



威潤 AS700

Engineer : Betty

Report date : 2024/02/29 REV.06



Revision History

Revision	Date	Engineer	Description
01	2023/05/18	Ting	New Release.
02	2023/05/31	Wade	Use one PCB to design GNSS and BT antennas.
03	2023/06/09	Wade	Change Ant0 Position
04	2023/10/20	Betty	The distance between Ant0 and the edge of the board is reduced by 0.5mm.
05	2023/10/24	Betty	Add VSWR Value
06	2024/02/29	Betty	Update ANT 0 & ANT 1

Antenna specification

Ant0

Item	Specification	Specification
Operating Frequency(MHz)	617-960	1710-2690
Bandwidth	343 MHz (Min.)	980MHz (Min.)
Return Loss	6dB (Min.)	6dB (Min.)
Polarization	Linear	Linear
Azimuth Bandwidth	Omni-directional	Omni-directional
Peak Gain	0.49dBi (Max.)	1.66dBi (Max.)
Impedance	50Ω	50Ω
Material	FPC	FPC
Connector	MHF 1	MHF 1
Cable type	O.D. 1.13	O.D. 1.13
Maximum Power	1W	1W
V.S.W.R	3 : 1	3 : 1
Radiation	Omni directional	Omni directional
Efficiency	42%(Max.)	44%(Max.)
Operating Temperature	-55~125°C	-55~125°C
Storage temp	5~40°C	5~40°C

Antenna specification

Ant1

Item	Specification	Specification
Operating Frequency(MHz)	1166-1186	1565-1585
Bandwidth	20 MHz (Min.)	20 MHz (Min.)
Return Loss	10 dB (Min.)	10 dB (Min.)
Polarization	Linear	Linear
Azimuth Bandwidth	Omni-directional	Omni-directional
Peak Gain	1.74dBi (Max.)	1.92dBi (Max.)
Impedance	50Ω	50Ω
Material	PCB	PCB
Connector	MHF 1	MHF 1
Cable type	O.D. 1.13	O.D. 1.13
Maximum Power	1W	1W
V.S.W.R	2 : 1	2 : 1
Radiation	Omni directional	Omni directional
Efficiency	53%(Max.)	52%(Max.)
Operating Temperature	-10~60°C	-10~60°C
Storage temp	-10~70°C	-10~70°C

Antenna specification

Ant2

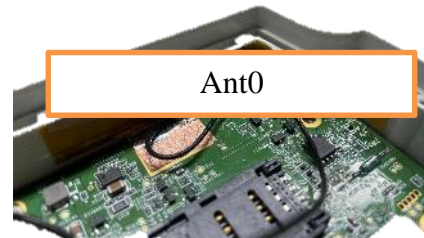
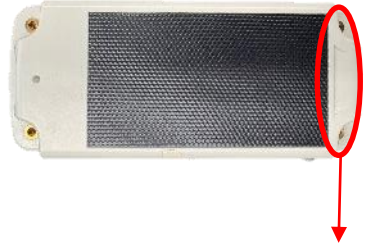
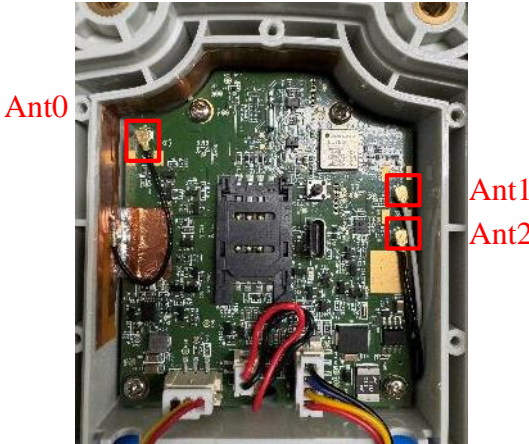
Item	Specification
Operating Frequency(MHz)	2400-2500
Bandwidth	100 MHz (Min.)
Return Loss	10 dB (Min.)
Polarization	Linear
Azimuth Bandwidth	Omni-directional
Peak Gain	1.56dBi (Max.)
Impedance	50Ω
Material	PCB
Connector	MHF 1
Cable type	O.D. 1.13
Maximum Power	1W
V.S.W.R	2 : 1
Radiation	Omni directional
Efficiency	37%(Max.)
Operating Temperature	-10~60°C
Storage temp	-10~70°C

Antenna photo

Top

Back

Front

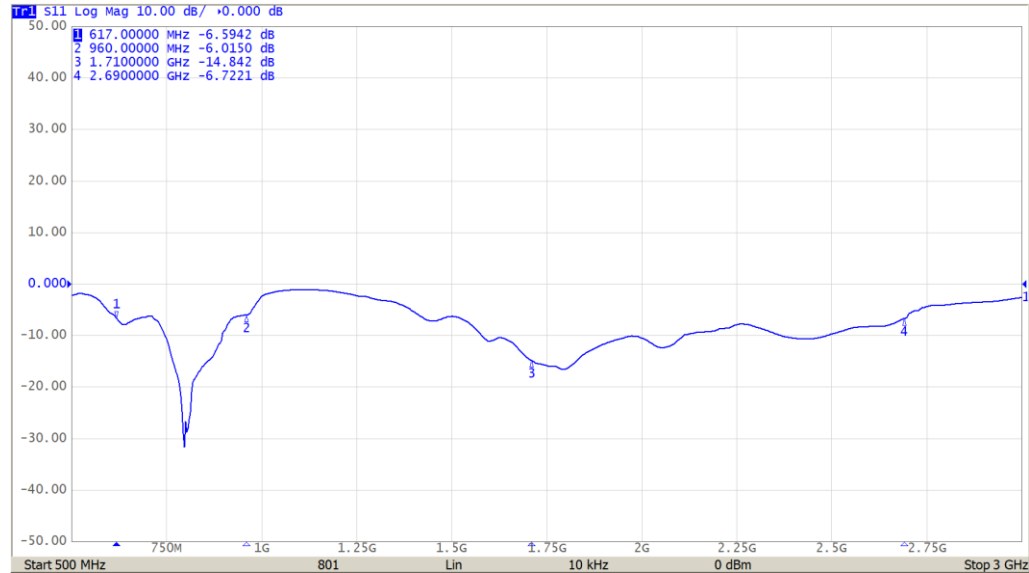


ANT	Specification	Cable length	Cable Jacket
ANT0	LTE	57mm	Black
ANT1	GNSS	100mm	White
ANT2	BT	100mm	Black

Antenna Measurement Vector Network Analyzer

Return Loss

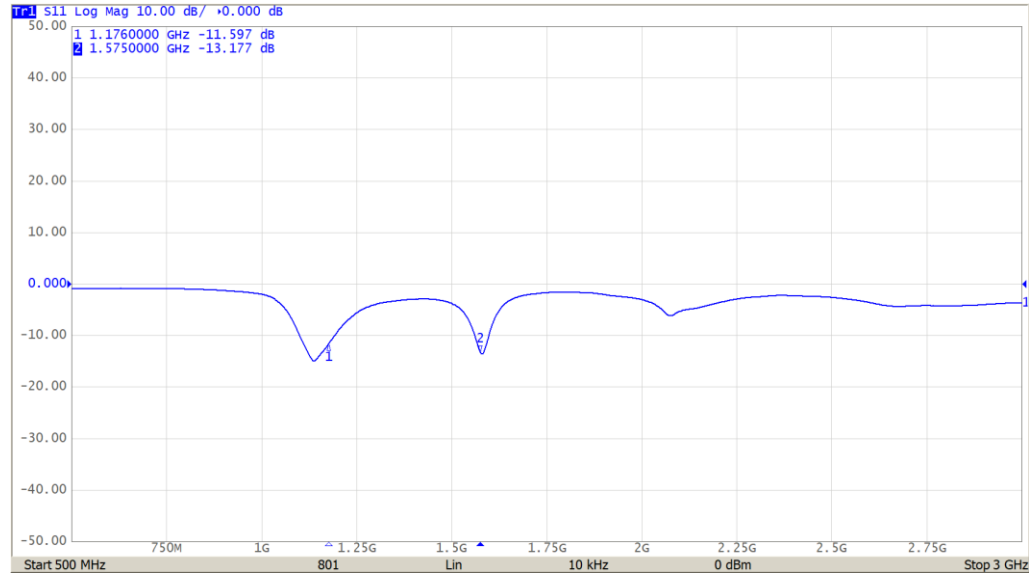
Ant0



Freq.(MHz)	617	960	1710	2690
S11(dB)	-6.5	-6.0	-14.8	-6.7

Return Loss

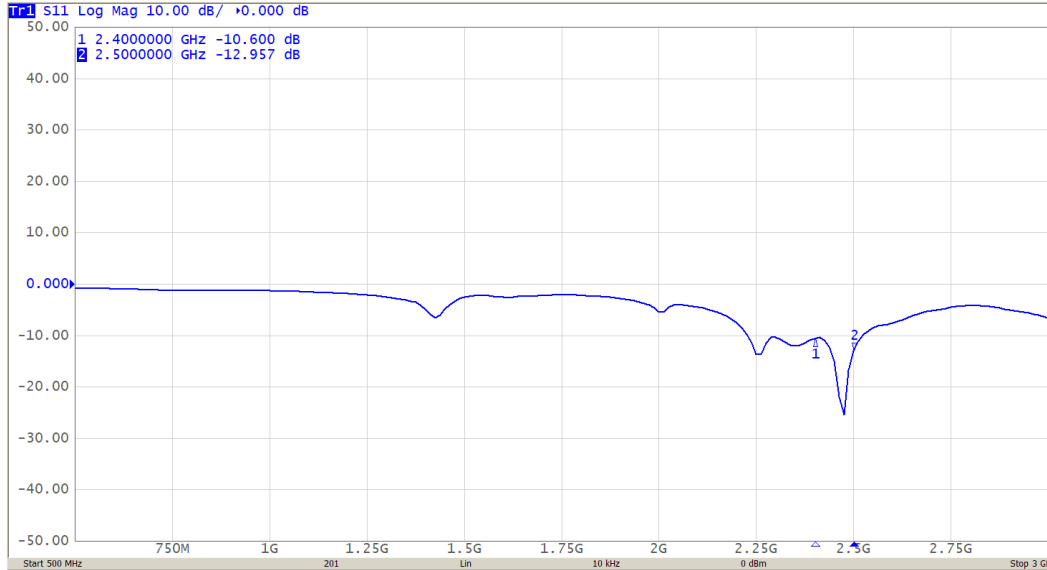
Ant1



Freq.(MHz)	1176	1575
S11(dB)	-11.5	-13.1

Return Loss

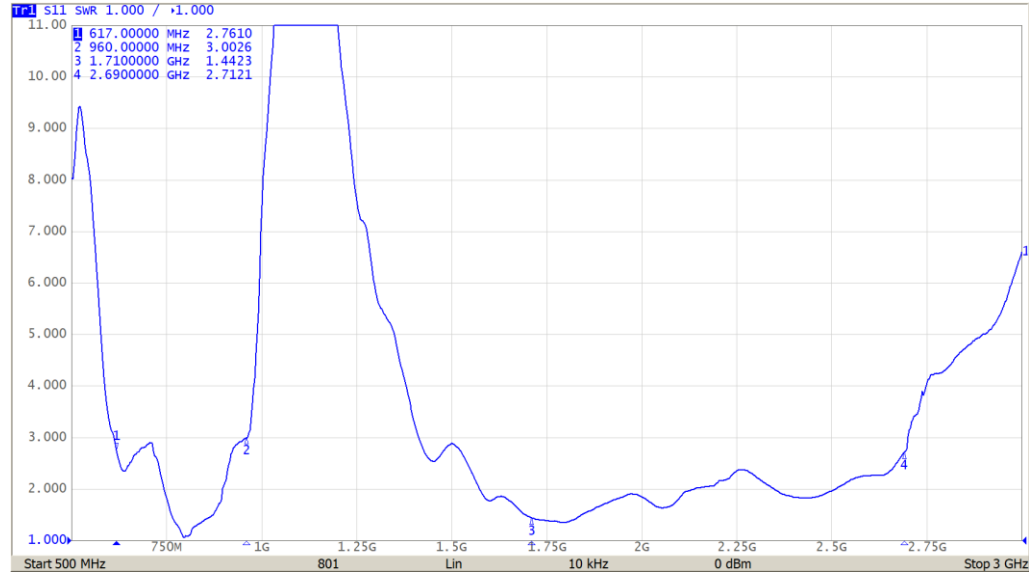
Ant2



Freq.(MHz)	2400	2500
S11(dB)	-10.6	-12.9

VSWR

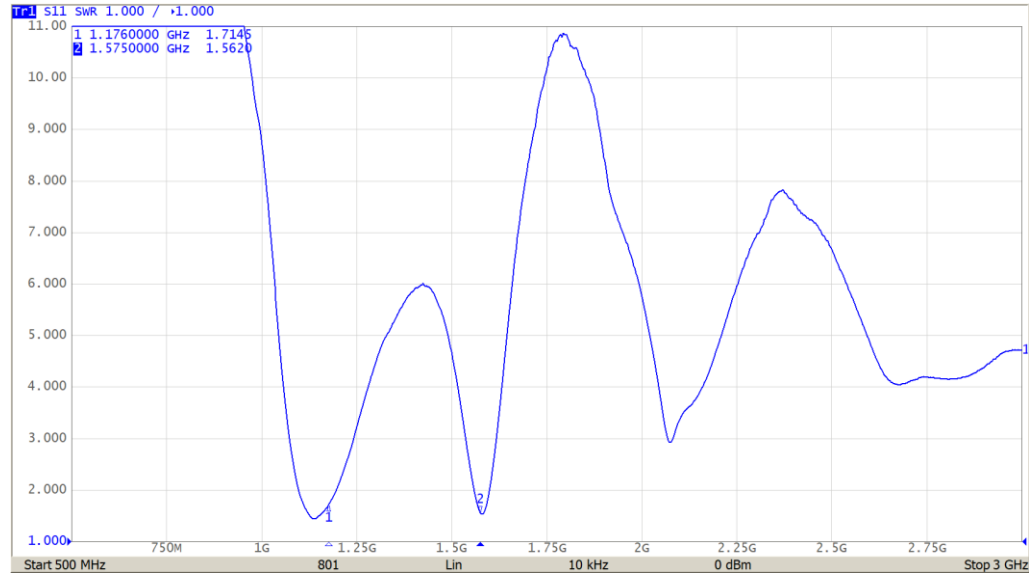
Ant0



Freq.(MHz)	617	960	1710	2690
S11(dB)	2.7	3.0	1.4	2.7

VSWR

Ant1



Freq.(MHz)	1176	1575
S11(dB)	1.71	1.56

VSWR

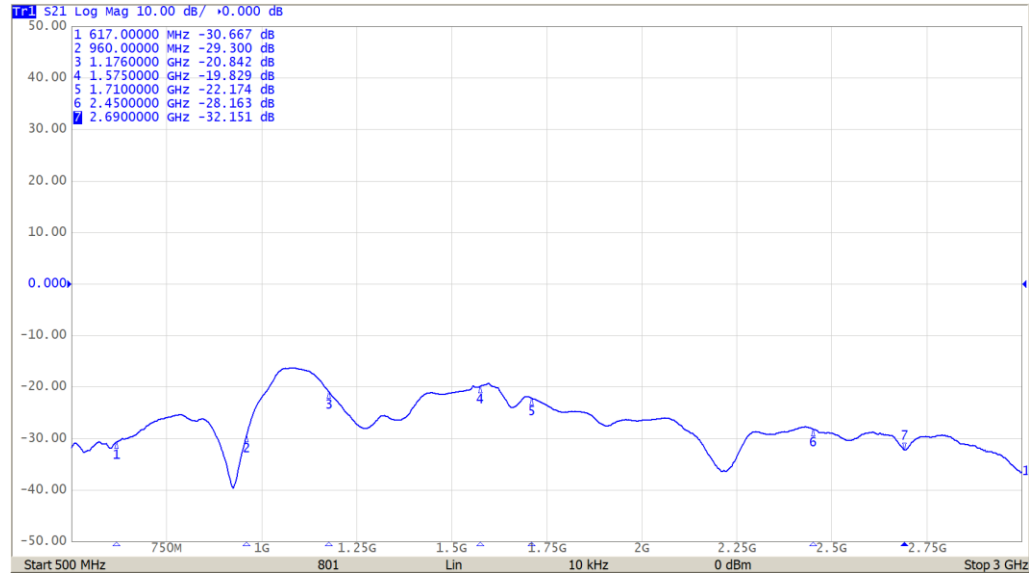
Ant2



Freq.(MHz)	2400	2500
S11(dB)	1.83	1.58

Isolation

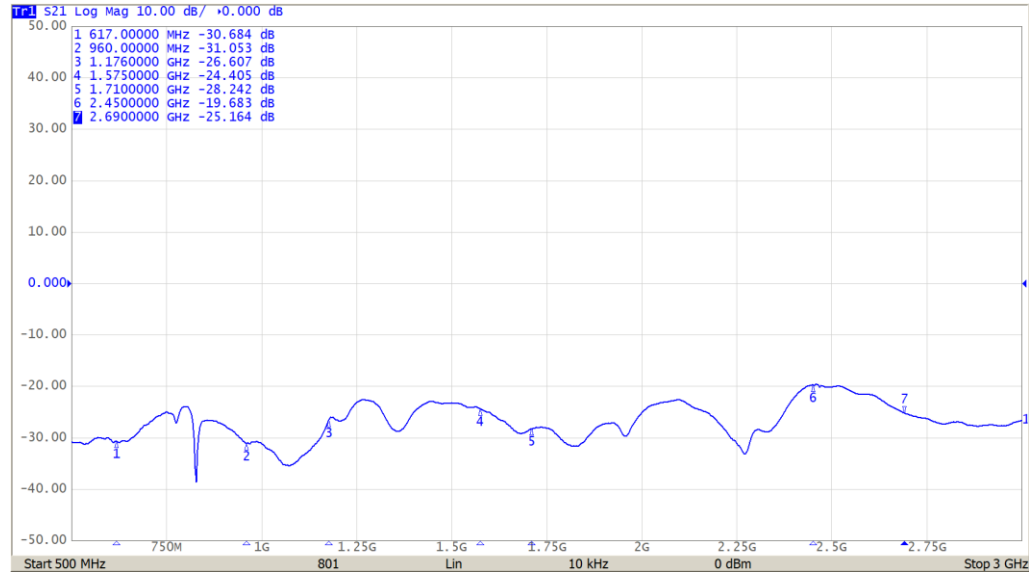
Ant0&Ant1



Freq.(MHz)	617	960	1176	1575	1710	2450	2690
S21(dB)	-30.6	-29.3	-20.8	-19.8	-22.1	-28.1	-32.1

Isolation

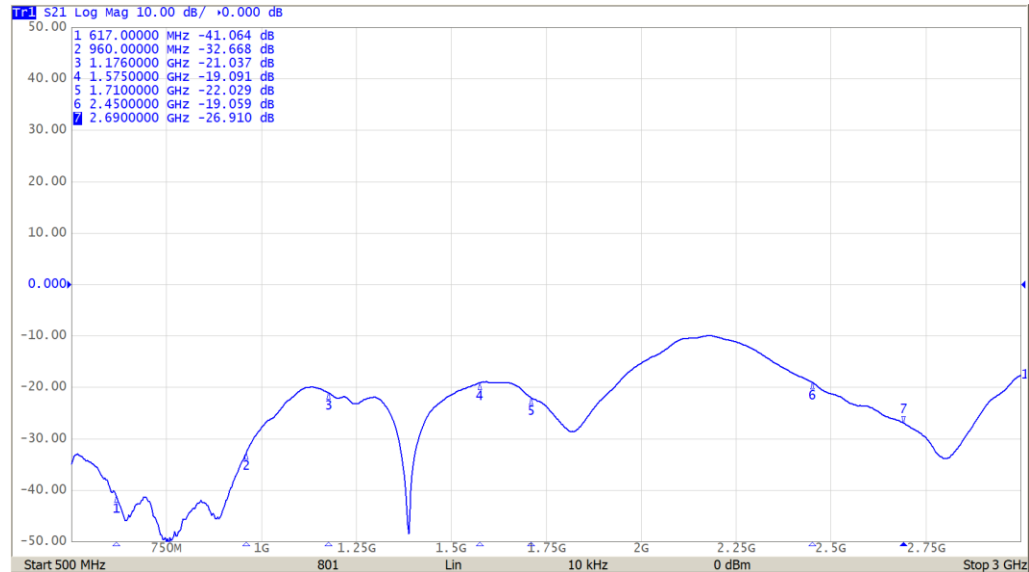
Ant0&Ant2



Freq.(MHz)	617	960	1176	1575	1710	2450	2690
S21(dB)	-30.6	-31.0	-26.6	-24.4	-28.2	-19.6	-25.1

Isolation

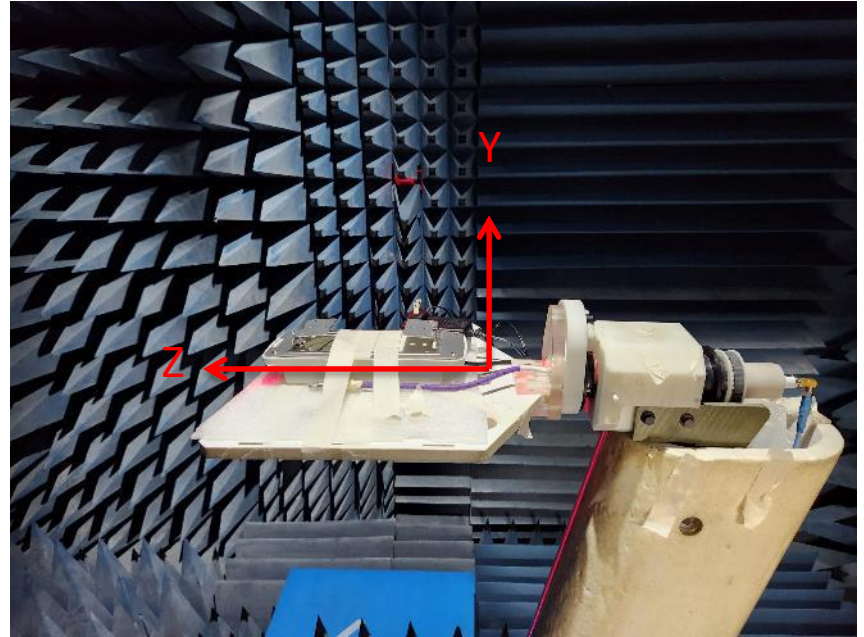
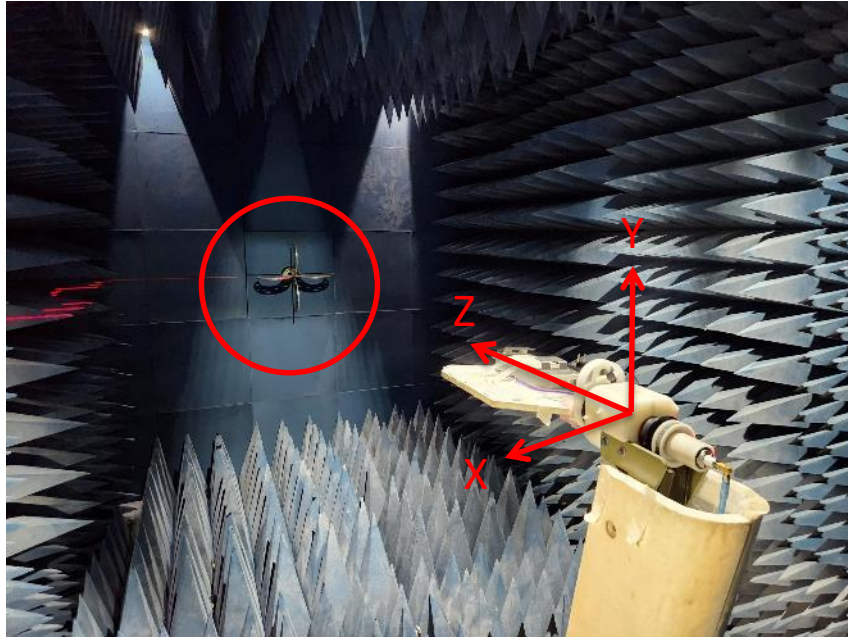
Ant1&Ant2



Freq.(MHz)	617	960	1176	1575	1710	2450	2690
S21(dB)	-41.0	-32.6	-21.0	-19.0	-22.0	-19.0	-26.9

The antenna anechoic chamber measurement

Chamber Measurement Photo



3D Gain Total

Ant 0

Frequency (GHz)	Gain(dBi)	3D-avgGain (dBi)	Efficiency(%)	Frequency (GHz)	Gain(dBi)	3D-avgGain (dBi)	Efficiency(%)
0.617	0.32	-4.61	35	0.96	-0.26	-5.3	30
0.658	-0.47	-4.93	32	1.71	1.33	-3.7	43
0.698	-0.6	-4.57	35	1.76	1.25	-4.18	38
0.703	0.49	-3.74	42	1.81	1.66	-3.54	44
0.74	-0.73	-4.84	33	1.88	1.33	-3.87	41
0.78	-0.7	-4.65	34	1.91	0.81	-3.8	42
0.84	-0.12	-4.8	33	1.96	1.09	-3.87	41
0.88	0.25	-4.71	34	2.01	1.27	-4.42	36
0.894	-0.4	-4.53	35	2.06	0.73	-3.85	41
0.92	-0.63	-4.71	34	2.11	0.61	-4.71	34

3D Gain Total

Ant 0

Frequency (GHz)	Gain(dBi)	3D-avgGain (dBi)	Efficiency(%)
2.17	1.44	-3.68	43
2.3	1.38	-4.19	38
2.35	1.04	-4.17	38
2.4	0.49	-4.55	35
2.45	0.07	-4.79	33
2.5	0.56	-4.8	33
2.55	-0.01	-5.25	30
2.6	0.01	-5.1	31
2.65	-0.25	-4.68	34
2.69	-0.38	-4.61	35

3D Gain Total

Ant 1

Frequency (GHz)	Gain(dBi)	3D-avgGain (dBi)	Efficiency(%)
1.166	1.7	-2.77	53
1.176	1.74	-2.79	53
1.186	1.38	-2.93	51
1.565	1.92	-2.92	51
1.575	1.85	-2.81	52
1.585	1.4	-2.96	51

3D Gain Total

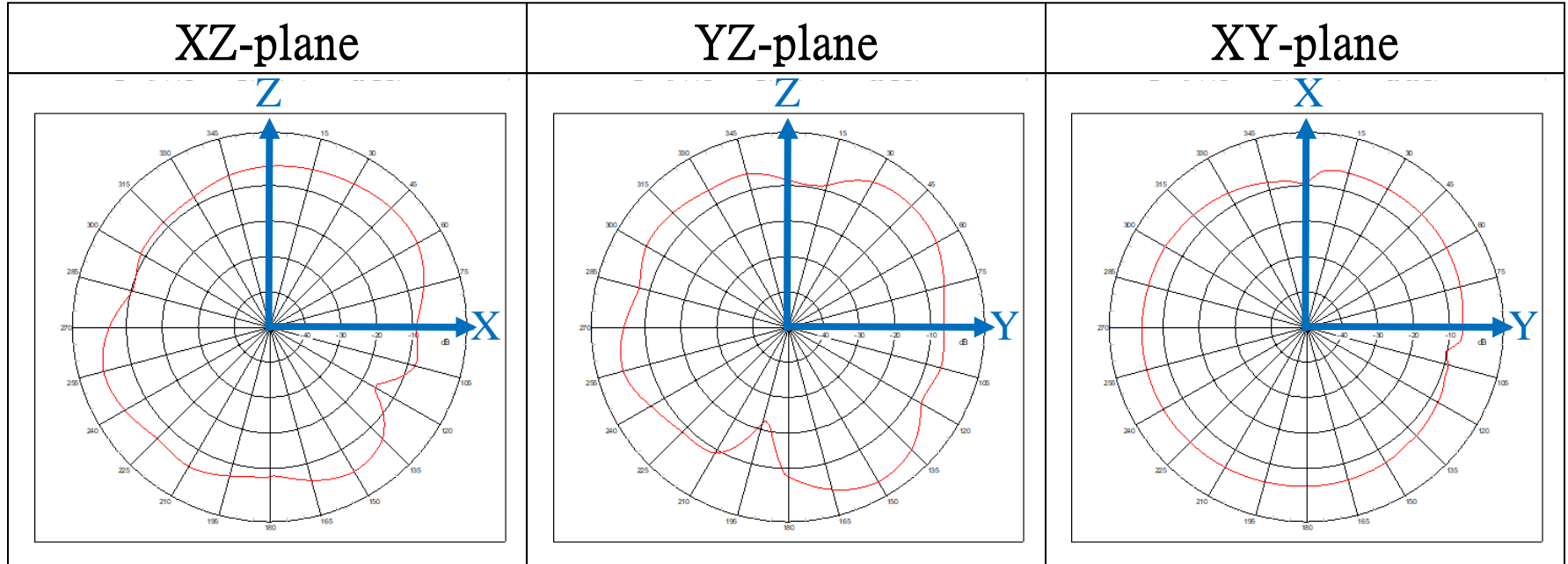
Ant 2

Frequency (GHz)	Gain(dBi)	3D-avgGain (dBi)	Efficiency(%)
2.4	0.95	-4.66	34
2.45	1.56	-4.88	33
2.5	1.24	-4.26	37

Antenna Pattern

Ant 0

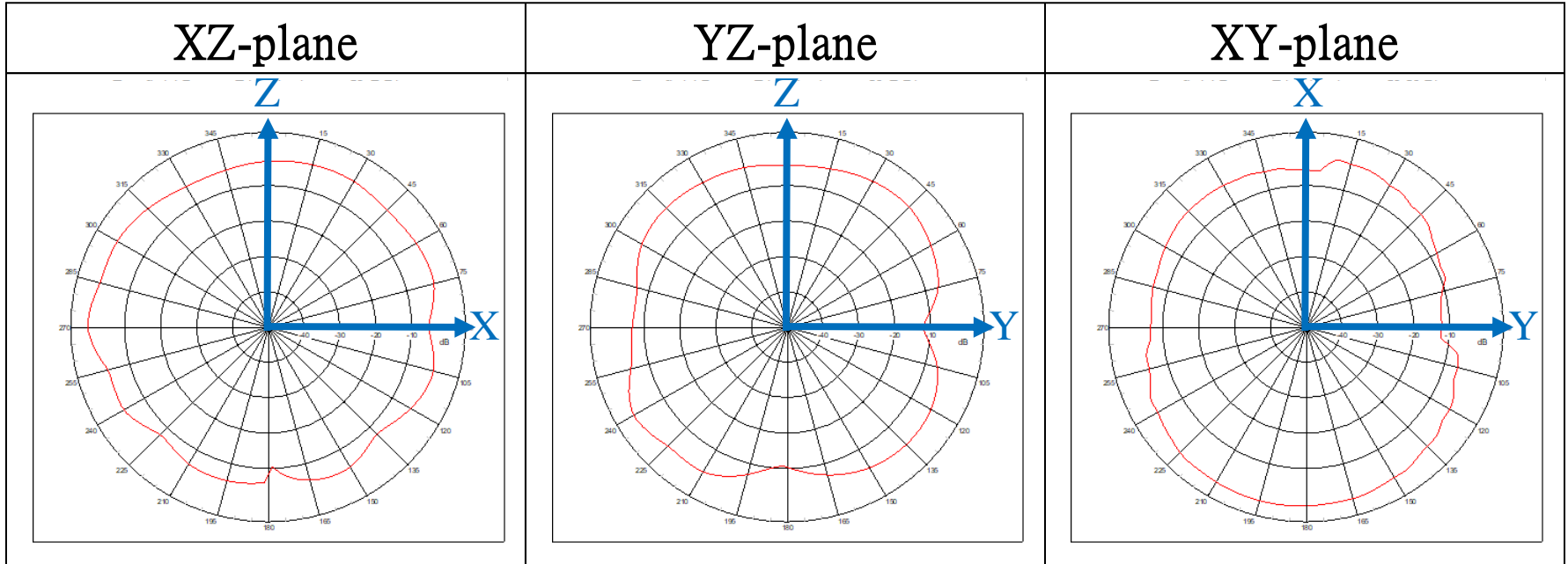
Frequency : 617MHz



Antenna Pattern

Ant 0

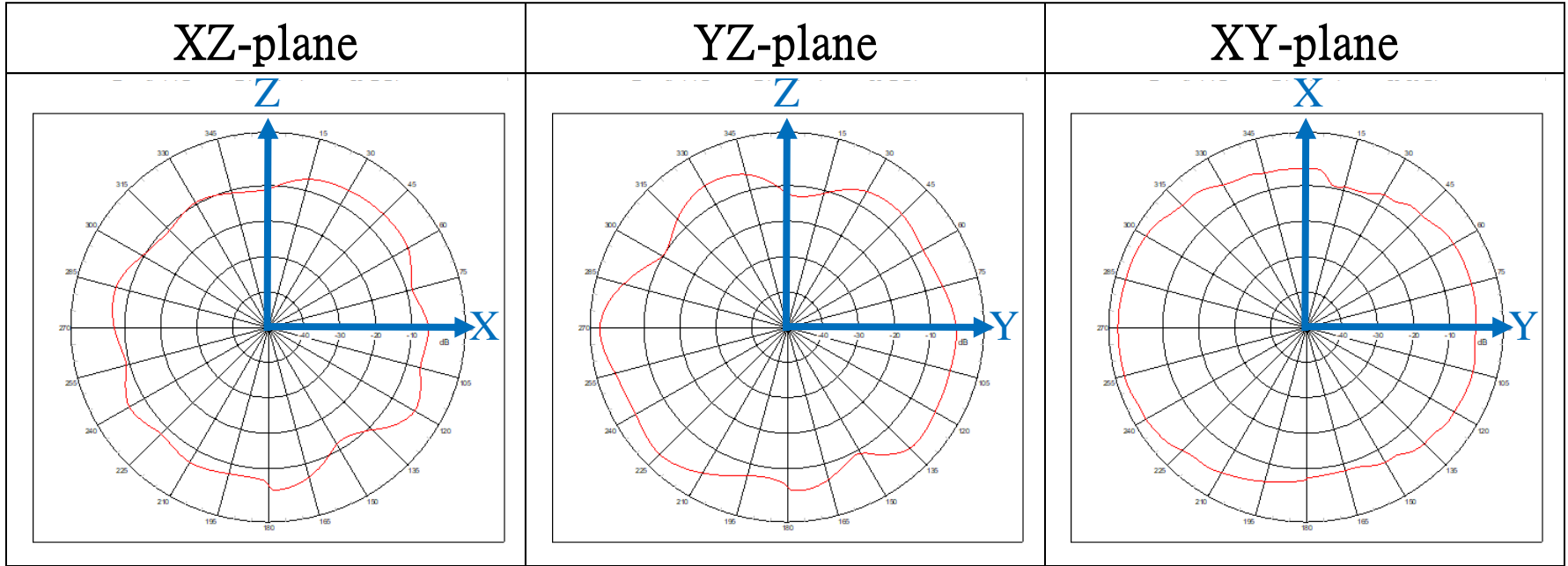
Frequency : 960MHz



Antenna Pattern

Ant 0

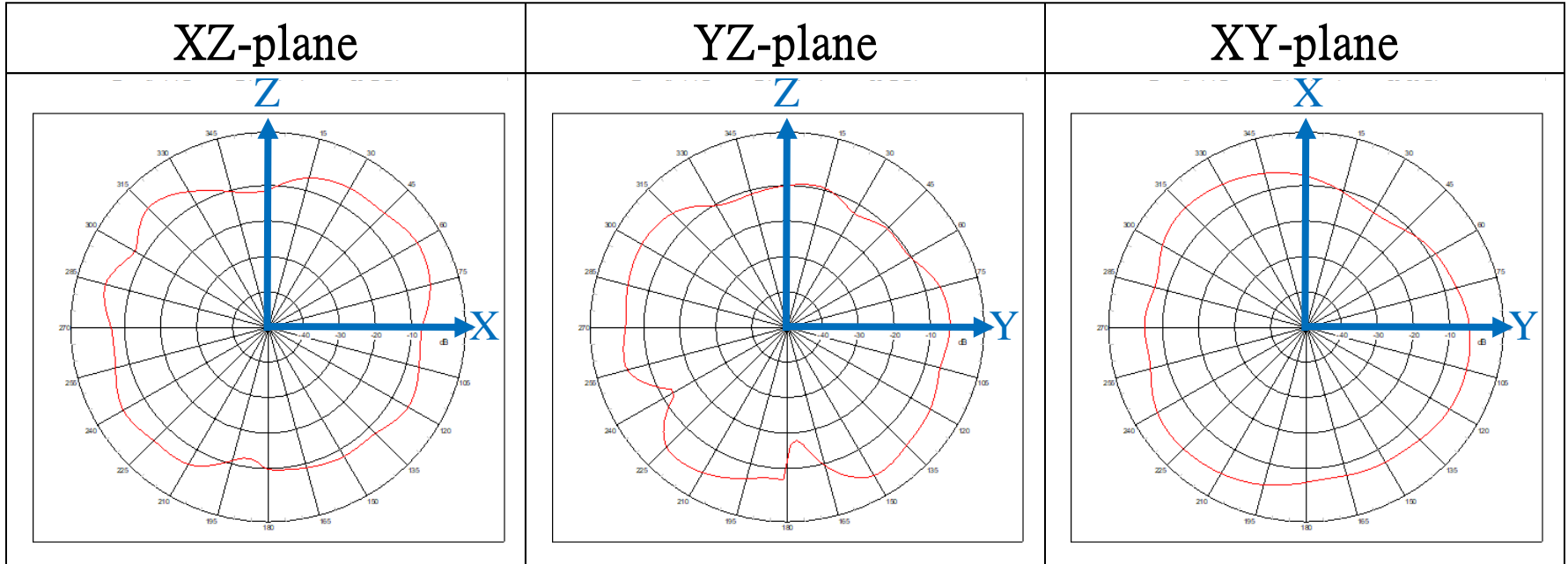
Frequency : 1710MHz



Antenna Pattern

Ant 0

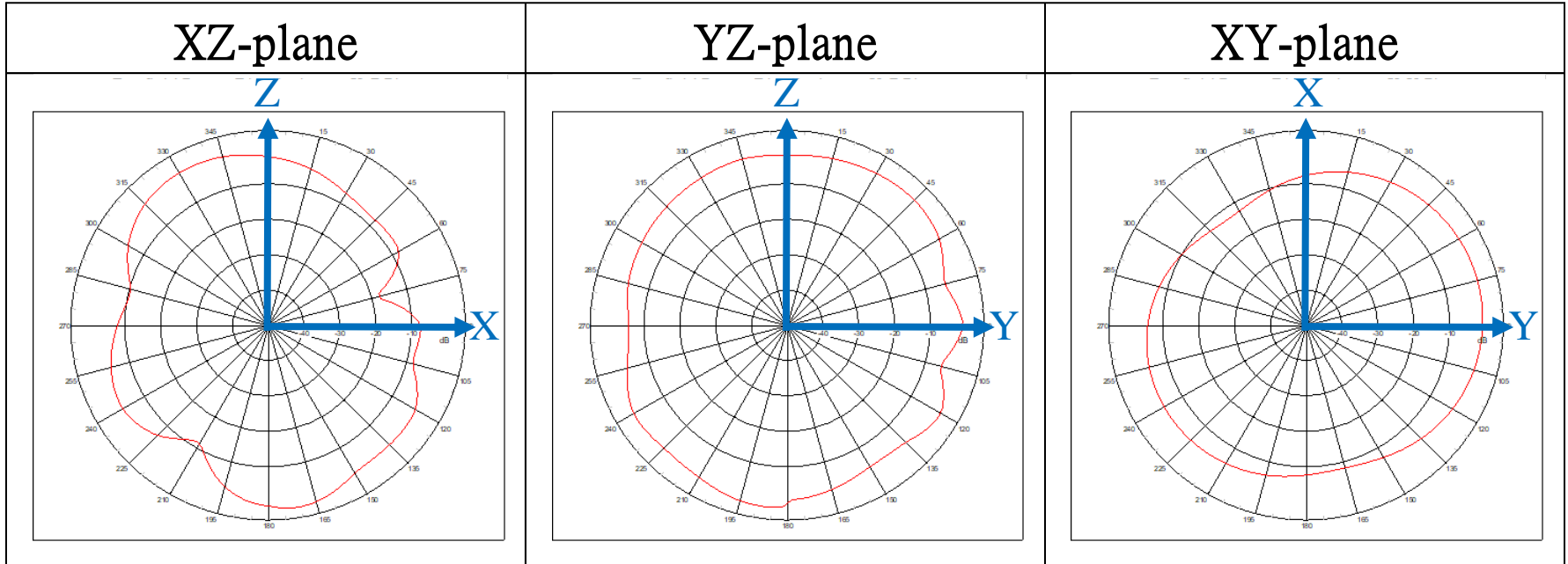
Frequency : 2690MHz



Antenna Pattern

Ant 1

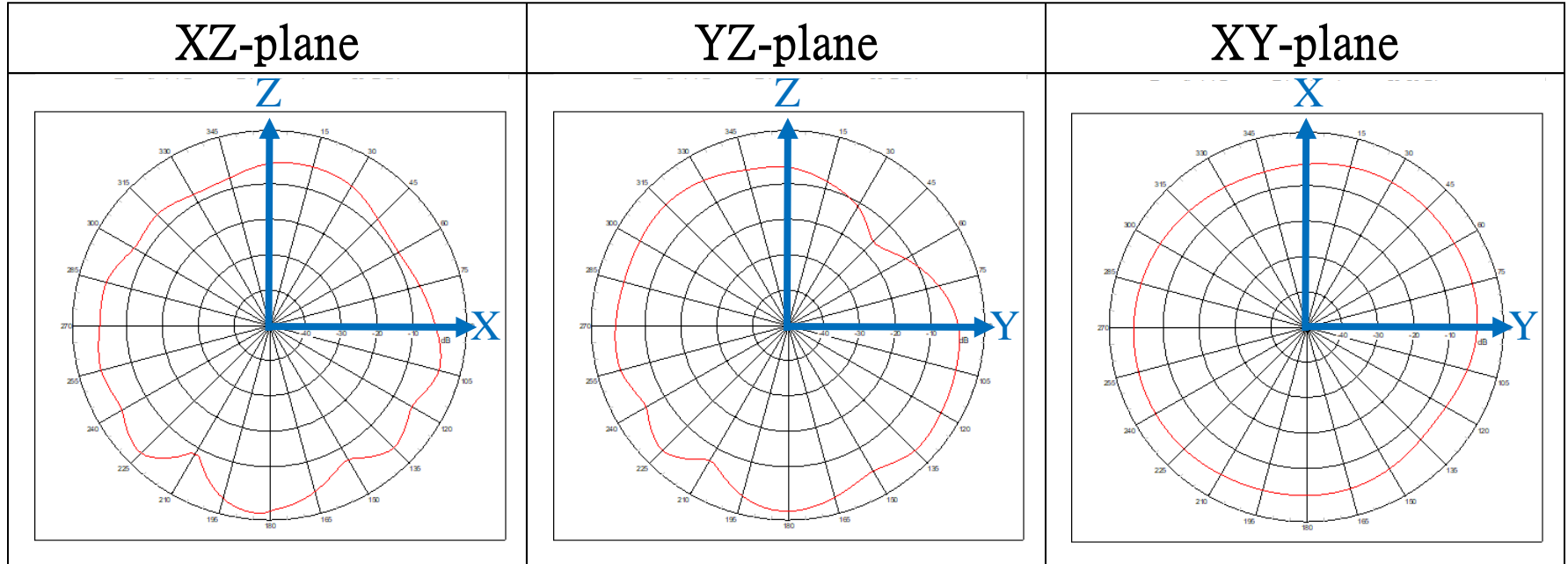
Frequency : 1176MHz



Antenna Pattern

Ant 1

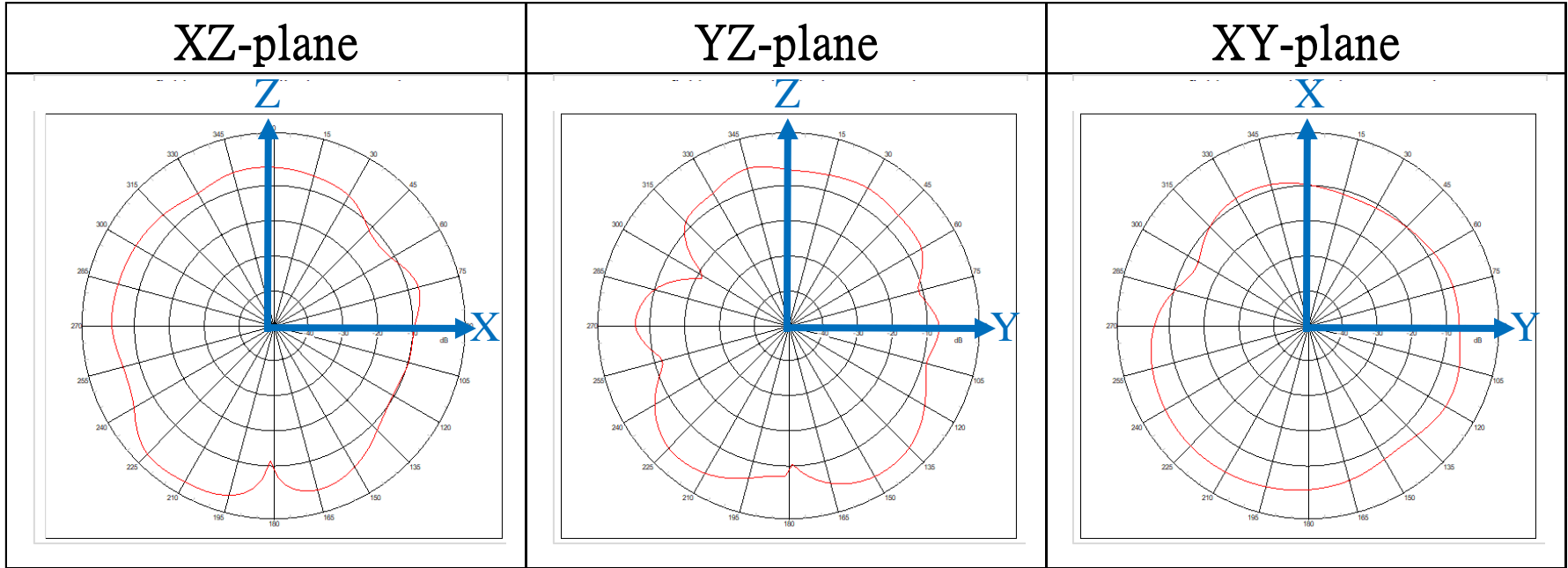
Frequency : 1575MHz



Antenna Pattern

Ant 2

Frequency : 2450MHz





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MAKING THE PERFECT CONNECTION

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