PROTOTYPE ANTENNA PERFORMANCE REPORT

ELC Lightning

June 25 2024

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1. Table of Contents

2. Performance of Prototype antenna 3

2.1. Customer Device Measurement 8

2.1.1. Measurement Setup 8

2.2. Antenna 1 9

2.2.1. Return Loss 9

2.2.2. VSWR 9

2.2.3. OTA Performance 10

2.2.4. Radiation Pattern 12

2.3. Antenna 2 13

2.3.1. Return Loss 13

2.3.2. VSWR 13

2.3.3. OTA Performance 14

2.3.4. Radiation Pattern 16

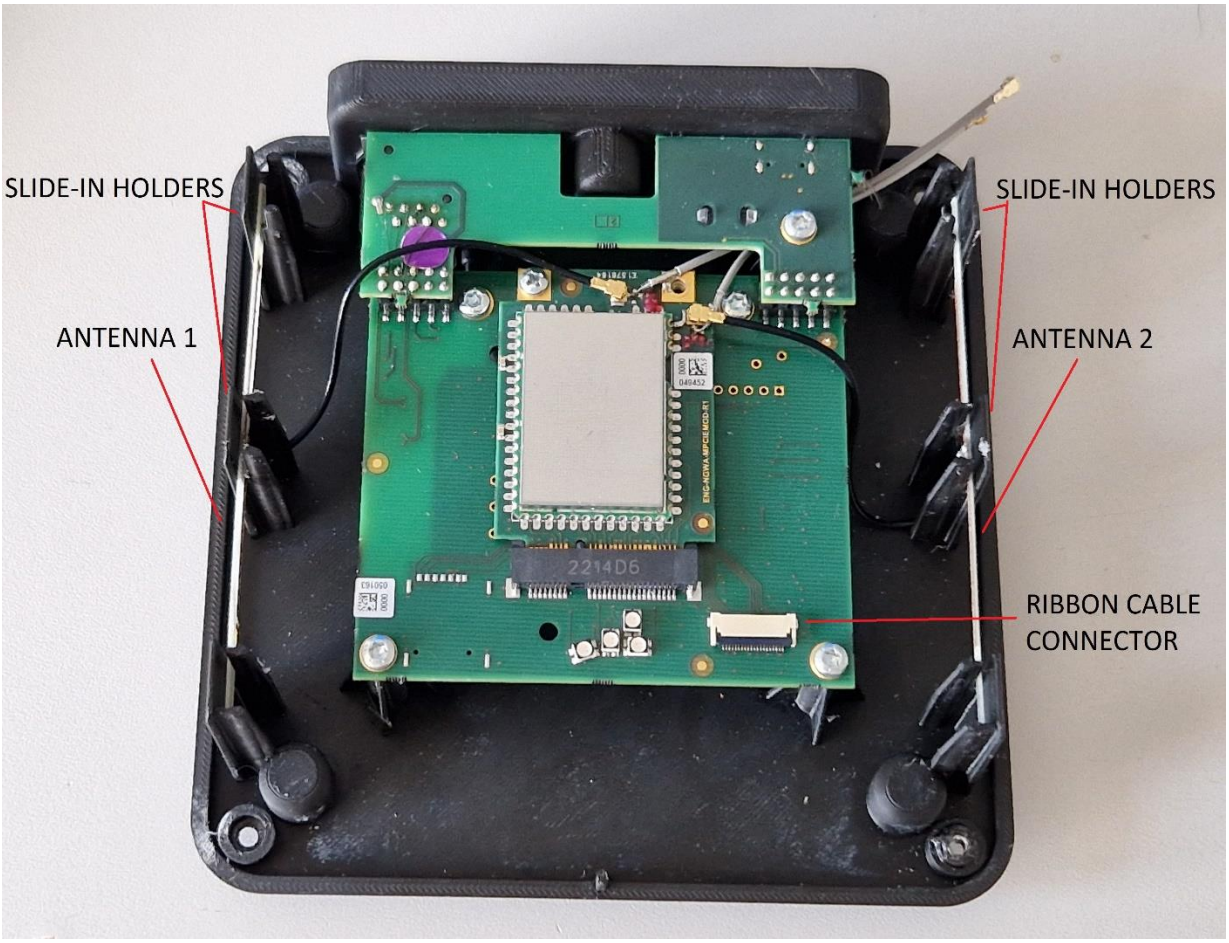
2.4. Conclusion 17

2. Performance of Prototype antenna

Prototype antenna for DECT bands (1880-1930 MHz) for mounting inside customer device was developed. Casing of the device is from plastic material. Display in top casing is connected to PCB using ribbon cable (not seen in pictures). Three slide-in holders on each side are made to hold the antennas. Antennas were placed in said holders and were connected to PCB using 9.5 cm long MC137 cable with UFL connector. To obtain the best results cable routing is critical. Cable for Antenna 1 should be routed over top PCB and cable for Antenna 2 should be routed away from ribbon cable (as seen in pictures below).

Top view of the device

Side view of the device



Inside view of the device with antenna placement (top casing with ribbon cable removed)

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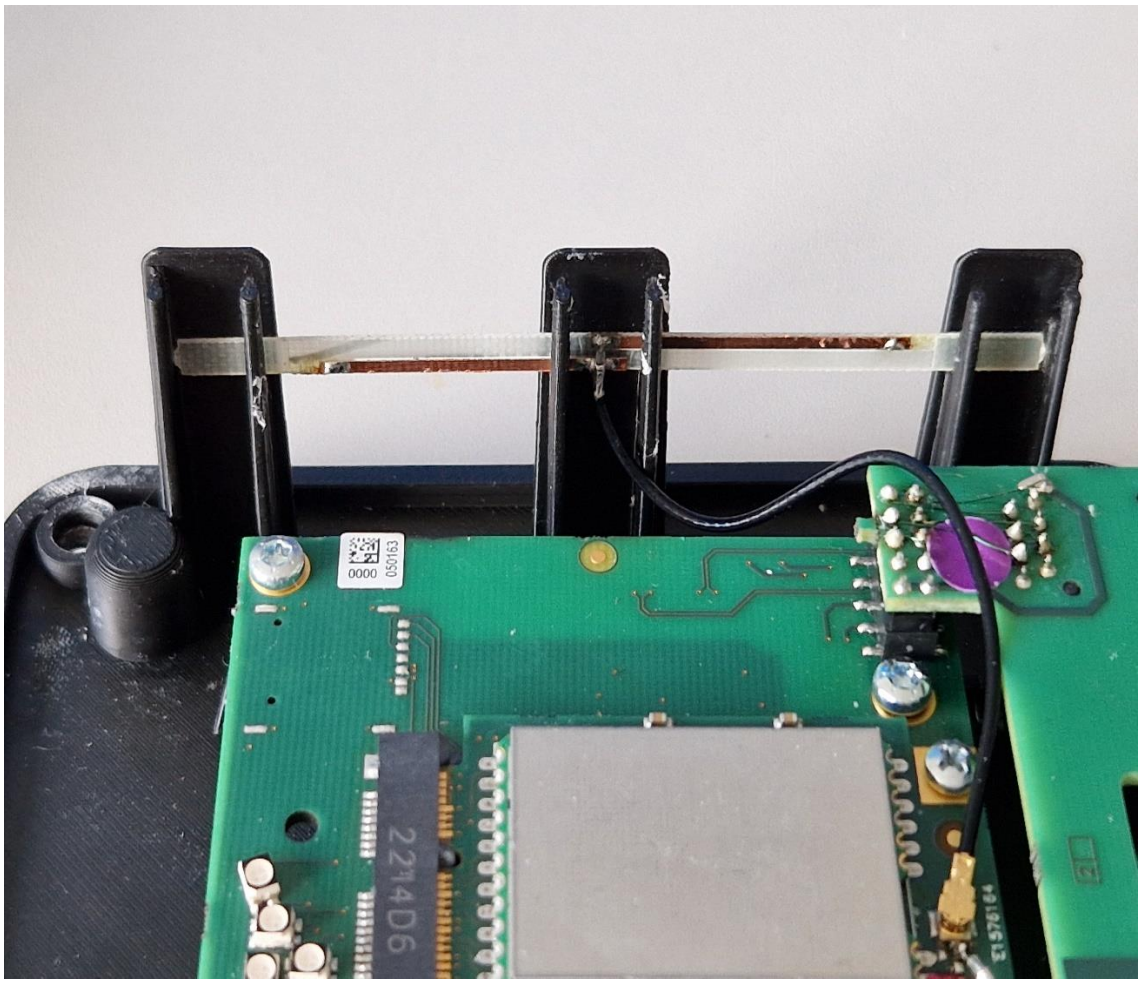

Detail view of antenna 1 and cable routing

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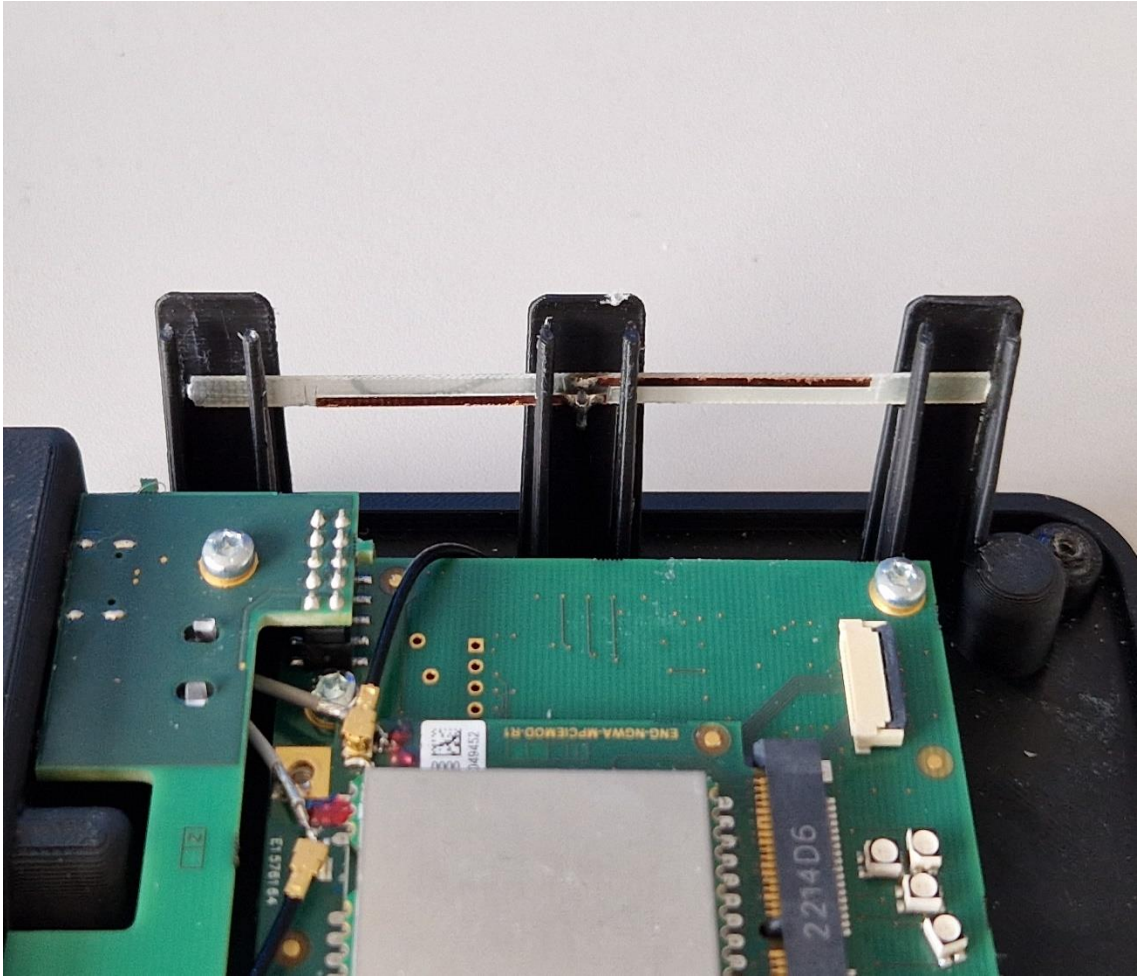

Detail view of antenna 2 and cable routing

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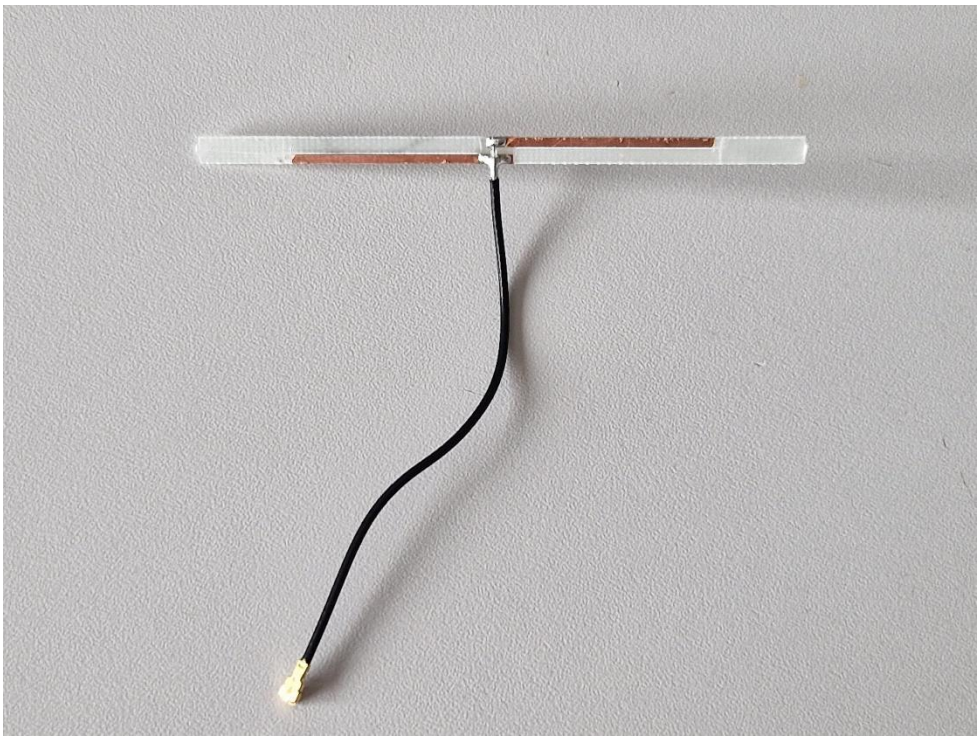

Detail view of used prototype antenna

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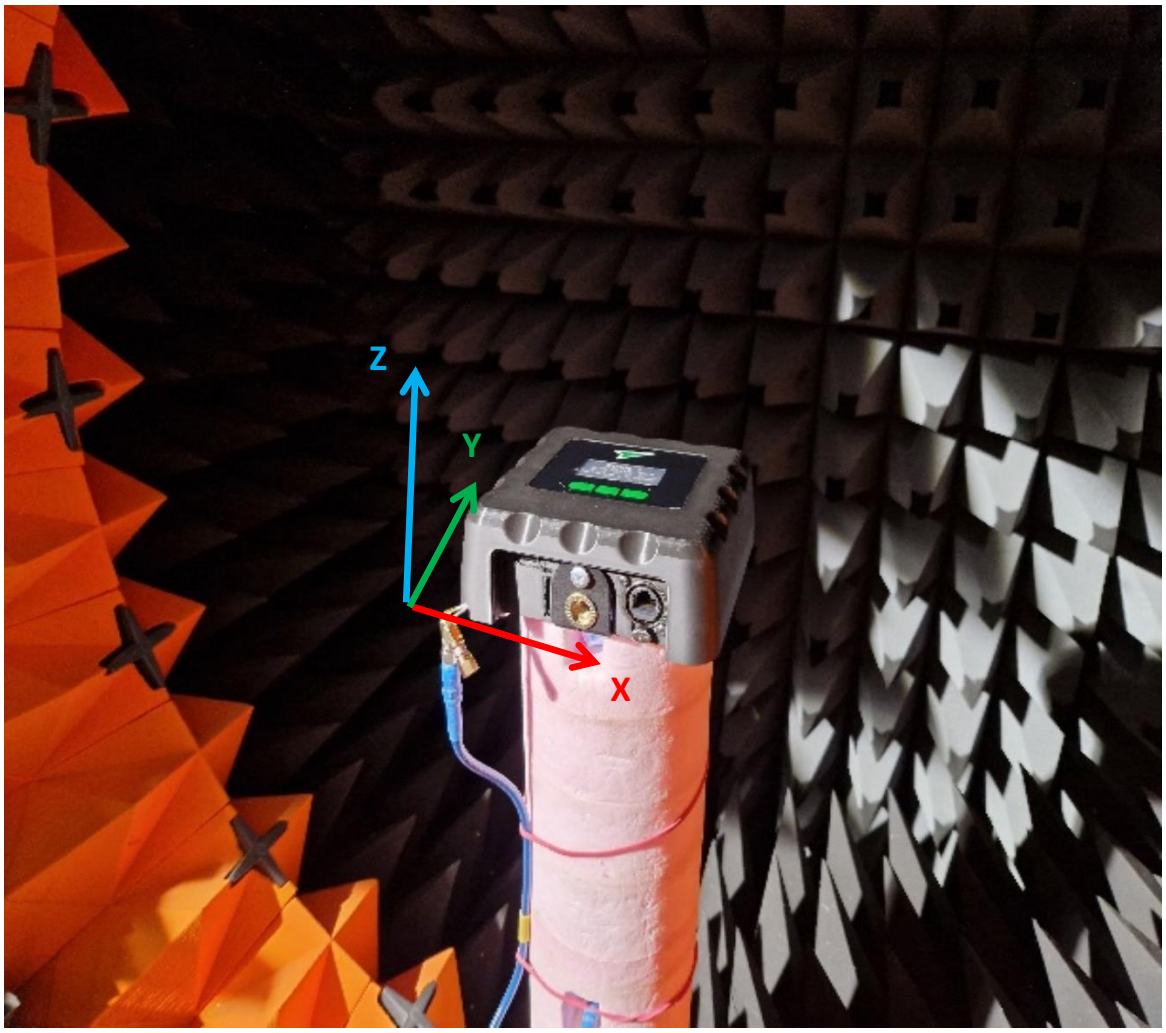
2.1. Customer Device Measurement

2.1.1. Measurement Setup

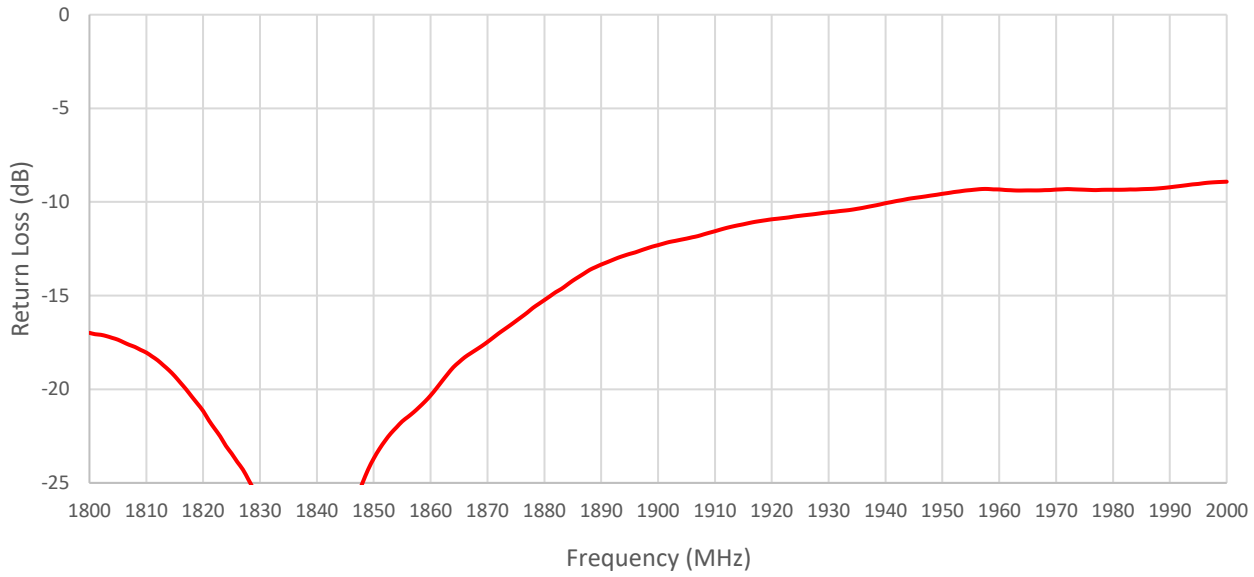
The antenna was measured inside of Certified CTIA 3D Anechoic Chamber.



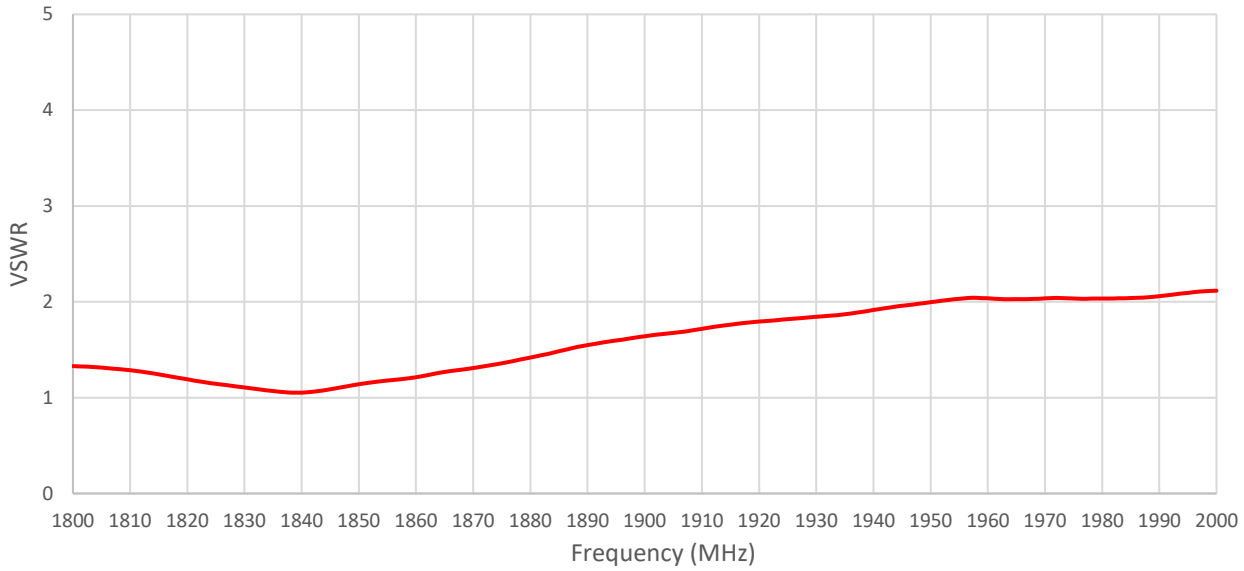
Measurement Setup

2.2. Antenna 1

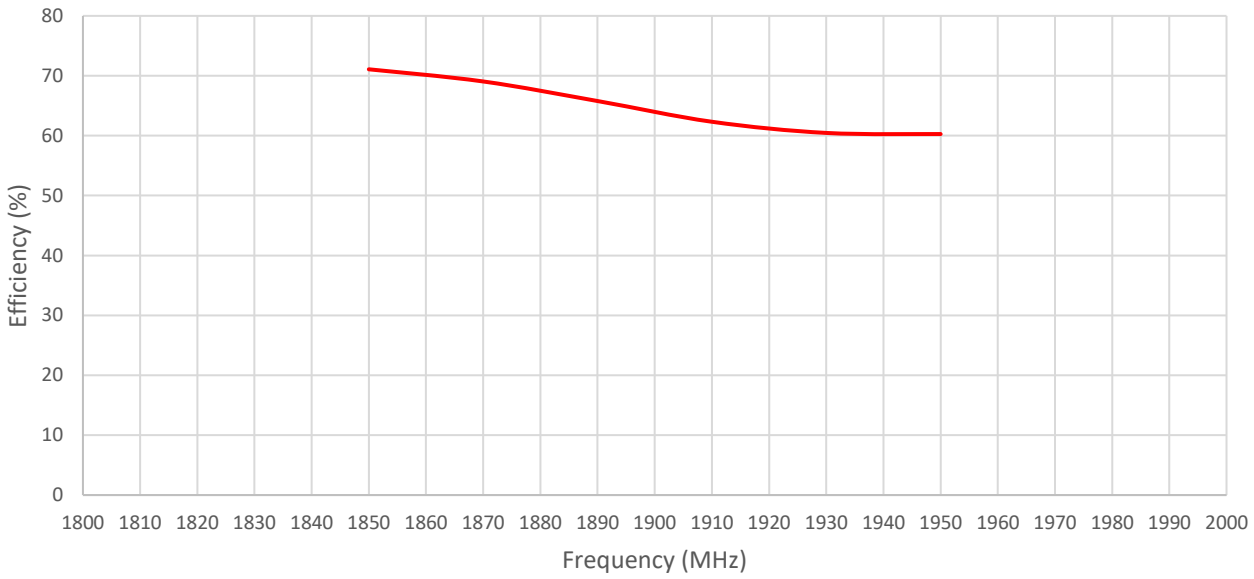
2.2.1. Return Loss

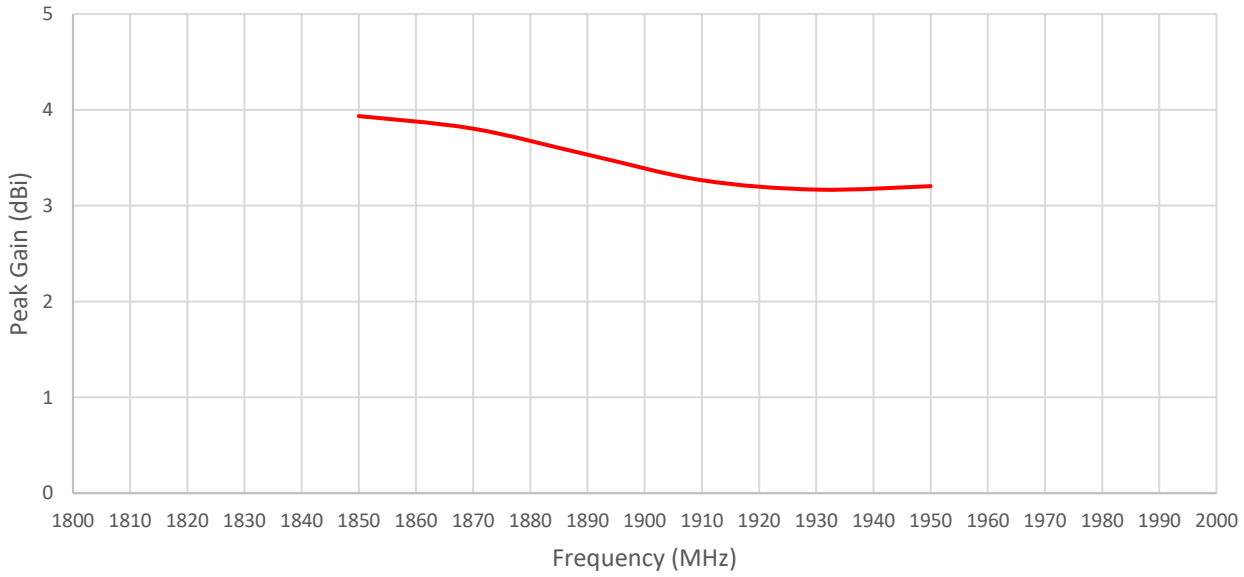


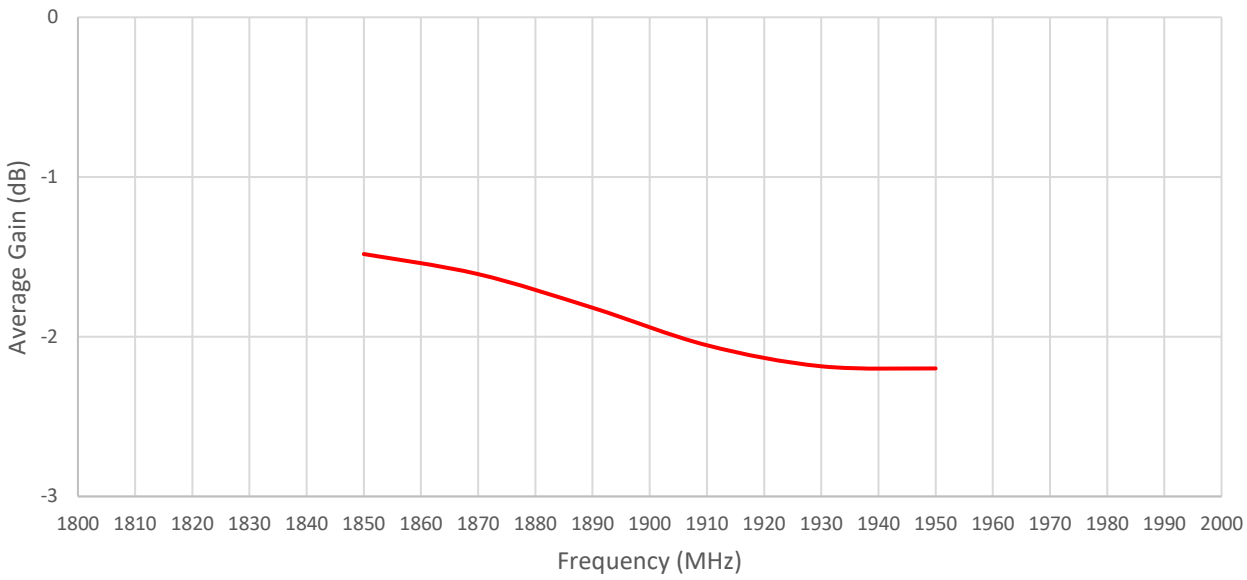
2.2.2. VSWR



2.2.3. OTA Performance







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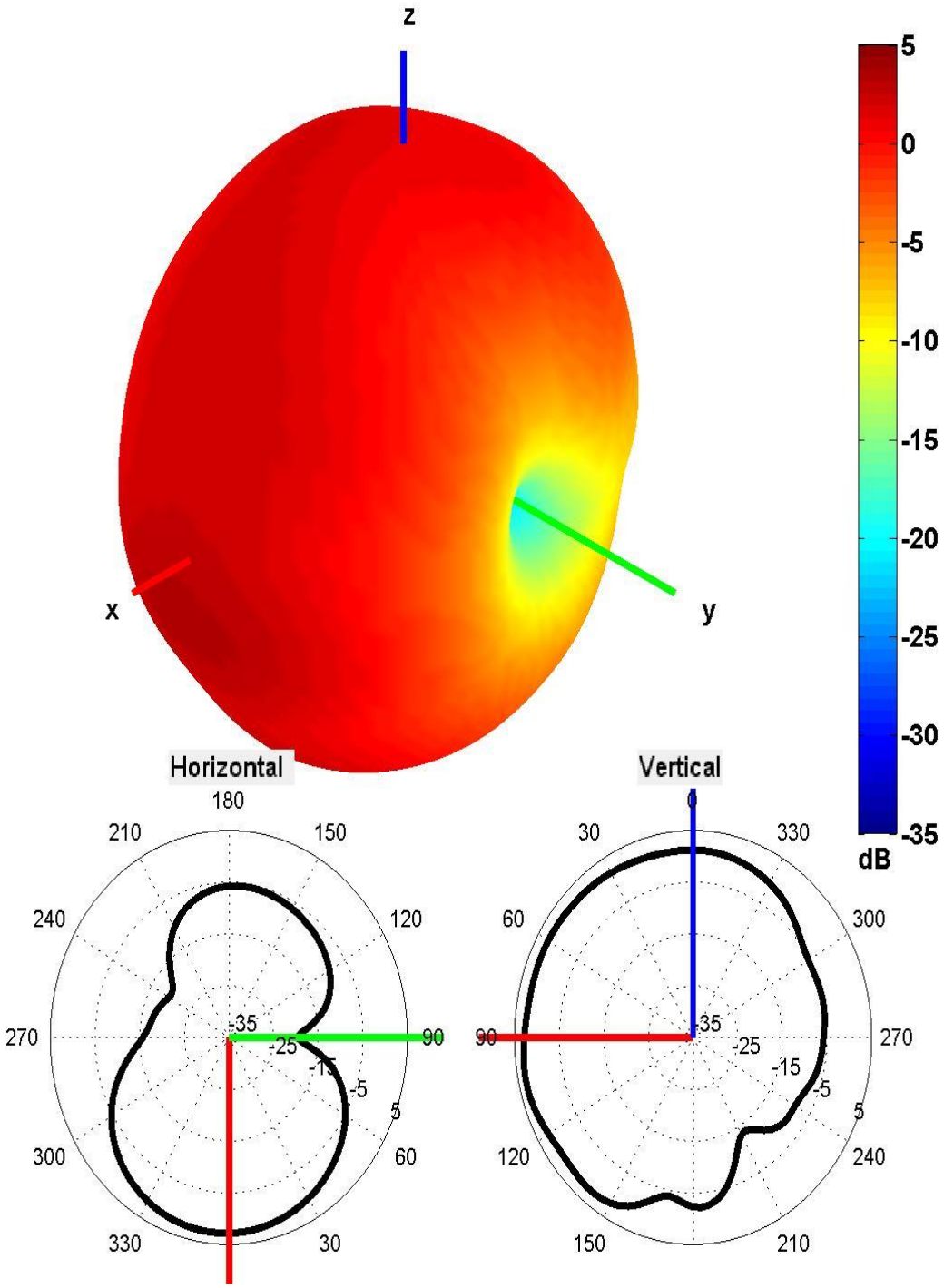
2.2.4. Radiation Pattern



Radiation Pattern at 1900MHz

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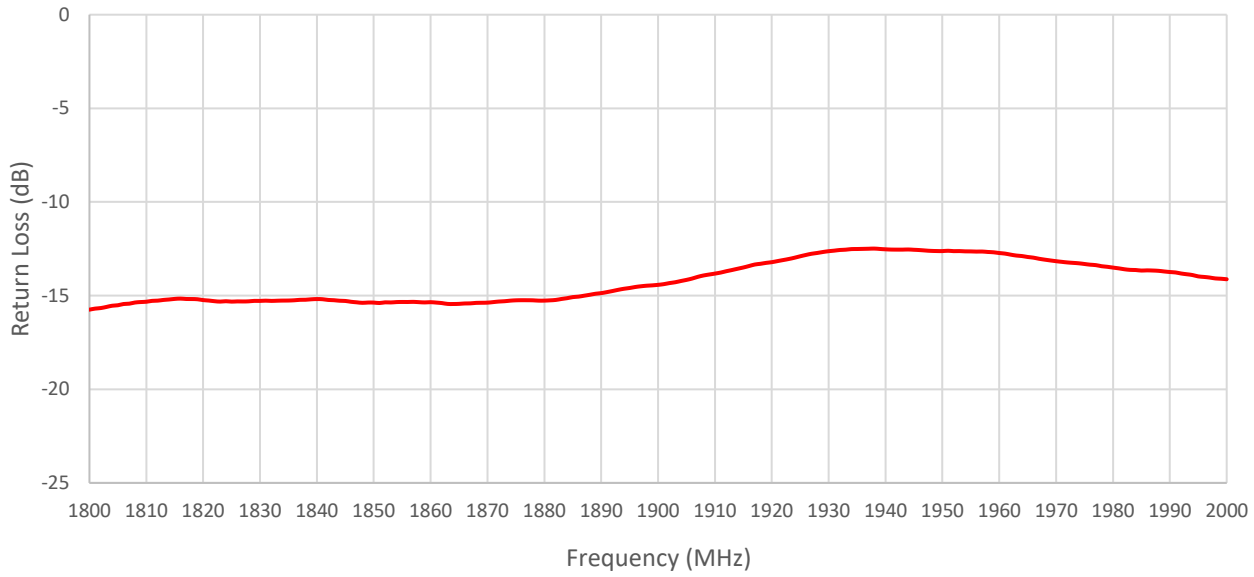
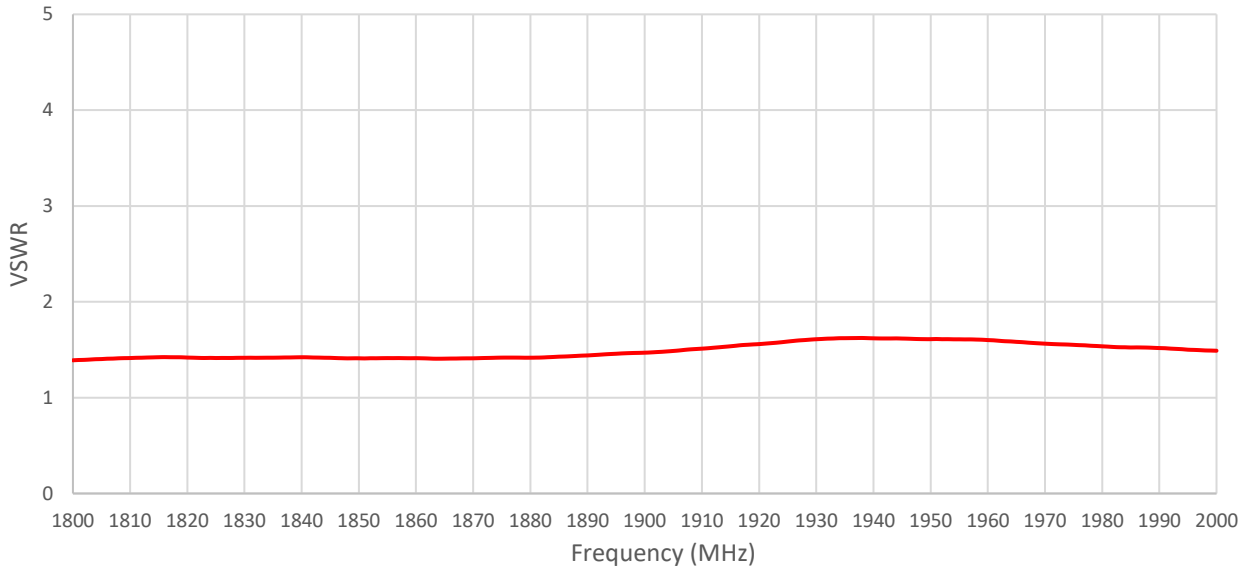
2.3. Antenna 2

2.3.1. Return Loss



2.3.2. VSWR



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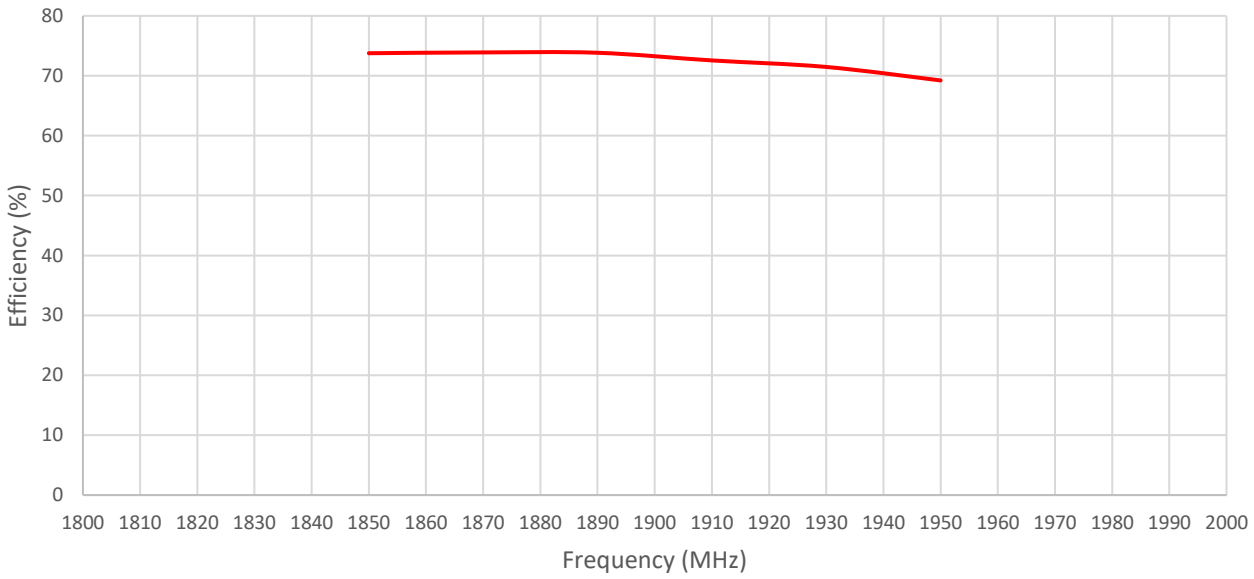
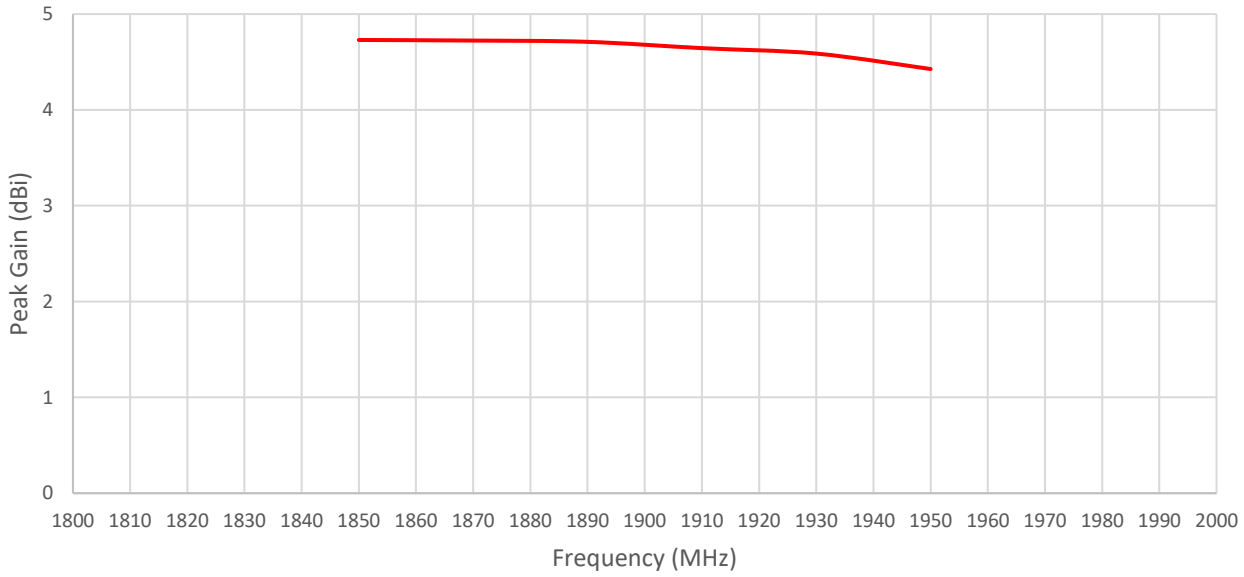
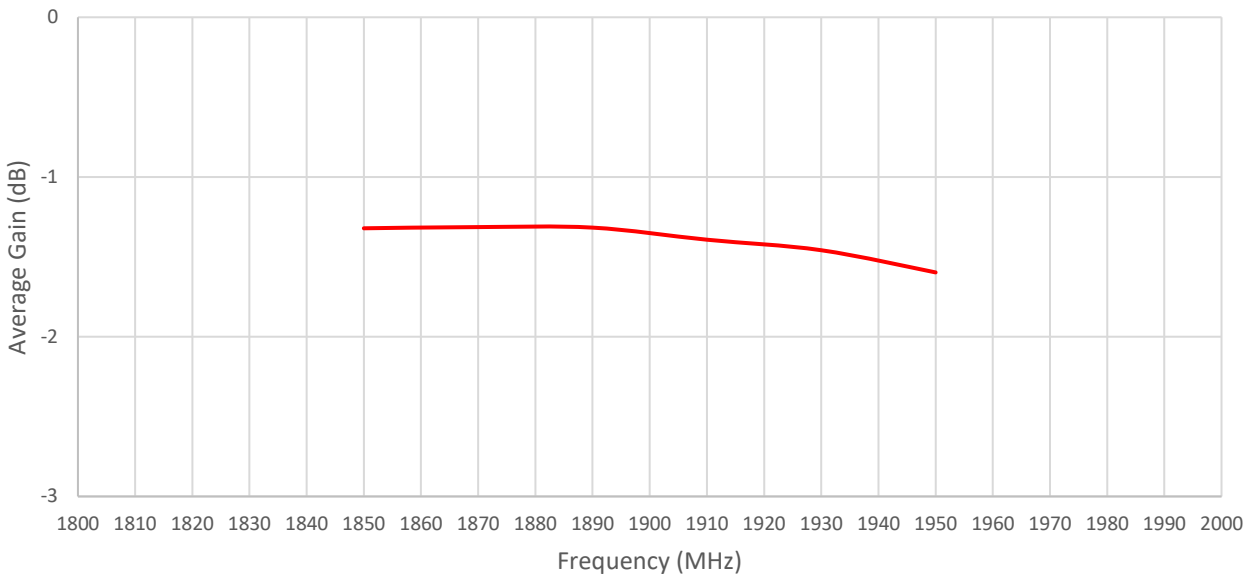
2.3.3. OTA Performance







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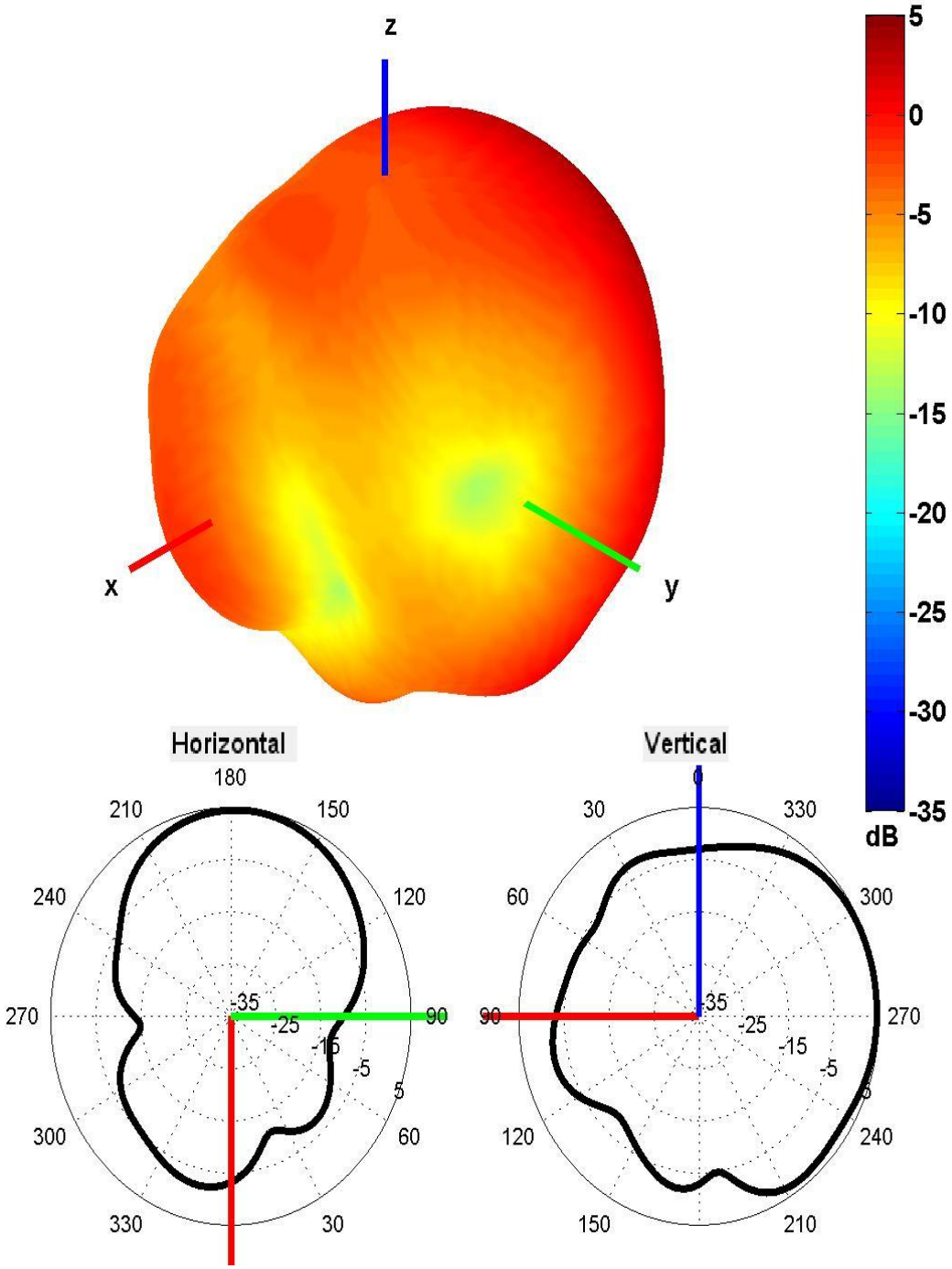
2.3.4. Radiation Pattern



Radiation Pattern at 1900MHz

2.4. Conclusion

Prototype antenna was developed for DECT bands (1880-1930 MHz) in respect to placement inside customer device. To achieve best results a cable routing as it is seen in pictures is critical to minimize coupling to nearby objects (main PCB and ribbon cable). Difference between radiation patterns is due to presence of ribbon cable near antenna 2.