

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

In the Matter of:

EchoStar Broadcasting Corporation

Application for Modification and Waiver to Communicate with the DBSD G-1 Satellite Using Two Earth Stations (Call Signs E980118 and E020233) over C-Band Frequencies

File No. SES-MOD-2013____-_____
Call Sign E980118

File No. SES-MOD-2013____-_____
Call Sign E020233

**APPLICATION FOR MODIFICATION
AND REQUEST FOR WAIVER**

I. INTRODUCTION

EchoStar Broadcasting Corporation (with its affiliates, “EchoStar”) requests modifications of the above-referenced earth station authorizations (Call Signs E980118 and E020233): (1) to add the New DBSD Satellite Services G.P. (“DBSD”) G-1 satellite (Call Sign S2651) at 92.85° W.L. as a new point of communication for purposes of telemetry, tracking, and control (“TT&C”) operations in certain C-band frequencies on a non-harmful interference basis; and (2) to the extent necessary, to request a waiver of Section 25.202(g) of the Commission’s rules¹ in connection with such operations, because the C-band is not the primary frequency band

¹ 47 C.F.R. § 25.202(g) (requiring TT&C operations to be conducted at the edges of a satellite’s allocated frequency band). EchoStar also requests to add ALSAT as a point of communication for E020233. E980118 already possesses authorization to communicate with satellites on the ALSAT list. *See* IBFS File No. SES-MFS-20090130-00108, Call Sign E980118 (Sept. 13, 2010).

for the DBSD G-1 satellite. EchoStar requests this authority and an associated waiver to permit it to use the requested C-band frequencies with DBSD G-1 on an as-needed, emergency or contingent basis, and to conduct annual reliability testing for such C-band TT&C operations.

EchoStar files these revised applications in response to the July 16, 2013 Commission letters dismissing previous modification requests for these same earth stations without prejudice to refiling.² As reasons for the dismissals, the Commission cited to: 1) the lack of frequency coordination reports for the earth stations; and 2) the lack of responses to items E28 through E60 in Schedule B to the Form 312.³

To address the Commission's concerns, EchoStar has limited its request for communications with DBSD G-1 to only those frequency subsets and power levels that have already been the subject of a frequency coordination report for the referenced earth stations. EchoStar appends these frequency coordination reports to these applications.⁴ Information responsive to Items E28 through E60 of Schedule B had been duly submitted as part of the earth

² Letter from Paul E. Blais, Chief, Systems Analysis Branch, Satellite Division, International Bureau, FCC, to Alison Minea, Corporate Counsel, EchoStar Broadcasting Corporation, *filed in* IBFS File No. SES-MFS-20120612-00507 (July 16, 2013); Letter from Paul E. Blais, Chief, Systems Analysis Branch, Satellite Division, International Bureau, FCC, to Alison Minea, Corporate Counsel, EchoStar Broadcasting Corporation, *filed in* IBFS File No. SES-MFS-20120612-00506 (July 16, 2013).

³ *See supra* note 2.

⁴ These frequency coordination reports were originally filed with the initial applications for authority to operate these earth stations. *See* IBFS File No. SES-LIC-20020820-01427, Call Sign E020233 (filed Aug. 20, 2002); IBFS File No. SES-LIC-19980629-00751, Call Sign E980118 (filed June 29, 1998).

stations' original license applications.⁵ EchoStar submits new Schedule Bs for these earth stations that include slightly revised information in response to these items.⁶

II. THE MODIFICATIONS ARE IN THE PUBLIC INTEREST

The requested authority serves the public interest because it enhances EchoStar's ability to maintain control over DBSD G-1 in the event of an emergency affecting the satellite's primary TT&C frequencies. EchoStar has performed annual reliability testing on select C-band frequencies with DBSD G-1 using the referenced earth stations pursuant to special temporary authority granted by the Commission.⁷

EchoStar provides technical and operational support for the DBSD G-1 satellite.⁸ Primary TT&C for the satellite is conducted using Ka-band frequencies under separate authorization.⁹ In addition, DBSD G-1 is capable of TT&C operations in the C-band as follows:

⁵ See IBFS File No. SES-LIC-20020820-01427, Call Sign E020233 (filed Aug. 20, 2002); IBFS File No. SES-LIC-19980629-00751, Call Sign E980118 (filed June 29, 1998).

⁶ Specifically, EchoStar updates certain emission designator information for both of the referenced earth stations. EchoStar also corrects the antenna identifier for E980118 and corrects the site ID and street name in the street address for E020233. Consistent with Section 25.117(d)(1) of the Commission's rules, 47 C.F.R. § 25.117(d)(1), EchoStar has included in the submitted Schedule Bs only that information that has changed, and so has listed only the *new* points of communication for each earth station, and has not entered frequency coordination information, which has not changed for either earth station.

⁷ See Stamp Grant, IBFS File No. SES-STA-20130517-00416, Call Sign E020233 (June 6, 2013); Stamp Grant, IBFS File No. SES-STA-20130517-00394, Call Sign E980118 (June 6, 2013); Stamp Grant, IBFS File No. SES-STA-20120713-00651, Call Sign E980118 (July 20, 2012); Stamp Grant, IBFS File No. SES-STA-20120713-00652, Call Sign E020233 (July 20, 2012).

⁸ DBSD G-1 is a United Kingdom-flagged satellite operating at the 92.85° W.L. orbital location, authorized under a Letter of Intent ("LOI") to provide Mobile-Satellite Services in the United States in the 2 GHz band. See Stamp Grant, IBFS File No. SAT-MOD-20070919-00129, Call Sign S2651 (Apr. 2, 2008); Stamp Grant, IBFS File No. SAT-AMD-20071129-00166, Call Sign S2651 (Apr. 2, 2008).

Command

5925 – 5930 MHz

6420 – 6425 MHz

Telemetry

3700 – 3705 MHz

4195 – 4200 MHz

Within each of the referenced command bands, there are 21 different command frequencies, selectable by ground command, with center frequencies that are spaced 250 kHz apart from one another. The command receivers can be commanded to utilize any one of the 21 frequencies. Within each of the telemetry bands, there are also 21 different telemetry frequencies, selectable by ground command, with their center frequencies again spaced 250 kHz apart from one another.

EchoStar is party to a coordination agreement with Intelsat License LLC (“Intelsat”), the FCC space station licensee for C-band operations at the 93° W.L. orbital location. Under that agreement, EchoStar may use certain frequencies of the C-band to control DBSD G-1 on an as-needed, emergency or contingent basis.¹⁰ Consistent with this agreement, EchoStar requests authority for its above-captioned earth station to communicate with DBSD G-1 in the following frequency subsets on an as-needed, emergency or contingent basis:

⁹ See Stamp Grant, IBFS File No. SAT-MOD-20070919-00129, Call Sign S2651 (Apr. 2, 2008); Stamp Grant, IBFS File No. SAT-AMD-20071129-00166, Call Sign S2651 (Apr. 2, 2008). On March 2, 2012, the Commission approved the transfer of control over DBSD’s authorizations, including the LOI authorization for the G-1 satellite, to DISH Network Corporation. See DBSD North America, Inc., Debtor-in-Possession; New DBSD Satellite Services G.P., Debtor-in-Possession; Pendrell Corporation, Transferor; and TerreStar License Inc., Debtor-in-Possession; Assignor, and DISH Network Corporation, Transferee; and Gamma Acquisition L.L.C.; Assignee Applications for Consent to Assign/Transfer Control of Licenses and Authorizations of New DBSD Satellite Services G.P., Debtor-in-Possession and TerreStar License Inc., Debtor-in-Possession, *Order*, 27 FCC Rcd. 2250 (2012).

¹⁰ See Narrative, IBFS File No. SES-STA-20130517-00416, Call Sign E020233 (filed May 15, 2013); Narrative, IBFS File No. SES-STA-20130517-00394, Call Sign E980118 (filed May 15, 2013); see also *New ICO Satellite Services G.P.*, 21 FCC Rcd. 14612 ¶ 15 n.43 (2006).

1. Command

The command carriers centered on the following frequencies:

- 5925.0 MHz,
- 5925.5 MHz,
- 6420.0 MHz, and
- 6424.5 MHz.

2. Telemetry

Any of the 21 available center frequencies within the following bands, as further set forth in Table IIa:

- 3700 – 3705 MHz, and
- 4195 – 4200 MHz.

Table IIa: Possible Telemetry Center Frequencies (MHz)

3700.00	3700.25	3700.50	3700.75	3701.00	3701.25	3701.50	3701.75	3702.00	3702.25	3702.50
3702.75	3703.00	3703.25	3703.50	3703.75	3704.00	3704.25	3704.50	3704.75	3705.00	
4195.00	4195.25	4195.50	4195.75	4196.00	4196.25	4196.50	4196.75	4197.00	4197.25	4197.50
4197.75	4198.00	4198.25	4198.50	4198.75	4199.00	4199.25	4199.50	4199.75	4200.00	

In addition, EchoStar requests authority to communicate in the above-referenced frequencies for annual reliability tests with DBSD G-1 in accordance with the coordination procedures set forth in its agreement with Intelsat.

The 5925.0 and 6420.0 MHz command carriers and the 3700.0 and 4200.00 telemetry carriers are centered at the edges of the earth stations' coordinated frequency bands.¹¹ The carrier bandwidths range between approximately 200 kHz and 800 kHz in width. To the extent necessary, EchoStar further requests a waiver of Section 25.203(c) of the Commission's rules to permit EchoStar to operate on these carriers under the conditions and circumstances requested in this application without further frequency coordination.

¹¹ E020233 is coordinated across the entire C-band downlink (from 3700.0 – 4200.0 MHz) and selected portions of the C-band uplink, including the 5925.0-5929.0 and 6420.0-6421.0 MHz bands. See IBFS File No. SES-LIC-20020820-01427, Call Sign E020233 (Oct. 25, 2002). E980118 is coordinated across the C-band downlink and uplink bands (3700.0 – 4200.0 MHz and 5925.0 – 6425.0 MHz). See IBFS File No. SES-MFS-20090130-00108, Call Sign E980118 (Sept. 13, 2010).

Grant of this application will enhance EchoStar's ability to maintain control over DBSD G-1 without causing harmful interference to any other lawful user of spectrum. Intelsat is the only C-band operator within 2 degrees of 92.85° W.L., and as noted above, EchoStar and Intelsat are already parties to a relevant coordination agreement. In addition, EchoStar will have the flexibility to select carriers from the above-requested frequencies so as to avoid interference with nearby C-band operations. In any event, EchoStar will operate on a non-harmful interference basis, and will accept such a condition on the requested authorizations.

III. THE REQUESTED WAIVER IS IN THE PUBLIC INTEREST

Section 25.202(g) of the Commission's rules requires operators of "U.S. domestic satellites" to conduct their TT&C functions in the same frequency bands in which they are providing service.¹² DBSD G-1 carries a secondary C-band TT&C payload.¹³ At the time of DBSD's request for access to the U.S. market, the International Bureau deferred the question of permanent C-band TT&C authority until it was presented "in the context of an earth station application that seeks authority to use [the] C-band" to communicate with DBSD G-1.¹⁴ These applications request such authority in order to maintain control of the satellite when it matters most – in emergency and certain other contingent circumstances.

The Commission may waive its rules for good cause shown, particularly where strict compliance with a rule is inconsistent with the public interest when taking "into account considerations of hardship, equity, or more effective implementation of overall policy."¹⁵ This

¹² 47 C.F.R. § 25.202(g).

¹³ See Stamp Grant, IBFS File Nos. SAT-MOD-20070919-00129, Call Sign S2651 (Apr. 2, 2008); SAT-AMD-20071129-00166, Call Sign S2651 (Apr. 2, 2008).

¹⁴ See Stamp Grant, IBFS File Nos. SAT-MOD-20070919-00129, Call Sign S2651 (Apr. 2, 2008); SAT-AMD-20071129-00166, Call Sign S2651 (Apr. 2, 2008).

¹⁵ 47 C.F.R. § 1.3; *WAIT Radio v. FCC*, 418 F.2d 1153, 1159 (D.C. Cir. 1969).

standard is met here. The DBSD G-1 C-band TT&C frequencies use an omnidirectional antenna that facilitates the reestablishment of communications with the spacecraft in emergency or contingent situations. EchoStar seeks authority to use the C-band only in those circumstances that require access to this omnidirectional antenna. The waiver will therefore enhance EchoStar's ability to maintain control over the satellite across a broader array of circumstances than would otherwise be possible. The Commission has recognized that coordinated, out-of-band TT&C operations can serve the public interest by giving operators the flexibility to operate consistent with underlying technical and operational objectives.¹⁶ Because the DBSD G-1 C-band operations are both coordinated and interim in nature, this enhanced capability can be achieved without causing harmful interference or any other offsetting public interest harms.¹⁷ Therefore, the Commission should grant the waiver based on good cause.

IV. CONCLUSION

EchoStar respectfully requests grant of the requested modifications and, to the extent necessary, a waiver of Section 25.202(g), as in the public interest.

¹⁶ See Astrolink Int'l LLC, *Order and Authorization*, 15 FCC Rcd. 23738 ¶ 9 (2000).

¹⁷ See Echostar Satellite LLC, *Order and Authorization*, 20 FCC Rcd. 4281 ¶ 6 (2005) (noting that the short term nature of the proposed out-of-band TT&C operations militated in favor of a waiver).

Respectfully submitted,

/s/

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September 5, 2013

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PANTELIS MICHALOPOULOS
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January 15, 1998

VIA HAND DELIVERY

Ms. Magalie Salas
Secretary
Federal Communications Commission
International Bureau - Earth Stations
P.O. Box 358160
Pittsburgh, PA 15251-5160

**Re: EchoStar North America Corporation
Application for a 9.0 Meter C-Band Transmit/Receive Earth Station
Cheyenne, Wyoming
File No.:**

Dear Ms. Salas:

On behalf of EchoStar North America Corporation, a Colorado corporation formerly known as EchoStar Licensee Corporation, a wholly-owned subsidiary of EchoStar Satellite Corporation, enclosed for filing please find an original and two copies of a completed FCC Form 312 earth station application for a 9.0 meter transmit/receive earth station in the C-band.

Also enclosed is a check in the amount of \$1,855.00 for the applicable filing fee, a completed FCC Form 159, and an additional copy of the application, which we ask you to date stamp and return with our messenger.

Respectfully submitted,



Pantelis Michalopoulos

Received

JAN 28 1998

Satellite and
Radiocommunications Division
International Bureau

Enclosures

TYPE OF SERVICE

20. NATURE OF SERVICE: This filing is for an authorization to provide or use the following type(s) of service(s): Place an "X" in the box(es) next to all that apply.

- a. Fixed Satellite
- b. Mobile Satellite
- c. Radiodetermination Satellite
- d. Earth Exploration Satellite
- e. Other (please specify) **Broadcasting Satellite**

21. STATUS: Place an "X" in the box next to the applicable status. Mark only one box.

- a. Common Carrier
- b. Non-Common Carrier

22. If earth station applicant, place an "X" in the box(es) next to all that apply.

- a. Using U.S. licensed satellites
- b. Using Non-U.S. licensed satellites

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

- a. Connected to the Public Switched Network
 - b. Not connected to the 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) _____

TYPE OF STATION

25. CLASS OF STATION: Place an "X" in the box next to the class of station that applies. Mark only one box.

- a. Fixed Earth Station
- b. Temporary Fixed Earth Station
- c. 12/14 GHz VSAT Network
- d. Mobile Earth Station
- e. Space Station
- f. Other (Specify) _____

If space station applicant, go to Question 27.

26. TYPE OF EARTH STATION FACILITY: Mark only one box.

- a. Transmit/Receive
- b. Transmit-Only
- c. Receive-Only

PURPOSE OF MODIFICATION OR AMENDMENT

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

- | | |
|---|--------------------------|
| a. authorization to add new emission designator and related service | <input type="checkbox"/> |
| b. authorization to change emission designator and related service | <input type="checkbox"/> |
| c. authorization to increase EIRP and EIRP density | <input type="checkbox"/> |
| d. authorization to replace antenna | <input type="checkbox"/> |
| e. authorization to add antenna | <input type="checkbox"/> |
| f. authorization to relocate fixed station | <input type="checkbox"/> |
| g. authorization to change assigned frequency(ies) | <input type="checkbox"/> |
| h. authorization to add Points of Communication (satellites & countries) | <input type="checkbox"/> |
| i. authorization to change Points of Communication (satellites & countries) | <input type="checkbox"/> |
| j. authorization for facilities for which environmental assessment and radiation hazard reporting is required | <input type="checkbox"/> |
| k. Other (Please Specify) | <input type="checkbox"/> |
- N/A

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?

- YES
- NO

If YES, submit the statement as required by Sections 1.1308 and 1.1311 of the Commission's rules, 47 CFR §§ 1.1308 and 1.1311, as Exhibit A to this application.

A Radiation Hazard Study must accompany all applications as Exhibit B for new transmitting facilities, major modifications, or major amendments. Refer to OET Bulletin 65.

FCC 312
Main Form
FEDERAL COMMUNICATIONS COMMISSION
APPLICATION FOR SATELLITE SPACE AND EARTH STATION AUTHORIZATIONS

PAYOR AND FILING FEE INFORMATION

1 Payor Name EchoStar North America Corp., F/K/A EchoStar Licensee Corp.		2 Daytime Telephone Number (303) 799-8222	
3 Mailing Street Address or P O Box 90 Inverness Circle East		4 FCC Account Number 0841282886	
5 City Englewood		6 State CO	7 Zip Code 80112
8 Payment Type Code BAX	9 Quantity 1	10 Fee Due for Payment Type Code in (i) \$1,855.00	11 Total Amount Paid \$1,855.00
		12 FCC Use Only	

APPLICANT INFORMATION

1 Legal Name of Applicant EchoStar North America Corp., F/K/A EchoStar Licensee Corp.		3 Voice Telephone Number (303) 799-8222	
4 Other Name Used for Doing Business (if any)		5 Fax Telephone Number (303) 799-0354	
5 Mailing Street Address or P O Box 90 Inverness Circle East ATTENTION: David K. Moskowitz		6 City Englewood	7 State / Country (if not U.S.A.) CO
9 Name of Contact Representative (if other than applicant) Pantelis Michalopoulos		10 Voice Telephone Number (202) 429-3000	8 Zip Code 80112
11 Firm or Company Name Steptoe & Johnson LLP		12 Fax Telephone Number (202) 429-3902	
13 Mailing Street Address or P O Box 1330 Connecticut Avenue, N.W. ATTENTION		14 City Washington	15 State / Country (if not U.S.A.) D.C.
		16 Zip Code 20036	

CLASSIFICATION OF FILING

17 Place an "X" in the box next to the classification that applies to this filing for both questions a and b. Mark only one box for 17a and only one box for 17b.

<input checked="" type="checkbox"/> a1 Earth Station	<input checked="" type="checkbox"/> b1 Application for License of New Station	<input type="checkbox"/> b4 Modification of License or Registration
<input type="checkbox"/> a2 Space Station	<input type="checkbox"/> b2 Application for Registration of New Domestic Receiver (Only Station)	<input type="checkbox"/> b5 Assignment of License or Registration
<input type="checkbox"/> b3 Amendment to a Pending Application	<input type="checkbox"/> b6 Transfer of Control of License or Registration	<input type="checkbox"/> b7 Notification of Minor Modification

18 If this filing is in reference to an existing station, enter:
 (a) Call sign of station: N/A

19 If this filing is an amendment to a pending application enter:
 (a) Date pending application was filed: N/A
 (b) File number of pending application: N/A

Received
JAN 28 1993

Satellite and
 Telecommunications Division
 (b) Copyrighted Material

ALIEN OWNERSHIP

- 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
- 31. Is the applicant a corporation organized under the laws of any foreign government? YES NO
- 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
- 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
- 34. If any answer to questions 29, 30, 31, 32 and/or 33 is Yes, attach as Exhibit C 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 Exhibit D, copies of the requests for waivers or exceptions with supporting documents.
- 36. Has the applicant or any party to this application 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 Exhibit E, an explanation of the circumstances. YES NO
- 37. Has the applicant, or any party to this application, or any party directly or indirectly controlling the applicant ever been convicted of a felony by any state or federal court? 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? 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? YES NO
- 40. By checking Yes, the undersigned certifies, that neither the 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. Sec 47 CFR 1.2002(b) for the meaning of "party to the application" for these purposes. YES NO

41. Description. (Summarize the nature of the application and the services to be provided).

The proposed earth station will be used for Telemetry, Tracking and Control ("TT&C") communications with the satellite of EchoStar Satellite Corporation ("ESC"), located at 119° W.L., in the G-band. (This satellite has been duly licensed for TT&C operations in this band.)* Furthermore, pending before the FCC is an application for minor modifications to allow relocation of ESC's satellite from 119° W.L. to 148° W.L. and use of that satellite by EchoStar DBS Corporation. Should approval for this modification be received, the proposed earth station will communicate with that satellite after its relocation as well. Moreover, the earth station will also be used for digital and analog, video and data communication with U.S.-licensed Fixed-Satellite Service satellites in the geostationary arc.

*See EchoStar Satellite Corporation, II FCCR 3016 (1996).

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.

42. Applicant is a (a): (Place an "X" in the box next to applicable response.)

- a. Individual
- b. Unincorporated Association
- c. Partnership
- d. Corporation
- e. Governmental Entity
- f. Other (Please specify) _____

43. Typed Name of Person Signing

David K. Moskowitz

44. Title of Person Signing

Senior Vice President and General Counsel

45. Signature

David K. Moskowitz

46. Date

January 15, 1998

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).

FCC 312
Schedule B

FEDERAL COMMUNICATIONS COMMISSION
SATELLITE EARTH STATION AUTHORIZATIONS
(Technical and Operational Description)

Page 1: Location

License of New Station Registration of New Domestic Receive-Only Station Amendment to a Pending Application Modification of License/Registration Notification of Minor Modification

B1. Location of Earth Station Site: If temporary-fixed, mobile, or VSAT remote facility, specify area of operation and point of contact. If VSAT hub station, give its location. For VSAT networks attach individual Schedule B, Page 1 sheets for each hub station and each remote station. Individually provide the Location, Points of Communications, and Destination Points for each hub and remote station.

B1a. Station Call Sign	B1b. Site Identifier (HUB, REMOTE, etc.)	B1c. Telephone Number	B1j. Geographic Coordinates			B1k. Lat/Long Coordinates are
B1d. Street Address of Station or Area of Operation	B1e. Name of Contact Person		Lat. 41	07	55	<input checked="" type="checkbox"/> NAID 27
530 EchoStar Drive	Karl Jesinghaus		Lon. 104	44	11	<input type="checkbox"/> NAID 83
B1f. City	B1g. County	B1h. State	B1i. Zip Code	B1l. Site Elevation (AMSL)		
Cheyenne	Laramie	WY	82007	1808.9 meters		

B2. Points of Communications: List the names and orbit locations of all satellites with which this earth station will communicate. The entry "ALSAT" is sufficient to identify the names and locations of all satellite facilities licensed by the U.S. All non-U.S. licensed satellites must be listed individually.

Satellite Name and Orbit Location	Satellite Name and Orbit Location	Satellite Name and Orbit Location
ALSAT, including but not limited to:	EchoStar Satellite Corporation at	119° W.L. (TT&C)

B3. Destination points for communications using non-U.S. licensed satellites. For each non-U.S. licensed satellite facility identified in section B2 above, specify the destination point(s) (countries) where the services will be provided by this earth station via each non-U.S. licensed satellite system. Use additional sheets as needed.

Satellite Name	List of Destination Points

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

B4. Earth Station Antenna Facilities: Use additional pages as needed.

(a) Site ID*	(b) Antenna ID**	(c) Quantity	(d) Manufacturer	(e) Model	(f) Antenna Size (meters)	(g) Antenna Gain (Transmit and/or Receive) (dBi at GHz)
		1	Vertex	9 KPC		50.1 at 3.950 GHz 53.5 at 6.175 GHz

B5. Antenna Heights and Maximum Power Limits: (The corresponding Antenna ID in tables B4 and B5 applies to the same antenna)

(a) Antenna ID**	(b) Antenna Structure Registration No	Maximum Antenna Height		(e) Building Height Above Ground Level (meters)***	(f) Maximum Antenna Height Above Rooftop (meters)***	(g) Total Input Power at antenna flange (Watts)	(h) Total EIRP for all carriers (dBW)
		(c) Above Ground Level (meters)	(d) Above Mean Sea Level (meters)				
		9 meter	1817.9	N/A	N/A	1440	85.08

Notes: * If this is an application for a VSAI network, identify the site from H4b, Schedule B, Page 1) where each antenna is located. Also include this Site ID on Schedule B, Page 5
 ** Identify each antenna in VSAI network of multi-antenna station with a unique identifier, such as H4b, H4 b(2) 1, A1, A2, 10M, 12M, 7M, etc. Use this same antenna ID throughout tables B4, B5, B6, and B7 when referring to the same antenna
 *** Attach sketch of site or excerpt from Sec 47 CFR Part 17

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

B6. Frequency Coordination Limits: Use additional pages as needed.

(a) Antenna ID*	(b) Frequency Limits (MHz)	(c) Range of Satellite Arc Eastern Limit**	(d) Range of Satellite Arc Western Limit**	(e) Antenna Elevation Angle Eastern Limit	(f) Antenna Elevation Angle Western Limit	(g) Earth Station Azimuth Angle Eastern Limit	(h) Earth Station Azimuth Angle Western Limit	(i) Maximum ERP Density toward the Horizon (dBW/4KHz)
	5925.000--5.6425.000 MHz	34	139	5.7	31.1	102.9	226.0	9.31
	3700 - 4200 MHz		139	5.7	31.1	102.9	226.0	

* Provide the ANTENNA ID from table B4 to identify the antenna to which each frequency band and orbital arc range is associated

** If operating with geostationary satellites, give the orbital arc limits and the associated elevation and azimuth angles. If operating with non geostationary satellites, give the maximum elevation angle and the maximum azimuth angle range.

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

If VSAT Network, provide the SITE ID (Item B1b) of the station that B8-B13 are in response to (HUB, REMOTE1, etc.): _____

B8. 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 measurements? If NO, provide as Exhibit H, a technical analysis showing compliance with two-degree spacing facility. YES NO

B9. 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? YES NO

B10. Is the facility operated by remote control? If YES, provide the location and telephone number of the control point. YES NO

Remote Control Point Location:

B10a. Street Address			
B10b. City	B10c. Country	B10d. State / Country	B10e. Zip Code
B10f. Telephone Number			
B10g. Call Sign of Control Station (if appropriate)			


B11. Is frequency coordination required? If YES, attach a frequency coordination report as Exhibit I. YES NO

B12. Is coordination with another country required? If YES, attach the name of the country(ies) and plot of coordination contours as Exhibit J. YES NO

B13. 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. YES NO

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 this application, that I am familiar with the Commission's Rules, that I have either prepared or reviewed the engineering information submitted in this application, and that it is complete and accurate to the best of my knowledge and belief.

By: 
Gary Edwards
Manager Satellite Services
Comsearch

Dated: January 13, 1998

EXHIBIT 1

FREQUENCY COORDINATION REPORT

FREQUENCY COORDINATION AND INTERFERENCE
ANALYSIS REPORT

PREPARED FOR
ECHOSTAR NORTH AMERICA CORPORATION
A WHOLLY-OWNED SUBSIDIARY OF ECHOSTAR SATELLITE CORPORATION
CHEYENNE, WY
SATELLITE EARTH STATION

PREPARED BY
COMSEARCH
2002 EDMUND HALLEY DRIVE
RESTON, VIRGINIA 22091
October 24, 1997

TABLE OF CONTENTS

1. CONCLUSIONS
2. SUMMARY OF RESULTS
3. SUPPLEMENTAL SHOWING, RE: PART 25.203(C)
4. EARTH STATION COORDINATION DATA
5. CERTIFICATION

1. CONCLUSIONS

AN INTERFERENCE STUDY CONSIDERING ALL EXISTING, PROPOSED AND PRIOR COORDINATED MICROWAVE FACILITIES WITHIN THE COORDINATION CONTOURS OF THE PROPOSED EARTH STATION DEMONSTRATES THAT THIS SITE WILL OPERATE SATISFACTORILY WITH THE COMMON CARRIER MICROWAVE ENVIRONMENT. FURTHER, THERE WILL BE NO RESTRICTIONS OF ITS OPERATION DUE TO INTERFERENCE CONSIDERATIONS.

2. SUMMARY OF RESULTS

A NUMBER OF GREAT CIRCLE INTERFERENCE CASES WERE IDENTIFIED DURING THE INTERFERENCE STUDY OF THE PROPOSED EARTH STATION. EACH OF THE CASES WHICH EXCEEDED THE INTERFERENCE OBJECTIVE ON A LINE-OF-SIGHT BASIS WAS PROFILED AND THE PROPAGATION LOSSES ESTIMATED USING NBS TN101 (REVISED) TECHNIQUES. THE LOSSES WERE FOUND TO BE SUFFICIENT TO REDUCE THE SIGNAL LEVELS TO ACCEPTABLE MAGNITUDES IN EVERY CASE.

3. SUPPLEMENTAL SHOWING
RE: PART 25.203(C)

PURSUANT TO PART 25.203(C) OF THE FCC RULES AND REGULATIONS,
THE SATELLITE EARTH STATION PROPOSED IN THIS APPLICATION
WAS COORDINATED BY COMSEARCH USING COMPUTER TECHNIQUES
AND IN ACCORDANCE WITH PART 25 OF THE FCC RULES AND
REGULATIONS.

COORDINATION DATA FOR THIS EARTH STATION WAS SENT TO THE
BELOW LISTED CARRIERS WITH A LETTER DATED OCTOBER 22, 1997.

ASIA SKYLINK INC
AT&T COMMUNICATIONS
AT&T WIRELESS SERVICES - COLORADO
AT&T WIRELESS SERVICES - DENVER
BURLINGTON NORTHERN RAILROAD COMPANY
COLORADO INTERSTATE GAS COMPANY
COLORADO STATE DIVISON OF TELECOMM
GREAT PLAINS CABLE TV
LARIMER COUNTY SHERIFF'S DEPARTMENT
MCI TELECOMMUNICATIONS CORPORATION
N.E. COLORADO CELLULAR
NEBRASKA PUBLIC POWER DISTRICT
PATHNET, INC.
PUBLIC SERVICE COMPANY OF COLORADO
TRI-STATE GENERATION & TRANSMISSION ASSN
UA CABLE OF CENTRAL WYOMING - CASPER
UNITED TELEPHONE COMPANY OF THE WEST
US WEST COMMUNICATIONS, INC.
US WEST NEW VECTOR GROUP INC
WESTERN PCS II CORPORATION
WESTERN TELE-COMMUNICATIONS, INC.

4. EARTH STATION COORDINATION DATA

THIS SECTION PRESENTS THE DATA PERTINENT TO FREQUENCY COORDINATION OF THE PROPOSED EARTH STATION WHICH WAS CIRCULATED TO ALL COMMON CARRIERS WITHIN ITS COORDINATION CONTOURS.

SATELLITE EARTH STATION
 FREQUENCY COORDINATION DATA
 10/23/97

Company	ECHOSTAR NORTH AMERICA CORPORATION, A WHOLLY-OWNED SUBSIDIARY OF ECHOSTAR SATELLITE CORPORATION
Owner code	ECHSAT
Earth Station Name, State	CHEYENNE, WY
Latitude (DMS)	41 7 55.7 N
Longitude (DMS)	104 44 11.5 W
Ground Elevation AMSL (Ft/m)	5933.0 / 1808.3
Antenna Centerline AGL (Ft/m)	18.0 / 5.5
Receive Antenna Type:	V40903 VERTEX COMMUNICATI 9 KPC
4 GHz Gain (dBi) / Diameter (m)	50.1 / 9.0
3 dB / 15 dB Half Beamwidth	0.27 / 0.60
Transmit Antenna Type:	V60903 VERTEX COMMUNICATI 9 KPC
6 GHz Gain (dBi) / Diameter (m)	53.5 / 9.0
3 dB / 15 dB Half Beamwidth	0.20 / 0.40
Operating Mode	TRANSMIT AND RECEIVE
Modulation	ANALOG & DIGITAL
Emission / Receive Band (MHz)	36M0F8W, 36M0G7W, 1M00F2D, 82K0F3N, 750KF2D / 3700.0000 - 4200.0000
Emission / Transmit Band (MHz)	36M0F8W, 36M0G7W, 1M00F2D, 82K0F3N, 750KF2D / 5925.0000 - 6425.0000
Max. Available RF Power (dBW)/4 kHz	82K0F3N to 36M0F8W
(dBW)/MHz	-2.70 -0.50
	21.30 23.50
Max. EIRP (dBW)/4 kHz	50.80 53.00
(dBW)/MHz	74.80 77.00
(dBW)	63.91 80.00
Max permissible Interference Power	
4 GHz, 20% (dBW/1 MHz)	-156.0
4 GHz, 0.0100% (dBW/1 MHz)	-146.0
6 GHz, 20% (dBW/4 kHz)	-154.0
6 GHz, 0.0025% (dBW/4 kHz)	-131.0
Range of Satellite Arc (Geostationary)	
Degrees Longitude	34.0 W / 139.0 W
Azimuth Range (Min/Max)	102.9 / 226.0
Corresponding Elevation Angles	5.7 / 31.1
Radio Climate	A
Rain Zone	2
Max Great Circle Coordination Distance (Mi/Km)	
4 GHz	328.6 / 528.8
6 GHz	199.7 / 321.4
Precipitation Scatter contour radius (Mi/Km)	
4 GHz	375.5 / 604.3
6 GHz	98.4 / 158.3

Table of Earth Station Coordination Values
10/23/97

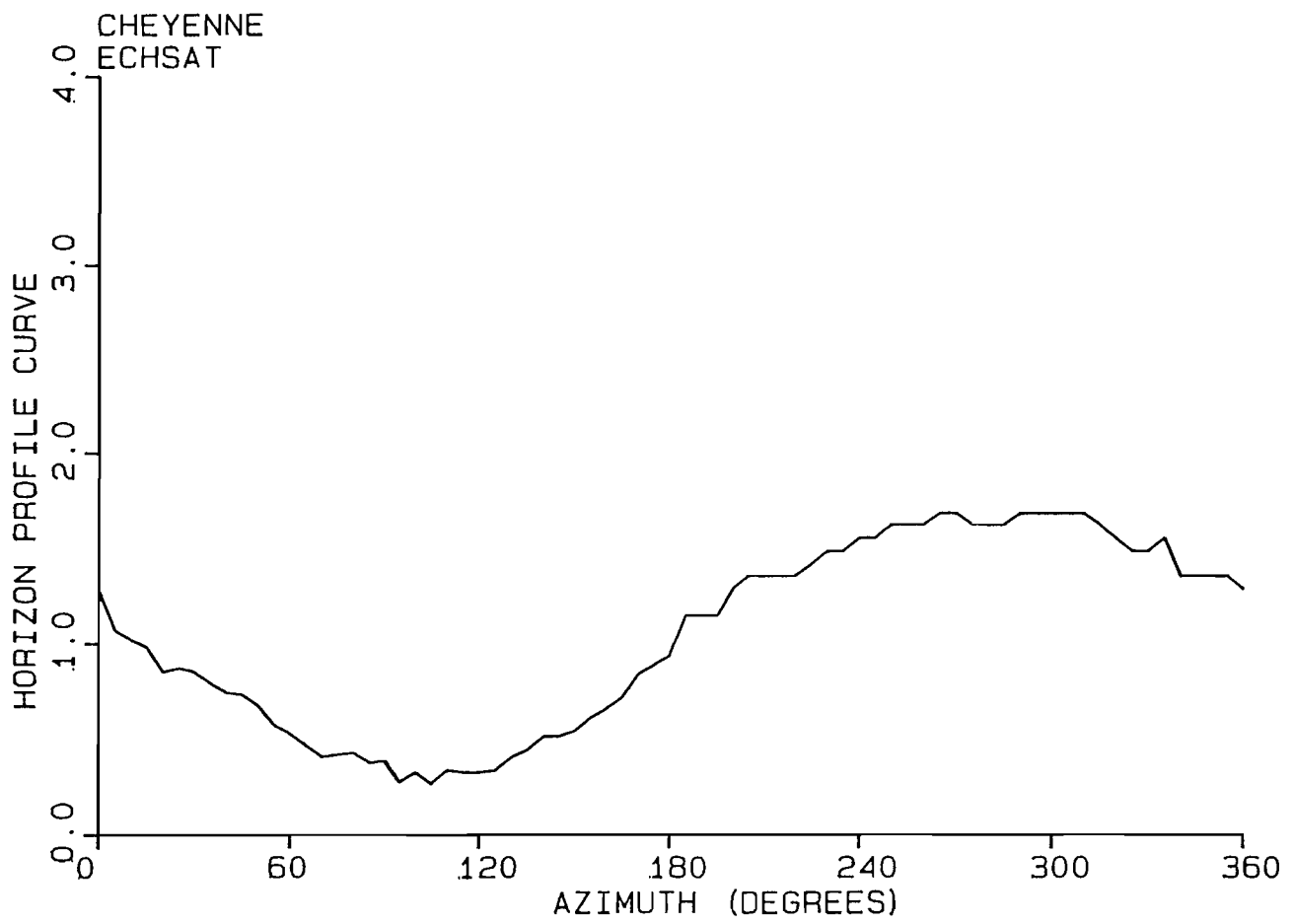
Earth Station Name : CHEYENNE WY
 Owner : ECHOSTAR SATELLITE CORPORATION
 Latitude : 41 7 55.7 N
 Longitude : 104 44 11.5 W
 Ground Elevation (Ft/m) : 5933.0 / 1808.3 AMSL ACL 18.0 Feet AGL
 Antenna Model : VERTEX COMMUNICATI 9 KPC
 Objectives: Receive -156.0 (dBW /1 MHz)
 Transmit -154.0 (dBW /4 kHz) TX Power -0.5 (dBW/4 kHz)

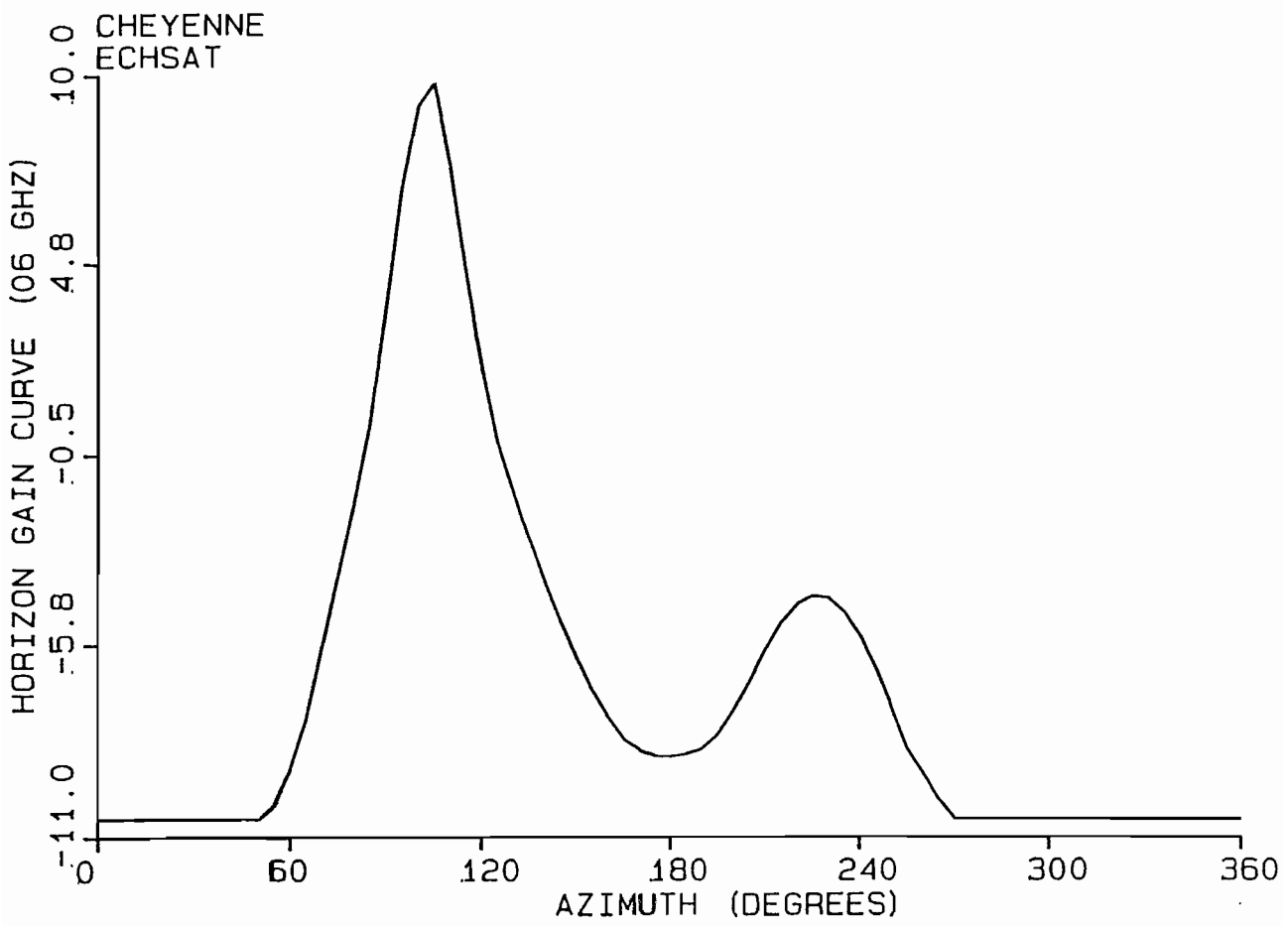
Azimuth (Deg)	Horizon Elevation Angle (Deg)	Antenna Disc. Angle (Deg)	4 GHz		6 GHz	
			Antenna Gain (dBi)	Coordination Distance (Km)	Antenna Gain (dBi)	Coordination Distance (Km)
0	1.29	102.91	-13.90	196.2	-10.50	115.2
5	1.07	97.92	-13.90	202.4	-10.50	120.9
10	1.02	92.94	-13.90	203.9	-10.50	122.3
15	0.98	87.95	-13.90	205.5	-10.50	123.7
20	0.85	82.97	-13.90	209.0	-10.50	129.2
25	0.87	77.99	-13.90	208.1	-10.50	128.4
30	0.85	73.01	-13.90	209.4	-10.50	129.5
35	0.79	68.03	-13.90	212.2	-10.50	132.0
40	0.74	63.06	-13.90	214.7	-10.50	134.2
45	0.73	58.08	-13.90	215.3	-10.50	133.4
50	0.67	53.12	-13.90	218.8	-10.50	136.5
55	0.57	48.16	-13.53	226.0	-10.13	142.4
60	0.52	43.20	-12.54	234.1	-9.14	148.6
65	0.46	38.26	-11.20	246.6	-7.80	158.2
70	0.40	33.33	-8.23	271.7	-5.83	174.6
75	0.41	28.41	-4.26	297.4	-3.86	182.3
80	0.42	23.52	-2.31	309.7	-1.91	189.1
85	0.37	18.71	-0.12	333.3	0.28	203.0
90	0.38	13.99	3.11	357.5	3.51	213.9
95	0.27	9.64	7.10	404.6	6.86	240.7
100	0.32	6.16	8.77	412.1	9.17	246.6
105	0.26	5.85	9.41	528.8	9.81	321.3
110	0.33	8.83	7.10	396.2	7.50	237.1
115	0.32	12.43	4.67	377.9	4.50	224.0
120	0.32	15.94	1.54	352.0	1.94	212.3
125	0.33	19.36	-0.52	335.9	-0.12	205.4
130	0.40	22.62	-1.95	315.7	-1.55	192.7
135	0.44	25.76	-3.20	300.5	-2.80	183.2
140	0.51	28.71	-4.38	284.6	-3.98	171.9
145	0.51	31.51	-6.41	271.2	-5.10	165.4
150	0.54	34.04	-8.94	253.7	-6.12	159.6
155	0.61	36.25	-10.40	240.4	-7.00	151.7
160	0.66	38.14	-11.16	233.2	-7.76	146.0
165	0.72	39.66	-11.76	226.7	-8.36	141.0
170	0.84	40.69	-12.04	218.7	-8.64	134.4
175	0.89	41.34	-12.17	215.5	-8.77	133.1
180	0.94	41.52	-12.20	212.4	-8.80	130.4

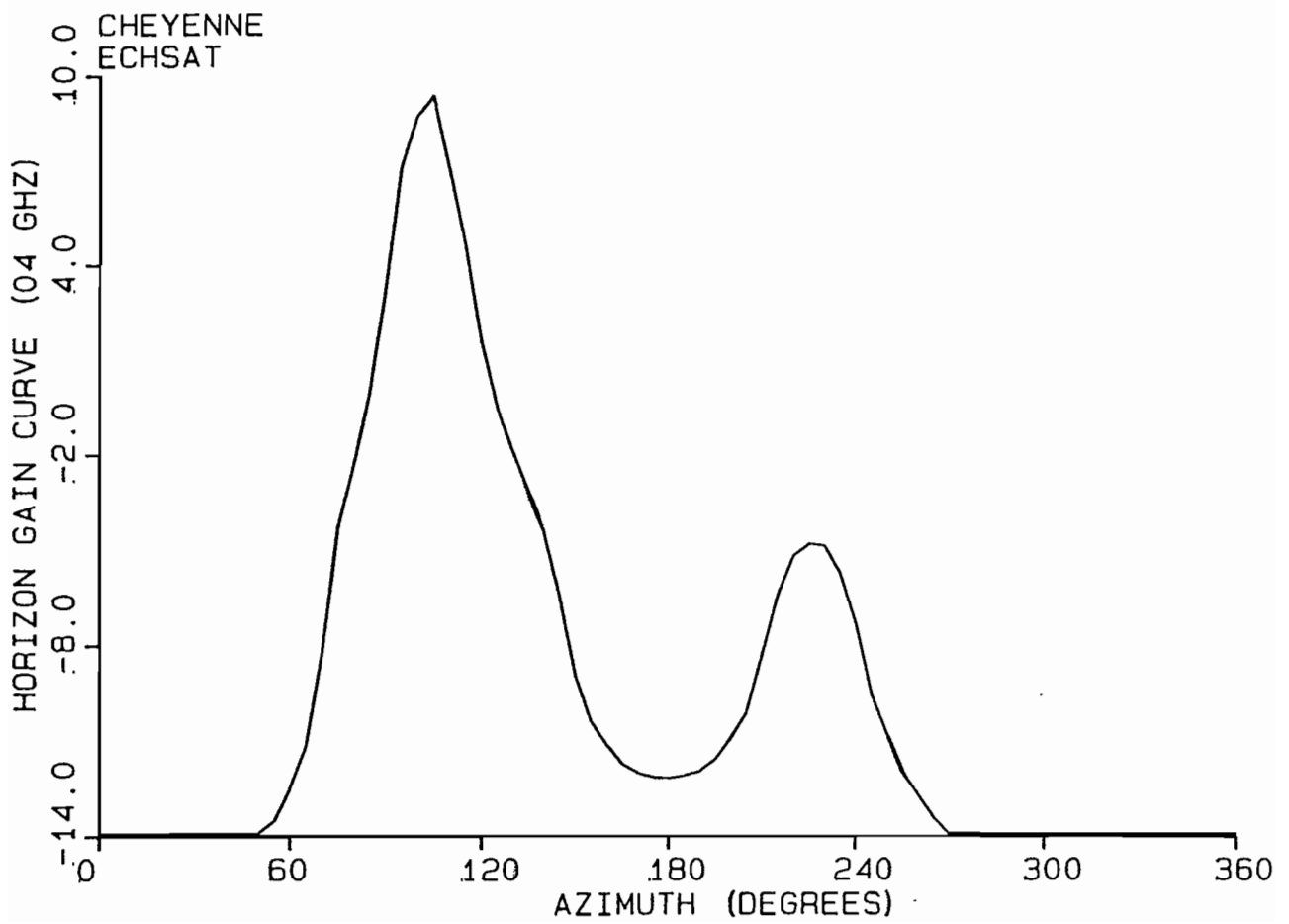
Table of Earth Station Coordination Values
10/23/97

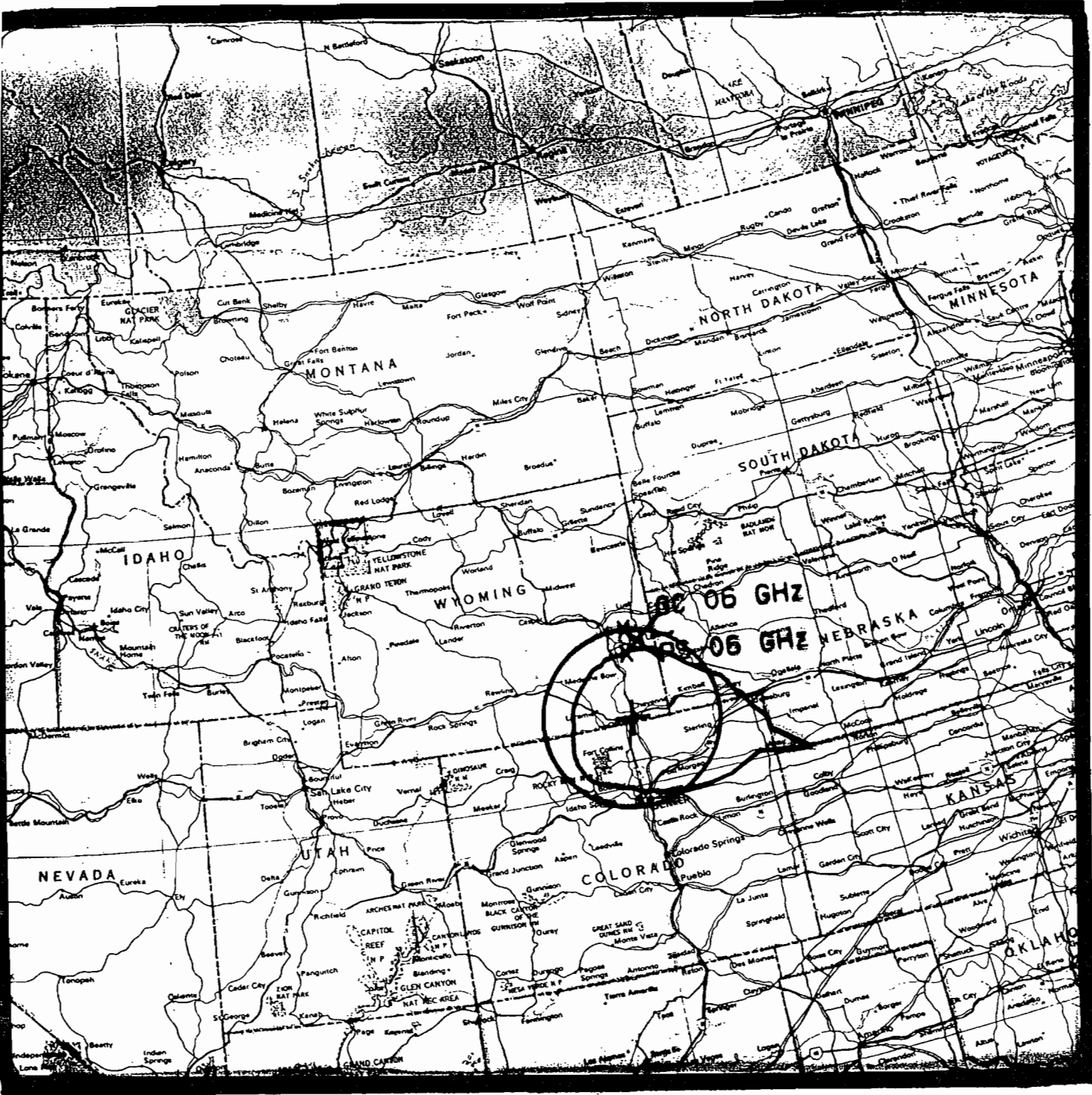
Earth Station Name CHEYENNE WY
 Owner ECHOSTAR SATELLITE CORPORATION
 Latitude 41 7 55.7 N
 Longitude 104 44 11.5 W
 Ground Elevation (Ft/m) 5933.0 / 1808.3 AMSL ACL 18.0 Feet AGL
 Antenna Model VERTEX COMMUNICATI 9 KPC
 Objectives: Receive -156.0 (dBW /1 MHz)
 Transmit -154.0 (dBW /4 kHz) TX Power -0.5 (dBW/4 kHz)

Azimuth (Deg)	Horizon Elevation Angle (Deg)	Antenna Disc. Angle (Deg)	4 GHz		6 GHz	
			Antenna Gain (dBi)	Coordination Distance (Km)	Antenna Gain (dBi)	Coordination Distance (Km)
185	1.15	41.08	-12.12	205.6	-8.72	124.2
190	1.15	40.38	-11.98	206.3	-8.58	124.6
195	1.15	39.25	-11.60	208.0	-8.20	125.8
200	1.29	37.58	-10.93	207.3	-7.53	124.5
205	1.36	35.60	-10.14	209.0	-6.74	125.4
210	1.36	33.38	-8.28	217.9	-5.85	128.4
215	1.36	31.49	-6.39	227.9	-5.10	131.0
220	1.36	30.24	-5.14	235.0	-4.60	132.8
225	1.42	29.65	-4.76	235.0	-4.36	131.9
230	1.49	29.81	-4.82	232.4	-4.42	130.0
235	1.49	30.78	-5.68	227.5	-4.81	128.6
240	1.56	32.38	-7.28	217.0	-5.45	124.7
245	1.56	34.62	-9.52	206.2	-6.35	121.6
250	1.63	37.28	-10.81	200.9	-7.41	116.3
255	1.63	40.38	-11.98	195.5	-8.58	112.5
260	1.63	43.77	-12.65	192.3	-9.25	110.4
265	1.69	47.36	-13.37	187.0	-9.97	106.5
270	1.69	51.17	-13.90	184.4	-10.50	104.9
275	1.63	55.15	-13.90	186.4	-10.50	106.6
280	1.63	59.21	-13.90	186.4	-10.50	106.6
285	1.63	63.35	-13.90	186.4	-10.50	106.6
290	1.69	67.54	-13.90	184.4	-10.50	104.9
295	1.69	71.80	-13.90	184.4	-10.50	104.9
300	1.69	76.10	-13.90	184.4	-10.50	104.9
305	1.69	80.43	-13.90	184.4	-10.50	104.9
310	1.69	84.77	-13.90	184.4	-10.50	104.9
315	1.63	89.13	-13.90	186.4	-10.50	106.6
320	1.56	93.48	-13.90	188.4	-10.50	108.3
325	1.49	97.82	-13.90	190.3	-10.50	110.0
330	1.49	102.15	-13.90	190.3	-10.50	110.0
335	1.56	106.46	-13.90	188.4	-10.50	108.3
340	1.36	110.69	-13.90	194.3	-10.50	113.5
345	1.36	114.90	-13.90	194.3	-10.50	113.5
350	1.36	112.88	-13.90	194.3	-10.50	113.5
355	1.36	107.89	-13.90	194.3	-10.50	113.5



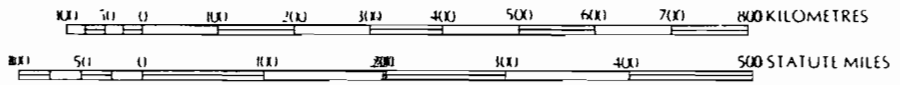




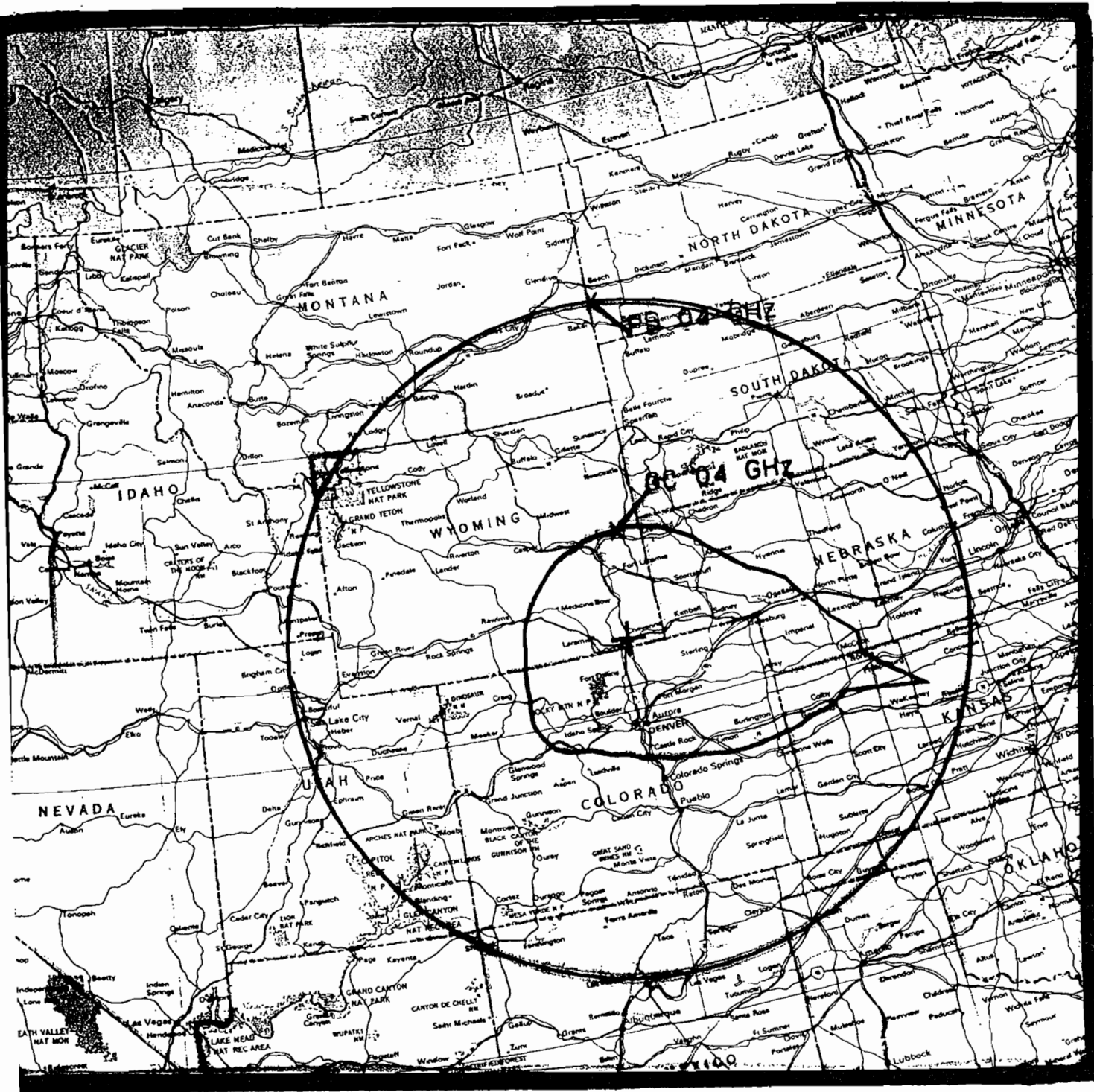


COMSEARCH
 Leadership and Diversity for Wireless

SCALE 1:10,000,000
 ONE INCH EQUALS APPROXIMATELY 158 MILES
 ONE CENTIMETRE EQUALS 100 KILOMETRES



2002 Edmund Halley Drive
 Reston, Virginia 20191
 USA
 TEL 703.620.6300
 FAX 703.476.2697

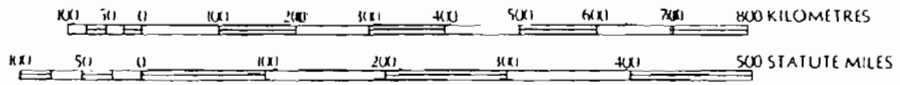


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 SA

Tel: 703.620.6300

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Earth Station Azimuth and Elevation Table
10/23/97

Earth Station Name CHEYENNE WY
 Owner
 Latitude 41 7 55.7 N
 Longitude 104 44 11.5 W
 Ground Elevation (Ft/m) 5933.0 / 1808.3 AMSL ACL 18.0 Feet AGL
 Satellite Arc Range 34.0 W
 139.0 W

Satellite Longitude	Azimuth (Degrees)	Elevation (Degrees)	Satellite Name
34.0	102.9	5.7	
34.5	103.3	6.1	INTELSAT 603
35.0	103.7	6.5	
36.0	104.4	7.2	
37.0	105.1	8.0	
38.0	105.8	8.7	
39.0	106.5	9.5	
40.0	107.2	10.2	
40.5	107.6	10.6	INTELSAT 502
41.0	108.0	10.9	TDRSS - AOR
42.0	108.7	11.7	
43.0	109.5	12.4	PAS 2R
44.0	110.2	13.1	
45.0	111.0	13.9	PAS 1
46.0	111.8	14.6	
47.0	112.6	15.3	
48.0	113.3	16.0	
49.0	114.1	16.8	
50.0	114.9	17.5	INTELSAT 709
51.0	115.8	18.2	
52.0	116.6	18.9	
53.0	117.4	19.6	INTELSAT 706
54.0	118.3	20.3	
55.0	119.1	21.0	INMARSAT 2F4
55.5	119.6	21.4	INMARSAT-2-F5
56.0	120.0	21.7	
57.0	120.9	22.4	
58.0	121.8	23.1	
59.0	122.7	23.8	
60.0	123.6	24.4	
61.0	124.5	25.1	
62.0	125.5	25.8	
63.0	126.4	26.4	
64.0	127.4	27.1	
65.0	128.4	27.7	BRAZILSAT B2
65.1	128.5	27.8	SBTS-1 - BRAZILSAT B2

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10/23/97

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 Satellite Arc Range 34.0 W
 139.0 W

Satellite Longitude	Azimuth (Degrees)	Elevation (Degrees)	Satellite Name
66.0	129.4	28.3	
67.0	130.4	29.0	
68.0	131.4	29.6	
69.0	132.4	30.2	SATCOM SN2
70.0	133.5	30.8	BRAZILSAT B1
70.0	133.5	30.8	SBTS-2 - BRAZILSAT B1
71.0	134.6	31.4	
72.0	135.7	31.9	SATCOM 2R
72.0	135.7	31.9	SATCOM IIR
73.0	136.8	32.5	
74.0	137.9	33.1	GALAXY 6
75.0	139.0	33.6	
76.0	140.2	34.1	COMSTAR D4
76.0	140.2	34.1	COMSTAR D2/D4
77.0	141.4	34.7	
78.0	142.6	35.2	
79.0	143.8	35.7	BRAZILSAT A1
80.0	145.0	36.1	
81.0	146.2	36.6	
82.0	147.5	37.1	SATCOM 6-R
83.0	148.8	37.5	
84.0	150.1	37.9	
85.0	151.4	38.3	GE-2
85.0	151.4	38.3	TELSTAR 302
86.0	152.7	38.7	
87.0	154.1	39.1	SPACENET 3
88.0	155.4	39.5	
89.0	156.8	39.8	TELSTAR 402R
90.0	158.2	40.1	
91.0	159.6	40.4	GALAXY 7
92.0	161.0	40.7	BRAZILSAT A2
93.0	162.5	41.0	
94.0	163.9	41.2	
95.0	165.4	41.4	GALAXY 3R
96.0	166.9	41.6	TELSTAR 301
97.0	168.3	41.8	TELSTAR 401

Earth Station Azimuth and Elevation Table
10/23/97

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 Satellite Arc Range 34.0 W
 139.0 W

Satellite Longitude	Azimuth (Degrees)	Elevation (Degrees)	Satellite Name
98.0	169.8	42.0	
99.0	171.3	42.1	GALAXY 4
99.0	171.3	42.1	GALAXY 6
100.0	172.8	42.2	
101.0	174.3	42.3	DBS 1
101.0	174.3	42.3	AMSC-1
101.0	174.3	42.3	SPACENET 4
102.0	175.8	42.4	
103.0	177.4	42.4	GE-1
104.0	178.9	42.5	
105.0	180.4	42.5	
106.0	181.9	42.4	
107.0	183.4	42.4	
107.5	184.2	42.4	ANIK E2
108.0	185.0	42.3	
109.0	186.5	42.3	
109.2	186.8	42.2	SOLARIDAD-1
110.0	188.0	42.2	
111.0	189.5	42.0	
111.1	189.6	42.0	ANIK E1
112.0	191.0	41.9	
113.0	192.4	41.7	SOLARIDAD-2
114.0	193.9	41.5	
115.0	195.4	41.3	
116.0	196.8	41.1	
116.8	198.0	40.9	MORELOS-2
117.0	198.3	40.8	
118.0	199.7	40.5	
119.0	201.1	40.3	
120.0	202.5	39.9	
121.0	203.9	39.6	
122.0	205.3	39.3	
123.0	206.6	38.9	TELSTAR 303
124.0	208.0	38.5	
125.0	209.3	38.1	GALAXY 5-W
126.0	210.6	37.7	

Earth Station Azimuth and Elevation Table
10/23/97

Earth Station Name CHEYENNE WY
 Owner
 Latitude 41 7 55.7 N
 Longitude 104 44 11.5 W
 Ground Elevation (Ft/m) 5933.0 / 1808.3 AMSL ACL 18.0 Feet AGL
 Satellite Arc Range 34.0 W
 139.0 W

Satellite Longitude	Azimuth (Degrees)	Elevation (Degrees)	Satellite Name
127.0	211.9	37.3	
128.0	213.2	36.8	
129.0	214.4	36.4	
130.0	215.7	35.9	
131.0	216.9	35.4	SATCOM C-3
131.0	216.9	35.4	SATCOM C-3/IR
132.0	218.1	34.9	
133.0	219.3	34.4	GALAXY 1R
133.0	219.3	34.4	GALAXY 1-R
134.0	220.4	33.9	
135.0	221.6	33.3	SATCOM C-4
136.0	222.7	32.8	
137.0	223.8	32.2	SATCOM C-1
138.0	224.9	31.6	
139.0	226.0	31.1	AURORA II/SATCOM C-5
139.0	226.0	31.1	SATCOM C-5/AURORA II

5. CERTIFICATION

I HEREBY CERTIFY THAT I AM THE TECHNICALLY QUALIFIED PERSON RESPONSIBLE FOR THE PREPARATION OF THE FREQUENCY COORDINATION DATA CONTAINED IN THIS APPLICATION, THAT I AM FAMILIAR WITH PARTS 101 AND 25 OF THE FCC RULES AND REGULATIONS, THAT I HAVE EITHER PREPARED OR REVIEWED THE FREQUENCY COORDINATION DATA SUBMITTED WITH THIS APPLICATION, AND THAT IT IS COMPLETE AND CORRECT TO THE BEST OF MY KNOWLEDGE AND BELIEF.

BY:



GARY K. EDWARDS
GROUP MANAGER
COMSEARCH
2002 EDMUND HALLEY DRIVE
RESTON, VIRGINIA 20191

DATED: December 17, 1997

EXHIBIT 2

**RADIATION HAZARD STUDY
(9.0 Meter Antenna)**

ANALYSIS OF NON-IONIZING RADIATION
FOR A 9.0 METER EARTH STATION

This report analyzes the non-ionizing radiation levels for a 9.0 meter earth station. The Office of Engineering and Technology Bulletin, No. 65, Edition 97-01, specifies that there are two separate tiers of exposure limits that are dependent on the situation in which exposure takes place and/or the status of the individuals who are subject to the exposure. The Maximum Permissible Exposure (MPE) limit for persons in a Uncontrolled/Public environment to non-ionizing radiation over a thirty minute period is a power density equal to 1 mW/cm**2 (one milliwatts per centimeter squared). The Maximum Permissible Exposure (MPE) limit for persons in a Controlled/Occupational environment to non-ionizing radiation over a six minute period is a power density equal to 5 mW/cm**2 (five milliwatts per centimeter squared). As demonstrated in the attached declaration of Mr. Brent J. Gale, the proposed earth station will operate in a controlled exposure environment. It is the purpose of this report to determine the power flux densities of the earth station in the far field, near field, transition region, between the subreflector and main reflector surface, at the main reflector surface, and between the antenna edge and the ground.

The following parameters were used to calculate the various power flux densities for this earth station:

Antenna Diameter, (D) = 9.0 meters

Antenna surface area, (Sa) = $\pi (D^2) / 4$ = 63.62 m**2

Feed Flange Diameter, (Df) = 116.8 cm

Area of Feed Flange, (Fa) = $\pi (Df^2) / 4$ = 10714.59 cm**2

Wavelength at 14.2500 GHz, (λ) = 0.049 meters

Transmit Power at Flange, (P) = 1440.00 Watts

Antenna Gain, (Ges) Antenna Gain at = 2.239E+05
6.1750 GHz = 53.5 dBi
Converted to a Power
Ratio Given By:
AntiLog (53.5 / 10)

π , (π) = 3.1415927

Antenna aperture efficiency, (η) = 0.55

1. Far Field Calculations

The distance to the beginning of the far field region can be found by the following equation: (1)

$$\begin{aligned} \text{Distance to the Far Field Region, (Rf)} &= 0.60(D^2) / \lambda \\ &= 1000.4 \text{ m} \end{aligned}$$

(1) Federal Communications Commission, Office of Engineering & Technology, Bulletin No. 65, pp. 17 & 18.

The maximum main beam power density in the far field can be calculated as follows: (1)

$$\begin{aligned}\text{On-Axis Power Density in the Far Field, (Wf)} &= \frac{(GES) (P)}{4(\pi) (Rf^{**2})} \\ &= 25.64 \text{ W/m**2} \\ &= 2.56 \text{ mW/cm**2}\end{aligned}$$

2. Near Field Calculation

Power flux density is considered to be at a maximum value throughout the entire length of the defined region. The region is contained within a cylindrical volume having the same diameter as the antenna. Past the extent of the near field region the power density decreases with distance from the transmitting antenna.

The distance to the end of the near field can be determined by the following equation: (1)

$$\text{Extent of near field, (Rn)} = D^{**2} / 4(\lambda) = 416.81 \text{ m}$$

The maximum power density in the near field is determined by: (1)

$$\begin{aligned}\text{Near field Power Density, (Wn)} &= \frac{16.0(n)P}{\pi(D^{**2})} \text{ mW/cm**2} \\ &= 49.80 \text{ W/m**2} \\ &= 4.98 \text{ mW/cm**2}\end{aligned}$$

3. Transition Region Calculations

The transition region is located between the near and far field regions. As stated above, the power density begins to decrease with distance in the transition region. While the power density decreases inversely with distance in the transition region, the power density decreases inversely with the square of the distance in the far field region. The maximum power density in the transition region will not exceed that calculated for the near field region. The power density in the near field region, as shown above, will not exceed 4.98 mW/cm**2.

(1) IBID

4. Region Between Feed Flange and Reflector

Transmissions from the feed horn are directed toward the reflector surface, and are confined within a conical shape defined by the feed. The energy between the feed and reflector surface can be calculated by determining the power density at the feed flange. This can be accomplished as follows:

$$\begin{aligned}\text{Power Density at Feed Flange, } (W_f) &= 2(P) / F_a \\ &= 268.79 \text{ mW/cm}^2\end{aligned}$$

5. Main Reflector Region

The power density in the main reflector region is determined in the same manner as the power density at the feed flange, above, but the area is now the area of the reflector aperture:

$$\begin{aligned}\text{Power Density at Reflector Surface, } (W_s) &= (2(P) / S_a) \\ &= 45.27 \text{ W/m}^2 \\ &= 4.53 \text{ mW/cm}^2\end{aligned}$$

6. Region between Reflector and Ground

Assuming uniform illumination of the reflector surface, the power density between the antenna and ground can be calculated as follows:

$$\begin{aligned}\text{Power density between Reflector and Ground, } (W_g) &= (P / S_a) \\ &= 2.26 \text{ mW/cm}^2\end{aligned}$$

Table 1

Summary of Expected Radiation Levels

Based on (5 mW/cm**2) MPE for Controlled Environment

<u>Region</u>	<u>Calculated Maximum Radiation Level (mW/cm**2)</u>	<u>Hazard Assessment</u>
1. Far Field, (Rf)= 1000.4 m	2.56	SATISFIES ANSI
2. Near Field, (Rn)= 416.81 m	4.98	SATISFIES ANSI
3. Transition Region, (Rt) Rn < Rt < Rf	4.98	SATISFIES ANSI
4. Between Reflector and feed	268.79	POTENTIAL HAZARD
5. Reflector Surface	4.53	SATISFIES ANSI
6. Between Antenna and Ground	2.26	SATISFIES ANSI

It is the applicants responsibility to ensure that the public and operational personnel are not exposed to harmful levels of radiation.

7. Conclusions

Based on the above analysis it is concluded that the FCC RF Guidelines have been exceeded only in the specified region of Table 1. As demonstrated in the attached declaration of Brent J. Gale, the applicant proposes to comply with the applicable Maximum Permissible Exposure (MPE) limit by one or more of the following methods:

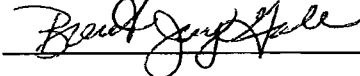
Means of Compliance

X Restrict Access, X Fencing, X Posting/Warnings

Applicant Certification:

Name Brent J. Gale

Company Echostar North America Corporation

Signature 

Date January 15, 1998

8. Certification

I hereby certify that I am the technically qualified person responsible for the preparation of the radiation hazard assessment, and that I have reviewed this radiation hazard assessment, and that it is complete and correct to the best of my knowledge.

BY:



Gary K. Edwards
Manager Satellite Services
COMSEARCH

DATED: December 17, 1997

DECLARATION

I, Brent Jay Gale, Vice President of EchoStar Satellite Corporation, a Colorado corporation and a holding corporation of EchoStar North America Corporation, a Colorado corporation formerly known as EchoStar Licensee Corporation ("EchoStar"), hereby declares as follows:

In connection with the FCC Form 312 application filed with the Federal Communications Commission ("FCC") by EchoStar on January 15, 1998, this declaration serves as an assurance that the proposed earth station will operate in a controlled environment. I understand that under the FCC's rules, "controlled exposure" standards apply in cases where, while persons are exposed as a consequence of their employment, those persons are fully aware of their exposure and can exercise control over it, and situations where any transient individual is aware of the potential for exposure.

Under those rules, EchoStar's earth station facility in Cheyenne, Wyoming, already qualifies as a "controlled exposure" environment. Specifically, EchoStar has taken the following safeguards to protect the general public and EchoStar's workers from exposure to radiation generated by the power flux densities of the proposed earth station:

- The uplink center is located on the rear 20 acres of a 60 acre parcel of land located on the eastern most outskirts of Cheyenne, Wyoming. The facility backs up to the rail line of Union Pacific to the North. The closest other commercial occupant in the Cheyenne Business Park will be located approximately 1/2 mile to the South.
- The perimeter of the uplink facility is protected by a 7 foot chain link fence with an additional three strands of barbed wire on top that tilts outward. The fence has warning signs posted every 100 feet with the standard warnings.
- The facility is monitored 24 hours per day by EchoStar's security staff. Six external security cameras are located on the outer perimeter of the facility with monitors at the security desk. Access to the facility is allowed only through card key access or by the 24 hour security staff.
- All visitors to the facility are required to check in with security before access is granted.

In sum, EchoStar has taken more than adequate measures to prevent any exposure of the general public to radiation from the proposed earth station and provide all requisite notice for operational personnel and authorized transient individuals.

Finally, EchoStar has taken precautions to ensure that there will not be any human exposure to radiation in the region between the main reflector and sub-reflector of the proposed station. That region will not be occupied by the earth station's operating personnel, except when necessary to conduct maintenance activities. At all such times, the transmitter will be turned off.

DECLARATION

I, Brent Jay Gale, hereby declare under penalty of perjury that the foregoing is true and correct to the best of my knowledge.

A handwritten signature in black ink, appearing to read "Brent Jay Gale", is written over a horizontal line.

Brent Jay Gale
Vice President
EchoStar Satellite Corporation

Dated: January 15, 1998

READ INSTRUCTIONS CAREFULLY
BEFORE PROCEEDING

FEDERAL COMMUNICATIONS COMMISSION
REMITTANCE ADVICE

Approved by OMB
3060-0589
Page No 1 of 1

(1) LOCKBOX # 358160

FCC/MELLON AUG 22 2002

SPECIAL USE
FCC USE ONLY

E020233 SES-LIC-20020820-01427
EchoStar Satellite Corporation
801 NORTH AMERICA SKY BLVD.
GILBERT, AZ MARICOPA

AMOUNT PAID (U.S. Dollars and cents)
\$2,035.00

(2) PAYER NAME (if paying by credit card, ent)
Stephoe & Johnson LLP

(4) STREET ADDRESS LINE NO. 1
1330 Connecticut Avenue, N.W.

(5) STREET ADDRESS LINE NO. 2
Attn: Pantelis Michalopoulos

PN 9/4/02

(6) CITY
Washington

(7) STATE
DC (8) ZIP CODE
20036-1795

(9) DAYTIME TELEPHONE NUMBER (include area code)
(202) 429-6494

(10) COUNTRY CODE (if not in U.S.A.)

FCC REGISTRATION NUMBER (FRN) AND TAX IDENTIFICATION NUMBER (TIN) REQUIRED

(11) PAYER (FRN)
0003-7546-29

(12) PAYER (TIN)
521349790

IF PAYER NAME AND THE APPLICANT NAME ARE DIFFERENT, COMPLETE SECTION B
IF MORE THAN ONE APPLICANT, USE CONTINUATION SHEETS (FORM 159-C)

(13) APPLICANT NAME
EchoStar Satellite Corporation

Received

(14) STREET ADDRESS LINE NO. 1
5701 South Santa Fe

AUG 27 2002

(15) STREET ADDRESS LINE NO. 2

(16) CITY
Littleton

Satellite Engineering Branch
International Bureau

(17) STATE
CO (18) ZIP CODE
80120

(19) DAYTIME TELEPHONE NUMBER (include area code)
(303) 723-1000

(20) COUNTRY CODE (if not in U.S.A.)

FCC REGISTRATION NUMBER (FRN) AND TAX IDENTIFICATION NUMBER (TIN) REQUIRED

(21) APPLICANT (FRN)
0004-2658-80

(22) APPLICANT (TIN)
841114039

COMPLETE SECTION C FOR EACH SERVICE, IF MORE BOXES ARE NEEDED, USE CONTINUATION SHEET

(23A) CALL SIGN/OTHER ID

(24A) PAYMENT TYPE CODE
BAX

(25A) QUANTITY
1

(26A) FEE DUE FOR (PTC)
\$2,035.00

(27A) TOTAL FEE
\$2,035.00

FCC USE ONLY

(28A) FCC CODE 1

(29A) FCC CODE 2

(23B) CALL SIGN/OTHER ID

(24B) PAYMENT TYPE CODE

(25B) QUANTITY

(26B) FEE DUE FOR (PTC)

(27B) TOTAL FEE

FCC USE ONLY

(28B) FCC CODE 1

(29B) FCC CODE 2

SECTION D - CERTIFICATION

(30) CERTIFICATION STATEMENT

I, David K. Moskowitz, certify under penalty of perjury that the foregoing and supporting information is true and correct to the best of my knowledge, information and belief.

SIGNATURE David K. Moskowitz

DATE 8/22/02

SECTION E - CREDIT CARD PAYMENT INFORMATION

(31) MASTERCARD

MASTERCARD/VISA ACCOUNT NUMBER:

EXPIRATION DATE:

VISA

I hereby authorize the FCC to charge my VISA or MASTERCARD for the service(s)/authorization herein described.

SIGNATURE _____ DATE _____

Pantelis Michalopoulos
202.429.6494
pmichalo@steptoe.com

Received

AUG 27 2002

Satellite Engineering Branch
International Bureau

1330 Connecticut Avenue, NW
Washington, DC 20036-1795

Telephone 202.429.3000
Facsimile 202.429.3902
www.steptoel.com

August 22, 2002

BY HAND DELIVERY

Marlene H. Dortch
Secretary
Federal Communications Commission
International Bureau - Earth Stations
P.O. Box 358160
Pittsburgh, PA 15251-5160

**Re: EchoStar Satellite Corporation
Application for a 9.0 Meter Transmit/Receive C-band Earth Station
Gilbert, Arizona**

Dear Ms. Dortch:

On behalf of EchoStar Satellite Corporation ("EchoStar"), enclosed for filing please find an original and two copies of a FCC Form 312 earth station application for a 9.0 meter transmit/receive C-band earth station.

Also enclosed is a check in the amount of \$2,035.00 for the applicable filing fee, a completed FCC Form 159 and an additional copy of this application, which we ask you to date-stamp and return with our messenger.

Respectfully submitted,



Pantelis Michalopoulos
Todd B. Lantor

Counsel to EchoStar Satellite Corporation

Enclosures

FCC 312
Main Form

FEDERAL COMMUNICATIONS COMMISSION
APPLICATION FOR SATELLITE SPACE AND EARTH STATION AUTHORIZATION

Fee Number:

APPLICANT INFORMATION

1. Legal Name of Applicant EchoStar Satellite Corporation		2. Voice Telephone Number (303) 723-1000
3. Other Name Used for Doing Business (if any) Dish Network		4. Fax Telephone Number (303) 723-1699
5. Mailing Street Address or P.O. Box 5701 South Santa Fe		6. City Littleton
ATTENTION: David K. Moskowitz		7. State / Country (if not U.S.A.) CO
8. Zip Code 80120		
9. Name of Contact Representative (If other than applicant) Pantelis Michalopoulos		10. Voice Telephone Number (202) 429-6494
11. Firm or Company Name Stephoe & Johnson LLP		12. Fax Telephone Number (202) 429-3902
13. Mailing Street Address or P.O. Box 1330 Connecticut Ave., N.W.		14. City Washington
ATTENTION:		15. State / Country (if not U.S.A.) DC
		16. Zip Code 20036-1795

Received

AUG 27 2002

Satellite Engineering Branch
International Bureau

CLASSIFICATION OF FILING

17. Place an "X" in the box next to the classification that applies to this filing for both questions a. and b. Mark only one box for 17a and only one box for 17b.

<input checked="" type="checkbox"/> a1. Earth Station	<input checked="" type="checkbox"/> b1. Application for License of New Station
<input type="checkbox"/> a2. Space Station	<input type="checkbox"/> b2. Application for Registration of New Domestic Receive-Only Station
	<input type="checkbox"/> b3. Amendment to a Pending Application
	<input type="checkbox"/> b4. Modification of License or Registration
	<input type="checkbox"/> b5. Assignment of License or Registration
	<input type="checkbox"/> b6. Transfer of Control of License or Registration
	<input type="checkbox"/> b7. Notification of Minor Modification
	<input type="checkbox"/> b8. Application for License of New Receive-Only Station Using Non-U.S. Licensed Satellite
	<input type="checkbox"/> b9. Letter of Intent to Use Non-U.S. Licensed Satellite to Provide Service in the United States
	<input type="checkbox"/> b10. Other (Please Specify):

18. If this filing is in reference to an existing station, enter:
Call sign of station: N/A
(a) Date pending application was filed: N/A
(b) File number of pending application: N/A

TYPE OF SERVICE

20. NATURE OF SERVICE: This filing is for an authorization to provide or use the following type(s) of service(s): Place an "X" in the box(es) next to 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: Place an "X" in the box next to the applicable status. Mark only one box.

- a. Common Carrier
- b. Non-Common Carrier
- c. Connected to the Public Switched Network
- d. Using U.S. licensed satellites
- e. Using Non-U.S. licensed satellites

22. If earth station applicant, place an "X" in the box(es) next to all that apply.

- a. Common Carrier
- b. Not connected to the Public Switched Network

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

- a. Connected to the Public Switched Network
- b. Not connected to the Public Switched Network

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)

TYPE OF STATION

25. CLASS OF STATION: Place an "X" in the box next to the class of station that applies. Mark only one box.

- a. Fixed Earth Station
- b. Temporary-Fixed Earth Station
- c. 12/14 GHz VSAT Network
- d. Mobile Earth Station
- e. Space Station
- f. Other (Specify)

If space station applicant, go to Question 27.

26. TYPE OF EARTH STATION FACILITY: Mark only one box.

- a. Transmit/Receive
- b. Transmit-Only
- c. Receive-Only

PURPOSE OF MODIFICATION OR AMENDMENT

27. The purpose of this proposed modification or amendment 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 assigned frequency(ies)
- h -- authorization to add Points of Communication (satellites & countries)
- i -- authorization to change Points of Communication (satellites & countries)
- j -- authorization for facilities for which environmental assessment and radiation hazard reporting is required
- k -- Other (Please Specify) N/A

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 as an exhibit for new transmitting facilities, major modifications, or major amendments. Refer to OET Bulletin 65.

- YES
- NO

ALIEN OWNERSHIP

29. Is the applicant a foreign government or the representative of any foreign government?	<input type="checkbox"/> YES	<input checked="" type="checkbox"/> NO
30. Is the applicant an alien or the representative of an alien?	<input type="checkbox"/> YES	<input checked="" type="checkbox"/> NO
31. Is the applicant a corporation organized under the laws of any foreign government?	<input type="checkbox"/> YES	<input checked="" type="checkbox"/> NO
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?	<input type="checkbox"/> YES	<input checked="" type="checkbox"/> NO
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?	<input type="checkbox"/> YES	<input checked="" type="checkbox"/> NO
34. If any answer to questions 29, 30, 31, 32 and/or 33 is Yes, attach as an exhibit, the identification of the aliens or foreign entities, their nationality, their relationship to the applicant, and the percentage of stock they own or vote.	N/A	

BASIC QUALIFICATIONS

35. Does the applicant request any waivers or exemptions from any of the Commission's Rules? If Yes, attach as an exhibit, copies of the requests for waivers or exceptions with supporting documents.	<input type="checkbox"/> YES	<input checked="" type="checkbox"/> NO
36. Has the applicant or any party to this application 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 the circumstances.	<input checked="" type="checkbox"/> YES	<input type="checkbox"/> NO
37. Has the applicant, or any party to this application, 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 the circumstances.	<input type="checkbox"/> YES	<input checked="" type="checkbox"/> 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 the circumstances.	<input type="checkbox"/> YES	<input checked="" type="checkbox"/> 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.	<input type="checkbox"/> YES	<input checked="" type="checkbox"/> NO
40. If the applicant is a corporation and is applying for a space station license, attach as an exhibit the names, addresses, and citizenship of those stockholders owning of 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.	N/A	
41. By checking Yes, the undersigned certifies, that neither the 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. See 47 CFR 1.2002(b) for the meaning of "party to be application" for these purposes.	<input checked="" type="checkbox"/> YES	<input type="checkbox"/> NO
42a. Does the applicant intend to use a non-U.S. licensed satellite to provide service in the United States? If yes, 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.	<input type="checkbox"/> YES	<input checked="" type="checkbox"/> NO
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?	N/A	

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

See Exhibit D.

Exhibit No.	Identify all exhibits that are attached to this application.
A	Frequency Coordination and Interference Analysis Report
B	Analysis of Non-Ionizing Radiation for a 9.0 Meter Earth Station System
C	Response to Question 36
D	Response to Question 43

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): (Place an "X" in the box next to applicable response.)

- a. Individual b. Unincorporated Association c. Partnership d. Corporation e. Governmental Entity f. Other (Please specify) _____

45. Typed Name of Person Signing

David K. Moskowitz

46. Title of Person Signing

Sr. VP and General Counsel

47. Signature

48. Date

8/22/2002

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).

FEDERAL COMMUNICATIONS COMMISSION
SATELLITE EARTH STATION AUTHORIZATIONS
(Technical and Operational Description)

License of New Station Registration of New Domestic Receive-Only Station Amendment to a Pending Application Modification of License/Registration Notification of Minor Modification

B1. Location of Earth Station Site. If temporary-fixed, mobile, or VSAT remote facility, specify area of operation and point of contact. If VSAT hub station, give its location. For VSAT networks attach individual Schedule B, Page 1 sheets for each hub station and each remote station. Individually provide the Location, Points of Communications, and Destination Points for each hub and remote station.

B1a. Station Call Sign N/A	B1b. Site Identifier (HUB, REMOTE1, etc.) N/A	B1c. Telephone Number (307) 633-5227	B1j. Geographic Coordinates Deg. - Mfn. - Sec. - E/W Lat. 33 22 0.9 N Lon. 111 48 52.9 W	B1k. Lat./Lon. Coordinates are: <input type="checkbox"/> NAD-27 <input checked="" type="checkbox"/> NAD-83
B1d. Street Address of Station or Area of Operation 801 North America Sky Blvd.			B1h. State AZ	B1i. Zip Code 85233
B1f. City Gilbert	B1g. County Maricopa	B1e. Name of Contact Person Karl Jesinghaus	B1l. Site Elevation (AMSL) 381.00 meters	

B2. Points of Communications: List the names and orbit locations of all satellites with which this earth station will communicate. The entry "ALSAT" is sufficient to identify the names and locations of all satellite facilities licensed by the U.S. All non-U.S. licensed satellites must be listed individually.

Satellite Name and Orbit Location	Satellite Name and Orbit Location
ALSAT	
EchoStar 1 @ 148 W.L.	

B3. Destination points for communications using non-U.S. licensed satellites. For each non-U.S. licensed satellite facility identified in section B2 above, specify the destination point(s) (countries) where the services will be provided by this earth station via each non-U.S. licensed satellite system. Use additional sheets as needed.

Satellite Name	List of Destination Points

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B4. Earth Station Antenna Facilities: Use additional pages as needed.

(a) Site ID*	(b) Antenna ID**	(c) Quantity	(d) Manufacturer	(e) Model	(f) Antenna Size (meters)	(g) Antenna Gain Transmit and/or Receive (____ dBi at ____ GHz)
Gilbert	GC2	1	Vertex	9 KPC	9.0	53.5 dBi at 6.0 GHz 50.1 dBi at 4.0 GHz

B5. Antenna Heights and Maximum Power Limits: (The corresponding Antenna ID in tables B4 and B5 applies to the same antenna)

(a) Antenna ID**	(b) Antenna Structure Registration No.	Maximum Antenna Height		(e) Building Height Above Ground Level (meters)***	(f) Maximum Antenna Height Above Rooftop (meters)***	(g) Total Input Power at antenna flange (Watts)	(h) Total EIRP for all carriers (dBW)
		(c) Above Ground Level (meters)	(d) Above Mean Sea Level (meters)				
GC2	N/A	9.0	390.00	N/A	N/A	240	77.30

Notes: * If this is an application for a VSAT network, identify the site (Item B1b, Schedule B, Page 1) where each antenna is located. Also include this Site-ID on Schedule B, Page 5.
 ** Identify each antenna in VSAT network or multi-antenna station with a unique identifier, such as HUB, REMOTE1, A1, A2, 10M, 12M, 7M, etc. Use this same antenna ID throughout tables B4, B5, B6, and B7 when referring to the same antenna.
 *** Attach sketch of site or exemption. See 47 CFR Part 17.

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B6. Frequency Coordination Limits: Use additional pages as needed.

(a) Antenna ID*	(b) Frequency Limits (MHz)	(c) Range of Satellite Arc Eastern Limit**	(d) Range of Satellite Arc Western Limit**	(e) Antenna Elevation Angle Eastern Limit	(f) Antenna Elevation Angle Western Limit	(g) Earth Station Azimuth Angle Eastern Limit	(h) Earth Station Azimuth Angle Western Limit	(i) Maximum EIRP Density toward the Horizon (dBW/4kHz)
GC2	3700.0000 - 4200.0000	58.0 W.L.	155.0 W.L.	21.5	30.0	111.9	239.6	
GC2	5925.0000 - 5929.0000	58.0 W.L.	155.0 W.L.	21.5	30.0	111.9	239.6	-7.81
GC2	5961.0000 - 5988.0000	58.0 W.L.	155.0 W.L.	21.5	30.0	111.9	239.6	-7.81
GC2	6020.0000 - 6028.0000	58.0 W.L.	155.0 W.L.	21.5	30.0	111.9	239.6	-7.81
GC2	6040.0000 - 6077.0000	58.0 W.L.	155.0 W.L.	21.5	30.0	111.9	239.6	-7.81
GC2	6109.0000 - 6181.0000	58.0 W.L.	155.0 W.L.	21.5	30.0	111.9	239.6	-7.81
GC2	6420.0000 - 6421.0000	58.0 W.L.	155.0 W.L.	21.5	30.0	111.9	239.6	-7.81
GC2	6424.0000 - 6425.0000	58.0 W.L.	155.0 W.L.	21.5	30.0	111.9	239.6	-7.81

Notes: * Provide the ANTENNA-ID from table B4 to identify the antenna to which each frequency band and orbital arc angle is associated.
 ** If operating with geostationary satellites, give the orbital arc limits and the associated elevation and azimuth angles. If operating with non-geostationary satellites, give the notation "NON-GEO" for the satellite arc and give the minimum operational elevation angle and the maximum azimuth angle range.

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B7. Particulars of Operation (Full particulars are required for each r.f. carrier): Use additional pages as needed.

(a) Antenna ID*	(b) Frequency Bands (MHz)	(c) T/R Mode**	(d) Antenna Polarization (H,V,L,R)	(e) Emission Designator	(f) Maximum EIRP per Carrier (dBW)	(g) Maximum EIRP Density per Carrier (dBW/4kHz)	(h) Description of Modulation and Services
GC2	3700.0000 - 4200.0000	R	H,V	1M00F2D			Data Carrier (Digital)
GC2	3700.0000 - 4200.0000	R	H,V	82K0F3N			Command Carrier
GC2	3700.0000 - 4200.0000	R	H,V	750KF2D			Data Carrier (Digital)
GC2	3700.0000 - 4200.0000	R	H,V	36M0F8F			Analog Video
GC2	3700.0000 - 4200.0000	R	H,V	36M0G7F			Compressed Video (Digital)
GC2	5925.0000 - 5929.0000	T	H,V	1M00F2D	74.77	50.8	Data Carrier (Digital)
GC2	5961.0000 - 5988.0000	T	H,V	1M00F2D	74.77	50.8	Data Carrier (Digital)
GC2	6020.0000 - 6028.0000	T	H,V	1M00F2D	74.77	50.8	Data Carrier (Digital)
GC2	6040.0000 - 6077.0000	T	H,V	1M00F2D	74.77	50.8	Data Carrier (Digital)
GC2	6109.0000 - 6181.0000	T	H,V	1M00F2D	74.77	50.8	Data Carrier (Digital)
GC2	6420.0000 - 6421.0000	T	H,V	1M00F2D	74.77	50.8	Data Carrier (Digital)
GC2	6424.0000 - 6425.0000	T	H,V	1M00F2D	74.77	50.8	Data Carrier (Digital)
GC2	5925.0000 - 5929.0000	T	H,V	82K0F3N	63.81	50.8	Command Carrier
GC2	5961.0000 - 5988.0000	T	H,V	82K0F3N	63.81	50.8	Command Carrier
GC2	6020.0000 - 6028.0000	T	H,V	82K0F3N	63.81	50.8	Command Carrier
GC2	6040.0000 - 6077.0000	T	H,V	82K0F3N	63.81	50.8	Command Carrier
GC2	6109.0000 - 6181.0000	T	H,V	82K0F3N	63.81	50.8	Command Carrier
GC2	6420.0000 - 6421.0000	T	H,V	82K0F3N	63.81	50.8	Command Carrier
GC2	6424.0000 - 6425.0000	T	H,V	82K0F3N	63.81	50.8	Command Carrier
GC2	5925.0000 - 5929.0000	T	H,V	750KF2D	73.53	50.8	Data Carrier (Digital)
GC2	5961.0000 - 5988.0000	T	H,V	750KF2D	73.53	50.8	Data Carrier (Digital)
GC2	6020.0000 - 6028.0000	T	H,V	750KF2D	73.53	50.8	Data Carrier (Digital)
GC2	6040.0000 - 6077.0000	T	H,V	750KF2D	73.53	50.8	Data Carrier (Digital)
GC2	6109.0000 - 6181.0000	T	H,V	750KF2D	73.53	50.8	Data Carrier (Digital)
GC2	6420.0000 - 6421.0000	T	H,V	750KF2D	73.53	50.8	Data Carrier (Digital)
GC2	6424.0000 - 6425.0000	T	H,V	750KF2D	73.53	50.8	Data Carrier (Digital)
GC2	5925.0000 - 5929.0000	T	H,V	36M0F8F	77.3	50.8	Analog Video
GC2	5961.0000 - 5988.0000	T	H,V	36M0F8F	77.3	50.8	Analog Video

Notes: * Provide the ANTENNA-ID from table B4 to identify the antenna to which each frequency band and emission is associated. For VSAT networks, include frequencies and emissions for all HUB and REMOTE units.
 ** Indicate whether the earth station transmits or receives in each frequency band.

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B7. Particulars of Operation (Full particulars are required for each r.f. carrier): Use additional pages as needed.

(a) Antenna ID*	(b) Frequency Bands (MHz)	(c) T/R Mode **	(d) Antenna Polarization (H,V,L,R)	(e) Emission Designator	(f) Maximum EIRP per Carrier (dBW)	(g) Maximum EIRP Density per Carrier (dBW/4kHz)	(h) Description of Modulation and Services
GC2	6020.0000 - 6028.0000	T	H,V	36M0F8F	77.3	50.8	Analog Video
GC2	6040.0000 - 6077.0000	T	H,V	36M0F8F	77.3	50.8	Analog Video
GC2	6109.0000 - 6181.0000	T	H,V	36M0F8F	77.3	50.8	Analog Video
GC2	6420.0000 - 6421.0000	T	H,V	36M0F8F	77.3	50.8	Analog Video
GC2	6424.0000 - 6425.0000	T	H,V	36M0F8F	77.3	50.8	Analog Video
GC2	5925.0000 - 5929.0000	T	H,V	36M0G7F	77.3	37.7	Compressed Video (Digital)
GC2	5981.0000 - 5988.0000	T	H,V	36M0G7F	77.3	37.7	Compressed Video (Digital)
GC2	6020.0000 - 6028.0000	T	H,V	36M0G7F	77.3	37.7	Compressed Video (Digital)
GC2	6040.0000 - 6077.0000	T	H,V	36M0G7F	77.3	37.7	Compressed Video (Digital)
GC2	6109.0000 - 6181.0000	T	H,V	36M0G7F	77.3	37.7	Compressed Video (Digital)
GC2	6420.0000 - 6421.0000	T	H,V	36M0G7F	77.3	37.7	Compressed Video (Digital)
GC2	6424.0000 - 6425.0000	T	H,V	36M0G7F	77.3	37.7	Compressed Video (Digital)

Notes: * Provide the ANTENNA-ID from table B4 to identify the antenna to which each frequency band and emission is associated. For VSAT networks, include frequencies and emissions for all HUB and REMOTE units.
 ** Indicate whether the earth station transmits or receives in each frequency band.

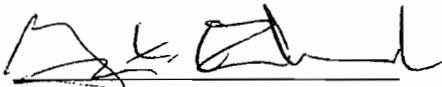
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If VSAT Network, provide the SITE-ID (Item B1b) of the station that B8-B13 are in response to (HUB, REMOTE1, etc.): _____

B8. 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 measurements? If NO, provide as an exhibit, a technical analysis showing compliance with two-degree spacing policy.	<input checked="" type="checkbox"/> YES <input type="checkbox"/> NO
B9. 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 checked="" type="checkbox"/> YES <input type="checkbox"/> NO
B10. Is the facility operated by remote control? If YES, provide the location and telephone number of the control point.	<input type="checkbox"/> YES <input checked="" type="checkbox"/> NO
Remote Control Point Location:	
B10a. Street Address	
B10b. City	B10c. County
B10f. Telephone Number	B10d. State / Country
	B10e. Zip Code
	B10g. Call Sign of Control Station (if appropriate)
B11. Is frequency coordination required? If YES, attach a frequency coordination report as an exhibit.	<input checked="" type="checkbox"/> YES <input type="checkbox"/> NO
B12. Is coordination with another country required? If YES, attach the name of the country(ies) and plot of coordination contours as an exhibit.	<input type="checkbox"/> YES <input checked="" type="checkbox"/> NO
B13. 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.	

**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 this application, that I am familiar with the Commission's Rules, that I have either prepared or reviewed the engineering information submitted in this application, and that it is complete and accurate to the best of my knowledge and belief.

By: 
Gary Edwards
Engineer
Microwave and Satellite Services
Comsearch

Dated: May 21, 2002

FREQUENCY COORDINATION AND INTERFERENCE
ANALYSIS REPORT

PREPARED FOR
ECHOSTAR NORTH AMERICA CORPORATION
GILBERT, AZ
SATELLITE EARTH STATION

PREPARED BY
COMSEARCH
19700 Janelia Farm Boulevard
Ashburn, Virginia 20147
April 18, 2002

TABLE OF CONTENTS

1. CONCLUSIONS
2. SUMMARY OF RESULTS
3. SUPPLEMENTAL SHOWING, RE: PART 25.203(C)
4. EARTH STATION COORDINATION DATA
5. CERTIFICATION

1. CONCLUSIONS

AN INTERFERENCE STUDY CONSIDERING ALL EXISTING, PROPOSED AND PRIOR COORDINATED MICROWAVE FACILITIES WITHIN THE COORDINATION CONTOURS OF THE PROPOSED EARTH STATION DEMONSTRATES THAT THIS SITE WILL OPERATE SATISFACTORILY WITH THE COMMON CARRIER MICROWAVE ENVIRONMENT. FURTHER, THERE WILL BE NO RESTRICTIONS OF ITS OPERATION DUE TO INTERFERENCE CONSIDERATIONS.

2. SUMMARY OF RESULTS

A NUMBER OF GREAT CIRCLE INTERFERENCE CASES WERE IDENTIFIED DURING THE INTERFERENCE STUDY OF THE PROPOSED EARTH STATION. EACH OF THE CASES WHICH EXCEEDED THE INTERFERENCE OBJECTIVE ON A LINE-OF-SIGHT BASIS WAS PROFILED AND THE PROPAGATION LOSSES ESTIMATED USING NBS TN101 (REVISED) TECHNIQUES. THE LOSSES WERE FOUND TO BE SUFFICIENT TO REDUCE THE SIGNAL LEVELS TO ACCEPTABLE MAGNITUDES IN EVERY CASE.

THE FOLLOWING COMPANIES REPORTED POTENTIAL GREAT CIRCLE INTERFERENCE CONFLICTS WHICH DID NOT MEET THE OBJECTIVES ON A LINE-OF-SIGHT BASIS. WHEN OVER-THE-HORIZON LOSSES ARE CONSIDERED ON THE INTERFERING PATHS, SUFFICIENT BLOCKAGE EXISTS TO NEGATE HARMFUL INTERFERENCE FROM OCCURRING WITH THE PROPOSED TRANSMIT AND RECEIVE EARTH STATION.

COMPANY

CNG COMMUNICATIONS, INC.

NO OTHER CARRIERS REPORTED POTENTIAL INTERFERENCE CASES.

3. SUPPLEMENTAL SHOWING
RE: PART 25.203(C)

PURSUANT TO PART 25.203(C) OF THE FCC RULES AND REGULATIONS,
THE SATELLITE EARTH STATION PROPOSED IN THIS APPLICATION
WAS COORDINATED BY COMSEARCH USING COMPUTER TECHNIQUES
AND IN ACCORDANCE WITH PART 25 OF THE FCC RULES AND
REGULATIONS.

COORDINATION DATA FOR THIS EARTH STATION WAS SENT TO THE
BELOW LISTED CARRIERS WITH A LETTER DATED MARCH 14, 2002.

360 DEGREE COMM CO OF NEVADA LTD PR
ALLTEL COMM OF THE SOUTHWEST LTD PRTRSH
AT&T CORP.
AT&T WIRELESS SERVICES OF FL INC-ARIZONA
CNG COMMUNICATIONS, INC.
COPPER VALLEY TELEPHONE COMPANY
CROWN COMMUNICATION, INC.
LB Tower Company LLC
MARICOPA COUNTY WIRELESS SYSTEMS
MCI WORLDCOM NETWORK SERVICES INC
MESA CITY COMMUNICATIONS DIVISION 389
PHOENIX CITY ARIZONA
PINNACLE WEST CAPITAL CORPORATION
QWEST COMMUNICATIONS INTERNATIONAL INC.
SOUTHWESTCO WIRELESS L P (Desert Mt Reg)
SUN HEALTH CORPORATION
Table Top Telephone Company
VALLEY TELEPHONE COOPERATIVE , INC.
VELOCITEL, INC
VERIZON WIRELESS (VAW) LLC-Desert Mt Reg
YAVAPAI COLLEGE

4. EARTH STATION COORDINATION DATA

THIS SECTION PRESENTS THE DATA PERTINENT TO FREQUENCY COORDINATION OF THE PROPOSED EARTH STATION WHICH WAS CIRCULATED TO ALL COMMON CARRIERS WITHIN ITS COORDINATION CONTOURS.

SATELLITE EARTH STATION
FREQUENCY COORDINATION DATA

Company ECHOSTAR NORTH AMERICA CORPORATION
 Earth Station Name, State GILBERT, AZ
 Latitude (DMS) (NAD83) 33 22 0.9 N
 Longitude (DMS) (NAD83) 111 48 52.9 W
 Ground Elevation AMSL (Ft/m) 1250.06 / 381.00
 Antenna Centerline AGL (Ft/m) 17.72 / 5.40

Receive Antenna Type: V40901 VERTEX COMMUNICATI
 9 KPC
 4.0 GHz Gain (dBi) / Diameter (m) 50.1 / 9.0
 3 dB / 15 dB Half Beamwidth 0.28 / 0.60

Transmit Antenna Type: V60901 VERTEX COMMUNICATI
 9 KPC
 6.0 GHz Gain (dBi) / Diameter (m) 53.5 / 9.0
 3 dB / 15 dB Half Beamwidth 0.20 / 0.40

Operating Mode	TRANSMIT AND RECEIVE	
Modulation	ANALOG & DIGITAL	
Emission / Receive Band (MHz)		
	1M00F2D /	3700.0000 - 4200.0000
	82K0F3N /	3700.0000 - 4200.0000
	750KF2D /	3700.0000 - 4200.0000
	36M0F8F /	3700.0000 - 4200.0000
	36M0G7F /	3700.0000 - 4200.0000
Emission / Transmit Band (MHz)		
	1M00F2D /	5925.0000 - 5929.0000
	1M00F2D /	5961.0000 - 5988.0000
	1M00F2D /	6020.0000 - 6028.0000
	1M00F2D /	6040.0000 - 6077.0000
	1M00F2D /	6109.0000 - 6181.0000
	1M00F2D /	6420.0000 - 6421.0000
	1M00F2D /	6424.0000 - 6425.0000
	82K0F3N /	5925.0000 - 5929.0000
	82K0F3N /	5961.0000 - 5988.0000
	82K0F3N /	6020.0000 - 6028.0000
	82K0F3N /	6040.0000 - 6077.0000
	82K0F3N /	6109.0000 - 6181.0000
	82K0F3N /	6420.0000 - 6421.0000
	82K0F3N /	6424.0000 - 6425.0000
	750KF2D /	5925.0000 - 5929.0000
	750KF2D /	5961.0000 - 5988.0000
	750KF2D /	6020.0000 - 6028.0000
	750KF2D /	6040.0000 - 6077.0000
	750KF2D /	6109.0000 - 6181.0000
	750KF2D /	6420.0000 - 6421.0000
	750KF2D /	6424.0000 - 6425.0000
	36M0F8F /	5925.0000 - 5929.0000
	36M0F8F /	5961.0000 - 5988.0000
	36M0F8F /	6020.0000 - 6028.0000
	36M0F8F /	6040.0000 - 6077.0000
	36M0F8F /	6109.0000 - 6181.0000
	36M0F8F /	6420.0000 - 6421.0000
	36M0F8F /	6424.0000 - 6425.0000
	36M0G7F /	5925.0000 - 5929.0000
	36M0G7F /	5961.0000 - 5988.0000
	36M0G7F /	6020.0000 - 6028.0000
	36M0G7F /	6040.0000 - 6077.0000
	36M0G7F /	6109.0000 - 6181.0000
	36M0G7F /	6420.0000 - 6421.0000
	36M0G7F /	6424.0000 - 6425.0000

Max. Available RF Power (dBW)/4 kHz)	-2.70	
(dBW)/MHz)	21.30	
Max. EIRP (dBW)/4 kHz)	50.80	
(dBW)/MHz)	74.80	
Max permissible Interference Power		
4.0 GHz, 20% (dBW/1 MHz)	-156.0	
4.0 GHz, 0.0100% (dBW/1 MHz)	-146.0	
6.0 GHz, 20% (dBW/4 kHz)	-154.0	
6.0 GHz, 0.0025% (dBW/4 kHz)	-131.0	
Range of Satellite Arc (Geostationary)		
Degrees Longitude	58.0 W /	155.0 W
Azimuth Range (Min/Max)	111.9 /	239.6
Corresponding Elevation Angles	21.5 /	30.0
Radio Climate	A	
Rain Zone	5	
Max Great Circle Coordination Distance (Mi/Km)		
4.0 GHz	194.7 /	313.3
6.0 GHz	117.8 /	189.6
Precipitation Scatter Contour Radius (Mi/Km)		
4.0 GHz	245.0 /	394.3
6.0 GHz	62.1 /	100.0

Note: Horizon is less than 0.2 degrees at all azimuths

Table of Earth Station Coordination Values

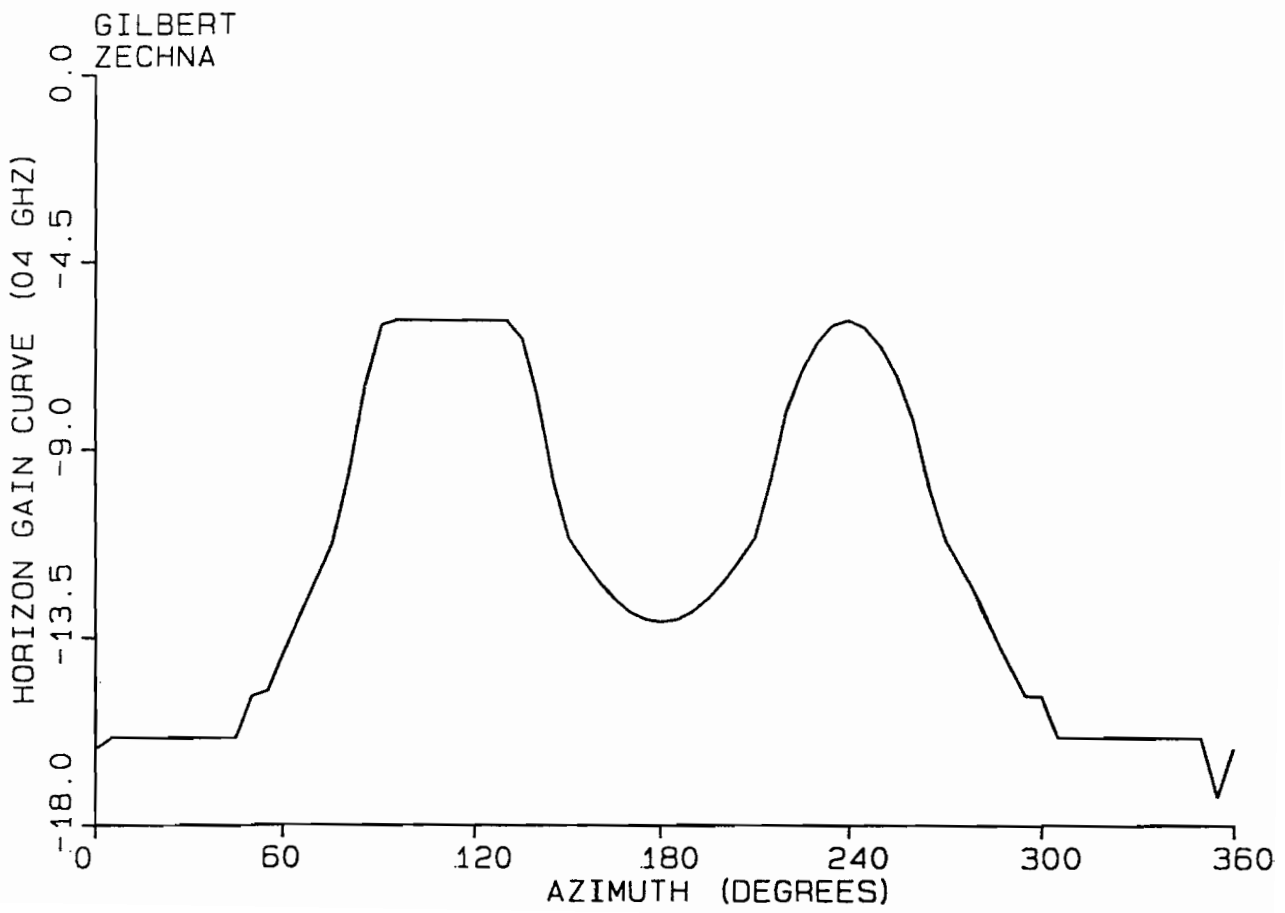
Earth Station Name GILBERT AZ
 Owner ECHOSTAR NORTH AMERICA CORPORATION
 Latitude (DMS) (NAD83) 33 22 0.9 N
 Longitude (DMS) (NAD83) 111 48 52.9 W
 Ground Elevation (Ft/m) 1250.06 / 381.00 AMSL
 Antenna Centerline (Ft/m) 17.72 / 5.40 AGL
 Antenna Model VERTEX COMMUNICATI 9 KPC
 Objectives: Receive -156.0 (dBW /1 MHz)
 Transmit -154.0 (dBW /4 kHz) TX Power -2.7 (dBW/4 kHz)

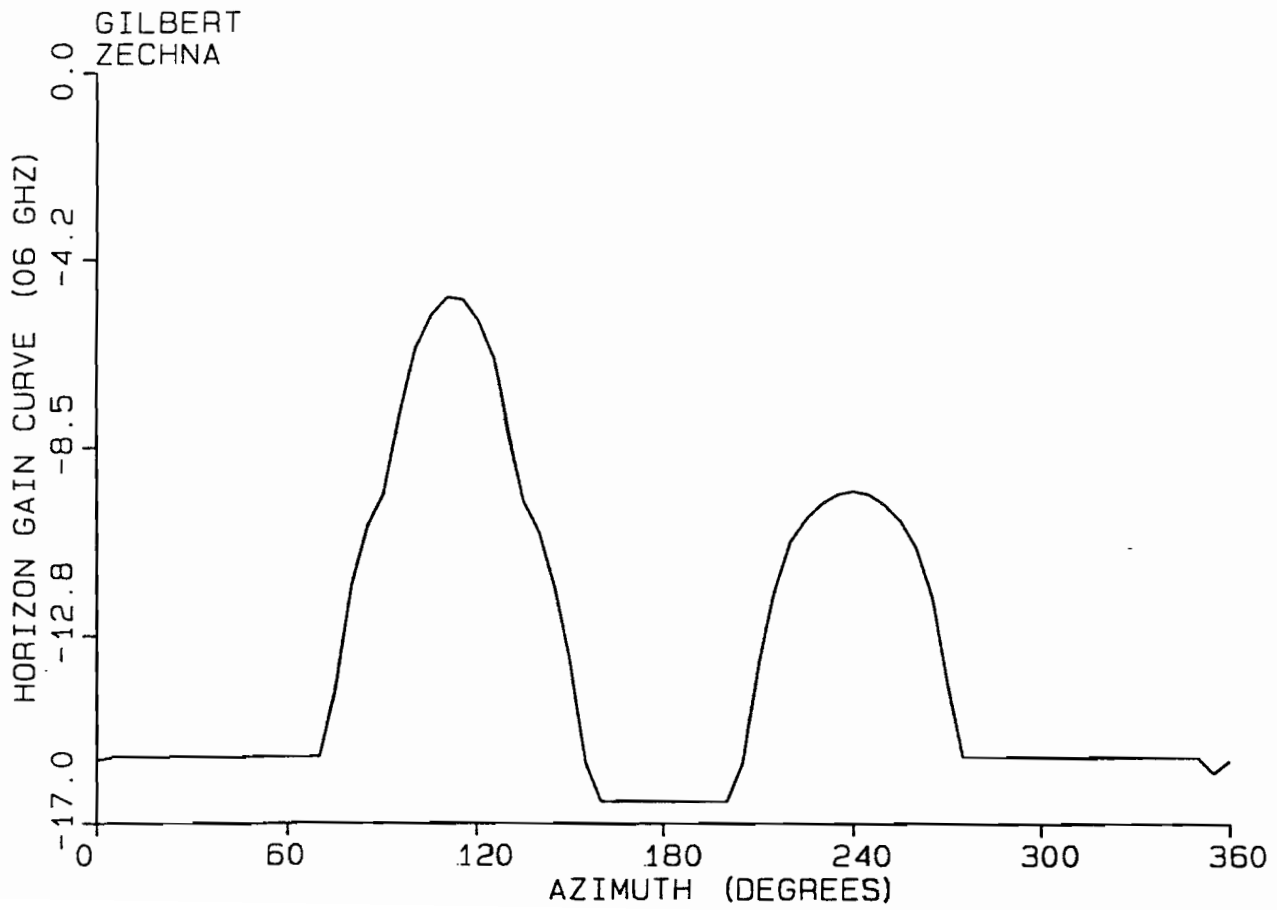
Azimuth (Deg)	Horizon Elevation Angle (Deg)	Antenna Disc. Angle (Deg)	Antenna Gain (dBi)	4.0 GHz		6.0 GHz	
				Coordination Distance (Km)	Antenna Gain (dBi)	Coordination Distance (Km)	Antenna Gain (dBi)
0	0.00	110.33	-16.16	248.9	-15.57	148.7	
5	0.00	105.71	-15.90	250.5	-15.50	148.9	
10	0.00	101.08	-15.90	250.5	-15.50	148.9	
15	0.00	96.44	-15.90	250.5	-15.50	148.9	
20	0.00	91.79	-15.90	250.5	-15.50	148.9	
25	0.00	87.13	-15.90	250.5	-15.50	148.9	
30	0.00	82.48	-15.90	250.5	-15.50	148.9	
35	0.00	77.84	-15.90	250.5	-15.50	148.9	
40	0.00	73.21	-15.90	250.5	-15.50	148.9	
45	0.00	68.60	-15.90	250.5	-15.50	148.9	
50	0.00	64.02	-14.90	256.0	-15.50	148.9	
55	0.00	59.47	-14.79	256.6	-15.50	148.9	
60	0.00	54.97	-13.89	261.7	-15.50	148.9	
65	0.00	50.53	-13.01	266.8	-15.50	148.9	
70	0.00	46.17	-12.13	272.0	-15.50	148.9	
75	0.00	41.92	-11.28	277.2	-14.03	153.9	
80	0.00	37.81	-9.59	287.9	-11.63	162.7	
85	0.00	33.91	-7.47	301.9	-10.28	169.5	
90	0.00	30.29	-6.02	311.8	-9.56	172.3	
95	0.00	27.07	-5.90	313.3	-7.74	179.4	
100	0.00	24.40	-5.90	313.3	-6.26	185.1	
105	0.00	22.49	-5.90	313.3	-5.50	188.0	
110	0.00	21.53	-5.90	313.3	-5.11	189.5	
115	0.00	21.66	-5.90	313.3	-5.16	189.3	
120	0.00	22.86	-5.90	313.3	-5.64	187.5	
125	0.00	24.96	-5.90	313.3	-6.49	184.2	
130	0.00	27.78	-5.90	313.3	-8.17	177.7	
135	0.00	31.11	-6.34	309.6	-9.72	171.7	
140	0.00	34.64	-7.76	299.9	-10.43	168.9	
145	0.00	37.98	-9.69	287.2	-11.69	162.4	
150	0.00	41.09	-11.12	278.2	-13.37	156.2	
155	0.00	43.91	-11.68	274.8	-15.63	148.4	
160	0.00	46.38	-12.18	271.8	-16.50	145.6	
165	0.00	48.41	-12.58	269.4	-16.50	145.6	
170	0.00	49.93	-12.89	267.5	-16.50	145.6	
175	0.00	50.87	-13.07	266.4	-16.50	145.6	
180	0.00	51.20	-13.14	266.1	-16.50	145.6	

Table of Earth Station Coordination Values

Earth Station Name GILBERT AZ
 Owner ECHOSTAR NORTH AMERICA CORPORATION
 Latitude (DMS) (NAD83) 33 22 0.9 N
 Longitude (DMS) (NAD83) 111 48 52.9 W
 Ground Elevation (Ft/m) 1250.06 / 381.00 AMSL
 Antenna Centerline (Ft/m) 17.72 / 5.40 AGL
 Antenna Model VERTEX COMMUNICATI 9 KPC
 Objectives: Receive -156.0 (dBW /1 MHz)
 Transmit -154.0 (dBW /4 kHz) TX Power -2.7 (dBW/4 kHz)

Azimuth (Deg)	Horizon Elevation Angle (Deg)	Antenna Disc. Angle (Deg)	Antenna Gain (dBi)	4.0 GHz Coordination Distance (Km)	Antenna Gain (dBi)	6.0 GHz Coordination Distance (Km)
185	0.00	50.88	-13.08	266.4	-16.50	145.6
190	0.00	49.93	-12.89	267.5	-16.50	145.6
195	0.00	48.41	-12.58	269.4	-16.50	145.6
200	0.00	46.37	-12.17	271.8	-16.50	145.6
205	0.00	43.91	-11.68	274.8	-15.63	148.4
210	0.00	41.09	-11.12	278.2	-13.38	156.2
215	0.00	38.06	-9.74	286.9	-11.72	162.3
220	0.00	35.33	-8.10	297.6	-10.63	168.1
225	0.00	33.06	-7.13	304.2	-10.11	170.2
230	0.00	31.36	-6.44	308.9	-9.77	171.5
235	0.00	30.31	-6.02	311.8	-9.56	172.3
240	0.00	29.99	-5.90	313.3	-9.49	172.6
245	0.00	30.42	-6.07	311.5	-9.58	172.2
250	0.00	31.57	-6.53	308.3	-9.81	171.3
255	0.00	33.37	-7.25	303.3	-10.17	169.9
260	0.00	35.71	-8.33	296.1	-10.79	165.9
265	0.00	38.50	-10.00	285.2	-11.90	161.7
270	0.00	41.65	-11.23	277.5	-13.82	154.7
275	0.00	45.07	-11.91	273.4	-15.50	148.9
280	0.00	48.71	-12.64	269.0	-15.50	148.9
285	0.00	52.52	-13.40	264.5	-15.50	148.9
290	0.00	56.47	-14.19	260.0	-15.50	148.9
295	0.00	60.52	-14.90	256.0	-15.50	148.9
300	0.00	64.65	-14.90	256.0	-15.50	148.9
305	0.00	68.84	-15.90	250.5	-15.50	148.9
310	0.00	73.09	-15.90	250.5	-15.50	148.9
315	0.00	77.37	-15.90	250.5	-15.50	148.9
320	0.00	81.67	-15.90	250.5	-15.50	148.9
325	0.00	85.99	-15.90	250.5	-15.50	148.9
330	0.00	90.32	-15.90	250.5	-15.50	148.9
335	0.00	94.65	-15.90	250.5	-15.50	148.9
340	0.00	98.97	-15.90	250.5	-15.50	148.9
345	0.00	103.27	-15.90	250.5	-15.50	148.9
350	0.00	107.55	-15.90	250.5	-15.50	148.9
355	0.00	111.79	-17.33	242.8	-15.86	147.7

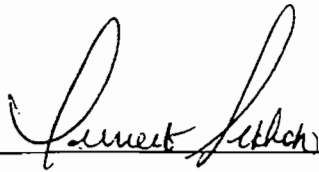




5. CERTIFICATION

I HEREBY CERTIFY THAT I AM THE TECHNICALLY QUALIFIED PERSON RESPONSIBLE FOR THE PREPARATION OF THE FREQUENCY COORDINATION DATA CONTAINED IN THIS APPLICATION, THAT I AM FAMILIAR WITH PARTS 101 AND 25 OF THE FCC RULES AND REGULATIONS, THAT I HAVE EITHER PREPARED OR REVIEWED THE FREQUENCY COORDINATION DATA SUBMITTED WITH THIS APPLICATION, AND THAT IT IS COMPLETE AND CORRECT TO THE BEST OF MY KNOWLEDGE AND BELIEF.

BY: _____



PUNEET K. SEKHON
ENGINEER
COMSEARCH
19700 Janelia Farm Boulevard
Ashburn, Virginia 20147

DATED: April 18, 2002

Analysis of Non-Ionizing Radiation
for a 9.0 Meter Earth Station System

This report analyzes the non-ionizing radiation levels for a 9.0 meter earth station system. The analysis and calculations performed in this report are in compliance with the methods described in the FCC Office of Engineering and Technology Bulletin, No. 65 first published in 1985 and revised in 1997 in Edition 97-01. The radiation safety limits used in the analysis are in conformance with the FCC R&O 96-326. Bulletin No. 65 and the FCC R&O specifies that there are two separate tiers of exposure limits that are dependant on the situation in which the exposure takes place and/or the status of the individuals who are subject to the exposure. The Maximum Permissible Exposure (MPE) limits for persons in a General Population/Uncontrolled environment are shown in Table 1. The General Population/Uncontrolled MPE is a function of transmit frequency and is for an exposure period of thirty minutes or less. The MPE limits for persons in an Occupational/Controlled environment are shown in Table 2. The Occupational MPE is a function of transmit frequency and is for an exposure period of six minutes or less. The purpose of the analysis described in this report is to determine the power flux density levels of the earth station in the far-field, near-field, transition region, between the subreflector or feed and main reflector surface, at the main reflector surface, and between the antenna edge and the ground and to compare these levels to the specified MPEs.

Table 1. Limits for General Population/Uncontrolled Exposure (MPE)

Frequency Range (MHz)	Power Density (mWatts/cm**2)
30-300	0.2
300-1500	Frequency (MHz) * (0.8/1200)
1500-100,000	1.0

Table 2. Limits for Occupational/Controlled Exposure (MPE)

Frequency Range (MHz)	Power Density (mWatts/cm**2)
30-300	1.0
300-1500	Frequency (MHz) * (4.0/1200)
1500-100,000	5.0

Table 3 contains the parameters that are used to calculate the various power densities for the earth stations.

Table 3. Formulas and Parameters Used for Determining Power Flux Densities

Parameter	Abbreviation	Value	Units
Antenna Diameter	D	9.0	meters
Antenna Surface Area	Sa	$\text{II} * \text{D}^{**2}/4$	meters**2
Subreflector Diameter	Ds	116.8	cm
Area of Subreflector	As	$\text{II} * \text{Ds}^{**2}/4$	cm**2
Frequency	Frequency	6175	MHz
Wavelength	lambda	$300/\text{frequency}(\text{MHz})$	meters
Transmit Power	P	240.00	Watts
Antenna Gain	Ges	53.5	dBi
Pi	II	3.1415927	n/a
Antenna Efficiency	n	0.66	n/a

1. Far Field Distance Calculation

The distance to the beginning of the far field can be determined from the following equation:(1)

$$\begin{aligned} \text{Distance to the Far Field Region, (Rf)} &= 0.60 * \text{D}^{**2} / \text{lambda} \\ &= 1000.4 \text{ meters} \end{aligned} \quad (1)$$

The maximum main beam power density in the Far Field can be determined from the following equation:(2)

$$\begin{aligned} \text{On-Axis Power Density in the Far Field, (Wf)} &= \text{Ges} * \text{P} / 4 * \text{II} * \text{Rf}^{**2} \\ &= 4.273 \text{ Watts/meters}^{**2} \\ &= 0.427 \text{ mWatts/cm}^{**2} \end{aligned} \quad (2)$$

2. Near Field Calculation

Power flux density is considered to be at a maximum value throughout the entire length of the defined Near Field region. The region is contained within a cylindrical volume having the same diameter as the antenna. Past the boundary of the Near Field region the power density from the antenna decreases linearly with respect to increasing distance.

The distance to the end of the Near Field can be determined from the following equation:(3)

$$\begin{aligned} \text{Extent of the Near Field, (Rn)} &= \text{D}^{**2} / (4 * \text{lambda}) \\ &= 416.8 \text{ meters} \end{aligned} \quad (3)$$

The maximum power density in the Near Field can be determined from the following equation:(4)

$$\begin{aligned} \text{Near Field Power Density, (Wn)} &= 16.0 * \text{n} * \text{P} / \text{II} * \text{D}^{**2} \\ &= 9.974 \text{ Watts/meters}^{**2} \\ &= 0.997 \text{ mWatts/cm}^{**2} \end{aligned} \quad (4)$$

3. Transition Region Calculations

The Transition region is located between the Near and Far Field regions. The power density begins to decrease linearly with increasing distance in the Transition region. While the power density decreases inversely with distance in the Transition region, the power density decreases inversely with the square of the distance in the Far Field region. The maximum power density in the Transition region will not exceed that calculated for the Near Field region. The power density calculated in Section 1 is the highest power density the antenna can produce in any of the regions away from the antenna. The power density at a distance R_t can be determined from the following equation: (5)

$$\begin{aligned} \text{Transition region Power Density, (Tt)} &= W_n * R_n / R_t \\ &= 0.997 \text{ mWatts/cm}^2 \end{aligned} \quad (5)$$

4. Region between Main Reflector and Subreflector

Transmissions from the feed assembly are directed toward the subreflector surface, and are reflected back toward the main reflector. The most common feed assemblies are waveguide flanges, horns or subreflectors. The energy between the subreflector and the reflector surfaces can be calculated by determining the power density at the subreflector surface. This can be determined from the following equation: (6)

$$\begin{aligned} \text{Power Density at Feed Flange, (Ws)} &= 4 * P / A_s \\ &= 89.597 \text{ mWatts/cm}^2 \end{aligned} \quad (6)$$

5. Main Reflector Region

The power density in the main reflector is determined in the same manner as the power density at the subreflector. The area is now the area of the main reflector aperture and can be determined from the following equation: (7)

$$\begin{aligned} \text{Power Density at the Main Reflector Surface, (Wm)} &= 4 * P / S_a \\ &= 15.090 \text{ Watts/meters}^2 \\ &= 1.509 \text{ mWatts/cm}^2 \end{aligned} \quad (7)$$

6. Region between Main Reflector and Ground

Assuming uniform illumination of the reflector surface, the power density between the antenna and ground can be determined from the following equation: (8)

$$\begin{aligned} \text{Power Density between Reflector and Ground, (Wg)} &= P / S_a \\ &= 3.773 \text{ Watts/meters}^2 \\ &= 0.377 \text{ mWatts/cm}^2 \end{aligned} \quad (8)$$

Table 4. Summary of Expected Radiation levels for Uncontrolled Environment

<u>Region</u>	<u>Calculated Maximum Radiation Power Density Level (mWatts/cm**2)</u>	<u>Hazard Assessment</u>
1. Far Field (Rf) = 1000.4 meters	0.427	Satisfies FCC MPE
2. Near Field (Rn) = 416.8 meters	0.997	Satisfies FCC MPE
3. Transition Region Rn < Rt < Rf, (Rt)	0.997	Satisfies FCC MPE
4. Between Main Reflector and Subreflector	89.597	Potential Hazard
5. Main Reflector	1.509	Potential Hazard
6. Between Main Reflector and Ground	0.377	Satisfies FCC MPE

Table 5. Summary of Expected Radiation levels for Controlled Environment

<u>Region</u>	<u>Calculated Maximum Radiation Power Density Level (mWatts/cm**2)</u>	<u>Hazard Assessment</u>
1. Far Field (Rf) = 1000.4 meters	0.427	Satisfies FCC MPE
2. Near Field (Rn) = 416.8 meters	0.997	Satisfies FCC MPE
3. Transition Region Rn < Rt < Rf, (Rt)	0.997	Satisfies FCC MPE
4. Between Main Reflector and Subreflector	89.597	Potential Hazard
5. Main Reflector	1.509	Satisfies FCC MPE
6. Between Main Reflector and Ground	0.377	Satisfies FCC MPE

It is the applicant's responsibility to ensure that the public and operational personnel are not exposed to harmful levels of radiation.

7. Conclusions

Based on the above analysis, it is concluded that the FCC MPE guidelines have been exceeded (or met) in the regions of Table 4 and 5. The applicant proposes to comply with the MPE limits by one or more of the following methods:

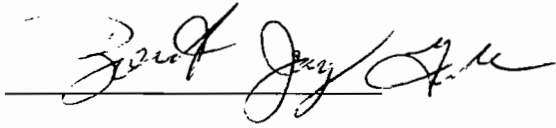
Means of Compliance

X Restrict Access, X Fencing, X Posting/Warnings

Applicant Certification:

Name: Brent J. Gale

Company: EchoStar Satellite Corporation

Signature: 

Date: 5/17/2002

DECLARATION

I, Brent Jay Gale, Vice President of EchoStar Satellite Corporation ("EchoStar"), a Colorado corporation, hereby declares as follows:

In connection with the attached FCC Form 312 application filed with the Federal Communications Commission ("FCC") by EchoStar, this declaration serves as an assurance that the proposed earth station will operate in a controlled environment. I understand that, under the FCC's rules, "controlled exposure" standards apply in cases where, while persons are exposed as a consequence of their employment, those persons are fully aware of their exposure and can exercise control over it, and situations where any transient individual is aware of the potential for exposure.

Under those rules, EchoStar's earth station facility in Gilbert, Arizona already qualifies as a "controlled exposure" environment. Specifically, EchoStar has taken the following safeguards to protect the general public and EchoStar's workers from exposure to radiation generated by the power flux densities of the proposed earth station:

- The uplink center is located on 15 acres of a 36 acre parcel of land in the Northwestern edge of Gilbert, Arizona. The closest commercial occupant in the area is located approximately 1/4 mile to the West.
- The perimeter of the uplink facility is protected by a 10 foot rod iron link fence, top with tilt out spikes spaced at 5 inch intervals. There are also motion sensors on the outside of the perimeter.
- There is also a 4 foot interior fence around all antenna fields.
- The facility is monitored 24 hours per day by EchoStar's security staff. Nineteen security cameras are located at the outer perimeter of the facility with monitors at the security desk. Access to the facility is allowed only through card key access or by the 24-hour security staff.
- All visitors to the facility are required to check in with security before access is granted.

In sum, EchoStar has taken more than adequate measures to prevent any exposure of the general public to radiation from the proposed earth station and provides all requisite notice for operational personnel and authorized transient individuals.

Finally, EchoStar has taken precautions to ensure that there will not be any human exposure to radiation in the region between the main reflector and sub-reflector of the proposed station. That region will not be occupied by the earth station's operating personnel, except when necessary to conduct maintenance activities. At all such times, the transmitter will be turned off.

DECLARATION

I, Brent Jay Gale, hereby declare under penalty of perjury that the foregoing is true and correct to the best of my knowledge.


A handwritten signature in cursive script, reading "Brent Jay Gale", written over a horizontal line.

Brent Jay Gale
Vice President, Broadcast Operations
EchoStar Satellite Corporation

Dated: 5/17/2002

8. Certification

I hereby certify that I am the technically qualified person responsible for the preparation of the radiation hazard assessment, and that it is complete and correct to the best of my knowledge.

By: 

Gary Edwards
Engineer
Microwave and Satellite Services
Comsearch

Dated: May 21, 2002

Response to Question 36

In a Memorandum Opinion and Order released May 16, 2002, the Satellite Division of the International Bureau cancelled EchoStar's conditional construction permit for 22 channels at the 175° W.L. orbital location. *See In the Matter of EchoStar Satellite Corporation, Directsat Corporation, Direct Broadcasting Satellite Corporation, Consolidated Request for Additional Time to Commence Operation*, Memorandum Opinion and Order, DA 02-1164 (rel. May 16, 2002).

By Order released July 1, 2002, the International Bureau cancelled EchoStar's license for a Ka-band satellite system and dismissed a related modification application filed by EchoStar. *See In the Matter of EchoStar Satellite Corporation; Application for Authority to Construct, Launch, and Operate a Ka-band Satellite System in the Fixed-Satellite Service*, Memorandum Opinion and Order, DA 02-1534 (rel. July 1, 2002). EchoStar has requested reconsideration of that decision.

Response to Question 43

This is an application for a C-band earth station that will be part of EchoStar's state of the art Gilbert, Arizona station facility. The antenna will be used to receive and transmit programming at the facility, and for various other communications with C-band satellites on the "ALSAT" list. The antenna will also serve as a back up for the TT&C functions of EchoStar 1. Because the earth station will be used to deliver significant programming content to EchoStar customers, and because it will serve as a backup for the TT&C functions of EchoStar 1, grant of this application will serve the public interest.