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AR-300 Antenna specifications and description

Antenna was simulated and designed in-house by Magos Systems Ltd. using the HFSS tool. All antenna data is proprietary information and is a confidential trade secret that should be exposed except for absolute gain values etc.

Antenna is composed of 2 arrays – transmit and receive. Each array has 8 separate elements. Each element is a classic print patch antenna.
For simulation only the input ports of the patches were left open/loaded as required.

In the AR-300 the antenna PCB has the RF front end (RFFE) on the “bottom” side of the PCB. Each patch in the RX array is connected directly to the LNA and then downconverter and baseband. There is not connector or port allowing direct measurement.
In a similar manner each TX antenna input is connected directly (via PCB) to a power amplifier and hence cannot be measured separately.

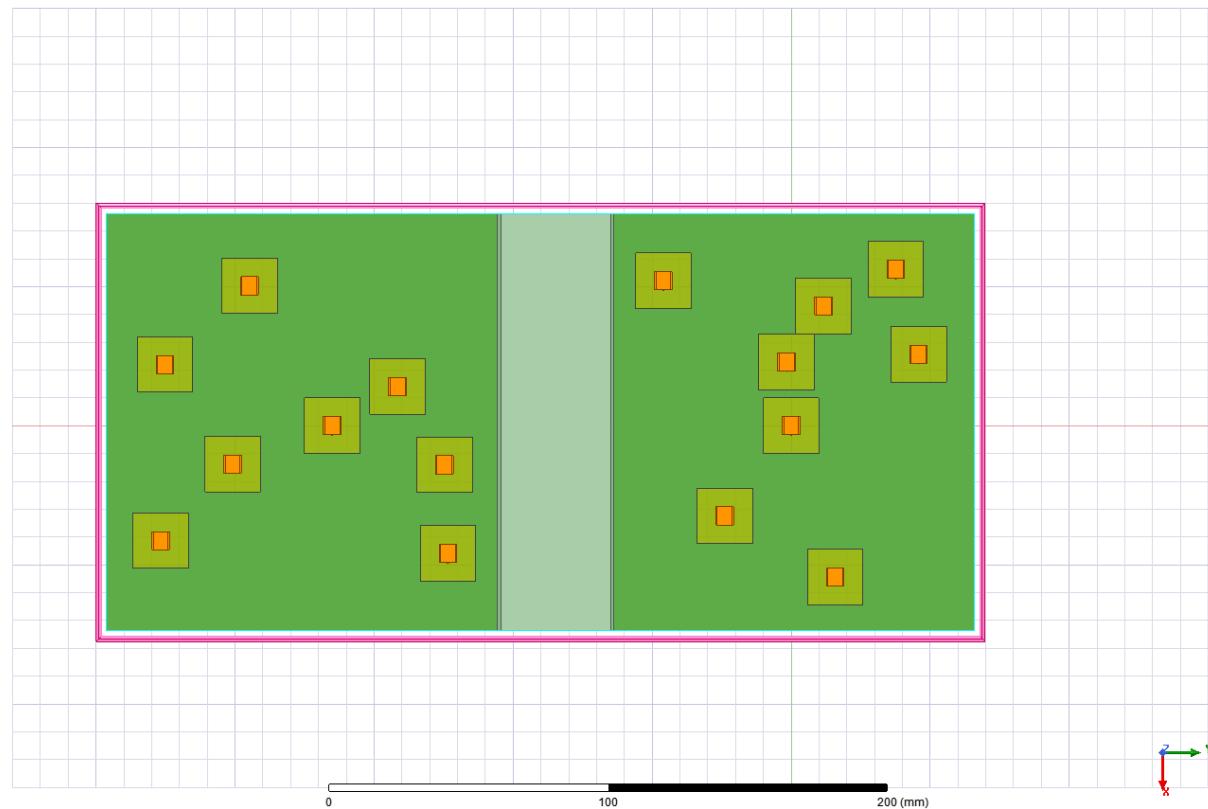
This report includes simulated gain results for one of the patches (all are identical up to 0.1 [dB]), as well as the overall antenna design and patch placement. All simulations were made using the HFSS software and the antenna was eventually fabricated based on DXF exports from the same software.



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Antenna Dimensions and design:

Front view of antenna, showing 8 patches Tx, 8 patches Rx, with metal separator between regions. Patches are all the same.

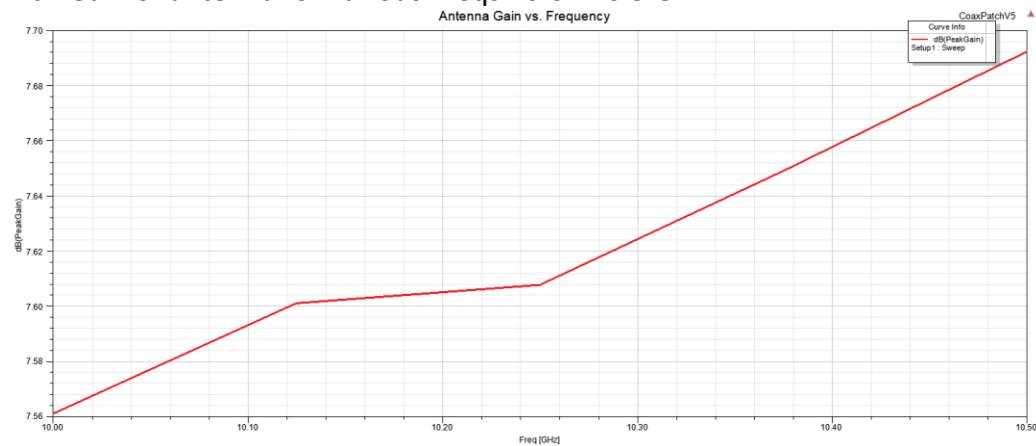




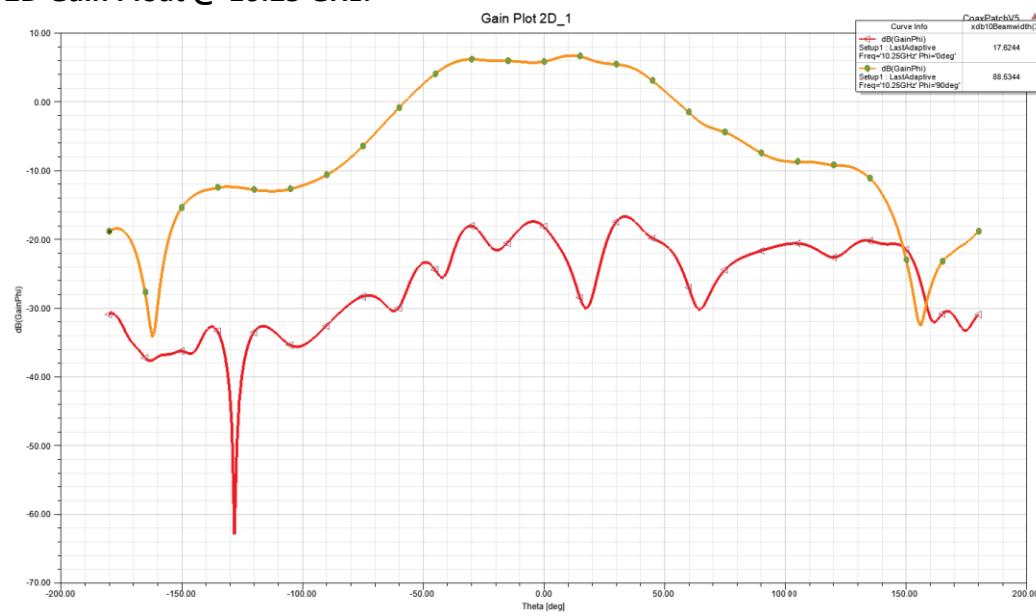
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Antenna Gain Vs. Frequency:

Max Gain of antenna for various Freqs 10.0 - 10.5 GHz



2D Gain Plot @ 10.25 GHz:

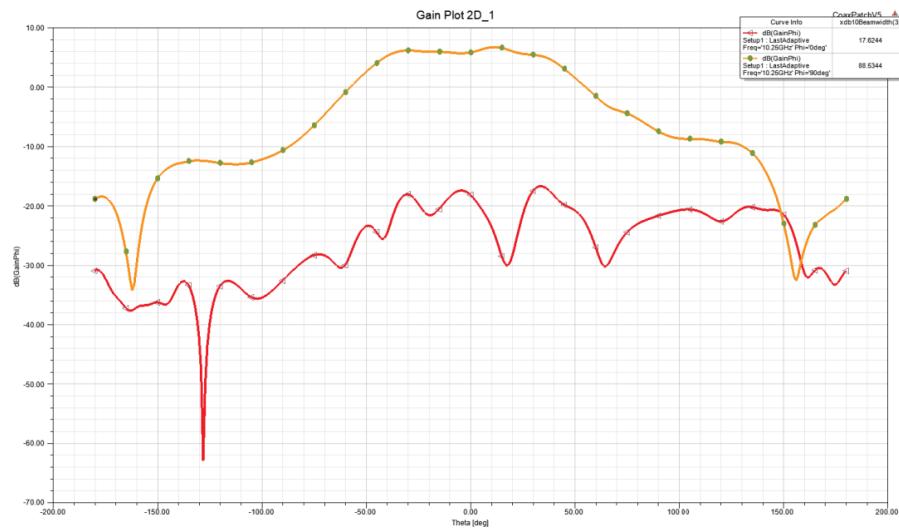




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Gain Plot Ephi:

Red: Azimuth Sweep, Vertical Polarization (no gain)
 Orange: Elevation Sweep, Horizontal Polarization



Gain Plot ETheta:

Red: Azimuth Sweep, Horizontal Polarization
 Orange: Elevation Sweep, Vertical Polarization (no gain)

