

Antenna Gain Test Report

Test Date: 04/10/23 - 04/12/23

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1. General Information

The purpose of this report is to demonstrate compliance to the FCC Part 15 Antenna requirement.

2. Chamber information

Dual polarization fully anechoic OTA chamber, R&S®TS8991 OTA Performance Test System.

Chamber pathloss calibration is per CTIA test plan v3.9.5 Section 4 Range Reference Requirements.

Chamber Location: Sunnyvale, CA 94089

3. Commercial Test Software

Test software is from ROHDE& SCHWARZ, AMS32 v11.50.

4. Test Operator

M.L. Employee ID: 202

5. Test Equipment

Equipment	Calibration Due Date
Dual polarization Fully anechoic OTA Chamber	24-Mar-2024
Rohde & Schwarz CMW500 + Z800A	07-Mar-2024
Rohde & Schwarz NRQ	06-Mar-2024
Rohde & Schwarz FSW	03-Jun-2023

Note: OTA Chamber was audited routinely to ensure accurate results and a 2 year calibration cycle.

6. Antenna Test Method

Measurement parameter and method follows CTIA Certification/Wi-Fi Alliance Test Plan for RF Performance Evaluation of Wi-Fi Mobile Converged Devices V2.2.1.

Active antenna measurement Steps:

- 1) DUT placed in free-space inside an anechoic chamber.
- 2) DUT establish a connection with the communication call box

- 3) EIRP are measured with Power meter/ Spectrum Analyzer at each polarization 0 – 360 degree on the turntable with respect to the theta arm from 0-180 degree for a full 3D spherical measurement.
- 4) Data and pathloss will be processed by AMS32 software.
- 5) Peak EIRP – Conducted power = Peak Antenna gain.
- 6) Repeat Step 2 to 5 for each testing channel/frequency.

7. Antenna Gain Results and Plots

Refer to Exhibit A for antenna gain results and plots.

8. Antenna Photo

Refer to Exhibit B for Antenna information and photo.

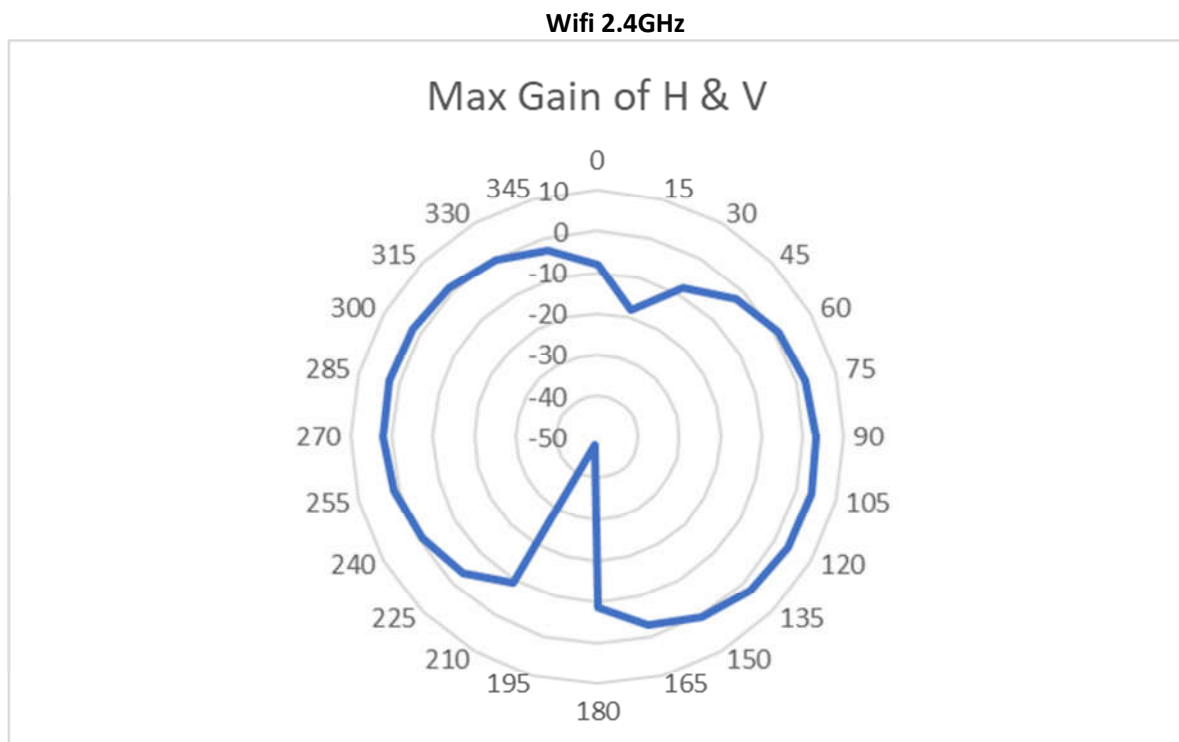
Exhibit A - Gain Results and Plots

Antenna Peak Gain:

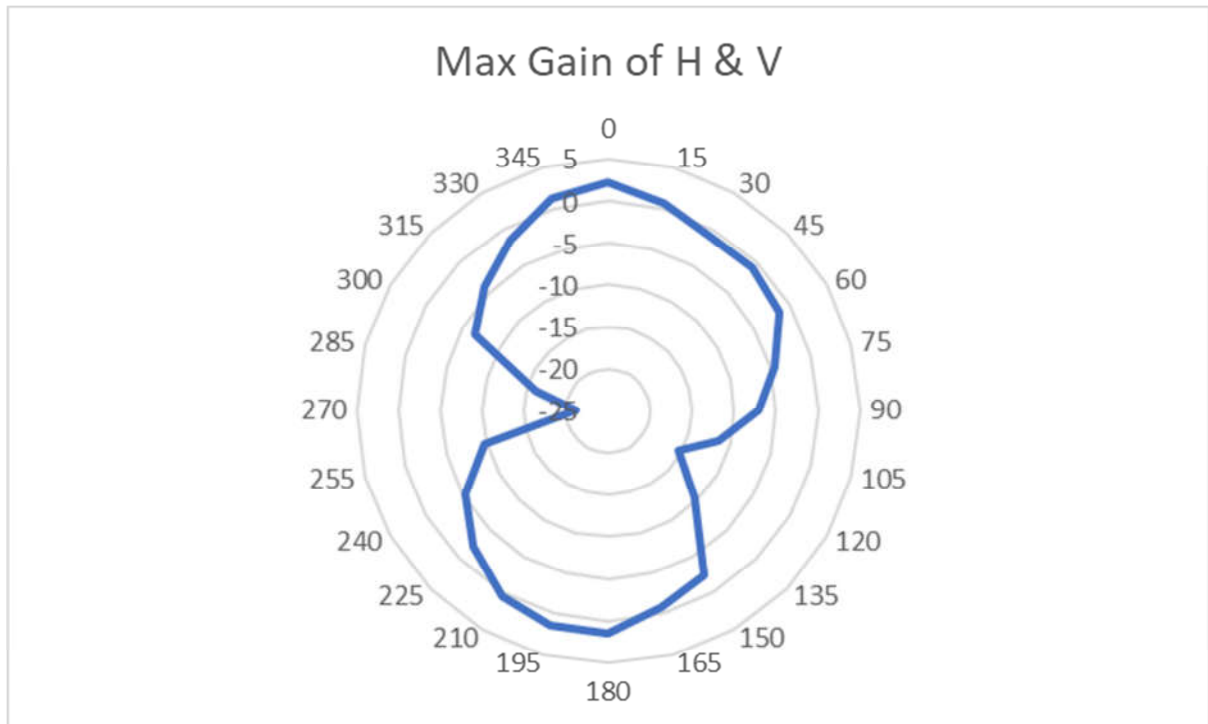
Technology	Frequency (MHz)	FreeSpace Tx Peak Max Gain of H & V		
		ANT0	ANT1	ANT2
nRF 2.4GHz	2400-2483.5	N/A	N/A	2.2
BT 2.4GHz	2400-2483.5	N/A	4.7	N/A
Wifi 2.4GHz	2400-2483.5	3.8	4.7	N/A
Wifi UNII-1	5150-5250	2.3	2.8	N/A
Wifi UNII-2A	5250-5350	2.4	2.6	N/A
Wifi UNII-2C	5470-5725	4.8	5.4	N/A
Wifi UNII-3	5725-5850	4.1	3.1	N/A
Wifi UNII-5	5945-6425	4.6	3.9	N/A
Wifi UNII-6	6425-6525	4.4	3.9	N/A
Wifi UNII-7	6525-6875	4.7	4.5	N/A
Wifi UNII-8	6875-7125	5.1	3.7	N/A

Antenna 2D/3D Plots:

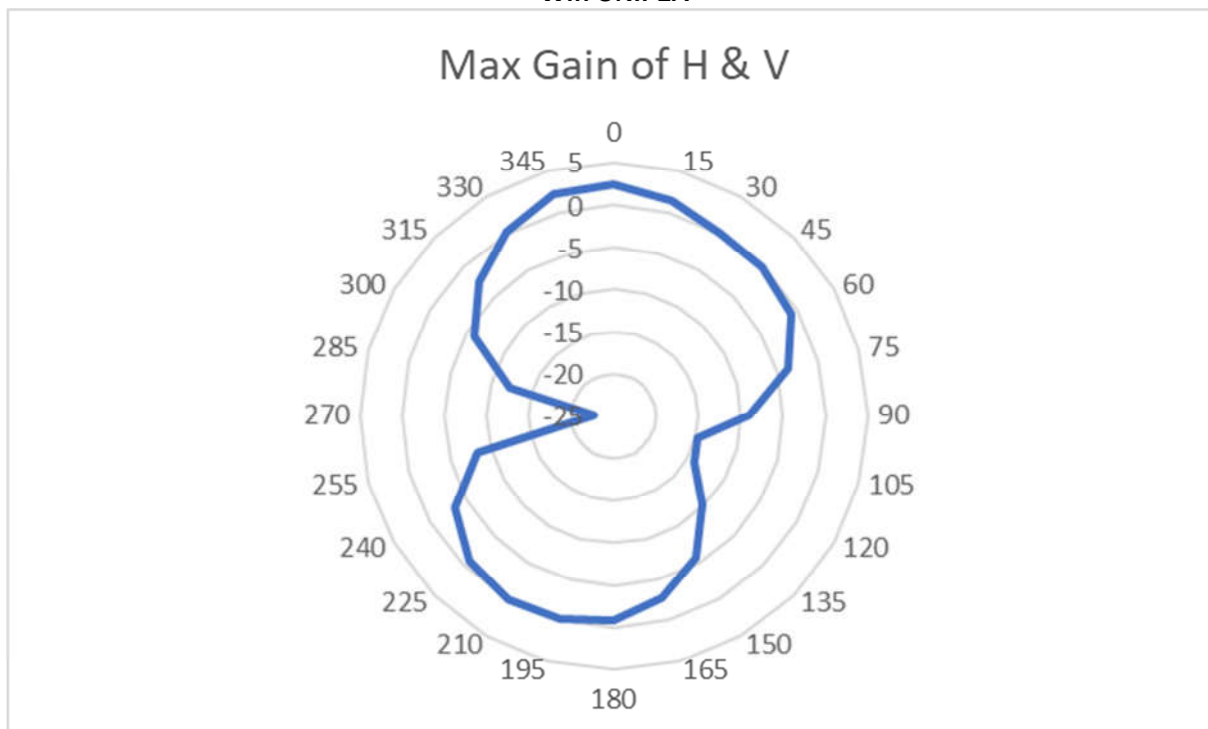
ANT0



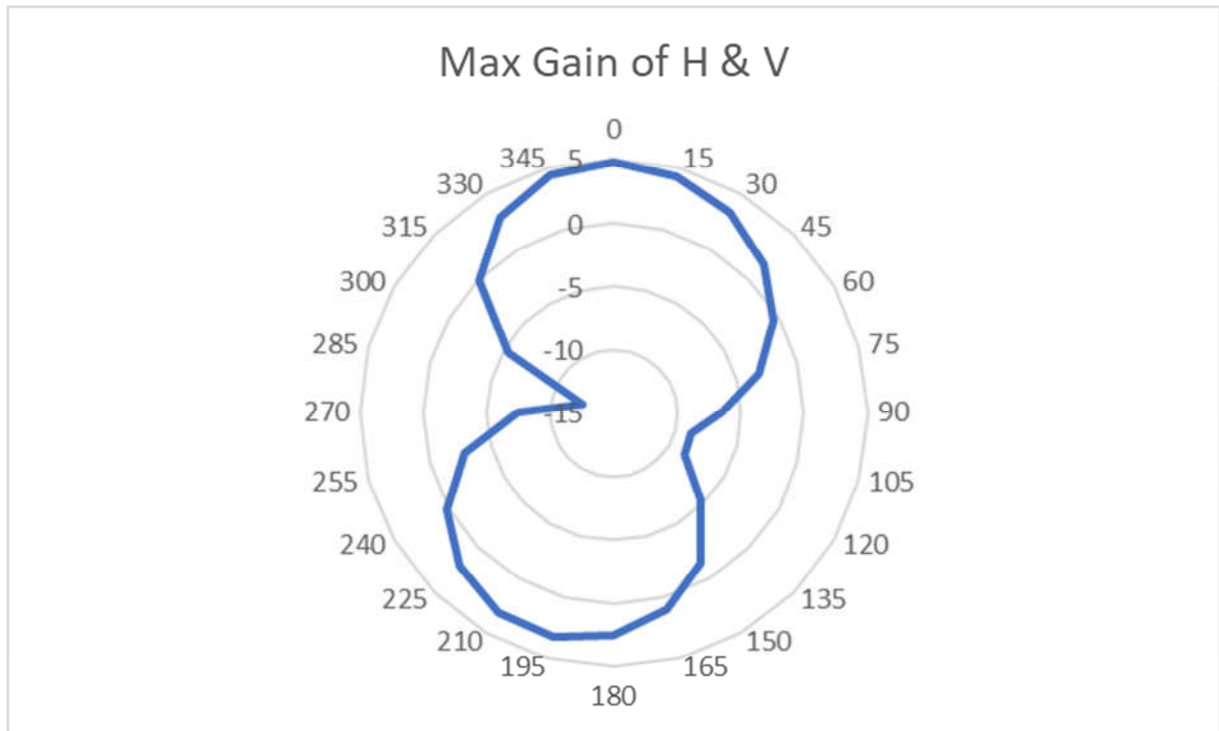
Wifi UNII-1



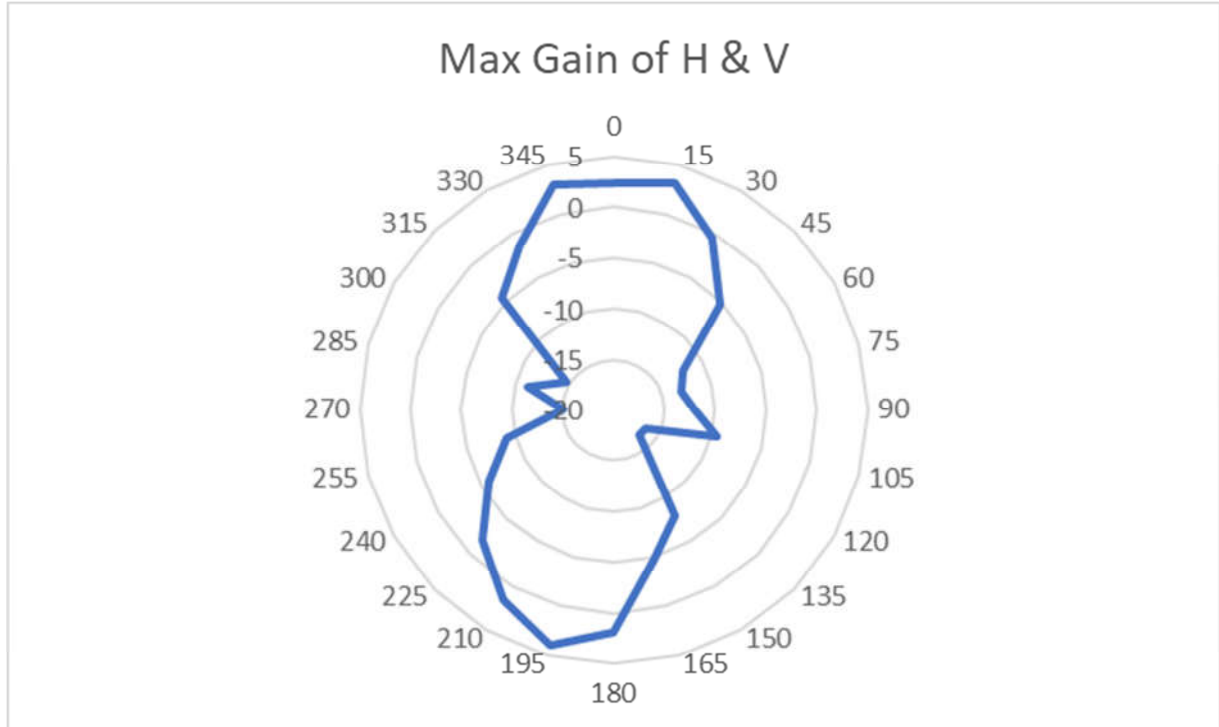
Wifi UNII-2A



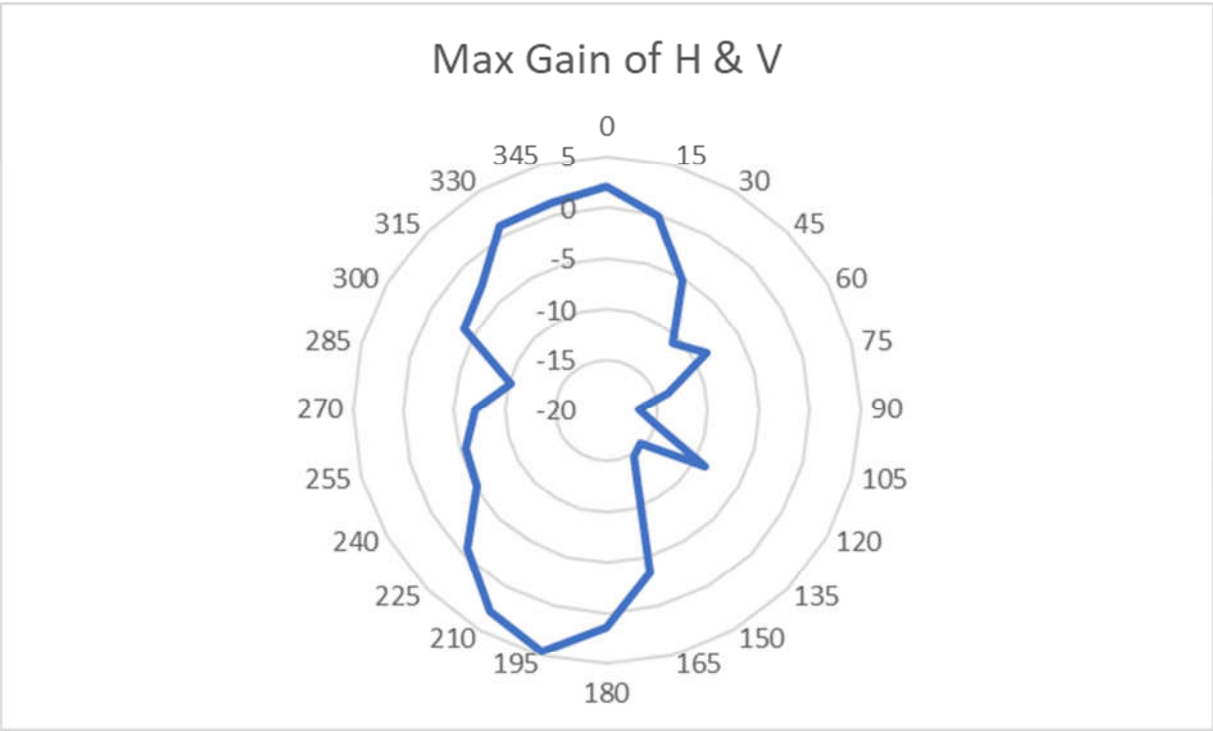
Wifi UNII-2C



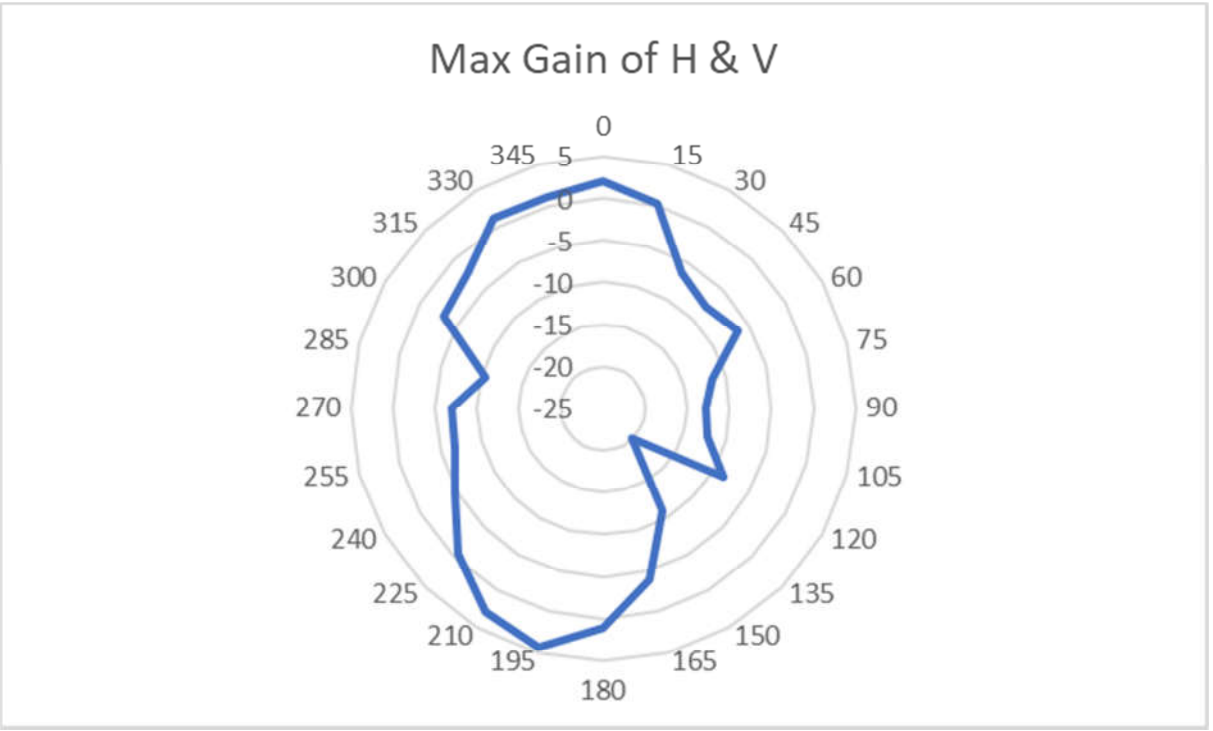
Wifi UNII-3



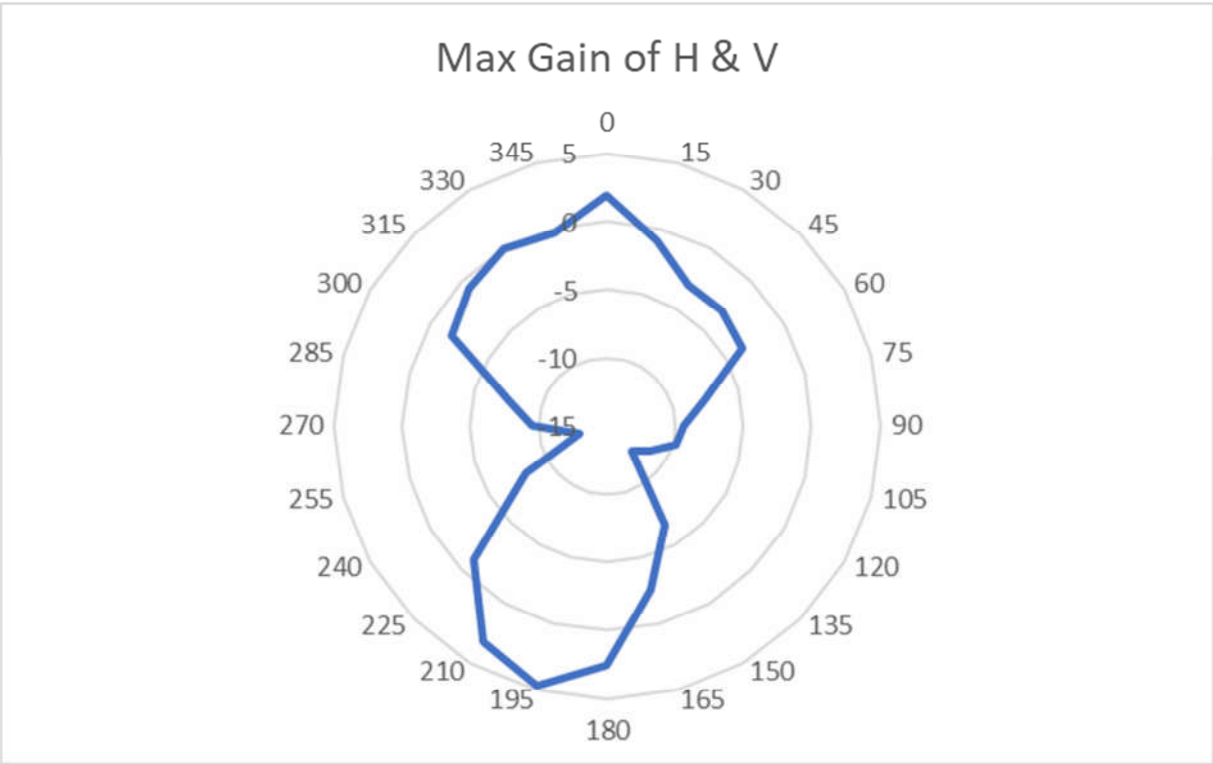
Wifi UNII-5



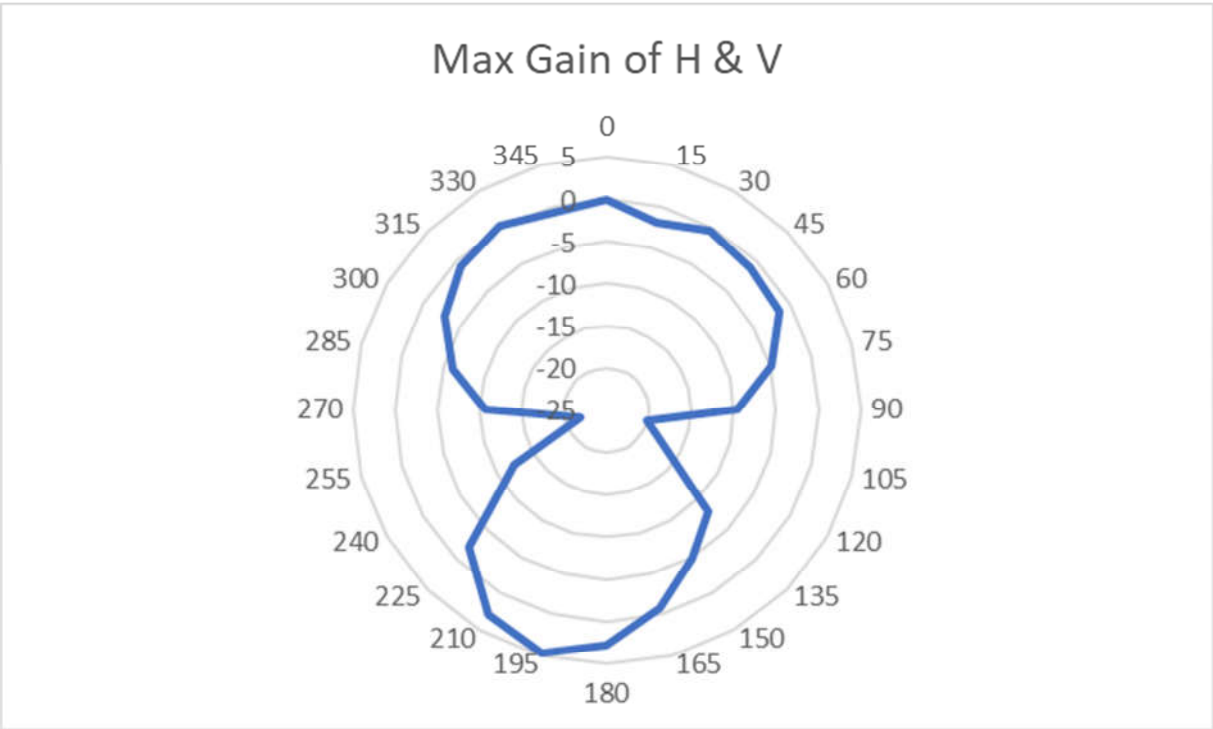
Wifi UNII-6



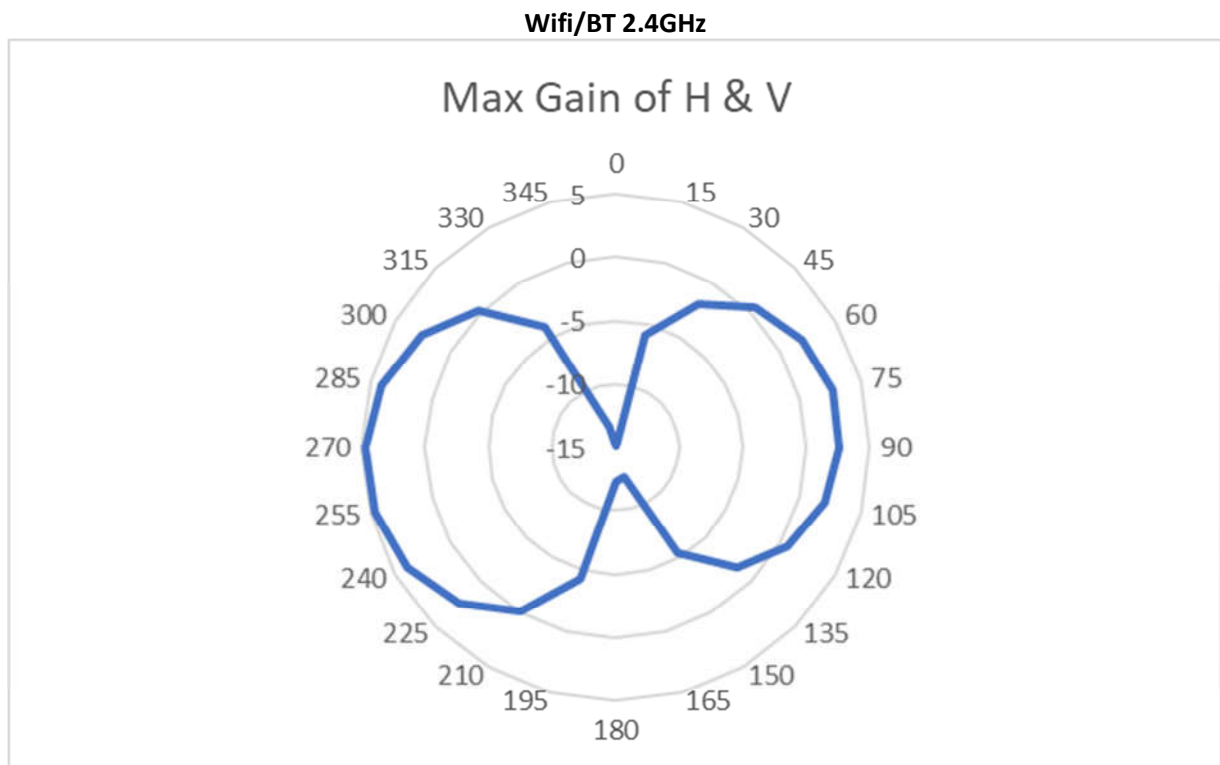
Wifi UNII-7



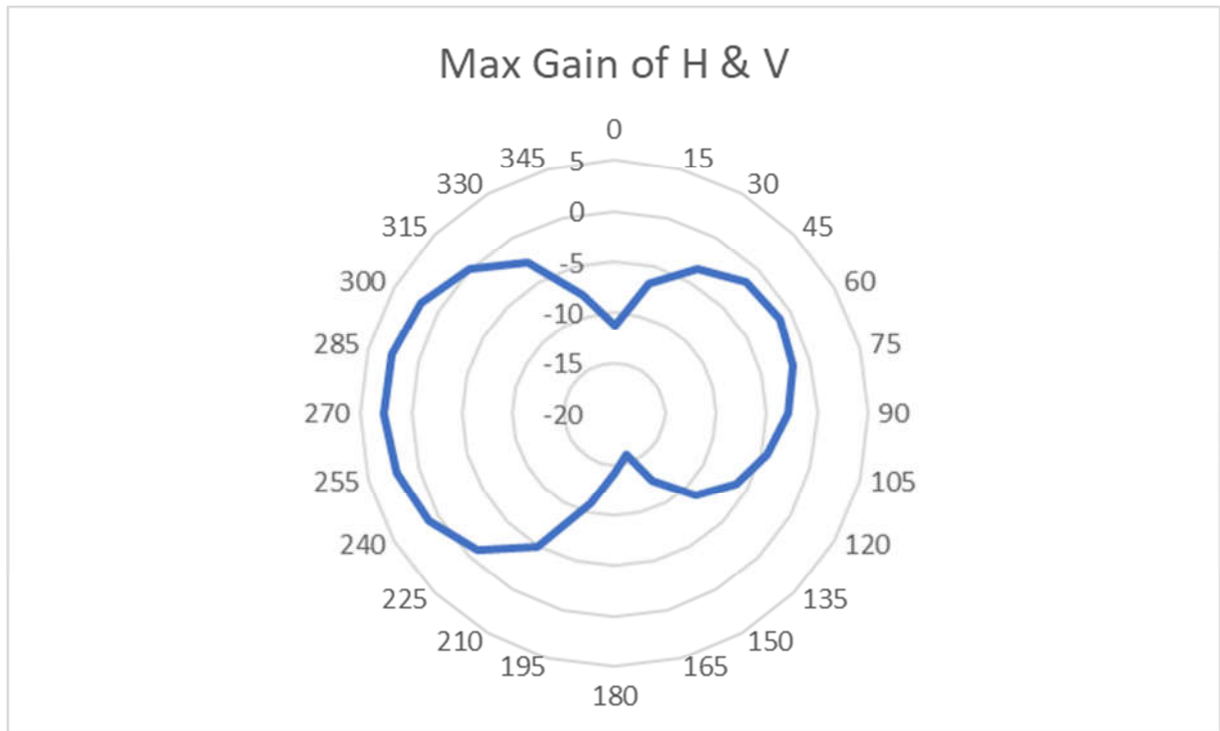
Wifi UNII-8



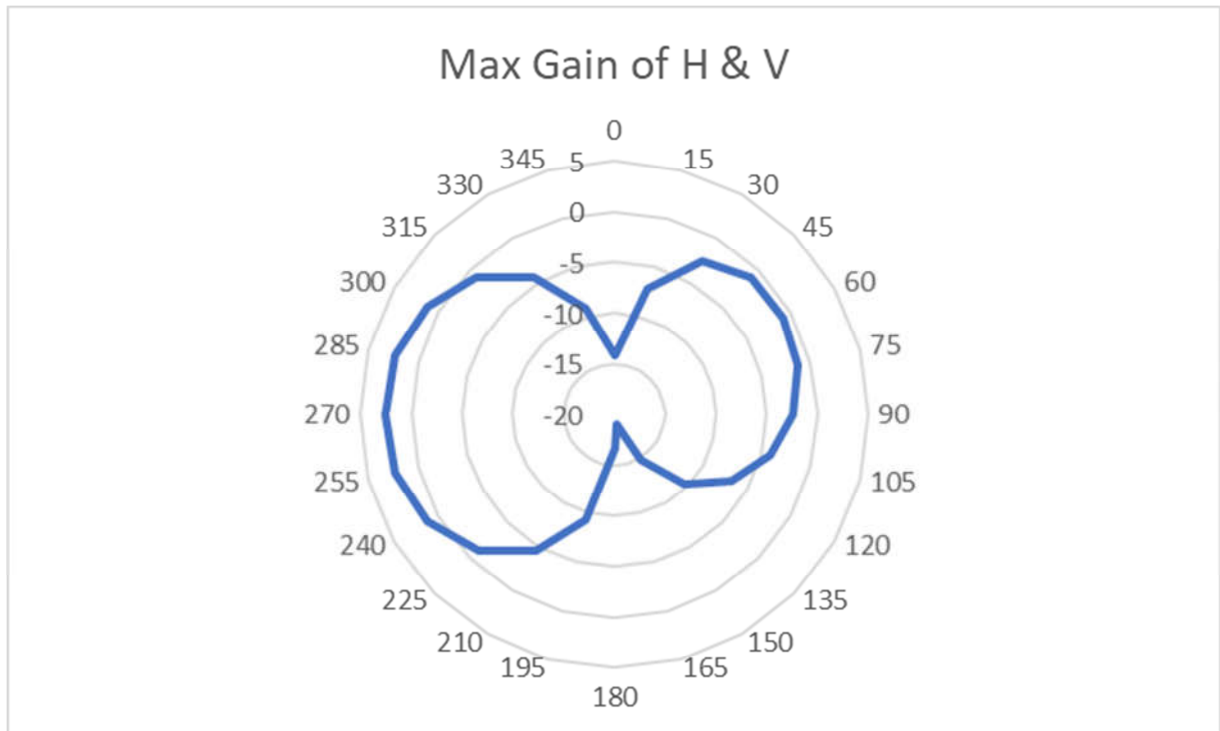
ANT1



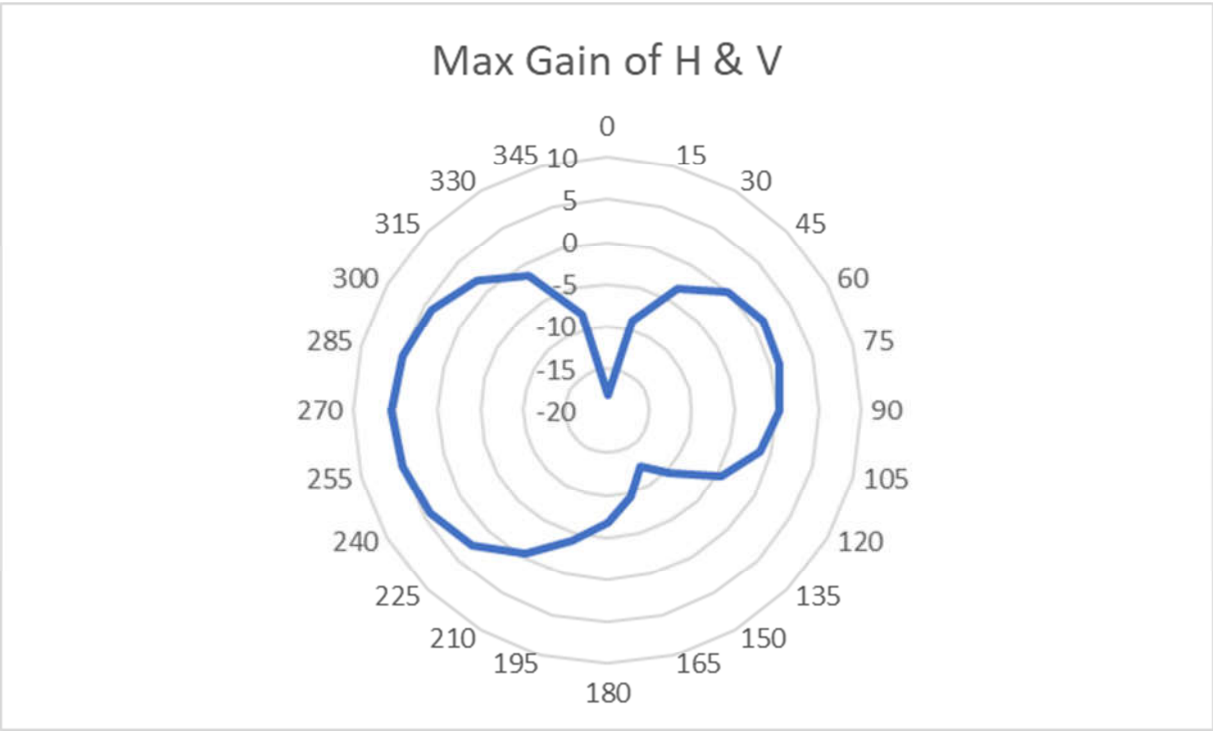
Wifi UNII-1



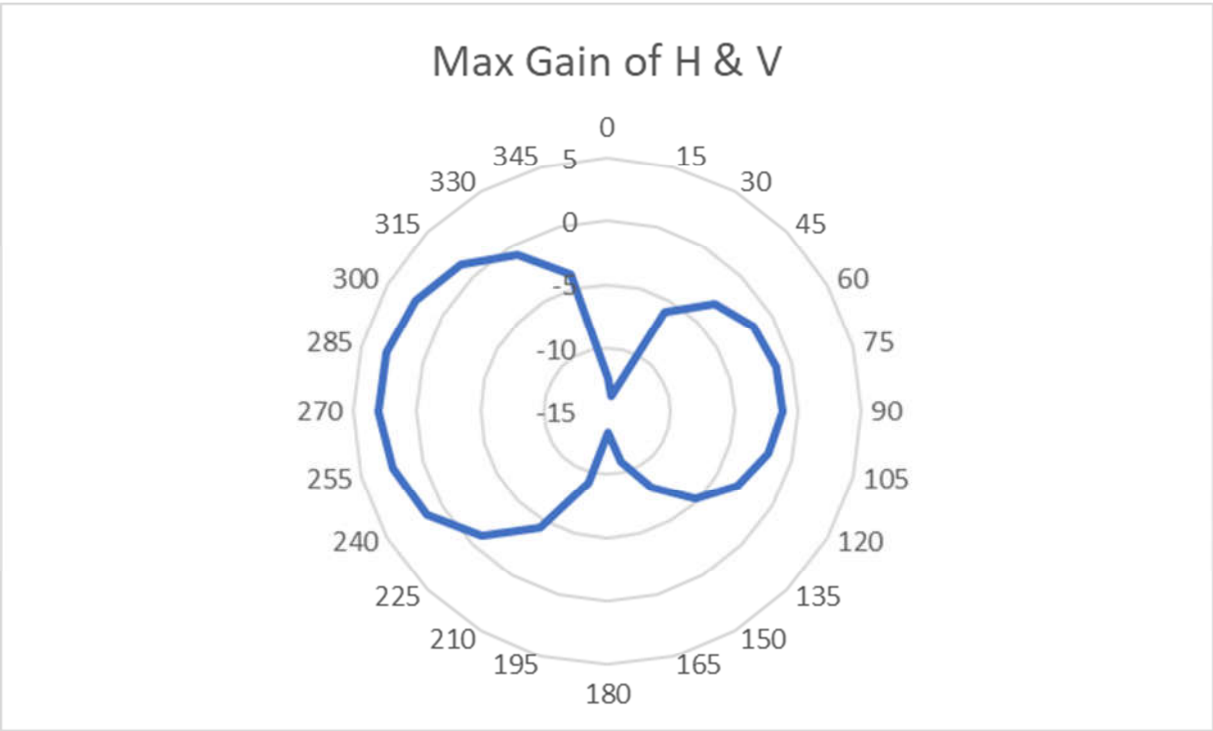
Wifi UNII-2A



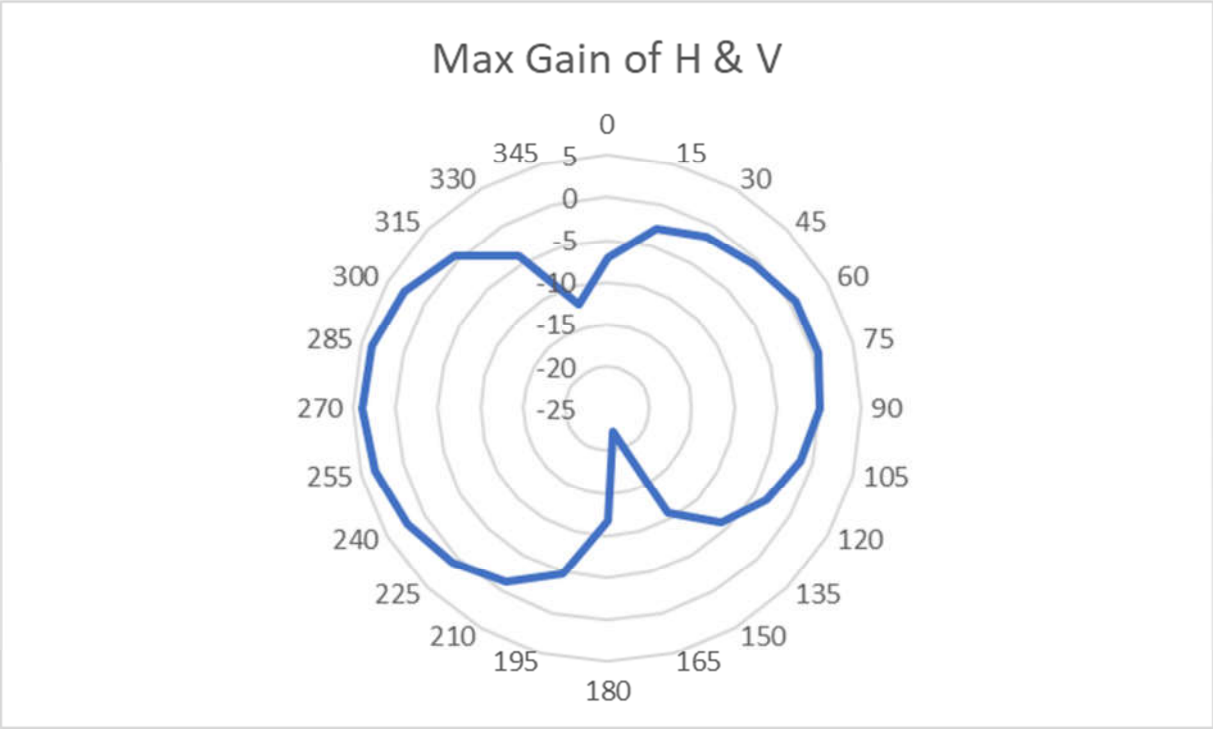
Wifi UNII-2C



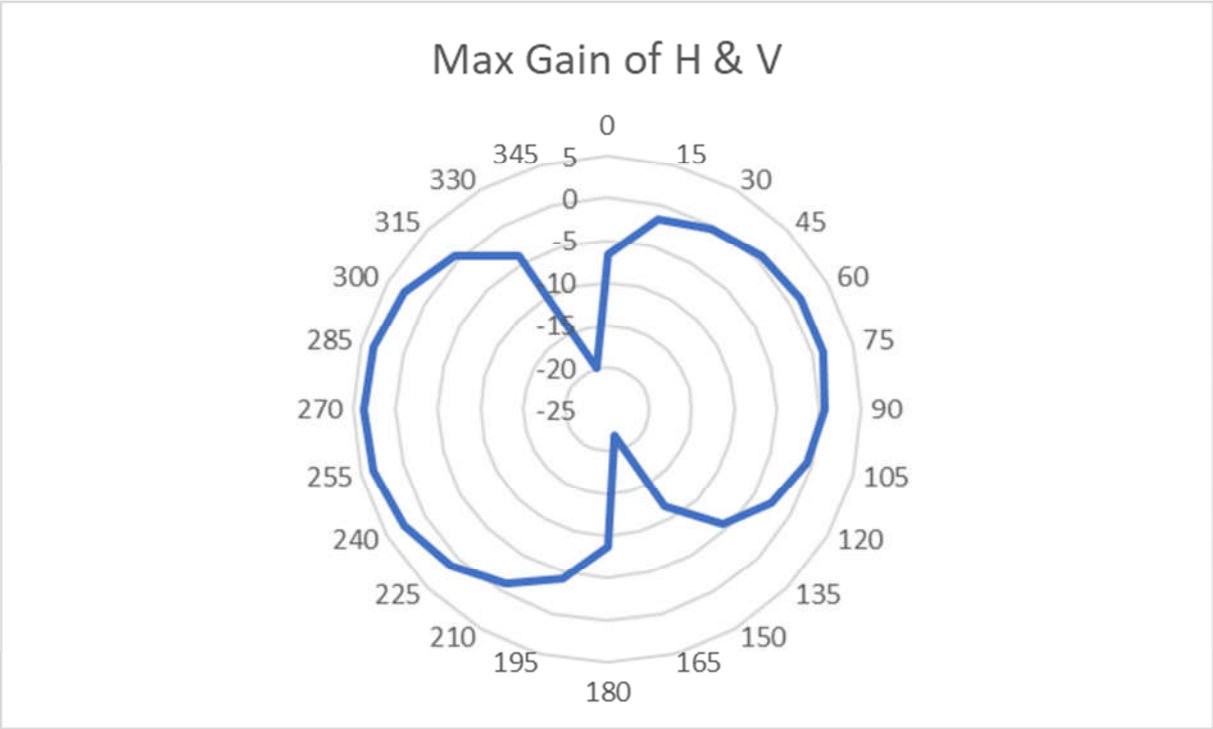
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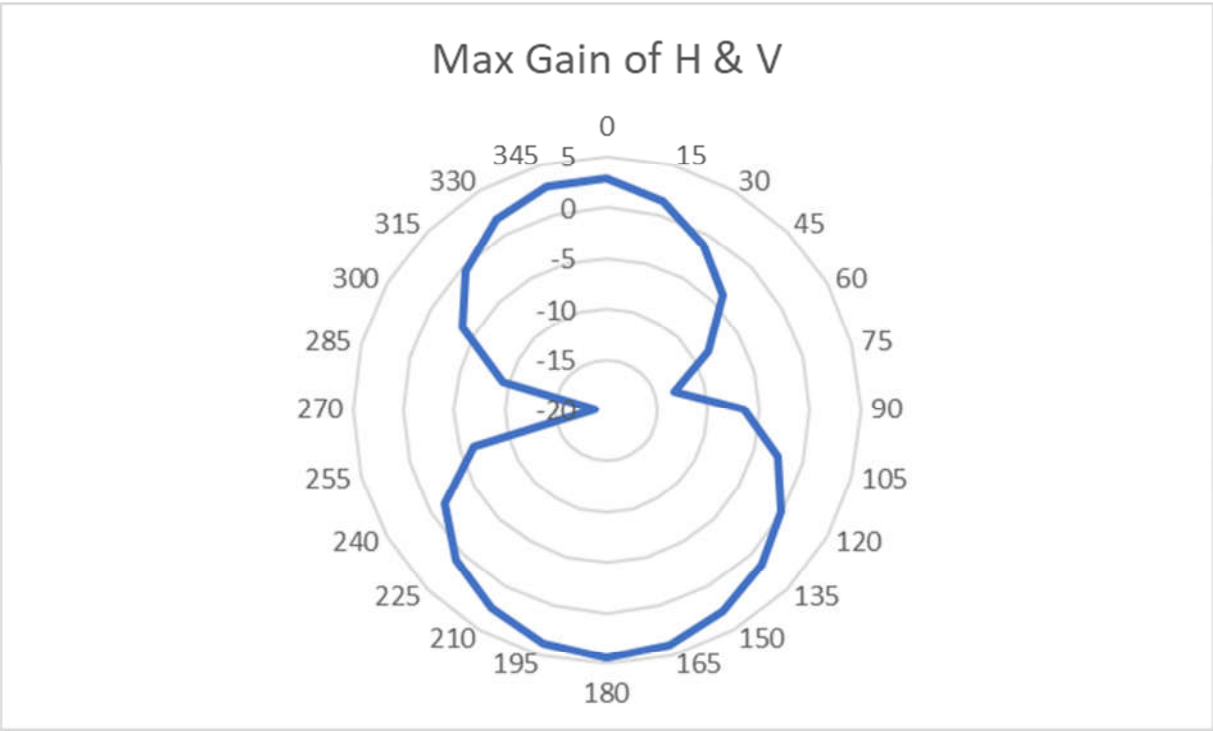
Wifi UNII-5



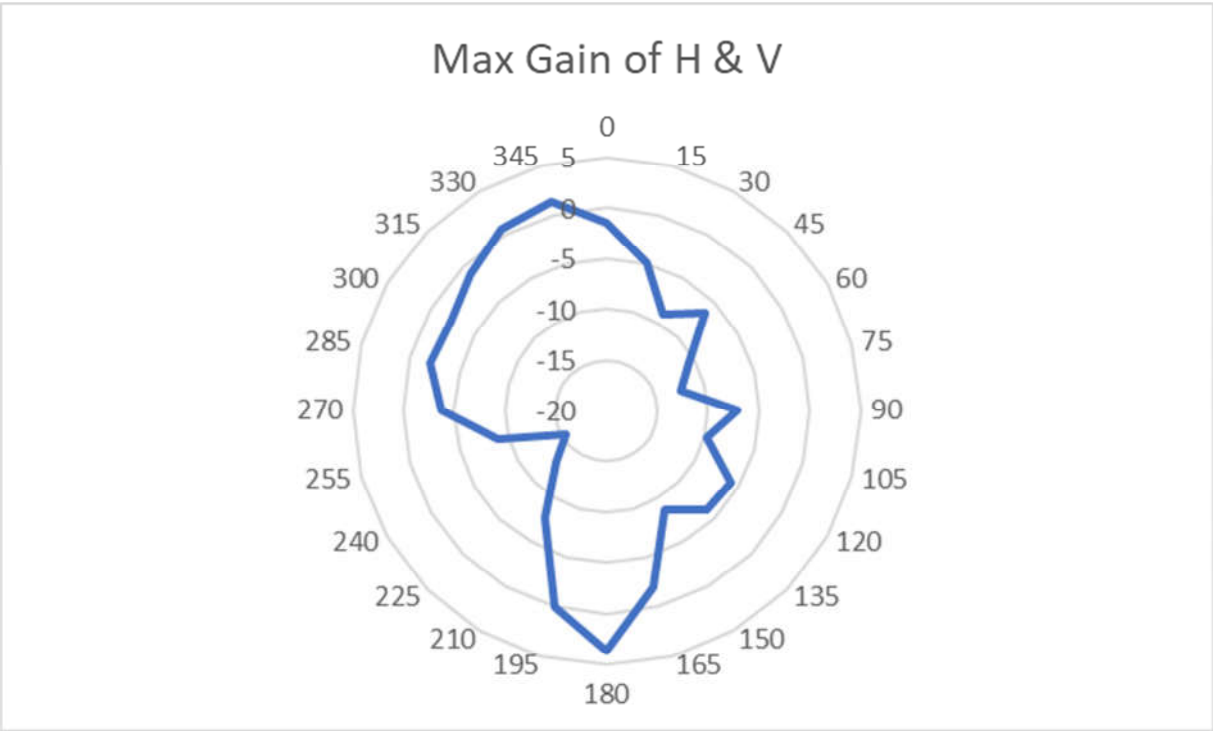
Wifi UNII-6



Wifi UNII-7



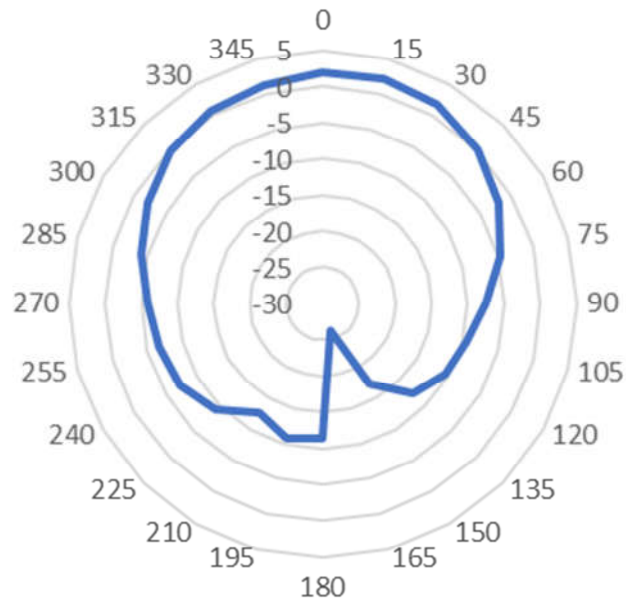
Wifi UNII-8



ANT2

nRF 2.4GHz

Max Gain of H & V



Antenna Manufacturer	Meta Platforms Technologies, LLC
Manufacturer Address	900 5th Ave, Sunnyvale, CA 94089
Antenna Part/Model Number	N/A
Antenna Type	nRF - Dipole, WiFi/BT - Dipole