

Antenna Report - CorivaSat

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Antenna development and original report by IRK – Dresden



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Preliminary clarification

This antenna report uses parts of the original antenna report from IRK - Dresden. It is a translation of the original German version, with some irrelevant information omitted.

Editor of original report: Dr. R. Klukas

Publication date: 30/11/2022

Used software and devices

Simulation software: Wipl-D

CDA construction: VariCAD

Network analyzer: Anritsu Wiltron 37347C

1. Calculations

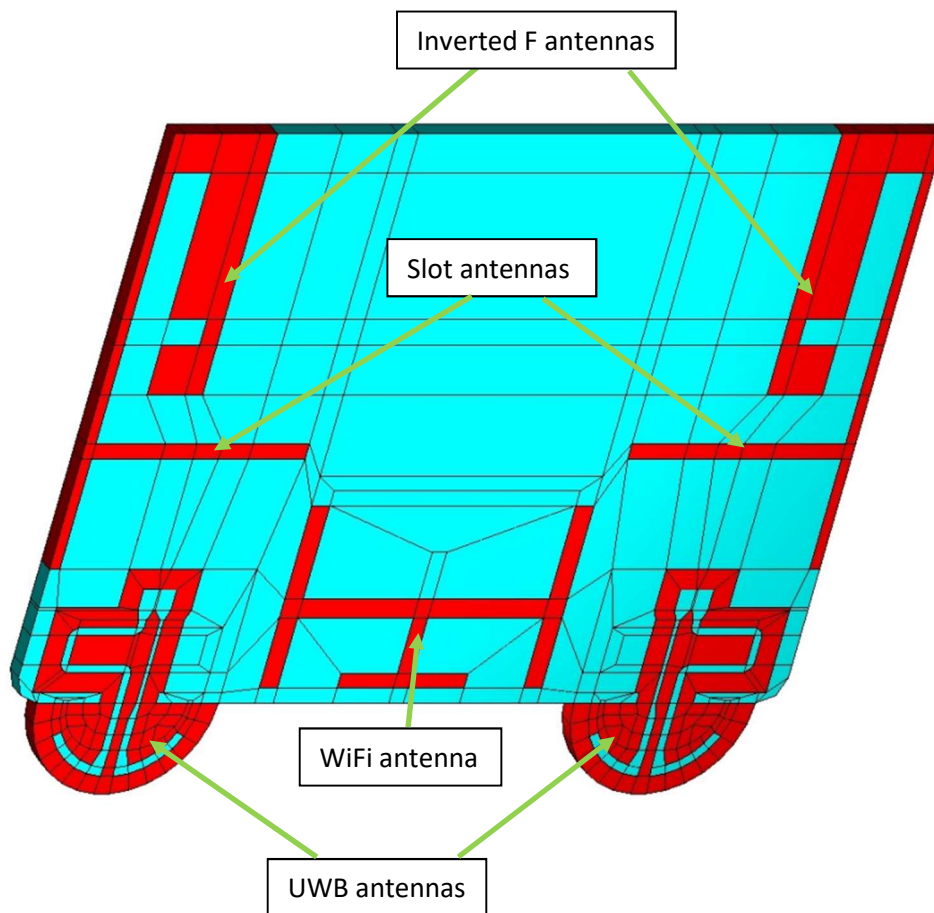


figure 1 - computation model without radomes

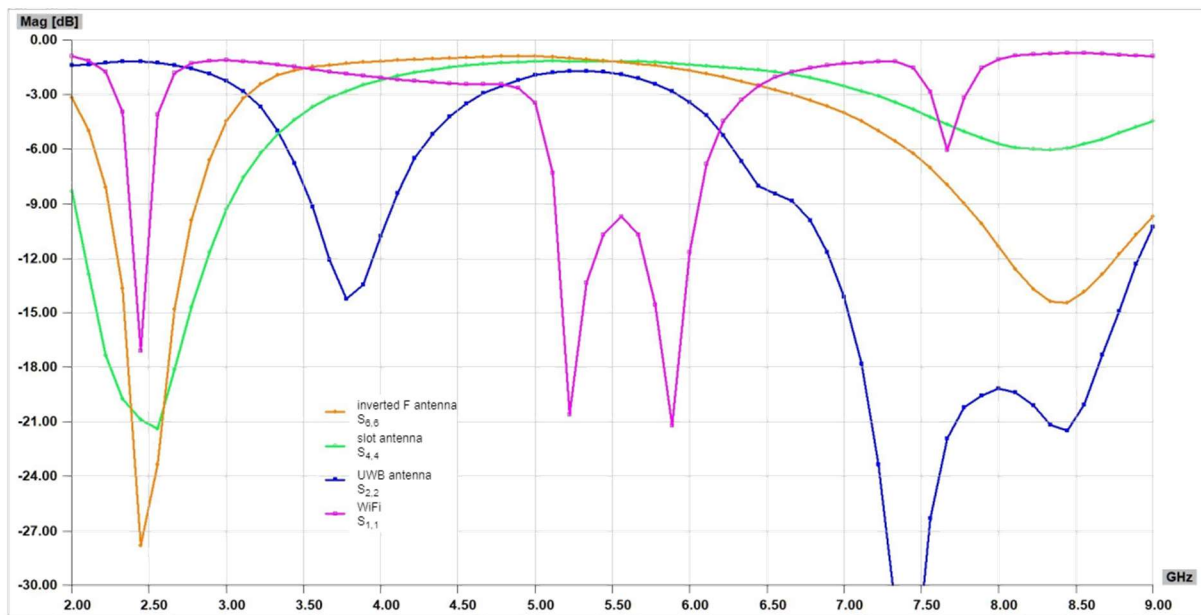


figure 2 - computed antenna matching

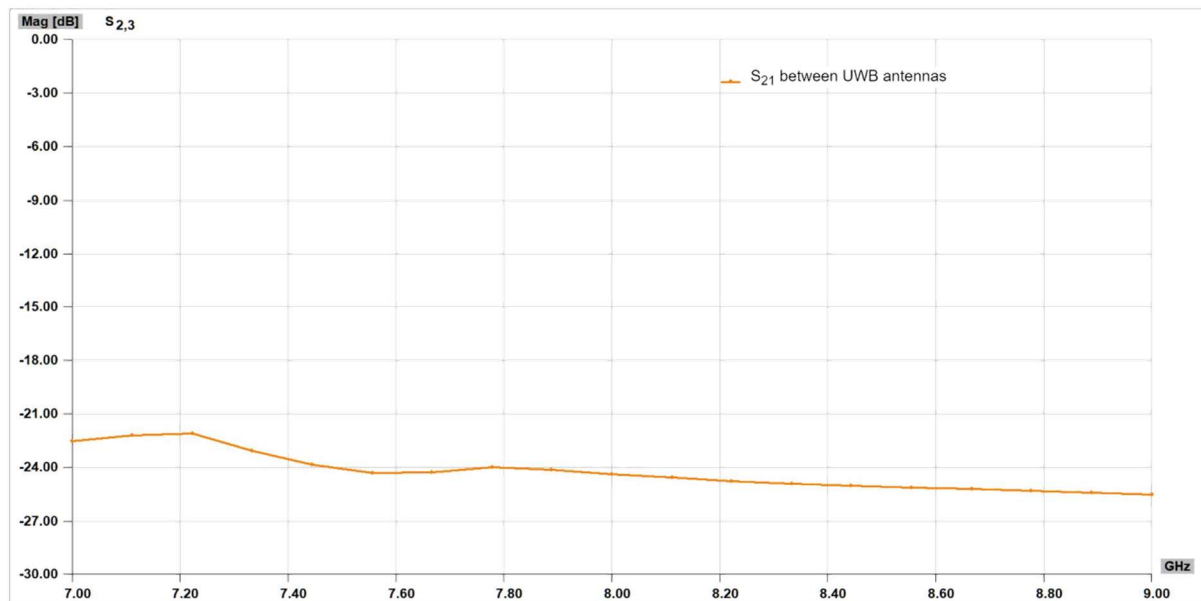


figure 3 - computed coupling between the UWB antennas

2. CAD

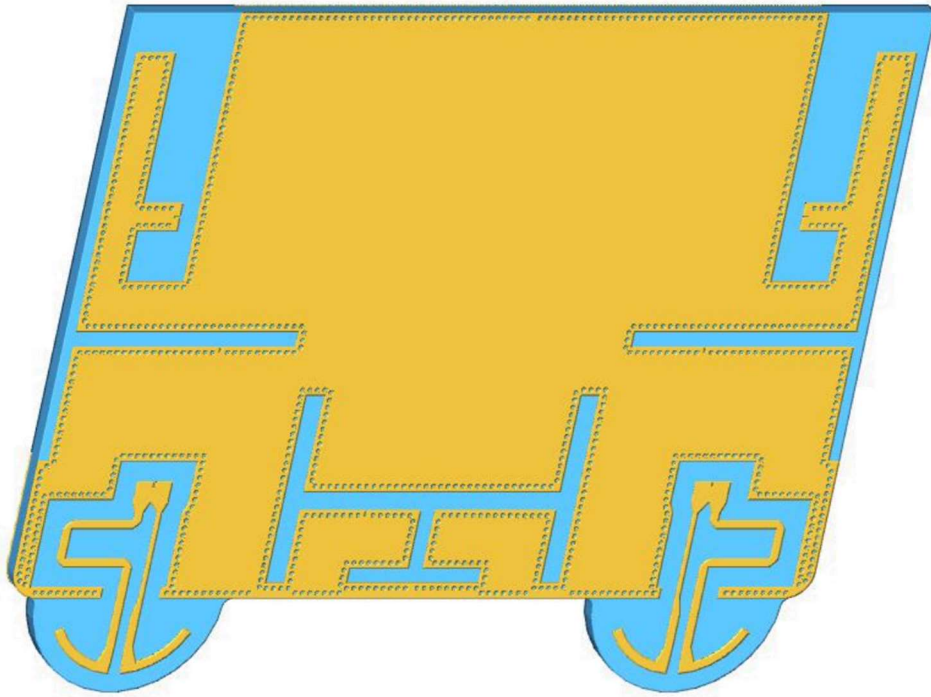


figure 4 - CAD model

3. Prototype

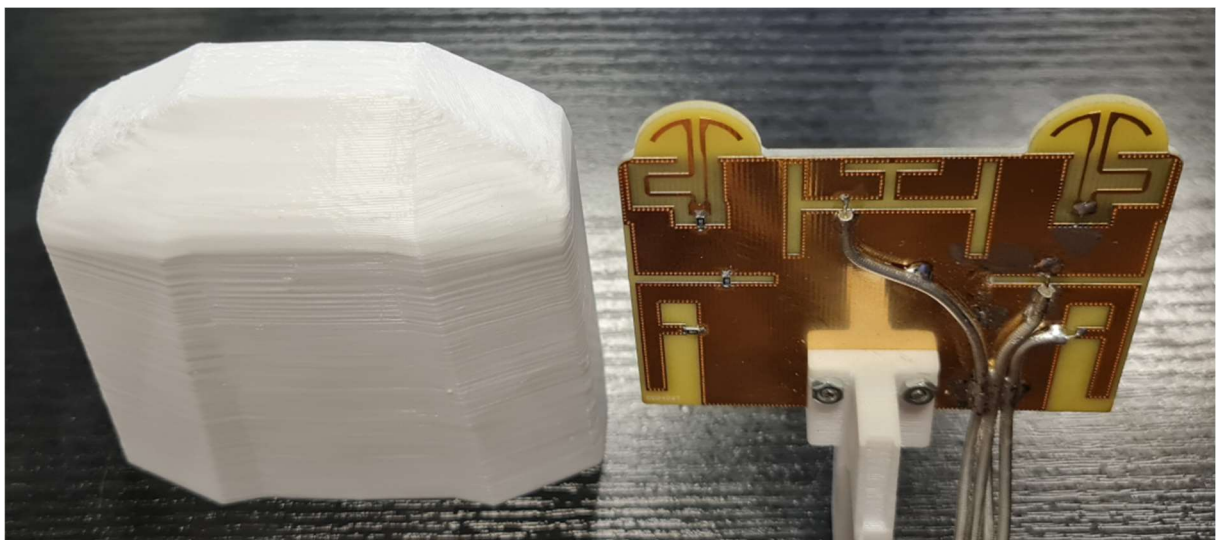


figure 5 - manufactured prototype

4. Measurement results

4.1 Matching

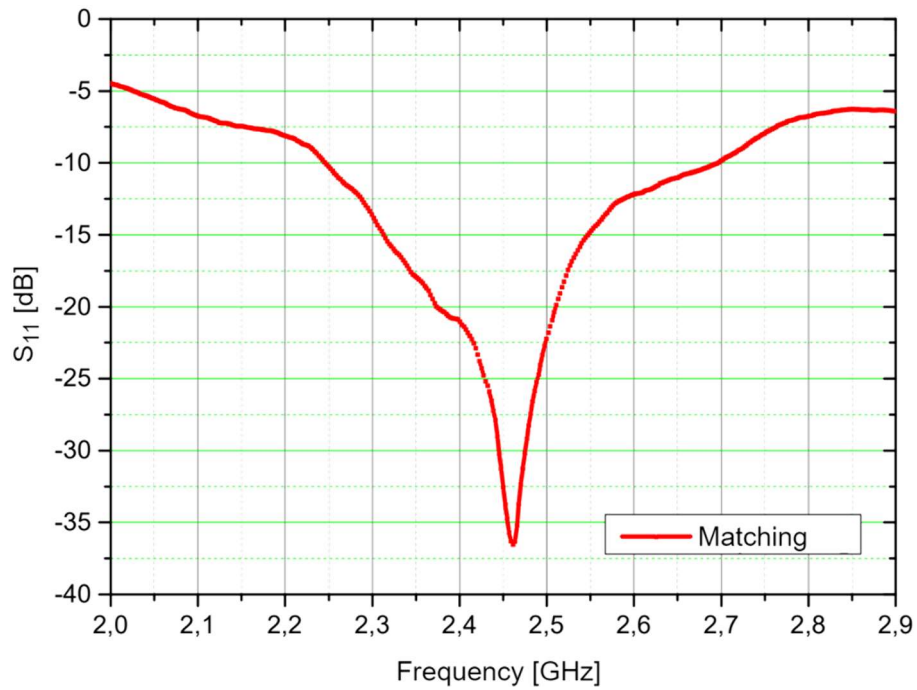


figure 6 - measured matching inverted F antenna

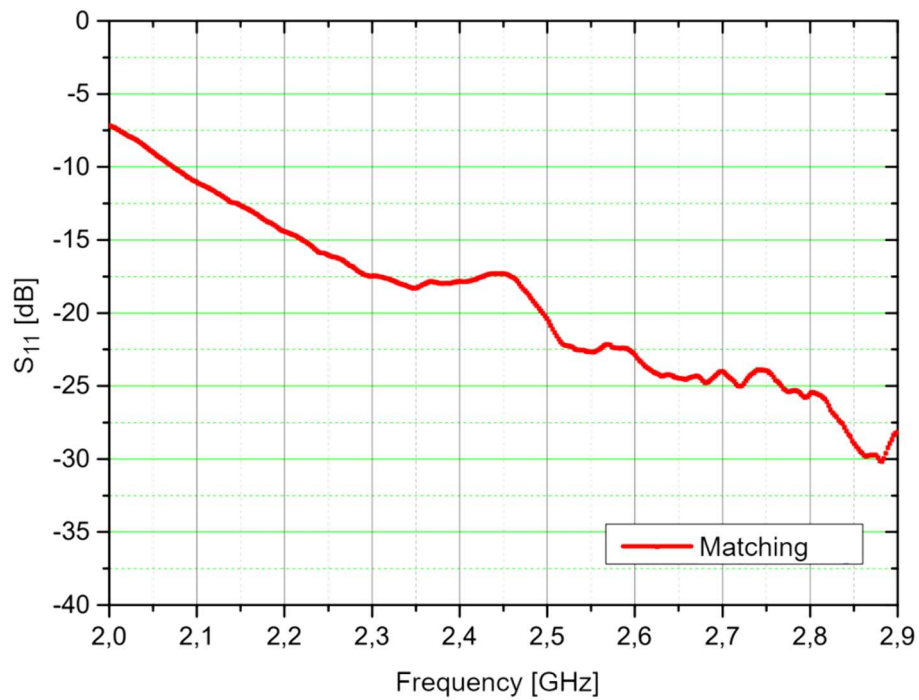
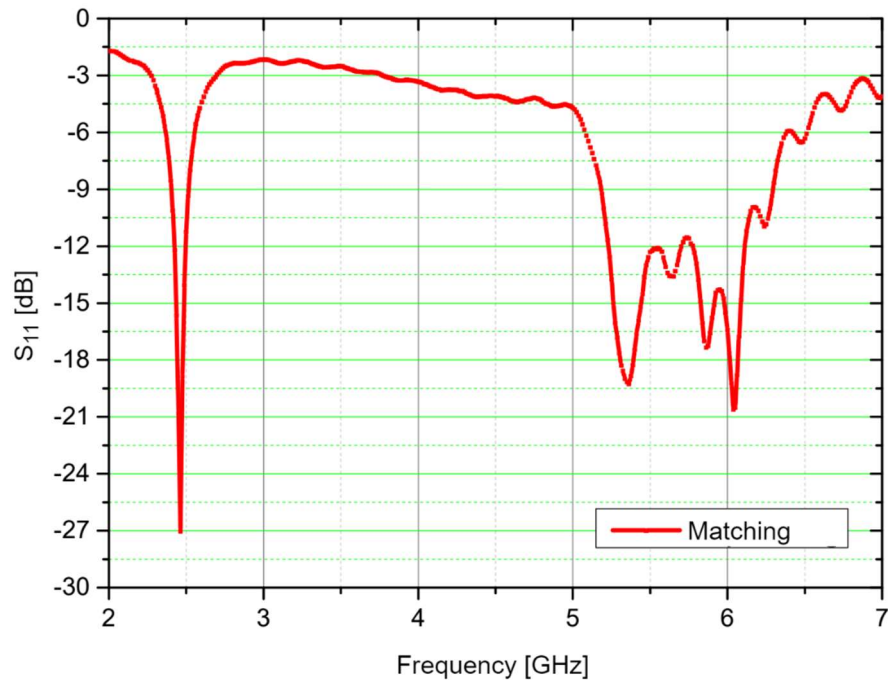
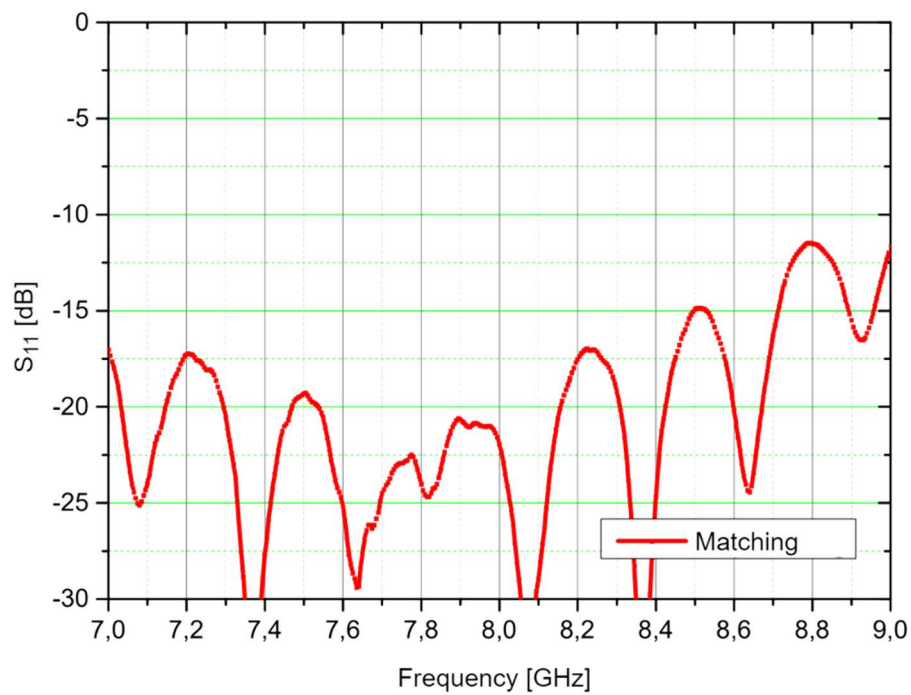


figure 7 - measured matching slot antenna

*figure 8 - measured matching WiFi antenna**figure 9 - measured matching UWB antenna*

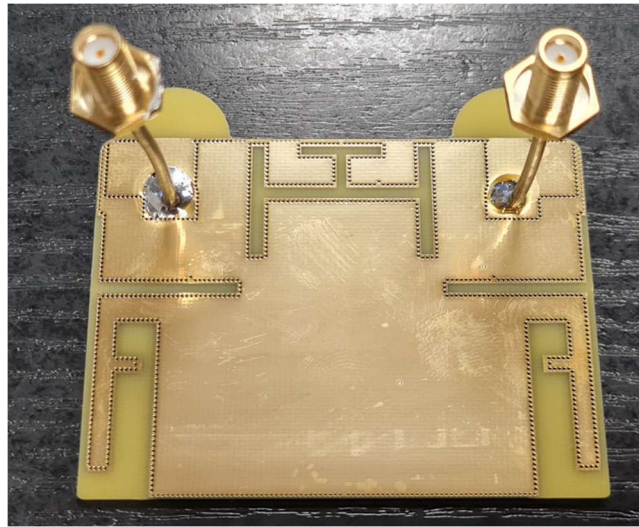
4.2 S_{21} of UWB antennas

figure 10 - measurement setup

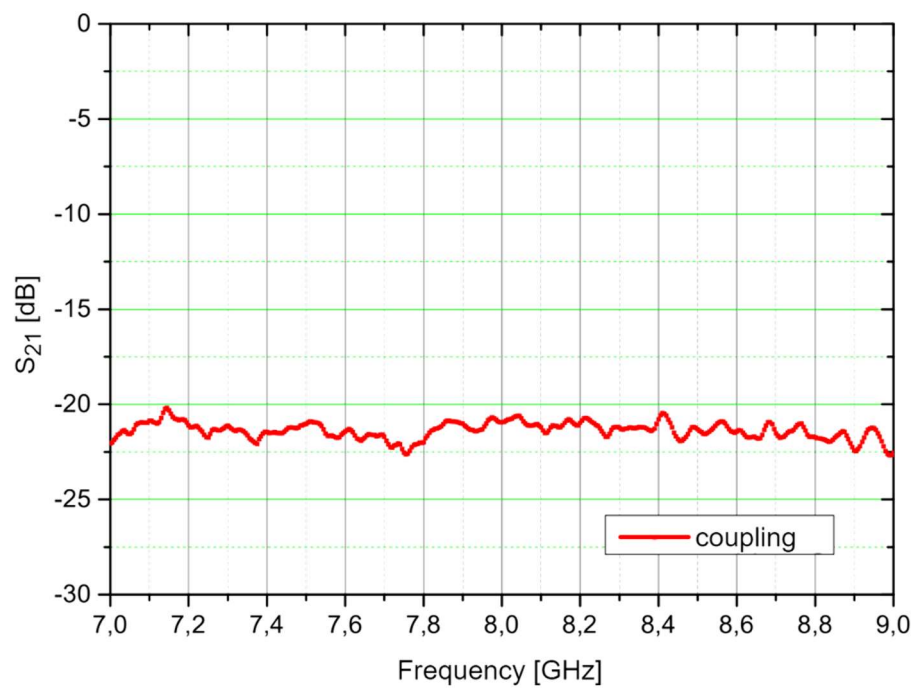


figure 11 - measured coupling between UWB antennas

4.3 Radiated Emission



figure 12 - measurement setup for horizontal diagram measurement

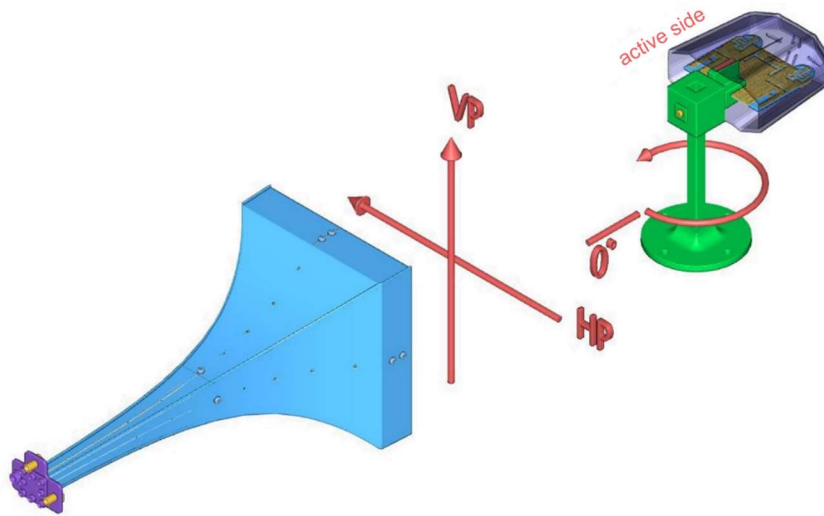


figure 13 - installation for measuring vertical section 1

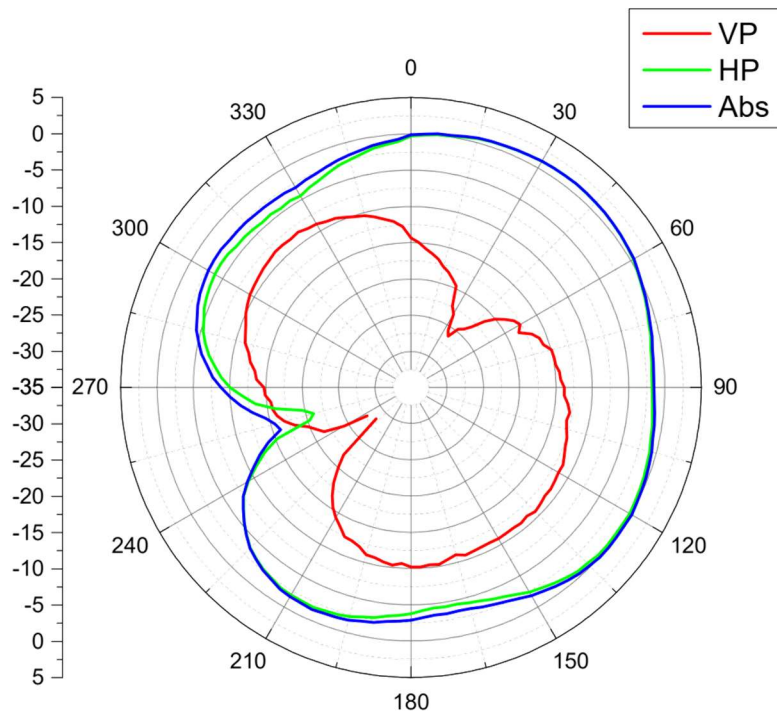


figure 14 - vertical section 1 inverted F antenna @2.45GHz

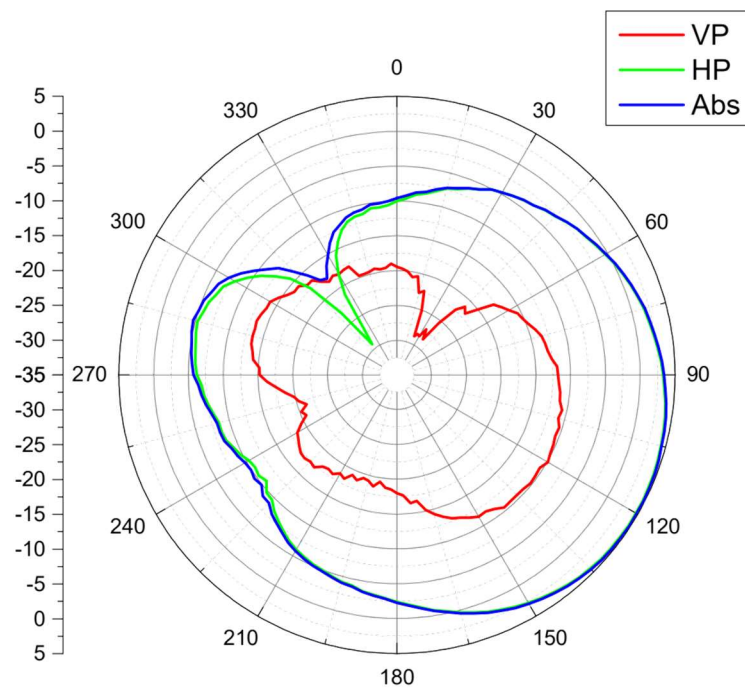


figure 15 - vertical section 1 slot antenna @2.45GHz

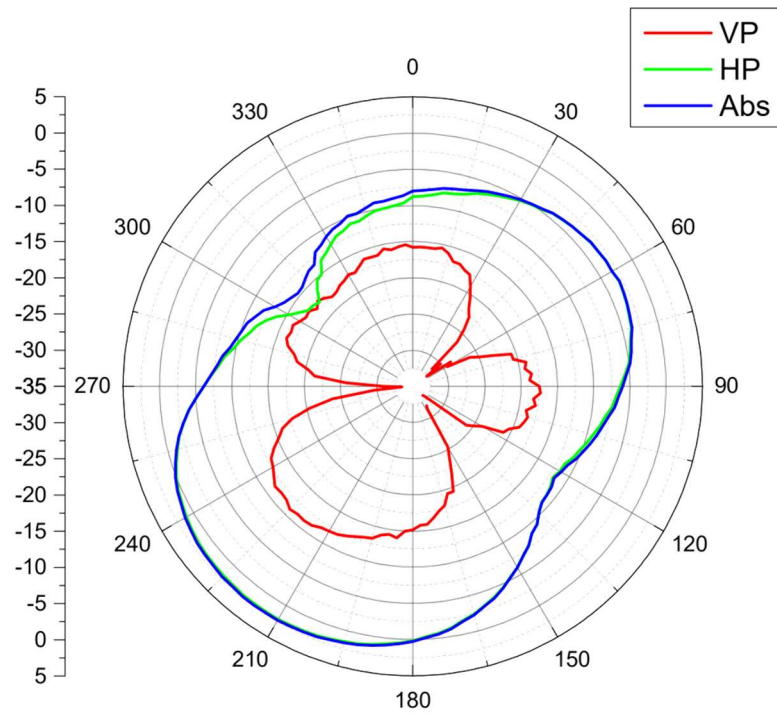


figure 16 - vertical section 1 WiFi antenna @2.45GHz

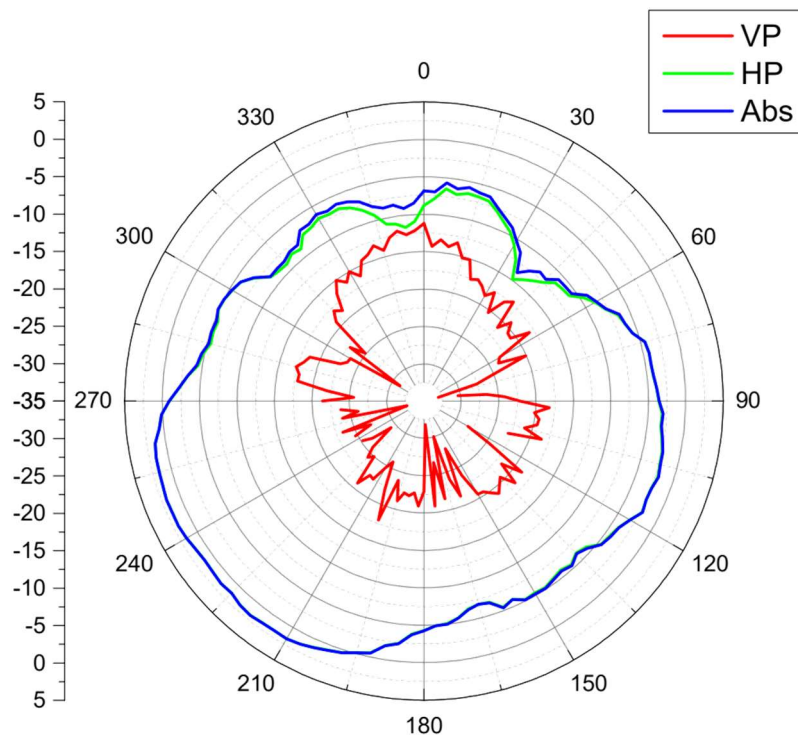


figure 17 - vertical section 1 WiFi antenna @5.1GHz

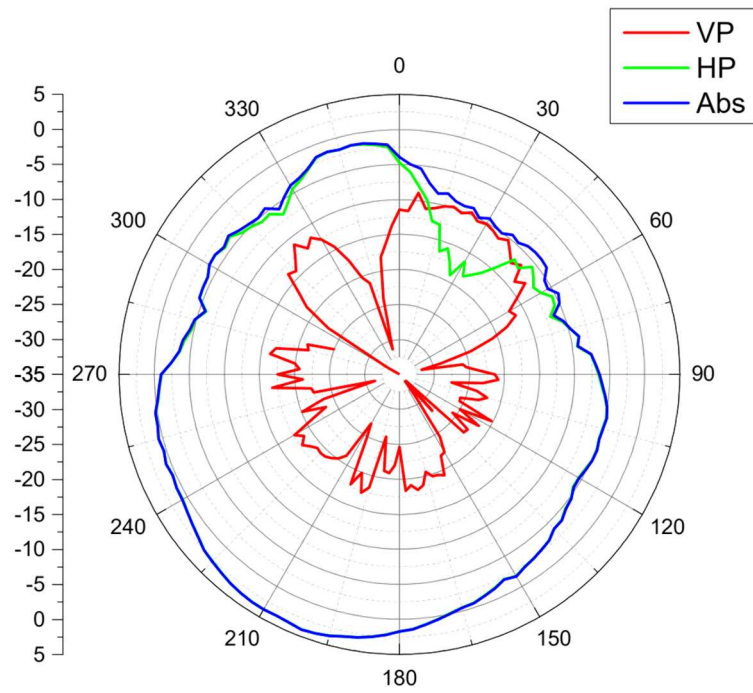


figure 18 - vertical section 1 WiFi antenna @5.4GHz

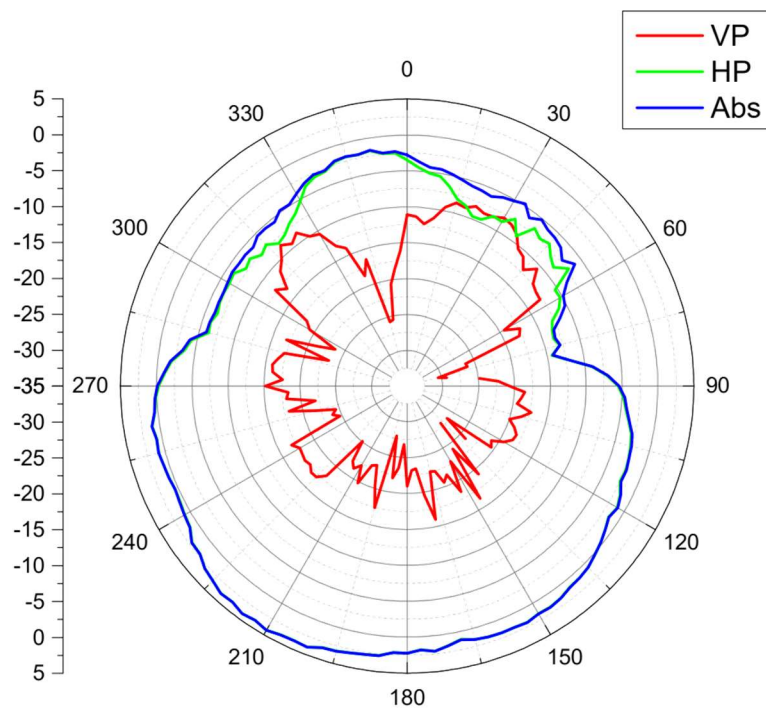


figure 19 - vertical section 1 WiFi antenna @5.7GHz

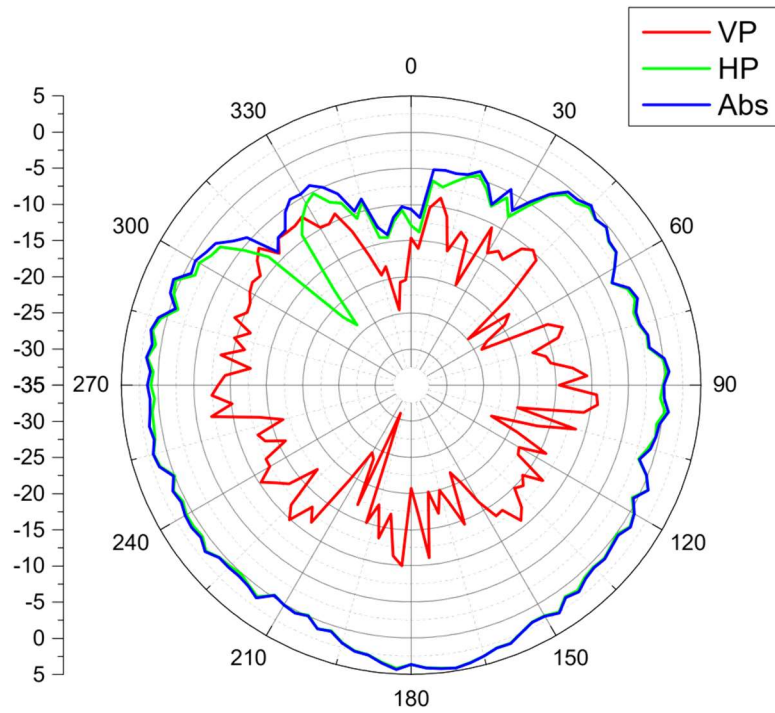


figure 20 - vertical section 1 UWB antenna @7.75GHz

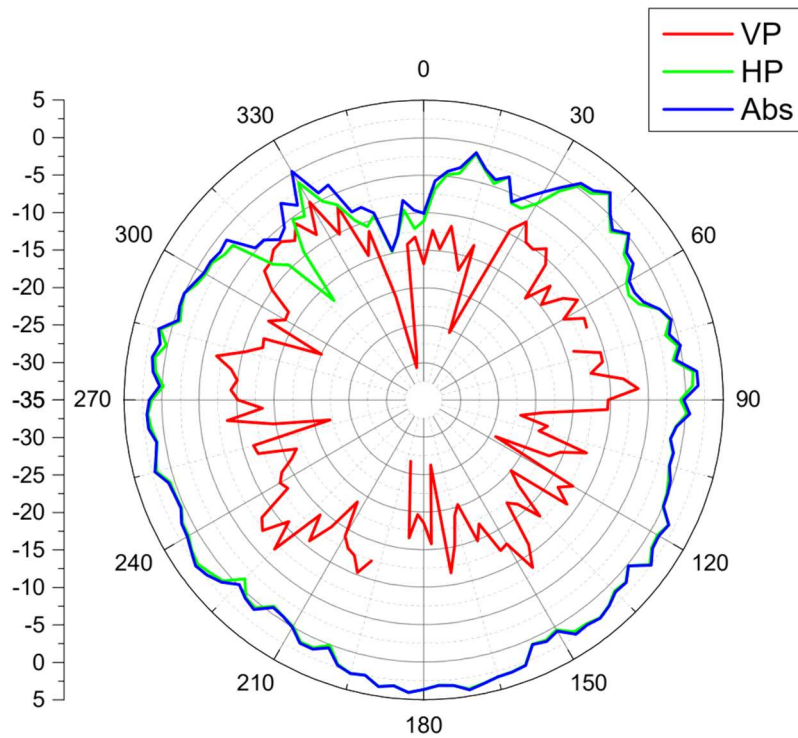


figure 21 - vertical section 1 UWB antenna @8GHz

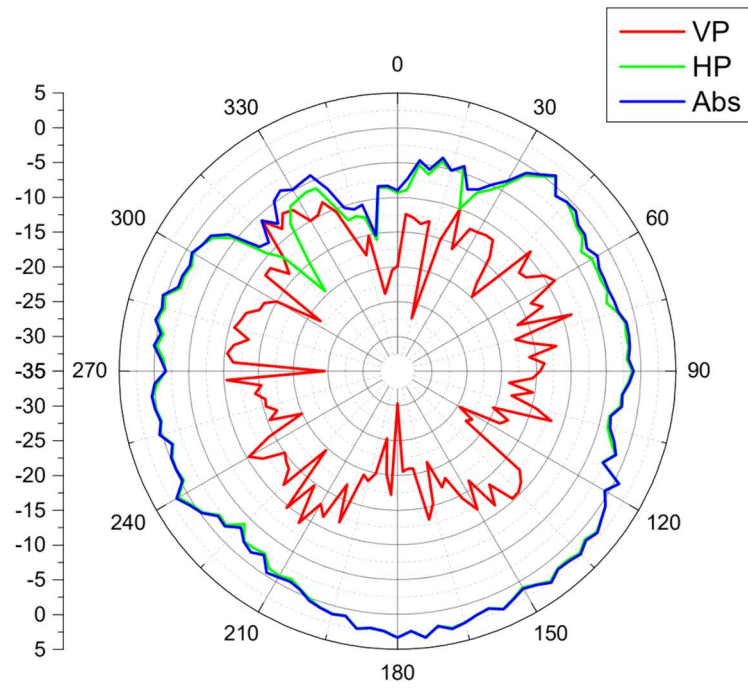


figure 22 - vertical section 1 UWB antenna @8.25GHz

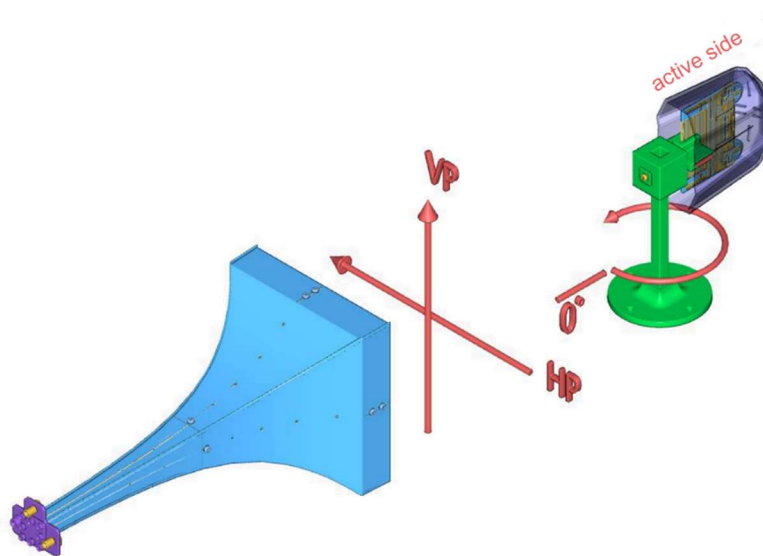


figure 23 - installation for measuring vertical section 2

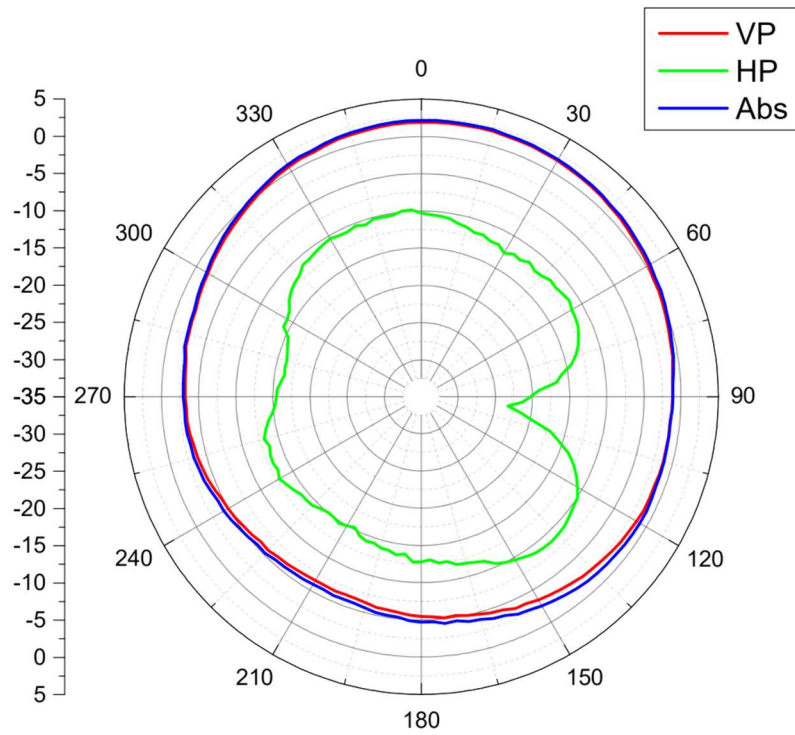


figure 24 - vertical section 2 inverted F antenna @2.45GHz

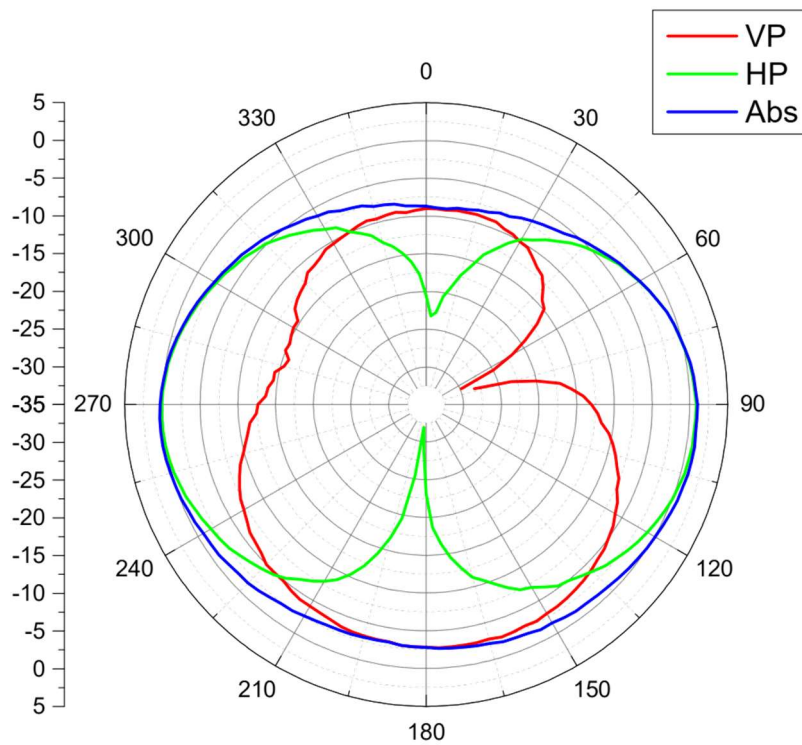


figure 25 - vertical section 2 slot antenna @2.45GHz

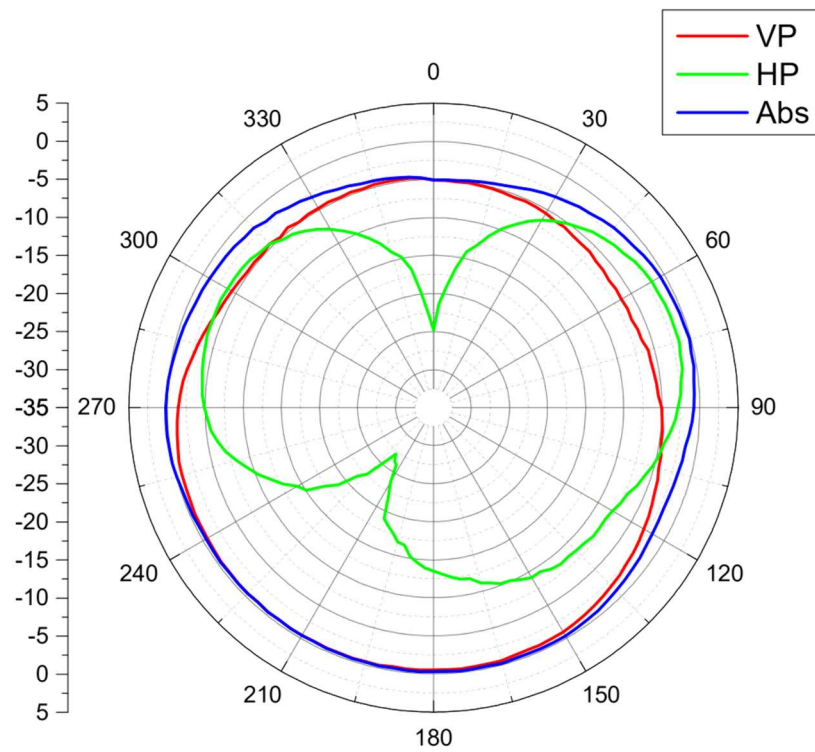


figure 26 - vertical section 2 WiFi antenna @2.45GHz

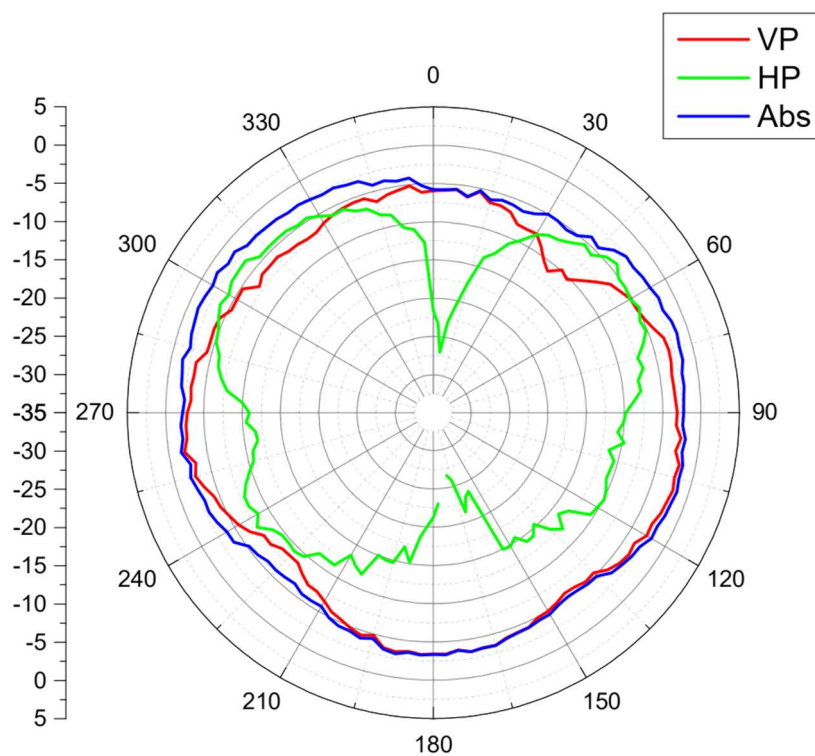


figure 27 - vertical section 2 WiFi antenna @5.1GHz

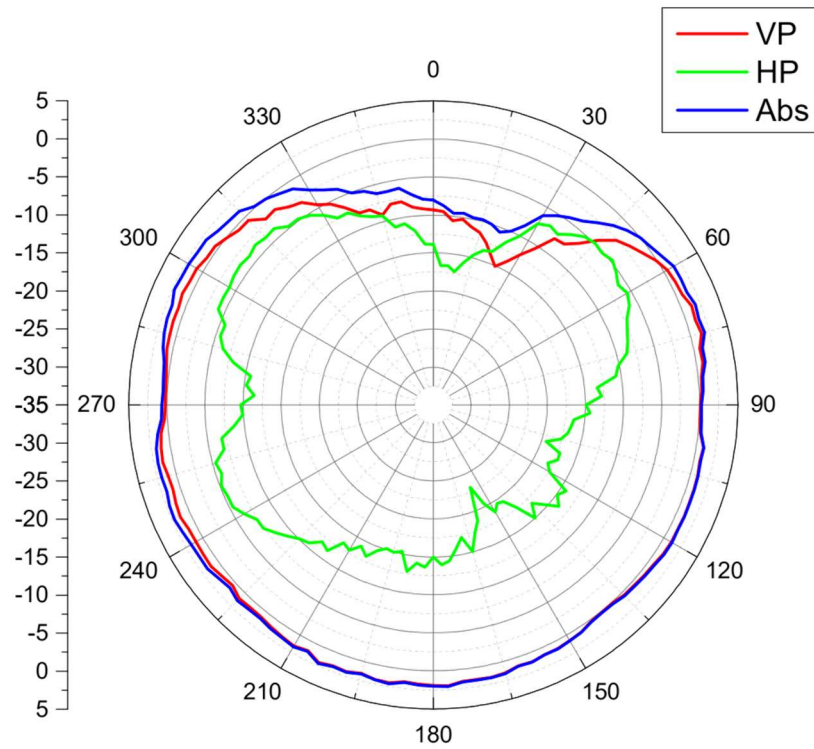


figure 28 - vertical section 2 WiFi antenna @5.4GHz

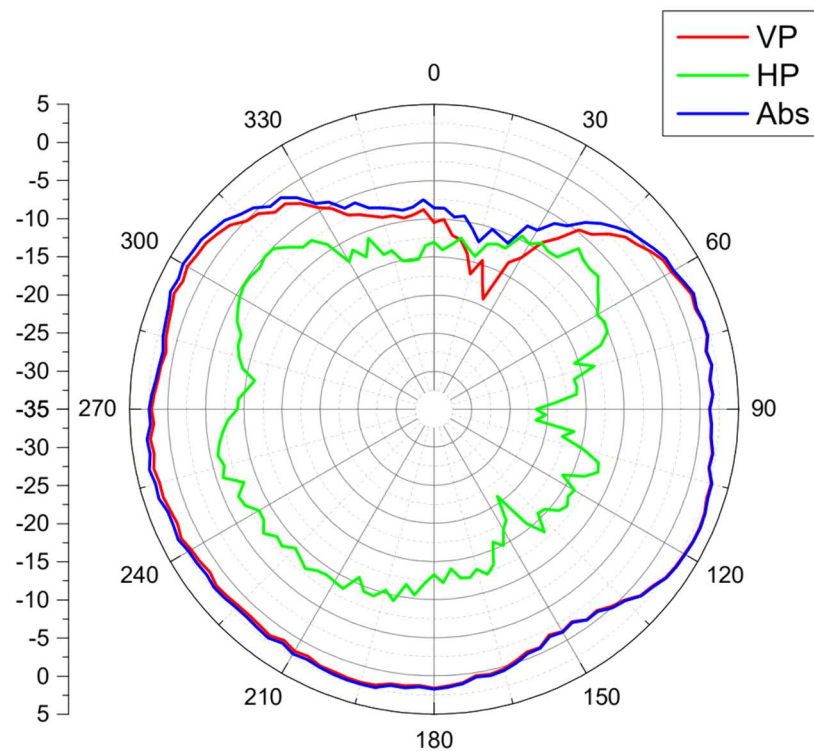


figure 29 - vertical section 2 WiFi antenna @5.7GHz

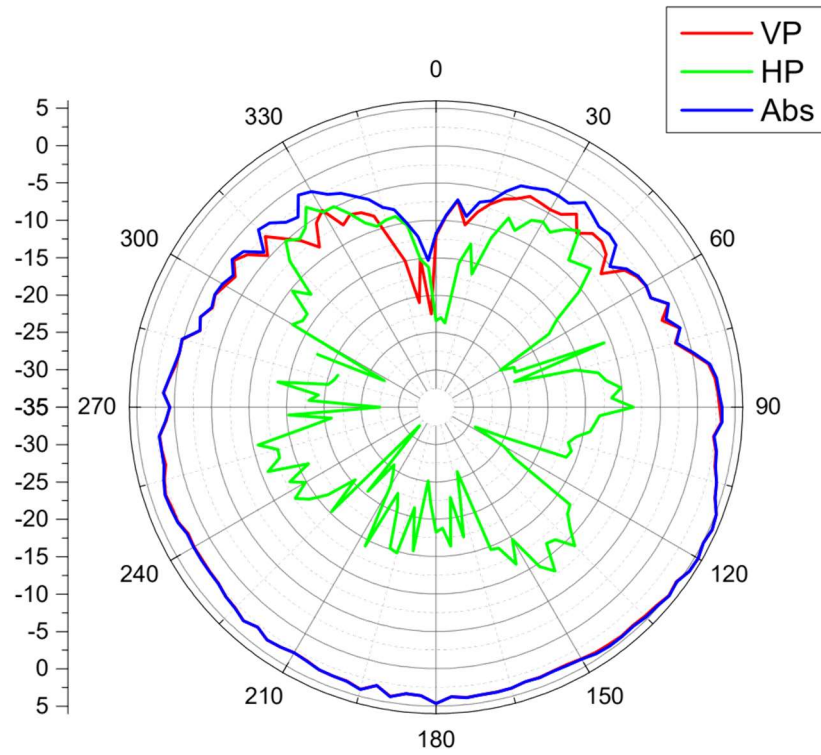


figure 30 - vertical section 2 UWB antenna @7.75GHz

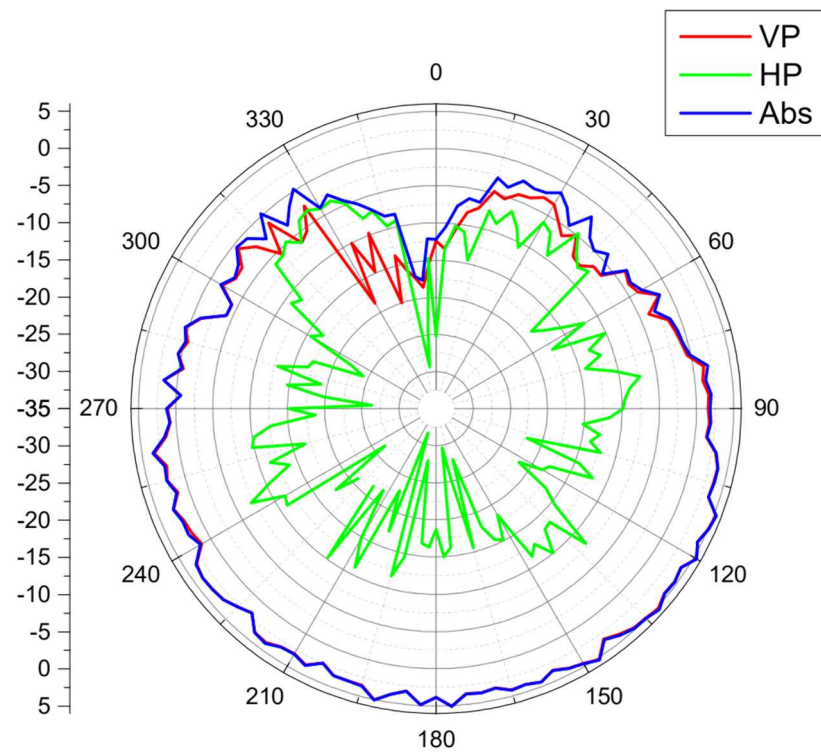


figure 31 - vertical section 2 UWB antenna @8GHz

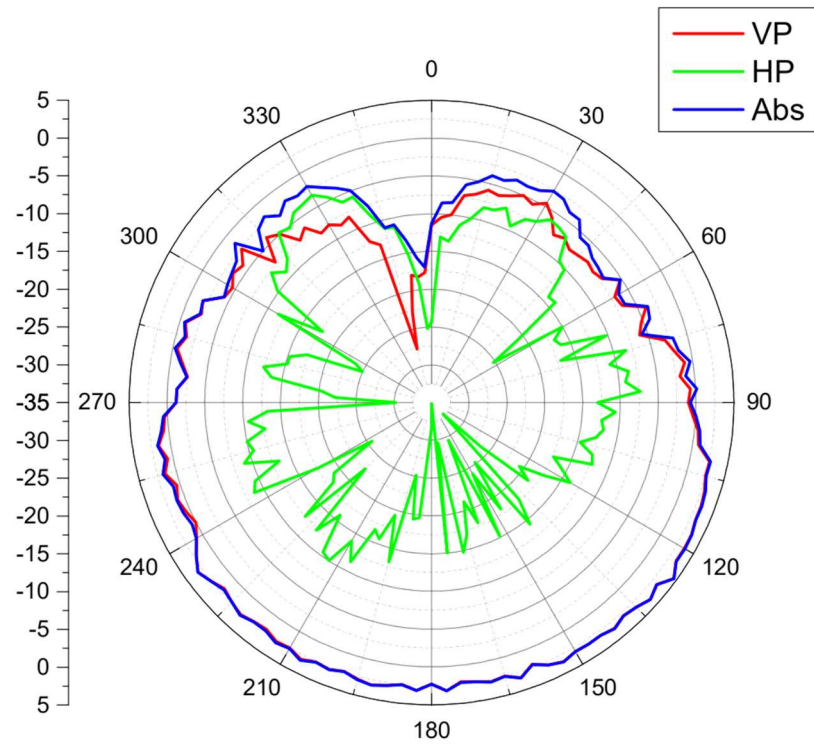


figure 32 - vertical section 2 UWB antenna @8.25GHz

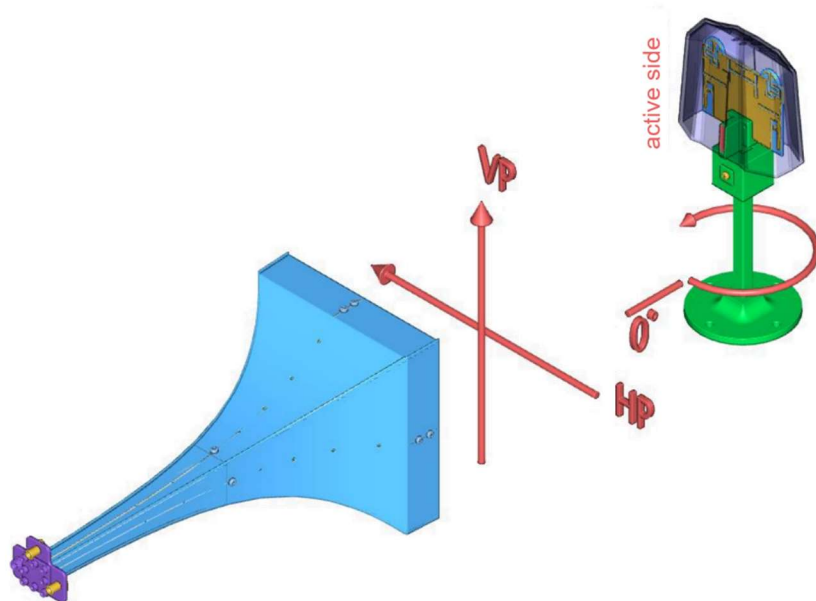


figure 33 - installation for measuring horizontal section

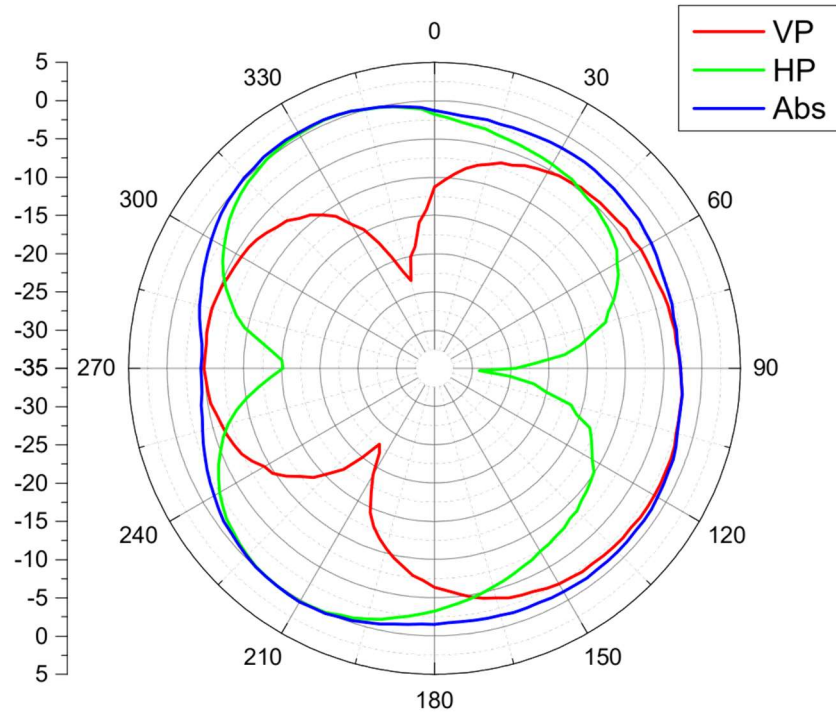


figure 34 - horizontal section inverted F antenna @2.45GHz

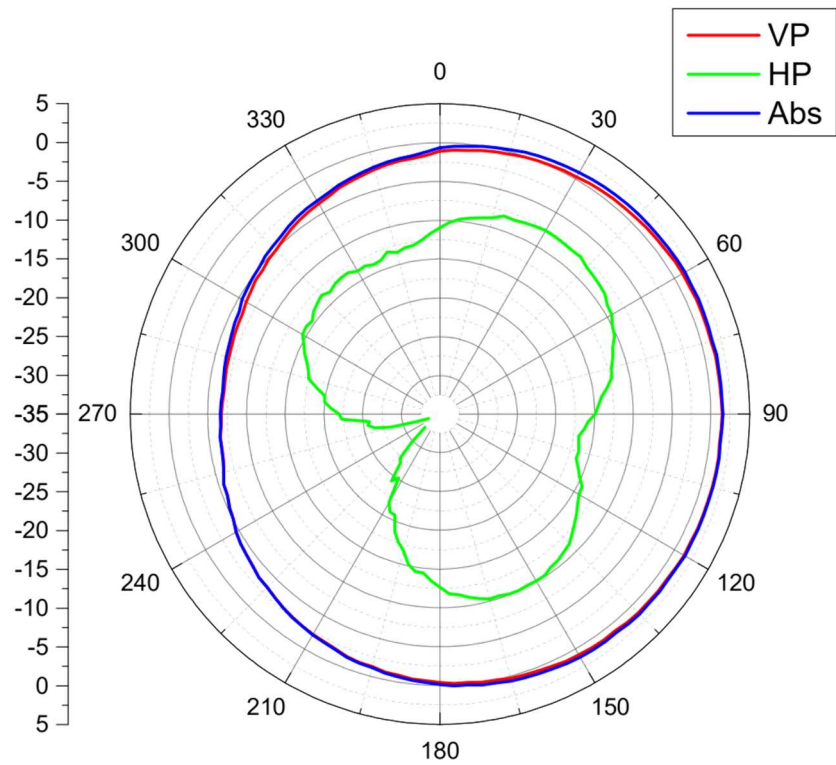


figure 35 - horizontal section slot antenna @2.45GHz

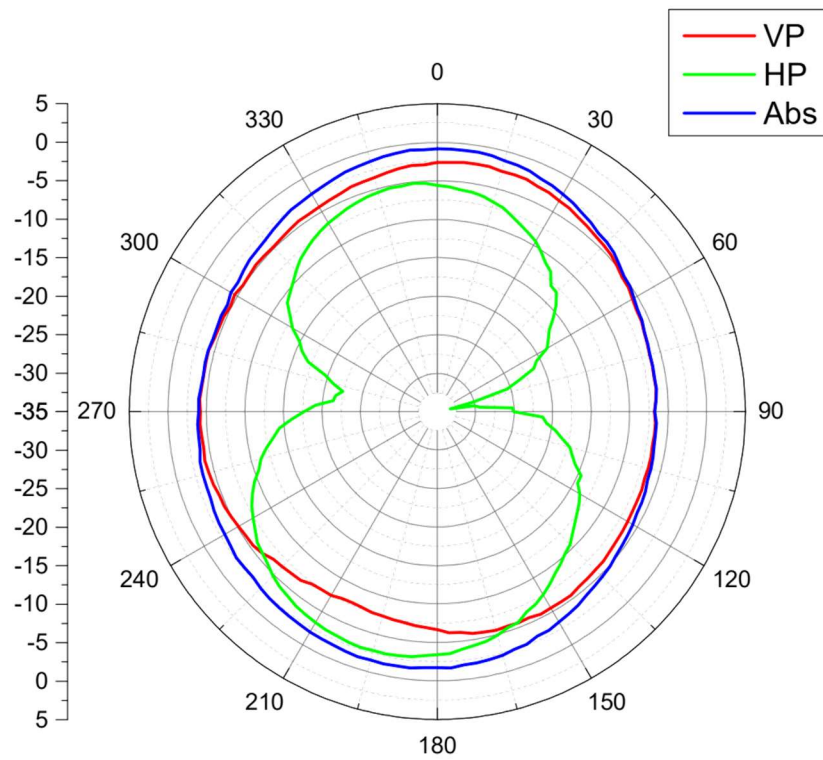


figure 36 - horizontal section WiFi antenna @2.45GHz

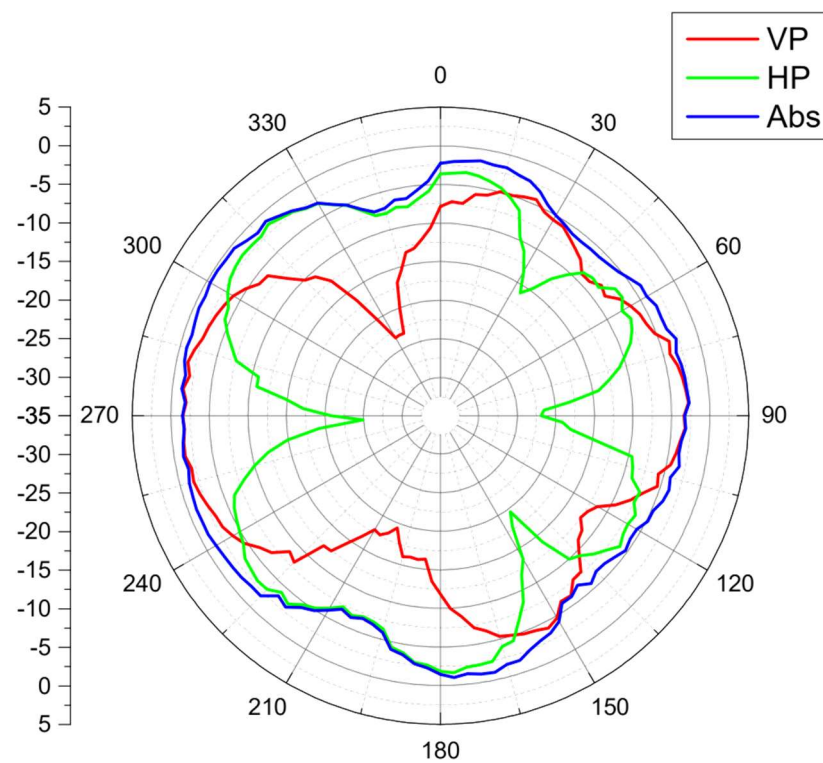


figure 37 - horizontal section WiFi antenna @5.1GHz

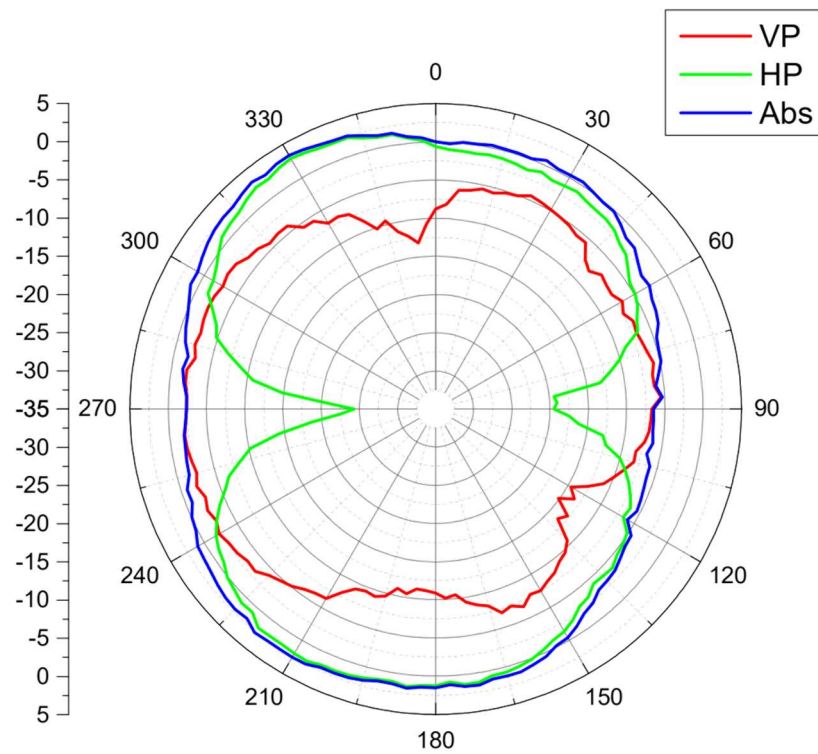


figure 38 - horizontal section WiFi antenna @5.4GHz

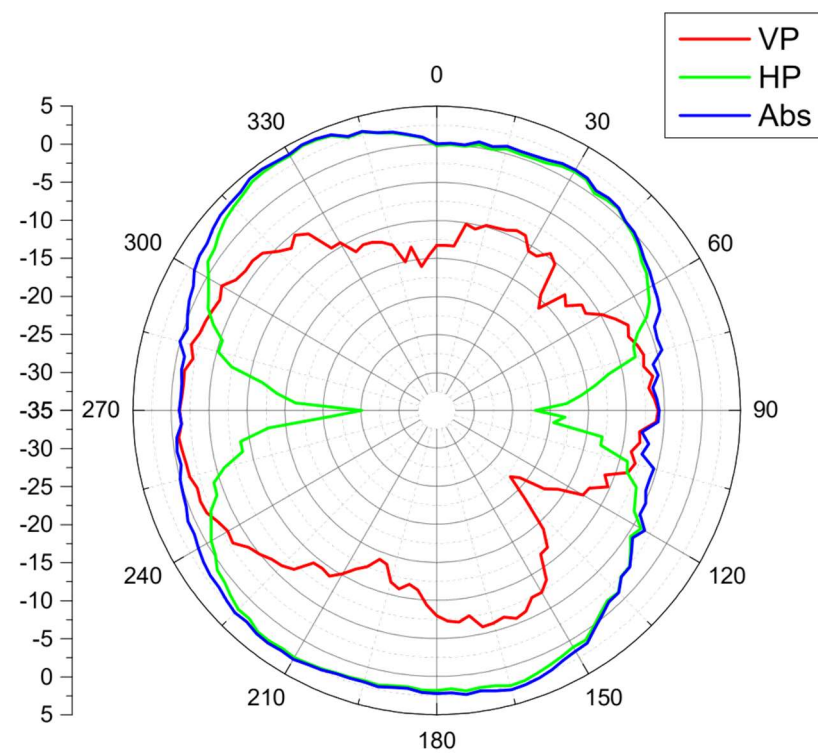


figure 39 - horizontal section WiFi antenna @5.7GHz

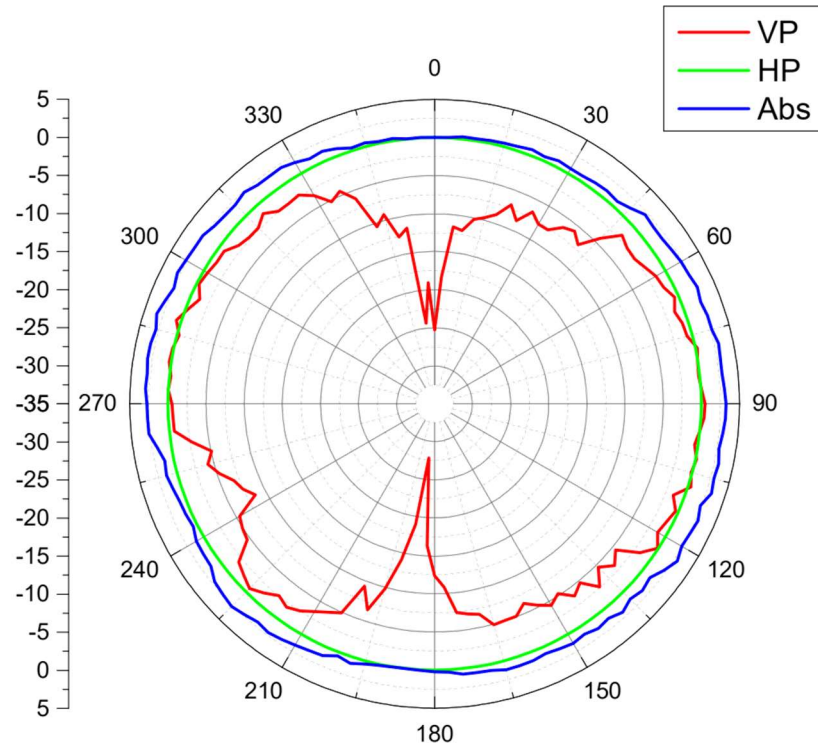


figure 40 - horizontal section UWB antenna @7.75GHz

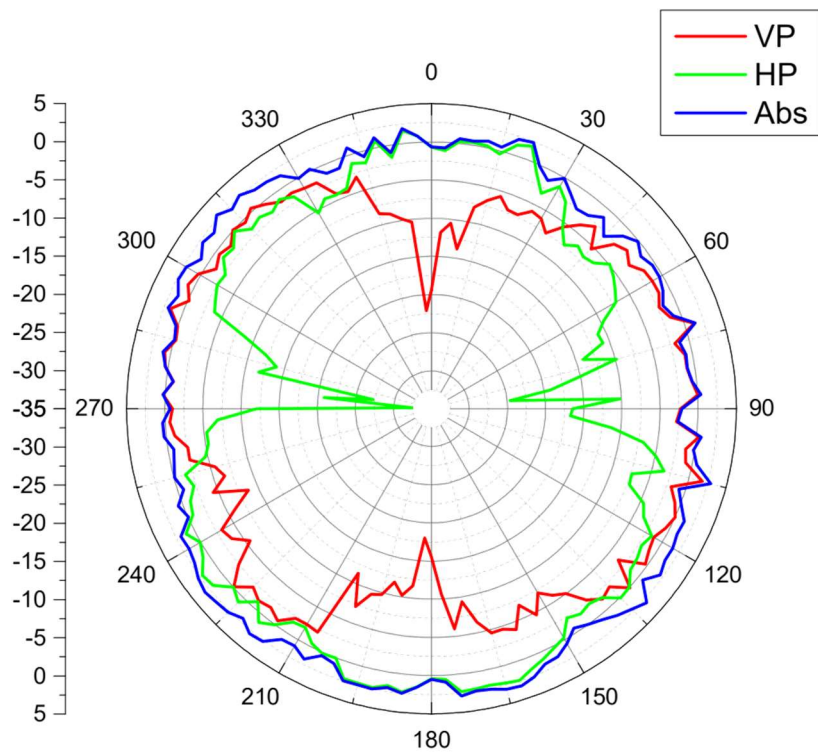


figure 41 - horizontal section UWB antenna @8GHz

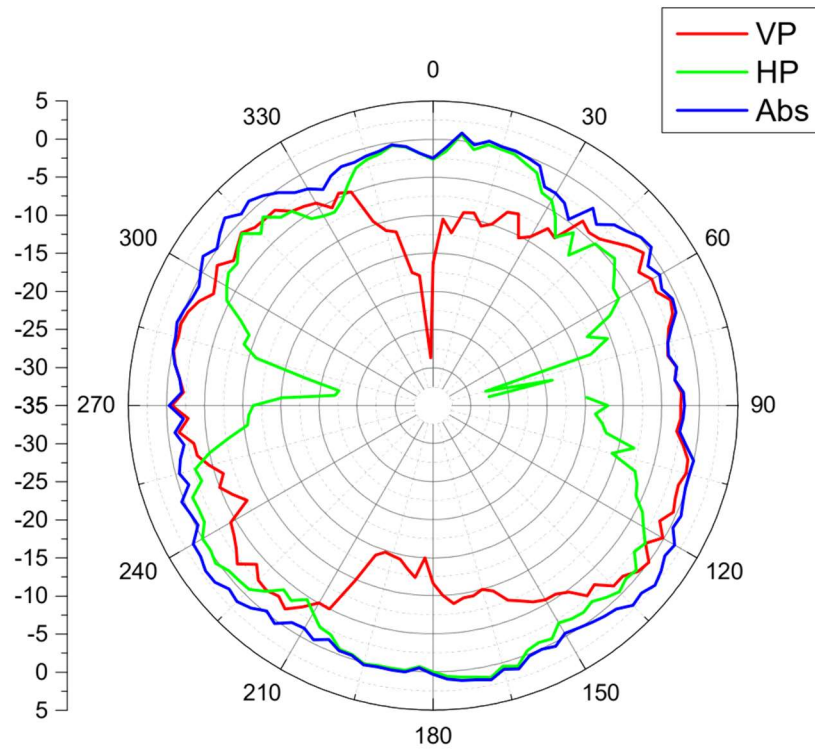


figure 42 - horizontal section UWB antenna @8.25GHz