

Genesis AI RIC 312 Antenna Description

The Bluetooth 2.4 GHz antenna is a bowtie (butterfly) component. The antenna is manufactured by Fujikura and its part number is 82344-700.

The peak gain of the antenna in the assembled DUT is nominally -3.0dBi (see calculations on page 6).

Date of antenna pattern measurement: January 13, 2023



Figure 1 2.4 GHz Antenna (scale in cm)

Three-dimensional pattern (scale in dBm noted)

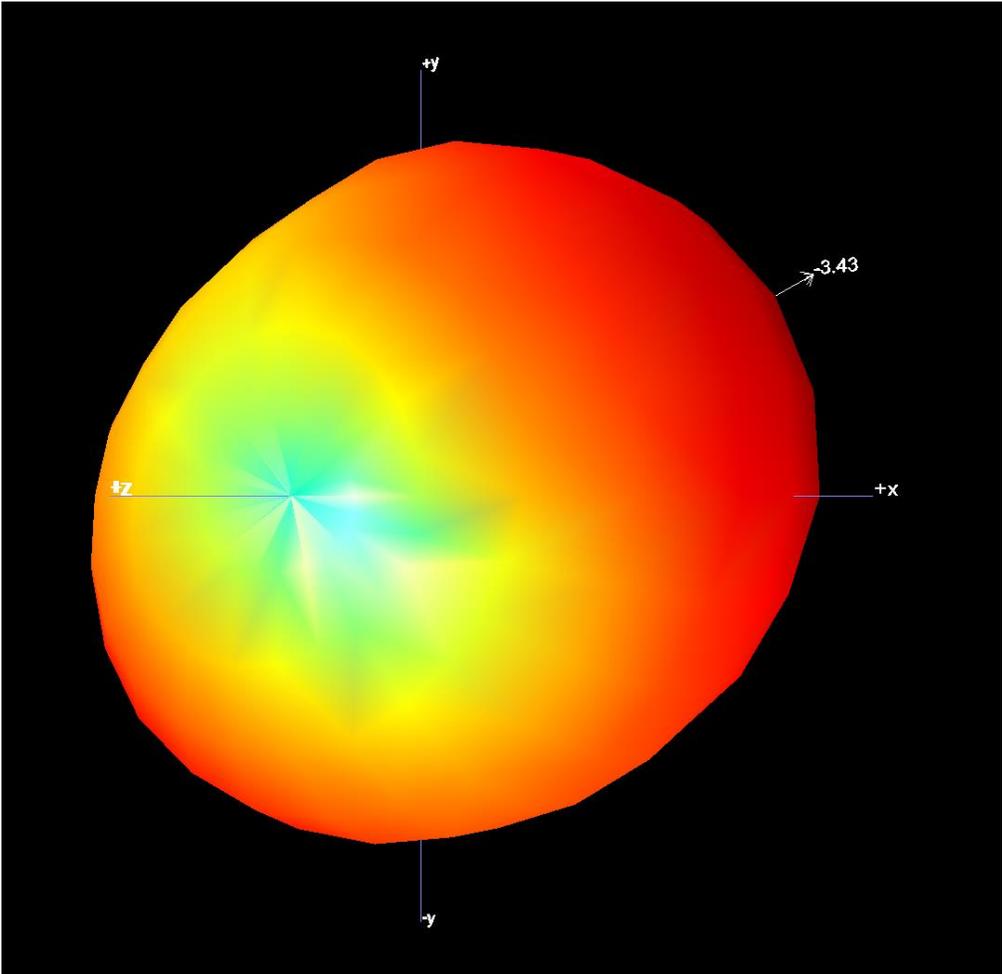


Figure 2a 3-Dimensional Antenna Pattern

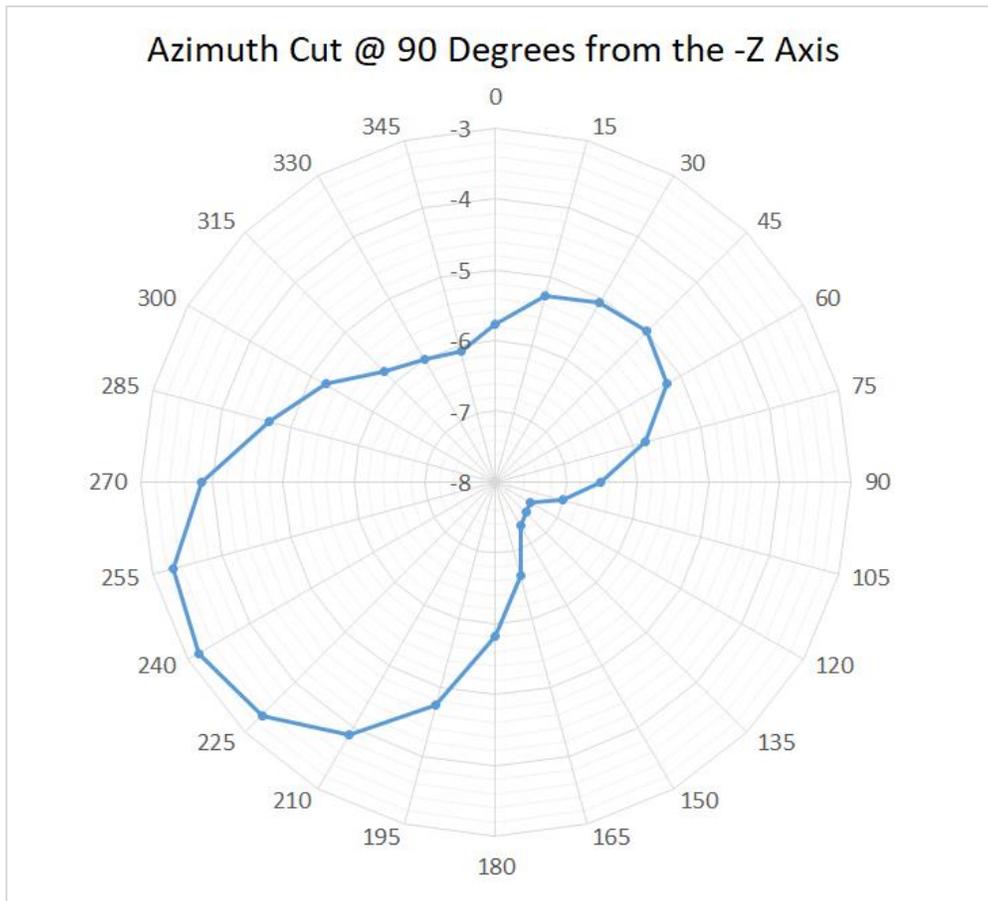
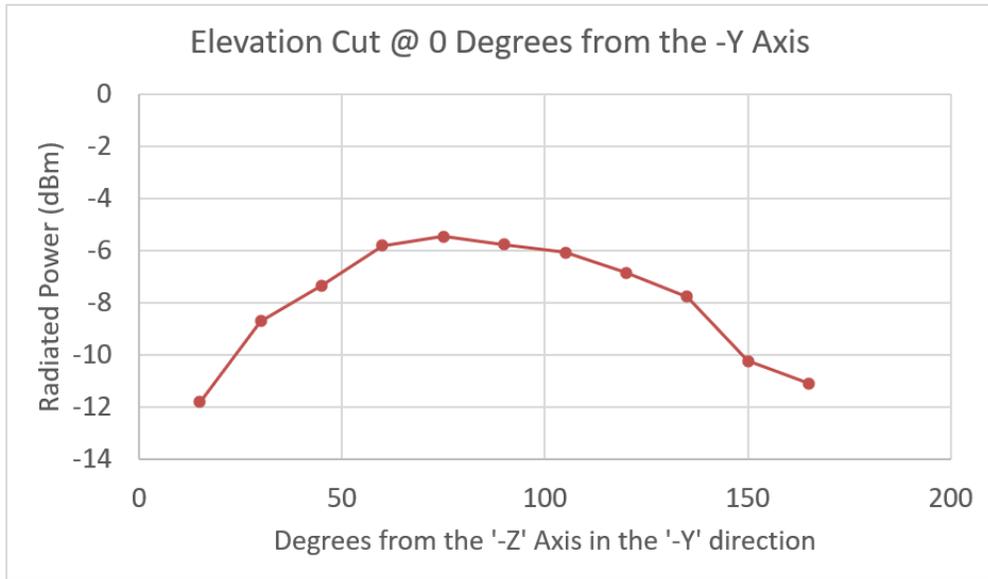


Figure 2b Left Hearing Aid Antenna Elevation and Azimuth Cuts

scale in dBm

Antenna Pattern Measurement Information

The antenna patterns shown in Figures 2a 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 2 are generated by the SG24L test system software.

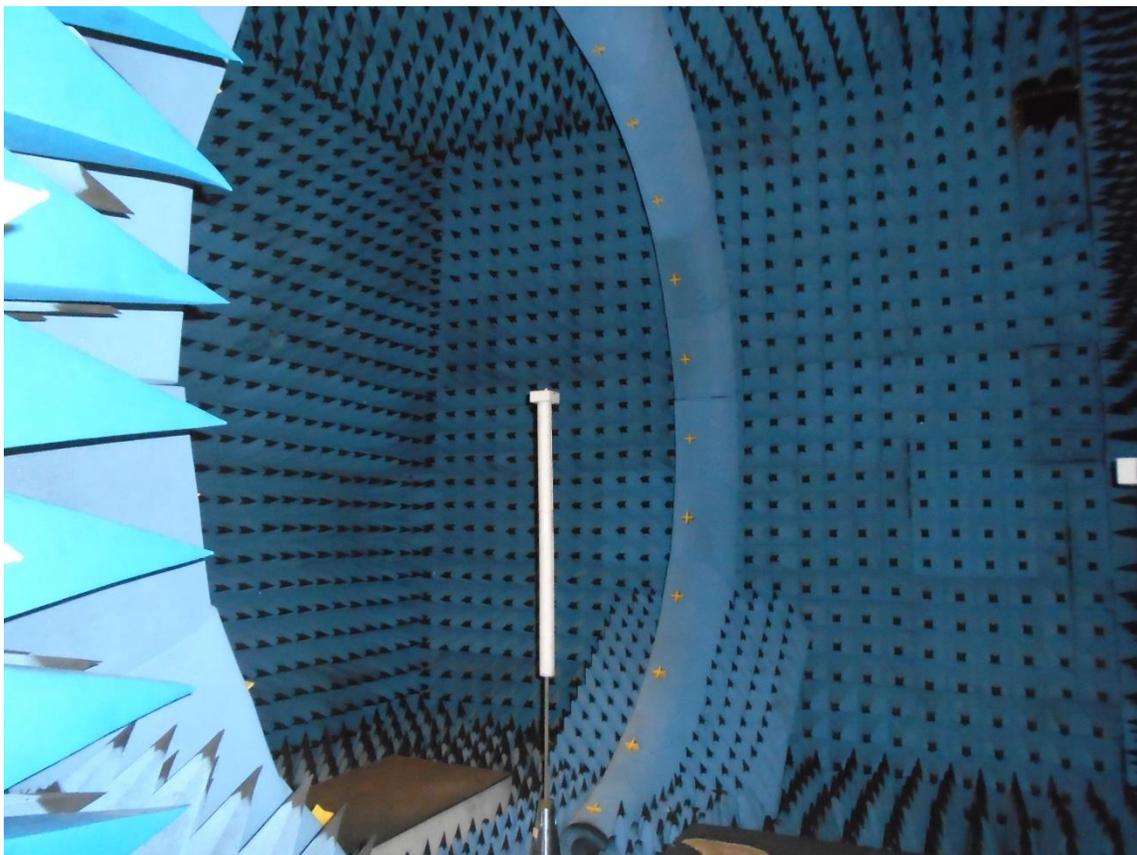


Figure 3a Overall view of SG24L test chamber, showing ring of receiving antennas

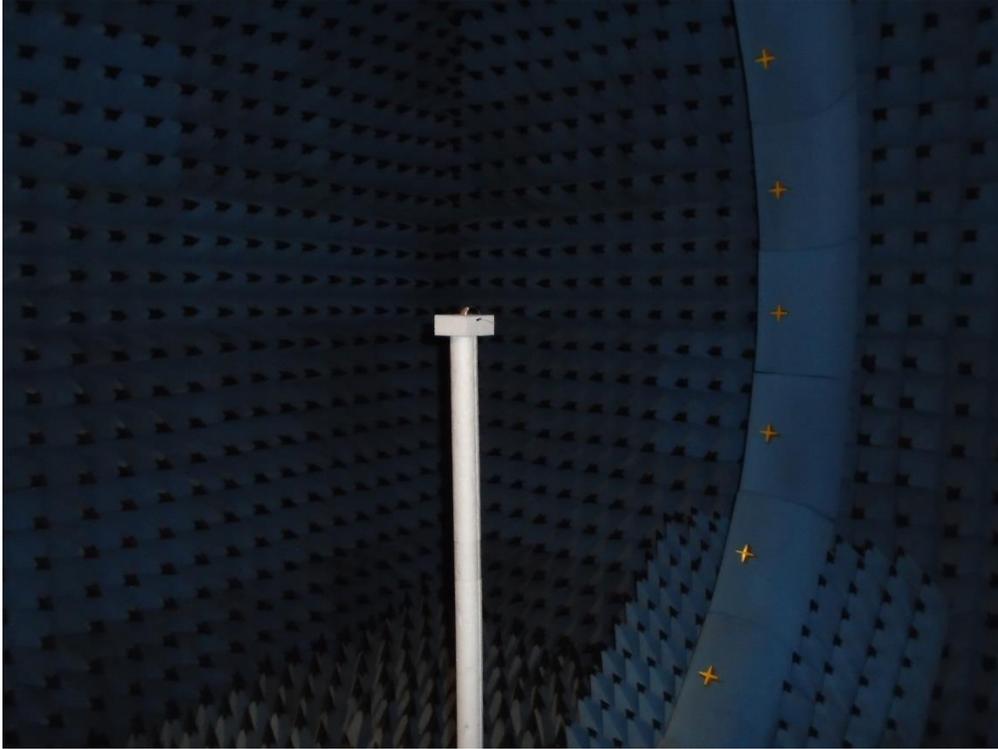


Figure 3b Test stand in SG24L test chamber



Figure 3c close-up of unit under test in 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 = -3.0 dBi

10.281 MHz NFMI antenna

The 10.281 MHz NFMI antenna is a coil wrapped on a ferrite core



Figure 4 **NFMI Antenna**

The NFMI antenna coil is a cylinder of nominal radius 1.125 mm and length 4.2 mm. There are 21 turns going down the coil, and 3 turns coming back, which are needed because the wire feed is only along one end of the coil.