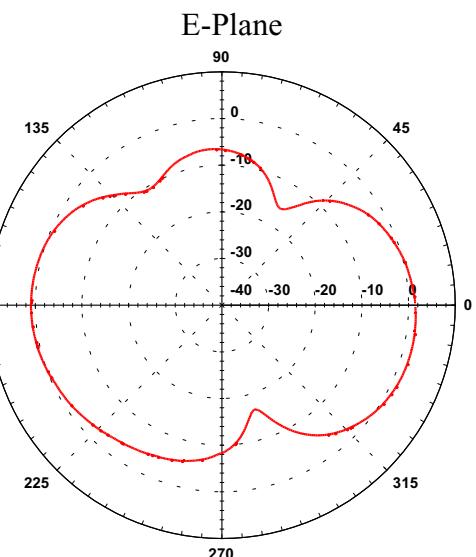
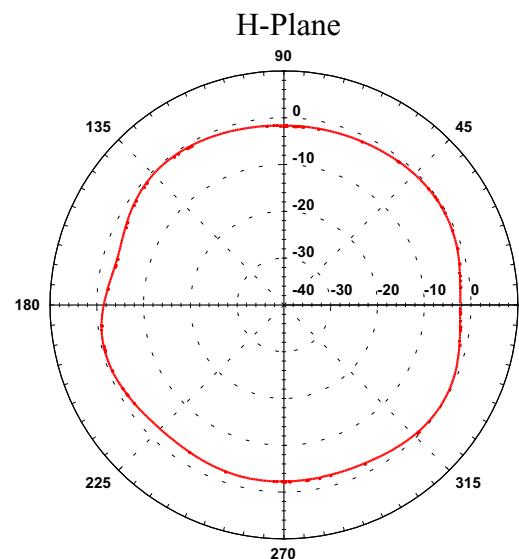
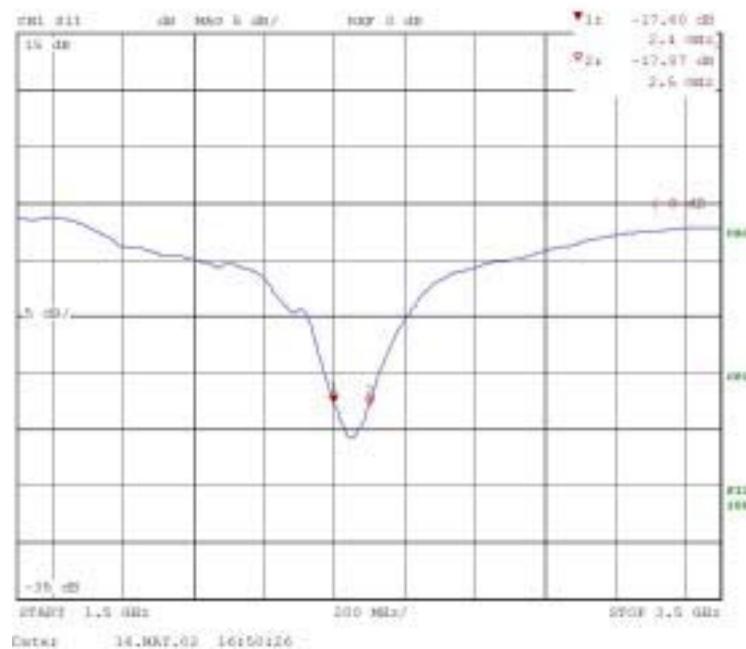


## USB External Antenna

Frequency Range : 2.4 ~2.5 GHz  
Nominal Impedance : 50 Ohm  
Return Loss : -10 dB  
Gain : 0 dBi  
Radiation : Omnidirection  
Polarization : Vertical  
Electronic Wave :  $1/2 \lambda$  Dipole

### Return Loss



## ***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** : WLAN USB Adapter

**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.** : 8800550 / 8800551

**Granted FCC ID** : L8G8800002

**Frequency Range** : 2.412 GHz ~ 2.462GHz

**Antenna Kit** : 1 external dipole antennas

**Supported Channel:** 11 Channel

**Modulation Skill** : DBPSK, DQPSK, CCK

**Power Type** : Powered by the USB port of the client's device

**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/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 Field**

$$\textbf{Friis Transmission Formula: } S = \frac{PG}{4\pi R^2} = \frac{14.19 \times 1}{4\pi(20)^2} = 0.002823 \text{ mW/cm}^2$$

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:

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

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