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Magalie Roman Salas, Esq.
Secretary
Federal Communications Commission
The Portals
445 12th Street, S.W.
Washington, DC 20554

Re: Views of the Co-Chairman of the GSO FSS Ka-Band Blanket Licensing Industry Working Group; IB Docket No. 98-172

Dear Ms. Salas:

Transmitted herewith, on behalf of the co-chairman of the GSO FSS Ka-Band Blanket Licensing Industry Working Group, we hereby submit the "Views of the Co-Chairman of the GSO FSS Ka-Band Blanket Licensing Industry Working Group concerning the Proposed Commission Evaluation Procedure for Compliance with Off-Axis EIRP Spectral Density Limits, and Reference Receive Antenna Patterns," for filing in the FCC's Ka-band blanket licensing proceeding.[1] Pursuant to Section 1.1206 of the Commission's rules, an original and one copy of this letter are being submitted to the Secretary's office for the above-captioned docket.

Respectfully submitted,

Carlos M. Nalda

cc: Harry Ng
Steve Selwyn
Ed Jacobs

[1] *Redesignation of the 17.7-19.7 GHz Frequency Band, Blanket Licensing of Satellite Earth Stations in the 17.7-20.2 GHz and 27.5-30.0 GHz Frequency Bands, and the Allocation of Additional Spectrum in the 17.3-17.8 GHz and 24.75 25.25 GHz Frequency Bands for Broadcast Satellite Service Use,* Notice of Proposed Rulemaking, FCC 98-235, IB Docket No. 98-172, 63 Fed. Reg. 54100 (Oct. 8, 1998).

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Views of the Co-Chairman of the GSO FSS Ka-Band Blanket Licensing Industry Working Group concerning the Proposed Commission Evaluation Procedure for Compliance with Off-Axis EIRP Spectral Density Limits, and Reference Receive Antenna Patterns

The following are the views of the co-chairman of the GSO FSS Ka-Band Blanket Licensing Industry Working Group, and are being provided to the Commission in the spirit of constructive support to the Commission's preparation of the Report and Order on this subject. The views provide ideas for how the Commission might evaluate compliance with the off-axis EIRP spectral density limits that are the cornerstone of the proposed new blanket licensing rules. Additional comments are provided concerning the reference antenna masks that could be used when considering the interference protection of receiving earth stations. There has been no opportunity as yet to discuss these views with any of the other members of the group.

In the Second Report of the GSO FSS Ka-Band Blanket Licensing Industry Working Group (September 27, 1999), hereafter referred to as the "Second Report", it was proposed that the uplink interference between satellite networks should be controlled by setting a maximum value (actually a coordination threshold), for both co- and cross-polar signals, on the uplink off-axis EIRP spectral density. This was expressed in the form of a mask defined (for the co-polar signal) as:

$18.5 - 25\log(\theta) - 10\log(N)$	dBW/40kHz	for $2.0° \leq \theta \leq 7°$
$-2.63 - 10\log(N)$	dBW/40kHz	for $7° < \theta \leq 9.23°$
$21.5 - 25\log(\theta) - 10\log(N)$	dBW/40kHz	for $9.23° < \theta \leq 48°$
$-10.5 - 10\log(N)$	dBW/40kHz	for $48° < \theta \leq 180°$

It is very important to the Ka-band licensees, and in fact is essential to maintaining the consensus already achieved, that the licensees retain the flexibility to trade off the antenna off-axis gain and input power spectral density performance parameters in order to meet the overall off-axis EIRP spectral density mask.

There has been some concern expressed that defining only the off-axis EIRP spectral density, rather than separately defining the off-axis antenna gain and the input power spectral density, might create difficulties for the Commission staff in determining whether the proposed earth stations are compliant with the defined values. This technical note demonstrates that blanket licensing can be implemented by defining only the off-axis EIRP spectral density, and a possible Commission evaluation procedure is proposed.

Proposed Requirement for Submission of Data by Applicant

In the new rule proposed in the Second Report (25.138(d)), there is a requirement for the applicant to provide "*the antenna off-axis gain performance and the maximum power spectral density (per 40 kHz)*". Of course, the applicant also must provide the value for "N", in case of multiple co-frequency transmissions within the same receive beam. In order to simplify the Commission's evaluation procedure, it is advisable for the Commission to require the applicant to state the value "R" for the reference transmit antenna gain mask, which would be equal to 29 dB for a conventionally compliant antenna (i.e., "29 – 25log(θ)"). Thus, the gain mask that the antenna would comply with would be:

$R - 25\log(\theta)$	dBW/40kHz	for $2.0° \leq \theta \leq 7°$
$R - 21.13$	dBW/40kHz	for $7° < \theta \leq 9.23°$
$R + 3 - 25\log(\theta)$	dBW/40kHz	for $9.23° < \theta \leq 48°$
$R - 29$	dBW/40kHz	for $48° < \theta \leq 180°$

Evidence that this gain mask is achieved would be provided by the applicant, showing measured gain patterns plotted on a graph with the above mask clearly shown.

It would also be advisable for the applicant to provide additional data to assist the Commission staff in checking for compliance with the proposed new rule 25.138(a)(iii), which states "*the values ... may be exceeded by 3 dB, for values of $\theta > 10°$, provided that the total angular range over which this occurs does not exceed 20° when measured along both sides of the GSO arc*". In this respect, the applicant should provide clear identification on the measured co-polar gain patterns of any exceedence of the mask. Such additional markings should demonstrate that no exceedence is by more than 3 dB, and that none occurs at any off-axis angle less than 10°. The width of each exceedence should be clearly indicated, and annotated by a numeric value that states the angular width of each exceedence. The applicant should also provide a simple table that adds up all these angular exceedences and gives a total (aggregate) value, which should not be greater than 20° across the entire 360° range of off-axis angles.

Proposed Commission Evaluation Procedure

The Commission's evaluation procedure would then consist of simply confirming that:

R + [maximum power spectral density in dBW per 40 kHz] – 10log(N) $\leq$ 18.5 dBW

A similar procedure could be applied to check for compliance with the limits for off-axis EIRP spectral density in other directions (25.138(a)(ii)) and for cross-polar signals (25.138(a)(iv)).

Reference Interference Protection Levels for Receive Earth Stations

It would be advisable for the Commission to have a reference antenna off-axis gain pattern that will be used to determine the interference protection of receiving earth stations when subjected to the downlink PFD limit (actually a coordination threshold) in the blanket licensing rules. This does not mean that all receive earth stations must comply with such a mask, as any licensee can freely accept less or more interference by using receive antennas with better or worse off-axis gain performance. However, the Commission should have a reference interference situation in case it is required to intervene in a coordination dispute between licensees.

For this purpose, the Commission should consider using the conventional "29-25log(θ)" off-axis gain mask, which would be defined as follows in order to match the pattern shape of the assumed transmit antenna:

29 – 25log(θ)	dBW/40kHz	for $2.0° \leq \theta \leq 7°$
7.87	dBW/40kHz	for $7° < \theta \leq 9.23°$
32 – 25log(θ)	dBW/40kHz	for $9.23° < \theta \leq 48°$
0	dBW/40kHz	for $48° < \theta \leq 180°$

CERTIFICATION OF PERSON RESPONSIBLE
FOR PREPARING ENGINEERING INFORMATION

I hereby certify that I am the technically qualified person responsible for preparation of the engineering information contained in the foregoing submission, that I am familiar with Part 25 of the Commission's rules, that I have either prepared or reviewed the engineering information submitted in this pleading, and that it is complete and accurate to the best of my knowledge and belief.

Richard Barnett

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Dated: October 28, 1999