

# Antenna Specification

Tested Products: HB1-32\_V1.0

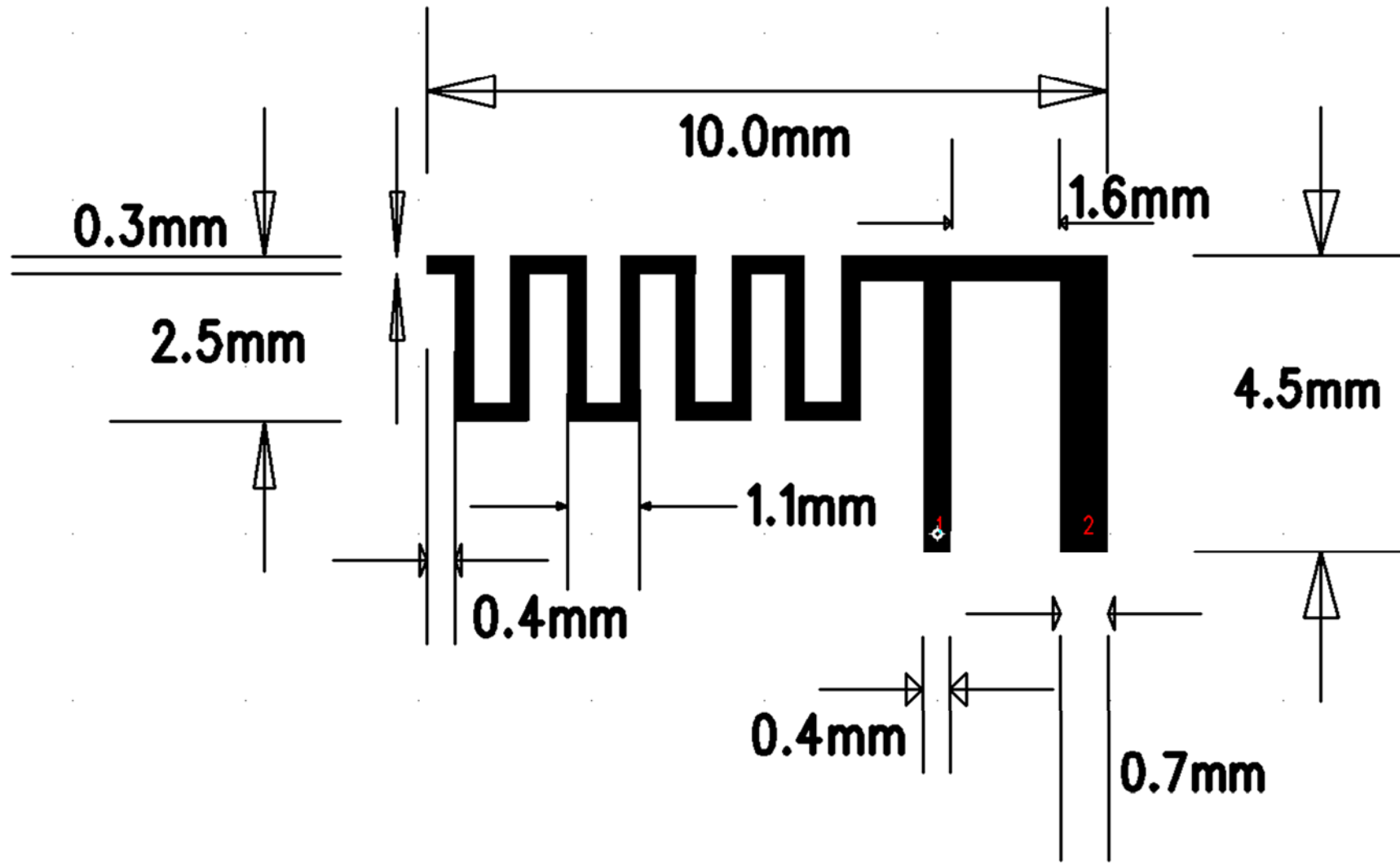
Manufacturer: ShenZhen Belon Technology Co.,Ltd

Antenna type: PCB Antenna

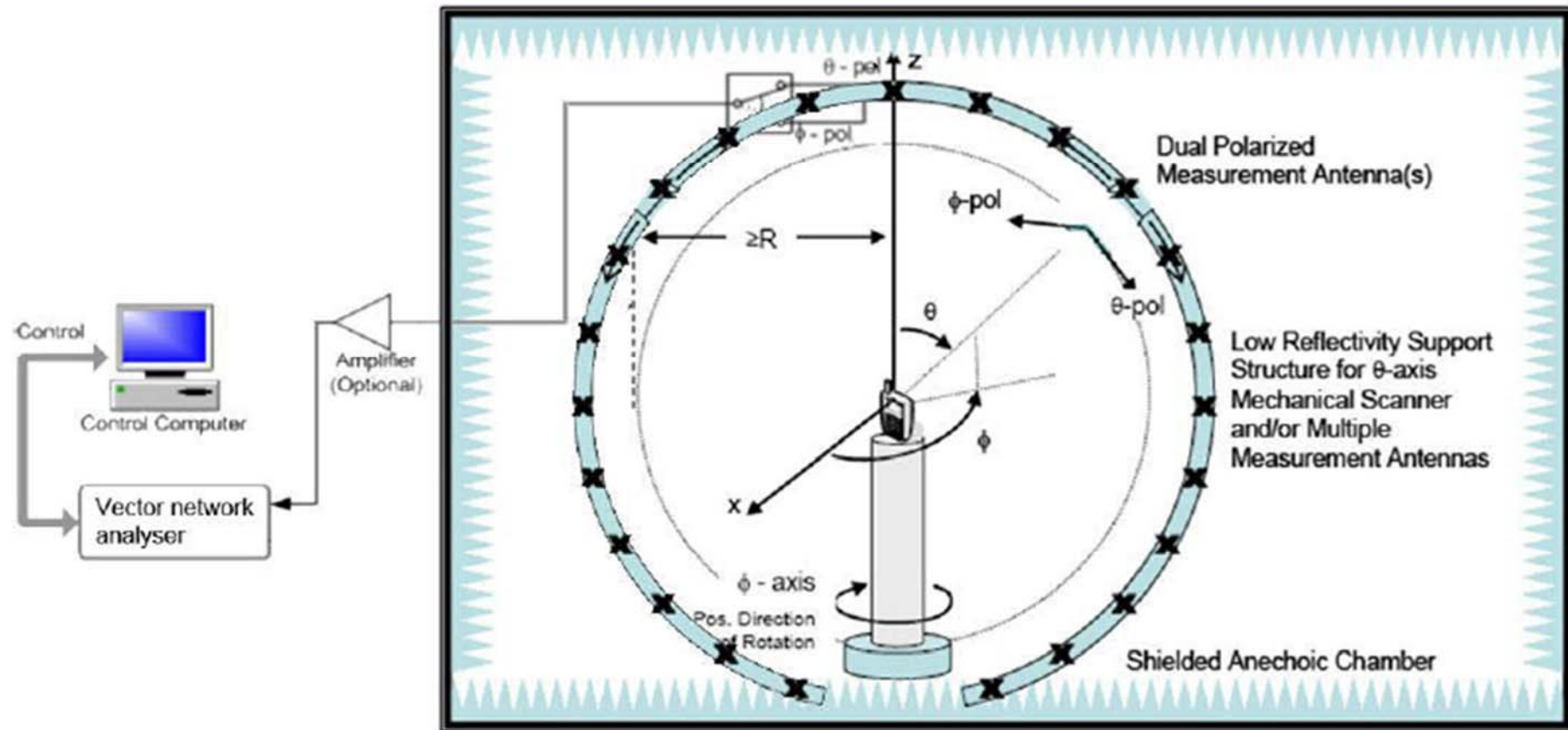
Max Gain: 1.87 dBi

- Antenna 1: integrated antenna.
    - Frequency = 2.402GHz.
    - Frequency = 2.440GHz.
    - Frequency = 2.480GHz.
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- **Antenna Photo & Length(mm)**



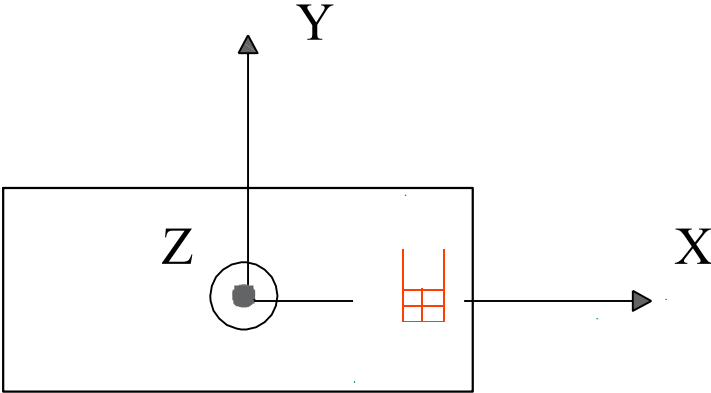
- **Test Setup**



# Coordinate System Reference:Antenna 1.

Top view

Front view

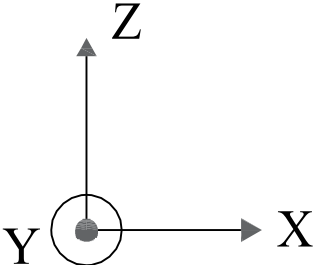


Side view

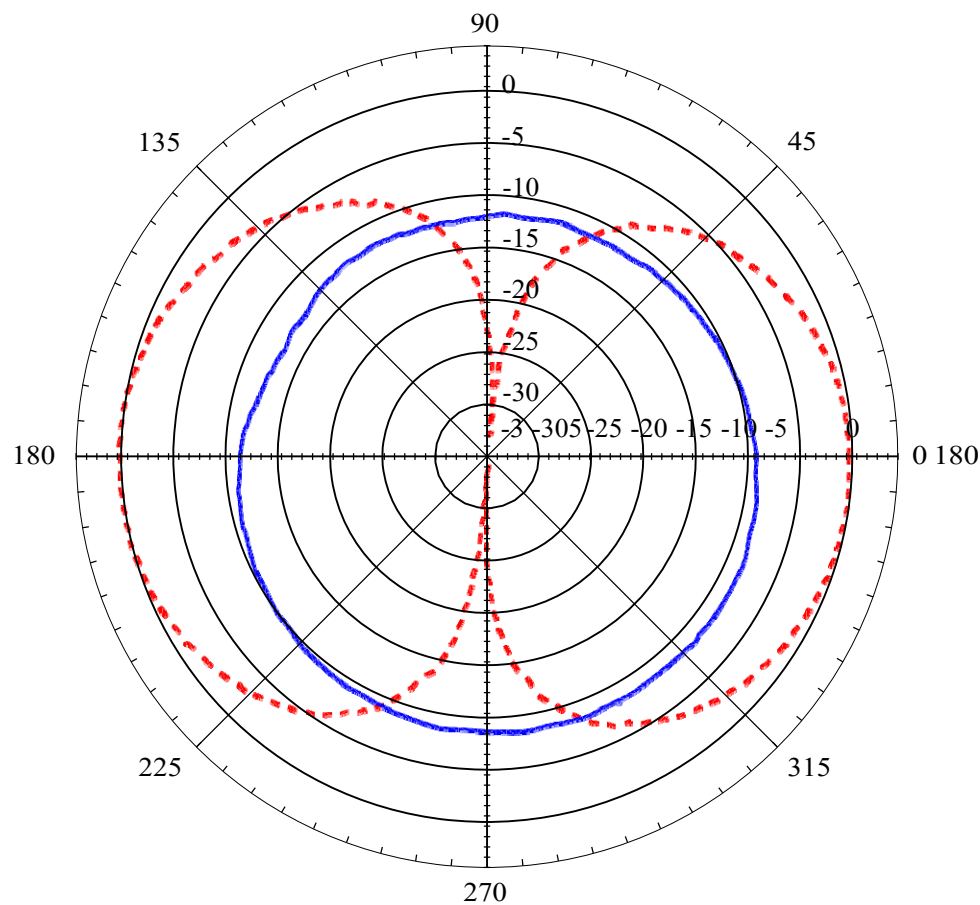
Front view



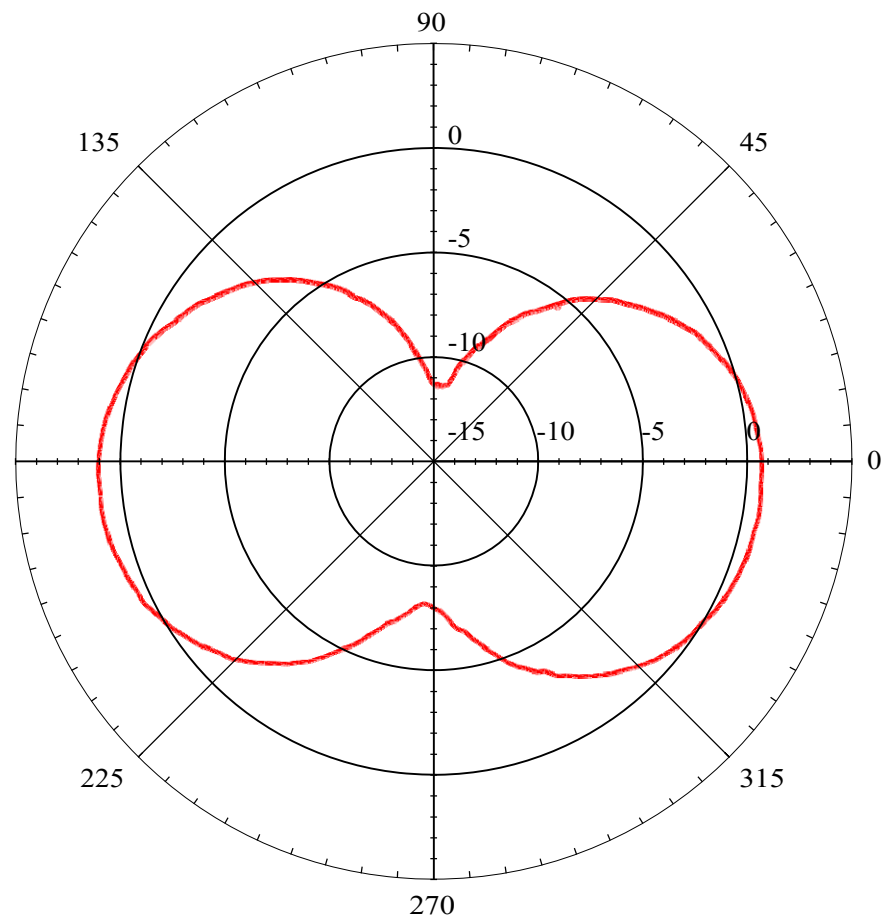
Rear view



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



Co-cross polarization field (dBi)

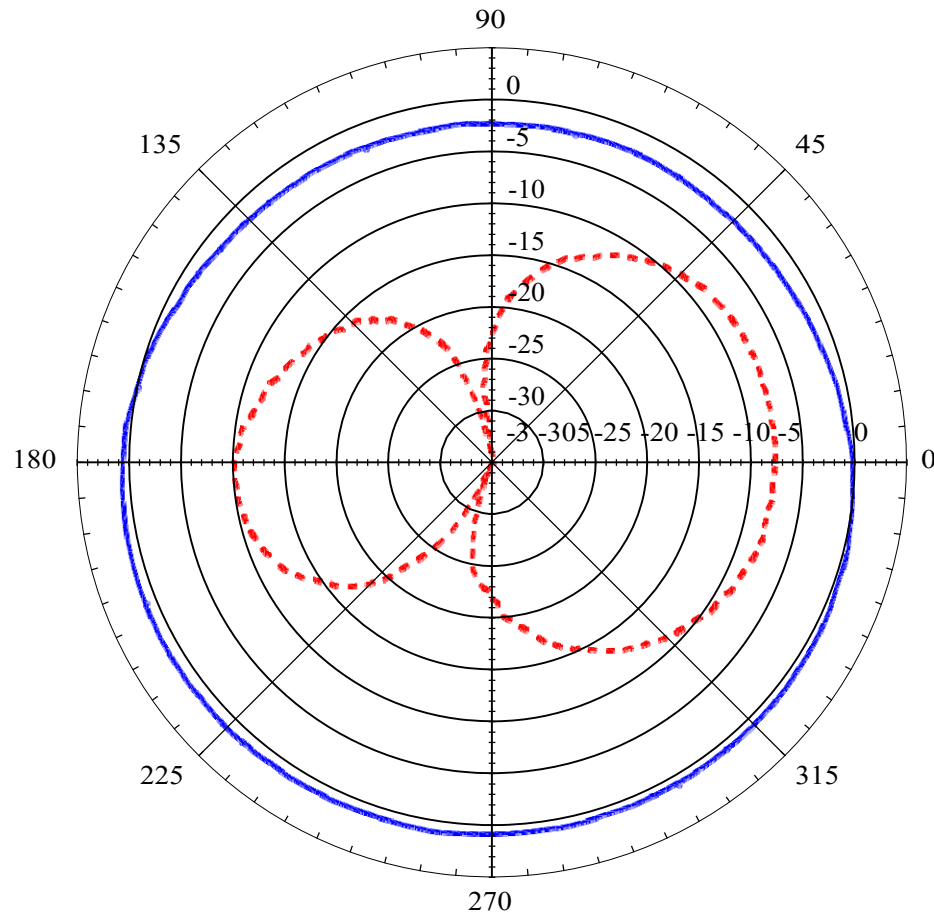


Total field (dBi)

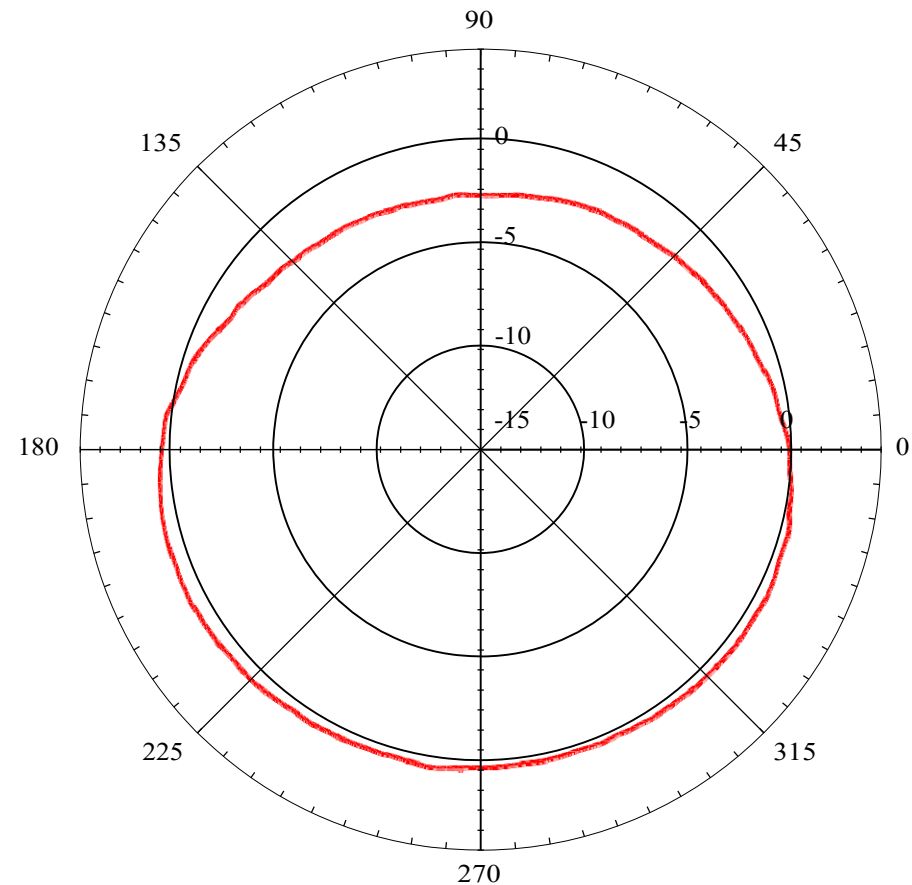
Solid line: vertical polarization  
Dash line: horizontal polarization

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



Co-cross polarization field (dBi)

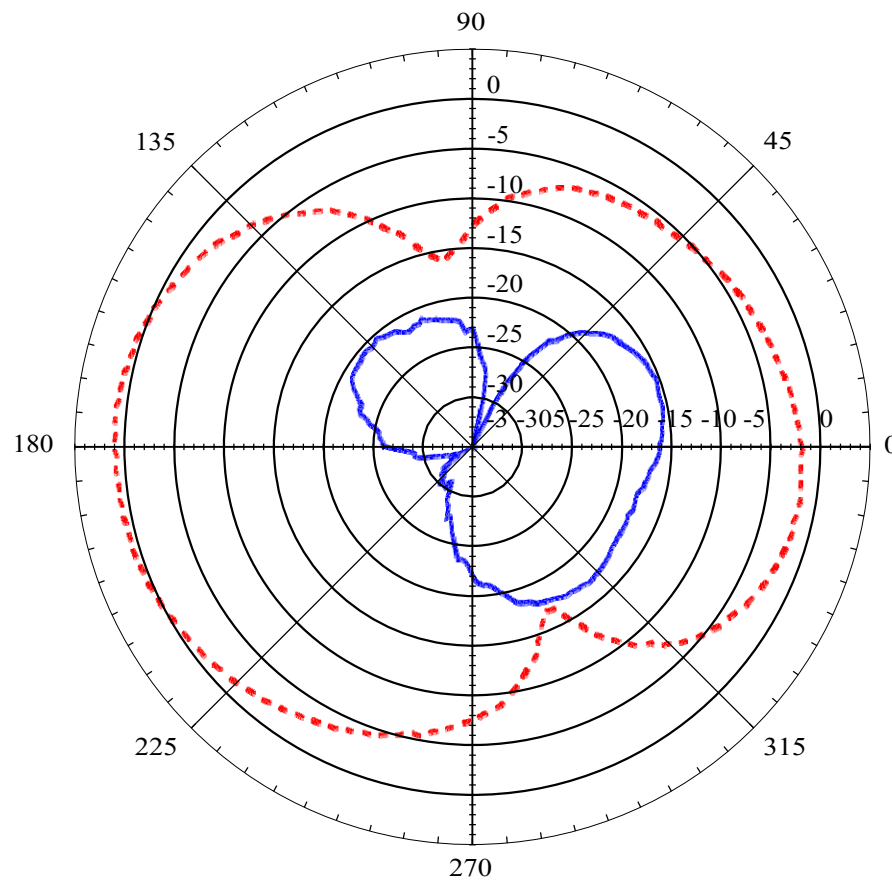


Total field (dBi)

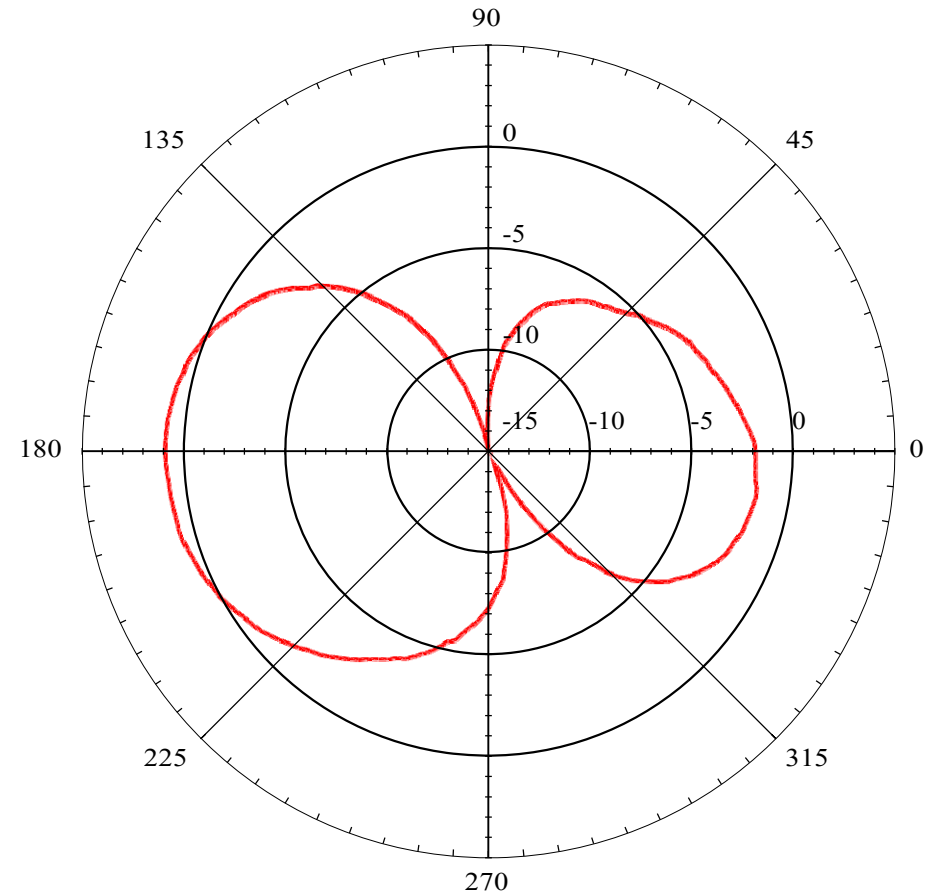
Solid line: vertical polarization

Dash line: horizontal polarization

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



Co-cross polarization field (dBi)

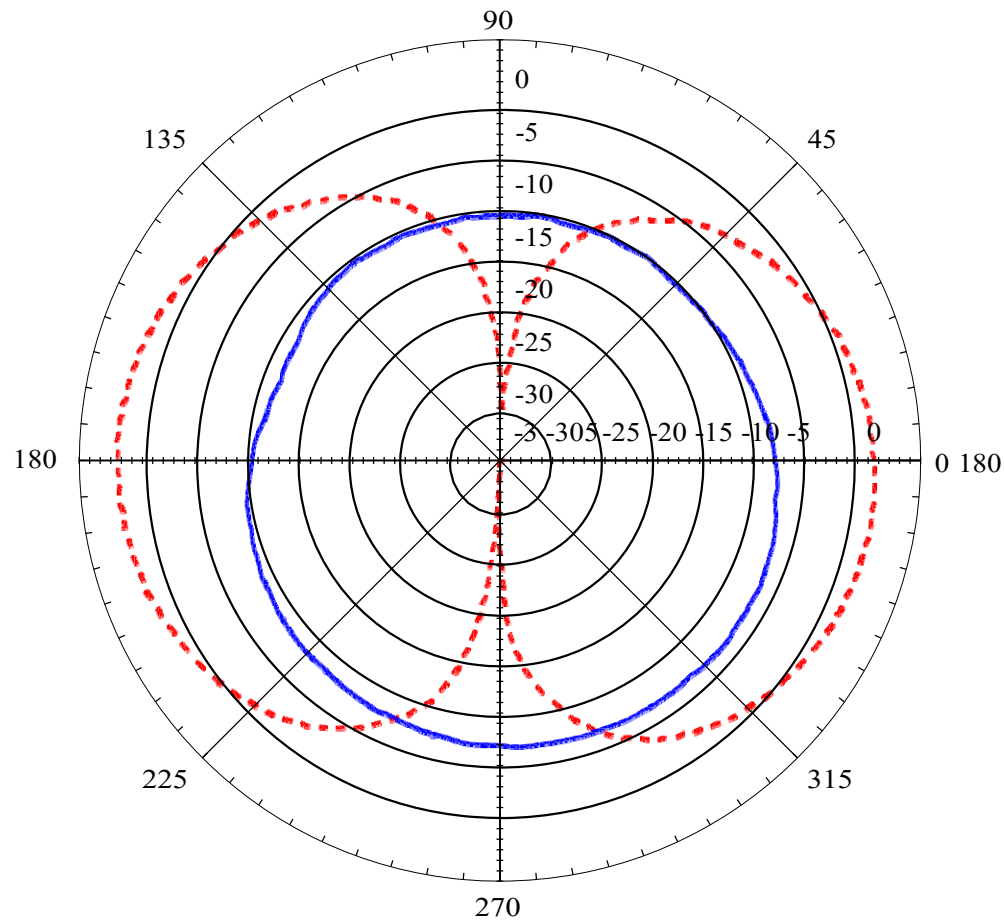


Total field (dBi)

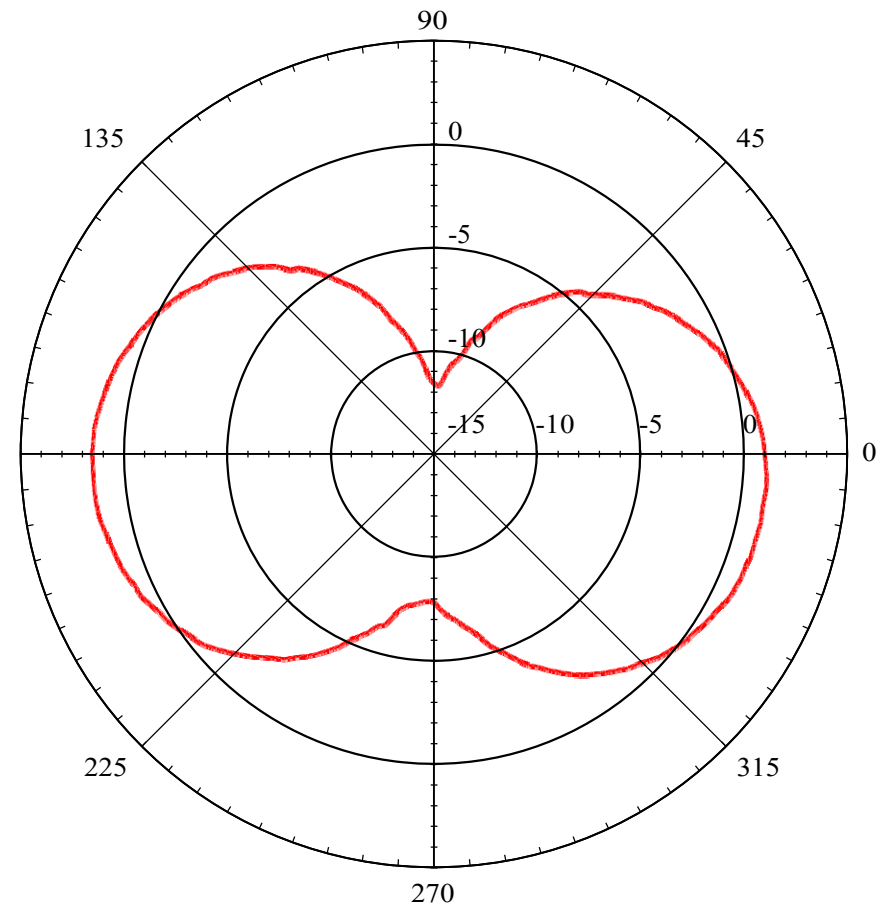
Solid line: vertical polarization

Dash line: horizontal polarization

# Radiation pattern: Antenna 1. XZ Plane at $f = 2.440\text{GHz}$



Co-cross polarization field (dBi)

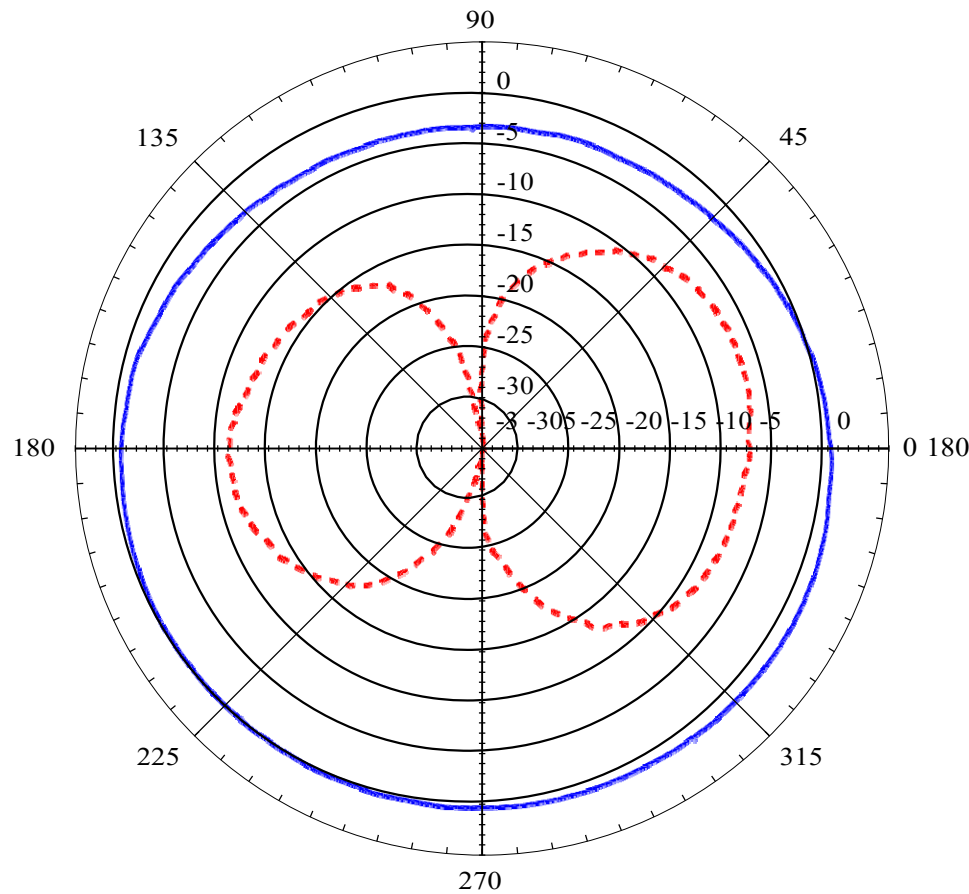


Total field (dBi)

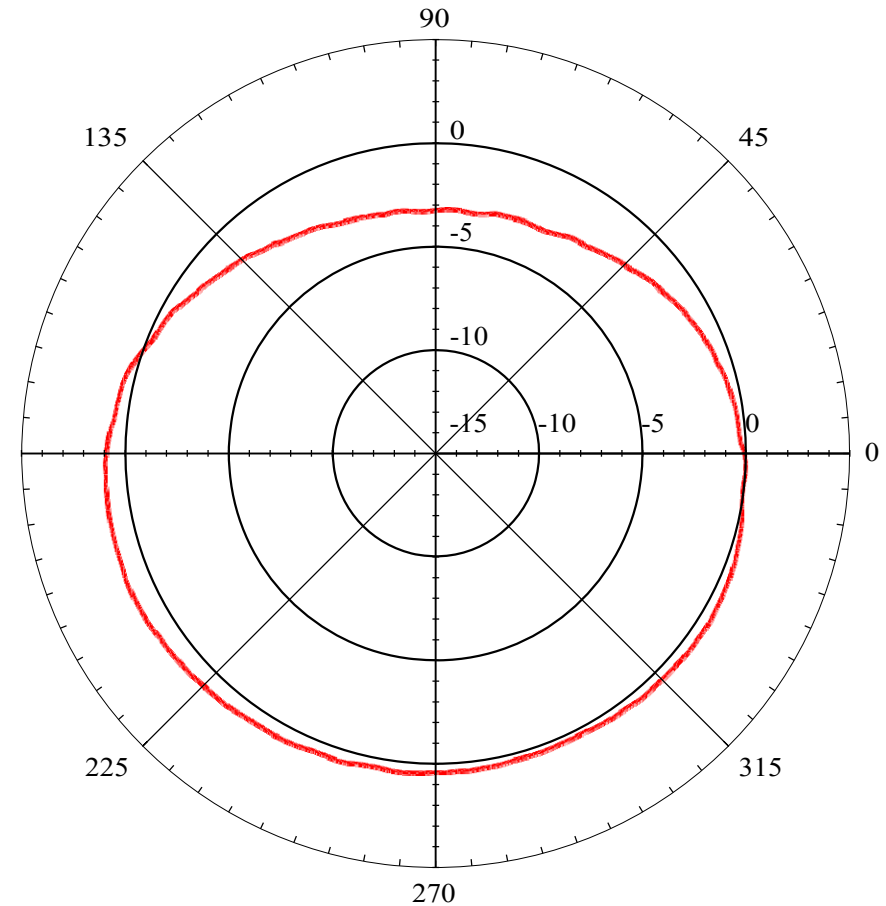
Solid line: vertical polarization  
Dash line: horizontal polarization

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# Radiation pattern: Antenna 1. YZ Plane at $f = 2.440\text{GHz}$



Co-cross polarization field (dBi)

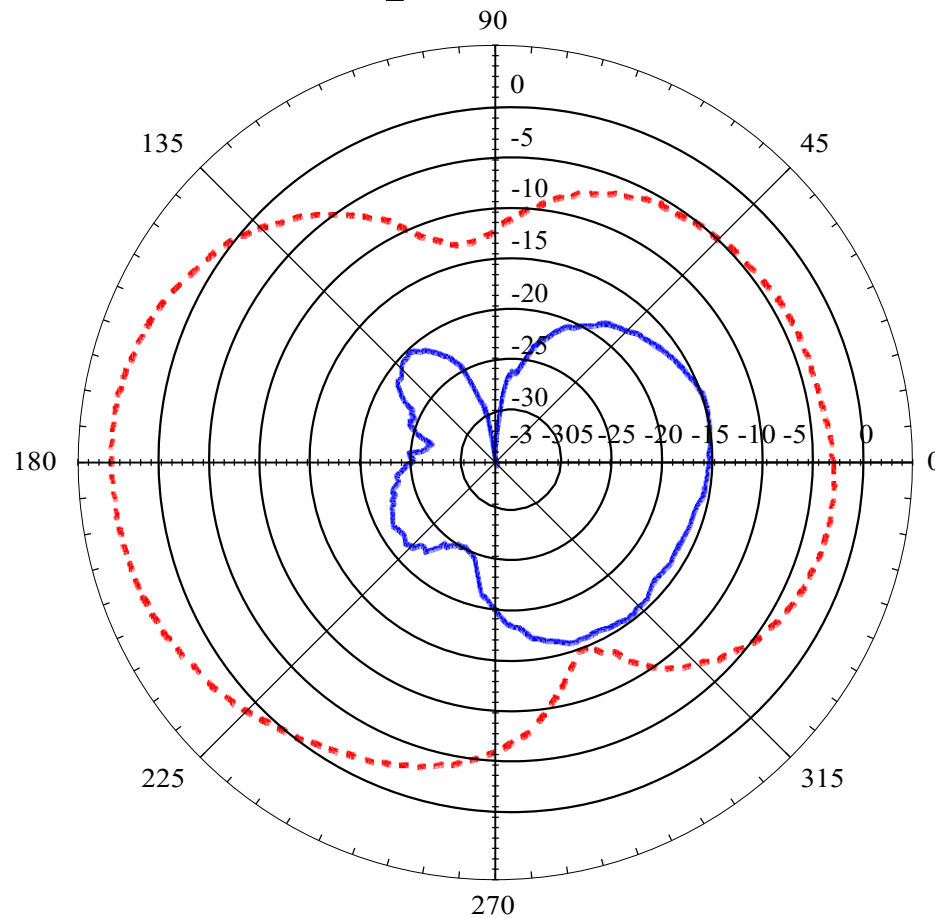


Total field (dBi)

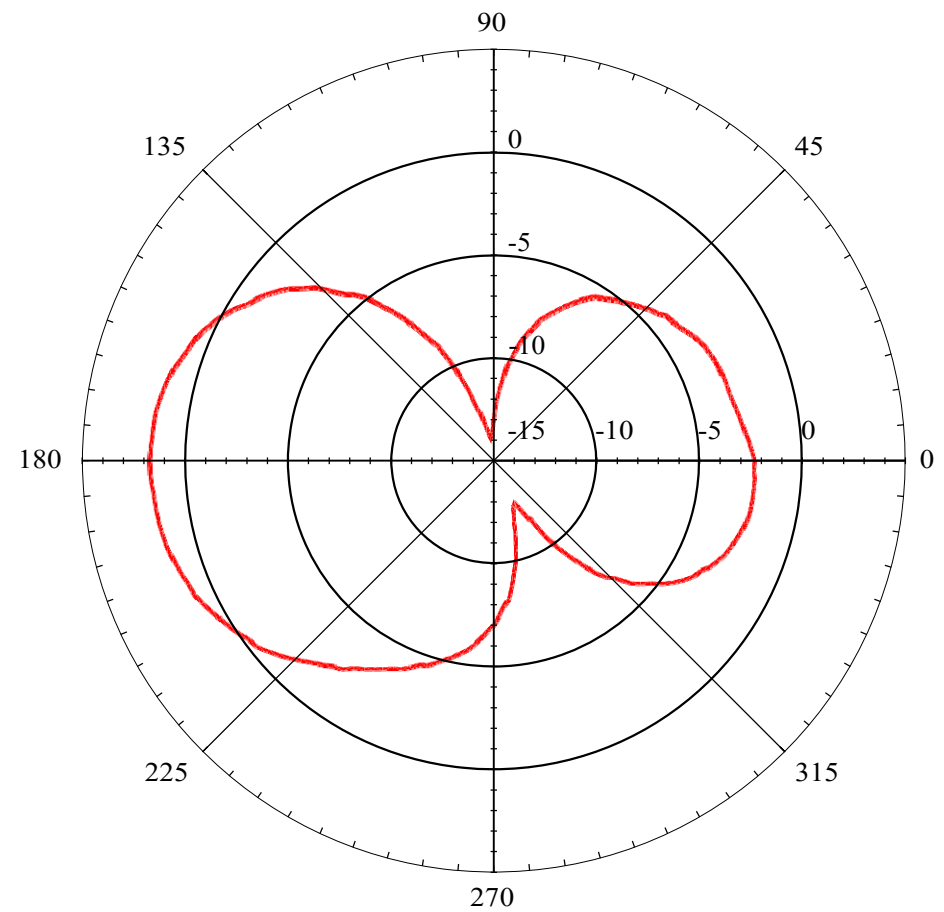
Solid line: vertical polarization  
Dash line: horizontal polarization

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# Radiation pattern: Antenna 1. XY Plane at $f = 2.440\text{GHz}$



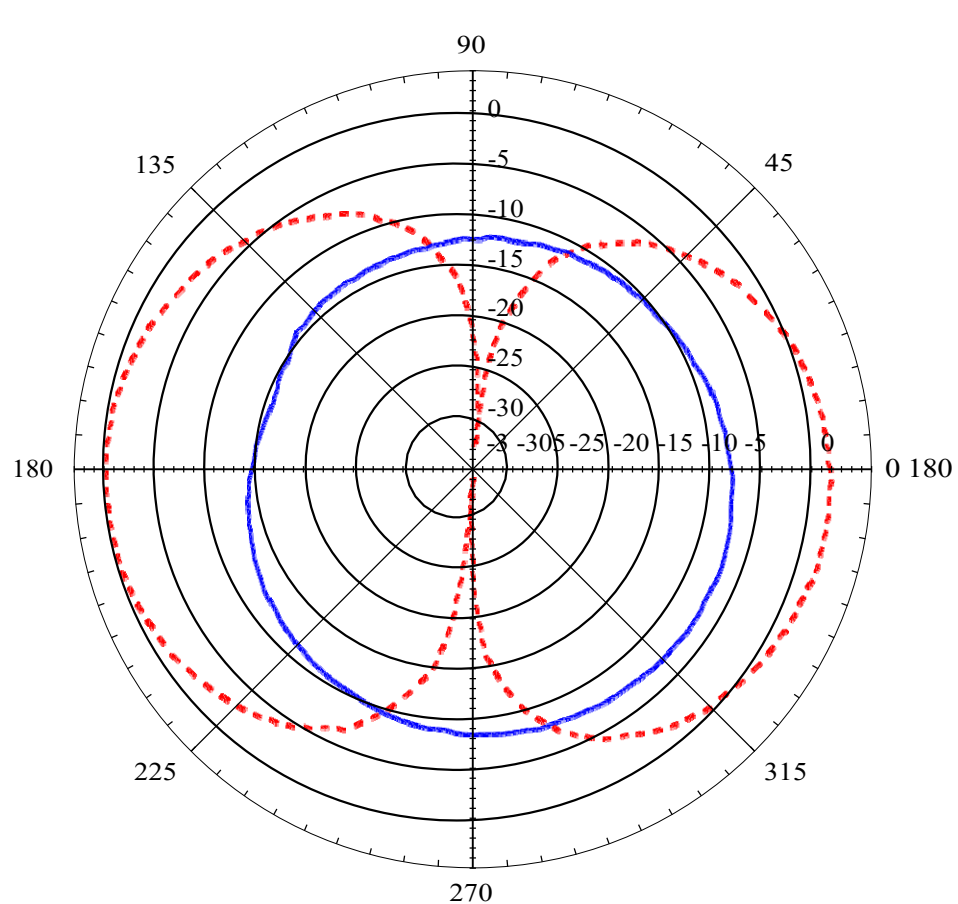
Co-cross polarization field (dBi)



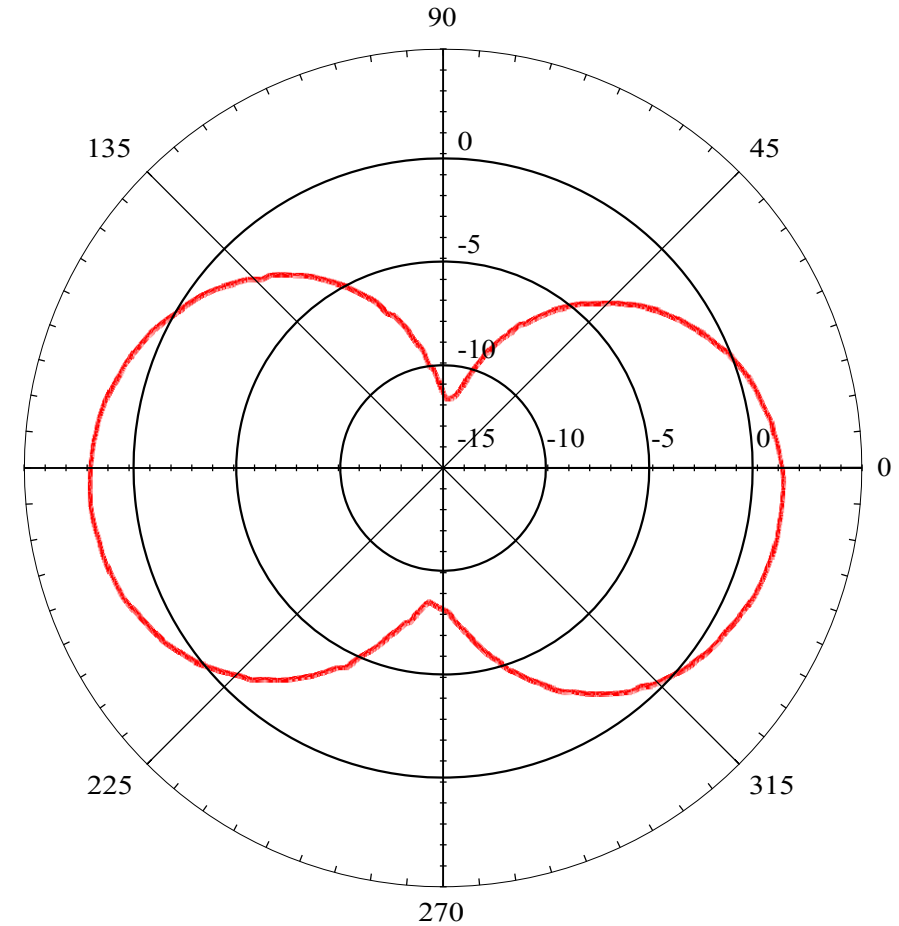
Total field (dBi)

Solid line: vertical polarization  
Dash line: horizontal polarization

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



Co-cross polarization field (dBi)

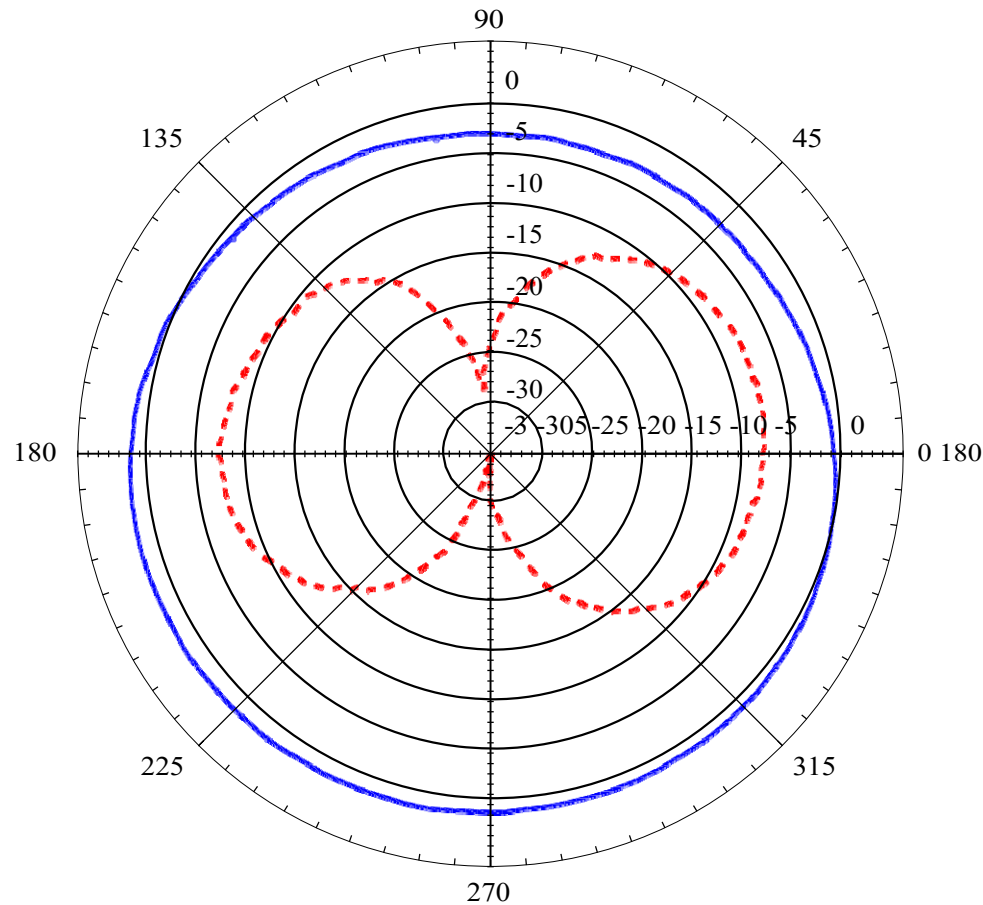


Total field (dBi)

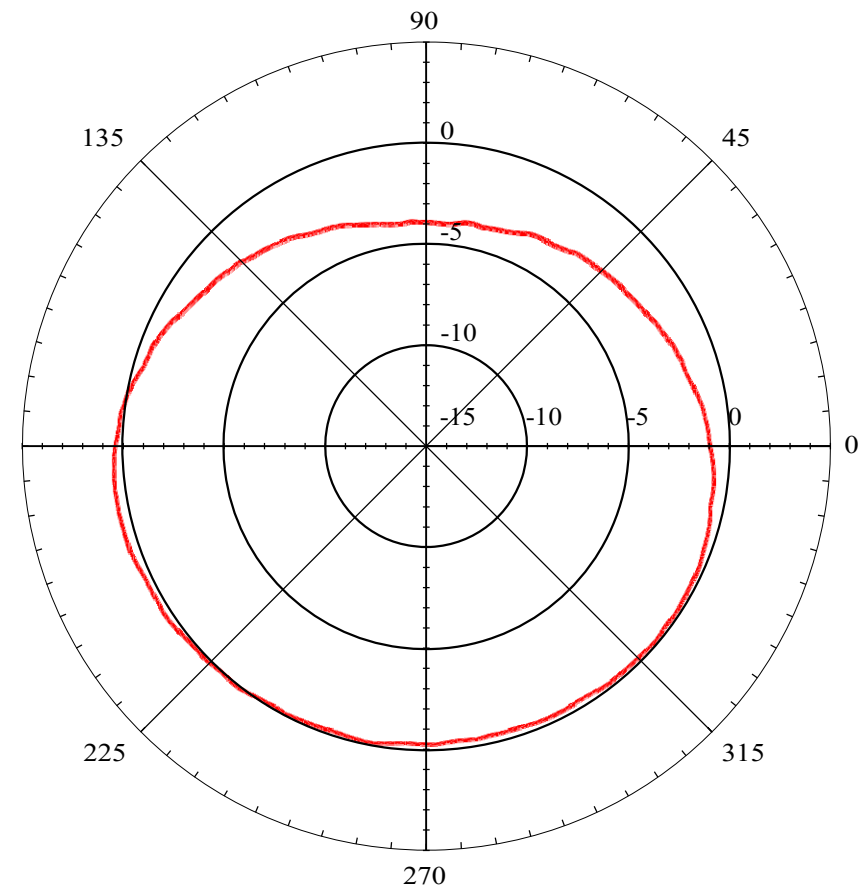
Solid line: vertical polarization  
Dash line: horizontal polarization

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



Co-cross polarization field (dBi)

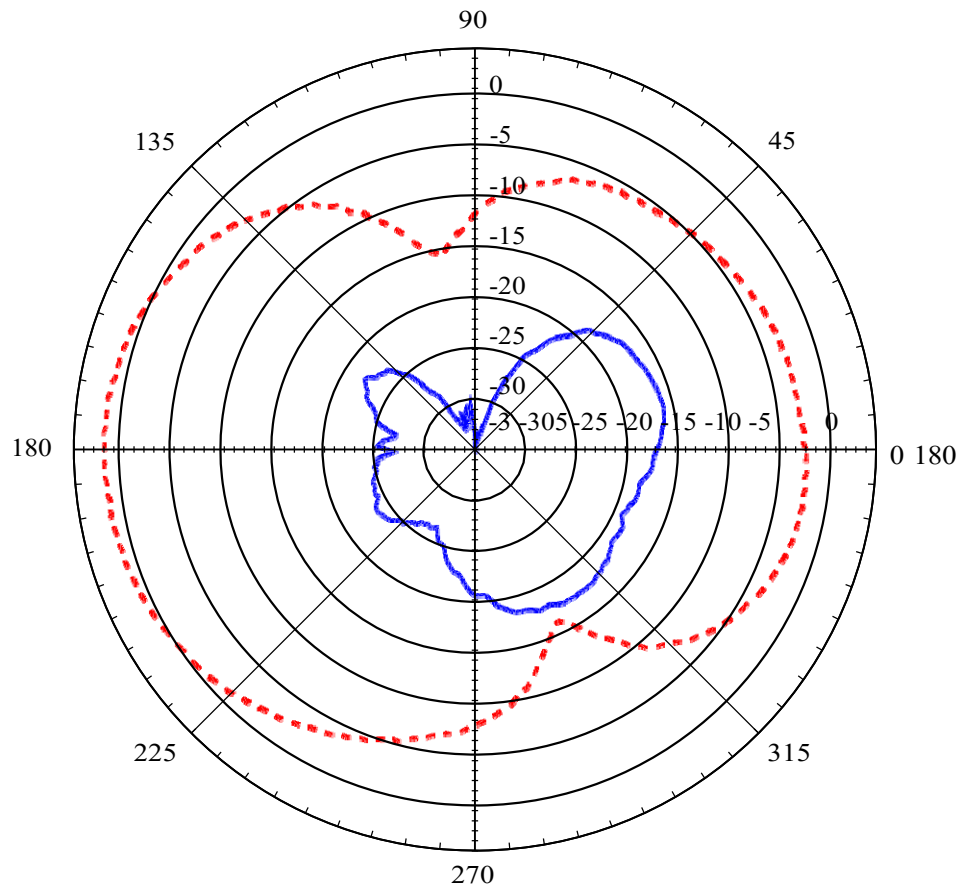


Total field (dBi)

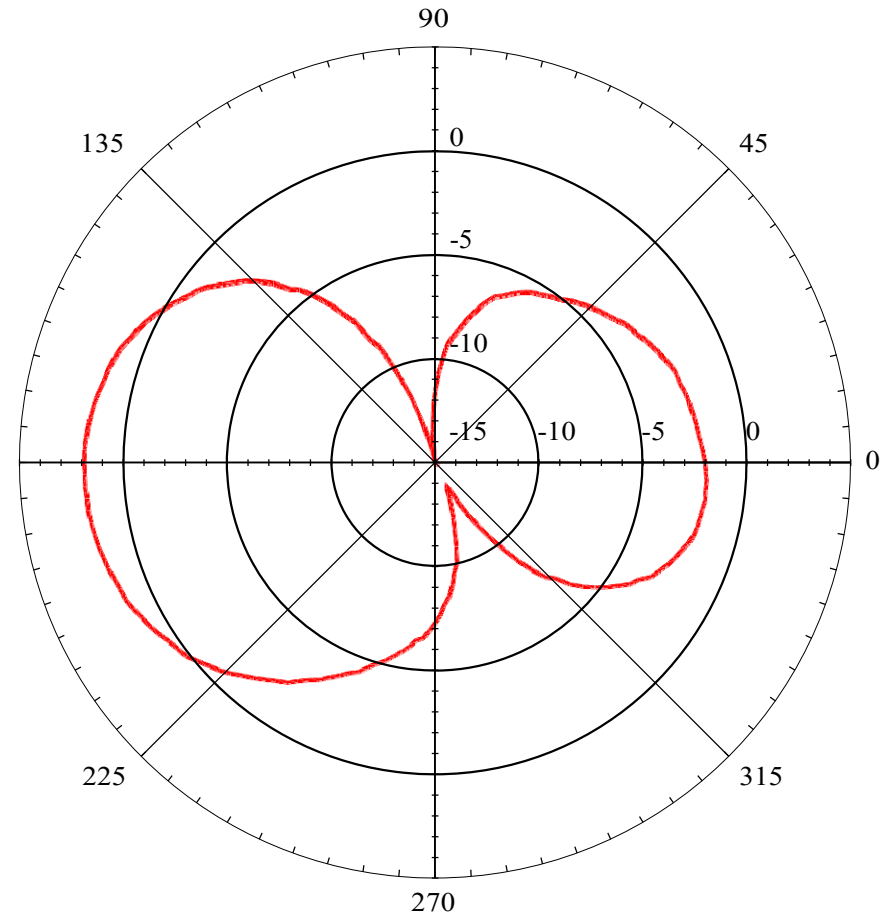
Solid line: vertical polarization

Dash line: horizontal polarization

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



Co-cross polarization field (dBi)

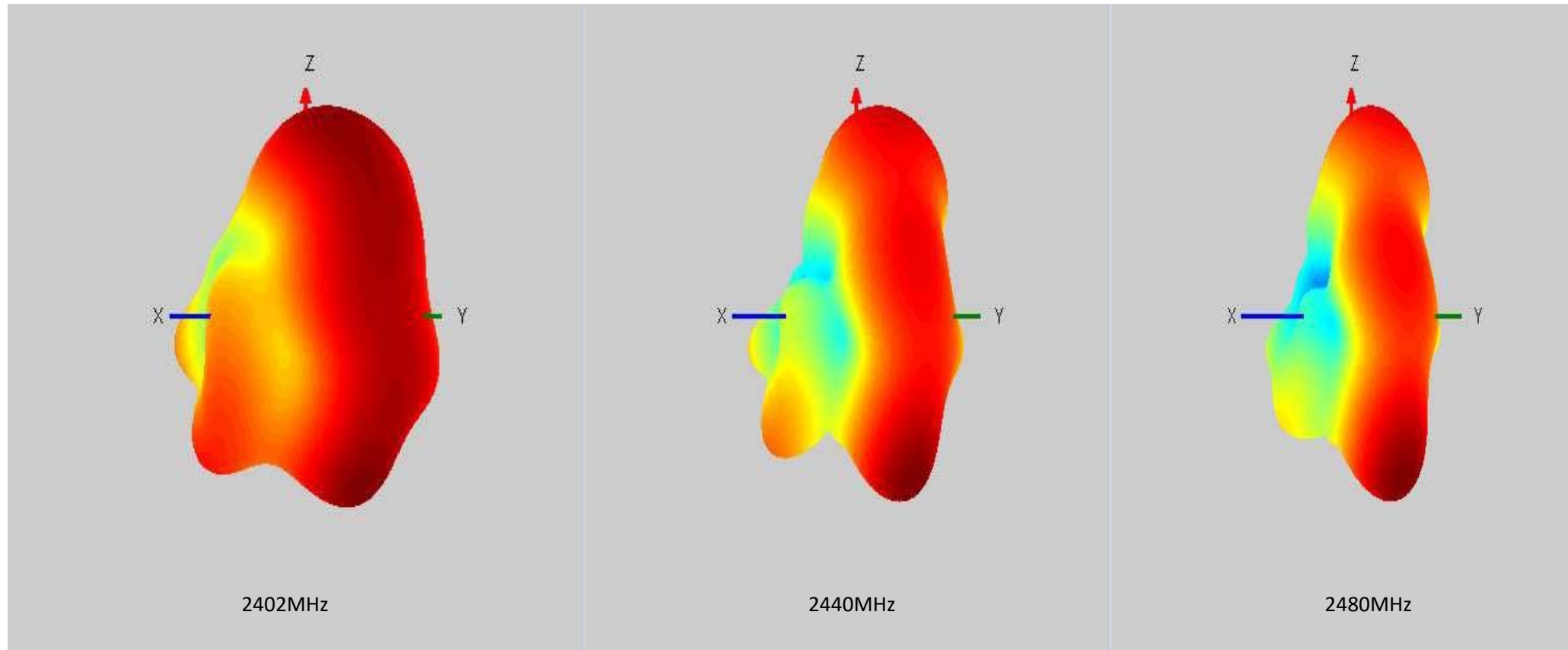


Total field (dBi)

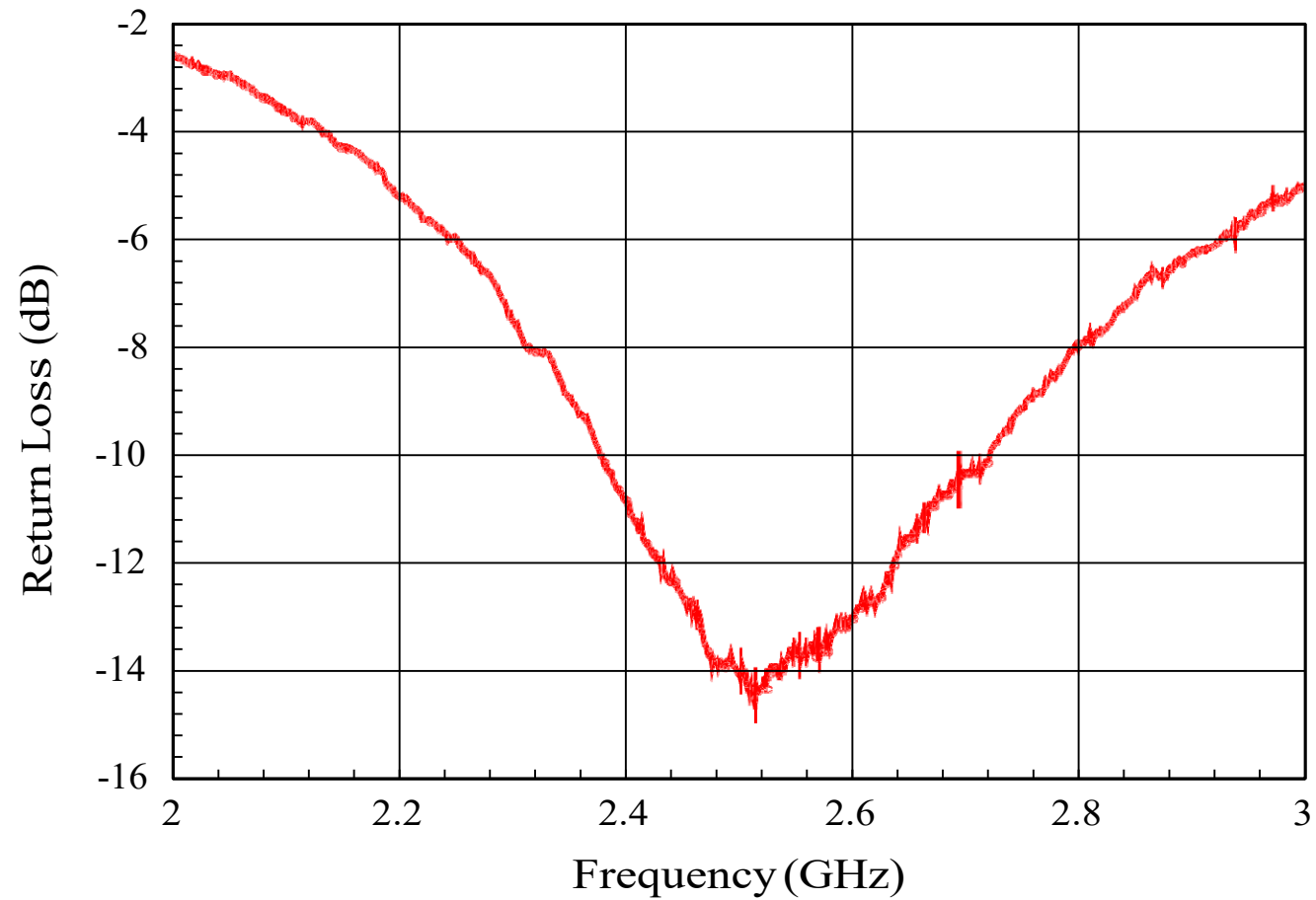
Solid line: vertical polarization  
Dash line: horizontal polarization

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# Radiation Pattern 3D



# Return Loss: Antenna 1



BW(-10dB) 13.48%

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# Measurements summary

|           | 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                  |
|           | 2.440           | XZ    | -12.20           | Vertical     | -7.36           | 318                    |                      |
|           | 2.440           | XZ    | -12.20           | Horizontal   | 1.32            | 180                    |                      |
|           | 2.440           | YZ    | -12.20           | Vertical     | 0.981           | 204                    |                      |
|           | 2.440           | YZ    | -12.20           | Horizontal   | -8.23           | 24                     |                      |
|           | 2.440           | XY    | -12.20           | Vertical     | -14.1           |                        | -14                  |
|           | 2.440           | XY    | -12.20           | Horizontal   | 1.74            |                        | 180                  |
|           | 2.480           | XZ    | -13.80           | Vertical     | -7.95           | 312                    |                      |
|           | 2.480           | XZ    | -13.80           | Horizontal   | 1.81            | 186                    |                      |
|           | 2.480           | YZ    | -13.80           | Vertical     | 0.204           | 214                    |                      |
|           | 2.480           | YZ    | -13.80           | Horizontal   | -8.38           | 8                      |                      |
|           | 2.480           | XY    | -13.80           | Vertical     | -15.8           |                        | 12                   |
|           | 2.480           | XY    | -13.80           | Horizontal   | 1.87            |                        | 180                  |