

YAGEO Chip Antenna report for Vantiva Halow Camera project



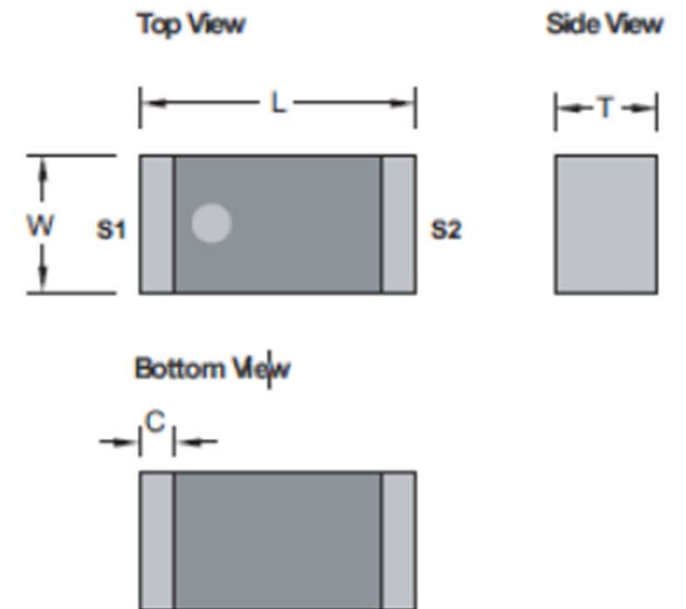
Wireless Components
LTCC R&D / Matthew

2024/08/30

Antenna information

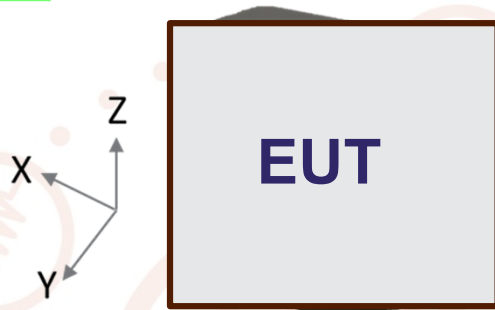
- Part Number: ANT3216LL00R2400A

	Dimension
L (mm)	3.2 ± 0.15
W (mm)	1.6 ± 0.15
T (mm)	1.2 ± 0.15
C (mm)	0.4 ± 0.20

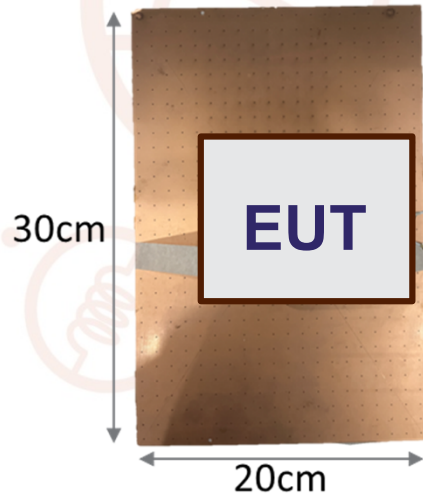


Antenna proposal and specification

Free space



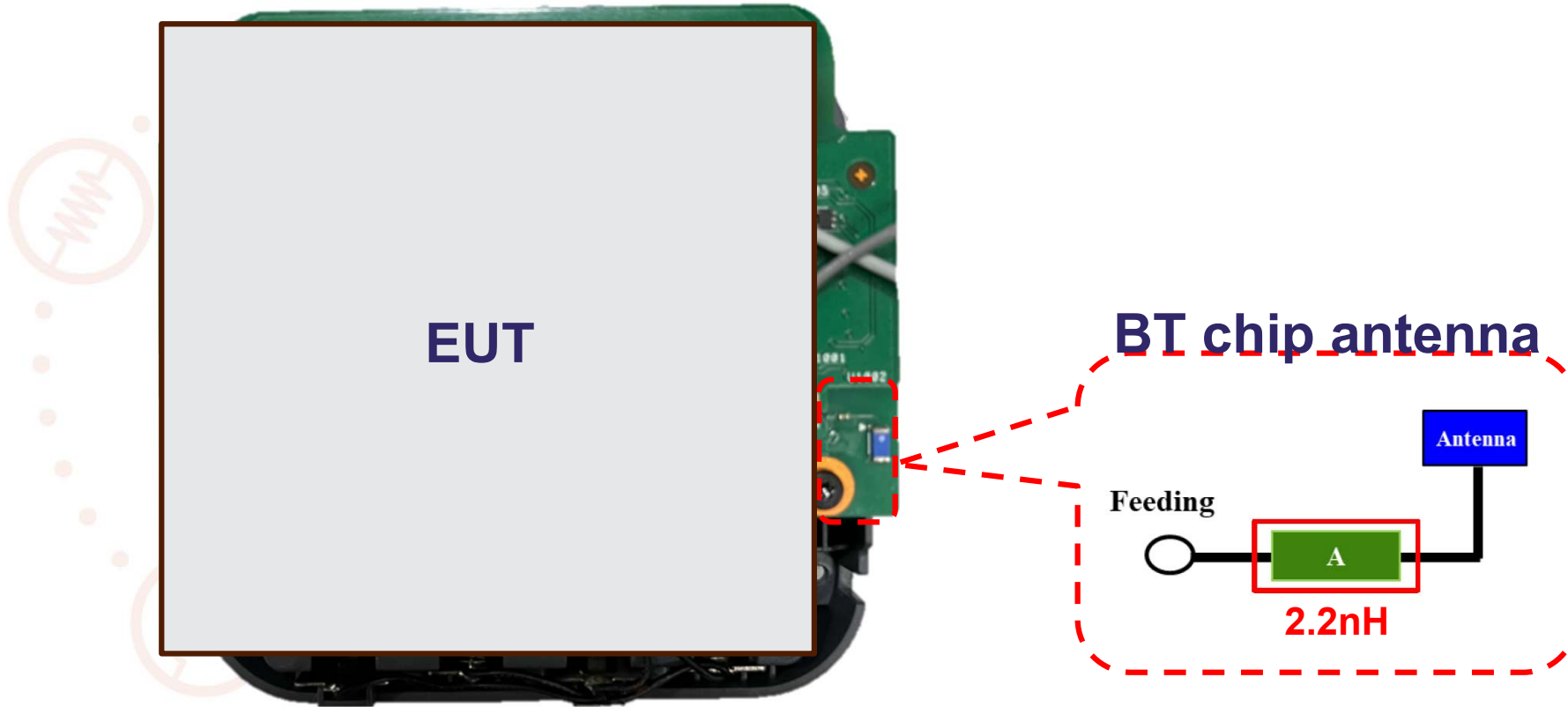
With metal plate



Antenna Proposal

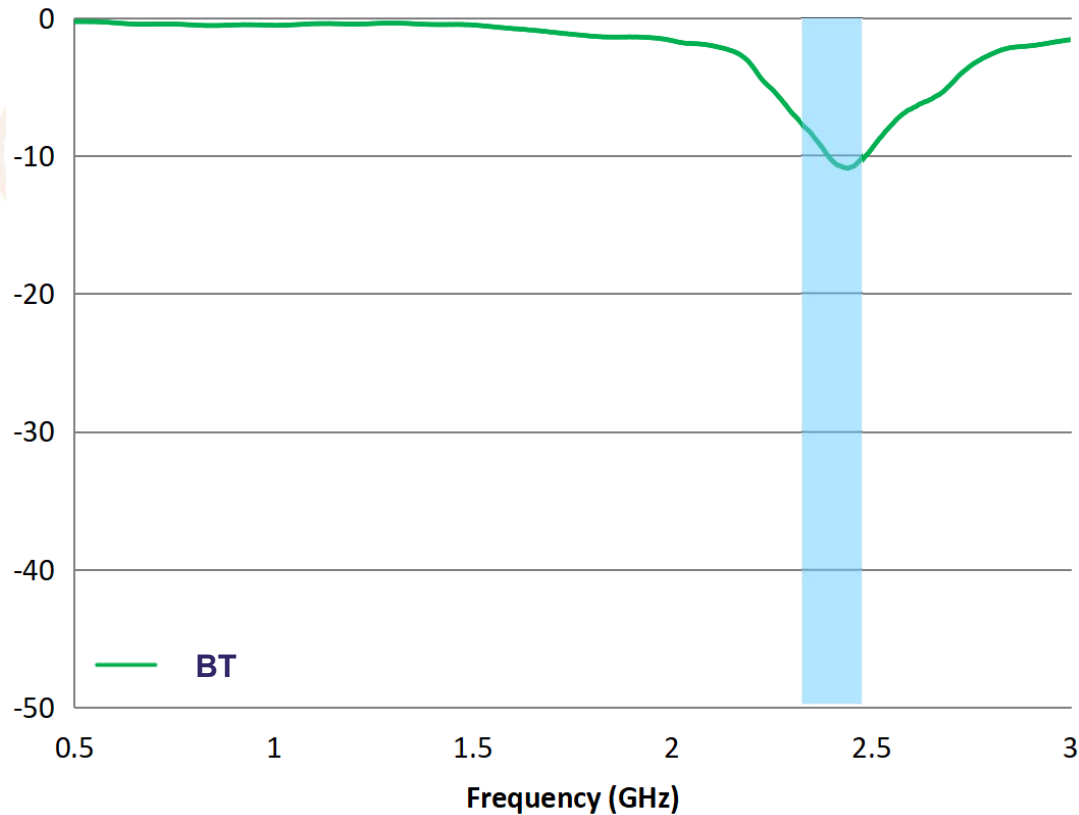
Wireless Function	2.4 GHz 802.11 b/g/n
Antenna type	■BLE: 2.4 GHz Chip antenna
Measurement data	
Return loss	BT <-10dB
Peak Gain	BT < 1.38 dB (free space) BT < 3.79 dB(metal plate)
Efficiency	BT > 40% (free space) BT > 40% (metal plate)

Antenna placement and experiment structure



Measurement data

- S-parameter : Return loss & Isolation**

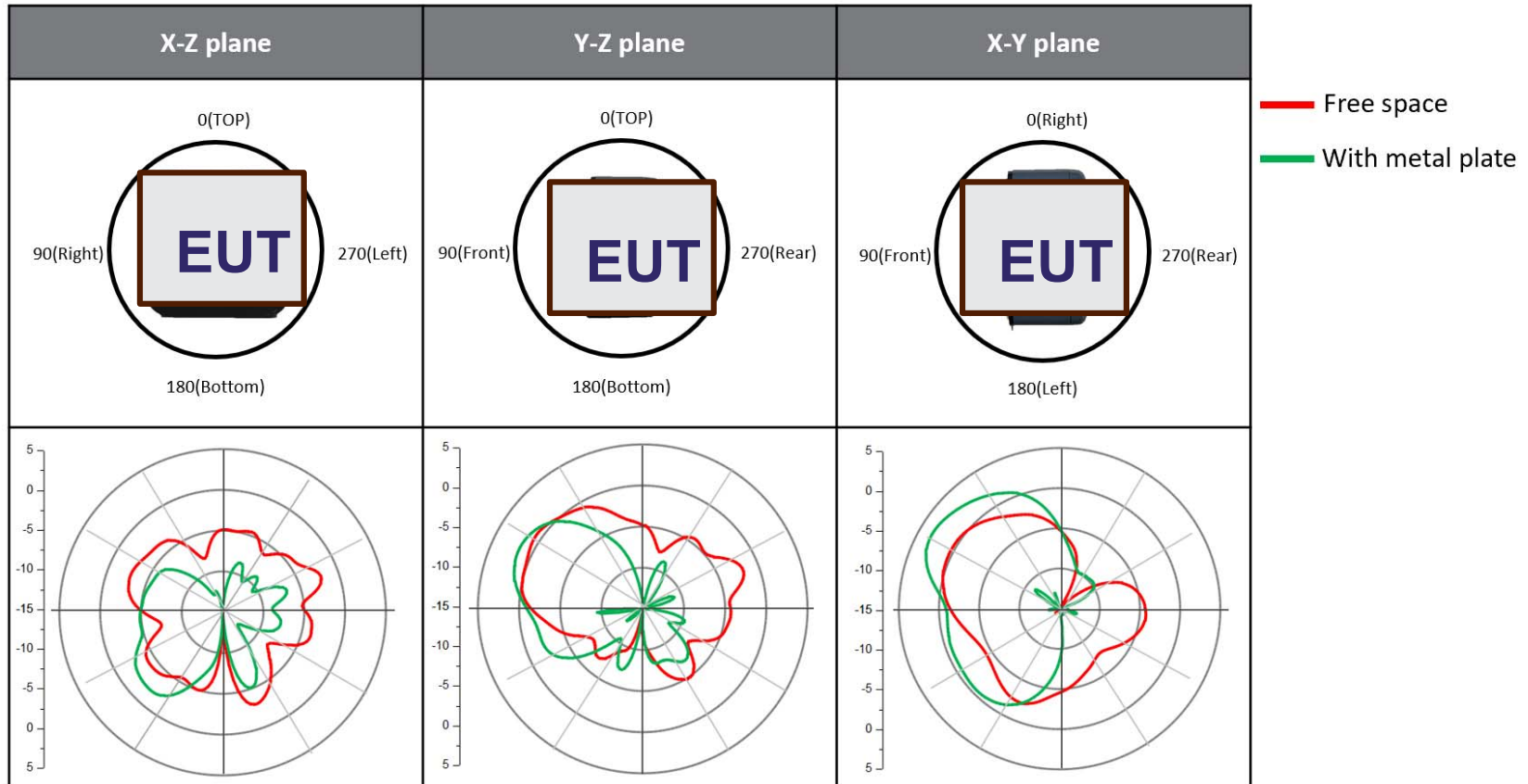


Frequency (MHz)	BT
2400	-11.25
2450	-10.91
2500	-10.07

Unit:dB

Measurement data

❖ Radiation pattern : BT 2.45GHz



Measurement data

❖ Gain table: (In Free space) BT antenna

Frequency (MHz)	E-total (dBi)	Efficiency (%)
2400	1.27	42
2450	1.38	46
2500	0.64	40

❖ Gain table: (with metal plate) BT antenna

Frequency (MHz)	E-total (dBi)	Efficiency (%)
2400	3.38	42
2450	3.79	44
2500	3.5	40

Summary

- ◆ **Return loss**

BT antenna are under -10 dB.

- ◆ **Efficiency**

BT antenna has been improved which can achieve 40% .

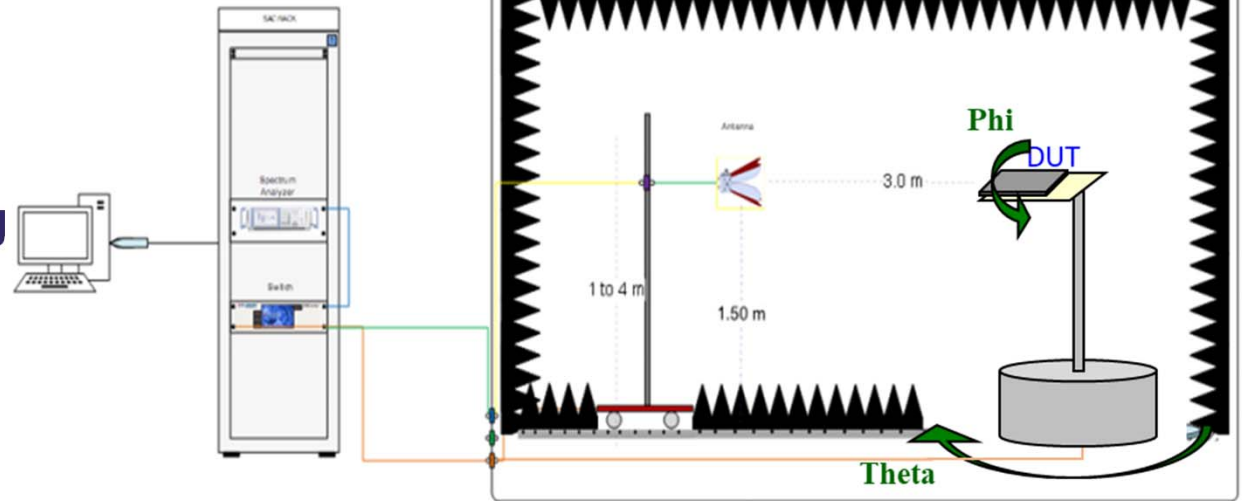
- ◆ **Radiation**

When the metal plate is in the back of the DUT , BT antenna radiation will be impacted by metal plate . There is null point at the backside and antenna gain would be increase in the front side.

Antenna Vendor Info & Measurement Setup

- Antenna Vendor: YAGEO
- Test Date: 20240829
- Test Engineer :MATTHEW KUNG
- Measurement Setup:
- Address: 99 Huo Ju Road(#29 Bldg
4th Phase Suzhou New District
Jiangsu Province, Suzhou 215009
PR China

Radiated Setup 0.6GHz-8.5GHz



ID#	Device	Type/Model	Serial#	Manufacturer	Cal. Date	Estimated Next Cal. Date
1	Anechoic Chamber	AMS8500	-	ETS-Lindgren	2023-07-13	2024-07-13
2	Turn Table	ETS	-	ETS-Lindgren	N/A	N/A
3	Switch & Positioning system	2090	-	ETS-Lindgren	N/A	N/A
4	Horn Antenna	3164-08	99210	ETS-Lindgren	N/A	N/A
5	Network Analyzer	E5071C	MY46103999	Agilent	2023-07-13	2024-07-13
6	Commercial test software	EMQuest	Version 1.14 Build 10265 SN:1156	ETS-Lindgren	2023-07-13	2024-07-13
7	Test Operator	James Hu		Pulse		

N/A: Not Applicable

Test Procedure

- a) **Sub-divide the whole sphere surface into many 2x2 degree subsection.**
- b) **Measure the gain contributed from each antenna within each subsection position.**
- c) **Apply the KDB 662911 D01 correlated directional gain formula to calculate directional gain for each subsection.**
- d) **After all subsections have been evaluated, the largest calculated value among all positions evaluated is picked as the worst-case directional gain for the system and used in RF/EMC test report.**



Thank you!