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December 14, 2006

VIA ELECTRONIC FILING

Ms. Marlene H. Dortch
Secretary
Federal Communications Commission
445 12th Street, SW
Washington, DC 20554

Re: ViaSat, Inc. *Ex Parte* Notice
2000 Biennial Regulatory Review, IB Docket No. 00-248

Dear Ms. Dortch:

On December 13, 2006, Daryl Hunter of ViaSat, Inc. ("ViaSat") and Elizabeth Park of Latham & Watkins LLP, met with Karl Kensinger, Steven Spaeth, Scott Kotler and Bill Bell of the International Bureau. At the meeting, ViaSat addressed the proposals by the Satellite Industry Association in connection with the EIRP density mask and contention protocols. The substance of the discussions is summarized in the attached presentation.

If you have any questions regarding this submission, please do not hesitate to contact me at 202-637-2200.

Respectfully submitted,

Elizabeth R. Park

Attachment

cc: Karl Kensinger
Steven Spaeth
Scott Kotler
Bill Bell

International Bureau Meeting
IB Docket No. 00-248

December 13, 2006

ViaSat's Modem/VSAT Products

- ViaSat has designed and built modem and terminal equipment to support virtually every access method
  - **DOCSIS, DVB, DVB-RCS, DBV-S2, FDMA/DAMA, MF-TDMA/DAMA, Slotted Aloha, CDMA Spread Spectrum, and SCPC**
    - **Over 200,000 Surfbeam Ka/Ku-band DOCSIS terminals shipped to date. Major customers include Wildblue, Telesat, Intelsat**
    - **~85,000 DVB-S/RCS/S2 Linkstar terminals**
    - **~20,000 FDMA/DAMA Skylinx and StarWire terminals**
    - **~5,000 MF-TDMA LINKWAY terminals**
    - **DSSS and DSSS-CRMA modems for Connexion and SKYLink AMSS terminals**
    - **Variety of modems/terminals for government and DoD markets**

Response to SIA Ex Parte

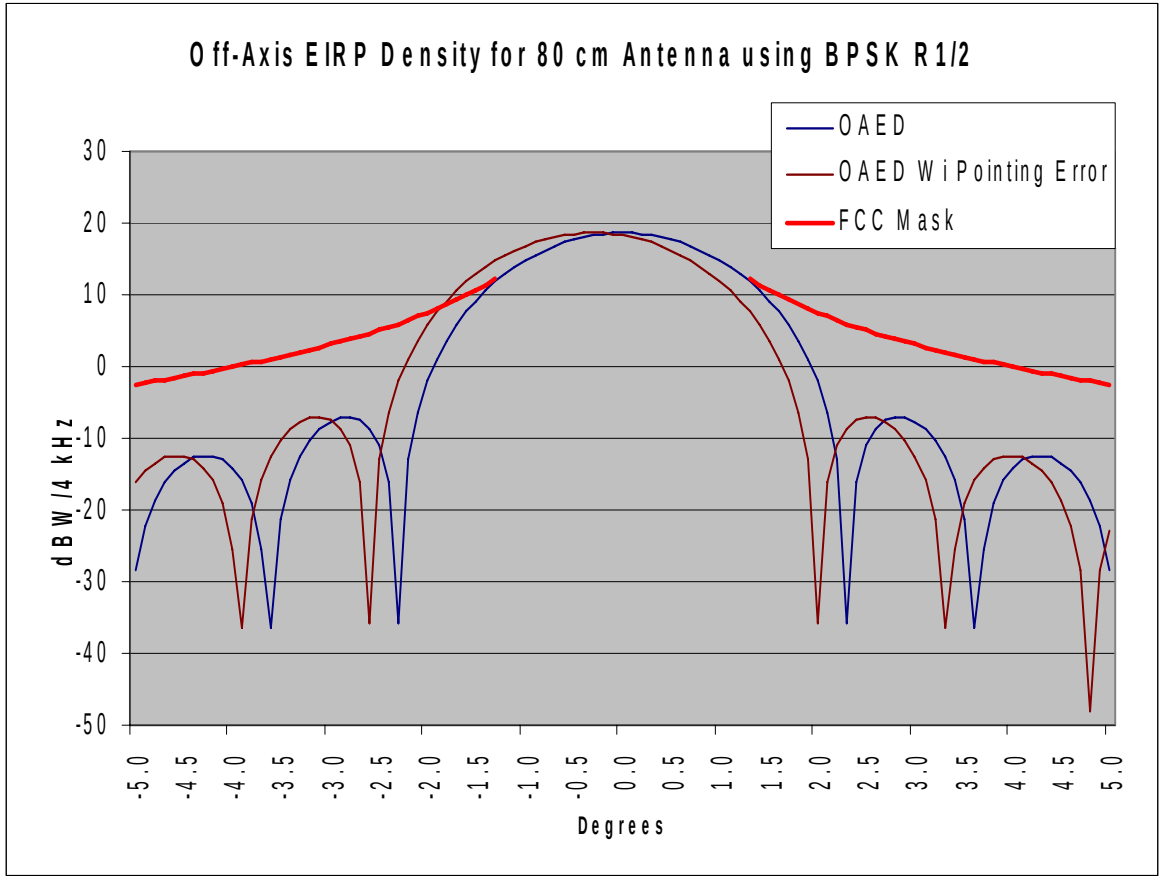
- ViaSat will address issues raised by SIA in its Oct 27 Ex Parte regarding:
  - **EIRP Density Mask for Smaller Antennas**
  - **Contention protocol mask**
- As a leading producer of VSAT products and the industry leader in VSAT technology development ViaSat is well suited to comment on issues in the VSAT NPRM
- ViaSat supports the off-axis EIRP density mask as proposed in the NPRM

EIRP Density Mask

- SIA proposes that antennas smaller than 70 cm should be subject to a different off-axis EIRP density mask because of an increased potential for interference due to mispointing
- ViaSat supports the adoption of a single EIRP density mask for all antenna types in order to promote the development and deployment of compact fixed, portable, and mobile satellite terminals
- A single EIRP density mask provides the industry incentives to develop innovative waveforms and other solutions to lower power spectral density
- Technologies exist today to allow smaller antennas to comply with the EIRP density mask as proposed by the FCC

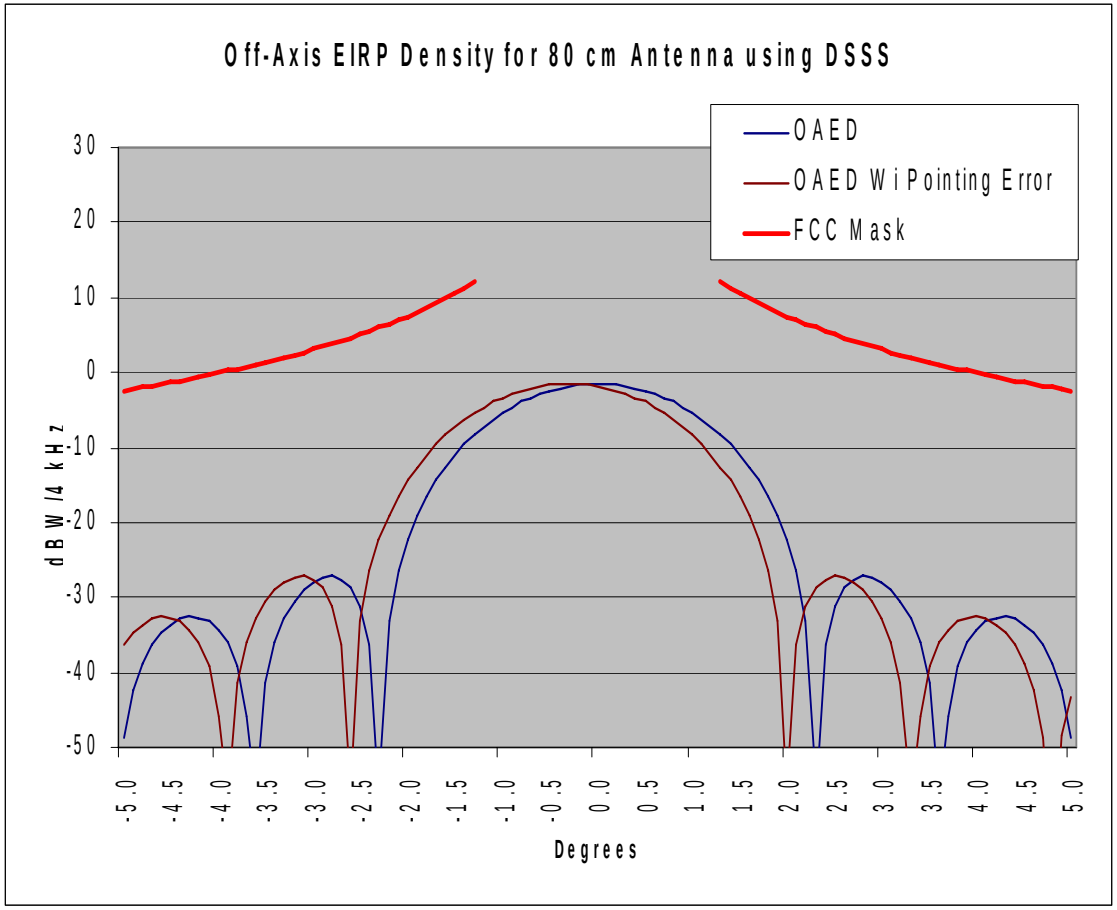
EIRP Density Mask - continued

- Graph shows off-axis EIRP density for an 80 cm antenna operating at a typical EIRP using BPSK and R1/2 TPC
- 0.3 to 0.4 degrees of mispointing can result if antenna is peaked to less than 0.5 dB of maximum boresight gain
- Potential for interference clearly exists even for antennas larger than 70 cm



EIRP Density Mask - continued

- 80 cm antenna operating at same EIRP but now using direct sequence spread spectrum modulation and R1/3 TC
- Same angular mispointing shown, but off-axis EIRP density levels are well below the proposed FCC mask and no interference potential exists



EIRP Density Mask - concluded

- Technology exists today to reduce power spectral density as necessary to resolve the small antenna pointing/mis-pointing problem
- Automated pointing systems can also be used to alleviate pointing error of smaller antennas
- Rules should be technology neutral so as not to hinder innovative antenna technologies
- Smaller antennas employing these technologies should not be limited by a more restrictive off-axis EIRP density mask

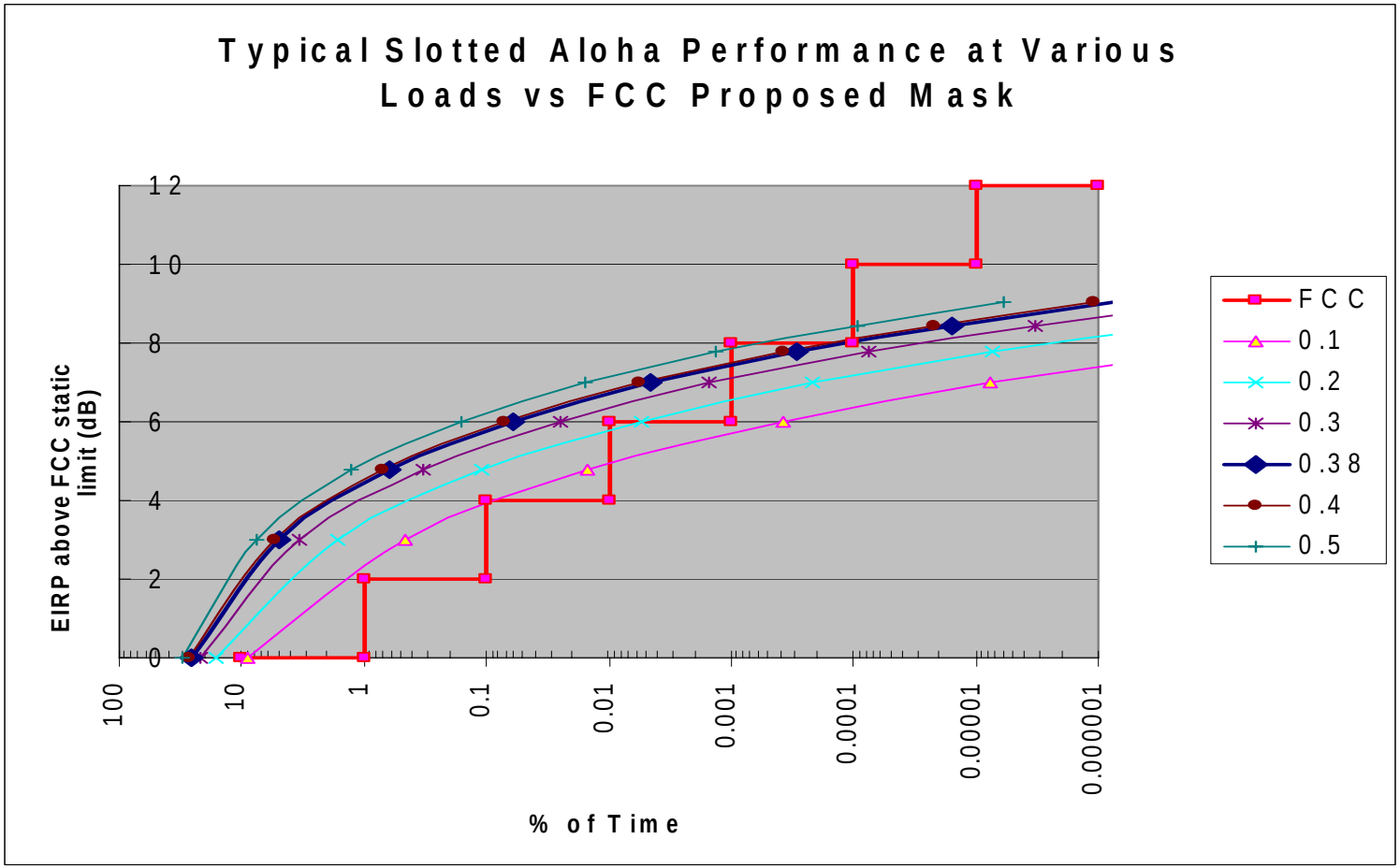
Contention Protocols

- SIA is concerned that the FCC's proposed contention protocal mask does not reflect the physics of contention protocol links and that the mask is too restrictive to allow real-world VSAT systems to operate at desired loading levels
- SIA also believes that contention links are less interfering in many cases than static links
- SIA states that there have been no recorded complaints against contention protocol links

Contention Protocols - continued

- Desired operating point of contention network depends on the type of traffic
  - **Single packet or short messages relatively insensitive to delay, i.e. point of sale applications**
    - **Can run on networks operating at higher loads and attendant probability of collision/retransmission**
  - **Single packet or short messages requiring minimal delay, i.e. VoIP**
    - **Retransmissions cause intolerable delay and jitter and network must be run with minimal load to avoid collisions**
  - **Longer multi-packet messages that are an encapsulation of higher level protocols, i.e. TCP/IP over Slotted Aloha**
    - **Longer datagrams typically require tens of Aloha packets for successful transmission – collisions can cause significant delays and reduced throughput**
    - **Typically requires lower network operating load point**

Issue 3 - Continued



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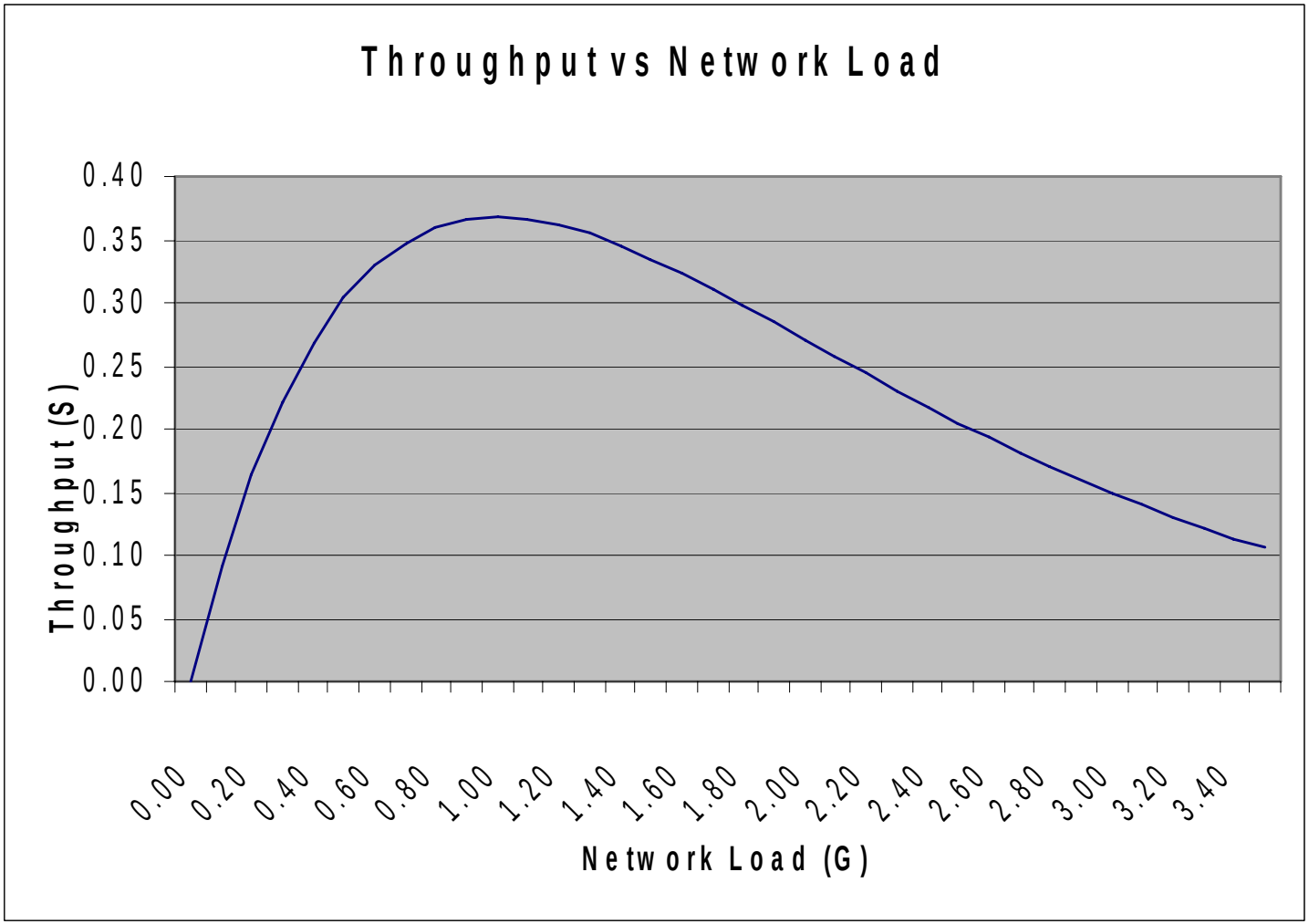
Contention Protocols - continued



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Contention Protocols - concluded

- ViaSat believes that a contention mask should be specified
- ViaSat agrees that slotted Aloha networks may require a less restrictive mask than that proposed in the NPRM
- However, specifying a technology-neutral contention mask will provide companies regulatory certainty to move forward with business ventures and/or new product development
- Adopting a contention mask would reduce costs to consumers because more customers can be supported per leased resource
- A contention mask may also serve other functions
  - **Transient effects such as power control error and dynamic antenna pointing error can be modeled, monitored, and controlled to live within the contention exceedance mask**