

Test Report for Antenna Specifications for 5F99F2

Product details:

FCC-ID: 2AEUPBHART011
ID: 20271-BHART011
Product Model Number: 5F99F2
Entity / Grantee Name: Ring, LLC

Test Site Name: Sunnyvale, SJC11

Test Date: 05/01/2024

Test Engineer Name in the report: Yohannes Samuel / Sumitra Dey

Antenna Specification:

Operating Frequency Range:

BLE antenna: 2.4 GHz – 2.48 GHz

WIFI Antenna: 2.4 GHz – 2.48 GHz

Antenna Type:

BLE antenna: Meandered Loop antenna, which is a trace antenna on MLB Bottom layer

WIFI Antenna: Inverted F antenna (IFA), which is a trace antenna on MLB Top layer

Peak Antenna Gain:

Band	Peak Gain (dBi)	
	BLE antenna	WIFI antenna
2.4 GHz (2400-2480 MHz)	2.5	2.0

Antenna Gain Measurement:

Measurement Test Method:

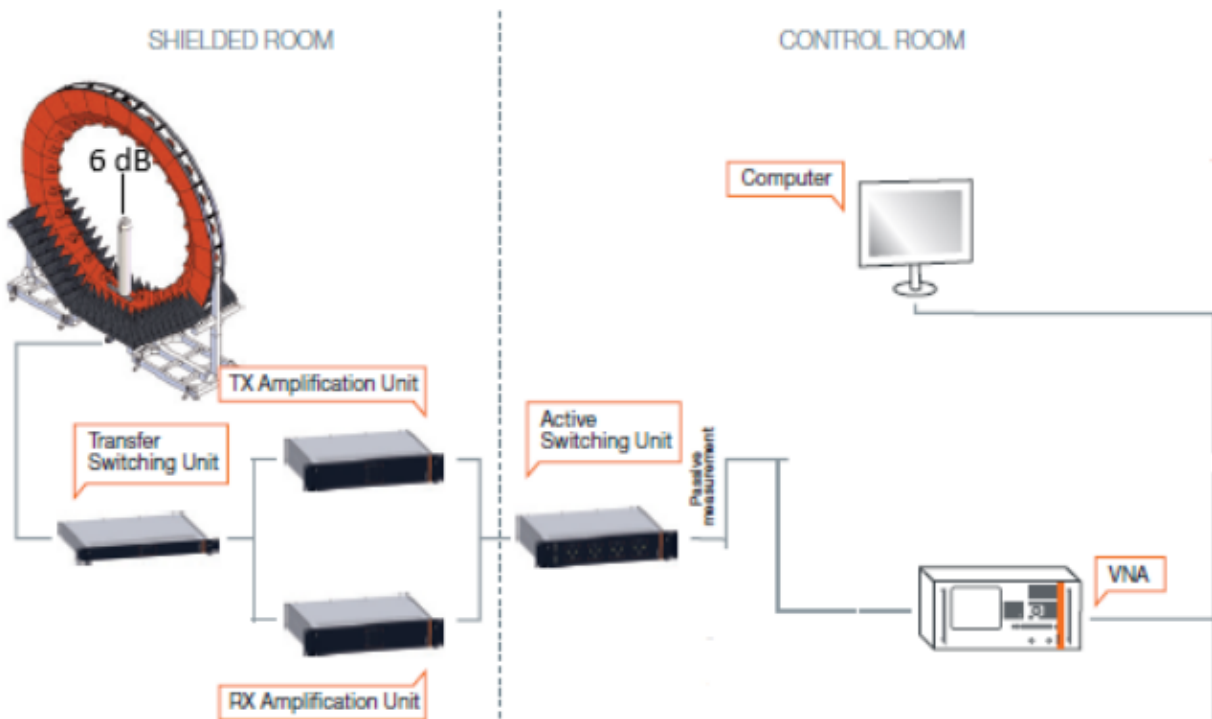
Solder pigtails on feeding point of antennas and measure passive antenna performance by VNA and OTA chamber system, and the measurement was done in device level.

Test Equipment Used:

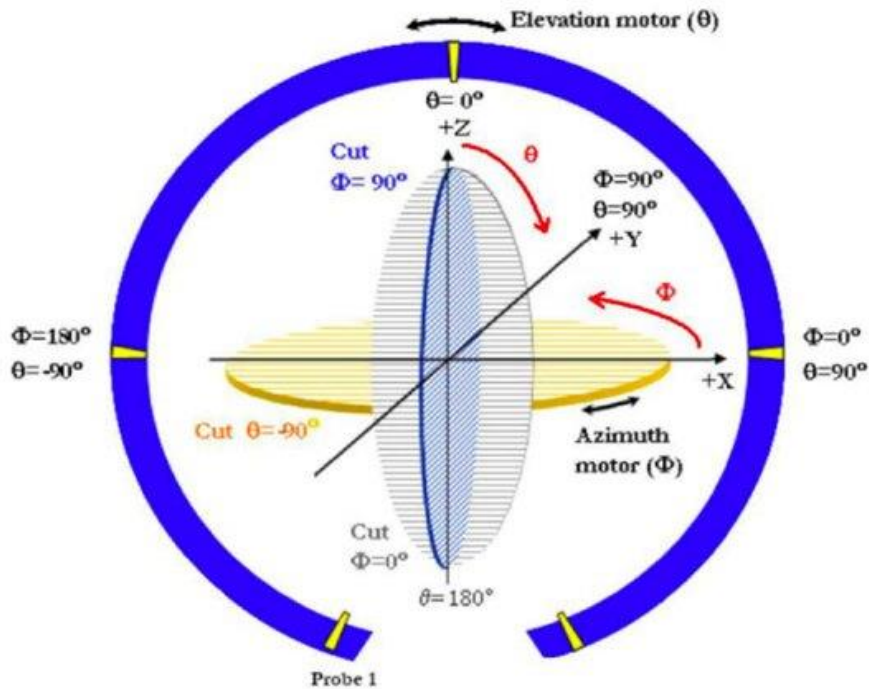
Description	Manufacturer	Model	Serial Number	Cal from	Cal Due
Test Chamber	Satimo-MVG	Star Gate 24	ATL541S	Aug 2023	
Vector Network Analyzer	Rohde & Schwarz	ZNB 8	1311.6010K44-102143-Wv	10/31/2023	1 year

Test Setup:

1. Below is a block diagram of the antenna measurement setup.



2. Turn table angle definition



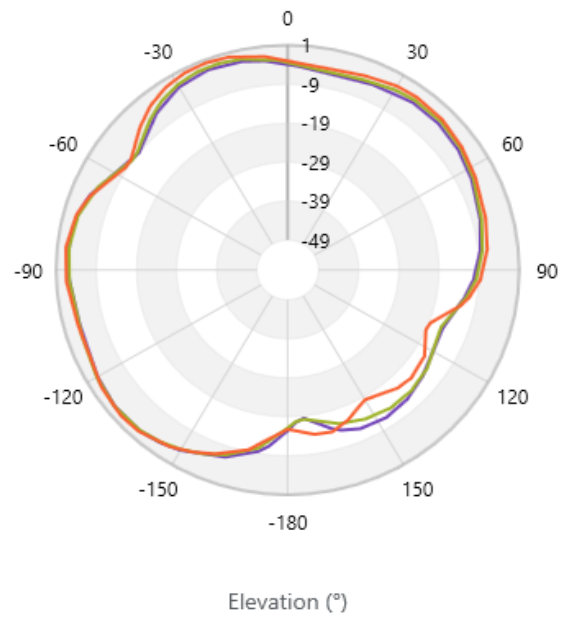
2D Radiation Pattern:

BLE antenna radiation pattern:

Azimuth = 0 deg

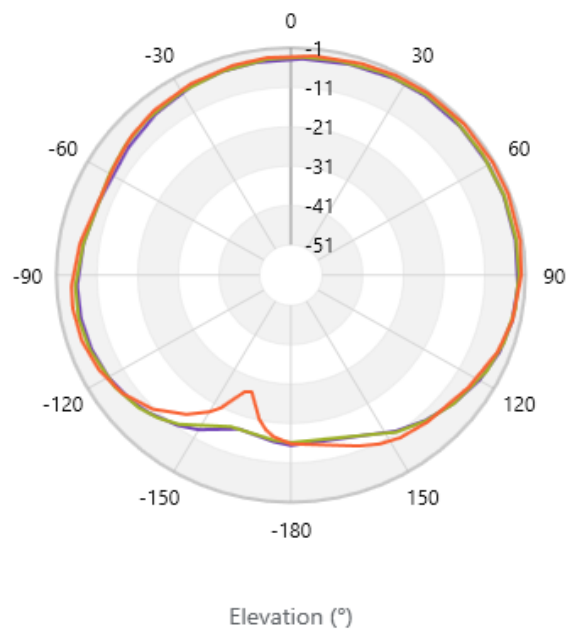
XZ plane

— 0° 2400.00 MHz ETotal
 — 0° 2420.00 MHz ETotal
 — 0° 2480.00 MHz ETotal

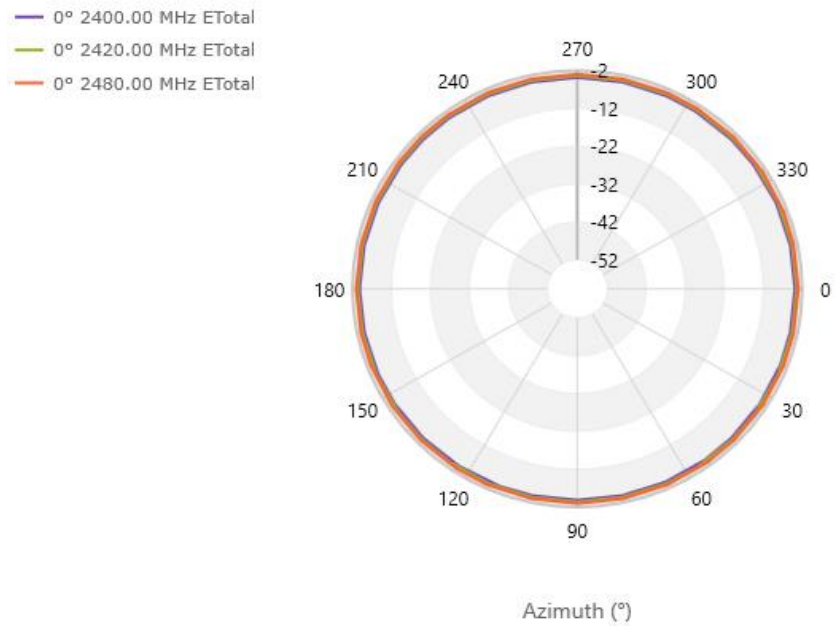


Azimuth = 90 deg
 YZ plane

— 90° 2400.00 MHz ETotal
 — 90° 2420.00 MHz ETotal
 — 90° 2480.00 MHz ETotal



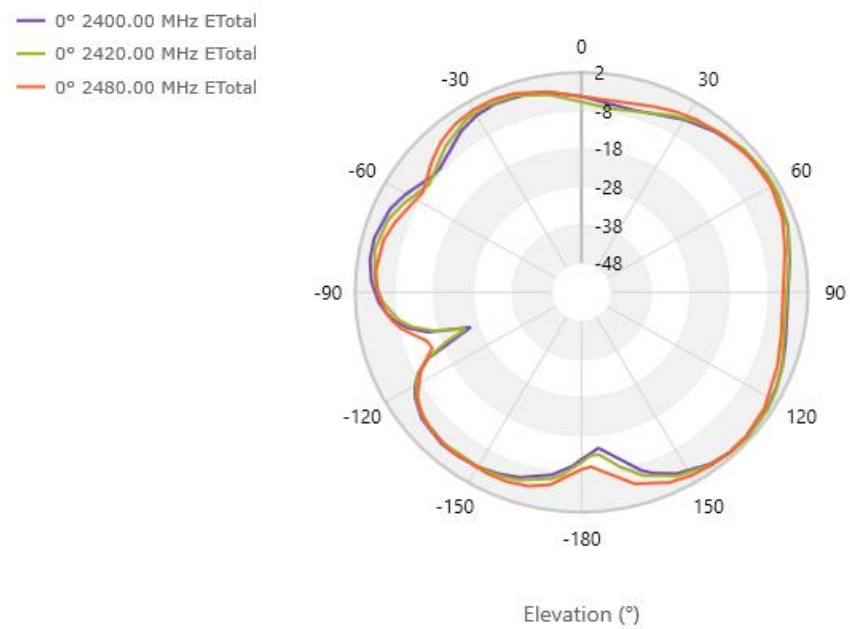
Elevation = 0 deg
 XY plane



WIFI antenna radiation pattern:

Azimuth = 0 deg

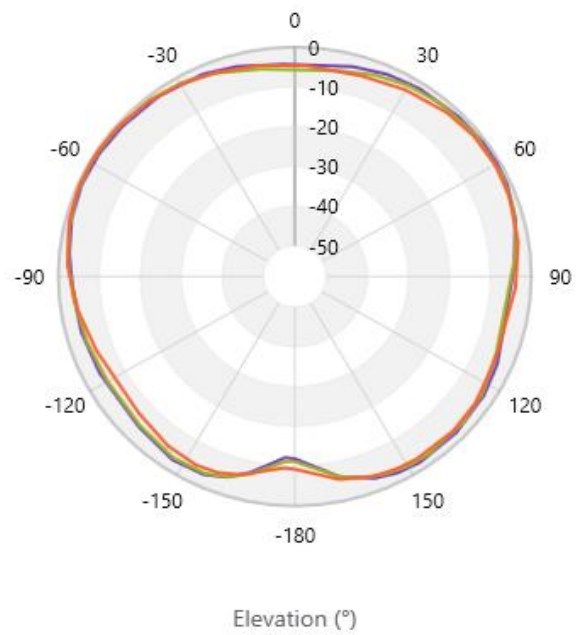
XZ plane



Azimuth = 90 deg

YZ plane

- 90° 2400.00 MHz ETotal
- 90° 2420.00 MHz ETotal
- 90° 2480.00 MHz ETotal



Elevation = 0 deg

XY plane

- 0° 2400.00 MHz ETotal
- 0° 2420.00 MHz ETotal
- 0° 2480.00 MHz ETotal

