

Matching Network Service

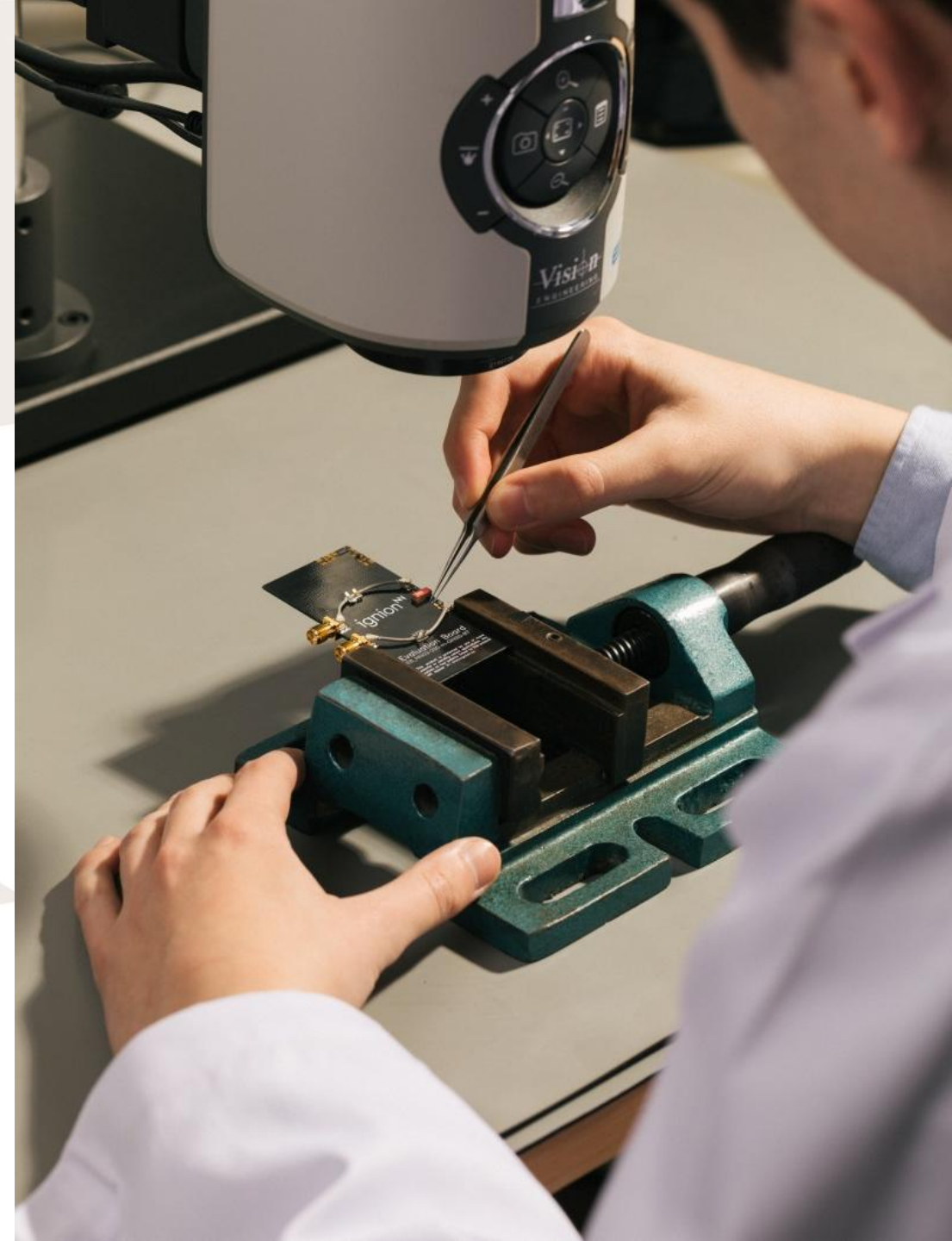
Invasion

Gamepad - Controller



Outline

1. Objectives
2. Proposed Antenna
3. Set-up
4. Proposed Matching Network
5. Performance Analysis
 - 5.1 Reflection coefficient (dB)
 - 5.2 Antenna Efficiency (%)
 - 5.3 Radiation Patterns
6. Summary



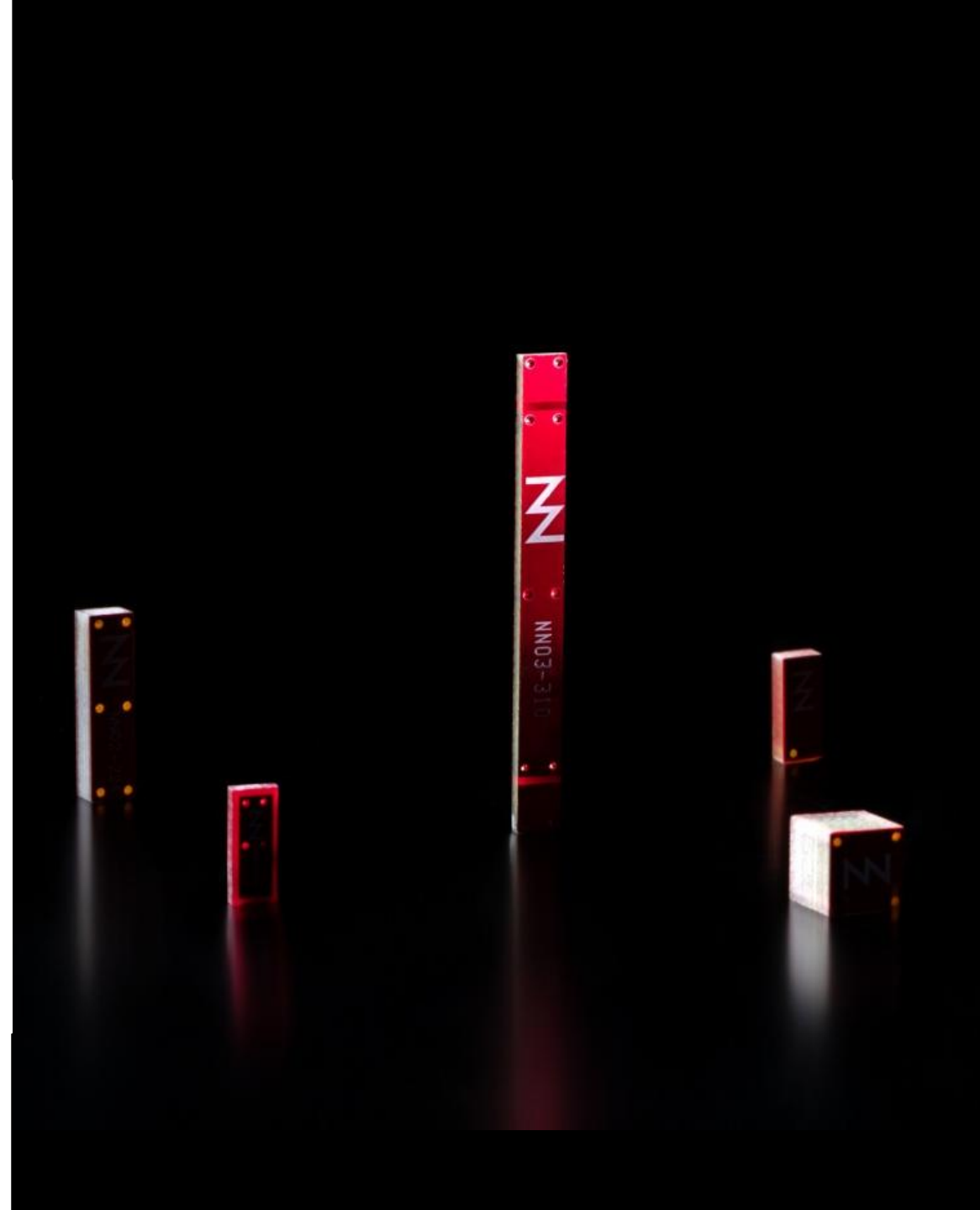
2.2 Recommended Antenna



PN: NN03-320

DUO mXTEND™ ANTENNA BOOSTER (NN03-320)

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Performance Analysis (Controller)

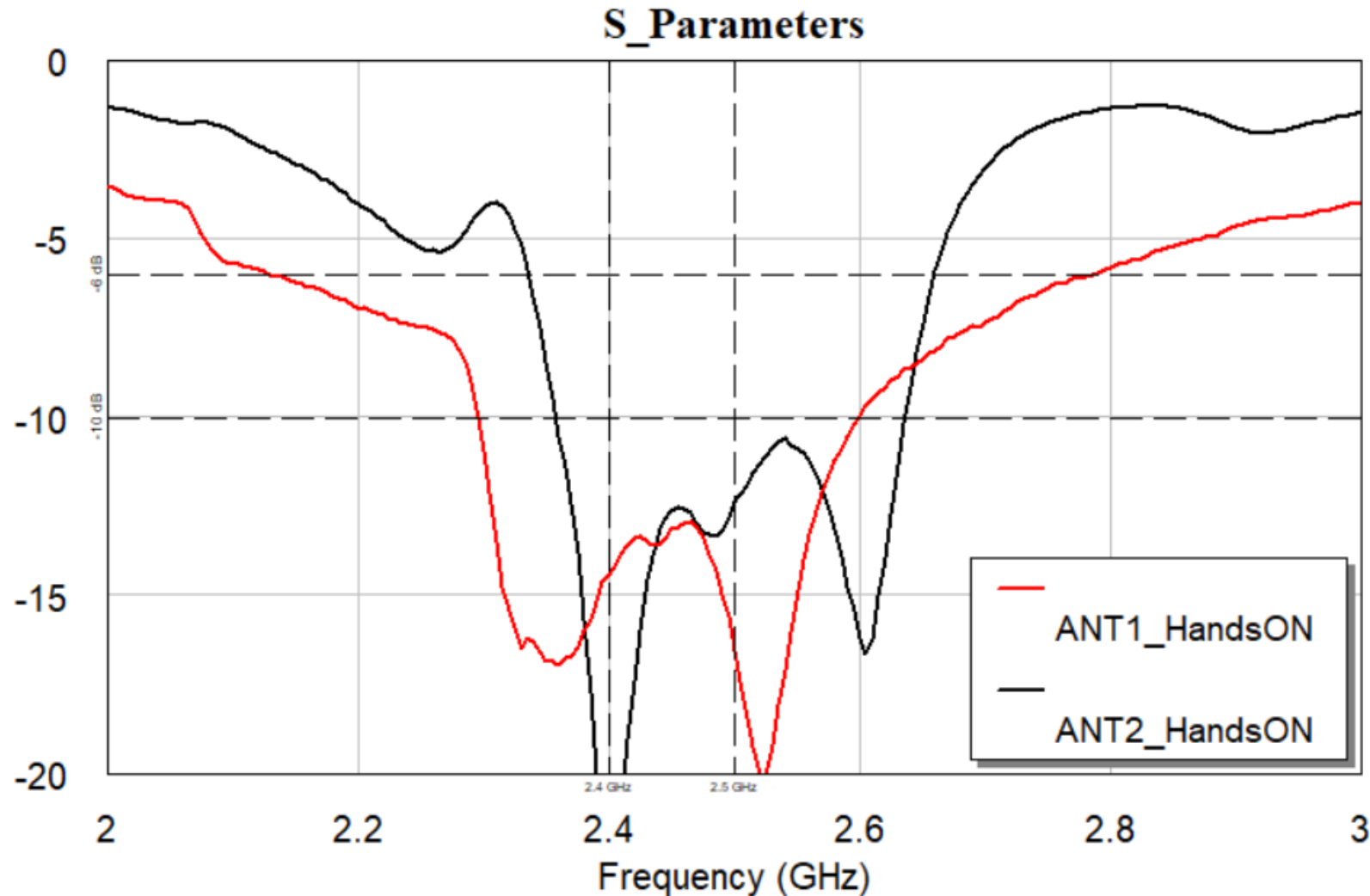
5.1 Reflection coefficient (dB)

5.2 Antenna Efficiency (%)

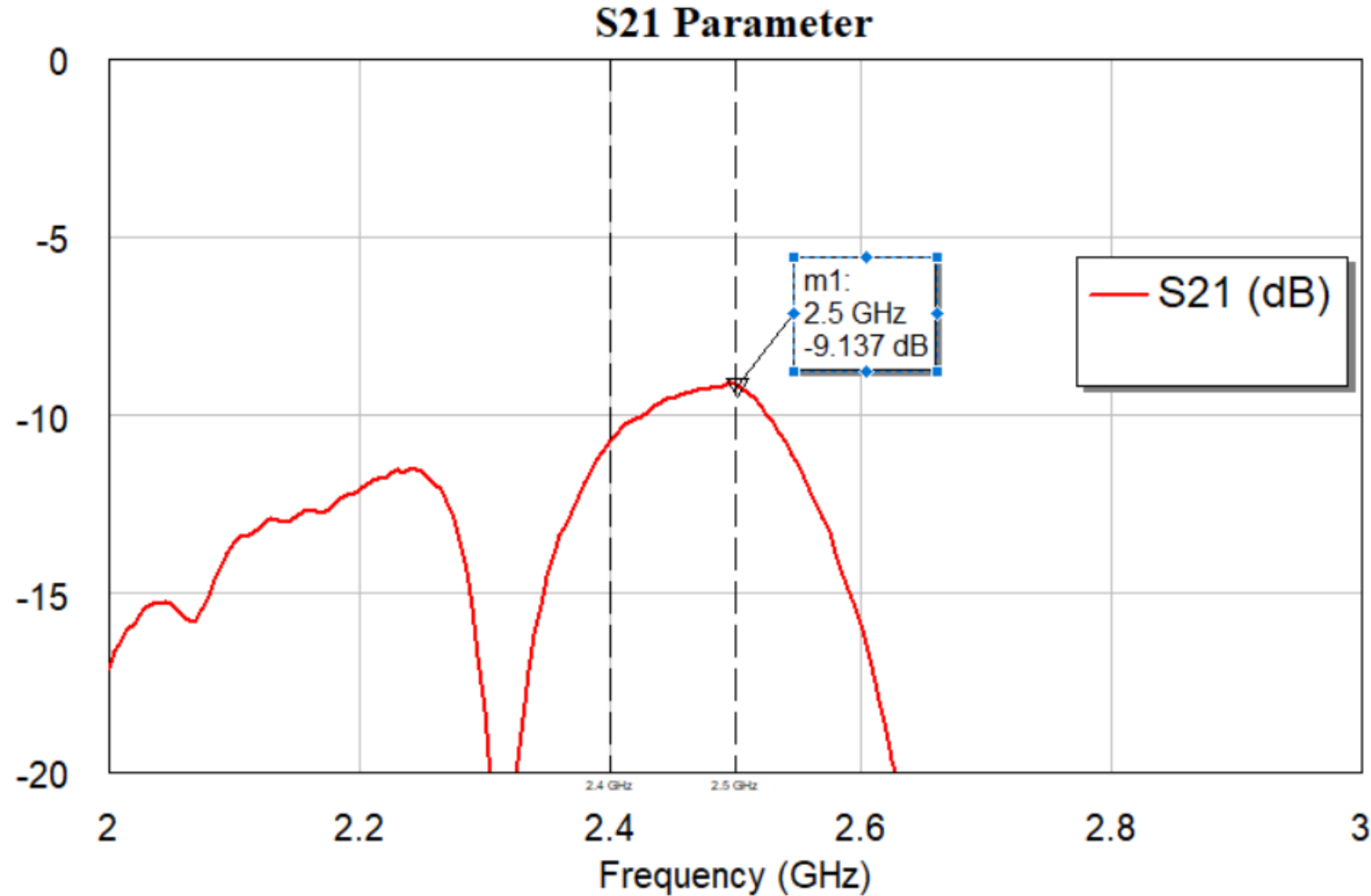
5.3 Radiation Patterns



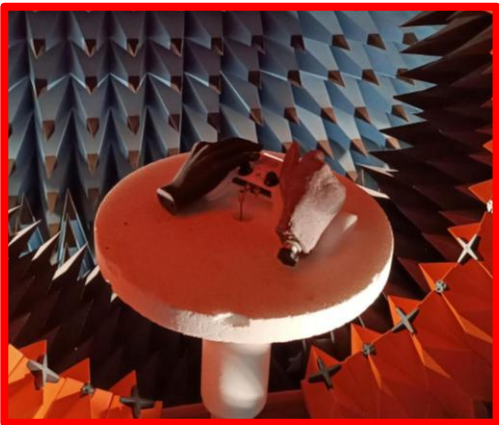
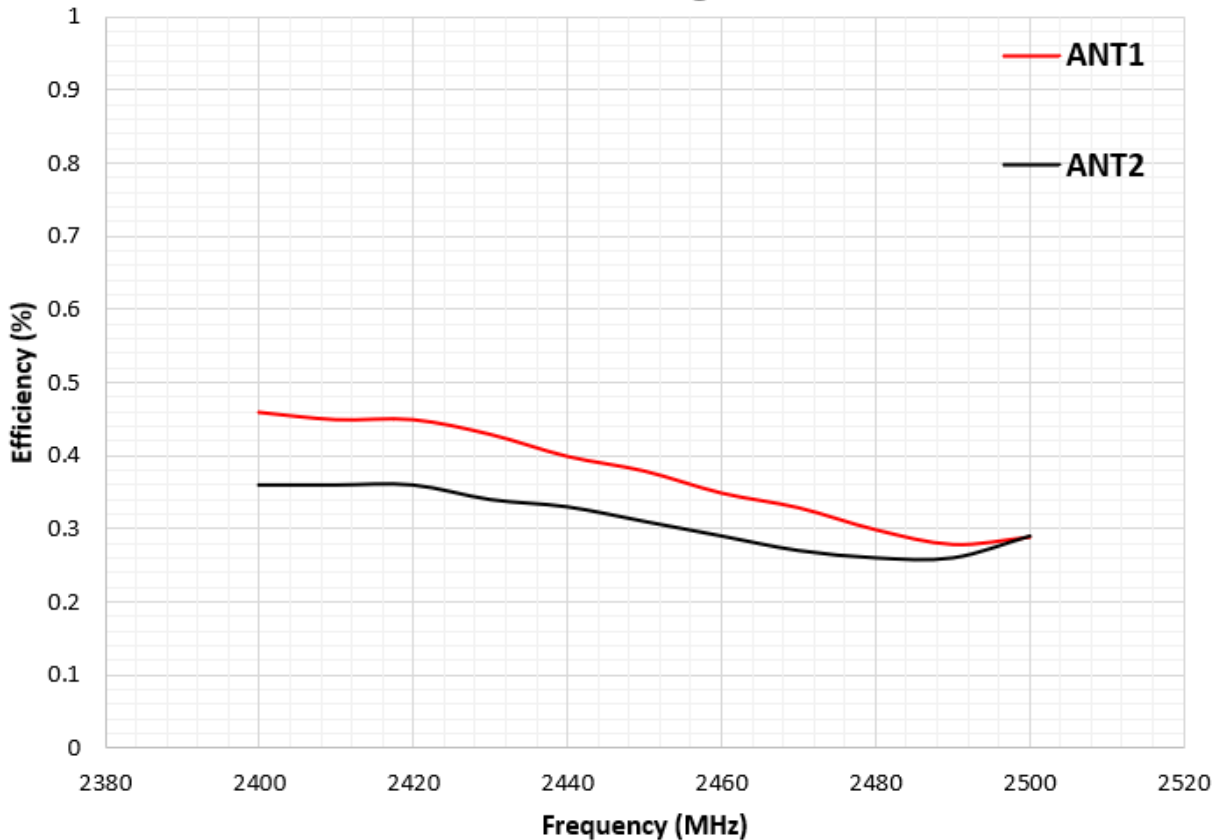
5.1.1 Performance Analysis: Reflection Coefficient (dB)



5.1.2 Performance Analysis: Forward Transmission Reflection Coefficient (dB)



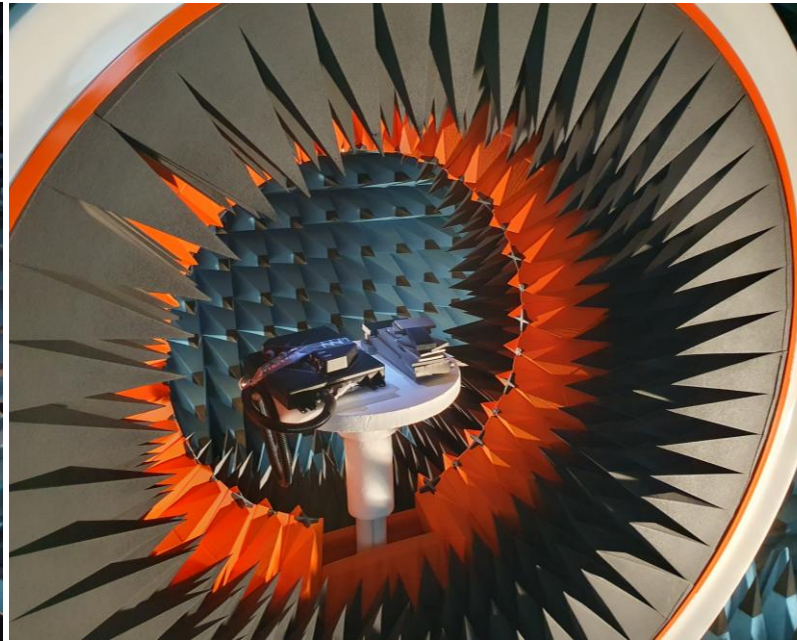
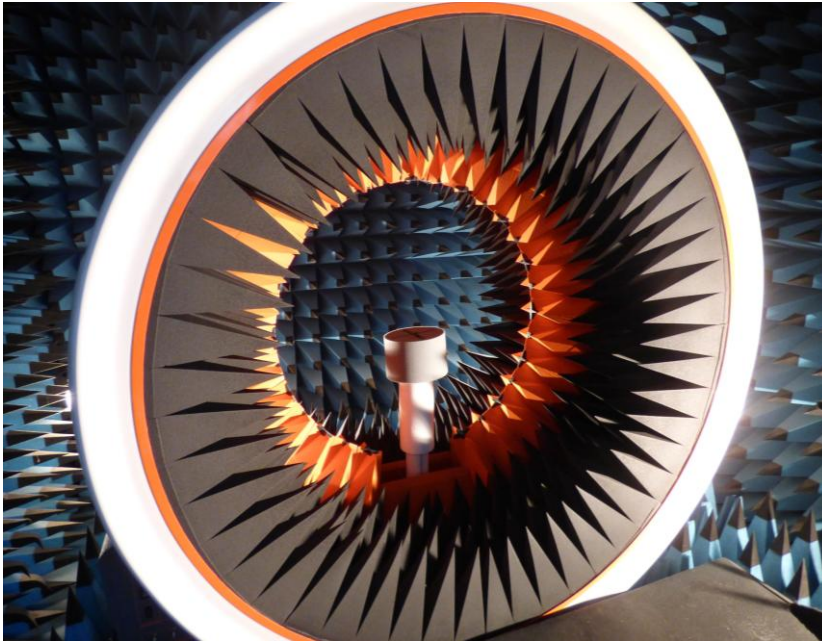
5.2.1 Performance Analysis: Antenna Efficiency (%)



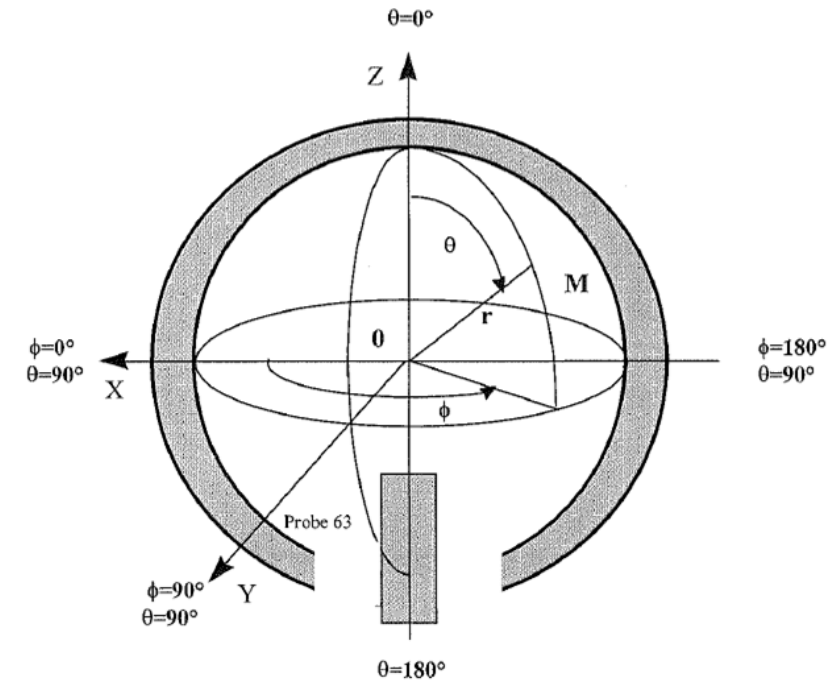
	η_a 2400MHz (%)	η_a 2500MHz (%)	Average η_a 2400-2500Hz (%)
Ant. 1 Controller FD Hands	46.0	29.5	37.5
Ant. 2 Controller FD Hands	36.0	29.5	31.2

5.3 Performance Analysis: Coordinates for the Radiation Pattern

MVG StarLab18



Measurement coordinate system



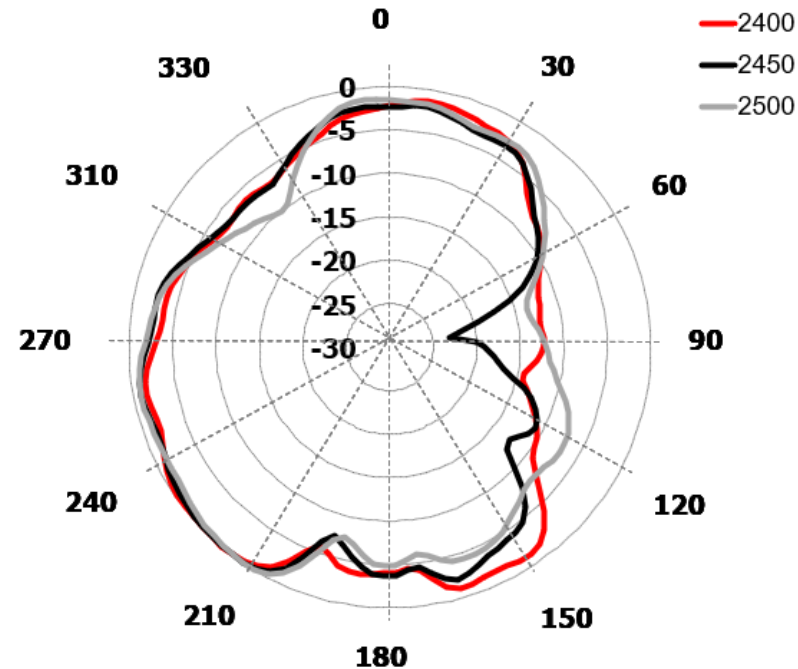
5.3 Performance Analysis: Coordinates for the Radiation Pattern

Radiation Pattern Phi 0° (1/3)

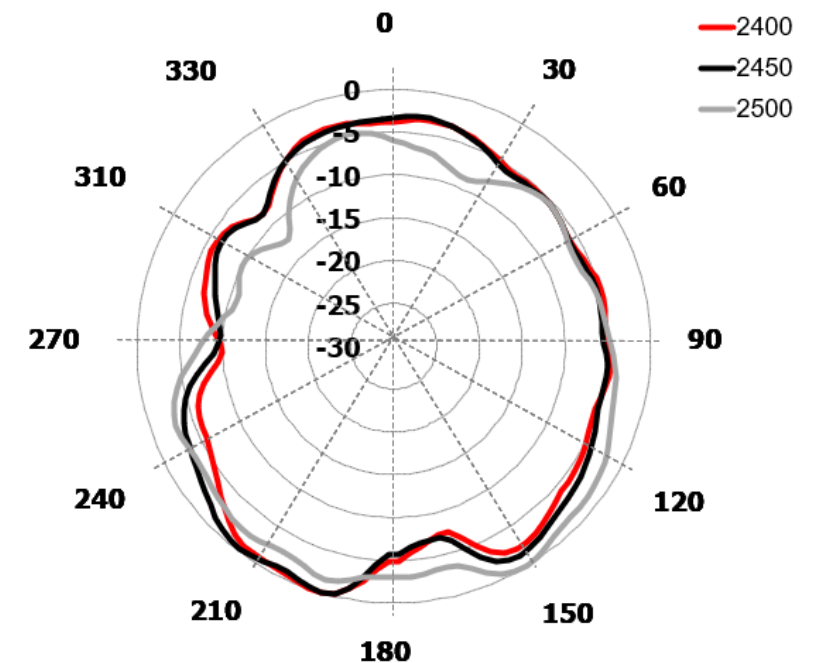
$\phi = 0^\circ$

Plane XZ

Y=0



Gamepad FD with Phantom Ant1

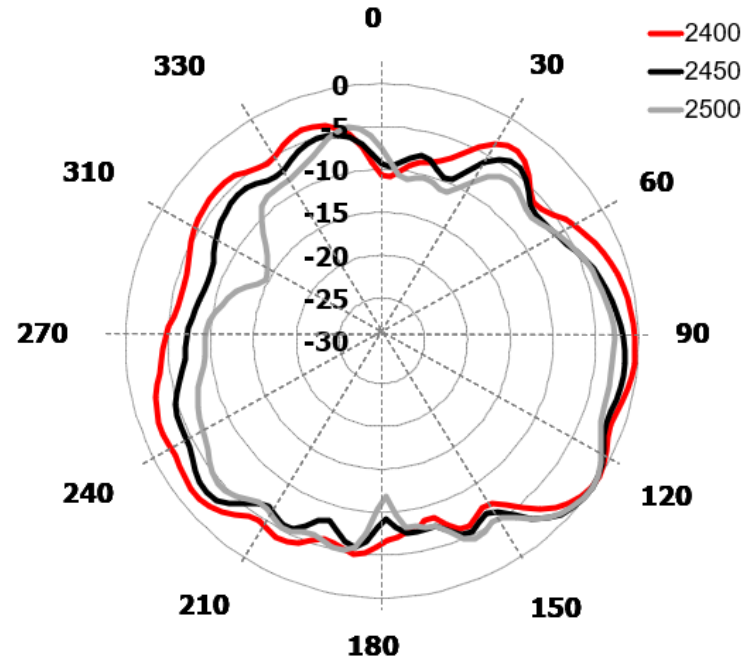


Gamepad FD with Phantom Ant2

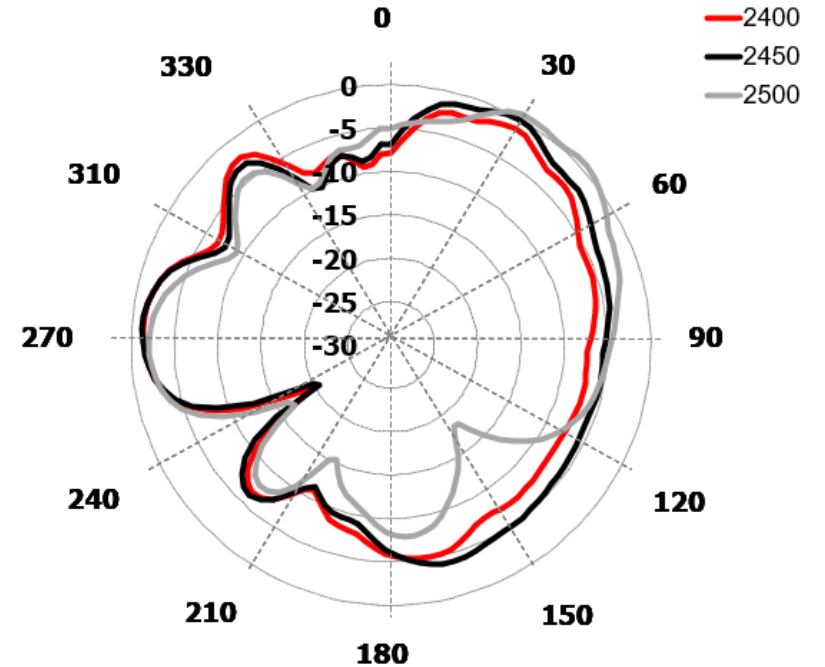
5.3 Performance Analysis: Coordinates for the Radiation Pattern

Radiation Pattern Phi 90° (2/3)

$\phi = 90^\circ$
Plane YZ
X=0



Gamepad FD with Phantom Ant1

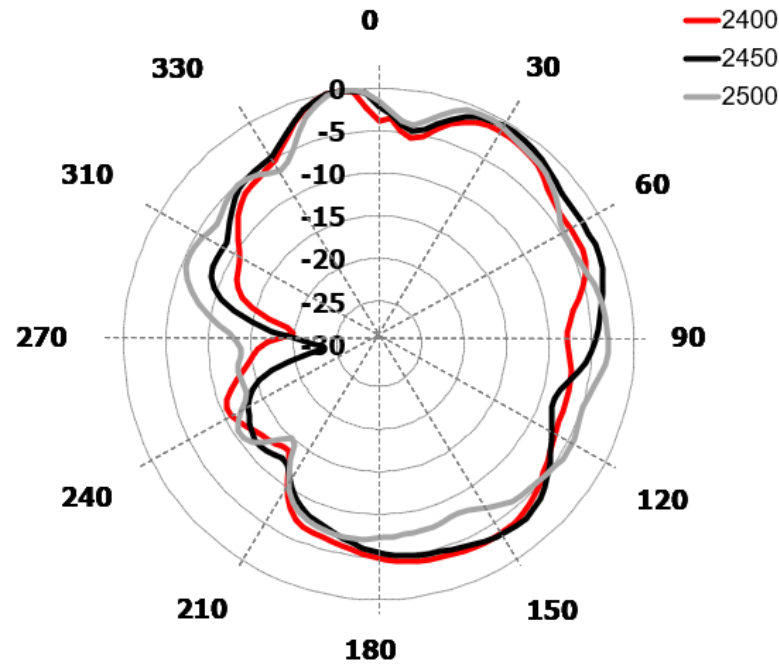


Gamepad FD with Phantom Ant2

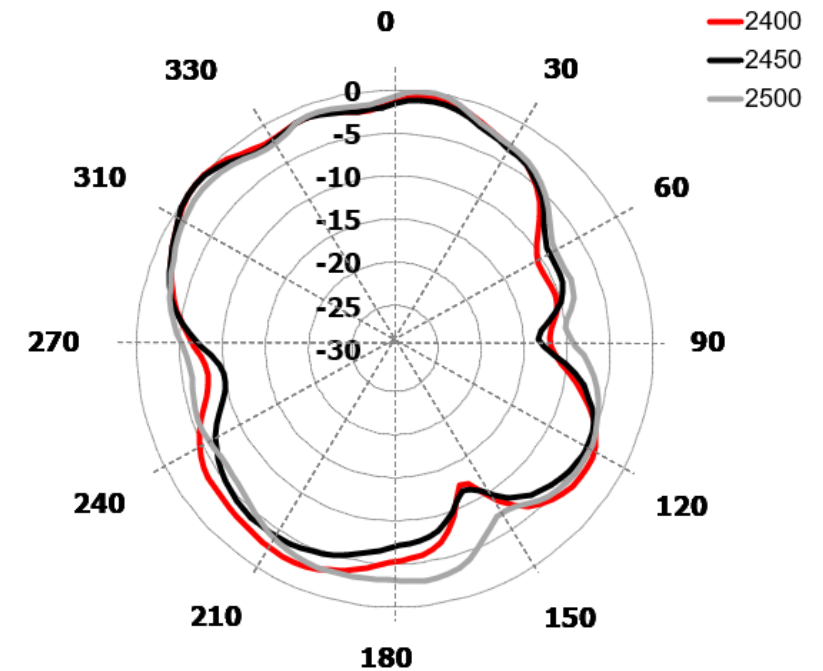
5.3 Performance Analysis: Coordinates for the Radiation Pattern

Radiation Pattern Theta 90° (3/3)

$\theta = 90^\circ$
Plane XY
Z=0



Gamepad FD with Phantom Ant1



Gamepad FD with Phantom Ant2

6. Summary

- Results obtained for the main antenna parameters:

	η_a 2400MHz (%)	η_a 2500MHz (%)	Average η_a 2400-2500Hz (%)
Ant. 1 Controller FD Hands	46.0	29.5	37.5
Ant. 2 Controller FD Hands	36.0	29.5	31.2

- S11 for both antennas remains under **-12dB** for the whole bandwidth of interest.
- Recommended matching network topology and component values.
- The transitions used for the measurements might introduce some slightly losses.
- For the measurements it is has considered the full device with all the parts.
- The isolation between antennas is under **-9.1 dB**, and the impact of the user's hands has been evaluated using hand phantoms.

If **any change** is applied on the PCB, the device, or its surroundings, the **matching network** may need a **readjustment**.

Get in touch.



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