Mercury O-RU n48/n77/n78 internal Antenna measurement report

2024/10/24

核心技術研發中心-無線通訊處-天線一部

Core Technology RDC-Wireless Comm. Div.-Ant1 Dept.

All rights reserved. Information in this leaflet is proprietary to Pegatron Corp.

CONFIDENTIAL

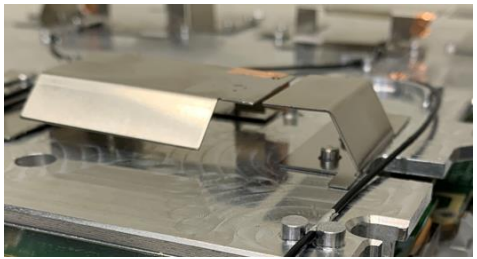
Outline

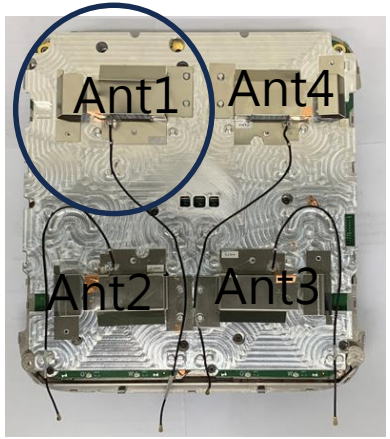
- Antenna structure , measurement condition and specification
- Distance between antennas of final position
- Performance
  - S parameter
  - Isolation
  - Envelope correlation coefficient (ECC)
  - Efficiency
  - Peak gain
- n48/n77/n78 band only model radiation patterns
  - 2D radiation patterns
  - 3D radiation patterns

All rights reserved. Information in this leaflet is proprietary to Pegatron Corp.
CONFIDENTIAL

Antenna structure , measurement condition and specification

✓ We measured the final positioning of n48/n77/n78 antenna structures with Mercury mockup environment.

Model	n48/n77/n48 band
Antenna structure	
Frequency band	n48/n77/n48 3.3~4.2 GHz
Antenna type	PIFA antenna
Antenna Brand	Pegatron
Antenna size (mm)	40*30*13
Ant1 No.	1415-0B06000
Ant2 No.	1415-0B07000
Ant3 No.	1415-0B08000
Ant4 No.	1415-0B09000
Antenna peak gain spec.	> 6 dBi
Efficiency spec.	> -3 dB

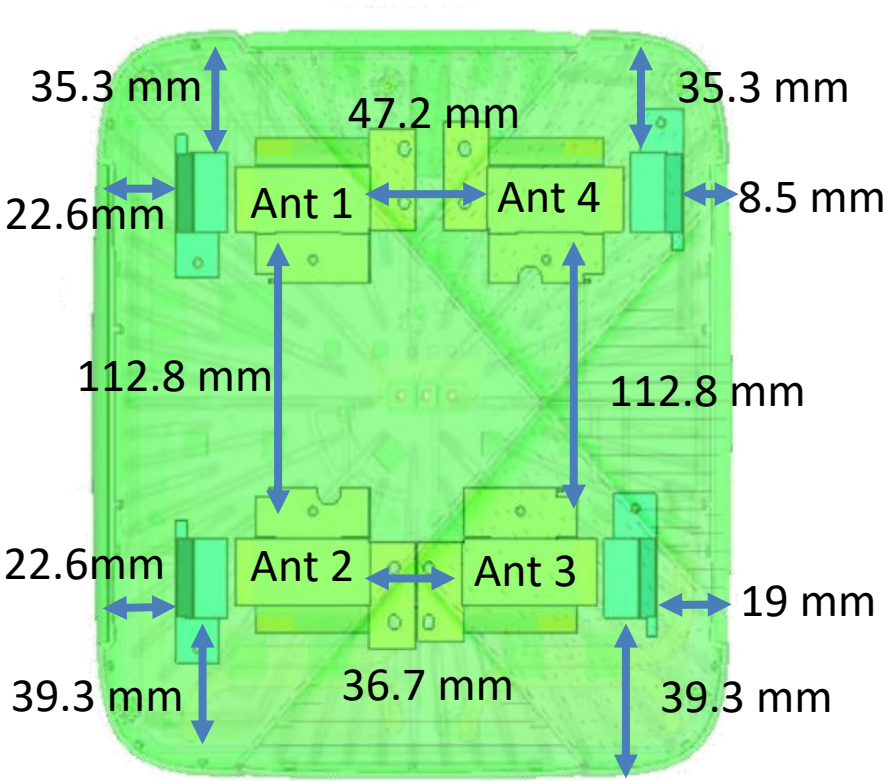


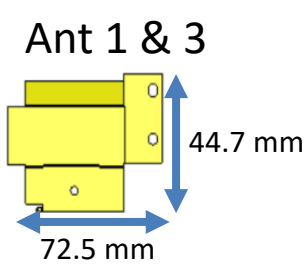
All rights reserved. Information in this leaflet is proprietary to Pegatron Corp.

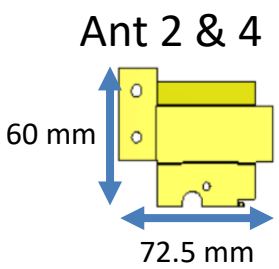
CONFIDENTIAL

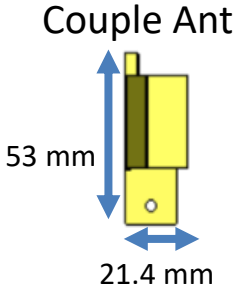
Mercury n48/n77/n78 antenna l position

✓ The Mercury n48/n77/n78 antenna final position is shown as follow.









Antenna	Dimension (mm*mm*mm)
Ant 1	72.5 x 44.7 x 13
Ant 2	72.5 x 60 x 13
Ant 3	72.5 x 44.7 x 13
Ant 4	72.5 x 60 x 13
Couple Ant	21.4 x 53 x 13

All rights reserved. Information in this leaflet is proprietary to Pegatron Corp.

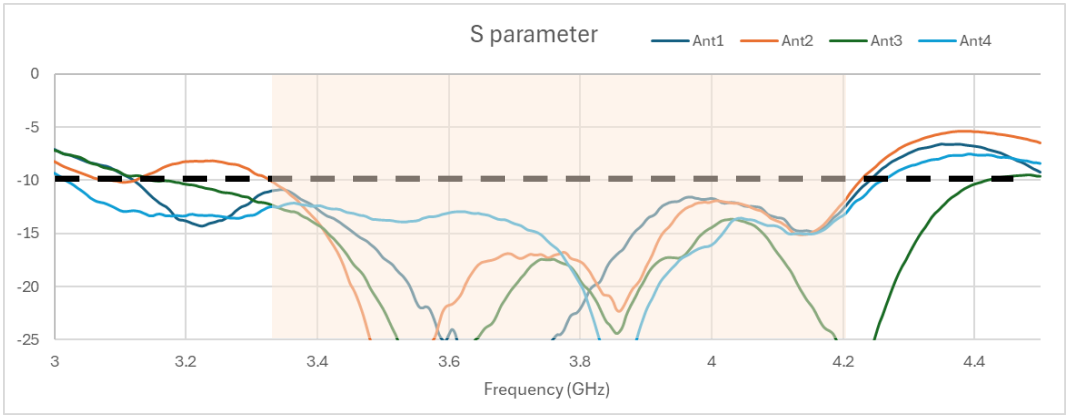
CONFIDENTIAL

S parameter

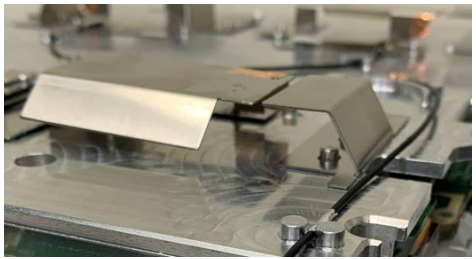
✓ The measured results of antenna at all model could meet under -10 dB spec.

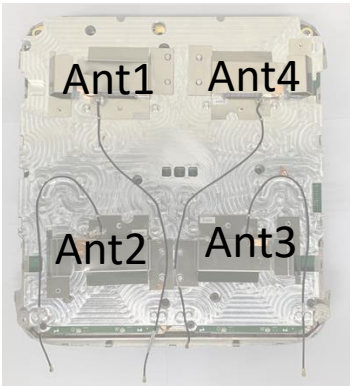
Model	n48/n77/n78 band

S11 results



Freq.	N77: 3.3 ~ 4.2 GHz			
	Port 1	Port 2	Port 3	Port 4
SPEC	Under -10 dB			
Result	Pass	Pass	Pass	Pass





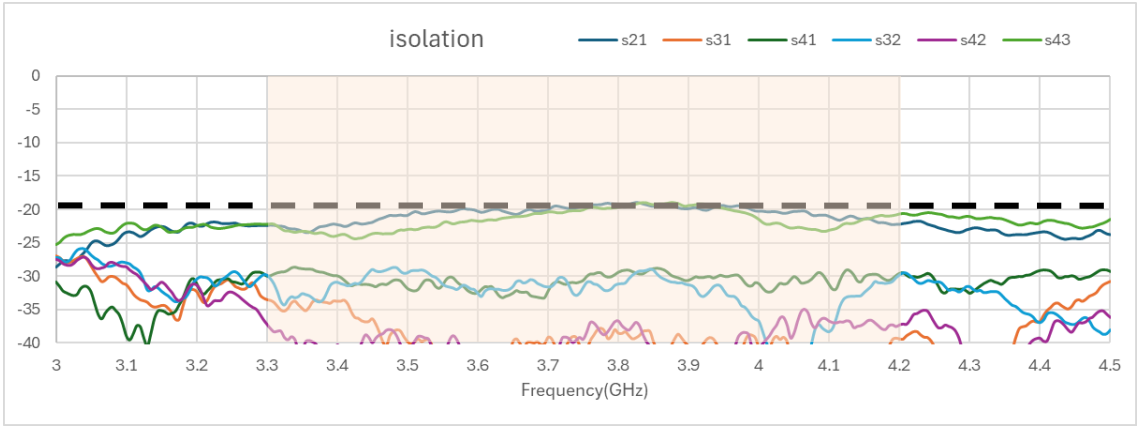
All rights reserved. Information in this leaflet is proprietary to Pegatron Corp.
CONFIDENTIAL

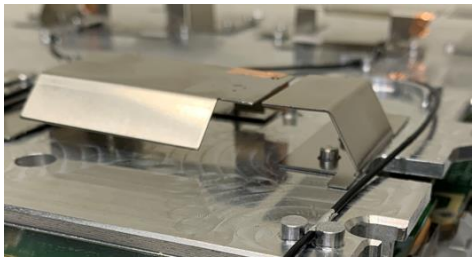
Isolation

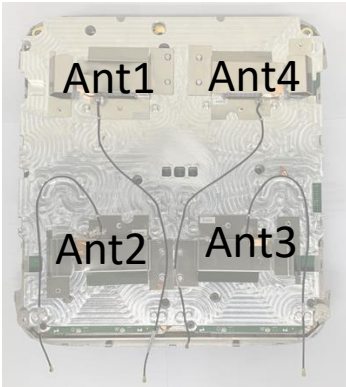
✓ The measured isolations of antenna at all model could meet under -20 dB spec.

Model	n48/n77/n48 band

results



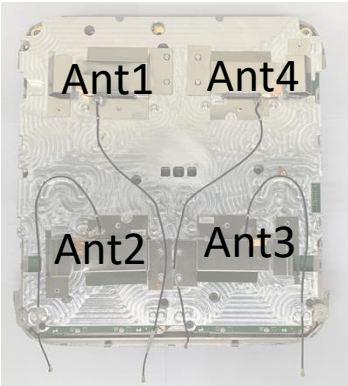




All rights reserved. Information in this leaflet is proprietary to Pegatron Corp.
CONFIDENTIAL

Envelope correlation coefficient (ECC)

- ✓ The measured ECC of antenna at all model could under 0.05 dB spec.



	Freq.	3300	3400	3500	3600	3700	3800	3900	4000	4100	4200
ANT 1 - ANT 2	ECC	0.003637	0.022475	0.012892	0.017143	0.037016	0.000548	0.030808	0.038163	0.016513	0.016897
ANT 1 - ANT 3	ECC	0.002446	0.000867	0.000275	0.000309	0.000163	0.001629	0.000354	0.000562	0.002055	0.000781
ANT 1 - ANT 4	ECC	0.004326	0.002134	0.000003	0.002927	0.000075	0.000660	0.004848	0.000168	0.003934	0.000881
ANT 2 - ANT 3	ECC	0.000432	0.000816	0.000426	0.003748	0.000002	0.002765	0.001911	0.000193	0.006129	0.000164
ANT 2- ANT 4	ECC	0.000401	0.000024	0.001950	0.000231	0.000766	0.001854	0.000065	0.001326	0.000592	0.000268
ANT 3 – ANT 4	ECC	0.025548	0.004834	0.020900	0.000440	0.036538	0.007181	0.023022	0.044643	0.002245	0.026991

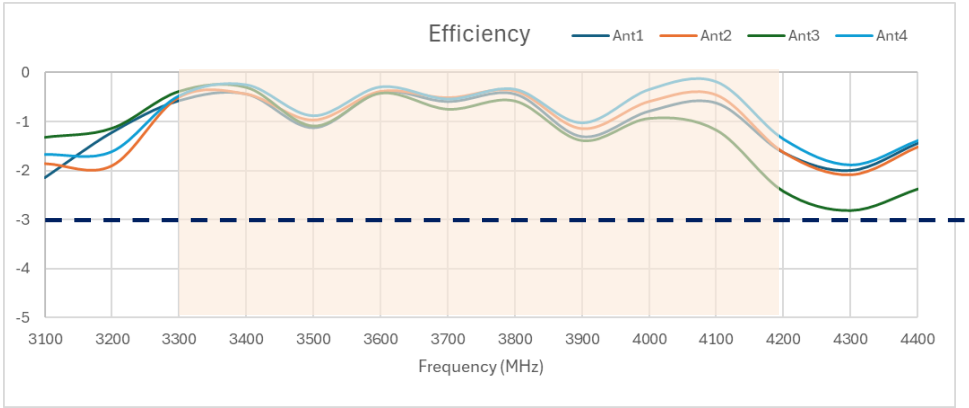
All rights reserved. Information in this leaflet is proprietary to Pegatron Corp.
CONFIDENTIAL

Efficiency

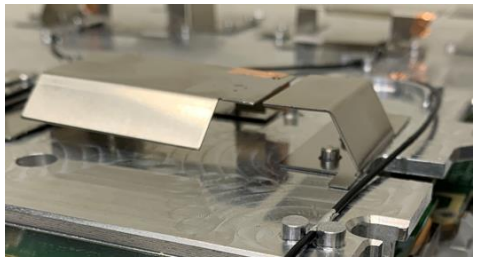
✓ The results of antenna of all ports could meet above -3 dB spec.

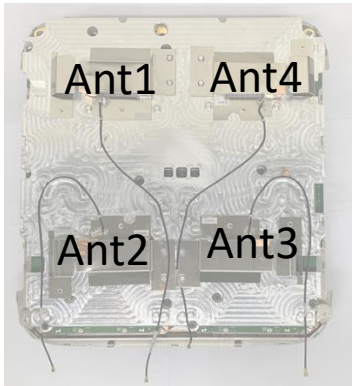
Model: n48/n77/n48 band

Efficiency results



Freq.	N77: 3.3 ~ 4.2 GHz			
	Port 1	Port 2	Port 3	Port 4
SPEC	Above -3 dB			
Result	Pass	Pass	Pass	Pass





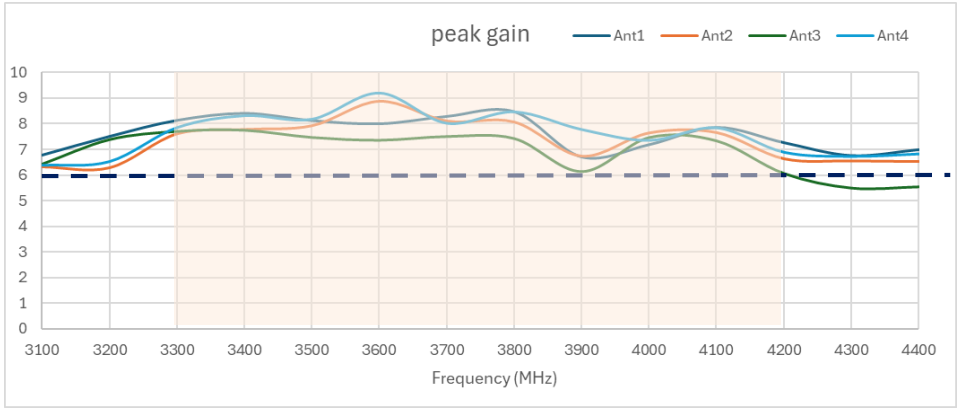
All rights reserved. Information in this leaflet is proprietary to Pegatron Corp.
CONFIDENTIAL

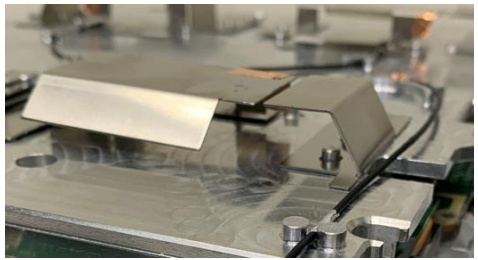
Peak gain

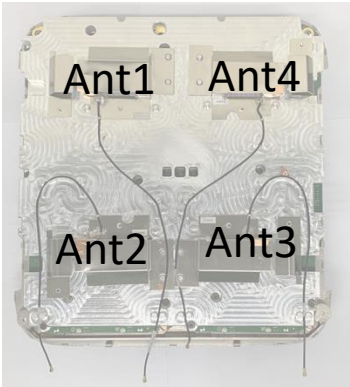
- ✓ Peak gain of n48/n77/n78 band only model get from 6 dBi to 9 dBi at 3.3 ~4.2 GHz

Model **n48/n77/n78 band**

Peak gain results







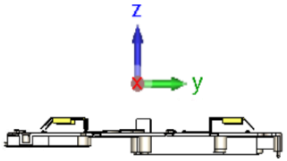
Frequency(MHz)	3300	3400	3500	3600	3700	3800	3900	4000	4100	4200
Ant1	8.12	8.39	8.11	7.99	8.28	8.46	6.70	7.18	7.85	7.26
Ant2	7.61	7.78	7.92	8.87	8.11	8.07	6.74	7.64	7.66	6.63
Ant3	7.71	7.76	7.47	7.36	7.51	7.43	6.14	7.47	7.34	6.06
Ant4	7.86	8.33	8.19	9.21	8.03	8.48	7.79	7.36	7.86	6.90

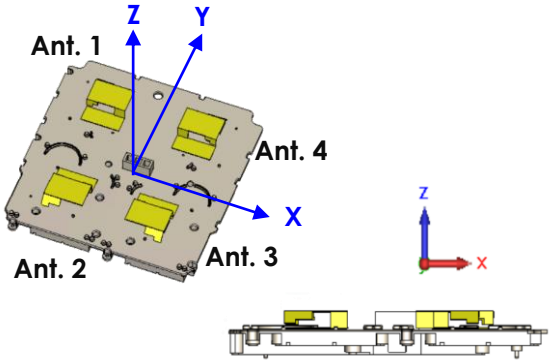
All rights reserved. Information in this leaflet is proprietary to Pegatron Corp.

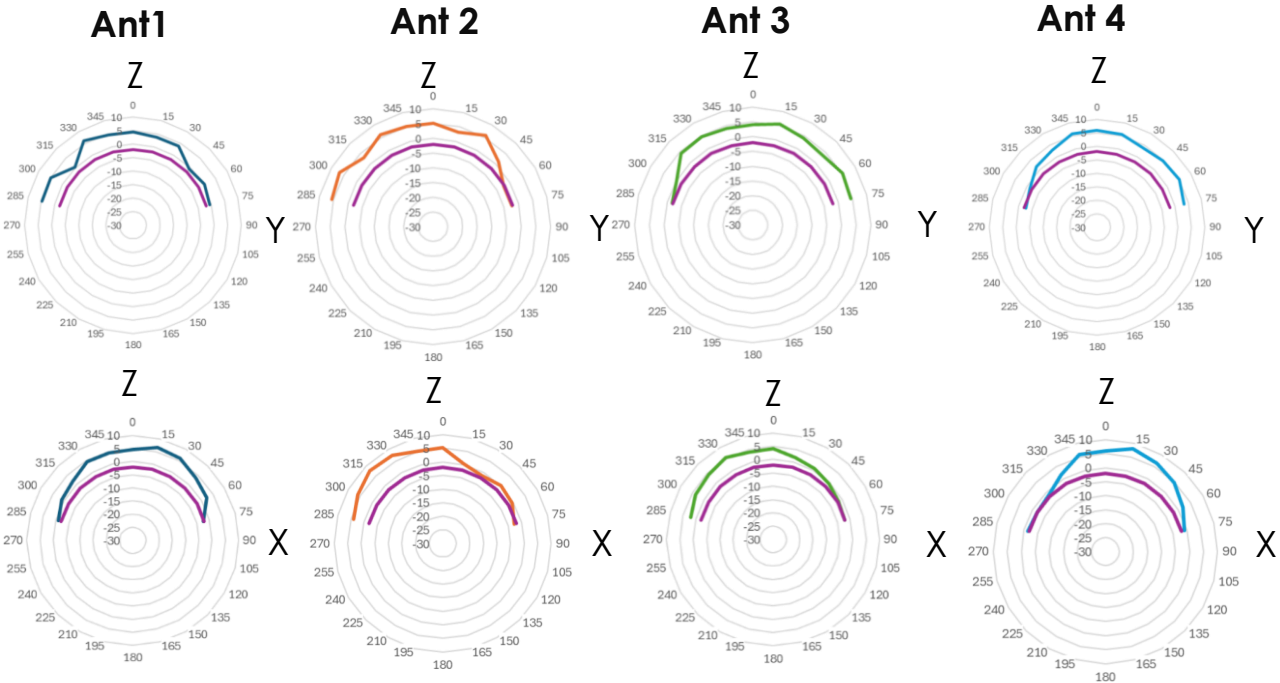
CONFIDENTIAL

n48/n77/n78 band only model 2D radiation patterns

- ✓ The measured results 2D radiation patterns







	Port 1	Port 2	Port 3	Port 4
Spec	-2 dBi			
result	Pass	Pass	Pass	Pass

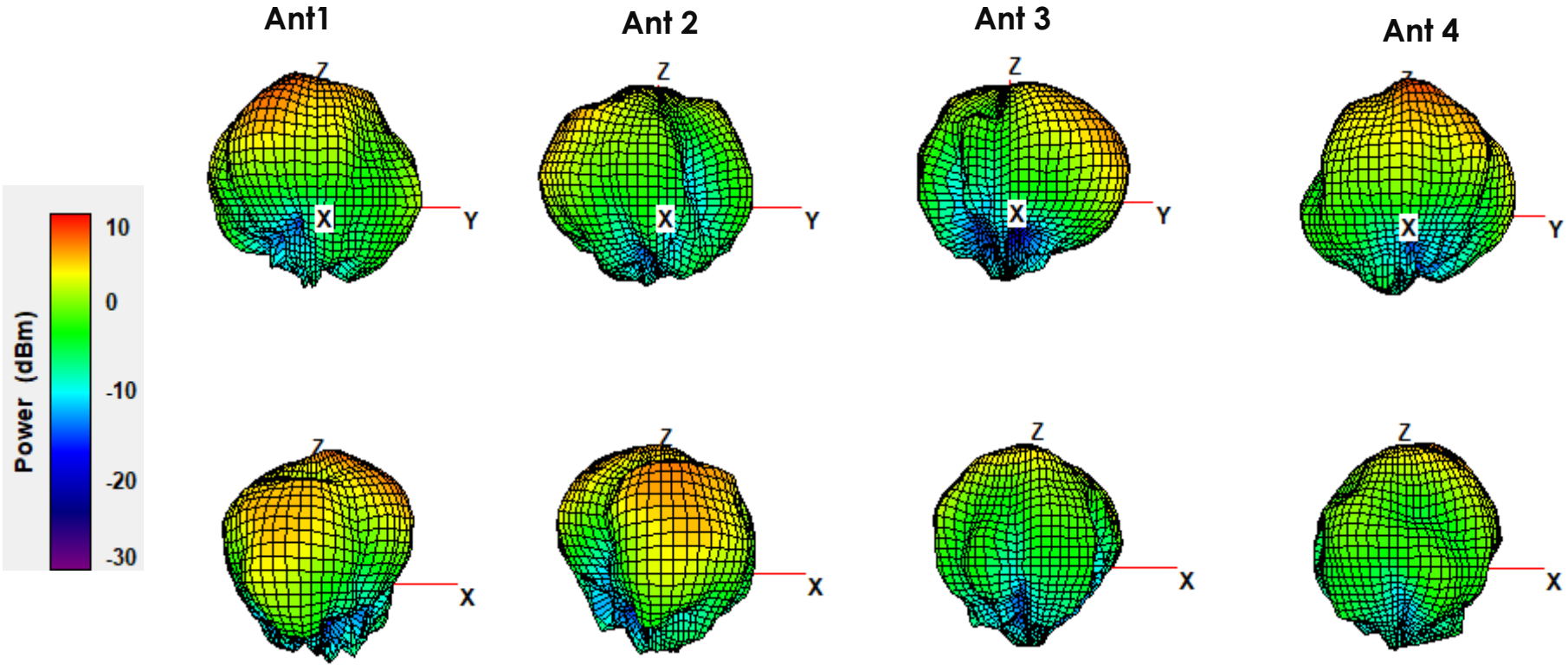
— minimal gain spec.

All rights reserved. Information in this leaflet is proprietary to Pegatron Corp.

CONFIDENTIAL

n48/n77/n78 band only model 3D radiation patterns

- ✓ The measured 3D radiation patterns shown as below, pass the specification.



All rights reserved. Information in this leaflet is proprietary to Pegatron Corp.
CONFIDENTIAL

Summary

- ✓ We measured the n48/n77/n78 T1 sample antenna for Mercury RU.
- ✓ All the performance can meet the spec.

	SPECIFICATION
Return Loss (S11)	< -10 dB
Efficiency	> -3 dB
Peak gain	> 6 dBi
2D Radiation pattern ($\pm 75^{\circ}$)	> -2 dBi

All rights reserved. Information in this leaflet is proprietary to Pegatron Corp.

CONFIDENTIAL

CONFIDENTIAL