

**33.30T01.001**  
**33.30T02.001**

**SmartAnt Internal Antennas**

**for**

**8368 WebPad**

**SmartAnt R&D Department**  
**Pat Chen**  
(Oct. 12, 2001)

# Contents

## **1. Introduction**

1.1 Features

1.2 Application

## **2. Antenna Dimension & Placement**

2.1 Dimension & structure of antenna

2.2 Antenna placement

## **3. Product Specification**

3.1 Electrical Specification

3.2 Environmental Specification

## **4. Antenna Test Report**

4.1 Test Equipments & Methods

4.1.1 Test Equipments

4.1.2 Test Methods

4.2 VSWR Test

4.3 Patterns and Gain Test

# **1. Introduction**

## **1.1 Features**

### **Designed for IEEE 802.11b wireless-LAN.**

The antennas are designed in 2.4~2.5 GHz for ISM band use.

### **Special design for Embedded use.**

According the WP120 structure and available design size, the antennas are special designed for this environment.

### **Ultra-Fine Teflon coaxial cable and connector.**

HRS connector U.FL series

HRS Teflon coaxial cable =1.13 mm

### **Space diversity**

These two antennas are arrayed in different space to accomplish diversified radiation pattern.

## **1.2 Application**

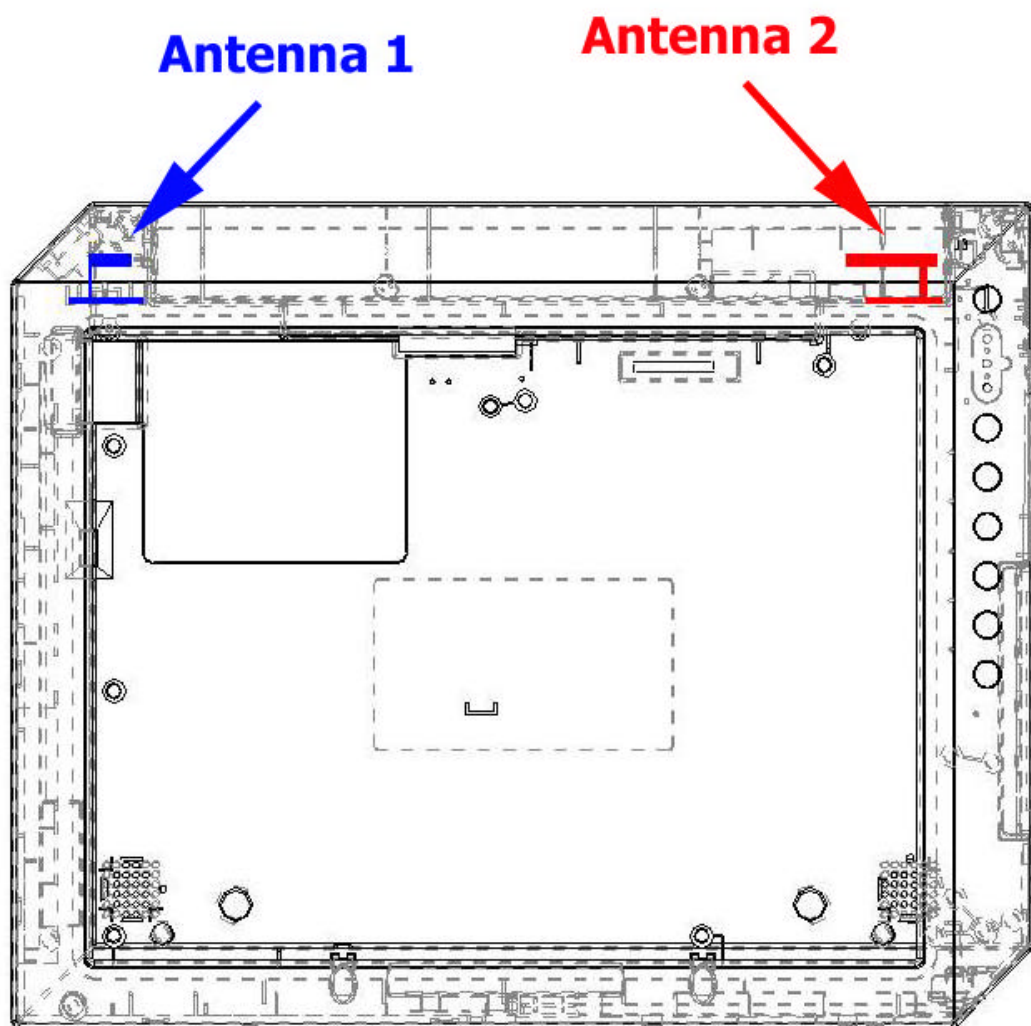
### **Use for WP120 system only**

The antennas are special design for WP120 Webpad.

## 2. Antenna Dimension & Placement

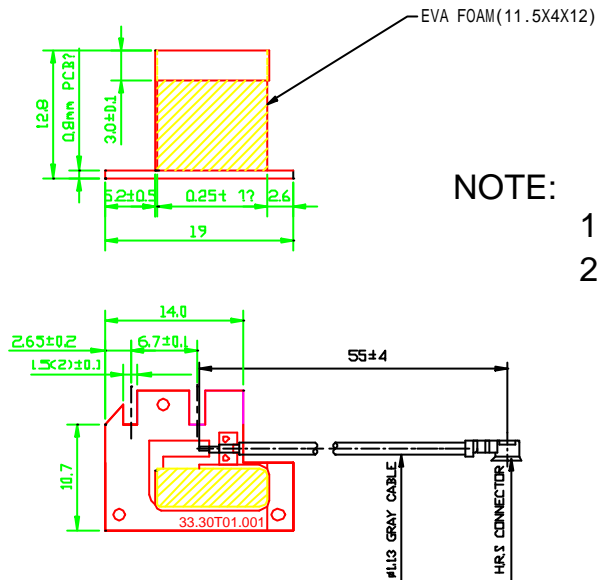
### 2.1 Placement

Antenna are set in the up side of WP120 , as below



## 2.2 Dimension & material

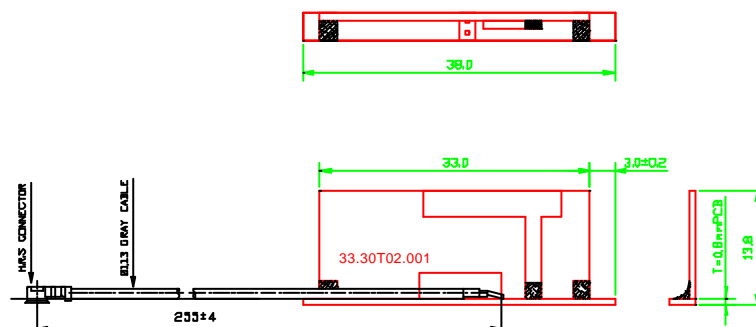
### Antenna 1 (left-side antenna)



NOTE:

1. 未標示公差為 ±0.3
2. 材質為 0.25mm 白銅

### Antenna 2 (right-side antenna)



NOTE:

1. 未標示公差為 ±0.3
2. ■: 表示為焊點
3. 材質為 0.8mm PCB板

## **3.Product Specification**

### **3.1 Electrical Specification**

Frequency	2.4GHz~2.5GHz
VSWR	2.0 max
Power	1W max
Input Impedance	50 ohm
Average Gain	>-5dBi

### **3.2 Environmental Specification**

Temperature	-10 <sup>0</sup> C~55 <sup>0</sup> C
Humidity	95

# **4. Antenna Test**

## **4.1 Test Equipments & Methods**

### **4.1.1 Equipments**

#### **Network Analyzer**

HP 8722D 30kHz ~ 40 GHz

#### **Standard gain horn**

EMCO Model 3115 Double Ridged Guide Antenna 1GHz ~ 18 GHz

#### **Anechoic Chamber**

##### **Test software**

Antcom NFH003 (5'x5'x5') Hybrid Near-field System

450 MHz – 40 GHz

7 axes scanner system

Planar, cylindrical, and spherical scanning  
measurement

##### **Size**

3.5 x 3.5 x 4.5 m<sup>3</sup>

##### **Specimens**

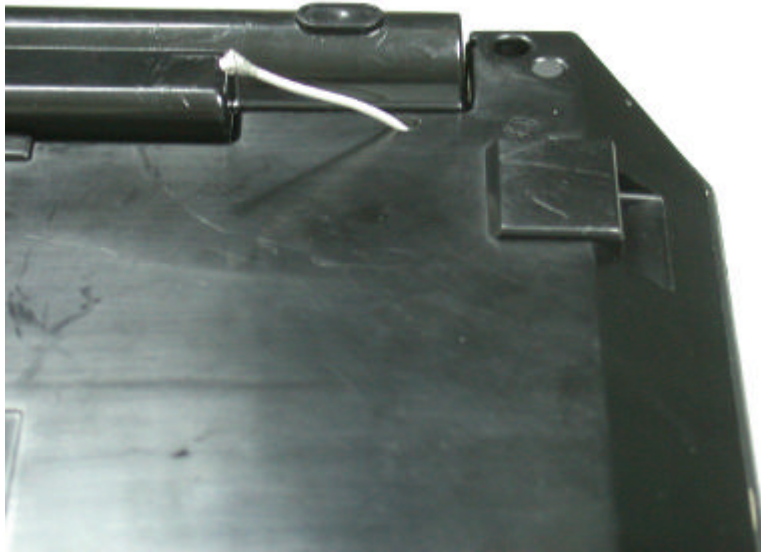
1. SmartAnt internal Antenna (Left Side Antenna)
2. SmartAnt internal Antenna (Right Side Antenna)

## 4.1.1 Test Methods

### Left Antenna

Pull the cable though back-side of WP120 when test execute.

As below figure



### Right Antenna

Pull the cable though Left-side of WP120 when test execute.

As below figure





## 4.2 VSWR Test

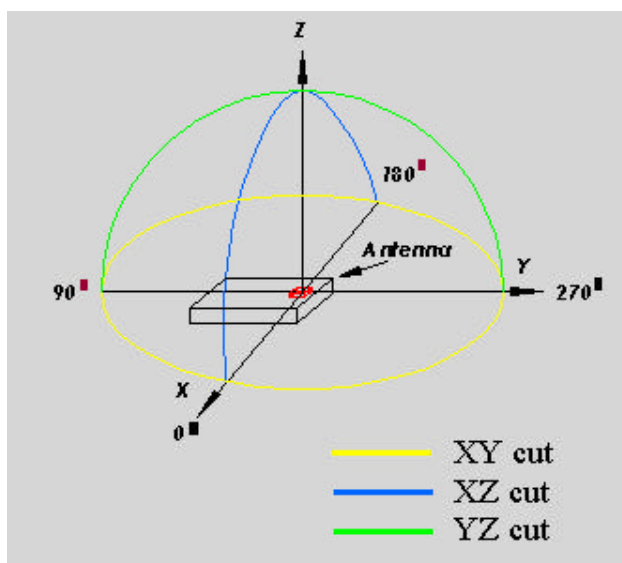
### Antenna 1 (Left Antenna)

Frequency	2.4GHz	2.45GHz	2.5GHz
VSWR	<b>1.07</b>	<b>1.13</b>	<b>1.27</b>

### Antenna 2 (Right Antenna)

Frequency	2.4GHz	2.45GHz	2.5GHz
VSWR	<b>1.17</b>	<b>1.41</b>	<b>1.47</b>

## 4.3 Pattern & Gain Test



### Test configuration

Far-field test with scan in two orthogonal cut (XY, YZ) as the figure.

# Average Gain Test

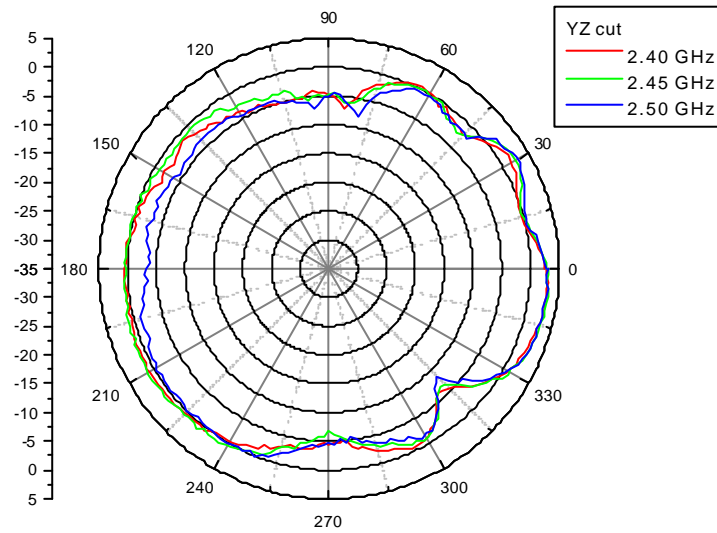
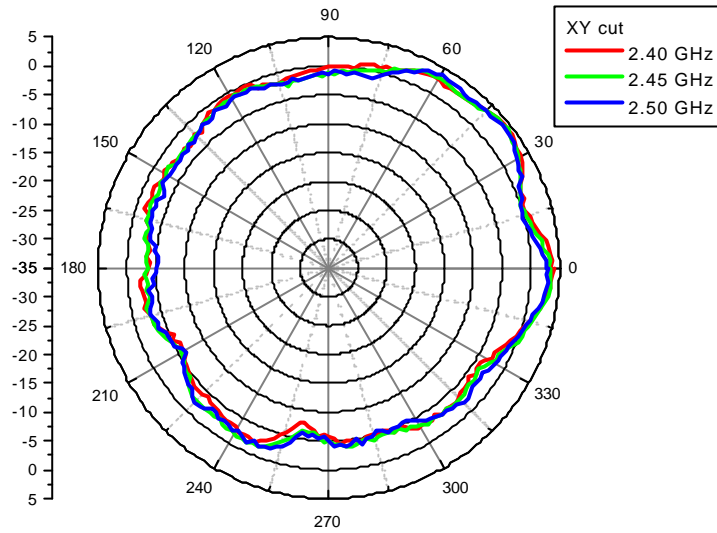
## Antenna 1

Antenna \ Frequency	2.4GHz	2.45GHz	2.5GHz
XY cut	<b>-0.56</b>	<b>-0.52</b>	<b>-0.75</b>
YZ cut	<b>-0.60</b>	<b>-0.28</b>	<b>-1.09</b>

## Antenna 2

Cut \ Frequency	2.4GHz	2.45GHz	2.5GHz
XY cut	<b>-3.53</b>	<b>-3.62</b>	<b>-3.96</b>
YZ cut	<b>-3.63</b>	<b>-3.47</b>	<b>-3.68</b>

# Radiation Pattern **Antenna 1 (left-side)**



# Radiation Pattern **Antenna 2 (right-side)**

