

DUPLICATE

Before the  
FEDERAL COMMUNICATIONS COMMISSION  
Washington, DC

In the matter of )  
 )  
CHANNEL 2 BROADCASTING )  
COMPANY )  
 )  
 )  
 )

FCC FILE NO. SES-LIC-20040106-00142  
E0400600

Application for Temporary Fixed  
Earth Station Authority in the  
Domestic Fixed Satellite Service

*Int'l Bureau*  
*JUL 09 2004*  
*Front Office*

RECEIVED

JUL - 6 2004

To: Office of the Secretary  
Attention: Chief, International Bureau

FEDERAL COMMUNICATIONS COMMISSION  
OFFICE OF THE SECRETARY

RESPONSE TO PETITION TO DENY

Channel 2 Broadcasting Company ("Channel 2"), by its undersigned attorneys, hereby responds to the Petition to Deny filed by PanAmSat Corporation ("PanAmSat") with respect to the application of Channel 2 for a new transmit earth station, FCC File No. SES-LIC-20040106-00142 (the "Application"). In its Petition to Deny, PanAmSat states that because the Application specifies the use of the NorSat Newslink 3200, a transportable transmit earth station 1.0 meter in diameter, a showing that the antenna conforms to the requirements of Section 25.209 with respect to 2 degree orbital spacings is required. In addition, PanAmSat states that Channel 2 must demonstrate that it will properly align the antenna.

An engineering analysis of the antenna proposed in the Application has been undertaken comparing it to a Section 25.209 compliant antenna operated at maximum input power densities specified in Section 25.212 of the Commission's Rules. This analysis demonstrates that, when operated with a maximum input power density of -19.3 dBw/4KHz, the Norsat Newslink 3200 conforms to the 2 degree orbital spacing requirements of Section 25.209. Accordingly, an

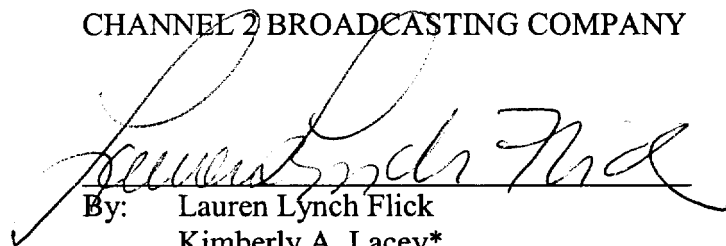
amendment to the Application is being filed simultaneously herewith specifying a maximum input power density of -19.3 dBw/4KHz. A copy of the amendment is attached as Exhibit 1 hereto. The referenced engineering analysis is made an exhibit to the amended Application.

With respect to the issue of antenna pointing, Channel 2 has received from Norsat its "Antenna Alignment Steps and Aids to Pointing." Channel 2 is the licensee of another transportable transmit earth station. Channel 2 only authorizes those of its engineers who have received specialized training in the use of such equipment to operate the equipment. At this time, there are two such individuals, and these are the only ones who will operate the Norsat NewsLink 3200 equipment. These individuals have received training on antenna pointing and are familiar with the Antenna Alignment Steps and Aids to Pointing. Accordingly, Channel 2 intends to follow appropriate procedures for antenna alignment and pointing.

Accordingly, it is respectfully submitted that the Application, as amended simultaneously herewith, demonstrates conformity to the FCC's 2 degree orbital spacing requirements and should be granted.

Respectfully submitted,

CHANNEL 2 BROADCASTING COMPANY



By: Lauren Lynch Flick  
Kimberly A. Lacey\*  
Shaw Pittman LLP  
2300 N Street, NW  
Washington, D.C. 20037  
(202) 663-8000

Its Attorneys


Dated: July 6, 2004

• Not Admitted in DC  
Supervised by Members of DC Bar

**CERTIFICATE OF SERVICE**

I, Cherie L. Mills, a secretary with the law firm of Shaw Pittman LLP, hereby certify that a copy of the foregoing "Response to Petition to Deny" was served via U.S. mail on this 6<sup>th</sup> day of July 2004, to the following:

Joseph A. Godles  
Goldberg Godles Wiener & Wright  
1229 19<sup>th</sup> Street, NW  
Washington, DC 20036

  
Cherie L. Mills  
Cherie L. Mills

**EXHIBIT 1**

# ShawPittman LLP

*A Limited Liability Partnership Including Professional Corporations*

LAUREN LYNCH FLICK  
(202) 663-8166  
lauren.lynych.flick@shawpittman.com

July 6, 2004

By Hand Delivery

Marlene H. Dortch  
Secretary  
Federal Communications Commission  
445 12th Street, SW  
Room TW-A325  
Washington, DC 20554

**Re: FCC Form 312  
Amendment to Application for New Temporary Fixed Transmit  
Earth Station  
Channel 2 Broadcasting Company  
FCC File No. SES-LIC-20040106-00142**

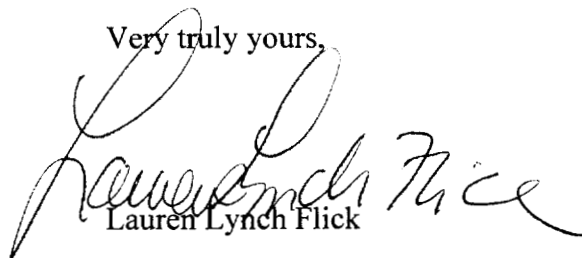
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Dear Ms. Dortch:

On behalf of Channel 2 Broadcasting Company, licensee of television station KTUU(TV), Anchorage, Alaska, submitted herewith is an amendment to the above-referenced application.

Please direct any communications regarding this matter to the undersigned.

Very truly yours,



Lauren Lynch Flick

Enclosures

Document #: 1413174 v.1

**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: 11 Hrs.

FCC Use Only

File Number:

Call Sign:

Fee Number:

**APPLICANT INFORMATION**

1. Legal Name of Applicant Zaser Longston Inc.		2. Voice Telephone Number 907-762-9202	
3. Other Name Used for Doing Business (if any) Channel 2 Broadcasting Co.		4. Fax Telephone Number 907-561-0882	
5. Mailing Street Address or P.O. Box 701 East Tudor Road Suite 220  ATTENTION:		6. City Anchorage	8. Zip Code 99503-7488
		7. State / Country (if not U.S.A.) Alaska	
9. Name of Contact Representative (if other than applicant) Leland R. Verschueren		10. Voice Telephone Number 907-762-9202	
11. Firm or Company Name Channel 2 Broadcasting Co.		12. Fax Telephone Number 907-561-0882	
13. Mailing Street Address or P.O. Box 701 East Tudor Road Suite 220  ATTENTION:		14. City Anchorage	16. Zip Code 99503-7488
		15. State / Country (if not U.S.A.) Alaska	

**CLASSIFICATION OF FILING**

17. Place an "X" in the box next to the classification that applies to this filing for both questions a. and b. Mark only one box for 17a and only one box for 17b.			
<input checked="" type="checkbox"/> a1. Earth Station	<input type="checkbox"/> b1. Application for License of New Station	<input type="checkbox"/> b6. Transfer of Control of License or Registration	
<input type="checkbox"/> a2. Space Station	<input type="checkbox"/> b2. Application for Registration of New Domestic Receive-Only Station	<input type="checkbox"/> b7. Notification of Minor Modification	
	<input checked="" type="checkbox"/> b3. Amendment to a Pending Application	<input type="checkbox"/> b8. Application for License of New Receive-Only Station Using Non-U.S. Licensed Satellite	
	<input type="checkbox"/> b4. Modification of License or Registration	<input type="checkbox"/> b9. Letter of Intent to Use Non-U.S. Licensed Satellite to Provide Service in the United States	
	<input type="checkbox"/> b5. Assignment of License or Registration	<input type="checkbox"/> b10. Other (Please Specify): _____	
18. If this filing is in reference to an existing station, enter: Call sign of station:		19. If this filing is an amendment to a pending application enter: (a) Date pending application was filed: 1/6/2004 (b) File number of pending application: SES-LIC-20040106-00142	

### 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   
  c. Radiodetermination Satellite   
  e. Direct to Home Fixed Satellite  
 b. Mobile Satellite   
  d. Earth Exploration Satellite   
  f. Digital Audio Radio Service   
  g. Other (please specify) \_\_\_\_\_

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

a. Common Carrier   
  b. Non-Common Carrier

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

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

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

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

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

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

### TYPE OF STATION

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

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

If space station applicant, go to Question 27.

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

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

### PURPOSE OF MODIFICATION OR AMENDMENT

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

a -- authorization to add new emission designator and related service  
 b -- authorization to change emission designator and related service  
 c -- authorization to increase EIRP and EIRP density  
 d -- authorization to replace antenna  
 e -- authorization to add antenna  
 f -- authorization to relocate fixed station  
 g -- authorization to change assigned frequency(ies)  
 h -- authorization to add Points of Communication (satellites & countries)  
 i -- authorization to change Points of Communication (satellites & countries)  
 j -- authorization for facilities for which environmental assessment and radiation hazard reporting is required  
 k -- Other (Please Specify) Items B5(g), B5(h), B7(f), B7(g), B8

### ENVIRONMENTAL POLICY

28. Would a Commission grant of any proposal in this application or amendment have a significant environmental impact as defined by 47 CFR 1.1307?  YES  NO

If YES, submit the statement as required by Sections 1.1308 and 1.1311 of the Commission's rules, 47 C.F.R. §§ 1.1308 and 1.1311, as an exhibit to this application.

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

### ALIEN OWNERSHIP

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

### BASIC QUALIFICATIONS

35. Does the applicant request any waivers or exemptions from any of the Commission's Rules? If Yes, attach as an exhibit, copies of the requests for waivers or exceptions with supporting documents.	<input type="checkbox"/> YES	<input checked="" type="checkbox"/> NO
36. Has the applicant or any party to this application had any FCC station authorization or license revoked or had any application for an initial, modification or renewal of FCC station authorization, license, or construction permit denied by the Commission? If Yes, attach as an exhibit, an explanation of the circumstances.	<input 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? If Yes, attach as an exhibit, an explanation of the circumstances.	<input type="checkbox"/> YES	<input checked="" type="checkbox"/> NO
38. Has any court finally adjudged the applicant, or any person directly or indirectly controlling the applicant, guilty of unlawfully monopolizing or attempting unlawfully to monopolize radio communication, directly or indirectly, through control of manufacture or sale of radio apparatus, exclusive traffic arrangement or any other means or unfair methods of competition? If Yes, attach as an exhibit, an explanation of the circumstances.	<input type="checkbox"/> YES	<input checked="" type="checkbox"/> NO
39. Is the applicant, or any person directly or indirectly controlling the applicant, currently a party in any pending matter referred to in the preceding two items? If Yes, attach as an exhibit, an explanation of the circumstances.	<input type="checkbox"/> YES	<input checked="" type="checkbox"/> NO
40. If the applicant is a corporation and is applying for a space station license, attach as an exhibit the names, addresses, and citizenship of those stockholders owning of record and/or voting 10 percent or more of the Filer's voting stock and the percentages so held. In the case of fiduciary control, indicate the beneficiary(ies) or class of beneficiaries. Also list the names and addresses of the officers and directors of the Filer.		
41. By checking Yes, the undersigned certifies, that neither the applicant nor any other party to the application is subject to a denial of Federal benefits that includes FCC benefits pursuant to Section 5301 of the Anti-Drug Act of 1988, 21 U.S.C. Section 862, because of a conviction for possession or distribution of a controlled substance. See 47 CFR 1.2002(b) for the meaning of "party to the application" for these purposes.	<input type="checkbox"/> YES	<input checked="" type="checkbox"/> NO
42a. Does the applicant intend to use a non-U.S. licensed satellite to provide service in the United States? If yes, answer 42b and attach an exhibit providing the information specified in 47 C.F.R. § 25.137, as appropriate. If no, proceed to question 43.	<input type="checkbox"/> YES	<input checked="" type="checkbox"/> NO
42b. What administration has licensed or is in the process of licensing the space station? If no license will be issued, what administration has coordinated or is in the process of coordinating the space station? _____		



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

Portable Satellite News Gathering (SNG) equipment. Providing uplink services utilizing Digital Video Broadcasting.

Exhibit No.	Identify all exhibits that are attached to this application.
1	Schedule B, Item B8 Technical Specifications for two degree spacing
2	Antenna Alignment Steps and Aids to Pointing
3	RFR Exhibit

**CERTIFICATION**

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

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

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

45. Typed Name of Person Signing

Cora V. Zaser

46. Title of Person Signing

Secretary

47. Signature

*CZaser*

48. Date

7/6/04

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









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

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

B8. If the proposed antenna(s) operate in the Fixed Satellite Service (FSS) with <b>geostationary</b> satellites, do(es) the proposed antenna(s) comply with the antenna gain patterns specified in Section 25.209(a) and (b) as demonstrated by the manufacturer's qualification measurements? If NO, provide as an exhibit, a technical analysis showing compliance with two-degree spacing policy.	<input type="checkbox"/> YES	<input checked="" type="checkbox"/> NO												
B9. If the proposed antenna(s) do not operate in the Fixed Satellite Service (FSS), or if they operate in the Fixed Satellite Service (FSS) with <b>non-geostationary</b> satellites, do(es) the proposed antenna(s) comply with the antenna gain patterns specified in Section 25.209(a2) and (b) as demonstrated by the manufacturer's qualification measurements?	<input type="checkbox"/> YES	<input type="checkbox"/> NO												
B10. Is the facility operated by remote control? If YES, provide the location and telephone number of the control point.	<input type="checkbox"/> YES	<input checked="" type="checkbox"/> NO												
<b>Remote Control Point Location:</b>														
<table border="1" style="width: 100%; border-collapse: collapse;"> <tr> <td colspan="4" style="padding: 2px;">B10a. Street Address</td> </tr> <tr> <td style="padding: 2px;">B10b. City</td> <td style="padding: 2px;">B10c. Country</td> <td style="padding: 2px;">B10d. State / Country</td> <td style="padding: 2px;">B10e. Zip Code</td> </tr> <tr> <td style="padding: 2px;">B10f. Telephone Number</td> <td colspan="3" style="padding: 2px;">B10g. Call Sign of Control Station (if appropriate)</td> </tr> </table>			B10a. Street Address				B10b. City	B10c. Country	B10d. State / Country	B10e. Zip Code	B10f. Telephone Number	B10g. Call Sign of Control Station (if appropriate)		
B10a. Street Address														
B10b. City	B10c. Country	B10d. State / Country	B10e. Zip Code											
B10f. Telephone Number	B10g. Call Sign of Control Station (if appropriate)													
B11. Is frequency coordination required? If YES, attach a frequency coordination report as an exhibit.	<input type="checkbox"/> YES	<input checked="" type="checkbox"/> NO												
B12. Is coordination with another country required? If YES, attach the name of the country(ies) and plot of coordination contours as an exhibit.	<input type="checkbox"/> YES	<input type="checkbox"/> NO												
B13. <b>FAA Notification - (See 47 CFR Part 17 and 47 CFR Part 25.113(c))</b> Where FAA notification is required, have you attached a copy of a completed FCC Form 854 and/or the FAA's study regarding the potential hazard of the structure to aviation? <b>FAILURE TO COMPLY WITH 47 CFR PARTS 17 AND 25 WILL RESULT IN THE RETURN OF THIS APPLICATION.</b>	<input type="checkbox"/> YES	<input type="checkbox"/> NO												

Amendment to FCC Form 312  
Channel 2 Broadcasting Co.  
FCC File NO. SES-LIC-20040106-00142

EXHIBIT 1  
Schedule B, Item B8

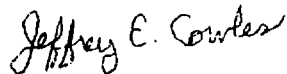
## ANTENNA STATEMENT

The attached Table 2 presents the actual off-axis EIRP density compared to FCC Part 25, Rules 25.209 and 25.212. For all angles starting at 1.25° the EIRP density meets the required specifications.

I have prepared the attached off-axis EIRP calculation table. Channel 2 Broadcasting is using a 1.0 meter Norsat antenna. The RF power density is  $-19.3$  dBW/4 kHz. The antenna sidelobe patterns for 14.0 GHz, 14.25 GHz, and 14.5 GHz for  $\pm 9$  degrees offset angles are also attached. The worst case off-axis antenna gain occurs at 14.25 GHz at 1.25 degrees, where the antenna gain is 5.22 dB greater than allowed by FCC rule 25.209. The RF power is 5.3 dB below the limits of 25.212, resulting in an off-axis EIRP which meets FCC requirements at all angles.

Under these operating conditions, this application will comply with the FCC's small diameter antenna two degree spacing rules.

### Comsearch



Jeffrey E. Cowles  
Principal Frequency Planner

July 6, 2004



Amendment to FCC Form 312  
Channel 2 Broadcasting Co.  
FCC File NO. SES-LIC-20040106-00142

EXHIBIT 1  
Schedule B, Item B8  
Table 1

GAIN: 42.0 dB

Horizontal Polarisation

Elevation cut  $\phi^\circ$  = 0

Frequency = 14.0 GHz

dB Scale = 40 dB

Angular scale =  $\pm 9^\circ$

Pattern No. = 16

REF: 15425 REF: 15425

RELATIVE POWER (db)

29-25 (Log  $\theta$ )

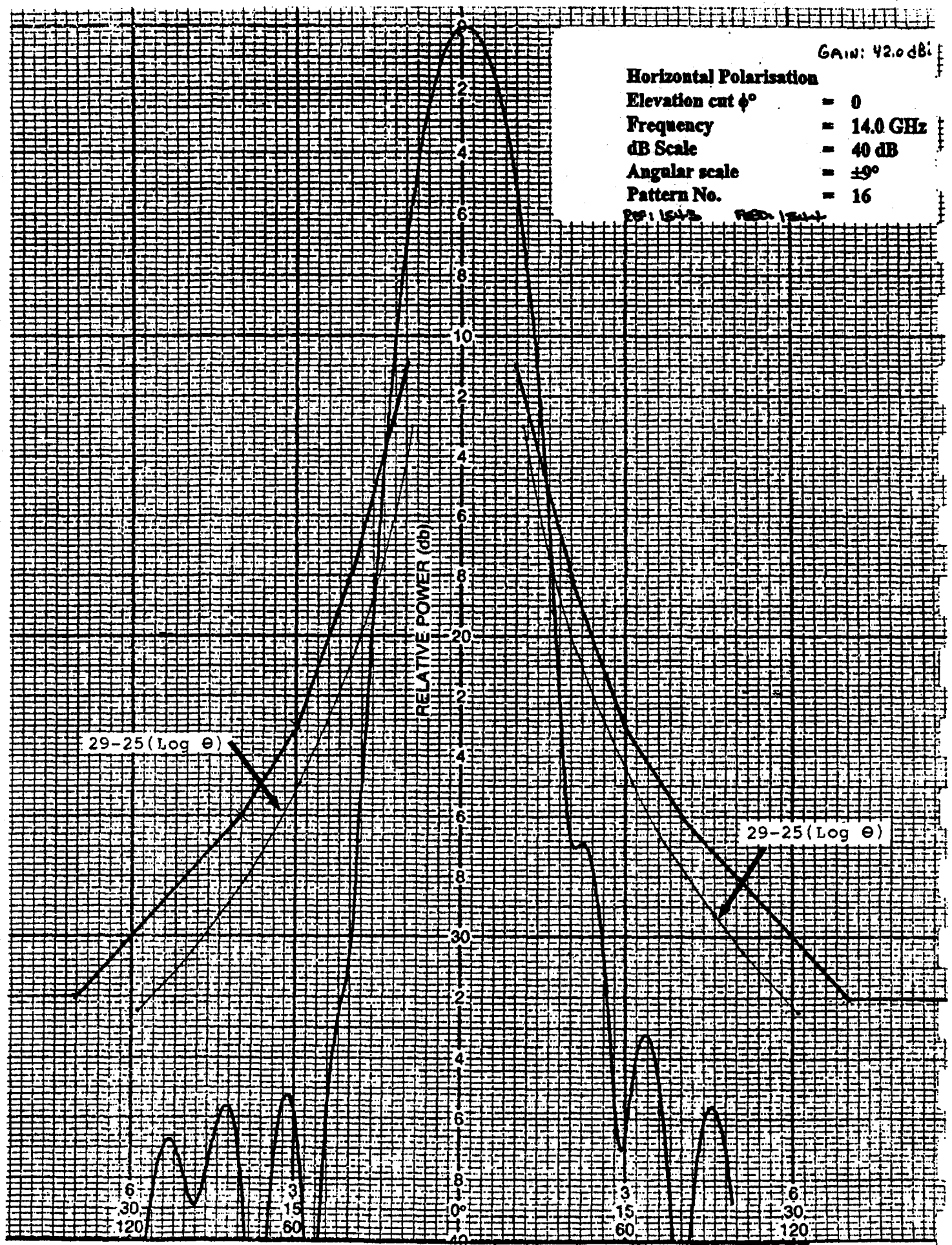
29-25 (Log  $\theta$ )

6  
30  
120

3  
15  
60

3  
15  
60

6  
30  
120



GAIN: 42.0 dB

Vertical Polarisation  
 Azimuth cut  $\phi^\circ$  = 90  
 Frequency = 14.0 GHz  
 dB Scale = 40 dB  
 Angular scale =  $\pm 9^\circ$   
 Pattern No. = 3  
 Ref: 1543 Feb: 1544

RELATIVE POWER (db)

29-25 (Log  $\Theta$ )

29-25 (Log  $\Theta$ )

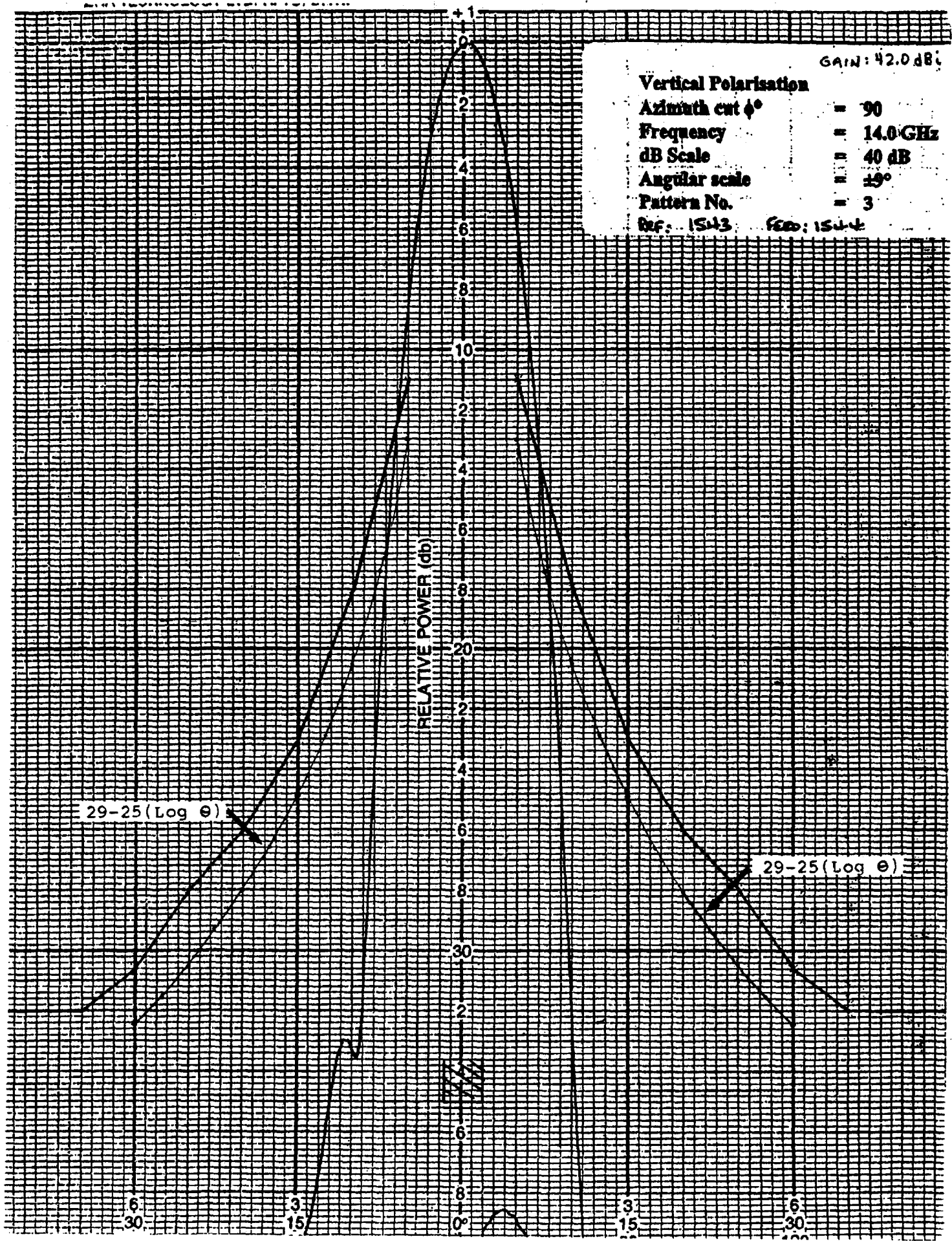
6  
30

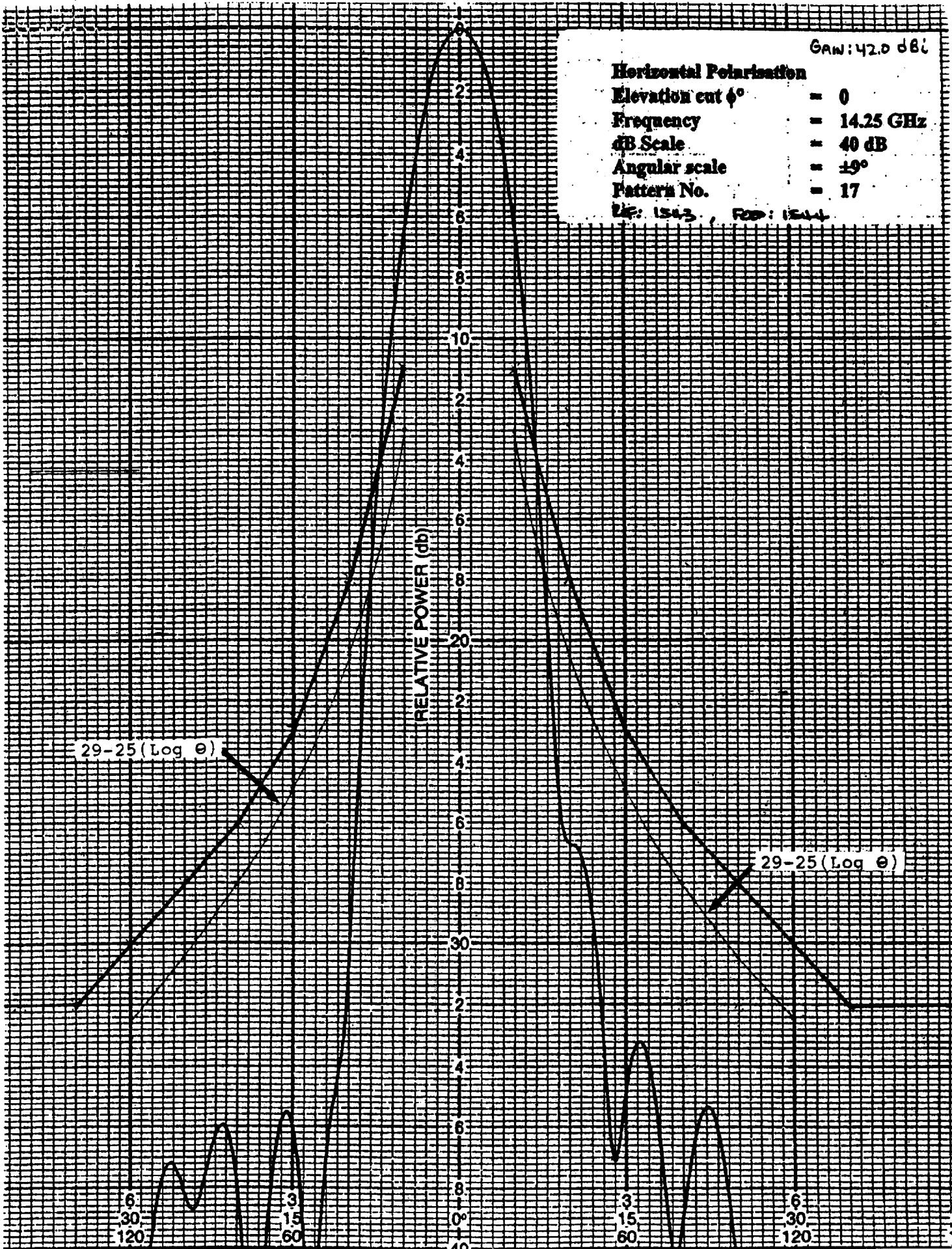
3  
15

3  
15

6  
30

0°  
6  
8





GAIN: 42.0 dBi

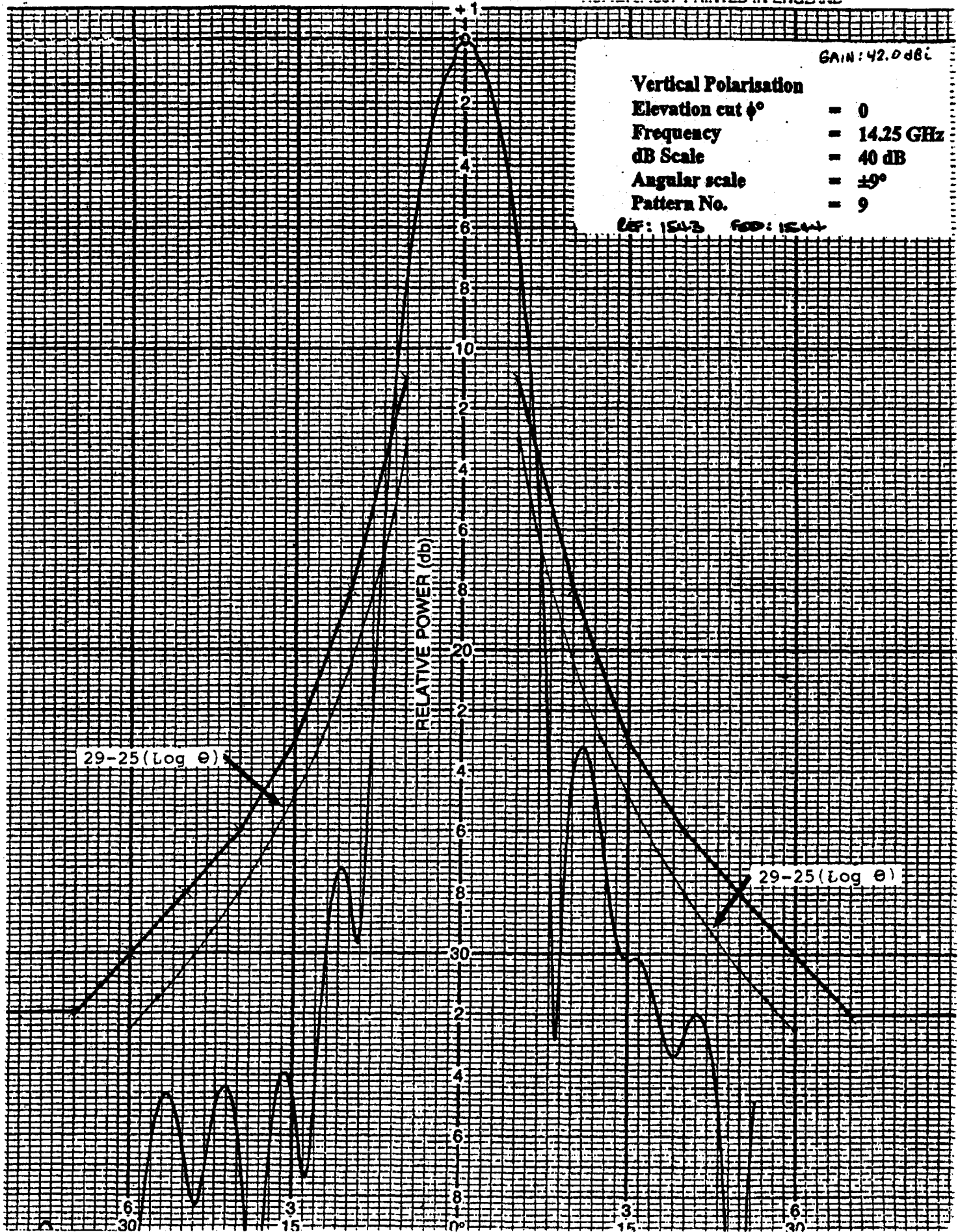
Vertical Polarisation  
Elevation cut  $\phi^\circ$  = 0  
Frequency = 14.25 GHz  
dB Scale = 40 dB  
Angular scale =  $\pm 9^\circ$   
Pattern No. = 9

REF: 15W3 FOD: 15W4

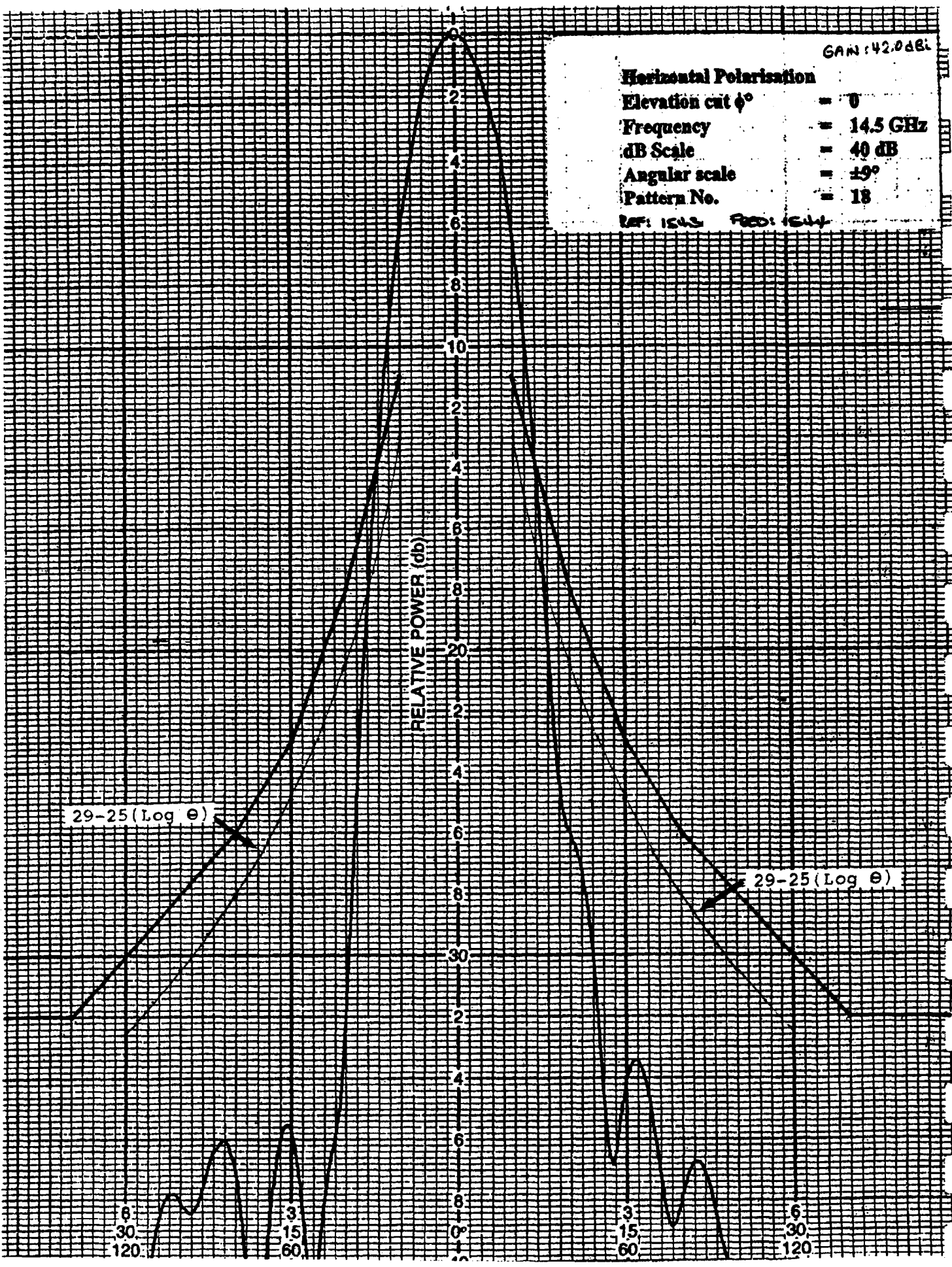
RELATIVE POWER (db)

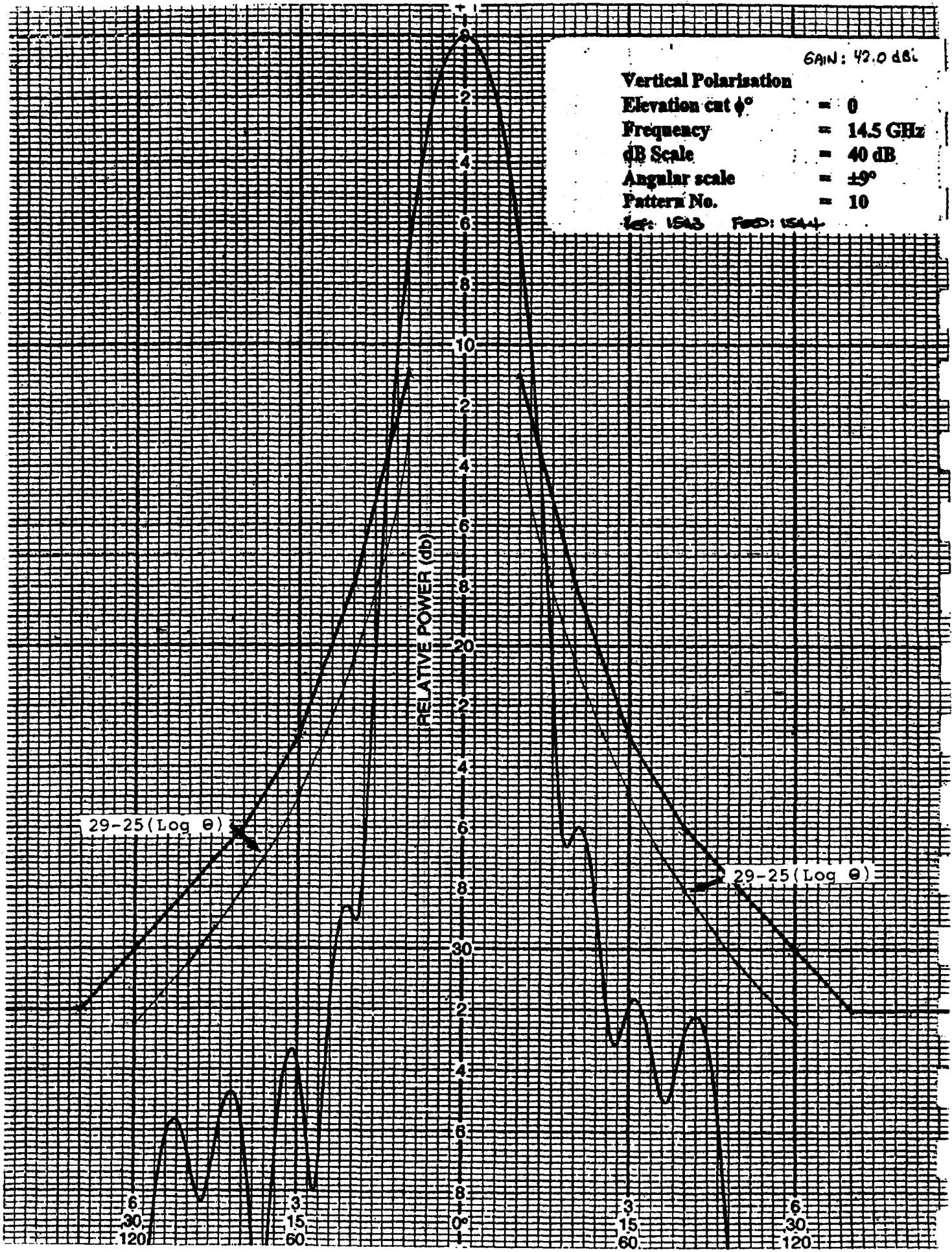
29-25 (Log  $\theta$ )

29-25 (Log  $\theta$ )









Amendment to FCC Form 312  
Channel 2 Broadcasting Co.  
FCC File NO. SES-LIC-20040106-00142

EXHIBIT 1  
Schedule B, Item B8  
Table 2



Data in support of claim that proposed operation meets off-axis criteria of 1986 Declaratory Order

Applicant: Channel 2 Broadcasting

Date of Application: 01/06/04

a1 Antenna Manufacturer: Norsat Int'l. c main bore gain 42.00 dBi  
 a2 Antenna Model: Newslink 3200 d frequency at which gain was measured 14.50 GHz  
 a3 Antenna ID: 1.00 e maximum input power density (dBw/4KHz) -19.30 dBw/4KHz  
 b Transmit band (b): 14.000 GHz

1.25 to 7 degrees calculated maximum difference in off-axis eirp density: -0.88 dBw/4KHz

1.0 to 180 degrees calculated maximum difference in off-axis eirp density: -0.88

EIRP for Antenna Conforming to 25.209(a) operating at 25.212 power density limits

Gain and EIRP for Antenna Not Conforming to 25.209(a) operating at stated maximum power density

1 Angle (degrees)	2 25.209 Gain (dBi)	3 Off-Axis EIRP Density for -14.00 dBw/4Kz	4 Gain relative to main bore gain (dB)	5 Actual Gain in dBi	6 Off-Axis EIRP Density for input of -19.30	7 Difference in Off-Axis EIRP Density (6) minus (3)
1.25	26.58	12.58	-11.00	31.00	11.70	-0.88
1.40	25.35	11.35	-13.00	29.00	9.70	-1.65
1.60	23.90	9.90	-18.00	24.00	4.70	-5.20
1.80	22.62	8.62	-23.00	19.00	-0.30	-8.92
2.00	21.47	7.47	-26.00	16.00	-3.30	-10.77
2.20	20.44	6.44	-26.50	15.50	-3.80	-10.24
2.40	19.49	5.49	-29.00	13.00	-6.30	-11.79
2.60	18.63	4.63	-32.00	10.00	-9.30	-13.93
2.80	17.82	3.82	-33.20	8.80	-10.50	-14.32
3.00	17.07	3.07	-32.00	10.00	-9.30	-12.37
3.20	16.37	2.37	-31.80	10.20	-9.10	-11.47
3.40	15.71	1.71	-33.60	8.40	-10.90	-12.61
3.60	15.09	1.09	-35.00	7.00	-12.30	-13.39
3.80	14.51	0.51	-34.20	7.80	-11.50	-12.01
4.00	13.95	-0.05	-33.80	8.20	-11.10	-11.05
4.20	13.42	-0.58	-32.20	9.80	-9.50	-8.92
4.40	12.91	-1.09	-33.00	9.00	-10.30	-9.21
4.60	12.43	-1.57	-35.80	6.20	-13.10	-11.53
4.80	11.97	-2.03	-32.20	9.80	-9.50	-7.47

<b>5.00</b>	<b>11.53</b>	<b>-2.47</b>
<b>5.20</b>	<b>11.10</b>	<b>-2.90</b>
<b>5.40</b>	<b>10.69</b>	<b>-3.31</b>
<b>5.60</b>	<b>10.30</b>	<b>-3.70</b>

-36.60  
-35.60  
-36.20  
-38.00

5.40  
6.40  
5.80  
4.00

<b>-13.90</b>	<b>-11.43</b>
<b>-12.90</b>	<b>-10.00</b>
<b>-13.50</b>	<b>-10.19</b>
<b>-15.30</b>	<b>-11.60</b>

Amendment to FCC Form 312  
Channel 2 Broadcasting Co.  
FCC File NO. SES-LIC-20040106-00142

EXHIBIT 2

FCC 312 Exhibit 2  
Antenna Alignment Steps and Aids to Pointing

31 May 2004

The following table summarizes the usual steps used to align the Norsat NewsLink Portable Terminal. The accuracy/resolution of the various pointing aids are derived from the manufacturers specifications and/or the Norsat design. Resolution of the signal strength meter and internal spectrum analyzer is based on knowledge of the design, knowledge of usual signal levels received and field experience. The resolution and error estimates are believed to be reasonable estimates based on analysis and knowledge of the system.

Step	Description	Norsat NewsLink Aid	Comment
<b>1</b>	<b>Determine satellite parameters</b>		
	<ul style="list-style-type: none"> <li>a) Satellite orbital position</li> <li>b) Transmit frequency</li> <li>c) Receive frequencies of known signals (DVB, beacons)</li> <li>d) Transmit polarization (Receive polarization is orthogonal)</li> <li>e) Satellite Operator telephone number</li> </ul>	A satellite profile can be set up and stored prior to deployment. The profile contains all information necessary to point the antenna.	
<b>2</b>	<b>Determine the position of the earth station</b>		
		GPS Receiver	Earth station location (Latitude, Longitude) is displayed on controller screen
		Manual Entry	Earth station location can be entered manually if known.
<b>3</b>	<b>Determine the required earth station azimuth angle, elevation angle and polarization setting for the selected satellite.</b>		
		The Newslink controller calculates the azimuth, elevation and polarization based on the satellite orbital position, transmit polarization and the earth station location. The required azimuth, elevation and polarization are displayed on the controller screen. The Azimuth is displayed as a magnetic bearing.	
<b>4</b>	<b>Initial pointing of the antenna</b>		
	a) Move the base of the antenna such that it faces in roughly the correct direction.		
	b) Level the antenna structure	Spirit Level Adjustable feet	Level sensitivity : 0.1 inch is 45 minutes
	c) Loosen the Azimuth plate hand wheels and rotate the antenna until the compass located on the back of the antenna matches the azimuth bearing	Fluxgate digital compass	Accuracy: +/- 0.5 degrees after calibration

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	calculated in Step 3. Tighten the Azimuth plate hand wheels.		
	d) Adjust the antenna elevation angle by turning the collars on the threaded jack screw. Adjust the elevation angle until the inclinometer displays the elevation angle calculated in Step 3. Tighten the elevation collars	Digital Inclinometer	Accuracy: +/- 0.5 degrees Resolution: 0.1 degrees
	e) Loosen the thumb screw clamping the feed assembly. Rotate the assembly until the red dot on the feed assembly clamp is aligned with the polarization calculated in Step 3.	Polarization scale	Resolution: 2.5 degrees
<b>5</b>	<b>Verify correct satellite</b>		
	a) Verify that the antenna is pointed at the correct satellite by verifying the spectral signature, verify the beacons, verify a signal lock on one of the pre-selected DVB signals.	Internal Spectrum Analyzer  DVB Receiver – indicates signal lock	<b>Amplitude Scale:</b> Video Resolution: 220 pixels Amplitude Resolution: 0.2 dB typical <b>Frequency Scale</b> Resolution BW: approx 3kHz Video Resolution: 310 pixels Video Bandwidth: approx 3 kHz
<b>6</b>	<b>Fine Pointing</b>		
	a) Loosen the Azimuth hand wheels and slowly rotate the antenna in azimuth . Watch the signal strength meter or the Spectrum analyzer to determine the azimuth with the strongest signal strength.. Tighten the azimuth hand wheels	Signal Strength Meter  Internal Spectrum Analyzer  External Spectrum Analyzer	Resolution: approx 0.12 dB per division
	b) Adjust the antenna elevation by rotating the elevation jack screw collars. Watch the signal strength meter of the spectrum analyzer for the peak signal. Secure the elevation collars		
	c) Loosen the thumb screw that clamps the feed assembly in place. Note the signal level on the spectrum analyzer. Rotate the feed to the left until the signal drops 10 dB. Note this location and signal level. Rotate the feed right through the initial starting point until	Polarization scale	Resolution: 2.5 degrees

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	calculated in Step 3. Tighten the Azimuth plate hand wheels.		
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	the signal level drops 10 dB. Note this location. Determine the mid point of the two low signal points. Set the feed to the midpoint. Tighten thumb screw.		
	d) Repeat steps 6a) and 6b) to ensure the signal level is peaked.		
7	<b>Antenna is pointed and ready for operation. Contact the satellite operator and follow their instructions to begin transmission.</b>		The satellite operator will normally check polarization during the set-up process.

**Notes:**

Note that Step 6 is the critical step in aligning the antenna. The previous steps are used to find the satellite, but Step 6 is where alignment is done.

**Error Estimate based on Signal Strength Meter**

The signal strength meter has a resolution of about 0.12 dB per division. Typically the display gives a number between 70 and 300. Due to noise and tolerances in the equipments it is not possible to peak the antenna to a single number. Normally the system can be pointed to within +/-2 units. This gives a peaking error of +/- 0.24 dB

A 0.24 dB error corresponds to an angular error of 0.2 degrees for the Newslink antenna..

**Error Estimate of Internal Spectrum Analyzer**

The internal spectrum analyzer has a resolution of about 0.2 dB. However, due to noise it is only possible to peak using the Internal Spectrum Analyzer to an accuracy of about 1 dB. A 1 dB error corresponds to an angular error of 0.45 degrees.



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Amendment to FCC Form 312  
Channel 2 Broadcasting Co.  
FCC File NO. SES-LIC-20040106-00142

**EXHIBIT 3**

## FCC 312 Exhibit 3

### Radio Frequency Radiation Hazard Study

#### Antenna Operational Data:

- Frequency Band = KU (Transmit only)
- Antenna Diameter = 1.0 meter
- Maximum Antenna Gain = 42.0 dBi
- Power fed to antenna = 25 watts maximum
- Antenna Aperture efficiency = 0.69

The calculations that appear on pages 1-6 are based on a maximum power output of 25 watts using OET Bulletin 65 Section 2 formulas.

Since this transmission system will be primarily operated in the state of Alaska, Far-Field Signal Densities were calculated using antenna elevation angles of 1, 5, and 10 degrees. In reference to RFR Study pages 2-6, you will see that if the elevation angle is 1 degree a minimum distance of 17.5 meters will be maintained by the general public by the use of markers and barricades to insure that human exposure to the RF field is within the 1 mW/cm<sup>2</sup> "general population/uncontrolled" limit. To maintain the "occupational/controlled" field-density of 5 mW/cm<sup>2</sup> the use of the above mentioned markers will be implemented.

For elevation angles of 10 degrees and greater, the minimum distance becomes 1.0 meter. Since the antenna mount is at ground level, the general public will not be allowed within 3 meters of the antenna, by the use of the before mentioned barricades. This insures that human exposure to the far-field will always exceed the 1 mW/cm<sup>2</sup> guideline. (Reference RFR Study pages 5 and 6.)

# Radio Frequency Radiation Study

Enter Power fed to antenna:  $P := 25.0 \cdot \text{watt}$

Enter Diameter of the antenna:  $D := 1.0 \cdot \text{m}$

Enter Frequency:  $f := 14.50 \cdot \text{GHz}$

Enter antenna Gain (dBi):  $G := 42.0$

For : KTUU-TV  
Portable Satellite  
Earth Station

$$r := \frac{1}{2} \cdot D \quad A := \pi \cdot r^2 \quad (\text{Area of antenna})$$

$$G' := 10^{\frac{G}{10}} \quad (\text{Convert Gain in dBi to real number})$$

$$\lambda := \frac{C}{f}$$

$$\eta := \frac{\frac{G \cdot \lambda^2}{4 \cdot \pi}}{\left( \frac{\pi \cdot D^2}{4} \right)}$$

$$S_{\text{surface}} := \frac{4 \cdot P}{A}$$

$$R_{\text{nf}} := \frac{D^2}{4 \cdot \lambda}$$

$$S_{\text{nf}} := \frac{16 \cdot \eta \cdot P}{\pi \cdot D^2}$$

$$R_{\text{ff}} := \frac{0.6 \cdot D^2}{\lambda}$$

$$T_r := R_{\text{ff}} - R_{\text{nf}}$$

Define special variables

$$\text{mW} \equiv \frac{\text{watt}}{10^3} \quad C \equiv 299792458 \cdot \frac{\text{m}}{\text{sec}}$$

$\eta = 0.686$  Calculated aperture efficiency.

$$S_{\text{surface}} = 12.732 \frac{\text{mW}}{\text{cm}^2}$$

Maximum power density at the antenna surface.

$$R_{\text{nf}} = 12.092 \text{ m}$$

Extent of Near-Field.

$$S_{\text{nf}} = 8.74 \frac{\text{mW}}{\text{cm}^2}$$

Maximum Near-Field power density.

$$R_{\text{ff}} = 29.02 \text{ m}$$

Distance to beginning of the Far-Field.

$$T_r = 16.928 \text{ m}$$

**Transition Region**

# Radio Frequency Radiation Study

For : KTUU-TV  
Portable Satellite  
Earth Station

Set R= Point of Interest in the Transition Region:  $R := 8.0 \cdot \text{m}$

Enter Dish Elevation Angle:  $\theta := 1.00 \text{ deg}$

$$G'' := (32 - 25 \cdot \log(\theta))$$

$$G_{\theta} := 10^{\frac{G''}{10}} \text{ (Convert Gain in dBi to Real Number)}$$

$$S_t := \frac{S_{nf} \cdot R_{nf}}{R}$$

$$S_t = 13.21 \frac{\text{mW}}{\text{cm}^2}$$

Power density in the Transition region.

$$S_{ff} := \frac{P \cdot G_{\theta}}{4 \cdot \pi \cdot R^2}$$

$$S_{ff} = 4.927 \frac{\text{mW}}{\text{cm}^2}$$

Power density On-Axis.

# Radio Frequency Radiation Study

For : KTUU-TV  
Portable Satellite  
Earth Station

Set R= Point of Interest in the Transition Region: R := 17.5-m

Enter Dish Elevation Angle:  $\theta := 1.00$  deg

$$G'' := (32 - 25 \cdot \log(\theta))$$

$$G_{\theta} := 10^{\frac{G''}{10}} \quad (\text{Convert Gain in dBi to Real Number})$$

$$S_t := \frac{S_{nf} \cdot R_{nf}}{R}$$

$$S_t = 6.039 \frac{\text{mW}}{\text{cm}^2}$$

Power density in the Transition region.

$$S_{ff} := \frac{P \cdot G_{\theta}}{4 \cdot \pi \cdot R^2}$$

$$S_{ff} = 1.03 \frac{\text{mW}}{\text{cm}^2}$$

Power density On-Axis.

# Radio Frequency Radiation Study

For : KTUU-TV  
Portable Satellite  
Earth Station

Set R= Point of Interest in the Transition Region:  $R := 1.07 \cdot m$

Enter Dish Elevation Angle:  $\theta := 5.00 \text{ deg}$

$$G'' := (32 - 25 \cdot \log(\theta))$$

$$G_{\theta} := 10^{\frac{G''}{10}} \text{ (Convert Gain in dBi to Real Number)}$$

$$S_t := \frac{S_{nf} \cdot R_{nf}}{R}$$

$$S_t = 98.769 \frac{mW}{cm^2}$$

Power density in the Transition region.

$$S_{ff} := \frac{P \cdot G_{\theta}}{4 \cdot \pi \cdot R^2}$$

$$S_{ff} = 4.926 \frac{mW}{cm^2}$$

Power density On-Axis.

# Radio Frequency Radiation Study

For : KTUU-TV  
Portable Satellite  
Earth Station

Set R= Point of Interest in the Transition Region: R := 2.3·m

Enter Dish Elevation Angle:  $\theta := 5.00$  deg

$$G'' := (32 - 25 \cdot \log(\theta))$$

$$G_{\theta} := 10^{\frac{G''}{10}} \quad (\text{Convert Gain in dBi to Real Number})$$

$$S_t := \frac{S_{nf} \cdot R_{nf}}{R}$$

$$S_t = 45.949 \frac{\text{mW}}{\text{cm}^2}$$

Power density in the Transition region.

$$S_{ff} := \frac{P \cdot G_{\theta}}{4 \cdot \pi \cdot R^2}$$

$$S_{ff} = 1.066 \frac{\text{mW}}{\text{cm}^2}$$

Power density On-Axis.



# Radio Frequency Radiation Study

For : KTUU-TV  
Portable Satellite  
Earth Station

Set R= Point of Interest in the Transition Region: R := 1·m

Enter Dish Elevation Angle:  $\theta := 10.00$  deg

$$G'' := (32 - 25 \cdot \log(\theta))$$

$$G_{\theta} := 10^{\frac{G''}{10}} \quad (\text{Convert Gain in dBi to Real Number})$$

$$S_t := \frac{S_{nf} \cdot R_{nf}}{R}$$

$$S_t = 105.683 \frac{\text{mW}}{\text{cm}^2}$$

Power density in the Transition region.

$$S_{ff} := \frac{P \cdot G_{\theta}}{4 \cdot \pi \cdot R^2}$$

$$S_{ff} = 0.997 \frac{\text{mW}}{\text{cm}^2}$$

Power density On-Axis.