

FCC Part 15 EMI TEST REPORT of

E.U.T. : Wireless LAN Access Point
MODEL : WA211P
FCC ID. : PQP-WA211P-X

for

APPLICANT : PRIME ELECTRONICS & SATELLITICS INC.
ADDRESS : 69, Tung Yuan Rd., Chung Li Industrial Park,
Chung Li City, Tao Yuan, Taiwan, R.O.C.

Test Performed by

ELECTRONICS TESTING CENTER, TAIWAN
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Report Number : ET90S-11-041

TEST REPORT CERTIFICATION

Applicant : PRIME ELECTRONICS & SATELLITICS INC.
69, Tung Yuan Rd., Chung Li Industrial Park, Chung Li City, Tao Yuan,
Taiwan, R.O.C.

Manufacturer : PRIME ELECTRONICS & SATELLITICS INC.
69, Tung Yuan Rd., Chung Li Industrial Park, Chung Li City, Tao Yuan,
Taiwan, R.O.C.

Description of EUT :

- a) Type of EUT : Wireless LAN Access Point
- b) Trade Name : PESI
- c) Model No. : WA211P
- d) Serial No. : 1000WA211P
- e) Power Supply : Adaptor:I/P:100~240Vac 47~63Hz;
O/P:5Vdc, 2.0A, 10W

Regulation Applied : FCC Rules and Regulations Part 15 Subpart B & C (1999)

I HEREBY CERTIFY THAT: The data shown in this report were made in accordance with the procedures given in ANSI C63.4, and the energy emitted by the device was founded to be within the limits applicable. I assume full responsibility for accuracy and completeness of these data.

Note: 1. The result of the testing report relate only to the item tested.

2. The testing report shall not be reproduced expect in full, without the written approval of ETC.

Issued Date : Jan. 31, 2002

Test Engineer : 

Approve & Authorized Signer :



Win-Po Tsai, Manager, NVLAP Signatory
EMC Dept. I of ELECTRONICS
TESTING CENTER, TAIWAN

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1 GENERAL INFORMATION

1.1 Product Description

a) Type of EUT	: Wireless LAN Access Point
b) Trade Name	: PESI
c) Model No.	: WA211P
d) Serial No.	: 1000WA211P
e) Power Supply	: Adaptor:I/P:100~240Vac 47~63Hz; O/P:5Vdc, 2.0A, 10W

1.2 Characteristics of Device

The PESI-AP (IEEE 802.11b, 11Mbps WLAN Access Point) is an internetworking device for interconnecting a WLAN with other WLANs and legacy LANs, which provides a 2.4 GHz RF network and bridges to an Ethernet backbone. The Access Point is the wireless equivalent of a LAN hub. It receives, buffers and transmits data between the WLAN and the wired network, supporting a group of wireless user devices. An Access Point is typically connected with the wired backbone through a standard Ethernet cable, and communicates with wireless devices by means of an antenna. The Access Point, or the antenna connected to it, is generally mounted high on a wall or on the ceiling. Like the cells in a cellular phone network. It feature:

- Highly Efficient Dipole Antennas Provide Extensive Range of Operation
- Auto Fall-Back Data Rate for Long-Distance Communication and Noisy Environments
- High-Speed Data Transmitter Rate Up to 11 Mbps
- Interoperable with IEEE 802.11b (DSSS) 2.4GHz-Compliant Equipment
- Features Roaming, Best Access Point Selection, Load Balancing, and Network Traffic Filtering
- 40-Bit or 128-Bit (optional) Wired Equivalent Privacy
- Free Software Driver Upgrades

1.3 Test Methodology

The Wireless LAN Access Point designed with a transmitting method of direct sequence spread spectrum is for local area network operation, which operates at 2.4 GHz ISM band and data rate up to 11 Mbps. The rated output power is 20.8 dBm (120.2 mW).

The Maximum Permissible Exposure (MPE) was performed according to the procedures illustrated in IEEE C95.1-1991.

1.4 Test Facility

The open area test site and conducted measurement facility used to collect the radiated data is located on the roof top of Building at No.34, Lin 5, Ding Fu Tsun, Linkou Hsiang, Taipei Hsien, Taiwan, R.O.C.

This site has been fully described in a report submitted to the FCC, and accepted in a letter dated Feb. 10, 2000.

2 PROVISIONS APPLICABLE

2.1 Definition

MPE in Occupational / Controlled Environments:

Persons are exposed as a consequence of their employment provided those persons are fully aware of the potential for exposure and can exercise control over their exposure. Also apply to a individual is transient through a location where occupational / controlled limits apply provided he or she is made aware of the potential for exposure.

MPE in General Population / Uncontrolled Environments:

General population / Uncontrolled exposure apply in situation in which the general public may be exposed, or in which persons that are exposed as a consequence of their employment may not be fully aware of the potential for exposure or cannot exercise control over their exposure.

2.2 Relative Requirement for Compliance

(1) MPE for Controlled Environments

According to section 1.1310 of FCC 47 CFR Part 1, MPE Limits for controlled environment are as following:

Frequency Range (MHz)	Electric Field Strength (V/m)	Magnetic Field Strength (A/m)	Power Density (mW/cm ²)	Averaging Time (minutes)
0.3-3.0	614	1.63	*100	6
3-30	1842/f	4.89/f	*900/f ²	6
30-300	61.4	0.163	1.0	6
300-1500	-----	-----	f/300	6
1500-100,000	-----	-----	5.0	6

(2) MPE for Uncontrolled Environments

According to section 1.1310 of FCC 47 CFR Part 1, MPE Limits for uncontrolled environment are as following:

Frequency Range (MHz)	Electric Field Strength (V/m)	Magnetic Field Strength (A/m)	Power Density (mW/cm ²)	Averaging Time (minutes)
0.3-3.0	614	1.63	*100	30
3-30	1842/f	4.89/f	*180/f ²	30
30-300	27.5	0.073	0.2	30
300-1500	-----	-----	f/1500	30
1500-100,000	-----	-----	1.0	30

f = frequency in MHz

* = Plane-wave equivalent power density

3. SYSTEM TEST CONFIGURATION

3.1 Justification

The system was configured for testing in a typical fashion, as a customer would normally use it. The MPE measurement was performed under the setting of maximum RF transmitting power and maximum transmission data rate of 11 Mbps. And measured on lowest, middle, and highest frequencies to demonstrate the whole used band is complied with the requirement. Further, measurement was made on every possible azimuth around the transmitting structure. Therefore, we can make sure that the MPE testing was performed under the worst case.

3.2 Devices for Tested System

Device	Manufacture	Model / FCC ID.	Cable Description
Wireless LAN Access Point *	PRIME ELECTRONICS & SATELLITICS INC.	WA211P PQP-WA211P-X	1.9m, Unshielded/Adaptor (VDE/DSA-0101F-05A) 1.2m, USB cable 1.7m, LAN cable
Notebook PC	ASUS	L7300	3.5m, Unshielded/Adaptor I/P:100~240VAC O/P:19VDC, 2.64A (Delta/ADP-50SB)

Remark “*” means equipment under test.

4 Maximum Permissible Exposure Measurement

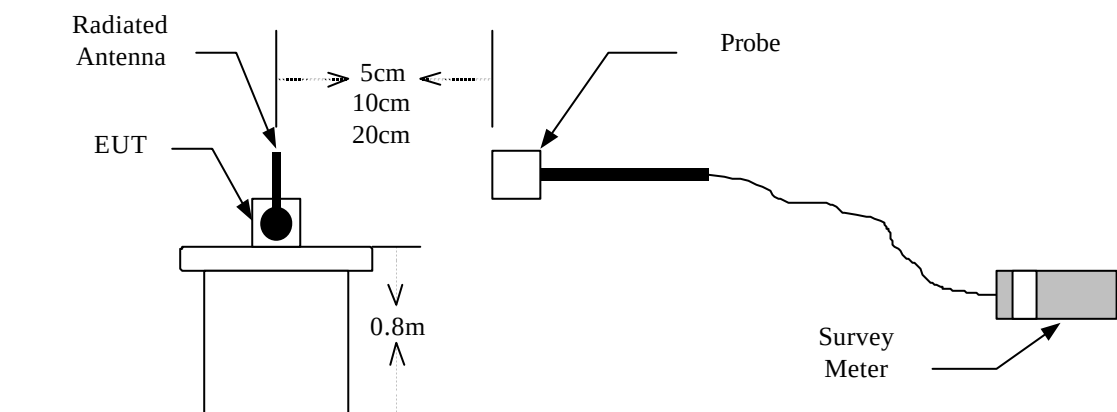
4.1 Applicable Standard

For this intentional radiator is used with any possible people, therefore the **Uncontrolled Environment Condition** is applied. And the MPE requirement is as descibed in section 2.2 of this test report.

4.2 Measurement Procedure

- (1) Set up the device under test (DUT) as its normal using configuration. Please see figure 1.
- (2) Calibrate the probe system so that the meter displays zero, and then power on the DUT.
- (3) Scan the antenna of DUT with a proper spacer of 5 cm in vertical axis and keep vertical scanning around the antenna, and pick up the maximum data with Max. Hold function.
- (4) Repeat step (3) by changing the spacer to 10 cm and then 20 cm till the field from DUT is too weak to be measured.
- (5) Record the maximum value appeared.

Figure 1 : Measurement configuration



4.3 Measurement Instrument

The following instrument are used for radiated emissions measurement :

Equipment	Manufacturer	Model No.	Next Cal. Due
Survey Meter	Narda	8712	Jan. 30, 2002
Probe	Narda	8721D	Jan. 30, 2002

4.4 Power Density Data

Operation Mode : Maximum Data Transmitting Rate

Transmitting Frequency : 2400 to 2483.5 MHz

Rated Maximum Output Power : 16 dBm

Measured Output Peak Power : 20.8dBm @ CH 01, 20.5dBm @ CH 06;
19.6 dBm @ CH 11

Test Date : Jan. 28, 2002

Temperature : 15 °C

Humidity : 70%

Measured Frequency MHz	Measured @ 5cm mW/cm ²	Measured @ 10cm mW/cm ²	Measured @ 15cm mW/cm ²	Measured @ 20cm mW/cm ²	Probe Factor	Maximum Result @5cm mW/ cm ²	MPE Limit mW/cm ²
CH 01	0.070	0.050	0.043	0.04	0.82	0.0574	1.0
CH 06	0.066	0.050	0.044	0.04	0.82	0.0541	1.0
CH 11	0.072	0.055	0.045	0.04	0.82	0.0590	1.0

Note :

1. Remark "---" means that the emission level is too low to be measured (the precise accuracy of the measurement system is 0.01 mW/ cm²).
2. Value 0.82 is a corrected factor of measurement system.
3. Result = Value Measured X Corrected Factor.
4. The measurement was performed under the condition of fixed the emission frequency to get the most extreme MPE.