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File Number: SES-MOD-INTR2010-02129

FCC APPLICATION FOR SPACE AND EARTH STATION:MOD OR AMD - MAIN FORM	FCC Use Only
FCC 312 MAIN FORM FOR OFFICIAL USE ONLY	

APPLICANT INFORMATION

Enter a description of this application to identify it on the main menu:

Modification of E070218 to Add 6.3 m Antenna

1-8. Legal Name of Applicant			
Name:	MTN License Corp.	Phone Number:	206-838-7700
DBA Name:		Fax Number:	206-838-7708
Street:	719 2nd Avenue Suite 820	E-Mail:	ithompson@mtnsat.com
City:	Seattle	State:	WA
Country:	USA	Zipcode:	98104 -
Attention:	Mr Ian Thompson		
9-16. Name of Contact Representative			
Name:	Stephen Baruch	Phone Number:	202-416-6782
Company:	Lerman Senter PLLC	Fax Number:	202-293-7783
Street:	2000 K Street, NW Suite 600	E-Mail:	sbaruch@lermansenter.com
City:	Washington	State:	DC
Country:	USA	Zipcode:	20006-
Attention:		Relationship:	Legal Counsel

CLASSIFICATION OF FILING

17. Choose the button next to the classification that applies to this filing for both questions a. and b. Choose only one for 17a and only one for 17b.	(N/A) b1. Application for License of New Station (N/A) b2. Application for Registration of New Domestic Receive-Only Station <input checked="" type="radio"/> b3. Amendment to a Pending Application <input checked="" type="radio"/> b4. Modification of License or Registration b5. Assignment of License or Registration b6. Transfer of Control of License or Registration <input checked="" type="radio"/> b7. Notification of Minor Modification (N/A) b8. Application for License of New Receive-Only Station Using Non-U.S. Licensed Satellite (N/A) b9. Letter of Intent to Use Non-U.S. Licensed Satellite to Provide Service in the United States (N/A) b10. Other (Please specify) (N/A) b11. Application for Earth Station to Access a Non-U.S.satellite Not Currently Authorized to Provide the Proposed Service in the Proposed Frequencies in the United States.
17c. Is a fee submitted with this application? <input checked="" type="radio"/> If Yes, complete and attach FCC Form 159. If No, indicate reason for fee exemption (see 47 C.F.R.Section 1.1114). <input checked="" type="radio"/> Governmental Entity <input checked="" type="radio"/> Noncommercial educational licensee	

☐ Other(please explain):

17d.

Fee Classification CGX - Fixed Satellite Transmit/Receive Earth Station

18. If this filing is in reference to an existing station, enter:

(a) Call sign of station:
E070218

19. If this filing is an amendment to a pending application enter both fields, if this filing is a modification please enter only the file number:

(a) Date pending application was filed:
(b) File number:
SESMFS2009060200676

TYPE OF SERVICE

20. NATURE OF SERVICE: This filing is for an authorization to provide or use the following type(s) of service(s): Select all that apply:

- ☒ a. Fixed Satellite
☐ b. Mobile Satellite
☐ c. Radiodetermination Satellite
☐ d. Earth Exploration Satellite
☐ e. Direct to Home Fixed Satellite
☐ f. Digital Audio Radio Service
☐ g. Other (please specify)

21. STATUS: Choose the button next to the applicable status. Choose only one.

☐ Common Carrier ☒ Non-Common Carrier

22. If earth station applicant, check all that apply.

- ☒ Using U.S. licensed satellites
☒ Using Non-U.S. licensed satellites

23. If applicant is providing INTERNATIONAL COMMON CARRIER service, see instructions regarding Sec. 214 filings. Choose one. Are these facilities:

☐ Connected to a Public Switched Network ☐ Not connected to a Public Switched Network ☒ N/A

24. FREQUENCY BAND(S): Place an 'X' in the box(es) next to all applicable frequency band(s).

- ☐ a. C-Band (4/6 GHz) ☒ b. Ku-Band (12/14 GHz)
☒ c. Other (Please specify upper and lower frequencies in MHz.)

Frequency Lower: Frequency Upper: (Please specify additional frequencies in an attachment)

TYPE OF STATION

25. CLASS OF STATION: Choose the button next to the class of station that applies. Choose only one.

- ☒ a. Fixed Earth Station
☐ b. Temporary-Fixed Earth Station
☐ c. 12/14 GHz VSAT Network
☐ d. Mobile Earth Station
☐ e. Geostationary Space Station
☐ f. Non-Geostationary Space Station
☐ g. Other (please specify)

26. TYPE OF EARTH STATION FACILITY:

☒ Transmit/Receive ☐ Transmit-Only ☐ Receive-Only ☐ N/A

"For Space Station applications, select N/A."

PURPOSE OF MODIFICATION

27. The purpose of this proposed modification is to: (Place an 'X' in the box(es) next to all that apply.)

- ☐ a -- authorization to add new emission designator and related service
☐ b -- authorization to change emission designator and related service
☒ c -- authorization to increase EIRP and EIRP density
☐ d -- authorization to replace antenna
☒ e -- authorization to add antenna
☐ f -- authorization to relocate fixed station
☐ g -- authorization to change frequency(ies)

- ☐ h -- authorization to add frequency
- ☐ i -- authorization to add Points of Communication (satellites & countries)
- ☐ j -- authorization to change Points of Communication (satellites & countries)
- ☐ k -- authorization for facilities for which environmental assessment and radiation hazard reporting is required
- ☐ l -- authorization to change orbit location
- ☐ m -- authorization to perform fleet management
- ☐ n -- authorization to extend milestones
- ☐ o -- Other (Please specify)

ENVIRONMENTAL POLICY

28. Would a Commission grant of any proposal in this application or amendment have a significant environmental impact as defined by 47 CFR 1.1307? If YES, submit the statement as required by Sections 1.1308 and 1.1311 of the Commission's rules, 47 C.F.R. 1.1308 and 1.1311, as an exhibit to this application. A Radiation Hazard Study must accompany all applications for new transmitting facilities, major modifications, or major amendments. ☐ Yes ☒ No **RF Study**

ALIEN OWNERSHIP Earth station applicants not proposing to provide broadcast, common carrier, aeronautical en route or aeronautical fixed radio station services are not required to respond to Items 30-34.

29. Is the applicant a foreign government or the representative of any foreign government? ☐ Yes ☒ No
30. Is the applicant an alien or the representative of an alien? ☐ Yes ☐ No ☒ N/A
31. Is the applicant a corporation organized under the laws of any foreign government? ☐ Yes ☐ No ☒ N/A
32. Is the applicant a corporation of which more than one-fifth of the capital stock is owned of record or voted by aliens or their representatives or by a foreign government or representative thereof or by any corporation organized under the laws of a foreign country? ☐ Yes ☐ No ☒ N/A
33. Is the applicant a corporation directly or indirectly controlled by any other corporation of which more than one-fourth of the capital stock is owned of record or voted by aliens, their representatives, or by a foreign government or representative thereof or by any corporation organized under the laws of a foreign country? ☐ Yes ☐ No ☒ N/A
34. If any answer to questions 29, 30, 31, 32 and/or 33 is Yes, attach as an exhibit an identification of the aliens or foreign entities, their nationality, their relationship to the applicant, and the percentage of stock they own or vote.

BASIC QUALIFICATIONS

35. Does the Applicant request any waivers or exemptions from any of the Commission's Rules? ☐ Yes ☒ No
If Yes, attach as an exhibit, copies of the requests for waivers or exceptions with supporting documents.
36. Has the applicant or any party to this application or amendment had any FCC station authorization or license revoked or had any application for an initial, modification or renewal of FCC station authorization, license, or construction permit denied by the Commission? If Yes, attach as an exhibit, an explanation of circumstances. ☒ Yes ☐ No
37. Has the applicant, or any party to this application or amendment, or any party directly or indirectly controlling the applicant ever been convicted of a felony by any state or federal court? If Yes, attach as an exhibit, an explanation of circumstances. ☐ Yes ☒ No
38. Has any court finally adjudged the applicant, or any person directly or indirectly controlling the applicant, guilty of unlawfully monopolizing or attempting unlawfully to monopolize radio communication, directly or indirectly, through control of manufacture or sale of radio apparatus, exclusive traffic arrangement or any other means or unfair methods of competition? If Yes, attach as an exhibit, an explanation of circumstances ☐ Yes ☒ No
39. Is the applicant, or any person directly or indirectly controlling the applicant, currently a party in any pending matter referred to in the preceding two items? If yes, attach as an exhibit, an explanation of the circumstances. ☐ Yes ☒ No
40. If the applicant is a corporation and is applying for a space station license, attach as an exhibit the names, address, and citizenship of those stockholders owning a record and/or voting 10 percent or more of the Filer's voting stock and the percentages so held. In the case of fiduciary control, indicate the beneficiary(ies) or class of beneficiaries. Also list the names and addresses of the officers and directors of the Filer.
41. By checking Yes, the undersigned certifies, that neither applicant nor any other party to the application is

subject to a denial of Federal benefits that includes FCC benefits pursuant to Section 5301 of the Anti-Drug Act of 1988, 21 U.S.C. Section 862, because of a conviction for possession or distribution of a controlled substance. ☒ Yes ☐ No
See 47 CFR 1.2002(b) for the meaning of "party to the application" for these purposes.

42a. Does the applicant intend to use a non-U.S. licensed satellite to provide service in the United States? If Yes, ☒ Yes ☐ No, answer 42b and attach an exhibit providing the information specified in 47 C.F.R. 25.137, as appropriate. If No, proceed to question 43.

42b. What administration has licensed or is in the process of licensing the space station? If no license will be issued, what administration has coordinated or is in the process of coordinating the space station? See Attachment A

43. Description. (Summarize the nature of the application and the services to be provided). See Attachment A. Attachment A

43a. Geographic Service Rule Certification

By selecting A, the undersigned certifies that the applicant is not subject to the geographic service or geographic coverage requirements specified in 47 C.F.R. Part 25. ☒ A

By selecting B, the undersigned certifies that the applicant is subject to the geographic service or geographic coverage requirements specified in 47 C.F.R. Part 25 and will comply with such requirements. ☐ B

By selecting C, the undersigned certifies that the applicant is subject to the geographic service or geographic coverage requirements specified in 47 C.F.R. Part 25 and will not comply with such requirements because it is not feasible as a technical matter to do so, or that, while technically feasible, such services would require so many compromises in satellite design and operation as to make it economically unreasonable. A narrative description and technical analysis demonstrating this claim are attached. ☐ C

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CERTIFICATION

The Applicant waives any claim to the use of any particular frequency or of the electromagnetic spectrum as against the regulatory power of the United States because of the previous use of the same, whether by license or otherwise, and requests an authorization in accordance with this application. The applicant certifies that grant of this application would not cause the applicant to be in violation of the spectrum aggregation limit in 47 CFR Part 20. All statements made in exhibits are a material part hereof and are incorporated herein as if set out in full in this application. The undersigned, individually and for the applicant, hereby certifies that all statements made in this application and in all attached exhibits are true, complete and correct to the best of his or her knowledge and belief, and are made in good faith.

44. Applicant is a (an): (Choose the button next to applicable response.)

- ☐ Individual
- ☐ Unincorporated Association
- ☐ Partnership
- ☒ Corporation
- ☐ Governmental Entity
- ☐ Other (please specify)

45. Name of Person Signing
Robert Hanson

46. Title of Person Signing
Vice President

WILLFUL FALSE STATEMENTS MADE ON THIS FORM ARE PUNISHABLE BY FINE AND / OR IMPRISONMENT (U.S. Code, Title 18, Section 1001), AND/OR REVOCATION OF ANY STATION AUTHORIZATION (U.S. Code, Title 47, Section 312(a)(1)), AND/OR FORFEITURE (U.S. Code, Title 47, Section 503).

SATELLITE EARTH STATION AUTHORIZATIONS FCC Form 312 - Schedule B:(Technical and Operational Description)

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Location of Earth Station Site

E1: Site Identifier: Site 1

E5. Call Sign: E070218

E2: Contact Name Mr. Mark DeSantis

E6. Phone Number: 732-739-2874

E3. Street:	MTN License Corp. 200 Telegraph Hill Road	E7. City:	Holmdel
E4. State	NJ	E8. County:	Monmouth
E10. Area of Operation:		E9. Zip Code	07733
E11. Latitude:	40 ° 23 ' 42.0 " N	Holmdel, NJ	
E12. Longitude:	74 ° 10 ' 25.0 " W		
E13. Lat/Lon Coordinates are:	<input type="radio"/> NAD-27	<input checked="" type="radio"/> NAD-83	<input type="radio"/> N/A
E14. Site Elevation (AMSL):	108.7 meters		

E15. If the proposed antenna(s) operate in the Fixed Satellite Service (FSS) with geostationary satellites, do(es) the proposed antenna(s) comply with the antenna gain patterns specified in Section 25.209(a) and (b) as demonstrated by the manufacturer's qualification measurement? If NO, provide as a technical analysis showing compliance with two-degree spacing policy.	<input type="radio"/> Yes <input type="radio"/> No <input type="radio"/> N/A
E16. If the proposed antenna(s) do not operate in the Fixed Satellite Service (FSS), or if they operate in the Fixed Satellite Service (FSS) with non-geostationary satellites, do(es) the proposed antenna(s) comply with the antenna gain patterns specified in Section 25.209(a2) and (b) as demonstrated by the manufacturer's qualification measurements?	<input type="radio"/> Yes <input type="radio"/> No <input checked="" type="radio"/> N/A
E17. Is the facility operated by remote control? If YES, provide the location and telephone number of the control point.	<input type="radio"/> Yes <input checked="" type="radio"/> No
E18. Is frequency coordination required? If YES, attach a frequency coordination report as	<input type="radio"/> Yes <input checked="" type="radio"/> No
E19. Is coordination with another country required? If YES, attach the name of the country(ies) and plot of coordination contours as	<input type="radio"/> Yes <input checked="" type="radio"/> No
E20. FAA Notification - (See 47 CFR Part 17 and 47 CFR part 25.113(c)) Where FAA notification is required, have you attached a copy of a completed FCC Form 854 and/or the FAA's study regarding the potential hazard of the structure to aviation? FAILURE TO COMPLY WITH 47 CFR PARTS 17 AND 25 WILL RESULT IN THE RETURN OF THIS APPLICATION.	<input type="radio"/> Yes <input checked="" type="radio"/> No

POINTS OF COMMUNICATION

Satellite Name:TELSTAR 11N USASAT26A 37.55 W.L. If you selected OTHER, please enter the following:	
E21. Common Name:	E22. ITU Name:
E23. Orbit Location:	E24. Country:
Satellite Name:ALSAT ALL AUTHORIZED U.S. ALSAT If you selected OTHER, please enter the following:	
E21. Common Name:	E22. ITU Name:
E23. Orbit Location:	E24. Country:
Satellite Name:ESTRELA DO SUL 1 BSAT-1 63 W.L. If you selected OTHER, please enter the following:	
E21. Common Name:	E22. ITU Name:
E23. Orbit Location:	E24. Country:

POINTS OF COMMUNICATION (Destination Points)

E25. Site Identifier:	
E26. Common Name:	E27. Country:

ANTENNA

Site ID	E28. Antenna Id	E29. Quantity	E30. Manufacturer	E31. Model	E32. Antenna Size	E41/42. Antenna Gain Transmint and/or Recieve(____dBi at ____GHz)
Site 1	HOM-E6.3-1	1	Vertex	6.3 KXK1	6.3	55.7 dBi at 11.95
Site 1	HOM-E6.3-1	1	Vertex	6.3 KXK1	6.3	57.5 dBi at 14.25

E28. Antenna	E33/34. Diameter	E35. Above Ground	E36. Above Sea	E37. Building Height Above	E38. Total Input Power	E39. Maximum Antenna Height	E40. Total EIRP for al
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Id	Minor/Major (meters)	Level (meters)	Level (meters)	Ground Level (meters)	at antenna flange(Watts)	Above Rooftop (meters)	carriers (dBW)
HOM-E6.3-1	6.3/6.3	7.6	116.3	0.0	357.45	0.0	83.03

FREQUENCY

E28. Antenna Id	E43/44. Frequency Bands(MHz)	E45. T/R Mode	E46. Antenna Polarization (H,V,L,R)	E47. Emission Designator	E48. Maximum EIRP per Carrier (dBW)	E49. Maximum EIRP Density per Carrier (dBW/4kHz)
HOM-E6.3-1	11700 12200	R	Horizontal and Vertical	40M5G7W	0.0	0.0
E50. Modulation and Services Digital Data Services						
HOM-E6.3-1	13800 14500	T	Horizontal and Vertical	40M5G7W	83.03	42.98
E50. Modulation and Services Digital Data Services						

FREQUENCY COORDINATION

E28. Antenna Id	E51. Satellite Orbit Type	E52/53. Frequency Limits (MHz)	E54/55. Range of Satellite Arc Eastern/Western Limit	E56. Earth Station Azimuth Angle Eastern Limit	E57. Antenna Elevation Angle Eastern Limit	E58. Earth Station Azimuth Angle Western Limit	E59. Antenna Elevation Angle Western Limit	E60. Maximum EIRP Density toward the Horizon (dBW/4kHz)
HOM-E6.3-1	Geostationary	11700 12200	17.0/143.0	112.7	16.0	255.9	7.3	0.0
	Geostationary	13800 14500	17.0/143.0	112.7	16.0	255.9	7.3	55.0

REMOTE CONTROL POINT LOCATION

E61. Call Sign			E66. Phone Number	
<p>NOTE: Please enter the callsign of the controlling station, not the callsign for which this application is being filed.</p>				
E62. Street Address				
E63. City		E68. County		E67/68. State/Country /
				E64. Zip Code

FCC NOTICE REQUIRED BY THE PAPERWORK REDUCTION ACT

The public reporting for this collection of information is estimated to average 2 hours per response, including the time for reviewing instructions, searching existing data sources, gathering and maintaining the required data, and completing and reviewing the collection of information. If you have any comments on this burden estimate, or how we can improve the collection and reduce the burden it causes you, please write to the Federal Communications Commission, AMD-PERF, Paperwork Reduction Project (3060-0678), Washington, DC 20554. We will also accept your comments regarding the Paperwork Reduction Act aspects of this collection via the Internet if you send them to PRA@fcc.gov. PLEASE DO NOT SEND COMPLETED FORMS TO THIS ADDRESS.

Remember - You are not required to respond to a collection of information sponsored by the Federal government, and the government may not conduct or sponsor this collection, unless it displays a currently valid OMB control number or if we fail to provide you with this notice. This collection has been assigned an OMB control number of 3060-0678.

THE FOREGOING NOTICE IS REQUIRED BY THE PAPERWORK REDUCTION ACT OF 1995, PUBLIC LAW 104-13, OCTOBER 1, 1995, 44 U.S.C. SECTION 3507.

MTN License Corp.
Modification Application
July 2010
Page 1 of 2

Description of Application

With this application, MTN License Corp. ("MTN") requests modification of its Ku-band fixed-satellite service earth station operated under Call Sign E070218 to add a new 6.3 meter antenna. The proposed new antenna (designated HOM-E6.3-1) will transmit and receive in the extended Ku-band using the 13.8-14.0 GHz frequencies as well as in the conventional Ku-band. All extended Ku-band transmissions will communicate with Estrela do Sul 1 (Telstar 14), located in the 63° W.L. orbital slot, or Telstar 11N, located in the 37.55 W.L. orbital slot.

MTN will operate in the 13.8-14.0 GHz band consistent with footnote US356 of the U.S. Table of Frequency Allocations, 47 C.F.R. §2.106, and Section 25.204(f) of the Commission's rules, 47 C.F.R. §25.204(f), which require fixed-satellite service earth stations operating in the 13.75-14.0 GHz band to have an antenna size of at least 4.5 meters and to operate with an equivalent isotropically radiated power ("EIRP") of between 68 and 85 dBW. MTN's proposed fixed-satellite service earth station is 6.3 meters in diameter, which satisfy the antenna size requirement. Its proposed maximum EIRP per carrier is 83.03 dBW, which is less than the maximum EIRP limit. To the extent that MTN's extended Ku-band operations involve carriers whose operations fall below the minimum required EIRP, MTN will not claim any additional interference protection beyond that which it would otherwise be entitled to claim were it operating at the minimum 68 dBW EIRP limit. Under these circumstances, it is appropriate for the Commission to consider that MTN's minimum EIRP is compliant with Section 25.204(f).

Use of Non-U.S. Licensed Satellites

MTN specifies, pursuant to Section 25.137(a) of the Commission's rules, 47 C.F.R. § 25.137(a), that the only non-U.S. licensed satellites to be accessed by the antenna proposed to be authorized under Call Sign E070218 are those included on the FCC's Permitted Space Station List. With respect to Estrela do Sul 1, which will be used as one of the points of communication for the 13.8-14.0 GHz band, the licensing state (Brazil) is a WTO member and thus is presumed to provide effective competitive opportunities for U.S.-licensed satellite systems. MTN notes that further information on the satellite is not required here, as there are existing earth stations, including E070218, authorized to communicate with the space craft under ALSAT in 14.0-14.5 GHz, as well as in the 13.8-14.0 GHz band. *See* SES-MFS-20090602-00676, Call Sign E070218; *see also* National Digital Television Center, Inc., Call Sign E030236, File No. SES-LIC-20031022-01447; Telesat Network Services, Inc.; Call Sign KA399; File No. SES-MOD-20040309-00349.

MTN License Corp.
Modification Application
July 2010
Page 2 of 2

Commission Denial of Applications

In 1998, Maritime Telecommunications Network, Inc., which wholly owns the applicant MTN License Corp., applied to the Commission for authority to establish 32 earth stations to provide fixed-satellite service on a primary basis in 17 U.S. seaports. *See Applications of MTN for Fixed Earth Station Licenses*, File Nos. SES-LIC-19980911-01272, *et al.* In a 2000 decision in *Maritime Telecommunications Network, Inc.*, 15 FCC Rcd 23210 (Int'l Bur. 2000) (subsequent history omitted), the International Bureau denied Maritime Telecommunications Network's applications on the ground that the Commission does not have jurisdiction to license earth stations on foreign vessels.

FAA Notification

The 6.3 meter antenna that is the subject of this application is exempt from notification to the Federal Aviation Administration because the antenna is located in an area with structures of a permanent and substantial character that are taller than the antenna itself. *See* 47 C.F.R. § 17.14(a). The antenna has a height above ground level of 7.6 meters. It is surrounded by thirteen existing structures that each have a height above ground level of more than 7.6 meters, with the tallest such structure (located approximately 150 feet from the proposed antenna) having a height of 140 feet above ground level. The thirteen taller structures are located within approximately 300 feet of the subject antenna. Under these circumstances, it is evident beyond all reasonable doubt that the existing and proposed antenna will not adversely affect safety in air navigation.

FCC RF Hazard Compliance Analysis
Prepared by
MTN License Corporation
6.3 Meter Ku-band Operation

In connection with a license application by MTN License Corp. (**MTN**) for operation of a 6.3 Meter Ku-band antenna at the Holmdel earth station, the following assessment is provided of compliance with the FCC limits for maximum permissible exposure (MPE) to RF fields.

Based on the mathematical analyses described herein, the potential RF exposure levels in all areas of possible interest are in compliance with the applicable FCC limit for controlled or occupational exposure. (Access to the earth station antenna is restricted to trained personnel). The proposed operation is therefore in compliance with the FCC regulations and exposure limits.

The sections that follow provide the analysis and conclusions regarding compliance.

1 Operational Data

The relevant data for the subject operation is summarized as follows:

Transmitting Frequency Band:	13.8 – 14.5 GHz
Antenna Manufacturer / Model:	Vertex 6.3 KXX1
Antenna Type:	Aperture (Cassegrain)
Antenna Dimension:	6.3 meters (diameter) (20.67 feet)
Antenna Efficiency:	63 %
Net Power Input to Antenna (at flange):	357.45 watts
Antenna Height AGL:	7.62 meters (25 feet)

2 Applicable MPE Limits

The MPE limits are described in the FCC Rules and Regulations. For the frequency range of interest here, the applicable limit for acceptable, continuous exposure of the general population is 1.0 milliwatt per square centimeter (mW/cm²), and for “controlled” occupational exposure, it is 5.0 mW/cm². As is the case for all antennas at the Holmdel earth station, access to the antenna is restricted to trained MTN personnel, and thus the latter limit applies.

3 FCC Formulas and Calculations

FCC Bulletin OET 65 provides standardized formulas for calculating the power density in both of the areas of interest here: (1) directly in front of the antenna, at the face and farther away but still in the main beam; and (2) to the side of the antenna. Each area of interest will be addressed below and the results of the calculations are given.

3.1 Potential exposure level directly in front of the antenna

The worst-case possible exposure occurs right at the surface (aperture) of the antenna. According to Bulletin OET65, the applicable formula for power density, **S**, at the antenna surface is as follows:

$$S = 4 * P / A$$

Where: **P** represents the antenna input power; and,
A is the surface area of the antenna.

In this case, with 357.45 watts antenna of input power at the flange, an antenna diameter of 6.3 m (20.67 feet), the power density at the antenna surface is 4.59 mW/cm², which is lower than the 5.0 mW/cm² MPE limit. Even so, when a technician needs to perform work in this area (which is more than 11 feet above ground level), standard RF safety procedures will be applied and power to the antenna will be removed during the period of the work.

The formula for near-field, on-axis power density, directly in front of the antenna is as follows:

$$S = 16 * \eta * P / (\pi * D^2)$$

Where: η represents the antenna illumination efficiency; and,
 D is the antenna diameter.

In this case, when we apply an illumination efficiency of 63 %, the result of the calculation is 2.90 mW/cm², which satisfies the occupational MPE limit. The calculated result here is also used in the analysis of potential exposure to the immediate side of the antenna, which is addressed in the subsection that follows.

3.2 Potential exposure level to the side of the antenna

The near-field power density drops off dramatically outside the imaginary cylinder extending from the surface along the axis of the main beam of an aperture antenna. According to Bulletin OET65, if the point of interest is at least one antenna diameter removed from the center of the main beam, the power density at that point would be at least a factor of 100 lower (20 dB) than the value calculated for the equivalent distance in the main beam.

The previous calculation of the power density immediately in front of the antenna) resulted in a value of 2.90 mW/cm², which is equivalent to 57.96% of the limit and is in compliance. Since the RF levels outside the hypothetical cylinder extending from the aperture is lower than inside the cylinder, the RF levels to the side of the antenna are clearly in compliance as well, and at ground level (11.63 feet below) the RF levels would be lower still.

4 Compliance Conclusion

Based on the result of the analysis with regard to the potential exposure levels in all respects – at the aperture of the antenna, to the side of the antenna, and at ground level – and taking into account the access restrictions and standard safety procedures, we conclude that the operation of the 6.3 meter Ku-band antenna by MTN at the Holmdel earth station satisfies the MPE compliance requirements in the FCC regulations.

Report prepared by

Robert Hanson
Vice President Regulatory Affairs
MTN Satellite Division
SeaMobile, Inc.
3044 N Commerce Parkway
Miramar, FL 33025