



PCW-400i

Antenna Report

© Copyright 2024 BLINQ Networks

CONFIDENTIAL INFORMATION

RESTRICTED USE AND DUPLICATION

All rights reserved.

The information contained in this document is the property of BLINQ Networks. Unless specifically authorized in writing by BLINQ Networks, the holder of this document shall keep all information contained herein confidential and shall protect same in whole or in part from disclosure and dissemination to all third parties.

This document is intended for limited circulation to provide preliminary information and to promote discussion. As such, the information contained in this document is subject to change without notice and should not be construed as a commitment by BLINQ Networks. BLINQ Networks reserves the right to make changes in design or components as progress in engineering and manufacturing may warrant.

Table of Contents

Table of Contents..... 2

1. Introduction..... 3

2. Antenna Report – 5G Access technology..... 4

3. Antenna Report – Wi-Fi technology 6

1. Introduction

The present Antenna Report applies to:

- Product ID: **PCW-400i-35**
FCC ID: **ROR2002**

The BLiNQ PCW-400i-35 product supports two distinct wireless technologies:

- 5G Access
- Wi-Fi-7

For each of the wireless technology the Product uses a different or multiple antenna element produced by different manufacturers.

Further on the document will describe each antenna / technology separately.

2. Antenna Report – 5G Access technology

Antenna Patch Designed by:

COMMUNICATION COMPONENTS ANTENNA RESEARCH

88 HINES ROAD

KANATA, ON K2K 2T8

Canada

Mechanical Design by:

BLiNQ Networks

140 Renfrew Drive

Markham, ON L3R 6B3

Canada

The PCW-400i-35 is using a BLiNQ – CCI proprietary 5G Access Antenna design.

The design is based on:

- 1 Dual Polarized H Band Antenna patch – covering 90deg Azimuth and Elevation BW.
- Per Product, 4 x 1 Dual Polarized Antenna patches are mechanically distributed as presented in Figure 1.
Through the mechanical design, the Product ensures a 360 deg azimuth coverage while each 90 deg direction uses a dedicated 2x2 (Dual Polarized) Antenna patch.

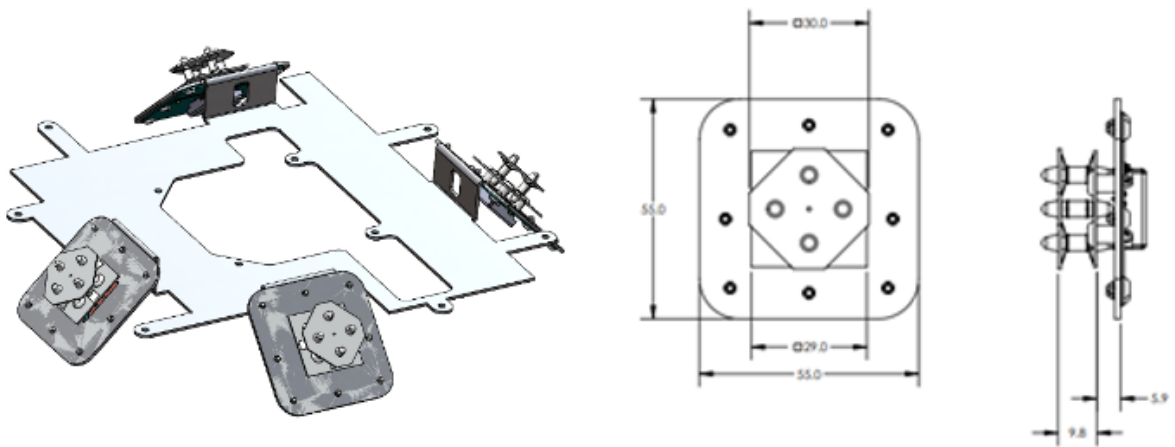


FIGURE 1 PCW-400i-35 ANTENNA REPORT - 5G ACCESS TECHNOLOGY

TABLE 1 5G TECHNOLOGY – H ANTENNA PATCH CHARACTERISTICS

H band patch Antenna by CCAI	
Frequency	3300-4200MHz
Gain Peak (dBi)	8
Gain Average (dBi)	7.4
AZ BW(5dB)	95
EL BW(5dB)	76
EDT(°)	0
FBR @ 180 deg(dB)	20
XPD (At Peak)(dB)	26.8
Isolation(dB)	>25
VSWR	<1.5:1
Input Power(W)	50
Polarization	Dual Linear 45°
Input Impedance	50 Ohms
Lightning Protection	Through the overall mechanical product design

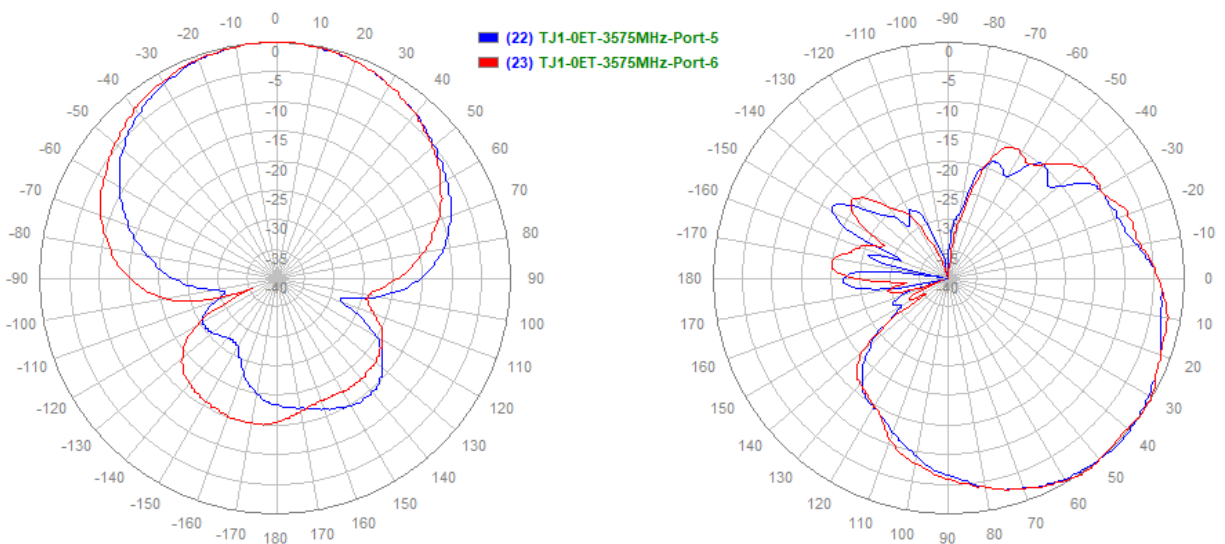


FIGURE 2 5G TECHNOLOGY - H ANTENNA PATCH RADIATION PATTERN

3. Antenna Report – Wi-Fi technology

Antenna Designed by:

VVDN Technologies Pvt. Ltd.

Plot No: CP-07, Sector-8, IMT Manesar, Gurugram, Haryana - 122050

India

Mechanical Design by:

BLiNQ Networks

140 Renfrew Drive

Markham, ON L3R 6B3

Canada

The PCW-400i-35 is using a BLiNQ – VVDN proprietary Wi-Fi Antenna design.

Considering the requirement of Wi-Fi RF needs, output transmitting power, path loss, and mounting/deployment scenarios, Stamped Metal based antennas are selected for 2.4GHz, 5 GHz & 6 GHz respectively.

Considering the bottom case of ADC material, the radiation patterns at the XZ/YZ plane will be semi-directional while the XY plane will be omnidirectional.

However, the radiation patterns of these antennas are optimized in such a way that, the coverage will be maximum for both ceiling/wall mount conditions. Below is the performance summary of the antennas.

The return loss of all 3 types of antenna elements is maintained below -10dB throughout the operating band for better impedance matching. Isolation between 2GHz elements is less than -20dB whereas for 5GHz and 6GHz elements are less than -25dB to avoid coupling. Peak gain of the elements is around 6.5dBi for all elements considering ADC/Metallic bottom enclosure.

All the 3 types of antenna elements have a semi directional radiation pattern with uniform radiation towards front of the device. The antennas are even having a nice radiation coverage towards side of the device (+/- 90 plane) which enables it to serve the users oriented away from broadside.

TABLE 2 WI-FI TECHNOLOGY – ANTENNA CHARACTERISTICS

Parameter	2.4 GHz (2.4-2.5 GHz)	5 GHz (5.1-5.9 GHz)	6 GHz 5.9-7.1 GHz)
Typical Efficiency [%]	80-85	75-80	75-80
Peak Gain [dBi]	6.22	6.66	6.8
Return loss [dB]	< -10	< -10	< -15
Maximum VSWR	1.9	1.72	1.4
Minimum Isolation [dB]	-21	-30	-28.7

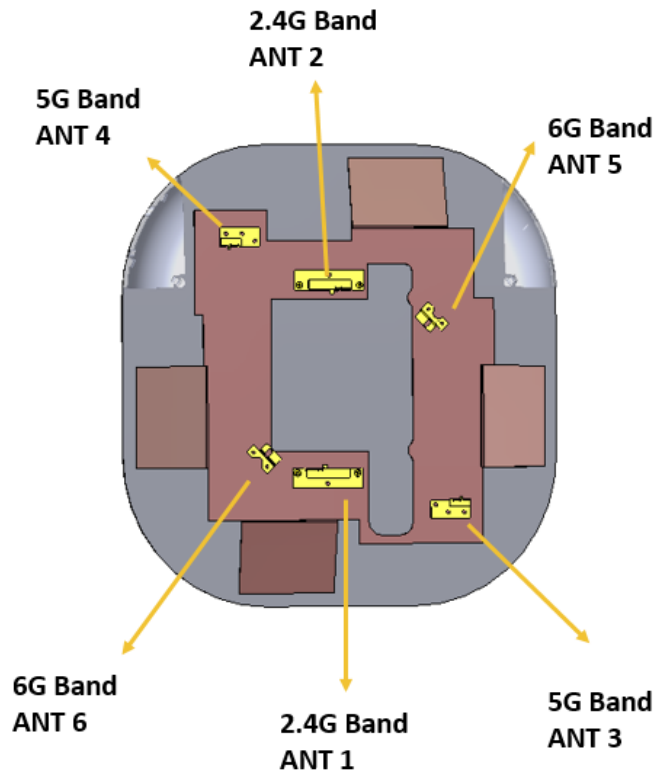


FIGURE 3 PCW-400I-35 ANTENNA REPORT - WiFi ACCESS TECHNOLOGY

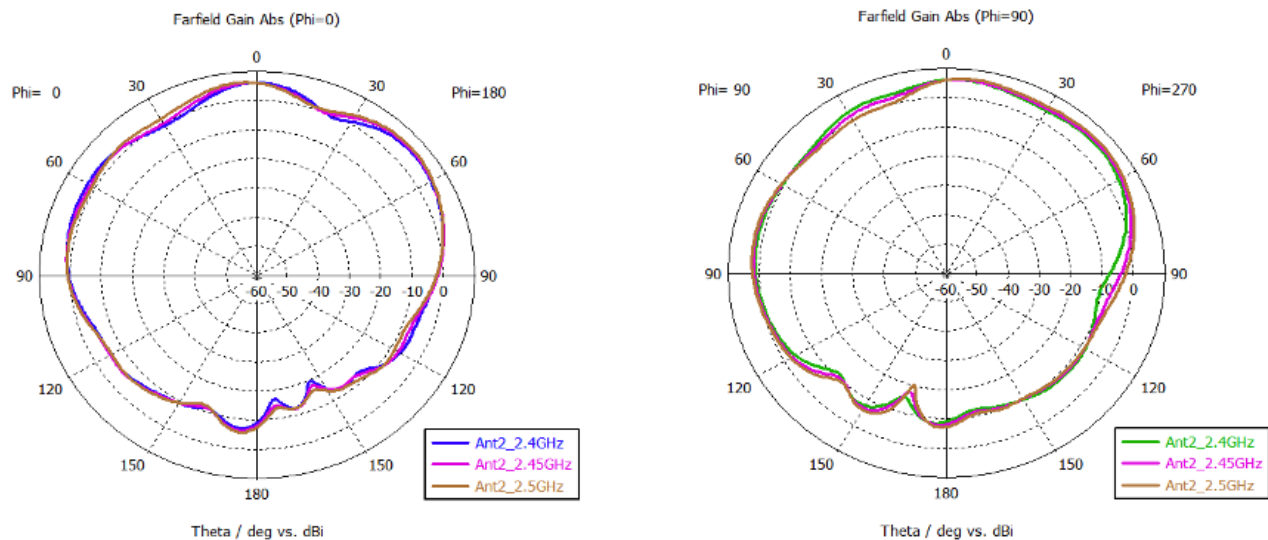


FIGURE 4 WI-FI 2.4GHz RADIATION PATTERNS FOR AZIMUTH AND ELEVATION PLANE

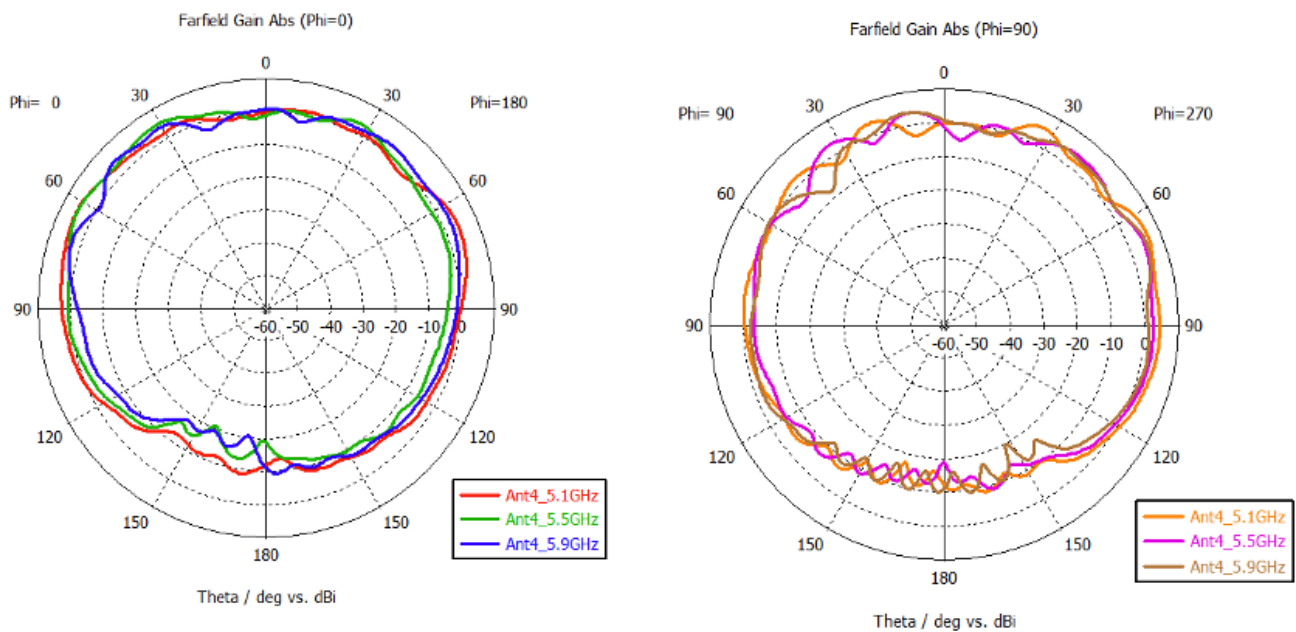


FIGURE 5 WI-FI 5GHz RADIATION PATTERNS FOR AZIMUTH AND ELEVATION PLANE

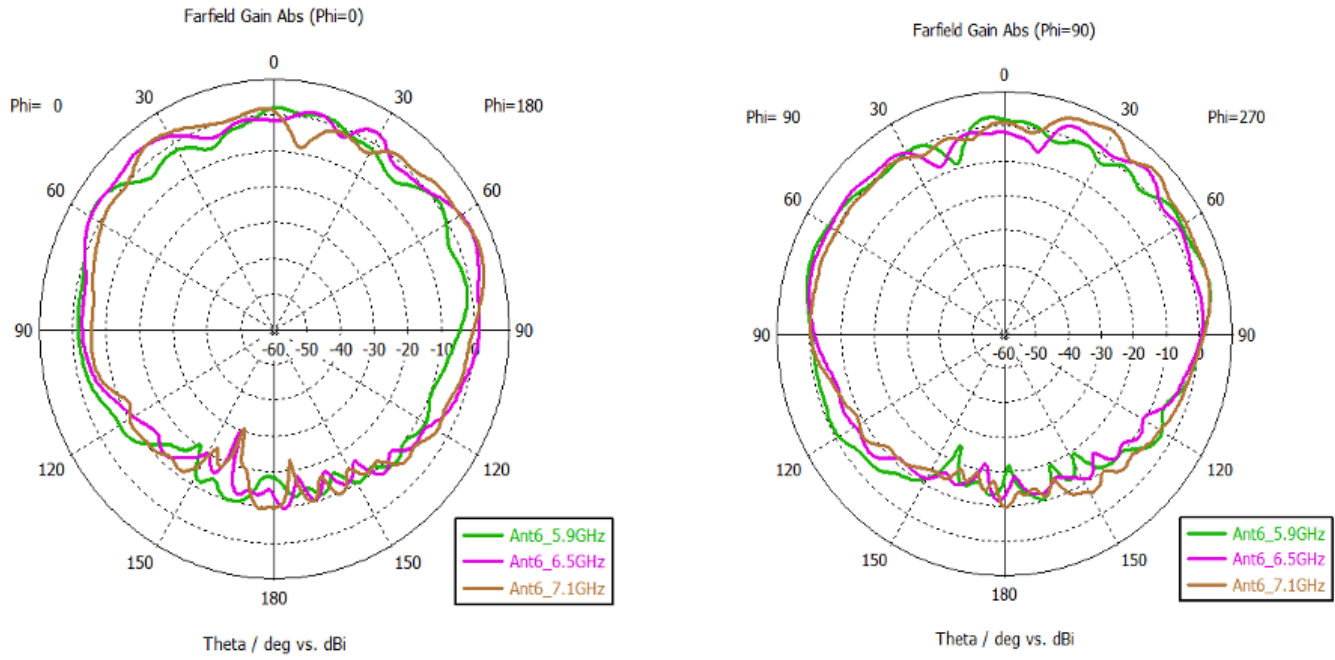


FIGURE 6 WI-FI 6GHZ RADIATION PATTERNS FOR AZIMUTH AND ELEVATION PLANE