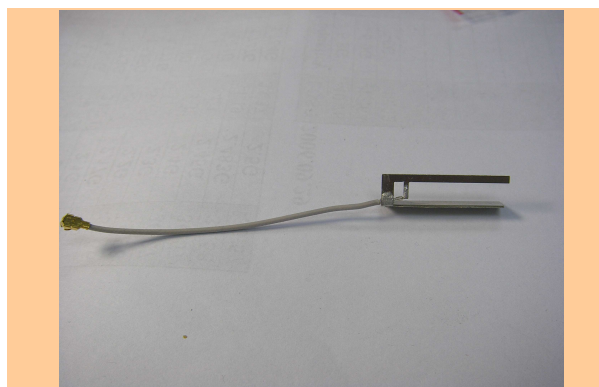




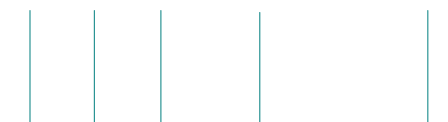
2.4G Antenna



Features:

1. 2.4G Band available

WTE93004



(1) (2) (3) (4) (5)

(1) System code :

(2) Area code :

(3) Product type :

(4) Customer code :

(5) Suffix :

DESIGNED BY : William

UNIT : mm

REV. : B0

Website: <http://www.wavefar.com.tw>

TITLE: WTE93004

Part No. 111010032

Document No. 111010032



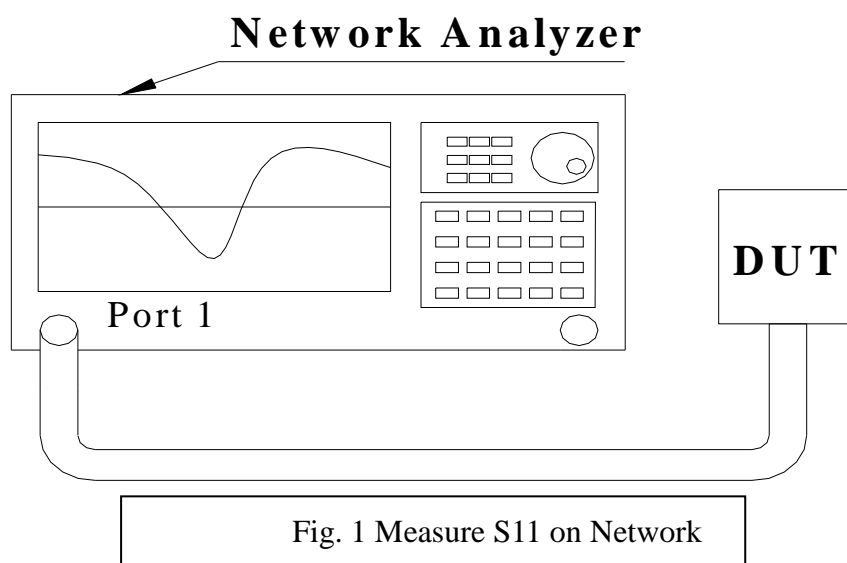
I. Measurement Setup:

(1) Reflection Coefficient Measurement :

a. Instrument : Network Analyzer

b. Setup :

- I. Calibrate the Network Analyzer by one port calibration using O.S.L calibration kits.
- II. Connect the antenna under test to the Network Analyzer.
- III. Measure the S11 (reflection coefficient) shown in Fig. 1.
- IV. Generally, the S11 is less than -10dB to ensure the 90% power into antenna and only less than 10% power back to system.



(2) Pattern Measurement:

- a. The anechoic chamber is a far-field measurement system with size of $7\text{m} \times 3\text{m} \times 3\text{m}$.
The quiet zone region is $30\text{cm} \times 30\text{cm} \times 30\text{cm}$ at center of the rotator.
- b. The probing antenna is the BBHA 9120 LFA 700MHz ~ 6GHz 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 4m.



- c. The gain is calibrated by the standard gain horn (BBHA 9120 LFA 700MHz ~ 6GHZ), and we do the gain calibration in each measurement.

$$G_{AUT} = G_{standard} + P_{AUT} - P_{standard}$$

G_{AUT} : Gain of AUT

$G_{standard}$: Gain of Standard Gain Antenna

P_{AUT} : Measured Power of AUT

$P_{standard}$: Measured Power of Standard Gain Antenna

- d. We use the HP 8753E for the pattern measure.
- e. The scanning method is CW wave with 6 degree by one step.
- f. We measure the radiation pattern in the free space situation at the lowest, middle and highest frequency for the H(X-Y), E1(Y-Z), and E2(X-Z) planes, which defined in figure next page.

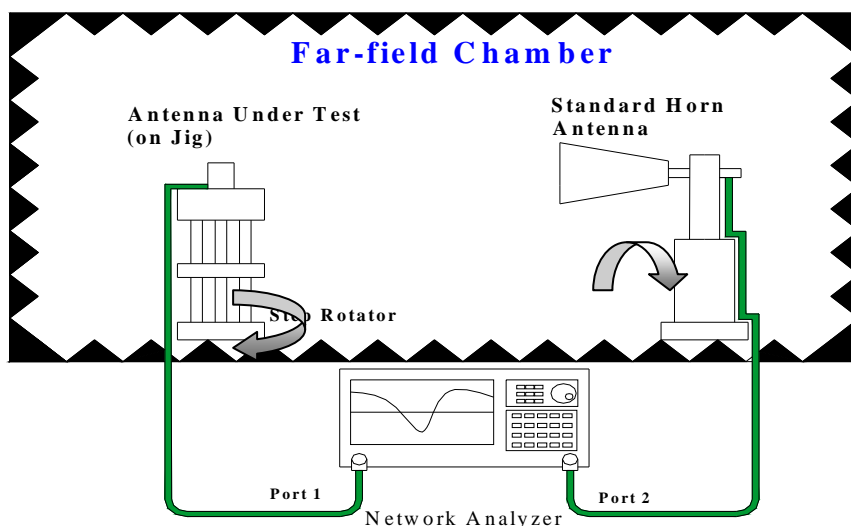


Fig. 2 Measure S21 on



(3) Pattern Definition:

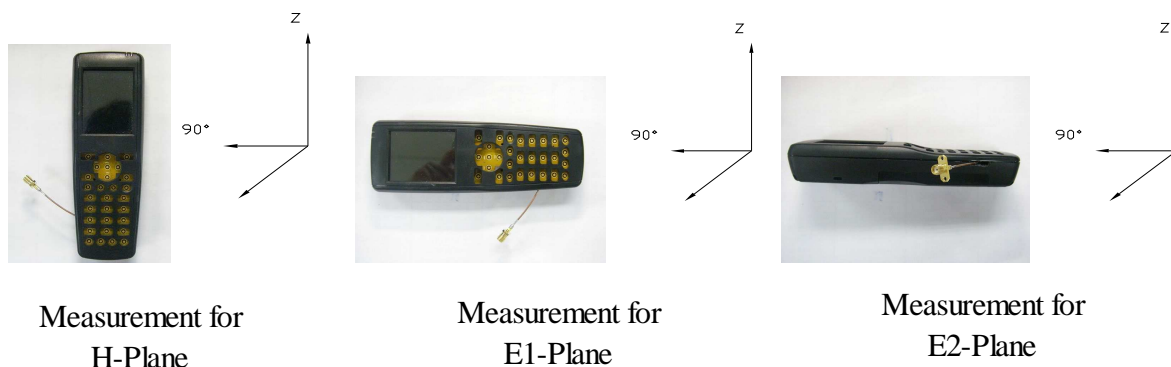


Fig. 3 Pattern Definition

Measuring technique is to connect antenna with DUT jig, then place DUT jig into chamber for later measurement.



II. Electrical Properties:

(1) Summary:

Item	Property
Impedance	50 (Typ.)
Radiation pattern	Vertical Polarization

Tab. 1 Summary Properties

(2) VSWR and Return Loss:

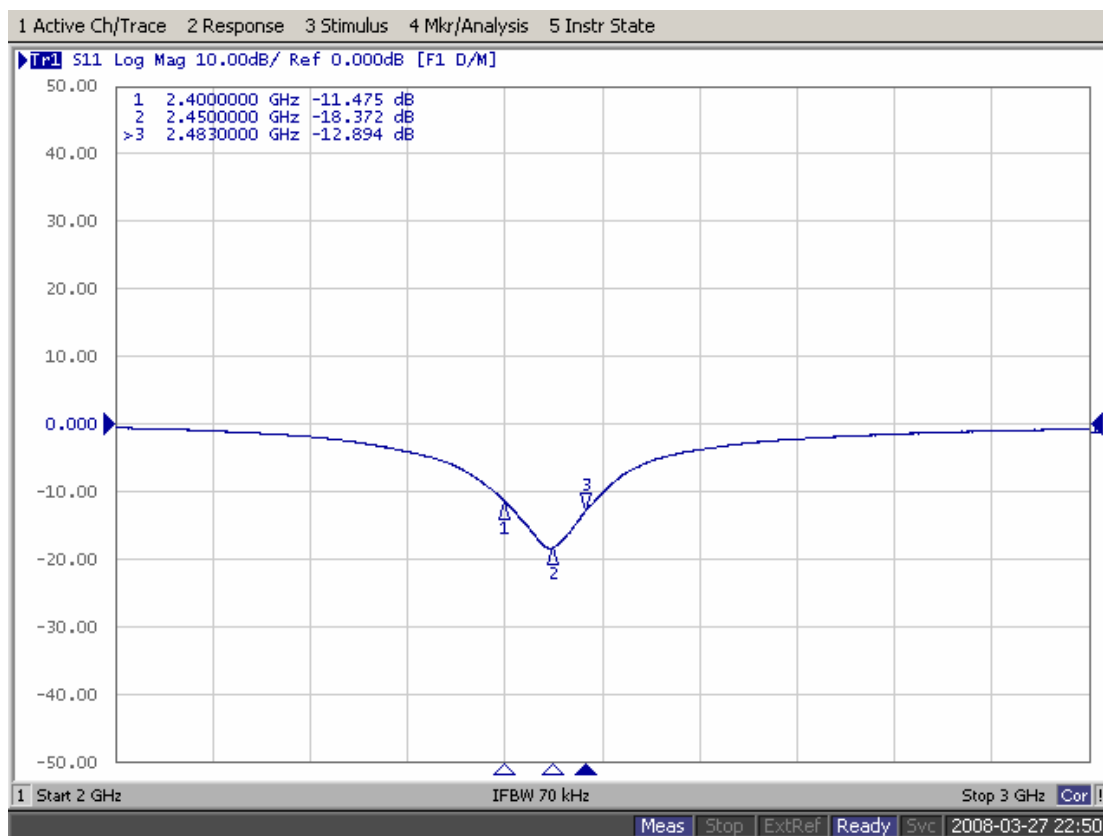


Fig. 4 Return Loss

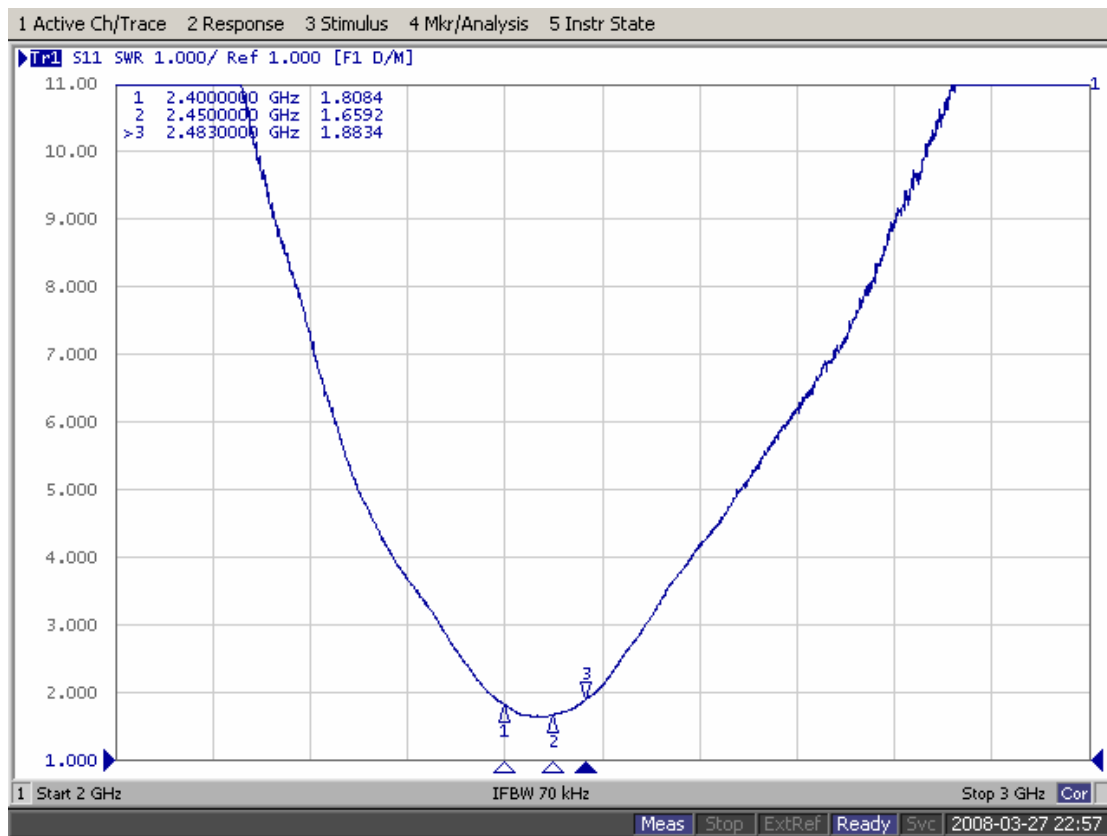


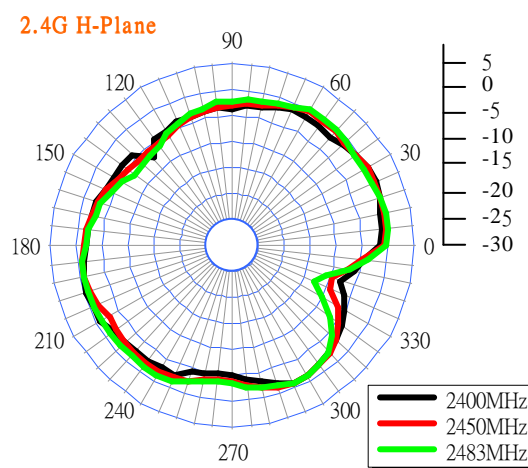
Fig. 5 VSWR



2.4G Gain Measurement Value:

H-Plane	Unit(dBi)	Max	Min	Average
	2400	-0.07	-8.15	-2.80
	2450	-0.26	-9.94	-2.61
	2483	-0.13	-13.00	-2.48

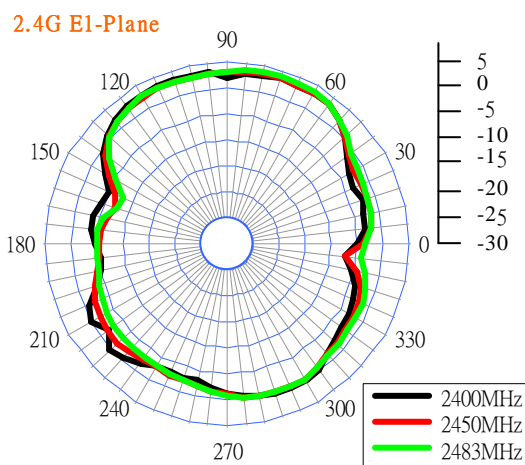
H-plane Radiation Patterns:





E1-Plane	Unit(dBi)	Max	Min	Average
	2400	3.28	-7.62	-0.57
	2450	3.12	-7.91	-0.65
	2483	3.45	-8.31	-0.52

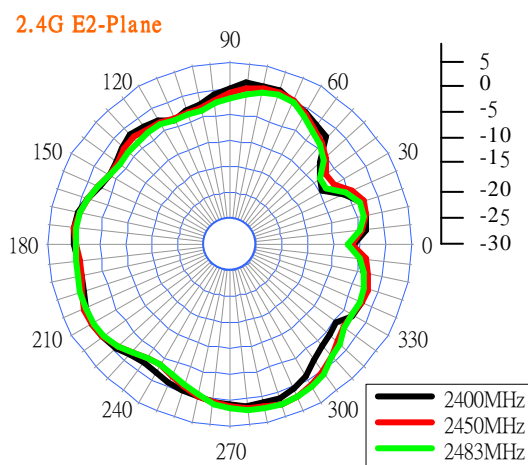
E1-plane Radiation Patterns:





	Unit(dBi)	Max	Min	Average
E2-Plane	2400	0.97	-9.83	-1.68
	2450	1.78	-7.47	-1.53
	2483	1.79	-8.98	-1.74

E2-plane Radiation Patterns:



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III. Mechanical Dimension:

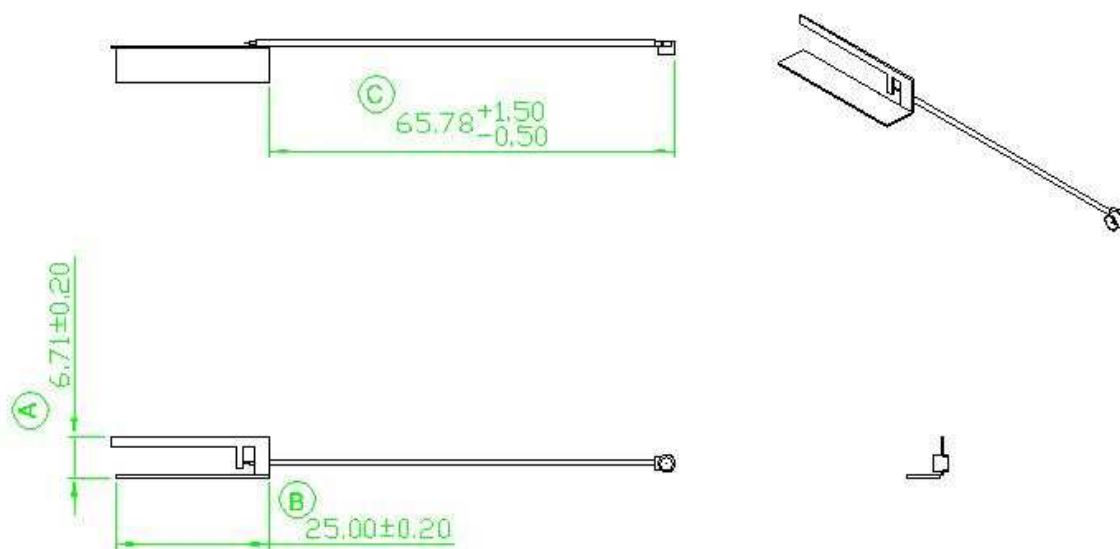


Fig. 6 Antenna drawing

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