

Antenna Description

Basecamp

Date: 2026-03-05

Version: 1.0

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1 Antenna overview

The Basecamp contains these transmitters for which antenna details are provided here:

- Bluetooth Low Energy (BLE)
- Wi-Fi

2 Antenna Details

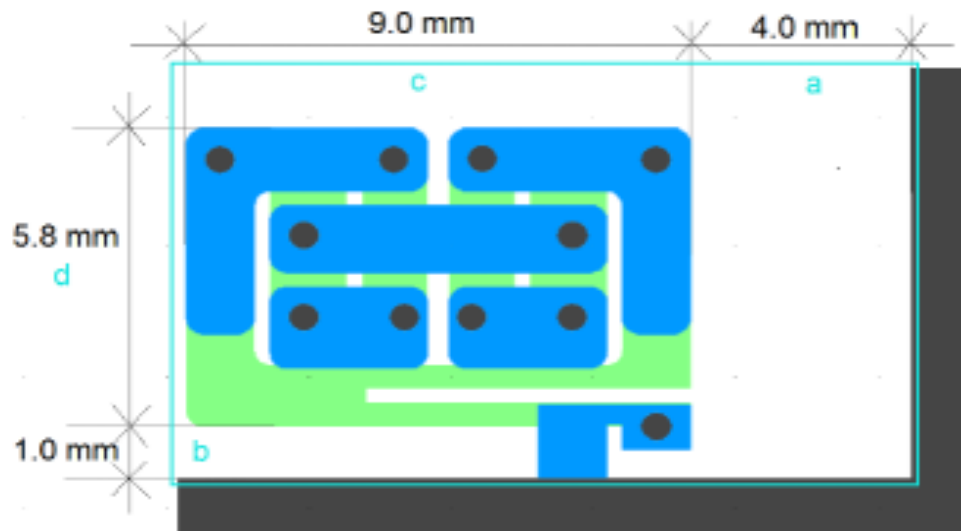
2.1 Bluetooth Low Energy

The Basecamp uses an integrated ZOR PCB antenna. The following antenna gain measurements were made during the certification testing process. More details about the testing can be found in the corresponding test report (1-0010-25-02-02_TR1-R01).

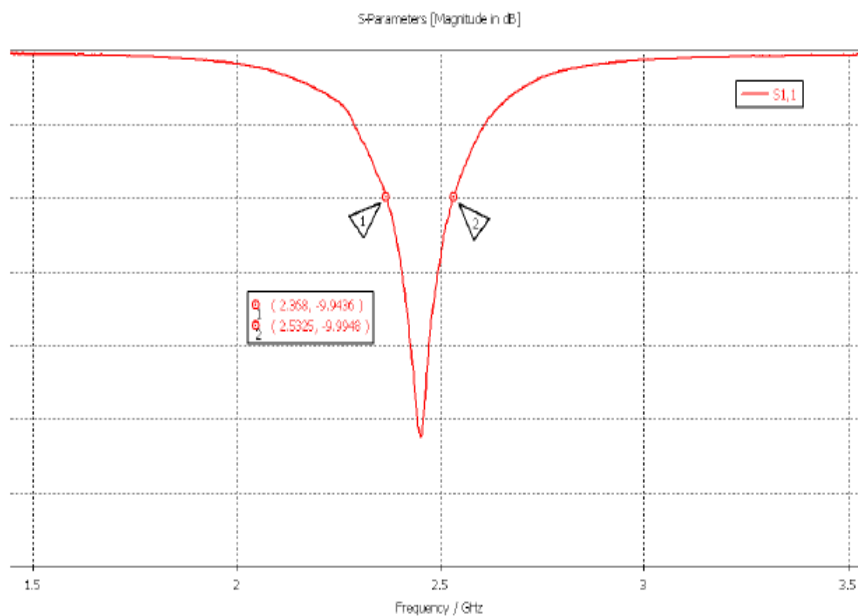
Frequency (MHz)	Antenna Gain (dBi)
2402	0.8
2440	0.4
2480	1.3

The design utilises a 1.6 mm substrate. All measurements and specifications provided hereafter are those provided with the reference design.

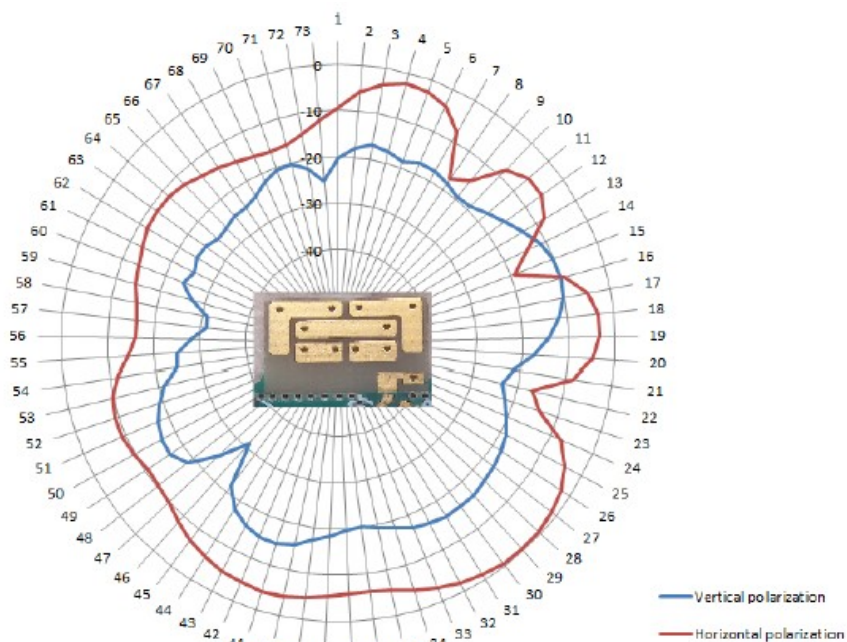
Bluetooth Antenna PCB layout:



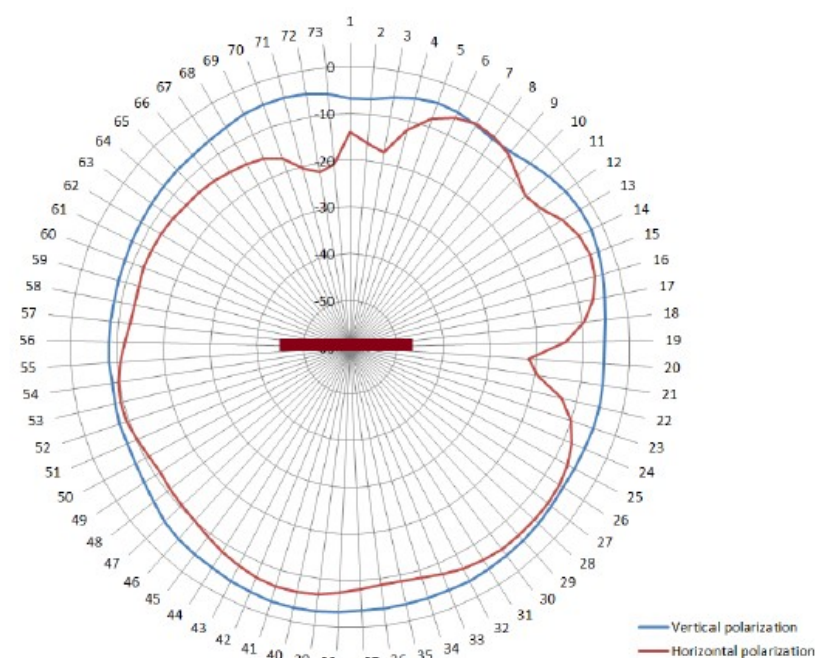
Return loss vs frequency plot:



Horizontal Radiation Pattern:



Vertical radiation pattern



2.2 Wi-Fi

The Basecamp uses a Flex Cabled Side-fed Balanced Antenna, gain 2.0 dBi.
Molex 2042810100



The following specifications can be found in the datasheet for this antenna. Please refer to the Antenna data sheet for more info.

Note that the Basecamp supports only 2.4GHz Wi-Fi.

DESCRIPTION	EQUIPMENT	REQUIREMENT		
Frequency Range	VNA E5071C	2.4-2.5GHz	5.15-5.85GHz	5.925-7.125GHz
Return Loss	VNA E5071C	< -10 dB	< -10 dB	< -5 dB
Peak Gain (Max)	OTA Chamber	2.0dBi	3.3dBi	4.5dBi
Average Total Efficiency	OTA Chamber	>65%	>68%	>50%
Polarization	OTA Chamber	Linear		
Input Impedance	VNA E5071C	50 ohms		

4.3 RETURN LOSS PLOT

All measurements in this document are done with a cable length of 100mm.

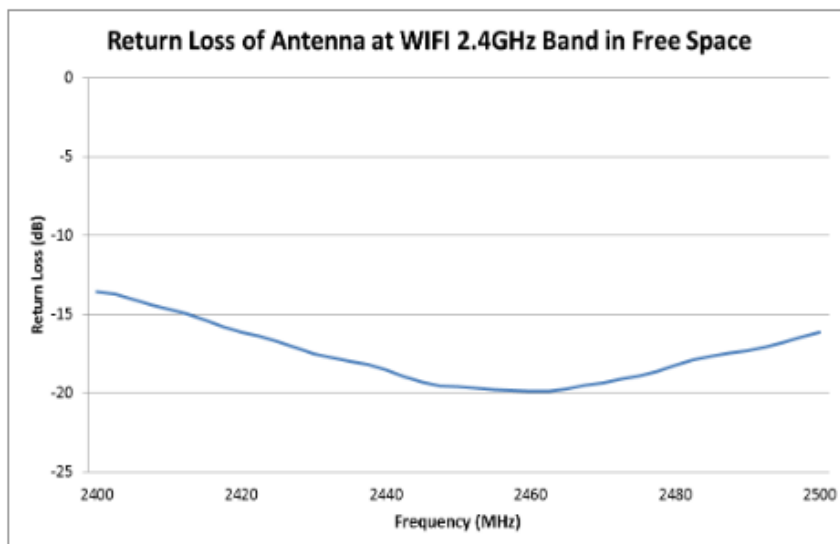


FIGURE 4.3.1 RETURN LOSS OF ANTENNA AT 2.4GHZ BAND IN FREE SPACE

4.4 EFFICIENCY PLOT

All measurements in this document are done with a cable length of 100mm.

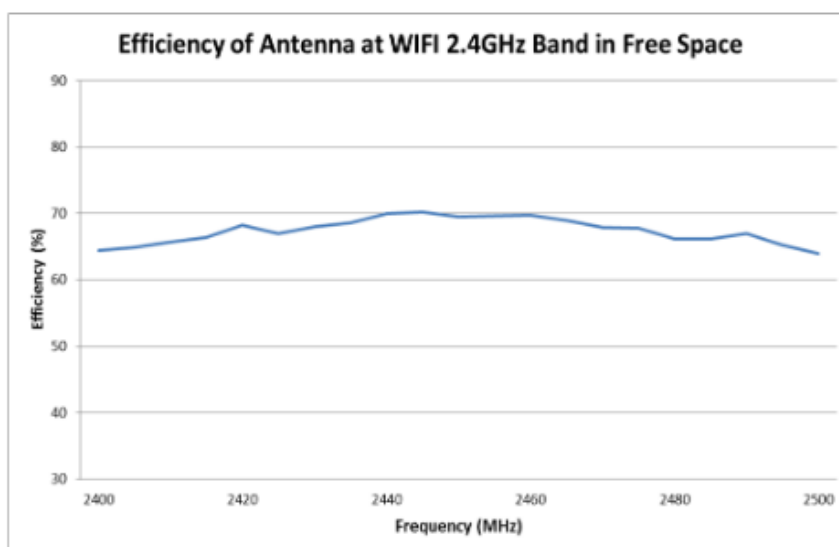


FIGURE 4.4.1 EFFICIENCY OF ANTENNA AT 2.4GHZ BAND IN FREE SPACE

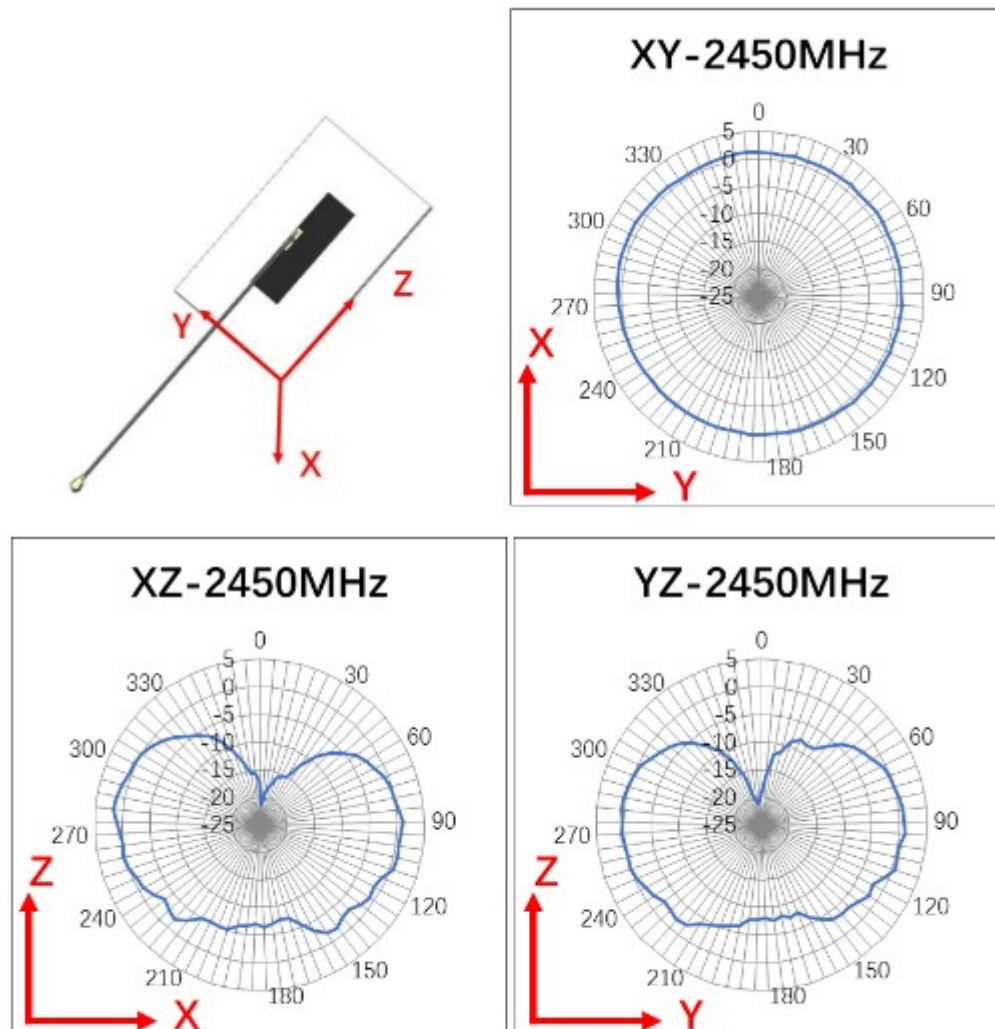


FIGURE 4.5.1 2D RADIATION PATTERN OF ANTENNA AT 2450MHZ IN FREE SPACE

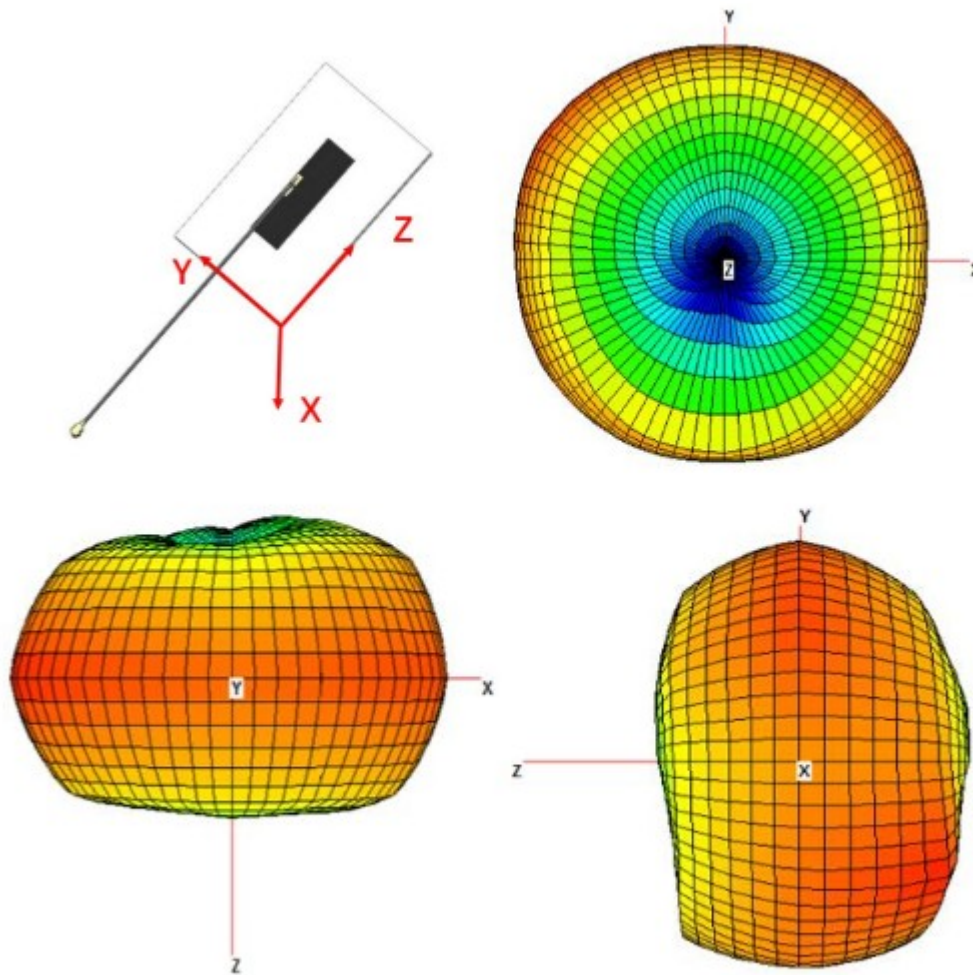


FIGURE 4.5.5 3D RADIATION PATTERN OF ANTENNA AT 2450MHZ BAND IN FREE SPACE