

READ INSTRUCTIONS CAREFULLY  
BEFORE PROCEEDING  
  
(1) LOCKBOX # 358210

FEDERAL COMMUNICATIONS COMMISSION  
**REMITTANCE ADVISE**  
PAGE NO. 1 OF \_\_\_\_\_

APPROVED BY OMB 3060-0589  
SPECIAL USE **SEP 28 1998**  
FCC USE ONLY

**SECTION A - PAYER INFORMATION**

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

(3) TOTAL AMOUNT PAID (dollars and cents)  
\$ **1,280.00**

(4) STREET ADDRESS LINE NO. 1  
**One Pickwick Plaza**

(5) STREET ADDRESS LINE NO. 2

(6) CITY **Greenwich** (7) STATE **CT** (8) ZIP CODE **06830**

(9) DAYTIME TELEPHONE NUMBER (include area code) **(203) 622-6664** (10) COUNTRY CODE (if not in U.S.A.)

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

**SECTION B - APPLICANT INFORMATION**

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

(12) STREET ADDRESS LINE NO. 1  
**SAT-MOD 19980928-00098**

(13) STREET ADDRESS LINE NO. 2

(14) CITY (15) STATE (16) ZIP CODE

(17) DAYTIME TELEPHONE NUMBER (include area code) (18) COUNTRY CODE (if not in U.S.A.)

COMPLETE SECTION C FOR EACH SERVICE, IF MORE BOXES ARE NEEDED, USE CONTINUATION SHEETS (FORM 159-C)

**SECTION C - PAYMENT INFORMATION**

(19A) FCC CALL SIGN/OTHER ID	(20A) PAYMENT TYPE CODE (PTC)	(21A) QUANTITY	(22A) FEE DUE FOR (PTC) IN BLOCK 20A	FCC USE ONLY
PAS-5	C W Y	1	\$ 1,280.00	
(23A) FCC CODE 1			(24A) FCC CODE 2	
(19B) FCC CALL SIGN/OTHER ID	(20B) PAYMENT TYPE CODE (PTC)	(21B) QUANTITY	(22B) FEE DUE FOR (PTC) IN BLOCK 20B	FCC USE ONLY
(23B) FCC CODE 1			(24B) FCC CODE 2	
(19C) FCC CALL SIGN/OTHER ID	(20C) PAYMENT TYPE CODE (PTC)	(21C) QUANTITY	(22C) FEE DUE FOR (PTC) IN BLOCK 20C	FCC USE ONLY
(23C) FCC CODE 1			(24C) FCC CODE 2	
(19D) FCC CALL SIGN/OTHER ID	(20D) PAYMENT TYPE CODE (PTC)	(21D) QUANTITY	(22D) FEE DUE FOR (PTC) IN BLOCK 20D	FCC USE ONLY
(23D) FCC CODE 1			(24D) FCC CODE 2	

**SECTION D - TAXPAYER INFORMATION (REQUIRED)**

(25) PAYER TIN **061369810** (25) COMPLETE THIS BLOCK ONLY IF APPLICANT NAME IN B-11 IS DIFFERENT FROM PAYER NAME IN A-3  
APPLICANT TIN

**SECTION E - CERTIFICATION**

(27) CERTIFICATION STATEMENT  
I, \_\_\_\_\_, Certify under penalty of perjury that the foregoing and supporting information  
(PRINT NAME)  
are true and correct to the best of my knowledge, information and belief. SIGNATURE \_\_\_\_\_

**SECTION F - CREDIT CARD PAYMENT INFORMATION**

(28) MASTERCARD/VISA ACCOUNT NUMBER: \_\_\_\_\_ EXPIRATION DATE: \_\_\_\_\_  
MONTH YEAR

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

**FCC 312**  
Main Form

**FEDERAL COMMUNICATIONS COMMISSION**  
**APPLICATION FOR SATELLITE SPACE AND EARTH STATION AUTHORIZATIONS**

Approved by OMB  
3060-0678  
Est. Avg. Burden Hours  
Per Response: 10 Hrs.

FCC Use Only  
File Number:  
Call Sign:

**PAYOR AND FILING FEE INFORMATION**

a. Payor Name PanAmSat Corporation		b. Daytime Telephone Number (203) 622-6664	
c. Mailing Street Address or P.O. Box One Pickwick Plaza		d. FCC Account Number 0954607698	
e. City Greenwich	f. State CT	g. Zip Code 06830	h. Country Code (if not U.S.A.)
i. Payment Type Code CWY	j. Quantity 1	k. Fee Due for Payment Type Code in (i) \$1,280.00	l. Total Amount Paid \$1,280.00
m. FCC Use Only		n. FCC Use Only	

**APPLICANT INFORMATION**

1. Legal Name of Applicant PanAmSat Licensee Corp.	2. Voice Telephone Number (203) 622-6664
3. Other Name Used for Doing Business (if any)	4. Fax Telephone Number (203) 622-9163
5. Mailing Street Address or P.O. Box One Pickwick Plaza	6. City Greenwich
ATTENTION: Joseph A. Godles	7. State / Country (if not U.S.A.) CT
9. Name of Contact Representative (if other than applicant) Goldberg, Godles, Wiener & Wright	8. Zip Code 06830
11. Firm or Company Name Goldberg, Godles, Wiener & Wright	10. Voice Telephone Number (202) 429-4900
13. Mailing Street Address or P.O. Box 1229 19th Street, N.W.	12. Fax Telephone Number (202) 429-4912
ATTENTION:	14. City Washington
	15. State / Country (if not U.S.A.) D.C.
	16. Zip Code 20036

**CLASSIFICATION OF FILING**

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

<input type="checkbox"/> a1. Earth Station	<input type="checkbox"/> b1. Application for License of New Station	<input type="checkbox"/> b4. Modification of License or Registration
<input checked="" type="checkbox"/> a2. Space Station	<input type="checkbox"/> b2. Application for Registration of New Domestic Receive-Only Station	<input type="checkbox"/> b5. Assignment of License or Registration
	<input checked="" type="checkbox"/> b3. Amendment to a Pending Application	<input type="checkbox"/> b6. Transfer of Control of License or Registration
19. If this filing is an amendment to a pending application, enter: (a) Date pending application was filed: 11/08/90 (b) File number of pending application: CSS-91-004		

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

**TYPE OF SERVICE**

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

- a. Fixed Satellite  b. Mobile Satellite  c. Radiodetermination Satellite  d. Earth Exploration Satellite  e. Other (please specify)
21. STATUS: Place an "X" in the box next to the applicable status. Mark only one box.
- a. Common Carrier  b. Non-Common Carrier  a. Using U.S. licensed satellites  b. Using Non-U.S. licensed satellites N/A

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

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

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

- a. C-Band (4/6 GHz)  b. Ku-Band (12/14 GHz)  c. Other (Please specify)

**TYPE OF STATION**

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

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

If space station applicant, go to Question 27.

25. TYPE OF EARTH STATION FACILITY Mark only one box.

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

**PURPOSE OF MODIFICATION OR AMENDMENT**

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

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

**ENVIRONMENTAL POLICY**

27. Would a Commission grant of any proposal in this application of amendment have a significant environmental impact as defined by 47 CFR 1.1307? If YES, submit the statement as required by Sections 1.1308 and 1.1311 of the Commission's rules, 47 C.F.R. §§ 1.1308 and 1.1311, as Exhibit A to this application. A Radiation Hazard Study must accompany all applications as Exhibit B for new transmitting facilities, major modifications, or major amendments. Refer to OET Bulletin 65.

- YES  NO

**ALIEN OWNERSHIP**

29. Is the applicant a foreign government or the representative of any foreign government?	<input type="checkbox"/> YES	<input checked="" type="checkbox"/> NO
30. Is the applicant an alien or the representative of an alien?	<input type="checkbox"/> YES	<input checked="" type="checkbox"/> NO
31. Is the applicant a corporation organized under the laws of any foreign government?	<input type="checkbox"/> YES	<input checked="" type="checkbox"/> NO
32. Is the applicant a corporation of which more than one-fifth of the capital stock is owned or voted by aliens or their representatives or by a foreign government or representative thereof or by any corporation organized under the laws of a foreign country?	<input type="checkbox"/> YES	<input checked="" type="checkbox"/> NO
33. Is the applicant a corporation directly or indirectly controlled by any other corporation of which more than one-fourth of the capital stock is owned or voted by aliens, their representatives, or by a foreign government or representative thereof or by any corporation organized under the laws of a foreign country?	<input type="checkbox"/> YES	<input checked="" type="checkbox"/> NO
34. If any answer to questions 29, 30, 31, 32 and/or 33 is Yes, attach as Exhibit C an identification of the aliens or foreign entities, their nationality, their relationship to the applicant, and the percentage of stock they own or vote.	N/A	

**BASIC QUALIFICATIONS**

35. Does the applicant request any waivers or exemptions from any of the Commission's Rules? If Yes, attach as Exhibit D, copies of the requests for waivers or exceptions with supporting documents.	<input type="checkbox"/> YES	<input checked="" type="checkbox"/> NO
36. Has the applicant or any party to this application had any FCC station authorization or license revoked or had any application for an initial, modification or renewal of FCC station authorization, license, or construction permit denied by the Commission? If Yes, attach as Exhibit E, an explanation of the circumstances.	<input type="checkbox"/> YES	<input checked="" type="checkbox"/> NO
37. Has the applicant, or any party to this application, or any party directly or indirectly controlling the applicant ever been convicted of a felony by any state or federal court?	<input checked="" type="checkbox"/> YES	<input type="checkbox"/> NO
38. Has any court finally adjudged the applicant, or any person directly or indirectly controlling the applicant, guilty of unlawfully monopolizing or attempting unlawfully to monopolize radio communication, directly or indirectly, through control of manufacture or sale of radio apparatus, exclusive traffic arrangement or any other means or unfair methods of competition?	<input type="checkbox"/> YES	<input checked="" type="checkbox"/> NO
39. Is the applicant, or any person directly or indirectly controlling the applicant, currently a party in any pending matter referred to in the preceding two items?	<input type="checkbox"/> YES	<input checked="" type="checkbox"/> NO
40. By checking Yes, the undersigned certifies, that neither the applicant nor any other party to the application is subject to a denial of Federal benefits that includes FCC benefits pursuant to Section 5301 of the Anti-Drug Act of 1988, 21 U.S.C. Section 862, because of a conviction for possession or distribution of a controlled substance. See 47 CFR 1.2002(b) for the meaning of "party to the application" for these purposes.	<input checked="" type="checkbox"/> YES	<input type="checkbox"/> NO

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

Amendment of application in order to bring it into conformity with the PAS-5 Satellite as built.

**CERTIFICATION**

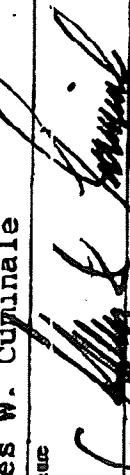
The Applicant waives any claim to the use of any particular frequency or of the electromagnetic spectrum as against the regulatory power of the United States because of the previous use of the same, whether by license or otherwise, and requests an authorization in accordance with this application. The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

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

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

43. Typed Name of Person Signing

James W. Cypriale



45. Signature

44. Title of Person Signing

Senior Vice President

46. Date

09-25-98

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

## EXHIBIT A

### FCC Form 312, Item 37

PanAmSat Licensee Corp. is a wholly-owned subsidiary of PanAmSat Corporation ("PanAmSat"). Hughes Electronics Corporation ("HE") indirectly owns over 80% of the issued and outstanding stock of PanAmSat. HE Holdings, Inc. ("HEH"), a wholly-owned subsidiary of HE formerly known as Hughes Aircraft Company, pled guilty to two felony counts in 1990. The full details of this matter are included in a Form 430 for Hughes Communications Galaxy, Inc., dated August 19, 1991.

On June 15, 1992, HEH was found guilty of one felony count with regard to the testing of microelectronics components. The full details of this matter are included in a Form 430 for Hughes Communications Galaxy, Inc., dated August 12, 1992.

As the Commission implicitly has found in granting numerous PanAmSat space station and earth station applications in the past, the conduct at issue in these two cases has no relevance to the FCC authorizations and applications of PanAmSat. HE had no ownership interest in the PanAmSat system when the conduct occurred at HEH. Moreover, conduct in these matters is wholly unrelated to the communications area and does not reflect in any way upon the FCC-related activity of PanAmSat or PanAmSat Licensee Corp., whose operations are largely independent of HEH.

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

In the Matter of Application of  
PANAMSAT LICENSEE CORP.  
Application for Authority to  
Launch and Operate a Satellite in its  
Communications Satellite System

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File No. CSS-91-004


AMENDMENT

PanAmSat Licensee Corp. ("PanAmSat") hereby amends its above-captioned application to launch a C/Ku-band hybrid satellite, PAS-5, and to operate the satellite at 194° W.L. This amendment reflects changes that PanAmSat has made to its satellite design since the time that it filed its application. In particular, and as described in the accompanying technical statement, the amendment: (1) substitutes frequencies in the 12.25-12.5 GHz band for the frequencies that PanAmSat had initially proposed in the 11.45-11.7 GHz band; and (2) reconfigures the Ku-band downlink beams to include coverage, at very low EIRPs, of the west coast of the United States and of Hawaii.

Respectfully submitted,

PANAMSAT LICENSEE CORP.

By:

  
James W. Cumahale  
Senior Vice President,  
General Counsel and Secretary

Of Counsel:

Joseph A. Godles, Esq.  
Goldberg, Godles, Wiener & Wright  
1229 19th Street, N.W.  
Washington, D.C. 20036

September 25, 1998



## TECHNICAL DISCUSSION

PAS-5 (USASAT-14H), is a PanAmSat Pacific Ocean Region (POR) satellite presently under final test at Space Systems / Loral (SS/L). When launched, the satellite will be located at 166°EL, three degrees east of PAS-4 (USASAT-14G), PanAmSat's other Pacific Ocean satellite. PAS-5 is designed to operate transponders in the two FSS frequency bands, C-Band and Ku-Band. In PanAmSat's original application for its PAS-4 and PAS-5 Pacific Ocean Region (POR) satellites, it was contemplated to use the band 11.45-11.7GHz to provide service to Pacific Rim nations. Subsequently when the ITU AP4 and AP3 documentation was filed for both PAS-4 and PAS-5, the 11.45-11.7GHz band was dropped and the 12.25-12.5GHz band was substituted. This amendment implements that substitution. The reason for the change was that it was discovered that the 11.45-11.7GHz band was widely used for terrestrial distribution of digital microwave in many Pacific Rim countries. The 12.25-12.5GHz band on the other hand was unused terrestrially and was in fact widely used throughout the Pacific Rim (specifically in Australia, Japan and China) for satellite distribution. Thus to avoid terrestrial interference to our earth stations and for the common use of receiving equipment to lower costs for its users, PanAmSat has changed frequencies. In addition to the reasons cited above, since PanAmSat had already planned the use of the 12.5-12.75GHz band, the fact that this new band was contiguous, led to additional savings such as having only a single conversion frequency within the satellite receivers from the 14.0-14.5GHz receive frequency band.



In addition to the change in frequencies noted above, the Ku-Band beams have been expanded since the filing of PanAmSat's 1990 application to cover the US West Coast and Hawaii at very low EIRP's. This design change was actually made during the satellite's construction when certain operational difficulties were noted in the PAS-4 program. The change will ensure that the principal uplink station for PAS-5 in the US, located at PanAmSat's Napa Valley Teleport, will be capable of monitoring the Ku-Band downlink signals in the three Asian Beams to assess degradation to those signals which may have occurred because of transmission impairments, meteorological occurrences or other unplanned events.

Enlarging PAS-5's Ku-Band beams also will provide additional flexibility and cost savings for PanAmSat customers who desire to have PanAmSat retransmit their signals from the Napa Valley Teleport to other US locations or to other PanAmSat satellites.

#### Engineering Considerations

1. The principle engineering consideration in this matter is whether downlinking of the 12.25-12.75GHz band in the US from the 166°EL orbital position will cause interference to any BSS operations in the US.
2. The nearest BSS satellite assignment to the PAS-5 166°EL orbital slot which is registered to cover the US, is located at the 175.2°WL orbital position. This slot is separated from the 166°EL slot by 18.8°. The BSS table is constructed so that

satellites using the same bands with the same coverage area should be separated by at least  $9^\circ$  in orbit to avoid interference if they operated at the same EIRP. Thus the spacing from a PAS-5 satellite in its assigned location of  $166^\circ\text{EL}$  would be approximately double the standard spacing.

3. For the purpose of this analysis, we will assume that the EIRP of the  $175.2^\circ\text{WL}$  DBS satellite is 50dBW toward the US West Coast. This is generally considered to be the minimum EIRP required in Southern California in order to meet the link availability objective for DBS service when using standard 46cm DBS terminals. Virtually all US DBS terminals in use today employ offset fed, prime focus antennas, with an aperture efficiency of 70-75% and sidelobe performance that exceeds the usual  $[29 - 25 \log(\theta)]$  requirement by several dB. There is every reason to believe that any future BDS spacecraft deployed at  $175.2^\circ\text{WL}$  would employ antennas with similar or improved performance characteristics and that the EIRP of such a spacecraft toward the US West Coast would be at least 50dBW. The maximum EIRP of the PAS-5 satellite coverage for the West Coast sidelobe coverage is approximately 14.5 down from the maximum beam EIRP. The most powerful beam on the PAS-5 satellite is the SE Asia beam with an estimated beam center EIRP of 56dBW with the value over the US West Coast estimated at 41.5dBW. Assuming a home DBS antenna of 46cm diameter in California with an offset feed, and an aperture efficiency of 70-75% and sidelobe performance of the usual  $[29-25 \text{ Log}(\theta)]$ , the following equation is used to determine the C/I that results from a maximum power PAS-5 transmission:

$$(C/I) = [EIRP_{\text{WANTED}} + G_{\text{WANTED}}] - [EIRP_{\text{INTF}} + 29 - 25 \log(\theta)]$$

where

$EIRP_{WANTED}$  = EIRP of 175.2° satellite towards California

$G_{WANTED}$  = gain of 45cm DBS antenna

$EIRP_{INTF}$  = 41.5dBW maximum EIRP of PAS-5 in California

$(\theta)$  = 18.8° angular separation between PAS-5 and 175.2° satellite

Thus

$$(C/I) = [50 + 34] - [41.5 + 29 - 25 \log(18.8)] = 45.3\text{dB}$$

Thus the C/I resulting from the PAS-5 operation under the worst conditions is 45.3dB which is so low as to be negligible in terms of potential interference to the reception of DBS programming from a 175.2°EL BSS satellite, if one is ever operated from that location.

4. The actual coverage area of the PAS-5 satellite can be seen in Figures 1, 2 and 3. As can be seen from these maps, the US West Coast coverage of PAS-5 is minimal. Thus only a small proportion of DBS receivers would be subject to interference, even at the very low levels which have been calculated above.

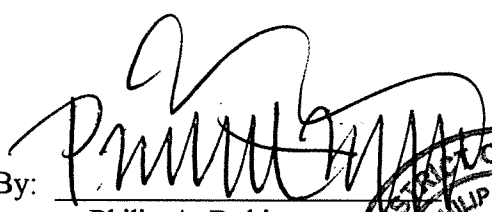
Based on the technical showing provided above, no measurable interference will occur to DBS receivers in the US from the PAS-5 use of the 12.25GHz – 12.75GHz frequencies covering parts of the US West Coast.

## ENGINEERING AFFIDAVIT

I, Philip A. Rubin, Chief Scientist of PanAmSat Corp., hereby certify that I am the technically qualified person responsible for the preparation of the technical information contained in this amendment and that I am familiar with Part 25 of the Commission's Rules and Regulations. My experience is documented in many engineering filings with the Commission.

I have reviewed all technical materials provided herein and certify that they were either prepared by me or under my direction. I further certify that the technical information submitted in this amendment is complete and accurate to the best of my knowledge.

By:

  
Philip A. Rubin  
Chief Scientist  
PanAmSat Corp.

Date:

9/24/98

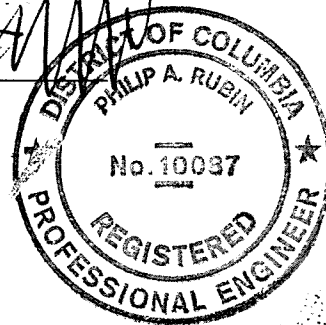
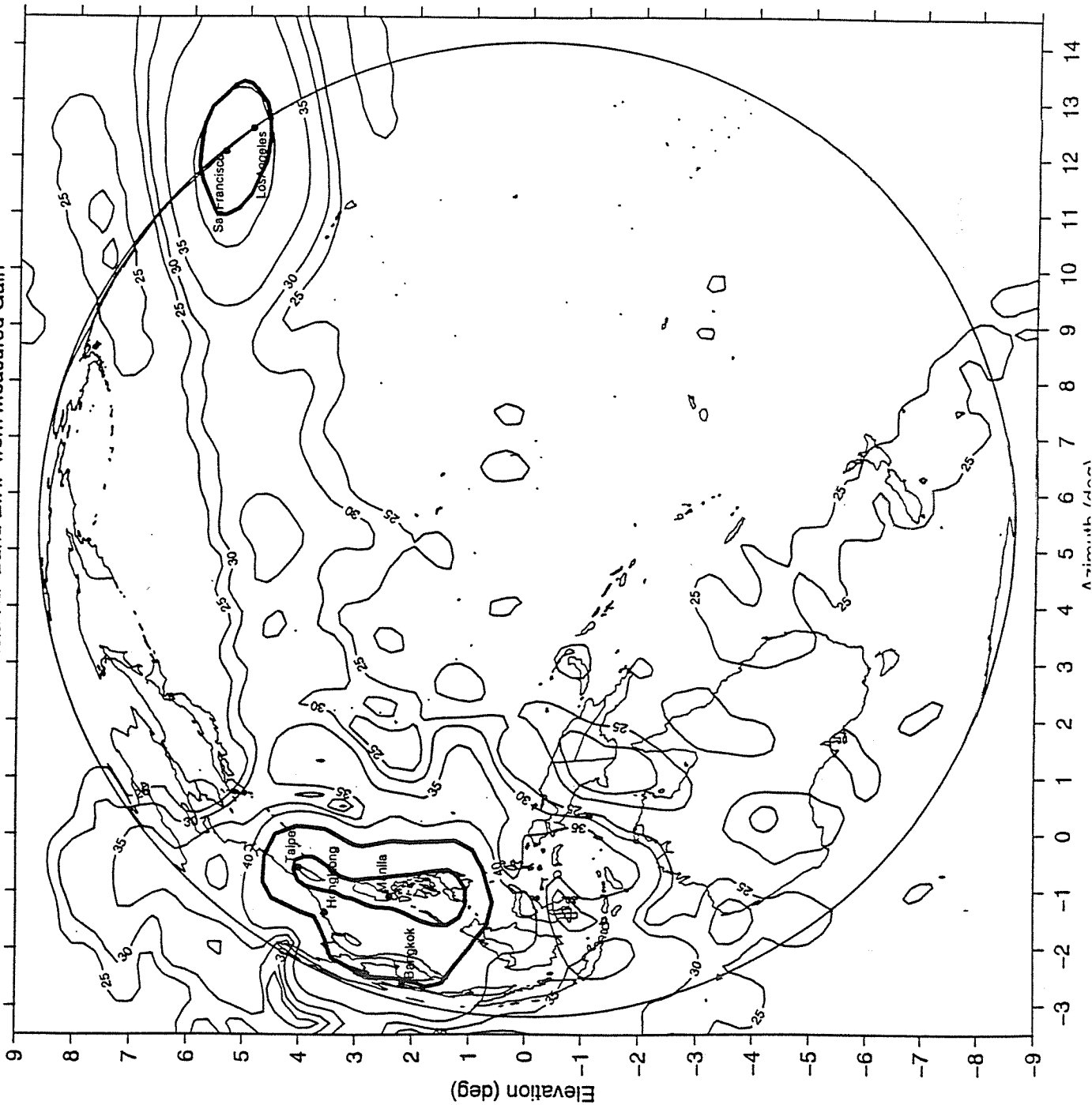


FIGURE 1

PAS-8 SE Asia Ku-Band EIRP from Measured Gain



15-May-98

Satellite Loc 166° East

Antenna : 1.8m Gregorian

Polarization: HP

Frequency : 12.500 GHz

Contours (dBW): 25, 30, 35, 40

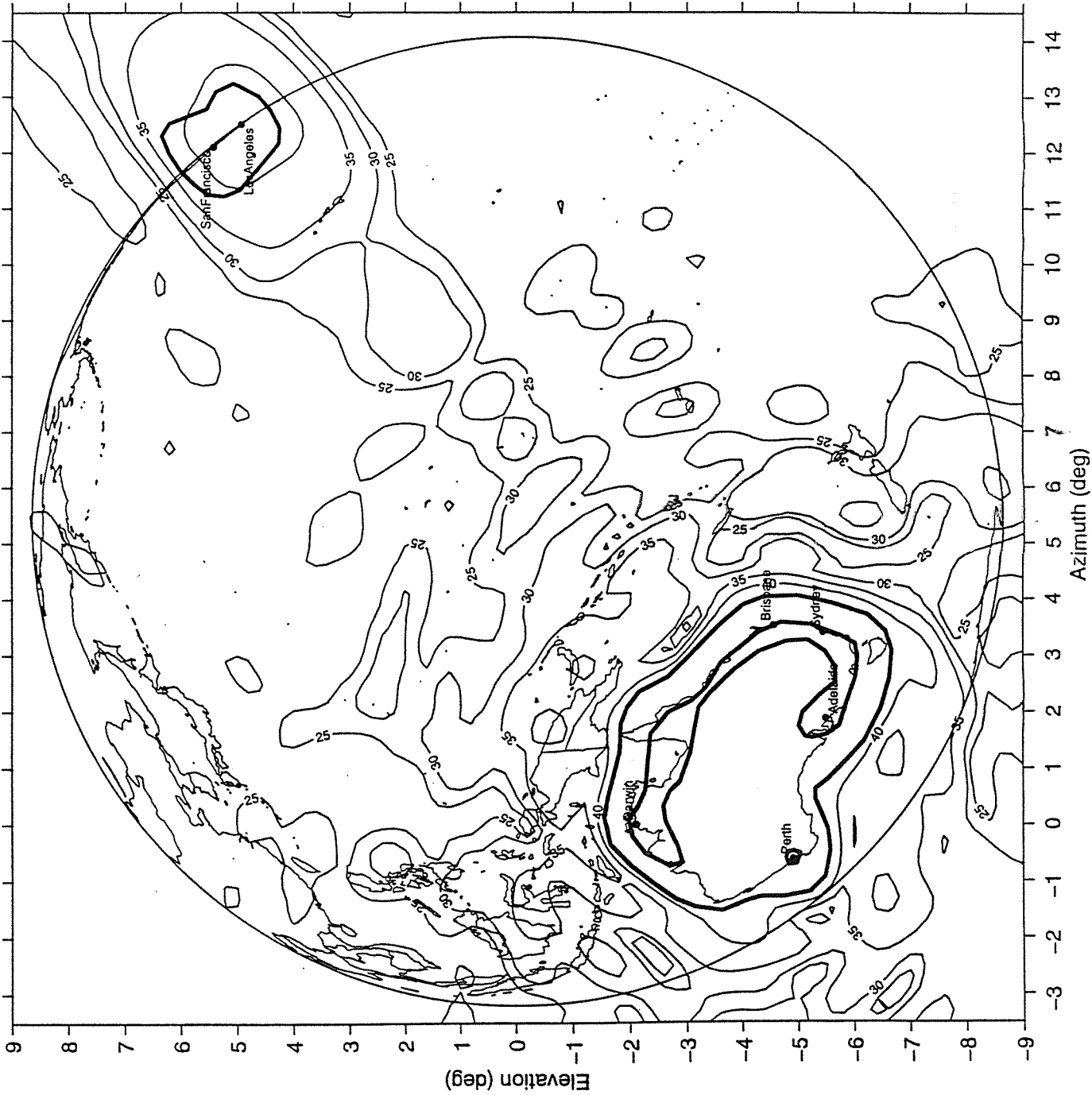
File:

~geseilg/pas8/meas/se-asia/  
11may98/12500hp.dat

Peak EIRP: 56.14 dBW

FIGURE 2

PAS-8 Australia Ku-Band EIRP from Measured Gain



14-May-98

Satellite Loc 166° East

Antenna : 1.8m Gregorian

Polarization: HP

Frequency : 12.500 GHz

Contours (dBW): 25, 30, 35, 40

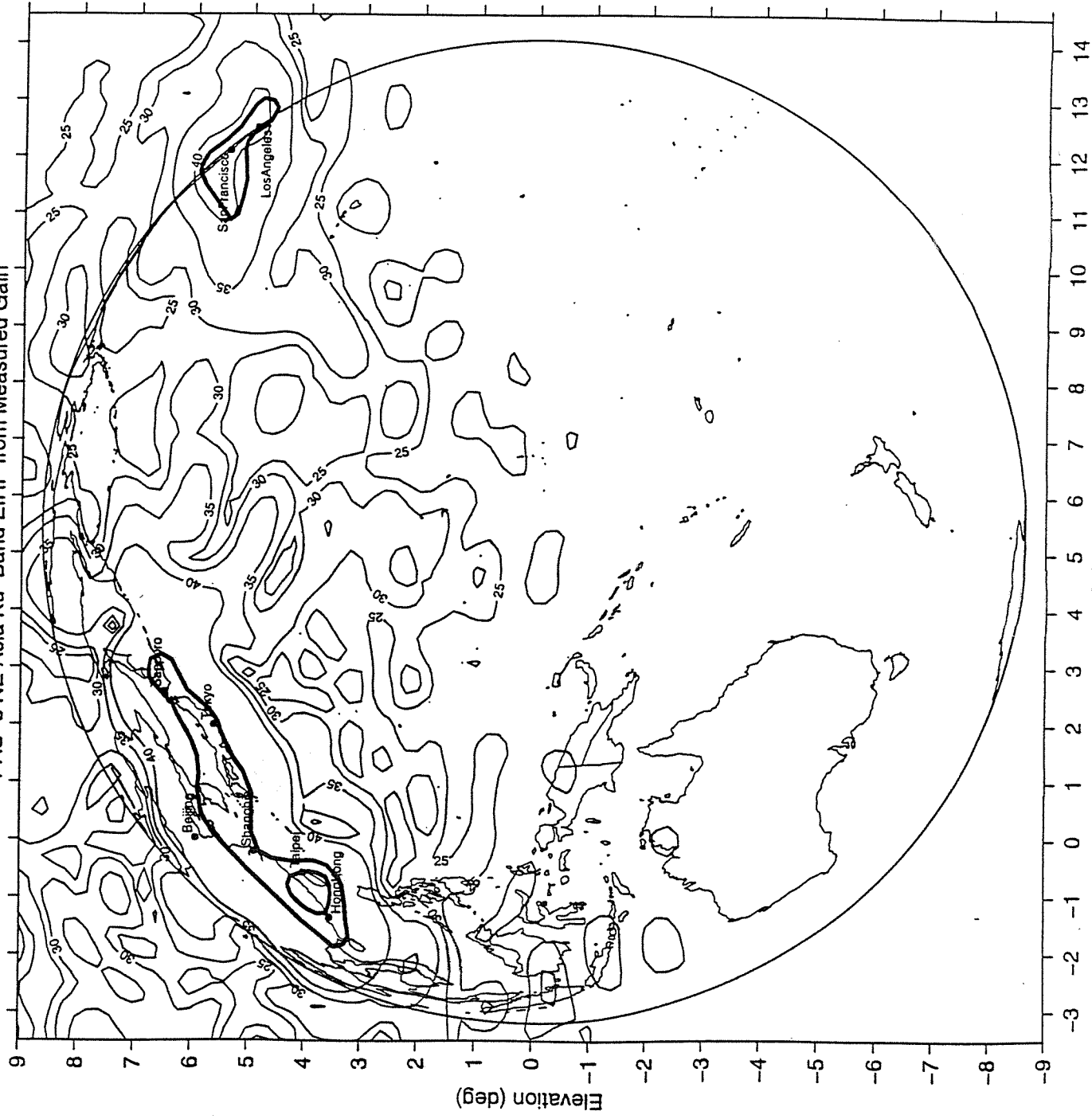
File:

-gesellg/pas8/meas/aust/  
13apr98/12500hp.dat

Peak EIRP: 51.61 dBW

FIGURE 3

PAS-8 NE Asia Ku-Band EIRP from Measured Gain



15-May-98

Satellite Loc 166° East

Antenna : 1.8m Gregorian

Polarization: VP

Frequency : 12.500 GHz

Contours (dBW): 25, 30, 35, 40

File:

~gesell/pas8/meas/ne-asia/  
27apr98/12500vp.dat

Peak EIRP: 55.39 dBW