

**FCC PART 15 SUBPART C TEST REPORT**

**for**

**Wireless LAN PCI Adapter**

**Model No.: PCI-G31**

**FCC ID: MSQ-PCIG31**

**of**

**Applicant: ASUSTeK COMPUTER INC.**

**Address: NO.15, LI-TE RD., PEITOU, TAIPEI, TAIWAN, R.O.C.**

**Tested and Prepared**

**by**

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

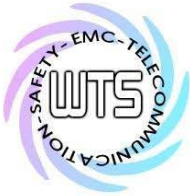
**FCC Registration No.: 930600**

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

**A2LA Accredited No.: 2732.01**

**Report No.: W6D20806-9177-C-1**

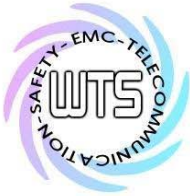
6F, NO. 58, LANE 188, RUEY-KUANG RD., NEIHU TAIPEI 114, TAIWAN, R.O.C.  
TEL: 886-2-66068877      FAX: 886-2-66068879      E-mail: [wts@wts-lab.com](mailto:wts@wts-lab.com)



Registration number: W6D20806-9177-C-1  
FCC ID: MSQ-PCIG31

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

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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.

#### Specific Conditions:

Usage of the hereunder tested device in combination with other integrated or external antennas requires at least additional output power measurements, spurious emission measurements, conducted emission measurements (AC supply lines) and radio frequency exposure evaluations for each individual configuration performed, for certification by FCC.

The test sample is able to work according IEEE 802.11 b/g.

This report is related to FCC Part 15 C (DSSS and OFDM device).

#### **Tester:**

July 17, 2008

Jay Chaing

Date

WTS-Lab.

Name

Signature

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

July 17, 2008

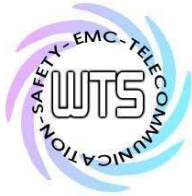
Steven Chuang

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**

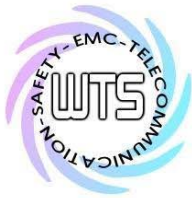
**A2LA-registration number: 2732.01**

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

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

## **1.3 Details of approval holder**

Name : ASUSTeK COMPUTER INC.  
Street : NO.15, LI-TE RD., PEITOU,  
Town : TAIPEI,  
Country : TAIWAN, R.O.C.  
Telephone : +886-2-28943447  
Fax : ./.



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## **1.4 Application details**

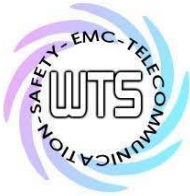
Date of receipt of application : June 24, 2008  
Date of receipt of test item : June 25, 2008  
Date of test : from June 25, 2008 to July 17, 2008

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

Type of test item : Wireless LAN PCI Adapter  
Model Number : PCI-G31  
Brand Name : ASUS  
Multi-listing model number : ./.  
Photos : see Appendix

### **Technical data**

Frequency band : 2.4 GHz – 2.4835 GHz  
Frequency ( ch 1 or A) : 2.412 GHz  
Frequency ( ch 6 or B) : 2.437 GHz  
Frequency ( ch 11 or C) : 2.462 GHz  
Number of Channels : 11  
Operation modes : duplex  
Modulation Type : DSSS / OFDM  
Fixed point-to-point operation:  Yes /  No  
Type of Antenna : Reverse SMA Antenna  
Antenna gain : 2.0 dBi  
Power supply : 3.3 VDC (power on PC)  
Emission designator : DSSS: 16M8G1D  
OFDM: 17M9W7D



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Host device: none

Classification :

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

## Transmitter

## Unom

### **Mode A (DSSS)**

Power ( ch 1 or A) : Conducted: 14.88 dBm  
 Power ( ch 6 or B) : Conducted: 15.58 dBm  
 Power ( ch 11 or C) : Conducted: 16.07 dBm

### **Mode B (OFDM)**

Power ( ch 1 or A) : Conducted: 14.43 dBm  
 Power ( ch 6 or B) : Conducted: 14.96 dBm  
 Power ( ch 11 or C) : Conducted: 15.34 dBm

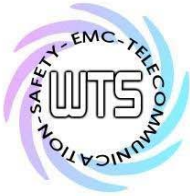
### **Manufacturer:** (if applicable)

Name : Pro-Nets Technology Corporation  
 Street : 7F,No.95,Lide St.,  
 Town : Chung Ho City 235 Taipei  
 Country : Taiwan R.O.C.

Additional information: The sample is using WLAN technology according IEEE 802.11 b/g.  
 There are two testing modes in the test report.  
 Mode A: IEEE 802.11b  
 Mode B: IEEE 802.11g  
 The scheme for frequency generation, spectrum spreading,  
 receiver parameters, synchronization procedure, and other parameters  
 are determined by the mentioned standard above.

## **1.6 Test standards**

Technical standard : FCC RULES PART 15 SUBPART B / SUBPART C § 15.247: October, 2007



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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 2.5 were ascertained in the course of the tests performed.

### **2.2 Test environment**

Temperature : 23 °C  
Relative humidity content : 20 ... 75 %  
Air pressure : 86 ... 103 kPa  
Power supply : 3.3 VDC (power on PC)  
Extreme conditions parameters : --

Special statement:

1. This report is based on the test reports no. W6M20704-7982-C-1.
2. The relevant Circuitry, PCB Layout, Inner element, Function of this model number is exactly the same as the original model number.

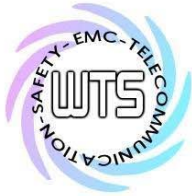


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## 2.3 Test Equipment List

No.	Test equipment	Type	Serial No.	Manufacturer	Cal. Date	Next Cal. Date
ETSTW-CE 001	EMI TEST RECEIVER	ESHS10	842121/013	R&S	2007/10/15	2008/10/14
ETSTW-CE 002	PREREULATOR MODE DC POWER SUPPLY	None	None		Function Test	
ETSTW-CE 003	AC POWER SOURCE	APS-9102	D161137	GW	Function Test	
ETSTW-CE 004	ZWEILEITER-V-NETZNACHBILDUNG TWO-LINE V-NETWORK	ESH3-Z5	840731/011	R&S	2007/10/15	2008/10/14
ETSTW-CE 005	Line-Impedance Stabilisation Network	NNBM 8126D	137	Schwarzbeck	2007/10/15	2008/10/14
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	2007/10/23	2009/10/22
ETSTW-CE 009	TEMP.&HUMIDITY CHAMBER	GTH-225-40-1P-U	MAA0305-009	GIANT FORCE	2007/8/2	2008/8/1
ETSTW-CE 013	CISPR 22 TWO BALANCED TELECOM PAIRS IMPEDANCE STABILIZATION NETWORK	FCC-TLISN-T4-02	20242	FCC	2007/11/2	2009/11/1
ETSTW-CE 014	CISPR 22 TWO BALANCED TELECOM PAIRS IMPEDANCE STABILIZATION NETWORK	FCC-TLISN-T2-02	20241	FCC	2005/12/7	2008/12/6
ETSTW-CE 015	CISPR 22 TWO BALANCED TELECOM PAIRS IMPEDANCE STABILIZATION NETWORK	FCC-TLISN-T8-02	20307	FCC	2006/11/7	2008/11/6
ETSTW-CE 016	TWO-LINE V-NETWORK	ENV216	100050	R&S	2007/10/29	2008/10/28
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	2007/12/3	2008/12/2
ETSTW-RE 004	EMI TEST RECEIVER	ESI 40	832427/004	R&S	2007/10/29	2008/10/28
ETSTW-RE 005	EMI TEST RECEIVER	ESVS10	843207/020	R&S	2007/10/11	2008/10/12
ETSTW-RE 010	PROGRAMMABLE LINEAR POWER SUPPLY	LPS-305	30503070181	MOTECH	Function Test	
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	2010/5/4
ETSTW-RE 018	MICROWAVE HORN ANTENNA	AT4560	27212	AR	2007/11/7	2010/11/6
ETSTW-RE 020	MICROWAVE HORN ANTENNA	AT4002A	306915	AR	Function Test	
ETSTW-RE 021	SWEEP GENERATOR	SWM05	835130/010	R&S	2007/10/9	2008/10/8
ETSTW-RE 028	Log-Periodic DipoleArray Antenna	3148	34429	EMCO	2008/4/23	2010/4/22
ETSTW-RE 029	Biconical Antenna	3109	33524	EMCO	2008/4/23	2010/4/22
ETSTW-RE 030	Double-Ridged Guide Horn Antenna	3117	00035224	EMCO	2008/3/26	2010/3/25



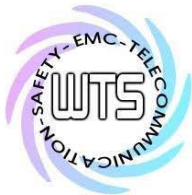


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ETSTW-RE 032	Millivoltmeter	URV 55	849086/013	R&S	2007/10/9	2008/10/8
ETSTW-RE 033	WaveRunner 6000A Serie Oscilloscope	WAVERUNNER 6100A	LCRY0604P14508	LeCroy	2008/6/27	2009/6/26
ETSTW-RE 034	Power Sensor	URV5-Z4	839313/006	R&S	2007/10/16	2009/10/15
ETSTW-RE 042	Biconical Antenna	HK116	100172	R&S	2007/1/11	2009/1/10
ETSTW-RE 043	Log-Periodic Dipole Antenna	HL223	100166	R&S	2008/5/2	2010/5/1
ETSTW-RE 044	Log-Periodic Antenna	HL050	100094	R&S	2008/5/22	2010/5/21
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	2005/3/22	2009/3/21
ETSTW-RE 049	TRILOG Super Broadband test Antenna	VULB 9160	9160-3185	Schwarzbeck	2007/5/2	2009/5/1
ETSTW-RE 055	SPECTRUM ANALYZER	FSU-26	200074	R&S	2008/7/1	2009/6/30
ETSTW-RE 064	Bluetooth Test Set	MT8852B-042	6K00005709	Anritsu	Function Test	
ETSTW-RE 072	CELL SITE TEST SET	8921A	3339A00375	HP	2007/7/2	2009/7/1



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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.

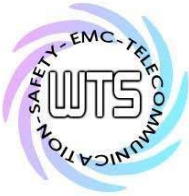
Example:

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 UUT was placed on a table 80 cm high and with dimensions of 1m by 1.5m (non metallic table) and arranged according to ANSI C63.4-2000 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.



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

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

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

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

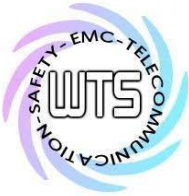
Duty Factor =  $20 \log (\text{dwell time}/T)$

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

ANTENNA & GROUND:

**This unit uses Reverse SMA Antenna. (see photos)**



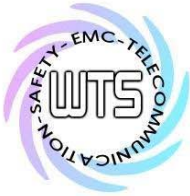
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### 3 Test results (enclosure)

TEST CASE	Para. Number	Required	Test passed	Test failed
Peak Output Power	15.247(b)(3)	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>
Equivalent radiated Power	15.247(b)(3)	<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"/>
Band Edge Measurement	15.247(c)	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>
Minimum 6 dB Bandwidth	15.247(a)(2)	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>
Peak Power Spectral Density	15.247(d)	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>
Radiated Emission from Digital Part And Receiver L.O.	15.109	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>
Power Line Conducted Emission	15.207	<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(b)(3)

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).

Mode A

Test condition		Conducted Power		
		Channel A	Channel B	Channel C
$T_{nom} = 23^{\circ}C$	$V_{nom} = 3.3 \text{ V}$	[dBm]	[dBm]	[dBm]
		14.88	15.58	16.07

Mode B

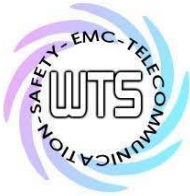
Test condition		Conducted Power		
		Channel A	Channel B	Channel C
$T_{nom} = 23^{\circ}C$	$V_{nom} = 3.3 \text{ V}$	[dBm]	[dBm]	[dBm]
		14.43	14.96	15.34

Mode A

Test condition	Signal Field strength TX highest power mode dB $\mu$ V/m
$T_{nom} = 23^{\circ}C, V_{nom} = 3.3 \text{ V}$	112.47
Frequency [MHz] 2463	

Mode B

Test condition	Signal Field strength TX highest power mode dB $\mu$ V/m
$T_{nom} = 23^{\circ}C, V_{nom} = 3.3 \text{ V}$	107.58
Frequency [MHz] 2465	



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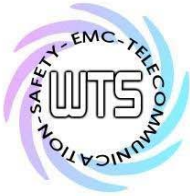
Limits:

Frequency MHz	Power dBm
902 - 928	30
2400 – 2483.5	30
5725 – 5850	30

In case of employing transmitter antennas having antenna gain  $> 6$  dBi and using fixed point-to-point operation consider §15.247 (b)(4)

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

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



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## 3.2 Equivalent isotropic radiated power

FCC Rule: 15.247(b)(3)

EIRP = max. conducted output power + antenna gain  
 EIRP = 16.07 dBm + 2.0 dBi  
 = 18.07 dBm

Limit: EIRP = +36 dBm for Antenna gain <6dBi

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

### 3.2.1 Transmitter

#### Integral Antenna:

At the transmitter the measurement was transacted with the modulation declared by the manufacturer and the maximum available output power of the EUT.  
 In this arrangement the EUT fulfils the requirements of the FCC rules § 15.247, subpart C, section b.

## 3.3 RF Exposure Compliance Requirements

The test sample is a GSM/VOWIFI Dual-Mode Phone intended for portable installation.  
 FCC OET Bulletin 65 Edition 97.01 determines the equations for predicting RF fields and applicable limits.  
 The prediction for power density in the far-field but will over-predict power density in the near field, where it could be used for walking a “worst case” or conservative prediction.

$$S = \frac{PG}{4\pi R^2}$$

S – Power Density

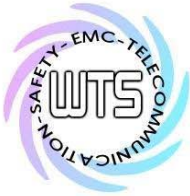
P – Output power ERP

R – Distance

D – Cable Loss

AG – Antenna Gain G = AG-D

Item	Unit	Value	Remarks
P	mW	40.45759	Peak value
D	dB		
AG	dBi	2.0	
G		1.6	Calculated Value
R	cm	20	Assumed value
S	mW/cm <sup>2</sup>	0.012	Calculated value



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Limits:

Limit for General Population / Uncontrolled Exposure	
Frequency (MHz)	Power Density (mW/cm <sup>2</sup> )
1500 – 100.000	1,0

### 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 26500 MHz.

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

Frequency  $\leq$  1 GHz, RBW:100 kHz, VBW: 100 kHz (Peak measurements)

Frequency  $>$  1 GHz, RBW: 1 MHz, VBW: 1 MHz (Peak measurements)

Frequency  $>$  1 GHz , RBW:1 MHz , VBW: 10 Hz (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	500	54.0

For frequencies above 1GHz (Average measurements).

Guidance on Measurement of Digit Transmission Systems:

“If the emission is pulsed, modify the unit for continuous operation, use the setting shown above, then correct the reading by subtracting the peak-average correction factor, derived from the appropriate duty cycle calculation.”

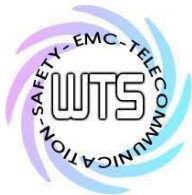
The correction factor, based on the total channel dwell time in a 100 ms period, may be mathematically applied to a measurement made with an average detector, to further reduce the value.

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

Note: No duty cycle correction was added to the reading of this EUT.

Comment: 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))

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:

Max. reading – 20 dB

Mode A: 112.47dB  $\mu$  V/m- 20 dB= 92.47 dB  $\mu$  V/m

Mode B: 107.58dB  $\mu$  V/m- 20 dB= 87.58 dB  $\mu$  V/m

Guidance on Measurement of Digit Transmission 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.”

The correction factor, based on the total channel dwell time in a 100 ms period, may be mathematically applied to a measurement made with an average detector, to further reduce the value.

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

For frequencies above 1GHz (Peak measurements).

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

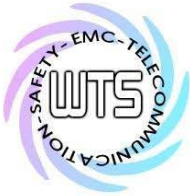
For frequencies above 1GHz (Average measurements).

Max. reading – 20dB

Note: No duty cycle correction was added to the reading of EUT.

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

Comment: See attached diagrams in Appendix.



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SAMPLE CALCULATION OF LIMIT. All results will be updated by an automatic measuring system in accordance with 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 and 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 "Duty-Cycle Correction Factor".

## Summary table with radiated data of the test plots

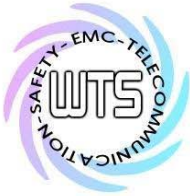
### Mode A CH 1

Antenna Polarization	Frequency Marker (MHz)	Reading (dBuV)	Correction Factor (dB)	Detector	Test Result (dBuV/m)	Compliance Limit (dBuV/m)	Margin (dB)	Antenna Height (cm)	Table Azimuth (degree)
H	2335.0701	47.74	2.10	PK	49.84	54	4.16	120	240
	2389.5791	35.66	2.07	PK	37.73	54	16.27	115	200
	3216.2437	50.79	0.32	PK	51.11	92.47	41.36	110	175
	6436.7488	45.99	6.02	PK	52.01	92.47	40.46	130	210

Antenna Polarization	Frequency Marker (MHz)	Reading (dBuV)	Correction Factor (dB)	Detector	Test Result (dBuV/m)	Compliance Limit (dBuV/m)	Margin (dB)	Antenna Height (cm)	Table Azimuth (degree)
V	2331.0621	50.74	2.10	PK	52.84	74	21.16	120	240
	2331.0621	39.13	2.10	AV	41.23	54	12.77	120	240
	2389.5791	36.85	2.07	PK	38.92	54	15.08	115	200
	3216.2437	50.16	0.32	PK	50.48	92.47	41.99	110	175
	4016.6320	47.11	3.34	PK	50.45	54	3.55	100	205
	6436.7488	45.24	6.02	PK	51.26	92.47	41.21	130	210

### Ch6

Antenna Polarization	Frequency Marker (MHz)	Reading (dBuV)	Correction Factor (dB)	Detector	Test Result (dBuV/m)	Compliance Limit (dBuV/m)	Margin (dB)	Antenna Height (cm)	Table Azimuth (degree)
H	2355.9188	45.31	2.09	PK	47.40	54	6.60	120	305
	2389.5791	35.48	2.07	PK	37.55	54	16.45	115	200
	3248.2626	48.99	0.27	PK	49.26	92.47	43.21	135	160
	6501.0704	43.73	6.16	PK	49.89	92.47	42.58	100	170



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Antenna Polarization	Frequency Marker (MHz)	Reading (dBuV)	Correction Factor (dB)	Detector	Test Result (dBuV/m)	Compliance Limit (dBuV/m)	Margin (dB)	Antenna Height (cm)	Table Azimuth (degree)
V	2354.3086	48.34	2.09	PK	50.43	54	3.57	120	305
	2389.5791	36.89	2.07	PK	38.96	54	15.04	115	200
	3248.2626	48.50	0.27	PK	48.77	92.47	43.70	135	160
	4064.1282	46.59	2.97	PK	49.56	54	4.44	105	265
	4873.6646	43.45	4.81	PK	48.26	54	5.74	120	220
	6501.0704	43.92	6.16	PK	50.08	92.47	42.39	100	170

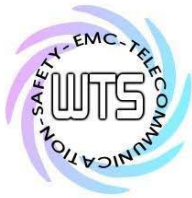
## Ch11

Antenna Polarization	Frequency Marker (MHz)	Reading (dBuV)	Correction Factor (dB)	Detector	Test Result (dBuV/m)	Compliance Limit (dBuV/m)	Margin (dB)	Antenna Height (cm)	Table Azimuth (degree)
H	2378.3567	41.92	2.07	PK	43.99	54	10.01	100	300
	2483.5000	38.08	-1.11	PK	36.97	54	17.03	130	260
	4921.8436	44.81	4.75	PK	49.56	54	4.44	135	300

Antenna Polarization	Frequency Marker (MHz)	Reading (dBuV)	Correction Factor (dB)	Detector	Test Result (dBuV/m)	Compliance Limit (dBuV/m)	Margin (dB)	Antenna Height (cm)	Table Azimuth (degree)
V	2379.1583	45.27	2.07	PK	47.34	54	6.66	100	300
	2483.5000	37.37	-1.11	PK	36.26	54	17.74	130	260
	3284.1162	44.00	0.22	PK	44.22	92.47	48.25	150	260
	4096.1923	45.43	2.73	PK	48.16	54	5.84	140	215
	4921.8436	45.49	4.75	PK	50.24	54	3.76	135	300
	6567.7488	43.84	5.88	PK	49.72	92.47	42.75	110	110

## Mode B CH 1

Antenna Polarization	Frequency Marker (MHz)	Reading (dBuV)	Correction Factor (dB)	Detector	Test Result (dBuV/m)	Compliance Limit (dBuV/m)	Margin (dB)	Antenna Height (cm)	Table Azimuth (degree)
H	2359.1182	42.21	2.08	PK	44.29	54	9.71	120	305
	2389.5791	35.69	2.07	PK	37.76	54	16.24	115	200
	3216.2437	54.48	0.32	PK	54.80	87.58	32.78	110	175
	6436.7488	46.98	6.02	PK	53.00	87.58	34.58	130	210



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Antenna Polarization	Frequency Marker (MHz)	Reading (dBuV)	Correction Factor (dB)	Detector	Test Result (dBuV/m)	Compliance Limit (dBuV/m)	Margin (dB)	Antenna Height (cm)	Table Azimuth (degree)
V	2350.0300	45.33	2.09	PK	47.42	54	6.58	120	305
	2389.5791	35.34	2.07	PK	37.41	54	16.59	115	200
	3216.2437	53.62	0.32	PK	53.94	87.58	33.64	110	175

## Ch6

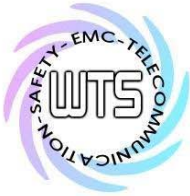
Antenna Polarization	Frequency Marker (MHz)	Reading (dBuV)	Correction Factor (dB)	Detector	Test Result (dBuV/m)	Compliance Limit (dBuV/m)	Margin (dB)	Antenna Height (cm)	Table Azimuth (degree)
H	2354.3086	43.37	2.09	PK	45.46	54	8.54	120	305
	2389.5791	35.55	2.07	PK	37.62	54	16.38	115	200
	3248.2626	49.62	0.27	PK	49.89	87.58	37.69	135	160

Antenna Polarization	Frequency Marker (MHz)	Reading (dBuV)	Correction Factor (dB)	Detector	Test Result (dBuV/m)	Compliance Limit (dBuV/m)	Margin (dB)	Antenna Height (cm)	Table Azimuth (degree)
V	2354.3086	45.79	2.09	PK	47.88	54	6.12	120	305
	2389.5791	36.19	2.07	PK	38.26	54	15.74	115	200
	3248.2626	52.56	0.27	PK	52.83	87.58	34.75	135	160

## Ch11

Antenna Polarization	Frequency Marker (MHz)	Reading (dBuV)	Correction Factor (dB)	Detector	Test Result (dBuV/m)	Compliance Limit (dBuV/m)	Margin (dB)	Antenna Height (cm)	Table Azimuth (degree)
H	2378.3567	42.29	2.07	PK	44.36	54	9.64	100	300
	2483.5000	36.74	-1.11	PK	35.63	54	18.37	130	260
	3284.1162	43.86	0.22	PK	44.08	87.58	43.50	150	260

Antenna Polarization	Frequency Marker (MHz)	Reading (dBuV)	Correction Factor (dB)	Detector	Test Result (dBuV/m)	Compliance Limit (dBuV/m)	Margin (dB)	Antenna Height (cm)	Table Azimuth (degree)
V	2375.1703	46.15	2.07	PK	48.22	54	5.78	100	300
	2483.5000	36.93	-1.11	PK	35.82	54	18.18	130	260
	3284.1162	50.59	0.22	PK	50.81	87.58	36.77	150	260



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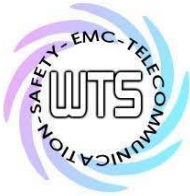
- Note**
- 1. Correction Factor = Antenna factor + Cable loss - Preamplifier**
  - 2. The formula of measured value as: Test Result = Reading + Correction Factor**
  - 3. Detector function in the form : PK = Peak, QP = Quasi Peak, AV = Average**
  - 4. All not in the table noted test results are more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

Freq. – Frequency Range:

1:	30	-	200 MHz
2:	200	-	1000 MHz
3:	1	-	4 GHz
4:	4	-	8 GHz
5:	8	-	12 GHz
6:	12	-	17 GHz
7:	17	-	26.5 GHz

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

Test equipment used: ETSTW-RE003 ETSTW-RE 004 ETSTW-RE 017 ETSTW-RE 028  
ETSTW-RE029 ETSTW-RE 030 ETSTW-RE 042 ETSTW-RE 043  
ETSTW-RE 044



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**3.6 Minimum 6 dB Bandwidth**

The analyzer ResBW was set to 100 kHz. For each RF output channel investigated, the spectrum analyzer center frequency was set to the channel carrier. A PEAK reading was taken, two markers were set 6 dB below the maximum level on the right and the left side of the emission. The 6 dB bandwidth is the frequency difference between the two markers.

Mode A

Test conditions		6 dB Bandwidth		
		Channel 1	Channel 6	Channel 11
T <sub>nom</sub> = 23°C	V <sub>nom</sub> = 3.3 V	10.929487179 MHz	10.929487179 MHz	10.961538462 MHz

Mode B

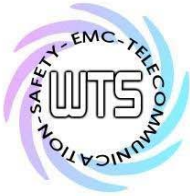
Test conditions		6 dB Bandwidth		
		Channel 1	Channel 6	Channel 11
T <sub>nom</sub> = 23°C	V <sub>nom</sub> = 3.3 V	16.602564103 MHz	16.602564103 MHz	16.602564103 MHz

**Limits:**

Frequency Range MHz	Limits
902-928	min 500 kHz
2400-2483.5	min 500 kHz
5725-5850	min 500 kHz

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

Comment: See attached diagrams in Appendix.



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**3.7 Peak Power Spectral Density**

Peak Power Spectral density is a measured at low, middle and high channel.  
 The peak output power is measured with a measurement bandwidth of 10 MHz and displayed on diagram together with Peak Power Spectral Density result which was measured with a bandwidth of 3 kHz, appreciate frequency span and sweep time.

Mode A

Test conditions		Peak Power Spectral Density (3 kHz)		
		Channel 1 [dBm]	Channel 6 [dBm]	Channel 11 [dBm]
$T_{nom} = 23^{\circ}C$	$V_{nom} = 3.3\ V$	-15.51	-13.98	-13.57

Mode B

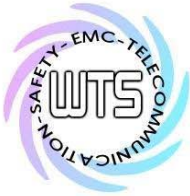
Test conditions		Peak Power Spectral Density (3 kHz)		
		Channel 1 [dBm]	Channel 6 [dBm]	Channel 11 [dBm]
$T_{nom} = 23^{\circ}C$	$V_{nom} = 3.3\ V$	-22.30	-21.82	-21.45

**Limits:**

Frequency Range MHz	dBm
902-928	8
2400-2483,5	8
5725-5850	8

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

Comment: See attached diagrams in Appendix.



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**3.8 Radiated Emission from Digital Part And Receiver L.O.**

FCC Rule: 15.109

**Receiver**

**Mode A**

**CH 1**

Antenna Polarization	Frequency Marker (MHz)	Reading (dBuV)	Correction Factor (dB)	Detector	Test Result (dBuV/m)	Compliance Limit (dBuV/m)	Margin (dB)	Antenna Height (cm)	Table Azimuth (degree)
H	240.0800	25.21	13.21	PK	38.42	46	7.58	305	170
	3218.2749	38.90	0.34	PK	39.24	54	14.76	125	200
	6436.7488	39.84	5.94	PK	45.78	54	8.22	140	305

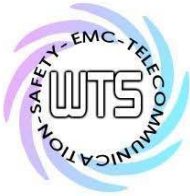
Antenna Polarization	Frequency Marker (MHz)	Reading (dBuV)	Correction Factor (dB)	Detector	Test Result (dBuV/m)	Compliance Limit (dBuV/m)	Margin (dB)	Antenna Height (cm)	Table Azimuth (degree)
V	878.1560	11.98	26.31	PK	38.29	46	7.71	315	100
	3218.2749	43.02	0.34	PK	43.36	54	10.64	125	200
	6436.7488	43.66	5.94	PK	49.60	54	4.40	140	305

**CH 6**

Antenna Polarization	Frequency Marker (MHz)	Reading (dBuV)	Correction Factor (dB)	Detector	Test Result (dBuV/m)	Compliance Limit (dBuV/m)	Margin (dB)	Antenna Height (cm)	Table Azimuth (degree)
H	240.0800	24.69	13.21	PK	37.90	46	8.10	305	170
	3248.2626	36.39	0.27	PK	36.66	54	17.34	120	185
	7800.1248	38.77	7.64	PK	46.41	54	7.59	135	210

Antenna Polarization	Frequency Marker (MHz)	Reading (dBuV)	Correction Factor (dB)	Detector	Test Result (dBuV/m)	Compliance Limit (dBuV/m)	Margin (dB)	Antenna Height (cm)	Table Azimuth (degree)
V	1000.0000	9.46	28.02	PK	37.48	54	16.52	310	200
	3248.2626	42.13	0.27	PK	42.40	54	11.60	120	185
	6501.0704	42.63	6.16	PK	48.79	54	5.21	115	140





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## CH 11

Antenna Polarization	Frequency Marker (MHz)	Reading (dBuV)	Correction Factor (dB)	Detector	Test Result (dBuV/m)	Compliance Limit (dBuV/m)	Margin (dB)	Antenna Height (cm)	Table Azimuth (degree)
H	240.0800	24.71	13.21	PK	37.92	46	8.08	300	180
	3284.5887	36.46	0.22	PK	36.68	54	17.32	110	270
	7631.2826	39.19	7.14	PK	46.33	54	7.67	125	200

Antenna Polarization	Frequency Marker (MHz)	Reading (dBuV)	Correction Factor (dB)	Detector	Test Result (dBuV/m)	Compliance Limit (dBuV/m)	Margin (dB)	Antenna Height (cm)	Table Azimuth (degree)
V	799.5990	11.29	25.67	PK	36.96	46	9.04	310	105
	3284.5887	41.10	0.22	PK	41.32	54	12.68	110	270
	7743.4650	38.87	7.63	PK	46.50	54	7.50	120	240

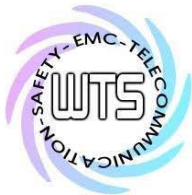
## Mode B CH 1

Antenna Polarization	Frequency Marker (MHz)	Reading (dBuV)	Correction Factor (dB)	Detector	Test Result (dBuV/m)	Compliance Limit (dBuV/m)	Margin (dB)	Antenna Height (cm)	Table Azimuth (degree)
H	240.0800	25.21	13.21	PK	38.42	46	7.58	305	170
	3218.2749	38.50	0.34	PK	38.84	54	15.16	125	200
	6437.0202	38.94	5.94	PK	44.88	54	9.12	140	305

Antenna Polarization	Frequency Marker (MHz)	Reading (dBuV)	Correction Factor (dB)	Detector	Test Result (dBuV/m)	Compliance Limit (dBuV/m)	Margin (dB)	Antenna Height (cm)	Table Azimuth (degree)
V	878.1560	11.90	26.31	PK	38.21	46	7.79	315	100
	3218.2749	42.82	0.34	PK	43.16	54	10.84	125	200
	6437.0202	44.19	5.94	PK	50.13	54	3.87	140	305

## CH 6

Antenna Polarization	Frequency Marker (MHz)	Reading (dBuV)	Correction Factor (dB)	Detector	Test Result (dBuV/m)	Compliance Limit (dBuV/m)	Margin (dB)	Antenna Height (cm)	Table Azimuth (degree)
H	879.7600	12.68	26.31	PK	38.99	46	7.01	315	100
	3248.2626	36.43	0.27	PK	36.70	54	17.30	120	185
	6501.1122	37.70	6.16	PK	43.86	54	10.14	115	140



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Antenna Polarization	Frequency Marker (MHz)	Reading (dBuV)	Correction Factor (dB)	Detector	Test Result (dBuV/m)	Compliance Limit (dBuV/m)	Margin (dB)	Antenna Height (cm)	Table Azimuth (degree)
V	1000.0000	10.78	28.02	PK	38.80	54	15.20	310	210
	3248.2626	41.61	0.27	PK	41.88	54	12.12	120	185
	6501.1122	40.08	6.16	PK	46.24	54	7.76	115	140

## CH 11

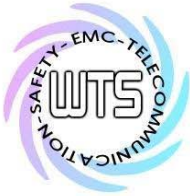
Antenna Polarization	Frequency Marker (MHz)	Reading (dBuV)	Correction Factor (dB)	Detector	Test Result (dBuV/m)	Compliance Limit (dBuV/m)	Margin (dB)	Antenna Height (cm)	Table Azimuth (degree)
H	878.1560	11.01	26.31	PK	37.32	46	8.68	315	100
	3284.5887	36.59	0.22	PK	36.81	54	17.19	110	270
	7832.2426	38.57	7.54	PK	46.11	54	7.89	115	245

Antenna Polarization	Frequency Marker (MHz)	Reading (dBuV)	Correction Factor (dB)	Detector	Test Result (dBuV/m)	Compliance Limit (dBuV/m)	Margin (dB)	Antenna Height (cm)	Table Azimuth (degree)
V	799.5990	11.23	25.67	PK	36.90	46	9.10	310	105
	3284.5887	41.22	0.22	PK	41.44	54	12.56	110	270
	6567.2488	41.00	5.88	PK	46.88	54	7.12	120	205

## Digital

Antenna Polarization	Frequency Marker (MHz)	Reading (dBuv)	Correction Factor (dB)	Detector	Test Result (dBuV/m)	Compliance Limit (dBuV/m)	Margin (dB)	Table Azimuth (degree)	Antenna Height (cm)
V	177.8560	12.54	13.49	PK	26.03	30	3.97	330	260
	357.1140	12.82	16.67	PK	29.49	37	7.51	130	170
	1000.0000	1.52	28.02	PK	29.54	37	7.46	125	200

Antenna Polarization	Frequency Marker (MHz)	Reading (dBuv)	Correction Factor (dB)	Detector	Test Result (dBuV/m)	Compliance Limit (dBuV/m)	Margin (dB)	Table Azimuth (degree)	Antenna Height (cm)
H	39.5390	13.03	12.85	PK	25.88	30	4.12	125	240
	313.8280	17.40	15.60	PK	33.00	37	4.00	310	175
	996.7930	4.28	28.00	PK	32.28	37	4.72	325	200



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

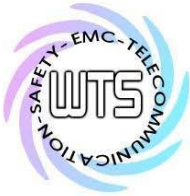
Registration number: W6D20806-9177-C-1  
FCC ID: MSQ-PCIG31

- 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 attached diagrams in Appendix.**

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



Registration number: W6D20806-9177-C-1  
 FCC ID: MSQ-PCIG31

### 3.9 Power Line Conducted Emission

For an intentional radiator which is designed to be connected to the public utility (AC) power line, the radio frequency voltage that is conducted back onto the AC line on any frequency or frequencies within the band 150 kHz to 30 MHz shall not exceed the limits in the table bellows with this provision shall be based on the measurement of the radio frequency voltage between each power line and ground at the power terminals.

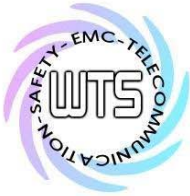
This measurement was transact first with instrumentation using an average and peak detector and a 10 kHz bandwidth. If the peak detector achieves a calculated level, the measurement is repeated by an instrumentation using a quasi-peak detector.

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

LISN type	Frequency Marker	Reading (dBuV)		Correction Factor	Test Result (dBuV)		Compliance Limit (dBuV)		Margin (dB)	
		QP	AV		dB	QP	AV	QP	AV	QP
N	MHz	QP	AV	dB	QP	AV	QP	AV	QP	AV
	0.195	30.59	27.61	10.10	40.69	37.71	63.82	53.82	23.13	16.11
	1.070	34.53	30.12	10.10	44.63	40.22	56.00	46.00	11.37	5.78
	14.195	36.56	18.84	10.10	46.66	28.94	60.00	50.00	13.34	21.06

LISN type	Frequency Marker	Reading (dBuV)		Correction Factor	Test Result (dBuV)		Compliance Limit (dBuV)		Margin (dB)	
		QP	AV		dB	QP	AV	QP	AV	QP
L1	MHz	QP	AV	dB	QP	AV	QP	AV	QP	AV
	0.195	27.70	24.19	10.10	37.80	34.29	63.82	53.82	26.02	19.53
	1.460	33.91	31.60	10.10	44.01	41.70	56.00	46.00	11.99	4.30
	14.205	37.38	19.03	10.10	47.48	29.13	60.00	50.00	12.52	20.87

- 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.



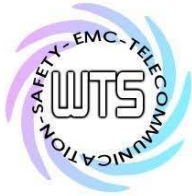
# Worldwide Testing Services(Taiwan) Co., Ltd.

Registration number: W6D20806-9177-C-1  
FCC ID: MSQ-PCIG31

## 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-CE 011



## **Appendix**

### **A Measurement diagrams**

1. Peak Output Power

2. Spurious Emissions radiated

(The measurement diagrams plots attached below are preliminary wideband scan with a peak detector for reference only. The final test results are listed on section 3.5)

3. Band Edge Measurement

4. Minimum 6dB Bandwidth

5. Peak Power Spectral Density

6. Radiated Emissions from Receiver Section of Transceiver

(The measurement diagrams plots attached below are preliminary wideband scan with a peak detector for reference only. The final test results are listed on section 3.8)

7. Power Line Conducted Emission

(The measurement diagrams plots attached below are preliminary wideband scan with a peak and average detector for reference only. The final test results are listed on section 3.9)

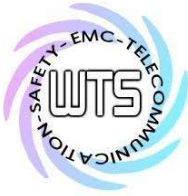
### **B Photos**

1. External Photos

2. Internal Photos

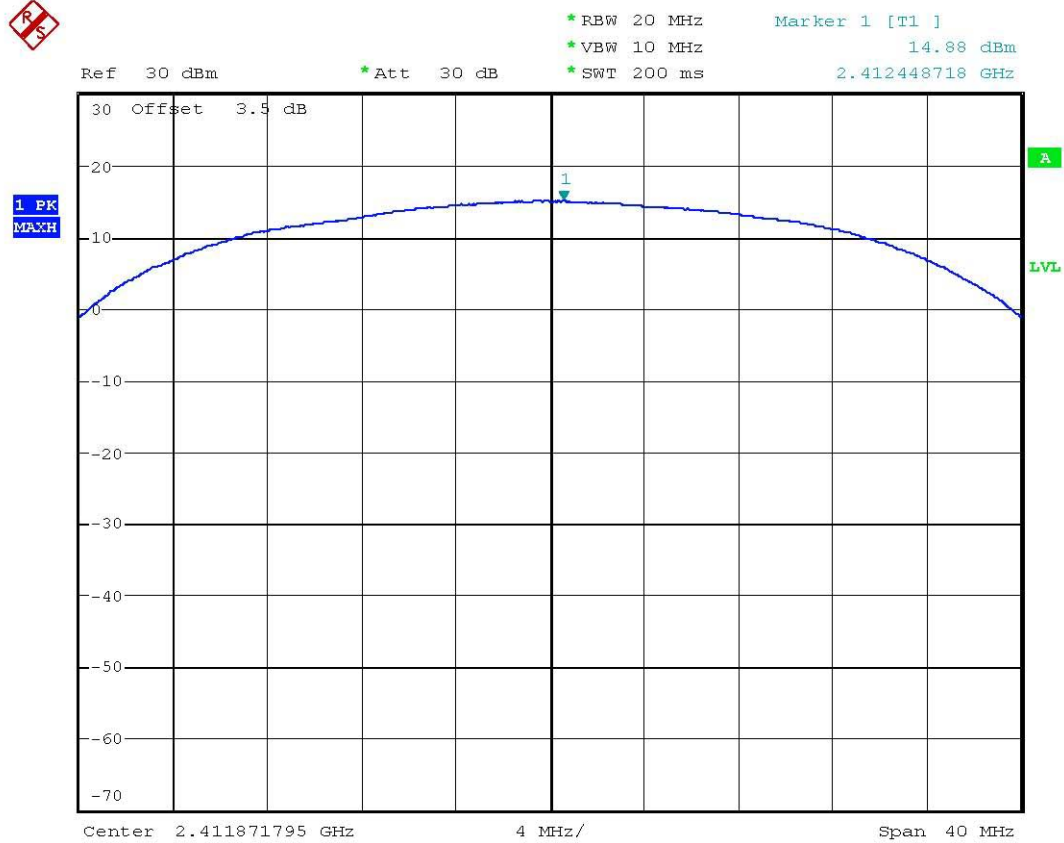
3. Set Up Photo of Radiated Emission

4. Set Up Photo of Conducted Emission

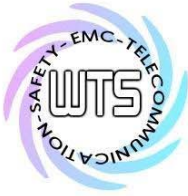


Registration number: W6D20806-9177-C-1  
FCC ID: MSQ-PCIG31

## Peak Output Power

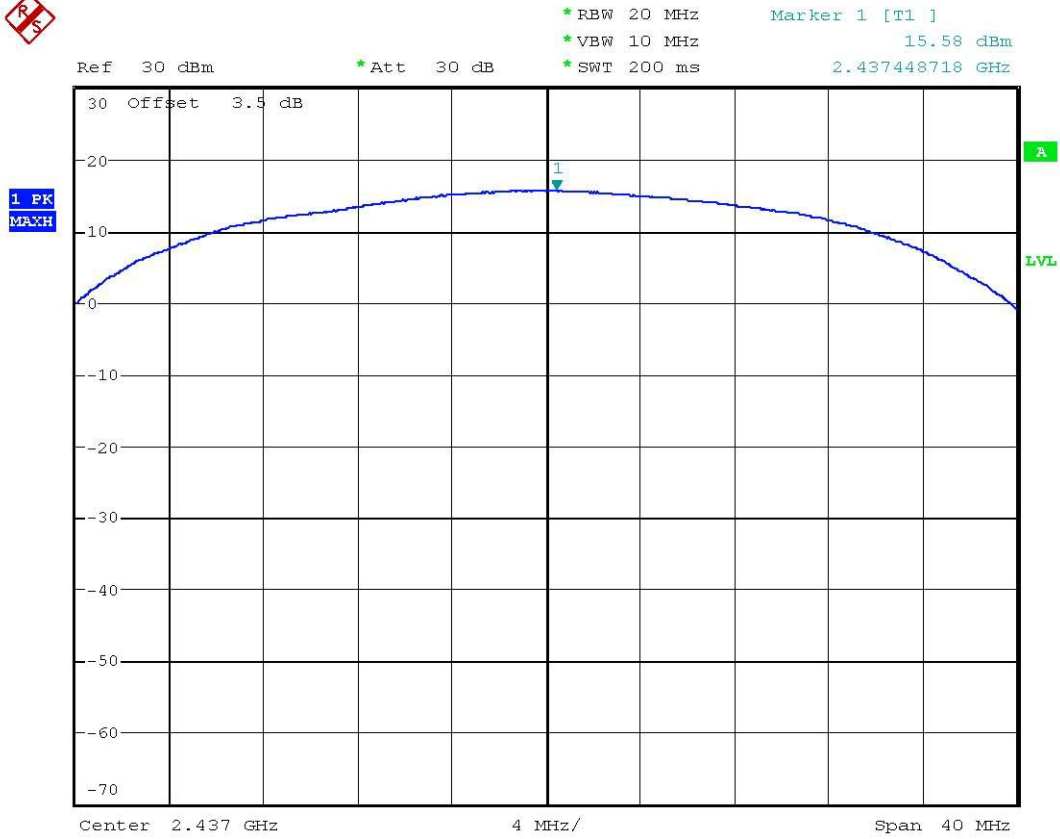


Max output power 802.11b 2412MHz  
Date: 16.JUL.2008 09:57:40



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

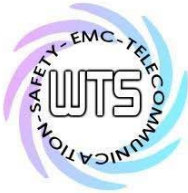
Registration number: W6D20806-9177-C-1  
FCC ID: MSQ-PCIG31



Max output power 802.11b 2437MHz

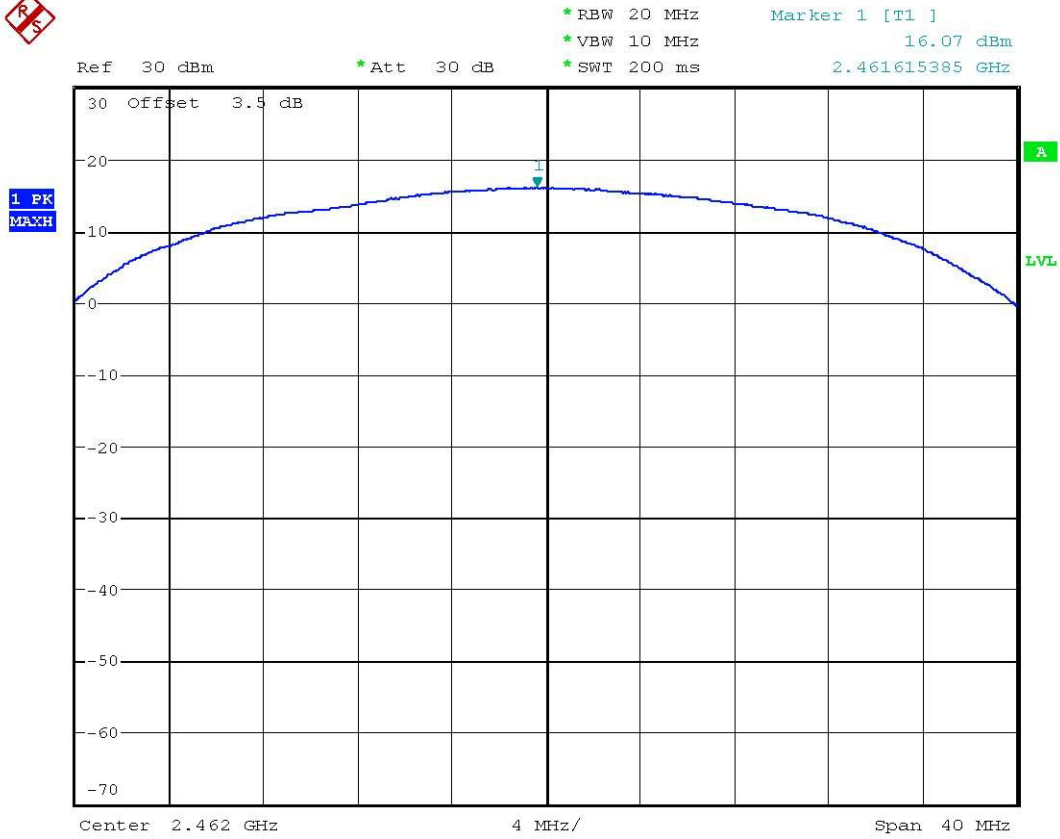
Date: 16.JUL.2008 10:00:46





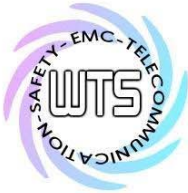
# Worldwide Testing Services(Taiwan) Co., Ltd.

Registration number: W6D20806-9177-C-1  
FCC ID: MSQ-PCIG31



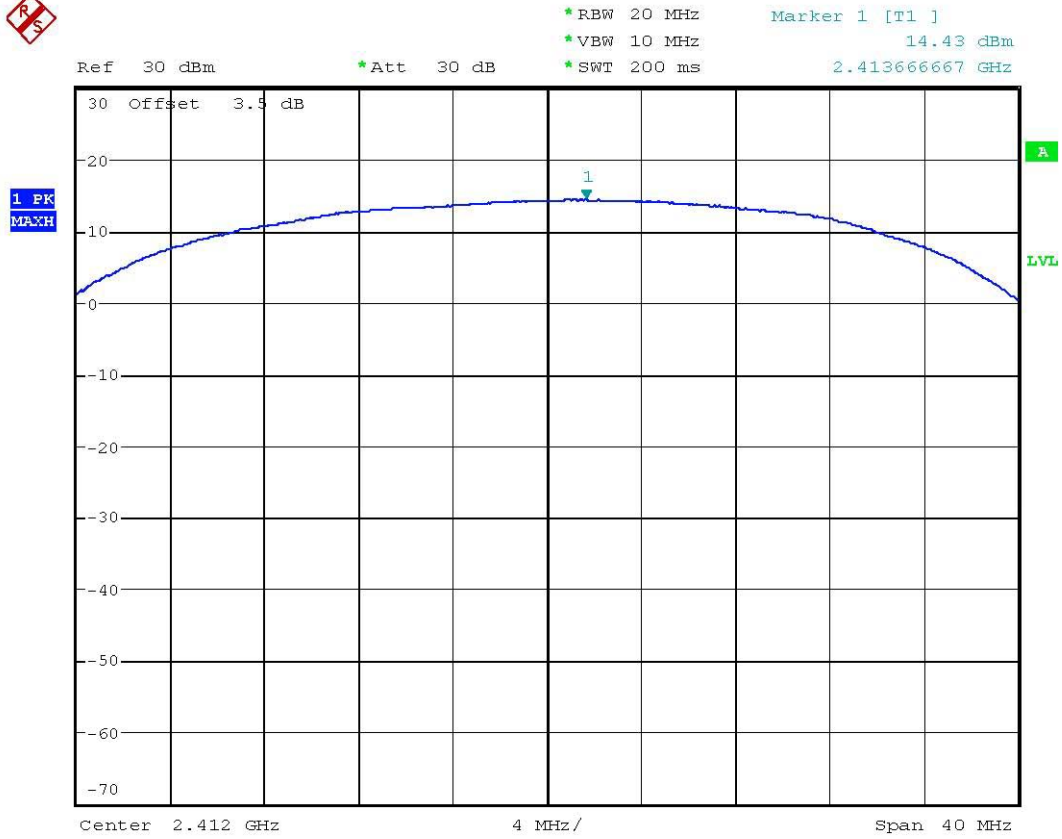
Max output power 802.11b 2462MHz

Date: 16.JUL.2008 10:02:39



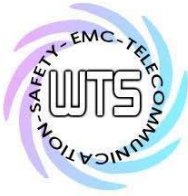
# Worldwide Testing Services(Taiwan) Co., Ltd.

Registration number: W6D20806-9177-C-1  
FCC ID: MSQ-PCIG31



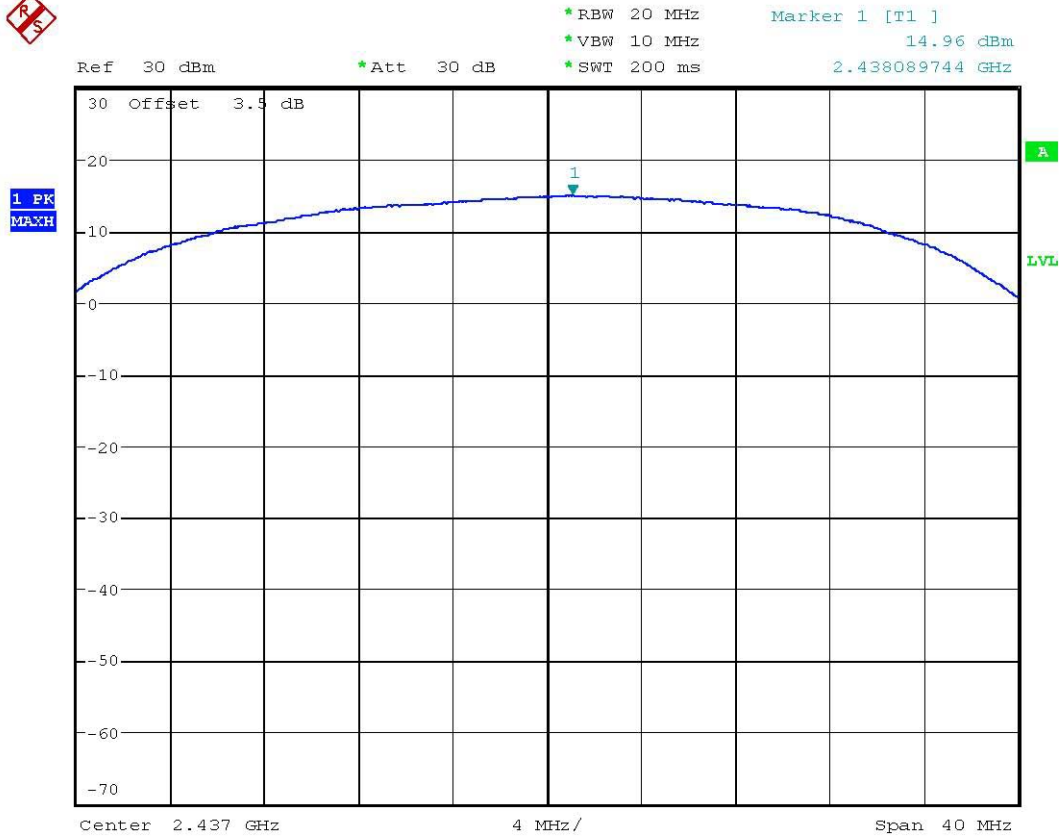
Max output power 802.11g 2412MHz

Date: 16.JUL.2008 10:06:06



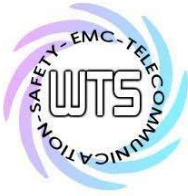
# Worldwide Testing Services(Taiwan) Co., Ltd.

Registration number: W6D20806-9177-C-1  
FCC ID: MSQ-PCIG31



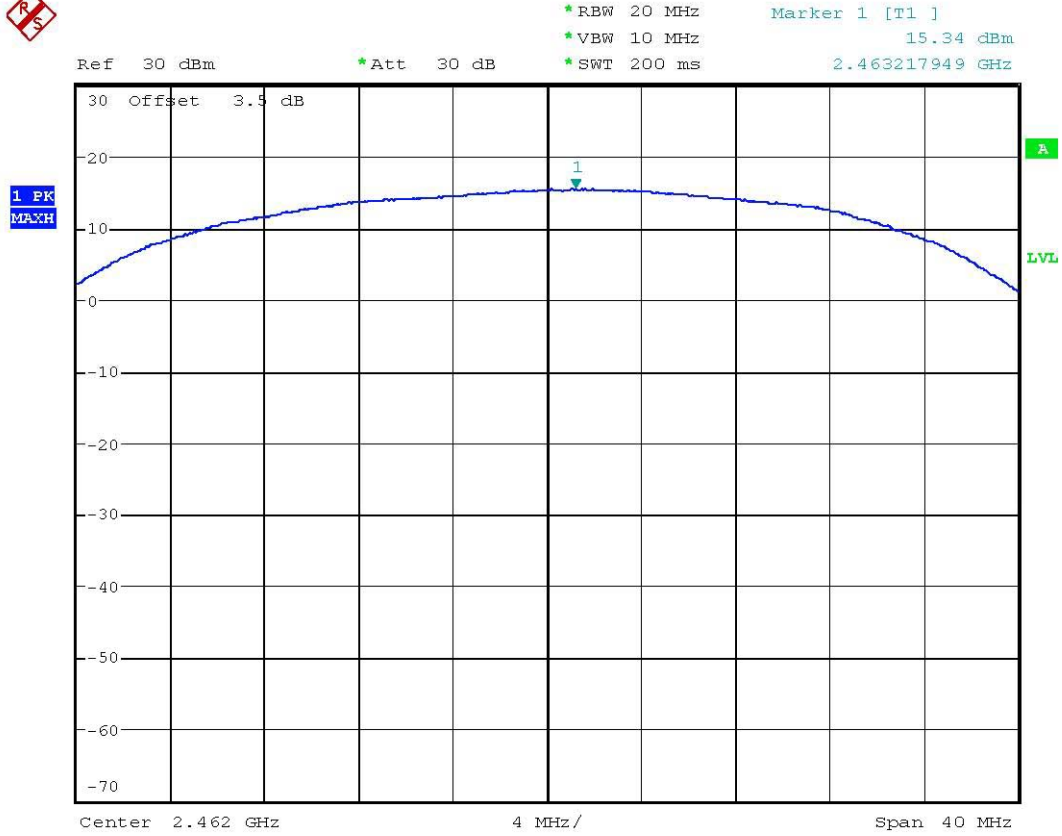
Max output power 802.11g 2437MHz

Date: 16.JUL.2008 10:05:35



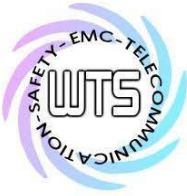
# Worldwide Testing Services(Taiwan) Co., Ltd.

Registration number: W6D20806-9177-C-1  
FCC ID: MSQ-PCIG31



Max output power 802.11g 2462MHz

Date: 16.JUL.2008 10:04:46



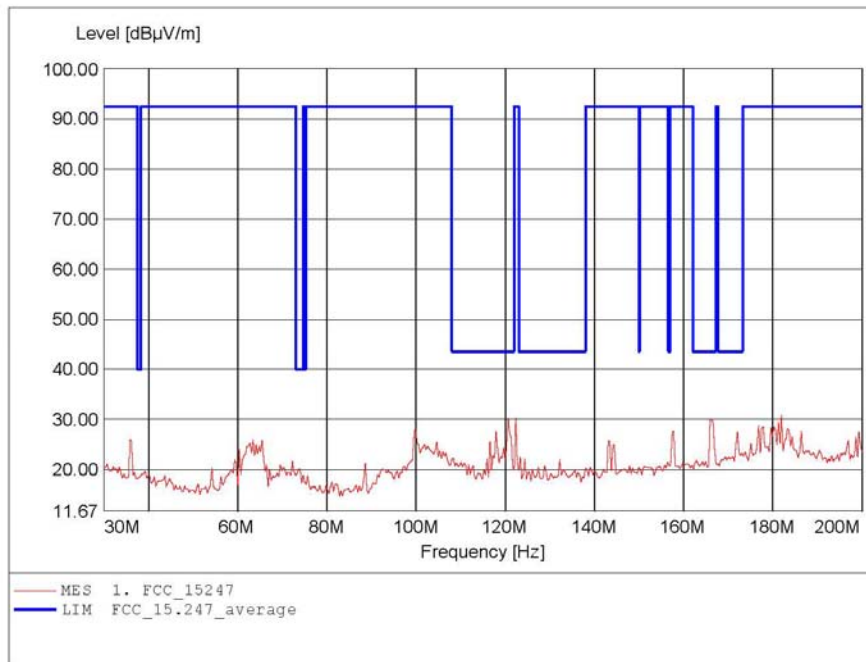
Registration number: W6D20806-9177-C-1  
FCC ID: MSQ-PCIG31

## Spurious Emission Radiated

*Spurious emissions Field Strength*

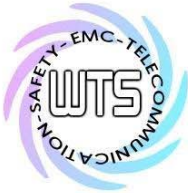
*FCC RULES PART 15, SUBPART C / LP 0002*

Order Number: W6D20806-9177 802.11b ch1  
Test Site / Operator: WTS / Brian  
Temperature: Temp.: 23.9°C  
Comment 1: Ant.: HK 116  
Freq: 181.944MHz, Emax: 30.77dBμV/m, RBW: 100kHz



### 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.

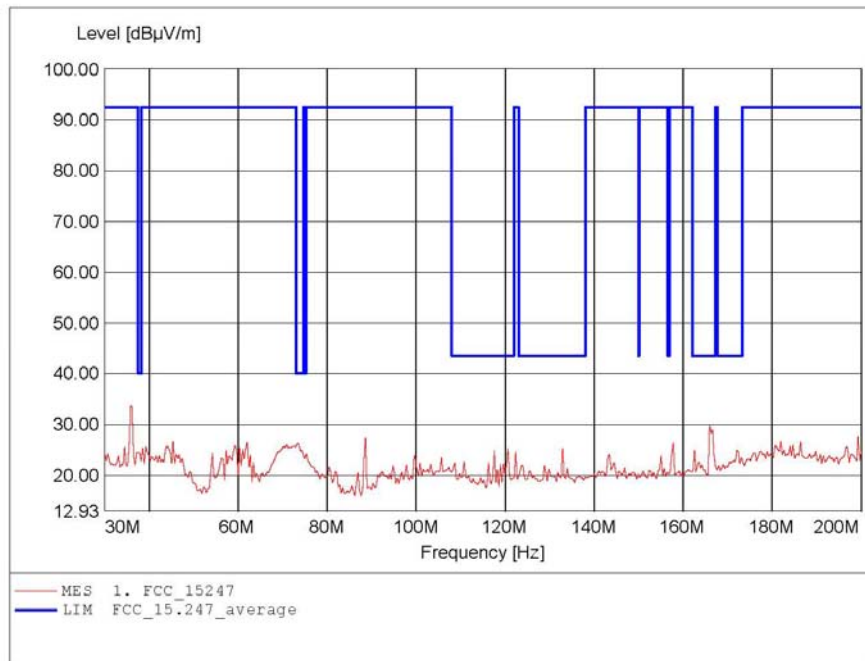
Registration number: W6D20806-9177-C-1

FCC ID: MSQ-PCIG31

*Spurious emissions Field Strength*

*FCC RULES PART 15, SUBPART C / LP 0002*

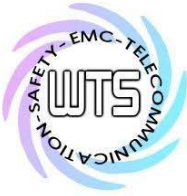
Order Number: W6D20806-9177 802.11b ch1  
Test Site / Operator: WTS / Brian  
Temperature: Temp.: 23.9°C  
Comment 1: Ant.: HK 116  
Freq: 35.792MHz, Emax: 33.59dB $\mu$ V/m, RBW: 100kHz



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**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.

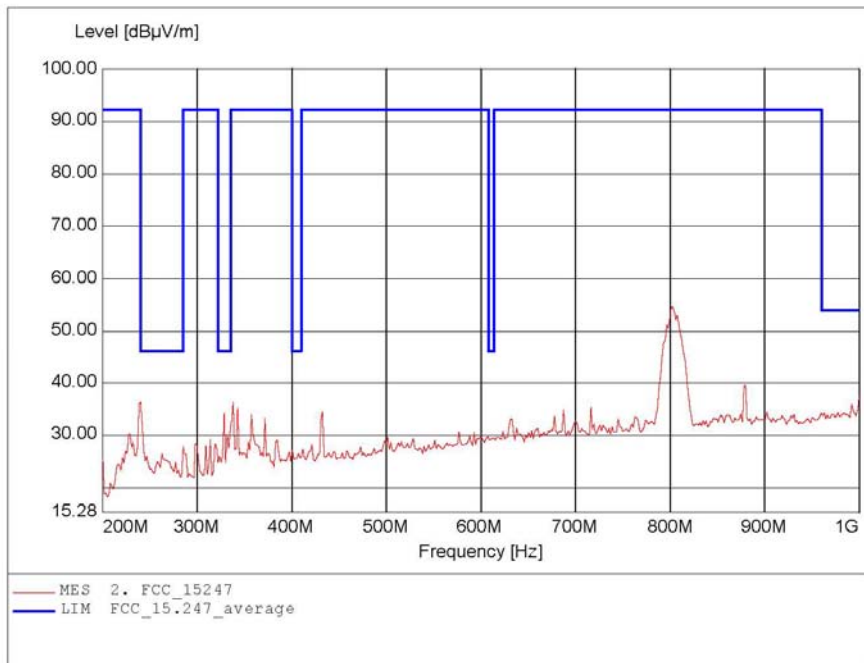
Registration number: W6D20806-9177-C-1

FCC ID: MSQ-PCIG31

*Spurious emissions Field Strength*

*FCC RULES PART 15, SUBPART C / LP 0002*

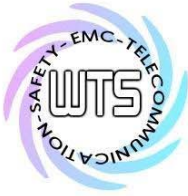
Order Number: W6D20806-9177 802.11b ch1  
Test Site / Operator: WTS / Brian  
Temperature: Temp.: 23.9°C  
Comment 1: Ant.: HL 223,  
Freq: 802.806MHz, Emax: 54.63dBµV/m, RBW: 100kHz



Page 1/1 7/16/2008 7:38AM Overview / Antenna horizontal

**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.

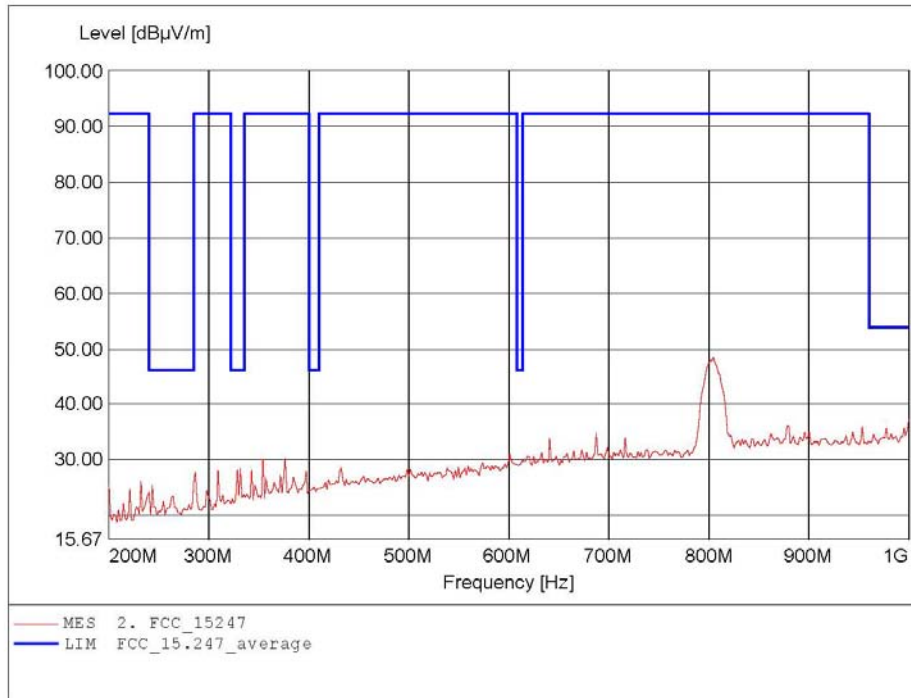
Registration number: W6D20806-9177-C-1

FCC ID: MSQ-PCIG31

*Spurious emissions Field Strength*

*FCC RULES PART 15, SUBPART C / LP 0002*

Order Number: W6D20806-9177 802.11b ch1  
Test Site / Operator: WTS / Brian  
Temperature: Temp.: 23.9°C  
Comment 1: Ant.: HL 223,  
Freq: 804.409MHz, Emax: 48.53dBμV/m, RBW: 100kHz

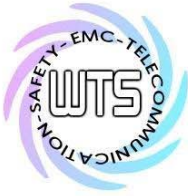


Page 1/1 7/16/2008 7:47AM Overview / Antenna vertical

**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.

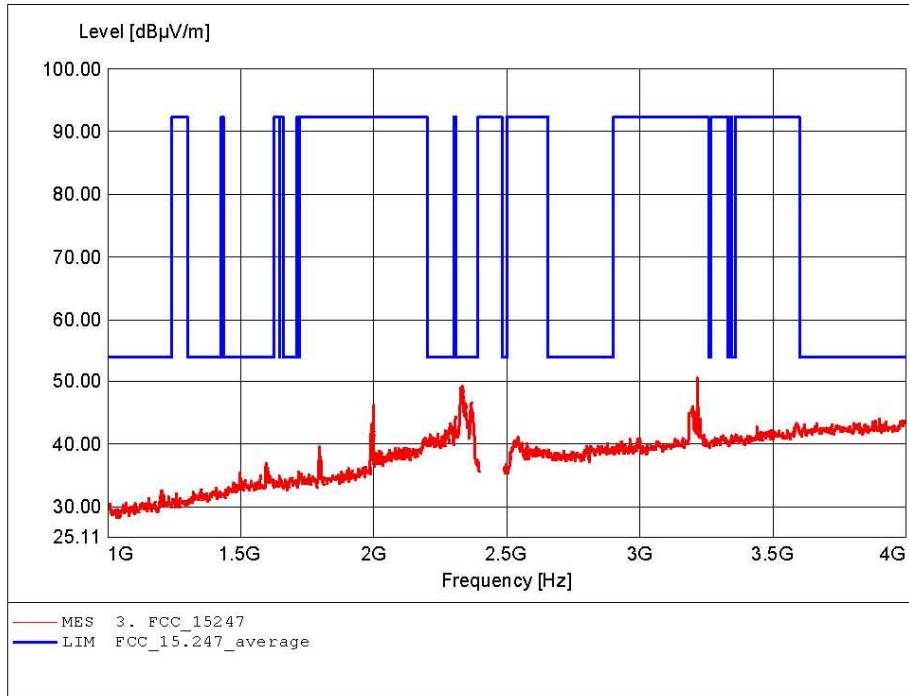
Registration number: W6D20806-9177-C-1

FCC ID: MSQ-PCIG31

*Spurious emissions Field Strength*

*FCC RULES PART 15, SUBPART C / LP 0002*

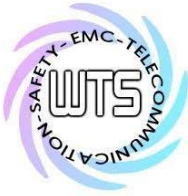
Order Number: W6D20806-9177 802.11b ch1  
Test Site / Operator: WTS / Brian  
Temperature: Temp.: 23.9°C  
Comment 1: Ant.: HL025, amplif.  
Freq: 3.216GHz, Emax: 51.02dBμV/m, RBW: 1MHz



Page 1/1 7/16/2008 12:05PM Overview / Antenna horizontal

**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.

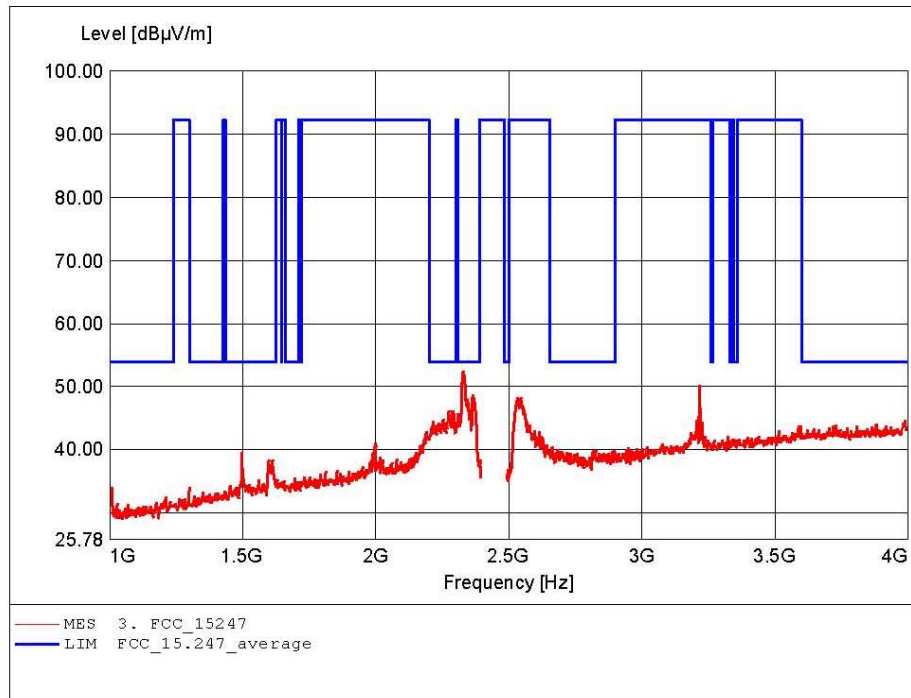
Registration number: W6D20806-9177-C-1

FCC ID: MSQ-PCIG31

*Spurious emissions Field Strength*

*FCC RULES PART 15, SUBPART C / LP 0002*

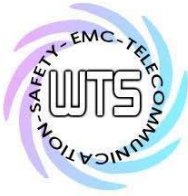
Order Number: W6D20806-9177 802.11b ch1  
Test Site / Operator: WTS / Brian  
Temperature: Temp.: 23.9°C  
Test Specification: according to §15.247 / LP 0002, peak detector  
Comment 1: Dist.: 3m, Ant.: HL025, amplif.  
Freq: 2.331GHz, Emax: 52.72dBμV/m, RBW: 1MHz



Page 1/1 7/16/2008 11:41AM Overview / Antenna vertical

**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.

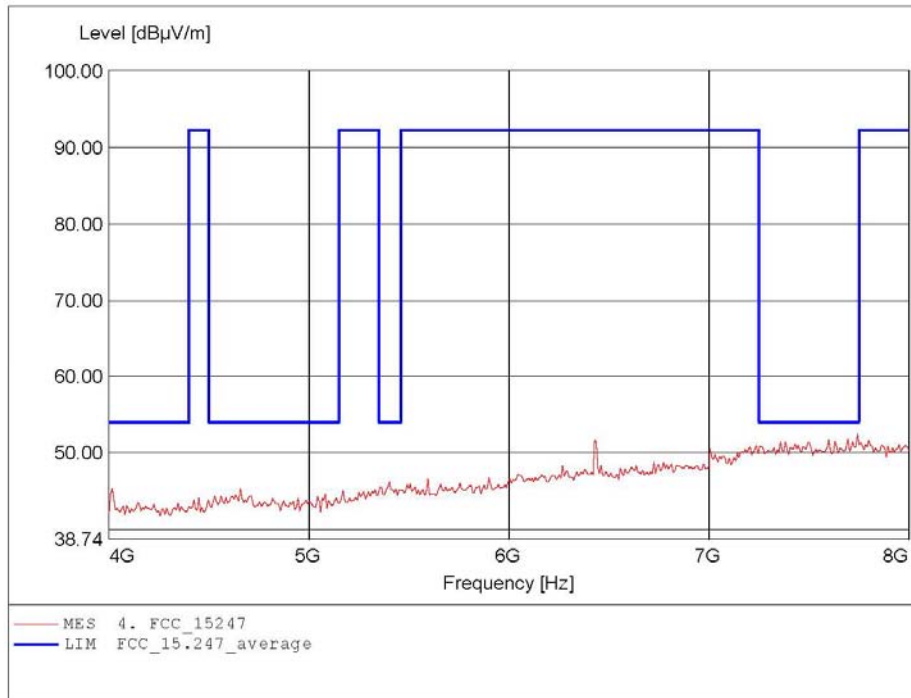
Registration number: W6D20806-9177-C-1

FCC ID: MSQ-PCIG31

*Spurious emissions Field Strength*

*FCC RULES PART 15, SUBPART C / LP 0002*

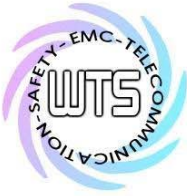
Order Number: W6D20806-9177 802.11b ch1  
Test Site / Operator: WTS / Brian  
Temperature: Temp.: 23.9°C  
Test Specification: according to §15.247, peak detector  
Comment 1: Dist.: 3m, Ant.: HL025, ampl.+HP.  
Freq: 7.743GHz, Emax: 52.45dBµV/m, RBW: 1MHz



Page 1/1 7/16/2008 8:02AM Overview / Antenna horizontal

**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.

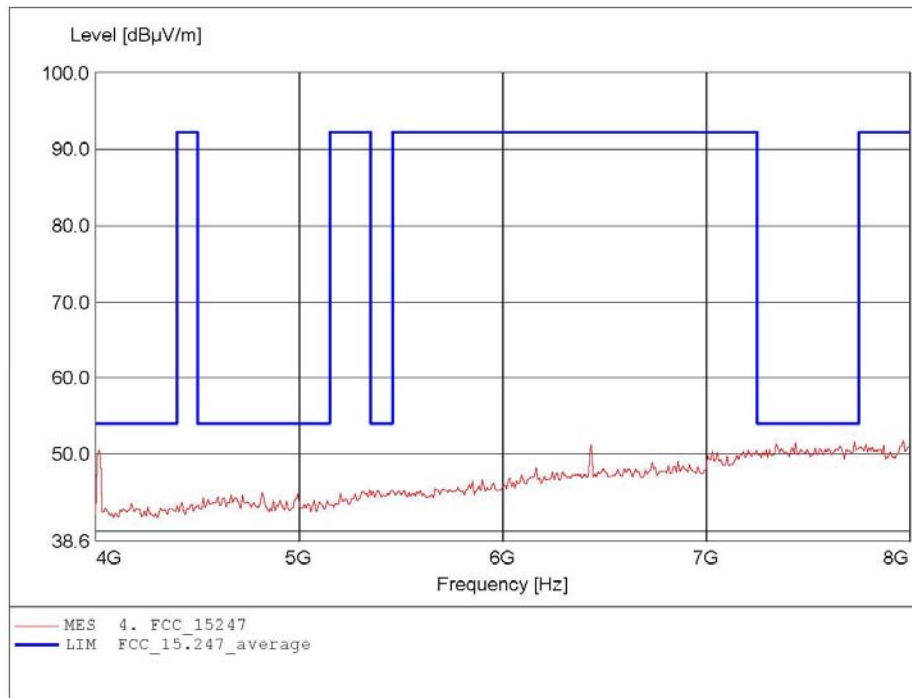
Registration number: W6D20806-9177-C-1

FCC ID: MSQ-PCIG31

*Spurious emissions Field Strength*

*FCC RULES PART 15, SUBPART C / LP 0002*

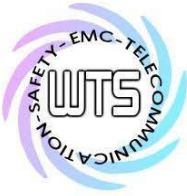
Order Number: W6D20806-9177 802.11b ch1  
Test Site / Operator: WTS / Brian  
Temperature: Temp.: 23.9°C  
Test Specification: according to §15.247, peak detector  
Comment 1: Dist.: 3m, Ant.: HL025, ampl.+HP.  
Freq: 7.968GHz, Emax: 51.78dBμV/m, RBW: 1MHz



Page 1/1 7/16/2008 7:48AM Overview / Antenna vertical

**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.

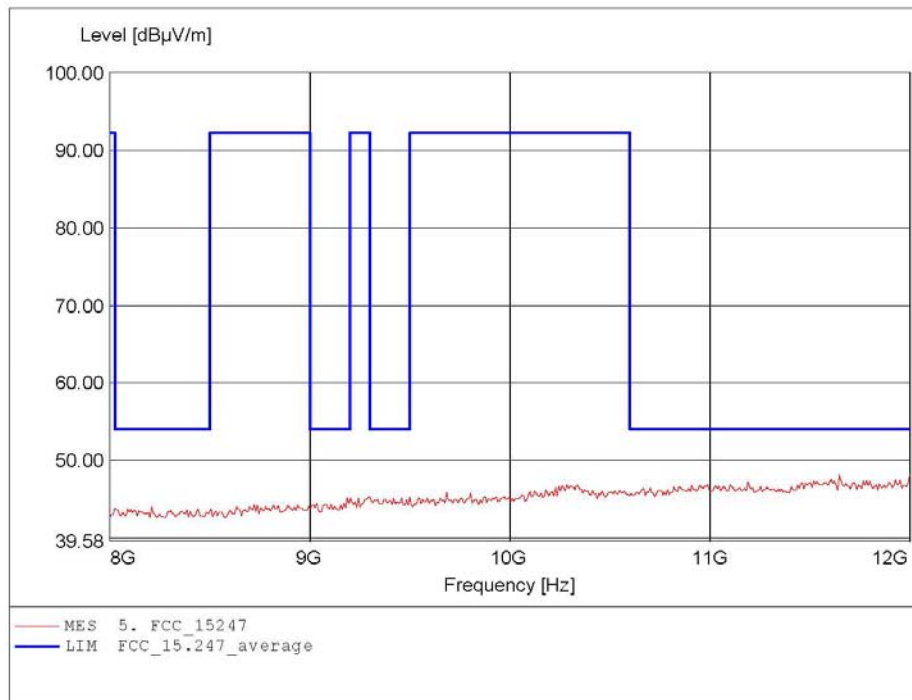
Registration number: W6D20806-9177-C-1

FCC ID: MSQ-PCIG31

*Spurious emissions Field Strength*

*FCC RULES PART 15, SUBPART C / LP 0002*

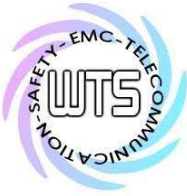
Order Number: W6D20806-9177 802.11b ch1  
Test Site / Operator: WTS / Brian  
Temperature: Temp.: 23.9°C  
Comment 1: Ant.: HL025, ampl.+HP.  
Freq: 12.000GHz, Emax: 48.22dBμV/m, RBW: 1MHz



Page 1/1 7/16/2008 8:00AM Overview / Antenna horizontal

**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.

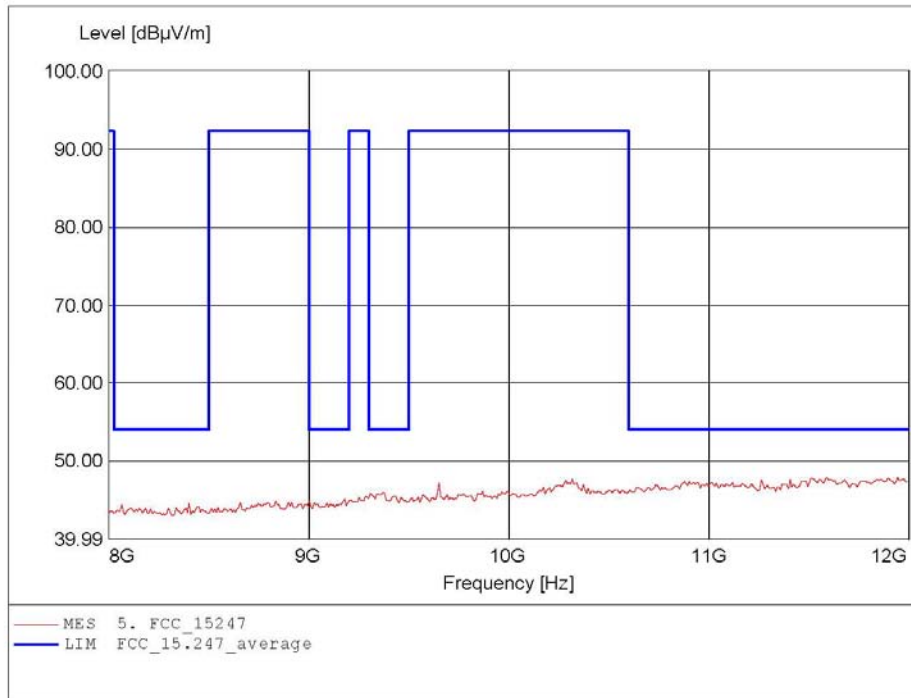
Registration number: W6D20806-9177-C-1

FCC ID: MSQ-PCIG31

*Spurious emissions Field Strength*

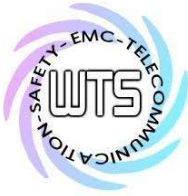
*FCC RULES PART 15, SUBPART C / LP 0002*

Order Number: W6D20806-9177 802.11b ch1  
Test Site / Operator: WTS / Brian  
Temperature: Temp.: 23.9°C  
Comment 1: Ant.: HL025, ampl.+HP.  
Freq: 11.944GHz, Emax: 47.90dBμV/m, RBW: 1MHz



**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.

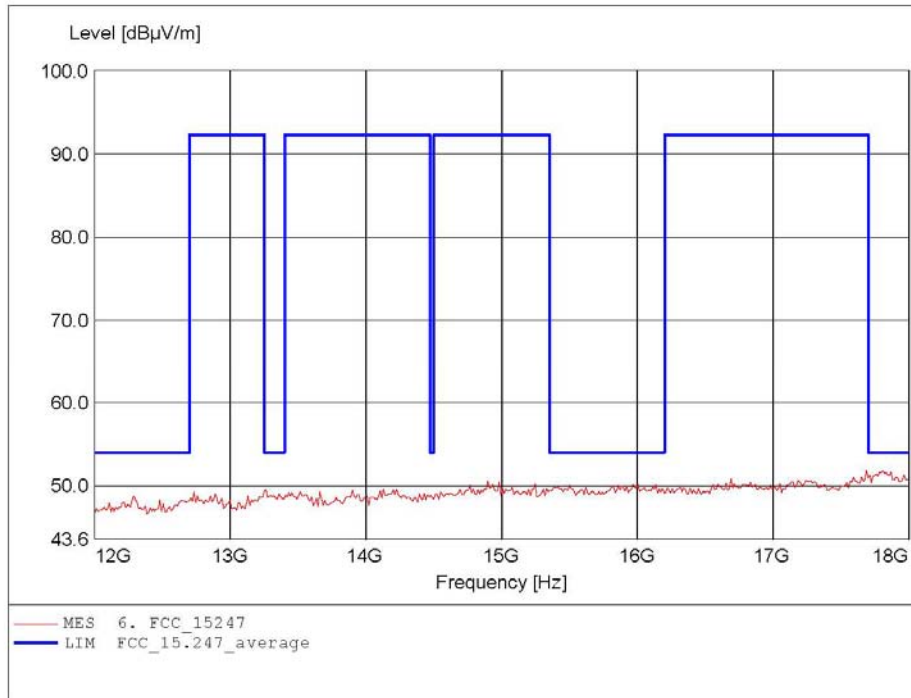
Registration number: W6D20806-9177-C-1

FCC ID: MSQ-PCIG31

*Spurious emissions Field Strength*

*FCC RULES PART 15, SUBPART C / LP 0002*

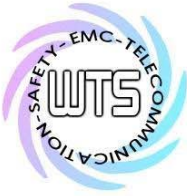
Order Number: W6D20806-9177 802.11b ch1  
Test Site / Operator: WTS / Brian  
Temperature: Temp.: 23.9°C  
Comment 1: Ant.: HL025, ampl.+HP.  
Freq: 17.687GHz, Emax: 51.88dBμV/m, RBW: 1MHz



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**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.

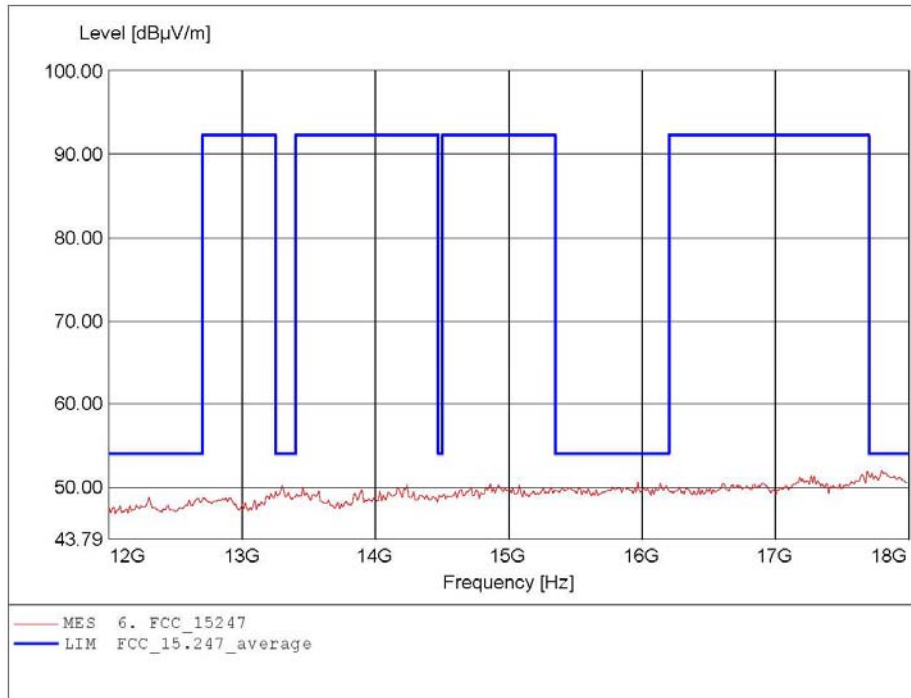
Registration number: W6D20806-9177-C-1

FCC ID: MSQ-PCIG31

*Spurious emissions Field Strength*

*FCC RULES PART 15, SUBPART C / LP 0002*

Order Number: W6D20806-9177 802.11b ch1  
Test Site / Operator: WTS / Brian  
Temperature: Temp.: 23.9°C  
Comment 1: Ant.: HL025, ampl.+HP.  
Freq: 17.796GHz, Emax: 52.03dBμV/m, RBW: 1MHz

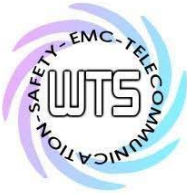


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**Note:**

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.

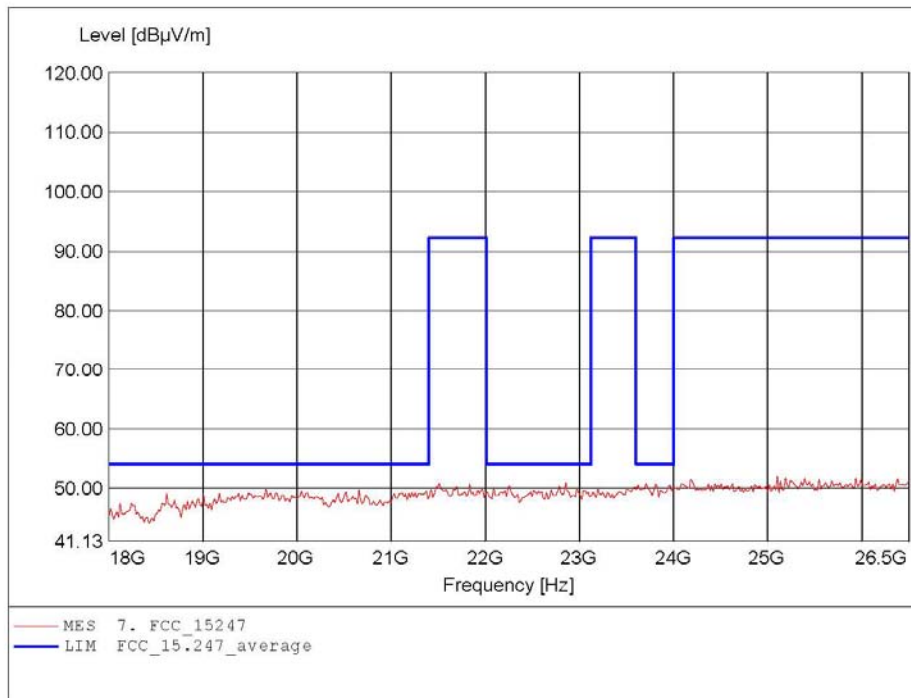
Registration number: W6D20806-9177-C-1

FCC ID: MSQ-PCIG31

*Spurious emissions Field Strength*

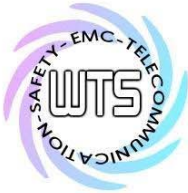
*FCC RULES PART 15, SUBPART C / LP 0002*

Order Number: W6D20806-9177 802.11b chl  
Test Site / Operator: WTS / Brian  
Temperature: Temp.: 23.9°C  
Comment 1: Ant.: HL025, amplif.  
Freq: 25.103GHz, Emax: 52.06dBμV/m, RBW: 1MHz



**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.

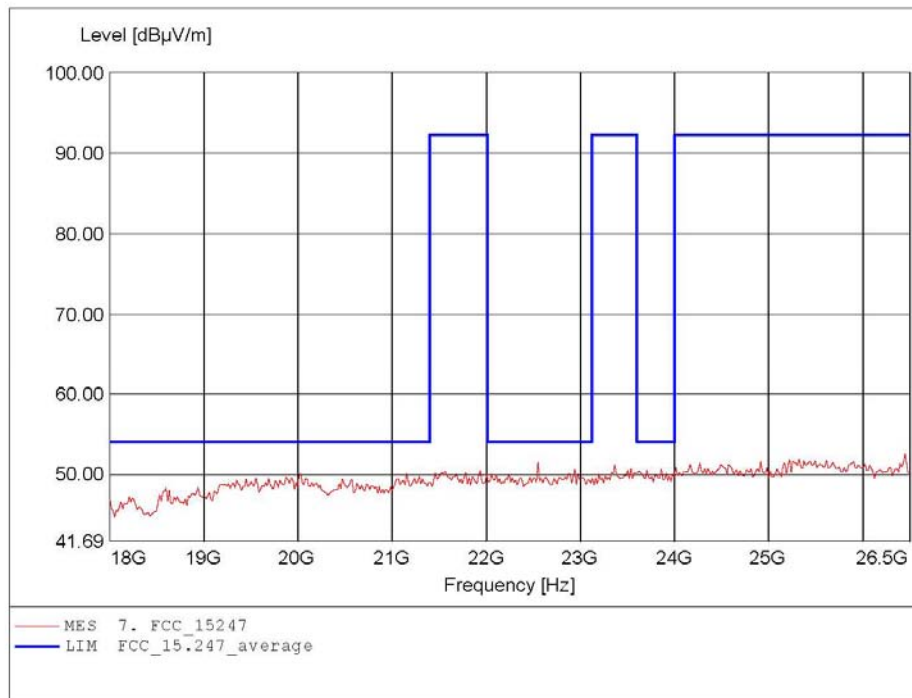
Registration number: W6D20806-9177-C-1

FCC ID: MSQ-PCIG31

*Spurious emissions Field Strength*

*FCC RULES PART 15, SUBPART C / LP 0002*

Order Number: W6D20806-9177 802.11b chl  
Test Site / Operator: WTS / Brian  
Temperature: Temp.: 23.9°C  
Comment 1: Ant.: HL025, amplif.  
Freq: 26.449GHz, Emax: 52.52dBμV/m, RBW: 1MHz



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**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.

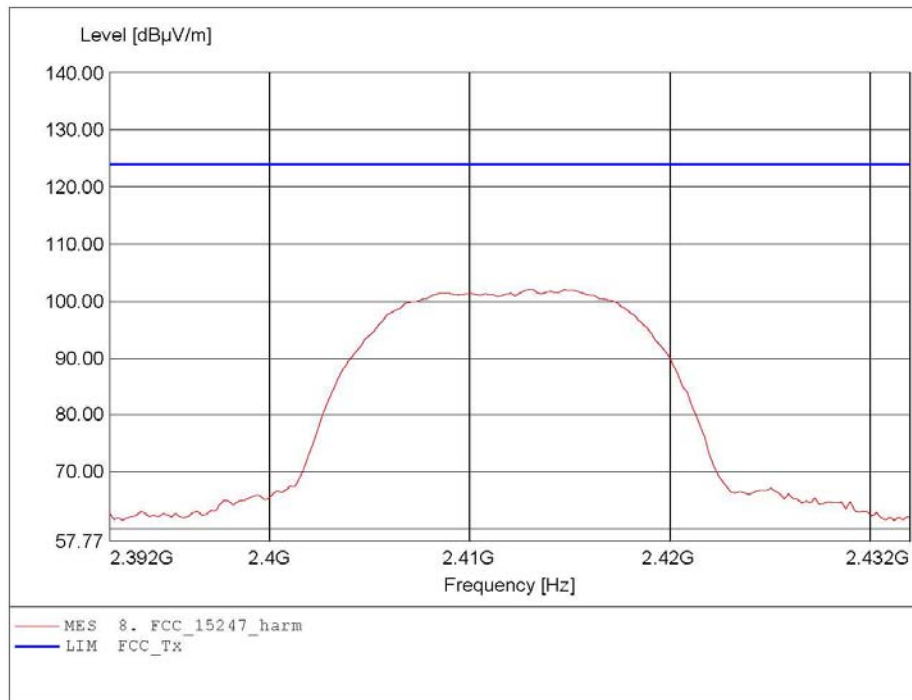
Registration number: W6D20806-9177-C-1

FCC ID: MSQ-PCIG31

*Carrier power (Field Strength)*

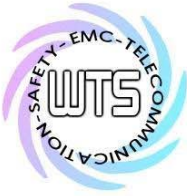
*FCC RULES PART 15, SUBPART C / LP 0002*

Order Number: W6D20806-9177 802.11b ch1  
Test Site / Operator: WTS / Brian  
Temperature: Temp.: 23.9°C  
Comment 1: Ant.: HL025  
Freq: 2.413GHz, Emax: 102.07dBμV/m, RBW: 1MHz



**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.

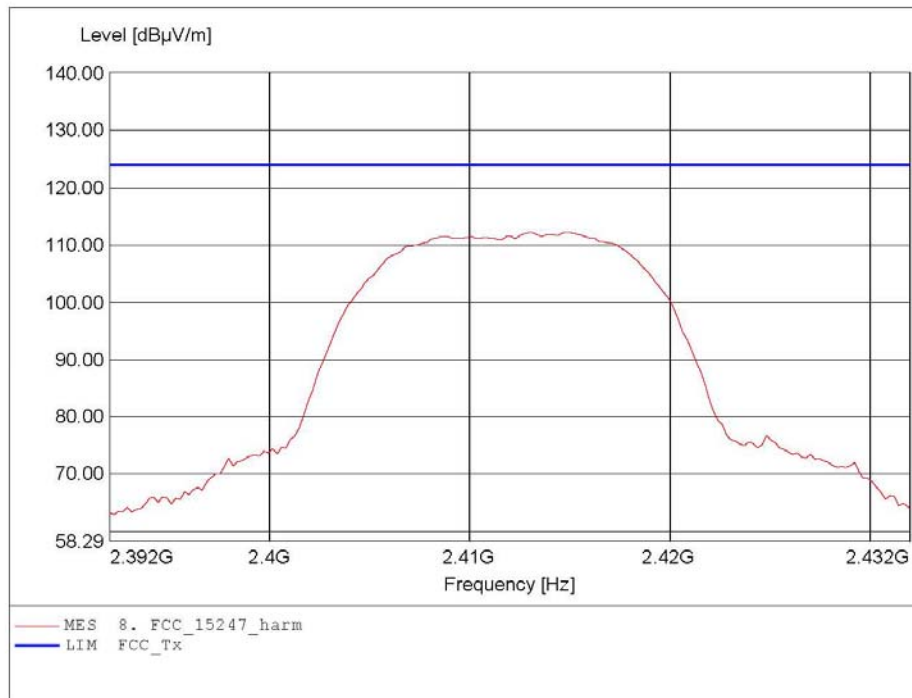
Registration number: W6D20806-9177-C-1

FCC ID: MSQ-PCIG31

*Carrier power (Field Strength)*

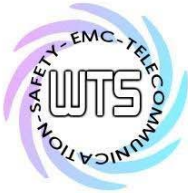
*FCC RULES PART 15, SUBPART C / LP 0002*

Order Number: W6D20806-9177 802.11b ch1  
Test Site / Operator: WTS / Brian  
Temperature: Temp.: 23.9°C  
Comment 1: Ant.: HL025  
Freq: 2.415GHz, Emax: 112.24dBμV/m, RBW: 1MHz



**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.

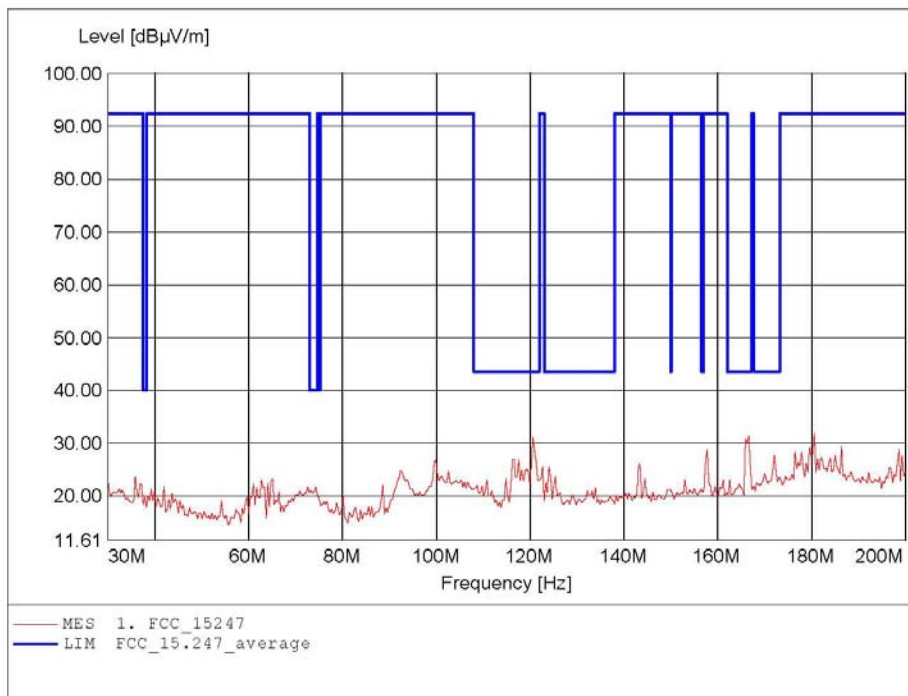
Registration number: W6D20806-9177-C-1

FCC ID: MSQ-PCIG31

## *Spurious emissions Field Strength*

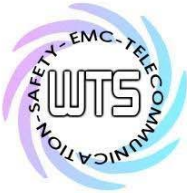
*FCC RULES PART 15, SUBPART C / LP 0002*

Order Number: W6D20806-9177 802.11b ch6  
Test Site / Operator: WTS / Brian  
Temperature: Temp.: 23.9°C  
Comment 1: Ant.: HK 116  
Freq: 180.581MHz, Emax: 31.94dB $\mu$ V/m, RBW: 100kHz



### 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.

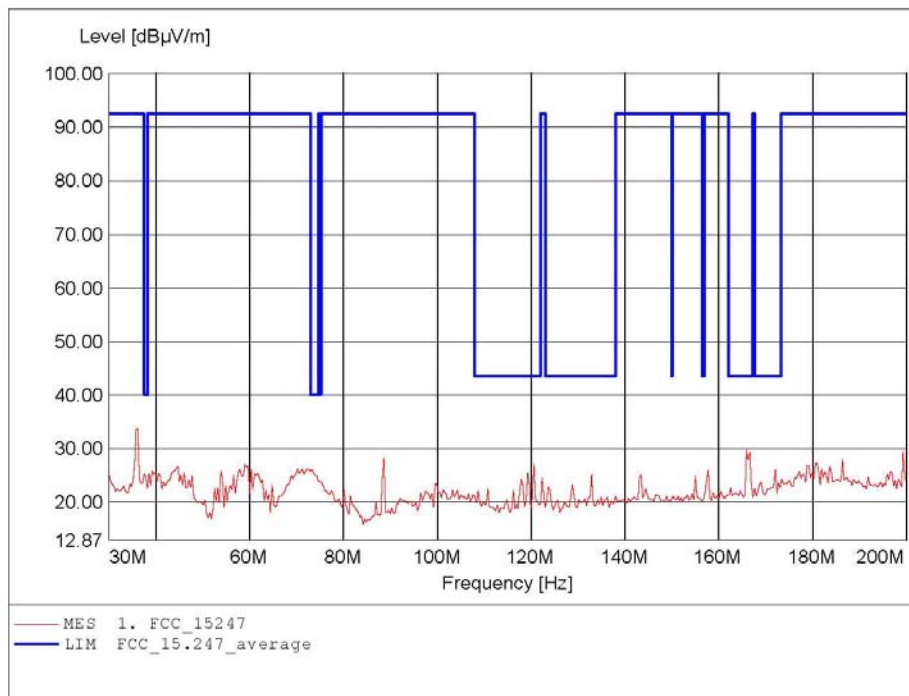
Registration number: W6D20806-9177-C-1

FCC ID: MSQ-PCIG31

## *Spurious emissions Field Strength*

*FCC RULES PART 15, SUBPART C / LP 0002*

Order Number: W6D20806-9177 802.11b ch6  
Test Site / Operator: WTS / Brian  
Temperature: Temp.: 23.9°C  
Comment 1: Ant.: HK 116  
Freq: 36.132MHz, Emax: 33.74dBuV/m, REW: 100kHz



### 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.

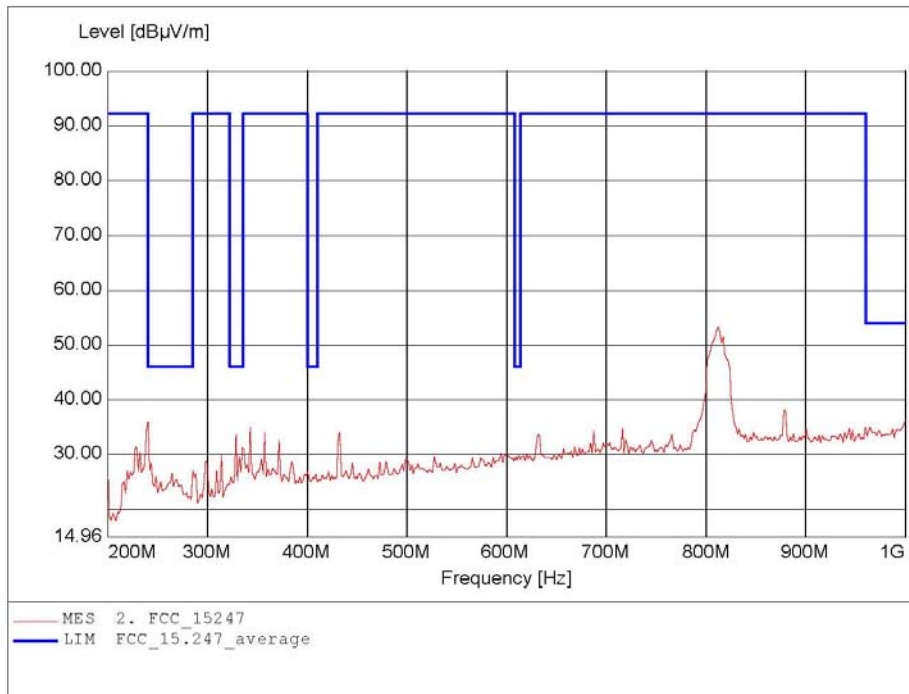


# Worldwide Testing Services(Taiwan) Co., Ltd.

Registration number: W6D20806-9177-C-1  
 FCC ID: MSQ-PCIG31

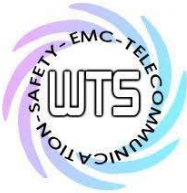
**Spurious emissions Field Strength**  
**FCC RULES PART 15, SUBPART C / LP 0002**

Order Number: W6D20806-9177 802.11b ch6  
 Test Site / Operator: WTS / Brian  
 Temperature: Temp.: 23.9°C  
 Comment 1: Ant.: HL 223,  
 Freq: 812.425MHz, Emax: 53.29dBμV/m, RBW: 100kHz



**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.

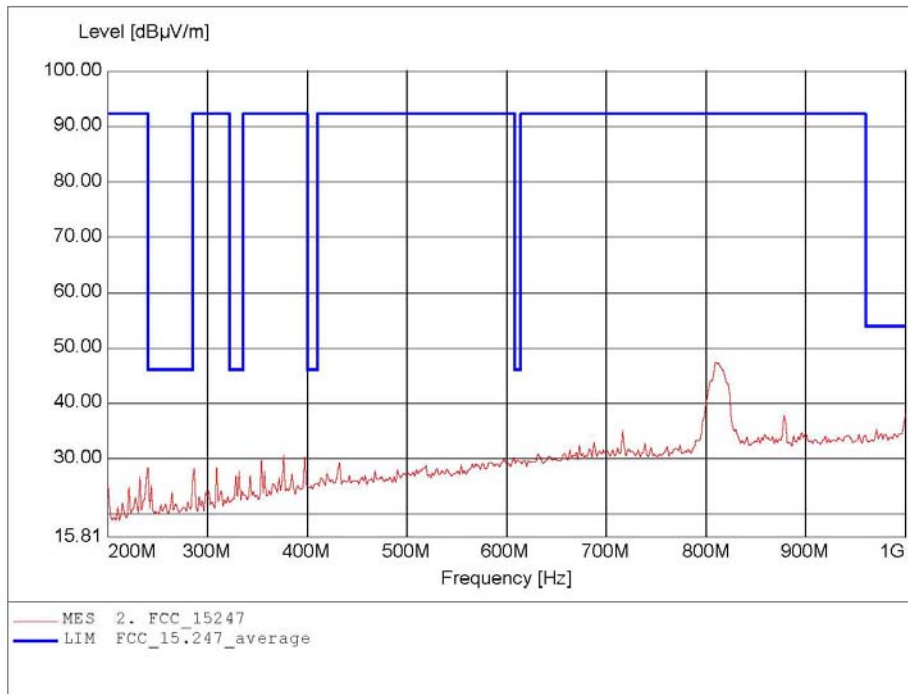


# Worldwide Testing Services(Taiwan) Co., Ltd.

Registration number: W6D20806-9177-C-1  
FCC ID: MSQ-PCIG31

**Spurious emissions Field Strength**  
**FCC RULES PART 15, SUBPART C / LP 0002**

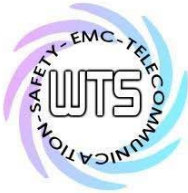
Order Number: W6D20806-9177 802.11b ch6  
Test Site / Operator: WTS / Brian  
Temperature: Temp.: 23.9°C  
Comment 1: Ant.: HL223  
Freq: 809.218GHz, Emax: 47.43dB $\mu$ V/m, REW: 100kHz



**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.

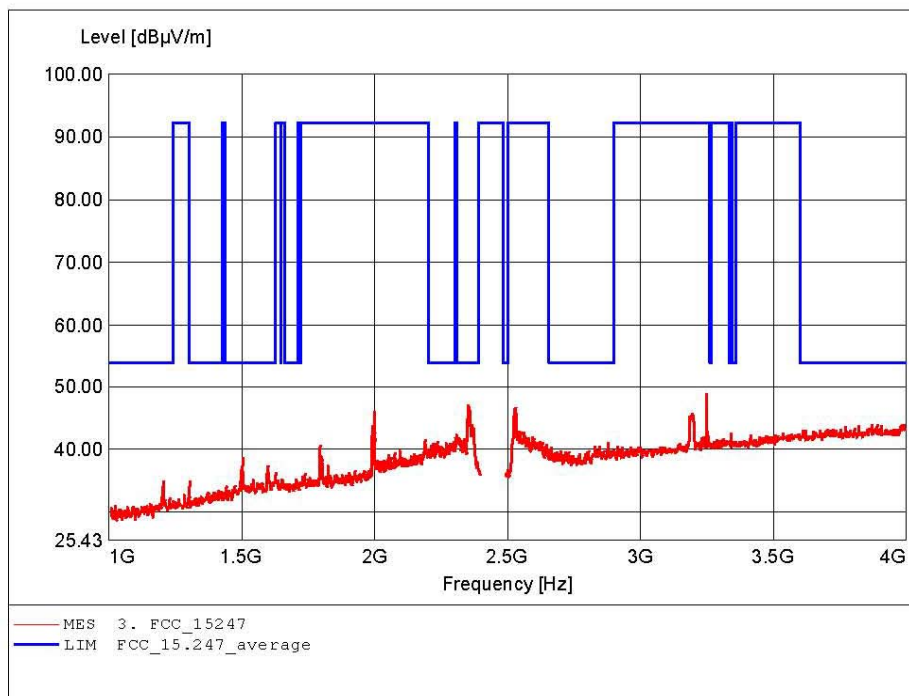
Registration number: W6D20806-9177-C-1

FCC ID: MSQ-PCIG31

*Spurious emissions Field Strength*

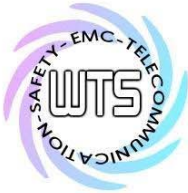
*FCC RULES PART 15, SUBPART C / LP 0002*

Order Number: W6D20806-9177 802.11b ch6  
Test Site / Operator: WTS / Brian  
Temperature: Temp.: 23.9°C  
Comment 1: Ant.: HL025, amplif.  
Freq: 3.248GHz, Emax: 49.12dBμV/m, RBW: 1MHz



**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.

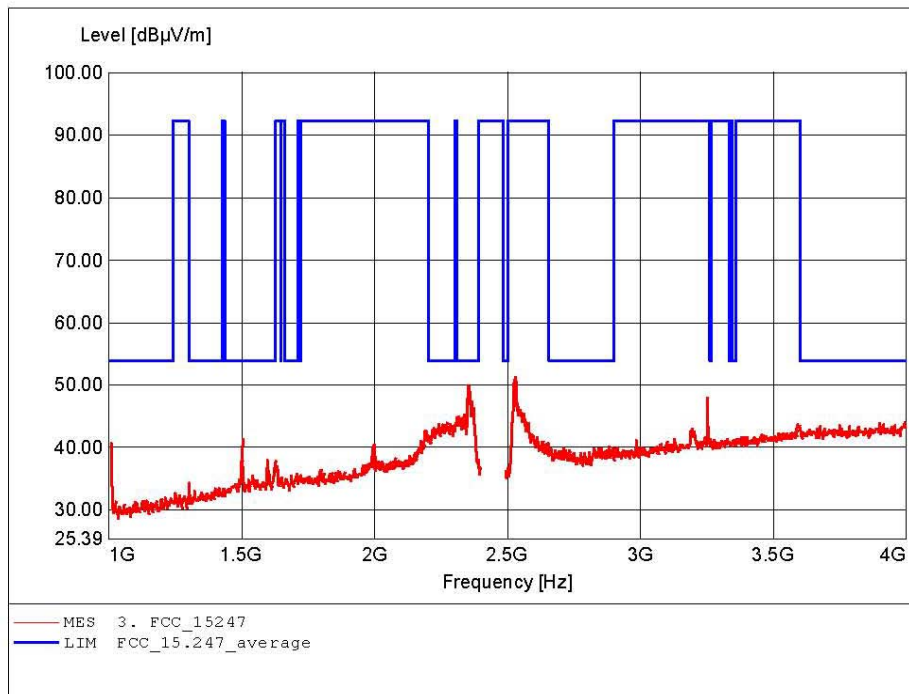
Registration number: W6D20806-9177-C-1

FCC ID: MSQ-PCIG31

*Spurious emissions Field Strength*

*FCC RULES PART 15, SUBPART C / LP 0002*

Order Number: W6D20806-9177 802.11b ch6  
Test Site / Operator: WTS / Brian  
Temperature: Temp.: 23.9°C  
Comment 1: Ant.: HL025, amplif.  
Freq: 2.519GHz, Emax: 51.72dBμV/m, RBW: 1MHz



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**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.

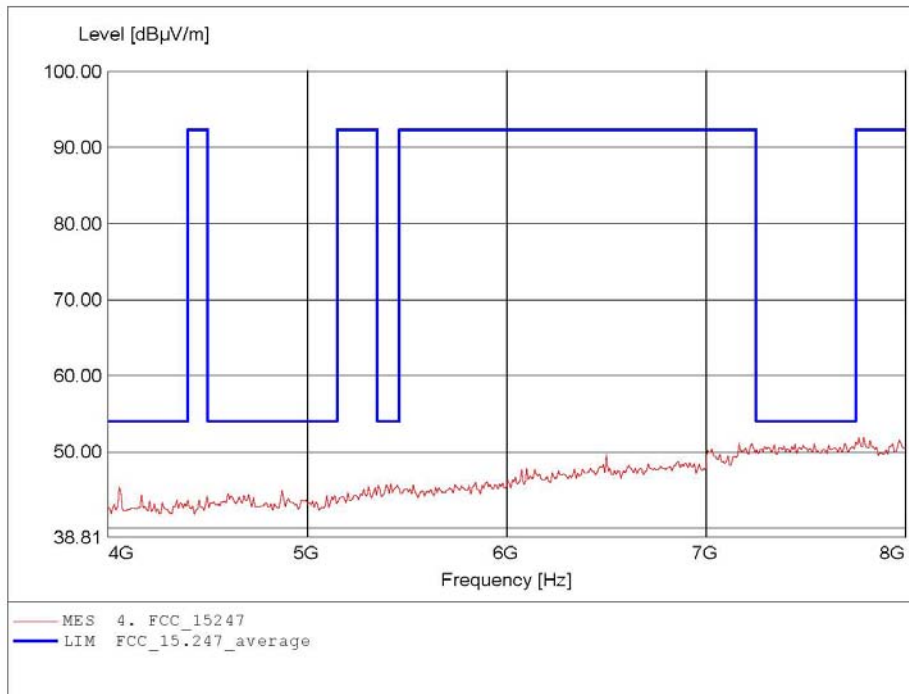


# Worldwide Testing Services(Taiwan) Co., Ltd.

Registration number: W6D20806-9177-C-1  
FCC ID: MSQ-PCIG31

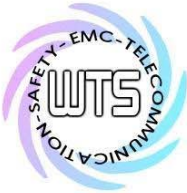
**Spurious emissions Field Strength**  
**FCC RULES PART 15, SUBPART C / LP 0002**

Order Number: W6D20806-9177 802.11b ch6  
Test Site / Operator: WTS / Brian  
Temperature: Temp.: 23.9°C  
Comment 1: Ant.: HL025, ampl.+HP.  
Freq: 7.792GHz, Emax: 51.87dBμV/m, RBW: 1MHz



**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.

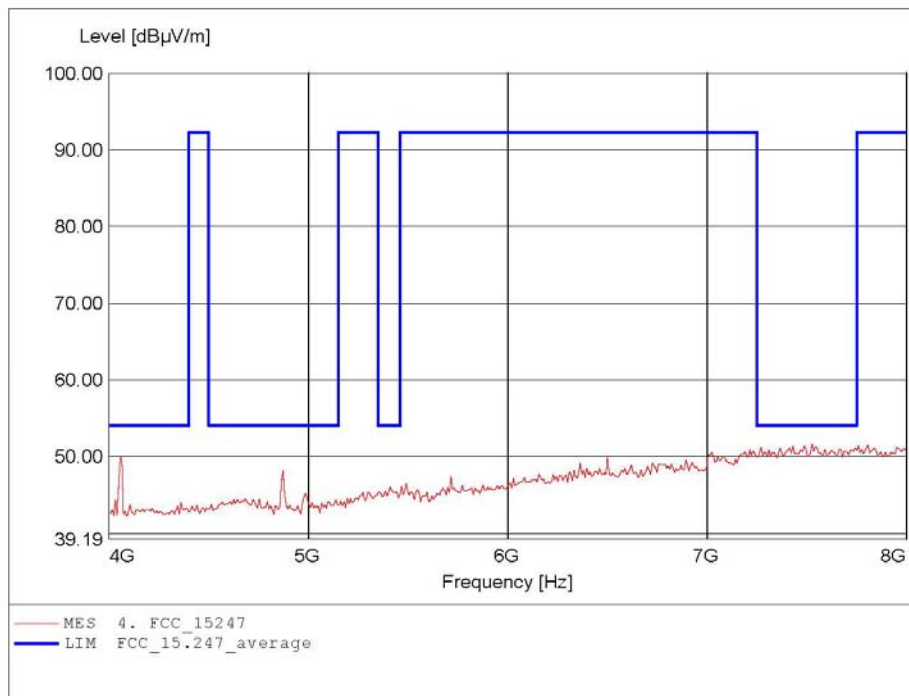


# Worldwide Testing Services(Taiwan) Co., Ltd.

Registration number: W6D20806-9177-C-1  
FCC ID: MSQ-PCIG31

**Spurious emissions Field Strength**  
**FCC RULES PART 15, SUBPART C / LP 0002**

Order Number: W6D20806-9177 802.11b ch6  
Test Site / Operator: WTS / Brian  
Temperature: Temp.: 23.9°C  
Comment 1: Ant.: HL025, ampl.+HP.  
Freq: 7.527GHz, Emax: 51.62dBμV/m, RBW: 1MHz



**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.