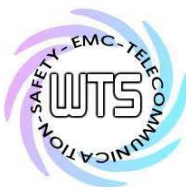
# Worldwide Testing Services(Taiwan) Co., Ltd.

Registration number: W6M20902-9574-P-15  
 FCC ID: T9J-RN24

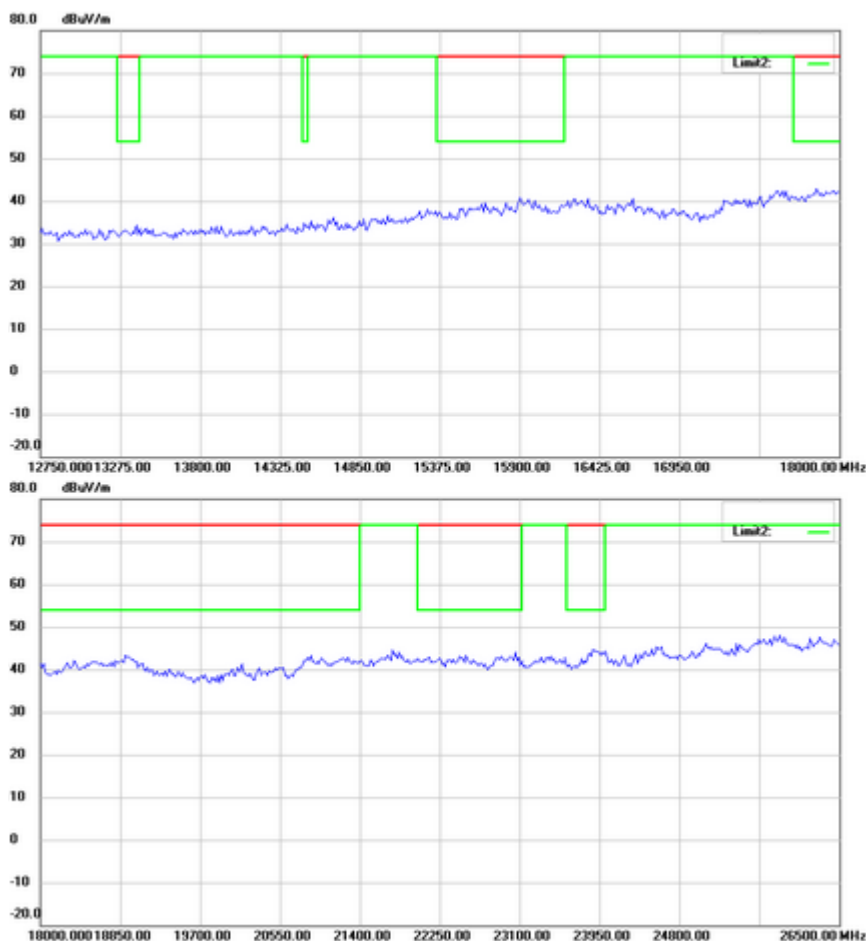


**Up Line: Peak Limit Line**  
**Down Line: Ave Limit Line**  
**Note:**

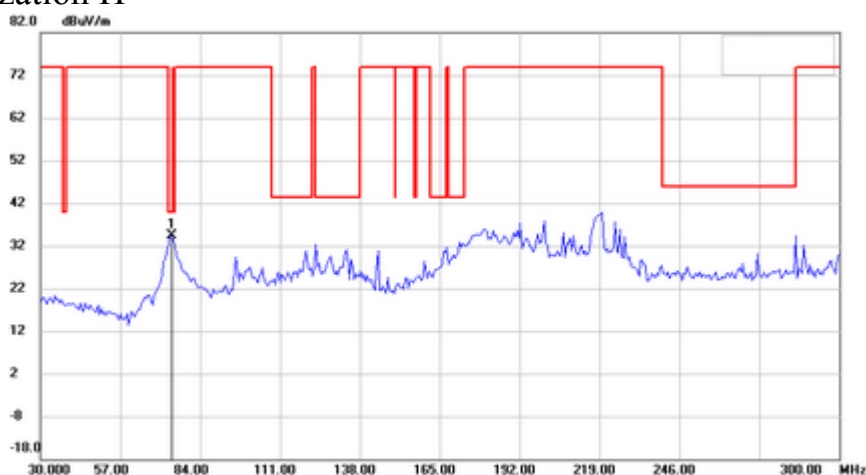
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Registration number: W6M20902-9574-P-15  
 FCC ID: T9J-RN24

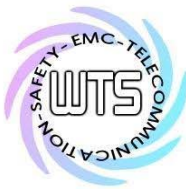


CH 78\_Antenna C  
 Antenna Polarization H

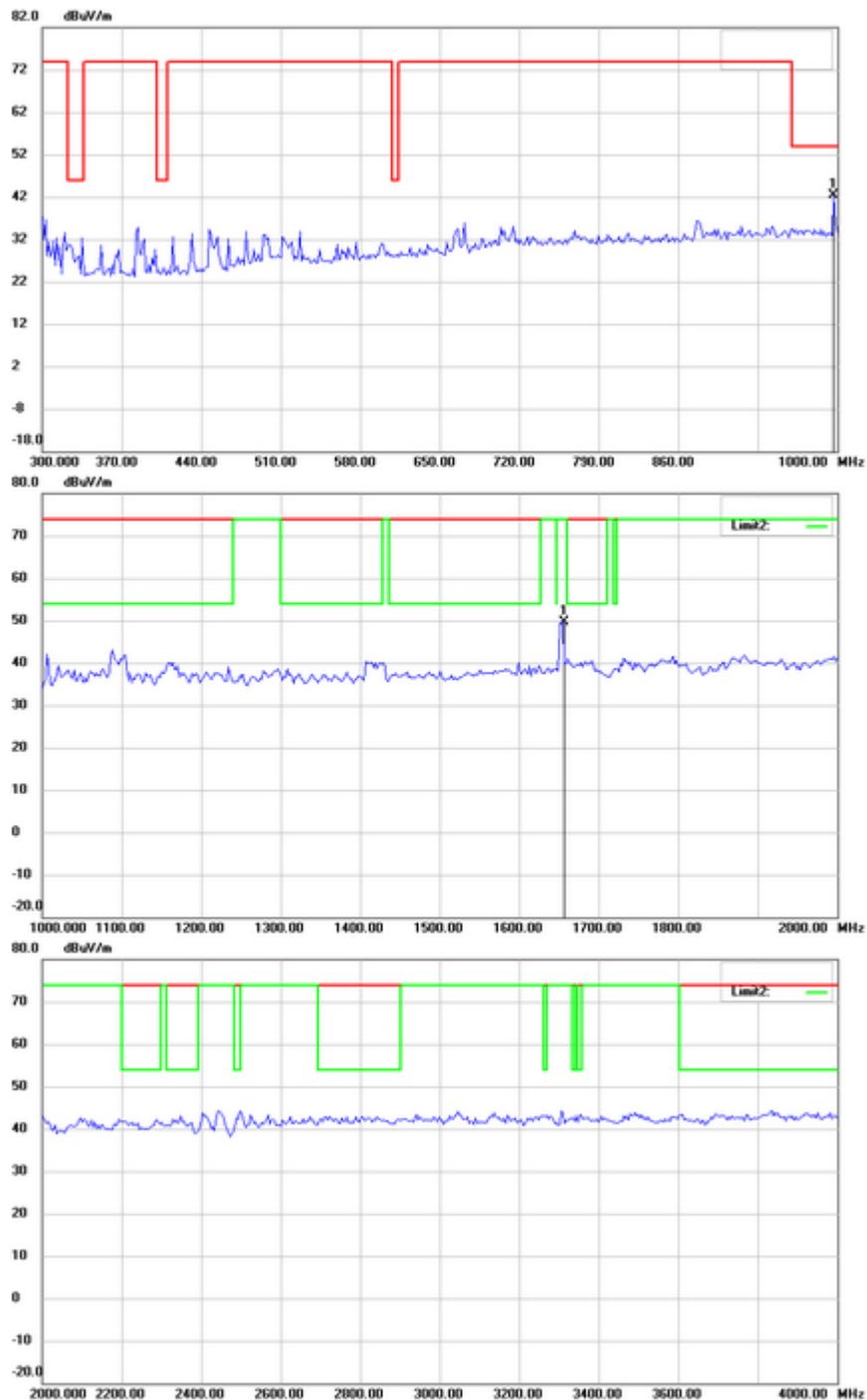


Up Line: Peak Limit Line  
 Down Line: Ave Limit Line  
 Note:

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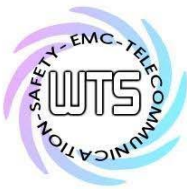


Registration number: W6M20902-9574-P-15  
FCC ID: T9J-RN24

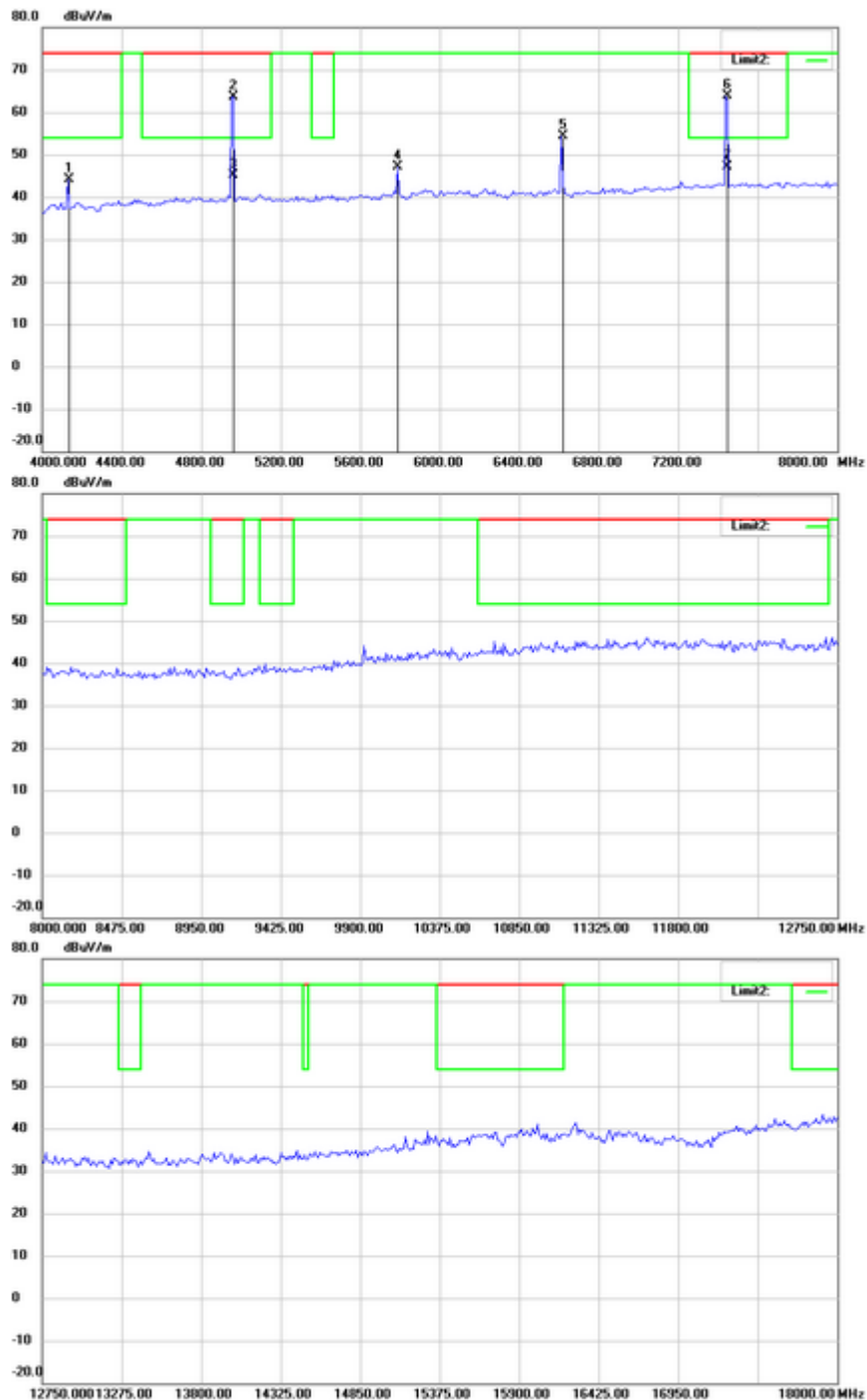


**Up Line: Peak Limit Line**  
**Down Line: Ave Limit Line**  
**Note:**

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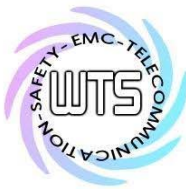


Registration number: W6M20902-9574-P-15  
FCC ID: T9J-RN24

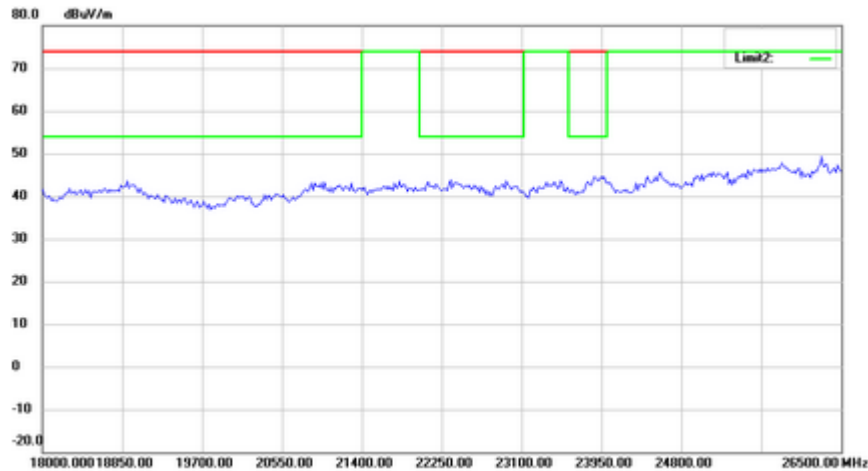


Up Line: Peak Limit Line  
Down Line: Ave Limit Line  
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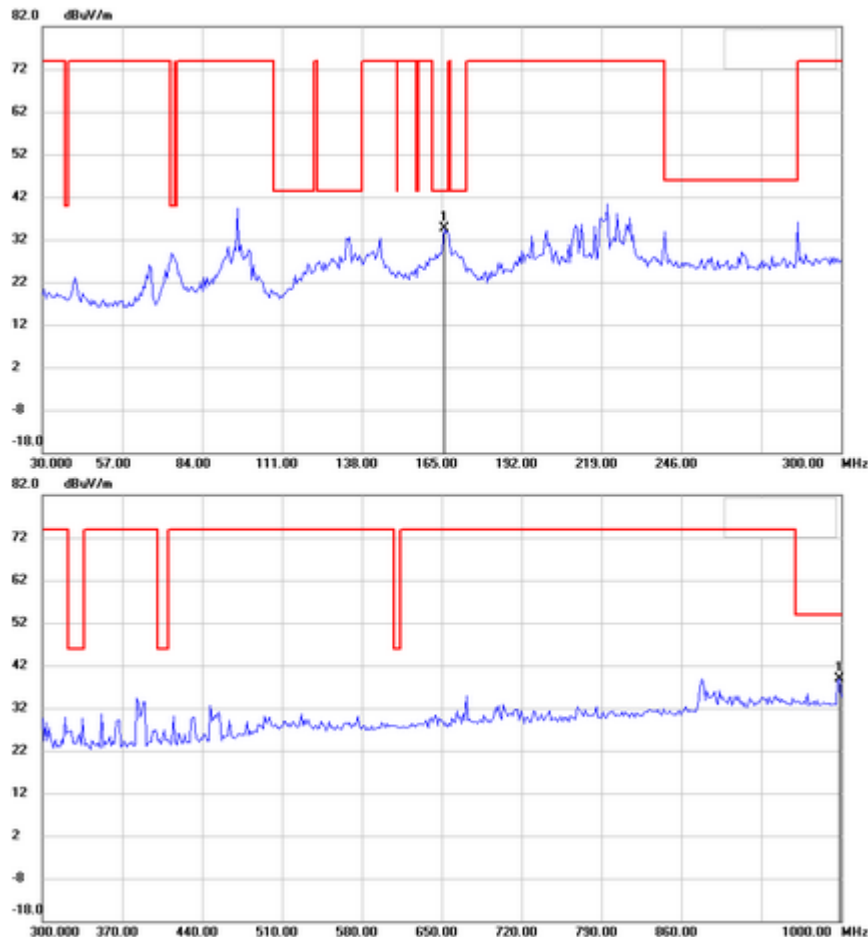
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Registration number: W6M20902-9574-P-15  
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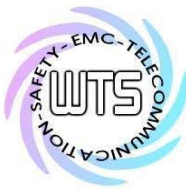


**Antenna Polarization V**



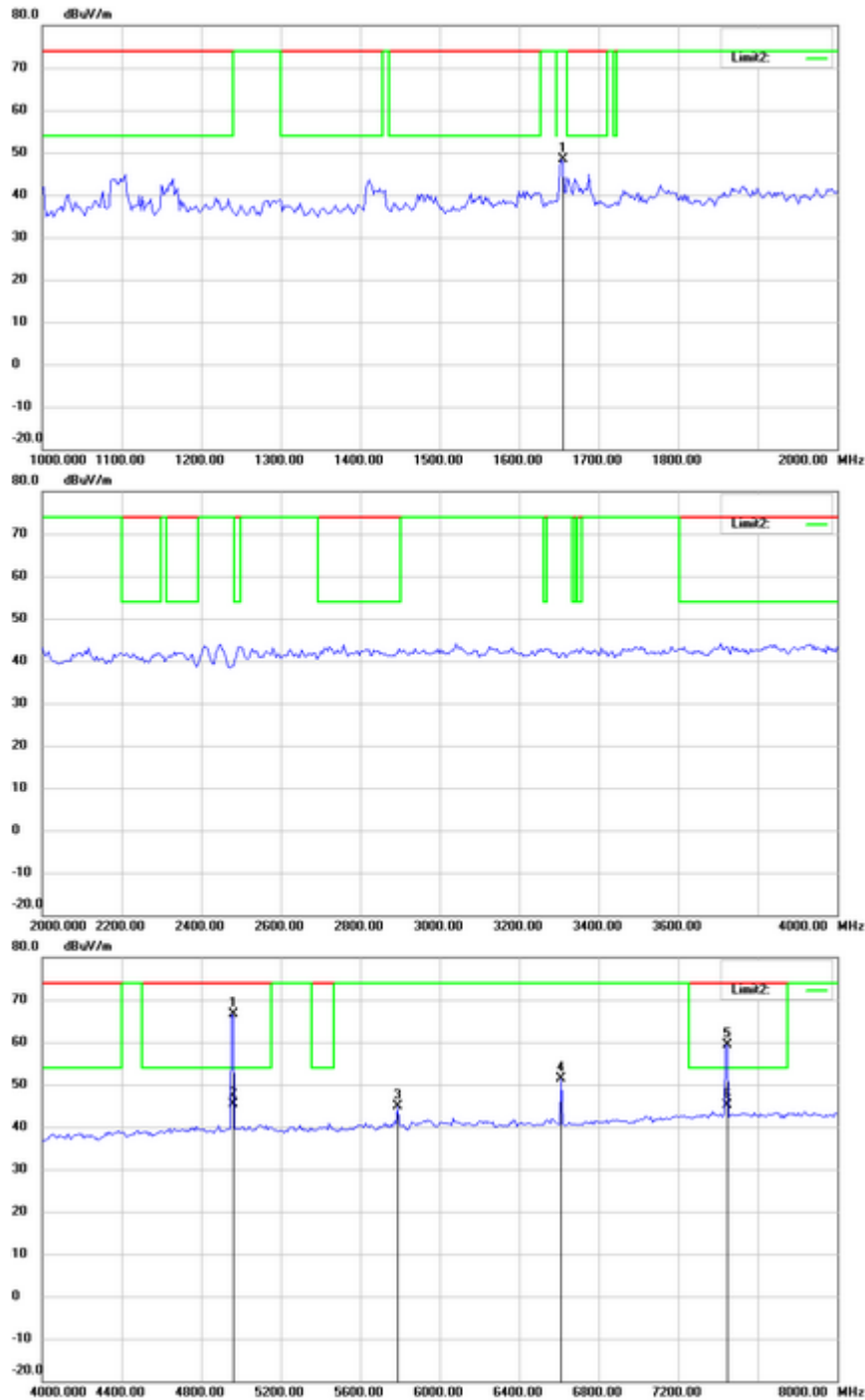
**Up Line: Peak Limit Line**  
**Down Line: Ave Limit Line**  
**Note:**

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

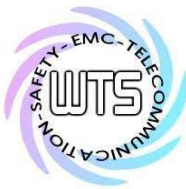
Registration number: W6M20902-9574-P-15  
FCC ID: T9J-RN24



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

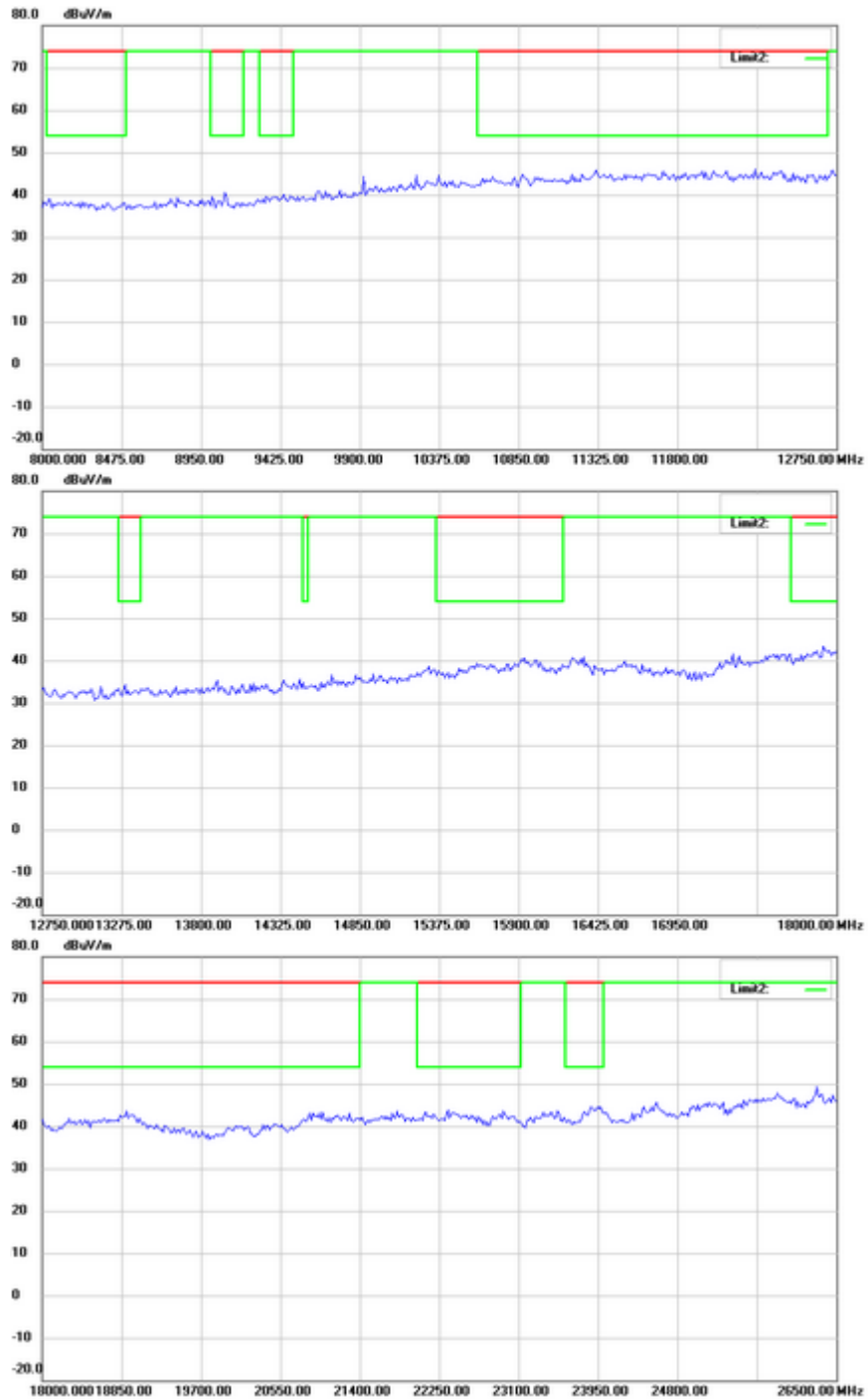
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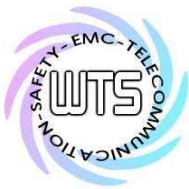
# Worldwide Testing Services(Taiwan) Co., Ltd.

Registration number: W6M20902-9574-P-15  
FCC ID: T9J-RN24



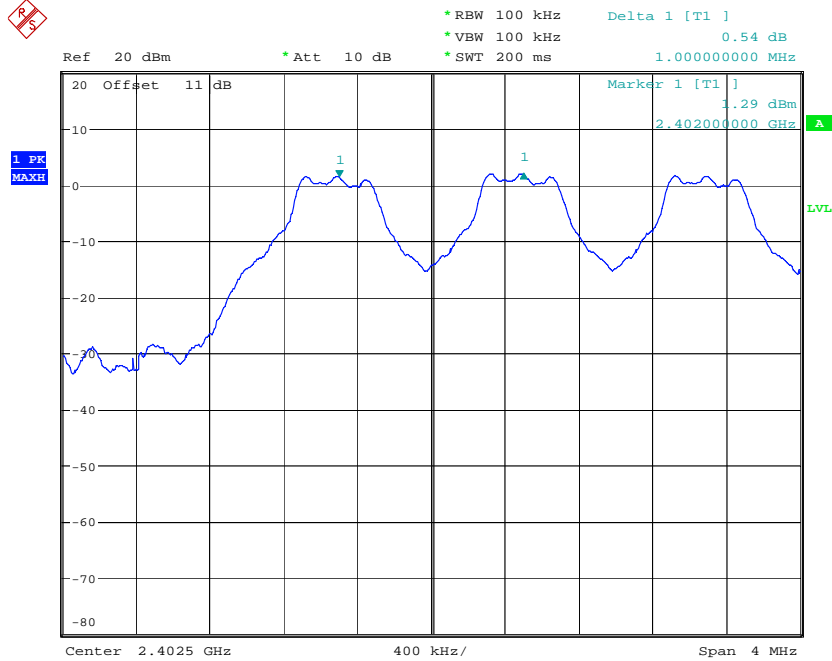
**Up Line: Peak Limit Line**  
**Down Line: Ave Limit Line**  
**Note:**

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.

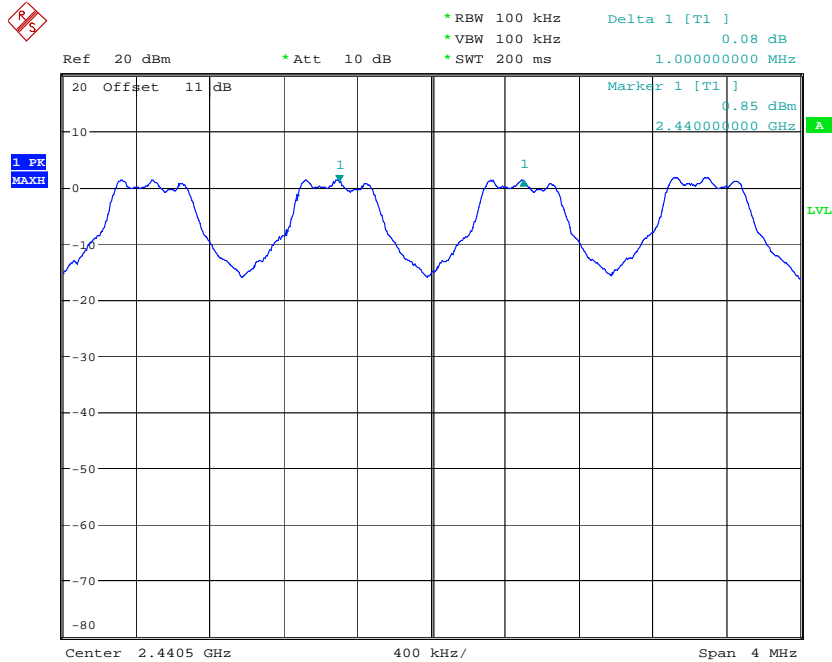


Registration number: W6M20902-9574-P-15  
FCC ID: T9J-RN24

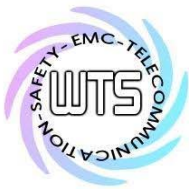
## Carrier Frequency Separation



FREQUENCY SEPARATION CH0  
Date: 21.FEB.2009 10:06:02

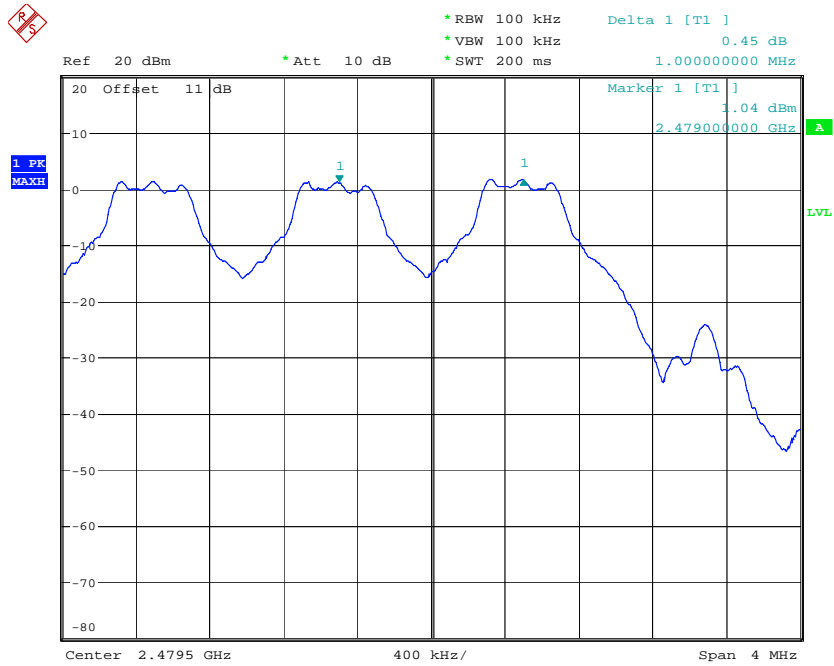


FREQUENCY SEPARATION CH39  
Date: 21.FEB.2009 10:06:44



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

Registration number: W6M20902-9574-P-15  
FCC ID: T9J-RN24

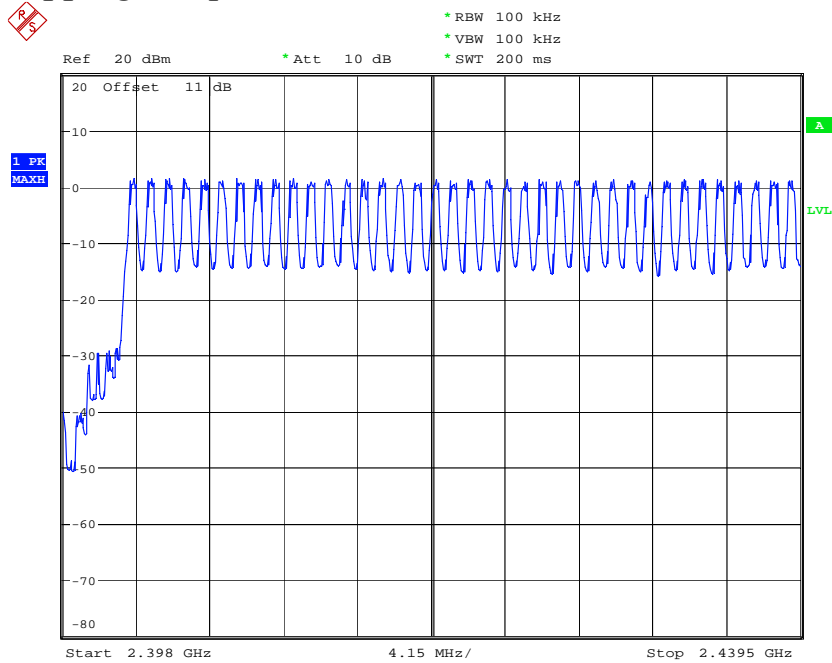


FREQUENCY SEPARATION CH78  
Date: 21.FEB.2009 10:07:18

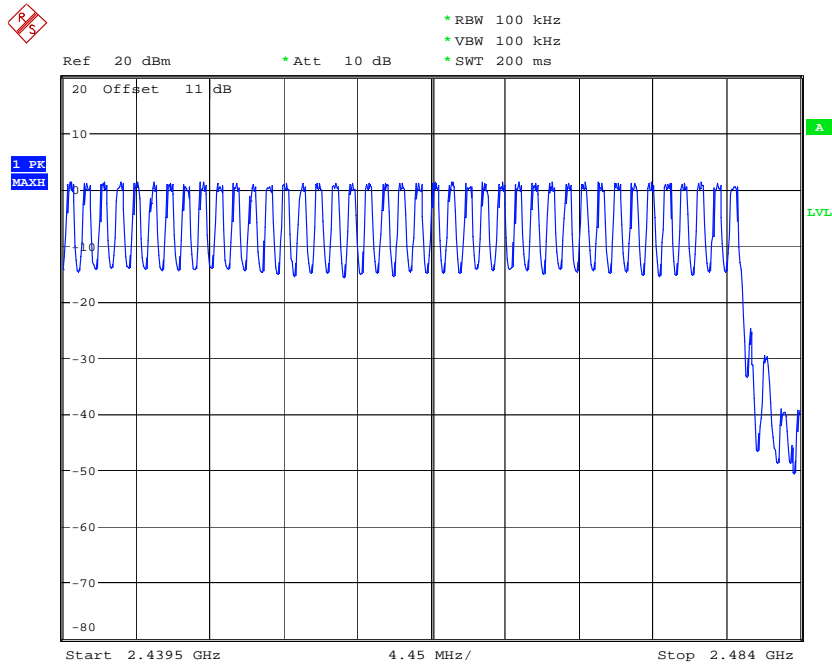


Registration number: W6M20902-9574-P-15  
FCC ID: T9J-RN24

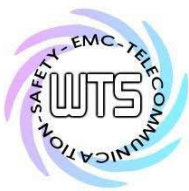
## Number of Hopping Frequencies



NUMBER OF HOPPING CH0-37  
Date: 21.FEB.2009 10:00:53

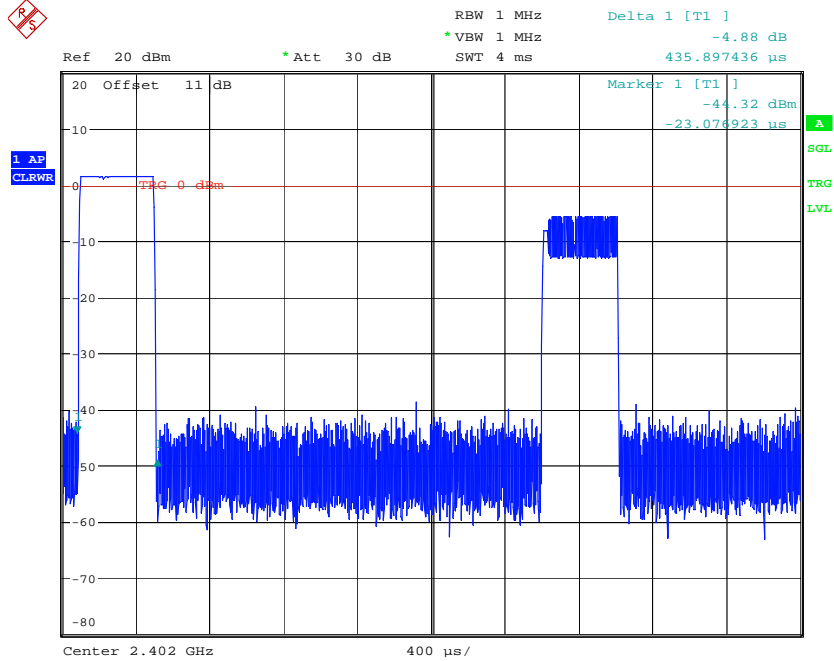


NUMBER OF HOPPING CH38-78  
Date: 21.FEB.2009 10:05:00

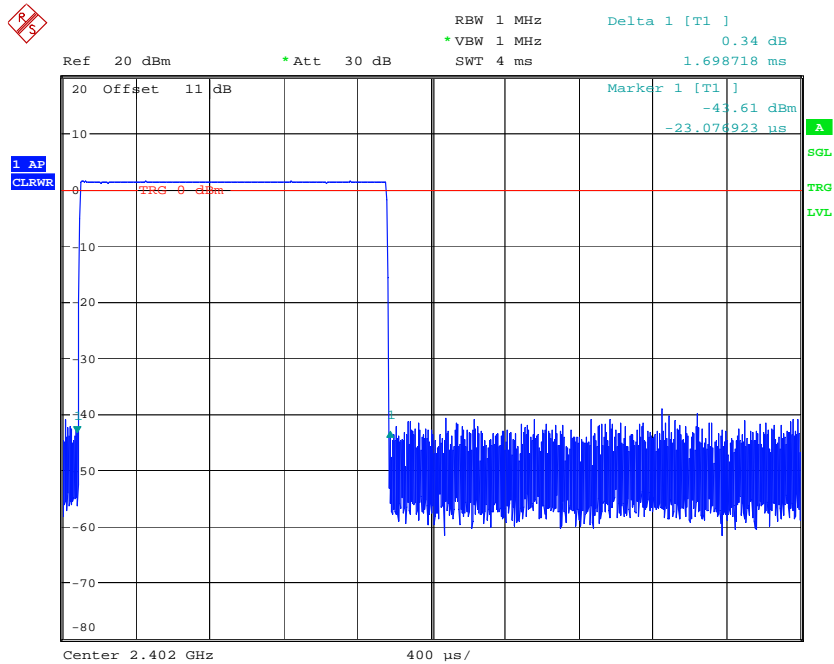


Registration number: W6M20902-9574-P-15  
FCC ID: T9J-RN24

### Time of Occupancy (Dwell Time)



DWELL TIME CH0 DH1 ( 0.435ms \* 320event = 139.2ms )  
Date: 21.FEB.2009 09:49:36

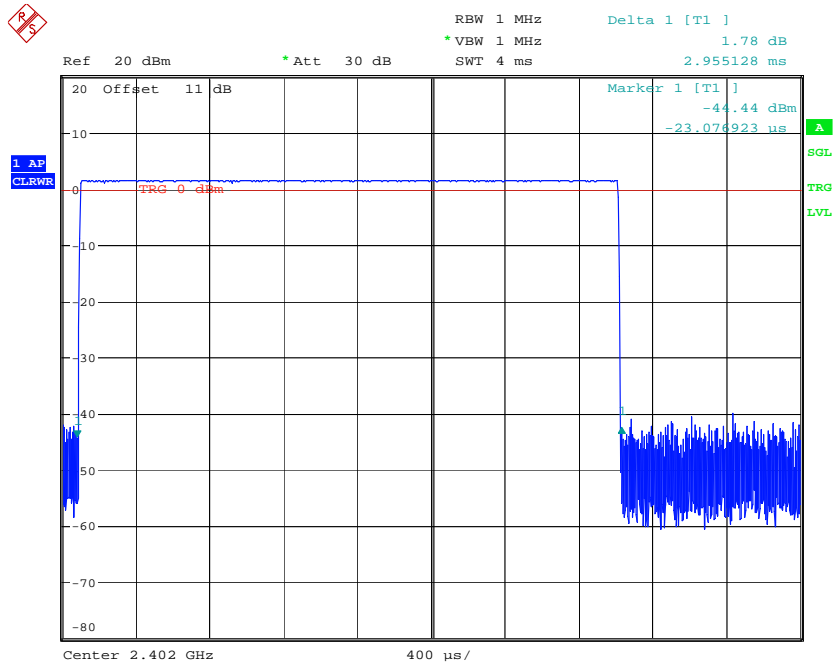


DWELL TIME CH0 DH3 ( 1.698ms \* 160event = 271.68ms )  
Date: 21.FEB.2009 09:52:29

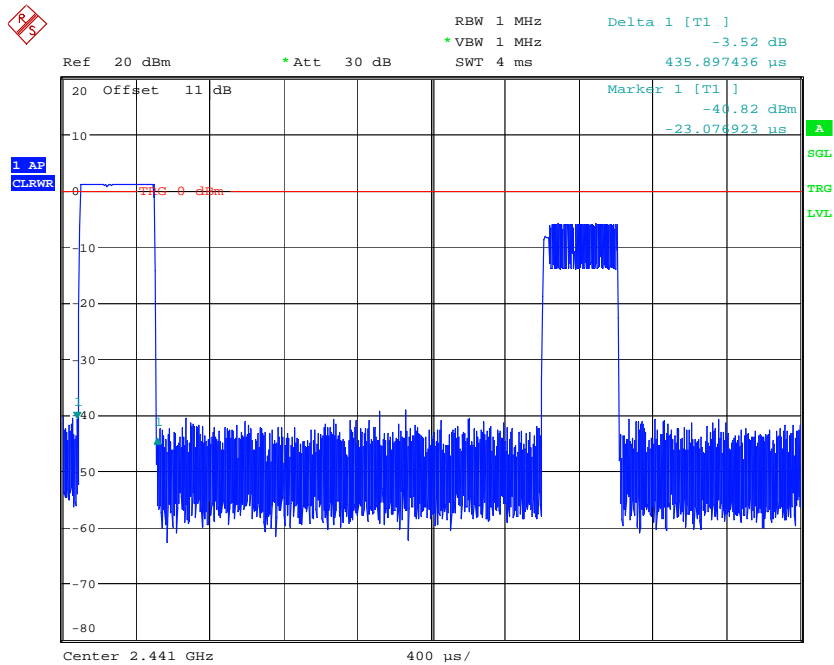


# Worldwide Testing Services(Taiwan) Co., Ltd.

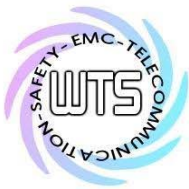
Registration number: W6M20902-9574-P-15  
 FCC ID: T9J-RN24



DWELL TIME CH0 DH5 ( 2.955ms \* 110event = 325.05ms )  
 Date: 21.FEB.2009 09:53:19

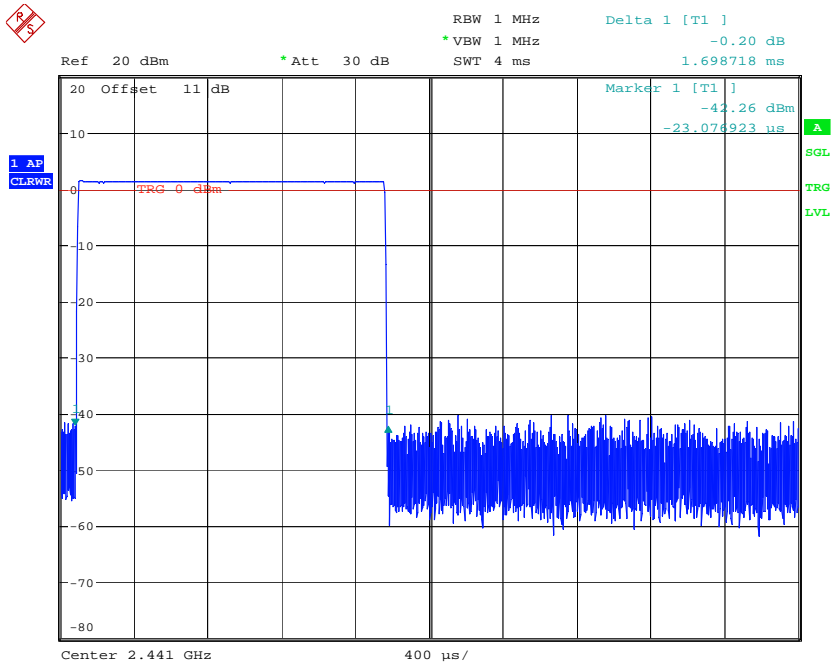


DWELL TIME CH39 DH1 ( 0.435ms \* 320event = 139.2ms )  
 Date: 21.FEB.2009 09:50:05

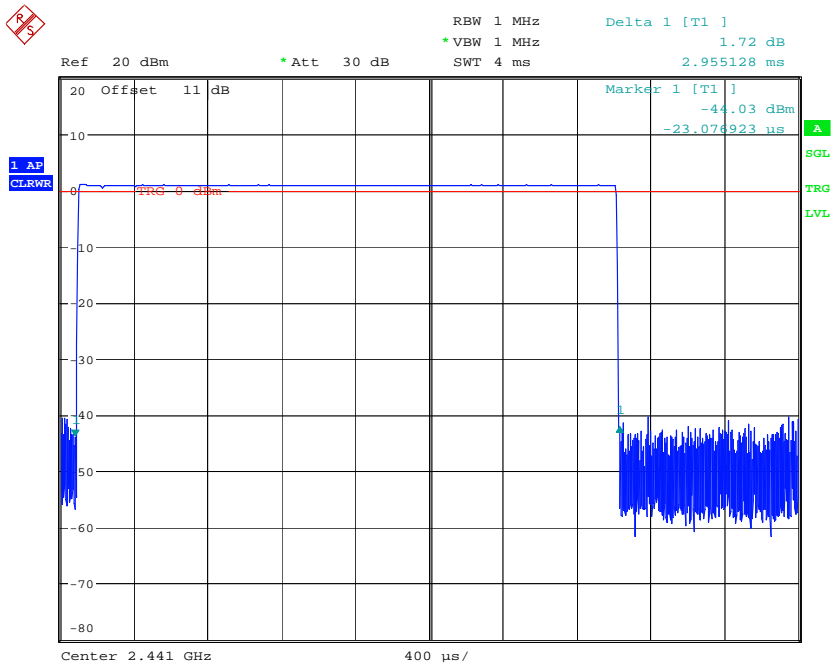


# Worldwide Testing Services(Taiwan) Co., Ltd.

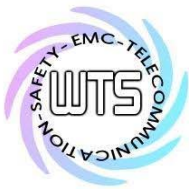
Registration number: W6M20902-9574-P-15  
FCC ID: T9J-RN24



DWELL TIME CH39 DH3 ( 1.698ms \* 160event = 271.68ms )  
Date: 21.FEB.2009 09:52:09

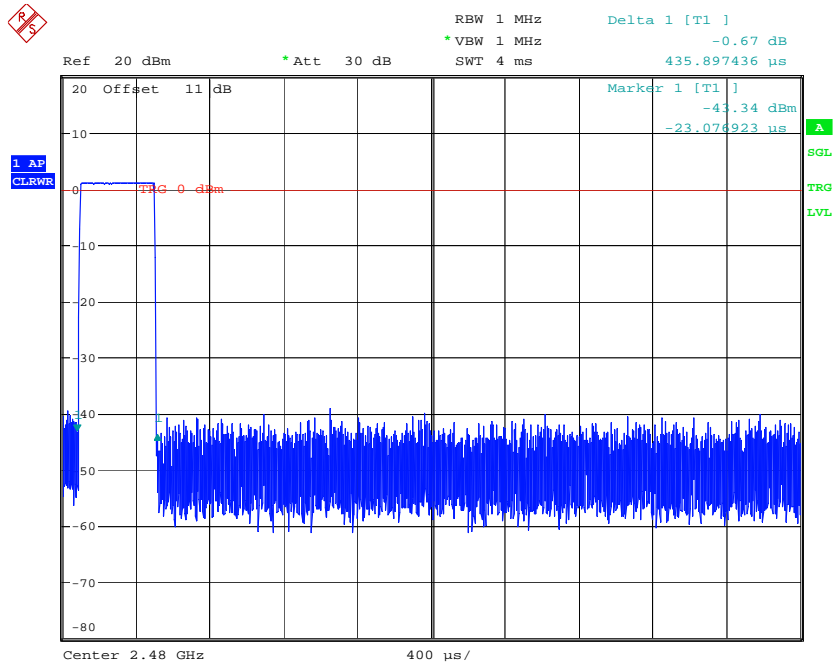


DWELL TIME CH39 DH5 ( 2.955ms \* 110event = 325.05ms )  
Date: 21.FEB.2009 09:53:39

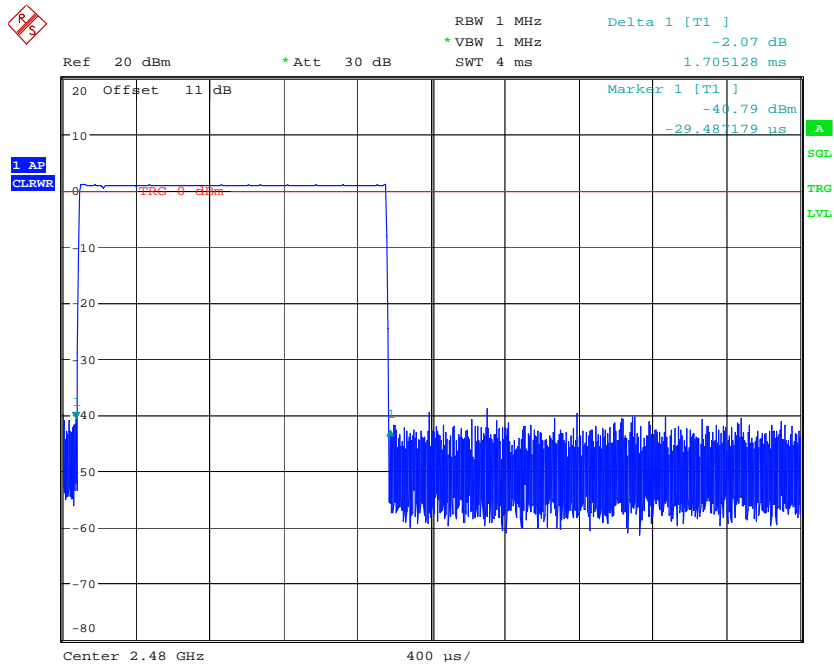


# Worldwide Testing Services(Taiwan) Co., Ltd.

Registration number: W6M20902-9574-P-15  
FCC ID: T9J-RN24

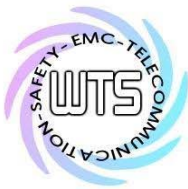


DWELL TIME CH78 DH1 ( 0.435ms \* 320event = 139.2ms )  
Date: 21.FEB.2009 09:50:26



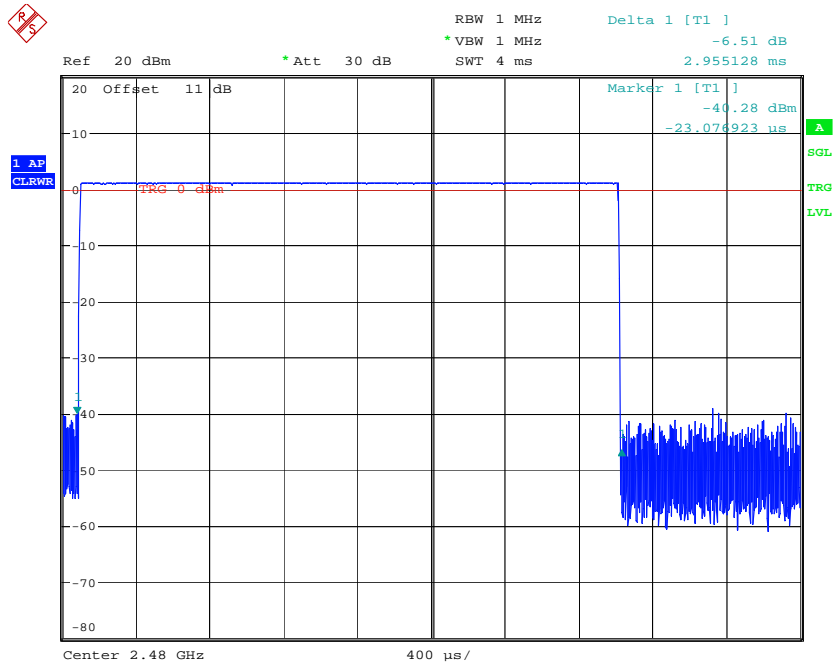
DWELL TIME CH78 DH3 ( 1.705ms \* 160event = 272.8ms )  
Date: 21.FEB.2009 09:51:21





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

Registration number: W6M20902-9574-P-15  
FCC ID: T9J-RN24

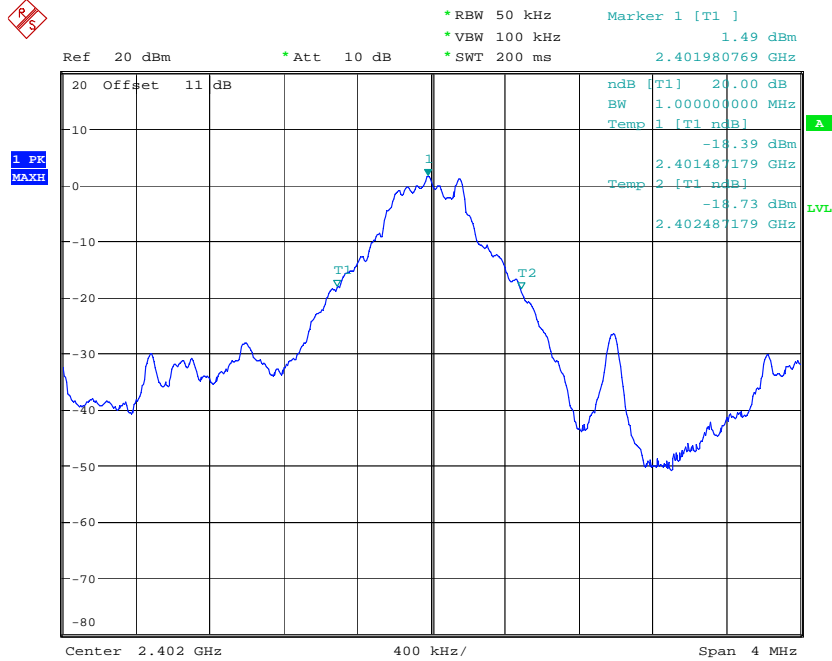


DWELL TIME CH78 DH5 ( 2.955ms \* 110event = 325.05ms )  
Date: 21.FEB.2009 09:54:00

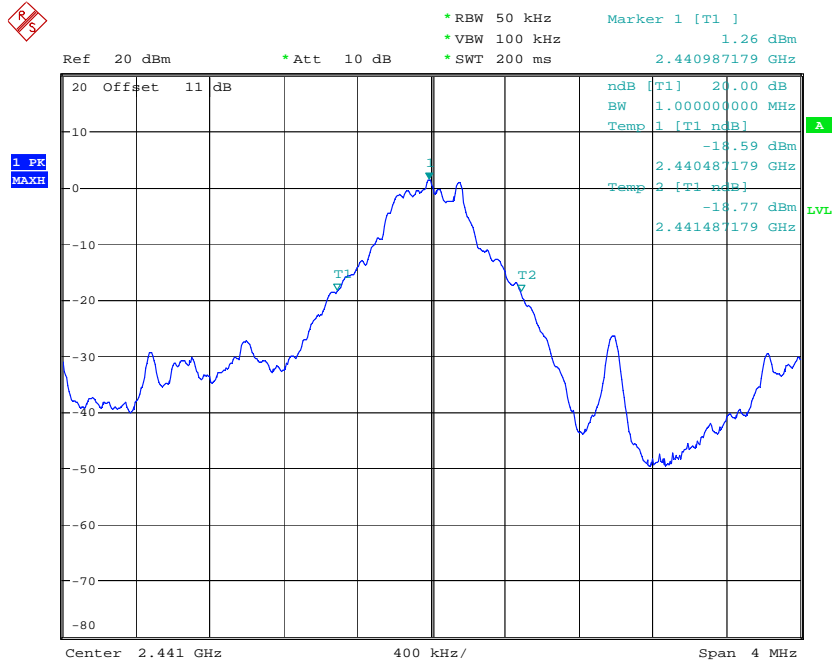


Registration number: W6M20902-9574-P-15  
 FCC ID: T9J-RN24

## 20dB Bandwidth



20DB BANDWIDTH CH0  
 Date: 21.FEB.2009 09:57:05

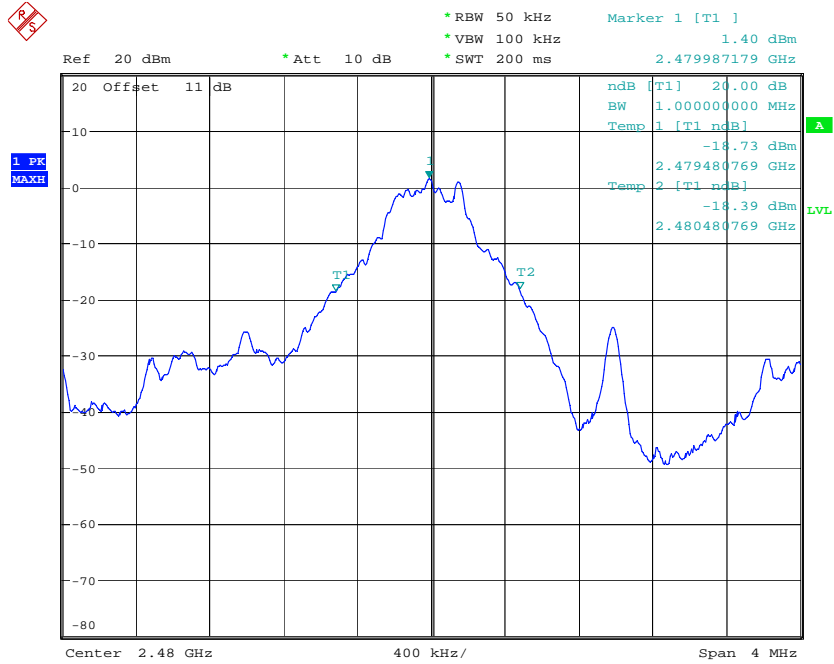


20DB BANDWIDTH CH39  
 Date: 21.FEB.2009 09:56:47

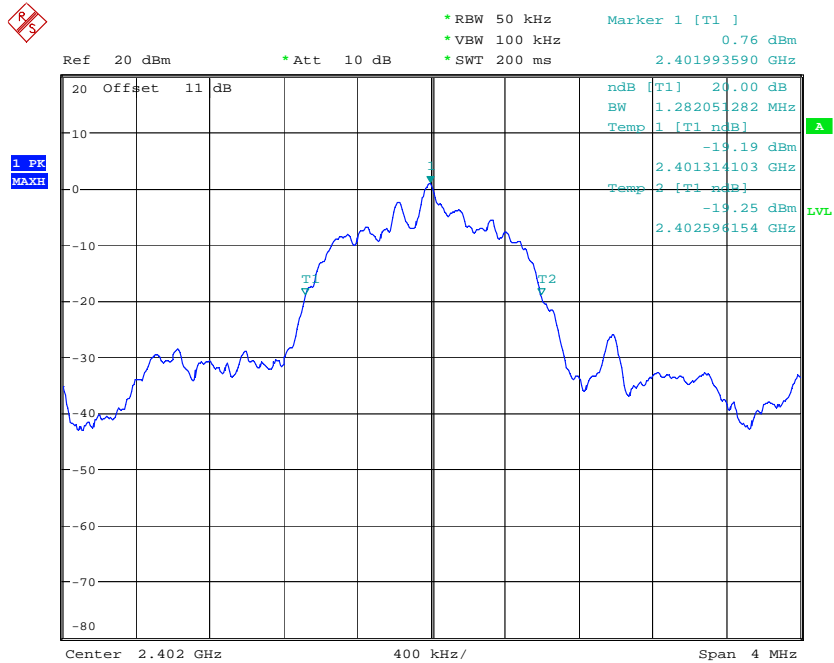


# Worldwide Testing Services(Taiwan) Co., Ltd.

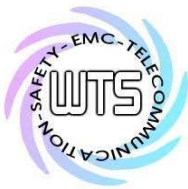
Registration number: W6M20902-9574-P-15  
 FCC ID: T9J-RN24



20DB BANDWIDTH CH78  
 Date: 21.FEB.2009 09:55:37

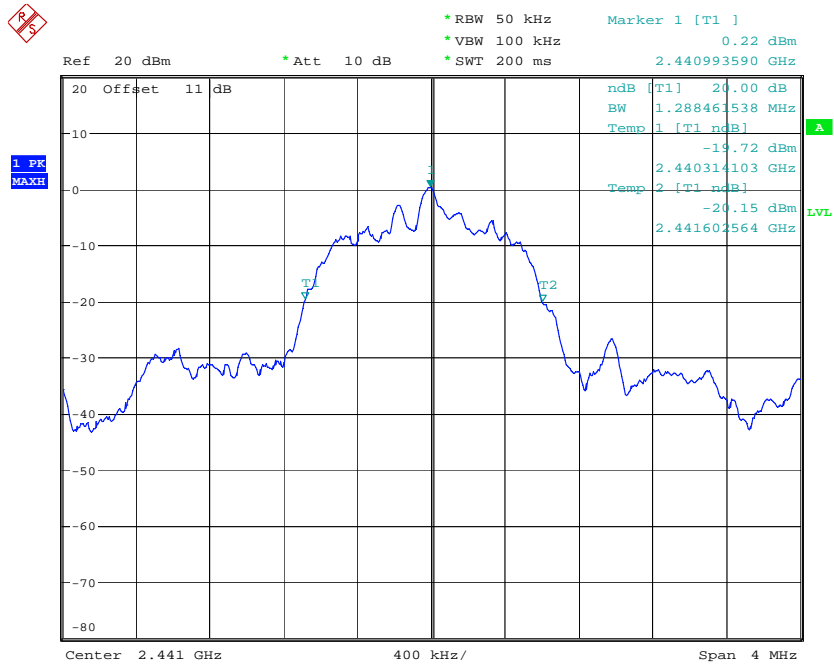


20DB BANDWIDTH CH0 EDR MODE  
 Date: 21.FEB.2009 09:57:33

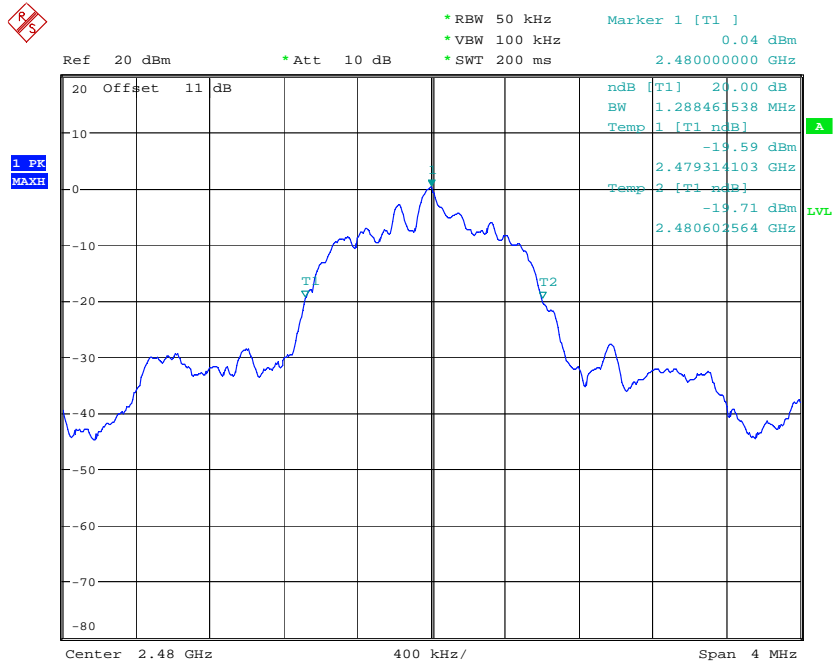


# Worldwide Testing Services(Taiwan) Co., Ltd.

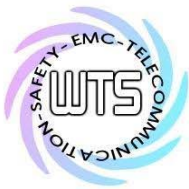
Registration number: W6M20902-9574-P-15  
 FCC ID: T9J-RN24



20DB BANDWIDTH CH39 EDR MODE  
 Date: 21.FEB.2009 09:57:50

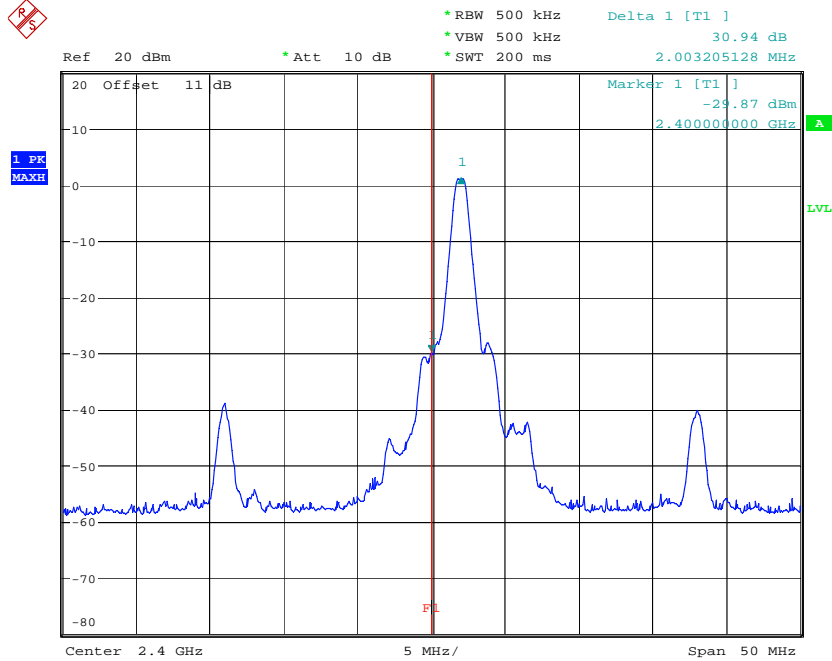


20DB BANDWIDTH CH78 EDR MODE  
 Date: 21.FEB.2009 09:58:08

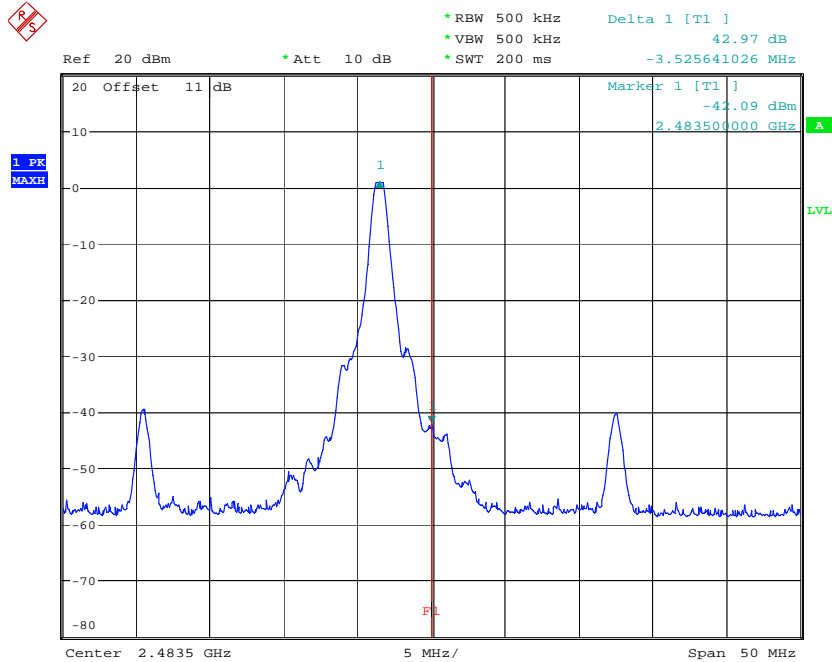


Registration number: W6M20902-9574-P-15  
FCC ID: T9J-RN24

## Band-edge Compliance of RF Conducted Emissions



BANDEDGE CH0  
Date: 21.FEB.2009 09:39:21

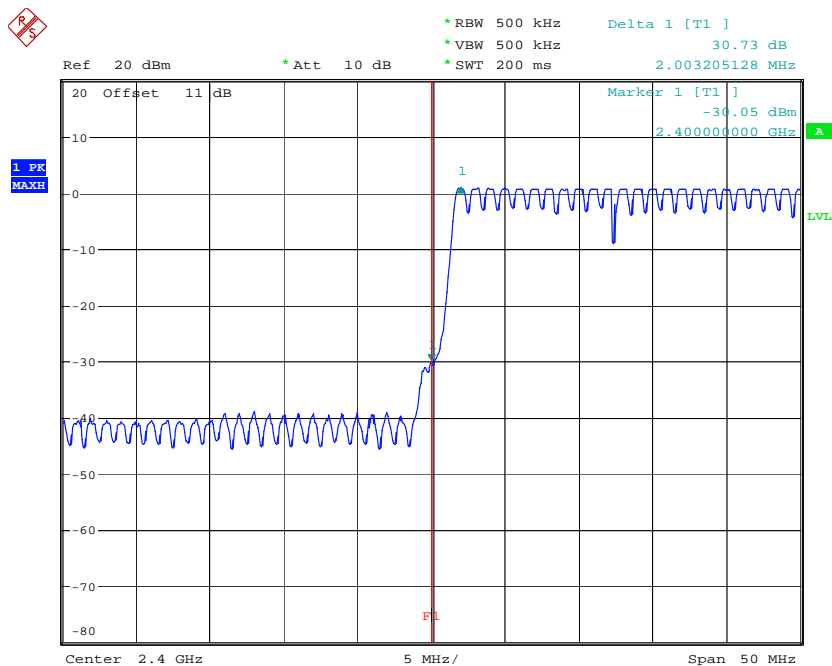


BANDEDGE CH78  
Date: 21.FEB.2009 09:39:54

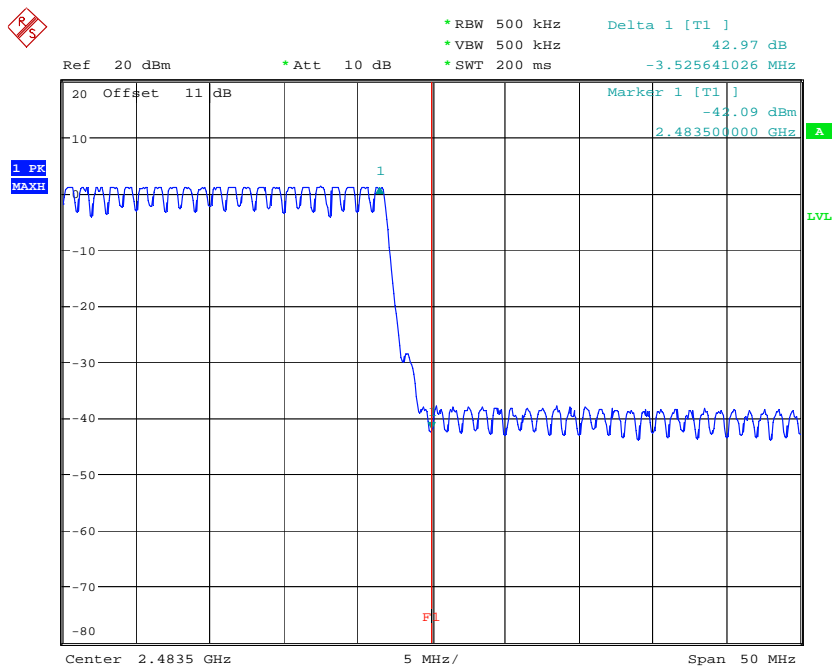


# Worldwide Testing Services(Taiwan) Co., Ltd.

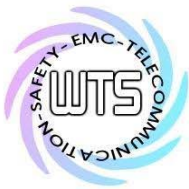
Registration number: W6M20902-9574-P-15  
FCC ID: T9J-RN24



BANDEDGE CH0 HOPPING MODE  
Date: 21.FEB.2009 09:38:52

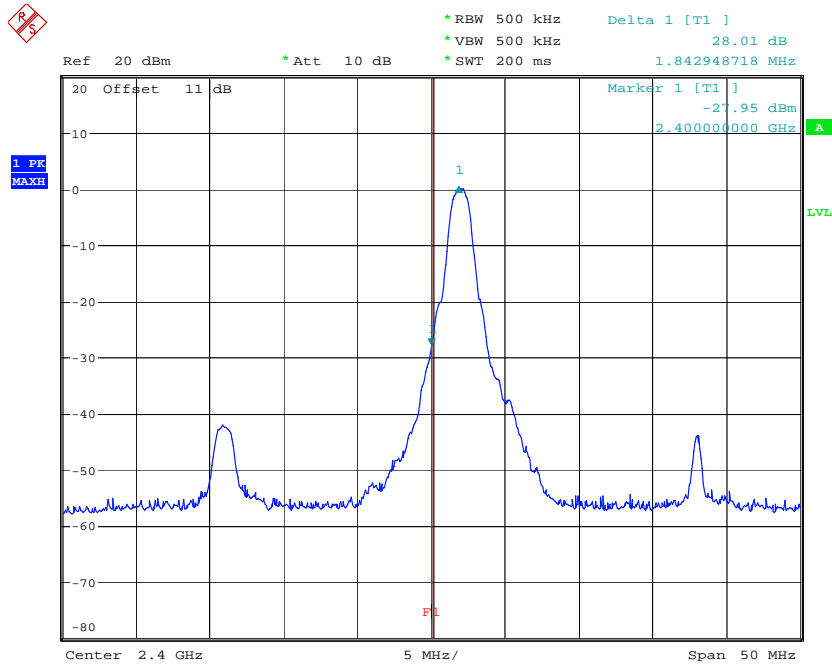


BANDEDGE CH78 HOPPING MODE  
Date: 21.FEB.2009 09:43:19

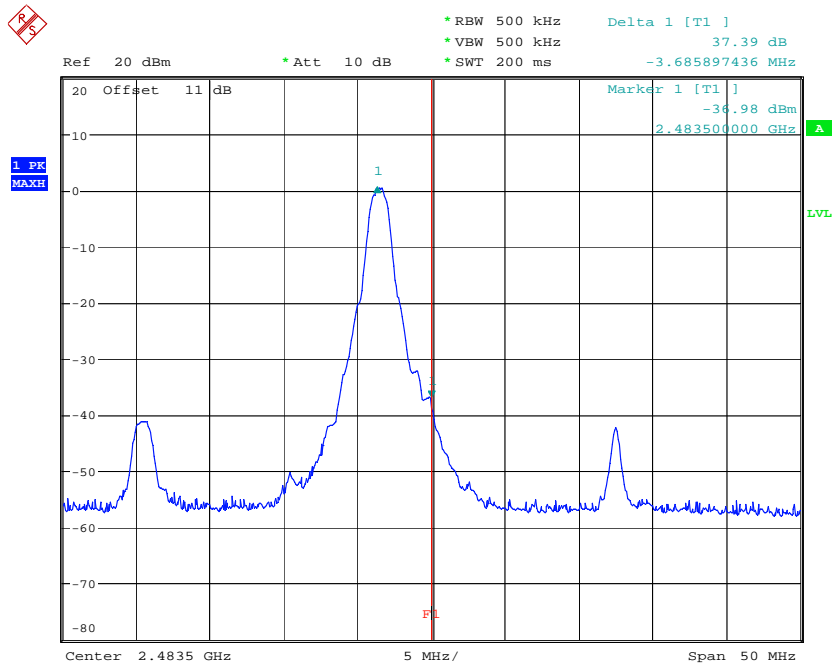


# Worldwide Testing Services(Taiwan) Co., Ltd.

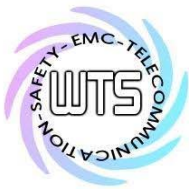
Registration number: W6M20902-9574-P-15  
FCC ID: T9J-RN24



BANDEDGE CH0 EDR MODE  
Date: 21.FEB.2009 09:33:19

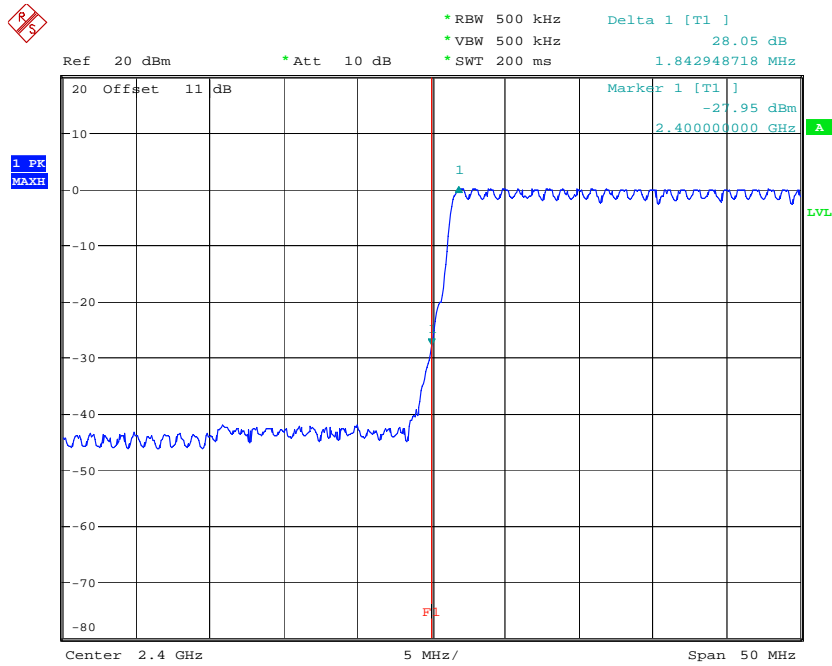


BANDEDGE CH78 EDR MODE  
Date: 21.FEB.2009 09:46:45

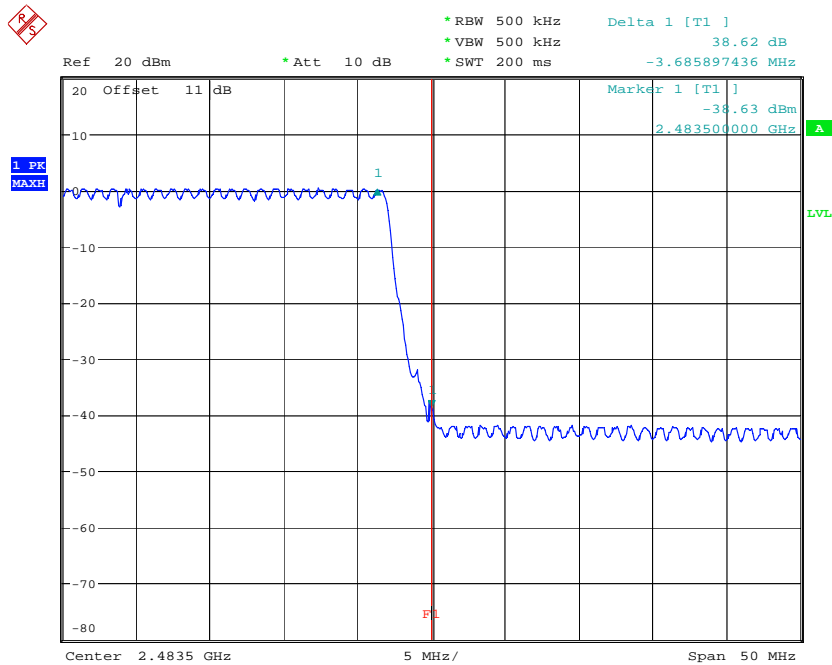


# Worldwide Testing Services(Taiwan) Co., Ltd.

Registration number: W6M20902-9574-P-15  
FCC ID: T9J-RN24

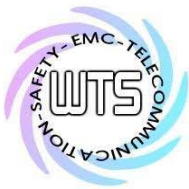


BANDEDGE CH0 EDR HOPPING MODE  
Date: 21.FEB.2009 09:35:43



BANDEDGE CH78 EDR HOPPING MODE  
Date: 21.FEB.2009 09:46:23

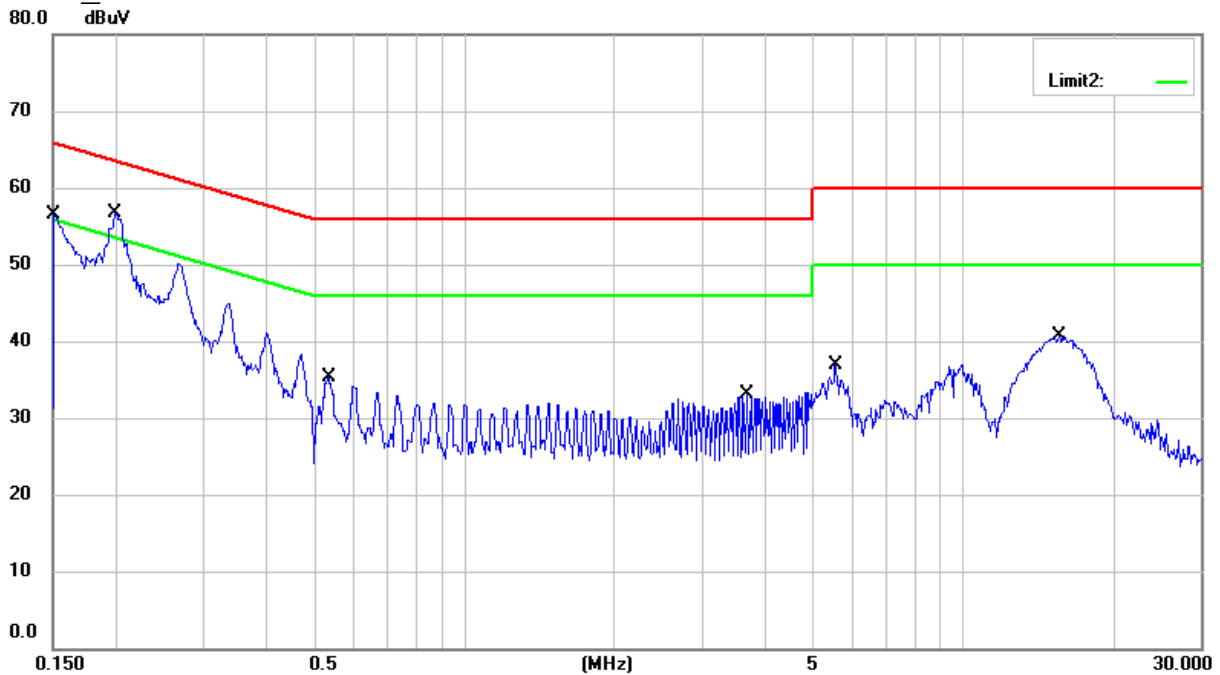




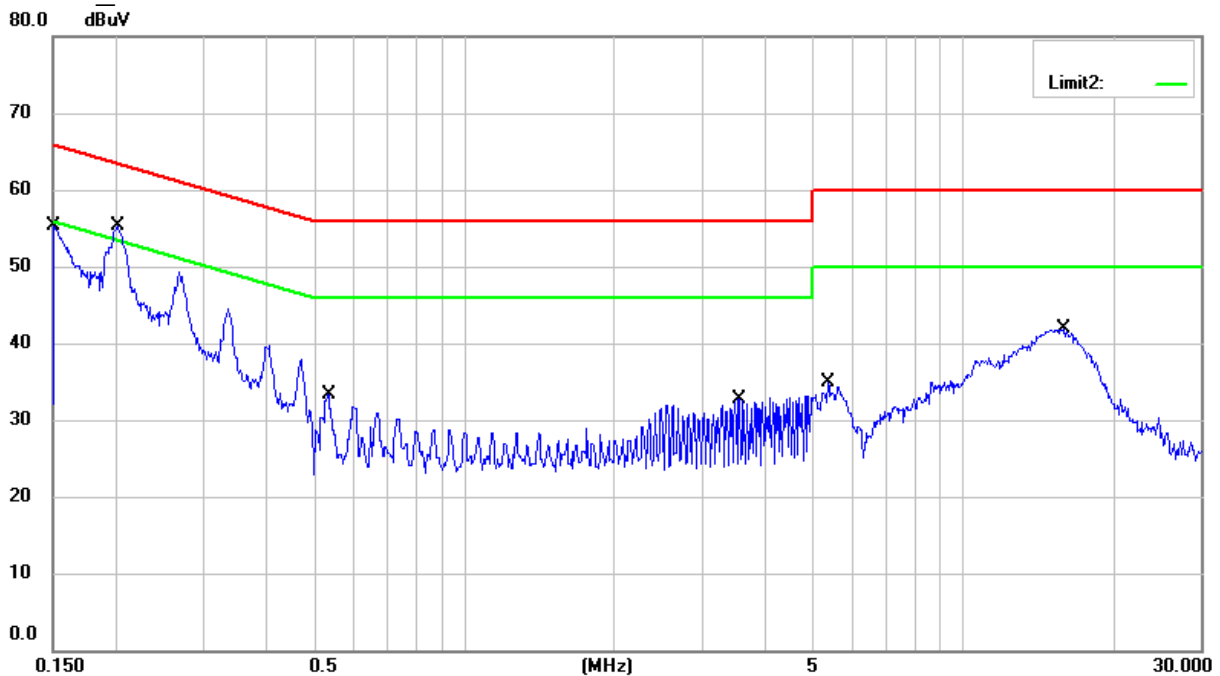
Registration number: W6M20902-9574-P-15  
FCC ID: T9J-RN24

## Power Line Conducted Emission

### LISN N\_Antenna A



### LISN L1\_Antenna A



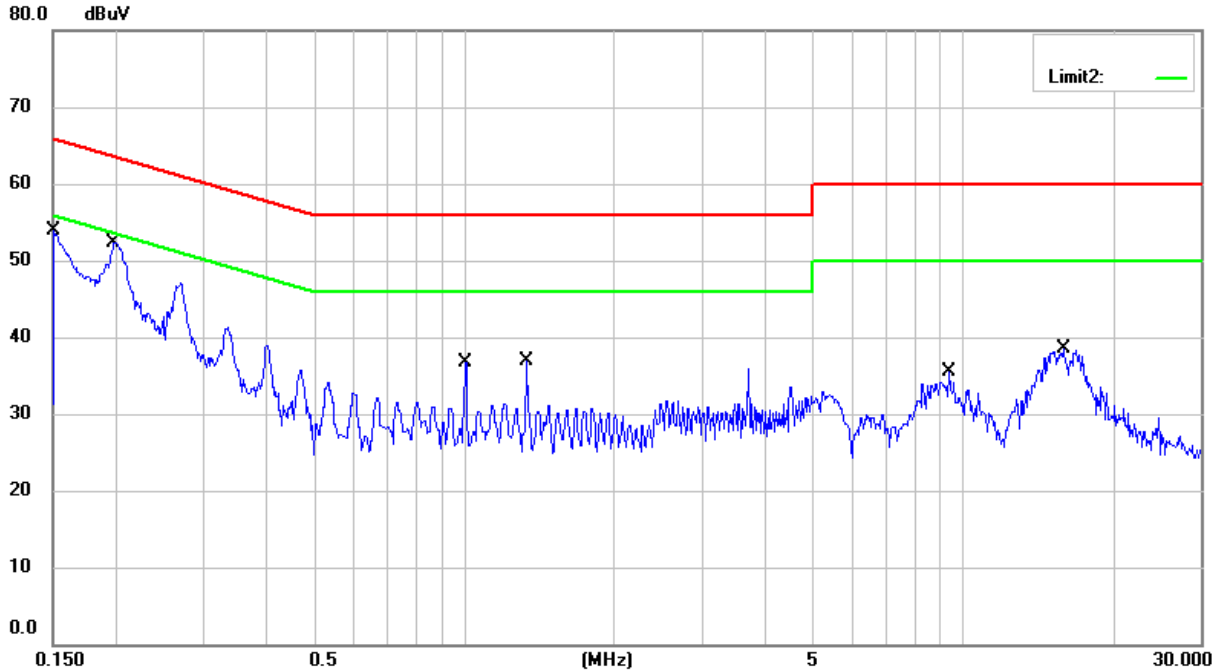
Up Line: QP Limit Line  
Down Line: Ave Limit Line  
Note:

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.

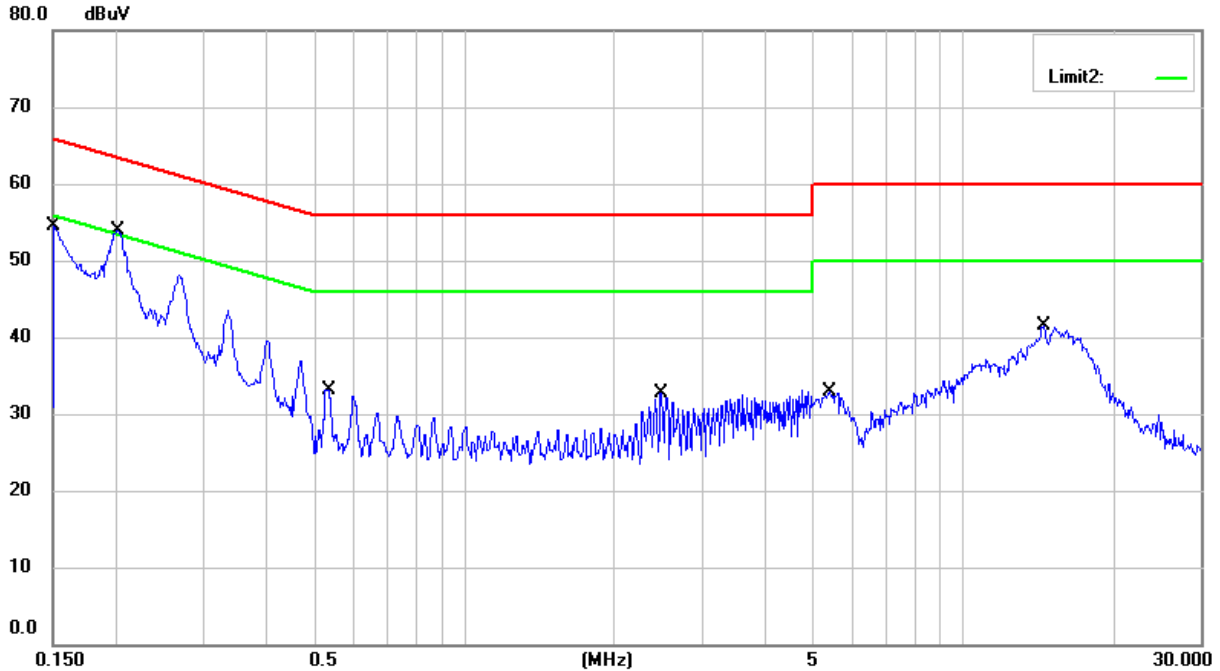


Registration number: W6M20902-9574-P-15  
FCC ID: T9J-RN24

## LISN N\_Antenna B



## LISN L1\_Antenna B



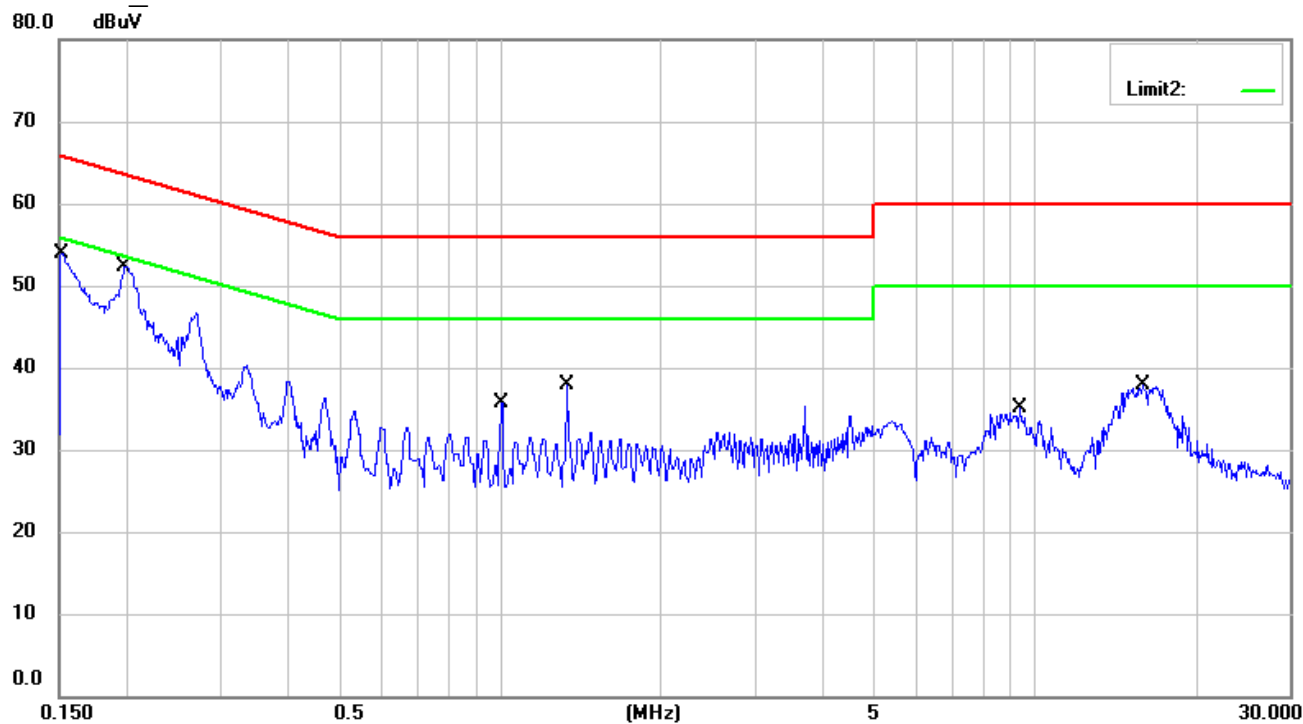
**Up Line: QP Limit Line**  
**Down Line: Ave Limit Line**  
**Note:**

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.

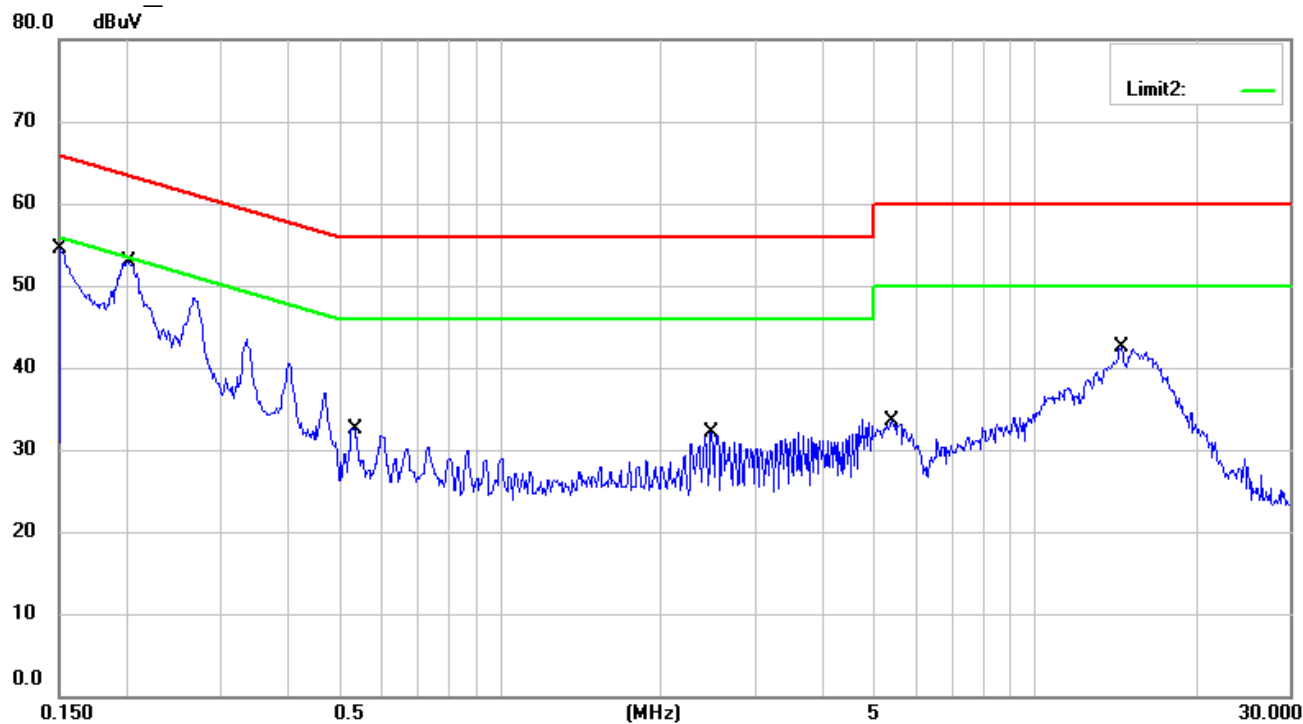


Registration number: W6M20902-9574-P-15  
FCC ID: T9J-RN24

## LISN N\_Antenna C



## LISN L1\_Antenna C



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.