



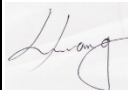
Data sheet

Main Internal Antenna

Part No. : AMMAP014TM

	Designed	Checked		Approved
Date	/	/	/	/

Revision no	Content	Page	Date	Name
0	First, documented	-	2017.02.01	I.J. Jeong

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

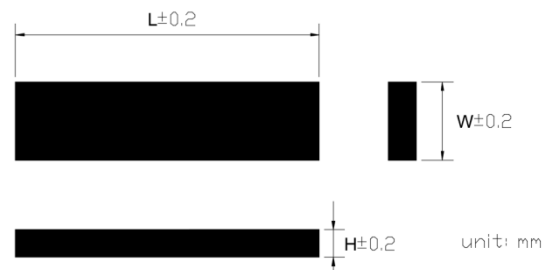
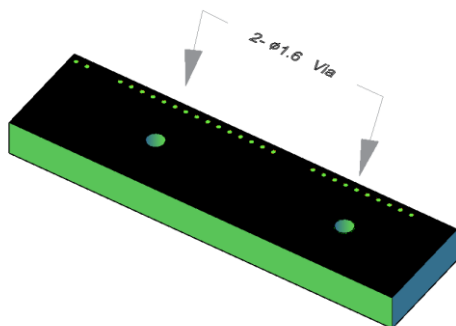
ITEM	GSM850	GSM900	DCS	PCS	UMTS	Remark
Frequency [MHz]	824~894	880~960	1710~1880	1850~1990	1920~2170	Notes :1)
Peak Gain [dBi]	1.13	0.89	1.87	2.39	2.99	Notes :1)
Average Eff.[%]	69.13%		61.98 %			Notes :1)
VSWR	2.7 : 1 max					Notes :1)
	TBD					Notes :2)
Power Handling	2 Watt cw					-
Polarization	Linear					Notes :1)
Azimuth Beam Pattern	Omni-directional					Notes :1)
Impedance	50 Ω					Notes :1)

※Notes:1) Measured on the AMOTECH test board (110x50x0.8 T)

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



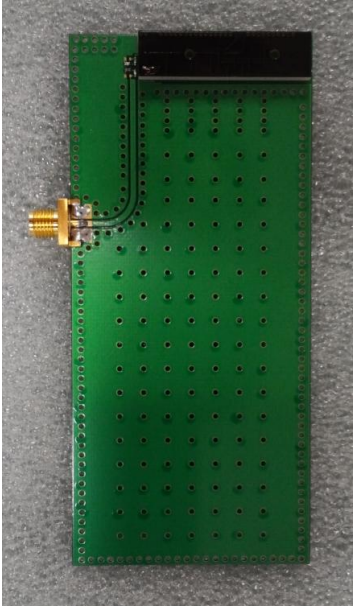
1.3 Marking



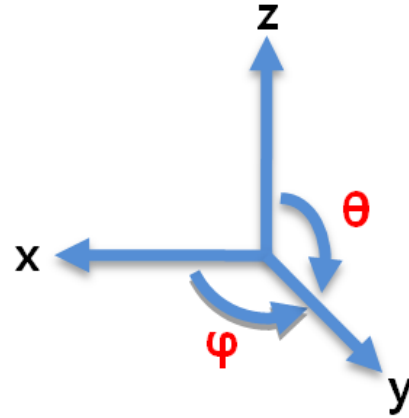
- : 1 pin position
- P014TM** : Model No.
- YY** : Year (ex: 2015 → 15)
- WW** : Week (ex: 1st week→01, 7th week→07)

2. MEASUREMENT

2.1. SET for Measurement



Board size mm: 110x50x0.8T

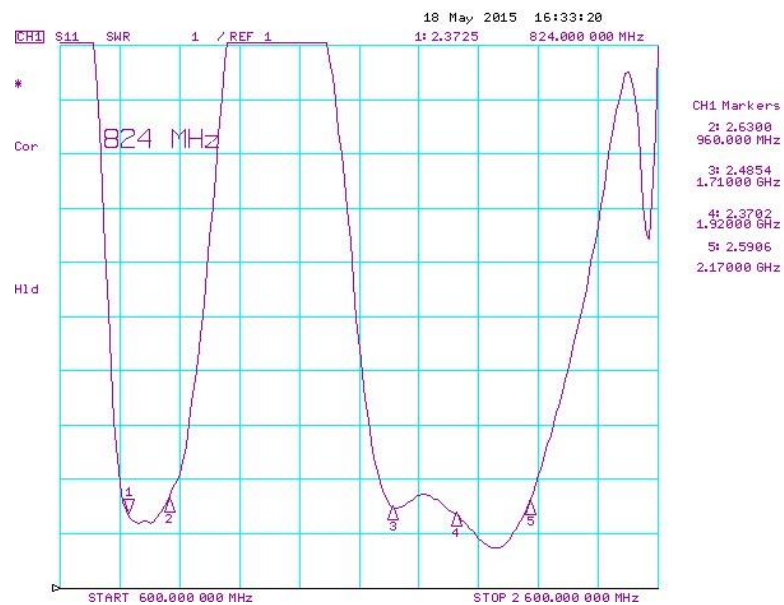


Antenna Radiation coordinate system

2.2. Electrical Characteristic

◆ S_{11} (VSWR)

Penta Band (GSM850&900, DCS, PCS, UMTS)



- VSWR @ EV Board -

2.3. Radiation Characteristic

- Measurement Setup

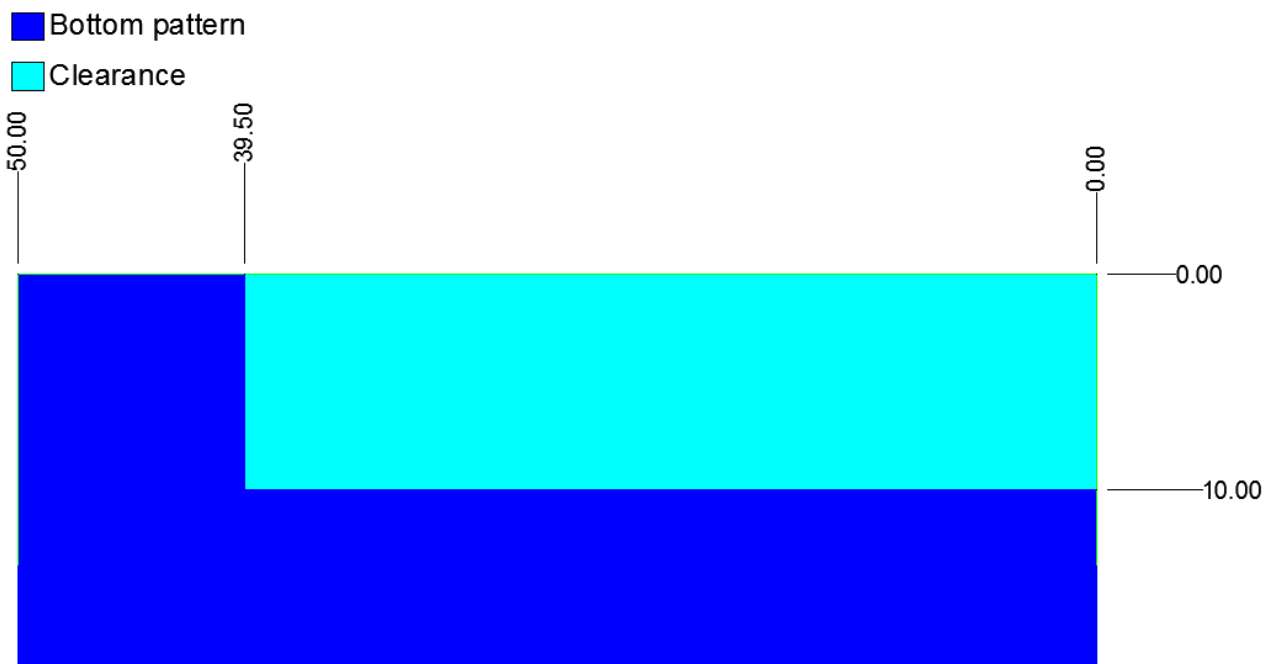
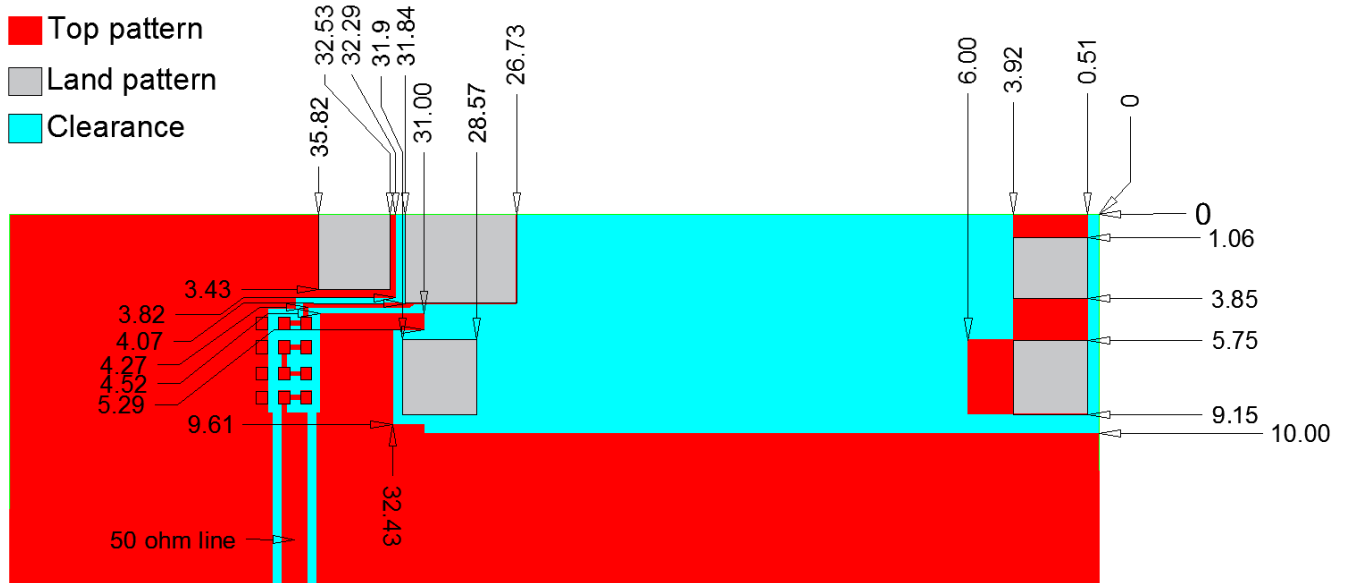
- 6mx3mx3m Anechoic Chamber
- Matching on the standard test board (110 x 50 mm)
- Temp. : 25°C / Humidity : 50~55%

- Measurement Result

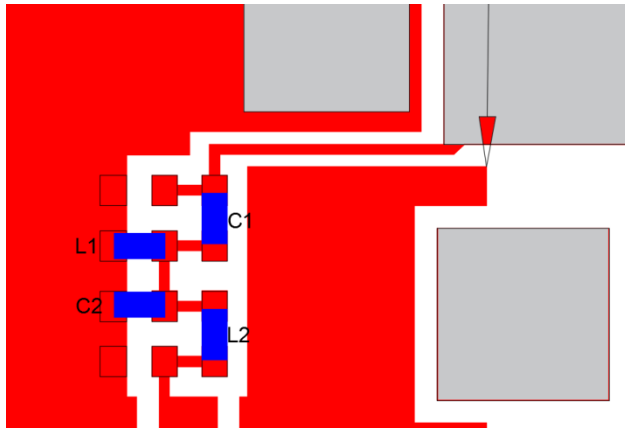
Band	Frequency MHz]	EFF.[%]	Avg. (dB)	Peak (dB)
GSM850	824	59.51	-2.25	0.88
	849	68.05	-1.67	1.42
	869	66.42	-1.78	1.29
	894	78.57	-1.05	2.05
GSM900	880	74.41	-1.28	1.77
	915	71.56	-1.45	1.77
	925	74.19	-1.3	1.94
	960	70.38	-1.53	2.04
DCS	1710	60.18	-2.21	1.76
	1785	56.48	-2.48	1.9
	1805	55.18	-2.58	1.73
	1880	61.93	-2.08	2.21
PCS	1850	61.23	-2.13	2.06
	1910	64.04	-1.94	2.28
	1930	62.29	-2.06	2.24
	1990	67.94	-1.68	2.38
UMTS	1920	62.16	-2.06	2.2
	1980	65.19	-1.86	2.35
	2140	61.39	-2.12	1.78
	2170	54.4	-2.64	1.32

3. SOLDERING RECOMMENDATIONS

3.1. Soldering Land Pattern



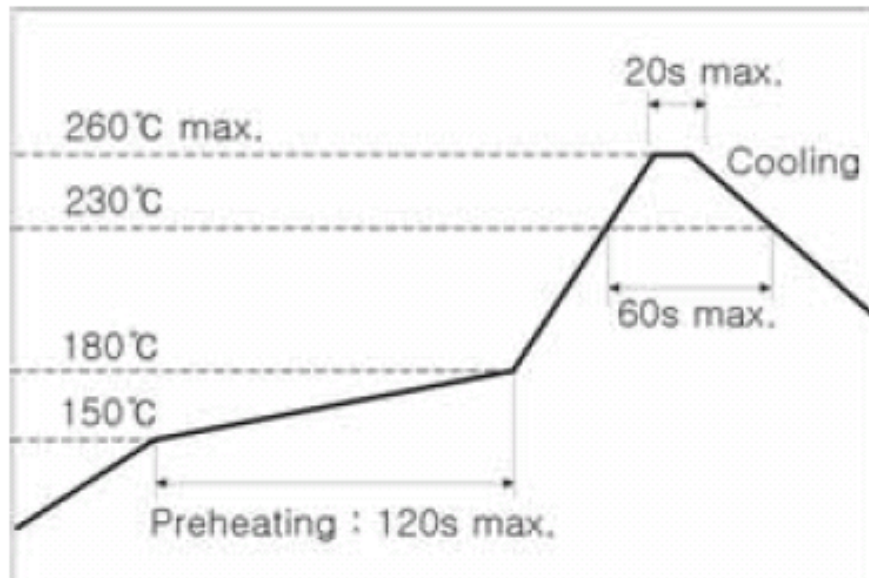
3.2. Matching circuit



C1 (Series)	2.0 pF
C2 (Shunt)	1.2 pF
L1 (Shunt)	15.0 nH
L2 (Series)	3.9 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.

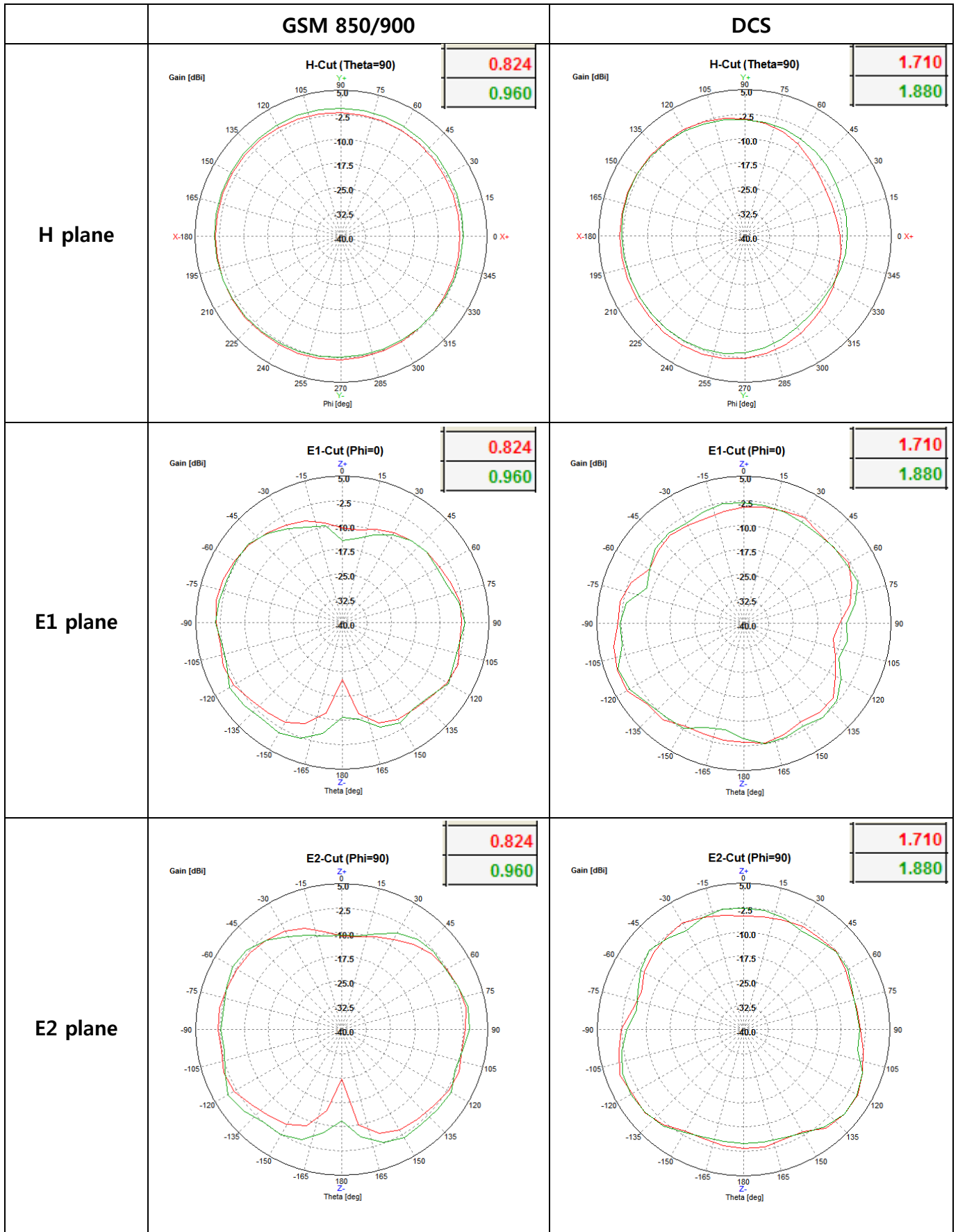
4. Reliability test

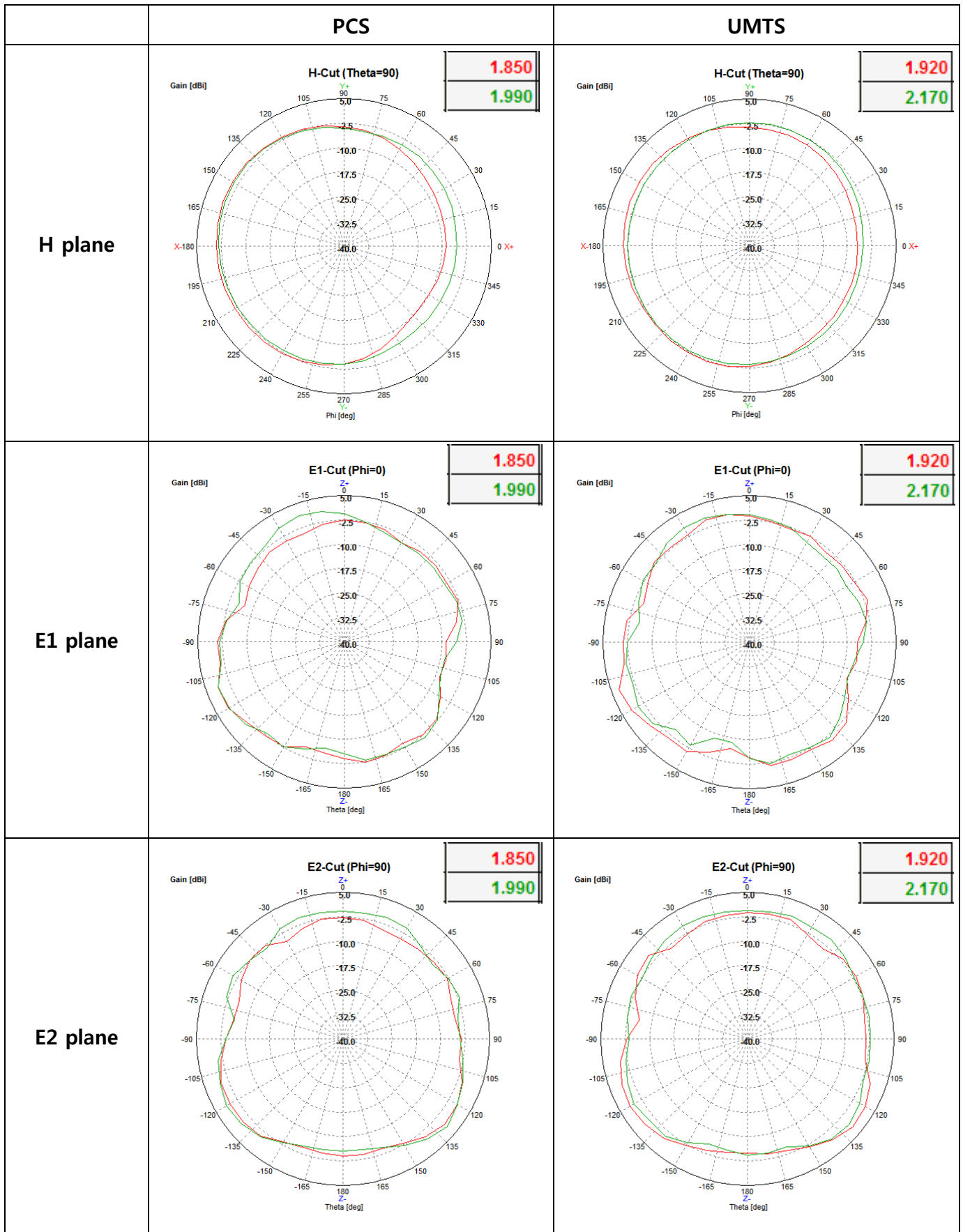
- Qualified to AEC-Q200 Standards for High Reliability

No.	Test Items	Test Condition	Requirement
1	High Temperature Exposure	+85±3°C, 1000hrs	1. No visible defects. 2. Satisfy VSWR spec.
2	Temperature Cycling	-40°C/30min ↔ +85°C/30min, 1000 Cycle	1. No visible defects. 2. Satisfy VSWR spec.
3	Biased Humidity	- Humidity: 85%RH - Temperature: 85°C - Time: 1000Hrs	1. No visible defects. 2. Satisfy VSWR spec.
4	Mechanical Shock	- Peak 100g - Duration 6 ms - X.Y.Z each 3 times	1. No visible defects. 2. Satisfy VSWR spec.
5	Vibration	- 5-55-5 Hz, 1 Octave/min - Amp.=1.5mm,acceleration=2x9.8 m/s ² (G) - Crossover Freq.=18 Hz	1. No visible defects. 2. Satisfy VSWR spec.
6	ESD	- ESD Level: 8KV, - Mode: Contact discharge, 100 times	1. No visible defects. 2. Satisfy VSWR spec.
7	Adhesion Strength of Soldering	- Used of push pull gauge	1. Spec (Min: 5Kgf)
8	Solderability	- Dipping 250±5°C / 5 sec	1. No visible defects.
9	Board Flex	- 2mm, Duration time: 1min - No open parts, No crack at soldering points	1. No visible defects. 2. Satisfy VSWR spec.

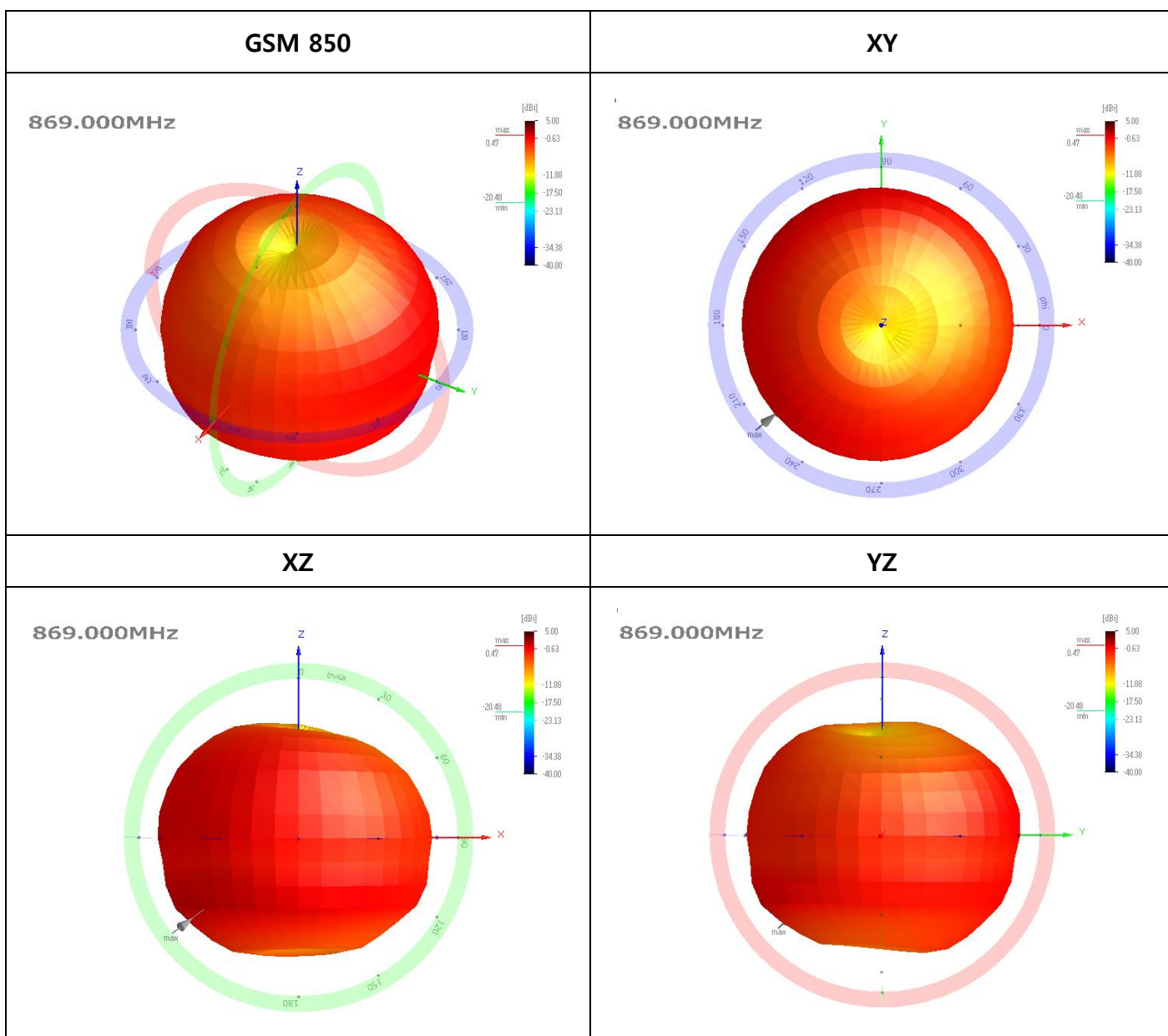
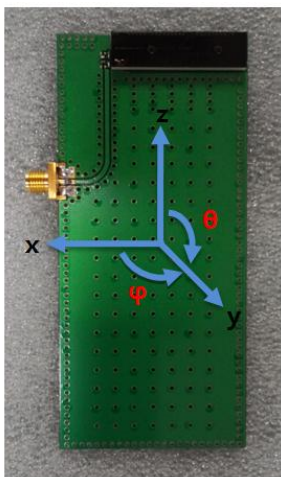
5. Radiation patterns

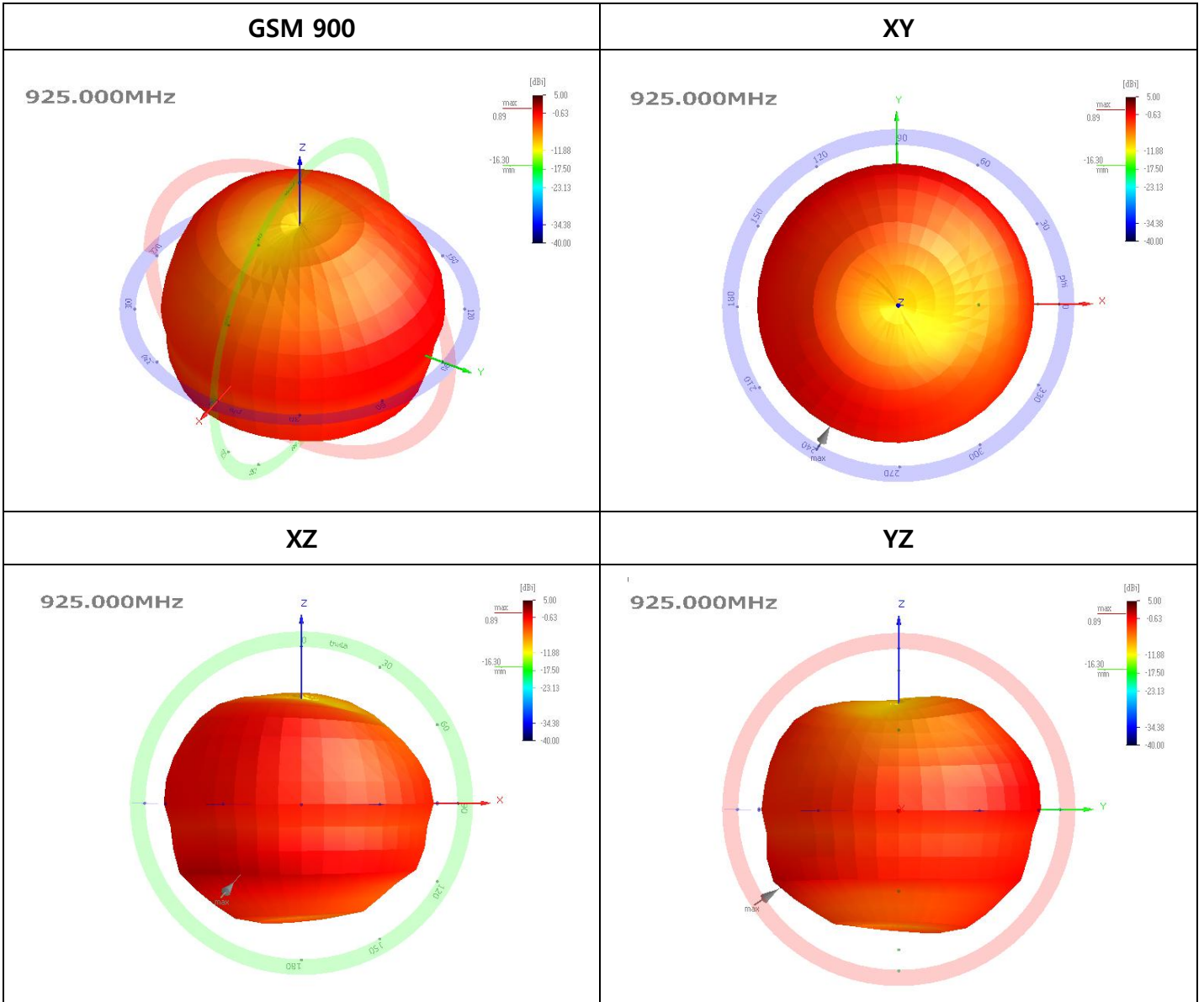
5.1. 2D Radiation patterns

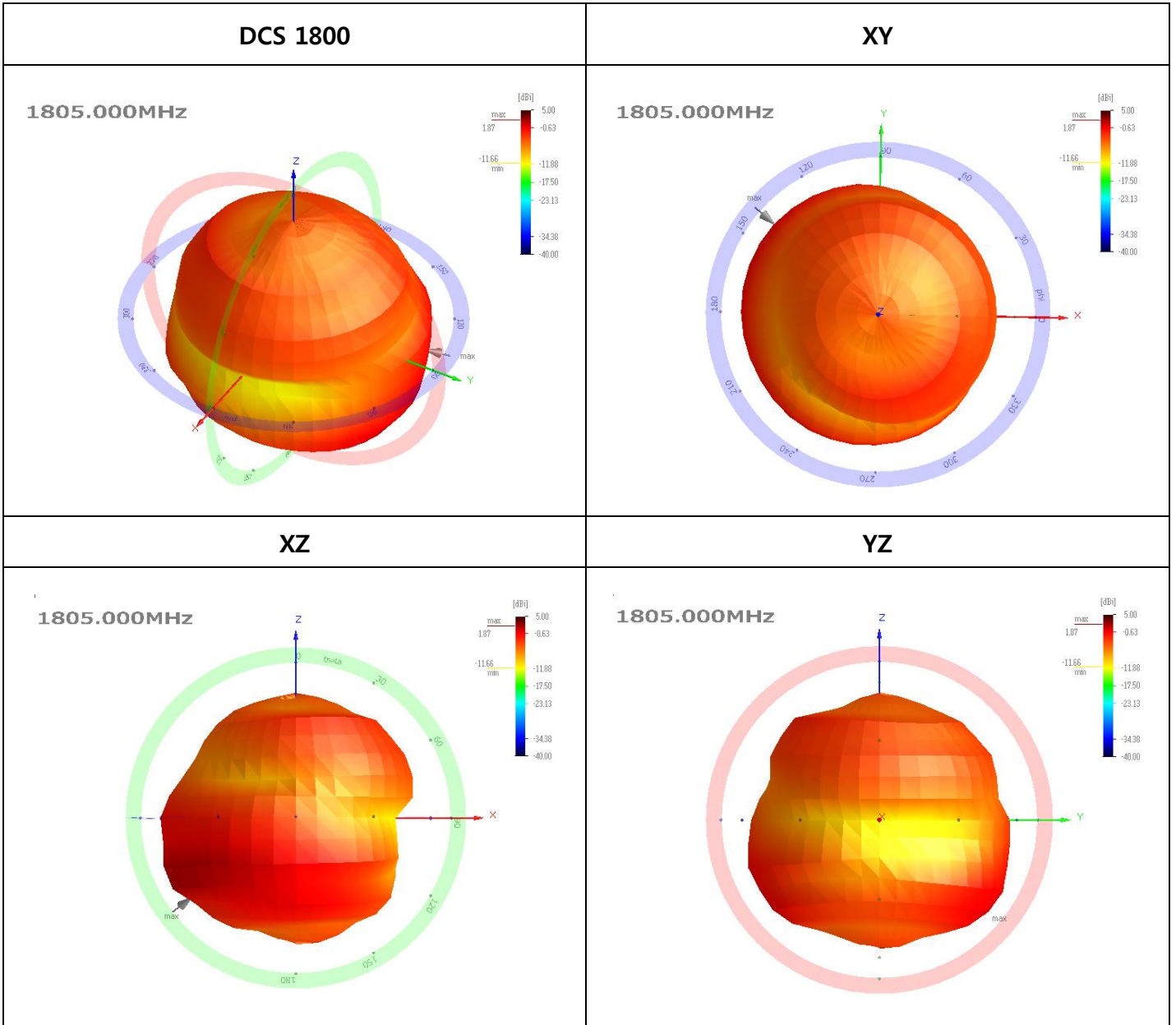


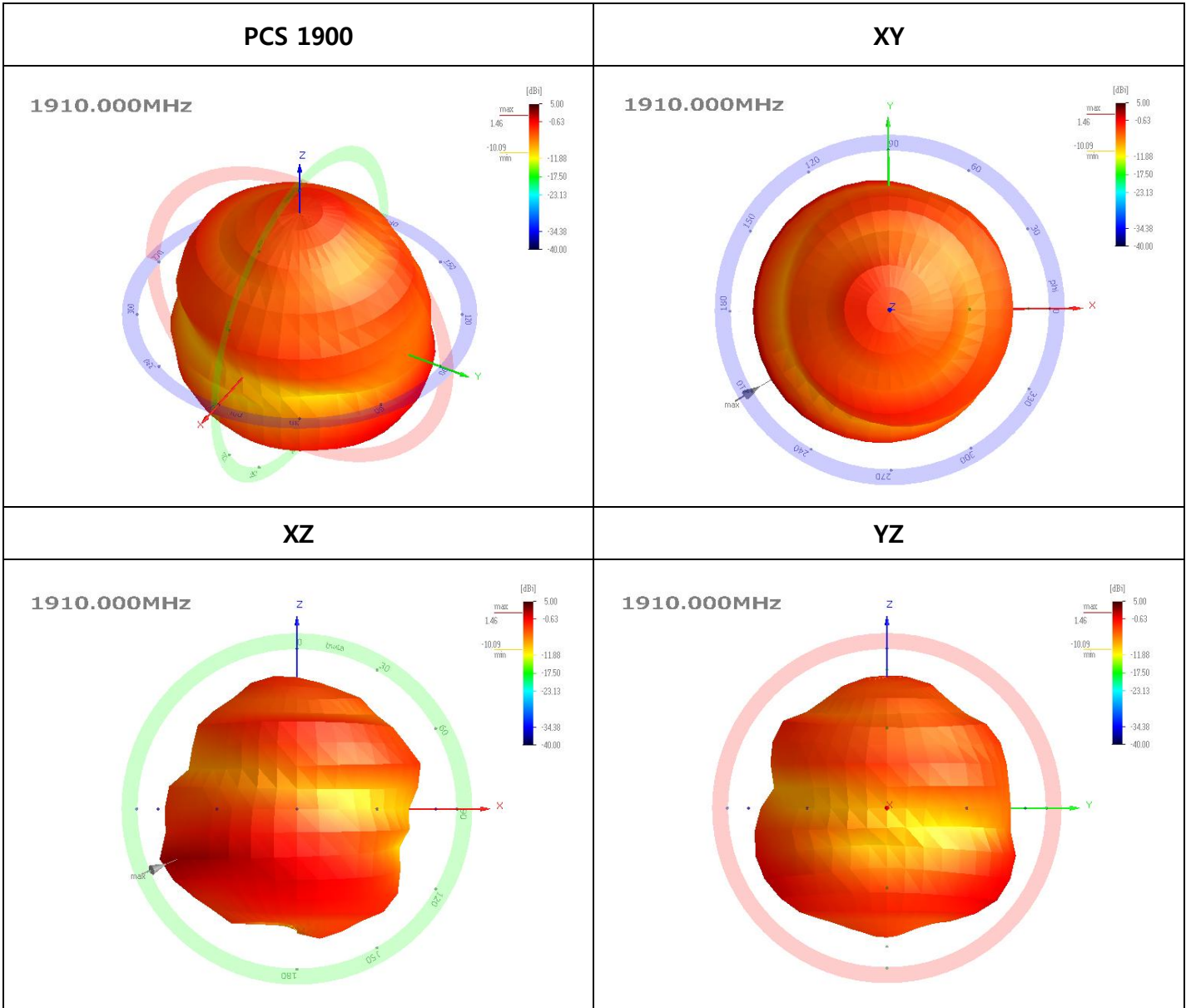


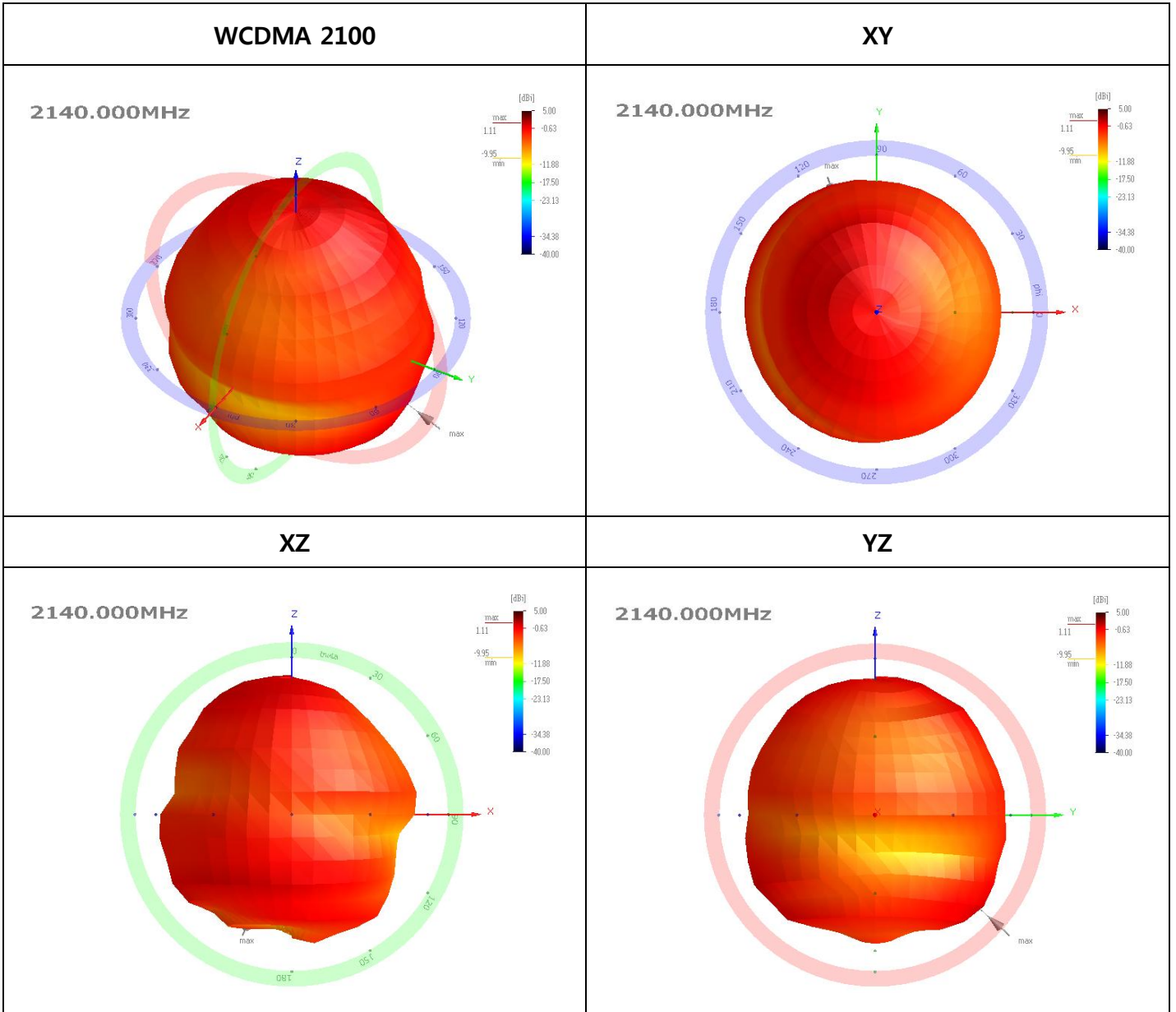
5.2. 3D Radiation patterns







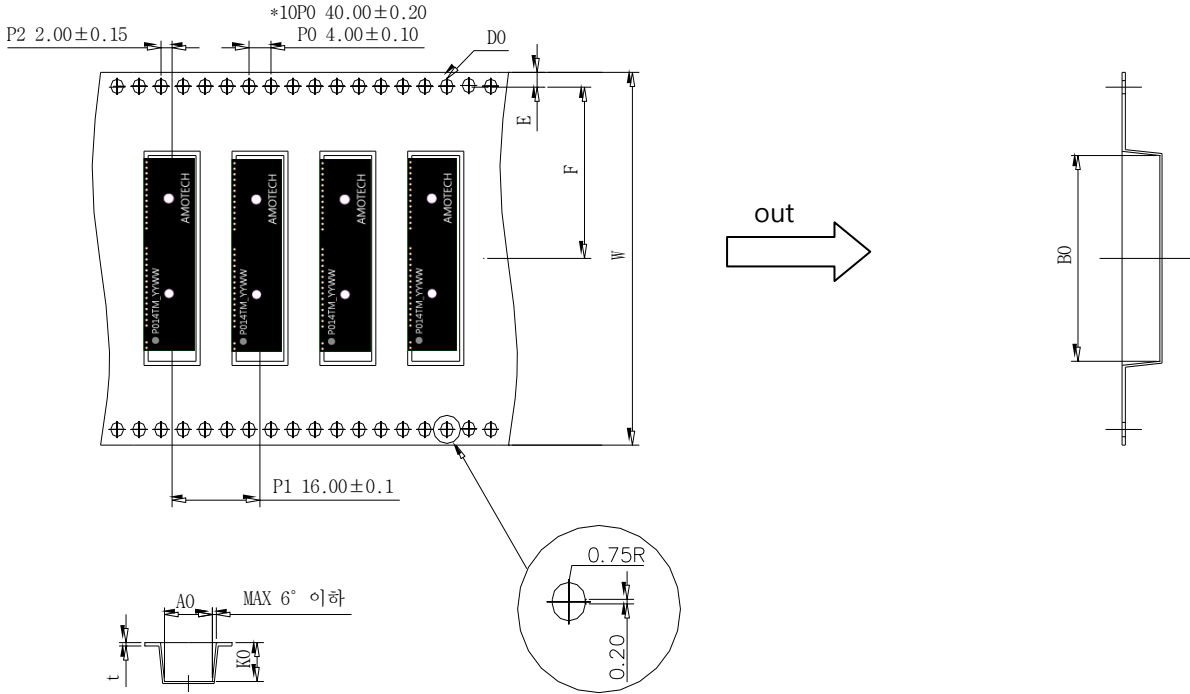




6. PACKING

6.1 Tape Dimension (unit : mm)

6.1.1 Size



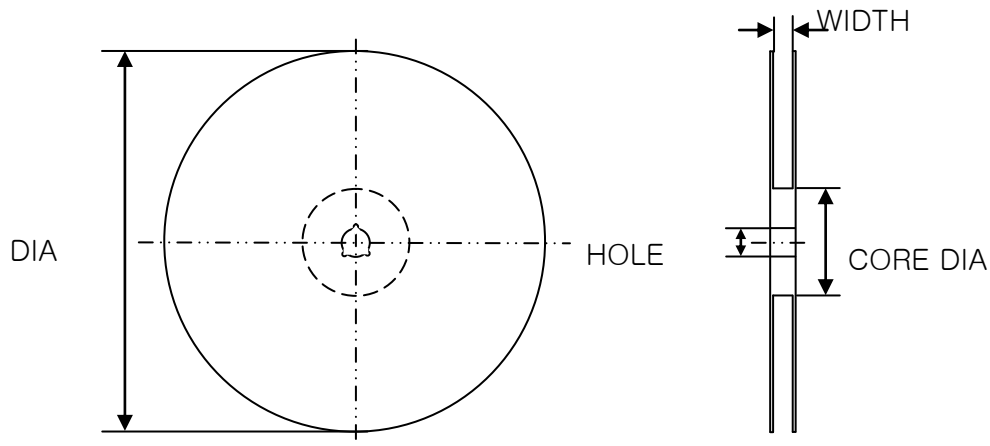
A0	9.40±0.10	E	1.75±0.10
B0	35.50±0.10	F	26.20±0.10
K0	3.70±0.10	W	56.00±0.30
D0	1.50+0.1 -0.0	t	0.40±0.05

6.1.2 Surface resistance

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

6.2 Description of Reel

6.2.1 Size



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

5.2.2 Material

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

6.3 Description of Packing Box

6.3.1 Reel

Size: 56 (W), Dia. Φ 330 (mm)

Quantity: 1,000ea/reel

6.3.2 Inner Box

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

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



6.3.3 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)



7. Caution and Warranty

7.1 Chip antennas must avoid shock and drop, to prevent damage of the antenna.

7.2 Chip antennas should be used within 12 months after delivery, antennas older than 12 months should be checked for solderability before using