

# Radio Module with Integrated Antenna, FCC 900MHz ISM bands report

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(Digitally signed)

Date Issued: March 5, 2024

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## Antenna Specifications

Frequency	911 - 919 MHz
Polarization	Linear, omnidirectional
Nominal impedance	50 $\Omega$
VSWR	3:1
Peak Gain	4.7 dBi
Weight	1.2 lbs
Operating temperature	-25°C to +65°C
Storage temperature	-40°C to +70°C

## Test Equipment

MVG StarLab 6 GHz serial number 1102283-0038

Test software: MVG WaveStudio 23.2.0

Test Personnel: James Bryant

Test date: March 5, 2024

The antenna was tested with MVG StarLab 6 GHz turn-key antenna measurement system. A system diagram is shown Figure 1. Figure 2 shows the antenna under test in the StarLab system.

The system is capable of the following measurements:

- Gain
- Directivity
- Beamwidth
- Cross polar discrimination
- Sidelobe levels
- 3D radiation pattern
- Radiation pattern in any polarization (linear or circular)
- Antenna efficiency
- TRP, TIS, EIRP and EIS

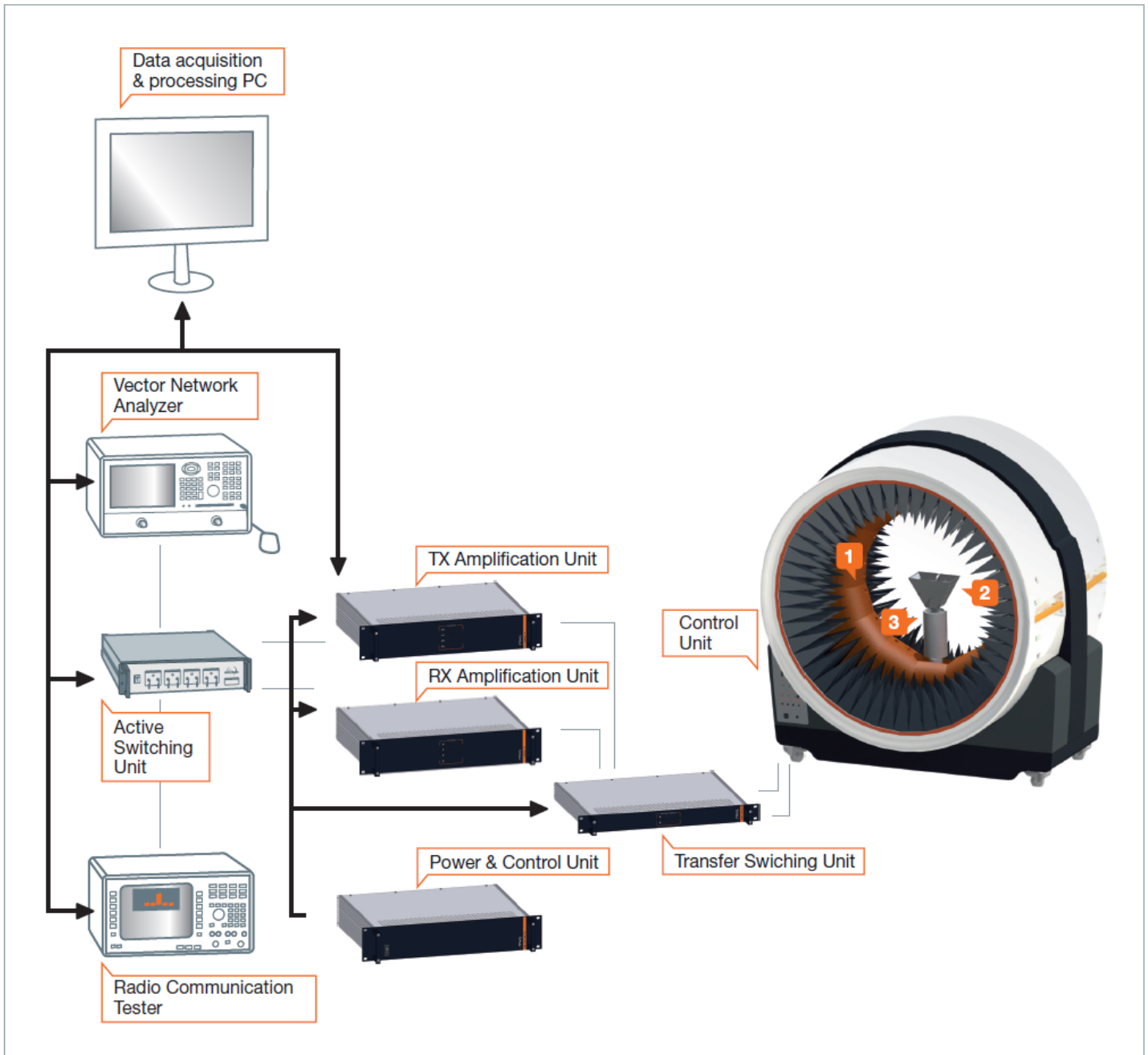


Figure 1 - MVG StarLab 6 GHz system diagram

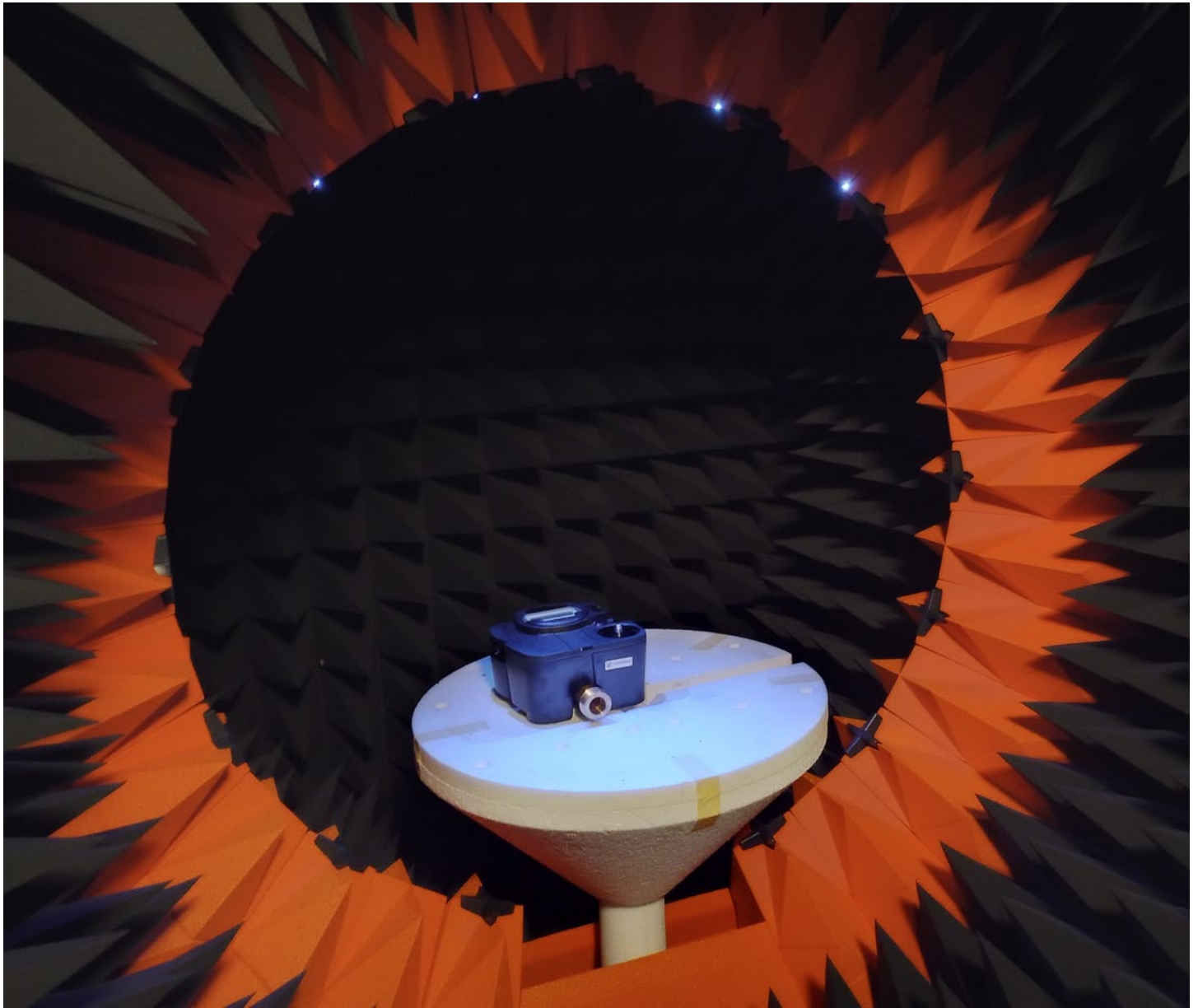


Figure 2 - Antenna Under Test in StarLab system

## Test Results

This is an active product, and the radiation pattern was measured in active mode with amplification turned on. Antenna only gain was calculated from active gain – amplifier gain.

Antenna only gain, azimuth, elevation plots of each max gain plane are shown at 911 - 919MHz.

Figure 3 shows the antenna gain, figures 4 – 17 show the azimuth, elevation gain plots at each max gain plane.

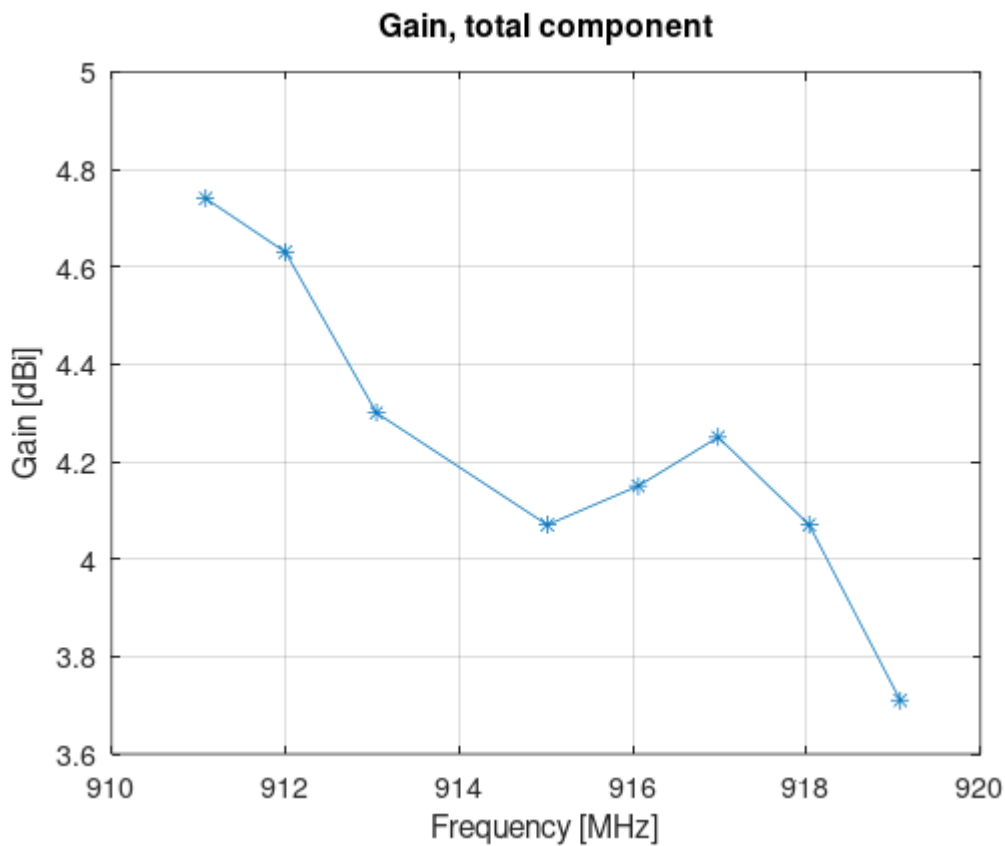


Figure 3 – Gain, total component

— 45° 911.08 MHz ETotal

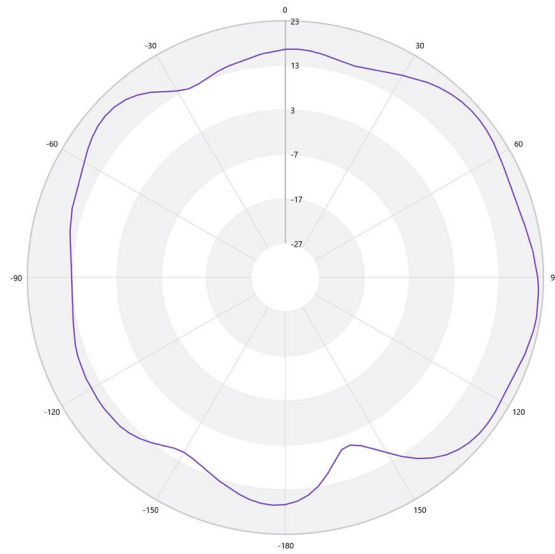


Figure 4 - Elevation cut, 911MHz

— 99° 911.08 MHz ETotal

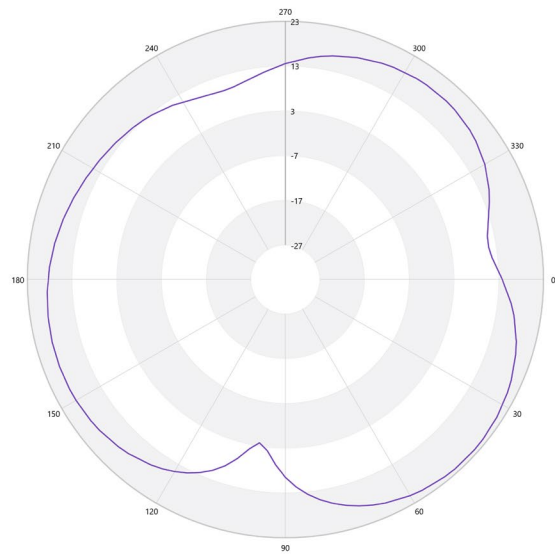


Figure 5 - Azimuth cut, 911MHz  
Rev. B.1



— 42° 912.00 MHz ETotal

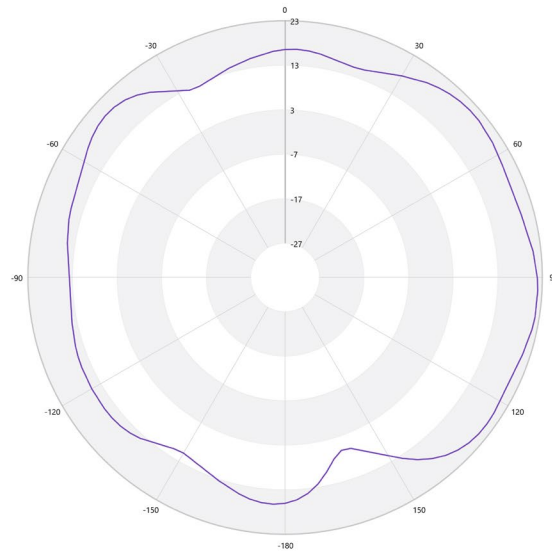


Figure 6 - Elevation cut, 912MHz

— 96° 912.00 MHz ETotal

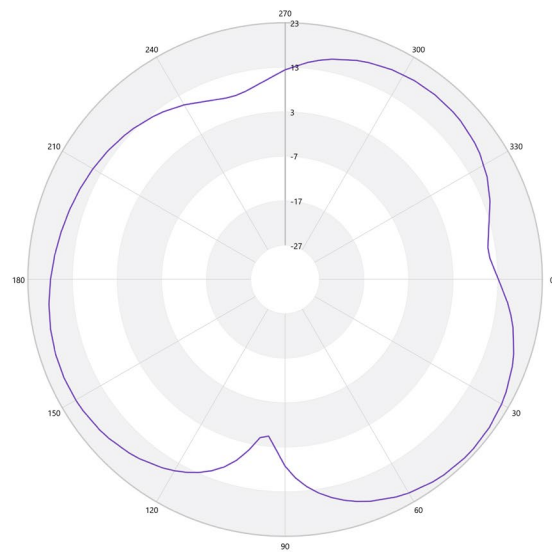


Figure 7 - Azimuth cut, 912MHz

— 42° 913.05 MHz ETotal

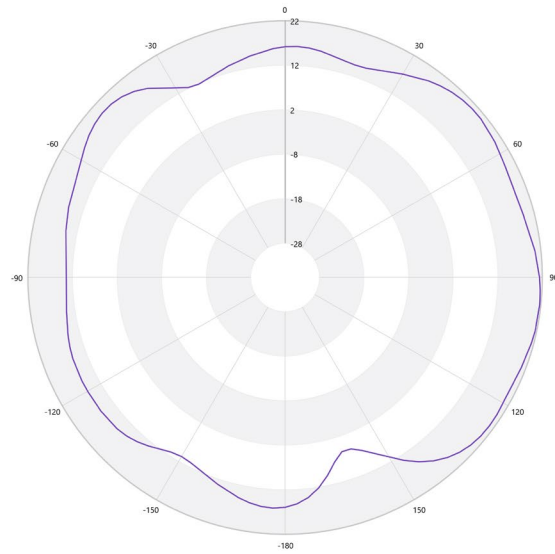


Figure 8 - Elevation cut, 913MHz

— 99° 913.05 MHz ETotal

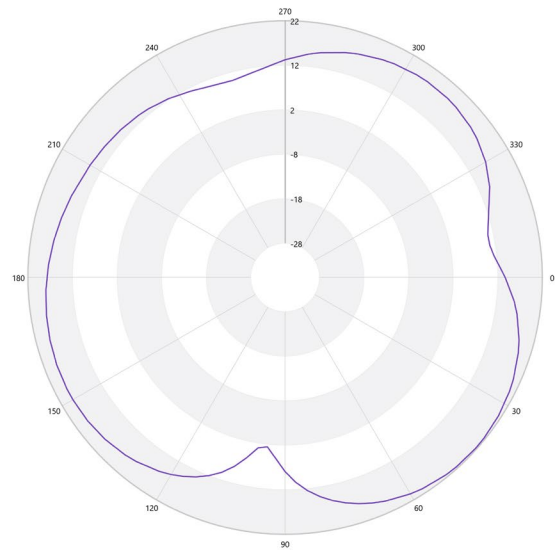


Figure 9 - Azimuth cut, 913MHz

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— 45° 915.01 MHz ETotal

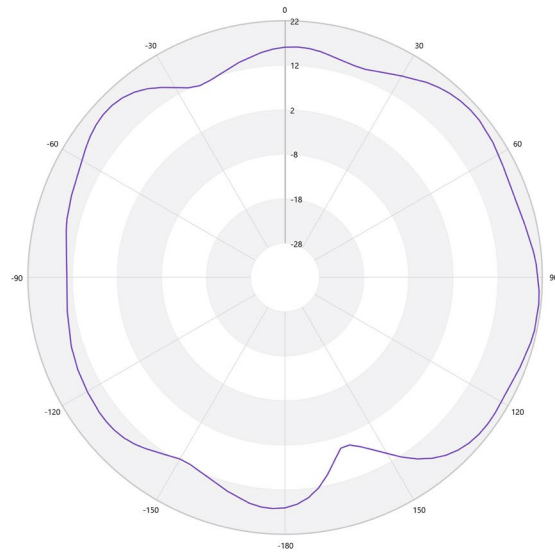


Figure 10 - Elevation cut, 915MHz

— 99° 915.01 MHz ETotal

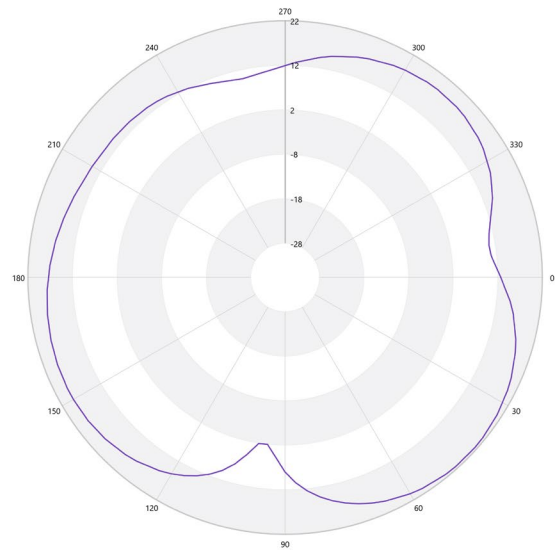


Figure 11 - Azimuth cut, 915MHz

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— 42° 916.06 MHz ETotal

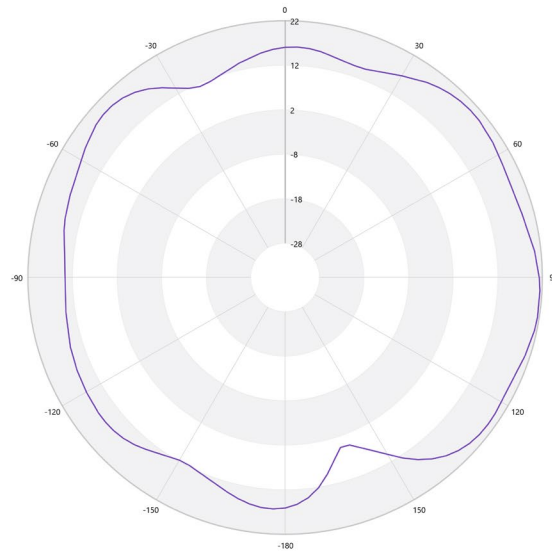


Figure 12 - Elevation cut, 916MHz

— 96° 916.06 MHz ETotal

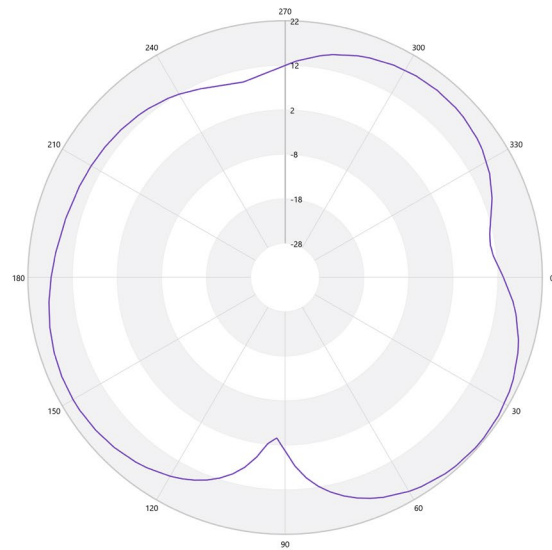


Figure 13 - Azimuth cut, 916MHz

— 45° 916.98 MHz ETotal

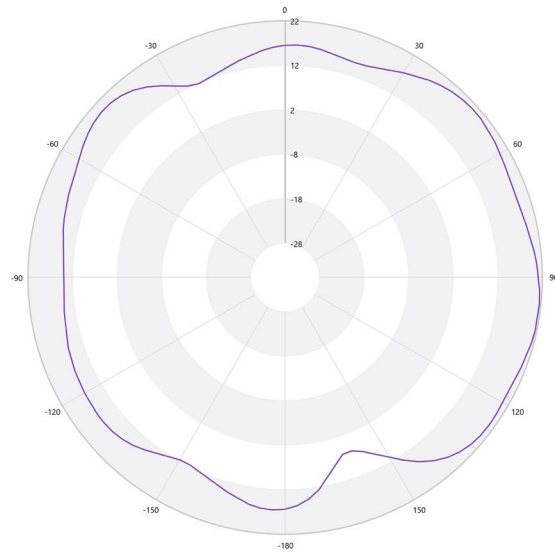


Figure 14 - Elevation cut, 917MHz

— 99° 916.98 MHz ETotal

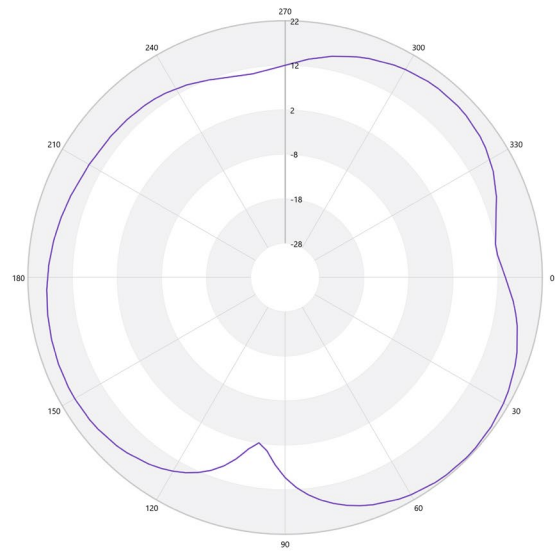


Figure 15 - Azimuth cut, 917MHz

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— 42° 918.03 MHz ETotal

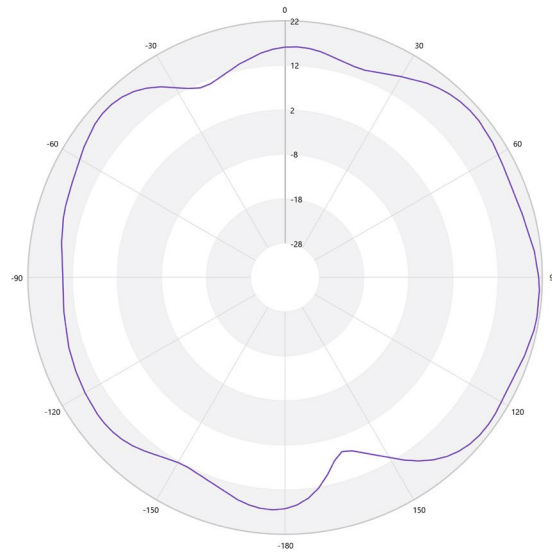


Figure 16 - Elevation cut, 918MHz

— 96° 918.03 MHz ETotal

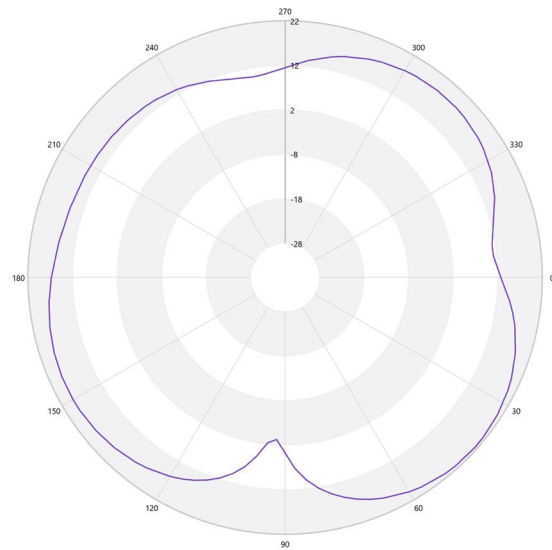


Figure 17 - Azimuth cut, 918MHz

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— 42° 919.08 MHz ETotal

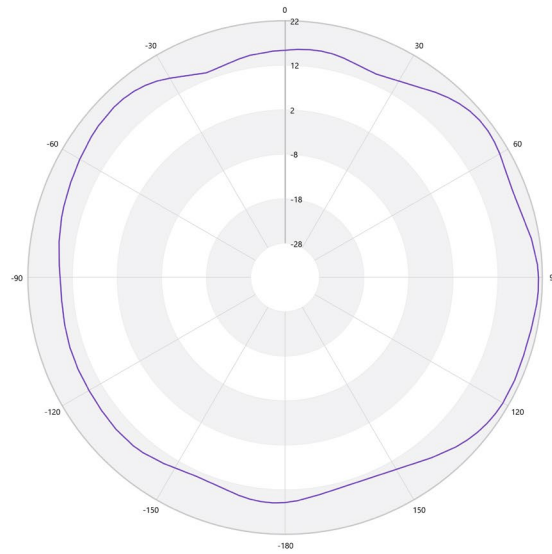


Figure 18 - Elevation cut, 919MHz

— 93° 919.08 MHz ETotal

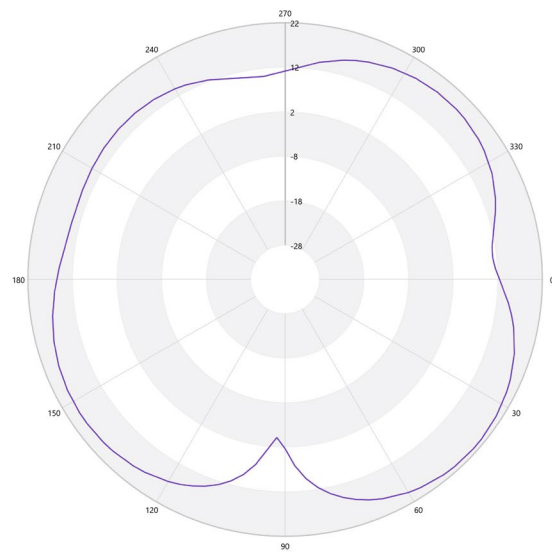


Figure 19 - Azimuth cut, 919MHz

Rev. B.1

<b>REVISION HISTORY</b>		
<b>Revision</b>	<b>Revision Date</b>	<b>Description</b>
A	03/05/2024	Initial Release
B	04/05/2024	Corrections and updates to antenna spec. summary
B.1	04/16/2024	Public Release