



FCC 47 CFR PART 15 SUBPART C

UPDATE TEST REPORT

For

Wireless USB Dongle

Model: WU71RL

Trade Name: PRO-NETS; Speed Com+; Jet Com

Issued to

**PRO-NETS TECHNOLOGY CORPORATION
15F., No. 669, Bannan Rd., Zhonghe Dist.,
New Taipei City 23557, Taiwan R.O.C.**

Issued by

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Revision History

Rev.	Issue Date	Revisions	Effect Page	Revised By
00	October 16, 2008	Initial Issue	ALL	Celine Chou
01	March 28, 2011	See the following Note Rev. (01)	ALL	Kosame Lin

Note:

Rev. (01):

- 1. Applicant removes PCB Antenna Connect & IC Chip. Due to the change do not influence the RF characteristics, and also after the preliminary scan, only radiated emission below 1GHz and AC line conducted emission were tested and documented in this report.*
- 2. Other information, please refer to the 80917201 and this test report.*



1. TEST RESULT CERTIFICATION

Applicant: PRO-NETS TECHNOLOGY CORPORATION
 15F., No. 669, Bannan Rd., Zhonghe Dist.,
 New Taipei City 23557, Taiwan R.O.C.

Equipment Under Test: Wireless USB Dongle

Trade Name: PRO-NETS; Speed Com+; Jet Com

Model: WU71RL

Date of Test: March 1 ~ 25, 2011

APPLICABLE STANDARDS	
STANDARD	TEST RESULT
FCC 47 CFR Part 15 Subpart C	No non-compliance noted


We hereby certify that:

The above equipment was tested by Compliance Certification Services Inc. The test data, data evaluation, test procedures, and equipment configurations shown in this report were made in accordance with the procedures given in ANSI C63.4: 2003 and the energy emitted by the sample EUT tested as described in this report is in compliance with the requirements of FCC Rules Part 15.207, 15.209, 15.247.

The test results of this report relate only to the tested sample EUT identified in this report.

Approved by:

Reviewed by:



 Stan Lin
 Supervisor



 Chieh Cheng
 Engineer



2. EUT DESCRIPTION

Product	Wireless USB Dongle
Trade Name	PRO-NETS; Speed Com+; Jet Com
Model Number	WU71RL
Model Discrepancy	N/A
EUT Power Rating	5VDC
Frequency Range	2412 ~ 2462 MHz
Transmit Power	IEEE 802.11b mode: 13.80 dBm IEEE 802.11g mode: 13.82 dBm draft 802.11n 20 MHz Channel mode: 13.15 dBm draft 802.11n 40 MHz Channel mode: 13.82 dBm
Modulation Technique	IEEE 802.11b mode: DSSS (1, 2, 5.5 and 11 Mbps) IEEE 802.11g mode: OFDM (6, 9, 12, 18, 24, 36, 48 and 54 Mbps) draft 802.11n 20 MHz Channel mode: OFDM (6.5, 7.2, 13, 14.4, 14.44, 19.5, 21.7, 26, 28.89, 28.9, 39, 43.3, 43.33 52, 57.78, 57.8, 58.5, 65.0, 72.2, 78, 86.67, 104, 115.56, 117, 130, 144.44 Mbps) draft 802.11n 40 MHz Channel mode: OFDM (13.5, 15, 27, 30, 40.5, 45, 54, 60, 81, 90, 108, 120, 121.5, 135, 150, 162, 180, 216, 240, 243, 270, 300 Mbps)
Number of Channels	IEEE 802.11b/g mode: 11 Channels draft 802.11n 20 MHz Channel mode: 11 Channels draft 802.11n 40 MHz Channel mode: 7 Channels
Antenna Specification	Printed Antenna / Gain: 2.65dBi

Remark:

3. The sample selected for test was engineering sample that approximated to production product and was provided by manufacturer.
4. This submittal(s) (test report) is intended for FCC ID: **RXZ-WU71RL** filing to comply with Section 15.207, 15.209 and 15.247 of the FCC Part 15, Subpart C Rules.



3. INSTRUMENT CALIBRATION

3.1 MEASURING instrument calibration

The measuring equipment, which was utilized in performing the tests documented herein, has been calibrated in accordance with the manufacturer's recommendations for utilizing calibration equipment, which is traceable to recognized national standards.

3.2 MEASUREMENT EQUIPMENT USED

Equipment Used for Emissions Measurement

Remark: Each piece of equipment is scheduled for calibration once a year.

3M Semi Anechoic Chamber				
Name of Equipment	Manufacturer	Model	Serial Number	Calibration Due
Spectrum Analyzer	Agilent	E4446A	MY48250064	11/05/2011
Spectrum Analyzer	R&S	FSEB	825829/011	11/02/2011
Pre-Amplifier	HP	8447D	2944A06530	01/02/2012
Pre-Amplifier	HP	8449B	3008A01738	04/17/2011
EMI Test Receiver	SCHAFFNER	SCR 3501	436	01/26/2012
Loop Antenna	EMCO	6502	2356	05/28/2011
Bilog Antenna	SCHWAZBECK	VULB9160	3084	09/11/2011
Horn Antenna	EMCO	3115	00022250	05/08/2011
Turn Table	CCS	CC-T-1F	N/A	N.C.R
Antenna Tower	CCS	CC-A-1F	N/A	N.C.R
Controller	CCS	CC-C-1F	N/A	N.C.R
Test S/W	LabVIEW 6.1 (Wugu Chamber EMI Teat V1_4.5.3)			

Conducted Emission Test site				
Name of Equipment	Manufacturer	Model	Serial Number	Calibration Due
Spectrum Analyzer	Agilent	E4446A	MY48250064	11/05/2011
Spectrum Analyzer	R&S	FSEB	825829/011	11/02/2011
USB Power Sensor	BOONTON	52012	2061194	06/08/2011



4. FACILITIES AND ACCREDITATIONS

4.1 FACILITIES

All measurement facilities used to collect the measurement data are located at

- No.199, Chunghsen Road, Hsintien City, Taipei Hsien, Taiwan, R.O.C.
Tel: 886-2-2217-0894 / Fax: 886-2-2217-1029
- No.11, Wugong 6th Rd., Wugu Industrial Park, Taipei Hsien 248, Taiwan
Tel: 886-2-2299-9720 / Fax: 886-2-2298-4045
- No.81-1, Lane 210, Bade 2nd Rd., Lujhu Township, Taoyuan County 33841, Taiwan, R.O.C.
Tel: 886-3-324-0332 / Fax: 886-3-324-5235

The sites are constructed in conformance with the requirements of ANSI C63.7, ANSI C63.4 (2003) and CISPR Publication 22.

4.2 EQUIPMENT

Radiated emissions are measured with one or more of the following types of linearly polarized antennas: tuned dipole, biconical, log periodic, bi-log, and/or ridged waveguide, horn. Spectrum analyzers with pre-selectors and quasi-peak detectors are used to perform radiated measurements.






Conducted emissions are measured with Line Impedance Stabilization Networks and EMI Test Receivers.

Calibrated wideband preamplifiers, coaxial cables, and coaxial attenuators are also used for making measurements.

All receiving equipment conforms to CISPR Publication 16-1, "Radio Interference Measuring Apparatus and Measurement Methods."



4.3 TABLE OF ACCREDITATIONS AND LISTINGS

Country	Agency	Scope of Accreditation	Logo
USA	A2LA	CFR 47, FCC Part15/18, CISPR 22, EN 55022, ICES-003, AS/NZS CISPR 22, VCCI V-3, EN 55011, CISPR 11, IEC/EN 61000-4-2/3/4/5/6/8/11, EN 61000-6-1/2/3/4, EN 55024, CISPR 24, AS/NZS CISPR 24, AS/NZS 61000.6.2, EN 55014-1/-2, ETSI EN 300 386 v1.3.2/v1.3.3, IEC/EN 61000-3-2, AS/NZS 61000.3.2, IEC/EN 61000-3-3, AS/NZS 61000.3.3	 ACCREDITED No. 0824-01
USA	FCC MRA	3/10 meter Open Area Test Sites to perform FCC Part 15/18 measurements	 FC _{TW1026}
Japan	VCCI	3/10 meter Open Area Test Sites and conducted test sites to perform radiated/conducted measurements	 R-2882/2541/2798/725/1868 C-402/747/912 T-1930/1646
Taiwan	TAF	EN 55014-1, CISPR 14, CNS 13781-1, EN 55013, CISPR 13, CNS 13439, EN 55011, CISPR 11, CNS 13803, PLMN09, IS2045-0, LP0002 FCC Part 27/90, Part 15B/C/D/E, RSS-192/193/210/310 ETSI EN 300 328/ 300 220-1/ 300 220-2/ 301 893/ 301 489-01/ 301 489-03/ 301 489-07 / 301 489-17/ 300 440-1/ 300 440-2 AS/NZS 4268, AS/NZS 4771 CISPR 22, EN 55022, CNS 13438, AS/NZS CISPR 22, VCCI, IEC/EN 61000-4-2/3/4/5/6/8/11, CNS 14676-2/3/4/5/6/8, CNS 14934-2/3, CNS 13783-1, CNS 13439, CNS 13803	 TAF Testing Laboratory 0363
Taiwan	BSMI	CNS 13438, CNS 13783-1, CNS 13439, CNS 14115	SL2-IS-E-0014 / IN-E-0014 /A1-E-0014 /R1-E-0014 /R2-E-0014 /L1-E-0014
Canada	Industry Canada	RSS212, Issue 1	 IC 2324C-3 IC 2324C-5

Note: No part of this report may be used to claim or imply product endorsement by A2LA, TAF or other government agency.



5. FCC PART 15.247 REQUIREMENTS

5.1 RADIATED EMISSIONS

LIMIT

1. According to §15.209(a), except as provided elsewhere in this Subpart, the emissions from an intentional radiator shall not exceed the field strength levels specified in the following table:

Frequency (MHz)	Field Strength ($\mu\text{V}/\text{m}$)	Measurement Distance (m)
30-88	100*	3
88-216	150*	3
216-960	200*	3
Above 960	500	3

Remark: Except as provided in paragraph (g), fundamental emissions from intentional radiators operating under this Section shall not be located in the frequency bands 54-72 MHz, 76-88 MHz, 174-216 MHz or 470-806 MHz. However, operation within these frequency bands is permitted under other sections of this Part, e.g., Sections 15.231 and 15.241.

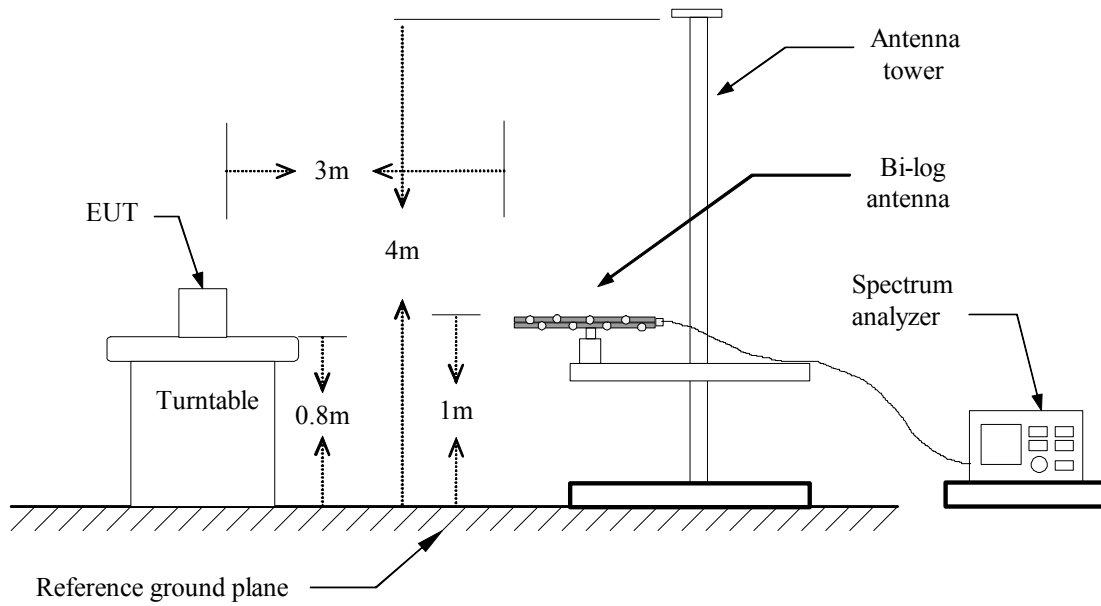
2. In the emission table above, the tighter limit applies at the band edges.

Frequency (MHz)	Field Strength ($\mu\text{V}/\text{m}$ at 3-meter)	Field Strength (dB $\mu\text{V}/\text{m}$ at 3-meter)
30-88	100	40
88-216	150	43.5
216-960	200	46
Above 960	500	54

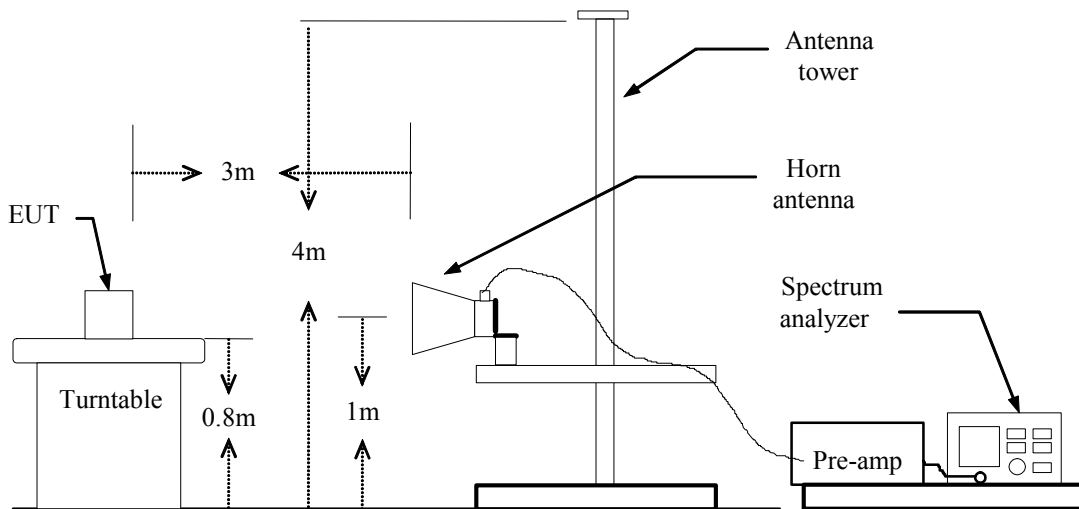


TEST CONFIGURATION

Below 1 GHz



Above 1 GHz





TEST PROCEDURE

1. The EUT is placed on a turntable, which is 0.8m above ground plane.
2. The turntable shall be rotated for 360 degrees to determine the position of maximum emission level.
3. EUT is set 3m away from the receiving antenna, which is varied from 1m to 4m to find out the highest emissions.
4. Maximum procedure was performed on the six highest emissions to ensure EUT compliance.
5. And also, each emission was to be maximized by changing the polarization of receiving antenna both horizontal and vertical.
6. Set the spectrum analyzer in the following setting as:
Below 1GHz:
RBW=100kHz / VBW=300kHz / Sweep=AUTO
Above 1GHz:
(a) PEAK: RBW=VBW=1MHz / Sweep=AUTO
(b) AVERAGE: RBW=1MHz / VBW=10Hz / Sweep=AUTO
7. Repeat above procedures until the measurements for all frequencies are complete.



TEST RESULTS

Below 1GHz

Operation Mode: Normal Link Test Date: 2011/1/28
Temperature: 18°C Tested by: Chieh Cheng
Humidity: 60% RH Polarity: Ver. / Hor.

Frequency (MHz)	Ant. Pol. (H/V)	Reading (dBuV)	Correction Factor (dB/m)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Remark
34.8500	V	39.18	-14.30	24.88	40.00	-15.12	Peak
41.3167	V	36.55	-13.57	22.98	40.00	-17.02	Peak
44.5500	V	32.70	-13.43	19.27	40.00	-20.73	Peak
133.4667	V	33.61	-13.62	19.99	43.50	-23.51	Peak
324.2333	V	28.67	-10.42	18.25	46.00	-27.75	Peak
400.2167	V	31.80	-9.46	22.34	46.00	-23.66	Peak
33.2333	H	33.68	-14.58	19.10	40.00	-20.90	Peak
60.7167	H	32.21	-15.83	16.38	40.00	-23.62	Peak
136.7000	H	27.91	-12.96	14.95	43.50	-28.55	Peak
240.1667	H	36.83	-13.40	23.43	46.00	-22.57	Peak
400.2167	H	32.23	-9.46	22.77	46.00	-23.23	Peak
424.4667	H	31.87	-8.89	22.98	46.00	-23.02	Peak

Remark:

1. Measuring frequencies from 30 MHz to the 1GHz.
2. Radiated emissions measured in frequency range from 30 MHz to 1000MHz were made with an instrument using peak/quasi-peak detector mode.
3. Measurements above show only up to 6 maximum emissions noted, or would be lesser, with " N/A " remark, if no specific emissions from the EUT are recorded (ie: margin>20dB from the applicable limit) and considered that's already beyond the background noise floor.
4. Margin (dB) = Result (dBuV/m) – Limit (dBuV/m).



5.2 POWERLINE CONDUCTED EMISSIONS

LIMIT

According to §15.207(a), except as shown in paragraphs (b) and (c) of this section, for an intentional radiator that is designed to be connected to the public utility (AC) power line, the radio frequency voltage that is conducted back onto the AC power line on any frequency or frequencies within the band 150 kHz to 30 MHz shall not exceed the limits in the following table, as measured using a 50 μ H/50 ohms line impedance stabilization network (LISN). Compliance with the provisions of this paragraph shall be based on the measurement of the radio frequency voltage between each power line and ground at the power terminal. The lower limit applies at the boundary between the frequency ranges.

Frequency Range (MHz)	Limits (dB μ V)	
	Quasi-peak	Average
0.15 to 0.50	66 to 56*	56 to 46*
0.50 to 5	56	46
5 to 30	60	50

* Decreases with the logarithm of the frequency.

TEST CONFIGURATION

See test photographs attached in Appendix 1 for the actual connections between EUT and support equipment.

TEST PROCEDURE

1. The EUT was placed on a table, which is 0.8m above ground plane.
2. Maximum procedure was performed on the six highest emissions to ensure EUT compliance.
3. Repeat above procedures until all frequency measured were complete.



TEST RESULTS

The initial step in collecting conducted data is a spectrum analyzer peak scan of the measurement range. Significant peaks are then marked as shown on the following data page, and these signals are then quasi-peaked.

Test Data

Operation Mode: Normal Link **Test Date:** March 25, 2011
Temperature: 25°C **Tested by:** Stan Lin
Humidity: 57% RH

Freq. (MHz)	QP Reading (dBuV)	AV Reading (dBuV)	Corr. factor (dB/m)	QP Result (dBuV/m)	AV Result (dBuV/m)	QP Limit (dBuV)	AV Limit (dBuV)	QP Margin (dB)	AV Margin (dB)	Note
0.1766	40.44	30.43	9.65	50.09	40.08	64.64	54.64	-14.55	-14.56	L1
0.2340	35.39	25.52	9.65	45.04	35.17	62.31	52.31	-17.27	-17.14	L1
0.2920	28.58	19.69	9.65	38.23	29.34	60.47	50.47	-22.24	-21.13	L1
2.9694	24.17	20.07	9.67	33.84	29.74	56.00	46.00	-22.16	-16.26	L1
5.2382	26.38	17.17	9.79	36.17	26.96	60.00	50.00	-23.83	-23.04	L1
24.4582	30.29	27.46	10.56	40.85	38.02	60.00	50.00	-19.15	-11.98	L1
0.1754	40.48	30.72	9.66	50.14	40.38	64.70	54.70	-14.56	-14.32	L2
0.2354	32.05	22.60	9.66	41.71	32.26	62.26	52.26	-20.55	-20.00	L2
0.2903	26.55	18.49	9.66	36.21	28.15	60.52	50.52	-24.31	-22.37	L2
3.4932	25.26	9.42	9.69	34.95	19.11	56.00	46.00	-21.05	-26.89	L2
3.9624	30.70	15.98	9.70	40.40	25.68	56.00	46.00	-15.60	-20.32	L2
23.7192	30.48	26.38	10.70	41.18	37.08	60.00	50.00	-18.82	-12.92	L2

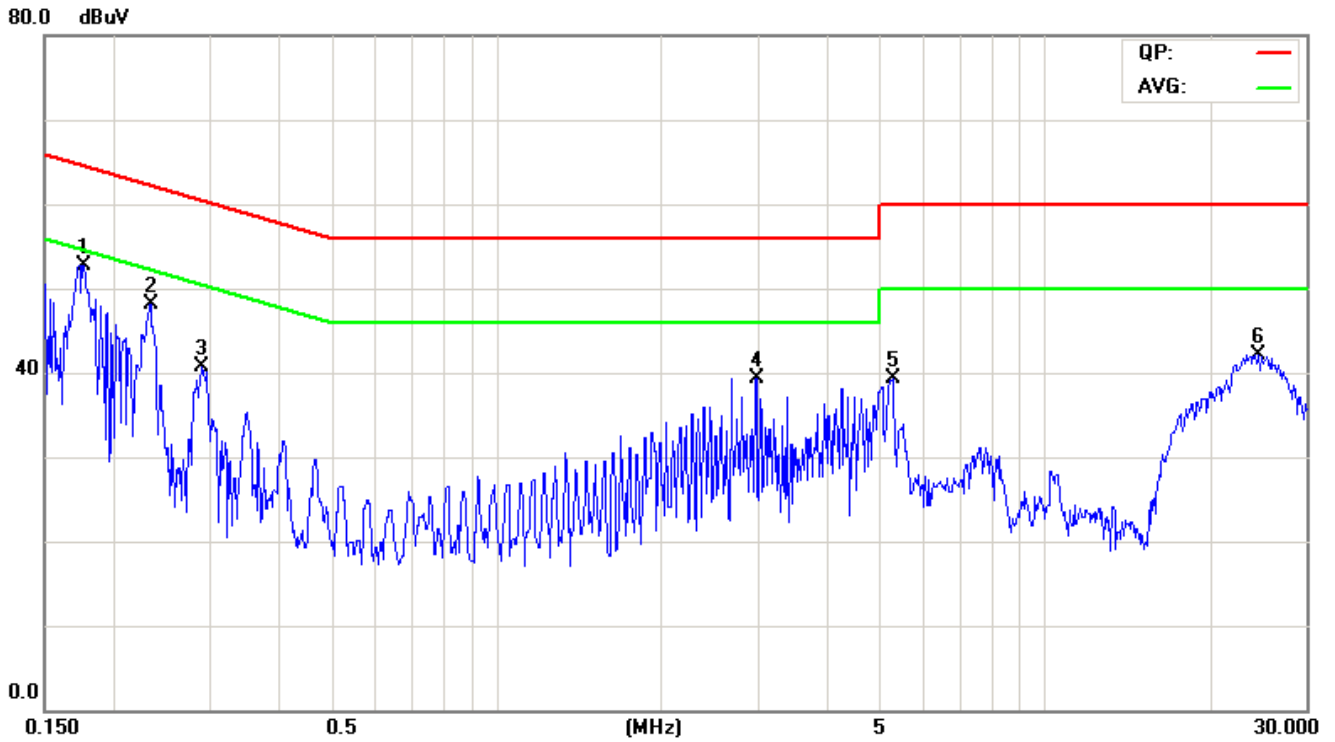
Remark:

1. Measuring frequencies from 0.15 MHz to 30MHz.
2. The emissions measured in frequency range from 0.15 MHz to 30MHz were made with an instrument using Quasi-peak detector and average detector.
3. The IF bandwidth of SPA between 0.15MHz and 30MHz was 10 kHz; the IF bandwidth of Test Receiver between 0.15MHz and 30MHz was 9 kHz;
4. L1 = Line One (Live Line) / L2 = Line Two (Neutral Line)



Test Plots

Conducted emissions (Line 1)



Conducted emissions (Line 2)

