

Exhibition for directional antenna

The IFF system consists of 4 array antennas. Each array antenna has 8 dipole antenna element that covers 90 degrees. With 4 of these array antennas the IFF system will be able to cover 360 degrees.

Our Test set-up will include two antenna arrays that combine to cover 180 degrees. Figure 1 shows two elements of the IFF antennas. Each antenna array has 15-degree elevation with respect to horizon.

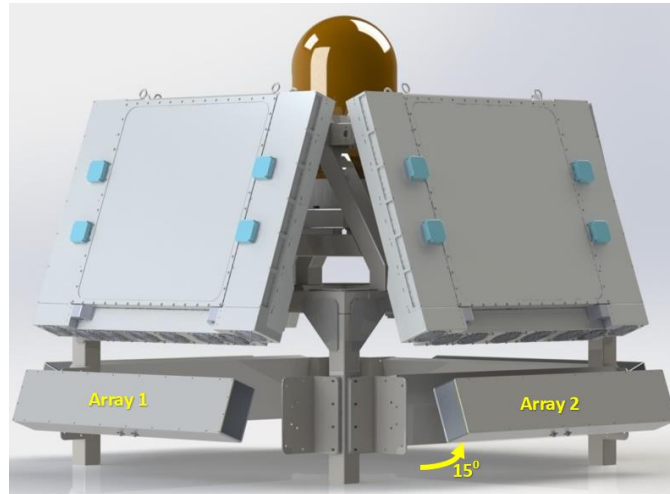


Figure 1 Orientation of IFF antenna array

Figure 2 also shows the details of the array antenna. It has an 8 dipoles antenna in which by changing the phase of each element different directional patterns can be generated.

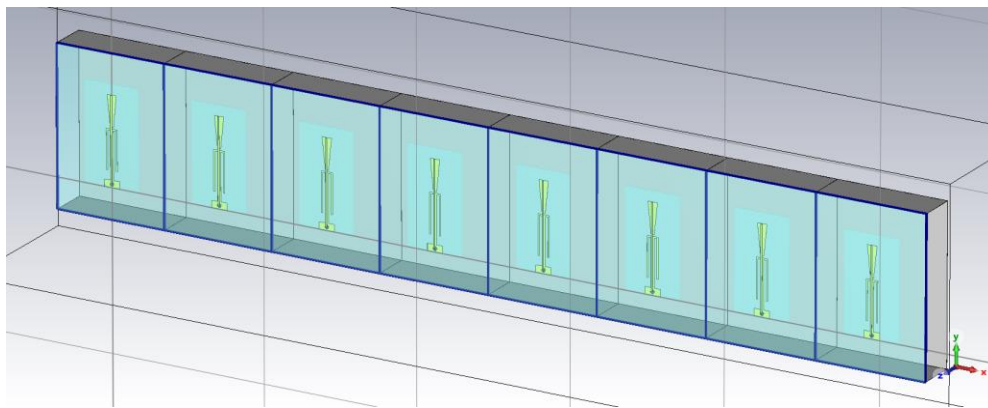
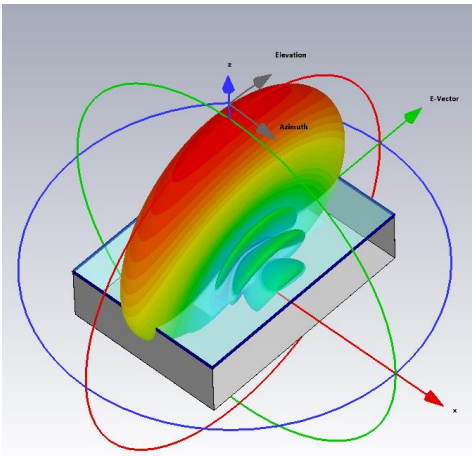
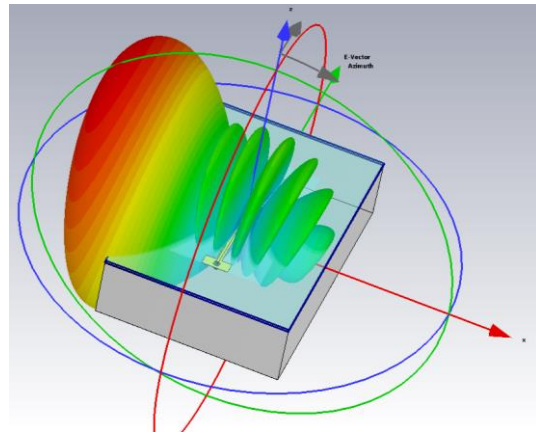


Figure 2 One array antenna consists of 8 dipole antennas.

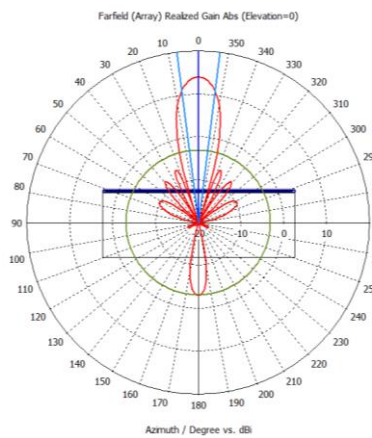
Figure 3 (a) to (d) show the 3D pattern at boresight and 45 degrees (maximum edge of scanning angle) and 2D azimuth pattern at boresight and 45 degrees respectively.



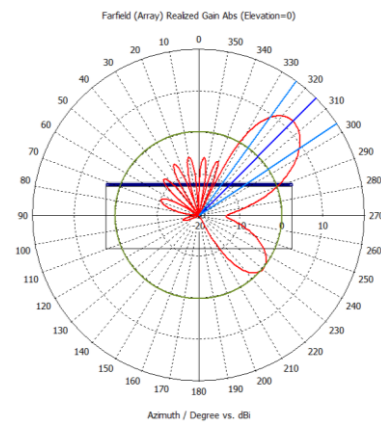
(a)



(b)



(c)



(d)

Figure 3 (a) 3D pattern at boresight, (b) 3D pattern at 45 degrees. (c) 2D pattern at boresight and (d) 2D pattern at 45 degrees

The elevation pattern at the boresight for the frequency of 1030 MHz is also 70 degrees with 3dB beamwidth.

There is also an omni pattern dipole antenna that will be used along the IFF array antenna for the purpose of sidelobe suppression.

Figure 4 and Figure 5 show the configuration of the dipole antenna and its pattern overlap with the IFF antenna pattern respectively.

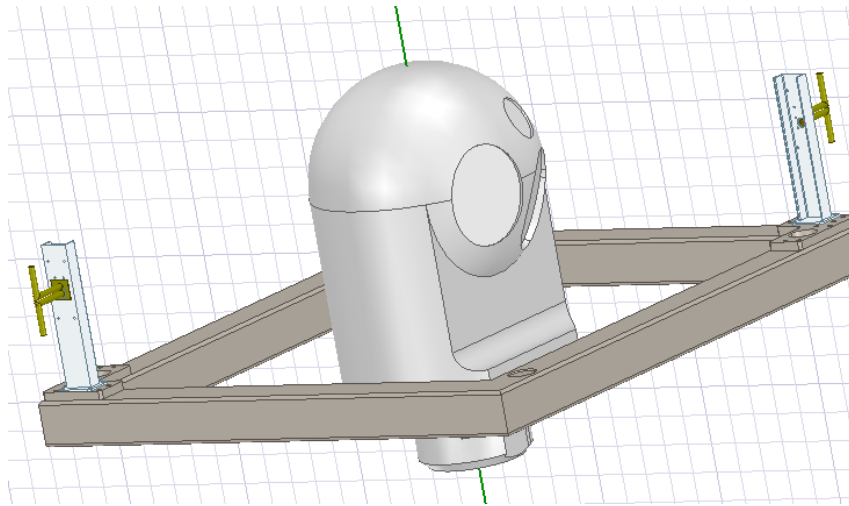


Figure 4 configuration of the dipole antenna (with Omni pattern). There are two (or 4) dipoles at the corner of the system providing an omni pattern.

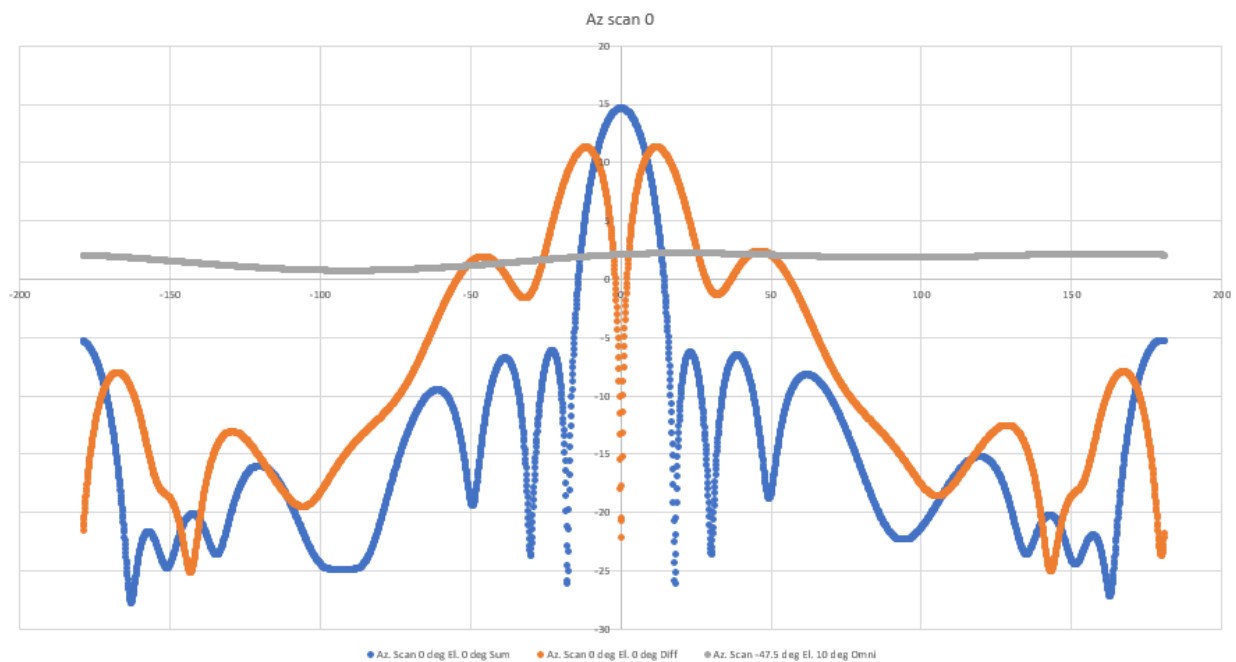


Figure 5 overlap of dipole omni pattern over the IFF sum and delta pattern.

Figure 6 depicts the simulation and measurement results of IFF sum pattern at boresight t 1030 MHz. The simulation and measurement results. The slightly higher gain for the measurement is due to reduced back lobes.

As a result a maximum of less than 16 dB gain is expected for the Sum pattern data and a 14 degree is expected to be the 3dB beamwidth.

Exhibit 2



Antenna Registration for File Number 1847-EX-CN-2023

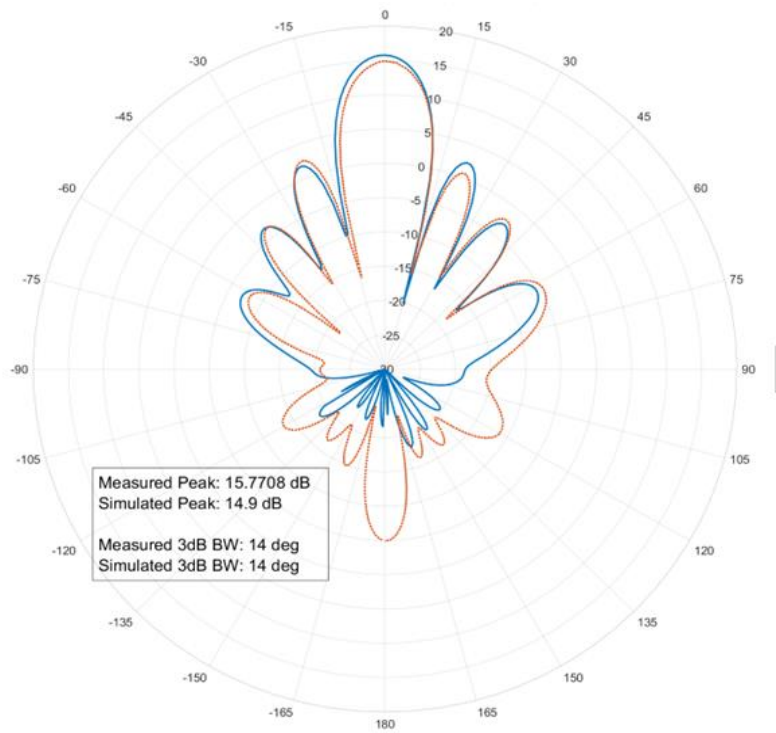


Figure 6 comparison between simulation and measurement results of the IFF boresight pattern