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ANTENNA SPECIFICATION HILTI

1 Basic information:

The diagnostic reader requires a wide frequency range, as it is operated in both the EU and US frequency ranges.

The complete reader, including the antenna, is installed in a plastic handheld housing..

2 IMPLEMENTATION

A sandwich design was chosen for the structure, meaning that the antenna is located above the reader circuit board. Due to the available space, a circular antenna structure was chosen. Frequency adjustment is achieved via the distance between the ends of the circle:

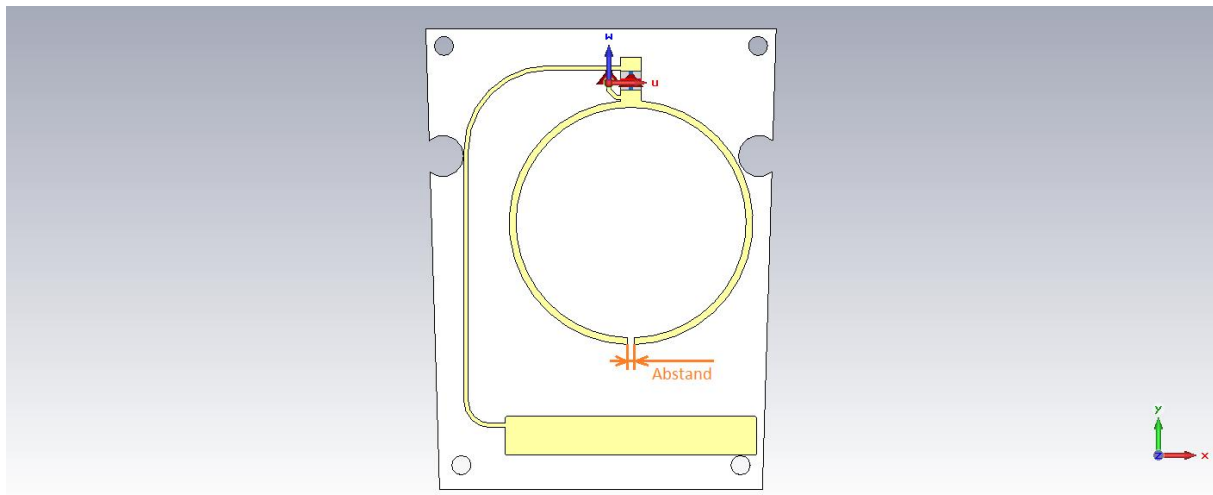


Figure 1: Antenna design

The simulation and subsequent tests determined an ideal distance of 1 mm.

To improve broadband performance, a component for adjusting the antenna quality was provided in addition to the feed.

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Due to the underlying circuit board, the antenna's radiation pattern is directed in the desired direction:

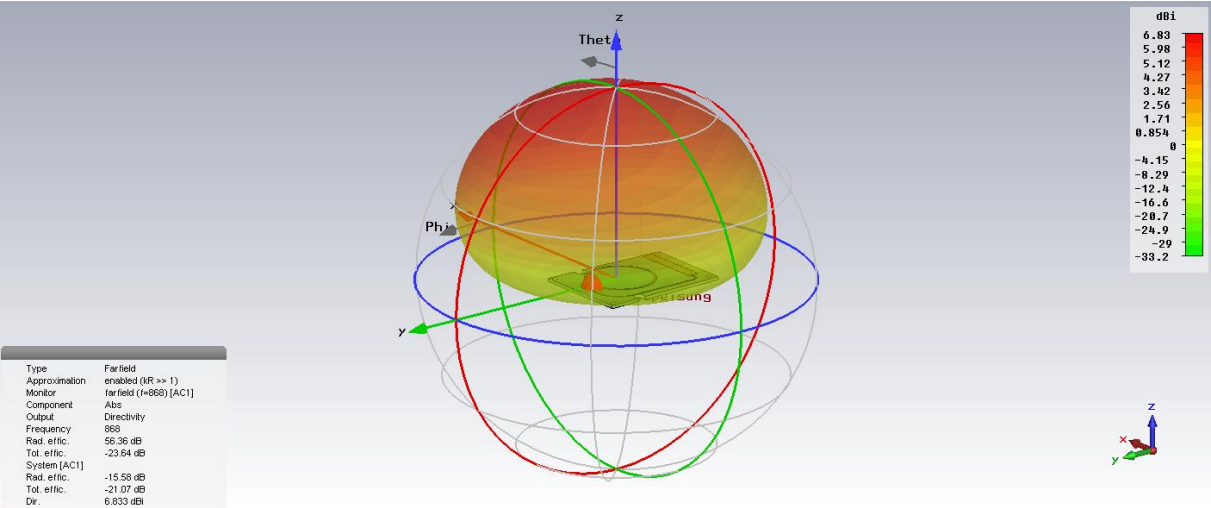


Figure 2: Directional characteristics at 868 MHz

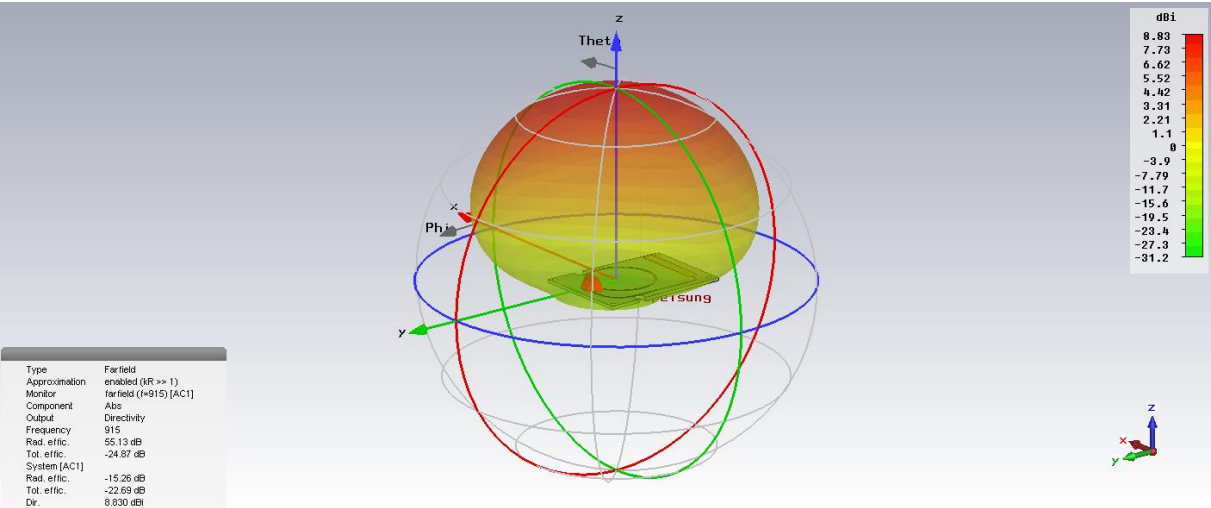


Figure 3: Directional characteristics at 915 MHz

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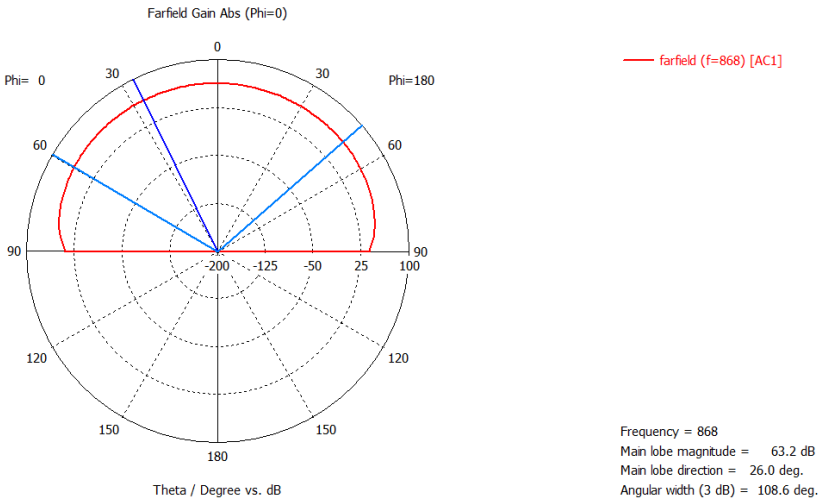


Figure 4: Antenna gain at 868 MHz

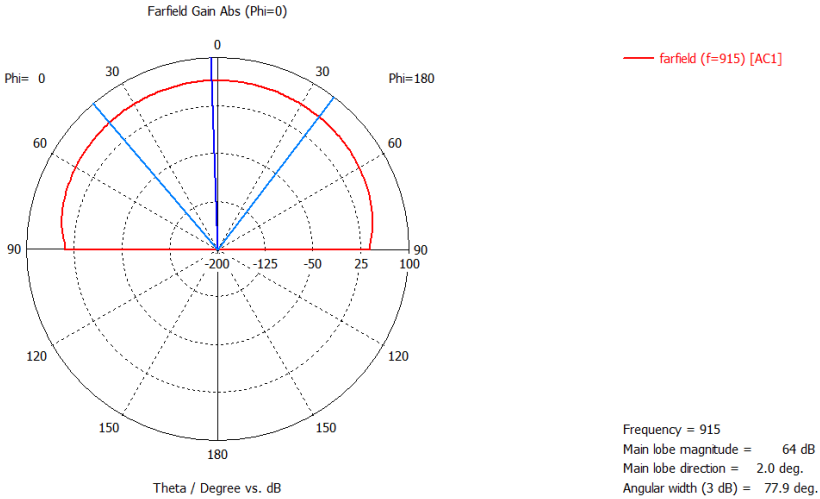


Figure 5: Antenna gain at 915 MHz