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

EUT	**:**	ASUS SpaceLink Wireless Home Gateway
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
Model No.	**:**	WL-500
Granted FCC ID	**:**	MSQWLHGWSWL500
Frequency Range	**:**	2.412 GHz ~ 2.462GHz
Antenna Kit	**:**	1 external dipole antenna
Supported Channel:		11 Channel
Modulation Skill	**:**	DBPSK, DQPSK, CCK
Data Cable	**:**	RJ45: Non-shielded, 10-meter, No ferrite bead
Power Type	**:**	AC to DC Switching Adapter
		Input: 100 ~ 240VAC, 50/60Hz, 0.3A
		Output: +5VDC, 2A
Applicant	**:**	ASUSTeK Computer Inc.
		4/F, 150 Li-Te Rd., Peitou, Taipei, Taiwan, R.O.C.

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: $S = \frac{PG}{4\pi R^2} = \frac{35.56 \times 1}{4\pi (20)^2} = 7.074 \times 10^{-3}\, mW/cm^2$

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

G = Log $^{-1}$ (0 / 10) = 1

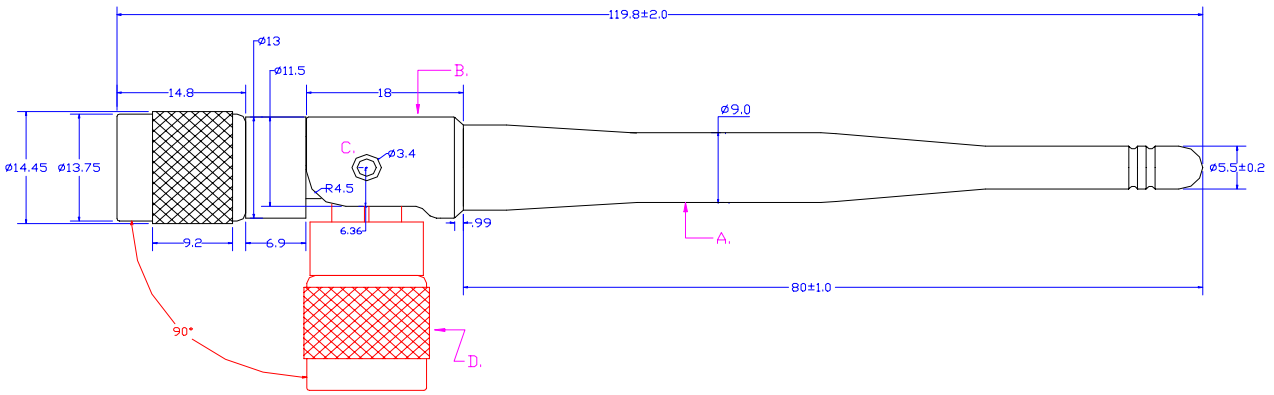
SPECIFICATION-ELECTRIC

*** PART NO. ： ASUS' S : 12-230002000**

FLN' S : 323-1000-120

- **CUSTOMER' S NAME： 華碩電腦股份有限公司 .**
- **PART NAME：STD 2.45GHz DIPOLE ANTENNA SWIVEL (WL500)**

1.	**WORKING FREQUENCE**	**2.400 – 2.500GHz**
2.	**ELECTRIC WAVE**	**1/2ë ; DIPOLE**
3.	**IMPEDANCE**	**50 Ohm , Nominal**
4.	**V.S.W.R.**	**2.0 MAX**
5.	**GAIN**	**O dBi .**
6.	**RADIATION**	**Omni**
7.	**POLARIZATION**	**VERTICAL**
8.	**POWER HANDLING**	**1 W MAX**



A. ANTENNA COVER ; TPE;

B. ANTENNA HOLDER ; POM;

C. SWIVEL SHAFT ; BRASS;

D. R/P TNC ;

福陸林企業有限公司 TEL:886-3-5256038 FLUORORINED PRODUCTS CO,,LTD FAX:886-3-5244079			UNIT: MM
TITLE: 2.45GHz ANTENNA-SWIVEL;TNC R/P			TOLERANCE: AS NOTE
DWC NO.: 323-1000-120			MATERIAL: SEE TABLE
DRAWN: Leon	ISSUED: HLANG	DATE: FEB.20.02'	FINISH: SEE TABLE