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March 22, 2013

VIA IBFS

Ms. Marlene H. Dortch, Secretary
Federal Communications Commission
445 Twelfth Street, SW
Washington, DC 20554

Re: Notice of *Ex Parte* Presentation - Application of ViaSat, Inc.; FCC File Nos. SES-LIC-20120427-00404 and SES-STA-20120815-00751 (Call Sign E120075)

Dear Ms. Dortch:

Row 44, Inc. ("Row 44"), by its counsel, hereby provides notice, pursuant to Section 1.1206 of the Commission's Rules, that John Guidon, Chief Technology Officer of Row 44, and James Costello, Vice President, Engineering, of Row 44, along with the undersigned counsel, met with the following International Bureau staff members on March 20, 2013: Paul Blais, Stephen Duall, Andrea Kelly, Alyssa Roberts, and Cindy Spiers. Joseph Hill and Kathyrn Medley of the FCC participated in the meeting by telephone. Byung K. Yi also joined the meeting near its conclusion. The meeting was requested to discuss the above-referenced ViaSat, Inc. applications, which are designated as permit-but-disclose proceedings.

At the outset of the meeting, counsel noted that Row 44 has had two principal concerns regarding the ViaSat applications from the time they were filed. First, Row 44 has been troubled that ViaSat has sought to ignore the novelty of its *sui generis* proposal to provide aeronautical mobile-satellite service ("AMSS") in the Ka-band, and has proceeded as if the existing fixed-satellite service ("FSS") rules were applicable to it without the requirement of further technical showings and evaluation of discrete public interest considerations. Second, and even more significantly, Row 44 is concerned that the design deficiencies of ViaSat's Mantarray antenna have the potential to disrupt both existing and future FSS and MSS applications in the Ka-band.

Counsel also noted that Row 44 is aware of ViaSat's March 14, 2013 *ex parte* meeting with the Bureau staff, and that Row 44's previously-scheduled meeting was not intended to

address the arguments raised therein, but to elaborate on the technical issues that it has previously advanced in its comments and *ex parte* letters concerning these applications. Mr. Guidon and Mr. Costello noted preliminarily, however, that to the extent that ViaSat's March 14th *ex parte* presentation seeks to rely on the recent decision within the European Union by CEPT's Electronic Communications Committee, which advanced Ka-band AMSS as an application of the FSS, this decision offers no persuasive evidence in support of ViaSat's applications. The ViaSat Mantarray antenna does not comply with requirement stated in the ECC decision that mobile antennas meet the standard set forth in ETSI 303 978 for Earth stations on board mobile platforms at 17.3-20.2 GHz and 27.5-30.0 GHz. Row 44's principals also emphasized that the technical issues concerning ViaSat's Ka-band equipment are of substantial importance to Row 44 as it continues to work with its antenna supplier toward developing a state-of-the-art Ka-band AMSS antenna that does not suffer from the deficiencies exhibited by the Mantarray antenna.

The remainder of the discussion was driven by the figures and illustrations contained on the attached slides, which were reviewed with the Bureau staff. Row 44 made the following points:

- ViaSat's use of 2-lambda horn spacing in its antenna is a design flaw that produces the variable grating lobes evidenced in ViaSat's own off-axis EIRP plots (1-lambda horn spacing is recognized as necessary to avoid generating grating lobes, and Ka-band antennas can meet this standard);

- In the Mantarray design, ViaSat seeks to suppress the grating lobes by off-setting each row of horns by one-half the width compared to the adjacent rows, but based on ViaSat's plots, the grating lobes are not fully suppressed even at zero degrees of antenna skew;

- Because of these flaws, the grating lobes cause asymmetrical exceedances of the Section 25.138 mask at different frequencies and skew values which range up to 20 dB in excess of the benchmark standard provided in the FCC Rule;

- The inconsistent grating lobe levels are further indicative of design and manufacturing deficiencies that make interference impact more difficult to assess, and may be further exacerbated by factors unaccounted for in the antenna plots such as installation variances and equipment aging;

- ViaSat's technical analyses have consistently ignored the additive impact of mis-pointing/mis-orientation in both azimuth and elevation, considering only the former, but not the latter, in assessing the potential interference impact of its proposed network; and

- Analysis that takes into account mis-pointing/mis-orientation in both the azimuth and elevation planes shows that at 40 degrees of skew, the ViaSat antenna would be in violation of the 0.5 degree mis-pointing limit almost 10% of the time, and would exceed this pointing error threshold approximately 20% of the time at 60 degrees skew.

Row 44 urged the Bureau to carefully evaluate each of these issues as it proceeds with its consideration of ViaSat's pending applications, and to withhold action on the applications until these deficiencies are addressed and resolved.

Respectfully submitted,

s/ David S. Keir

David S. Keir
Counsel to Row 44, Inc.

cc: Paul Blais, FCC (via email)
Stephen Duall, FCC (via email)
Joseph Hill, FCC (via email)
Andrea Kelly, FCC (via email)
Kathyrn Medley, FCC (via email)
Alyssa Roberts, FCC (via email)
Cindy Spiers, FCC (via email)
Byung K. Yi, FCC (via email)

William Bell, FCC (via email)
Howard Griboff, FCC (via email)
Fern Jarmulnek, FCC (via email)
Kal Krautkramer, FCC (via email)
Hsing Liu, FCC (via email)
Robert Nelson, FCC (via email)

John Janka, Counsel to ViaSat (via email & U.S. mail)

Presentation Concerning ViaSat Ka-band AMSS Proposal

20 March 2013

Concerns with ViaSat Ka-band Proposal

- **Row 44 Has Had Two Principal Concerns:**
  1) ViaSat's Effort to Ignore the Lack of Ka-Band Spectrum Allocations and Service Rules Covering Mobile Operations, and to Shoehorn its Proposal into Existing Fixed-Satellite Service Rules in Order to Seek Fast-Track Approval; and
  2) The Evident Design Deficiencies in ViaSat's Mantarray Antenna, Which Raise Harmful Interference Concerns.

- **This Presentation Focuses Primarily on the Second of These Issues**

ViaSat Antenna Deficiencies

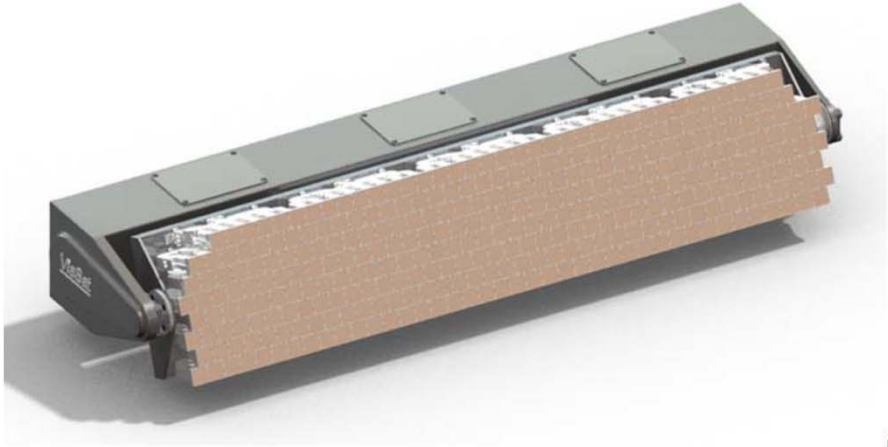
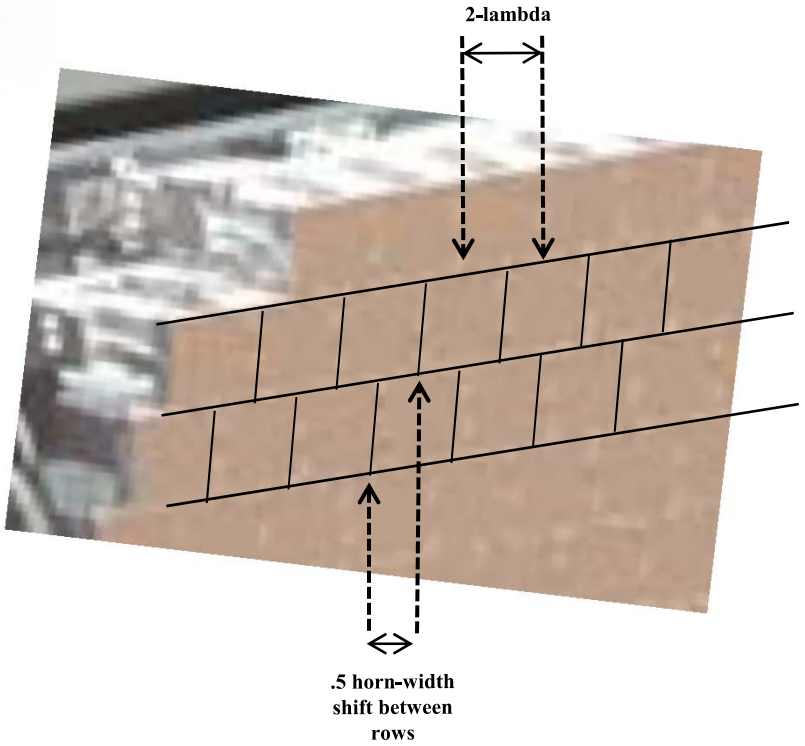


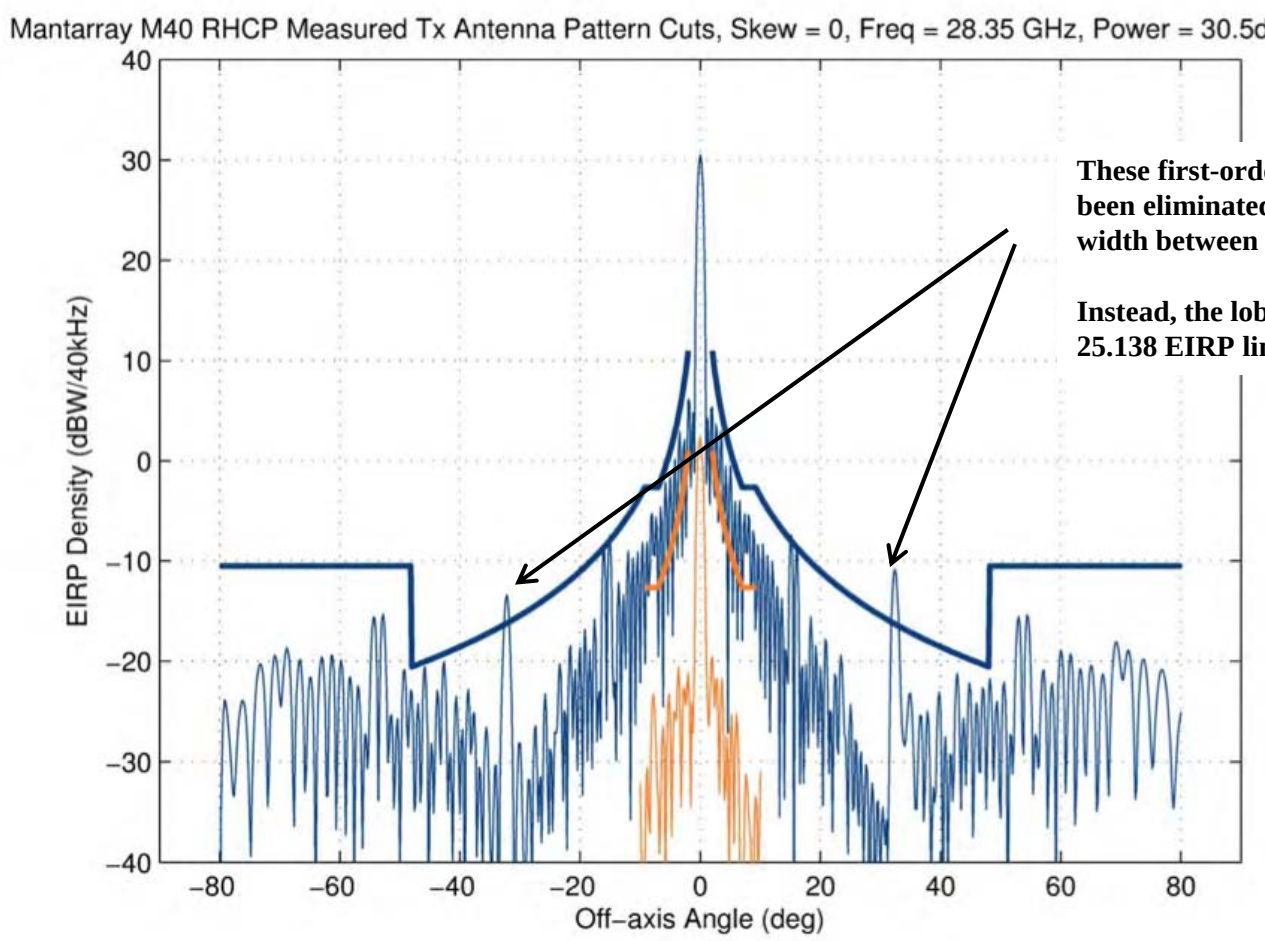
Figure 1 – Mantarry M40 Front View

(Figure extracted from ViaSat's application)

(enlargement of Figure from ViaSat's application)



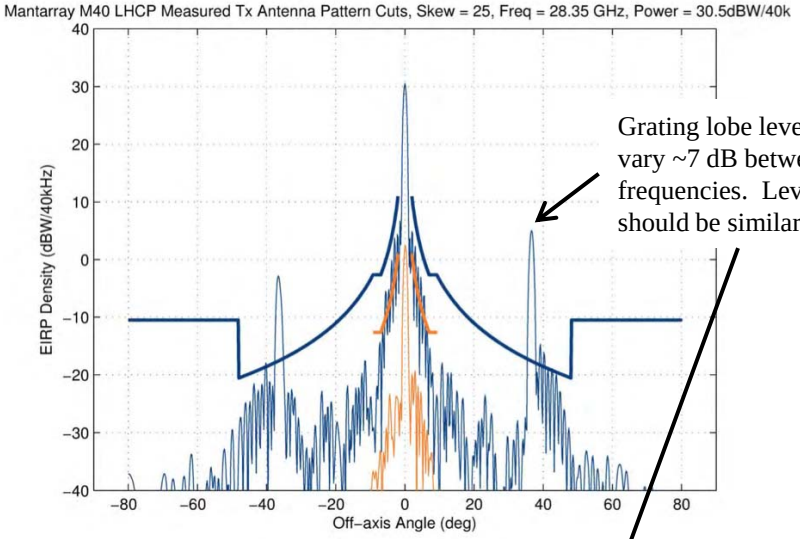
ViaSat Antenna Deficiencies



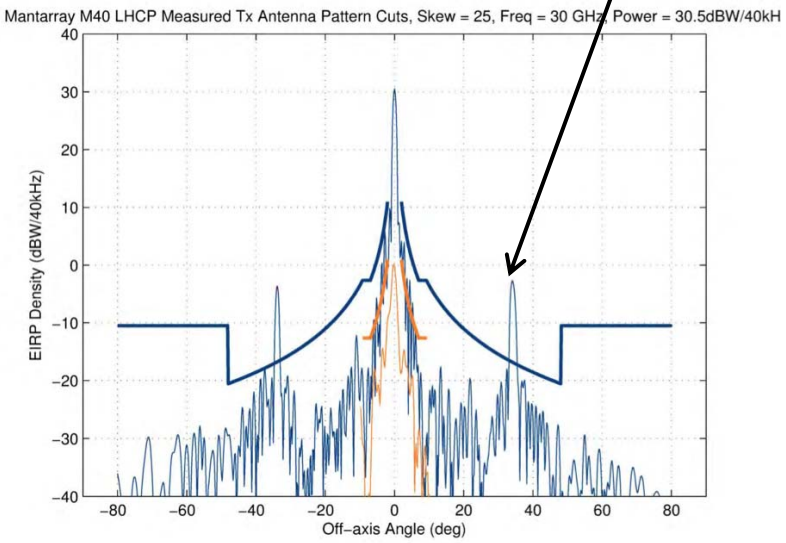
These first-order grating lobes should have been eliminated by shifting the horns .5-width between rows.

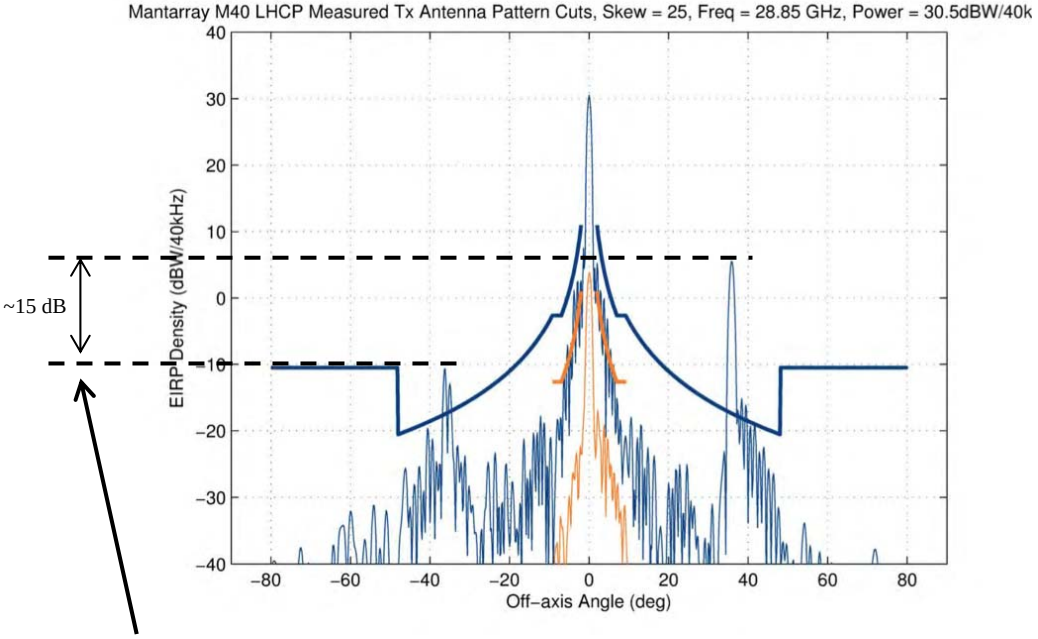
Instead, the lobes are present, violating the 25.138 EIRP limits by 5 dB.

ViaSat Antenna Deficiencies



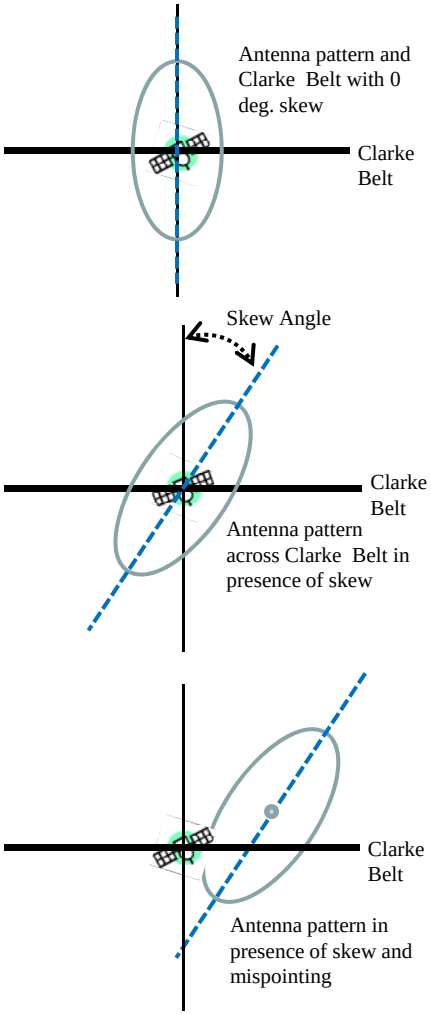
Grating lobe levels vary ~7 dB between frequencies. Levels should be similar.



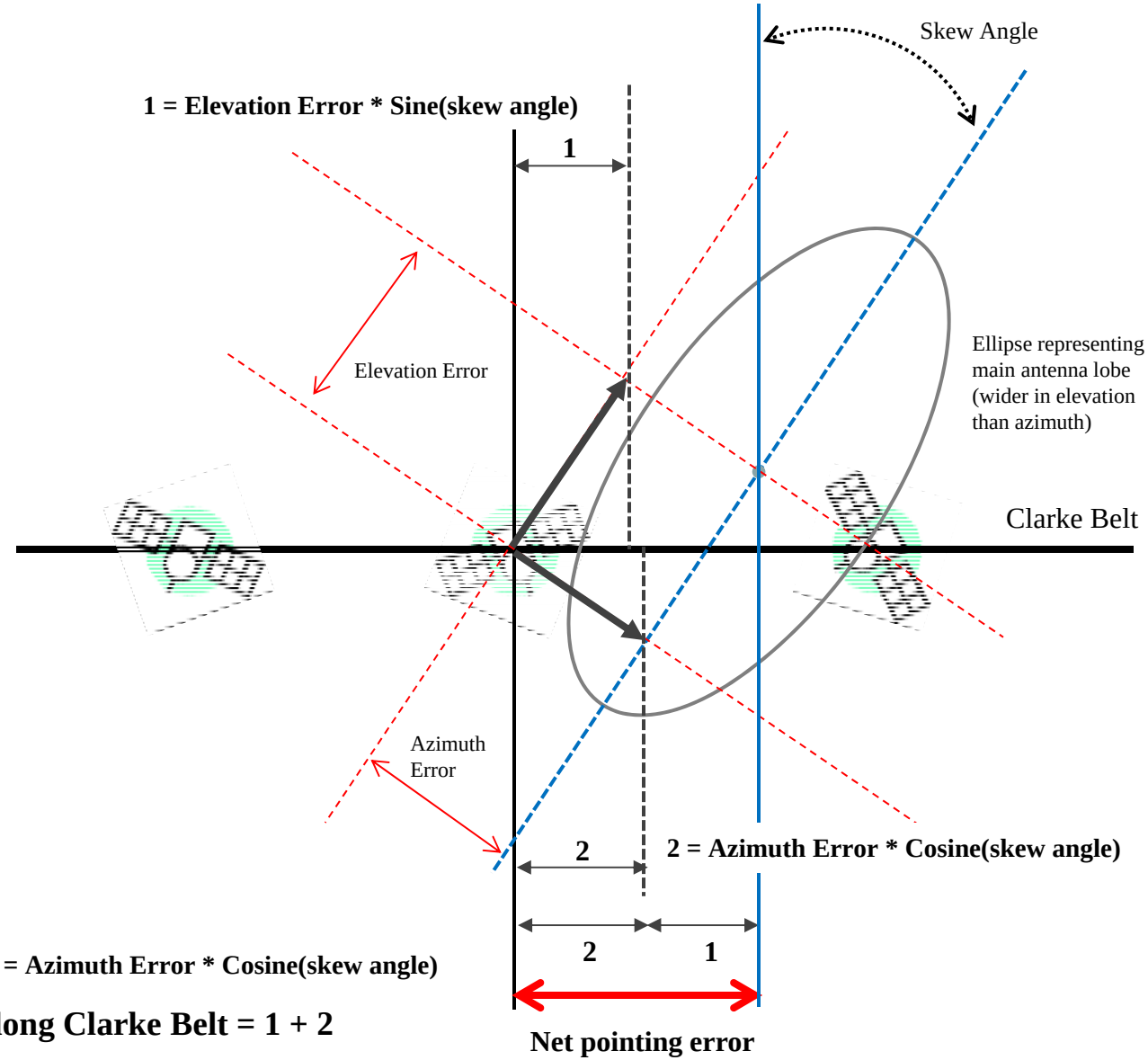


~15 dB level variation exists between grating lobe levels for the same TX frequency. These levels should be similar.

CALCULATING ANTENNA POINTING ERROR



Pointing error is the projection of both azimuth and elevation error along the Clarke Belt



1 = Elevation Error * Sine(skew angle) 2 = Azimuth Error * Cosine(skew angle)

Total pointing error along Clarke Belt = 1 + 2

ViaSat Antenna Deficiencies