

Part No. W5E-WO-03L
WiFi Dipole Antenna
(2.4 GHz, Left-handed SMA)
WINiZEN Co., Ltd.

	Check	Check	Approval

Revision History

E D	Date	Author	Description
IR	2009.8.29	W.I.Kwak	First issuance

To: WIZNET Co., Ltd.



Approval Sheet

Product	WiFi Dipole Antenna
Model No.	
Manufacturer P/N	W5E-WO-03L




NO	CODE	DESCRIPTION	REMARK
1		2.4 GHz WiFi Dipole Antenna	Left-handed SMA
2			
3			
4			
5			
6			

August 29, 2009

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Issue	Check	Approval
		
2009/8/29		2009/8/29

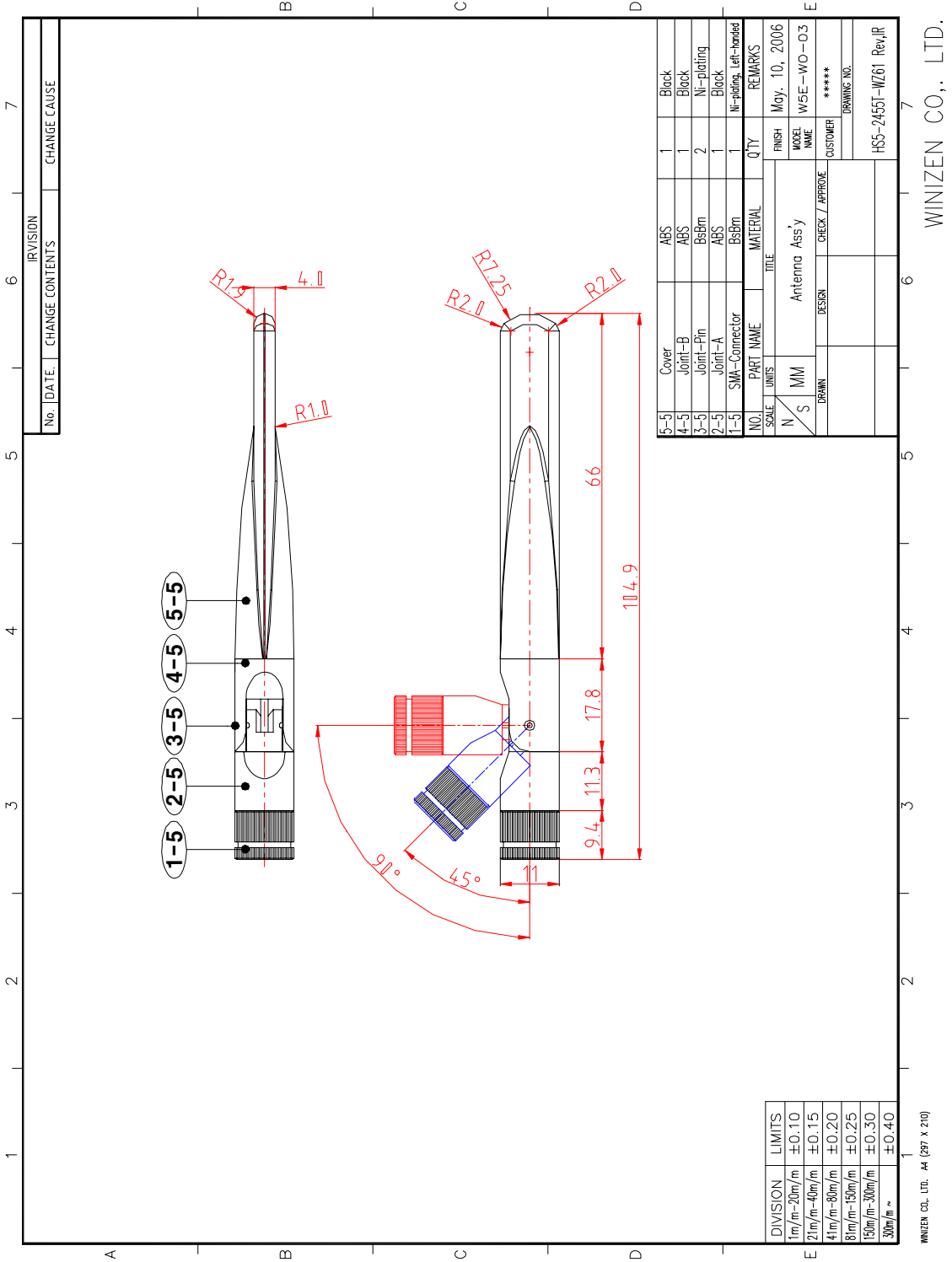
- Contents -

1. Specifications
2. Mechanical Drawing
3. Test Method
 - 3-1 Test Equipments
 - 3-2 Test Equipment Setting
 - 3-3 Calibration
4. Test Procedure
 - 4-1 VSWR
 - 4-2 Gain and Radiation Patterns
5. Measurement Data
 - 5-1 VSWR
 - 5-2 Return Loss
 - 5-3 Smith Chart
 - 5-4 Radiation Pattern
6. QC Process
7. Reliability Test
8. Packaging
9. RoHS Data

1. Specifications

Specifications	
Electrical Specifications	Frequency Range
	2400 ~ 2483.5 MHz
Band Width	83.5 (MHz)
V.S.W.R (Min)	1.9 : 1
Gain (Max)	$2.5 \pm 1 \text{ dB}$ ($\pm 1 \text{ dB}$)
Input Impedance	50 (Ω)
Polarization	Linear
Mechanical Specifications	
Antenna Size	See drawing
Connector	SMA Male (Left-handed)
Operation Temperature	-20 ~ 70 ($^{\circ}\text{C}$)
Operation Humidity	10 ~ 90 (%)
Option	
Others	

2. Mechanical Drawing



No.	DATE.	CHANGE CONTENTS	REVISION	CHANGE CAUSE

5-5	Cover	ABS	1	Black	REMARKS
4-5	Joint-B	ABS	1	Black	
3-5	Joint-Pin	BsBm	2	Ni-plating	
2-5	Joint-A	ABS	1	Black	
1-5	SMA-Connector	BsBm	1	Ni-plating, Left-handed	
NO. PART NAME		MATERIAL		QTY	
SCALE	UNITS	TITLE		FINISH	
N	S	Antenna Ass'y		MOSEL	May, 10, 2006
DRAWN		DESIGN	CHECK / APPROVE	MODEL NAME	W5E-WO-03
				CUSTOMER	*****
				DRAWING NO.	
					H55-2455T-WZ61 Rev.1R

WINZEN CO., LTD.

3. Test Method

3-1. Test Equipments

Network Analyzer	Agilent E8357A
Calibration Kit	Agilent E8357A
Adaptor	SMA Type Female ↔ SMA male
Measurement Cable	SPS-2801-400-SPS(Insulated Wire Inc.)

3-2. Test Equipment Setting

Display	Dual Channel : On Split Display : On
Menu	Number of Points : 201 Power : 0 dBm
Measure	Channel 1 : S11 Channel 2 : S21

3-3. Calibration

Calibration-	Cal. Kit : 50 Ω 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
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4. Test Procedure

4-1. V.S.W.R

Step 1.

Connect the antenna to Port 1 of the Network Analyzer with a Cable Assembly.

Step 2.

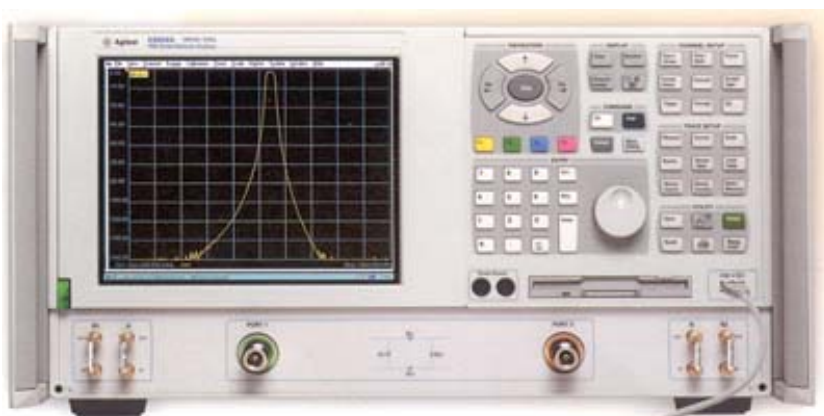
Set Marker Pointer of the Network Analyzer to the target frequency.

Step 3.

Measure and check if the V.S.W.R. values are within 1.9.

Step 4.

Record Data.



4-2. Gain and Radiation Patterns

Step 1

Calibrate the Anechoic Chamber and Measurement System with a Dipole Antenna and a Horn Antenna. Prepare the Software Program to control the system.

Step 2.

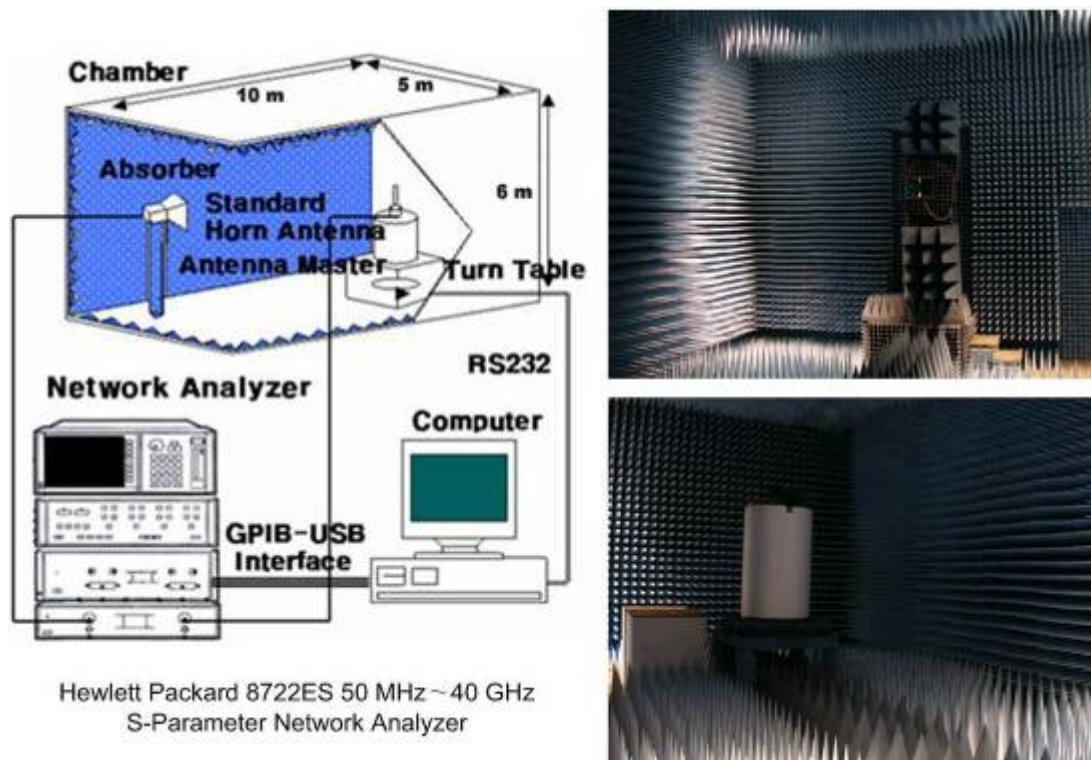
Place the Antenna for measurement, on the location within the Anechoic Chamber.

Step 3.

Start the Software Program and Measurement.

Step 4.

Measure and record Data.

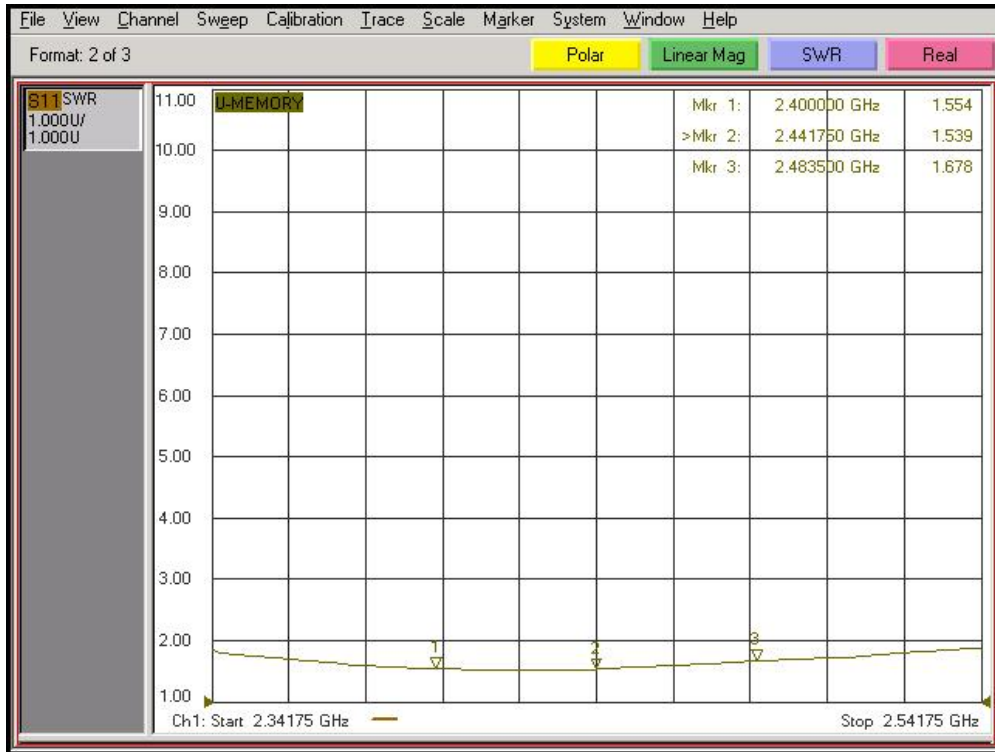


5. Measurement Data

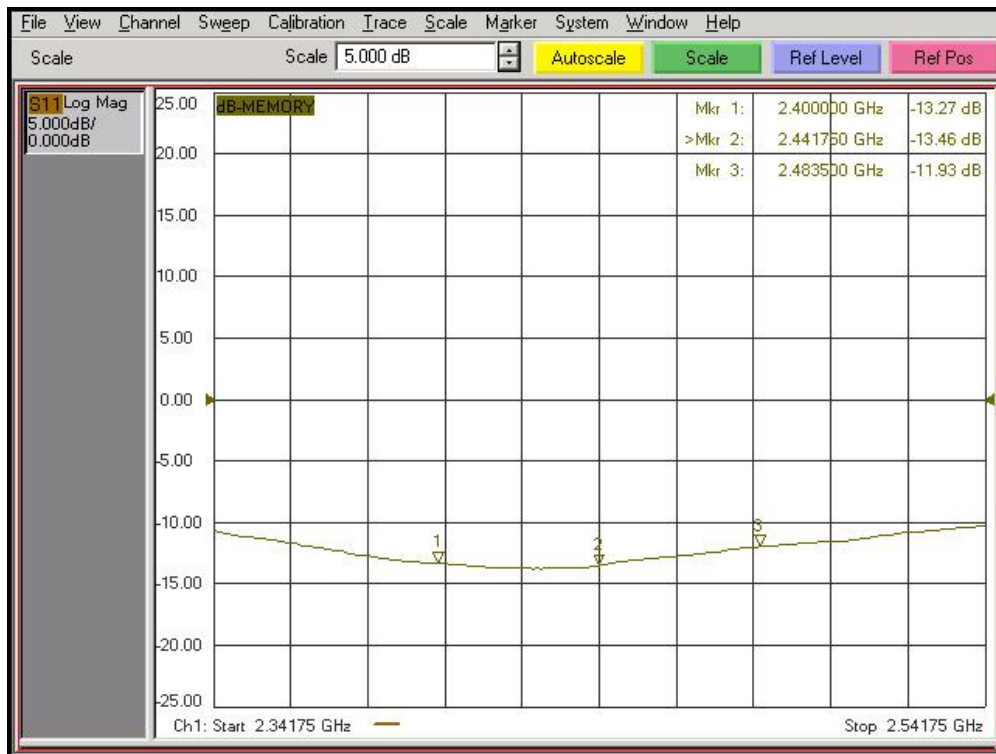
Model Name	W5E-WO-03L		
Engineer	W.I.Kwak		
Antenna	WiFi Dipole Antenna		
Frequency	2400 MHz ~ 2483.5 MHz		

Items	Spec.	Test Result
Frequency	2400 MHz ~ 2483.5 MHz	OK
VSWR(Min)	< 1.9	OK
Gain(Max)	2.5±1.0 dBi	OK

5-1 VSWR

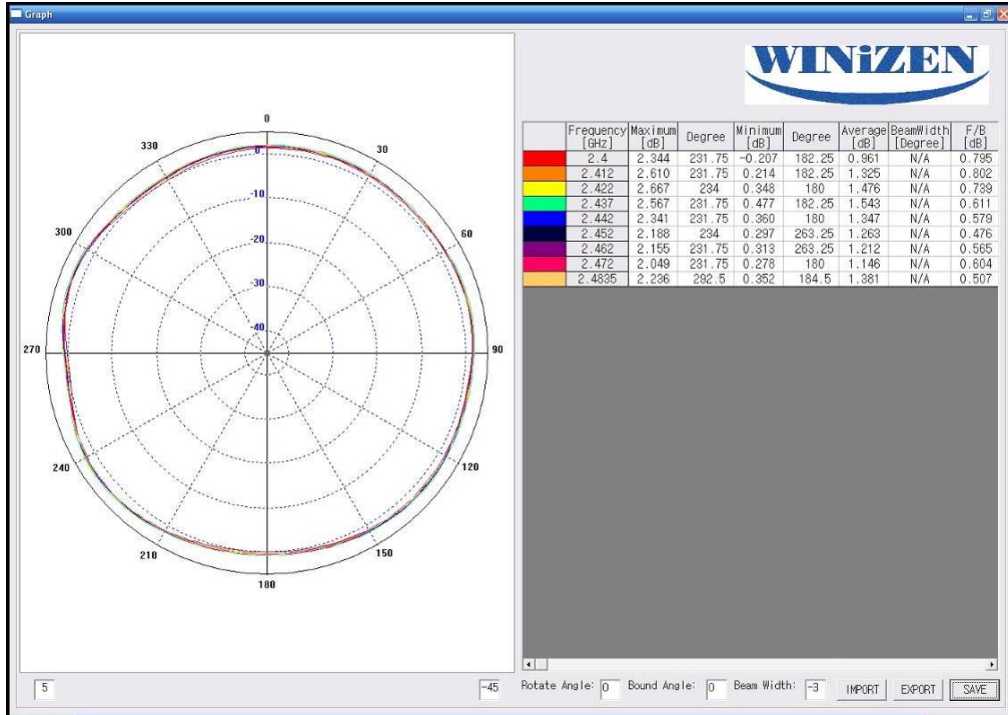


5-2 Return Loss

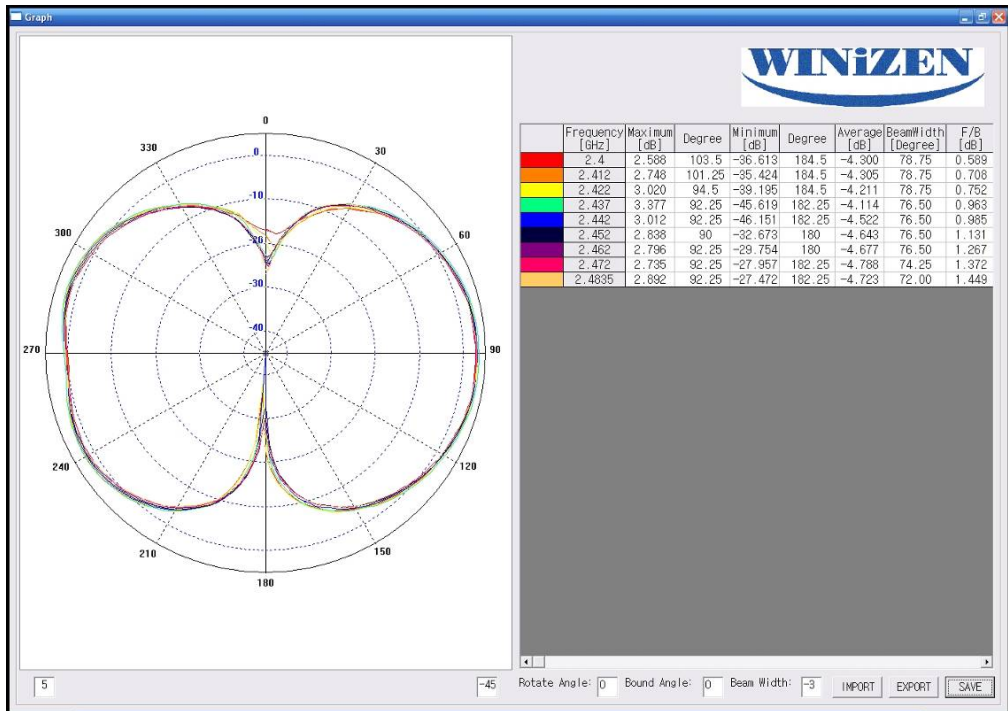


5-4 Radiation Pattern










a. Azimuth Pattern



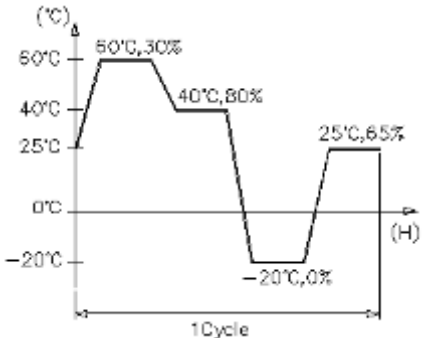
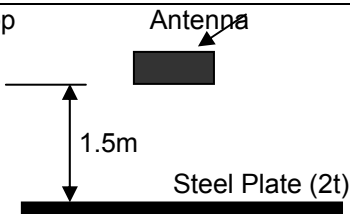
c. Elevation Pattern



6. QC Process

QC Process											
Product		WIMAX/WLAN Dipole Antenna		Drawing No.		Document No.		WSQP-003		Issued 2006.9.1	
No	Mark	Process	Work	Facility	Checking Point (Method)	Standard			Note		
						Item	Standard	Cycle			
1		Material	• Check Vendor	• Drawing	• Lot (FIFO)						
2		Incoming Inspection	• Outlook/Spec Inspection	• Network Analyzer, Vernier Callipers • Manual		• Appearance • Dimensions/ Electrical Spec.	• To be good (Color, Damage, Dimensions) • Meet Spec.	Lot			
3		Material	• Take items out of the warehouse (Moulds, Connector, Cable, etc.)		• Lot (FIFO)						
4		Assembly	• Assembly between connector and cable • Assembly of cable and PCB, Coil • Assembly of moulds	• Assembly Jig	• Full assembly						
5		Mechanical Inspection	• Check Ass'y status	• Manual	• Appearance (Moulds, Connector) • Bonding, Assembly	• Appearance • Assembly	• To be good, No bending and twisted. No damage, crack. • Assembly result to be good and solid.	All			
6		Electrical Inspection	• Test of electrical spec	• Network Analyzer	• Electrical spec	• VSWR	• Meet spec (less than 1.9)	All	CTQ		
7		Packaging	• Pack the antenna into a plastic bag and a carton	• Manual, scale	• Packaging, Contents, Quantity • Appearance (Moulds, Connector)	• Appearance • Quantity	• Appearance to be good, No damage, crack. • Packaging to be solid, no damage. • Quantity to be correct.	All			
8		Outgoing Inspection	• Check electrical spec, Appearance, Packaging	• Network Analyzer, Vernier Callipers	• Appearance Inspection • Electrical spec Inspection	• Appearance • Electrical spec • Packaging	• To be good • Meet spec • To be good, Correct quantity	Sampling			
9		Shipment	• Load the products into the warehouse	• Hand car	• Check Lot • Storage conditions	• Packaging					
No	Revise	Revised item		Responsible							
1	2007.8.20	Increase appearance inspection times		I.K.Lee							

7. Reliability Test

Item Specifications		Conditions	Test Result
Salt-water Resistance	No change of material characteristic	Temperature of 35℃, Concentration of 5%, Let stand for 48 hours	OK
Humidity Resistance	Changeable range of V.S.WR value \pm 0.5 No change of material characteristic	Temperature of 40℃, Humidity of 95%, Let stand for 96 hours	OK
Temperature Test Temperature(° C) 	Changeable range of V.S.WR value \pm 0.5 No change of material characteristic	Increasing from +25℃, 65% to +60℃, 30%; 35min / Keeping on +60℃, 30% for 6hour / Decreasing from +60℃, 30% to +40℃, 80%; 20min / Keeping on +40℃, 80% for 8hour / Decreasing from +40℃, 80% to -20℃, 0%; 60min / Keeping on -20℃, 0% for 4hour / Increasing from -20℃, 0% to 25℃, 65%; 45min / Keeping on 25℃ for 3hour / 5Cycle time = 118hour and 20min	OK
Drop 	No disconnection No crack or damage	Drop the antenna at 1.5m height to the steel plate (2t) of ground	OK

8. Packaging

