

MPE TEST REPORT

Product : **Cable Modem**

Model(s): **CBW560; CBW560E**

Applicant: **CastleNet Technology Inc.**

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Taiwan, R. O. C.**

Test Performed by:

International Standards Laboratory

<Lung-Tan LAB>

*Site Registration No.

BSMI: SL2-IN-E-0013; TAF: 0997; IC: IC4164-1 ;

VCCI: R-1435, C-1440, T-299, R-2598, C-2845; NEMKO: ELA 113B

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Report No.: **ISL-08LR021MPE**

Issue Date : **2008/07/30**

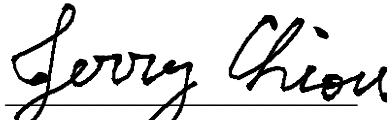
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1. General

1.1 Certification of Accuracy of Test Data

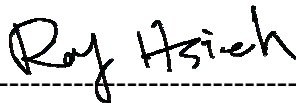
Standards:	CFR 47 Part 15 Subpart B Class B CFR 47 Part 15 Subpart C (Section 15.247)
Test Procedure:	ANSI C63.4:2003
Equipment Tested:	Cable Modem
Model:	CBW560; CBW560E
Applied by:	CastleNet Technology Inc.
Sample received Date:	2008/07/18
Final test Date :	2008/07/29
Test Result	PASS
Test Site:	Chamber 12, Conduction 03
Temperature	Refer to each site test data
Humidity:	Refer to each site test data
Test Engineer:	


Jerry Chiou

All the tests in this report have been performed and recorded in accordance with the standards described above and performed by an independent electromagnetic compatibility consultant, International Standards Laboratory.

The test results contained in this report accurately represent the measurements of the characteristics and the energy generated by sample equipment under test at the time of the test. The sample equipment tested as described in this report is in compliance with the limits of above standards.

Approve & Signature



Roy Hsieh / Manager

Test results given in this report apply only to the specific sample(s) tested under stated test conditions. This report shall not be reproduced other than in full without the explicit written consent of ISL. This report totally contains 10 pages, including 1 cover page, 1 contents page, and 8 pages for the test description.

1.2 Test Results Summary

The 802.11b functions of EUT has been tested according to the FCC regulations listed below:

Tested Standards: 47 CFR Part 15 Subpart C			
Standard Section	Test Type	Result	Remarks
15.207	AC Power Line Emissions	Pass	
15.247(a)(2)	Spectrum Bandwidth Of DSSS device	Pass	
15.247(b)	Max. Peak Output Power	Pass	
15.247(c)	Radiated Emissions 30MHz – 25 GHz	Pass	
15.247 (c)	Band Edge Measurement	Pass	
15.247(b)(4)	Radiation Exposure	Pass	SAR report attached
15.247 (d)	Power Spectral Density	Pass	

The 802.11g functions of EUT has been tested according to the FCC regulations listed below:

Tested Standards: 47 CFR Part 15 Subpart C			
Standard Section	Test Type	Result	Remarks
15.207	AC Power Line Emissions	Pass	
15.247(a)(2)	Spectrum Bandwidth Of DSSS device	Pass	
15.247(b)	Max. Peak Output Power	Pass	
15.247(c)	Radiated Emissions 30MHz – 25 GHz	Pass	
15.247 (c)	Band Edge Measurement	Pass	
15.247(b)(4)	Radiation Exposure	Pass	SAR report attached
15.247 (d)	Power Spectral Density	Pass	

2. Description of Equipment Under Test (EUT)

Description:	Cable Modem
Condition:	Pre-Production
Model:	CBW560; CBW560E
Frequency Range of 802.11b/g:	2400 - 2483.5 MHz
Support channel: 802.11b/g	11 Channels
Modulation Skill: 802.11b	DBPSK(1Mbps), DQPSK(2Mbps), CCK(5.5/11Mbps)
802.11g	OFDM (6M - 54Mbps)
Antennas Type: WLAN Main antenna:	Dipole (P/N: 6602113051-090), made by KINSUN.
Antenna Connected:	Connected to RF connector on the WLAN module .The user is not possible to change the antenna without disassembling the EUT.
Antenna peak Gain: WLAN Main antenna	2.39dBi(11b,11g)
Power Type of wireless module:	3.3V DC from EUT

The channel and the operation frequency of 802.11b and 802.11g listed below:

Channel	Frequency(MHz)	Channel	Frequency(MHz)
01	2412	07	2442
02	2417	08	2447
03	2422	09	2452
04	2427	10	2457
05	2432	11	2462
06	2437		

Power Adaptor:

OEM (Model: AD-121A)
Input: 120VAC~60Hz 18W
Output: 12VDC 1A

Power Cord:

Non-shielded, Detachable (2-pins)

LAN Port:

four

Reset key:

one

Cable in Jack:

one

USB Port:

one

Power In Jack:

one

3. Description of Support Equipment

3.1 Description of Support Equipment

Unit	Model Serial No.	Brand	Power Cord	FCC ID
Notebook PC	Satellite M50	Toshiba	Shielded, Detachable	DoC

3.2 Software for Controlling Support Unit

Test programs exercising various part of EUT were used. The programs were executed as follows:

- A. Read and write to the disk drives.
- B. Send commands from NB PC to EUT through LAN port.
- C. The RF software makes the transmitter continuously sending RF signals
- D. Repeat the above steps.

	Filename	Issued Date
Continue Tx	CM Test.exe	06/20/2007
Continue Tx	Ping.exe	08/12/2004

3.3 I/O Cable Condition of EUT and Support Units

Description	Path	Cable Length	Cable Type	Connector Type
DC Power Cord	DC 12V to EUT Power-in Port	1.8M	Non-shielded, Non-detachable	Metal Head
LAN Data Cable	PC to EUT RJ 45 Connector	33 feet	Non-shielded, Detachable	RJ-45, with Plastic Head

3.4 General Test Conditions

1. During the test, the EUT was set in continuously transmitting mode with a duty cycle of 100%.for 802.11b.
2. The EUT was set in continuously transmitting mode with a duty cycle of 97%.for 802.11g.
3. The channel 1, 6, 11 of 802.11b/g of EUT were all tested.

4. RF Exposure Measurement [Section 15.247(b)(4) & 1.1307(b)]

4.1 Applied Standards

FCC PART 1.1307, 1.1310, 2.1091, 2.1093 RF EXPOSURE

4.2 Test Procedure

The Transmitter output of EUT was connected to the Peak Power Analyzer

4.3 Test Setup



4.4 Calculation for Maximum Permissible Exposure (MPE)

From FCC 1.1310 Table 1B, the maximum permissible RF exposure for an uncontrolled environment is 1 mW/cm². The actual power density for the EUT with the antenna is calculated as shown below.

$$S = (P \times G) / (4 \times \pi \times d^2)$$

where:

S = power density

P = transmitter conducted power in (W)

G = antenna numeric gain

d = distance to radiation center (m)

<<DATA>>

802.11b

Antenna Manufacturer	Antenna Type	Gain (dBi)	Numeric Gain	Frequency (MHz)	Power (dBm)	Power (mW)	Separation Distance (cm)	Power Density (W/m2)	Power Density (mW/cm2)
KINSUN, P/N: 6602113051-090	Dipole	2.39	1.73	2412	17.22	52.72	20	0.1819	0.01819
				2437	17.28	53.46	20	0.1844	0.01844
				2462	17.27	53.33	20	0.1840	0.01840

802.11g

Antenna Manufacturer	Antenna Type	Gain (dBi)	Numeric Gain	Frequency (MHz)	Power (dBm)	Power (mW)	Separation Distance (cm)	Power Density (W/m2)	Power Density (mW/cm2)
KINSUN, P/N: 6602113051-090	Dipole	2.39	1.73	2412	15.81	38.11	20	0.1314	0.01314
				2437	15.78	37.84	20	0.1305	0.01305
				2462	15.9	38.90	20	0.1342	0.01342

WARNING:

It is the responsibility of the installer to ensure that the EUT is a WLAN module and a specified antenna inside. Only the specified antennas listed above may be used. The use of any other antenna is expressly forbidden in accordance with FCC rules CFR 47 part 15.204.

NOTICE:

FCC Radiation Exposure Statement

This equipment complies with FCC radiation exposure limits for an uncontrolled environment when installed as directed. This equipment should be installed and operated with the specified antenna listed in this report.

5. Appendix : Test Equipment

5.1 Test Equipment List

Location	Equipment Name	Brand	Model	S/N	Last Cal. Date	Next Cal. Date
Radiation	Spectrum Analyzer 19	R&S	FSP40	100116	09/12/2007	09/12/2008

Note: Calibration traceable to NIST or national or international standards.