

# External Monopole Antenna

## APPROVAL SHEET


**CUSTOMER** : \_\_\_\_\_  
**ITEM** : External WLAN Antenna  
**DESCRIPTION** : Monopole Ant.  
**CUSTOMER P/NO** : \_\_\_\_\_  
**DATE** : 2004 . 05 . 06

## CUSTOMER'S APPROVED

APPROVED			
BEAUCOM	EN'GR	CHKD	APPD
	Approval Date		
	Approval No.		
	DESC		

REV NO ;

	CUIT.	MECH.	SAFETY	EMI
CHKD				
APPD				

		Subject	<b>External Monopole Antenna Approval Sheet</b>	
<b>Document No.</b>	<b>KAT-0404-EX078P</b>		<b>Rev.</b>	<b>IR</b>
<b>Model Name</b>	<b>KWBE-2454TD90</b>		<b>Date</b>	<b>May 6, 2004</b>
<b>Application System</b>	<b>WLAN</b>		<b>Customer</b>	
<b>Notice</b>	All the specifications and data in this sheet may vary for each different product board of you.			
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<b>KOSAN</b>		<b>Investigation</b>	<b>Verification</b>	<b>Approval</b>
	<b>SEOK KEE SONG</b>			
	<b>Approval No.</b>			
	<b>Approval Date</b>			

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## External Monopole Antenna

### 1. Electrical & Mechanical Specifications

Electrical Specifications		
Frequency Range	2400~2483.5 MHz	5150~5875 MHz
V.S.W.R	1.9 : 1 (Max)	1.9 : 1 (Max)
Gain(Max)	4±0.5 dBi	4±0.5 dBi
Nominal Impedance	50 ohm	
Radiation Pattern	Omni - Directional	
Polarization	Linear	
Power Handling	3 watts (max)	

Mechanical Specifications	
Dimensions	128 mm x 11 Ø
Weight	15g
Radiator	Copper
Operating Temp	-20 ~ 90
Operating Humidity	0 ~ 95 %
Option	N/A



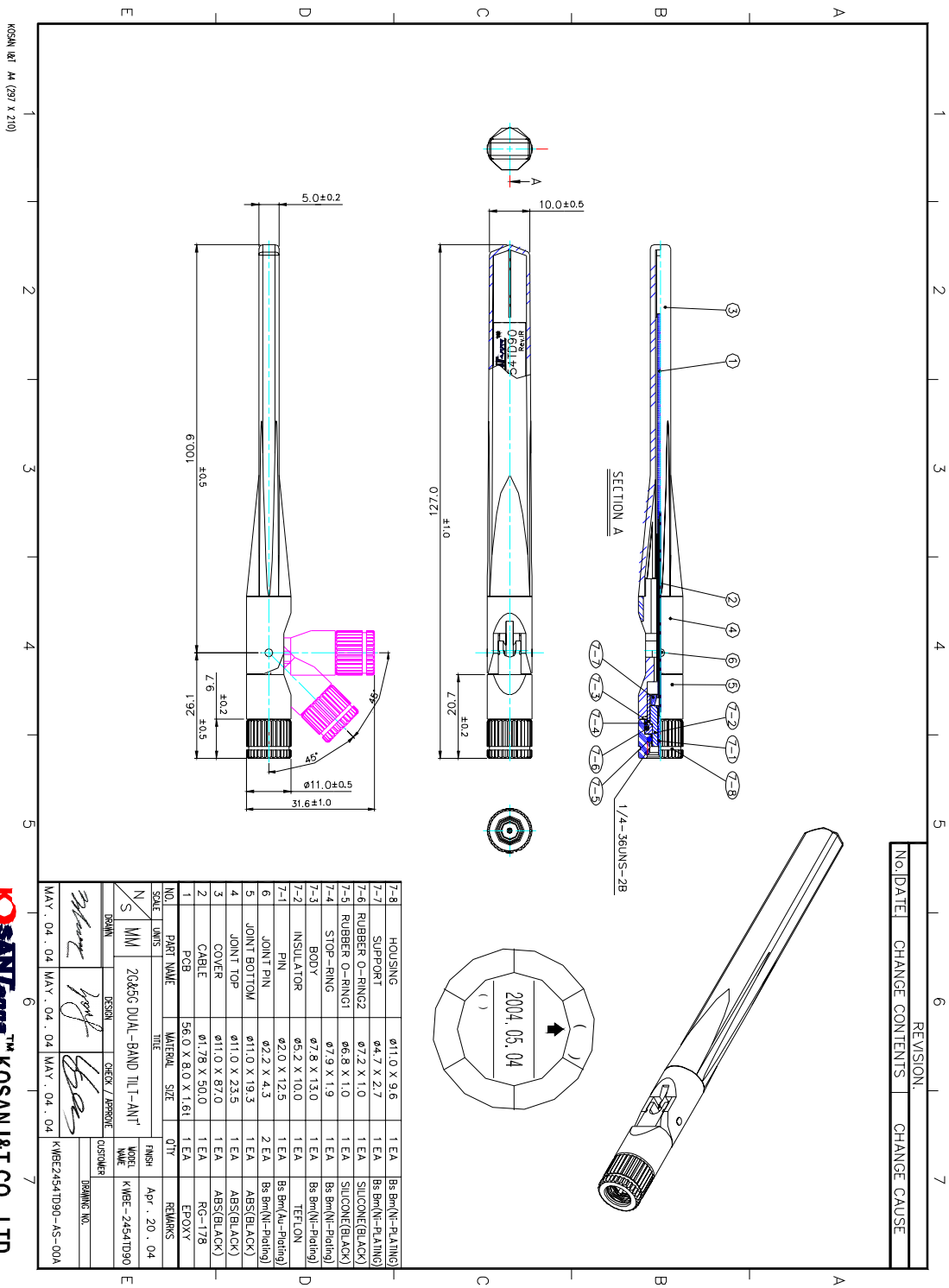
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## 2. Mechanical Drawing



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## External Monopole Antenna

### 3. Measurement Setup

#### 3-1. Test Equipments

Network Analyzer	HP8753ES
Calibration Kit	HP85033D
High Resistance Meter	HP4277A
Withstanding Voltage Tester	TOS-8750
Adaptor	SMA Reverse Type Adaptor
Measurement Cable	8120-4779 (Hewlett Packard)

#### 3-2. Test Equipments Setting

2.1 Display	Dual channel : On
	Split display : On
2.2 Menu	Number of points : 201
	Power : 0 dBm
2.3 Measure	Channel 1 : S11

#### 3-3. Calibration

Calibration-	Cal. Kit : 50
	Calibration menu      Full-2 Port
	Reflection
	Forward : Open      Short      Load
	Reverse : Open      Short      Load
	Done
	Transmission
	Do Both      FWD + REV
	Done
	Isolation
	Omit Isolation
	Done

## External Monopole Antenna

### 4. Test Procedures

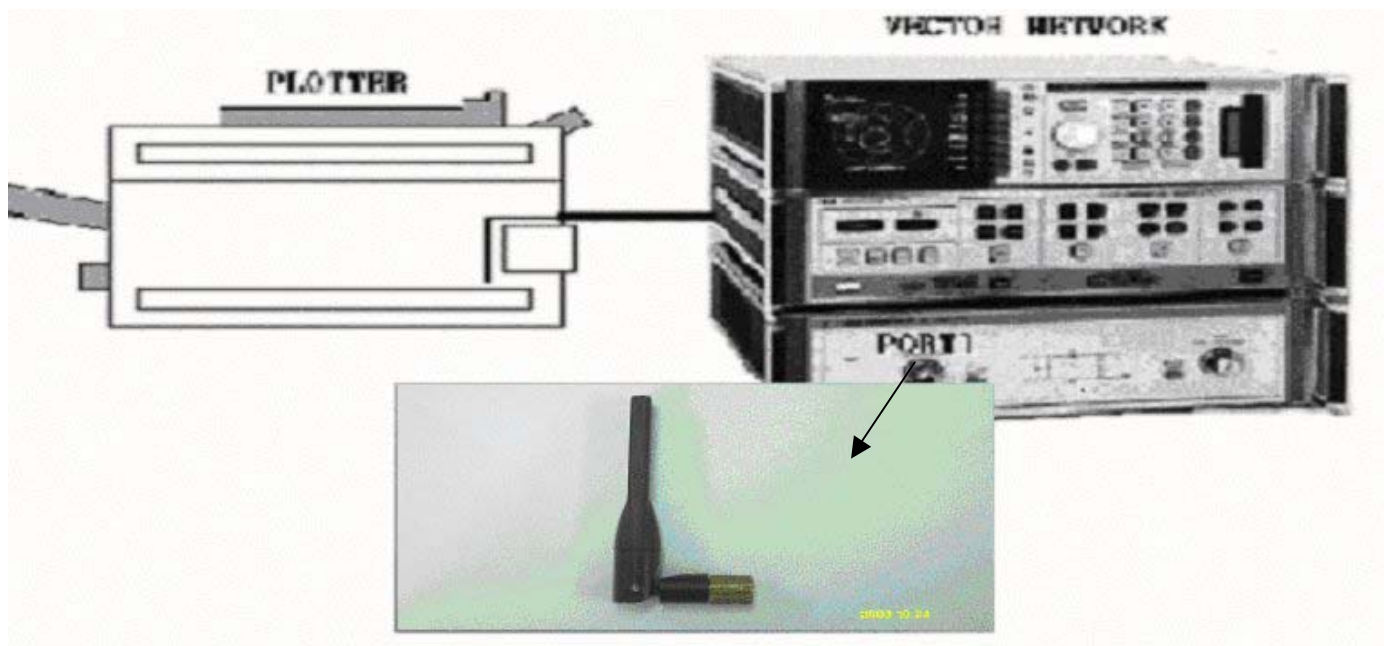
#### 4-1. V.S.W.R.

Step 1. Connect ANT Port With Cable included Adaptor to Port1 of Network Analyzer.

Step 2. Point out Markers on Network Analyzer Display at 2400MHz , 2483.5MHz, and 5150MHz, 5475 MHz, 5875MHz

Step 3. Inspect V.S.W.R < 1.9

Step 4. Measurement



## External Monopole Antenna

### 4-2. Gain and Pattern (Near Field Chamber)

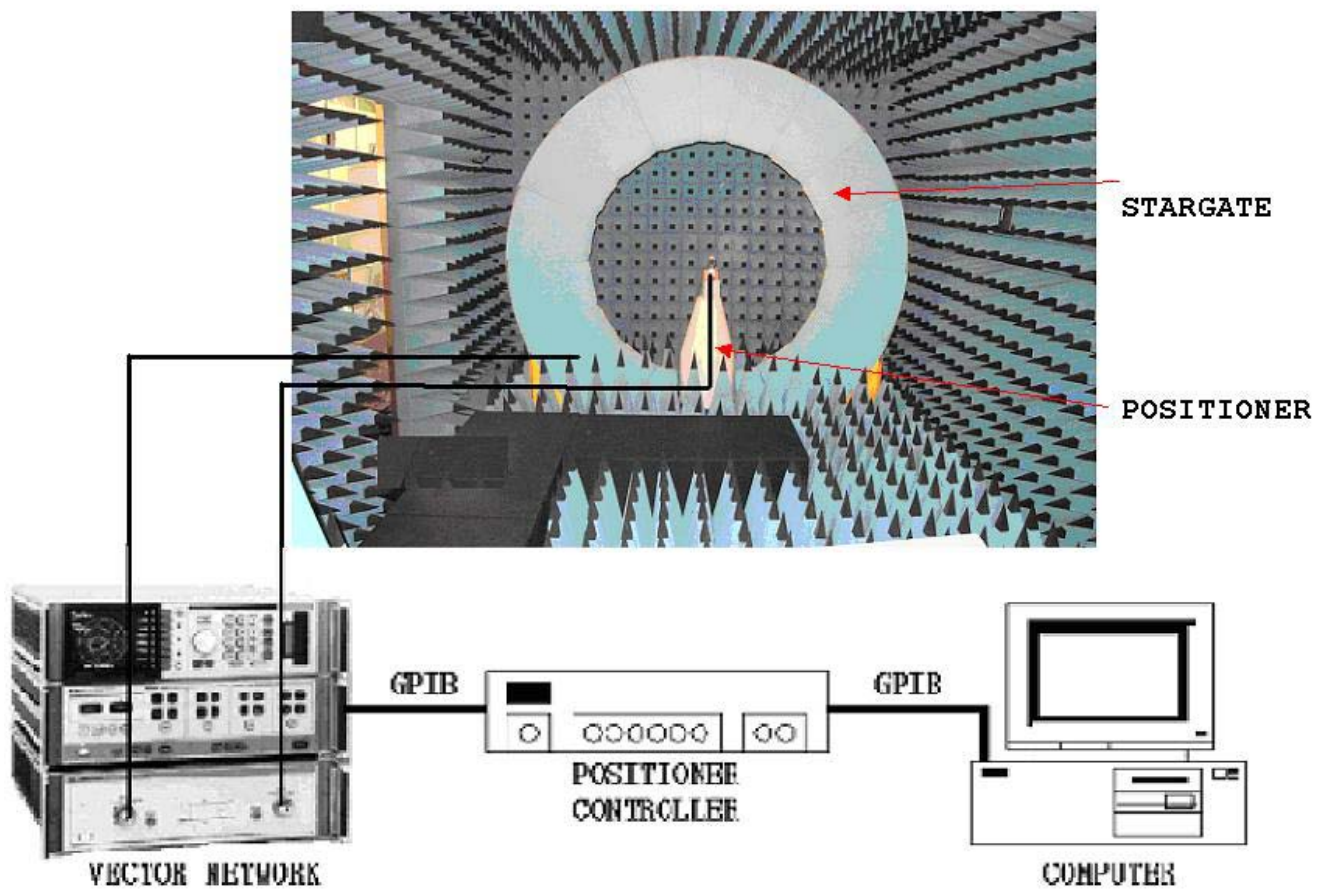
**Step 1. Calibrate Chamber System for Gain Measurement Using Stargate 32 Sensor.**

**At the Same Time Set Up Software Program for Chamber System Control.**

**Step 2. Change Over from a Stargate 32 Sensor to Measuring Antenna on Target Positioner.**

**Step 3. Start a Software Program for Chamber System Control & Measuring**

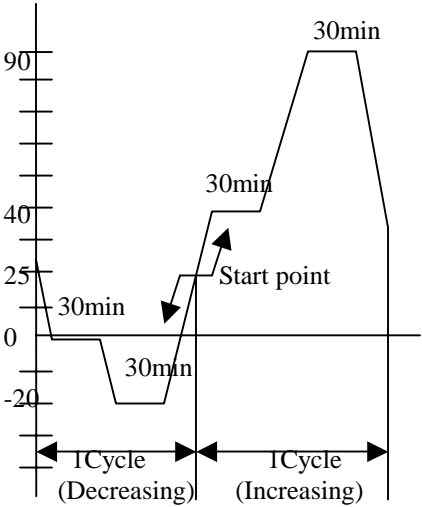
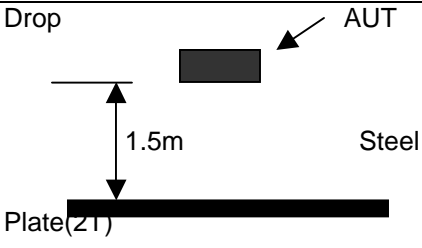
**Step 4. Measurement Data**






## External Monopole Antenna

### 5. Reliability Test

Item	Specification	Conditions
Vibration Resistance	No Momentary Disconnections or Noise for 300s to 600s No Damage, Crack or Parts Looseness	Frequency of 100Hz to 20KHz , Amplitude of 1mm for versus deaction of Antenna , 1 Cycle Time of 60s
Humidity Resistance	Changeable range of RF Impedance in $50 \pm 5$ No Electrical Short	Temperature of 40 , Humidity of 95% let stand for 96 hours
Temperature Test  <b>Temperature( ° C)</b> 	Changeable range of RF Impedance in $50 \pm 5$ No change of material characteristic No disconnection	Decreasing form +25 to -0 ; 5min / Keeping on -0 for 30min / Decreasing form -0 to -20 ; 5min / Keeping on -20 for 30min / Increasing form -20 to +25 ; 30min / Cycle time = 5  Increasing form +25 to +40 ; 5min / Keeping on +40 for 30min / Increasing form +40 to +90 ; 5min / Keeping on +90 for 30min / Decreasing form +90 to +25 ; 60min / Cycle time = 5
Withstand Voltage	No line or insulator breakdown No disconnection No damage	200V AC for 1 min
Drop 	No disconnection No crack or damage	Drop antenna' set at 1.5m height From steel plate(2T) of ground

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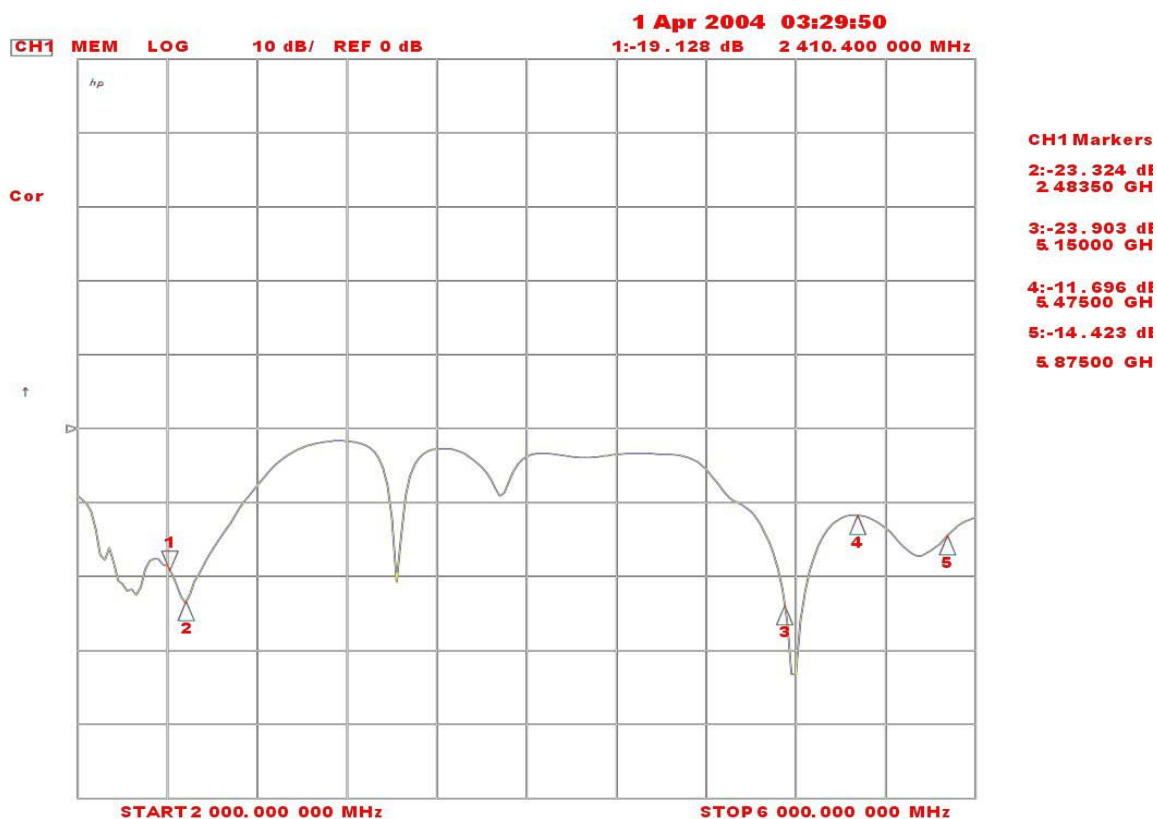
## External Monopole Antenna

### 6. Measurement Data

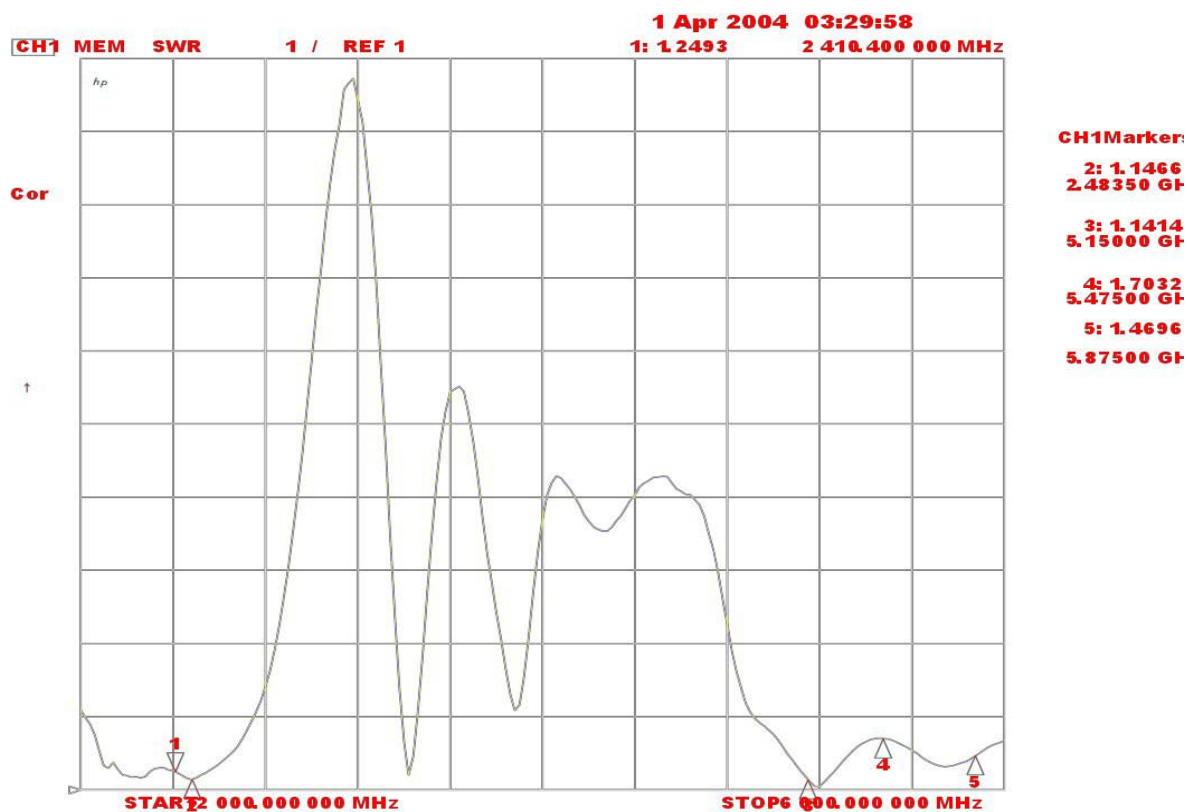
Model Name	KWBE-2454TD90		
Written by	SEOK KEE SONG	Authorized by	PAN SIK CHOI
Instrument	Network Analyzer: 8753ES (HP)		
Subject	External Monopole Antenna		
Frequency	2400~2483.5 MHz	5150~5875 MHz	


Items	Spec.		Test Result (#1)
Frequency	2400~2483.5 MHz	5150~5875 MHz	O.K
V.S.W.R	< 1.9	< 1.9	O.K
Gain	4 ± 0.5 dBi (Max)	4 ± 0.5 dBi (Max)	O.K
Polarization	Linear	Linear	Linear

## S<sub>11</sub>



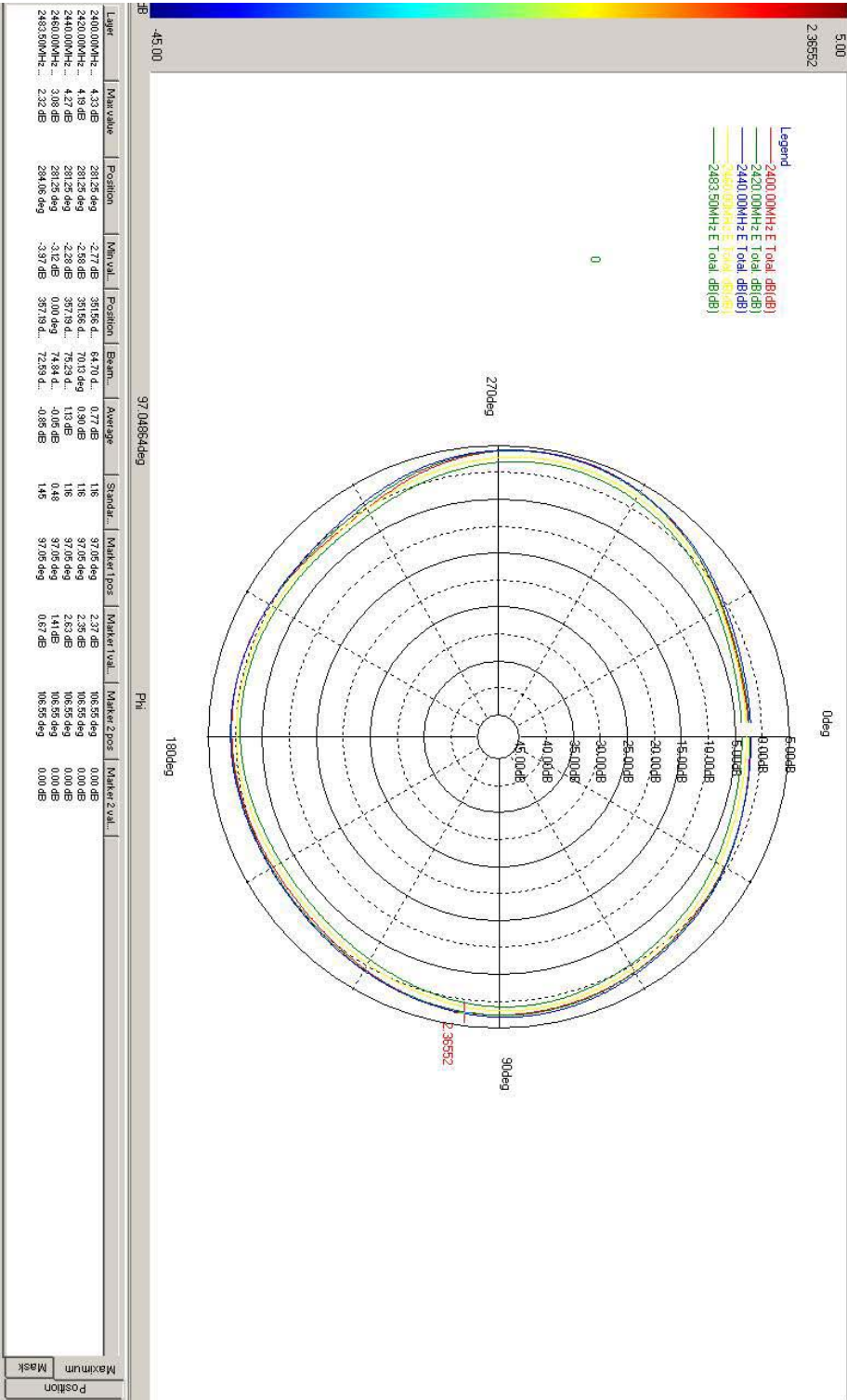
## VSWR




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Radiation Pattern(AZIMUTH)

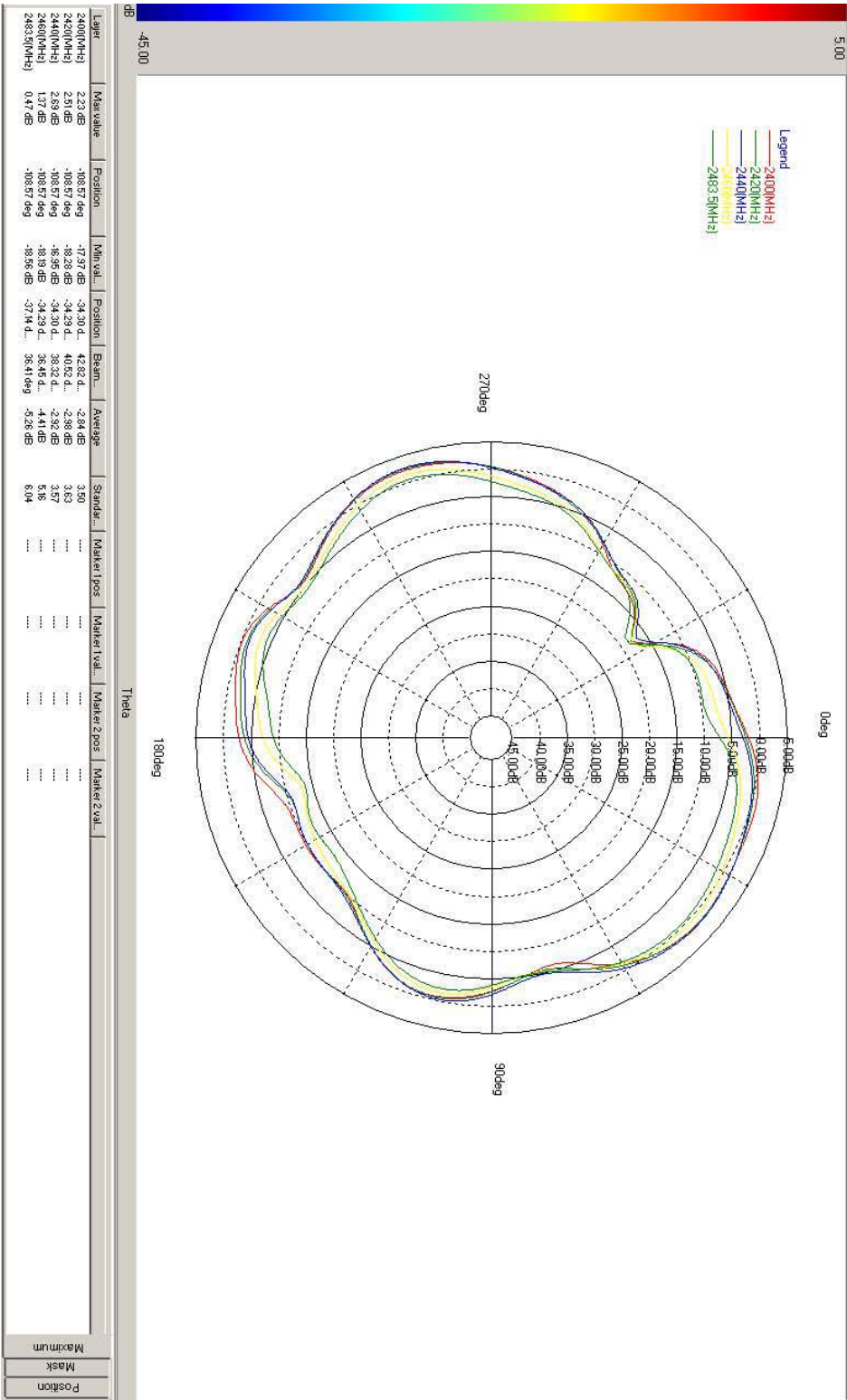
- 2GHz -




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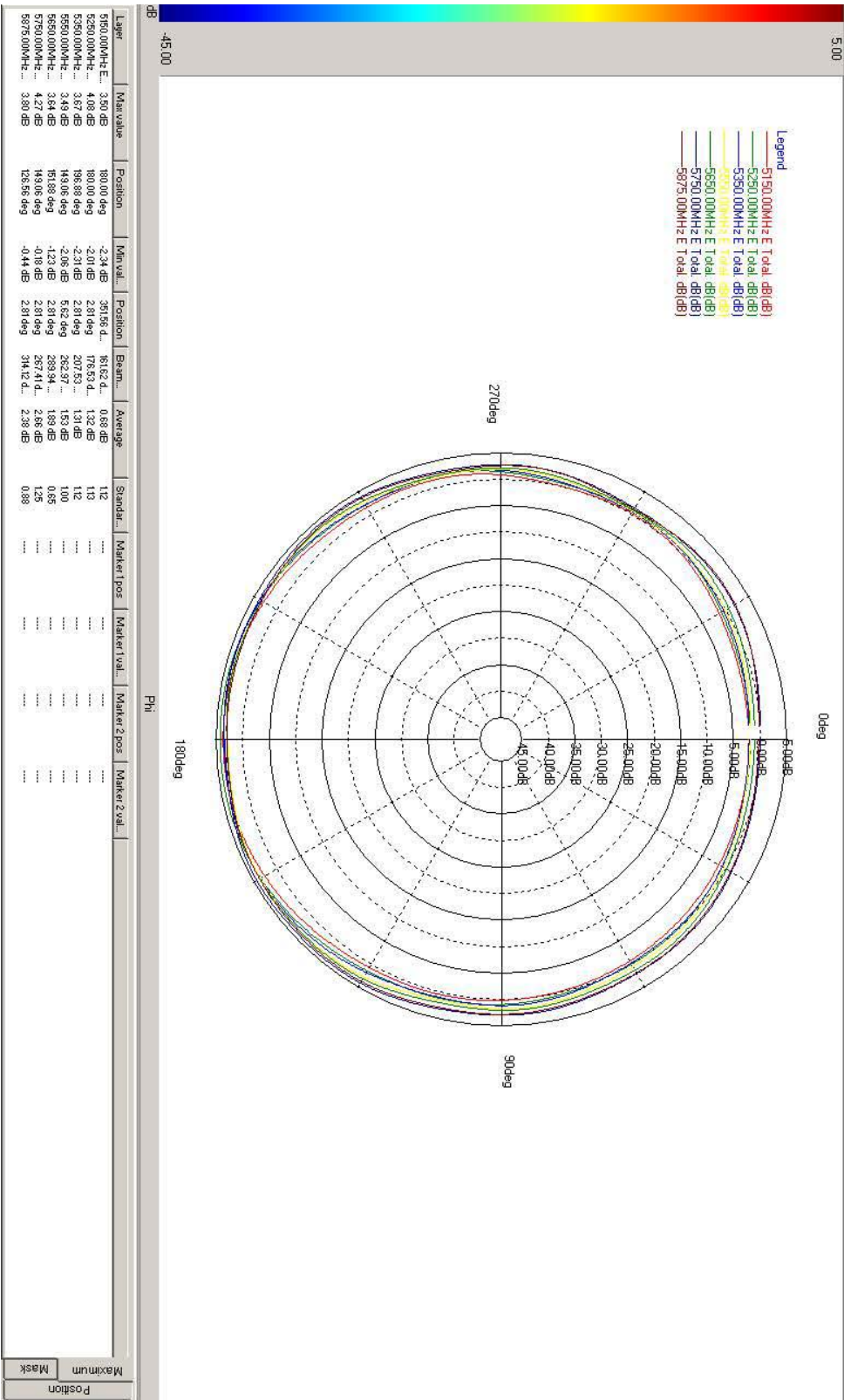
Radiation Pattern(ELEVATION)

- 2GHz -




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Radiation Pattern(AZIMUTH)  
- 5GHz -





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Radiation Pattern(ELEVATION)  
- 5GHz -

