

Starlink Remote 2.0 Antenna Description

The Bluetooth 2.4 GHz antenna is a PC board F antenna.

The peak gain of the antenna in the assembled DUT is nominally -1.4 dBi (see calculations on page 6).

Date of antenna pattern measurement: June 21, 2023

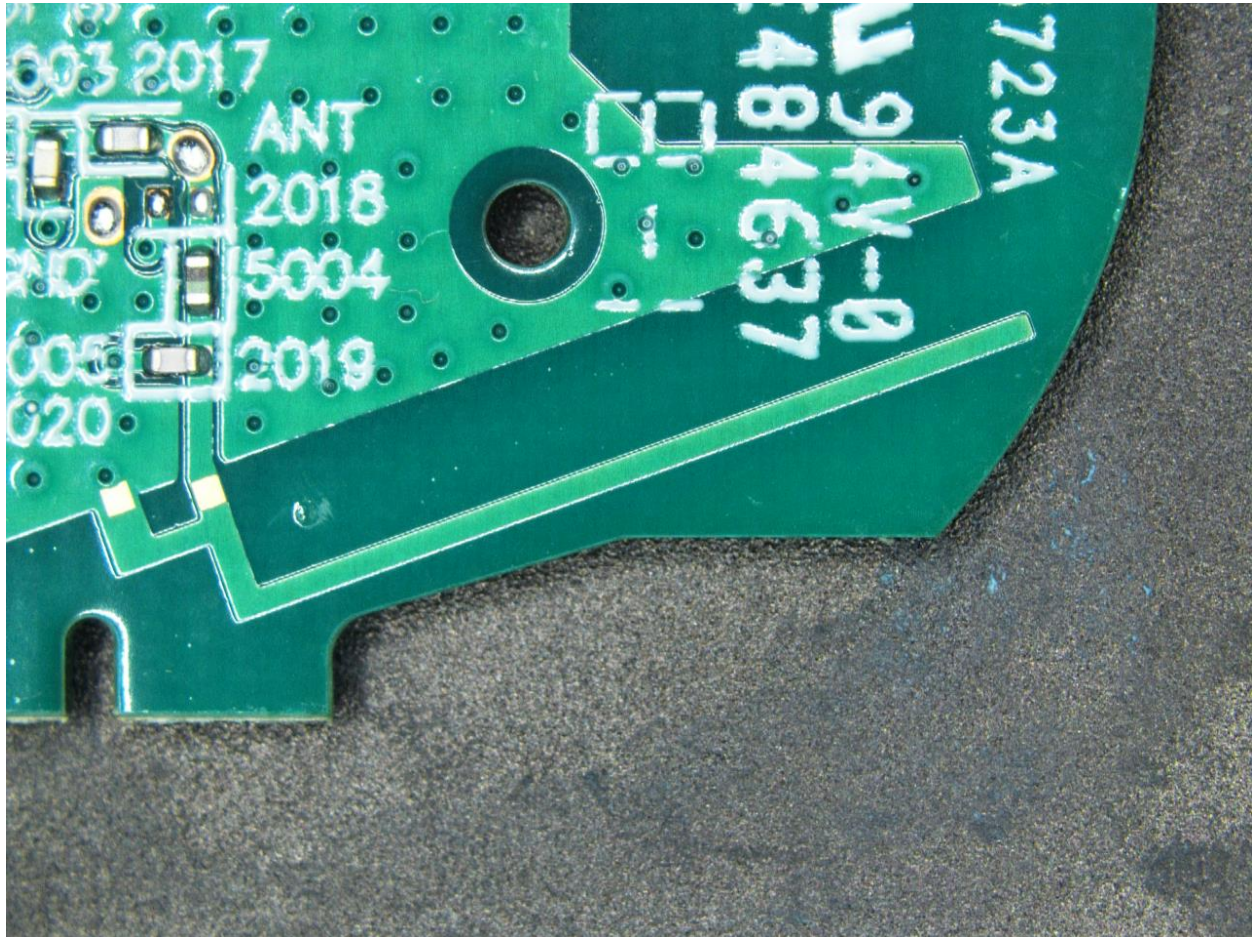


Figure 1 2.4 GHz Antenna

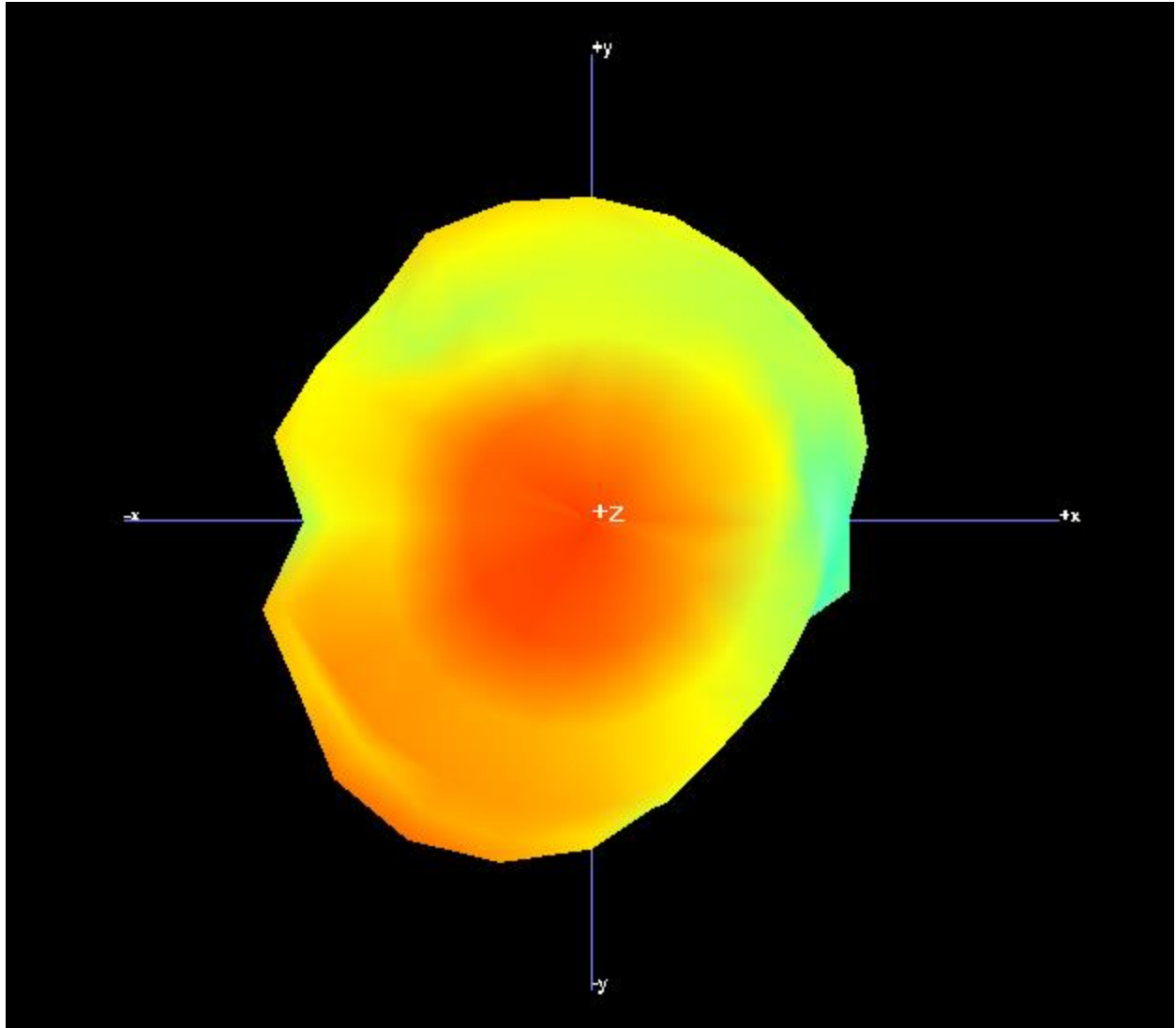
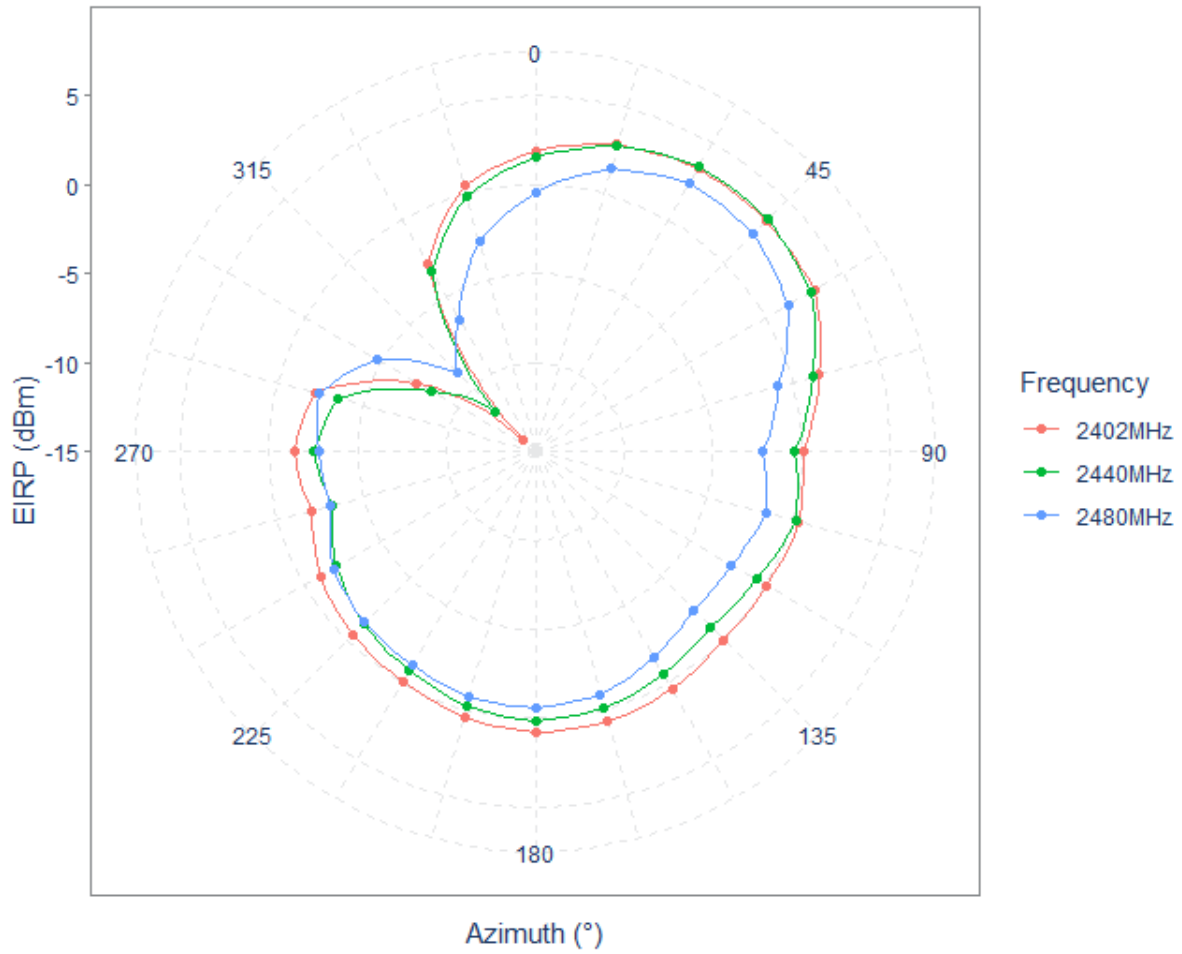


Figure 2a 3-Dimensional Antenna Pattern

Remote Control 2.0 - Radiation Pattern

Azimuth Cut @ Elevation = 90°



Angle (degrees) vs output power in dBm with conducted input power = 4.3 dBm

Figure 2b Azimuth Pattern

Remote Control 2.0 - Radiation Pattern

Elevation Cut @ Azimuth = 0°

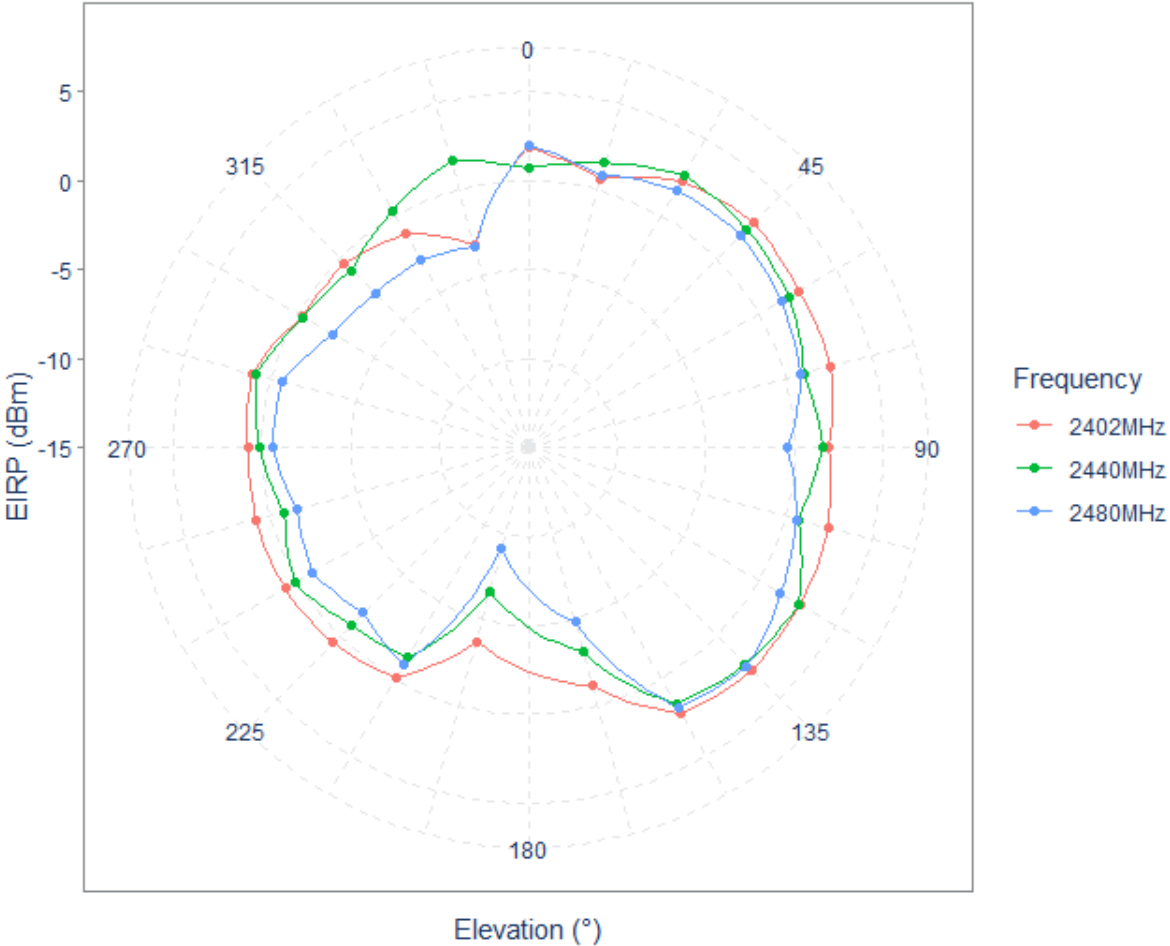


Figure 2c Elevation Pattern

Antenna Pattern Measurement Information

The antenna patterns shown in Figures 2a, 2b, and 2c were measured using a MVG SGL24L antenna test system, serial number ATL0232S located at Starkey Laboratories, Inc., 6600 Washington Avenue, South, Eden Prairie, MN 55344 System was calibrated on September 9, 2021 and September 16, 2022, due for calibration in September 2023.

Signal levels were measured using an Agilent N9020A MXA Signal Analyzer (Spectrum Analyzer). serial number MY50410289, calibrated on July 19, 2021 and October 26, 2022, due for calibration on October 31, 2024.

The antenna pattern plots in Figures 2a, 2b, and 2c are generated by the SG24L test system software.

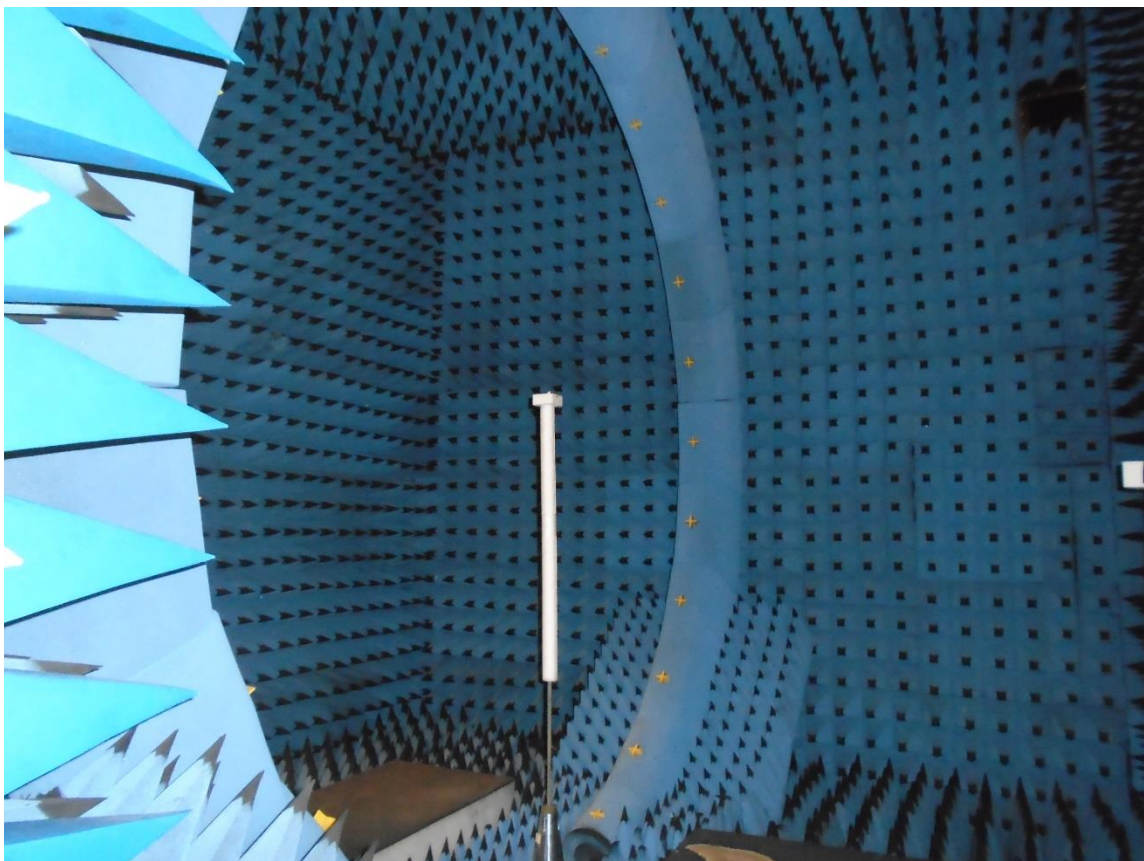


Figure 3a Overall view of SG24L test chamber, showing ring of receiving antennas

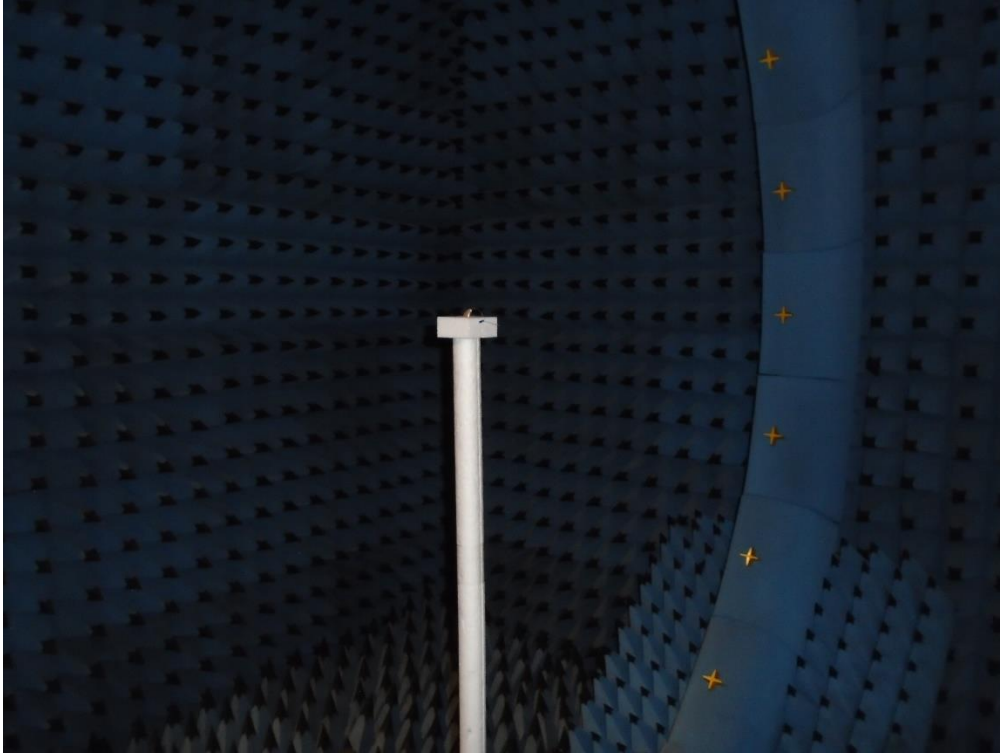


Figure 3b Test stand in SG24L test chamber

Antenna Gain Measurement Information

The MVG SGL24L antenna test system runs internal scripts that yield the maximum EIRP from each radiated power measurement. From there, the following equation could be used to calculate the antenna gain in dBi.

$$\text{Max Antenna Gain} = \text{Max EIRP} - \text{Power at antenna pads}$$

Where,

$$\text{Power at antenna pads} = \text{BLE Chipset Power Setting} - \text{Simulated PCB Insertion Loss}$$

Subtracting the conducted power at the antenna pads from the EIRP value, yields the antenna gain as follows:

- Max Antenna Gain = -1.4 dBi