Measurement of Maximum Permissible Exposure

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

FCC ID	**:**	S9ZTEW430APB
Product name	**:**	802.11g Wireless Access Point
Classification	**:**	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
Frequency Range	**:**	2.412 GHz ~ 2.462GHz
Supported Channel	**:**	11 Channels
Modulation Skill	**:**	DBPSK, DQPSK, CCK, OFDM
Power Type	**:**	Powered by the adapter

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

Frequency Range (MHz)	Electric Field Strength (V/m)	Magnetic Filed Strength (H) (A/m)	Power Density (S) (mW/cm2)	Averaging Time $\|E\|^2$, $\|H\|^2$ or S (minutes)
(A) Limits for Occupational/Controlled Exposure				
0.3-3.0	614	1.63	100	6
3.0-30	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	6
(B) Limits for General Population/Uncontrolled Exposure				
0.3-1.34	614	1.63	100	30
1.34-30	824/f	2.19/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

[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:**

Friis Transmission Formula: $S = \frac{PG}{4pR^2} = \frac{100 \times 1.585}{4p(20)^2} = 0.0315 mW/cm^2$

Estimated safe separation: $R = \sqrt{\frac{PG}{4p}} = \sqrt{\frac{100 \times 1.585}{4p}} = 3.551 cm$

Remarks: "The safe estimated separation that the user must maintain from the antenna is at least 3.551 cm."

Where: S = *power density* (in appropriate units, e.g. mW/cm2)

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:

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

$G = \text{Log}^{-1}$ (2.0 / 10) = 1.585

Appendix

Antenna Specification

WHA YU INDUSTRIAL CO., LTD. (HEAD OFFICE)
TAI HWA ELECTRONIC CO., LTD.(CHINA)
SHANGHAI HUA YU ELECTRONIC CO., LTD.(CHINA
AEON TECH CO., LTD. (CHINA)

SPECIFICATION FOR APPROVAL

CUSTOMER: *友勁科技股份有限公司*

PART NAME: ***RF Antenna Assembly***

PART NO.: 11723B01*317*00 ***REVISION:***

W. Y. P/NO.: ***C056-510170-A*** ***REV.:*** ***X1***

	MANUFACTURER SIGNATURE	CUSTOMER SIGNATURE
APPROVED BY :	Winston	
DATE :	2004/7/6	

WHA YU GROUP

WHA YU INDUSTRIAL CO., LTD.(HEAD OFFICE)
譁裕實業股份有限公司
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台 樺 電 業 制 品 廠
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HUA HONG INTERNATIONAL LTD.
華 弘 國 際 有 限 公 司
Rm.1103A,President Commercial Centre,608 Nathan Road,Mong Kok,Kowloon,Hong Kong
Tel: + 86-852-27712210
Fax: + 86-852-23843747

SHANGHAI HUA YU ELECTRONIC CO., LTD. (CHINA)
上 海 譁 裕 電 子 有 限 公 司
Address:3586,Wai Qing Song Road, Qing Pu County, Shanghai China
Tel: + 86-21-59741348 · + 86-21-59744101~4
Fax: + 86-21-59741347

SU ZHOU AEON TECH CO., LTD. (CHINA)
蘇 州 華 廣 電 通 有 限 公 司
Address:Limin North Road, LiLi Town,LiLi Industrial Park,LinHu Economic Zone
Wujiang City,Jiangsu Province,China
Tel: + 86-512-63627980
Fax: + 86-512-63627981

RF Antenna Cable Assembly

Specification

1. Electrical Properties :

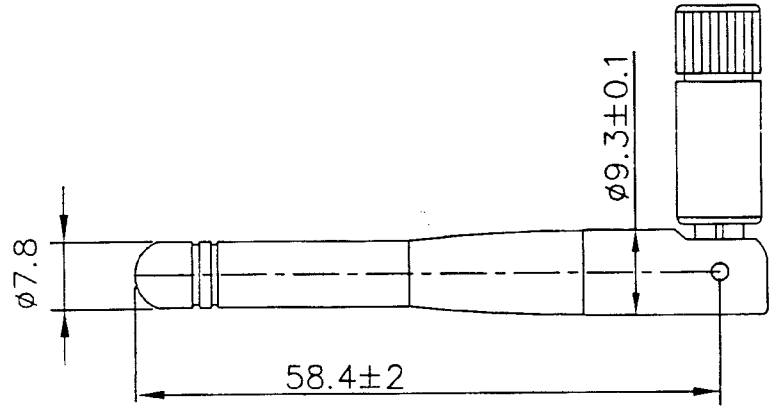
1.1 Frequency Rang..... 2.4GHz ~ 2.5GHz
1.2 Impedance ..... 50Ω Nominal
1.3 VSWR ..... 1.92 Max.
1.4 Return Loss..... -10dB Maximum
1.5 Electrical Wave..... 1/2 λ Diople
1.6 Gain..... 1.0 dBi
1.7 Admitted Power..... 1W

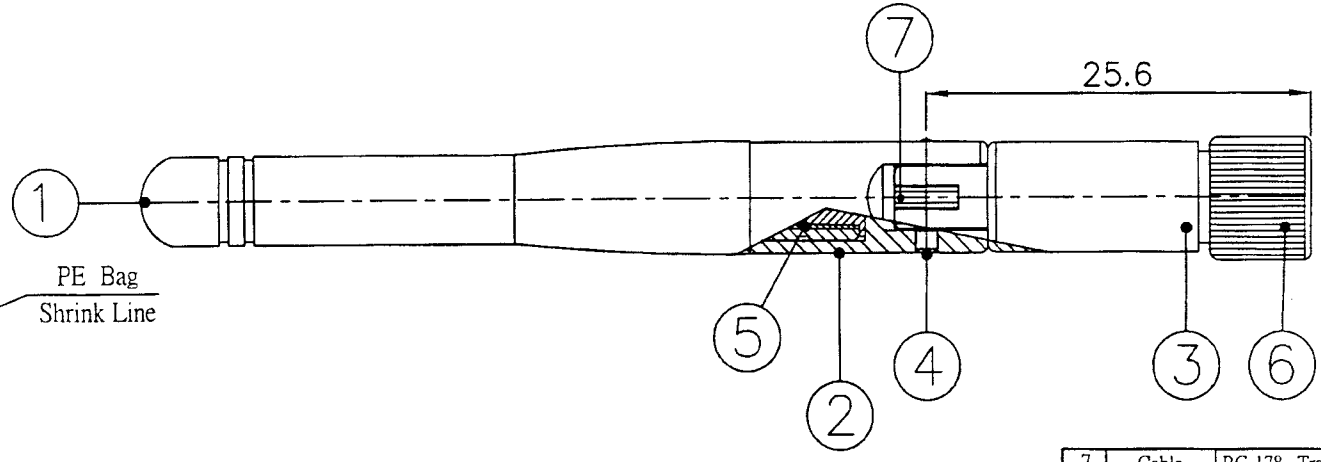
2. Physical Properties :

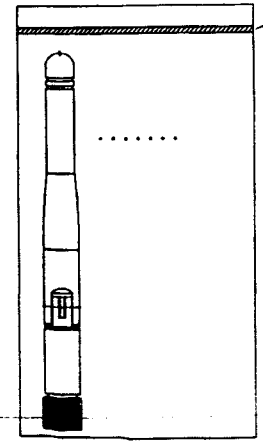
2.1 Cable..... RG-178 Coaxial Cable
2.2 Antenna Cover..... TPE
2.3 Antenna Base..... PC
2.4 Operating Temp. .....-20℃ ~ +65℃
2.5 Storage Temp. .....-30℃ ~ +75℃
2.6 Color .....Black
2.7 Connector .....SMA Plug Reverse

CG-

REV	DATE	DESCRIPTION
X1	07/06-2004	New Issue







Packing : 25 pcs/bag

NO	DESCRIPTION	QTY	REMARK
7	Cable	RG-178 . Translucent Brown ; 50 Ω	1	
6	Connector	SMA Straight Plug Reverse (Black)	1	
5	Ground Tube	Brass , Ni plated	1	
4	Rivet	Brass , Cr Plated (Black)	2	
3	Antenna Base	PC ; Color : Black	1	
2	Antenna Base	PC ; Color : Black	1	
1	Antenna Cover	TPE ; Color : Black	1	

CUSTOMER'S SINGATURE

XX.	±3.0
X.	±2.0
.X	±1.0
.XX	±0.5
.XXX	±0.1

APPROVED

CHECKED

DRAWING

CUSTOMER: 友勁科技股份有限公司

PART NO : **11723B01*317*00**

PARTNAME: 2.4G RF Antenna Assembly

W.Y P/NO : C056-510170-A

REV	UNIT	FILE :
X1	m/m	SHEET : 1/1

Wha Yu
INDUSTRIAL CO.,LTD.
譁裕實業股份有限公司