

**FCC PART 15 SUBPART C TEST REPORT**

**for**

**Wireless USB Dongle**

**Model No.: WU71R**

**FCC ID: RXZ-WU71R**

**of**

Applicant: Pro-Nets Technology Corporation  
Address: 7F, No. 95, Lide St., Chung Ho City 235 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.: W6M21011-10997-C-1**

6F, NO. 58, LANE 188, RUEY-KUANG RD., NEIHU TAIPEI 114, TAIWAN, R.O.C.  
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Registration number: W6M21011-10997-C-1  
FCC ID: RXZ-WU71R

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## APPENDIX



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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.

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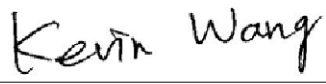
**Specific Conditions:**

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.

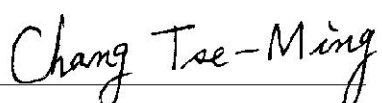
The test sample is able to work according IEEE 802.11 b/g/n.

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

**Tester:**

November 25, 2010	Kevin Wang	
Date	WTS-Lab. Name	Signature

**Technical responsibility for area of testing:**

November 25, 2010	Chang Tse-Ming	
Date	WTS Name	Signature



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## **1.2 Testing laboratory**

### **1.2.1 Location**

OATS

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

Company

Worldwide Testing Services(Taiwan) Co., Ltd.  
6F, NO. 58, LANE 188, RUEY-KUANG RD.  
NEIHU, TAIPEI 114, TAIWAN R.O.C.

Tel : 886-2-66068877

Fax : 886-2-66068879

### **1.2.2 Details of accreditation status**

Accredited testing laboratory

A2LA accredited number: 2732.01

FCC filed test laboratory Reg. No. 930600

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



**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: Pro-Nets Technology Corporation  
Street: 7F, No.95, Lide St., Chung Ho City  
Town: 235 Taipei  
Country: Taiwan R.O.C.  
Telephone: +886-2-8221-8385  
Fax: +886-2-8221-7009



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## **1.4 Application details**

Date of receipt of test item: November 16, 2010  
Date of test: from November 16, 2010 to November 23, 2010

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

Type of test item: Wireless USB Dongle  
Model Number: WU71R  
Brand Name: PRO-NETS  
Multi-listing model number: without  
Photos: see Appendix

### **Technical data**

Frequency band: 2.4 GHz – 2.4835 GHz

#### **11b, 11g, 11n 20MHz**

Frequency ( ch 1 or A): 2.412 GHz  
Frequency ( ch 6 or B): 2.437 GHz  
Frequency ( ch 11 or C): 2.462 GHz

#### **11n 40MHz**

Frequency ( ch 1 or A): 2.422 GHz  
Frequency ( ch 4 or B): 2.437 GHz  
Frequency ( ch 7 or C): 2.452 GHz

Number of Channels: 11b, 11g, 11n 20MHz: 11  
11n 40MHz: 7

Operation modes: duplex  
Modulation Type: DSSS / OFDM  
Fixed point-to-point operation:  Yes /  No  
Type of Antenna: PIFA Antenna  
Antenna gain: -0.5 dBi  
Power supply: 5V(from PC)  
Emission designator: 11b: DSSS: 16M3G1D  
11g: OFDM: 18M1W7D  
11n 20MHz: OFDM: 18M2W7D  
11n 40MHz: OFDM: 36M6W7D

Host device: none



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Classification :

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

## Transmitter

## Unom

### **Mode A (802.11b)**

Power ( ch 1 or A): Conducted: 12.96 dBm

Power ( ch 6 or B): Conducted: 13.43 dBm

Power ( ch 11 or C): Conducted: 13.70 dBm

### **Mode B (802.11g)**

Power ( ch 1 or A): Conducted: 10.08 dBm

Power ( ch 6 or B): Conducted: 10.68 dBm

Power ( ch 11 or C): Conducted: 10.95 dBm

### **Mode C (802.11n20MHz)**

Power ( ch 1 or A): Conducted: 10.77 dBm

Power ( ch 6 or B): Conducted: 10.76 dBm

Power ( ch 11 or C): Conducted: 10.98 dBm

### **Mode D (802.11n40MHz)**

Power ( ch 1 or A): Conducted: 10.16 dBm

Power ( ch 4 or B): Conducted: 10.24 dBm

Power ( ch 7 or C): Conducted: 10.24 dBm

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

Name: ./.

Street: ./.

Town: ./.

Country: ./.

## **1.6 Test standards**

Technical standard : FCC RULES PART 15 SUBPART C § 15.247 (2009-10)



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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: 5 Vdc (from PC)  
Extreme conditions parameters: ./.



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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	2010/9/2	2011/9/1
ETSTW-CE 004	ZWEILEITER-V- NETZNACHBILDUNG TWO- LINE V-NETWORK	ESH3-Z5	840731/011	R&S	2010/3/2	2011/3/1
ETSTW-CE 005	Line-Impedance Stabilisation Network	NNBM 8126D	137	Schwarzbeck	2010/9/8	2011/9/7
ETSTW-CE 006	IMPULSBEGRENZER PULSE LIMITER	ESH3-Z2	100226	R&S	2010/5/8	2011/5/7
ETSTW-CE 007	SPECTRUM ANALYZER 5GHz	FSB	849670/001	R&S	Pre-test Use NCR	
ETSTW-CE 008	HF-EICHLITUNG RF STEP ATTENUATOR 139dB DPSP	334.6010.02	844581/024	R&S	Function Test	
ETSTW-CE 009	TEMP.&HUMIDITY CHAMBER	GTH-225-40-1P-U	MAA0305-009	GIANT FORCE	2010/7/21	2011/7/20
ETSTW-CE 013	CISPR 22 TWO BALANCED TELECOM PAIRS IMPEDANCE STABILIZATION NETWORK	FCC-TLISN-T4-02	20242	FCC	2010/10/21	2011/10/20
ETSTW-CE 015	CISPR 22 TWO BALANCED TELECOM PAIRS IMPEDANCE STABILIZATION NETWORK	FCC-TLISN-T8-02	20307	FCC	2010/9/6	2011/9/5
ETSTW-RE 002	Function Generator	33220A	MY43004982	Agilent	Function Test	
ETSTW-RE 003	EMI TEST RECEIVER	ESI 26	831438/001	R&S	2010/8/10	2011/8/9
ETSTW-RE 004	EMI TEST RECEIVER	ESI 40	832427/004	R&S	2010/9/14	2011/9/13
ETSTW-RE 005	EMI TEST RECEIVER	ESVS10	843207/020	R&S	2010/9/2	2011/9/1
ETSTW-RE 006	Attenuator 10dB	50HF-010-5N-1	None	STEP	2010/3/5	2011/3/4
ETSTW-RE 010	ABSORBING CLAMP	MDS 21	3469	Schwarzbeck	2010/9/6	2011/9/5
ETSTW-RE 012	TUNABLE BANDREJECT FILTER	D.C 0309	146	K&L	Function Test	
ETSTW-RE 013	TUNABLE BANDREJECT FILTER	D.C 0336	397	K&L	Function Test	
ETSTW-RE 018	MICROWAVE HORN ANTENNA	AT4560	27212	AR	2010/10/4	2011/10/3
ETSTW-RE 020	MICROWAVE HORN ANTENNA	AT4002A	306915	AR	Function Test	
ETSTW-RE 021	SWEEP GENERATOR	SWM05	835130/010	R&S	2010/8/20	2011/8/19
ETSTW-RE 027	Passive Loop Antenna	6512	00034563	EMCO	2010/7/22	2011/7/21
ETSTW-RE 028	Log-Periodic Dipole Array Antenna	3148	34429	EMCO	2010/4/14	2011/4/13
ETSTW-RE 029	Biconical Antenna	3109	33524	EMCO	2010/4/14	2011/4/13
ETSTW-RE 030	Double-Ridged Guide Horn Antenna	3117	00035224	EMCO	2010/3/2	2011/3/1
ETSTW-RE 032	Millivoltmeter	URV 55	849086/013	R&S	2010/10/4	2011/10/3
ETSTW-RE 033	WaveRunner 6000A Serie Oscilloscope	WAVERUNNER 6100A	LCRY0604P14508	LeCroy	Function Test	
ETSTW-RE 034	Power Sensor	URV5-Z4	839313/006	R&S	2010/10/4	2011/10/3
ETSTW-RE 044	Log-Periodic Antenna	HL050	100094	R&S	2010/5/11	2011/5/10
ETSTW-RE 047	PSA SERIES SPECTRUM ANALYZER	E4445A	MY46181369	Agilent	Pre-test Use NCR	
ETSTW-RE 048	Triple Loop Antenna	HXYZ 9170	HXYZ 9170-134	Schwarzbeck	2010/8/30	2011/8/29
ETSTW-RE 049	TRILOG Super Broadband test Antenna	VULB 9160	9160-3185	Schwarzbeck	2010/4/13	2011/4/12
ETSTW-RE 050	Attenuator 10dB	50HF-010-1	None	JFW	2010/3/5	2011/3/4





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ETSTW-RE 051	Attenuator 6dB	50HF-006-1	None	JFW	2010/3/5	2011/3/4
ETSTW-RE 053	Attenuator 3dB	50HF-003-1	None	JFW	2010/3/5	2011/3/4
ETSTW-RE 055	SPECTRUM ANALYZER	FSU 26	200074	R&S	2010/6/3	2011/6/2
ETSTW-RE 060	Attenuator 30dB	5015-30	F651012z-01	ATM	Pre-test Use NCR	
ETSTW-RE 061	Amplifier Module	CHC 1	None	ETS	2010/9/27	2011/9/26
ETSTW-RE 062	Amplifier Module	CHC 2	None	KMIC	2010/11/10	2011/11/9
ETSTW-RE 064	Bluetooth Test Set	MT8852B-042	6K00005709	Anritsu	Function Test	
ETSTW-RE 065	Amplifier	AMF-6F-18002650-25-10P	941608	MITEQ	2010/4/13	2011/4/12
ETSTW-RE 066	Highpass Filter	H1G013G1	206015	MICROWAVE CIRCUITS, INC.	2010/3/5	2011/3/4
ETSTW-RE 072	CELL SITE TEST SET	8921A	3339A00375	HP	2010/10/7	2011/10/6
ETSTW-RE 073	Power Meter	N1911A	MY45100769	Agilent	2010/1/7	2011/1/6
ETSTW-RE 074	Power Sensor	N1921A	MY45241198	Agilent	2010/1/7	2011/1/6
ETSTW-RE 081	Highpass Filter	H03G13G1	4260-02 DC0428	MICROWAVE CIRCUITS, INC.	2010/3/5	2011/3/4
ETSTW-RE 096	SIGNAL GENERATOR	SMIQ 03B	102274	R&S	2010/5/31	2011/5/30
ETSTW-RE 099	DC Block	50DB-007-1	None	JFW	2010/3/5	2011/3/4
ETSTW-RE 105	2.4GHz Notch Filter	NO124411	39555	MICROWAVE CIRCUITS, INC.	2010/3/25	2011/3/24
ETSTW-RE 106	Humidity Temperature Meter	TES-1366	091011113	TES	2010/3/25	2011/3/24
ETSTW-GSM 002	Universal Radio Communication Tester	CMU 200	109439	R&S	2010/10/7	2011/10/6
ETSTW-GSM 019	Band Reject Filter	WRCTF824/849-822/851-40/12+9SS	3	WI	Function Test	
ETSTW-GSM 020	Band Reject Filter	WRCD1747/1748-1743/1752-32/5SS	1	WI	Function Test	
ETSTW-GSM 021	Band Reject Filter	WRCD1879.5/1880.5-1875.5/1884.5-32/5SS	3	WI	Function Test	
ETSTW-GSM 022	Band Reject Filter	WRCT901.9/903.1-904.25-50/8SS	1	WI	Function Test	
ETSTW-GSM 023	Power Divider	4901.19.A	None	SUHNER	2010/9/20	2011/9/19
ETSTW-Cable 002	Microwave Cable	SUCOFLEX 104 (S Cable 7)	238093	HUBER+SUHNER	2010/9/27	2011/9/26
ETSTW-Cable 003	Microwave Cable	SUCOFLEX 104 (S Cable 11)	209953	HUBER+SUHNER	2010/9/27	2011/9/26
ETSTW-Cable 006	Microwave Cable	SUCOFLEX 104 (S Cable 8)	238095	HUBER+SUHNER	2010/3/5	2011/3/4
ETSTW-Cable 010	BNC Cable	5 M BNC Cable	None	JYE BAO CO.,LTD.	2010/3/5	2011/3/4
ETSTW-Cable 011	BNC Cable	BNC Cable 1	None	JYE BAO CO.,LTD.	2010/8/19	2011/8/18
ETSTW-Cable 012	BNC Cable	BNC Cable 2	None	JYE BAO CO.,LTD.	2010/8/19	2011/8/18
ETSTW-Cable 013	Microwave Cable	SUCOFLEX 104 (S Cable 5)	232345	HUBER+SUHNER	2010/3/5	2011/3/4
ETSTW-Cable 022	N TYPE Cable	OATS Cable 3	0002	JYE BAO CO.,LTD.	2010/3/5	2011/3/4
ETSTW-Cable 028	Microwave Cable	FA147A0015M2020	30064-2	UTIFLEX	2010/9/13	2011/9/12
ETSTW-Cable 029	Microwave Cable	FA147A0015M2020	30064-3	UTIFLEX	2010/9/13	2011/9/12
ETSTW-Cable 039	Microwave Cable	SUCOFLEX 104 (S Cable 19)	316739	HUBER+SUHNER	2010/3/5	2011/3/4
WTSTW-SW 001	EMI TEST SOFTWARE	Harmonics-1000	None	EMC PARTNER	HARCS Version 4.16 Firmware Version 2.18	



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WTSTW-SW 002	EMI TEST SOFTWARE	EZ_EMCC	None	Farad	Version ETS-03A1
WTSTW-SW 003	EMS TEST SOFTWARE	i2	None	AUDIX	Version 3.2007-8-17b
WTSTW-SW 005	GSM Fading Level Correction	GSMFadLevCor	None	R.&S	Version 1.66



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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.

**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 at 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)(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): 15.209	<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	15.109	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Power Line Conducted Emission	15.207	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>

**Note:**

1. The Pre-test was performed to determine the worst case mode from all possible combinations between all available modulations, data rates, bandwidths, and spatial stream modes.
2. The worst case mode was base on the investigations by measuring the peak and average power according to the description above. The detail of chosen mode for full testing are as below:

Mode	Available channel	Chosen Channel	Modulation Technology	Modulation Type	Data Rate (Mbps)
802.11b	1 to 11	1,6,11	DSSS	DBPSK	1
802.11g	1 to 11	1,6,11	OFDM	BPSK	6
Draft 802.11n (20MHz)	1 to 11	1,6,11	OFDM	BPSK	6.5
Draft 802.11n (40MHz)	1 to 7	1,4,7	OFDM	BPSK	13.5



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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 802.11b

Test condition		Conducted Power		
		Channel A	Channel B	Channel C
$T_{nom} = 23^{\circ}C$	$V_{nom} = 5\ V$	[dBm]	[dBm]	[dBm]
		12.96	13.43	13.70

Mode 802.11g

Test condition		Conducted Power		
		Channel A	Channel B	Channel C
$T_{nom} = 23^{\circ}C$	$V_{nom} = 5\ V$	[dBm]	[dBm]	[dBm]
		10.08	10.68	10.95

Mode 802.11n 20MHz

Test condition		Conducted Power		
		Channel A	Channel B	Channel C
$T_{nom} = 23^{\circ}C$	$V_{nom} = 5\ V$	[dBm]	[dBm]	[dBm]
		10.77	10.76	10.98

Mode 802.11n 40MHz

Test condition		Conducted Power		
		Channel A	Channel B	Channel C
$T_{nom} = 23^{\circ}C$	$V_{nom} = 5\ V$	[dBm]	[dBm]	[dBm]
		10.16	10.24	10.24



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## Mode 802.11b

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

## Mode 802.11g

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

## Mode 802.11n 20MHz

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

## Mode 802.11n 40MHz

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

## 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 055

Explanation: The diagrams for the peak output power 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 = 13.7 dBm + (-0.5)dBi  
 = 13.2 dBm

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

Test equipment used: ETSTW-RE 055

**3.3 RF Exposure Compliance Requirements**

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

Item	Unit	Value	Remarks
P	mW	23.44229	Peak value
D	dB		
AG	dBi	1	
G		1.26	Calculated Value
R	cm	20	Assumed value
S	mW/cm <sup>2</sup>	0.0470	Calculated value

Limits:

Limit for General Population / Uncontrolled Exposure	
Frequency (MHz)	Power Density (mW/cm <sup>2</sup> )
1500 – 100.000	1.0





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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 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.

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))

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 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

Max. reading – 20 dB

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

Test equipment used: ETSTW-RE 003, ETSTW-RE 004, ETSTW-RE 018, ETSTW-RE 028,  
ETSTW-RE 029, ETSTW-RE 030, ETSTW-RE 044

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



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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 "Correction Factor".

Model: WU71R Date: 2010/11/18  
 Mode: 802.11b CH1 Temperature: 23.4 °C Engineer: Kevin  
 Polarization: Horizontal Humidity: 60 %

Frequency (MHz)	Reading (dBuV)	Detector	Factor (dB)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Table Degree (Deg.)	Ant. High (cm)
128.4770	15.34	peak	14.37	29.71	43.50	-13.79	210	150
990.1803	7.33	peak	29.09	36.42	54.00	-17.58	310	150

Polarization: Horizontal

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.			
1597.1940	53.66	---	-11.19	42.47	---	74.00	54.00	-31.53	220	150
4825.6510	64.38	54.12	-4.94	59.44	49.18	74.00	54.00	-4.82	220	150
7236.0000	47.63	---	-2.37	45.26	---	74.00	54.00	-28.74	250	150
9648.0000	31.38	---	12.83	44.21	---	74.00	54.00	-29.79	110	150
12060.0000	30.59	---	15.92	46.51	---	74.00	54.00	-27.49	200	150

Polarization: Vertical

Frequency (MHz)	Reading (dBuV)	Detector	Factor (dB)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Table Degree (Deg.)	Ant. High (cm)
262.1243	16.93	peak	14.89	31.82	46.00	-14.18	110	150
971.9438	7.79	peak	28.86	36.65	54.00	-17.35	220	150



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Polarization: Vertical

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.			
1062.1240	53.25	---	-13.58	39.67	---	74.00	54.00	-34.33	220	150
1597.1940	51.65	---	-11.19	40.46	---	74.00	54.00	-33.54	310	150
4825.6510	58.33	46.55	-4.94	53.39	41.61	74.00	54.00	-12.39	120	150
7236.0000	47.55	---	-2.37	45.18	---	74.00	54.00	-28.82	310	150
9648.0000	30.66	---	12.83	43.49	---	74.00	54.00	-30.51	310	150
12060.0000	30.82	---	15.92	46.74	---	74.00	54.00	-27.26	140	150

Mode: 802.11b CH6

Polarization: Horizontal

Frequency (MHz)	Reading (dBuV)	Detector	Factor (dB)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Table Degree (Deg.)	Ant. High (cm)
132.8057	16.59	peak	14.68	31.27	43.50	-12.23	55	150
994.3887	6.98	peak	29.15	36.13	54.00	-17.87	60	150

Polarization: Horizontal

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.			
1597.1940	53.91	---	-11.19	42.72	---	74.00	54.00	-31.28	120	150
4873.7480	63.95	54.25	-4.86	59.09	49.39	74.00	54.00	-4.61	210	150
7236.0000	47.25	---	-2.37	44.88	---	74.00	54.00	-29.12	220	150
9748.0000	31.17	---	12.80	43.97	---	74.00	54.00	-30.03	40	150
12185.0000	30.71	---	16.40	47.11	---	74.00	54.00	-26.89	110	150

Polarization: Vertical

Frequency (MHz)	Reading (dBuV)	Detector	Factor (dB)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Table Degree (Deg.)	Ant. High (cm)
257.2545	18.12	peak	14.75	32.87	46.00	-13.13	160	150
995.7916	7.54	peak	29.17	36.71	54.00	-17.29	210	150

Polarization: Vertical

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.			
1062.1240	58.31	---	-13.58	44.73	---	74.00	54.00	-29.27	60	150
1599.1980	54.82	---	-11.19	43.63	---	74.00	54.00	-30.37	130	150
4873.7480	56.75	46.29	-4.86	51.89	41.43	74.00	54.00	-12.57	230	150
7311.0000	48.30	---	-2.76	45.54	---	74.00	54.00	-28.46	110	150
9748.0000	30.98	---	12.80	43.78	---	74.00	54.00	-30.22	210	150
12185.0000	30.5	---	16.40	46.9	---	74.00	54.00	-27.1	140	150



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Mode: 802.11b CH11  
 Polarization: Horizontal

Frequency (MHz)	Reading (dBuV)	Detector	Factor (dB)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Table Degree (Deg.)	Ant. High (cm)
133.3468	20.07	peak	14.71	34.78	43.50	-8.72	190	150
971.9438	8.17	peak	28.86	37.03	54.00	-16.97	110	150

Polarization: Horizontal

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.			
1597.1940	50.64	---	-11.19	39.45	---	74.00	54.00	-34.55	180	150
4921.8440	64.15	53.78	-4.89	59.26	48.89	74.00	54.00	-5.11	130	150
7386.0000	47.88	---	-3.09	44.79	---	74.00	54.00	-29.21	220	150
9848.0000	31.8	---	13.02	44.82	---	74.00	54.00	-29.18	110	150
12310.0000	31.05	---	16.46	47.51	---	74.00	54.00	-26.49	160	150

Polarization: Vertical

Frequency (MHz)	Reading (dBuV)	Detector	Factor (dB)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Table Degree (Deg.)	Ant. High (cm)
258.3367	17.42	peak	14.77	32.19	46.00	-13.81	60	150
981.7635	8.12	peak	28.98	37.10	54.00	-16.90	110	150

Polarization: Vertical

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.			
1064.1280	55.64	---	-13.59	42.05	---	74.00	54.00	-31.95	60	150
1597.1940	53.38	---	-11.19	42.19	---	74.00	54.00	-31.81	110	150
4921.8440	57.46	45.42	-4.89	52.57	40.53	74.00	54.00	-13.47	110	150
7386.0000	47.59	---	-3.09	44.50	---	74.00	54.00	-29.50	230	150
9848.0000	30.87	---	13.02	43.89	---	74.00	54.00	-30.11	110	150
12310.0000	30.63	---	16.46	47.09	---	74.00	54.00	-26.91	55	150

Mode: 802.11g CH1

Polarization: Horizontal

Frequency (MHz)	Reading (dBuV)	Detector	Factor (dB)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Table Degree (Deg.)	Ant. High (cm)
133.8876	18.90	peak	14.75	33.65	43.50	-9.85	110	150
998.5972	7.32	peak	29.20	36.52	54.00	-17.48	110	150



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Polarization: Horizontal

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.			
4825.6510	55.70	---	-4.94	50.76	---	74.00	54.00	-23.24	110	150
7236.0000	47.76	---	-2.37	45.39	---	74.00	54.00	-28.61	345	150
9648.0000	29.99	---	12.83	42.82	---	74.00	54.00	-31.18	110	150
12060.0000	30.12	---	15.92	46.04	---	74.00	54.00	-27.96	145	150

Polarization: Vertical

Frequency (MHz)	Reading (dBuV)	Detector	Factor (dB)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Table Degree (Deg.)	Ant. High (cm)
262.1243	18.14	peak	14.89	33.03	46.00	-12.97	130	150
983.1662	7.28	peak	29.00	36.28	54.00	-17.72	220	150

Polarization: Vertical

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.			
4825.6510	52.85	---	-4.94	47.91	---	74.00	54.00	-26.09	110	150
7236.0000	48.46	---	-2.37	46.09	---	74.00	54.00	-27.91	210	150
9648.0000	30.84	---	12.83	43.67	---	74.00	54.00	-30.33	200	150
12060.0000	30.98	---	15.92	46.90	---	74.00	54.00	-27.10	130	150

Mode: 802.11g CH6

Polarization: Horizontal

Frequency (MHz)	Reading (dBuV)	Detector	Factor (dB)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Table Degree (Deg.)	Ant. High (cm)
135.5110	19.16	peak	14.85	34.01	43.50	-9.49	210	150
973.3467	7.06	peak	28.87	35.93	54.00	-18.07	210	150

Polarization: Horizontal

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.			
4873.7480	55.95	---	-4.86	51.09	---	74.00	54.00	-22.91	210	150
7311.0000	47.97	---	-2.76	45.21	---	74.00	54.00	-28.79	330	150
9748.0000	30.94	---	12.80	43.74	---	74.00	54.00	-30.26	110	150
12185.0000	31.77	---	16.40	48.17	---	74.00	54.00	-25.83	60	150



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Polarization: Vertical

Frequency (MHz)	Reading (dBuV)	Detector	Factor (dB)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Table Degree (Deg.)	Ant. High (cm)
257.2545	17.71	peak	14.75	32.46	46.00	-13.54	110	150
987.3748	7.50	peak	29.06	36.56	54.00	-17.44	110	150

Polarization: Vertical

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.			
1599.1980	54.76	---	-11.19	43.57	---	74.00	54.00	-30.43	140	150
4873.7480	53.53	---	-4.86	48.67	---	74.00	54.00	-25.33	110	150
7311.0000	48.21	---	-2.76	45.45	---	74.00	54.00	-28.55	160	150
9748.0000	31.71	---	12.80	44.51	---	74.00	54.00	-29.49	210	150
12185.0000	30.54	---	16.40	46.94	---	74.00	54.00	-27.06	130	150

Mode: 802.11g CH11

Polarization: Horizontal

Frequency (MHz)	Reading (dBuV)	Detector	Factor (dB)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Table Degree (Deg.)	Ant. High (cm)
133.8876	20.36	peak	14.75	35.11	43.50	-8.39	220	150
977.5551	7.45	peak	28.93	36.38	54.00	-17.62	140	150

Polarization: Horizontal

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.			
1597.1940	51.29	---	-11.19	40.10	---	74.00	54.00	-33.90	50	150
4913.8280	55.83	---	-4.86	50.97	---	74.00	54.00	-23.03	160	150
7386.0000	47.33	---	-3.09	44.24	---	74.00	54.00	-29.76	220	150
9848.0000	31.32	---	13.02	44.34	---	74.00	54.00	-29.66	160	150
12310.0000	31.42	---	16.46	47.88	---	74.00	54.00	-26.12	20	150

Polarization: Vertical

Frequency (MHz)	Reading (dBuV)	Detector	Factor (dB)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Table Degree (Deg.)	Ant. High (cm)
262.1243	17.62	peak	14.89	32.51	46.00	-13.49	210	150
973.3467	8.19	peak	28.87	37.06	54.00	-16.94	205	150



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Polarization: Vertical

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.			
1064.1280	58.19	---	-13.59	44.60	---	74.00	54.00	-29.40	210	150
1599.1980	52.56	---	-11.19	41.37	---	74.00	54.00	-32.63	130	150
4921.8440	52.26	---	-4.89	47.37	---	74.00	54.00	-26.63	110	150
7386.0000	47.42	---	-3.09	44.33	---	74.00	54.00	-29.67	90	150
9848.0000	31.86	---	13.02	44.88	---	74.00	54.00	-29.12	40	150
12310.0000	30.87	---	16.46	47.33	---	74.00	54.00	-26.67	170	150

Mode: 802.11n 20M CH1

Polarization: Horizontal

Frequency (MHz)	Reading (dBuV)	Detector	Factor (dB)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Table Degree (Deg.)	Ant. High (cm)
135.5110	20.19	peak	14.85	35.04	43.50	-8.46	310	150
985.9720	7.38	peak	29.04	36.42	54.00	-17.58	110	150

Polarization: Horizontal

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.			
1599.1980	51.02	---	-11.19	39.83	---	74.00	54.00	-34.17	80	150
4817.6350	56.17	---	-4.95	51.22	---	74.00	54.00	-22.78	110	150
7236.0000	45.59	---	-2.37	43.22	---	74.00	54.00	-30.78	210	150
9648.0000	31.43	---	12.83	44.26	---	74.00	54.00	-29.74	20	150
12060.0000	30.62	---	15.92	46.54	---	74.00	54.00	-27.46	310	150

Polarization: Vertical

Frequency (MHz)	Reading (dBuV)	Detector	Factor (dB)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Table Degree (Deg.)	Ant. High (cm)
257.2545	17.60	peak	14.75	32.35	46.00	-13.65	50	150
992.9860	8.01	peak	29.13	37.14	54.00	-16.86	60	150





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

Registration number: W6M21011-10997-C-1  
 FCC ID: RXZ-WU71R

Polarization: Vertical

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.			
1062.1240	55.85	---	-13.58	42.27	---	74.00	54.00	-31.73	210	150
1597.1940	50.24	---	-11.19	39.05	---	74.00	54.00	-34.95	50	150
4817.6350	53.83	---	-4.95	48.88	---	74.00	54.00	-25.12	40	150
7236.0000	47.21	---	-2.37	44.84	---	74.00	54.00	-29.16	110	150
9648.0000	30.5	---	12.83	43.33	---	74.00	54.00	-30.67	70	150
12060.0000	30.17	---	15.92	46.09	---	74.00	54.00	-27.91	110	150

Mode: 802.11n 20M CH6

Polarization: Horizontal

Frequency (MHz)	Reading (dBuV)	Detector	Factor (dB)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Table Degree (Deg.)	Ant. High (cm)
134.9700	21.04	peak	14.82	35.86	43.50	-7.64	60	150
990.1803	8.08	peak	29.09	37.17	54.00	-16.83	170	150

Polarization: Horizontal

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.			
1595.1900	53.95	---	-11.18	42.77	---	74.00	54.00	-31.23	80	150
4873.7480	55.91	---	-4.86	51.05	---	74.00	54.00	-22.95	110	150
7311.0000	47.74	---	-2.76	44.98	---	74.00	54.00	-29.02	50	150
9748.0000	32.29	---	12.80	45.09	---	74.00	54.00	-28.91	220	150
12185.0000	30.22	---	16.40	46.62	---	74.00	54.00	-27.38	130	150

Polarization: Vertical

Frequency (MHz)	Reading (dBuV)	Detector	Factor (dB)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Table Degree (Deg.)	Ant. High (cm)
257.7955	17.13	peak	14.76	31.89	46.00	-14.11	170	150
971.9438	7.96	peak	28.86	36.82	54.00	-17.18	220	150



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

Registration number: W6M21011-10997-C-1  
 FCC ID: RXZ-WU71R

Polarization: Vertical

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.			
1066.1320	59.61	---	-13.60	46.01	---	74.00	54.00	-27.99	190	150
1599.1980	53.27	---	-11.19	42.08	---	74.00	54.00	-31.92	60	150
4873.7480	53.52	---	-4.86	48.66	---	74.00	54.00	-25.34	190	150
7311.0000	47.92	---	-2.76	45.16	---	74.00	54.00	-28.84	210	150
9748.0000	31.06	---	12.80	43.86	---	74.00	54.00	-30.14	220	150
12185.0000	30.88	---	16.40	47.28	---	74.00	54.00	-26.72	70	150

Mode: 802.11n 20M CH11

Polarization: Horizontal

Frequency (MHz)	Reading (dBuV)	Detector	Factor (dB)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Table Degree (Deg.)	Ant. High (cm)
135.5110	21.42	peak	14.85	36.27	43.50	-7.23	60	150
980.3606	7.72	peak	28.96	36.68	54.00	-17.32	110	150

Polarization: Horizontal

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.			
1599.1980	53.18	---	-11.19	41.99	---	74.00	54.00	-32.01	110	150
4921.8440	55.99	---	-4.89	51.10	---	74.00	54.00	-22.90	220	150
7386.0000	47.70	---	-3.09	44.61	---	74.00	54.00	-29.39	80	150
9848.0000	30.75	---	13.02	43.77	---	74.00	54.00	-30.23	110	150
12310.0000	30.44	---	16.46	46.9	---	74.00	54.00	-27.1	50	150

Polarization: Vertical

Frequency (MHz)	Reading (dBuV)	Detector	Factor (dB)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Table Degree (Deg.)	Ant. High (cm)
262.1243	17.90	peak	14.89	32.79	46.00	-13.21	80	150
987.3748	7.58	peak	29.06	36.64	54.00	-17.36	60	150



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

Registration number: W6M21011-10997-C-1  
 FCC ID: RXZ-WU71R

Polarization: Vertical

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.			
1064.1280	58.22	---	-13.59	44.63	---	74.00	54.00	-29.37	310	150
1332.6650	57.83	---	-12.76	45.07	---	74.00	54.00	-28.93	50	150
1599.1980	55.33	---	-11.19	44.14	---	74.00	54.00	-29.86	110	150
4921.8440	56.12	---	-4.89	51.23	---	74.00	54.00	-22.77	120	150
7386.0000	47.07	---	-3.09	43.98	---	74.00	54.00	-30.02	110	150
9848.0000	31.73	---	13.02	44.75	---	74.00	54.00	-29.25	110	150
12310.0000	31.56	---	16.46	48.02	---	74.00	54.00	-25.98	165	150

Mode: 802.11n 40M CH1

Polarization: Horizontal

Frequency (MHz)	Reading (dBuV)	Detector	Factor (dB)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Table Degree (Deg.)	Ant. High (cm)
133.8876	19.95	peak	14.75	34.70	43.50	-8.80	170	150
983.1662	7.50	peak	29.00	36.50	54.00	-17.50	330	150

Polarization: Horizontal

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.			
4844.1150	58.95	49.96	-4.91	54.04	45.05	74.00	54.00	-8.95	280	150
7266.0000	46.87	---	-2.53	44.34	---	74.00	54.00	-29.66	110	150
9688.0000	30.59	---	12.65	43.24	---	74.00	54.00	-30.76	110	150
12110.0000	31.60	---	16.05	47.65	---	74.00	54.00	-26.35	250	150

Polarization: Vertical

Frequency (MHz)	Reading (dBuV)	Detector	Factor (dB)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Table Degree (Deg.)	Ant. High (cm)
257.2545	17.40	peak	14.75	32.15	46.00	-13.85	20	150
992.9860	7.33	peak	29.13	36.46	54.00	-17.54	80	150

Polarization: Vertical

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.			
1595.1900	53.56	---	-11.18	42.38	---	74.00	54.00	-31.62	170	150
4841.6830	51.87	---	-4.91	46.96	---	74.00	54.00	-27.04	110	150
7236.0000	47.52	---	-2.37	45.15	---	74.00	54.00	-28.85	230	150
9648.0000	32.17	---	12.83	45.00	---	74.00	54.00	-29.00	330	150
12060.0000	30.71	---	15.92	46.63	---	74.00	54.00	-27.37	250	150



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 FCC ID: RXZ-WU71R

Mode: 802.11n 40M CH4  
 Polarization: Horizontal

Frequency (MHz)	Reading (dBuV)	Detector	Factor (dB)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Table Degree (Deg.)	Ant. High (cm)
133.8876	21.57	peak	14.75	36.32	43.50	-7.18	190	150
966.3327	7.85	peak	28.78	36.63	54.00	-17.37	145	150

Polarization: Horizontal

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.			
4873.7480	56.52	48.56	-4.86	51.66	43.70	74.00	54.00	-10.30	110	150
7311.0000	47.82	---	-2.76	45.06	---	74.00	54.00	-28.94	60	150
9748.0000	30.85	---	12.80	43.65	---	74.00	74.00	-30.35	200	150
12185.0000	30.76	---	16.40	47.16	---	74.00	54.00	-26.84	130	150

Polarization: Vertical

Frequency (MHz)	Reading (dBuV)	Detector	Factor (dB)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Table Degree (Deg.)	Ant. High (cm)
165.8117	21.00	peak	15.15	36.15	43.50	-7.35	115	150
984.5691	7.59	peak	29.02	36.61	54.00	-17.39	330	150

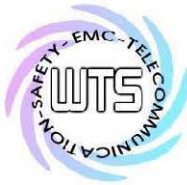
Polarization: Vertical

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.			
1595.1900	54.05	---	-11.18	42.87	---	74.00	54.00	-31.13	160	150
4873.7480	54.52	---	-4.86	49.66	---	74.00	54.00	-24.34	120	150
7311.0000	47.60	---	-2.76	44.84	---	74.00	54.00	-29.16	260	150
9748.0000	31.47	---	12.80	44.27	---	74.00	54.00	-29.73	110	150
12185.0000	30.22	---	16.40	46.62	---	74.00	54.00	-27.38	310	150

Mode: 802.11n 40M CH7

Polarization: Horizontal

Frequency (MHz)	Reading (dBuV)	Detector	Factor (dB)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Table Degree (Deg.)	Ant. High (cm)
135.5110	20.34	peak	14.85	35.19	43.50	-8.31	110	150
987.3748	7.06	peak	29.06	36.12	54.00	-17.88	120	150



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

Registration number: W6M21011-10997-C-1  
 FCC ID: RXZ-WU71R

Polarization: Horizontal

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.			
4897.7960	55.61	---	-4.82	50.79	---	74.00	54.00	-23.21	140	150
7356.0000	47.70	---	-2.96	44.74	---	74.00	54.00	-29.26	120	150
9808.0000	30.59	---	13.01	43.60	---	74.00	54.00	-30.40	110	150
12260.0000	31.41	---	16.46	47.87	---	74.00	54.00	-26.13	310	150

Polarization: Vertical

Frequency (MHz)	Reading (dBuV)	Detector	Factor (dB)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Table Degree (Deg.)	Ant. High (cm)
262.1243	20.80	peak	14.89	35.69	46.00	-10.31	60	150
984.5691	7.72	peak	29.02	36.74	54.00	-17.26	310	150

Polarization: Vertical

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.			
1064.1280	59.74	---	-13.59	46.15	---	74.00	54.00	-27.85	80	150
1593.1860	54.73	---	-11.18	43.55	---	74.00	54.00	-30.45	110	150
4905.8120	53.06	---	-4.84	48.22	---	74.00	54.00	-25.78	110	150
7356.0000	47.83	---	-2.96	44.87	---	74.00	54.00	-29.13	210	150
9808.0000	30.43	---	13.01	43.44	---	74.00	54.00	-30.56	210	150
12260.0000	32.06	---	16.46	48.52	---	74.00	54.00	-25.48	330	150

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

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

Test equipment used: ETSTW-RE 003, ETSTW-RE 004, ETSTW-RE 018, ETSTW-RE 028,  
 ETSTW-RE 029, ETSTW-RE 030, ETSTW-RE 044



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**3.6 Radiated Emission on the band edge**

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.

Mode 802.11b

Test conditions		Attenuation at or outside band-edges	
		Lower Band-edge	Upper Band-edge
$T_{nom} = 23^{\circ}C$	$V_{nom} = 5 V$	37.49 dB	51.15 dB

Mode 802.11g

Test conditions		Attenuation at or outside band-edges	
		Lower Band-edge	Upper Band-edge
$T_{nom} = 23^{\circ}C$	$V_{nom} = 5 V$	31.75 dB	43.52 dB

Mode 802.11n 20MHz

Test conditions		Attenuation at or outside band-edges	
		Lower Band-edge	Upper Band-edge
$T_{nom} = 23^{\circ}C$	$V_{nom} = 5 V$	32.04 dB	41.42 dB

Mode 802.11n 40MHz

Test conditions		Attenuation at or outside band-edges	
		Lower Band-edge	Upper Band-edge
$T_{nom} = 23^{\circ}C$	$V_{nom} = 5 V$	32.35 dB	38.16 dB

Limit:

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

Test equipment used: ETSTW-RE 055  
 Explanation: Please see attached diagram as appendix.



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 FCC ID: RXZ-WU71R

**3.7 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 802.11b

Test conditions		6 dB Bandwidth		
		Channel 1	Channel 6	Channel 11
T <sub>nom</sub> = 23°C	V <sub>nom</sub> = 5 V	10.192307692MHz	10.192307692MHz	10.192307692 MHz

Mode 802.11g

Test conditions		6 dB Bandwidth		
		Channel 1	Channel 6	Channel 11
T <sub>nom</sub> = 23°C	V <sub>nom</sub> = 5 V	16.570512821MHz	16.570512821MHz	16.602564103MHz

Mode 802.11n 20MHz

Test conditions		6 dB Bandwidth		
		Channel 1	Channel 6	Channel 11
T <sub>nom</sub> = 23°C	V <sub>nom</sub> = 5 V	17.884615385MHz	17.884615385 MHz	17.884615385 MHz

Mode 802.11n 40MHz

Test conditions		6 dB Bandwidth		
		Channel 1	Channel 4	Channel 7
T <sub>nom</sub> = 23°C	V <sub>nom</sub> = 5 V	36.538461538MHz	36.538461538 MHz	36.538461538 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 055

Explanation: see attached diagrams in Appendix.



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**3.8 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 802.11b

Test conditions		Peak Power Spectral Density (3 kHz)		
		Channel 1 [dBm]	Channel 6 [dBm]	Channel 11 [dBm]
$T_{nom} = 23^{\circ}C$	$V_{nom} = 5\ V$	-23.39	-22.91	-23.04

Mode 802.11g

Test conditions		Peak Power Spectral Density (3 kHz)		
		Channel 1 [dBm]	Channel 6 [dBm]	Channel 11 [dBm]
$T_{nom} = 23^{\circ}C$	$V_{nom} = 5\ V$	-23.79	-23.40	-23.41

Mode 802.11n 20MHz

Test conditions		Peak Power Spectral Density (3 kHz)		
		Channel 1 [dBm]	Channel 6 [dBm]	Channel 11 [dBm]
$T_{nom} = 23^{\circ}C$	$V_{nom} = 5\ V$	-24.00	-24.13	-23.83

Mode 802.11n 40MHz

Test conditions		Peak Power Spectral Density (3 kHz)		
		Channel 1 [dBm]	Channel 4 [dBm]	Channel 7 [dBm]
$T_{nom} = 23^{\circ}C$	$V_{nom} = 5\ V$	-26.10	-23.13	-25.90

**Limits:**

Frequency Range MHz	dBm
902-928	8
2400-2483.5	8
5725-5850	8

Test equipment used: ETSTW-RE 055

Explanation: see attached diagrams in Appendix.





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**3.9 Radiated Emission 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 018, ETSTW-RE 028, ETSTW-RE 029, ETSTW-RE 030, ETSTW-RE 044

Explanation: The test results are listed in the separated test report no. W6M21011-10997-P-15B.



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### 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

Model: WU71R Date: 2010/11/22  
 Mode: Temperature: 24 °C Engineer: Kevin  
 Polarization: N Humidity: 60 %

Frequency (MHz)	Reading (dBuV)		Factor (dB) Corr.	Result (dBuV)		Limit (dBuV)		Margin (dB)
	QP	Ave.		QP	Ave.	QP	Ave.	
0.1525	42.96	14.71	10.74	53.70	25.45	65.86	55.86	-12.16
0.1947	42.64	31.94	10.77	53.41	42.71	63.83	53.83	-10.42
0.3137	29.21	11.52	10.72	39.93	22.24	59.87	49.87	-19.94
0.4934	32.41	22.23	10.66	43.07	32.89	56.11	46.11	-13.04
1.0075	22.70	10.67	10.38	33.08	21.05	56.00	46.00	-22.92
17.8611	27.60	20.48	10.76	38.36	31.24	60.00	50.00	-18.76

Polarization: L1

Frequency (MHz)	Reading (dBuV)		Factor (dB) Corr.	Result (dBuV)		Limit (dBuV)		Margin (dB)
	QP	Ave.		QP	Ave.	QP	Ave.	
0.1504	44.06	15.73	10.75	54.81	26.48	65.98	55.98	-11.17
0.1858	40.97	21.21	10.77	51.74	31.98	64.22	54.22	-12.48
0.3141	30.77	10.74	10.72	41.49	21.46	59.86	49.86	-18.37
0.4572	25.82	4.95	10.63	36.45	15.58	56.74	46.74	-20.29
3.8900	22.63	12.46	10.20	32.83	22.66	56.00	46.00	-23.17
16.9166	26.65	20.30	10.91	37.56	31.21	60.00	50.00	-18.79

- 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.



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

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FCC ID: RXZ-WU71R

## **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 004, ETSTW-CE 006

Explanation: see attached diagrams in Appendix.