

**Patent Pending**



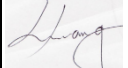
# Data sheet

## Main Internal Antenna

**Part No. : AMMAL002**

	Designed	Checked		Approved
Date	/	/	/	/

Revision no	Content	Page	Date	Name
0	First, documented	-	2015.12.18	I.J. Jeong

	<b>AMOTECH CO., LTD</b> 5B-1L, 617, NAMCHON-DONG, NAMDONG-GU, INCHOEN-CITY, KOREA TEL : 82-32-821-0363 FAX : 82-32-811-0283	Designed	Checked		Approved
					
		2/22			2/22

### Notes

The contents of this data sheet are subject to change without notice. Please confirm the specifications and delivery conditions when placing your order.

# 1. SPECIFICATIONS

## 1.1. Electrical Specifications

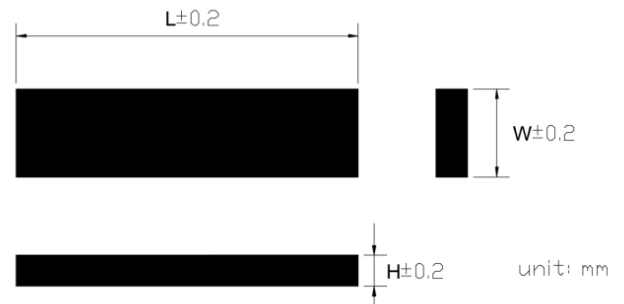
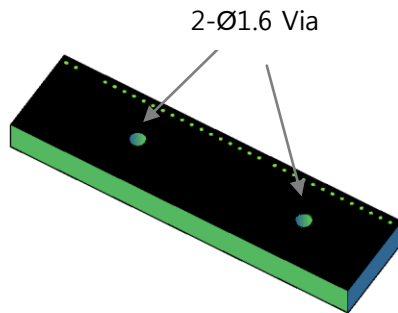
ITEM	LTE20	LTE23	LTE 40	LTE7, LTE41	Remark
Frequency [MHz]	791~821 832~862	2000~2020 2180~2200	2300~2400	2500~2690	Notes :1)
Peak Gain[dBi]	2.11	2.02	0.96	1.81	Notes :1)
Eff.[%] @Avg.	61.9 %	59.0 %	51.6 %	52.2 %	Notes :1)
ITEM	GSM900	DCS	PCS	WCDMA	Remark
Frequency [MHz]	880~960	1710~1880	1850~1990	1920~2170	Notes :1)
Peak Gain[dBi]	1.8	1.72	2.57	3.54	Notes :1)
Eff.[%] @Avg.	52.26 %	57.91 %	65.81 %	69.29 %	Notes :1)
VSWR	3.0 : 1				Notes :1)
	TBD				Notes :2)
Polarization	Linear				Notes :1)
Azimuth Beam Pattern	Omni-directional				Notes :1)
Impedance	50 Ω				Notes :1)

※Notes:1) Measured on the AMOTECH test board (120x50x1.6T)

Notes:2) Measured on the matched AMOTECH manual jig.

## 1.2. Mechanical Specifications

Electrode	Copper	-
Dimensions (L x W x H)	35.0(L) x 9.0(W) x 3.2(H)	mm
Operating Temperature	-35 ~ +85	°C



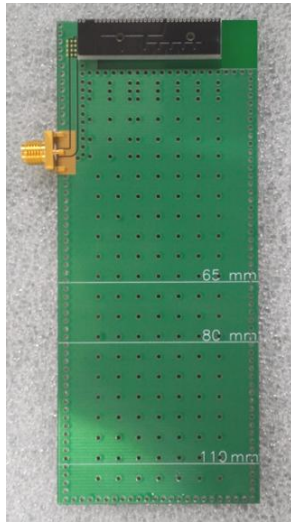
## 1.3 Marking



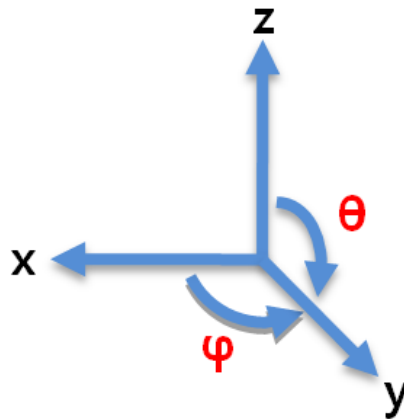
**L002** : Model No.  
**YY** : Year (ex: 2015 → 15 )  
**WW** : Week (ex: 1<sup>st</sup> week→01, 7<sup>th</sup> week→07)

## 2. MEASUREMENT

### 2.1. SET for Measurement



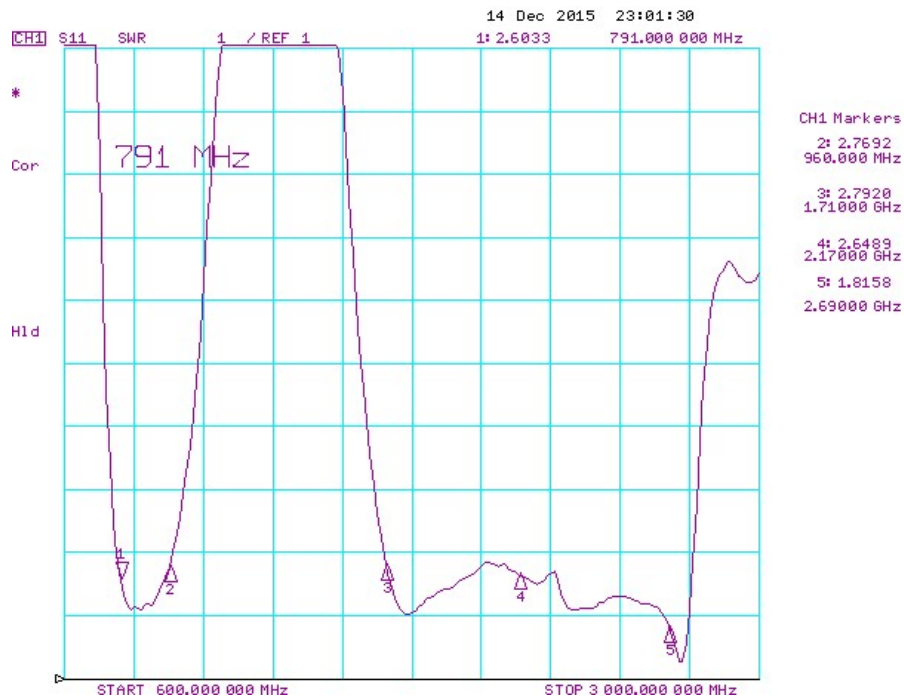
Board size mm: 120x50x1.6T



Antenna Radiation coordinate system

### 2.2. Electrical Characteristic

#### ◆ $S_{11}$ (VSWR)



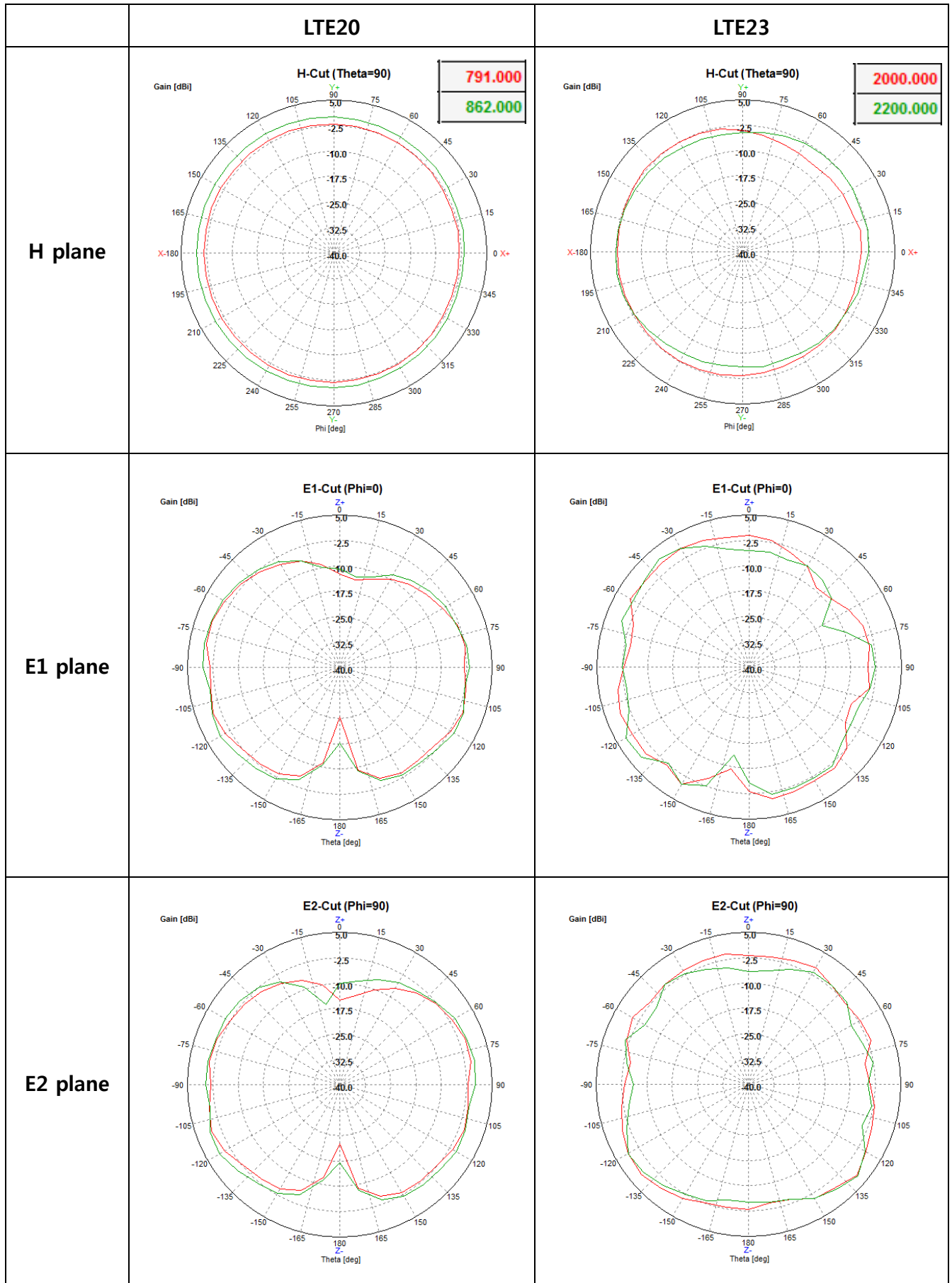
- VSWR @ EV Board -

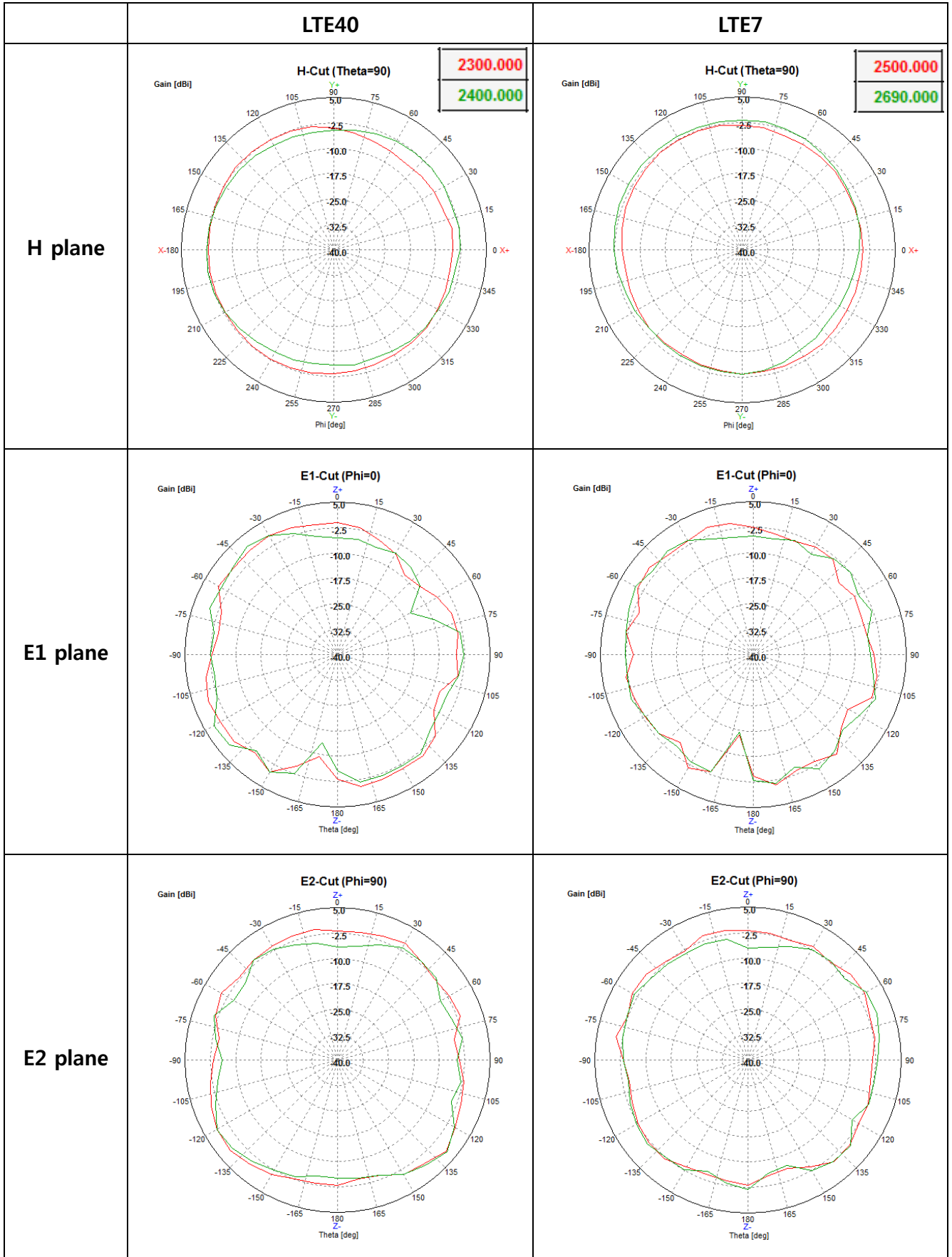
## 2.3. Radiation Characteristic

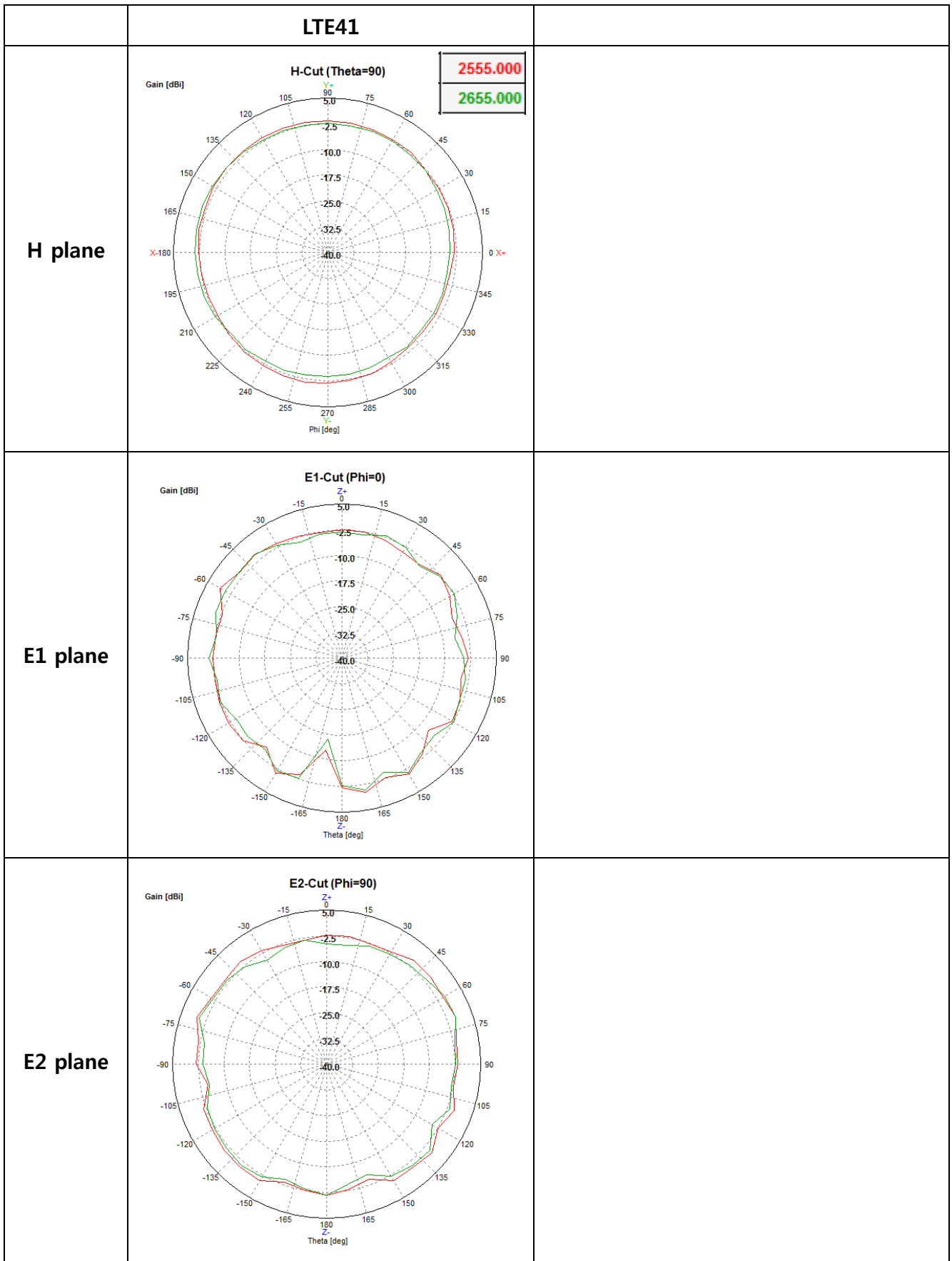
### - Measurement Result

Band	Frequency MHz]	EFF.[%]	Avg. (dB)	Peak (dB)
LTE20	791	50.79	-2.94	0.57
	821	59.84	-2.23	1.25
	832	66.53	-1.77	1.78
	862	70.56	-1.51	2.11
GSM900	880	73.92	-1.31	2.34
	960	68.04	-1.67	2.7
DCS	1710	51.16	-2.91	0.57
	1785	50.76	-2.95	0.88
	1805	58.89	-2.30	1.71
	1880	59.6	-2.25	1.7
PCS	1850	69.18	-1.6	2.57
	1910	68.21	-1.66	2.29
	1930	69.57	-1.58	2.32
	1990	63.59	-1.97	1.82
WCDMA	1920	71.86	-1.44	2.32
	1980	64.05	-1.93	1.91
	2140	76.44	-1.17	3.54
	2170	70.27	-1.53	3.44
LTE23	2000	63.40	-1.98	1.85
	2020	53.11	-2.75	0.91
	2180	62.91	-2.01	2.02
	2200	56.62	-2.47	1.76
LTE40	2300	49.04	-3.09	0.51
	2400	54.26	-2.65	0.96
LTE7	2500	59.74	-2.24	1.6
	2570	45.42	-3.43	0.86
	2620	56.09	-2.51	1.81
	2690	47.48	-3.23	1.58
LTE41	2555	63.58	-1.97	1.06
	2575	65.76	-1.82	1.29
	2635	51.39	-2.89	0.25
	2655	55.54	-2.55	0.49
<ul style="list-style-type: none"> <li>● Remark</li> <li>- 6mx3mx3m Anechoic Chamber</li> <li>- Matching on the standard test board (120 x 50 mm)</li> <li>- Temp. : 25°C / Humidity : 50~55%</li> </ul>				

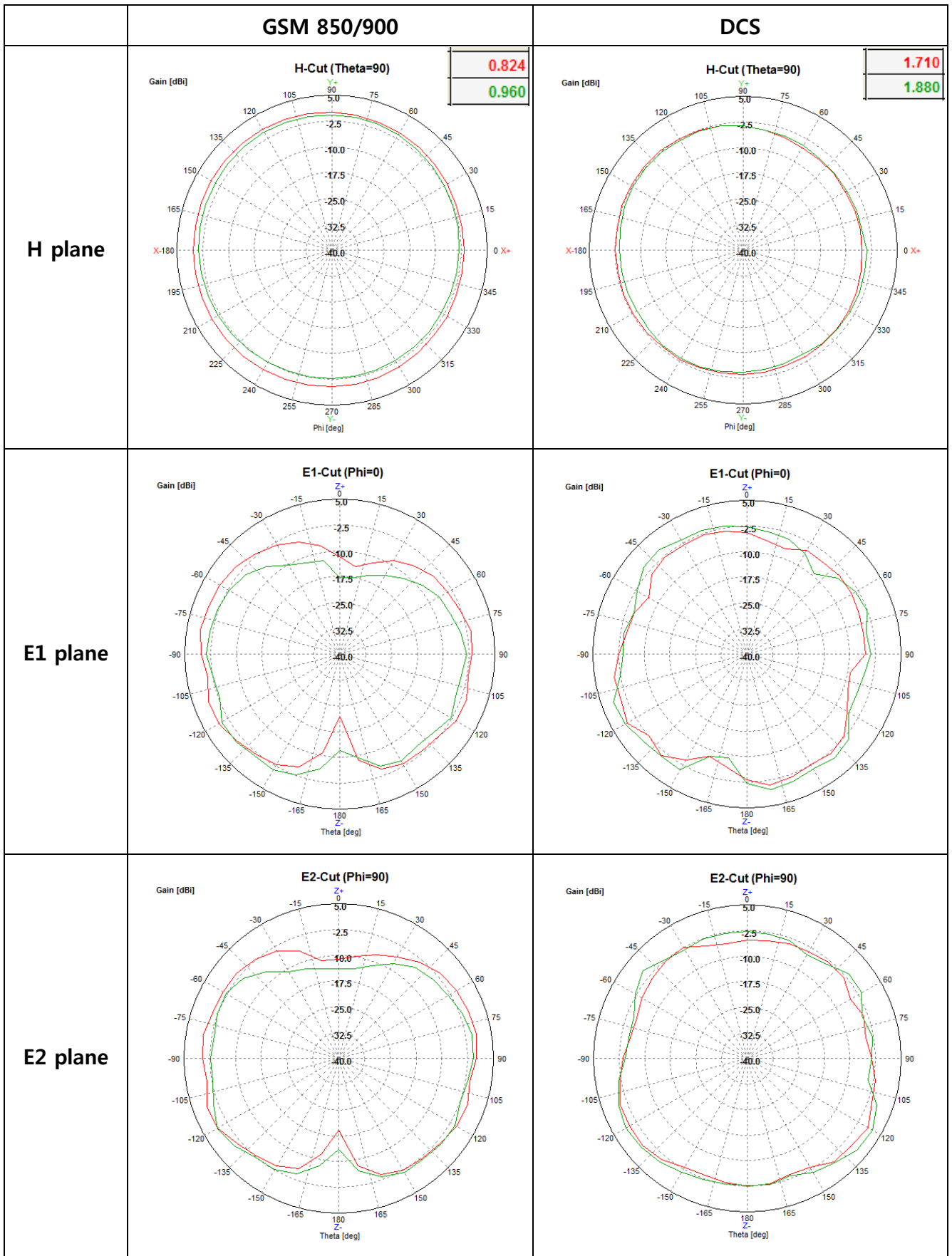
## 2.4. Radiation patterns

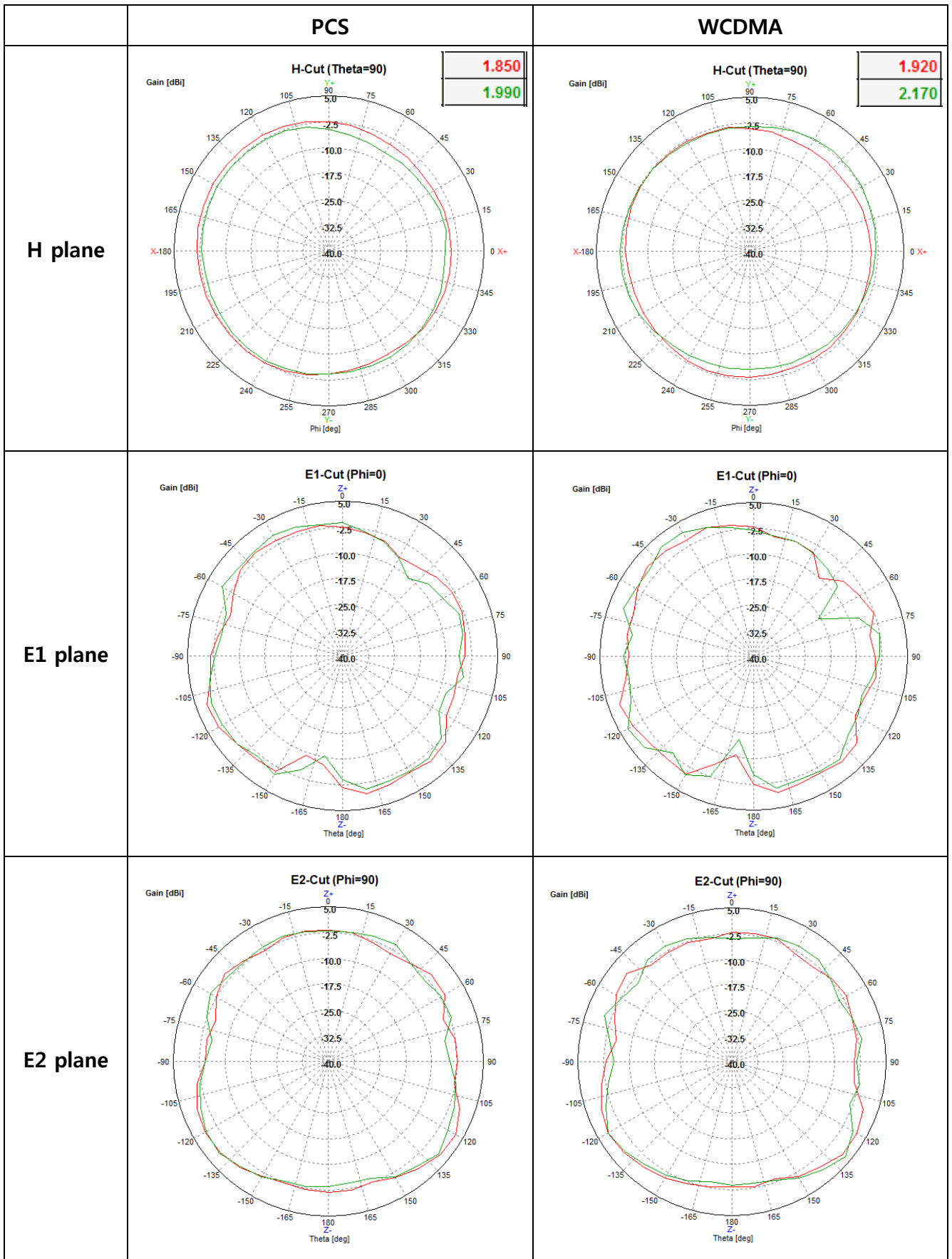








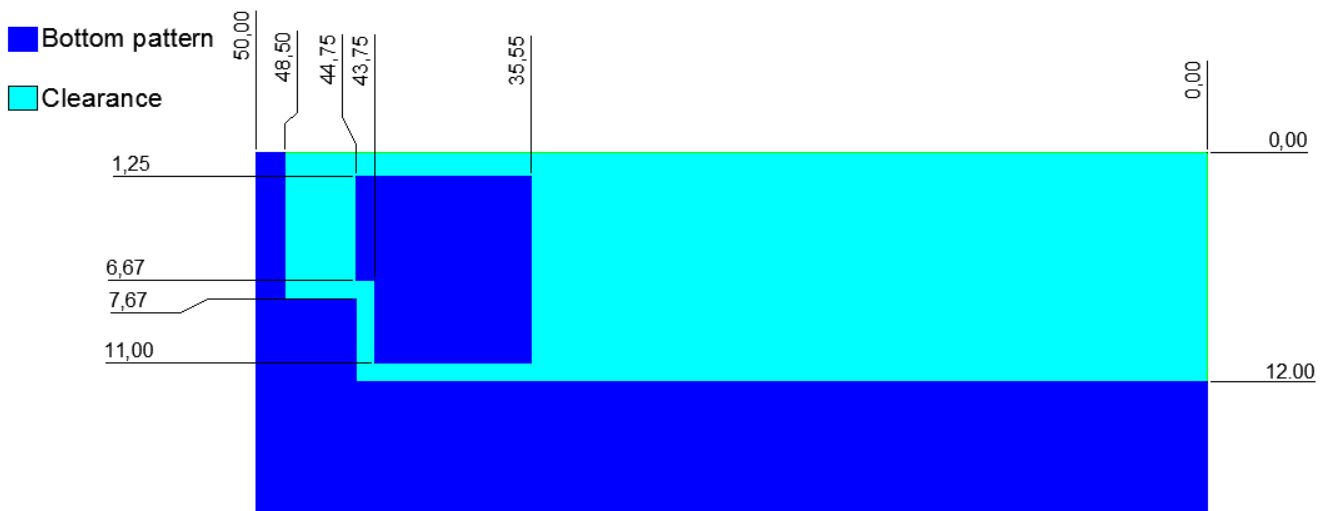
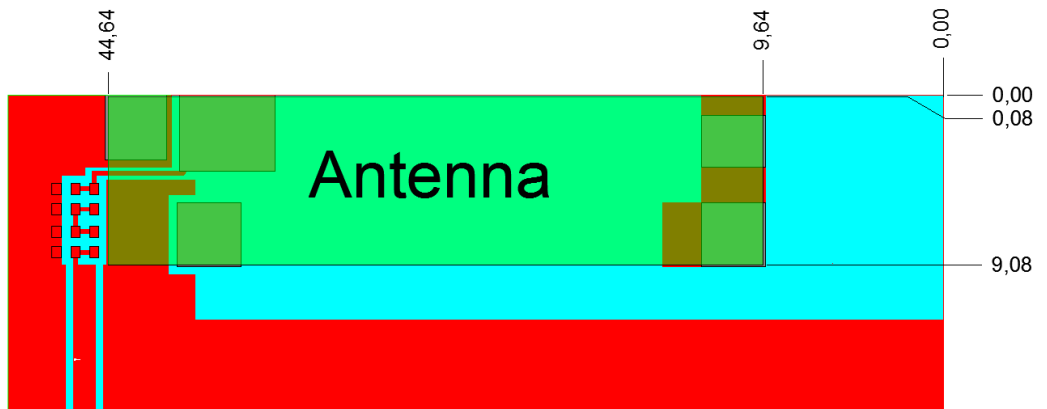
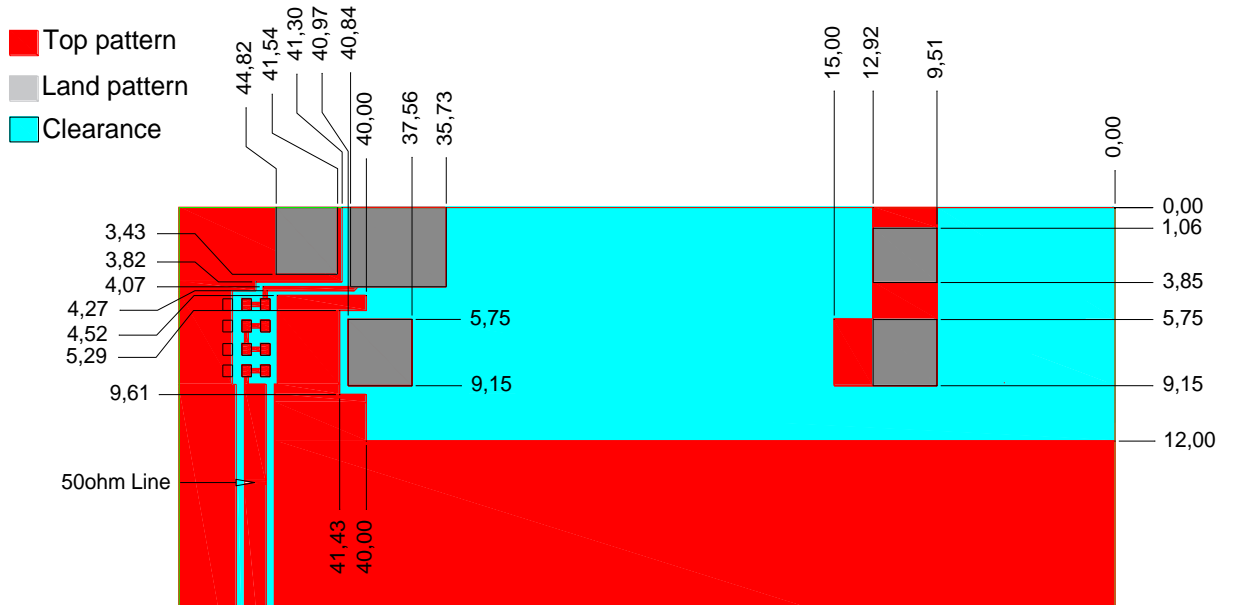




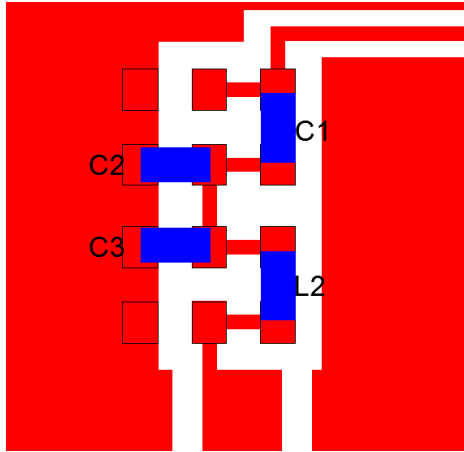
### 3. SOLDERING RECOMMENDATIONS

#### 3.1. Soldering Land Pattern

\* PCB Thickness (mm): FR4 1.6T



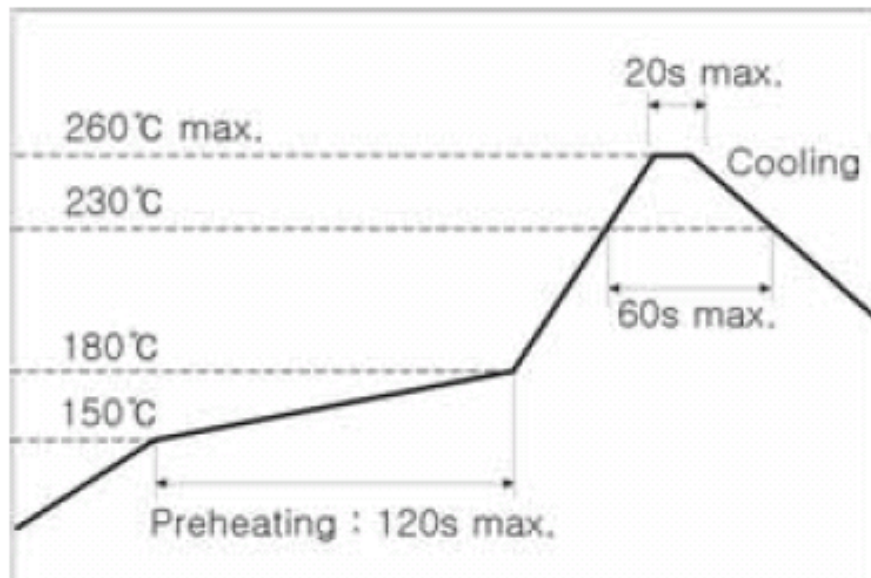
### 3.2. Matching circuit



C1 (Series)	2.2 pF
C2 (Shunt)	0.5 pF
C3 (Shunt)	NC
L2 (Series)	1.8 nH

### 3.3. Soldering Profile

Solder paste : Sn/Ag/Cu:96.5/3.0/0.5



This product is designed for reflow soldering only. Do not use flow (wave) soldering.

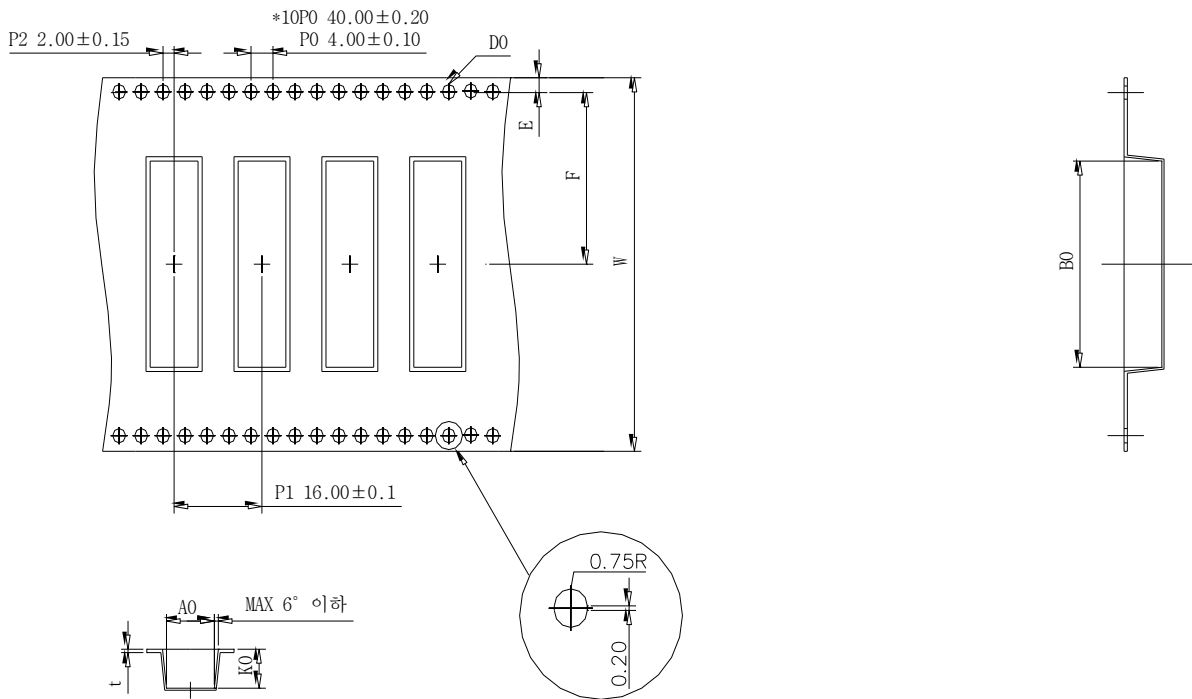
- ① Use non-activated flux (Cl content 0.2% max.)
- ② Follow the recommended soldering conditions to avoid damage.
- ③ Reflow-cycle is max. 3times.

## 4. PACKING



## 4.1 Tape Dimension (unit : mm)

### 4.1.1 Size



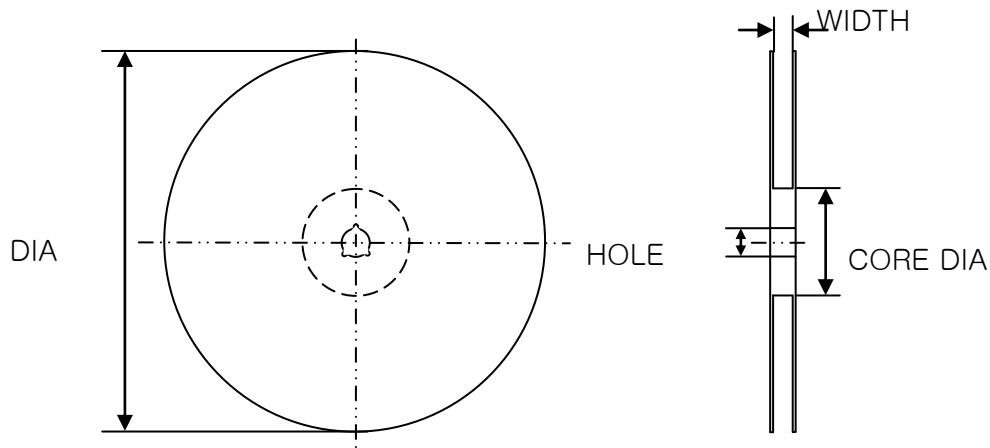
A0	9.40±0.10	E	1.75±0.10
B0	35.50±0.10	F	26.20±0.10
K0	3.70±0.10	W	56.00±0.30
D0	1.50±0.1 -0.0	t	0.40±0.05

### 4.1.2 Surface resistance

- 1) Carrier tape : Max  $10^{11}\Omega$
- 2) Cover tape : Max  $10^{11}\Omega$
- 3) Reel : Max  $10^{11}\Omega$

## 4.2 Description of Reel

### 4.2.1 Size



ITEM	DIA	WIDTH	CORE DIA	HOLE
Size(mm)	330.0 ±2	57.5 ± 1.0	80.0 ± 1.0	13.0 ± 0.3

### 4.2.2 Material

- 1) Plastic reel : GPPS (General Purpose Poly Styrene) resin

## 4.3 Description of Packing Box

### 4.3.1 Reel

Size: 56 (W), Dia.  $\Phi$ 330 (mm)

Quantity: 1,000ea/reel

### 4.3.2 Inner Box

Size: 368 (W) x 346 (D) x 65 (T) (mm)

Quantity: 1 reel (1,000 ea/reel × 1 reel = 1,000 ea)



### 4.3.3 Outer Box

Size: 405 (W) x 360 (D) x 300 (T) (mm)

Quantity: 4 Inner Box (1,000 ea/Inner Box × 4 Inner Box=4,000 ea)

