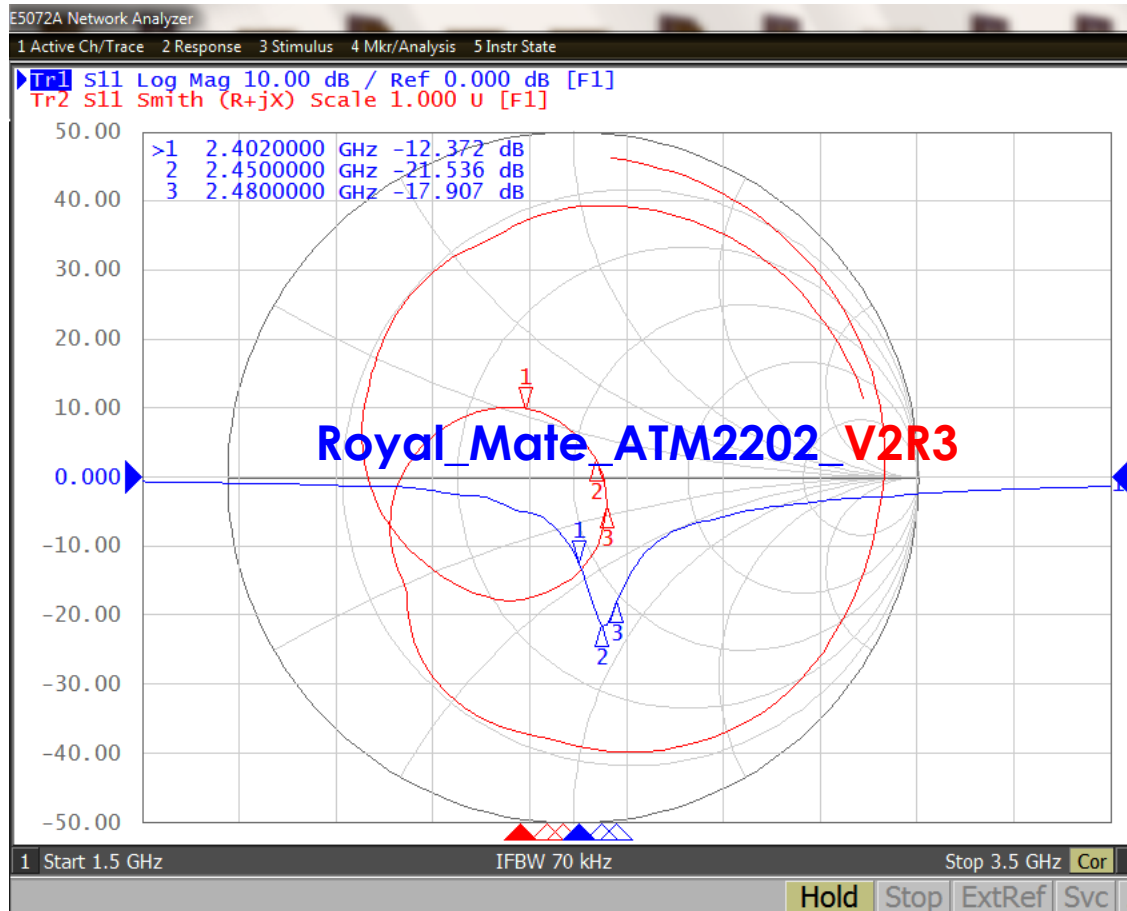


# Measured Return Loss and Antenna Efficiency

Antenna Performance of the Royal\_Mate\_ATM2202\_V2R3 (DVT).

## Return Loss



Measured by using E5072A Network Analyzer.

## Antenna Efficiency & Peak Gain

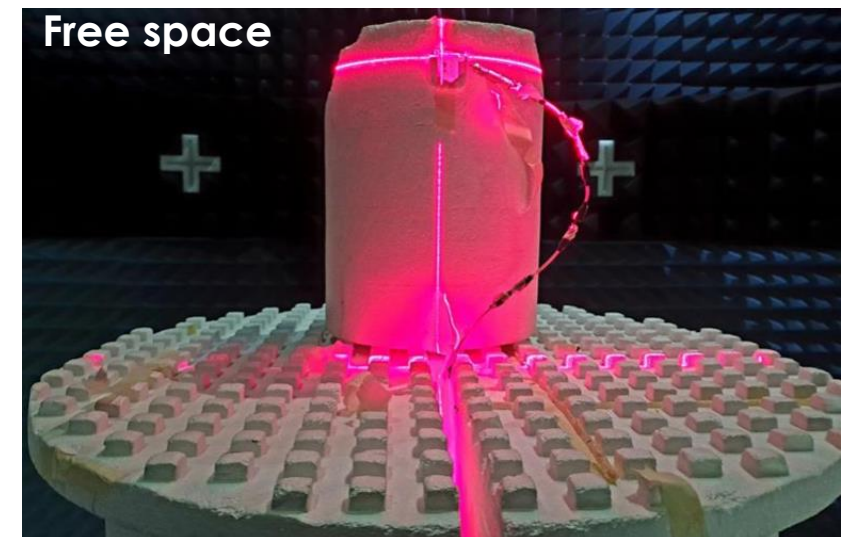
| Frequency (MHz) | Efficiency (%) | Gain (dBi) |
|-----------------|----------------|------------|
| 2400            | 63.11          | 0.71       |
| 2410            | 64.88          | 0.90       |
| 2420            | 65.08          | 0.96       |
| 2430            | 65.45          | 0.94       |
| 2440            | 66.32          | 1.18       |
| 2450            | 66.62          | 1.15       |
| 2460            | 66.69          | 1.10       |
| 2470            | 63.93          | 1.03       |
| 2480            | 60.42          | 0.84       |

Bluetooth® technology uses the 2.4 GHz ISM spectrum band (2400 to 2483.5 MHz)

# Performance Testing Items on OTA Testing system

## Passive and Active Performance Test on Devices

- **OTA Testing system :**
  - ✓ ETS-LINDGREN AMS-8947-195.
- **Test condition :**
  - ✓ Measurement in free space.
- **Passive Antenna Performance Measurement:**
  - ✓ 3D radiation pattern
  - ✓ Efficiency
  - ✓ Peak gain
- **Active Antenna Performance Measurement :**
  - ✓ Bluetooth Low Energy (BLE) - Total radiated power (TRP)
- **Bluetooth Trackers Devices for test listed below :**
  - ✓ Tile's Royal\_Mate\_ATM2202\_V2R3
- **Info Bluetooth of Trackers Devices :**
  - ✓ Antenna type: integral
  - ✓ Antenna size: 18.5mmX7mmX10.5mm

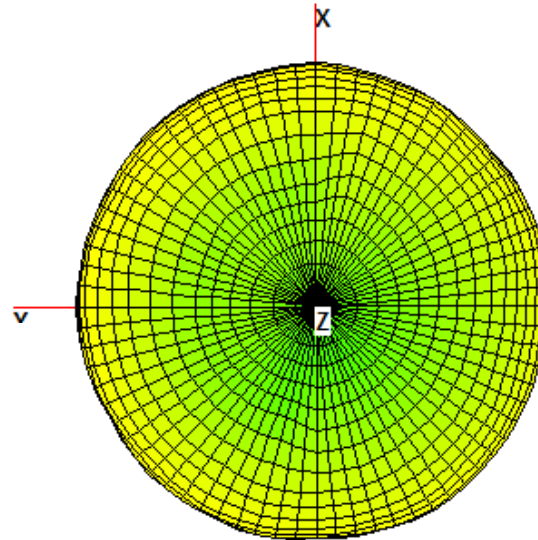


# Measured 3-D Radiation Patterns at 2450MHz

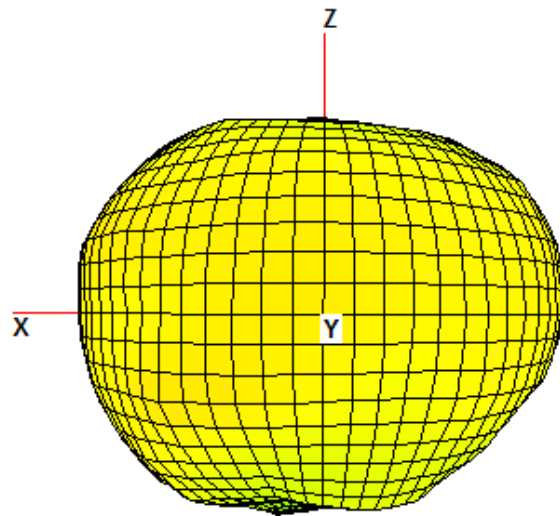
"Royal\_Mate\_ATM2202\_V2R3 " Antenna in free space.

**Royal  
(Mate)**

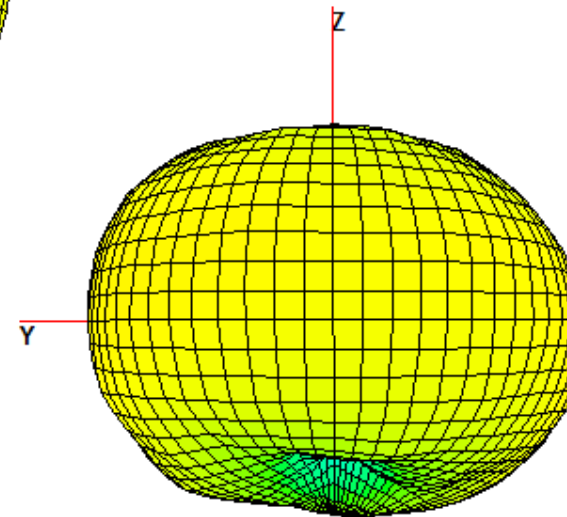
**X-Y Plane**



**BLE  
@2450MHz**



**Z-X Plane**



**Z-Y Plane**

