

**RTCA Special Committee 186, Working Group 5**

**ADS-B UAT MOPS**

**Meeting #11**

**Proposal for Sectorized Ground Antenna**

**Presented by Ed Valovage**

<b>SUMMARY</b>

Antenna catalog is “Decibel Products” [www.decibelproducts.com](http://www.decibelproducts.com)

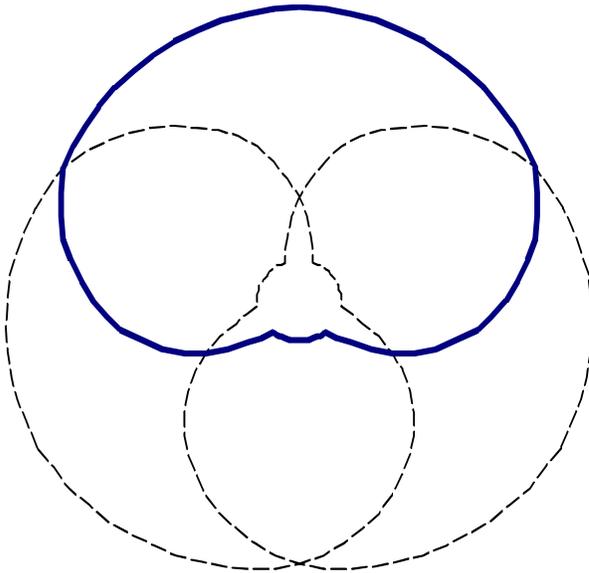
Can we use DME pattern vertically and sample comm antenna horizontally?

What do we currently use for vertical pattern? Is there a null above? Is there ground rejection?

Go through DME power budget. What was that about the notch filter?

How do we interpret dBd?

In a dense traffic environment, a ground station may experience low performance due to UAT self-interference. A sectorized station coverage can improve the performance. Performance predictions for these dense scenarios were carried out with a 3-sector station model. In this model, there are three sectors each with its own receiver and decoder. The 3 outputs are assumed to be fused to remove redundant received messages.



A front-to-back ratio of 30 dB is assumed, and an on-axis gain of 4.8 dB over omnidirectional. The pattern drops to about 3.5 dB at  $60^\circ$ . This pattern gives a net rejection (relative to isotropic) to targets more than about  $65^\circ$  off boresight. There is no loss of range coverage even at the sector boundaries, and increased range coverage on the sector axes. Target load is lowered in each sector reducing the self-interference.

When co-located with DME equipment, there are two possible configurations. One is a vertical structure holding the three sector antennas on its faces and the DME on the top. This gives isolation of the DME and the UAT. The other is a surrounding of the DME antenna with the three UAT sector antennas. In this case, isolation of the DME and UAT comes from the

