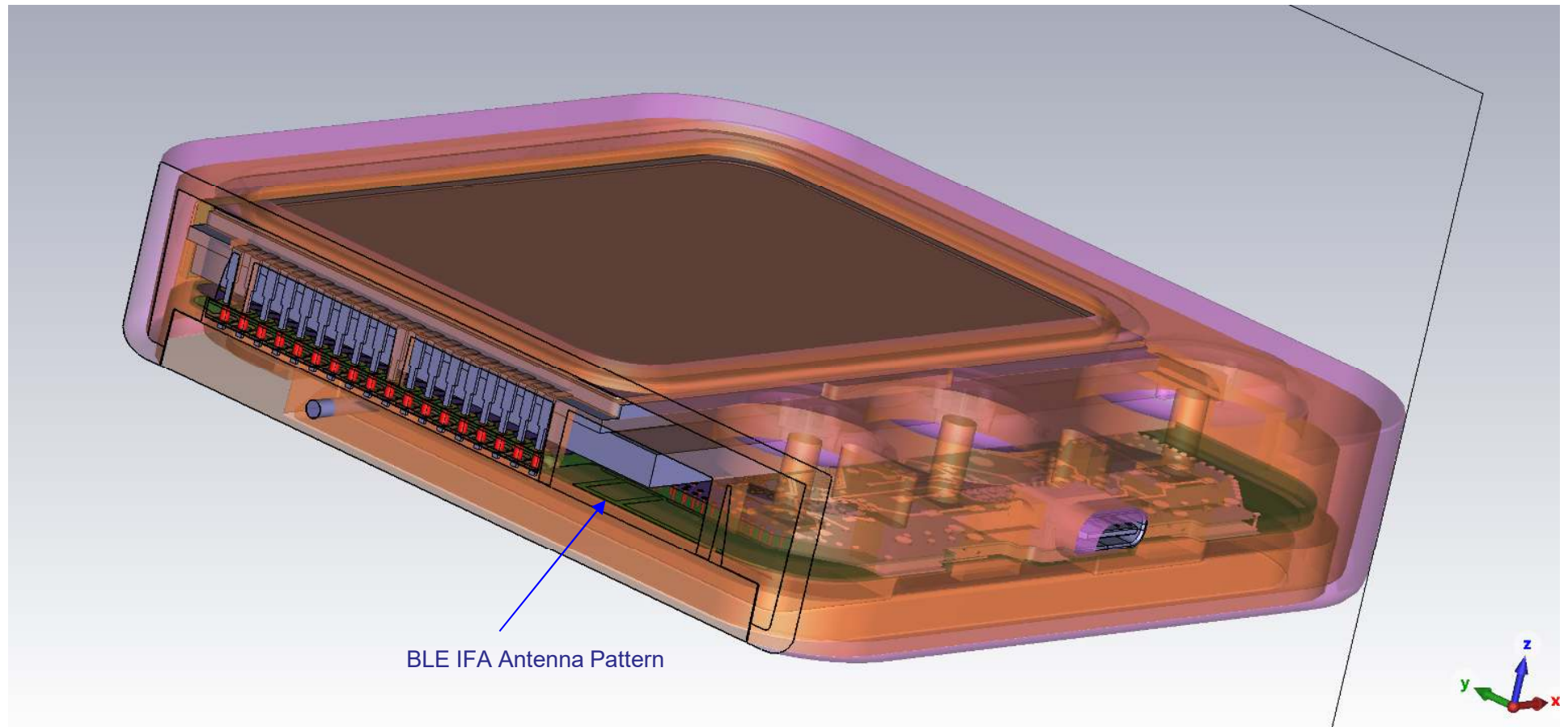


Combustion Inc. WiFi Display: Antenna Specification

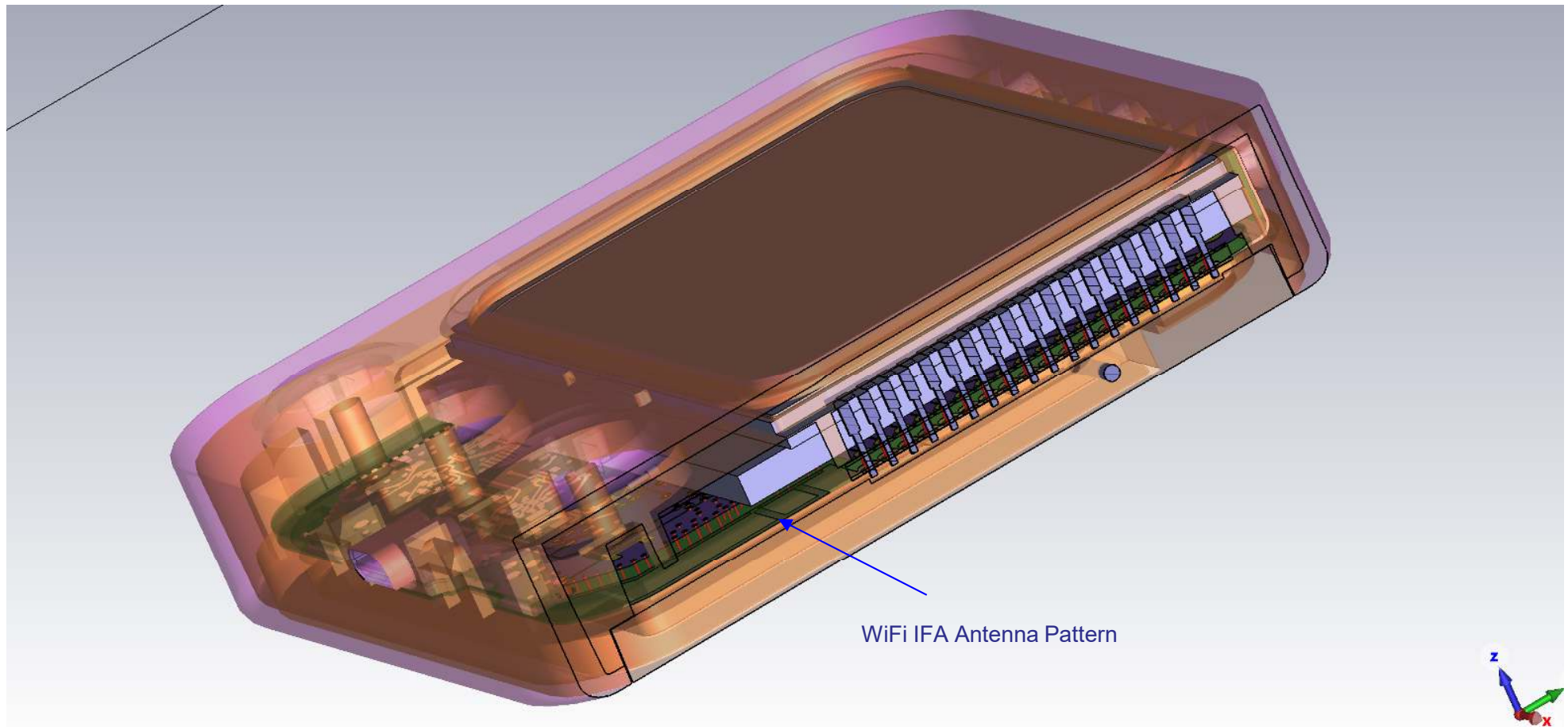
Version	Date	Description	Report
1	1-16-2025	Description of WiFi and BLE Antenna Configurations; Radiated Peak Gains	JCM-EM: Joseph C. Modro

External View: BLE Antenna



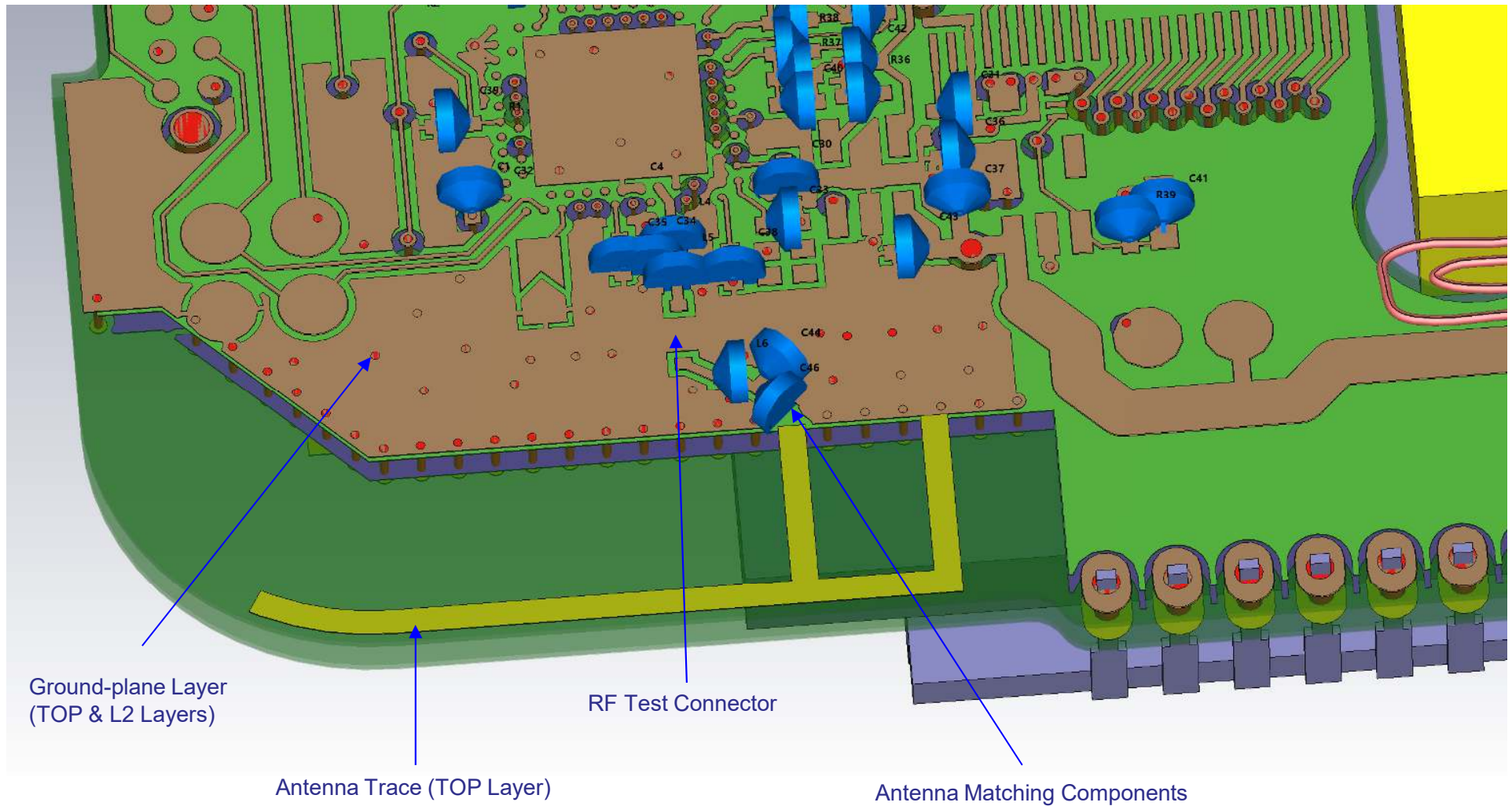
- BLE PCB trace antenna shown in cross-section

External View: WiFi Antenna



- WiFi PCB trace antenna shown in cross-section

Internal View : BLE Antenna



- View from reverse side
- PCB has 4 copper layers with total thickness of 1.55mm

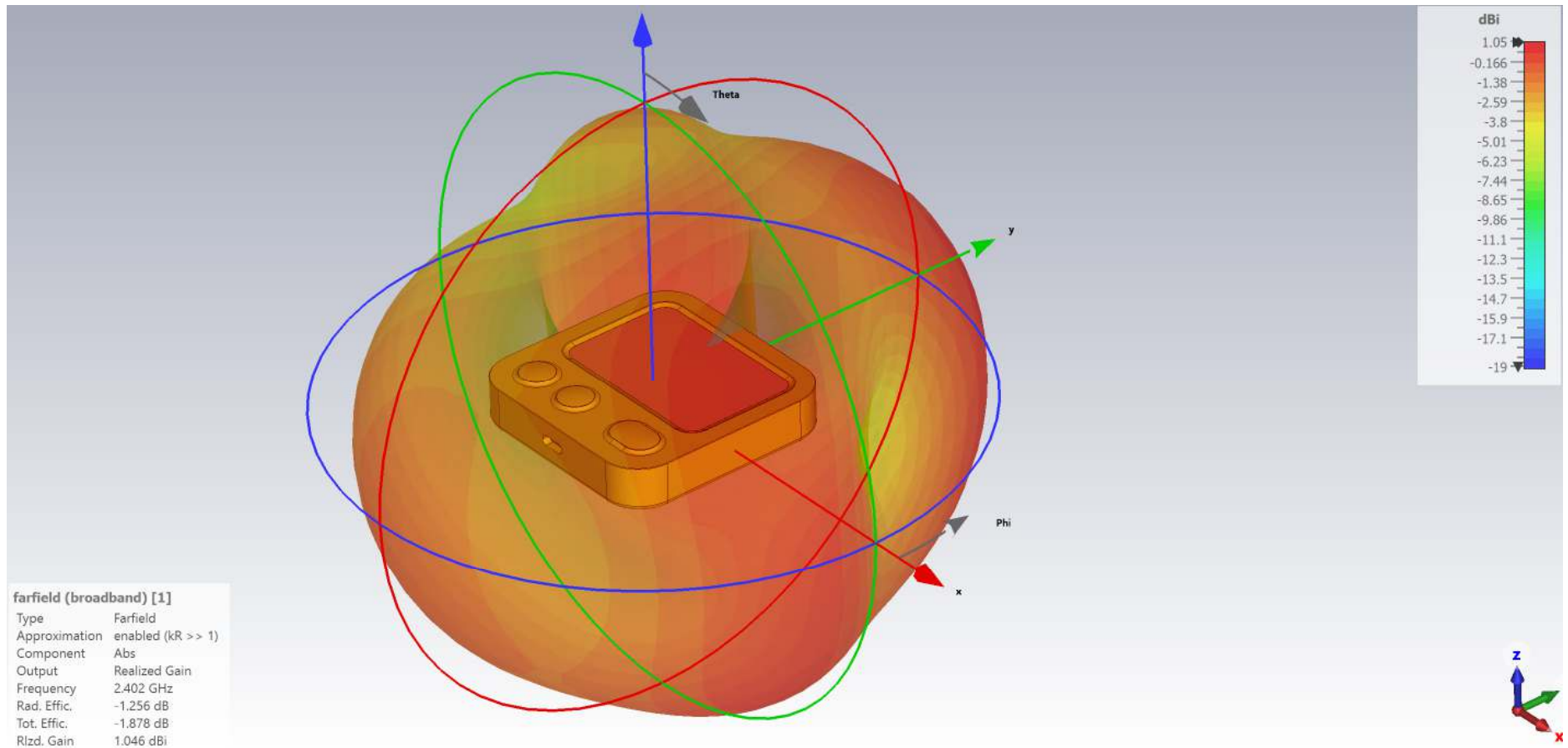
Internal View : WiFi Antenna



Summary of Antenna Properties

- Antenna Type: Inverted-F Antenna (IFA) on PCB: 2 separate antennas with matching components tuned for optimum efficiency
- Peak Antenna Gain:
 - BLE: **1.05dBi @ 2.402GHz**
 - WiFi: **0.84dBi @ 2.402GHz**
- Frequency Range: 2.402GHz – 2.48GHz [WiFi & BLE bands]

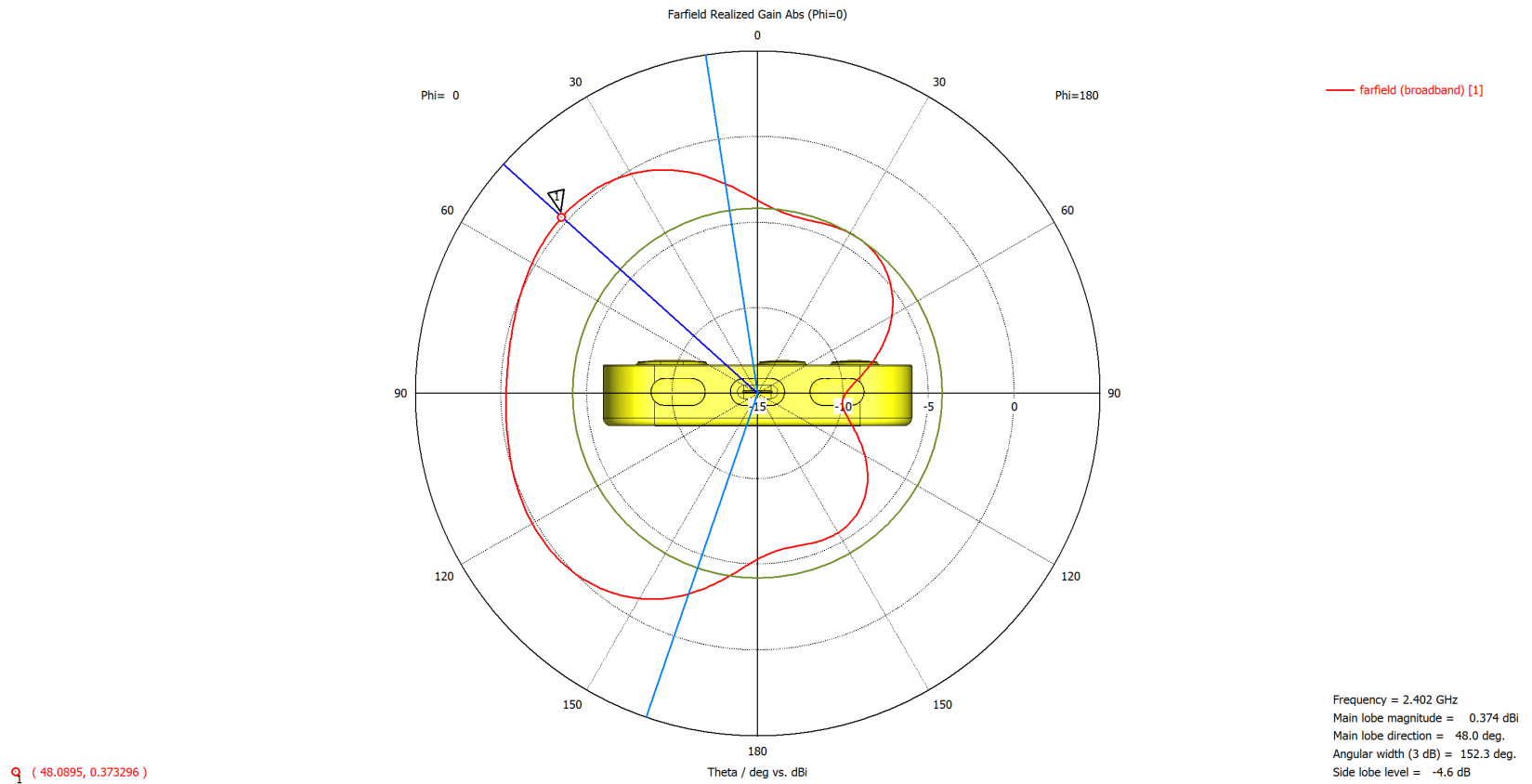
BLE Antenna Free-Space Radiation Pattern 3D: Peak Gain is at 2.402GHz



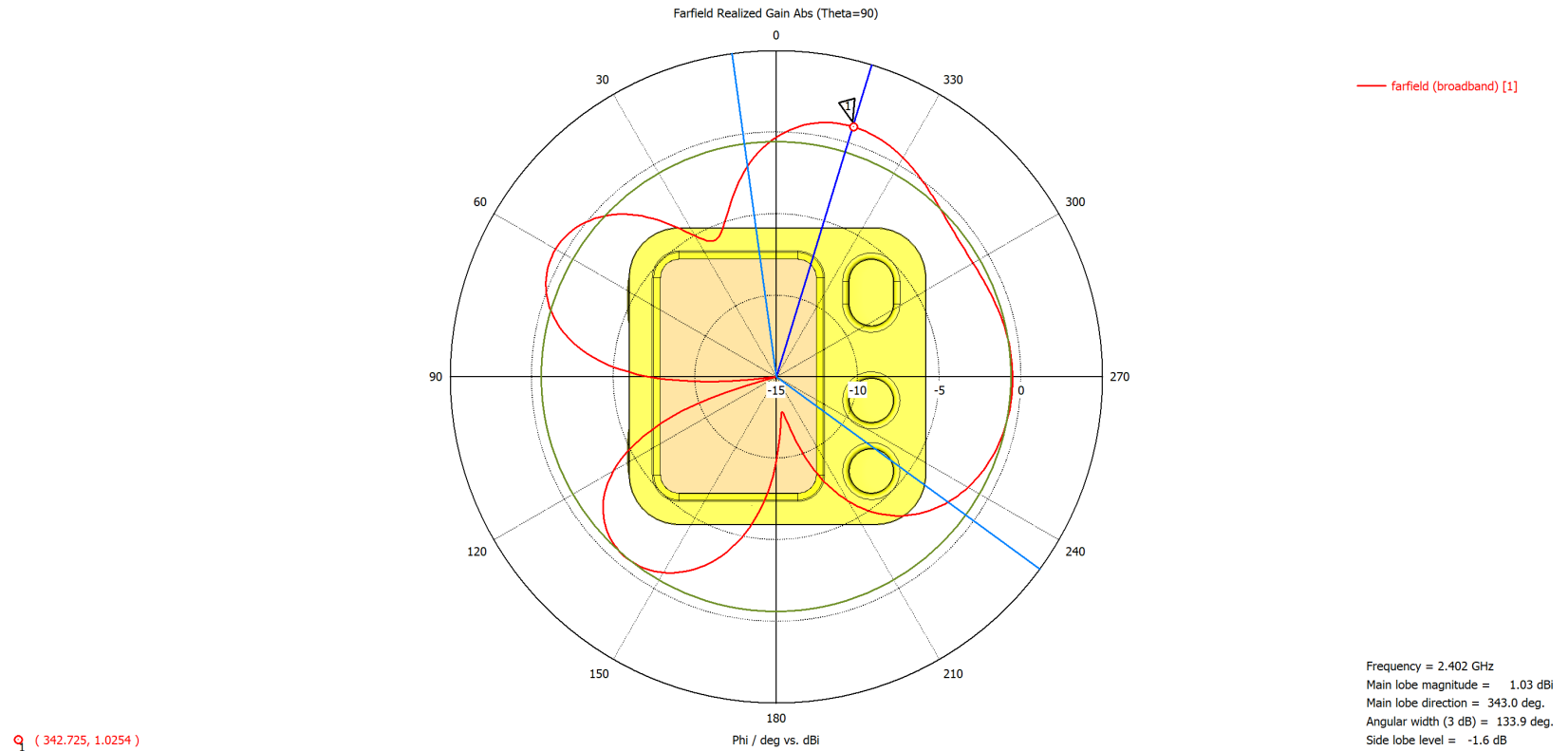
Peak gains [realized gain]:

- 2.402GHz: **1.05dBi**
- 2.44GHz: 0.75dBi
- 2.48GHz: 0.78dBi

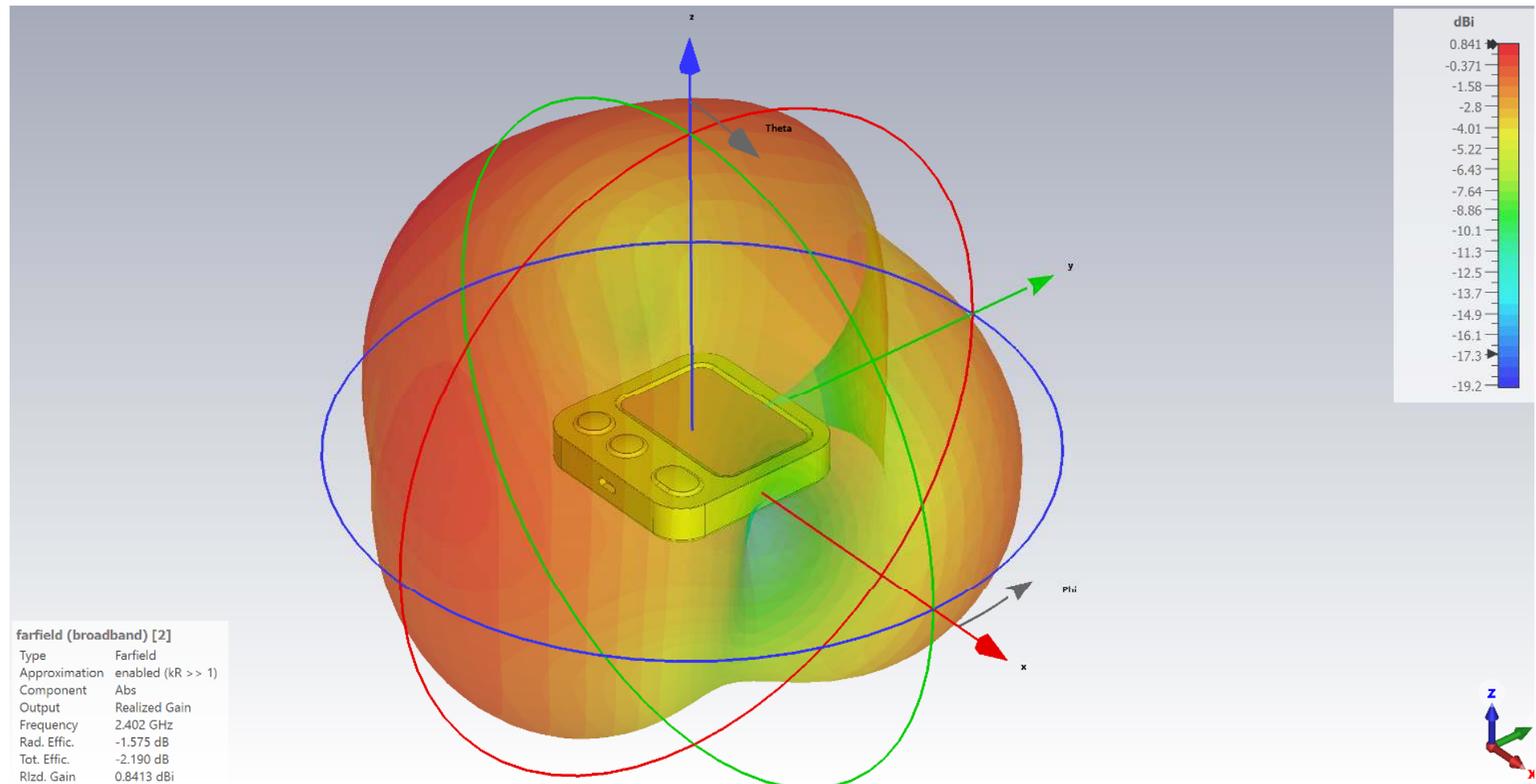
BLE Antenna Free-Space Radiation Pattern 1D-Polar: Vertical [Elevation] Cut: [Gain vs Theta @ Phi=0 deg.; @ 2.402GHz]



BLE Antenna Free-Space Radiation Pattern 1D-Polar: Horizontal [Azimuth] Cut: [Gain vs. Phi @ Theta=90 deg.; @ 2.402GHz]



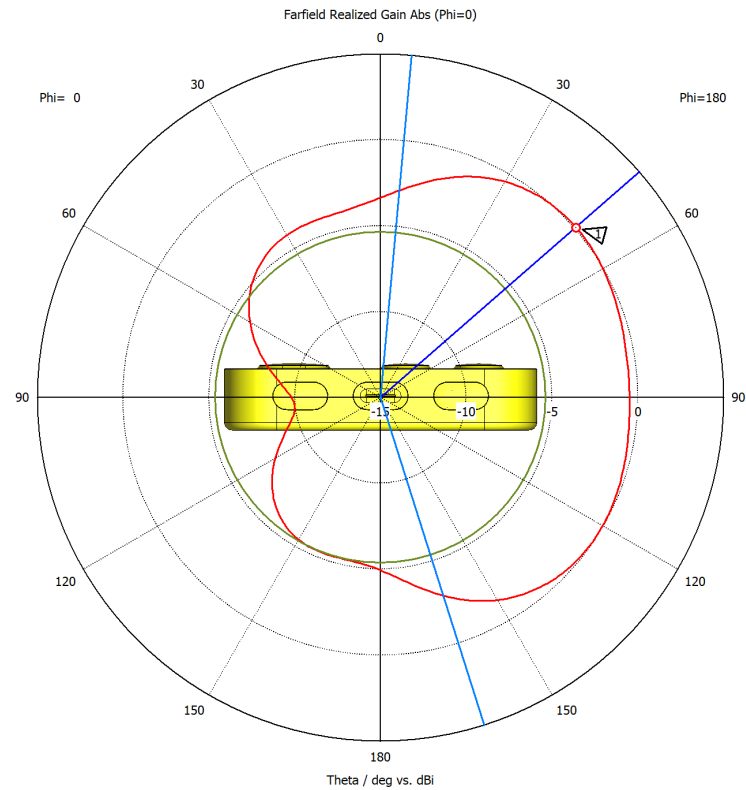
WiFi Antenna Free-Space Radiation Pattern 3D: Peak Gain is at 2.402GHz



Peak gains [realized gain]:

- 2.402GHz: **0.84dBi**
- 2.44GHz: 0.78dBi
- 2.48GHz: 0.67dBi

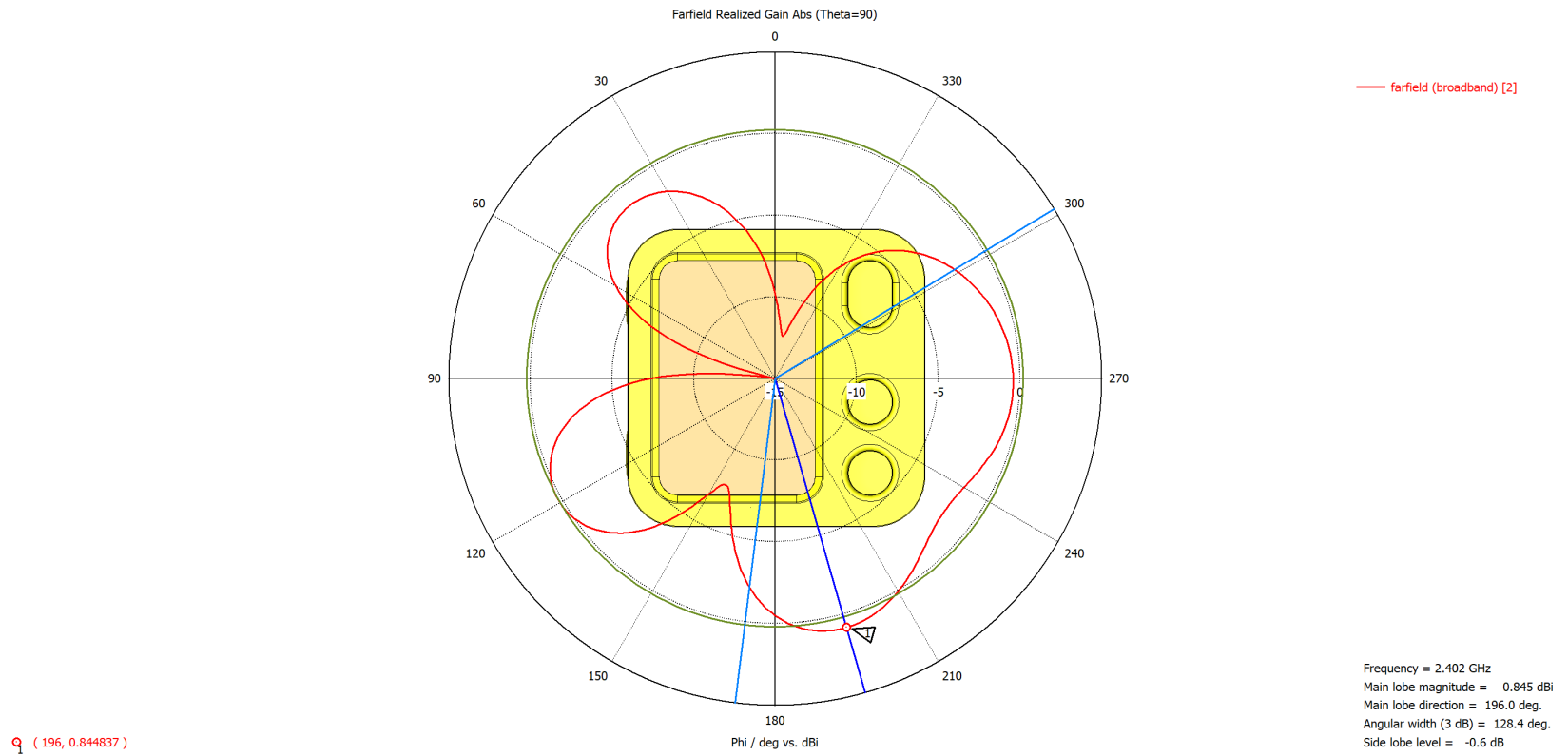
WiFi Antenna Free-Space Radiation Pattern 1D-Polar: Vertical [Elevation] Cut: [Gain vs Theta @ Phi=0 deg.; @ 2.402GHz]



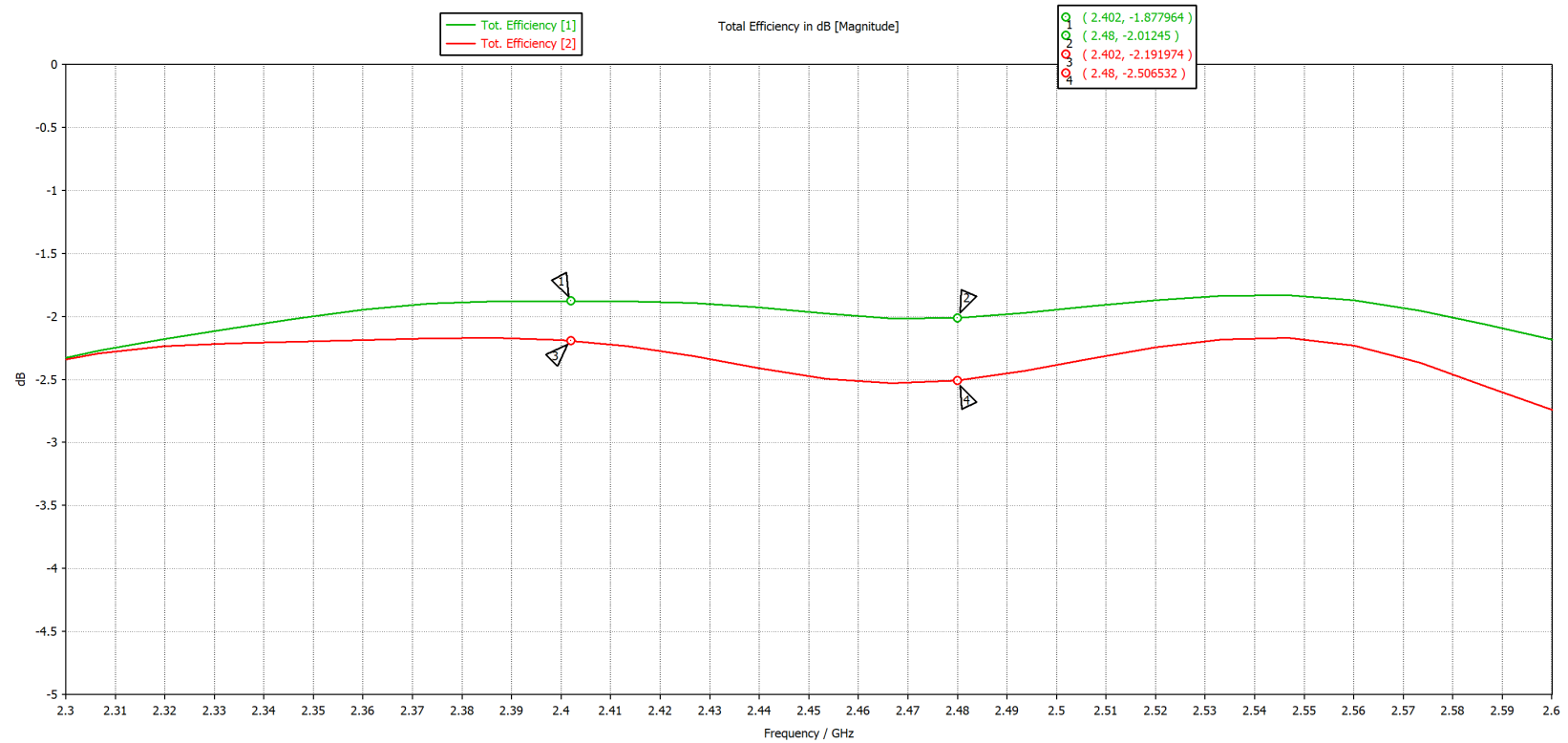
Q₁ (49.1637, 0.090401)

Frequency = 2.402 GHz
Main lobe magnitude = 0.0909 dBi
Main lobe direction = 49.0 deg.
Angular width (3 dB) = 157.2 deg.
Side lobe level = -5.4 dB

WiFi Antenna Free-Space Radiation Pattern 1D-Polar: Horizontal [Azimuth] Cut: [Gain vs. Phi @ Theta=90 deg.; @ 2.402GHz]



Total Antenna Efficiency vs. Frequency



- BLE Antenna
- WiFi Antenna

天线尺寸:

Timer:

长: 19.96mm; 宽: 5.78mm

