

**OR650-X00**  
**Antenna design proposal**

V2.0  
Tim Chao  
2023/05/10

# Agenda

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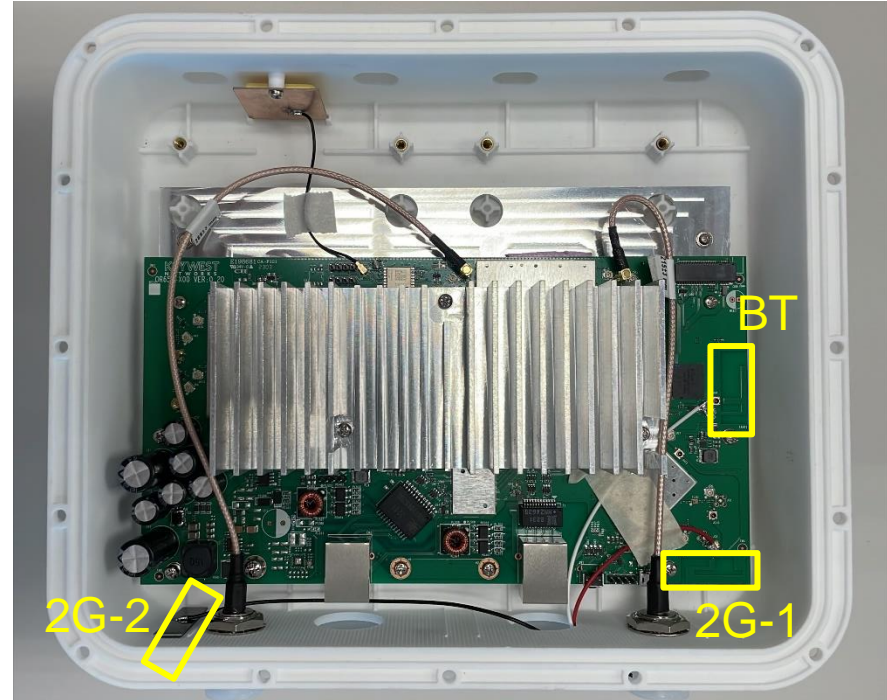
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- 2D Radiation Pattern
- Summary

# History

Date	Description	Version
2022/09/22	Mockup sample measurement, WiFi antenna location compare	V1.0
2022/10/19	Use Corner ant for WiFi and Side-middle ant for BT	V1.1
2023/05/10	EVT test, 3D print housing, RG178 cable, modified heatsink	V2.0

# Antenna Placement

- OR650-X00 have three antenna as figure :
- 2.4GHz \* 2
- BT \* 1



# Antenna Information

Manufactory : Advanced wireless & antenna inc.

Add. : B2-F,No.207-1,Sec.3,Beixin Rd.,Xindian Dist.,New Taipei City,231,Taiwan

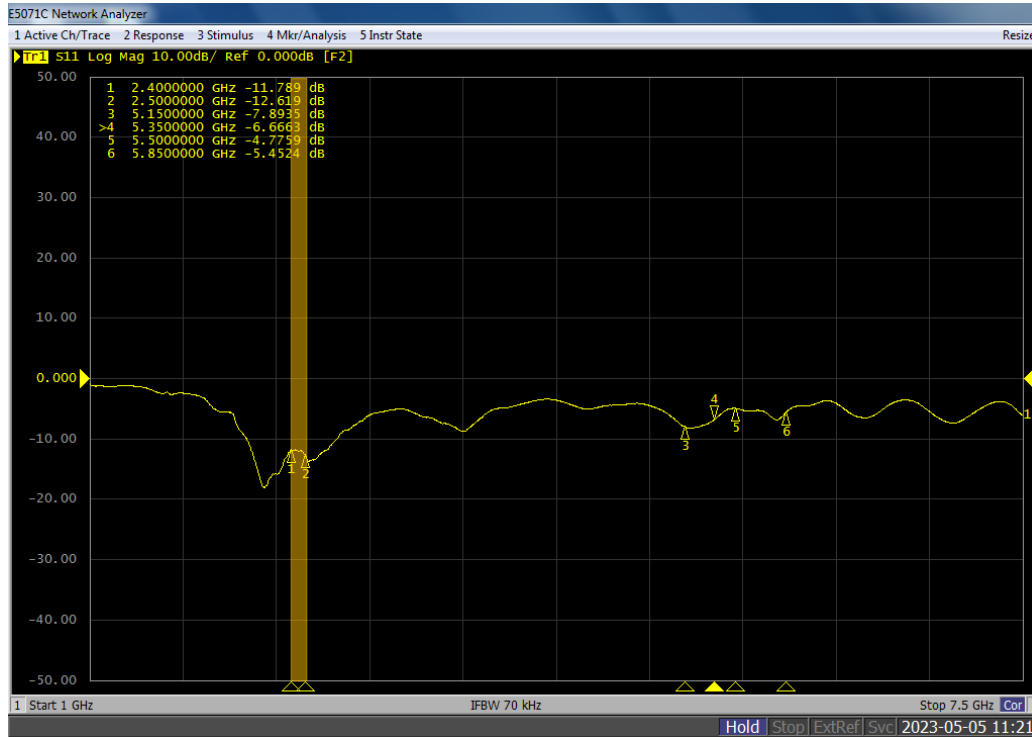
No.	Brand	Size(mm)	Material	Part Number	Type
2G-2	AWAN	38*9.6*1.4	FR4	7102A0612000	dipole

Manufactory : Emplus Technologies, Inc.

Add. : 10F, Building B, No.209, Sec.1, Nangang rd., Nangang Dist., Taipei City, Taiwan

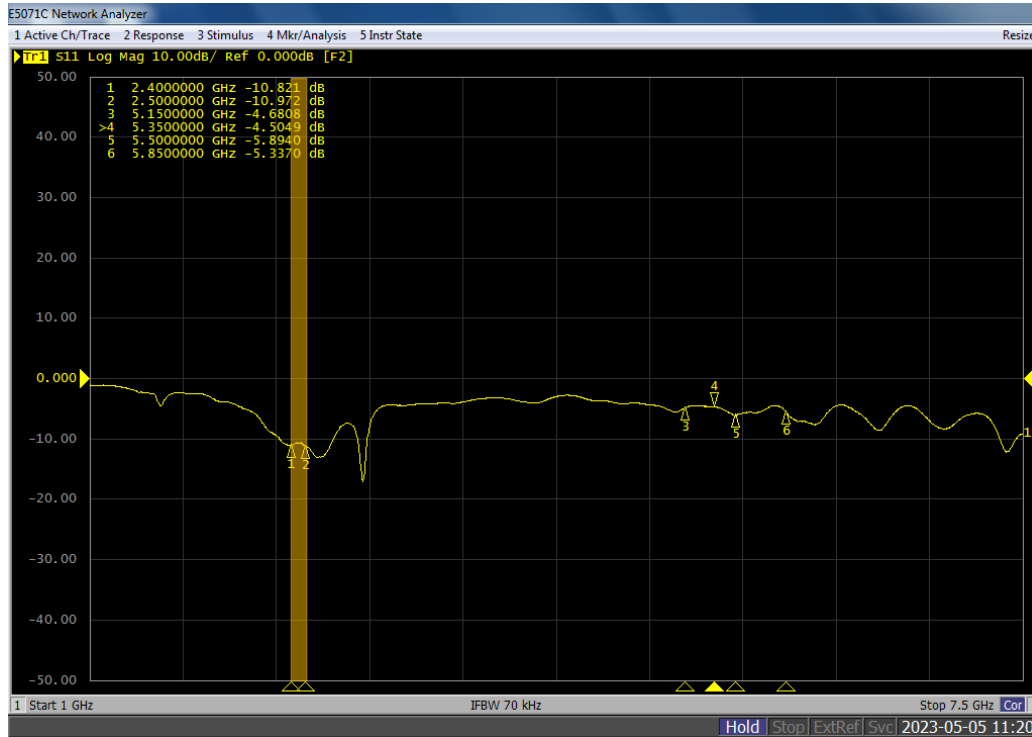
No.	Brand	Size(mm)	Material	Part Number	Type
2G-1	Emplus	25.5*10*1.6	FR4	OR650-OnBoard 2G	PIFA
BT	Emplus	27*10*1.6	FR4	OR650-OnBoard BT	PIFA

# Return Loss : 2-1



Criteria :  $\leq -10\text{dB}$

# Return Loss : 2-2



Criteria :  $\leq -10\text{dB}$

# Return Loss : BT



Criteria :  $\leq -10\text{dB}$



# Return loss table

S11(dB)	2.4GHz	2.5GHz
2-1	-11	-12
2-2	-10	-10
BT	-10	-12

Criteria :  
S11 < -10dB  
Result : PASS

# Isolation at 2.45GHz

	2-1	2-2	BT
2-1	NA	-38	-9
2-2	NA	NA	-33
BT	NA	NA	NA



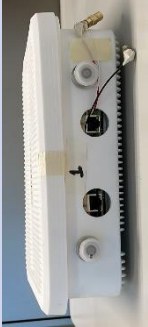
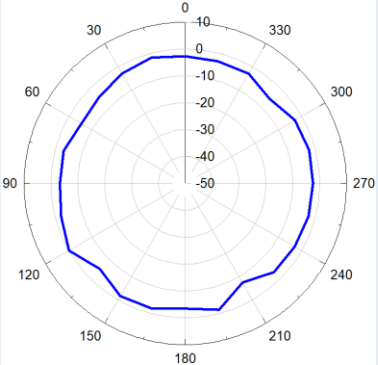
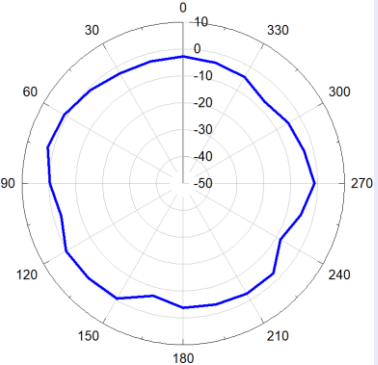
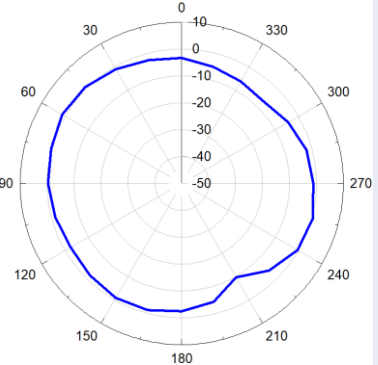
Criteria :  $\leq -20\text{dB}$  (Except 2-1 to BT)    Result : Pass

# Gain table



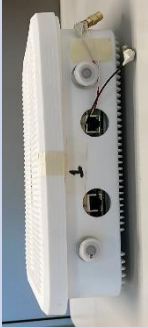
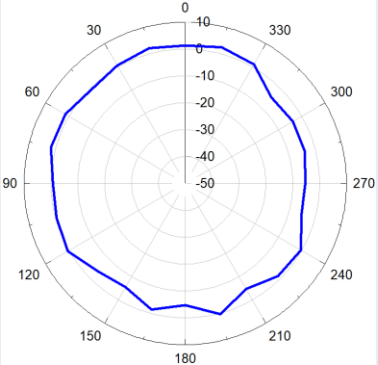
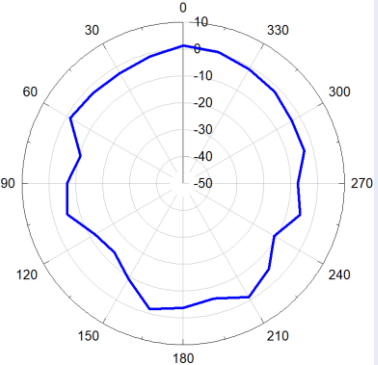
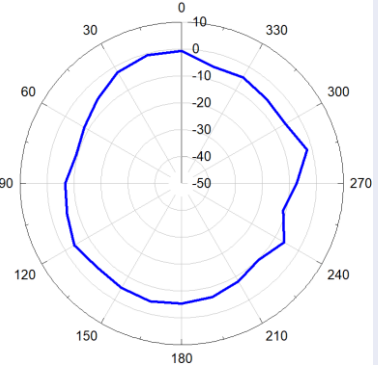
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Gain / Efficiency	Antenna	2.45GHz
2.45GHz	2-1	3.7/65
	2-2	3.4/61
	BT	3.4/50



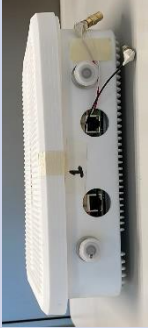
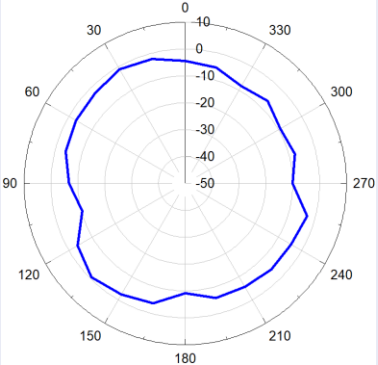
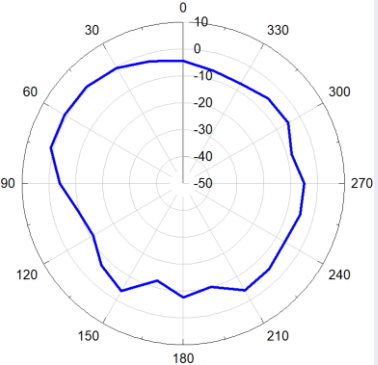
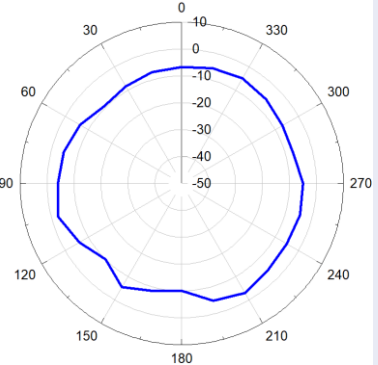
# 2D pattern : 2-1

Frequency	XZ Plane	YZ Plane	XY Plane
2.45GHz			
			

# 2D pattern : 2-2

Frequency	XZ Plane	YZ Plane	XY Plane
2.45GHz			
			

# 2D pattern : BT

Frequency	XZ Plane	YZ Plane	XY Plane
2.45GHz			
			

The logo for 'emplus' is centered in the image. It features the word 'emplus' in a lowercase, sans-serif font. The 'e' and 'm' are a light blue color, while the 'p' and 'l' are a darker blue, and the 'u' and 's' are a light blue color. The background is a large, abstract graphic consisting of two overlapping circles filled with a low-poly, geometric pattern of various shades of blue. The overall aesthetic is clean and modern.

Dependable, Accountable, and always Available

**We are your best partner!**