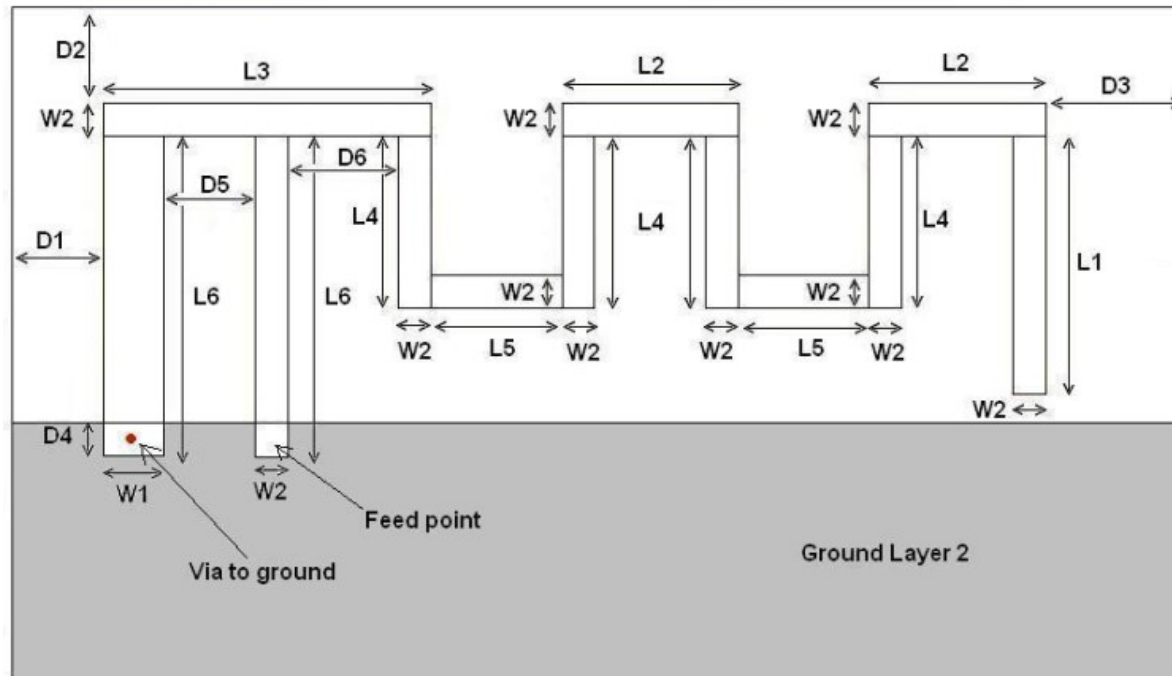


# Test Report For Antenna1

## Tested Products.

- Antenna1: integrated antenna.
  - Frequency = 2.402GHz.
  - Frequency = 2.441GHz.
  - Frequency = 2.480GHz.

## Antenna1 Photo & Length (mm)

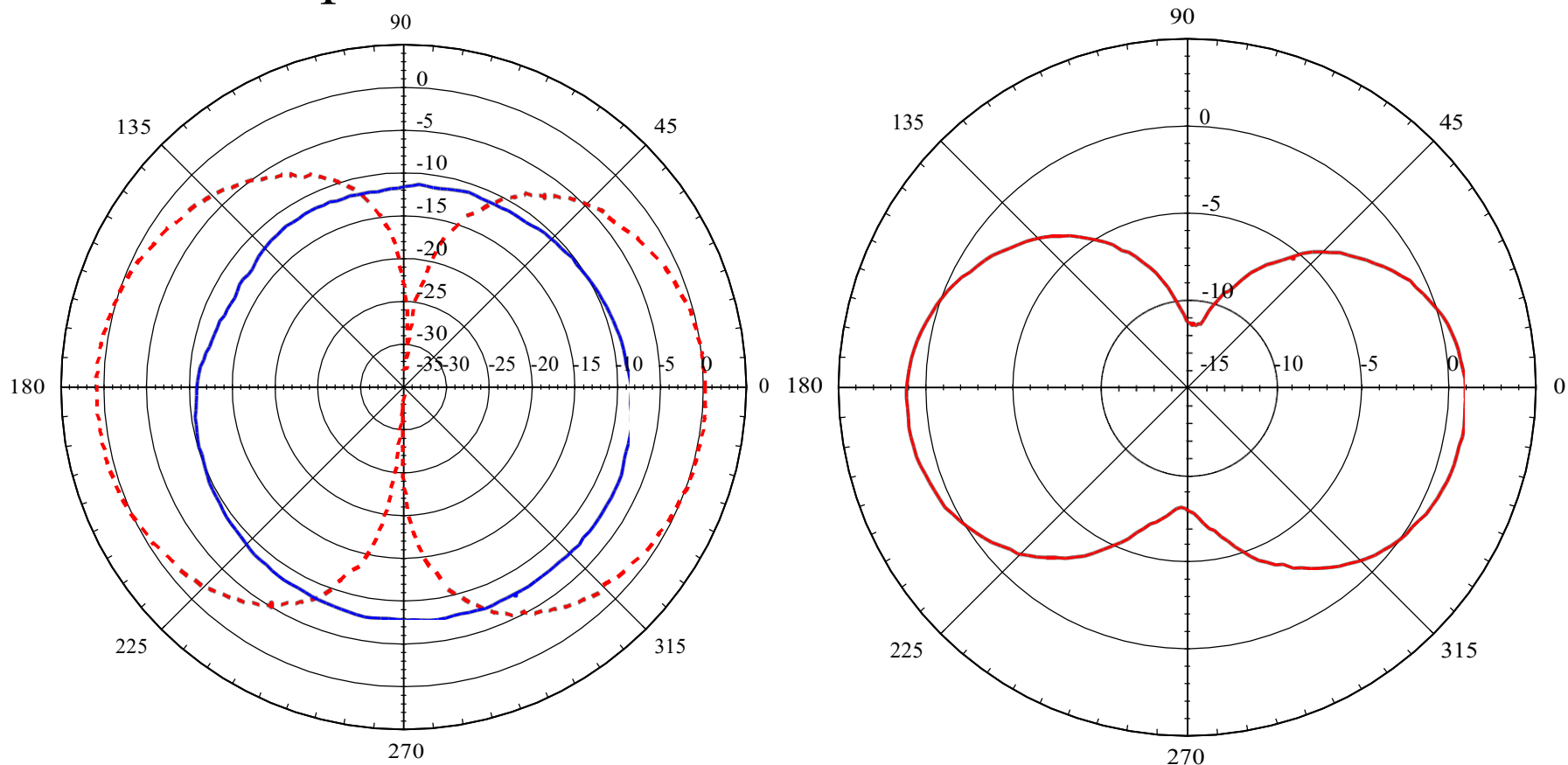


**Figure 3: Antenna Dimensions**

|    |         |
|----|---------|
| L1 | 3.94 mm |
| L2 | 2.70 mm |
| L3 | 5.00 mm |
| L4 | 2.64 mm |
| L5 | 2.00 mm |
| L6 | 4.90 mm |
| W1 | 0.90 mm |
| W2 | 0.50 mm |
| D1 | 0.50 mm |
| D2 | 0.30 mm |
| D3 | 0.30 mm |
| D4 | 0.50 mm |
| D5 | 1.40mm  |
| D6 | 1.70 mm |

**Table 1: Antenna Dimensions**

# Radiation pattern: Antenna 1. XZ Plane at $f = 2.402\text{GHz}$

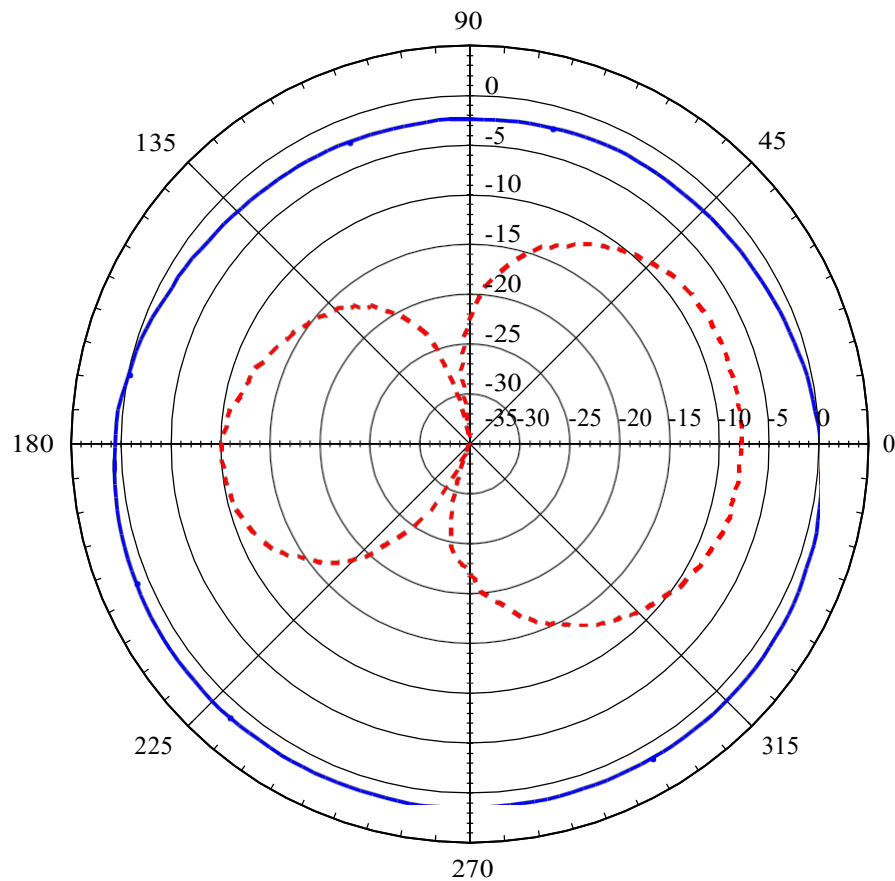


Co-cross polarization field (dBi)

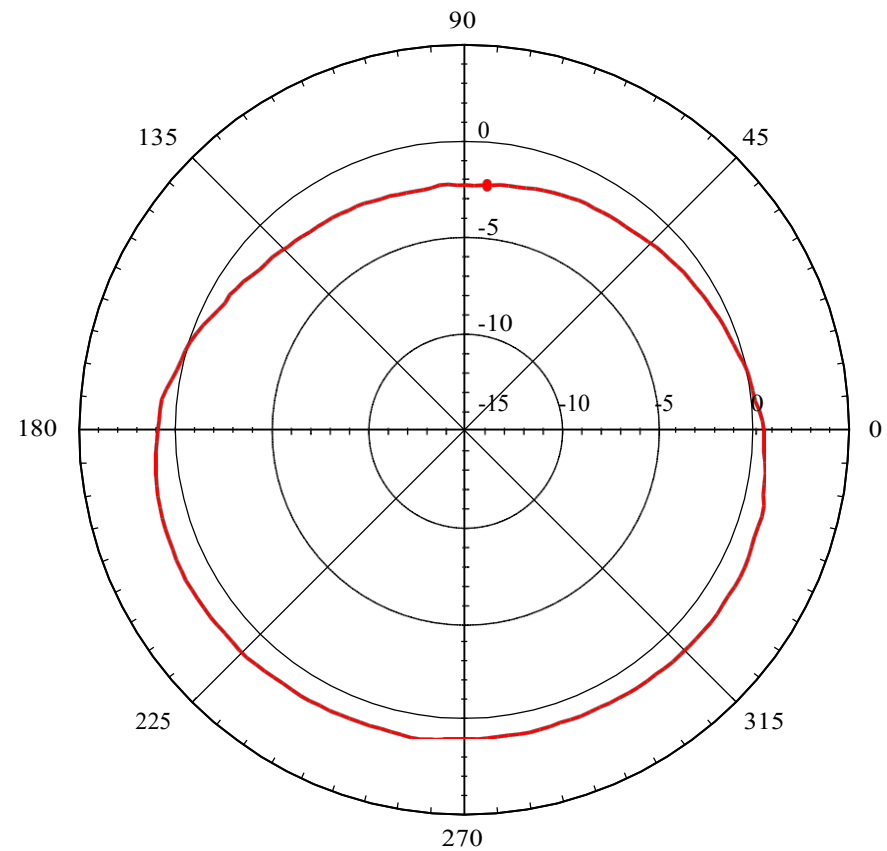
Total field (dBi)

Solid line: vertical polarization  
Dash line: horizontal polarization

# Radiation pattern: Antenna 1. YZ Plane at $f = 2.402\text{GHz}$



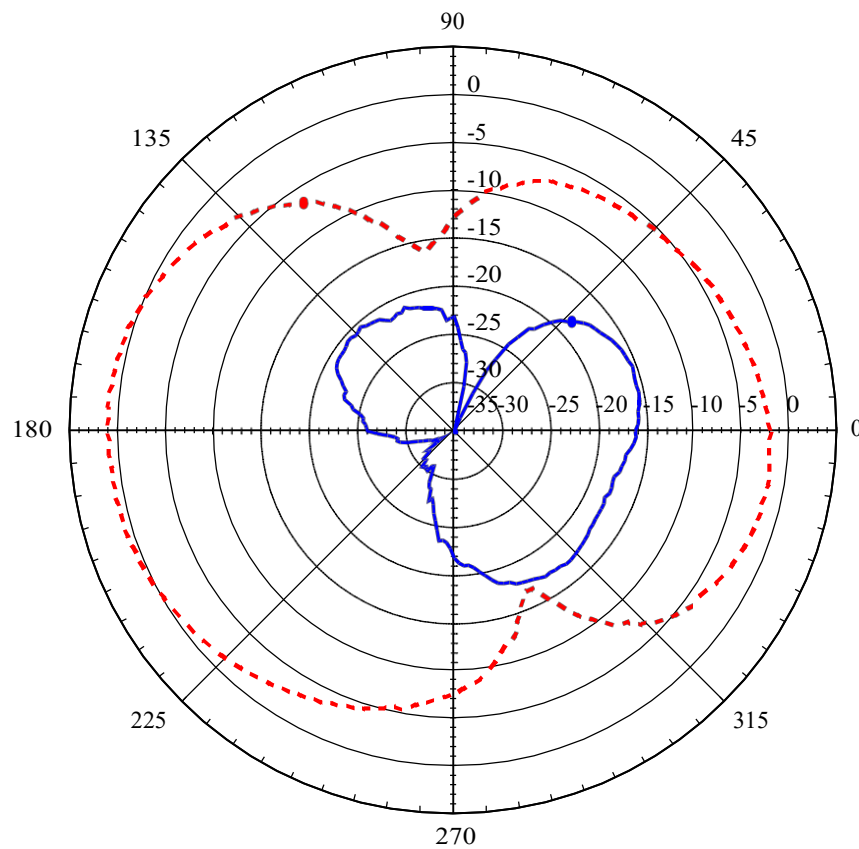
Co-cross polarization field (dBi)



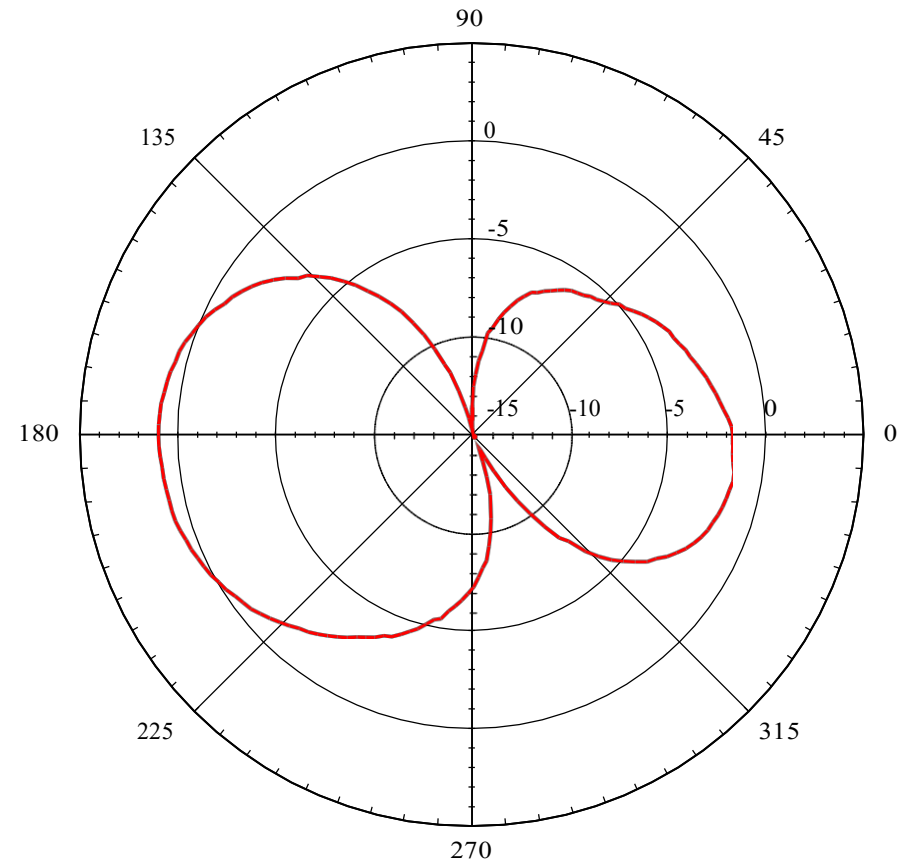
Total field (dBi)

Solid line: vertical polarization  
Dash line: horizontal polarization

# Radiation pattern: Antenna 1. XY Plane at $f = 2.402\text{GHz}$



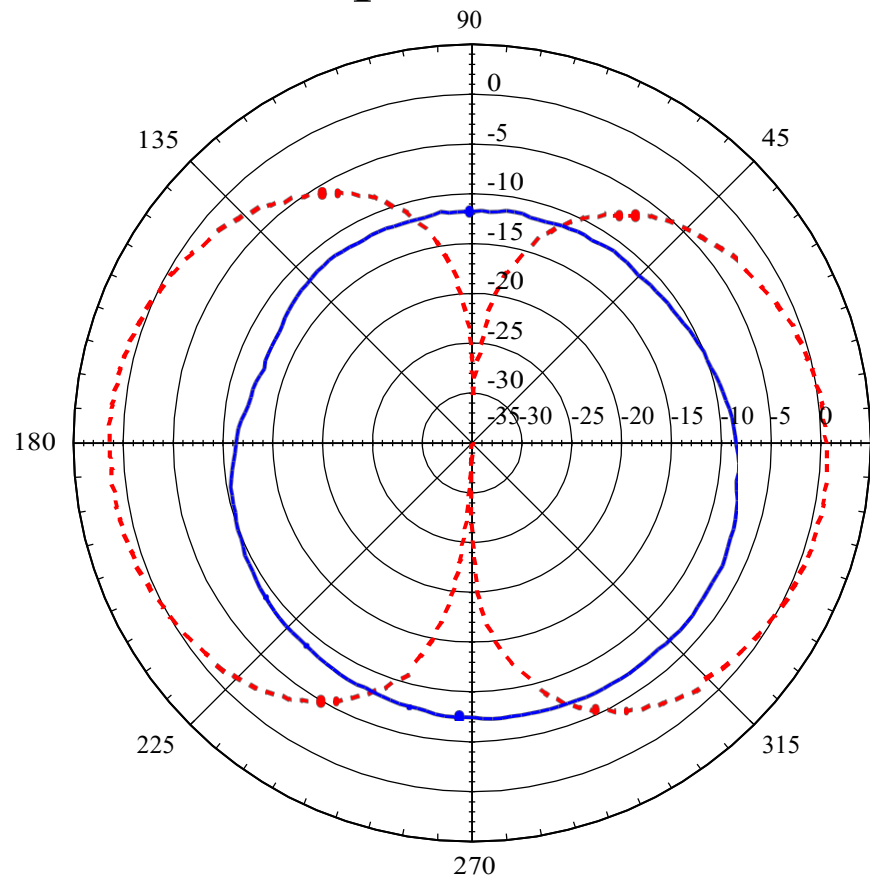
Co-cross polarization field (dBi)



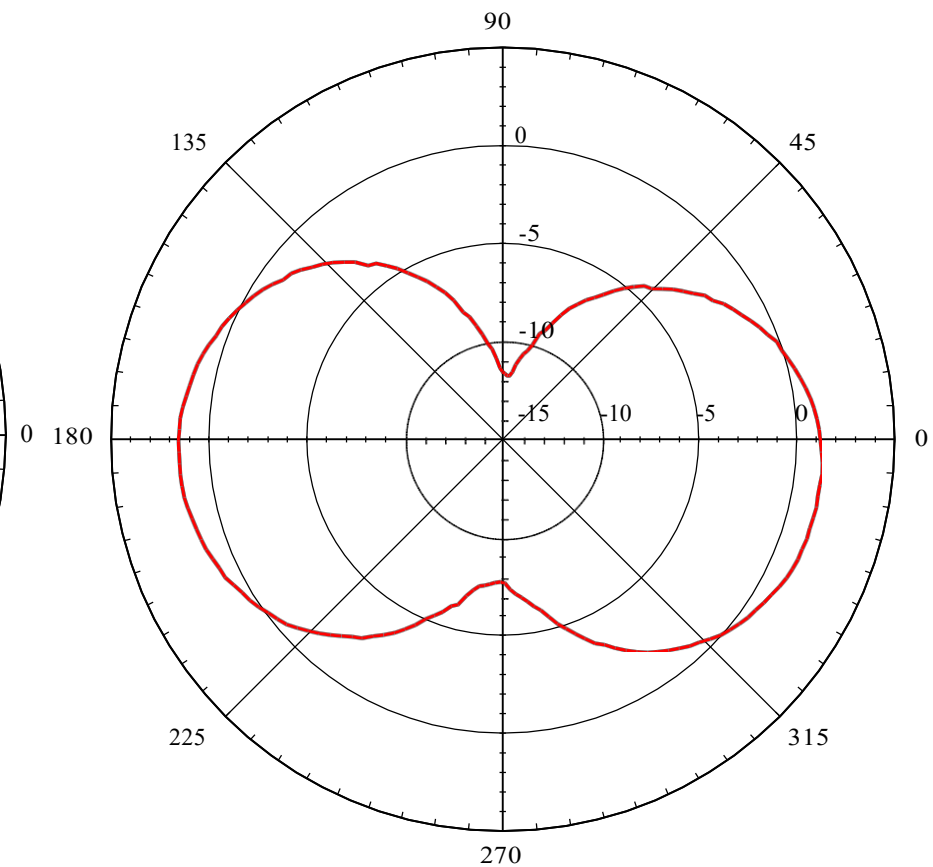
Total field (dBi)

Solid line: vertical polarization  
Dash line: horizontal polarization

# Radiation pattern: Antenna 1. XZ Plane at $f = 2.441\text{GHz}$



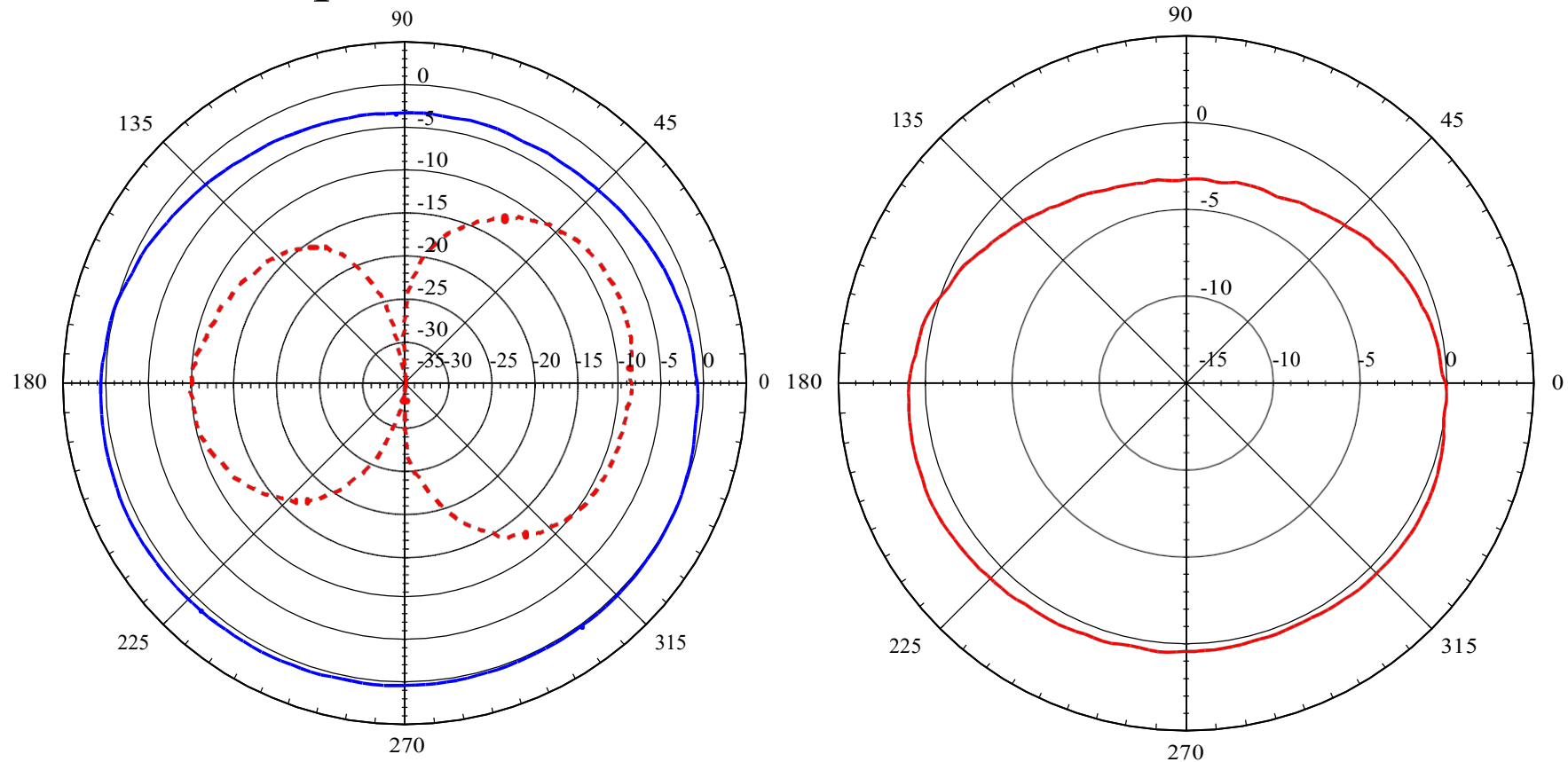
Co-cross polarization field (dBi)



Total field (dBi)

Solid line: vertical polarization  
Dash line: horizontal polarization

# Radiation pattern: Antenna 1. YZ Plane at $f = 2.441\text{GHz}$

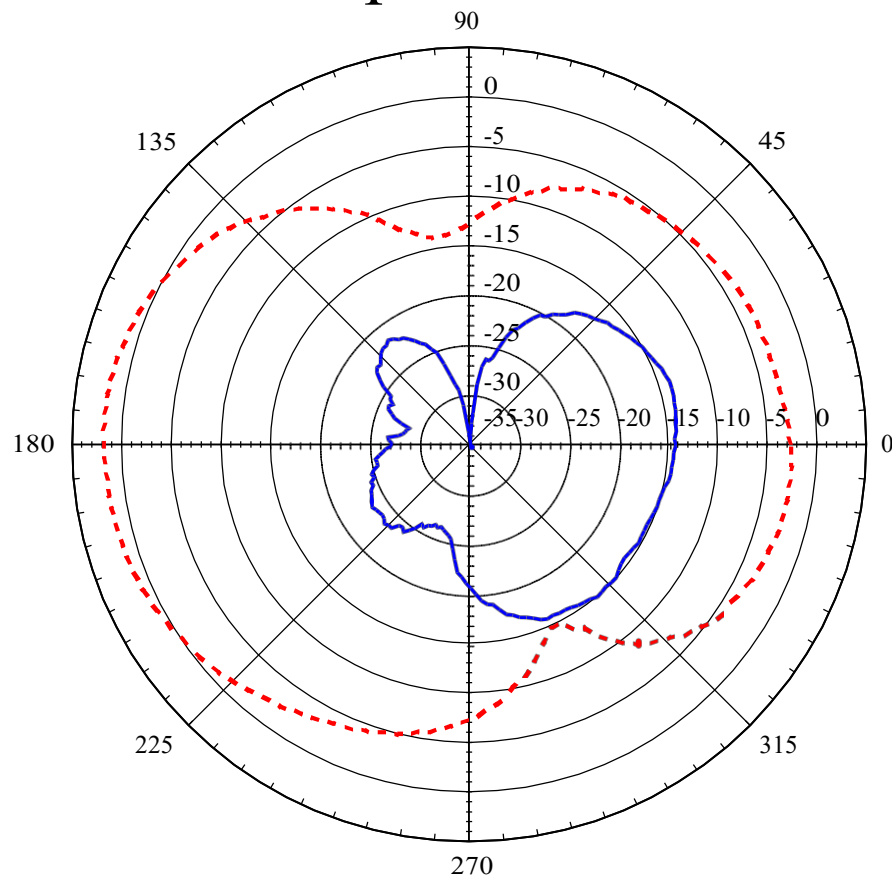


Co-cross polarization field (dBi)

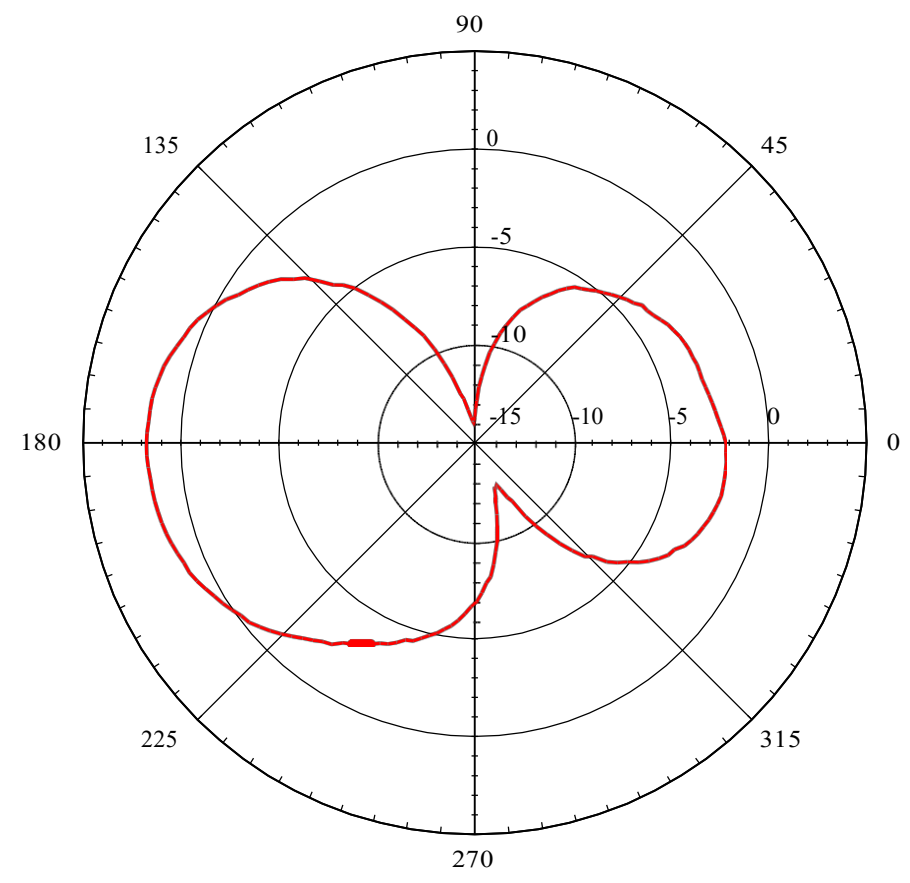
Total field (dBi)

Solid line: vertical polarization  
Dash line: horizontal polarization

# Radiation pattern: Antenna 1. XY Plane at $f = 2.441\text{GHz}$



Co-cross polarization field (dBi)

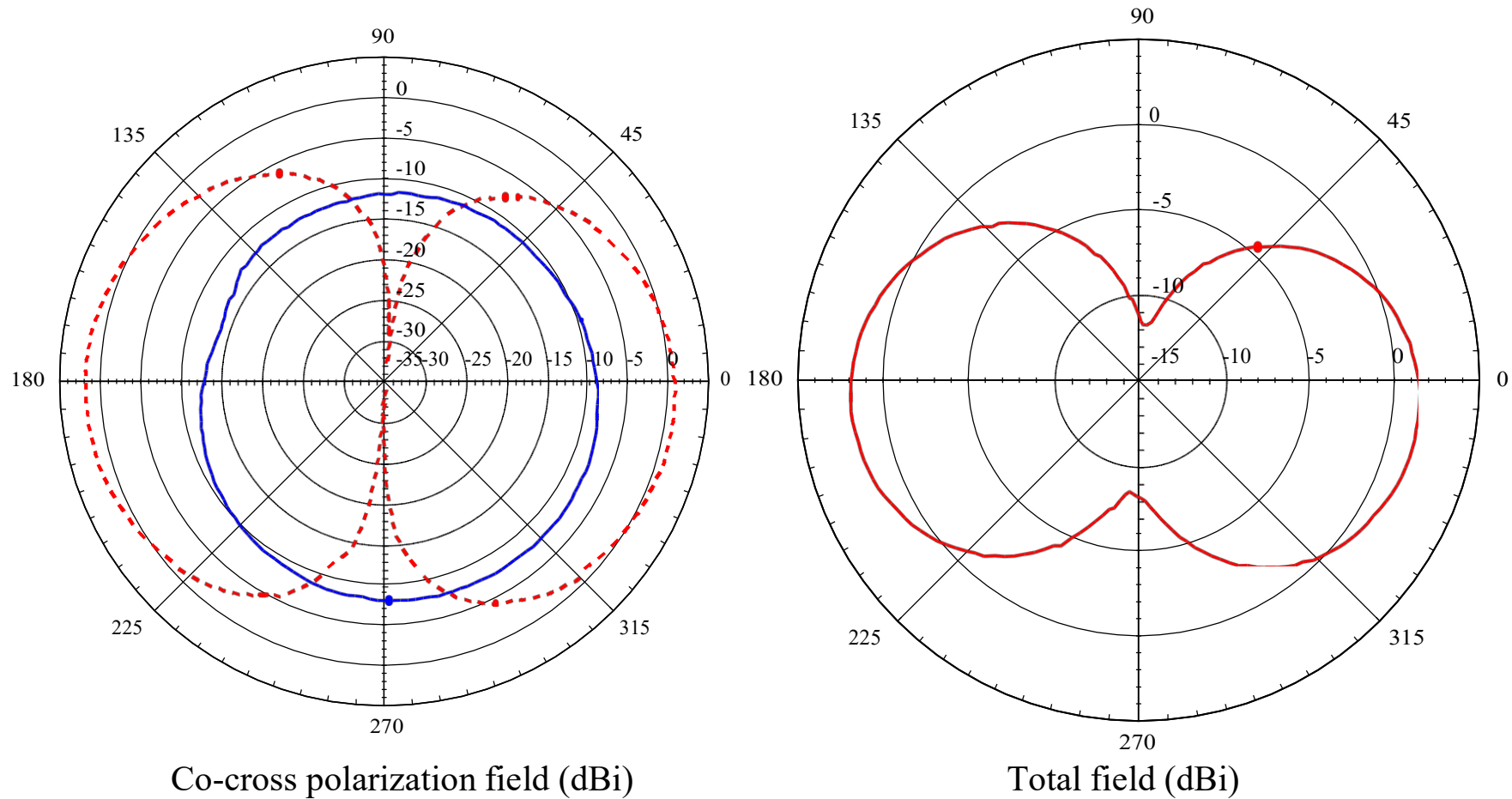


Total field (dBi)

Solid line: vertical polarization  
Dash line: horizontal polarization

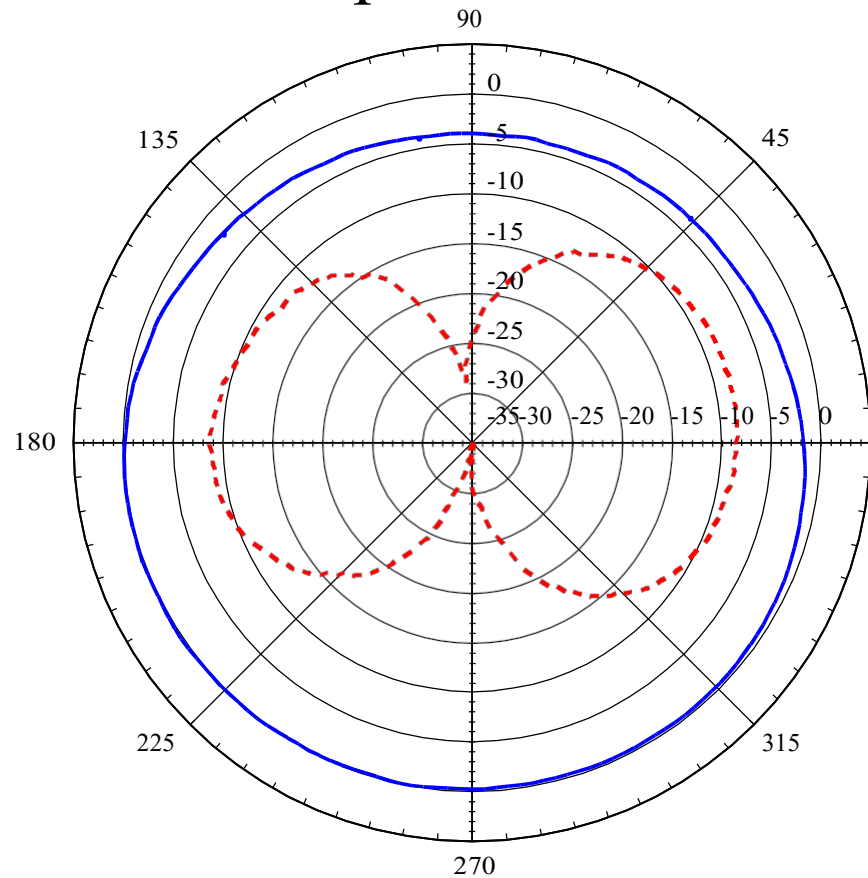


# Radiation pattern: Antenna 1. XZ Plane at $f = 2.480\text{GHz}$



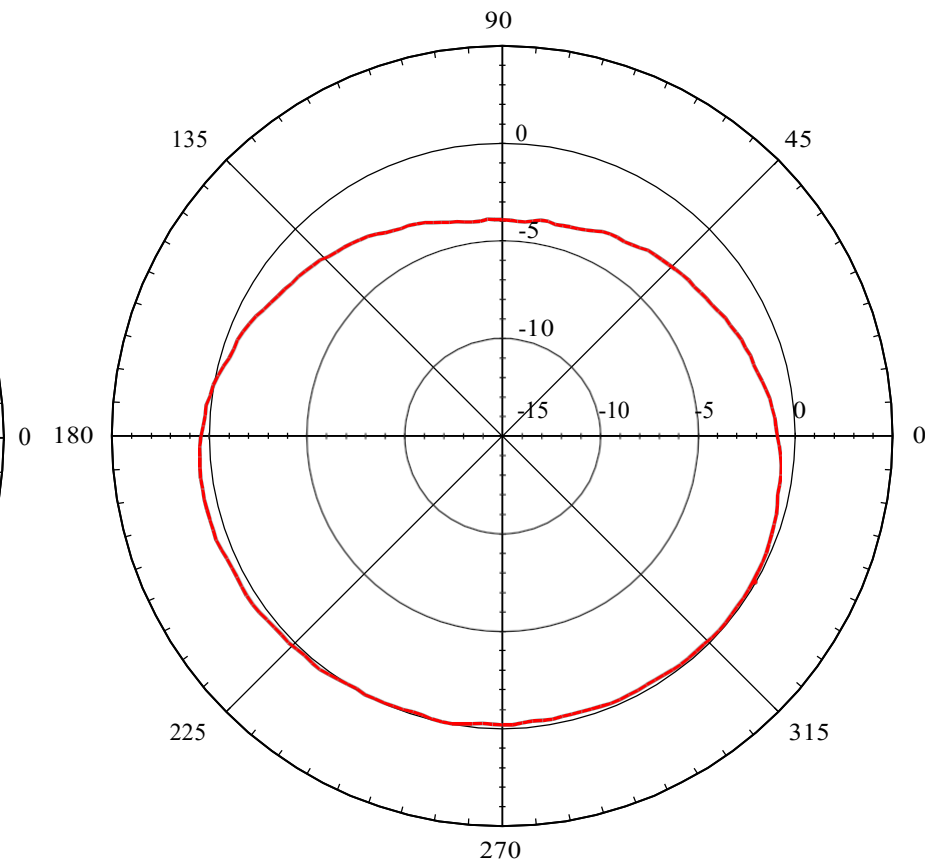
Solid line: vertical polarization  
Dash line: horizontal polarization

# Radiation pattern: Antenna 1. YZ Plane at $f = 2.480\text{GHz}$



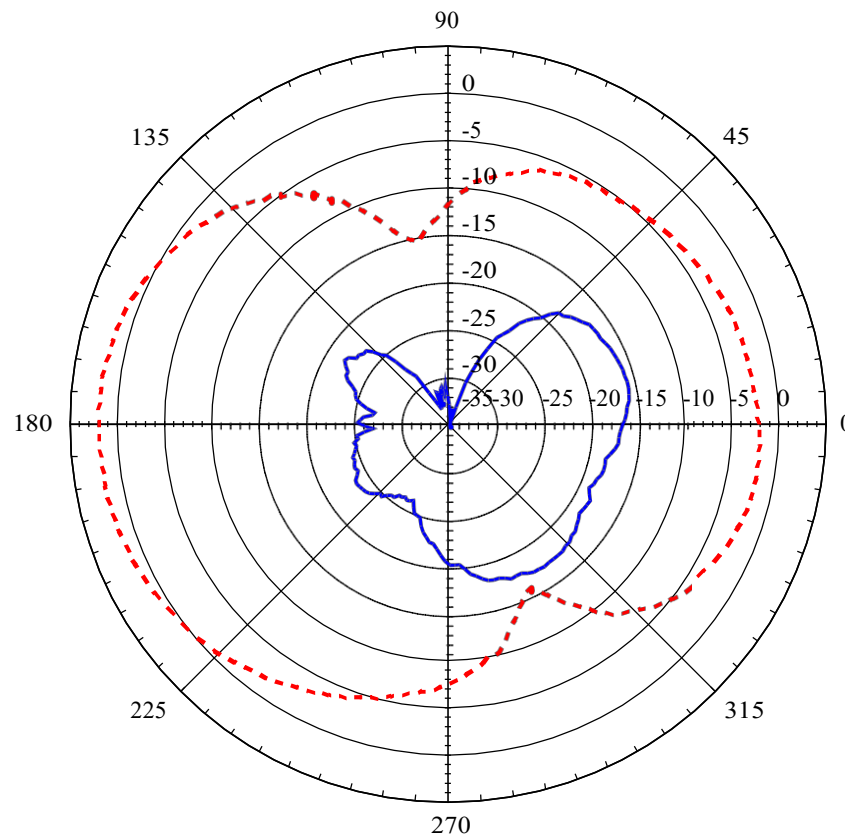
Co-cross polarization field (dBi)

Solid line: vertical polarization  
Dash line: horizontal polarization

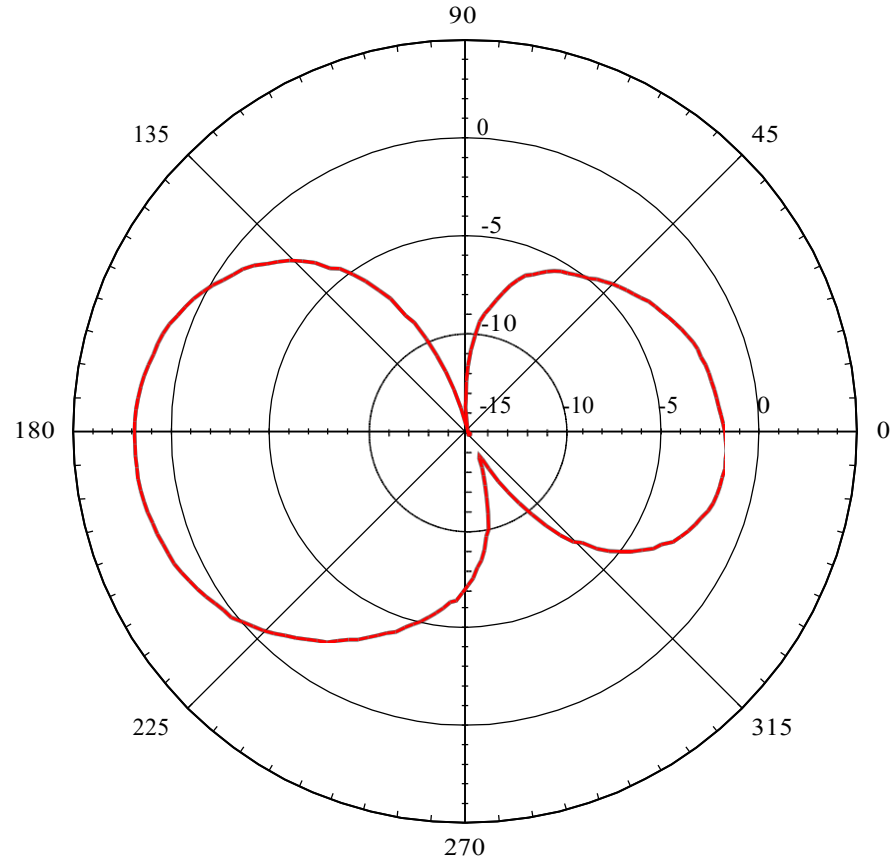


Total field (dBi)

# Radiation pattern: Antenna 1. XY Plane at $f = 2.480\text{GHz}$



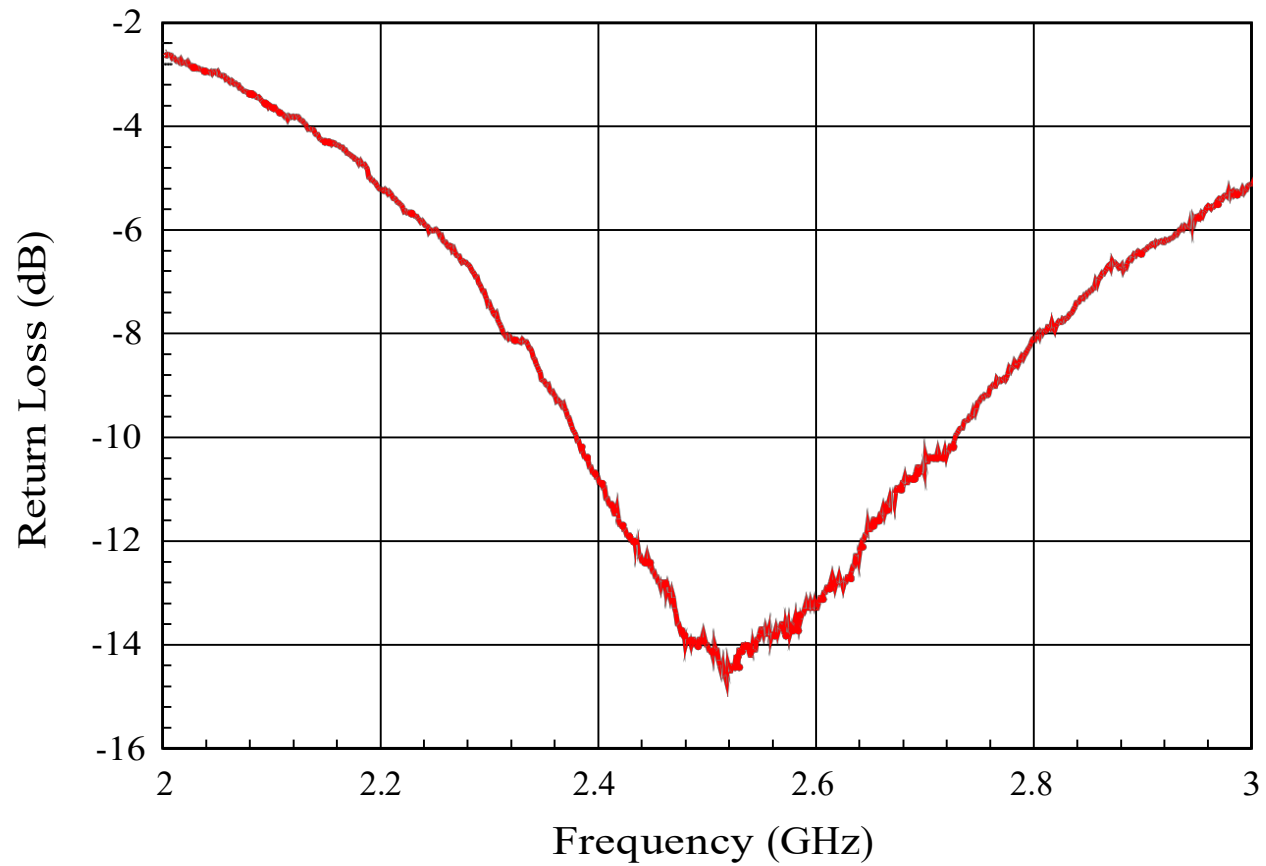
Co-cross polarization field (dBi)



Total field (dBi)

Solid line: vertical polarization  
Dash line: horizontal polarization

# Return Loss: Antenna 1



BW(-10dB) 13.48%

# Measurements summary

MAX Gain 1.87dBi

|           | Frequency (GHz) | Plane | Return Loss (dB) | Polarization | Gain max. (dBi) | $\theta$ for Gain max. | $\phi$ for Gain max. |
|-----------|-----------------|-------|------------------|--------------|-----------------|------------------------|----------------------|
| Antenna 1 |                 |       |                  |              |                 |                        |                      |
|           | 2.402           | XZ    | -10.90           | Vertical     | -7.8            | 290                    |                      |
|           | 2.402           | XZ    | -10.90           | Horizontal   | 0.786           | 182                    |                      |
|           | 2.402           | YZ    | -10.90           | Vertical     | 1.21            | 226                    |                      |
|           | 2.402           | YZ    | -10.90           | Horizontal   | -7.75           | 10                     |                      |
|           | 2.402           | XY    | -10.90           | Vertical     | -15.4           |                        | 20                   |
|           | 2.402           | XY    | -10.90           | Horizontal   | 0.93            |                        | 180                  |
|           | 2.441           | XZ    | -12.20           | Vertical     | -7.36           | 318                    |                      |
|           | 2.441           | XZ    | -12.20           | Horizontal   | 1.32            | 180                    |                      |
|           | 2.441           | YZ    | -12.20           | Vertical     | 0.981           | 204                    |                      |
|           | 2.441           | YZ    | -12.20           | Horizontal   | -8.23           | 24                     |                      |
|           | 2.441           | XY    | -12.20           | Vertical     | -14.1           |                        | -14                  |
|           | 2.441           | XY    | -12.20           | Horizontal   | 1.74            |                        | 180                  |
|           | 2.48            | XZ    | -13.80           | Vertical     | -7.95           | 312                    |                      |
|           | 2.48            | XZ    | -13.80           | Horizontal   | 1.81            | 186                    |                      |
|           | 2.48            | YZ    | -13.80           | Vertical     | 0.204           | 214                    |                      |
|           | 2.48            | YZ    | -13.80           | Horizontal   | -8.38           | 8                      |                      |
|           | 2.48            | XY    | -13.80           | Vertical     | -15.8           |                        | 12                   |
|           | 2.48            | XY    | -13.80           | Horizontal   | 1.87            |                        | 180                  |