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Antenna 3x4 Array at 24GHz

Product Name: FX Pocket Chronograph Pro

Antenna Type: Integrated PCB Antenna (Custom Design, Non-detachable)

20240408

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- This document describes the simulation approach for a 3x4 antenna array at 24GHz, and it also matches simulated with environment conditions.

Manufacturer Information

Manufacturer: Viasion Electronics Co., Ltd
Address: 4th floor, building C, Yuyuan Industrial
Park, No 94, Fuyuan 1st Road, Fuhai street,
Bao'an District, Shenzhen City, China

Item	Specification
Model Name	EXC-RADAR-ANT-01
Frequency Range	24.0 – 24.25 GHz
Antenna Type	PCB Directional Antenna
Gain	14.876 dBi
Polarization	Linear
Radiation Pattern	Directional
Mounting	PCB integrated, non-detachable
Connector	None

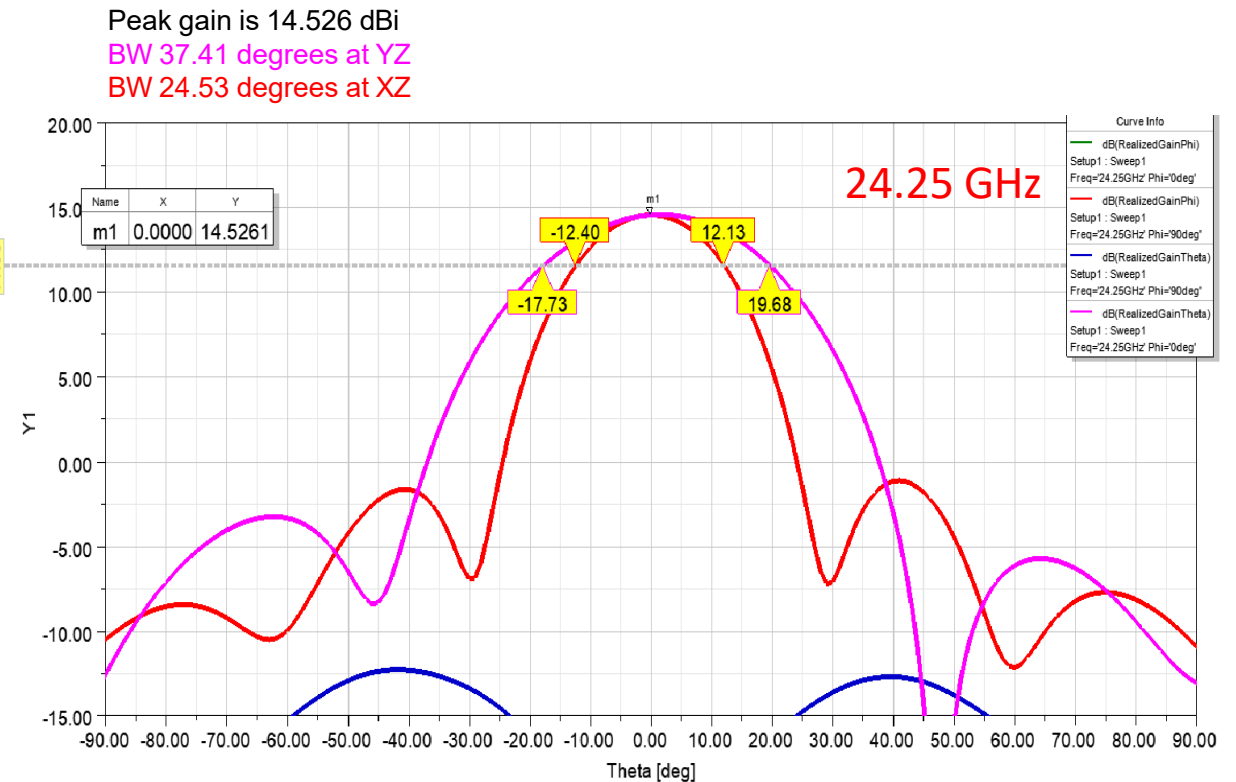
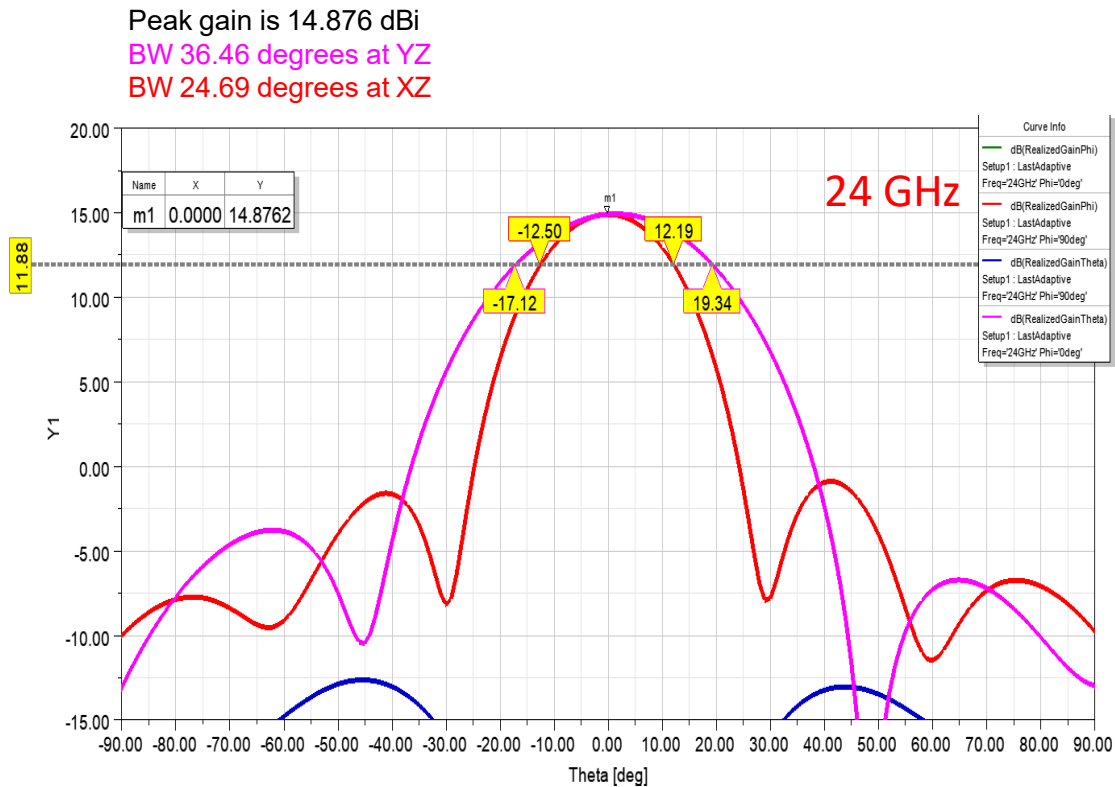
Simulation Conditions



- Simulate antenna performance based on actual area of the PCB(red frame) that uses 1.0 mm PC material as radome, and the air gap is set to 6.6mm from antenna board at z axis.
- The results of this simulation are based on a 26.4*24 ground.

Antenna 2D Pattern

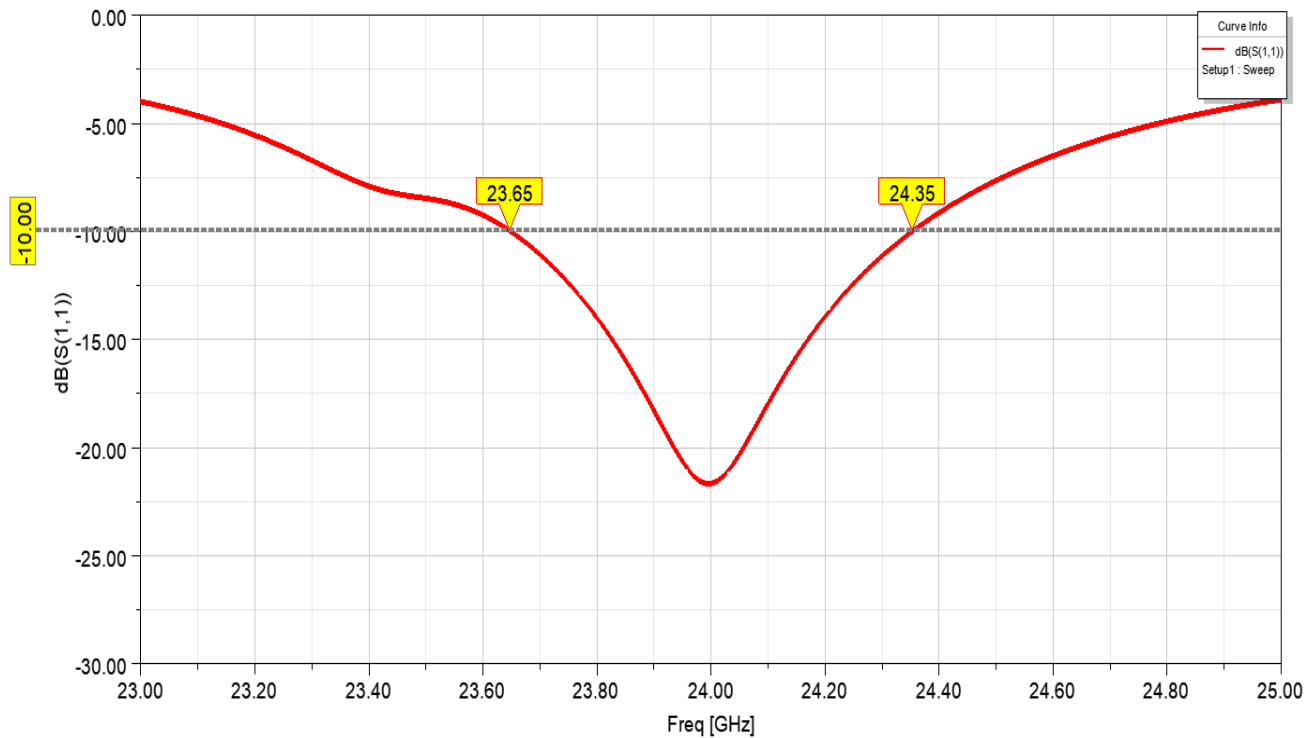
- There is simulated based on a 26.4*24 ground for antenna performance that uses 1.0 mm PC material as radome, and the air gap is set to 6.6mm from antenna board at z axis.
- Antenna frequencies for 24 and 24.25 GHz have similar 2D patterns and gain over the 14dBi.



Pink and red lines are simulated result for TX antenna.

Conclusion

- A 24.65*21.8mm antenna array is designed. It features to have over 14dBi antenna gain when a **1.0 mm PC radome** is placed at 6.6 mm away from board.
- It supports over 250 bandwidth at 24.125GHz.





Thank You

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