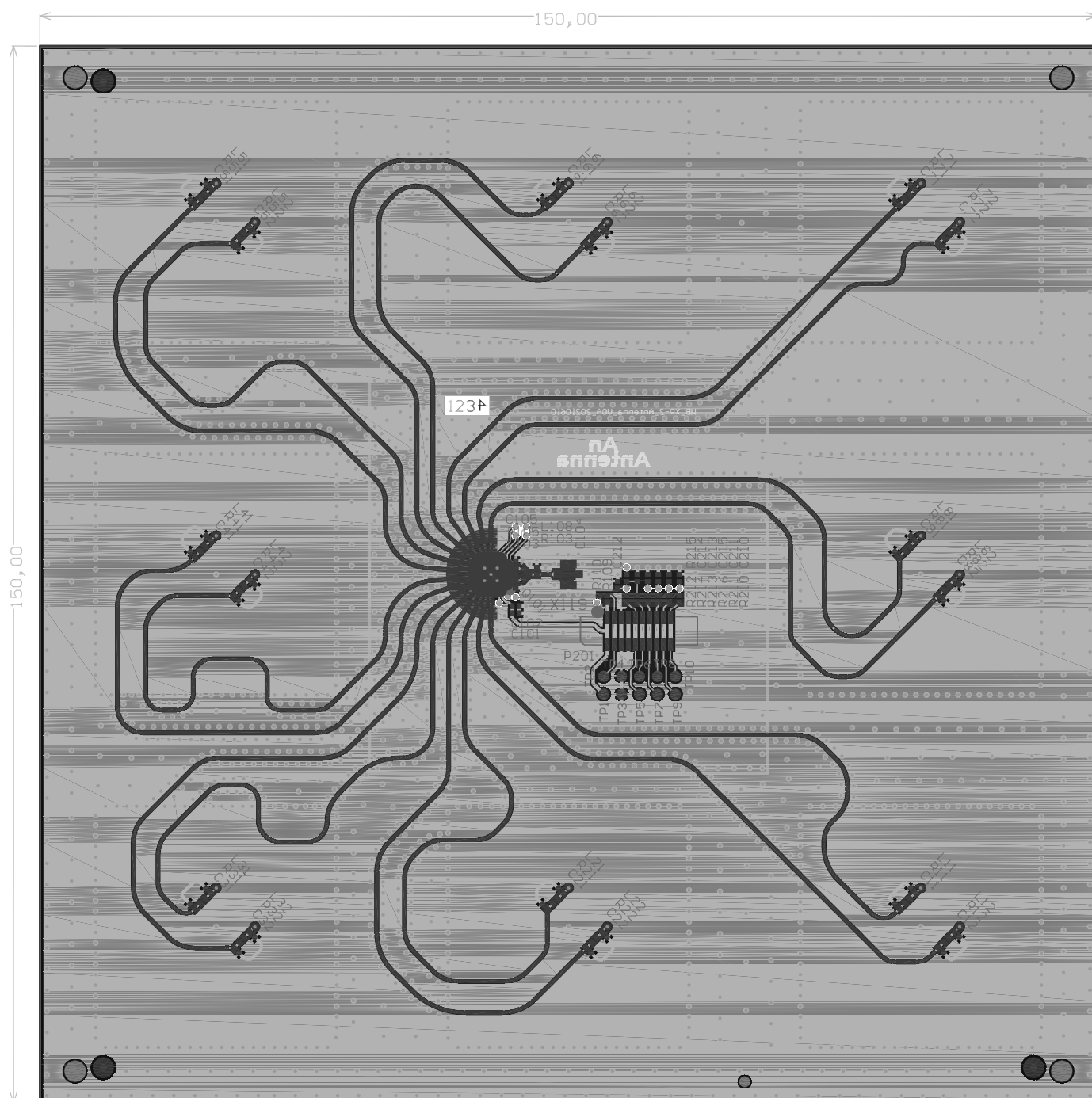
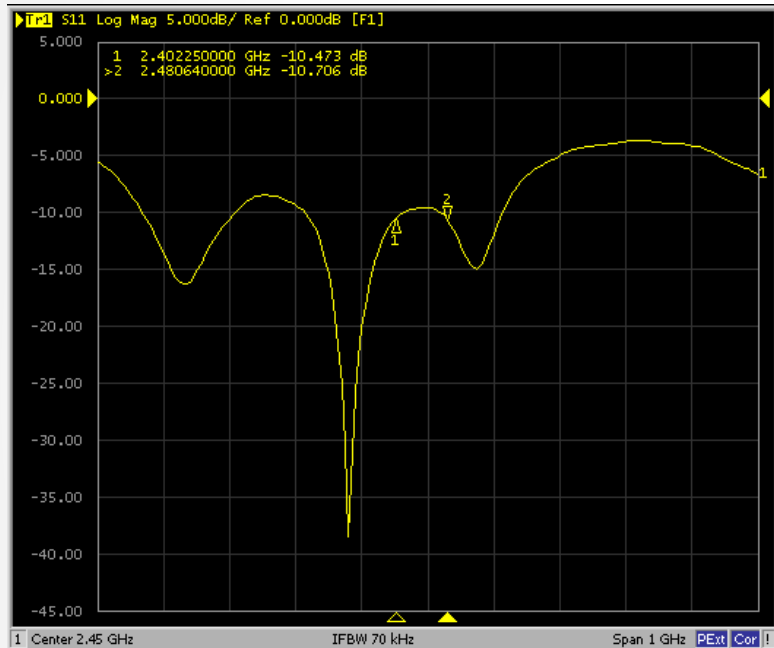


Antenna Study

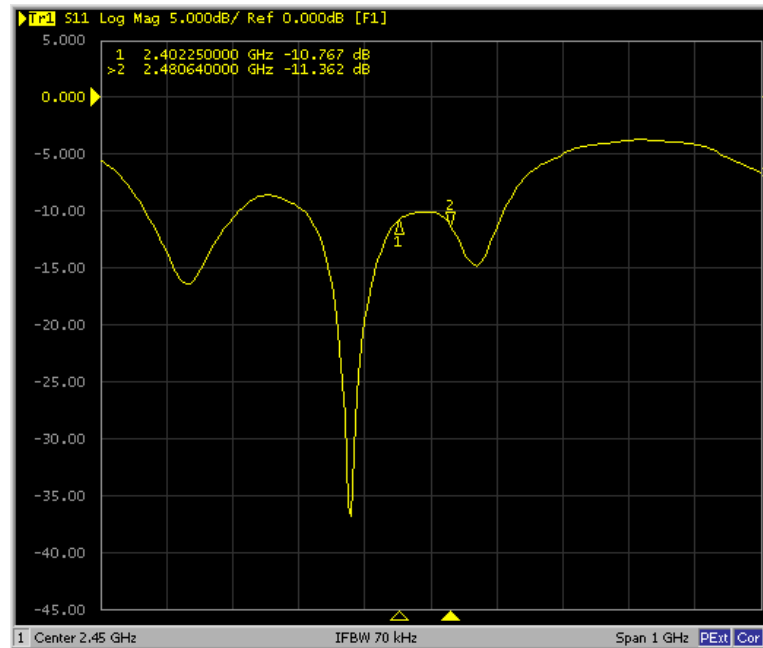
- **Manufacturer Name:**SCALA Digital Technology(Ningbo) Co., LTD
- **Address:** No.7 Hong Da Road, Hong Tang Industrial Zone A Jiang Bei District, Ningbo, China
- **Project Name:**Locater
- **Model:**WB_XR-2_Antenna
- **Valuation date:**2023.08.17
- **Antenna Gain(dBi):**2dBi



Impact of the case in antenna matching.

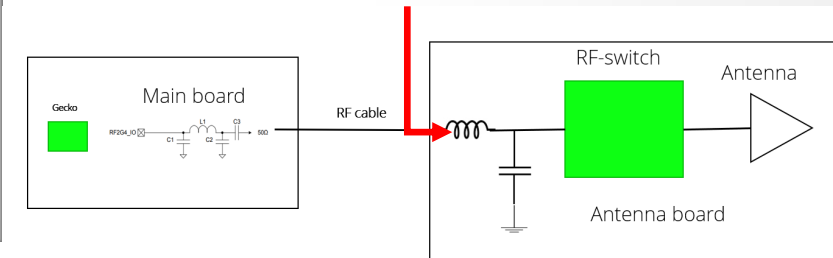


S11 ant 11 without the case

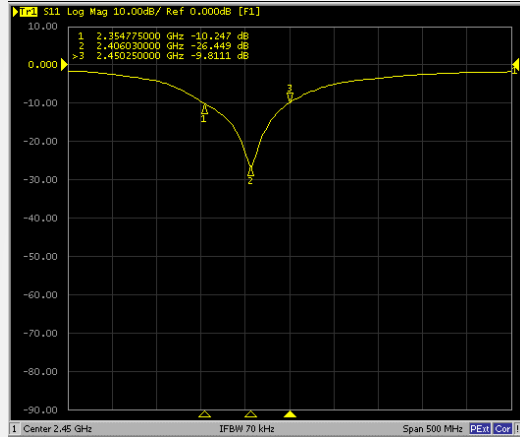


S11 ant 11 with the case

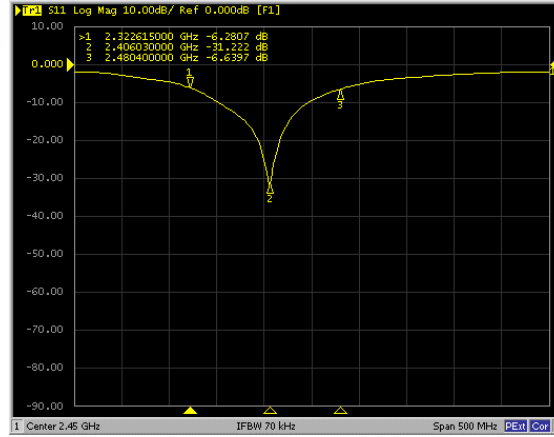
- The case has very little impact on the matching.



Antenna return loss



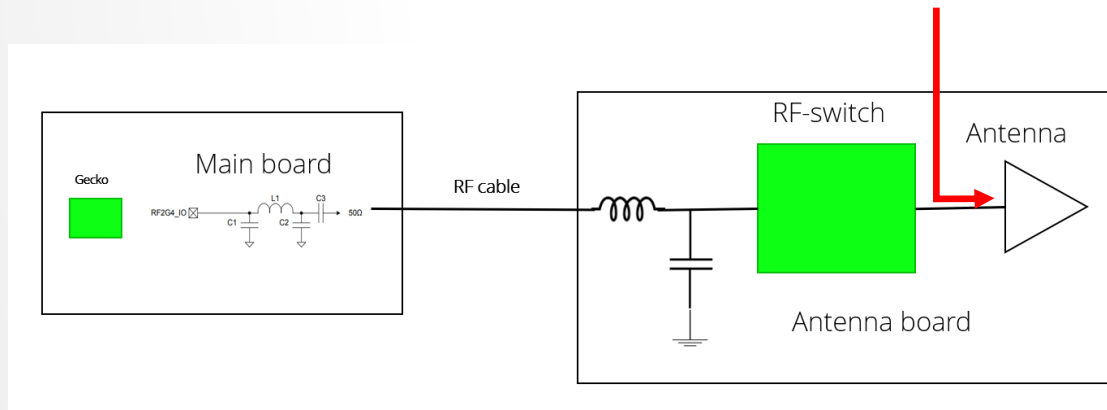
S11 Antenna 1



S11 Antenna 9

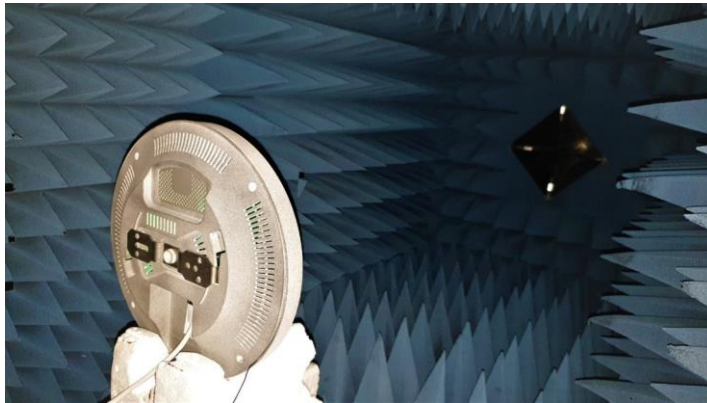
Measured the return loss of center top antenna. (antenna 1/9)

Results were good and no need for the retuning



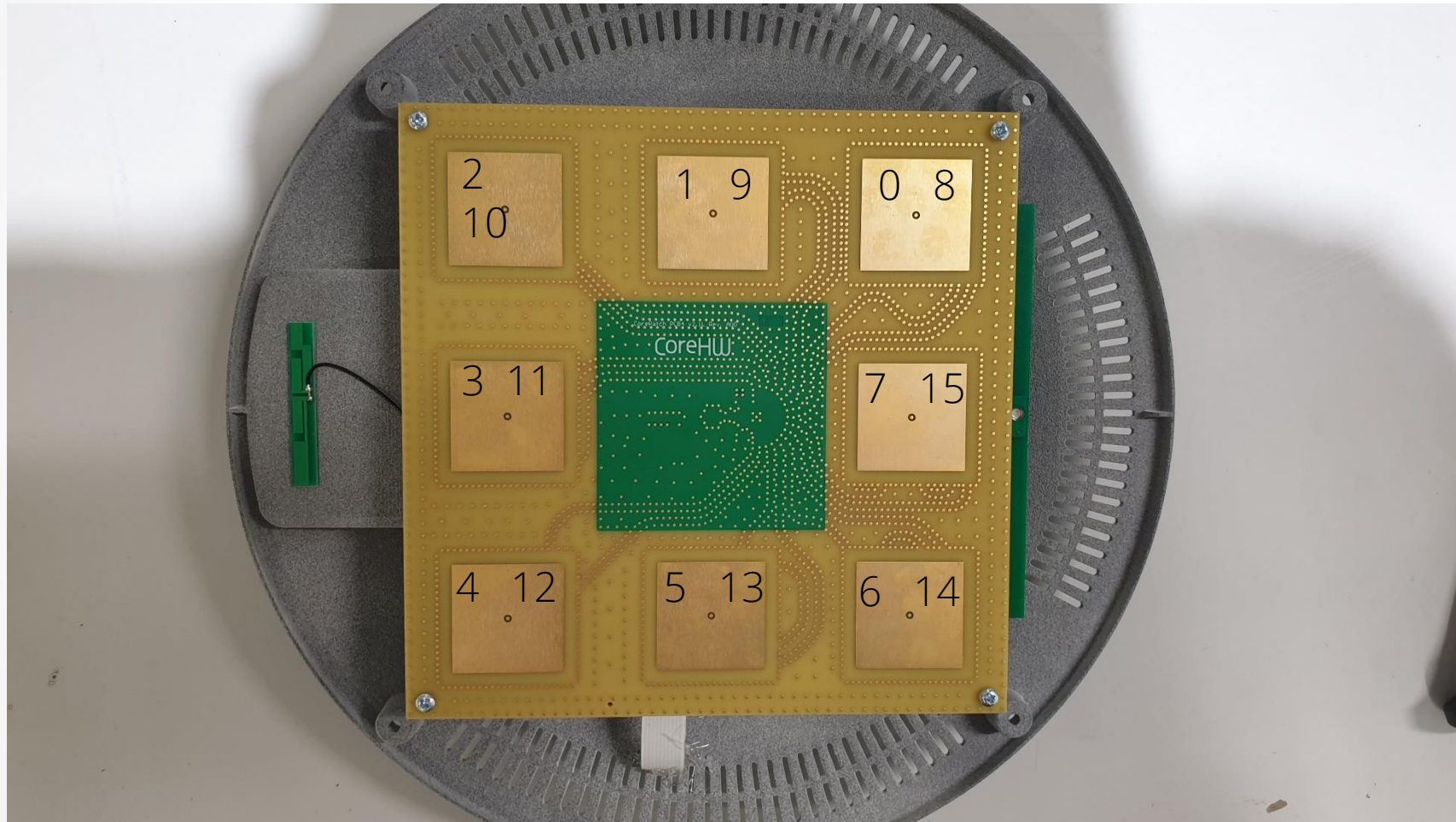
Radiation pattern measurements

- The radiation patterns were measured in vertical position with all antennas.
- The radiation patterns show that the polarisation switch between antenna input works like intended.
- Antenna gain to best direction is good. It is up to installation, how large area this HUB can cover



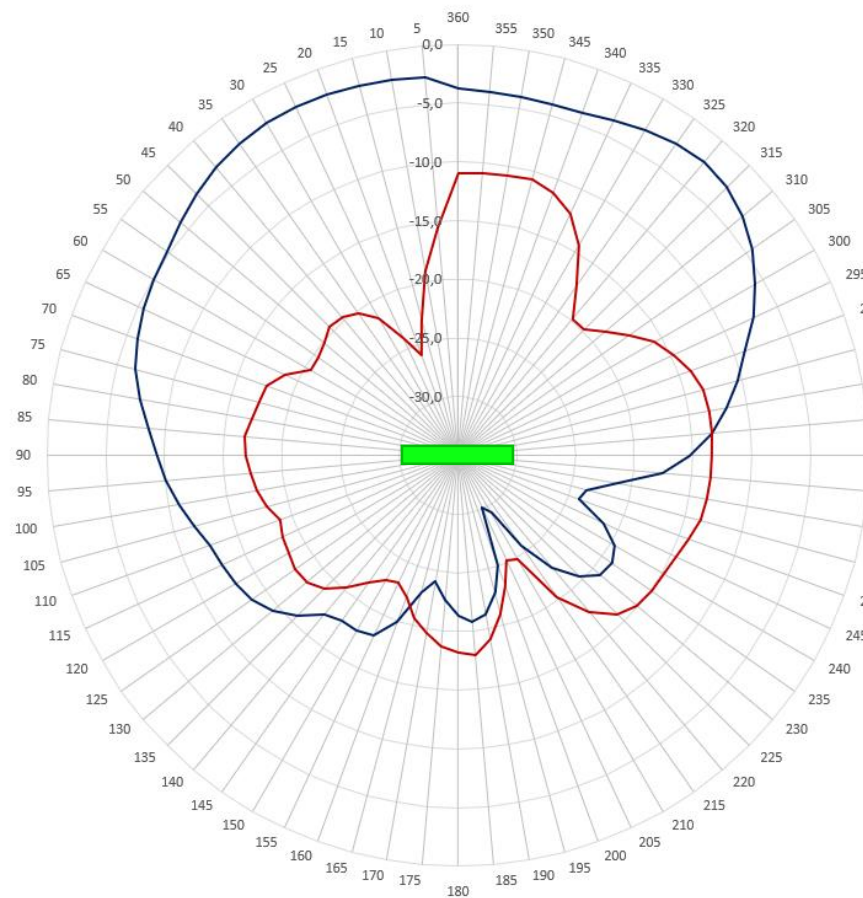
Vertical positioning in chamber

XR-2 antenna board and antenna numbers



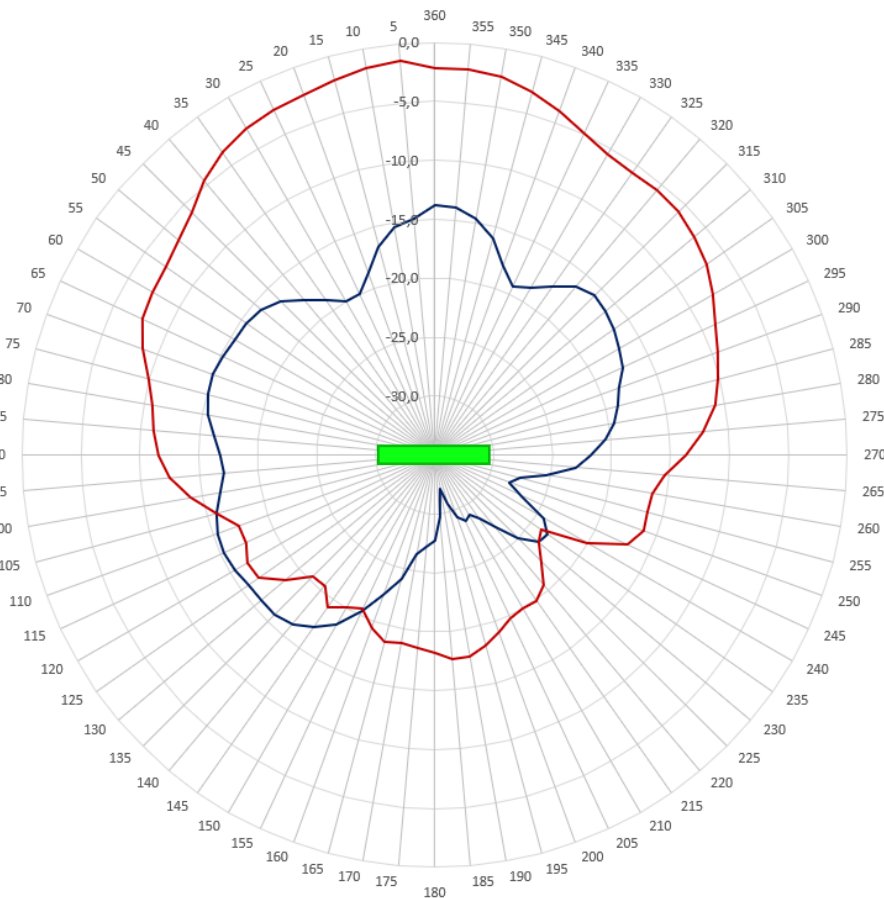
Radiation pattern measurements in vertical position, ant 0 & 8

— Ant 0, horizontal polarisation — Ant 0, vertical polarisation

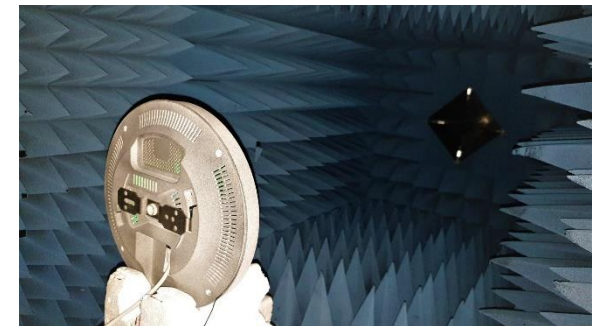


ANT 0

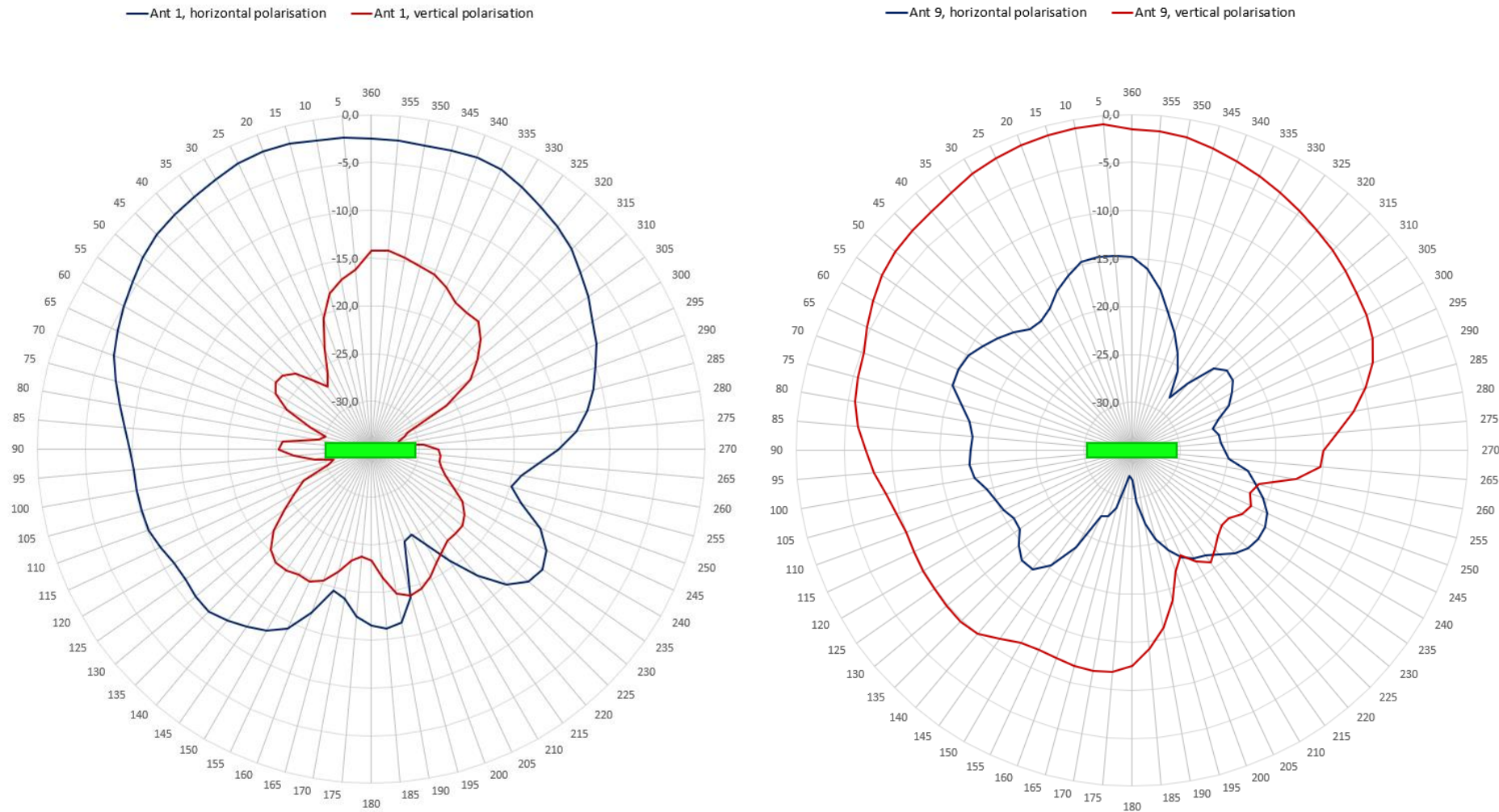
— Ant 8, horizontal polarisation — Ant 8, vertical polarisation



ANT 8

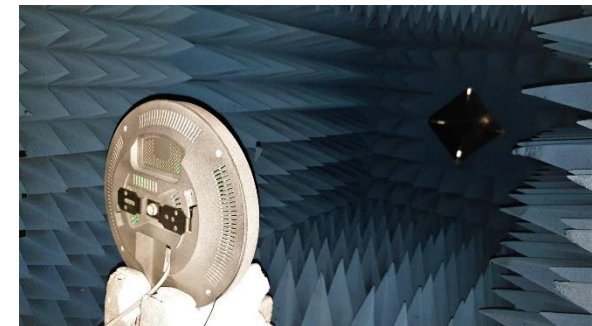


Radiation pattern measurements in vertical position, ant 1 & 9



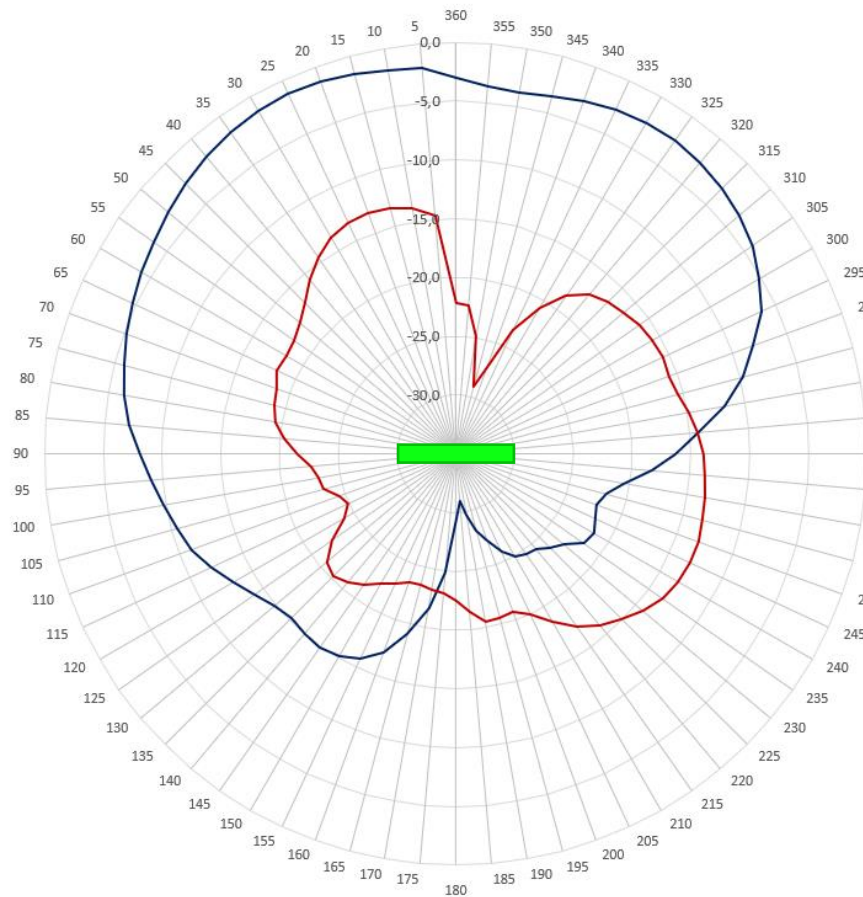
ANT 1

ANT 9



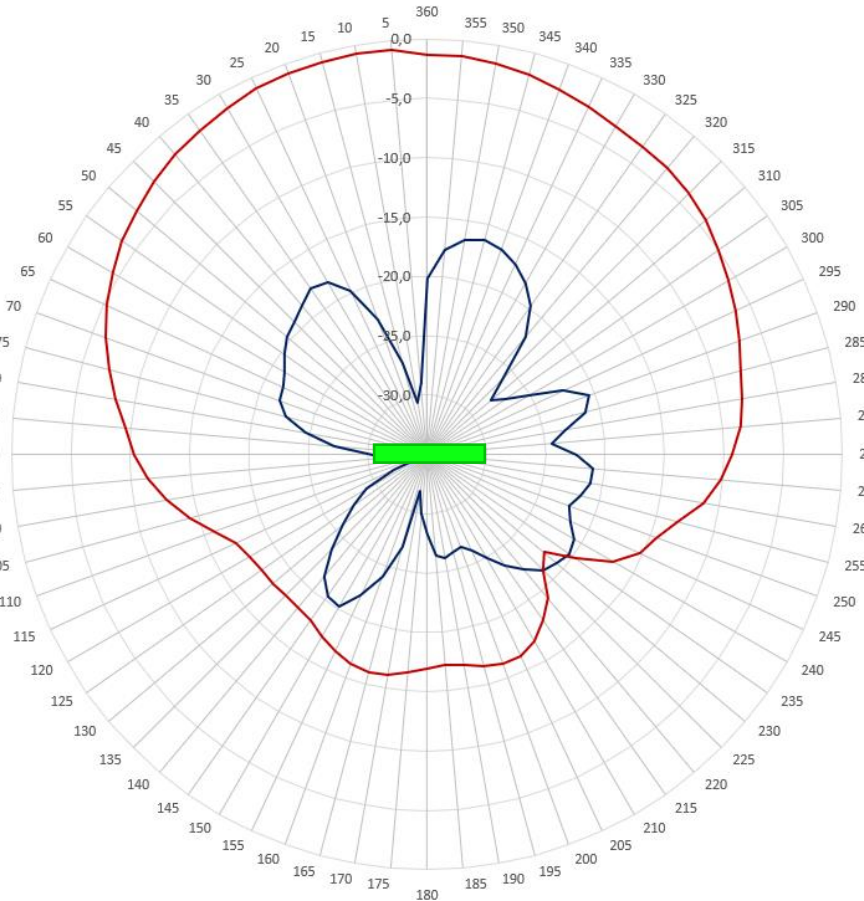
Radiation pattern measurements in vertical position, ant 2 & 10

— Ant 2, horizontal polarisation — Ant 2, vertical polarisation

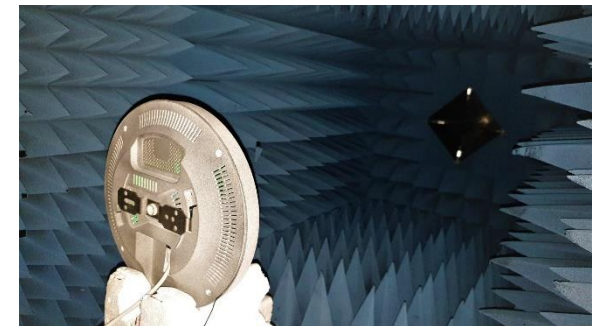


ANT 2

— Ant 10, horizontal polarisation — Ant 10, vertical polarisation

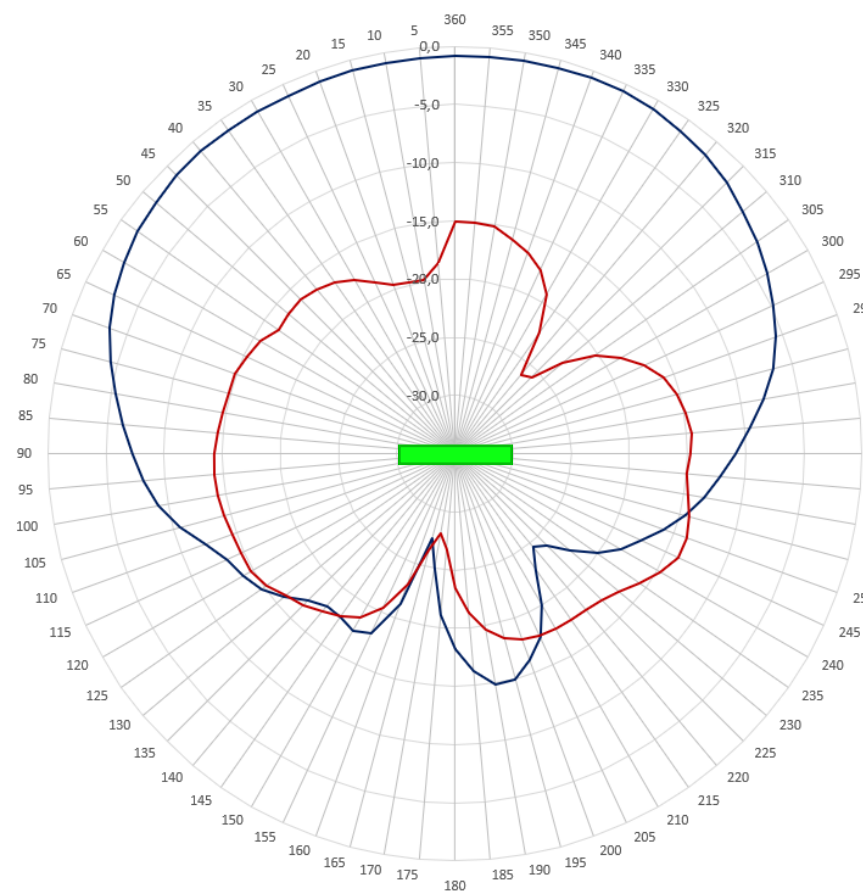


ANT 10



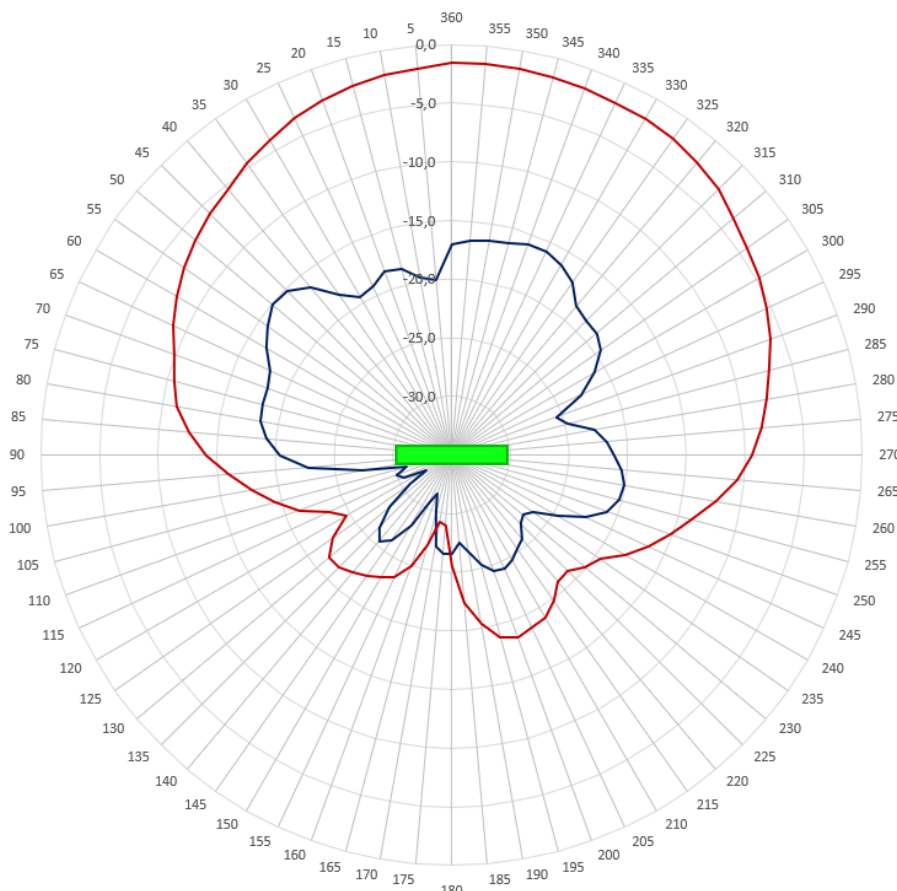
Radiation pattern measurements in vertical position, ant 3 & 11

— Ant 3, horizontal polarisation — Ant 3, vertical polarisation

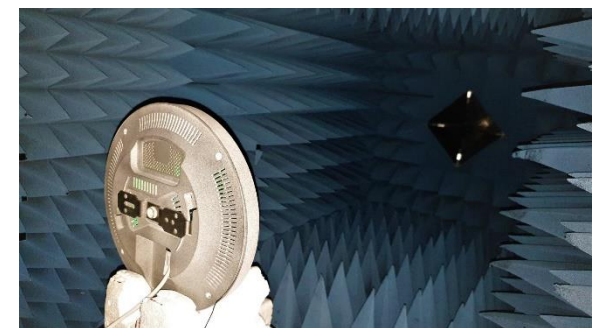


ANT 3

— Ant 11, horizontal polarisation — Ant 11, vertical polarisation

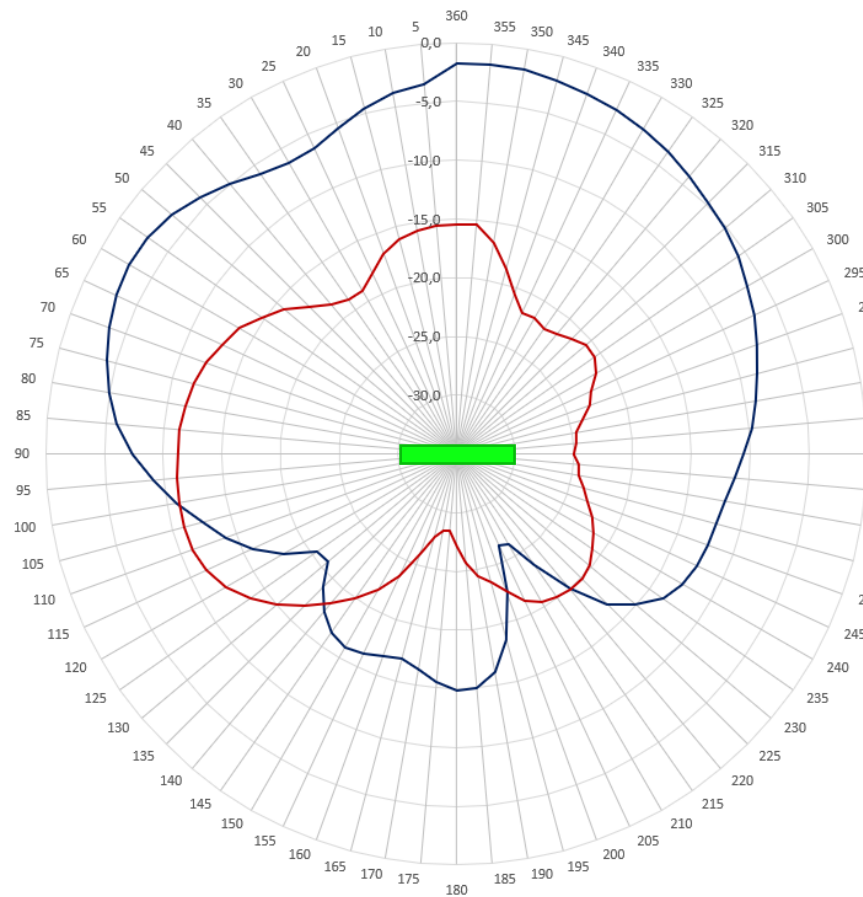


ANT 11



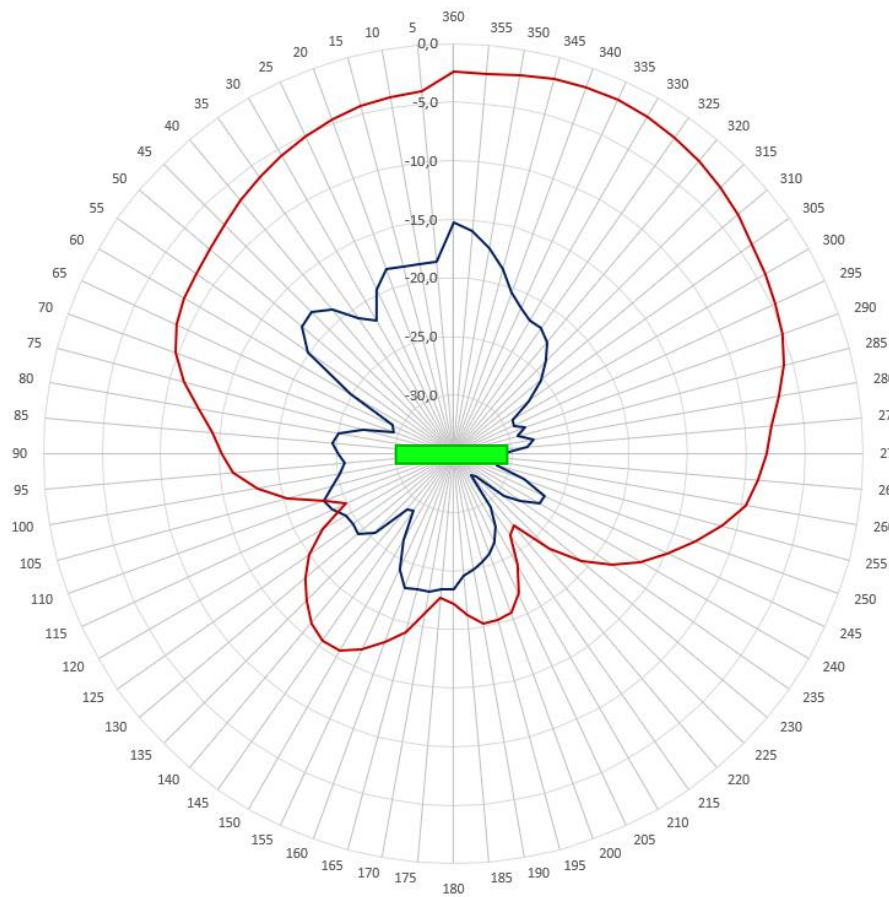
Radiation pattern measurements in vertical position, ant 4 & 12

— Ant 4, horizontal polarisation — Ant 4, vertical polarisation

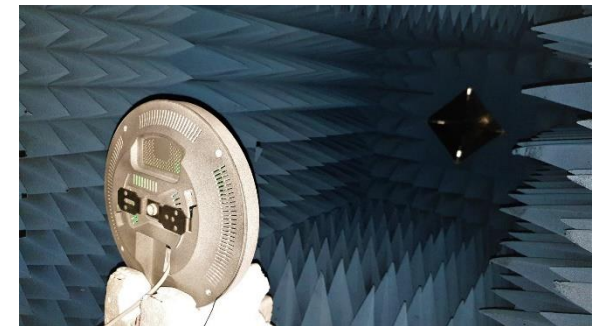


ANT 4

— Ant 12, horizontal polarisation — Ant 12, vertical polarisation

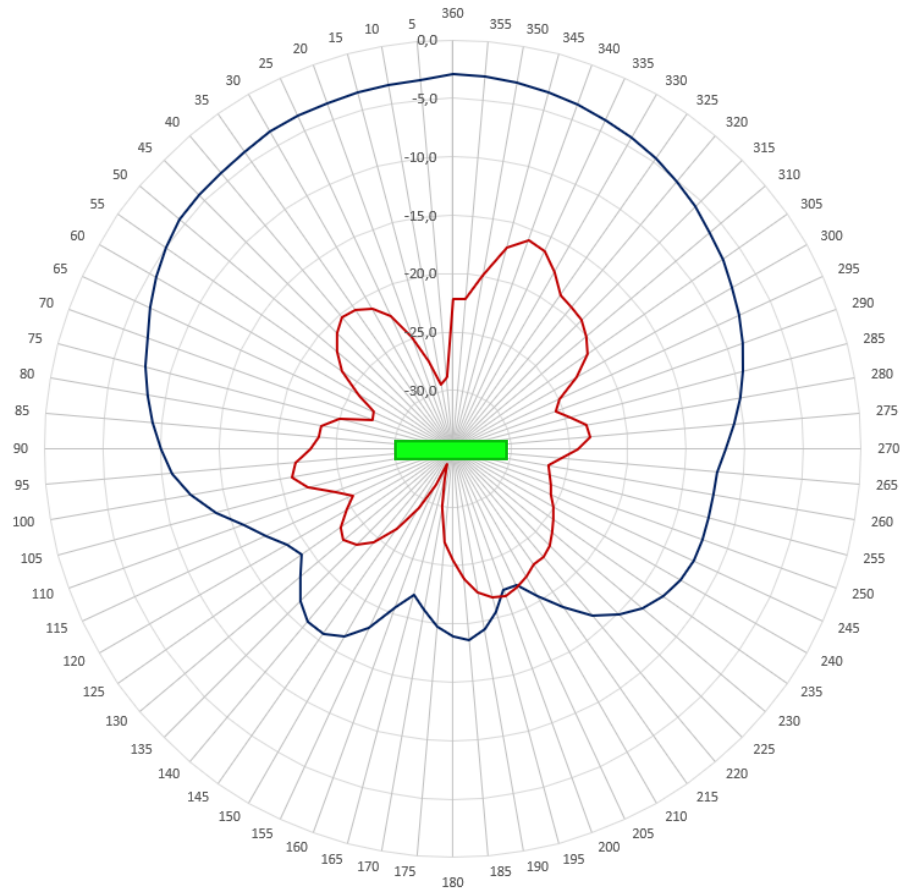


ANT 12



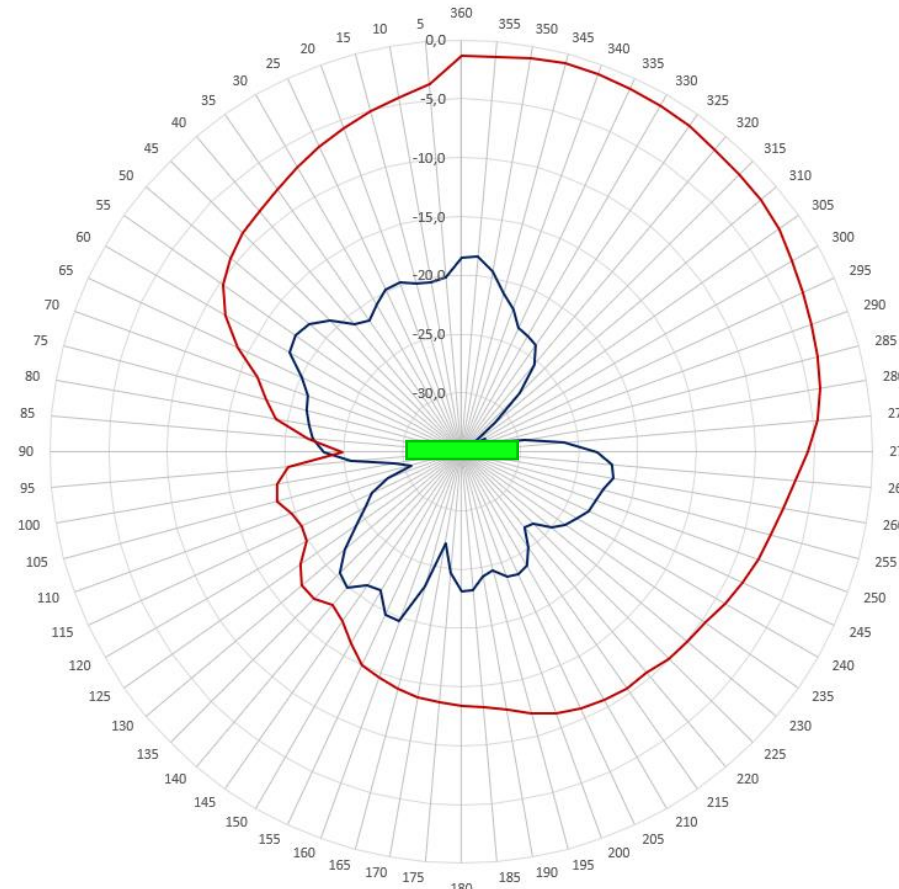
Radiation pattern measurements in vertical position, ant 5 & 13

— Ant 5, horizontal polarisation — Ant 5, vertical polarisation

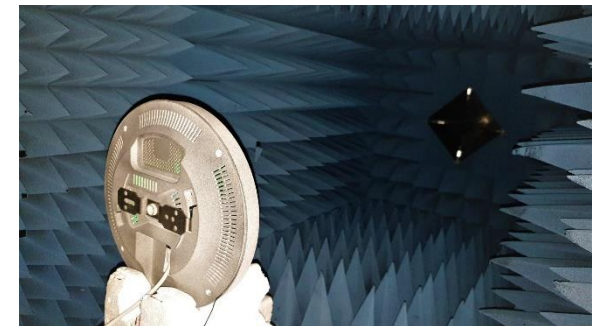


ANT 5

— Ant 13, horizontal polarisation — Ant 13, vertical polarisation

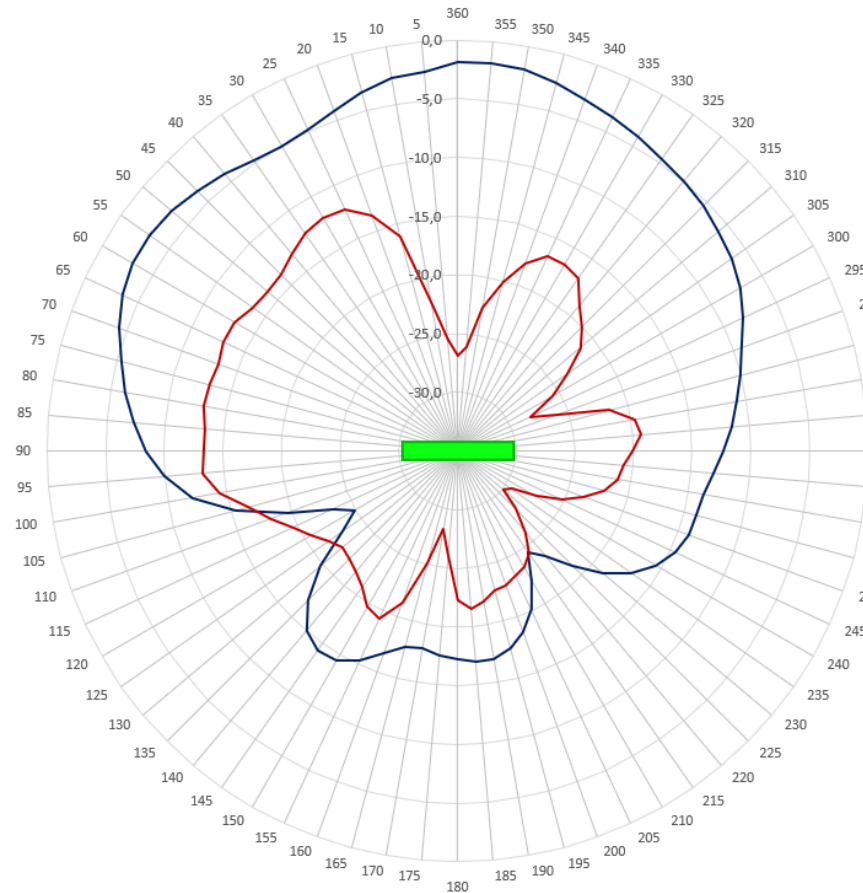


ANT 13



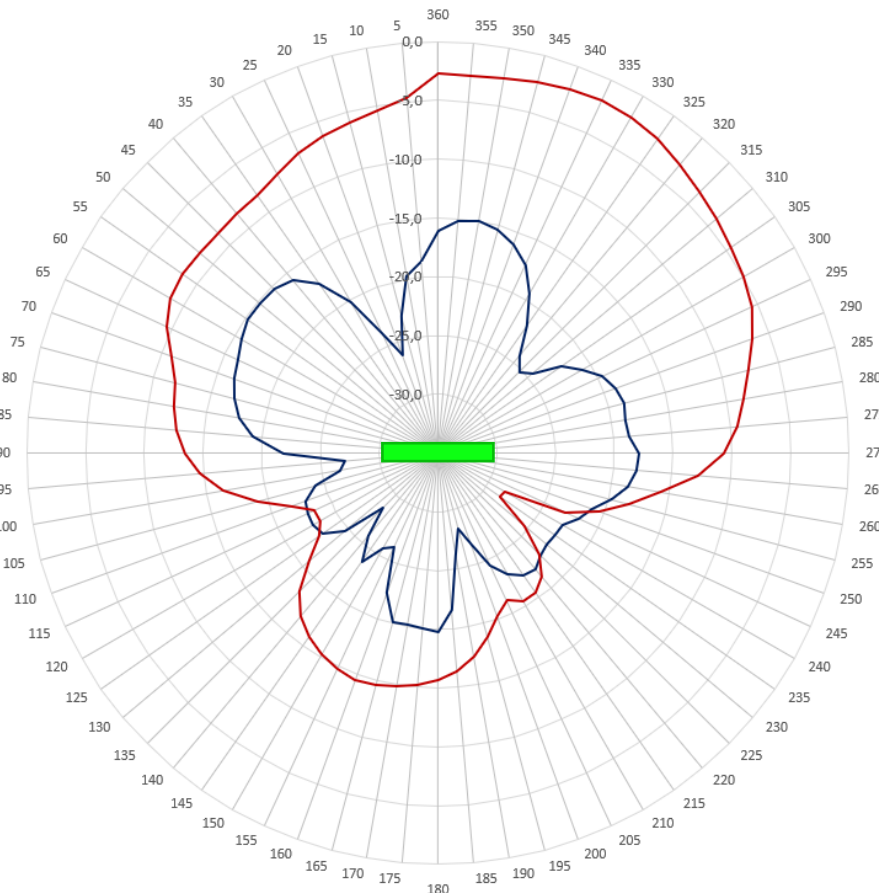
Radiation pattern measurements in vertical position, ant 6 & 14

— Ant 6, horizontal polarisation — Ant 6, vertical polarisation

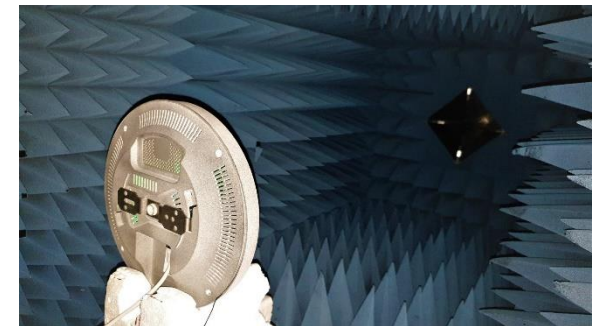


ANT 6

— Ant 14, horizontal polarisation — Ant 14, vertical polarisation

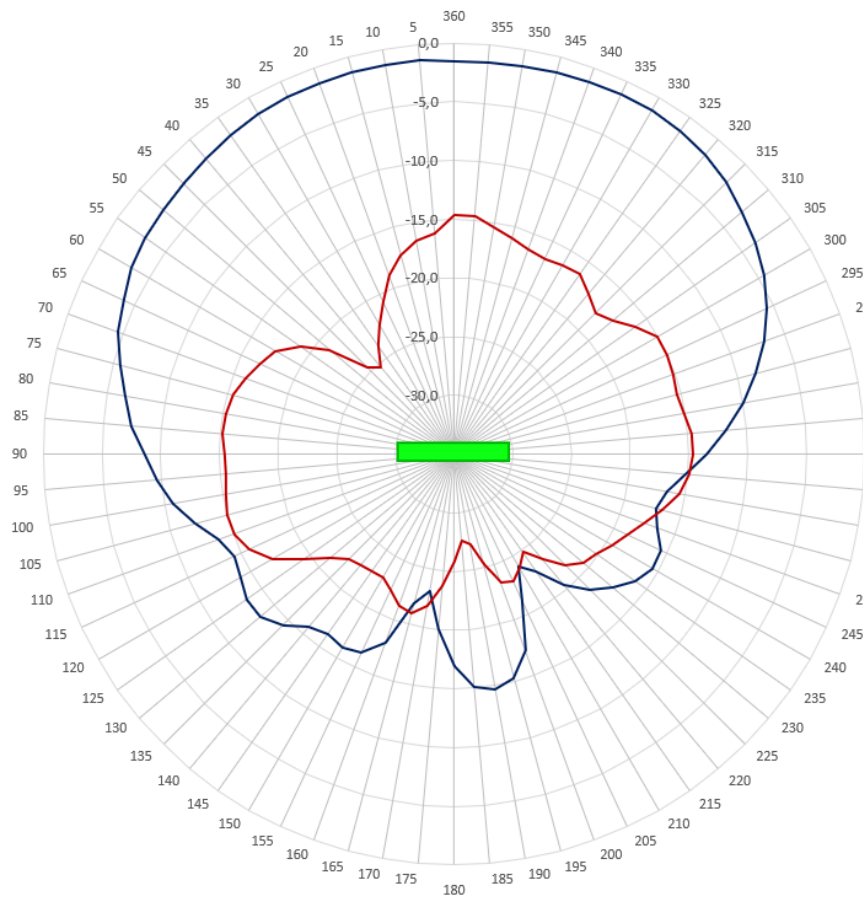


ANT 14



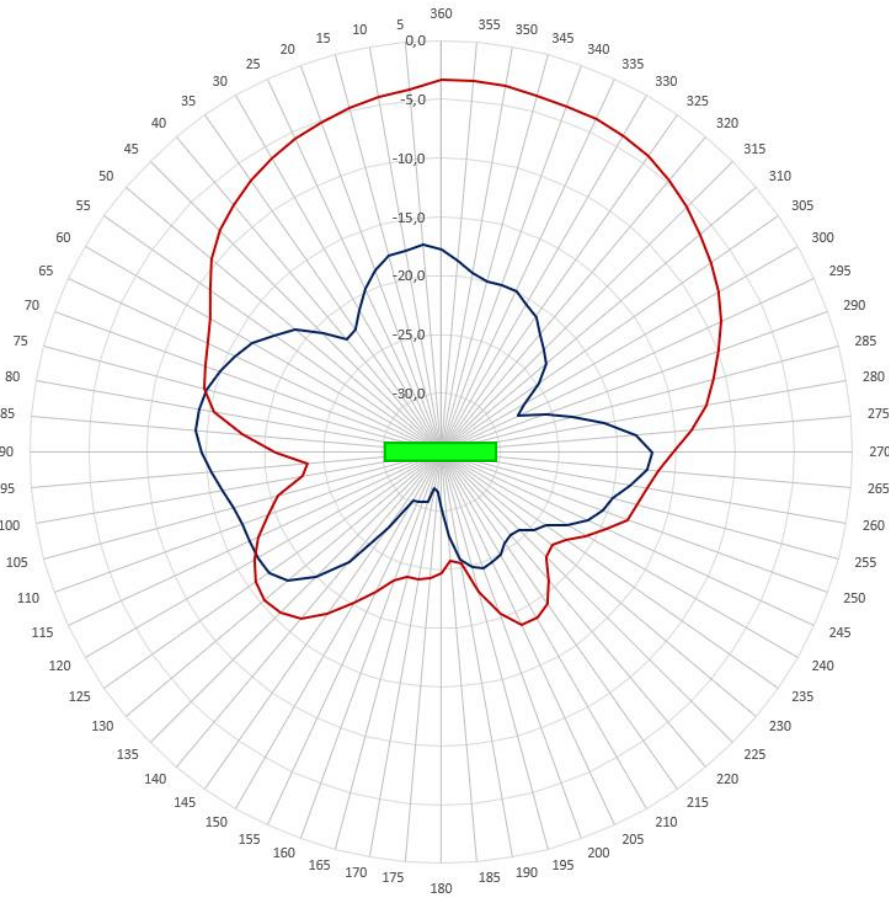
Radiation pattern measurements in vertical position, ant 7 & 15

— Ant 7, horizontal polarisation — Ant 7, vertical polarisation

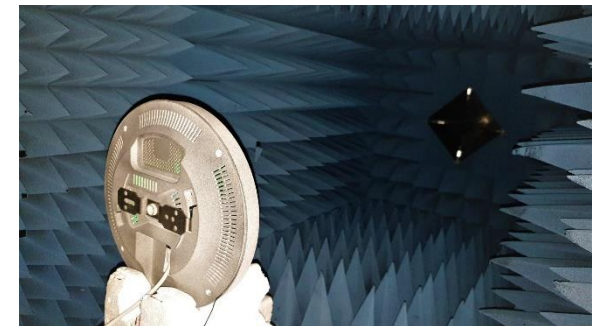


ANT 7

— Ant 15, horizontal polarisation — Ant 15, vertical polarisation

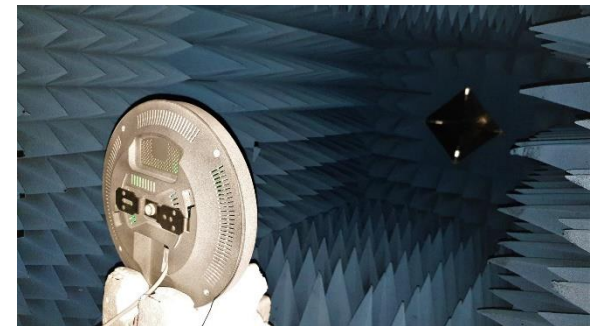
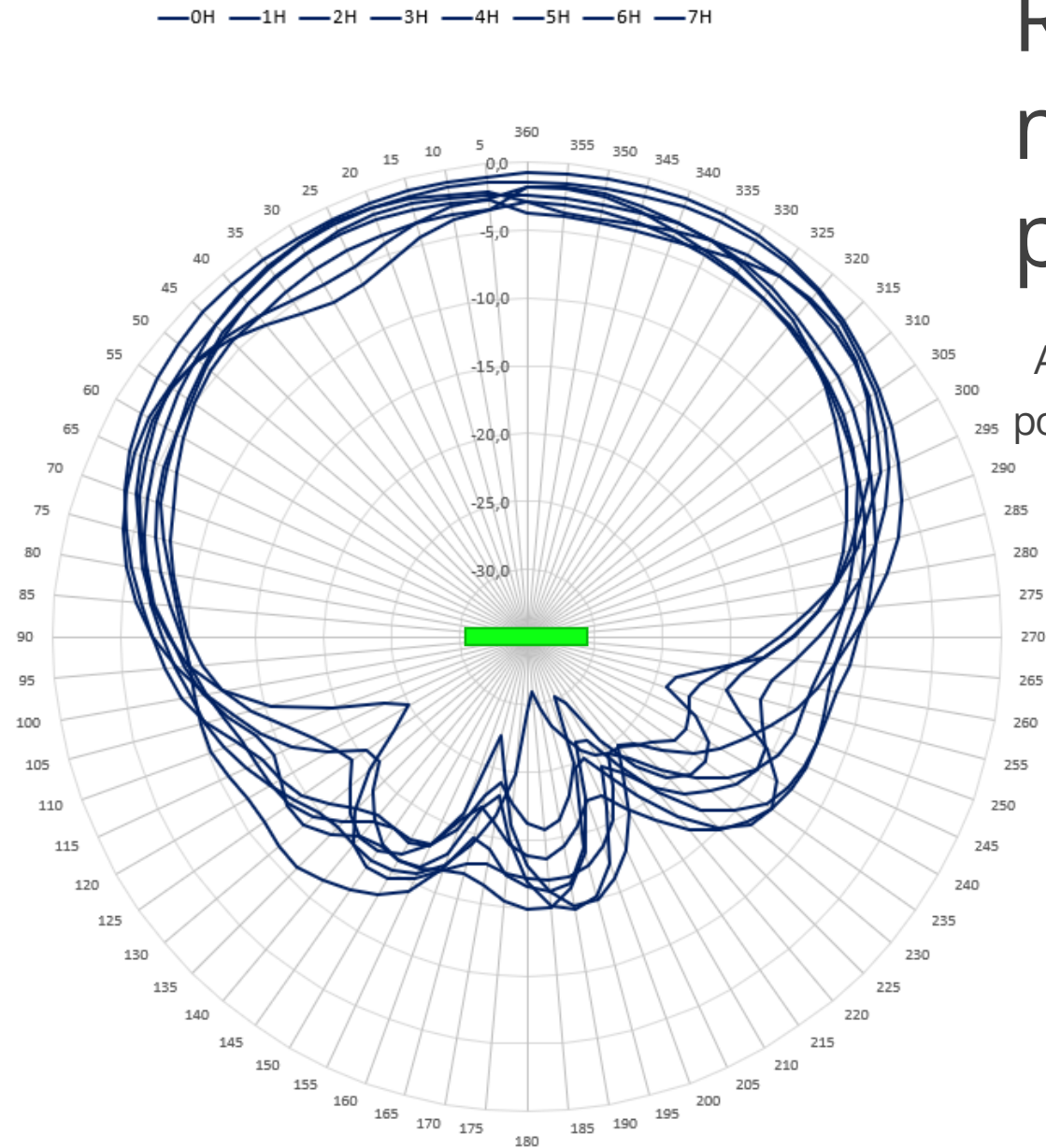


ANT 15



Radiation pattern measurements in vertical position.

All horizontally polarised antennas (0,1,2,3,4,5,6 and 7) in horizontal polarization.



Radiation pattern measurements in vertical position.

All vertically polarised antennas (0,1,2,3,4,5,6 and 7) in vertical polarization.

