



PCW-400i

Antenna Report

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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:

- Dual Polarized H Band Antenna patch.
- Per Product, 4 x Dual Polarized Antenna elements are mechanically distributed to ensures a 360 deg azimuth coverage.

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

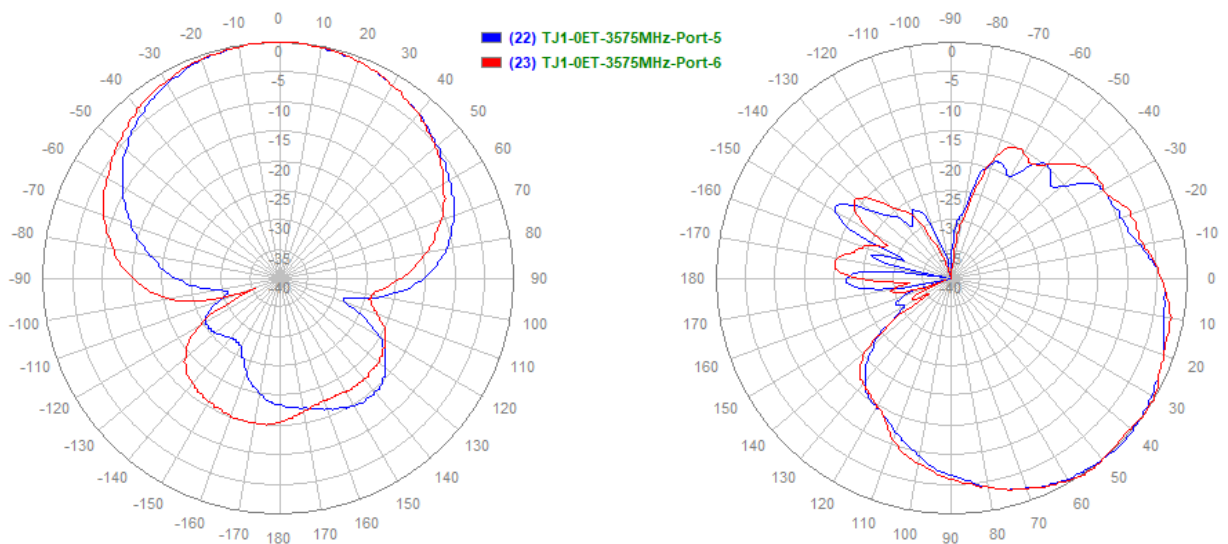


FIGURE 1 5G TECHNOLOGY - H ANTENNA PATCH RADIATION PATTERN

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

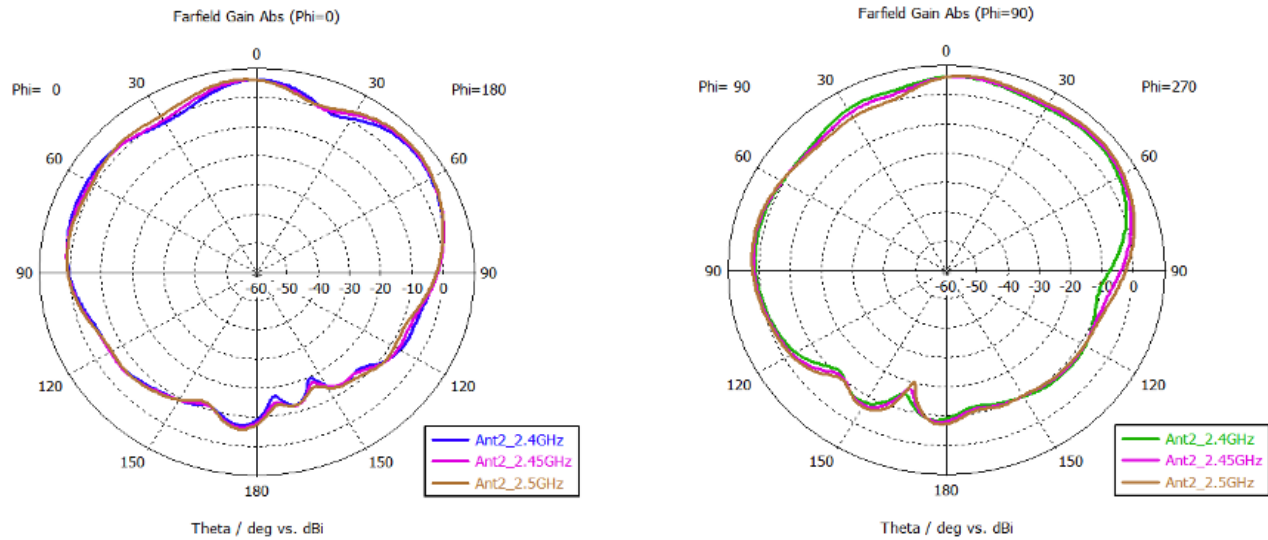


FIGURE 2 WI-FI 2.4GHz RADIATION PATTERNS FOR AZIMUTH AND ELEVATION PLANE

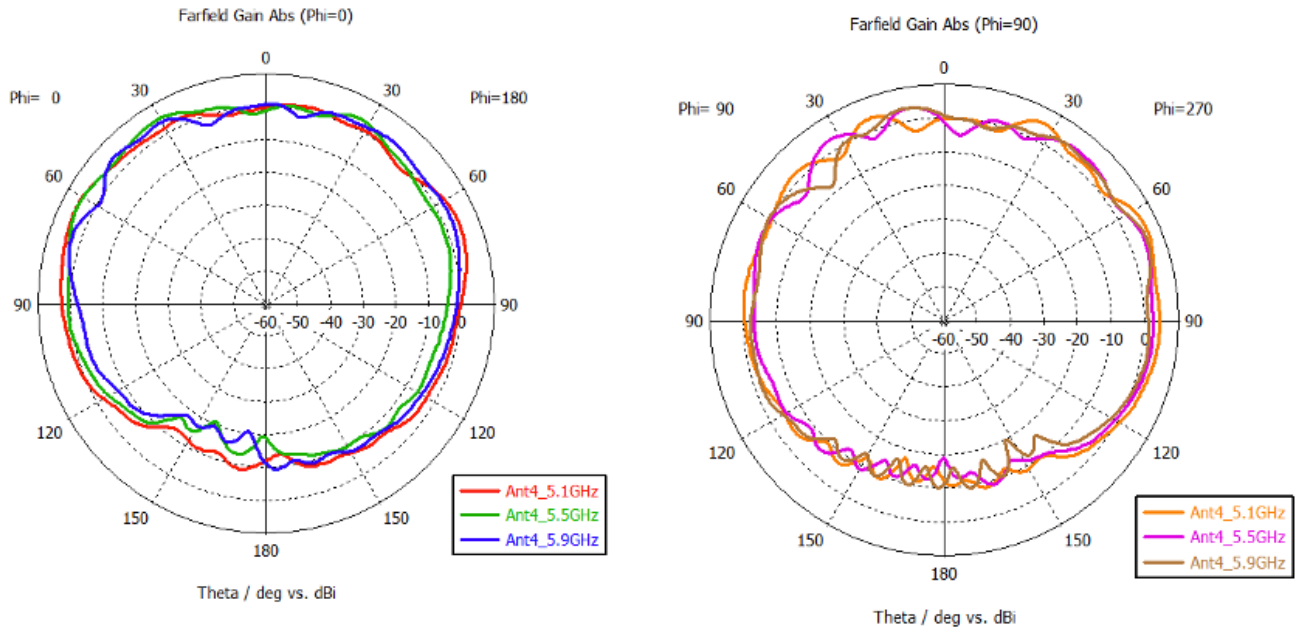


FIGURE 3 Wi-Fi 5GHz RADIATION PATTERNS FOR AZIMUTH AND ELEVATION PLANE

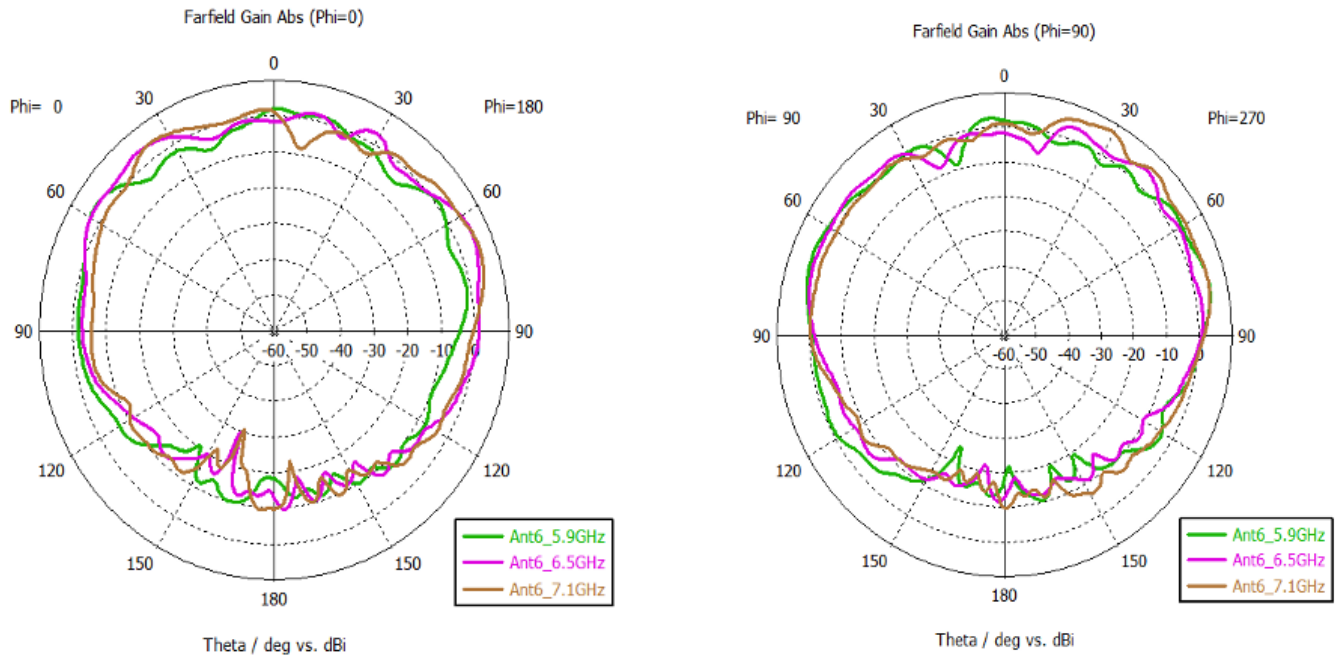


FIGURE 4 Wi-Fi 6GHz RADIATION PATTERNS FOR AZIMUTH AND ELEVATION PLANE