

PAUL, WEISS, RIFKIND, WHARTON & GARRISON LLP

1615 L STREET, NW
WASHINGTON, DC 20036-5694
TELEPHONE (202) 223-7300
FACSIMILE (202) 223-7420

LLOYD K. GARRISON (1946-1991)
RANDOLPH E. PAUL (1946-1956)
SIMON H. RIFKIND (1950-1995)
LOUIS S. WEISS (1927-1950)
JOHN F. WHARTON (1927-1977)

1285 AVENUE OF THE AMERICAS
NEW YORK, NY 10019-6064
TELEPHONE (212) 373-3000
FACSIMILE (212) 757-3990

FUKOKU SEIMEI BUILDING
2-2 UCHISAIWAICHO 2-CHOME
CHIYODA-KU, TOKYO 100-0011, JAPAN
TELEPHONE (81-3) 3597-8101
FACSIMILE (81-3) 3597-8120

ORIENTAL PLAZA, TOWER E3
SUITE 1205
NO. 1 EAST CHANG AN AVENUE
DONG CHENG DISTRICT
BEIJING, 100738
PEOPLE'S REPUBLIC OF CHINA
TELEPHONE (86-10) 8518-2766
FACSIMILE (86-10) 8518-2760/61

12TH FLOOR, HONG KONG CLUB BUILDING
3A CHATER ROAD, CENTRAL
HONG KONG
TELEPHONE (852) 2536-9933
FACSIMILE (852) 2536-0622

ALDER CASTLE
10 NOBLE STREET
LONDON EC2V 7JU, U.K.
TELEPHONE (44 20) 7367 1600
FACSIMILE (44 20) 7367 1650

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LISA YANO*
JORDAN E. YARETT*
ALFRED D. YOUNGWOOD

*NOT AN ACTIVE MEMBER OF THE DC BAR.

WRITER'S DIRECT DIAL NUMBER

202-223-7340

WRITER'S DIRECT FACSIMILE

202-223-7440

WRITER'S DIRECT E-MAIL ADDRESS

pspector@paulweiss.com

BY HAND

Marlene H. Dortch
Secretary
Federal Communications Commission
445 - 12th St., S.W.
Washington, DC 20554

RECEIVED

AUG 18 2004

Federal Communications Commission
Office of Secretary

Re: Ex Parte Presentation; Report No. SPB-196; SAT-PDR-20020425-00071

Dear Ms. Dortch:

On behalf of SES AMERICOM, Inc. ("SES AMERICOM"), we write in response to an *ex parte* filing submitted by The DIRECTV Group, Inc. ("DIRECTV") in the above-referenced dockets.¹ The DIRECTV *Ex Parte* consists of materials presented to International Bureau ("IB") staff in a meeting on July 22, 2004, responding to an SES AMERICOM *ex parte* presentation made on June 15, 2004, on the topic of Direct Broadcast Satellite ("DBS") and Direct-to-Home ("DTH") satellite operations in Europe.²

¹ *Ex Parte* Notice, The DIRECTV Group, Inc., Report No. SPB-196; SAT-PDR-20020425-00071, July 23, 2004 (the "DIRECTV *Ex Parte*").

² *Ex Parte* Notice, SES AMERICOM Inc., Report No. SPB-196; SAT-PDR-20020425-00071, June 15, 2004 (the "SES AMERICOM *Ex Parte*").

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I. Introduction and Summary

In June, SES AMERICOM presented to Commission staff an overview of European DBS/DTH satellite operations, focusing in detail on the interference into the consumer dishes of one DTH satellite from closely neighboring satellites. That DTH satellite, Astra 1G, is currently serving millions of households in Europe, with high availability, in a fiercely competitive marketplace. The SES AMERICOM study shows that DTH services are being delivered successfully in an interference environment that is greater and more complex than the current 9°-spacing environment in the United States.

DIRECTV argues that the presented analysis is not relevant to the DBS environment in the United States, due to differences in the services and technical parameters of the satellites considered in the study. However, the interference analysis performed by SES AMERICOM depends on the actual interference contributed by the neighboring satellites, and not on their services *per se*, and takes into account differences between European and U.S. DTH systems, such as dish size. Therefore, the resulting interference levels can be meaningfully compared to U.S. levels, and such a comparison supports the viability of reduced spacing in the United States.

Importantly, however, there is no need for the Commission to determine whether reduced U.S. DBS spacing is feasible in the general case or in any specific case. Rather, the Commission should follow existing international and domestic rules for entry of new DBS satellites, which prescribe case-by-case coordination of proposed new systems under the auspices of the International Telecommunication Union ("ITU"). The Commission should fully support these ongoing proceedings, and should refrain from adopting rules or policies that could arbitrarily and unnecessarily constrain the coordination agreements which may be reached by the operators.

II. The Experience of European DTH Operators Supports the Viability of Reduced Spacing in the United States.

DIRECTV claims that the SES AMERICOM analysis of European DTH operations is not relevant to the question of reduced satellite spacing in the United States, because the analysis does not show "DTH/DBS sharing that involves co-frequency and co-coverage service using 60 cm antennas."³ DIRECTV also argues that, even if such sharing

³ DIRECTV *Ex Parte*, slide 6. For this reason, DIRECTV claims that the presentation was "misleading." *Id.* However, SES AMERICOM explicitly indicated in the meeting with IB staff and in the *Ex Parte* notice that the two neighboring Eutelsat satellites included in the analysis provided primarily single channel per carrier ("SCPC") services, and that the neighboring Astra 3A satellite included in the analysis provided primarily direct-to-cable service (although with DTH-like signal characteristics). See SES AMERICOM *Ex Parte* at 1; see also *id.*, slide 4 (indicating that the neighboring satellites considered in the analysis are providing "other services").

were present, the differences in the operational characteristics and environmental factors facing satellites in Europe and the U.S. would render such an instance of little value in the U.S. context.⁴ DIRECTV mischaracterizes both the purpose of, and the importance of the results from, SES AMERICOM's analysis.

As an initial matter, SES AMERICOM has never presented European spacing scenarios as perfect analogies to the U.S. DBS environment.⁵ The subject *Ex Parte* presentation, which stemmed from discussions with IB staff members, was intended to aid in understanding the situation in Europe, in which DTH services to small dishes are successfully provided in an environment that includes interference contributed by closely-spaced, co-frequency, co-coverage satellites, at higher levels than currently experienced in the U.S. environment of uniform 9° spacing.

Because of the differences in the European environment (in terms of satellite spacing, antenna size, etc.), SES AMERICOM focused its study on a parameter that measures the true impact of adjacent satellites on a DTH system, independent of such details: the interference level received by that system, expressed relative to the desired signal strength (*i.e.*, the carrier-to-interference ratio, or "C/I"). SES AMERICOM computed the aggregate C/I into consumer dishes served by the Astra 1G satellite from several closely-spaced (2.3°, 3.2°, and 4.3°), co-frequency and co-coverage satellites (Eutelsat Iif3, Eutelsat W2, and Astra

DIRECTV also states that one of those Eutelsat satellites, Eutelsat Iif3, is operated in an inclined-orbit, and therefore cannot be used for DTH service. See DIRECTV *Ex Parte* at 2, and slide 2. However, SES AMERICOM's analysis did not assume that the satellite was used for DTH service. As discussed below, the contribution of that satellite to the interference experienced by the Astra 1G satellite was determined based on its actual signal characteristics (at the nominal orbital location), and it is that contribution (and not the services *per se*) that is relevant to the results presented by SES AMERICOM.

⁴ DIRECTV *Ex Parte* at 2. For example, DIRECTV notes that larger dishes (60-90 cm) are used in Europe, while 45 cm dishes are used in the United States. DIRECTV *Ex Parte*, slides 3, 4.

⁵ In fact, the satellites studied by SES AMERICOM – at 2.3°, 3.2°, and 4.3° spacing from the Astra 1G satellite of interest – are closer (in two cases far closer) than SES AMERICOM's proposed DBS satellite would be to any U.S. DBS satellite. See SES AMERICOM, Inc., *Petition for Declaratory Ruling To Serve the U.S. Market Using BSS Spectrum from the 105.5° W.L. Orbital Location*, SAT-PDR-20020425-00071, April 25, 2002 (the "SES AMERICOM Petition"). The satellite proposed by SES AMERICOM at 105.5° W.L. would be 4.5° from DIRECTV and EchoStar satellites at 101° W.L. and 110° W.L.

3A, respectively).⁶ The EIRP levels of each satellite, including relevant factors such as transponder back-off due to multi-carrier operations, were taken into account in the analysis.⁷

As indicated in the SES AMERICOM presentation, the satellites adjacent to Astra 1G contribute a combined interfering power density similar to the contributions of an adjacent, reduced-spaced DTH satellite.⁸ The interference contributed by these neighboring satellites, and not the type of services these satellites provide, is the critical factor in the presented interference analysis. Whether or not the interference comes from satellites providing DTH service is irrelevant.⁹ It is the resulting C/I that determines the impact on Astra 1G services.

⁶ In its presentation, DIRECTV suggests that the orbital spacing for fixed-satellite service ("FSS") and broadcasting-satellite service ("BSS") in Europe is typically 6°. *DirecTV Ex Parte*, slide 10. However, as evidenced by SES AMERICOM's analysis, co-frequency, co-coverage satellites are spaced as close as 2.3 to 4.3 degrees from an operating DTH FSS satellite.

⁷ See SES AMERICOM *Ex Parte*, slide 7, where rows 6, 7 and 8 of the C/I calculation table provide various factors employed in the analysis. As explained to IB staff during the presentation, these factors take into account the difference in the power densities due to (1) the difference in saturated EIRPs between the interfering satellite and Astra 1G (row 6), (2) the difference in transponder bandwidths between the interfering satellite and Astra 1G (row 7), (3) the transponder back-off of the interfering satellite due to multi-carrier operation (3 dB reduction in EIRP for both Eutelsat satellites) (row 6), and (4) the reduction in interfering power density due to approximated carrier spacing (0.5 dB reduction in power density for both Eutelsat satellites) (row 8).

⁸ Indeed, the Astra 3A satellite, spaced 4.3° from Astra 1G, transmits fully-saturated digital video carriers, at comparable power densities to 1G, regardless of whether the signals are being received by cable head-ends or consumer dishes. It is not the case, as DIRECTV suggests (*DIRECTV Ex Parte*, slide 5), that this satellite operates at lower power levels than DTH services. (Note that, while the saturated EIRP on Astra 1G and 3A is equivalent, the C/I analysis assumed a power density 1.4 dB lower for Astra 3A because it uses 36 MHz transponders, while Astra 1G uses 26 MHz transponders. See SES AMERICOM *Ex Parte*, slide 7.)

Moreover, DIRECTV is wrong when it argues that the Astra 3A "hardly represents a competitive sharing scenario since SES has full control of both satellites and can adjust parameters at any time to optimize service." *Id.*, slide 2; see also *id.*, slide 13. As SES AMERICOM has explained, the Astra satellites are operated as open architecture platforms, providing capacity to third-party retail DTH service providers. SES AMERICOM *Ex Parte* Notice, slide 2. Full transponder users are given full power and bandwidth of the transponders without downlink power or bandwidth restrictions. *Id.* For this reason, European satellite operators have much less control over the loading of their transponders than do the U.S. DBS providers. *Id.*

⁹ However, as noted above, the Astra 3A satellite, 4.3° from Astra 1G, transmits DTH-like signals (in terms of both power and signal characteristics), providing an accurate model of the impact of a closely-spaced DTH satellite on Astra 1G DTH operations.

Moreover, the C/I figure takes into account and subsumes antenna size, power levels, and other parameters that differ between European and U.S. systems, and allows comparisons to be made among systems based solely on the level of interference in which they operate.¹⁰ The results show that the Astra 1G system receives a higher level of interference from neighboring systems relative to the strength of its desired signal than do U.S. DBS systems. The fact that the systems employ different dish sizes, for example, is irrelevant to this fundamental conclusion.

For the above reasons, the C/I levels computed by SES AMERICOM accurately model the interference experienced by the Astra 1G DTH system, and can be directly compared to the C/I levels of U.S. DBS systems. DIRECTV dismisses the relevance of that result, arguing that, for a variety of reasons, higher C/I levels are required in the United States. As explained in detail in the attached Technical Appendix, this is not the case. None of the reasons proffered by DIRECTV necessarily produce the impact claimed by DIRECTV, and all can be – and routinely are – dealt with in coordination.

III. Coordination, and Not a Commission Rulemaking, is the Appropriate Forum for Debate of These Issues.

The European environment illustrates the possibilities for reduced spacing in the United States. However, as SES AMERICOM has explained repeatedly in various fora, each case is different and must be assessed individually.¹¹ The feasibility of coordinating a new satellite at a given spacing from existing satellites depends on a variety of considerations, including the proposed spacing; the power levels, frequency plans, coding techniques, and coverage patterns of proposed and existing satellites; and the services provided by the satellites.

Importantly, SES AMERICOM is not asking the Commission to determine whether 4.5-degree spacing is feasible in the general case or in any specific case, and there is no need for the Commission to do so. Rather, the Commission should follow existing international and domestic rules and procedures for entry of new DBS satellites, which

¹⁰ For this reason, it is irrelevant that European DTH and DBS operations are subject to PFD limits. See DIRECTV *Ex Parte*, slides 3, 4.

¹¹ See, e.g., Comments of SES AMERICOM, Inc., Report No. SPB-196, January 23, 2004 (“SES AMERICOM Reduced Spacing Comments”) at 21-22, 27-33; Reply Comments of SES AMERICOM Inc., Report No SPB-196, February 13, 2004 (“SES AMERICOM Reduced Spacing Reply”) at 10-19.

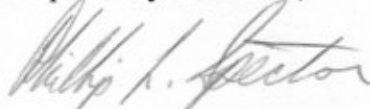
prescribe individual coordination of proposed new systems.¹² The appropriate forum for resolution of the issues raised by DIRECTV is coordination under the auspices of the ITU.¹³

The coordination procedures allow the determination of the appropriate protection levels for systems on a case-by-case basis by the involved operators, avoiding the need for generic measures that would place unnecessary constraints, based on worst-case assumptions, on the introduction of new systems. The limitations that result from a one-size-fits-all, worst-case analysis are significant, and would render such new systems commercially non-competitive.

The ongoing coordination of the proposed SES AMERICOM satellite at 105.5° W.L. involves study of that satellite and neighboring satellites to a level of detail far beyond what is possible in a rulemaking proceeding. This effort is necessary to permit introduction of new, competitive DBS services at reduced spacing. The Commission should fully support these ongoing proceedings, and encourage good faith among the participants. Most importantly, the Commission should not prejudge the outcome of the coordinations by adopting rules or policies that would unnecessarily constrain the agreements that may be reached by the concerned parties.

For these reasons, the Commission should act quickly to dismiss the DIRECTV rulemaking petition,¹⁴ and to grant the SES AMERICOM Petition, subject to the outcome of coordination.¹⁵

Respectfully submitted,



Phillip L. Spector
Diane C. Gaylor

Attorneys for SES AMERICOM, Inc.

¹² SES AMERICOM Reduced Spacing Comments at 5-15; SES AMERICOM Reduced Spacing Reply at 3-10.

¹³ See, e.g., Consolidated Reply of SES AMERICOM, Inc., SAT-PDR-20020425-00071, July 3, 2002 (the "SES AMERICOM Reply") at 27-29; SES AMERICOM Reduced Spacing Reply at 13.

¹⁴ See Petition of DIRECTV Enterprises, LLC for a Rulemaking on the Feasibility of Reduced Orbital Spacing in the U.S. Direct Broadcast Satellite Service, RM No. 10804, Sept. 5, 2003; *Public Notice*, Report No. SPB-196, December 16, 2003.

¹⁵ See SES AMERICOM Reduced Spacing Comments at 35-36.

cc: Thomas Tycz
John Martin
Selina Kahn
Chip Fleming
Rockie Patterson
JoAnn Lucanik
Marilyn Simon
International Bureau

William M. Wiltshire, Esq.
Attorney for DIRECTV

Technical Appendix

As explained in the attached letter, SES AMERICOM has computed the C/I levels experienced by a successfully-operating DTH platform in Europe. DIRECTV has argued that the analysis is irrelevant because higher C/I levels are needed in the United States, for a variety of reasons. However, none of the reasons proffered by DIRECTV necessarily produce the impact claimed by DIRECTV, and all can be – and routinely are – dealt with in coordination.

Spot Beams and Dish Size. DIRECTV argues that higher C/I levels are needed in the United States to accommodate higher power spot-beams, which must contend with adjacent beam interference.¹ DIRECTV also argues that a lower C/I would require it to adopt larger receive antennas in order to maintain its quality of service.²

DIRECTV's claim that reduced-spacing would unduly limit use of spot-beams is unsupported by any analysis. Similarly, DIRECTV provides no support for its claim that larger dishes would be required in the United States for reduced spacing operations.³ SES AMERICOM believes that coordination of spot beam operation is feasible in a reduced spacing environment, as is coordination of the earth stations deployed for DBS service in the United States. This assessment is based on SES AMERICOM's review of the C/I's resulting from analysis performed for the 105.5° W.L. sharing scenario.⁴

SES AMERICOM is not alone in its conclusion that reduced spacing in the United States can be successfully coordinated. In its comments in the Commission's proceeding on reduced spacing, EchoStar stated that its "more advanced assessment of interference in a 4.5° orbital spacing environment illustrates very well

¹ *Ex Parte* Notice, The DIRECTV Group, Inc., Report No. SPB-196; SAT-PDR-20020425-00071, July 23, 2004 (the "DIRECTV *Ex Parte*"), slide 3.

² *Id.* at 2.

³ In the past, DIRECTV has attempted to justify such conclusions based on application of the coordination trigger criterion employed by the ITU's MSPACE program. *See, e.g.*, Opposition of DIRECTV, Inc., File No. SAT-PDR-20020425-00071, June 17, 2002, at 17-18, Technical Annex at 8-9; *Ex Parte* Notice, DIRECTV, Inc., File No. SAT-PDR-20020425-00071, November 12, 2002, at 6-7; Comments of DIRECTV, Inc., Report No. SPB-196, January 23, 2004, at 4. As SES AMERICOM has explained on numerous occasions, MSPACE analysis functions as a coordination trigger only, and cannot support DIRECTV's claims regarding spot-beams and dish sizes. *See, e.g.*, Consolidated Reply of SES AMERICOM, Inc., SAT-PDR-20020425-00071, July 3, 2002 ("SES AMERICOM Reply"), at 22-25.

⁴ *See* SES AMERICOM Reply, Appendix 1. These sharing studies have continued to evolve in the context of the ongoing coordination of the 105.5° W.L. satellite. However, SES AMERICOM's fundamental conclusion regarding the feasibility of coordination has not changed.

how detailed technical coordination between satellite operators can ensure mutually compatible operation, whereas the application of worst case interference assessment can lead to the conclusion that such operation is not possible.”⁵

Like DIRECTV, EchoStar has a spot beam satellite currently in operation 4.5° away from the 105.5° W.L. orbital position. In the analysis presented in its comments, EchoStar reviewed the sharing scenario between 105.5° W.L. and its spot-beam satellite, considered the availability achieved for these areas, and addressed certain spot beams on a case-by-case basis.⁶ The EchoStar analysis supports SES AMERICOM’s assessment that creative solutions permitting DBS reduced-spacing can be developed through detailed coordination discussions among the involved parties. As discussed in the attached letter, the appropriate forum in which to assess the needed C/I for DIRECTV’s systems is the ongoing coordination under the auspices of the ITU.

Power Limits. DIRECTV argues that BSS and FSS operations in Europe are subject to power flux-density (“PFD”) limits, which is not the case in the United States. First, however, power limits are irrelevant to the C/I calculations performed by SES AMERICOM, because these computations assess relative, not absolute, power levels.

For FSS in the 12.5-12.75 GHz band, the subject of the SES AMERICOM presentation, Region 1 (the ITU Region encompassing Europe) does have PFD limits in Article 21 of the Radio Regulations. However, the PFD limits in 12.5-12.75 GHz apply only to countries specified in Nos. 5.494 and 5.496 of the Radio Regulations. Germany, the country used in the SES AMERICOM analysis, is not

⁵ Comments of EchoStar Satellite L.L.C., Report No. SPB-196, January 23, 2004, Technical Annex, at 2. EchoStar noted that its original assessment of SES AMERICOM’s proposal conservatively assumed worst-case values for the parameters used in the interference calculations, which led to EchoStar’s earlier conclusion that accommodation of the proposed new satellite was not technically feasible. *Id.*, at 1. EchoStar demonstrated that such analysis is not an accurate predictor of technical feasibility in many cases, and that detailed coordination is necessary for parties to reach informed conclusions with respect to the possibility of DBS operation in a 4.5° spacing environment. *Id.* In particular, EchoStar demonstrated the importance of taking into account the specific characteristics of the particular satellite under consideration (such as frequency plans, and modulation and coding). *Id.* at 6-7. EchoStar also explained how coordination allows the parties to consider a wide range of parameters (such as relative EIRP levels or C/I levels), all of which may provide acceptable end results, when viewed in combination with other factors. *Id.* at 8, 14-18.

⁶ *Id.*, 15-18. EchoStar computes a C/I as low as 14.5 dB for the worst-case interference into the edge of coverage of one of its spot beams.

included (nor are most other European countries), which means that the PFD limits do not apply in Germany.

For BSS, European BSS and Region 2 BSS are treated in the same manner in Appendix 30. Both have PFD levels that trigger coordination with terrestrial services on an administration's territory, but only in channels that are not assigned to that administration in the Plan or List for BSS. Setting aside whether or not the PFD levels apply in each territory, for the United States and Germany these PFD levels are quite permissive, allowing EIRP levels of approximately 63 dBW in 27 MHz or 62.7 dBW in 24 MHz. These levels certainly allow for higher EIRP in Europe than the satellites considered in SES AMERICOM's analysis (where the maximum EIRP considered was on the order of 53 dBW in 26 MHz).

Rain. DIRECTV also argues that lower C/I levels are acceptable in Europe because it experiences less rain than does the United States.⁷

However, the western half of the United States has comparable rain rates to Europe, or much lower rain rates.⁸ In the southeastern United States, which does have higher rain rates, the impact of rain is ameliorated by U.S. operators by use of higher EIRP in that area than in other parts of the United States. In a coordination, if the adjacent satellites have similar concentrations of higher EIRP levels in the southeast, the C/I levels can be optimized.

In addition, the southeastern United States, because of its lower latitudes, has greater topocentric angles than do northern parts of the United States. A greater topocentric angle means a greater off-axis discrimination of the earth station, and hence a higher C/I. In Germany, where the SES AMERICOM analysis was performed, the latitude ranges from approximately 45 to 55 degrees north latitude. This is much further north, and with a correspondingly smaller topocentric angle, than the southeastern United States, which ranges from approximately 25 to 35 degrees north latitude. Depending on the orbital separation considered, the receive antenna size, and the roll-off of the reference antenna pattern, relatively small variations in the topocentric angle can result in over a dB difference in C/I.

⁷ DIRECTV *Ex Parte*, slides 11-12.

⁸ See Recommendation ITU-R P.837-2. Germany has rain intensity for 0.01% of the average year from 25-30 mm/h. The United States ranges from 80 mm/h in Florida to 15 mm/h in the southwest.

Polarization. DIRECTV also argues that Europe employs linear polarization (“LP”),⁹ which provides better cross-polarization (“X-pol”) isolation during rain than circular polarization (“CP”).¹⁰

In general, however, the difference in the link performance of a CP system as compared to an LP system is not significant. Furthermore, for DTH applications, the X-pol effect on an average CP or LP link (with decent installer polarization alignment for LP) is almost negligible, so any difference between CP and LP X-pol performance does not significantly affect the analysis.

More generally, there are differences in the performance and installation of CP and LP dishes that each operator or service provider assesses in detail prior to deciding which polarization to use. LP dishes have a more complex installation process, because in addition to pointing towards the desired orbit location, the horizontal and vertical polarizations must be rotationally aligned. This additional alignment requirement can lead to additional losses for LP dishes if not performed properly. It is often the simplified installation process that encourages the use of CP for DTH services.

Dish Pointing. DIRECTV suggests that U.S. receive antennas are more difficult to point than are European antennas, particularly considering the use of triple-feed dishes in the United States.¹¹ The relevant issue here is whether the mispointing angle that SES AMERICOM assumed in its European C/I analysis is appropriate.

First, SES AMERICOM used a mispointing of 0.4 degree for the 50 and 60 cm dishes in its analysis. In its Petition for Rulemaking, DIRECTV stated that a 0.5 degree mispointing should be used for 45 cm dishes.¹² If one scales the mispointing angle based on increased antenna size, then 0.4 degrees for 50 cm dishes is consistent with the 0.5 degree value that DIRECTV proposes.

Moreover, even if one assumes that the European dishes are easier to point, for 60 cm dishes – where the scenarios considered in SES AMERICOM’s

⁹ As noted in the SES AMERICOM presentation, all Ku-band operations in Europe today are linearly polarized, including DBS. *Ex Parte* Notice, SES AMERICOM Inc., Report No. SPB-196; SAT-PDR-20020425-00071, June 15, 2004 (the “SES AMERICOM *Ex Parte*”), slide 3.

¹⁰ DIRECTV *Ex Parte*, slide 3.

¹¹ *Id.*

¹² DIRECTV Enterprises, LLC, Petition for a Rulemaking on the Feasibility of Reduced Orbital Spacing in the U.S. Direct Broadcast Satellite Service, RM No. 10804, Sept. 5, 2003, at 17.

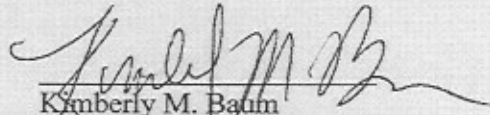
presentation are generally in the 29-25 log (off-axis angle) portion of the Recommendation BO.1213 antenna pattern – use of a smaller mispointing (such as 0.3 degrees) would only result in a small (about a couple of tenths of a dB) change in the earth station off-axis gain. Use of a smaller mispointing assumption for Europe would not significantly raise the computed C/I values.

Conclusion. DIRECTV has not demonstrated that higher C/I levels are needed in the United States than in Europe. In any case, each proposal for a satellite at reduced spacing should be judged on its own merits, which requires evaluation of the specific operational characteristics of the neighboring satellites. The C/I requirements of the DIRECTV satellites should be dealt with in the context of the ongoing coordinations.

**CERTIFICATION OF PERSON RESPONSIBLE FOR
PREPARING ENGINEERING INFORMATION**

I hereby declare that I am a technically qualified person responsible for preparation of the engineering information contained in this *ex parte* presentation, that I am familiar with Part 25 of the Commission's Rules, and that I have either prepared or reviewed the engineering information submitted in this *ex parte* presentation, and that it is complete and accurate to the best of my knowledge and belief.

By:



Kimberly M. Baum
Manager, Satellite Market
Development
SES AMERICOM, Inc.

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