

Mintz, Levin, Cohn, Ferris, Glovsky and Popeo, P.C.

701 Pennsylvania Avenue, N.W.  
Washington, D.C. 20004

Benjamin J. Griffin

202 434 7300  
202 434 7400 fax

Direct dial 202 661 8720  
[bgriffin@mintz.com](mailto:bgriffin@mintz.com)

December 15, 2003

HAND DELIVERY

RECEIVED

Donald Abelson, Chief  
International Bureau  
Federal Communications Commission  
445 12th Street, SW  
Washington, D.C. 20554

DEC 15 2003

FEDERAL COMMUNICATIONS COMMISSION  
OFFICE OF THE SECRETARY

**Re: Rainbow DBS Company LLC Direct Broadcast Satellite Construction  
Permit, File Nos. DBS 87-01, 94-SAT-AL-96, 94-SAT-TC-96, 49-SAT-TC-95,  
130-SAT-EXT-95, SAT-MOD-20020408-00062, SAT-MOD-2003110-00009**

Dear Mr. Abelson:

Rainbow DBS Company LLC ("Rainbow DBS") is pleased to report to the International Bureau that Rainbow DBS has timely and successfully completed all milestones required by the Commission's *Memorandum Opinion and Order*, 16 FCC Rcd 9 (2000), as modified by the Bureau in April 2003,<sup>1/</sup> and is now offering original programming to customers throughout the United States. Specifically, the Rainbow 1 DBS satellite is operating on the 11 channels for which it is authorized to operate on pursuant to its license (File No. SAT-MOD-20020408-00062) and the two channels which it is authorized to operate on pursuant to Special Temporary Authority ("STA") (File No. SAT-STA-20030623-00122). Rainbow DBS is providing service to customers, including original programming. Rainbow DBS is currently operating all of the Rainbow 1 transponders in full-CONUS mode.

Should you have any questions regarding the foregoing report, please communicate with the undersigned.

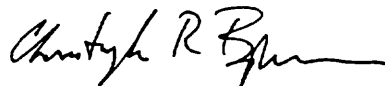
---

<sup>1/</sup> On April 22, 2003, the Bureau released an Order authorizing the launch of Rainbow 1 and extending the shipment, final testing and launch milestones for Rainbow 1 to August 31, 2003. See R/L DBS Company Application for Extension of Launch Milestone for Rainbow 1 (USABSS-17), File Nos. SAT-MOD-20020408-00062, SAT-MOD-2003110-00009, *Order and Authorization*, DA 03-1185 (rel. April 22, 2003).

MINTZ, LEVIN, COHN, FERRIS, GLOVSKY AND POPEO, P.C.

Donald Abelson, Chief  
December 15, 2003  
Page 2

Respectfully submitted,



Benjamin J. Griffin  
Christopher R. Bjornson  
*Counsel for Rainbow DBS*

cc: Anna Gomez  
Tom Tycz  
Rosalee Chiara  
Jennifer Gilsenan  
John Martin  
Sasha Field  
Doug Webbink  
Rockie Patterson  
Mark Young  
Selina Khan  
Marlene Dortch

WDC 342091v1

READ INSTRUCTIONS CAREFULLY  
BEFORE PROCEEDING

FEDERAL COMMUNICATIONS COMMISSION  
REMITTANCE ADVICE

Approved by OMB  
3060-0589  
Page No 1 of 1

(1) LOCKBOX # 358210

FCC/MELLON

APR 08 2002

SPECIAL USE

FOR USE ONLY

SECTION A - PAYER INFORMATION

(2) PAYER NAME (if paying by credit card, enter name exactly as it appears on your card)

Mintz, Levin, Cohn, Ferris, Glovsky

AMOUNT PAID (U.S. Dollars and cents)

\$755.00

(4) STREET ADDRESS LINE NO. 1

Attn: Benjamin J. Griffin

DBS8701

SAT-MOD-20020408-00062

(5) STREET ADDRESS LINE NO. 2

701 Pennsylvania Avenue, N.W.

R/L DBS Company, LLC

Rainbow 1

(6) CITY

Washington, D.C.

ZIP CODE

20004

(9) DAYTIME TELEPHONE NUMBER (include area code)

202.434.7300

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

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

(11) PAYER (FRN)

0003-7290-84

(12) PAYER (TIN)

0042718459

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

R/L DBS Company, LLC

(14) STREET ADDRESS LINE NO. 1

Attn: David A. Deitch

(15) STREET ADDRESS LINE NO. 2

200 Jericho Quadrangle

(16) CITY

Jericho

(17) STATE

NY

(18) ZIP CODE

11753

(19) DAYTIME TELEPHONE NUMBER (include area code)

516.803.3000

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

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

(21) APPLICANT (FRN)

0006-8593-75

(22) APPLICANT (TIN)

0000007715

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

(23A) CALL SIGN/OTHER ID

Rainbow 1

(24A) PAYMENT TYPE CODE

MPD

(25A) QUANTITY

1

(26A) FEE DUE FOR (PTC)

\$755.00

(27A) TOTAL FEE

\$755.00

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, JETTE WARD, 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 Jette Ward DATE April 8, 2002

SECTION E - CREDIT CARD PAYMENT INFORMATION

(31)

MASTERCARD/VISA ACCOUNT NUMBER:

EXPIRATION  
DATE:

☐

MASTERCARD

☐

VISA

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

SIGNATURE \_\_\_\_\_

DATE \_\_\_\_\_

Mintz, Levin, Cohn, Ferris, Glovsky and Popeo, P.C.

701 Pennsylvania Avenue, N.W.  
Washington, D.C. 20004

Benjamin J. Griffin  
Christopher R. Bjornson

202 434 7300  
202 434 7400 fax

Direct dial 202 661 8720  
bgriffin@mintz.com

April 8, 2002

**BY HAND DELIVERY**

Mr. William Caton  
Acting Secretary  
Federal Communications Commission  
International Bureau – Satellites  
P.O. Box 358210  
Pittsburgh, PA 15251-5210

Re: Application of R/L DBS Company, LLC for Minor Modification to Direct Broadcast Authorization, for Issuance of Authority to Launch, and for Authority to Operate Rainbow 1, File Nos. 87-01, \_\_\_\_\_

Dear Mr. Caton:

On behalf of R/L DBS Company, LLC ("R/L DBS"), a Direct Broadcast Satellite ("DBS") permittee, enclosed please find an original and four copies of an application for authority to make a minor modification to R/L DBS's DBS authorization, for issuance of authority to launch, and for operating authority for Rainbow 1. Also enclosed is a check in the amount of \$755.00 for the applicable "License to Operate" filing fee, and a completed FCC Form 159. Under the Commission's fee guidelines, no fee is required for minor modification applications for DBS satellites. *See* 47 C.F.R. § 1.1107(11). The fee for launch authority has already been paid in connection with an application for construction permit and launch authority filed by Continental Satellite Corporation, the predecessor in interest to R/L DBS.

We are also enclosing an additional copy of the application, which we ask you to date-stamp and return with our messenger. Also attached is a CD-ROM containing technical data for use by the Commission's engineering staff and the ITU. Please place the CD-ROM with the application copy that will be maintained in the Reference Room.

Mr. William Caton

Page 2

Please do not hesitate to contact us if you have any questions.

Sincerely,



Benjamin J. Griffin  
Christopher R. Bjornson  
Counsel for R/L DBS Company, LLC

Enclosures

cc: Rockie Patterson  
Mark Young  
Rosalee Chiara

WDC 312297v1

dd2900@gmail.com

Marlene Dortch

Page 2

Please let us know if you need any other information from us on this matter.

Sincerely,



Benjamin J. Griffin  
Christopher R. Bjornson  
Counsel for R/L DBS Company, LLC

cc: Mr. Rockie Patterson, International Bureau  
Mr. David Deitch  
Mr. Michael Olsen

WDC 313712v1

2900@gmail.com

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

In the Matter of	)	
	)	
R/L DBS Company, LLC	)	File No. DBS 87-01
	)	File No. _____
Application for Minor Modification to Direct	)	
Broadcast Satellite Authorization, for	)	
Issuance of Authority to Launch and for	)	
Authority to Operate	)	
Rainbow 1 (USABBS-17)	)	

**APPLICATION OF R/L DBS COMPANY, LLC FOR MINOR MODIFICATION TO  
DIRECT BROADCAST SATELLITE AUTHORIZATION, FOR ISSUANCE OF  
AUTHORITY TO LAUNCH AND FOR AUTHORITY TO OPERATE RAINBOW 1  
(USABBS-17)**

R/L DBS Company, LLC ("R/L DBS")<sup>1/</sup> hereby applies for authority to launch and operate a direct broadcast satellite, Rainbow 1, and locate it at the 61.5° W.L. orbital location. R/L DBS holds a construction permit for a satellite to operate over 11 Direct Broadcast Satellite ("DBS") service channels at 61.5° W.L.<sup>2/</sup> Rainbow 1 will be the first satellite launched by R/L DBS to operate over these channels.<sup>3/</sup>

This application also requests a minor modification of the R/L DBS permit to specify operation of Rainbow 1 as a spot beam satellite.

<sup>1/</sup> R/L DBS is an indirect wholly-owned subsidiary of Cablevision Systems Corporation ("Cablevision").

<sup>2/</sup> The authorization was first granted in 1989 and two extensions of time to complete construction have been granted. See Continental Satellite Corporation, et al., DBS-87-01, *Memorandum Opinion and Order*, FCC 89-257, 4 FCC Rcd 6292 (1989) ("Continental CP Order"); Application of Continental Satellite Corporation for Extension of Construction Permit, File No. 130-SAT-EXT-95, *Memorandum Opinion and Order*, DA 95-2347, 11 FCC Rcd 1157 (1995) ("Continental Extension Order"); Petition of R/L DBS Company, L.L.C. for Extension of its Direct Broadcast Satellite Construction Permit, File Nos. DBS 87-01 et al., *Memorandum Opinion and Order*, DA 00-2852, 16 FCC Rcd 9 (rel. Dec. 29, 2000) ("R/L DBS Extension Order").

<sup>3/</sup> In this application, the terms channels and frequencies may be used interchangeably.

With the launch of Rainbow 1, R/L DBS will have the capacity to offer numerous video, data and audio channels of programming, including national cable networks, educational and informational programming, local broadcast stations, and other local and regional programming in approximately 148 designated market areas ("DMAs") in the United States.

As set forth below and in the Technical Annex, Rainbow 1 will give R/L DBS the ability to enter the DBS marketplace with a panoply of local and regional programming as well as national programming networks in packages that will offer consumers a new competitive choice in DBS providers. This will promote competition and encourage technological innovation. Thus, grant of this application is in the public interest.

## **I. BACKGROUND**

In 1989, the Commission issued Continental Satellite Corporation ("Continental"), R/L DBS's predecessor in interest, an authorization to construct a two-satellite DBS system.<sup>4/</sup> In 1990, Continental filed a Request for Construction Permit and Launch Authority and, in August 1995, the International Bureau granted the construction permit and assigned 11 DBS channels to Continental at each of the 166° W.L and 61.5° W.L. orbital locations.<sup>5/</sup> The International Bureau deferred the issuance of launch authority until Continental submitted "updated technical information" and the Commission made "a finding that the information assures compliance with international treaties and agreements."<sup>6/</sup> In November 1995, the International Bureau granted Continental a four-year extension of the date by which it was required to commence service.<sup>7/</sup>

---

<sup>4/</sup> *Continental CP Order*, 4 FCC Rcd at 6300.

<sup>5/</sup> Application of Continental Satellite Corporation for Assignment of Direct Broadcast Satellite Orbital Positions and Channels, File No. DBS 87-01, DA 95-1733, 10 FCC Rcd 10473, 10479 (1995) (assigning 11 channels on odd-numbered channels 1-21 at orbital positions of the 166° W.L and 61.5° W.L. to Continental).

<sup>6/</sup> *Id.* Although Continental submitted updated technical information, there is no indication that the Commission ever made the finding of compliance with international agreements and the launch authority for which Continental had applied has not yet been issued.

<sup>7/</sup> *Continental Extension Order*, 11 FCC Rcd at 1158.



In 1996, Loral SpaceCom DBS Holdings, Inc. (“Loral”) and Rainbow DBS Holdings, Inc. (“Rainbow”) (an indirect subsidiary of Cablevision) formed R/L DBS as a Delaware limited liability company owned equally by the forming companies. An application was filed to assign Continental’s DBS permit to R/L DBS and the International Bureau granted this assignment in May 1997.<sup>8/</sup> Following this assignment, R/L DBS voluntarily surrendered the 11 assigned western channels at the 166° W.L. orbital location.<sup>9/</sup>

In December 2000, the Commission granted R/L DBS a 36-month extension of time to bring its DBS system into operation at 61.5° W.L.<sup>10/</sup> In the *R/L DBS Extension Order*, the Commission noted that R/L DBS had incorporated recent spot beam technological advances into its system design that would allow R/L DBS to improve the quality of its video offerings and the number of channels it would be able to offer consumers.<sup>11/</sup> Finding R/L DBS’s use of spot beam technology to be the best means for creating a commercially viable DBS system with only 11 channels at 61.5° W.L., and recognizing R/L DBS’s proposed marketing of regional programming as “an unprecedented DBS service offering,” the Commission concluded that granting an extension was in the public interest.<sup>12/</sup>

Pursuant to the *R/L DBS Extension Order*, R/L DBS is required to meet strict interim milestones for constructing and launching the satellite and commencing operations.<sup>13/</sup> To date,

---

<sup>8/</sup> Loral Corporation Request for a Declaratory Ruling Concerning Section 310(b)(4) of the Communications Act of 1934, File No. 70-SAT-DR-96, *Memorandum Opinion and Order*, DA 97-725, 12 FCC Rcd 21164, 21173 (1997). On March 12, 2002, Loral and Rainbow completed a transaction whereby Loral transferred its interest in R/L DBS to Rainbow. See Letter from Benjamin J. Griffin and Christopher R. Bjornson, Counsel for R/L DBS Company, LLC, to William Caton, Acting Secretary, FCC 1 (March 18, 2002). R/L DBS is now an indirect wholly-owned subsidiary of Cablevision.

<sup>9/</sup> International Bureau Satellite Policy Branch Information, *Public Notice*, DA 98-1869, 13 FCC Rcd 17892 (1998).

<sup>10/</sup> Petition of R/L DBS Company, L.L.C. for Extension of its Direct Broadcast Satellite Construction Permit, File Nos. DBS 87-01 et al., *Memorandum Opinion and Order*, DA 00-2852, 16 FCC Rcd 9 (rel. Dec. 29, 2000) (“*R/L DBS Extension Order*”).

<sup>11/</sup> *R/L DBS Extension Order*, 16 FCC Rcd at 15, ¶ 17.

<sup>12/</sup> *Id.*

<sup>13/</sup> *Id.* at 17-18, ¶ 24.

R/L DBS has met all of the milestones, reporting on its progress to the Commission in letters dated June 29, 2001,<sup>14/</sup> and December 21, 2001.<sup>15/</sup> The Commission also noted in the *R/L DBS Extension Order* that R/L DBS would be required to obtain authority to modify its satellite design during the extension period.<sup>16/</sup> This application incorporates that modification request and also requests authority to launch and operate the satellite.

## **II. AUTHORITY REQUESTED**

Rainbow 1 is under construction by Lockheed Martin Corporation ("Lockheed Martin") and is one of Lockheed Martin's A2100 class of satellites. The spacecraft has been designed to carry all 11 of the frequencies assigned to R/L DBS plus the two unassigned frequencies at the 61.5° W.L. orbital location (channels 23 and 24). R/L DBS will not activate these two unassigned channels unless and until it receives appropriate authorization from the Commission.

The spacecraft will deploy antennas that will permit the transmission of all or some of the frequencies into a CONUS<sup>17/</sup> beam or into one or more of 22 spot beams. By combining programming on the CONUS beam with local and regional programming in the spot beams, R/L DBS will be able to provide a differentiated DBS service.

By this application, R/L DBS requests authority to modify Rainbow 1 to incorporate the spot beam technology. R/L DBS also requests that the Commission issue the launch authority for which Continental previously applied (*see* note 6 and accompanying text). Finally, R/L DBS seeks a license to operate Rainbow 1 at the 61.5° W.L. orbital location. R/L DBS does not, at this time, seek assignment of the remaining two channels at 61.5° W.L.

---

<sup>14/</sup> Letter from Benjamin J. Griffin and James L. Casserly, Counsel for R/L DBS, to Donald Abelson, Chief, International Bureau (June 29, 2001).

<sup>15/</sup> Letter from Benjamin J. Griffin and James L. Casserly, Counsel for R/L DBS, to Donald Abelson, Chief, International Bureau (Dec. 21, 2001).

<sup>16/</sup> *R/L DBS Extension Order*, 16 FCC Rcd at 16, ¶ 22.

<sup>17/</sup> Although one beam of the spacecraft covers CONUS, the receive antenna elevation angles in certain far western parts of CONUS will be less than 15 degrees.

### **III. GENERAL TECHNICAL AND INTERFERENCE ANALYSIS**

The Technical Annex contains a technical description of the Rainbow 1 satellite. Interference analyses performed in accordance with ITU Radio Regulations Appendices S30 and S30A determined that coordination with Canada and Mexico and with certain EUTELSAT satellites is required per Section 2 of Annex 1 of Appendix S30. R/L DBS requests that the Commission forward to the ITU the necessary technical analyses. R/L DBS stands ready to work with the Commission to successfully complete any necessary coordinations. Rainbow 1 was shown to be in full compliance with all other applicable international interference criteria and limitations of Appendices S30 and S30A.

### **IV. APPLICANT QUALIFICATIONS**

R/L DBS is a fully qualified DBS permittee. R/L DBS's legal qualifications are a matter of public record. For DBS systems, the Commission has not required a prior demonstration of financial qualifications, but has instead relied on the applicant meeting due diligence milestones once a system is authorized.<sup>18/</sup> Nevertheless, R/L DBS, as a subsidiary of Cablevision, has sufficient financial resources available to it to cover the costs of launching and operating the Rainbow 1 satellite.

### **V. TYPE OF OPERATIONS**

R/L DBS intends to operate Rainbow 1 on a non-broadcast, non-common carrier basis. R/L DBS may sell and/or lease a portion of its capacity on a non-common carrier basis for complementary business purposes.

### **VI. SCHEDULE**

The expected launch date of Rainbow 1 is March 2003.

---

<sup>18/</sup> 47 C.F.R. § 100.19

## **VII. PUBLIC INTEREST CONSIDERATIONS**

Grant of this application will serve the public interest by promoting competition and encouraging technological innovation.

If the pending merger between EchoStar and DirecTV is approved, there will only be one national DBS provider. The new entity would be the only multichannel video program distributor (“MVPD”) capable of reaching all Americans. Even if the merger is not consummated, there would only be two facilities-based competitors in the DBS service, absent the presence of R/L DBS’s proposed service offering. Granting this application will allow R/L DBS to inject additional competition into the DBS service. R/L DBS will be able to compete with a DBS service offering differentiated from those of DirecTV, EchoStar, and/or New EchoStar.

The Commission also has noted that R/L DBS represents the “last opportunity in the near-term for entry by a competitive provider within the DBS service itself” because no other potential DBS operator has the wherewithal to become operational by the end of 2003 except for R/L DBS.<sup>19/</sup> R/L DBS is seen by EchoStar as being “able to compete head-to-head with New EchoStar.”<sup>20/</sup>

The use of spot beam technology by R/L DBS will provide a technological innovation in the DBS industry. Although EchoStar, DirecTV, and New EchoStar may be able to realize some of the benefits of spot beam technology, only R/L DBS will have its entire DBS system (including ground equipment) designed to take advantage of the latest advances in spot beam and advanced compression technologies.

---

<sup>19/</sup> *Id.* at 16, ¶ 19.

<sup>20/</sup> Application of EchoStar Communications Corporation, General Motors Corporation, Hughes Electronics Corporation, Transferors, and EchoStar Communications Corporation, Transferee, for Authority to Transfer Control, CS Docket No. 01-348, Joint Opposition to Petitions to Deny and Reply Comments of General Motors Corporation, Hughes Electronics Corporation, and EchoStar Communications Corporation at 51 (Feb. 25, 2002).

## **EXPEDITED PROCESSING REQUESTED**

Granting this application will also provide a distribution avenue for local and regional programming. As a condition to the *Extension Order*, R/L DBS agreed to provide original or regional programming on its spot beams.<sup>21/</sup> R/L DBS's ultimate parent company, Cablevision, and an affiliated company, Rainbow Media Holdings, Inc. ("Rainbow Media") have an impressive history of creating and distributing programming, including local and regional programming, with award-winning local and regional channels in the Bronx, Long Island, Nassau County, Suffolk County, and Westchester County, New York, as well as communities in Connecticut, and New Jersey. Bringing this type of programming to DBS would help advance the Commission's long-held goal of promoting localism in video programming.

### **VIII. THE NEED FOR EXPEDITED PROCESSING**

It is important that this application be approved as soon as possible in order to insure that R/L DBS's satellite launch schedule is not delayed. As the Commission has noted, processing of a modification application can potentially be a source of delay in a system becoming fully operational.<sup>22/</sup> Consequently, R/L DBS requests that this application be processed on an expedited basis.

### **IX. SECTION 304 WAIVER**

In accordance with Section 304 of the Communications Act,<sup>23/</sup> R/L DBS, as the party to this application, hereby 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.

---

<sup>21/</sup> *R/L DBS Extension Order*, 16 FCC Rcd at 16, ¶ 19.

<sup>22/</sup> *Id.* at 17, ¶ 23.

<sup>23/</sup> 47 U.S.C. § 304.

**X. CONCLUSION**

For the foregoing reasons, R/L DBS respectfully requests that the Commission grant this application to modify its DBS construction permit and to launch and operate the Rainbow 1 satellite and, therefore, allow R/L DBS to bring its DBS offering to the American public.

dd2900@gmail.com

**EXPEDITED PROCESSING REQUESTED**

Respectfully Submitted,

R/L DBS Company, LLC

By:   
David A. Deitch

Title: SVP and General Counsel  
R/L DBS Company, LLC  
200 Jericho Quadrangle  
Jericho, NY 11753  
(516) 803-2569

Dated: April 5, 2002

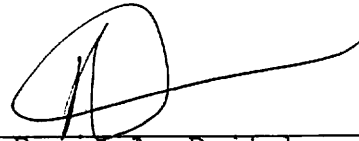
dd2900@gmail.com

**ANTI-DRUG ABUSE ACT CERTIFICATION**

Pursuant to Section 1.2002 of the Commission's rules, 47 C.F.R. § 1.2002, R/L DBS Company, LLC ("R/L DBS") certifies that neither R/L DBS, nor any of its shareholders, nor any of its officers or directors, are subject to a denial of Federal benefits pursuant to authority granted in Section 5301 of the Anti-Drug Abuse Act of 1988.

Respectfully Submitted,

R/L DBS Company, LLC

By:   
David A. Deitch

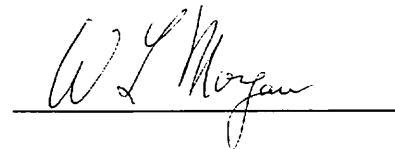
Title: SVP and General Counsel  
R/L DBS Company, LLC  
200 Jericho Quadrangle  
Jericho, NY 11753  
(516) 803-2569

Dated: April 5, 2002



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

I hereby declare under penalty of perjury that I am the technically qualified person responsible for preparation of the information contained in the foregoing submission, that I am familiar with Parts 25 and 100 of 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.



Walter Morgan

Communications Center

2723 Green Valley Road

Clarksburg, Maryland 20871

(301) 831-6700

Dated: *March 28, 2002*

# **TECHNICAL ANNEX**

## **Technical Description of RAINBOW-1**

**March 26, 2002**

**Prepared for  
R/L DBS COMPANY, LLC**

**Prepared by the  
Communications Center**

**Expert Consultants in Telecommunications Management and Technology**

## TABLE OF CONTENTS

1.0 General Description .....	4
1.1 Beam Coverage .....	5
1.2 Other Information .....	7
2.0 Communications Equipment on Rainbow-1 .....	8
2.1 Downlink Transmissions .....	14
2.1.1 CONUS .....	14
2.1.2 SPOT BEAMS .....	16
2.2 Uplink Reception .....	17
3.0 ITU Radio Regulation Information.....	20

## List of Figures and Tables

Figure 1 – Coverage by Spot Beams.....	10
Figure 2 – CONUS Coverage .....	11
Figure 3 – Simplified Block Diagram of the Communications Package.....	15
Figure 4 – Typical CONUS Coverage G/T.....	18
Figure 5 – Typical Spot Beam G/T.....	19
Table 1 DBS Frequencies per Spot Beam.....	6
Table 2 – ITU Frequency Plan for Region 2.....	8
Table 3 – Strapping Plan.....	9
Table 4 – Spot Beam Center Locations .....	12
Table 6 – TT&C Modulations.....	13

## TECHNICAL ANNEX

### Technical Description of Rainbow-1

#### 1.0 General Description

The Rainbow-1 (USABSS-17) satellite of R/L DBS Company, LLC has been designed to operate at R/L's 61.5 degrees West orbital location. The satellite is presently under construction at Lockheed Martin. It is intended to provide Broadcasting Satellite Services (BSS or DBS) to the 48 states. It has been designed to match the ITU Region 2 Plan (Appendices S30 and S30A). The BSS band frequencies are 12.2 to 12.7 GHz (downlinks) and 17.3 to 17.8 GHz (uplinks). Due to the frequency assignments, no use is made of the spectrum occupied by the Part 74, Part 78 or Part 94 services. All uplinks except the tracking beacon operate below 17.7 GHz.

The satellite uses the Lockheed Martin A2100 class of satellites which have seen extensive use throughout the SES Americom and other fleets of satellites. These satellites have a proven track record. The basic bus contains the attitude control, power, propulsion thermal and antenna pointing subsystems. An important addition is the autotracking subsystem that provides superior spot beam pointing. This allows more and smaller spots, thus increasing the frequency reuse ratio.

Rainbow-1 is a direct broadcasting satellite (DBS) capable of delivering up to 13 CONUS ("CONUS") frequencies or a larger number of frequencies via up to 22 spot beams from the licensed geostationary orbit nominal location at 61.5 West longitude (WL).

Various combinations of the CONUS and spot beams are possible. With the exception of Channel 24, each CONUS transponder may be switched independently into a multiplicity of spot beams and back to a single CONUS transponder. Each spot beam may have its own, independent, programming. There will be up to 14 uplinks. A single uplink can

serve one or more downlinks. When used in an all-spot beam configuration, the satellite is capable of operating over 100 DBS frequencies or providing more than 1000 standard TV channels using only 11 frequencies. This will provide local programming to up to 148 DMAs. The average frequency reuse will be 11:1.

The described spacecraft is currently under construction and arrangements have been made for a March 2003 launch assignment.

### **1.1 Beam Coverage**

As indicated above, the satellite can be configured from the ground to operate all of its BSS frequencies in a pure CONUS mode. In this mode, the satellite looks like a conventional BSS satellite optimized for this orbital location. The primary uplink will be located in Bethpage, NY and use 9 to 13 meter antennas and 2.2 kW transmitters with a 20 dB rain margin. Compressed video will be used with audio and data. All transmissions are digital and compatible with a matching set top box. The typical subscriber antenna will be no larger than the present 45-cm dishes.

The other mode involves the use of 22 spot beams, each with multiple BSS frequency assignments. Obviously, if a BSS frequency is used for a spot beam service, it cannot also be simultaneously used for CONUS service, therefore the choice between CONUS and spot service is made at the frequency level by commanding switches inside the satellite. It is accomplished using space proven technology. No on-board processor is needed.

The spacecraft has been configured to carry all eleven licensed frequencies plus the two unassigned frequencies at the 61.5 W.L. orbital location. The number of frequencies per spot beam is indicated in Table 1. Due to the handicap of limited spectrum, highly efficient use must be made of the frequencies. It is therefore imperative that the satellite shall be capable of a high level of frequency reuse to offer meaningful competition to the

one or two other BSS operators when the satellite is placed into service in approximately a year. The concept of local service has been recognized from the start. This satellite makes the important contribution of extending serious frequency reuse to the uplinks. By keeping the local services local the quality can be better controlled. In all, there are fourteen uplinks across the nation. Thus frequency reuse is extensively used on both the up- and downlinks.

**Table 1 DBS Frequencies per Spot Beam**

Beam No.	City	DBS FREQUENCY											
		1	3	5	7	9	11	13	15	17	19	21	23
1	Bangor, ME	1	3		7				15	17			
2	Boston, MA			5		9	11	13				21	
3	Bethpage, NY	1	3		7				15	17	19		23
4	Washington, DC			5		9	11	13				21	
5	Raleigh, NC	1	3		7				15	17	19		23
6	Atlanta, GA	1	3		7				15	17	19		23
7	Birmingham, AL			5		9	11	13				21	
8	Charleston, SC			5		9	11	13				21	
9	Miami, FL	1	3		7	9			15		19		23
10	Detroit, MI	1	3		7				15	17	19		23
11	Chicago, IL			5		9	11	13				21	
12	New Orleans, LA	1	3		7				15	17	19		23
13	Minneapolis, MN	1	3		7				15	17	19		23
14	St. Louis, MO	1	3		7				15	17	19		23
15	Kansas City, MO			5			11	13				21	
16	Dallas, TX	1	3		7				15	17	19		23
17	Houston, TX			5		9	11	13				21	
18	Denver, CO	1	3		7	9			15		19		23
19	Albuquerque, NM			5			11	13				21	
20	Seattle, WA			5			11	13		17		21	
21	San Francisco, CA	1	3		7				15	17	19		23
22	Los Angeles, CA			5		9	11	13				21	

The programming will come from up to 14 uplinks. The primary uplink is located in Bethpage, NY. The CONUS beam services provide channels of interest to a broader set of subscribers than within a single spot beam or DMA.

The uplinks for the spot beams originate within the spots themselves. Local TV station signals and other local programming are collected at an uplink within a spot beam or in a nearby spot beam. Not every spot has its own uplink. A 9-meter antenna is used for the spot beam uplinks. These uplinks have the advantage of the satellite's higher receiving spot beam antenna gain.

Conditional access is used to confine the downlink service to a beam and thence to specific designated market areas (DMAs) within the beam.

## **1.2 Other Information**

The Rainbow-1, like the other U.S.-licensed BSS satellites, will use QPSK with forward error correction (FEC) in 24 MHz per transponder. The signal will be time division multiplex (TDM) containing compressed video, audio and data. It has also been designed to be capable of 8PSK operation.

The design lifetime of the satellite is a minimum of 15 years. The fuel and DC power lifetimes will be 15 years. The power supply is sized to allow operation at all times including 100% of the eclipse period.

The satellite will be launched by an Atlas, Ariane V class rocket.

The TT&C and beacon facilities are to be located near Rapid City, SD. The beacon transmitter will be 230 watts. An 8 meter antenna is to be used. The TT&C equipment uses a 13.2-meter antenna and a 2 kW transmitter.



The satellite, its uplinks and operation will require a modification to the international standards and regulations for an ITU Region 2 BSS satellite as indicated the ITU Appendices S30 and S30A. This is similar to modifications requested by the other US DBS licensees. The attached ITU material reflects the changes of the current ITU Circular Letter CR/158 dated 4 May 2001 and Corrigendum 1 to CR/158 dated 15 March 2002 for this type of filing.

## 2.0 Communications Equipment on Rainbow-1

Rainbow-1 is capable of transmitting and receiving both left hand and right hand circular polarizations (LHCP or RHCP). The frequency assignments are in accord with the ITU APS30 and APS30A. See Table 2.

**Table 2 – ITU Frequency Plan for Region 2**

<b>Channel (frequency) Number</b>	<b>Space to Earth Downlink, MHz</b>	<b>Earth to Space Uplink, MHz</b>
1	12224.00	17324.00
3	12253.16	17353.16
5	12282.32	17382.32
7	12311.48	17411.48
9	12340.64	17440.64
11	12369.80	17469.80
13	12398.96	17498.96
15	12428.12	17528.12
17	12457.28	17557.28
19	12486.44	17586.44
21	12515.60	17615.60
23	12544.76	17644.76
24	12559.34	17659.34

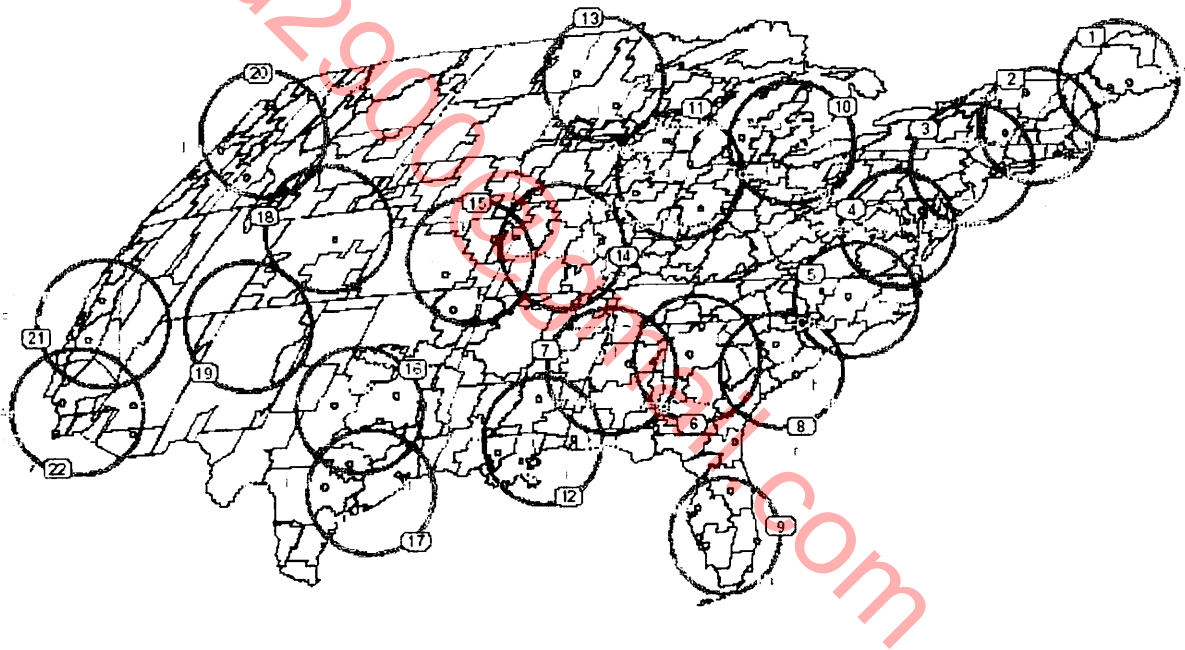
Table 3 shows the connection between beam numbers, downlink and uplink frequencies.

**Table 3 – Strapping Plan**

Downlink	Uplink Beam													
	1	3	5	6	9	11	12	13	14	17	18	20	21	22
1	1													
2		3												
3		3												
4			5											
5			5											
6				6										
7							12							
8				6										
9					9									
10						11								
11						11								
12							12							
13								13						
14									14					
15									14					
16										17				
17										17				
18											18			
19											18			
20												20		
21													21	
22														22

Figure 1 shows the spot beam coverages for Rainbow-1. Although some beams may overlap, they are at different frequencies. Service to areas between co-frequency beams is prohibited by the conditional access system.

**Figure 1 – Coverage by Spot Beams**



The CONUS coverage is shown in Figure 2.

**Figure 2 – CONUS Coverage**

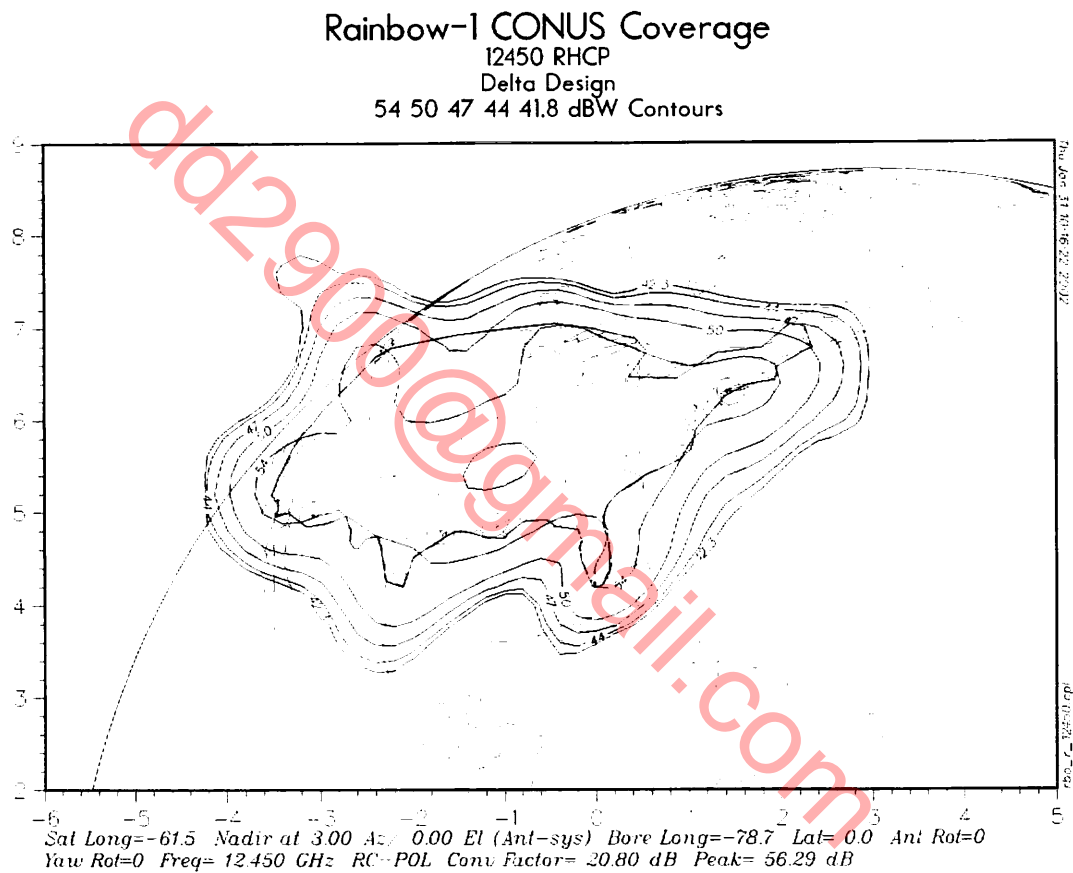


Table 4 provides the beam center (boresight) location for each spot beam.

**Table 4 – Spot Beam Center Locations**

Spot Beam Number	Beam Center West Longitude	Beam Center North Latitude
1	69.25	44.90
2	72.67	42.76
3	74.87	41.06
4	77.56	38.60
5	78.02	35.43
6	83.99	33.67
7	87.43	33.29
8	80.45	32.78
9	81.30	26.96
10	83.55	42.48
11	88.22	41.51
12	89.44	30.84
13	94.57	46.77
14	92.26	38.52
15	96.49	38.10
16	98.29	32.37
17	96.33	29.27
18	105.77	40.41
19	107.20	36.34
20	119.63	46.07
21	120.89	37.92
22	115.34	33.50

The telemetry, tracking and command (TT&C) frequencies are provided in Tables 5 and 6.

**Table 5 – TT&C Frequencies**

<b>Function</b>	<b>Frequency, MHz</b>	<b>Polarization</b>
Command		
Transfer orbit	17,304.00	Linear-H
On-station	17,304.00	Linear-V
On-station (Emergency)	17,304.00	Linear-H
Telemetry		
Transfer orbit #1	12,205.00	Linear-V
Transfer orbit #2	12,697.00	Linear-V
On-station #1	12,205.00	Linear-V
On-station back up #1	12,697.00	Linear-V
On-station #2	12,205.00	Linear-V
On-station back up #2	12,697.00	Linear-V

**Table 6 – TT&C Modulations**

<b>Function</b>	<b>Value</b>	<b>Units</b>
TT&C		
Antennas	Omni, wide angle horn or Rapid City, SD beam	
Command		
Signal format	PCM-RZ/FSK	
Command tones	35, 43 & 50	kHz
Data rate	1024	Bits per second
Modulation	FM	
Deviation	±400	kHz
Receive flux levels		
Transfer orbit	-77	dBW/m <sup>2</sup>
Normal on-station	-90	dBW/m <sup>2</sup>
Orbit anomalies	-77	dBW/m <sup>2</sup>
Telemetry		
Antennas	Omni, wide angle horn or Rapid City, SD beam	
Signal format	PCM/PSK	
Subcarriers	49.152 & 73.728	kHz
Data rate	2048	Bits per second
Modulation	PM	
Deviation	1.0, 0.7 & 0.6	Radians (1, 2 & 3 subcarriers)
EIRP (maximum)		

Function	Value	Units
Transfer orbit	1.0	dBW
Normal on-station	8.0	dBW
Ranging Tones	27,778	Hz
Subcarrier	27,778	Hz
Peak frequency deviation	2.0	kHz
Carrier		
Peak frequency deviation	±31,746	kHz

## 2.1 Downlink Transmissions

Figures 1 and 2 show the coverages. The CONUS beam EIRP levels with the maximum power from paralleled TWTAs ranges from 51.5 to 56.3 dBW. The spot beam edge EIRP levels are expected to be in the range of 53.7 to 54.9 dBW at the -6 dB contour with an 8.8 dBW power input. These are based on the worst case pointing errors for each type of beam.

The input power and antenna gain (co-polarized and cross-polarized) are provided in the Appendix S4 for APS30 for each beam. The cross-polarized isolation of the CONUS beam is at least 27 dB over 98% of CONUS. The cross polarization isolation of any spot beam is at least 30 dB at beam center.

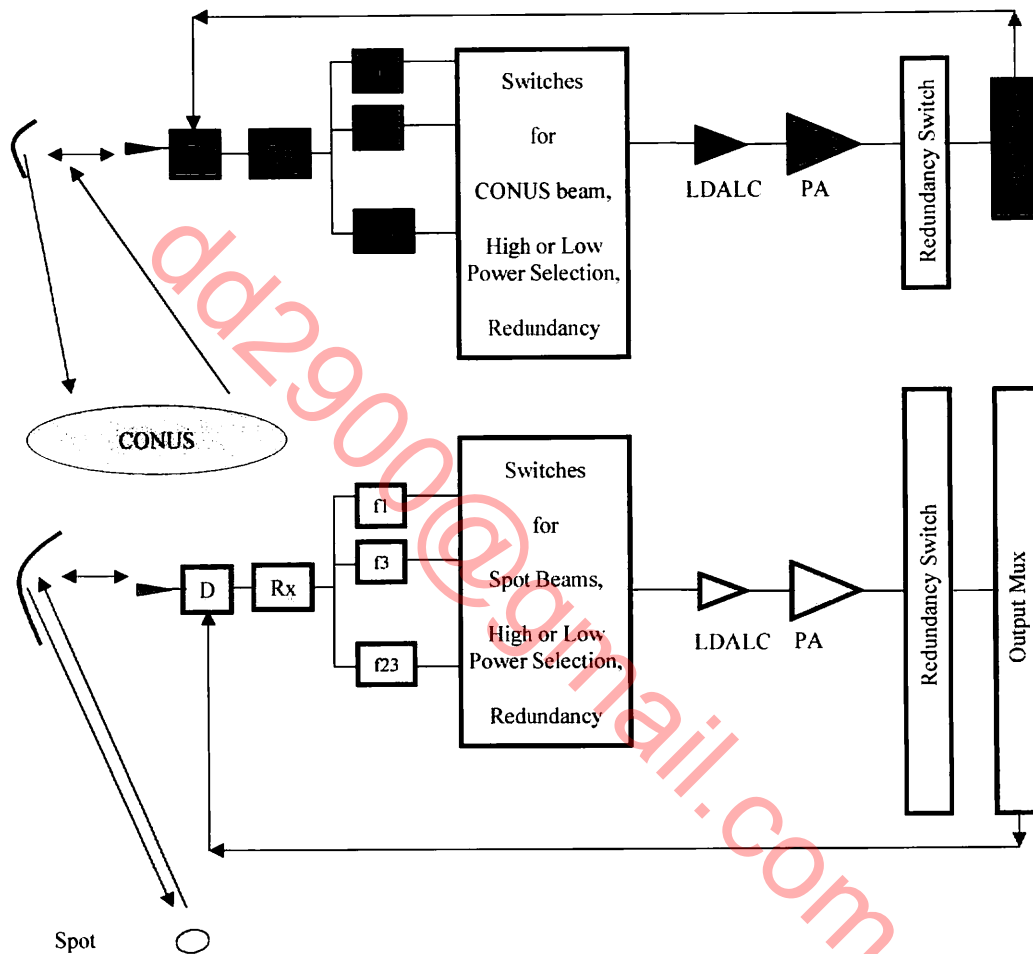
### 2.1.1 CONUS

The communications portion of the Rainbow-1 can be described with the help of Figure 3.

The CONUS coverage is provided by a separate antenna system from the spot beams. A shaped reflector is used for the CONUS coverage. Although the antenna beam of the satellite will cover CONUS, service to some far western states will be under 15° as must

be expected from a satellite at this location. A feed horn is connected via a transmit/receive diplexer (D) to the input of the 17.3 to 17.8 GHz receiver (RX).

**Figure 3 – Simplified Block Diagram of the Communications Package**



The receiver down-converts the spectrum to the 12.2 to 12.7 GHz band. The input multiplexer is composed of channel filters (f1 to f23), each with a 26 MHz bandwidth (of which 24 MHz is utilized). Not shown is the similar path for frequency 24, which uses the opposite polarization (LHCP) for a CONUS-only coverage.

Several switches are cascaded to select between spot and CONUS uplinks and downlinks, to select an appropriate power level and the redundancy. The output is provided to the



selected linearizer/driver automatic level control (LDALC) amplifier and the power amplifier (PA).

After passing through the output redundancy switch, this signal, along with other CONUS power amplifier outputs are combined in the high power output multiplexer (OMUX). Up to eleven transponders can be combined. The resulting signal is fed to the diplexer and thence to the horn and the downlink.

Figure 3 has been simplified by the omission of the receiver switching, redundant and parallel equipment, TT&C, housekeeping functions, etc.

### 2.1.2 SPOT BEAMS

The spot beam configuration is very similar, except there are more active receivers (one for each of the 14 spot uplinks) and the input multiplexer contains over 100 filters, one per transponder.

The spot/CONUS switches allow either spot or CONUS coverage, but never both on the same frequency at the same time.

There are more output multiplexers for the spot beams. The spot beam OMUX is coupled to the diplexer (receive/transmit) and thence to the associated feed to form the downlink beam.

ITU channels 23 and 24 are carried. Since channel 24 is of the opposite polarization sense (LHCP), it requires its own receiver and one filter (number 24). Other than redundancy switching, there are no other switches. There is no plan to use channel 24 in any beam except CONUS.

If permission to use channel 23 and/or 24 is not granted, they will not be powered. Just like any other occupant of this orbital location, having the capability to utilize these frequencies is not the same as having an authorization to use them from the FCC. R/L DBS Company, LLC accepts the risk that a license for channels 23 and 24 might not be granted.

## **2.2 Uplink Reception**

Table 3 provides the strapping plans for the uplinks to the downlinks. Table 1 shows the frequencies in each spot beam. Not all spot beam downlinks have their own uplink(s) within the spot. This reduces the number of uplink sites and on-board receivers. Traffic from a DMA in a nearby beam (number N) can therefore be transported to an uplink in beam number M. Appropriate spectrum portions of the output of the beam M satellite receiver are connected to beam N's transmitter section and radiated to cover beam N's area.

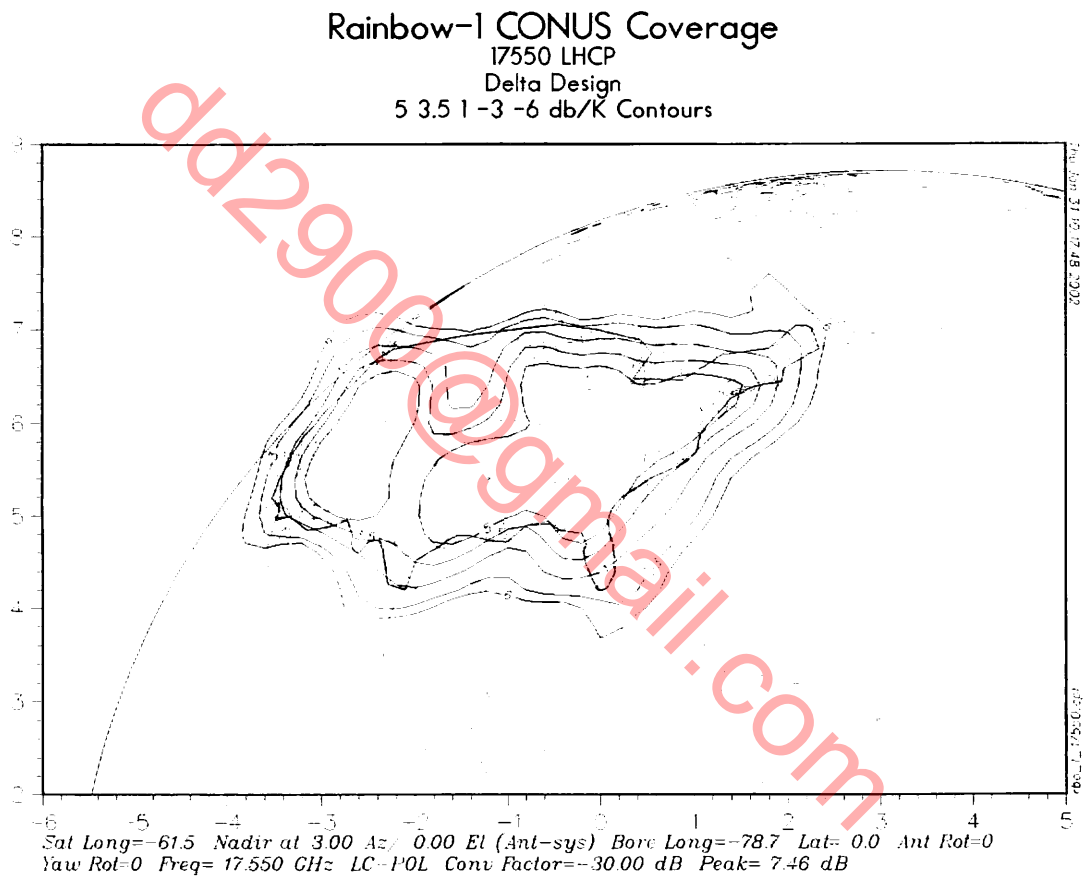
At the same time, traffic from a DMA (or DMAs) in beam M can be served, but on a different set of frequencies. In this case the uplink and downlink beams are both in M. This approach also allows placing uplinks in lower rain rate zones. The automatic level control in the satellite and the 20 dB of power control in the uplink combine to mitigate the effects of rain on the 17 GHz uplinks.

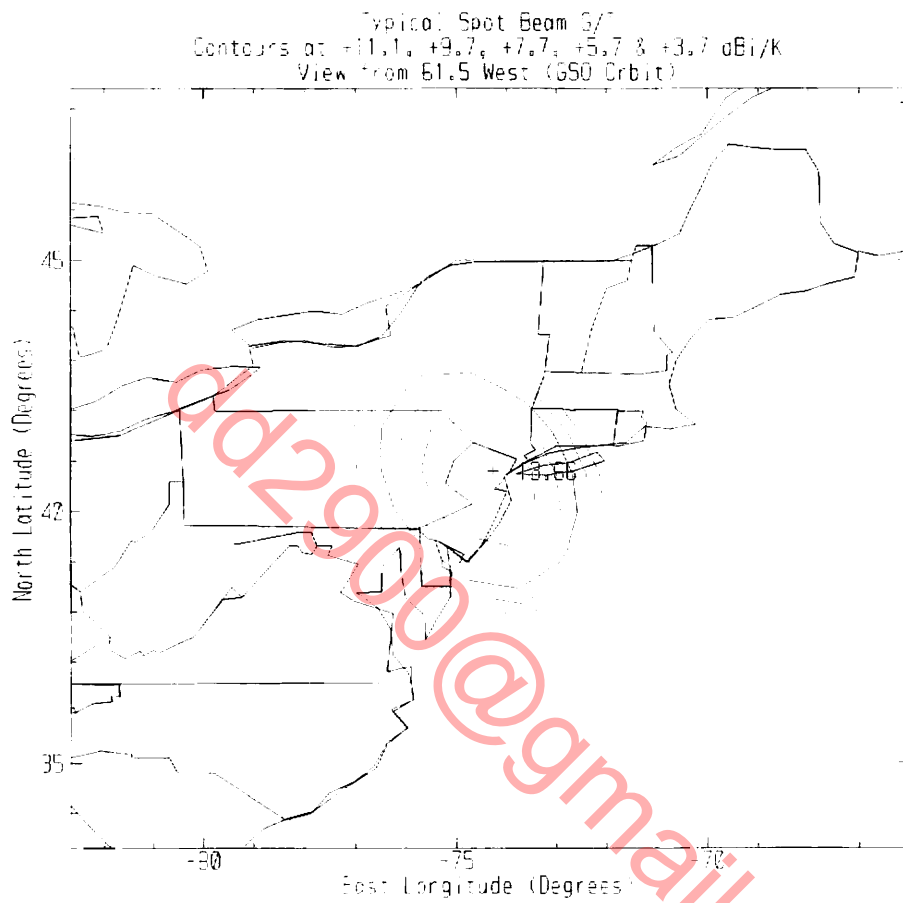
Figures 4 and 5 show the typical receiving figure of merit (G/T) for each beam type. The minimum G/T for the spot beam uplinks is +10 dBi/K. The G/T for the CONUS beam at Bethpage, NY is +3.5 dBi/K.

This value includes the  $\pm 0.05$ -degree maximum antenna pointing error effects for the spot beams. A beacon autotracking system is used to reference the spot beams to a defined location on Earth. The CONUS beam pointing error is  $\pm 0.15$  degrees.

The cross polarization isolation of the CONUS uplink is 27-dB minimum over the CONUS receiving area. The cross polarization isolation of each of the spot beams will be at least 30 dB at the beam center.

**Figure 4 – Typical CONUS Coverage G/T**



**Figure 5 – Typical Spot Beam G/T**

### **3.0 ITU Radio Regulation Information**

Attached are the completed forms for the following ITU interference analyses:

#### **Space to Earth**

Attachment 1 – Annex 1 to Appendix S30

Attachment 2 – Appendix S4 (Annex 2 to Appendix S30)

#### **Earth to Space**

Attachment 3 – Annex 1 to Appendix S30A

Attachment 4 – Appendix S4 (Annex 2 to Appendix S30A)

#### **ITU API/A and RC Forms**

Attachment 5 - API/A for USABSS-17 at 61.5 West Longitude

Attachment 6 - Request for Coordination for the Command, Beacon & Telemetry

The accompanying CD contains the GXT files based on data from the manufacturer. These files were used with the MSPACE program to detect interference. The CD contains the GIMS database and the pattern files, for the co- and cross-polarizations of all transmit and receive beams.

The Request for Coordination and API forms have been prepared for electronic filing with the ITU. These are also on the CD.

As appropriate, the data has been prepared in accord with the ITU Circular Letter 158 dated 4 May 2001. This letter modified the “Required Appendix S4 data elements for the

submission of information to the Radiocommunication Bureau under Appendices S30, S30A and S30B". The data has been reviewed and found to be in compliance with Corrigendum 1 to CR/158 dated 15 March 2002.

technical.annex.doc

dd2900@gmail.com

## **ATTACHMENT 1**

### **ANNEX 1 TO APPENDIX S30**

#### **USABSS-17 AT 61.5 WEST LONGITUDE**

**LIMITS FOR DETERMINING WHETHER A SERVICE OF AN  
ADMINISTRATION IS AFFECTED BY A PROPOSED MODIFICATION  
TO THE PLANS OR WHEN IT IS NECESSARY UNDER THIS  
APPENDIX TO SEEK THE AGREEMENT OF ANY OTHER  
ADMINISTRATION**

**Note: Conforms to ITU CR/158**

## ATTACHMENT 1

## ANNEX 1 (APS30)

Limits for determining whether a service of an administration is affected by a proposed modification to the Region 2 Plan or by a proposed new or modified assignment in the Regions 1 and 3 List or when it is necessary under this Appendix to seek the agreement of any other administration<sup>1</sup>

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

*NOT APPLICABLE*

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

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

- the Region 2 Plan as established by the 1983 Conference; *or*
- a modification of the assignment in accordance with this Appendix; *or*
- a new entry in the Region 2 Plan under Article 4 of this Appendix; *or*
- any agreement reached in accordance with this Appendix.

*A detailed interference analysis has been performed using the MSPACE version 1.964 software.*

*The conclusions are that the administrations of Mexico and Canada are affected for interference with respect to some of their downlink test points.*

*The attached CR-ROM contains the GIMS database containing the antenna diagrams of the shaped spot beams of USABSS-17 used in the analysis.*



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

With respect to § 4.1.1 c) of Article 4, an administration in Region 2 shall be considered as being affected if the proposed new or modified assignment in the Regions 1 and 3 List would result in exceeding the power flux-densities given below, at any test point in the service area affected.

*NOT APPLICABLE*

With respect to § 4.2.3 a), 4.2.3 b) or 4.2.3 f) of Article 4, as appropriate, an administration in Region 1 or 3 shall be considered as being affected if the proposed modification to the Region 2 Plan would result in exceeding the power flux-densities given below, at any test point in the service area affected.

$$\begin{aligned} & - 147 \text{ dB(W/(m}^2\cdot 27 \text{ MHz))} && \text{for} && 0^\circ \leq \theta < 0.44^\circ \\ & - 138 + 25 \log \theta \text{ dB(W/(m}^2\cdot 27 \text{ MHz))} && \text{for} && 0.44^\circ \leq \theta < 19.1^\circ \\ & - 106 \text{ dB(W/(m}^2\cdot 27 \text{ MHz))} && \text{for} && \theta \geq 19.1^\circ \end{aligned}$$

where  $\theta$  is:

- the difference in degrees between the longitudes of the broadcasting-satellite space station in Region 1 or 3 and the broadcasting-satellite space station affected in Region 2, or
- the difference in degrees between the longitudes of the broadcasting-satellite space station in Region 2 and the broadcasting-satellite space station affected in Region 1 or 3.

*Here is a list of the closest Region 1 BSS stations longitudes (only BSS stations with overlapping frequencies, with channels in the band 12,212 to 12,500 GHz, i.e. channels 26 to 40 in the Region 1 Plan)*

*Plan:*

<i>SEN (Senegal)</i>	<i>37W</i>
<i>MTN (Mauritania)</i>	<i>36.8W</i>
<i>DK, ISL, SRL (Denmark, Iceland and Sierra Leone)</i>	<i>33.5W</i>
<i>E,GNB, BFA (UK, Guinea Bissau and Burkina Fasso)</i>	<i>30W</i>

*List*

*Hispasat* *30W*

*Separation with 61.5W is always more than 19.1°, so that -106dBW/m² applies.*

Results for the CONUS beams (worst case) using GIMS pfd examination tool are as follows:

country	max pfd (dBW/m <sup>2</sup> )	limit (dBW/m <sup>2</sup> )	margin (dB)
Senegal	-135.76	-106	29.76
Mauritania	-135.76	-106	29.76
Danemark	-129.11	-106	23.11
Iceland	-126.82	-106	20.82
Sierra Leone	-136.35	-106	30.35
Spain	-132.56	-106	26.56
Guinea Bissau	-136.29	-106	30.29
Burkina Fasso	-136.52	-106	30.52
Hispasat	-132.56	-106	26.56

No administration is affected

#### 4. Limits to the power flux-density to protect the terrestrial services of other administrations<sup>5, 6, 7</sup>

With respect to § 4.1.1 d) of Article 4, an administration in Region 1, 2 or 3 shall be considered as being affected if the consequence of the proposed modified assignment in the Regions 1 and 3 List is to increase the power flux-density arriving on any part of the territory of that administration by more than 0.25 dB over that resulting from that frequency assignment in the Plan or List for Regions 1 and 3 as established by WRC-2000. The same administration shall be considered as not being affected if the value of the power flux-density anywhere in its territory does not exceed the limits expressed below.

**NOT APPLICABLE**

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

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

- |  |     |                                   |
|--|-----|-----------------------------------|
| - 148 dB(W/(m <sup>2</sup> .4 kHz))                        | for | $\theta \leq 5^\circ$             |
| - 148 + 0.5 ( $\theta - 5$ ) dB(W/(m <sup>2</sup> .4 kHz)) | for | $5^\circ < \theta \leq 25^\circ$  |
| - 138 dB(W/(m <sup>2</sup> .4 kHz))                        | for | $25^\circ < \theta \leq 90^\circ$ |

where  $\theta$  represents the angle of arrival

*It should be noted that this applies only to administrations "having no frequency assignment in the broadcasting-satellite service in the channel concerned, but in whose territory the power flux-density value exceeds the prescribed limit as a result of the proposed modification, or having an assignment whose associated service area does not cover the whole of the territory of the administration, and in whose territory outside that service area the power flux-density from the broadcasting-satellite space station subject to this modification exceeds the prescribed limit as a result of the proposed modification."*

*So it does not apply to Canada, USA, Mexico, Brazil, (and many other Region 2 countries for the odd channels)*

*Calculation of pfd from the CONUS beam in 4kHz:*

*Limit of -148dBW/m<sup>2</sup> in 4kHz is equivalent to  $-148 + 10\log(24000/4000)$  in 24 MHz, so the pfd limit is -110.2 dBW/m<sup>2</sup> for angle of arrival less than 5° and -100.2 dBW/m<sup>2</sup> for angles of arrival greater than 25°.*

*Using the GIMS pfd examination tool, it can be demonstrated that for all beams no administration is affected.*

5. (Not used.)

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

With respect to § 4.1.1 e) of Article 4, an administration in Region 2 or Region 3 shall be considered as being affected if the proposed new or modified assignment in the Regions 1 and 3 List would result in an increase in the power flux-density on its territory of 0.25 dB or more above that resulting from the frequency assignments in the Plan or List for Regions 1 and 3 as established by WRC-2000.

**NOT APPLICABLE**

With respect to § 4.2.3 e), an administration in Region 1 or 3 shall be considered as being affected if the proposed modification to the Region 2 Plan would result in an increase in the power flux-density on its territory of 0.25 dB or more above that resulting from the frequency assignments in the Region 2 Plan at the time of entry into force of the Final Acts of the 1985 Conference.

With respect to § 4.1.1 e) of Article 4, where a proposed new or modified assignment in the Regions 1 and 3 List gives a power flux-density of less than  $-138 \text{ dB(W/(m}^2\cdot 27 \text{ MHz))}$  \* anywhere in the territory of an administration of Region 2 or Region 3, that administration shall be considered as not being affected. With respect to § 4.2.3 e) of Article 4, where a proposed modification to the Region 2 Plan gives a power flux-density of less than  $-160 \text{ dB(W/(m}^2\cdot 4 \text{ kHz))}$  \* anywhere in the territory of an administration of Region 1 or 3, that administration shall be considered as not being affected.

\* In place of these values, the values given in the Annex to Resolution **540 (WRC-2000)** shall be applied by administrations and the Bureau until this section is revised by a subsequent conference.

"Annex to resolution 540 (WRC-2000)  
Pfd limits to be applied in place of  $-138 \text{ dB(W/(m}^2\cdot 27 \text{ MHz))}$   
and  $-160 \text{ dB(W/(m}^2\cdot 4 \text{ kHz))}$  in paragraph 3 of section 6  
of Annex 1 to Appendix S30 <sup>(1)</sup>

Instead of the uniform pfd limits of  $-138 \text{ dB(W/(m}^2\cdot 27 \text{ MHz))}$  and  $-160 \text{ dB(W/(m}^2\cdot 4 \text{ kHz))}$ , apply new pfd limits to protect FSS in all Regions from BSS in all Regions, as given below:

For Regions 1 and 3 BSS & Region 2 FSS (space-to-Earth in the band 11.7-12.2 GHz):

$-160 \text{ dB(W/(m}^2\cdot 27 \text{ MHz))}$	$0^\circ \leq \theta < 0.054^\circ$
$(-137.46 + 17.74 \log \theta) \text{ dB(W/(m}^2\cdot 27 \text{ MHz))}$	$0.054^\circ \leq \theta < 3.67^\circ$
$(-141.56 + 25 \log \theta) \text{ dB(W/(m}^2\cdot 27 \text{ MHz))}$	$3.67^\circ \leq \theta < 11.54^\circ$
$-115 \text{ dB(W/(m}^2\cdot 27 \text{ MHz))}$	$11.54^\circ \leq \theta$

where  $\theta$  corresponds to the minimum geocentric angular separation between the interfering BSS and the interfered-with FSS space station.

For Region 1 BSS & Region 3 FSS (space-to-Earth in the band 12.2-12.5 GHz):

$-160 \text{ dB(W/(m}^2\cdot 27 \text{ MHz))}$	$0^\circ \leq \theta < 0.054^\circ$
$(-137.46 + 17.74 \log \theta) \text{ dB(W/(m}^2\cdot 27 \text{ MHz))}$	$0.054^\circ \leq \theta < 3.67^\circ$
$(-141.56 + 25 \log \theta) \text{ dB(W/(m}^2\cdot 27 \text{ MHz))}$	$3.67^\circ \leq \theta < 16.69^\circ$
$-111 \text{ dB(W/(m}^2\cdot 27 \text{ MHz))}$	$16.69^\circ \leq \theta$

where  $\theta$  corresponds to the minimum geocentric angular separation between the interfering BSS and the interfered-with FSS space station.

For Region 2 BSS & Regions 1 and 3 FSS (space-to-Earth in the band 12.5-12.7 GHz in Region 1 and in the band 12.2-12.7 GHz in Region 3):

$-160 \text{ dB(W/(m}^2 \cdot 27 \text{ MHz))}$	$0^\circ \leq \theta < 0.054^\circ$
$(-137.46 + 17.74 \log \theta) \text{ dB(W/(m}^2 \cdot 27 \text{ MHz))}$	$0.054^\circ \leq \theta < 3.67^\circ$
$(-141.56 + 25 \log \theta) \text{ dB(W/(m}^2 \cdot 27 \text{ MHz))}$	$3.67^\circ \leq \theta < 11.54^\circ$
$-115 \text{ dB(W/(m}^2 \cdot 27 \text{ MHz))}$	$11.54^\circ \leq \theta$

where  $\theta$  corresponds to the minimum geocentric angular separation between the interfering BSS and the interfered-with FSS space station.

It is understood that, in the implementation of these criteria, the Bureau should take into account the pertinent station-keeping accuracy of the BSS and FSS space stations as filed by the notifying administrations.

NOTE - In addition, the 0.25 dB allowed increase over the pfd resulting from the original Plan assignments of all Regions should be maintained.

1 - For those sharing situations not listed here, the provisions of Appendix S30 and Appendix S30A apply.

*There are several filings from Region 1 administrations in the FSS in the neighborhood of 61.5W (less than 11.54° separation) using the band 12.5-12.7 GHz over Region 1, these are:*

67W	3GSAT G13 (F) (still in the advance publication stage)
65W	F-SAT 12 Ku (F) (still in the advance publication stage)
64W	EUTELSAT 3-64W (F/EUT) (request for coordination received by ITU on 2/5/2000)
63W	SMO-GEO-3B KU (F) (still in advance publication stage)
59W	F-SAT-13 KU (F) (still in the advance publication stage)
54.5W	HISPASAT 54.5W KU (E) (request for coordination received by ITU on 18/7/2000)
54W	F SAT 14 KU (F) (still in the advance publication stage)
51.5W	HISPASAT 51.5W KU (E) (request for coordination received by ITU on 18/7/2000)

*The service area of EUTELSAT 3-64W (beam BCR, all of visible Region 1) has been checked for a USABSS-17 pfd less than  $-137.46 + 17.74 \log 2.35 = -130.88 \text{ dBW/m}^2$  in 27 MHz. Using GIMS, it appears that some areas in Europe receive a higher pfd, so that this network is affected and coordination with Eutelsat is necessary.*

*The PFD over the service area of HISPASAT 54.5W KU has been checked with reference to  $(-141.56 + 25 \log 6.85 = -120.67 \text{ dBW/m}^2)$ .*

*Analysis with GIMS has shown that the pfd is always lower.*

*The PFD over the service area of HISPASAT 51.5W KU has been checked with reference to  $(-141.56 + 25 \log 9.85 = -116.72 \text{ dBW/m}^2)$ .*

*Analysis with GIMS has shown that the pfd is always lower.*

*Consequently, Spain is not affected.*

*Other countries of Region 1 or 3 have been checked against a pfd of  $-115 \text{ dB(W/(m}^2 \cdot 27 \text{ MHz))}$*

*No administration is affected since the received pfd is always lower.*

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

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

- the value of  $\Delta T / T$  resulting from the proposed modification is greater than the value of  $\Delta T / T$  resulting from the assignment in the Region 2 Plan as of the date of entry into force of the Final Acts of the 1985 Conference; *and*
- the value of  $\Delta T / T$  resulting from the proposed modification exceeds 4%,

using the method of Appendix S8 (Case II).

*No space network in Region 1 currently has filed for uplink in the 12.5-12.7 GHz, so no administration is concerned by this §7*

---

End notes:

1 - With respect to this Annex, except for section 2, the limits relate to the power flux-density which would be obtained assuming free-space propagation conditions.

With respect to section 2 of this Annex, the limit specified relates to the overall equivalent protection margin calculated in accordance with § 2.2.4 of Annex 5.

2 - For the definition of the equivalent protection margin, see § 3.4 of Annex 5.

3 - For the protection of analogue assignments brought in service before 17 October 1997, the following values shall be used until 1 January 2015:

$$\begin{array}{ll} -147 \text{ dB(W/(m}^2\cdot 27 \text{ MHz))} & \text{for } 0^\circ \leq \theta < 0.44^\circ \\ -138 + 20 \log \theta \text{ dB(W/(m}^2\cdot 27 \text{ MHz))} & \text{for } 0.44^\circ \leq \theta < 9^\circ \end{array}$$

4 - For the definition of the overall equivalent protection margin, see section 1.11 of Annex 5 to this Appendix

5 - See § 3.18 of Annex 5

6 - In the band 12.5 - 12.7 GHz in Region 1, these limits are applicable only to the territory of administrations mentioned in Nos. S5.494 and S5.496.

7 - See Resolution 34.

**ATTACHMENT 2**

**APPENDIX S4 (ANNEX 2 TO APPENDIX S30)**

**USABSS-17 AT 61.5 WEST LONGITUDE**

**BASIC CHARACTERISTICS TO BE FURNISHED IN NOTICES RELATING TO  
SPACE STATIONS IN THE BROADCASTING-SATELLITE SERVICE.**

**Note: Conforms to ITU CR/158**

dd2900@gmail.com



# APPENDIX S4 (ANNEX 2 TO APPENDIX S30) FOR USABSS-17

## A.1 Identity of the satellite network

- a) Identity of a satellite network: *USABSS-17*
- b)
- c) Country: *USA*

### *beams identification*

<i>USA9BS01</i>
<i>USA9BS02</i>
<i>USA9BS03</i>
<i>USA9BS04</i>
<i>USA9BS05</i>
<i>USA9BS06</i>
<i>USA9BS07</i>
<i>USA9BS08</i>
<i>USA9BS09</i>
<i>USA9BS10</i>
<i>USA9BS11</i>
<i>USA9BS12</i>
<i>USA9BS13</i>
<i>USA9BS14</i>
<i>USA9BS15</i>
<i>USA9BS16</i>
<i>USA9BS17</i>
<i>USA9BS18</i>
<i>USA9BS19</i>
<i>USA9BS20</i>
<i>USA9BS21</i>
<i>USA9BS22</i>
<i>USA9BUS1</i>
<i>USA9BUS2</i>

- f) Country symbol of the notifying administration: *USA*

## A.2 Date of bringing into use

a) Date of bringing into use: *December 29, 2003*

## A.3 Operating administration or agency: *120*

## A.4 Orbital information

a) For the case of a space station onboard a GSO satellite:

- 1) nominal geographical longitude on the geostationary-satellite orbit: *61.5 °W*
- 2) planned longitudinal tolerance and inclination excursion:  *$\pm 0.05^\circ$  E-W;  $\pm 0.05^\circ$  N-S*

## A.5 Coordination

*None*

## A.6 Agreements

*None*

## A.11 Regular Hours of Operation

*0-24*

## B. Satellite antenna beams

### B.1 Designation

*The USABSS-17 satellite contains 22 spot beams and two national beams. Each beam has a unique designation and corresponds to the downlink beam of the respective MSPACE input file beam identification. Table 1 below is a complete list of USABSS-17 satellite antenna beams.*

Table 1 - USABSS-17 Beams

<i>MSPACE Beam ID (for reference)</i>	<i>Beam designation</i>
USA9BS01	E01
USA9BS02	E02
USA9BS03	E03
USA9BS04	E04
USA9BS05	E05
USA9BS06	E06
USA9BS07	E07
USA9BS08	E08
USA9BS09	E09
USA9BS10	E10
USA9BS11	E11
USA9BS12	E12
USA9BS13	E13
USA9BS14	E14
USA9BS15	E15
USA9BS16	E16
USA9BS17	E17
USA9BS18	E18
USA9BS19	E19
USA9BS20	E20
USA9BS21	E21
USA9BS22	E22
USA9BUS1	EU1
USA9BUS2	EU2

### B.3 Geostationary Space Station Antenna Characteristics

d) Pointing accuracy of the antenna: 0.05 degrees for spot beams (E01 to E22) and 0.1 degrees for CONUS beams (EU1 and EU2)

g) For the case of a space station submitted in accordance with Appendix S30:

1. co-polar and cross-polar gain of antenna: *see Table 2.*
- 2.
- 3.
4. for elliptical beams: *not applicable (all beams are shaped)*
5. for beams other than elliptical shape:
  - co-polar and cross-polar gain contours: *beam contours in gxt format are provided in the attached CD-ROM.*

*The gxt file naming convention is as follows:*

*CONUS beam copol EU1 : CONUSR.GXT*

*CONUS beam crosspol EU1: CONUSRX.GXT*

*CONUS beam copol EU2: CONUSL.GXT*

*CONUS beam crosspol EU2: CONUSLX.GXT*

*SPOT 01 to SPOT 22 (E01 to E22) copol: BEAM1.GXT to BEAM22.GXT*

*SPOT 01 to SPOT 22 (E01 to E22) crosspol: BEAM1X.GXT to BEAM22X.GXT*

- beam aim point longitude and latitude: *see Table 2.*

Table 2 - USABSS-17 Beam Information

<i>Beam</i>	<i>Co-pol Gain dBi</i>	<i>X-pol Gain dBi</i>	<i>Aim Point Longitude</i>	<i>Aim Point latitude</i>
E01	51.4	21.4	-69.25	44.90
E02	51.8	21.8	-72.67	42.76
E03	51.6	21.6	-74.87	41.06
E04	52.0	22.0	-77.56	38.60
E05	51.8	21.8	-78.02	35.43
E06	51.8	21.8	-83.99	33.67
E07	52.1	22.1	-87.43	33.29
E08	52.0	22.0	-80.45	32.78
E09	51.8	21.8	-81.30	26.96
E10	52.1	21.1	-83.55	42.48
E11	52.0	22.0	-88.22	41.51
E12	51.8	21.8	-89.44	30.84
E13	51.8	21.8	-94.57	46.77
E14	52.0	22.0	-92.26	38.52
E15	52.1	22.1	-96.49	38.10
E16	51.7	21.7	-98.29	32.37
E17	51.6	21.6	-96.33	29.27
E18	51.5	21.5	-105.77	40.41
E19	51.8	21.8	-107.20	36.34
E20	51.6	21.6	-119.63	46.07
E21	50.9	20.9	-120.89	37.92
E22	51.3	21.3	-115.34	33.50
EU1	35.6	5.6	-103.08	34.87
EU2	35.6	5.6	-103.08	34.87

C. Characteristics to be provided for each group of frequency assignments for a satellite antenna beam or an earth station antenna

C.2 Assigned frequency (frequencies)

a) Channel designation as per Appendix S30, see Table 3 for use of channels per beam

TABLE SHOWING CORRESPONDENCE BETWEEN CHANNEL  
NUMBERS AND ASSIGNED FREQUENCIES

Channel No.	Assigned frequency (MHz)
1	12224.00
3	12253.16
5	12282.32
7	12311.48
9	12340.64
11	12369.80
13	12398.96
15	12428.12
17	12457.28
19	12486.44
21	12515.60
23	12544.76
24	12559.34

C.3 Assigned frequency band.

a) Bandwidth of the assigned frequency band in kHz: 24000

C.4 Class of station(s) and Nature of service

*Class of Station: EV*

*Nature of Service: CP*

## C.6 Polarization

Type of Polarization: *Circular*

Sense of Polarization: *Right-hand for odd-numbered and left hand for the even-numbered channel.*

## C.7 Class of Emission

a) Class of emission and necessary bandwidth:

*Class of Emission: 24M0G7W*

*Necessary Bandwidth: 24 MHz*

## C.8 Power Characteristics of the Transmission

*h) Table 3 lists the maximum power supplied to the antenna for each beam and each channel. Also provided for each beam and channel is the maximum power density per Hz averaged over the worst 5 MHz, 27 MHz and 40 kHz*

Table 3 - USABSS-17 Transmission Characteristics

Beam	Channels	Power to Antenna dBW	Max. Power Density per Hz in dBW/Hz		
			5 MHz	27 MHz	40 kHz
E01	1 3 7 15 17	8.8	-65.0	-65.0	-65.0
E02	5 9 11 13 21	8.8	-65.0	-65.0	-65.0
E03	1 3 7 15 17 19 23	8.8	-65.0	-65.0	-65.0
E04	5 9 11 13 21	8.8	-65.0	-65.0	-65.0
E05	1 3 7 15 17 19 23	8.8	-65.0	-65.0	-65.0
E06	1 3 7 15 17 19 23	8.8	-65.0	-65.0	-65.0
E07	5 9 11 13 21	8.8	-65.0	-65.0	-65.0
E08	5 9 11 13	8.8	-65.0	-65.0	-65.0
E09	1 3 7 9 15 17 19 23	8.8	-65.0	-65.0	-65.0
E10	1 3 7 15 17 19 23	8.8	-65.0	-65.0	-65.0
E11	5 9 11 13 21	8.8	-65.0	-65.0	-65.0
E12	1 3 7 15 17 19 23	8.8	-65.0	-65.0	-65.0
E13	1 3 7 15 17 19 23	8.8	-65.0	-65.0	-65.0
E14	1 3 7 15 17 19 23	8.8	-65.0	-65.0	-65.0
E15	5 11 13 21	8.8	-65.0	-65.0	-65.0
E16	1 3 7 15 17 19 23	8.8	-65.0	-65.0	-65.0
E17	5 9 11 13 21	8.8	-65.0	-65.0	-65.0
E18	1 3 7 9 15 17 19 23	8.8	-65.0	-65.0	-65.0
E19	5 11 13 21	8.8	-65.0	-65.0	-65.0
E20	5 11 13 17 21	8.8	-65.0	-65.0	-65.0
E21	1 3 7 15 17 19 23	8.8	-65.0	-65.0	-65.0
E22	5 9 11 13 21	8.8	-65.0	-65.0	-65.0
EU1	1 3 5 7 9 11 13 15 17 19 21 23	20.8	-53.0	-53.0	-53.0
[EU2]	[24]	[20.8]	[-53.0]	[-53.0]	[-53.0]

## C.9 Information on modulation characteristics.

b) In the case of a space station submitted in accordance with Appendix S30:



1. type of modulation: *QPSK and/or 8PSK*
2. pre-emphasis characteristics: *not applicable*
3. TV standard: *not applicable*
4. sound-broadcasting characteristics: *time division multiplexed compressed digital audio and data.*
5. frequency deviation: *not applicable*
6. composition of the baseband: *time division multiplexed compressed video, audio and data.*
7. type of multiplexing of the video and sound signal: *time division multiplex*
8. energy dispersal characteristics: *carrier will always be modulated*
9. digital modulation: *effective bit rate: 30.32 Mbits/s (6/7 code rate), 23.58 Mbits/s (2/3 code rate); transmitted bit rate: 40 Mbits/s; symbol rate 20 Msymbols/s for QPSK, effective bit rate: 41.5 Mbits/s (3/4 code rate), transmitted bit rate: 60 Mbits/s; symbol rate: 13.8 Msymbols/s for 8PSK.*
10. roll-off factor of the filter of the receiver: *in accordance with ITU-R BO1293-1.*

#### C.10 Type and identity of the associated stations

##### *Typical associated Earth station*

C.10.c For an associated earth station (whether specific or typical):

C.10.c.2 The isotropic gain (dBi) of the antenna in the direction of maximum radiation (see No. S1.160)

*33.1 dBi*

C.10.c.3 The beamwidth in degrees between the half power points (describe in detail if not symmetrical)

*3.7°*

C.10.c.4 Either the measured radiation pattern of the antenna or the reference radiation pattern

*Reference radiation pattern : MODRES*

C.10.c.6 The equivalent antenna diameter (metres)

0.45m

#### C.11 Service Area

b) In the case of a space station submitted in accordance with Appendix S30, the service area identified by a set of a maximum of twenty test points and by a service area contour on the surface of the Earth

*For each of the 22 spot beams described in B above, the service area is the intersection of the area lying within its -6dB contour and the territory of the 48 contiguous states of the USA; for the CONUS beams the service area is the territory of the 48 contiguous states of the USA. (see gxt files in the attached CR-ROM).*

*The test points for each beam are indicated in Table 4.*

Table 4 - Test Points

<i>Beam</i>	<i>Test Point #</i>	<i>Longitude</i>	<i>latitude</i>
E01	1	-69.25	44.90
E02	1	-72.67	42.76
E03	1	-74.87	41.06
E04	1	-77.56	38.60
E05	1	-78.02	35.43
E06	1	-83.99	33.67
E07	1	-87.43	33.29
E08	1	-80.45	32.78
E09	1	-81.30	26.96
E10	1	-83.55	42.48
E11	1	-88.22	41.51
E12	1	-89.44	30.84
E13	1	-94.57	46.77
E14	1	-92.26	38.52
E15	1	-96.49	38.10
E16	1	-98.29	32.37
E17	1	-96.33	29.27
E18	1	-105.77	40.41
E19	1	-107.20	36.34
E20	1	-119.63	46.07
E21	1	-120.89	37.92
E22	1	-115.34	33.50
EU1 & EU2	1	-94.93	49.30
	2	-124.59	48.25
	3	-124.21	40.37
	4	-117.15	32.68
	5	-97.22	26.03
	6	-80.34	25.27
	7	-80.05	32.77
	8	-75.57	35.53
	9	-69.27	47.30
	10	-82.44	42.94

C.15 Description of the group(s) required in the case of non-simultaneous emissions.

*A group, identified as group 99 in MSPACE, includes USABSS-17 and the planned beam USAEH001 since these networks will not be operated simultaneously on the same channels.*

*Concerning the various beams of USABSS-17, they are also all in the group, however some spot beams may be operated simultaneously on the same channels (as shown in Table 3), albeit not simultaneously with the national beam EU1. Several runs of MSPACE with other type of grouping, have shown that this represents the worst case for calculating interference to other networks.*

#### D. Overall Link Characteristics

D.1 Connection between Earth-to-Space and Space-to-Earth frequencies in the network.

*The channel connectivity complies with Appendix S30 and S30A (i.e. channel 1 Earth to Space is connected to channel 1 Space to Earth and so on.)*

*The beam connectivity is indicated in Table 5.*

Table 5 Beam connectivity

<i>MSPACE Beam ID (for reference)</i>	<i>uplink beam<sup>2</sup></i>	<i>downlink beam</i>
USA9BS01	R01	E01
USA9BS02	R03	E02
USA9BS03	R03	E03
USA9BS04	R05	E04
USA9BS05	R05	E05
USA9BS06	R06	E06
USA9BS07	R12	E07
USA9BS08	R06	E08
USA9BS09	R09	E09
USA9BS10	R11	E10
USA9BS11	R11	E11
USA9BS12	R12	E12
USA9BS13	R13	E13
USA9BS14	R14	E14
USA9BS15	R14	E15
USA9BS16	R17	E16
USA9BS17	R17	E17
USA9BS18	R18	E18
USA9BS19	R18	E19
USA9BS20	R20	E20
USA9BS21	R21	E21
USA9BS22	R22	E22
USA9BUS1	RU1	EU1
USA9BUS2	RU2	EU2

---

<sup>2</sup> See Attachment 4 for a description of the satellite receive beams

## BEAM PATTERNS FOR BEAMS 1 TO 22 AND CONUS

### CO-POLARIZED

dd2900@gmail.com

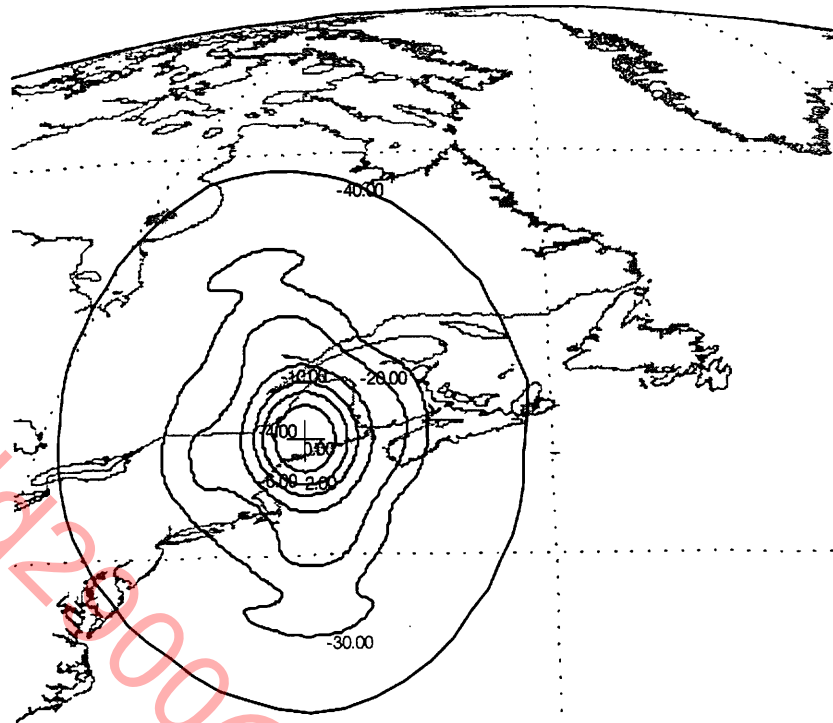
## PART OF ATTACHMENT 2

## CO-POLARIZED BEAM PATTERNS

## List of Beams for USABSS-17

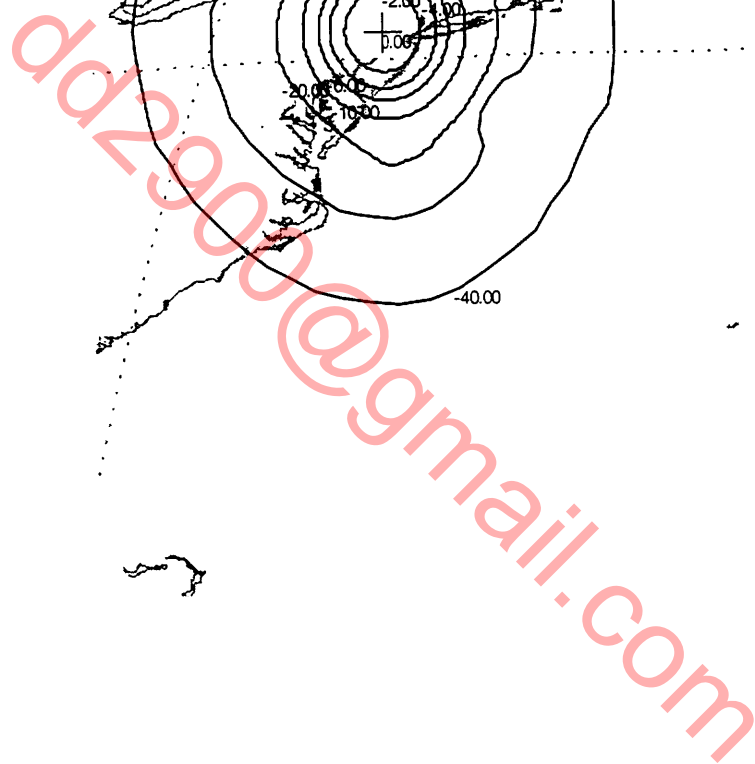
	Beam Number	Receive	Transmit	USA9B Identification
1	Bangor, ME	R01	E01	S01
2	Boston, MA	--	E02	S02
3	Bethpage, NY	R03	E03	S03
4	Washington, DC	--	E04	S04
5	Raleigh, NC	R05	E05	S05
6	Atlanta, GA	R06	E06	S06
7	Birmingham, AC	--	E07	S07
8	Charleston, DC	--	E08	S08
9	Miami, FL	R09	E09	S09
10	Detroit, MI	--	E10	S10
11	Chicago, IL	R11	E11	S11
12	New Orleans, LA	R12	E12	S12
13	Minneapolis, MN	R13	E13	S13
14	St. Louis, MO	R14	E14	S14
15	Kansas City, MO	--	E15	S15
16	Dallas, TX	--	E16	S16
17	Houston, TX	R17	E17	S17
18	Denver, CO	R18	E18	S18
19	Albuquerque, NM	--	E19	S19
20	Seattle, WA	R20	E20	S20
21	San Francisco, CA	R21	E21	S21
22	Los Angeles, CA	R22	E22	S22
	CONUS LHCP	RU1	EU1	US1
	CONUS RHCP	RU2	EU2	US2

Notice ID : 000000000  
Administration : USA  
Satellite Network : USABSS-17  
Beam : R01  
Emission / Reception : R  
Polarization : C  
Service Area Number :  
Service Area Name :  
Reason : C  
Satellite Position : -61.500

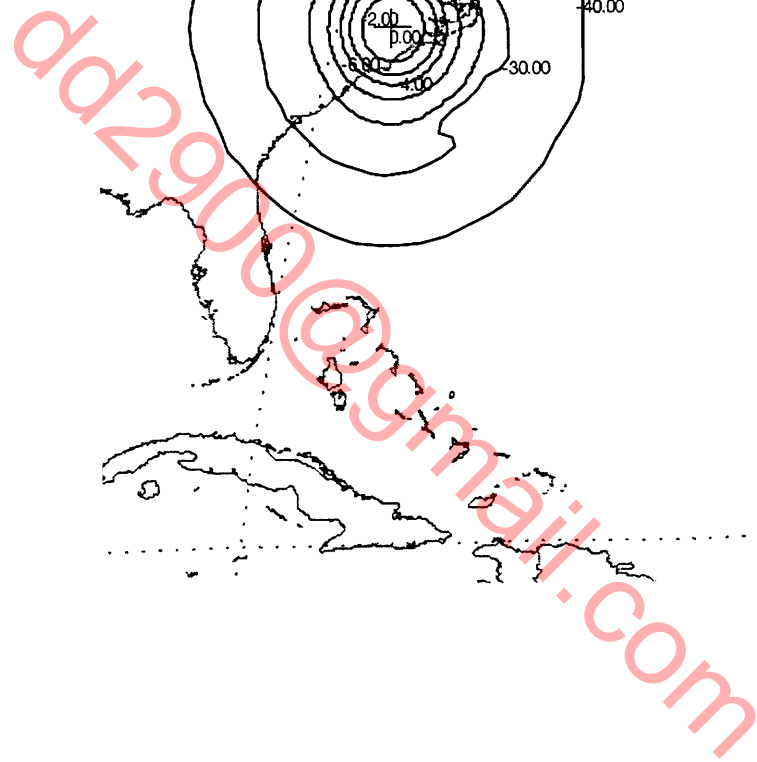




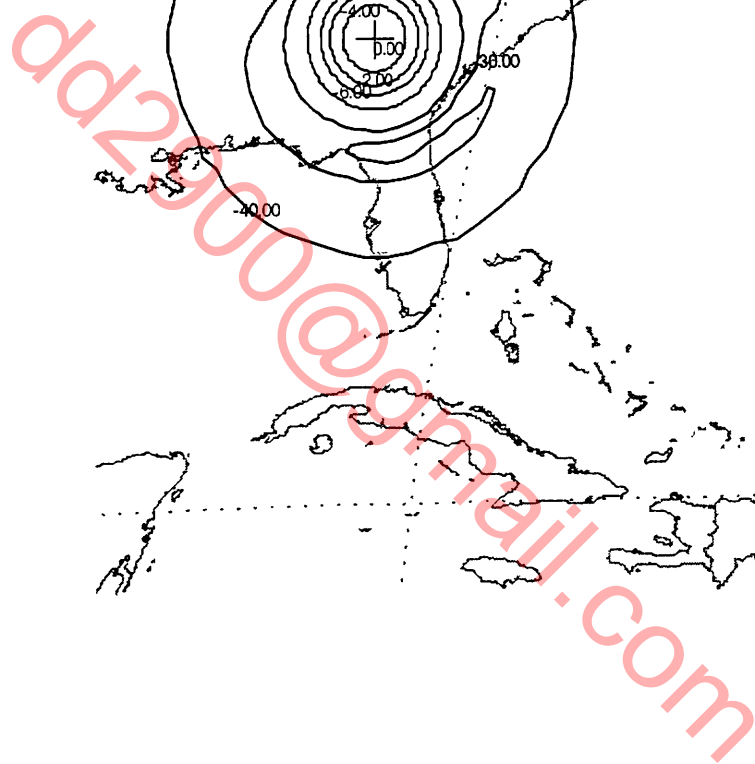
Notice ID : 000000000  
Administration : USA  
Satellite Network : USABSS-17  
Beam : R03  
Emission / Reception : R  
Polarization : C  
Service Area Number :  
Service Area Name :  
Reason : C  
Satellite Position : -61.500



Notice ID : 000000000  
Administration : USA  
Satellite Network : USABSS-17  
Beam : R05  
Emission / Reception : R  
Polarization : C  
Service Area Number :  
Service Area Name :  
Reason : C  
Satellite Position : -61.500



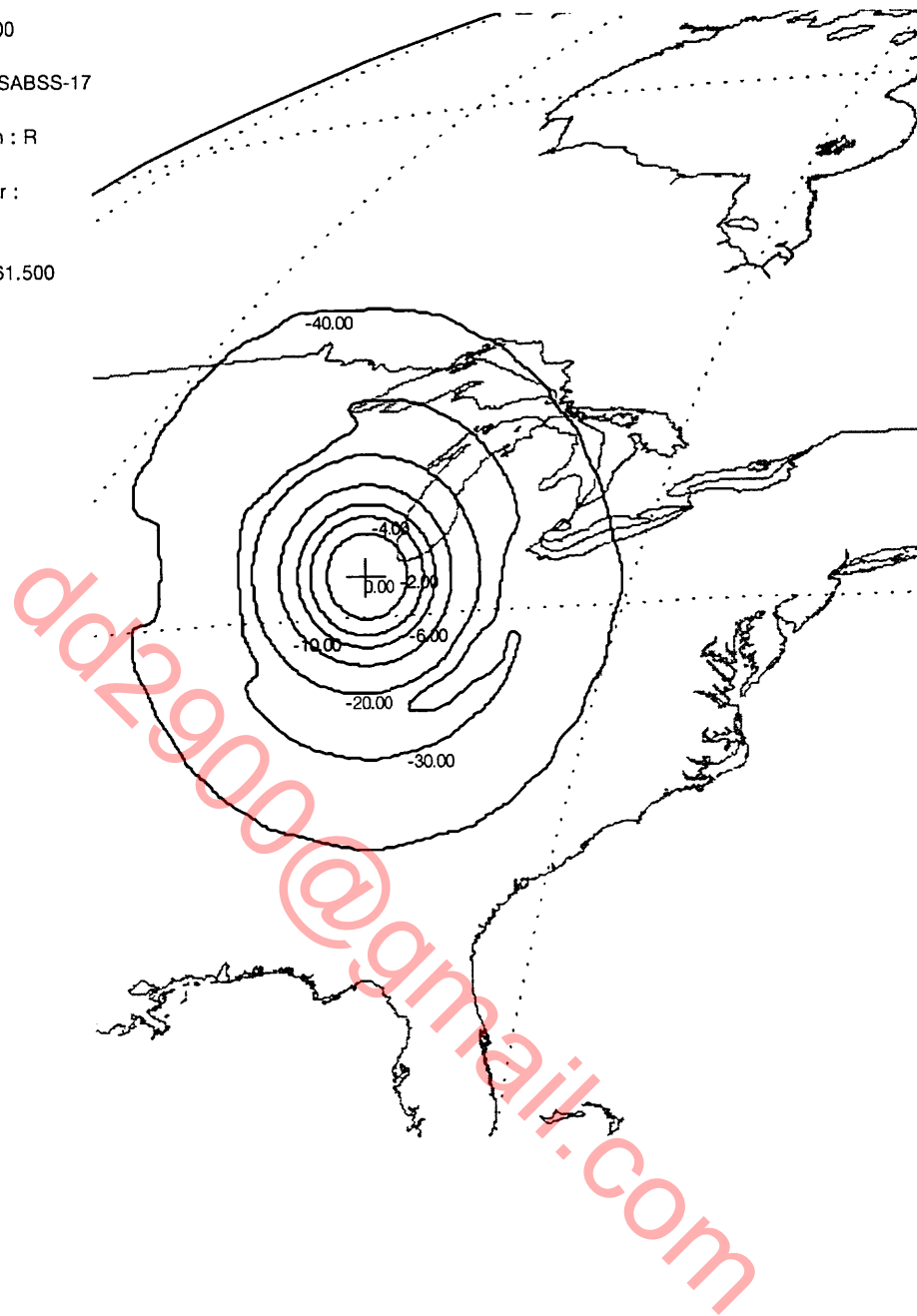
Notice ID : 000000000  
Administration : USA  
Satellite Network : USABSS-17  
Beam : R06  
Emission / Reception : R  
Polarization : C  
Service Area Number :  
Service Area Name :  
Reason : C  
Satellite Position : -61.500



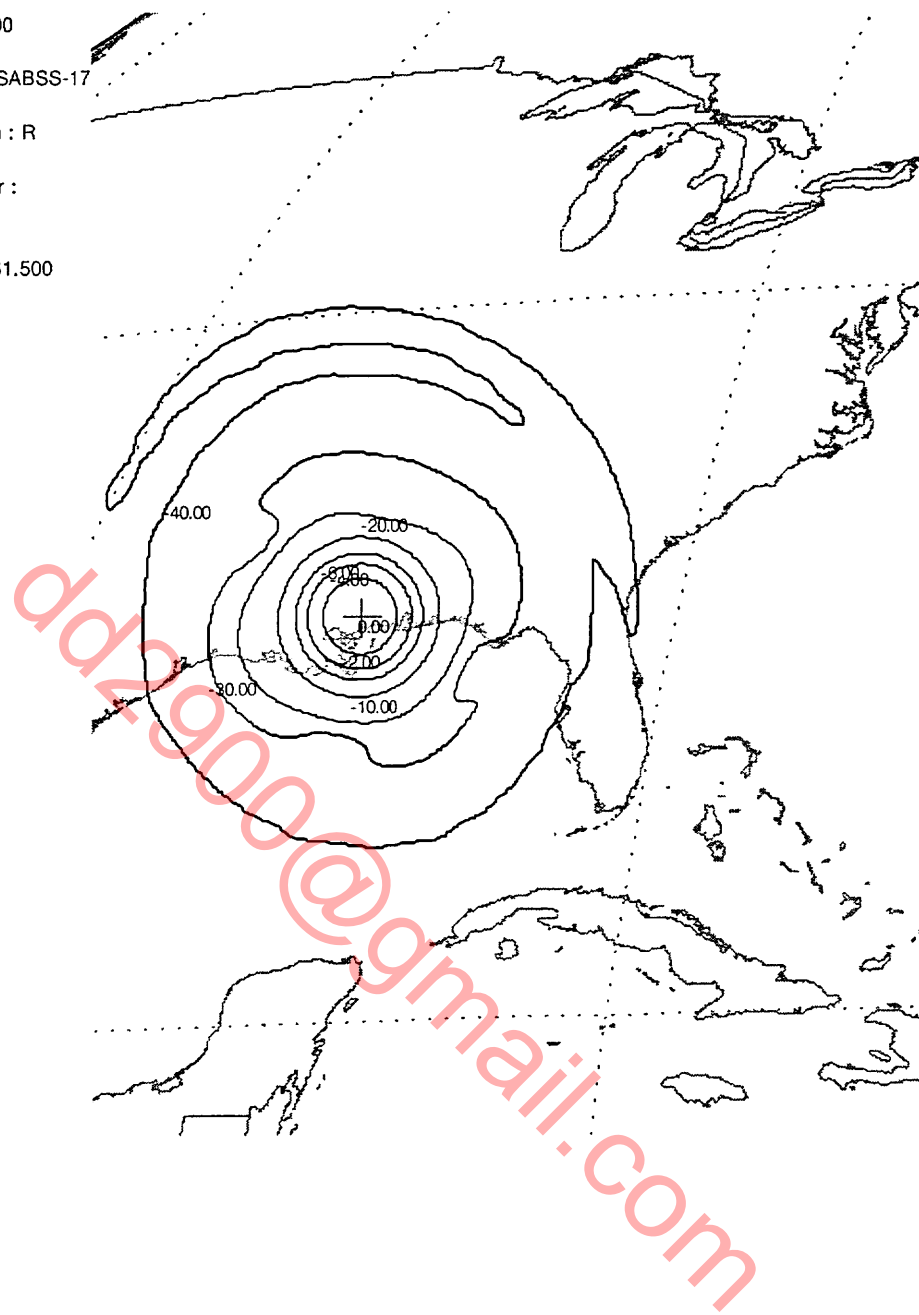
Notice ID : 000000000  
Administration : USA  
Satellite Network : USABSS-17  
Beam : R09  
Emission / Reception : R  
Polarization : C  
Service Area Number :  
Service Area Name :  
Reason : C  
Satellite Position : -61.500



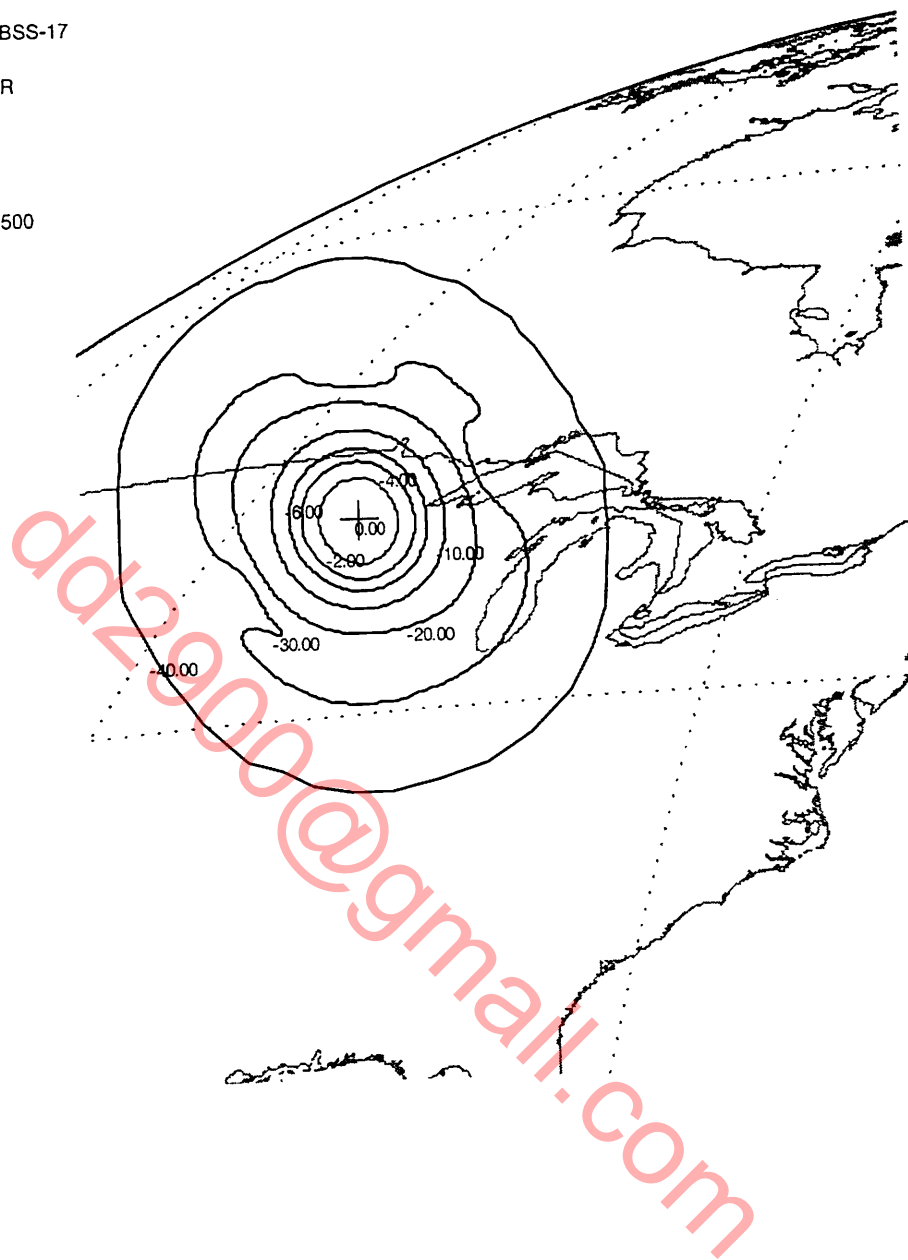
Notice ID : 000000000  
Administration : USA  
Satellite Network : USABSS-17  
Beam : R11  
Emission / Reception : R  
Polarization : C  
Service Area Number :  
Service Area Name :  
Reason : C  
Satellite Position : -61.500



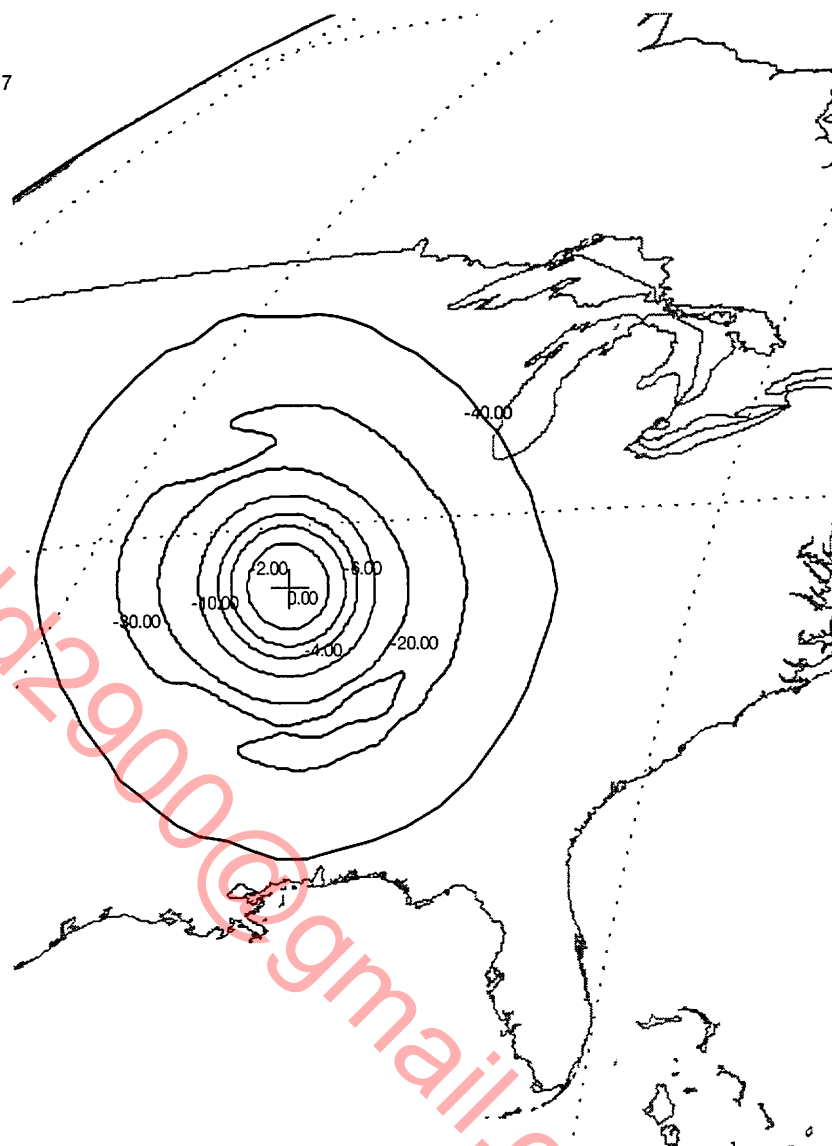
Notice ID : 000000000  
Administration : USA  
Satellite Network : USABSS-17  
Beam : R12  
Emission / Reception : R  
Polarization : C  
Service Area Number :  
Service Area Name :  
Reason : C  
Satellite Position : -61.500



Notice ID : 000000000  
Administration : USA  
Satellite Network : USABSS-17  
Beam : R13  
Emission / Reception : R  
Polarization : C  
Service Area Number :  
Service Area Name :  
Reason : C  
Satellite Position : -61.500

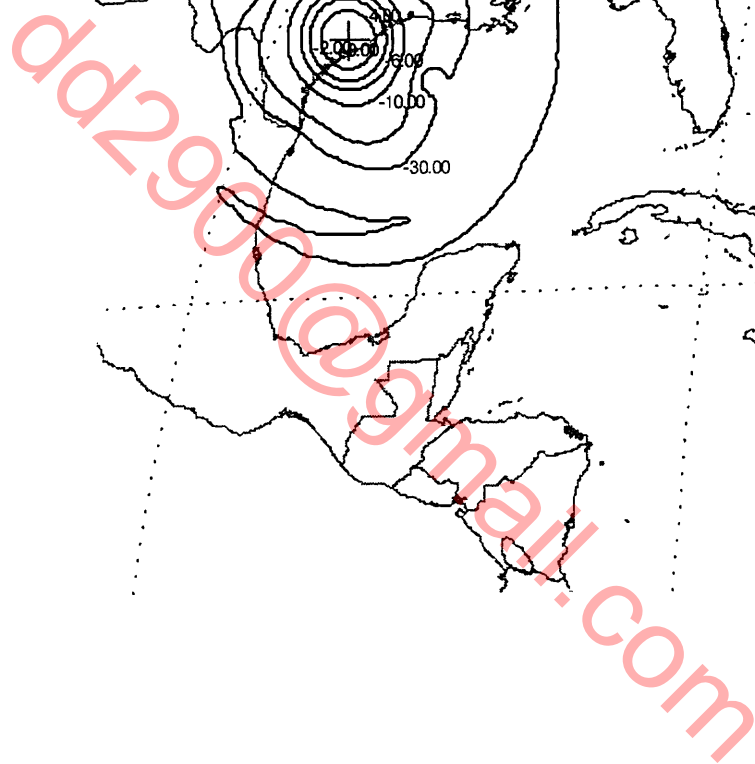


Notice ID : 000000000  
Administration : USA  
Satellite Network : USABSS-17  
Beam : R14  
Emission / Reception : R  
Polarization : C  
Service Area Number :  
Service Area Name :  
Reason : C  
Satellite Position : -61.500

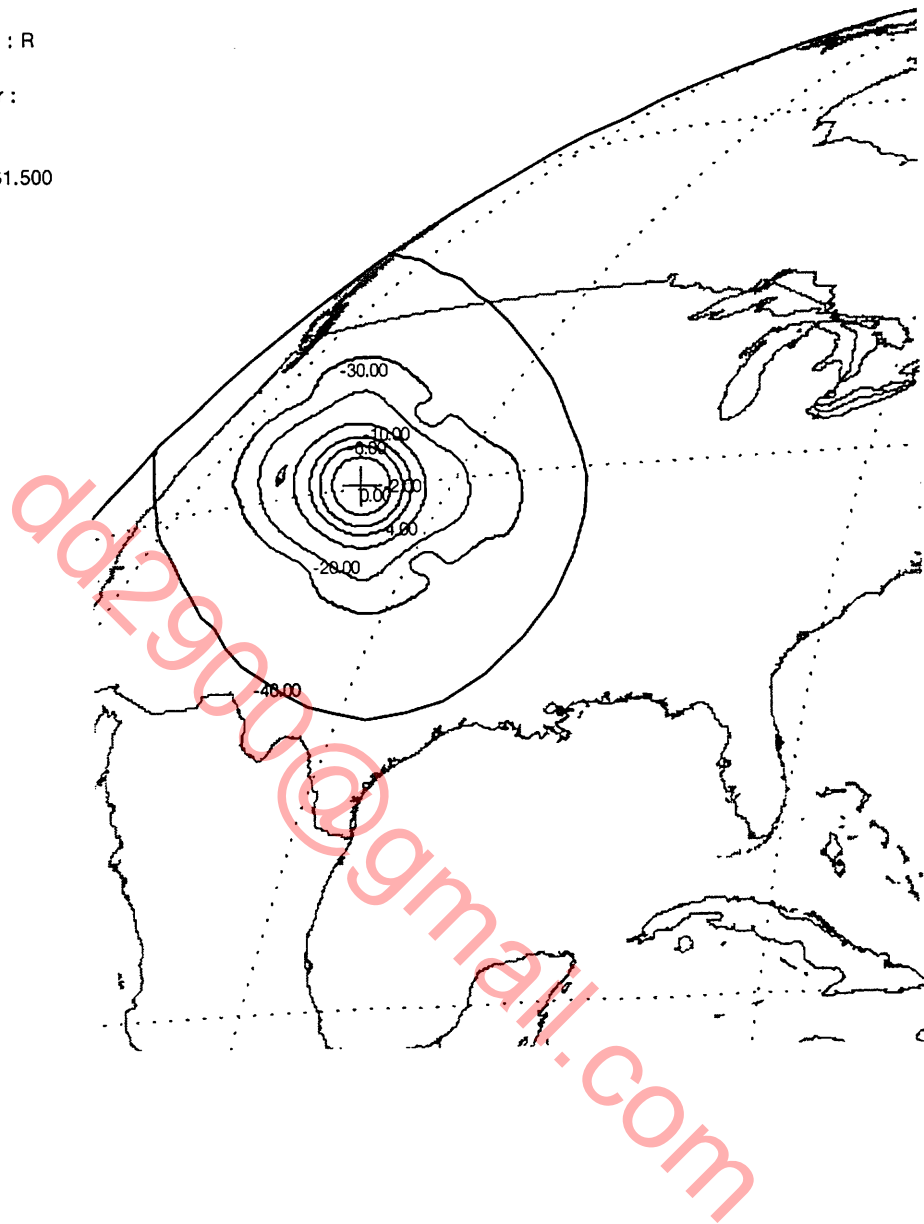




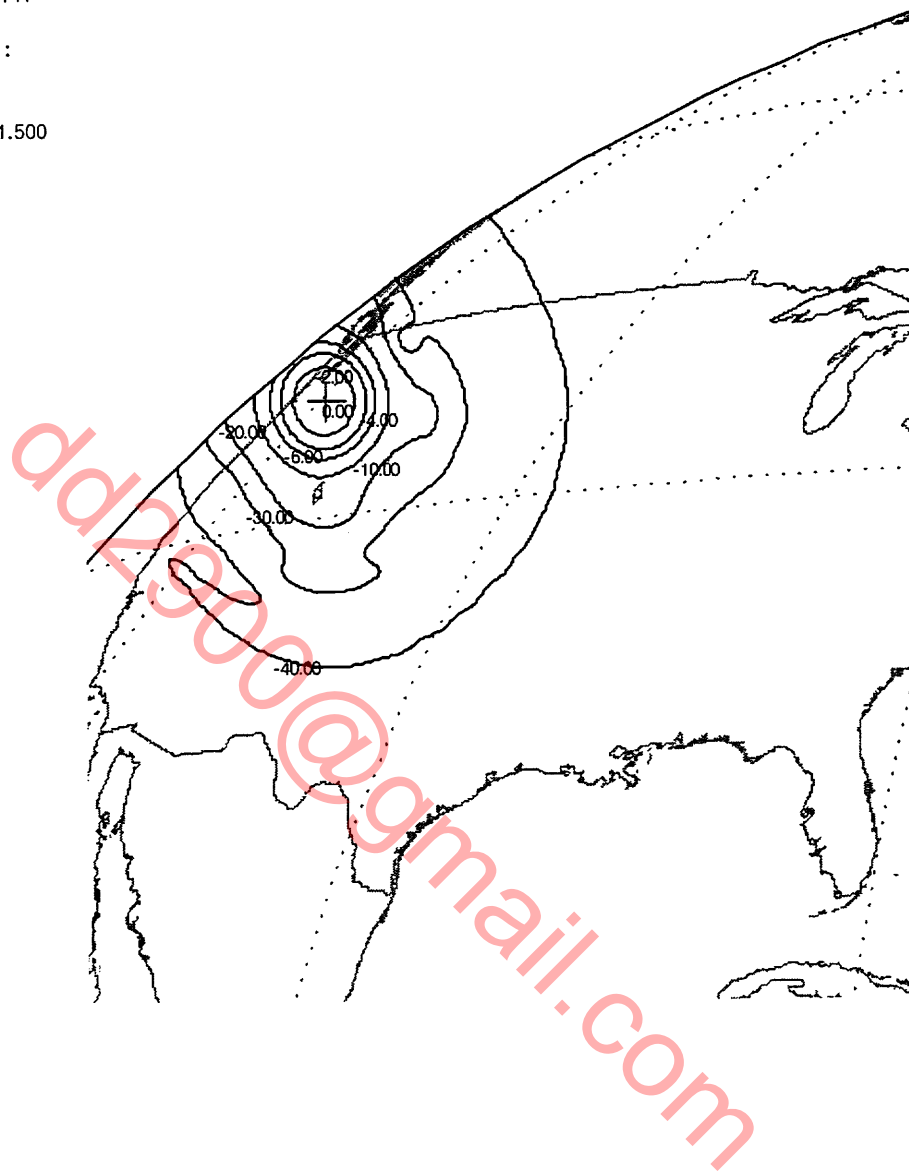
Notice ID : 000000000  
Administration : USA  
Satellite Network : USABSS-17  
Beam : R17  
Emission / Reception : R  
Polarization : C  
Service Area Number :  
Service Area Name :  
Reason : C  
Satellite Position : -61.500



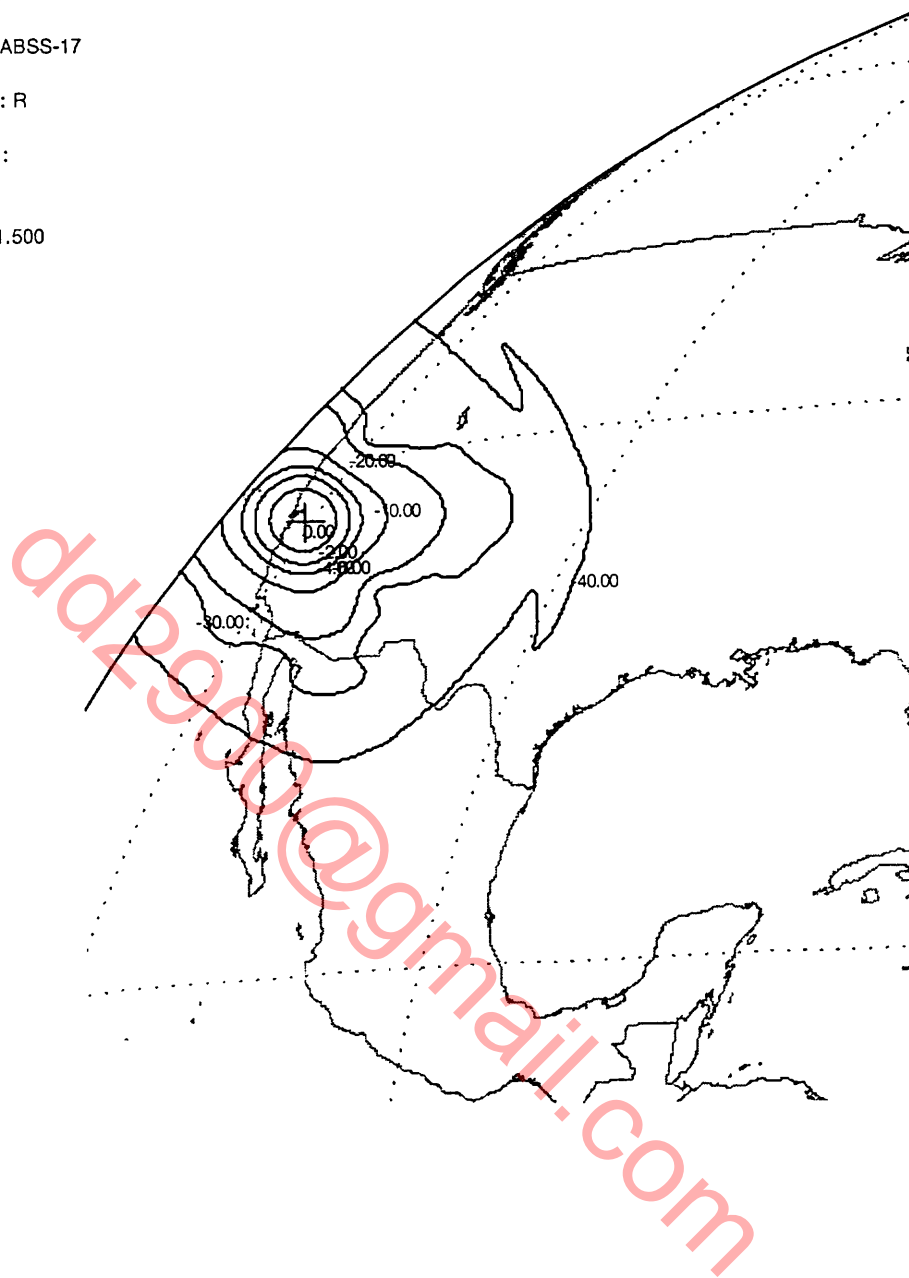
Notice ID : 000000000  
Administration : USA  
Satellite Network : USABSS-17  
Beam : R18  
Emission / Reception : R  
Polarization : C  
Service Area Number :  
Service Area Name :  
Reason : C  
Satellite Position : -61.500



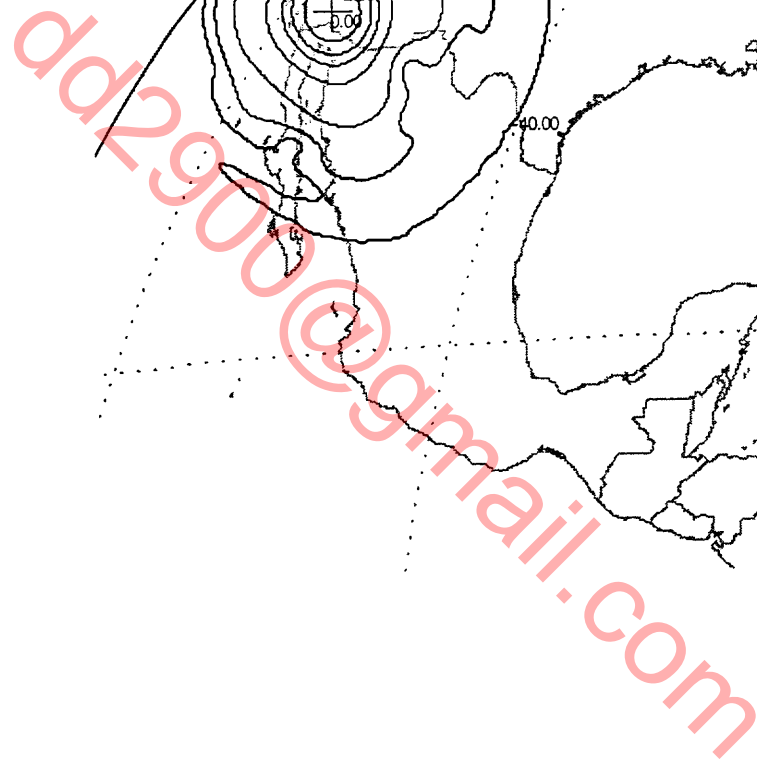
Notice ID : 000000000  
Administration : USA  
Satellite Network : USABSS-17  
Beam : R20  
Emission / Reception : R  
Polarization : C  
Service Area Number :  
Service Area Name :  
Reason : C  
Satellite Position : -61.500



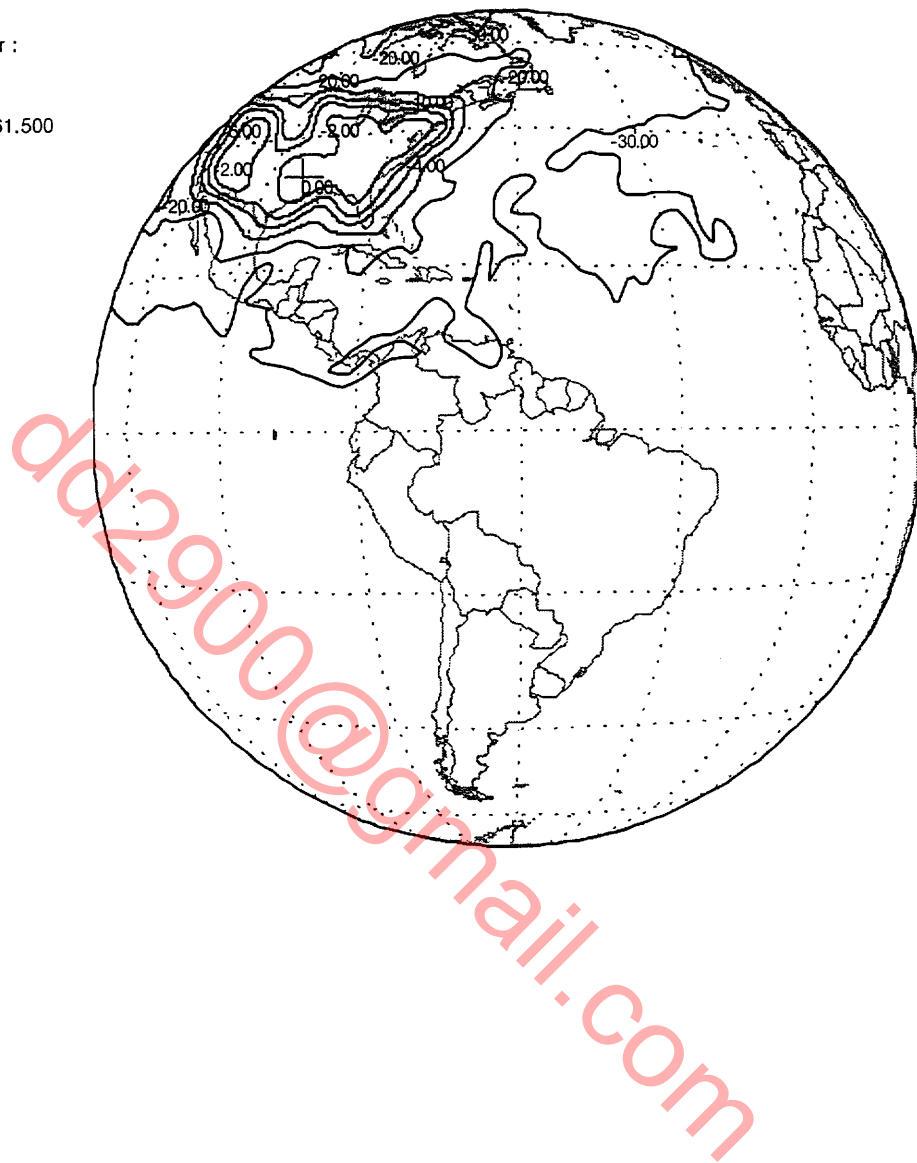
Notice ID : 000000000  
Administration : USA  
Satellite Network : USABSS-17  
Beam : R21  
Emission / Reception : R  
Polarization : C  
Service Area Number :  
Service Area Name :  
Reason : C  
Satellite Position : -61.500

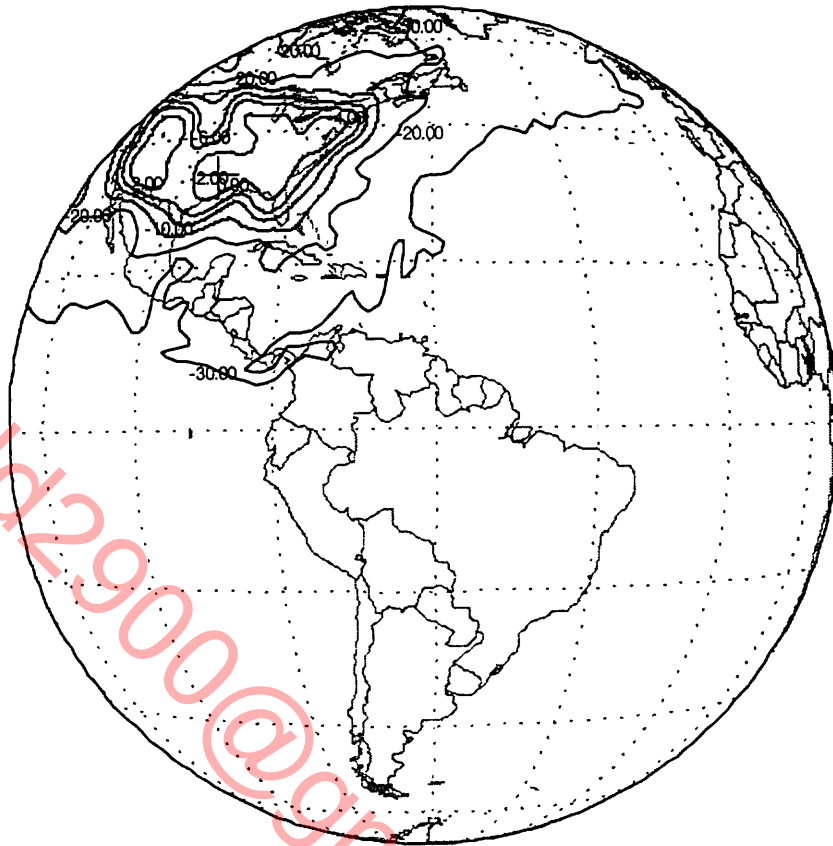


Notice ID : 000000000  
Administration : USA  
Satellite Network : USABSS-17  
Beam : R22  
Emission / Reception : R  
Polarization : C  
Service Area Number :  
Service Area Name :  
Reason : C  
Satellite Position : -61.500

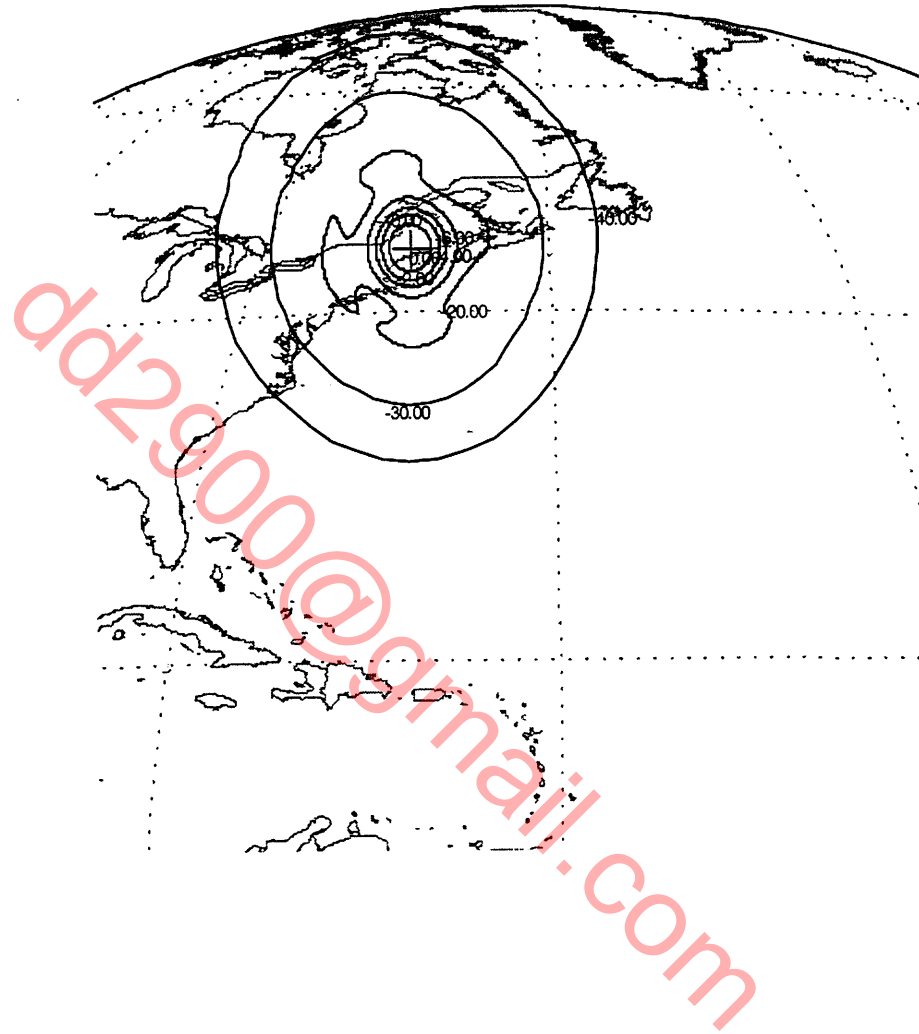


Notice ID : 000000000  
Administration : USA  
Satellite Network : USABSS-17  
Beam : RU1  
Emission / Reception : R  
Polarization : C  
Service Area Number :  
Service Area Name :  
Reason : C  
Satellite Position : -61.500



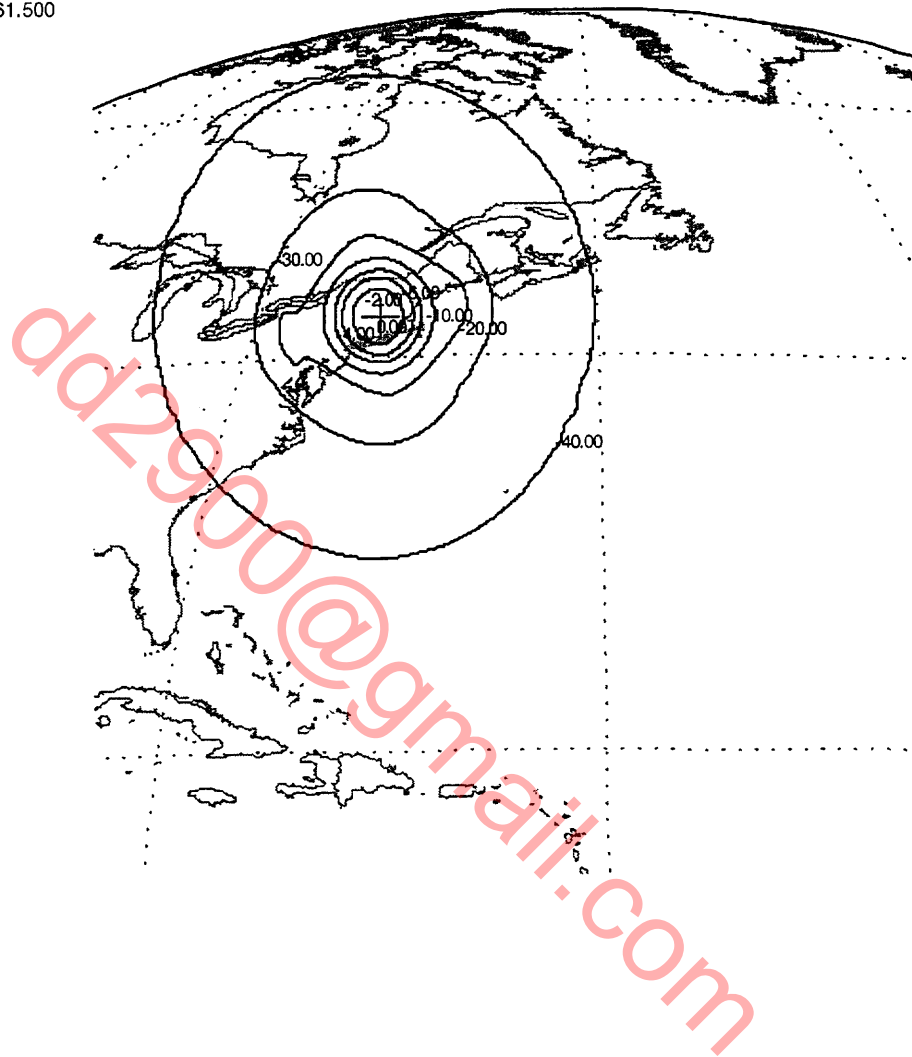


Notice ID : 000000000  
Administration : USA  
Satellite Network : USABSS-17  
Beam : E01  
Emission / Reception : E  
Polarization : C  
Service Area Number :  
Service Area Name :  
Reason : C  
Satellite Position : -61.500

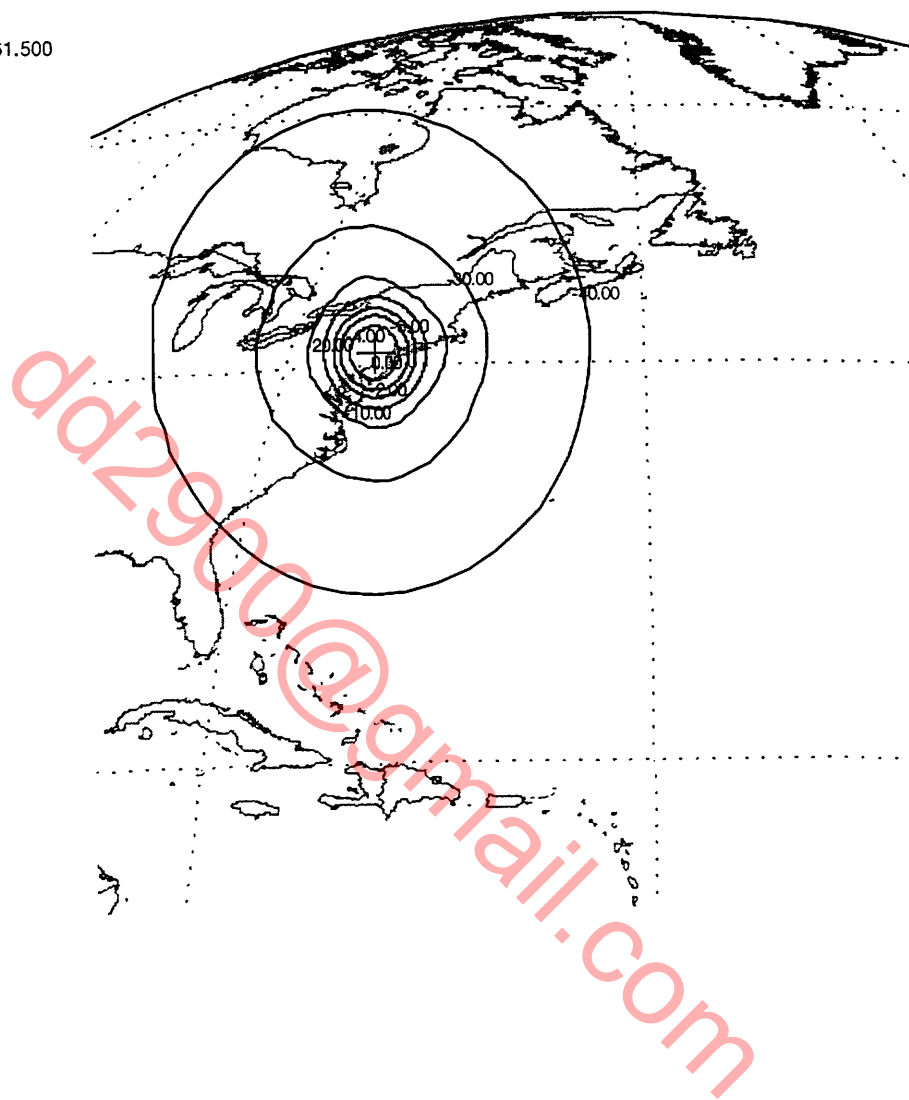




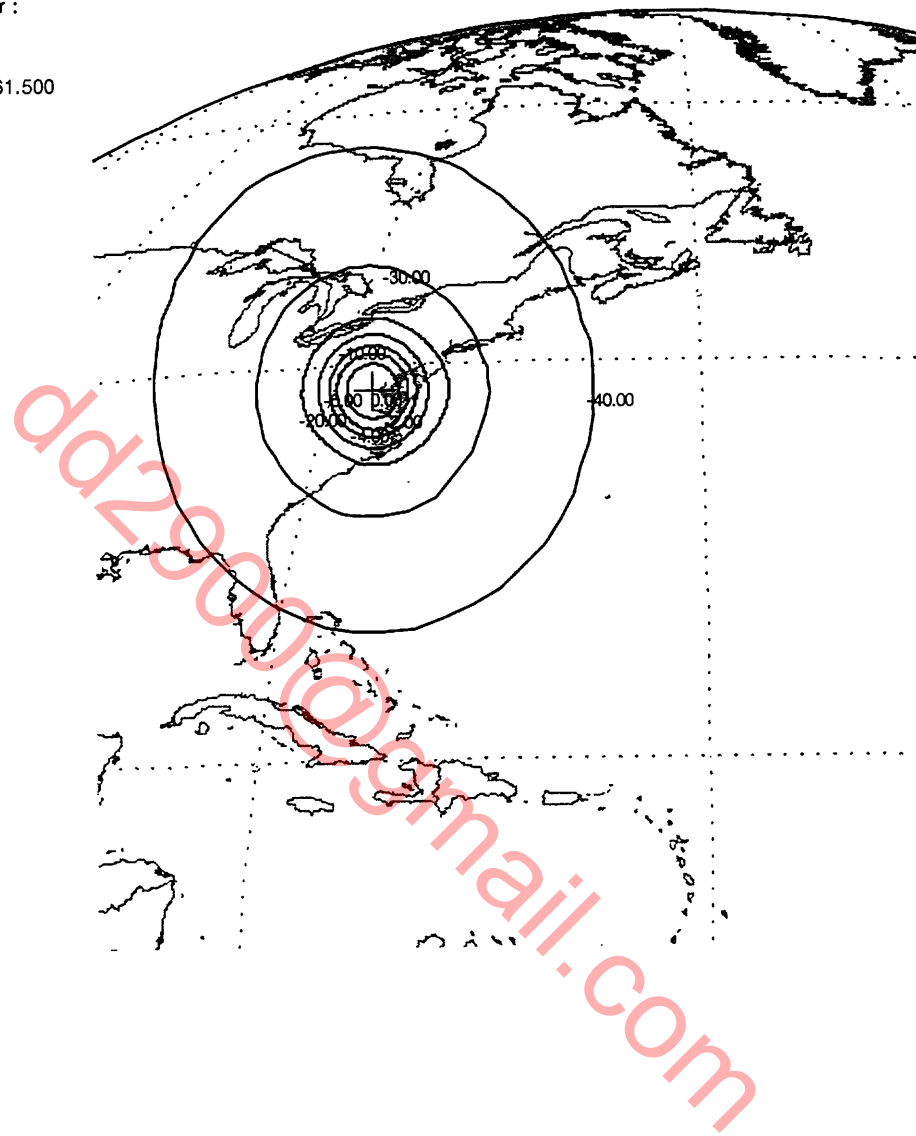
Notice ID : 000000000  
Administration : USA  
Satellite Network : USABSS-17  
Beam : E02  
Emission / Reception : E  
Polarization : C  
Service Area Number :  
Service Area Name :  
Reason : C  
Satellite Position : -61.500



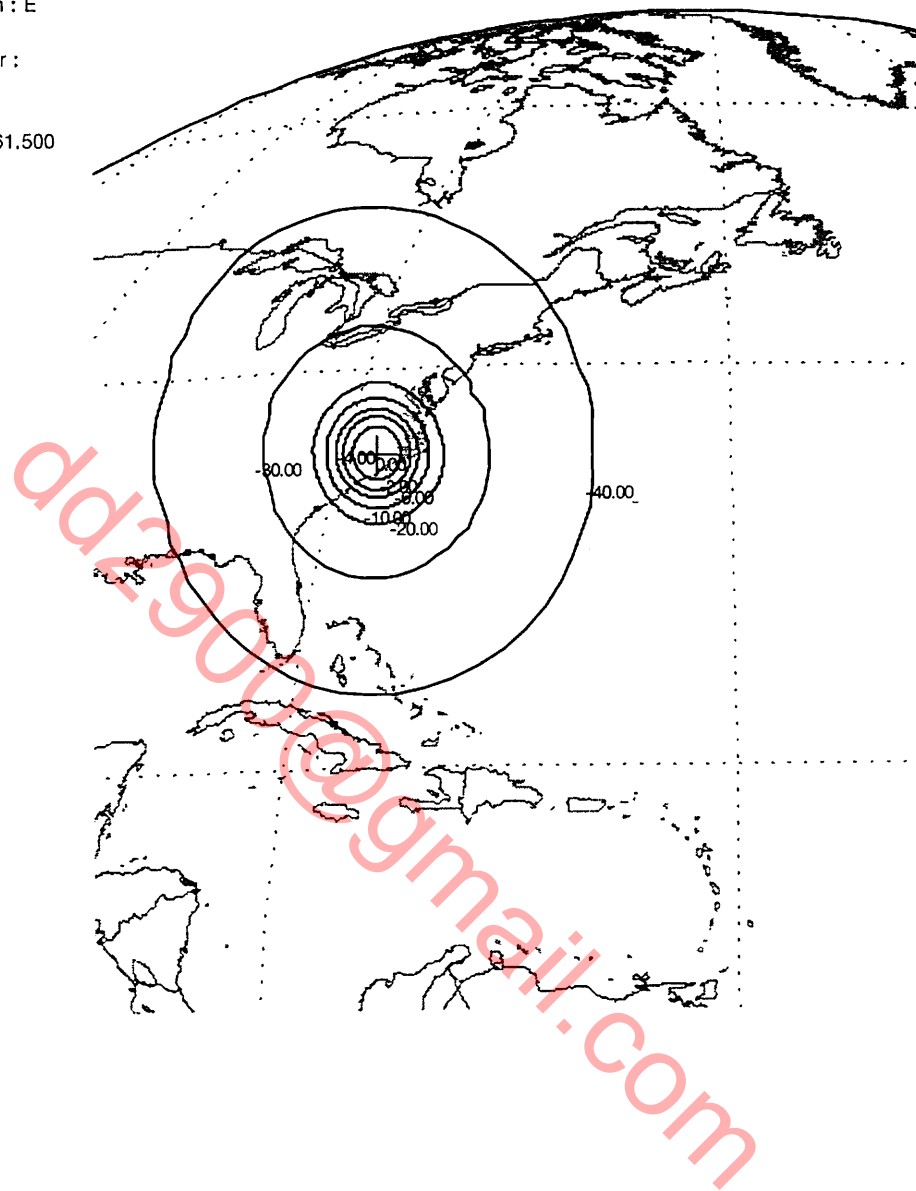
Notice ID : 000000000  
Administration : USA  
Satellite Network : USABSS-17  
Beam : E03  
Emission / Reception : E  
Polarization : C  
Service Area Number :  
Service Area Name :  
Reason : C  
Satellite Position : -61.500



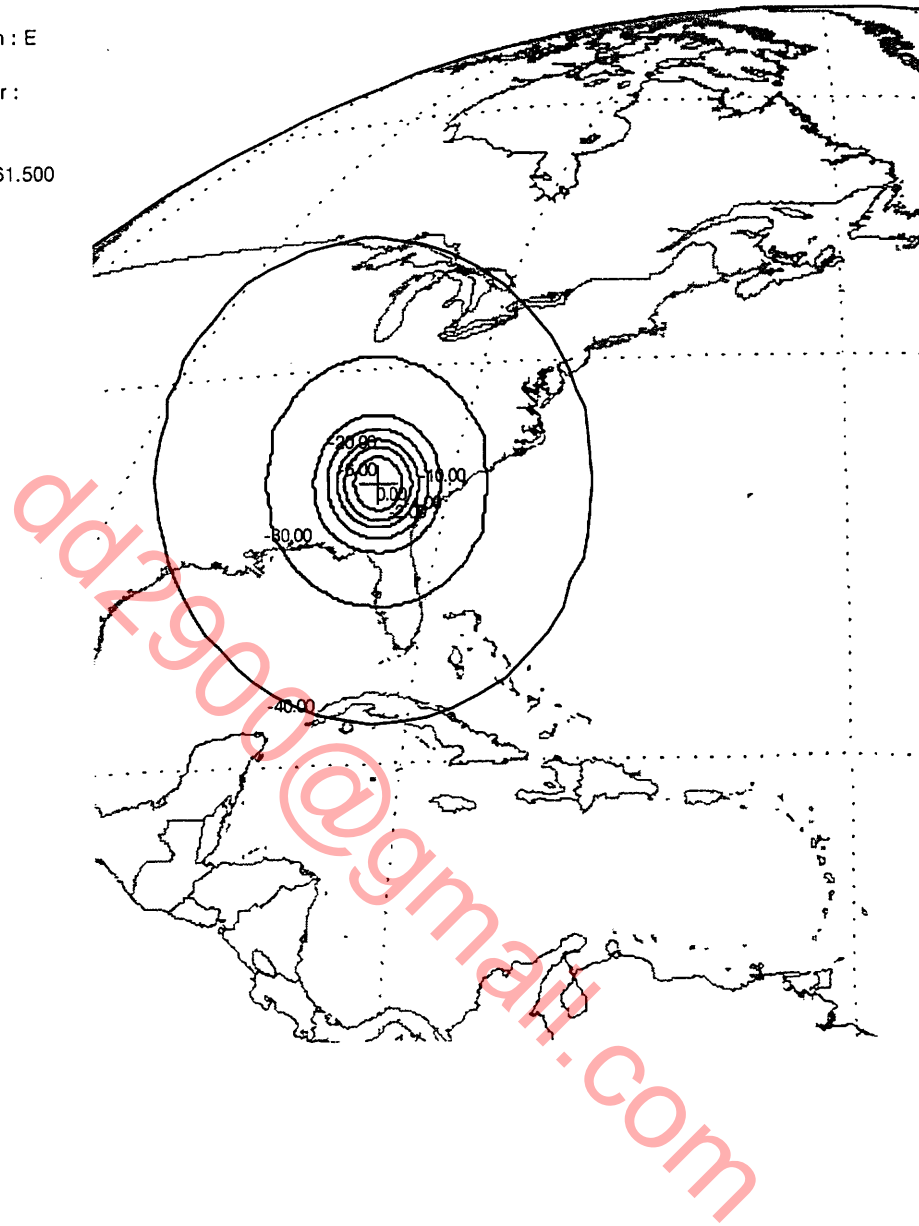
Notice ID : 000000000  
Administration : USA  
Satellite Network : USABSS-17  
Beam : E04  
Emission / Reception : E  
Polarization : C  
Service Area Number :  
Service Area Name :  
Reason : C  
Satellite Position : -61.500



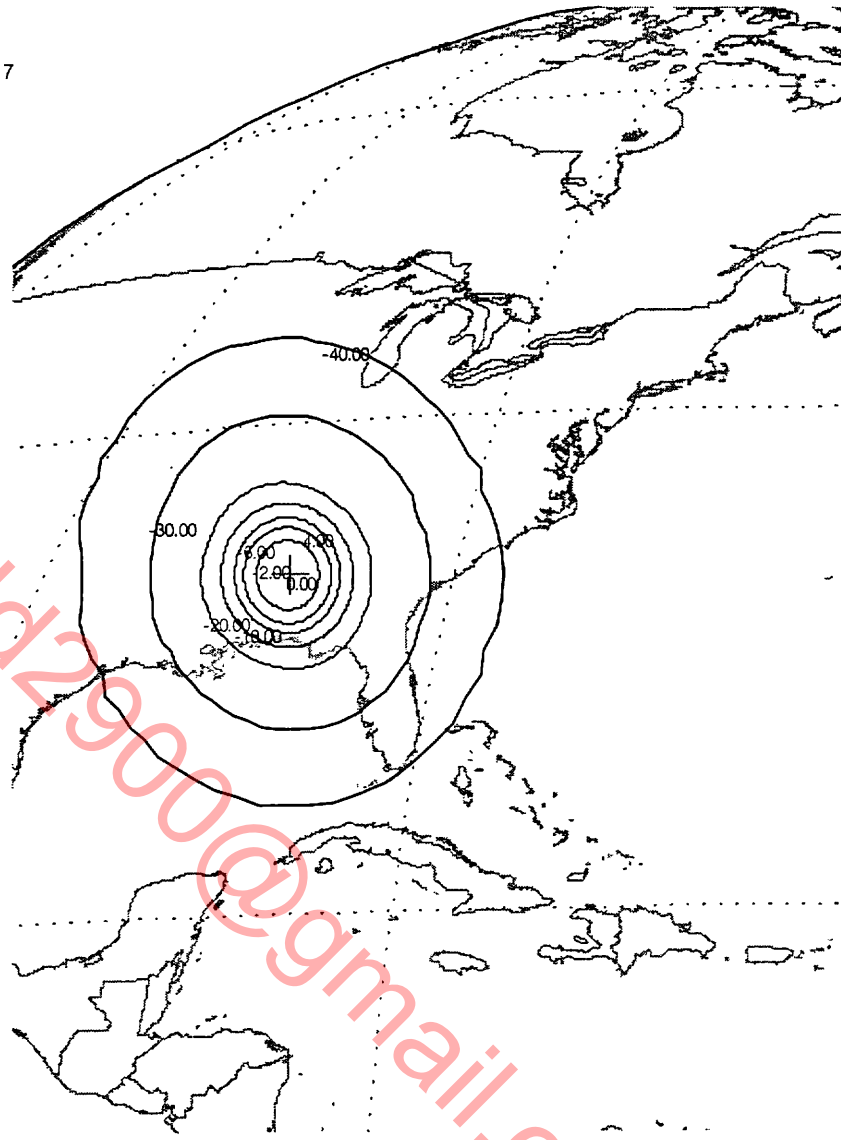
Notice ID : 000000000  
Administration : USA  
Satellite Network : USABSS-17  
Beam : E05  
Emission / Reception : E  
Polarization : C  
Service Area Number :  
Service Area Name :  
Reason : C  
Satellite Position : -61.500



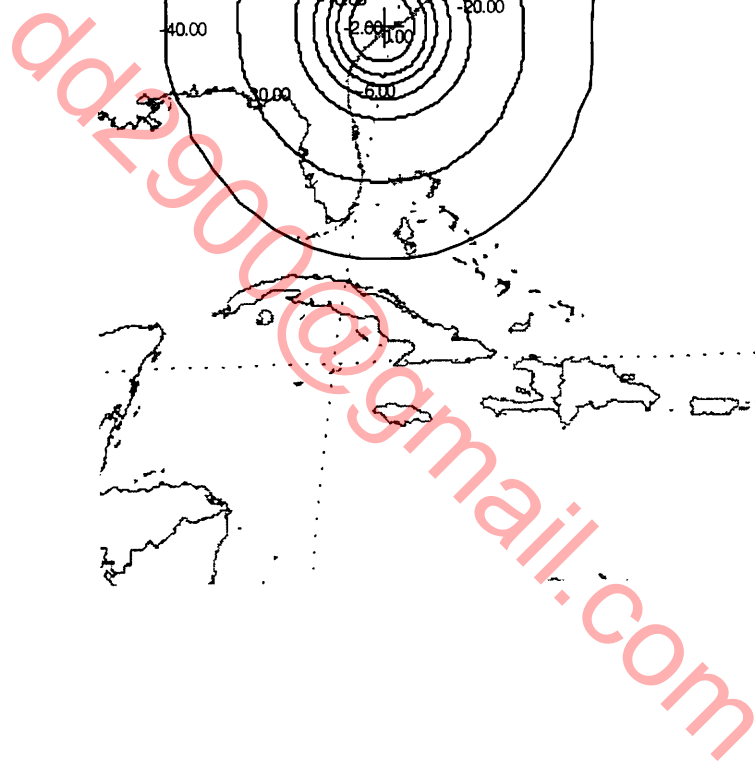
Notice ID : 000000000  
Administration : USA  
Satellite Network : USABSS-17  
Beam : E06  
Emission / Reception : E  
Polarization : C  
Service Area Number :  
Service Area Name :  
Reason : C  
Satellite Position : -61.500



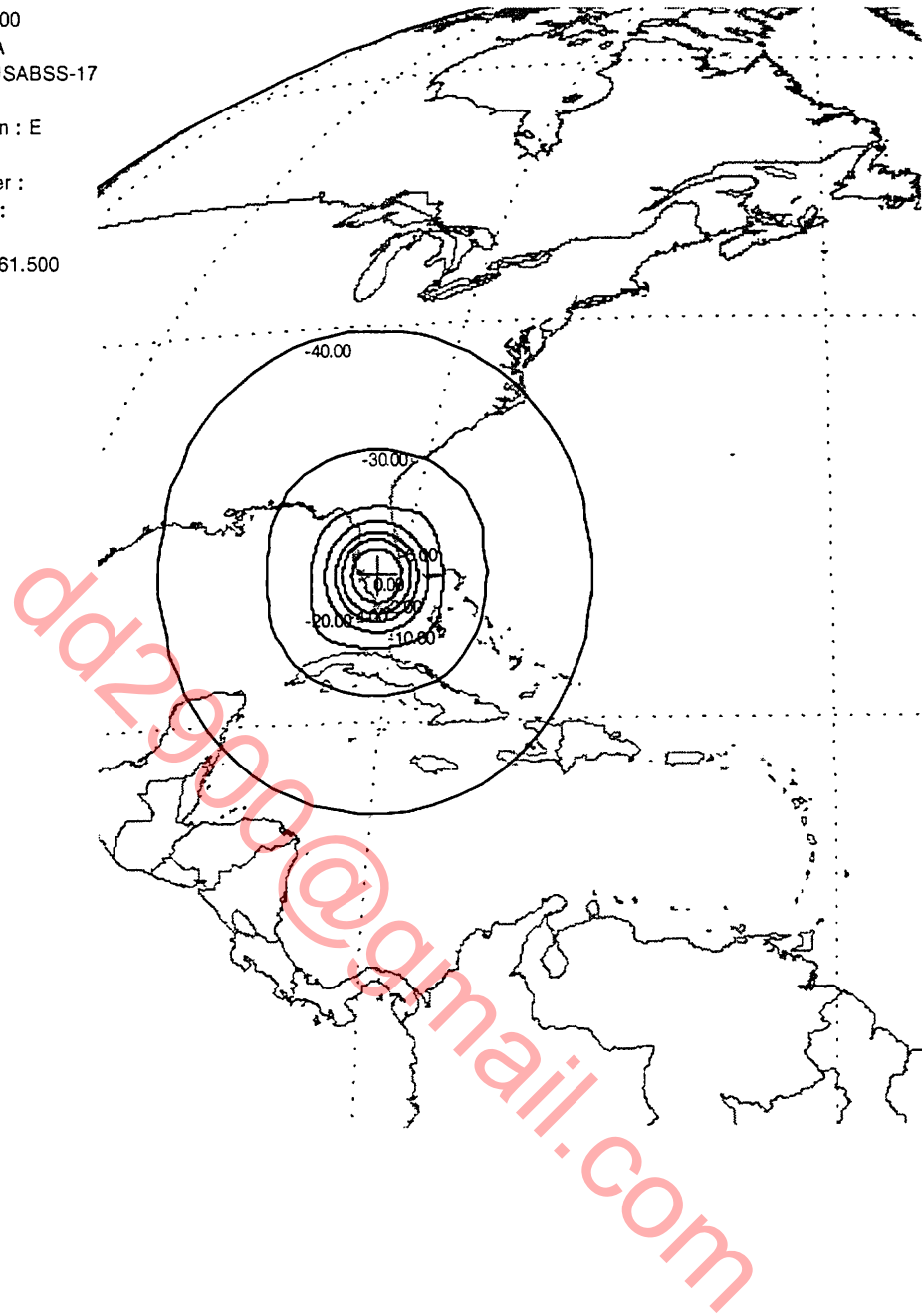
Notice ID : 000000000  
Administration : USA  
Satellite Network : USABSS-17  
Beam : E07  
Emission / Reception : E  
Polarization : C  
Service Area Number :  
Service Area Name :  
Reason : C  
Satellite Position : -61.500



Notice ID : 000000000  
Administration : USA  
Satellite Network : USABSS-17  
Beam : E08  
Emission / Reception : E  
Polarization : C  
Service Area Number :  
Service Area Name :  
Reason : C  
Satellite Position : -61.500

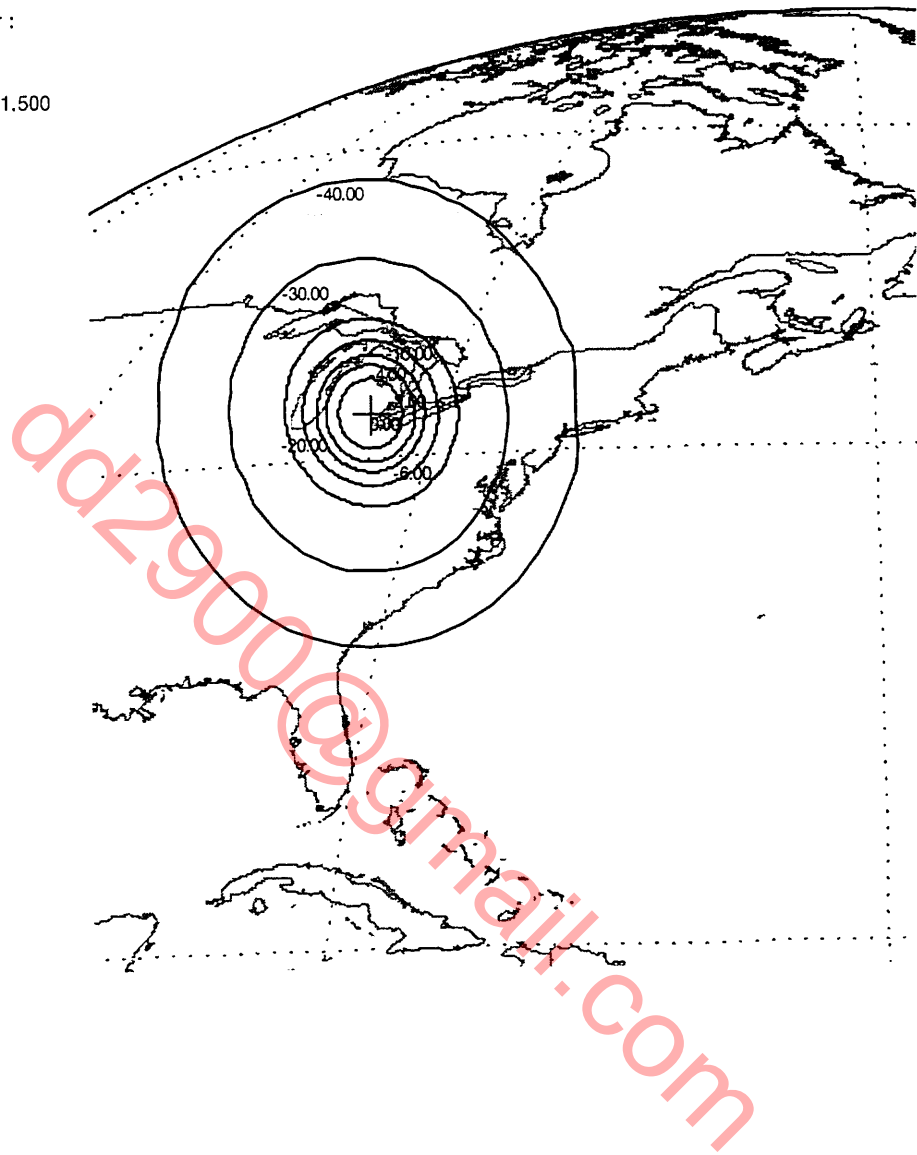


Notice ID : 000000000  
Administration : USA  
Satellite Network : USABSS-17  
Beam : E09  
Emission / Reception : E  
Polarization : C  
Service Area Number :  
Service Area Name :  
Reason : C  
Satellite Position : -61.500

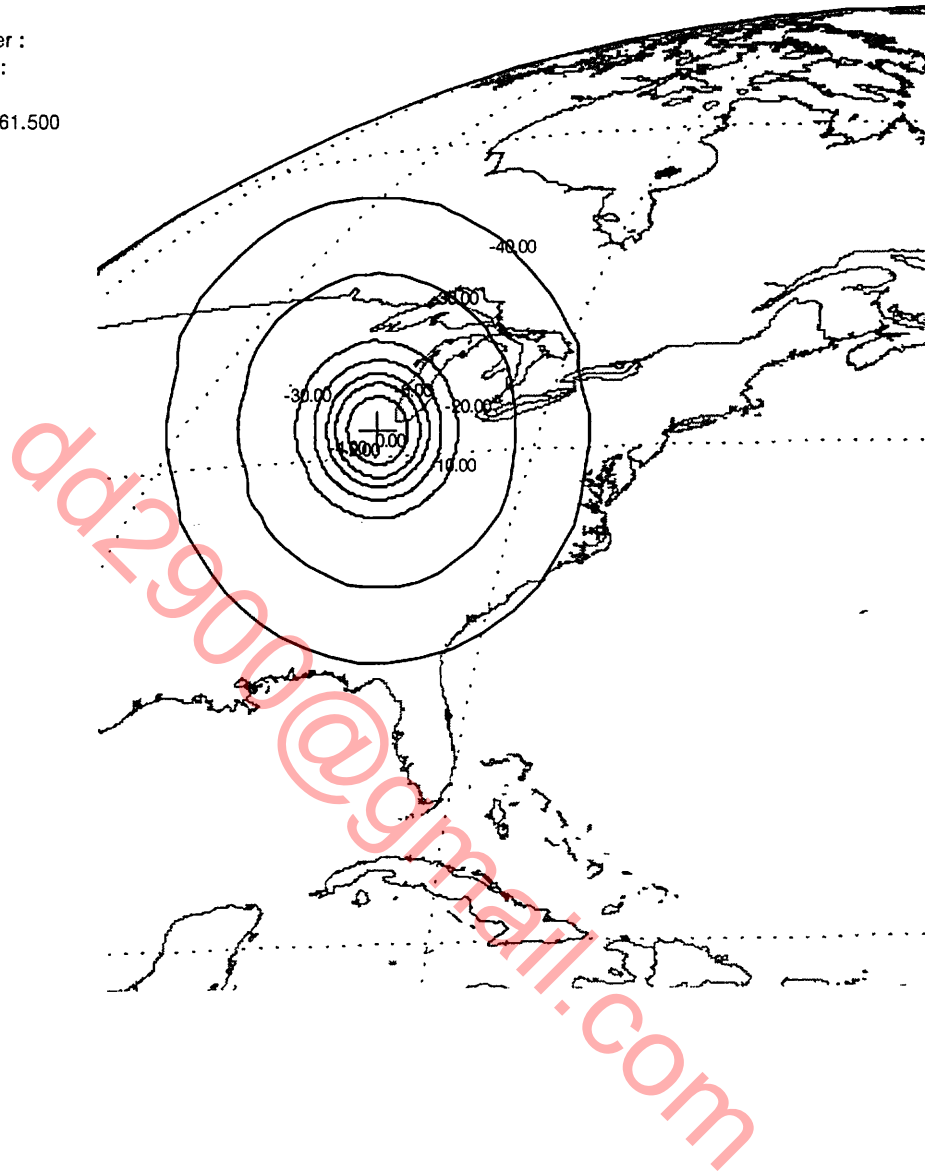




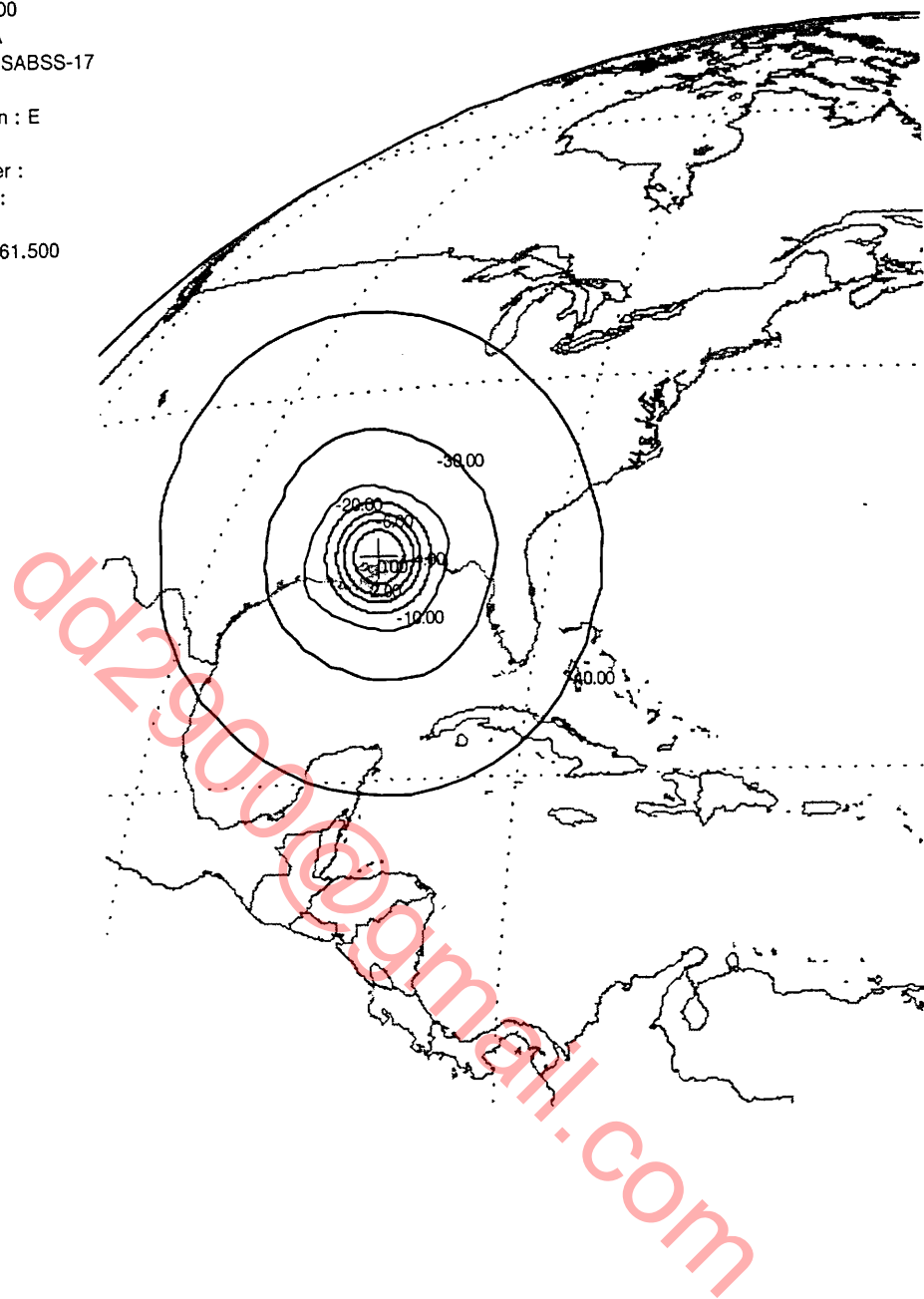
Notice ID : 000000000  
Administration : USA  
Satellite Network : USABSS-17  
Beam : E10  
Emission / Reception : E  
Polarization : C  
Service Area Number :  
Service Area Name :  
Reason : C  
Satellite Position : -61.500



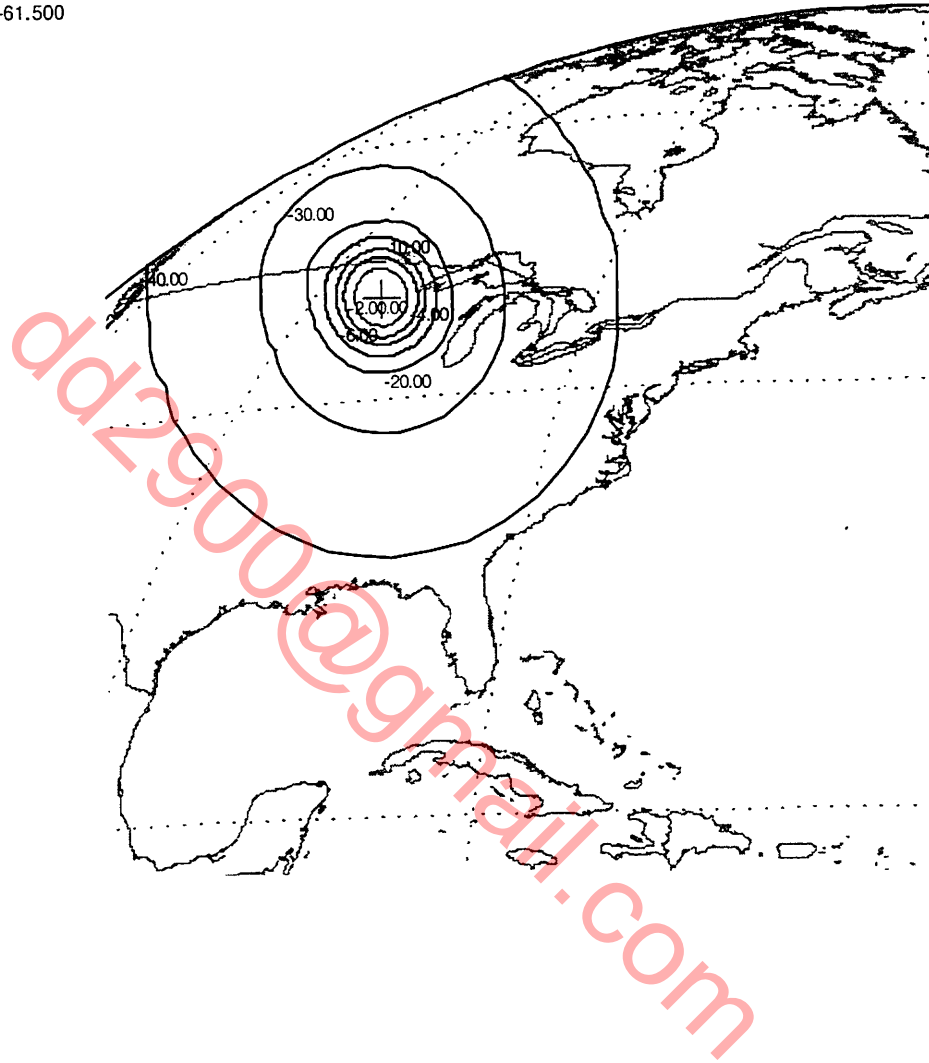
Notice ID : 000000000  
Administration : USA  
Satellite Network : USABSS-17  
Beam : E11  
Emission / Reception : E  
Polarization : C  
Service Area Number :  
Service Area Name :  
Reason : C  
Satellite Position : -61.500



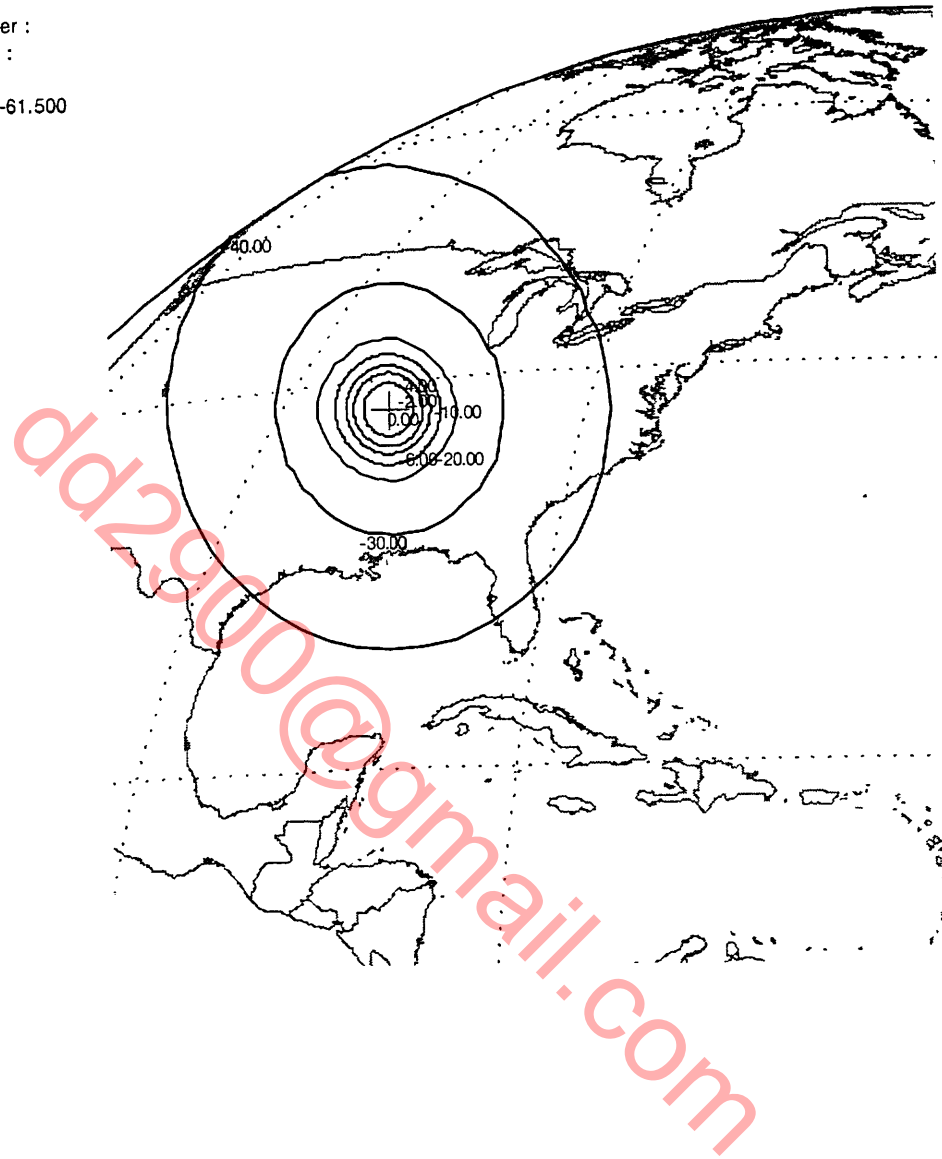
Notice ID : 000000000  
Administration : USA  
Satellite Network : USABSS-17  
Beam : E12  
Emission / Reception : E  
Polarization : C  
Service Area Number :  
Service Area Name :  
Reason : C  
Satellite Position : -61.500



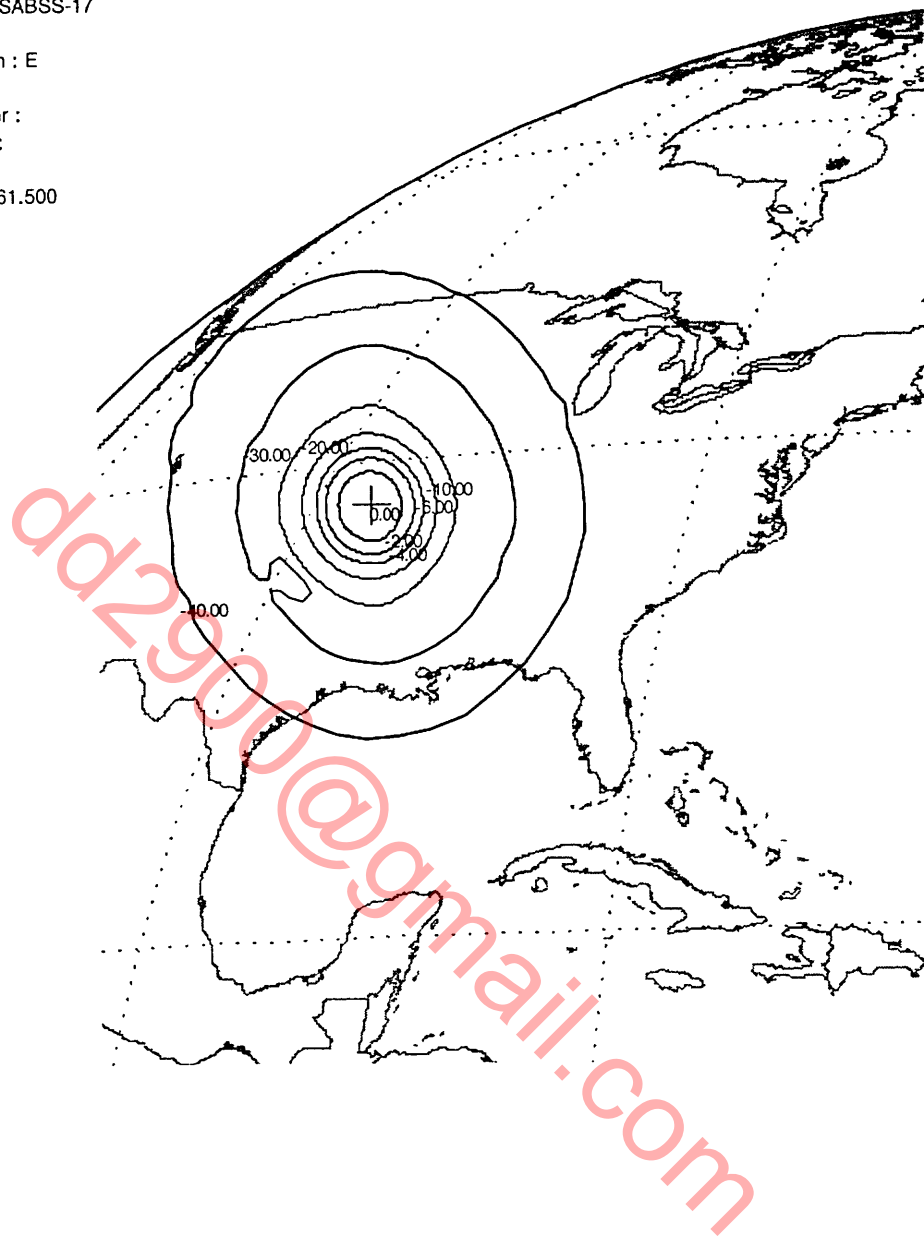
Notice ID : 000000000  
Administration : USA  
Satellite Network : USABSS-17  
Beam : E13  
Emission / Reception : E  
Polarization : C  
Service Area Number :  
Service Area Name :  
Reason : C  
Satellite Position : -61.500



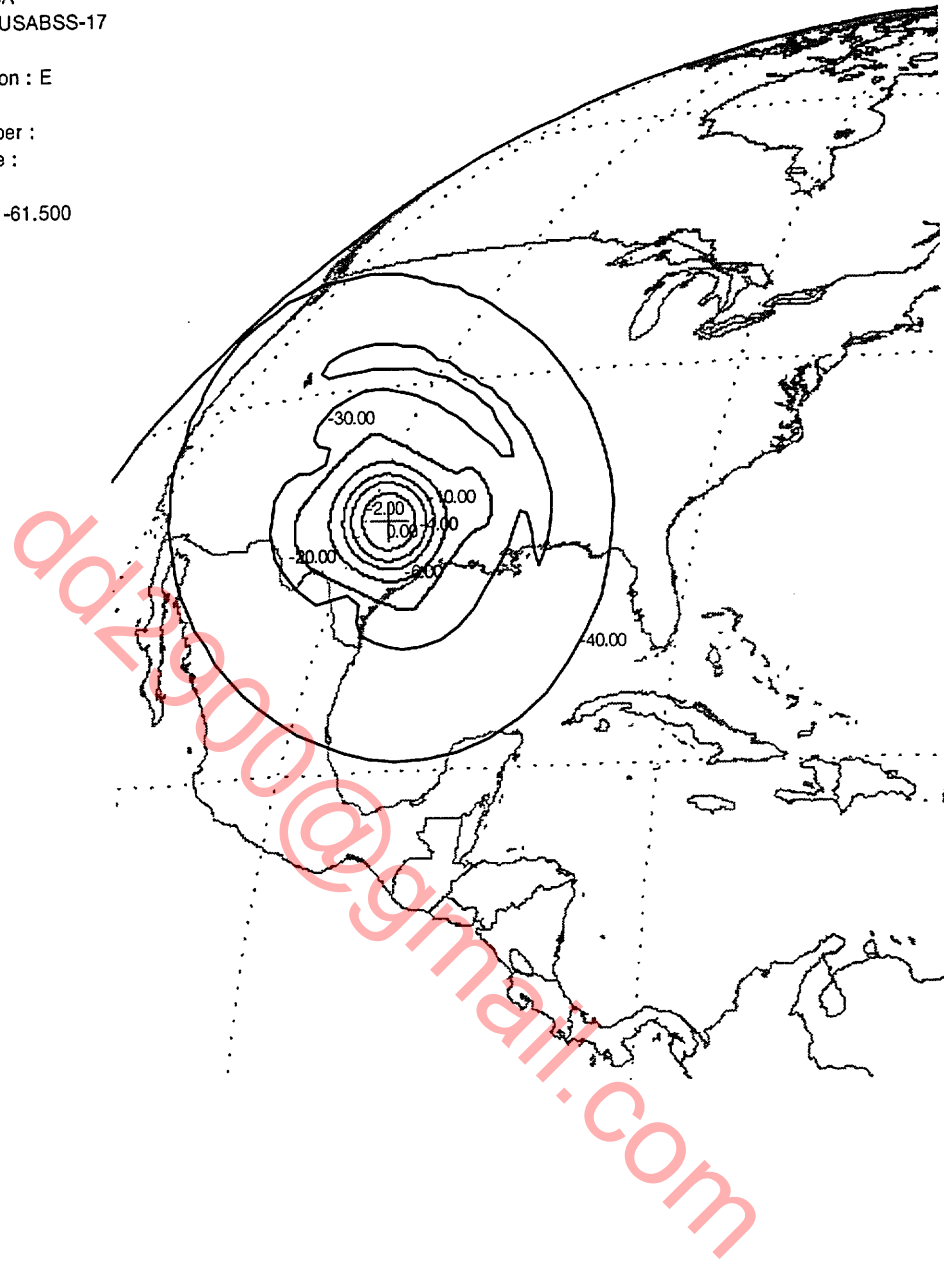
Notice ID : 000000000  
Administration : USA  
Satellite Network : USABSS-17  
Beam : E14  
Emission / Reception : E  
Polarization : C  
Service Area Number :  
Service Area Name :  
Reason : C  
Satellite Position : -61.500



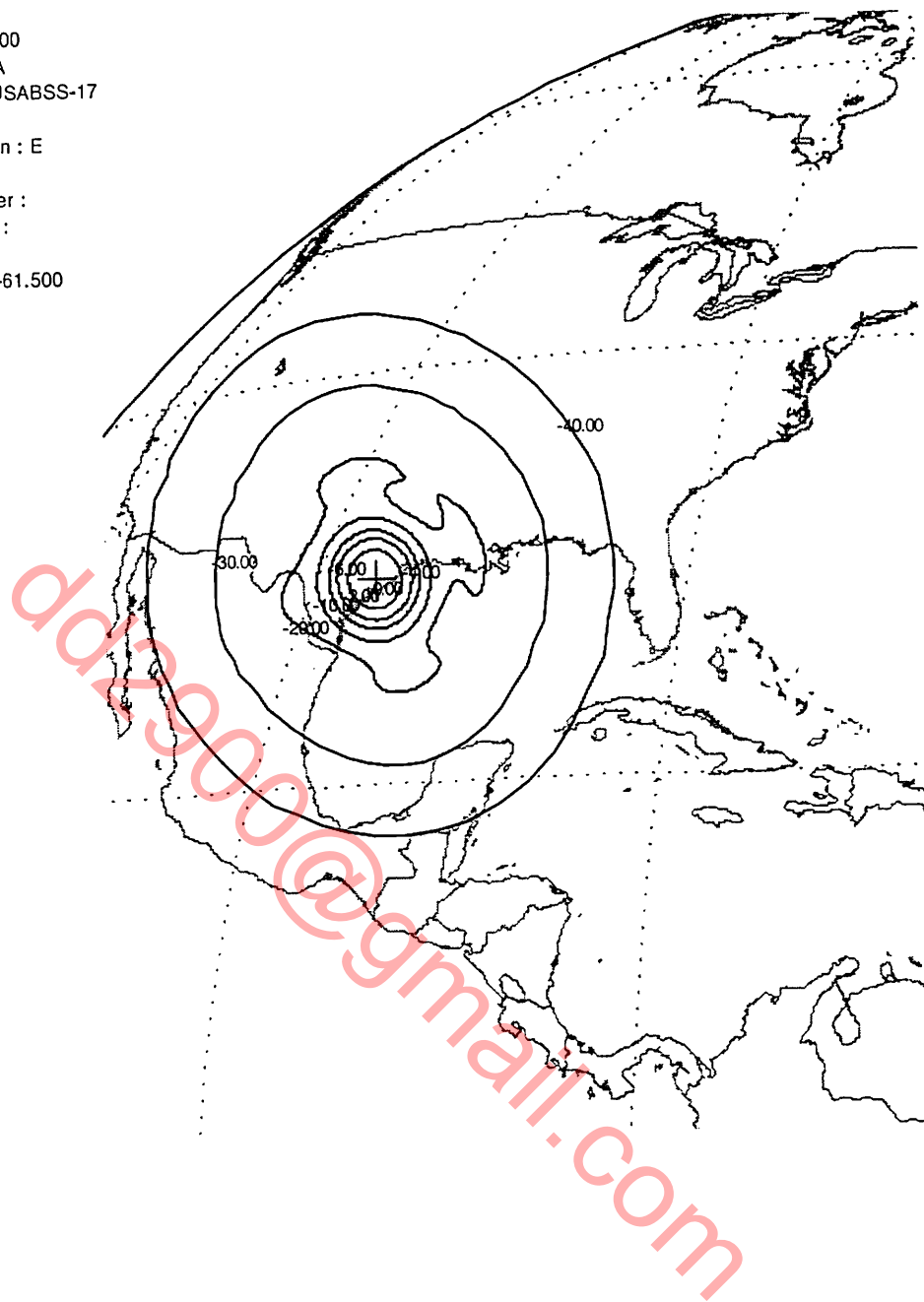
Notice ID : 000000000  
Administration : USA  
Satellite Network : USABSS-17  
Beam : E15  
Emission / Reception : E  
Polarization : C  
Service Area Number :  
Service Area Name :  
Reason : C  
Satellite Position : -61.500



Notice ID : 000000000  
Administration : USA  
Satellite Network : USABSS-17  
Beam : E16  
Emission / Reception : E  
Polarization : C  
Service Area Number :  
Service Area Name :  
Reason : C  
Satellite Position : -61.500

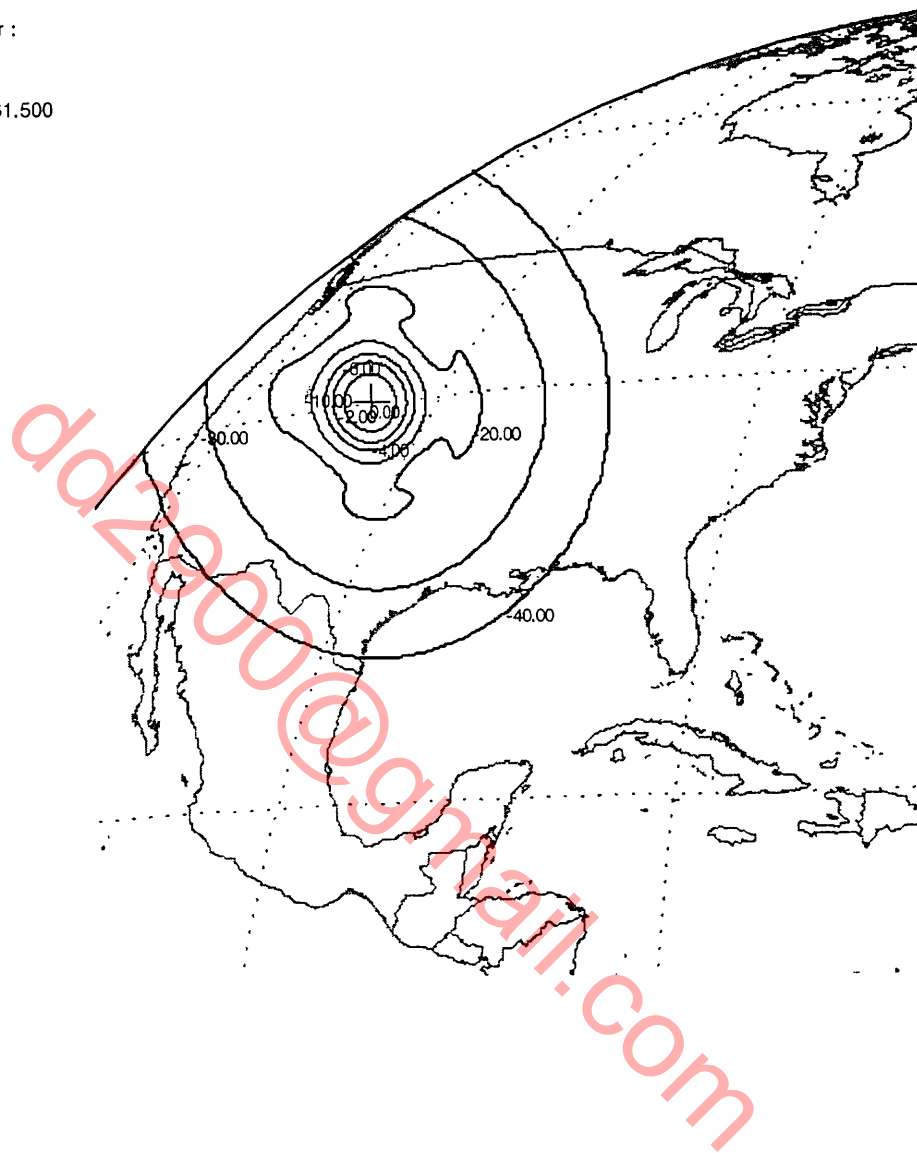


Notice ID : 000000000  
Administration : USA  
Satellite Network : USABSS-17  
Beam : E17  
Emission / Reception : E  
Polarization : C  
Service Area Number :  
Service Area Name :  
Reason : C  
Satellite Position : -61.500

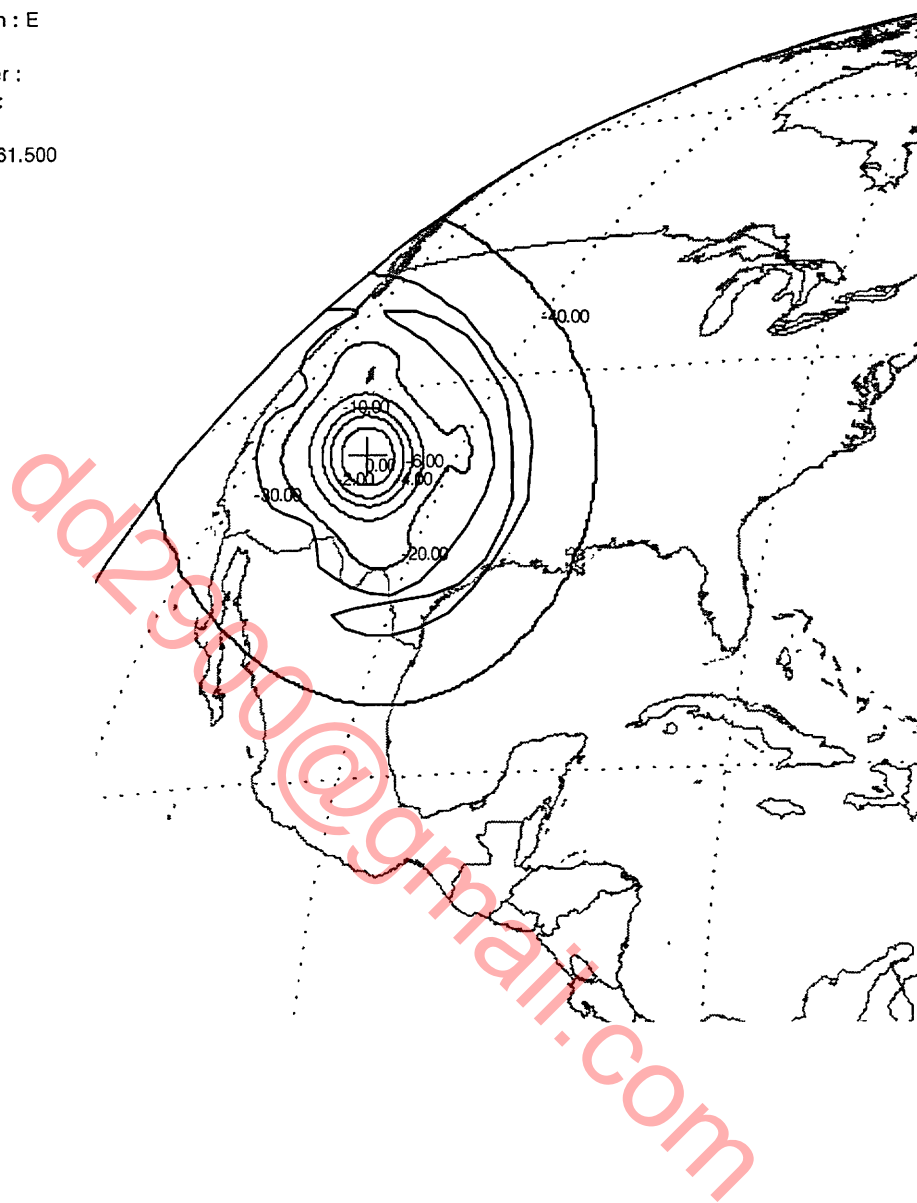




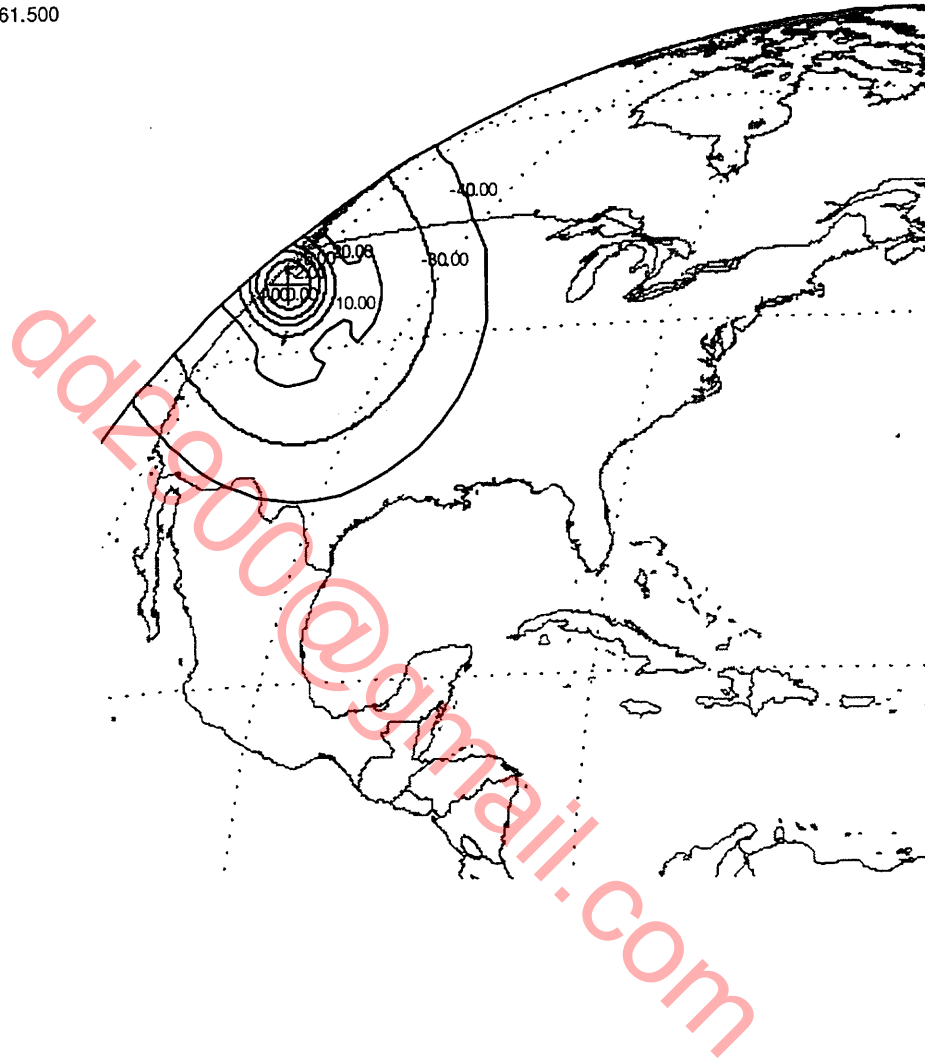
Notice ID : 000000000  
Administration : USA  
Satellite Network : USABSS-17  
Beam : E18  
Emission / Reception : E  
Polarization : C  
Service Area Number :  
Service Area Name :  
Reason : C  
Satellite Position : -61.500



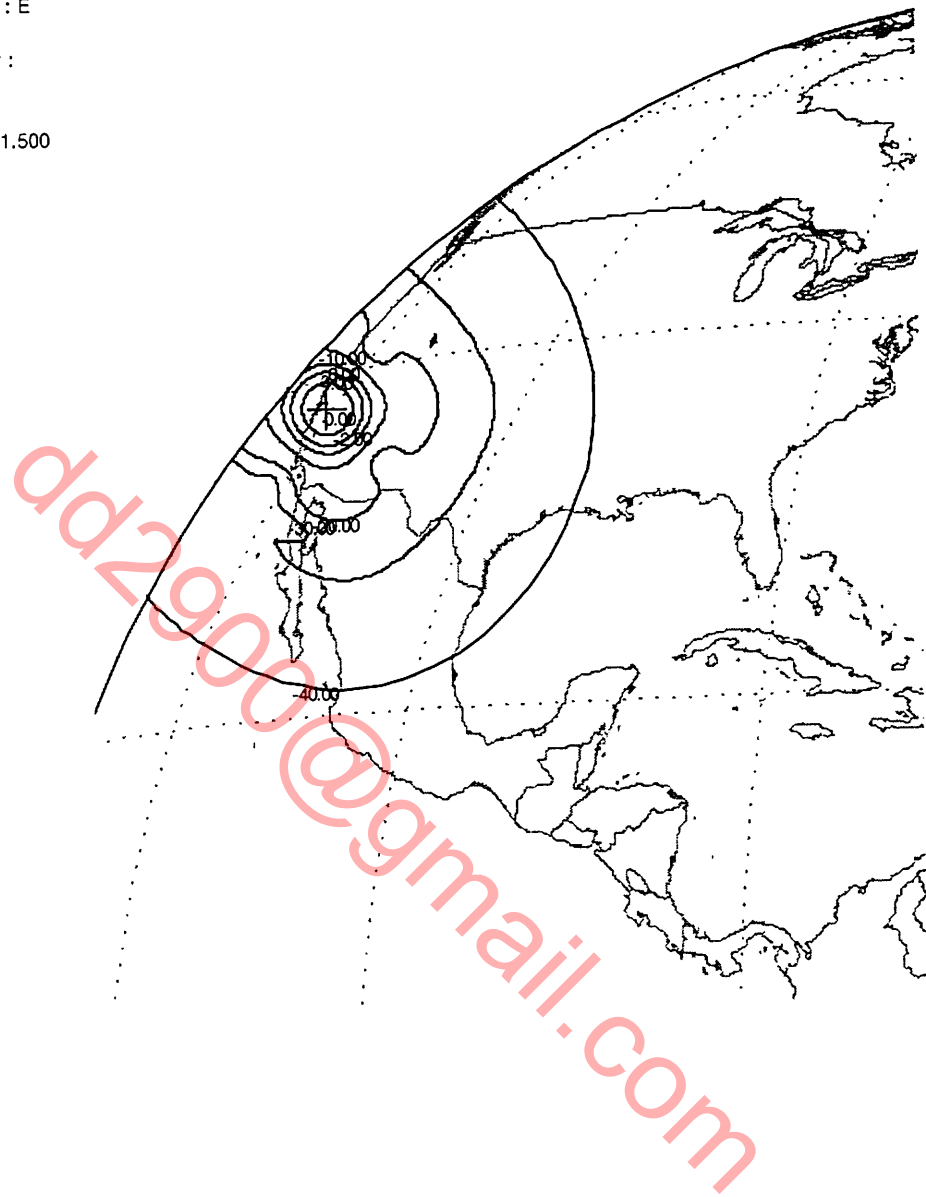
Notice ID : 000000000  
Administration : USA  
Satellite Network : USABSS-17  
Beam : E19  
Emission / Reception : E  
Polarization : C  
Service Area Number :  
Service Area Name :  
Reason : C  
Satellite Position : -61.500



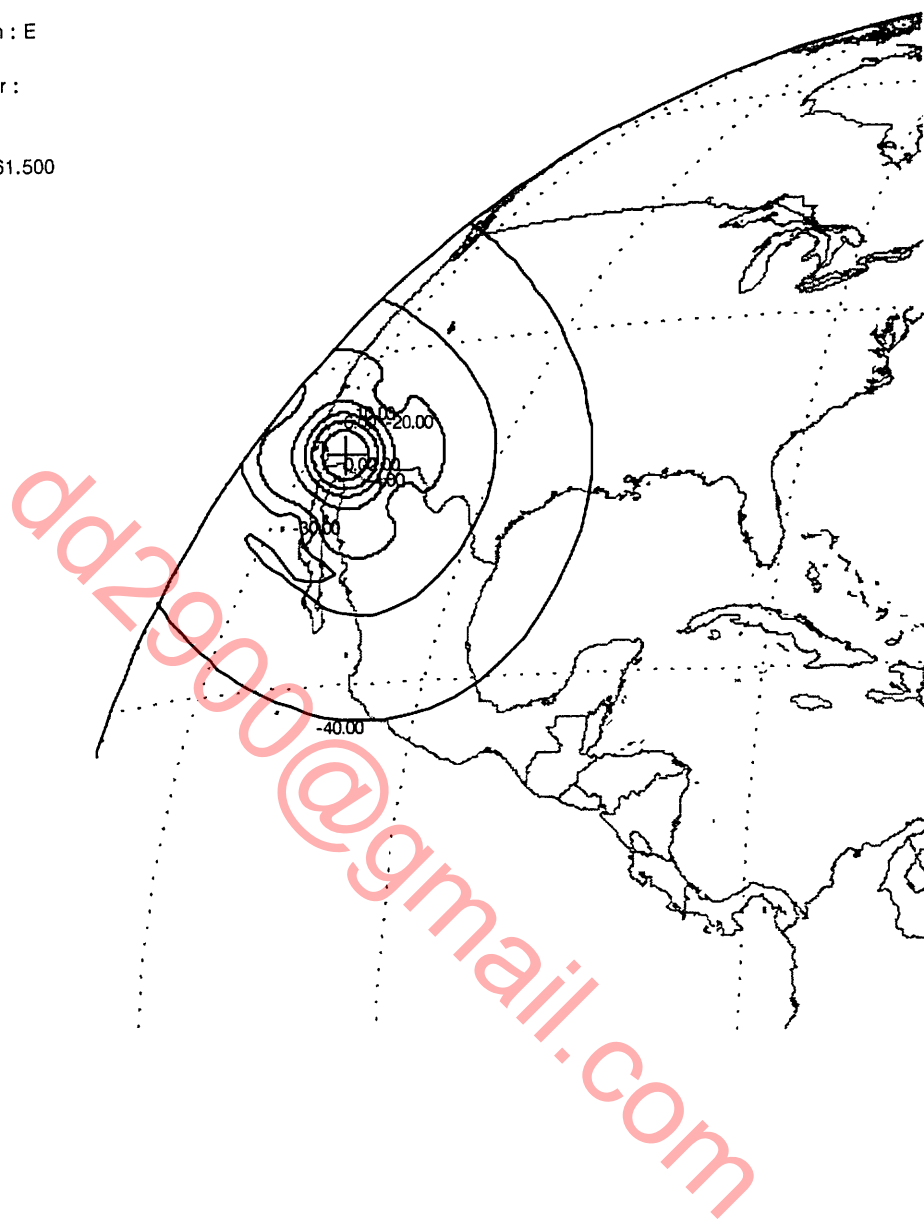
Notice ID : 000000000  
Administration : USA  
Satellite Network : USABSS-17  
Beam : E20  
Emission / Reception : E  
Polarization : C  
Service Area Number :  
Service Area Name :  
Reason : C  
Satellite Position : -61.500



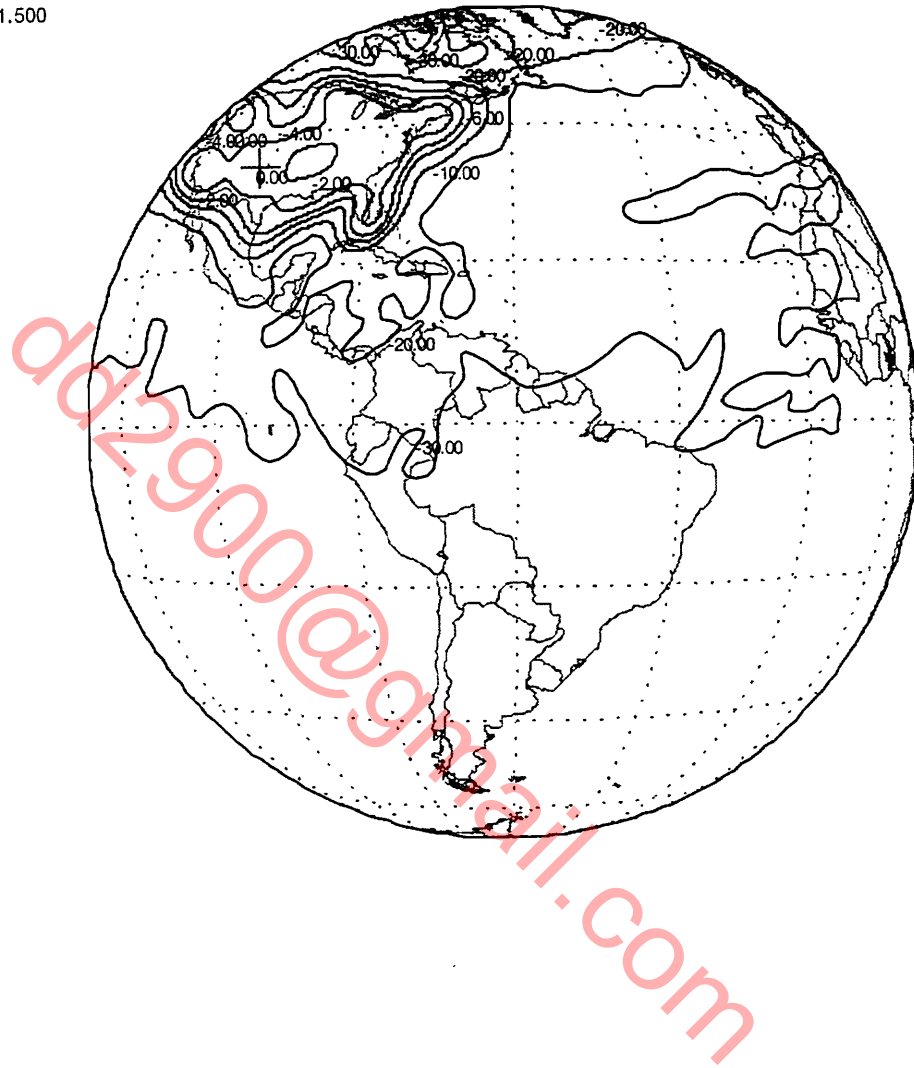
Notice ID : 000000000  
Administration : USA  
Satellite Network : USABSS-17  
Beam : E21  
Emission / Reception : E  
Polarization : C  
Service Area Number :  
Service Area Name :  
Reason : C  
Satellite Position : -61.500



Notice ID : 000000000  
Administration : USA  
Satellite Network : USABSS-17  
Beam : E22  
Emission / Reception : E  
Polarization : C  
Service Area Number :  
Service Area Name :  
Reason : C  
Satellite Position : -61.500



Notice ID : 000000000  
Administration : USA  
Satellite Network : USABSS-17  
Beam : EU1  
Emission / Reception : E  
Polarization : C  
Service Area Number :  
Service Area Name :  
Reason : C  
Satellite Position : -61.500



Notice ID : 000000000  
Administration : USA  
Satellite Network : USABSS-17  
Beam : EU2  
Emission / Reception : E  
Polarization : C  
Service Area Number :  
Service Area Name :  
Reason : C  
Satellite Position : -61.500



**BEAM PATTERNS FOR BEAMS 1 TO 22 AND CONUS**

**CROSS-POLARIZED**

dd2900@gmail.com



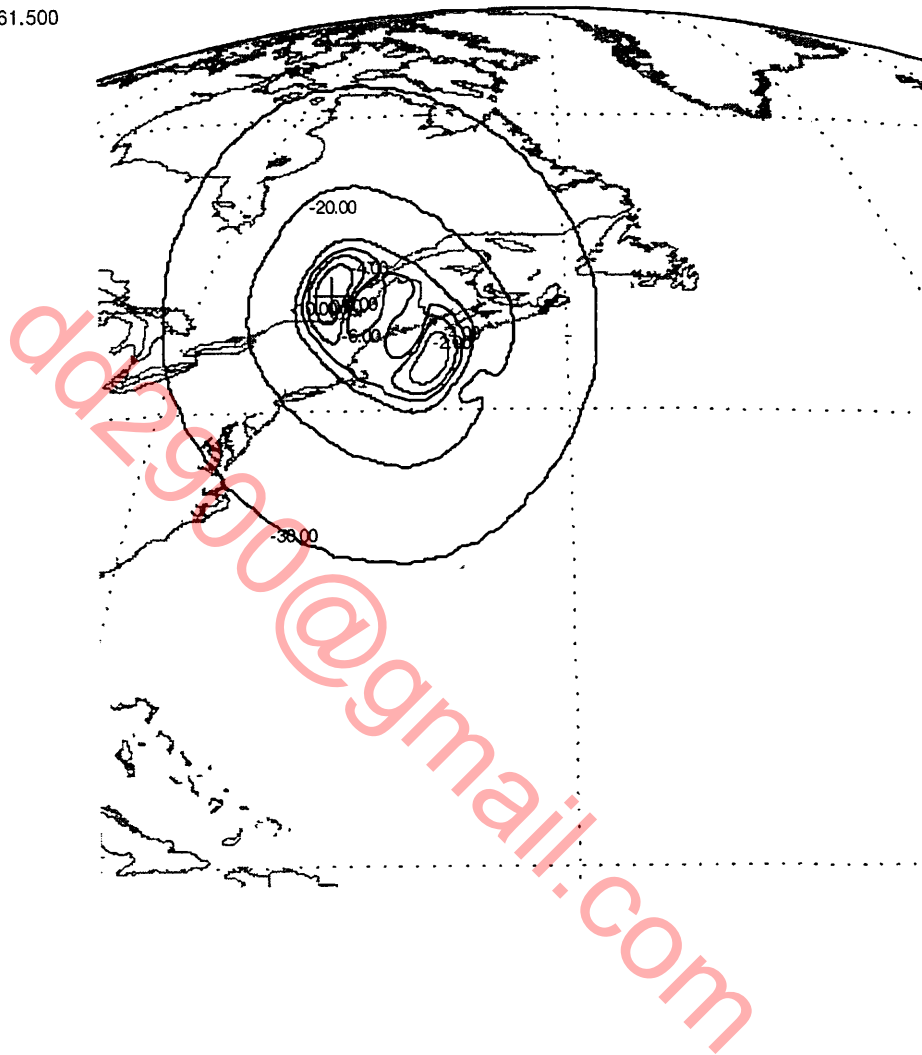
## PART OF ATTACHMENT 2

## CROSS-POLARIZED BEAM PATTERNS

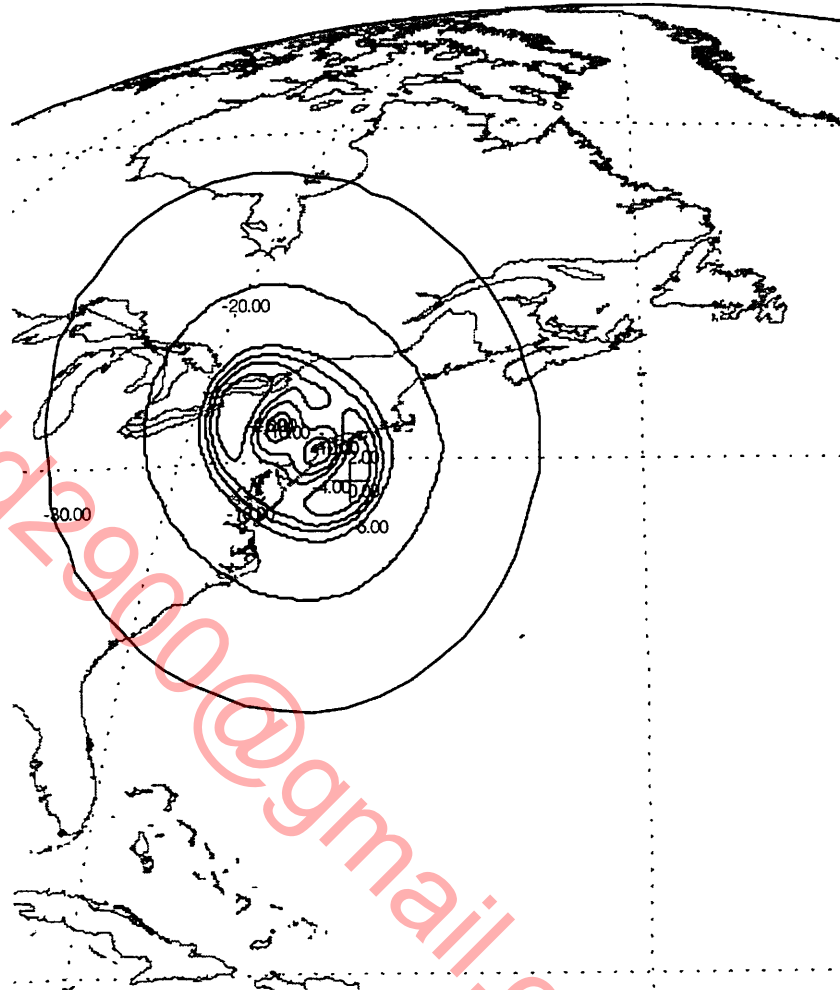
## List of Beams for USABSS-17

Beam Number		Receive	Transmit	USA9B Identification
1	Bangor, ME	R01	E01	S01
2	Boston, MA	--	E02	S02
3	Bethpage, NY	R03	E03	S03
4	Washington, DC	--	E04	S04
5	Raleigh, NC	R05	E05	S05
6	Atlanta, GA	R06	E06	S06
7	Birmingham, AC	--	E07	S07
8	Charleston, DC	--	E08	S08
9	Miami, FL	R09	E09	S09
10	Detroit, MI	--	E10	S10
11	Chicago, IL	R11	E11	S11
12	New Orleans, LA	R12	E12	S12
13	Minneapolis, MN	R13	E13	S13
14	St. Louis, MO	R14	E14	S14
15	Kansas City, MO	--	E15	S15
16	Dallas, TX	--	E16	S16
17	Houston, TX	R17	E17	S17
18	Denver, CO	R18	E18	S18
19	Albuquerque, NM	--	E19	S19
20	Seattle, WA	R20	E20	S20
21	San Francisco, CA	R21	E21	S21
22	Los Angeles, CA	R22	E22	S22
	CONUS LHCP	RU1	EU1	US1
	CONUS RHCP	RU2	EU2	US2

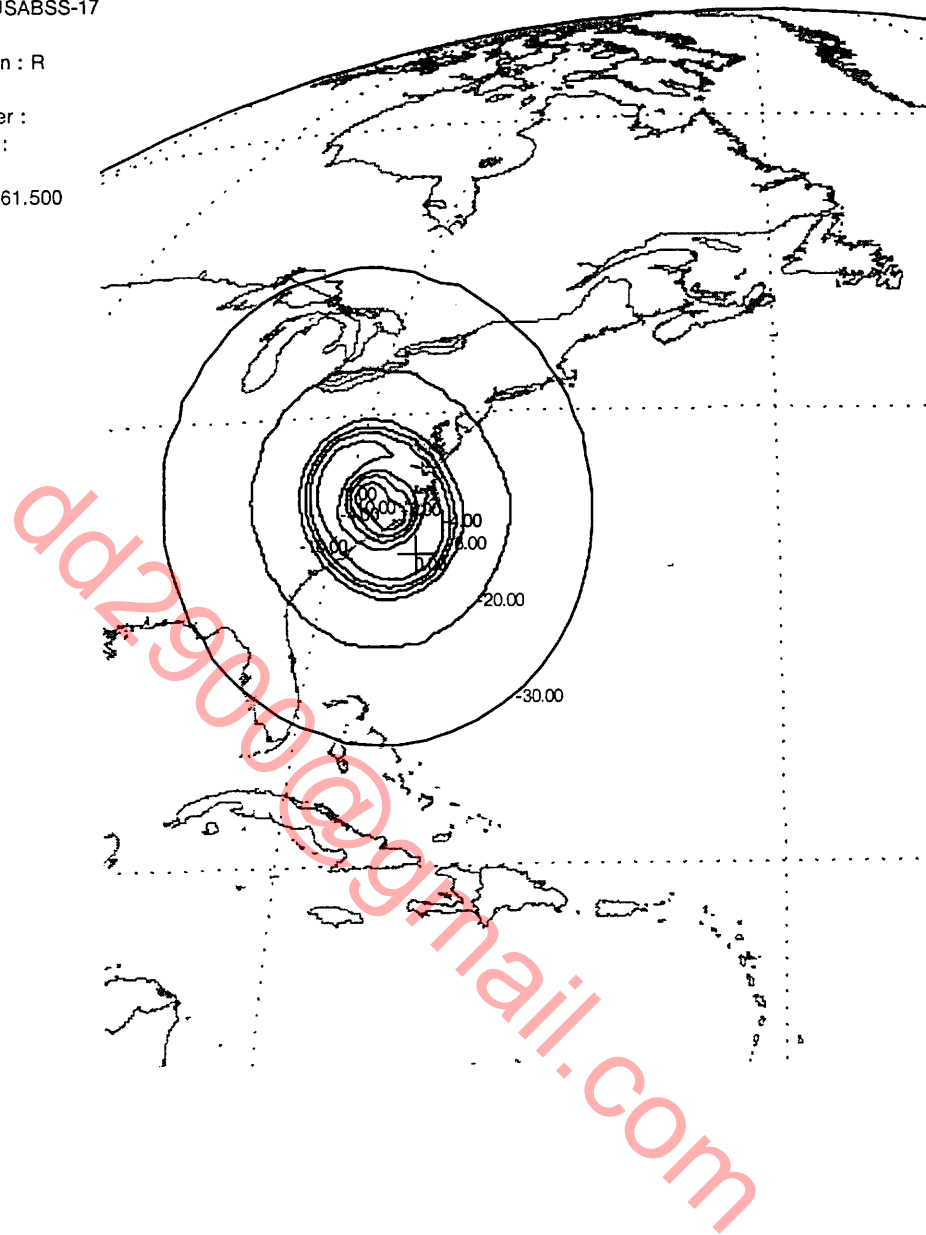
Notice ID : 000000000  
Administration : USA  
Satellite Network : USABSS-17  
Beam : R01  
Emission / Reception : R  
Polarization : X  
Service Area Number :  
Service Area Name :  
Reason : C  
Satellite Position : -61.500



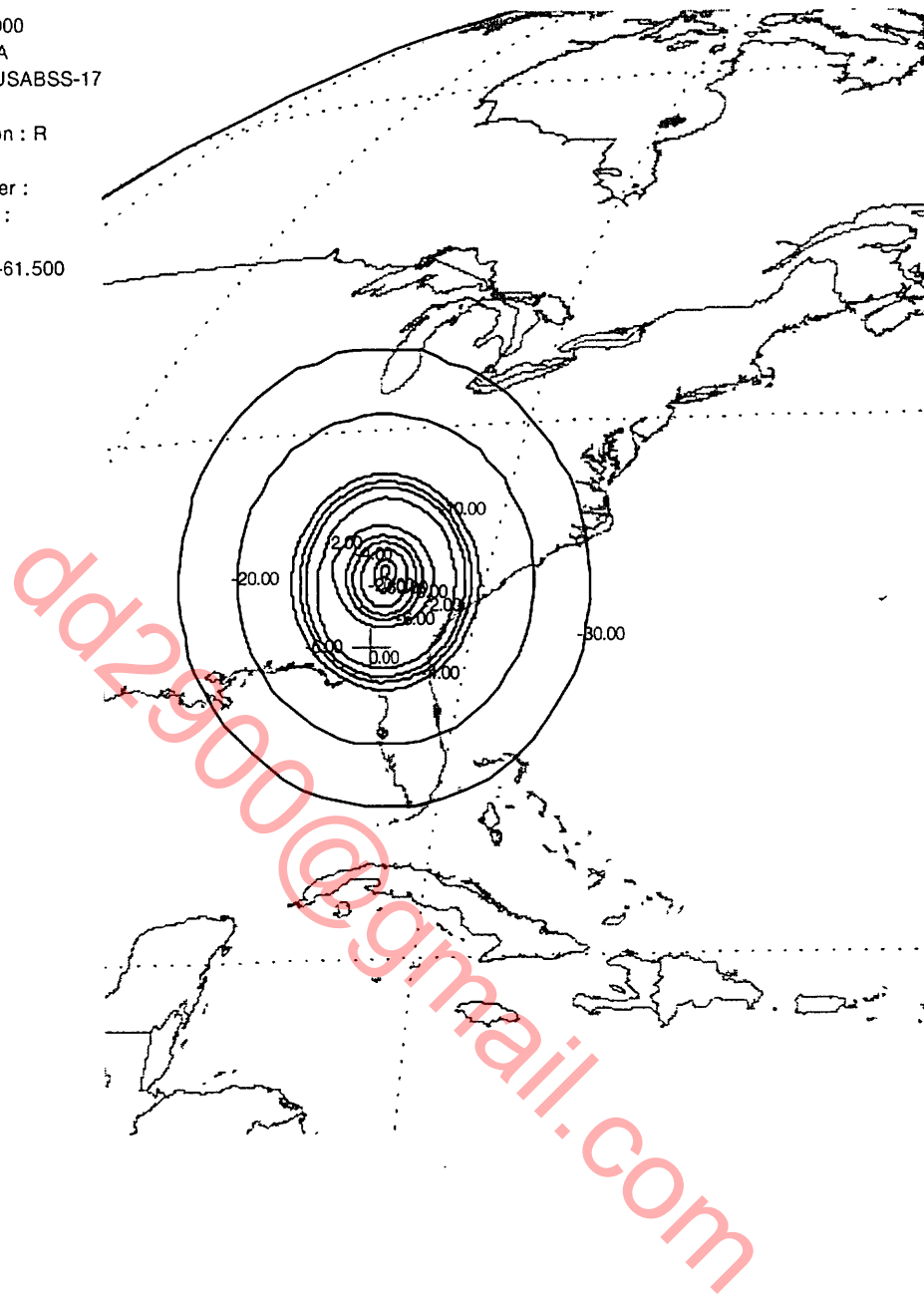
Notice ID : 000000000  
Administration : USA  
Satellite Network : USABSS-17  
Beam : R03  
Emission / Reception : R  
Polarization : X  
Service Area Number :  
Service Area Name :  
Reason : C  
Satellite Position : -61.500



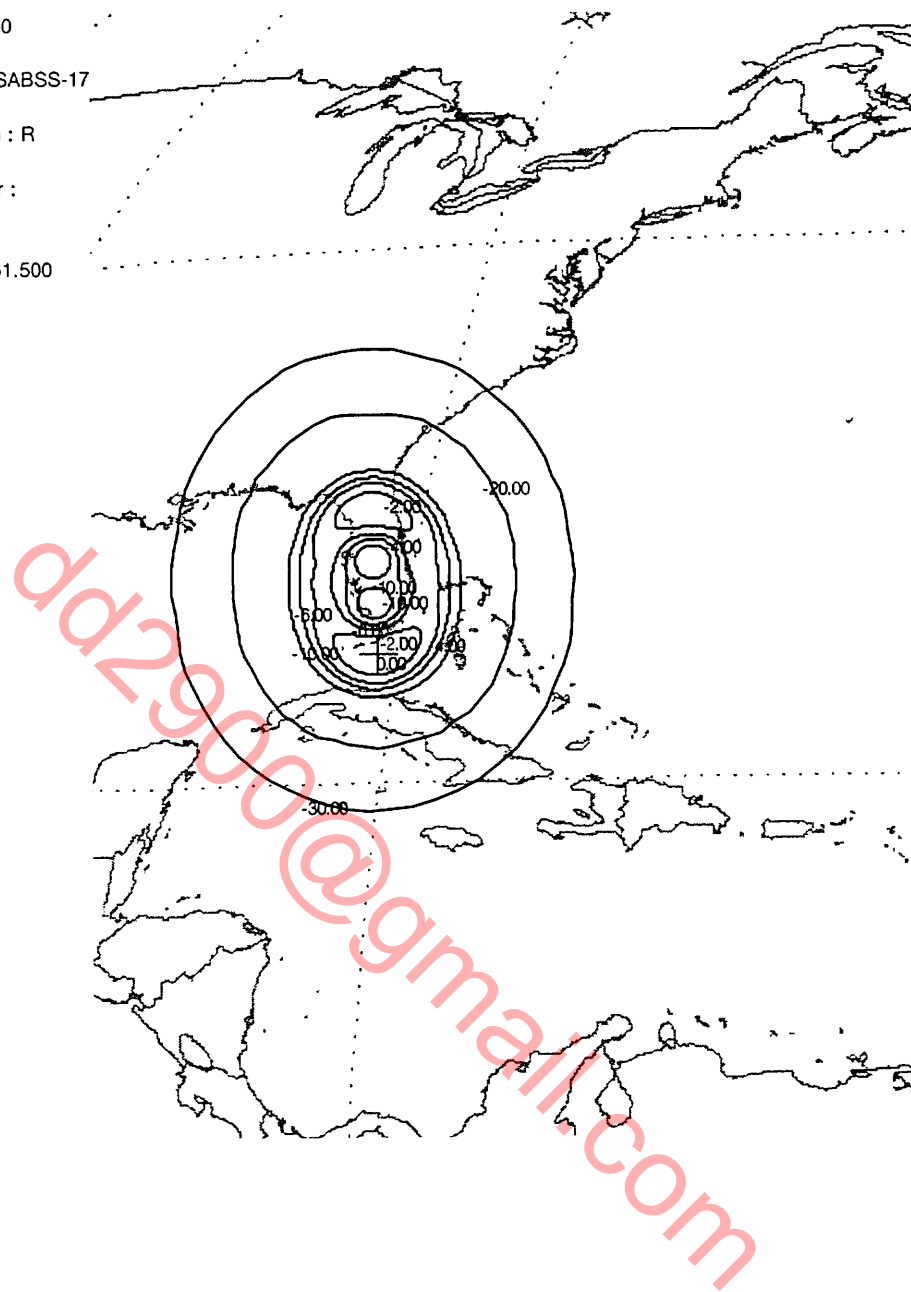
Notice ID : 000000000  
Administration : USA  
Satellite Network : USABSS-17  
Beam : R05  
Emission / Reception : R  
Polarization : X  
Service Area Number :  
Service Area Name :  
Reason : C  
Satellite Position : -61.500



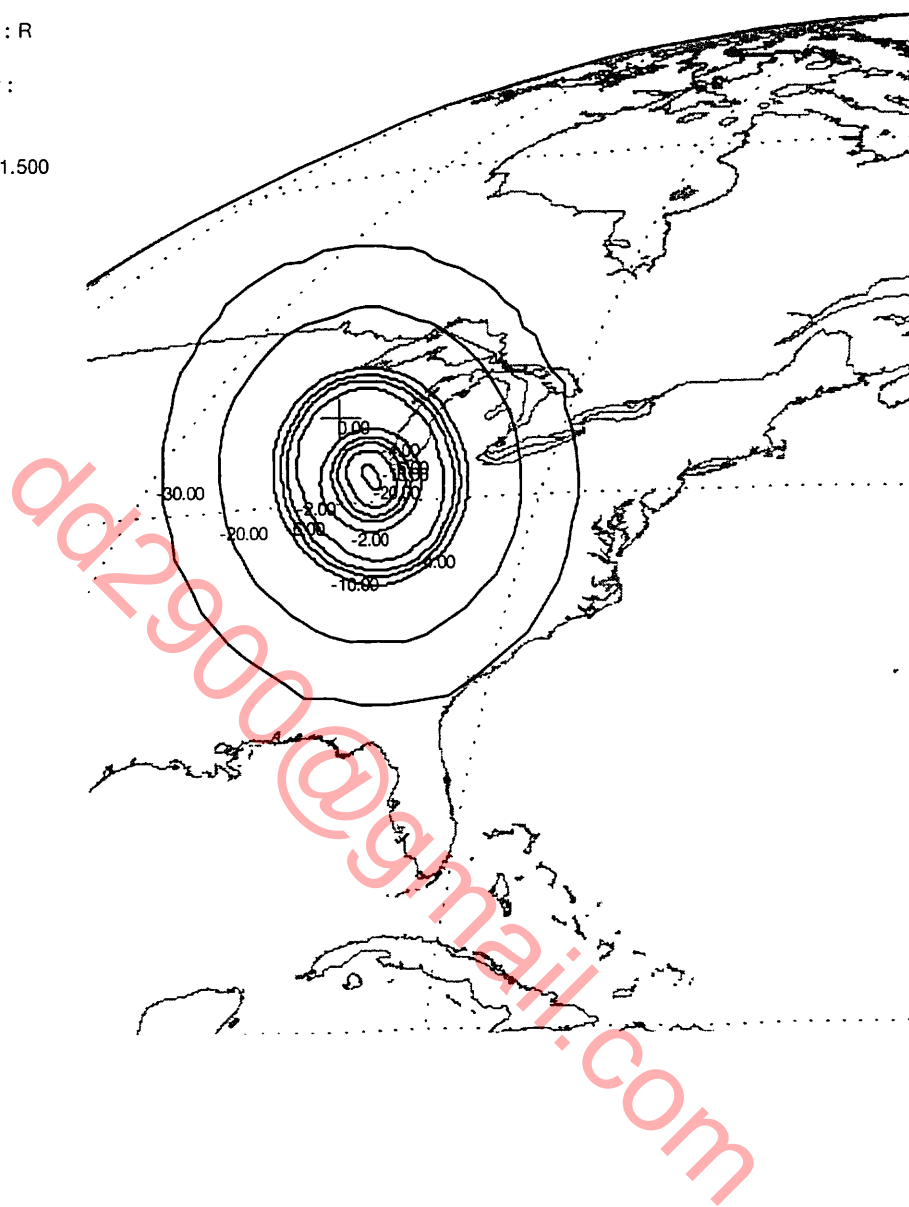
Notice ID : 000000000  
Administration : USA  
Satellite Network : USABSS-17  
Beam : R06  
Emission / Reception : R  
Polarization : X  
Service Area Number :  
Service Area Name :  
Reason : C  
Satellite Position : -61.500



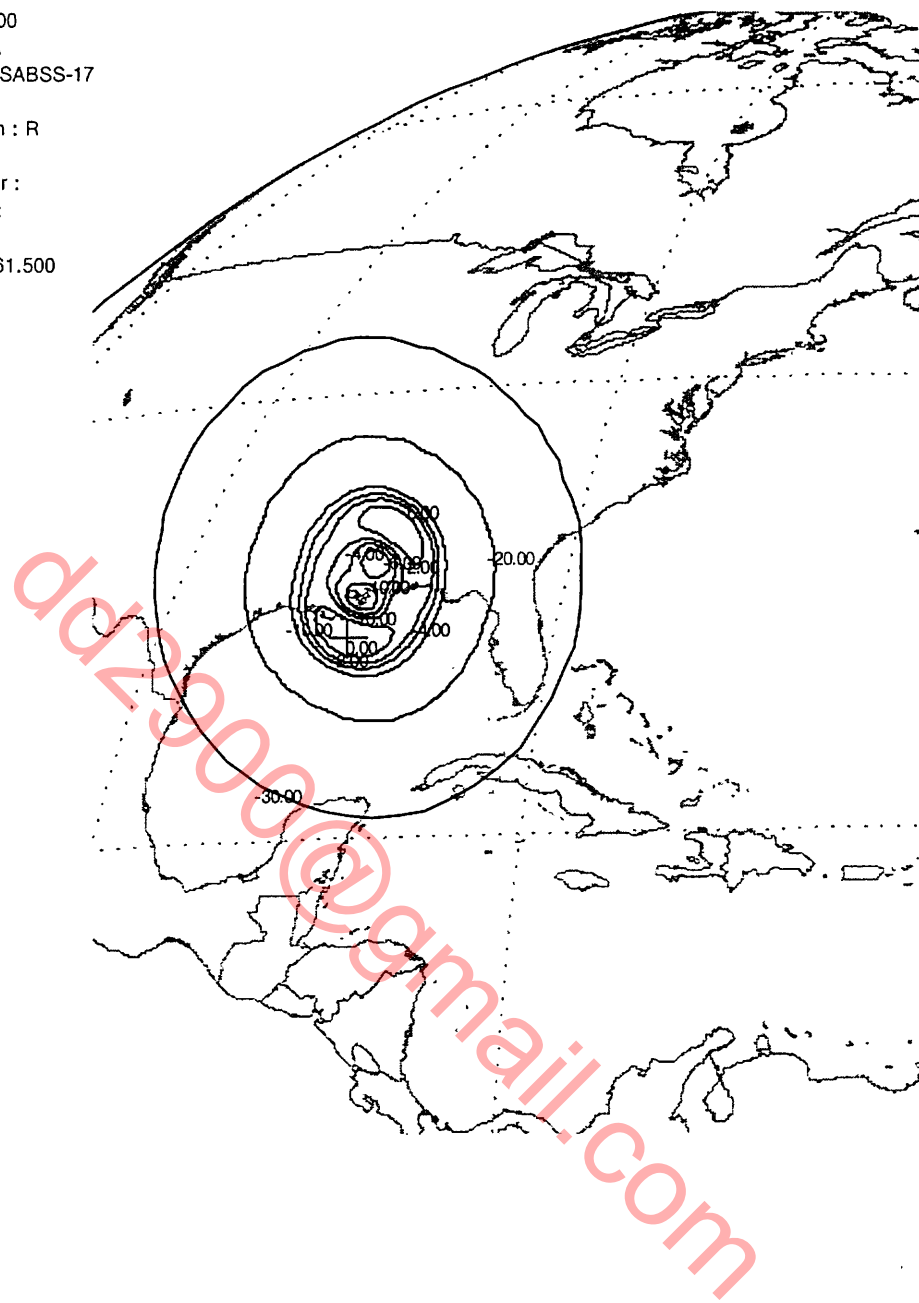
Notice ID : 000000000  
Administration : USA  
Satellite Network : USABSS-17  
Beam : R09  
Emission / Reception : R  
Polarization : X  
Service Area Number :  
Service Area Name :  
Reason : C  
Satellite Position : -61.500



Notice ID : 000000000  
Administration : USA  
Satellite Network : USABSS-17  
Beam : R11  
Emission / Reception : R  
Polarization : X  
Service Area Number :  
Service Area Name :  
Reason : C  
Satellite Position : -61.500

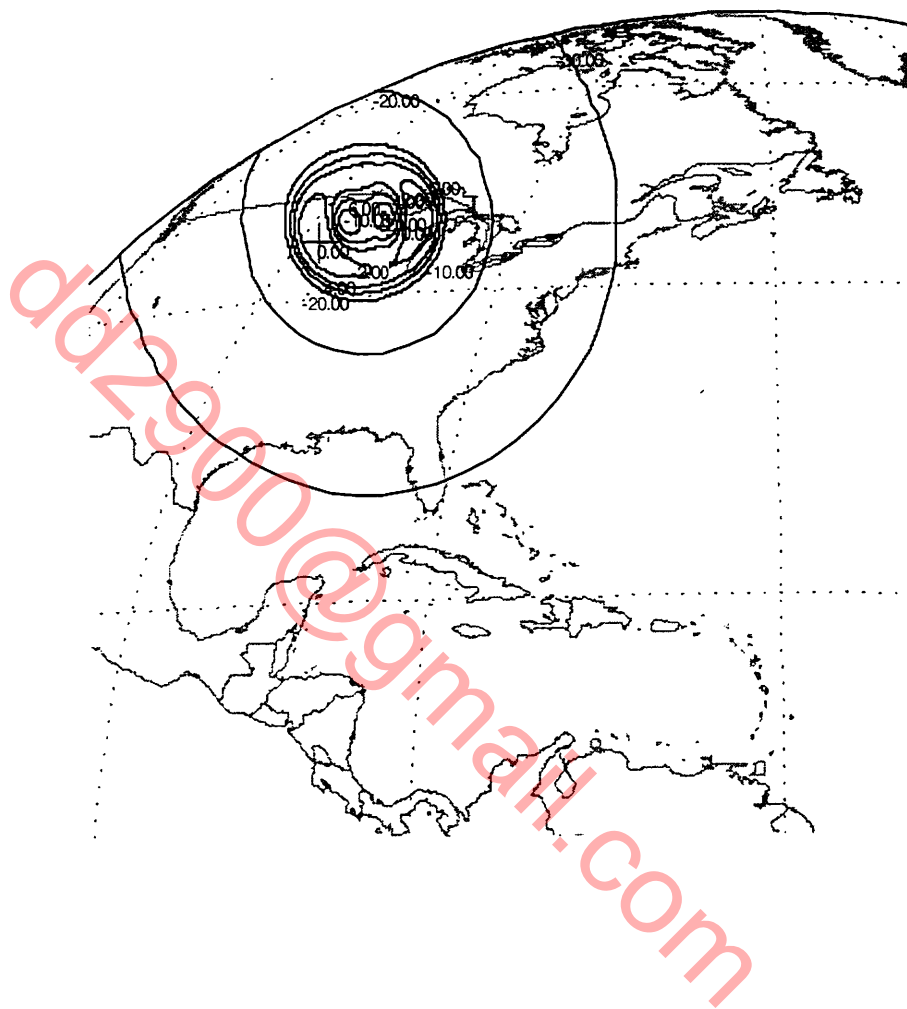


Notice ID : 000000000  
Administration : USA  
Satellite Network : USABSS-17  
Beam : R12  
Emission / Reception : R  
Polarization : X  
Service Area Number :  
Service Area Name :  
Reason : C  
Satellite Position : -61.500

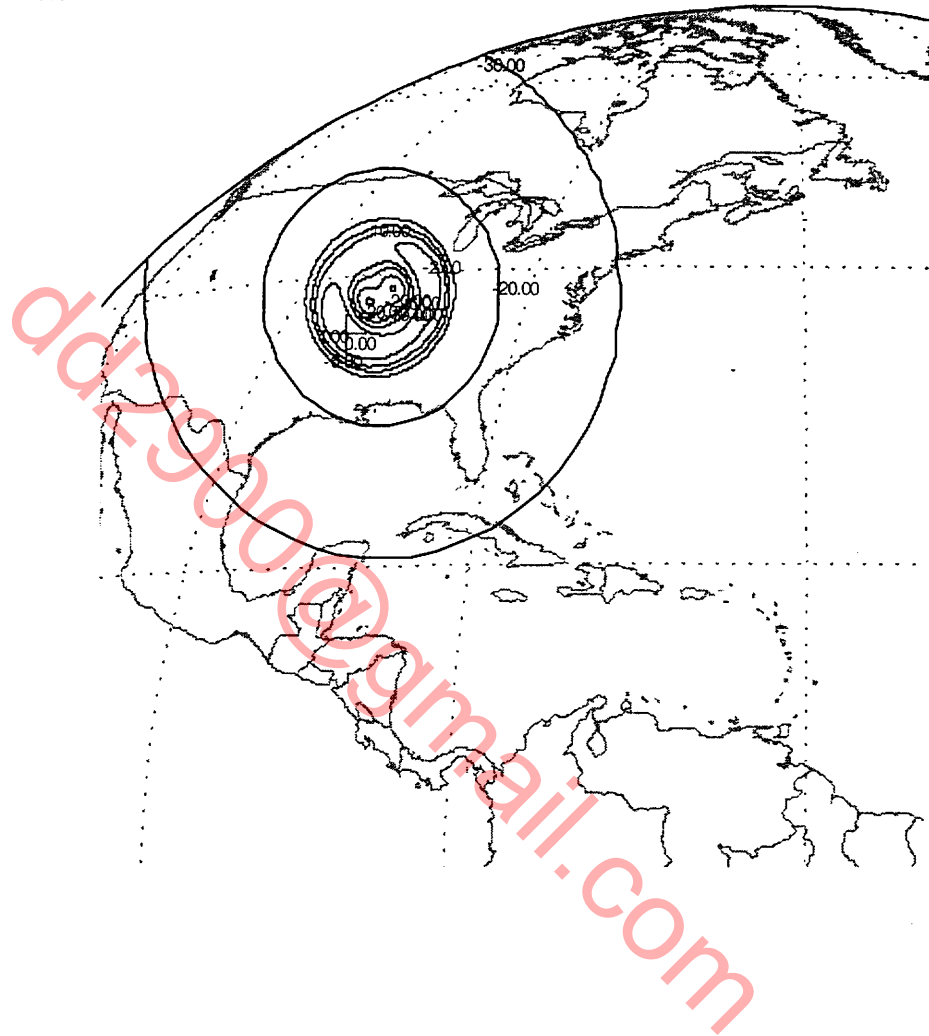




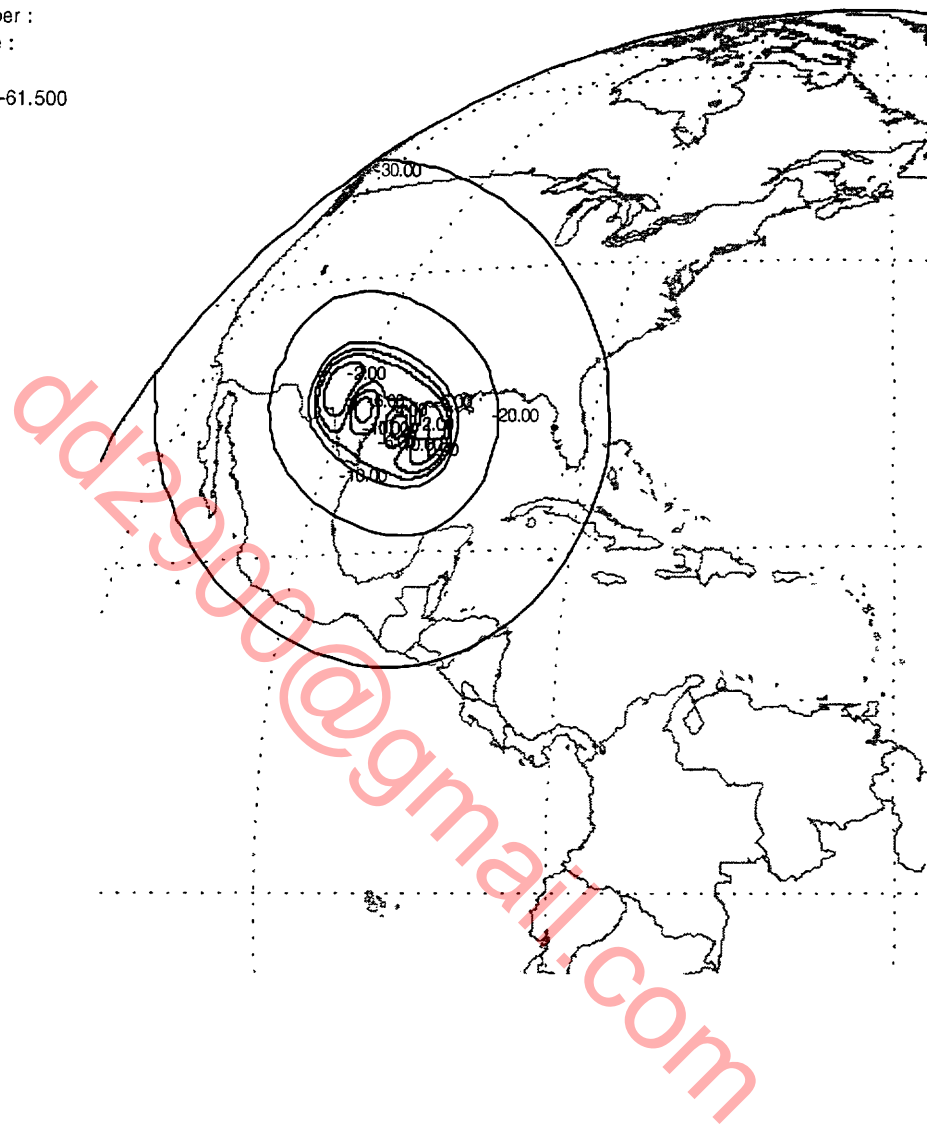
Notice ID : 000000000  
Administration : USA  
Satellite Network : USABSS-17  
Beam : R13  
Emission / Reception : R  
Polarization : X  
Service Area Number :  
Service Area Name :  
Reason : C  
Satellite Position : -61.500



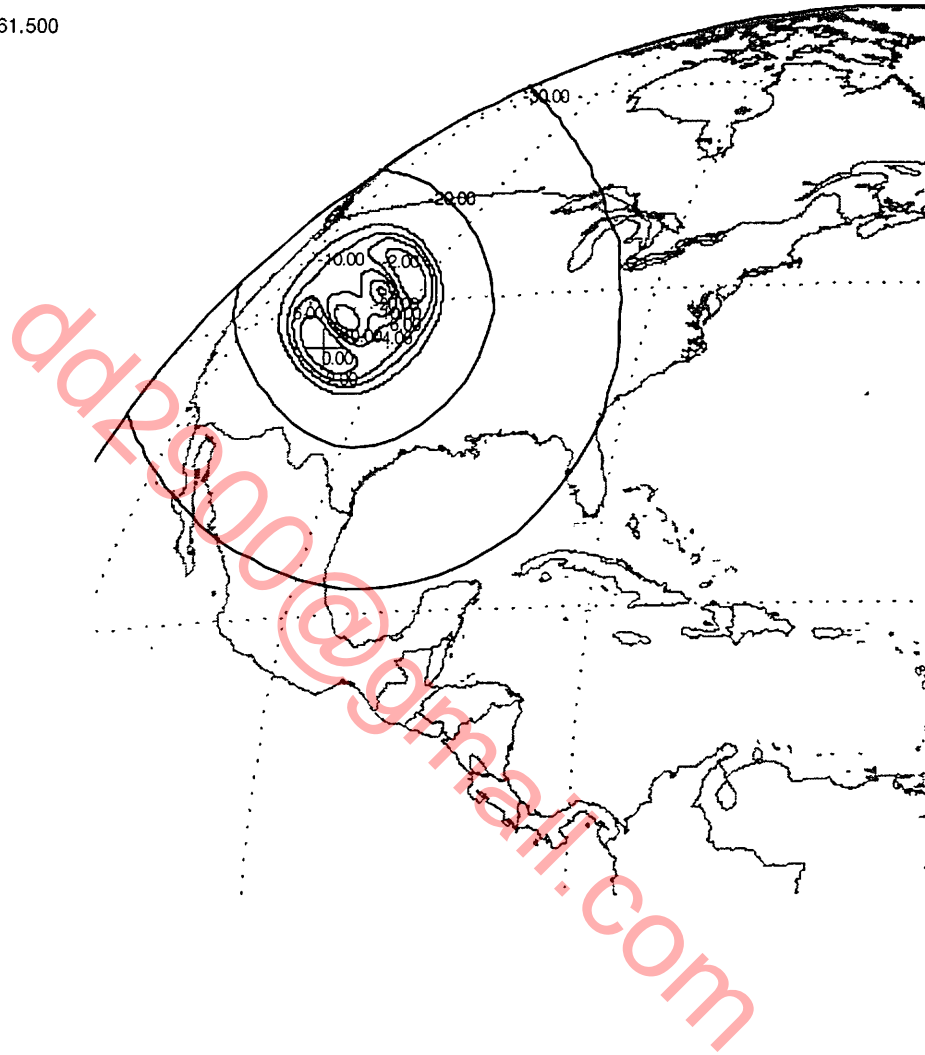
Notice ID : 000000000  
Administration : USA  
Satellite Network : USABSS-17  
Beam : R14  
Emission / Reception : R  
Polarization : X  
Service Area Number :  
Service Area Name :  
Reason : C  
Satellite Position : -61.500



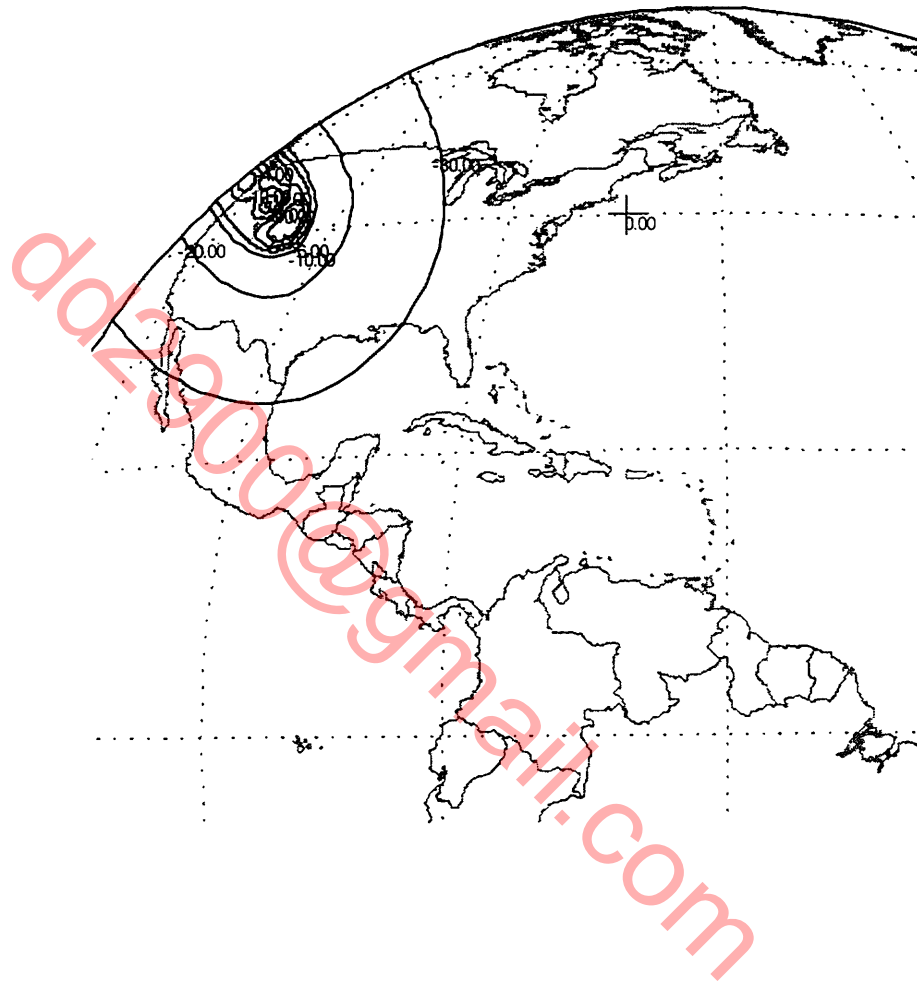
Notice ID : 000000000  
Administration : USA  
Satellite Network : USABSS-17  
Beam : R17  
Emission / Reception : R  
Polarization : X  
Service Area Number :  
Service Area Name :  
Reason : C  
Satellite Position : -61.500



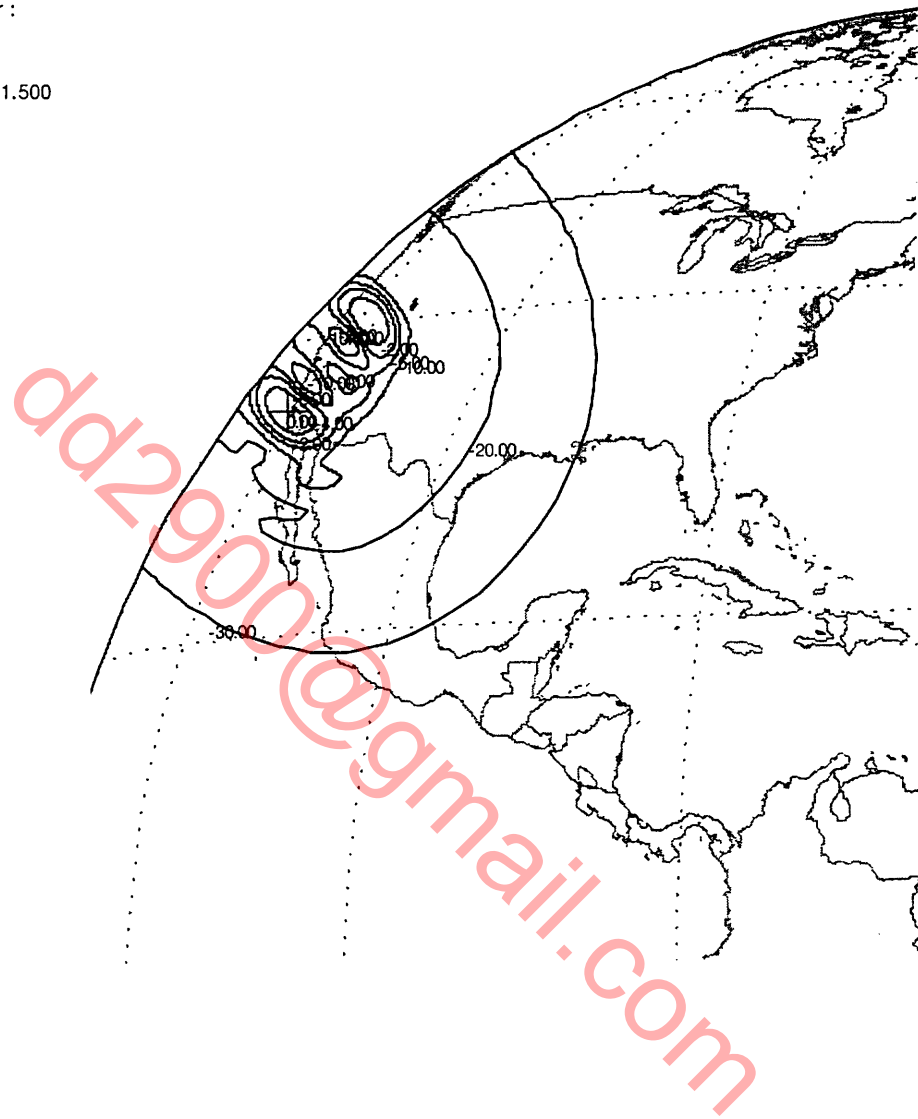
Notice ID : 000000000  
Administration : USA  
Satellite Network : USABSS-17  
Beam : R18  
Emission / Reception : R  
Polarization : X  
Service Area Number :  
Service Area Name :  
Reason : C  
Satellite Position : -61,500



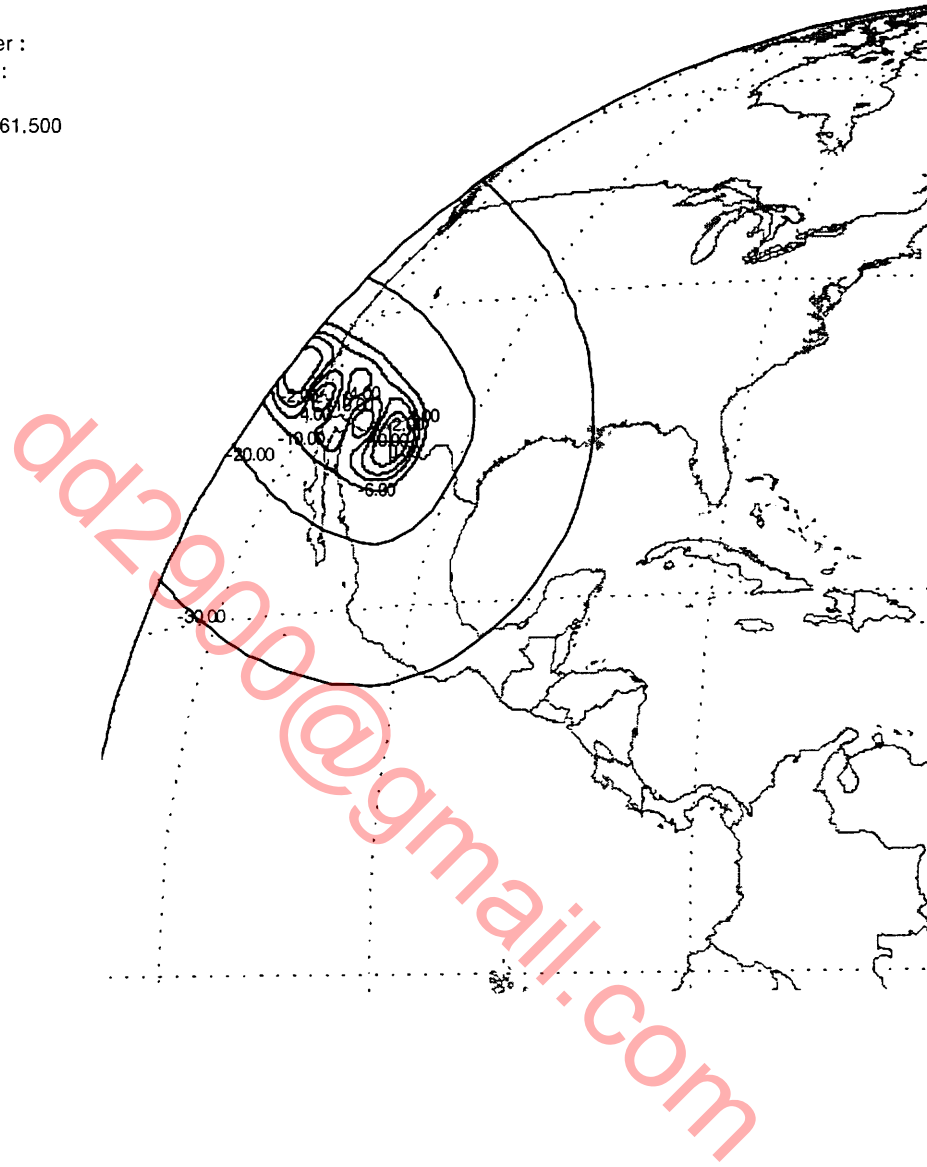
Notice ID : 000000000  
Administration : USA  
Satellite Network : USABSS-17  
Beam : R20  
Emission / Reception : R  
Polarization : X  
Service Area Number :  
Service Area Name :  
Reason : C  
Satellite Position : -61.500

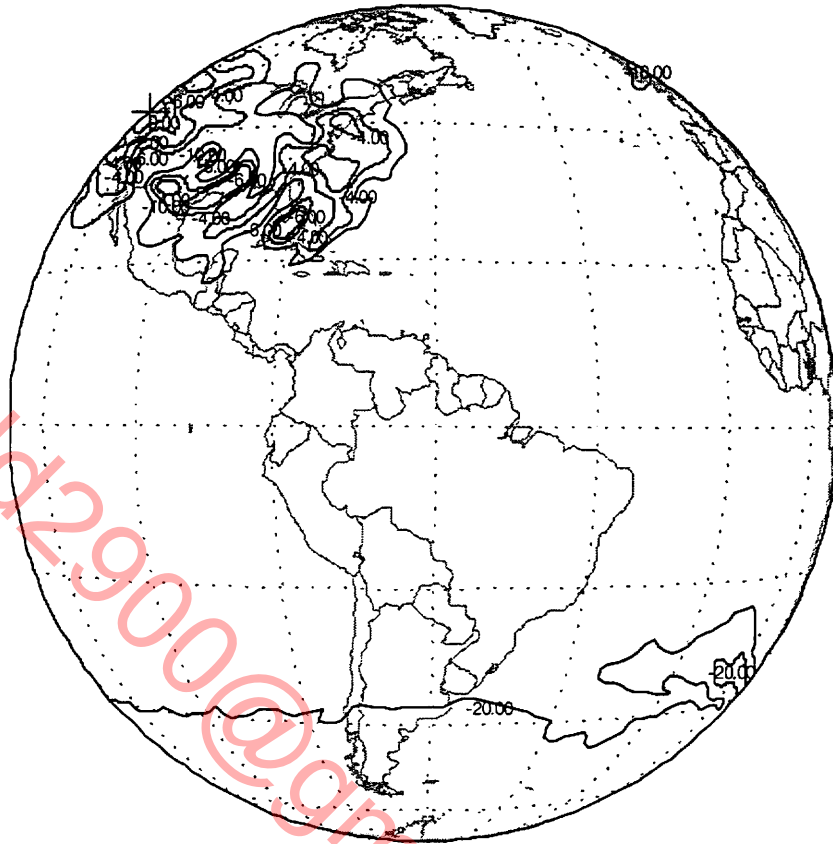


Notice ID : 000000000  
Administration : USA  
Satellite Network : USABSS-17  
Beam : R21  
Emission / Reception : R  
Polarization : X  
Service Area Number :  
Service Area Name :  
Reason : C  
Satellite Position : -61.500



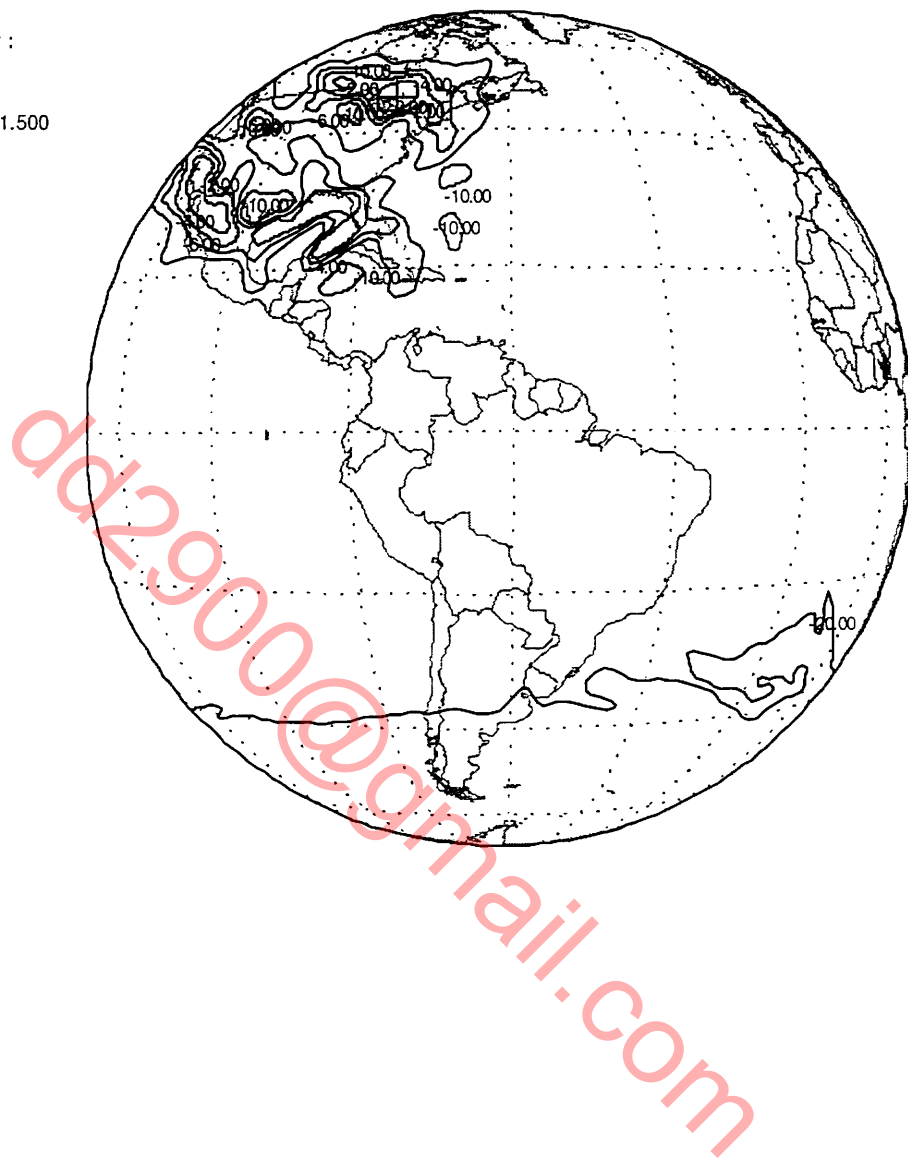
Notice ID : 000000000  
Administration : USA  
Satellite Network : USABSS-17  
Beam : R22  
Emission / Reception : R  
Polarization : X  
Service Area Number :  
Service Area Name :  
Reason : C  
Satellite Position : -61.500



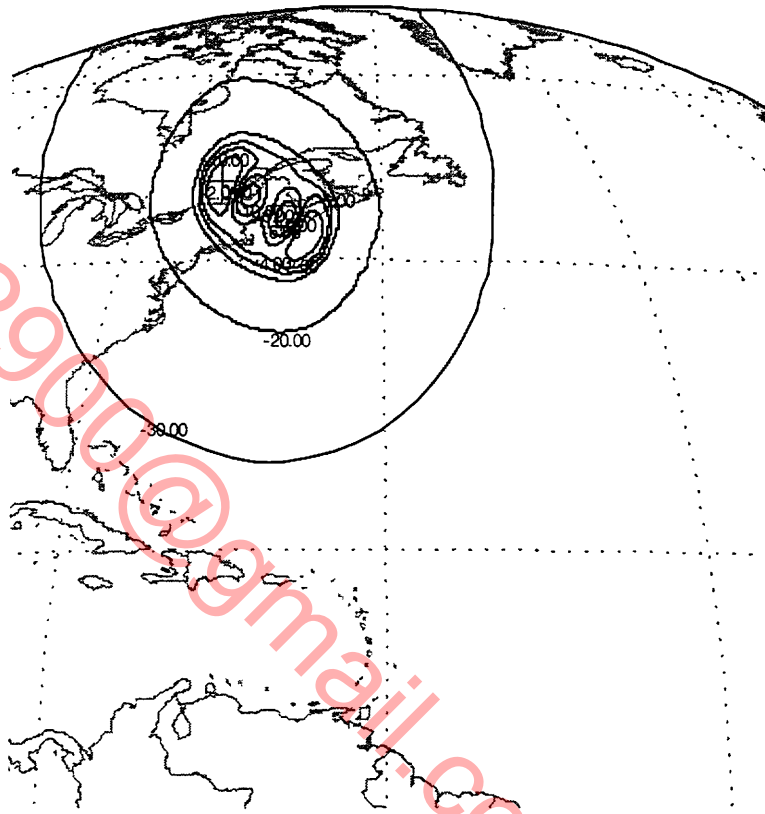




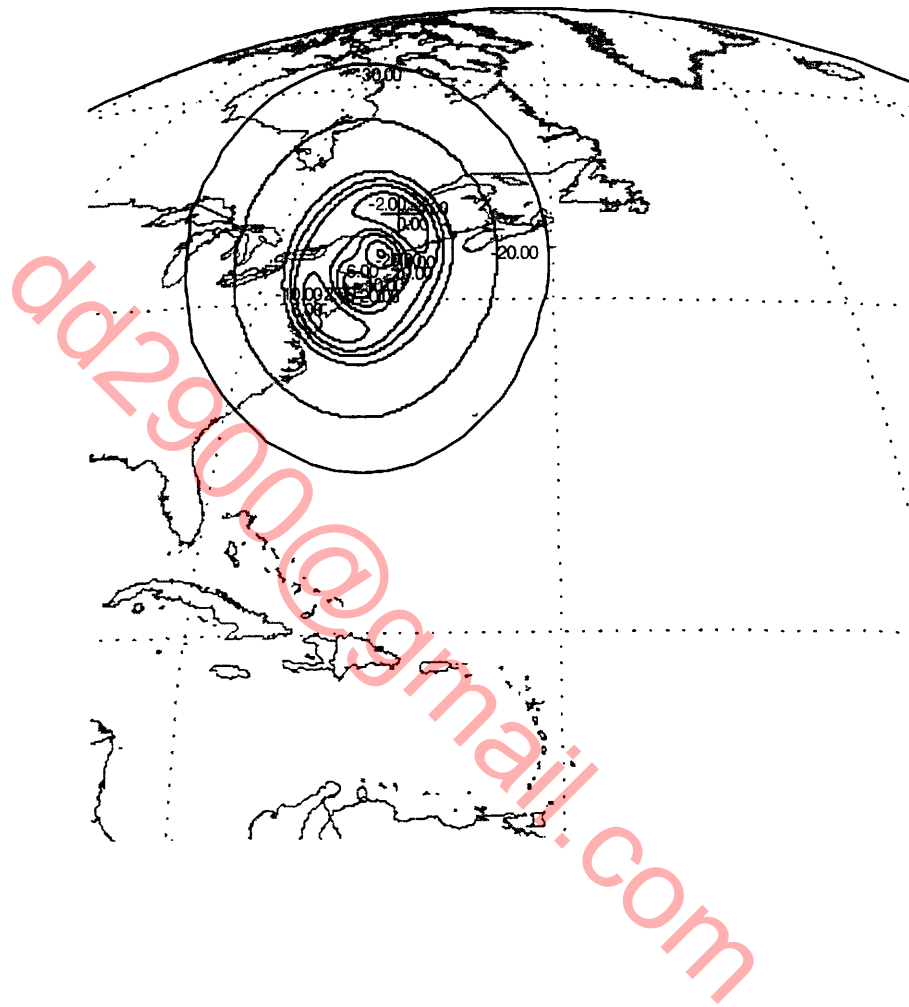
Notice ID : 000000000  
Administration : USA  
Satellite Network : USABSS-17  
Beam : RU2  
Emission / Reception : R  
Polarization : X  
Service Area Number :  
Service Area Name :  
Reason : C  
Satellite Position : -61.500



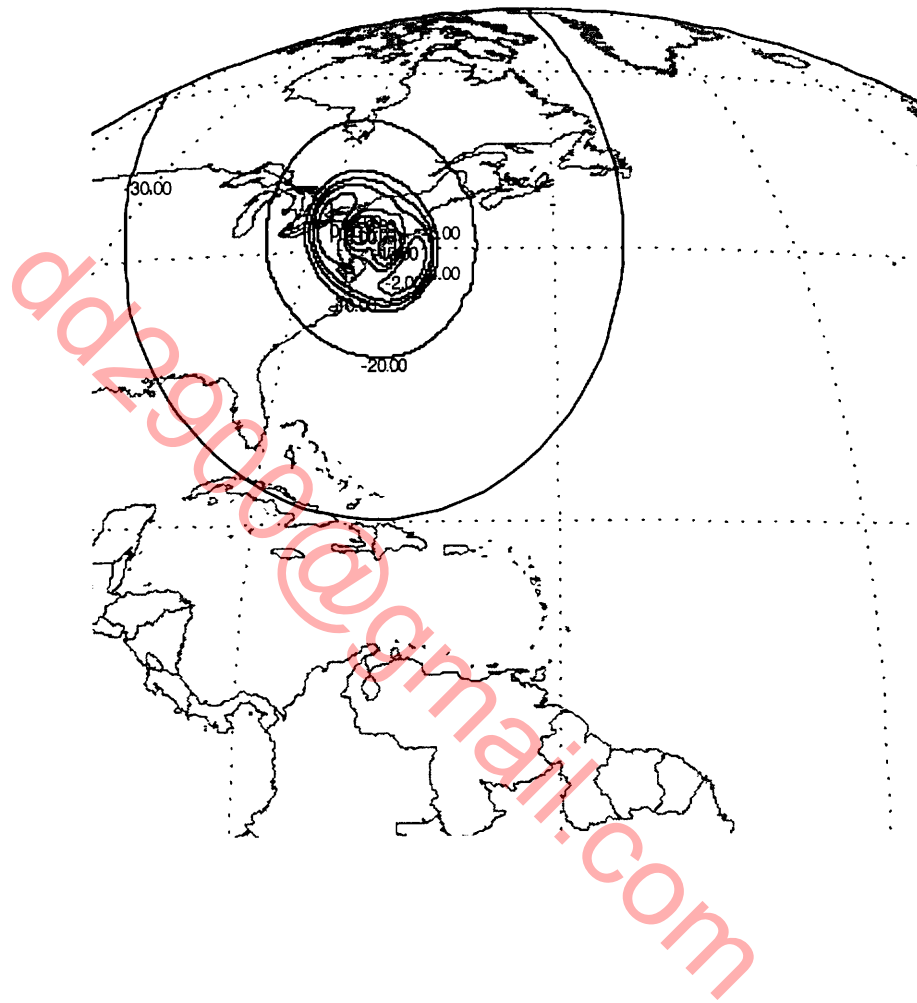
Notice ID : 000000000  
Administration : USA  
Satellite Network : USABSS-17  
Beam : E01  
Emission / Reception : E  
Polarization : X  
Service Area Number :  
Service Area Name :  
Reason : C  
Satellite Position : -61.500



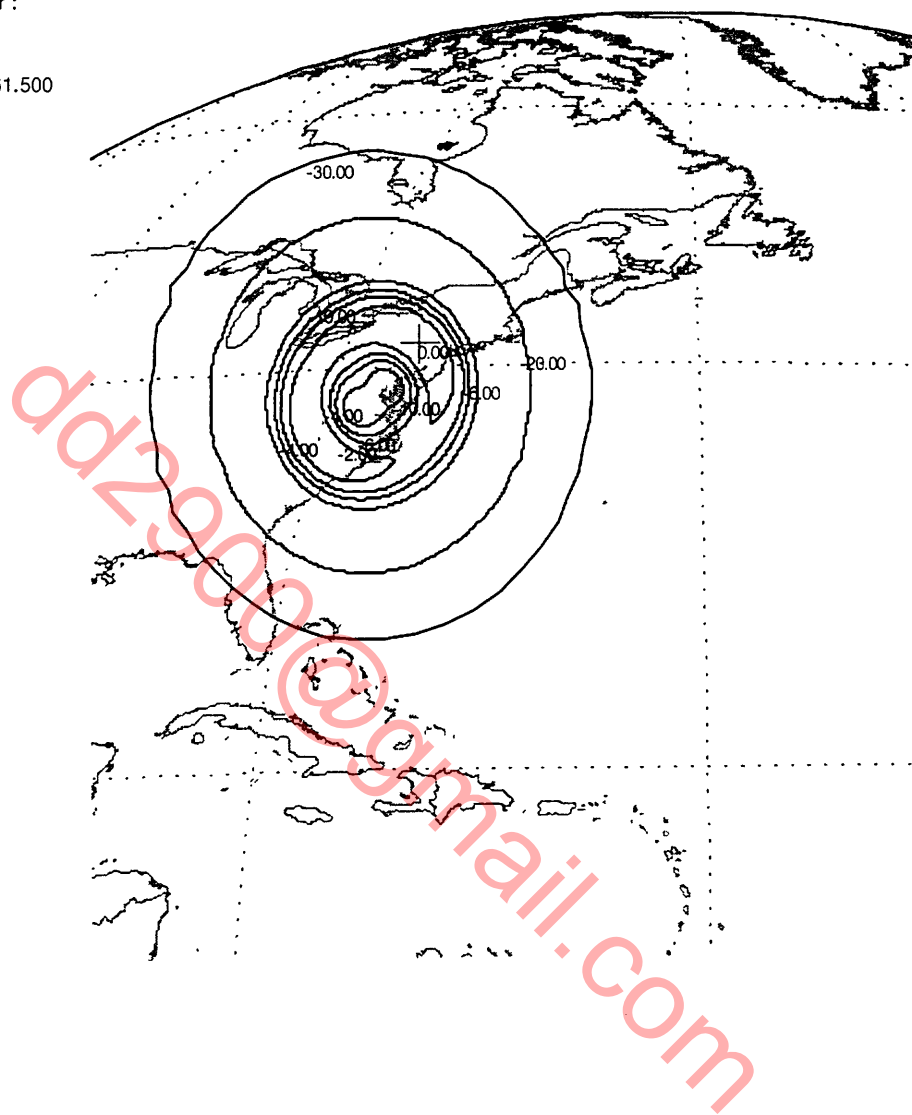
Notice ID : 000000000  
Administration : USA  
Satellite Network : USABSS-17  
Beam : E02  
Emission / Reception : E  
Polarization : X  
Service Area Number :  
Service Area Name :  
Reason : C  
Satellite Position : -61.500



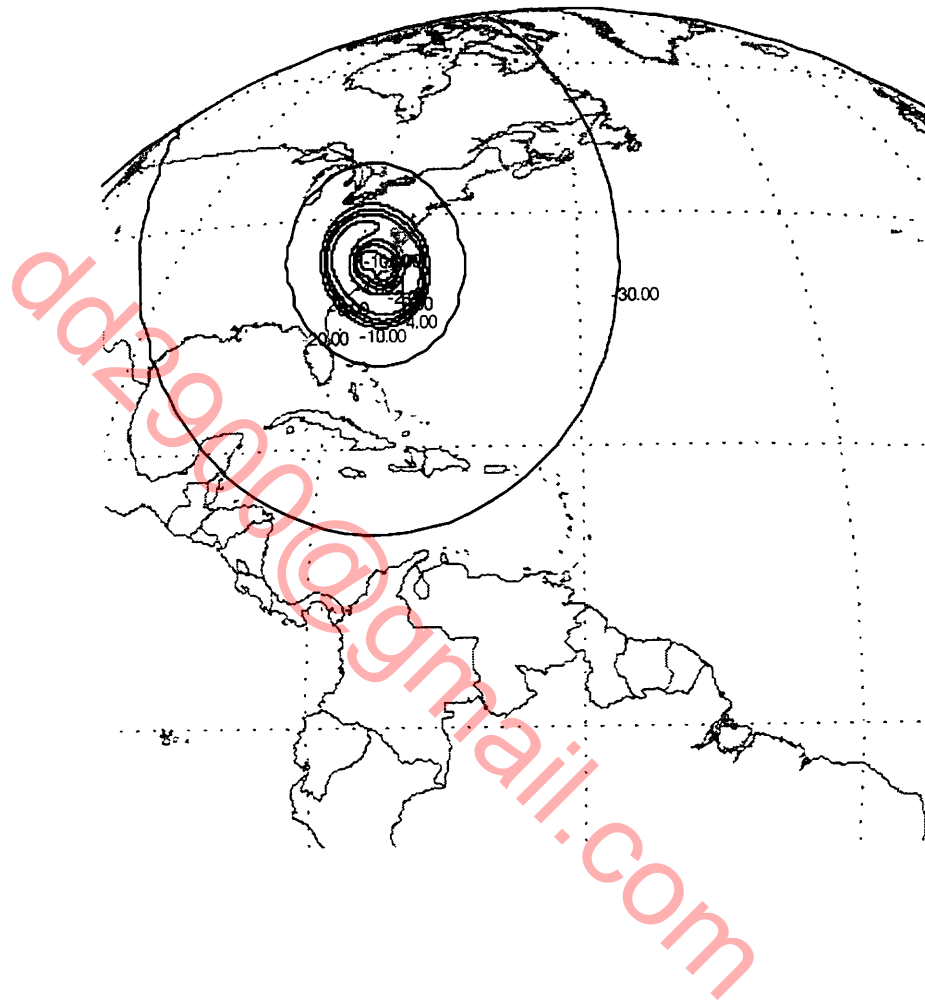
Notice ID : 000000000  
Administration : USA  
Satellite Network : USABSS-17  
Beam : E03  
Emission / Reception : E  
Polarization : X  
Service Area Number :  
Service Area Name :  
Reason : C  
Satellite Position : -61.500



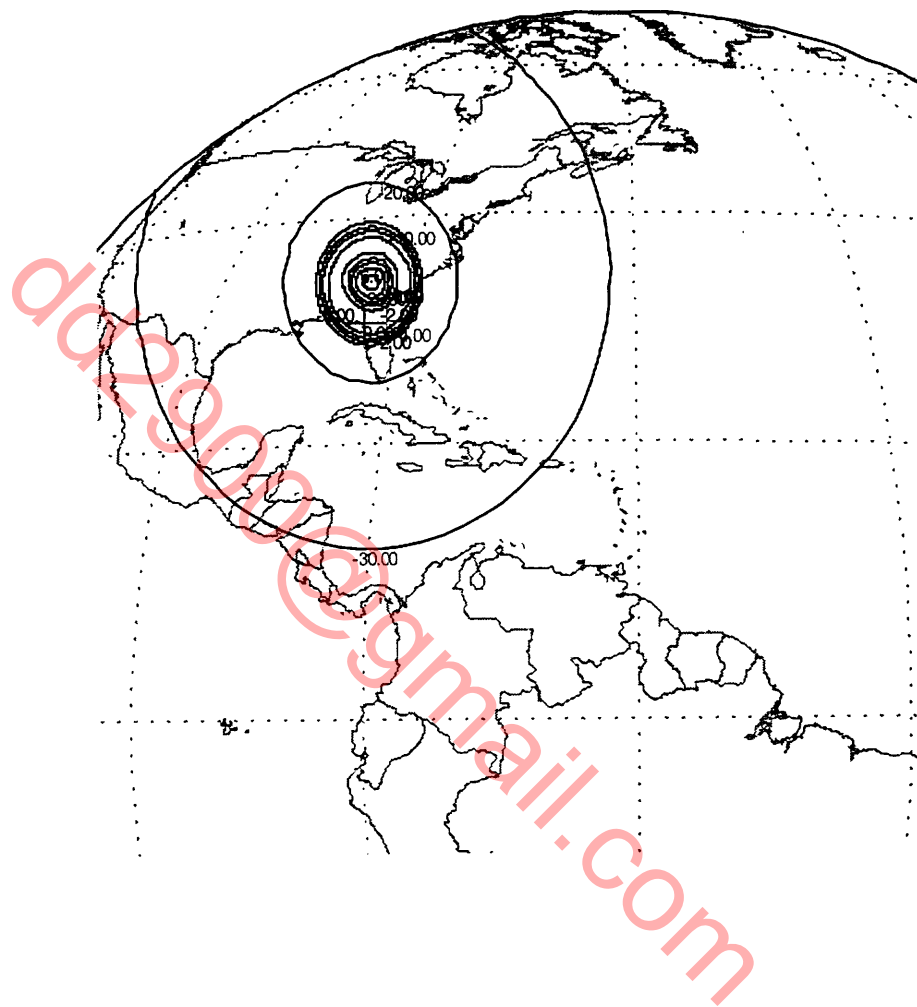
Notice ID : 000000000  
Administration : USA  
Satellite Network : USABSS-17  
Beam : E04  
Emission / Reception : E  
Polarization : X  
Service Area Number :  
Service Area Name :  
Reason : C  
Satellite Position : -61.500



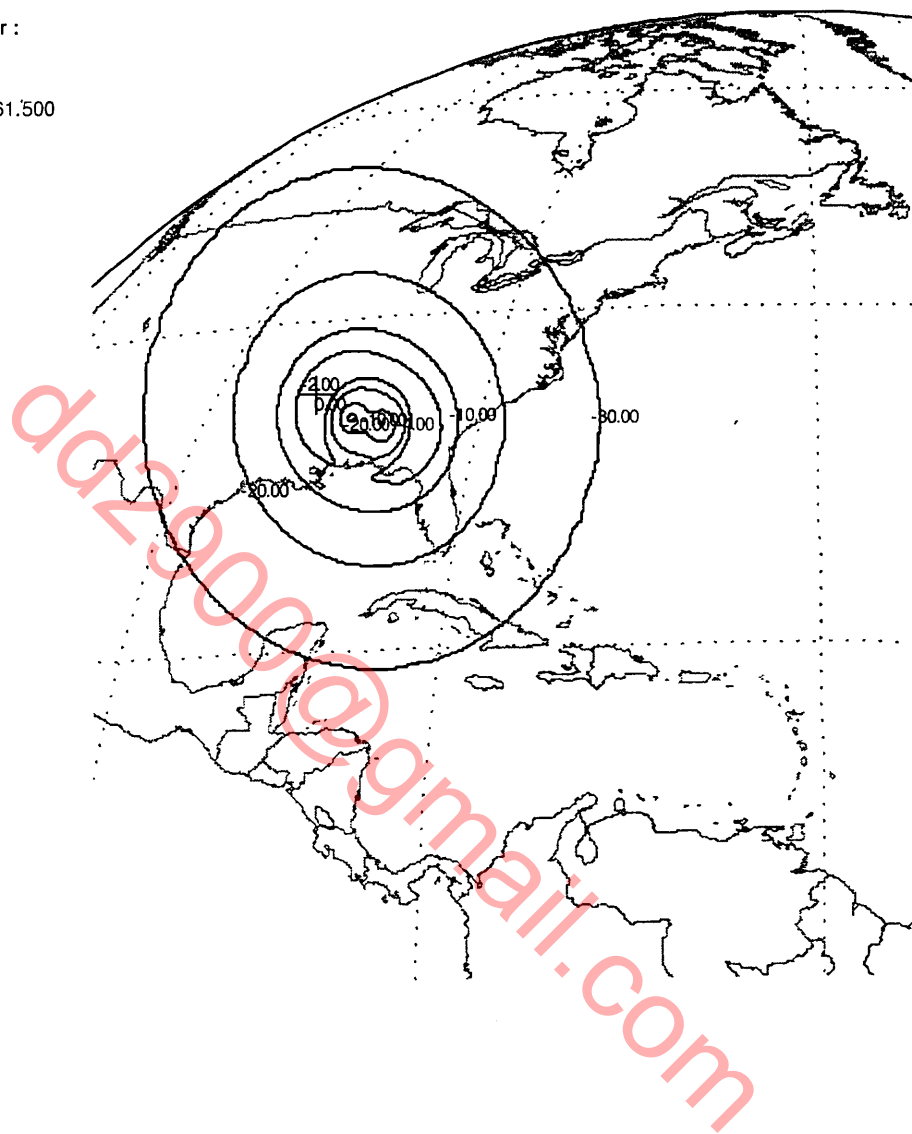
Notice ID : 000000000  
Administration : USA  
Satellite Network : USABSS-17  
Beam : E05  
Emission / Reception : E  
Polarization : X  
Service Area Number :  
Service Area Name :  
Reason : C  
Satellite Position : -61.500



Notice ID : 000000000  
Administration : USA  
Satellite Network : USABSS-17  
Beam : E06  
Emission / Reception : E  
Polarization : X  
Service Area Number :  
Service Area Name :  
Reason : C  
Satellite Position : -61.500

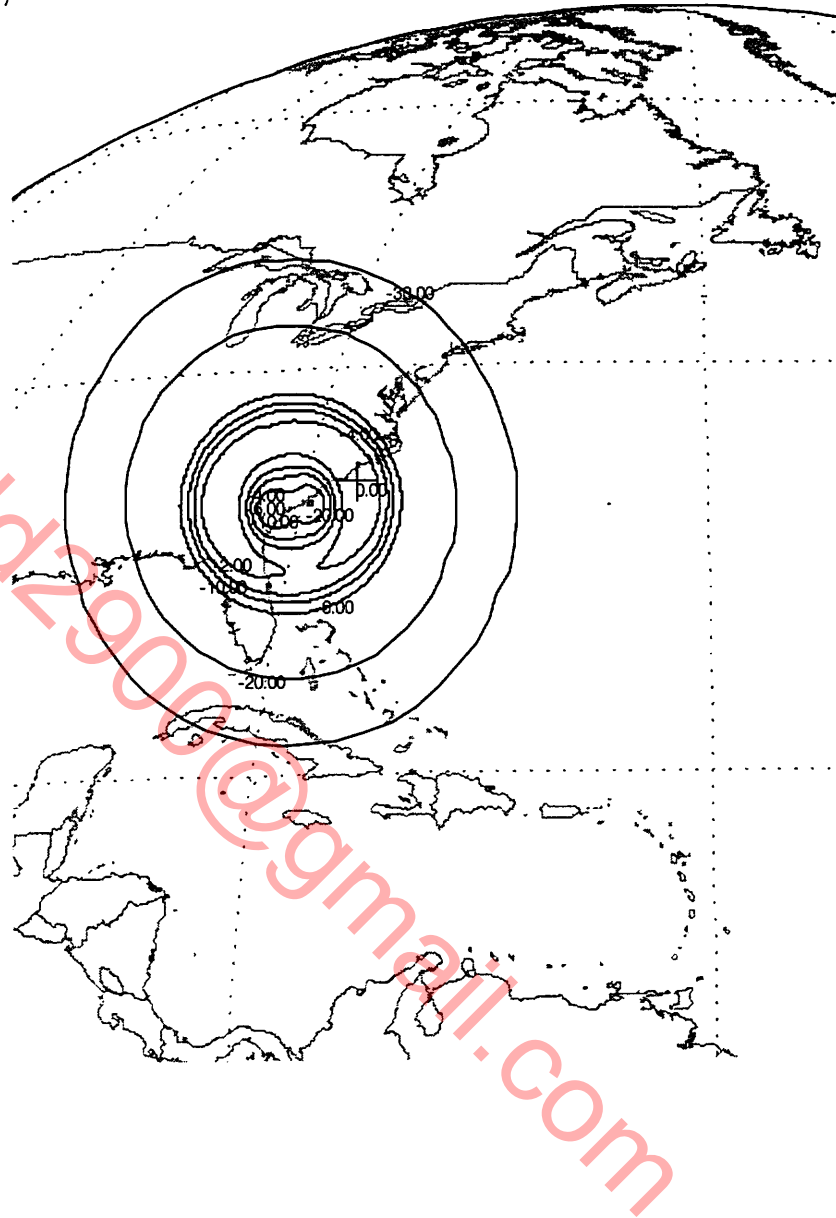


Notice ID : 000000000  
Administration : USA  
Satellite Network : USABSS-17  
Beam : E07  
Emission / Reception : E  
Polarization : X  
Service Area Number :  
Service Area Name :  
Reason : C  
Satellite Position : -61.500

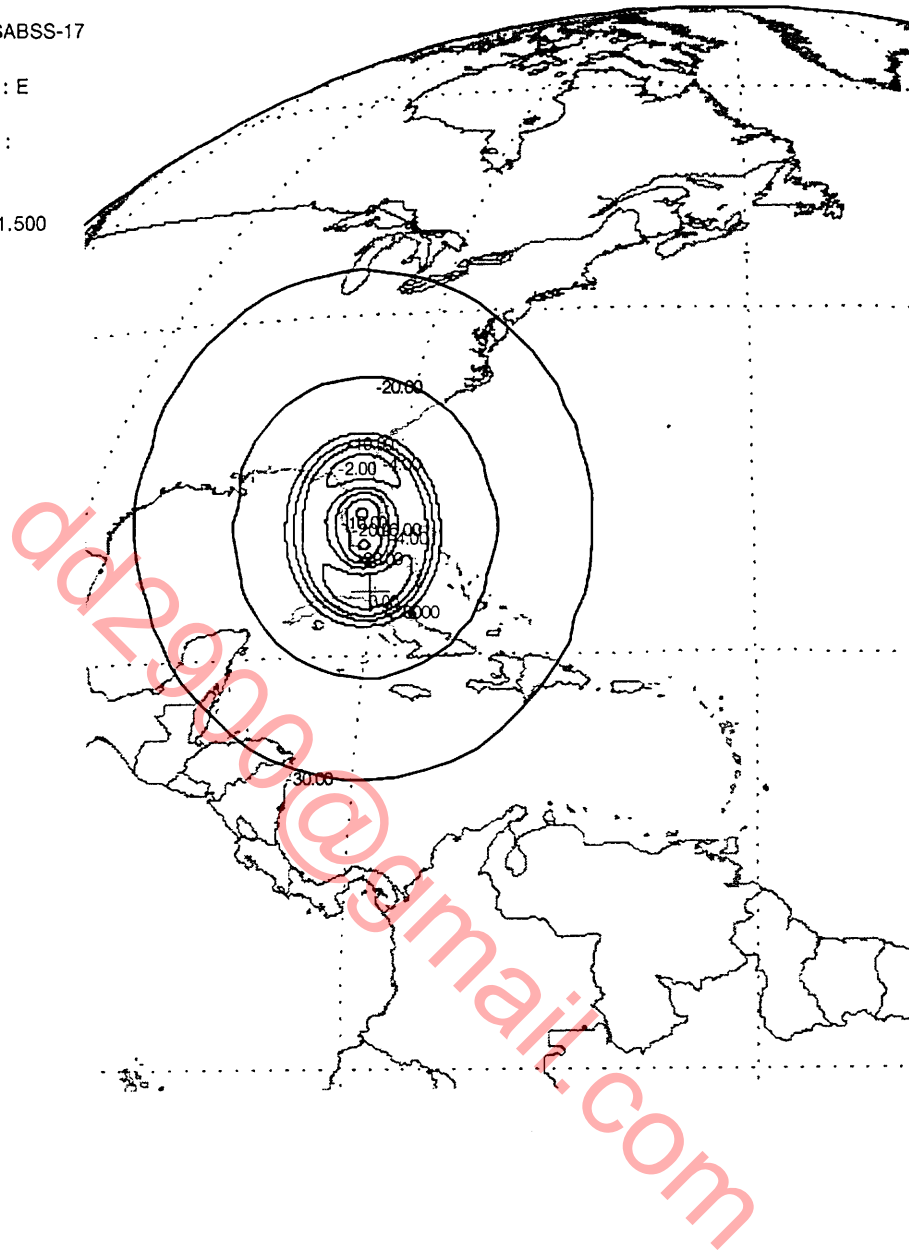




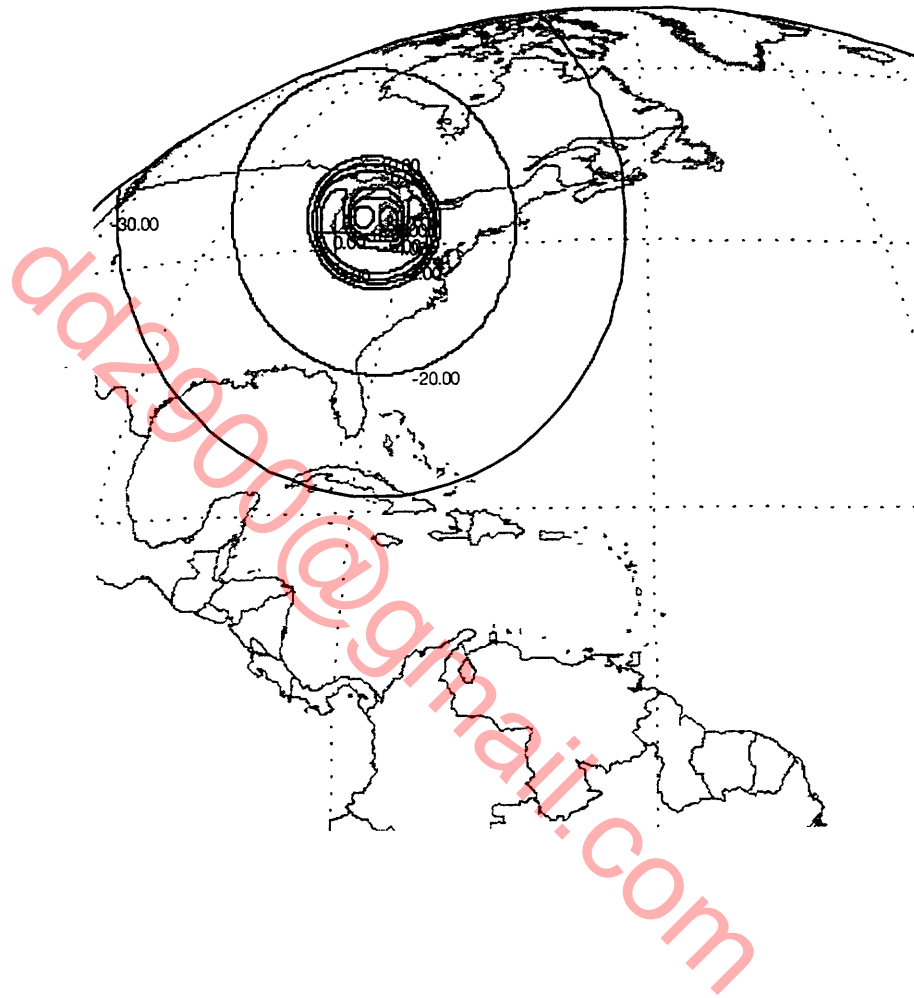
Notice ID : 000000000  
Administration : USA  
Satellite Network : USABSS-17  
Beam : E08  
Emission / Reception : E  
Polarization : X  
Service Area Number :  
Service Area Name :  
Reason : C  
Satellite Position : -61.500



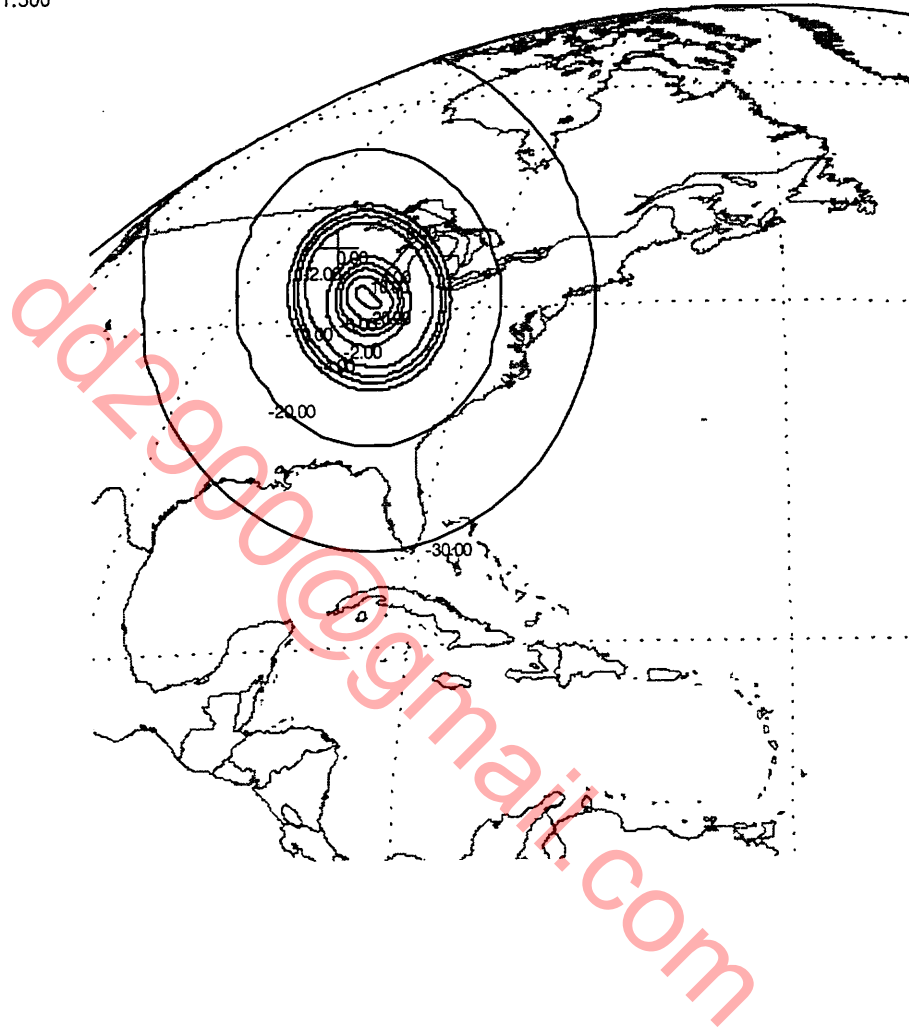
Notice ID : 000000000  
Administration : USA  
Satellite Network : USABSS-17  
Beam : E09  
Emission / Reception : E  
Polarization : X  
Service Area Number :  
Service Area Name :  
Reason : C  
Satellite Position : -61.500



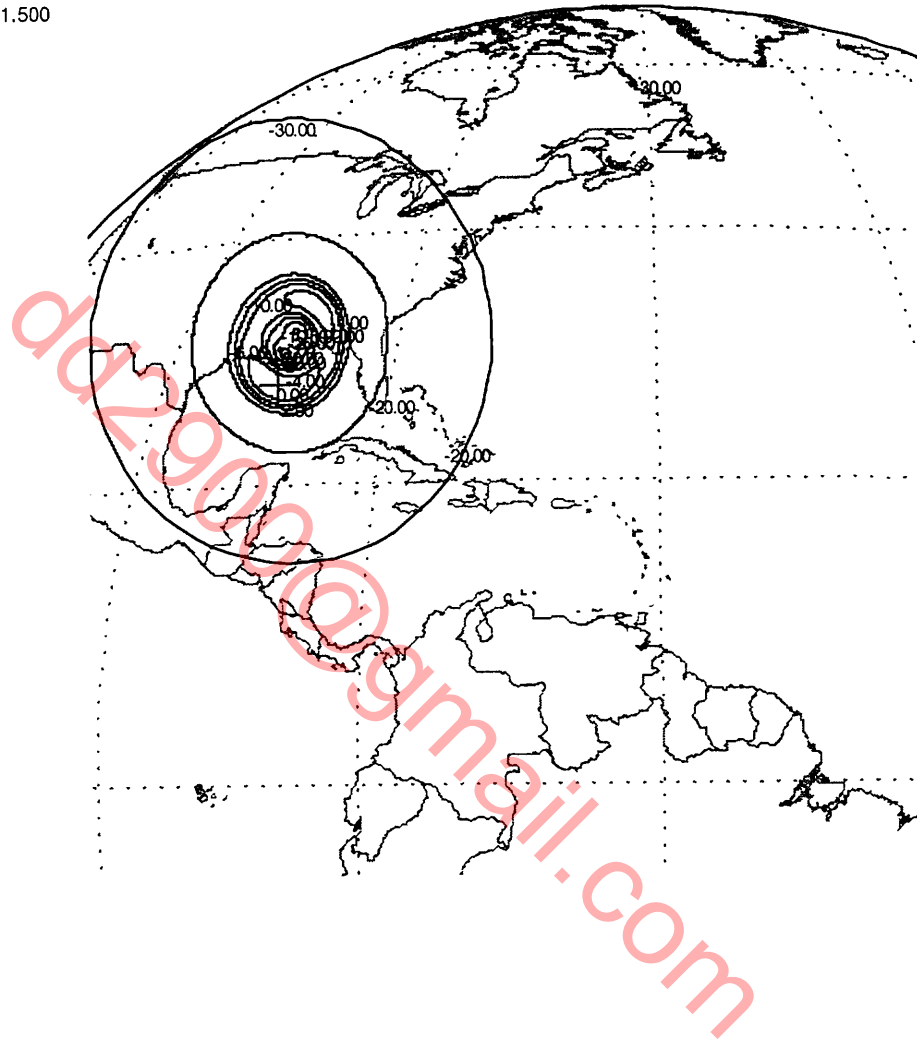
Notice ID : 000000000  
Administration : USA  
Satellite Network : USABSS-17  
Beam : E10  
Emission / Reception : E  
Polarization : X  
Service Area Number :  
Service Area Name :  
Reason : C  
Satellite Position : -61.500



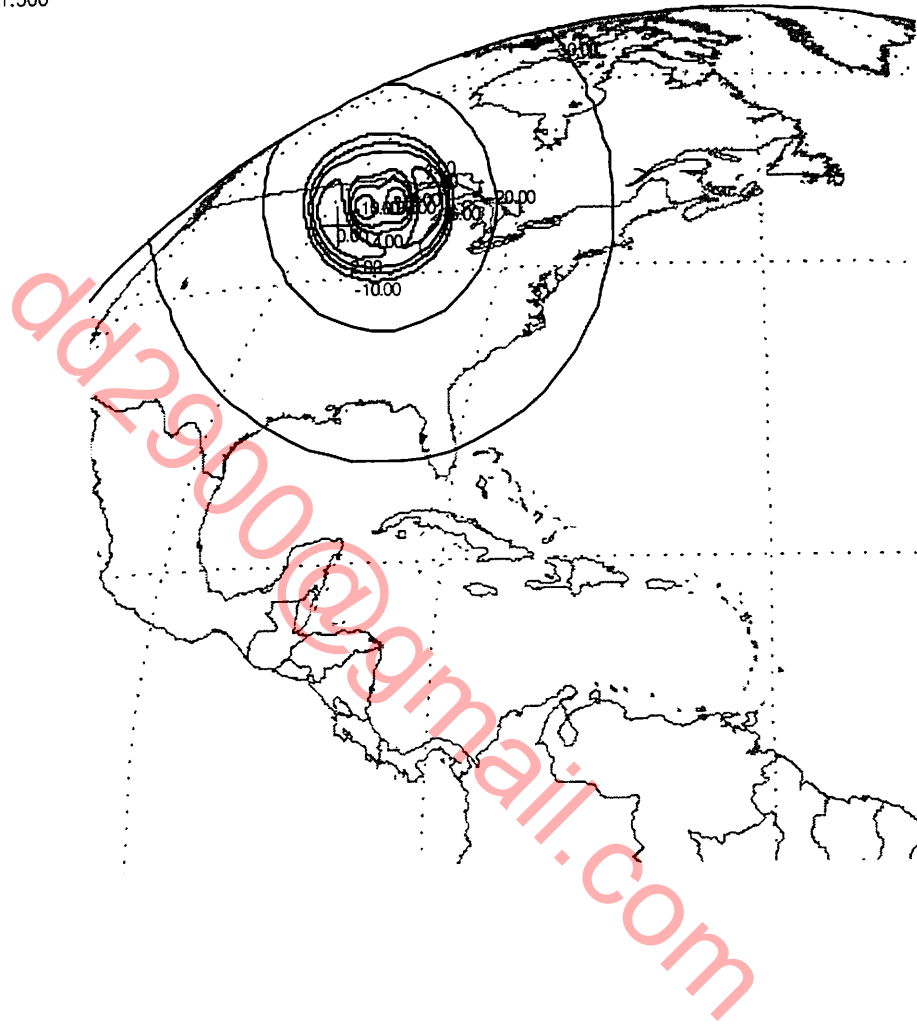
Notice ID : 000000000  
Administration : USA  
Satellite Network : USABSS-17  
Beam : E11  
Emission / Reception : E  
Polarization : X  
Service Area Number :  
Service Area Name :  
Reason : C  
Satellite Position : -61.500



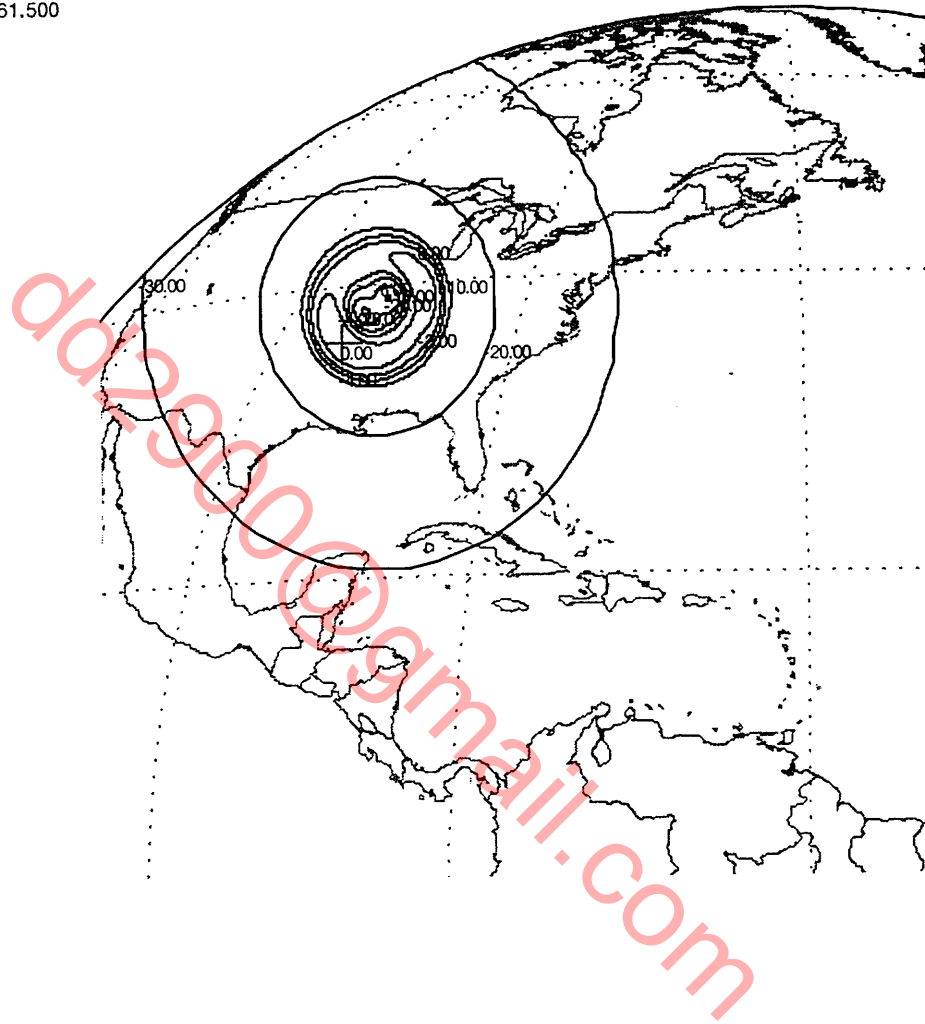
Notice ID : 000000000  
Administration : USA  
Satellite Network : USABSS-17  
Beam : E12  
Emission / Reception : E  
Polarization : X  
Service Area Number :  
Service Area Name :  
Reason : C  
Satellite Position : -61.500



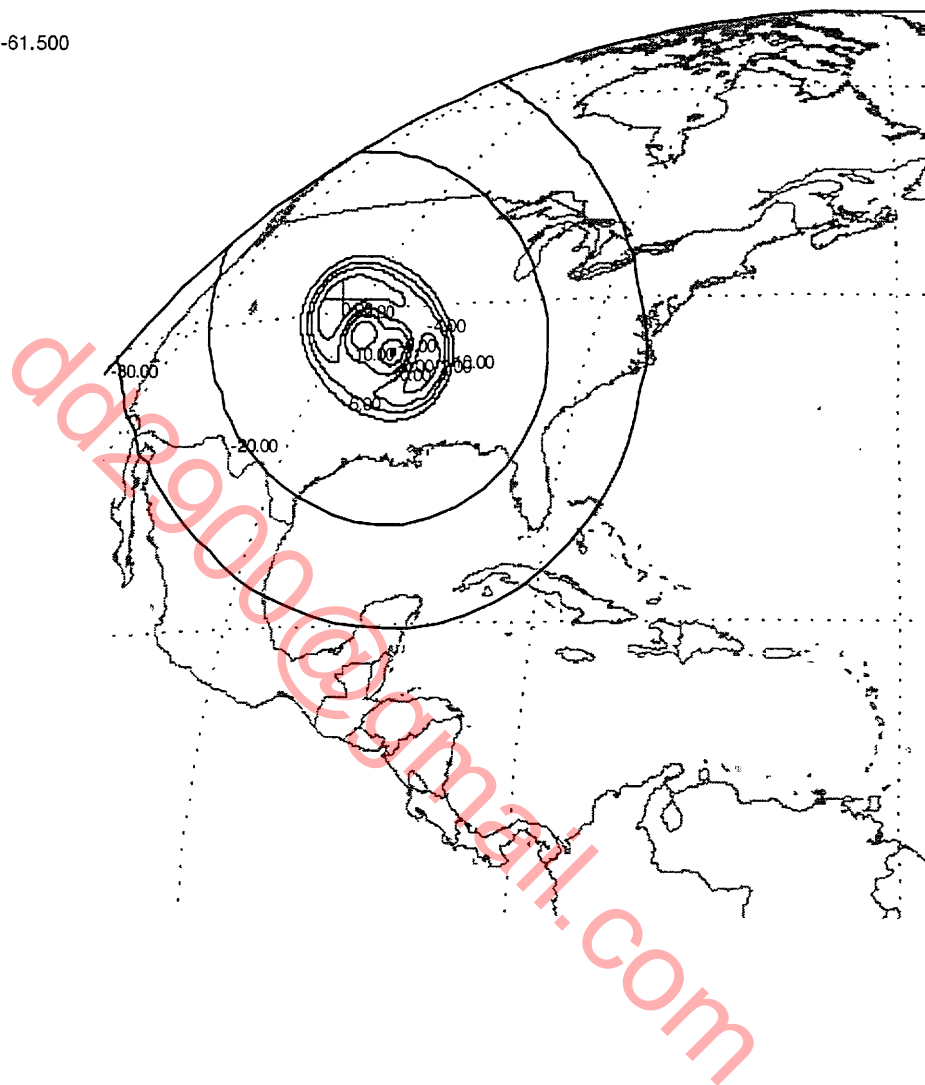
Notice ID : 000000000  
Administration : USA  
Satellite Network : USABSS-17  
Beam : E13  
Emission / Reception : E  
Polarization : X  
Service Area Number :  
Service Area Name :  
Reason : C  
Satellite Position : -61.500



Notice ID : 000000000  
Administration : USA  
Satellite Network : USABSS-17  
Beam : E14  
Emission / Reception : E  
Polarization : X  
Service Area Number :  
Service Area Name :  
Reason : C  
Satellite Position : -61.500

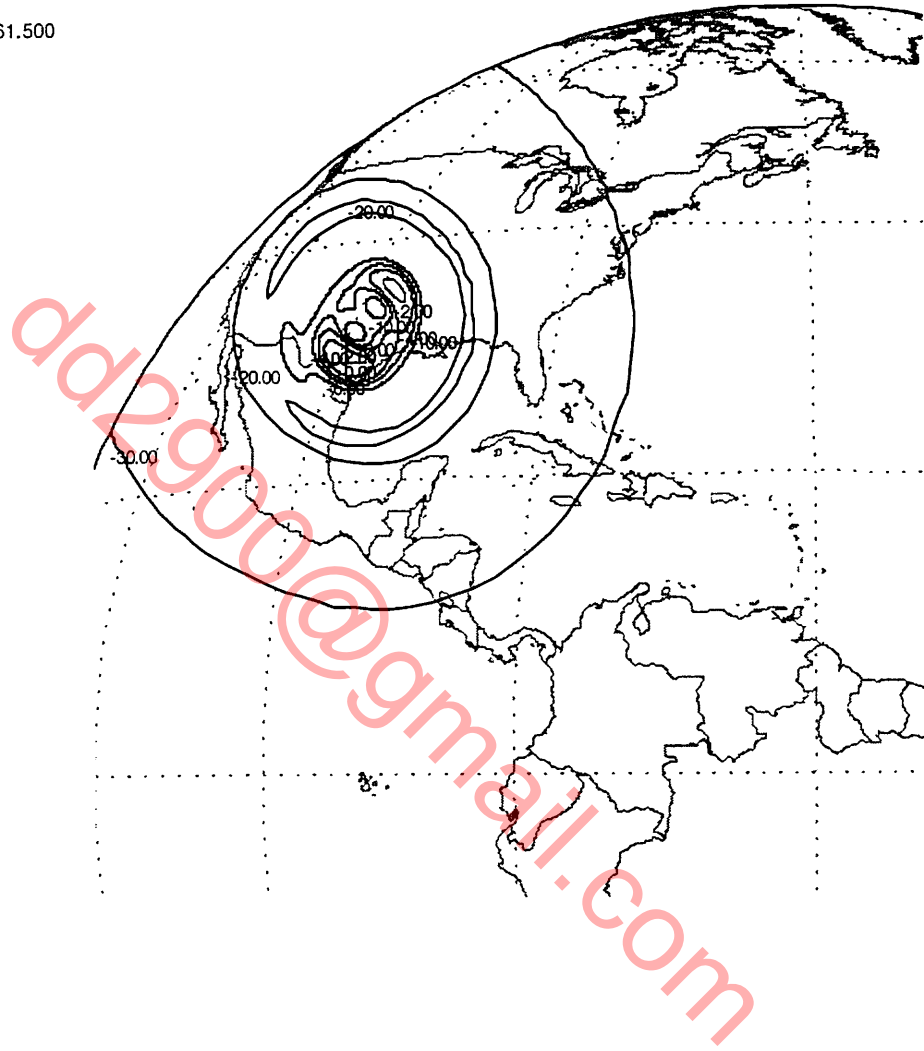


Notice ID : 000000000  
Administration : USA  
Satellite Network : USABSS-17  
Beam : E15  
Emission / Reception : E  
Polarization : X  
Service Area Number :  
Service Area Name :  
Reason : C  
Satellite Position : -61.500

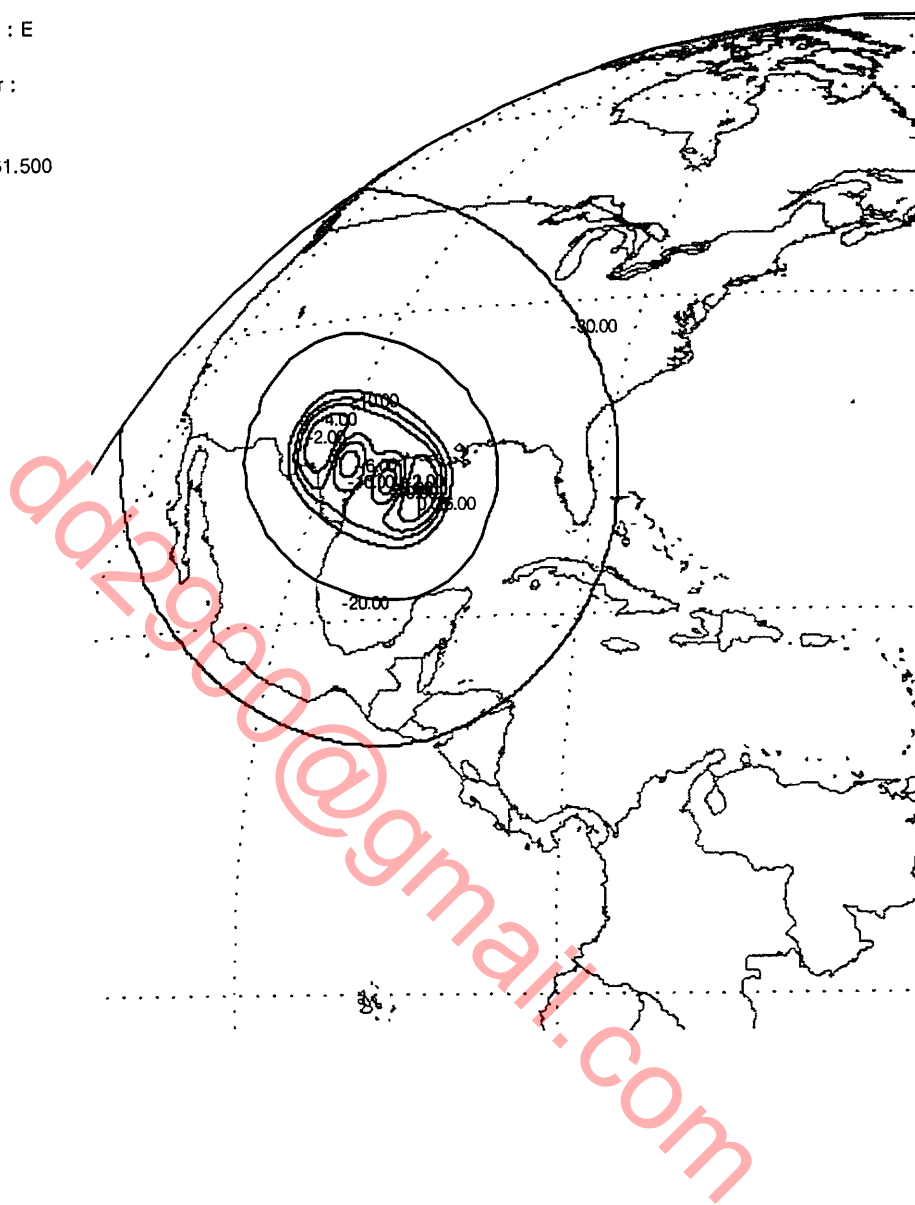




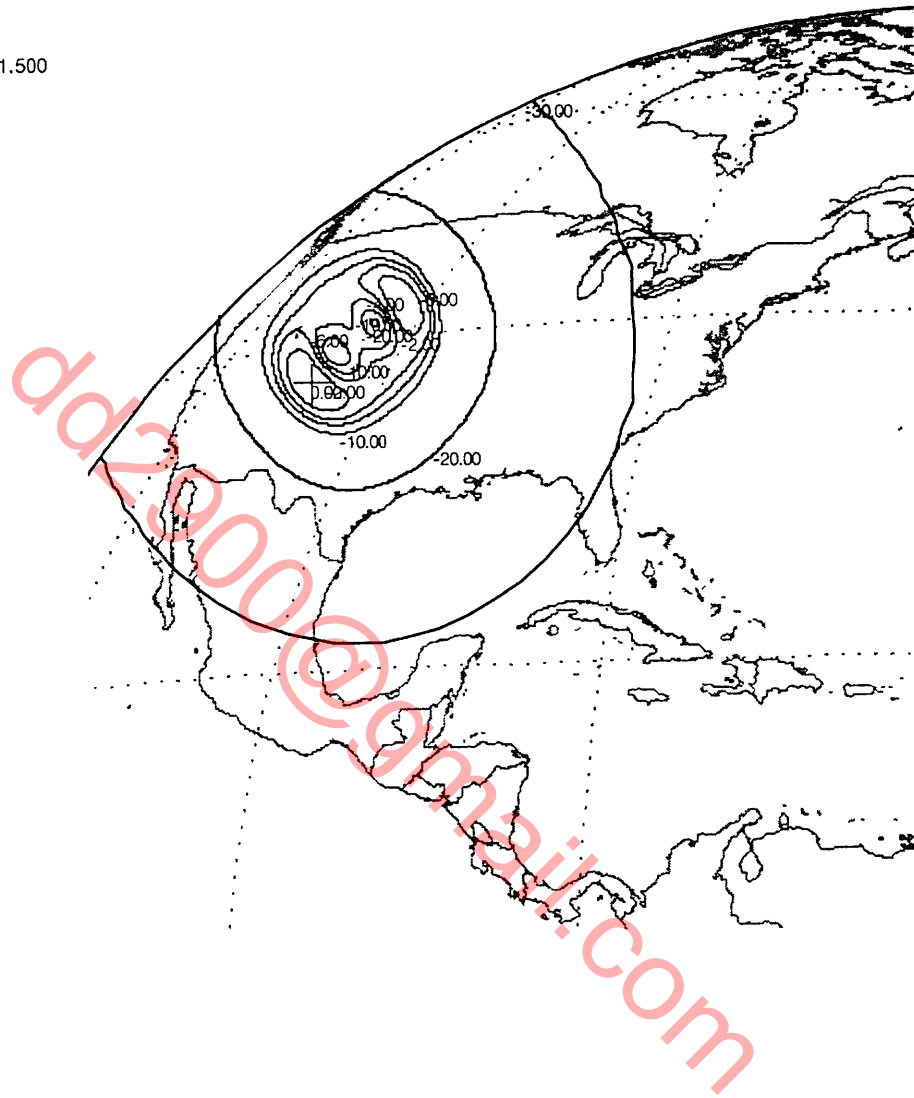
Notice ID : 000000000  
Administration : USA  
Satellite Network : USABSS-17  
Beam : E16  
Emission / Reception : E  
Polarization : X  
Service Area Number :  
Service Area Name :  
Reason : C  
Satellite Position : -61.500



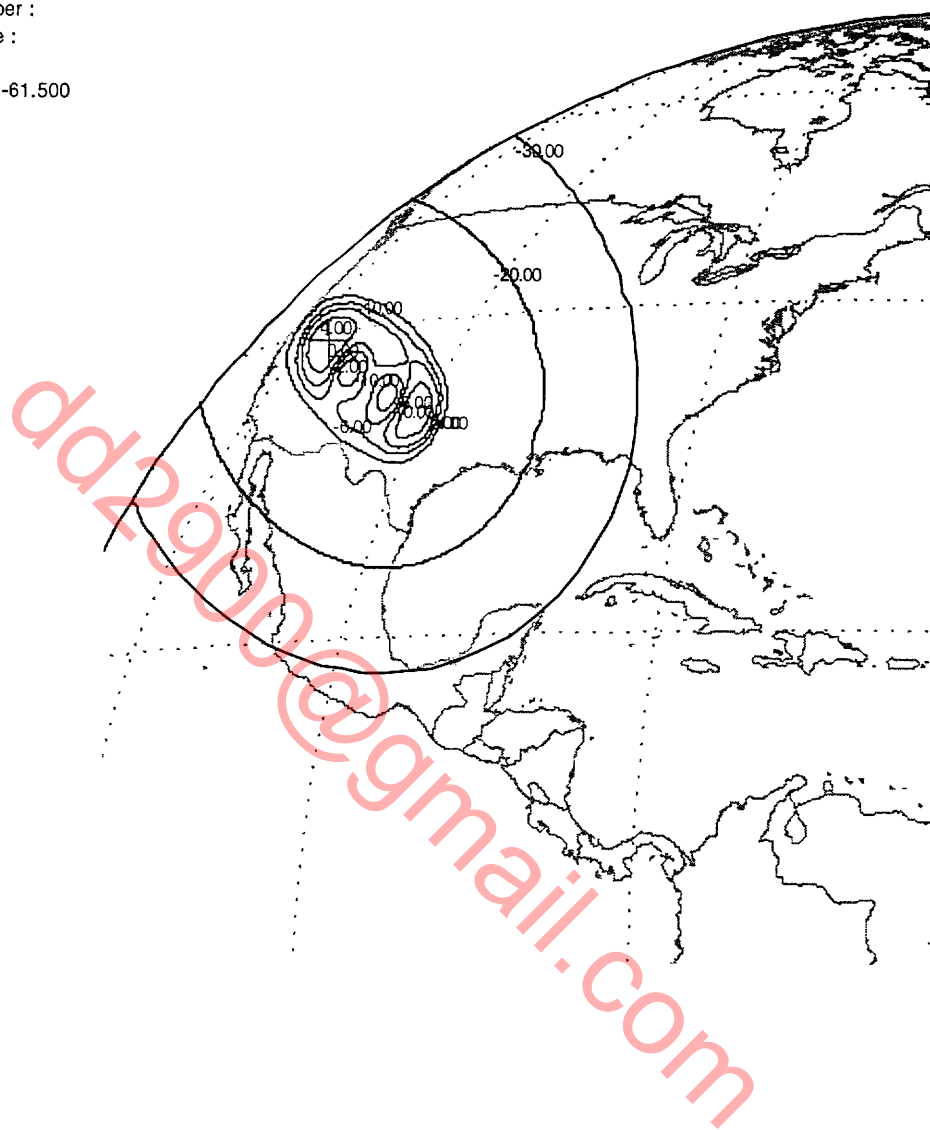
Notice ID : 000000000  
Administration : USA  
Satellite Network : USABSS-17  
Beam : E17  
Emission / Reception : E  
Polarization : X  
Service Area Number :  
Service Area Name :  
Reason : C  
Satellite Position : -61.500



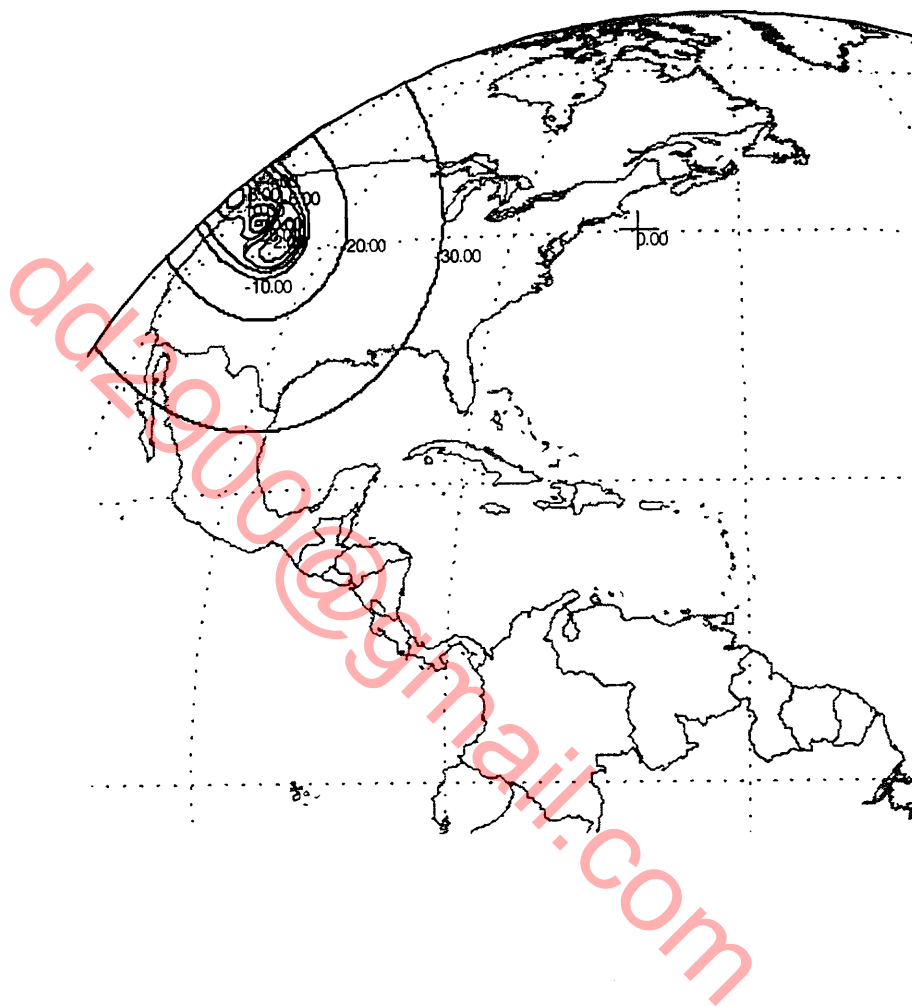
Notice ID : 000000000  
Administration : USA  
Satellite Network : USABSS-17  
Beam : E18  
Emission / Reception : E  
Polarization : X  
Service Area Number :  
Service Area Name :  
Reason : C  
Satellite Position : -61.500



Notice ID : 000000000  
Administration : USA  
Satellite Network : USABSS-17  
Beam : E19  
Emission / Reception : E  
Polarization : X  
Service Area Number :  
Service Area Name :  
Reason : C  
Satellite Position : -61.500



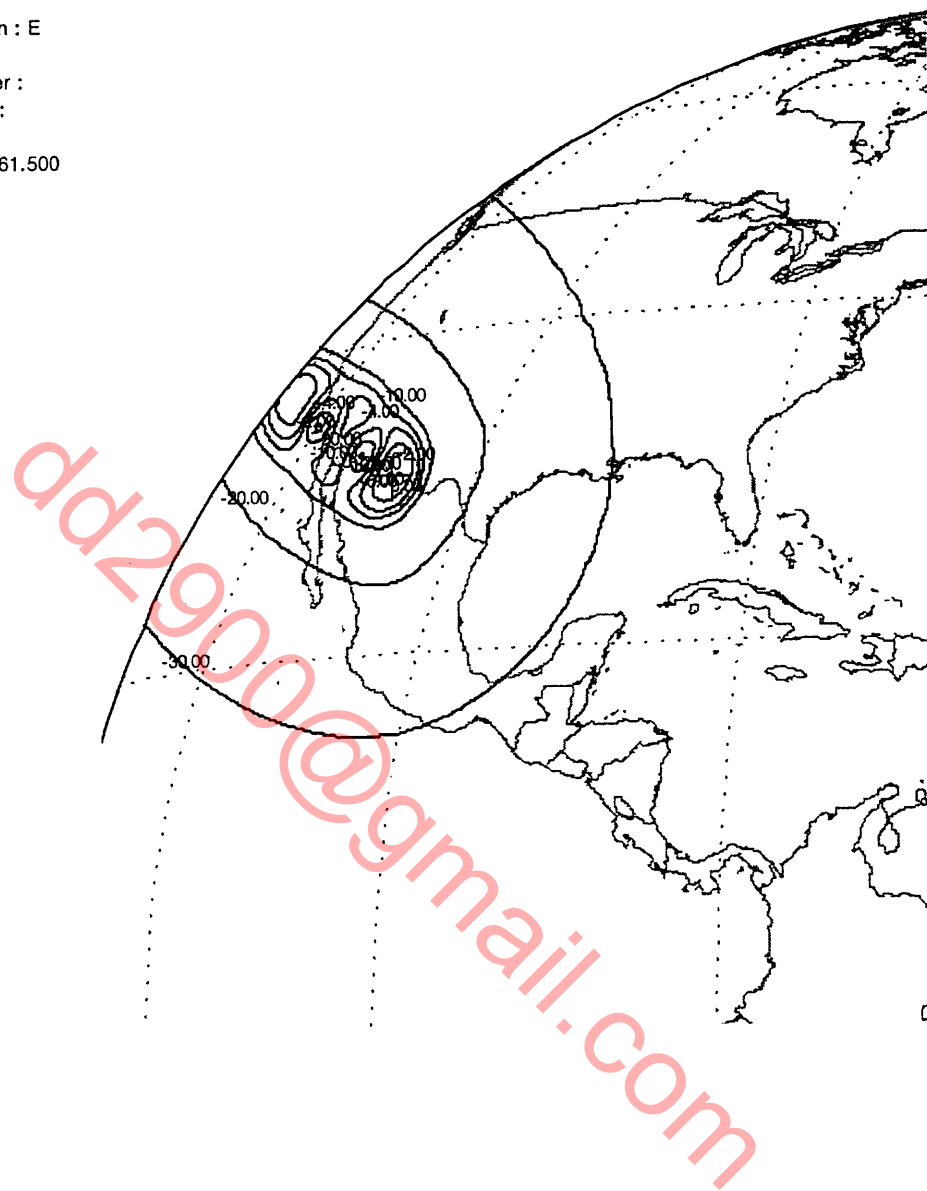
Notice ID : 000000000  
Administration : USA  
Satellite Network : USABSS-17  
Beam : E20  
Emission / Reception : E  
Polarization : X  
Service Area Number :  
Service Area Name :  
Reason : C  
Satellite Position : -61.500



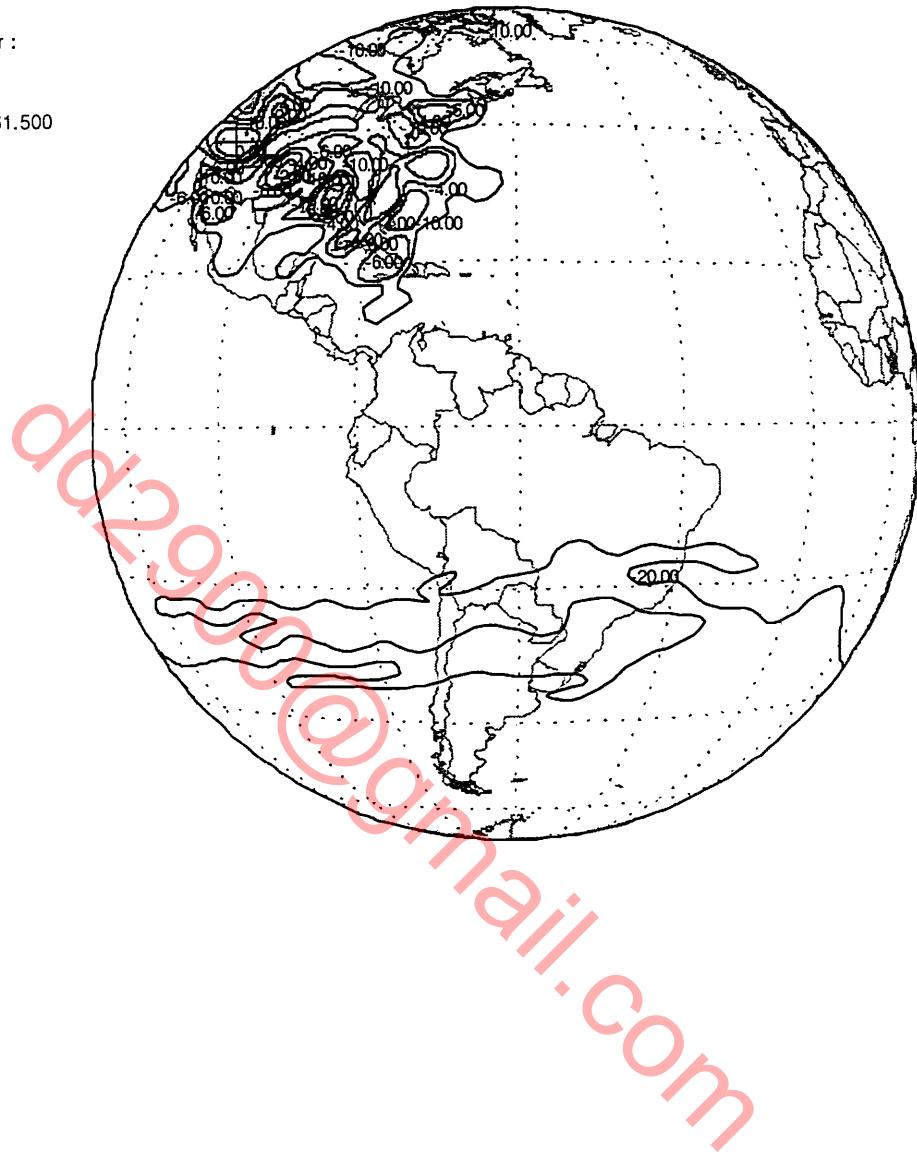
Notice ID : 000000000  
Administration : USA  
Satellite Network : USABSS-17  
Beam : E21  
Emission / Reception : E  
Polarization : X  
Service Area Number :  
Service Area Name :  
Reason : C  
Satellite Position : -61.500



Notice ID : 000000000  
Administration : USA  
Satellite Network : USABSS-17  
Beam : E22  
Emission / Reception : E  
Polarization : X  
Service Area Number :  
Service Area Name :  
Reason : C  
Satellite Position : -61.500

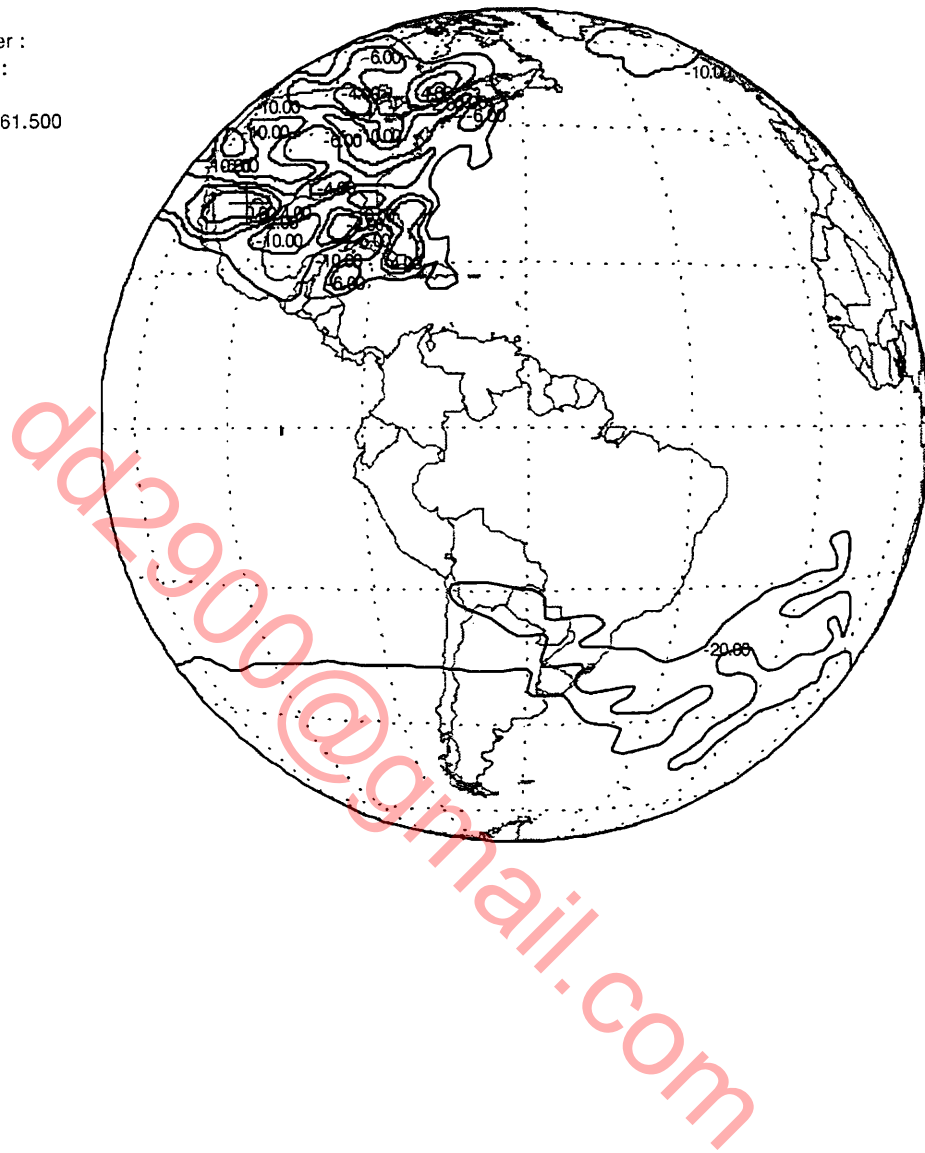


Notice ID : 000000000  
Administration : USA  
Satellite Network : USABSS-17  
Beam : EU1  
Emission / Reception : E  
Polarization : X  
Service Area Number :  
Service Area Name :  
Reason : C  
Satellite Position : -61.500





Notice ID : 000000000  
Administration : USA  
Satellite Network : USABSS-17  
Beam : EU2  
Emission / Reception : E  
Polarization : X  
Service Area Number :  
Service Area Name :  
Reason : C  
Satellite Position : -61.500



**ATTACHMENT 3**

**ANNEX 1 TO APPENDIX S30A**

**USABSS-17 at 61.5 WEST LONGITUDE**

**LIMITS FOR DETERMINING WHETHER A SERVICE OF AN ADMINISTRATION  
IS AFFECTED BY A PROPOSED MODIFICATION TO THE PLANS OR WHEN IT  
IS NECESSARY UNDER THIS APPENDIX TO SEEK THE AGREEMENT OF ANY  
OTHER ADMINISTRATION.**

**Note: Conforms to ITU CR/158**

dd2900@gmail.com

## ATTACHMENT 3

## ANNEX 1 to APPENDIX.S30A

Limits for determining whether a service of an administration is considered to be affected by a proposed modification to the Region 2 Plan or by a proposed new or modified assignment in the Regions 1 and 3 List or when it is necessary under this Appendix to seek the agreement of any other administration.

1. (Not Used)
2. (Not Used)
3. Limits to the change in the overall equivalent protection margin with respect to frequency assignments in conformity with the Region 2 Plan <sup>[1]</sup>

With respect to the modification to the Region 2 Plan and when it is necessary under this Appendix to seek the agreement of any other administration of Region 2, except in cases covered by Resolution 42 (Rev.Orb-88), an administration shall be considered as affected if the overall equivalent protection margin <sup>[2]</sup> corresponding to a test point of its entry in the Plan, including the cumulative effect of any previous modification to the Plan or any previous agreement, falls more than 0.25 dB below 0 dB, or, if already negative, more than 0.25 dB below the value resulting from:

- the Plan as established by the 1983 Conference; *or*
- a modification of the assignment in accordance with this Appendix; *or*
- a new entry in the Plan under Article 4; *or*
- any agreement reached in accordance with this Appendix except for Resolution 42 (Rev.Orb-88).

*An interference analysis has been conducted using MSPACE version 1.964, the conclusion is that no administration test points are affected in the uplink. (The GIMS database used in this analysis is provided in the attached CD-ROM).*

4. Limits to the interference into frequency assignments in conformity with the Regions 1 and 3 Plans or with the Regions 1 and 3 Lists or proposed new or modified assignments in the Regions 1 and 3 Lists

Under assumed free-space propagation conditions, the power flux-density of a proposed new or modified assignment in the List shall not exceed the value of  $-76 \text{ dB (W/(m}^2 \cdot 27 \text{ MHz))}$  at any point in the GSO orbit, and the relative off-axis e.i.r.p. of the associated feeder-link antenna shall be in compliance with Figure A (WRC-97 curves) of Annex 3 to this Appendix.

With respect to § 4.1.1 a) or b) of Article 4, an administration in Region 1 or 3 shall be considered by the Bureau as being affected if the minimum orbital spacing between the

wanted and interfering space stations, under worst-case station-keeping conditions, is less than 9°.

However, an administration shall not be considered as affected if, under assumed free-space propagation conditions, the effect of the proposed new or modified assignments in the List is that the feeder-link equivalent protection margin 13 corresponding to a test point of its assignment in the Plan or the List or for which the procedure of Article 4 of this Appendix has been initiated, including the cumulative effect of any previous modification to the List or any previous agreement, does not fall more than 0.45 dB below 0 dB, or, if already negative, more than 0.45 dB below the value resulting from:

- the Regions 1 and 3 Plan and List as established by WRC-2000; or
- a proposed new or modified assignment to the List in accordance with this Appendix; or
- a new entry in the Regions 1 and 3 List as a result of the successful application of Article 4 procedures.

For a proposed new or modified assignment to the List, in the interference analysis, for each test point, the antenna characteristics described in § 3.5 of Annex 3 to this Appendix shall apply.

*NOT APPLICABLE to REGION 2 modification to the Plan*

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

An administration in Region 1 or 3 shall be considered as affected by a proposed modification in Region 2 or an administration in Region 2 shall be considered as affected by a proposed new modified assignment in the Regions 1 and 3 List when the power flux-density arriving at the receiving space station of a broadcasting-satellite feeder-link would cause an increase in the noise temperature of the feeder-link space station which exceeds the threshold value of  $\Delta T / T$  corresponding to 3%, where  $\Delta T / T$  is calculated in accordance with the method given in Appendix S8, except that the maximum power densities per hertz averaged over the worst 1 MHz are replaced by power densities per hertz averaged over the total RF bandwidth of the feeder-link carriers (24 MHz for Region 2 and 27 MHz for Regions 1 and 3).

Interim systems of Region 2 in accordance with Resolution 42 (Rev.Orb-88) shall not be taken into consideration when applying this provision to proposed modifications to the Regions 1 and 3 Plan. However, this provision shall be applied to Region 2 interim systems with respect to the Regions 1 and 3 Plan.

*Here is a list of the closest Region 1 BSS satellites using the band 17.312-17.672GHz in the uplinks:*

*Plan:*

<i>NGR (Niger)</i>	<i>37.2W</i>
<i>GUI,POR (Guinea and Portugal)</i>	<i>37W</i>
<i>SMR (San Marino)</i>	<i>36.8W</i>
<i>CPV, G,LBR (Cape Verde, UK and Liberia)</i>	<i>33.5W</i>
<i>E,GNB (Spain and Guinea Bissau)</i>	<i>30W</i>

*List**none West of 24W*

*The increase of equivalent noise temperature has been calculated for these networks.  
The highest value is  $2 \times 10^{-5} \%$ , so that no administration is affected.*

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

An administration in Region 2 shall be considered affected by a proposed new or modified assignment in the Regions 1 and 3 List when the power flux-density arriving at the Region 2 receiving space station of a broadcasting-satellite feeder-link would cause an increase in the noise temperature of the receiving feeder-link space station which exceeds the threshold value of  $\Delta T / T$  corresponding to 3%, where  $\Delta T / T$  is calculated in accordance with the method given in Appendix S8, except that the maximum power densities per hertz averaged over the worst 1 MHz are replaced by power densities per hertz averaged over the total RF bandwidth of the feeder-link carriers.

*NOT APPLICABLE*


---

[1] With respect to § 3 the limit specified relates to the overall equivalent protection margin calculated in accordance with § 1.12 of Annex 3 to this Appendix.

[2] For the definition of the overall equivalent protection margin, see § 1.11 of Annex 5 to Appendix S30.

**ATTACHMENT 4**  
**APPENDIX S4 (ANNEX 2 TO APPENDIX 30A)**

**USABSS-17 AT 61.5 WEST LONGITUDE**

**BASIC CHARACTERISTICS TO BE FURNISHED IN NOTICES RELATING TO  
FEEDER LINK STATIONS IN THE FIXED-SATELLITE SERVICE  
OPERATING IN THE FREQUENCY BANDS 14.5-14.8 GHZ AND 17.3-18.1 GHZ**

**Note: Conforms to ITU CR/158**

dd2900@gmail.com

# APPENDIX S4 (ANNEX 2 TO APPENDIX S30A) FOR USABSS-17

## A.1 Identity of the satellite network

a) Identity of a satellite network: *USABSS-17*

c) Country *USA*

### *beam identification*

<i>USA9BS01</i>
<i>USA9BS02</i>
<i>USA9BS03</i>
<i>USA9BS04</i>
<i>USA9BS05</i>
<i>USA9BS06</i>
<i>USA9BS07</i>
<i>USA9BS08</i>
<i>USA9BS09</i>
<i>USA9BS10</i>
<i>USA9BS11</i>
<i>USA9BS12</i>
<i>USA9BS13</i>
<i>USA9BS14</i>
<i>USA9BS15</i>
<i>USA9BS16</i>
<i>USA9BS17</i>
<i>USA9BS18</i>
<i>USA9BS19</i>
<i>USA9BS20</i>
<i>USA9BS21</i>
<i>USA9BS22</i>
<i>USA9BUS1</i>
<i>USA9BUS2</i>

f) Country symbol of the notifying administration: *USA*

## A.2 Date of bringing into use

a) Date of bringing into use: *December 29, 2003*

A.3 Operating administration or agency: *120*

A.4 Orbital information

a) For the case of a space station onboard a GSO satellite:

- 1) nominal geographical longitude on the geostationary-satellite orbit: *61.5 °W*
- 2) planned longitudinal tolerance and inclination excursion:  *$\pm 0.05^\circ$  E-W;  $\pm 0.05^\circ$  N-S*

A.5 Coordination

*None*

A.6 Agreements

*None*

A.7 Earth station site characteristics

*Specific Earth stations data (there are 2 specific Earth stations: Long Island Broadcasting Center and Rapid City, other Earth stations are typical)*

a) b) *Long Island Broadcasting Center (Bethpage, NY)*

*Horizon elevation*

<i>Azimuth</i>	<i>0°</i>	<i>45°</i>	<i>90°</i>	<i>135°</i>	<i>180°</i>	<i>225°</i>	<i>270°</i>	<i>315°</i>
<i>Horizon Elevation</i>	<i>5°</i>	<i>5°</i>	<i>5°</i>	<i>5°</i>	<i>5°</i>	<i>5°</i>	<i>5°</i>	<i>5°</i>
<i>Distance to horizon (km)</i>	<i>10</i>	<i>10</i>	<i>10</i>	<i>10</i>	<i>10</i>	<i>10</i>	<i>10</i>	<i>10</i>

c1) the planned minimum angle of elevation of the antenna in the direction of maximum radiation in degrees from the horizontal plane: *41°*

e) altitude: *34.60m*



a) b) *Rapid City, SD*

*Horizon elevation*

<i>Azimuth</i>	$0^\circ$	$45^\circ$	$90^\circ$	$135^\circ$	$180^\circ$	$225^\circ$	$270^\circ$	$315^\circ$
<i>Horizon Elevation</i>	$3.5^\circ$	$6^\circ$	$5^\circ$	$4.5^\circ$	$12^\circ$	$10^\circ$	$3^\circ$	$1^\circ$
<i>Distance to horizon (km)</i>	<i>10</i>	<i>10</i>	<i>10</i>	<i>10</i>	<i>10</i>	<i>10</i>	<i>10</i>	<i>10</i>

c1) the planned minimum angle of elevation of the antenna in the direction of maximum radiation in degrees from the horizontal plane:  $24^\circ$

e) altitude: *1079m*

A.11 Regular Hours of Operation

*0-24*

A.12 Range of Automatic Gain Control

*18 dB*

B. Satellite antenna beams

B.1 Designation of the satellite antenna beam

*The USABSS-17 satellite contains 14 uplink spot beams and two uplink national beams. Each beam corresponds to the uplink beam of the respective MSPACE input file beam identification. Table 1 below is a complete list of USABSS-17 satellite receive beams.*

Table 1 - USABSS-17 Beams

<i>MSPACE Beam ID (for reference)</i>	<i>Beam designation</i>
USA9BS01	R01
USA9BS02	R03
USA9BS03	R03
USA9BS04	R05
USA9BS05	R05
USA9BS06	R06
USA9BS07	R12
USA9BS08	R06
USA9BS09	R09
USA9BS10	R11
USA9BS11	R11
USA9BS12	R12
USA9BS13	R13
USA9BS14	R14
USA9BS15	R14
USA9BS16	R17
USA9BS17	R17
USA9BS18	R18
USA9BS19	R18
USA9BS20	R20
USA9BS21	R21
USA9BS22	R22
USA9BUS1	RU1
USA9BUS2	RU2

### B.3 Geostationary Space Station Antenna Characteristics

d) Pointing accuracy of the antenna:

*0.05 degrees in any direction for the spot beams R01 to R22*

*0.1 degrees in any direction for the CONUS beams RU1 and RU2*

f) The gain of the antenna in the direction of those parts of the geostationary-satellite orbit which are not obstructed by the Earth, in the case of operation in a band allocated in the Earth-to-space direction and in the space-to-Earth direction.

*The band 17.3 to 17.8 GHz is also allocated to the Broadcasting Satellite Service in Region 2. The gain of the satellite receive antennas in the direction of those parts of the GSO not obstructed by the Earth is presented in Figure 1 for two representative beams. Other figures may be found in the GXT files describing the receive beams on the attached CD-ROM.*

g) For the case of a space station submitted in accordance with Appendix S30A:

1. copol and cross pol satellite receive antenna gain

*See Table 2*

Table 2 - USABSS-17 Beam Information

<i>Beam</i>	<i>Co-pol Gain dBi</i>	<i>X-pol Gain dBi</i>	<i>Aim Point Longitude</i>	<i>Aim Point Latitude</i>
R01	51.4	21.4	-69.25	44.90
R03	51.6	21.6	-74.87	41.06
R05	51.8	21.8	-78.02	35.43
R06	51.8	21.8	-83.99	33.67
R09	51.8	21.8	-81.30	26.96
R11	52.0	22.0	-88.22	41.51
R12	51.8	21.8	-89.44	30.84
R13	51.8	21.8	-94.57	46.77
R14	52.0	22.0	-92.26	38.52
R17	51.6	21.6	-96.33	29.27
R18	51.5	21.5	-105.77	40.41
R20	51.6	21.6	-119.63	46.07
R21	50.9	20.9	-120.89	37.92
R22	51.3	21.3	-115.34	33.50
RU1	35.6	5.6	-103.08	34.87
RU2	35.6	5.6	-103.08	34.87

5. for beams other than elliptical shape:

- co-polar and cross-polar gain contours:

*Beam contours in gxt format are provided in the attached CD-ROM.*

*The gxt file naming convention is as follows:*

*CONUS beam copol RU1 : CONUSR-rx.GXT*

*CONUS beam crosspol RU1: CONUSRX-rx.GXT*

*CONUS beam copol RU2: CONUSL-rx.GXT*

*CONUS beam crosspol RU2: CONUSLX-rx.GXT*

*SPOT 01 to SPOT 22 (R01 to R22) copol: BEAM1-rx.GXT to BEAM22-rx.GXT*

*SPOT 01 to SPOT 22 (E01 to E22) crosspol: BEAM1X-rx.GXT to BEAM22X-rx.GXT*

- beam aim point longitude and latitude:

*see Table 2*

**C. Characteristics to be provided for each group of frequency assignments for a satellite antenna beam or an earth station antenna**

**C.2 Assigned frequency (frequencies)**

*a) Channel designation as per Appendix S30A Article 9, Table 2*

*Table showing correspondence between channel numbers and assigned frequencies*

*Channel No. Assigned frequency(MHz)*

<i>1</i>	<i>17324.00</i>
<i>3</i>	<i>17353.16</i>
<i>5</i>	<i>17382.32</i>
<i>7</i>	<i>17411.48</i>
<i>9</i>	<i>17440.64</i>
<i>11</i>	<i>17469.80</i>
<i>13</i>	<i>17498.96</i>
<i>15</i>	<i>17528.12</i>
<i>17</i>	<i>17557.28</i>
<i>19</i>	<i>17586.44</i>
<i>21</i>	<i>17615.60</i>
<i>23</i>	<i>17644.76</i>
<i>24</i>	<i>17659.34</i>

*See Table 3 for use of channels per beam*

Table 3 - USABSS-17 Transmission Characteristics

Beam	Channels	Satellite Rx Noise temperature (K)	E/S Power to Antenna (dBW)	Max. E/S Power Density( dBW/ Hz)		
				1 MHz	24 MHz	27 MHz
R01	1 3 7 15 17	12590	20	-53.8	-53.8	-53.8
R03	5 9 11 13 21	12590	20	-53.8	-53.8	-53.8
	1 3 7 15 17 19 23					
R05	5 9 11 13 21	12590	20	-53.8	-53.8	-53.8
	1 3 7 15 17 19 23					
R06	1 3 7 15 17 19 23	12590	20	-53.8	-53.8	-53.8
	5 9 11 13					
R09	1 3 7 9 15 17 19 23	12590	20	-53.8	-53.8	-53.8
R11	1 3 7 15 17 19 23	12590	20	-53.8	-53.8	-53.8
	5 9 11 13 21					
R12	1 3 7 15 17 19 23	12590	20	-53.8	-53.8	-53.8
	5 9 11 13 21					
R13	1 3 7 15 17 19 23	12590	20	-53.8	-53.8	-53.8
R14	1 3 7 15 17 19 23	12590	20	-53.8	-53.8	-53.8
	5 11 13 21					
R17	1 3 7 15 17 19 23	12590	20	-53.8	-53.8	-53.8
	5 9 11 13 21					
R18	1 3 7 9 15 17 19 23	12590	20	-53.8	-53.8	-53.8
	5 11 13 21					
R20	5 11 13 17 21	12590	20	-53.8	-53.8	-53.8
R21	1 3 7 15 17 19 23	12590	20	-53.8	-53.8	-53.8
R22	5 9 11 13 21	12590	20	-53.8	-53.8	-53.8
RU1	1 3 5 7 9 11 13 15 17 19 21 23	1000	20	-53.8	-53.8	-53.8
RU2	24	1000	20	-53.8	-53.8	-53.8

## C.3 Assigned frequency band

a) The bandwidth of the assigned frequency band in kHz: 24000

## C.4 Class of station(s) and Nature of service

*Class of Station: EC*

*Nature of Service: CR*

#### C.5 Receiving system noise temperature

a) *In the case of the space station, the lowest total receiving system noise temperature, in Kelvins, referred to the output of the receiving antenna of the space station is indicated in Table 3.*

#### C.6 Polarization

*Type of Polarization: Circular*

*Sense of Polarization: right-hand for odd channels and left-hand for channel 24*

#### C.7 Class of Emission

a) *Class of emission and necessary bandwidth:*

*Class of Emission: 24M0G7W*

*Necessary Bandwidth: 24 MHz*

#### C.8 Power Characteristics of the Transmission

i)

In the case of an earth station submitted in accordance with Appendix S30A:

- total transmitting power supplied to the input of the antenna
  - 20 dBW
- maximum power density averaged over worst 1 MHz:
  - -53.8 dBW/Hz
- maximum power density averaged over 24 MHz
  - -53.8 dBW/Hz
- range of power control, expressed in dB, above the transmitting power indicated above (if power control is used).: 20 dB

### C.9 Information on modulation characteristics.

b) In the case of a space station submitted in accordance with Appendix S30A:

1. type of modulation: *QPSK and/or 8PSK*
2. pre-emphasis characteristics: *not applicable*
3. TV standard: *not applicable*
4. sound-broadcasting characteristics: *time division multiplexed compressed digital audio and data.*
5. frequency deviation: *not applicable*
6. composition of the baseband: *time division multiplexed compressed video, audio and data.*
7. type of multiplexing of the video and sound signal: *time division multiplex*
8. energy dispersal characteristics: *carrier will always be modulated*
9. digital modulation: *effective bit rate: 30.32 Mbits/s (6/7 code rate), 23.58 Mbits/s (2/3 code rate); transmitted bit rate: 40 Mbits/s, symbol rate: 20 Msymbols/s for QPSK, effective bit rate: 41.5 Mbits/s (3/4 code rate), transmitted bit rate: 60 Mbits/s; symbol rate: 13.8 Msymbols/s for 8PSK.*
10. roll-off factor of the filter of the receiver: *in accordance with ITU-R BO1293-1.*

### C.10 Type and identity of the associated station(s)

a) identity

*2 Specific associated stations*

- *Rapid City (Beacon and TT&C)*
- *Long Island Broadcast Center (Feeder)*

*others are typical Feeder Earth stations*

*(all typical stations have identical radiofrequency parameters)*



b) For a specific associated earth station, identify the earth station and geographical coordinates of the antenna site:

*Long Island Broadcast Center, Bethpage, NY*

*Latitude: 40.45N, Longitude 73.29W*

*Rapid City, SD*

*Latitude: 44.18N, Longitude 103.33W*

c) 1 The class of station and nature of service performed

*Bethpage, NY*

*class of station TC*

*nature of service CR*

2 Isotropic gain of the antenna in the direction of maximum radiation: *62 dBi*

3 Beamwidth in degrees between the half power points: *0.13°*

4) Reference radiation pattern of the antenna:

*complying with MIX2*

$$\begin{aligned}
 g(\phi) &= G_{\max} - 2.5 \times 10^{-3} \left( \frac{D}{\lambda} \phi \right)^2 && \text{for } 0 \leq \phi < \phi_m \\
 g(\phi) &= G_1 && \text{for } \phi_m \leq \phi < \phi_r \\
 g(\phi) &= 29 - 25 \log_{10} \phi && \text{for } \phi_r \leq \phi < 7^\circ \\
 g(\phi) &= 7.9 && \text{for } 7^\circ \leq \phi < 9^\circ \\
 g(\phi) &= 32 - 25 \log_{10} \phi && \text{for } 9^\circ \leq \phi < 48^\circ \\
 g(\phi) &= -10 && \text{for } 48^\circ \leq \phi < 180^\circ
 \end{aligned}$$

*$\phi$  is the off-axis angle referred to the main lobe, degrees.*

6) Equivalent diameter of the antenna: *9 meters*

c) 1 The class of station and nature of service performed

*Rapid City, SD*

*class of station TK & TD*

*nature of service OT*

2 Isotropic gain of the antenna in the direction of maximum radiation: *65.4 dBi*

3 Beamwidth in degrees between the half power points: *0.09°*

4) Reference radiation pattern of the antenna:

*complying with MIX2*

$$\begin{aligned}
 g(\phi) &= G_{\max} - 2.5 \times 10^{-3} \left( \frac{D}{\lambda} \phi \right)^2 && \text{for } 0 \leq \phi < \phi_m \\
 g(\phi) &= G_1 && \text{for } \phi_m \leq \phi < \phi_r \\
 g(\phi) &= 29 - 25 \log_{10} \phi && \text{for } \phi_r \leq \phi < 7^\circ \\
 g(\phi) &= 7.9 && \text{for } 7^\circ \leq \phi < 9^\circ \\
 g(\phi) &= 32 - 25 \log_{10} \phi && \text{for } 9^\circ \leq \phi < 48^\circ \\
 g(\phi) &= -10 && \text{for } 48^\circ \leq \phi < 180^\circ
 \end{aligned}$$

$\phi$  is the off-axis angle referred to the main lobe, degrees.

7) Equivalent diameter of the antenna: *13.2 meters*

#### C.11 Service Area

b) Feeder-link test points (*see Table 4*)

For each of the 14 satellite spot beams described in B above, the service area is the intersection of the area lying within its -6dB contour and the territory of the 48 contiguous states of the USA. For the CONUS beam, the service area is the territory of the 48 contiguous states of the USA.(see GXT files in the CR-ROM attached)

The test points for each beam are indicated in Table 4

Table 4 - Test Points

Beam	Test Point #	Longitude	latitude
R01	1	-69.25	44.90
R03	1	-74.87	41.06
R05	1	-78.02	35.43
R06	1	-83.99	33.67
R09	1	-81.30	26.96
R11	1	-88.22	41.51
R12	1	-89.44	30.84
R13	1	-94.57	46.77
R14	1	-92.26	38.52
R17	1	-96.33	29.27
R18	1	-105.77	40.41
R20	1	-119.63	46.07
R21	1	-120.89	37.92
R22	1	-115.34	33.50
RU1 & RU2	1	-94.93	49.30
	2	-124.59	48.25
	3	-124.21	40.37
	4	-117.15	32.68
	5	-97.22	26.03
	6	-80.34	25.27
	7	-80.05	32.77
	8	-75.57	35.53
	9	-69.27	47.30
	10	-82.44	42.94

C.15 Description of the group(s) required in the case of non-simultaneous emissions.

*A group, identified as group 99 in MSPACE, includes USABSS-17 and the planned beam USAEH001 since these networks will not be operated simultaneously on the same channels.*

*Concerning the various beams of USABSS-17, they are also all in the group, however some spot beams may be operated simultaneously on the same channels (as shown in Table 3), albeit not simultaneously with the national beam EU1. Several runs of MSPACE with other types of grouping, have shown that this represents the worst case for calculating interference to other networks.*

#### D. Overall Link Characteristics

##### 1) Connection between Earth-to-Space and Space-to-Earth frequencies in the network:

*The channel connectivity complies with Appendix S30 and S30A (i.e. channel 1 Earth to Space is connected to channel 1 Space to Earth and so on.)*

*The beam connectivity is indicated in Table 5*

Table 5 Beam connectivity

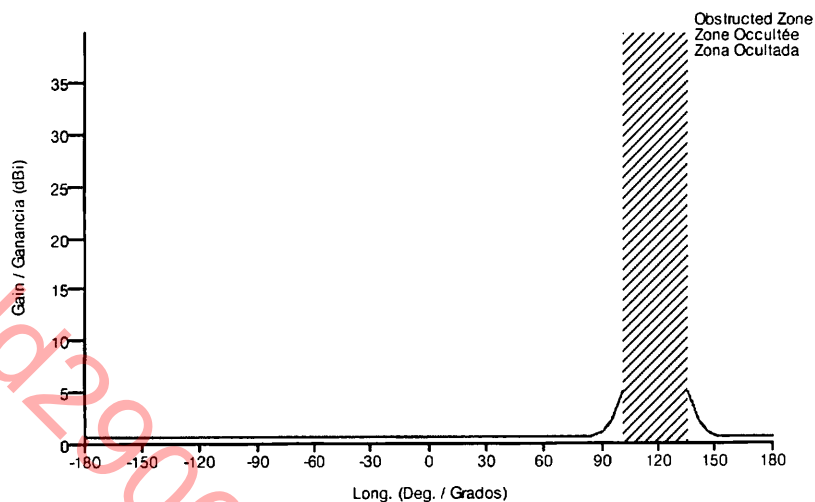
<i>MSPACE Beam ID (for reference)</i>	<i>uplink beam</i>	<i>downlink beam<sup>1</sup></i>
USA9BS01	R01	E01
USA9BS02	R03	E02
USA9BS03	R03	E03
USA9BS04	R05	E04
USA9BS05	R05	E05
USA9BS06	R06	E06
USA9BS07	R12	E07
USA9BS08	R06	E08
USA9BS09	R09	E09
USA9BS10	R11	E10
USA9BS11	R11	E11
USA9BS12	R12	E12
USA9BS13	R13	E13
USA9BS14	R14	E14
USA9BS15	R14	E15
USA9BS16	R17	E16
USA9BS17	R17	E17
USA9BS18	R18	E18
USA9BS19	R18	E19
USA9BS20	R20	E20
USA9BS21	R21	E21
USA9BS22	R22	E22
USA9BUS1	RU1	EU1
USA9BUS2	RU2	EU2

---

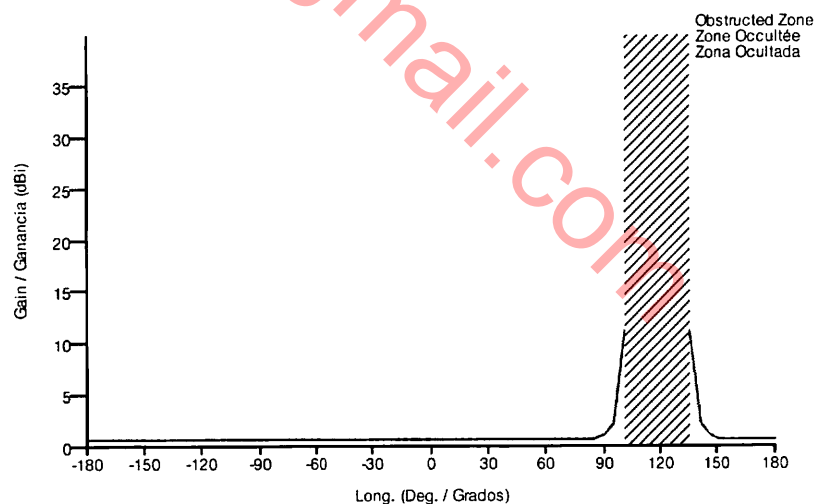
<sup>1</sup> See Attachment 2 for a description of the satellite transmit beams

**Figure 1 - Gain of the Antenna in the Direction of the Geostationary-Satellite Orbit  
for some selected beams (Item B.3f))**

Notice ID : 000000000  
Administration : USA  
Satellite Network : USABSS-17  
Beam : RU1  
Emission / Reception : R  
Polarization : C  
Service Area Number :  
Service Area Name :  
Reason : C  
Satellite Position : -61.500



Notice ID : 000000000  
Administration : USA  
Satellite Network : USABSS-17  
Beam : R01  
Emission / Reception : R  
Polarization : C  
Service Area Number :  
Service Area Name :  
Reason : C  
Satellite Position : -61.500



**ATTACHMENT 5**

**API/A FOR USABSS-17 AT 61.5 WEST LONGITUDE**

dd2900@gmail.com



UNION INTERNATIONALE DES TELECOMMUNICATIONS  
BUREAU DES RADIOCOMMUNICATIONS

INTERNATIONAL TELECOMMUNICATION UNION  
RADIOCOMMUNICATION BUREAU

UNIÓN INTERNACIONAL DE TELECOMUNICACIONES  
OFICINA DE RADIOCOMUNICACIONES

IFIC / DATE IFIC / DATE IFIC / FECHA	SECTION SPECIALE N° SPECIAL SECTION No. SECCIÓN ESPECIAL N.º	API/A/
RESEAU(X) A SATELLITE SATELLITE NETWORK(S) RED(ES) DE SATELITE	USABSS-17	ADMINISTRATION RESPONSABLE RESPONSIBLE ADMINISTRATION ADMINISTRACIÓN RESPONSABLE
USA		

RENSEIGNEMENTS REÇUS PAR LE BUREAU LE  
INFORMATION RECEIVED BY THE BUREAU ON  
INFORMACIÓN RECIBIDA POR LA OFICINA EL

Ces renseignements concernant les réseaux à satellite régis par l'article S9, sous-section 1B, sont publiés par le Bureau des radiocommunications en application du No. S9.2B. Ils font l'objet de la(les) procédure(s) suivante(s), indiquée(s) ci-dessous par un X dans la case pertinente.  
(voir les commentaires du Bureau des radiocommunications)

This information on satellite networks covered under Article S9, Sub-Section 1B, is published by the Radiocommunication Bureau in accordance with No. S9.2B. It is subject to the procedure(s) indicated below by an X in the relevant box.

(see comments of the Radiocommunication Bureau)

Esta información relativa a las redes de satélite regidas por el Artículo S9, sub-sección 1B, se publica por la Oficina de Radiocomunicaciones en virtud del No. S9.2B. Está sujeta al (los) procedimiento(s) siguiente(s), señalados) con una X en la casilla apropiada.

(véanse las observaciones de la Oficina de Radiocomunicaciones)

<input checked="" type="checkbox"/>	Les renseignements ont été reçus conformément au No. S9.1	The information has been received pursuant to No. S9.1	La información ha sido recibida de conformidad con No. S9.1
<input type="checkbox"/>	Les renseignements ont été reçus conformément au No. S9.2	The information has been received pursuant to No. S9.2	La información ha sido recibida de conformidad con No. S9.2
Toute administration estimant que ses réseaux à satellite, ses systèmes à satellites ou ses stations de terre, selon le cas, existants ou en projet, sont affectés, peut envoyer ses observations à l'administration qui a demandé la publication des renseignements, avec copie au Bureau des radiocommunications.			
Any administration which considers that its existing or planned satellite systems or networks or terrestrial stations, as appropriate, are affected, may send its comments to the administration which has requested publication of the information, with a copy of such comments to the Radiocommunication Bureau.			
Cualquier administración que considere que sus sistemas o redes des satélites o estaciones terrenales, según el caso, existentes o planificados se verán afectados, podrá comunicar sus comentarios a la administración que haya solicitado la publicación de la información, enviando una copia de dichos comentarios a la Oficina de Radiocomunicaciones.			

Information aussi disponible sur le / Information also available on the / Información también disponible en:

Space Network Systems Online Service : <http://www-br/sns/advpub.html>

© I.T.U.



Items	Description	Description	Descripción
A1a	Name of the space station	Nom de la station spatiale	Nombre de la estación espacial
A1f	Notifying administration	Administration notificatrice	Administración notificante
A2a	Date of bringing into use	Date de mise en service	Fecha de puesta en servicio
A2b	Period of validity (year)	Période de validité (année)	Período de validez (año)
A4a1	Nominal longitude of a geostationary space station (degree)	Longitude nominale d'une station spatiale géostationnaire (degré)	Longitud nominal de una estación espacial geoestacionaria (grado)
A4b1	Angle of inclination of the orbit (degree)	Inclinaison de l'orbite (degré)	Ángulo de inclinación de la órbita (grado)
A4b2	Period (ddd/hh/mm)	Période (jjj/hh/mm)	Periodo (ddd/hh/mm)
A4b3a	Altitude of the apogee (km)	Altitude de l'apogée (km)	Altitud del apogeo (km)
A4b3b	Altitude of the perigee (km)	Altitude du périgée (km)	Altitud del perigeo (km)
A4b4a	Number of satellites	Nombre de satellites	Número de satélites
A4b4b	Reference body	Corps de référence	Cuerpo de referencia
A4b5a	Number of orbital planes	Nombre de plans orbitaux	Número de planos orbitales
C1	Frequency Range	Gamme de fréquences	Gama de frecuencias
C4a	Class of station	Classe de station	Clase de estación
C4b	Nature of service	Nature du service	Naturaleza del servicio
C11a4	Narrative description of the service area	Description détaillée de la zone de service	Descripción detallada de la zona de servicio
BR1	Date of receipt	Date de réception	Fecha de recepción
BR3a	Provision reference code	Code de référence de la disposition	Código de referencia de la disposición
BR6a	Identification number of the network	Numéro d'identification du réseau à satellite	Número de identificación de la red
BR6b	Old identification number of the network	Ancien numéro d'identification du réseau à satellite	Número anterior de la identificación de la red
BR20	IFIC number	Numéro de la IFIC	Número de la IFIC
BR22	Administration remarks	Remarques de l'Administration	Observaciones de la Administración
BR23	Radiocommunication Bureau comments	Observations du Bureau des radiocommunications	Comentarios de la Oficina de Radiocomunicaciones

## SECTION SPECIALE / SPECIAL SECTION / SECCION ESPECIAL

A

A1a Space station USABSS-17

A1f Notifying adm. USA

BR1 Date of receipt

BR20 IFIC no.

APIA/

BR6a/BR6b Id. no. 1

BR3a Provision reference S9.1/TB

A4a1 Orbital long.

61.5 W

A2a Date of bringing into use

29.12.2003

A2b Period of valid.

20

C1 Frequency range:

From

17.3

GHz

To

17.8

GHz

C4a Class of station

ED

EK

ET

C4b Nature of service

OT

OT

OT

C11a4 Service area

USA

A2a Date of bringing into use

29.12.2003

A2b Period of valid.

20

C1 Frequency range:

From

12.2

GHz

To

12.7

GHz

C4a Class of station

ED

ER

C4b Nature of service

OT

OT

C11a4 Service area

USA

BR22 Administration remarks

BR23 Radiocommunication Bureau comments

**COMMENTAIRES DU BUREAU DES  
RADIOCOMMUNICATIONS CONCERNANT LE  
NUMEROTAGE DE LA SECTION SPECIALE**

**COMMENTS OF RADIOCOMMUNICATION  
BUREAU RELATING TO THE SPECIAL SECTION  
NUMBERING**

**COMENTARIOS DE LA OFICINA DE  
RADIOCOMUNICACIONES RELATIVOS A LA  
NUMERACION DE LA SECCION ESPECIAL**

1. La date limite pour la réception des commentaires indiquée sur la page de couverture s'applique uniquement aux bandes de fréquences additionnelles suivantes:

1. Expiry date for the receipt of comments indicated on the cover page applies only to the following additional frequency bands:

1. La fecha límite para la recepción de los comentarios indicada en la portada de la Sección Especial sólo se aplica a las siguientes bandas de frecuencias adicionales:

2. La présente Section spéciale est aussi publiée conformément au paragraphe 7.1.3 de l'Appendice 30/S30 pour les gammes de fréquences suivantes:

2. This Special Section is also published in accordance with paragraph 7.1.3 of Appendix 30/S30 with respect to the following frequency bands:

2. La presente Sección Especial se publica también en virtud del párrafo 7.1.3 del apéndice 30/S30 para las siguientes gamas de frecuencias:

3. Sections spéciales déjà publiées/ IFIC/ date:

3. Previously published Special Sections/ IFIC/Date:

3. Secciones Especiales ya publicadas/ IFIC/ fecha:

**ATTACHMENT 6**

**USABSS-17 AT 61.5 WEST LONGITUDE**

**REQUEST FOR COORDINATION FOR THE COMMAND, BEACON & TELEMETRY**

dd2900@gmail.com



UNION INTERNATIONALE DES TELECOMMUNICATIONS  
BUREAU DES RADIOCOMMUNICATIONS

INTERNATIONAL TELECOMMUNICATION UNION  
RADIOCOMMUNICATION BUREAU

UNIÓN INTERNACIONAL DE TELECOMUNICACIONES  
OFICINA DE RADIOCOMUNICACIONES

IFIC / DATE IFIC / DATE IFIC / FECHA		SECTION SPECIALE N° SPECIAL SECTION No. SECCIÓN ESPECIAL N.º	
STATION SPATIALE SPACE STATION ESTACIÓN ESPACIAL	USABSS-17	ou or o	STATION(S) TERRIENNE(S) EARTH STATION(S) ESTACIÓN(ES) TERRENA(S)  SPECIFIQUE/SPECIFIC/ ESPECIFICA
ADMINISTRATION RESPONSABLE RESPONSIBLE ADMINISTRATION ADMINISTRACIÓN RESPONSABLE		USA  RENSEIGNEMENTS REÇUS PAR LE BUREAU LE INFORMATION RECEIVED BY THE BUREAU ON INFORMACIÓN RECIBIDA POR LA OFICINA EL	

Ces renseignements ont été reçus par le Bureau des radiocommunications en vertu du RR1074 et son publiés en application du RR1078. Ils font l'objet de l'une des deux procédures suivantes, indiquées ci-dessous par un X dans la case pertinente.

This information has been received by the Radiocommunication Bureau pursuant to RR1074 and is published in accordance with RR1078. It is subject to one of two procedures, indicated below by an X in the relevant box.

Esta información ha sido recibida por la Oficina de Radiocomunicaciones de conformidad con RR1074 y se publica en virtud de RR1078. Está sujeta a uno de los dos procedimientos siguientes, señalado con una X en la casilla apropiada.

<input checked="" type="checkbox"/>	<p>Une demande de coordination a été envoyée conformément au RR1073 aux administrations indiquées ci-dessous. En application du RR1078, le Bureau a ajouté, le cas échéant, le symbole des autres administrations (identifiées par *) dont les services sont susceptibles d'être affectés. Toute administration dont le symbole apparaît dans la présente Section Spéciale accuse immédiatement réception, par télégramme, des données concernant la coordination (RR1082).</p>	<p>A request for coordination has been sent in accordance with RR1073 to the administrations indicated below. In conformity with RR1078, the Bureau has added, as appropriate, the symbols of any other administrations (identified by *) whose services are likely to be affected. Any administration whose symbol appears in the present Special Section shall acknowledge receipt of the coordination data immediately by telegram (RR1082).</p>	<p>De conformidad con RR1073, se ha enviado una solicitud de coordinación a las administraciones indicadas más abajo. Conforme a RR1078, la Oficina ha añadido adecuadamente el símbolo de las demás administraciones (identificadas por un *) cuyos servicios pueden resultar afectados. Las administraciones cuyo símbolo aparece en la presente Sección Especial deberán acusar recibo inmediatamente por telegrama de la información referente a la coordinación (RR1082).</p>
DEMANDE DE COORDINATION (RR1060) ADRESSEE A REQUEST FOR COORDINATION (RR1060) ADDRESSED TO SOLICITUD DE COORDINACIÓN (RR1060) DIRIGIDA A			
DATE LIMITE POUR LA DECISION (RR1084) : EXPIRY DATE FOR DECISION (RR1084): FECHA LÍMITE PARA LA DECISIÓN (RR1084):			
<input type="checkbox"/>	<p>Les dispositions du RR1066 s'appliquent à ces assignations qui sont publiées uniquement pour information.</p>	<p>The provisions of RR1066 apply to these assignments, which are published for information only.</p>	<p>Las disposiciones de RR1066 se aplican a estas asignaciones, que se publican a título de información únicamente.</p>

Items	Description	Description	Descripción	RES. 46	WIC.No.
A1a	Name of the space station	Nom de la station spatiale	Nombre de la estación espacial		1
A1f	Notifying administration	Administration notificatrice	Administración notificante		2
A2a	Date of bringing into use	Date de mise en service	Fecha de puesta en servicio		48
A2b	Period of validity (year)	Période de validité (année)	Periodo de validez (año)		49
A3a	Operating agency	Organisme exploitant les stations	Compañía explotadora		50
A3b	Address of the administration responsible for the station	Adresse de l'administration responsable de la station	Dirección de la administración responsable de la estación		51
A4a1	Nominal longitude of a geostationary space station (degree)	Longitude nominale d'une station spatiale géostationnaire (degré)	Longitud nominal de una estación espacial geoestacionaria (grado)		8
A4a2a	Longitudinal tolerance	Tolérance de longitude	Tolerancia longitudinal		9
A4a2b	Inclination excursion	Excursion d'inclinaison	Excursión de inclinación		10
A4a3	Visibility arc	Arc de visibilité	Arco de visibilidad		11
A4a4	Service arc	Arc de service	Arco de servicio		12
A4a5	Reasons for service arc < arc of visibility	Raisons pour lesquelles l'arc de service < l'arc de visibilité	Razones por las que el arco de servicio < el arco de visibilidad		13
A5 /A6	Coordination information	Information de la coordination	Información de la coordinación		46
A13	Reference to Special Sections	Référence aux Sections Spéciales	Referencia a las Secciones Especiales		52
B1a	Designation of the satellite antenna beam	Désignation du faisceau de l'antenne du satellite	Designación del haz de la antena del satélite		28
B1b	Old beam designation	Ancienne désignation du faisceau	Designación anterior del haz		
B2	Transmission/reception indicator	Indicateur d'émission/réception	Indicador de transmisión/recepción		29
B3a1 /B3b1	Maximum antenna gain (dBi)	Gain maximal d'antenne (dBi)	Ganancia máxima de la antena (dBi)		31
B3a2 /B3b2b	Antenna gain contour diagram	Diagramme des contours de gain de l'antenne	Diagrama de los contornos de ganancia de la antena		34
B3d	Pointing accuracy (degree)	Précision de pointage (degré)	Precisión de puntería (grado)		32
B3e1	Radiation diagram	Diagramme de rayonnement	Diagrama de radiación		35
B3e2	Reference pattern	Diagramme de référence	Diagrama de referencia		35
B3e3	Coefficient A	Coefficient A	Coefficiente A		35
B3e4	Coefficient B	Coefficient B	Coefficiente B		35
B3f	Antenna gain vs orbit longitude diagram	Diagramme du gain d'antenne en fonction de la longitude de l'orbite.	Diagrama de la ganancia de la antena en función de la longitud de la órbita		36
C2a	Assigned frequency	Fréquence assignée	Frecuencia asignada		53
C3a	Assigned frequency band (kHz)	Bande de fréquences assignée (kHz)	Banda de frecuencias asignada (kHz)		41
C4a	Class of station	Classe de station	Clase de estación		39
C4b	Nature of service	Nature du service	Naturaleza del servicio		40
C5a	Receiving system noise temperature (Kelvin) in the case of a space station	Température de bruit du système de réception (Kelvin) dans le cas d'une station spatiale	Temperatura de ruido del sistema receptor (Kelvin) en el caso de una estación espacial		42
C6a	Type of polarization	Type de polarisation	Tipo de polarización		33
C6b	Polarization angle (degree)	Angle de polarisation (degré)	Ángulo de polarización (grado)		33
C7a	Designation of emission	Désignation de l'émission	Denominación de la emisión		56
C8a1 /C8b1	Maximum power supplied to the antenna (dBW)	Puissance maximale fournie à l'antenne (dBW)	Potencia máxima suministrada a la antena (dBW)		57
C8a2 /C8b2	Maximum power density (dB(W/Hz))	Densité maximale de puissance (dB(W/Hz))	Densidad máxima de potencia (dB(W/Hz))		58
C8c1	Minimum peak power (dBW)	Valeur minimale de la puissance en crête (dBW)	Valor mínimo de la potencia en la cresta (dBW)		
C8c2	Minimum power density (dB(W/Hz))	Densité minimale de puissance (dB(W/Hz))	Densidad mínima de potencia (dB(W/Hz))		
C8d /C8g	Maximum total peak power (dBW)	Valeur maximale de la puissance en crête totale (dBW)	Potencia en la cresta de la envolvente total máxima (dBW)		
C8e	Carrier-to-noise ratio (dB)	Rapport porteuse/bruit (dB)	Relación portadora/ruido (dB)		
C10a1	Name of the associated space station	Nom de la station spatiale associée	Nombre de la estación espacial asociada		71
C10a2	Previous name of the associated space station	Ancien nom de la station spatiale	Nombre anterior de la estación espacial		71
C10a3	Type of associated space station	Type de station spatiale associée	Tipo de la estación espacial asociada		
C10a4	Nominal longitude of the associated geostationary space station	Longitude nominale de la station spatiale géostationnaire associée	Longitud nominal de la estación espacial geoestacionaria asociada		

C10a5	Designation of the antenna beam of the associated space station	Désignation du faisceau de l'antenne de la station spatiale associée	Designación del haz de la antena de la estación espacial asociada	73
C10b1	Name of the associated earth station	Nom de la station terrienne associée	Nombre de la estación terrena asociada	59
C10b2	Previous name of the associated earth station	Ancien nom de la station terrienne	Nombre anterior de la estación terrena	
C10b3	Type of associated earth station	Type de station terrienne associée	Tipo de la estación terrena asociada	62
C10b4	Country symbol	Symbole de pays	Símbolo de país	61
C10b5	Geographical coordinates	Coordonnées géographiques	Coordenadas geográficas	63
C10c1a	Class of station of the associated earth station	Classe de station de la station terrienne associée	Clase de estación de la estación terrena asociada	65
C10c1b	Nature of service of the associated earth station	Nature du service de la station terrienne associée	Naturaleza del servicio de la estación terrena asociada	66
C10c2	Isotropic gain of the antenna (dBi)	Gain isotrope de l'antenne (dBi)	Ganancia isotropa de la antena (dBi)	67
C10c3	Beamwidth (degree)	Ouverture du faisceau (degré)	Abertura del haz (grado)	68
C10c4a	Reference radiation pattern	Diagramme de rayonnement de référence	Diagrama de radiación de referencia	70
C10c4b	Radiation pattern diagram of the associated earth station	Diagramme de rayonnement	Diagrama de radiación	69
C10c4c1	Radiation pattern diagram coefficient A	Coefficient A du diagramme de rayonnement	Coefficiente A del diagrama de radiación	
C10c4c2	Radiation pattern diagram coefficient B	Coefficient B du diagramme de rayonnement	Coefficiente B del diagrama de radiación	
C10c4c3	Radiation pattern diagram coefficient C	Coefficient C du diagramme de rayonnement	Coefficiente C del diagrama de radiación	
C10c4c4	Radiation pattern diagram coefficient D	Coefficient D du diagramme de rayonnement	Coefficiente D del diagrama de radiación	
C10c4c5	Radiation pattern diagram angle	Angle du diagramme de rayonnement	Ángulo del diagrama de radiación	
C10c5	Receiving system noise temperature (Kelvin) of the associated earth station	Température de bruit du système de réception (Kelvin) de la station terrienne associée	Temperatura de ruido del sistema receptor (Kelvin) de la estación terrena asociada	64
C11a1	Service area no. (GIMS)	Numéro de zone de service (GIMS)	Número de zona de servicio (GIMS)	43-44
C11a2	Service area symbol	Symbole de la zone de service	Símbolo de la zona de servicio	43-44
C11a3	Service area diagram attachment	Diagramme de zone de service annexe	Diagrama de la zona de servicio anexo	43-44
D1a	Serial number of the strap	Numéro de série de la connexion	Número de serie de la conexión	75
D1b	Uplink beam designation	Désignation du faisceau de réception	Designación del haz de recepción	76
D1c	Downlink beam designation	Désignation du faisceau d'émission	Designación del haz de transmisión	77
D1d	Uplink assigned frequency	Assignation de fréquence sur les liaisons montantes	Asignación de frecuencia de enlace ascendente	78
D1e	Downlink assigned frequency	Assignation de fréquence sur les liaisons descendantes	Asignación de frecuencia de enlace descendente	79
D2a1	Lowest equivalent satellite link noise temperature	Température de bruit équivalente la plus faible de la liaison par satellite	Temperatura de ruido equivalente más baja del enlace por satélite	80
D2a2	Associated transmitting gain (lowest)	Gain de transmission associé (plus faible)	Ganancia de transmisión asociada (más baja)	81
D2b1	Satellite link noise temperature for highest ratio of gain/noise	Température de bruit équivalente de liaison par satellite pour le rapport gain/température bruit le plus élevé	Temperatura de ruido equivalente del enlace por satélite para la relación más elevada ganancia/ruido	82
D2b2	Associated transmitting gain (highest)	Gain de transmission associé (plus élevé)	Ganancia de transmisión asociada (más elevada)	83
D2c	Line number for a given set of equivalent satellite link noise temperatures and transmission gain values	Numéro de ligne pour un groupe donné températures de bruit équivalente de la liaison par satellite et les gains de transmission	Número de serie para un grupo dado de temperaturas de ruido equivalente del enlace por satélite y las ganancias de transmisión	88
D2d	Associated receiving earth station name	Nom de la station terrienne réceptrice associée	Nombre de la estación terrena receptora asociada	84
2D	Findings: Date from which an assignment is taken into account according to RR1061-1065 or 2.5 of the procedure in Annex 1 to Resolution 46	Conclusions: Date à partir de laquelle une assignation est prise en compte en accord avec les RR1061-1065 ou 2.5 de la procédure dans l'Annex 1 à la Résolution 46	Conclusiones: Fecha a partir de la cual una asignación es tomada en cuenta de acuerdo con RR1061-1065 ó 2.5 del procedimiento del Anexo 1 a la Resolución 46	
13A	Findings: Conformity with Radio Regulations; Table No. 13A of the preface to the IFL	Conclusions: En conformité avec le Règlement des radiocommunications; Tableau No. 13A de la Préface à la Liste Internationale des Fréquences	Conclusiones: En conformidad con los Reglamentos de radiocomunicaciones; Tabla No.13A del Prefacio a la Lista Internacional de frecuencias	
13B1	Findings: Reference to a provision, appendix or resolution	Conclusions: Référence à une disposition, appendice ou résolution	Conclusiones: Referencia a una disposición, apéndice o resolución	
13B2	Findings: Remarks concerning the findings entered in column 13A; Table No.13B of the preface to the IFL	Conclusions: Remarques concernant les conclusions inscrites à la colonne 13A; Tableau No.13B de la Préface à la Liste Internationale des Fréquences	Conclusiones: Comentarios correspondientes a las conclusiones inscritas en la columna 13A; Tabla No.13B del Prefacio a la Lista Internacional de frecuencias	
13B3	Findings: Date relating to the review of the findings	Conclusions: Date relative à un réexamen des conclusions	Conclusiones: Fecha relativa a una revisión de las conclusiones	
13C	Remarks	Observations	Observaciones	47
BR1	Date of receipt	Date de réception	Fecha de recepción	3
BR2	Administration serial number	Numéro de série de l'administration	Número de serie de la administración	

<b>BR3a</b>	Provision reference code	Code de référence de la disposition	Código de referencia de la disposición	5
<b>BR3b</b>	Category of notification	Catégorie de notification	Categoría de notificación	5
<b>BR6a</b>	Identification number of the network	Numéro d'identification du réseau à satellite	Número de identificación de la red	4
<b>BR6b</b>	Old identification number of the network	Ancien numéro d'identification du réseau à satellite	Número anterior de la identificación de la red	
<b>BR7a</b>	Identification number of the group	Numéro d'identification du groupe	Número de la identificación del grupo	45
<b>BR7b</b>	Old identification number of the group	Ancien numéro d'identification du groupe	Número anterior de la identificación del grupo	
<b>BR14</b>	Symbol and number of the Special Section	Symbole et numéro de la Section Spéciale	Símbolo y número de la Sección Especial	7
<b>BR16</b>	Value of type C8b	Valeur du type C8b	Valor del tipo C8b	
<b>BR17</b>	Reason for C8c/C8e absent	Raison pour laquelle C8c/C8e non indiquées	Razón por la que faltan C8c/C8e	
<b>BR20</b>	IFIC number	Numéro de la IFIC	Número de la IFIC	6
<b>BR21</b>	Part of the IFIC	Partie de la IFIC	Parte de la IFIC	

dd2900@gmail.com



## SECTION SPECIALE / SPECIAL SECTION / SECCION ESPECIAL

A A1a Space station USABSS-17 A1f Notifying adm. USA BR1 Date of receipt                      BR20/BR21 IIC no./part                       
 BR6a/BR6b Id. no. 2 BR3a/BR3b Provision reference S9.6 C BR2 Adm. serial no.                      BRX                      R                     

A4a1 Orbital long. 61.5 W A4a2a Long. tolerance 0.05 W - 0.05 E A4a2b Inclination excursion 0.05  
 A4a3 Visibility arc 135 W - 10 E A4a4 Service arc 62 W - 61 W A4a5 Reason for arc diff. 1

B1a/B1b Beam designation BRX B2 Emi-Rcp R B3a1/B3b1/B3b2a Max. ant. gain 51 B3d Pointing accuracy 0.1

B3a2/B3b2b Ant. gain cont. diag. 11 B3f Ant. gain vs orbit long. diag. 12

B3e1 Rad. diag.                      B3e2 Ref. pat.                      B3e3 Coef. A                      B3e4 Coef. B                     

BR7a/BR7b Group id. 15 BR14 Special Section                       
 C4a Class of station ET C3a Assigned freq. band 300 C5a Noise temperature 12590  
 C4b Nature of service OT C6a Polarization type CR C6b Polarization angle                      C8d/C8g Max. pwr 4.4  
 C11a1 Service area no.                      C11a2 Service area USA C11a3 Service area diagram                     

A5/A6 Coordination                     

A2a Date of bringing into use 29.12.2003 A2b Period of valid. 20 A3a Op. agency 120 A3b Adm. resp. A BR16 Value of type C8b                      BR17 Reason for C8c/C8e absent                     

C2a Assigned frequency 17.798 G                                                                                                                                                                                                                  

A13 Ref. to Special Sections	C7a Design. of emission	C8a1/C8b1 Max. peak pwr	C8a2/C8b2 Max. pwr dens.	C8c1 Min. peak pwr	C8c2 Min. pwr dens.	C8e C/N ratio
1 API/A	1 300KN0N--	4.4	-50.4	4.4	-50.4	26

C10b1 Assoc. earth station name	C10b4 Ctry	C10b3 Type	C10b5 Geographical coord.	C10c1a/C10c1b Cls. / Nat.	C10c2 Max. iso. gain	C10c3 Bmwidth	C10c4a Ref. pattern	C10c4b Rad. diag.	C10c4c				
									Coef A	Coef B	Coef C	Coef D	Phi
BEACON	USA	S	103 W 20 11 44 N 11 17	1 TT OT	60	0.15	REC-580						

Findings 2D Date                      I3A Conformity with RR                      I3B1 Provision                      I3B2 Remarks                      I3B3 Date of Review                     

I3C Remarks                     

B1a/B1b Beam designation HRX B2 Emi-Rcp R B3a1/B3b1/B3b2a Max. ant. gain 11.5 B3d Pointing accuracy 0.1

B3a2/B3b2b Ant. gain cont. diag. 5 B3f Ant. gain vs orbit long. diag. 6

B3e1 Rad. diag.                      B3e2 Ref. pat.                      B3e3 Coef. A                      B3e4 Coef. B                     

BR7a/BR7b Group id. 10 BR14 Special Section                       
 C4a Class of station ED EK C3a Assigned freq. band 1500 C5a Noise temperature 12590  
 C4b Nature of service OT OT C6a Polarization type L C6b Polarization angle 0 C8d/C8g Max. pwr 26.2  
 C11a1 Service area no.                      C11a2 Service area USA C11a3 Service area diagram                     

A5/A6 Coordination                     

A2a Date of bringing into use 29.12.2003 A2b Period of valid. 20 A3a Op. agency 120 A3b Adm. resp. A BR16 Value of type C8b                      BR17 Reason for C8c/C8e absent

SECTION SPECIALE / SPECIAL SECTION / SECCION ESPECIAL									
<input type="checkbox"/> A	A1a Space station <b>USABSS-17</b>			A1f Notifying adm. <b>USA</b>		BR1 Date of receipt <input type="text"/>		BR20/BR21 IFIC no./part <input type="text"/>	
BR6a/BR6b Id. no. <b>2</b>			BR3a/BR3b Provision reference <b>S9.6 C</b>			BR2 Adm. serial no. <input type="text"/>		HRX <input type="text"/> R <input type="text"/>	

C2a Assigned frequency									
17.304	G								

A13 Ref. to Special Sections		C7a Design. of emission		C8a1/C8b1 Max. peak pwr	C8a2/C8b2 Max. pwr dens.	C8c1 Min. peak pwr	C8c2 Min. pwr dens.	C8e C/N ratio
1 API/A		1 1M50FXD--		26.2	-19.2	26.2	-19.2	26

C10b1 Assoc. earth station name	C10b4 Ctry	C10b3 Type	C10b5 Geographical coord.	C10c1a/C10c1b Cls. / Nat.	C10c2 Max. iso. gain	C10c3 Bmwidth	C10c4a Ref. pattern	C10c4b Rad. diag.	C10c4c				
									Coef A	Coef B	Coef C	Coef D	Phil
RAPID CITY TTC	USA	S	103 W 20 11 44 N 11 17	1 TK 2 TD OT	65.4	0.09	REC-580						

Findings <input type="text"/>	2D Date <input type="text"/>	13A Conformity with RR <input type="text"/>	13B1 Provision <input type="text"/>	13B2 Remarks <input type="text"/>	13B3 Date of Review <input type="text"/>
13C Remarks <input type="text"/>					

<input type="checkbox"/> B1a/B1b Beam designation <b>ORX</b>	<input type="checkbox"/> B2 Emi-Rep <b>R</b>	<input type="checkbox"/> B3a1/B3b1/B3b2a Max. ant. gain <b>1.5</b>	<input type="checkbox"/> B3d Pointing accuracy <b>0.1</b>
B3a2/B3b2b Ant. gain cont. diag. <b>7</b>	B3f Ant. gain vs orbit long. diag. <b>8</b>		
B3e1 Rad. diag. <input type="text"/>	B3e2 Ref. pat. <input type="text"/>	B3e3 Coef. A <input type="text"/>	B3e4 Coef. B <input type="text"/>

<input type="checkbox"/> BR7a/BR7b Group id. <b>11</b>	<input type="checkbox"/> BR14 Special Section <input type="text"/>		
C4a Class of station <b>ED EK</b>	C3a Assigned freq. band <b>1500</b>	C5a Noise temperature <b>12590</b>	
C4b Nature of service <b>OT OT</b>	C6a Polarization type <b>L</b>	C6b Polarization angle <b>0</b>	C8d/C8g Max. pwr <b>26.2</b>
C11a1 Service area no. <input type="text"/>	C11a2 Service area <b>USA</b>	C11a3 Service area diagram <input type="text"/>	

A5/A6 Coordination <input type="text"/>									
A2a Date of bringing into use <b>29.12.2003</b>	A2b Period of valid. <b>20</b>	A3a Op. agency <b>120</b>	A3b Adm. resp. <b>A</b>	BR16 Value of type C8b <input type="text"/>	BR17 Reason for C8c/C8e absent <input type="text"/>				

C2a Assigned frequency									
17.304	G								

A13 Ref. to Special Sections		C7a Design. of emission		C8a1/C8b1 Max. peak pwr	C8a2/C8b2 Max. pwr dens.	C8c1 Min. peak pwr	C8c2 Min. pwr dens.	C8e C/N ratio
1 API/A		1 1M50FXD--		26.2	-19.2	26.2	-19.2	26

C10b1 Assoc. earth station name	C10b4 Ctry	C10b3 Type	C10b5 Geographical coord.	C10c1a/C10c1b Cls. / Nat.	C10c2 Max. iso. gain	C10c3 Bmwidth	C10c4a Ref. pattern	C10c4b Rad. diag.	C10c4c				
									Coef A	Coef B	Coef C	Coef D	Phil
RAPID CITY TTC	USA	S	103 W 20 11 44 N 11 17	1 TK 2 TD OT	65.4	0.09	REC-580						

Findings <input type="text"/>	2D Date <input type="text"/>	13A Conformity with RR <input type="text"/>	13B1 Provision <input type="text"/>	13B2 Remarks <input type="text"/>	13B3 Date of Review <input type="text"/>
13C Remarks <input type="text"/>					

<input type="checkbox"/> B1a/B1b Beam designation <b>TLC</b>	<input type="checkbox"/> B2 Emi-Rep <b>R</b>	<input type="checkbox"/> B3a1/B3b1/B3b2a Max. ant. gain <b>38.4</b>	<input type="checkbox"/> B3d Pointing accuracy <b>0.1</b>
B3a2/B3b2b Ant. gain cont. diag. <b>2</b>	B3f Ant. gain vs orbit long. diag. <b>3</b>		

[illegible]

*B3e1* Rad. diag.  *B3e2* Rcf. pat.  *B3e3* Coef. A  *B3e4* Coef. B

BR7a/BR7b Group id.	3	BR14 Special Section	
---------------------	---	----------------------	--

<b>C4a</b> Class of station	EJ	EK	
<b>C4b</b> Nature of service	OT	OT	
<b>C3a</b> Assigned freq. band		1500	
<b>C6a</b> Polarization type		L	
<b>C5a</b> Noise temperature		1000	
<b>C6b</b> Polarization angle		90	
<b>C8d/C8g</b> Max. pwr		12.6	

<i>C11a1</i> Service area no.	<input type="text"/>	<i>C11a2</i> Service area	<input type="text" value="USA"/>	<i>C11a3</i> Service area diagram	<input type="text"/>
<i>A51a6</i> Coordination	<input type="text"/>				

A2a	Date of bringing into use	29.12.2003
A2b	Period of valid.	20
A3a	Op. agency	120
A3b	Adm. resp.	A
BR/6	Value of type C8b	
BR/7	Reason for C8c/C8e absent	

[illegible]

A13		C7a	C8a1/C8b1	C8a2/C8a2	C8c1	C8c2	C8c	
Ref. to Special Sections		Design of emission	Max. peak pwr	Max. pwr dens.	Min. peak pwr	Min. pwr dens.	C/N ratio	
1	API/A	1	1M50FXD--	12.6	-32.8	12.6	-32.8	26

	C10b1	C10b4	C10b3	C10b5		C10c1a/c10c1b		C10e2	C10c3	C10c4a	C10c4b	C10c4c				
	Assoc. earth station name	City	Type	(geographical coord.		Cls. / Nat.		Max. iso. gain	Bmwdth	Ref. pattern	Rad. diag.	Coef A	Coef B	Coef C	Coef D	Phil
	RAPID CITY TTC	USA	S	103 W 20 LL	44 N 11 17	1 TD	TK OT	65.4	0.09	REC-580						

Findings	2D Date	13A Conformity with RK	13B1 Provision	13B2 Remarks	13B3 Date of Review
13C Remarks					

<input type="checkbox"/>	<i>B1a/B1b</i> Beam designation	HTX			
<input type="checkbox"/>	<i>B2</i> Emi-Rep	E			
<input type="checkbox"/>	<i>B3a1/B3b1/B3b2a</i> Max. ant. gain			11.5	
<input type="checkbox"/>	<i>B3d</i> Pointing accuracy				0.1

*B3a2/B3b2b* Ant. gain cont. diag.  9 *B3f* Ant. gain vs orbit long. diag.

*B3e1* Rad. diag.  *B3e2* Ref. pat.  *B3e3* Coef. A

*B3e4* Coef. B

<input type="checkbox"/>	BR/ulBR7b Group id.	12	BR/4 Special Section	
--------------------------	---------------------	----	----------------------	--

<b>C4a</b> Class of station	ER	EK	<b>C3a</b> Assigned freq. band	300
<b>C4b</b> Nature of service	OT	OT	<b>C6a</b> Polarization type	T
			<b>C6b</b> Polarization angle	90
			<b>C8d/C8e</b> Max. pwr	5

<i>C11a1</i> Service area no.		<i>C11a2</i> Service area	USA	<i>C11a3</i> Service area diagram	
<i>A51a6</i> Coordination					

A2a Date of bringing into use	29.12.2003	A2b Period of valid.	20	A3a Op. agency	1201	A3b Adm. resp.	A	BR16 Value of type C8b		BR17 Reason for C8b/C8e absent	
C2a Assigned frequency											

[illegible][illegible]

## SECTION SPECIALE / SPECIAL SECTION / SECCION ESPECIAL

A	A/a Space station	USABSS-17	A/f Notifying adm.	USA	BR1 Date of receipt		BR20/BR21 IPI/C no/part	/	HTX	E
	BR6a/BR6b Id. no.	2	BR3d/BR3b Provision reference	S9-6 C	BR2 Adm. serial no.					

C10b1	Assoc. earth station name	C10b4 City	C10b3 Type	C10b5 Geographical coord.	C10c1a/C10c1b Cts. / Nat.	C10c2 Max. iso. gain	C10c3 Bmwidth	C10c4a Ref. pattern	C10c4b Rad. diag.	C10c5 Noise temp.	C10c4c Coef A	C10c4c Coef B	C10c4c Coef C	C10c4c Coef D	Phil
	RAPID CITY TTC	USA	S	103 W 20 11 44 N 11 17	1 TK 2 TR	OT 62.5	0.13	REC-580		160					

Findings	2D Date		/3A Conformity with RR		/3B1 Provision		/3B2 Remarks		/3B3 Date of Review	
/3C Remarks										

B1a/B1b Beam designation	OTX	B2 Emi-Rep	E	B3d/BR3b/BR3b2a Max. ant. gain	1.5	B3d Pointing accuracy	0.1
BR3a2/BR3b2b Ant. gain cont. diag.	10	BR3f Ant. gain vs orbit long. diag.					
BR3e1 Rad. diag.		BR3e2 Ref. pat.		BR3e3 Coef. A		BR3e4 Coef. B	

BR7a/BR7b Group id.	13	BR14 Special Section		C3a Assigned freq. band	300	C6b Polarization angle	90	C8d/C8g Max. pwr	5	C11a3 Service area diagram	
C4a Class of station	ER EK	C3u		C6a Polarization type	L						
C4b Nature of service	OT OT										
C11a1 Service area no.		C11a2 Service area	USA								

A5/A6 Coordination		A2a Date of bringing into use	29.12.2003	A2b Period of valid.	20	A3u Op. agency	120	A3b Adm. resp.	A	BR16 Value of type C8b		BR17 Reason for C8c/C8e absent	
12.205	G	12.697	G	C2d Assigned frequency									

A13 Ref. to Special Sections	1 APL/A/	C7a Design. of emission	1 300KXGD--	C8a1/C8b1 Max. peak pwr	-49.8	C8a2/C8b2 Max. pwr dens.	5	C8c1 Min. peak pwr	-49.8	C8c2 Min. pwr dens.	11	C8c C/N ratio	
------------------------------	----------	-------------------------	-------------	-------------------------	-------	--------------------------	---	--------------------	-------	---------------------	----	---------------	--

C10b1 Assoc. earth station name	C10b4 City	C10b3 Type	C10b5 Geographical coord.	C10c1a/C10c1b Cts. / Nat.	C10c2 Max. iso. gain	C10c3 Bmwidth	C10c4a Ref. pattern	C10c4b Rad. diag.	C10c5 Noise temp.	C10c4c Coef A	C10c4c Coef B	C10c4c Coef C	C10c4c Coef D	Phil
	RAPID CITY TTC	USA	S	103 W 20 11 44 N 11 17	1 TK 2 TR	OT 62.5	0.13	REC-580		160				

Findings	2D Date		/3A Conformity with RR		/3B1 Provision		/3B2 Remarks		/3B3 Date of Review	
/3C Remarks										

B1a/B1b Beam designation	TIM	B2 Emi-Rep	E	B3d/BR3b/BR3b2a Max. ant. gain	35.6	B3d Pointing accuracy	0.1
BR3a2/BR3b2b Ant. gain cont. diag.	4	BR3f Ant. gain vs orbit long. diag.					
BR3e1 Rad. diag.		BR3e2 Ref. pat.		BR3e3 Coef. A		BR3e4 Coef. B	
BR7a/BR7b Group id. 9 BR14 Special Section							

## SECTION SPECIALE / SPECIAL SECTION / SECCION ESPECIAL

A Space station USABSS-17A/f Notifying adm. USABR/ Date of receipt           BR20/BR21 IFTC no./part /           BR6d/BR6b Id. no. 2BR3d/BR3b Provision reference 59.6 CBR2 Adm. serial no.           TLM E

C4a Class of station

ER EK

C3a Assigned freq. band 300

C4b Nature of service

OT OT

C6a Polarization type LC6b Polarization angle 90C8d/C8g Max. pwr -27.6

C1/a1 Service area no.

C1/a2 Service area USAC1/a3 Service area diagram           

A5/A6 Coordination

A2a Date of bringing into use 29.12.2003A2b Period of valid. 20A3a Op. agency 120A3b Adm. resp. ABR/6 Value of type C8b           BR/7 Reason for C8e/C8e absent           

12.205

G

G

C2a Assigned frequency

C2a Assigned frequency

C2a Assigned frequency

C2a Assigned frequency

A/3

Ref. to Special Sections

1 300KGXD--

C7a

C8a1/C8b1

C8a2/C8b2

C8c1

C8c2

C8e

1

Design. of emission

Max. peak pwr

Max. pwr dens.

Min. peak pwr

Min. pwr dens.

C/N ratio

C/N ratio

C/N ratio

C10b1

C10b4

C10b3

C10b5

C10c1a/C10c1b

C10c2

C10c3

C10c4a

C10c4b

Assoc. earth station name

C10b4

C10b3

C10b5

C10c1a/C10c1b

C10c2

C10c3

C10c4a

C10c4b

RAPID CITY TTC

USA

S

103 W 20 11 44 N 11 17

1 TR

OT

62.5

0.13

REC-580

Findings

2D Date           13A Conformity with RR           13B1 Provision           13B2 Remarks           13B3 Date of Review           13C Remarks           

dd2900@gmail.com