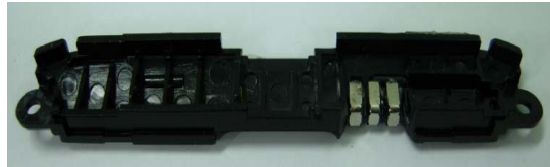


ANTENNA SPECIFICATION		DATE	2011-04-19	REV.	A
MODEL	P9060	TYPE	Internal Antenna	PAGE	1

# Antenna Specifications



Product Name	: P9060 Main Antenna
Product Part/No	: 3357274
Customer Model	: P9060 Main Antenna
Customer	: Pantech
Date	: 2011-04-19

		DRAFTING	CHECK	CHECK	APPROVAL
DYKTX	RF Engineer				
		Associate Research/ S. B. BYUN		Principal Research/ G. S. LEE	
	Design Engineer	이명주			
		Associate Research/ M. J. LEE			

#680-9, JAKJEUN-DONG, KYEYANG-GU, INCHON, KOREA

TEL : 82-32-676-9224 FAX : 82-32-546-4797

**KTX DAEYOUNG KTX**

<b>ANTENNA SPECIFICATION</b>		<b>DATE</b>	<b>2011-04-19</b>	<b>REV.</b>	<b>A</b>
<b>MODEL</b>	<b>P9060</b>	<b>TYPE</b>	<b>Internal Antenna</b>	<b>PAGE</b>	<b>2</b>

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## 1, Document Change Record

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No	Rev.	Pantech Rev.	Rev. Date	Rev. Date	History	QTY	Req-Post	progression step
1	A	A	-	-	The first of Pre-Approval Sheet draft	30	-	WS20

<b>ANTENNA SPECIFICATION</b>		<b>DATE</b>	<b>2011-04-19</b>	<b>REV.</b>	<b>A</b>
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## 2. List of Material

No	Part Name	Raw Material	Material Supplier	Tooling & Injection	Finishing & Spec.	quantity	Remark
1	MAIN Antenna	-	-	-	-	30	-
1-1	Carrier	PC (141R-701)	SABIC	CLASTAR	-	30	1 X 4
1-2	Pattern	ABS (MP211)	LG chemistry	CLASTAR	-	30	1 X 4
1-3	Plating	Cu_(10~15 μm) Ni_(5~10 μm)		HANUL TECH	-	30	

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### 3. Electrical & Mechanical Specifications

#### 3.1. Electrical Specifications

<b>Frequency Range</b>	<b>GSM850</b> WCDMA850 (824~ 894MHz)	<b>GSM900</b> (880~ 960MHz)	<b>GSM1800</b> (1710~ 1880MHz)	<b>GSM1900</b> WCDMA1900 (1850~ 1990MHz)	<b>WCDMA2100</b> (1920 ~ 2170MHz)
<b>Peak gain</b> (H /E1/ E2 Plane)	-3.2 dBi over (at 824,894MHz)	-3.2 dBi over (at 880, 960MHz)	-3.2 dBi over (at 1710,1880MHz)	-1.8 dBi over (at 1850,1990MHz)	-3.3 dBi over (at 1920, 2170MHz)
<b>VSWR</b>	1.8:1 below	2.2:1 below	2.5:1 below	1.5:1 below	3.9:1 below
<b>Impedance</b>	50Ω				
<b>Polarization</b>	Linear				
<b>Radiation pattern</b>	Omni-directional				
<b>Power Handling</b>	2 Watt				

#### 3.2. Mechanical Specifications

<b>Connector</b>	C-Clip Type
<b>Dimension</b>	63.6 (W) x 6.1 (H) x 9.1 (D)
<b>Operating Temperature</b>	-30℃ ~ +80℃
<b>Weight</b>	1.5g

#### 3.3. Package

<b>Name</b>	<b>Quantity</b>	<b>Material</b>	<b>Remark</b>
<b>Tray</b>	50EA	P.S(0.5t)	N/A
<b>Carton BOX</b>	1000EA	DW 2 Branches(AB)	N/A

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## 4. Electrical properties

### 4.1. Test equipment

The equipment for the antenna measurement we used is as follows.

4.1.1. Agilent 8753 Series Network Analyzer to measure the V.S.W.R and input impedance.

4.1.2. Three-dimensional anechoic chamber to measure the gain

(Standard dipole and horn were used to calibrate the chamber)

4.1.3. Digital caliper to measure the dimensions.

4.1.4. Climatic chamber for mechanical tests.

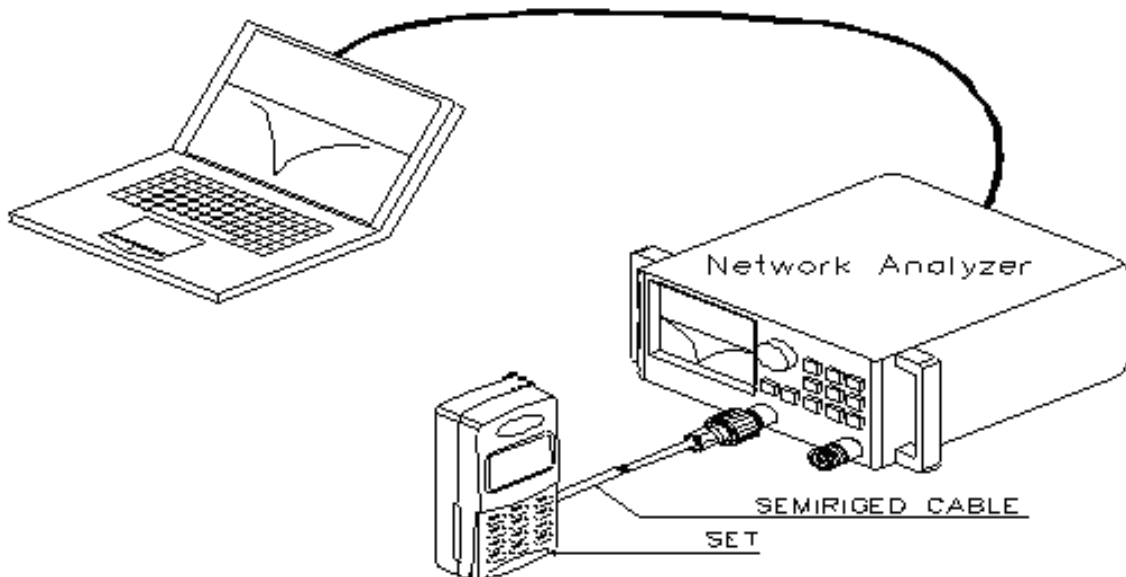
4.1.5 Test environment

Standard temperature: 15 °C ~ 25 °C (Normal state : 20 °C)

Relative humidity 25% ~ 80%, Air pressure: 86 ~ 106 kPa

### 4.2. V.S.W.R

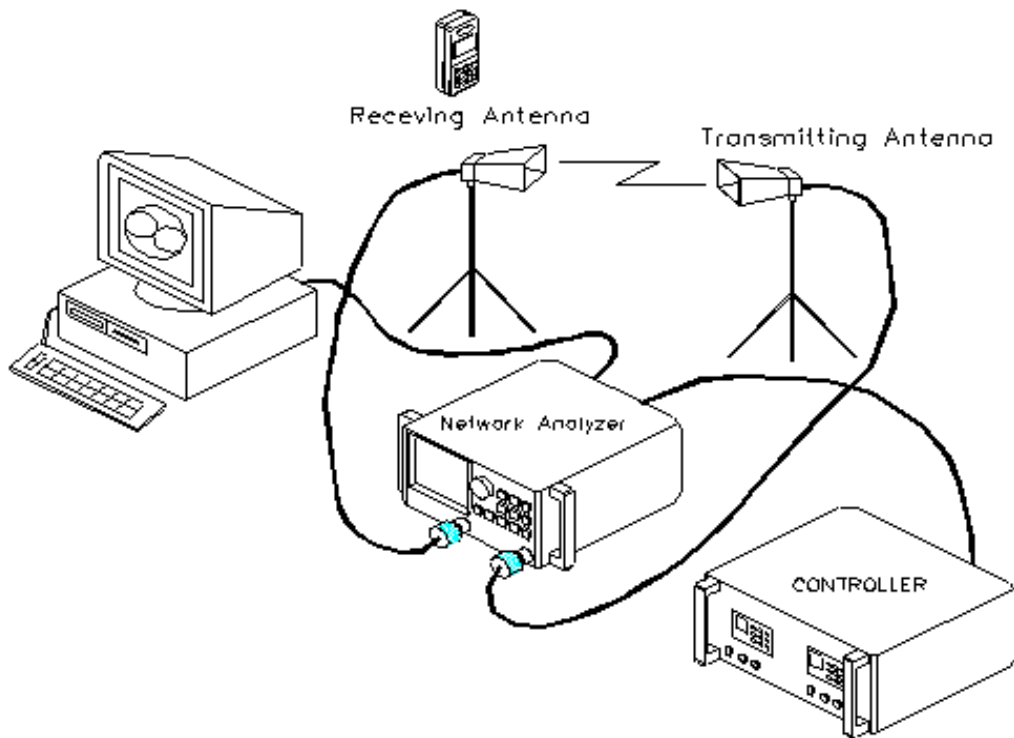
The VSWR characteristics must satisfy the electrical demands. The VSWR is measured with Agilent 8753 Series network analyzer. All the measurements are performed with the customer provided fixture.



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### 4.3. Radiation pattern and gain

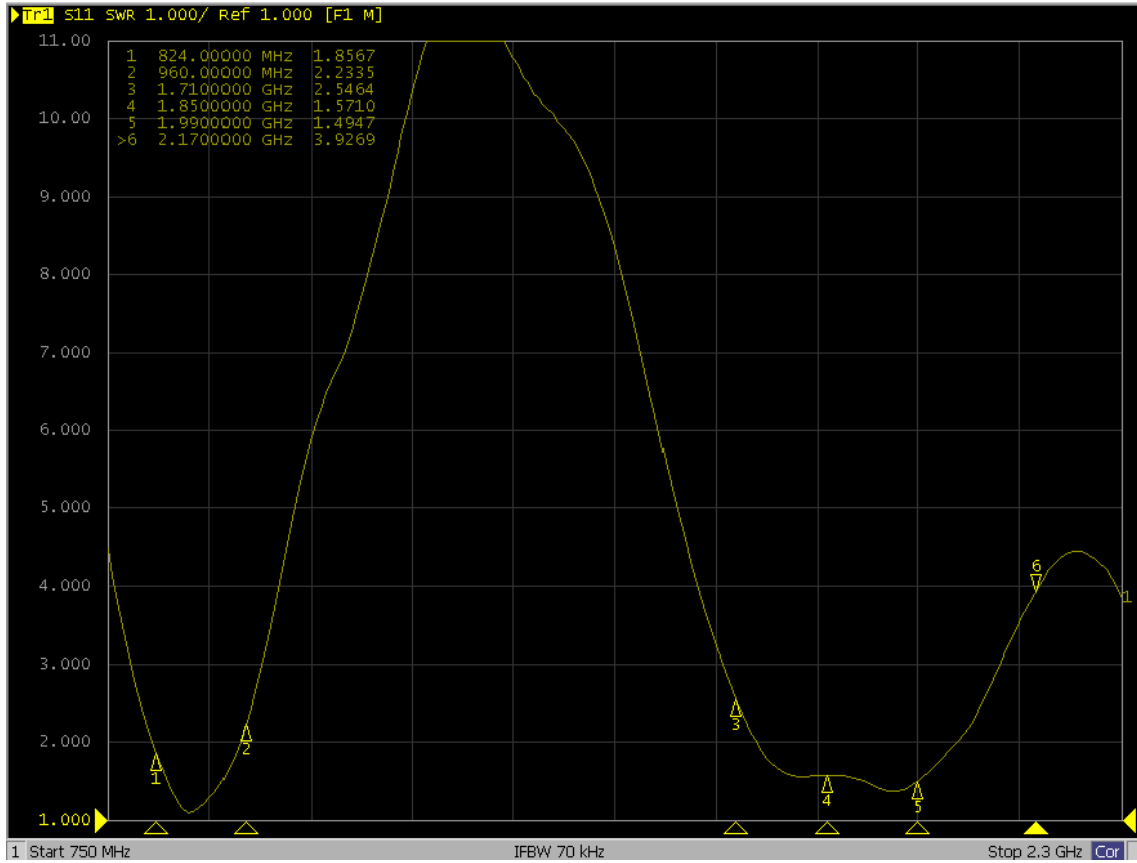
Radiation pattern of this antenna has Omni-directional specification in H, E1, E2-Plane. Antenna gain is satisfied with customer demand based on as GSM850/WCDMA850:-3.2dBi, GSM900:-3.2dBi, GSM1800:-3.2dBi, GSM1900/WCDMA1900:-1.8dBi, WCDMA2100:-3.3dBi over, after calibration with standard horn antenna.



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## 5. Measurement Data

### 5.1. V.S.W.R

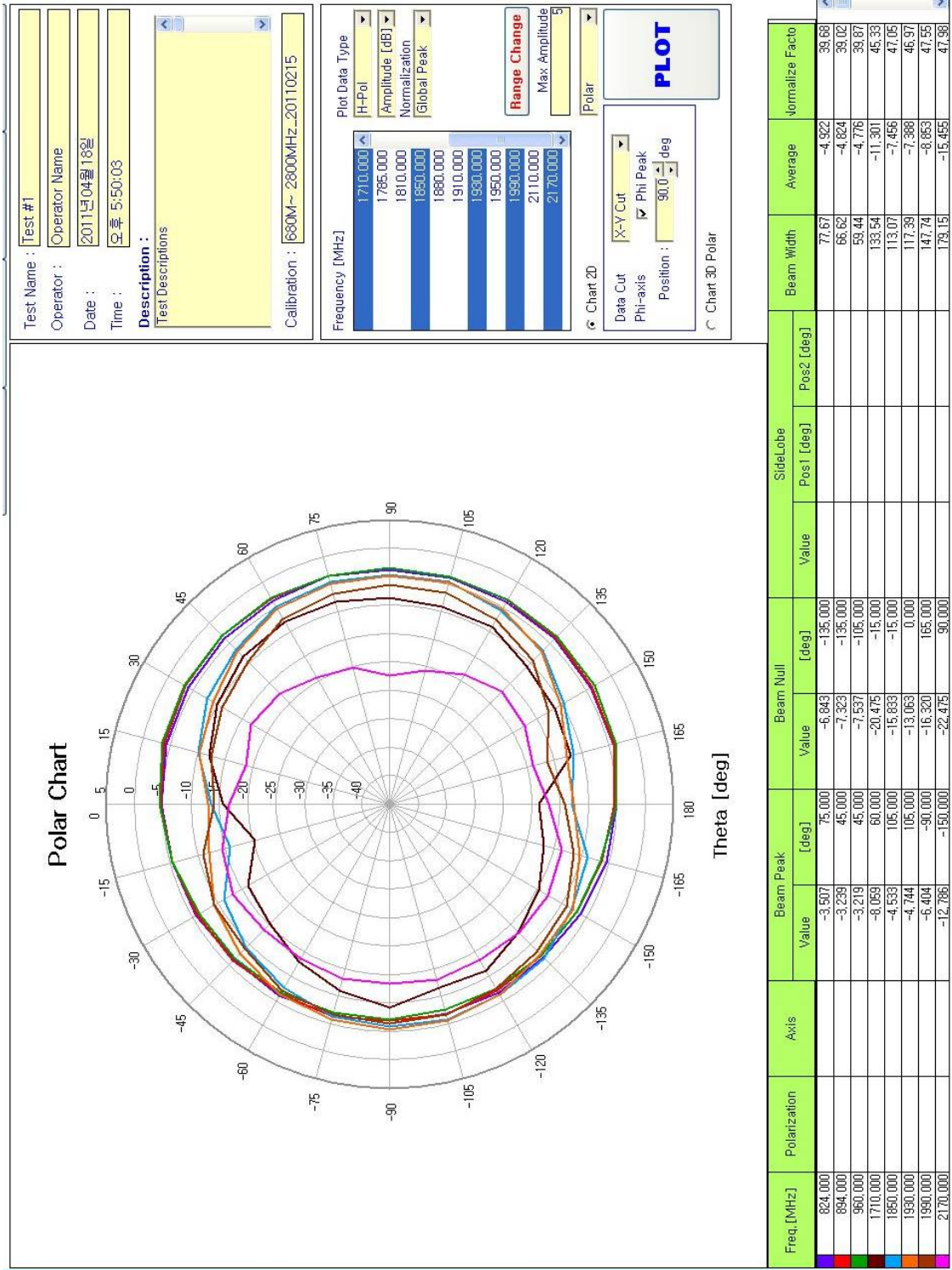




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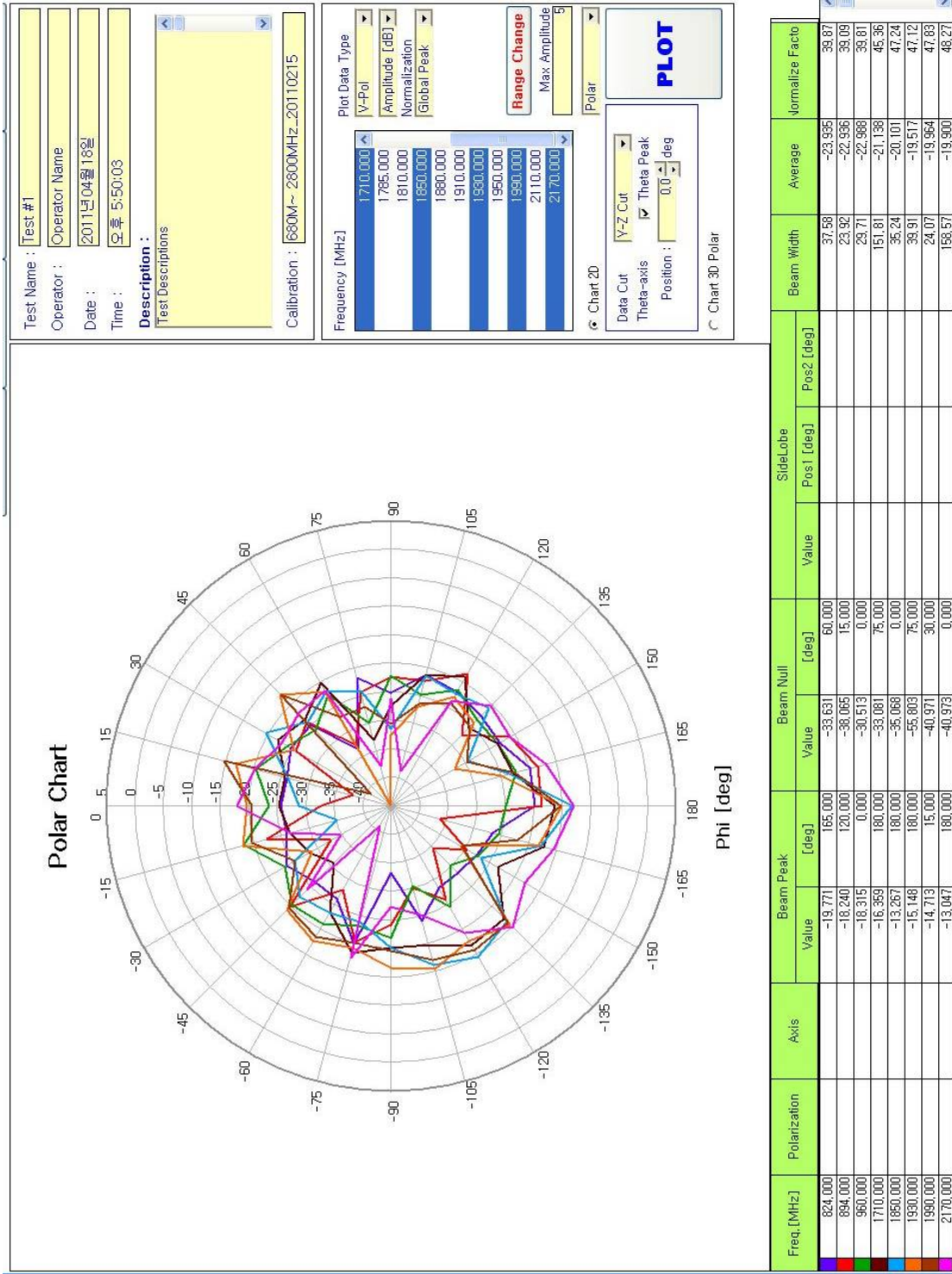
## 5.2. Radiation pattern

Azimuth pattern theta=90



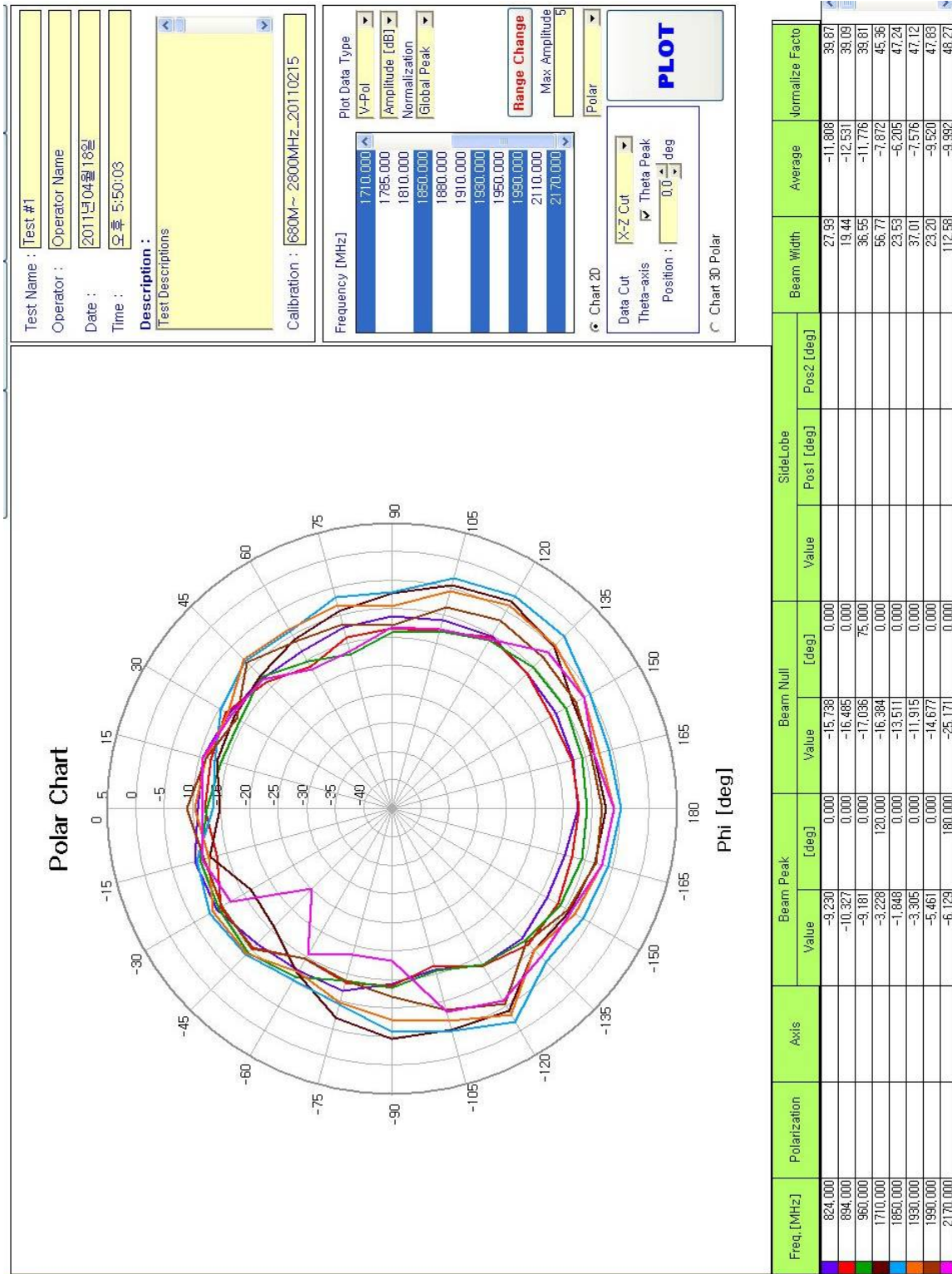
<b>ANTENNA SPECIFICATION</b>		<b>DATE</b>	<b>2011-04-19</b>	<b>REV.</b>	<b>A</b>
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Elevation pattern phi=0



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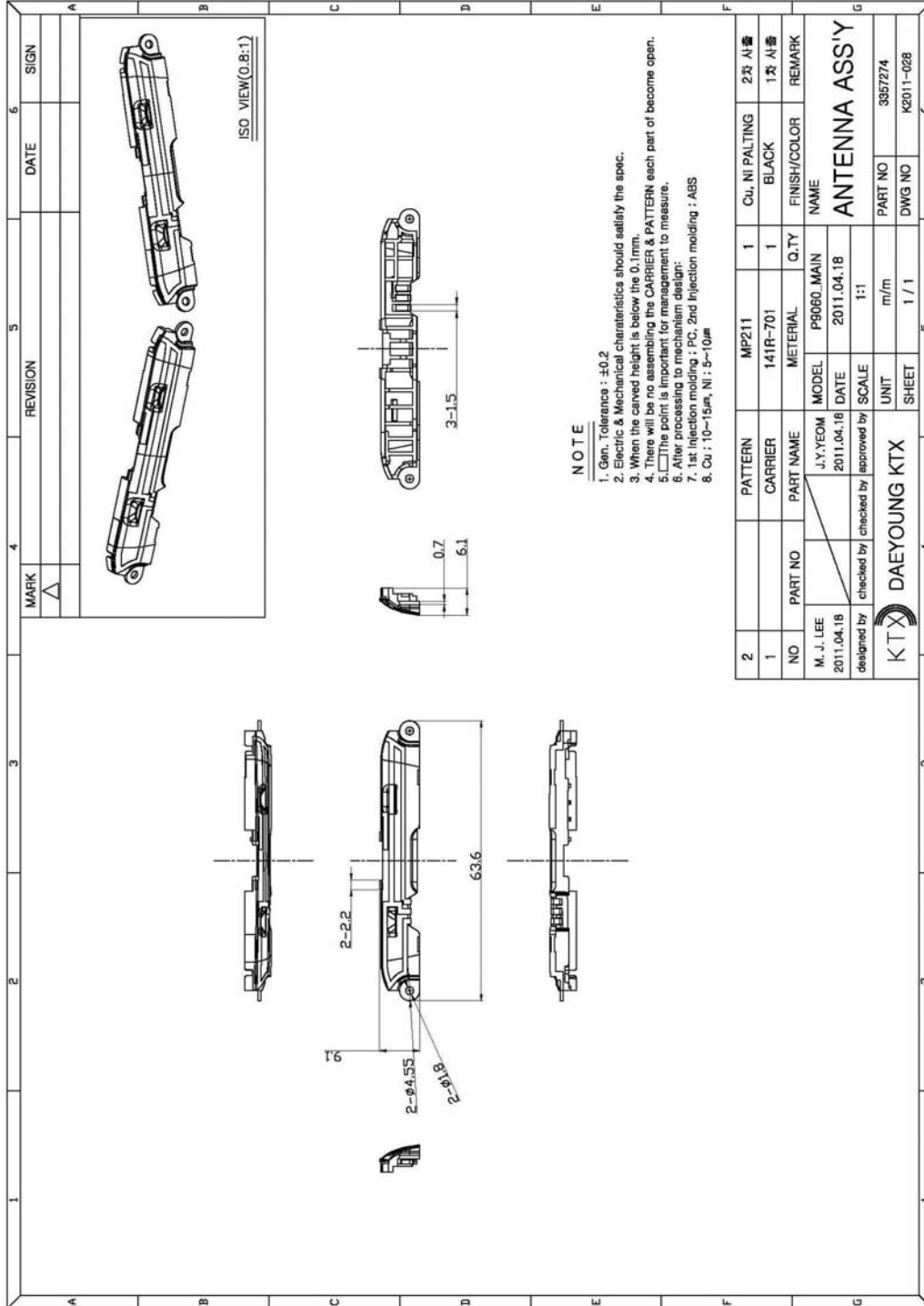
Elevation pattern phi=90



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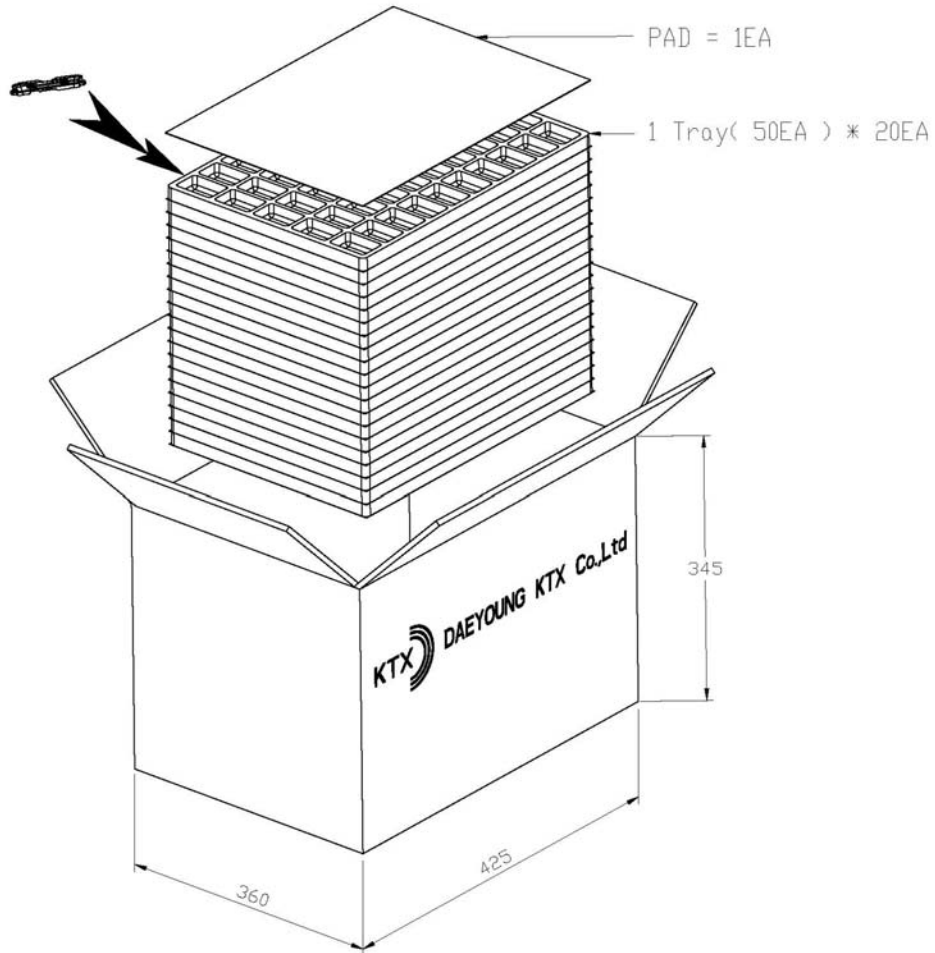
## 6. Mechanical Drawing

### 6.1. Assembly



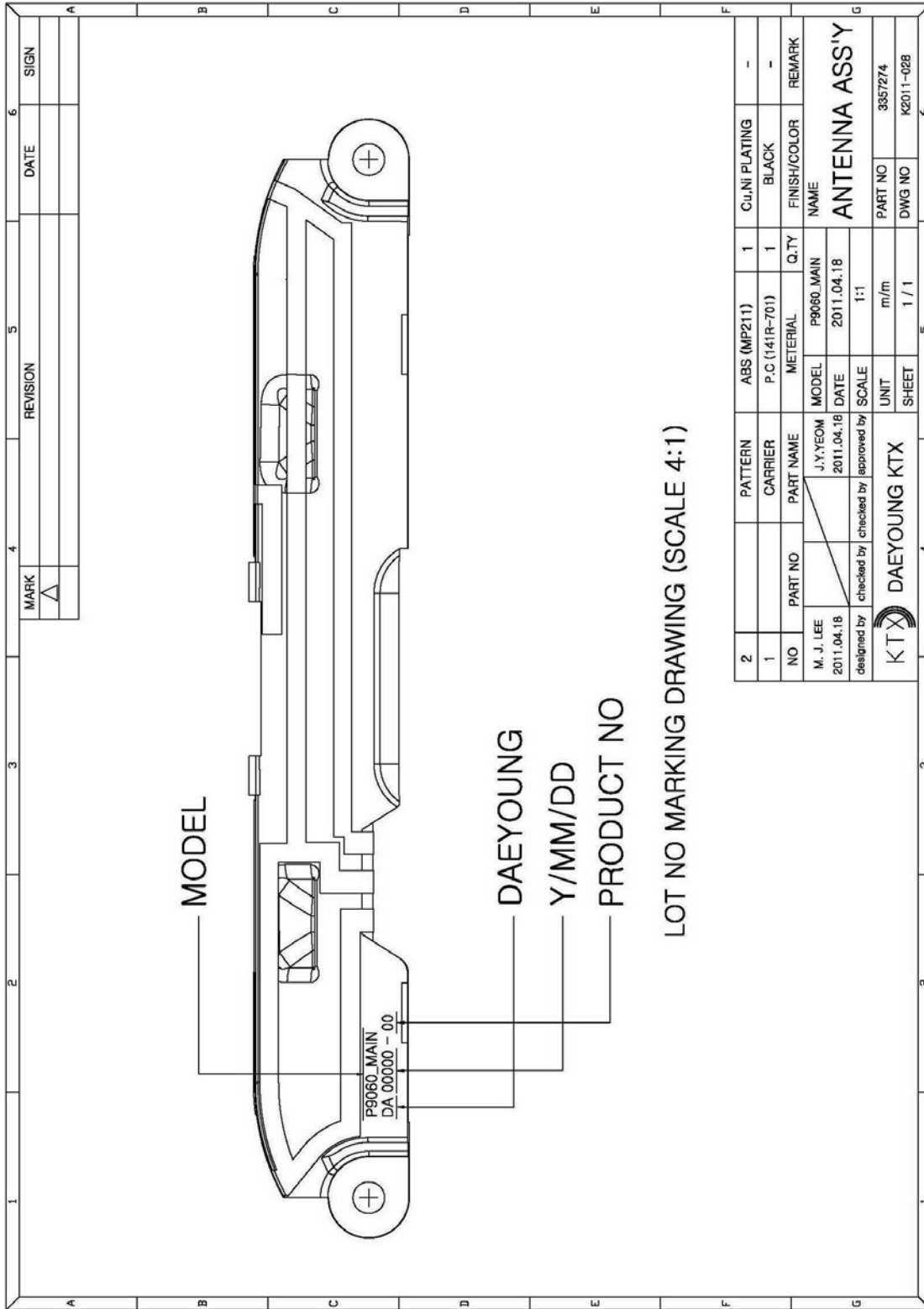
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## 6.2. Package



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### 6.3. Lot. Number



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### 6.4. Measurement

MARK △	REVISION	DATE	SIGN
1	2	3	4

**\* A resistance price measurement order.**

- 1) No.1,2 Point measurement
- 2) No.1,3 Point measurement
- 3) No.4,5 Point measurement

**\* A judgment basis.**

- A point resistance price the three that it was measured Right goods below 2 Ω.

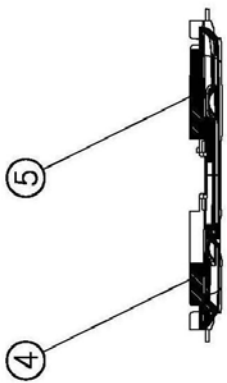
**\* A plating thickness measurement order.**

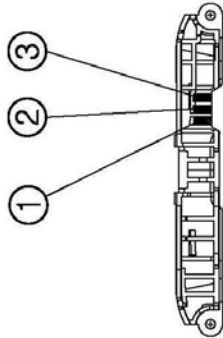
- 1) No.1 Point measurement
- 2) No.4 Point measurement
- 3) No.5 Point measurement

**\* A judgment basis.**


- Plating SPEC. (Cu 10~15um, Ni 5~10um)


  









Plating thickness, Resistance price measurement point (SCAL 1:1)

2	PATTERN	MP211	1	Cu, Ni PALTING	2차 사출
1	CARRIER	141R-701	1	BLACK	1차 사출
NO	PART NO	PART NAME	MATERIAL	Q.TY	FINISH/COLOR
M. J. LEE	J.Y. YEOM	P9060.MAIN	P9060.MAIN		NAME
2011.04.18	2011.04.18	2011.04.18	2011.04.18		ANTENNA ASS'Y
designed by	checked by	checked by	approved by	SCALE	1:1
KTX DAEYOUNG KTX		UNIT	m/m	PART NO	3357274
		SHEET	1 / 1	DWG NO	K2011-028