

# **INPAQ 2.4Hz (80cm)**

## **AP Antenna Report**

**Apr. 10<sup>th</sup>, 2003**

**Engineer Contact : Thomas Lai**

**INPAQ Technology Co., Ltd**  
2F, No38, Industry Park, Hsinchu,  
Taiwan 300, R.O.C.  
TEL:+886-3-563-2828ext103  
FAX:+886-3-563-6205  
<http://www.inpaq.com.tw>  
e-mail:[thomas@ms2.inpaq.com.tw](mailto:thomas@ms2.inpaq.com.tw)

# I. Purpose of the Measurement Report

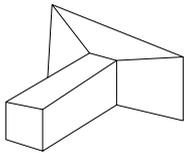
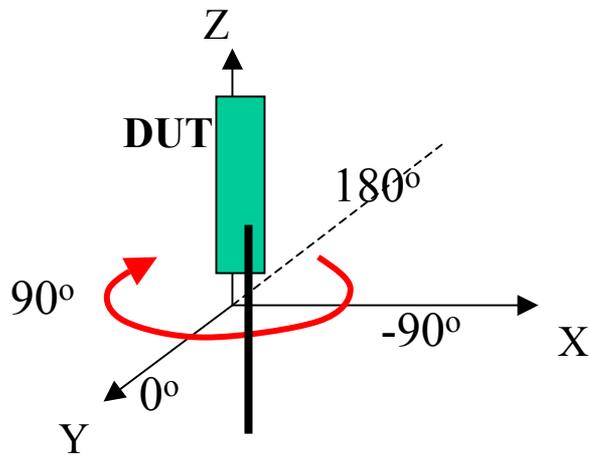
- A. The purpose of this measurement is used to account for the antenna performances of 2.4GHz AP antenna. These antenna performances include antenna bandwidth, VSWR, gain, and radiation patterns.

## II. Measurement Setup

- A. We measure the radiation pattern in the H(X-Y)E(Y-Z), shown in next page in the free space situation.
- B. The INPAQ's anechoic is a far-field measurement system with the size of 8m\*4m\*3.5m.
- C. We use the Agilent 8720 ES to measure the reflection coefficient and insertion coefficient.
- D. The probing antenna is the TDK 900MHz~18 GHz module ( [9120D horn antenna](#) ), which is placed in the one side of the chamber room. And the antenna under testing (AUT) is placed in the other side of the chamber. The distance between the probing antenna and the AUT is about 4.38m.
- E. The gain is calibrated by the standard gain antenna (BBHA 9120LFA 700MHz~6GHZ), and we do the gain calibration every Friday for sure that the gain is under acceptable region.

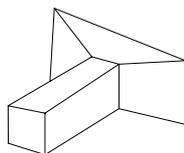
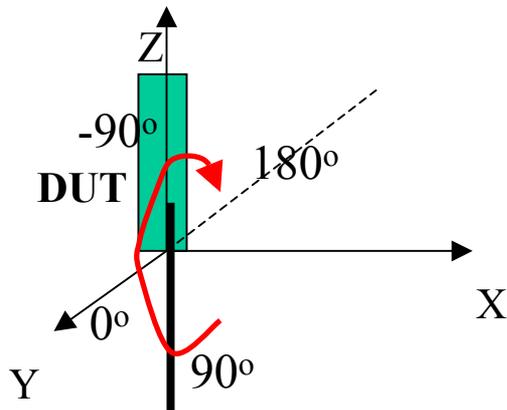
### III. Definition E-and H-Plane

H-plane



Standard antenna

E-Plane



Standard antenna

# IV. Gain List for 2.4GHz AP Antenna

H-plane-V	Max (dBi)	Min (dBi)	Average (dBi)
2400MHz	1.974	1.285	1.59
2450MHz	1.109	0.088	0.60
2483MHz	2.128	0.821	1.33
H-plane-H	Max (dBi)	Min (dBi)	Average (dBi)
2400MHz	-16.171	-28.043	-20.12
2450MHz	-16.911	-26.519	-20.81
2483MHz	-14.908	-31.258	-19.17
Total powerH	Max (dBi)	Min (dBi)	Average (dBi)
2400MHz	2.01	1.32	1.62
2450MHz	1.13	0.10	0.63
2483MHz	2.14	0.90	1.37

E-plane-H	Max (dBi)	Min (dBi)	Average (dBi)
2400MHz	-15.309	-29.266	-21.07
2450MHz	-16.891	-28.195	-21.05
2483MHz	-14.541	-32.063	-19.36
E-plane-V	Max (dBi)	Min (dBi)	Average (dBi)
2400MHz	2.122	-26.069	-1.23
2450MHz	1.881	-22.981	-1.92
2483MHz	2.39	-26.279	-1.18
Total powerE	Max (dBi)	Min (dBi)	Average (dBi)
2400MHz	2.16	-22.28	-1.18
2450MHz	1.92	-19.79	-1.87
2483MHz	2.45	-21.24	-1.12

**H-plane-H:** H-plane for Horizontal Polarization

**H-plane-V:** H-plane for Vertical Polarization

**Total Power H:** Power sum for Horizontal+  
Vertical Polarization

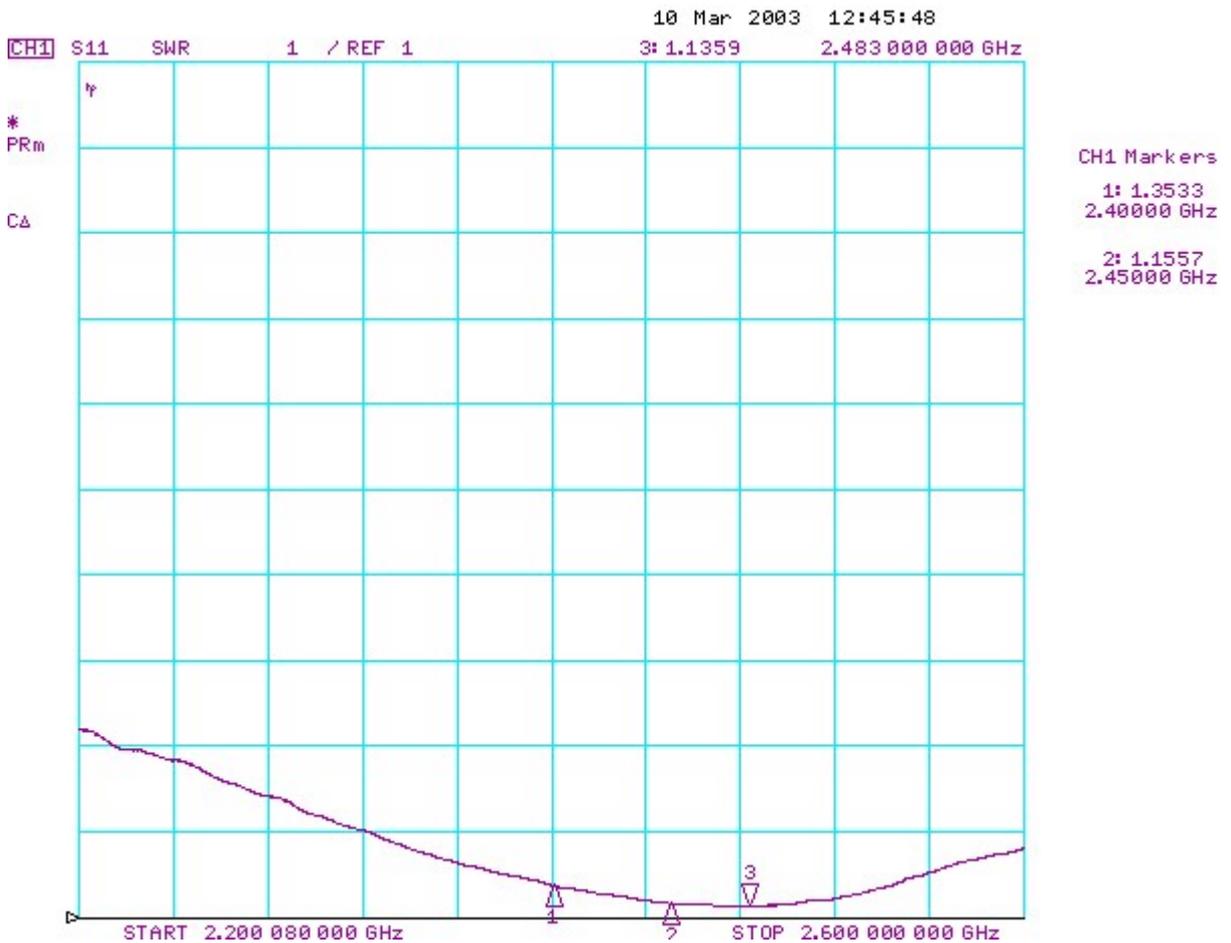
**E-plane-H:** E-plane for Horizontal Polarization

**E-plane-V:** E-plane for Vertical Polarization

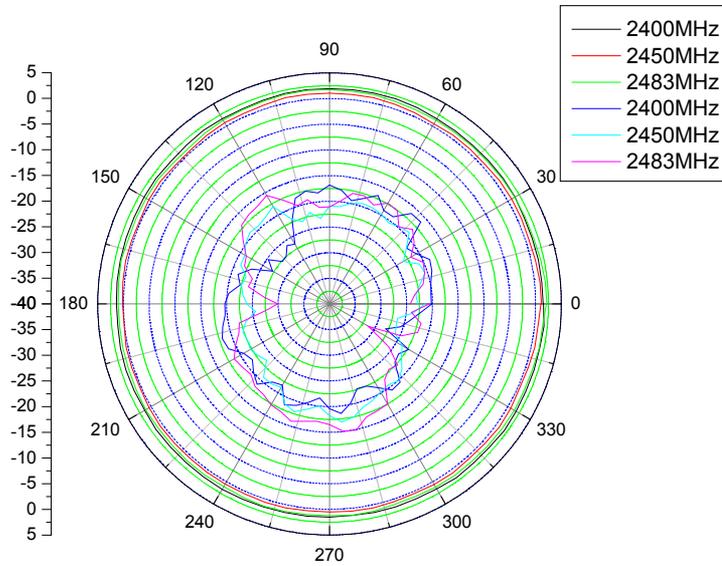
**Total Power E:** Power sum for Horizontal+  
Vertical Polarization

# V. Antenna VSWR and Patterns

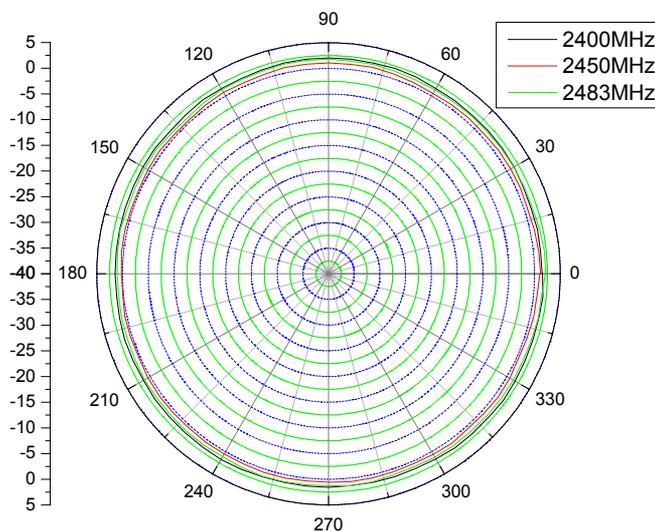
frequency	VSWR
2400MHz	1.353
2450MHz	1.155
2483MHz	1.135



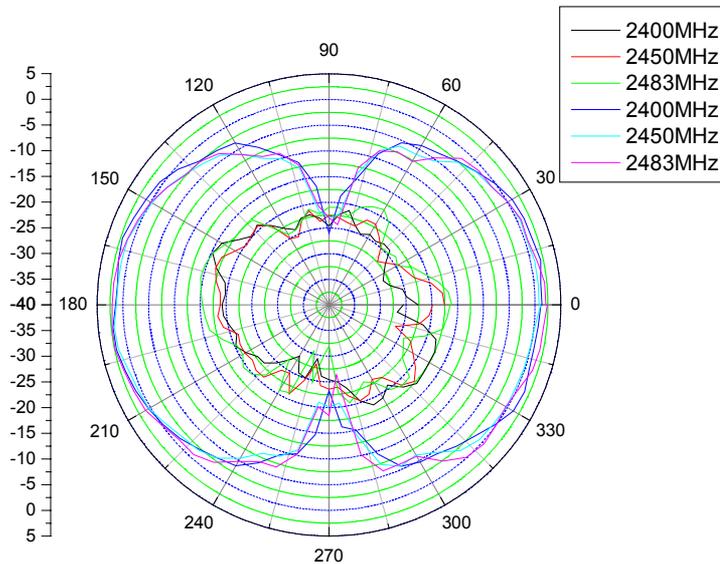
# H-plane Pattern (Vertical & Horizontal Polarization)



# H-plane Pattern (Total Power)



# E-plane Pattern (Vertical & Horizontal Polarization)



# E-plane Pattern (Total Power)

