

## FTVARF133 WiFi/BLE Antenna

*Custom Built to Serve Your Unique Requirements*

### Features:

**Type:** Inverted-F Antenna

**Frequency Range:**

2400 - 2483.5MHz

**Carrier Dimensions<sup>1</sup>:**

32.12 X 18.83 X 0.405 mm

### Suggested Applications:

- WiFi/BLE

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**PN:** FTVARF133

**Status:** Released **Date:** 04/07/2025

## Performance & Specifications

| Antenna Performance |         |              |              |
|---------------------|---------|--------------|--------------|
| Parameters          | Results |              |              |
| Frequency (GHz)     | 2.402   | <b>2.440</b> | <b>2.478</b> |
| Efficiency (%)      | 26.74   | 36.72        | 44.54        |
| Peak Gain (dBi)     | -1.68   | -0.02        | 1.20         |
| VSWR                | < 2.00  |              |              |

| General Specifications |                   |                |              |
|------------------------|-------------------|----------------|--------------|
| Antenna Type           | Nominal Impedance | Power Handling | Polarization |
| BLE/WiFi               | 50 $\Omega$       | 10 W           | Linear       |

| Mechanical Specifications     |          |
|-------------------------------|----------|
| Carrie Dimensions (L x W x H) | Material |
| 32.12 X 18.83 X 0.405 mm      | FPC      |

### Efficiency

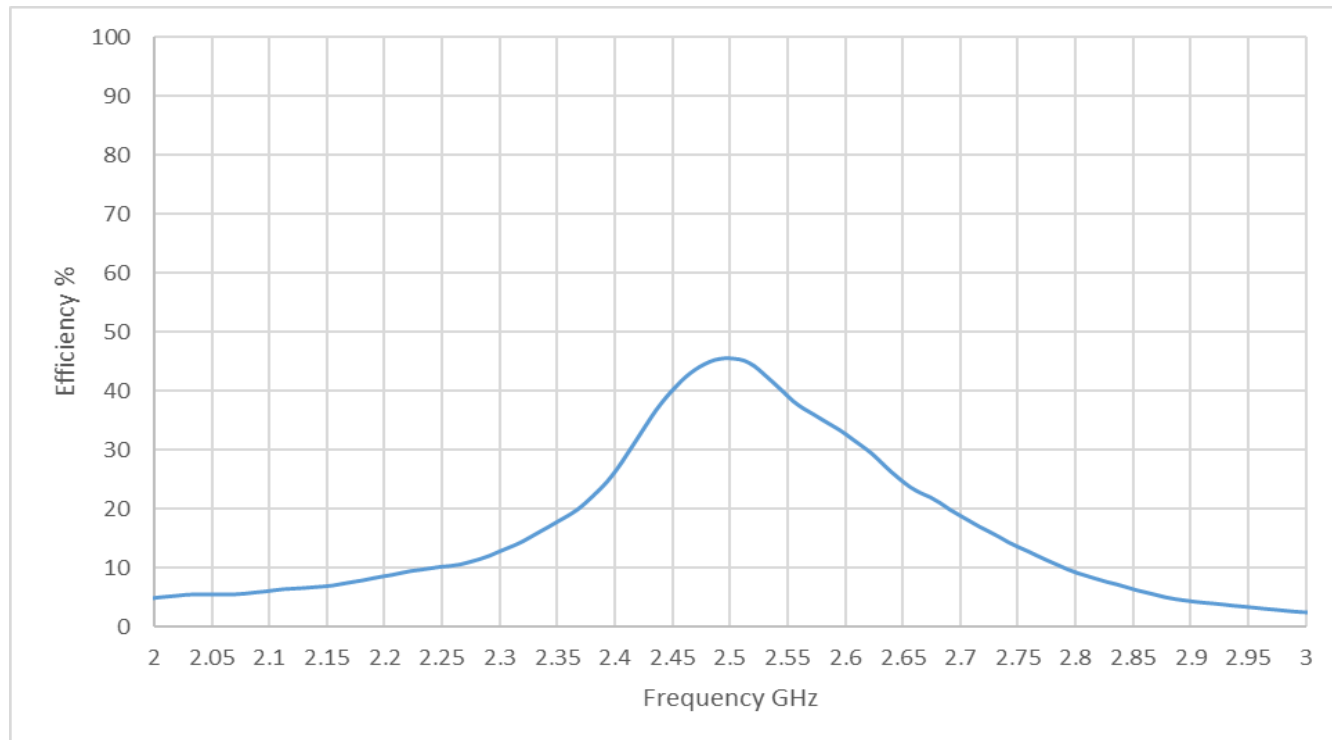


Fig 2. Efficiency vs Frequency

### 1D Gain Radiation Patterns

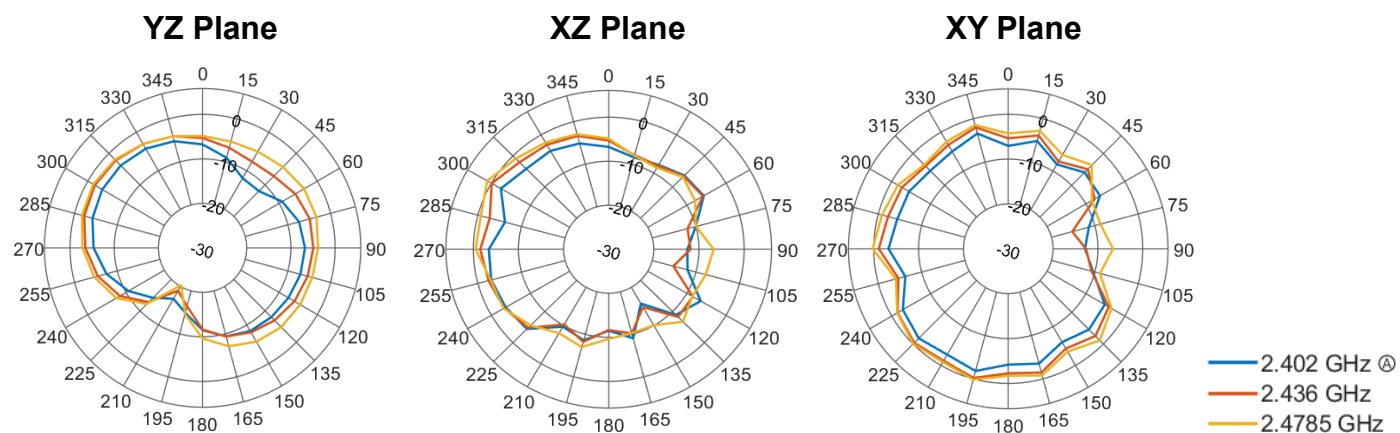


Fig. 3-5: 1D Gain Radiation Patterns

### 2D & 3D Gain Radiation Patterns

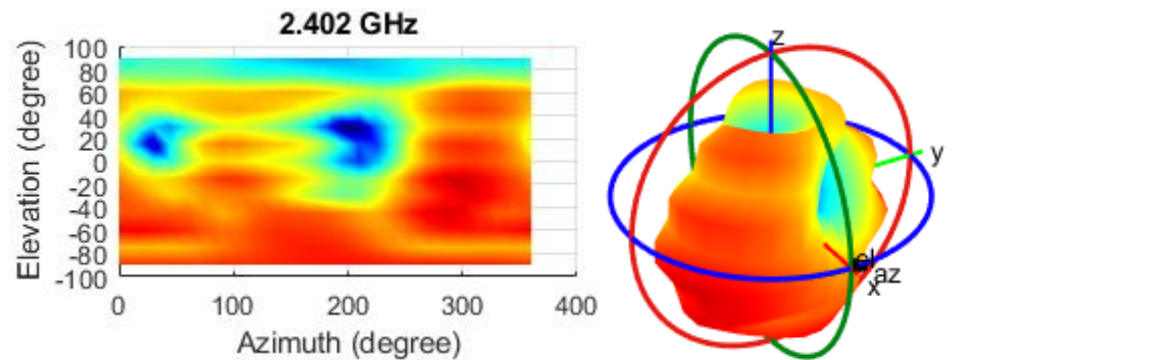


Fig. 6: 2D & 3D Gain Radiation Patterns, 2.402 GHz

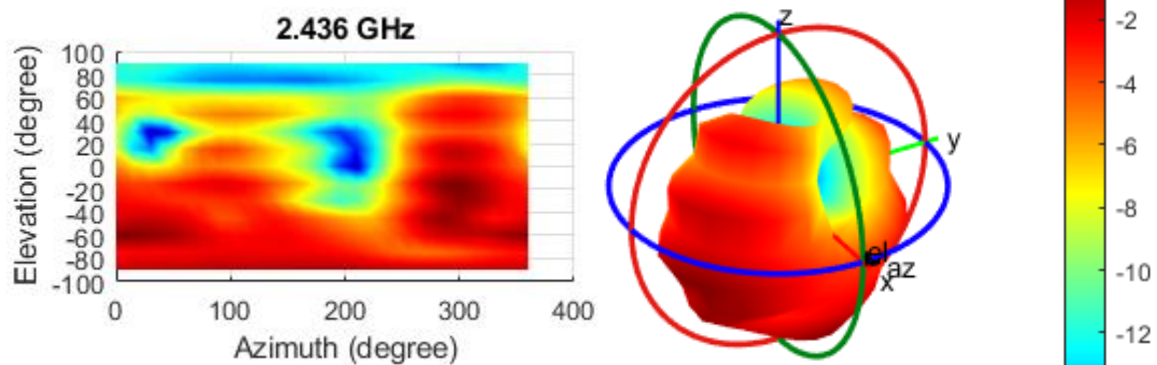


Fig. 7: 2D & 3D Gain Radiation Patterns, 2.436 GHz

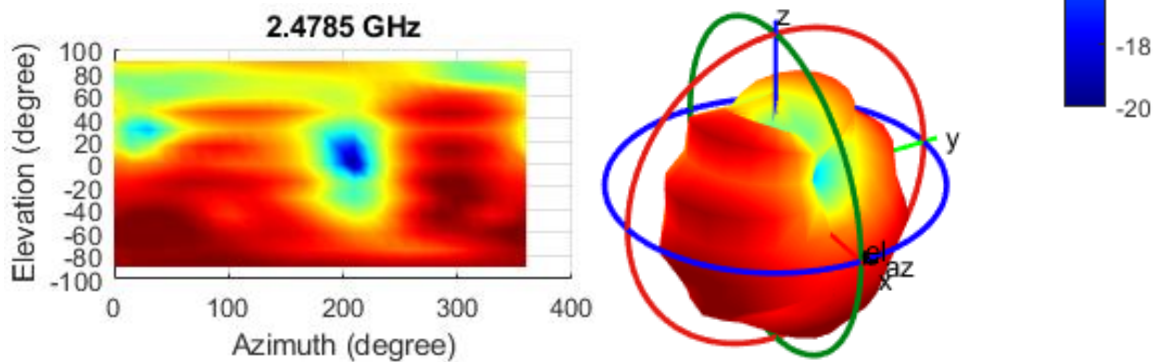


Fig. 8: 2D & 3D Gain Radiation Patterns, 2.4785 GHz

## Test Conditions

Results were collected from a passive antenna measurement within a 5-meter fully anechoic antenna chamber equipped with a dual-pol quad-ridged horn receiver antenna and an EL-AZ positioner with laser positioner.

|                |            |
|----------------|------------|
| Test Conducted | 07/25/2025 |
|----------------|------------|

## Formula & Calculations

Gain: 
$$G_{AUT} = \frac{[S_{21}^2]}{[G_{REF}]} \left( \frac{\lambda}{4\pi d} \right)^{-2}$$

Efficiency: 
$$\varepsilon = \frac{\pi}{2NM} \sum_N \sum_M \frac{S_{21}^2(\theta_M, \phi_N)}{P_L G_T} \cos(\phi_N)$$

**Software Name:** Antenna Measurement Studio

## Test Equipment Calibration Status

| Equipment                | Manufacturer             | Model No.        | Serial No.         | Last Cal. | Due Date   |
|--------------------------|--------------------------|------------------|--------------------|-----------|------------|
| Network Analyzer         | Anritsu                  | MS46122B         | 2135304            | 7/10/2025 | 11/10/2025 |
| Quad-Ridge Horn Antenna  | ETS-Lindgreen            | 3164-10          | 217936             | 7/10/2025 | 11/10/2025 |
| 5 Meter Anechoic Chamber | Braden Shielding Systems | NA               | F70331             | NA        | NA         |
| RF Cable                 | ENS Microwave            | S160-160-MKS-MKS | 3042020            | 7/10/2025 | 11/10/2025 |
| RF Cable                 | ENS Microwave            | S160-120-MKS-MKS | 12042018           | 7/10/2025 | 11/10/2025 |
| RF Cable                 | ENS Microwave            | EMC1-K1K1-72     | 1GVT4 19002201     | 7/10/2025 | 11/10/2025 |
| RF Cable                 | ENS Microwave            | EMC1-K1K1-72     | 1GVT4 19002202     | 7/10/2025 | 11/10/2025 |
| RF Cable                 | ENS Microwave            | EMC1-K1K1-216    | 1GVT4 19002202 001 | 7/10/2025 | 11/10/2025 |
| RF Cable                 | ENS Microwave            | EMC1-K1K1-216    | 1GVT4 19002202 002 | 7/10/2025 | 11/10/2025 |
| DUT Positioner           | DE LCC                   | D6025            | NA                 | NA        | NA         |
| RF Switch                | Mini-Circuits            | RC-1SPDT-A18     | 1810010005         | 7/10/2025 | 11/10/2025 |