Before the
FEDERAL COMMUNICATIONS COMMISSION
Washington, D.C. 20554

Application of	)	
DIRECTV ENTERPRISES, LLC	)	File No. _____
For Minor Modification of Authorization to Operate DIRECTV 5, a Direct Broadcast Satellite, at 110.1° W.L.	)	Call Sign S2673

APPLICATION FOR MINOR MODIFICATION

DIRECTV Enterprises, LLC ("DIRECTV") hereby requests a minor modification of its authorization to operate DIRECTV 5, a satellite in the Direct Broadcast Satellite ("DBS") service at the 110.1° W.L. orbital location.[1] Specifically, DIRECTV requests authority to reorient the spacecraft slightly to the East so that it will be able to provide better service to subscribers of DIRECTV Latin America ("DTVLA") in Puerto Rico. This proposed reorientation will not require any additional orbital or spectrum resources, and will have no effect on the services and programming currently available to DIRECTV subscribers in other parts of the United States, including Alaska and Hawaii. Accordingly, it will serve the public interest by improving signal reception for DTVLA's subscribers in Puerto Rico without any offsetting impact on any other subscribers.

In accordance with Section 25.117(d)(1) of the Commission's rules, DIRECTV identifies in this Application, Technical Attachment and Annex, and associated GIMS

[1] *See DIRECTV Enterprises, LLC*, 20 FCC Rcd. 15778 (IB 2005); Grant Stamp, IBFS File No. SAT-MOD-20060717-00074 (Nov. 29, 2006).

container database,[2] only those items of information that have changed from its station license and associated application(s). DIRECTV hereby certifies that the remaining information in its station license and associated application(s) has not changed.

DISCUSSION

DIRECTV has been providing DBS service from the 110° W.L. orbital location since 1999,[3] where it is authorized to use three of the thirty-two DBS channels available at that location. DIRECTV 5 is the most recent satellite to operate at this location, having arrived in 2005. Because of the limited amount of spectrum available, DIRECTV has traditionally used this slot to provide a variety of non-core content, including foreign language programming and early high definition channels.

At present, the satellite is being used to enhance the direct-to-home video service provided to subscribers in Puerto Rico. The programming being transmitted is intended for DTVLA subscribers, and consists of a subset of the programming available to subscribers in the United States. In other words, U.S. subscribers outside of Puerto Rico – including those in Alaska and Hawaii – also have access to all of the programming carried by DIRECTV 5, but receive that programming from other DIRECTV satellites. Because the transmissions are redundant with respect to DIRECTV subscribers in areas outside of Puerto Rico, their loss will not change the services and packages available in those areas. Unfortunately, Puerto Rico lies at the outside edge of the area currently covered by the DIRECTV 5 downlink

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[2] The reoriented uplink and downlink gain contours are set forth in Figures A-1 and A-2 of the Technical Appendix, and are submitted herewith in .GXT format in the associated GIMS container database.

[3] *See DIRECTV Enterprises, Inc.*, 15 FCC Rcd. 6738 (IB 1999) (authorizing operation of DIRECTV 1 satellite at 109.8° W.L.).

beam. As a result, the signal received by subscribers in that area is subject to more signal outages due to atmospheric effects than it would be for a subscriber located on the mainland.

Accordingly, in this application, DIRECTV seeks authority to reorient the satellite so that Puerto Rico falls within the portion of the downlink with a higher power level. This will increase the signal strength available in Puerto Rico by approximately 6 dB – about four times the power currently available from DIRECTV 5 in Puerto Rico. This will, in turn, increase the availability of the signal in Puerto Rico to over 99.85%, which is commensurate with that provided throughout the rest of the United States.

Clearly, the proposed modification will improve DBS service for subscribers in Puerto Rico. Moreover, because the programming being transmitted by DIRECTV 5 is merely duplicative of the programming made available to subscribers outside Puerto Rico from other DIRECTV satellites, the proposed modification will achieve this improvement for Puerto Rico without affecting the service enjoyed by other DIRECTV subscribers. For this same reason, although reorienting the satellite to the East will pull coverage away from Western portions of the United States, including Alaska and Hawaii,[4] subscribers in those areas will continue to enjoy the same level of DIRECTV service they have today. In essence, the proposed modification will enable DTVLA to provide consumers in Puerto Rico – a U.S. territory – a video experience of the same high quality that other Americans have come to expect.[5]

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[4] DIRECTV is filing herewith a request for waiver of the geographic service requirements in Section 25.148(c) of the Commission's rules.

[5] *See* 8 U.S.C. § 1402 ("All persons born in Puerto Rico on or after January 13, 1941, and subject to the jurisdiction of the United States, are citizens of the United States at birth").

CONCLUSION

For the foregoing reasons, the proposed modification will serve the public interest by enabling DIRECTV to provide improved service in Puerto Rico without affecting the service levels or content available to viewers outside that territory. Accordingly, DIRECTV respectfully requests that the Commission grant this application as expeditiously as possible.

Respectfully submitted,

DIRECTV ENTERPRISES, LLC

By: __\s_____
Romulo Pontual
Executive Vice President

ENGINEERING CERTIFICATION

The undersigned hereby certifies to the Federal Communications Commission as follows:

(i) I am the technically qualified person responsible for the engineering information contained in the foregoing Application,

(ii) I am familiar with Part 25 of the Commission's Rules, and

(iii) I have either prepared or reviewed the engineering information contained in the foregoing Application, and it is complete and accurate to the best of my knowledge and belief.

Signed:

/s/
Jack Wengryniuk

November 13, 2013
Date

TECHNICAL ATTACHMENT

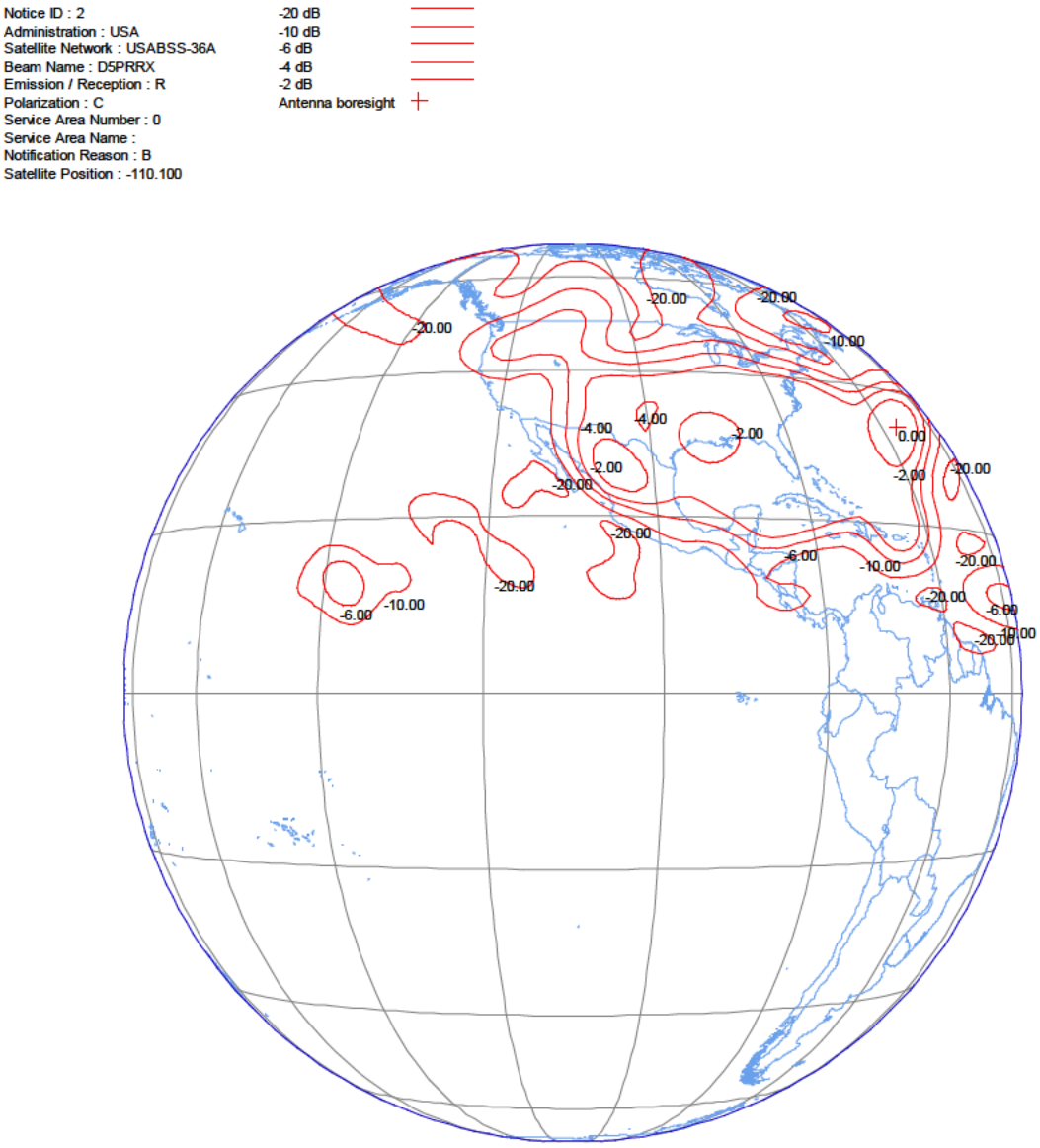


Figure A-1. DIRECTV 5 Uplink Gain Contours

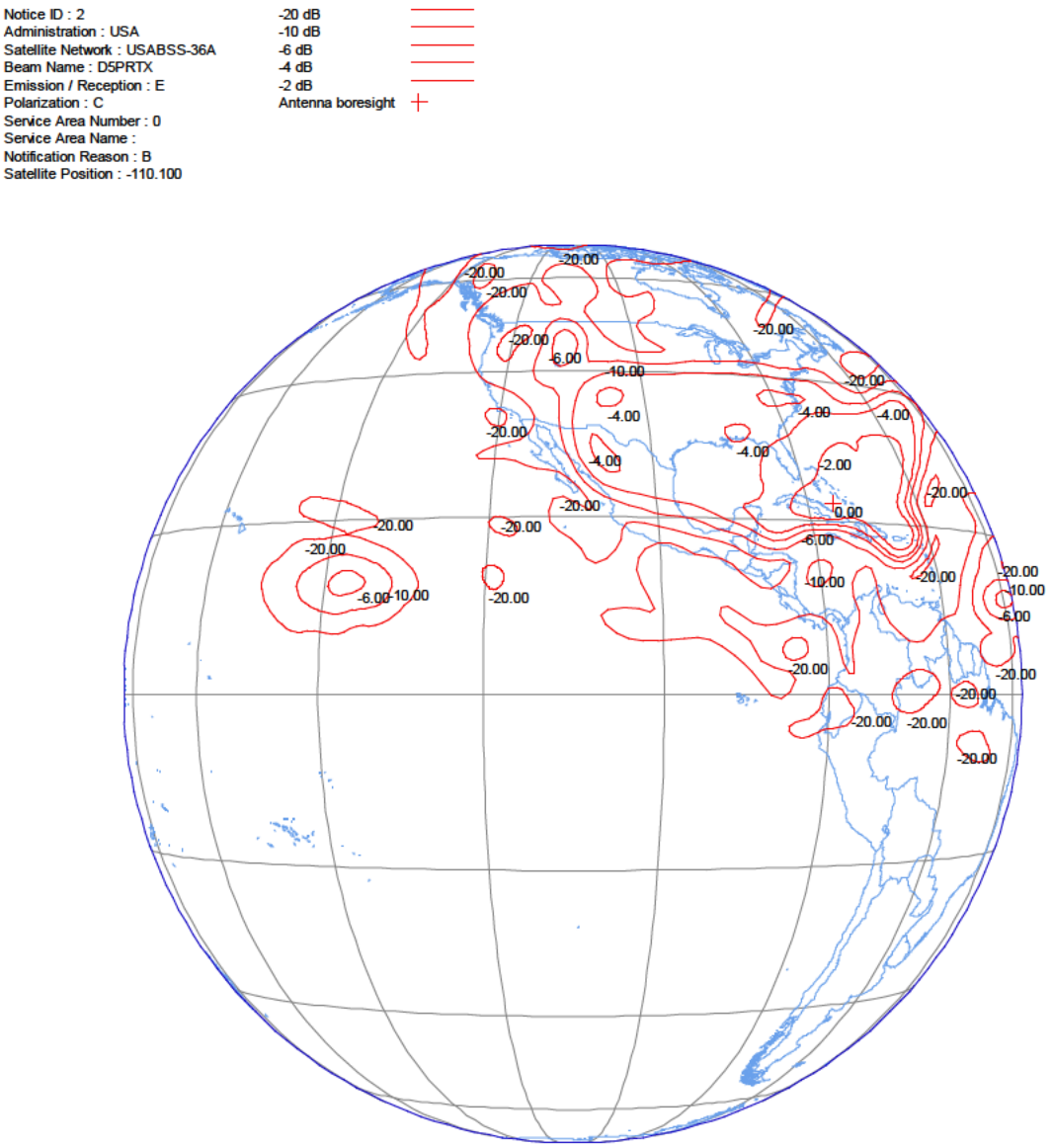


Figure A-2. DIRECTV 5 Downlink Gain Contours

Table A-1. DIRECTV 5 Link Budget – Downlink to Puerto Rico

DIRECTV 5	San Juan	Clear Sky	Rain Dn
Uplink C/N (thermal), dB	Transmit power, dBW	15.0	17.0
	Transmit power density dBW/Hz	-58.8	-56.8
	Transmit losses, dB	-2.0	-2.0
	Ground antenna gain, dB	65.8	65.8
	Antenna pointing loss, dB	-0.5	-0.5
	Free space loss, dB	-209.4	-209.4
	Atmospheric loss, dB	-0.2	-0.2
	Uplink rain loss, dB	0.0	-2.0
	Satellite G/T, dB/K	1.6	1.6
	Bandwidth, dB-Hz	73.0	73.0
	Boltzmann's constant, dBW/Hz K	228.6	228.6
Total Uplink C/N		**25.9**	**25.9**
Downlink C/N (thermal),dB	Satellite EIRP, dBW/36 MHz	56.0	56.0
	Free space loss, dB	-206.4	-206.4
	Atmospheric loss, dB	-0.2	-0.2
	Downlink rain loss, dB	0.0	-2.5
	Rain temp increase, dB	0.0	-2.2
	Rcv. antenna pointing loss, dB	-0.5	-0.5
	Ground G/T, dB/K	14.4	14.4
	Bandwidth, dB-Hz	73.0	73.0
	Boltzmann's constant, dBW/Hz K	228.6	228.6
Total Downlink C/N		**18.9**	**14.2**
		Clear Sky	**Rain Dn**
Totals	Uplink C/N (thermal), dB	25.9	25.9
	Downlink C/N (thermal), dB	18.9	14.2
	Total inter and intra-system C/I dB (incl x-pol, ASI, ACI)	17.4	17.4
	Total C/(N+I), dB	**14.7**	**12.3**
	Required C/(N+I), dB	**4.6**	**4.6**
	Margin, dB	**10.1**	**7.7**

ANNEX 1

ITU RADIO REGULATIONS APPENDIX 30 AND 30A INTERFERENCE ANALYSES

ANNEX 1 TO APPENDIX 30 FOR USABSS-16

1. Limits for the interference into frequency assignments in conformity with the Regions 1 and 3 Plan or with the Regions 1 and 3 List or into new or modified assignments in the Regions 1 and 3 List

Not applicable to Region 2 modifications.

2. Limits to the change in the overall equivalent protection margin for frequency assignments in conformity with the region 2 Plan

With respect to § 4.2.3 c) of Article 4, an administration in Region 2 is considered as being affected if the overall equivalent protection margin corresponding to a test point of its entry in the Region 2 Plan, including the cumulative effect of any previous modification to that Plan or any previous agreement, falls more than 0.25 dB below 0 dB, or, if already negative, more than 0.25 dB below the value resulting from:

– *the Region 2 Plan as established by the 1983 Conference; or*

– *a modification of the assignment in accordance with this Appendix; or*

– *a new entry in the Region 2 Plan under Article 4; or*

– *any agreement reached in accordance with this Appendix.*

A detailed interference analysis was performed using MSPACEg and the uplink and downlink shaped beams of USABSS-40.[1] Results show that only one administration is affected, namely Belize. The findings file for USABSS-36A is included immediately below. As can be seen, the maximum degradation to the Belize entry in the Region 2 Plan is 0.33dB (*i.e.*, 0.08 dB above the trigger value of 0.25 dB) at one test point of one channel. DIRECTV believes that this exceedance can be readily resolved.

Input File C:\Users\00u5450\Desktop\MSpace runs\SPS_ALL_IFIC2756.mdb

Input File Title

Output Database C:\Users\00u5450\Desktop\MSpace runs\SPS_ALL_IFIC2756.OUT.MDB

Analysis Version (in output database) 4 *Completed on* 7-November 2013 16:47 Sorted by orb.position

All Networks/Assignments from Input File or SNS/SPS Database Were Considered in Analysis

Orbital Position	Adm. Symbol	Identity of Satellite Network	Beam Name	Affected Channels	Max. OEPM Degradation	Band GHz
-115.80	BLZ	BLZ00001	BLZ00001	30	0.33	
-110.10	USA	USABSS-36A	10029347	28,30,32	5.33	
-110.10	USA	USABSS-36A	10029348	28,30,32	5.02	

[1] Because the network identifier was not known at the time, DIRECTV used the identifier USABSS-36A as the alias for this network for purposes of the MSPACEg analysis, which is why that identifier appears in the printout of the MSPACEg findings file.

3. Limits to the change in the power flux density to protect the broadcasting-satellite service in Regions 1 and 2 in the band 12.2-12.5 GHz and in Region 3 in the band 12.5-12.7 GHz

With respect to § 4.2.3 a), 4.2.3 b) or 4.2.3 f) of Article 4, as appropriate, an administration in Region 1 or 3 is considered as being affected if the proposed modification to the Region 2 Plan would result in exceeding the following power flux-densities values, at any test point in the service area of its overlapping frequency assignments:

-147 dB(W/(m^2 · 27 MHz))	for	0°	$\leq \theta < 0.23°$
$-135.7 + 17.74 \log \theta$ dB(W/(m^2 · 27 MHz))	for	0.23°	$\leq \theta < 2.0°$
$-136.7 + 1.66\ \theta^2$ dB(W/(m^2 · 27 MHz))	for	2.0°	$\leq \theta < 3.59°$
$-129.2 + 25 \log \theta$ dB(W/(m^2 · 27 MHz))	for	3.59°	$\leq \theta < 10.57°$
-103.6 dB(W/(m^2 · 27 MHz))	for	10.57°	$\leq \theta$

where θ is the minimum geocentric orbital separation in degrees between the wanted and interfering space stations, taking into account the respective East-West station-keeping accuracies.

The closest Regions 1 and 3 BSS orbital location in the Regions 1 and 3 Plan or List is a French assignment at 160° W.L., which is 50° from the 110° W.L. orbital location. Therefore the -103.6 dBW/m^2/27 MHz level applies.

The maximum pfd for USABSS-40 is -106.9 dBW/m^2 · 24 MHz, or -107.4 dBW/m^2 · 27 MHz. The pfd limit of -103.6 dBW/m^2/27 MHz is not exceeded anywhere on the earth's surface. Therefore, USABSS-40 is in compliance with Section 3.

4. Limits to the power flux density to protect the terrestrial services of other administrations

With respect to § 4.2.3 d) of Article 4, an administration in Region 1, 2 or 3 is considered as being affected if the consequence of the proposed modification to an existing assignment in the Region 2 Plan is to increase the power flux-density arriving on any part of the territory of that administration by more than 0.25 dB over that resulting from that frequency assignment in the Region 2 Plan at the time of entry into force of the Final Acts of the 1985 Conference. The same administration is considered as not being affected if the value of the power flux-density anywhere in its territory does not exceed the limits expressed below.

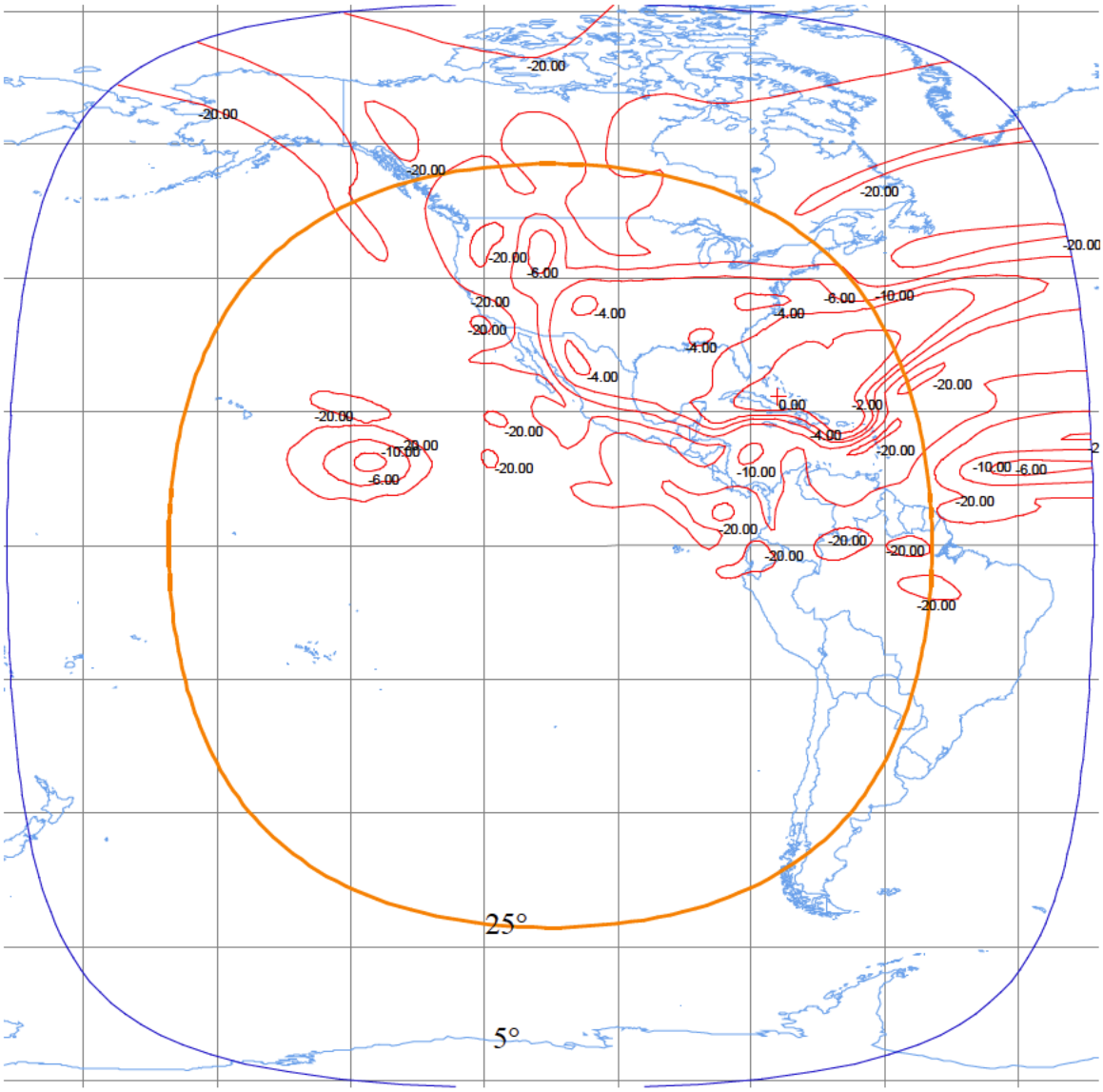
With respect to § 4.1.1 d) or §4.2.3 d) of Article 4, an administration in Region 1, 2 or 3 is considered as being affected if the proposed new assignment in the Regions 1 and 3 List, or if the proposed new frequency assignment in the Region 2 Plan, would result in exceeding a power flux-density, for any angle of arrival, at any point on its territory, of:

$$
\begin{aligned}
&-148 \ \mathrm{dB(W/(m^2 \cdot 4\ kHz))} && \text{for} && \theta \le 5^\circ \\
&-148 + 0.5\,(\theta - 5) \ \mathrm{dB(W/(m^2 \cdot 4\ kHz))} && \text{for} && 5^\circ < \theta \le 25^\circ \\
&-138 \ \mathrm{dB(W/(m^2 \cdot 4\ kHz))} && \text{for} && 25^\circ < \theta \le 90^\circ
\end{aligned}
$$

where θ represents the angle of arrival.

There are no Region 1 or 3 territories within the coverage area of USABSS-40 and therefore the pfd of USABSS-36A is by default below the strictist limit of -148 dBW/m^2 · 4 kHz.

Consistent with provision 4.2.3 d) of Article 4 of Appendix 30, these pfd limits apply to countires not having frequency assignment in the broadcasting-satellite service in the channel concerned. The maximum possible pfd of USABSS-40 is -143.8 dBW/m^2 · 4 kHz, which is only 4.2 dB above the mosty restrictive pfd value. The figure on the next page shows the USABSS-40 transmit beam with an elevation contour of 25 degrees. This figure shows that there are no territories outside of the 25 degree contour that are within the -4.2 dB contour of the beam. As such, USABSS-40 meets the pfd limits of Section 4.



5. (Not used.)

6. Limits to the change in the power flux density of assignments in the Regions 1 and 3 Plan or List to protect the fixed-satellite service (space-to-Earth) in the band 11.7-12.2 GHz in Region 2 or in the band 12.2-12.5 GHz in Region 3, and of assignments in the Region 2 Plan to protect the fixed-satellite service (space-to-Earth) in the band 12.5-12.7 GHz in Region 1 and in the band 12.2-12.7 GHz in Region 3

With respect to § 4.2.3 e), an administration is considered as being affected if the proposed modification to the Region 2 Plan would result in an increase in the power flux-density over any portion of the service area of its overlapping frequency assignments in the fixed-satellite service in Region 1 or 3 of 0.25 dB or more above that resulting from the frequency

assignment in the Region 2 Plan at the time of entry into force of the Final Acts of the 1985 Conference.

With respect to § 4.1.1 e) or 4.2.3 e) of Article 4, with the exception of cases covered by Note 1[2] below, an administration is considered as not being affected if the proposed new or modified assignment in the Regions 1 and 3 List, or if a proposed modification to the Region 2 Plan, gives a power flux-density anywhere over any portion of the service area of its overlapping frequency assignments in the fixed-satellite service in Region 1, 2 or 3 of less than:

-186.5 dB(W/(m^2 · 40 kHz))	for	$0°$	$\le \theta < 0.054°$
$-164.0 + 17.74 \log \theta$ dB(W/(m^2 · 40 kHz))	for	$0.054°$	$\le \theta < 2.0°$
$-165.0 + 1.66\ \theta^2$ dB(W/(m^2 · 40 kHz))	for	$2.0°$	$\le \theta < 3.59°$
$-157.5 + 25 \log \theta$ dB(W/(m^2 · 40 kHz))	for	$3.59°$	$\le \theta < 10.57°$
-131.9 dB(W/(m^2 · 40 kHz))	for	$10.57°$	$\le \theta$

where θ is the minimum geocentric orbital separation in degrees between the wanted and interfering space stations, taking into account the respective East-West station-keeping accuracies.

All Regions 1 and 3 FSS satellites are greater than 10.57 degrees from the 110° W orbit location. Therefore the -131.9 dB(W/(m^2 · 40 kHz)) level applies. As shown in the response to Section 4, the highest possible pfd of USABSS-40 is -143.8 dBW/m^2 · 4 kHz, which equates to -133.8 dBW/m^2 · 40 kHz , which is below the pfd value for the 10.57 degree separation case. Therefore, USABSS-40 is in compliance with Section 6.

[2] Note 1 pertains to Regions 1 and 3 only

7. Limits to the change in equivalent noise temperature to protect the fixed-satellite service (Earth-to-space) in Region 1 from modifications to the Region 2 Plan in the band 12.5-12.7 GHz

With respect to § 4.2.3 e) of Article 4, an administration of Region 1 is considered as being affected if the proposed modification to the Region 2 Plan would result in:

– *the value of $\Delta T/T$ resulting from the proposed modification is greater than the value of $\Delta T/T$ resulting from the assignment in the Region 2 Plan as of the date of entry into force of the Final Acts of the 1985 Conference; and*

– *the value of $\Delta T/T$ resulting from the proposed modification exceeds 6%,*

using the method of Appendix 8 (Case II).

The ITU's GIBC software was used to conduct an Appendix 8 analysis with the USABSS-40 network included in the SPS ALL IFIC 2756 database. No networks were identified as potentially affected. Therefore, USABSS-40 is in compliance with Section 7.

ANNEX 1 TO APPENDIX 30A FOR USABSS-16

1 Not used.

2 Not used.

3 Limits to the change in the overall equivalent protection margin with respect to frequency assignments in conformity with the Region 2 feeder-link Plan

With respect to the modification to the Region 2 feeder-link Plan and when it is necessary under this Appendix to seek the agreement of any other administration of Region 2, except in cases covered by Resolution 42 (Rev.WRC-03), an administration is considered as being affected if the overall equivalent protection margin[3] *corresponding to a test point of its entry in that Plan, including the cumulative effect of any previous modification to that Plan or any previous agreement, falls more than 0.25 dB below 0 dB, or, if already negative, more than 0.25 dB below the value resulting from:*

– *the feeder-link Plan as established by the 1983 Conference; or*

– *a modification of the assignment in accordance with this Appendix; or*

– *a new entry in the feeder-link Plan under Article 4; or*

– *any agreement reached in accordance with this Appendix except for Resolution 42 (Rev.WRC-03).*

A detailed interference analysis was performed using MSPACEg and the uplink and downlink shaped beams of USABSS-40. Results show that only one administration, Belize, is potentially affected, and that the overall impact is 0.33 dB. MSPACEg calculates the overall equivalent protection margin (OEPM) which combines the impact of both the uplink and downlink into this single result. DIRECTV believes that this minor exceedance of the 0.25 dB coordination trigger is caused purely by the downlink of the USABSS-40 network.

4 Limits to the interference into frequency assignments in conformity with the Regions 1 and 3 feeder-link Plan or with the Regions 1 and 3 feeder-link Lists or proposed new or modified assignments in the Regions 1 and 3 feeder-link Lists

Not applicable to Region 2 modifications

5 Limits applicable to protect a frequency assignment in the bands 17.3-18.1 GHz (Regions 1 and 3) and 17.3-17.8 GHz (Region 2) to a receiving space station in the fixed-satellite service (Earth-to-space)

An administration in Region 1 or 3 is considered as being affected by a proposed modification in Region 2, with respect to § 4.2.2 a) or 4.2.2 b) of Article 4, or an administration in Region 2 is considered as being affected by a proposed new or modified assignment in the Regions 1 and 3

[3] For the definition of the overall equivalent protection margin, see § 1.11 of Annex 5 to Appendix 30.

feeder-link List, with respect to § 4.1.1 c) of Article 4, when the power flux-density arriving at the receiving space station of a broadcasting-satellite feeder-link would cause an increase in the noise temperature of the feeder-link space station which exceeds the threshold value of ΔT/T corresponding to 6%, where ΔT/T is calculated in accordance with the method given in Appendix 8, except that the maximum power densities per hertz averaged over the worst 1 MHz are replaced by power densities per hertz averaged over the necessary bandwidth of the feeder-link carriers. (WRC-03)

*Interim systems of Region 2 in accordance with Resolution **42 (Rev.WRC-03)** shall not be taken into consideration when applying the above paragraph to proposed new or modified assignments in the Regions 1 and 3 feeder-link List. However, the above paragraph shall be applied to Region 2 interim systems with respect to Regions 1 and 3 administrations, referred to in § 5.2 b) of Resolution **42 (Rev.WRC-03)**. (WRC-03)*

The ITU's GIBC software was used to conduct an Appendix 8 analysis with the USABSS-40 network included in the SPS ALL IFIC 2756 database. No networks were identified as potentially affected. Therefore, USABSS-40 is in compliance with Section 5.

6 Limits applicable to protect a frequency assignment in the band 17.8-18.1 GHz (Region 2) to a receiving feeder-link space station in the fixed-satellite service (Earth-to-space)

Not applicable to Region 2 modifications