Exhibit A

Non-Compliant Earth Station Antenna, Uplink EIRP Density, and Protection from Interference

In this application, GCI Communication Corp (GCI) proposes to employ the four (4) Ku-band earth station antennas that have been recognized as non-compliant with the antenna performance standards defined in 47 C.F.R. Ch. 1 §25.209. Per the instructions set forth in the FCC International Bureau Public Notice DA 09-425 ("International Bureau Establishes Website For List Of Previously Approved Non-Routine Earth Station Antennas"), GCI cites the following non-routine earth station applications to serve as a reference for three of these non-compliant antennas that are listed in this GCI application:

Antenna Manufacturer / Size #1:	Prodelin / 0.95m
Antenna Model Number #1:	1951
Reference Application File Number #1:	SES-MOD-20060321-00478
Reference Call Sign #1:	E000658
Reference Licensee Name #1:	MCI Communication Services, Inc.

Antenna Manufacturer / Size #1:	Andrew / Channel Master / Skyware Global / 0.96m
Antenna Model Number #1:	Type 960 / 961
Reference Application File Number #1:	SES-MOD-20060321-00478
Reference Call Sign #1:	E000658
Reference Licensee Name #1:	MCI Communication Services, Inc.

Antenna Manufacturer #2:	Norsat / 1.0m
Antenna Model Number #2:	Newslink 3200
Reference Application File Number #2:	SES-LIC-20060119-00068
Reference Call Sign #2:	E060015
Reference Licensee Name #2:	Alaska Broadcasting Company Inc.

As presented in the FCC license associated with Call Sign E000658 (noted above), GCI will operate the 0.95m earth station associated with its' application (Prodelin 1951) at a level 4.0 dB below the maximum power density into the antenna defined in 47 C.F.R. Ch. 1 §25.212(c)(2). As such, the maximum power density into the antenna flange will not exceed -18.0 dBW/4kHz (calculated as: -14.0 dBW/4kHz – 4.0 dB = -18.0 dBW/4kHz) and the maximum carrier EIRP density will not exceed 23.2 dBW/4kHz (calculated as: 41.2 dBi – 18.0 dBW/4kHz = 23.2 dBW/4 kHz).

As presented in the FCC license associated with Call Sign E000658 (noted above), GCI will operate the 0.96m earth station associated with its' application (Andrew / Channel Master / Skyware Global Type 960 / 961) at a level 0.0 dB below the maximum power density into the antenna defined in 47 C.F.R. Ch. 1 §25.212(c)(2). As such, the maximum power density into the antenna flange will not exceed -14.0 dBW/4kHz (calculated as: -14.0 dBW/4kHz – 0.0 dB = -14.0 dBW/4kHz) and the maximum carrier EIRP density will not exceed 27.2 dBW/4kHz (calculated as: 41.2 dBi – 14.0 dBW/4kHz = 27.2 dBW/4 kHz).

As presented in the FCC license associated with Call Sign E060015 (noted above), GCI will operate the 1.0m earth station associated with its' application (Norsat 3200) at a level 5.3 dB below the maximum power density into the antenna defined in 47 C.F.R. Ch. 1 §25.212(c). As such, the maximum power

density into the antenna flange will not exceed -19.3 dBW/4kHz (calculated as: -14.0 dBW/4kHz – 5.3 dB = -19.3 dBW/4kHz) and the maximum carrier EIRP density will not exceed 22.7 dBW/4kHz (calculated as: 42.0 dBi – 19.3 dBW/4kHz = 22.7 dBW/4 kHz).

Additionally, GCI desires to license a GD Satcom 1.2 QDMA 1.2m Ku-band earth station antenna. This antenna is also non-compliant with the antenna performance standards defined in 47 C.F.R. Ch. 1 §25.209, but it has not yet been listed on the FCC website specified above. As such, GCI is attaching a technical performance report from the manufacturer indicating the non-compliant nature of the antenna and a complete set of antenna plots. As presented in the GD Satcom technical performance report, GCI will operate the 1.2m GD Satcom 1.2 QDMA Ku-band earth station at a level 1.3 dB below the maximum power density into the antenna defined in 47 C.F.R. Ch. 1 §25.212(c)(2). As such, the maximum power density into the antenna flange will not exceed -15.3 dBW/4kHz (calculated as: -14.0 dBW/4kHz – 1.3 dB = -15.3 dBW/4kHz) and the maximum carrier EIRP density will not exceed 28.3 dBW/4kHz (calculated as: 43.6 dBi – 15.3 dBW/4kHz = 28.3 dBW/4 kHz).

Lastly, GCI understands that it is not protected from interference which may result from the aforementioned antennas main lobe and/or side lobe performance characteristics. As such, GCI will only seek protection to the level associated with an antenna meeting the performance standards defined in 47 C.F.R. Ch. 1 §25.209.

Fly-Away Antenna Power Input Restrictions

Tim Shroyer General Dynamics C4 Systems
5-Apr-06

Approach:

FCC Regulations provide for a maximum Input Power Density of -14 dBW/4kHz for a "compliant" antenna

"Compliant" means compliant with FCC Regulation 25.209

There are two alternative methods to secure an FCC license for an antenna which is not "compliant" those are:

25.225 c(1) Reduce the Input Power Density by that amount by which the 25.209 pattern is exceeded

25.220 c(2) Secure waivers from satellite operators adjacent to the satellite being used concurring that interference is not an issue

This analysis will consider the "Excess" sidelobe energy and from that calculate the permitted Maximum Input Power Density

Input Data

1.3 dB = Amount of pattern maximum excess of compliant pattern (in dB units)

Formula

P_{DMAX} = -14 + 1.3 dBW/4kHz = -15.3 dBW/4kHz

Pinput = Maximum Total Input Power

BW = Occupied Bandwidth

$P_{DMAX\ Linear}$ = 10 x antilog (P_{DMAX} - Excursion) Watts/4 kHz

$P_{DMAX\ Linear}$ = 0.029512092 Watts/4 kHz
= 7.37802E-06 Watts/Hz

Pinput = ($P_{DMAX\ Linear\ in\ Hz}$ x BW in Hz)

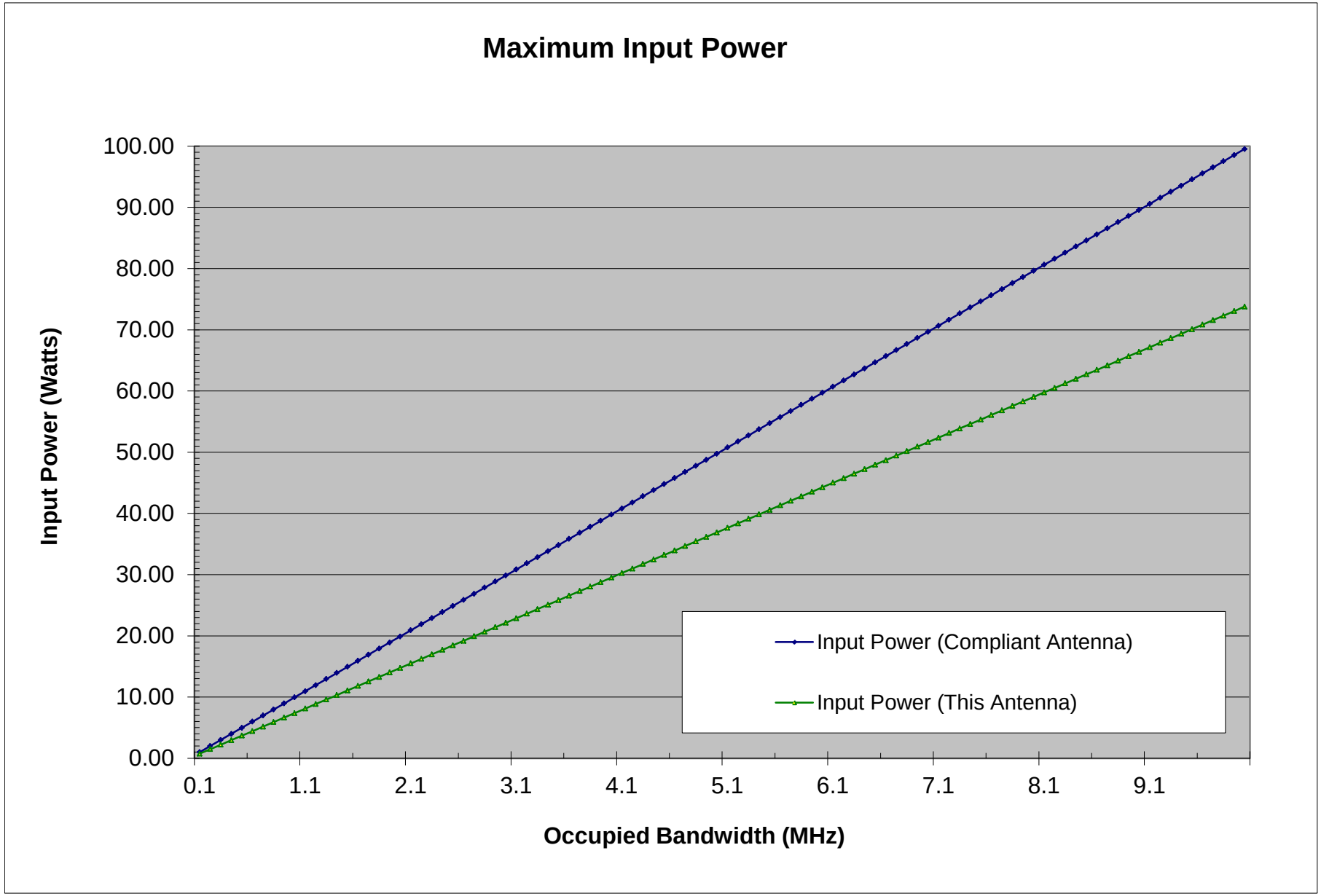
If antenna were compliant with 25.209, values would be:

$P_{DMAX\ Linear}$ = 0.039810717 Watts/4 kHz
= 9.95268E-06 Watts/Hz

Calculation Table

BW (MHz)	Compliant Ant. Power (Watts)	Maximum Power (Watts)	Maximum Power (dBW)
0.1	1.00	0.74	-1.32
0.2	1.99	1.48	1.69
0.3	2.99	2.21	3.45
0.4	3.98	2.95	4.70
0.5	4.98	3.69	5.67
0.6	5.97	4.43	6.46
0.7	6.97	5.16	7.13
0.8	7.96	5.90	7.71
0.9	8.96	6.64	8.22
1	9.95	7.38	8.68
1.1	10.95	8.12	9.09
1.2	11.94	8.85	9.47
1.3	12.94	9.59	9.82
1.4	13.93	10.33	10.14
1.5	14.93	11.07	10.44
1.6	15.92	11.80	10.72
1.7	16.92	12.54	10.98
1.8	17.91	13.28	11.23
1.9	18.91	14.02	11.47
2	19.91	14.76	11.69
2.1	20.90	15.49	11.90
2.2	21.90	16.23	12.10
2.3	22.89	16.97	12.30
2.4	23.89	17.71	12.48
2.5	24.88	18.45	12.66
2.6	25.88	19.18	12.83
2.7	26.87	19.92	12.99
2.8	27.87	20.66	13.15
2.9	28.86	21.40	13.30
3	29.86	22.13	13.45
3.1	30.85	22.87	13.59
3.2	31.85	23.61	13.73
3.3	32.84	24.35	13.86
3.4	33.84	25.09	13.99
3.5	34.83	25.82	14.12
3.6	35.83	26.56	14.24
3.7	36.82	27.30	14.36
3.8	37.82	28.04	14.48
3.9	38.82	28.77	14.59
4	39.81	29.51	14.70
4.1	40.81	30.25	14.81
4.2	41.80	30.99	14.91
4.3	42.80	31.73	15.01
4.4	43.79	32.46	15.11
4.5	44.79	33.20	15.21
4.6	45.78	33.94	15.31
4.7	46.78	34.68	15.40
4.8	47.77	35.41	15.49
4.9	48.77	36.15	15.58
5	49.76	36.89	15.67
5.1	50.76	37.63	15.76
5.2	51.75	38.37	15.84
5.3	52.75	39.10	15.92
5.4	53.74	39.84	16.00

5.5	54.74	40.58	16.08
5.6	55.74	41.32	16.16
5.7	56.73	42.05	16.24
5.8	57.73	42.79	16.31
5.9	58.72	43.53	16.39
6	59.72	44.27	16.46
6.1	60.71	45.01	16.53
6.2	61.71	45.74	16.60
6.3	62.70	46.48	16.67
6.4	63.70	47.22	16.74
6.5	64.69	47.96	16.81
6.6	65.69	48.69	16.87
6.7	66.68	49.43	16.94
6.8	67.68	50.17	17.00
6.9	68.67	50.91	17.07
7	69.67	51.65	17.13
7.1	70.66	52.38	17.19
7.2	71.66	53.12	17.25
7.3	72.65	53.86	17.31
7.4	73.65	54.60	17.37
7.5	74.65	55.34	17.43
7.6	75.64	56.07	17.49
7.7	76.64	56.81	17.54
7.8	77.63	57.55	17.60
7.9	78.63	58.29	17.66
8	79.62	59.02	17.71
8.1	80.62	59.76	17.76
8.2	81.61	60.50	17.82
8.3	82.61	61.24	17.87
8.4	83.60	61.98	17.92
8.5	84.60	62.71	17.97
8.6	85.59	63.45	18.02
8.7	86.59	64.19	18.07
8.8	87.58	64.93	18.12
8.9	88.58	65.66	18.17
9	89.57	66.40	18.22
9.1	90.57	67.14	18.27
9.2	91.56	67.88	18.32
9.3	92.56	68.62	18.36
9.4	93.56	69.35	18.41
9.5	94.55	70.09	18.46
9.6	95.55	70.83	18.50
9.7	96.54	71.57	18.55
9.8	97.54	72.30	18.59
9.9	98.53	73.04	18.64
10	99.53	73.78	18.68


Maximum Input Power
Input Power (Watts)
100.00
90.00
80.00
70.00
60.00
50.00
40.00
30.00
20.00
10.00
0.00
0.1
1.1
2.1
3.1
4.1
5.1
6.1
7.1
8.1
9.1
Occupied Bandwidth (MHz)
Input Power (Compliant Antenna)
Input Power (This Antenna)

GENERAL DYNAMICS
C4 Systems

Range Test Report
1.2m QDMA
Antenna System

Feed Model #:	**K12MOTRLN**
Feed Serial #:	**AA298-103**
RF Specification:	**975-1622D**
Side lobe Specification:	**FCC**
Test Plan:	**Custom**
Test Engineer:	**Zukowski, Werner**

Test Report # 7032
Job #: C0038
01 August 2007

For
GD Satcom

Prepared By: Zukowski, Werner

Vertex RSI®
ISO 9001 Registered

2600 N. Longview St., Kilgore, TX USA 75662-6842
Phone (903) 984-0555 • FAX (903) 984-1826

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HORZ

13.750 GHz

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INTRODUCTION

The test data presented in this report represents an evaluation of a 1.2 meter Ku, QDMA reflector system. The tests were conducted on the VertexRSI Test Range in accordance with a custom test plan.

This report shows the antenna's performance for Co-pol side lobe suppression, on axis cross polarization isolation, antenna noise temperature, and antenna gain using the pattern integration method.

Job No.: C0038		**FT No: 7032**		**Test Engineer: Zukowski, Werner**	
Zukowski, Werner	08/01/07	Davisson, Richard	08/01/07	Pollard, Alan B.	08/01/07
	1AUG07				8/6/07
Originator	**Date**	**Approval**	**Date**	**Approval**	**Date**

DATA REDUCTION FORMULAS

1. System Noise Temperature:

$T_s = [T_h + (T_{LNA} + T_i)] / Y'$ (°K)

where: T_s = system noise temperature in degrees K
T_h = hot load temperature in degrees K
T_{LNA} = LNA noise temperature in degrees K
T_i = sum of noise temperature contributions of device(s) installed between feed flange and LNA in degrees K

2. $Y' = 10 \exp (Y_{dB}/10)$

3. G/T_s:

$Ts(dB) = 10 LOG(T_s)$

Where: T_s = System noise temp.(°K)

4. $G/T_s(dB/°K) = G - T_s$ (dB)

5. Antenna Gain:

$G_A = 10 LOG[(G_3+G_{10})/2]-L_{rms} -L_f$

$G_3 = 31,000/(_{az\ 3dB})(_{el\ 3dB})$
$G_{10} = 91,000/(_{az\ 10dB})(_{el\ 10dB})$

where: $_{az\ 3dB}$ = (cosine corrected) Azimuth Half Power Beamwidth, degrees
$_{el\ 3dB}$ = Elevation Half Power Beamwidth, degrees
$_{az\ 10dB}$ = (cosine corrected) Azimuth Beamwidth @ -10dB, degrees
$_{el\ 10dB}$ = Elevation Beamwidth @ -10dB, degrees
L_{rms} = Reflector Surface Accuracy Loss, dB
$L_{rms} = 4.92E^2F^2$
E = RMS Surface Accuracy of Reflector, inches
F = Frequency, GHz
L_f = Feed Insertion Loss, dB

6. Azimuth Angle Corrected for Elevation Angle:

$Az' = 2 SIN^{-1} [SIN(Az/2)COS El]$

Where: Az = Angle from 0° on axis

DATA REDUCTION FORMULAS CONTINUED

7. Sidelobe Envelope Specification: FCC

For Angle A from 1 degree to 7 degrees_____29-25 log(A)
For Angle A from 7 to 9.2 degrees_____-8 dBi
For Angle A from 9.2 to 48 degrees _____32-25 log(A)
For Angle A from 48 to 180 degrees_____ -10 dBi

8. G/T : by Carrier to Noise Method

G/T dB/°K =

$C/N_{O\ dB\text{-}Hz}$ - 228.6 - Satellite $EIRP_{dBW}$ + Path $Loss_{dB}$ + Aspect $Correction_{dB}$

9. C/N_O =

C+N/N - 2.5dB + 10 $\log_{10}$ (NBW)

SUMMARY OF ANTENNA PERFORMANCE:

On-axis cross-pol isolation

Frequency (MHz):	10700	11725	12750	13750	14125	14500
Measured (dBi):						
HORZ						
AZ	**.**	**.**	**.**	60.14	37.56	43.29
EL	**.**	**.**	**.**	72.10	38.45	45.56
VERT						
AZ	56.28	44.22	51.14	**.**	**.**	**.**
EL	54.88	45.13	50.38	**.**	**.**	**.**
Spec. (dBi):	Rx/Tx	35 dB on axis				

Antenna Gain (Integration)

Frequency (MHz):	10700	11725	12750	13750	14125	14500
Measured (dBi):						
HORZ	**.**	**.**	**.**	45.40	45.89	46.02
VERT	42.85	43.83	44.31	**.**	**.**	**.**
Spec. (dBi):	41.20	41.60	42.20	43.20	43.60	43.70

Measurement accuracy estimated at +/- 0.2 dBi

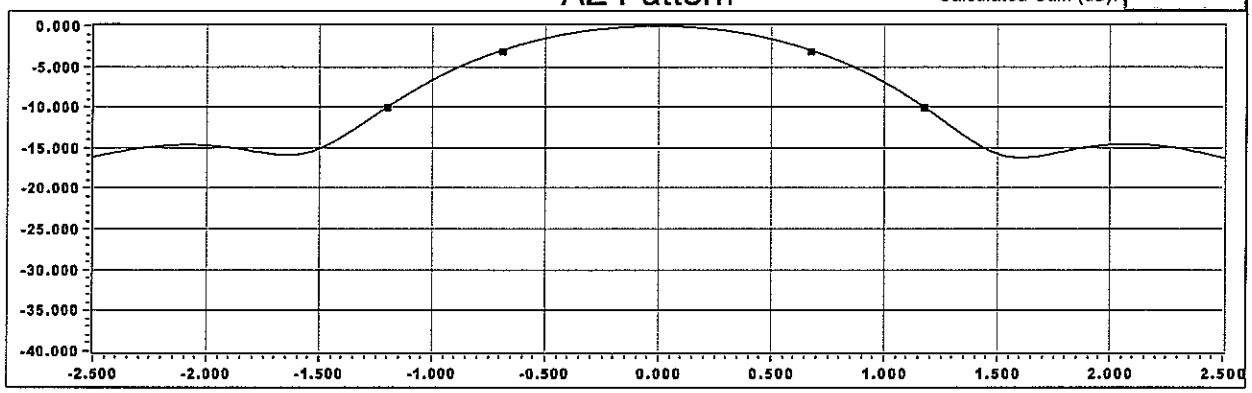
Vertex RSI
GENERAL DYNAMICS

Customer.....	GDSATCOM	Model.....	1.2 QDMA
Date/Local Time.....	7-20-2007 at 190640	Location.....	Test Range
Job Number.....	C0038	Weather.....	Heavy Cloudy
		Test Engineer.....	Richard Davisson
		Spacecraft.....	Short Range
		Transponder.....	

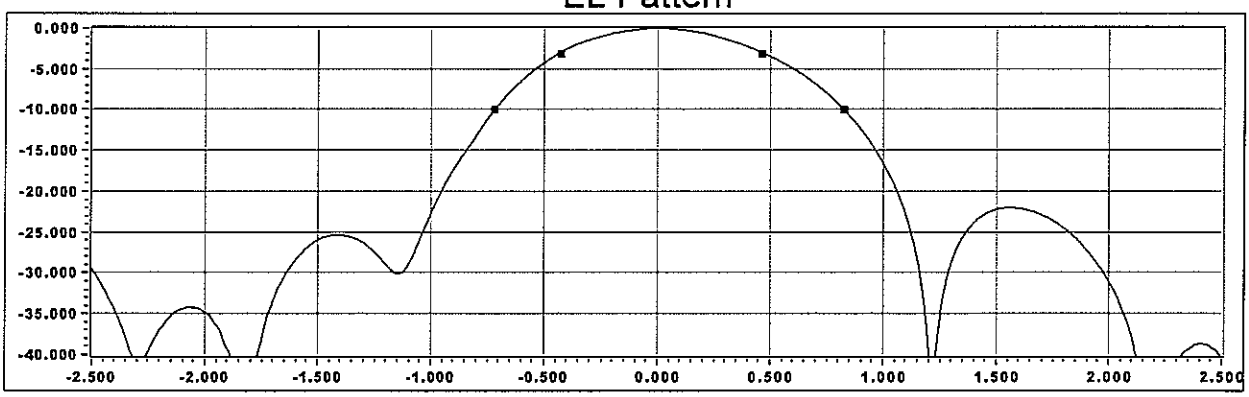
RX...VERT Polarization...Gain by Beamwidth...10.700 GHz

Spec. Gain (dBi): 41.200
Calculated Gain (dB): 43.21

AZ Pattern



EL Pattern



The Y-scale is power level (dB) relative to beam center; the X -scale is angle (degrees, AZ cosine corrected) relative to beam center.

Gain by Beamwidth dBi = 10 log[((3dB factor / (AZ 3dB BW * EL 3dB BW)) + (10dB factor / (AZ 10dB BW * EL 10dB BW))) / 2]
- Feed Loss dB - 4.923(RMS inches * Freq GHz)²

SA Freq (Hz)=10700000192, AZ rate (deg/s)=1.291, EL rate (deg/s)=0.832, RBW (Hz)=30, VBW (Hz)=10

AZ Co-pol File: % 070720 190640 C0038 RC-5-VA-10.700.txt
EL Co-pol File: % 070720 190739 C0038 RC-5-VE-10.700.txt

The calculated gain is greater than the specified gain by 2.01 dB.

Test Frequency (GHz)	10.700000192	AZ 3dB BW (deg)	1.3675	# Points Displayed	3862
AZ Ref. Level (dBm)	-12.94	AZ 10dB BW (deg)	2.3793		
Feed Loss (dB)	0.55	AZ 15dB BW (deg)	2.9345		
RMS (in.)	0.020	EL 3dB BW (deg)	0.8955		
Azimuth (deg)	181.000	EL 10dB BW (deg)	1.5453	3dB Factor	31000
Elevation (deg)	12.000	EL 15dB BW (deg)	1.8114	10dB Factor	91000

Versions
60120 FAST
60129 PACK

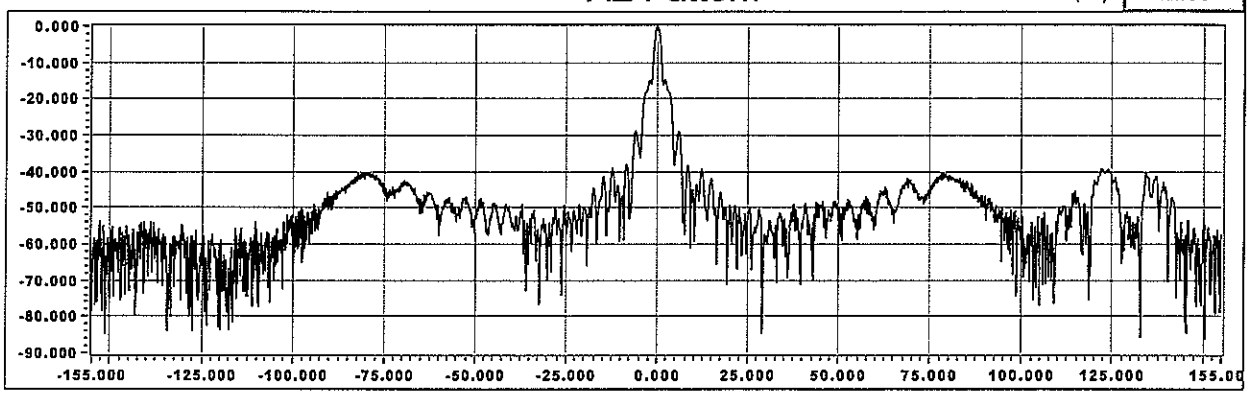
Vertex RSI
GENERAL DYNAMICS

Customer.....	GDSATCOM	Model.....	1.2 QDMA
Date/Local Time.....	7-20-2007 at 184707	Location.....	Test Range
Job Number.....	C0038	Weather.....	Heavy Cloudy
		Test Engineer.....	Richard Davisson
		Spacecraft.....	Short Range
		Transponder.....	

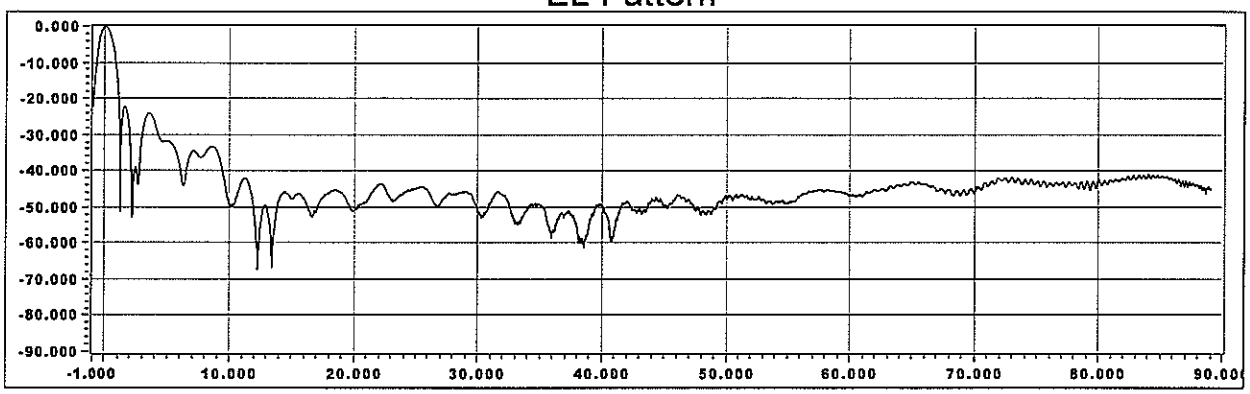
RX...VERT Polarization...Gain by Integration...10.700 GHz

Spec. Gain (dBi): 41.200
Calculated Gain (dB): 42.85

AZ Pattern



EL Pattern



The Y-scale is power level (dB) relative to beam center; the X -scale is angle (degrees, AZ cosine corrected) relative to beam center.

Antenna Gain by Integration = 2 / (Sum [PsubTheta * sin(Theta) * deltaTheta] - FeedLoss - AngularExtentLoss - SparBlockageLoss - CrossPolLoss)
where the summation is performed for look angles (Theta) offset from beam center from 0 to 180 degrees (in practice the summation occurs on both sides of beam center and the average is taken) and where PsubTheta is the power relative to beam center power and measured at look angles offset from beam center.

SA Freq (Hz)=10700000187, AZ rate (deg/s)=1.291, EL rate (deg/s)=0.832, RBW (Hz)=30, VBW (Hz)=10

AZ Co-pol File	% 070720 184707 C0038 RC-155-VA-10.700.txt
EL Co-pol File	% 070720 185839 C0038 RC-95-VE-10.700.txt
Test Frequency (GHz)	10.700000187
AZ Ref. Level (dBm)	-12.79
Azimuth (deg)	181.000
Elevation (deg)	12.000

Versions
60120 FAST
60129 PACK

The calculated gain is greater than the specified gain by 1.65 dB.

# Points Displayed	7914
Feed Loss (dB)	0.55
Angular Extent Loss(dB)	0.15
Spar Blockage Loss (dB)	0.05
Cross-pol Loss (dB)	0.05

Vertex RSI
GENERAL DYNAMICS

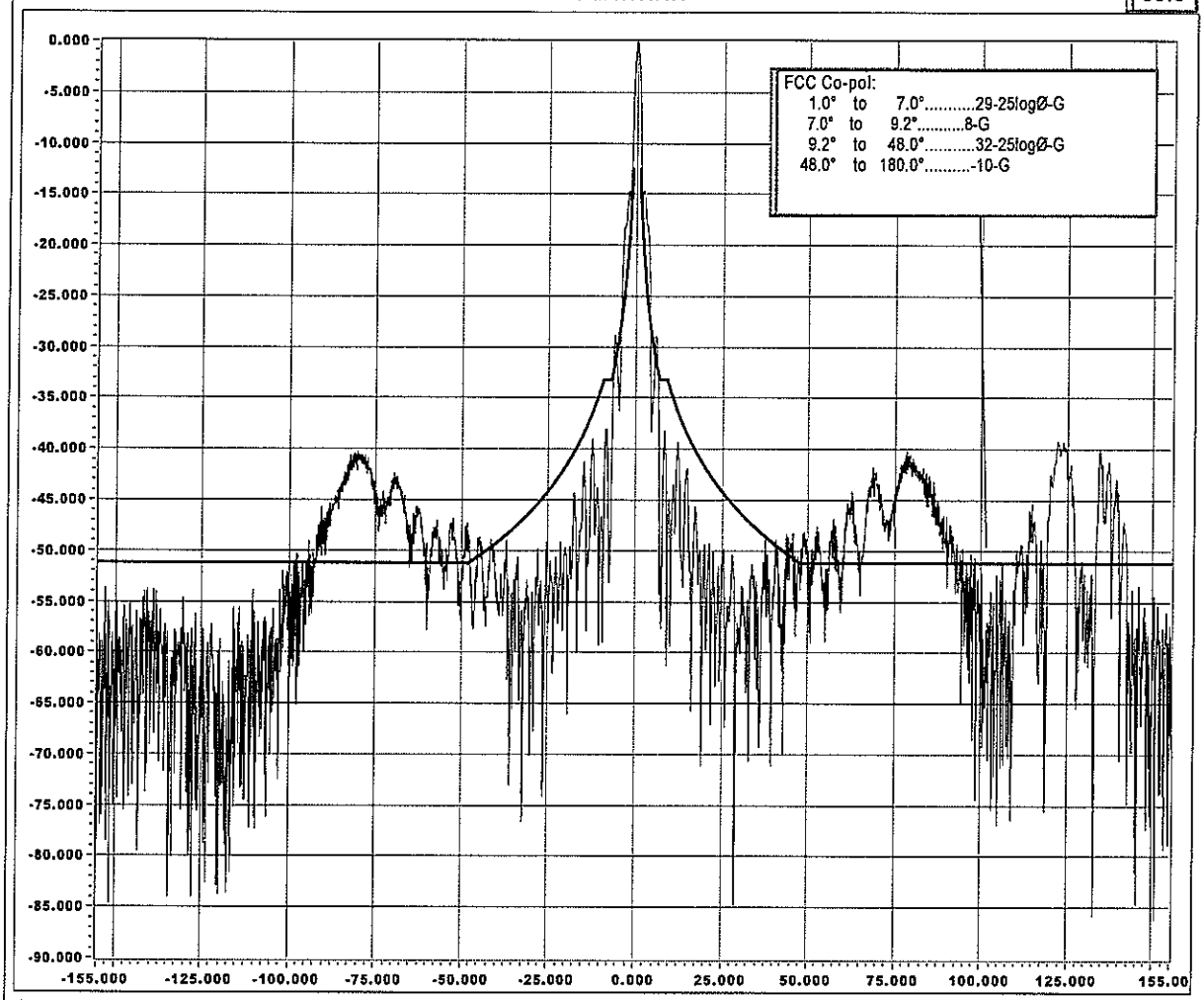
Customer.....	GDSATCOM
Date/Local Time.....	7-20-2007 at 184707
Job Number.....	C0038

Model.....	1.2 QDMA
Location.....	Test Range
Weather.....	Heavy Cloudy
Test Engineer.....	Richard Davisson
Spacecraft.....	Short Range
Transponder.....	

RX...Co-pol...VERT polarization...10.700 GHz

Azimuth

% Over Curve: 36.0



Y-scale is power level (dB) relative to beam center; x-scale is angle (degrees, cosine corrected) relative to beam center

SA Freq (Hz)=10700000187, AZ rate (deg/s)=1.291, EL rate (deg/s)=0.832, RBW (Hz)=30, VBW (Hz)=10

File:	% 070720 184707 C0038 RC-155-VA-10.700.tx	Specified Gain (dB):	41.200
Test Frequency (GHz):	10.700000187	Azimuth Beam Center (deg):	181.000
Ref. Level (dBm):	-12.79	Elevation Beam Center (deg):	12.000
# Points Displayed:	8192	Margin Under Curved (dB):	None

Versions
60120 FAST
60129 PACK

Vertex RSI
GENERAL DYNAMICS

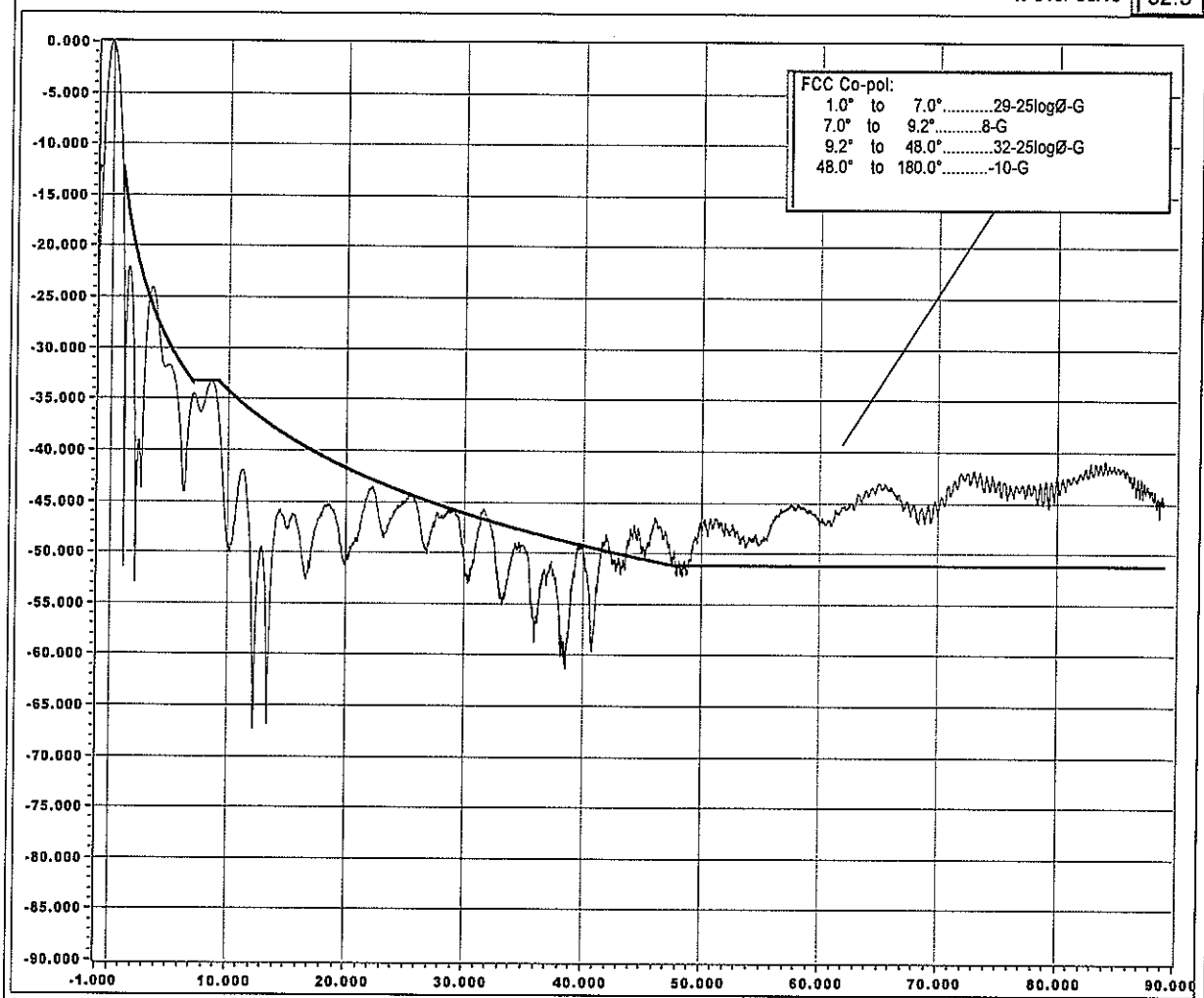
Customer.....	GDSATCOM
Date/Local Time.....	7-20-2007 at 185839
Job Number.....	C0038

Model.....	1.2 QDMA
Location.....	Test Range
Weather.....	Heavy Cloudy
Test Engineer.....	Richard Davisson
Spacecraft.....	Short Range
Transponder.....	

RX...Co-pol...VERT polarization...10.700 GHz

Elevation

% Over Curve: 52.5



Y-scale is power level (dB) relative to beam center; x-scale is angle (degrees, cosine corrected) relative to beam center

SA Freq (Hz)=10700000194, AZ rate (deg/s)=1.291, EL rate (deg/s)=0.832, RBW (Hz)=30, VBW (Hz)=1

File:	% 070720 185839 C0038 RC-95-VE-10.700.tx	Specified Gain:	41.200
Test Frequency (GHz):	10.700000194	Azimuth Beam Center (deg):	181.000
Ref. Level (dBm):	-12.76	Elevation Beam Center (deg):	12.000
# Points Displayed:	7816	Margin Under Curve (dB):	None

Versions
60120 FAST
60129 PACK

Vertex RSI
GENERAL DYNAMICS

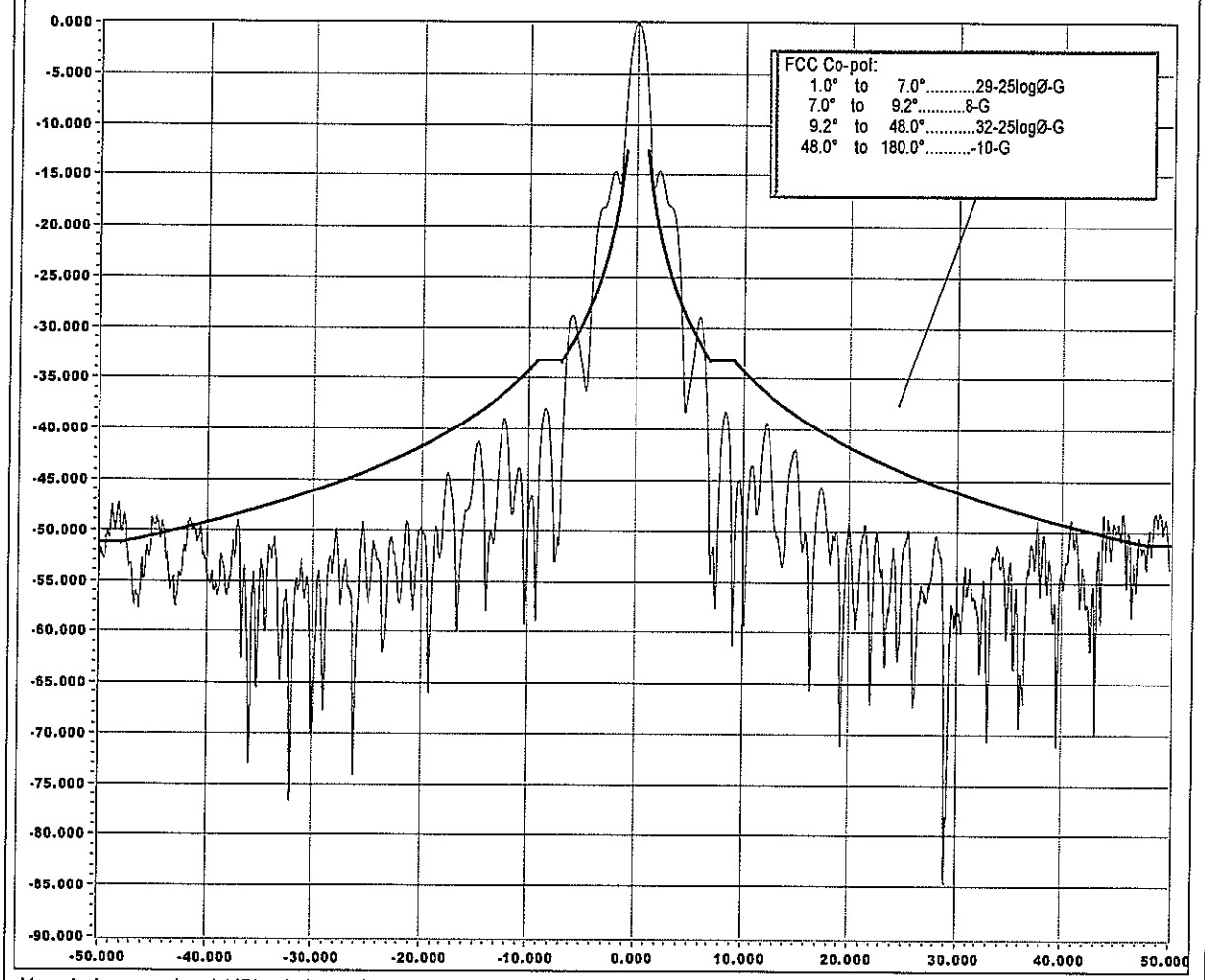
Customer.....	GDSATCOM
Date/Local Time.....	7-20-2007 at 184707
Job Number.....	C0038

Model.....	1.2 QDMA
Location.....	Test Range
Weather.....	Heavy Cloudy
Test Engineer.....	Richard Davisson
Spacecraft.....	Short Range
Transponder.....	

RX...Co-pol...VERT polarization...10.700 GHz

Azimuth

% Over Curve: 15.5



Y-scale is power level (dB) relative to beam center; x-scale is angle (degrees, cosine corrected) relative to beam center

SA Freq (Hz)=10700000187, AZ rate (deg/s)=1.291, EL rate (deg/s)=0.832, RBW (Hz)=30, VBW (Hz)=10

File:	% 070720 184707 C0038 RC-155-VA-10.700.tx	Specified Gain (dB):	41.200
Test Frequency (GHz):	10.700000187	Azimuth Beam Center (deg):	181.000
Ref. Level (dBm):	-12.79	Elevation Beam Center (deg):	12.000
# Points Displayed:	2341	Margin Under Curved (dB):	None

Versions
60120 FAST
60129 PACK

Vertex RSI
GENERAL DYNAMICS

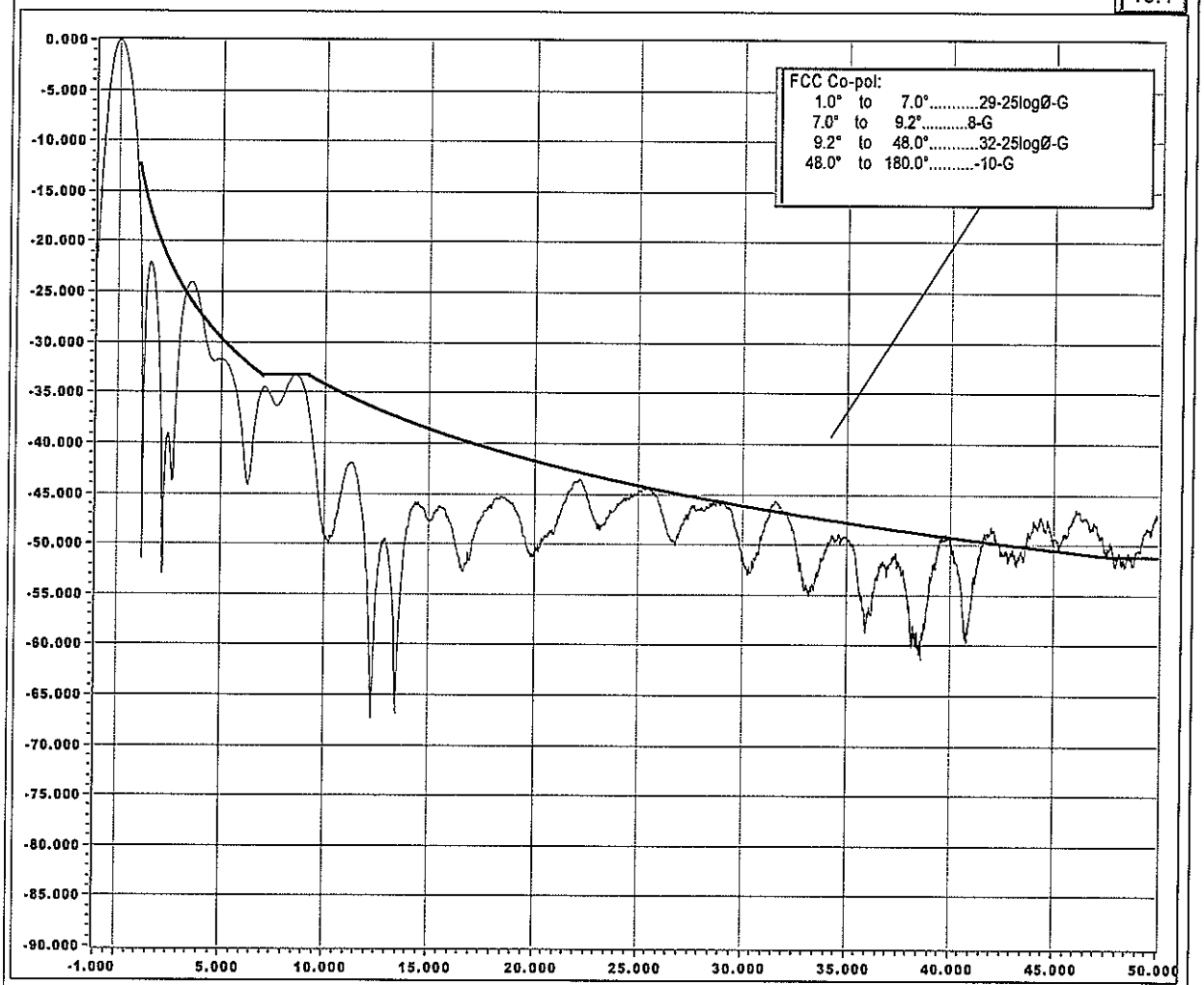
Customer.....	GDSATCOM
Date/Local Time.....	7-20-2007 at 185839
Job Number.....	C0038

Model.....	1.2 QDMA
Location.....	Test Range
Weather.....	Heavy Cloudy
Test Engineer.....	Richard Davisson
Spacecraft.....	Short Range
Transponder.....	

RX...Co-pol...VERT polarization...10.700 GHz

Elevation

% Over Curve: 16.1



Y-scale is power level (dB) relative to beam center; x-scale is angle (degrees, cosine corrected) relative to beam center

SA Freq (Hz)=10700000194, AZ rate (deg/s)=1.291, EL rate (deg/s)=0.832, RBW (Hz)=30, VBW (Hz)=1

File:	% 070720 185839 C0038 RC-95-VE-10.700.tx	Specified Gain:	41.200
Test Frequency (GHz):	10.700000194	Azimuth Beam Center (deg):	181.000
Ref. Level (dBm):	-12.76	Elevation Beam Center (deg):	12.000
# Points Displayed:	4395	Margin Under Curve (dB):	None

Versions
60120 FAST
60129 PACK

Vertex RSI
GENERAL DYNAMICS

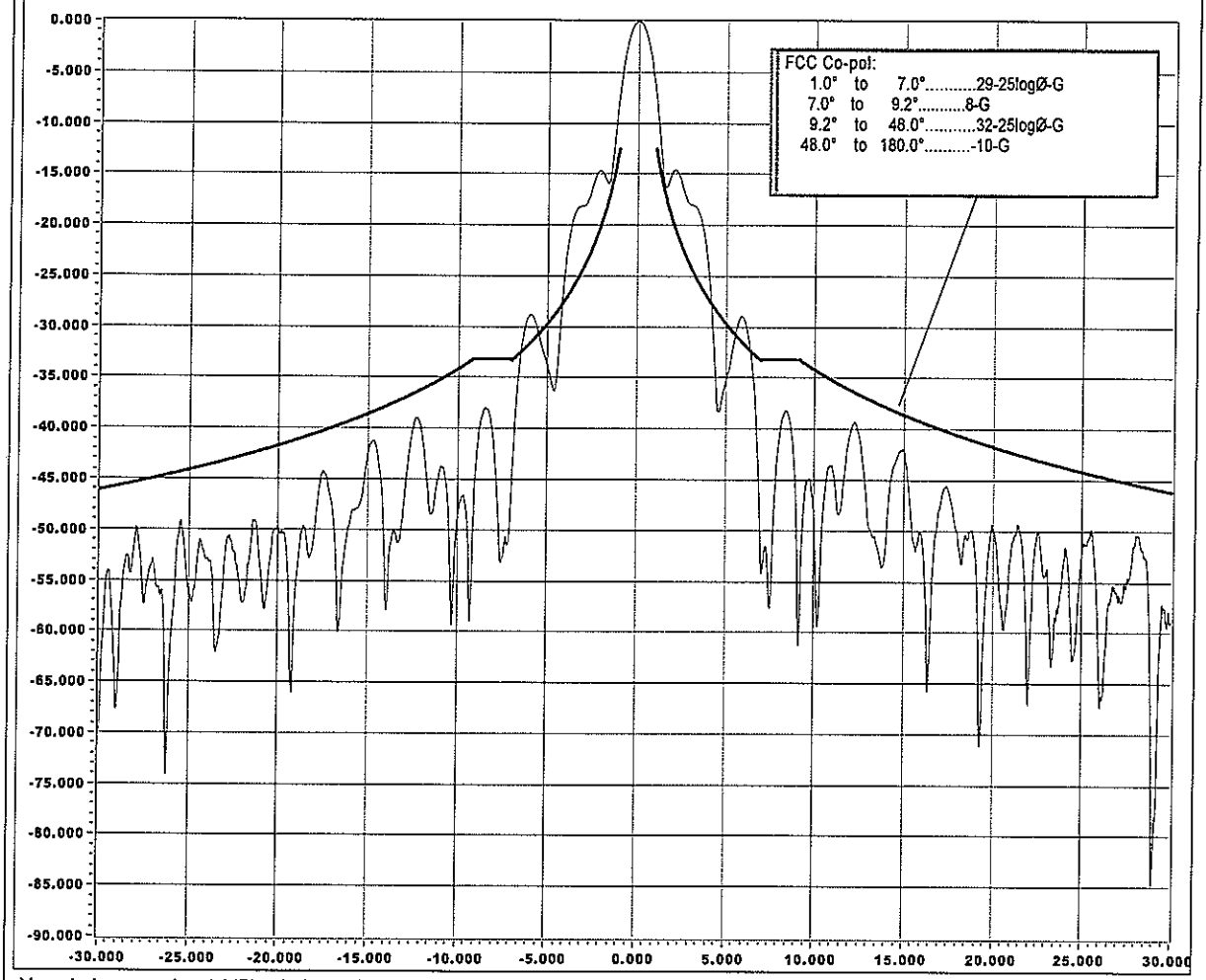
Customer.....	GDSATCOM
Date/Local Time.....	7-20-2007 at 184707
Job Number.....	C0038

Model.....	1.2 QDMA
Location.....	Test Range
Weather.....	Heavy Cloudy
Test Engineer.....	Richard Davisson
Spacecraft.....	Short Range
Transponder.....	

RX...Co-pol...VERT polarization...10.700 GHz

Azimuth

% Over Curve: 14.0



Y-scale is power level (dB) relative to beam center; x-scale is angle (degrees, cosine corrected) relative to beam center.

SA Freq (Hz)=10700000187, AZ rate (deg/s)=1.291, EL rate (deg/s)=0.832, RBW (Hz)=30, VBW (Hz)=10

File:	% 070720 184707 C0038 RC-155-VA-10.700.txt		
Test Frequency (GHz):	10.700000187	Specified Gain (dB):	41.200
Ref. Level (dBm):	-12.79	Azimuth Beam Center (deg):	181.000
# Points Displayed:	1403	Elevation Beam Center (deg):	12.000
Versions: 60120 FAST, 60129 PACK		Margin Under Curved (dB):	None

Vertex RSI
GENERAL DYNAMICS

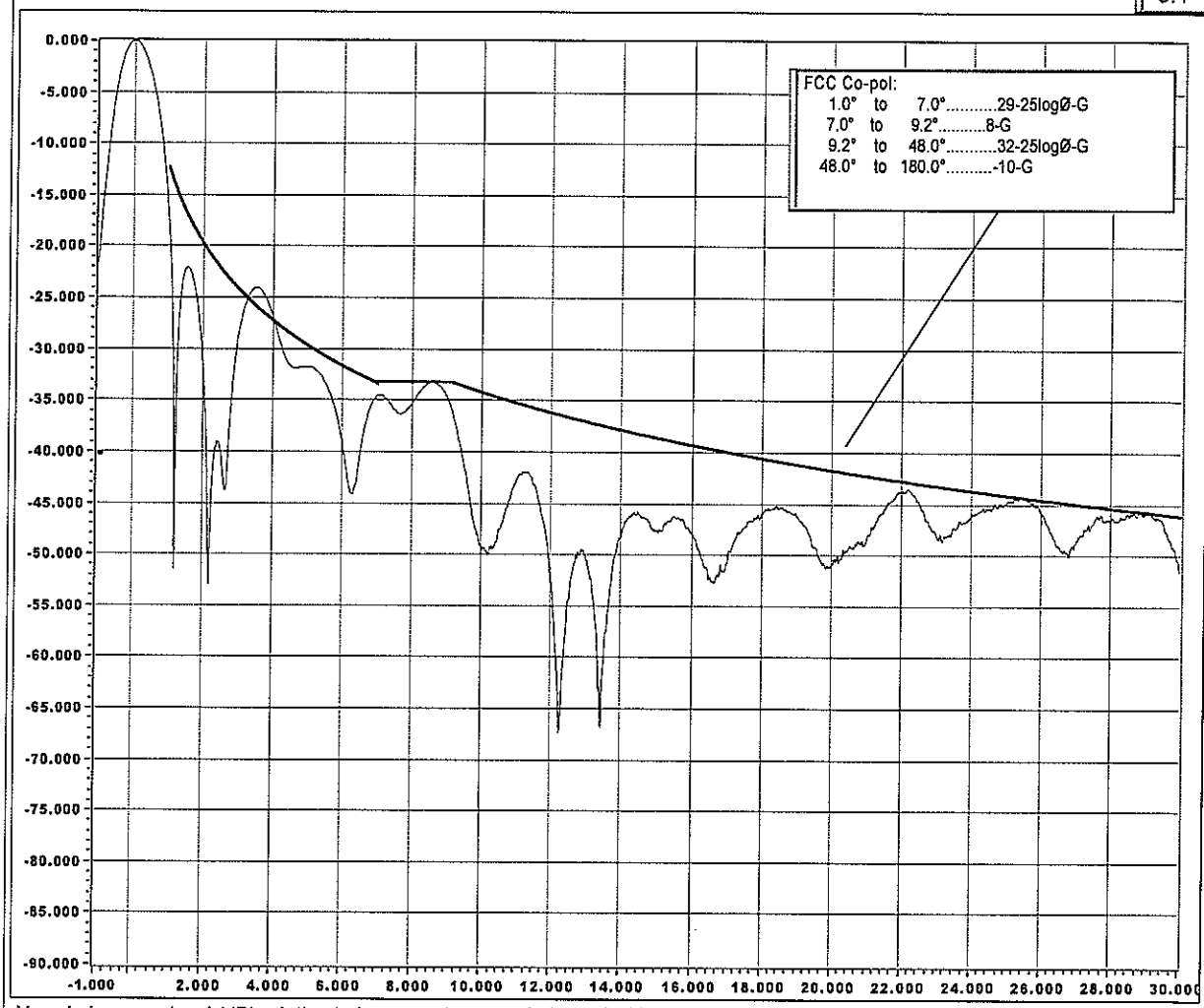
Customer.....	GDSATCOM
Date/Local Time.....	7-20-2007 at 185839
Job Number.....	C0038

Model.....	1.2 QDMA
Location.....	Test Range
Weather.....	Heavy Cloudy
Test Engineer.....	Richard Davisson
Spacecraft.....	Short Range
Transponder.....	

RX...Co-pol...VERT polarization...10.700 GHz

Elevation

% Over Curve: 3.1



Y-scale is power level (dB) relative to beam center; x-scale is angle (degrees, cosine corrected) relative to beam center

SA Freq (Hz)=10700000194, AZ rate (deg/s)=1.291, EL rate (deg/s)=0.832, RBW (Hz)=30, VBW (Hz)=1

File:	% 070720 185839 C0038 RC-95-VE-10.700.tx	Specified Gain:	41.200
Test Frequency (GHz):	10.700000194	Azimuth Beam Center (deg):	181.000
Ref. Level (dBm):	-12.76	Elevation Beam Center (deg):	12.000
# Points Displayed:	2458	Margin Under Curve (dB):	None

Versions
60120 FAST
60129 PACK

Vertex RSI
GENERAL DYNAMICS

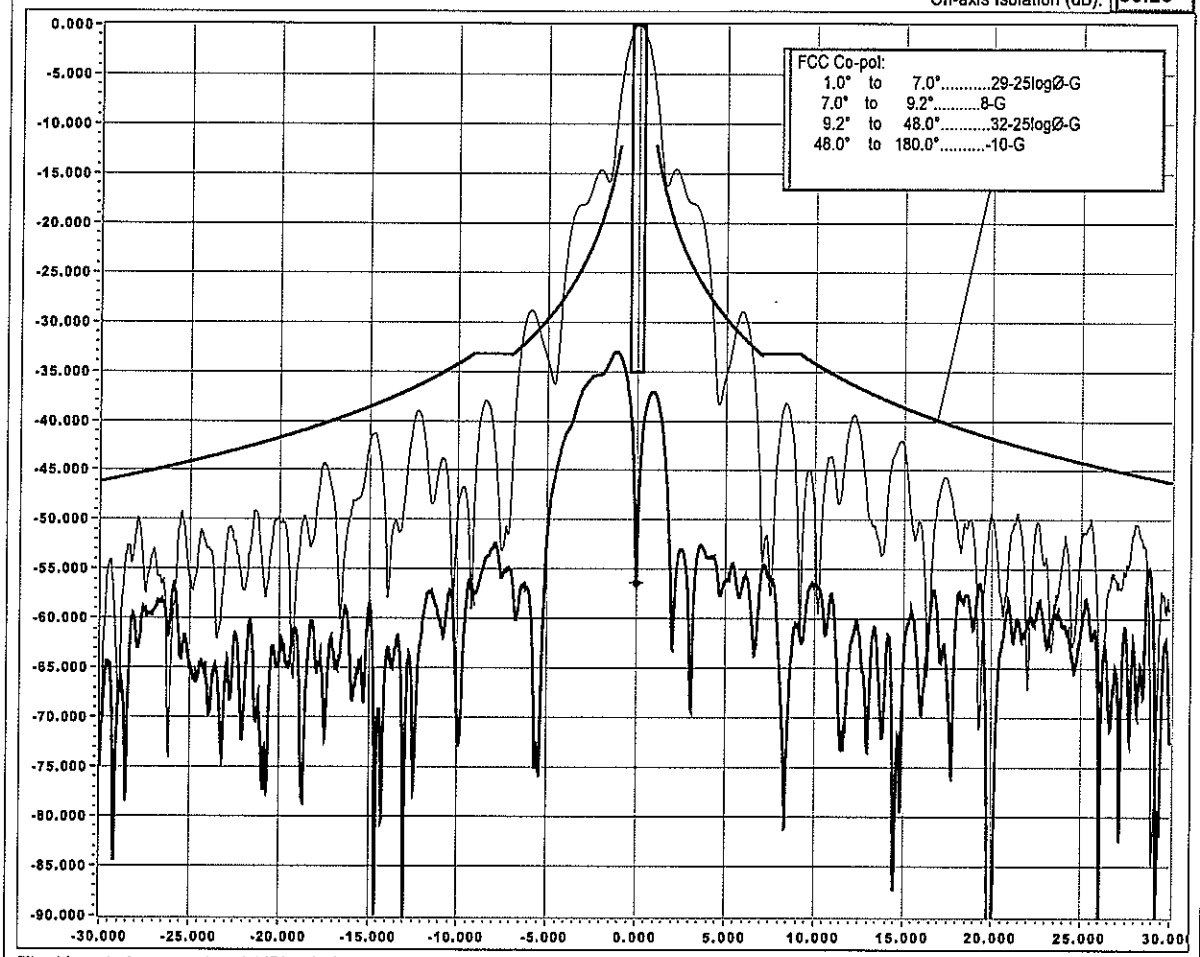
Customer.....	GDSATCOM
Date/Local Time.....	7-20-2007 at 202927
Job Number.....	C0038

Model.....	1.2 QDMA
Location.....	Test Range
Weather.....	Heavy Cloudy
Test Engineer.....	Richard Davisson
Spacecraft.....	Short Range
Transponder.....	

RX...Cross-pol under Co-pol...VERT polarization...10.700 GHz

Azimuth

On-axis Isolation (dB): 56.28



The Y-scale is power level (dB) relative to beam center; the X-scale is angle (degrees, cosine corrected) relative to beam center.

SA Freq (Hz)=10700000191, AZ rate (deg/s)=1.291, EL rate (deg/s)=0.832, RBW (Hz)=30, VBW (Hz)=10

Co-pol File:	% 070720 184707 C0038 RC-155-VA-10.700.txt	Azimuth Beam Center (deg):	181.000
Cross-pol File:	% 070720 202927 C0038 RX-30-VA-10.700.txt	Elevation Beam Center (deg):	12.000
Test Frequency (GHz):	10.700000191	On-axis Spec. Isolation (dB):	35.000
Ref. Level (dBm):	-12.79	Off-axis Spec. Isolation (dB):	35.00
# Points Displayed:	7842		

Versions
60120 FAST
60129 PACK

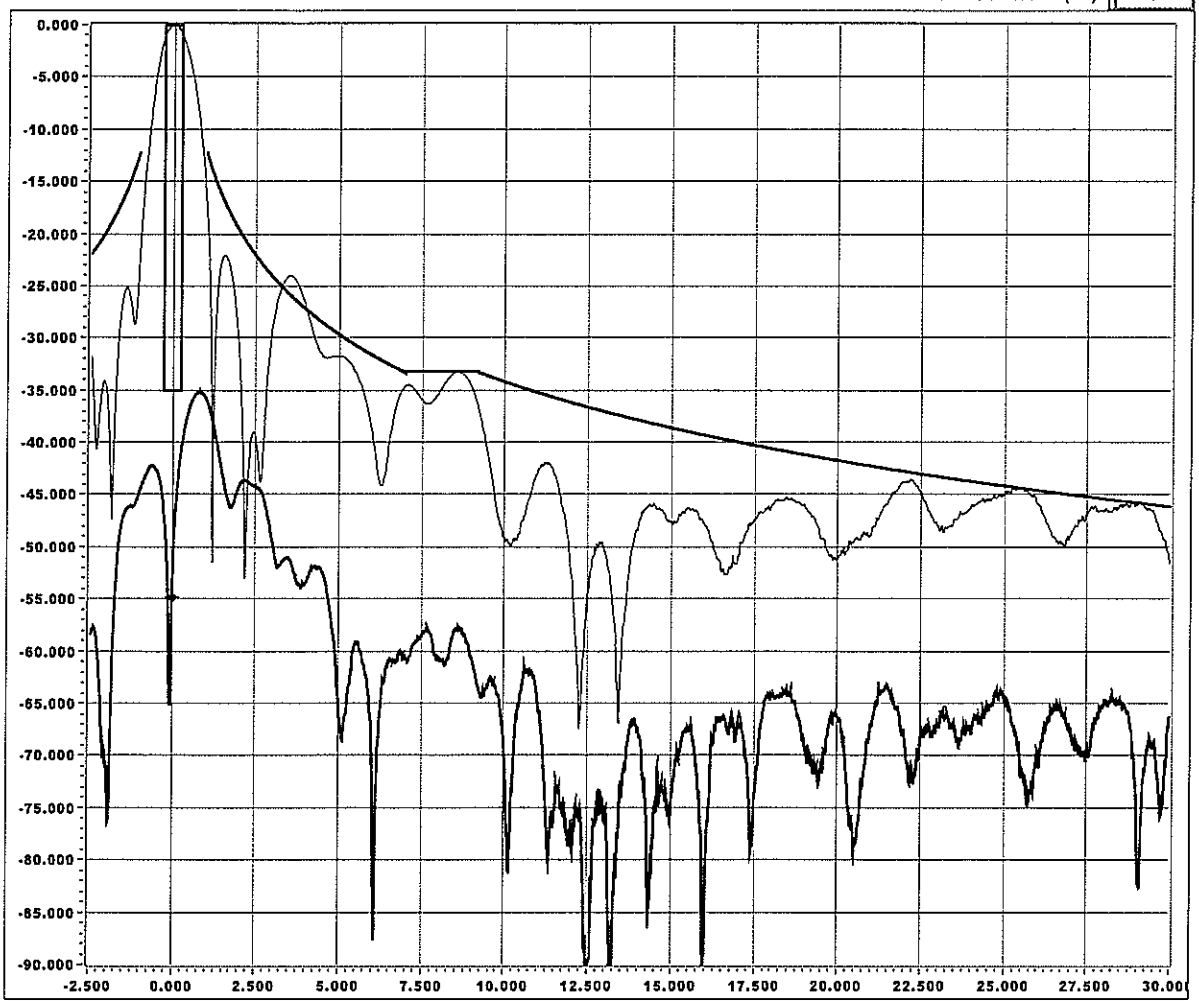
Vertex RSI
GENERAL DYNAMICS

Customer.....	GDSATCOM	Model.....	1.2 QDMA
Date/Local Time.....	7-20-2007 at 185839	Location.....	Test Range
Job Number.....	C0038	Weather.....	Heavy Cloudy
		Test Engineer.....	Richard Davisson
		Spacecraft.....	Short Range
		Transponder.....	

RX...Cross-pol under Co-pol...VERT polarization...10.700 GHz

Elevation

On Axis Isolation (dB): 54.88



The Y-scale is power level (dB) relative to beam center; the X-scale is angle (degrees, cosine corrected) relative to beam center.

SA Freq (Hz)=10700000194, AZ rate (deg/s)=1.291, EL rate (deg/s)=0.832, RBW (Hz)=30, VBW (Hz)=10

Co-pol File:	% 070720 185839 C0038 RC-95-VE-10.700.txt	Azimuth Beam Center (deg):	181.000
Cross-pol File:	% 070720 203238 C0038 RX-30-VE-10.700.txt	Elevation Beam Center (deg):	12.000
Test Frequency (GHz):	10.700000194	On-axis Spec. Isolation (dB):	35.000
Ref. Level (dBm):	-12.79	Off-axis Spec. Isolation (dB):	35.00
# Points Displayed:	2652		

Versions
60120 FAST
60129 PACK

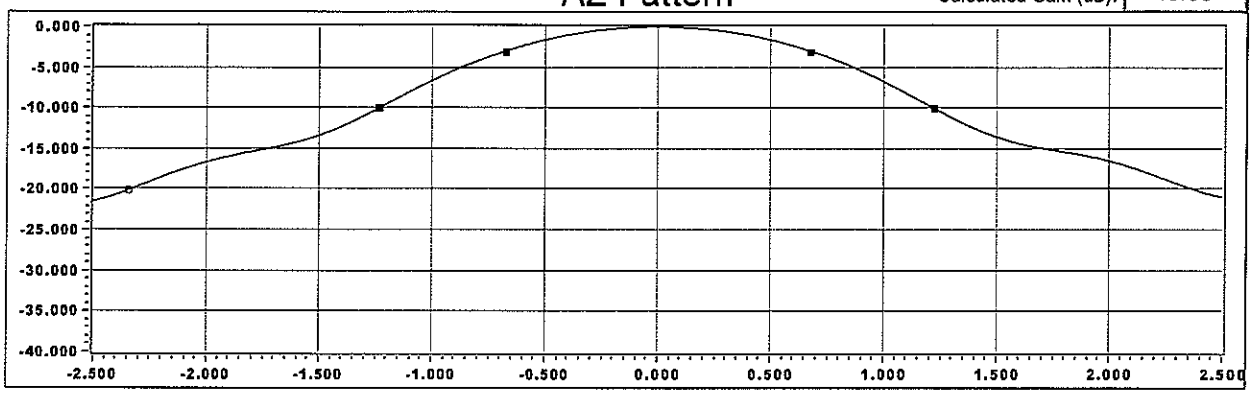
Vertex RSI
GENERAL DYNAMICS

Customer.....	GDSATCOM	Model.....	1.2 QDMA
Date/Local Time.....	7-20-2007 at 192847	Location.....	Test Range
Job Number.....	C0038	Weather.....	Heavy Cloudy
		Test Engineer.....	Richard Davisson
		Spacecraft.....	Short Range
		Transponder.....	

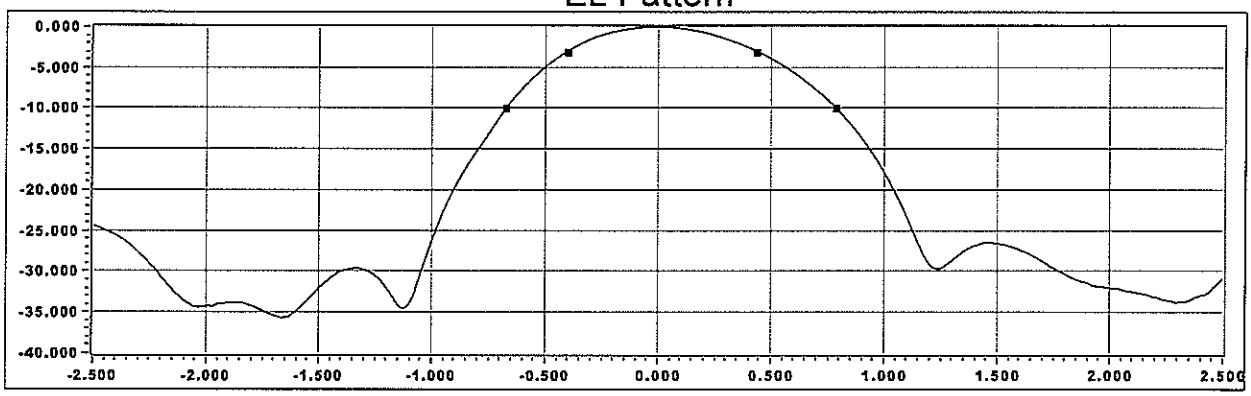
RX...VERT Polarization...Gain by Beamwidth...11.725 GHz

Spec. Gain (dBi): 41.600
Calculated Gain (dB): 43.38

AZ Pattern



EL Pattern



The Y-scale is power level (dB) relative to beam center; the X -scale is angle (degrees, AZ cosine corrected) relative to beam center.

Gain by Beamwidth dBi = 10 log[((3dB factor / (AZ 3dB BW * EL 3dB BW)) + (10dB factor / (AZ 10dB BW * EL 10dB BW))) / 2]
- Feed Loss dB - 4.923(RMS inches * Freq GHz)²

SA Freq (Hz)=11725000211, AZ rate (deg/s)=1.291, EL rate (deg/s)=0.832, RBW (Hz)=30, VBW (Hz)=10

AZ Co-pol File	% 070720 192847 C0038 RC-5-VA-11.725.txt
EL Co-pol File	% 070720 192948 C0038 RC-5-VE-11.725.txt

The calculated gain is greater than the specified gain by 1.78 dB.

Test Frequency (GHz)	11.725000211	AZ 3dB BW (deg)	1.3495	# Points Displayed	3206
AZ Ref. Level (dBm)	-14.45	AZ 10dB BW (deg)	2.4540		
Feed Loss (dB)	0.55	AZ 15dB BW (deg)	3.4354		
RMS (in.)	0.020	EL 3dB BW (deg)	0.8435		
Azimuth (deg)	181.000	EL 10dB BW (deg)	1.4630	3dB Factor	31000
Elevation (deg)	12.000	EL 15dB BW (deg)	1.7330	10dB Factor	91000

Versions
60120 FAST
60129 PACK

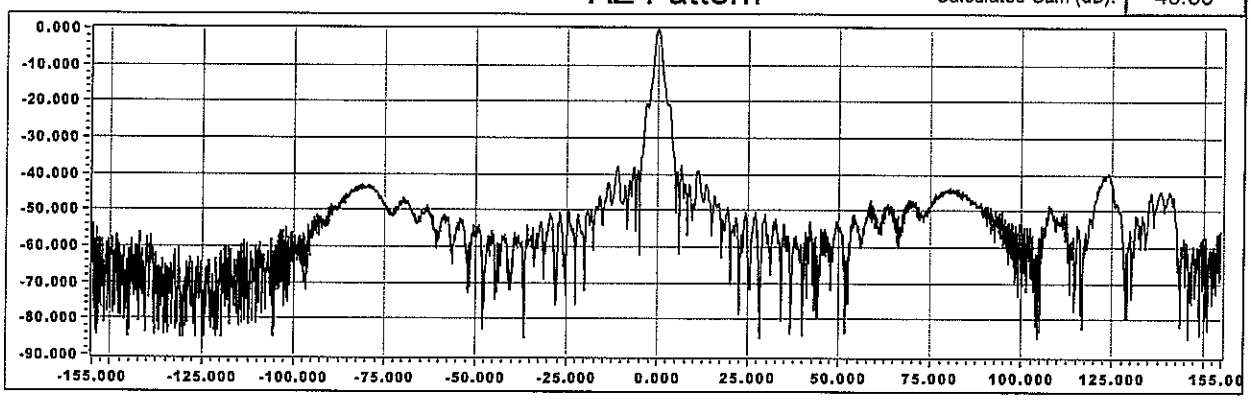
Vertex RSI
GENERAL DYNAMICS

Customer.....	GDSATCOM
Date/Local Time.....	7-20-2007 at 191937
Job Number.....	C0038
Model.....	1.2 QDMA
Location.....	Test Range
Weather.....	Heavy Cloudy
Test Engineer.....	Richard Davisson
Spacecraft.....	Short Range
Transponder.....	

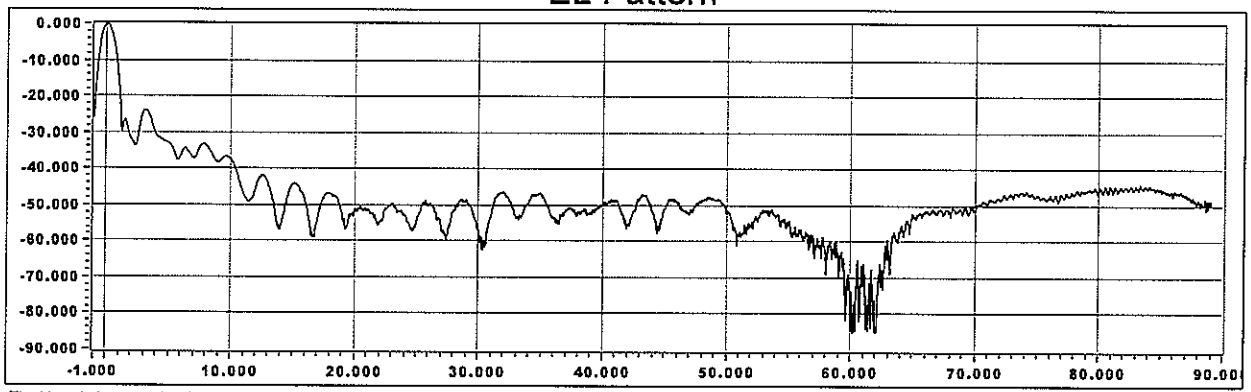
RX...VERT Polarization...Gain by Integration...11.725 GHz

Spec. Gain (dBi): 41.600
Calculated Gain (dB): 43.83

AZ Pattern



EL Pattern



The Y-scale is power level (dB) relative to beam center; the X -scale is angle (degrees, AZ cosine corrected) relative to beam center.

Antenna Gain by Integration = 2 / (Sum [PsubTheta * sin(Theta) * deltaTheta] - FeedLoss - AngularExtentLoss - SparBlockageLoss - CrossPolLoss)
where the summation is performed for look angles (Theta) offset from beam center from 0 to 180 degrees (in practice the summation occurs on both sides of beam center and the average is taken) and where PsubTheta is the power relative to beam center power and measured at look angles offset from beam center.

SA Freq (Hz)=11725000212, AZ rate (deg/s)=1.291, EL rate (deg/s)=0.832, RBW (Hz)=30, VBW (Hz)=10

AZ Co-pol File	% 070720 191937 C0038 RC-155-VA-11.725.txt
EL Co-pol File	% 070720 192426 C0038 RC-90-VE-11.725.txt

Test Frequency (GHz)	11.725000212
AZ Ref. Level (dBm)	-14.41
Azimuth (deg)	181.000
Elevation (deg)	12.000

Versions
60120 FAST
60129 PACK

The calculated gain is greater than the specified gain by 2.23 dB.

# Points Displayed	7881
Feed Loss (dB)	0.55
Angular Extent Loss(dB)	0.15
Spar Blockage Loss (dB)	0.05
Cross-pol Loss (dB)	0.05

Vertex RSI
GENERAL DYNAMICS

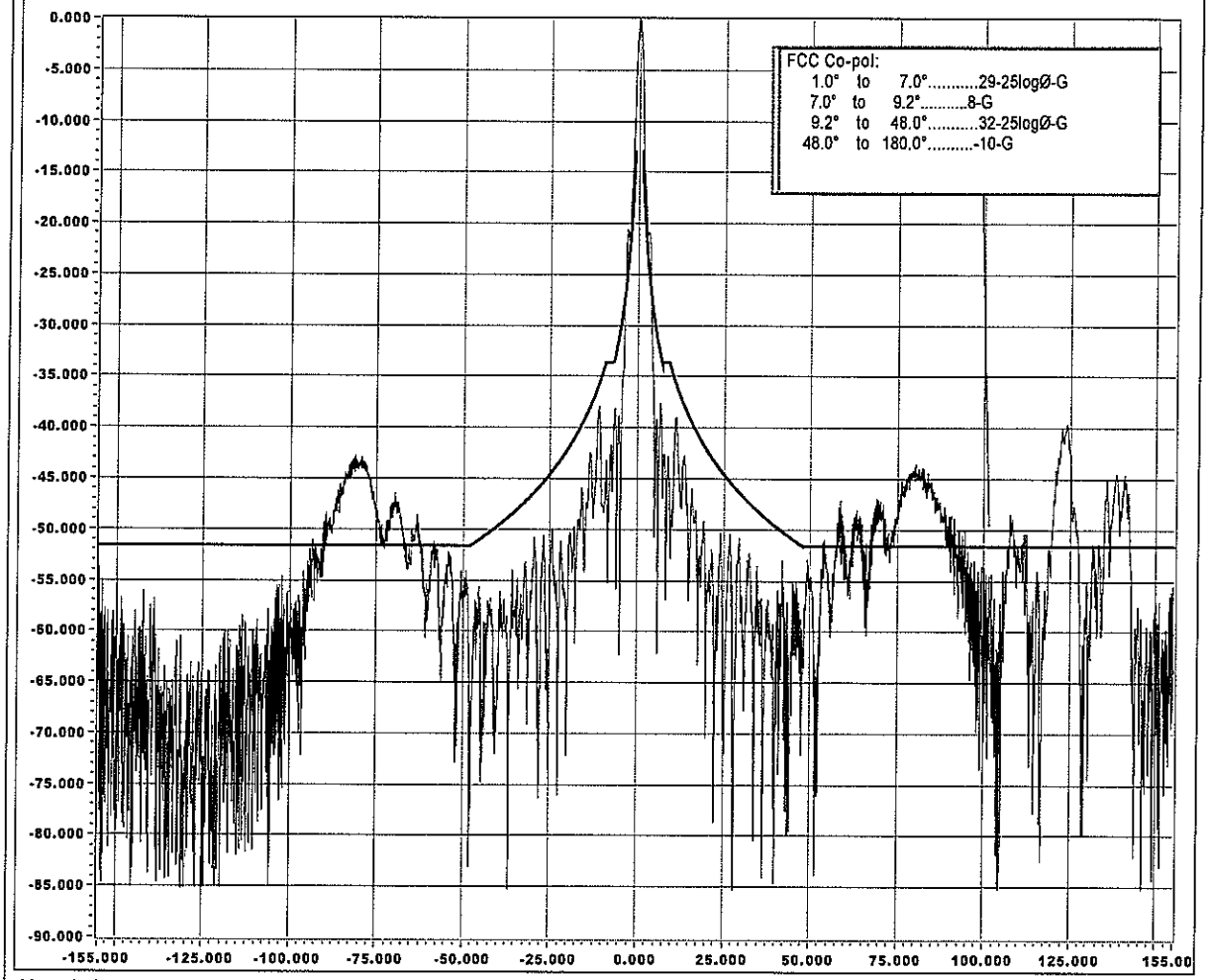
Customer.....	GDSATCOM
Date/Local Time.....	7-20-2007 at 191937
Job Number.....	C0038

Model.....	1.2 QDMA
Location.....	Test Range
Weather.....	Heavy Cloudy
Test Engineer.....	Richard Davisson
Spacecraft.....	Short Range
Transponder.....	

RX...Co-pol...VERT polarization...11.725 GHz

Azimuth

% Over Curve: 24.8



Y-scale is power level (dB) relative to beam center; x-scale is angle (degrees, cosine corrected) relative to beam center

SA Freq (Hz)=11725000212, AZ rate (deg/s)=1.291, EL rate (deg/s)=0.832, RBW (Hz)=30, VBW (Hz)=10

File:	% 070720 191937 C0038 RC-155-VA-11.725.tx	Specified Gain (dB):	41.600
Test Frequency (GHz):	11.725000212	Azimuth Beam Center (deg):	181.000
Ref. Level (dBm):	-14.41	Elevation Beam Center (deg):	12.000
# Points Displayed:	7881	Margin Under Curved (dB):	None

Versions
60120 FAST
60129 PACK

Vertex RSI
GENERAL DYNAMICS

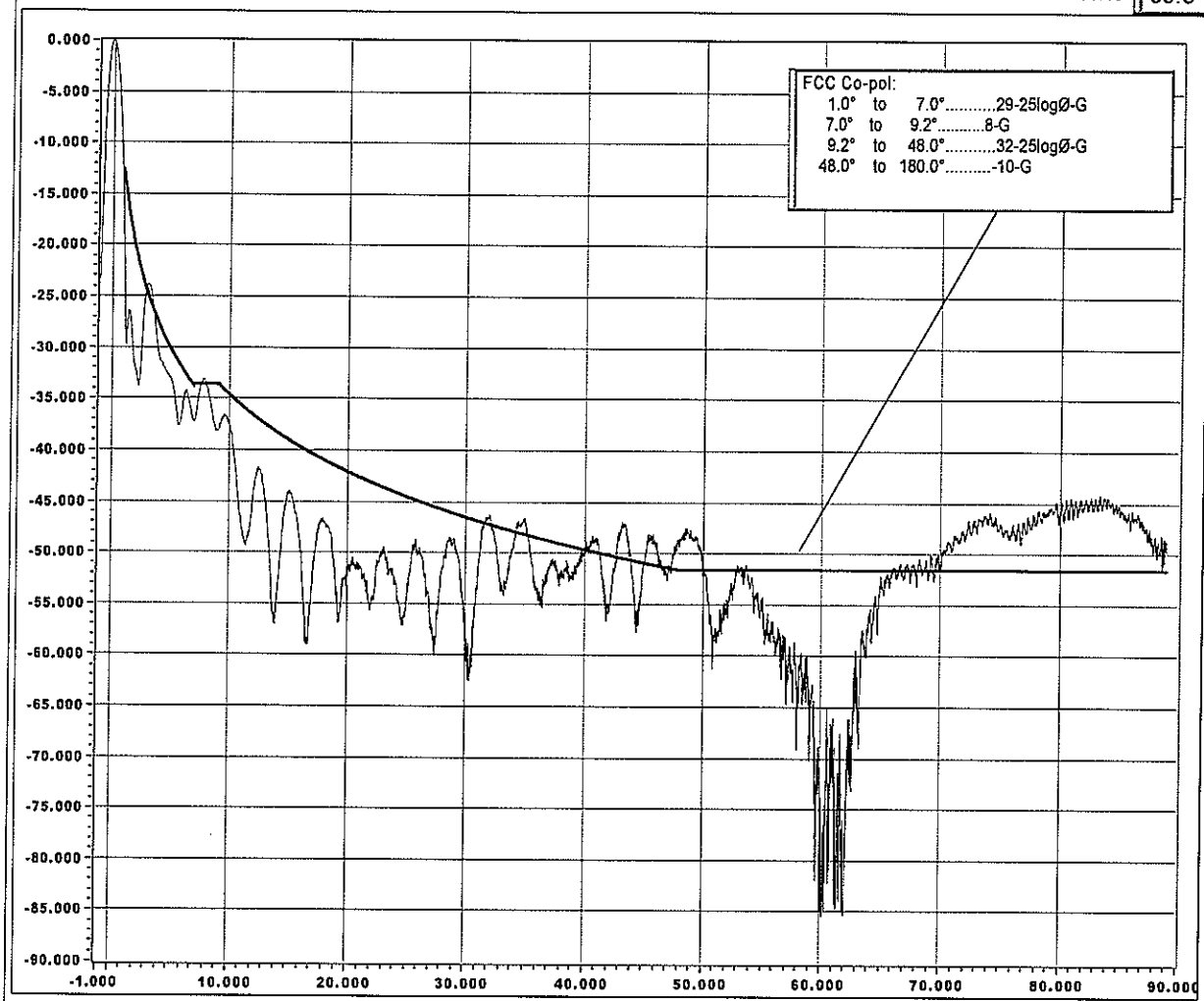
Customer.....	GDSATCOM
Date/Local Time.....	7-20-2007 at 192426
Job Number.....	C0038

Model.....	1.2 QDMA
Location.....	Test Range
Weather.....	Heavy Cloudy
Test Engineer.....	Richard Davisson
Spacecraft.....	Short Range
Transponder.....	

RX...Co-pol...VERT polarization...11.725 GHz

Elevation

% Over Curve: 35.3



Y-scale is power level (dB) relative to beam center; x-scale is angle (degrees, cosine corrected) relative to beam center

SA Freq (Hz)=11725000212, AZ rate (deg/s)=1.291, EL rate (deg/s)=0.832, RBW (Hz)=30, VBW (Hz)=1

File:	% 070720 192426 C0038 RC-90-VE-11.725.tx	Specified Gain:	41.600
Test Frequency (GHz):	11.725000212	Azimuth Beam Center (deg):	181.000
Ref. Level (dBm):	-14.53	Elevation Beam Center (deg):	12.000
# Points Displayed:	7616	Margin Under Curve (dB):	None

Versions
60120 FAST
60129 PACK

Vertex RSI
GENERAL DYNAMICS

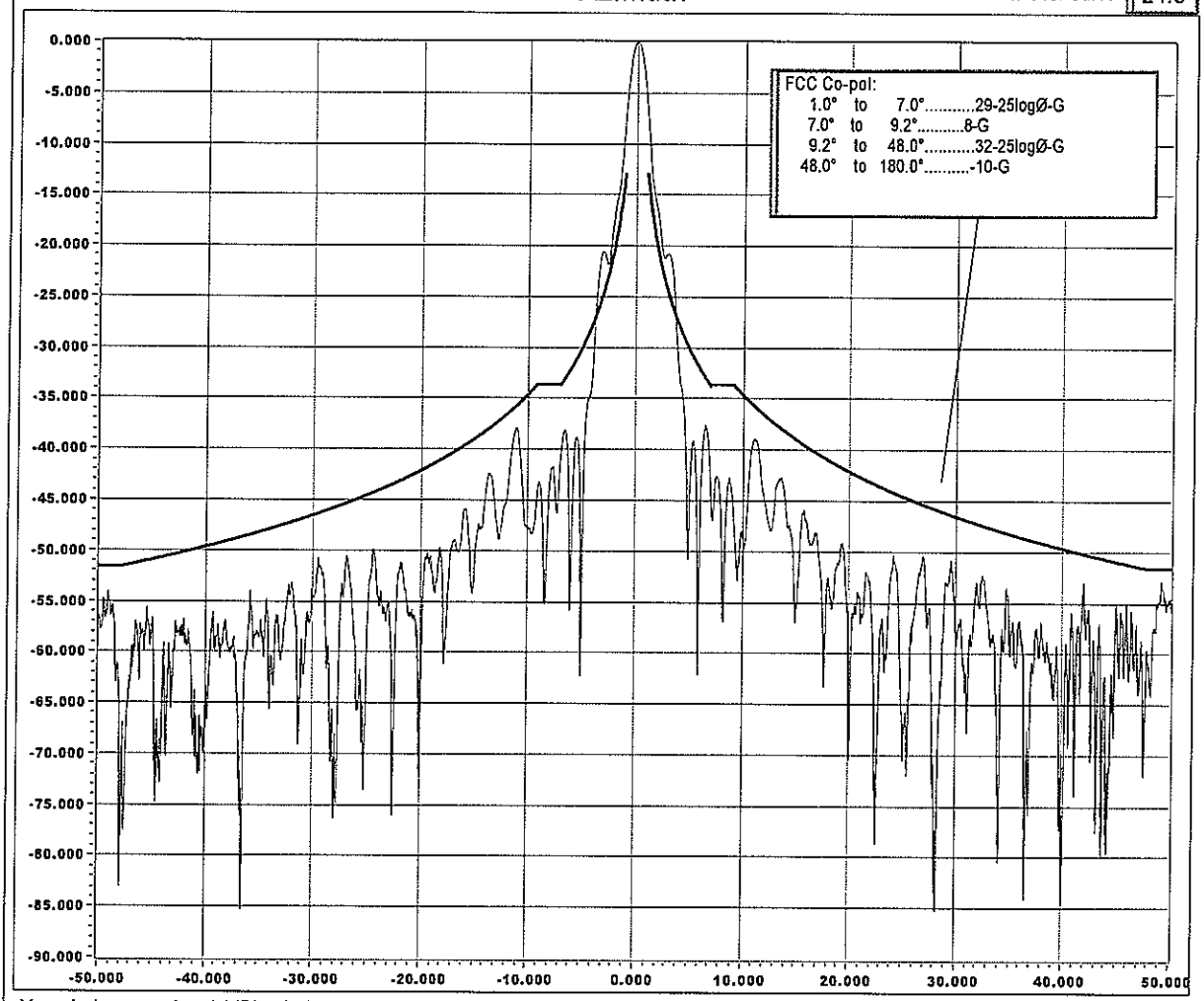
Customer.....	GDSATCOM
Date/Local Time.....	7-20-2007 at 191937
Job Number.....	C0038

Model.....	1.2 QDMA
Location.....	Test Range
Weather.....	Heavy Cloudy
Test Engineer.....	Richard Davisson
Spacecraft.....	Short Range
Transponder.....	

RX...Co-pol...VERT polarization...11.725 GHz

Azimuth

% Over Curve: 24.8



Y-scale is power level (dB) relative to beam center; x-scale is angle (degrees, cosine corrected) relative to beam center

SA Freq (Hz)=11725000212, AZ rate (deg/s)=1.291, EL rate (deg/s)=0.832, RBW (Hz)=30, VBW (Hz)=10

File:	% 070720 191937 C0038 RC-155-VA-11.725.tx	Specified Gain (dB):	41.600
Test Frequency (GHz):	11.725000212	Azimuth Beam Center (deg):	181.000
Ref. Level (dBm):	-14.41	Elevation Beam Center (deg):	12.000
# Points Displayed:	7881	Margin Under Curved (dB):	None

Versions
60120 FAST
60129 PACK

Vertex RSI
GENERAL DYNAMICS

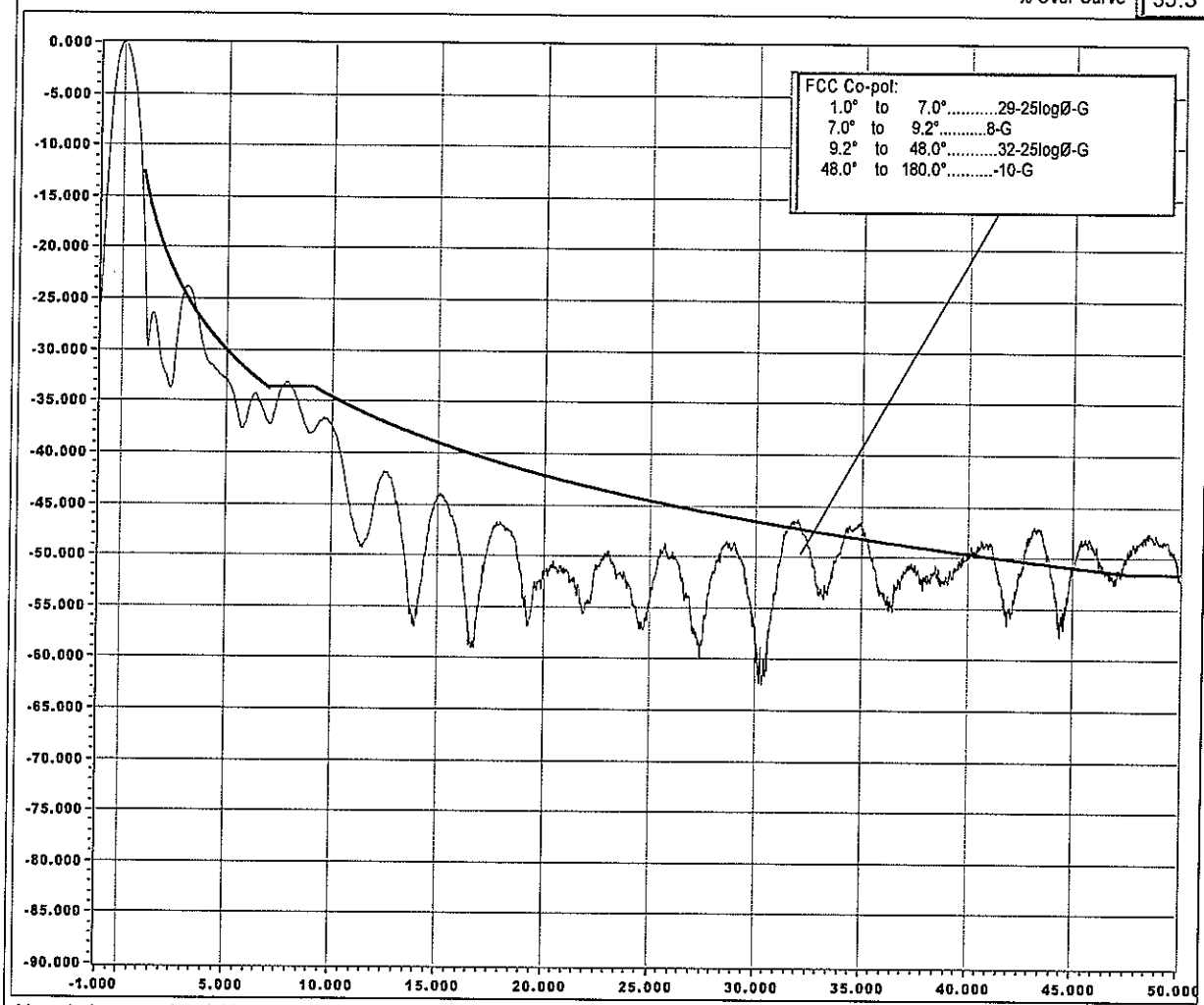
Customer.....	GDSATCOM
Date/Local Time.....	7-20-2007 at 192426
Job Number.....	C0038

Model.....	1.2 QDMA
Location.....	Test Range
Weather.....	Heavy Cloudy
Test Engineer.....	Richard Davisson
Spacecraft.....	Short Range
Transponder.....	

RX...Co-pol...VERT polarization...11.725 GHz

Elevation

% Over Curve: 35.3



Y-scale is power level (dB) relative to beam center; x-scale is angle (degrees, cosine corrected) relative to beam center

SA Freq (Hz)=11725000212, AZ rate (deg/s)=1.291, EL rate (deg/s)=0.832, RBW (Hz)=30, VBW (Hz)=1

File:	% 070720 192426 C0038 RC-90-VE-11.725.tx	Specified Gain:	41.600
Test Frequency (GHz):	11.725000212	Azimuth Beam Center (deg):	181.000
Ref. Level (dBm):	-14.53	Elevation Beam Center (deg):	12.000
# Points Displayed:	7616	Margin Under Curve (dB):	None

Versions
60120 FAST
60129 PACK

Vertex RSI
GENERAL DYNAMICS

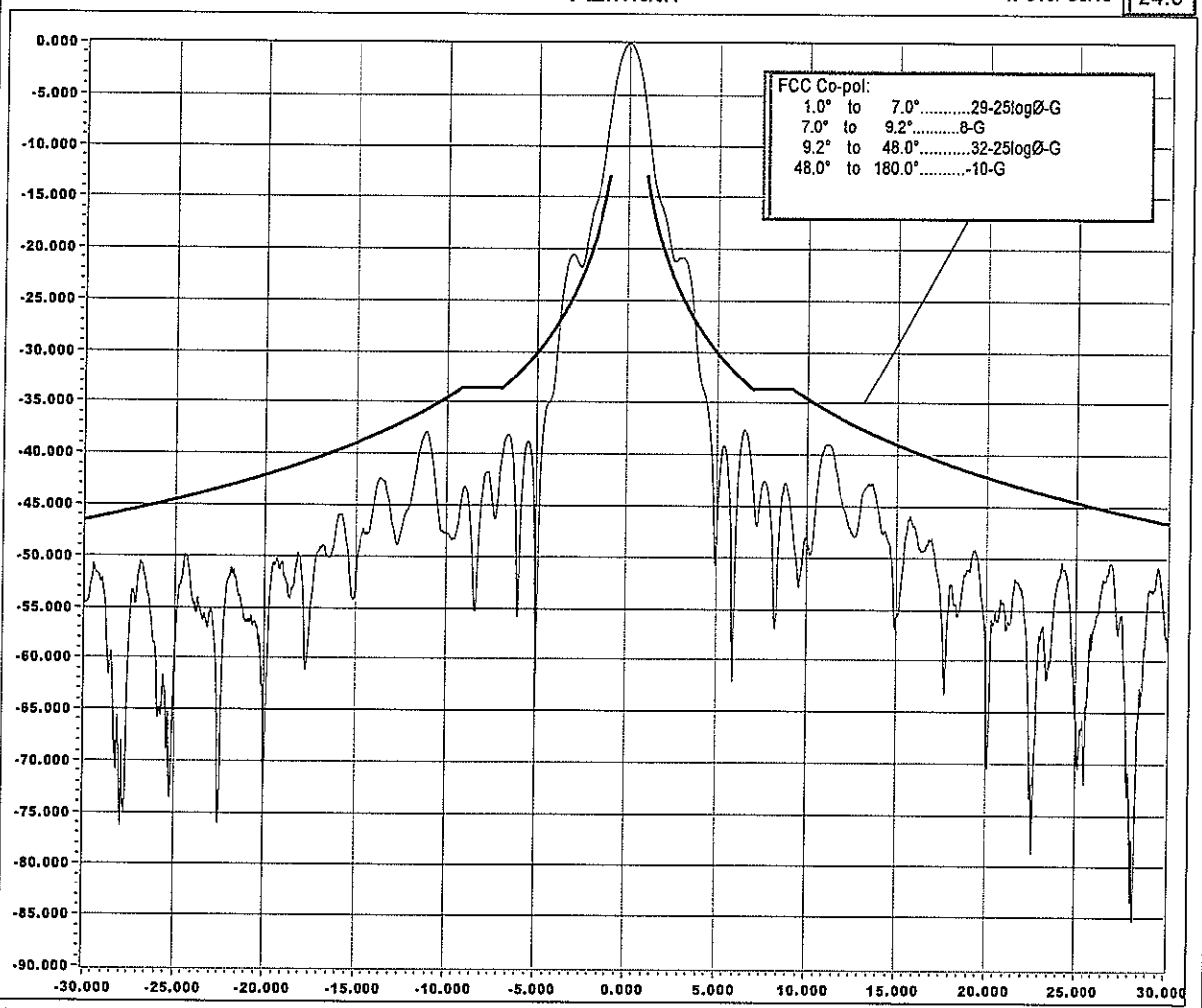
Customer.....	GDSATCOM
Date/Local Time.....	7-20-2007 at 191937
Job Number.....	C0038

Model.....	1.2 QDMA
Location.....	Test Range
Weather.....	Heavy Cloudy
Test Engineer.....	Richard Davisson
Spacecraft.....	Short Range
Transponder.....	

RX...Co-pol...VERT polarization...11.725 GHz

Azimuth

% Over Curve: 24.8



Y-scale is power level (dB) relative to beam center; x-scale is angle (degrees, cosine corrected) relative to beam center

SA Freq (Hz)=11725000212, AZ rate (deg/s)=1.291, EL rate (deg/s)=0.832, RBW (Hz)=30, VBW (Hz)=10

File:	% 070720 191937 C0038 RC-155-VA-11.725.tx	Specified Gain (dB):	41.600
Test Frequency (GHz):	11.725000212	Azimuth Beam Center (deg):	181.000
Ref. Level (dBm):	-14.41	Elevation Beam Center (deg):	12.000
# Points Displayed:	7881	Margin Under Curved (dB):	None

Versions
60120 FAST
60129 PACK

Vertex RSI
GENERAL DYNAMICS

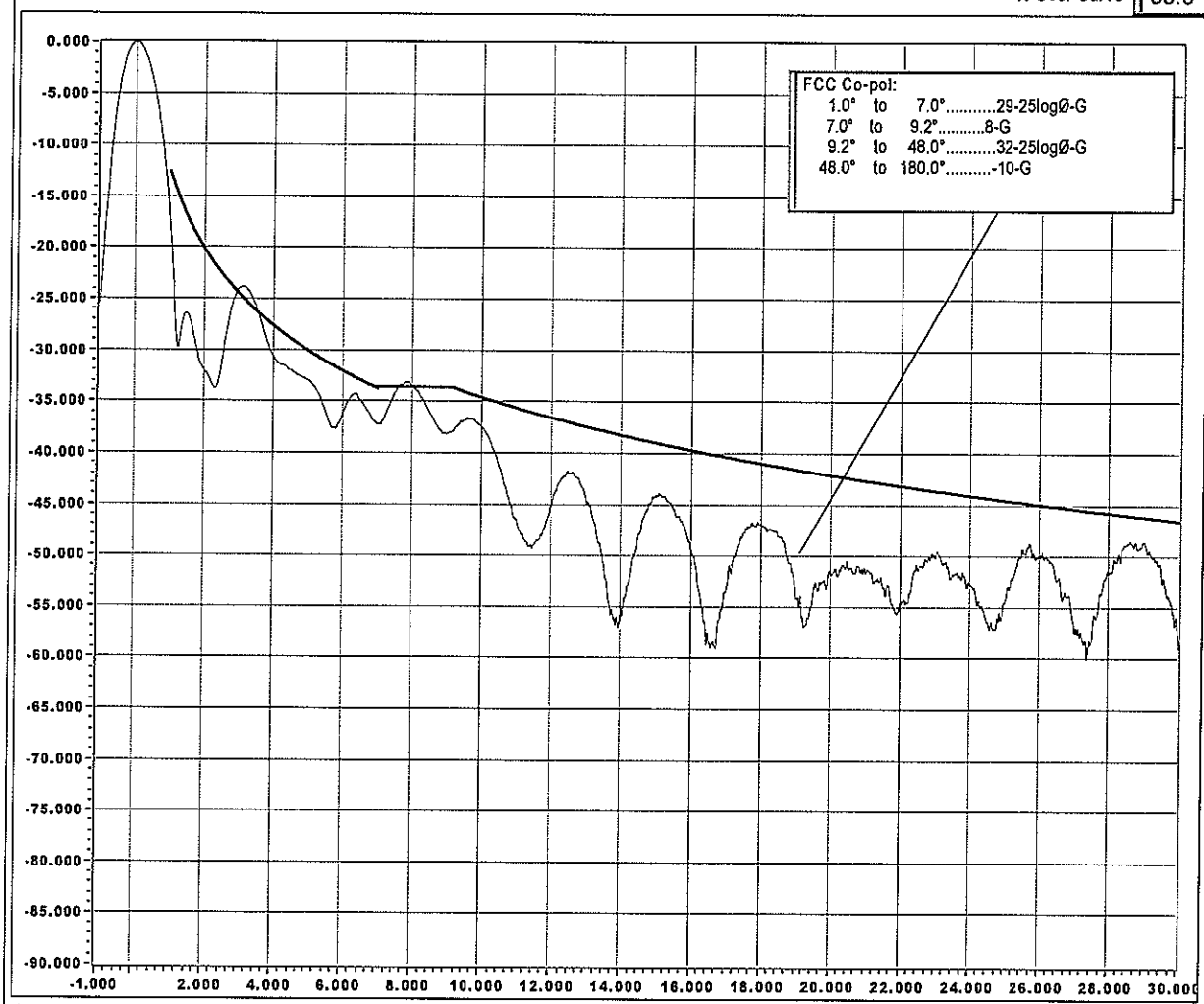
Customer.....	GDSATCOM
Date/Local Time.....	7-20-2007 at 192426
Job Number.....	C0038

Model.....	1.2 QDMA
Location.....	Test Range
Weather.....	Heavy Cloudy
Test Engineer.....	Richard Davisson
Spacecraft.....	Short Range
Transponder.....	

RX...Co-pol...VERT polarization...11.725 GHz

Elevation

% Over Curve: 35.3



Y-scale is power level (dB) relative to beam center; x-scale is angle (degrees, cosine corrected) relative to beam center

SA Freq (Hz)=11725000212, AZ rate (deg/s)=1.291, EL rate (deg/s)=0.832, RBW (Hz)=30, VBW (Hz)=1

File:	% 070720 192426 C0038 RC-90-VE-11.725.tx	Specified Gain:	41.600
Test Frequency (GHz):	11.725000212	Azimuth Beam Center (deg):	181.000
Ref. Level (dBm):	-14.53	Elevation Beam Center (deg):	12.000
# Points Displayed:	7616	Margin Under Curve (dB):	None

Versions
60120 FAST
60129 PACK

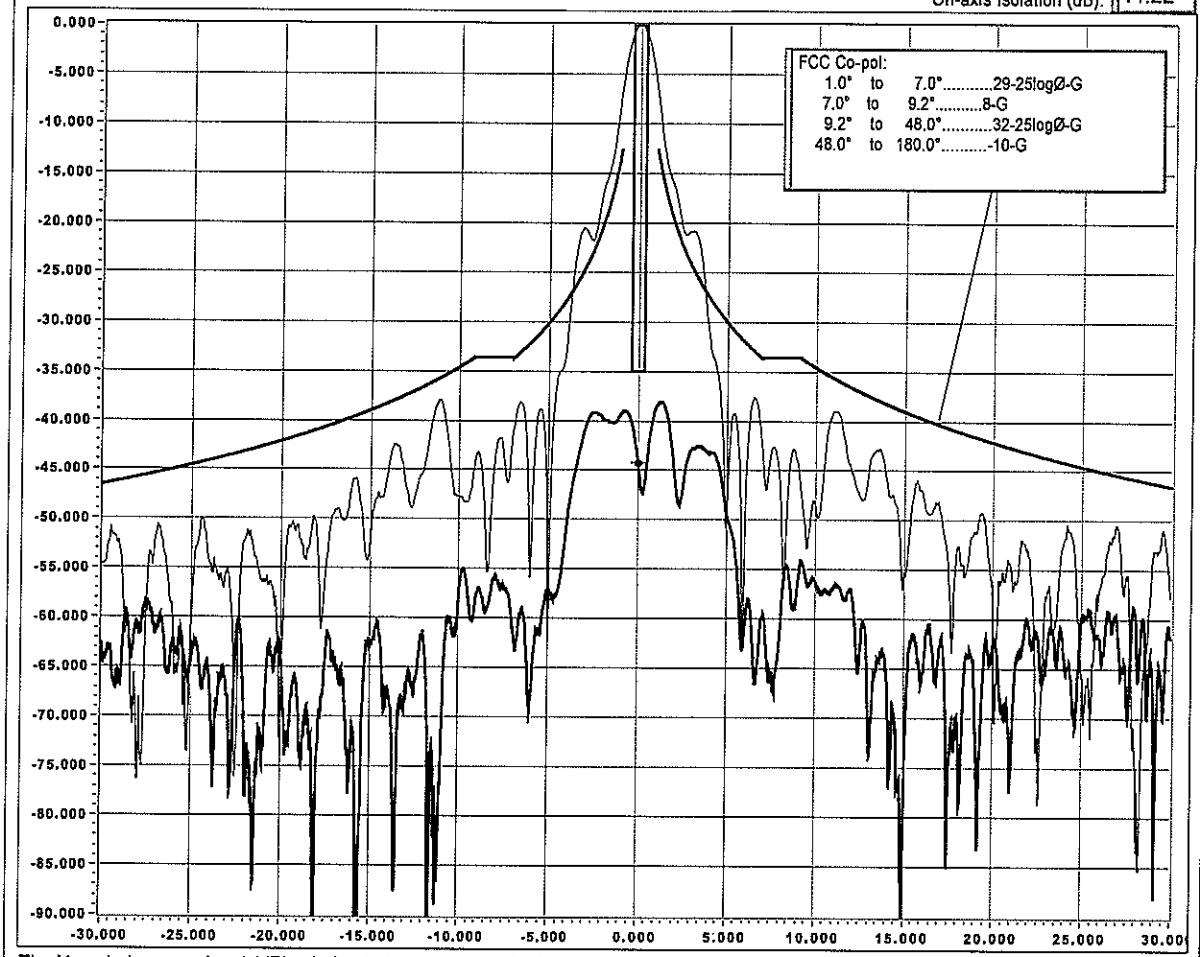
Vertex RSI
GENERAL DYNAMICS

Customer.....	GDSATCOM
Date/Local Time.....	7-20-2007 at 201711
Job Number.....	C0038
Model.....	1.2 QDMA
Location.....	Test Range
Weather.....	Heavy Cloudy
Test Engineer.....	Richard Davisson
Spacecraft.....	Short Range
Transponder.....	

RX...Cross-pol under Co-pol...VERT polarization...11.725 GHz

Azimuth

On-axis Isolation (dB): 44.22



The Y-scale is power level (dB) relative to beam center; the X-scale is angle (degrees, cosine corrected) relative to beam center.

SA Freq (Hz)=11725000210, AZ rate (deg/s)=1.291, EL rate (deg/s)=0.832, RBW (Hz)=30, VBW (Hz)=10

Co-pol File:	% 070720 191937 C0038 RC-155-VA-11.725.txt	Azimuth Beam Center (deg):	181.000
Cross-pol File:	% 070720 201711 C0038 RX-30-VA-11.725.txt	Elevation Beam Center (deg):	12.000
Test Frequency (GHz):	11.725000210	On-axis Spec. Isolation (dB):	35.000
Ref. Level (dBm):	-14.41	Off-axis Spec. Isolation (dB):	35.00
# Points Displayed:	7830		

Versions
60120 FAST
60129 PACK

Vertex RSI
GENERAL DYNAMICS

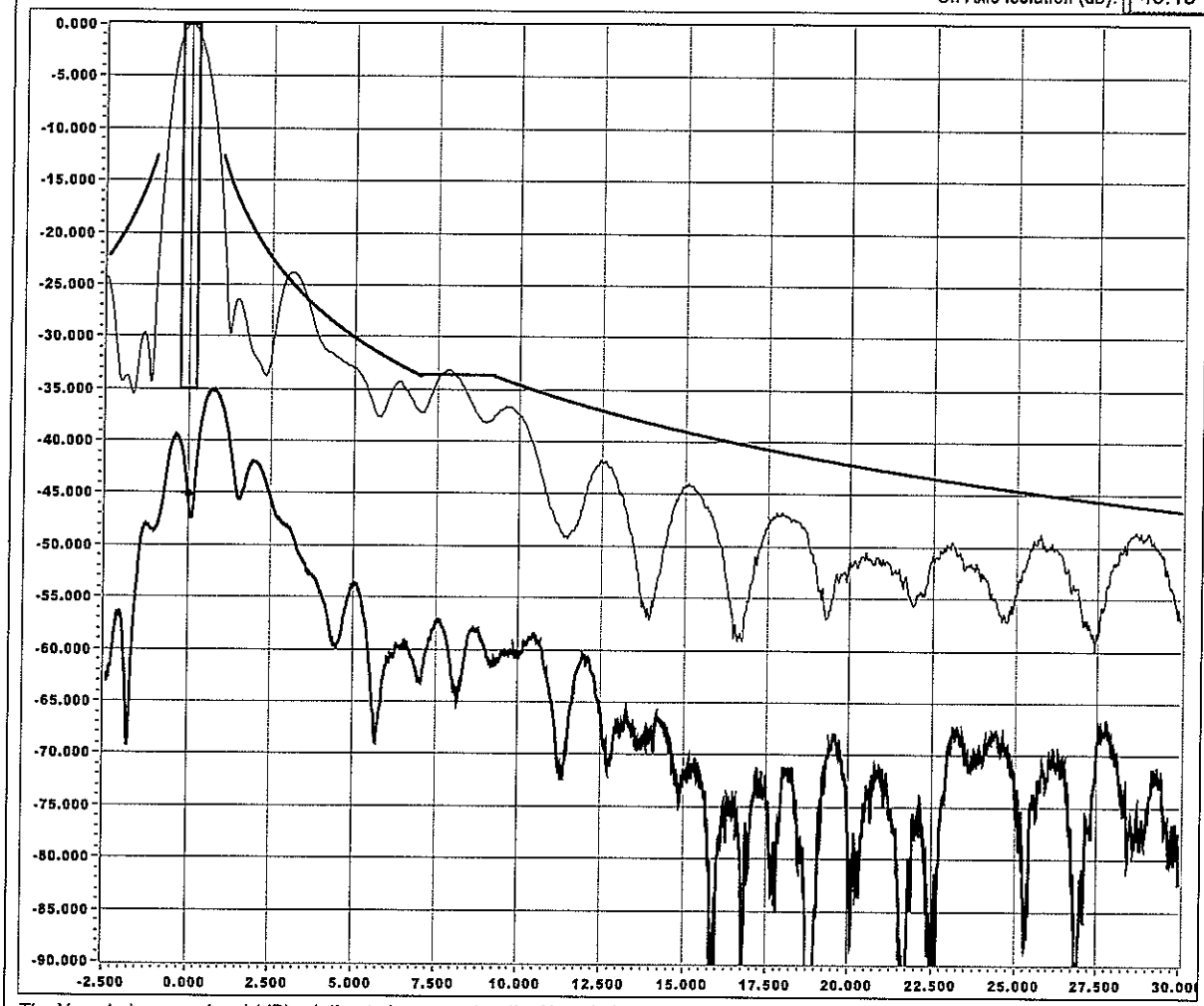
Customer.....	GDSATCOM
Date/Local Time.....	7-20-2007 at 192426
Job Number.....	C0038

Model.....	1.2 QDMA
Location.....	Test Range
Weather.....	Heavy Cloudy
Test Engineer.....	Richard Davisson
Spacecraft.....	Short Range
Transponder.....	

RX...Cross-pol under Co-pol...VERT polarization...11.725 GHz

Elevation

On Axis Isolation (dB): 45.13



The Y-scale is power level (dB) relative to beam center; the X-scale is angle (degrees, cosine corrected) relative to beam center.

SA Freq (Hz)=11725000212, AZ rate (deg/s)=1.291, EL rate (deg/s)=0.832, RBW (Hz)=30, VBW (Hz)=10

Co-pol File:	% 070720 192426 C0038 RC-90-VE-11.725.txt
Cross-pol File:	% 070720 202020 C0038 RX-30-VE-11.725.txt
Test Frequency (GHz):	11.725000212
Ref. Level (dBm):	-14.41
# Points Displayed:	2651

Versions
60120 FAST
60129 PACK

Azimuth Beam Center (deg):	181.000
Elevation Beam Center (deg):	12.000
On-axis Spec. Isolation (dB):	35.000
Off-axis Spec. Isolation (dB):	35.00

Vertex RSI
GENERAL DYNAMICS

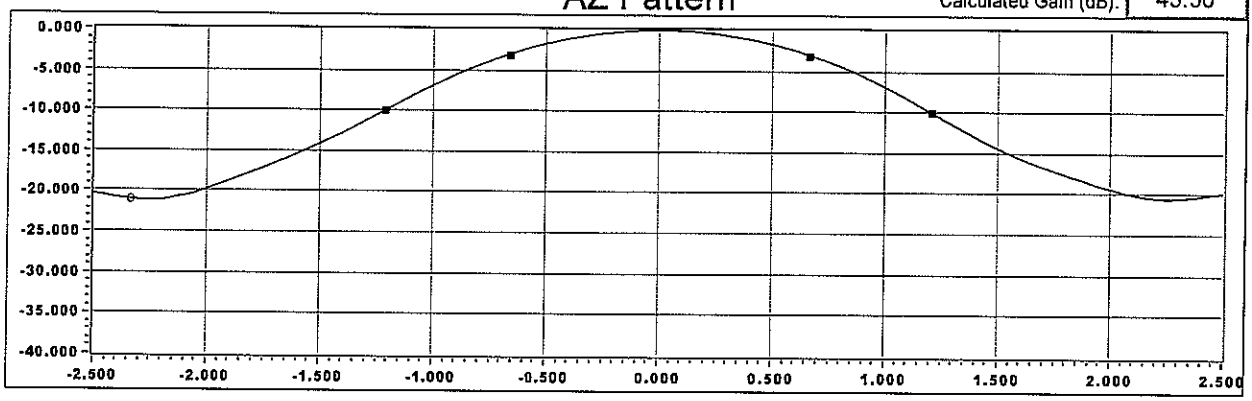
Customer..... GDSATCOM
Date/Local Time..... 7-20-2007 at 193357
Job Number..... C0038

Model..... 1.2 QDMA
Location..... Test Range
Weather..... Heavy Cloudy
Test Engineer..... Richard Davisson
Spacecraft..... Short Range
Transponder.....

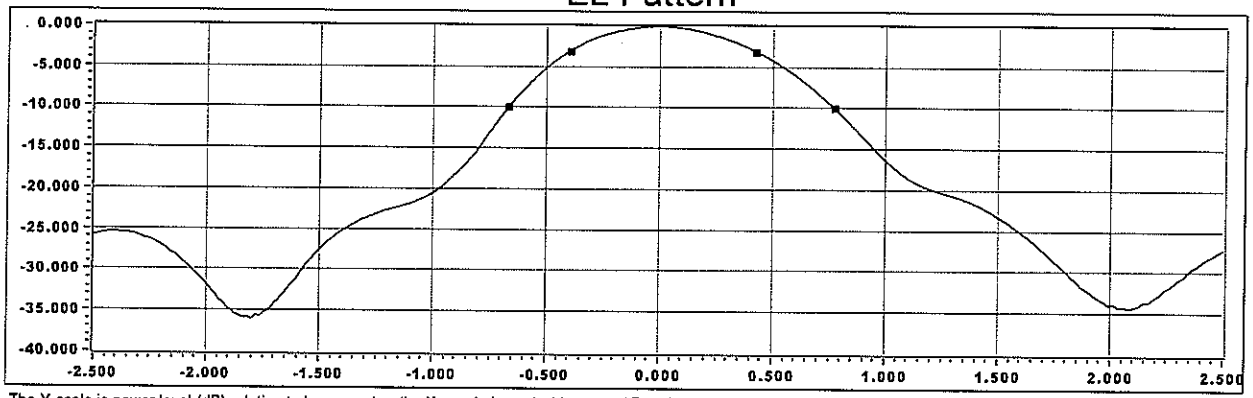
RX...VERT Polarization...Gain by Beamwidth...12.750 GHz

Spec. Gain (dBi): 42.200
Calculated Gain (dB): 43.50

AZ Pattern



EL Pattern



The Y-scale is power level (dB) relative to beam center; the X -scale is angle (degrees, AZ cosine corrected) relative to beam center.

Gain by Beamwidth dBi = 10 log[((3dB factor / (AZ 3dB BW * EL 3dB BW)) + (10dB factor / (AZ 10dB BW * EL 10dB BW))) / 2]
- Feed Loss dB - 4.923(RMS inches * Freq GHz)²

SA Freq (Hz)=12750000230, AZ rate (deg/s)=1.291, EL rate (deg/s)=0.832, RBW (Hz)=30, VBW (Hz)=10

AZ Co-pol File: % 070720 193357 C0038 RC-5-VA-12.750.txt
EL Co-pol File: % 070720 193458 C0038 RC-5-VE-12.750.txt

The calculated gain is greater than the specified gain by 1.30 dB.

Test Frequency (GHz)	12.750000230	AZ 3dB BW (deg)	1.3255	# Points Displayed	3208
AZ Ref. Level (dBm)	-19.04	AZ 10dB BW (deg)	2.4230		
Feed Loss (dB)	0.55	AZ 15dB BW (deg)	3.1179		
RMS (in.)	0.020	EL 3dB BW (deg)	0.8161		
Azimuth (deg)	181.000	EL 10dB BW (deg)	1.4436	3dB Factor	31000
Elevation (deg)	12.000	EL 15dB BW (deg)	1.7519	10dB Factor	91000

Versions
60120 FAST
60129 PACK

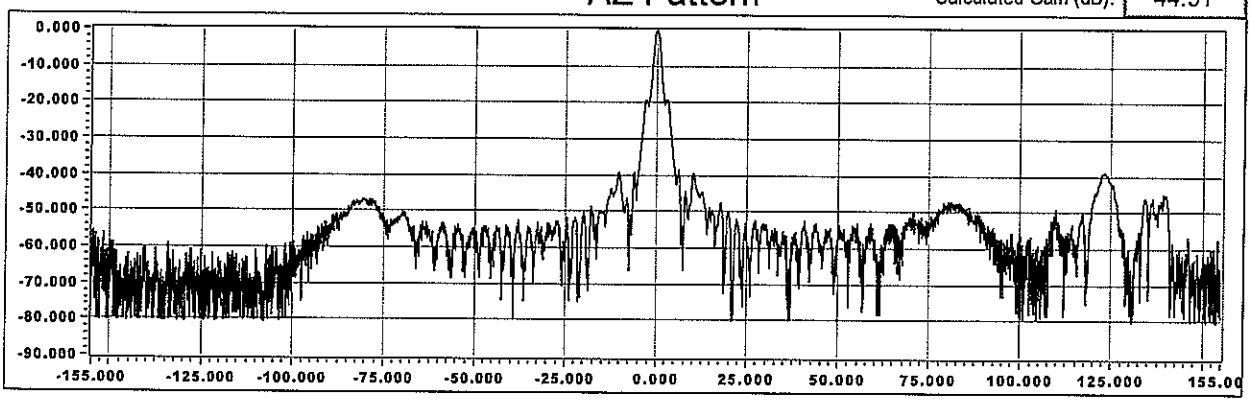
Vertex RSI
GENERAL DYNAMICS

Customer.....	GDSATCOM
Date/Local Time.....	7-20-2007 at 194317
Job Number.....	C0038
Model.....	1.2 QDMA
Location.....	Test Range
Weather.....	Heavy Cloudy
Test Engineer.....	Richard Davisson
Spacecraft.....	Short Range
Transponder.....	

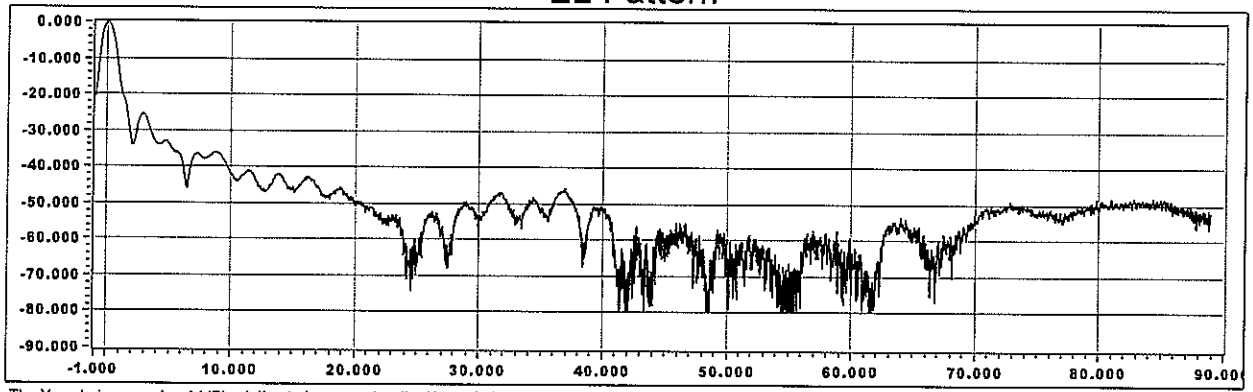
RX...VERT Polarization...Gain by Integration...12.750 GHz

Spec. Gain (dBi):	42.200
Calculated Gain (dB):	44.31

AZ Pattern



EL Pattern



The Y-scale is power level (dB) relative to beam center; the X -scale is angle (degrees, AZ cosine corrected) relative to beam center.

Antenna Gain by Integration = 2 / (Sum [PsubTheta * sin(Theta) * deltaTheta] - FeedLoss - AngularExtentLoss - SparBlockageLoss - CrossPolLoss)
where the summation is performed for look angles (Theta) offset from beam center from 0 to 180 degrees (in practice the summation occurs on both sides of beam center and the average is taken) and where PsubTheta is the power relative to beam center power and measured at look angles offset from beam center.

SA Freq (Hz)=12750000230, AZ rate (deg/s)=1.291, EL rate (deg/s)=0.832, RBW (Hz)=30, VBW (Hz)=10

AZ Co-pol File	% 070720 194317 C0038 RC-155-VA-12.750.txt
EL Co-pol File	% 070720 194806 C0038 RC-90-VE-12.750.txt
Test Frequency (GHz)	12.750000230
AZ Ref. Level (dBm)	-19.12
Azimuth (deg)	181.000
Elevation (deg)	12.000

Versions
60120 FAST
60129 PACK

The calculated gain is greater than the specified gain by 2.11 dB.

# Points Displayed	7863
Feed Loss (dB)	0.55
Angular Extent Loss(dB)	0.15
Spar Blockage Loss (dB)	0.05
Cross-pol Loss (dB)	0.05

Vertex RSI
GENERAL DYNAMICS

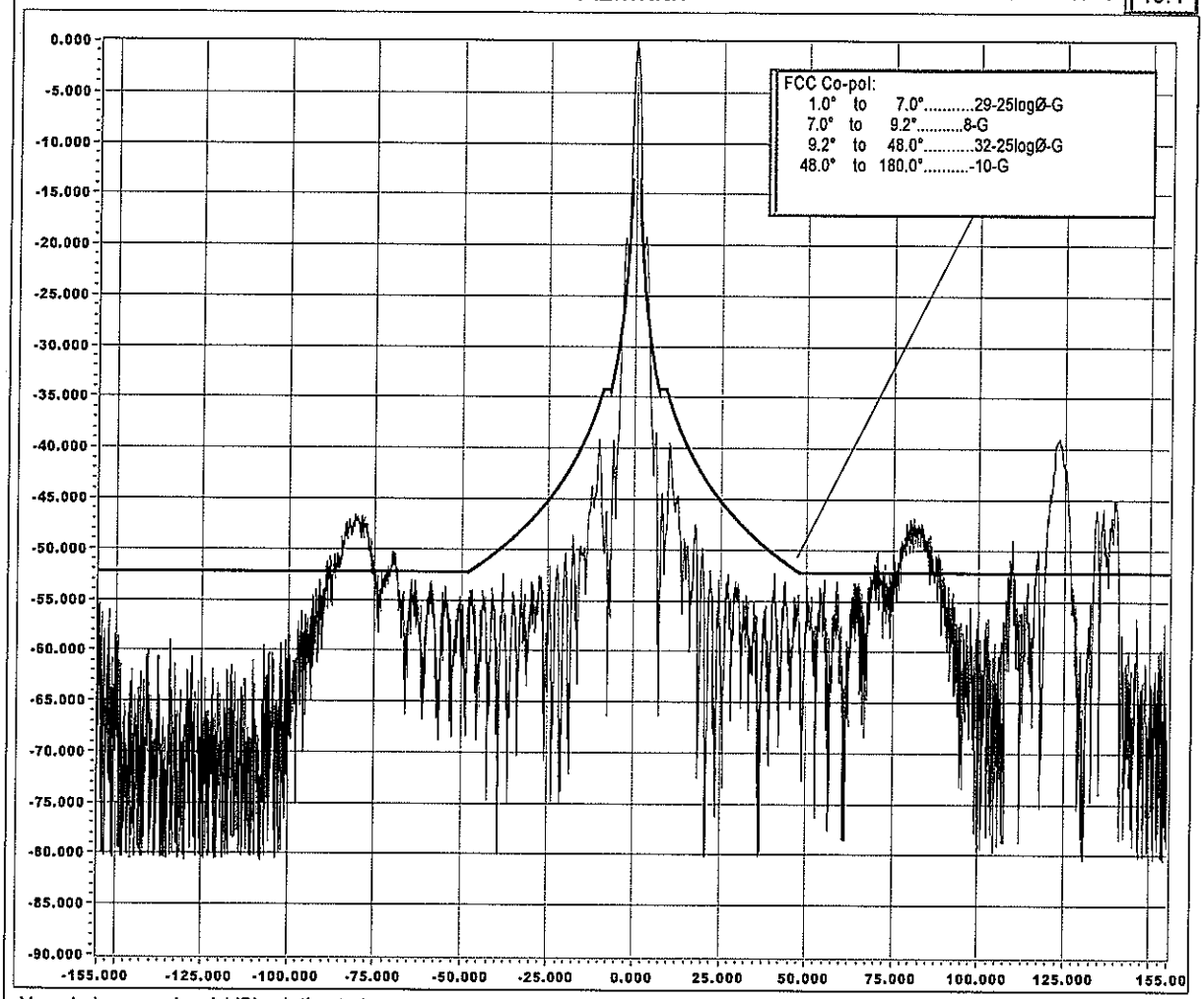
Customer.....	GDSATCOM
Date/Local Time.....	7-20-2007 at 194317
Job Number.....	C0038

Model.....	1.2 QDMA
Location.....	Test Range
Weather.....	Heavy Cloudy
Test Engineer.....	Richard Davisson
Spacecraft.....	Short Range
Transponder.....	

RX...Co-pol...VERT polarization...12.750 GHz

Azimuth

% Over Curve: 15.1



Y-scale is power level (dB) relative to beam center; x-scale is angle (degrees, cosine corrected) relative to beam center

SA Freq (Hz)=12750000230, AZ rate (deg/s)=1.291, EL rate (deg/s)=0.832, RBW (Hz)=30, VBW (Hz)=10

File:	% 070720 194317 C0038 RC-155-VA-12.750.tx	Specified Gain (dB):	42.200
Test Frequency (GHz):	12.750000230	Azimuth Beam Center (deg):	181.000
Ref. Level (dBm):	-19.12	Elevation Beam Center (deg):	12.000
# Points Displayed:	7863	Margin Under Curved (dB):	None

Versions
60120 FAST
60129 PACK

Vertex RSI
GENERAL DYNAMICS

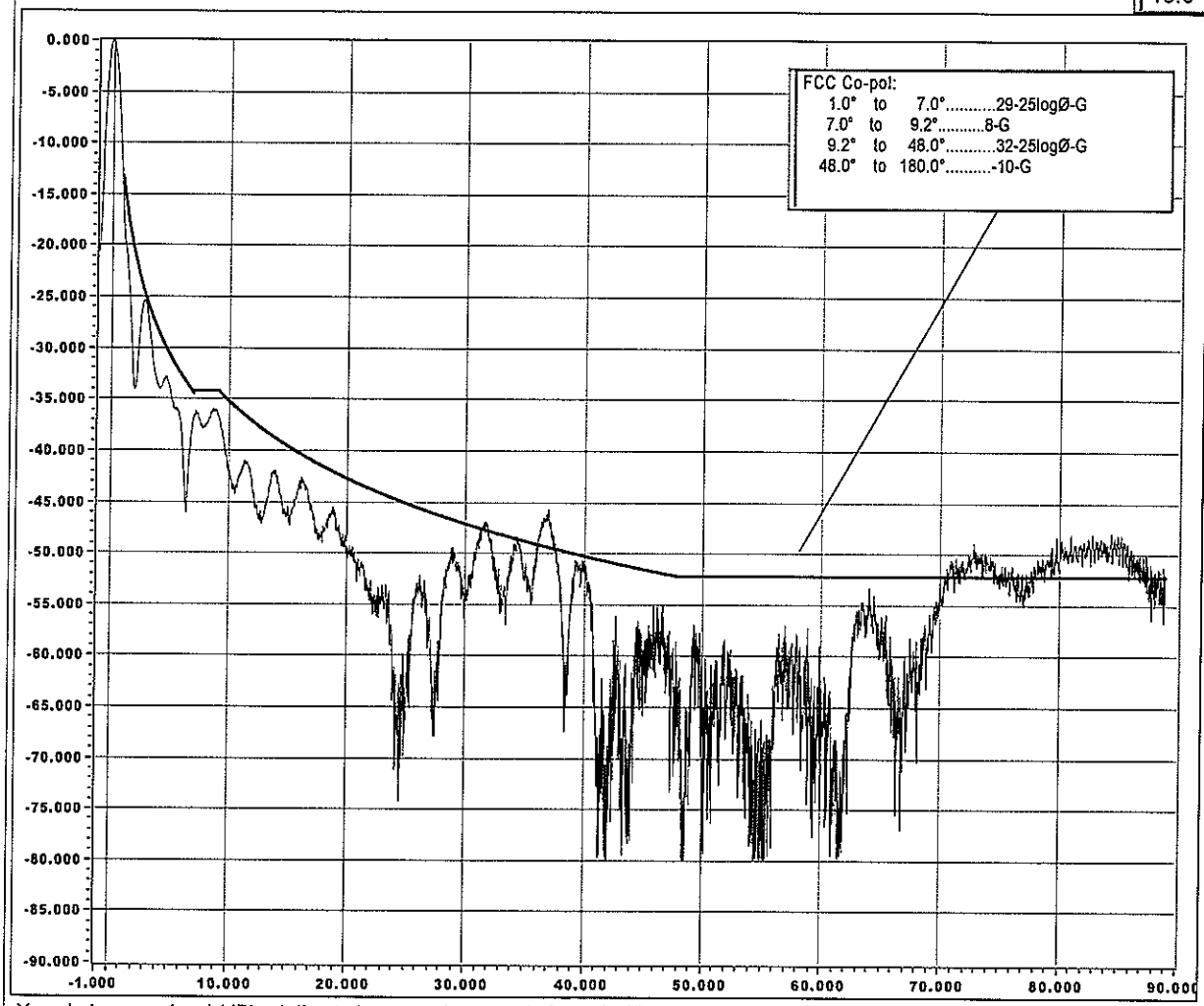
Customer.....	GDSATCOM
Date/Local Time.....	7-20-2007 at 194806
Job Number.....	C0038

Model.....	1.2 QDMA
Location.....	Test Range
Weather.....	Heavy Cloudy
Test Engineer.....	Richard Davisson
Spacecraft.....	Short Range
Transponder.....	

RX...Co-pol...VERT polarization...12.750 GHz

Elevation

% Over Curve: 18.0



Y-scale is power level (dB) relative to beam center; x-scale is angle (degrees, cosine corrected) relative to beam center

SA Freq (Hz)=12750000230, AZ rate (deg/s)=1.291, EL rate (deg/s)=0.832, RBW (Hz)=30, VBW (Hz)=1

File:	% 070720 194806 C0038 RC-90-VE-12.750.tx	Specified Gain:	42.200
Test Frequency (GHz):	12.750000230	Azimuth Beam Center (deg):	181.000
Ref. Level (dBm):	-19.67	Elevation Beam Center (deg):	12.000
# Points Displayed:	7685	Margin Under Curve (dB):	None

Versions
60120 FAST
60129 PACK

Vertex RSI
GENERAL DYNAMICS

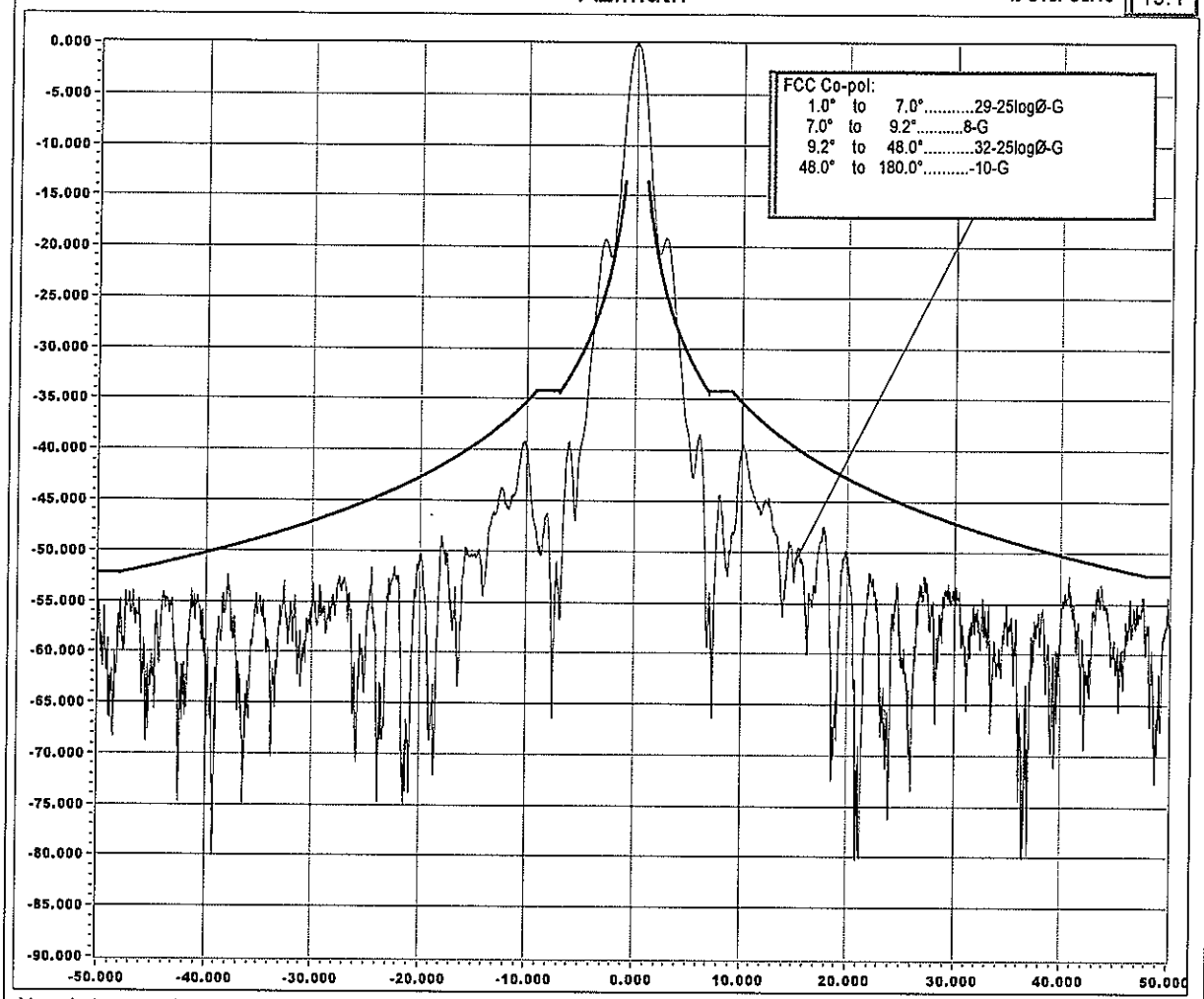
Customer.....	GDSATCOM
Date/Local Time.....	7-20-2007 at 194317
Job Number.....	C0038

Model.....	1.2 QDMA
Location.....	Test Range
Weather.....	Heavy Cloudy
Test Engineer.....	Richard Davisson
Spacecraft.....	Short Range
Transponder.....	

RX...Co-pol...VERT polarization...12.750 GHz

Azimuth

% Over Curve: 15.1



Y-scale is power level (dB) relative to beam center; x-scale is angle (degrees, cosine corrected) relative to beam center

SA Freq (Hz)=12750000230, AZ rate (deg/s)=1.291, EL rate (deg/s)=0.832, RBW (Hz)=30, VBW (Hz)=10

File:	% 070720 194317 C0038 RC-155-VA-12.750.tx	Specified Gain (dB):	42.200
Test Frequency (GHz):	12.750000230	Azimuth Beam Center (deg):	181.000
Ref. Level (dBm):	-19.12	Elevation Beam Center (deg):	12.000
# Points Displayed:	7863	Margin Under Curved (dB):	None

Versions
60120 FAST
60129 PACK

Vertex RSI
GENERAL DYNAMICS

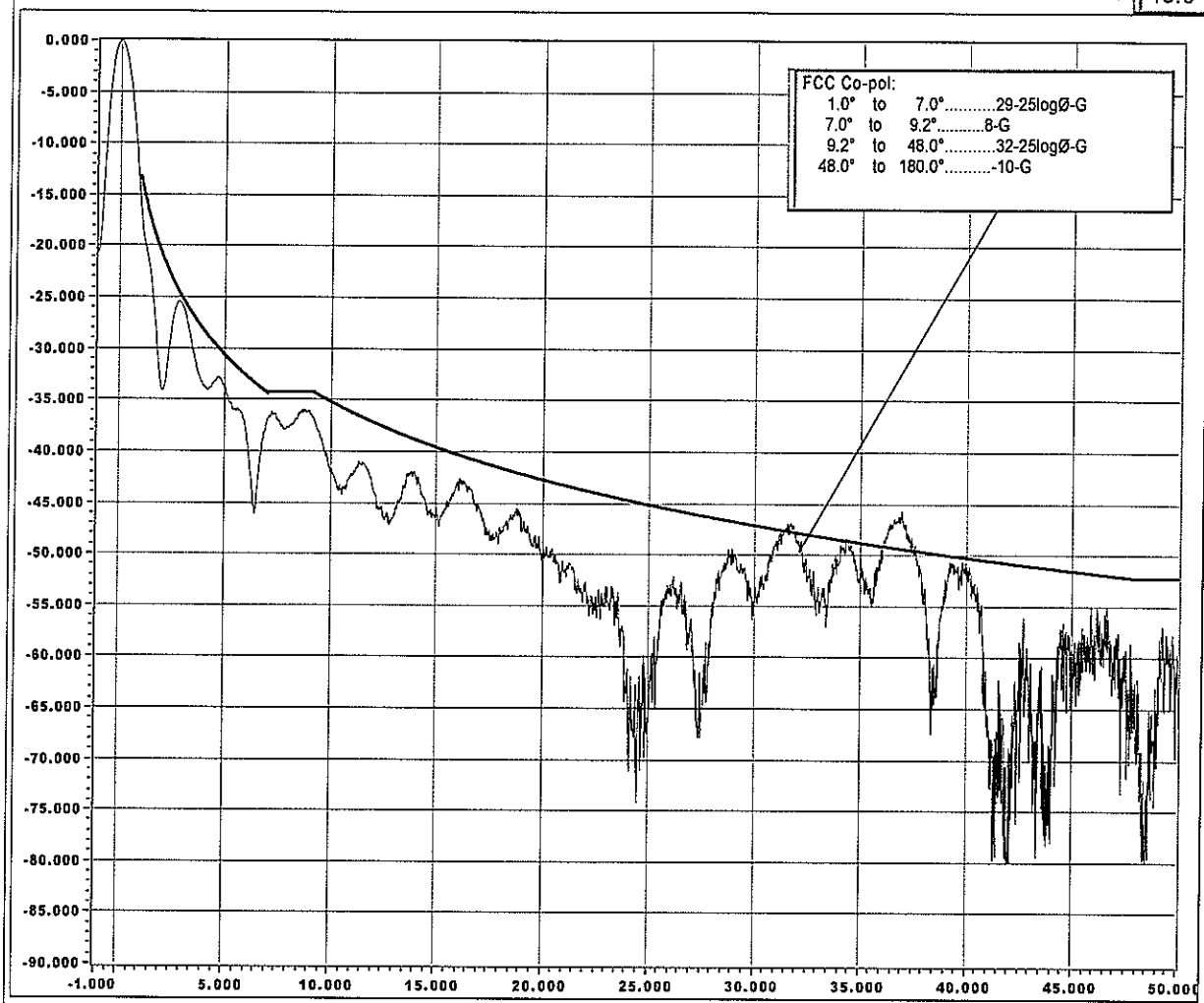
Customer.....	GDSATCOM
Date/Local Time.....	7-20-2007 at 194806
Job Number.....	C0038

Model.....	1.2 QDMA
Location.....	Test Range
Weather.....	Heavy Cloudy
Test Engineer.....	Richard Davisson
Spacecraft.....	Short Range
Transponder.....	

RX...Co-pol...VERT polarization...12.750 GHz

Elevation

% Over Curve: 18.0



Y-scale is power level (dB) relative to beam center; x-scale is angle (degrees, cosine corrected) relative to beam center

SA Freq (Hz)=12750000230, AZ rate (deg/s)=1.291, EL rate (deg/s)=0.832, RBW (Hz)=30, VBW (Hz)=1

File:	% 070720 194806 C0038 RC-90-VE-12.750.tx	Specified Gain:	42.200
Test Frequency (GHz):	12.750000230	Azimuth Beam Center (deg):	181.000
Ref. Level (dBm):	-19.67	Elevation Beam Center (deg):	12.000
# Points Displayed:	7685	Margin Under Curve (dB):	None

Versions
60120 FAST
60129 PACK

Vertex RSI
GENERAL DYNAMICS

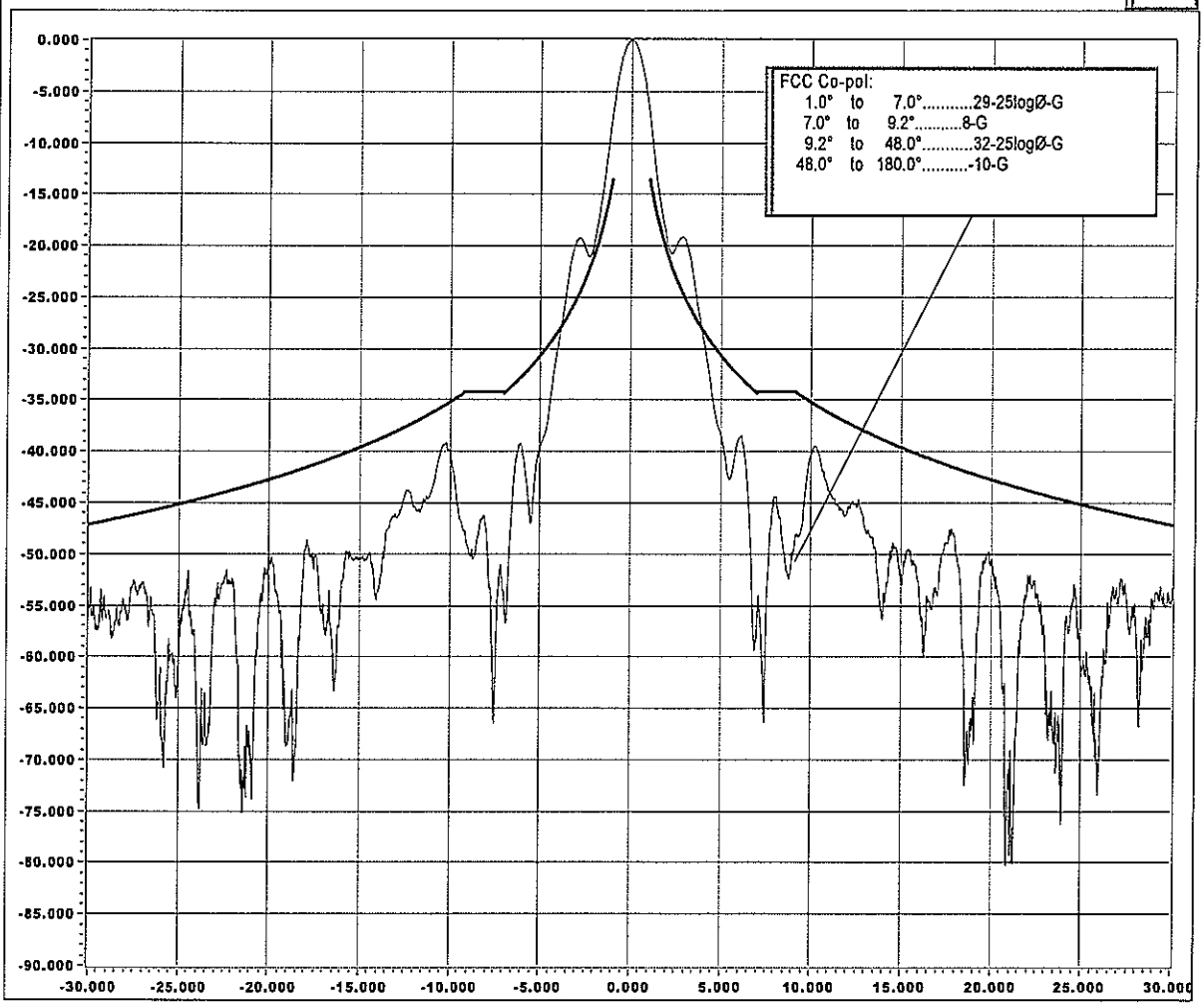
Customer.....	GDSATCOM
Date/Local Time.....	7-20-2007 at 194317
Job Number.....	C0038

Model.....	1.2 QDMA
Location.....	Test Range
Weather.....	Heavy Cloudy
Test Engineer.....	Richard Davisson
Spacecraft.....	Short Range
Transponder.....	

RX...Co-pol...VERT polarization...12.750 GHz

Azimuth

% Over Curve: 15.1



Y-scale is power level (dB) relative to beam center; x-scale is angle (degrees, cosine corrected) relative to beam center

SA Freq (Hz)=12750000230, AZ rate (deg/s)=1.291, EL rate (deg/s)=0.832, RBW (Hz)=30, VBW (Hz)=10

File:	% 070720 194317 C0038 RC-155-VA-12.750.tx	Specified Gain (dB):	42.200
Test Frequency (GHz):	12.750000230	Azimuth Beam Center (deg):	181.000
Ref. Level (dBm):	-19.12	Elevation Beam Center (deg):	12.000
# Points Displayed:	7863	Margin Under Curved (dB):	None

Versions
60120 FAST
60129 PACK

Vertex RSI
GENERAL DYNAMICS

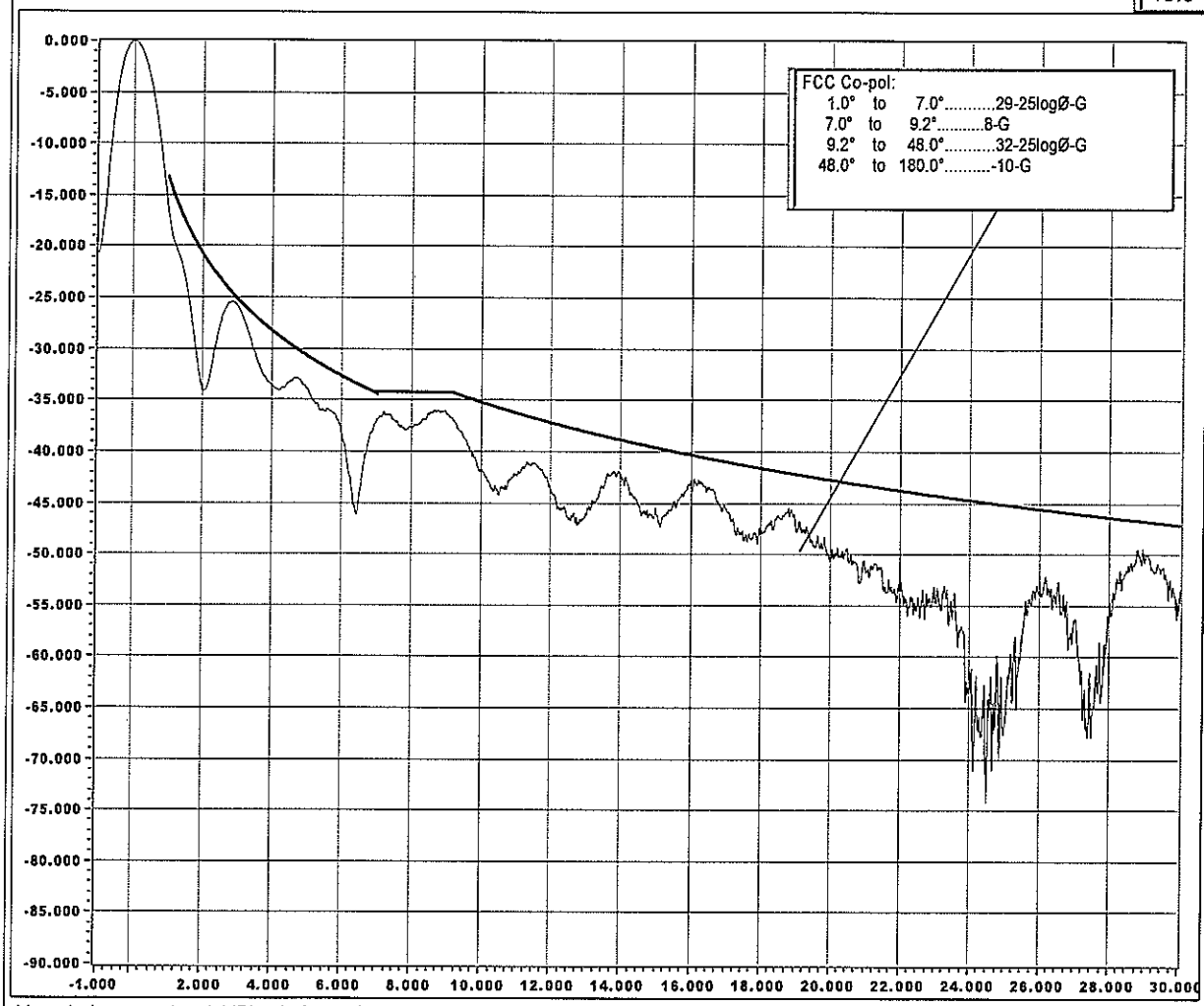
Customer.....	GDSATCOM
Date/Local Time.....	7-20-2007 at 194806
Job Number.....	C0038

Model.....	1.2 QDMA
Location.....	Test Range
Weather.....	Heavy Cloudy
Test Engineer.....	Richard Davisson
Spacecraft.....	Short Range
Transponder.....	

RX...Co-pol...VERT polarization...12.750 GHz

Elevation

% Over Curve: 18.0



Y-scale is power level (dB) relative to beam center; x-scale is angle (degrees, cosine corrected) relative to beam center

SA Freq (Hz)=12750000230, AZ rate (deg/s)=1.291, EL rate (deg/s)=0.832, RBW (Hz)=30, VBW (Hz)=1

File:	% 070720 194806 C0038 RC-90-VE-12.750.tx	Specified Gain:	42.200
Test Frequency (GHz):	12.750000230	Azimuth Beam Center (deg):	181.000
Ref. Level (dBm):	-19.67	Elevation Beam Center (deg):	12.000
# Points Displayed:	7685	Margin Under Curve (dB):	None

Versions
60120 FAST
60129 PACK

Vertex RSI
GENERAL DYNAMICS

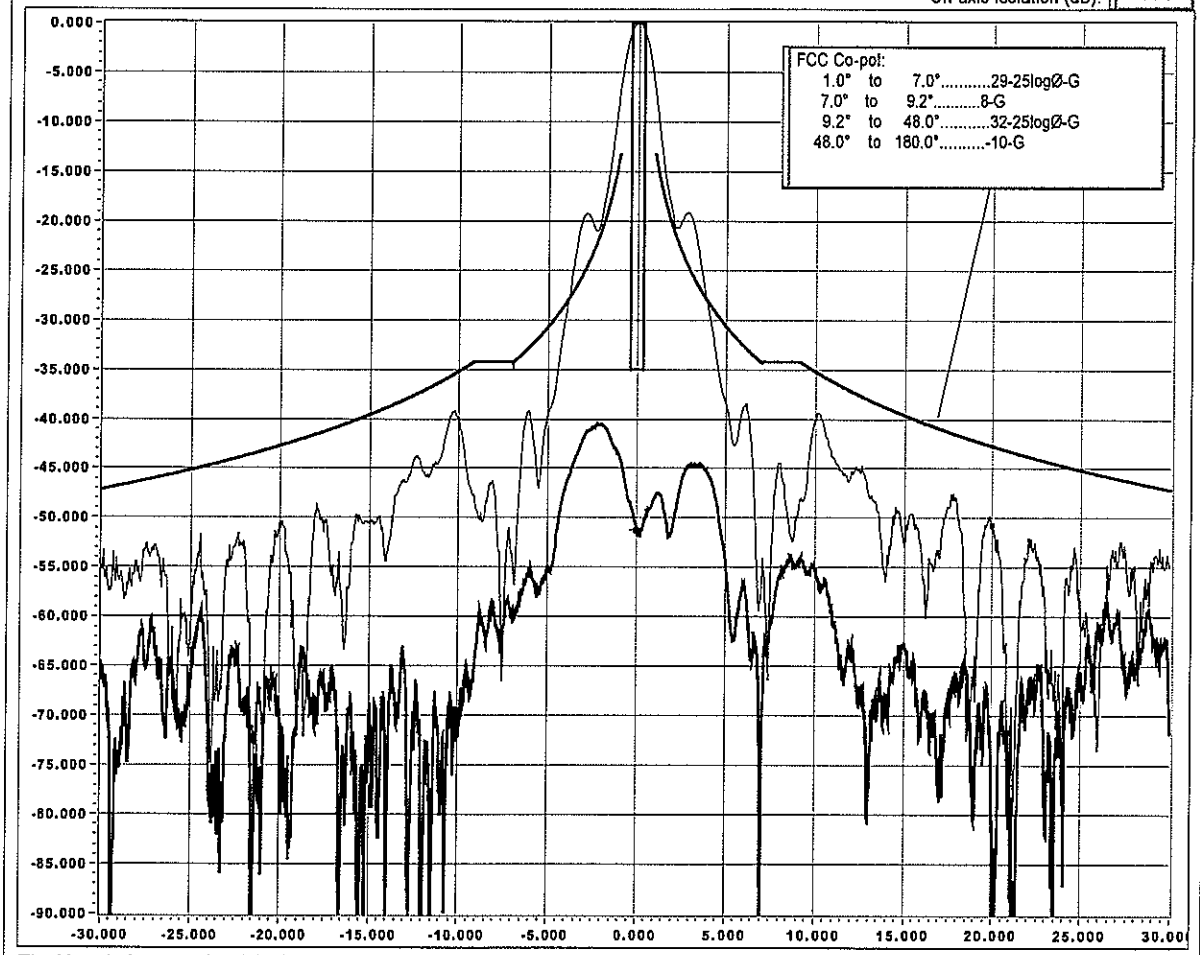
Customer.....	GDSATCOM
Date/Local Time.....	7-20-2007 at 200714
Job Number.....	C0038

Model.....	1.2 QDMA
Location.....	Test Range
Weather.....	Heavy Cloudy
Test Engineer.....	Richard Davisson
Spacecraft.....	Short Range
Transponder.....	

RX...Cross-pol under Co-pol...VERT polarization...12.750 GHz

Azimuth

On-axis Isolation (dB): 51.14



The Y-scale is power level (dB) relative to beam center; the X-scale is angle (degrees, cosine corrected) relative to beam center.

SA Freq (Hz)=12750000231, AZ rate (deg/s)=1.291, EL rate (deg/s)=0.832, RBW (Hz)=30, VBW (Hz)=10

Co-pol File:	% 070720 194317 C0038 RC-155-VA-12.750.txt	Azimuth Beam Center (deg):	181.000
Cross-pol File:	% 070720 200714 C0038 RX-30-VA-12.750.txt	Elevation Beam Center (deg):	12.000
Test Frequency (GHz):	12.750000231	On-axis Spec. Isolation (dB):	35.000
Ref. Level (dBm):	-19.12	Off-axis Spec. Isolation (dB):	35.00
# Points Displayed:	7826		

Versions
60120 FAST
60129 PACK

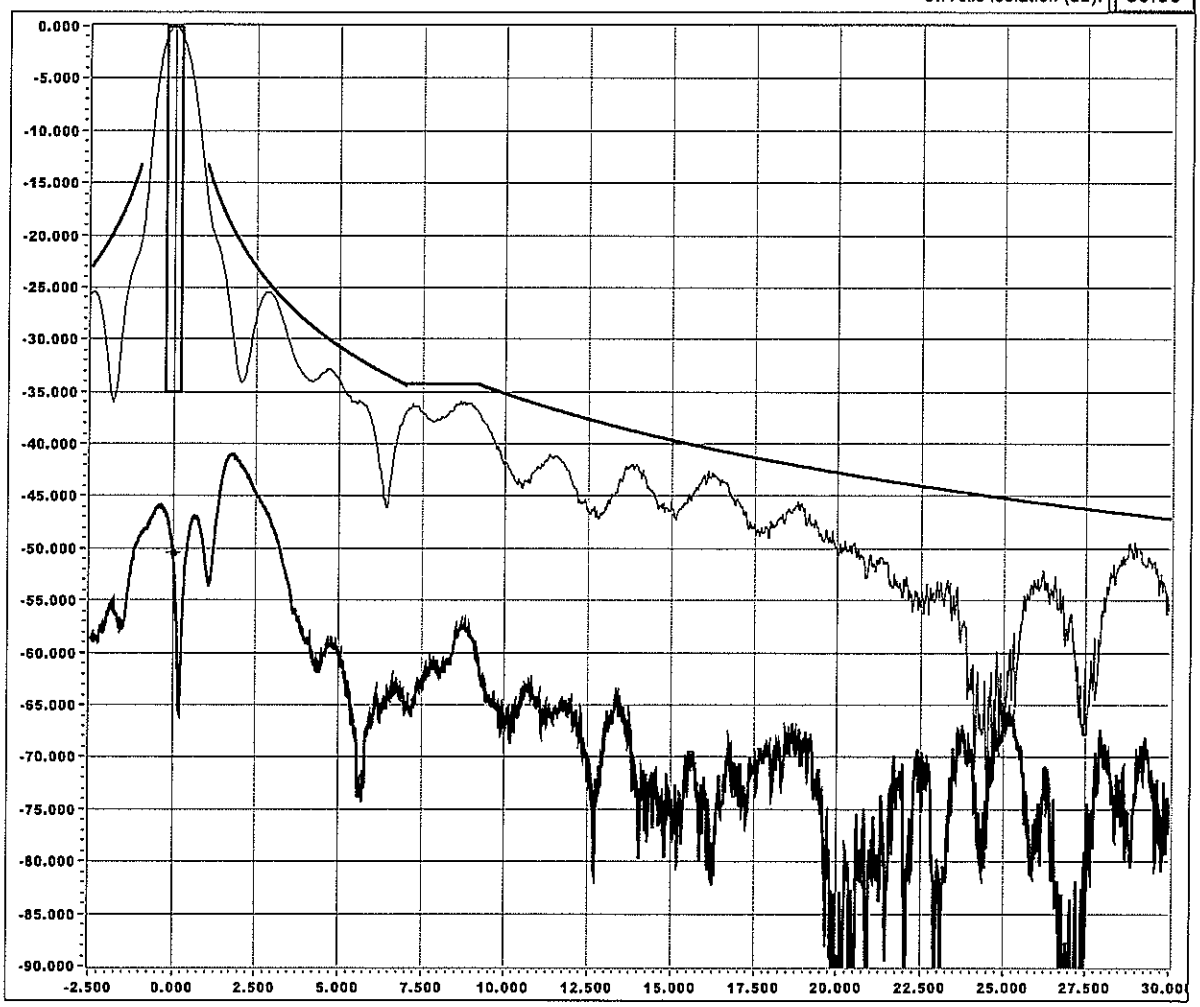
Vertex RSI
GENERAL DYNAMICS

Customer.....	GDSATCOM
Date/Local Time.....	7-20-2007 at 194806
Job Number.....	C0038
Model.....	1.2 QDMA
Location.....	Test Range
Weather.....	Heavy Cloudy
Test Engineer.....	Richard Davisson
Spacecraft.....	Short Range
Transponder.....	

RX...Cross-pol under Co-pol...VERT polarization...12.750 GHz

Elevation

On Axis Isolation (dB): 50.36



The Y-scale is power level (dB) relative to beam center; the X-scale is angle (degrees, cosine corrected) relative to beam center.

SA Freq (Hz)=12750000230, AZ rate (deg/s)=1.291, EL rate (deg/s)=0.832, RBW (Hz)=30, VBW (Hz)=10

Co-pol File:	% 070720 194806 C0038 RC-90-VE-12.750.txt	Azimuth Beam Center (deg):	181.000
Cross-pol File:	% 070720 201031 C0038 RX-30-VE-12.750.txt	Elevation Beam Center (deg):	12.000
Test Frequency (GHz):	12.750000230	On-axis Spec. Isolation (dB):	35.000
Ref. Level (dBm):	-19.12	Off-axis Spec. Isolation (dB):	35.00
# Points Displayed:	2653		

Versions
60120 FAST
60129 PACK

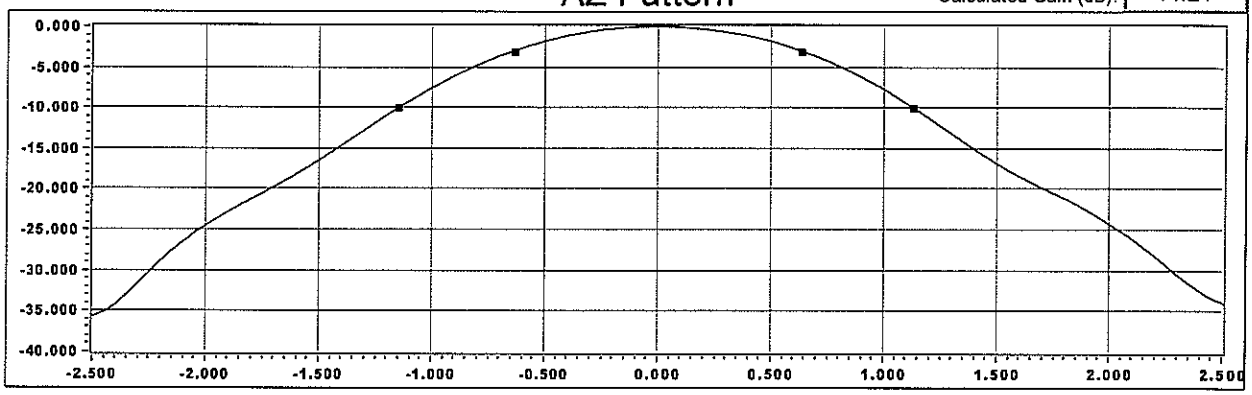
Vertex RSI
GENERAL DYNAMICS

Customer.....	GDSATCOM	Model.....	1.2 QDMA
Date/Local Time.....	7-23-2007 at 093058	Location.....	Test Range
Job Number.....	C0038	Weather.....	Clear
		Test Engineer.....	Richard Davisson
		Spacecraft.....	Short Range
		Transponder.....	

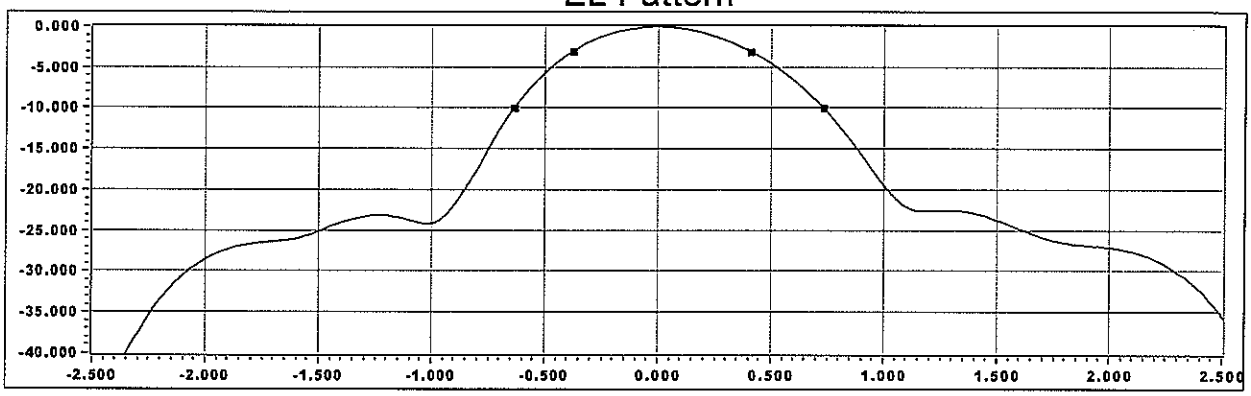
TX...HORZ Polarization...Gain by Beamwidth...13.750 GHz

Spec. Gain (dBi): 43.200
Calculated Gain (dB): 44.21

AZ Pattern



EL Pattern



The Y-scale is power level (dB) relative to beam center; the X -scale is angle (degrees, AZ cosine corrected) relative to beam center.

Gain by Beamwidth dBi = 10 log[((3dB factor / (AZ 3dB BW * EL 3dB BW)) + (10dB factor / (AZ 10dB BW * EL 10dB BW))) / 2]
- Feed Loss dB - 4.923(RMS inches * Freq GHz)²

SA Freq (Hz)=13750000189, AZ rate (deg/s)=1.266, EL rate (deg/s)=0.818, RBW (Hz)=30, VBW (Hz)=10

AZ Co-pol File	% 070723 093058 C0038 TC-5-HA-13.750.txt
EL Co-pol File	% 070723 093200 C0038 TC-5-HE-13.750.txt

The calculated gain is greater than the specified gain by 1.01 dB.

Test Frequency (GHz)	13.750000189	AZ 3dB BW (deg)	1.2707	# Points Displayed	8196
AZ Ref. Level (dBm)	-18.60	AZ 10dB BW (deg)	2.2812		
Feed Loss (dB)	0.20	AZ 15dB BW (deg)	2.8171		
RMS (in.)	0.020	EL 3dB BW (deg)	0.7841		
Azimuth (deg)	181.000	EL 10dB BW (deg)	1.3712	3dB Factor	31000
Elevation (deg)	12.000	EL 15dB BW (deg)	1.6330	10dB Factor	91000

Versions
60120 FAST
60129 PACK

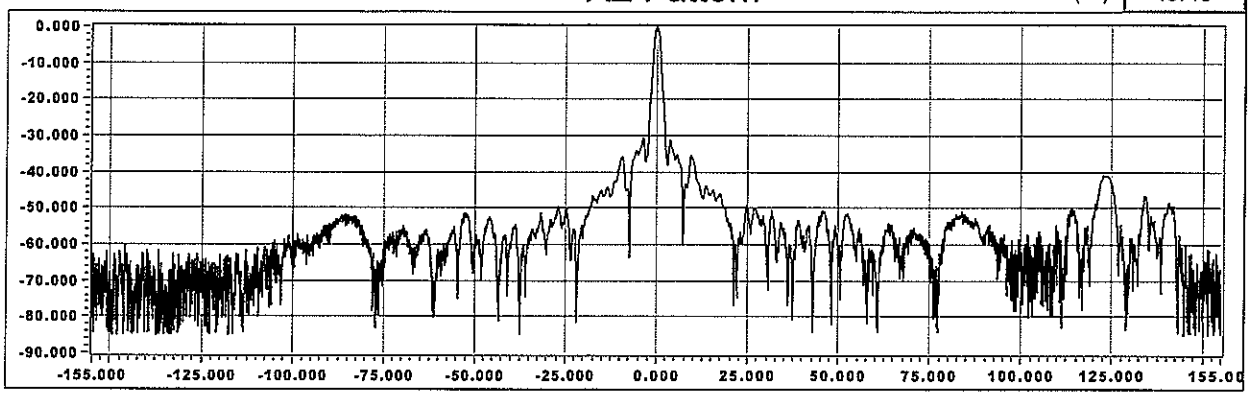
Vertex RSI
GENERAL DYNAMICS

Customer.....	GDSATCOM
Date/Local Time.....	7-23-2007 at 092238
Job Number.....	C0038
Model.....	1.2 QDMA
Location.....	Test Range
Weather.....	Clear
Test Engineer.....	Richard Davisson
Spacecraft.....	Short Range
Transponder.....	

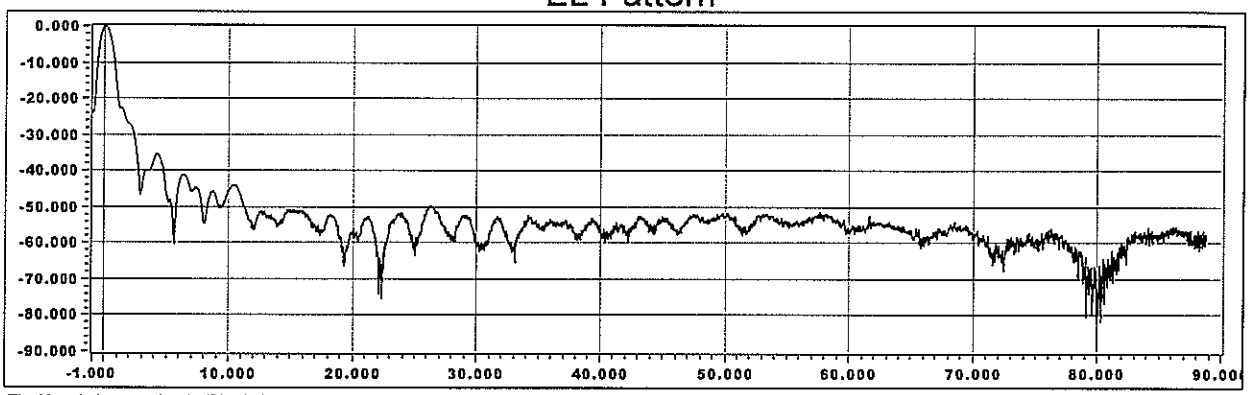
TX...HORZ Polarization...Gain by Integration...13.750 GHz

Spec. Gain (dBi): 43.200
Calculated Gain (dB): 45.40

AZ Pattern



EL Pattern



The Y-scale is power level (dB) relative to beam center; the X -scale is angle (degrees, AZ cosine corrected) relative to beam center.

Antenna Gain by Integration = 2 / (Sum [PsubTheta * sin(Theta) * deltaTheta] - FeedLoss - AngularExtentLoss - SparBlockageLoss - CrossPolLoss)
where the summation is performed for look angles (Theta) offset from beam center from 0 to 180 degrees (in practice the summation occurs on both sides of beam center and the average is taken) and where PsubTheta is the power relative to beam center power and measured at look angles offset from beam center.

SA Freq (Hz)=13750000181, AZ rate (deg/s)=1.266, EL rate (deg/s)=0.818, RBW (Hz)=30, VBW (Hz)=10

AZ Co-pol File	% 070723 092238 C0038 TC-155-HA-13.750.txt
EL Co-pol File	% 070723 092733 C0038 TC-90-HE-13.750.txt
Test Frequency (GHz)	13.750000181
AZ Ref. Level (dBm)	-18.74
Azimuth (deg)	181.000
Elevation (deg)	12.000

Versions
60120 FAST
60129 PACK

The calculated gain is greater than the specified gain by 2.20 dB.

# Points Displayed	7830
Feed Loss (dB)	0.20
Angular Extent Loss(dB)	0.15
Spar Blockage Loss (dB)	0.05
Cross-pol Loss (dB)	0.05

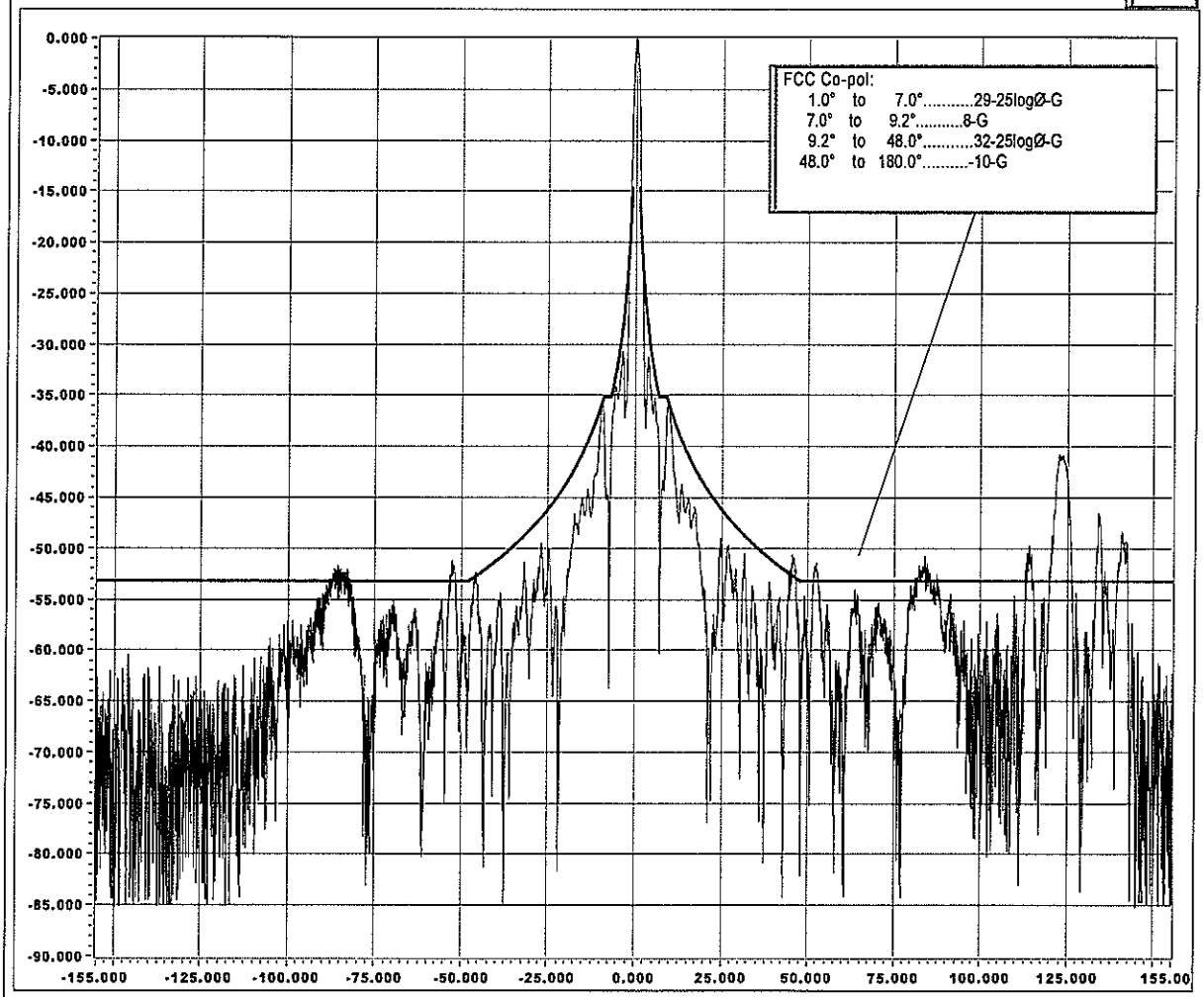
Vertex RSI
GENERAL DYNAMICS

Customer.....	GDSATCOM
Date/Local Time.....	7-23-2007 at 092238
Job Number.....	C0038
Model.....	1.2 QDMA
Location.....	Test Range
Weather.....	Clear
Test Engineer.....	Richard Davisson
Spacecraft.....	Short Range
Transponder.....	

TX...Co-pol...HORZ polarization...13.750 GHz

Azimuth

% Over Curve: 8.3



Y-scale is power level (dB) relative to beam center; x-scale is angle (degrees, cosine corrected) relative to beam center.

SA Freq (Hz)=13750000181, AZ rate (deg/s)=1.266, EL rate (deg/s)=0.818, RBW (Hz)=30, VBW (Hz)=10

File:	% 070723 092238 C0038 TC-155-HA-13.750.txt	Specified Gain (dB):	43.200
Test Frequency (GHz):	13.750000181	Azimuth Beam Center (deg):	181.000
Ref. Level (dBm):	-18.74	Elevation Beam Center (deg):	12.000
# Points Displayed:	8076	Margin Under Curved (dB):	None

Versions
60120 FAST
60129 PACK

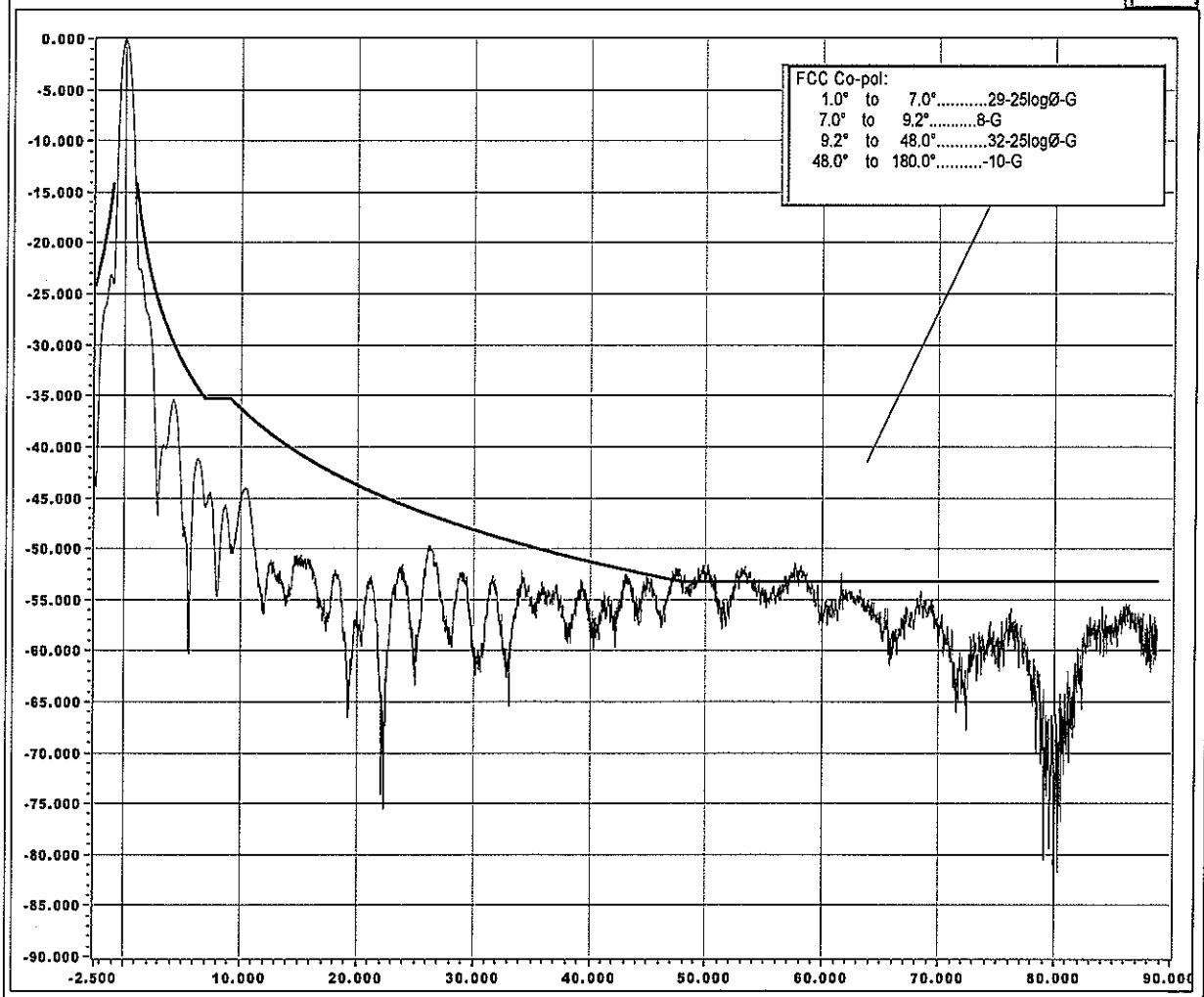
Vertex RSI
GENERAL DYNAMICS

Customer.....	GDSATCOM	Model.....	1.2 QDMA
Date/Local Time.....	7-23-2007 at 092733	Location.....	Test Range
Job Number.....	C0038	Weather.....	Clear
		Test Engineer.....	Richard Davisson
		Spacecraft.....	Short Range
		Transponder.....	

TX...Co-pol...HORZ polarization...13.750 GHz

Elevation

% Over Curve: 5.6



Y-scale is power level (dB) relative to beam center; x-scale is angle (degrees, cosine corrected) relative to beam center.

SA Freq (Hz)=13750000181, AZ rate (deg/s)=1.266, EL rate (deg/s)=0.818, RBW (Hz)=30, VBW (Hz)=10

File:	% 070723 092733 C0038 TC-90-HE-13.750.txt	Specified Gain:	43.200
Test Frequency (GHz):	13.750000181	Azimuth Beam Center (deg):	181.000
Ref. Level (dBm):	-19.20	Elevation Beam Center (deg):	12.000
# Points Displayed:	7675	Margin Under Curve (dB):	None

Versions
60120 FAST
60129 PACK

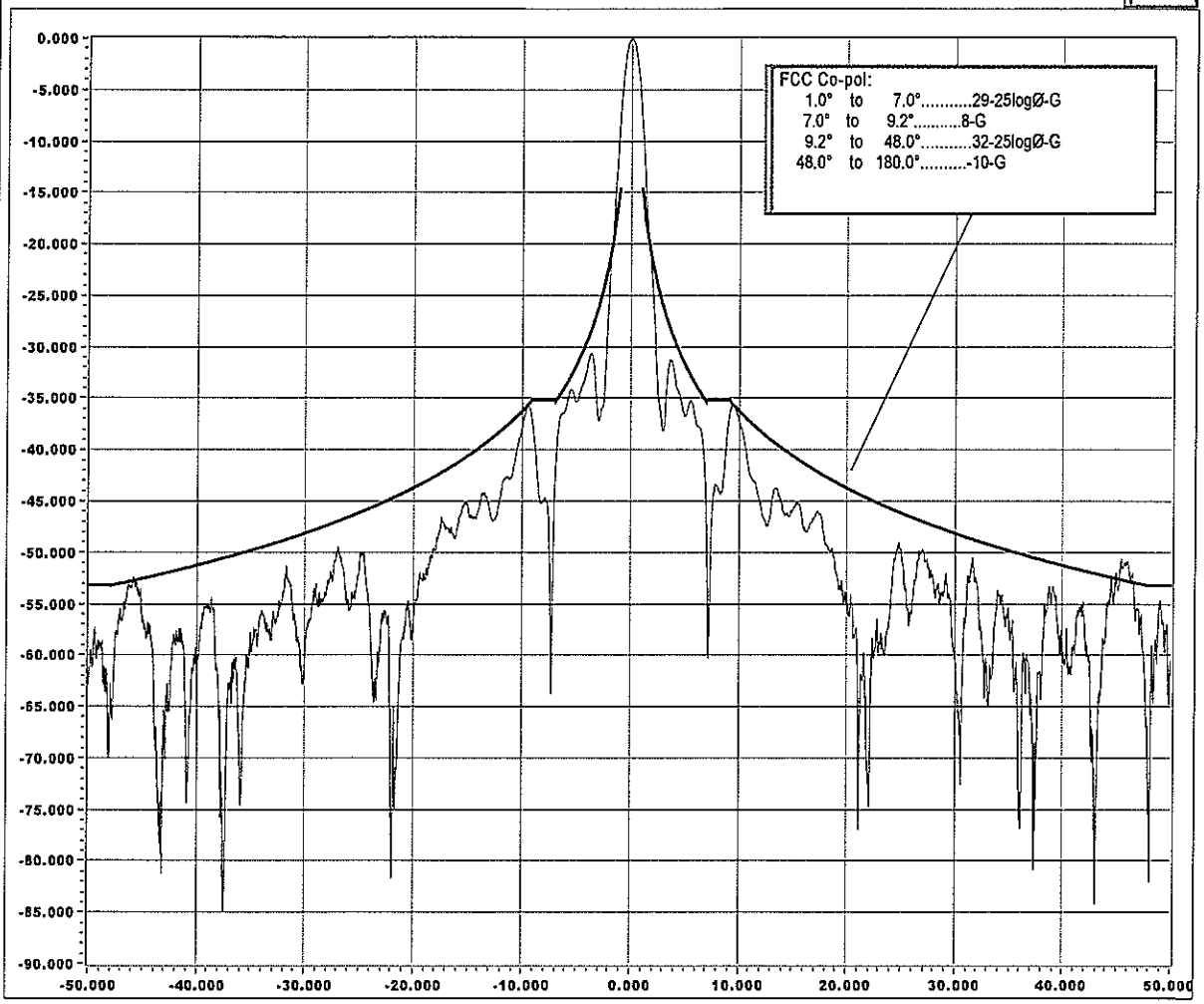
Vertex RSI
GENERAL DYNAMICS

Customer.....	GDSATCOM	Model.....	1.2 QDMA
Date/Local Time.....	7-23-2007 at 092238	Location.....	Test Range
Job Number.....	C0038	Weather.....	Clear
		Test Engineer.....	Richard Davisson
		Spacecraft.....	Short Range
		Transponder.....	

TX...Co-pol...HORZ polarization...13.750 GHz

Azimuth

% Over Curve: 3.3



Y-scale is power level (dB) relative to beam center; x-scale is angle (degrees, cosine corrected) relative to beam center.

SA Freq (Hz)=13750000181, AZ rate (deg/s)=1.266, EL rate (deg/s)=0.818, RBW (Hz)=30, VBW (Hz)=10

File:	% 070723 092238 C0038 TC-155-HA-13.750.txt	Specified Gain (dB):	43.200
Test Frequency (GHz):	13.750000181	Azimuth Beam Center (deg):	181.000
Ref. Level (dBm):	-18.74	Elevation Beam Center (deg):	12.000
# Points Displayed:	2315	Margin Under Curved (dB):	None

Versions
60120 FAST
60129 PACK

Vertex RSI
GENERAL DYNAMICS

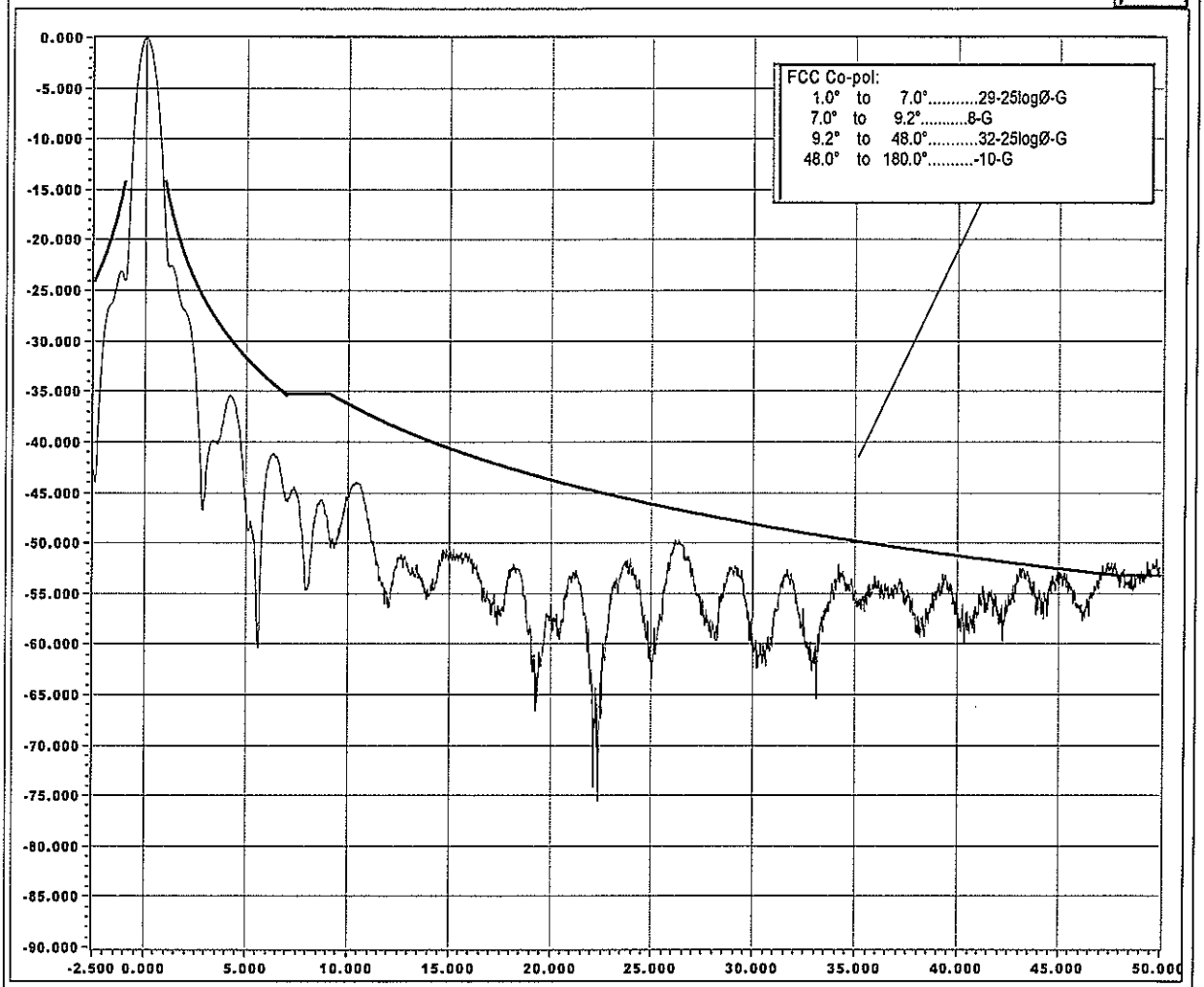
Customer.....	GDSATCOM
Date/Local Time.....	7-23-2007 at 092733
Job Number.....	C0038

Model.....	1.2 QDMA
Location.....	Test Range
Weather.....	Clear
Test Engineer.....	Richard Davisson
Spacecraft.....	Short Range
Transponder.....	

TX...Co-pol...HORZ polarization...13.750 GHz

Elevation

% Over Curve: 3.0



Y-scale is power level (dB) relative to beam center; x-scale is angle (degrees, cosine corrected) relative to beam center.

SA Freq (Hz)=13750000181, AZ rate (deg/s)=1.266, EL rate (deg/s)=0.818, RBW (Hz)=30, VBW (Hz)=10

File:	% 070723 092733 C0038 TC-90-HE-13.750.txt		
Test Frequency (GHz):	13.750000181	Specified Gain:	43.200
Ref. Level (dBm):	-19.20	Azimuth Beam Center (deg):	181.000
# Points Displayed:	4587	Elevation Beam Center (deg):	12.000
		Margin Under Curve (dB):	None

Versions
60120 FAST
60129 PACK

Vertex RSI
GENERAL DYNAMICS

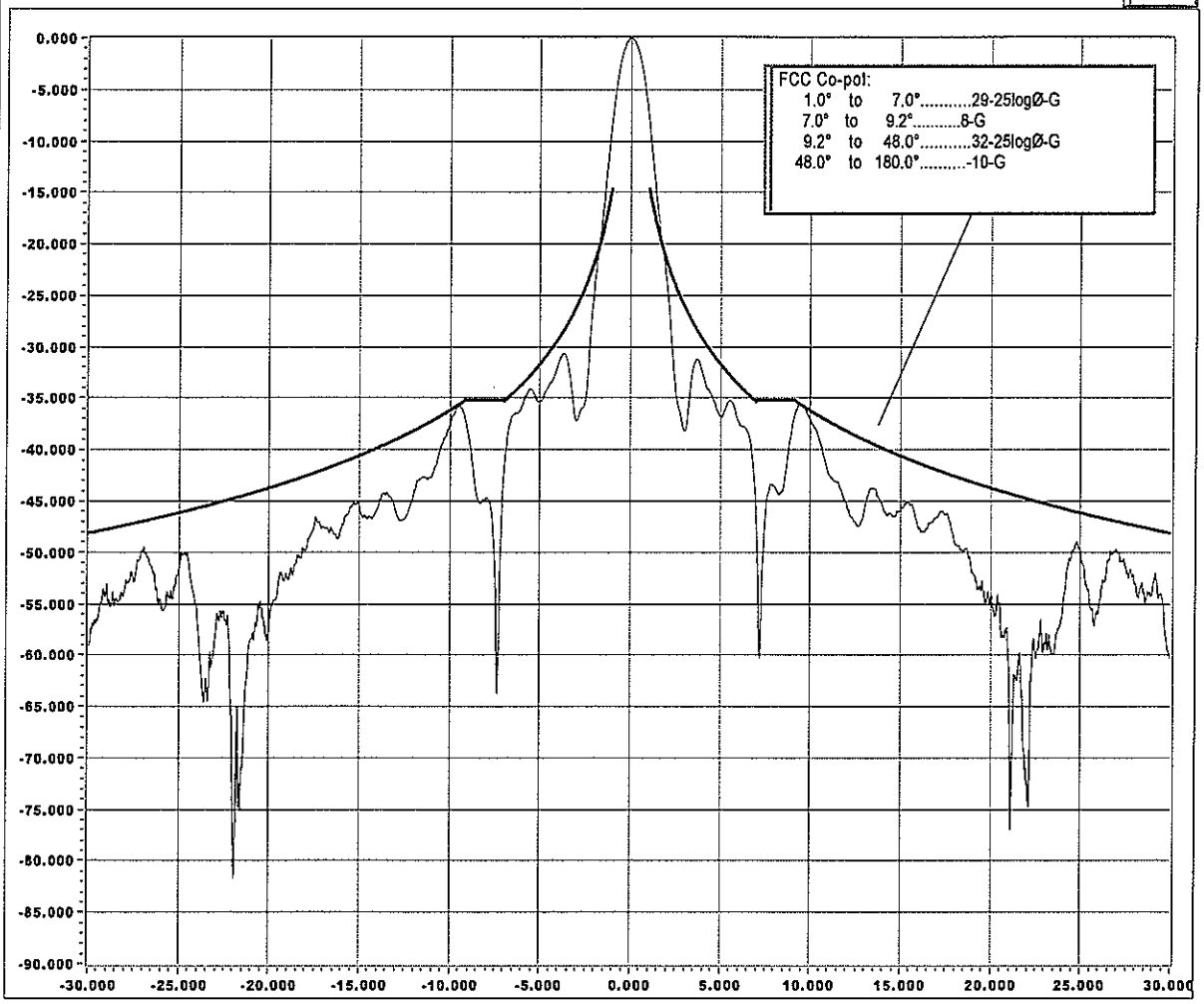
Customer.....	GDSATCOM
Date/Local Time.....	7-23-2007 at 092238
Job Number.....	C0038

Model.....	1.2 QDMA
Location.....	Test Range
Weather.....	Clear
Test Engineer.....	Richard Davisson
Spacecraft.....	Short Range
Transponder.....	

TX...Co-pol...HORZ polarization...13.750 GHz

Azimuth

% Over Curve: 2.9



Y-scale is power level (dB) relative to beam center; x-scale is angle (degrees, cosine corrected) relative to beam center.

SA Freq (Hz)=13750000181, AZ rate (deg/s)=1.266, EL rate (deg/s)=0.818, RBW (Hz)=30, VBW (Hz)=10

File:	% 070723 092238 C0038 TC-155-HA-13.750.txt	Specified Gain (dB):	43.200
Test Frequency (GHz):	13.750000181	Azimuth Beam Center (deg):	181.000
Ref. Level (dBm):	-18.74	Elevation Beam Center (deg):	12.000
# Points Displayed:	1387	Margin Under Curved (dB):	None

Versions
60120 FAST
60129 PACK

Vertex RSI
GENERAL DYNAMICS

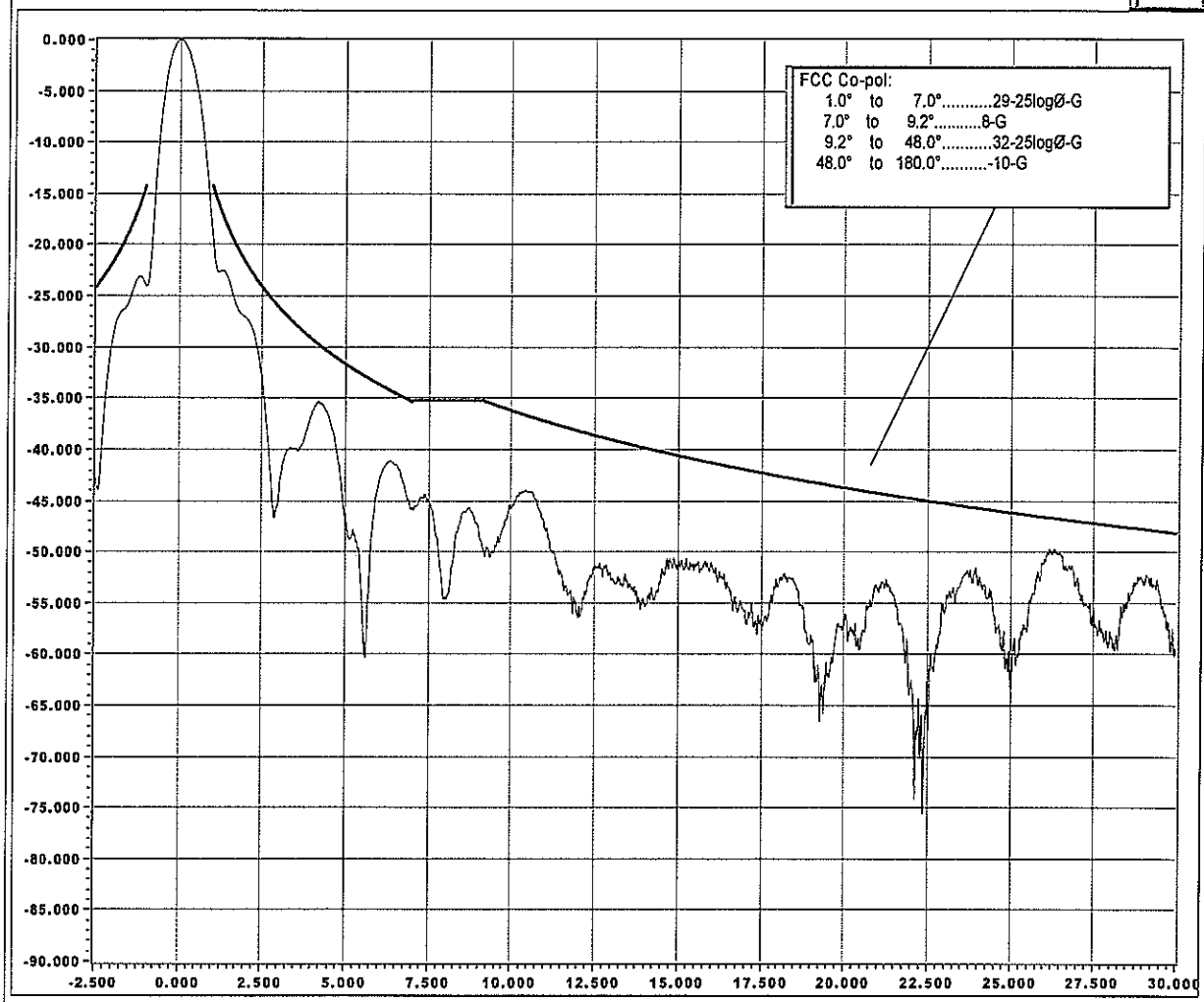
Customer.....	GDSATCOM
Date/Local Time.....	7-23-2007 at 092733
Job Number.....	C0038

Model.....	1.2 QDMA
Location.....	Test Range
Weather.....	Clear
Test Engineer.....	Richard Davisson
Spacecraft.....	Short Range
Transponder.....	

TX...Co-pol...HORZ polarization...13.750 GHz

Elevation

% Over Curve: 0.0



Y-scale is power level (dB) relative to beam center; x-scale is angle (degrees, cosine corrected) relative to beam center.

SA Freq (Hz)=13750000181, AZ rate (deg/s)=1.266, EL rate (deg/s)=0.818, RBW (Hz)=30, VBW (Hz)=10

File:	% 070723 092733 C0038 TC-90-HE-13.750.txt	Specified Gain:	43.200
Test Frequency (GHz):	13.750000181	Azimuth Beam Center (deg):	181.000
Ref. Level (dBm):	-19.20	Elevation Beam Center (deg):	12.000
# Points Displayed:	2652	Margin Under Curve (dB):	2.99

Versions
60120 FAST
60129 PACK

Vertex RSI
GENERAL DYNAMICS

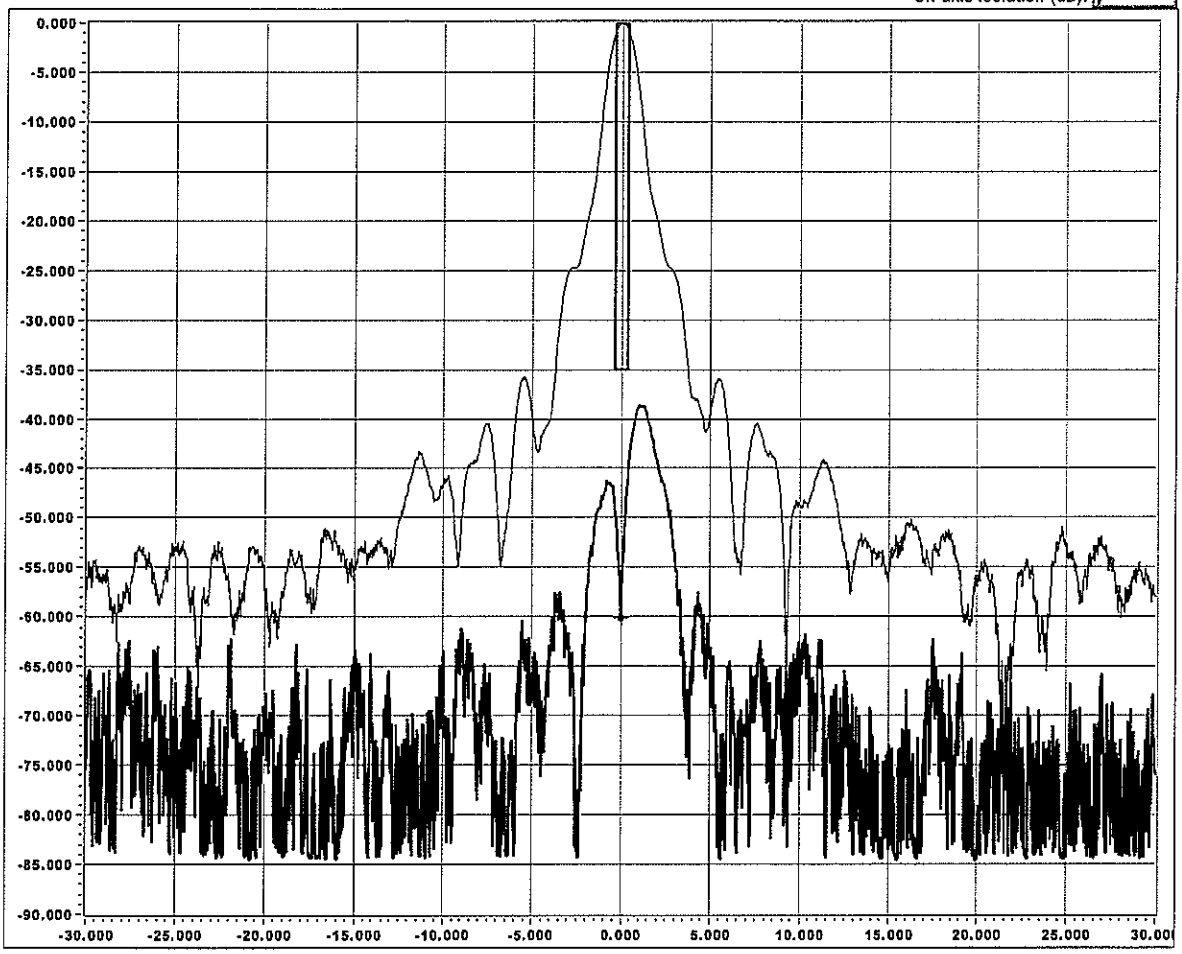
Customer.....	GDSATCOM
Date/Local Time.....	7-23-2007 at 191206
Job Number.....	C0038

Model.....	1.2 QDMA
Location.....	Test Range
Weather.....	Overcast
Test Engineer.....	Richard Davisson
Spacecraft.....	Short Range
Transponder.....	

TX...Cross-pol under Co-pol...HORZ polarization...13.750 GHz

Azimuth

On-axis Isolation (dB): 60.14



The Y-scale is power level (dB) relative to beam center; the X-scale is angle (degrees, cosine corrected) relative to beam center.

SA Freq (Hz)=13750000242, AZ rate (deg/s)=1.266, EL rate (deg/s)=0.818, RBW (Hz)=30, VBW (Hz)=10

Co-pol File:	% 070723 180804 C0038 TC-30-HA-13.750.txt	Azimuth Beam Center (deg):	181.000
Cross-pol File:	% 070723 191206 C0038 TX-30-HA-13.750.txt	Elevation Beam Center (deg):	12.000
Test Frequency (GHz):	13.750000242	On-axis Spec. Isolation (dB):	35.000
Ref. Level (dBm):	-29.09	Off-axis Spec. Isolation (dB):	35.00
# Points Displayed:	7684		

Versions
60120 FAST
60129 PACK

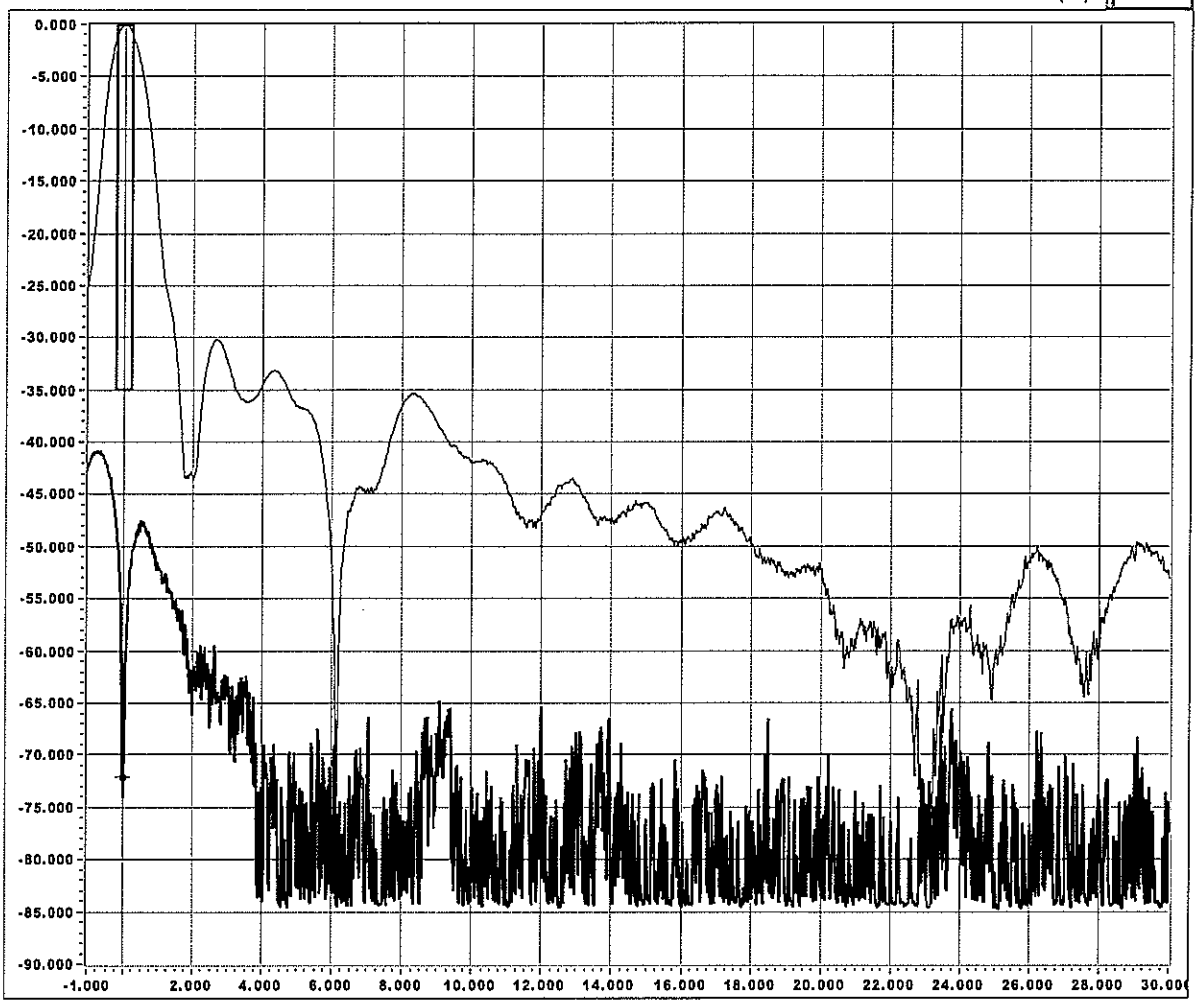
Vertex RSI
GENERAL DYNAMICS

Customer.....	GDSATCOM	Model.....	1.2 QDMA
Date/Local Time.....	7-23-2007 at 180954	Location.....	Test Range
Job Number.....	C0038	Weather.....	Overcast
		Test Engineer.....	Richard Davisson
		Spacecraft.....	Short Range
		Transponder.....	

TX...Cross-pol under Co-pol...HORZ polarization...13.750 GHz

Elevation

On Axis Isolation (dB): 72.10



The Y-scale is power level (dB) relative to beam center; the X-scale is angle (degrees, cosine corrected) relative to beam center.

SA Freq (Hz)=13750000235, AZ rate (deg/s)=1.266, EL rate (deg/s)=0.818, RBW (Hz)=30, VBW (Hz)=10

Co-pol File:	% 070723 180954 C0038 TC-30-HE-13.750.txt	Azimuth Beam Center (deg):	181.000
Cross-pol File:	% 070723 191507 C0038 TX-30-HE-13.750.txt	Elevation Beam Center (deg):	12.000
Test Frequency (GHz):	13.750000235	On-axis Spec. Isolation (dB):	35.000
Ref. Level (dBm):	-29.09	Off-axis Spec. Isolation (dB):	35.00
# Points Displayed:	6814		

Versions
60120 FAST
60129 PACK

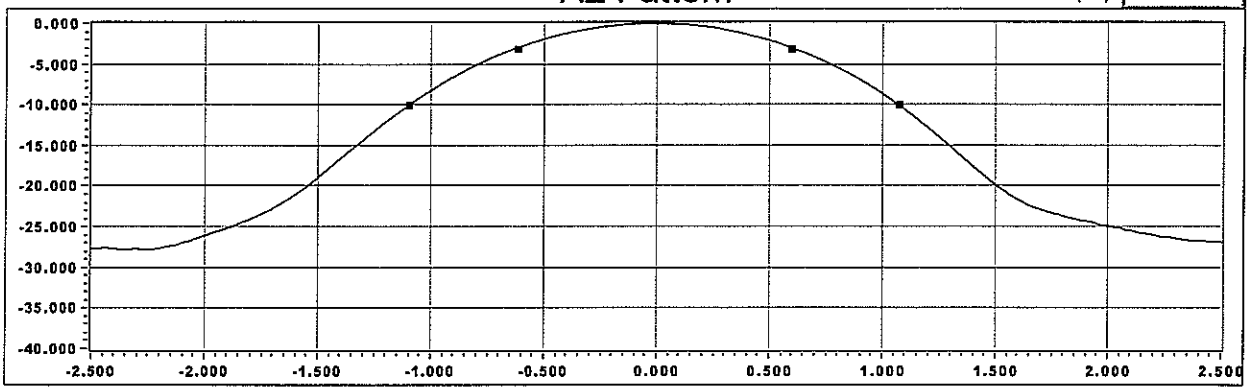
Vertex RSI
GENERAL DYNAMICS

Customer.....	GDSATCOM	Model.....	1.2 QDMA
Date/Local Time.....	7-23-2007 at 093452	Location.....	Test Range
Job Number.....	C0038	Weather.....	Clear
		Test Engineer.....	Richard Davisson
		Spacecraft.....	Short Range
		Transponder.....	

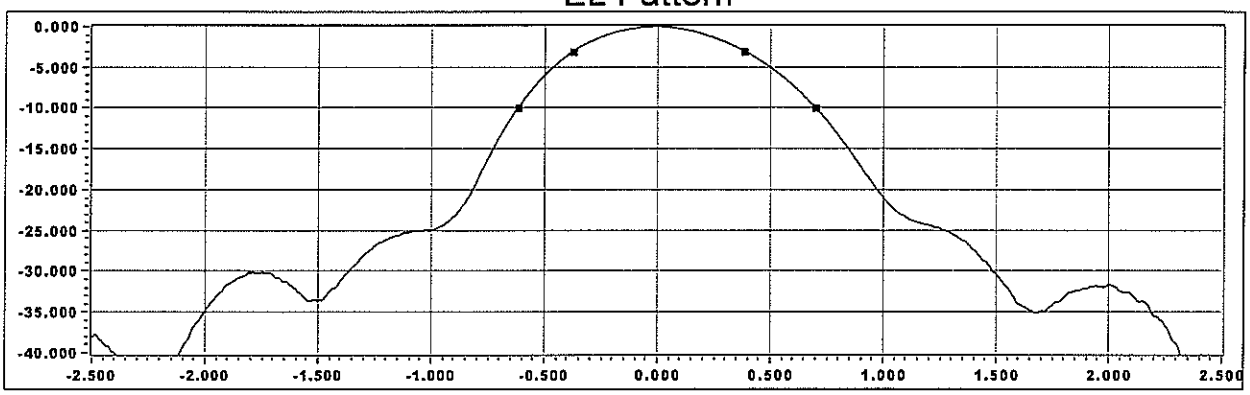
TX...HORZ Polarization...Gain by Beamwidth...14.125 GHz

Spec. Gain (dBi): 43.600
Calculated Gain (dB): 44.55

AZ Pattern



EL Pattern



The Y-scale is power level (dB) relative to beam center; the X -scale is angle (degrees, AZ cosine corrected) relative to beam center.

Gain by Beamwidth dBi = 10 log[((3dB factor / (AZ 3dB BW * EL 3dB BW)) + (10dB factor / (AZ 10dB BW * EL 10dB BW))) / 2]
- Feed Loss dB - 4.923(RMS inches * Freq GHz)²

SA Freq (Hz)=14125000199, AZ rate (deg/s)=1.266, EL rate (deg/s)=0.818, RBW (Hz)=30, VBW (Hz)=10

AZ Co-pol File	% 070723 093452 C0038 TC-5-HA-14.125.txt
EL Co-pol File	% 070723 093550 C0038 TC-5-HE-14.125.txt

The calculated gain is greater than the specified gain by 0.95 dB.

Test Frequency (GHz)	14.125000199	AZ 3dB BW (deg)	1.2169	# Points Displayed	8196
AZ Ref. Level (dBm)	-28.34	AZ 10dB BW (deg)	2.1644		
Feed Loss (dB)	0.20	AZ 15dB BW (deg)	2.6221		
RMS (in.)	0.020	EL 3dB BW (deg)	0.7586		
Azimuth (deg)	181.000	EL 10dB BW (deg)	1.3215	3dB Factor	31000
Elevation (deg)	12.000	EL 15dB BW (deg)	1.5746	10dB Factor	91000

Versions
60120 FAST
60129 PACK

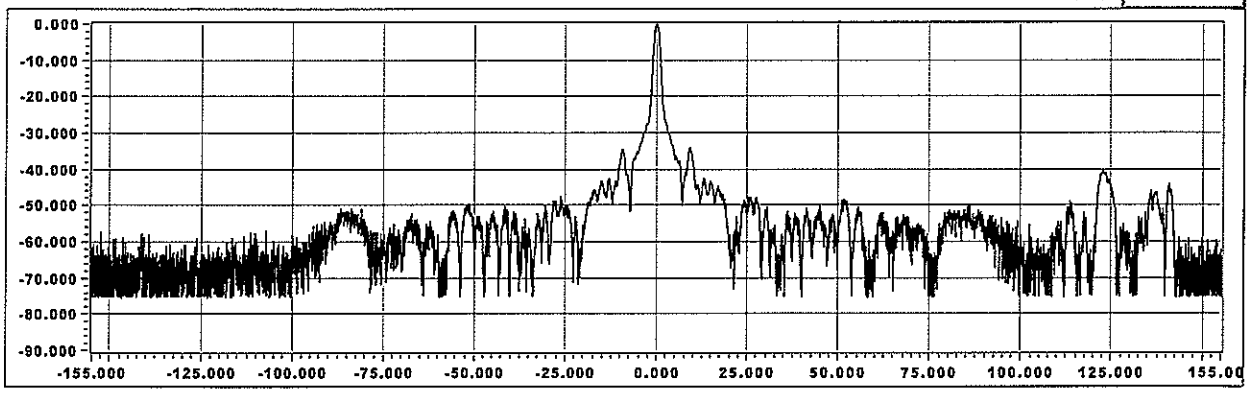
Vertex RSI
GENERAL DYNAMICS

Customer.....	GDSATCOM	Model.....	1.2 QDMA
Date/Local Time.....	7-23-2007 at 094616	Location.....	Test Range
Job Number.....	C0038	Weather.....	Clear
		Test Engineer.....	Richard Davisson
		Spacecraft.....	Short Range
		Transponder.....	

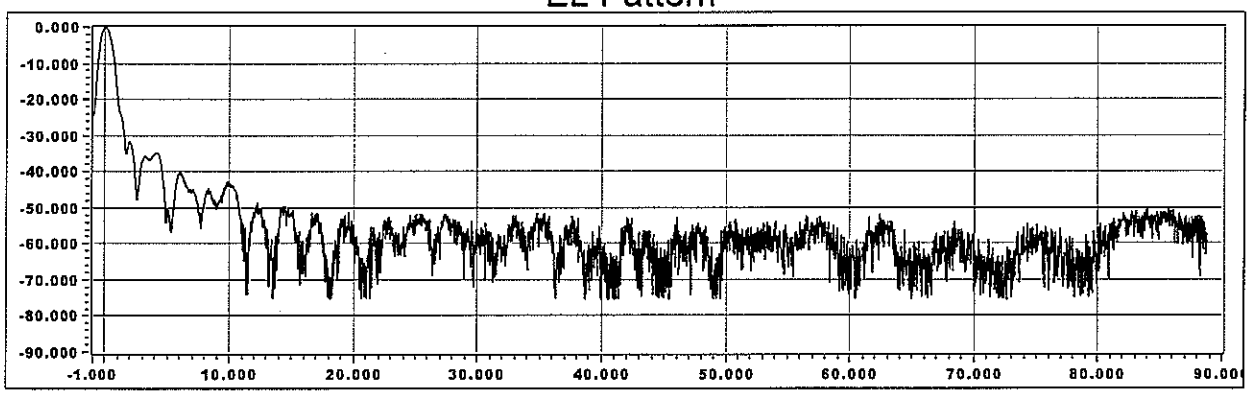
TX...HORZ Polarization...Gain by Integration...14.125 GHz

Spec. Gain (dBi): 43.600
Calculated Gain (dB): 45.89

AZ Pattern



EL Pattern



The Y-scale is power level (dB) relative to beam center; the X -scale is angle (degrees, AZ cosine corrected) relative to beam center.

Antenna Gain by Integration = 2 / (Sum [PsubTheta * sin(Theta) * deltaTheta] - FeedLoss - AngularExtentLoss - SparBlockageLoss - CrossPolLoss)
where the summation is performed for look angles (Theta) offset from beam center from 0 to 180 degrees (in practice the summation occurs on both sides of beam center and the average is taken) and where PsubTheta is the power relative to beam center power and measured at look angles offset from beam center.

SA Freq (Hz)=14125000198, AZ rate (deg/s)=1.266, EL rate (deg/s)=0.818, RBW (Hz)=30, VBW (Hz)=10

AZ Co-pol File	% 070723 094616 C0038 TC-155-HA-14.125.txt
EL Co-pol File	% 070723 095111 C0038 TC-90-HE-14.125.txt
Test Frequency (GHz)	14.125000198
AZ Ref. Level (dBm)	-28.43
Azimuth (deg)	181.000
Elevation (deg)	12.000

Versions
60120 FAST
60129 PACK

The calculated gain is greater than the specified gain by 2.29 dB.

# Points Displayed	8192
Feed Loss (dB)	0.20
Angular Extent Loss(dB)	0.15
Spar Blockage Loss (dB)	0.05
Cross-pol Loss (dB)	0.05

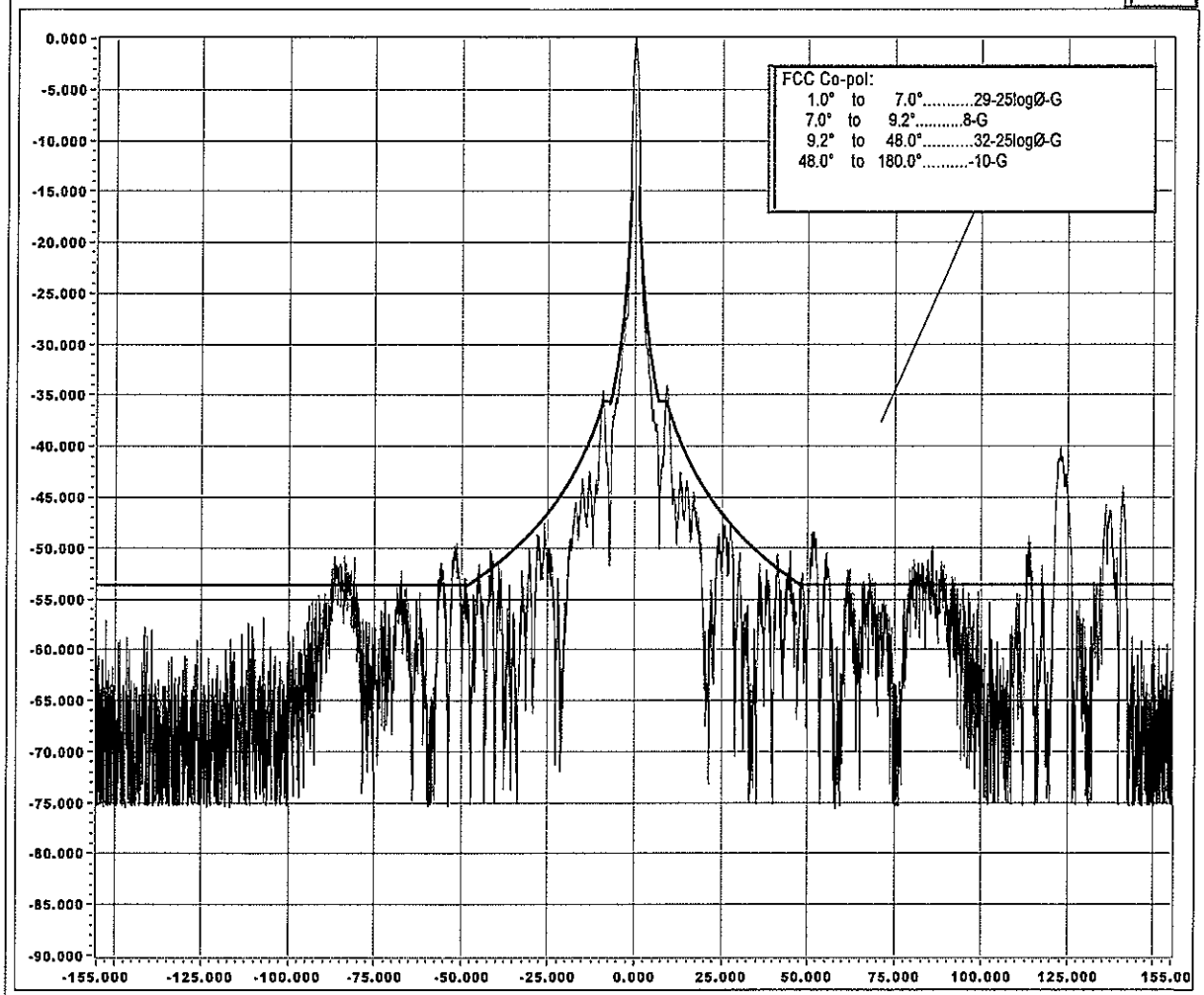
Vertex RSI
GENERAL DYNAMICS

Customer.....	GDSATCOM	Model.....	1.2 QDMA
Date/Local Time.....	7-23-2007 at 094616	Location.....	Test Range
Job Number.....	C0038	Weather.....	Clear
		Test Engineer.....	Richard Davisson
		Spacecraft.....	Short Range
		Transponder.....	

TX...Co-pol...HORZ polarization...14.125 GHz

Azimuth

% Over Curve: 10.7



Y-scale is power level (dB) relative to beam center; x-scale is angle (degrees, cosine corrected) relative to beam center.

SA Freq (Hz)=14125000198, AZ rate (deg/s)=1.266, EL rate (deg/s)=0.818, RBW (Hz)=30, VBW (Hz)=10

File:	% 070723 094616 C0038 TC-155-HA-14.125.txt	Specified Gain (dB):	43.600
Test Frequency (GHz):	14.125000198	Azimuth Beam Center (deg):	181.000
Ref. Level (dBm):	-28.43	Elevation Beam Center (deg):	12.000
# Points Displayed:	8192	Margin Under Curved (dB):	None

Versions
60120 FAST
60129 PACK

Vertex RSI
GENERAL DYNAMICS

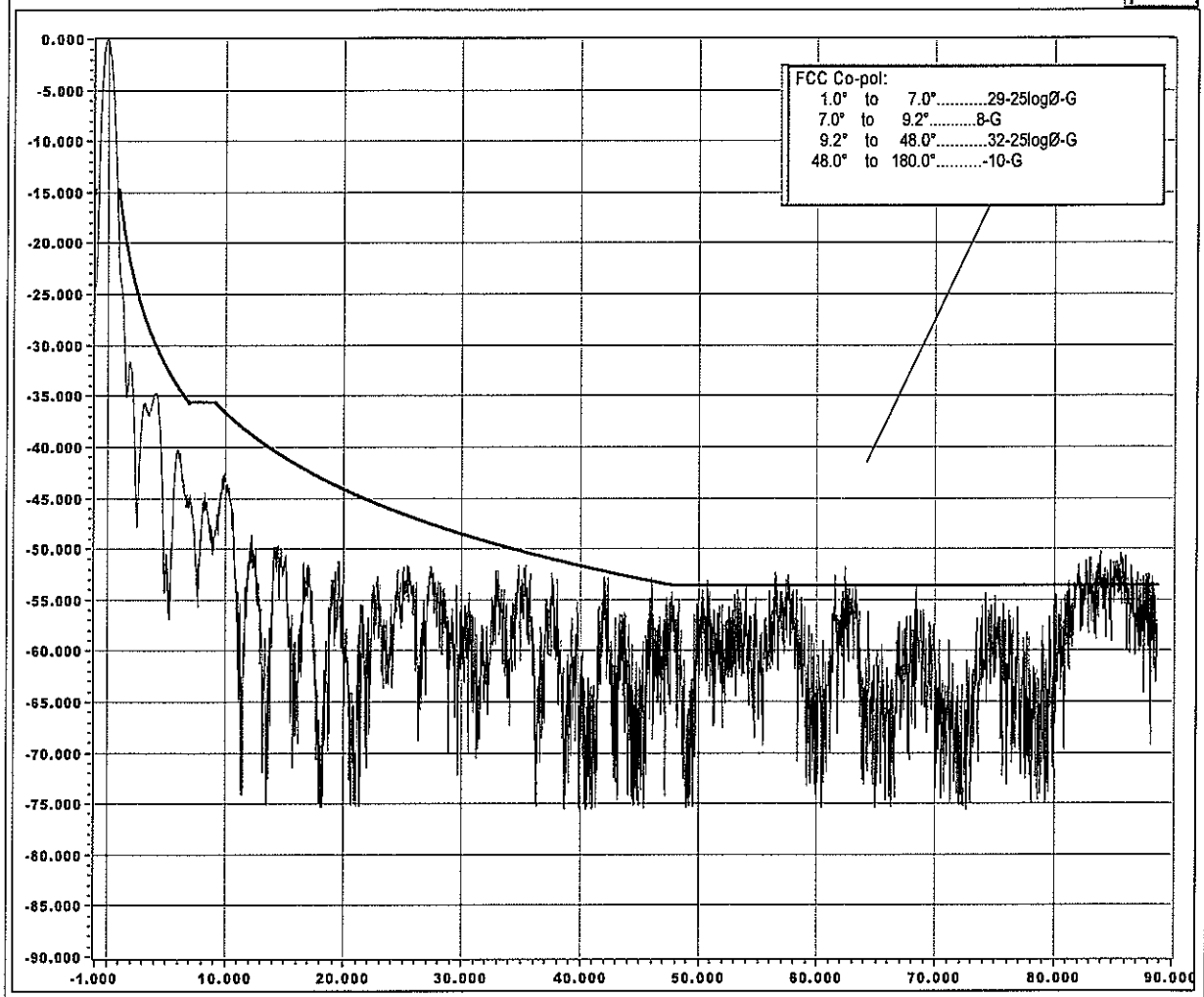
Customer.....	GDSATCOM
Date/Local Time.....	7-23-2007 at 095111
Job Number.....	C0038

Model.....	1.2 QDMA
Location.....	Test Range
Weather.....	Clear
Test Engineer.....	Richard Davisson
Spacecraft.....	Short Range
Transponder.....	

TX...Co-pol...HORZ polarization...14.125 GHz

Elevation

% Over Curve: 3.0



Y-scale is power level (dB) relative to beam center; x-scale is angle (degrees, cosine corrected) relative to beam center.

SA Freq (Hz)=14125000198, AZ rate (deg/s)=1.266, EL rate (deg/s)=0.818, RBW (Hz)=30, VBW (Hz)=10

File:	% 070723 095111 C0038 TC-90-HE-14.125.txt		
Test Frequency (GHz):	14.125000198		
Ref. Level (dBm):	-28.29	Versions	
# Points Displayed:	7601	60120 FAST 60129 PACK	
Specified Gain:			43.600
Azimuth Beam Center (deg):			181.000
Elevation Beam Center (deg):			12.000
Margin Under Curve (dB):			None

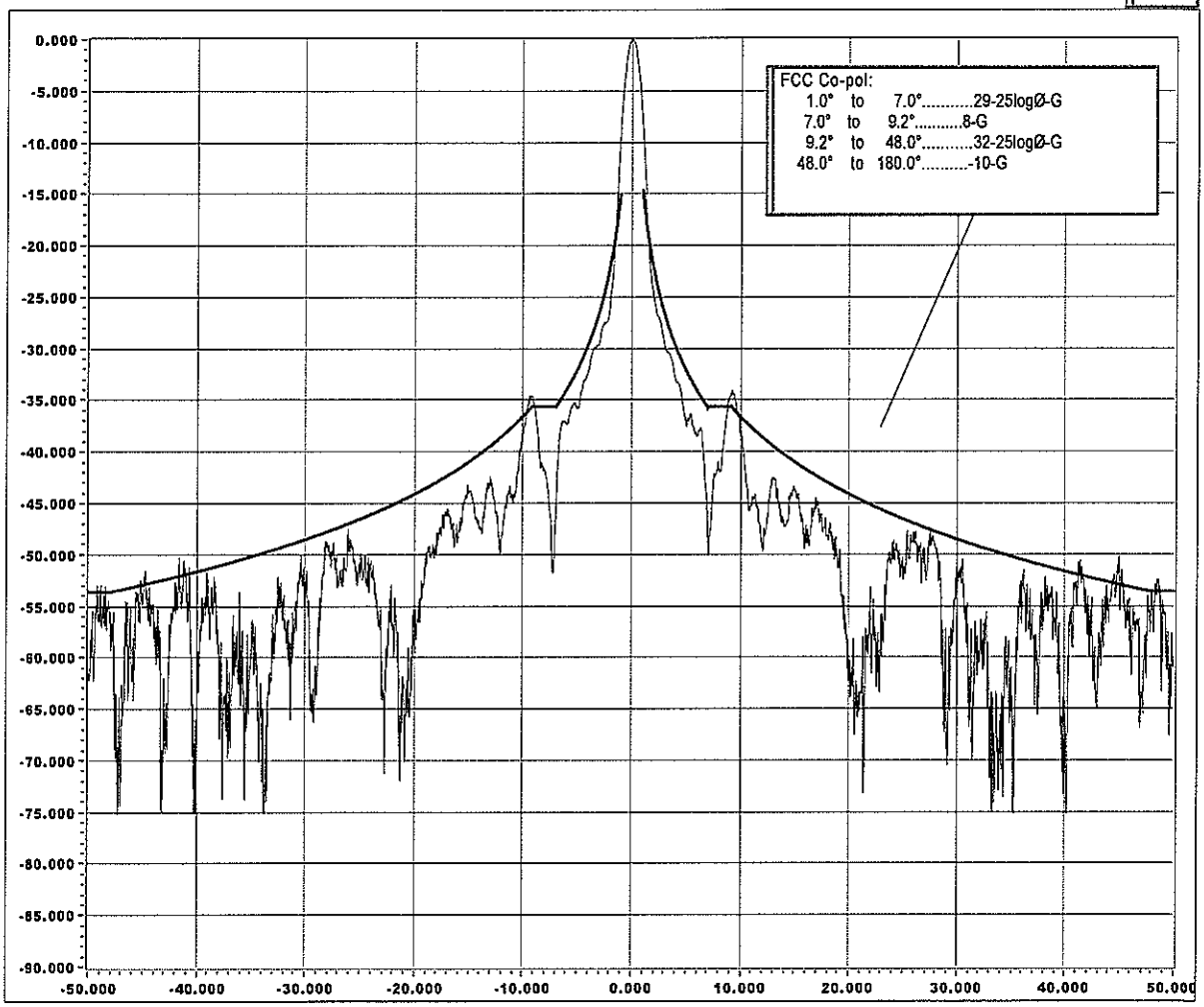
Vertex RSI
GENERAL DYNAMICS

Customer.....	GDSATCOM
Date/Local Time.....	7-23-2007 at 094616
Job Number.....	C0038
Model.....	1.2 QDMA
Location.....	Test Range
Weather.....	Clear
Test Engineer.....	Richard Davisson
Spacecraft.....	Short Range
Transponder.....	

TX...Co-pol...HORZ polarization...14.125 GHz

Azimuth

% Over Curve: 4.7



Y-scale is power level (dB) relative to beam center; x-scale is angle (degrees, cosine corrected) relative to beam center.

SA Freq (Hz)=14125000198, AZ rate (deg/s)=1.266, EL rate (deg/s)=0.818, RBW (Hz)=30, VBW (Hz)=10

File:	% 070723 094616 C0038 TC-155-HA-14.125.txt	Specified Gain (dB):	43.600
Test Frequency (GHz):	14.125000198	Azimuth Beam Center (deg):	181.000
Ref. Level (dBm):	-28.43	Elevation Beam Center (deg):	12.000
# Points Displayed:	2304	Margin Under Curved (dB):	None

Versions
60120 FAST
60129 PACK

Vertex RSI
GENERAL DYNAMICS

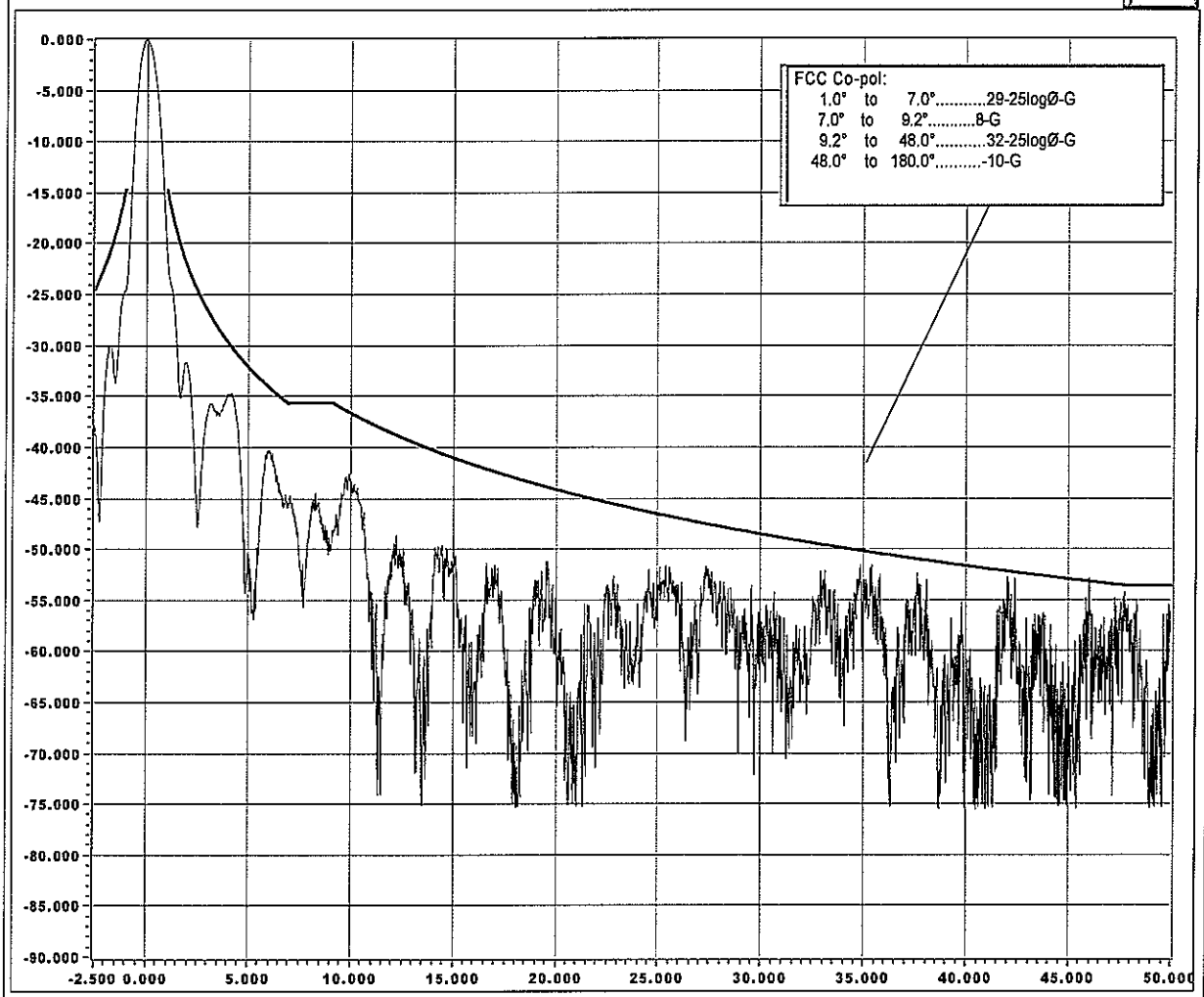
Customer.....	GDSATCOM
Date/Local Time.....	7-23-2007 at 095111
Job Number.....	C0038

Model.....	1.2 QDMA
Location.....	Test Range
Weather.....	Clear
Test Engineer.....	Richard Davisson
Spacecraft.....	Short Range
Transponder.....	

TX...Co-pol...HORZ polarization...14.125 GHz

Elevation

% Over Curve: 0.0



Y-scale is power level (dB) relative to beam center; x-scale is angle (degrees, cosine corrected) relative to beam center.

SA Freq (Hz)=14125000198, AZ rate (deg/s)=1.266, EL rate (deg/s)=0.818, RBW (Hz)=30, VBW (Hz)=10

File:	% 070723 095111 C0038 TC-90-HE-14.125.txt		
Test Frequency (GHz):	14.125000198		
Ref. Level (dBm):	-28.29	Versions	
# Points Displayed:	4565	60120 FAST 60129 PACK	
Specified Gain:			43.600
Azimuth Beam Center (deg):			181.000
Elevation Beam Center (deg):			12.000
Margin Under Curve (dB):			None

Vertex RSI
GENERAL DYNAMICS

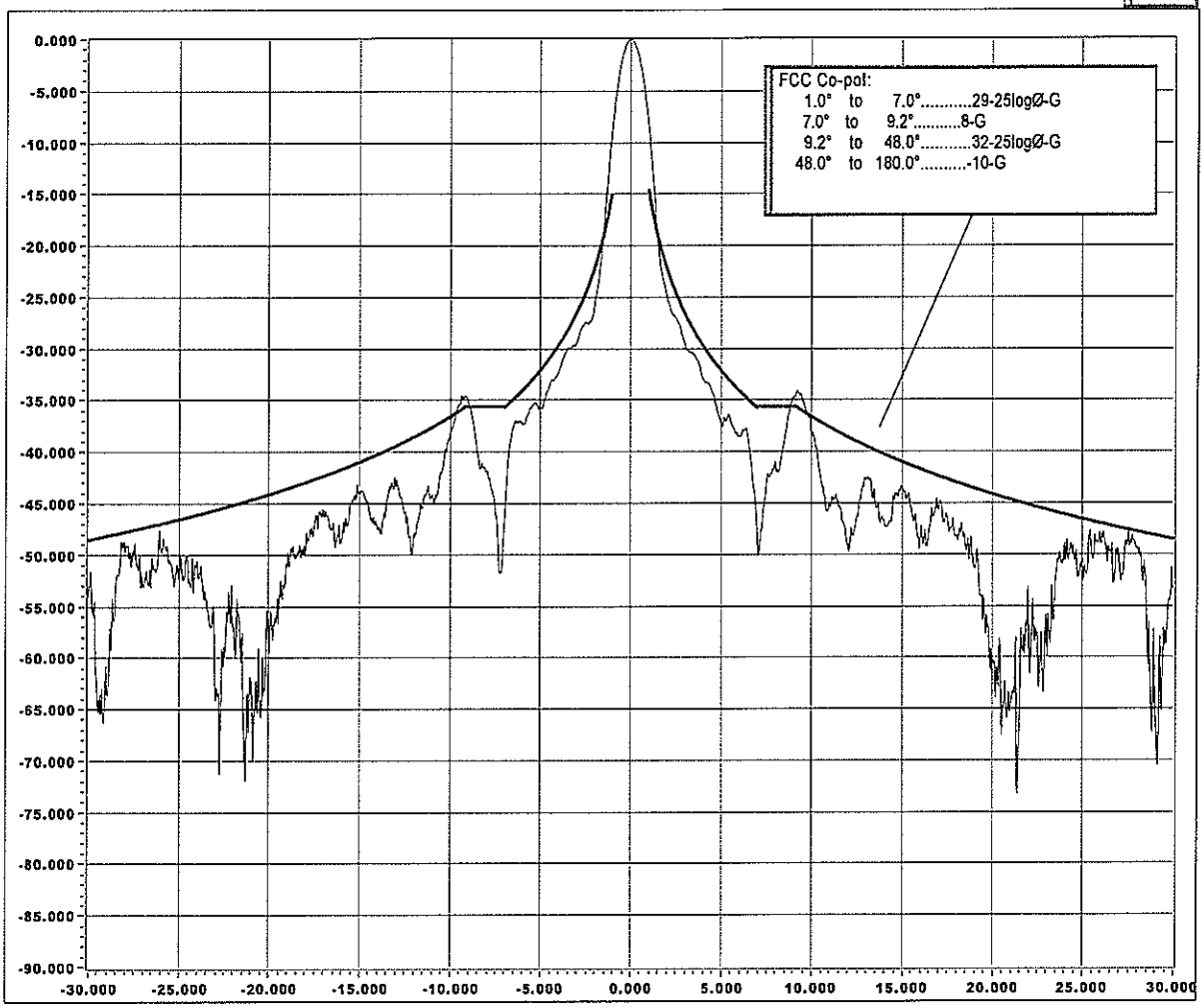
Customer.....	GDSATCOM
Date/Local Time.....	7-23-2007 at 094616
Job Number.....	C0038

Model.....	1.2 QDMA
Location.....	Test Range
Weather.....	Clear
Test Engineer.....	Richard Davisson
Spacecraft.....	Short Range
Transponder.....	

TX...Co-pol...HORZ polarization...14.125 GHz

Azimuth

% Over Curve: 4.5



Y-scale is power level (dB) relative to beam center; x-scale is angle (degrees, cosine corrected) relative to beam center.

SA Freq (Hz)=14125000198, AZ rate (deg/s)=1.266, EL rate (deg/s)=0.818, RBW (Hz)=30, VBW (Hz)=10

File:	% 070723 094616 C0038 TC-155-HA-14.125.txt		
Test Frequency (GHz):	14.125000198	Specified Gain (dB):	43.600
Ref. Level (dBm):	-28.43	Azimuth Beam Center (deg):	181.000
# Points Displayed:	1381	Elevation Beam Center (deg):	12.000
Versions: 60120 FAST, 60129 PACK		Margin Under Curved (dB):	None

Vertex RSI
GENERAL DYNAMICS

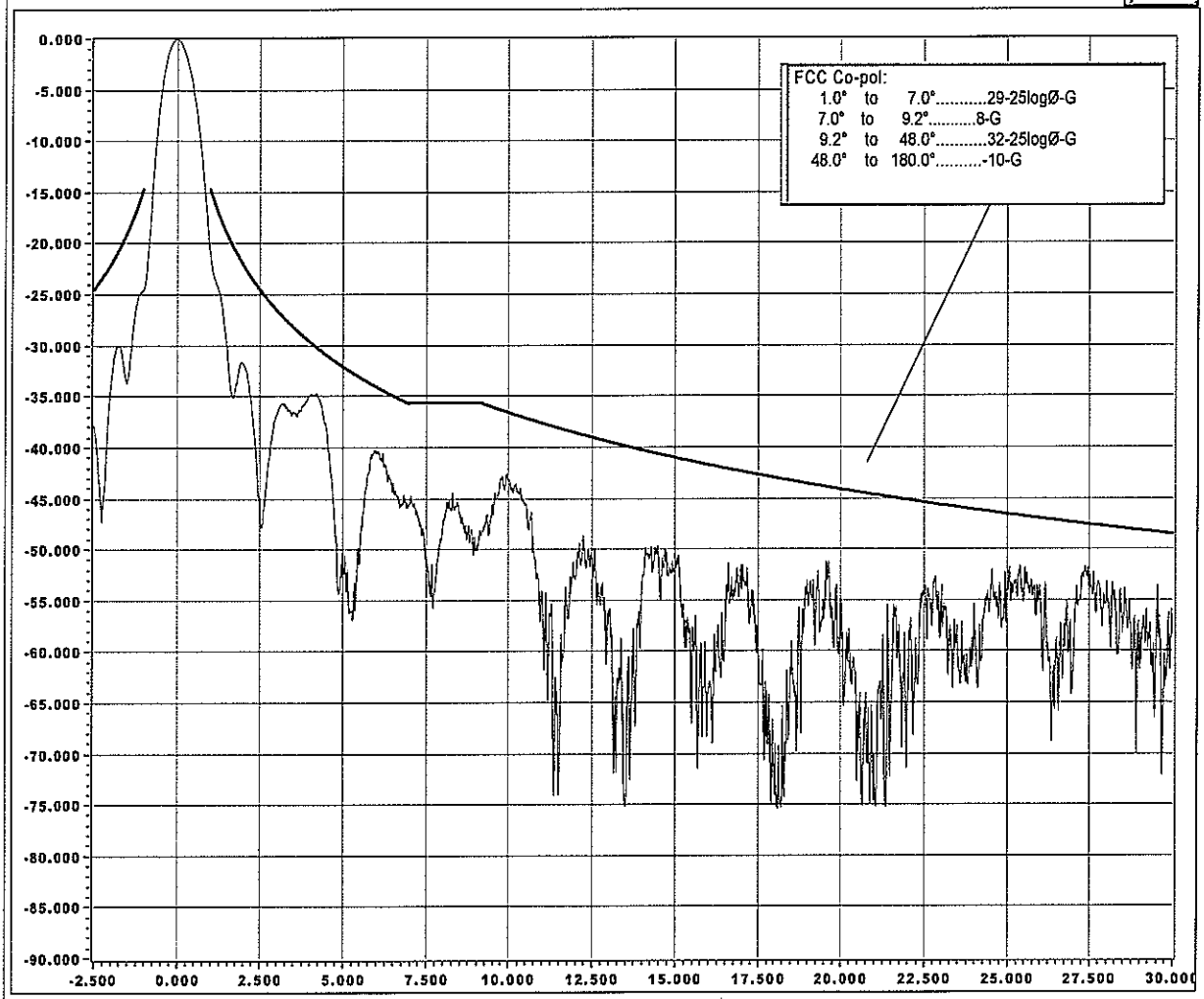
Customer.....	GDSATCOM
Date/Local Time.....	7-23-2007 at 095111
Job Number.....	C0038

Model.....	1.2 QDMA
Location.....	Test Range
Weather.....	Clear
Test Engineer.....	Richard Davisson
Spacecraft.....	Short Range
Transponder.....	

TX...Co-pol...HORZ polarization...14.125 GHz

Elevation

% Over Curve: 0.0



Y-scale is power level (dB) relative to beam center; x-scale is angle (degrees, cosine corrected) relative to beam center.

SA Freq (Hz)=14125000198, AZ rate (deg/s)=1.266, EL rate (deg/s)=0.818, RBW (Hz)=30, VBW (Hz)=10

File:	% 070723 095111 C0038 TC-90-HE-14.125.txt		
Test Frequency (GHz):	14.125000198		
Ref. Level (dBm):	-28.29	Versions	
# Points Displayed:	2638	60120 FAST 60129 PACK	
Specified Gain:			43.600
Azimuth Beam Center (deg):			181.000
Elevation Beam Center (deg):			12.000
Margin Under Curve (dB):			4.13

Vertex RSI
GENERAL DYNAMICS

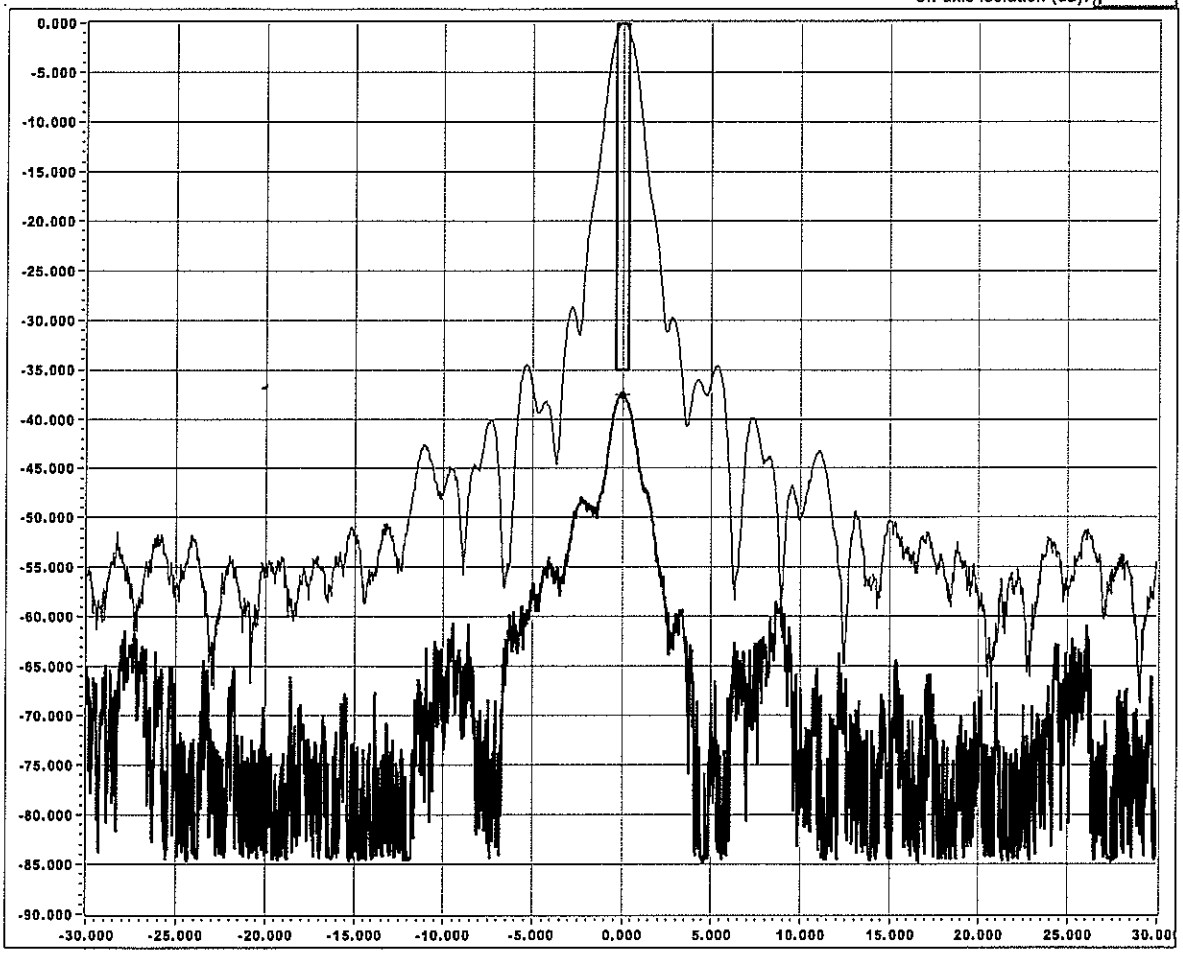
Customer.....	GDSATCOM
Date/Local Time.....	7-23-2007 at 185243
Job Number.....	C0038

Model.....	1.2 QDMA
Location.....	Test Range
Weather.....	Overcast
Test Engineer.....	Richard Davisson
Spacecraft.....	Short Range
Transponder.....	

TX...Cross-pol under Co-pol...HORZ polarization...14.125 GHz

Azimuth

On-axis Isolation (dB): 37.56



The Y-scale is power level (dB) relative to beam center; the X-scale is angle (degrees, cosine corrected) relative to beam center.

SA Freq (Hz)=14125000246, AZ rate (deg/s)=1.266, EL rate (deg/s)=0.818, RBW (Hz)=30, VBW (Hz)=10

Co-pol File:	% 070723 181252 C0038 TC-30-HA-14.125.txt	Azimuth Beam Center (deg):	181.000
Cross-pol File:	% 070723 185243 C0038 TX-30-HA-14.125.txt	Elevation Beam Center (deg):	12.000
Test Frequency (GHz):	14.125000246	On-axis Spec. Isolation (dB):	35.000
Ref. Level (dBm):	-28.79	Off-axis Spec. Isolation (dB):	35.00
# Points Displayed:	7657		

Versions
60120 FAST
60129 PACK

Vertex RSI
GENERAL DYNAMICS

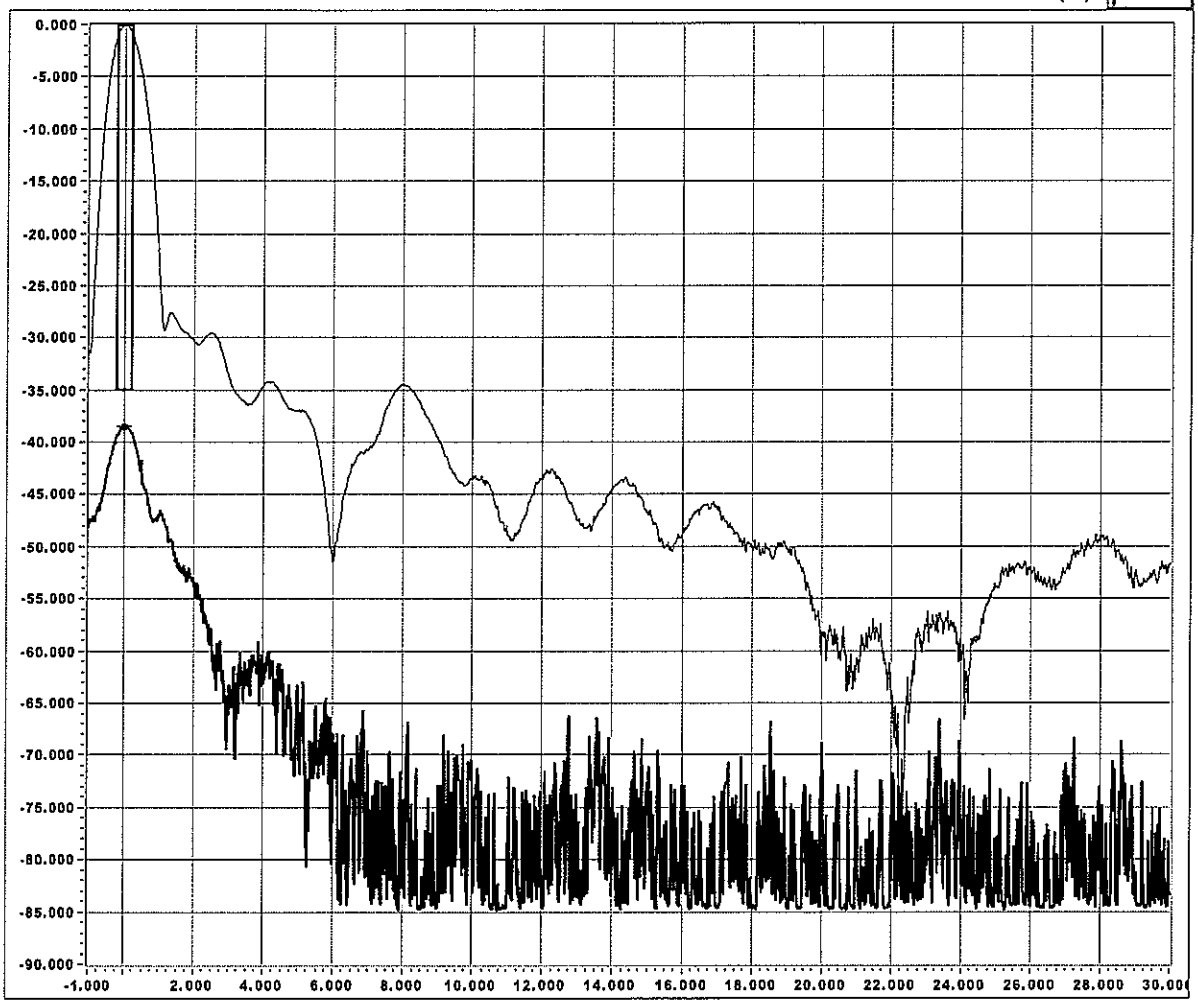
Customer.....	GDSATCOM
Date/Local Time.....	7-23-2007 at 181439
Job Number.....	C0038

Model.....	1.2 QDMA
Location.....	Test Range
Weather.....	Overcast
Test Engineer.....	Richard Davisson
Spacecraft.....	Short Range
Transponder.....	

TX...Cross-pol under Co-pol...HORZ polarization...14.125 GHz

Elevation

On Axis Isolation (dB): 38.45



The Y-scale is power level (dB) relative to beam center; the X-scale is angle (degrees, cosine corrected) relative to beam center.

SA Freq (Hz)=14125000244, AZ rate (deg/s)=1.266, EL rate (deg/s)=0.818, RBW (Hz)=30, VBW (Hz)=10

Co-pol File:	% 070723 181439 C0038 TC-30-HE-14.125.txt	Azimuth Beam Center (deg):	181.000
Cross-pol File:	% 070723 185547 C0038 TX-30-HE-14.125.txt	Elevation Beam Center (deg):	12.000
Test Frequency (GHz):	14.125000244	On-axis Spec. Isolation (dB):	35.000
Ref. Level (dBm):	-28.79	Off-axis Spec. Isolation (dB):	35.00
# Points Displayed:	6812		

Versions
60120 FAST
60129 PACK

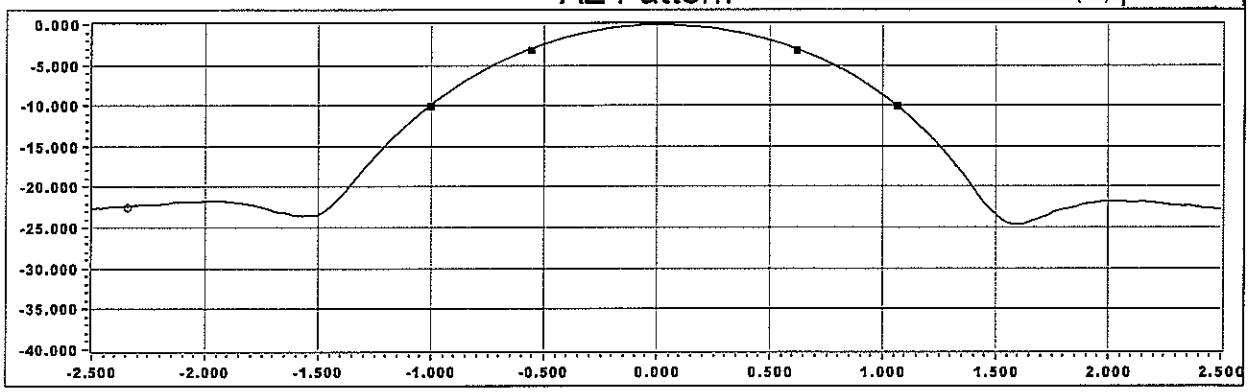
Vertex RSI
GENERAL DYNAMICS

Customer.....	GDSATCOM	Model.....	1.2 QDMA
Date/Local Time.....	7-23-2007 at 101512	Location.....	Test Range
Job Number.....	C0038	Weather.....	Clear
		Test Engineer.....	Richard Davisson
		Spacecraft.....	Short Range
		Transponder.....	

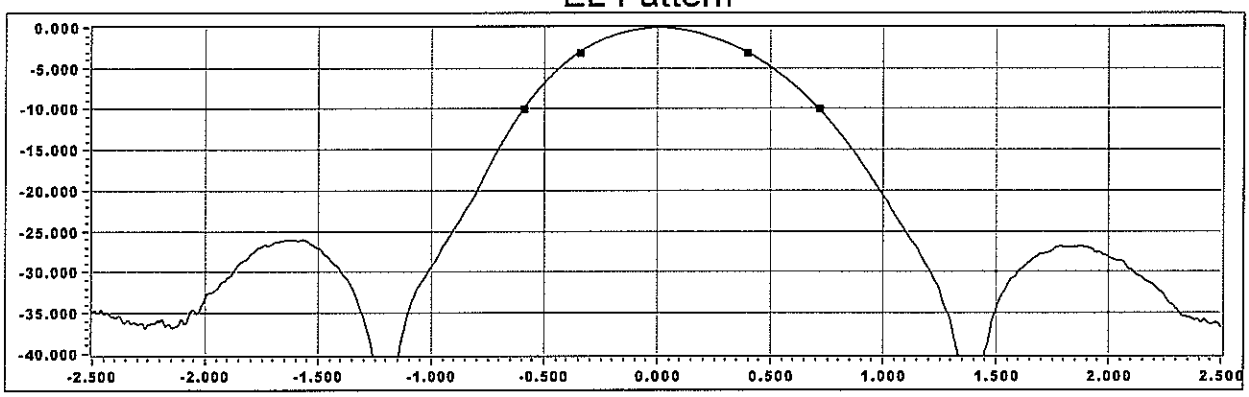
TX...HORZ Polarization...Gain by Beamwidth...14.500 GHz

Spec. Gain (dBi): 43.700
Calculated Gain (dB): 44.76

AZ Pattern



EL Pattern



The Y-scale is power level (dB) relative to beam center; the X -scale is angle (degrees, AZ cosine corrected) relative to beam center.

Gain by Beamwidth dBi = 10 log[((3dB factor / (AZ 3dB BW * EL 3dB BW)) + (10dB factor / (AZ 10dB BW * EL 10dB BW))) / 2]
- Feed Loss dB - 4.923(RMS inches * Freq GHz)²

SA Freq (Hz)=14500000211, AZ rate (deg/s)=1.266, EL rate (deg/s)=0.818, RBW (Hz)=30, VBW (Hz)=10

AZ Co-pol File	% 070723 101512 C0038 TC-5-HA-14.500.txt
EL Co-pol File	% 070723 101608 C0038 TC-5-HE-14.500.txt

The calculated gain is greater than the specified gain by 1.06 dB.

Test Frequency (GHz)	14.500000211	AZ 3dB BW (deg)	1.1797	# Points Displayed	3231
AZ Ref. Level (dBm)	-31.77	AZ 10dB BW (deg)	2.0714		
Feed Loss (dB)	0.20	AZ 15dB BW (deg)	2.4617		
RMS (in.)	0.020	EL 3dB BW (deg)	0.7430		
Azimuth (deg)	181.000	EL 10dB BW (deg)	1.3077	3dB Factor	31000
Elevation (deg)	12.000	EL 15dB BW (deg)	1.5712	10dB Factor	91000

Versions
60120 FAST
60129 PACK

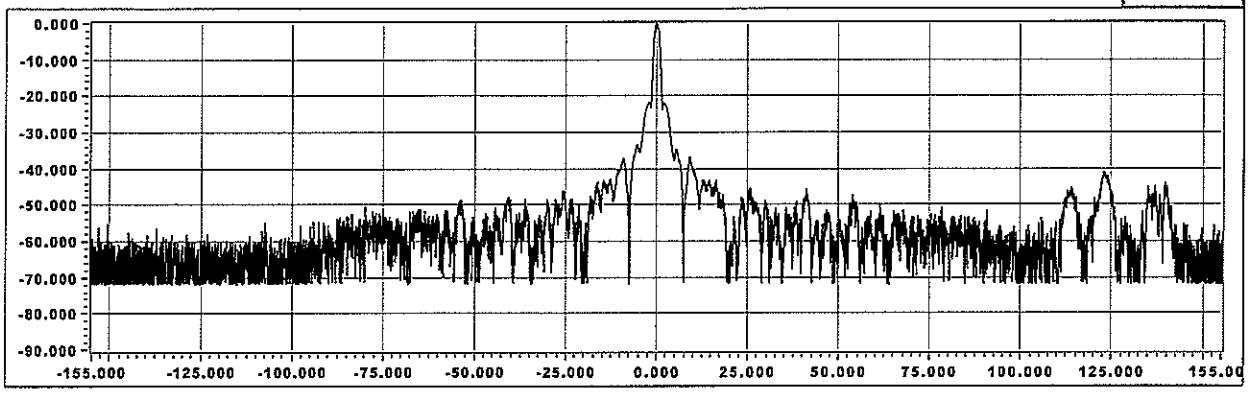
Vertex RSI
GENERAL DYNAMICS

Customer.....	GDSATCOM	Model.....	1.2 QDMA
Date/Local Time.....	7-23-2007 at 100600	Location.....	Test Range
Job Number.....	C0038	Weather.....	Clear
		Test Engineer.....	Richard Davisson
		Spacecraft.....	Short Range
		Transponder.....	

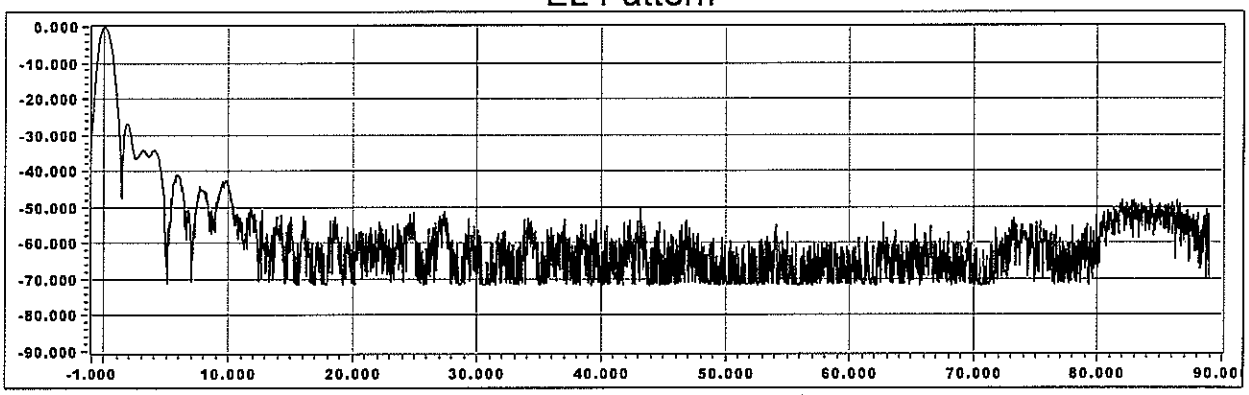
TX...HORZ Polarization...Gain by Integration...14.500 GHz

Spec. Gain (dBi): 43.700
Calculated Gain (dB): 46.02

AZ Pattern



EL Pattern



The Y-scale is power level (dB) relative to beam center; the X -scale is angle (degrees, AZ cosine corrected) relative to beam center.

Antenna Gain by Integration = 2 / (Sum [PsubTheta * sin(Theta) * deltaTheta] - FeedLoss - AngularExtentLoss - SparBlockageLoss - CrossPolLoss)
where the summation is performed for look angles (Theta) offset from beam center from 0 to 180 degrees (in practice the summation occurs on both sides of beam center and the average is taken) and where PsubTheta is the power relative to beam center power and measured at look angles offset from beam center.

SA Freq (Hz)=14500000211, AZ rate (deg/s)=1.266, EL rate (deg/s)=0.818, RBW (Hz)=30, VBW (Hz)=10

AZ Co-pol File	% 070723 100600 C0038 TC-155-HA-14.500.txt
EL Co-pol File	% 070723 101049 C0038 TC-90-HE-14.500.txt
Test Frequency (GHz)	14.500000211
AZ Ref. Level (dBm)	-31.66
Azimuth (deg)	181.000
Elevation (deg)	12.000

Versions
60120 FAST
60129 PACK

The calculated gain is greater than the specified gain by 2.32 dB.

# Points Displayed	8192
Feed Loss (dB)	0.20
Angular Extent Loss(dB)	0.15
Spar Blockage Loss (dB)	0.05
Cross-pol Loss (dB)	0.05

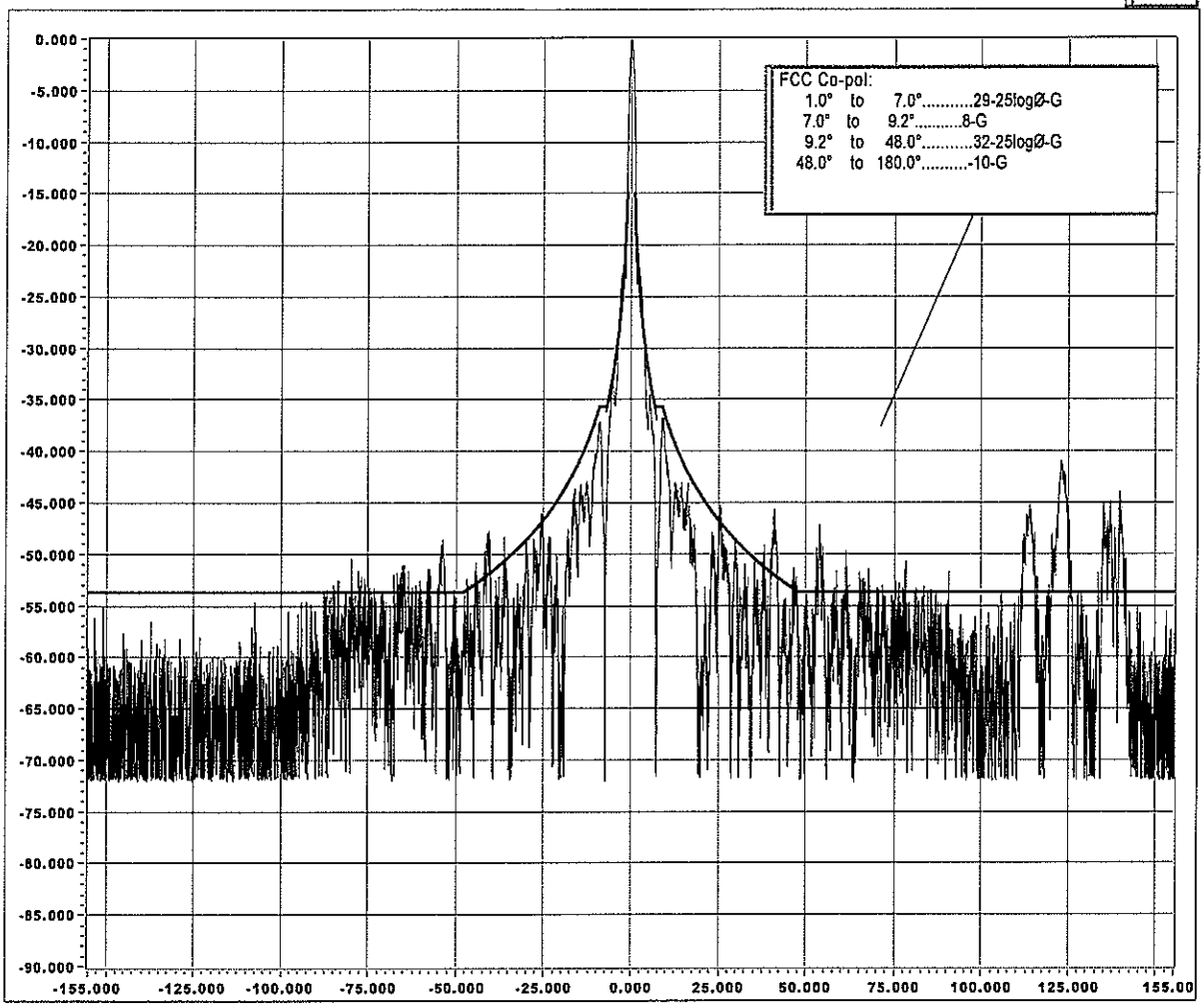
Vertex RSI
GENERAL DYNAMICS

Customer.....	GDSATCOM	Model.....	1.2 QDMA
Date/Local Time.....	7-23-2007 at 100600	Location.....	Test Range
Job Number.....	C0038	Weather.....	Clear
		Test Engineer.....	Richard Davisson
		Spacecraft.....	Short Range
		Transponder.....	

TX...Co-pol...HORZ polarization...14.500 GHz

Azimuth

% Over Curve: 10.1



Y-scale is power level (dB) relative to beam center; x-scale is angle (degrees, cosine corrected) relative to beam center.

SA Freq (Hz)=14500000211, AZ rate (deg/s)=1.266, EL rate (deg/s)=0.818, RBW (Hz)=30, VBW (Hz)=10

File:	% 070723 100600 C0038 TC-155-HA-14.500.txt	Specified Gain (dB):	43.700
Test Frequency (GHz):	14.500000211	Azimuth Beam Center (deg):	181.000
Ref. Level (dBm):	-31.66	Elevation Beam Center (deg):	12.000
# Points Displayed:	8192	Margin Under Curved (dB):	None

Versions
60120 FAST
60129 PACK

Vertex RSI
GENERAL DYNAMICS

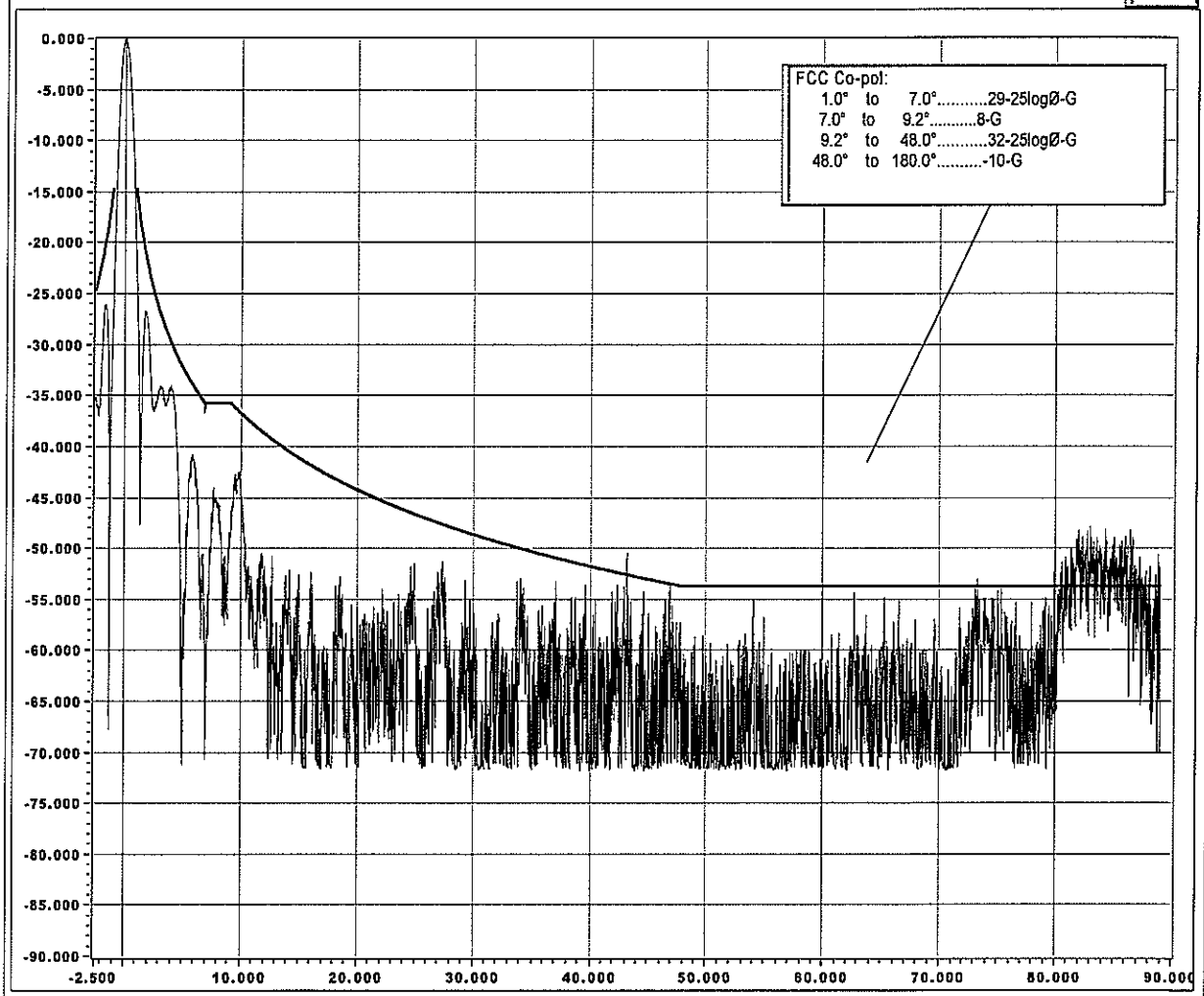
Customer.....	GDSATCOM
Date/Local Time.....	7-23-2007 at 101049
Job Number.....	C0038

Model.....	1.2 QDMA
Location.....	Test Range
Weather.....	Clear
Test Engineer.....	Richard Davisson
Spacecraft.....	Short Range
Transponder.....	

TX...Co-pol...HORZ polarization...14.500 GHz

Elevation

% Over Curve: 5.1



Y-scale is power level (dB) relative to beam center; x-scale is angle (degrees, cosine corrected) relative to beam center.

SA Freq (Hz)=14500000211, AZ rate (deg/s)=1.266, EL rate (deg/s)=0.818, RBW (Hz)=30, VBW (Hz)=10

File:	% 070723 101049 C0038 TC-90-HE-14.500.txt	Specified Gain:	43.700
Test Frequency (GHz):	14.500000211	Azimuth Beam Center (deg):	181.000
Ref. Level (dBm):	-31.68	Elevation Beam Center (deg):	12.000
# Points Displayed:	7821	Margin Under Curve (dB):	None

Versions
60120 FAST
60129 PACK

Vertex RSI
GENERAL DYNAMICS

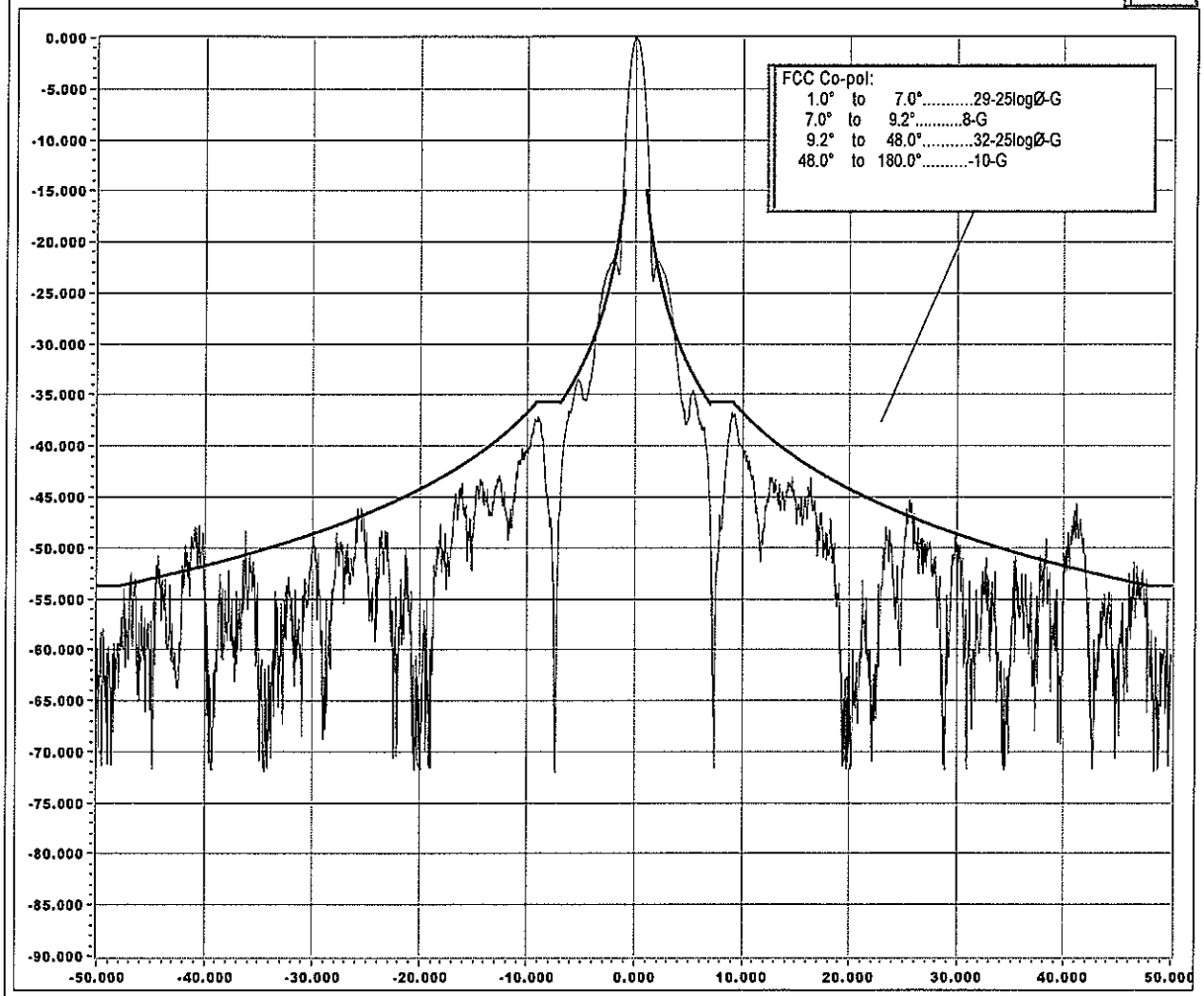
Customer.....	GDSATCOM
Date/Local Time.....	7-23-2007 at 100600
Job Number.....	C0038

Model.....	1.2 QDMA
Location.....	Test Range
Weather.....	Clear
Test Engineer.....	Richard Davisson
Spacecraft.....	Short Range
Transponder.....	

TX...Co-pol...HORZ polarization...14.500 GHz

Azimuth

% Over Curve: 9.3



Y-scale is power level (dB) relative to beam center; x-scale is angle (degrees, cosine corrected) relative to beam center.

SA Freq (Hz)=14500000211, AZ rate (deg/s)=1.266, EL rate (deg/s)=0.818, RBW (Hz)=30, VBW (Hz)=10

File:	% 070723 100600 C0038 TC-155-HA-14.500.txt	Specified Gain (dB):	43.700
Test Frequency (GHz):	14.500000211	Azimuth Beam Center (deg):	181.000
Ref. Level (dBm):	-31.66	Elevation Beam Center (deg):	12.000
# Points Displayed:	2298	Margin Under Curved (dB):	None

Versions
60120 FAST
60129 PACK

Vertex RSI
GENERAL DYNAMICS

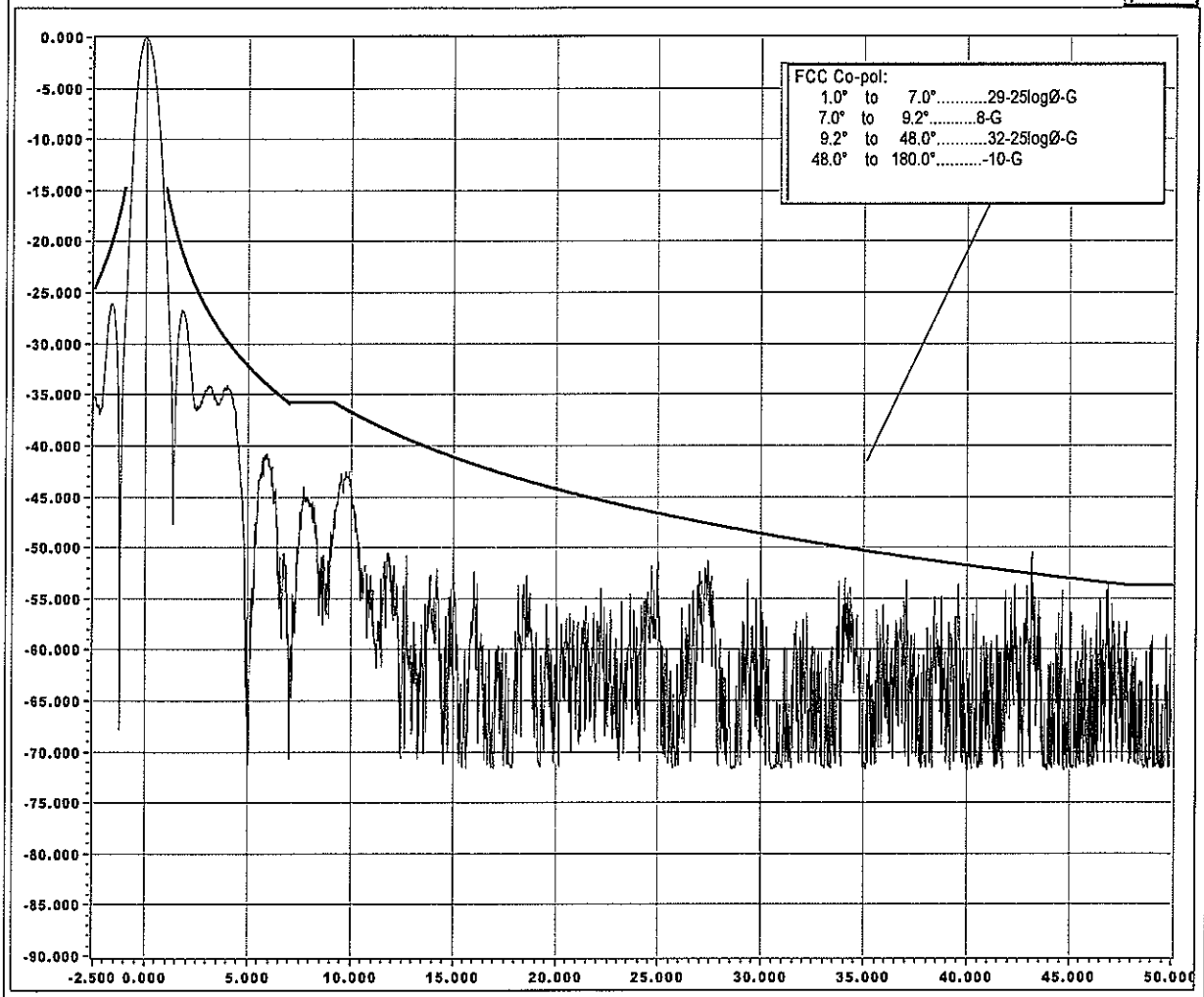
Customer.....	GDSATCOM
Date/Local Time.....	7-23-2007 at 101049
Job Number.....	C0038

Model.....	1.2 QDMA
Location.....	Test Range
Weather.....	Clear
Test Engineer.....	Richard Davisson
Spacecraft.....	Short Range
Transponder.....	

TX...Co-pol...HORZ polarization...14.500 GHz

Elevation

% Over Curve: 0.1



Y-scale is power level (dB) relative to beam center; x-scale is angle (degrees, cosine corrected) relative to beam center.

SA Freq (Hz)=14500000211, AZ rate (deg/s)=1.266, EL rate (deg/s)=0.818, RBW (Hz)=30, VBW (Hz)=10

File:	% 070723 101049 C0038 TC-90-HE-14.500.txt	Specified Gain:	43.700
Test Frequency (GHz):	14.500000211	Azimuth Beam Center (deg):	181.000
Ref. Level (dBm):	-31.68	Elevation Beam Center (deg):	12.000
# Points Displayed:	4547	Margin Under Curve (dB):	None

Versions
60120 FAST
60129 PACK

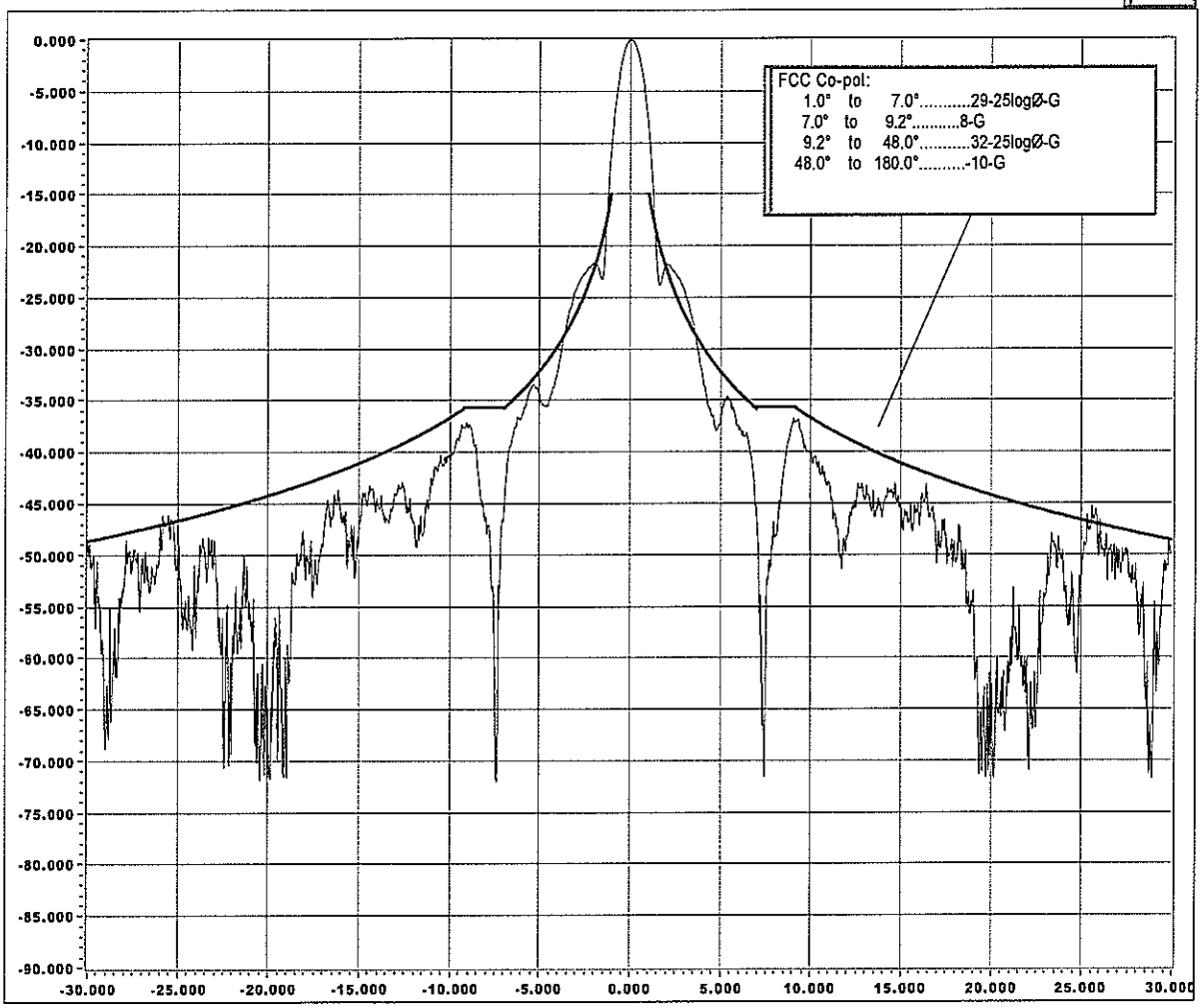
Vertex RSI
GENERAL DYNAMICS

Customer.....	GDSATCOM	Model.....	1.2 QDMA
Date/Local Time.....	7-23-2007 at 100600	Location.....	Test Range
Job Number.....	C0038	Weather.....	Clear
		Test Engineer.....	Richard Davisson
		Spacecraft.....	Short Range
		Transponder.....	

TX...Co-pol...HORZ polarization...14.500 GHz

Azimuth

% Over Curve: 8.0



Y-scale is power level (dB) relative to beam center; x-scale is angle (degrees, cosine corrected) relative to beam center.

SA Freq (Hz)=14500000211, AZ rate (deg/s)=1.266, EL rate (deg/s)=0.818, RBW (Hz)=30, VBW (Hz)=10

File:	% 070723 100600 C0038 TC-155-HA-14.500.txt	Specified Gain (dB):	43.700
Test Frequency (GHz):	14.500000211	Azimuth Beam Center (deg):	181.000
Ref. Level (dBm):	-31.66	Elevation Beam Center (deg):	12.000
# Points Displayed:	1377	Margin Under Curved (dB):	None

Versions
60120 FAST
60129 PACK

Vertex RSI
GENERAL DYNAMICS

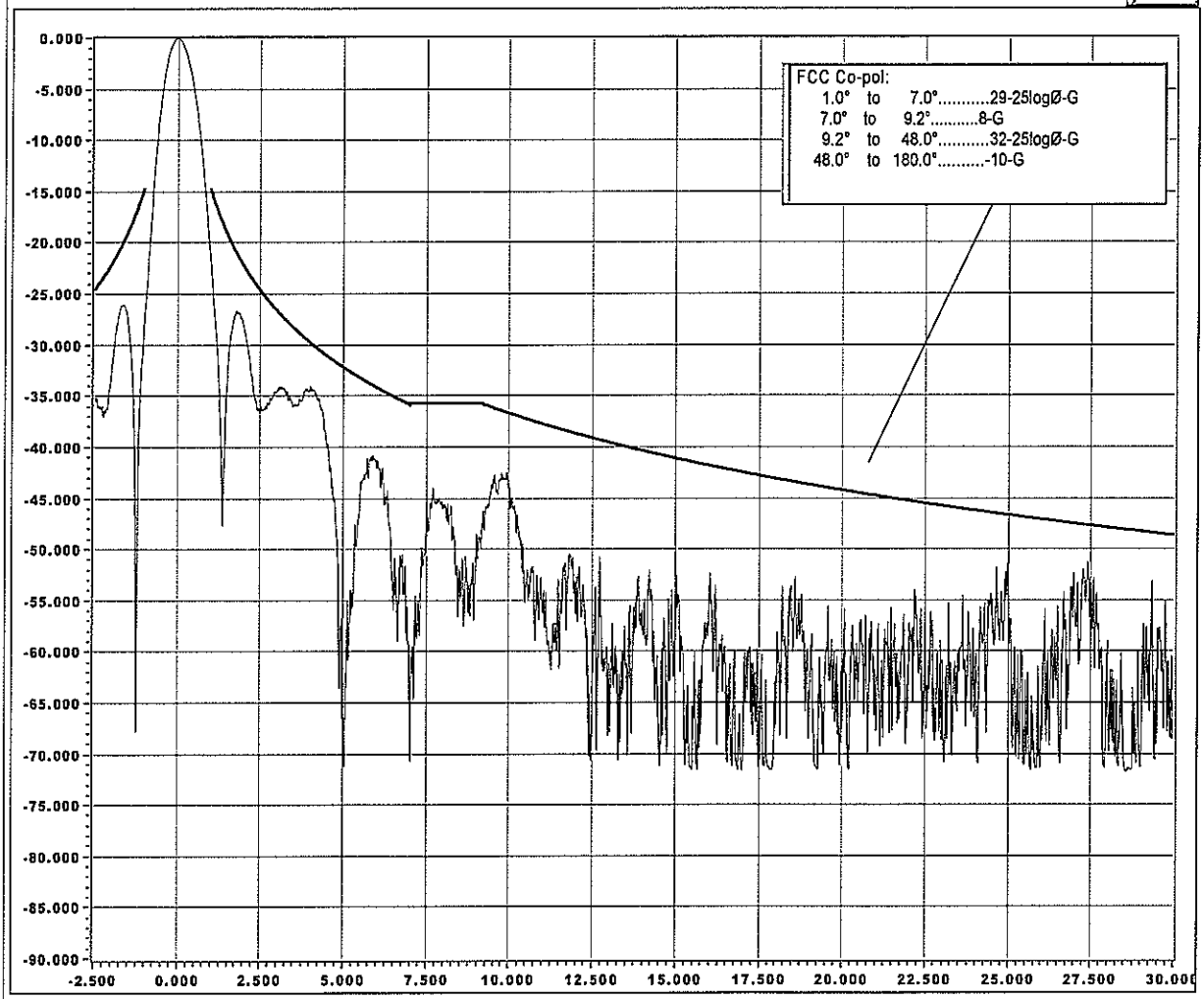
Customer.....	GDSATCOM
Date/Local Time.....	7-23-2007 at 101049
Job Number.....	C0038

Model.....	1.2 QDMA
Location.....	Test Range
Weather.....	Clear
Test Engineer.....	Richard Davisson
Spacecraft.....	Short Range
Transponder.....	

TX...Co-pol...HORZ polarization...14.500 GHz

Elevation

% Over Curve: 0.0



Y-scale is power level (dB) relative to beam center; x-scale is angle (degrees, cosine corrected) relative to beam center.

SA Freq (Hz)=14500000211, AZ rate (deg/s)=1.266, EL rate (deg/s)=0.818, RBW (Hz)=30, VBW (Hz)=10

File:	% 070723 101049 C0038 TC-90-HE-14.500.txt		
Test Frequency (GHz):	14.500000211		
Ref. Level (dBm):	-31.68	Versions	
# Points Displayed:	2627	60120 FAST 60129 PACK	
Specified Gain:	43.700		
Azimuth Beam Center (deg):	181.000		
Elevation Beam Center (deg):	12.000		
Margin Under Curve (dB):	3.59		

Vertex RSI
GENERAL DYNAMICS

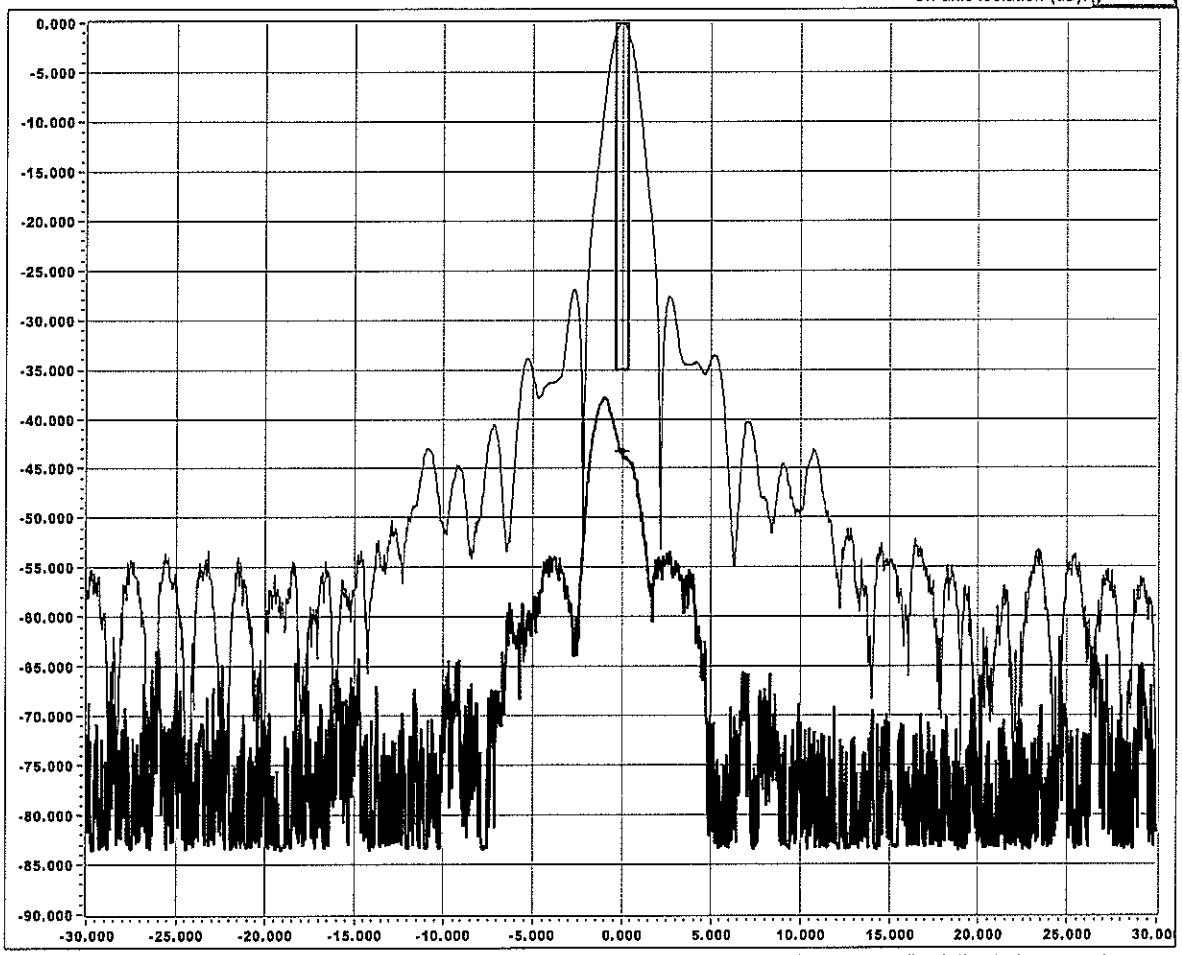
Customer.....	GDSATCOM
Date/Local Time.....	7-23-2007 at 184255
Job Number.....	C0038

Model.....	1.2 QDMA
Location.....	Test Range
Weather.....	Overcast
Test Engineer.....	Richard Davisson
Spacecraft.....	Short Range
Transponder.....	

TX...Cross-pol under Co-pol...HORZ polarization...14.500 GHz

Azimuth

On-axis Isolation (dB): 43.29



The Y-scale is power level (dB) relative to beam center; the X-scale is angle (degrees, cosine corrected) relative to beam center.

SA Freq (Hz)=14500000248, AZ rate (deg/s)=1.266, EL rate (deg/s)=0.818, RBW (Hz)=30, VBW (Hz)=10

Co-pol File:	% 070723 182535 C0038 TC-30-HA-14.500.txt	Azimuth Beam Center (deg):	181.000
Cross-pol File:	% 070723 184255 C0038 TX-30-HA-14.500.txt	Elevation Beam Center (deg):	12.000
Test Frequency (GHz):	14.500000248	On-axis Spec. Isolation (dB):	35.000
Ref. Level (dBm):	-29.89	Off-axis Spec. Isolation (dB):	35.00
# Points Displayed:	7654		

Versions
60120 FAST
60129 PACK

Vertex RSI
GENERAL DYNAMICS

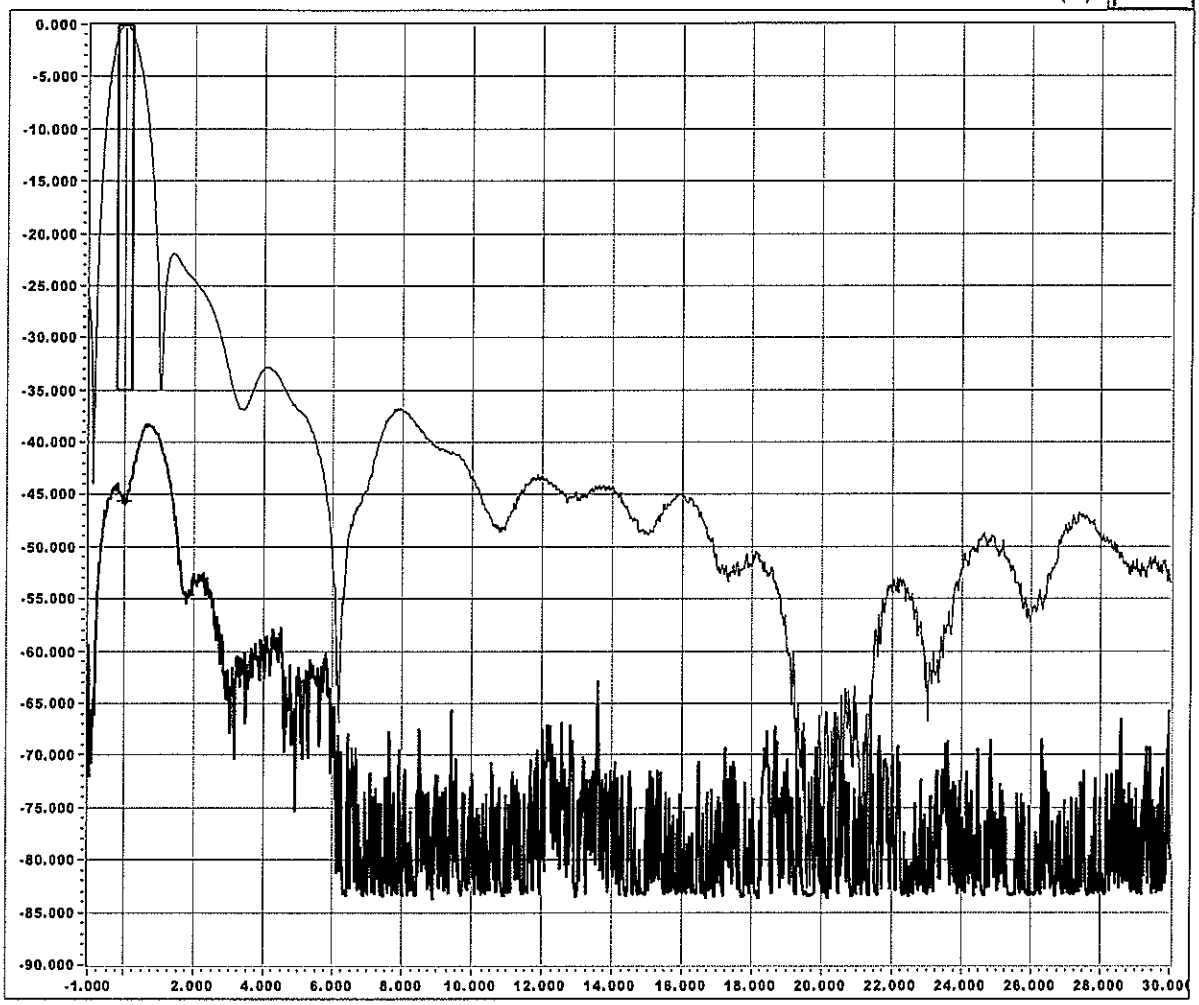
Customer.....	GDSATCOM
Date/Local Time.....	7-23-2007 at 182729
Job Number.....	C0038

Model.....	1.2 QDMA
Location.....	Test Range
Weather.....	Overcast
Test Engineer.....	Richard Davisson
Spacecraft.....	Short Range
Transponder.....	

TX...Cross-pol under Co-pol...HORZ polarization...14.500 GHz

Elevation

On Axis Isolation (dB): 45.56



The Y-scale is power level (dB) relative to beam center; the X-scale is angle (degrees, cosine corrected) relative to beam center.

SA Freq (Hz)=14500000250, AZ rate (deg/s)=1.266, EL rate (deg/s)=0.818, RBW (Hz)=30, VBW (Hz)=10

Co-pol File:	% 070723 182729 C0038 TC-30-HE-14.500.txt	Azimuth Beam Center (deg):	181.000
Cross-pol File:	% 070723 184551 C0038 TX-30-HE-14.500.txt	Elevation Beam Center (deg):	12.000
Test Frequency (GHz):	14.500000250	On-axis Spec. Isolation (dB):	35.000
Ref. Level (dBm):	-29.89	Off-axis Spec. Isolation (dB):	35.00
# Points Displayed:	6852		

Versions
60120 FAST
60129 PACK

Antenna Noise Temperture and G/T

CUSTOMER: GDSATCOM
SITE: Kilgore, TX (Long Range)
ANTENNA SIZE: 1.2 QDMA
JOB NUMBER: C0038
LNA DATA: Maxtech LKE-4090/1 S/N:087

DATE: 7/25/07
LOCAL TIME: 2:30, p.m.
WEATHER: Clear
TESTED BY: Sean Casey

Polarization	RHCP											
Azimuth angle (deg)	97.3			97.3			97.3			97.3		
Elevation angle (deg)	10			20			40			60		
Frequency (GHz)	10.700	11.725	12.750	10.700	11.725	12.750	10.700	11.725	12.750	10.700	11.725	12.750
Hot load ambient temp (deg C)	35.0	35.0	35.0	35.0	35.0	35.0	35.0	35.0	35.0	35.0	35.0	35.0
LNA ambient temp (deg C)	38.7	38.8	38.4	38.6	37.9	38.0	38.0	38.2	38.0	38.5	38.4	38.8
Cold sky noise power at SA (dBm)	-63.03	-63.60	-62.23	-63.25	-63.78	-62.42	-63.47	-63.88	-62.48	-63.36	-63.92	-62.60
Hot load noise power at SA (dBm)	-59.31	-60.09	-58.67	-59.30	-60.07	-58.72	-59.33	-59.83	-58.44	-59.14	-59.90	-58.50
LNA noise temp at spec (K)	78.00	77.00	83.85	78.00	77.00	83.85	78.00	77.00	83.85	78.00	77.00	83.85
Instrument floor noise power (dBm)	-94.74	-94.39	-93.58	-94.74	-94.39	-93.58	-94.74	-94.39	-93.58	-94.74	-94.39	-93.58
Spec temp (deg C)	23.0	23.0	23.0	23.0	23.0	23.0	23.0	23.0	23.0	23.0	23.0	23.0
Feed loss (dB)	0.550	0.550	0.550	0.550	0.550	0.550	0.550	0.550	0.550	0.550	0.550	0.550
Permanent losses after feed (dB)	0.016	0.016	0.016	0.016	0.016	0.016	0.016	0.016	0.016	0.016	0.016	0.016
Temporary losses before LNA (dB)	0.086	0.086	0.086	0.086	0.086	0.086	0.086	0.086	0.086	0.086	0.086	0.086
Antenna gain (dBi)	42.85	43.83	44.31	42.85	43.83	44.31	42.85	43.83	44.31	42.85	43.83	44.31
LNA noise temp referenced in RF Spec	70.00	70.00	70.00	70.00	70.00	70.00	70.00	70.00	70.00	70.00	70.00	70.00
Uncorrected y-factor (dB)	3.72	3.51	3.56	3.95	3.71	3.70	4.14	4.05	4.04	4.22	4.02	4.10
Corrected y-factor (dB)	3.72	3.51	3.56	3.95	3.71	3.70	4.14	4.05	4.04	4.22	4.02	4.10
Feed loss (ratio<1)	0.881	0.881	0.881	0.881	0.881	0.881	0.881	0.881	0.881	0.881	0.881	0.881
Feed noise temp at ambient temp (K)	36.64	36.64	36.64	36.64	36.64	36.64	36.64	36.64	36.64	36.64	36.64	36.64
Permanent losses after feed (ratio<1)	0.996	0.996	0.996	0.996	0.996	0.996	0.996	0.996	0.996	0.996	0.996	0.996
Permanent noise temp after feed at amb. (K)	0.13	0.13	0.13	0.13	0.13	0.13	0.13	0.13	0.13	0.13	0.13	0.13
Temporary losses before LNA (ratio<1)	0.980	0.980	0.980	0.980	0.980	0.980	0.980	0.980	0.980	0.980	0.980	0.980
Temporary noise temp before LNA at amb. (K)	6.039	6.039	6.039	6.039	6.039	6.039	6.039	6.039	6.039	6.039	6.039	6.039
LNA noise temp at ambient (K)	85.60	84.56	91.87	85.55	84.12	91.65	85.26	84.26	91.65	85.51	84.36	92.08
Y-factor corrected (ratio>1)	2.36	2.24	2.27	2.48	2.35	2.35	2.60	2.54	2.54	2.64	2.52	2.57
Tsysall at ambient (K)	167.07	174.86	176.09	158.42	166.80	170.41	151.52	154.29	157.57	148.85	155.40	155.57
Pattern noise temp (K)	45.91	56.19	49.12	35.93	47.33	42.77	28.25	32.63	27.85	24.86	33.80	25.03
Feed noise temp at spec temp (K)	35.21	35.21	35.21	35.21	35.21	35.21	35.21	35.21	35.21	35.21	35.21	35.21
Permanent noise temp after feed at spec (K)	1.09	1.09	1.09	1.09	1.09	1.09	1.09	1.09	1.09	1.09	1.09	1.09
Tant, noise temp at spec temp (K)	**75.66**	**84.72**	**78.49**	**66.86**	**76.91**	**72.89**	**60.10**	**63.95**	**59.75**	**57.11**	**64.99**	**57.26**
Tsys referenced to spec sheet (K)	146.47	155.49	149.29	137.70	147.72	143.71	130.97	134.81	130.62	127.99	135.84	128.14
Tsys (dBK)	21.66	21.92	21.74	21.39	21.69	21.57	21.17	21.30	21.16	21.07	21.33	21.08
G/Tsys (dB/ K)	**21.19**	**21.91**	**22.57**	**21.46**	**22.14**	**22.74**	**21.68**	**22.53**	**23.15**	**21.78**	**22.50**	**23.23**

G/T	10	20	40	60	90
10.700	21.19	21.46	21.68	21.78	67.71
11.725	21.91	22.14	22.53	22.50	58.56
12.750	22.57	22.74	23.15	23.23	55.45

Tant	10	20	40	60
10.700	75.66	66.86	60.10	57.11
11.725	84.72	76.91	63.95	64.99
12.750	78.49	72.89	59.75	57.26

R.F.Specification

for

VertexRSI 1.20 Meter QDMA Antenna

With Two Port Transmit/Receive Linearly Polarized Feed

Preliminary Spec

	Receive	Transmit
Frequency in GHz	10.700-12.750	13.750-14.500
Port Type	Rx1	Tx1
Polarization	Linear	Linear
Feed Port Polarizations	VLP or HLP	HLP or VLP
Antenna Gain (+/- 0.2 dB)		
10.700 / 13.750 GHz	41.20 dBi	43.20 dBi
11.725 / 14.125 GHz	41.60 dBi	43.60 dBi
12.750 / 14.500 GHz	42.20 dBi	43.70 dBi

Antenna Noise Temperture	
5 degree Elevation	82 K
10 degree Elevation	69 K
20 degree Elevation	61 K
40 degree Elevation	56 K

Typical G/T at 20 deg Elevation 11.725 GHz , clear horizon

70 degree K LNA	20.4 dB/K
90 degree K LNA	19.8 dB/K

Pattern Beamwidth in degrees at 11.725 / 14.125 GHz		
-3 dB Beamwidth	1.36	1.13
-15 dB Beamwidth	2.86	2.37
Sidelobes		
For Angle A from 1.5 to 48 Degrees	Meets FCC Requirement	

Cross Polarization Isolation		
On Axis	35.0 dB	35.0 dB
Within 1.0 dB Beamwidth	35.0 dB	35.0 dB

R.F.Specification

for

VertexRSI 1.20 Meter QDMA Antenna

With Two Port Transmit/Receive Linearly Polarized Feed

Preliminary Spec

	Receive	Transmit
VSWR (Return Loss)	1.38:1(15.9dB)	1.38:1(15.9dB)
Feed Insertion or Ohmic Loss	0.55 dB	0.20 dB
Port to Port Isolation	0.0 dB (Input)	-30.0 dB
Port to Port Isolation	-85.0 dB	0.0 dB (Input)
Output Waveguide Flange Interface	WR-75	WR-75
Total Power Handling Capability		100 Watts

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Notes - Other operational frequencies available

- 10% of sidelobes may exceed the sidelobe specifications where applicable.
- Power handling capability is based on and limited by the physical characteristics in the feed components. Microwave power at these levels may contribute to the radiation hazard or exceed certain offaxis EIRP specifications.

-G/T is calculated by bolting single LNA directly to the feed.It does not allow for any post LNA effects.

All values are at the rear feed output flange.

Custom Test Plan

Rx: 10.700 – 12.750 GHz
Tx: 13.750 – 14.500 GHz

Rx/Tx Gain: Low, Mid, High +/- 180deg Az
+/- 90deg El

Rx/Tx Co-Pol: Low, Mid, High +/- 30deg _ 50deg _ 180deg Az
+/- 30deg _ 50deg _ 90deg El

Rx/Tx Cross-Pol: Low, Mid, High +/- 3deg Az/El

Antenna Noise Temperature and G/T

Equipment List

LNA's:

Maxtech LKE-4090/1 S/N:087 (Noise Temp)
Maxtech LKE-4090/1 S/N:060 (Testing)
Satellink P/N:9V670-571-001-001 S/N:001 (Testing)

Analyzer's:

Agilent E4446A
S/N: MY46180164
CAL: 1-22-07 to 1-22-08

Agilent E4407B
S/N: MY44213574
CAL: 17-03-07 to 17-03-08

Signal Generator:

Agilent E4446A
S/N: MY46180400
CAL: 6-28-07 to 6-28-08

Source: LP Ku

Feed Horn: P/N: SH/KTR1L S/N: TRSR005