



FCC Form 442, Exhibit: Antenna Beam Patterns

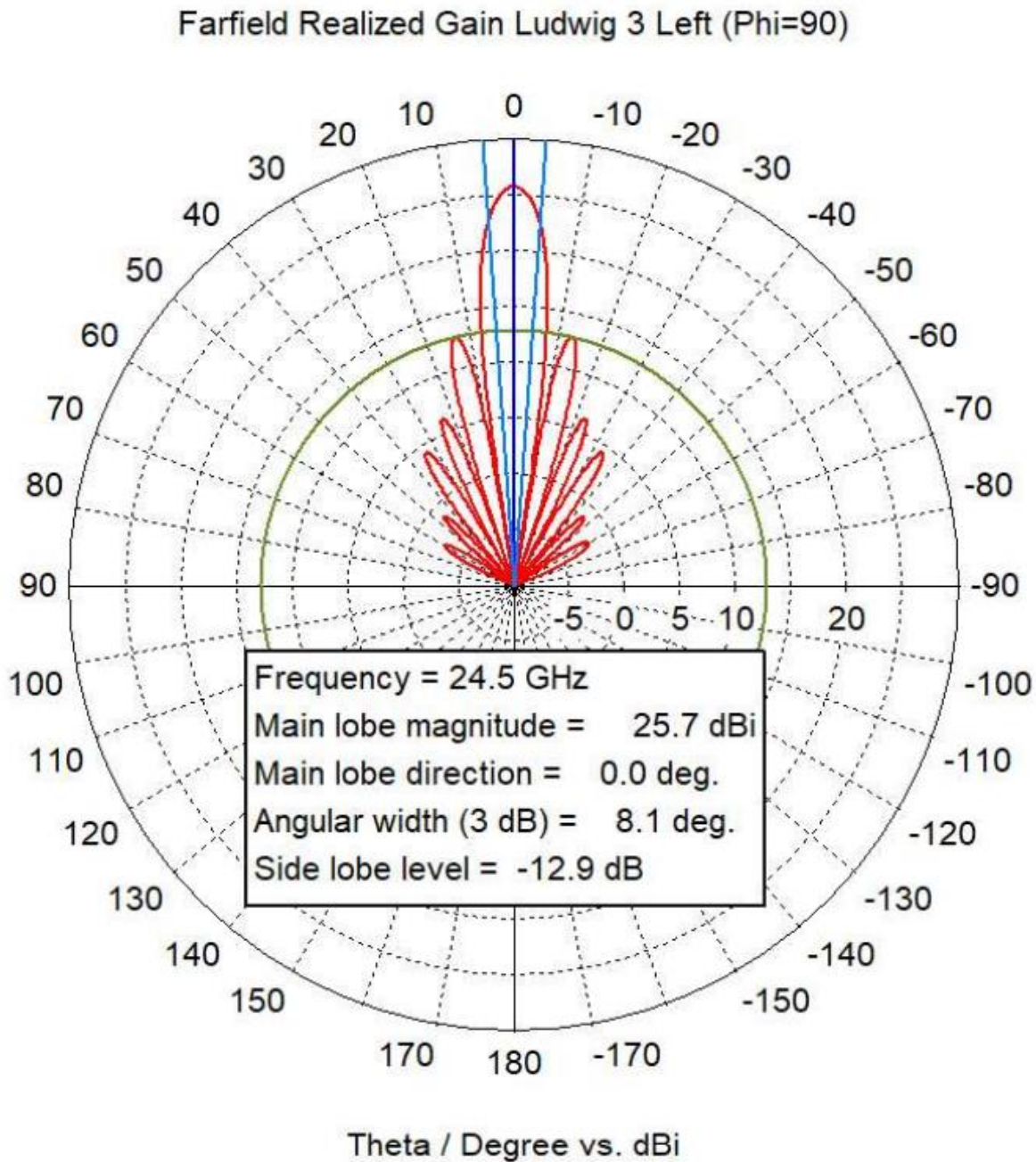
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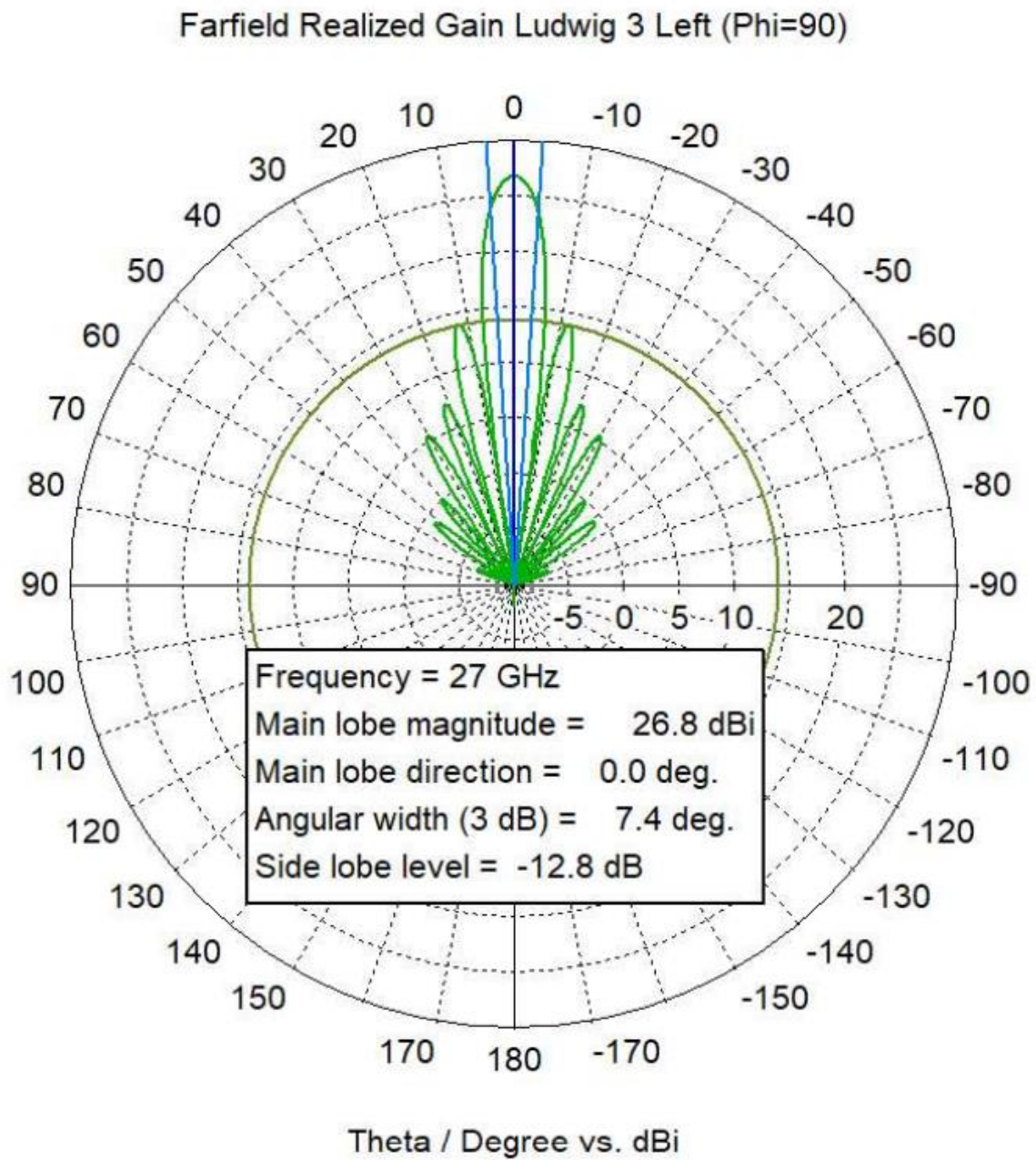
CesiumAstro, Inc.
13412 Galleria Circle Suite H-100
Austin, Texas 78738

June 11, 2021

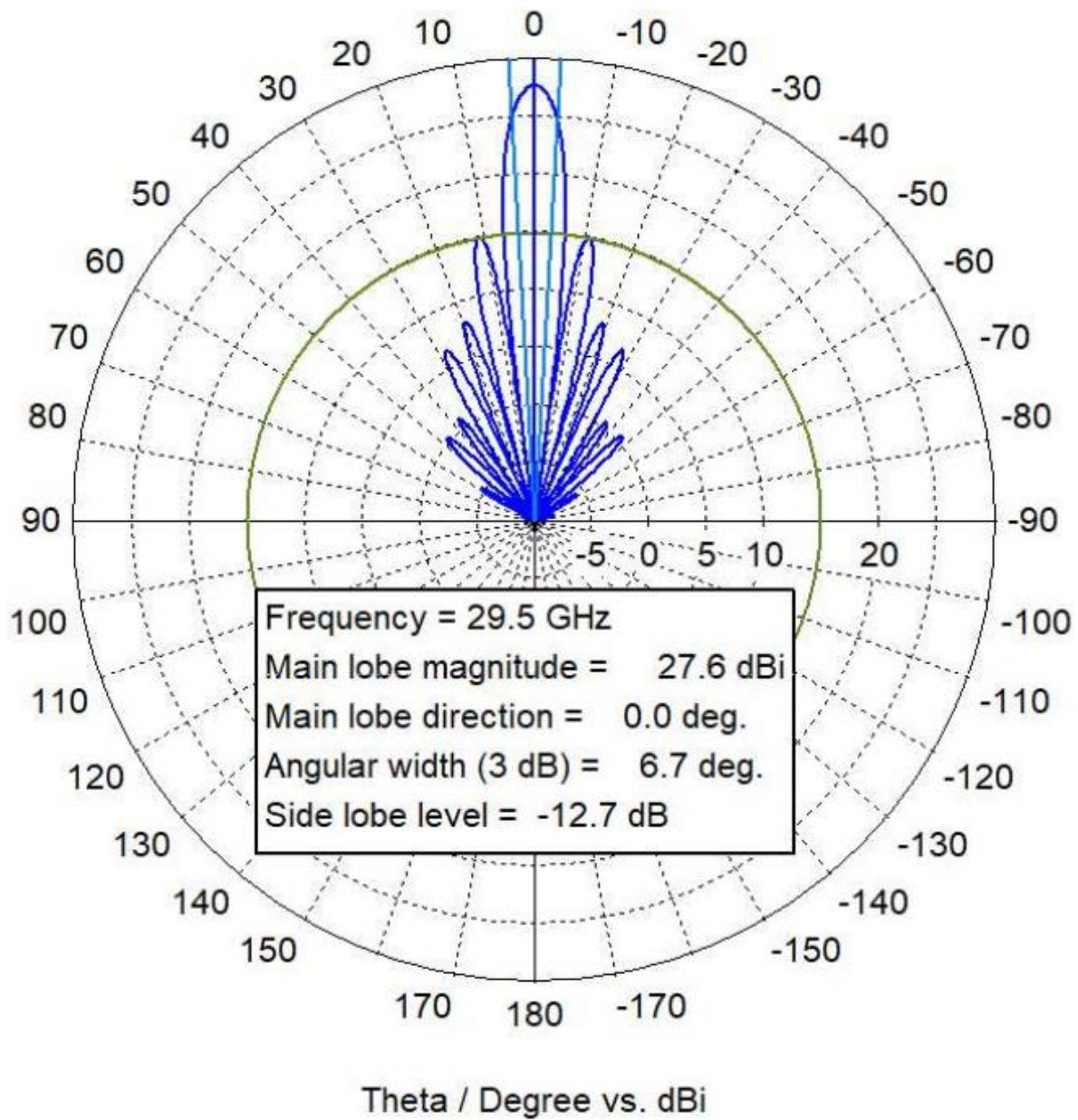
Nightingale 1 APA Antenna Beam Patterns

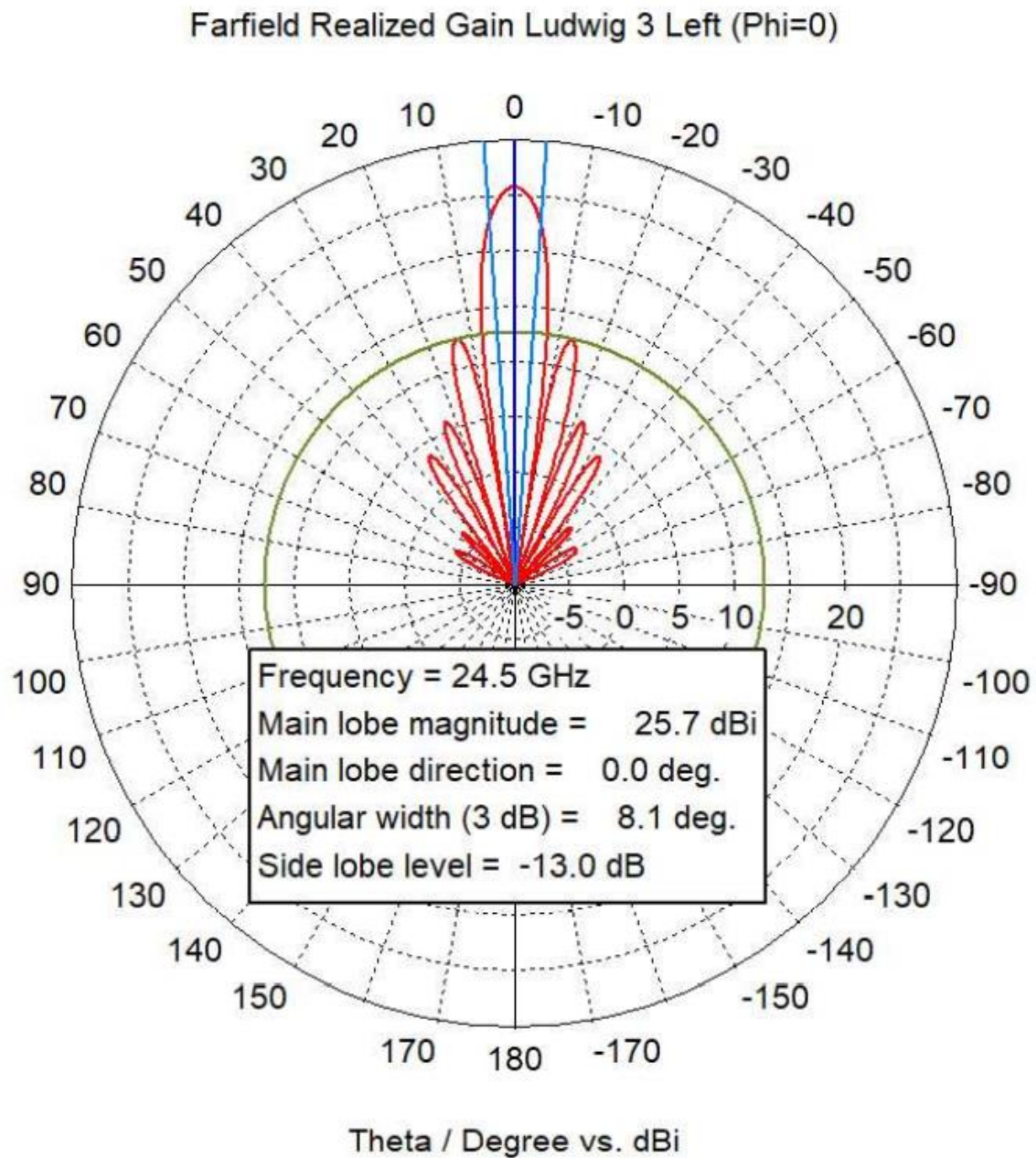
These simulated patterns characterize the Nightingale 1 APA antenna for transmit and receive for its full range of operation (from 24.5 – 29.5 GHz, boresight to max steering).

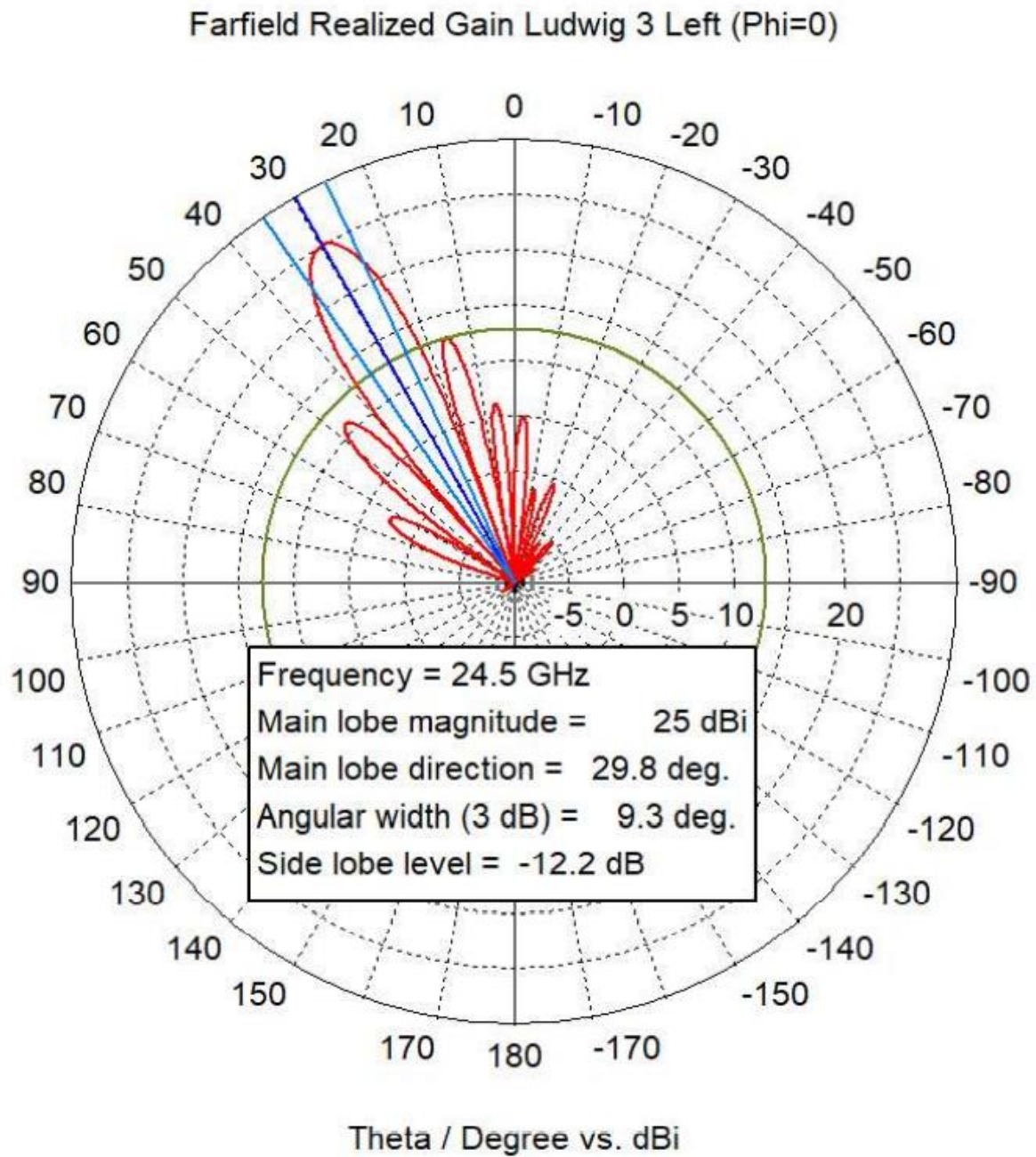


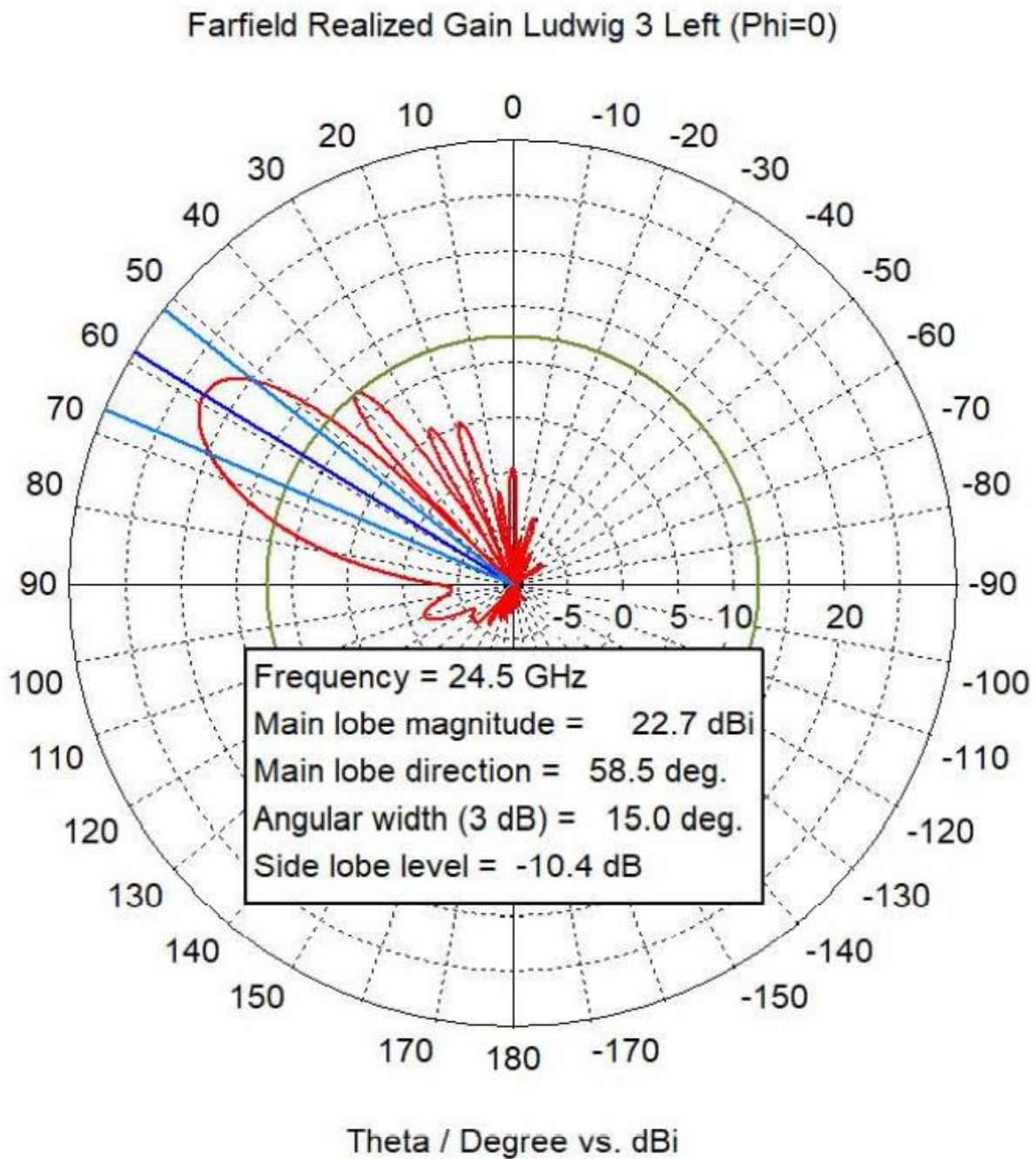


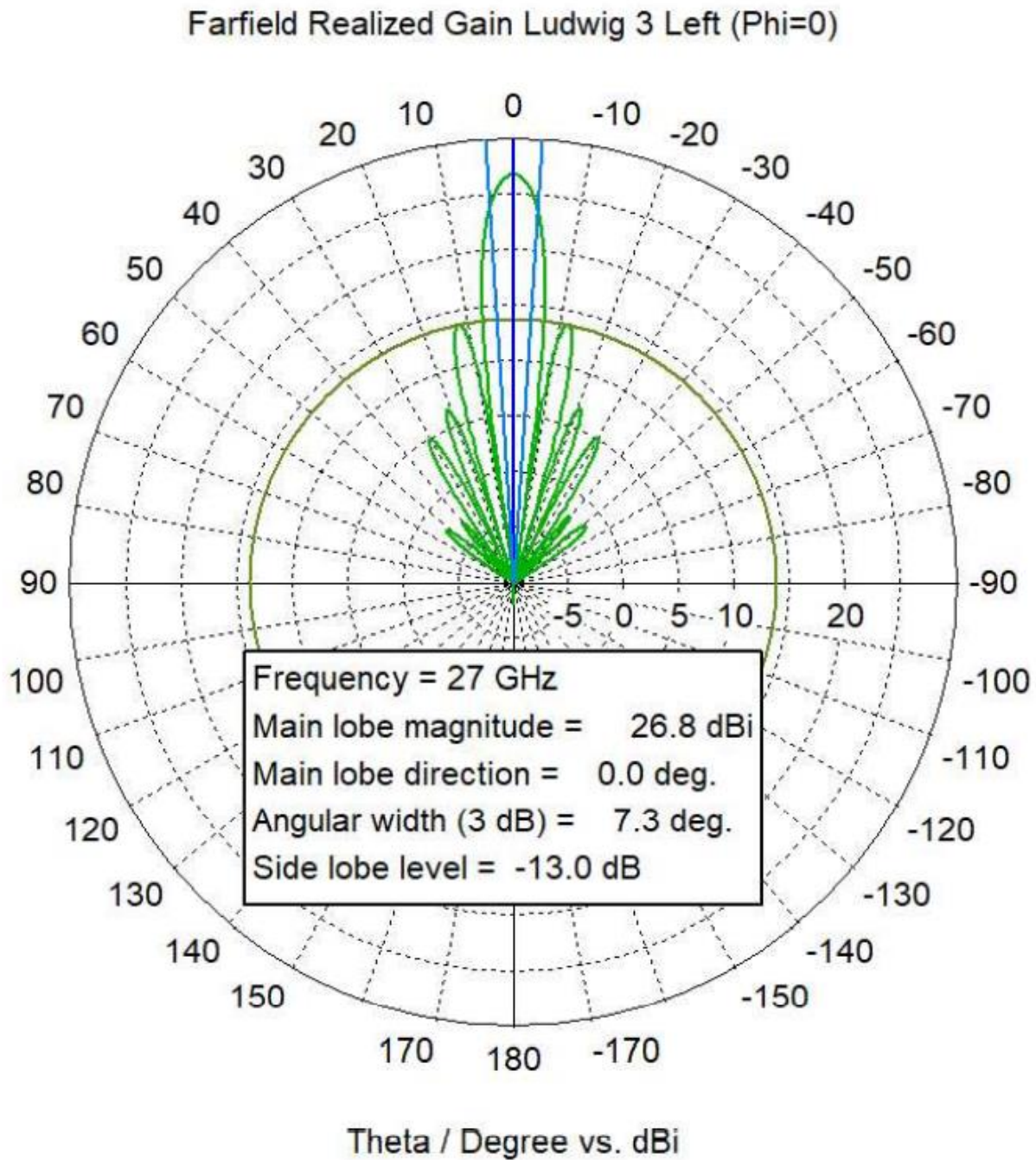
Farfield Realized Gain Ludwig 3 Left (Phi=90)

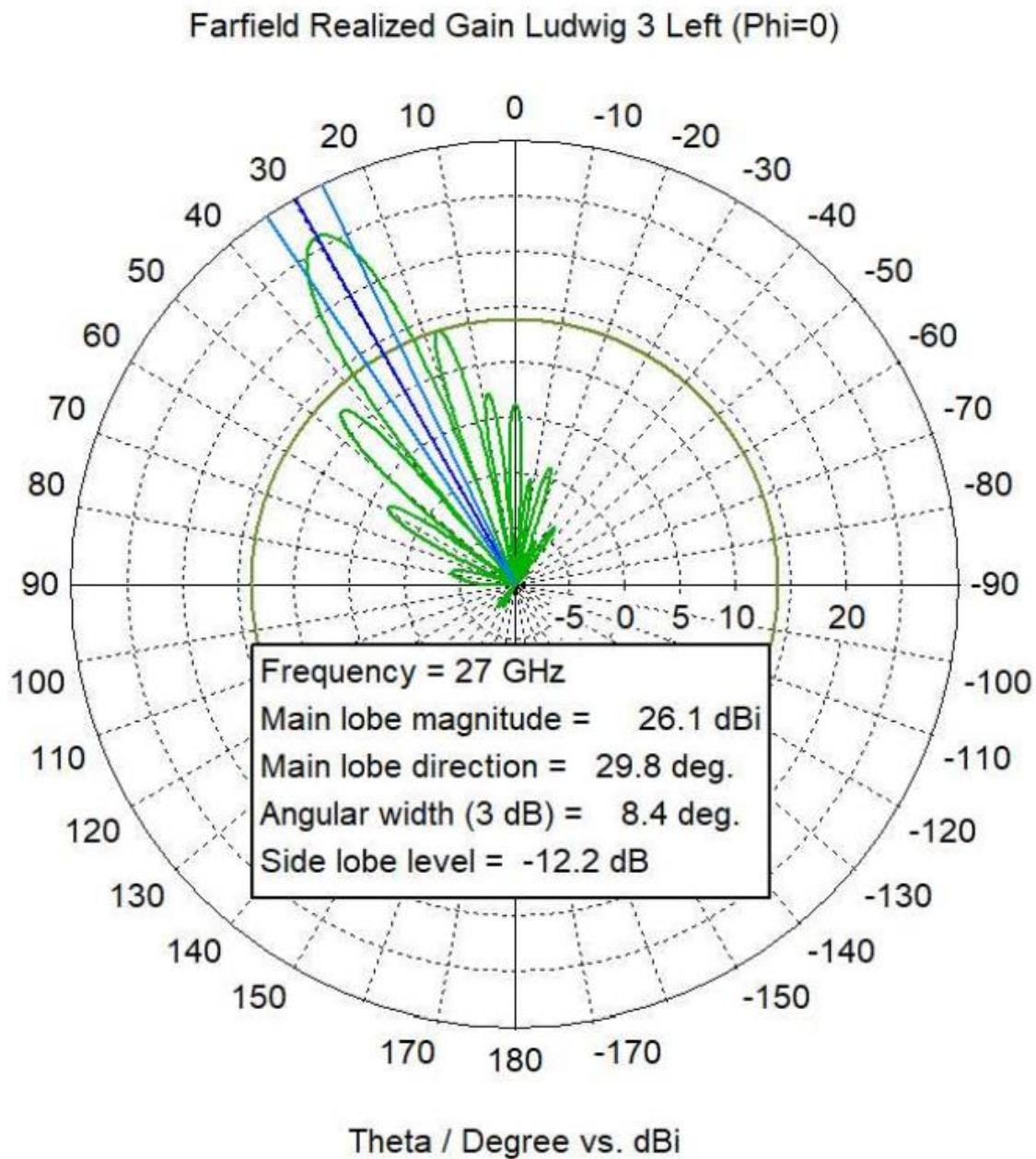


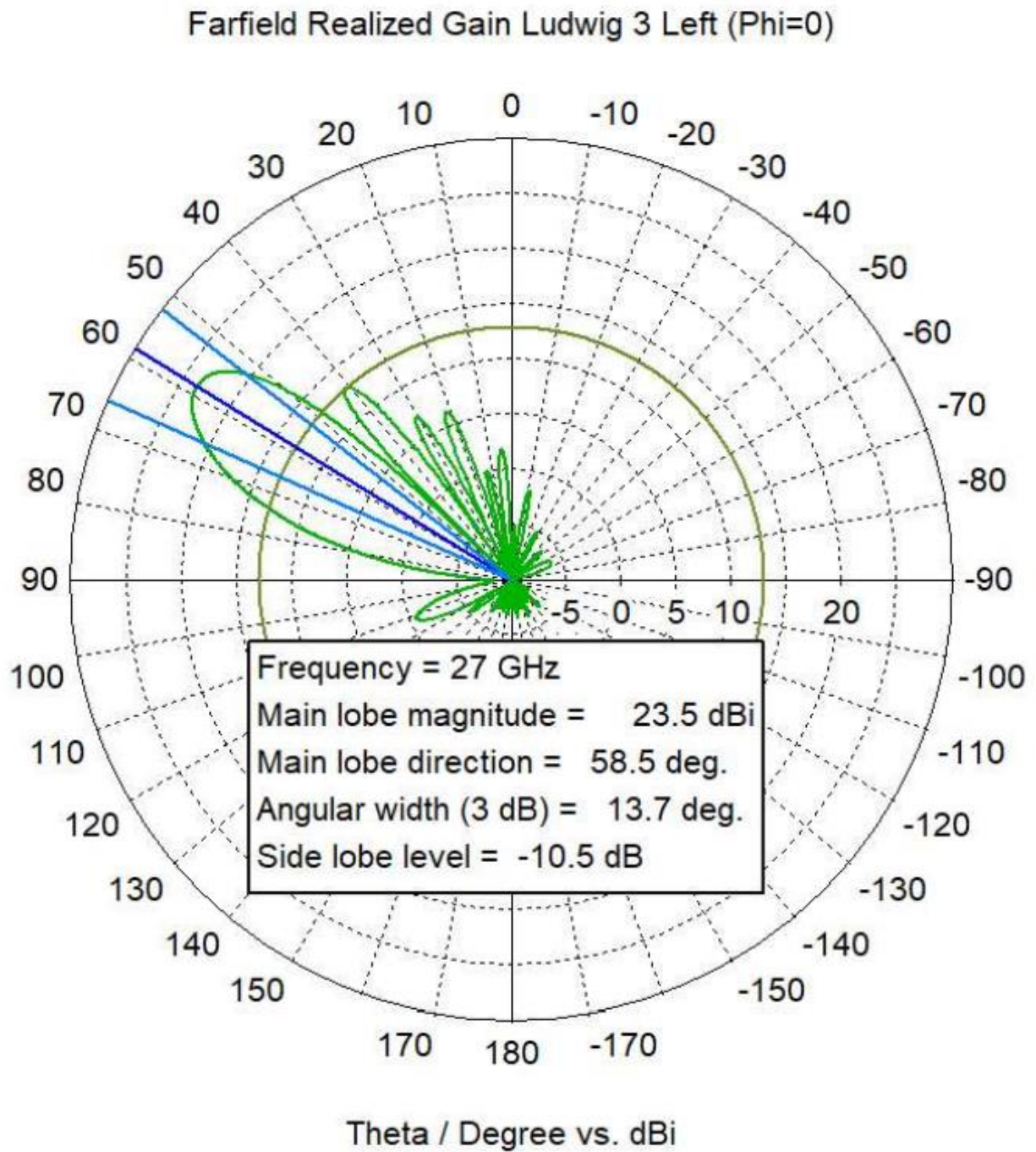


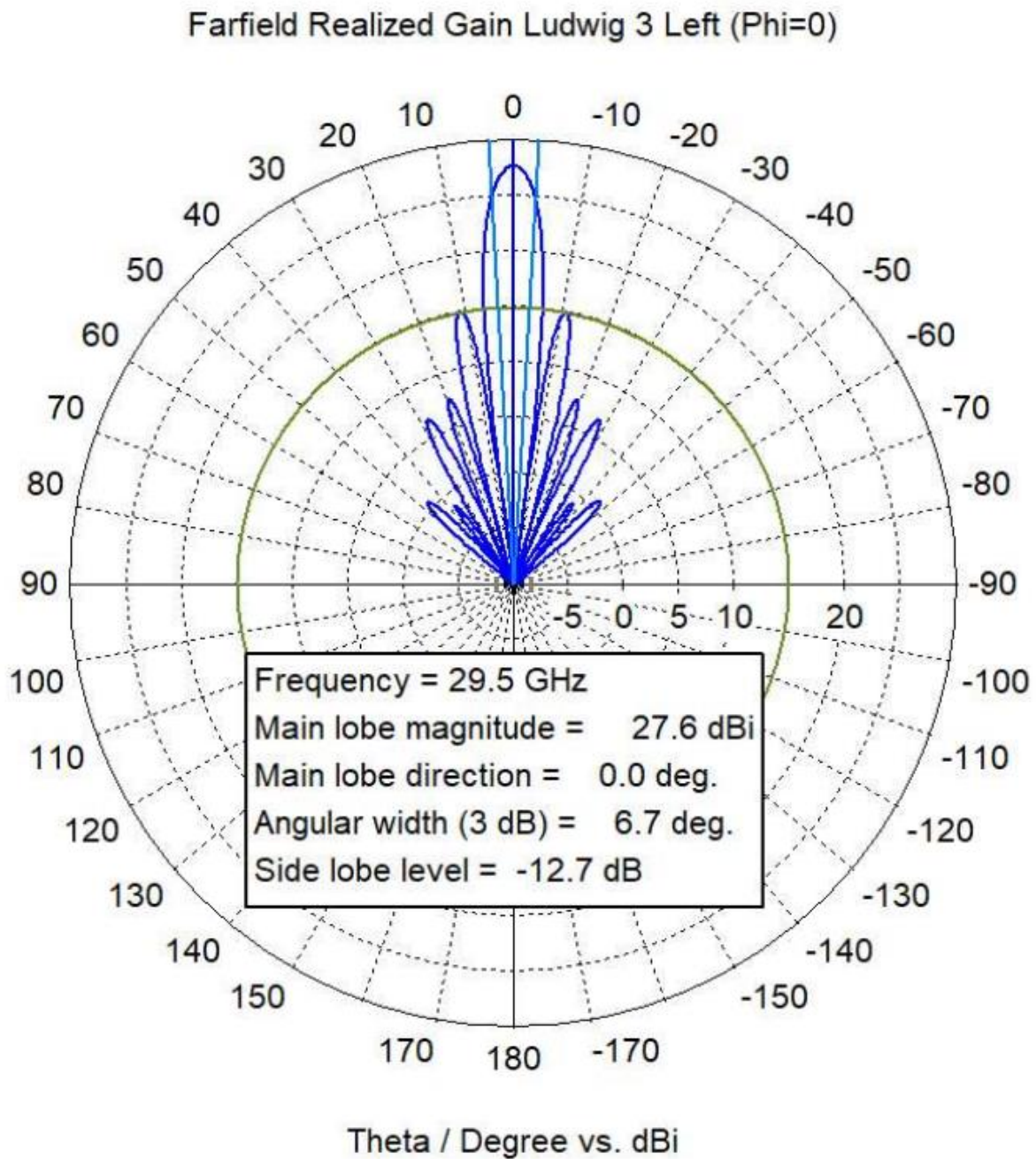


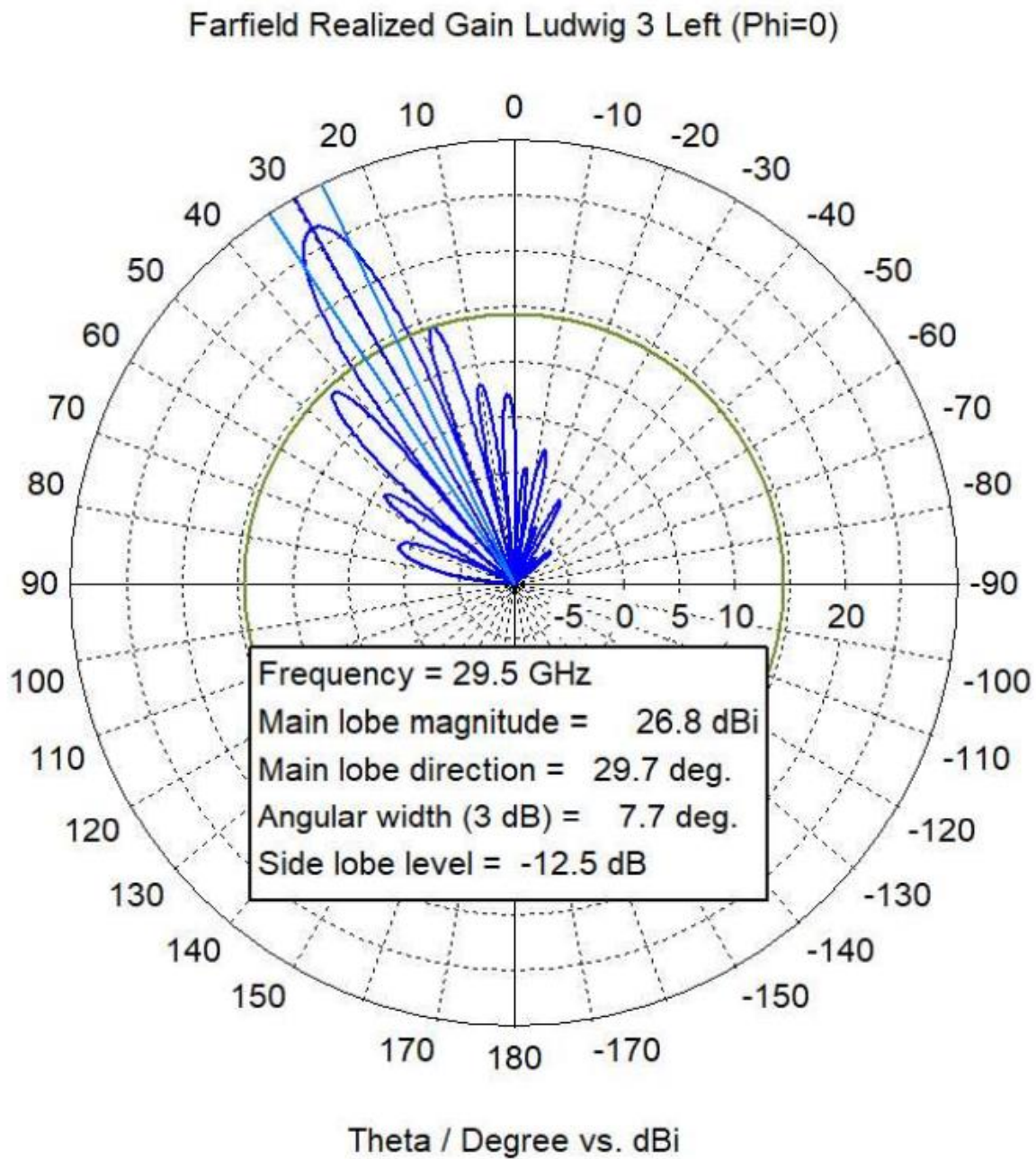


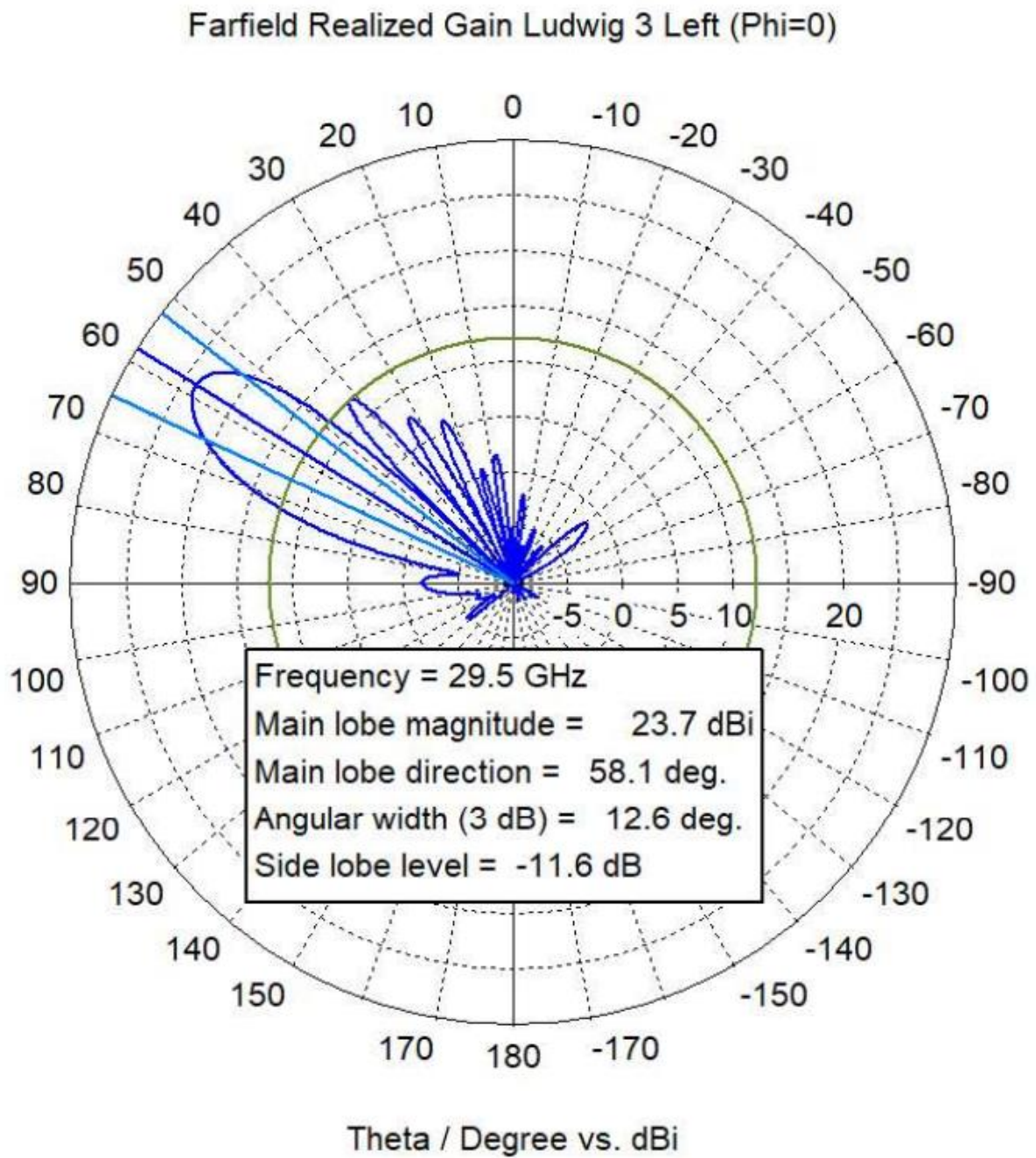






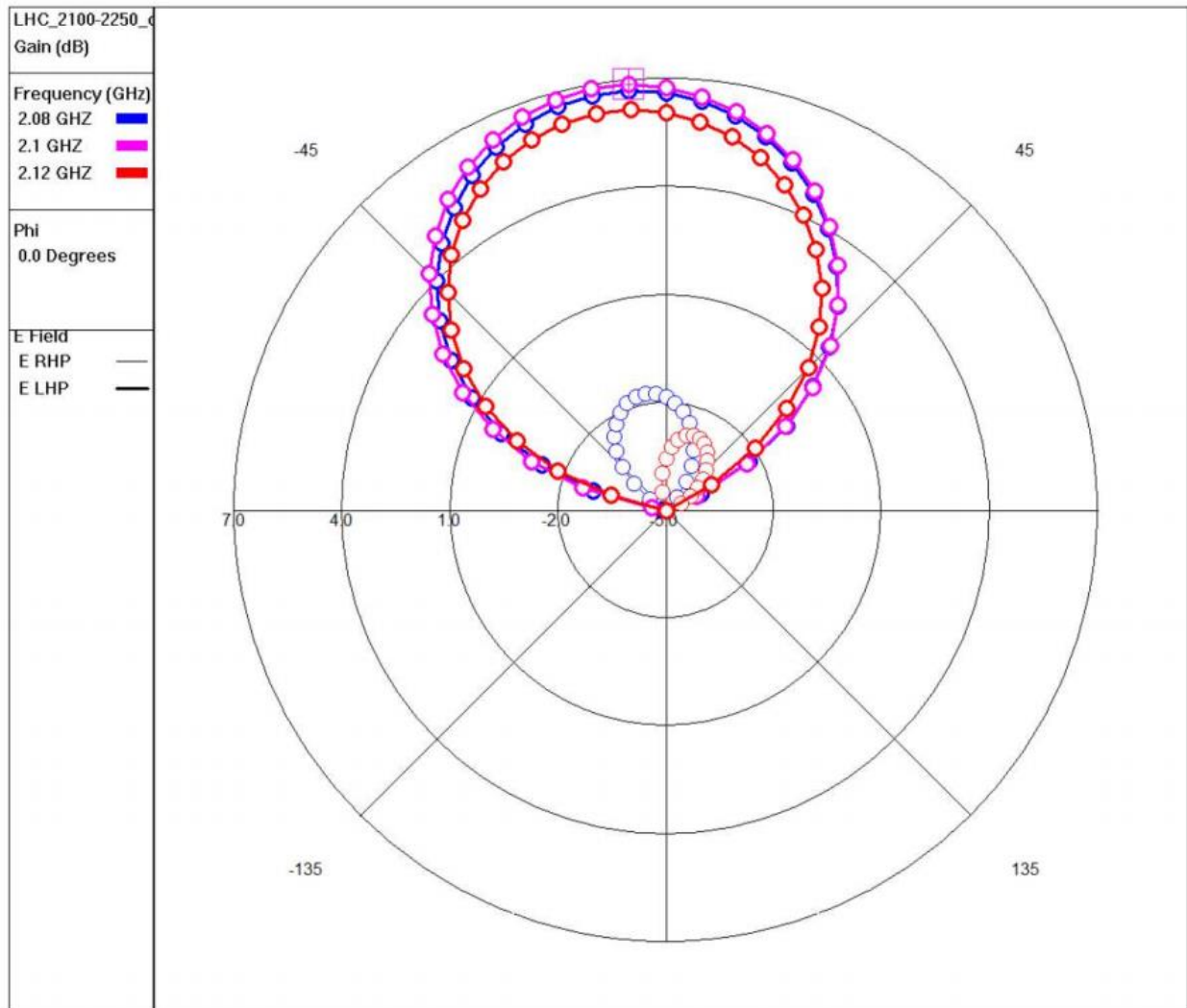




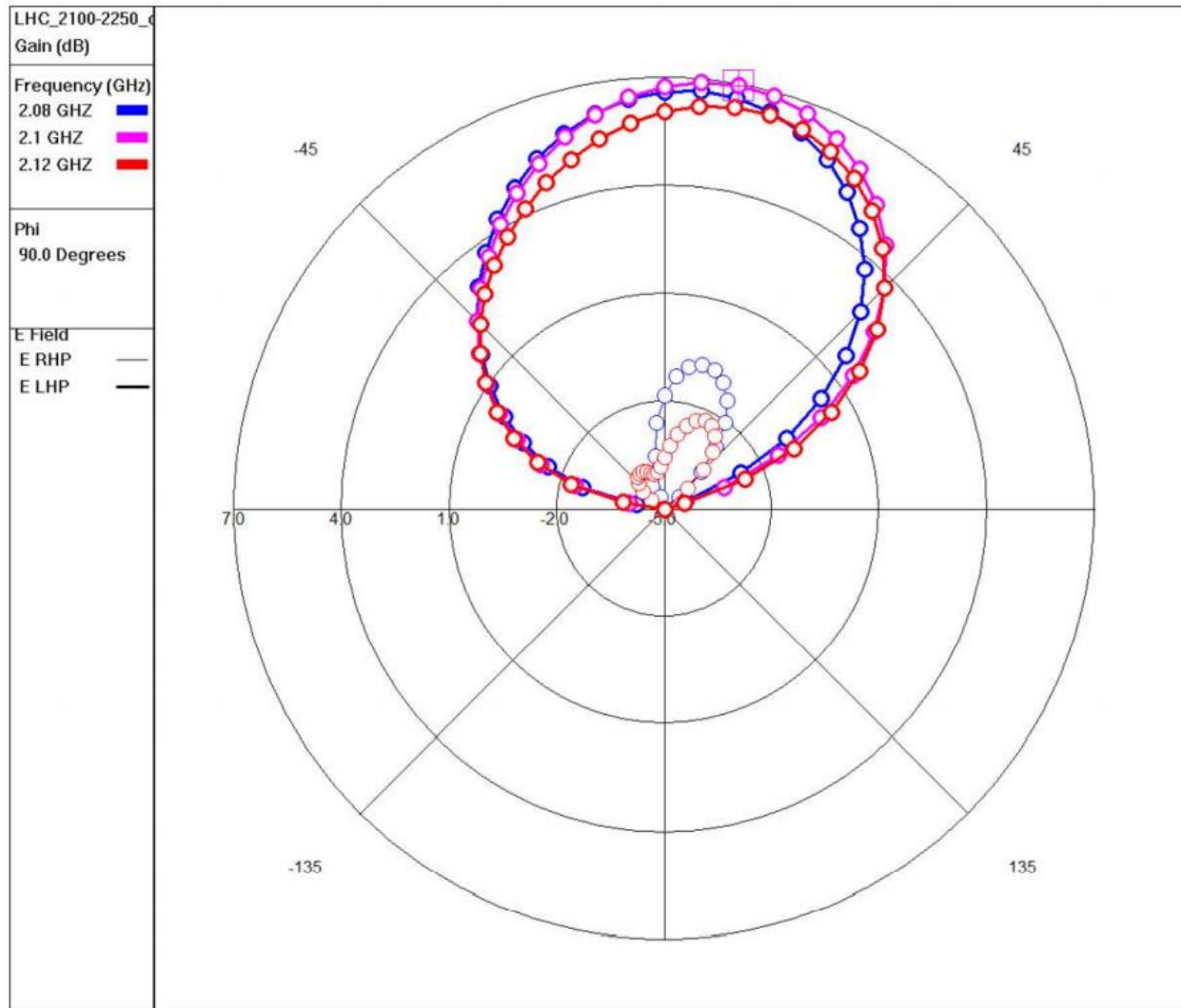


IQ Spacecom Antenna Beam Patterns

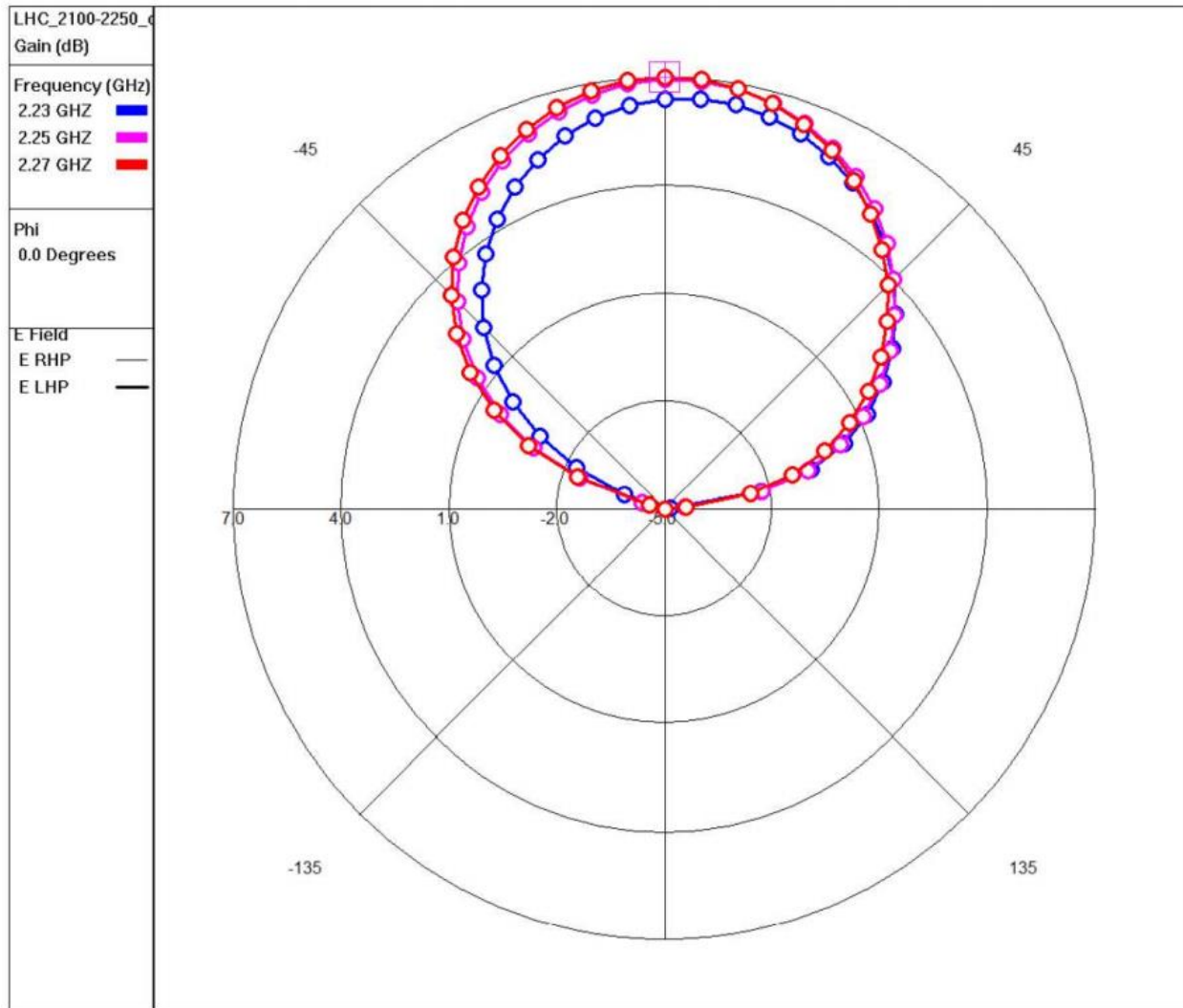
These are the antenna beam patterns for the SRS-3 IQ Spacecom, both transmit and receive



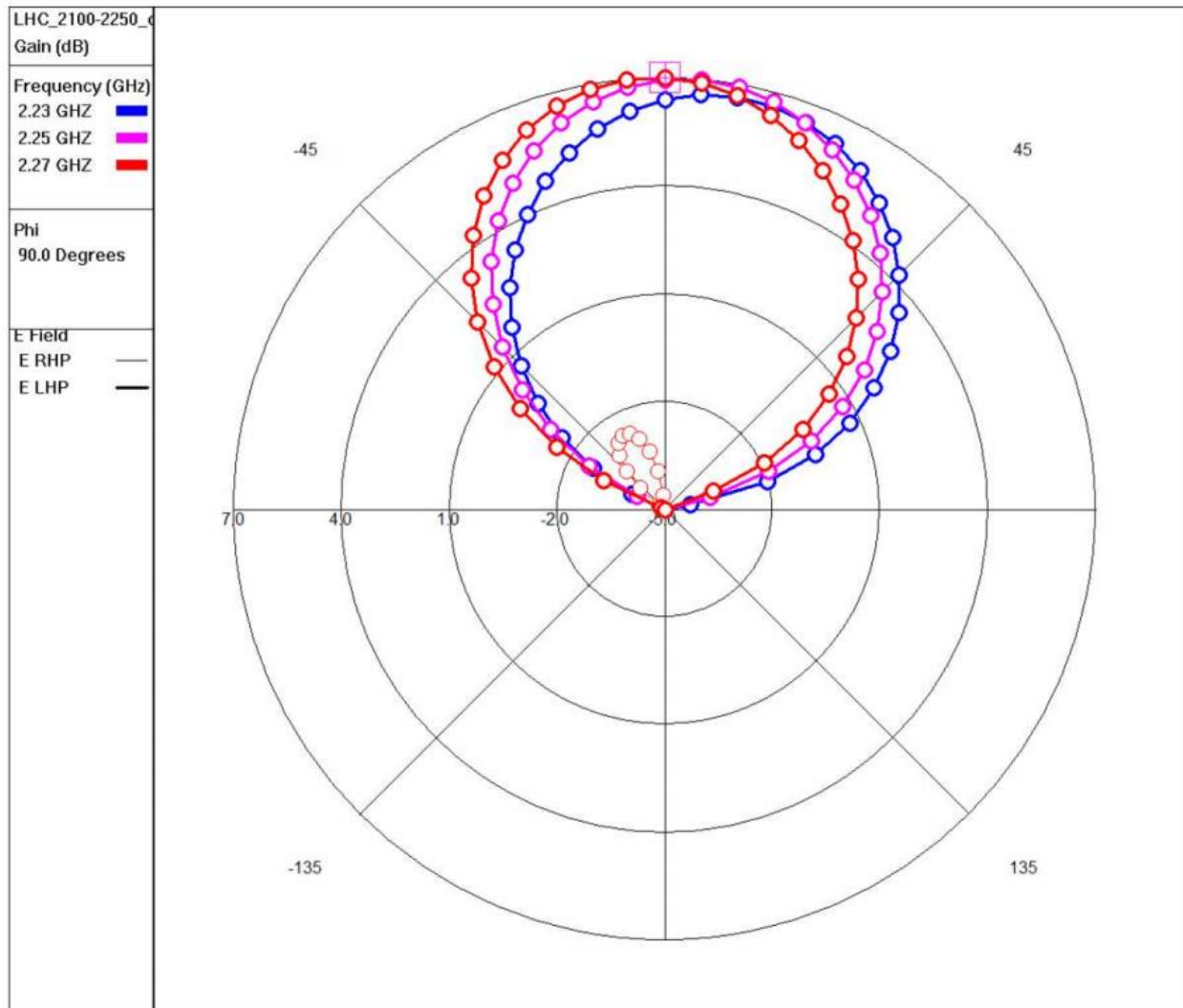
Simulation results of Rx antenna pattern 0 degrees, RHC vs. LHC (bold)



Simulation results of Rx antenna pattern, 90 degrees RHC vs. LHC (bold)



Simulation results of Tx antenna pattern, 0 degrees RHC vs. LHC (bold)



Simulation results of Tx antenna pattern, 90 degrees RHC vs. LHC (bold)

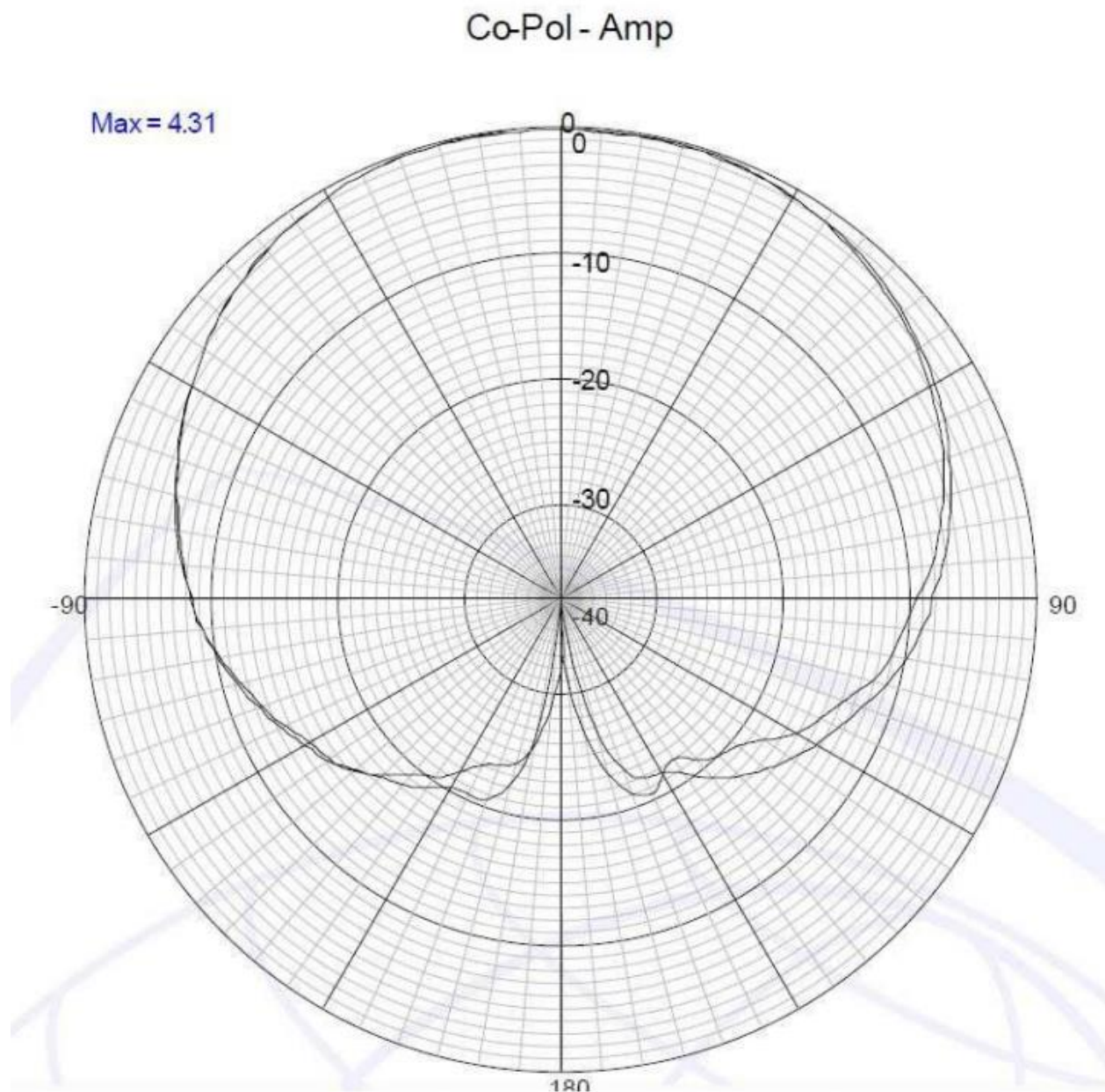
EyeStar-D2 Antenna Beam Patterns

These are the antenna beam patterns for the EyeStar-D2 duplex, both transmit and receive.

Radiation Pattern Diagram for Tx in Free Space

Beam Width = 110 Degrees

Max Gain = 4.31 dBi



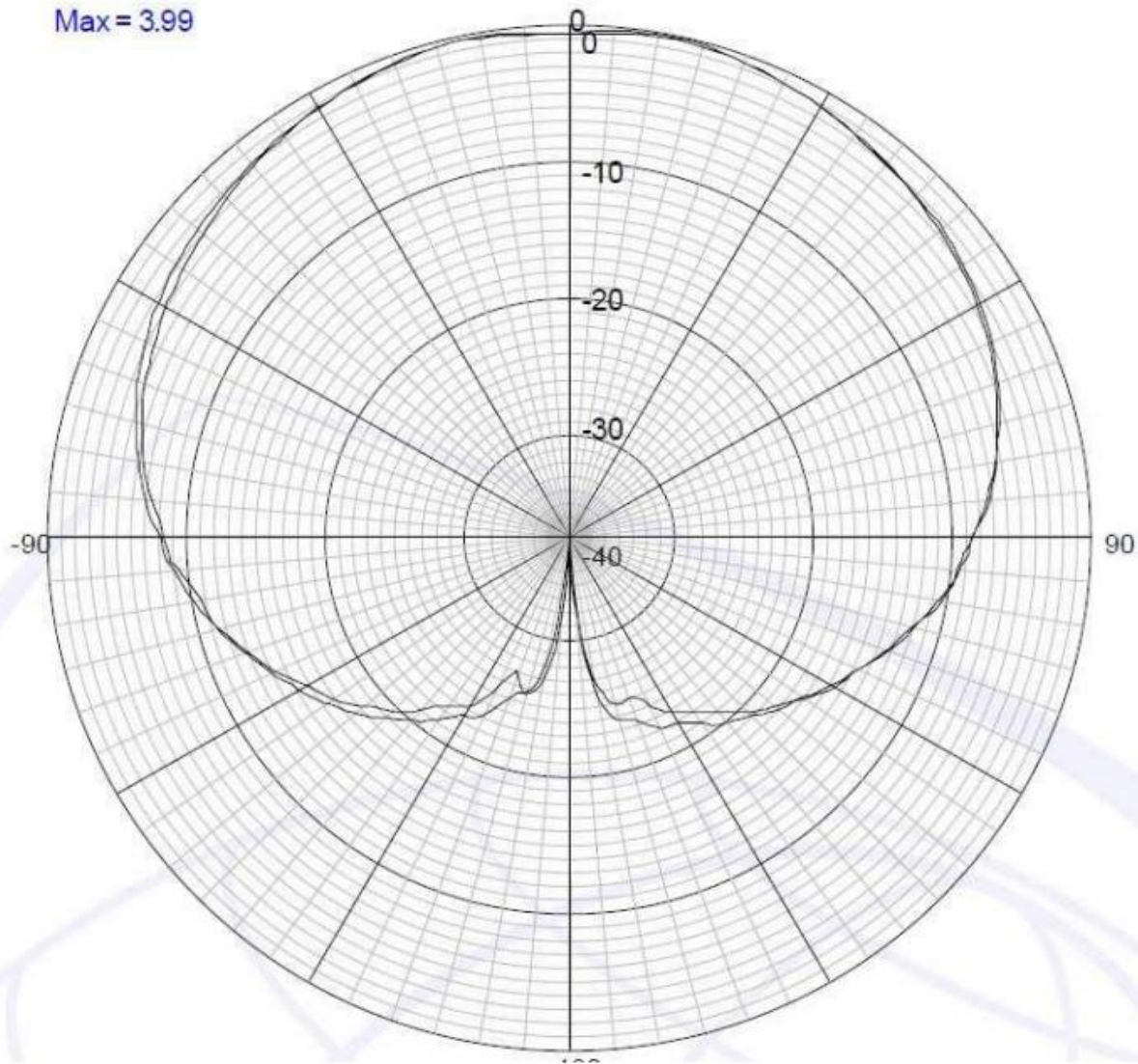
Radiation Pattern Diagram for Rx in free Space

Beam Width = 110 degrees

Max Gain = 3.99 dBi

Co-Pol - Amp

Max = 3.99

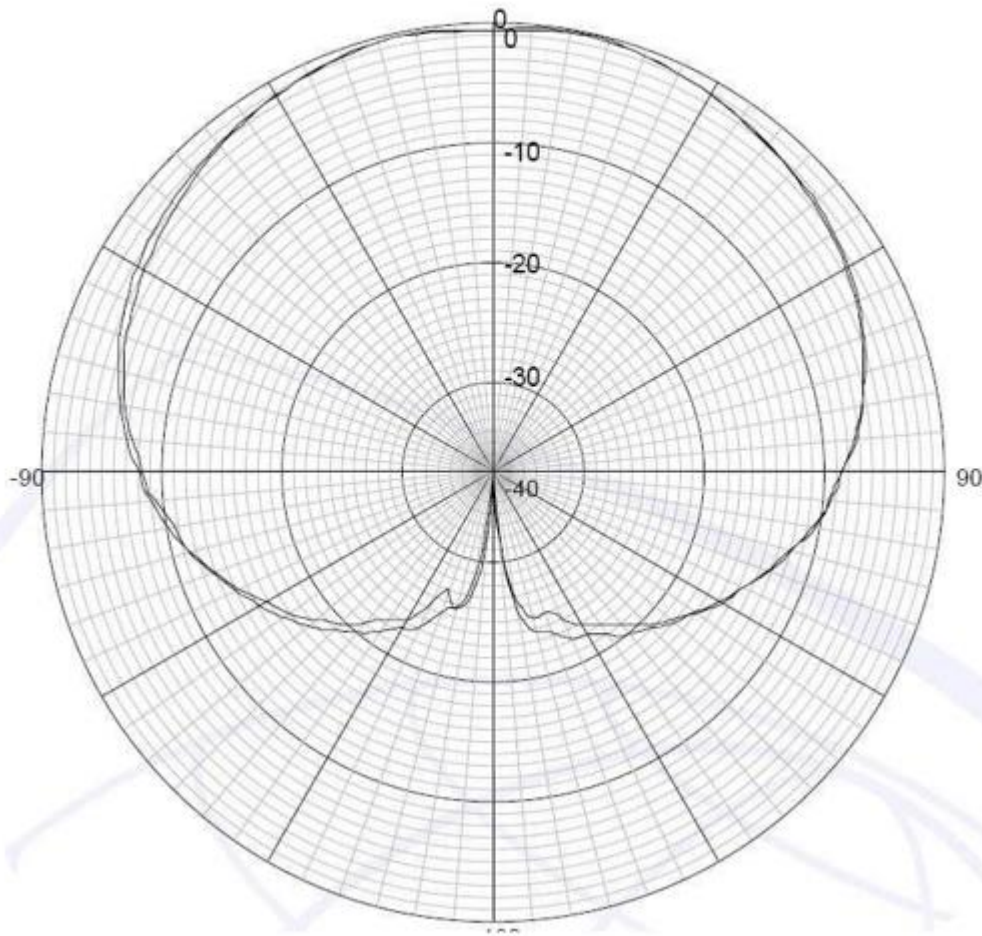


EyeStar-S3 Antenna Beam Pattern

This is the antenna beam pattern for the EyeStar-S3 simplex, transmit only.

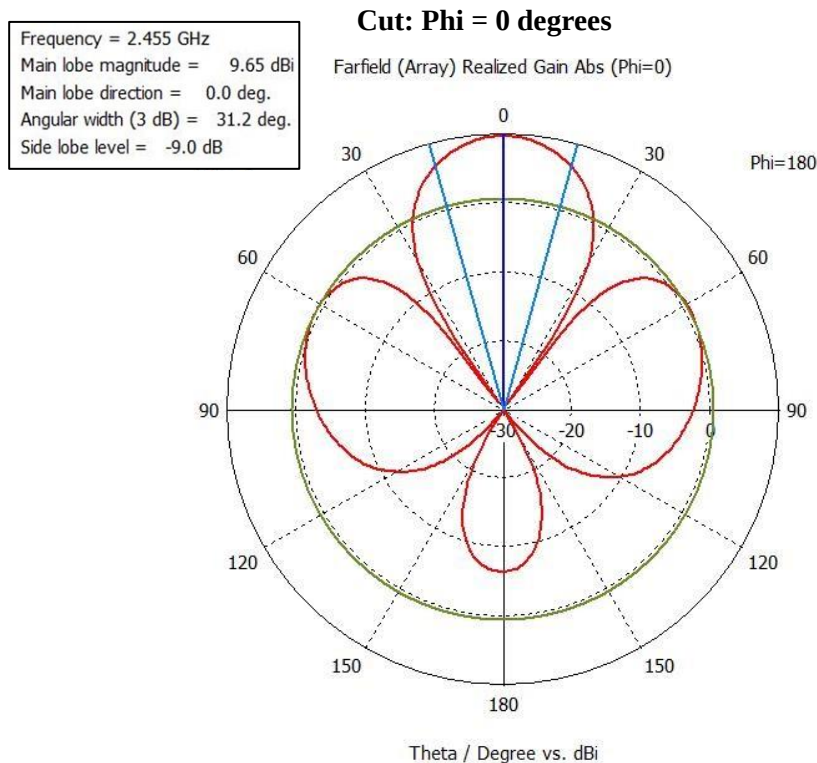
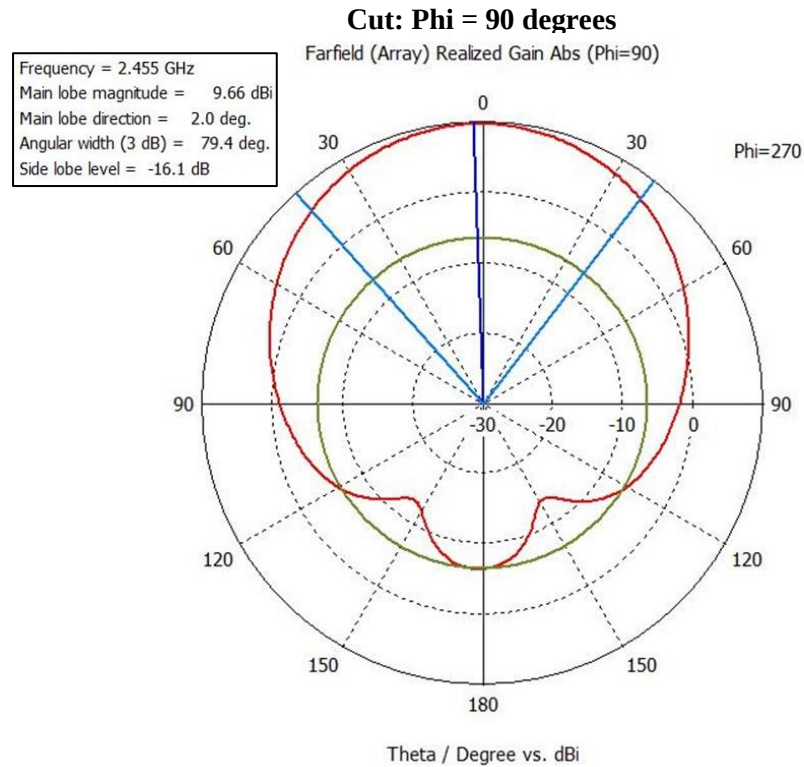
Beam Width = 100 degrees

Max Gain = 4 dBi



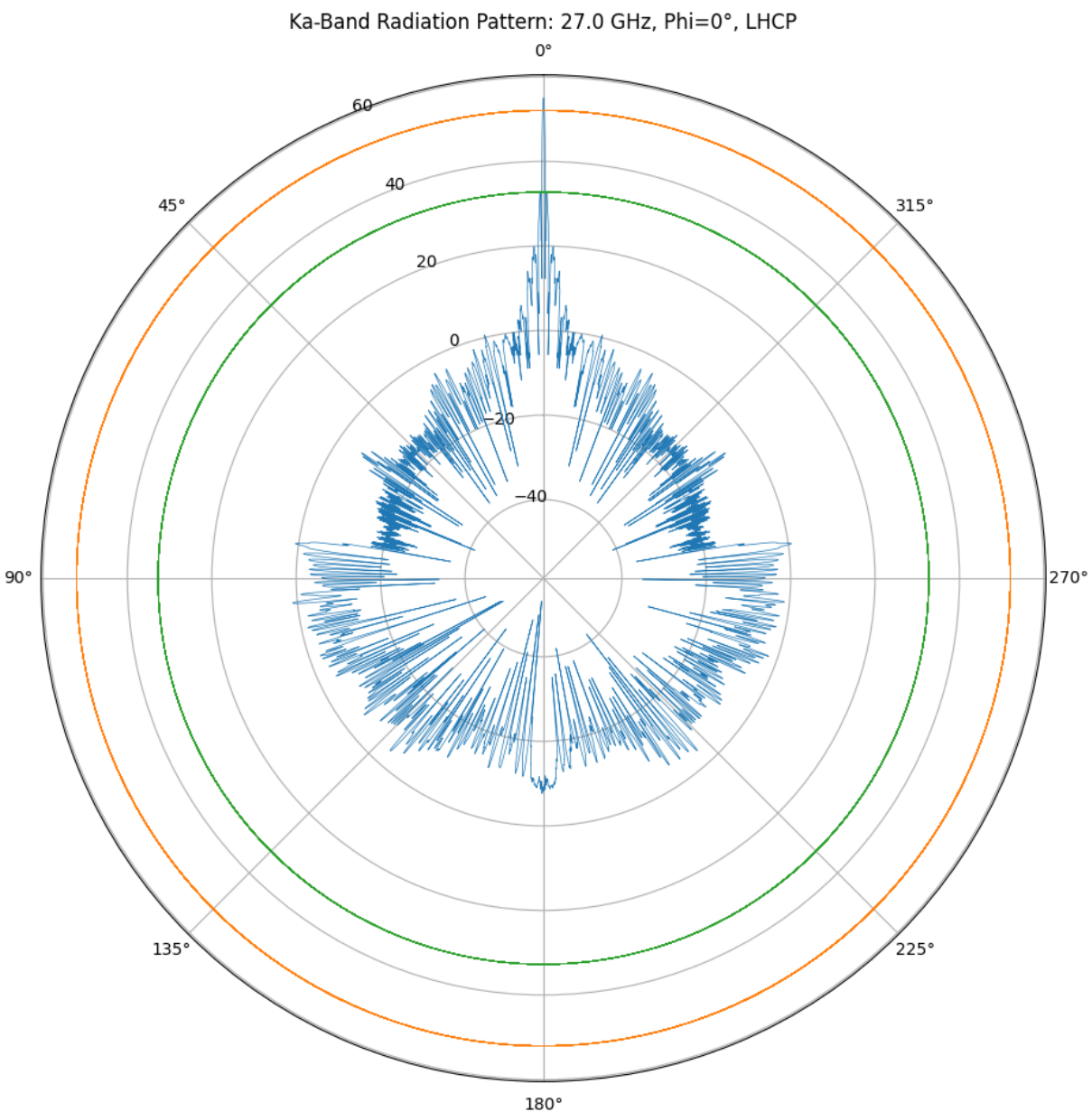
CommPack Antenna Beam Pattern

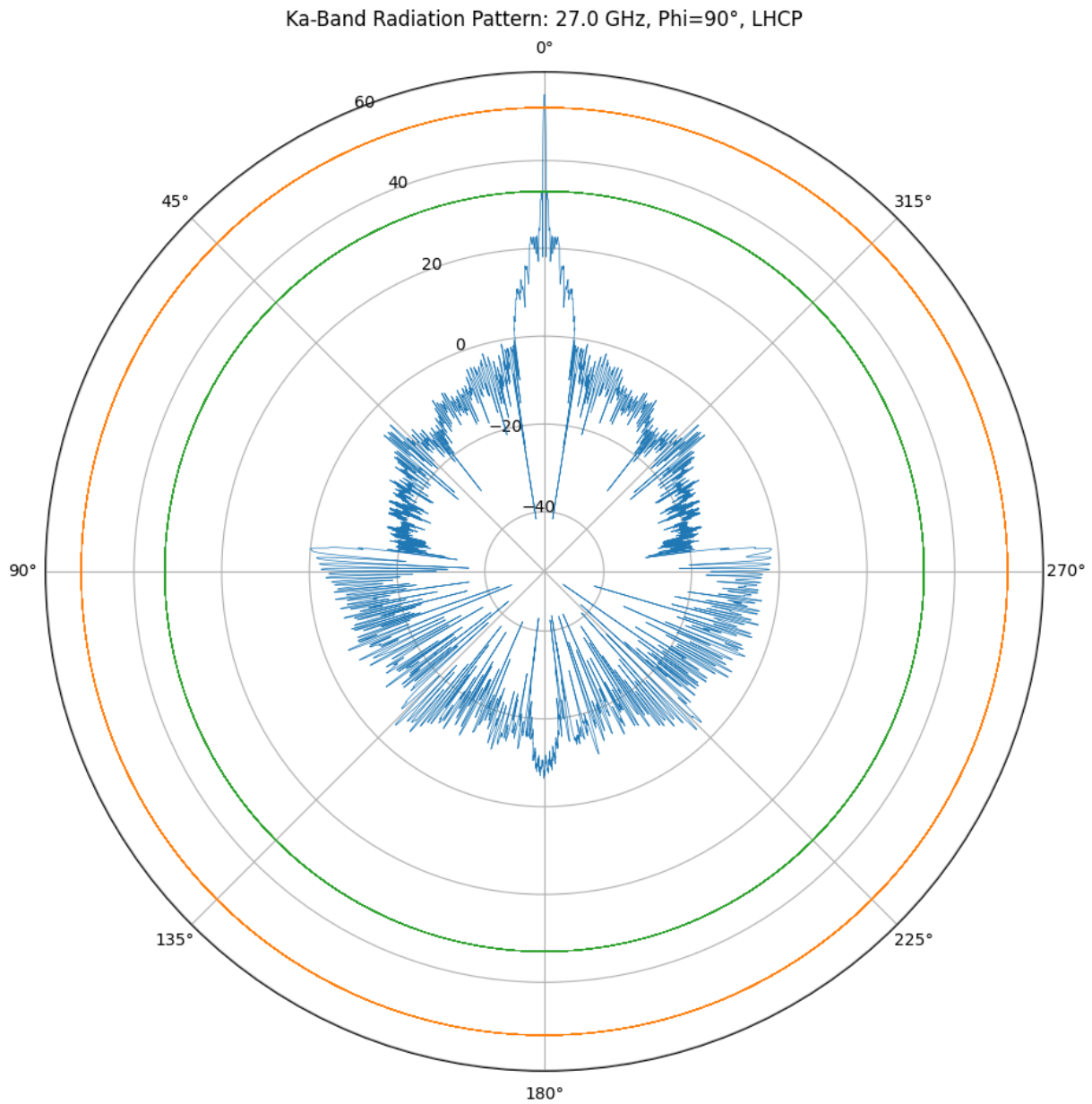
These are the simulated antenna beam pattern for the CommPack antennas, both transmit and receive.

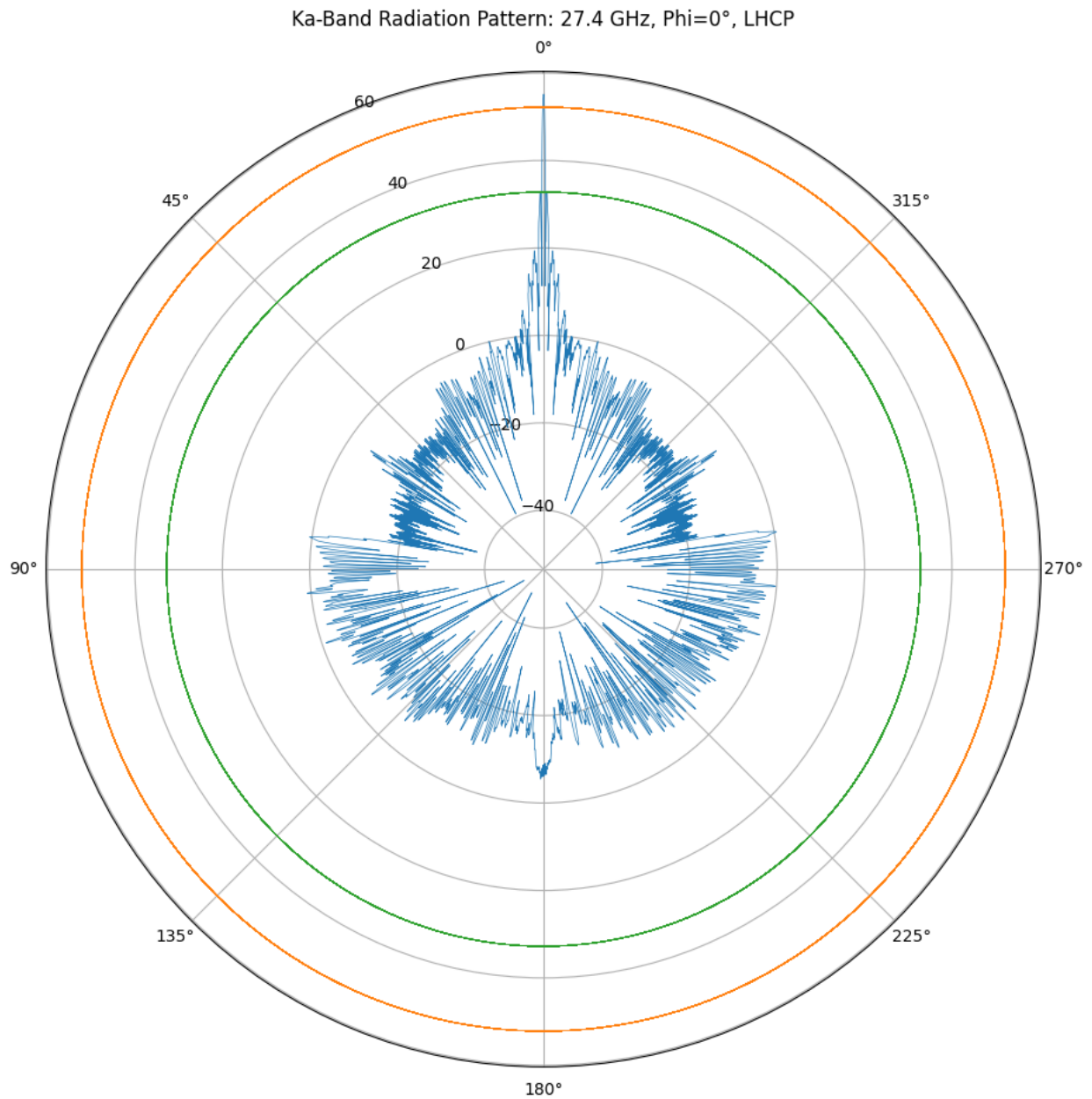
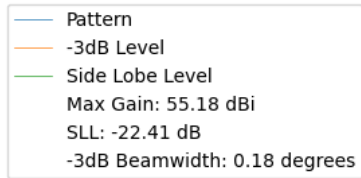


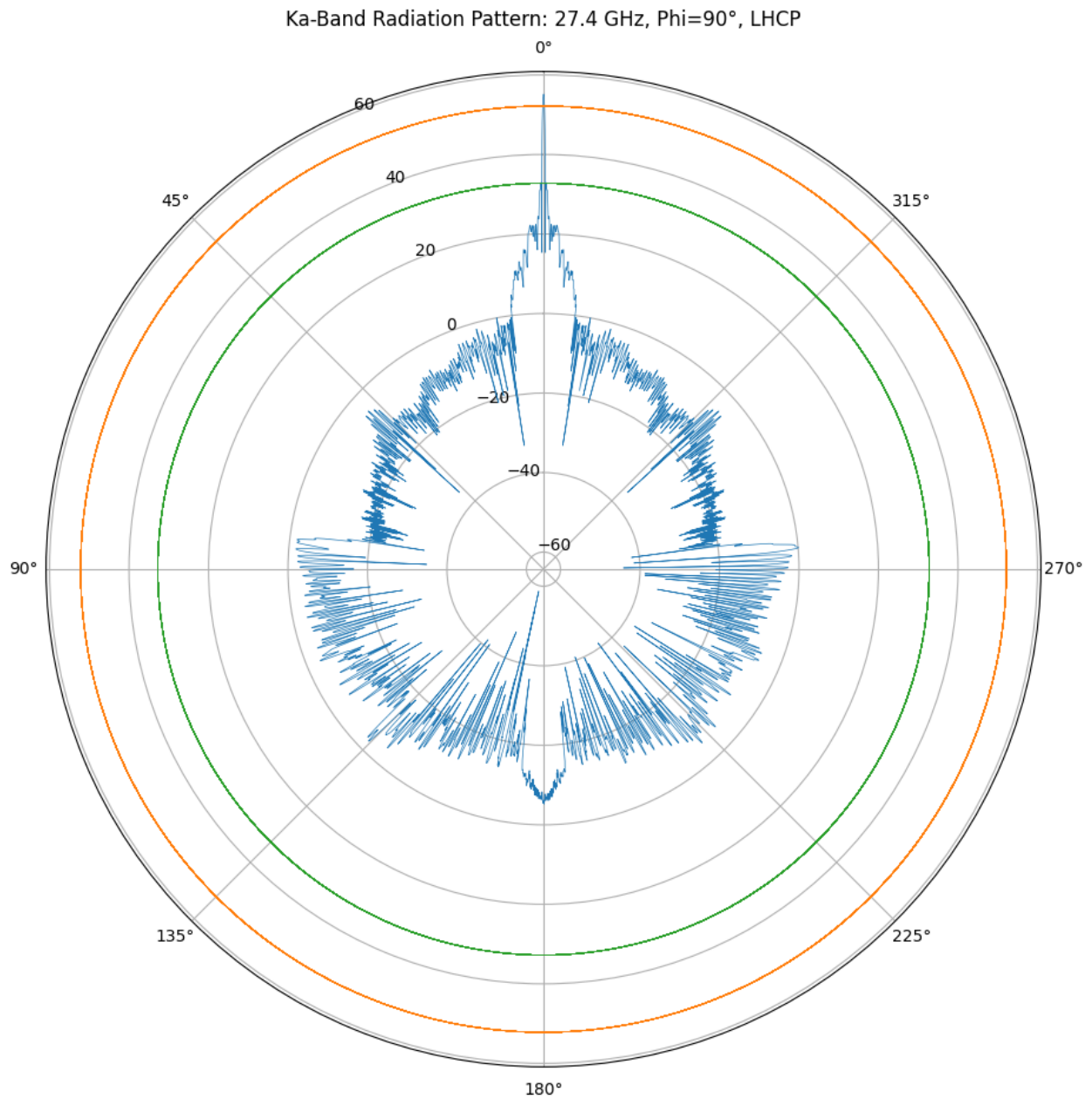
Cesium Ka-Band Ground Station Antenna Beam Pattern

These are the simulated antenna beam pattern for the Cesium Ka-band ground stations, both transmit and receive. The first two patterns depict the beam patterns at the low end of the requested operating frequency range (27.0 GHz), and the last two patterns depict the beam patterns at the high end of the requested operating frequency range (27.4 GHz)



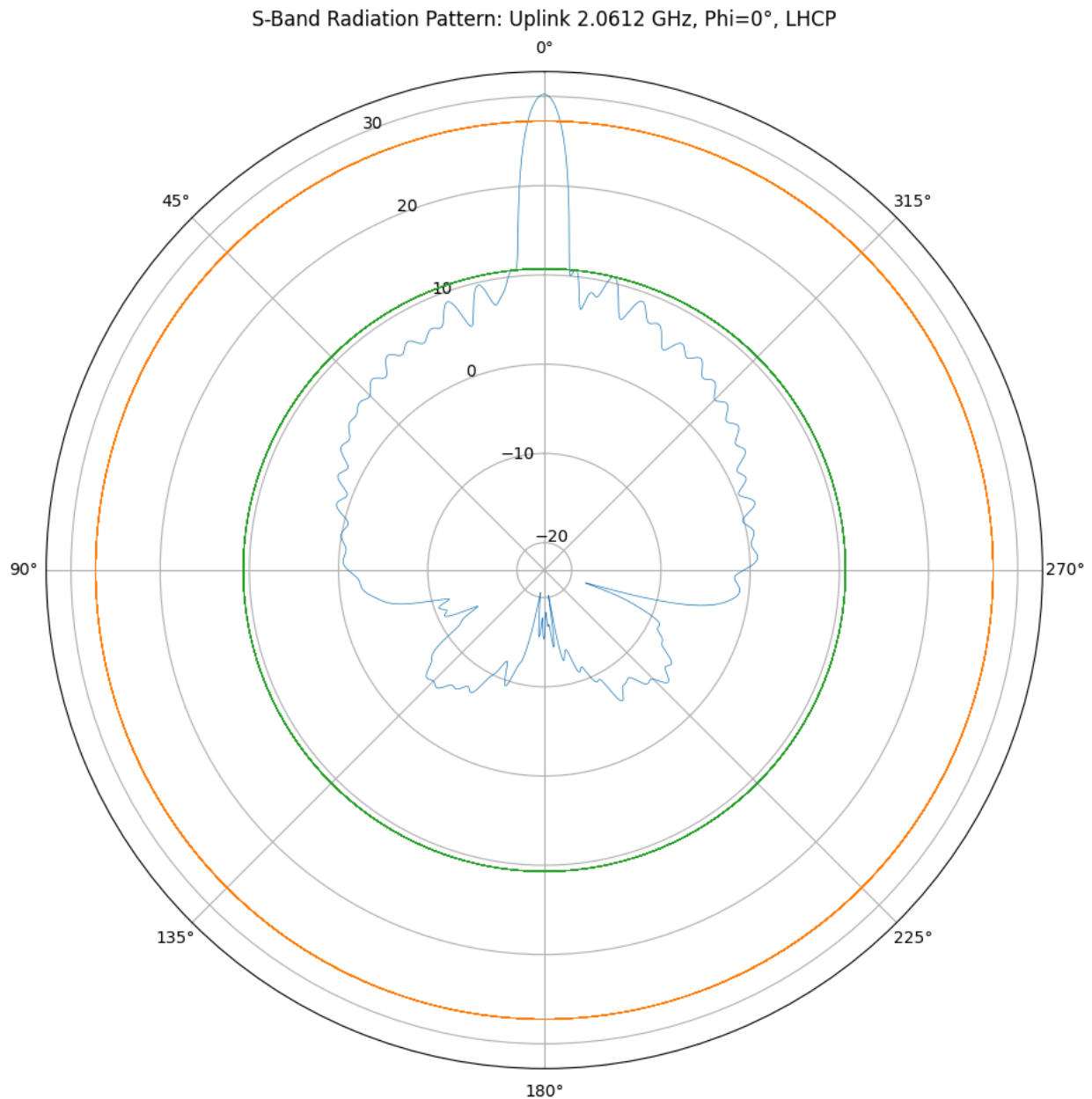


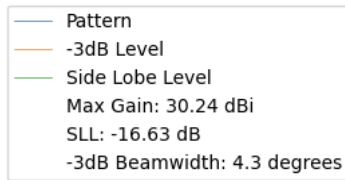




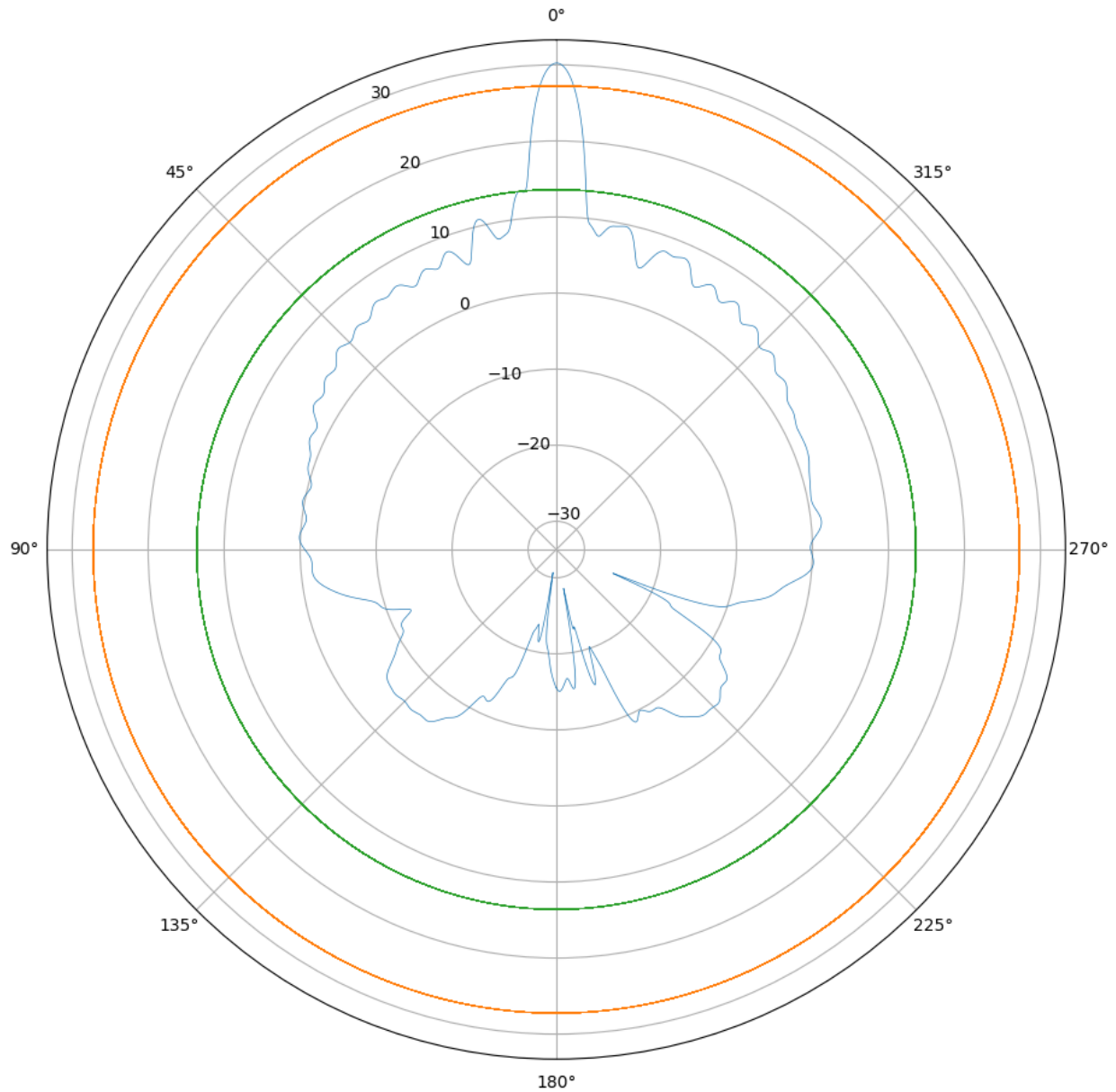
Cesium S-Band Ground Station Antenna Beam Patterns

These are the simulated antenna beam pattern for the Cesium S-band ground stations. The first two patterns are for transmit (uplink) operations, and the last two patterns are for receive (downlink) operations.



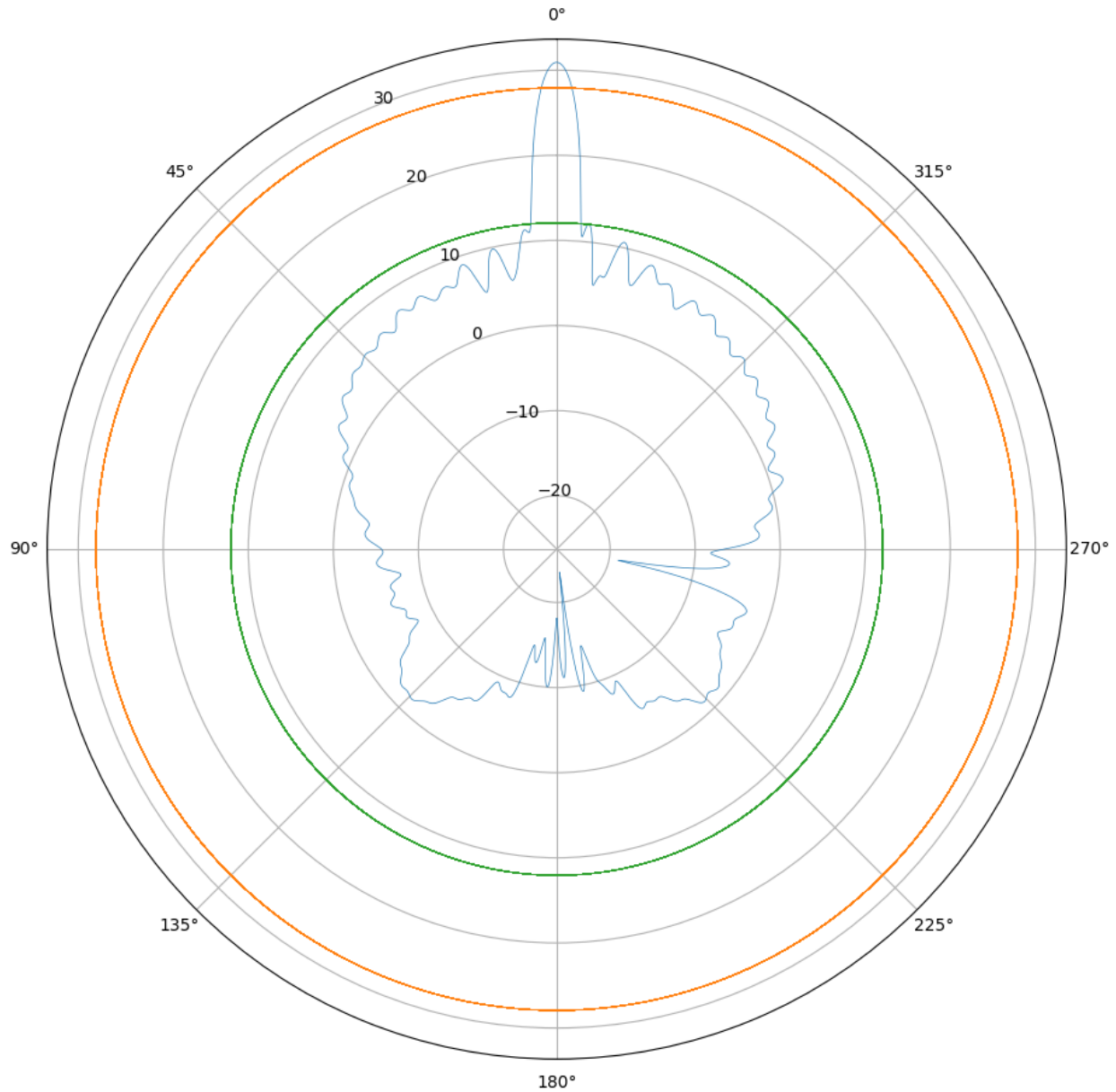


S-Band Radiation Pattern: Uplink 2.0612 GHz, Phi=90°, LHCP





S-Band Radiation Pattern: Downlink 2.215 GHz, Phi=0°, LHCP





S-Band Radiation Pattern: Downlink 2.215 GHz, Phi=90°, LHCP

