

ATTACHMENT 1

Table 5 – RaySat StealthRay Off-Axis EIRP Compliance

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

ID Applicant: RaySat

Date of Application:

12/08/05

HEADING

a1	Antenna Manufacturer:	RaySat	c	main bore gain	26.75	dBi
a2	Antenna Model:	StealthRay	d	frequency at which gain was measured	14.00	GHz
a3	Antenna ID:	RaySat	e	maximum input power density (dBw/4KHz)	-18.10	dBw/4KHz
b	Transmit band (b):	14 GHz	Pattern ID:	14.0 GHz Azimuth Horizontal 50 degree Skew		

1.0 to 7 degrees calculated maximum difference in off-axis eirp density: -3.18 dBw/4KHz

TABLE

1.0 to 180 degrees calculated maximum difference in off-axis eirp density: -1.64

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

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

1	2	3	4	5	6	7
Angle (degrees)	25.209 Gain (dBi)	Off-Axis EIRP Density for -14.00 dBw/4Kz	Gain relative to main bore gain (dB)	Actual Gain in dBi	Off-Axis EIRP Density for input of -18.10	Difference in Off-Axis EIRP Density (6) minus (3)
-25.00	-2.95	-16.95	-44.36	-17.61	-35.71	-18.76
-20.00	-0.53	-14.53	-54.45	-27.70	-45.80	-31.27
-15.00	2.60	-11.40	-27.76	-1.01	-19.11	-7.70
-10.00	7.00	-7.00	-27.59	-0.84	-18.94	-11.94
-9.00	8.00	-6.00	-29.27	-2.52	-20.62	-14.62
-8.00	8.00	-6.00	-22.16	4.59	-13.51	-7.51
-7.00	8.00	-6.00	-21.60	5.15	-12.95	-6.95
-6.00	9.55	-4.45	-24.03	2.72	-15.38	-10.93
-5.00	11.53	-2.47	-17.17	9.58	-8.52	-6.04
-4.00	13.95	-0.05	-15.77	10.98	-7.12	-7.06
-3.50	15.40	1.40	-17.83	8.92	-9.18	-10.57
-3.00	17.07	3.07	-19.58	7.17	-10.93	-14.00
-2.75	18.02	4.02	-17.50	9.25	-8.85	-12.86
-2.50	19.05	5.05	-14.43	12.32	-5.78	-10.83
-2.25	20.20	6.20	-11.60	15.15	-2.95	-9.14
-2.00	21.47	7.47	-9.21	17.54	-0.56	-8.03
-1.75	22.92	8.92	-7.22	19.53	1.43	-7.49
-1.50	24.60	10.60	-5.56	21.19	3.09	-7.51
-1.25	26.58	12.58	-4.18	22.57	4.47	-8.10
-1.25	26.58	12.58	-0.68	26.07	7.97	-4.60
-1.50	24.60	10.60	-1.23	25.52	7.42	-3.18
-1.75	22.92	8.92	-1.98	24.77	6.67	-2.26
-2.00	21.47	7.47	-2.93	23.82	5.72	-1.76
-2.25	20.20	6.20	-4.13	22.62	4.52	-1.67
-2.50	19.05	5.05	-5.62	21.13	3.03	-2.02
-2.75	18.02	4.02	-7.47	19.28	1.18	-2.84
-3.00	17.07	3.07	-9.83	16.92	-1.18	-4.26
-3.25	16.20	2.20	-12.96	13.79	-4.31	-6.52
-3.50	15.40	1.40	-17.51	9.24	-8.86	-10.26
-4.00	13.95	-0.05	-30.89	-4.14	-22.24	-22.19
-5.00	11.53	-2.47	-13.95	12.80	-5.30	-2.83
-6.00	9.55	-4.45	-14.75	12.00	-6.10	-1.64
-7.00	8.00	-6.00	-22.56	4.19	-13.91	-7.91
-8.00	8.00	-6.00	-20.47	6.28	-11.82	-5.82
-9.00	8.00	-6.00	-18.84	7.91	-10.19	-4.19
-10.00	7.00	-7.00	-23.10	3.65	-14.45	-7.45
-15.00	2.60	-11.40	-23.65	3.10	-15.00	-3.60
-20.00	-0.53	-14.53	-37.87	-11.12	-29.22	-14.70
-25.00	-2.95	-16.95	-47.03	-20.28	-38.38	-21.43

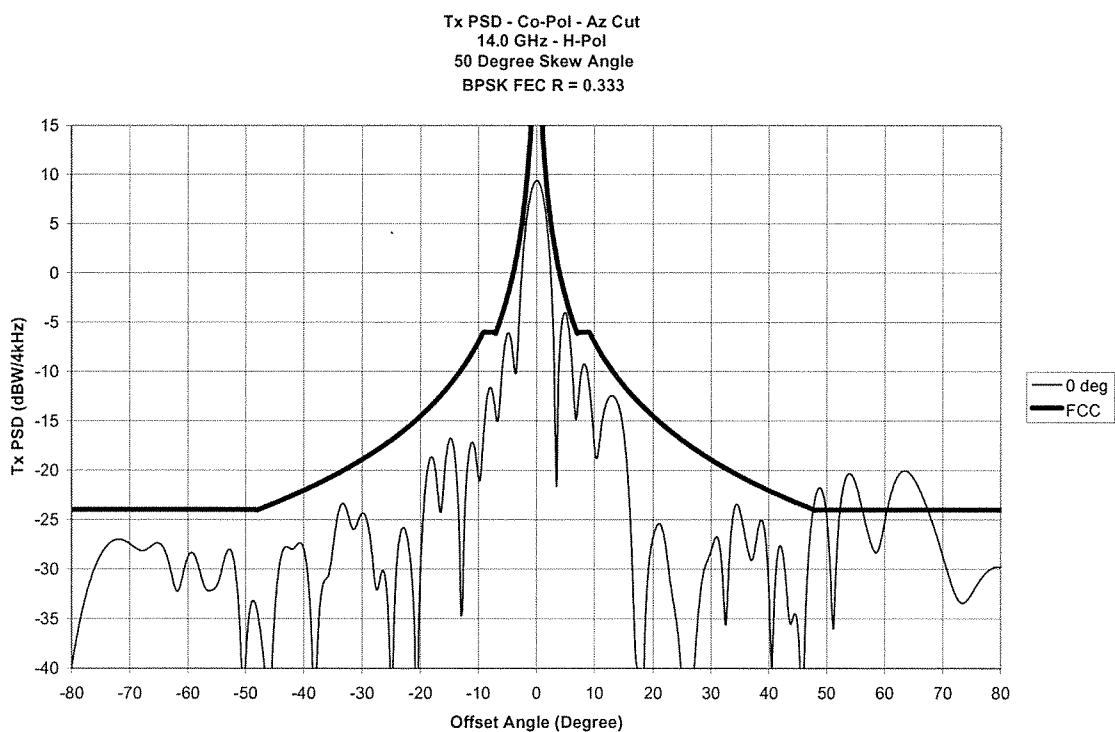
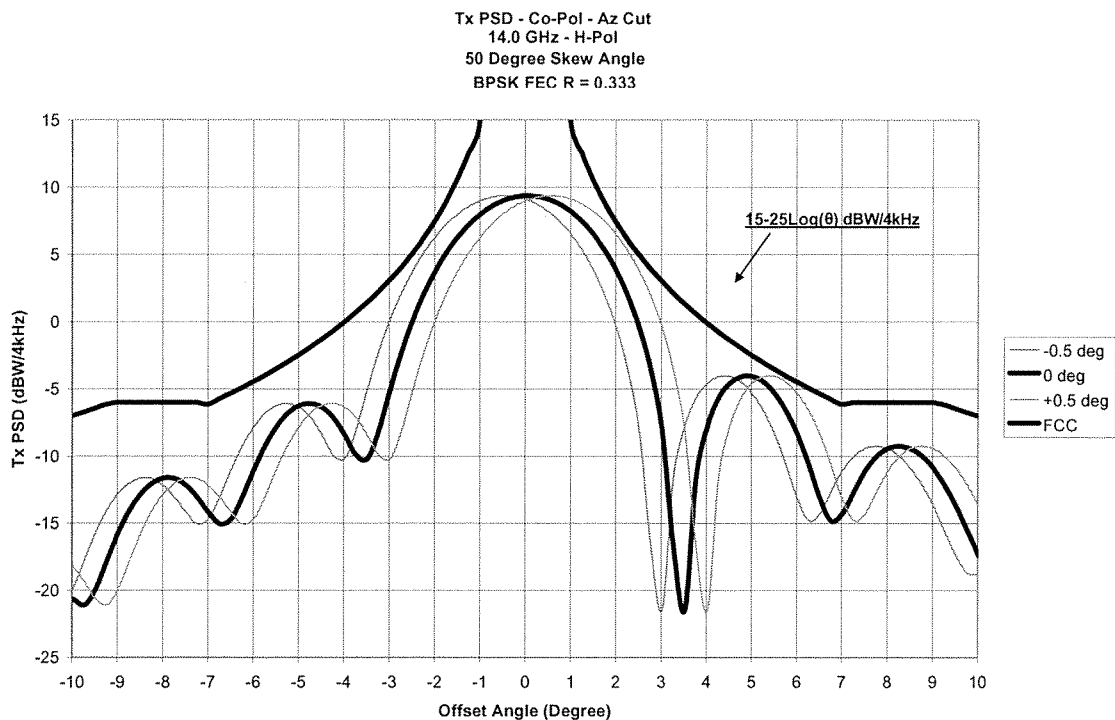


Figure 1

Table 6 – RaySat StealthRay Off-Axis EIRP Compliance

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

ID Applicant: RaySat

Date of Application:

12/08/05

HEADING

a1	Antenna Manufacturer:	RaySat	c	main bore gain	26.75	dBi
a2	Antenna Model:	StealthRay	d	frequency at which gain was measured	14.00	GHz
a3	Antenna ID:	RaySat	e	maximum input power density (dBW/4KHz)	-18.10	dBW/4KHz
b	Transmit band (b):	14 GHz		Pattern ID:	14.0 GHz Azimuth Vertical 50 degree Skew	

1.0 to 7 degrees calculated maximum difference in off-axis eirp density: -3.24 dBW/4KHz

TABLE

1.0 to 180 degrees calculated maximum difference in off-axis eirp density: -1.01

EIRP for Antenna Conforming
to 25.209(a) operating at 25.212
power density limitsGain and EIRP for Antenna Not Conforming to 25.209(a)
operating at stated maximum power density

1	2	3	4	5	6	7
Angle (degrees)	25.209 Gain (dBi)	Off-Axis EIRP Density for -14.00 dBW/4KHz	Gain relative to main bore gain (dB)	Actual Gain in dBi	Off-Axis EIRP Density for input of -18.10	Difference in Off-Axis EIRP Density (6) minus (3)
-25.00	-2.95	-16.95	-31.05	-4.30	-22.40	-5.46
-20.00	-0.53	-14.53	-30.18	-3.43	-21.53	-7.01
-15.00	2.60	-11.40	-28.58	-1.83	-19.93	-8.53
-10.00	7.00	-7.00	-29.73	-2.98	-21.08	-14.08
-9.00	8.00	-6.00	-28.41	-1.66	-19.76	-13.76
-8.00	8.00	-6.00	-21.46	5.29	-12.81	-6.81
-7.00	8.00	-6.00	-22.80	3.95	-14.15	-8.15
-6.00	9.55	-4.45	-29.80	-3.05	-21.15	-16.69
-5.00	11.53	-2.47	-18.05	8.70	-9.40	-6.93
-4.00	13.95	-0.05	-16.27	10.48	-7.62	-7.56
-3.50	15.40	1.40	-19.50	7.25	-10.85	-12.24
-3.00	17.07	3.07	-35.41	-8.66	-26.76	-29.83
-2.75	18.02	4.02	-23.99	2.76	-15.34	-19.36
-2.50	19.05	5.05	-17.04	9.71	-8.39	-13.44
-2.25	20.20	6.20	-12.87	13.88	-4.22	-10.41
-2.00	21.47	7.47	-9.87	16.88	-1.22	-8.70
-1.75	22.92	8.92	-7.56	19.19	1.09	-7.84
-1.50	24.60	10.60	-5.73	21.02	2.92	-7.68
-1.25	26.58	12.58	-4.24	22.51	4.41	-8.16
-1.25	26.58	12.58	-0.72	26.03	7.93	-4.65
1.50	24.60	10.60	-1.29	25.46	7.36	-3.24
1.75	22.92	8.92	-2.04	24.71	6.61	-2.32
2.00	21.47	7.47	-2.99	23.76	5.66	-1.82
2.25	20.20	6.20	-4.17	22.58	4.48	-1.71
2.50	19.05	5.05	-5.62	21.13	3.03	-2.02
2.75	18.02	4.02	-7.41	19.34	1.24	-2.77
3.00	17.07	3.07	-9.63	17.12	-0.98	-4.06
3.25	16.20	2.20	-12.48	14.27	-3.83	-6.04
3.50	15.40	1.40	-16.34	10.41	-7.69	-9.09
4.00	13.95	-0.05	-26.81	-0.06	-18.16	-18.11
5.00	11.53	-2.47	-15.05	11.70	-6.40	-3.93
6.00	9.55	-4.45	-15.26	11.49	-6.61	-2.16
7.00	7.87	-6.13	-20.91	5.84	-12.26	-6.13
8.00	8.00	-6.00	-24.29	2.46	-15.64	-9.64
9.00	8.00	-6.00	-22.52	4.23	-13.87	-7.87
10.00	7.00	-7.00	-24.31	2.44	-15.66	-8.66
15.00	2.60	-11.40	-21.06	5.69	-12.41	-1.01
20.00	-0.53	-14.53	-36.38	-9.63	-27.73	-13.21
25.00	-2.95	-16.95	-30.16	-3.41	-21.51	-4.56

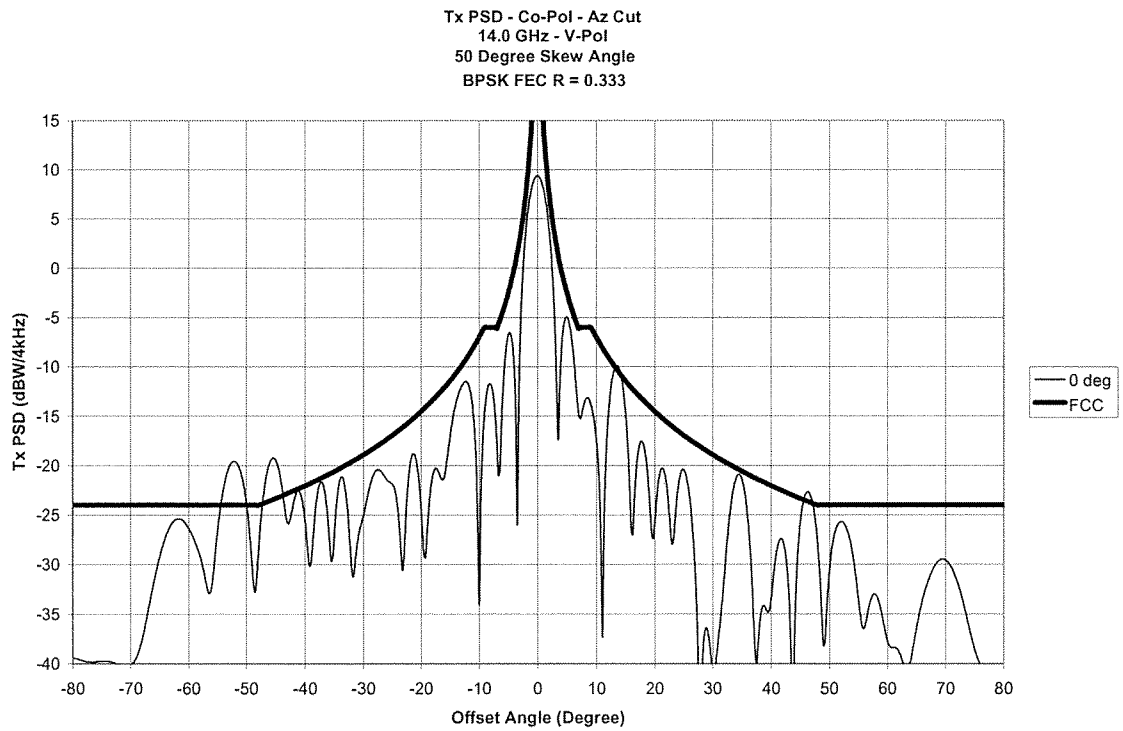
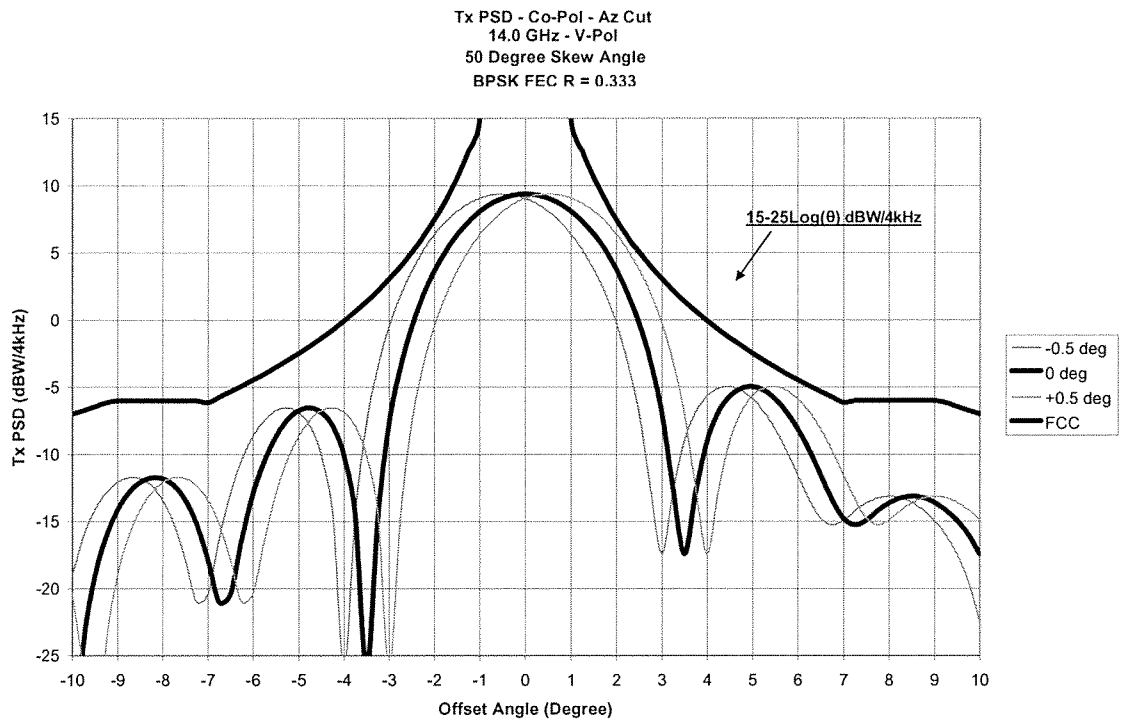


Figure 2

Table 7 – RaySat StealthRay Off-Axis EIRP Compliance

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

ID Applicant: RaySat

Date of Application:

12/08/05

HEADING

a1	Antenna Manufacturer:	RaySat	c	main bore gain	26.75	dB
a2	Antenna Model:	StealthRay	d	frequency at which gain was measured	14.25	GHz
a3	Antenna ID:	RaySat	e	maximum input power density (dBW/4KHz)	-18.10	dBW/4KHz
b	Transmit band (b):	14 GHz	Pattern ID: 14.25 GHz Azimuth Horizontal 50 degree Skew			

1.0 to 7 degrees calculated maximum difference in off-axis eirp density: -3.80 dBW/4KHz

1.0 to 180 degrees calculated maximum difference in off-axis eirp density: -2.74

TABLE

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

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

1 Angle (degrees)	2 25.209 Gain (dBi)	3 Off-Axis EIRP Density for -14.00 dBW/4Kz	4 Gain relative to main bore gain (dB)	5 Actual Gain in dBi	6 Off-Axis EIRP Density for input of -18.10	7 Difference in Off-Axis EIRP Density (6) minus (3)
-25.00	-2.95	-16.95	-43.66	-16.91	-35.01	-18.06
-20.00	-0.53	-14.53	-40.23	-13.48	-31.58	-17.05
-15.00	2.60	-11.40	-29.70	-2.95	-21.05	-9.64
-10.00	7.00	-7.00	-31.79	-5.04	-23.14	-16.14
-9.00	8.00	-6.00	-30.10	-3.35	-21.45	-15.45
-8.00	8.00	-6.00	-22.71	4.04	-14.06	-8.06
-7.00	8.00	-6.00	-25.64	1.11	-16.99	-10.99
-6.00	9.55	-4.45	-27.92	-1.17	-19.27	-14.82
-5.00	11.53	-2.47	-16.90	9.85	-8.25	-5.78
-4.00	13.95	-0.05	-15.95	10.80	-7.30	-7.25
-3.50	15.40	1.40	-18.63	8.12	-9.98	-11.38
-3.00	17.07	3.07	-19.65	7.10	-11.00	-14.07
-2.75	18.02	4.02	-16.54	10.21	-7.89	-11.90
-2.50	19.05	5.05	-13.21	13.54	-4.56	-9.61
-2.25	20.20	6.20	-10.40	16.35	-1.75	-7.95
-2.00	21.47	7.47	-8.11	18.64	0.54	-6.94
-1.75	22.92	8.92	-6.23	20.52	2.42	-6.50
-1.50	24.60	10.60	-4.68	22.07	3.97	-6.63
-1.25	26.58	12.58	-3.40	23.35	5.25	-7.33
1.25	26.58	12.58	-1.13	25.62	7.52	-5.06
1.50	24.60	10.60	-1.85	24.90	6.80	-3.80
1.75	22.92	8.92	-2.77	23.98	5.88	-3.04
2.00	21.47	7.47	-3.91	22.84	4.74	-2.74
2.25	20.20	6.20	-5.31	21.44	3.34	-2.85
2.50	19.05	5.05	-7.02	19.73	1.63	-3.42
2.75	18.02	4.02	-9.10	17.65	-0.45	-4.47
3.00	17.07	3.07	-11.69	15.06	-3.04	-6.11
3.25	16.20	2.20	-14.89	11.86	-6.24	-8.44
3.50	15.40	1.40	-18.61	8.14	-9.96	-11.36
4.00	13.95	-0.05	-19.97	6.78	-11.32	-11.27
5.00	11.53	-2.47	-15.00	11.75	-6.35	-3.87
6.00	9.55	-4.45	-18.28	8.47	-9.63	-5.17
7.00	8.00	-6.00	-33.65	-6.90	-25.00	-19.00
8.00	8.00	-6.00	-21.70	5.05	-13.05	-7.05
9.00	8.00	-6.00	-21.23	5.52	-12.58	-6.58
10.00	7.00	-7.00	-27.46	-0.71	-18.81	-11.81
15.00	2.60	-11.40	-25.15	1.60	-16.50	-5.10
20.00	-0.53	-14.53	-35.99	-9.24	-27.34	-12.81
25.00	-2.95	-16.95	-43.98	-17.23	-35.33	-18.38

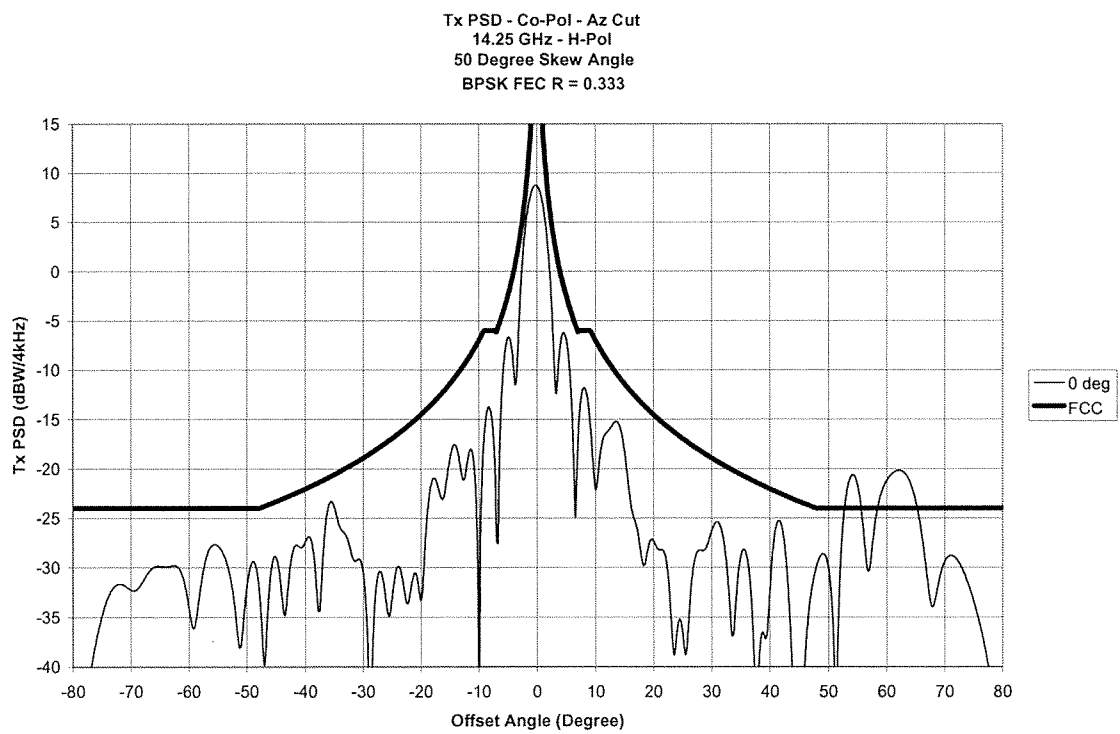
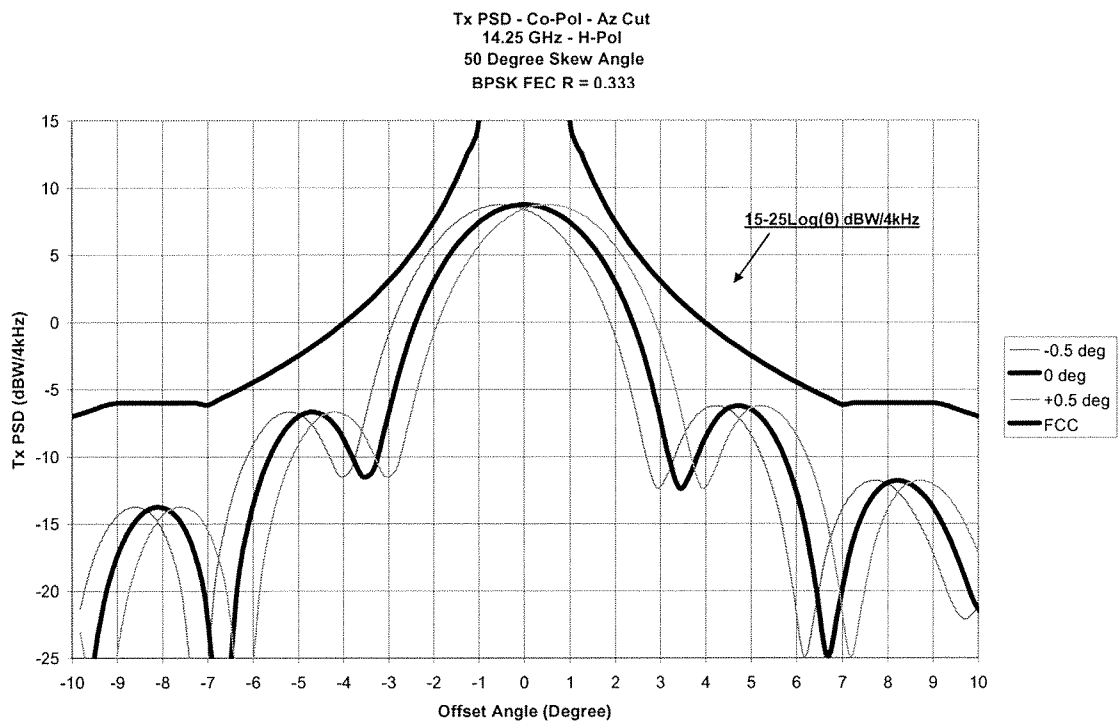


Figure 3

Table 8 – RaySat StealthRay Off-Axis EIRP Compliance

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

ID Applicant: RaySat

Date of Application:

12/08/05

HEADING

a1	Antenna Manufacturer:	RaySat	c	main bore gain	26.75	dBi
a2	Antenna Model:	StealthRay	d	frequency at which gain was measured	14.25	GHz
a3	Antenna ID:	RaySat	e	maximum input power density (dBw/4KHz)	-18.10	dBw/4KHz
b	Transmit band (b):	14 GHz		Pattern ID:	14.25 GHz Azimuth Vertical 50 degree Skew	

1.0 to 7 degrees calculated maximum difference in off-axis eirp density: -2.63 dBw/4KHz

1.0 to 180 degrees calculated maximum difference in off-axis eirp density: -2.63

TABLE

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

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

1 Angle (degrees)	2 25.209 Gain (dBi)	3 Off-Axis EIRP Density for -14.00 dBw/4Kz	4 Gain relative to main bore gain (dB)	5 Actual Gain in dBi	6 Off-Axis EIRP Density for input of -18.10	7 Difference in Off-Axis EIRP Density (6) minus (3)
-25.00	-2.95	-16.95	-34.25	-7.50	-25.60	-8.65
-20.00	-0.53	-14.53	-25.80	0.95	-17.15	-2.63
-15.00	2.60	-11.40	-28.46	-1.71	-19.81	-8.41
-10.00	7.00	-7.00	-28.30	-1.55	-19.65	-12.65
-9.00	8.00	-6.00	-37.49	-10.74	-28.84	-22.84
-8.00	8.00	-6.00	-23.25	3.50	-14.60	-8.60
-7.00	8.00	-6.00	-24.10	2.65	-15.45	-9.45
-6.00	9.55	-4.45	-24.21	2.54	-15.56	-11.10
-5.00	11.53	-2.47	-15.51	11.24	-6.86	-4.39
-4.00	13.95	-0.05	-14.98	11.77	-6.33	-6.28
-3.50	15.40	1.40	-18.79	7.96	-10.14	-11.54
-3.00	17.07	3.07	-29.37	-2.62	-20.72	-23.79
-2.75	18.02	4.02	-21.01	5.74	-12.36	-16.38
-2.50	19.05	5.05	-15.30	11.45	-6.65	-11.70
-2.25	20.20	6.20	-11.57	15.18	-2.92	-9.11
-2.00	21.47	7.47	-8.82	17.93	-0.17	-7.65
-1.75	22.92	8.92	-6.69	20.06	1.96	-6.96
-1.50	24.60	10.60	-4.98	21.77	3.67	-6.93
-1.25	26.58	12.58	-3.60	23.15	5.05	-7.53
-1.25	26.58	12.58	-1.18	25.57	7.47	-5.10
1.50	24.60	10.60	-1.94	24.81	6.71	-3.88
1.75	22.92	8.92	-2.92	23.83	5.73	-3.19
2.00	21.47	7.47	-4.15	22.60	4.50	-2.97
2.25	20.20	6.20	-5.68	21.07	2.97	-3.22
2.50	19.05	5.05	-7.59	19.16	1.06	-3.99
2.75	18.02	4.02	-10.01	16.74	-1.36	-5.38
3.00	17.07	3.07	-13.23	13.52	-4.58	-7.65
3.25	16.20	2.20	-17.85	8.90	-9.20	-11.40
3.50	15.40	1.40	-26.44	0.31	-17.79	-19.18
4.00	13.95	-0.05	-21.89	4.86	-13.24	-13.19
5.00	11.53	-2.47	-14.76	11.99	-6.11	-3.64
6.00	9.55	-4.45	-17.54	9.21	-8.89	-4.43
7.00	8.00	-6.00	-24.72	2.03	-16.07	-10.07
8.00	8.00	-6.00	-21.83	4.92	-13.18	-7.18
9.00	8.00	-6.00	-22.42	4.33	-13.77	-7.77
10.00	7.00	-7.00	-26.77	-0.02	-18.12	-11.12
15.00	2.60	-11.40	-25.58	1.17	-16.93	-5.53
20.00	-0.53	-14.53	-36.58	-9.83	-27.93	-13.40
25.00	-2.95	-16.95	-51.86	-25.11	-43.21	-26.26

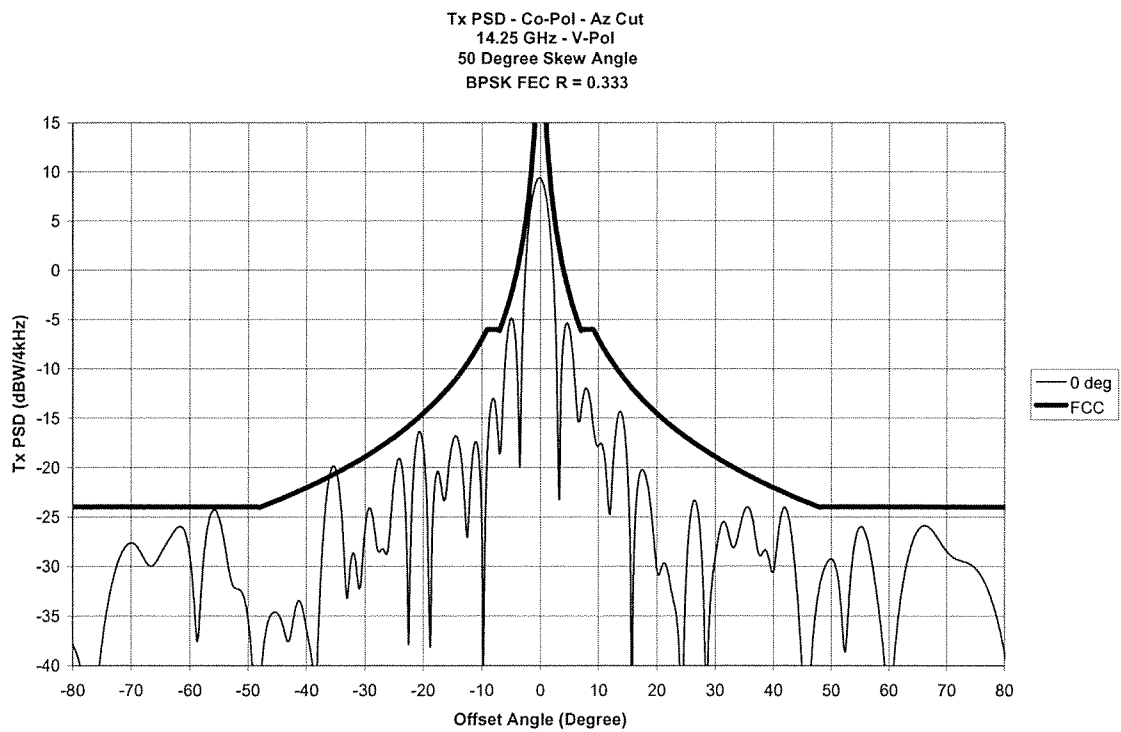
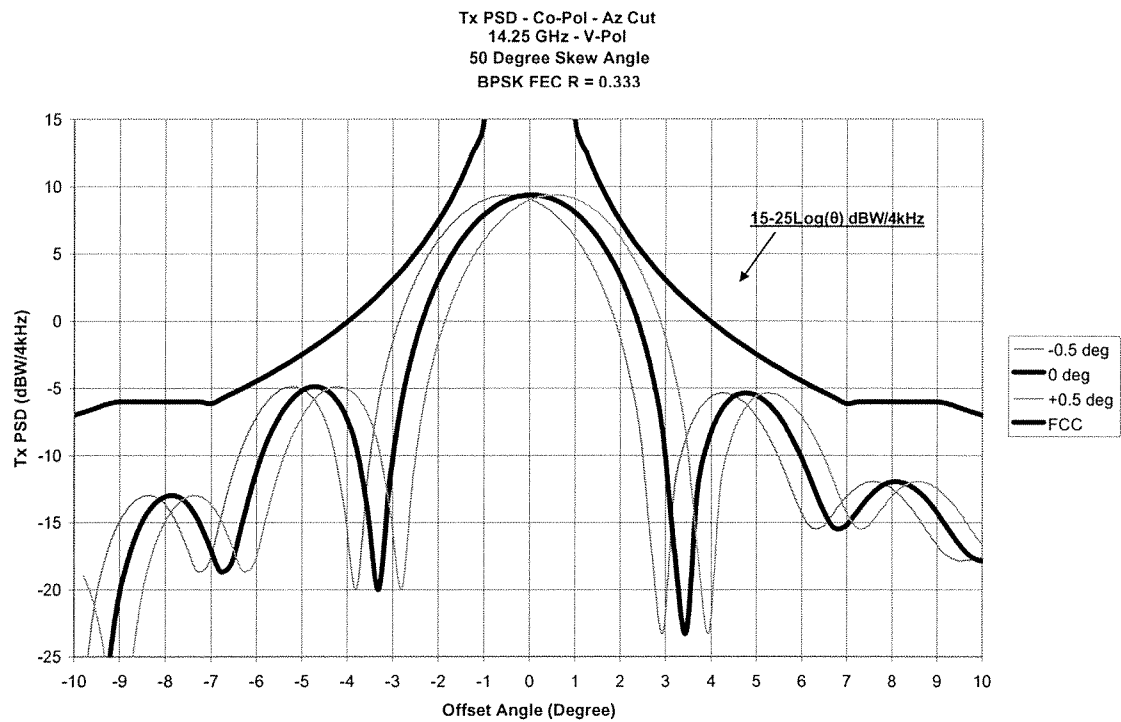


Figure 4

Table 9 – RaySat StealthRay Off-Axis EIRP Compliance

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

ID Applicant: RaySat

Date of Application:

12/08/05

HEADING

a1	Antenna Manufacturer:	RaySat	c	main bore gain	26.75	dBi
a2	Antenna Model:	StealthRay	d	frequency at which gain was measured	14.50	GHz
a3	Antenna ID:	RaySat	e	maximum input power density (dBW/4KHz)	-18.10	dBW/4KHz
b	Transmit band (b):	14 GHz	Pattern ID:	14.5 GHz Azimuth Horizontal 50 degree Skew		

1.0 to 7 degrees calculated maximum difference in off-axis eirp density: -3.08 dBW/4KHz

1.0 to 180 degrees calculated maximum difference in off-axis eirp density: -1.69

TABLE

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

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

1 Angle (degrees)	2 25.209 Gain (dBi)	3 Off-Axis EIRP Density for -14.00 dBW/4Kz	4 Gain relative to main bore gain (dB)	5 Actual Gain in dBi	6 Off-Axis EIRP Density for input of -18.10	7 Difference in Off-Axis EIRP Density (6) minus (3)
-25.00	-2.95	-16.95	-33.76	-7.01	-25.11	-8.16
-20.00	-0.53	-14.53	-29.36	-2.61	-20.71	-6.18
-15.00	2.60	-11.40	-34.45	-7.70	-25.80	-14.40
-10.00	7.00	-7.00	-28.13	-1.38	-19.48	-12.48
-9.00	8.00	-6.00	-59.74	-32.99	-51.09	-45.09
-8.00	8.00	-6.00	-26.07	0.68	-17.42	-11.42
-7.00	8.00	-6.00	-24.99	1.76	-16.34	-10.34
-6.00	9.55	-4.45	-28.00	-1.25	-19.35	-14.89
-5.00	11.53	-2.47	-15.82	10.93	-7.17	-4.70
-4.00	13.95	-0.05	-12.73	14.02	-4.08	-4.03
-3.50	15.40	1.40	-13.66	13.09	-5.01	-6.41
-3.00	17.07	3.07	-16.70	10.05	-8.05	-11.12
-2.75	18.02	4.02	-18.52	8.23	-9.87	-13.89
-2.50	19.05	5.05	-18.08	8.67	-9.43	-14.48
-2.25	20.20	6.20	-15.09	11.66	-6.44	-12.63
-2.00	21.47	7.47	-11.88	14.87	-3.23	-10.71
-1.75	22.92	8.92	-9.19	17.56	-0.54	-9.46
-1.50	24.60	10.60	-7.02	19.73	1.63	-8.96
-1.25	26.58	12.58	-5.25	21.50	3.40	-9.18
1.25	26.58	12.58	-0.58	26.17	8.07	-4.50
1.50	24.60	10.60	-1.14	25.61	7.51	-3.08
1.75	22.92	8.92	-1.90	24.85	6.75	-2.18
2.00	21.47	7.47	-2.89	23.86	5.76	-1.72
2.25	20.20	6.20	-4.15	22.60	4.50	-1.69
2.50	19.05	5.05	-5.74	21.01	2.91	-2.14
2.75	18.02	4.02	-7.73	19.02	0.92	-3.10
3.00	17.07	3.07	-10.31	16.44	-1.66	-4.74
3.25	16.20	2.20	-13.80	12.95	-5.15	-7.36
3.50	15.40	1.40	-19.12	7.63	-10.47	-11.87
4.00	13.95	-0.05	-26.89	-0.14	-18.24	-18.18
5.00	11.53	-2.47	-14.27	12.48	-5.62	-3.15
6.00	9.55	-4.45	-16.43	10.32	-7.78	-3.32
7.00	8.00	-6.00	-31.20	-4.45	-22.55	-16.55
8.00	8.00	-6.00	-22.78	3.97	-14.13	-8.13
9.00	8.00	-6.00	-20.44	6.31	-11.79	-5.79
10.00	7.00	-7.00	-24.12	2.63	-15.47	-8.47
15.00	2.60	-11.40	-24.02	2.73	-15.37	-3.97
20.00	-0.53	-14.53	-40.34	-13.59	-31.69	-17.16
25.00	-2.95	-16.95	-43.88	-17.13	-35.23	-18.28

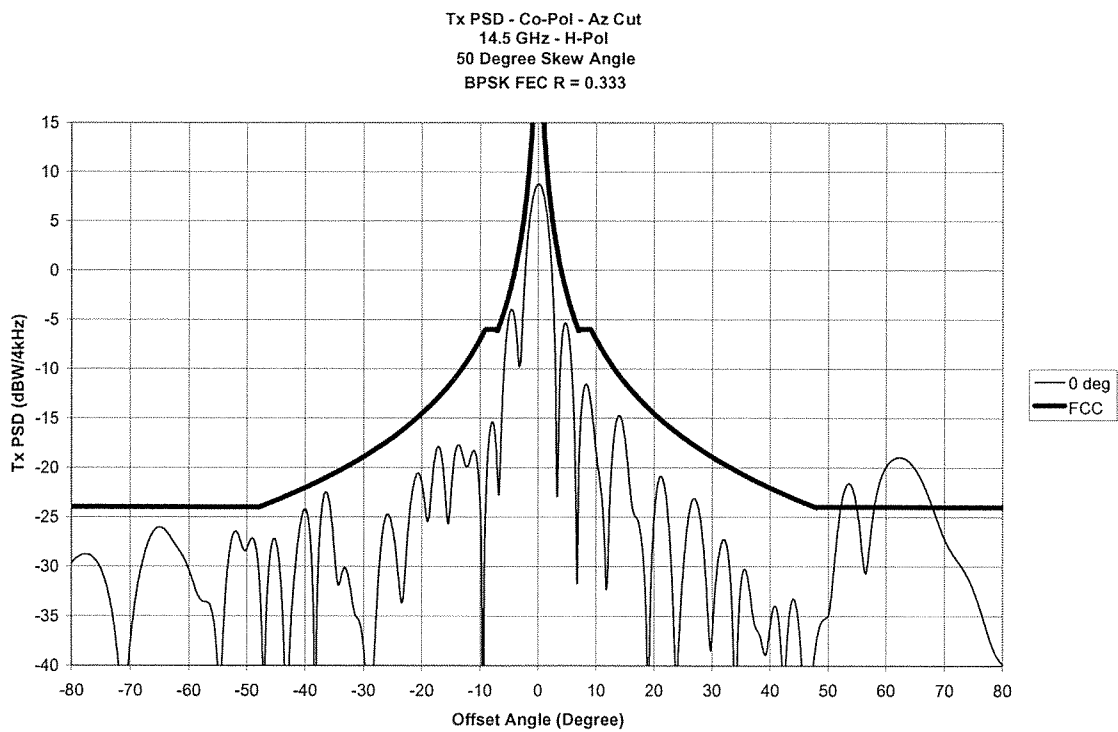
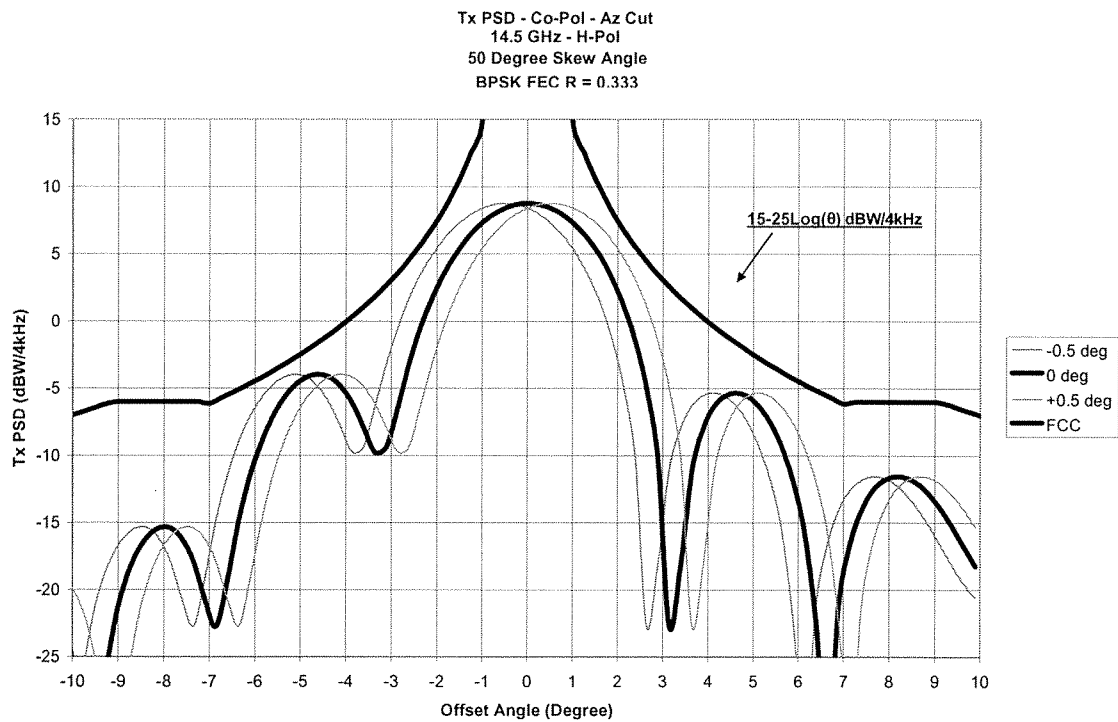


Figure 5

Table 10 – RaySat StealthRay Off-Axis EIRP Compliance

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

ID Applicant: RaySat

Date of Application:

12/08/05

HEADING

a1	Antenna Manufacturer:	RaySat	c	main bore gain	26.75	dB
a2	Antenna Model:	StealthRay	d	frequency at which gain was measured	14.50	GHz
a3	Antenna ID:	RaySat	e	maximum input power density (dBW/4KHz)	-18.10	dBW/4KHz
b	Transmit band (b):	14 GHz		Pattern ID:	14.5 GHz Azimuth Vertical 50 degree Skew	

1.0 to 7 degrees calculated maximum difference in off-axis eirp density: -3.81 dBW/4KHz

1.0 to 180 degrees calculated maximum difference in off-axis eirp density: -2.73

TABLE

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

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

1 Angle (degrees)	2 25.209 Gain (dBi)	3 Off-Axis EIRP Density for -14.00 dBW/4Kz	4 Gain relative to main bore gain (dB)	5 Actual Gain in dBi	6 Off-Axis EIRP Density for input of -18.10	7 Difference in Off-Axis EIRP Density (6) minus (3)
-25.00	-2.95	-16.95	-32.81	-6.06	-24.16	-7.22
-20.00	-0.53	-14.53	-32.46	-5.71	-23.81	-9.28
-15.00	2.60	-11.40	-33.14	-6.39	-24.49	-13.09
-10.00	7.00	-7.00	-22.84	3.91	-14.19	-7.19
-9.00	8.00	-6.00	-30.42	-3.67	-21.77	-15.77
-8.00	8.00	-6.00	-29.55	-2.80	-20.90	-14.90
-7.00	8.00	-6.00	-31.67	-4.92	-23.02	-17.02
-6.00	9.55	-4.45	-25.38	1.37	-16.73	-12.27
-5.00	11.53	-2.47	-16.45	10.30	-7.80	-5.32
-4.00	13.95	-0.05	-15.88	10.87	-7.23	-7.18
-3.50	15.40	1.40	-18.86	7.89	-10.21	-11.61
-3.00	17.07	3.07	-19.70	7.05	-11.05	-14.12
-2.75	18.02	4.02	-16.27	10.48	-7.62	-11.64
-2.50	19.05	5.05	-12.86	13.89	-4.21	-9.26
-2.25	20.20	6.20	-10.06	16.69	-1.41	-7.60
-2.00	21.47	7.47	-7.79	18.96	0.86	-6.62
-1.75	22.92	8.92	-5.95	20.80	2.70	-6.22
-1.50	24.60	10.60	-4.44	22.31	4.21	-6.39
-1.25	26.58	12.58	-3.20	23.55	5.45	-7.13
-1.25	26.58	12.58	-1.16	25.59	7.49	-5.08
-1.50	24.60	10.60	-1.87	24.88	6.78	-3.81
-1.75	22.92	8.92	-2.77	23.98	5.88	-3.05
-2.00	21.47	7.47	-3.90	22.85	4.75	-2.73
-2.25	20.20	6.20	-5.29	21.46	3.36	-2.83
-2.50	19.05	5.05	-6.99	19.76	1.66	-3.40
-2.75	18.02	4.02	-9.10	17.65	-0.45	-4.46
-3.00	17.07	3.07	-11.75	15.00	-3.10	-6.17
-3.25	16.20	2.20	-15.19	11.56	-6.54	-8.74
-3.50	15.40	1.40	-19.74	7.01	-11.09	-12.49
-4.00	13.95	-0.05	-22.39	4.36	-13.74	-13.69
-5.00	11.53	-2.47	-15.42	11.33	-6.77	-4.30
-6.00	9.55	-4.45	-18.03	8.72	-9.38	-4.92
-7.00	8.00	-6.00	-27.55	-0.80	-18.90	-12.90
-8.00	8.00	-6.00	-23.76	2.99	-15.11	-9.11
-9.00	8.00	-6.00	-24.07	2.68	-15.42	-9.42
-10.00	7.00	-7.00	-25.91	0.84	-17.26	-10.26
-15.00	2.60	-11.40	-29.79	-3.04	-21.14	-9.74
-20.00	-0.53	-14.53	-43.32	-16.57	-34.67	-20.14
-25.00	-2.95	-16.95	-34.86	-8.11	-26.21	-9.26

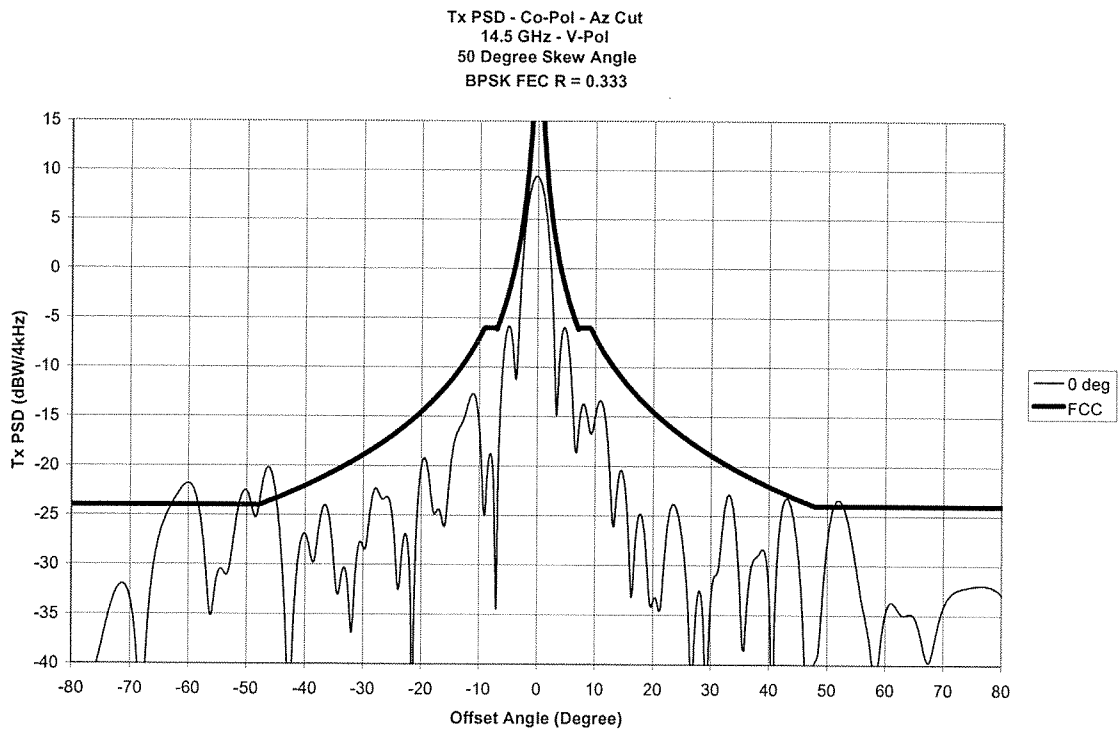
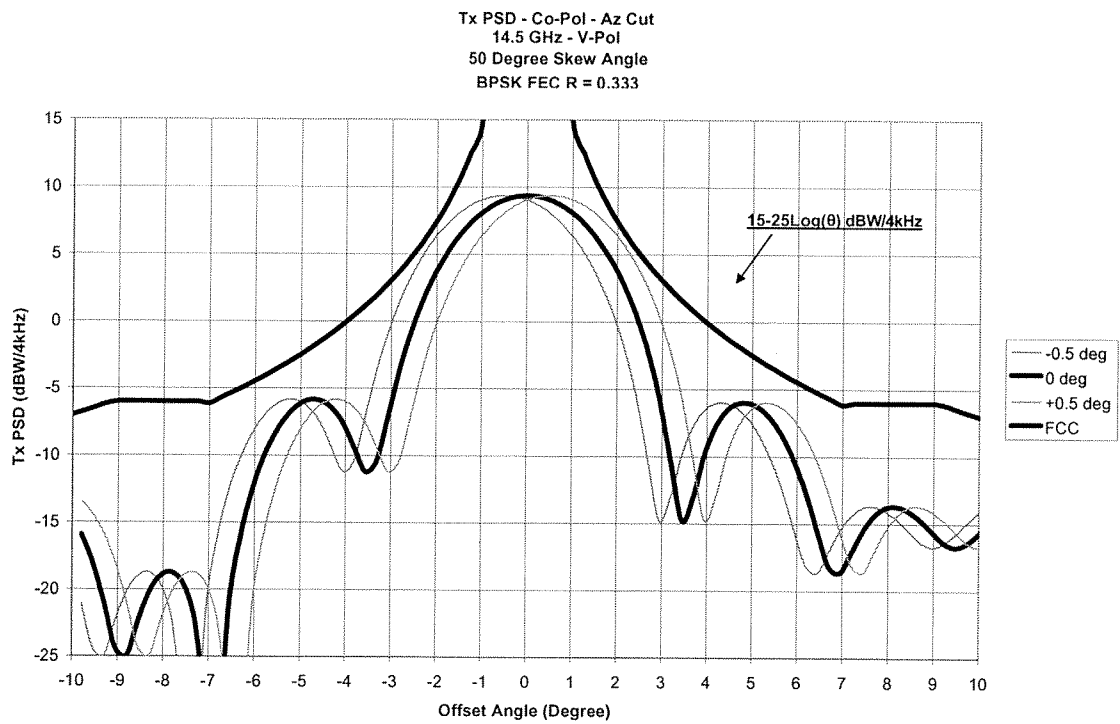


Figure 6

Table 11 – RaySat StealthRay Off-Axis EIRP Compliance

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

ID Applicant: RaySat

Date of Application: 12/08/05

HEADING

a1	Antenna Manufacturer:	RaySat	c	main bore gain	26.75	dB
a2	Antenna Model:	StealthRay	d	frequency at which gain was measured	14.25	GHz
a3	Antenna ID:	RaySat	e	maximum input power density (dBW/4KHz)	-18.10	dBW/4KHz
b	Transmit band (b):	14 GHz		Pattern ID:	14.25 GHz Elevation Horizontal	

1.0 to 7 degrees calculated maximum difference in off-axis eirp density: 11.77 dBW/4KHz

TABLE

1.0 to 180 degrees calculated maximum difference in off-axis eirp density: 11.77

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

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

1 Angle (degrees)	2 25.209 Gain (dBi)	3 Off-Axis EIRP Density for -14.00 dBW/4Kz	4 Gain relative to main bore gain (dB)	5 Actual Gain in dBi	6 Off-Axis EIRP Density for input of -18.10	7 Difference in Off-Axis EIRP Density (6) minus (3)
-85.00	-10.00	-24.00	-45.89	-19.14	-37.24	-13.24
-80.00	-10.00	-24.00	-40.06	-13.31	-31.41	-7.41
-75.00	-10.00	-24.00	-38.62	-11.87	-29.97	-5.97
-70.00	-10.00	-24.00	-41.26	-14.51	-32.61	-8.61
-65.00	-10.00	-24.00	-32.37	-5.62	-23.72	0.28
-60.00	-10.00	-24.00	-31.66	-4.91	-23.01	0.99
-55.00	-10.00	-24.00	-23.39	3.36	-14.74	9.26
-50.00	-10.00	-24.00	-21.47	5.28	-12.82	11.18
-45.00	-9.33	-23.33	-20.21	6.54	-11.56	11.77
-40.00	-8.05	-22.05	-24.40	2.35	-15.75	6.31
-35.00	-6.60	-20.60	-27.51	-0.76	-18.86	1.74
-30.00	-4.93	-18.93	-16.32	10.43	-7.67	11.26
-25.00	-2.95	-16.95	-14.43	12.32	-5.78	11.17
-20.00	-0.53	-14.53	-17.47	9.28	-8.82	5.71
-15.00	2.60	-11.40	-15.01	11.74	-6.36	5.04
-10.00	7.00	-7.00	-5.51	21.24	3.14	10.14
-9.00	8.14	-5.86	-4.43	22.32	4.22	10.08
-8.00	9.42	-4.58	-3.48	23.27	5.17	9.75
-7.00	10.87	-3.13	-2.64	24.11	6.01	9.14
-6.00	12.55	-1.45	-1.91	24.84	6.74	8.20
-5.00	14.53	0.53	-1.29	25.46	7.36	6.84
-4.00	16.95	2.95	-0.79	25.96	7.86	4.91
-3.00	20.07	6.07	-0.42	26.33	8.23	2.16
-2.00	24.47	10.47	-0.18	26.57	8.47	-2.01
-1.00	32.00	18.00	-0.06	26.69	8.59	-9.41
1.00	32.00	18.00	-0.11	26.64	8.54	-9.46
2.00	24.47	10.47	-0.26	26.49	8.39	-2.09
3.00	20.07	6.07	-0.50	26.25	8.15	2.07
4.00	16.95	2.95	-0.84	25.91	7.81	4.86
5.00	14.53	0.53	-1.28	25.47	7.37	6.84
6.00	12.55	-1.45	-1.84	24.91	6.81	8.27
7.00	10.87	-3.13	-2.52	24.23	6.13	9.26
8.00	9.42	-4.58	-3.33	23.42	5.32	9.90
9.00	8.14	-5.86	-4.28	22.47	4.37	10.23
10.00	7.00	-7.00	-5.39	21.36	3.26	10.26
15.00	2.60	-11.40	-15.55	11.20	-6.90	4.51
20.00	-0.53	-14.53	-20.42	6.33	-11.77	2.76
25.00	-2.95	-16.95	-15.47	11.28	-6.82	10.13
30.00	-4.93	-18.93	-18.21	8.54	-9.56	9.37
35.00	-6.60	-20.60	-34.92	-8.17	-26.27	-5.67
40.00	-8.05	-22.05	-21.86	4.89	-13.21	8.84
45.00	-9.33	-23.33	-20.48	6.27	-11.83	11.50
50.00	-10.00	-24.00	-21.18	5.57	-12.53	11.47
55.00	-10.00	-24.00	-24.09	2.66	-15.44	8.56
60.00	-10.00	-24.00	-31.48	-4.73	-22.83	1.17
65.00	-10.00	-24.00	-37.42	-10.67	-28.77	-4.77
70.00	-10.00	-24.00	-41.13	-14.38	-32.48	-8.48
75.00	-10.00	-24.00	-38.02	-11.27	-29.37	-5.37
80.00	-10.00	-24.00	-39.68	-12.93	-31.03	-7.03
85.00	-10.00	-24.00	-46.46	-19.71	-37.81	-13.81

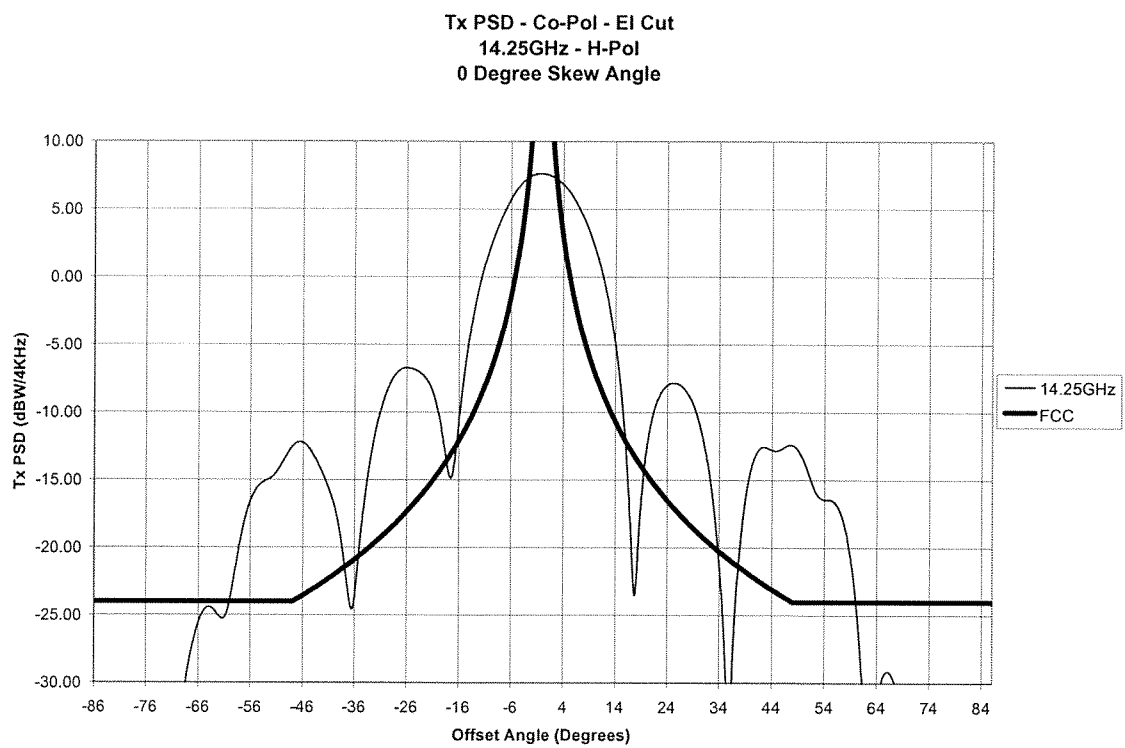


Figure 7

Table 12 – RaySat StealthRay Off-Axis EIRP Compliance

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

ID Applicant: RaySat

Date of Application: 12/08/05

HEADING

a1	Antenna Manufacturer:	RaySat	c	main bore gain	26.75	dBi
a2	Antenna Model:	StealthRay	d	frequency at which gain was measured	14.25	GHz
a3	Antenna ID:	RaySat	e	maximum input power density (dBw/4KHz)	-18.10	dBw/4KHz
b	Transmit band (b):	14 GHz	Pattern ID:	14.25 GHz Elevation Vertical		

1.0 to 7 degrees calculated maximum difference in off-axis eirp density: 15.57 dBw/4KHz

TABLE

1.0 to 180 degrees calculated maximum difference in off-axis eirp density: 15.57

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

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

1 Angle (degrees)	2 25.209 Gain (dBi)	3 Off-Axis EIRP Density for -14.00 dBw/4Kz	4 Gain relative to main bore gain (dB)	5 Actual Gain in dBi	6 Off-Axis EIRP Density for input of -18.10	7 Difference in Off-Axis EIRP Density (6) minus (3)
-85.00	-10.00	-24.00	-65.70	-38.95	-57.05	-33.05
-80.00	-10.00	-24.00	-47.46	-20.71	-38.81	-14.81
-75.00	-10.00	-24.00	-38.58	-11.83	-29.93	-5.93
-70.00	-10.00	-24.00	-35.68	-8.93	-27.03	-3.03
-65.00	-10.00	-24.00	-33.73	-6.98	-25.08	-1.08
-60.00	-10.00	-24.00	-27.35	-0.60	-18.70	5.30
-55.00	-10.00	-24.00	-23.07	3.68	-14.42	9.58
-50.00	-10.00	-24.00	-19.10	7.65	-10.45	13.55
-45.00	-9.33	-23.33	-16.41	10.34	-7.76	15.57
-40.00	-8.05	-22.05	-15.76	10.99	-7.11	14.94
-35.00	-6.60	-20.60	-20.54	6.21	-11.89	8.71
-30.00	-4.93	-18.93	-21.41	5.34	-12.76	6.17
-25.00	-2.95	-16.95	-14.34	12.41	-5.69	11.26
-20.00	-0.53	-14.53	-17.58	9.17	-8.93	5.60
-15.00	2.60	-11.40	-18.20	8.55	-9.55	1.86
-10.00	7.00	-7.00	-6.13	20.62	2.52	9.52
-9.00	8.14	-5.86	-4.72	22.03	3.93	9.79
-8.00	9.42	-4.58	-3.56	23.19	5.09	9.67
-7.00	10.87	-3.13	-2.62	24.13	6.03	9.16
-6.00	12.55	-1.45	-1.86	24.89	6.79	8.24
-5.00	14.53	0.53	-1.26	25.49	7.39	6.87
-4.00	16.95	2.95	-0.79	25.96	7.86	4.91
-3.00	20.07	6.07	-0.44	26.31	8.21	2.14
-2.00	24.47	10.47	-0.20	26.55	8.45	-2.02
-1.00	32.00	18.00	-0.06	26.69	8.59	-9.41
1.00	32.00	18.00	-0.13	26.62	8.52	-9.48
2.00	24.47	10.47	-0.33	26.42	8.32	-2.15
3.00	20.07	6.07	-0.65	26.10	8.00	1.93
4.00	16.95	2.95	-1.08	25.67	7.57	4.63
5.00	14.53	0.53	-1.62	25.13	7.03	6.51
6.00	12.55	-1.45	-2.28	24.47	6.37	7.83
7.00	10.87	-3.13	-3.06	23.69	5.59	8.72
8.00	9.42	-4.58	-4.01	22.74	4.64	9.22
9.00	8.14	-5.86	-5.16	21.59	3.49	9.35
10.00	7.00	-7.00	-6.60	20.15	2.05	9.05
15.00	2.60	-11.40	-24.41	2.34	-15.76	-4.35
20.00	-0.53	-14.53	-15.04	11.71	-6.39	8.13
25.00	-2.95	-16.95	-12.42	14.33	-3.77	13.18
30.00	-4.93	-18.93	-17.15	9.60	-8.50	10.43
35.00	-6.60	-20.60	-21.60	5.15	-12.95	7.65
40.00	-8.05	-22.05	-17.10	9.65	-8.45	13.60
45.00	-9.33	-23.33	-17.75	9.00	-9.10	14.23
50.00	-10.00	-24.00	-21.62	5.13	-12.97	11.03
55.00	-10.00	-24.00	-25.03	1.72	-16.38	7.62
60.00	-10.00	-24.00	-29.92	-3.17	-21.27	2.73
65.00	-10.00	-24.00	-35.49	-8.74	-26.84	-2.84
70.00	-10.00	-24.00	-41.83	-15.08	-33.18	-9.18
75.00	-10.00	-24.00	-40.45	-13.70	-31.80	-7.80
80.00	-10.00	-24.00	-45.43	-18.68	-36.78	-12.78
85.00	-10.00	-24.00	-54.73	-27.98	-46.08	-22.08

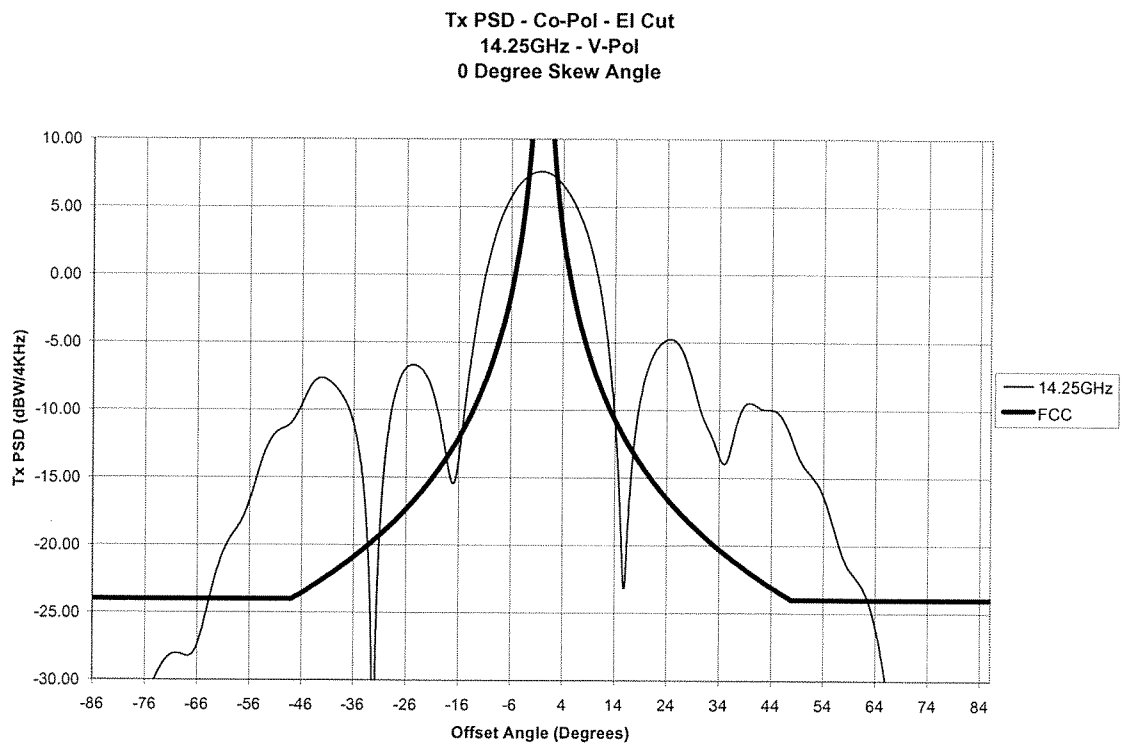


Figure 8