EIRP at 0 Degrees Elevation

15 Northeast/Mid-Atlantic States

Active CPE's S	Equiv. Pwr Ant. Sect 1 dBW/MHz	Equiv. Pwr Ant. Sect 2 dBW/MHz	Equiv. Pwr Ant. Sect 3 dBW/MHz	Equiv. Pwr Ant. Sect 4 dBW/MHz	Tot. Equiv. EIRP dBW/MHz	Total EIRP dBW/MHz	Total EIRP dBW/Hz	Antenna Polariza-tion in dB	Blocking in dB	Area of 15 NE States sq-km	PSAD dBW/MHz/ sq-km	Region 2 EIRP Spec dBW/MHz/ sq-km	Margin dB
119	-2.6	-5.6	-12.0	-13.4	-0.28	20.47	-39.53	-3.00	-3.00	825,700	-44.69	-25	19.69
200	-2.6	-5.6	-12.0	-13.4	-0.28	22.73	-37.27	-3.00	-3.00	825,700	-42.44	-25	
300	-2.6	-5.6	-12.0	-13.4	-0.28	24.49	-35.51	-3.00	-3.00	825,700	-40.68	-25	
400	-2.6	-5.6	-12.0	-13.4	-0.28	25.74	-34.26	-3.00	-3.00	825,700	-39.43	-25	
500	-2.6	-5.6	-12.0	-13.4	-0.28	26.71	-33.29	-3.00	-3.00	825,700	-38.46	-25	
600	-2.6	-5.6	-12.0	-13.4	-0.28	27.50	-32.50	-3.00	-3.00	825,700	-37.67	-25	
700	-2.6	-5.6	-12.0	-13.4	-0.28	28.17	-31.83	-3.00	-3.00	825,700	-37.00	-25	
800	-2.6	-5.6	-12.0	-13.4	-0.28	28.75	-31.25	-3.00	-3.00	825,700	-36.42	-25	
900	-2.6	-5.6	-12.0	-13.4	-0.28	29.26	-30.74	-3.00	-3.00	825,700	-35.91	-25	
1000	-2.6	-5.6	-12.0	-13.4	-0.28	29.72	-30.28	-3.00	-3.00	825,700	-35.45	-25	

EIRP at 7.5 Degrees Elevation

Active CPE's S	Equiv. Pwr Ant. Sect 1 dBW/MHz	Equiv. Pwr Ant. Sect 2 dBW/MHz	Equiv. Pwr Ant. Sect 3 dBW/MHz	Equiv. Pwr Ant. Sect 4 dBW/MHz	Tot. Equiv. EIRP dBW/MHz	Total EIRP dBW/MHz	Total EIRP dBW/Hz	Antenna Polariza-tion in dB	Blocking in dB	Area of 15 NE States sq-km	PSAD dBW/MHz/ sq-km	Region 2 EIRP Spec dBW/MHz/ sq-km	Margin dB
119			-9.8	-13.4	-8.23	12.53	-47.47	-3.00	0.00	825,700	-49.64	-46	3.64
200			-9.8	-13.4	-8.23	14.78	-45.22	-3.00	0.00	825,700	-47.39	-46	
275			-9.8	-13.4	-8.23	16.17	-43.83	-3.00	0.00	825,700	-46.00	-46	
400			-9.8	-13.4	-8.23	17.79	-42.21	-3.00	0.00	825,700	-44.38	-46	
500			-9.8	-13.4	-8.23	18.76	-41.24	-3.00	0.00	825,700	-43.41	-46	
600			-9.8	-13.4	-8.23	19.55	-40.45	-3.00	0.00	825,700	-42.61	-46	
700			-9.8	-13.4	-8.23	20.22	-39.78	-3.00	0.00	825,700	-41.94	-46	
800			-9.8	-13.4	-8.23	20.80	-39.20	-3.00	0.00	825,700	-41.36	-46	
900			-9.8	-13.4	-8.23	21.31	-38.69	-3.00	0.00	825,700	-40.85	-46	
1000			-9.8	-13.4	-8.23	21.77	-38.23	-3.00	0.00	825,700	-40.40	-46	

EIRP at 90 Degrees Elevation

Active CPE's S	Equiv. Pwr Ant. Sect 1 dBW/MHz	Equiv. Pwr Ant. Sect 2 dBW/MHz	Equiv. Pwr Ant. Sect 3 dBW/MHz	Equiv. Pwr Ant. Sect 4 dBW/MHz	Tot. Equiv. EIRP dBW/MHz	Total EIRP dBW/MHz	Total EIRP dBW/Hz	Antenna Polariza-tion in dB	Blocking in dB	Area of 15 NE States sq-km	PSAD dBW/MHz/ sq-km	Region 2 EIRP Spec dBW/MHz/ sq-km	Margin dB
119				-13.0	-13.00	7.76	-52.24	-3.00	0.00	825,700	-54.41	-47	7.41
200				-13.0	-13.00	10.01	-49.99	-3.00	0.00	825,700	-52.16	-47	
300				-13.0	-13.00	11.77	-48.23	-3.00	0.00	825,700	-50.40	-47	
400				-13.0	-13.00	13.02	-46.98	-3.00	0.00	825,700	-49.15	-47	
500				-13.0	-13.00	13.99	-46.01	-3.00	0.00	825,700	-48.18	-47	
656				-13.0	-13.00	15.17	-44.83	-3.00	0.00	825,700	-47.00	-47	
700				-13.0	-13.00	15.45	-44.55	-3.00	0.00	825,700	-46.72	-47	
800				-13.0	-13.00	16.03	-43.97	-3.00	0.00	825,700	-46.14	-47	
900				-13.0	-13.00	16.54	-43.46	-3.00	0.00	825,700	-45.63	-47	
1000				-13.0	-13.00	17.00	-43.00	-3.00	0.00	825,700	-45.17	-47	

EIRP at 0 Degrees Elevation

Northeast as defined in Rand-McNally Commercial Atlas

Active CPE's S	Equiv. Pwr Ant. Sect 1 dBW/MHz	Equiv. Pwr Ant. Sect 2 dBW/MHz	Equiv. Pwr Ant. Sect 3 dBW/MHz	Equiv. Pwr Ant. Sect 4 dBW/MHz	Tot. Equiv. EIRP dBW/MHz	Total EIRP dBW/MHz	Total EIRP dBW/Hz	Antenna Polariza-tion in dB	Blocking in dB	Area in sq-km	PSAD dBW/MHz/ sq-km	Region 2 EIRP Spec dBW/MHz/ sq-km	Margin dB
103	-2.6	-5.6	-12.0	-13.4	-0.28	19.85	-40.15	-3.00	-3.00	515,434	-43.28	-25	18.28
200	-2.6	-5.6	-12.0	-13.4	-0.28	22.73	-37.27	-3.00	-3.00	515,434	-40.39	-25	
300	-2.6	-5.6	-12.0	-13.4	-0.28	24.49	-35.51	-3.00	-3.00	515,434	-38.63	-25	
400	-2.6	-5.6	-12.0	-13.4	-0.28	25.74	-34.26	-3.00	-3.00	515,434	-37.38	-25	
500	-2.6	-5.6	-12.0	-13.4	-0.28	26.71	-33.29	-3.00	-3.00	515,434	-36.41	-25	
600	-2.6	-5.6	-12.0	-13.4	-0.28	27.50	-32.50	-3.00	-3.00	515,434	-35.62	-25	
700	-2.6	-5.6	-12.0	-13.4	-0.28	28.17	-31.83	-3.00	-3.00	515,434	-34.95	-25	
800	-2.6	-5.6	-12.0	-13.4	-0.28	28.75	-31.25	-3.00	-3.00	515,434	-34.37	-25	
900	-2.6	-5.6	-12.0	-13.4	-0.28	29.26	-30.74	-3.00	-3.00	515,434	-33.86	-25	
1000	-2.6	-5.6	-12.0	-13.4	-0.28	29.72	-30.28	-3.00	-3.00	515,434	-33.40	-25	

EIRP at 7.5 Degrees Elevation

Active CPE's S	Equiv. Pwr Ant. Sect 1 dBW/MHz	Equiv. Pwr Ant. Sect 2 dBW/MHz	Equiv. Pwr Ant. Sect 3 dBW/MHz	Equiv. Pwr Ant. Sect 4 dBW/MHz	Tot. Equiv. EIRP dBW/MHz	Total EIRP dBW/MHz	Total EIRP dBW/Hz	Antenna Polariza-tion in dB	Blocking in dB	Area in sq-km	PSAD dBW/MHz/ sq-km	Region 2 EIRP Spec dBW/MHz/ sq-km	Margin dB
103			-9.8	-13.4	-8.23	11.90	-48.10	-3.00	0.00	515,434	-48.22	-46	2.22
172			-9.8	-13.4	-8.23	14.13	-45.87	-3.00	0.00	515,434	-45.99	-46	
300			-9.8	-13.4	-8.23	16.54	-43.46	-3.00	0.00	515,434	-43.58	-46	
400			-9.8	-13.4	-8.23	17.79	-42.21	-3.00	0.00	515,434	-42.33	-46	
500			-9.8	-13.4	-8.23	18.76	-41.24	-3.00	0.00	515,434	-41.36	-46	
600			-9.8	-13.4	-8.23	19.55	-40.45	-3.00	0.00	515,434	-40.57	-46	
700			-9.8	-13.4	-8.23	20.22	-39.78	-3.00	0.00	515,434	-39.90	-46	
800			-9.8	-13.4	-8.23	20.80	-39.20	-3.00	0.00	515,434	-39.32	-46	
900			-9.8	-13.4	-8.23	21.31	-38.69	-3.00	0.00	515,434	-38.81	-46	
1000			-9.8	-13.4	-8.23	21.77	-38.23	-3.00	0.00	515,434	-38.35	-46	

EIRP at 90 Degrees Elevation

Active CPE's S	Equiv. Pwr Ant. Sect 1 dBW/MHz	Equiv. Pwr Ant. Sect 2 dBW/MHz	Equiv. Pwr Ant. Sect 3 dBW/MHz	Equiv. Pwr Ant. Sect 4 dBW/MHz	Tot. Equiv. EIRP dBW/MHz	Total EIRP dBW/MHz	Total EIRP dBW/Hz	Antenna Polariza-tion in dB	Blocking in dB	Area in sq-km	PSAD dBW/MHz/ sq-km	Region 2 EIRP Spec dBW/MHz/ sq-km	Margin dB
103				-13.0	-13.00	7.13	-52.87	-3.00	0.00	515,434	-52.99	-47	5.99
200				-13.0	-13.00	10.01	-49.99	-3.00	0.00	515,434	-50.11	-47	
300				-13.0	-13.00	11.77	-48.23	-3.00	0.00	515,434	-48.35	-47	
409				-13.0	-13.00	13.12	-46.88	-3.00	0.00	515,434	-47.00	-47	
500				-13.0	-13.00	13.99	-46.01	-3.00	0.00	515,434	-46.13	-47	
600				-13.0	-13.00	14.78	-45.22	-3.00	0.00	515,434	-45.34	-47	
700				-13.0	-13.00	15.45	-44.55	-3.00	0.00	515,434	-44.67	-47	
800				-13.0	-13.00	16.03	-43.97	-3.00	0.00	515,434	-44.09	-47	
900				-13.0	-13.00	16.54	-43.46	-3.00	0.00	515,434	-43.58	-47	
1000				-13.0	-13.00	17.00	-43.00	-3.00	0.00	515,434	-43.12	-47	

EIRP at 0 Degrees Elevation

South as defined in Rand-McNally Commercial Atlas

Active CPE's S	Equiv. Pwr Ant. Sect 1 dBW/MHz	Equiv. Pwr Ant. Sect 2 dBW/MHz	Equiv. Pwr Ant. Sect 3 dBW/MHz	Equiv. Pwr Ant. Sect 4 dBW/MHz	Tot. Equiv. EIRP dBW/MHz	Total EIRP dBW/MHz	Total EIRP dBW/Hz	Antenna Polariza-tion in dB	Blocking in dB	Area in sq-km	PSAD dBW/MHz/ sq-km	Region 1 EIRP Spec dBW/MHz/ sq-km	Margin dB
82	-2.6	-5.6	-12.0	-13.4	-0.28	18.86	-41.14	-3.00	-3.00	2,171,282	-50.51	-23	27.51
200	-2.6	-5.6	-12.0	-13.4	-0.28	22.73	-37.27	-3.00	-3.00	2,171,282	-46.64	-23	
300	-2.6	-5.6	-12.0	-13.4	-0.28	24.49	-35.51	-3.00	-3.00	2,171,282	-44.88	-23	
400	-2.6	-5.6	-12.0	-13.4	-0.28	25.74	-34.26	-3.00	-3.00	2,171,282	-43.63	-23	
500	-2.6	-5.6	-12.0	-13.4	-0.28	26.71	-33.29	-3.00	-3.00	2,171,282	-42.66	-23	
600	-2.6	-5.6	-12.0	-13.4	-0.28	27.50	-32.50	-3.00	-3.00	2,171,282	-41.87	-23	
700	-2.6	-5.6	-12.0	-13.4	-0.28	28.17	-31.83	-3.00	-3.00	2,171,282	-41.20	-23	
800	-2.6	-5.6	-12.0	-13.4	-0.28	28.75	-31.25	-3.00	-3.00	2,171,282	-40.62	-23	
900	-2.6	-5.6	-12.0	-13.4	-0.28	29.26	-30.74	-3.00	-3.00	2,171,282	-40.11	-23	
1000	-2.6	-5.6	-12.0	-13.4	-0.28	29.72	-30.28	-3.00	-3.00	2,171,282	-39.65	-23	

EIRP at 7.5 Degrees Elevation

Active CPE's S	Equiv. Pwr Ant. Sect 1 dBW/MHz	Equiv. Pwr Ant. Sect 2 dBW/MHz	Equiv. Pwr Ant. Sect 3 dBW/MHz	Equiv. Pwr Ant. Sect 4 dBW/MHz	Tot. Equiv. EIRP dBW/MHz	Total EIRP dBW/MHz	Total EIRP dBW/Hz	Antenna Polariza-tion in dB	Blocking in dB	Area in sq-km	PSAD dBW/MHz/ sq-km	Region 1 EIRP Spec dBW/MHz/ sq-km	Margin dB
82			-9.8	-13.4	-8.23	10.91	-49.09	-3.00	0.00	2,171,282	-55.46	-44	11.46
200			-9.8	-13.4	-8.23	14.78	-45.22	-3.00	0.00	2,171,282	-51.58	-44	
300			-9.8	-13.4	-8.23	16.54	-43.46	-3.00	0.00	2,171,282	-49.82	-44	
400			-9.8	-13.4	-8.23	17.79	-42.21	-3.00	0.00	2,171,282	-48.57	-44	
500			-9.8	-13.4	-8.23	18.76	-41.24	-3.00	0.00	2,171,282	-47.60	-44	
600			-9.8	-13.4	-8.23	19.55	-40.45	-3.00	0.00	2,171,282	-46.81	-44	
700			-9.8	-13.4	-8.23	20.22	-39.78	-3.00	0.00	2,171,282	-46.14	-44	
800			-9.8	-13.4	-8.23	20.80	-39.20	-3.00	0.00	2,171,282	-45.56	-44	
900			-9.8	-13.4	-8.23	21.31	-38.69	-3.00	0.00	2,171,282	-45.05	-44	
1000			-9.8	-13.4	-8.23	21.77	-38.23	-3.00	0.00	2,171,282	-44.59	-44	

EIRP at 90 Degrees Elevation

Active CPE's S	Equiv. Pwr Ant. Sect 1 dBW/MHz	Equiv. Pwr Ant. Sect 2 dBW/MHz	Equiv. Pwr Ant. Sect 3 dBW/MHz	Equiv. Pwr Ant. Sect 4 dBW/MHz	Tot. Equiv. EIRP dBW/MHz	Total EIRP dBW/MHz	Total EIRP dBW/Hz	Antenna Polariza-tion in dB	Blocking in dB	Area in sq-km	PSAD dBW/MHz/ sq-km	Region 1 EIRP Spec dBW/MHz/ sq-km	Margin dB
82				-13.0	-13.00	6.14	-53.86	-3.00	0.00	2,171,282	-60.23	-45	15.23
200				-13.0	-13.00	10.14	-49.86	-3.00	0.00	2,171,282	-56.23	-45	
300				-13.0	-13.00	11.77	-48.23	-3.00	0.00	2,171,282	-54.60	-45	
400				-13.0	-13.00	13.02	-46.98	-3.00	0.00	2,171,282	-53.35	-45	
500				-13.0	-13.00	13.99	-46.01	-3.00	0.00	2,171,282	-52.38	-45	
600				-13.0	-13.00	14.78	-45.22	-3.00	0.00	2,171,282	-51.59	-45	
700				-13.0	-13.00	15.45	-44.55	-3.00	0.00	2,171,282	-50.92	-45	
800				-13.0	-13.00	16.03	-43.97	-3.00	0.00	2,171,282	-50.34	-45	
900				-13.0	-13.00	16.54	-43.46	-3.00	0.00	2,171,282	-49.82	-45	
1000				-13.0	-13.00	17.00	-43.00	-3.00	0.00	2,171,282	-49.37	-45	

EIRP at 0 Degrees Elevation

Midwest as defined in Rand-McNally Commercial Atlas

Active CPE's S	Equiv. Pwr Ant. Sect 1 dBW/MHz	Equiv. Pwr Ant. Sect 2 dBW/MHz	Equiv. Pwr Ant. Sect 3 dBW/MHz	Equiv. Pwr Ant. Sect 4 dBW/MHz	Tot. Equiv. EIRP dBW/MHz	Total EIRP dBW/MHz	Total EIRP dBW/Hz	Antenna Polariza-tion in dB	Blocking in dB	Area in sq-km	PSAD dBW/MHz/ sq-km	Region 2 EIRP Spec dBW/MHz/ sq-km	Margin dB
100	-2.6	-5.6	-12.0	-13.4	-0.28	19.72	-40.28	-3.00	-3.00	1,950,893	-49.18	-25	
147	**-2.6**	**-5.6**	**-12.0**	**-13.4**	**-0.28**	**21.39**	**-38.61**	**-3.00**	**-3.00**	**1,950,893**	**-47.51**	**-25**	**22.51**
300	-2.6	-5.6	-12.0	-13.4	-0.28	24.49	-35.51	-3.00	-3.00	1,950,893	-44.41	-25	
400	-2.6	-5.6	-12.0	-13.4	-0.28	25.74	-34.26	-3.00	-3.00	1,950,893	-43.16	-25	
500	-2.6	-5.6	-12.0	-13.4	-0.28	26.71	-33.29	-3.00	-3.00	1,950,893	-42.19	-25	
600	-2.6	-5.6	-12.0	-13.4	-0.28	27.50	-32.50	-3.00	-3.00	1,950,893	-41.40	-25	
700	-2.6	-5.6	-12.0	-13.4	-0.28	28.17	-31.83	-3.00	-3.00	1,950,893	-40.73	-25	
800	-2.6	-5.6	-12.0	-13.4	-0.28	28.75	-31.25	-3.00	-3.00	1,950,893	-40.15	-25	
900	-2.6	-5.6	-12.0	-13.4	-0.28	29.26	-30.74	-3.00	-3.00	1,950,893	-39.64	-25	
1000	-2.6	-5.6	-12.0	-13.4	-0.28	29.72	-30.28	-3.00	-3.00	1,950,893	-39.18	-25	

EIRP at 7.5 Degrees Elevation

Active CPE's S	Equiv. Pwr Ant. Sect 1 dBW/MHz	Equiv. Pwr Ant. Sect 2 dBW/MHz	Equiv. Pwr Ant. Sect 3 dBW/MHz	Equiv. Pwr Ant. Sect 4 dBW/MHz	Tot. Equiv. EIRP dBW/MHz	Total EIRP dBW/MHz	Total EIRP dBW/Hz	Antenna Polariza-tion in dB	Blocking in dB	Area in sq-km	PSAD dBW/MHz/ sq-km	Region 2 EIRP Spec dBW/MHz/ sq-km	Margin dB
100			-9.8	-13.4	-8.23	11.77	-48.23	-3.00	0.00	1,950,893	-54.13	-46	
147			**-9.8**	**-13.4**	**-8.23**	**13.45**	**-46.55**	**-3.00**	**0.00**	**1,950,893**	**-52.46**	**-46**	**6.46**
300			-9.8	-13.4	-8.23	16.54	-43.46	-3.00	0.00	1,950,893	-49.36	-46	
400			-9.8	-13.4	-8.23	17.79	-42.21	-3.00	0.00	1,950,893	-48.11	-46	
500			-9.8	-13.4	-8.23	18.76	-41.24	-3.00	0.00	1,950,893	-47.14	-46	
600			-9.8	-13.4	-8.23	19.55	-40.45	-3.00	0.00	1,950,893	-46.35	-46	
650			**-9.8**	**-13.4**	**-8.23**	**19.90**	**-40.10**	**-3.00**	**0.00**	**1,950,893**	**-46.00**	**-46**	
800			-9.8	-13.4	-8.23	20.80	-39.20	-3.00	0.00	1,950,893	-45.10	-46	
900			-9.8	-13.4	-8.23	21.31	-38.69	-3.00	0.00	1,950,893	-44.59	-46	
1000			-9.8	-13.4	-8.23	21.77	-38.23	-3.00	0.00	1,950,893	-44.13	-46	

EIRP at 90 Degrees Elevation

Active CPE's S	Equiv. Pwr Ant. Sect 1 dBW/MHz	Equiv. Pwr Ant. Sect 2 dBW/MHz	Equiv. Pwr Ant. Sect 3 dBW/MHz	Equiv. Pwr Ant. Sect 4 dBW/MHz	Tot. Equiv. EIRP dBW/MHz	Total EIRP dBW/MHz	Total EIRP dBW/Hz	Antenna Polariza-tion in dB	Blocking in dB	Area in sq-km	PSAD dBW/MHz/ sq-km	Region 2 EIRP Spec dBW/MHz/ sq-km	Margin dB
100				-13.0	-13.00	7.00	-53.00	-3.00	0.00	1,950,893	-58.90	-47	
147				**-13.0**	**-13.00**	**8.67**	**-51.33**	**-3.00**	**0.00**	**1,950,893**	**-57.23**	**-47**	**10.23**
300				-13.0	-13.00	11.77	-48.23	-3.00	0.00	1,950,893	-54.13	-47	
400				-13.0	-13.00	13.02	-46.98	-3.00	0.00	1,950,893	-52.88	-47	
500				-13.0	-13.00	13.99	-46.01	-3.00	0.00	1,950,893	-51.91	-47	
600				-13.0	-13.00	14.78	-45.22	-3.00	0.00	1,950,893	-51.12	-47	
700				-13.0	-13.00	15.45	-44.55	-3.00	0.00	1,950,893	-50.45	-47	
800				-13.0	-13.00	16.03	-43.97	-3.00	0.00	1,950,893	-49.87	-47	
900				-13.0	-13.00	16.54	-43.46	-3.00	0.00	1,950,893	-49.36	-47	
1000				-13.0	-13.00	17.00	-43.00	-3.00	0.00	1,950,893	-48.90	-47	

EIRP at 0 Degrees Elevation

West as defined in Rand-McNally Commercial Atlas

Active CPE's S	Equiv. Pwr Ant. Sect 1 dBW/MHz	Equiv. Pwr Ant. Sect 2 dBW/MHz	Equiv. Pwr Ant. Sect 3 dBW/MHz	Equiv. Pwr Ant. Sect 4 dBW/MHz	Tot. Equiv. EIRP dBW/MHz	Total EIRP dBW/MHz	Total EIRP dBW/Hz	Antenna Polariza-tion in dB	Blocking in dB	Area in sq-km	PSAD dBW/MHz/ sq-km	Reg. 3,4,5 EIRP Spec dBW/MHz/ sq-km	Margin dB
100	-2.6	-5.6	-12.0	-13.4	-0.28	19.72	-40.28	-3.00	-3.00	4,543,136	-52.86	-26	
132	-2.6	-5.6	-12.0	-13.4	-0.28	20.92	-39.08	-3.00	-3.00	4,543,136	-51.65	-26	25.65
300	-2.6	-5.6	-12.0	-13.4	-0.28	24.49	-35.51	-3.00	-3.00	4,543,136	-48.08	-26	
400	-2.6	-5.6	-12.0	-13.4	-0.28	25.74	-34.26	-3.00	-3.00	4,543,136	-46.83	-26	
500	-2.6	-5.6	-12.0	-13.4	-0.28	26.71	-33.29	-3.00	-3.00	4,543,136	-45.87	-26	
600	-2.6	-5.6	-12.0	-13.4	-0.28	27.50	-32.50	-3.00	-3.00	4,543,136	-45.07	-26	
700	-2.6	-5.6	-12.0	-13.4	-0.28	28.17	-31.83	-3.00	-3.00	4,543,136	-44.40	-26	
800	-2.6	-5.6	-12.0	-13.4	-0.28	28.75	-31.25	-3.00	-3.00	4,543,136	-43.82	-26	
900	-2.6	-5.6	-12.0	-13.4	-0.28	29.26	-30.74	-3.00	-3.00	4,543,136	-43.31	-26	
1000	-2.6	-5.6	-12.0	-13.4	-0.28	29.72	-30.28	-3.00	-3.00	4,543,136	-42.86	-26	

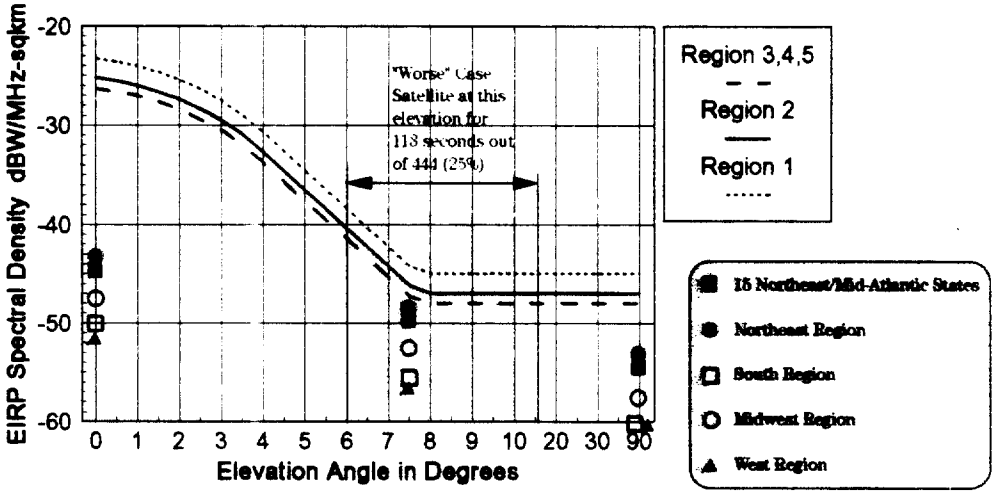
EIRP at 7.5 Degrees Elevation

Active CPE's S	Equiv. Pwr Ant. Sect 1 dBW/MHz	Equiv. Pwr Ant. Sect 2 dBW/MHz	Equiv. Pwr Ant. Sect 3 dBW/MHz	Equiv. Pwr Ant. Sect 4 dBW/MHz	Tot. Equiv. EIRP dBW/MHz	Total EIRP dBW/MHz	Total EIRP dBW/Hz	Antenna Polariza-tion in dB	Blocking in dB	Area in sq-km	PSAD dBW/MHz/ sq-km	Reg. 3,4,5 EIRP Spec dBW/MHz/ sq-km	Margin dB
100			-9.8	-13.4	-8.23	11.77	-48.23	-3.00	0.00	4,543,136	-57.80	-47	
132			-9.8	-13.4	-8.23	12.98	-47.02	-3.00	0.00	4,543,136	-56.60	-47	9.60
300			-9.8	-13.4	-8.23	16.54	-43.46	-3.00	0.00	4,543,136	-53.03	-47	
400			-9.8	-13.4	-8.23	17.79	-42.21	-3.00	0.00	4,543,136	-51.78	-47	
500			-9.8	-13.4	-8.23	18.76	-41.24	-3.00	0.00	4,543,136	-50.81	-47	
600			-9.8	-13.4	-8.23	19.55	-40.45	-3.00	0.00	4,543,136	-50.02	-47	
700			-9.8	-13.4	-8.23	20.22	-39.78	-3.00	0.00	4,543,136	-49.35	-47	
800			-9.8	-13.4	-8.23	20.80	-39.20	-3.00	0.00	4,543,136	-48.77	-47	
900			-9.8	-13.4	-8.23	21.31	-38.69	-3.00	0.00	4,543,136	-48.26	-47	
1000			-9.8	-13.4	-8.23	21.77	-38.23	-3.00	0.00	4,543,136	-47.80	-47	

EIRP at 90 Degrees Elevation

Active CPE's S	Equiv. Pwr Ant. Sect 1 dBW/MHz	Equiv. Pwr Ant. Sect 2 dBW/MHz	Equiv. Pwr Ant. Sect 3 dBW/MHz	Equiv. Pwr Ant. Sect 4 dBW/MHz	Tot. Equiv. EIRP dBW/MHz	Total EIRP dBW/MHz	Total EIRP dBW/Hz	Antenna Polariza-tion in dB	Blocking in dB	Area in sq-km	PSAD dBW/MHz/ sq-km	Reg. 3,4,5 EIRP Spec dBW/MHz/ sq-km	Margin dB
100				-13.0	-13.00	7.00	-53.00	-3.00	0.00	4,543,136	-62.57	-48	
132				-13.0	-13.00	8.21	-51.79	-3.00	0.00	4,543,136	-61.37	-48	13.37
300				-13.0	-13.00	11.77	-48.23	-3.00	0.00	4,543,136	-57.80	-48	
400				-13.0	-13.00	13.02	-46.98	-3.00	0.00	4,543,136	-56.55	-48	
500				-13.0	-13.00	13.99	-46.01	-3.00	0.00	4,543,136	-55.58	-48	
600				-13.0	-13.00	14.78	-45.22	-3.00	0.00	4,543,136	-54.79	-48	
700				-13.0	-13.00	15.45	-44.55	-3.00	0.00	4,543,136	-54.12	-48	
800				-13.0	-13.00	16.03	-43.97	-3.00	0.00	4,543,136	-53.54	-48	
900				-13.0	-13.00	16.54	-43.46	-3.00	0.00	4,543,136	-53.03	-48	
1000				-13.0	-13.00	17.00	-43.00	-3.00	0.00	4,543,136	-52.57	-48	

Transmitter EIRP Spectral Limit as per Proposed Rule 21.1020 & 21.1021, 3rd NPRM with Projected EIRP Levels for U.S. Regions



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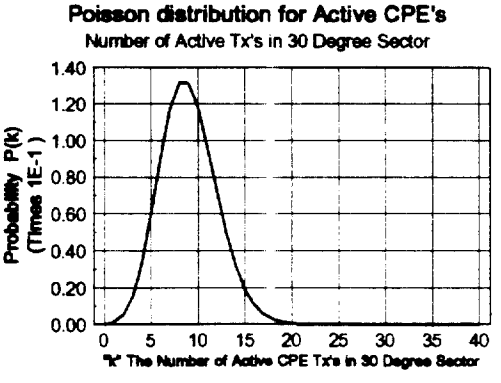
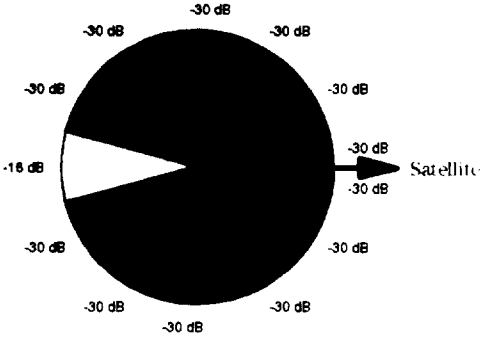
Composite CPE Tx Satellite Interference Potential at 6-15 Degrees Elevation





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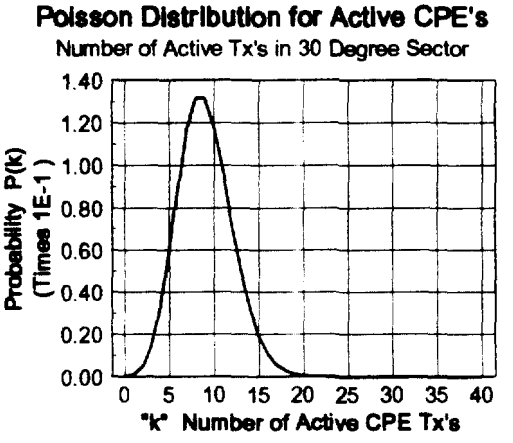
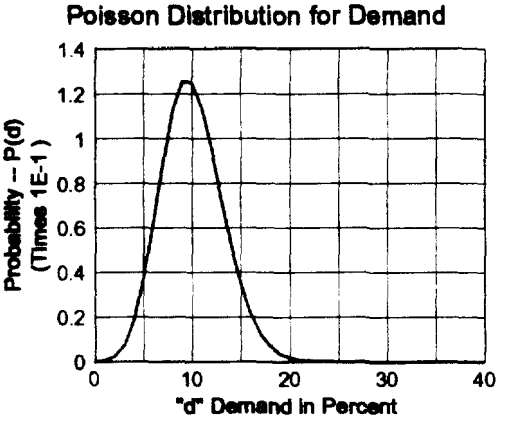
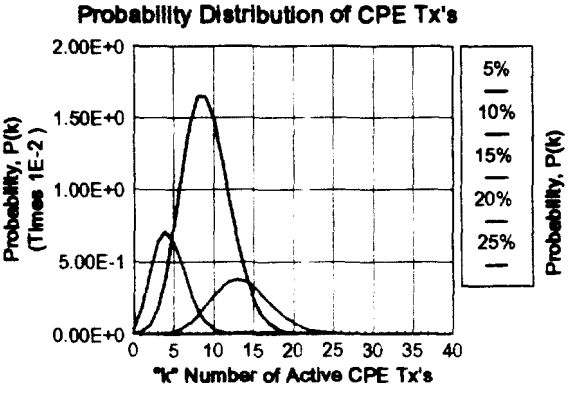
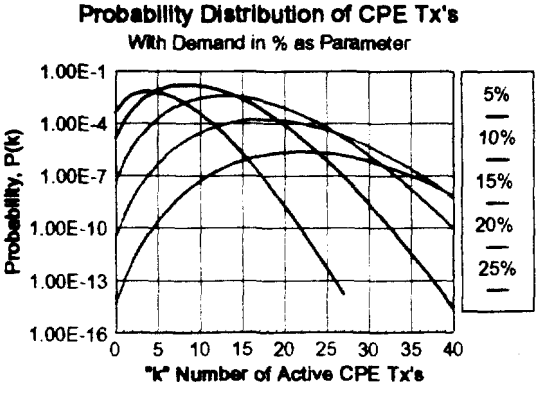
Probability Distribution for Demand and Active CPE Tx's in 30 Degree Sector



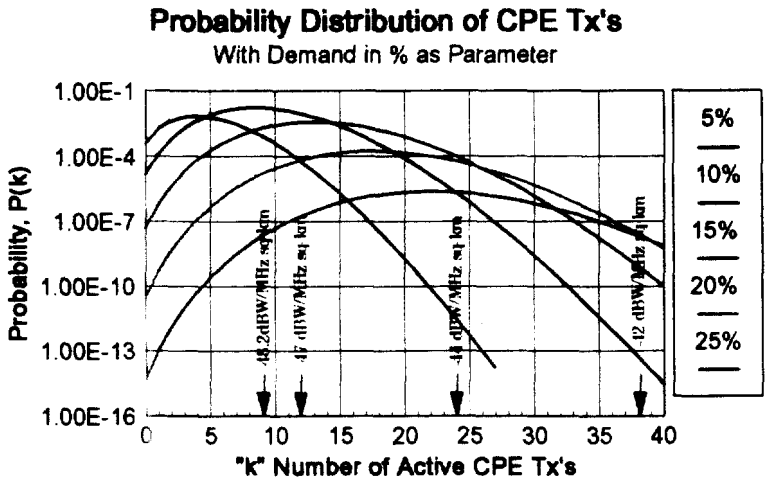


Joint Probability Distribution for Demand and Active CPE Tx's in 30 Degree Sector

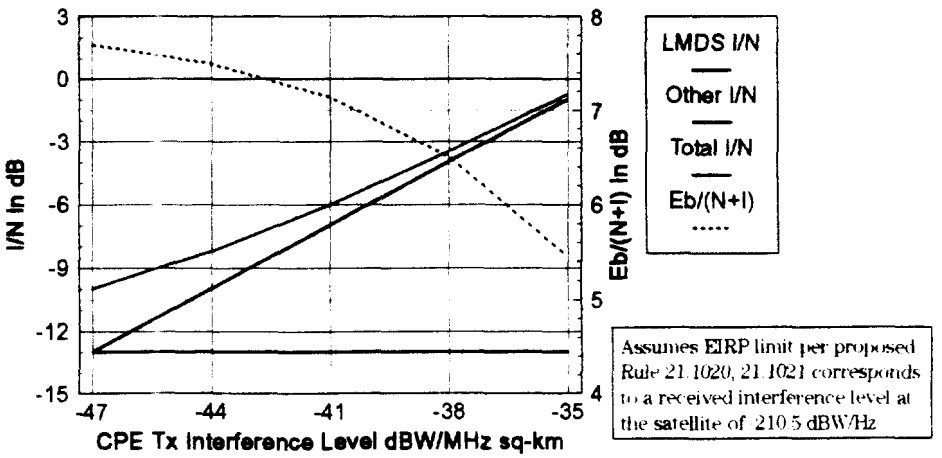




Joint Probability Distribution for Demand and Active CPE Tx's in 30 Degree Sector

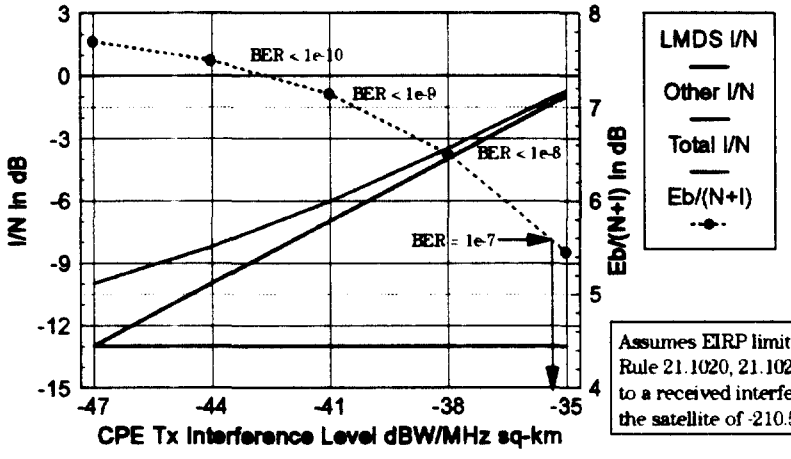


Effect of Interference Level on Eb/(N+I)



Assumes EIRP limit per proposed Rule 21.1020, 21.1021 corresponds to a received interference level at the satellite of -210.5 dBW/Hz

Effect of Interference Level on Eb/(N+I) and BER



Assumes EIRP limit per proposed Rule 21.1020, 21.1021 corresponds to a received interference level at the satellite of -210.5 dBW/Hz

Summary

- In the major geographical regions in the continental U.S., assuming a uniform distribution of active CPE Tx's pointing in their intended direction, the PSAD can be expected to be:
  - At 0 degrees elevation, 17dB to 27dB below the level specified in proposed Rule 21.1021, 3rd NPRM.
  - At 6.0 to 15 degrees elevation, 2dB to 11dB below the level specified in proposed Rule 21.1021, 3rd NPRM.
  - At 15 to 90 degrees elevation, 6dB to 15dB below the level specified in proposed Rule 21.1021, 3rd NPRM.
- Statistical spread in PSAD due to demand and non-uniformly distributed active CPE Tx's will result in higher PSAD and in the Northeast could result in levels exceeding proposed Rule 21.1021, 3rd NPRM, but with very low probabilities.
  - Assuming a Poisson distribution, the probability of sufficient interference to cause BER to drop to 1e-8 is < 1e-7.

Conclusion

- The CPE Tx rules proposed for the 29.1 to 29.25 GHz band at the November 2, 1995 meeting are sufficient to ensure co-sharing of the band with MSS feeder uplinks without harmful interference.

- The proposed rules 21.1020 & 21.1021 per 3rd NPRM will be difficult to manage in areas made up of BTA's covering small geographic areas. The simplified rules proposed in November should be sufficient.

Compromise Alternative for Increasing Interference Margin

Scenario 1

1. Decrease sidelobe level on CPE antenna mask from 16 dB to 18 dB and from 30 dB to 32 dB or decrease max clear air EIRP from +20 dBW/MHz to +18 dBW/MHz and...

2. Increase satellite feeder uplink power by 2 dB

Result: 2 dB + 11 dB = 13 dB Additional Margin

Compromise Alternative for Increasing Interference Margin

Scenario 2

1. Tighten up CPE antenna mask from 16 dB to 18 dB and from 30 dB to 32 dB * and...

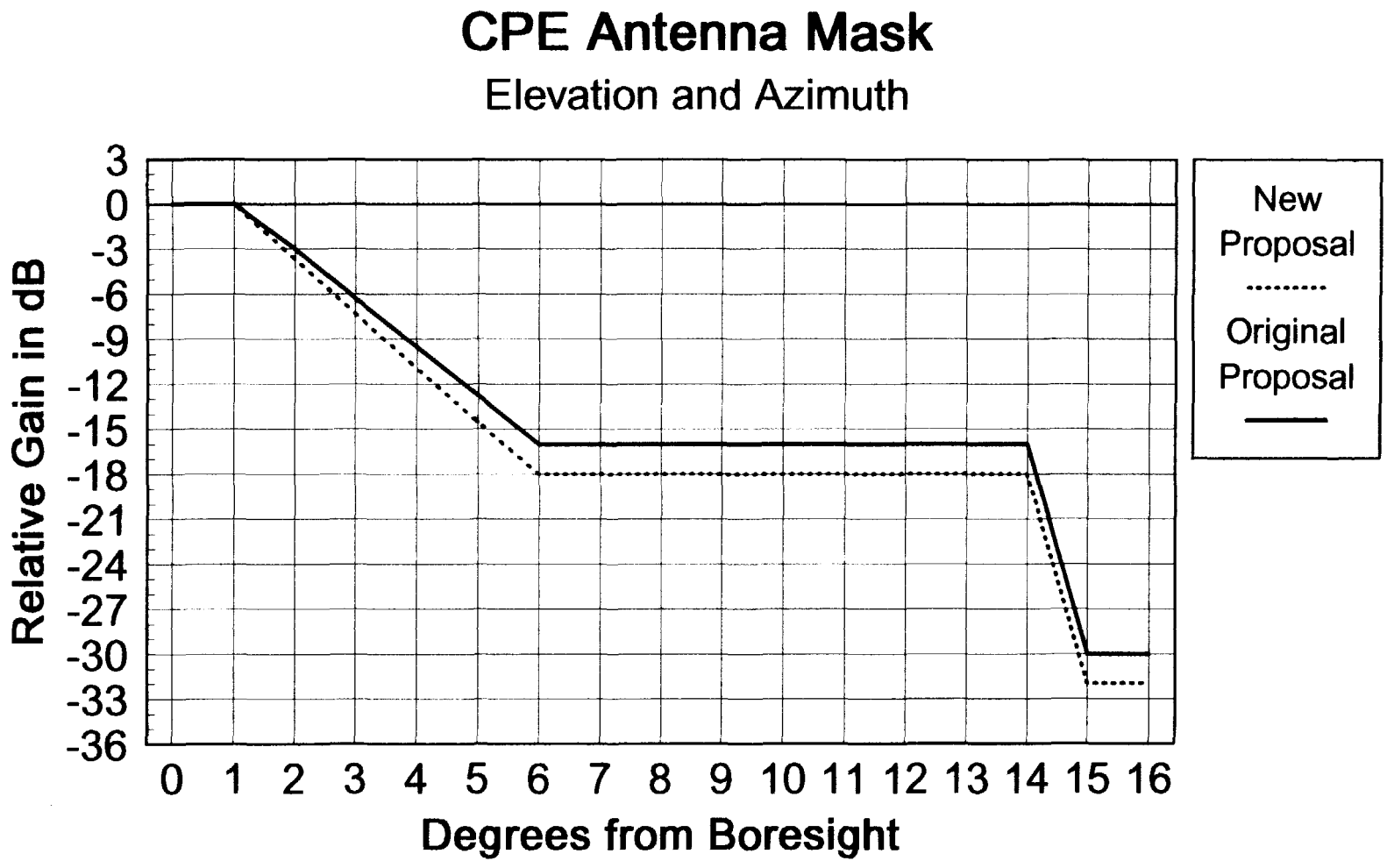
2. Decrease max clear air EIRP in Northeast BTA's from +20 dBW/MHz to +17 dBW/MHz and...

3. Increase satellite feeder uplink power by 3 dB

* alternative could be to decrease max EIRP by 2 dB

Result: 5 dB + 13 dB = 18 dB additional margin in Northeast and 15 dB additional margin elsewhere

Proposed CPE Tx Antenna Mask to Provide Additional Margin



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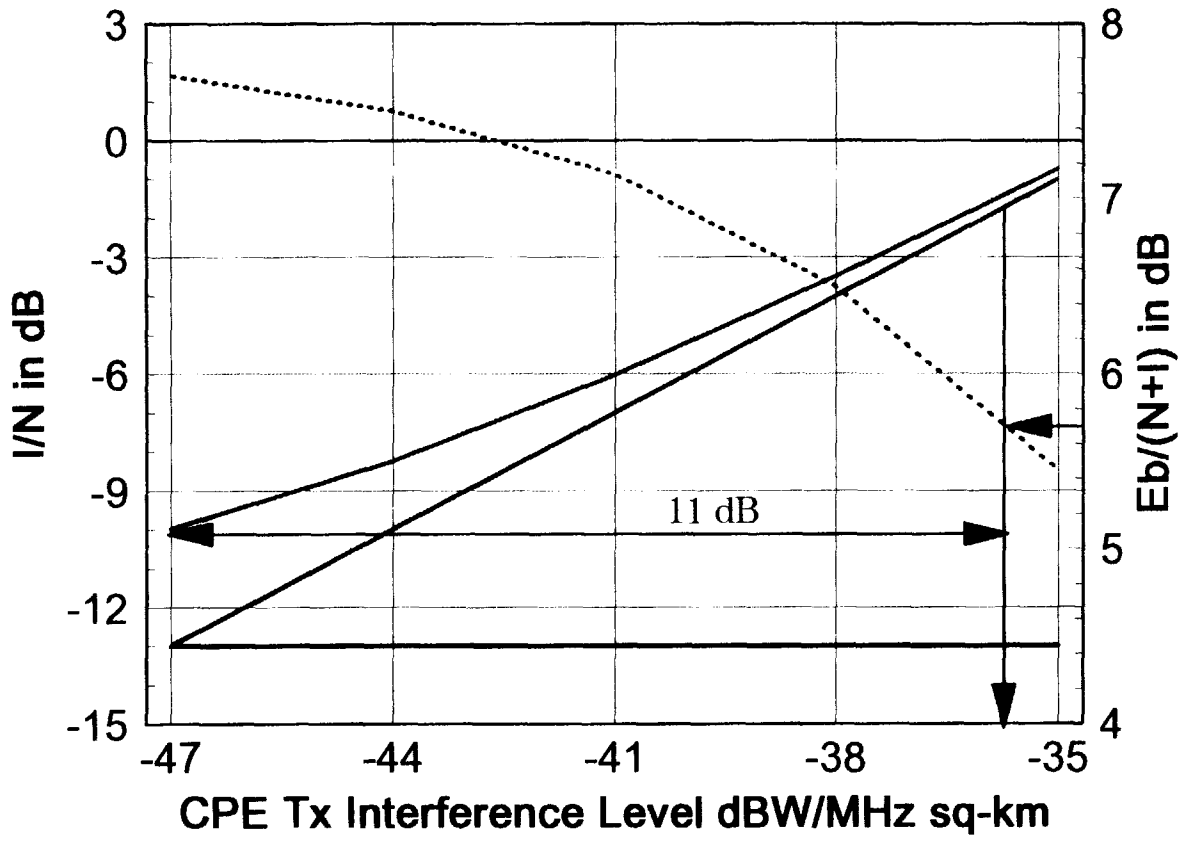
Effect of Interference Level on Eb/(N+I)



LMDS I/N

Other I/N

Total I/N

Eb/(N+I)

Assumes EIRP limit per proposed Rule 21.1020, 21.1021 corresponds to a received interference level at the satellite of -210.5 dBW/Hz

An increase of 2dB in the feeder uplink power provides 11 dB additional tolerance to LMDS interference