



Antenna Radiation Pattern & Gain Measurement

Test Report

Version: 1.0

Report No: SER0005-009

Document Classification: External

Preface

The objective of this document is to measure the Antenna Radiation Pattern & Gain measurement report figure of the IoT Product using Radiation Measurement System inside anechoic chamber for Radiation Efficiency verification purpose.

Privacy Information

This Report shall not be reproduced except in full without the written approval of the Avartanam Test Labs LLP.

Only the test(s) asked by the customer have been carried out and tests are performed on the DUT's only whose serial no is given by the customer for that test.

Any anomaly/discrepancy in this test report/certificate should be brought to our notice within 45 days from the date of issue.

Testing has been done in environmental conditions as specified by the standard.

Report prepared by

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1 General Information

Service Request No.	RFSRV-PTRP-0626-009
Purchase Order No.	PO-00038
DUT Inward No. & Date	OTH0014, OTH0042
Name and Address of Customer	Nikul.shah, Indiesemic Pvt Ltd A-1101, B-1101, The First, B/H Keshav Baug Party Plot, Vastra pur, Ahmedabad, Gujarat, 380015

1.1 DUT Description

Manufacturer	INDIESEMIC PVT LTD
Number of Sample	1
Modal No	ISC-SX1262-B
Serial No.(s) of product(s) tested	1201202612000043
Sample(s) Condition on receipt	Ok
Product	LoRa Module
Accessories	NA
Operating Frequency	902 MHz-915 MHz
Received Date	01/05/2026
Test Start Date	28/05/2026
Test Completed Date	29/05/2026
DUT Size (LxWxH) (mm)	17.0*16.0*2.0($\pm$ 0.2)mm
DUT Weight(kg)	-
Antenna Type	External antenna (ET-865R-SMMO)

1.1.1 DUT Photograph

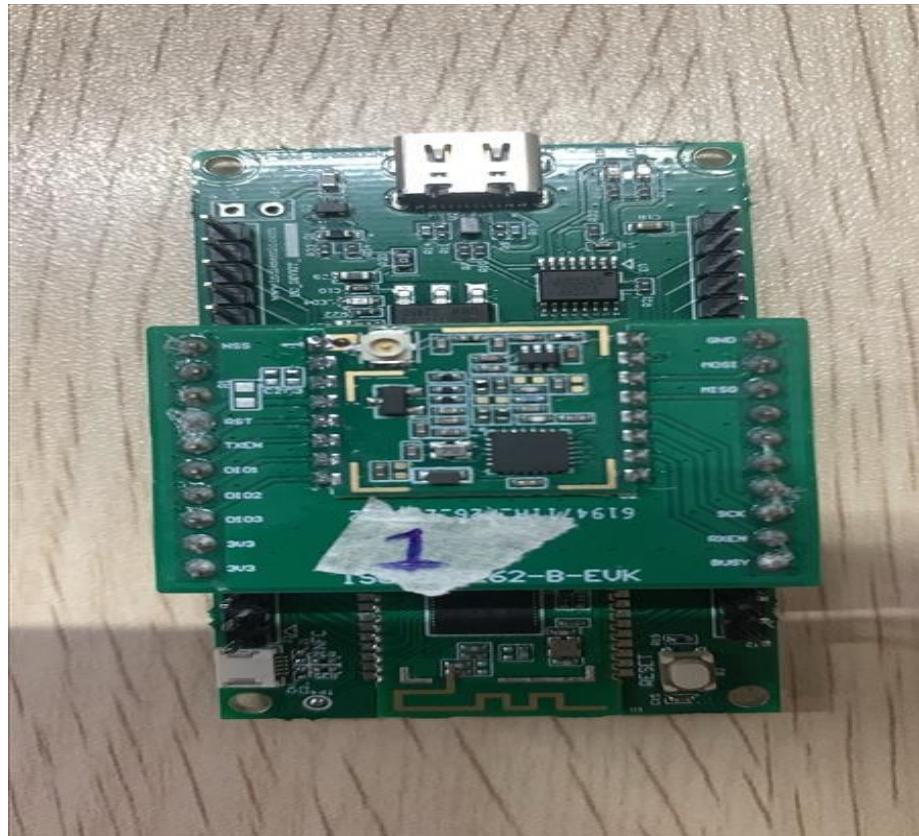


Figure 1: DUT Photograph

1.2 Test Instrument Details

Instrument Name	Manufacturer	Model No
Radiation Measurement System	MegiQ	RMS-0460
RF Anechoic Chamber	Shenzhen Tojoin Technology Co. Ltd	3 Meter Semi Anechoic Chamber
Spectrum Analyzer	R & S	FPL-1026

Table 1.2: Test Instrument Details

1.3 Testing Location

Avartanam Test Labs LLP.

Plot#32, Zone-D/4,

Phase-1, GIDC Estate,

V.U. Nagar 388 121,

Gujarat, India.

2 Conductive Output Power Measurement

2.1 Introduction

- RF Output power generated by the transceiver is measured on the Spectrum Analyzer.

2.2 Test Setup Image

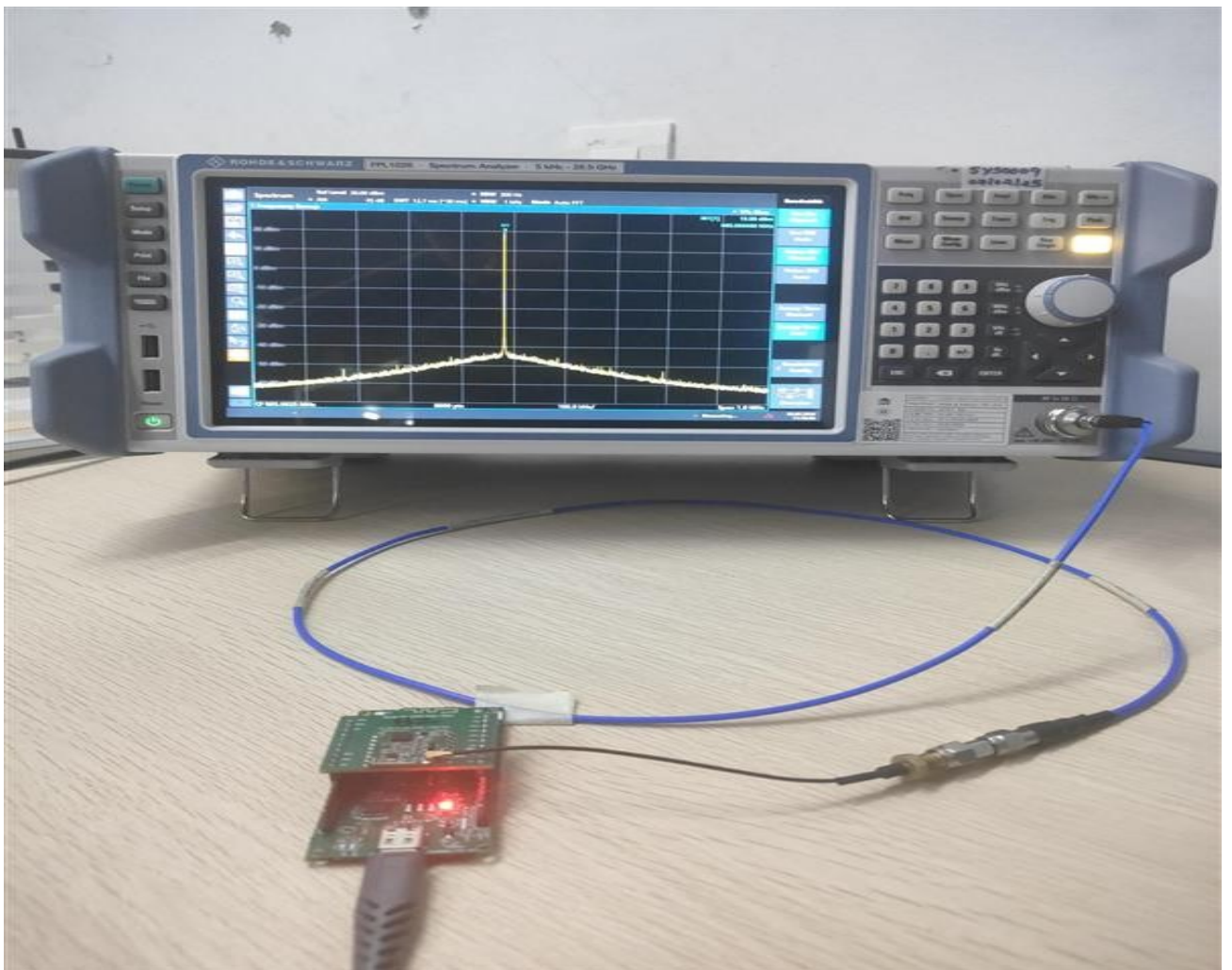


Figure 2: Test Setup Image

2.3 Test Conditions

DUT Operating Condition	
Temperature	23°C
Relative Humidity	54%

Table 2.3: Test conditions

2.4 Measurement Uncertainty

Measurement Type	As per Avartanam Lab
Conductive Output Power	± 0.5 dB

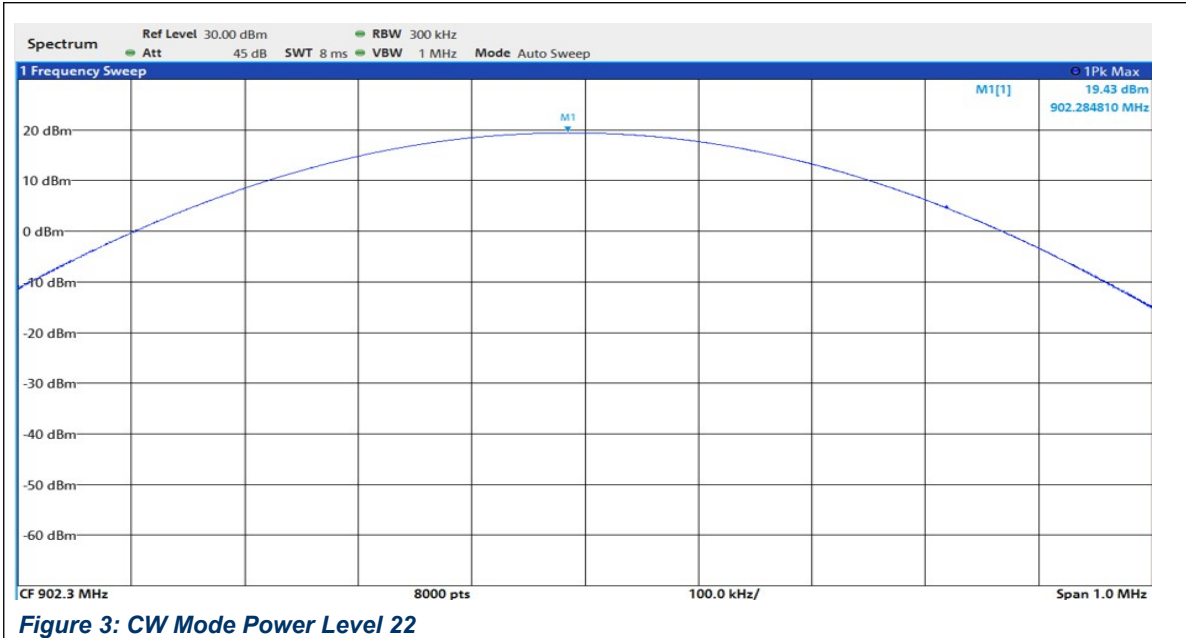
Table 2.4: Measurement uncertainty

2.5 Summary

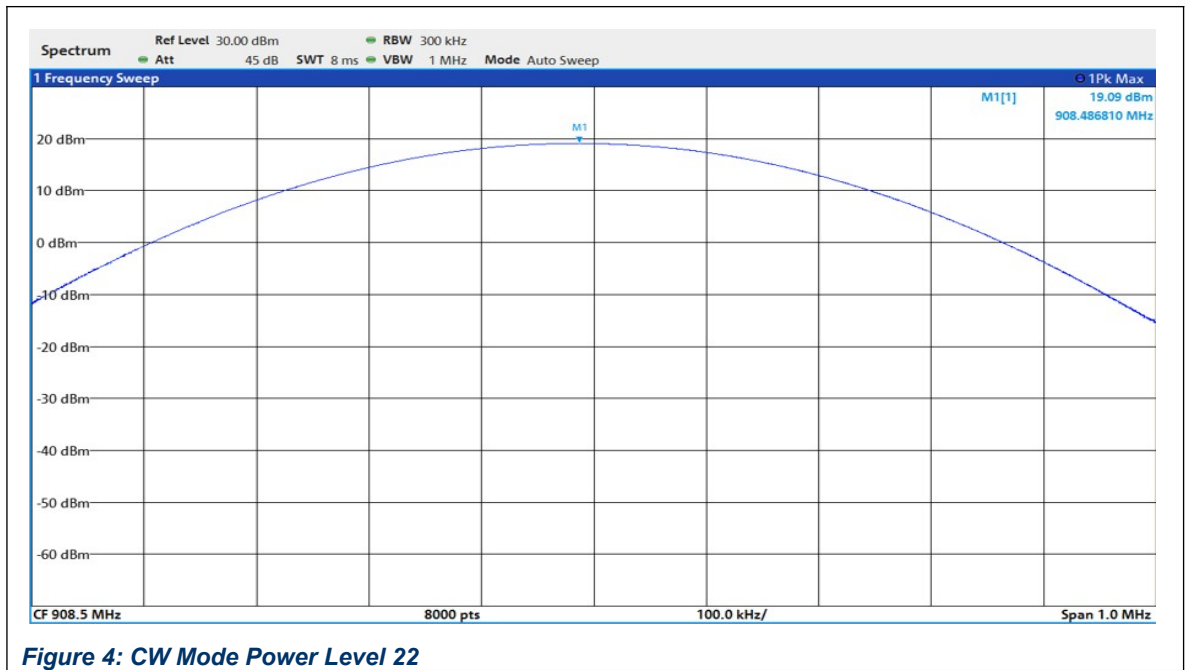
Sr no	Power Level	Frequency (MHz)	Conductive Output power (dBm)
1	22	902.3 MHz	19.43
2	22	908.5 MHz	19.90
3	22	914.9 MHz	18.74

Table 2.5: Summary

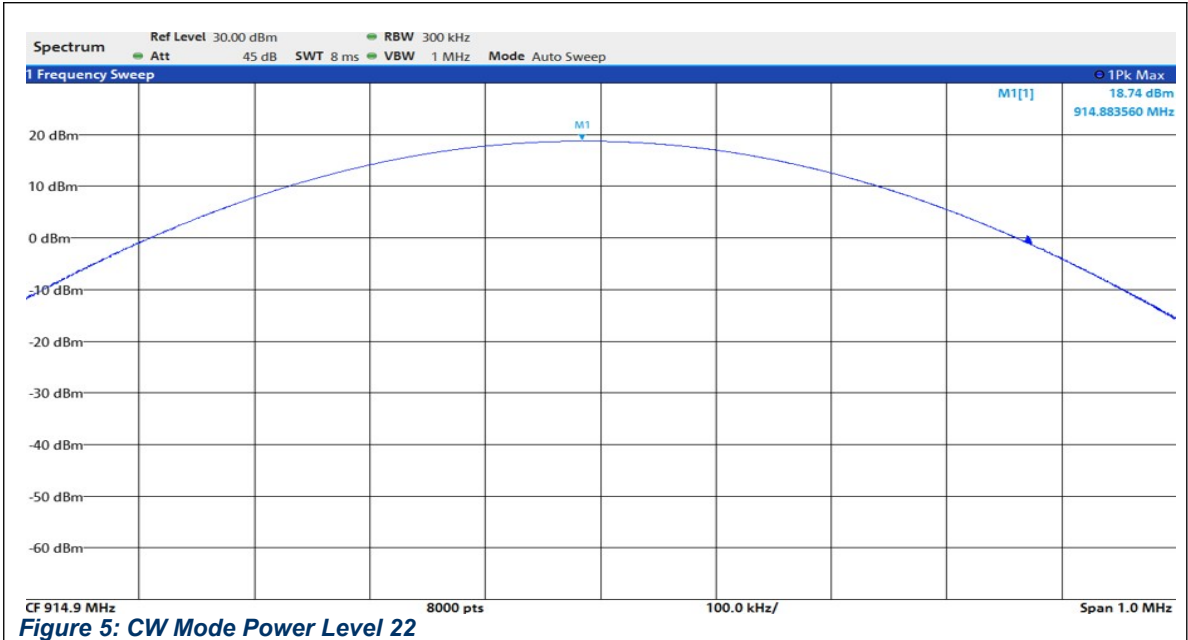
2.5.1 RF Power Measured Test Plots (902.3MHz)



2.5.2 RF Power Measured Test Plots (908.5MHz)



2.5.3 RF Power Measured Test Plots (914.9MHz)



3 Antenna Radiation Pattern & Gain Measurement

3.1 Introduction

- The measured power radiated in a single direction by an ideal isotropic antenna is known as Antenna Radiation Pattern & Gain measurement. It is the antenna's maximum output power in the particular direction with the highest antenna gain.

3.2 Test Setup Image

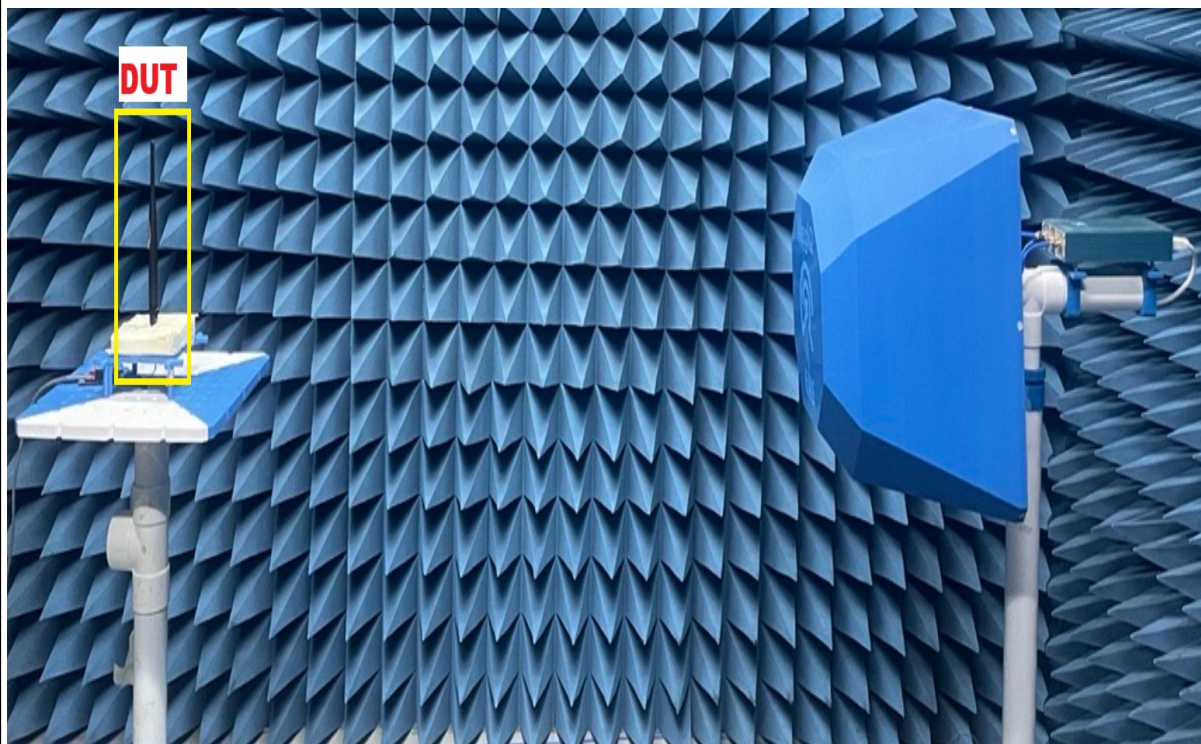


Figure 6: Test Setup Image

3.2 Test Conditions

DUT Operating Condition	
Temperature	23 ° C
Relative Humidity	54%
Measurement Standard Reference	As per IEEE Standards 149-2021 on a Pre-Compliance basis.

Table 2: Test Conditions

3.3 Measurement Uncertainty

Measurement Type	As per Avartanam Lab
Conductive power	± 0.5 dB

Table 3: Measurement Uncertainty

3.5 DUT Orientation in XY Plane

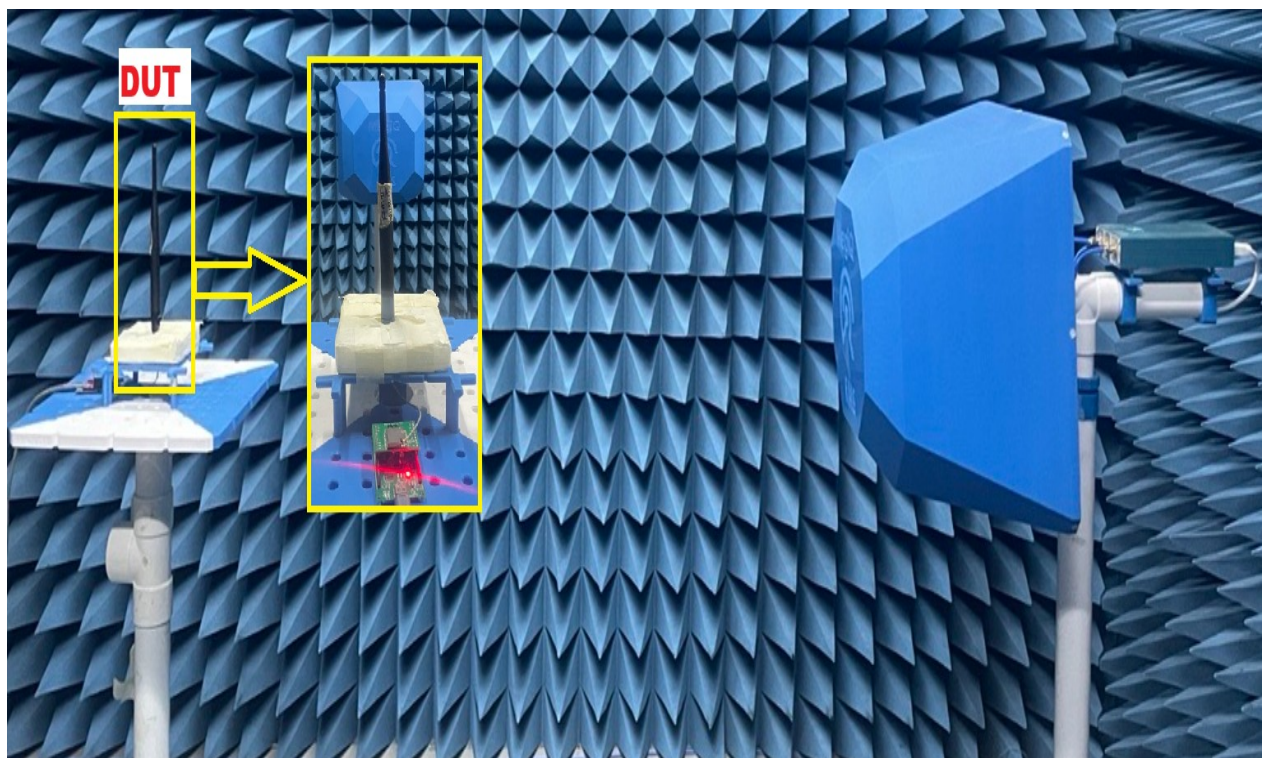


Figure 7: XY Plane ($\Theta=90^\circ$)

3.5 DUT Orientation in YZ Plane

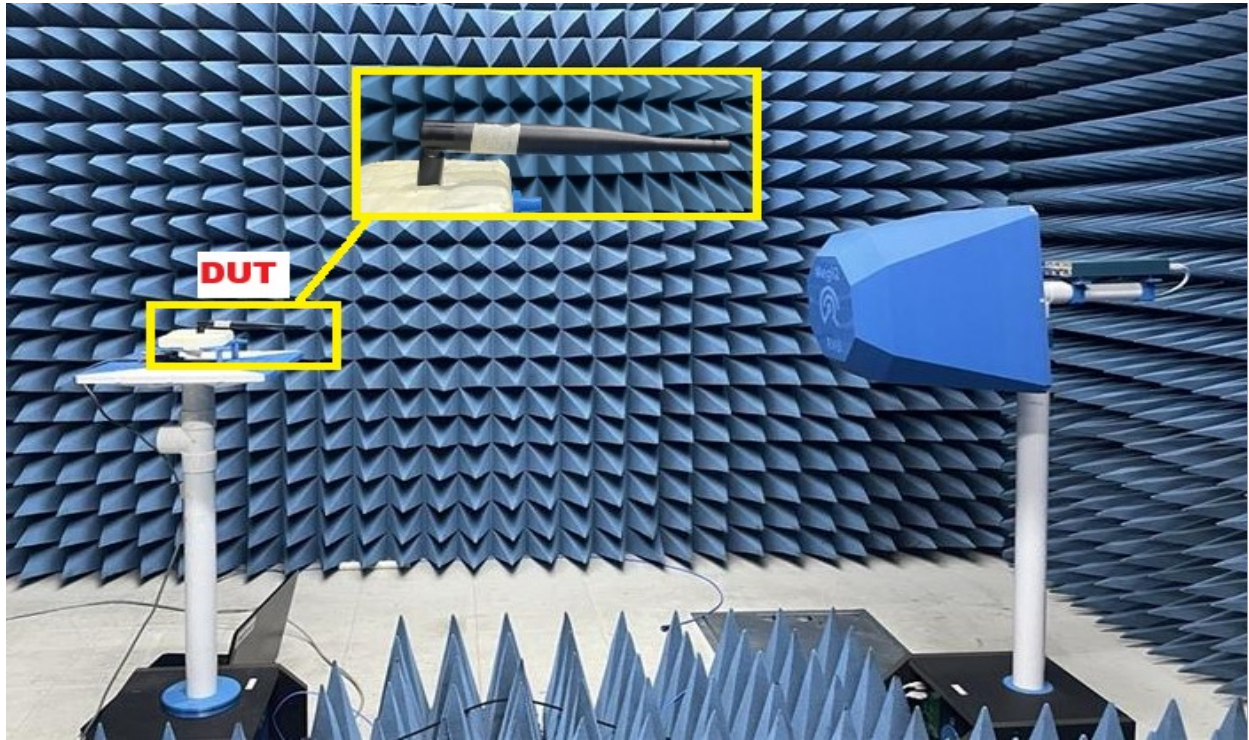
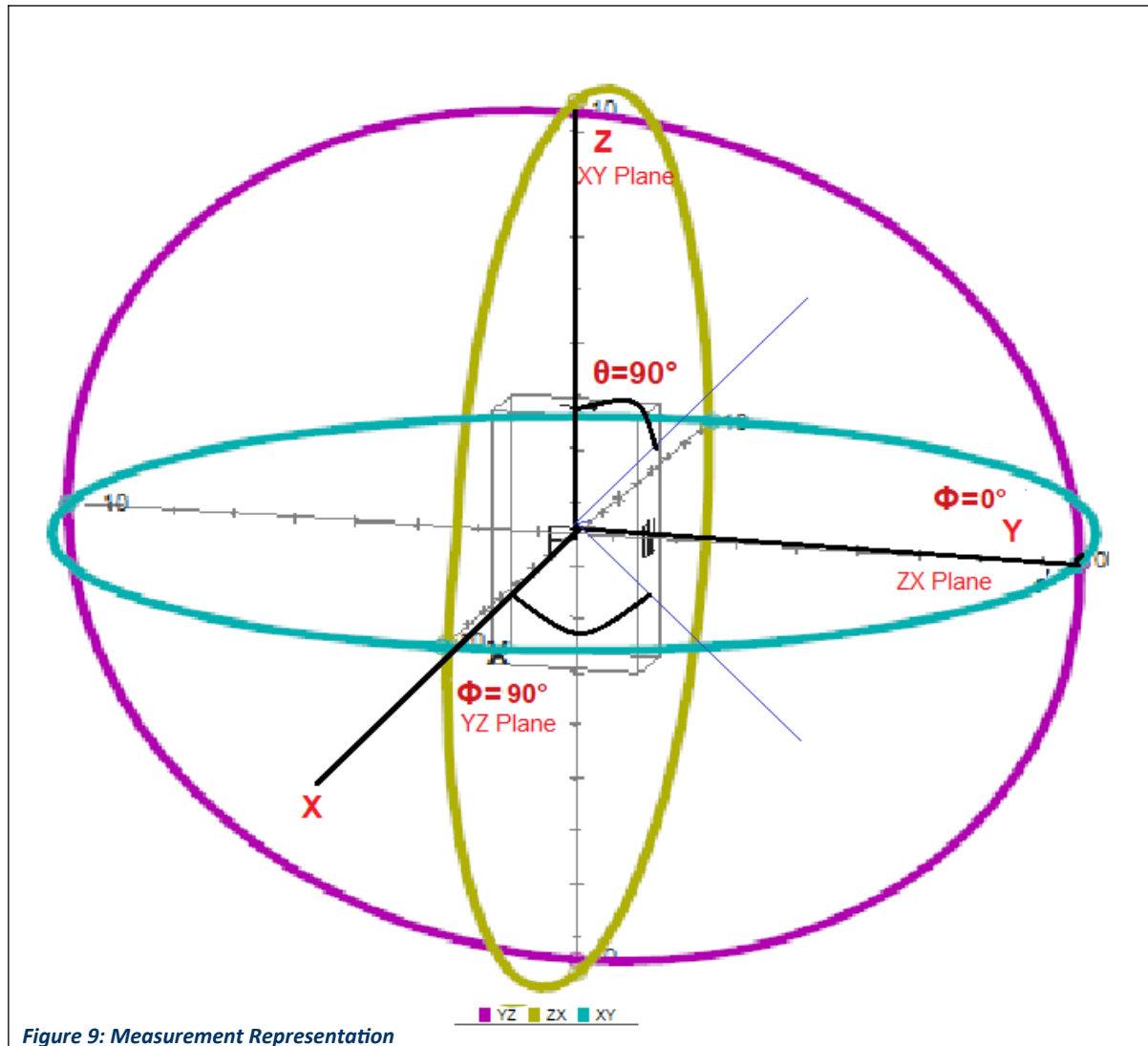


Figure 8: YZ Plane ($\Theta=90^\circ$)

3.6 Measurement Representation



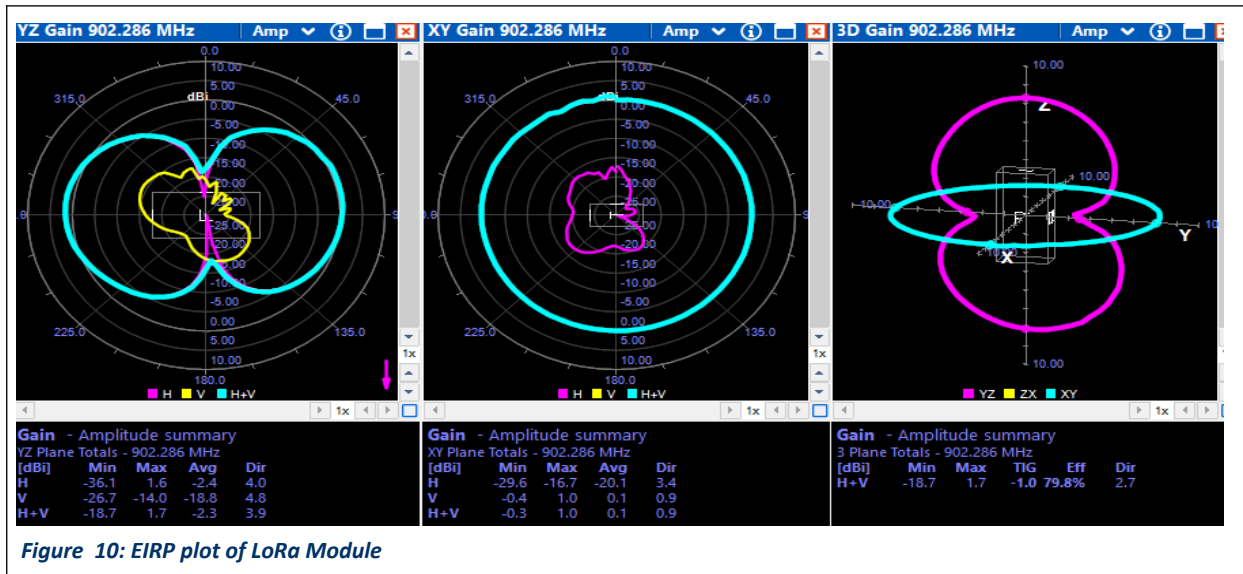
3.7 Test Results

3.7.1 Summary

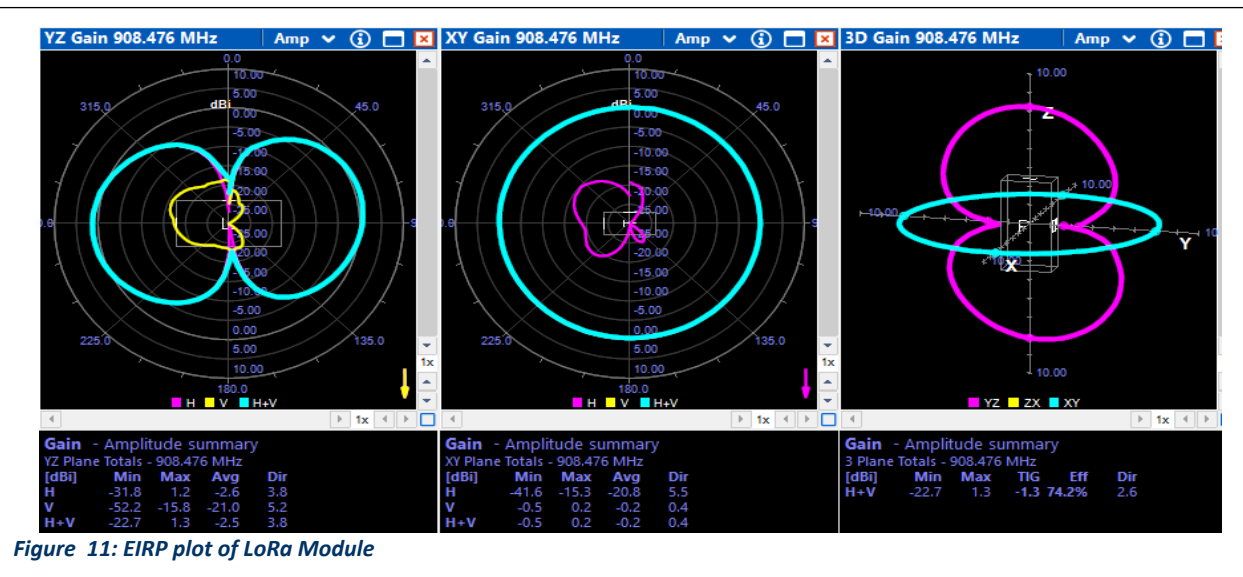
Sr. No	Frequency (MHz)	Power level	Test Result		
			Plane	Maximum (dBi)	Average (dBi)
1	902.3	22	YZ	1.7	-2.3
			XY	1.0	0.1
2	908.5	22	YZ	1.3	-2.5
			XY	0.2	-0.2
3	914.9	22	YZ	1.2	-2.6
			XY	0.4	-0.1
Gain Measurement (dBi)			1.7 dBi @ 902.3 MHz		

Table 3.8.1: Summary

3.7.2 Gain Graphical Plots (902.3MHz)



3.7.3 Gain Graphical Plots (908.5MHz)



3.7.4 Gain Graphical Plots (914.9MHz)

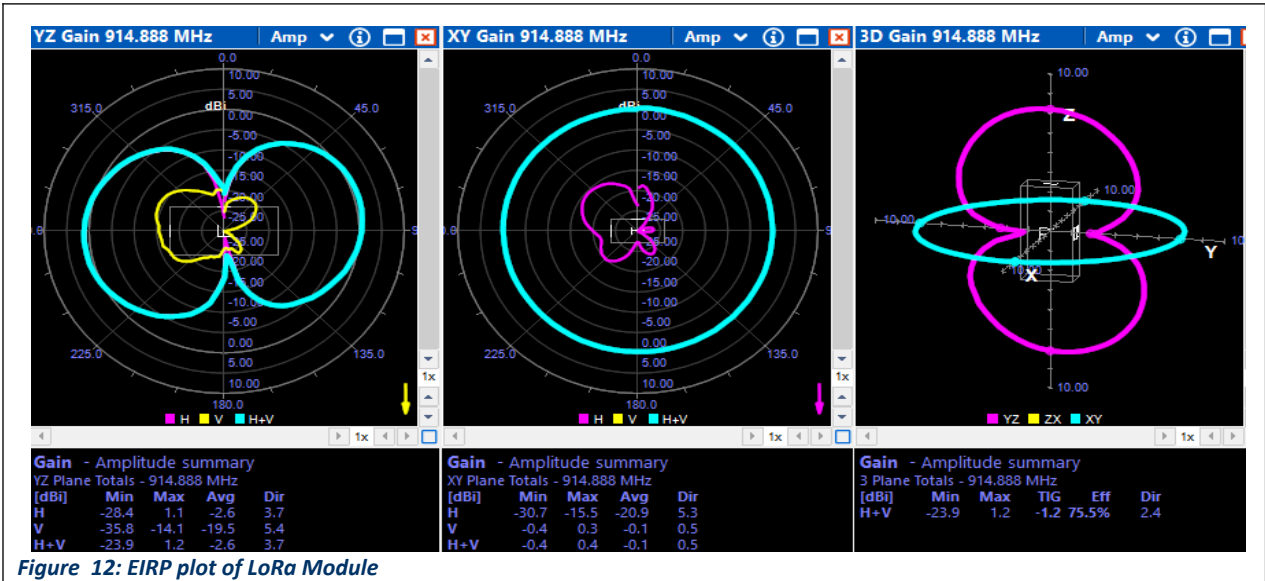


Figure 12: EIRP plot of LoRa Module

4 Appendix A: Abbreviations

CW: Continues Wave

RF: Radio Frequency

Rx: Receiver (Mode)

Tx: Transmitter (Mode)

DUT: Device Under Test

EiRP: Effective Isotropic Radiated Power

Antenna Photo&Length

