



Puck Antenna Gain Test Report

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1 DOCUMENT HISTORY

Version	Date	Author	Nature of the Change
1.0	09/12/2025	YBi	Creation

2 INTRODUCTION

CONTEXT

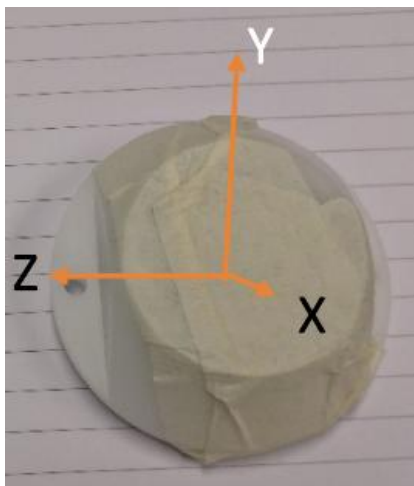
This report presents the radiation pattern characterization of the PIFA antenna integrated on our PCB-based PUCK product. The objective of this document is to present the radiation performance of the antenna at the three operating frequencies of interest. The following sections provide a summary table of the main results obtained at each frequency, as well as the 3D and 2D radiation patterns.

Frequency Range (MHz)	2401 - 2481
Feed Point Impedance	50 ohms
VSWR	< 2:1
Polarization Type	Linear
Elevation Beamwidth	Omni directional
Peak Gain (dBi)@2404MHz	5,57
Peak Gain (dBi)@2440MHz	5,34
Peak Gain (dBi)@2478MHz	1,37

3 DESIGN ANTENNE

CONTEXT

The antenna performance was evaluated using a controlled measurement setup by the COREIOT laboratory. The tests were conducted with the antenna integrated into the enclosure. This setup ensures that the radiation patterns accurately reflect the in-situ behavior of the antenna under real operating conditions.

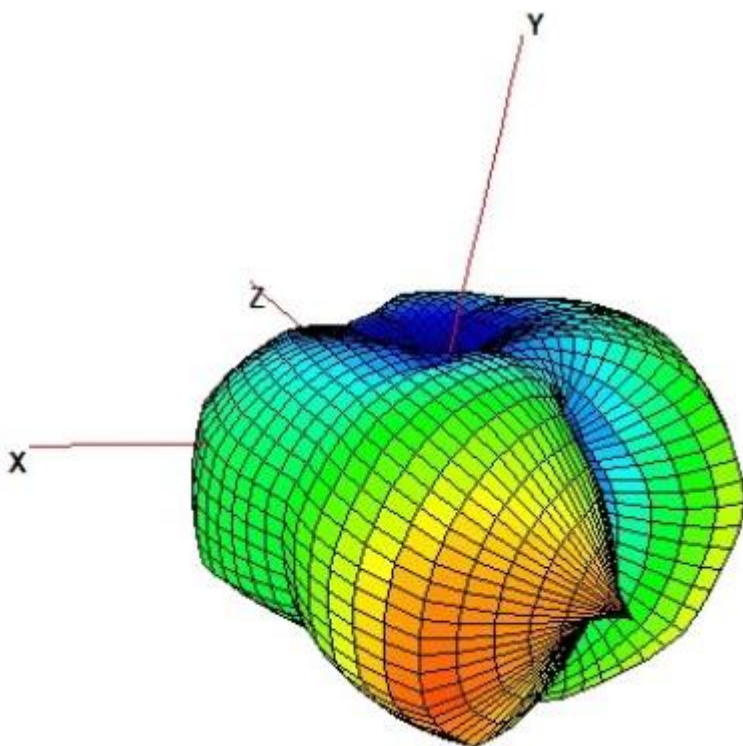


- Device is placed in YZ plane.
- Antenna is at +Y.

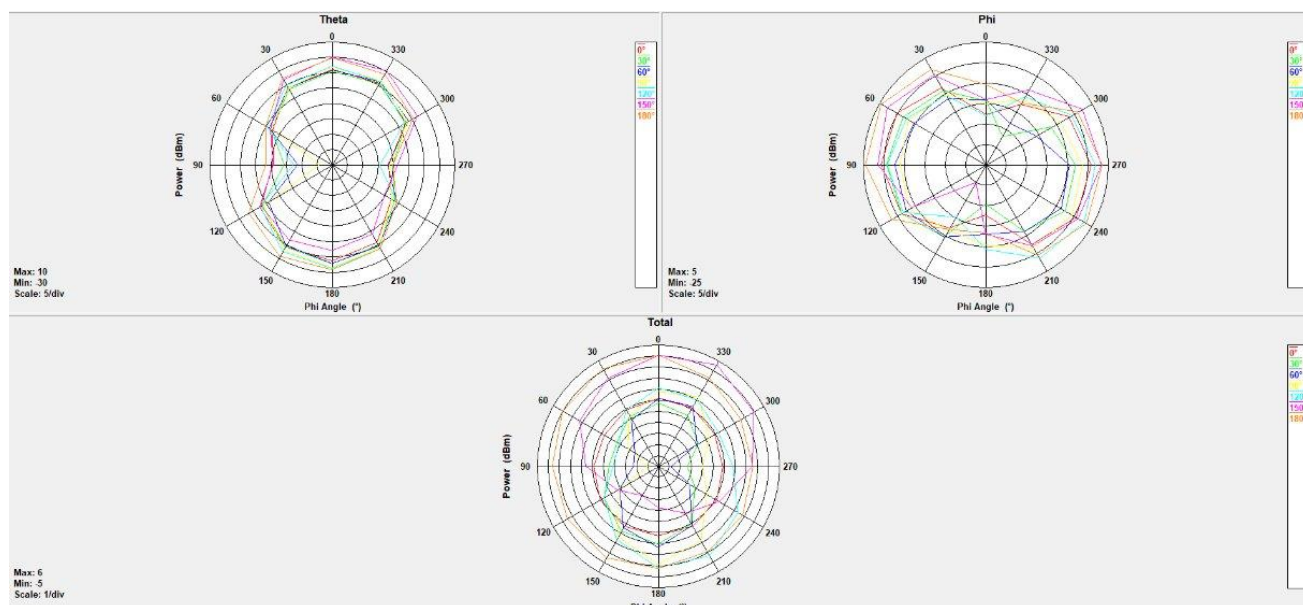
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4 PUCK LOW BAND – 2404 MHZ

This section presents the radiation characteristics of the antenna at 2404 MHz, including the 3D radiation pattern, 2D cuts, and a summary table with directivity, efficiency, peak EIRP, and gain.



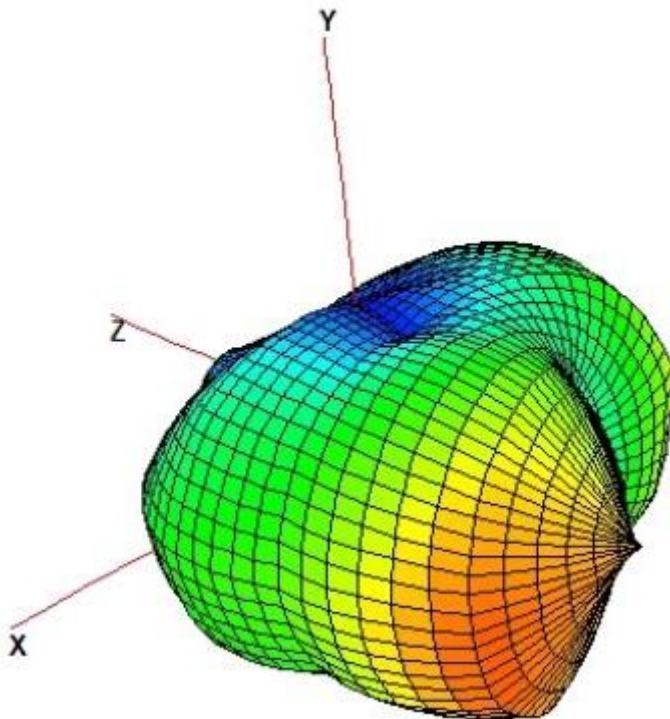
Total	Point Values	
	Ant. Port Input Pwr. (dBm)	0
	Tot. Rad. Pwr. (dBm)	1.12308
	Peak EIRP (dBm)	5.57184
	Directivity (dBi)	4.44876
	Efficiency (dB)	1.12308
	Efficiency (%)	129.511
	Gain (dBi)	5.57184



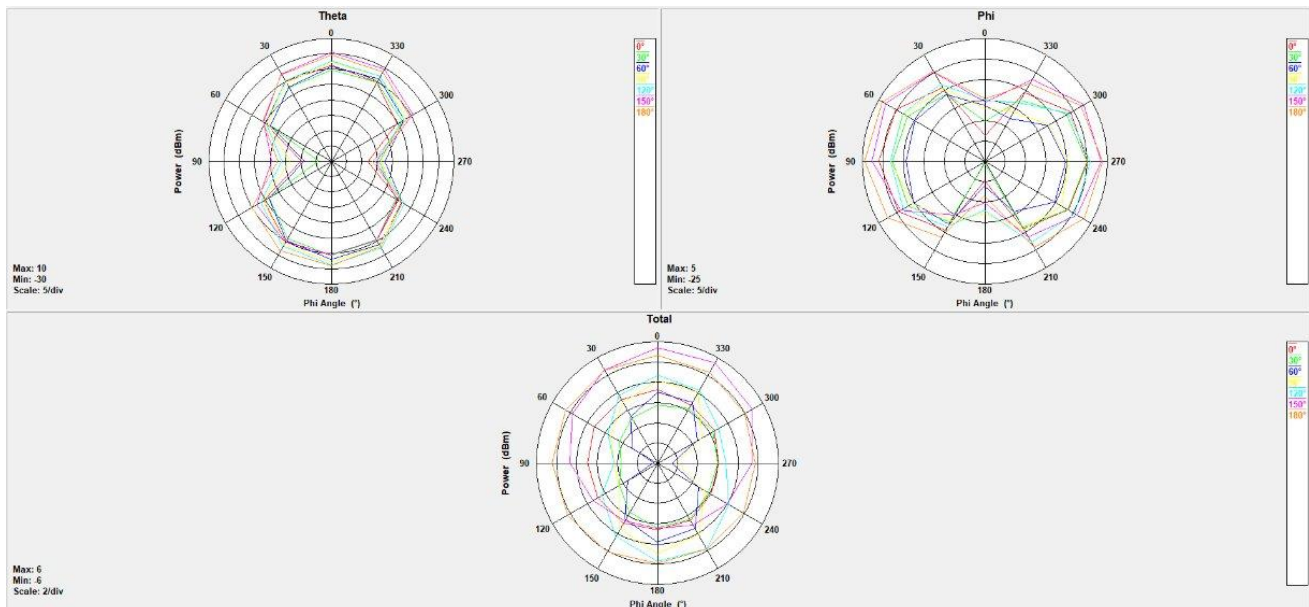
5 PUCK CENTER BAND – 2440 MHZ

This section presents the radiation characteristics of the antenna at 2444 MHz, including the 3D radiation pattern, 2D cuts, and a summary table with directivity, efficiency, peak EIRP, and gain.

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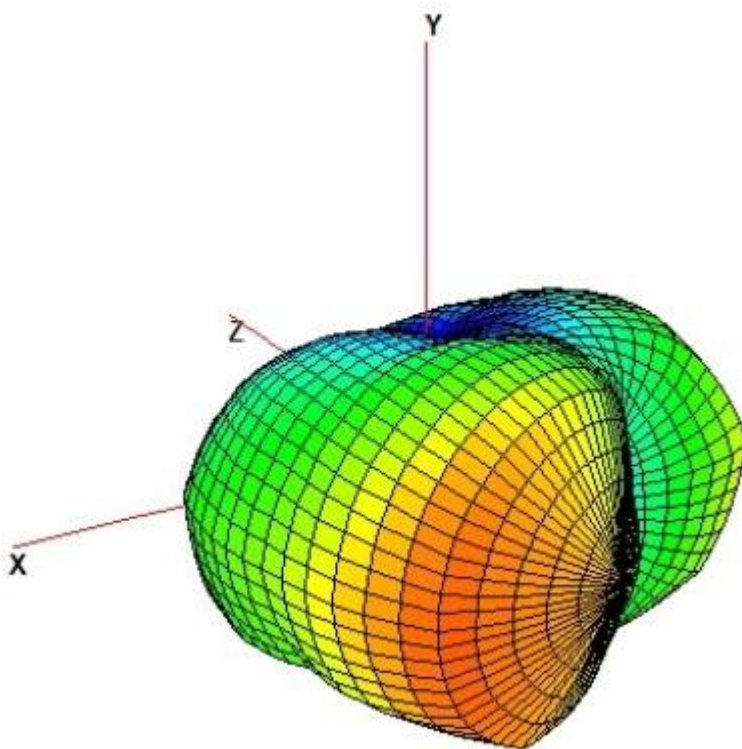


Total	Point Values	
	Ant. Port Input Pwr. (dBm)	0
	Tot. Rad. Pwr. (dBm)	0.889648
	Peak EIRP (dBm)	5.34746
	Directivity (dBi)	4.45781
	Efficiency (dB)	0.889648
	Efficiency (%)	122.734
	Gain (dBi)	5.34746

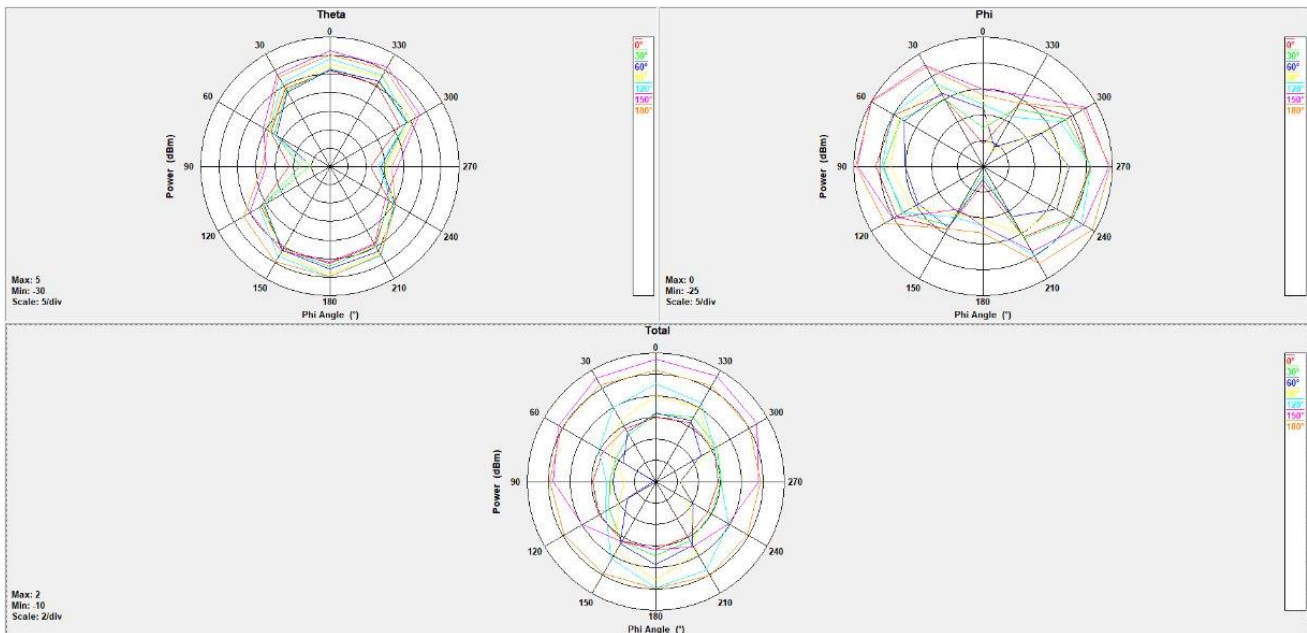


6 PUCK HIGHER BAND – 2478 MHZ

This section presents the radiation characteristics of the antenna at 2478 MHz, including the 3D radiation pattern, 2D cuts, and a summary table with directivity, efficiency, peak EIRP, and gain.



Total	Point Values	
	Ant. Port Input Pwr. (dBm)	0
	Tot. Rad. Pwr. (dBm)	-3.09307
	Peak EIRP (dBm)	1.36858
	Directivity (dBi)	4.46165
	Efficiency (dB)	-3.09307
	Efficiency (%)	49.0561
	Gain (dBi)	1.36858



7 TABULAR FORM OF MEASUREMENT RESULTS FOR PUCK

Frequency (MHz)	2404	2440	2478
Ant. Port Input Pwr. (dBm)	0	0	0
Tot. Rad. Pwr. (dBm)	1.12308	0.889648	-3.09307
Peak EIRP (dBm)	5.57184	5.34746	1.36858
Directivity (dBi)	4.44876	4.45781	4.46165
Efficiency (dB)	1.12308	0.889648	-3.09307
Efficiency (%)	129.511	122.734	49.0561
Gain (dBi)	5.57184	5.34746	1.36858

The low, mid, and high frequency bands exhibit TRP values of 1.12 dB, 0.89 dB, and –3 dB, respectively, indicating that the low band radiates approximately 4.12 dB more power than the high band. This significant drop in TRP at higher frequencies is likely linked to poorer antenna matching in the upper band compared to the lower frequencies.