Signature CIC R Antenna Description

The Bluetooth 2.4 GHz antenna is a center fed monopole.

The peak gain of the antenna in the assembled left hearing aid is -2 dBi.

The peak gain of the antenna in the assembled right hearing aid is -4 dBi.

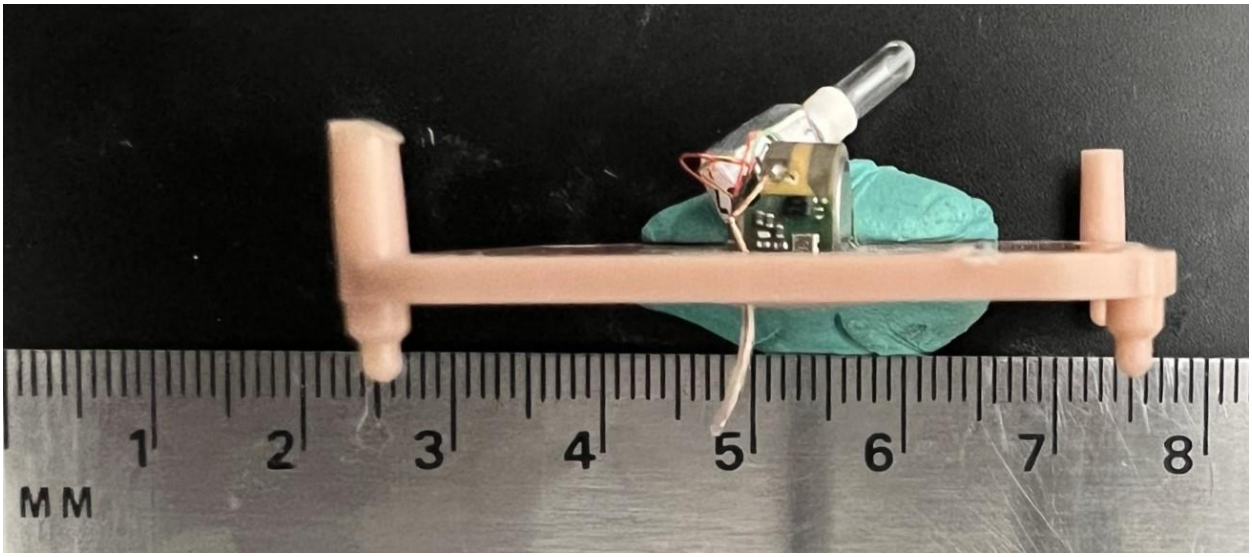

Figure 1 2.4 GHz Antenna (scale in mm)

Antenna shown on faceplate before hearing aid is removed from excess plastic around faceplate and custom case molded to patient ear canal is placed on it. Half of antenna shown above faceplate in photo, other half is wire below faceplate.

Date of antenna pattern measurement: November 20, 2023

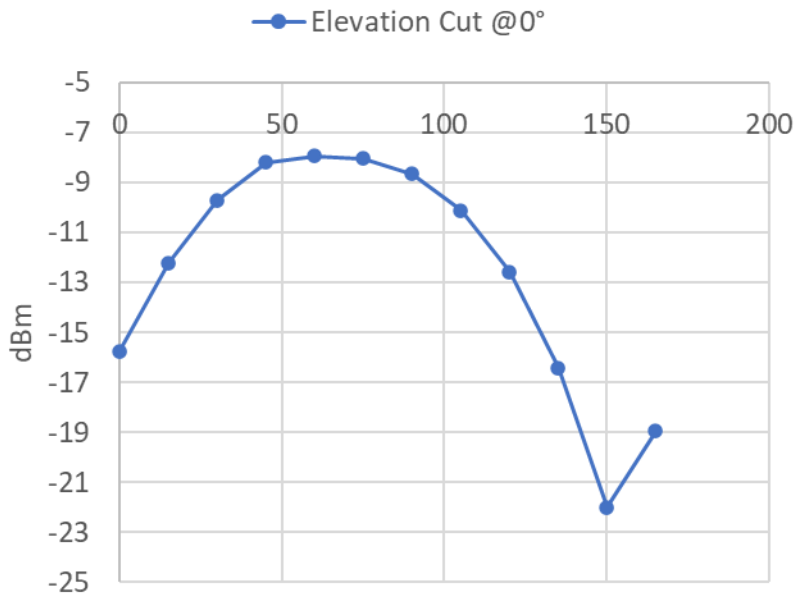

Figure 2a Left Hearing Aid Elevation cut @ 0 degrees from X axis. Y axis Effective Radiated Power Scale in dBm

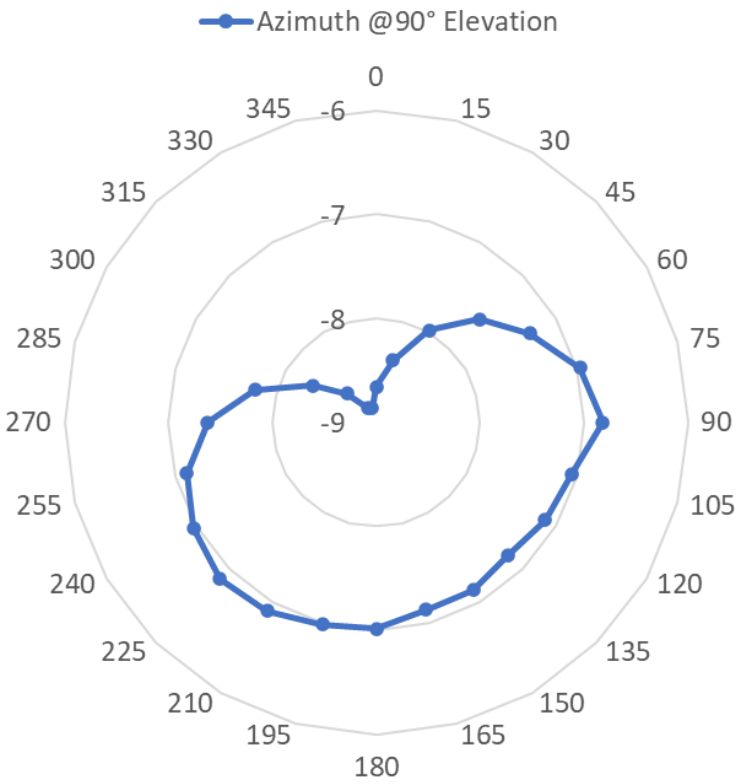

Figure 2b Left Hearing Aid Antenna Azimuth Cut @ 90 degrees from Z axis. Circles are Effective Radiated Power Scale in dBm.

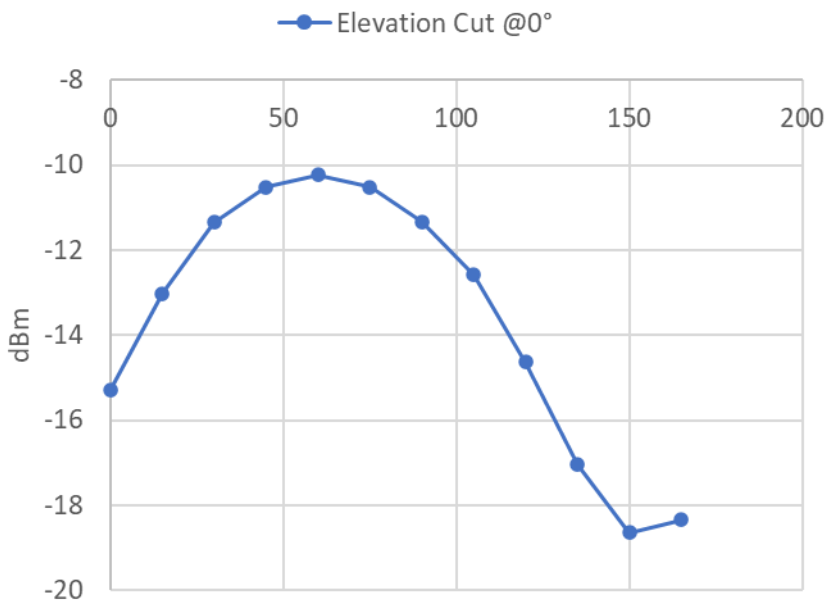

Figure 3a Right Hearing Aid Elevation cut @ 0 degrees from X axis. Y axis Effective Radiated Power Scale in dBm

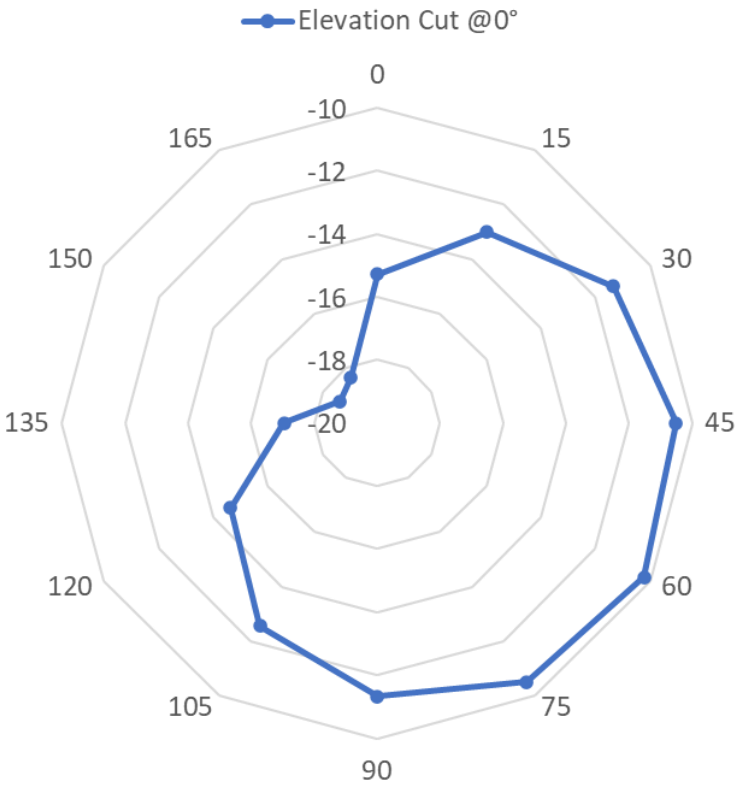

Figure 3b Right Hearing Aid Antenna Azimuth Cut @ 90 degrees from Z axis. Circles are Effective Radiated Power Scale in dBm.

Antenna Pattern Measurement Information

The antenna patterns shown in Figures 2 and 3 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 October 12, 2023, due for calibration in October 2024.

Signal levels were measured using a Keysight N9020B MXA Signal Analyzer (Spectrum Analyzer). serial number MY63470227,
calibrated on May 4, 2023, due for calibration on May 4, 2025.

The antenna pattern plots in Figures 2 and 3 are generated by the SG24L test system software.

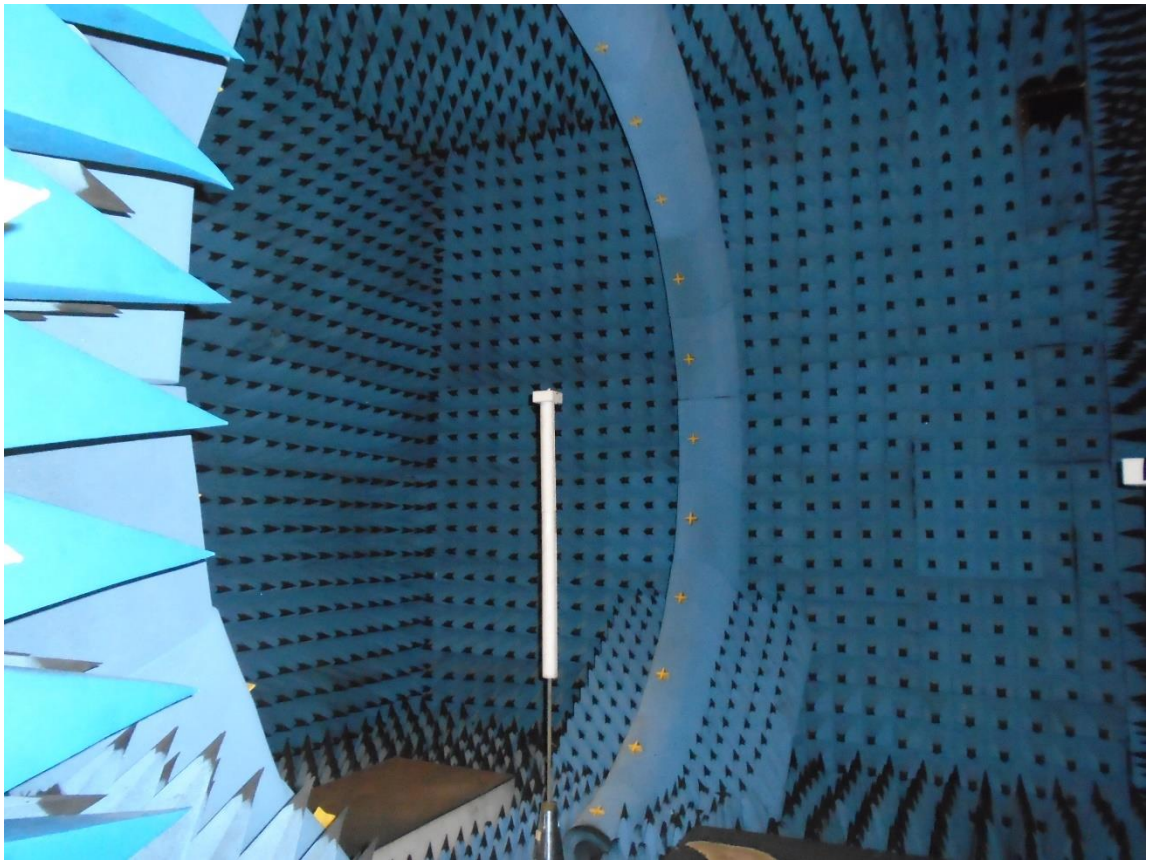

Figure 4a Overall view of SG24L test chamber, showing ring of receiving antennas

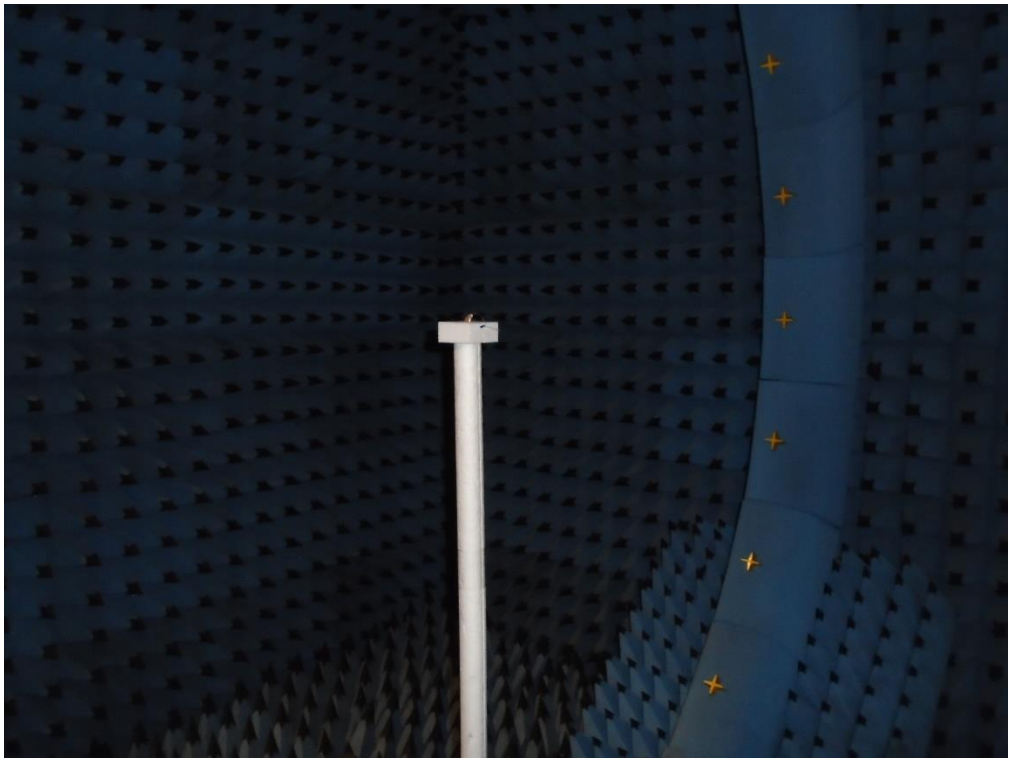

Figure 4b Test stand in SG24L test chamber

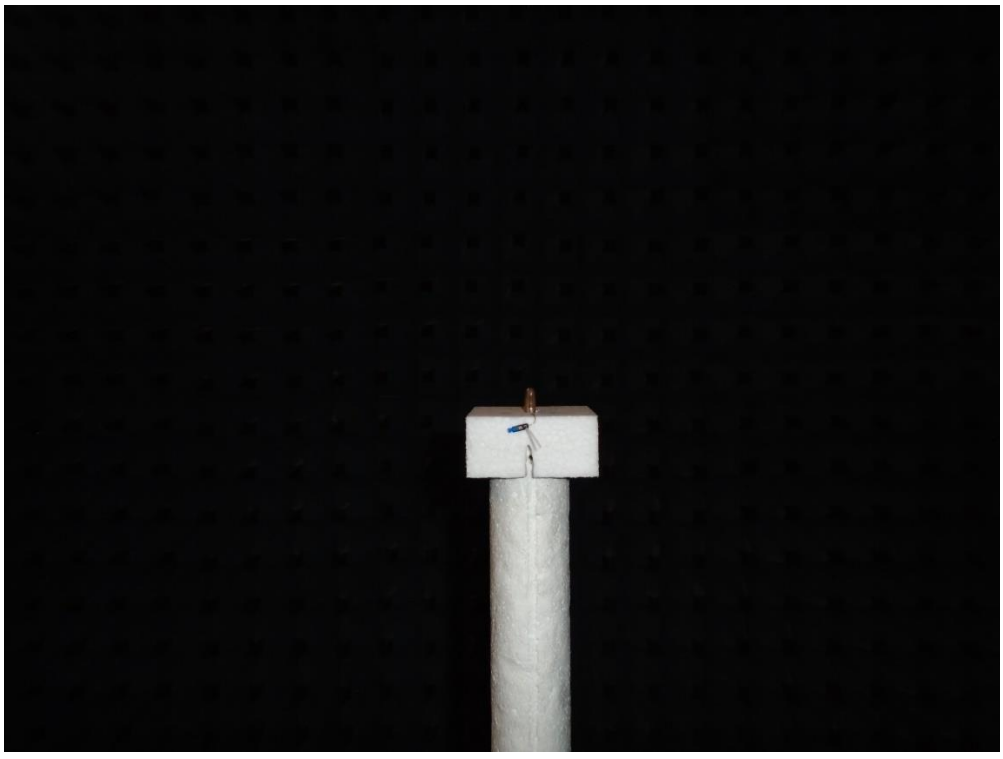

Figure 4c close-up of unit under test in test chamber

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.

Max Antenna Gain = Max EIRP – Power at antenna pads

Where,

Power at antenna pads = BLE Chipset Power Setting – Measured Insertion Loss

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

- Max Antenna Gain = -2.0 dBi (left) and -4.0 dBi (right)