COMMSCOPE®

RP5200 N41/N71 Radiation Test

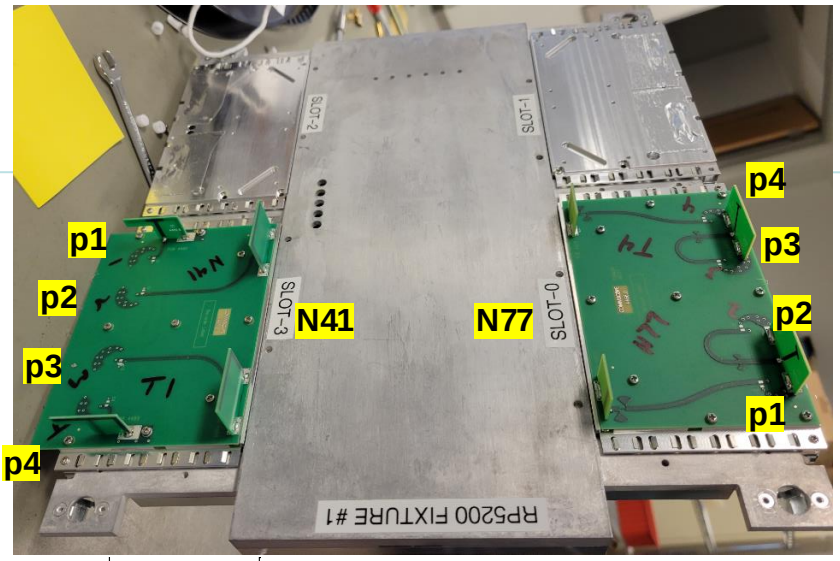
Weekly

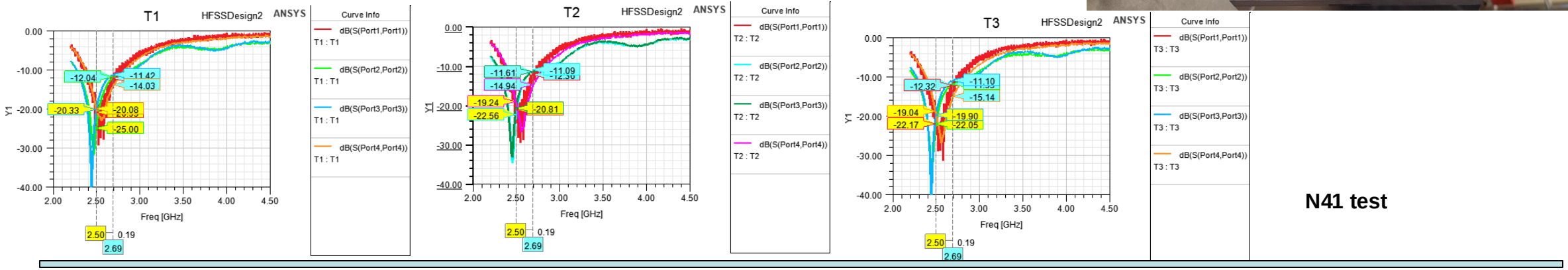
Nov 11 , 2021

Huan Wang
VCN Small Cell R&D
Richardson, TX

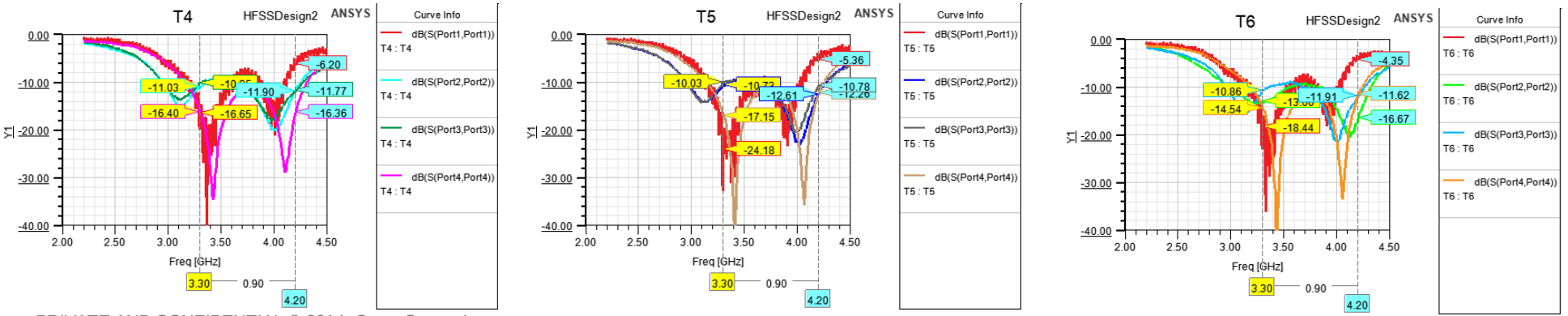
RL (dB) built and tested by Tim Purvis

- **3 samples T1, T2, and T3 for N41**
- **3 samples T4, T5, and T6 for N77**



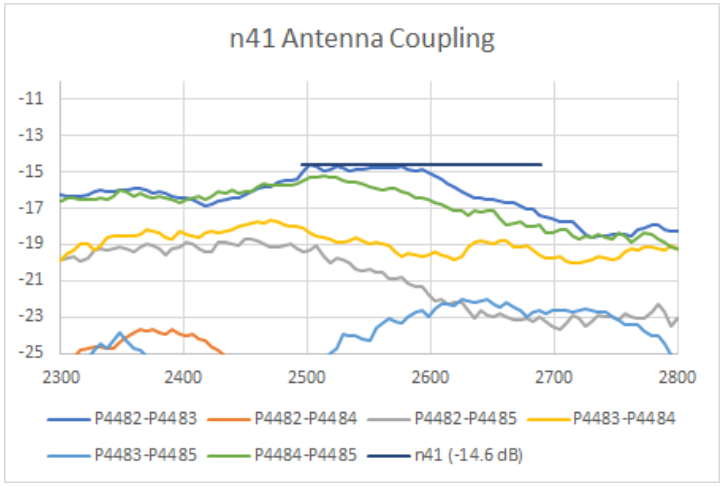


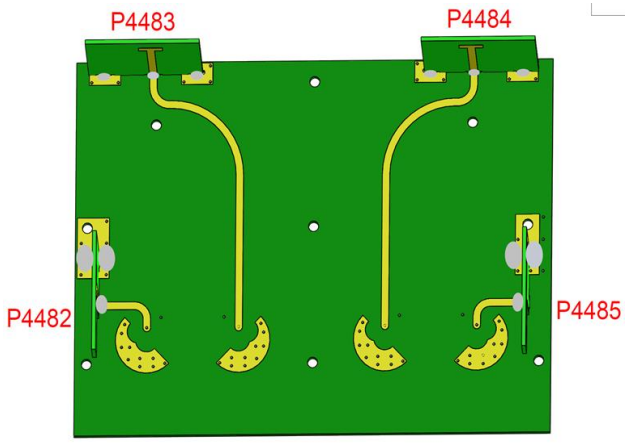
N41 test

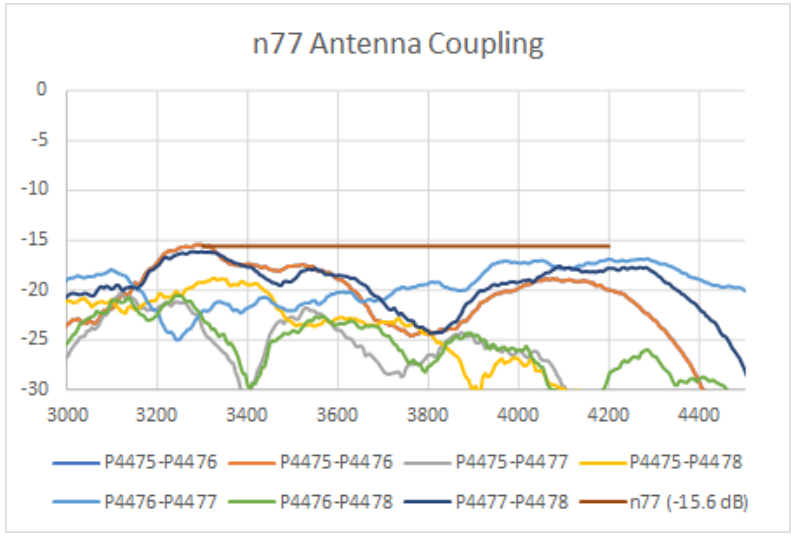


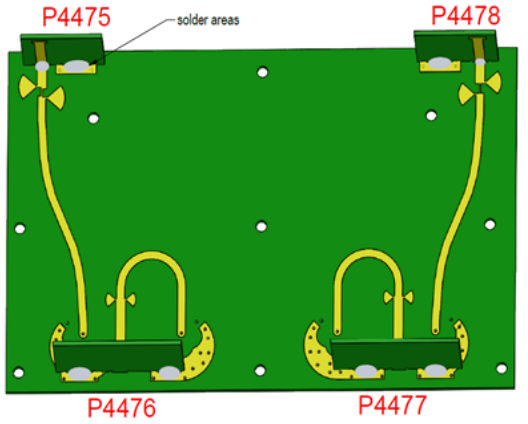
N77 test

ISO (dB) built and tested by Bob Gels

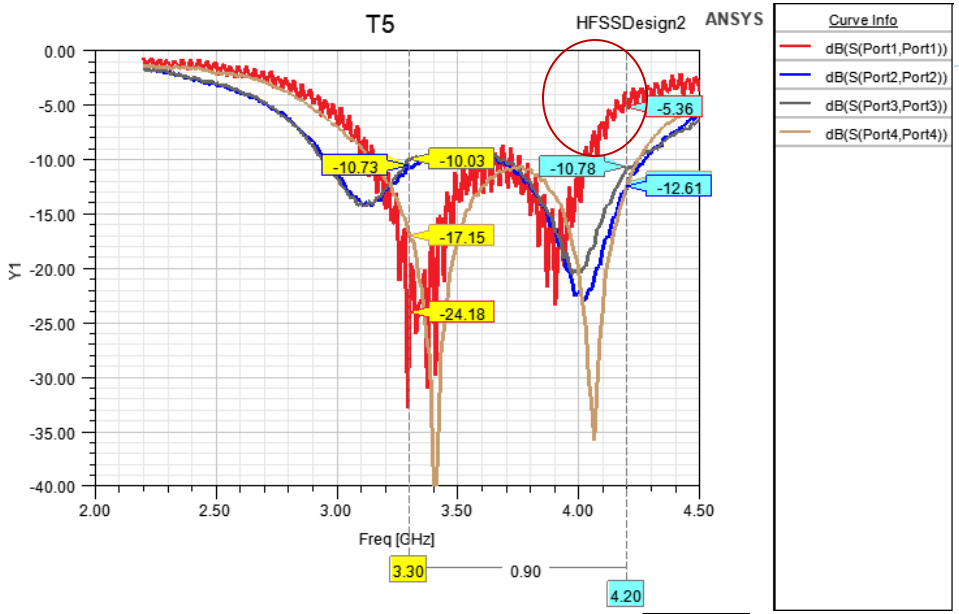


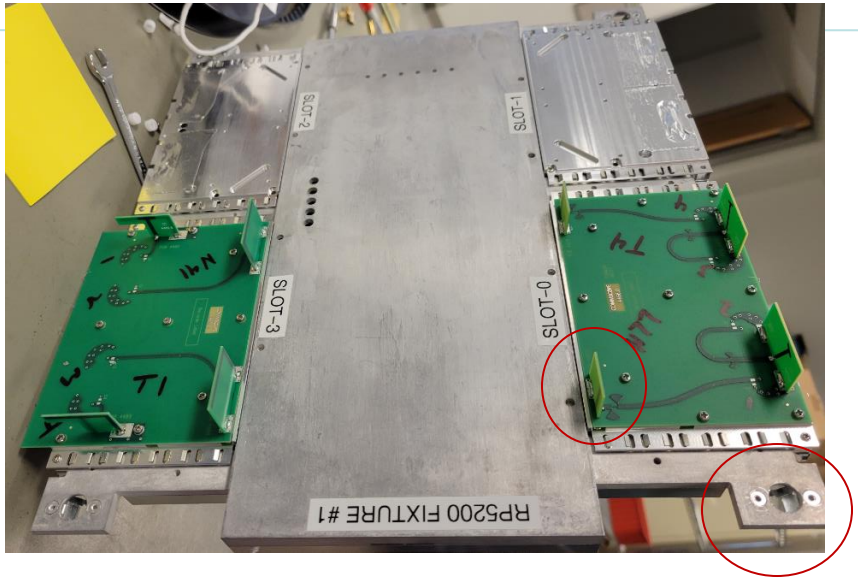


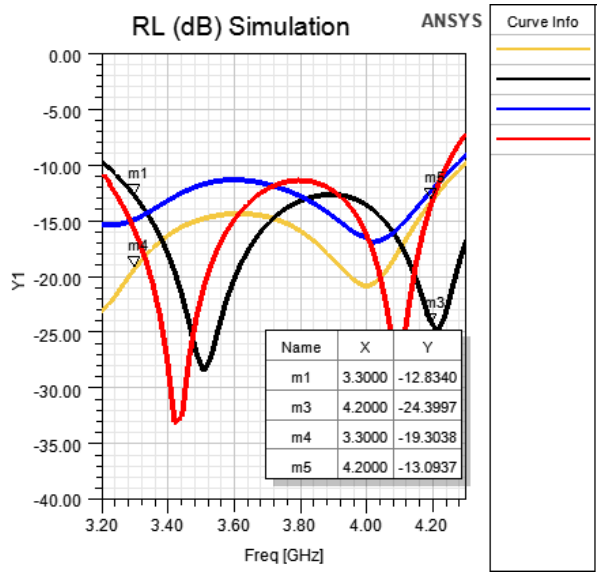


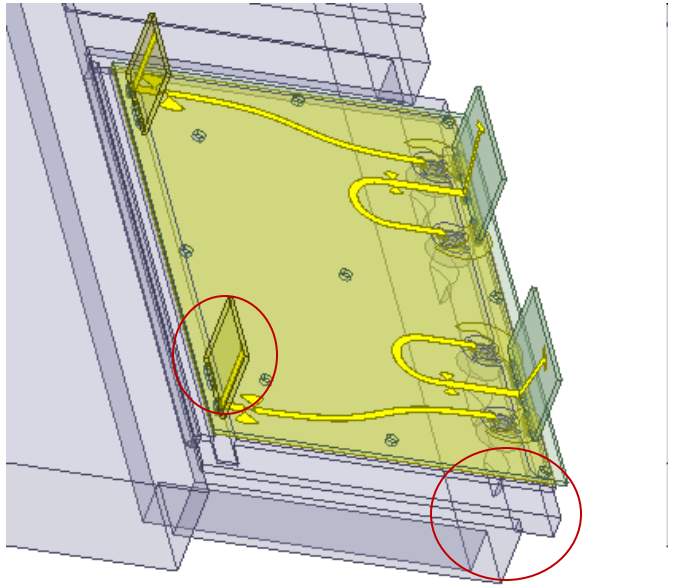


Discussion



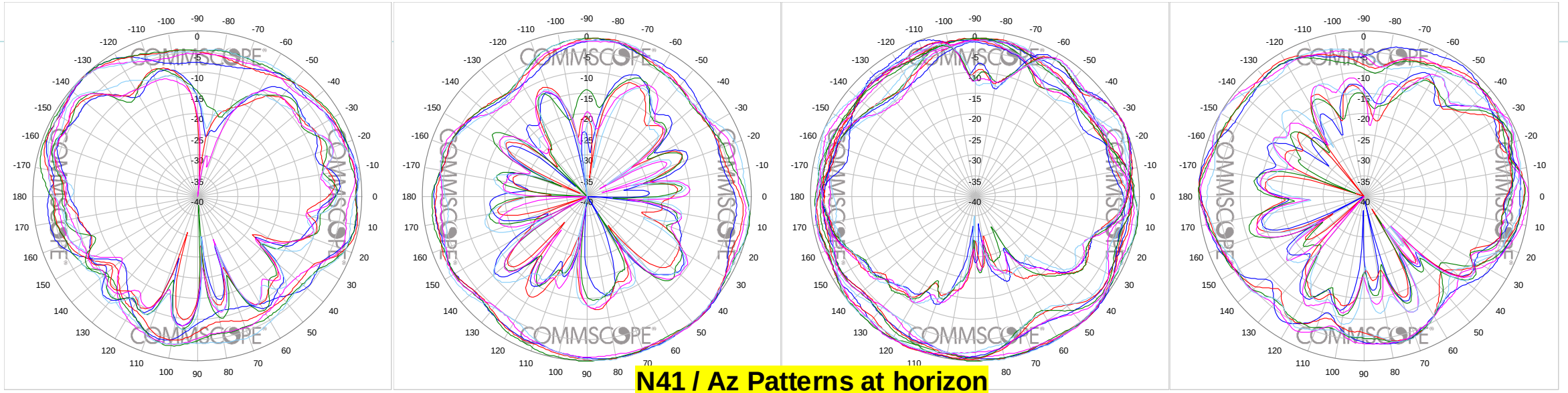




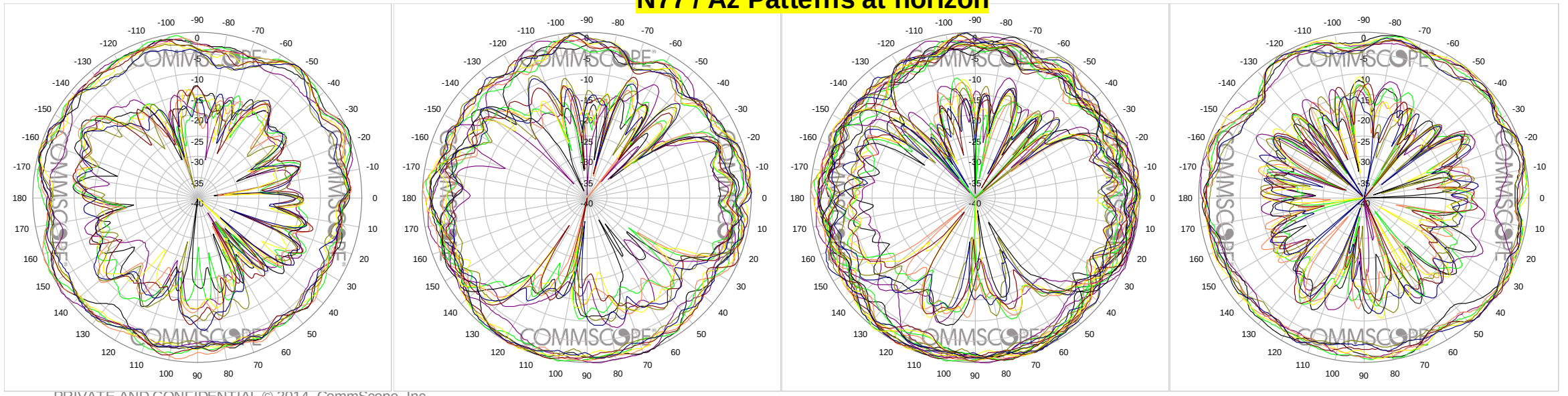


- **RL = -5dB @ 4.2 GHz at port 1 was not predicted in the early simulation.**
- **A possible reason is that the simulation model has a missing part from the real chassis, to be verified…**

Patterns Tested / Supported by Tim and BSA group

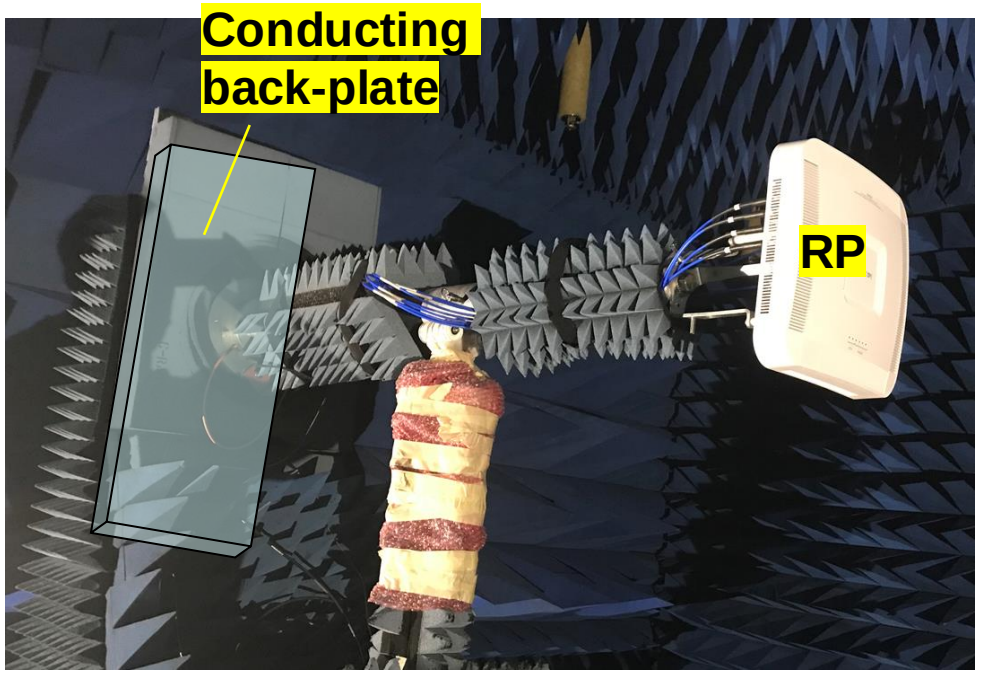


N41 / Az Patterns at horizon

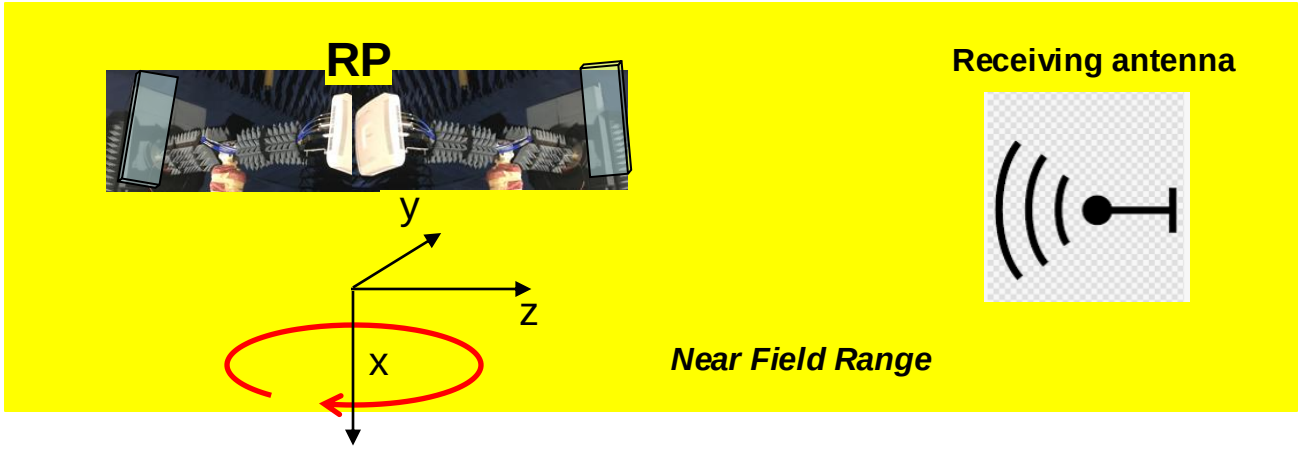


N77 / Az Patterns at horizon

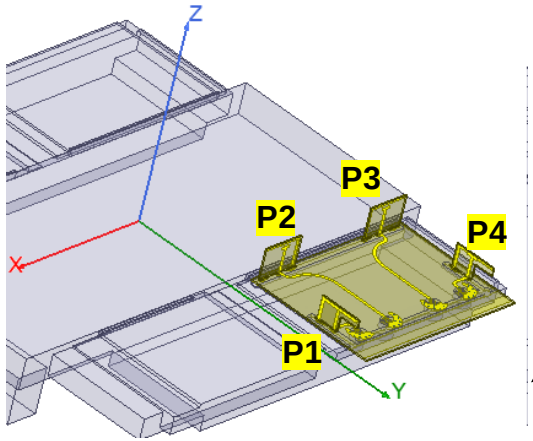
Range setup

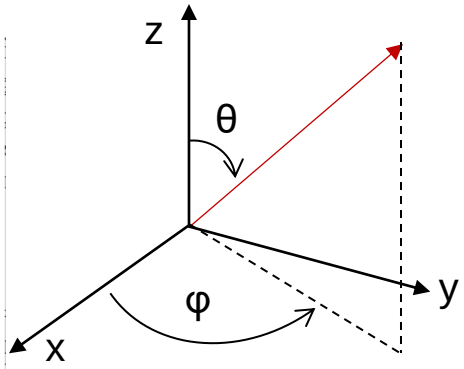


- There is a chunk of conducting back-plate (about 400mm x 1700 mm x 30 mm) supporting the RP antennas
- RP hung along x-axis is rotating around x-axis
- The back-plate is orbiting RP as RP is self-spinning
- Therefore, the back-plate causes pattern-distortion, especially back-lobe distortion



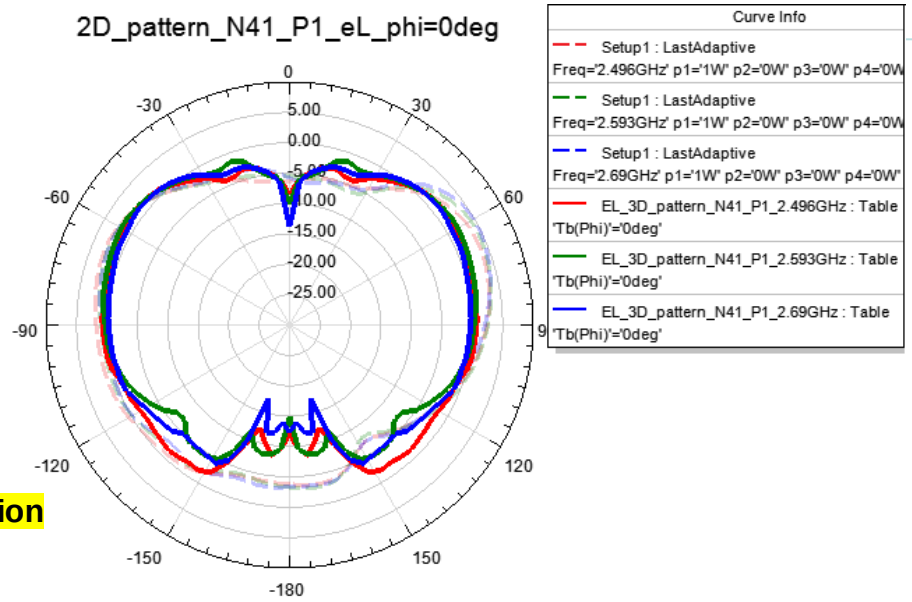
N41 / Test vs Simulation / P1 / Directivity (dB)

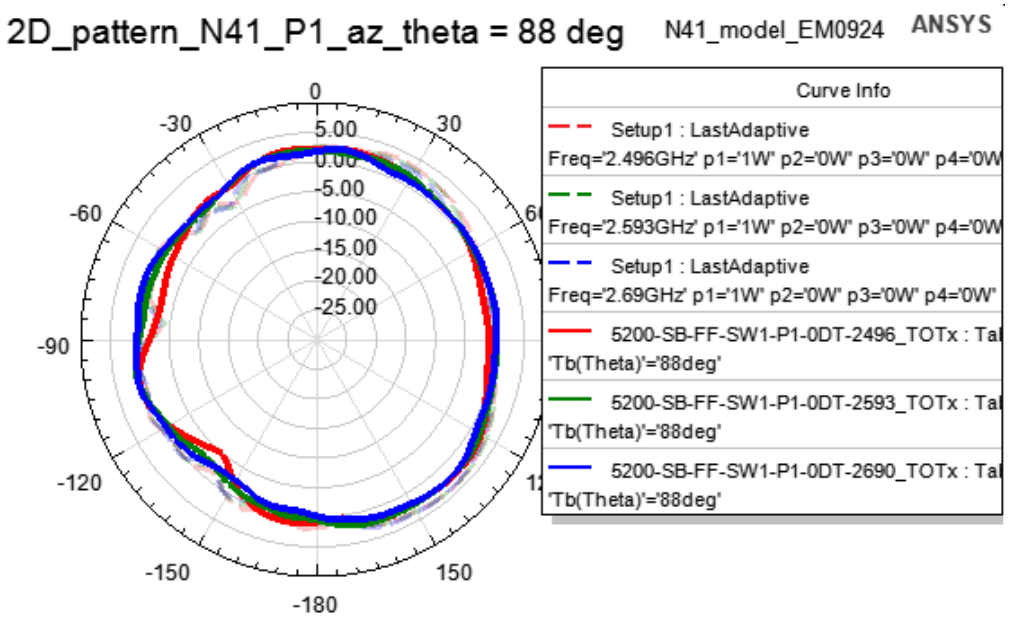


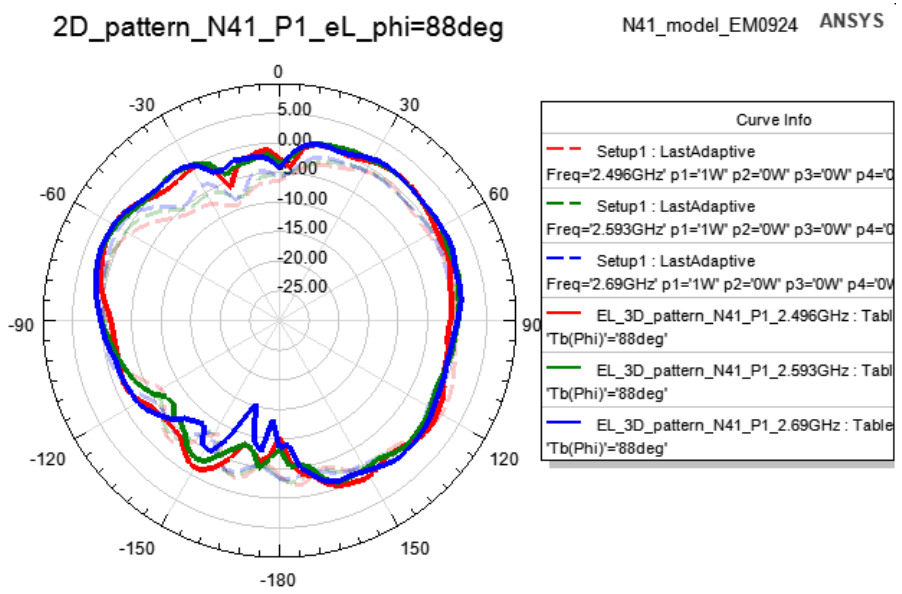


Back-lobe distortion due to the back-plate in the test

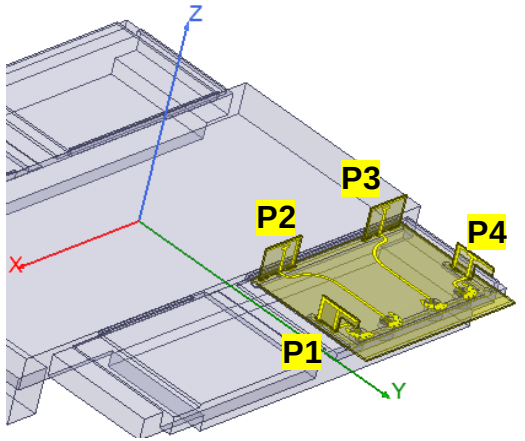
- - Dashed lines : Simulation
— Solid lines: Test

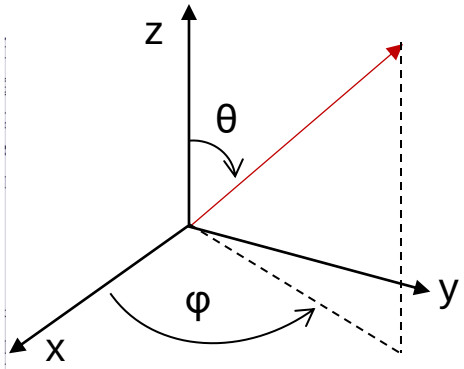






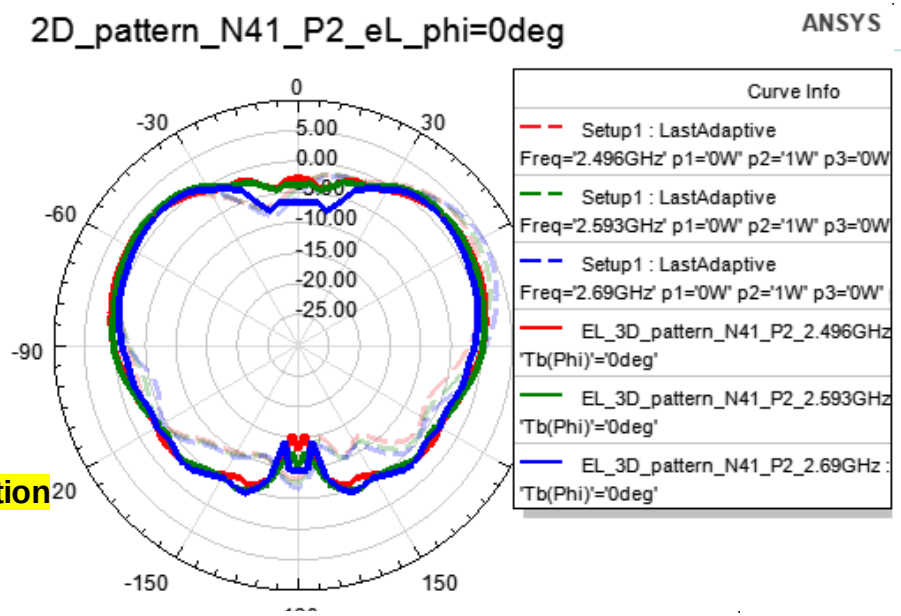
N41 / Test vs Simulation / P2 / Directivity (dB)

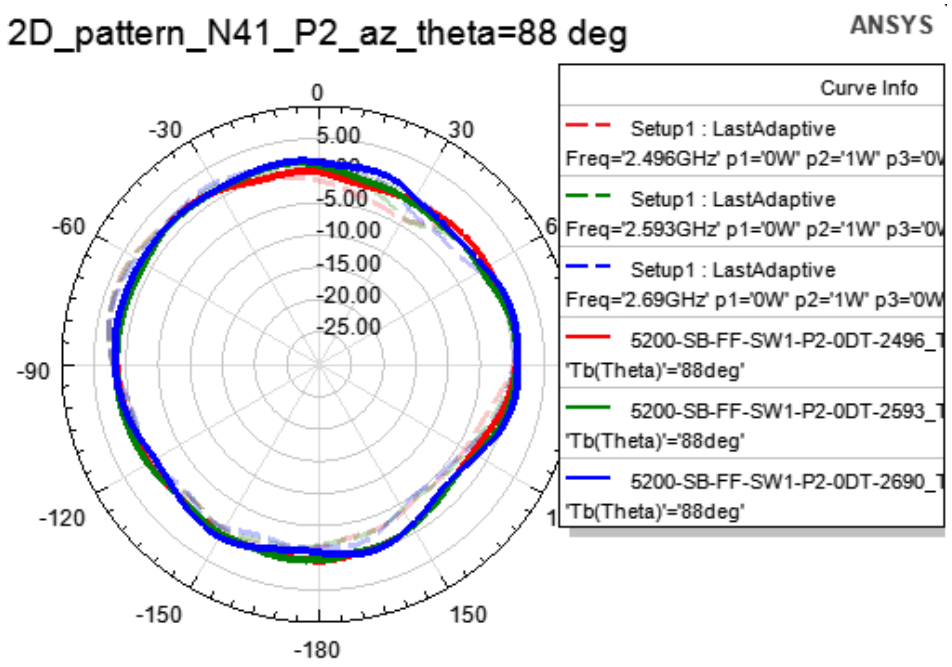


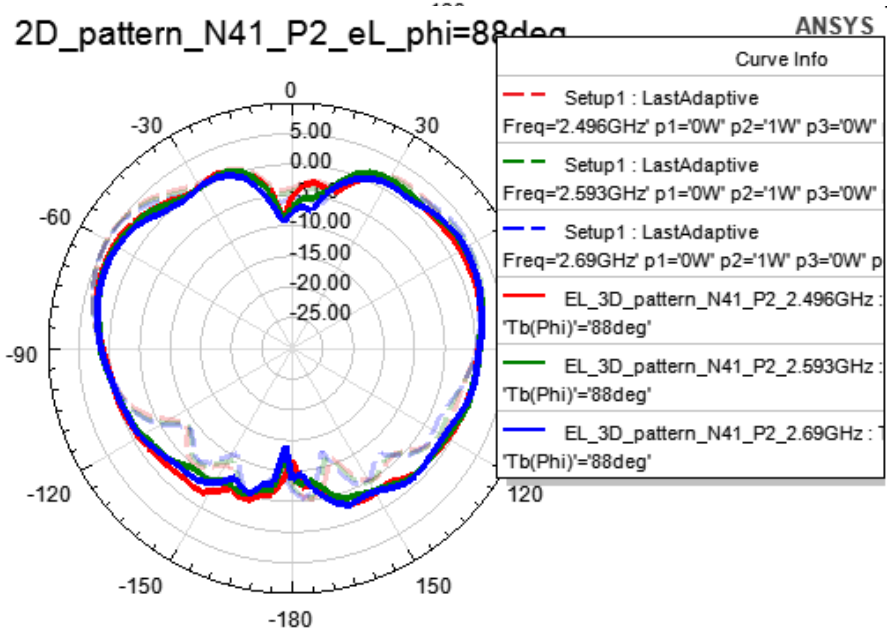


Back-lobe distortion due to the back-plate in the test

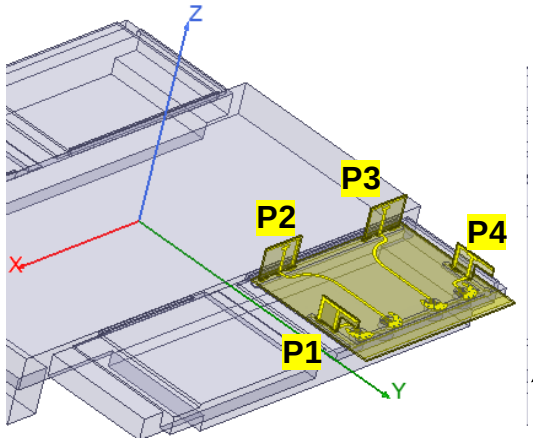
- - Dashed lines : Simulation
— Solid lines: Test

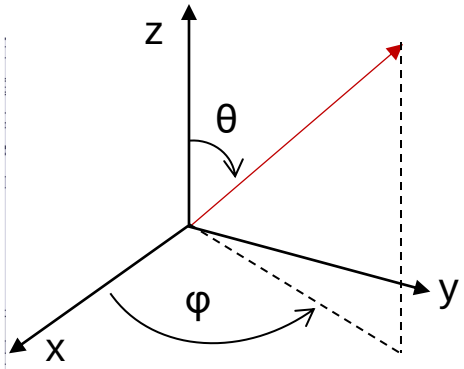






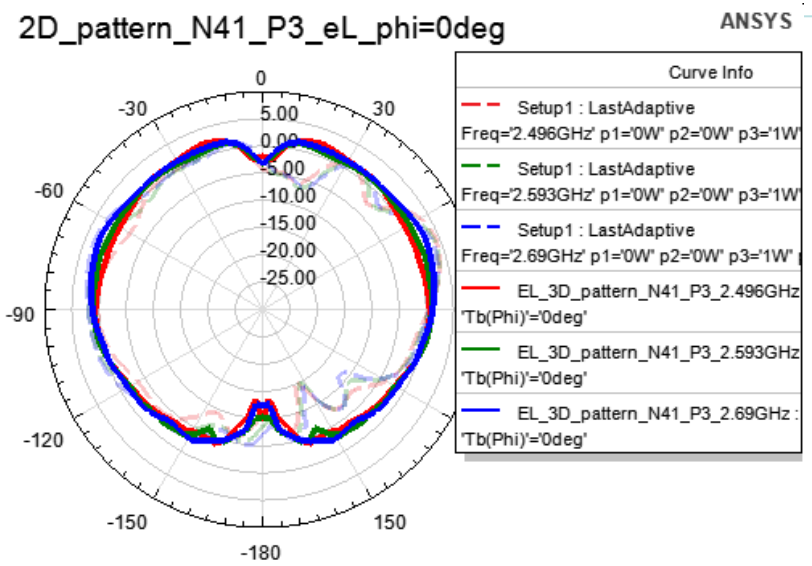
N41 / Test vs Simulation / P3 / Directivity (dB)

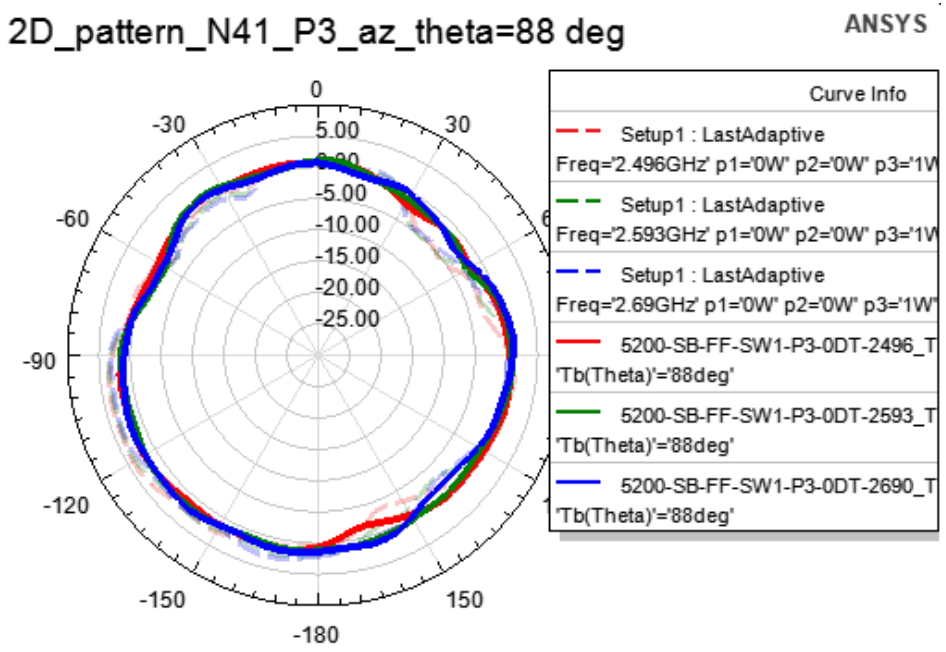


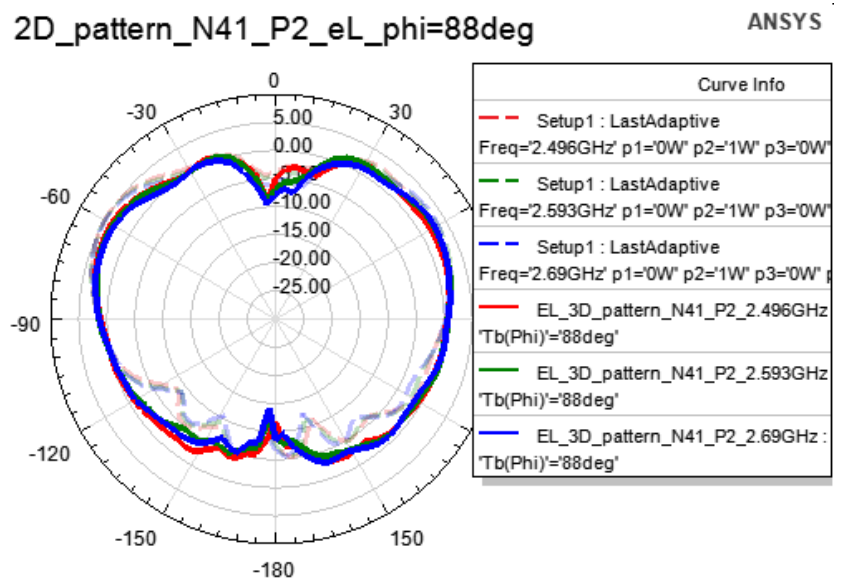


Back-lobe distortion due to the back-plate in the test

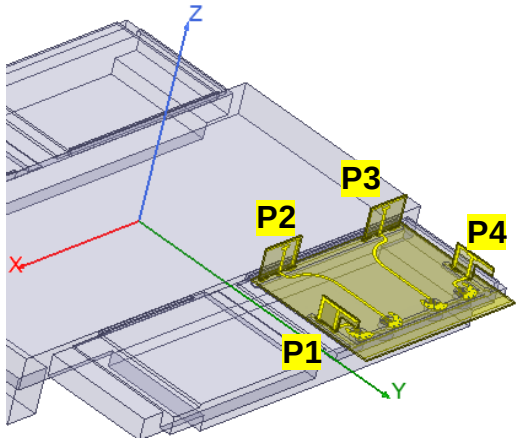
- - Dashed lines : Simulation
— Solid lines: Test

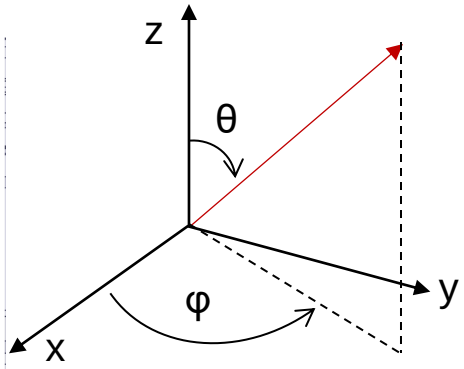






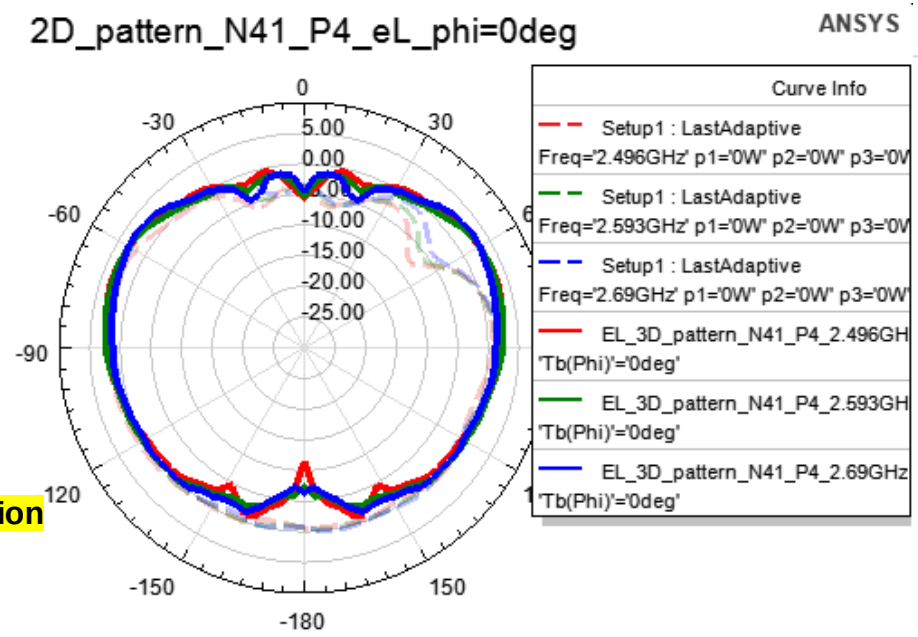
N41 / Test vs Simulation / P4 / Directivity (dB)

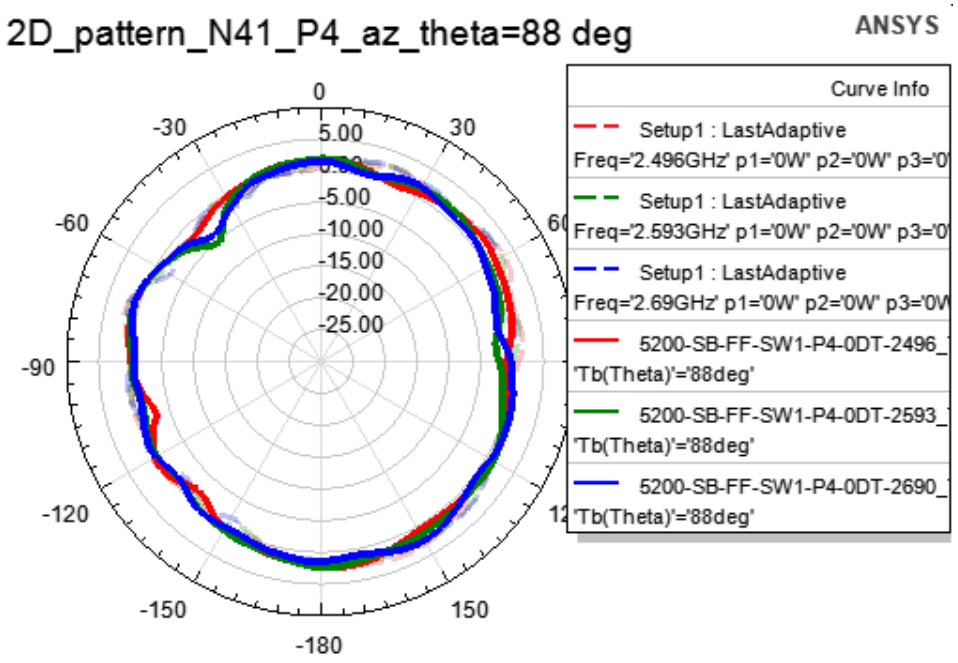


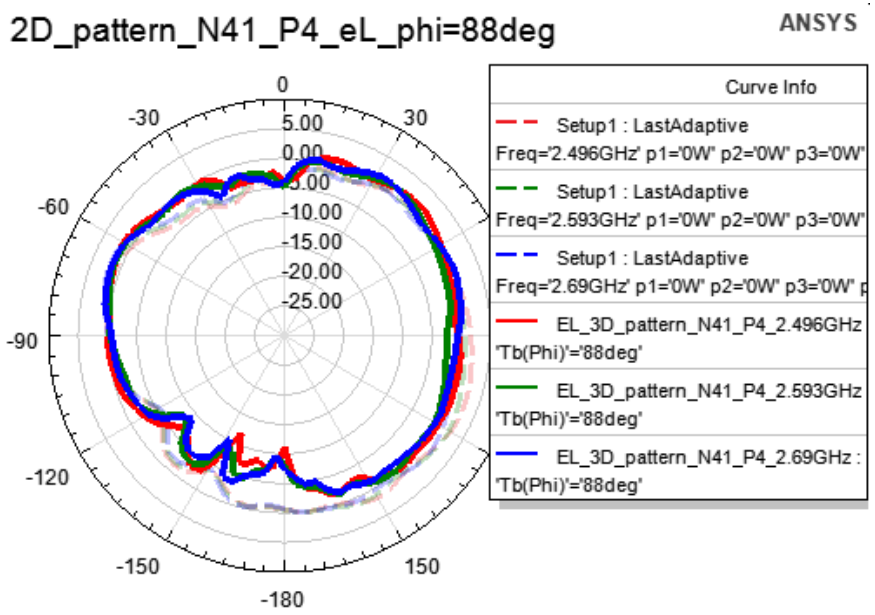


Back-lobe distortion due to the back-plate in the test

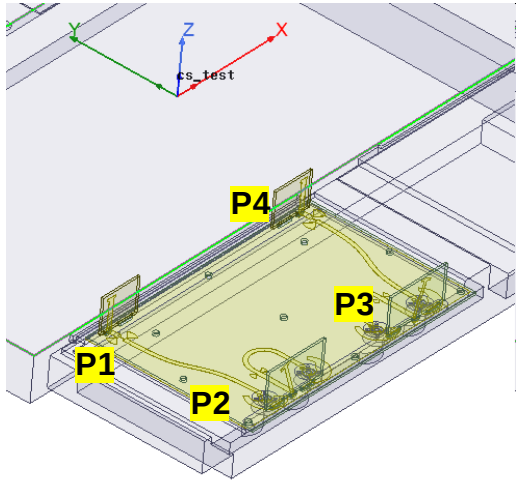
- - Dashed lines : Simulation
— Solid lines: Test

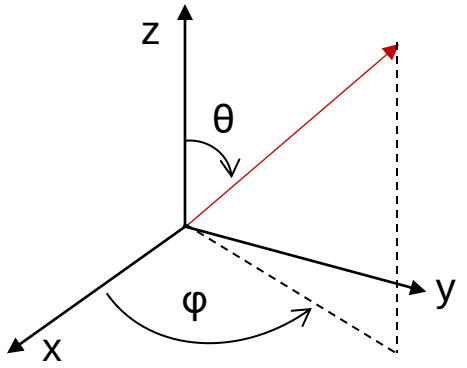


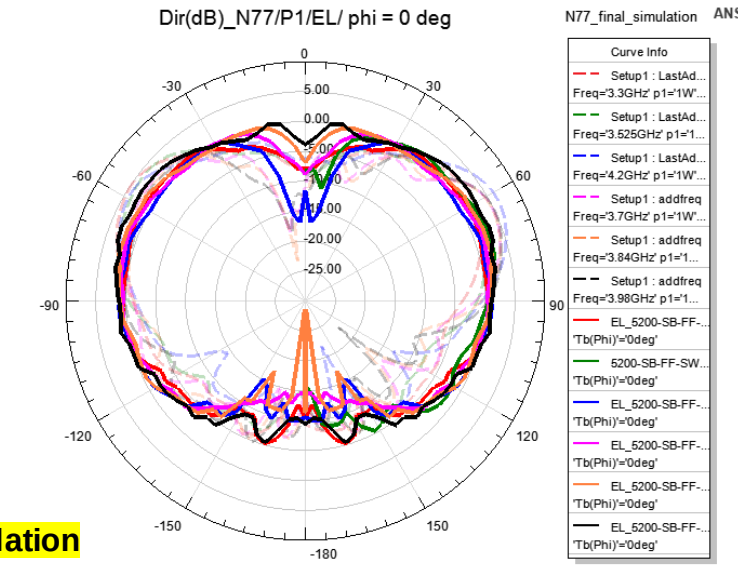




N77 / Test vs Simulation / P1 / Directivity (dB)

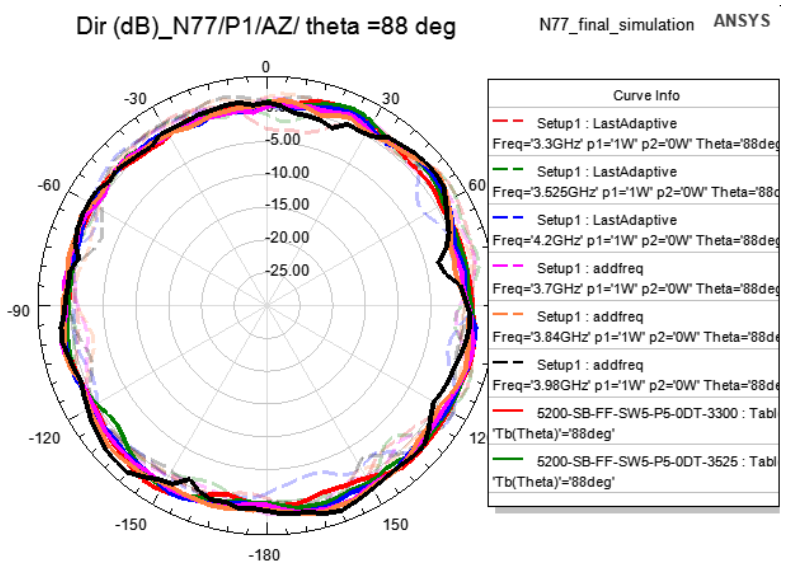


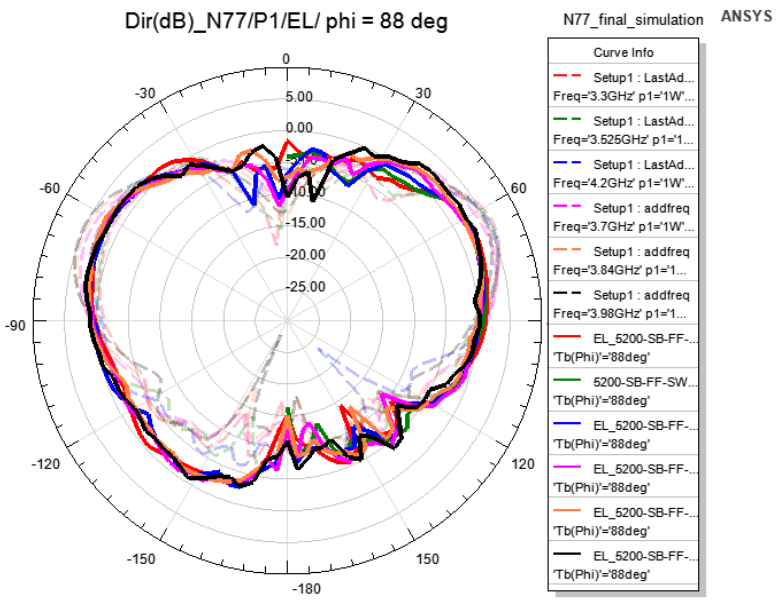




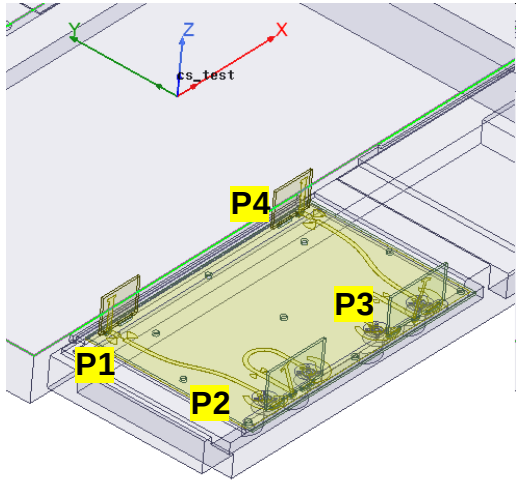
- - Dashed lines : Simulation
— Solid lines: Test

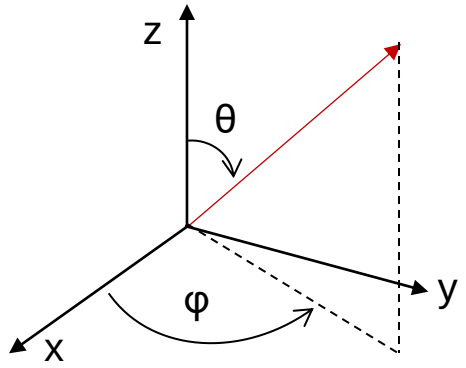
Greater simulation/test mismatch than that from N41





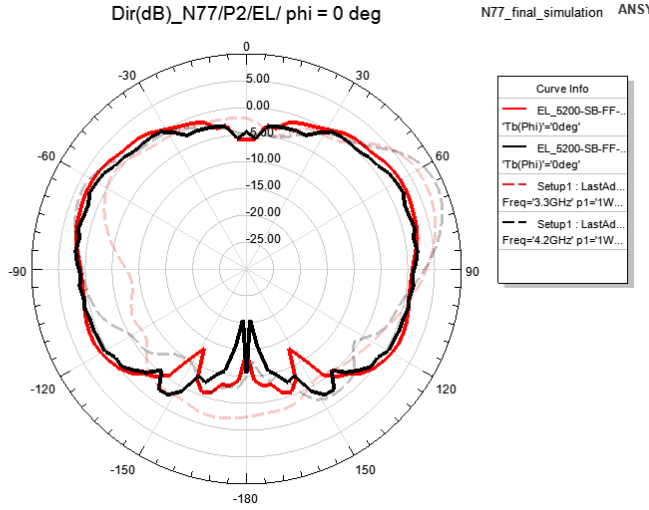
N77 / Test vs Simulation / P2 / Directivity (dB)

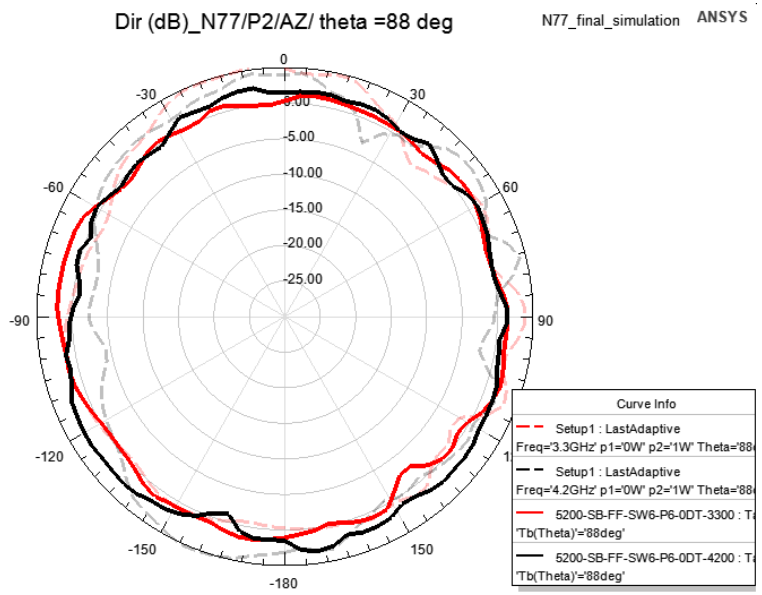


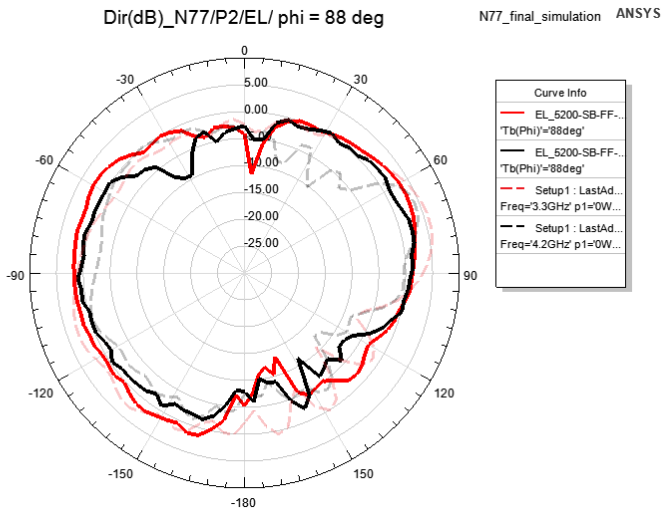


- - Dashed lines : Simulation
— Solid lines: Test

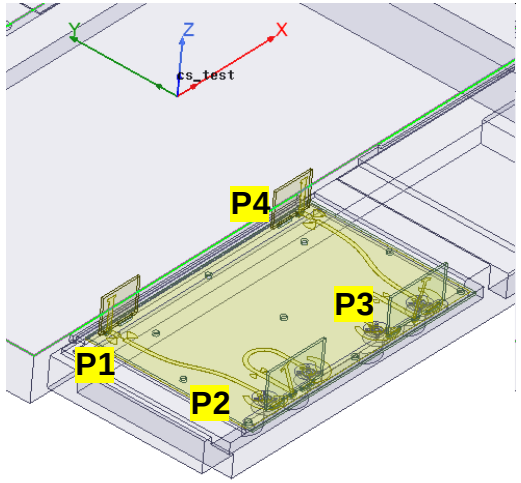
Greater simulation/test mismatch than that from N41

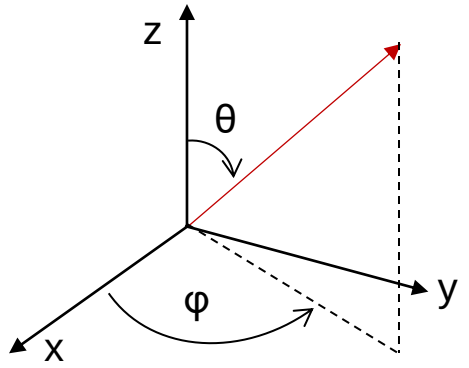






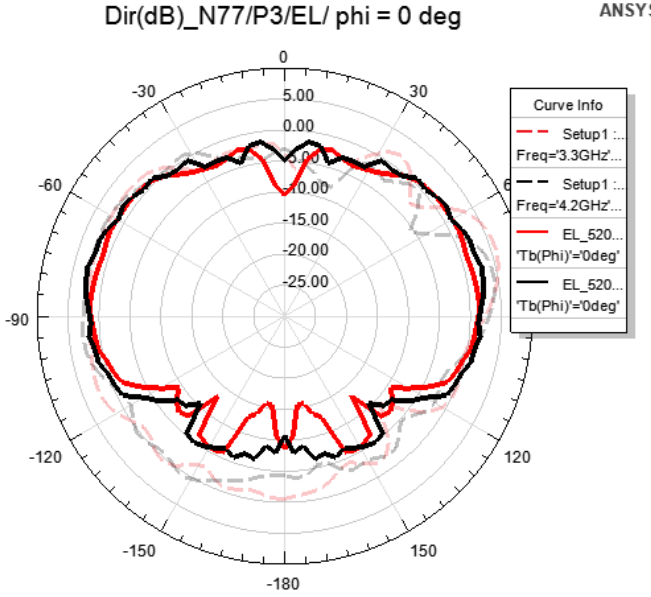
N77 / Test vs Simulation / P3 / Directivity (dB)

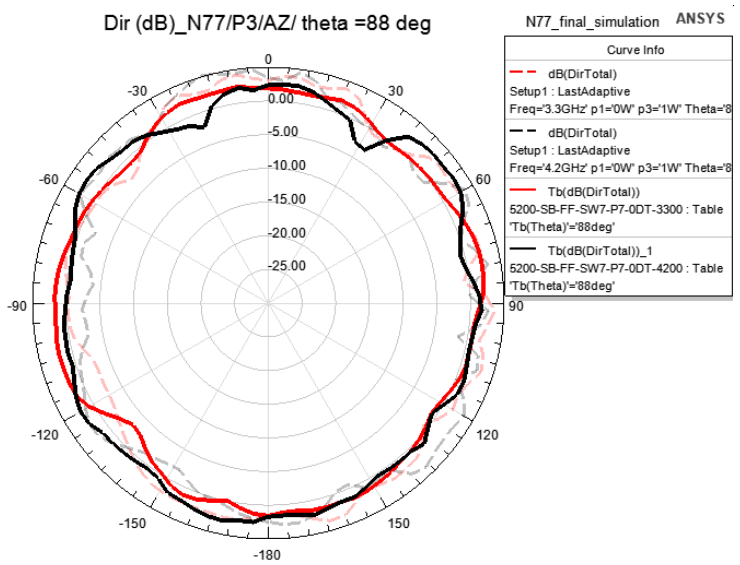


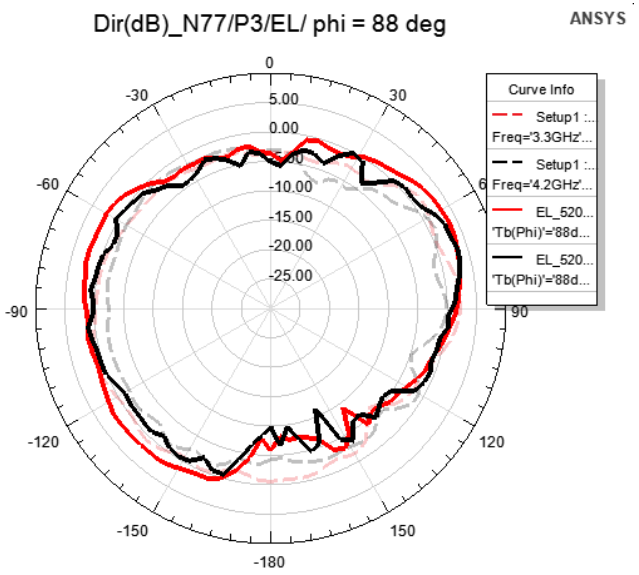


- - Dashed lines : Simulation
— Solid lines: Test

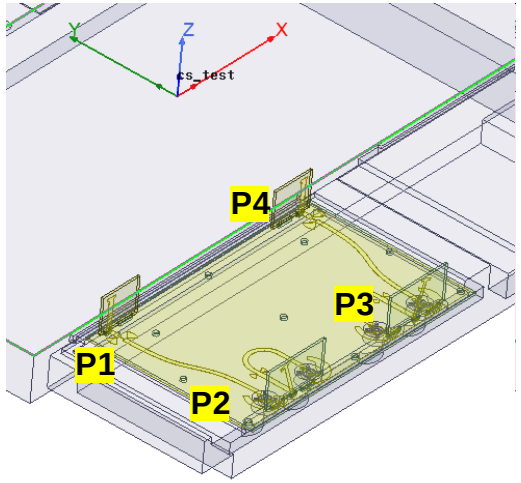
Greater simulation/test mismatch than that from N41

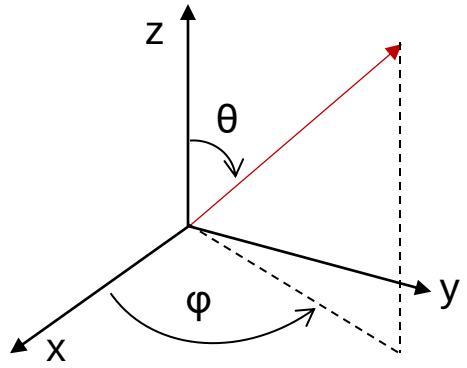






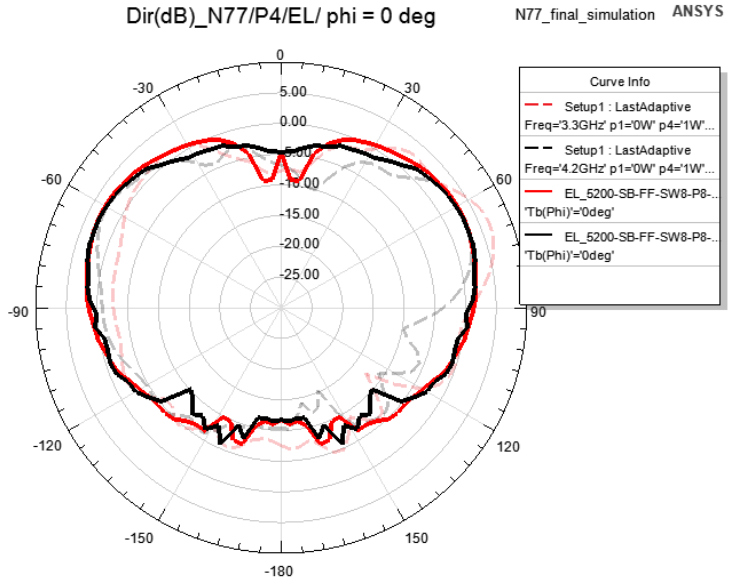
N77 / Test vs Simulation / P4 / Directivity (dB)

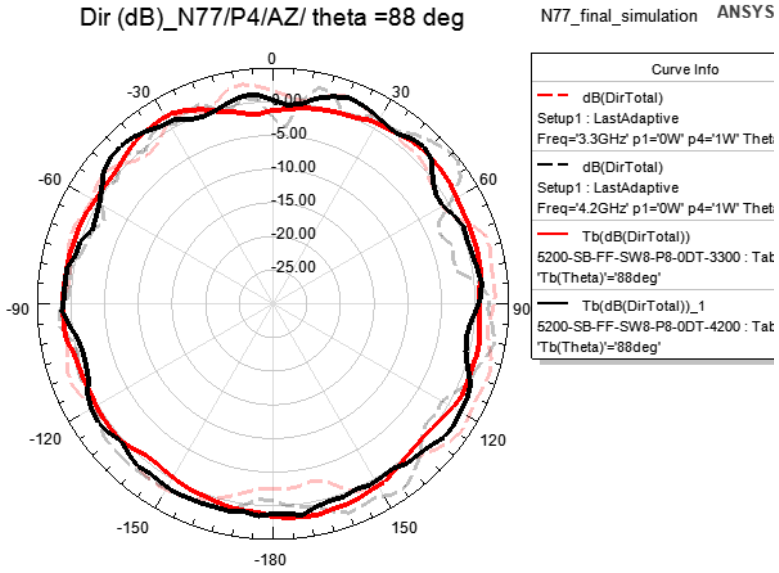


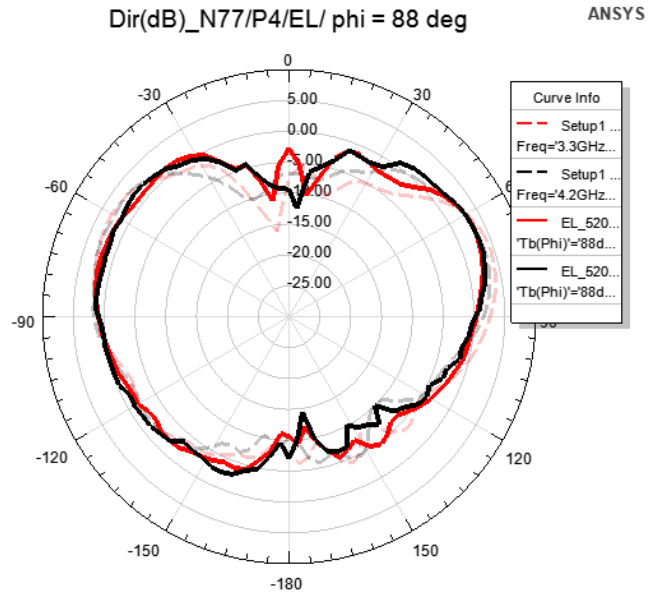


- - Dashed lines : Simulation
— Solid lines: Test

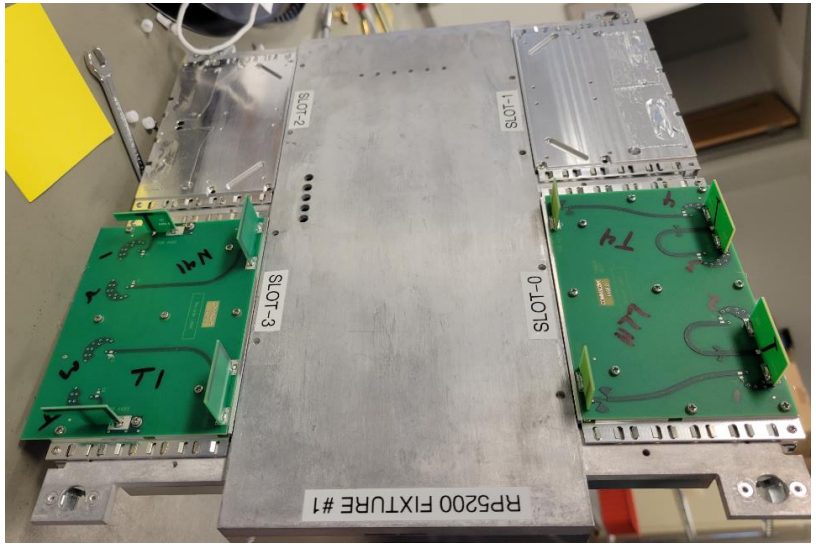
Greater simulation/test mismatch than that from N41







Discussion



Beside the range setup disruption, pattern discrepancy between test and simulation might be caused by below reason.

- **Both N41 and N71 antennas were present on the same chassis in the same test**
- **N41 antennas were absent in the simulation of N44**
- **N77 antennas were absent in the simulation of N77**

To be verified…