

MPE Test Report

of

Product Name

802.11 a/g Super A/G Intelligent WLAN Router

Model

CRP-1

Applied by:

Wistron Neweb Corporation
No. 10-1, Li-hsin Road 1,
Science-based Industrial Park, Hsinchu 300,
Taiwan, R. O. C.

Test Performed by:

(NVLAP Lab. Code: 200234-0)

International Standards Laboratory

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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)
 CFR 47 Part 15 Subpart E (Section 15.407)

Test Procedure: ANSI C63.4: 2001

Equipment Tested: 802.11 a/g Super A/G Intelligent WLAN Router

Model: CRP-1

Applied by: Wistron Neweb Corporation

Sample received Date: 2004/03/26

Final test Date : 2004/04/28

Test Site: Chamber 02, Conduction 02

Temperature Refer to each site test data

Humidity: Refer to each site test data

Mailes Hsieh 2004/04/28

Test Engineer: Mailes Hsieh

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 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

Eddy Hsiung

 Eddy Hsiung/Director

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 9 pages, including 1 cover page , 1 contents page, and 7 pages for the test description. This report must not be use to claim product endorsement by NVLAP or any agency of the U.S. Government.

This test data shown below is traceable to NIST or national or international standard. International Standards Laboratory certifies that no party to this application has been denied the FCC benefits pursuant to Section 5301 of the Anti-Drug Abuse Act of 1988, 21 U.S.C. 853(a).

2. Description of Equipment Under Test (EUT)

Description:	802.11 a/g Super A/G Intelligent WLAN Router
Condition:	Pre-Production
Model:	CRP-1
Brand:	Wistron NeWeb
Frequency Range 802.11a:	5150 - 5350 MHz, 5725 - 5825 MHz
Frequency Range 802.11b/g:	2400 – 2483.5 MHz
Support Channel:	
802.11a Normal mode	12 Channels
802.11a Turbo mode	5 Channels
802.11b	11 Channels
802.11g	11 Channels
Modulation Skill:	
802.11a Normal mode	OFDM (6 Mbps – 54 Mbps)
802.11a Turbo mode	OFDM (12 Mbps – 108 MBps)
802.11b	DBPSK(1Mbps), DQPSK(2Mbps), CCK(5.5/11Mbps)
802.11g	OFDM (6M - 54Mbps)
Antennas Type:	
802.11a	PCB Printed Type (WNC Corp. Model:CRP-1)
802.11b/g	Dipole in Metal (Long-Chu Electronics Corp. Model:F1B-004321-93)
Antenna Connected:	
802.11a	Connected to the RF connector of the WLAN module
802.11b/g	Connected to the reverse SMA connector of the EUT
Antenna Peak Gain:	
802.11a	3.44dBi
802.11b/g	2dBi
WLAN Module:	WNC (Model: CM9)
Power Type of :	5V DC from AC Adapter
RJ-45 LAN Port:	4-Port 8-pin
RJ-45 WAN Port:	1-Port 8-pin
RJ-45 DMZ Port:	1-Port 8-pin
AC-DC Adapter:	LB (Model:M1-12S05)

The EUT is a 802.11b, 802.11g, 802.11a WLAN router, contains a WLAN module for RF communicating. The Channel and operating frequency are listed below:

(1) 11b/11g:

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		

(2) 11a Normal Mode /Turbo Mode:

(Normal Mode)		(Turbo Mode)	
Channel	Frequency(MHz)	Channel	Frequency(MHz)
06	5280	03	5290
07	5300	04	5760
08	5320	05	5800
09	5745		
10	5765		
11	5785		
12	5805		

2.1 General Test Conditions

1. During the test, the EUT was set in continuously transmitting mode with a duty cycle of 100%.
2. The channel 1, 6, 11 of of 802.11b/g of EUT were all tested.
3. The channel 1, 4, 5, 8, 9, 12 of of 802.11a normal mode of EUT were all tested. The channel 1, 2, 3, 4, 5 of of 802.11a turbol mode of EUT were all tested.

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

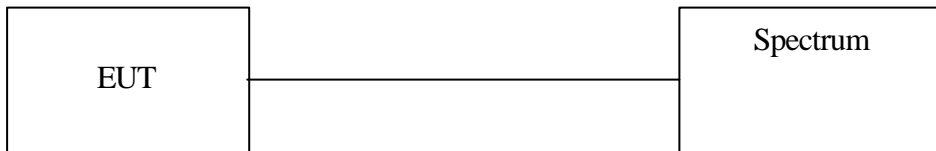
3.1 Applied Standards

FCC PART 1.1307, 1.1310, 2.1091, 2.1093 RF EXPOSURE

3.2 Test Procedure

1. The Transmitter output of EUT was connected to the peak power analyzer through an attenuator.

3.3 Test Setup



3.4 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)

802.11b:

Antenna Manufacturer	Antenna Type	Gain (dBi)	Numeric Gain	Frequency (MHz)	Power (dBm)	Power (mW)	Separation Distance (cm)	Power Density (W/m ²)	Power Density (mW/cm ²)
Long-Chu Electronics Corp. Model:F1B-004321-93)	Dipole	2	1.584	2412	22.256	168.11	20	0.529	0.0529
				2437	22.662	184.59	20	0.581	0.0581
				2462	22.506	178.07	20	0.561	0.0561

802.11g:

Antenna Manufacturer	Antenna Type	Gain (dBi)	Numeric Gain	Frequency (MHz)	Power (dBm)	Power (mW)	Separation Distance (cm)	Power Density (W/m ²)	Power Density (mW/cm ²)
Long-Chu Electronics Corp. Model:F1B-004321-93)	Dipole	2	1.584	2412	22.568	180.63	20	0.569	0.0569
				2437	22.568	180.63	20	0.569	0.0569
				2462	22.256	168.11	20	0.529	0.0529

802.11a:

Antenna Manufacturer	Antenna Type	Gain (dBi)	Numeric Gain	Frequency (MHz)	Power (dBm)	Power (mW)	Separation Distance (cm)	Power Density (W/m ²)	Power Density (mW/cm ²)
WNC Corp. Model:CRP-1	PCB Printed Type	3.44	2.208	5180 (Normal Mode)	14.575	28.67	20	0.126	0.0126
				5240 (Normal Mode)	15.106	32.40	20	0.142	0.0142
				5260 (Normal Mode)	22.262	168.35	20	0.739	0.0739
				5320 (Normal Mode)	22.106	162.40	20	0.713	0.0713
				5745 (Normal Mode)	20.262	106.21	20	0.466	0.0466
				5805 (Normal Mode)	21.387	137.62	20	0.604	0.0604
				5210 (Turbo Mode)	16.668	46.43	20	0.204	0.0204
				5250 (Turbo Mode)	16.418	43.83	20	0.192	0.0192
				5290 (Turbo Mode)	20.043	100.99	20	0.443	0.0443
				5760 (Turbo Mode)	20.262	106.21	20	0.466	0.0466
				5800 (Turbo Mode)	16.543	45.11	20	0.198	0.0198

WARNING:

It is the responsibility of the installer to ensure that the EUT is a WLAN router with a WLAN module and a specified antenna inside. Only the specified antenna 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 Long-Chu Electronics Corp. Dipole antenna Model:F1B-004321-93 and WNC PCB Printed Type antenna Model:CRP-1 in a fixed-mount configuration, installed with a maximum of 22.662 and 22.262dBm of radiated output power during normal operation

4. Appendix : Test Equipment

4.1 Test Equipment List

Equipment Name: Spectrum Analyzer 08
Brand: Advantest
Model: R3132
S/N: 111000867
Last Cal. Date: 11/21/2003
Next Cal. Date: 11/21/2004

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