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VIA HAND DELIVERY

June 30, 2003

Ms. Marlene H. Dortch
Secretary
Federal Communications Commission
445 12th Street, SW – Room TW-A325
Washington, D.C. 20554

Re: **The Boeing Company's Application to Modify Transmit/Receive Authorization Call Sign E000723; File No. SES-MOD-20030512-00639**

Dear Ms. Dortch:

The Boeing Company hereby submits for association with the above-referenced application additional clarifying information that may be useful in evaluating the application.

If you have any questions concerning this submission, please do not hesitate to contact the undersigned.

Respectfully submitted,

Philip L. Malet /cw

Philip L. Malet
Carlos M. Nalda
Counsel for The Boeing Company

Attachment

cc (w/ att.): Howard Griboff

Supplemental Technical Information

The Boeing Company ("Boeing") hereby submits the following information which clarifies certain portions of its application to modify the blanket transmit-receive aircraft earth station authorization (Call Sign E000723) to add a new reflector antenna and make certain other changes. Specifically, Boeing notes the following:

1. At pages 9-10 of the Technical Appendix (Exhibit 1) to the Application, Boeing supplied four figures (Figures 6 thru 9) which depict the measured antenna transmit gain patterns for the azimuth and elevation planes for the new reflector antenna at 14.2 GHz. Attachment 1 hereto shows additional details of these antenna patterns at 14.0 GHz, 14.2 GHz and 14.4 GHz. As indicated in these antenna patterns, the first sidelobe will be at least 6.7 dB below the mainbeam gain of the new reflector antenna;

2. At page 12 of the Technical Appendix, Boeing supplied a "typical" link budget (Figure 11) for the return uplink of the new reflector antenna *on a single aircraft* assuming "a nominal 1024 kbps data signal" spread to 32.4 MHz. This link budget assumes, among other parameters, ITU Rain Region "E", an elevation angle of 45 degrees, transmit EIRP of 44.6 dBW, and a satellite gain of 30 dB. While the maximum throughput of the system for multiple aircraft operations may be greater than the nominal data rate indicated in the typical link budget without exceeding the off-axis EIRP density limits established by the FCC's Rules, at the present time the system cannot support two aircraft platforms having this "typical" link budget and operating over the same transponder spreading bandwidth in the United States. Therefore, multiple aircraft operations over the same transponder spreading bandwidth in the United States within the off-axis EIRP density limits established by the FCC's Rules may require operations at reduced data rates, which in turn would result in lower transmit EIRP values in this link budget calculation for each aircraft platform;

3. At pages 35-36 of the original transmit-receive application (File No. SES-LIC-20001204-02300), Boeing supplied figures (Figures 6.1-1 and 6.1-2) depicting an example of multiple aircraft aggregation for the 99.99 % probability envelope of the phased array antenna when accounting for mis-pointing, power control and antenna pattern variations. Attachment 2 hereto replicates these figures and compares them with the results achieved for the new reflector antenna. In both cases, the aggregate off-axis emissions are below the EIRP density limits established by the FCC's Rules at all points along the GSO arc.

Attachment 1

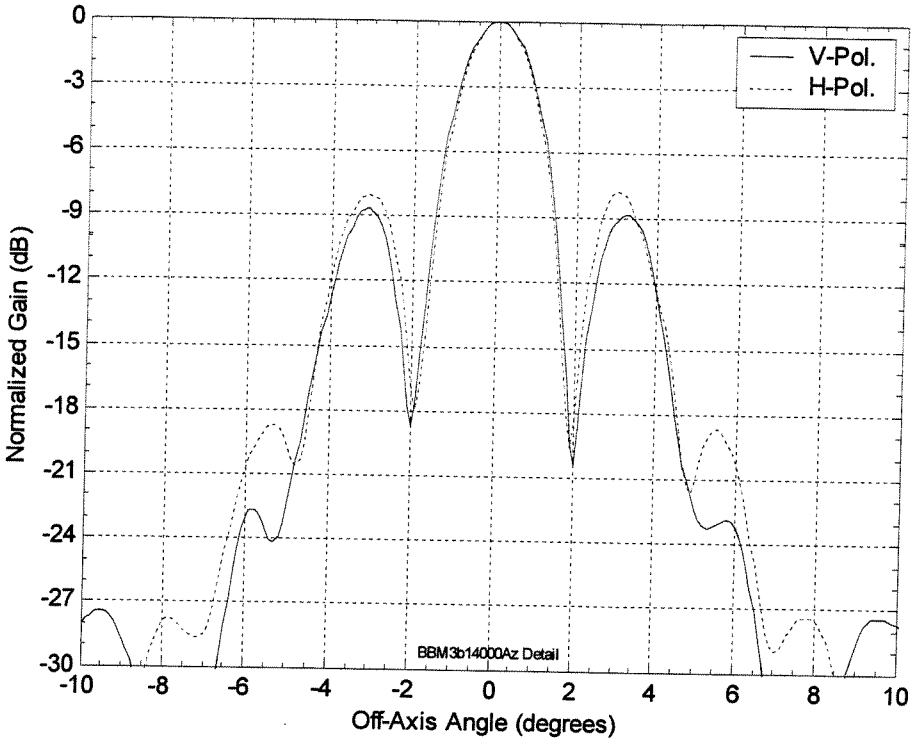


Fig. 1. Azimuth Plane Transmit Pattern 14.0 GHz (Detail)

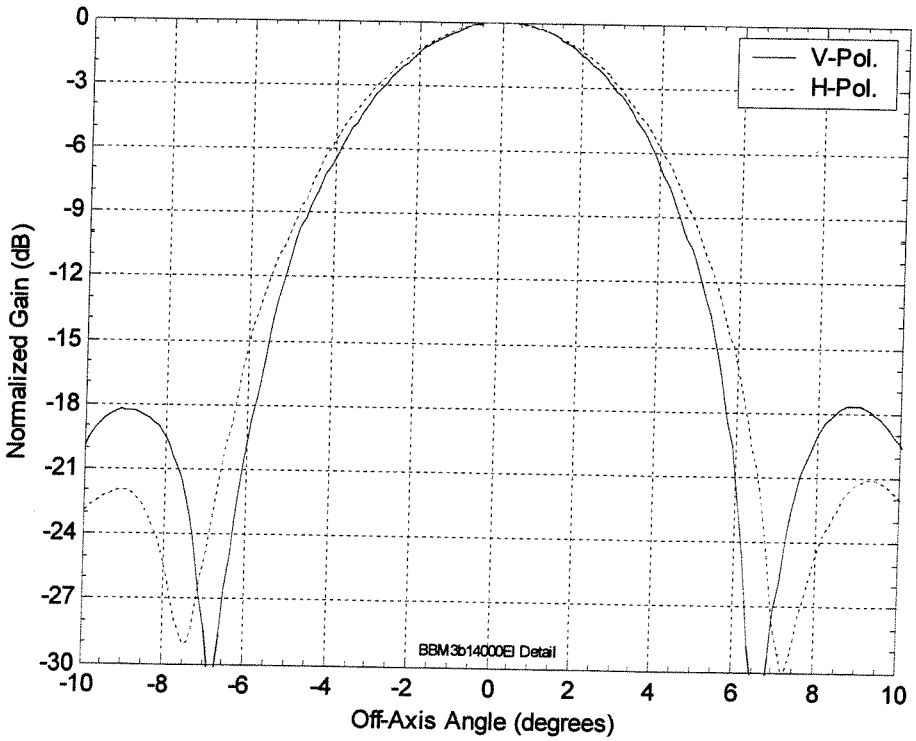


Fig. 2. Elevation Plane Transmit Pattern 14.0 GHz (Detail)

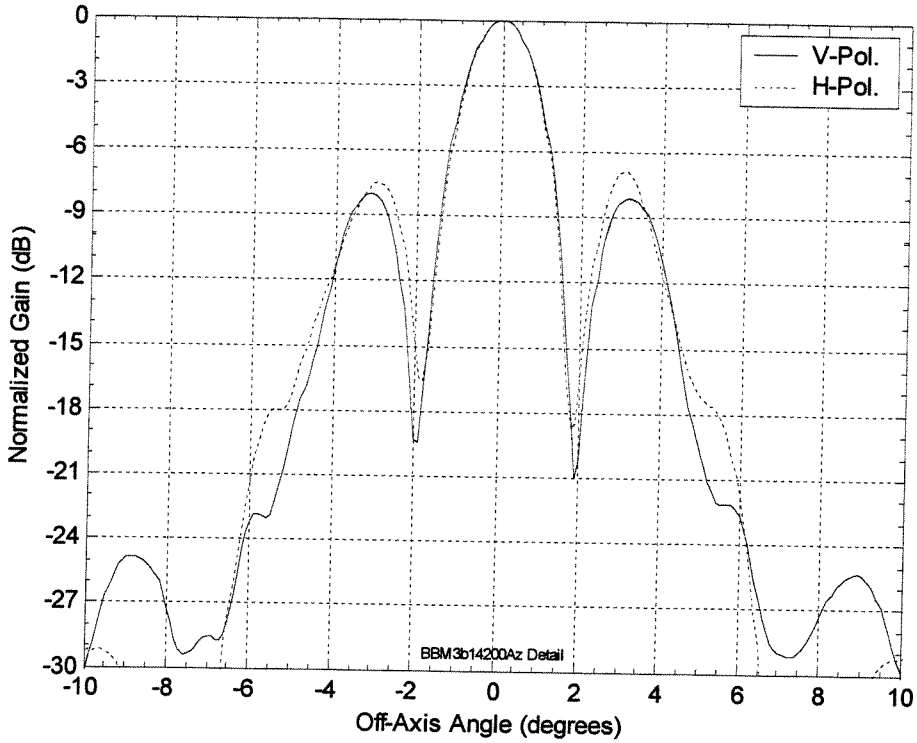


Fig. 3. Azimuth Plane Transmit Pattern 14.2 GHz (Detail)

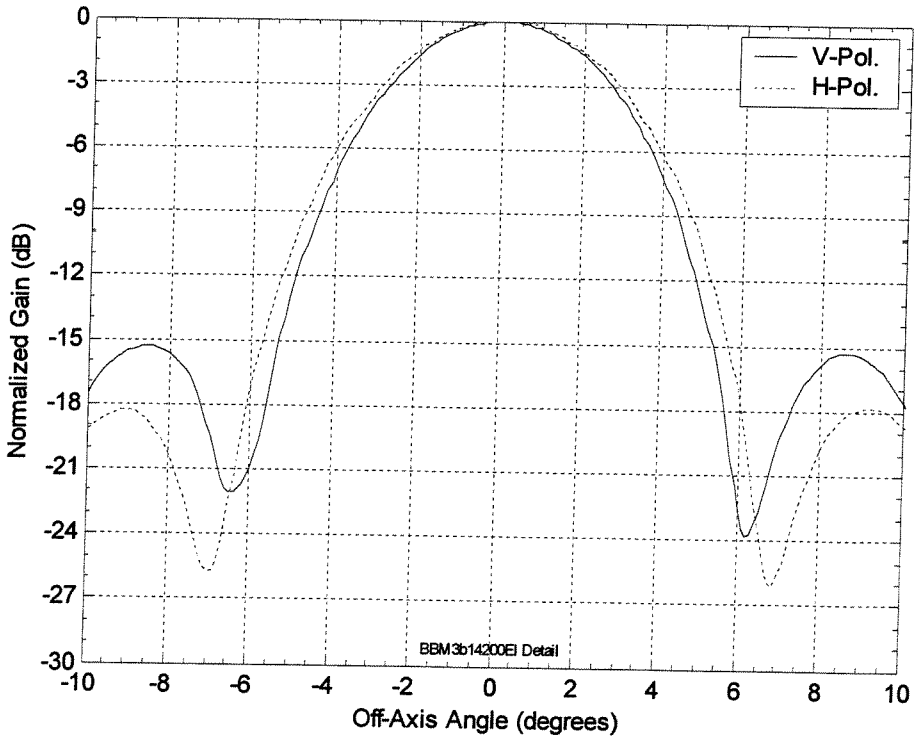


Fig. 4. Elevation Plane Transmit Pattern 14.2 GHz (Detail)

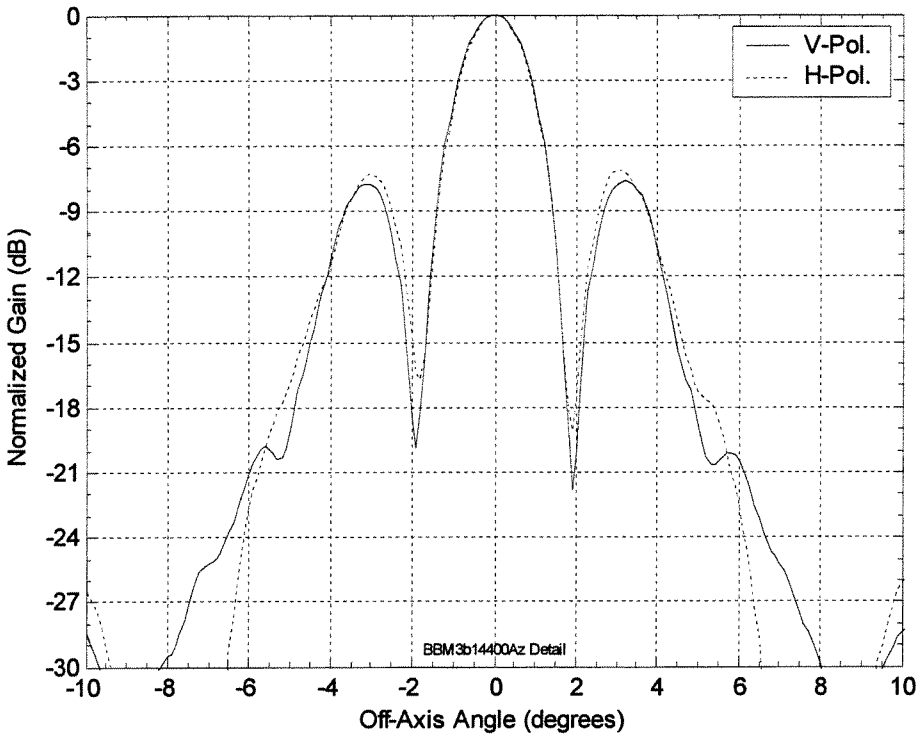


Fig. 10. Azimuth Plane Transmit Pattern 14.4 GHz (Detail)

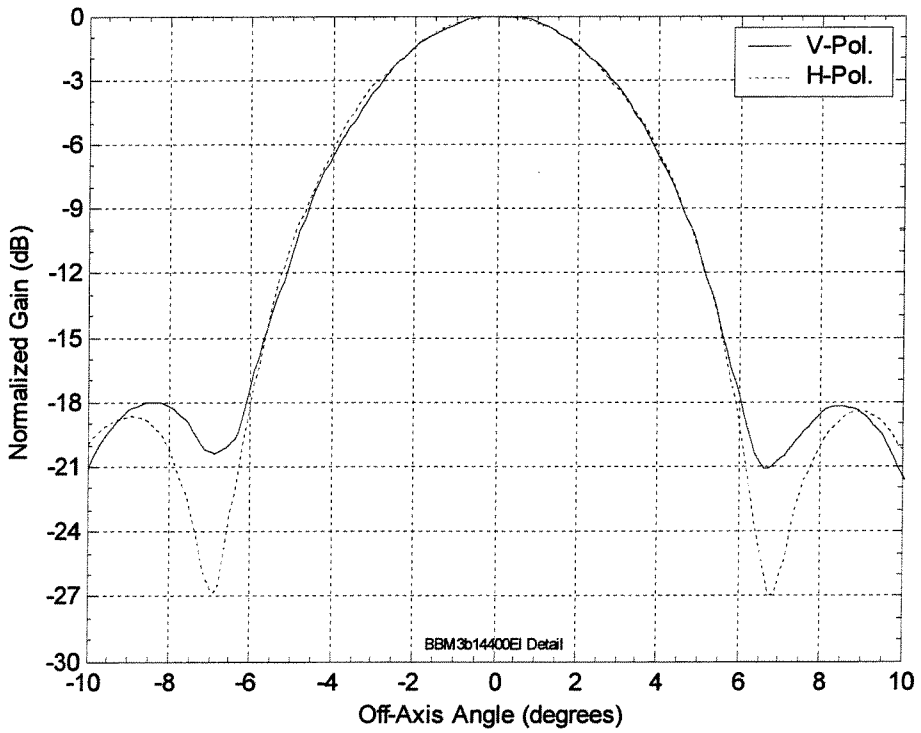
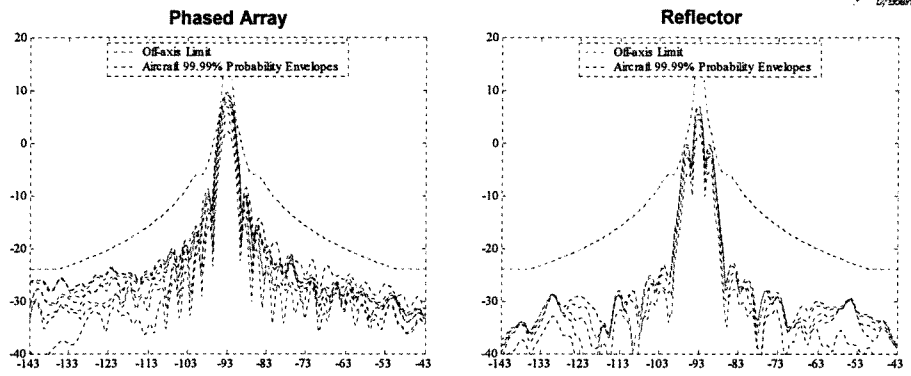


Fig. 12. Elevation Plane Transmit Pattern 14.4 GHz (Detail)

Attachment 2

Example of Multiple Aircraft Aggregation

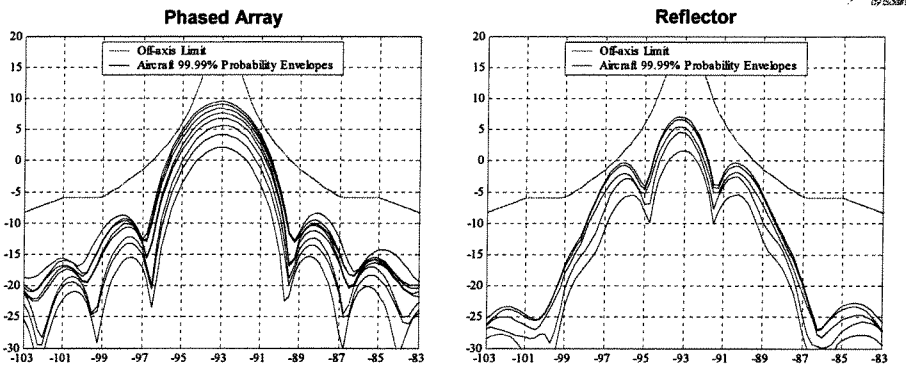
connexion



- Replicates Figure 6.1-1 from initial application
- Off-axis limits from 25.209 and 25.134
- Shows 99.99% probability envelopes when accounting for mis-pointing, power control, and antenna pattern variation
- Off-axis limits met at ***all points*** along the GSO arc

Example of Multiple Aircraft Aggregation (Detail)

connexion



- Replicates Figure 6.1-2 from initial application
- Detail of previous figure
- Shows 99.99% probability envelopes when accounting for mis-pointing, power control, and antenna pattern variation
- Off-axis limits met at ***all points*** along the GSO arc