

## *Measurement of MPE*

### **1. Foreword**

In adopt with the Human Exposure IEEE C95.1, and according to the FCC 1.1310. The *Maximum Permissible Exposure (MPE)* is obligated to measure in order to prove the safety of radiation harmfulness to the human body.

The *Gain* of the antenna used is measured in an *Anechoic chamber*. The *maximum total power to the antenna* is to be recorded. By adopting the *Friis Transmission Formula* and the *power gain of the antenna*, we can find the distance right away from the product, where the limit of the MPE is.

### **2. Description of EUT**

<b>Granted FCC ID</b>	:	PB6-02102
<b>Product name</b>	:	Wireless LAN Access Point
<b>Model name</b>	:	A14
<b>Classification</b>	:	Mobile Device (i) Under normal use condition, the antenna is at least 20cm away from the user; (ii) Warning statement for keeping 20cm separation distance and the prohibition of operating next to the person has been printed in the user's manual
<b>Frequency Range</b>	:	2.412 GHz ~ 2.462GHz
<b>Supported Channel</b>	:	11 Channel
<b>Modulation Skill</b>	:	DBPSK, DQPSK, CCK
<b>Power Type</b>	:	By the Power Adaptor Mfg.: Touch Electronic Co., Ltd. M/N: SA070507 I/P: 100-240Vac, 50-60Hz; 0.4A O/P: 5Vdc, 10W
<b>Power Cable</b>	:	180cm long, non-shielded, no ferrite core

**3. Limits for Maximum Permissible Exposure (MPE)**

Frequency Range (MHz)	Electric Field Strength (V/m)	Magnetic Field Strength (H) (A/m)	Power Density (S) (mW/cm <sup>2</sup> )	Averaging Time  E  <sup>2</sup> ,  H  <sup>2</sup> or S (minutes)
<b>(A) Limits for Occupational/Controlled Exposure</b>				
0.3-3.0	614	1.63	100	6
3.0-30	1842/f	4.89/f	900/f <sup>2</sup>	6
30-300	61.4	0.163	1.0	6
300-1500	--	--	f/300	6
1500-100,000	--	--	5	6
<b>(B) Limits for General Population/Uncontrolled Exposure</b>				
0.3-1.34	614	1.63	100	30
1.34-30	824/f	2.19/f	180/f <sup>2</sup>	30
30-300	27.5	0.073	0.2	30
300-1500	--	--	f/1500	30
1500-100,000	--	--	1.0	30

[The EUT is tested in transmit and receive modes and in the first, middle and the last channel separately. The following shows only our observation have the greatest emissions.]

According to OET BULLETIN 56 Fourth Edition / August 1999, Equation for Predicting RF Fields:

$$\text{Friis Transmission Formula: } S = \frac{PG}{4pR^2} = \frac{119.399 \times 1.585}{4p(20)^2} = 3.765 \times 10^{-2} \text{ mW / cm}^2$$

$$\text{Estimated safe separation: } R = \sqrt{\frac{PG}{4p}} = \sqrt{\frac{119.399 \times 1.585}{4p}} = 3.88 \text{ cm}$$

Remarks: "The safe estimated separation that the user must maintain from the antenna is at least 3.88cm."

Where: S = power density (in appropriate units, e.g. mW/cm<sup>2</sup>)

P = power input to the antenna (in appropriate units, e.g., mW)

G = power gain of the antenna in the direction of interest relative to an isotropic radiator

R = distance to the center of radiation of the antenna (appropriate units, e.g., cm)

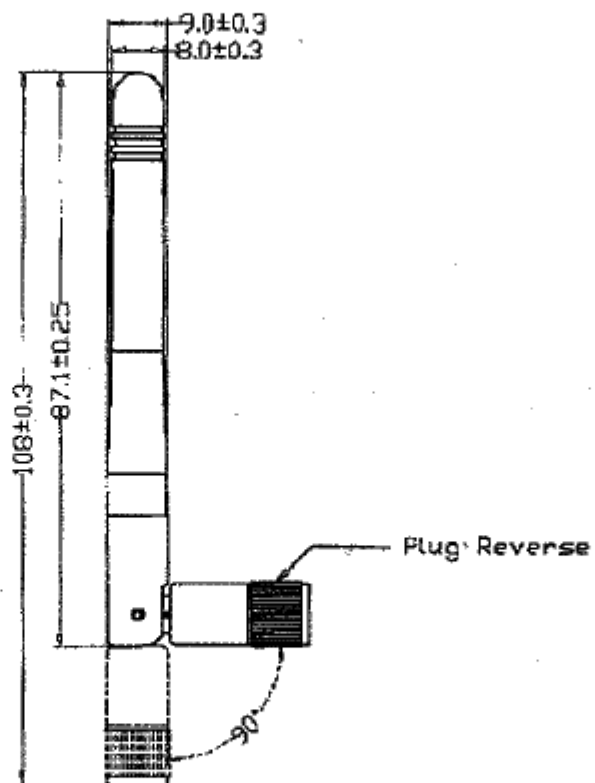
The Numeric gain G of antenna with a gain specified in dB is determined by:

$$G = \text{Log}^{-1} (\text{dB antenna gain} / 10)$$

$$G = \text{Log}^{-1} (2 / 10) = 1.585$$

THE DIMENSIONS OF THIS DOCUMENT ARE UNPRECEDENT TO ACRON. CHANGES IN DIMENSIONS AND SHALL NOT BE BASED ON CHANGES IN THIS PART PURPOSES OTHER THAN DESCRIBED BY THE WRITTEN APPROVAL OF ACRON.

REV		BY	DESCRIPTION	DATE
1				



REV	BY	DATE	DESCRIPTION
1			

PART LIST	
1	欣格科技股份有限公司 Antenniques Corp. Ltd.
	2.4GHz Dipole Antenna SMA Plug Reverse
PART NO.	MCS-003-134-01
DRAWING NO.	WR-R-A00008-A1

**METRIC**

UNLESS OTHERWISE SPECIFIED  
ALL DIMENSIONS ARE IN MILLIMETERS  
UNLESS OTHERWISE SPECIFIED  
TOLERANCES ARE AS FOLLOWS

0.1	0.2	0.5	1.0	2.0	5.0	10.0	20.0	50.0	100.0
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DO NOT SCALE DRAWING

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## TECHNICAL DATA

### ● Electrical Properties

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Frequency Range	: 2.4~2.5GHz
Impedance	: 50 Ohm nominal
VSWR	: $\leq 2.0$
Gain	: 2dBi
Radiation	: Omni
Polarization	: Vertical
Electrical Wave	: $\lambda/4$ Dipole

### ● Mechanical Properties

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Antenna Cover	: PU
Color	: Black
Operation Temperature	: $-20^{\circ}\text{C} \sim +60^{\circ}\text{C}$
Storage Temperature	: $-30^{\circ}\text{C} \sim +75^{\circ}\text{C}$