

YAGEO Chip Antenna Measurement for PEGA – [AOS_G3] Project Update Measurement Setup



Wireless Components
LTCC R&D / Matthew

2024/09/09

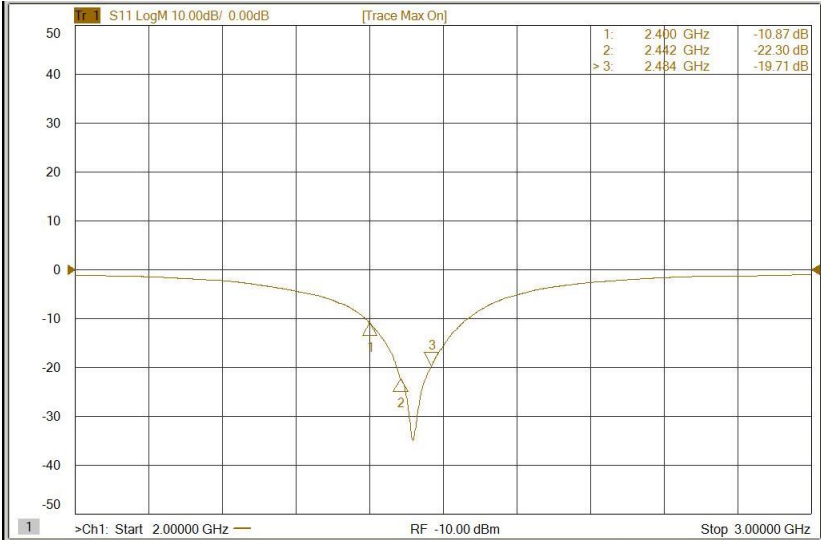
Project Information

- **Customer : PEGA**
- **Project Name : AOS_G3**
- **Application : IOT module for smart meter**
- **Antenna size :**
3.2x1.6x1.2(mm) 2.4GHz chip antenna([ANT3216LL00R2400A](#))
- **PCB size : 112 x 52 (mm)**
- **Report date : 2024/09/09**
- **Version : 1_Update measurement setup**

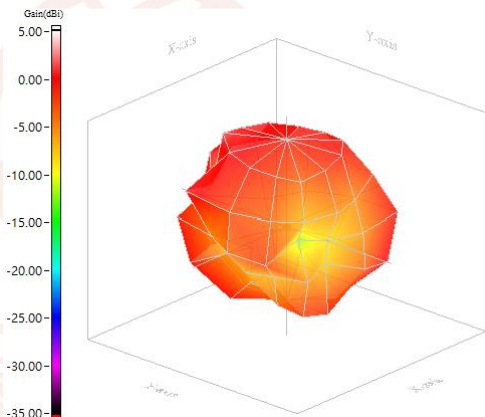
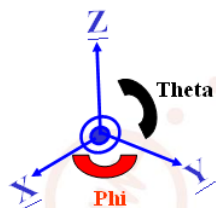
Measurement Data

Fine-tune matching

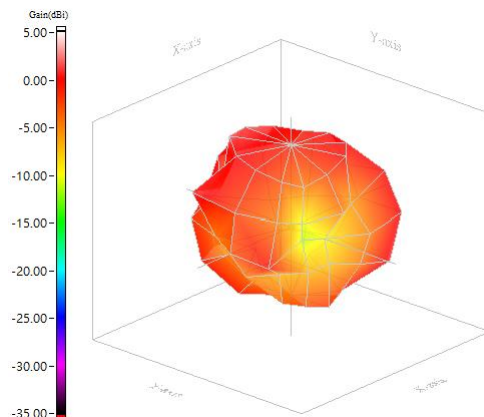
Condition	AOS_G3_V1_BT_Fine-tune matching		
Antenna	YAGEO 3216 BT Chip antenna (ANT3216LL00R2400A)		
Frequency (MHz)	2400	2442	2484
R.L. (dB)	-10.9	-22.3	-19.7
Max. Gain (dBi)	1.8	1.9	1.8
Avg. Gain (dB)	-2.6	-2.4	-2.6
Efficiency (%)	55.2	56.9	55.1



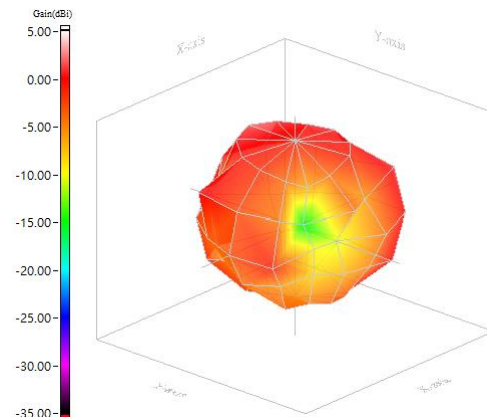
Radiation Pattern (3D)



2400MHz



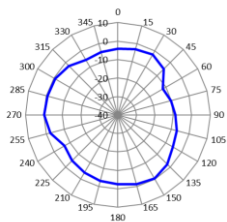
2442MHz



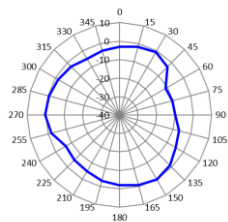
2484MHz

Radiation Pattern (2D)

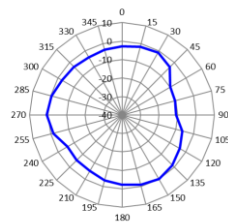
XY-Plane



2400MHz

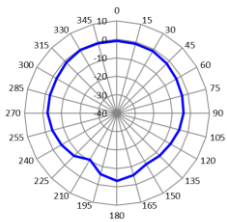


2442MHz

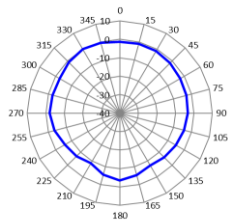


2484MHz

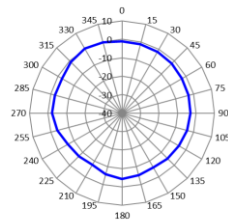
XZ-Plane



2400MHz

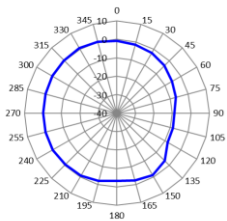


2442MHz

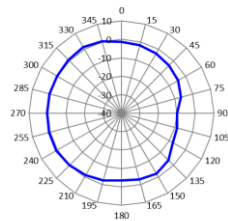


2484MHz

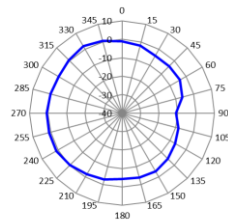
YZ-Plane



2400MHz



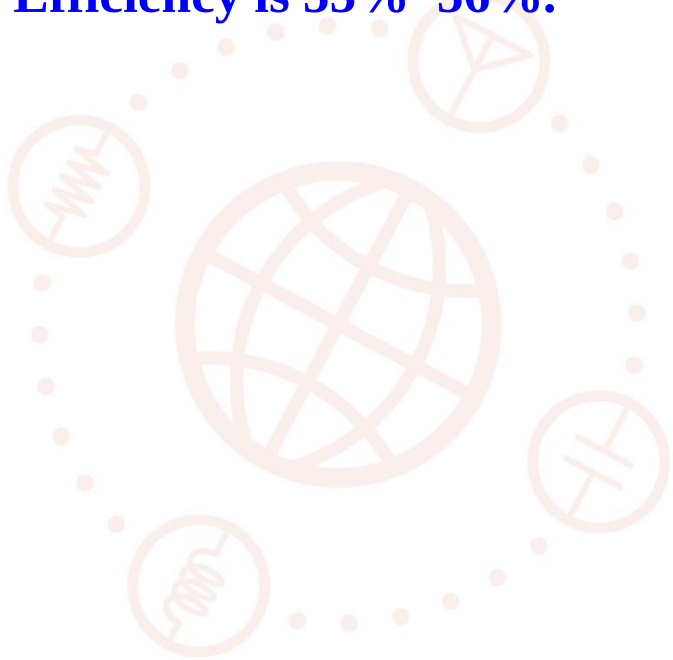
2442MHz



2484MHz

Summary

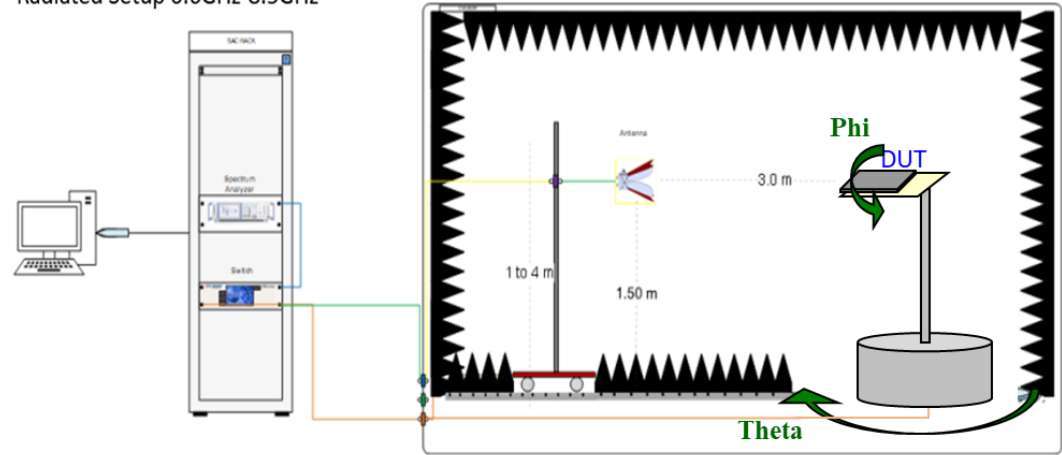
- Efficiency is 55%~56%.



Antenna Vendor Info & Measurement Setup

- Antenna Vendor: **YAGEO**
- Test Date: **20240522**
- Test Engineer :**MATTHEW KUNG**
- Measurement Setup:

Radiated Setup 0.6GHz-8.5GHz



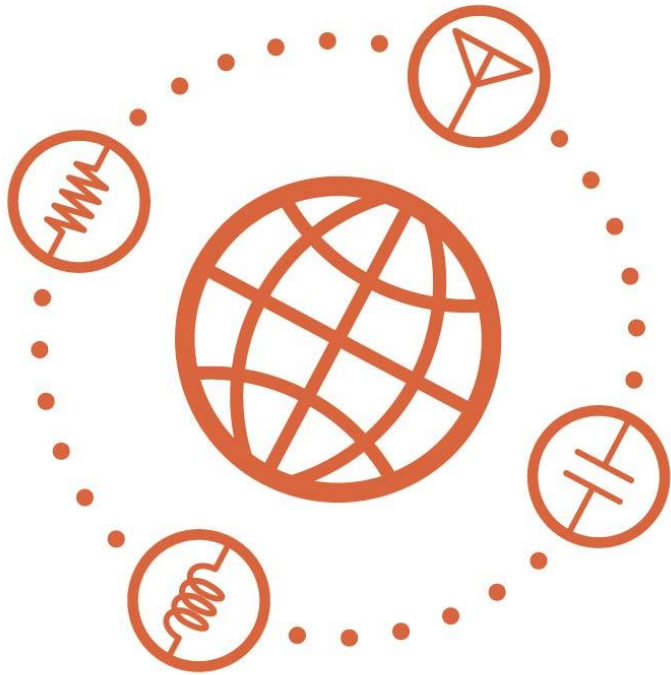
ID#	Device	Type/Model	Serial#	Manufactuter	Cal. Date	Estimated Next Cal. Date
1	Anechoic Chamber	AMS8500	-	ETS-Lindgren	2023-07-13	2024-07-13
2	Turn Table	ETS	-	ETS-Lindgren	N/A	N/A
3	Switch & Positioning system	2090	-	ETS-Lindgren	N/A	N/A
4	Horn Antenna	3164-08	99210	ETS-Lindgren	N/A	N/A
5	Network Analyzer	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	Matthew Kung		YAGEO		

N/A: Not Applicable

Test Procedure

ETS-Lindgren AMS-8500 system is 3D fully anechoic chamber, it is applied to the “Conical Cut test method”, the detail description is described as below :

- The Conical Cut method requires the ability of the Measurement Antenna to be physically rotated in the theta plane (overhead) of the EUT for implementations using a single Measurement Antenna, thirteen conical cuts are required to capture data at every 15 degrees from the EUT.
- Typically, the EUT will remain affixed to a turntable during the entire measurement process.
- The Measurement Antenna will be positioned at a starting theta angle.
- The EUT will then be rotated around the full 360 degrees of phi rotation.
- The Measurement Antenna will then be positioned at the next theta angle, and the process repeated.
- Finally, the measurement data of all angles are calculated through the EMQuest software to obtain the Peak gain, Average gain, Efficiency... and other data we need.



Thank you!