

Appendix A2

SR5000 Technical Appendices

SR-5000 Antenna Transmit Pattern Tables

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SR-5000 Antenna Radiation Hazard Study

Description	Page
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Data in support of claim that proposed operation meets criteria of VMES Order July 2009

Applicant	RAS	Date of Application	
	ID Heading		
a1	Antenna Manufacture:	RAS	c Main bore gain (dBi): 30.5
a2	Antenna Model:	SR5000	d Frequency at which gain was measured (GHz): 14.0
a3	Antenna ID:	RAS	e Max input power density (dBW/4kHz): - 20.8
b	Transmit Band (b):	14GHz	Pattern ID Table A1
	Pattern Description:	14.0GHz H-polarization, co-polarized at tangent to the geosynchronous plane for 0°, 37.5°, and 50° skew angle	

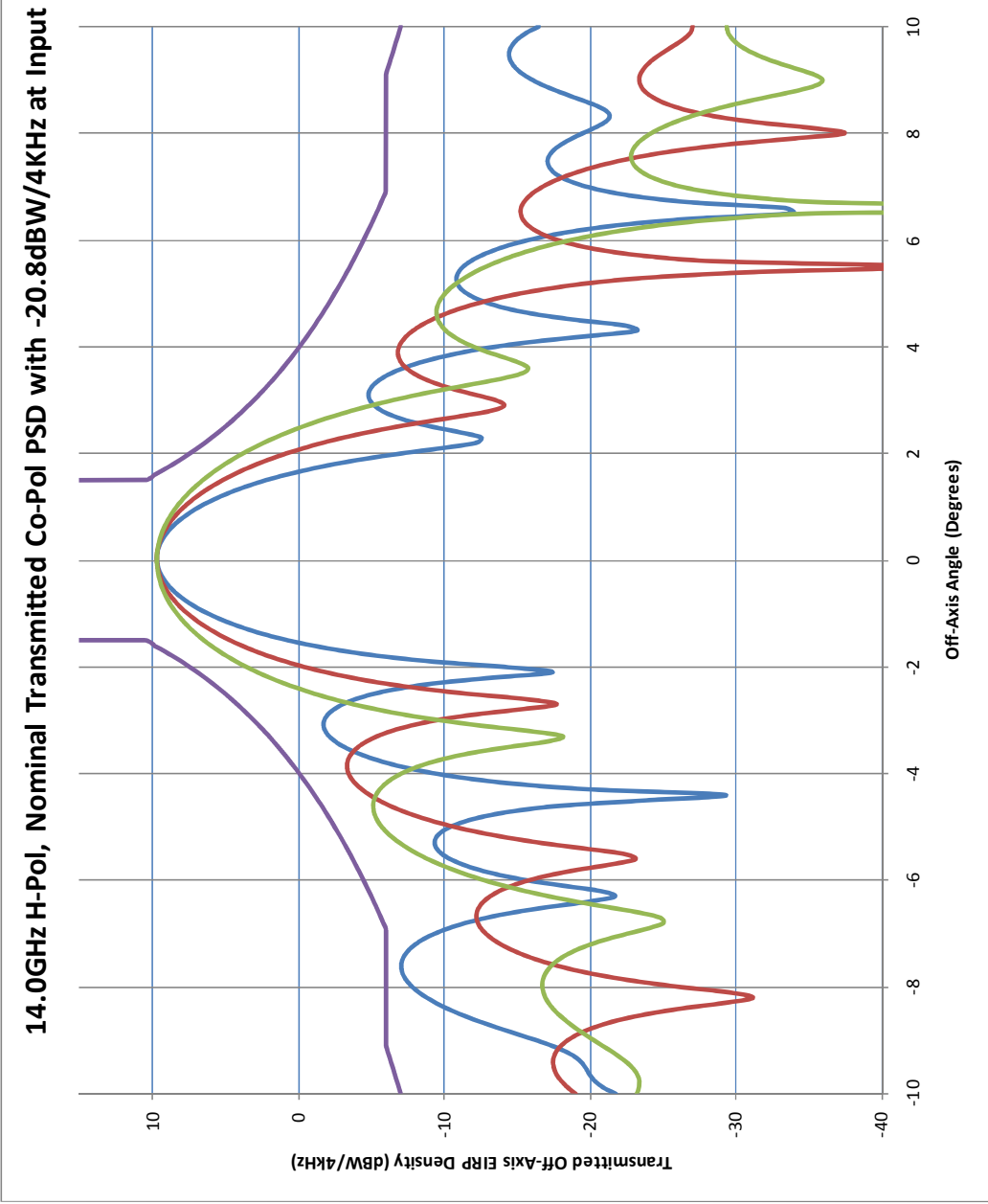
Offset Angles (Degrees)	Nominal Co-Pol Gain Along Tangent to Geo Arc (dBi)			Worst Case Co-Pol Gain Along Tangent to Geo Arc (dBi)			Worst Case Co-Pol PSD Along Tangent to Geo Arc input PSD = -20.8dBW/4kHz (dBW/4kHz)			FCC Mask (dBW/4kHz)	Mask Exceedence (dB)
	0° Skew	37.5° Skew	50° Skew	0° Skew	37.5° Skew	50° Skew	0° Skew	37.5° Skew	50° Skew		
	-180	0.5	0.5	0.5	0.5	0.5	0.5	-20.300	-20.300		
-175	0.5	0.5	0.5	0.5	0.5	0.5	-20.300	-20.300	-20.300	-14.000	-
-170	0.5	0.5	0.5	0.5	0.5	0.5	-20.300	-20.300	-20.300	-14.000	-
-165	0.5	0.5	0.5	0.5	0.5	0.5	-20.300	-20.300	-20.300	-14.000	-
-160	0.5	0.5	0.5	0.5	0.5	0.5	-20.300	-20.300	-20.300	-14.000	-
-155	0.5	0.5	0.5	0.5	0.5	0.5	-20.300	-20.300	-20.300	-14.000	-
-150	0.5	0.5	0.5	0.5	0.5	0.5	-20.300	-20.300	-20.300	-14.000	-
-145	0.5	0.5	0.5	0.5	0.5	0.5	-20.300	-20.300	-20.300	-14.000	-
-140	0.5	0.5	0.5	0.5	0.5	0.5	-20.300	-20.300	-20.300	-14.000	-
-135	0.5	0.5	0.5	0.5	0.5	0.5	-20.300	-20.300	-20.300	-14.000	-
-130	0.5	0.5	0.5	0.5	0.5	0.5	-20.300	-20.300	-20.300	-14.000	-
-125	0.5	0.5	0.5	0.5	0.5	0.5	-20.300	-20.300	-20.300	-14.000	-
-120	0.5	0.5	0.5	0.5	0.5	0.5	-20.300	-20.300	-20.300	-14.000	-
-115	0.5	0.5	0.5	0.5	0.5	0.5	-20.300	-20.300	-20.300	-14.000	-
-110	0.5	0.5	0.5	0.5	0.5	0.5	-20.300	-20.300	-20.300	-14.000	-
-105	0.5	0.5	0.5	0.5	0.5	0.5	-20.300	-20.300	-20.300	-14.000	-
-100	0.5	0.5	0.5	0.5	0.5	0.5	-20.300	-20.300	-20.300	-14.000	-
-95	0.5	0.5	0.5	0.5	0.5	0.5	-20.300	-20.300	-20.300	-14.000	-
-90	-10.199	-26.901	-10.135	-9.931	-25.877	-9.569	-30.731	-46.677	-30.369	-14.000	-
-85	-8.437	-18.388	-6.709	-8.343	-18.140	-6.636	-29.143	-38.940	-27.436	-14.000	-
-80	-6.901	-14.401	-8.448	-6.650	-13.833	-8.139	-27.450	-34.633	-28.939	-24.000	-
-75	-8.199	-9.420	-12.000	-7.306	-9.275	-11.639	-28.106	-30.075	-32.439	-24.000	-
-70	-32.800	-7.753	-13.777	-25.015	-7.463	-12.447	-45.815	-28.263	-33.247	-24.000	-
-65	-20.309	-17.494	-12.612	-18.219	-14.599	-12.135	-39.019	-35.399	-32.935	-24.000	-
-60	-7.465	-16.972	-13.351	-7.291	-14.657	-12.075	-28.091	-35.457	-32.875	-24.000	-
-55	-7.455	-6.623	-4.500	-6.691	-6.564	-4.500	-27.491	-27.364	-25.300	-24.000	-
-50	-25.707	-11.154	-12.364	-12.287	-9.993	-12.255	-33.087	-30.793	-33.055	-24.000	-
-45	-19.492	-26.678	-10.749	-15.638	-17.383	-9.146	-36.438	-38.183	-29.946	-23.330	-
-40	-13.679	-22.748	-12.066	-13.078	-19.855	-11.967	-33.878	-40.655	-32.767	-22.051	-
-35	-15.925	-14.223	-25.177	-15.356	-14.223	-21.012	-36.156	-35.023	-41.812	-20.602	-
-30	-28.243	-21.997	-21.423	-16.302	-19.308	-19.125	-37.102	-40.108	-39.925	-18.928	-
-25	-5.952	-17.978	-7.554	-5.901	-8.365	-6.058	-26.701	-29.165	-26.858	-16.949	-
-20	-5.132	-4.556	-7.421	-5.132	-2.268	-1.122	-25.932	-23.068	-21.922	-14.526	-
-15	-10.555	-16.082	-8.012	-1.252	-12.004	-7.942	-22.052	-32.804	-28.742	-11.402	-
-10	-0.957	1.808	-2.408	1.146	3.312	-0.987	-19.654	-17.488	-21.787	-7.000	-

-9.9	-0.203	2.273	-2.552	1.426	3.355	-1.315	-19.374	-17.445	-22.115	-6.891	-
-9.8	0.317	2.656	-2.597	1.875	3.355	-1.183	-18.925	-17.445	-21.983	-6.781	-
-9.7	0.673	2.960	-2.541	2.541	3.355	-0.644	-18.259	-17.445	-21.444	-6.669	-
-9.6	0.927	3.184	-2.361	3.418	3.355	-0.069	-17.382	-17.445	-20.869	-6.557	-
-9.5	1.146	3.312	-2.067	4.459	3.355	0.510	-16.341	-17.445	-20.290	-6.443	-
-9.4	1.426	3.355	-1.668	5.591	3.355	1.082	-15.209	-17.445	-19.718	-6.328	-
-9.3	1.875	3.286	-1.183	6.727	3.355	1.623	-14.073	-17.445	-19.177	-6.212	-
-9.2	2.541	3.112	-0.644	7.819	3.355	2.132	-12.981	-17.445	-18.668	-6.095	-
-9.1	3.418	2.813	-0.069	8.840	3.355	2.588	-11.960	-17.445	-18.212	-6.000	-
-9	4.459	2.367	0.510	9.781	3.355	2.998	-11.019	-17.445	-17.802	-6.000	-
-8.9	5.591	1.773	1.082	10.625	3.355	3.343	-10.175	-17.445	-17.457	-6.000	-
-8.8	6.727	0.964	1.623	11.362	3.286	3.631	-9.438	-17.514	-17.169	-6.000	-
-8.7	7.819	-0.075	2.132	11.997	3.112	3.848	-8.803	-17.688	-16.952	-6.000	-
-8.6	8.840	-1.413	2.588	12.537	2.813	3.995	-8.263	-17.987	-16.805	-6.000	-
-8.5	9.781	-3.201	2.998	12.982	2.367	4.067	-7.818	-18.433	-16.733	-6.000	-
-8.4	10.625	-5.485	3.343	13.325	1.773	4.067	-7.475	-19.027	-16.733	-6.000	-
-8.3	11.362	-8.317	3.631	13.566	0.964	4.067	-7.234	-19.836	-16.733	-6.000	-
-8.2	11.997	-10.345	3.848	13.709	1.559	4.067	-7.091	-19.241	-16.733	-6.000	-
-8.1	12.537	-8.728	3.995	13.753	3.049	4.067	-7.047	-17.751	-16.733	-6.000	-
-8	12.982	-5.420	4.067	13.753	4.309	4.067	-7.047	-16.491	-16.733	-6.000	-
-7.9	13.325	-2.589	4.055	13.753	5.350	4.067	-7.047	-15.450	-16.733	-6.000	-
-7.8	13.566	-0.306	3.955	13.753	6.208	4.067	-7.047	-14.592	-16.733	-6.000	-
-7.7	13.709	1.559	3.756	13.753	6.932	4.067	-7.047	-13.868	-16.733	-6.000	-
-7.6	13.753	3.049	3.449	13.753	7.502	4.067	-7.047	-13.298	-16.733	-6.000	-
-7.5	13.690	4.309	3.017	13.753	7.955	4.067	-7.047	-12.845	-16.733	-6.000	-
-7.4	13.512	5.350	2.443	13.753	8.290	4.055	-7.047	-12.510	-16.745	-6.000	-
-7.3	13.215	6.208	1.702	13.753	8.499	3.955	-7.047	-12.301	-16.845	-6.000	-
-7.2	12.791	6.932	0.767	13.753	8.602	3.756	-7.047	-12.198	-17.044	-6.000	-
-7.1	12.221	7.502	-0.383	13.753	8.602	3.449	-7.047	-12.198	-17.351	-6.000	-
-7	11.476	7.955	-1.754	13.690	8.602	3.017	-7.110	-12.198	-17.783	-6.000	-
-6.9	10.531	8.290	-3.183	13.512	8.602	2.443	-7.288	-12.198	-18.357	-5.971	-
-6.8	9.354	8.499	-4.236	13.215	8.602	3.581	-7.585	-12.198	-17.219	-5.813	-
-6.7	7.883	8.602	-4.023	12.791	8.602	5.257	-8.009	-12.198	-15.543	-5.652	-
-6.6	6.024	8.572	-2.503	12.221	8.602	6.718	-8.579	-12.198	-14.082	-5.489	-
-6.5	3.669	8.420	-0.394	11.476	8.602	8.025	-9.324	-12.198	-12.775	-5.323	-
-6.4	0.961	8.126	1.696	10.531	8.602	9.169	-10.269	-12.198	-11.631	-5.154	-
-6.3	-0.902	7.666	3.581	9.354	8.602	10.201	-11.446	-12.198	-10.599	-4.984	-
-6.2	0.094	7.036	5.257	9.569	8.602	11.108	-11.231	-12.198	-9.692	-4.810	-
-6.1	2.665	6.164	6.718	10.402	8.572	11.927	-10.398	-12.228	-8.873	-4.633	-
-6	5.085	5.027	8.025	10.989	8.420	12.642	-9.811	-12.380	-8.158	-4.454	-
-5.9	6.993	3.552	9.169	11.337	8.126	13.286	-9.463	-12.674	-7.514	-4.271	-
-5.8	8.454	1.615	10.201	11.461	7.666	13.838	-9.339	-13.134	-6.962	-4.086	-
-5.7	9.569	-0.638	11.108	11.461	7.036	14.325	-9.339	-13.764	-6.475	-3.897	-
-5.6	10.402	-2.312	11.927	11.461	8.419	14.728	-9.339	-12.381	-6.072	-3.705	-
-5.5	10.989	-1.432	12.642	11.461	10.083	15.067	-9.339	-10.717	-5.733	-3.509	-
-5.4	11.337	1.296	13.286	11.461	11.462	15.327	-9.339	-9.338	-5.473	-3.310	-
-5.3	11.461	4.123	13.838	11.461	12.660	15.518	-9.339	-8.140	-5.282	-3.107	-
-5.2	11.364	6.461	14.325	11.461	13.684	15.629	-9.339	-7.116	-5.171	-2.900	-
-5.1	11.029	8.419	14.728	11.461	14.549	15.664	-9.339	-6.251	-5.136	-2.689	-
-5	10.411	10.083	15.067	11.461	15.302	15.664	-9.339	-5.498	-5.136	-2.474	-
-4.9	9.447	11.462	15.327	11.461	15.922	15.664	-9.339	-4.878	-5.136	-2.255	-
-4.8	8.039	12.660	15.518	11.461	16.436	15.664	-9.339	-4.364	-5.136	-2.031	-
-4.7	5.974	13.684	15.629	11.364	16.851	15.664	-9.436	-3.949	-5.136	-1.802	-
-4.6	2.755	14.549	15.664	11.029	17.154	15.664	-9.771	-3.646	-5.136	-1.569	-
-4.5	-3.068	15.302	15.613	11.363	17.364	15.664	-9.437	-3.436	-5.136	-1.330	-
-4.4	-8.470	15.922	15.471	13.244	17.464	15.664	-7.556	-3.336	-5.136	-1.086	-
-4.3	0.470	16.436	15.228	14.729	17.464	15.664	-6.071	-3.336	-5.136	-0.837	-
-4.2	5.583	16.851	14.871	15.926	17.464	15.664	-4.874	-3.336	-5.136	-0.581	-
-4.1	8.915	17.154	14.386	16.896	17.464	15.664	-3.904	-3.336	-5.136	-0.320	-
-4	11.363	17.364	13.743	17.673	17.464	15.613	-3.127	-3.336	-5.187	-0.051	-

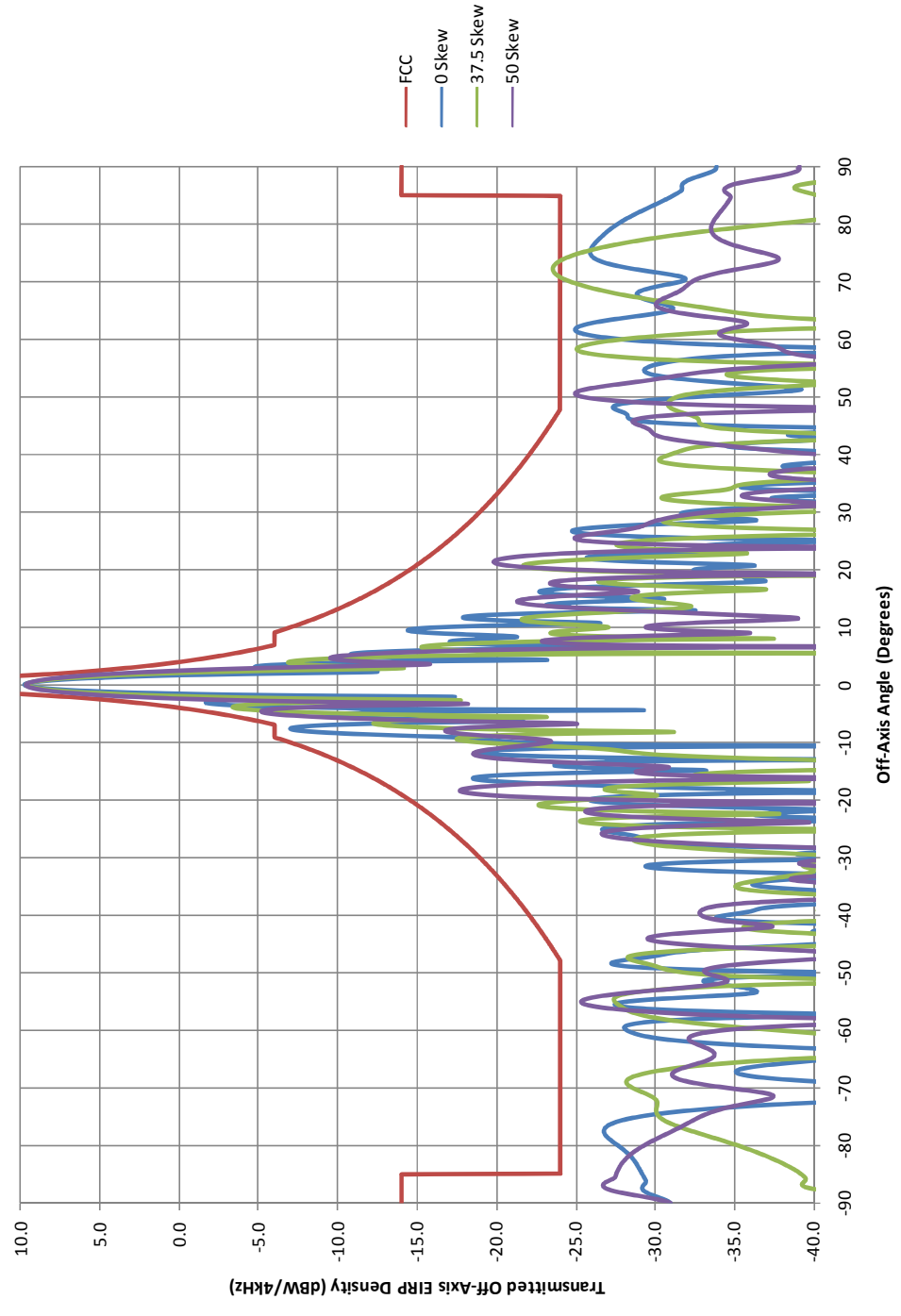
-3.9	13.244	17.464	12.913	18.266	17.464	15.471	-2.534	-3.336	-5.329	0.223	-
-3.8	14.729	17.458	11.845	18.691	17.464	15.228	-2.109	-3.336	-5.572	0.505	-
-3.7	15.926	17.342	10.465	18.961	17.464	14.871	-1.839	-3.336	-5.929	0.795	-
-3.6	16.896	17.091	8.681	19.078	17.464	14.386	-1.722	-3.336	-6.414	1.092	-
-3.5	17.673	16.710	6.360	19.078	17.464	13.743	-1.722	-3.336	-7.057	1.398	-
-3.4	18.266	16.156	3.760	19.078	17.464	13.417	-1.722	-3.336	-7.383	1.713	-
-3.3	18.691	15.408	2.661	19.078	17.458	15.343	-1.722	-3.342	-5.457	2.037	-
-3.2	18.961	14.427	5.002	19.078	17.342	17.017	-1.722	-3.458	-3.783	2.371	-
-3.1	19.078	13.097	8.268	19.078	17.091	18.442	-1.722	-3.709	-2.358	2.716	-
-3	19.033	11.349	11.074	19.078	16.710	19.724	-1.722	-4.090	-1.076	3.072	-
-2.9	18.811	8.966	13.417	19.078	16.156	20.839	-1.722	-4.644	0.039	3.440	-
-2.8	18.395	5.743	15.343	19.078	15.408	21.866	-1.722	-5.392	1.066	3.821	-
-2.7	17.759	3.101	17.017	19.078	17.185	22.769	-1.722	-3.615	1.969	4.216	-
-2.6	16.851	5.350	18.442	19.078	18.914	23.612	-1.722	-1.886	2.812	4.626	-
-2.5	15.576	9.309	19.724	19.033	20.409	24.358	-1.767	-0.391	3.558	5.051	-
-2.4	13.783	12.536	20.839	18.811	21.679	25.060	-1.989	0.879	4.260	5.495	-
-2.3	11.221	15.129	21.866	18.395	22.814	25.684	-2.405	2.014	4.884	5.957	-
-2.2	7.434	17.185	22.769	17.759	23.815	26.272	-3.041	3.015	5.472	6.439	-
-2.1	3.384	18.914	23.612	19.815	24.697	26.795	-0.985	3.897	5.995	6.945	-
-2	6.673	20.409	24.358	21.542	25.503	27.287	0.742	4.703	6.487	7.474	-
-1.9	11.569	21.679	25.060	22.996	26.213	27.724	2.196	5.413	6.924	8.031	-
-1.8	15.087	22.814	25.684	24.226	26.851	28.135	3.426	6.051	7.335	8.618	-
-1.7	17.723	23.815	26.272	25.283	27.433	28.496	4.483	6.633	7.696	9.239	-
-1.6	19.815	24.697	26.795	26.202	27.941	28.834	5.402	7.141	8.034	9.897	-
-1.5	21.542	25.503	27.287	27.006	28.402	29.128	6.206	7.602	8.328	10.598	-
-1.4	22.996	26.213	27.724	27.707	28.810	29.399	6.907	8.010	8.599	-	-
-1.3	24.226	26.851	28.135	28.307	29.165	29.631	7.507	8.365	8.831	-	-
-1.2	25.283	27.433	28.496	28.822	29.480	29.840	8.022	8.680	9.040	-	-
-1.1	26.202	27.941	28.834	29.261	29.746	30.015	8.461	8.946	9.215	-	-
-1	27.006	28.402	29.128	29.630	29.970	30.166	8.830	9.170	9.366	-	-
-0.9	27.707	28.810	29.399	29.931	30.157	30.285	9.131	9.357	9.485	-	-
-0.8	28.307	29.165	29.631	30.164	30.299	30.381	9.364	9.499	9.581	-	-
-0.7	28.822	29.480	29.840	30.335	30.406	30.446	9.535	9.606	9.646	-	-
-0.6	29.261	29.746	30.015	30.446	30.472	30.488	9.646	9.672	9.688	-	-
-0.5	29.630	29.970	30.166	30.500	30.500	30.500	9.700	9.700	9.700	-	-
-0.4	29.931	30.157	30.285	30.500	30.500	30.500	9.700	9.700	9.700	-	-
-0.3	30.164	30.299	30.381	30.500	30.500	30.500	9.700	9.700	9.700	-	-
-0.2	30.335	30.406	30.446	30.500	30.500	30.500	9.700	9.700	9.700	-	-
-0.1	30.446	30.472	30.488	30.500	30.500	30.500	9.700	9.700	9.700	-	-
0	30.500	30.500	30.500	30.500	30.500	30.500	9.700	9.700	9.700	-	-
0.1	30.492	30.493	30.490	30.500	30.500	30.500	9.700	9.700	9.700	-	-
0.2	30.424	30.444	30.448	30.500	30.500	30.500	9.700	9.700	9.700	-	-
0.3	30.298	30.361	30.385	30.500	30.500	30.500	9.700	9.700	9.700	-	-
0.4	30.113	30.238	30.290	30.500	30.500	30.500	9.700	9.700	9.700	-	-
0.5	29.867	30.073	30.173	30.500	30.500	30.500	9.700	9.700	9.700	-	-
0.6	29.552	29.875	30.023	30.492	30.493	30.490	9.692	9.693	9.690	-	-
0.7	29.171	29.629	29.852	30.424	30.444	30.448	9.624	9.644	9.648	-	-
0.8	28.722	29.344	29.645	30.298	30.361	30.385	9.498	9.561	9.585	-	-
0.9	28.200	29.019	29.416	30.113	30.238	30.290	9.313	9.438	9.490	-	-
1	27.596	28.640	29.150	29.867	30.073	30.173	9.067	9.273	9.373	-	-
1.1	26.898	28.223	28.862	29.552	29.875	30.023	8.752	9.075	9.223	-	-
1.2	26.103	27.751	28.532	29.171	29.629	29.852	8.371	8.829	9.052	-	-
1.3	25.205	27.222	28.180	28.722	29.344	29.645	7.922	8.544	8.845	-	-
1.4	24.187	26.648	27.783	28.200	29.019	29.416	7.400	8.219	8.616	-	-
1.5	23.023	25.999	27.361	27.596	28.640	29.150	6.796	7.840	8.350	10.598	-
1.6	21.677	25.291	26.891	26.898	28.223	28.862	6.098	7.423	8.062	9.897	-
1.7	20.129	24.517	26.393	26.103	27.751	28.532	5.303	6.951	7.732	9.239	-
1.8	18.339	23.643	25.841	25.205	27.222	28.180	4.405	6.422	7.380	8.618	-
1.9	16.242	22.698	25.257	24.187	26.648	27.783	3.387	5.848	6.983	8.031	-

2	13.769	21.645	24.614	23.023	25.999	27.361	2.223	5.199	6.561	7.474	-
2.1	10.984	20.460	23.931	21.677	25.291	26.891	0.877	4.491	6.091	6.945	-
2.2	8.622	19.162	23.181	20.129	24.517	26.393	-0.671	3.717	5.593	6.439	-
2.3	8.261	17.675	22.381	18.339	23.643	25.841	-2.461	2.843	5.041	5.957	-
2.4	9.770	16.005	21.505	16.242	22.698	25.257	-4.558	1.898	4.457	5.495	-
2.5	11.603	14.123	20.561	15.903	21.645	24.614	-4.897	0.845	3.814	5.051	-
2.6	13.134	11.960	19.529	15.995	20.460	23.931	-4.805	-0.340	3.131	4.626	-
2.7	14.276	9.677	18.404	15.995	19.162	23.181	-4.805	-1.638	2.381	4.216	-
2.8	15.076	7.605	17.170	15.995	17.675	22.381	-4.805	-3.125	1.581	3.821	-
2.9	15.604	6.692	15.806	15.995	16.005	21.505	-4.805	-4.795	0.705	3.440	-
3	15.903	7.294	14.304	15.995	14.123	20.561	-4.805	-6.677	-0.239	3.072	-
3.1	15.995	8.676	12.630	15.995	13.403	19.529	-4.805	-7.397	-1.271	2.716	-
3.2	15.890	10.091	10.799	15.995	13.749	18.404	-4.805	-7.051	-2.396	2.371	-
3.3	15.602	11.253	8.829	15.995	13.930	17.170	-4.805	-6.870	-3.630	2.037	-
3.4	15.136	12.201	6.910	15.995	13.985	15.806	-4.805	-6.815	-4.994	1.713	-
3.5	14.483	12.898	5.480	15.995	13.985	14.304	-4.805	-6.815	-6.496	1.398	-
3.6	13.620	13.403	5.030	15.995	13.985	12.630	-4.805	-6.815	-8.170	1.092	-
3.7	12.520	13.749	5.651	15.890	13.985	10.799	-4.910	-6.815	-10.001	0.795	-
3.8	11.155	13.930	6.681	15.602	13.985	10.677	-5.198	-6.815	-10.123	0.505	-
3.9	9.459	13.985	7.817	15.136	13.985	11.000	-5.664	-6.815	-9.800	0.223	-
4	7.313	13.908	8.764	14.483	13.985	11.220	-6.317	-6.815	-9.580	-0.051	-
4.1	4.529	13.712	9.583	13.620	13.985	11.312	-7.180	-6.815	-9.488	-0.320	-
4.2	0.955	13.400	10.191	12.520	13.985	11.314	-8.280	-6.815	-9.486	-0.581	-
4.3	-2.385	12.962	10.677	11.155	13.985	11.314	-9.645	-6.815	-9.486	-0.837	-
4.4	-1.532	12.412	11.000	9.459	13.985	11.314	-11.341	-6.815	-9.486	-1.086	-
4.5	1.667	11.720	11.220	9.267	13.908	11.314	-11.533	-6.892	-9.486	-1.330	-
4.6	4.317	10.891	11.312	9.706	13.712	11.314	-11.094	-7.088	-9.486	-1.569	-
4.7	6.240	9.908	11.314	9.930	13.400	11.314	-10.870	-7.400	-9.486	-1.802	-
4.8	7.608	8.711	11.209	9.961	12.962	11.314	-10.839	-7.838	-9.486	-2.031	-
4.9	8.586	7.307	11.021	9.961	12.412	11.314	-10.839	-8.388	-9.486	-2.255	-
5	9.267	5.587	10.737	9.961	11.720	11.314	-10.839	-9.080	-9.486	-2.474	-
5.1	9.706	3.427	10.369	9.961	10.891	11.314	-10.839	-9.909	-9.486	-2.689	-
5.2	9.930	0.657	9.908	9.961	9.908	11.314	-10.839	-10.892	-9.486	-2.900	-
5.3	9.961	-3.381	9.357	9.961	8.711	11.209	-10.839	-12.089	-9.591	-3.107	-
5.4	9.819	-10.442	8.709	9.961	7.307	11.021	-10.839	-13.493	-9.779	-3.310	-
5.5	9.510	-22.078	7.956	9.961	5.587	10.737	-10.839	-15.213	-10.063	-3.509	-
5.6	9.026	-7.920	7.091	9.961	4.012	10.369	-10.839	-16.788	-10.431	-3.705	-
5.7	8.353	-3.075	6.099	9.961	4.698	9.908	-10.839	-16.102	-10.892	-3.897	-
5.8	7.487	-0.224	4.958	9.961	5.165	9.357	-10.839	-15.635	-11.443	-4.086	-
5.9	6.401	1.695	3.647	9.819	5.455	8.709	-10.981	-15.345	-12.091	-4.271	-
6	5.044	3.026	2.111	9.510	5.570	7.956	-11.290	-15.230	-12.844	-4.454	-
6.1	3.324	4.012	0.306	9.026	5.570	7.091	-11.774	-15.230	-13.709	-4.633	-
6.2	1.098	4.698	-1.906	8.353	5.570	6.099	-12.447	-15.230	-14.701	-4.810	-
6.3	-1.870	5.165	-4.690	7.487	5.570	4.958	-13.313	-15.230	-15.842	-4.984	-
6.4	-6.185	5.455	-8.564	6.401	5.570	3.647	-14.399	-15.230	-17.153	-5.154	-
6.5	-13.091	5.570	-14.881	5.044	5.570	2.111	-15.756	-15.230	-18.689	-5.323	-
6.6	-12.578	5.548	-42.362	3.324	5.570	0.306	-17.476	-15.230	-20.494	-5.489	-
6.7	-6.427	5.379	-15.973	2.933	5.570	-1.906	-17.867	-15.230	-22.706	-5.652	-
6.8	-2.851	5.080	-10.362	3.414	5.570	-2.633	-17.386	-15.230	-23.433	-5.813	-
6.9	-0.551	4.647	-7.403	3.663	5.570	-2.240	-17.137	-15.230	-23.040	-5.971	-
7	1.038	4.067	-5.459	3.711	5.570	-2.054	-17.089	-15.230	-22.854	-6.000	-
7.1	2.162	3.353	-4.163	3.711	5.548	-2.026	-17.089	-15.252	-22.826	-6.000	-
7.2	2.933	2.460	-3.238	3.711	5.379	-2.026	-17.089	-15.421	-22.826	-6.000	-
7.3	3.414	1.393	-2.633	3.711	5.080	-2.026	-17.089	-15.720	-22.826	-6.000	-
7.4	3.663	0.116	-2.240	3.711	4.647	-2.026	-17.089	-16.153	-22.826	-6.000	-
7.5	3.711	-1.462	-2.054	3.711	4.067	-2.026	-17.089	-16.733	-22.826	-6.000	-
7.6	3.568	-3.355	-2.026	3.711	3.353	-2.026	-17.089	-17.447	-22.826	-6.000	-
7.7	3.239	-5.761	-2.156	3.711	2.460	-2.026	-17.089	-18.340	-22.826	-6.000	-
7.8	2.738	-8.901	-2.426	3.711	1.393	-2.026	-17.089	-19.407	-22.826	-6.000	-
7.9	2.089	-12.970	-2.835	3.711	0.116	-2.026	-17.089	-20.684	-22.826	-6.000	-

8	1.330	-16.618	-3.383	3.711	-1.462	-2.026	-17.089	-22.262	-22.826	-6.000	-
8.1	0.532	-14.403	-4.071	3.568	-3.355	-2.026	-17.232	-24.155	-22.826	-6.000	-
8.2	-0.160	-10.821	-4.912	3.239	-3.344	-2.156	-17.561	-24.144	-22.956	-6.000	-
8.3	-0.527	-8.140	-5.907	3.138	-2.887	-2.426	-17.662	-23.687	-23.226	-6.000	-
8.4	-0.398	-6.309	-7.086	4.013	-2.644	-2.835	-16.787	-23.444	-23.635	-6.000	-
8.5	0.219	-4.969	-8.437	4.760	-2.560	-3.383	-16.040	-23.360	-24.183	-6.000	-
8.6	1.144	-4.004	-10.000	5.364	-2.560	-4.071	-15.436	-23.360	-24.871	-6.000	-
8.7	2.162	-3.344	-11.690	5.820	-2.560	-4.912	-14.980	-23.360	-25.712	-6.000	-
8.8	3.138	-2.887	-13.412	6.134	-2.560	-5.907	-14.666	-23.360	-26.707	-6.000	-
8.9	4.013	-2.644	-14.722	6.313	-2.560	-7.086	-14.487	-23.360	-27.886	-6.000	-
9	4.760	-2.560	-15.153	6.356	-2.560	-8.437	-14.444	-23.360	-29.237	-6.000	-
9.1	5.364	-2.620	-14.581	6.356	-2.560	-9.729	-14.444	-23.360	-30.529	-6.000	-
9.2	5.820	-2.826	-13.485	6.356	-2.560	-9.224	-14.444	-23.360	-30.024	-6.095	-
9.3	6.134	-3.143	-12.319	6.356	-2.560	-8.867	-14.444	-23.360	-29.667	-6.212	-
9.4	6.313	-3.576	-11.269	6.356	-2.560	-8.656	-14.444	-23.360	-29.456	-6.328	-
9.5	6.356	-4.094	-10.412	6.356	-2.560	-8.569	-14.444	-23.360	-29.369	-6.443	-
9.6	6.253	-4.661	-9.729	6.356	-2.620	-8.569	-14.444	-23.420	-29.369	-6.557	-
9.7	6.005	-5.245	-9.224	6.356	-2.826	-8.569	-14.444	-23.626	-29.369	-6.669	-
9.8	5.613	-5.749	-8.867	6.356	-3.143	-8.569	-14.444	-23.943	-29.369	-6.781	-
9.9	5.062	-6.097	-8.656	6.356	-3.576	-8.569	-14.444	-24.376	-29.369	-6.891	-
10	4.329	-6.215	-8.569	6.356	-3.731	-8.569	-14.444	-24.531	-29.369	-7.000	-
15	-9.501	-7.726	-1.270	-4.448	-7.678	-0.463	-25.248	-28.478	-21.263	-11.402	-
20	-11.704	-3.035	-4.070	-11.645	-0.990	-0.699	-32.445	-21.790	-21.499	-14.526	-
25	-23.269	-8.216	-4.818	-11.548	-6.780	-4.082	-32.348	-27.580	-24.882	-16.949	-
30	-11.133	-18.374	-12.631	-10.882	-13.813	-11.048	-31.682	-34.613	-31.848	-18.928	-
35	-18.065	-15.324	-25.458	-14.734	-14.242	-19.940	-35.534	-35.042	-40.740	-20.602	-
40	-21.673	-10.106	-19.657	-19.948	-9.603	-17.320	-40.748	-30.403	-38.120	-22.051	-
45	-13.829	-12.326	-8.260	-9.537	-11.964	-7.822	-30.337	-32.764	-28.622	-23.330	-
50	-11.654	-10.552	-4.600	-9.227	-10.151	-4.124	-30.027	-30.951	-24.924	-24.000	-
55	-8.668	-20.702	-15.022	-8.544	-15.211	-12.835	-29.344	-36.011	-33.635	-24.000	-
60	-7.177	-7.062	-14.277	-5.584	-5.669	-13.486	-26.384	-26.469	-34.286	-24.000	-
65	-10.184	-13.422	-9.964	-9.307	-12.241	-9.408	-30.107	-33.041	-30.208	-24.000	-
70	-10.799	-3.844	-11.480	-9.938	-3.398	-11.230	-30.738	-24.198	-32.030	-24.000	-
75	-5.147	-4.440	-16.026	-5.142	-3.880	-15.269	-25.942	-24.680	-36.069	-24.000	-
80	-6.857	-16.490	-12.754	-6.591	-14.720	-12.698	-27.391	-35.520	-33.498	-24.000	-
85	-10.395	-19.434	-13.864	-10.052	-18.733	-13.621	-30.852	-39.533	-34.421	-14.000	-
90	-13.102	-26.423	-18.257	-13.043	-26.345	-18.171	-33.843	-47.145	-38.971	-14.000	-
95	0.5	0.5	0.5	0.5	0.5	0.5	-20.300	-20.300	-20.300	-14.000	-
100	0.5	0.5	0.5	0.5	0.5	0.5	-20.300	-20.300	-20.300	-14.000	-
105	0.5	0.5	0.5	0.5	0.5	0.5	-20.300	-20.300	-20.300	-14.000	-
110	0.5	0.5	0.5	0.5	0.5	0.5	-20.300	-20.300	-20.300	-14.000	-
115	0.5	0.5	0.5	0.5	0.5	0.5	-20.300	-20.300	-20.300	-14.000	-
120	0.5	0.5	0.5	0.5	0.5	0.5	-20.300	-20.300	-20.300	-14.000	-
125	0.5	0.5	0.5	0.5	0.5	0.5	-20.300	-20.300	-20.300	-14.000	-
130	0.5	0.5	0.5	0.5	0.5	0.5	-20.300	-20.300	-20.300	-14.000	-
135	0.5	0.5	0.5	0.5	0.5	0.5	-20.300	-20.300	-20.300	-14.000	-
140	0.5	0.5	0.5	0.5	0.5	0.5	-20.300	-20.300	-20.300	-14.000	-
145	0.5	0.5	0.5	0.5	0.5	0.5	-20.300	-20.300	-20.300	-14.000	-
150	0.5	0.5	0.5	0.5	0.5	0.5	-20.300	-20.300	-20.300	-14.000	-
155	0.5	0.5	0.5	0.5	0.5	0.5	-20.300	-20.300	-20.300	-14.000	-
160	0.5	0.5	0.5	0.5	0.5	0.5	-20.300	-20.300	-20.300	-14.000	-
165	0.5	0.5	0.5	0.5	0.5	0.5	-20.300	-20.300	-20.300	-14.000	-
170	0.5	0.5	0.5	0.5	0.5	0.5	-20.300	-20.300	-20.300	-14.000	-
175	0.5	0.5	0.5	0.5	0.5	0.5	-20.300	-20.300	-20.300	-14.000	-
180	0.5	0.5	0.5	0.5	0.5	0.5	-20.300	-20.300	-20.300	-14.000	-



14.0GHz H-Pol Nominal Transmitted Co-Pol PSD with -20.8dBW/4kHz at Input



Data in support of claim that proposed operation meets criteria of VMES Order July 2009

Applicant	RAS	Date of Application	
ID Heading			
a1 Antenna Manufacture:	RAS	c Main bore gain (dBi):	30.5
a2 Antenna Model:	SR5000	d Frequency at which gain was measured (GHz):	14.0
a3 Antenna ID:	RAS	e Max input power density (dBW/4kHz):	-20.8
b Transmit Band (b):	14GHz	Pattern ID	Table A2
Pattern Description:	14.0GHz V-polarization, co-polarized at tangent to the geosynchronous plane for 0°, 37.5°, and 50° skew angle		

Offset Angles (Degrees)	Nominal Co-Pol Gain Along Tangent to Geo Arc (dBi)			Worst Case Co-Pol Gain Along Tangent to Geo Arc (dBi)			Worst Case Co-Pol PSD Along Tangent to Geo Arc input PSD = -20.8dBW/4kHz (dBW/4kHz)			FCC Mask (dBW/4kHz)	Mask Exceedence (dB)
	0° Skew	37.5° Skew	50° Skew	0° Skew	37.5° Skew	50° Skew	0° Skew	37.5° Skew	50° Skew		
	-180	0.5	0.5	0.5	0.5	0.5	0.5	-20.300	-20.300	-20.300	-14.000
-175	0.5	0.5	0.5	0.5	0.5	0.5	-20.300	-20.300	-20.300	-14.000	-
-170	0.5	0.5	0.5	0.5	0.5	0.5	-20.300	-20.300	-20.300	-14.000	-
-165	0.5	0.5	0.5	0.5	0.5	0.5	-20.300	-20.300	-20.300	-14.000	-
-160	0.5	0.5	0.5	0.5	0.5	0.5	-20.300	-20.300	-20.300	-14.000	-
-155	0.5	0.5	0.5	0.5	0.5	0.5	-20.300	-20.300	-20.300	-14.000	-
-150	0.5	0.5	0.5	0.5	0.5	0.5	-20.300	-20.300	-20.300	-14.000	-
-145	0.5	0.5	0.5	0.5	0.5	0.5	-20.300	-20.300	-20.300	-14.000	-
-140	0.5	0.5	0.5	0.5	0.5	0.5	-20.300	-20.300	-20.300	-14.000	-
-135	0.5	0.5	0.5	0.5	0.5	0.5	-20.300	-20.300	-20.300	-14.000	-
-130	0.5	0.5	0.5	0.5	0.5	0.5	-20.300	-20.300	-20.300	-14.000	-
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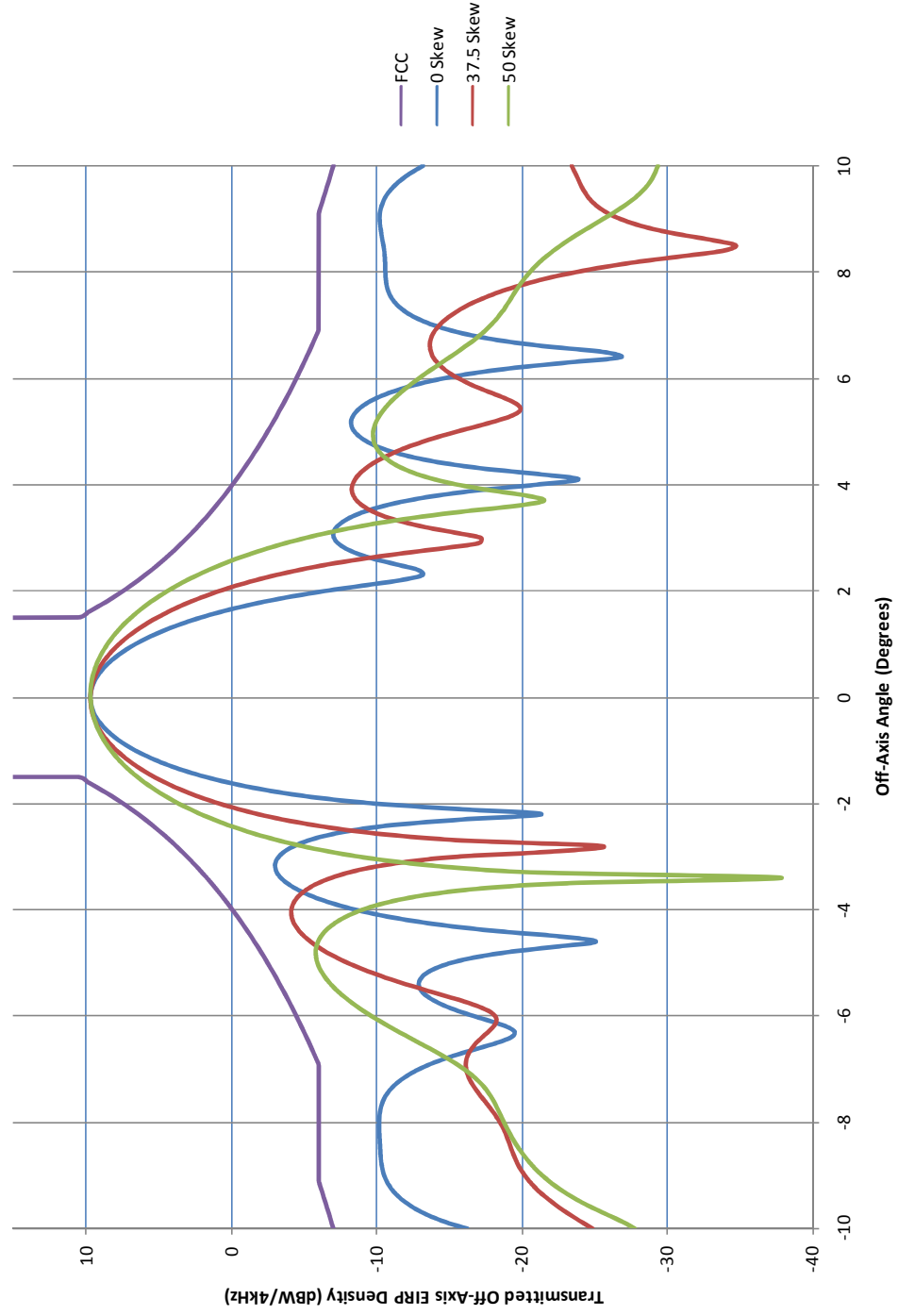
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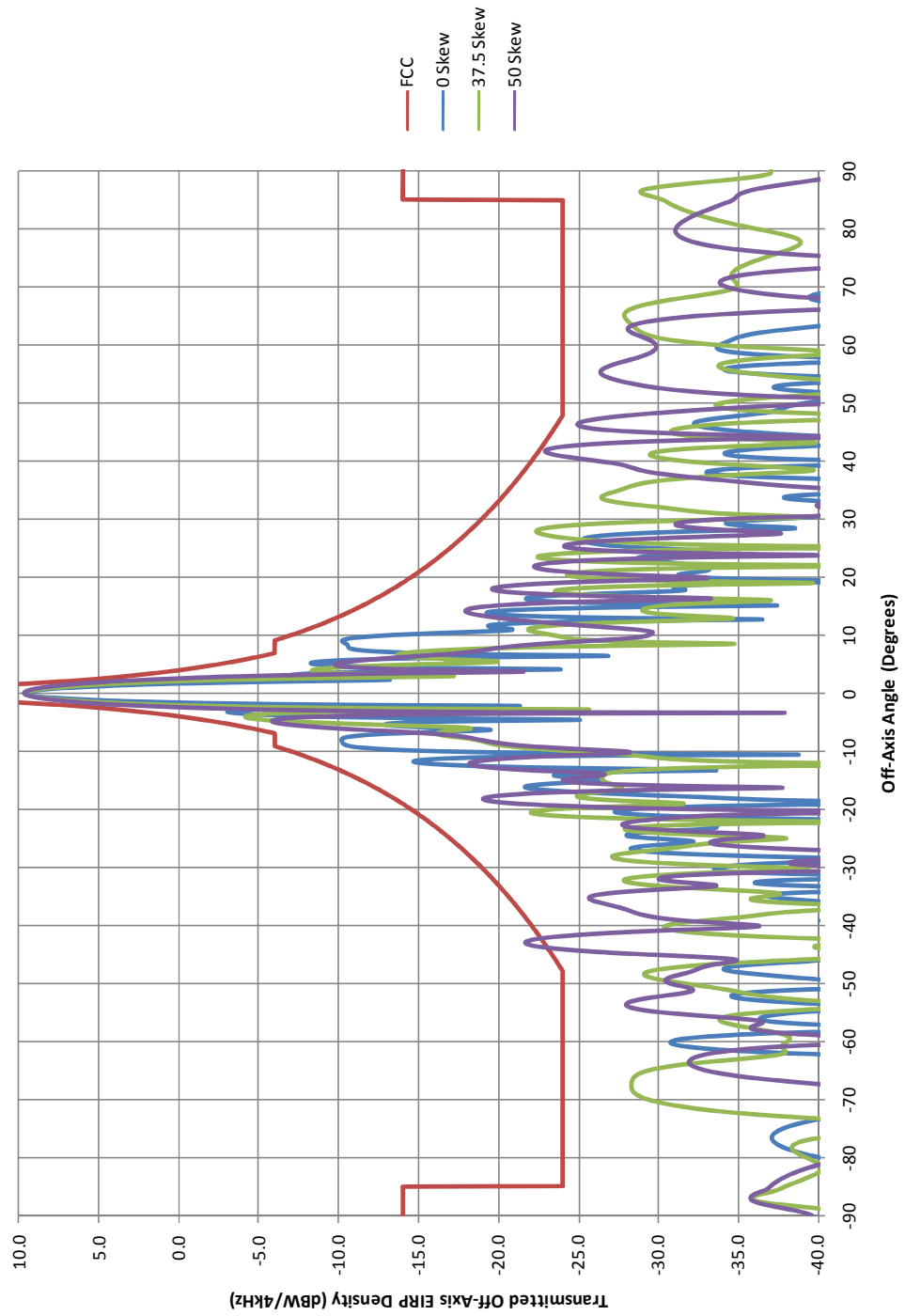
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2.8	12.949	6.335	18.336	13.789	17.715	23.135	-7.011	-3.085	2.335	3.821	-
2.9	13.484	3.764	17.082	13.789	16.053	22.336	-7.011	-4.747	1.536	3.440	-
3	13.758	3.610	15.670	13.789	14.163	21.461	-7.011	-6.637	0.661	3.072	-
3.1	13.789	5.436	14.100	13.789	11.893	20.514	-7.011	-8.907	-0.286	2.716	-
3.2	13.585	7.409	12.275	13.789	12.162	19.477	-7.011	-8.638	-1.323	2.371	-
3.3	13.159	8.999	10.192	13.789	12.404	18.336	-7.011	-8.396	-2.464	2.037	-
3.4	12.503	10.222	7.658	13.789	12.505	17.082	-7.011	-8.295	-3.718	1.713	-
3.5	11.585	11.099	4.696	13.789	12.505	15.670	-7.011	-8.295	-5.130	1.398	-
3.6	10.347	11.734	1.264	13.789	12.505	14.100	-7.011	-8.295	-6.700	1.092	-
3.7	8.707	12.162	-0.727	13.585	12.505	12.275	-7.215	-8.295	-8.525	0.795	-
3.8	6.559	12.404	0.586	13.159	12.505	10.192	-7.641	-8.295	-10.608	0.505	-
3.9	3.675	12.505	3.082	12.503	12.505	9.667	-8.297	-8.295	-11.133	0.223	-
4	-0.169	12.456	5.211	11.585	12.505	10.181	-9.215	-8.295	-10.619	-0.051	-
4.1	-3.059	12.287	6.804	10.347	12.505	10.569	-10.453	-8.295	-10.231	-0.320	-
4.2	-0.300	11.998	8.040	10.611	12.505	10.821	-10.189	-8.295	-9.979	-0.581	-
4.3	3.362	11.581	8.953	11.413	12.505	10.984	-9.387	-8.295	-9.816	-0.837	-
4.4	6.061	11.063	9.667	11.980	12.505	11.046	-8.820	-8.295	-9.754	-1.086	-
4.5	8.034	10.410	10.181	12.352	12.456	11.046	-8.448	-8.344	-9.754	-1.330	-
4.6	9.509	9.641	10.569	12.547	12.287	11.046	-8.253	-8.513	-9.754	-1.569	-
4.7	10.611	8.757	10.821	12.571	11.998	11.046	-8.229	-8.802	-9.754	-1.802	-
4.8	11.413	7.710	10.984	12.571	11.581	11.046	-8.229	-9.219	-9.754	-2.031	-
4.9	11.980	6.556	11.046	12.571	11.063	11.046	-8.229	-9.737	-9.754	-2.255	-
5	12.352	5.274	11.039	12.571	10.410	11.046	-8.229	-10.390	-9.754	-2.474	-
5.1	12.547	3.885	10.953	12.571	9.641	11.046	-8.229	-11.159	-9.754	-2.689	-
5.2	12.571	2.566	10.810	12.571	8.757	11.046	-8.229	-12.043	-9.754	-2.900	-
5.3	12.433	1.469	10.603	12.571	7.710	11.046	-8.229	-13.090	-9.754	-3.107	-
5.4	12.140	0.912	10.348	12.571	6.556	11.046	-8.229	-14.244	-9.754	-3.310	-
5.5	11.688	1.062	10.039	12.571	5.274	11.039	-8.229	-15.526	-9.761	-3.509	-
5.6	11.059	1.733	9.690	12.571	5.783	10.953	-8.229	-15.017	-9.847	-3.705	-
5.7	10.229	2.629	9.294	12.571	6.264	10.810	-8.229	-14.536	-9.990	-3.897	-
5.8	9.184	3.575	8.867	12.433	6.636	10.603	-8.367	-14.164	-10.197	-4.086	-
5.9	7.881	4.431	8.399	12.140	6.904	10.348	-8.660	-13.896	-10.452	-4.271	-
6	6.240	5.161	7.912	11.688	7.060	10.039	-9.112	-13.740	-10.761	-4.454	-
6.1	4.124	5.783	7.391	11.059	7.132	9.690	-9.741	-13.668	-11.110	-4.633	-
6.2	1.327	6.264	6.865	10.229	7.132	9.294	-10.571	-13.668	-11.506	-4.810	-
6.3	-2.345	6.636	6.314	9.184	7.132	8.867	-11.616	-13.668	-11.933	-4.984	-
6.4	-5.979	6.904	5.779	7.881	7.132	8.399	-12.919	-13.668	-12.401	-5.154	-
6.5	-4.705	7.060	5.230	6.873	7.132	7.912	-13.927	-13.668	-12.888	-5.323	-
6.6	-0.964	7.132	4.721	7.810	7.132	7.391	-12.990	-13.668	-13.409	-5.489	-
6.7	1.978	7.102	4.212	8.531	7.132	6.865	-12.269	-13.668	-13.935	-5.652	-
6.8	4.095	6.985	3.763	9.068	7.132	6.314	-11.732	-13.668	-14.486	-5.813	-
6.9	5.668	6.783	3.326	9.468	7.132	5.779	-11.332	-13.668	-15.021	-5.971	-
7	6.873	6.481	2.959	9.761	7.132	5.230	-11.039	-13.668	-15.570	-6.000	-
7.1	7.810	6.102	2.609	9.967	7.132	4.721	-10.833	-13.668	-16.079	-6.000	-
7.2	8.531	5.616	2.322	10.097	7.102	4.212	-10.703	-13.698	-16.588	-6.000	-
7.3	9.068	5.034	2.042	10.169	6.985	3.763	-10.631	-13.815	-17.037	-6.000	-
7.4	9.468	4.357	1.808	10.205	6.783	3.326	-10.595	-14.017	-17.474	-6.000	-
7.5	9.761	3.539	1.565	10.223	6.481	2.959	-10.577	-14.319	-17.841	-6.000	-
7.6	9.967	2.615	1.343	10.235	6.102	2.609	-10.565	-14.698	-18.191	-6.000	-
7.7	10.097	1.537	1.097	10.245	5.616	2.322	-10.555	-15.184	-18.478	-6.000	-
7.8	10.169	0.267	0.850	10.265	5.034	2.042	-10.535	-15.766	-18.758	-6.000	-
7.9	10.205	-1.170	0.564	10.303	4.357	1.808	-10.497	-16.443	-18.992	-6.000	-

8	10.223	-2.906	0.262	10.359	3.539	1.565	-10.441	-17.261	-19.235	-6.000	-
8.1	10.235	-4.938	-0.086	10.425	2.615	1.343	-10.375	-18.185	-19.457	-6.000	-
8.2	10.245	-7.335	-0.463	10.489	1.537	1.097	-10.311	-19.263	-19.703	-6.000	-
8.3	10.265	-10.247	-0.887	10.547	0.267	0.850	-10.253	-20.533	-19.950	-6.000	-
8.4	10.303	-13.022	-1.346	10.593	-1.170	0.564	-10.207	-21.970	-20.236	-6.000	-
8.5	10.359	-13.949	-1.851	10.614	-2.906	0.262	-10.186	-23.706	-20.538	-6.000	-
8.6	10.425	-12.388	-2.386	10.614	-4.938	-0.086	-10.186	-25.738	-20.886	-6.000	-
8.7	10.489	-10.268	-2.961	10.614	-4.598	-0.463	-10.186	-25.398	-21.263	-6.000	-
8.8	10.547	-8.416	-3.556	10.614	-4.138	-0.887	-10.186	-24.938	-21.687	-6.000	-
8.9	10.593	-7.048	-4.171	10.614	-3.796	-1.346	-10.186	-24.596	-22.146	-6.000	-
9	10.614	-5.998	-4.788	10.614	-3.552	-1.851	-10.186	-24.352	-22.651	-6.000	-
9.1	10.597	-5.177	-5.392	10.614	-3.327	-2.386	-10.186	-24.127	-23.186	-6.000	-
9.2	10.531	-4.598	-5.975	10.614	-3.163	-2.961	-10.186	-23.963	-23.761	-6.095	-
9.3	10.415	-4.138	-6.505	10.614	-2.996	-3.556	-10.186	-23.796	-24.356	-6.212	-
9.4	10.244	-3.796	-6.988	10.614	-2.812	-4.171	-10.186	-23.612	-24.971	-6.328	-
9.5	10.008	-3.552	-7.394	10.614	-2.636	-4.788	-10.186	-23.436	-25.588	-6.443	-
9.6	9.693	-3.327	-7.742	10.597	-2.426	-5.392	-10.203	-23.226	-26.192	-6.557	-
9.7	9.301	-3.163	-8.015	10.531	-2.208	-5.975	-10.269	-23.008	-26.775	-6.669	-
9.8	8.831	-2.996	-8.243	10.415	-1.993	-6.505	-10.385	-22.793	-27.305	-6.781	-
9.9	8.278	-2.812	-8.413	10.244	-1.761	-6.988	-10.556	-22.561	-27.788	-6.891	-
10	7.628	-2.636	-8.560	10.008	-1.564	-7.394	-10.792	-22.364	-28.194	-7.000	-
15	-13.707	-9.146	1.389	-1.935	-8.260	2.693	-22.735	-29.060	-18.107	-11.402	-
20	-11.280	-4.226	-11.519	-10.404	-3.472	-6.117	-31.204	-24.272	-26.917	-14.526	-
25	-8.744	-20.938	-3.725	-5.994	-7.396	-3.291	-26.794	-28.196	-24.091	-16.949	-
30	-16.467	-14.735	-13.366	-13.757	-8.031	-10.807	-34.557	-28.831	-31.607	-18.928	-
35	-26.757	-6.778	-22.096	-22.034	-6.188	-18.434	-42.834	-26.988	-39.234	-20.602	-
40	-22.551	-10.841	-5.409	-15.887	-9.361	-3.981	-36.687	-30.161	-24.781	-22.051	-
45	-14.853	-9.981	-7.923	-12.921	-9.974	-5.358	-33.721	-30.774	-26.158	-23.330	-
50	-18.408	-13.152	-20.911	-17.429	-12.776	-16.450	-38.229	-33.576	-37.250	-24.000	-
55	-15.495	-15.298	-5.611	-13.550	-13.938	-5.559	-34.350	-34.738	-26.359	-24.000	-
60	-13.017	-12.905	-9.027	-12.827	-10.925	-8.846	-33.627	-31.725	-29.646	-24.000	-
65	-22.037	-7.068	-11.721	-21.434	-7.064	-9.790	-42.234	-27.864	-30.590	-24.000	-
70	-24.318	-14.102	-13.419	-21.472	-13.696	-13.064	-42.272	-34.496	-33.864	-24.000	-
75	-24.383	-15.811	-22.196	-23.849	-15.294	-18.260	-44.649	-36.094	-39.060	-24.000	-
80	-21.629	-15.335	-10.266	-21.081	-14.440	-10.242	-41.881	-35.240	-31.042	-24.000	-
85	-34.767	-9.454	-13.858	-33.987	-8.864	-13.441	-54.787	-29.664	-34.241	-14.000	-
90	-32.350	-16.248	-20.589	-32.299	-16.170	-20.548	-53.099	-36.970	-41.348	-14.000	-
95	0.5	0.5	0.5	0.5	0.5	0.5	-20.300	-20.300	-20.300	-14.000	-
100	0.5	0.5	0.5	0.5	0.5	0.5	-20.300	-20.300	-20.300	-14.000	-
105	0.5	0.5	0.5	0.5	0.5	0.5	-20.300	-20.300	-20.300	-14.000	-
110	0.5	0.5	0.5	0.5	0.5	0.5	-20.300	-20.300	-20.300	-14.000	-
115	0.5	0.5	0.5	0.5	0.5	0.5	-20.300	-20.300	-20.300	-14.000	-
120	0.5	0.5	0.5	0.5	0.5	0.5	-20.300	-20.300	-20.300	-14.000	-
125	0.5	0.5	0.5	0.5	0.5	0.5	-20.300	-20.300	-20.300	-14.000	-
130	0.5	0.5	0.5	0.5	0.5	0.5	-20.300	-20.300	-20.300	-14.000	-
135	0.5	0.5	0.5	0.5	0.5	0.5	-20.300	-20.300	-20.300	-14.000	-
140	0.5	0.5	0.5	0.5	0.5	0.5	-20.300	-20.300	-20.300	-14.000	-
145	0.5	0.5	0.5	0.5	0.5	0.5	-20.300	-20.300	-20.300	-14.000	-
150	0.5	0.5	0.5	0.5	0.5	0.5	-20.300	-20.300	-20.300	-14.000	-
155	0.5	0.5	0.5	0.5	0.5	0.5	-20.300	-20.300	-20.300	-14.000	-
160	0.5	0.5	0.5	0.5	0.5	0.5	-20.300	-20.300	-20.300	-14.000	-
165	0.5	0.5	0.5	0.5	0.5	0.5	-20.300	-20.300	-20.300	-14.000	-
170	0.5	0.5	0.5	0.5	0.5	0.5	-20.300	-20.300	-20.300	-14.000	-
175	0.5	0.5	0.5	0.5	0.5	0.5	-20.300	-20.300	-20.300	-14.000	-
180	0.5	0.5	0.5	0.5	0.5	0.5	-20.300	-20.300	-20.300	-14.000	-

14.0GHz V-Pol, Nominal Transmitted Co-Pol PSD with -20.8dBW/4KHz at Input



14.0GHz V-Pol Nominal Transmitted Co-Pol PSD with-20.8dBW/4kHz at Input



Data in support of claim that proposed operation meets criteria of VMES Order July 2009

Applicant	RAS		Date of Application	
	ID Heading			
a1	Antenna Manufacture:	RAS	c	Main bore gain (dBi): 30.5
a2	Antenna Model:	SR5000	d	Frequency at which gain was measured (GHz): 14.0
a3	Antenna ID:	RAS	e	Max input power density (dBW/4kHz): -20.8
b	Transmit Band (b):	14GHz	Pattern ID	Table A3
	Pattern Description:	14.25GHz H-polarization, co-polarized at tangent to the geosynchronous plane for 0°, 37.5°, and 50° skew angle		

Offset Angles (Degrees)	Nominal Co-Pol Gain Along Tangent to Geo Arc			Worst Case Co-Pol Gain Along Tangent to Geo Arc			Worst Case Co-Pol PSD Along Tangent to Geo Arc input PSD = -20.8dBW/4kHz			FCC Mask (dBW/4kHz)	Mask Exceedence (dB)
	(dBi)			(dBi)			(dBW/4kHz)				
	0° Skew	37.5° Skew	50° Skew	0° Skew	37.5° Skew	50° Skew	0° Skew	37.5° Skew	50° Skew		
-180	0.5	0.5	0.5	0.5	0.5	0.5	-20.300	-20.300	-20.300	-14.000	-
-175	0.5	0.5	0.5	0.5	0.5	0.5	-20.300	-20.300	-20.300	-14.000	-
-170	0.5	0.5	0.5	0.5	0.5	0.5	-20.300	-20.300	-20.300	-14.000	-
-165	0.5	0.5	0.5	0.5	0.5	0.5	-20.300	-20.300	-20.300	-14.000	-
-160	0.5	0.5	0.5	0.5	0.5	0.5	-20.300	-20.300	-20.300	-14.000	-
-155	0.5	0.5	0.5	0.5	0.5	0.5	-20.300	-20.300	-20.300	-14.000	-
-150	0.5	0.5	0.5	0.5	0.5	0.5	-20.300	-20.300	-20.300	-14.000	-
-145	0.5	0.5	0.5	0.5	0.5	0.5	-20.300	-20.300	-20.300	-14.000	-
-140	0.5	0.5	0.5	0.5	0.5	0.5	-20.300	-20.300	-20.300	-14.000	-
-135	0.5	0.5	0.5	0.5	0.5	0.5	-20.300	-20.300	-20.300	-14.000	-
-130	0.5	0.5	0.5	0.5	0.5	0.5	-20.300	-20.300	-20.300	-14.000	-
-125	0.5	0.5	0.5	0.5	0.5	0.5	-20.300	-20.300	-20.300	-14.000	-
-120	0.5	0.5	0.5	0.5	0.5	0.5	-20.300	-20.300	-20.300	-14.000	-
-115	0.5	0.5	0.5	0.5	0.5	0.5	-20.300	-20.300	-20.300	-14.000	-
-110	0.5	0.5	0.5	0.5	0.5	0.5	-20.300	-20.300	-20.300	-14.000	-
-105	0.5	0.5	0.5	0.5	0.5	0.5	-20.300	-20.300	-20.300	-14.000	-
-100	0.5	0.5	0.5	0.5	0.5	0.5	-20.300	-20.300	-20.300	-14.000	-
-95	0.5	0.5	0.5	0.5	0.5	0.5	-20.300	-20.300	-20.300	-14.000	-
-90	-11.907	-14.270	-22.858	-11.643	-13.456	-22.357	-32.443	-34.256	-43.157	-14.000	-
-85	-11.482	-7.284	-14.825	-11.276	-7.148	-14.015	-32.076	-27.948	-34.815	-14.000	-
-80	-17.990	-8.603	-8.122	-16.809	-8.544	-7.755	-37.609	-29.344	-28.555	-24.000	-
-75	-32.922	-7.887	-8.016	-31.113	-7.804	-7.691	-51.913	-28.604	-28.491	-24.000	-
-70	-13.254	-9.466	-15.086	-12.321	-7.915	-13.595	-33.121	-28.715	-34.395	-24.000	-
-65	-17.138	-2.758	-18.196	-14.161	-2.113	-17.628	-34.961	-22.913	-38.428	-24.000	1.087
-60	-19.308	-11.777	-21.570	-16.476	-9.922	-20.359	-37.276	-30.722	-41.159	-24.000	-
-55	-13.631	-15.681	-7.150	-12.856	-13.930	-6.834	-33.656	-34.730	-27.634	-24.000	-
-50	-17.861	-18.035	-8.576	-13.040	-17.692	-8.373	-33.840	-38.492	-29.173	-24.000	-
-45	-11.975	-20.679	-12.239	-10.776	-17.060	-9.161	-31.576	-37.860	-29.961	-23.330	-
-40	-15.435	-18.290	-17.107	-15.241	-16.015	-12.969	-36.041	-36.815	-33.769	-22.051	-
-35	-16.600	-10.806	-22.093	-16.547	-10.031	-19.152	-37.347	-30.831	-39.952	-20.602	-
-30	-16.061	-12.378	-18.248	-12.334	-12.099	-11.951	-33.134	-32.899	-32.751	-18.928	-
-25	-35.114	-17.494	-6.157	-16.301	-8.562	-5.660	-37.101	-29.362	-26.460	-16.949	-
-20	-3.437	-2.352	-31.125	-3.423	-1.955	-7.945	-24.223	-22.755	-28.745	-14.526	-
-15	-5.483	-12.412	-3.401	0.471	-9.854	-3.332	-20.329	-30.654	-24.132	-11.402	-
-10	2.861	-2.528	-10.014	6.625	1.214	-7.839	-14.175	-19.586	-28.639	-7.000	-

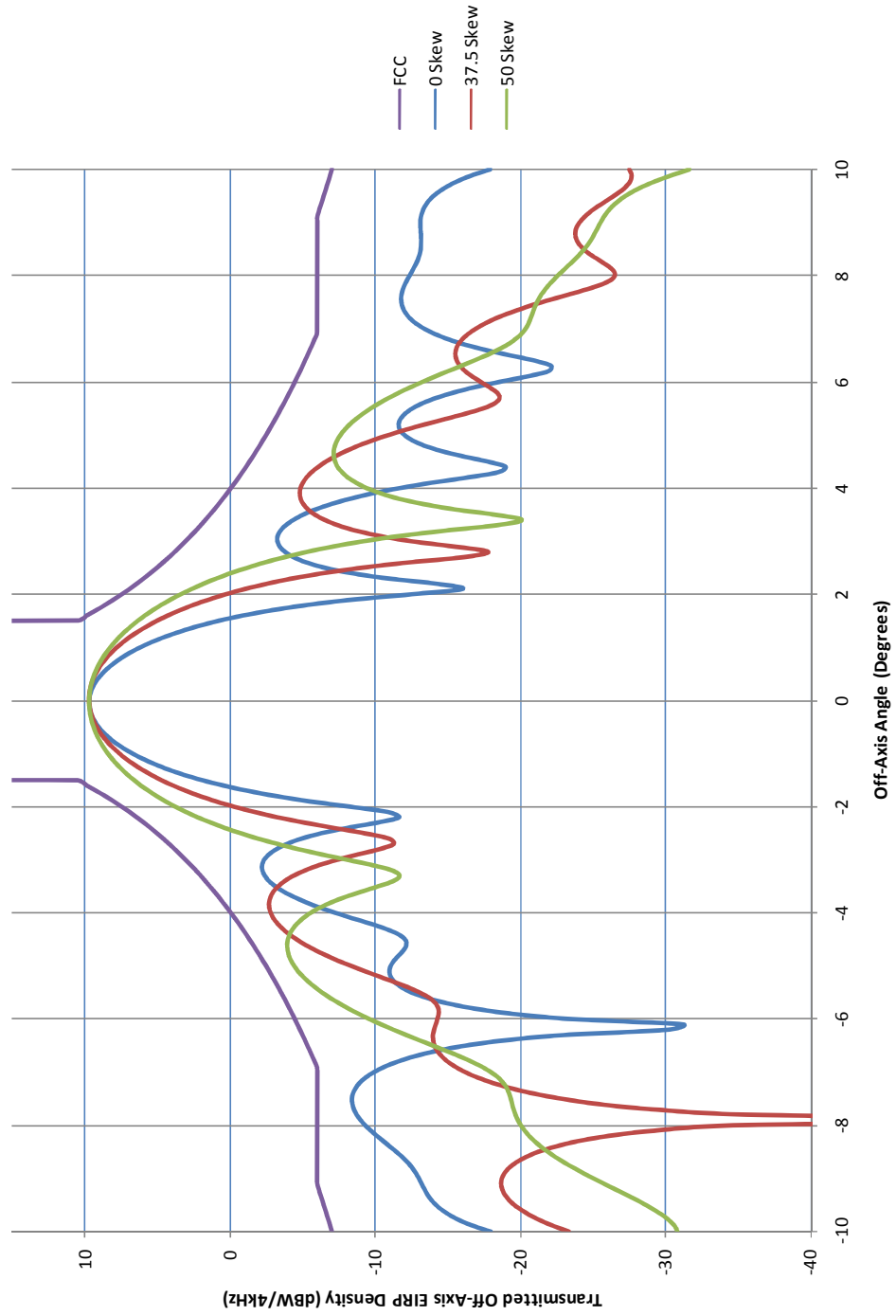
-9.9	4.010	-1.527	-9.834	6.961	1.602	-7.145	-13.839	-19.198	-27.945	-6.891	-
-9.8	4.911	-0.652	-9.483	7.221	1.892	-6.440	-13.579	-18.908	-27.240	-6.781	-
-9.7	5.624	0.087	-9.028	7.433	2.062	-5.692	-13.367	-18.738	-26.492	-6.669	-
-9.6	6.187	0.704	-8.459	7.619	2.126	-4.964	-13.181	-18.674	-25.764	-6.557	-
-9.5	6.625	1.214	-7.839	7.803	2.126	-4.224	-12.997	-18.674	-25.024	-6.443	-
-9.4	6.961	1.602	-7.145	8.012	2.126	-3.527	-12.788	-18.674	-24.327	-6.328	-
-9.3	7.221	1.892	-6.440	8.267	2.126	-2.843	-12.533	-18.674	-23.643	-6.212	-
-9.2	7.433	2.062	-5.692	8.576	2.126	-2.218	-12.224	-18.674	-23.018	-6.095	-
-9.1	7.619	2.126	-4.964	8.938	2.126	-1.621	-11.862	-18.674	-22.421	-6.000	-
-9	7.803	2.071	-4.224	9.350	2.126	-1.093	-11.450	-18.674	-21.893	-6.000	-
-8.9	8.012	1.886	-3.527	9.796	2.126	-0.600	-11.004	-18.674	-21.400	-6.000	-
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-8.3	10.250	-3.134	-0.181	12.086	1.575	1.148	-8.714	-19.225	-19.652	-6.000	-
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-7.9	11.826	-38.263	0.977	12.413	-0.079	1.590	-8.387	-20.879	-19.210	-6.000	-
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-3.5	17.688	17.484	10.599	18.593	18.101	15.253	-2.207	-2.699	-5.547	1.398	-
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0.7	28.811	29.611	29.786	30.335	30.443	30.433	9.535	9.643	9.633	-	-
0.8	28.292	29.315	29.576	30.162	30.353	30.357	9.362	9.553	9.557	-	-
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1	26.996	28.598	29.056	29.629	30.064	30.127	8.829	9.264	9.327	-	-
1.1	26.189	28.157	28.742	29.256	29.855	29.975	8.456	9.055	9.175	-	-
1.2	25.266	27.673	28.406	28.811	29.611	29.786	8.011	8.811	8.986	-	-
1.3	24.214	27.126	28.023	28.292	29.315	29.576	7.492	8.515	8.776	-	-
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1.5	21.593	25.844	27.154	26.996	28.598	29.056	6.196	7.798	8.256	10.598	-
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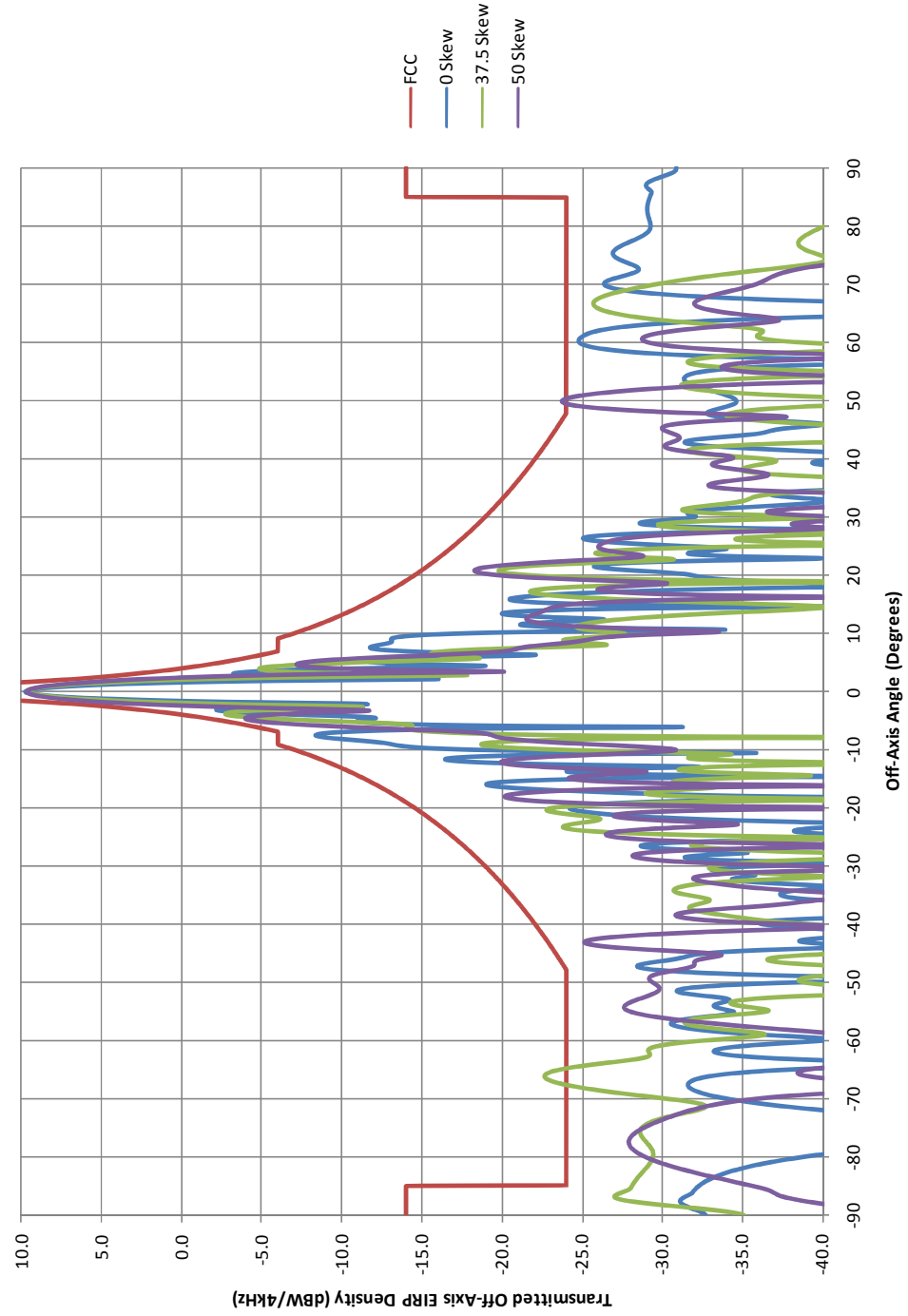
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3.4	16.450	14.274	0.709	17.544	15.991	13.687	-3.256	-4.809	-7.113	1.713	-
3.5	15.766	14.957	2.589	17.544	15.991	11.574	-3.256	-4.809	-9.226	1.398	-
3.6	14.897	15.430	5.363	17.522	15.991	12.118	-3.278	-4.809	-8.682	1.092	-
3.7	13.820	15.749	7.503	17.326	15.991	12.690	-3.474	-4.809	-8.110	0.795	-
3.8	12.525	15.936	9.185	16.967	15.991	13.090	-3.833	-4.809	-7.710	0.505	-
3.9	10.977	15.991	10.416	16.450	15.991	13.388	-4.350	-4.809	-7.412	0.223	-
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4.4	1.830	14.725	13.388	10.977	15.991	13.652	-9.823	-4.809	-7.148	-1.086	-
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4.7	6.302	12.785	13.647	9.192	15.530	13.652	-11.608	-5.270	-7.148	-1.802	-
4.8	7.438	11.938	13.571	9.192	15.179	13.652	-11.608	-5.621	-7.148	-2.031	-
4.9	8.257	10.956	13.415	9.192	14.725	13.652	-11.608	-6.075	-7.148	-2.255	-
5	8.805	9.879	13.195	9.192	14.185	13.652	-11.608	-6.615	-7.148	-2.474	-
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5.6	7.535	2.542	10.517	9.192	8.678	12.903	-11.608	-12.122	-7.897	-3.705	-
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5.8	5.394	2.425	9.144	9.071	5.983	12.132	-11.729	-14.817	-8.668	-4.086	-
5.9	3.950	2.942	8.372	8.759	5.176	11.655	-12.041	-15.624	-9.145	-4.271	-
6	2.241	3.541	7.558	8.254	5.270	11.115	-12.546	-15.530	-9.685	-4.454	-
6.1	0.379	4.113	6.691	7.535	5.270	10.517	-13.265	-15.530	-10.283	-4.633	-
6.2	-1.108	4.598	5.808	6.582	5.270	9.857	-14.218	-15.530	-10.943	-4.810	-
6.3	-1.308	4.945	4.895	5.772	5.270	9.144	-15.028	-15.530	-11.656	-4.984	-
6.4	-0.147	5.176	4.012	6.693	5.270	8.372	-14.107	-15.530	-12.428	-5.154	-
6.5	1.547	5.270	3.147	7.427	5.270	7.558	-13.373	-15.530	-13.242	-5.323	-
6.6	3.200	5.237	2.383	8.005	5.270	6.691	-12.795	-15.530	-14.109	-5.489	-
6.7	4.622	5.089	1.696	8.436	5.270	5.808	-12.364	-15.530	-14.992	-5.652	-
6.8	5.772	4.802	1.167	8.732	5.270	4.895	-12.068	-15.530	-15.905	-5.813	-
6.9	6.693	4.407	0.741	8.918	5.270	4.012	-11.882	-15.530	-16.788	-5.971	-
7	7.427	3.883	0.460	9.010	5.270	3.147	-11.790	-15.530	-17.653	-6.000	-
7.1	8.005	3.225	0.241	9.019	5.237	2.383	-11.781	-15.563	-18.417	-6.000	-
7.2	8.436	2.457	0.100	9.019	5.089	1.696	-11.781	-15.711	-19.104	-6.000	-
7.3	8.732	1.529	-0.043	9.019	4.802	1.167	-11.781	-15.998	-19.633	-6.000	-
7.4	8.918	0.487	-0.172	9.019	4.407	0.741	-11.781	-16.393	-20.059	-6.000	-
7.5	9.010	-0.676	-0.344	9.019	3.883	0.460	-11.781	-16.917	-20.340	-6.000	-
7.6	9.019	-1.966	-0.536	9.019	3.225	0.241	-11.781	-17.575	-20.559	-6.000	-
7.7	8.951	-3.245	-0.790	9.019	2.457	0.100	-11.781	-18.343	-20.700	-6.000	-
7.8	8.819	-4.446	-1.070	9.019	1.529	-0.043	-11.781	-19.271	-20.843	-6.000	-
7.9	8.647	-5.319	-1.409	9.019	0.487	-0.172	-11.781	-20.313	-20.972	-6.000	-

8	8.451	-5.706	-1.761	9.019	-0.676	-0.344	-11.781	-21.476	-21.144	-6.000	-
8.1	8.246	-5.585	-2.153	9.019	-1.966	-0.536	-11.781	-22.766	-21.336	-6.000	-
8.2	8.046	-5.132	-2.536	8.951	-3.031	-0.790	-11.849	-23.831	-21.590	-6.000	-
8.3	7.875	-4.573	-2.925	8.819	-2.990	-1.070	-11.981	-23.790	-21.870	-6.000	-
8.4	7.750	-4.000	-3.276	8.647	-2.990	-1.409	-12.153	-23.790	-22.209	-6.000	-
8.5	7.677	-3.558	-3.605	8.451	-2.990	-1.761	-12.349	-23.790	-22.561	-6.000	-
8.6	7.646	-3.228	-3.879	8.246	-2.990	-2.153	-12.554	-23.790	-22.953	-6.000	-
8.7	7.647	-3.031	-4.122	8.046	-2.990	-2.536	-12.754	-23.790	-23.336	-6.000	-
8.8	7.669	-2.990	-4.324	7.875	-2.990	-2.925	-12.925	-23.790	-23.725	-6.000	-
8.9	7.695	-3.058	-4.516	7.750	-2.990	-3.276	-13.050	-23.790	-24.076	-6.000	-
9	7.703	-3.269	-4.706	7.703	-2.990	-3.605	-13.097	-23.790	-24.405	-6.000	-
9.1	7.666	-3.589	-4.924	7.703	-2.990	-3.879	-13.097	-23.790	-24.679	-6.000	-
9.2	7.569	-4.003	-5.183	7.703	-2.990	-4.122	-13.097	-23.790	-24.922	-6.095	-
9.3	7.403	-4.512	-5.510	7.703	-2.990	-4.324	-13.097	-23.790	-25.124	-6.212	-
9.4	7.155	-5.063	-5.917	7.703	-3.058	-4.516	-13.097	-23.858	-25.316	-6.328	-
9.5	6.804	-5.628	-6.428	7.703	-3.269	-4.706	-13.097	-24.069	-25.506	-6.443	-
9.6	6.327	-6.158	-7.052	7.666	-3.589	-4.924	-13.134	-24.389	-25.724	-6.557	-
9.7	5.721	-6.559	-7.808	7.569	-4.003	-5.183	-13.231	-24.803	-25.983	-6.669	-
9.8	4.973	-6.813	-8.699	7.403	-4.512	-5.510	-13.397	-25.312	-26.310	-6.781	-
9.9	4.050	-6.859	-9.719	7.155	-5.063	-5.917	-13.645	-25.863	-26.717	-6.891	-
10	2.907	-6.705	-10.820	6.804	-4.853	-6.428	-13.996	-25.653	-27.228	-7.000	-
15	-4.669	-15.737	-3.612	-0.288	-9.974	-2.370	-21.088	-30.774	-23.170	-11.402	-
20	-11.025	-0.776	1.081	-9.278	0.825	2.365	-30.078	-19.975	-18.435	-14.526	-
25	-10.708	-16.840	-5.202	-6.928	-8.383	-5.189	-27.728	-29.183	-25.989	-16.949	-
30	-11.245	-20.478	-20.537	-9.451	-13.312	-16.595	-30.251	-34.112	-37.395	-18.928	-
35	-22.388	-28.666	-12.715	-18.396	-20.171	-12.069	-39.196	-40.971	-32.869	-20.602	-
40	-19.874	-15.602	-13.486	-18.681	-13.196	-12.654	-39.481	-33.996	-33.454	-22.051	-
45	-16.293	-24.973	-9.236	-15.549	-21.956	-9.162	-36.349	-42.756	-29.962	-23.330	-
50	-13.817	-25.915	-2.930	-13.584	-20.448	-2.915	-34.384	-41.248	-23.715	-24.000	0.285
55	-11.741	-21.175	-14.273	-10.912	-14.560	-13.016	-31.712	-35.360	-33.816	-24.000	-
60	-4.030	-17.856	-8.321	-3.992	-15.789	-7.928	-24.792	-36.589	-28.728	-24.000	-
65	-25.062	-6.201	-13.554	-20.614	-5.507	-12.307	-41.414	-26.307	-33.107	-24.000	-
70	-5.578	-8.792	-15.001	-5.572	-7.799	-14.406	-26.372	-28.599	-35.206	-24.000	-
75	-6.160	-19.051	-26.488	-6.126	-18.516	-23.966	-26.926	-39.316	-44.766	-24.000	-
80	-8.475	-19.301	-20.500	-8.435	-18.907	-20.435	-29.235	-39.707	-41.235	-24.000	-
85	-8.433	-21.465	-24.136	-8.373	-20.971	-23.922	-29.173	-41.771	-44.722	-14.000	-
90	-10.074	-27.764	-27.369	-10.016	-27.592	-27.334	-30.816	-48.392	-48.134	-14.000	-
95	0.5	0.5	0.5	0.5	0.5	0.5	-20.300	-20.300	-20.300	-14.000	-
100	0.5	0.5	0.5	0.5	0.5	0.5	-20.300	-20.300	-20.300	-14.000	-
105	0.5	0.5	0.5	0.5	0.5	0.5	-20.300	-20.300	-20.300	-14.000	-
110	0.5	0.5	0.5	0.5	0.5	0.5	-20.300	-20.300	-20.300	-14.000	-
115	0.5	0.5	0.5	0.5	0.5	0.5	-20.300	-20.300	-20.300	-14.000	-
120	0.5	0.5	0.5	0.5	0.5	0.5	-20.300	-20.300	-20.300	-14.000	-
125	0.5	0.5	0.5	0.5	0.5	0.5	-20.300	-20.300	-20.300	-14.000	-
130	0.5	0.5	0.5	0.5	0.5	0.5	-20.300	-20.300	-20.300	-14.000	-
135	0.5	0.5	0.5	0.5	0.5	0.5	-20.300	-20.300	-20.300	-14.000	-
140	0.5	0.5	0.5	0.5	0.5	0.5	-20.300	-20.300	-20.300	-14.000	-
145	0.5	0.5	0.5	0.5	0.5	0.5	-20.300	-20.300	-20.300	-14.000	-
150	0.5	0.5	0.5	0.5	0.5	0.5	-20.300	-20.300	-20.300	-14.000	-
155	0.5	0.5	0.5	0.5	0.5	0.5	-20.300	-20.300	-20.300	-14.000	-
160	0.5	0.5	0.5	0.5	0.5	0.5	-20.300	-20.300	-20.300	-14.000	-
165	0.5	0.5	0.5	0.5	0.5	0.5	-20.300	-20.300	-20.300	-14.000	-
170	0.5	0.5	0.5	0.5	0.5	0.5	-20.300	-20.300	-20.300	-14.000	-
175	0.5	0.5	0.5	0.5	0.5	0.5	-20.300	-20.300	-20.300	-14.000	-
180	0.5	0.5	0.5	0.5	0.5	0.5	-20.300	-20.300	-20.300	-14.000	-

14.25GHz H-Pol, Nominal Transmitted Co-Pol PSD with -20.8dBW/4KHz at Input



14.25GHz H-Pol Nominal Transmitted Co-Pol PSD with -20.8dBW/4kHz at Input



Data in support of claim that proposed operation meets criteria of VMES Order July 2009

Applicant	RAS	Date of Application	
ID Heading			
a1 Antenna Manufacture:	RAS	c Main bore gain (dBi):	30.5
a2 Antenna Model:	SR5000	d Frequency at which gain was measured (GHz):	14.0
a3 Antenna ID:	RAS	e Max input power density (dBW/4kHz):	-20.8
b Transmit Band (b):	14GHz	Pattern ID	Table A4
Pattern Description:	14.25GHz V-polarization, co-polarized at tangent to the geosynchronous plane for 0°, 37.5°, and 50° skew angle		

Offset Angles (Degrees)	Nominal Co-Pol Gain Along Tangent to Geo Arc			Worst Case Co-Pol Gain Along Tangent to Geo Arc			Worst Case Co-Pol PSD Along Tangent to Geo Arc input PSD = -21.3dBW/4kHz			FCC Mask (dBW/4kHz)	Mask Exceedence (dB)
	(dBi)			(dBi)			(dBW/4kHz)				
	0° Skew	37.5° Skew	50° Skew	0° Skew	37.5° Skew	50° Skew	0° Skew	37.5° Skew	50° Skew		
-180	0.5	0.5	0.5	0.5	0.5	0.5	-20.800	-20.800	-20.800	-14.000	-
-175	0.5	0.5	0.5	0.5	0.5	0.5	-20.800	-20.800	-20.800	-14.000	-
-170	0.5	0.5	0.5	0.5	0.5	0.5	-20.800	-20.800	-20.800	-14.000	-
-165	0.5	0.5	0.5	0.5	0.5	0.5	-20.800	-20.800	-20.800	-14.000	-
-160	0.5	0.5	0.5	0.5	0.5	0.5	-20.800	-20.800	-20.800	-14.000	-
-155	0.5	0.5	0.5	0.5	0.5	0.5	-20.800	-20.800	-20.800	-14.000	-
-150	0.5	0.5	0.5	0.5	0.5	0.5	-20.800	-20.800	-20.800	-14.000	-
-145	0.5	0.5	0.5	0.5	0.5	0.5	-20.800	-20.800	-20.800	-14.000	-
-140	0.5	0.5	0.5	0.5	0.5	0.5	-20.800	-20.800	-20.800	-14.000	-
-135	0.5	0.5	0.5	0.5	0.5	0.5	-20.800	-20.800	-20.800	-14.000	-
-130	0.5	0.5	0.5	0.5	0.5	0.5	-20.800	-20.800	-20.800	-14.000	-
-125	0.5	0.5	0.5	0.5	0.5	0.5	-20.800	-20.800	-20.800	-14.000	-
-120	0.5	0.5	0.5	0.5	0.5	0.5	-20.800	-20.800	-20.800	-14.000	-
-115	0.5	0.5	0.5	0.5	0.5	0.5	-20.800	-20.800	-20.800	-14.000	-
-110	0.5	0.5	0.5	0.5	0.5	0.5	-20.800	-20.800	-20.800	-14.000	-
-105	0.5	0.5	0.5	0.5	0.5	0.5	-20.800	-20.800	-20.800	-14.000	-
-100	0.5	0.5	0.5	0.5	0.5	0.5	-20.800	-20.800	-20.800	-14.000	-
-95	0.5	0.5	0.5	0.5	0.5	0.5	-20.800	-20.800	-20.800	-14.000	-
-90	-24.457	-20.872	-14.625	-24.196	-19.907	-14.123	-45.496	-41.207	-35.423	-14.000	-
-85	-23.038	-14.315	-8.804	-22.942	-14.137	-8.413	-44.242	-35.437	-29.713	-14.000	-
-80	-19.410	-20.440	-5.779	-18.887	-19.256	-5.755	-40.187	-40.556	-27.055	-24.000	-
-75	-19.273	-29.379	-10.867	-18.586	-27.195	-9.761	-39.886	-48.495	-31.061	-24.000	-
-70	-24.555	-8.841	-12.191	-24.090	-7.551	-11.706	-45.390	-28.851	-33.006	-24.000	-
-65	-21.923	-8.302	-15.776	-20.961	-6.697	-14.868	-42.261	-27.997	-36.168	-24.000	-
-60	-22.418	-19.593	-20.092	-18.160	-18.094	-19.583	-39.460	-39.394	-40.883	-24.000	-
-55	-11.104	-12.323	-18.542	-10.443	-12.215	-17.654	-31.743	-33.515	-38.954	-24.000	-
-50	-20.306	-11.391	-1.098	-19.171	-11.311	-1.091	-40.471	-32.611	-22.391	-24.000	1.609
-45	-33.711	-10.355	-9.921	-29.035	-9.144	-9.858	-50.335	-30.444	-31.158	-23.330	-
-40	-21.914	-19.290	-8.019	-21.842	-16.414	-6.420	-43.142	-37.714	-27.720	-22.051	-
-35	-17.479	-15.007	-4.447	-16.158	-14.019	-4.121	-37.458	-35.319	-25.421	-20.602	-
-30	-10.159	-5.948	-11.001	-8.791	-4.835	-9.266	-30.091	-26.135	-30.566	-18.928	-
-25	-13.993	-16.946	-5.643	-8.411	-11.939	-5.504	-29.711	-33.239	-26.804	-16.949	-
-20	-9.110	-0.384	-2.523	-8.225	-0.368	0.094	-29.525	-21.668	-21.206	-14.526	-
-15	-9.814	-4.423	1.177	-3.860	-4.352	1.309	-25.160	-25.652	-19.991	-11.402	-
-10	3.416	-5.400	-10.984	5.238	-1.528	-7.509	-16.062	-22.828	-28.809	-7.000	-

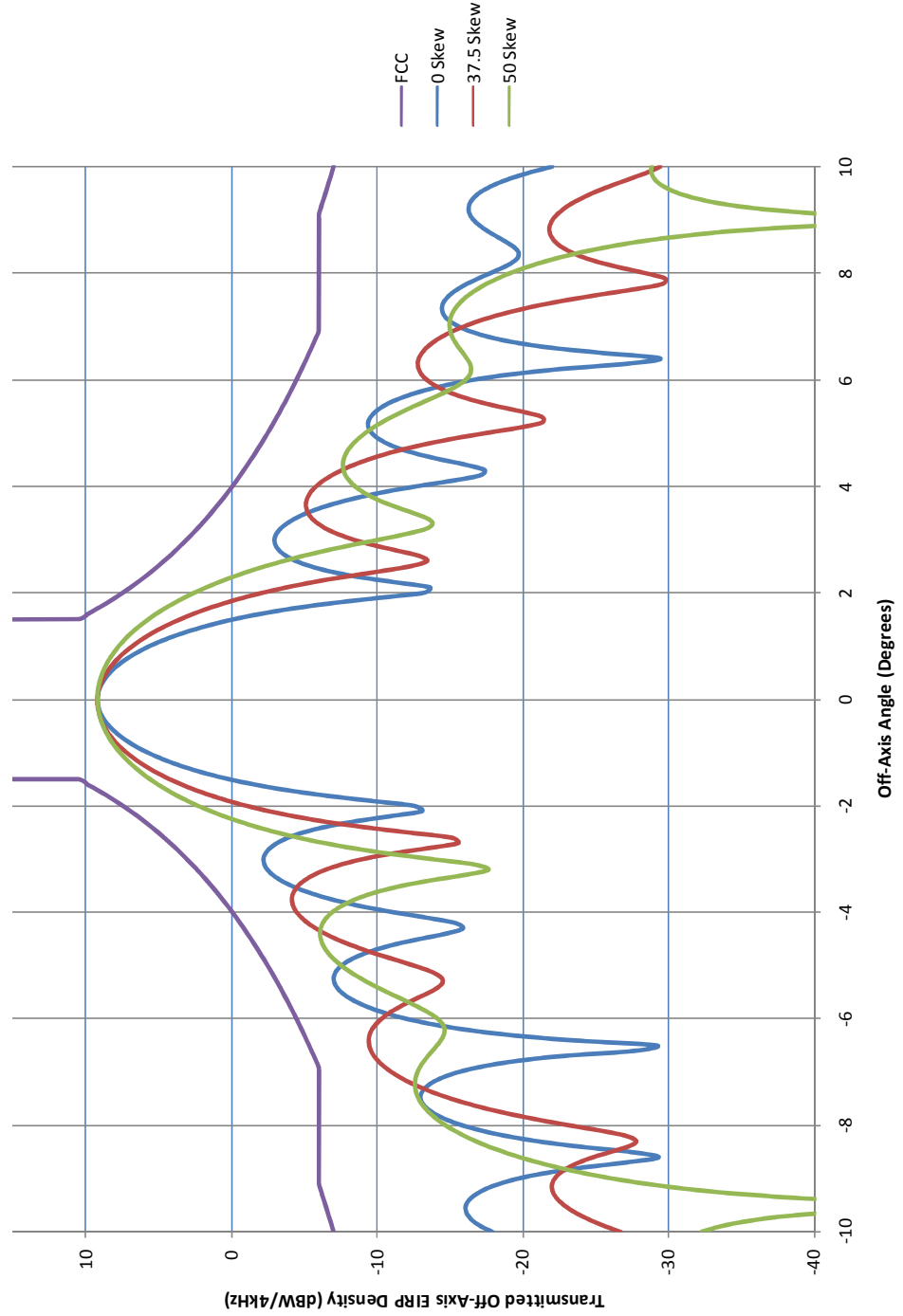
-9.9	4.174	-4.381	-12.250	5.238	-1.116	-8.082	-16.062	-22.416	-29.382	-6.891	-
-9.8	4.718	-3.488	-14.112	5.238	-0.844	-8.649	-16.062	-22.144	-29.949	-6.781	-
-9.7	5.069	-2.714	-16.973	5.238	-0.705	-9.291	-16.062	-22.005	-30.591	-6.669	-
-9.6	5.238	-2.052	-22.466	5.238	-0.705	-7.269	-16.062	-22.005	-28.569	-6.557	-
-9.5	5.222	-1.528	-35.052	5.238	-0.705	-4.897	-16.062	-22.005	-26.197	-6.443	-
-9.4	5.004	-1.116	-20.350	5.238	-0.705	-2.952	-16.062	-22.005	-24.252	-6.328	-
-9.3	4.573	-0.844	-14.167	5.238	-0.705	-1.259	-16.062	-22.005	-22.559	-6.212	-
-9.2	3.907	-0.705	-10.172	5.238	-0.705	0.189	-16.062	-22.005	-21.111	-6.095	-
-9.1	2.960	-0.708	-7.269	5.238	-0.705	1.483	-16.062	-22.005	-19.817	-6.000	-
-9	1.647	-0.879	-4.897	5.222	-0.705	2.606	-16.078	-22.005	-18.694	-6.000	-
-8.9	-0.150	-1.212	-2.952	5.004	-0.705	3.620	-16.296	-22.005	-17.680	-6.000	-
-8.8	-2.563	-1.754	-1.259	4.573	-0.705	4.501	-16.727	-22.005	-16.799	-6.000	-
-8.7	-5.653	-2.515	0.189	3.907	-0.705	5.295	-17.393	-22.005	-16.005	-6.000	-
-8.6	-8.000	-3.496	1.483	4.149	-0.708	5.983	-17.151	-22.008	-15.317	-6.000	-
-8.5	-6.084	-4.708	2.606	5.478	-0.879	6.591	-15.822	-22.179	-14.709	-6.000	-
-8.4	-2.572	-5.895	3.620	6.502	0.153	7.111	-14.798	-21.147	-14.189	-6.000	-
-8.3	0.280	-6.484	4.501	7.266	1.983	7.557	-14.034	-19.317	-13.743	-6.000	-
-8.2	2.457	-5.817	5.295	7.815	3.606	7.923	-13.485	-17.694	-13.377	-6.000	-
-8.1	4.149	-4.049	5.983	8.169	4.994	8.220	-13.131	-16.306	-13.080	-6.000	-
-8	5.478	-1.877	6.591	8.329	6.229	8.442	-12.971	-15.071	-12.858	-6.000	-
-7.9	6.502	0.153	7.111	8.329	7.299	8.595	-12.971	-14.001	-12.705	-6.000	-
-7.8	7.266	1.983	7.557	8.329	8.225	8.678	-12.971	-13.075	-12.622	-6.000	-
-7.7	7.815	3.606	7.923	8.329	9.043	8.691	-12.971	-12.257	-12.609	-6.000	-
-7.6	8.169	4.994	8.220	8.329	9.733	8.691	-12.971	-11.567	-12.609	-6.000	-
-7.5	8.329	6.229	8.442	8.329	10.324	8.691	-12.971	-10.976	-12.609	-6.000	-
-7.4	8.286	7.299	8.595	8.329	10.819	8.691	-12.971	-10.481	-12.609	-6.000	-
-7.3	8.036	8.225	8.678	8.329	11.212	8.691	-12.971	-10.088	-12.609	-6.000	-
-7.2	7.561	9.043	8.691	8.329	11.521	8.691	-12.971	-9.779	-12.609	-6.000	-
-7.1	6.819	9.733	8.638	8.329	11.731	8.691	-12.971	-9.569	-12.609	-6.000	-
-7	5.732	10.324	8.517	8.329	11.856	8.691	-12.971	-9.444	-12.609	-6.000	-
-6.9	4.187	10.819	8.337	8.286	11.885	8.691	-13.014	-9.415	-12.609	-5.971	-
-6.8	1.986	11.212	8.096	8.036	11.885	8.691	-13.264	-9.415	-12.609	-5.813	-
-6.7	-1.305	11.521	7.812	7.561	11.885	8.691	-13.739	-9.415	-12.609	-5.652	-
-6.6	-6.421	11.731	7.496	7.554	11.885	8.638	-13.746	-9.415	-12.662	-5.489	-
-6.5	-7.843	11.856	7.180	9.294	11.885	8.517	-12.006	-9.415	-12.783	-5.323	-
-6.4	-1.889	11.885	6.898	10.663	11.885	8.337	-10.637	-9.415	-12.963	-5.154	-
-6.3	2.369	11.818	6.706	11.749	11.885	8.304	-9.551	-9.415	-12.996	-4.984	-
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-6	9.294	11.018	7.123	13.782	11.885	10.609	-7.518	-9.415	-10.691	-4.454	-
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-5.8	11.749	9.931	8.304	14.268	11.818	12.043	-7.032	-9.482	-9.257	-4.086	-
-5.7	12.612	9.246	9.058	14.272	11.661	12.670	-7.028	-9.639	-8.630	-3.897	-
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-5.5	13.782	7.702	10.609	14.272	11.018	13.746	-7.028	-10.282	-7.554	-3.509	-
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-4.7	11.399	12.256	14.830	14.272	16.081	15.211	-7.028	-5.219	-6.089	-1.802	-
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-4.5	8.386	14.132	15.168	13.759	16.830	15.211	-7.541	-4.470	-6.089	-1.330	-
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-3.7	15.178	17.136	12.252	18.838	17.145	15.020	-2.462	-4.155	-6.280	0.795	-
-3.6	16.300	16.993	11.078	19.054	17.145	14.763	-2.246	-4.155	-6.537	1.092	-
-3.5	17.214	16.724	9.552	19.108	17.145	14.386	-2.192	-4.155	-6.914	1.398	-
-3.4	17.931	16.288	7.608	19.108	17.145	13.858	-2.192	-4.155	-7.442	1.713	-
-3.3	18.466	15.677	5.301	19.108	17.145	13.165	-2.192	-4.155	-8.135	2.037	-
-3.2	18.838	14.857	3.639	19.108	17.136	14.907	-2.192	-4.164	-6.393	2.371	-
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-3	19.108	12.287	7.565	19.108	16.724	18.180	-2.192	-4.576	-3.120	3.072	-
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-2.4	14.931	12.234	19.531	18.988	21.612	24.374	-2.312	0.312	3.074	5.495	-
-2.3	13.000	14.843	20.700	18.684	22.787	25.102	-2.616	1.487	3.802	5.957	-
-2.2	10.535	16.960	21.777	18.178	23.823	25.747	-3.122	2.523	4.447	6.439	-
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-2	8.799	20.296	23.598	21.480	25.563	26.890	0.180	4.263	5.590	7.474	-
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-1.7	17.641	23.823	25.747	25.302	27.539	28.258	4.002	6.239	6.958	9.239	-
-1.6	19.731	24.732	26.354	26.240	28.055	28.622	4.940	6.755	7.322	9.897	-
-1.5	21.480	25.563	26.890	27.061	28.520	28.961	5.761	7.220	7.661	10.598	-
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-1.2	25.302	27.539	28.258	28.903	29.595	29.747	7.603	8.295	8.447	-	-
-1.1	26.240	28.055	28.622	29.342	29.853	29.949	8.042	8.553	8.649	-	-
-1	27.061	28.520	28.961	29.709	30.067	30.112	8.409	8.767	8.812	-	-
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0.6	29.272	29.630	29.993	30.462	30.464	30.486	9.162	9.164	9.186	-	-
0.7	28.813	29.324	29.798	30.358	30.381	30.449	9.058	9.081	9.149	-	-
0.8	28.275	28.973	29.579	30.189	30.259	30.377	8.889	8.959	9.077	-	-
0.9	27.649	28.574	29.318	29.956	30.094	30.281	8.656	8.794	8.981	-	-
1	26.923	28.110	29.033	29.653	29.881	30.149	8.353	8.581	8.849	-	-
1.1	26.077	27.599	28.703	29.272	29.630	29.993	7.972	8.330	8.693	-	-
1.2	25.104	27.021	28.346	28.813	29.324	29.798	7.513	8.024	8.498	-	-
1.3	23.990	26.370	27.940	28.275	28.973	29.579	6.975	7.673	8.279	-	-
1.4	22.704	25.660	27.505	27.649	28.574	29.318	6.349	7.274	8.018	-	-
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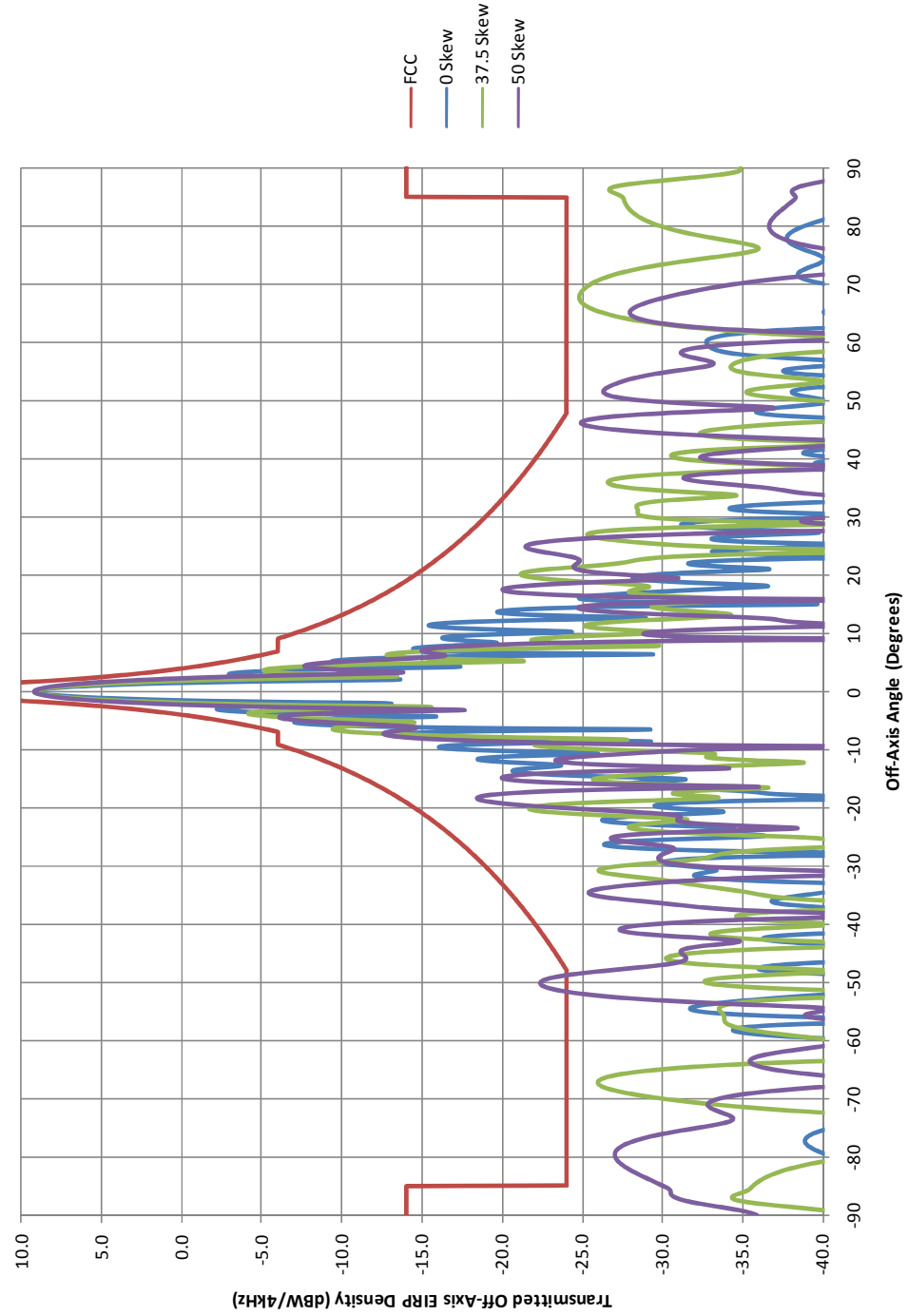
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2.3	12.637	13.545	21.184	18.052	21.841	25.288	-3.248	0.541	3.988	5.957	-
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2.5	15.908	8.992	18.958	18.355	19.178	23.858	-2.945	-2.122	2.558	5.051	-
2.6	16.911	7.868	17.673	18.355	17.534	23.039	-2.945	-3.766	1.739	4.626	-
2.7	17.605	8.525	16.251	18.355	15.694	22.159	-2.945	-5.606	0.859	4.216	-
2.8	18.052	10.084	14.674	18.355	15.378	21.184	-2.945	-5.922	-0.116	3.821	-
2.9	18.294	11.653	12.961	18.355	15.800	20.128	-2.945	-5.500	-1.172	3.440	-
3	18.355	12.951	11.112	18.355	16.056	18.958	-2.945	-5.244	-2.342	3.072	-
3.1	18.241	13.999	9.350	18.355	16.185	17.673	-2.945	-5.115	-3.627	2.716	-
3.2	17.956	14.791	7.944	18.355	16.185	16.251	-2.945	-5.115	-5.049	2.371	-
3.3	17.511	15.378	7.467	18.355	16.185	14.674	-2.945	-5.115	-6.626	2.037	-
3.4	16.903	15.800	7.877	18.355	16.185	12.961	-2.945	-5.115	-8.339	1.713	-
3.5	16.118	16.056	8.838	18.355	16.185	12.827	-2.945	-5.115	-8.473	1.398	-
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3.7	13.904	16.185	10.853	17.956	16.185	13.452	-3.344	-5.115	-7.848	0.795	-
3.8	12.436	16.065	11.667	17.511	16.185	13.594	-3.789	-5.115	-7.706	0.505	-
3.9	10.678	15.840	12.318	16.903	16.185	13.641	-4.397	-5.115	-7.659	0.223	-
4	8.592	15.489	12.827	16.118	16.185	13.641	-5.182	-5.115	-7.659	-0.051	-
4.1	6.262	15.038	13.196	15.126	16.185	13.641	-6.174	-5.115	-7.659	-0.320	-
4.2	4.298	14.464	13.452	13.904	16.185	13.641	-7.396	-5.115	-7.659	-0.581	-
4.3	3.919	13.758	13.594	12.436	16.065	13.641	-8.864	-5.235	-7.659	-0.837	-
4.4	5.179	12.934	13.641	11.267	15.840	13.641	-10.033	-5.460	-7.659	-1.086	-
4.5	6.913	11.937	13.592	11.687	15.489	13.641	-9.613	-5.811	-7.659	-1.330	-
4.6	8.474	10.780	13.456	11.904	15.038	13.641	-9.396	-6.262	-7.659	-1.569	-
4.7	9.711	9.434	13.238	11.926	14.464	13.641	-9.374	-6.836	-7.659	-1.802	-
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5	11.687	3.826	12.104	11.926	11.937	13.592	-9.374	-9.363	-7.708	-2.474	-
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5.3	11.764	-0.016	10.297	11.926	7.813	12.937	-9.374	-13.487	-8.363	-3.107	-
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5.5	10.913	3.032	8.774	11.926	7.909	12.104	-9.374	-13.391	-9.196	-3.509	-
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5.9	6.575	7.396	5.702	11.428	8.516	9.561	-9.872	-12.784	-11.739	-4.271	-
6	4.672	7.909	5.211	10.913	8.516	8.774	-10.387	-12.784	-12.526	-4.454	-
6.1	2.168	8.266	4.905	10.199	8.516	7.958	-11.101	-12.784	-13.342	-4.633	-
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6.5	-4.257	8.243	5.391	5.721	8.516	6.318	-15.579	-12.784	-14.982	-5.323	-
6.6	-0.642	7.931	5.676	6.331	8.516	6.318	-14.969	-12.784	-14.982	-5.489	-
6.7	1.861	7.480	5.917	6.701	8.516	6.318	-14.599	-12.784	-14.982	-5.652	-
6.8	3.598	6.916	6.123	6.859	8.516	6.318	-14.441	-12.784	-14.982	-5.813	-
6.9	4.836	6.216	6.250	6.859	8.443	6.318	-14.441	-12.857	-14.982	-5.971	-
7	5.721	5.360	6.318	6.859	8.243	6.318	-14.441	-13.057	-14.982	-6.000	-
7.1	6.331	4.369	6.294	6.859	7.931	6.318	-14.441	-13.369	-14.982	-6.000	-
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7.3	6.859	1.778	6.015	6.859	6.916	6.318	-14.441	-14.384	-14.982	-6.000	-
7.4	6.836	0.155	5.756	6.859	6.216	6.318	-14.441	-15.084	-14.982	-6.000	-
7.5	6.649	-1.806	5.395	6.859	5.360	6.318	-14.441	-15.940	-14.982	-6.000	-
7.6	6.301	-4.015	4.960	6.859	4.369	6.294	-14.441	-16.931	-15.006	-6.000	-
7.7	5.793	-6.398	4.412	6.859	3.170	6.203	-14.441	-18.130	-15.097	-6.000	-
7.8	5.148	-8.298	3.785	6.859	1.778	6.015	-14.441	-19.522	-15.285	-6.000	-
7.9	4.392	-8.469	3.026	6.836	0.155	5.756	-14.464	-21.145	-15.544	-6.000	-

8	3.567	-7.124	2.177	6.649	-1.312	5.395	-14.651	-22.612	-15.905	-6.000	-
8.1	2.745	-5.471	1.166	6.301	-0.878	4.960	-14.999	-22.178	-16.340	-6.000	-
8.2	2.052	-4.002	0.035	5.793	-0.622	4.412	-15.507	-21.922	-16.888	-6.000	-
8.3	1.649	-2.828	-1.310	5.148	-0.511	3.785	-16.152	-21.811	-17.515	-6.000	-
8.4	1.634	-1.962	-2.838	4.392	-0.511	3.026	-16.908	-21.811	-18.274	-6.000	-
8.5	1.977	-1.312	-4.695	4.701	-0.511	2.177	-16.599	-21.811	-19.123	-6.000	-
8.6	2.546	-0.878	-6.891	4.950	-0.511	1.166	-16.350	-21.811	-20.134	-6.000	-
8.7	3.184	-0.622	-9.748	5.040	-0.511	0.035	-16.260	-21.811	-21.265	-6.000	-
8.8	3.789	-0.511	-13.543	5.040	-0.511	-1.310	-16.260	-21.811	-22.610	-6.000	-
8.9	4.306	-0.559	-19.747	5.040	-0.511	-2.838	-16.260	-21.811	-24.138	-6.000	-
9	4.701	-0.726	-29.667	5.040	-0.511	-4.695	-16.260	-21.811	-25.995	-6.000	-
9.1	4.950	-1.029	-20.351	5.040	-0.511	-6.891	-16.260	-21.811	-28.191	-6.000	-
9.2	5.040	-1.454	-15.374	5.040	-0.511	-8.013	-16.260	-21.811	-29.313	-6.095	-
9.3	4.973	-1.990	-12.493	5.040	-0.511	-7.689	-16.260	-21.811	-28.989	-6.212	-
9.4	4.747	-2.663	-10.685	5.040	-0.559	-7.542	-16.260	-21.859	-28.842	-6.328	-
9.5	4.348	-3.436	-9.422	5.040	-0.726	-7.542	-16.260	-22.026	-28.842	-6.443	-
9.6	3.752	-4.325	-8.585	5.040	-1.029	-7.542	-16.260	-22.329	-28.842	-6.557	-
9.7	2.953	-5.308	-8.013	5.040	-1.454	-7.542	-16.260	-22.754	-28.842	-6.669	-
9.8	1.947	-6.316	-7.689	4.973	-1.990	-7.542	-16.327	-23.290	-28.842	-6.781	-
9.9	0.728	-7.310	-7.542	4.747	-2.663	-7.542	-16.553	-23.963	-28.842	-6.891	-
10	-0.673	-8.123	-7.572	4.348	-3.436	-7.542	-16.952	-24.736	-28.842	-7.000	-
15	-18.355	-8.781	-5.434	-4.315	-8.013	-3.481	-25.615	-29.313	-24.781	-11.402	-
20	-7.620	0.081	-6.957	-6.841	0.153	-4.507	-28.141	-21.147	-25.807	-14.526	-
25	-23.131	-10.837	-0.189	-13.704	-7.788	-0.178	-35.004	-29.088	-21.478	-16.949	-
30	-21.984	-7.814	-19.236	-13.423	-7.174	-17.473	-34.723	-28.474	-38.773	-18.928	-
35	-33.335	-6.684	-15.277	-27.845	-5.586	-13.375	-49.145	-26.886	-34.675	-20.602	-
40	-19.557	-9.889	-11.306	-18.499	-9.236	-11.089	-39.799	-30.536	-32.389	-22.051	-
45	-22.691	-11.890	-5.822	-21.614	-11.082	-4.366	-42.914	-32.382	-25.666	-23.330	-
50	-19.013	-18.295	-7.624	-18.081	-15.961	-6.056	-39.381	-37.261	-27.356	-24.000	-
55	-16.285	-13.488	-9.202	-16.240	-13.007	-8.053	-37.540	-34.307	-29.353	-24.000	-
60	-11.454	-29.379	-14.999	-11.454	-22.386	-12.197	-32.754	-43.686	-33.497	-24.000	-
65	-18.876	-5.096	-6.693	-18.781	-4.542	-6.685	-40.081	-25.842	-27.985	-24.000	-
70	-19.061	-4.202	-13.154	-18.051	-3.934	-12.002	-39.351	-25.234	-33.302	-24.000	-
75	-18.487	-12.839	-22.558	-18.021	-11.472	-20.594	-39.321	-32.772	-41.894	-24.000	-
80	-17.550	-8.571	-15.393	-17.116	-8.050	-15.393	-38.416	-29.350	-36.693	-24.000	-
85	-24.203	-6.192	-17.042	-23.546	-5.850	-16.900	-44.846	-27.150	-38.200	-14.000	-
90	-28.037	-13.566	-21.640	-27.979	-13.490	-21.603	-49.279	-34.790	-42.903	-14.000	-
95	0.5	0.5	0.5	0.5	0.5	0.5	-20.800	-20.800	-20.800	-14.000	-
100	0.5	0.5	0.5	0.5	0.5	0.5	-20.800	-20.800	-20.800	-14.000	-
105	0.5	0.5	0.5	0.5	0.5	0.5	-20.800	-20.800	-20.800	-14.000	-
110	0.5	0.5	0.5	0.5	0.5	0.5	-20.800	-20.800	-20.800	-14.000	-
115	0.5	0.5	0.5	0.5	0.5	0.5	-20.800	-20.800	-20.800	-14.000	-
120	0.5	0.5	0.5	0.5	0.5	0.5	-20.800	-20.800	-20.800	-14.000	-
125	0.5	0.5	0.5	0.5	0.5	0.5	-20.800	-20.800	-20.800	-14.000	-
130	0.5	0.5	0.5	0.5	0.5	0.5	-20.800	-20.800	-20.800	-14.000	-
135	0.5	0.5	0.5	0.5	0.5	0.5	-20.800	-20.800	-20.800	-14.000	-
140	0.5	0.5	0.5	0.5	0.5	0.5	-20.800	-20.800	-20.800	-14.000	-
145	0.5	0.5	0.5	0.5	0.5	0.5	-20.800	-20.800	-20.800	-14.000	-
150	0.5	0.5	0.5	0.5	0.5	0.5	-20.800	-20.800	-20.800	-14.000	-
155	0.5	0.5	0.5	0.5	0.5	0.5	-20.800	-20.800	-20.800	-14.000	-
160	0.5	0.5	0.5	0.5	0.5	0.5	-20.800	-20.800	-20.800	-14.000	-
165	0.5	0.5	0.5	0.5	0.5	0.5	-20.800	-20.800	-20.800	-14.000	-
170	0.5	0.5	0.5	0.5	0.5	0.5	-20.800	-20.800	-20.800	-14.000	-
175	0.5	0.5	0.5	0.5	0.5	0.5	-20.800	-20.800	-20.800	-14.000	-
180	0.5	0.5	0.5	0.5	0.5	0.5	-20.800	-20.800	-20.800	-14.000	-

14.25GHz V-Pol, Nominal Transmitted Co-Pol PSD with -21.3dBW/4KHz at Input



14.25GHz V-Pol Nominal Transmitted Co-Pol PSD with-21.3dBW/4kHz at Input



Data in support of claim that proposed operation meets criteria of VMES Order July 2009

Applicant	RAS	Date of Application	
ID Heading			
a1 Antenna Manufacture:	RAS	c Main bore gain (dBi):	30.5
a2 Antenna Model:	SR5000	d Frequency at which gain was measured (GHz):	14.0
a3 Antenna ID:	RAS	e Max input power density (dBW/4kHz):	-20.8
b Transmit Band (b):	14GHz	Pattern ID	Table A5
Pattern Description:	14.5GHz H-polarization, co-polarized at tangent to the geosynchronous plane for 0°, 37.5°, and 50° skew angle		

Offset Angles (Degrees)	Nominal Co-Pol Gain Along Tangent to Geo Arc (dBi)			Worst Case Co-Pol Gain Along Tangent to Geo Arc (dBi)			Worst Case Co-Pol PSD Along Tangent to Geo Arc input PSD = -20.8dBW/4kHz (dBW/4kHz)			FCC Mask (dBW/4kHz)	Mask Exceedence (dB)
	0° Skew	37.5° Skew	50° Skew	0° Skew	37.5° Skew	50° Skew	0° Skew	37.5° Skew	50° Skew		
	-180	0.5	0.5	0.5	0.5	0.5	0.5	-20.300	-20.300		
-175	0.5	0.5	0.5	0.5	0.5	0.5	-20.300	-20.300	-20.300	-14.000	-
-170	0.5	0.5	0.5	0.5	0.5	0.5	-20.300	-20.300	-20.300	-14.000	-
-165	0.5	0.5	0.5	0.5	0.5	0.5	-20.300	-20.300	-20.300	-14.000	-
-160	0.5	0.5	0.5	0.5	0.5	0.5	-20.300	-20.300	-20.300	-14.000	-
-155	0.5	0.5	0.5	0.5	0.5	0.5	-20.300	-20.300	-20.300	-14.000	-
-150	0.5	0.5	0.5	0.5	0.5	0.5	-20.300	-20.300	-20.300	-14.000	-
-145	0.5	0.5	0.5	0.5	0.5	0.5	-20.300	-20.300	-20.300	-14.000	-
-140	0.5	0.5	0.5	0.5	0.5	0.5	-20.300	-20.300	-20.300	-14.000	-
-135	0.5	0.5	0.5	0.5	0.5	0.5	-20.300	-20.300	-20.300	-14.000	-
-130	0.5	0.5	0.5	0.5	0.5	0.5	-20.300	-20.300	-20.300	-14.000	-
-125	0.5	0.5	0.5	0.5	0.5	0.5	-20.300	-20.300	-20.300	-14.000	-
-120	0.5	0.5	0.5	0.5	0.5	0.5	-20.300	-20.300	-20.300	-14.000	-
-115	0.5	0.5	0.5	0.5	0.5	0.5	-20.300	-20.300	-20.300	-14.000	-
-110	0.5	0.5	0.5	0.5	0.5	0.5	-20.300	-20.300	-20.300	-14.000	-
-105	0.5	0.5	0.5	0.5	0.5	0.5	-20.300	-20.300	-20.300	-14.000	-
-100	0.5	0.5	0.5	0.5	0.5	0.5	-20.300	-20.300	-20.300	-14.000	-
-95	0.5	0.5	0.5	0.5	0.5	0.5	-20.300	-20.300	-20.300	-14.000	-
-90	-23.756	-24.478	-10.882	-23.599	-23.582	-10.316	-44.399	-44.382	-31.116	-14.000	-
-85	-15.569	-13.273	-6.171	-14.652	-12.365	-5.975	-35.452	-33.165	-26.775	-14.000	-
-80	-9.947	-5.358	-5.290	-9.631	-4.763	-5.202	-30.431	-25.563	-26.002	-24.000	-
-75	-8.849	-1.591	-7.951	-8.551	-1.542	-7.687	-29.351	-22.342	-28.487	-24.000	1.658
-70	-23.342	-12.290	-9.000	-21.197	-8.932	-8.472	-41.997	-29.732	-29.272	-24.000	-
-65	-5.276	-4.485	-14.241	-5.005	-4.305	-12.483	-25.805	-25.105	-33.283	-24.000	-
-60	-12.434	-3.904	-4.513	-9.691	-3.321	-3.809	-30.491	-24.121	-24.609	-24.000	-
-55	-9.244	-8.280	-20.536	-9.136	-7.358	-16.095	-29.936	-28.158	-36.895	-24.000	-
-50	-10.120	-19.421	-13.416	-10.074	-14.939	-12.518	-30.874	-35.739	-33.318	-24.000	-
-45	-9.403	-27.051	-9.720	-9.289	-24.256	-9.684	-30.089	-45.056	-30.484	-23.330	-
-40	-8.365	-20.778	-6.861	-8.275	-18.829	-4.699	-29.075	-39.629	-25.499	-22.051	-
-35	-10.721	-16.924	-17.587	-10.477	-14.574	-13.208	-31.277	-35.374	-34.008	-20.602	-
-30	-20.927	-13.359	-26.202	-9.797	-10.884	-19.955	-30.597	-31.684	-40.755	-18.928	-
-25	-5.393	-17.506	-12.378	-4.034	-16.516	-11.639	-24.834	-37.316	-32.439	-16.949	-
-20	-4.146	-3.997	-1.647	-1.158	-3.697	1.341	-21.958	-24.497	-19.459	-14.526	-
-15	-2.172	-0.436	1.764	0.439	-0.368	3.581	-20.361	-21.168	-17.219	-11.402	-
-10	0.119	-8.514	-5.626	7.982	-4.261	-4.475	-12.818	-25.061	-25.275	-7.000	-

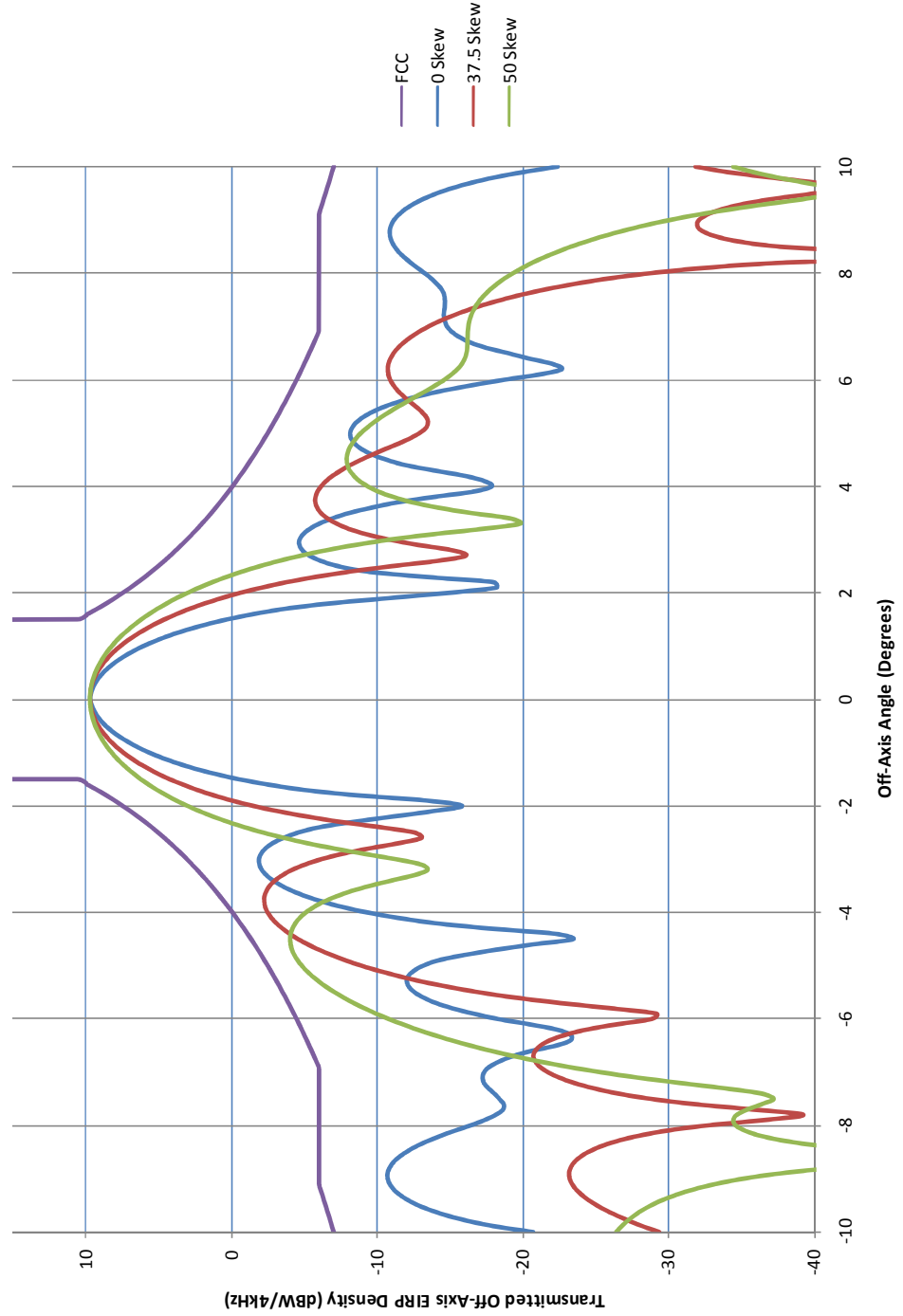
-9.9	2.588	-7.485	-5.959	8.706	-3.683	-4.655	-12.094	-24.483	-25.455	-6.891	-
-9.8	4.446	-6.546	-6.345	9.272	-3.203	-4.859	-11.528	-24.003	-25.659	-6.781	-
-9.7	5.896	-5.699	-6.805	9.684	-2.829	-5.083	-11.116	-23.629	-25.883	-6.669	-
-9.6	7.049	-4.925	-7.344	9.950	-2.554	-5.338	-10.850	-23.354	-26.138	-6.557	-
-9.5	7.982	-4.261	-8.002	10.089	-2.398	-5.626	-10.712	-23.198	-26.426	-6.443	-
-9.4	8.706	-3.683	-8.784	10.097	-2.354	-5.959	-10.703	-23.154	-26.759	-6.328	-
-9.3	9.272	-3.203	-9.752	10.097	-2.354	-6.345	-10.703	-23.154	-27.145	-6.212	-
-9.2	9.684	-2.829	-10.926	10.097	-2.354	-6.805	-10.703	-23.154	-27.605	-6.095	-
-9.1	9.950	-2.554	-12.417	10.097	-2.354	-7.344	-10.703	-23.154	-28.144	-6.000	-
-9	10.089	-2.398	-14.309	10.097	-2.354	-8.002	-10.703	-23.154	-28.802	-6.000	-
-8.9	10.097	-2.354	-16.880	10.097	-2.354	-8.784	-10.703	-23.154	-29.584	-6.000	-
-8.8	9.973	-2.444	-20.597	10.097	-2.354	-9.752	-10.703	-23.154	-30.552	-6.000	-
-8.7	9.728	-2.676	-27.357	10.097	-2.354	-10.926	-10.703	-23.154	-31.726	-6.000	-
-8.6	9.351	-3.061	-44.195	10.097	-2.354	-12.417	-10.703	-23.154	-33.217	-6.000	-
-8.5	8.835	-3.652	-25.504	10.097	-2.354	-13.826	-10.703	-23.154	-34.626	-6.000	-
-8.4	8.205	-4.449	-20.359	10.097	-2.354	-13.665	-10.703	-23.154	-34.465	-6.000	-
-8.3	7.411	-5.540	-17.460	9.973	-2.444	-13.665	-10.827	-23.244	-34.465	-6.000	-
-8.2	6.512	-7.015	-15.625	9.728	-2.676	-13.665	-11.072	-23.476	-34.465	-6.000	-
-8.1	5.517	-8.978	-14.482	9.351	-3.061	-13.665	-11.449	-23.861	-34.465	-6.000	-
-8	4.425	-11.792	-13.826	8.835	-3.652	-13.665	-11.965	-24.452	-34.465	-6.000	-
-7.9	3.468	-15.638	-13.665	8.205	-4.449	-13.665	-12.595	-25.249	-34.465	-6.000	-
-7.8	2.687	-18.415	-13.896	7.411	-4.017	-13.021	-13.389	-24.817	-33.821	-6.000	-
-7.7	2.179	-15.007	-14.625	6.512	-2.676	-9.946	-14.288	-23.476	-30.746	-6.000	-
-7.6	2.132	-10.969	-15.608	5.517	-1.669	-7.080	-15.283	-22.469	-27.880	-6.000	-
-7.5	2.441	-7.937	-16.432	4.425	-0.899	-4.565	-16.375	-21.699	-25.365	-6.000	-
-7.4	2.771	-5.709	-15.594	3.570	-0.352	-2.347	-17.230	-21.152	-23.147	-6.000	-
-7.3	3.183	-4.017	-13.021	3.570	-0.032	-0.386	-17.230	-20.832	-21.186	-6.000	-
-7.2	3.494	-2.676	-9.946	3.570	0.095	1.368	-17.230	-20.705	-19.432	-6.000	-
-7.1	3.570	-1.669	-7.080	3.570	0.095	2.954	-17.230	-20.705	-17.846	-6.000	-
-7	3.476	-0.899	-4.565	3.570	0.095	4.389	-17.230	-20.705	-16.411	-6.000	-
-6.9	3.128	-0.352	-2.347	3.570	0.095	5.709	-17.230	-20.705	-15.091	-5.971	-
-6.8	2.455	-0.032	-0.386	3.570	0.095	6.909	-17.230	-20.705	-13.891	-5.813	-
-6.7	1.536	0.095	1.368	3.570	0.095	8.026	-17.230	-20.705	-12.774	-5.652	-
-6.6	0.235	-0.026	2.954	3.570	0.095	9.043	-17.230	-20.705	-11.757	-5.489	-
-6.5	-1.460	-0.377	4.389	3.476	0.095	9.995	-17.324	-20.705	-10.805	-5.323	-
-6.4	-2.449	-1.031	5.709	4.224	0.095	10.861	-16.576	-20.705	-9.939	-5.154	-
-6.3	-2.457	-2.065	6.909	5.651	0.095	11.671	-15.149	-20.705	-9.129	-4.984	-
-6.2	-1.517	-3.538	8.026	6.790	0.095	12.406	-14.010	-20.705	-8.394	-4.810	-
-6.1	0.365	-5.639	9.043	7.625	1.311	13.092	-13.175	-19.489	-7.708	-4.633	-
-6	2.528	-8.013	9.995	8.252	3.808	13.706	-12.548	-16.992	-7.094	-4.454	-
-5.9	4.224	-8.330	10.861	8.622	5.883	14.276	-12.178	-14.917	-6.524	-4.271	-
-5.8	5.651	-5.238	11.671	8.773	7.717	14.777	-12.027	-13.083	-6.023	-4.086	-
-5.7	6.790	-1.739	12.406	8.773	9.273	15.234	-12.027	-11.527	-5.566	-3.897	-
-5.6	7.625	1.311	13.092	8.773	10.650	15.625	-12.027	-10.150	-5.175	-3.705	-
-5.5	8.252	3.808	13.706	8.773	11.891	15.969	-12.027	-8.909	-4.831	-3.509	-
-5.4	8.622	5.883	14.276	8.773	12.967	16.248	-12.027	-7.833	-4.552	-3.310	-
-5.3	8.773	7.717	14.777	8.773	13.944	16.474	-12.027	-6.856	-4.326	-3.107	-
-5.2	8.689	9.273	15.234	8.773	14.810	16.634	-12.027	-5.990	-4.166	-2.900	-
-5.1	8.325	10.650	15.625	8.773	15.565	16.735	-12.027	-5.235	-4.065	-2.689	-
-5	7.663	11.891	15.969	8.773	16.248	16.764	-12.027	-4.552	-4.036	-2.474	-
-4.9	6.616	12.967	16.248	8.773	16.826	16.764	-12.027	-3.974	-4.036	-2.255	-
-4.8	4.847	13.944	16.474	8.773	17.323	16.764	-12.027	-3.477	-4.036	-2.031	-
-4.7	2.659	14.810	16.634	8.689	17.744	16.764	-12.111	-3.056	-4.036	-1.802	-
-4.6	0.122	15.565	16.735	9.407	18.070	16.764	-11.393	-2.730	-4.036	-1.569	-
-4.5	-2.644	16.248	16.764	11.509	18.323	16.764	-9.291	-2.477	-4.036	-1.330	-
-4.4	-1.387	16.826	16.725	13.165	18.484	16.764	-7.635	-2.316	-4.036	-1.086	-
-4.3	3.174	17.323	16.603	14.543	18.555	16.764	-6.257	-2.245	-4.036	-0.837	-
-4.2	6.863	17.744	16.398	15.678	18.555	16.764	-5.123	-2.245	-4.036	-0.581	-
-4.1	9.407	18.070	16.095	16.602	18.555	16.764	-4.198	-2.245	-4.036	-0.320	-
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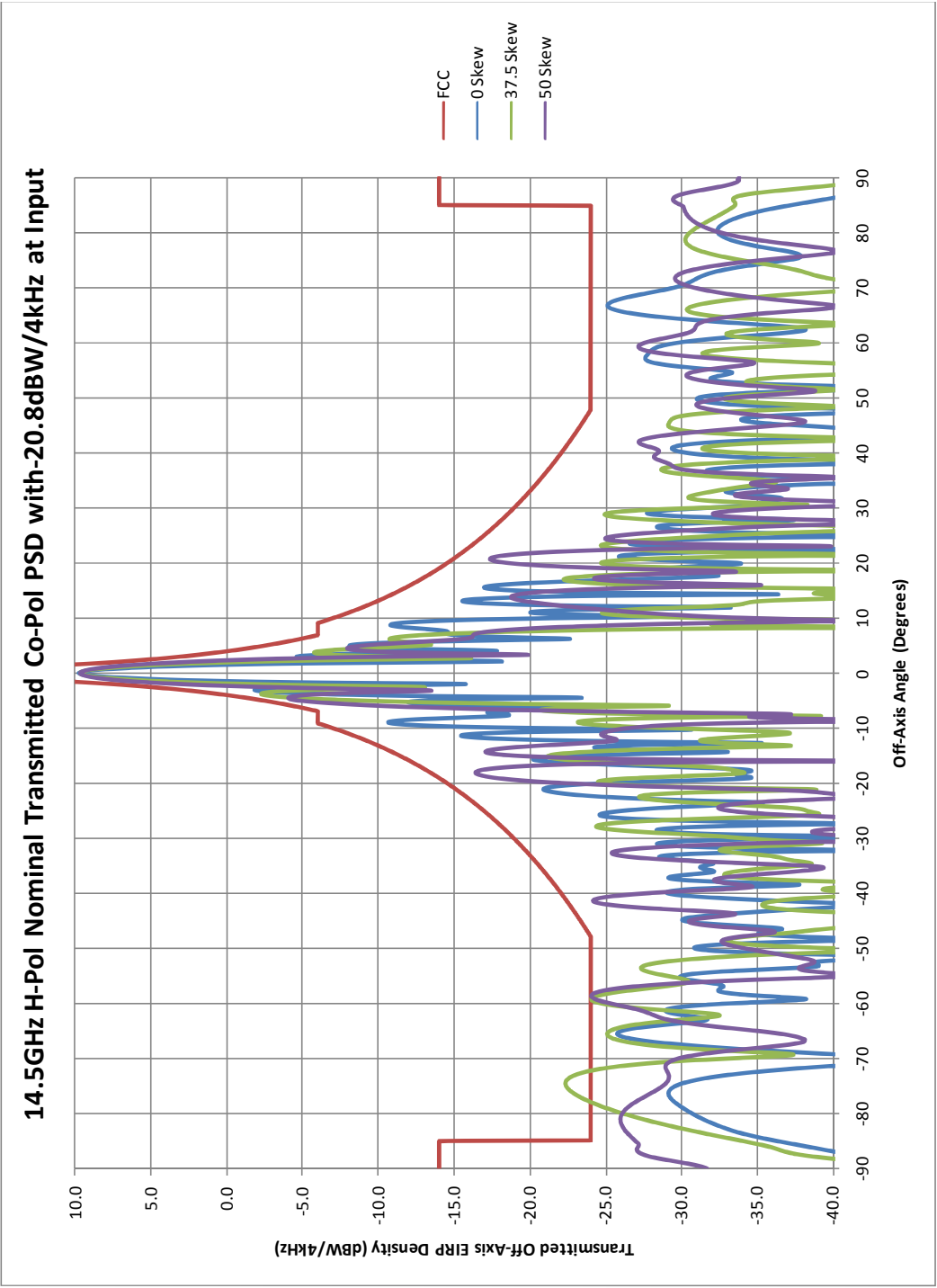
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1.2	25.048	27.420	28.317	28.770	29.531	29.788	7.970	8.731	8.988	-	-
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1.5	21.133	25.411	26.994	26.861	28.424	29.009	6.061	7.624	8.209	10.598	-
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5.2	12.247	7.322	11.027	12.661	10.247	12.718	-8.139	-10.553	-8.082	-2.900	-
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75	-16.161	-13.241	-14.379	-14.876	-12.241	-12.723	-35.676	-33.041	-33.523	-24.000	-
80	-11.652	-9.747	-11.832	-11.619	-9.581	-11.212	-32.419	-30.381	-32.012	-24.000	-
85	-16.431	-12.740	-9.183	-15.438	-12.506	-8.831	-36.238	-33.306	-29.631	-14.000	-
90	-24.947	-21.192	-12.998	-24.789	-21.115	-12.916	-45.589	-41.915	-33.716	-14.000	-
95	0.5	0.5	0.5	0.5	0.5	0.5	-20.300	-20.300	-20.300	-14.000	-
100	0.5	0.5	0.5	0.5	0.5	0.5	-20.300	-20.300	-20.300	-14.000	-
105	0.5	0.5	0.5	0.5	0.5	0.5	-20.300	-20.300	-20.300	-14.000	-
110	0.5	0.5	0.5	0.5	0.5	0.5	-20.300	-20.300	-20.300	-14.000	-
115	0.5	0.5	0.5	0.5	0.5	0.5	-20.300	-20.300	-20.300	-14.000	-
120	0.5	0.5	0.5	0.5	0.5	0.5	-20.300	-20.300	-20.300	-14.000	-
125	0.5	0.5	0.5	0.5	0.5	0.5	-20.300	-20.300	-20.300	-14.000	-
130	0.5	0.5	0.5	0.5	0.5	0.5	-20.300	-20.300	-20.300	-14.000	-
135	0.5	0.5	0.5	0.5	0.5	0.5	-20.300	-20.300	-20.300	-14.000	-
140	0.5	0.5	0.5	0.5	0.5	0.5	-20.300	-20.300	-20.300	-14.000	-
145	0.5	0.5	0.5	0.5	0.5	0.5	-20.300	-20.300	-20.300	-14.000	-
150	0.5	0.5	0.5	0.5	0.5	0.5	-20.300	-20.300	-20.300	-14.000	-
155	0.5	0.5	0.5	0.5	0.5	0.5	-20.300	-20.300	-20.300	-14.000	-
160	0.5	0.5	0.5	0.5	0.5	0.5	-20.300	-20.300	-20.300	-14.000	-
165	0.5	0.5	0.5	0.5	0.5	0.5	-20.300	-20.300	-20.300	-14.000	-
170	0.5	0.5	0.5	0.5	0.5	0.5	-20.300	-20.300	-20.300	-14.000	-
175	0.5	0.5	0.5	0.5	0.5	0.5	-20.300	-20.300	-20.300	-14.000	-
180	0.5	0.5	0.5	0.5	0.5	0.5	-20.300	-20.300	-20.300	-14.000	-

14.5GHz H-Pol, Nominal Transmitted Co-Pol PSD with -20.8dBW/4KHz at Input





Data in support of claim that proposed operation meets criteria of VMES Order July 2009

Applicant	RAS		Date of Application	
	ID Heading			
a1	Antenna Manufacture:	RAS	c	Main bore gain (dBi): 30.5
a2	Antenna Model:	SR5000	d	Frequency at which gain was measured (GHz): 14.0
a3	Antenna ID:	RAS	e	Max input power density (dBW/4kHz): -20.8
b	Transmit Band (b):	14GHz	Pattern ID	Table A6
	Pattern Description:	14.5GHz V-polarization, co-polarized at tangent to the geosynchronous plane for 0°, 37.5°, and 50° skew angle		

Offset Angles (Degrees)	Nominal Co-Pol Gain Along Tangent to Geo Arc (dBi)			Worst Case Co-Pol Gain Along Tangent to Geo Arc (dBi)			Worst Case Co-Pol PSD Along Tangent to Geo Arc input PSD = -20.8dBW/4kHz (dBW/4kHz)			FCC Mask (dBW/4kHz)	Mask Exceedence (dB)
	0° Skew	37.5° Skew	50° Skew	0° Skew	37.5° Skew	50° Skew	0° Skew	37.5° Skew	50° Skew		
	-180	0.5	0.5	0.5	0.5	0.5	0.5	-20.300	-20.300		
-175	0.5	0.5	0.5	0.5	0.5	0.5	-20.300	-20.300	-20.300	-14.000	-
-170	0.5	0.5	0.5	0.5	0.5	0.5	-20.300	-20.300	-20.300	-14.000	-
-165	0.5	0.5	0.5	0.5	0.5	0.5	-20.300	-20.300	-20.300	-14.000	-
-160	0.5	0.5	0.5	0.5	0.5	0.5	-20.300	-20.300	-20.300	-14.000	-
-155	0.5	0.5	0.5	0.5	0.5	0.5	-20.300	-20.300	-20.300	-14.000	-
-150	0.5	0.5	0.5	0.5	0.5	0.5	-20.300	-20.300	-20.300	-14.000	-
-145	0.5	0.5	0.5	0.5	0.5	0.5	-20.300	-20.300	-20.300	-14.000	-
-140	0.5	0.5	0.5	0.5	0.5	0.5	-20.300	-20.300	-20.300	-14.000	-
-135	0.5	0.5	0.5	0.5	0.5	0.5	-20.300	-20.300	-20.300	-14.000	-
-130	0.5	0.5	0.5	0.5	0.5	0.5	-20.300	-20.300	-20.300	-14.000	-
-125	0.5	0.5	0.5	0.5	0.5	0.5	-20.300	-20.300	-20.300	-14.000	-
-120	0.5	0.5	0.5	0.5	0.5	0.5	-20.300	-20.300	-20.300	-14.000	-
-115	0.5	0.5	0.5	0.5	0.5	0.5	-20.300	-20.300	-20.300	-14.000	-
-110	0.5	0.5	0.5	0.5	0.5	0.5	-20.300	-20.300	-20.300	-14.000	-
-105	0.5	0.5	0.5	0.5	0.5	0.5	-20.300	-20.300	-20.300	-14.000	-
-100	0.5	0.5	0.5	0.5	0.5	0.5	-20.300	-20.300	-20.300	-14.000	-
-95	0.5	0.5	0.5	0.5	0.5	0.5	-20.300	-20.300	-20.300	-14.000	-
-90	-15.790	-21.762	-21.041	-15.520	-20.777	-20.520	-36.320	-41.577	-41.320	-14.000	-
-85	-13.460	-16.079	-18.953	-13.375	-15.657	-18.681	-34.175	-36.457	-39.481	-14.000	-
-80	-16.643	-26.302	-25.072	-15.912	-23.972	-23.939	-36.712	-44.772	-44.739	-24.000	-
-75	-14.218	-13.121	-20.428	-13.977	-12.309	-19.590	-34.777	-33.109	-40.390	-24.000	-
-70	-18.778	-21.315	-13.679	-17.150	-18.404	-12.154	-37.950	-39.204	-32.954	-24.000	-
-65	-20.716	-4.931	-9.621	-18.001	-4.180	-9.141	-38.801	-24.980	-29.941	-24.000	-
-60	-13.026	-13.507	-7.761	-10.920	-10.842	-7.587	-31.720	-31.642	-28.387	-24.000	-
-55	-17.041	-12.877	-20.112	-14.981	-11.793	-15.074	-35.781	-32.593	-35.874	-24.000	-
-50	-16.704	-17.763	-3.247	-16.544	-14.883	-2.924	-37.344	-35.683	-23.724	-24.000	0.276
-45	-33.226	-9.218	-9.916	-18.170	-9.215	-9.469	-38.970	-30.015	-30.269	-23.330	-
-40	-25.224	-3.589	-13.135	-22.460	-3.556	-9.572	-43.260	-24.356	-30.372	-22.051	-
-35	-15.572	-17.188	-17.428	-15.461	-14.834	-12.549	-36.261	-35.634	-33.349	-20.602	-
-30	-12.476	-15.554	-7.456	-9.884	-15.358	-7.145	-30.684	-36.158	-27.945	-18.928	-
-25	-18.015	-13.929	-1.518	-10.125	-11.254	-1.005	-30.925	-32.054	-21.805	-16.949	-
-20	-16.947	-2.847	-3.313	-9.864	-2.718	-0.812	-30.664	-23.518	-21.612	-14.526	-
-15	-3.233	-1.781	-0.419	0.298	-1.532	2.010	-20.502	-22.332	-18.790	-11.402	-
-10	0.312	-3.708	-4.854	4.599	0.905	-3.540	-16.201	-19.895	-24.340	-7.000	-

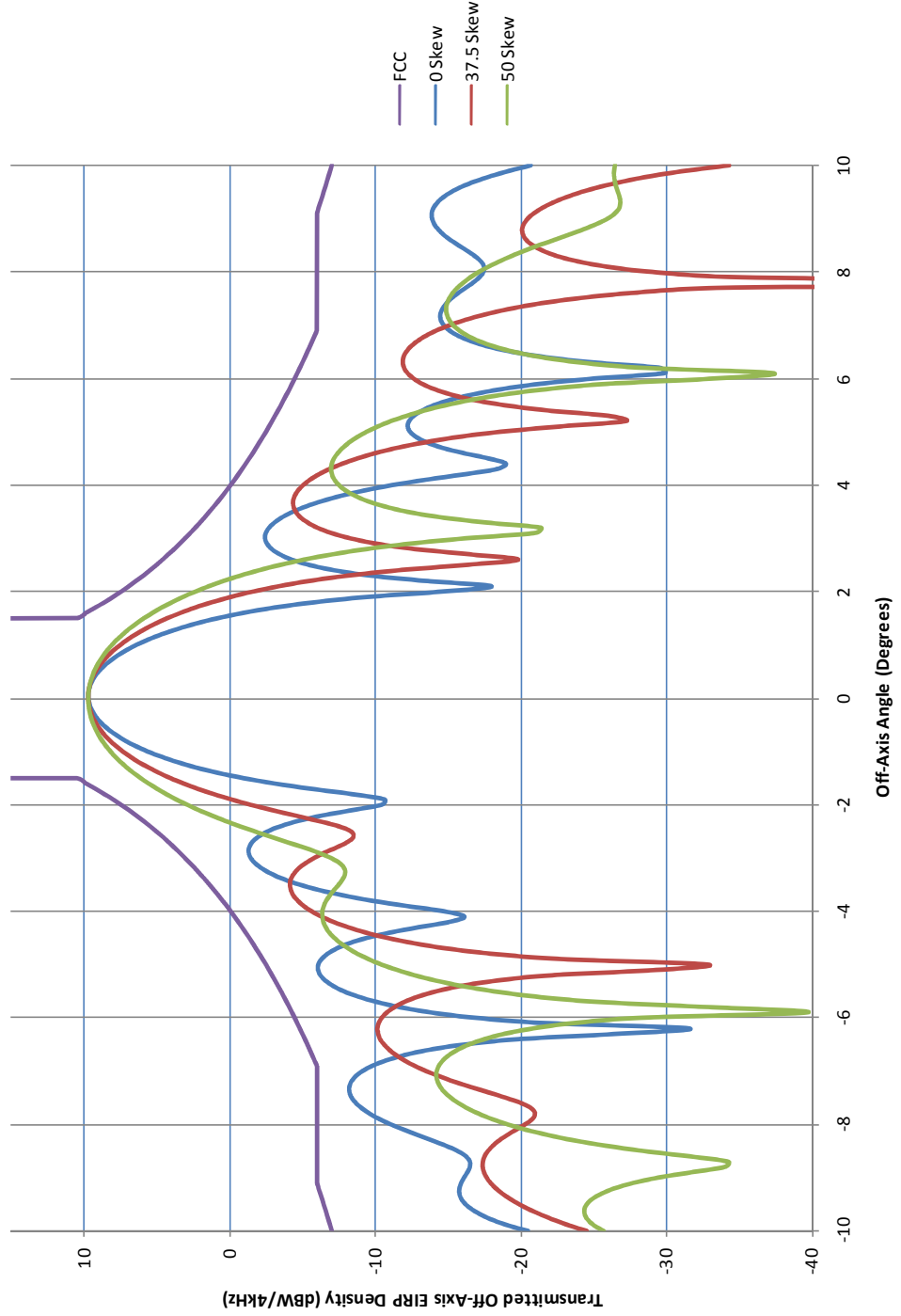
-9.9	1.638	-2.551	-4.218	4.892	1.536	-3.540	-15.908	-19.264	-24.340	-6.891	-
-9.8	2.686	-1.532	-3.800	5.021	2.072	-3.540	-15.779	-18.728	-24.340	-6.781	-
-9.7	3.507	-0.624	-3.575	5.021	2.517	-3.540	-15.779	-18.283	-24.340	-6.669	-
-9.6	4.138	0.199	-3.540	5.021	2.884	-3.540	-15.779	-17.916	-24.340	-6.557	-
-9.5	4.599	0.905	-3.709	5.021	3.149	-3.540	-15.779	-17.651	-24.340	-6.443	-
-9.4	4.892	1.536	-4.080	5.021	3.333	-3.540	-15.779	-17.467	-24.340	-6.328	-
-9.3	5.021	2.072	-4.710	5.021	3.419	-3.540	-15.779	-17.381	-24.340	-6.212	-
-9.2	5.014	2.517	-5.605	5.021	3.419	-3.540	-15.779	-17.381	-24.340	-6.095	-
-9.1	4.898	2.884	-6.889	5.021	3.419	-3.540	-15.779	-17.381	-24.340	-6.000	-
-9	4.704	3.149	-8.589	5.146	3.419	-3.709	-15.654	-17.381	-24.509	-6.000	-
-8.9	4.476	3.333	-10.865	5.958	3.419	-4.080	-14.842	-17.381	-24.880	-6.000	-
-8.8	4.303	3.419	-13.156	6.900	3.419	-2.805	-13.900	-17.381	-23.605	-6.000	-
-8.7	4.301	3.402	-13.401	7.886	3.419	-1.040	-12.914	-17.381	-21.840	-6.000	-
-8.6	4.571	3.295	-10.753	8.847	3.419	0.471	-11.953	-17.381	-20.329	-6.000	-
-8.5	5.146	3.063	-7.599	9.737	3.419	1.720	-11.063	-17.381	-19.080	-6.000	-
-8.4	5.958	2.733	-4.992	10.516	3.419	2.802	-10.284	-17.381	-17.998	-6.000	-
-8.3	6.900	2.294	-2.805	11.172	3.419	3.700	-9.628	-17.381	-17.100	-6.000	-
-8.2	7.886	1.737	-1.040	11.710	3.402	4.476	-9.090	-17.398	-16.324	-6.000	-
-8.1	8.847	1.135	0.471	12.128	3.295	5.104	-8.672	-17.505	-15.696	-6.000	-
-8	9.737	0.512	1.720	12.418	3.063	5.632	-8.382	-17.737	-15.168	-6.000	-
-7.9	10.516	0.008	2.802	12.568	3.023	6.032	-8.232	-17.777	-14.768	-6.000	-
-7.8	11.172	-0.176	3.700	12.580	4.211	6.337	-8.220	-16.589	-14.463	-6.000	-
-7.7	11.710	0.077	4.476	12.580	5.359	6.526	-8.220	-15.441	-14.274	-6.000	-
-7.6	12.128	0.781	5.104	12.580	6.378	6.616	-8.220	-14.422	-14.184	-6.000	-
-7.5	12.418	1.842	5.632	12.580	7.297	6.616	-8.220	-13.503	-14.184	-6.000	-
-7.4	12.568	3.023	6.032	12.580	8.107	6.616	-8.220	-12.693	-14.184	-6.000	-
-7.3	12.580	4.211	6.337	12.580	8.786	6.616	-8.220	-12.014	-14.184	-6.000	-
-7.2	12.450	5.359	6.526	12.580	9.372	6.616	-8.220	-11.428	-14.184	-6.000	-
-7.1	12.162	6.378	6.616	12.580	9.838	6.616	-8.220	-10.962	-14.184	-6.000	-
-7	11.686	7.297	6.586	12.580	10.200	6.616	-8.220	-10.600	-14.184	-6.000	-
-6.9	10.996	8.107	6.446	12.580	10.462	6.616	-8.220	-10.338	-14.184	-5.971	-
-6.8	10.059	8.786	6.167	12.580	10.604	6.616	-8.220	-10.196	-14.184	-5.813	-
-6.7	8.803	9.372	5.756	12.450	10.647	6.616	-8.350	-10.153	-14.184	-5.652	-
-6.6	7.093	9.838	5.161	12.162	10.647	6.616	-8.638	-10.153	-14.184	-5.489	-
-6.5	4.657	10.200	4.382	11.686	10.647	6.586	-9.114	-10.153	-14.214	-5.323	-
-6.4	0.941	10.462	3.318	10.996	10.647	6.446	-9.804	-10.153	-14.354	-5.154	-
-6.3	-5.895	10.604	1.937	10.059	10.647	6.167	-10.741	-10.153	-14.633	-4.984	-
-6.2	-10.732	10.647	-0.006	10.732	10.647	5.756	-10.068	-10.153	-15.044	-4.810	-
-6.1	-0.945	10.562	-2.748	11.995	10.647	5.161	-8.805	-10.153	-15.639	-4.633	-
-6	3.898	10.353	-7.424	12.975	10.647	4.382	-7.825	-10.153	-16.418	-4.454	-
-5.9	6.944	10.011	-18.855	13.707	10.647	4.926	-7.093	-10.153	-15.874	-4.271	-
-5.8	9.103	9.485	-12.061	14.228	10.647	6.653	-6.572	-10.153	-14.147	-4.086	-
-5.7	10.732	8.790	-4.384	14.565	10.647	8.130	-6.235	-10.153	-12.670	-3.897	-
-5.6	11.995	7.838	-0.138	14.727	10.562	9.331	-6.073	-10.238	-11.469	-3.705	-
-5.5	12.975	6.562	2.698	14.727	10.353	10.386	-6.073	-10.447	-10.414	-3.509	-
-5.4	13.707	4.875	4.926	14.727	10.011	11.256	-6.073	-10.789	-9.544	-3.310	-
-5.3	14.228	2.406	6.653	14.727	9.485	12.024	-6.073	-11.315	-8.776	-3.107	-
-5.2	14.565	-1.345	8.130	14.727	8.790	12.648	-6.073	-12.010	-8.152	-2.900	-
-5.1	14.727	-8.644	9.331	14.727	8.137	13.191	-6.073	-12.663	-7.609	-2.689	-
-5	14.706	-11.980	10.386	14.727	9.984	13.612	-6.073	-10.816	-7.188	-2.474	-
-4.9	14.494	-2.162	11.256	14.727	11.445	13.962	-6.073	-9.355	-6.838	-2.255	-
-4.8	14.087	2.675	12.024	14.727	12.649	14.201	-6.073	-8.151	-6.599	-2.031	-
-4.7	13.465	5.846	12.648	14.727	13.669	14.371	-6.073	-7.131	-6.429	-1.802	-
-4.6	12.583	8.137	13.191	14.727	14.488	14.437	-6.073	-6.312	-6.363	-1.569	-
-4.5	11.374	9.984	13.612	14.706	15.170	14.437	-6.094	-5.630	-6.363	-1.330	-
-4.4	9.791	11.445	13.962	14.494	15.718	14.437	-6.306	-5.082	-6.363	-1.086	-
-4.3	7.823	12.649	14.201	14.087	16.126	14.437	-6.713	-4.674	-6.363	-0.837	-
-4.2	5.716	13.669	14.371	13.465	16.430	14.437	-7.335	-4.370	-6.363	-0.581	-
-4.1	4.679	14.488	14.437	14.669	16.599	14.437	-6.131	-4.201	-6.363	-0.320	-
-4	6.084	15.170	14.436	16.005	16.656	14.437	-4.795	-4.144	-6.363	-0.051	-

-3.9	8.653	15.718	14.334	17.076	16.656	14.437	-3.724	-4.144	-6.363	0.223	-
-3.8	11.051	16.126	14.173	17.917	16.656	14.437	-2.883	-4.144	-6.363	0.505	-
-3.7	13.040	16.430	13.922	18.565	16.656	14.437	-2.235	-4.144	-6.363	0.795	-
-3.6	14.669	16.599	13.641	19.041	16.656	14.437	-1.759	-4.144	-6.363	1.092	-
-3.5	16.005	16.656	13.317	19.353	16.656	14.436	-1.447	-4.144	-6.364	1.398	-
-3.4	17.076	16.594	13.052	19.491	16.656	14.722	-1.309	-4.144	-6.078	1.713	-
-3.3	17.917	16.393	12.874	19.491	16.656	15.746	-1.309	-4.144	-5.054	2.037	-
-3.2	18.565	16.074	12.922	19.491	16.656	16.870	-1.309	-4.144	-3.930	2.371	-
-3.1	19.041	15.602	13.232	19.491	16.656	17.983	-1.309	-4.144	-2.817	2.716	-
-3	19.353	14.992	13.850	19.491	16.656	19.097	-1.309	-4.144	-1.703	3.072	-
-2.9	19.491	14.268	14.722	19.491	16.594	20.133	-1.309	-4.206	-0.667	3.440	-
-2.8	19.454	13.447	15.746	19.491	16.393	21.139	-1.309	-4.407	0.339	3.821	-
-2.7	19.241	12.698	16.870	19.491	16.337	22.052	-1.309	-4.463	1.252	4.216	-
-2.6	18.833	12.286	17.983	19.491	17.891	22.930	-1.309	-2.909	2.130	4.626	-
-2.5	18.196	12.469	19.097	19.491	19.368	23.719	-1.309	-1.432	2.919	5.051	-
-2.4	17.279	13.368	20.133	19.491	20.683	24.475	-1.309	-0.117	3.675	5.495	-
-2.3	16.034	14.789	21.139	19.454	21.903	25.151	-1.346	1.103	4.351	5.957	-
-2.2	14.396	16.337	22.052	19.241	22.996	25.797	-1.559	2.196	4.997	6.439	-
-2.1	12.353	17.891	22.930	18.833	23.970	26.372	-1.967	3.170	5.572	6.945	-
-2	10.361	19.368	23.719	19.863	24.871	26.920	-0.937	4.071	6.120	7.474	-
-1.9	10.169	20.683	24.475	21.639	25.665	27.405	0.839	4.865	6.605	8.031	-
-1.8	12.414	21.903	25.151	23.125	26.383	27.864	2.325	5.583	7.064	8.618	-
-1.7	15.236	22.996	25.797	24.390	27.040	28.267	3.590	6.240	7.467	9.239	-
-1.6	17.746	23.970	26.372	25.482	27.613	28.646	4.682	6.813	7.846	9.897	-
-1.5	19.863	24.871	26.920	26.433	28.134	28.975	5.633	7.334	8.175	10.598	-
-1.4	21.639	25.665	27.405	27.255	28.596	29.280	6.455	7.796	8.480	-	-
-1.3	23.125	26.383	27.864	27.956	28.996	29.539	7.156	8.196	8.739	-	-
-1.2	24.390	27.040	28.267	28.554	29.353	29.775	7.754	8.553	8.975	-	-
-1.1	25.482	27.613	28.646	29.063	29.653	29.969	8.263	8.853	9.169	-	-
-1	26.433	28.134	28.975	29.491	29.906	30.138	8.691	9.106	9.338	-	-
-0.9	27.255	28.596	29.280	29.839	30.118	30.269	9.039	9.318	9.469	-	-
-0.8	27.956	28.996	29.539	30.108	30.276	30.376	9.308	9.476	9.576	-	-
-0.7	28.554	29.353	29.775	30.305	30.397	30.446	9.505	9.597	9.646	-	-
-0.6	29.063	29.653	29.969	30.436	30.471	30.491	9.636	9.671	9.691	-	-
-0.5	29.491	29.906	30.138	30.500	30.500	30.500	9.700	9.700	9.700	-	-
-0.4	29.839	30.118	30.269	30.500	30.500	30.500	9.700	9.700	9.700	-	-
-0.3	30.108	30.276	30.376	30.500	30.500	30.500	9.700	9.700	9.700	-	-
-0.2	30.305	30.397	30.446	30.500	30.500	30.500	9.700	9.700	9.700	-	-
-0.1	30.436	30.471	30.491	30.500	30.500	30.500	9.700	9.700	9.700	-	-
0	30.500	30.500	30.500	30.500	30.500	30.500	9.700	9.700	9.700	-	-
0.1	30.495	30.491	30.484	30.500	30.500	30.500	9.700	9.700	9.700	-	-
0.2	30.421	30.432	30.432	30.500	30.500	30.500	9.700	9.700	9.700	-	-
0.3	30.282	30.335	30.355	30.500	30.500	30.500	9.700	9.700	9.700	-	-
0.4	30.076	30.191	30.240	30.500	30.500	30.500	9.700	9.700	9.700	-	-
0.5	29.800	29.999	30.101	30.500	30.500	30.500	9.700	9.700	9.700	-	-
0.6	29.446	29.767	29.921	30.495	30.491	30.484	9.695	9.691	9.684	-	-
0.7	29.013	29.479	29.717	30.421	30.432	30.432	9.621	9.632	9.632	-	-
0.8	28.502	29.145	29.469	30.282	30.335	30.355	9.482	9.535	9.555	-	-
0.9	27.905	28.761	29.196	30.076	30.191	30.240	9.276	9.391	9.440	-	-
1	27.208	28.310	28.875	29.800	29.999	30.101	9.000	9.199	9.301	-	-
1.1	26.392	27.811	28.527	29.446	29.767	29.921	8.646	8.967	9.121	-	-
1.2	25.452	27.243	28.127	29.013	29.479	29.717	8.213	8.679	8.917	-	-
1.3	24.373	26.599	27.698	28.502	29.145	29.469	7.702	8.345	8.669	-	-
1.4	23.123	25.893	27.210	27.905	28.761	29.196	7.105	7.961	8.396	-	-
1.5	21.652	25.082	26.688	27.208	28.310	28.875	6.408	7.510	8.075	10.598	-
1.6	19.881	24.184	26.100	26.392	27.811	28.527	5.592	7.011	7.727	9.897	-
1.7	17.719	23.182	25.471	25.452	27.243	28.127	4.652	6.443	7.327	9.239	-
1.8	15.000	22.020	24.766	24.373	26.599	27.698	3.573	5.799	6.898	8.618	-
1.9	11.365	20.726	24.009	23.123	25.893	27.210	2.323	5.093	6.410	8.031	-

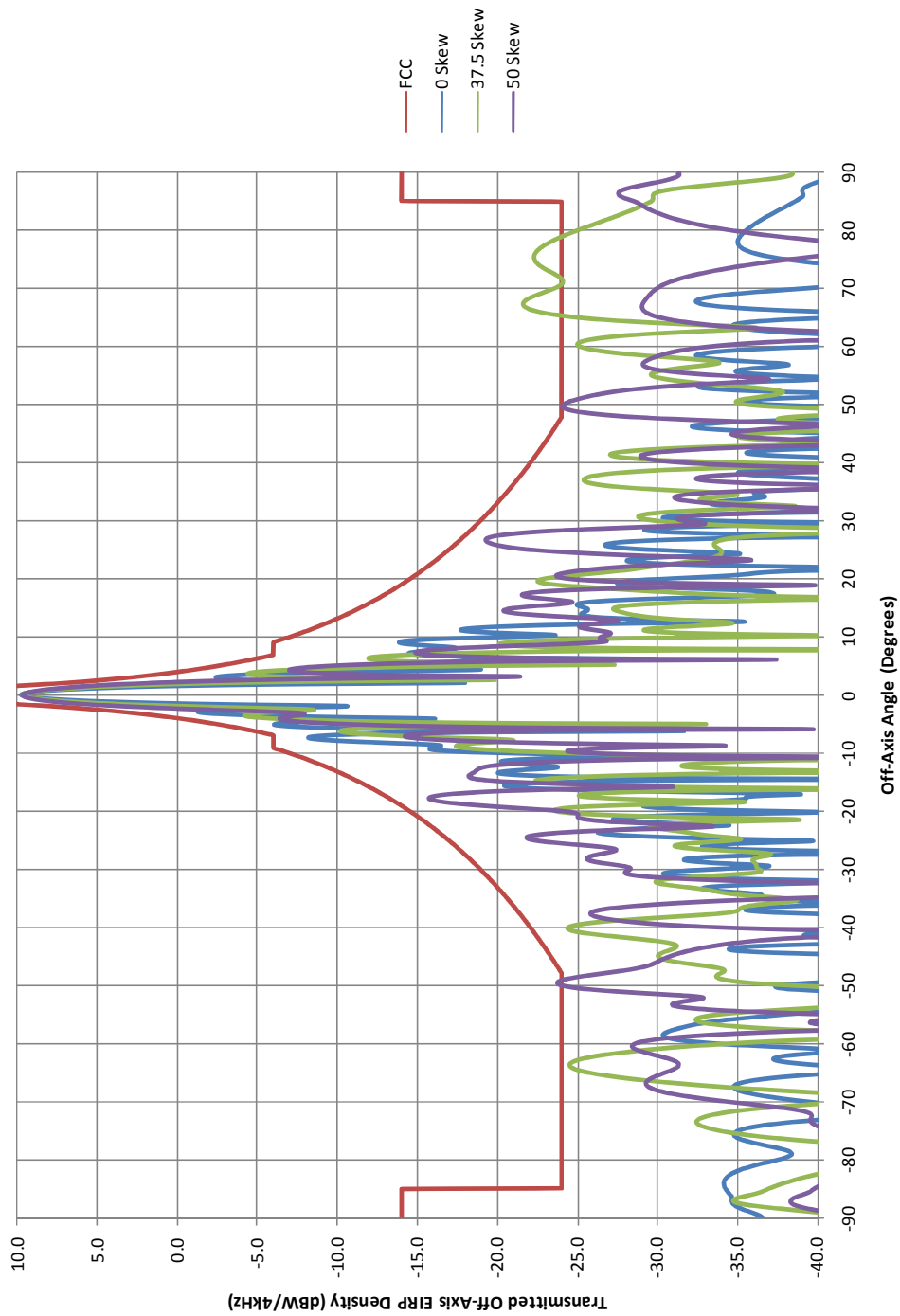
2	6.241	19.225	23.162	21.652	25.082	26.688	0.852	4.282	5.888	7.474	-
2.1	2.818	17.439	22.244	19.881	24.184	26.100	-0.919	3.384	5.300	6.945	-
2.2	7.299	15.344	21.215	17.719	23.182	25.471	-3.081	2.382	4.671	6.439	-
2.3	11.102	12.687	20.084	17.914	22.020	24.766	-2.886	1.220	3.966	5.957	-
2.4	13.599	9.232	18.803	18.239	20.726	24.009	-2.561	-0.074	3.209	5.495	-
2.5	15.318	4.660	17.363	18.369	19.225	23.162	-2.431	-1.575	2.362	5.051	-
2.6	16.528	0.985	15.701	18.369	17.439	22.244	-2.431	-3.361	1.444	4.626	-
2.7	17.364	4.312	13.752	18.369	15.344	21.215	-2.431	-5.456	0.415	4.216	-
2.8	17.914	8.086	11.411	18.369	15.464	20.084	-2.431	-5.336	-0.716	3.821	-
2.9	18.239	10.701	8.447	18.369	15.955	18.803	-2.431	-4.845	-1.997	3.440	-
3	18.369	12.495	4.613	18.369	16.255	17.363	-2.431	-4.545	-3.437	3.072	-
3.1	18.319	13.819	-0.141	18.369	16.413	15.701	-2.431	-4.387	-5.099	2.716	-
3.2	18.095	14.776	-0.556	18.369	16.431	13.752	-2.431	-4.369	-7.048	2.371	-
3.3	17.711	15.464	3.329	18.369	16.431	12.211	-2.431	-4.369	-8.589	2.037	-
3.4	17.169	15.955	6.431	18.369	16.431	12.856	-2.431	-4.369	-7.944	1.713	-
3.5	16.458	16.255	8.627	18.369	16.431	13.304	-2.431	-4.369	-7.496	1.398	-
3.6	15.557	16.413	10.185	18.319	16.431	13.614	-2.481	-4.369	-7.186	1.092	-
3.7	14.446	16.431	11.356	18.095	16.431	13.782	-2.705	-4.369	-7.018	0.795	-
3.8	13.117	16.320	12.211	17.711	16.431	13.841	-3.089	-4.369	-6.959	0.505	-
3.9	11.528	16.097	12.856	17.169	16.431	13.841	-3.631	-4.369	-6.959	0.223	-
4	9.617	15.741	13.304	16.458	16.431	13.841	-4.342	-4.369	-6.959	-0.051	-
4.1	7.326	15.278	13.614	15.557	16.431	13.841	-5.243	-4.369	-6.959	-0.320	-
4.2	4.738	14.684	13.782	14.446	16.431	13.841	-6.354	-4.369	-6.959	-0.581	-
4.3	2.462	13.950	13.841	13.117	16.320	13.841	-7.683	-4.480	-6.959	-0.837	-
4.4	1.820	13.084	13.789	11.528	16.097	13.841	-9.272	-4.703	-6.959	-1.086	-
4.5	3.024	12.024	13.637	9.617	15.741	13.841	-11.183	-5.059	-6.959	-1.330	-
4.6	4.738	10.779	13.389	8.569	15.278	13.841	-12.231	-5.522	-6.959	-1.569	-
4.7	6.201	9.292	13.041	8.569	14.684	13.841	-12.231	-6.116	-6.959	-1.802	-
4.8	7.265	7.437	12.600	8.569	13.950	13.841	-12.231	-6.850	-6.959	-2.031	-
4.9	7.981	5.175	12.052	8.569	13.084	13.789	-12.231	-7.716	-7.011	-2.255	-
5	8.406	2.194	11.403	8.569	12.024	13.637	-12.231	-8.776	-7.163	-2.474	-
5.1	8.569	-1.857	10.629	8.569	10.779	13.389	-12.231	-10.021	-7.411	-2.689	-
5.2	8.480	-6.409	9.731	8.569	9.292	13.041	-12.231	-11.508	-7.759	-2.900	-
5.3	8.149	-5.196	8.670	8.569	7.437	12.600	-12.231	-13.363	-8.200	-3.107	-
5.4	7.581	-1.059	7.437	8.569	7.574	12.052	-12.231	-13.226	-8.748	-3.310	-
5.5	6.758	1.935	5.958	8.569	8.164	11.403	-12.231	-12.636	-9.397	-3.509	-
5.6	5.632	4.087	4.189	8.569	8.578	10.629	-12.231	-12.222	-10.171	-3.705	-
5.7	4.127	5.600	1.968	8.480	8.812	9.731	-12.320	-11.988	-11.069	-3.897	-
5.8	2.149	6.734	-0.926	8.149	8.904	8.670	-12.651	-11.896	-12.130	-4.086	-
5.9	-0.511	7.574	-5.115	7.581	8.904	7.437	-13.219	-11.896	-13.363	-4.271	-
6	-4.248	8.164	-12.489	6.758	8.904	5.958	-14.042	-11.896	-14.842	-4.454	-
6.1	-9.077	8.578	-16.468	5.632	8.904	4.189	-15.168	-11.896	-16.611	-4.633	-
6.2	-8.747	8.812	-7.604	4.237	8.904	3.674	-16.563	-11.896	-17.126	-4.810	-
6.3	-4.230	8.904	-3.288	5.100	8.904	4.458	-15.700	-11.896	-16.342	-4.984	-
6.4	-0.920	8.856	-0.591	5.703	8.904	5.036	-15.097	-11.896	-15.764	-5.154	-
6.5	1.380	8.672	1.270	6.095	8.904	5.458	-14.705	-11.896	-15.342	-5.323	-
6.6	3.035	8.367	2.649	6.298	8.904	5.737	-14.502	-11.896	-15.063	-5.489	-
6.7	4.237	7.916	3.674	6.329	8.904	5.896	-14.471	-11.896	-14.904	-5.652	-
6.8	5.100	7.339	4.458	6.329	8.904	5.945	-14.471	-11.896	-14.855	-5.813	-
6.9	5.703	6.609	5.036	6.329	8.856	5.945	-14.471	-11.944	-14.855	-5.971	-
7	6.095	5.704	5.458	6.329	8.672	5.945	-14.471	-12.128	-14.855	-6.000	-
7.1	6.298	4.629	5.737	6.329	8.367	5.945	-14.471	-12.433	-14.855	-6.000	-
7.2	6.329	3.295	5.896	6.329	7.916	5.945	-14.471	-12.884	-14.855	-6.000	-
7.3	6.213	1.687	5.945	6.329	7.339	5.945	-14.471	-13.461	-14.855	-6.000	-
7.4	5.966	-0.309	5.892	6.329	6.609	5.945	-14.471	-14.191	-14.855	-6.000	-
7.5	5.602	-2.956	5.748	6.329	5.704	5.945	-14.471	-15.096	-14.855	-6.000	-
7.6	5.136	-6.572	5.508	6.329	4.629	5.945	-14.471	-16.171	-14.855	-6.000	-
7.7	4.610	-12.656	5.187	6.329	3.295	5.945	-14.471	-17.505	-14.855	-6.000	-
7.8	4.092	-41.265	4.771	6.213	1.687	5.945	-14.587	-19.113	-14.855	-6.000	-
7.9	3.653	-14.140	4.282	5.966	-0.309	5.892	-14.834	-21.109	-14.908	-6.000	-

8	3.374	-8.227	3.696	5.602	-0.014	5.748	-15.198	-20.814	-15.052	-6.000	-
8.1	3.331	-5.114	3.040	5.634	0.421	5.508	-15.166	-20.379	-15.292	-6.000	-
8.2	3.551	-3.092	2.286	6.113	0.648	5.187	-14.687	-20.152	-15.613	-6.000	-
8.3	3.972	-1.669	1.467	6.487	0.707	4.771	-14.313	-20.093	-16.029	-6.000	-
8.4	4.507	-0.699	0.554	6.750	0.707	4.282	-14.050	-20.093	-16.518	-6.000	-
8.5	5.081	-0.014	-0.405	6.897	0.707	3.696	-13.903	-20.093	-17.104	-6.000	-
8.6	5.634	0.421	-1.434	6.919	0.707	3.040	-13.881	-20.093	-17.760	-6.000	-
8.7	6.113	0.648	-2.458	6.919	0.707	2.286	-13.881	-20.093	-18.514	-6.000	-
8.8	6.487	0.707	-3.474	6.919	0.707	1.467	-13.881	-20.093	-19.333	-6.000	-
8.9	6.750	0.592	-4.375	6.919	0.707	0.554	-13.881	-20.093	-20.246	-6.000	-
9	6.897	0.333	-5.126	6.919	0.707	-0.405	-13.881	-20.093	-21.205	-6.000	-
9.1	6.919	-0.086	-5.640	6.919	0.707	-1.434	-13.881	-20.093	-22.234	-6.000	-
9.2	6.802	-0.650	-5.928	6.919	0.707	-2.458	-13.881	-20.093	-23.258	-6.095	-
9.3	6.545	-1.371	-6.010	6.919	0.707	-3.474	-13.881	-20.093	-24.274	-6.212	-
9.4	6.146	-2.275	-5.958	6.919	0.592	-4.375	-13.881	-20.208	-25.175	-6.328	-
9.5	5.592	-3.350	-5.846	6.919	0.333	-5.126	-13.881	-20.467	-25.926	-6.443	-
9.6	4.864	-4.668	-5.719	6.919	-0.086	-5.573	-13.881	-20.886	-26.373	-6.557	-
9.7	3.953	-6.243	-5.625	6.802	-0.650	-5.573	-13.998	-21.450	-26.373	-6.669	-
9.8	2.856	-8.141	-5.573	6.545	-1.371	-5.573	-14.255	-22.171	-26.373	-6.781	-
9.9	1.575	-10.542	-5.580	6.146	-2.275	-5.573	-14.654	-23.075	-26.373	-6.891	-
10	0.136	-13.485	-5.635	5.592	-3.350	-5.573	-15.208	-24.150	-26.373	-7.000	-
15	-4.700	-6.459	-0.309	-4.177	-6.401	0.445	-24.977	-27.201	-20.355	-11.402	-
20	-9.555	-2.039	-3.645	-7.046	-1.681	-2.852	-27.846	-22.481	-23.652	-14.526	-
25	-8.929	-13.100	-1.305	-6.375	-12.831	0.268	-27.175	-33.631	-20.532	-16.949	-
30	-12.405	-9.091	-10.918	-9.532	-8.064	-10.425	-30.332	-28.864	-31.225	-18.928	-
35	-15.652	-11.962	-13.793	-15.222	-8.396	-10.958	-36.022	-29.196	-31.758	-20.602	-
40	-32.818	-14.169	-10.760	-23.227	-8.908	-8.855	-44.027	-29.708	-29.655	-22.051	-
45	-21.310	-15.530	-13.825	-14.278	-14.179	-13.817	-35.078	-34.979	-34.617	-23.330	-
50	-16.191	-14.680	-3.288	-14.551	-14.076	-3.224	-35.351	-34.876	-24.024	-24.000	-
55	-16.909	-8.807	-13.088	-14.321	-8.770	-10.614	-35.121	-29.570	-31.414	-24.000	-
60	-19.977	-4.298	-12.531	-15.223	-4.164	-11.064	-36.023	-24.964	-31.864	-24.000	-
65	-21.374	-4.107	-9.297	-16.585	-2.638	-8.728	-37.385	-23.438	-29.528	-24.000	0.562
70	-18.527	-2.746	-9.151	-16.020	-2.275	-8.914	-36.820	-23.075	-29.714	-24.000	0.925
75	-17.180	-1.485	-17.489	-16.083	-1.461	-16.090	-36.883	-22.261	-36.890	-24.000	1.739
80	-14.750	-4.199	-13.702	-14.551	-3.736	-12.605	-35.351	-24.536	-33.405	-24.000	-
85	-17.817	-8.799	-7.680	-17.496	-8.454	-7.134	-38.296	-29.254	-27.934	-14.000	-
90	-20.328	-17.622	-10.544	-20.271	-17.544	-10.466	-41.071	-38.344	-31.266	-14.000	-
95	0.5	0.5	0.5	0.5	0.5	0.5	-20.300	-20.300	-20.300	-14.000	-
100	0.5	0.5	0.5	0.5	0.5	0.5	-20.300	-20.300	-20.300	-14.000	-
105	0.5	0.5	0.5	0.5	0.5	0.5	-20.300	-20.300	-20.300	-14.000	-
110	0.5	0.5	0.5	0.5	0.5	0.5	-20.300	-20.300	-20.300	-14.000	-
115	0.5	0.5	0.5	0.5	0.5	0.5	-20.300	-20.300	-20.300	-14.000	-
120	0.5	0.5	0.5	0.5	0.5	0.5	-20.300	-20.300	-20.300	-14.000	-
125	0.5	0.5	0.5	0.5	0.5	0.5	-20.300	-20.300	-20.300	-14.000	-
130	0.5	0.5	0.5	0.5	0.5	0.5	-20.300	-20.300	-20.300	-14.000	-
135	0.5	0.5	0.5	0.5	0.5	0.5	-20.300	-20.300	-20.300	-14.000	-
140	0.5	0.5	0.5	0.5	0.5	0.5	-20.300	-20.300	-20.300	-14.000	-
145	0.5	0.5	0.5	0.5	0.5	0.5	-20.300	-20.300	-20.300	-14.000	-
150	0.5	0.5	0.5	0.5	0.5	0.5	-20.300	-20.300	-20.300	-14.000	-
155	0.5	0.5	0.5	0.5	0.5	0.5	-20.300	-20.300	-20.300	-14.000	-
160	0.5	0.5	0.5	0.5	0.5	0.5	-20.300	-20.300	-20.300	-14.000	-
165	0.5	0.5	0.5	0.5	0.5	0.5	-20.300	-20.300	-20.300	-14.000	-
170	0.5	0.5	0.5	0.5	0.5	0.5	-20.300	-20.300	-20.300	-14.000	-
175	0.5	0.5	0.5	0.5	0.5	0.5	-20.300	-20.300	-20.300	-14.000	-
180	0.5	0.5	0.5	0.5	0.5	0.5	-20.300	-20.300	-20.300	-14.000	-

14.5GHz V-Pol, Nominal Transmitted Co-Pol PSD with -20.8dBW/4KHz at Input



14.5GHz V-Pol Nominal Transmitted Co-Pol PSD with -20.8dBW/4kHz at Input



Data in support of claim that proposed operation meets criteria of VMES Order July 2009

Applicant RAS

Date of Application

ID Heading

a1 **Antenna Manufacture:** RAS **c Main bore gain (dBi):** 30.5
a2 **Antenna Model:** SR5000 **d Frequency at which gain was measured (GHz):** 14.0
a3 **Antenna ID:** RAS **e Max input power density (dBW/4kHz):** -20.8
b Transmit Band (b): 14GHz **Pattern ID** Table B1
Pattern Description: 14.0GHz H-polarization, co-polarized perpendicular to the geosynchronous plane

Offset Angles (Degrees)	Nominal EI Gain Along At Normal to Geo Arc (dBi) 0° Skew	Worst Case EI Gain Along At Normal to Geo Arc (dBi) 0° Skew	Worst Case EI PSD Along At Normal to Geo Arc input PSD = -20.8dBW/4kHz (dBW/4kHz) 0° Skew	FCC Mask (dBW/4kHz)	Mask Exceedence (dB)
-180	-2.750	-2.750	-23.550	-14	-
-175	-2.750	-2.750	-23.550	-14	-
-170	-2.750	-2.750	-23.550	-14	-
-165	-2.750	-2.750	-23.550	-14	-
-160	-2.750	-2.750	-23.550	-14	-
-155	-2.750	-2.750	-23.550	-14	-
-150	-2.750	-2.750	-23.550	-14	-
-145	-2.750	-2.750	-23.550	-14	-
-140	-2.750	-2.750	-23.550	-14	-
-135	-2.750	-2.750	-23.550	-14	-
-130	-2.750	-2.750	-23.550	-14	-
-125	-2.750	-2.750	-23.550	-14	-
-120	-2.750	-2.750	-23.550	-14	-
-115	-2.750	-2.750	-23.550	-14	-
-110	-2.750	-2.750	-23.550	-14	-
-105	-2.750	-2.750	-23.550	-14	-
-100	-2.750	-2.750	-23.550	-14	-
-95	-2.750	-2.750	-23.550	-14	-
-90	-6.111	-5.694	-26.494	-14	-
-85	-4.965	-4.879	-25.679	-24	-
-80	-3.506	-3.339	-24.139	-24	-
-75	-3.014	-2.883	-23.683	-24	0.317
-70	-7.186	-6.667	-27.467	-24	-
-65	-12.180	-11.568	-32.368	-24	-
-60	-1.422	-0.541	-21.341	-24	2.659
-55	7.552	8.118	-12.682	-24	11.318
-50	9.613	9.619	-11.181	-24	12.819
-45	2.485	4.200	-16.600	-23.330	6.730
-40	-5.876	-4.747	-25.547	-22.051	-
-35	7.053	8.167	-12.633	-20.602	7.969
-30	13.089	13.118	-7.682	-18.928	11.246
-25	3.295	5.898	-14.902	-16.949	2.047
-20	4.888	5.547	-15.253	-14.526	-
-15	17.629	18.705	-2.095	-11.402	9.307
-10	19.014	20.020	-0.780	-7.000	6.220
-9.9	18.763	19.850	-0.950	-6.891	5.941
-9.8	18.492	19.665	-1.135	-6.781	5.646
-9.7	18.200	19.464	-1.336	-6.669	5.333

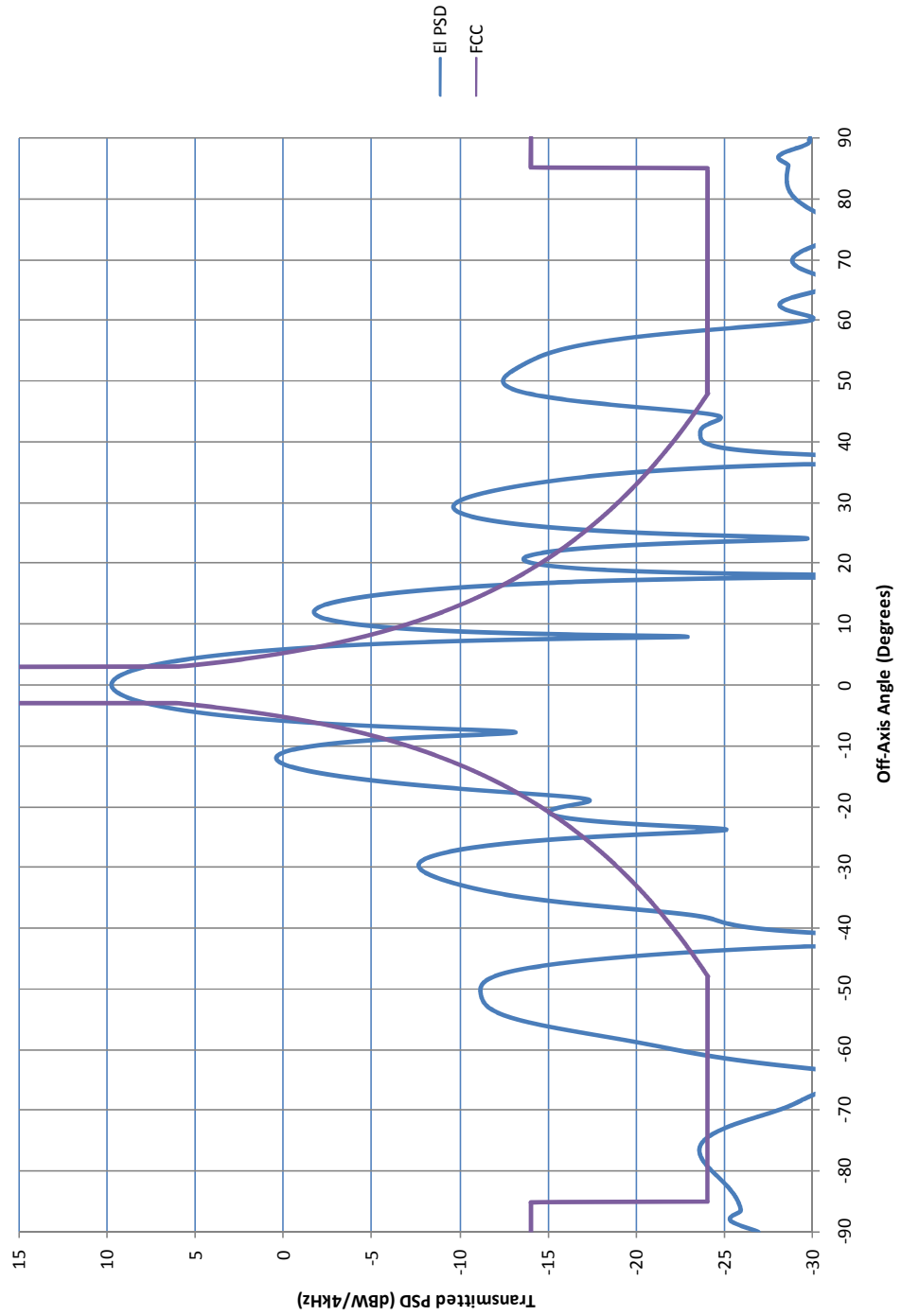
-9.6	17.886	19.247	-1.553	-6.557	5.004
-9.5	17.549	19.014	-1.786	-6.443	4.657
-9.4	17.186	18.763	-2.037	-6.328	4.291
-9.3	16.795	18.492	-2.308	-6.212	3.904
-9.2	16.373	18.200	-2.600	-6.095	3.495
-9.1	15.918	17.886	-2.914	-5.976	3.062
-9	15.428	17.549	-3.251	-5.856	2.605
-8.9	14.899	17.186	-3.614	-5.735	2.121
-8.8	14.326	16.795	-4.005	-5.612	1.607
-8.7	13.707	16.373	-4.427	-5.488	1.061
-8.6	13.040	15.918	-4.882	-5.362	0.480
-8.5	12.323	15.428	-5.372	-5.235	-
-8.4	11.558	14.899	-5.901	-5.107	-
-8.3	10.752	14.326	-6.474	-4.977	-
-8.2	9.925	13.707	-7.093	-4.845	-
-8.1	9.119	13.040	-7.760	-4.712	-
-8	8.401	12.323	-8.477	-4.577	-
-7.9	7.870	11.558	-9.242	-4.441	-
-7.8	7.636	10.884	-9.916	-4.302	-
-7.7	7.771	11.857	-8.943	-4.162	-
-7.6	8.259	12.799	-8.001	-4.020	-
-7.5	9.011	13.698	-7.102	-3.877	-
-7.4	9.916	14.548	-6.252	-3.731	-
-7.3	10.884	15.349	-5.451	-3.583	-
-7.2	11.857	16.102	-4.698	-3.433	-
-7.1	12.799	16.809	-3.991	-3.281	-
-7	13.698	17.474	-3.326	-3.127	-
-6.9	14.548	18.101	-2.699	-2.971	0.272
-6.8	15.349	18.695	-2.105	-2.813	0.708
-6.7	16.102	19.256	-1.544	-2.652	1.108
-6.6	16.809	19.786	-1.014	-2.489	1.475
-6.5	17.474	20.290	-0.510	-2.323	1.813
-6.4	18.101	20.769	-0.031	-2.154	2.123
-6.3	18.695	21.226	0.426	-1.984	2.410
-6.2	19.256	21.661	0.861	-1.810	2.671
-6.1	19.786	22.075	1.275	-1.633	2.908
-6	20.290	22.471	1.671	-1.454	3.125
-5.9	20.769	22.850	2.050	-1.271	3.321
-5.8	21.226	23.214	2.414	-1.086	3.500
-5.7	21.661	23.561	2.761	-0.897	3.658
-5.6	22.075	23.894	3.094	-0.705	3.799
-5.5	22.471	24.213	3.413	-0.509	3.922
-5.4	22.850	24.520	3.720	-0.310	4.030
-5.3	23.214	24.814	4.014	-0.107	4.121
-5.2	23.561	25.097	4.297	0.100	4.197
-5.1	23.894	25.368	4.568	0.311	4.257
-5	24.213	25.629	4.829	0.526	4.303
-4.9	24.520	25.880	5.080	0.745	4.335
-4.8	24.814	26.121	5.321	0.969	4.352
-4.7	25.097	26.353	5.553	1.198	4.355
-4.6	25.368	26.576	5.776	1.431	4.345
-4.5	25.629	26.790	5.990	1.670	4.320
-4.4	25.880	26.996	6.196	1.914	4.282
-4.3	26.121	27.195	6.395	2.163	4.232
-4.2	26.353	27.385	6.585	2.419	4.166
-4.1	26.576	27.568	6.768	2.680	4.088
-4	26.790	27.744	6.944	2.949	3.995
-3.9	26.996	27.912	7.112	3.223	3.889

-3.8	27.195	28.075	7.275	3.505	3.770
-3.7	27.385	28.230	7.430	3.795	3.635
-3.6	27.568	28.379	7.579	4.092	3.487
-3.5	27.744	28.522	7.722	4.398	3.324
-3.4	27.912	28.659	7.859	4.713	3.146
-3.3	28.075	28.790	7.990	5.037	2.953
-3.2	28.230	28.916	8.116	5.371	2.745
-3.1	28.379	29.035	8.235	5.716	2.519
-3	28.522	29.150	8.350	6.072	2.278
-2.9	28.659	29.259	8.459		-
-2.8	28.790	29.363	8.563		-
-2.7	28.916	29.461	8.661		-
-2.6	29.035	29.555	8.755		-
-2.5	29.150	29.644	8.844		-
-2.4	29.259	29.728	8.928		-
-2.3	29.363	29.807	9.007		-
-2.2	29.461	29.882	9.082		-
-2.1	29.555	29.953	9.153		-
-2	29.644	30.018	9.218		-
-1.9	29.728	30.080	9.280		-
-1.8	29.807	30.137	9.337		-
-1.7	29.882	30.189	9.389		-
-1.6	29.953	30.238	9.438		-
-1.5	30.018	30.282	9.482		-
-1.4	30.080	30.322	9.522		-
-1.3	30.137	30.358	9.558		-
-1.2	30.189	30.390	9.590		-
-1.1	30.238	30.418	9.618		-
-1	30.282	30.442	9.642		-
-0.9	30.322	30.461	9.661		-
-0.8	30.358	30.477	9.677		-
-0.7	30.390	30.489	9.689		-
-0.6	30.418	30.497	9.697		-
-0.5	30.442	30.500	9.700		-
-0.4	30.461	30.500	9.700		-
-0.3	30.477	30.500	9.700		-
-0.2	30.489	30.500	9.700		-
-0.1	30.497	30.500	9.700		-
0	30.500	30.500	9.700		-
0.1	30.497	30.500	9.700		-
0.2	30.495	30.500	9.700		-
0.3	30.487	30.500	9.700		-
0.4	30.474	30.500	9.700		-
0.5	30.457	30.500	9.700		-
0.6	30.436	30.497	9.697		-
0.7	30.411	30.495	9.695		-
0.8	30.382	30.487	9.687		-
0.9	30.348	30.474	9.674		-
1	30.311	30.457	9.657		-
1.1	30.268	30.436	9.636		-
1.2	30.222	30.411	9.611		-
1.3	30.170	30.382	9.582		-
1.4	30.115	30.348	9.548		-
1.5	30.054	30.311	9.511		-
1.6	29.989	30.268	9.468		-
1.7	29.920	30.222	9.422		-
1.8	29.845	30.170	9.370		-

1.9	29.765	30.115	9.315	-	
2	29.681	30.054	9.254	-	
2.1	29.591	29.989	9.189	-	
2.2	29.496	29.920	9.120	-	
2.3	29.396	29.845	9.045	-	
2.4	29.290	29.765	8.965	-	
2.5	29.179	29.681	8.881	-	
2.6	29.062	29.591	8.791	-	
2.7	28.940	29.496	8.696	-	
2.8	28.811	29.396	8.596	-	
2.9	28.676	29.290	8.490	-	
3	28.535	29.179	8.379	6.072	2.307
3.1	28.388	29.062	8.262	5.716	2.546
3.2	28.235	28.940	8.140	5.371	2.769
3.3	28.074	28.811	8.011	5.037	2.974
3.4	27.907	28.676	7.876	4.713	3.163
3.5	27.733	28.535	7.735	4.398	3.337
3.6	27.552	28.388	7.588	4.092	3.496
3.7	27.363	28.235	7.435	3.795	3.640
3.8	27.166	28.074	7.274	3.505	3.769
3.9	26.962	27.907	7.107	3.223	3.884
4	26.749	27.733	6.933	2.949	3.984
4.1	26.528	27.552	6.752	2.680	4.072
4.2	26.299	27.363	6.563	2.419	4.144
4.3	26.060	27.166	6.366	2.163	4.203
4.4	25.812	26.962	6.162	1.914	4.248
4.5	25.554	26.749	5.949	1.670	4.279
4.6	25.286	26.528	5.728	1.431	4.297
4.7	25.008	26.299	5.499	1.198	4.301
4.8	24.718	26.060	5.260	0.969	4.291
4.9	24.417	25.812	5.012	0.745	4.267
5	24.104	25.554	4.754	0.526	4.228
5.1	23.778	25.286	4.486	0.311	4.175
5.2	23.439	25.008	4.208	0.100	4.108
5.3	23.085	24.718	3.918	-0.107	4.025
5.4	22.716	24.417	3.617	-0.310	3.927
5.5	22.331	24.104	3.304	-0.509	3.813
5.6	21.929	23.778	2.978	-0.705	3.683
5.7	21.509	23.439	2.639	-0.897	3.536
5.8	21.069	23.085	2.285	-1.086	3.371
5.9	20.607	22.716	1.916	-1.271	3.187
6	20.122	22.331	1.531	-1.454	2.985
6.1	19.613	21.929	1.129	-1.633	2.762
6.2	19.076	21.509	0.709	-1.810	2.519
6.3	18.507	21.069	0.269	-1.984	2.253
6.4	17.904	20.607	-0.193	-2.154	1.961
6.5	17.264	20.122	-0.678	-2.323	1.645
6.6	16.581	19.613	-1.187	-2.489	1.302
6.7	15.849	19.076	-1.724	-2.652	0.928
6.8	15.059	18.507	-2.293	-2.813	0.520
6.9	14.204	17.904	-2.896	-2.971	0.075
7	13.272	17.264	-3.536	-3.127	-
7.1	12.249	16.581	-4.219	-3.281	-
7.2	11.112	15.849	-4.951	-3.433	-
7.3	9.835	15.059	-5.741	-3.583	-
7.4	8.380	14.204	-6.596	-3.731	-
7.5	6.702	13.272	-7.528	-3.877	-

7.6	4.734	12.249	-8.551	-4.020	-
7.7	2.422	11.112	-9.688	-4.162	-
7.8	-0.133	9.835	-10.965	-4.302	-
7.9	-2.081	8.380	-12.420	-4.441	-
8	-1.750	7.767	-13.033	-4.577	-
8.1	0.372	8.961	-11.839	-4.712	-
8.2	2.688	9.992	-10.808	-4.845	-
8.3	4.693	10.895	-9.905	-4.977	-
8.4	6.365	11.692	-9.108	-5.107	-
8.5	7.767	12.401	-8.399	-5.235	-
8.6	8.961	13.037	-7.763	-5.362	-
8.7	9.992	13.611	-7.189	-5.488	-
8.8	10.895	14.132	-6.668	-5.612	-
8.9	11.692	14.606	-6.194	-5.735	-
9	12.401	15.038	-5.762	-5.856	0.094
9.1	13.037	15.434	-5.366	-5.976	0.610
9.2	13.611	15.797	-5.003	-6.095	1.092
9.3	14.132	16.131	-4.669	-6.212	1.543
9.4	14.606	16.437	-4.363	-6.328	1.965
9.5	15.038	16.719	-4.081	-6.443	2.362
9.6	15.434	16.978	-3.822	-6.557	2.735
9.7	15.797	17.217	-3.583	-6.669	3.086
9.8	16.131	17.436	-3.364	-6.781	3.417
9.9	16.437	17.638	-3.162	-6.891	3.729
10	16.719	17.822	-2.978	-7.000	4.022
15	14.910	16.239	-4.561	-11.402	6.841
20	6.600	7.127	-13.673	-14.526	0.853
25	0.282	3.615	-17.185	-16.949	-
30	10.974	11.132	-9.668	-18.928	9.260
35	0.777	2.784	-18.016	-20.602	2.586
40	-2.996	-2.865	-23.665	-22.051	-
45	-2.056	-0.115	-20.915	-23.330	2.415
50	8.337	8.337	-12.463	-24	11.537
55	5.263	5.818	-14.982	-24	9.018
60	-9.075	-7.850	-28.650	-24	-
65	-9.691	-9.024	-29.824	-24	-
70	-8.042	-8.034	-28.834	-24	-
75	-10.897	-10.790	-31.590	-24	-
80	-8.205	-8.047	-28.847	-24	-
85	-7.791	-7.761	-28.561	-24	-
90	-9.038	-8.980	-29.780	-14	-
95	-2.750	-2.750	-23.550	-14	-
100	-2.750	-2.750	-23.550	-14	-
105	-2.750	-2.750	-23.550	-14	-
110	-2.750	-2.750	-23.550	-14	-
115	-2.750	-2.750	-23.550	-14	-
120	-2.750	-2.750	-23.550	-14	-
125	-2.750	-2.750	-23.550	-14	-
130	-2.750	-2.750	-23.550	-14	-
135	-2.750	-2.750	-23.550	-14	-
140	-2.750	-2.750	-23.550	-14	-
145	-2.750	-2.750	-23.550	-14	-
150	-2.750	-2.750	-23.550	-14	-
155	-2.750	-2.750	-23.550	-14	-
160	-2.750	-2.750	-23.550	-14	-
165	-2.750	-2.750	-23.550	-14	-
170	-2.750	-2.750	-23.550	-14	-
175	-2.750	-2.750	-23.550	-14	-
180	-2.750	-2.750	-23.550	-14	-

14.0GHz, H-Pol Co-Pol Elevation PSD with -20.8dBW/4kHz at Input



Data in support of claim that proposed operation meets criteria of VMES Order July 2009

Applicant RAS

Date of Application

ID Heading

a1	Antenna Manufacture:	RAS	c	Main bore gain (dBi):	30.5
a2	Antenna Model:	SR5000	d	Frequency at which gain was measured (GHz):	14.0
a3	Antenna ID:	RAS	e	Max input power density (dBW/4kHz):	-20.8
b	Transmit Band (b):	14GHz	Pattern ID	Table B2	
	Pattern Description:	14.0GHz V-polarization, co-polarized perpendicular to the geosynchronous plane			

Offset Angles	Nominal EI Gain Along At Normal to Geo Arc	Worst Case EI Gain Along At Normal to Geo Arc	Worst Case EI PSD Along At Normal to Geo Arc	FCC Mask (dBW/4kHz)	Mask Exceedence
(Degrees)	(dBi)	(dBi)	(dBW/4kHz)		(dB)
	0° Skew	0° Skew	0° Skew		
-180	-2.750	-2.750	-23.550	-14	-
-175	-2.750	-2.750	-23.550	-14	-
-170	-2.750	-2.750	-23.550	-14	-
-165	-2.750	-2.750	-23.550	-14	-
-160	-2.750	-2.750	-23.550	-14	-
-155	-2.750	-2.750	-23.550	-14	-
-150	-2.750	-2.750	-23.550	-14	-
-145	-2.750	-2.750	-23.550	-14	-
-140	-2.750	-2.750	-23.550	-14	-
-135	-2.750	-2.750	-23.550	-14	-
-130	-2.750	-2.750	-23.550	-14	-
-125	-2.750	-2.750	-23.550	-14	-
-120	-2.750	-2.750	-23.550	-14	-
-115	-2.750	-2.750	-23.550	-14	-
-110	-2.750	-2.750	-23.550	-14	-
-105	-2.750	-2.750	-23.550	-14	-
-100	-2.750	-2.750	-23.550	-14	-
-95	-2.750	-2.750	-23.550	-14	-
-90	1.252	1.619	-19.181	-14	-
-85	1.732	1.821	-18.979	-24	5.021
-80	-0.337	0.006	-20.794	-24	3.206
-75	-3.401	-3.088	-23.888	-24	0.112
-70	1.412	1.713	-19.087	-24	4.913
-65	3.931	4.306	-16.494	-24	7.506
-60	9.548	10.334	-10.466	-24	13.534
-55	15.718	16.031	-4.769	-24	19.231
-50	17.735	17.762	-3.038	-24	20.962
-45	13.558	14.527	-6.273	-23.330	17.057
-40	3.695	5.515	-15.285	-22.051	6.766
-35	2.806	4.470	-16.330	-20.602	4.272
-30	12.774	13.208	-7.592	-18.928	11.336
-25	7.465	9.367	-11.433	-16.949	5.516
-20	9.046	9.069	-11.731	-14.526	2.795
-15	16.442	17.949	-2.851	-11.402	8.551
-10	20.418	21.088	0.288	-7.000	7.288
-9.9	20.244	20.978	0.178	-6.891	7.069
-9.8	20.056	20.857	0.057	-6.781	6.838
-9.7	19.852	20.724	-0.076	-6.669	6.593

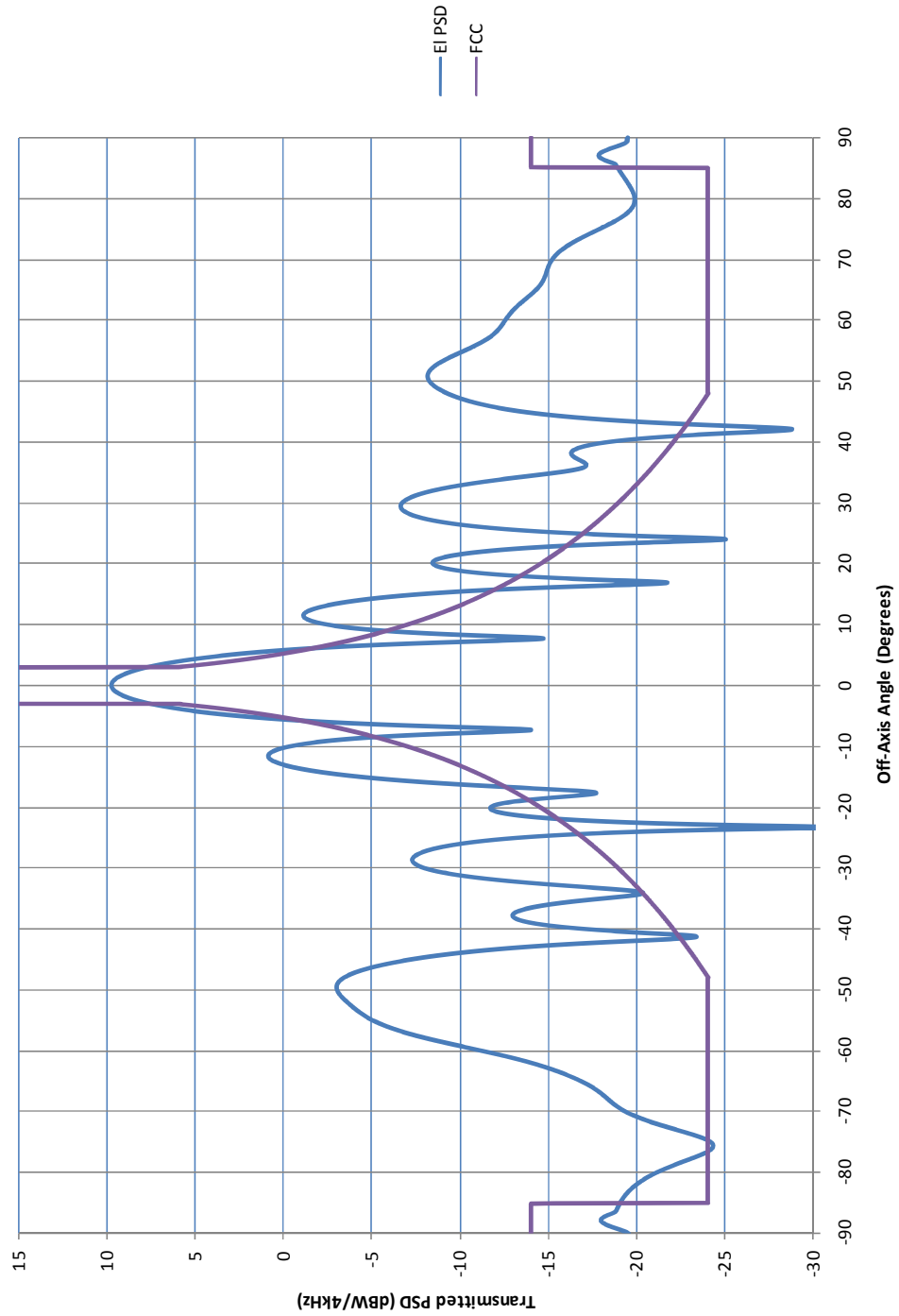
-9.6	19.632	20.577	-0.223	-6.557	6.334
-9.5	19.394	20.418	-0.382	-6.443	6.061
-9.4	19.137	20.244	-0.556	-6.328	5.772
-9.3	18.860	20.056	-0.744	-6.212	5.468
-9.2	18.560	19.852	-0.948	-6.095	5.147
-9.1	18.237	19.632	-1.168	-5.976	4.808
-9	17.888	19.394	-1.406	-5.856	4.450
-8.9	17.511	19.137	-1.663	-5.735	4.072
-8.8	17.104	18.860	-1.940	-5.612	3.672
-8.7	16.662	18.560	-2.240	-5.488	3.248
-8.6	16.182	18.237	-2.563	-5.362	2.799
-8.5	15.661	17.888	-2.912	-5.235	2.323
-8.4	15.094	17.511	-3.289	-5.107	1.818
-8.3	14.476	17.104	-3.696	-4.977	1.281
-8.2	13.799	16.662	-4.138	-4.845	0.707
-8.1	13.059	16.182	-4.618	-4.712	0.094
-8	12.253	15.661	-5.139	-4.577	-
-7.9	11.376	15.094	-5.706	-4.441	-
-7.8	10.432	14.476	-6.324	-4.302	-
-7.7	9.439	13.799	-7.001	-4.162	-
-7.6	8.448	13.059	-7.741	-4.020	-
-7.5	7.562	12.253	-8.547	-3.877	-
-7.4	6.942	11.376	-9.424	-3.731	-
-7.3	6.768	11.271	-9.529	-3.583	-
-7.2	7.124	12.371	-8.429	-3.433	-
-7.1	7.922	13.404	-7.396	-3.281	-
-7	8.975	14.364	-6.436	-3.127	-
-6.9	10.124	15.255	-5.545	-2.971	-
-6.8	11.271	16.085	-4.715	-2.813	-
-6.7	12.371	16.858	-3.942	-2.652	-
-6.6	13.404	17.579	-3.221	-2.489	-
-6.5	14.364	18.253	-2.547	-2.323	-
-6.4	15.255	18.885	-1.915	-2.154	0.239
-6.3	16.085	19.480	-1.320	-1.984	0.664
-6.2	16.858	20.042	-0.758	-1.810	1.052
-6.1	17.579	20.572	-0.228	-1.633	1.405
-6	18.253	21.072	0.272	-1.454	1.726
-5.9	18.885	21.547	0.747	-1.271	2.018
-5.8	19.480	21.998	1.198	-1.086	2.284
-5.7	20.042	22.428	1.628	-0.897	2.525
-5.6	20.572	22.837	2.037	-0.705	2.742
-5.5	21.072	23.226	2.426	-0.509	2.935
-5.4	21.547	23.597	2.797	-0.310	3.107
-5.3	21.998	23.952	3.152	-0.107	3.259
-5.2	22.428	24.291	3.491	0.100	3.391
-5.1	22.837	24.616	3.816	0.311	3.505
-5	23.226	24.926	4.126	0.526	3.600
-4.9	23.597	25.222	4.422	0.745	3.677
-4.8	23.952	25.506	4.706	0.969	3.737
-4.7	24.291	25.779	4.979	1.198	3.781
-4.6	24.616	26.040	5.240	1.431	3.809
-4.5	24.926	26.290	5.490	1.670	3.820
-4.4	25.222	26.530	5.730	1.914	3.816
-4.3	25.506	26.760	5.960	2.163	3.797
-4.2	25.779	26.980	6.180	2.419	3.761
-4.1	26.040	27.191	6.391	2.680	3.711
-4	26.290	27.394	6.594	2.949	3.645
-3.9	26.530	27.587	6.787	3.223	3.564

-3.8	26.760	27.773	6.973	3.505	3.468
-3.7	26.980	27.951	7.151	3.795	3.356
-3.6	27.191	28.121	7.321	4.092	3.229
-3.5	27.394	28.284	7.484	4.398	3.086
-3.4	27.587	28.439	7.639	4.713	2.926
-3.3	27.773	28.587	7.787	5.037	2.750
-3.2	27.951	28.729	7.929	5.371	2.558
-3.1	28.121	28.865	8.065	5.716	2.349
-3	28.284	28.994	8.194	6.072	2.122
-2.9	28.439	29.116	8.316		-
-2.8	28.587	29.233	8.433		-
-2.7	28.729	29.344	8.544		-
-2.6	28.865	29.449	8.649		-
-2.5	28.994	29.549	8.749		-
-2.4	29.116	29.643	8.843		-
-2.3	29.233	29.731	8.931		-
-2.2	29.344	29.815	9.015		-
-2.1	29.449	29.893	9.093		-
-2	29.549	29.966	9.166		-
-1.9	29.643	30.034	9.234		-
-1.8	29.731	30.097	9.297		-
-1.7	29.815	30.156	9.356		-
-1.6	29.893	30.209	9.409		-
-1.5	29.966	30.258	9.458		-
-1.4	30.034	30.303	9.503		-
-1.3	30.097	30.342	9.542		-
-1.2	30.156	30.378	9.578		-
-1.1	30.209	30.408	9.608		-
-1	30.258	30.434	9.634		-
-0.9	30.303	30.456	9.656		-
-0.8	30.342	30.474	9.674		-
-0.7	30.378	30.487	9.687		-
-0.6	30.408	30.495	9.695		-
-0.5	30.434	30.500	9.700		-
-0.4	30.456	30.500	9.700		-
-0.3	30.474	30.500	9.700		-
-0.2	30.487	30.500	9.700		-
-0.1	30.495	30.500	9.700		-
0	30.500	30.500	9.700		-
0.1	30.497	30.500	9.700		-
0.2	30.495	30.500	9.700		-
0.3	30.487	30.500	9.700		-
0.4	30.474	30.500	9.700		-
0.5	30.456	30.500	9.700		-
0.6	30.434	30.497	9.697		-
0.7	30.408	30.495	9.695		-
0.8	30.378	30.487	9.687		-
0.9	30.343	30.474	9.674		-
1	30.303	30.456	9.656		-
1.1	30.259	30.434	9.634		-
1.2	30.210	30.408	9.608		-
1.3	30.157	30.378	9.578		-
1.4	30.099	30.343	9.543		-
1.5	30.037	30.303	9.503		-
1.6	29.969	30.259	9.459		-
1.7	29.897	30.210	9.410		-
1.8	29.820	30.157	9.357		-

1.9	29.738	30.099	9.299	-	
2	29.650	30.037	9.237	-	
2.1	29.558	29.969	9.169	-	
2.2	29.460	29.897	9.097	-	
2.3	29.357	29.820	9.020	-	
2.4	29.248	29.738	8.938	-	
2.5	29.134	29.650	8.850	-	
2.6	29.014	29.558	8.758	-	
2.7	28.888	29.460	8.660	-	
2.8	28.756	29.357	8.557	-	
2.9	28.618	29.248	8.448	-	
3	28.474	29.134	8.334	6.072	2.262
3.1	28.323	29.014	8.214	5.716	2.498
3.2	28.166	28.888	8.088	5.371	2.717
3.3	28.002	28.756	7.956	5.037	2.919
3.4	27.830	28.618	7.818	4.713	3.105
3.5	27.652	28.474	7.674	4.398	3.276
3.6	27.466	28.323	7.523	4.092	3.431
3.7	27.273	28.166	7.366	3.795	3.571
3.8	27.071	28.002	7.202	3.505	3.697
3.9	26.862	27.830	7.030	3.223	3.807
4	26.643	27.652	6.852	2.949	3.903
4.1	26.416	27.466	6.666	2.680	3.986
4.2	26.180	27.273	6.473	2.419	4.054
4.3	25.935	27.071	6.271	2.163	4.108
4.4	25.680	26.862	6.062	1.914	4.148
4.5	25.413	26.643	5.843	1.670	4.173
4.6	25.137	26.416	5.616	1.431	4.185
4.7	24.849	26.180	5.380	1.198	4.182
4.8	24.550	25.935	5.135	0.969	4.166
4.9	24.238	25.680	4.880	0.745	4.135
5	23.912	25.413	4.613	0.526	4.087
5.1	23.573	25.137	4.337	0.311	4.026
5.2	23.220	24.849	4.049	0.100	3.949
5.3	22.851	24.550	3.750	-0.107	3.857
5.4	22.465	24.238	3.438	-0.310	3.748
5.5	22.061	23.912	3.112	-0.509	3.621
5.6	21.638	23.573	2.773	-0.705	3.478
5.7	21.196	23.220	2.420	-0.897	3.317
5.8	20.731	22.851	2.051	-1.086	3.137
5.9	20.243	22.465	1.665	-1.271	2.936
6	19.728	22.061	1.261	-1.454	2.715
6.1	19.185	21.638	0.838	-1.633	2.471
6.2	18.613	21.196	0.396	-1.810	2.206
6.3	18.006	20.731	-0.069	-1.984	1.915
6.4	17.361	20.243	-0.557	-2.154	1.597
6.5	16.675	19.728	-1.072	-2.323	1.251
6.6	15.944	19.185	-1.615	-2.489	0.874
6.7	15.163	18.613	-2.187	-2.652	0.465
6.8	14.326	18.006	-2.794	-2.813	0.019
6.9	13.427	17.361	-3.439	-2.971	-
7	12.462	16.675	-4.125	-3.127	-
7.1	11.433	15.944	-4.856	-3.281	-
7.2	10.344	15.163	-5.637	-3.433	-
7.3	9.218	14.326	-6.474	-3.583	-
7.4	8.103	13.427	-7.373	-3.731	-
7.5	7.101	12.462	-8.338	-3.877	-

7.6	6.367	11.433	-9.367	-4.020	-
7.7	6.062	10.344	-10.456	-4.162	-
7.8	6.251	10.480	-10.320	-4.302	-
7.9	6.851	11.320	-9.480	-4.441	-
8	7.695	12.094	-8.706	-4.577	-
8.1	8.634	12.802	-7.998	-4.712	-
8.2	9.578	13.449	-7.351	-4.845	-
8.3	10.480	14.042	-6.758	-4.977	-
8.4	11.320	14.584	-6.216	-5.107	-
8.5	12.094	15.081	-5.719	-5.235	-
8.6	12.802	15.535	-5.265	-5.362	0.097
8.7	13.449	15.953	-4.847	-5.488	0.641
8.8	14.042	16.337	-4.463	-5.612	1.149
8.9	14.584	16.690	-4.110	-5.735	1.625
9	15.081	17.014	-3.786	-5.856	2.070
9.1	15.535	17.312	-3.488	-5.976	2.488
9.2	15.953	17.585	-3.215	-6.095	2.880
9.3	16.337	17.836	-2.964	-6.212	3.248
9.4	16.690	18.067	-2.733	-6.328	3.595
9.5	17.014	18.277	-2.523	-6.443	3.920
9.6	17.312	18.469	-2.331	-6.557	4.226
9.7	17.585	18.643	-2.157	-6.669	4.512
9.8	17.836	18.801	-1.999	-6.781	4.782
9.9	18.067	18.943	-1.857	-6.891	5.034
10	18.277	19.070	-1.730	-7.000	5.270
15	13.054	15.006	-5.794	-11.402	5.608
20	12.318	12.338	-8.462	-14.526	6.064
25	4.355	7.348	-13.452	-16.949	3.497
30	14.057	14.140	-6.660	-18.928	12.268
35	5.234	6.599	-14.201	-20.602	6.401
40	2.383	3.440	-17.360	-22.051	4.691
45	7.285	8.394	-12.406	-23.330	10.924
50	12.517	12.599	-8.201	-24	15.799
55	10.536	10.915	-9.885	-24	14.115
60	8.224	8.341	-12.459	-24	11.541
65	6.481	6.664	-14.136	-24	9.864
70	5.564	5.672	-15.128	-24	8.872
75	2.893	3.249	-17.551	-24	6.449
80	0.904	0.936	-19.864	-24	4.136
85	1.850	1.960	-18.840	-24	5.160
90	1.296	1.353	-19.447	-14	-
95	-2.750	-2.750	-23.550	-14	-
100	-2.750	-2.750	-23.550	-14	-
105	-2.750	-2.750	-23.550	-14	-
110	-2.750	-2.750	-23.550	-14	-
115	-2.750	-2.750	-23.550	-14	-
120	-2.750	-2.750	-23.550	-14	-
125	-2.750	-2.750	-23.550	-14	-
130	-2.750	-2.750	-23.550	-14	-
135	-2.750	-2.750	-23.550	-14	-
140	-2.750	-2.750	-23.550	-14	-
145	-2.750	-2.750	-23.550	-14	-
150	-2.750	-2.750	-23.550	-14	-
155	-2.750	-2.750	-23.550	-14	-
160	-2.750	-2.750	-23.550	-14	-
165	-2.750	-2.750	-23.550	-14	-
170	-2.750	-2.750	-23.550	-14	-
175	-2.750	-2.750	-23.550	-14	-
180	-2.750	-2.750	-23.550	-14	-

14.0GHz, V-Pol Co-Pol Elevation PSD with -20.8dBW/4kHz at Input



Data in support of claim that proposed operation meets criteria of VMES Order July 2009

Applicant RAS

Date of Application

ID Heading

a1 Antenna Manufacture: RAS **c Main bore gain (dBi):** 30.5

a2 Antenna Model: SR5000 **d Frequency at which gain was measured (GHz):** 14.0

a3 Antenna ID: RAS **e Max input power density (dBW/4kHz):** -20.8

b Transmit Band (b): 14GHz **Pattern ID** Table B3

Pattern Description: 14.25GHz H-polarization, co-polarized perpendicular to the geosynchronous plane

Offset Angles (Degrees)	Nominal EI Gain Along At Normal to Geo Arc (dBi) 0° Skew	Worst Case EI Gain Along At Normal to Geo Arc (dBi) 0° Skew	Worst Case EI PSD Along At Normal to Geo Arc input PSD = -20.8dBW/4kHz (dBW/4kHz) 0° Skew	FCC Mask (dBW/4kHz)	Mask Exceedence (dB)
-180	-2.750	-2.750	-23.550	-14	-
-175	-2.750	-2.750	-23.550	-14	-
-170	-2.750	-2.750	-23.550	-14	-
-165	-2.750	-2.750	-23.550	-14	-
-160	-2.750	-2.750	-23.550	-14	-
-155	-2.750	-2.750	-23.550	-14	-
-150	-2.750	-2.750	-23.550	-14	-
-145	-2.750	-2.750	-23.550	-14	-
-140	-2.750	-2.750	-23.550	-14	-
-135	-2.750	-2.750	-23.550	-14	-
-130	-2.750	-2.750	-23.550	-14	-
-125	-2.750	-2.750	-23.550	-14	-
-120	-2.750	-2.750	-23.550	-14	-
-115	-2.750	-2.750	-23.550	-14	-
-110	-2.750	-2.750	-23.550	-14	-
-105	-2.750	-2.750	-23.550	-14	-
-100	-2.750	-2.750	-23.550	-14	-
-95	-2.750	-2.750	-23.550	-14	-
-90	-6.293	-5.983	-26.783	-14	-
-85	-5.622	-5.587	-26.387	-24	-
-80	-5.590	-5.478	-26.278	-24	-
-75	-4.024	-4.011	-24.811	-24	-
-70	-12.366	-9.809	-30.609	-24	-
-65	-2.874	-2.565	-23.365	-24	0.635
-60	-8.784	-6.579	-27.379	-24	-
-55	3.438	4.373	-16.427	-24	7.573
-50	9.067	9.070	-11.730	-24	12.270
-45	4.671	5.869	-14.931	-23.330	8.399
-40	-2.633	-1.896	-22.696	-22.051	-
-35	3.538	5.212	-15.588	-20.602	5.014
-30	13.196	13.311	-7.489	-18.928	11.439
-25	5.518	7.544	-13.256	-16.949	3.693
-20	7.779	7.779	-13.021	-14.526	1.505
-15	16.755	17.984	-2.816	-11.402	8.586
-10	19.109	19.977	-0.823	-7.000	6.177
-9.9	18.889	19.832	-0.968	-6.891	5.923
-9.8	18.650	19.673	-1.127	-6.781	5.654
-9.7	18.392	19.501	-1.299	-6.669	5.370

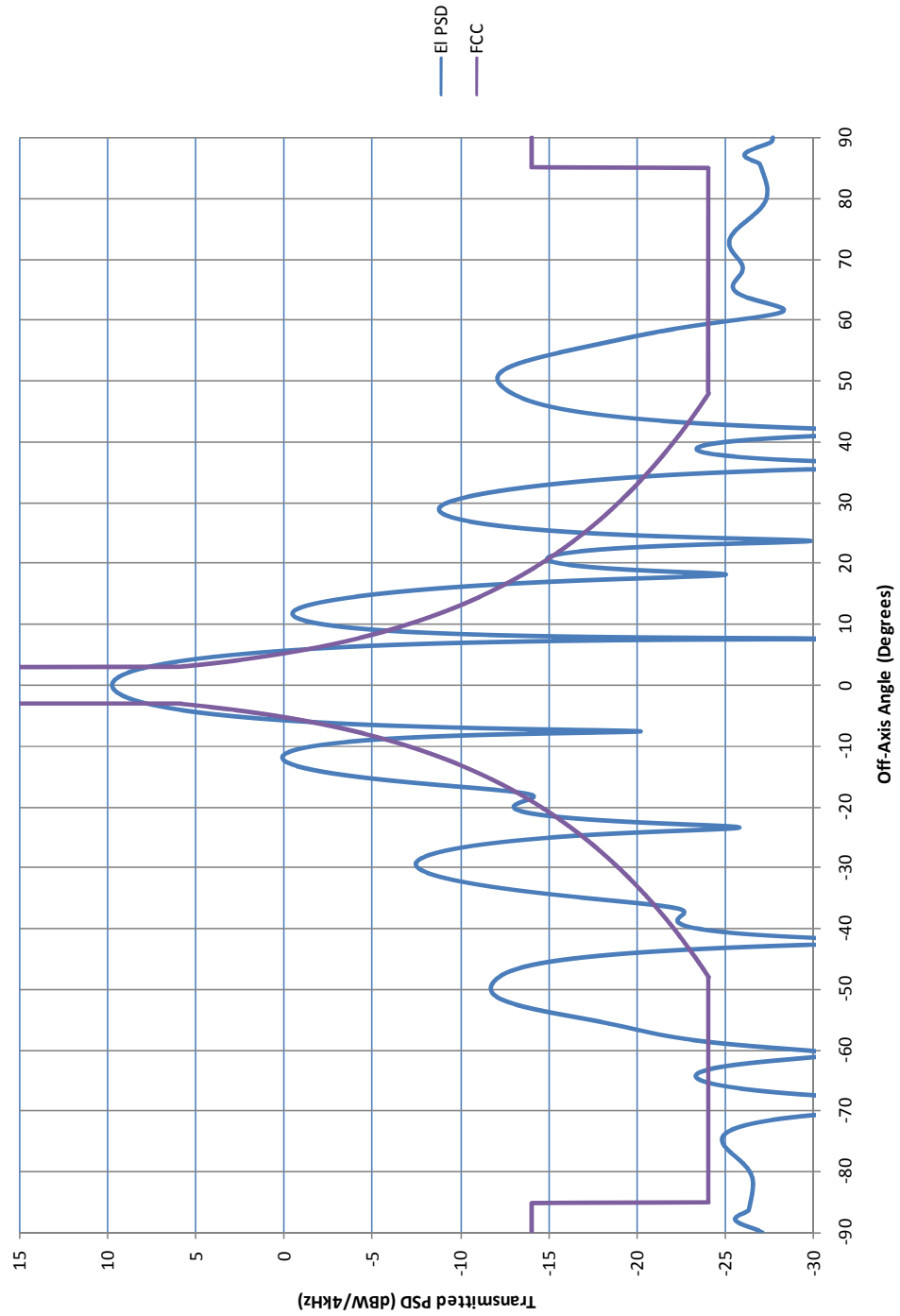
-9.6	18.113	19.313	-1.487	-6.557	5.070
-9.5	17.810	19.109	-1.691	-6.443	4.752
-9.4	17.482	18.889	-1.911	-6.328	4.417
-9.3	17.128	18.650	-2.150	-6.212	4.062
-9.2	16.743	18.392	-2.408	-6.095	3.687
-9.1	16.323	18.113	-2.687	-5.976	3.289
-9	15.865	17.810	-2.990	-5.856	2.866
-8.9	15.364	17.482	-3.318	-5.735	2.417
-8.8	14.816	17.128	-3.672	-5.612	1.940
-8.7	14.210	16.743	-4.057	-5.488	1.431
-8.6	13.539	16.323	-4.477	-5.362	0.885
-8.5	12.790	15.865	-4.935	-5.235	0.300
-8.4	11.950	15.364	-5.436	-5.107	-
-8.3	11.001	14.816	-5.984	-4.977	-
-8.2	9.916	14.210	-6.590	-4.845	-
-8.1	8.661	13.539	-7.261	-4.712	-
-8	7.201	12.790	-8.010	-4.577	-
-7.9	5.500	11.950	-8.850	-4.441	-
-7.8	3.573	11.001	-9.799	-4.302	-
-7.7	1.658	9.916	-10.884	-4.162	-
-7.6	0.603	9.126	-11.674	-4.020	-
-7.5	1.350	10.617	-10.183	-3.877	-
-7.4	3.310	11.927	-8.873	-3.731	-
-7.3	5.459	13.093	-7.707	-3.583	-
-7.2	7.415	14.141	-6.659	-3.433	-
-7.1	9.126	15.094	-5.706	-3.281	-
-7	10.617	15.963	-4.837	-3.127	-
-6.9	11.927	16.763	-4.037	-2.971	-
-6.8	13.093	17.503	-3.297	-2.813	-
-6.7	14.141	18.191	-2.609	-2.652	0.043
-6.6	15.094	18.836	-1.964	-2.489	0.525
-6.5	15.963	19.439	-1.361	-2.323	0.962
-6.4	16.763	20.005	-0.795	-2.154	1.359
-6.3	17.503	20.539	-0.261	-1.984	1.723
-6.2	18.191	21.044	0.244	-1.810	2.054
-6.1	18.836	21.523	0.723	-1.633	2.356
-6	19.439	21.977	1.177	-1.454	2.631
-5.9	20.005	22.408	1.608	-1.271	2.879
-5.8	20.539	22.818	2.018	-1.086	3.104
-5.7	21.044	23.208	2.408	-0.897	3.305
-5.6	21.523	23.582	2.782	-0.705	3.487
-5.5	21.977	23.937	3.137	-0.509	3.646
-5.4	22.408	24.277	3.477	-0.310	3.787
-5.3	22.818	24.601	3.801	-0.107	3.908
-5.2	23.208	24.912	4.112	0.100	4.012
-5.1	23.582	25.209	4.409	0.311	4.098
-5	23.937	25.493	4.693	0.526	4.167
-4.9	24.277	25.765	4.965	0.745	4.220
-4.8	24.601	26.025	5.225	0.969	4.256
-4.7	24.912	26.275	5.475	1.198	4.277
-4.6	25.209	26.514	5.714	1.431	4.283
-4.5	25.493	26.743	5.943	1.670	4.273
-4.4	25.765	26.961	6.161	1.914	4.247
-4.3	26.025	27.171	6.371	2.163	4.208
-4.2	26.275	27.371	6.571	2.419	4.152
-4.1	26.514	27.564	6.764	2.680	4.084
-4	26.743	27.748	6.948	2.949	3.999
-3.9	26.961	27.923	7.123	3.223	3.900

-3.8	27.171	28.091	7.291	3.505	3.786
-3.7	27.371	28.252	7.452	3.795	3.657
-3.6	27.564	28.405	7.605	4.092	3.513
-3.5	27.748	28.552	7.752	4.398	3.354
-3.4	27.923	28.691	7.891	4.713	3.178
-3.3	28.091	28.824	8.024	5.037	2.987
-3.2	28.252	28.951	8.151	5.371	2.780
-3.1	28.405	29.072	8.272	5.716	2.556
-3	28.552	29.187	8.387	6.072	2.315
-2.9	28.691	29.296	8.496		-
-2.8	28.824	29.399	8.599		-
-2.7	28.951	29.497	8.697		-
-2.6	29.072	29.590	8.790		-
-2.5	29.187	29.678	8.878		-
-2.4	29.296	29.760	8.960		-
-2.3	29.399	29.838	9.038		-
-2.2	29.497	29.911	9.111		-
-2.1	29.590	29.979	9.179		-
-2	29.678	30.043	9.243		-
-1.9	29.760	30.102	9.302		-
-1.8	29.838	30.157	9.357		-
-1.7	29.911	30.208	9.408		-
-1.6	29.979	30.254	9.454		-
-1.5	30.043	30.297	9.497		-
-1.4	30.102	30.335	9.535		-
-1.3	30.157	30.369	9.569		-
-1.2	30.208	30.399	9.599		-
-1.1	30.254	30.425	9.625		-
-1	30.297	30.448	9.648		-
-0.9	30.335	30.466	9.666		-
-0.8	30.369	30.480	9.680		-
-0.7	30.399	30.491	9.691		-
-0.6	30.425	30.498	9.698		-
-0.5	30.448	30.500	9.700		-
-0.4	30.466	30.500	9.700		-
-0.3	30.480	30.500	9.700		-
-0.2	30.491	30.500	9.700		-
-0.1	30.498	30.500	9.700		-
0	30.500	30.500	9.700		-
0.1	30.499	30.500	9.700		-
0.2	30.494	30.500	9.700		-
0.3	30.485	30.500	9.700		-
0.4	30.472	30.500	9.700		-
0.5	30.454	30.500	9.700		-
0.6	30.433	30.499	9.699		-
0.7	30.407	30.494	9.694		-
0.8	30.378	30.485	9.685		-
0.9	30.344	30.472	9.672		-
1	30.305	30.454	9.654		-
1.1	30.262	30.433	9.633		-
1.2	30.215	30.407	9.607		-
1.3	30.163	30.378	9.578		-
1.4	30.106	30.344	9.544		-
1.5	30.045	30.305	9.505		-
1.6	29.978	30.262	9.462		-
1.7	29.907	30.215	9.415		-
1.8	29.831	30.163	9.363		-

1.9	29.749	30.106	9.306	-	
2	29.662	30.045	9.245	-	
2.1	29.569	29.978	9.178	-	
2.2	29.471	29.907	9.107	-	
2.3	29.367	29.831	9.031	-	
2.4	29.257	29.749	8.949	-	
2.5	29.141	29.662	8.862	-	
2.6	29.018	29.569	8.769	-	
2.7	28.890	29.471	8.671	-	
2.8	28.755	29.367	8.567	-	
2.9	28.613	29.257	8.457	-	
3	28.464	29.141	8.341	6.072	2.269
3.1	28.308	29.018	8.218	5.716	2.502
3.2	28.145	28.890	8.090	5.371	2.719
3.3	27.975	28.755	7.955	5.037	2.918
3.4	27.797	28.613	7.813	4.713	3.100
3.5	27.610	28.464	7.664	4.398	3.266
3.6	27.416	28.308	7.508	4.092	3.416
3.7	27.213	28.145	7.345	3.795	3.550
3.8	27.001	27.975	7.175	3.505	3.670
3.9	26.780	27.797	6.997	3.223	3.774
4	26.550	27.610	6.810	2.949	3.861
4.1	26.310	27.416	6.616	2.680	3.936
4.2	26.060	27.213	6.413	2.419	3.994
4.3	25.800	27.001	6.201	2.163	4.038
4.4	25.529	26.780	5.980	1.914	4.066
4.5	25.246	26.550	5.750	1.670	4.080
4.6	24.951	26.310	5.510	1.431	4.079
4.7	24.643	26.060	5.260	1.198	4.062
4.8	24.323	25.800	5.000	0.969	4.031
4.9	23.989	25.529	4.729	0.745	3.984
5	23.640	25.246	4.446	0.526	3.920
5.1	23.275	24.951	4.151	0.311	3.840
5.2	22.894	24.643	3.843	0.100	3.743
5.3	22.496	24.323	3.523	-0.107	3.630
5.4	22.079	23.989	3.189	-0.310	3.499
5.5	21.641	23.640	2.840	-0.509	3.349
5.6	21.180	23.275	2.475	-0.705	3.180
5.7	20.696	22.894	2.094	-0.897	2.991
5.8	20.187	22.496	1.696	-1.086	2.782
5.9	19.648	22.079	1.279	-1.271	2.550
6	19.078	21.641	0.841	-1.454	2.295
6.1	18.471	21.180	0.380	-1.633	2.013
6.2	17.825	20.696	-0.104	-1.810	1.706
6.3	17.134	20.187	-0.613	-1.984	1.371
6.4	16.392	19.648	-1.152	-2.154	1.002
6.5	15.588	19.078	-1.722	-2.323	0.601
6.6	14.712	18.471	-2.329	-2.489	0.160
6.7	13.752	17.825	-2.975	-2.652	-
6.8	12.689	17.134	-3.666	-2.813	-
6.9	11.495	16.392	-4.408	-2.971	-
7	10.132	15.588	-5.212	-3.127	-
7.1	8.541	14.712	-6.088	-3.281	-
7.2	6.633	13.752	-7.048	-3.433	-
7.3	4.240	12.689	-8.111	-3.583	-
7.4	1.016	11.495	-9.305	-3.731	-
7.5	-3.937	10.132	-10.668	-3.877	-

7.6	-13.012	8.541	-12.259	-4.020	-
7.7	-7.626	8.403	-12.397	-4.162	-
7.8	-1.295	9.684	-11.116	-4.302	-
7.9	2.381	10.775	-10.025	-4.441	-
8	4.928	11.720	-9.080	-4.577	-
8.1	6.859	12.550	-8.250	-4.712	-
8.2	8.403	13.286	-7.514	-4.845	-
8.3	9.684	13.945	-6.855	-4.977	-
8.4	10.775	14.539	-6.261	-5.107	-
8.5	11.720	15.079	-5.721	-5.235	-
8.6	12.550	15.570	-5.230	-5.362	0.132
8.7	13.286	16.018	-4.782	-5.488	0.706
8.8	13.945	16.429	-4.371	-5.612	1.241
8.9	14.539	16.807	-3.993	-5.735	1.742
9	15.079	17.156	-3.644	-5.856	2.212
9.1	15.570	17.477	-3.323	-5.976	2.653
9.2	16.018	17.773	-3.027	-6.095	3.068
9.3	16.429	18.046	-2.754	-6.212	3.458
9.4	16.807	18.298	-2.502	-6.328	3.826
9.5	17.156	18.531	-2.269	-6.443	4.174
9.6	17.477	18.745	-2.055	-6.557	4.502
9.7	17.773	18.942	-1.858	-6.669	4.811
9.8	18.046	19.123	-1.677	-6.781	5.104
9.9	18.298	19.289	-1.511	-6.891	5.380
10	18.531	19.440	-1.360	-7.000	5.640
15	15.436	16.846	-3.954	-11.402	7.448
20	5.106	5.782	-15.018	-14.526	-
25	3.496	6.097	-14.703	-16.949	2.246
30	11.544	11.869	-8.931	-18.928	9.997
35	-4.084	-0.642	-21.442	-20.602	-
40	-4.292	-3.111	-23.911	-22.051	-
45	4.253	5.223	-15.577	-23.330	7.753
50	8.670	8.698	-12.102	-24	11.898
55	4.684	5.452	-15.348	-24	8.652
60	-4.736	-3.462	-24.262	-24	-
65	-4.681	-4.623	-25.423	-24	-
70	-4.946	-4.802	-25.602	-24	-
75	-4.869	-4.704	-25.504	-24	-
80	-6.528	-6.457	-27.257	-24	-
85	-6.236	-6.168	-26.968	-24	-
90	-6.881	-6.856	-27.656	-14	-
95	-2.750	-2.750	-23.550	-14	-
100	-2.750	-2.750	-23.550	-14	-
105	-2.750	-2.750	-23.550	-14	-
110	-2.750	-2.750	-23.550	-14	-
115	-2.750	-2.750	-23.550	-14	-
120	-2.750	-2.750	-23.550	-14	-
125	-2.750	-2.750	-23.550	-14	-
130	-2.750	-2.750	-23.550	-14	-
135	-2.750	-2.750	-23.550	-14	-
140	-2.750	-2.750	-23.550	-14	-
145	-2.750	-2.750	-23.550	-14	-
150	-2.750	-2.750	-23.550	-14	-
155	-2.750	-2.750	-23.550	-14	-
160	-2.750	-2.750	-23.550	-14	-
165	-2.750	-2.750	-23.550	-14	-
170	-2.750	-2.750	-23.550	-14	-
175	-2.750	-2.750	-23.550	-14	-
180	-2.750	-2.750	-23.550	-14	-

14.25GHz, H-Pol Co-Pol Elevation PSD with -20.8dBW/4kHz at Input



Data in support of claim that proposed operation meets criteria of VMES Order July 2009

Applicant RAS

Date of Application

ID Heading

a1	Antenna Manufacture:	RAS	c	Main bore gain (dBi):	30.5
a2	Antenna Model:	SR5000	d	Frequency at which gain was measured (GHz):	14.0
a3	Antenna ID:	RAS	e	Max input power density (dBW/4kHz):	-20.8
b	Transmit Band (b):	14GHz	Pattern ID	Table B4	
	Pattern Description:	14.25GHz V-polarization, co-polarized perpendicular to the geosynchronous plane			

Offset Angles	Nominal EI Gain Along At Normal to Geo Arc	Worst Case EI Gain Along At Normal to Geo Arc	Worst Case EI PSD Along At Normal to Geo Arc input PSD = -20.8dBW/4kHz	FCC Mask (dBW/4kHz)	Mask Exceedence
(Degrees)	(dBi)	(dBi)	(dBW/4kHz)		(dB)
	0° Skew	0° Skew	0° Skew		
-180	-2.750	-2.750	-23.550	-14	-
-175	-2.750	-2.750	-23.550	-14	-
-170	-2.750	-2.750	-23.550	-14	-
-165	-2.750	-2.750	-23.550	-14	-
-160	-2.750	-2.750	-23.550	-14	-
-155	-2.750	-2.750	-23.550	-14	-
-150	-2.750	-2.750	-23.550	-14	-
-145	-2.750	-2.750	-23.550	-14	-
-140	-2.750	-2.750	-23.550	-14	-
-135	-2.750	-2.750	-23.550	-14	-
-130	-2.750	-2.750	-23.550	-14	-
-125	-2.750	-2.750	-23.550	-14	-
-120	-2.750	-2.750	-23.550	-14	-
-115	-2.750	-2.750	-23.550	-14	-
-110	-2.750	-2.750	-23.550	-14	-
-105	-2.750	-2.750	-23.550	-14	-
-100	-2.750	-2.750	-23.550	-14	-
-95	-2.750	-2.750	-23.550	-14	-
-90	1.562	1.867	-18.933	-14	-
-85	1.759	1.841	-18.959	-24	5.041
-80	2.989	3.353	-17.447	-24	6.553
-75	6.525	6.741	-14.059	-24	9.941
-70	6.737	6.885	-13.915	-24	10.085
-65	6.529	6.648	-14.152	-24	9.848
-60	5.907	6.076	-14.724	-24	9.276
-55	10.429	11.224	-9.576	-24	14.424
-50	16.535	16.865	-3.935	-24	20.065
-45	15.509	16.162	-4.638	-23.330	18.692
-40	-0.835	3.575	-17.225	-22.051	4.826
-35	5.622	7.427	-13.373	-20.602	7.229
-30	13.311	14.002	-6.798	-18.928	12.130
-25	8.895	10.757	-10.043	-16.949	6.906
-20	11.545	11.545	-9.255	-14.526	5.271
-15	15.696	17.434	-3.366	-11.402	8.036
-10	21.232	21.711	0.911	-7.000	7.911
-9.9	21.100	21.638	0.838	-6.891	7.729
-9.8	20.955	21.554	0.754	-6.781	7.535
-9.7	20.795	21.459	0.659	-6.669	7.328

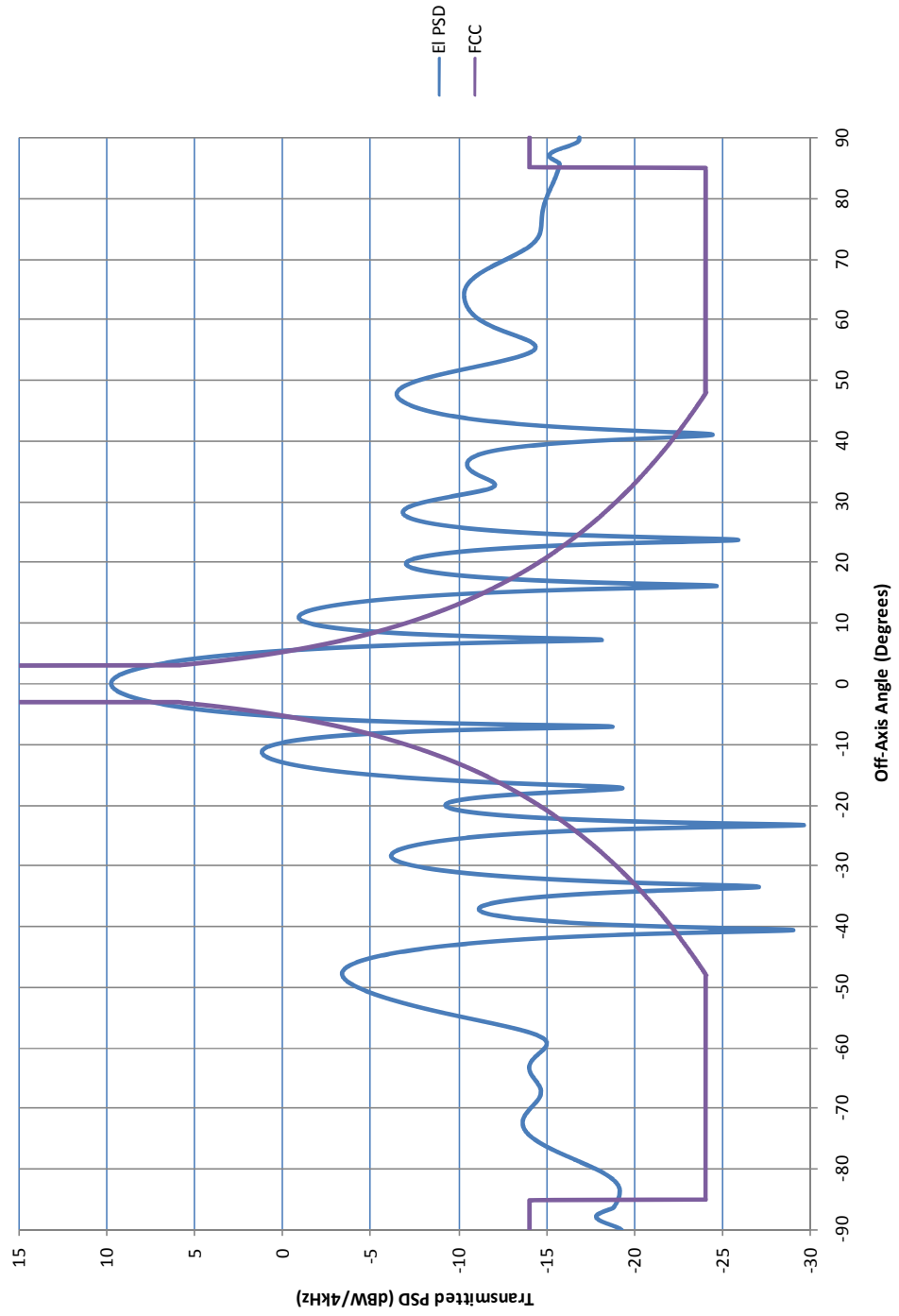
-9.6	20.620	21.352	0.552	-6.557	7.109
-9.5	20.428	21.232	0.432	-6.443	6.875
-9.4	20.220	21.100	0.300	-6.328	6.628
-9.3	19.994	20.955	0.155	-6.212	6.367
-9.2	19.747	20.795	-0.005	-6.095	6.090
-9.1	19.479	20.620	-0.180	-5.976	5.796
-9	19.188	20.428	-0.372	-5.856	5.484
-8.9	18.872	20.220	-0.580	-5.735	5.155
-8.8	18.528	19.994	-0.806	-5.612	4.806
-8.7	18.155	19.747	-1.053	-5.488	4.435
-8.6	17.746	19.479	-1.321	-5.362	4.041
-8.5	17.300	19.188	-1.612	-5.235	3.623
-8.4	16.812	18.872	-1.928	-5.107	3.179
-8.3	16.277	18.528	-2.272	-4.977	2.705
-8.2	15.687	18.155	-2.645	-4.845	2.200
-8.1	15.031	17.746	-3.054	-4.712	1.658
-8	14.302	17.300	-3.500	-4.577	1.077
-7.9	13.486	16.812	-3.988	-4.441	0.453
-7.8	12.565	16.277	-4.523	-4.302	-
-7.7	11.515	15.687	-5.113	-4.162	-
-7.6	10.305	15.031	-5.769	-4.020	-
-7.5	8.903	14.302	-6.498	-3.877	-
-7.4	7.272	13.486	-7.314	-3.731	-
-7.3	5.407	12.565	-8.235	-3.583	-
-7.2	3.463	11.515	-9.285	-3.433	-
-7.1	2.090	10.305	-10.495	-3.281	-
-7	2.336	11.418	-9.382	-3.127	-
-6.9	4.045	12.752	-8.048	-2.971	-
-6.8	6.160	13.934	-6.866	-2.813	-
-6.7	8.147	14.992	-5.808	-2.652	-
-6.6	9.896	15.951	-4.849	-2.489	-
-6.5	11.418	16.822	-3.978	-2.323	-
-6.4	12.752	17.620	-3.180	-2.154	-
-6.3	13.934	18.356	-2.444	-1.984	-
-6.2	14.992	19.039	-1.761	-1.810	0.049
-6.1	15.951	19.675	-1.125	-1.633	0.508
-6	16.822	20.269	-0.531	-1.454	0.923
-5.9	17.620	20.825	0.025	-1.271	1.296
-5.8	18.356	21.347	0.547	-1.086	1.633
-5.7	19.039	21.840	1.040	-0.897	1.937
-5.6	19.675	22.306	1.506	-0.705	2.211
-5.5	20.269	22.747	1.947	-0.509	2.456
-5.4	20.825	23.163	2.363	-0.310	2.673
-5.3	21.347	23.559	2.759	-0.107	2.866
-5.2	21.840	23.935	3.135	0.100	3.035
-5.1	22.306	24.293	3.493	0.311	3.182
-5	22.747	24.633	3.833	0.526	3.307
-4.9	23.163	24.957	4.157	0.745	3.412
-4.8	23.559	25.266	4.466	0.969	3.497
-4.7	23.935	25.561	4.761	1.198	3.563
-4.6	24.293	25.843	5.043	1.431	3.612
-4.5	24.633	26.111	5.311	1.670	3.641
-4.4	24.957	26.368	5.568	1.914	3.654
-4.3	25.266	26.613	5.813	2.163	3.650
-4.2	25.561	26.847	6.047	2.419	3.628
-4.1	25.843	27.071	6.271	2.680	3.591
-4	26.111	27.284	6.484	2.949	3.535
-3.9	26.368	27.488	6.688	3.223	3.465

-3.8	26.613	27.683	6.883	3.505	3.378
-3.7	26.847	27.869	7.069	3.795	3.274
-3.6	27.071	28.047	7.247	4.092	3.155
-3.5	27.284	28.217	7.417	4.398	3.019
-3.4	27.488	28.379	7.579	4.713	2.866
-3.3	27.683	28.533	7.733	5.037	2.696
-3.2	27.869	28.680	7.880	5.371	2.509
-3.1	28.047	28.820	8.020	5.716	2.304
-3	28.217	28.954	8.154	6.072	2.082
-2.9	28.379	29.080	8.280		-
-2.8	28.533	29.200	8.400		-
-2.7	28.680	29.314	8.514		-
-2.6	28.820	29.422	8.622		-
-2.5	28.954	29.525	8.725		-
-2.4	29.080	29.621	8.821		-
-2.3	29.200	29.712	8.912		-
-2.2	29.314	29.797	8.997		-
-2.1	29.422	29.878	9.078		-
-2	29.525	29.953	9.153		-
-1.9	29.621	30.022	9.222		-
-1.8	29.712	30.087	9.287		-
-1.7	29.797	30.147	9.347		-
-1.6	29.878	30.202	9.402		-
-1.5	29.953	30.252	9.452		-
-1.4	30.022	30.298	9.498		-
-1.3	30.087	30.338	9.538		-
-1.2	30.147	30.375	9.575		-
-1.1	30.202	30.406	9.606		-
-1	30.252	30.433	9.633		-
-0.9	30.298	30.456	9.656		-
-0.8	30.338	30.474	9.674		-
-0.7	30.375	30.487	9.687		-
-0.6	30.406	30.496	9.696		-
-0.5	30.433	30.500	9.700		-
-0.4	30.456	30.500	9.700		-
-0.3	30.474	30.500	9.700		-
-0.2	30.487	30.500	9.700		-
-0.1	30.496	30.500	9.700		-
0	30.500	30.500	9.700		-
0.1	30.497	30.500	9.700		-
0.2	30.495	30.500	9.700		-
0.3	30.486	30.500	9.700		-
0.4	30.472	30.500	9.700		-
0.5	30.454	30.500	9.700		-
0.6	30.430	30.497	9.697		-
0.7	30.402	30.495	9.695		-
0.8	30.369	30.486	9.686		-
0.9	30.332	30.472	9.672		-
1	30.289	30.454	9.654		-
1.1	30.241	30.430	9.630		-
1.2	30.188	30.402	9.602		-
1.3	30.130	30.369	9.569		-
1.4	30.067	30.332	9.532		-
1.5	29.999	30.289	9.489		-
1.6	29.924	30.241	9.441		-
1.7	29.845	30.188	9.388		-
1.8	29.760	30.130	9.330		-

1.9	29.669	30.067	9.267	-	-
2	29.572	29.999	9.199	-	-
2.1	29.468	29.924	9.124	-	-
2.2	29.359	29.845	9.045	-	-
2.3	29.244	29.760	8.960	-	-
2.4	29.122	29.669	8.869	-	-
2.5	28.993	29.572	8.772	-	-
2.6	28.857	29.468	8.668	-	-
2.7	28.714	29.359	8.559	-	-
2.8	28.565	29.244	8.444	-	-
2.9	28.407	29.122	8.322	-	-
3	28.242	28.993	8.193	6.072	2.121
3.1	28.069	28.857	8.057	5.716	2.341
3.2	27.888	28.714	7.914	5.371	2.543
3.3	27.699	28.565	7.765	5.037	2.728
3.4	27.501	28.407	7.607	4.713	2.894
3.5	27.294	28.242	7.442	4.398	3.044
3.6	27.078	28.069	7.269	4.092	3.177
3.7	26.852	27.888	7.088	3.795	3.293
3.8	26.616	27.699	6.899	3.505	3.394
3.9	26.370	27.501	6.701	3.223	3.478
4	26.113	27.294	6.494	2.949	3.545
4.1	25.844	27.078	6.278	2.680	3.598
4.2	25.563	26.852	6.052	2.419	3.633
4.3	25.271	26.616	5.816	2.163	3.653
4.4	24.965	26.370	5.570	1.914	3.656
4.5	24.645	26.113	5.313	1.670	3.643
4.6	24.310	25.844	5.044	1.431	3.613
4.7	23.961	25.563	4.763	1.198	3.565
4.8	23.595	25.271	4.471	0.969	3.502
4.9	23.212	24.965	4.165	0.745	3.420
5	22.810	24.645	3.845	0.526	3.319
5.1	22.388	24.310	3.510	0.311	3.199
5.2	21.945	23.961	3.161	0.100	3.061
5.3	21.479	23.595	2.795	-0.107	2.902
5.4	20.987	23.212	2.412	-0.310	2.722
5.5	20.468	22.810	2.010	-0.509	2.519
5.6	19.918	22.388	1.588	-0.705	2.293
5.7	19.335	21.945	1.145	-0.897	2.042
5.8	18.716	21.479	0.679	-1.086	1.765
5.9	18.055	20.987	0.187	-1.271	1.458
6	17.347	20.468	-0.332	-1.454	1.122
6.1	16.585	19.918	-0.882	-1.633	0.751
6.2	15.762	19.335	-1.465	-1.810	0.345
6.3	14.870	18.716	-2.084	-1.984	-
6.4	13.896	18.055	-2.745	-2.154	-
6.5	12.823	17.347	-3.453	-2.323	-
6.6	11.634	16.585	-4.215	-2.489	-
6.7	10.312	15.762	-5.038	-2.652	-
6.8	8.835	14.870	-5.930	-2.813	-
6.9	7.197	13.896	-6.904	-2.971	-
7	5.440	12.823	-7.977	-3.127	-
7.1	3.770	11.634	-9.166	-3.281	-
7.2	2.694	10.312	-10.488	-3.433	-
7.3	2.770	9.586	-11.214	-3.583	-
7.4	3.881	10.672	-10.128	-3.731	-
7.5	5.413	11.629	-9.171	-3.877	-
7.6	6.952	12.477	-8.323	-4.020	-

7.7	8.351	13.231	-7.569	-4.162	-
7.8	9.586	13.906	-6.894	-4.302	-
7.9	10.672	14.513	-6.287	-4.441	-
8	11.629	15.063	-5.737	-4.577	-
8.1	12.477	15.561	-5.239	-4.712	-
8.2	13.231	16.014	-4.786	-4.845	0.059
8.3	13.906	16.426	-4.374	-4.977	0.603
8.4	14.513	16.802	-3.998	-5.107	1.109
8.5	15.063	17.147	-3.653	-5.235	1.582
8.6	15.561	17.461	-3.339	-5.362	2.023
8.7	16.014	17.748	-3.052	-5.488	2.436
8.8	16.426	18.011	-2.789	-5.612	2.823
8.9	16.802	18.251	-2.549	-5.735	3.186
9	17.147	18.470	-2.330	-5.856	3.526
9.1	17.461	18.668	-2.132	-5.976	3.844
9.2	17.748	18.848	-1.952	-6.095	4.143
9.3	18.011	19.011	-1.789	-6.212	4.423
9.4	18.251	19.157	-1.643	-6.328	4.685
9.5	18.470	19.288	-1.512	-6.443	4.931
9.6	18.668	19.404	-1.396	-6.557	5.161
9.7	18.848	19.505	-1.295	-6.669	5.374
9.8	19.011	19.593	-1.207	-6.781	5.574
9.9	19.157	19.668	-1.132	-6.891	5.759
10	19.288	19.730	-1.070	-7.000	5.930
15	9.262	12.424	-8.376	-11.402	3.026
20	13.750	13.777	-7.023	-14.526	7.503
25	7.440	9.768	-11.032	-16.949	5.917
30	12.681	13.302	-7.498	-18.928	11.430
35	10.036	10.222	-10.578	-20.602	10.024
40	3.276	5.767	-15.033	-22.051	7.018
45	12.570	13.153	-7.647	-23.330	15.683
50	13.057	13.547	-7.253	-24	16.747
55	6.525	6.822	-13.978	-24	10.022
60	9.610	9.842	-10.958	-24	13.042
65	10.433	10.475	-10.325	-24	13.675
70	8.066	8.416	-12.384	-24	11.616
75	6.121	6.156	-14.644	-24	9.356
80	5.823	5.885	-14.915	-24	9.085
85	5.115	5.171	-15.629	-24	8.371
90	3.950	3.975	-16.825	-14	-
95	-2.750	-2.750	-23.550	-14	-
100	-2.750	-2.750	-23.550	-14	-
105	-2.750	-2.750	-23.550	-14	-
110	-2.750	-2.750	-23.550	-14	-
115	-2.750	-2.750	-23.550	-14	-
120	-2.750	-2.750	-23.550	-14	-
125	-2.750	-2.750	-23.550	-14	-
130	-2.750	-2.750	-23.550	-14	-
135	-2.750	-2.750	-23.550	-14	-
140	-2.750	-2.750	-23.550	-14	-
145	-2.750	-2.750	-23.550	-14	-
150	-2.750	-2.750	-23.550	-14	-
155	-2.750	-2.750	-23.550	-14	-
160	-2.750	-2.750	-23.550	-14	-
165	-2.750	-2.750	-23.550	-14	-
170	-2.750	-2.750	-23.550	-14	-
175	-2.750	-2.750	-23.550	-14	-
180	-2.750	-2.750	-23.550	-14	-

14.25GHz, V-Pol Co-Pol Elevation PSD with -20.8dBW/4kHz at Input



Data in support of claim that proposed operation meets criteria of VMES Order July 2009

Applicant RAS

Date of Application

ID Heading

a1 **Antenna Manufacture:** RAS c **Main bore gain (dBi):** 30.5
a2 **Antenna Model:** SR5000 d **Frequency at which gain was measured (GHz):** 14.0
a3 **Antenna ID:** RAS e **Max input power density (dBW/4kHz):** -20.8
b **Transmit Band (b):** 14GHz **Pattern ID** Table B5
Pattern Description: 14.5GHz H-polarization, co-polarized perpendicular to the geosynchronous plane

Offset Angles (Degrees)	Nominal EI Gain Along At Normal to Geo Arc (dBi) 0° Skew	Worst Case EI Gain Along At Normal to Geo Arc (dBi) 0° Skew	Worst Case EI PSD Along At Normal to Geo Arc input PSD = -20.8dBW/4kHz (dBW/4kHz) 0° Skew	FCC Mask (dBW/4kHz)	Mask Exceedence (dB)
-180	-2.750	-2.750	-23.550	-14	-
-175	-2.750	-2.750	-23.550	-14	-
-170	-2.750	-2.750	-23.550	-14	-
-165	-2.750	-2.750	-23.550	-14	-
-160	-2.750	-2.750	-23.550	-14	-
-155	-2.750	-2.750	-23.550	-14	-
-150	-2.750	-2.750	-23.550	-14	-
-145	-2.750	-2.750	-23.550	-14	-
-140	-2.750	-2.750	-23.550	-14	-
-135	-2.750	-2.750	-23.550	-14	-
-130	-2.750	-2.750	-23.550	-14	-
-125	-2.750	-2.750	-23.550	-14	-
-120	-2.750	-2.750	-23.550	-14	-
-115	-2.750	-2.750	-23.550	-14	-
-110	-2.750	-2.750	-23.550	-14	-
-105	-2.750	-2.750	-23.550	-14	-
-100	-2.750	-2.750	-23.550	-14	-
-95	-2.750	-2.750	-23.550	-14	-
-90	-3.778	-3.351	-24.151	-14	-
-85	-3.621	-3.517	-24.317	-24	-
-80	-5.768	-5.422	-26.222	-24	-
-75	-9.267	-8.949	-29.749	-24	-
-70	-3.173	-2.753	-23.553	-24	0.447
-65	-2.895	-2.462	-23.262	-24	0.738
-60	-15.940	-14.318	-35.118	-24	-
-55	2.087	3.338	-17.462	-24	6.538
-50	9.144	9.405	-11.395	-24	12.605
-45	6.693	7.677	-13.123	-23.330	10.207
-40	-2.845	-0.670	-21.470	-22.051	0.581
-35	4.848	5.618	-15.182	-20.602	5.420
-30	13.604	13.930	-6.870	-18.928	12.058
-25	7.635	9.513	-11.287	-16.949	5.662
-20	7.452	7.462	-13.338	-14.526	1.188
-15	15.956	17.387	-3.413	-11.402	7.989
-10	19.459	20.236	-0.564	-7.000	6.436
-9.9	19.259	20.107	-0.693	-6.891	6.198
-9.8	19.042	19.966	-0.834	-6.781	5.947
-9.7	18.808	19.811	-0.989	-6.669	5.680

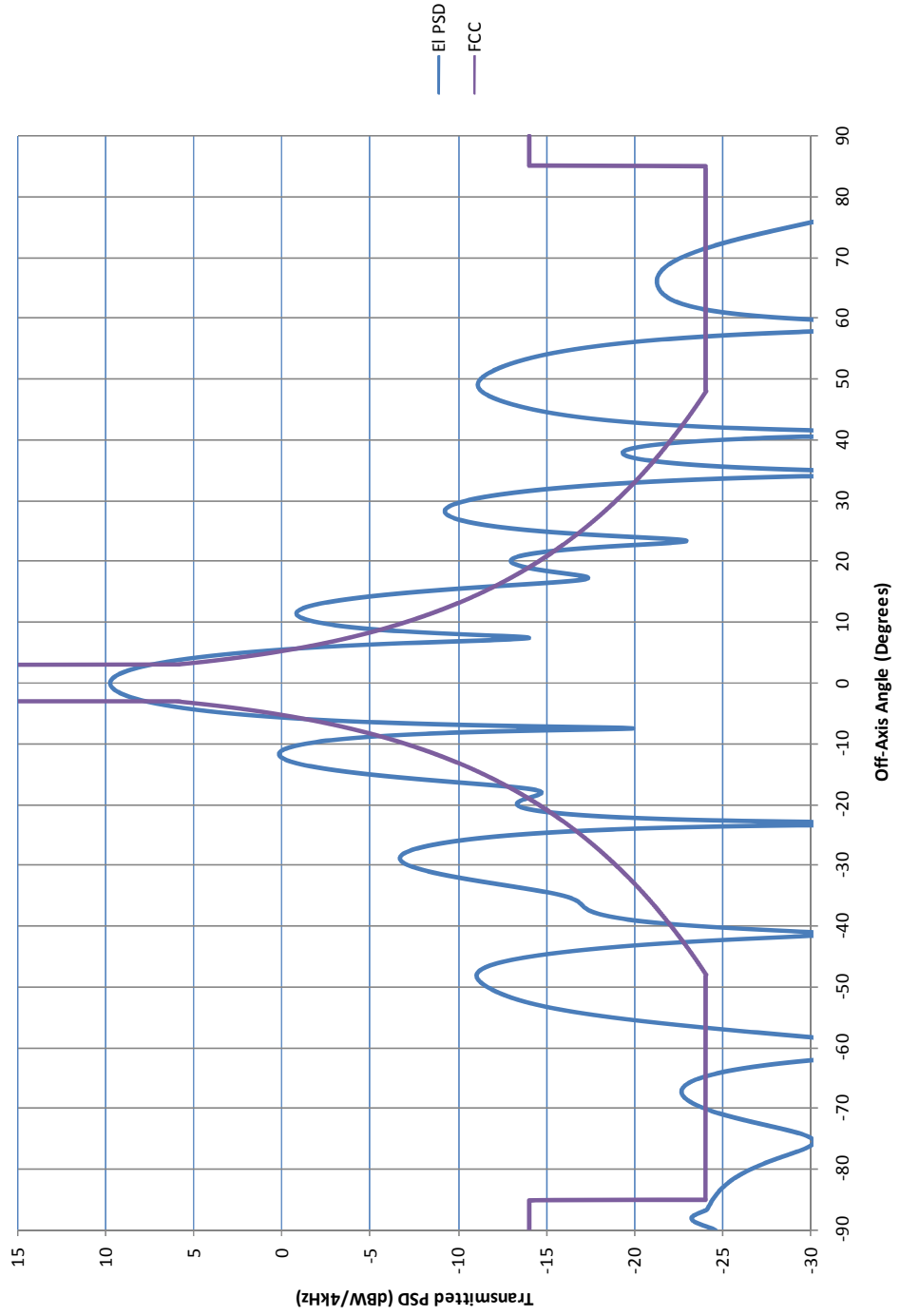
-9.6	18.554	19.642	-1.158	-6.557	5.399
-9.5	18.280	19.459	-1.341	-6.443	5.102
-9.4	17.982	19.259	-1.541	-6.328	4.787
-9.3	17.659	19.042	-1.758	-6.212	4.454
-9.2	17.309	18.808	-1.992	-6.095	4.103
-9.1	16.929	18.554	-2.246	-5.976	3.730
-9	16.515	18.280	-2.520	-5.856	3.336
-8.9	16.064	17.982	-2.818	-5.735	2.917
-8.8	15.569	17.659	-3.141	-5.612	2.471
-8.7	15.027	17.309	-3.491	-5.488	1.997
-8.6	14.430	16.929	-3.871	-5.362	1.491
-8.5	13.769	16.515	-4.285	-5.235	0.950
-8.4	13.030	16.064	-4.736	-5.107	0.371
-8.3	12.201	15.569	-5.231	-4.977	-
-8.2	11.265	15.027	-5.773	-4.845	-
-8.1	10.198	14.430	-6.370	-4.712	-
-8	8.967	13.769	-7.031	-4.577	-
-7.9	7.534	13.030	-7.770	-4.441	-
-7.8	5.864	12.201	-8.599	-4.302	-
-7.7	3.968	11.265	-9.535	-4.162	-
-7.6	2.058	10.198	-10.602	-4.020	-
-7.5	0.903	9.179	-11.621	-3.877	-
-7.4	1.480	10.685	-10.115	-3.731	-
-7.3	3.355	12.009	-8.791	-3.583	-
-7.2	5.491	13.184	-7.616	-3.433	-
-7.1	7.456	14.239	-6.561	-3.281	-
-7	9.179	15.197	-5.603	-3.127	-
-6.9	10.685	16.074	-4.726	-2.971	-
-6.8	12.009	16.879	-3.921	-2.813	-
-6.7	13.184	17.622	-3.178	-2.652	-
-6.6	14.239	18.313	-2.487	-2.489	0.002
-6.5	15.197	18.959	-1.841	-2.323	0.482
-6.4	16.074	19.565	-1.235	-2.154	0.919
-6.3	16.879	20.133	-0.667	-1.984	1.317
-6.2	17.622	20.668	-0.132	-1.810	1.678
-6.1	18.313	21.174	0.374	-1.633	2.007
-6	18.959	21.652	0.852	-1.454	2.306
-5.9	19.565	22.107	1.307	-1.271	2.578
-5.8	20.133	22.538	1.738	-1.086	2.824
-5.7	20.668	22.948	2.148	-0.897	3.045
-5.6	21.174	23.337	2.537	-0.705	3.242
-5.5	21.652	23.709	2.909	-0.509	3.418
-5.4	22.107	24.064	3.264	-0.310	3.574
-5.3	22.538	24.403	3.603	-0.107	3.710
-5.2	22.948	24.726	3.926	0.100	3.826
-5.1	23.337	25.035	4.235	0.311	3.924
-5	23.709	25.330	4.530	0.526	4.004
-4.9	24.064	25.613	4.813	0.745	4.068
-4.8	24.403	25.884	5.084	0.969	4.115
-4.7	24.726	26.142	5.342	1.198	4.144
-4.6	25.035	26.390	5.590	1.431	4.159
-4.5	25.330	26.626	5.826	1.670	4.156
-4.4	25.613	26.853	6.053	1.914	4.139
-4.3	25.884	27.071	6.271	2.163	4.108
-4.2	26.142	27.278	6.478	2.419	4.059
-4.1	26.390	27.477	6.677	2.680	3.997
-4	26.626	27.667	6.867	2.949	3.918
-3.9	26.853	27.849	7.049	3.223	3.826

-3.8	27.071	28.022	7.222	3.505	3.717
-3.7	27.278	28.188	7.388	3.795	3.593
-3.6	27.477	28.347	7.547	4.092	3.455
-3.5	27.667	28.498	7.698	4.398	3.300
-3.4	27.849	28.643	7.843	4.713	3.130
-3.3	28.022	28.781	7.981	5.037	2.944
-3.2	28.188	28.912	8.112	5.371	2.741
-3.1	28.347	29.036	8.236	5.716	2.520
-3	28.498	29.155	8.355	6.072	2.283
-2.9	28.643	29.268	8.468		-
-2.8	28.781	29.375	8.575		-
-2.7	28.912	29.477	8.677		-
-2.6	29.036	29.573	8.773		-
-2.5	29.155	29.664	8.864		-
-2.4	29.268	29.749	8.949		-
-2.3	29.375	29.830	9.030		-
-2.2	29.477	29.905	9.105		-
-2.1	29.573	29.976	9.176		-
-2	29.664	30.042	9.242		-
-1.9	29.749	30.103	9.303		-
-1.8	29.830	30.160	9.360		-
-1.7	29.905	30.212	9.412		-
-1.6	29.976	30.260	9.460		-
-1.5	30.042	30.303	9.503		-
-1.4	30.103	30.342	9.542		-
-1.3	30.160	30.377	9.577		-
-1.2	30.212	30.407	9.607		-
-1.1	30.260	30.433	9.633		-
-1	30.303	30.455	9.655		-
-0.9	30.342	30.472	9.672		-
-0.8	30.377	30.486	9.686		-
-0.7	30.407	30.495	9.695		-
-0.6	30.433	30.499	9.699		-
-0.5	30.455	30.500	9.700		-
-0.4	30.472	30.500	9.700		-
-0.3	30.486	30.500	9.700		-
-0.2	30.495	30.500	9.700		-
-0.1	30.499	30.500	9.700		-
0	30.500	30.500	9.700		-
0.1	30.496	30.500	9.700		-
0.2	30.488	30.500	9.700		-
0.3	30.476	30.500	9.700		-
0.4	30.459	30.500	9.700		-
0.5	30.438	30.500	9.700		-
0.6	30.412	30.496	9.696		-
0.7	30.381	30.488	9.688		-
0.8	30.346	30.476	9.676		-
0.9	30.307	30.459	9.659		-
1	30.262	30.438	9.638		-
1.1	30.213	30.412	9.612		-
1.2	30.158	30.381	9.581		-
1.3	30.099	30.346	9.546		-
1.4	30.035	30.307	9.507		-
1.5	29.965	30.262	9.462		-
1.6	29.890	30.213	9.413		-
1.7	29.809	30.158	9.358		-
1.8	29.723	30.099	9.299		-

1.9	29.631	30.035	9.235	-	
2	29.534	29.965	9.165	-	
2.1	29.430	29.890	9.090	-	
2.2	29.320	29.809	9.009	-	
2.3	29.204	29.723	8.923	-	
2.4	29.082	29.631	8.831	-	
2.5	28.953	29.534	8.734	-	
2.6	28.817	29.430	8.630	-	
2.7	28.675	29.320	8.520	-	
2.8	28.525	29.204	8.404	-	
2.9	28.368	29.082	8.282	-	
3	28.204	28.953	8.153	6.072	2.081
3.1	28.032	28.817	8.017	5.716	2.301
3.2	27.852	28.675	7.875	5.371	2.504
3.3	27.663	28.525	7.725	5.037	2.688
3.4	27.467	28.368	7.568	4.713	2.855
3.5	27.262	28.204	7.404	4.398	3.006
3.6	27.048	28.032	7.232	4.092	3.140
3.7	26.825	27.852	7.052	3.795	3.257
3.8	26.592	27.663	6.863	3.505	3.358
3.9	26.350	27.467	6.667	3.223	3.444
4	26.098	27.262	6.462	2.949	3.513
4.1	25.835	27.048	6.248	2.680	3.568
4.2	25.561	26.825	6.025	2.419	3.606
4.3	25.275	26.592	5.792	2.163	3.629
4.4	24.978	26.350	5.550	1.914	3.636
4.5	24.669	26.098	5.298	1.670	3.628
4.6	24.347	25.835	5.035	1.431	3.604
4.7	24.011	25.561	4.761	1.198	3.563
4.8	23.661	25.275	4.475	0.969	3.506
4.9	23.296	24.978	4.178	0.745	3.433
5	22.915	24.669	3.869	0.526	3.343
5.1	22.518	24.347	3.547	0.311	3.236
5.2	22.103	24.011	3.211	0.100	3.111
5.3	21.668	23.661	2.861	-0.107	2.968
5.4	21.214	23.296	2.496	-0.310	2.806
5.5	20.739	22.915	2.115	-0.509	2.624
5.6	20.241	22.518	1.718	-0.705	2.423
5.7	19.716	22.103	1.303	-0.897	2.200
5.8	19.165	21.668	0.868	-1.086	1.954
5.9	18.584	21.214	0.414	-1.271	1.685
6	17.972	20.739	-0.061	-1.454	1.393
6.1	17.325	20.241	-0.559	-1.633	1.074
6.2	16.639	19.716	-1.084	-1.810	0.726
6.3	15.911	19.165	-1.635	-1.984	0.349
6.4	15.138	18.584	-2.216	-2.154	-
6.5	14.317	17.972	-2.828	-2.323	-
6.6	13.443	17.325	-3.475	-2.489	-
6.7	12.516	16.639	-4.161	-2.652	-
6.8	11.538	15.911	-4.889	-2.813	-
6.9	10.524	15.138	-5.662	-2.971	-
7	9.499	14.317	-6.483	-3.127	-
7.1	8.513	13.443	-7.357	-3.281	-
7.2	7.653	12.516	-8.284	-3.433	-
7.3	7.037	11.538	-9.262	-3.583	-
7.4	6.778	10.524	-10.276	-3.731	-
7.5	6.915	10.543	-10.257	-3.877	-
7.6	7.390	11.318	-9.482	-4.020	-

7.7	8.088	12.044	-8.756	-4.162	-
7.8	8.894	12.716	-8.084	-4.302	-
7.9	9.727	13.337	-7.463	-4.441	-
8	10.543	13.910	-6.890	-4.577	-
8.1	11.318	14.440	-6.360	-4.712	-
8.2	12.044	14.929	-5.871	-4.845	-
8.3	12.716	15.381	-5.419	-4.977	-
8.4	13.337	15.798	-5.002	-5.107	0.105
8.5	13.910	16.185	-4.615	-5.235	0.620
8.6	14.440	16.544	-4.256	-5.362	1.106
8.7	14.929	16.876	-3.924	-5.488	1.564
8.8	15.381	17.185	-3.615	-5.612	1.997
8.9	15.798	17.470	-3.330	-5.735	2.405
9	16.185	17.735	-3.065	-5.856	2.791
9.1	16.544	17.981	-2.819	-5.976	3.157
9.2	16.876	18.208	-2.592	-6.095	3.503
9.3	17.185	18.418	-2.382	-6.212	3.830
9.4	17.470	18.612	-2.188	-6.328	4.140
9.5	17.735	18.790	-2.010	-6.443	4.433
9.6	17.981	18.954	-1.846	-6.557	4.711
9.7	18.208	19.104	-1.696	-6.669	4.973
9.8	18.418	19.240	-1.560	-6.781	5.221
9.9	18.612	19.362	-1.438	-6.891	5.453
10	18.790	19.473	-1.327	-7.000	5.673
15	13.099	14.971	-5.829	-11.402	5.573
20	7.803	7.810	-12.990	-14.526	1.536
25	6.253	8.009	-12.791	-16.949	4.158
30	10.325	10.934	-9.866	-18.928	9.062
35	-9.294	-4.728	-25.528	-20.602	-
40	-4.108	-1.455	-22.255	-22.051	-
45	6.552	7.292	-13.508	-23.330	9.822
50	9.520	9.640	-11.160	-24	12.840
55	3.940	4.992	-15.808	-24	8.192
60	-7.977	-5.698	-26.498	-24	-
65	-0.554	-0.490	-21.290	-24	2.710
70	-1.864	-1.515	-22.315	-24	1.685
75	-7.996	-7.223	-28.023	-24	-
80	-12.727	-12.667	-33.467	-24	-
85	-11.195	-11.006	-31.806	-24	-
90	-11.563	-11.538	-32.338	-14	-
95	-2.750	-2.750	-23.550	-14	-
100	-2.750	-2.750	-23.550	-14	-
105	-2.750	-2.750	-23.550	-14	-
110	-2.750	-2.750	-23.550	-14	-
115	-2.750	-2.750	-23.550	-14	-
120	-2.750	-2.750	-23.550	-14	-
125	-2.750	-2.750	-23.550	-14	-
130	-2.750	-2.750	-23.550	-14	-
135	-2.750	-2.750	-23.550	-14	-
140	-2.750	-2.750	-23.550	-14	-
145	-2.750	-2.750	-23.550	-14	-
150	-2.750	-2.750	-23.550	-14	-
155	-2.750	-2.750	-23.550	-14	-
160	-2.750	-2.750	-23.550	-14	-
165	-2.750	-2.750	-23.550	-14	-
170	-2.750	-2.750	-23.550	-14	-
175	-2.750	-2.750	-23.550	-14	-
180	-2.750	-2.750	-23.550	-14	-

14.5GHz, H-Pol Co-Pol Elevation PSD with -20.8dBW/4kHz at Input



Data in support of claim that proposed operation meets criteria of VMES Order July 2009

Applicant RAS

Date of Application

ID Heading

a1 Antenna Manufacture: RAS c Main bore gain (dBi): 30.5
 a2 Antenna Model: SR5000 d Frequency at which gain was measured (GHz): 14.0
 a3 Antenna ID: RAS e Max input power density (dBW/4kHz): -20.8
 b Transmit Band (b): 14GHz Pattern ID Table B6
 Pattern Description: 14.5GHz V-polarization, co-polarized perpendicular to the geosynchronous plane

Offset Angles (Degrees)	Nominal EI Gain Along At Normal to Geo Arc (dBi) 0° Skew	Worst Case EI Gain Along At Normal to Geo Arc (dBi) 0° Skew	Worst Case EI PSD Along At Normal to Geo Arc input PSD = -20.8dBW/4kHz (dBW/4kHz) 0° Skew	FCC Mask (dBW/4kHz)	Mask Exceedence (dB)
-180	-2.750	-2.750	-23.550	-14	-
-175	-2.750	-2.750	-23.550	-14	-
-170	-2.750	-2.750	-23.550	-14	-
-165	-2.750	-2.750	-23.550	-14	-
-160	-2.750	-2.750	-23.550	-14	-
-155	-2.750	-2.750	-23.550	-14	-
-150	-2.750	-2.750	-23.550	-14	-
-145	-2.750	-2.750	-23.550	-14	-
-140	-2.750	-2.750	-23.550	-14	-
-135	-2.750	-2.750	-23.550	-14	-
-130	-2.750	-2.750	-23.550	-14	-
-125	-2.750	-2.750	-23.550	-14	-
-120	-2.750	-2.750	-23.550	-14	-
-115	-2.750	-2.750	-23.550	-14	-
-110	-2.750	-2.750	-23.550	-14	-
-105	-2.750	-2.750	-23.550	-14	-
-100	-2.750	-2.750	-23.550	-14	-
-95	-2.750	-2.750	-23.550	-14	-
-90	10.547	10.857	-9.943	-14	4.057
-85	11.194	11.235	-9.565	-24	14.435
-80	10.372	10.510	-10.290	-24	13.710
-75	8.231	8.442	-12.358	-24	11.642
-70	8.601	8.732	-12.068	-24	11.932
-65	7.927	8.184	-12.616	-24	11.384
-60	5.504	5.729	-15.071	-24	8.929
-55	2.302	3.154	-17.646	-24	6.354
-50	13.488	14.256	-6.544	-24	17.456
-45	16.577	16.706	-4.094	-23.330	19.236
-40	2.120	5.151	-15.649	-22.051	6.402
-35	9.558	10.270	-10.530	-20.602	10.072
-30	11.268	12.361	-8.439	-18.928	10.489
-25	11.365	12.539	-8.261	-16.949	8.688
-20	10.779	11.189	-9.611	-14.526	4.915
-15	11.835	14.391	-6.409	-11.402	4.993
-10	22.142	22.346	1.546	-7.000	8.546
-9.9	22.064	22.329	1.529	-6.891	8.420
-9.8	21.972	22.301	1.501	-6.781	8.282
-9.7	21.867	22.260	1.460	-6.669	8.129

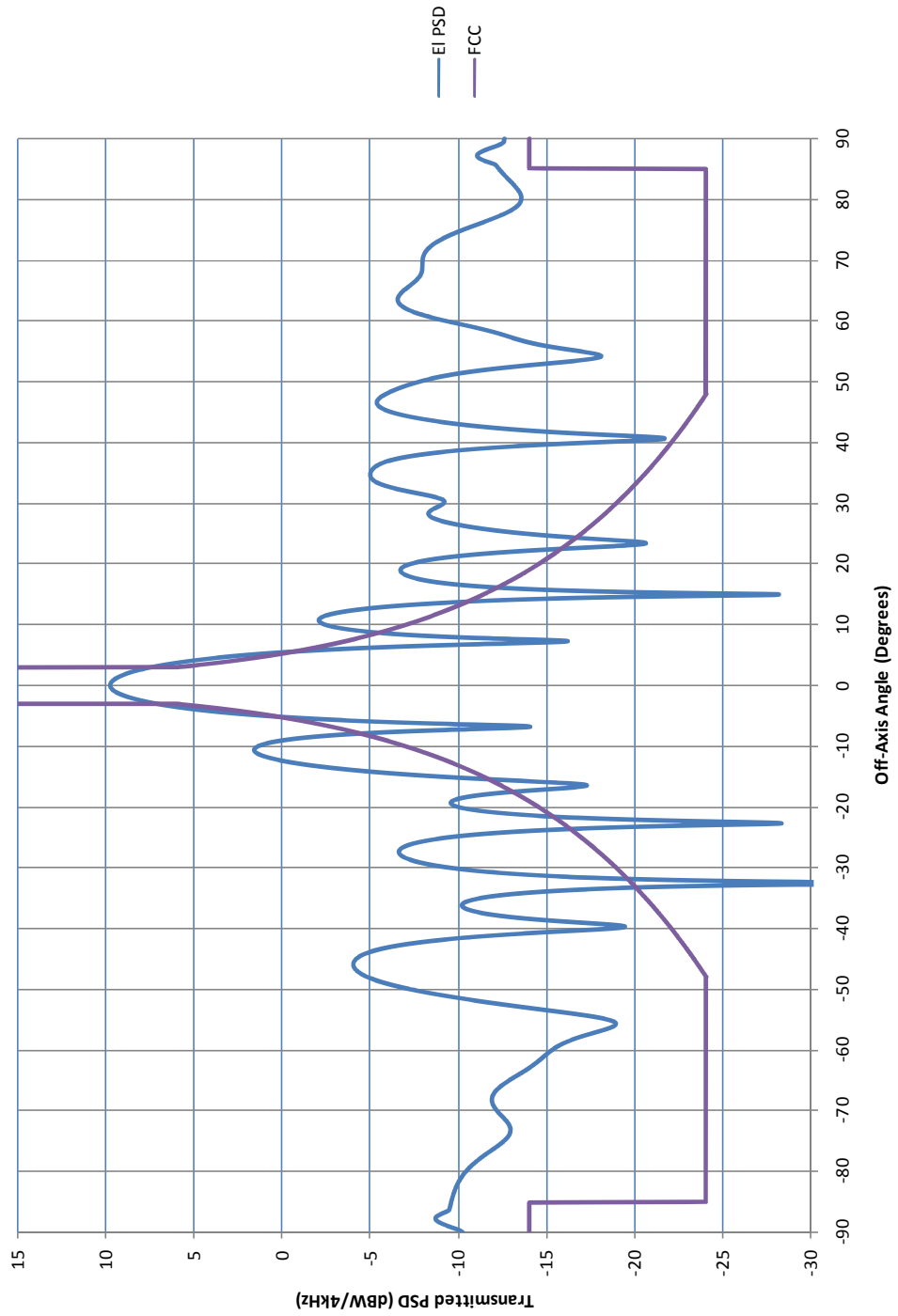
-9.6	21.746	22.208	1.408	-6.557	7.965
-9.5	21.611	22.142	1.342	-6.443	7.785
-9.4	21.459	22.064	1.264	-6.328	7.592
-9.3	21.291	21.972	1.172	-6.212	7.384
-9.2	21.106	21.867	1.067	-6.095	7.162
-9.1	20.902	21.746	0.946	-5.976	6.922
-9	20.678	21.611	0.811	-5.856	6.667
-8.9	20.433	21.459	0.659	-5.735	6.394
-8.8	20.167	21.291	0.491	-5.612	6.103
-8.7	19.877	21.106	0.306	-5.488	5.794
-8.6	19.560	20.902	0.102	-5.362	5.464
-8.5	19.215	20.678	-0.122	-5.235	5.113
-8.4	18.841	20.433	-0.367	-5.107	4.740
-8.3	18.434	20.167	-0.633	-4.977	4.344
-8.2	17.991	19.877	-0.923	-4.845	3.922
-8.1	17.507	19.560	-1.240	-4.712	3.472
-8	16.978	19.215	-1.585	-4.577	2.992
-7.9	16.400	18.841	-1.959	-4.441	2.482
-7.8	15.767	18.434	-2.366	-4.302	1.936
-7.7	15.070	17.991	-2.809	-4.162	1.353
-7.6	14.301	17.507	-3.293	-4.020	0.727
-7.5	13.453	16.978	-3.822	-3.877	0.055
-7.4	12.518	16.400	-4.400	-3.731	-
-7.3	11.491	15.767	-5.033	-3.583	-
-7.2	10.377	15.070	-5.730	-3.433	-
-7.1	9.206	14.301	-6.499	-3.281	-
-7	8.069	13.453	-7.347	-3.127	-
-6.9	7.153	12.518	-8.282	-2.971	-
-6.8	6.726	11.586	-9.214	-2.813	-
-6.7	6.980	12.779	-8.021	-2.652	-
-6.6	7.835	13.883	-6.917	-2.489	-
-6.5	9.026	14.895	-5.905	-2.323	-
-6.4	10.318	15.824	-4.976	-2.154	-
-6.3	11.586	16.678	-4.122	-1.984	-
-6.2	12.779	17.468	-3.332	-1.810	-
-6.1	13.883	18.202	-2.598	-1.633	-
-6	14.895	18.883	-1.917	-1.454	-
-5.9	15.824	19.518	-1.282	-1.271	-
-5.8	16.678	20.113	-0.687	-1.086	0.399
-5.7	17.468	20.671	-0.129	-0.897	0.768
-5.6	18.202	21.198	0.398	-0.705	1.103
-5.5	18.883	21.695	0.895	-0.509	1.404
-5.4	19.518	22.164	1.364	-0.310	1.674
-5.3	20.113	22.608	1.808	-0.107	1.915
-5.2	20.671	23.030	2.230	0.100	2.130
-5.1	21.198	23.431	2.631	0.311	2.320
-5	21.695	23.813	3.013	0.526	2.487
-4.9	22.164	24.176	3.376	0.745	2.631
-4.8	22.608	24.522	3.722	0.969	2.753
-4.7	23.030	24.853	4.053	1.198	2.855
-4.6	23.431	25.169	4.369	1.431	2.938
-4.5	23.813	25.471	4.671	1.670	3.001
-4.4	24.176	25.759	4.959	1.914	3.045
-4.3	24.522	26.035	5.235	2.163	3.072
-4.2	24.853	26.299	5.499	2.419	3.080
-4.1	25.169	26.553	5.753	2.680	3.073
-4	25.471	26.795	5.995	2.949	3.046
-3.9	25.759	27.027	6.227	3.223	3.004

-3.8	26.035	27.248	6.448	3.505	2.943
-3.7	26.299	27.461	6.661	3.795	2.866
-3.6	26.553	27.664	6.864	4.092	2.772
-3.5	26.795	27.859	7.059	4.398	2.661
-3.4	27.027	28.044	7.244	4.713	2.531
-3.3	27.248	28.221	7.421	5.037	2.384
-3.2	27.461	28.391	7.591	5.371	2.220
-3.1	27.664	28.553	7.753	5.716	2.037
-3	27.859	28.707	7.907	6.072	1.835
-2.9	28.044	28.854	8.054		-
-2.8	28.221	28.993	8.193		-
-2.7	28.391	29.126	8.326		-
-2.6	28.553	29.252	8.452		-
-2.5	28.707	29.371	8.571		-
-2.4	28.854	29.483	8.683		-
-2.3	28.993	29.589	8.789		-
-2.2	29.126	29.688	8.888		-
-2.1	29.252	29.782	8.982		-
-2	29.371	29.869	9.069		-
-1.9	29.483	29.951	9.151		-
-1.8	29.589	30.026	9.226		-
-1.7	29.688	30.095	9.295		-
-1.6	29.782	30.159	9.359		-
-1.5	29.869	30.217	9.417		-
-1.4	29.951	30.270	9.470		-
-1.3	30.026	30.317	9.517		-
-1.2	30.095	30.358	9.558		-
-1.1	30.159	30.394	9.594		-
-1	30.217	30.425	9.625		-
-0.9	30.270	30.450	9.650		-
-0.8	30.317	30.470	9.670		-
-0.7	30.358	30.485	9.685		-
-0.6	30.394	30.495	9.695		-
-0.5	30.425	30.500	9.700		-
-0.4	30.450	30.500	9.700		-
-0.3	30.470	30.500	9.700		-
-0.2	30.485	30.500	9.700		-
-0.1	30.495	30.500	9.700		-
0	30.500	30.500	9.700		-
0.1	30.499	30.500	9.700		-
0.2	30.494	30.500	9.700		-
0.3	30.483	30.500	9.700		-
0.4	30.468	30.500	9.700		-
0.5	30.447	30.500	9.700		-
0.6	30.421	30.499	9.699		-
0.7	30.391	30.494	9.694		-
0.8	30.355	30.483	9.683		-
0.9	30.314	30.468	9.668		-
1	30.269	30.447	9.647		-
1.1	30.218	30.421	9.621		-
1.2	30.162	30.391	9.591		-
1.3	30.101	30.355	9.555		-
1.4	30.035	30.314	9.514		-
1.5	29.964	30.269	9.469		-
1.6	29.887	30.218	9.418		-
1.7	29.805	30.162	9.362		-
1.8	29.718	30.101	9.301		-

1.9	29.625	30.035	9.235	-	
2	29.526	29.964	9.164	-	
2.1	29.422	29.887	9.087	-	
2.2	29.312	29.805	9.005	-	
2.3	29.196	29.718	8.918	-	
2.4	29.074	29.625	8.825	-	
2.5	28.945	29.526	8.726	-	
2.6	28.810	29.422	8.622	-	
2.7	28.668	29.312	8.512	-	
2.8	28.520	29.196	8.396	-	
2.9	28.365	29.074	8.274	-	
3	28.202	28.945	8.145	6.072	2.073
3.1	28.031	28.810	8.010	5.716	2.294
3.2	27.853	28.668	7.868	5.371	2.497
3.3	27.666	28.520	7.720	5.037	2.683
3.4	27.472	28.365	7.565	4.713	2.852
3.5	27.268	28.202	7.402	4.398	3.004
3.6	27.055	28.031	7.231	4.092	3.139
3.7	26.833	27.853	7.053	3.795	3.258
3.8	26.601	27.666	6.866	3.505	3.361
3.9	26.359	27.472	6.672	3.223	3.449
4	26.106	27.268	6.468	2.949	3.519
4.1	25.842	27.055	6.255	2.680	3.575
4.2	25.566	26.833	6.033	2.419	3.614
4.3	25.278	26.601	5.801	2.163	3.638
4.4	24.976	26.359	5.559	1.914	3.645
4.5	24.661	26.106	5.306	1.670	3.636
4.6	24.331	25.842	5.042	1.431	3.611
4.7	23.986	25.566	4.766	1.198	3.568
4.8	23.626	25.278	4.478	0.969	3.509
4.9	23.248	24.976	4.176	0.745	3.431
5	22.851	24.661	3.861	0.526	3.335
5.1	22.434	24.331	3.531	0.311	3.220
5.2	21.997	23.986	3.186	0.100	3.086
5.3	21.537	23.626	2.826	-0.107	2.933
5.4	21.053	23.248	2.448	-0.310	2.758
5.5	20.542	22.851	2.051	-0.509	2.560
5.6	20.001	22.434	1.634	-0.705	2.339
5.7	19.429	21.997	1.197	-0.897	2.094
5.8	18.824	21.537	0.737	-1.086	1.823
5.9	18.179	21.053	0.253	-1.271	1.524
6	17.491	20.542	-0.258	-1.454	1.196
6.1	16.755	20.001	-0.799	-1.633	0.834
6.2	15.966	19.429	-1.371	-1.810	0.439
6.3	15.117	18.824	-1.976	-1.984	0.008
6.4	14.199	18.179	-2.621	-2.154	-
6.5	13.203	17.491	-3.309	-2.323	-
6.6	12.118	16.755	-4.045	-2.489	-
6.7	10.942	15.966	-4.834	-2.652	-
6.8	9.670	15.117	-5.683	-2.813	-
6.9	8.320	14.199	-6.601	-2.971	-
7	6.947	13.203	-7.597	-3.127	-
7.1	5.696	12.118	-8.682	-3.281	-
7.2	4.826	10.942	-9.858	-3.433	-
7.3	4.604	9.670	-11.130	-3.583	-
7.4	5.076	10.295	-10.505	-3.731	-
7.5	6.012	11.171	-9.629	-3.877	-
7.6	7.133	11.958	-8.842	-4.020	-

7.7	8.263	12.664	-8.136	-4.162	-
7.8	9.325	13.300	-7.500	-4.302	-
7.9	10.295	13.875	-6.925	-4.441	-
8	11.171	14.395	-6.405	-4.577	-
8.1	11.958	14.866	-5.934	-4.712	-
8.2	12.664	15.294	-5.506	-4.845	-
8.3	13.300	15.683	-5.117	-4.977	-
8.4	13.875	16.038	-4.762	-5.107	0.345
8.5	14.395	16.361	-4.439	-5.235	0.796
8.6	14.866	16.655	-4.145	-5.362	1.217
8.7	15.294	16.922	-3.878	-5.488	1.610
8.8	15.683	17.165	-3.635	-5.612	1.977
8.9	16.038	17.386	-3.414	-5.735	2.321
9	16.361	17.586	-3.214	-5.856	2.642
9.1	16.655	17.766	-3.034	-5.976	2.942
9.2	16.922	17.927	-2.873	-6.095	3.222
9.3	17.165	18.071	-2.729	-6.212	3.483
9.4	17.386	18.199	-2.601	-6.328	3.727
9.5	17.586	18.310	-2.490	-6.443	3.953
9.6	17.766	18.406	-2.394	-6.557	4.163
9.7	17.927	18.488	-2.312	-6.669	4.357
9.8	18.071	18.555	-2.245	-6.781	4.536
9.9	18.199	18.608	-2.192	-6.891	4.699
10	18.310	18.648	-2.152	-7.000	4.848
15	-7.339	3.084	-17.716	-11.402	-
20	13.520	13.927	-6.873	-14.526	7.653
25	7.067	8.642	-12.158	-16.949	4.791
30	11.618	11.900	-8.900	-18.928	10.028
35	15.763	15.778	-5.022	-20.602	15.580
40	3.125	6.802	-13.998	-22.051	8.053
45	14.580	15.034	-5.766	-23.330	17.564
50	13.026	13.599	-7.201	-24	16.799
55	3.881	5.044	-15.756	-24	8.244
60	11.482	12.195	-8.605	-24	15.395
65	13.889	14.064	-6.736	-24	17.264
70	12.811	12.818	-7.982	-24	16.018
75	10.545	10.970	-9.830	-24	14.170
80	7.225	7.288	-13.512	-24	10.488
85	8.485	8.629	-12.171	-24	11.829
90	8.186	8.211	-12.589	-14	1.411
95	-2.750	-2.750	-23.550	-14	-
100	-2.750	-2.750	-23.550	-14	-
105	-2.750	-2.750	-23.550	-14	-
110	-2.750	-2.750	-23.550	-14	-
115	-2.750	-2.750	-23.550	-14	-
120	-2.750	-2.750	-23.550	-14	-
125	-2.750	-2.750	-23.550	-14	-
130	-2.750	-2.750	-23.550	-14	-
135	-2.750	-2.750	-23.550	-14	-
140	-2.750	-2.750	-23.550	-14	-
145	-2.750	-2.750	-23.550	-14	-
150	-2.750	-2.750	-23.550	-14	-
155	-2.750	-2.750	-23.550	-14	-
160	-2.750	-2.750	-23.550	-14	-
165	-2.750	-2.750	-23.550	-14	-
170	-2.750	-2.750	-23.550	-14	-
175	-2.750	-2.750	-23.550	-14	-
180	-2.750	-2.750	-23.550	-14	-

14.5GHz, V-Pol Co-Pol Elevation PSD with -20.8dBW/4kHz at Input



Data in support of claim that proposed operation meets criteria of VMES Order July 2009

Applicant	RAS	Date of Application	
ID Heading			
a1	Antenna Manufacture: RAS	c	Main bore gain (dBi): 30.5
a2	Antenna Model: SR5000	d	Frequency at which gain was measured (GHz): 14.0
a3	Antenna ID: RAS	e	Max input power density (dBW/4kHz): -20.8
b	Transmit Band (b): 14GHz	Pattern ID	Table C1
	Pattern Description: 14.0GHz H-polarization, X-polarized tangent to the geosynchronous plane for 0°, 37.5°, and 50° skew angle		

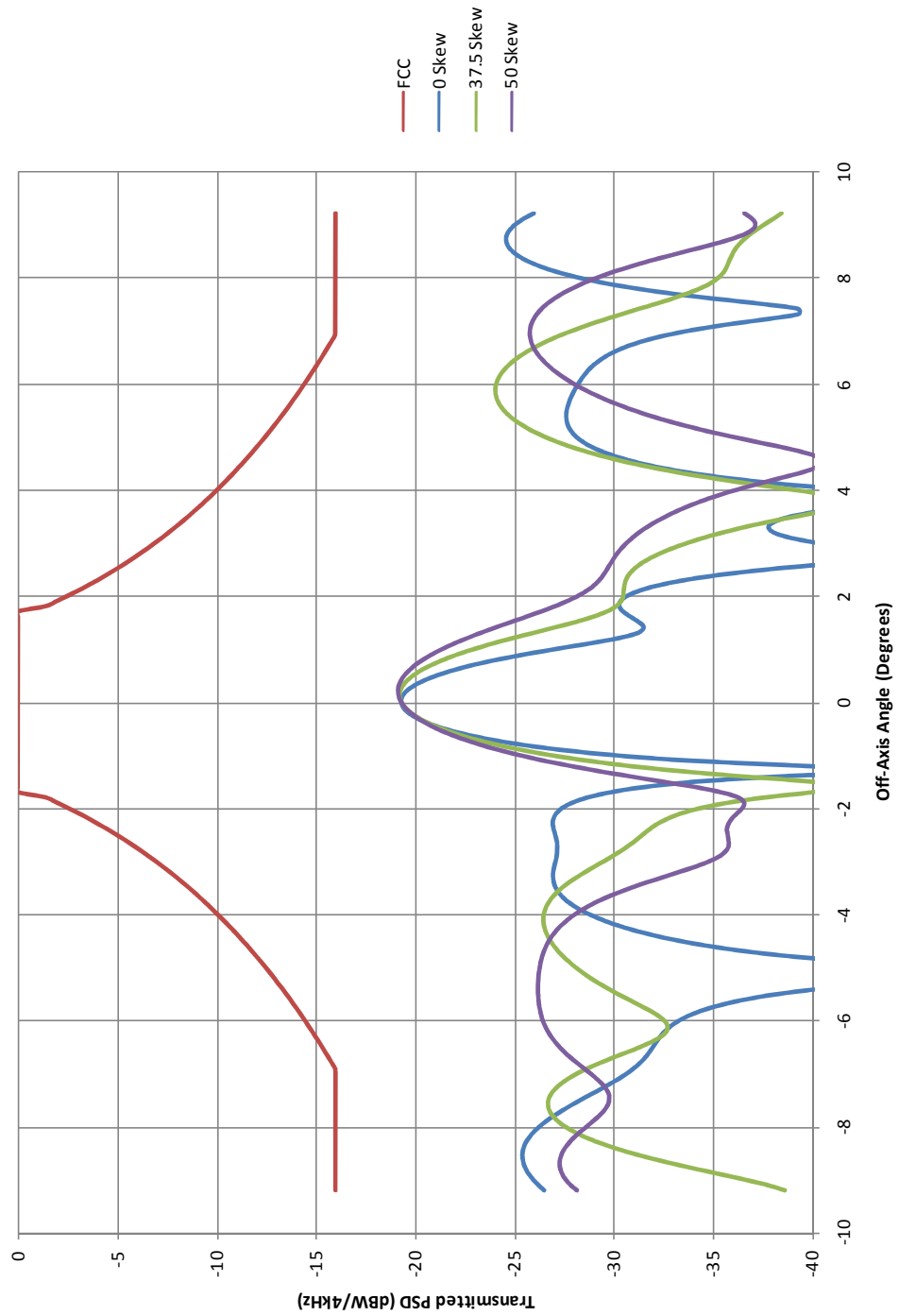
Offset Angles (Degrees)	Nominal X-Pol Gain Along Tangent to Geo Arc (dBi)			Worst Case X-Pol Gain Along Tangent to Geo Arc (dBi)			Worst Case X-Pol PSD Along Tangent to Geo Arc input PSD = -20.8dBW/4kHz (dBW/4kHz)			FCC Mask (dBW/4kHz)	Mask Exceedence (dB)
	0° Skew	37.5° Skew	50° Skew	0° Skew	37.5° Skew	50° Skew	0° Skew	37.5° Skew	50° Skew		
	-9.2	-5.679	-17.802	-7.332	-4.649	-12.183	-6.465	-25.449	-32.983		
-9.1	-5.387	-16.924	-7.016	-4.593	-11.099	-6.465	-25.393	-31.899	-27.265	-16.000	-
-9	-5.135	-15.807	-6.777	-4.592	-10.085	-6.465	-25.392	-30.885	-27.265	-16.000	-
-8.9	-4.924	-14.605	-6.603	-4.592	-9.207	-6.465	-25.392	-30.007	-27.265	-16.000	-
-8.8	-4.759	-13.370	-6.501	-4.592	-8.432	-6.465	-25.392	-29.232	-27.265	-16.000	-
-8.7	-4.649	-12.183	-6.465	-4.592	-7.753	-6.465	-25.392	-28.553	-27.265	-16.000	-
-8.6	-4.593	-11.099	-6.494	-4.592	-7.201	-6.465	-25.392	-28.001	-27.265	-16.000	-
-8.5	-4.592	-10.085	-6.588	-4.592	-6.734	-6.465	-25.392	-27.534	-27.265	-16.000	-
-8.4	-4.645	-9.207	-6.740	-4.592	-6.377	-6.465	-25.392	-27.177	-27.265	-16.000	-
-8.3	-4.758	-8.432	-6.949	-4.592	-6.119	-6.465	-25.392	-26.919	-27.265	-16.000	-
-8.2	-4.933	-7.753	-7.204	-4.592	-5.946	-6.465	-25.392	-26.746	-27.265	-16.000	-
-8.1	-5.161	-7.201	-7.499	-4.592	-5.880	-6.494	-25.392	-26.680	-27.294	-16.000	-
-8	-5.440	-6.734	-7.815	-4.592	-5.880	-6.588	-25.392	-26.680	-27.388	-16.000	-
-7.9	-5.770	-6.377	-8.137	-4.645	-5.880	-6.740	-25.445	-26.680	-27.540	-16.000	-
-7.8	-6.152	-6.119	-8.440	-4.758	-5.880	-6.949	-25.558	-26.680	-27.749	-16.000	-
-7.7	-6.578	-5.946	-8.694	-4.933	-5.880	-7.204	-25.733	-26.680	-28.004	-16.000	-
-7.6	-7.030	-5.880	-8.879	-5.161	-5.880	-7.499	-25.961	-26.680	-28.299	-16.000	-
-7.5	-7.505	-5.898	-8.962	-5.440	-5.880	-7.815	-26.240	-26.680	-28.615	-16.000	-
-7.4	-7.996	-6.010	-8.949	-5.770	-5.880	-7.669	-26.570	-26.680	-28.469	-16.000	-
-7.3	-8.494	-6.215	-8.819	-6.152	-5.880	-7.341	-26.952	-26.680	-28.141	-16.000	-
-7.2	-8.976	-6.501	-8.614	-6.578	-5.880	-7.013	-27.378	-26.680	-27.813	-16.000	-
-7.1	-9.425	-6.886	-8.326	-7.030	-5.880	-6.725	-27.830	-26.680	-27.525	-16.000	-
-7	-9.835	-7.345	-8.015	-7.505	-5.898	-6.453	-28.305	-26.698	-27.253	-16.000	-
-6.9	-10.197	-7.888	-7.669	-7.996	-6.010	-6.227	-28.796	-26.810	-27.027	-15.971	-
-6.8	-10.506	-8.504	-7.341	-8.494	-6.215	-6.023	-29.294	-27.015	-26.823	-15.813	-
-6.7	-10.760	-9.158	-7.013	-8.976	-6.501	-5.862	-29.776	-27.301	-26.662	-15.652	-
-6.6	-10.971	-9.854	-6.725	-9.425	-6.886	-5.721	-30.225	-27.686	-26.521	-15.489	-
-6.5	-11.157	-10.527	-6.453	-9.835	-7.345	-5.618	-30.635	-28.145	-26.418	-15.323	-
-6.4	-11.335	-11.122	-6.227	-10.197	-7.888	-5.530	-30.997	-28.688	-26.330	-15.154	-
-6.3	-11.531	-11.596	-6.023	-10.506	-8.504	-5.472	-31.306	-29.304	-26.272	-14.984	-
-6.2	-11.771	-11.863	-5.862	-10.760	-9.158	-5.424	-31.560	-29.958	-26.224	-14.810	-
-6.1	-12.082	-11.895	-5.721	-10.971	-9.854	-5.399	-31.771	-30.654	-26.199	-14.633	-
-6	-12.490	-11.729	-5.618	-11.157	-9.375	-5.380	-31.957	-30.175	-26.180	-14.454	-
-5.9	-13.027	-11.383	-5.530	-11.335	-8.891	-5.380	-32.135	-29.691	-26.180	-14.271	-
-5.8	-13.738	-10.921	-5.472	-11.531	-8.425	-5.380	-32.331	-29.225	-26.180	-14.086	-
-5.7	-14.670	-10.421	-5.424	-11.771	-8.005	-5.380	-32.571	-28.805	-26.180	-13.897	-
-5.6	-15.890	-9.891	-5.399	-12.082	-7.619	-5.380	-32.882	-28.419	-26.180	-13.705	-
-5.5	-17.514	-9.375	-5.380	-12.490	-7.258	-5.380	-33.290	-28.058	-26.180	-13.509	-
-5.4	-19.770	-8.891	-5.380	-13.027	-6.943	-5.380	-33.827	-27.743	-26.180	-13.310	-
-5.3	-23.193	-8.425	-5.382	-13.738	-6.654	-5.380	-34.538	-27.454	-26.180	-13.107	-
-5.2	-29.453	-8.005	-5.402	-14.670	-6.397	-5.380	-35.470	-27.197	-26.180	-12.900	-

-5.1	-46.629	-7.619	-5.425	-13.966	-6.180	-5.380	-34.766	-26.980	-26.180	-12.689	-
-5	-27.470	-7.258	-5.467	-12.461	-5.990	-5.380	-33.261	-26.790	-26.180	-12.474	-
-4.9	-21.752	-6.943	-5.515	-11.217	-5.843	-5.380	-32.017	-26.643	-26.180	-12.255	-
-4.8	-18.293	-6.654	-5.587	-10.172	-5.734	-5.382	-30.972	-26.534	-26.182	-12.031	-
-4.7	-15.842	-6.397	-5.671	-9.294	-5.663	-5.402	-30.094	-26.463	-26.202	-11.802	-
-4.6	-13.966	-6.180	-5.787	-8.557	-5.644	-5.425	-29.357	-26.444	-26.225	-11.569	-
-4.5	-12.461	-5.990	-5.923	-7.939	-5.644	-5.467	-28.739	-26.444	-26.267	-11.330	-
-4.4	-11.217	-5.843	-6.100	-7.423	-5.644	-5.515	-28.223	-26.444	-26.315	-11.086	-
-4.3	-10.172	-5.734	-6.309	-6.999	-5.644	-5.587	-27.799	-26.444	-26.387	-10.837	-
-4.2	-9.294	-5.663	-6.570	-6.668	-5.644	-5.671	-27.468	-26.444	-26.471	-10.581	-
-4.1	-8.557	-5.644	-6.873	-6.424	-5.644	-5.787	-27.224	-26.444	-26.587	-10.320	-
-4	-7.939	-5.666	-7.241	-6.260	-5.644	-5.923	-27.060	-26.444	-26.723	-10.051	-
-3.9	-7.423	-5.743	-7.663	-6.163	-5.644	-6.100	-26.963	-26.444	-26.900	-9.777	-
-3.8	-6.999	-5.873	-8.161	-6.124	-5.644	-6.309	-26.924	-26.444	-27.109	-9.495	-
-3.7	-6.668	-6.053	-8.724	-6.124	-5.644	-6.570	-26.924	-26.444	-27.370	-9.205	-
-3.6	-6.424	-6.298	-9.367	-6.124	-5.644	-6.873	-26.924	-26.444	-27.673	-8.908	-
-3.5	-6.260	-6.591	-10.079	-6.124	-5.666	-7.241	-26.924	-26.466	-28.041	-8.602	-
-3.4	-6.163	-6.938	-10.860	-6.124	-5.743	-7.663	-26.924	-26.543	-28.463	-8.287	-
-3.3	-6.124	-7.340	-11.688	-6.124	-5.873	-8.161	-26.924	-26.673	-28.961	-7.963	-
-3.2	-6.140	-7.768	-12.525	-6.124	-6.053	-8.724	-26.924	-26.853	-29.524	-7.629	-
-3.1	-6.192	-8.232	-13.333	-6.124	-6.298	-9.367	-26.924	-27.098	-30.167	-7.284	-
-3	-6.257	-8.702	-14.020	-6.124	-6.591	-10.079	-26.924	-27.391	-30.879	-6.928	-
-2.9	-6.313	-9.150	-14.552	-6.124	-6.938	-10.860	-26.924	-27.738	-31.660	-6.560	-
-2.8	-6.343	-9.588	-14.849	-6.117	-7.340	-11.688	-26.917	-28.140	-32.488	-6.179	-
-2.7	-6.339	-9.973	-14.982	-6.117	-7.768	-12.525	-26.917	-28.568	-33.325	-5.784	-
-2.6	-6.301	-10.316	-14.956	-6.117	-8.232	-13.333	-26.917	-29.032	-34.133	-5.374	-
-2.5	-6.233	-10.657	-14.919	-6.117	-8.702	-14.020	-26.917	-29.502	-34.820	-4.949	-
-2.4	-6.159	-10.986	-14.886	-6.117	-9.150	-14.552	-26.917	-29.950	-35.352	-4.505	-
-2.3	-6.117	-11.386	-14.965	-6.117	-9.588	-14.849	-26.917	-30.388	-35.649	-4.043	-
-2.2	-6.151	-11.910	-15.128	-6.117	-9.973	-14.547	-26.917	-30.773	-35.347	-3.561	-
-2.1	-6.297	-12.594	-15.399	-6.117	-10.316	-13.214	-26.917	-31.116	-34.014	-3.055	-
-2	-6.593	-13.589	-15.661	-6.117	-10.657	-11.575	-26.917	-31.457	-32.375	-2.526	-
-1.9	-7.096	-14.954	-15.754	-6.117	-10.986	-9.948	-26.917	-31.786	-30.748	-1.969	-
-1.8	-7.887	-16.822	-15.450	-6.117	-11.386	-8.343	-26.917	-32.186	-29.143	-1.382	-
-1.7	-9.080	-19.251	-14.547	-6.151	-9.785	-6.905	-26.951	-30.585	-27.705	-	-
-1.6	-10.827	-20.890	-13.214	-6.297	-7.689	-5.564	-27.097	-28.489	-26.364	-	-
-1.5	-13.468	-19.008	-11.575	-6.593	-5.940	-4.395	-27.393	-26.740	-25.195	-	-
-1.4	-17.818	-15.498	-9.948	-6.417	-4.440	-3.326	-27.217	-25.240	-24.126	-	-
-1.3	-23.875	-12.389	-8.343	-4.409	-3.196	-2.404	-25.209	-23.996	-23.204	-	-
-1.2	-18.257	-9.785	-6.905	-2.824	-2.125	-1.574	-23.624	-22.925	-22.374	-	-
-1.1	-12.653	-7.689	-5.564	-1.578	-1.217	-0.866	-22.378	-22.017	-21.666	-	-
-1	-9.029	-5.940	-4.395	-0.592	-0.465	-0.243	-21.392	-21.265	-21.043	-	-
-0.9	-6.417	-4.440	-3.326	0.181	0.168	0.273	-20.619	-20.632	-20.527	-	-
-0.8	-4.409	-3.196	-2.404	0.767	0.668	0.713	-20.033	-20.132	-20.087	-	-
-0.7	-2.824	-2.125	-1.574	1.179	1.058	1.057	-19.621	-19.742	-19.743	-	-
-0.6	-1.578	-1.217	-0.866	1.424	1.342	1.330	-19.376	-19.458	-19.470	-	-
-0.5	-0.592	-0.465	-0.243	1.515	1.515	1.515	-19.285	-19.285	-19.285	-	-
-0.4	0.181	0.168	0.273	1.515	1.594	1.632	-19.285	-19.206	-19.168	-	-
-0.3	0.767	0.668	0.713	1.515	1.594	1.665	-19.285	-19.206	-19.135	-	-
-0.2	1.179	1.058	1.057	1.515	1.594	1.665	-19.285	-19.206	-19.135	-	-
-0.1	1.424	1.342	1.330	1.515	1.594	1.665	-19.285	-19.206	-19.135	-	-
0	1.515	1.515	1.515	1.515	1.594	1.665	-19.285	-19.206	-19.135	-	-
0.1	1.459	1.594	1.632	1.515	1.594	1.665	-19.285	-19.206	-19.135	-	-
0.2	1.253	1.566	1.665	1.515	1.594	1.665	-19.285	-19.206	-19.135	-	-
0.3	0.890	1.445	1.634	1.515	1.594	1.665	-19.285	-19.206	-19.135	-	-
0.4	0.371	1.226	1.522	1.515	1.594	1.665	-19.285	-19.206	-19.135	-	-
0.5	-0.305	0.900	1.348	1.515	1.594	1.665	-19.285	-19.206	-19.135	-	-
0.6	-1.148	0.488	1.092	1.459	1.594	1.665	-19.341	-19.206	-19.135	-	-
0.7	-2.177	-0.037	0.780	1.253	1.566	1.665	-19.547	-19.234	-19.135	-	-
0.8	-3.405	-0.658	0.383	0.890	1.445	1.634	-19.910	-19.355	-19.166	-	-
0.9	-4.812	-1.370	-0.063	0.371	1.226	1.522	-20.429	-19.574	-19.278	-	-

1	-6.364	-2.203	-0.594	-0.305	0.900	1.348	-21.105	-19.900	-19.452	-
1.1	-7.976	-3.107	-1.167	-1.148	0.488	1.092	-21.948	-20.312	-19.708	-
1.2	-9.442	-4.097	-1.820	-2.177	-0.037	0.780	-22.977	-20.837	-20.020	-
1.3	-10.417	-5.158	-2.500	-3.405	-0.658	0.383	-24.205	-21.458	-20.417	-
1.4	-10.693	-6.211	-3.245	-4.812	-1.370	-0.063	-25.612	-22.170	-20.863	-
1.5	-10.455	-7.241	-3.992	-6.364	-2.203	-0.594	-27.164	-23.003	-21.394	-
1.6	-10.029	-8.136	-4.771	-7.976	-3.107	-1.167	-28.776	-23.907	-21.967	-
1.7	-9.654	-8.841	-5.511	-9.442	-4.097	-1.820	-30.242	-24.897	-22.620	-
1.8	-9.463	-9.311	-6.231	-9.463	-5.158	-2.500	-30.263	-25.958	-23.300	-1.382
1.9	-9.534	-9.563	-6.862	-9.463	-6.211	-3.245	-30.263	-27.011	-24.045	-1.969
2	-9.888	-9.676	-7.419	-9.463	-7.241	-3.992	-30.263	-28.041	-24.792	-2.526
2.1	-10.537	-9.694	-7.863	-9.463	-8.136	-4.771	-30.263	-28.936	-25.571	-3.055
2.2	-11.514	-9.734	-8.215	-9.463	-8.841	-5.511	-30.263	-29.641	-26.311	-3.561
2.3	-12.883	-9.810	-8.481	-9.463	-9.311	-6.231	-30.263	-30.111	-27.031	-4.043
2.4	-14.722	-9.959	-8.687	-9.534	-9.563	-6.862	-30.334	-30.363	-27.662	-4.505
2.5	-17.112	-10.212	-8.860	-9.888	-9.676	-7.419	-30.688	-30.476	-28.219	-4.949
2.6	-20.087	-10.552	-9.018	-10.537	-9.694	-7.863	-31.337	-30.494	-28.663	-5.374
2.7	-22.992	-11.006	-9.187	-11.514	-9.734	-8.215	-32.314	-30.534	-29.015	-5.784
2.8	-23.390	-11.553	-9.374	-12.883	-9.810	-8.481	-33.683	-30.610	-29.281	-6.179
2.9	-21.349	-12.206	-9.597	-14.722	-9.959	-8.687	-35.522	-30.759	-29.487	-6.560
3	-19.331	-12.963	-9.854	-16.979	-10.212	-8.860	-37.779	-31.012	-29.660	-6.928
3.1	-17.952	-13.813	-10.157	-16.979	-10.552	-9.018	-37.779	-31.352	-29.818	-7.284
3.2	-17.185	-14.804	-10.502	-16.979	-11.006	-9.187	-37.779	-31.806	-29.987	-7.629
3.3	-16.979	-15.894	-10.900	-16.979	-11.553	-9.374	-37.779	-32.353	-30.174	-7.963
3.4	-17.323	-17.135	-11.344	-16.979	-12.206	-9.597	-37.779	-33.006	-30.397	-8.287
3.5	-18.231	-18.518	-11.852	-16.979	-12.963	-9.854	-37.779	-33.763	-30.654	-8.602
3.6	-19.773	-19.870	-12.411	-16.979	-13.813	-10.157	-37.779	-34.613	-30.957	-8.908
3.7	-22.007	-20.941	-13.052	-15.184	-14.365	-10.502	-35.984	-35.165	-31.302	-9.205
3.8	-24.324	-21.014	-13.752	-13.215	-12.713	-10.900	-34.015	-33.513	-31.700	-9.495
3.9	-23.915	-19.921	-14.560	-11.659	-11.288	-11.344	-32.459	-32.088	-32.144	-9.777
4	-20.782	-18.101	-15.430	-10.434	-10.010	-11.852	-31.234	-30.810	-32.652	-10.051
4.1	-17.676	-16.172	-16.419	-9.459	-8.891	-12.411	-30.259	-29.691	-33.211	-10.320
4.2	-15.184	-14.365	-17.435	-8.683	-7.921	-13.052	-29.483	-28.721	-33.852	-10.581
4.3	-13.215	-12.713	-18.472	-8.072	-7.049	-13.752	-28.872	-27.849	-34.552	-10.837
4.4	-11.659	-11.288	-19.297	-7.608	-6.305	-14.560	-28.408	-27.105	-35.360	-11.086
4.5	-10.434	-10.010	-19.729	-7.270	-5.656	-15.052	-28.070	-26.456	-35.852	-11.330
4.6	-9.459	-8.891	-19.524	-7.035	-5.087	-13.854	-27.835	-25.887	-34.654	-11.569
4.7	-8.683	-7.921	-18.723	-6.885	-4.615	-12.787	-27.685	-25.415	-33.587	-11.802
4.8	-8.072	-7.049	-17.586	-6.807	-4.212	-11.790	-27.607	-25.012	-32.590	-12.031
4.9	-7.608	-6.305	-16.293	-6.793	-3.883	-10.915	-27.593	-24.683	-31.715	-12.255
5	-7.270	-5.656	-15.052	-6.793	-3.628	-10.101	-27.593	-24.428	-30.901	-12.474
5.1	-7.035	-5.087	-13.854	-6.793	-3.429	-9.387	-27.593	-24.229	-30.187	-12.689
5.2	-6.885	-4.615	-12.787	-6.793	-3.303	-8.724	-27.593	-24.103	-29.524	-12.900
5.3	-6.807	-4.212	-11.790	-6.793	-3.233	-8.140	-27.593	-24.033	-28.940	-13.107
5.4	-6.793	-3.883	-10.915	-6.793	-3.223	-7.601	-27.593	-24.023	-28.401	-13.310
5.5	-6.827	-3.628	-10.101	-6.793	-3.223	-7.127	-27.593	-24.023	-27.927	-13.509
5.6	-6.898	-3.429	-9.387	-6.793	-3.223	-6.694	-27.593	-24.023	-27.494	-13.705
5.7	-6.995	-3.303	-8.724	-6.793	-3.223	-6.318	-27.593	-24.023	-27.118	-13.897
5.8	-7.115	-3.233	-8.140	-6.793	-3.223	-5.981	-27.593	-24.023	-26.781	-14.086
5.9	-7.255	-3.223	-7.601	-6.793	-3.223	-5.697	-27.593	-24.023	-26.497	-14.271
6	-7.413	-3.275	-7.127	-6.827	-3.223	-5.454	-27.627	-24.023	-26.254	-14.454
6.1	-7.590	-3.382	-6.694	-6.898	-3.223	-5.261	-27.698	-24.023	-26.061	-14.633
6.2	-7.796	-3.553	-6.318	-6.995	-3.223	-5.113	-27.795	-24.023	-25.913	-14.810
6.3	-8.047	-3.781	-5.981	-7.115	-3.223	-5.016	-27.915	-24.023	-25.816	-14.984
6.4	-8.363	-4.070	-5.697	-7.255	-3.223	-4.967	-28.055	-24.023	-25.767	-15.154
6.5	-8.759	-4.426	-5.454	-7.413	-3.275	-4.967	-28.213	-24.075	-25.767	-15.323
6.6	-9.258	-4.838	-5.261	-7.590	-3.382	-4.967	-28.390	-24.182	-25.767	-15.489
6.7	-9.895	-5.324	-5.113	-7.796	-3.553	-4.967	-28.596	-24.353	-25.767	-15.652
6.8	-10.718	-5.873	-5.016	-8.047	-3.781	-4.967	-28.847	-24.581	-25.767	-15.813
6.9	-11.783	-6.483	-4.967	-8.363	-4.070	-4.967	-29.163	-24.870	-25.767	-15.971

7	-13.126	-7.175	-4.972	-8.759	-4.426	-4.967	-29.559	-25.226	-25.767	-16.000	-
7.1	-14.797	-7.916	-5.028	-9.258	-4.838	-4.967	-30.058	-25.638	-25.767	-16.000	-
7.2	-16.757	-8.720	-5.144	-9.895	-5.324	-4.967	-30.695	-26.124	-25.767	-16.000	-
7.3	-18.472	-9.581	-5.316	-10.024	-5.873	-4.967	-30.824	-26.673	-25.767	-16.000	-
7.4	-18.459	-10.452	-5.553	-8.509	-6.483	-4.967	-29.309	-27.283	-25.767	-16.000	-
7.5	-16.489	-11.349	-5.850	-7.282	-7.175	-4.972	-28.082	-27.975	-25.772	-16.000	-
7.6	-14.054	-12.201	-6.222	-6.286	-7.916	-5.028	-27.086	-28.716	-25.828	-16.000	-
7.7	-11.867	-12.965	-6.657	-5.482	-8.720	-5.144	-26.282	-29.520	-25.944	-16.000	-
7.8	-10.024	-13.638	-7.176	-4.844	-9.581	-5.316	-25.644	-30.381	-26.116	-16.000	-
7.9	-8.509	-14.142	-7.762	-4.366	-10.452	-5.553	-25.166	-31.252	-26.353	-16.000	-
8	-7.282	-14.500	-8.444	-4.037	-11.349	-5.850	-24.837	-32.149	-26.650	-16.000	-
8.1	-6.286	-14.747	-9.193	-3.840	-12.201	-6.222	-24.640	-33.001	-27.022	-16.000	-
8.2	-5.482	-14.891	-10.046	-3.765	-12.965	-6.657	-24.565	-33.765	-27.457	-16.000	-
8.3	-4.844	-15.007	-10.959	-3.765	-13.638	-7.176	-24.565	-34.438	-27.976	-16.000	-
8.4	-4.366	-15.128	-11.963	-3.765	-14.142	-7.762	-24.565	-34.942	-28.562	-16.000	-
8.5	-4.037	-15.265	-12.989	-3.765	-14.500	-8.444	-24.565	-35.300	-29.244	-16.000	-
8.6	-3.840	-15.468	-14.033	-3.765	-14.747	-9.193	-24.565	-35.547	-29.993	-16.000	-
8.7	-3.765	-15.724	-14.971	-3.765	-14.891	-10.046	-24.565	-35.691	-30.846	-16.000	-
8.8	-3.811	-16.036	-15.738	-3.765	-15.007	-10.959	-24.565	-35.807	-31.759	-16.000	-
8.9	-3.981	-16.414	-16.195	-3.765	-15.128	-11.963	-24.565	-35.928	-32.763	-16.000	-
9	-4.265	-16.820	-16.319	-3.765	-15.265	-12.989	-24.565	-36.065	-33.789	-16.000	-
9.1	-4.659	-17.239	-16.141	-3.765	-15.468	-14.033	-24.565	-36.268	-34.833	-16.000	-
9.2	-5.164	-17.642	-15.761	-3.765	-15.724	-14.971	-24.565	-36.524	-35.771	-16.000	-

Nominal 14.0GHz, H-Polarized, X-pol PSD, with -20.8dBW/4kHz Input



Data in support of claim that proposed operation meets criteria of VMES Order July 2009

Applicant RAS Date of Application
 ID Heading
 a1 Antenna Manufacture: RAS c Main bore gain (dBi): 30.5
 a2 Antenna Model: SR5000 d Frequency at which gain was measured (GHz): 14.0
 a3 Antenna ID: RAS e Max input power density (dBW/4kHz): -20.8
 b Transmit Band (b): 14GHz Pattern ID Table C2
 Pattern Description: 14.0GHz V-polarization, X-polarized tangent to the geosynchronous plane for 0°, 37.5°, and 50° skew angle

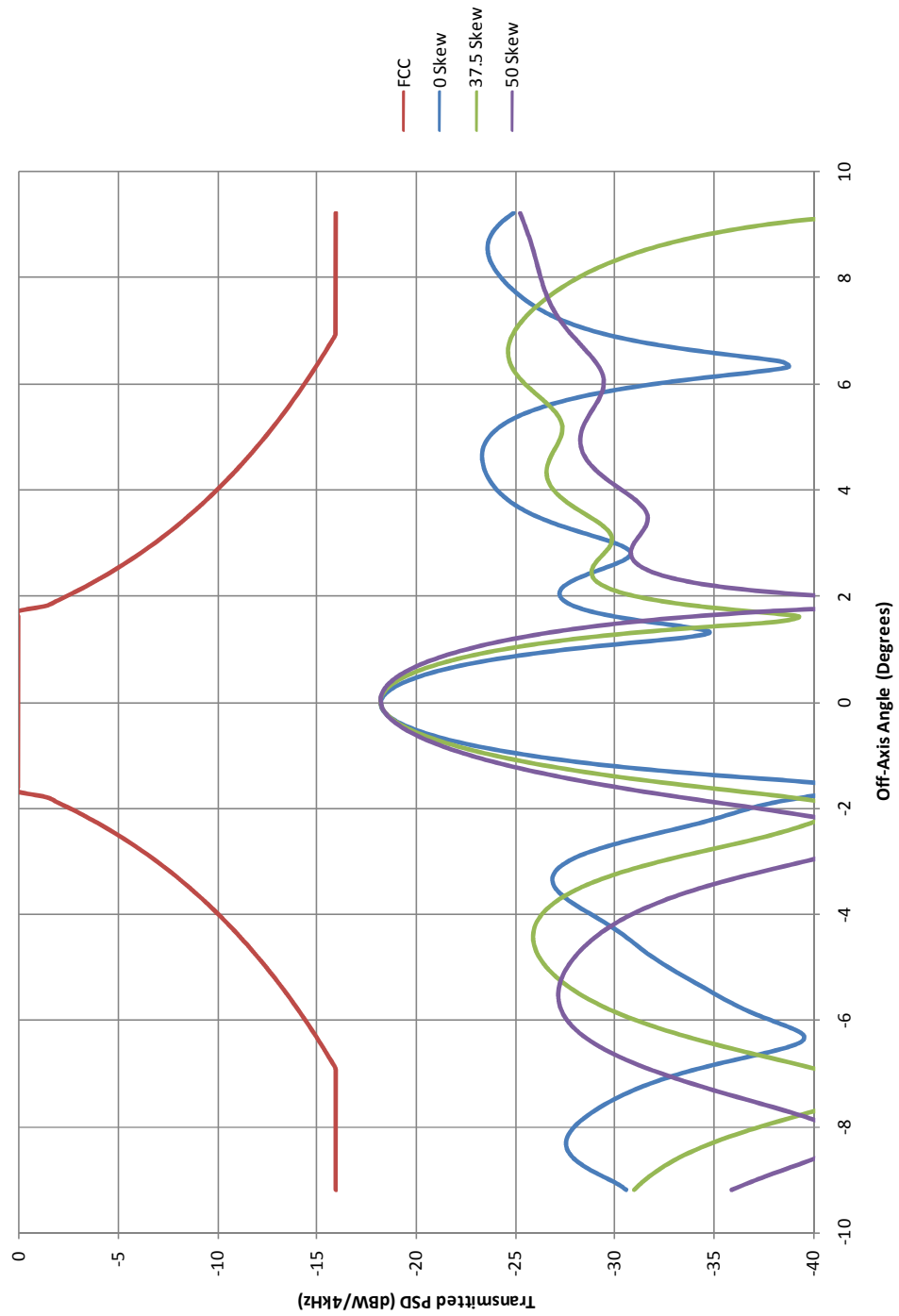
Offset Angles (Degrees)	Nominal X-Pol Gain Along Tangent to Geo Arc (dBi)			Worst Case X-Pol Gain Along Tangent to Geo Arc (dBi)			Worst Case X-Pol PSD Along Tangent to Geo Arc input PSD = -20.8dBW/4kHz (dBW/4kHz)			FCC Mask (dBW/4kHz)	Mask Exceedence (dB)
	0° Skew	37.5° Skew	50° Skew	0° Skew	37.5° Skew	50° Skew	0° Skew	37.5° Skew	50° Skew		
	-9.2	-9.772	-10.184	-15.093	-7.434	-10.184	-15.093	-28.234	-30.984		
-9.1	-9.390	-10.463	-15.742	-7.115	-10.184	-15.093	-27.915	-30.984	-35.893	-16.000	-
-9	-8.882	-10.774	-16.413	-6.894	-10.184	-15.093	-27.694	-30.984	-35.893	-16.000	-
-8.9	-8.346	-11.116	-17.147	-6.773	-10.184	-15.093	-27.573	-30.984	-35.893	-16.000	-
-8.8	-7.849	-11.500	-17.877	-6.753	-10.184	-15.093	-27.553	-30.984	-35.893	-16.000	-
-8.7	-7.434	-11.932	-18.637	-6.753	-10.184	-15.093	-27.553	-30.984	-35.893	-16.000	-
-8.6	-7.115	-12.411	-19.328	-6.753	-10.463	-15.742	-27.553	-31.263	-36.542	-16.000	-
-8.5	-6.894	-12.957	-19.967	-6.753	-10.774	-16.413	-27.553	-31.574	-37.213	-16.000	-
-8.4	-6.773	-13.559	-20.428	-6.753	-11.116	-17.147	-27.553	-31.916	-37.947	-16.000	-
-8.3	-6.753	-14.227	-20.713	-6.753	-11.500	-17.877	-27.553	-32.300	-38.677	-16.000	-
-8.2	-6.825	-14.970	-20.733	-6.753	-11.932	-17.701	-27.553	-32.732	-38.501	-16.000	-
-8.1	-6.975	-15.767	-20.502	-6.753	-12.411	-16.783	-27.553	-33.211	-37.583	-16.000	-
-8	-7.195	-16.631	-20.035	-6.753	-12.957	-15.828	-27.553	-33.757	-36.628	-16.000	-
-7.9	-7.481	-17.539	-19.375	-6.753	-13.559	-14.900	-27.553	-34.359	-35.700	-16.000	-
-7.8	-7.826	-18.458	-18.589	-6.753	-14.227	-13.974	-27.553	-35.027	-34.774	-16.000	-
-7.7	-8.220	-19.379	-17.701	-6.825	-14.970	-13.106	-27.625	-35.770	-33.906	-16.000	-
-7.6	-8.659	-20.216	-16.783	-6.975	-15.767	-12.262	-27.775	-36.567	-33.062	-16.000	-
-7.5	-9.145	-20.918	-15.828	-7.195	-16.631	-11.487	-27.995	-37.431	-32.287	-16.000	-
-7.4	-9.687	-21.395	-14.900	-7.481	-17.539	-10.753	-28.281	-38.339	-31.553	-16.000	-
-7.3	-10.291	-21.560	-13.974	-7.826	-18.001	-10.088	-28.626	-38.801	-30.888	-16.000	-
-7.2	-10.970	-21.381	-13.106	-8.220	-16.886	-9.473	-29.020	-37.686	-30.273	-16.000	-
-7.1	-11.739	-20.858	-12.262	-8.659	-15.758	-8.926	-29.459	-36.558	-29.726	-16.000	-
-7	-12.608	-20.071	-11.487	-9.145	-14.686	-8.429	-29.945	-35.486	-29.229	-16.000	-
-6.9	-13.590	-19.086	-10.753	-9.687	-13.662	-7.998	-30.487	-34.462	-28.798	-15.971	-
-6.8	-14.684	-18.001	-10.088	-10.291	-12.694	-7.617	-31.091	-33.494	-28.417	-15.813	-
-6.7	-15.857	-16.886	-9.473	-10.970	-11.811	-7.296	-31.770	-32.611	-28.096	-15.652	-
-6.6	-17.022	-15.758	-8.926	-11.739	-10.982	-7.023	-32.539	-31.782	-27.823	-15.489	-
-6.5	-18.017	-14.686	-8.429	-12.608	-10.232	-6.805	-33.408	-31.032	-27.605	-15.323	-
-6.4	-18.631	-13.662	-7.998	-13.590	-9.551	-6.630	-34.390	-30.351	-27.430	-15.154	-
-6.3	-18.728	-12.694	-7.617	-14.684	-8.919	-6.505	-35.484	-29.719	-27.305	-14.984	-
-6.2	-18.365	-11.811	-7.296	-15.168	-8.360	-6.419	-35.968	-29.160	-27.219	-14.810	-
-6.1	-17.733	-10.982	-7.023	-14.663	-7.850	-6.377	-35.463	-28.650	-27.177	-14.633	-
-6	-17.020	-10.232	-6.805	-14.186	-7.387	-6.368	-34.986	-28.187	-27.168	-14.454	-
-5.9	-16.333	-9.551	-6.630	-13.720	-6.983	-6.368	-34.520	-27.783	-27.168	-14.271	-
-5.8	-15.718	-8.919	-6.505	-13.248	-6.612	-6.368	-34.048	-27.412	-27.168	-14.086	-
-5.7	-15.168	-8.360	-6.419	-12.774	-6.289	-6.368	-33.574	-27.089	-27.168	-13.897	-
-5.6	-14.663	-7.850	-6.377	-12.310	-6.008	-6.368	-33.110	-26.808	-27.168	-13.705	-
-5.5	-14.186	-7.387	-6.368	-11.866	-5.758	-6.368	-32.666	-26.558	-27.168	-13.509	-
-5.4	-13.720	-6.983	-6.400	-11.442	-5.554	-6.368	-32.242	-26.354	-27.168	-13.310	-
-5.3	-13.248	-6.612	-6.459	-11.040	-5.384	-6.368	-31.840	-26.184	-27.168	-13.107	-
-5.2	-12.774	-6.289	-6.556	-10.669	-5.251	-6.368	-31.469	-26.051	-27.168	-12.900	-

-5.1	-12.310	-6.008	-6.676	-10.326	-5.163	-6.368	-31.126	-25.963	-27.168	-12.689	-
-5	-11.866	-5.758	-6.833	-9.987	-5.110	-6.368	-30.787	-25.910	-27.168	-12.474	-
-4.9	-11.442	-5.554	-7.010	-9.633	-5.105	-6.400	-30.433	-25.905	-27.200	-12.255	-
-4.8	-11.040	-5.384	-7.224	-9.249	-5.105	-6.459	-30.049	-25.905	-27.259	-12.031	-
-4.7	-10.669	-5.251	-7.458	-8.841	-5.105	-6.556	-29.641	-25.905	-27.356	-11.802	-
-4.6	-10.326	-5.163	-7.732	-8.410	-5.105	-6.676	-29.210	-25.905	-27.476	-11.569	-
-4.5	-9.987	-5.110	-8.027	-7.960	-5.105	-6.833	-28.760	-25.905	-27.633	-11.330	-
-4.4	-9.633	-5.105	-8.369	-7.507	-5.105	-7.010	-28.307	-25.905	-27.810	-11.086	-
-4.3	-9.249	-5.144	-8.735	-7.078	-5.105	-7.224	-27.878	-25.905	-28.024	-10.837	-
-4.2	-8.841	-5.230	-9.158	-6.704	-5.105	-7.458	-27.504	-25.905	-28.258	-10.581	-
-4.1	-8.410	-5.373	-9.611	-6.402	-5.105	-7.732	-27.202	-25.905	-28.532	-10.320	-
-4	-7.960	-5.563	-10.132	-6.186	-5.105	-8.027	-26.986	-25.905	-28.827	-10.051	-
-3.9	-7.507	-5.823	-10.692	-6.071	-5.105	-8.369	-26.871	-25.905	-29.169	-9.777	-
-3.8	-7.078	-6.141	-11.333	-6.071	-5.144	-8.735	-26.871	-25.944	-29.535	-9.495	-
-3.7	-6.704	-6.526	-12.024	-6.071	-5.230	-9.158	-26.871	-26.030	-29.958	-9.205	-
-3.6	-6.402	-6.997	-12.809	-6.071	-5.373	-9.611	-26.871	-26.173	-30.411	-8.908	-
-3.5	-6.186	-7.534	-13.653	-6.071	-5.563	-10.132	-26.871	-26.363	-30.932	-8.602	-
-3.4	-6.071	-8.168	-14.598	-6.071	-5.823	-10.692	-26.871	-26.623	-31.492	-8.287	-
-3.3	-6.079	-8.894	-15.601	-6.071	-6.141	-11.333	-26.871	-26.941	-32.133	-7.963	-
-3.2	-6.219	-9.702	-16.688	-6.071	-6.526	-12.024	-26.871	-27.326	-32.824	-7.629	-
-3.1	-6.494	-10.634	-17.797	-6.071	-6.997	-12.809	-26.871	-27.797	-33.609	-7.284	-
-3	-6.909	-11.639	-18.916	-6.071	-7.534	-13.653	-26.871	-28.334	-34.453	-6.928	-
-2.9	-7.476	-12.731	-19.943	-6.071	-8.168	-14.598	-26.871	-28.968	-35.398	-6.560	-
-2.8	-8.206	-13.902	-20.832	-6.079	-8.894	-15.601	-26.879	-29.694	-36.401	-6.179	-
-2.7	-9.084	-15.065	-21.466	-6.219	-9.702	-16.688	-27.019	-30.502	-37.488	-5.784	-
-2.6	-10.081	-16.212	-21.842	-6.494	-10.634	-17.797	-27.294	-31.434	-38.597	-5.374	-
-2.5	-11.166	-17.254	-21.865	-6.909	-11.639	-16.174	-27.709	-32.439	-36.974	-4.949	-
-2.4	-12.291	-18.188	-21.555	-7.476	-12.731	-14.269	-28.276	-33.531	-35.069	-4.505	-
-2.3	-13.375	-19.005	-20.761	-8.206	-13.902	-12.459	-29.006	-34.702	-33.259	-4.043	-
-2.2	-14.343	-19.734	-19.567	-9.084	-15.065	-10.684	-29.884	-35.865	-31.484	-3.561	-
-2.1	-15.225	-20.341	-17.945	-10.081	-13.245	-9.075	-30.881	-34.045	-29.875	-3.055	-
-2	-16.146	-20.438	-16.174	-11.166	-11.008	-7.545	-31.966	-31.808	-28.345	-2.526	-
-1.9	-17.279	-19.688	-14.269	-12.291	-8.985	-6.181	-33.091	-29.785	-26.981	-1.969	-
-1.8	-18.790	-17.932	-12.459	-11.390	-7.206	-4.901	-32.190	-28.006	-25.701	-1.382	-
-1.7	-20.542	-15.590	-10.684	-8.692	-5.589	-3.770	-29.492	-26.389	-24.570	-	-
-1.6	-20.939	-13.245	-9.075	-6.470	-4.182	-2.718	-27.270	-24.982	-23.518	-	-
-1.5	-18.268	-11.008	-7.545	-4.616	-2.940	-1.799	-25.416	-23.740	-22.599	-	-
-1.4	-14.629	-8.985	-6.181	-3.050	-1.829	-0.954	-23.850	-22.629	-21.754	-	-
-1.3	-11.390	-7.206	-4.901	-1.719	-0.881	-0.227	-22.519	-21.681	-21.027	-	-
-1.2	-8.692	-5.589	-3.770	-0.597	-0.050	0.428	-21.397	-20.850	-20.372	-	-
-1.1	-6.470	-4.182	-2.718	0.323	0.660	0.979	-20.477	-20.140	-19.821	-	-
-1	-4.616	-2.940	-1.799	1.069	1.243	1.457	-19.731	-19.557	-19.343	-	-
-0.9	-3.050	-1.829	-0.954	1.659	1.729	1.839	-19.141	-19.071	-18.961	-	-
-0.8	-1.719	-0.881	-0.227	2.104	2.095	2.149	-18.696	-18.705	-18.651	-	-
-0.7	-0.597	-0.050	0.428	2.404	2.358	2.368	-18.396	-18.442	-18.432	-	-
-0.6	0.323	0.660	0.979	2.556	2.520	2.514	-18.244	-18.280	-18.286	-	-
-0.5	1.069	1.243	1.457	2.569	2.569	2.569	-18.231	-18.231	-18.231	-	-
-0.4	1.659	1.729	1.839	2.569	2.569	2.569	-18.231	-18.231	-18.231	-	-
-0.3	2.104	2.095	2.149	2.569	2.569	2.569	-18.231	-18.231	-18.231	-	-
-0.2	2.404	2.358	2.368	2.569	2.569	2.569	-18.231	-18.231	-18.231	-	-
-0.1	2.556	2.520	2.514	2.569	2.569	2.569	-18.231	-18.231	-18.231	-	-
0	2.569	2.569	2.569	2.569	2.569	2.569	-18.231	-18.231	-18.231	-	-
0.1	2.444	2.520	2.551	2.569	2.569	2.569	-18.231	-18.231	-18.231	-	-
0.2	2.175	2.354	2.440	2.569	2.569	2.569	-18.231	-18.231	-18.231	-	-
0.3	1.746	2.079	2.252	2.569	2.569	2.569	-18.231	-18.231	-18.231	-	-
0.4	1.152	1.688	1.964	2.569	2.569	2.569	-18.231	-18.231	-18.231	-	-
0.5	0.384	1.159	1.595	2.569	2.569	2.569	-18.231	-18.231	-18.231	-	-
0.6	-0.579	0.508	1.113	2.444	2.520	2.551	-18.356	-18.280	-18.249	-	-
0.7	-1.777	-0.307	0.542	2.175	2.354	2.440	-18.625	-18.446	-18.360	-	-
0.8	-3.266	-1.292	-0.164	1.746	2.079	2.252	-19.054	-18.721	-18.548	-	-
0.9	-5.085	-2.461	-0.973	1.152	1.688	1.964	-19.648	-19.112	-18.836	-	-

1	-7.295	-3.900	-1.953	0.384	1.159	1.595	-20.416	-19.641	-19.205		-
1.1	-9.925	-5.612	-3.066	-0.579	0.508	1.113	-21.379	-20.292	-19.687		-
1.2	-12.645	-7.709	-4.412	-1.777	-0.307	0.542	-22.577	-21.107	-20.258		-
1.3	-13.980	-10.380	-5.959	-3.266	-1.292	-0.164	-24.066	-22.092	-20.964		-
1.4	-12.842	-13.666	-7.868	-5.085	-2.461	-0.973	-25.885	-23.261	-21.773		-
1.5	-10.878	-17.351	-10.148	-6.431	-3.900	-1.953	-27.231	-24.700	-22.753		-
1.6	-9.192	-18.463	-13.137	-6.431	-5.612	-3.066	-27.231	-26.412	-23.866		-
1.7	-7.952	-15.938	-17.031	-6.431	-7.709	-4.412	-27.231	-28.509	-25.212		-
1.8	-7.120	-13.294	-22.279	-6.431	-8.185	-5.959	-27.231	-28.985	-26.759	-1.382	-
1.9	-6.633	-11.388	-23.372	-6.431	-8.055	-7.868	-27.231	-28.855	-28.668	-1.969	-
2	-6.431	-10.040	-19.108	-6.431	-8.055	-10.148	-27.231	-28.855	-30.948	-2.526	-
2.1	-6.476	-9.120	-15.947	-6.431	-8.055	-10.301	-27.231	-28.855	-31.101	-3.055	-
2.2	-6.746	-8.530	-13.797	-6.431	-8.055	-10.087	-27.231	-28.855	-30.887	-3.561	-
2.3	-7.226	-8.185	-12.373	-6.431	-8.055	-10.020	-27.231	-28.855	-30.820	-4.043	-
2.4	-7.865	-8.055	-11.372	-6.431	-8.055	-10.020	-27.231	-28.855	-30.820	-4.505	-
2.5	-8.590	-8.076	-10.721	-6.431	-8.055	-10.020	-27.231	-28.855	-30.820	-4.949	-
2.6	-9.296	-8.225	-10.301	-6.476	-8.055	-10.020	-27.276	-28.855	-30.820	-5.374	-
2.7	-9.827	-8.451	-10.087	-6.746	-8.055	-10.020	-27.546	-28.855	-30.820	-5.784	-
2.8	-9.998	-8.696	-10.020	-6.554	-8.055	-10.020	-27.354	-28.855	-30.820	-6.179	-
2.9	-9.715	-8.926	-10.076	-5.812	-8.055	-10.020	-26.612	-28.855	-30.820	-6.560	-
3	-9.076	-9.055	-10.214	-5.174	-7.838	-10.020	-25.974	-28.638	-30.820	-6.928	-
3.1	-8.253	-9.061	-10.403	-4.634	-7.412	-10.020	-25.434	-28.212	-30.820	-7.284	-
3.2	-7.384	-8.916	-10.600	-4.179	-6.999	-10.020	-24.979	-27.799	-30.820	-7.629	-
3.3	-6.554	-8.639	-10.768	-3.799	-6.639	-10.020	-24.599	-27.439	-30.820	-7.963	-
3.4	-5.812	-8.267	-10.865	-3.487	-6.337	-9.869	-24.287	-27.137	-30.669	-8.287	-
3.5	-5.174	-7.838	-10.861	-3.230	-6.095	-9.493	-24.030	-26.895	-30.293	-8.602	-
3.6	-4.634	-7.412	-10.751	-3.020	-5.927	-9.107	-23.820	-26.727	-29.907	-8.908	-
3.7	-4.179	-6.999	-10.528	-2.850	-5.821	-8.752	-23.650	-26.621	-29.552	-9.205	-
3.8	-3.799	-6.639	-10.231	-2.714	-5.782	-8.421	-23.514	-26.582	-29.221	-9.495	-
3.9	-3.487	-6.337	-9.869	-2.613	-5.782	-8.142	-23.413	-26.582	-28.942	-9.777	-
4	-3.230	-6.095	-9.493	-2.547	-5.782	-7.902	-23.347	-26.582	-28.702	-10.051	-
4.1	-3.020	-5.927	-9.107	-2.521	-5.782	-7.721	-23.321	-26.582	-28.521	-10.320	-
4.2	-2.850	-5.821	-8.752	-2.521	-5.782	-7.586	-23.321	-26.582	-28.386	-10.581	-
4.3	-2.714	-5.782	-8.421	-2.521	-5.782	-7.506	-23.321	-26.582	-28.306	-10.837	-
4.4	-2.613	-5.799	-8.142	-2.521	-5.782	-7.474	-23.321	-26.582	-28.274	-11.086	-
4.5	-2.547	-5.869	-7.902	-2.521	-5.782	-7.474	-23.321	-26.582	-28.274	-11.330	-
4.6	-2.521	-5.980	-7.721	-2.521	-5.782	-7.474	-23.321	-26.582	-28.274	-11.569	-
4.7	-2.536	-6.114	-7.586	-2.521	-5.782	-7.474	-23.321	-26.582	-28.274	-11.802	-
4.8	-2.599	-6.265	-7.506	-2.521	-5.782	-7.474	-23.321	-26.582	-28.274	-12.031	-
4.9	-2.721	-6.403	-7.474	-2.521	-5.799	-7.474	-23.321	-26.599	-28.274	-12.255	-
5	-2.908	-6.512	-7.489	-2.521	-5.869	-7.474	-23.321	-26.669	-28.274	-12.474	-
5.1	-3.170	-6.573	-7.549	-2.521	-5.828	-7.474	-23.321	-26.628	-28.274	-12.689	-
5.2	-3.515	-6.564	-7.645	-2.536	-5.527	-7.474	-23.336	-26.327	-28.274	-12.900	-
5.3	-3.959	-6.483	-7.777	-2.599	-5.221	-7.474	-23.399	-26.021	-28.274	-13.107	-
5.4	-4.518	-6.322	-7.928	-2.721	-4.916	-7.474	-23.521	-25.716	-28.274	-13.310	-
5.5	-5.203	-6.102	-8.097	-2.908	-4.641	-7.489	-23.708	-25.441	-28.289	-13.509	-
5.6	-6.035	-5.828	-8.261	-3.170	-4.396	-7.549	-23.970	-25.196	-28.349	-13.705	-
5.7	-7.042	-5.527	-8.418	-3.515	-4.190	-7.645	-24.315	-24.990	-28.445	-13.897	-
5.8	-8.269	-5.221	-8.542	-3.959	-4.033	-7.777	-24.759	-24.833	-28.577	-14.086	-
5.9	-9.768	-4.916	-8.631	-4.518	-3.919	-7.928	-25.318	-24.719	-28.728	-14.271	-
6	-11.577	-4.641	-8.662	-5.203	-3.857	-8.022	-26.003	-24.657	-28.822	-14.454	-
6.1	-13.739	-4.396	-8.640	-6.035	-3.841	-7.782	-26.835	-24.641	-28.582	-14.633	-
6.2	-16.138	-4.190	-8.556	-7.042	-3.841	-7.537	-27.842	-24.641	-28.337	-14.810	-
6.3	-17.942	-4.033	-8.420	-8.269	-3.841	-7.288	-29.069	-24.641	-28.088	-14.984	-
6.4	-17.588	-3.919	-8.236	-8.901	-3.841	-7.051	-29.701	-24.641	-27.851	-15.154	-
6.5	-15.600	-3.857	-8.022	-7.912	-3.841	-6.821	-28.712	-24.641	-27.621	-15.323	-
6.6	-13.457	-3.841	-7.782	-7.098	-3.841	-6.614	-27.898	-24.641	-27.414	-15.489	-
6.7	-11.623	-3.871	-7.537	-6.418	-3.841	-6.419	-27.218	-24.641	-27.219	-15.652	-
6.8	-10.120	-3.946	-7.288	-5.844	-3.841	-6.250	-26.644	-24.641	-27.050	-15.813	-
6.9	-8.901	-4.060	-7.051	-5.355	-3.841	-6.093	-26.155	-24.641	-26.893	-15.971	-

7	-7.912	-4.216	-6.821	-4.933	-3.841	-5.959	-25.733	-24.641	-26.759	-16.000	-
7.1	-7.098	-4.403	-6.614	-4.563	-3.841	-5.835	-25.363	-24.641	-26.635	-16.000	-
7.2	-6.418	-4.624	-6.419	-4.233	-3.871	-5.731	-25.033	-24.671	-26.531	-16.000	-
7.3	-5.844	-4.876	-6.250	-3.937	-3.946	-5.632	-24.737	-24.746	-26.432	-16.000	-
7.4	-5.355	-5.152	-6.093	-3.671	-4.060	-5.549	-24.471	-24.860	-26.349	-16.000	-
7.5	-4.933	-5.461	-5.959	-3.437	-4.216	-5.467	-24.237	-25.016	-26.267	-16.000	-
7.6	-4.563	-5.794	-5.835	-3.234	-4.403	-5.396	-24.034	-25.203	-26.196	-16.000	-
7.7	-4.233	-6.156	-5.731	-3.064	-4.624	-5.321	-23.864	-25.424	-26.121	-16.000	-
7.8	-3.937	-6.554	-5.632	-2.931	-4.876	-5.254	-23.731	-25.676	-26.054	-16.000	-
7.9	-3.671	-6.983	-5.549	-2.841	-5.152	-5.178	-23.641	-25.952	-25.978	-16.000	-
8	-3.437	-7.455	-5.467	-2.799	-5.461	-5.106	-23.599	-26.261	-25.906	-16.000	-
8.1	-3.234	-7.978	-5.396	-2.799	-5.794	-5.023	-23.599	-26.594	-25.823	-16.000	-
8.2	-3.064	-8.548	-5.321	-2.799	-6.156	-4.941	-23.599	-26.956	-25.741	-16.000	-
8.3	-2.931	-9.192	-5.254	-2.799	-6.554	-4.848	-23.599	-27.354	-25.648	-16.000	-
8.4	-2.841	-9.906	-5.178	-2.799	-6.983	-4.755	-23.599	-27.783	-25.555	-16.000	-
8.5	-2.799	-10.707	-5.106	-2.799	-7.455	-4.652	-23.599	-28.255	-25.452	-16.000	-
8.6	-2.809	-11.634	-5.023	-2.799	-7.978	-4.553	-23.599	-28.778	-25.353	-16.000	-
8.7	-2.872	-12.682	-4.941	-2.799	-8.548	-4.449	-23.599	-29.348	-25.249	-16.000	-
8.8	-2.993	-13.913	-4.848	-2.799	-9.192	-4.449	-23.599	-29.992	-25.249	-16.000	-
8.9	-3.178	-15.397	-4.755	-2.799	-9.906	-4.449	-23.599	-30.706	-25.249	-16.000	-
9	-3.424	-17.183	-4.652	-2.799	-10.707	-4.449	-23.599	-31.507	-25.249	-16.000	-
9.1	-3.734	-19.533	-4.553	-2.809	-11.634	-4.449	-23.609	-32.434	-25.249	-16.000	-
9.2	-4.109	-22.746	-4.449	-2.872	-12.682	-4.449	-23.672	-33.482	-25.249	-16.000	-

Nominal 14.0GHz, V-Polarized, X-pol PSD, with -20.8dBW/4kHz Input



Data in support of claim that proposed operation meets criteria of VMES Order July 2009

Applicant RAS Date of Application
 ID Heading
 a1 Antenna Manufacture: RAS c Main bore gain (dBi): 30.5
 a2 Antenna Model: SR5000 d Frequency at which gain was measured (GHz): 14.0
 a3 Antenna ID: RAS e Max input power density (dBW/4kHz): -20.8
 b Transmit Band (b): 14GHz Pattern ID Table C3
 Pattern Description: 14.25GHz H-polarization, X-polarized tangent to the geosynchronous plane for 0°, 37.5°, and 50° skew angle

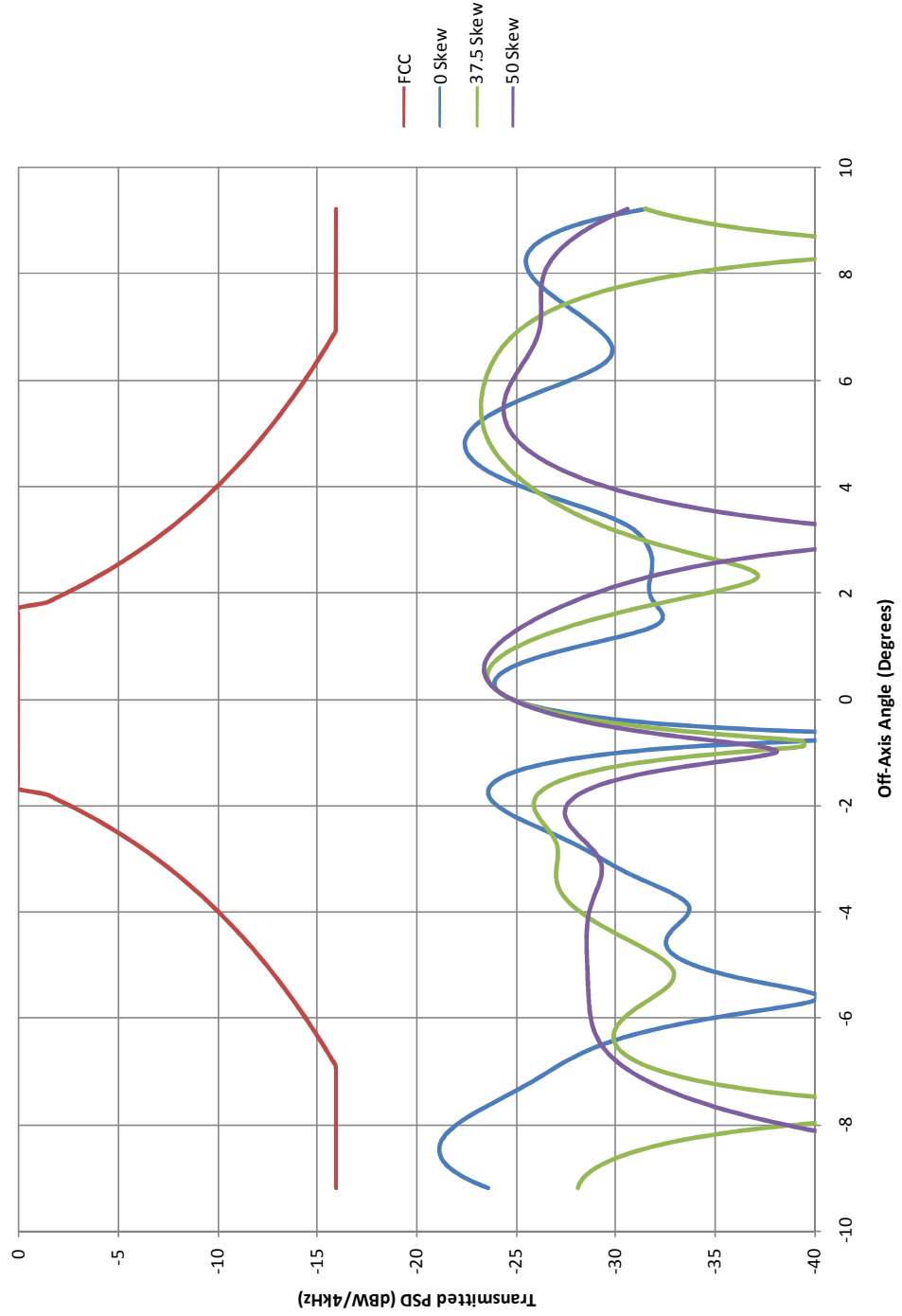
Offset Angles (Degrees)	Nominal X-Pol Gain Along Tangent to Geo Arc (dBi)			Worst Case X-Pol Gain Along Tangent to Geo Arc (dBi)			Worst Case X-Pol PSD Along Tangent to Geo Arc input PSD = -20.8dBW/4kHz (dBW/4kHz)			FCC Mask (dBW/4kHz)	Mask Exceedence (dB)
	0° Skew	37.5° Skew	50° Skew	0° Skew	37.5° Skew	50° Skew	0° Skew	37.5° Skew	50° Skew		
	-9.2	-2.808	-7.319	-24.442	-0.569	-7.319	-24.442	-21.369	-28.119		
-9.1	-2.147	-7.421	-25.611	-0.422	-7.319	-24.442	-21.222	-28.119	-45.242	-16.000	-
-9	-1.602	-7.629	-26.840	-0.363	-7.319	-24.442	-21.163	-28.119	-45.242	-16.000	-
-8.9	-1.161	-7.922	-28.163	-0.363	-7.319	-23.729	-21.163	-28.119	-44.529	-16.000	-
-8.8	-0.815	-8.329	-28.944	-0.363	-7.319	-21.925	-21.163	-28.119	-42.725	-16.000	-
-8.7	-0.569	-8.859	-28.770	-0.363	-7.319	-20.356	-21.163	-28.119	-41.156	-16.000	-
-8.6	-0.422	-9.505	-27.458	-0.363	-7.421	-18.887	-21.163	-28.221	-39.687	-16.000	-
-8.5	-0.363	-10.335	-25.603	-0.363	-7.629	-17.625	-21.163	-28.429	-38.425	-16.000	-
-8.4	-0.386	-11.330	-23.729	-0.363	-7.922	-16.436	-21.163	-28.722	-37.236	-16.000	-
-8.3	-0.490	-12.551	-21.925	-0.363	-8.329	-15.405	-21.163	-29.129	-36.205	-16.000	-
-8.2	-0.679	-14.115	-20.356	-0.363	-8.859	-14.433	-21.163	-29.659	-35.233	-16.000	-
-8.1	-0.941	-16.037	-18.887	-0.363	-9.505	-13.589	-21.163	-30.305	-34.389	-16.000	-
-8	-1.267	-18.643	-17.625	-0.363	-10.335	-12.793	-21.163	-31.135	-33.593	-16.000	-
-7.9	-1.649	-22.271	-16.436	-0.386	-11.330	-12.104	-21.186	-32.130	-32.904	-16.000	-
-7.8	-2.086	-27.303	-15.405	-0.490	-12.551	-11.456	-21.290	-33.351	-32.256	-16.000	-
-7.7	-2.565	-28.527	-14.433	-0.679	-13.552	-10.904	-21.479	-34.352	-31.704	-16.000	-
-7.6	-3.065	-23.473	-13.589	-0.941	-12.375	-10.388	-21.741	-33.175	-31.188	-16.000	-
-7.5	-3.568	-19.687	-12.793	-1.267	-11.460	-9.956	-22.067	-32.260	-30.756	-16.000	-
-7.4	-4.067	-16.983	-12.104	-1.649	-10.707	-9.559	-22.449	-31.507	-30.359	-16.000	-
-7.3	-4.559	-15.066	-11.456	-2.086	-10.146	-9.235	-22.886	-30.946	-30.035	-16.000	-
-7.2	-5.032	-13.552	-10.904	-2.565	-9.715	-8.941	-23.365	-30.515	-29.741	-16.000	-
-7.1	-5.478	-12.375	-10.388	-3.065	-9.399	-8.711	-23.865	-30.199	-29.511	-16.000	-
-7	-5.909	-11.460	-9.956	-3.568	-9.213	-8.505	-24.368	-30.013	-29.305	-16.000	-
-6.9	-6.346	-10.707	-9.559	-4.067	-9.114	-8.354	-24.867	-29.914	-29.154	-15.971	-
-6.8	-6.818	-10.146	-9.235	-4.559	-9.114	-8.220	-25.359	-29.914	-29.020	-15.813	-
-6.7	-7.338	-9.715	-8.941	-5.032	-9.114	-8.129	-25.832	-29.914	-28.929	-15.652	-
-6.6	-7.919	-9.399	-8.711	-5.478	-9.114	-8.047	-26.278	-29.914	-28.847	-15.489	-
-6.5	-8.587	-9.213	-8.505	-5.909	-9.114	-7.999	-26.709	-29.914	-28.799	-15.323	-
-6.4	-9.375	-9.114	-8.354	-6.346	-9.114	-7.952	-27.146	-29.914	-28.752	-15.154	-
-6.3	-10.319	-9.123	-8.220	-6.818	-9.114	-7.929	-27.618	-29.914	-28.729	-14.984	-
-6.2	-11.426	-9.219	-8.129	-7.338	-9.114	-7.901	-28.138	-29.914	-28.701	-14.810	-
-6.1	-12.710	-9.392	-8.047	-7.919	-9.114	-7.890	-28.719	-29.914	-28.690	-14.633	-
-6	-14.193	-9.653	-7.999	-8.587	-9.114	-7.871	-29.387	-29.914	-28.671	-14.454	-
-5.9	-15.867	-9.967	-7.952	-9.375	-9.114	-7.864	-30.175	-29.914	-28.664	-14.271	-
-5.8	-17.615	-10.340	-7.929	-10.319	-9.123	-7.847	-31.119	-29.923	-28.647	-14.086	-
-5.7	-19.011	-10.748	-7.901	-11.426	-9.219	-7.842	-32.226	-30.019	-28.642	-13.897	-
-5.6	-19.423	-11.153	-7.890	-12.710	-9.392	-7.826	-33.510	-30.192	-28.626	-13.705	-
-5.5	-18.704	-11.541	-7.871	-13.068	-9.653	-7.820	-33.868	-30.453	-28.620	-13.509	-
-5.4	-17.397	-11.862	-7.864	-12.484	-9.967	-7.806	-33.284	-30.767	-28.606	-13.310	-
-5.3	-16.026	-12.070	-7.847	-12.074	-10.340	-7.801	-32.874	-31.140	-28.601	-13.107	-
-5.2	-14.825	-12.157	-7.842	-11.836	-10.654	-7.791	-32.636	-31.454	-28.591	-12.900	-

-5.1	-13.843	-12.089	-7.826	-11.753	-10.159	-7.790	-32.553	-30.959	-28.590	-12.689	-
-5	-13.068	-11.874	-7.820	-11.753	-9.640	-7.787	-32.553	-30.440	-28.587	-12.474	-
-4.9	-12.484	-11.552	-7.806	-11.753	-9.134	-7.787	-32.553	-29.934	-28.587	-12.255	-
-4.8	-12.074	-11.135	-7.801	-11.753	-8.653	-7.787	-32.553	-29.453	-28.587	-12.031	-
-4.7	-11.836	-10.654	-7.791	-11.753	-8.187	-7.787	-32.553	-28.987	-28.587	-11.802	-
-4.6	-11.753	-10.159	-7.790	-11.753	-7.771	-7.787	-32.553	-28.571	-28.587	-11.569	-
-4.5	-11.800	-9.640	-7.787	-11.753	-7.395	-7.787	-32.553	-28.195	-28.587	-11.330	-
-4.4	-11.957	-9.134	-7.795	-11.753	-7.059	-7.787	-32.553	-27.859	-28.587	-11.086	-
-4.3	-12.198	-8.653	-7.808	-11.753	-6.790	-7.787	-32.553	-27.590	-28.587	-10.837	-
-4.2	-12.488	-8.187	-7.834	-11.753	-6.566	-7.787	-32.553	-27.366	-28.587	-10.581	-
-4.1	-12.754	-7.771	-7.873	-11.716	-6.402	-7.787	-32.516	-27.202	-28.587	-10.320	-
-4	-12.915	-7.395	-7.927	-11.119	-6.298	-7.787	-31.919	-27.098	-28.587	-10.051	-
-3.9	-12.896	-7.059	-8.000	-10.511	-6.233	-7.795	-31.311	-27.033	-28.595	-9.777	-
-3.8	-12.663	-6.790	-8.087	-9.927	-6.226	-7.808	-30.727	-27.026	-28.608	-9.495	-
-3.7	-12.250	-6.566	-8.189	-9.399	-6.226	-7.834	-30.199	-27.026	-28.634	-9.205	-
-3.6	-11.716	-6.402	-8.295	-8.920	-6.226	-7.873	-29.720	-27.026	-28.673	-8.908	-
-3.5	-11.119	-6.298	-8.403	-8.460	-6.226	-7.927	-29.260	-27.026	-28.727	-8.602	-
-3.4	-10.511	-6.233	-8.488	-7.990	-6.226	-8.000	-28.790	-27.026	-28.800	-8.287	-
-3.3	-9.927	-6.226	-8.552	-7.489	-6.226	-7.986	-28.289	-27.026	-28.786	-7.963	-
-3.2	-9.399	-6.243	-8.556	-6.957	-6.216	-7.733	-27.757	-27.016	-28.533	-7.629	-
-3.1	-8.920	-6.275	-8.516	-6.394	-6.072	-7.451	-27.194	-26.872	-28.251	-7.284	-
-3	-8.460	-6.315	-8.393	-5.799	-5.899	-7.200	-26.599	-26.699	-28.000	-6.928	-
-2.9	-7.990	-6.320	-8.224	-5.189	-5.689	-6.966	-25.989	-26.489	-27.766	-6.560	-
-2.8	-7.489	-6.293	-7.986	-4.593	-5.475	-6.809	-25.393	-26.275	-27.609	-6.179	-
-2.7	-6.957	-6.216	-7.733	-4.053	-5.298	-6.705	-24.853	-26.098	-27.505	-5.784	-
-2.6	-6.394	-6.072	-7.451	-3.592	-5.158	-6.705	-24.392	-25.958	-27.505	-5.374	-
-2.5	-5.799	-5.899	-7.200	-3.222	-5.104	-6.705	-24.022	-25.904	-27.505	-4.949	-
-2.4	-5.189	-5.689	-6.966	-2.960	-5.104	-6.705	-23.760	-25.904	-27.505	-4.505	-
-2.3	-4.593	-5.475	-6.809	-2.828	-5.104	-6.705	-23.628	-25.904	-27.505	-4.043	-
-2.2	-4.053	-5.298	-6.705	-2.828	-5.104	-6.705	-23.628	-25.904	-27.505	-3.561	-
-2.1	-3.592	-5.158	-6.713	-2.828	-5.104	-6.705	-23.628	-25.904	-27.505	-3.055	-
-2	-3.222	-5.104	-6.805	-2.828	-5.104	-6.705	-23.628	-25.904	-27.505	-2.526	-
-1.9	-2.960	-5.148	-7.045	-2.828	-5.104	-6.705	-23.628	-25.904	-27.505	-1.969	-
-1.8	-2.828	-5.299	-7.398	-2.828	-5.104	-6.705	-23.628	-25.904	-27.505	-1.382	-
-1.7	-2.851	-5.617	-7.944	-2.828	-5.104	-6.705	-23.628	-25.904	-27.505	-	-
-1.6	-3.039	-6.082	-8.647	-2.828	-5.104	-6.713	-23.628	-25.904	-27.513	-	-
-1.5	-3.410	-6.755	-9.614	-2.828	-5.104	-6.805	-23.628	-25.904	-27.605	-	-
-1.4	-3.992	-7.691	-10.810	-2.828	-5.148	-7.045	-23.628	-25.948	-27.845	-	-
-1.3	-4.842	-8.900	-12.374	-2.828	-5.299	-7.398	-23.628	-26.099	-28.198	-	-
-1.2	-6.034	-10.555	-14.216	-2.851	-5.617	-7.944	-23.651	-26.417	-28.744	-	-
-1.1	-7.655	-12.738	-16.219	-3.039	-6.082	-8.647	-23.839	-26.882	-29.447	-	-
-1	-9.896	-15.571	-17.349	-3.410	-6.755	-8.538	-24.210	-27.555	-29.338	-	-
-0.9	-13.189	-18.635	-16.444	-3.992	-7.691	-7.237	-24.792	-28.491	-28.037	-	-
-0.8	-18.630	-18.564	-14.328	-4.842	-6.616	-6.137	-25.642	-27.416	-26.937	-	-
-0.7	-24.239	-15.334	-12.061	-5.760	-5.499	-5.256	-26.560	-26.299	-26.056	-	-
-0.6	-17.149	-12.251	-10.160	-4.691	-4.610	-4.520	-25.491	-25.410	-25.320	-	-
-0.5	-12.358	-9.897	-8.538	-3.942	-3.942	-3.942	-24.742	-24.742	-24.742	-	-
-0.4	-9.346	-8.041	-7.237	-3.451	-3.436	-3.476	-24.251	-24.236	-24.276	-	-
-0.3	-7.259	-6.616	-6.137	-3.184	-3.086	-3.132	-23.984	-23.886	-23.932	-	-
-0.2	-5.760	-5.499	-5.256	-3.130	-2.872	-2.877	-23.930	-23.672	-23.677	-	-
-0.1	-4.691	-4.610	-4.520	-3.130	-2.776	-2.724	-23.930	-23.576	-23.524	-	-
0	-3.942	-3.942	-3.942	-3.130	-2.776	-2.643	-23.930	-23.576	-23.443	-	-
0.1	-3.451	-3.436	-3.476	-3.130	-2.776	-2.643	-23.930	-23.576	-23.443	-	-
0.2	-3.184	-3.086	-3.132	-3.130	-2.776	-2.643	-23.930	-23.576	-23.443	-	-
0.3	-3.130	-2.872	-2.877	-3.130	-2.776	-2.643	-23.930	-23.576	-23.443	-	-
0.4	-3.268	-2.776	-2.724	-3.130	-2.776	-2.643	-23.930	-23.576	-23.443	-	-
0.5	-3.582	-2.804	-2.643	-3.130	-2.776	-2.643	-23.930	-23.576	-23.443	-	-
0.6	-4.067	-2.928	-2.648	-3.130	-2.776	-2.643	-23.930	-23.576	-23.443	-	-
0.7	-4.725	-3.161	-2.713	-3.130	-2.776	-2.643	-23.930	-23.576	-23.443	-	-
0.8	-5.554	-3.490	-2.855	-3.130	-2.776	-2.643	-23.930	-23.576	-23.443	-	-
0.9	-6.525	-3.900	-3.043	-3.268	-2.776	-2.643	-24.068	-23.576	-23.443	-	-

1	-7.602	-4.417	-3.302	-3.582	-2.804	-2.643	-24.382	-23.604	-23.443	-
1.1	-8.736	-5.005	-3.595	-4.067	-2.928	-2.648	-24.867	-23.728	-23.448	-
1.2	-9.835	-5.680	-3.955	-4.725	-3.161	-2.713	-25.525	-23.961	-23.513	-
1.3	-10.751	-6.454	-4.340	-5.554	-3.490	-2.855	-26.354	-24.290	-23.655	-
1.4	-11.342	-7.290	-4.789	-6.525	-3.900	-3.043	-27.325	-24.700	-23.843	-
1.5	-11.584	-8.228	-5.259	-7.602	-4.417	-3.302	-28.402	-25.217	-24.102	-
1.6	-11.553	-9.250	-5.795	-8.736	-5.005	-3.595	-29.536	-25.805	-24.395	-
1.7	-11.374	-10.343	-6.350	-9.835	-5.680	-3.955	-30.635	-26.480	-24.755	-
1.8	-11.164	-11.544	-6.978	-10.751	-6.454	-4.340	-31.551	-27.254	-25.140	-1.382
1.9	-11.005	-12.780	-7.634	-10.898	-7.290	-4.789	-31.698	-28.090	-25.589	-1.969
2	-10.918	-14.034	-8.379	-10.898	-8.228	-5.259	-31.698	-29.028	-26.059	-2.526
2.1	-10.898	-15.188	-9.169	-10.898	-9.250	-5.795	-31.698	-30.050	-26.595	-3.055
2.2	-10.930	-16.031	-10.078	-10.898	-10.343	-6.350	-31.698	-31.143	-27.150	-3.561
2.3	-10.987	-16.373	-11.062	-10.898	-11.544	-6.978	-31.698	-32.344	-27.778	-4.043
2.4	-11.039	-16.080	-12.219	-10.780	-11.286	-7.634	-31.580	-32.086	-28.434	-4.505
2.5	-11.065	-15.356	-13.514	-10.606	-10.413	-8.379	-31.406	-31.213	-29.179	-4.949
2.6	-11.058	-14.350	-15.080	-10.367	-9.613	-9.169	-31.167	-30.413	-29.969	-5.374
2.7	-11.010	-13.288	-16.906	-10.033	-8.869	-10.078	-30.833	-29.669	-30.878	-5.784
2.8	-10.917	-12.271	-19.168	-9.571	-8.216	-11.062	-30.371	-29.016	-31.862	-6.179
2.9	-10.780	-11.286	-21.744	-8.982	-7.603	-12.219	-29.782	-28.403	-33.019	-6.560
3	-10.606	-10.413	-24.020	-8.293	-7.043	-13.514	-29.093	-27.843	-34.314	-6.928
3.1	-10.367	-9.613	-23.769	-7.524	-6.539	-13.004	-28.324	-27.339	-33.804	-7.284
3.2	-10.033	-8.869	-21.360	-6.709	-6.056	-11.647	-27.509	-26.856	-32.447	-7.629
3.3	-9.571	-8.216	-18.685	-5.885	-5.625	-10.508	-26.685	-26.425	-31.308	-7.963
3.4	-8.982	-7.603	-16.448	-5.096	-5.223	-9.483	-25.896	-26.023	-30.283	-8.287
3.5	-8.293	-7.043	-14.555	-4.374	-4.844	-8.611	-25.174	-25.644	-29.411	-8.602
3.6	-7.524	-6.539	-13.004	-3.726	-4.508	-7.814	-24.526	-25.308	-28.614	-8.908
3.7	-6.709	-6.056	-11.647	-3.157	-4.190	-7.135	-23.957	-24.990	-27.935	-9.205
3.8	-5.885	-5.625	-10.508	-2.672	-3.903	-6.511	-23.472	-24.703	-27.311	-9.495
3.9	-5.096	-5.223	-9.483	-2.283	-3.649	-5.984	-23.083	-24.449	-26.784	-9.777
4	-4.374	-4.844	-8.611	-1.991	-3.412	-5.499	-22.791	-24.212	-26.299	-10.051
4.1	-3.726	-4.508	-7.814	-1.788	-3.211	-5.098	-22.588	-24.011	-25.898	-10.320
4.2	-3.157	-4.190	-7.135	-1.672	-3.033	-4.734	-22.472	-23.833	-25.534	-10.581
4.3	-2.672	-3.903	-6.511	-1.645	-2.877	-4.443	-22.445	-23.677	-25.243	-10.837
4.4	-2.283	-3.649	-5.984	-1.645	-2.753	-4.186	-22.445	-23.553	-24.986	-11.086
4.5	-1.991	-3.412	-5.499	-1.645	-2.646	-3.992	-22.445	-23.446	-24.792	-11.330
4.6	-1.788	-3.211	-5.098	-1.645	-2.566	-3.830	-22.445	-23.366	-24.630	-11.569
4.7	-1.672	-3.033	-4.734	-1.645	-2.509	-3.725	-22.445	-23.309	-24.525	-11.802
4.8	-1.645	-2.877	-4.443	-1.645	-2.466	-3.648	-22.445	-23.266	-24.448	-12.031
4.9	-1.710	-2.753	-4.186	-1.645	-2.450	-3.623	-22.445	-23.250	-24.423	-12.255
5	-1.858	-2.646	-3.992	-1.645	-2.447	-3.621	-22.445	-23.247	-24.421	-12.474
5.1	-2.086	-2.566	-3.830	-1.645	-2.447	-3.621	-22.445	-23.247	-24.421	-12.689
5.2	-2.392	-2.509	-3.725	-1.645	-2.447	-3.621	-22.445	-23.247	-24.421	-12.900
5.3	-2.779	-2.466	-3.648	-1.645	-2.447	-3.621	-22.445	-23.247	-24.421	-13.107
5.4	-3.246	-2.450	-3.623	-1.710	-2.447	-3.621	-22.510	-23.247	-24.421	-13.310
5.5	-3.775	-2.447	-3.621	-1.858	-2.447	-3.621	-22.658	-23.247	-24.421	-13.509
5.6	-4.360	-2.461	-3.666	-2.086	-2.447	-3.621	-22.886	-23.247	-24.421	-13.705
5.7	-4.996	-2.496	-3.730	-2.392	-2.447	-3.621	-23.192	-23.247	-24.421	-13.897
5.8	-5.675	-2.539	-3.834	-2.779	-2.447	-3.621	-23.579	-23.247	-24.421	-14.086
5.9	-6.370	-2.604	-3.950	-3.246	-2.447	-3.621	-24.046	-23.247	-24.421	-14.271
6	-7.044	-2.681	-4.098	-3.775	-2.447	-3.621	-24.575	-23.247	-24.421	-14.454
6.1	-7.668	-2.770	-4.250	-4.360	-2.461	-3.666	-25.160	-23.261	-24.466	-14.633
6.2	-8.211	-2.883	-4.425	-4.996	-2.496	-3.730	-25.796	-23.296	-24.530	-14.810
6.3	-8.638	-3.007	-4.590	-5.675	-2.539	-3.834	-26.475	-23.339	-24.634	-14.984
6.4	-8.919	-3.153	-4.768	-6.370	-2.604	-3.950	-27.170	-23.404	-24.750	-15.154
6.5	-9.051	-3.325	-4.924	-7.044	-2.681	-4.098	-27.844	-23.481	-24.898	-15.323
6.6	-9.049	-3.514	-5.080	-7.668	-2.770	-4.250	-28.468	-23.570	-25.050	-15.489
6.7	-8.934	-3.742	-5.205	-7.438	-2.883	-4.425	-28.238	-23.683	-25.225	-15.652
6.8	-8.728	-3.999	-5.318	-7.061	-3.007	-4.590	-27.861	-23.807	-25.390	-15.813
6.9	-8.458	-4.291	-5.396	-6.679	-3.153	-4.768	-27.479	-23.953	-25.568	-15.971

7	-8.145	-4.639	-5.459	-6.306	-3.325	-4.924	-27.106	-24.125	-25.724	-16.000	-
7.1	-7.801	-5.027	-5.489	-5.951	-3.514	-5.080	-26.751	-24.314	-25.880	-16.000	-
7.2	-7.438	-5.479	-5.510	-5.622	-3.742	-5.205	-26.422	-24.542	-26.005	-16.000	-
7.3	-7.061	-6.006	-5.507	-5.326	-3.999	-5.318	-26.126	-24.799	-26.118	-16.000	-
7.4	-6.679	-6.598	-5.505	-5.077	-4.291	-5.396	-25.877	-25.091	-26.196	-16.000	-
7.5	-6.306	-7.302	-5.495	-4.888	-4.639	-5.459	-25.688	-25.439	-26.259	-16.000	-
7.6	-5.951	-8.105	-5.496	-4.766	-5.027	-5.489	-25.566	-25.827	-26.289	-16.000	-
7.7	-5.622	-9.034	-5.505	-4.715	-5.479	-5.495	-25.515	-26.279	-26.295	-16.000	-
7.8	-5.326	-10.151	-5.538	-4.715	-6.006	-5.495	-25.515	-26.806	-26.295	-16.000	-
7.9	-5.077	-11.446	-5.588	-4.715	-6.598	-5.495	-25.515	-27.398	-26.295	-16.000	-
8	-4.888	-13.025	-5.674	-4.715	-7.302	-5.495	-25.515	-28.102	-26.295	-16.000	-
8.1	-4.766	-14.985	-5.785	-4.715	-8.105	-5.496	-25.515	-28.905	-26.296	-16.000	-
8.2	-4.715	-17.435	-5.940	-4.715	-9.034	-5.505	-25.515	-29.834	-26.305	-16.000	-
8.3	-4.744	-20.712	-6.125	-4.715	-10.151	-5.538	-25.515	-30.951	-26.338	-16.000	-
8.4	-4.868	-24.558	-6.360	-4.715	-11.446	-5.588	-25.515	-32.246	-26.388	-16.000	-
8.5	-5.094	-25.579	-6.628	-4.715	-12.891	-5.674	-25.515	-33.691	-26.474	-16.000	-
8.6	-5.428	-22.092	-6.950	-4.715	-11.672	-5.785	-25.515	-32.472	-26.585	-16.000	-
8.7	-5.881	-18.800	-7.307	-4.715	-10.695	-5.940	-25.515	-31.495	-26.740	-16.000	-
8.8	-6.476	-16.295	-7.722	-4.744	-10.695	-6.125	-25.544	-31.495	-26.925	-16.000	-
8.9	-7.234	-14.374	-8.172	-4.868	-10.695	-6.360	-25.668	-31.495	-27.160	-16.000	-
9	-8.170	-12.891	-8.684	-5.094	-10.695	-6.628	-25.894	-31.495	-27.428	-16.000	-
9.1	-9.319	-11.672	-9.231	-5.428	-10.695	-6.950	-26.228	-31.495	-27.750	-16.000	-
9.2	-10.744	-10.695	-9.842	-5.881	-10.695	-7.307	-26.681	-31.495	-28.107	-16.000	-

Nominal 14.25GHz, H-Polarized, X-pol PSD, with -20.8dBW/4kHz Input



Data in support of claim that proposed operation meets criteria of VMES Order July 2009

Applicant RAS Date of Application
 ID Heading
 a1 Antenna Manufacture: RAS c Main bore gain (dBi): 30.5
 a2 Antenna Model: SR5000 d Frequency at which gain was measured (GHz): 14.0
 a3 Antenna ID: RAS e Max input power density (dBW/4kHz): -20.8
 b Transmit Band (b): 14GHz Pattern ID Table C4
 Pattern Description: 14.25GHz V-polarization, X-polarized tangent to the geosynchronous plane for 0°, 37.5°, and 50° skew angle

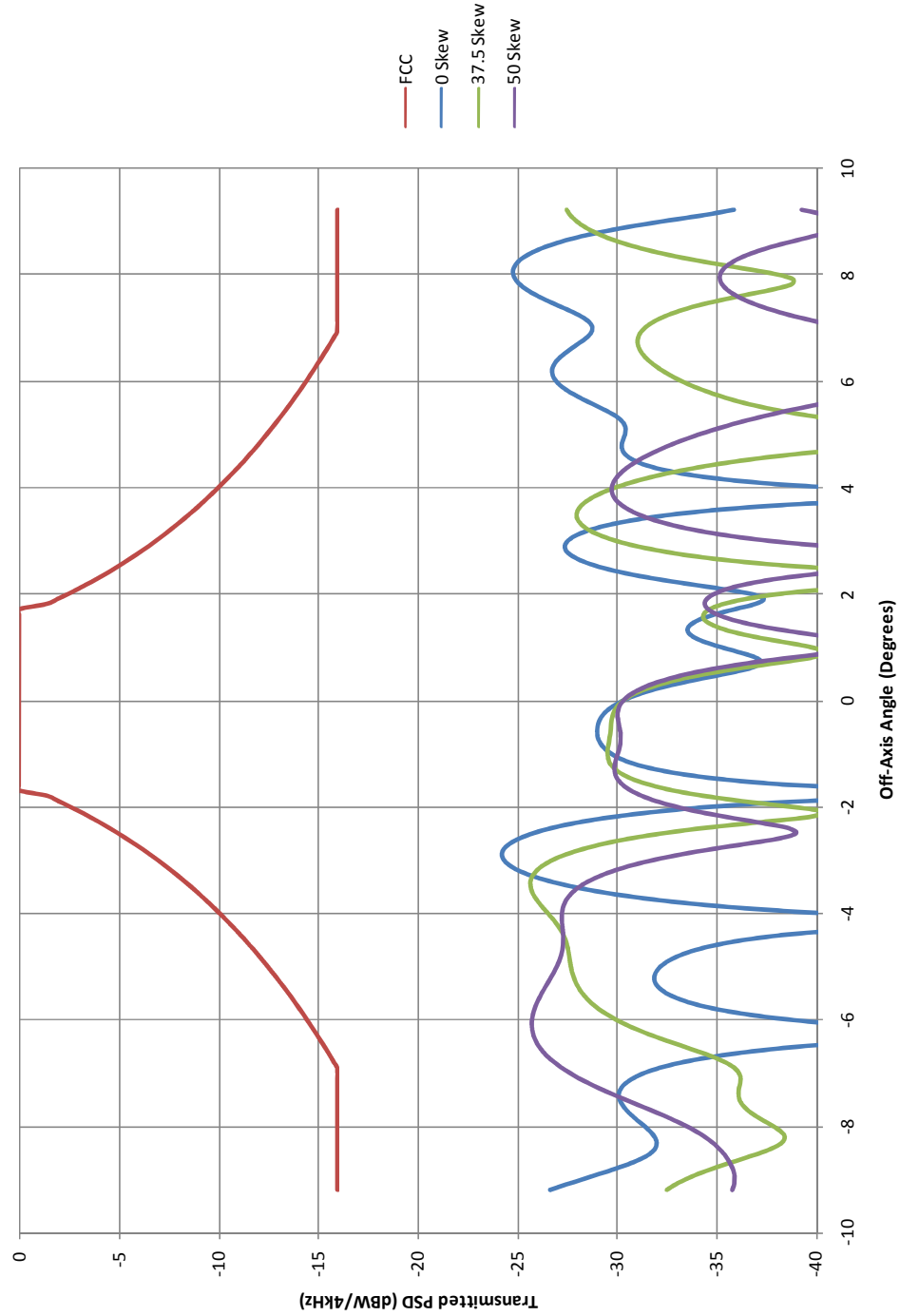
Offset Angles (Degrees)	Nominal X-Pol Gain Along Tangent to Geo Arc (dBi)			Worst Case X-Pol Gain Along Tangent to Geo Arc (dBi)			Worst Case X-Pol PSD Along Tangent to Geo Arc input PSD = -20.8dBW/4kHz (dBW/4kHz)			FCC Mask (dBW/4kHz)	Mask Exceedence (dB)
	0° Skew	37.5° Skew	50° Skew	0° Skew	37.5° Skew	50° Skew	0° Skew	37.5° Skew	50° Skew		
	-9.2	-5.832	-11.704	-14.990	-5.832	-11.704	-14.884	-26.632	-32.504		
-9.1	-6.633	-12.132	-15.084	-5.832	-11.704	-14.719	-26.632	-32.504	-35.519	-16.000	-
-9	-7.467	-12.669	-15.111	-5.832	-11.704	-14.516	-26.632	-32.504	-35.316	-16.000	-
-8.9	-8.309	-13.290	-15.086	-5.832	-11.704	-14.263	-26.632	-32.504	-35.063	-16.000	-
-8.8	-9.129	-14.011	-15.005	-5.832	-11.704	-13.961	-26.632	-32.504	-34.761	-16.000	-
-8.7	-9.879	-14.813	-14.884	-5.832	-11.704	-13.598	-26.632	-32.504	-34.398	-16.000	-
-8.6	-10.491	-15.638	-14.719	-6.633	-12.132	-13.167	-27.433	-32.932	-33.967	-16.000	-
-8.5	-10.915	-16.452	-14.516	-7.467	-12.669	-12.676	-28.267	-33.469	-33.476	-16.000	-
-8.4	-11.137	-17.117	-14.263	-8.309	-13.290	-12.117	-29.109	-34.090	-32.917	-16.000	-
-8.3	-11.174	-17.522	-13.961	-9.129	-14.011	-11.520	-29.929	-34.811	-32.320	-16.000	-
-8.2	-11.062	-17.630	-13.598	-9.652	-14.813	-10.878	-30.452	-35.613	-31.678	-16.000	-
-8.1	-10.840	-17.421	-13.167	-9.448	-15.499	-10.237	-30.248	-36.299	-31.037	-16.000	-
-8	-10.549	-17.023	-12.676	-9.318	-15.346	-9.582	-30.118	-36.146	-30.382	-16.000	-
-7.9	-10.227	-16.566	-12.117	-9.284	-15.316	-8.962	-30.084	-36.116	-29.762	-16.000	-
-7.8	-9.916	-16.113	-11.520	-9.284	-15.316	-8.355	-30.084	-36.116	-29.155	-16.000	-
-7.7	-9.652	-15.758	-10.878	-9.284	-15.316	-7.802	-30.084	-36.116	-28.602	-16.000	-
-7.6	-9.448	-15.499	-10.237	-9.284	-15.316	-7.280	-30.084	-36.116	-28.080	-16.000	-
-7.5	-9.318	-15.346	-9.582	-9.284	-15.316	-6.822	-30.084	-36.116	-27.622	-16.000	-
-7.4	-9.284	-15.316	-8.962	-9.284	-15.065	-6.404	-30.084	-35.865	-27.204	-16.000	-
-7.3	-9.378	-15.331	-8.355	-9.284	-14.610	-6.050	-30.084	-35.410	-26.850	-16.000	-
-7.2	-9.619	-15.392	-7.802	-9.284	-14.000	-5.740	-30.084	-34.800	-26.540	-16.000	-
-7.1	-10.018	-15.412	-7.280	-9.284	-13.258	-5.491	-30.084	-34.058	-26.291	-16.000	-
-7	-10.600	-15.316	-6.822	-9.284	-12.481	-5.285	-30.084	-33.281	-26.085	-16.000	-
-6.9	-11.414	-15.065	-6.404	-9.284	-11.702	-5.136	-30.084	-32.502	-25.936	-15.971	-
-6.8	-12.529	-14.610	-6.050	-9.378	-10.952	-5.027	-30.178	-31.752	-25.827	-15.813	-
-6.7	-14.010	-14.000	-5.740	-9.619	-10.281	-4.967	-30.419	-31.081	-25.767	-15.652	-
-6.6	-15.968	-13.258	-5.491	-10.018	-9.661	-4.942	-30.818	-30.461	-25.742	-15.489	-
-6.5	-18.626	-12.481	-5.285	-10.600	-9.129	-4.942	-31.400	-29.929	-25.742	-15.323	-
-6.4	-22.317	-11.702	-5.136	-11.414	-8.670	-4.942	-32.214	-29.470	-25.742	-15.154	-
-6.3	-26.291	-10.952	-5.027	-12.529	-8.267	-4.942	-33.329	-29.067	-25.742	-14.984	-
-6.2	-24.738	-10.281	-4.967	-12.978	-7.942	-4.942	-33.778	-28.742	-25.742	-14.810	-
-6.1	-20.740	-9.661	-4.942	-12.182	-7.666	-4.942	-32.982	-28.466	-25.742	-14.633	-
-6	-17.749	-9.129	-4.961	-11.630	-7.441	-4.942	-32.430	-28.241	-25.742	-14.454	-
-5.9	-15.623	-8.670	-5.006	-11.276	-7.266	-4.942	-32.076	-28.066	-25.742	-14.271	-
-5.8	-14.086	-8.267	-5.088	-11.096	-7.123	-4.942	-31.896	-27.923	-25.742	-14.086	-
-5.7	-12.978	-7.942	-5.188	-11.062	-7.019	-4.942	-31.862	-27.819	-25.742	-13.897	-
-5.6	-12.182	-7.666	-5.315	-11.062	-6.939	-4.942	-31.862	-27.739	-25.742	-13.705	-
-5.5	-11.630	-7.441	-5.452	-11.062	-6.881	-4.961	-31.862	-27.681	-25.761	-13.509	-
-5.4	-11.276	-7.266	-5.607	-11.062	-6.836	-5.006	-31.862	-27.636	-25.806	-13.310	-
-5.3	-11.096	-7.123	-5.760	-11.062	-6.795	-5.088	-31.862	-27.595	-25.888	-13.107	-
-5.2	-11.062	-7.019	-5.920	-11.062	-6.751	-5.188	-31.862	-27.551	-25.988	-12.900	-

-5.1	-11.161	-6.939	-6.066	-11.062	-6.692	-5.315	-31.862	-27.492	-26.115	-12.689	-
-5	-11.395	-6.881	-6.205	-11.062	-6.608	-5.452	-31.862	-27.408	-26.252	-12.474	-
-4.9	-11.774	-6.836	-6.318	-11.062	-6.494	-5.607	-31.862	-27.294	-26.407	-12.255	-
-4.8	-12.326	-6.795	-6.413	-11.062	-6.344	-5.760	-31.862	-27.144	-26.560	-12.031	-
-4.7	-13.103	-6.751	-6.475	-11.062	-6.157	-5.920	-31.862	-26.957	-26.720	-11.802	-
-4.6	-14.186	-6.692	-6.512	-11.161	-5.943	-6.066	-31.961	-26.743	-26.866	-11.569	-
-4.5	-15.710	-6.608	-6.520	-11.395	-5.713	-6.205	-32.195	-26.513	-27.005	-11.330	-
-4.4	-17.940	-6.494	-6.510	-11.774	-5.475	-6.318	-32.574	-26.275	-27.118	-11.086	-
-4.3	-21.431	-6.344	-6.486	-12.233	-5.258	-6.413	-33.033	-26.058	-27.213	-10.837	-
-4.2	-26.614	-6.157	-6.461	-9.999	-5.069	-6.448	-30.799	-25.869	-27.248	-10.581	-
-4.1	-25.057	-5.943	-6.448	-8.255	-4.930	-6.448	-29.055	-25.730	-27.248	-10.320	-
-4	-19.224	-5.713	-6.458	-6.867	-4.860	-6.448	-27.667	-25.660	-27.248	-10.051	-
-3.9	-15.172	-5.475	-6.509	-5.756	-4.860	-6.448	-26.556	-25.660	-27.248	-9.777	-
-3.8	-12.233	-5.258	-6.610	-4.878	-4.860	-6.448	-25.678	-25.660	-27.248	-9.495	-
-3.7	-9.999	-5.069	-6.778	-4.223	-4.860	-6.448	-25.023	-25.660	-27.248	-9.205	-
-3.6	-8.255	-4.930	-7.027	-3.771	-4.860	-6.448	-24.571	-25.660	-27.248	-8.908	-
-3.5	-6.867	-4.860	-7.369	-3.505	-4.860	-6.458	-24.305	-25.660	-27.258	-8.602	-
-3.4	-5.756	-4.866	-7.823	-3.417	-4.860	-6.509	-24.217	-25.660	-27.309	-8.287	-
-3.3	-4.878	-4.974	-8.402	-3.417	-4.860	-6.610	-24.217	-25.660	-27.410	-7.963	-
-3.2	-4.223	-5.184	-9.131	-3.417	-4.860	-6.778	-24.217	-25.660	-27.578	-7.629	-
-3.1	-3.771	-5.528	-10.029	-3.417	-4.860	-7.027	-24.217	-25.660	-27.827	-7.284	-
-3	-3.505	-6.012	-11.127	-3.417	-4.860	-7.369	-24.217	-25.660	-28.169	-6.928	-
-2.9	-3.417	-6.653	-12.452	-3.417	-4.866	-7.823	-24.217	-25.666	-28.623	-6.560	-
-2.8	-3.515	-7.506	-14.012	-3.417	-4.974	-8.402	-24.217	-25.774	-29.202	-6.179	-
-2.7	-3.810	-8.565	-15.752	-3.417	-5.184	-9.131	-24.217	-25.984	-29.931	-5.784	-
-2.6	-4.307	-9.912	-17.383	-3.417	-5.528	-10.029	-24.217	-26.328	-30.829	-5.374	-
-2.5	-5.021	-11.620	-18.200	-3.417	-6.012	-11.127	-24.217	-26.812	-31.927	-4.949	-
-2.4	-5.986	-13.715	-17.714	-3.417	-6.653	-11.158	-24.217	-27.453	-31.958	-4.505	-
-2.3	-7.271	-16.322	-16.274	-3.515	-7.506	-10.444	-24.315	-28.306	-31.244	-4.043	-
-2.2	-8.959	-18.864	-14.718	-3.810	-8.565	-9.888	-24.610	-29.365	-30.688	-3.561	-
-2.1	-11.170	-19.612	-13.273	-4.307	-9.912	-9.512	-25.107	-30.712	-30.312	-3.055	-
-2	-14.196	-17.760	-12.116	-5.021	-10.059	-9.257	-25.821	-30.859	-30.057	-2.526	-
-1.9	-18.748	-15.452	-11.158	-5.986	-9.484	-9.128	-26.786	-30.284	-29.928	-1.969	-
-1.8	-26.253	-13.509	-10.444	-7.271	-9.105	-9.081	-28.071	-29.905	-29.881	-1.382	-
-1.7	-23.875	-11.988	-9.888	-8.959	-8.861	-9.081	-29.759	-29.661	-29.881	-	-
-1.6	-18.030	-10.893	-9.512	-9.322	-8.758	-9.081	-30.122	-29.558	-29.881	-	-
-1.5	-14.691	-10.059	-9.257	-8.849	-8.725	-9.081	-29.649	-29.525	-29.881	-	-
-1.4	-12.538	-9.484	-9.128	-8.533	-8.725	-9.081	-29.333	-29.525	-29.881	-	-
-1.3	-11.054	-9.105	-9.081	-8.330	-8.725	-9.081	-29.130	-29.525	-29.881	-	-
-1.2	-10.021	-8.861	-9.111	-8.223	-8.725	-9.081	-29.023	-29.525	-29.881	-	-
-1.1	-9.322	-8.758	-9.177	-8.194	-8.725	-9.081	-28.994	-29.525	-29.881	-	-
-1	-8.849	-8.725	-9.266	-8.194	-8.725	-9.081	-28.994	-29.525	-29.881	-	-
-0.9	-8.533	-8.748	-9.339	-8.194	-8.725	-9.081	-28.994	-29.525	-29.881	-	-
-0.8	-8.330	-8.802	-9.392	-8.194	-8.725	-9.081	-28.994	-29.525	-29.881	-	-
-0.7	-8.223	-8.839	-9.398	-8.194	-8.725	-9.111	-28.994	-29.525	-29.911	-	-
-0.6	-8.194	-8.884	-9.377	-8.194	-8.725	-9.177	-28.994	-29.525	-29.977	-	-
-0.5	-8.219	-8.907	-9.321	-8.194	-8.725	-9.241	-28.994	-29.525	-30.041	-	-
-0.4	-8.297	-8.926	-9.277	-8.194	-8.748	-9.241	-28.994	-29.548	-30.041	-	-
-0.3	-8.446	-8.987	-9.241	-8.194	-8.802	-9.241	-28.994	-29.602	-30.041	-	-
-0.2	-8.698	-9.079	-9.273	-8.194	-8.839	-9.241	-28.994	-29.639	-30.041	-	-
-0.1	-9.069	-9.269	-9.362	-8.194	-8.884	-9.241	-28.994	-29.684	-30.041	-	-
0	-9.573	-9.573	-9.573	-8.219	-8.907	-9.241	-29.019	-29.707	-30.041	-	-
0.1	-10.237	-10.001	-9.884	-8.297	-8.926	-9.241	-29.097	-29.726	-30.041	-	-
0.2	-11.096	-10.637	-10.369	-8.446	-8.987	-9.241	-29.246	-29.787	-30.041	-	-
0.3	-12.181	-11.456	-10.995	-8.698	-9.079	-9.273	-29.498	-29.879	-30.073	-	-
0.4	-13.452	-12.518	-11.859	-9.069	-9.269	-9.362	-29.869	-30.069	-30.162	-	-
0.5	-14.788	-13.898	-12.921	-9.573	-9.573	-9.573	-30.373	-30.373	-30.373	-	-
0.6	-15.916	-15.523	-14.322	-10.237	-10.001	-9.884	-31.037	-30.801	-30.684	-	-
0.7	-16.421	-17.398	-15.997	-11.096	-10.637	-10.369	-31.896	-31.437	-31.169	-	-
0.8	-16.103	-19.086	-18.100	-12.181	-11.456	-10.995	-32.981	-32.256	-31.795	-	-
0.9	-15.250	-19.655	-20.257	-12.727	-12.518	-11.859	-33.527	-33.318	-32.659	-	-

1	-14.291	-18.803	-21.755	-12.727	-13.600	-12.921	-33.527	-34.400	-33.721	-	-
1.1	-13.484	-17.330	-21.264	-12.727	-13.556	-14.243	-33.527	-34.356	-35.043	-	-
1.2	-12.943	-15.888	-19.485	-12.727	-13.556	-13.786	-33.527	-34.356	-34.586	-	-
1.3	-12.727	-14.773	-17.663	-12.727	-13.556	-13.611	-33.527	-34.356	-34.411	-	-
1.4	-12.847	-14.022	-16.139	-12.727	-13.556	-13.611	-33.527	-34.356	-34.411	-	-
1.5	-13.289	-13.600	-15.030	-12.727	-13.556	-13.611	-33.527	-34.356	-34.411	-	-
1.6	-14.050	-13.556	-14.243	-12.727	-13.556	-13.611	-33.527	-34.356	-34.411	-	-
1.7	-15.079	-13.847	-13.786	-12.336	-13.556	-13.611	-33.136	-34.356	-34.411	-	-
1.8	-16.134	-14.566	-13.611	-10.684	-13.556	-13.611	-31.484	-34.356	-34.411	-1.382	-
1.9	-16.540	-15.779	-13.729	-9.321	-13.556	-13.611	-30.121	-34.356	-34.411	-1.969	-
2	-15.757	-17.635	-14.150	-8.263	-13.556	-13.611	-29.063	-34.356	-34.411	-2.526	-
2.1	-14.140	-20.659	-14.898	-7.477	-13.556	-13.611	-28.277	-34.356	-34.411	-3.055	-
2.2	-12.336	-25.475	-16.073	-6.936	-13.000	-13.611	-27.736	-33.800	-34.411	-3.561	-
2.3	-10.684	-29.431	-17.775	-6.635	-11.319	-13.611	-27.435	-32.119	-34.411	-4.043	-
2.4	-9.321	-23.130	-20.360	-6.581	-9.998	-13.729	-27.381	-30.798	-34.529	-4.505	-
2.5	-8.263	-18.445	-24.545	-6.581	-9.017	-14.150	-27.381	-29.817	-34.950	-4.949	-
2.6	-7.477	-15.264	-34.161	-6.581	-8.273	-14.465	-27.381	-29.073	-35.265	-5.374	-
2.7	-6.936	-13.000	-32.479	-6.581	-7.733	-12.943	-27.381	-28.533	-33.743	-5.784	-
2.8	-6.635	-11.319	-23.580	-6.581	-7.392	-11.768	-27.381	-28.192	-32.568	-6.179	-
2.9	-6.581	-9.998	-19.288	-6.581	-7.205	-10.864	-27.381	-28.005	-31.664	-6.560	-
3	-6.770	-9.017	-16.480	-6.581	-7.185	-10.169	-27.381	-27.985	-30.969	-6.928	-
3.1	-7.208	-8.273	-14.465	-6.581	-7.185	-9.657	-27.381	-27.985	-30.457	-7.284	-
3.2	-7.923	-7.733	-12.943	-6.581	-7.185	-9.294	-27.381	-27.985	-30.094	-7.629	-
3.3	-8.975	-7.392	-11.768	-6.581	-7.185	-9.069	-27.381	-27.985	-29.869	-7.963	-
3.4	-10.448	-7.205	-10.864	-6.581	-7.185	-8.961	-27.381	-27.985	-29.761	-8.287	-
3.5	-12.467	-7.185	-10.169	-6.770	-7.185	-8.961	-27.570	-27.985	-29.761	-8.602	-
3.6	-15.335	-7.305	-9.657	-7.208	-7.185	-8.961	-28.008	-27.985	-29.761	-8.908	-
3.7	-19.847	-7.570	-9.294	-7.923	-7.185	-8.961	-28.723	-27.985	-29.761	-9.205	-
3.8	-29.004	-7.982	-9.069	-8.975	-7.185	-8.961	-29.775	-27.985	-29.761	-9.495	-
3.9	-26.575	-8.525	-8.961	-10.448	-7.185	-8.961	-31.248	-27.985	-29.761	-9.777	-
4	-19.295	-9.237	-8.961	-10.017	-7.185	-8.961	-30.817	-27.985	-29.761	-10.051	-
4.1	-15.589	-10.094	-9.061	-9.628	-7.305	-8.961	-30.428	-28.105	-29.761	-10.320	-
4.2	-13.271	-11.124	-9.249	-9.451	-7.570	-8.961	-30.251	-28.370	-29.761	-10.581	-
4.3	-11.717	-12.382	-9.525	-9.435	-7.982	-8.961	-30.235	-28.782	-29.761	-10.837	-
4.4	-10.680	-13.848	-9.873	-9.435	-8.525	-8.961	-30.235	-29.325	-29.761	-11.086	-
4.5	-10.017	-15.650	-10.301	-9.435	-9.237	-8.961	-30.235	-30.037	-29.761	-11.330	-
4.6	-9.628	-17.861	-10.793	-9.435	-10.094	-9.061	-30.235	-30.894	-29.861	-11.569	-
4.7	-9.451	-20.625	-11.362	-9.435	-11.124	-9.249	-30.235	-31.924	-30.049	-11.802	-
4.8	-9.435	-24.329	-11.989	-9.224	-12.382	-9.525	-30.024	-33.182	-30.325	-12.031	-
4.9	-9.515	-28.436	-12.697	-8.788	-13.848	-9.873	-29.588	-34.648	-30.673	-12.255	-
5	-9.601	-28.585	-13.465	-8.260	-15.650	-10.301	-29.060	-36.450	-31.101	-12.474	-
5.1	-9.616	-24.846	-14.328	-7.708	-15.314	-10.793	-28.508	-36.114	-31.593	-12.689	-
5.2	-9.503	-21.801	-15.255	-7.182	-14.401	-11.362	-27.982	-35.201	-32.162	-12.900	-
5.3	-9.224	-19.518	-16.301	-6.718	-13.625	-11.989	-27.518	-34.425	-32.789	-13.107	-
5.4	-8.788	-17.777	-17.427	-6.350	-12.936	-12.697	-27.150	-33.736	-33.497	-13.310	-
5.5	-8.260	-16.440	-18.699	-6.097	-12.358	-13.465	-26.897	-33.158	-34.265	-13.509	-
5.6	-7.708	-15.314	-20.076	-5.961	-11.842	-14.328	-26.761	-32.642	-35.128	-13.705	-
5.7	-7.182	-14.401	-21.633	-5.941	-11.394	-15.255	-26.741	-32.194	-36.055	-13.897	-
5.8	-6.718	-13.625	-23.323	-5.941	-11.022	-16.301	-26.741	-31.822	-37.101	-14.086	-
5.9	-6.350	-12.936	-25.211	-5.941	-10.705	-17.427	-26.741	-31.505	-38.227	-14.271	-
6	-6.097	-12.358	-27.236	-5.941	-10.472	-18.699	-26.741	-31.272	-39.499	-14.454	-
6.1	-5.961	-11.842	-29.294	-5.941	-10.311	-20.076	-26.741	-31.111	-40.876	-14.633	-
6.2	-5.941	-11.394	-31.084	-5.941	-10.240	-21.633	-26.741	-31.040	-42.433	-14.810	-
6.3	-6.037	-11.022	-31.735	-5.941	-10.240	-23.323	-26.741	-31.040	-44.123	-14.984	-
6.4	-6.249	-10.705	-31.041	-5.941	-10.240	-21.972	-26.741	-31.040	-42.772	-15.154	-
6.5	-6.552	-10.472	-29.286	-5.941	-10.240	-20.509	-26.741	-31.040	-41.309	-15.323	-
6.6	-6.916	-10.311	-27.320	-5.941	-10.240	-19.238	-26.741	-31.040	-40.038	-15.489	-
6.7	-7.306	-10.240	-25.380	-5.941	-10.240	-18.104	-26.741	-31.040	-38.904	-15.652	-
6.8	-7.664	-10.269	-23.584	-6.037	-10.240	-17.148	-26.837	-31.040	-37.948	-15.813	-
6.9	-7.904	-10.398	-21.972	-6.241	-10.240	-16.320	-27.041	-31.040	-37.120	-15.971	-

7	-7.947	-10.663	-20.509	-5.649	-10.240	-15.656	-26.449	-31.040	-36.456	-16.000	-
7.1	-7.765	-11.052	-19.238	-5.114	-10.240	-15.119	-25.914	-31.040	-35.919	-16.000	-
7.2	-7.381	-11.600	-18.104	-4.662	-10.240	-14.733	-25.462	-31.040	-35.533	-16.000	-
7.3	-6.846	-12.331	-17.148	-4.311	-10.269	-14.479	-25.111	-31.069	-35.279	-16.000	-
7.4	-6.241	-13.231	-16.320	-4.079	-10.398	-14.368	-24.879	-31.198	-35.168	-16.000	-
7.5	-5.649	-14.369	-15.656	-3.978	-10.663	-14.368	-24.778	-31.463	-35.168	-16.000	-
7.6	-5.114	-15.653	-15.119	-3.978	-11.052	-14.368	-24.778	-31.852	-35.168	-16.000	-
7.7	-4.662	-16.973	-14.733	-3.978	-11.600	-14.368	-24.778	-32.400	-35.168	-16.000	-
7.8	-4.311	-17.969	-14.479	-3.978	-12.331	-14.368	-24.778	-33.131	-35.168	-16.000	-
7.9	-4.079	-18.027	-14.368	-3.978	-11.229	-14.368	-24.778	-32.029	-35.168	-16.000	-
8	-3.978	-17.064	-14.403	-3.978	-10.171	-14.368	-24.778	-30.971	-35.168	-16.000	-
8.1	-4.006	-15.527	-14.578	-3.978	-9.274	-14.368	-24.778	-30.074	-35.168	-16.000	-
8.2	-4.168	-13.948	-14.921	-3.978	-8.550	-14.368	-24.778	-29.350	-35.168	-16.000	-
8.3	-4.478	-12.481	-15.408	-3.978	-7.954	-14.368	-24.778	-28.754	-35.168	-16.000	-
8.4	-4.946	-11.229	-16.088	-3.978	-7.481	-14.368	-24.778	-28.281	-35.168	-16.000	-
8.5	-5.577	-10.171	-16.913	-3.978	-7.121	-14.403	-24.778	-27.921	-35.203	-16.000	-
8.6	-6.382	-9.274	-17.929	-4.006	-6.851	-14.578	-24.806	-27.651	-35.378	-16.000	-
8.7	-7.389	-8.550	-18.996	-4.168	-6.675	-14.921	-24.968	-27.475	-35.721	-16.000	-
8.8	-8.629	-7.954	-20.035	-4.478	-6.675	-15.408	-25.278	-27.475	-36.208	-16.000	-
8.9	-10.106	-7.481	-20.631	-4.946	-6.675	-16.088	-25.746	-27.475	-36.888	-16.000	-
9	-11.790	-7.121	-20.546	-5.577	-6.675	-16.913	-26.377	-27.475	-37.713	-16.000	-
9.1	-13.569	-6.851	-19.712	-6.382	-6.675	-17.929	-27.182	-27.475	-38.729	-16.000	-
9.2	-15.048	-6.675	-18.471	-7.389	-6.675	-18.471	-28.189	-27.475	-39.271	-16.000	-

Nominal 14.25GHz, V-Polarized, X-pol PSD, with -20.8dBW/4kHz Input



Data in support of claim that proposed operation meets criteria of VMES Order July 2009

Applicant RAS Date of Application
 ID Heading
 a1 Antenna Manufacture: RAS c Main bore gain (dBi): 30.5
 a2 Antenna Model: SR5000 d Frequency at which gain was measured (GHz): 14.0
 a3 Antenna ID: RAS e Max input power density (dBW/4kHz): -20.8
 b Transmit Band (b): 14GHz Pattern ID Table C5
 Pattern Description: 14.5GHz H-polarization, X-polarized tangent to the geosynchronous plane for 0°, 37.5°, and 50° skew angle

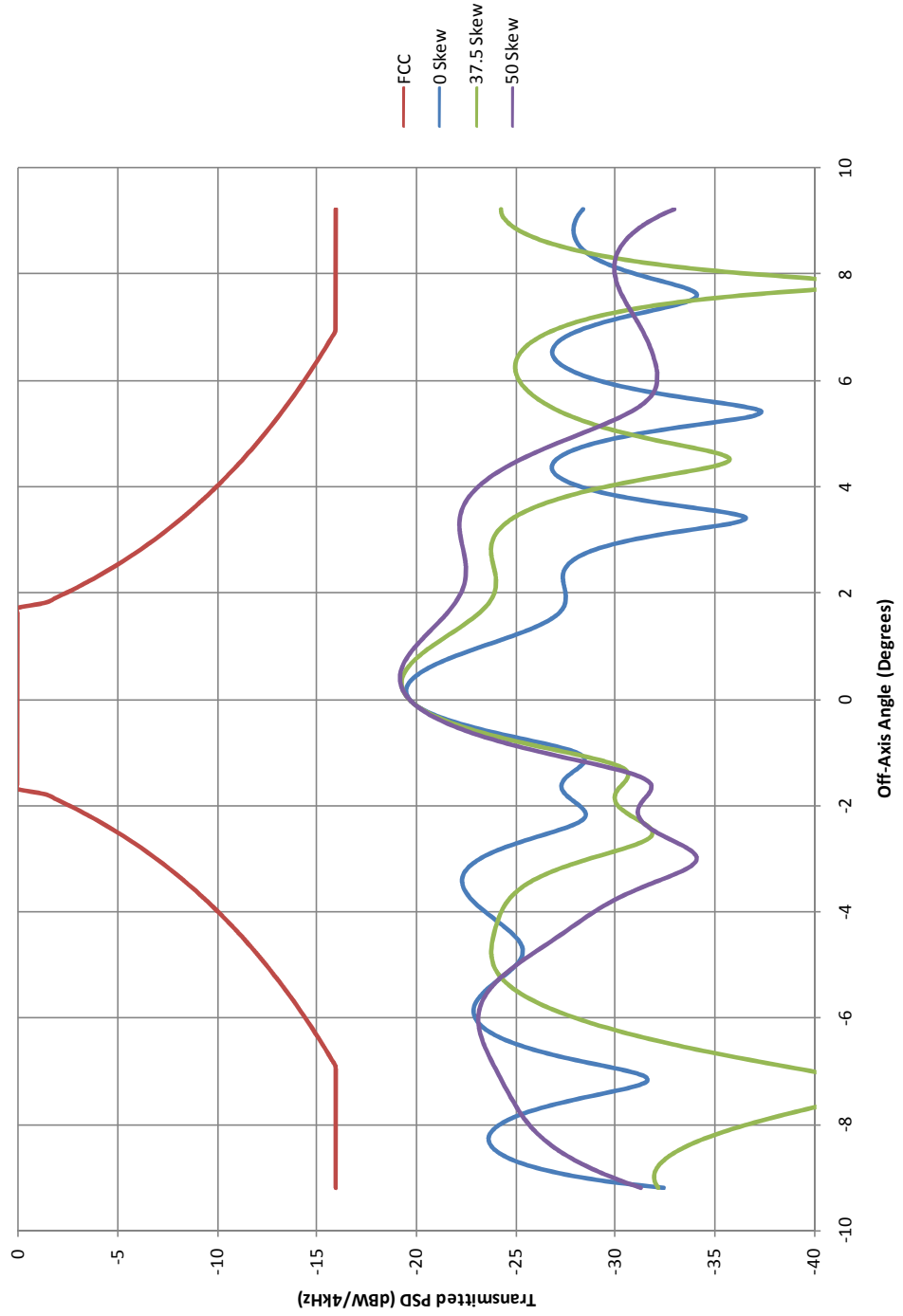
Offset Angles (Degrees)	Nominal X-Pol Gain Along Tangent to Geo Arc (dBi)			Worst Case X-Pol Gain Along Tangent to Geo Arc (dBi)			Worst Case X-Pol PSD Along Tangent to Geo Arc input PSD = -20.8dBW/4kHz (dBW/4kHz)			FCC Mask (dBW/4kHz)	Mask Exceedence (dB)
	0° Skew	37.5° Skew	50° Skew	0° Skew	37.5° Skew	50° Skew	0° Skew	37.5° Skew	50° Skew		
	-9.2	-11.610	-11.377	-10.503	-4.179	-11.173	-7.271	-24.979	-31.973		
-9.1	-9.173	-11.222	-9.733	-3.591	-11.173	-6.804	-24.391	-31.973	-27.604	-16.000	-
-9	-7.397	-11.173	-9.046	-3.180	-11.173	-6.368	-23.980	-31.973	-27.168	-16.000	-
-8.9	-6.040	-11.221	-8.388	-2.926	-11.173	-5.996	-23.726	-31.973	-26.796	-16.000	-
-8.8	-4.985	-11.362	-7.813	-2.823	-11.173	-5.651	-23.623	-31.973	-26.451	-16.000	-
-8.7	-4.179	-11.609	-7.271	-2.823	-11.173	-5.359	-23.623	-31.973	-26.159	-16.000	-
-8.6	-3.591	-11.940	-6.804	-2.823	-11.173	-5.088	-23.623	-31.973	-25.888	-16.000	-
-8.5	-3.180	-12.382	-6.368	-2.823	-11.173	-4.857	-23.623	-31.973	-25.657	-16.000	-
-8.4	-2.926	-12.909	-5.996	-2.823	-11.221	-4.641	-23.623	-32.021	-25.441	-16.000	-
-8.3	-2.823	-13.526	-5.651	-2.823	-11.362	-4.456	-23.623	-32.162	-25.256	-16.000	-
-8.2	-2.875	-14.259	-5.359	-2.823	-11.609	-4.278	-23.623	-32.409	-25.078	-16.000	-
-8.1	-3.079	-15.056	-5.088	-2.823	-11.940	-4.121	-23.623	-32.740	-24.921	-16.000	-
-8	-3.428	-15.961	-4.857	-2.823	-12.382	-3.964	-23.623	-33.182	-24.764	-16.000	-
-7.9	-3.929	-16.945	-4.641	-2.823	-12.909	-3.821	-23.623	-33.709	-24.621	-16.000	-
-7.8	-4.603	-17.972	-4.456	-2.823	-13.526	-3.673	-23.623	-34.326	-24.473	-16.000	-
-7.7	-5.459	-19.084	-4.278	-2.875	-14.259	-3.534	-23.675	-35.059	-24.334	-16.000	-
-7.6	-6.487	-20.134	-4.121	-3.079	-15.056	-3.389	-23.879	-35.856	-24.189	-16.000	-
-7.5	-7.667	-21.069	-3.964	-3.428	-15.961	-3.251	-24.228	-36.761	-24.051	-16.000	-
-7.4	-8.931	-21.707	-3.821	-3.929	-16.945	-3.107	-24.729	-37.745	-23.907	-16.000	-
-7.3	-10.093	-21.806	-3.673	-4.603	-16.044	-2.974	-25.403	-36.844	-23.774	-16.000	-
-7.2	-10.774	-21.311	-3.534	-5.459	-14.655	-2.839	-26.259	-35.455	-23.639	-16.000	-
-7.1	-10.632	-20.267	-3.389	-5.055	-13.302	-2.718	-25.855	-34.102	-23.518	-16.000	-
-7	-9.744	-18.963	-3.251	-4.223	-12.075	-2.603	-25.023	-32.875	-23.403	-16.000	-
-6.9	-8.495	-17.492	-3.107	-3.539	-10.919	-2.507	-24.339	-31.719	-23.307	-15.971	-
-6.8	-7.205	-16.044	-2.974	-2.996	-9.841	-2.425	-23.796	-30.641	-23.225	-15.813	-
-6.7	-6.045	-14.655	-2.839	-2.595	-8.876	-2.369	-23.395	-29.676	-23.169	-15.652	-
-6.6	-5.055	-13.302	-2.718	-2.316	-7.967	-2.334	-23.116	-28.767	-23.134	-15.489	-
-6.5	-4.223	-12.075	-2.603	-2.143	-7.160	-2.333	-22.943	-27.960	-23.133	-15.323	-
-6.4	-3.539	-10.919	-2.507	-2.068	-6.432	-2.333	-22.868	-27.232	-23.133	-15.154	-
-6.3	-2.996	-9.841	-2.425	-2.068	-5.768	-2.333	-22.868	-26.568	-23.133	-14.984	-
-6.2	-2.595	-8.876	-2.369	-2.068	-5.199	-2.333	-22.868	-25.999	-23.133	-14.810	-
-6.1	-2.316	-7.967	-2.334	-2.068	-4.695	-2.333	-22.868	-25.495	-23.133	-14.633	-
-6	-2.143	-7.160	-2.333	-2.068	-4.263	-2.333	-22.868	-25.063	-23.133	-14.454	-
-5.9	-2.068	-6.432	-2.359	-2.068	-3.907	-2.333	-22.868	-24.707	-23.133	-14.271	-
-5.8	-2.092	-5.768	-2.424	-2.068	-3.610	-2.333	-22.868	-24.410	-23.133	-14.086	-
-5.7	-2.208	-5.199	-2.521	-2.068	-3.383	-2.333	-22.868	-24.183	-23.133	-13.897	-
-5.6	-2.398	-4.695	-2.662	-2.068	-3.212	-2.333	-22.868	-24.012	-23.133	-13.705	-
-5.5	-2.648	-4.263	-2.836	-2.068	-3.094	-2.333	-22.868	-23.894	-23.133	-13.509	-
-5.4	-2.948	-3.907	-3.057	-2.068	-3.025	-2.359	-22.868	-23.825	-23.159	-13.310	-
-5.3	-3.286	-3.610	-3.308	-2.092	-2.994	-2.424	-22.892	-23.794	-23.224	-13.107	-
-5.2	-3.635	-3.383	-3.606	-2.208	-2.994	-2.521	-23.008	-23.794	-23.321	-12.900	-

-5.1	-3.959	-3.212	-3.926	-2.398	-2.994	-2.662	-23.198	-23.794	-23.462	-12.689	-
-5	-4.230	-3.094	-4.287	-2.648	-2.994	-2.836	-23.448	-23.794	-23.636	-12.474	-
-4.9	-4.426	-3.025	-4.657	-2.948	-2.994	-3.057	-23.748	-23.794	-23.857	-12.255	-
-4.8	-4.529	-2.994	-5.057	-3.286	-2.994	-3.308	-24.086	-23.794	-24.108	-12.031	-
-4.7	-4.525	-3.001	-5.451	-3.295	-2.994	-3.606	-24.095	-23.794	-24.406	-11.802	-
-4.6	-4.416	-3.030	-5.860	-2.949	-2.994	-3.926	-23.749	-23.794	-24.726	-11.569	-
-4.5	-4.216	-3.078	-6.252	-2.611	-2.994	-4.287	-23.411	-23.794	-25.087	-11.330	-
-4.4	-3.947	-3.143	-6.647	-2.296	-2.994	-4.657	-23.096	-23.794	-25.457	-11.086	-
-4.3	-3.634	-3.214	-7.025	-2.015	-2.994	-5.057	-22.815	-23.794	-25.857	-10.837	-
-4.2	-3.295	-3.297	-7.412	-1.785	-3.001	-5.451	-22.585	-23.801	-26.251	-10.581	-
-4.1	-2.949	-3.393	-7.795	-1.615	-3.030	-5.860	-22.415	-23.830	-26.660	-10.320	-
-4	-2.611	-3.505	-8.206	-1.515	-3.078	-6.252	-22.315	-23.878	-27.052	-10.051	-
-3.9	-2.296	-3.650	-8.639	-1.495	-3.143	-6.647	-22.295	-23.943	-27.447	-9.777	-
-3.8	-2.015	-3.829	-9.126	-1.495	-3.214	-7.025	-22.295	-24.014	-27.825	-9.495	-
-3.7	-1.785	-4.059	-9.655	-1.495	-3.297	-7.412	-22.295	-24.097	-28.212	-9.205	-
-3.6	-1.615	-4.359	-10.257	-1.495	-3.393	-7.795	-22.295	-24.193	-28.595	-8.908	-
-3.5	-1.515	-4.727	-10.897	-1.495	-3.505	-8.206	-22.295	-24.305	-29.006	-8.602	-
-3.4	-1.495	-5.190	-11.583	-1.495	-3.650	-8.639	-22.295	-24.450	-29.439	-8.287	-
-3.3	-1.570	-5.753	-12.239	-1.495	-3.829	-9.126	-22.295	-24.629	-29.926	-7.963	-
-3.2	-1.750	-6.408	-12.820	-1.495	-4.059	-9.655	-22.295	-24.859	-30.455	-7.629	-
-3.1	-2.039	-7.188	-13.201	-1.495	-4.359	-10.257	-22.295	-25.159	-31.057	-7.284	-
-3	-2.445	-8.038	-13.331	-1.495	-4.727	-10.897	-22.295	-25.527	-31.697	-6.928	-
-2.9	-2.975	-8.940	-13.162	-1.495	-5.190	-10.826	-22.295	-25.990	-31.626	-6.560	-
-2.8	-3.637	-9.829	-12.782	-1.570	-5.753	-10.538	-22.370	-26.553	-31.338	-6.179	-
-2.7	-4.415	-10.550	-12.258	-1.750	-6.408	-10.391	-22.550	-27.208	-31.191	-5.784	-
-2.6	-5.266	-11.004	-11.725	-2.039	-7.188	-10.367	-22.839	-27.988	-31.167	-5.374	-
-2.5	-6.130	-11.081	-11.222	-2.445	-8.038	-10.367	-23.245	-28.838	-31.167	-4.949	-
-2.4	-6.912	-10.863	-10.826	-2.975	-8.940	-10.367	-23.775	-29.740	-31.167	-4.505	-
-2.3	-7.477	-10.439	-10.538	-3.637	-9.201	-10.367	-24.437	-30.001	-31.167	-4.043	-
-2.2	-7.703	-9.985	-10.391	-4.415	-9.201	-10.367	-25.215	-30.001	-31.167	-3.561	-
-2.1	-7.613	-9.603	-10.367	-5.266	-9.201	-10.367	-26.066	-30.001	-31.167	-3.055	-
-2	-7.327	-9.312	-10.471	-6.130	-9.201	-10.367	-26.930	-30.001	-31.167	-2.526	-
-1.9	-6.980	-9.201	-10.657	-6.499	-9.201	-9.933	-27.299	-30.001	-30.733	-1.969	-
-1.8	-6.676	-9.224	-10.884	-6.499	-9.201	-8.916	-27.299	-30.001	-29.716	-1.382	-
-1.7	-6.499	-9.376	-11.034	-6.499	-8.846	-7.777	-27.299	-29.646	-28.577	-	-
-1.6	-6.503	-9.623	-11.002	-6.499	-7.824	-6.557	-27.299	-28.624	-27.357	-	-
-1.5	-6.677	-9.823	-10.632	-6.499	-6.618	-5.410	-27.299	-27.418	-26.210	-	-
-1.4	-6.986	-9.865	-9.933	-6.214	-5.359	-4.306	-27.014	-26.159	-25.106	-	-
-1.3	-7.347	-9.572	-8.916	-5.038	-4.188	-3.328	-25.838	-24.988	-24.128	-	-
-1.2	-7.618	-8.846	-7.777	-3.801	-3.099	-2.427	-24.601	-23.899	-23.227	-	-
-1.1	-7.600	-7.824	-6.557	-2.649	-2.133	-1.650	-23.449	-22.933	-22.450	-	-
-1	-7.127	-6.618	-5.410	-1.630	-1.302	-0.953	-22.430	-22.102	-21.753	-	-
-0.9	-6.214	-5.359	-4.306	-0.758	-0.577	-0.366	-21.558	-21.377	-21.166	-	-
-0.8	-5.038	-4.188	-3.328	-0.040	0.018	0.148	-20.840	-20.782	-20.652	-	-
-0.7	-3.801	-3.099	-2.427	0.519	0.507	0.564	-20.281	-20.293	-20.236	-	-
-0.6	-2.649	-2.133	-1.650	0.920	0.896	0.914	-19.880	-19.904	-19.886	-	-
-0.5	-1.630	-1.302	-0.953	1.179	1.179	1.179	-19.621	-19.621	-19.621	-	-
-0.4	-0.758	-0.577	-0.366	1.304	1.379	1.385	-19.496	-19.421	-19.415	-	-
-0.3	-0.040	0.018	0.148	1.304	1.485	1.516	-19.496	-19.315	-19.284	-	-
-0.2	0.519	0.507	0.564	1.304	1.513	1.595	-19.496	-19.287	-19.205	-	-
-0.1	0.920	0.896	0.914	1.304	1.513	1.607	-19.496	-19.287	-19.193	-	-
0	1.179	1.179	1.179	1.304	1.513	1.607	-19.496	-19.287	-19.193	-	-
0.1	1.304	1.379	1.385	1.304	1.513	1.607	-19.496	-19.287	-19.193	-	-
0.2	1.299	1.485	1.516	1.304	1.513	1.607	-19.496	-19.287	-19.193	-	-
0.3	1.162	1.513	1.595	1.304	1.513	1.607	-19.496	-19.287	-19.193	-	-
0.4	0.903	1.468	1.607	1.304	1.513	1.607	-19.496	-19.287	-19.193	-	-
0.5	0.536	1.343	1.578	1.304	1.513	1.607	-19.496	-19.287	-19.193	-	-
0.6	0.065	1.165	1.489	1.304	1.513	1.607	-19.496	-19.287	-19.193	-	-
0.7	-0.505	0.921	1.369	1.299	1.513	1.607	-19.501	-19.287	-19.193	-	-
0.8	-1.168	0.627	1.197	1.162	1.513	1.607	-19.638	-19.287	-19.193	-	-
0.9	-1.893	0.300	1.008	0.903	1.468	1.607	-19.897	-19.332	-19.193	-	-

1	-2.654	-0.078	0.776	0.536	1.343	1.578	-20.264	-19.457	-19.222	-
1.1	-3.429	-0.465	0.540	0.065	1.165	1.489	-20.735	-19.635	-19.311	-
1.2	-4.189	-0.865	0.275	-0.505	0.921	1.369	-21.305	-19.879	-19.431	-
1.3	-4.893	-1.278	0.019	-1.168	0.627	1.197	-21.968	-20.173	-19.603	-
1.4	-5.496	-1.662	-0.253	-1.893	0.300	1.008	-22.693	-20.500	-19.792	-
1.5	-5.979	-2.032	-0.500	-2.654	-0.078	0.776	-23.454	-20.878	-20.024	-
1.6	-6.335	-2.365	-0.751	-3.429	-0.465	0.540	-24.229	-21.265	-20.260	-
1.7	-6.563	-2.643	-0.965	-4.189	-0.865	0.275	-24.989	-21.665	-20.525	-
1.8	-6.673	-2.879	-1.171	-4.893	-1.278	0.019	-25.693	-22.078	-20.781	-1.382
1.9	-6.698	-3.049	-1.334	-5.496	-1.662	-0.253	-26.296	-22.462	-21.053	-1.969
2	-6.671	-3.162	-1.478	-5.979	-2.032	-0.500	-26.779	-22.832	-21.300	-2.526
2.1	-6.618	-3.224	-1.580	-6.335	-2.365	-0.751	-27.135	-23.165	-21.551	-3.055
2.2	-6.566	-3.234	-1.657	-6.548	-2.643	-0.965	-27.348	-23.443	-21.765	-3.561
2.3	-6.548	-3.209	-1.696	-6.548	-2.879	-1.171	-27.348	-23.679	-21.971	-4.043
2.4	-6.607	-3.158	-1.712	-6.548	-2.980	-1.334	-27.348	-23.780	-22.134	-4.505
2.5	-6.770	-3.096	-1.698	-6.548	-2.980	-1.452	-27.348	-23.780	-22.252	-4.949
2.6	-7.059	-3.036	-1.668	-6.548	-2.980	-1.410	-27.348	-23.780	-22.210	-5.374
2.7	-7.507	-2.993	-1.620	-6.548	-2.980	-1.384	-27.348	-23.780	-22.184	-5.784
2.8	-8.161	-2.980	-1.564	-6.548	-2.980	-1.382	-27.348	-23.780	-22.182	-6.179
2.9	-9.064	-3.005	-1.506	-6.607	-2.980	-1.382	-27.407	-23.780	-22.182	-6.560
3	-10.244	-3.086	-1.452	-6.770	-2.980	-1.382	-27.570	-23.780	-22.182	-6.928
3.1	-11.725	-3.225	-1.410	-7.059	-2.980	-1.382	-27.859	-23.780	-22.182	-7.284
3.2	-13.464	-3.441	-1.384	-7.507	-2.980	-1.382	-28.307	-23.780	-22.182	-7.629
3.3	-15.119	-3.734	-1.382	-8.161	-2.980	-1.382	-28.961	-23.780	-22.182	-7.963
3.4	-15.733	-4.117	-1.407	-8.213	-3.005	-1.382	-29.013	-23.805	-22.182	-8.287
3.5	-14.695	-4.607	-1.467	-7.298	-3.086	-1.382	-28.098	-23.886	-22.182	-8.602
3.6	-12.836	-5.197	-1.560	-6.644	-3.225	-1.382	-27.444	-24.025	-22.182	-8.908
3.7	-10.992	-5.922	-1.698	-6.221	-3.441	-1.382	-27.021	-24.241	-22.182	-9.205
3.8	-9.435	-6.780	-1.874	-6.016	-3.734	-1.382	-26.816	-24.534	-22.182	-9.495
3.9	-8.213	-7.780	-2.103	-6.016	-4.117	-1.407	-26.816	-24.917	-22.207	-9.777
4	-7.298	-8.973	-2.372	-6.016	-4.607	-1.467	-26.816	-25.407	-22.267	-10.051
4.1	-6.644	-10.308	-2.699	-6.016	-5.197	-1.560	-26.816	-25.997	-22.360	-10.320
4.2	-6.221	-11.794	-3.067	-6.016	-5.922	-1.698	-26.816	-26.722	-22.498	-10.581
4.3	-6.016	-13.313	-3.495	-6.016	-6.780	-1.874	-26.816	-27.580	-22.674	-10.837
4.4	-6.027	-14.511	-3.963	-6.016	-7.780	-2.103	-26.816	-28.580	-22.903	-11.086
4.5	-6.242	-14.972	-4.490	-6.016	-8.973	-2.372	-26.816	-29.773	-23.172	-11.330
4.6	-6.658	-14.445	-5.050	-6.016	-8.597	-2.699	-26.816	-29.397	-23.499	-11.569
4.7	-7.286	-13.318	-5.664	-6.016	-7.763	-3.067	-26.816	-28.563	-23.867	-11.802
4.8	-8.150	-11.978	-6.296	-6.016	-7.038	-3.495	-26.816	-27.838	-24.295	-12.031
4.9	-9.280	-10.715	-6.965	-6.027	-6.417	-3.963	-26.827	-27.217	-24.763	-12.255
5	-10.685	-9.592	-7.630	-6.242	-5.898	-4.490	-27.042	-26.698	-25.290	-12.474
5.1	-12.377	-8.597	-8.302	-6.658	-5.447	-5.050	-27.458	-26.247	-25.850	-12.689
5.2	-14.275	-7.763	-8.931	-7.286	-5.079	-5.664	-28.086	-25.879	-26.464	-12.900
5.3	-15.974	-7.038	-9.526	-8.150	-4.779	-6.296	-28.950	-25.579	-27.096	-13.107
5.4	-16.510	-6.417	-10.038	-9.141	-4.534	-6.965	-29.941	-25.334	-27.765	-13.310
5.5	-15.450	-5.898	-10.475	-8.151	-4.362	-7.630	-28.951	-25.162	-28.430	-13.509
5.6	-13.670	-5.447	-10.809	-7.376	-4.245	-8.302	-28.176	-25.045	-29.102	-13.705
5.7	-11.906	-5.079	-11.058	-6.787	-4.193	-8.931	-27.587	-24.993	-29.731	-13.897
5.8	-10.387	-4.779	-11.216	-6.368	-4.193	-9.526	-27.168	-24.993	-30.326	-14.086
5.9	-9.141	-4.534	-11.308	-6.113	-4.193	-10.038	-26.913	-24.993	-30.838	-14.271
6	-8.151	-4.362	-11.340	-6.020	-4.193	-10.475	-26.820	-24.993	-31.275	-14.454
6.1	-7.376	-4.245	-11.337	-6.020	-4.193	-10.809	-26.820	-24.993	-31.609	-14.633
6.2	-6.787	-4.193	-11.298	-6.020	-4.193	-10.878	-26.820	-24.993	-31.678	-14.810
6.3	-6.368	-4.209	-11.245	-6.020	-4.193	-10.746	-26.820	-24.993	-31.546	-14.984
6.4	-6.113	-4.288	-11.169	-6.020	-4.193	-10.618	-26.820	-24.993	-31.418	-15.154
6.5	-6.020	-4.448	-11.087	-6.020	-4.193	-10.463	-26.820	-24.993	-31.263	-15.323
6.6	-6.082	-4.680	-10.983	-6.020	-4.193	-10.317	-26.820	-24.993	-31.117	-15.489
6.7	-6.297	-5.007	-10.878	-6.020	-4.193	-10.148	-26.820	-24.993	-30.948	-15.652
6.8	-6.674	-5.432	-10.746	-6.020	-4.209	-9.996	-26.820	-25.009	-30.796	-15.813
6.9	-7.227	-5.962	-10.618	-6.020	-4.288	-9.826	-26.820	-25.088	-30.626	-15.971

7	-7.957	-6.643	-10.463	-6.020	-4.448	-9.686	-26.820	-25.248	-30.486	-16.000	-
7.1	-8.856	-7.465	-10.317	-6.082	-4.680	-9.534	-26.882	-25.480	-30.334	-16.000	-
7.2	-9.911	-8.492	-10.148	-6.297	-5.007	-9.424	-27.097	-25.807	-30.224	-16.000	-
7.3	-11.077	-9.783	-9.996	-6.674	-5.432	-9.310	-27.474	-26.232	-30.110	-16.000	-
7.4	-12.218	-11.372	-9.826	-7.227	-5.962	-9.244	-28.027	-26.762	-30.044	-16.000	-
7.5	-13.052	-13.486	-9.686	-7.957	-6.643	-9.187	-28.757	-27.443	-29.987	-16.000	-
7.6	-13.280	-16.205	-9.534	-8.856	-7.465	-9.179	-29.656	-28.265	-29.979	-16.000	-
7.7	-12.840	-19.590	-9.424	-8.592	-8.492	-9.179	-29.392	-29.292	-29.979	-16.000	-
7.8	-11.971	-21.585	-9.310	-8.067	-8.909	-9.179	-28.867	-29.709	-29.979	-16.000	-
7.9	-10.980	-18.976	-9.244	-7.681	-7.582	-9.179	-28.481	-28.382	-29.979	-16.000	-
8	-10.055	-15.493	-9.187	-7.411	-6.510	-9.179	-28.211	-27.310	-29.979	-16.000	-
8.1	-9.254	-12.704	-9.179	-7.229	-5.622	-9.179	-28.029	-26.422	-29.979	-16.000	-
8.2	-8.592	-10.610	-9.194	-7.121	-4.938	-9.179	-27.921	-25.738	-29.979	-16.000	-
8.3	-8.067	-8.909	-9.258	-7.082	-4.387	-9.179	-27.882	-25.187	-29.979	-16.000	-
8.4	-7.681	-7.582	-9.357	-7.082	-3.978	-9.179	-27.882	-24.778	-29.979	-16.000	-
8.5	-7.411	-6.510	-9.508	-7.082	-3.699	-9.179	-27.882	-24.499	-29.979	-16.000	-
8.6	-7.229	-5.622	-9.705	-7.082	-3.525	-9.179	-27.882	-24.325	-29.979	-16.000	-
8.7	-7.121	-4.938	-9.955	-7.082	-3.476	-9.194	-27.882	-24.276	-29.994	-16.000	-
8.8	-7.082	-4.387	-10.267	-7.082	-3.476	-9.258	-27.882	-24.276	-30.058	-16.000	-
8.9	-7.114	-3.978	-10.632	-7.082	-3.476	-9.357	-27.882	-24.276	-30.157	-16.000	-
9	-7.202	-3.699	-11.078	-7.082	-3.476	-9.508	-27.882	-24.276	-30.308	-16.000	-
9.1	-7.347	-3.525	-11.583	-7.082	-3.476	-9.705	-27.882	-24.276	-30.505	-16.000	-
9.2	-7.561	-3.476	-12.192	-7.082	-3.476	-9.955	-27.882	-24.276	-30.755	-16.000	-

Nominal 14.5GHz, H-Polarized, X-pol PSD, with -20.8dBW/4kHz Input



Data in support of claim that proposed operation meets criteria of VMES Order July 2009

Applicant RAS Date of Application
 ID Heading
 a1 Antenna Manufacture: RAS c Main bore gain (dBi): 30.5
 a2 Antenna Model: SR5000 d Frequency at which gain was measured (GHz): 14.0
 a3 Antenna ID: RAS e Max input power density (dBW/4kHz): -20.8
 b Transmit Band (b): 14GHz Pattern ID Table C6
 Pattern Description: 14.5GHz V-polarization, X-polarized tangent to the geosynchronous plane for 0°, 37.5°, and 50° skew angle

Offset Angles (Degrees)	Nominal X-Pol Gain Along Tangent to Geo Arc			Worst Case X-Pol Gain Along Tangent to Geo Arc			Worst Case X-Pol PSD Along Tangent to Geo Arc input PSD = -20.8dBW/4kHz			FCC Mask (dBW/4kHz)	Mask Exceedence (dB)
	(dBi)			(dBi)			(dBW/4kHz)				
	0° Skew	37.5° Skew	50° Skew	0° Skew	37.5° Skew	50° Skew	0° Skew	37.5° Skew	50° Skew		
-9.2	-4.143	-14.551	-15.390	-1.895	-14.551	-15.390	-22.695	-35.351	-36.190	-16.000	-
-9.1	-3.524	-15.016	-16.095	-1.671	-14.551	-15.390	-22.471	-35.351	-36.190	-16.000	-
-9	-3.000	-15.500	-16.897	-1.509	-14.551	-15.390	-22.309	-35.351	-36.190	-16.000	-
-8.9	-2.559	-15.914	-17.860	-1.406	-14.551	-15.390	-22.206	-35.351	-36.190	-16.000	-
-8.8	-2.191	-16.256	-18.918	-1.359	-14.551	-15.390	-22.159	-35.351	-36.190	-16.000	-
-8.7	-1.895	-16.414	-20.143	-1.359	-14.551	-15.390	-22.159	-35.351	-36.190	-16.000	-
-8.6	-1.671	-16.391	-21.414	-1.359	-14.267	-16.095	-22.159	-35.067	-36.895	-16.000	-
-8.5	-1.509	-16.158	-22.745	-1.359	-13.805	-16.897	-22.159	-34.605	-37.697	-16.000	-
-8.4	-1.406	-15.774	-23.857	-1.359	-13.430	-17.860	-22.159	-34.230	-38.660	-16.000	-
-8.3	-1.359	-15.297	-24.593	-1.359	-13.155	-18.918	-22.159	-33.955	-39.718	-16.000	-
-8.2	-1.371	-14.760	-24.672	-1.359	-12.972	-20.143	-22.159	-33.772	-40.943	-16.000	-
-8.1	-1.440	-14.267	-24.188	-1.359	-12.920	-19.831	-22.159	-33.720	-40.631	-16.000	-
-8	-1.559	-13.805	-23.372	-1.359	-12.920	-19.096	-22.159	-33.720	-39.896	-16.000	-
-7.9	-1.727	-13.430	-22.414	-1.359	-12.920	-18.448	-22.159	-33.720	-39.248	-16.000	-
-7.8	-1.948	-13.155	-21.497	-1.359	-12.920	-17.831	-22.159	-33.720	-38.631	-16.000	-
-7.7	-2.225	-12.972	-20.610	-1.371	-12.920	-17.274	-22.171	-33.720	-38.074	-16.000	-
-7.6	-2.554	-12.920	-19.831	-1.440	-12.920	-16.735	-22.240	-33.720	-37.535	-16.000	-
-7.5	-2.936	-12.979	-19.096	-1.559	-12.920	-16.235	-22.359	-33.720	-37.035	-16.000	-
-7.4	-3.381	-13.177	-18.448	-1.727	-12.920	-15.742	-22.527	-33.720	-36.542	-16.000	-
-7.3	-3.907	-13.514	-17.831	-1.948	-12.920	-15.270	-22.748	-33.720	-36.070	-16.000	-
-7.2	-4.527	-13.999	-17.274	-2.225	-12.920	-14.799	-23.025	-33.720	-35.599	-16.000	-
-7.1	-5.250	-14.671	-16.735	-2.554	-12.920	-14.337	-23.354	-33.720	-35.137	-16.000	-
-7	-6.103	-15.525	-16.235	-2.936	-12.979	-13.873	-23.736	-33.779	-34.673	-16.000	-
-6.9	-7.134	-16.645	-15.742	-3.381	-13.177	-13.416	-24.181	-33.977	-34.216	-15.971	-
-6.8	-8.414	-18.065	-15.270	-3.907	-13.514	-12.961	-24.707	-34.314	-33.761	-15.813	-
-6.7	-10.010	-19.911	-14.799	-4.527	-13.999	-12.519	-25.327	-34.799	-33.319	-15.652	-
-6.6	-12.037	-22.496	-14.337	-5.250	-14.671	-12.090	-26.050	-35.471	-32.890	-15.489	-
-6.5	-14.732	-26.312	-13.873	-6.103	-15.525	-11.686	-26.903	-36.325	-32.486	-15.323	-
-6.4	-18.536	-33.797	-13.416	-7.134	-16.645	-11.312	-27.934	-37.445	-32.112	-15.154	-
-6.3	-23.413	-41.356	-12.961	-8.414	-16.046	-10.971	-29.214	-36.846	-31.771	-14.984	-
-6.2	-22.556	-28.512	-12.519	-9.382	-14.570	-10.674	-30.182	-35.370	-31.474	-14.810	-
-6.1	-17.940	-23.404	-12.090	-8.512	-13.332	-10.420	-29.312	-34.132	-31.220	-14.633	-
-6	-14.612	-20.220	-11.686	-7.911	-12.280	-10.211	-28.711	-33.080	-31.011	-14.454	-
-5.9	-12.282	-17.899	-11.312	-7.539	-11.415	-10.046	-28.339	-32.215	-30.846	-14.271	-
-5.8	-10.597	-16.046	-10.971	-7.378	-10.673	-9.919	-28.178	-31.473	-30.719	-14.086	-
-5.7	-9.382	-14.570	-10.674	-7.378	-10.069	-9.819	-28.178	-30.869	-30.619	-13.897	-
-5.6	-8.512	-13.332	-10.420	-7.378	-9.586	-9.737	-28.178	-30.386	-30.537	-13.705	-
-5.5	-7.911	-12.280	-10.211	-7.378	-9.195	-9.647	-28.178	-29.995	-30.447	-13.509	-
-5.4	-7.539	-11.415	-10.046	-7.378	-8.920	-9.540	-28.178	-29.720	-30.340	-13.310	-
-5.3	-7.378	-10.673	-9.919	-7.378	-8.726	-9.379	-28.178	-29.526	-30.179	-13.107	-
-5.2	-7.417	-10.069	-9.819	-7.378	-8.606	-9.165	-28.178	-29.406	-29.965	-12.900	-

-5.1	-7.642	-9.586	-9.737	-7.378	-8.561	-8.865	-28.178	-29.361	-29.665	-12.689	-
-5	-8.047	-9.195	-9.647	-7.378	-8.545	-8.503	-28.178	-29.345	-29.303	-12.474	-
-4.9	-8.647	-8.920	-9.540	-7.378	-8.545	-8.060	-28.178	-29.345	-28.860	-12.255	-
-4.8	-9.464	-8.726	-9.379	-7.378	-8.545	-7.586	-28.178	-29.345	-28.386	-12.031	-
-4.7	-10.516	-8.606	-9.165	-7.417	-8.482	-7.066	-28.217	-29.282	-27.866	-11.802	-
-4.6	-11.835	-8.561	-8.865	-7.642	-8.349	-6.559	-28.442	-29.149	-27.359	-11.569	-
-4.5	-13.479	-8.545	-8.503	-8.047	-8.106	-6.047	-28.847	-28.906	-26.847	-11.330	-
-4.4	-15.531	-8.553	-8.060	-8.647	-7.745	-5.580	-29.447	-28.545	-26.380	-11.086	-
-4.3	-18.043	-8.549	-7.586	-9.464	-7.305	-5.137	-30.264	-28.105	-25.937	-10.837	-
-4.2	-20.610	-8.482	-7.066	-10.516	-6.780	-4.756	-31.316	-27.580	-25.556	-10.581	-
-4.1	-21.509	-8.349	-6.559	-11.750	-6.218	-4.415	-32.550	-27.018	-25.215	-10.320	-
-4	-19.758	-8.106	-6.047	-10.518	-5.655	-4.143	-31.318	-26.455	-24.943	-10.051	-
-3.9	-17.247	-7.745	-5.580	-9.447	-5.094	-3.921	-30.247	-25.894	-24.721	-9.777	-
-3.8	-15.023	-7.305	-5.137	-8.483	-4.579	-3.771	-29.283	-25.379	-24.571	-9.495	-
-3.7	-13.218	-6.780	-4.756	-7.609	-4.111	-3.675	-28.409	-24.911	-24.475	-9.205	-
-3.6	-11.750	-6.218	-4.415	-6.802	-3.695	-3.654	-27.602	-24.495	-24.454	-8.908	-
-3.5	-10.518	-5.655	-4.143	-6.037	-3.356	-3.654	-26.837	-24.156	-24.454	-8.602	-
-3.4	-9.447	-5.094	-3.921	-5.303	-3.080	-3.654	-26.103	-23.880	-24.454	-8.287	-
-3.3	-8.483	-4.579	-3.771	-4.601	-2.883	-3.654	-25.401	-23.683	-24.454	-7.963	-
-3.2	-7.609	-4.111	-3.675	-3.952	-2.772	-3.654	-24.752	-23.572	-24.454	-7.629	-
-3.1	-6.802	-3.695	-3.654	-3.372	-2.741	-3.654	-24.172	-23.541	-24.454	-7.284	-
-3	-6.037	-3.356	-3.693	-2.866	-2.741	-3.654	-23.666	-23.541	-24.454	-6.928	-
-2.9	-5.303	-3.080	-3.814	-2.445	-2.741	-3.654	-23.245	-23.541	-24.454	-6.560	-
-2.8	-4.601	-2.883	-4.002	-2.126	-2.741	-3.654	-22.926	-23.541	-24.454	-6.179	-
-2.7	-3.952	-2.772	-4.288	-1.936	-2.741	-3.654	-22.736	-23.541	-24.454	-5.784	-
-2.6	-3.372	-2.741	-4.655	-1.889	-2.741	-3.654	-22.689	-23.541	-24.454	-5.374	-
-2.5	-2.866	-2.817	-5.148	-1.889	-2.741	-3.693	-22.689	-23.541	-24.493	-4.949	-
-2.4	-2.445	-2.992	-5.750	-1.889	-2.741	-3.814	-22.689	-23.541	-24.614	-4.505	-
-2.3	-2.126	-3.290	-6.529	-1.889	-2.741	-4.002	-22.689	-23.541	-24.802	-4.043	-
-2.2	-1.936	-3.733	-7.466	-1.889	-2.741	-4.288	-22.689	-23.541	-25.088	-3.561	-
-2.1	-1.889	-4.328	-8.668	-1.889	-2.741	-4.655	-22.689	-23.541	-25.455	-3.055	-
-2	-2.000	-5.144	-10.105	-1.889	-2.817	-5.148	-22.689	-23.617	-25.948	-2.526	-
-1.9	-2.293	-6.201	-11.882	-1.889	-2.992	-5.750	-22.689	-23.792	-26.550	-1.969	-
-1.8	-2.812	-7.574	-13.697	-1.889	-3.290	-6.529	-22.689	-24.090	-27.329	-1.382	-
-1.7	-3.614	-9.413	-14.796	-1.889	-3.733	-5.429	-22.689	-24.533	-26.229	-	-
-1.6	-4.762	-11.728	-13.980	-1.889	-4.328	-3.840	-22.689	-25.128	-24.640	-	-
-1.5	-6.371	-14.248	-11.748	-2.000	-4.700	-2.513	-22.800	-25.500	-23.313	-	-
-1.4	-8.642	-14.962	-9.397	-2.293	-2.935	-1.333	-23.093	-23.735	-22.133	-	-
-1.3	-11.841	-12.556	-7.234	-2.812	-1.506	-0.337	-23.612	-22.306	-21.137	-	-
-1.2	-15.093	-9.430	-5.429	-1.631	-0.295	0.549	-22.431	-21.095	-20.251	-	-
-1.1	-13.432	-6.823	-3.840	-0.130	0.722	1.297	-20.930	-20.078	-19.503	-	-
-1	-9.341	-4.700	-2.513	1.056	1.559	1.956	-19.744	-19.241	-18.844	-	-
-0.9	-6.053	-2.935	-1.333	1.997	2.269	2.505	-18.803	-18.531	-18.295	-	-
-0.8	-3.560	-1.506	-0.337	2.733	2.839	2.978	-18.067	-17.961	-17.822	-	-
-0.7	-1.631	-0.295	0.549	3.286	3.296	3.356	-17.514	-17.504	-17.444	-	-
-0.6	-0.130	0.722	1.297	3.666	3.650	3.667	-17.134	-17.150	-17.133	-	-
-0.5	1.056	1.559	1.956	3.895	3.895	3.895	-16.905	-16.905	-16.905	-	-
-0.4	1.997	2.269	2.505	3.986	4.053	4.061	-16.814	-16.747	-16.739	-	-
-0.3	2.733	2.839	2.978	3.986	4.112	4.150	-16.814	-16.688	-16.650	-	-
-0.2	3.286	3.296	3.356	3.986	4.112	4.181	-16.814	-16.688	-16.619	-	-
-0.1	3.666	3.650	3.667	3.986	4.112	4.181	-16.814	-16.688	-16.619	-	-
0	3.895	3.895	3.895	3.986	4.112	4.181	-16.814	-16.688	-16.619	-	-
0.1	3.986	4.053	4.061	3.986	4.112	4.181	-16.814	-16.688	-16.619	-	-
0.2	3.940	4.112	4.150	3.986	4.112	4.181	-16.814	-16.688	-16.619	-	-
0.3	3.757	4.086	4.181	3.986	4.112	4.181	-16.814	-16.688	-16.619	-	-
0.4	3.441	3.975	4.138	3.986	4.112	4.181	-16.814	-16.688	-16.619	-	-
0.5	2.997	3.771	4.042	3.986	4.112	4.181	-16.814	-16.688	-16.619	-	-
0.6	2.422	3.490	3.873	3.986	4.112	4.181	-16.814	-16.688	-16.619	-	-
0.7	1.705	3.117	3.654	3.940	4.112	4.181	-16.860	-16.688	-16.619	-	-
0.8	0.834	2.657	3.361	3.757	4.086	4.181	-17.043	-16.714	-16.619	-	-
0.9	-0.187	2.119	3.022	3.441	3.975	4.138	-17.359	-16.825	-16.662	-	-

1	-1.364	1.472	2.606	2.997	3.771	4.042	-17.803	-17.029	-16.758	-
1.1	-2.714	0.745	2.146	2.422	3.490	3.873	-18.378	-17.310	-16.927	-
1.2	-4.264	-0.081	1.606	1.705	3.117	3.654	-19.095	-17.683	-17.146	-
1.3	-6.036	-1.033	1.024	0.834	2.657	3.361	-19.966	-18.143	-17.439	-
1.4	-8.014	-2.075	0.357	-0.187	2.119	3.022	-20.987	-18.681	-17.778	-
1.5	-10.176	-3.260	-0.351	-1.364	1.472	2.606	-22.164	-19.328	-18.194	-
1.6	-12.441	-4.591	-1.150	-2.714	0.745	2.146	-23.514	-20.055	-18.654	-
1.7	-14.558	-6.061	-1.990	-4.264	-0.081	1.606	-25.064	-20.881	-19.194	-
1.8	-16.025	-7.761	-2.928	-6.036	-1.033	1.024	-26.836	-21.833	-19.776	-1.382
1.9	-16.506	-9.662	-3.905	-8.014	-2.075	0.357	-28.814	-22.875	-20.443	-1.969
2	-16.268	-11.834	-4.985	-10.176	-3.260	-0.351	-30.976	-24.060	-21.151	-2.526
2.1	-15.721	-14.413	-6.100	-11.863	-4.591	-1.150	-32.663	-25.391	-21.950	-3.055
2.2	-15.077	-17.288	-7.309	-10.864	-6.061	-1.990	-31.664	-26.861	-22.790	-3.561
2.3	-14.381	-20.357	-8.530	-9.835	-7.761	-2.928	-30.635	-28.561	-23.728	-4.043
2.4	-13.628	-22.635	-9.799	-8.819	-9.662	-3.905	-29.619	-30.462	-24.705	-4.505
2.5	-12.793	-22.538	-11.001	-7.844	-11.834	-4.985	-28.644	-32.634	-25.785	-4.949
2.6	-11.863	-21.189	-12.120	-6.919	-14.413	-6.100	-27.719	-35.213	-26.900	-5.374
2.7	-10.864	-19.884	-13.020	-6.046	-17.242	-7.309	-26.846	-38.042	-28.109	-5.784
2.8	-9.835	-18.917	-13.654	-5.225	-16.651	-8.530	-26.025	-37.451	-29.330	-6.179
2.9	-8.819	-18.286	-14.002	-4.457	-15.680	-9.799	-25.257	-36.480	-30.599	-6.560
3	-7.844	-17.924	-14.091	-3.746	-14.422	-11.001	-24.546	-35.222	-31.801	-6.928
3.1	-6.919	-17.625	-14.054	-3.087	-13.028	-12.120	-23.887	-33.828	-32.920	-7.284
3.2	-6.046	-17.242	-13.926	-2.477	-11.535	-13.020	-23.277	-32.335	-33.820	-7.629
3.3	-5.225	-16.651	-13.840	-1.913	-10.121	-13.654	-22.713	-30.921	-34.454	-7.963
3.4	-4.457	-15.680	-13.772	-1.397	-8.794	-13.772	-22.197	-29.594	-34.572	-8.287
3.5	-3.746	-14.422	-13.823	-0.938	-7.536	-13.772	-21.738	-28.336	-34.572	-8.602
3.6	-3.087	-13.028	-13.928	-0.532	-6.424	-13.772	-21.332	-27.224	-34.572	-8.908
3.7	-2.477	-11.535	-14.167	-0.176	-5.401	-13.772	-20.976	-26.201	-34.572	-9.205
3.8	-1.913	-10.121	-14.452	0.130	-4.469	-13.772	-20.670	-25.269	-34.572	-9.495
3.9	-1.397	-8.794	-14.837	0.383	-3.652	-13.772	-20.417	-24.452	-34.572	-9.777
4	-0.938	-7.536	-15.206	0.578	-2.903	-13.823	-20.222	-23.703	-34.623	-10.051
4.1	-0.532	-6.424	-15.540	0.720	-2.245	-13.496	-20.080	-23.045	-34.296	-10.320
4.2	-0.176	-5.401	-15.701	0.811	-1.667	-12.407	-19.989	-22.467	-33.207	-10.581
4.3	0.130	-4.469	-15.588	0.849	-1.145	-11.362	-19.951	-21.945	-32.162	-10.837
4.4	0.383	-3.652	-15.174	0.849	-0.706	-10.279	-19.951	-21.506	-31.079	-11.086
4.5	0.578	-2.903	-14.411	0.849	-0.322	-9.313	-19.951	-21.122	-30.113	-11.330
4.6	0.720	-2.245	-13.496	0.849	0.003	-8.358	-19.951	-20.797	-29.158	-11.569
4.7	0.811	-1.667	-12.407	0.849	0.263	-7.528	-19.951	-20.537	-28.328	-11.802
4.8	0.849	-1.145	-11.362	0.849	0.476	-6.723	-19.951	-20.324	-27.523	-12.031
4.9	0.830	-0.706	-10.279	0.849	0.628	-6.030	-19.951	-20.172	-26.830	-12.255
5	0.753	-0.322	-9.313	0.849	0.730	-5.365	-19.951	-20.070	-26.165	-12.474
5.1	0.620	0.003	-8.358	0.849	0.783	-4.797	-19.951	-20.017	-25.597	-12.689
5.2	0.429	0.263	-7.528	0.849	0.783	-4.257	-19.951	-20.017	-25.057	-12.900
5.3	0.171	0.476	-6.723	0.849	0.783	-3.801	-19.951	-20.017	-24.601	-13.107
5.4	-0.161	0.628	-6.030	0.830	0.783	-3.374	-19.970	-20.017	-24.174	-13.310
5.5	-0.569	0.730	-5.365	0.753	0.783	-3.019	-20.047	-20.017	-23.819	-13.509
5.6	-1.058	0.783	-4.797	0.620	0.783	-2.694	-20.180	-20.017	-23.494	-13.705
5.7	-1.645	0.778	-4.257	0.429	0.783	-2.434	-20.371	-20.017	-23.234	-13.897
5.8	-2.349	0.729	-3.801	0.171	0.783	-2.204	-20.629	-20.017	-23.004	-14.086
5.9	-3.195	0.623	-3.374	-0.161	0.783	-2.033	-20.961	-20.017	-22.833	-14.271
6	-4.199	0.467	-3.019	-0.569	0.783	-1.895	-21.369	-20.017	-22.695	-14.454
6.1	-5.402	0.263	-2.694	-1.058	0.783	-1.812	-21.858	-20.017	-22.612	-14.633
6.2	-6.875	-0.005	-2.434	-1.645	0.778	-1.763	-22.445	-20.022	-22.563	-14.810
6.3	-8.740	-0.319	-2.204	-2.349	0.729	-1.763	-23.149	-20.071	-22.563	-14.984
6.4	-11.202	-0.695	-2.033	-3.195	0.623	-1.763	-23.995	-20.177	-22.563	-15.154
6.5	-14.676	-1.134	-1.895	-4.199	0.467	-1.763	-24.999	-20.333	-22.563	-15.323
6.6	-20.507	-1.624	-1.812	-5.402	0.263	-1.763	-26.202	-20.537	-22.563	-15.489
6.7	-34.046	-2.197	-1.763	-6.875	-0.005	-1.763	-27.675	-20.805	-22.563	-15.652
6.8	-20.792	-2.830	-1.767	-6.209	-0.319	-1.763	-27.009	-21.119	-22.563	-15.813
6.9	-14.968	-3.537	-1.807	-5.134	-0.695	-1.763	-25.934	-21.495	-22.563	-15.971

7	-11.613	-4.343	-1.899	-4.283	-1.134	-1.763	-25.083	-21.934	-22.563	-16.000	-
7.1	-9.298	-5.218	-2.028	-3.611	-1.624	-1.763	-24.411	-22.424	-22.563	-16.000	-
7.2	-7.564	-6.206	-2.213	-3.087	-2.197	-1.763	-23.887	-22.997	-22.563	-16.000	-
7.3	-6.209	-7.308	-2.432	-2.697	-2.830	-1.767	-23.497	-23.630	-22.567	-16.000	-
7.4	-5.134	-8.516	-2.710	-2.435	-3.537	-1.807	-23.235	-24.337	-22.607	-16.000	-
7.5	-4.283	-9.898	-3.024	-2.297	-4.343	-1.899	-23.097	-25.143	-22.699	-16.000	-
7.6	-3.611	-11.419	-3.397	-2.276	-5.218	-2.028	-23.076	-26.018	-22.828	-16.000	-
7.7	-3.087	-13.121	-3.805	-2.276	-6.206	-2.213	-23.076	-27.006	-23.013	-16.000	-
7.8	-2.697	-15.050	-4.275	-2.276	-7.308	-2.432	-23.076	-28.108	-23.232	-16.000	-
7.9	-2.435	-17.076	-4.777	-2.276	-8.516	-2.710	-23.076	-29.316	-23.510	-16.000	-
8	-2.297	-19.056	-5.342	-2.276	-9.898	-3.024	-23.076	-30.698	-23.824	-16.000	-
8.1	-2.276	-20.451	-5.934	-2.276	-11.419	-3.397	-23.076	-32.219	-24.197	-16.000	-
8.2	-2.373	-20.638	-6.588	-2.276	-13.121	-3.805	-23.076	-33.921	-24.605	-16.000	-
8.3	-2.596	-19.832	-7.260	-2.276	-15.050	-4.275	-23.076	-35.850	-25.075	-16.000	-
8.4	-2.955	-18.651	-7.986	-2.276	-14.759	-4.777	-23.076	-35.559	-25.577	-16.000	-
8.5	-3.453	-17.500	-8.720	-2.276	-14.510	-5.342	-23.076	-35.310	-26.142	-16.000	-
8.6	-4.102	-16.526	-9.491	-2.276	-14.407	-5.934	-23.076	-35.207	-26.734	-16.000	-
8.7	-4.924	-15.756	-10.252	-2.373	-14.407	-6.588	-23.173	-35.207	-27.388	-16.000	-
8.8	-5.952	-15.169	-11.028	-2.596	-14.407	-7.260	-23.396	-35.207	-28.060	-16.000	-
8.9	-7.196	-14.759	-11.768	-2.955	-14.407	-7.986	-23.755	-35.207	-28.786	-16.000	-
9	-8.653	-14.510	-12.499	-3.453	-14.407	-8.720	-24.253	-35.207	-29.520	-16.000	-
9.1	-10.280	-14.407	-13.178	-4.102	-14.407	-9.491	-24.902	-35.207	-30.291	-16.000	-
9.2	-11.872	-14.460	-13.833	-4.924	-14.407	-10.252	-25.724	-35.207	-31.052	-16.000	-

Nominal 14.5GHz, V-Polarized, X-pol PSD, with -20.8dBW/4kHz Input

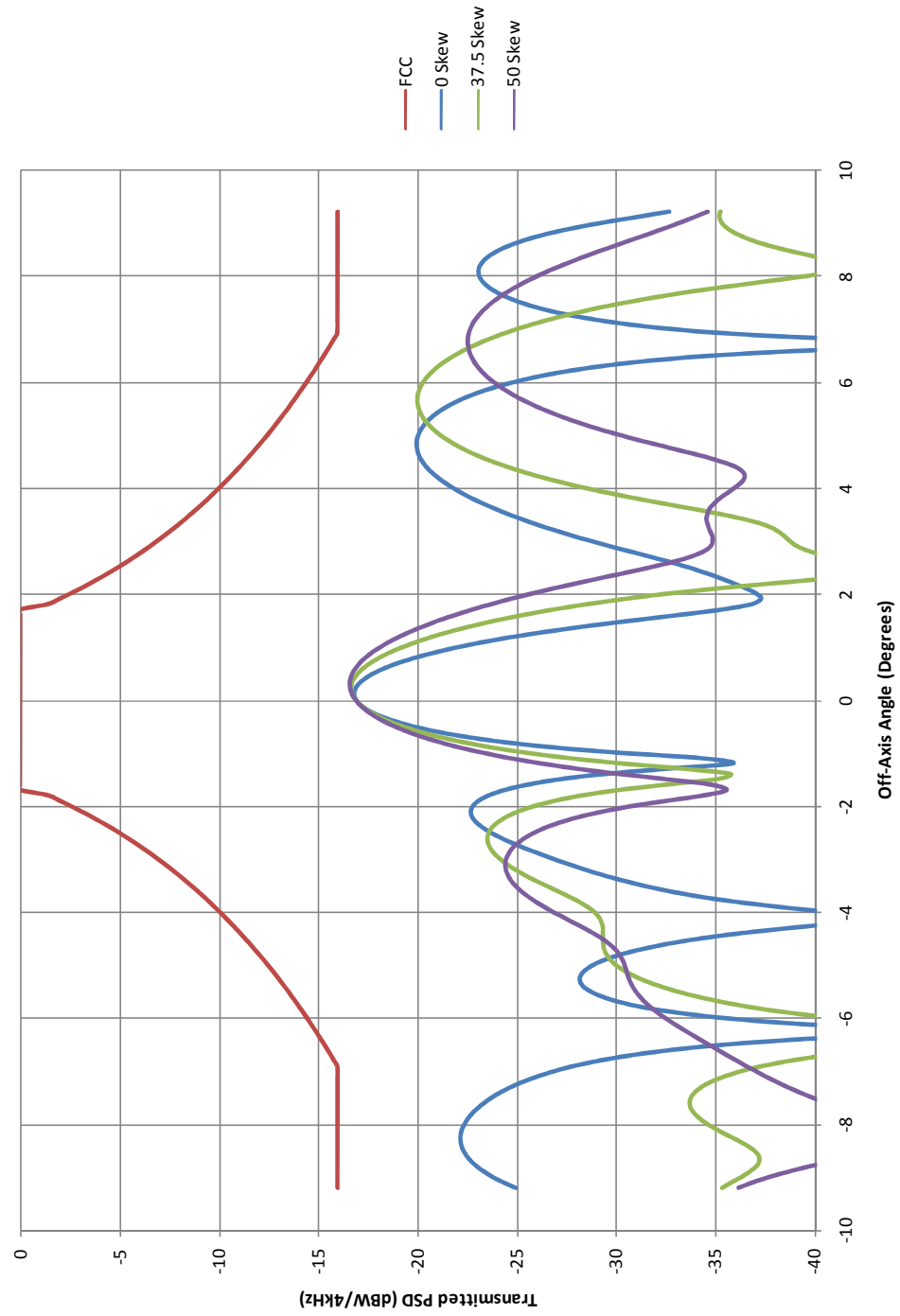


Table D1
Remote to Hub Emission Designator 4M05G7W

Data Parameters		Satellite Parameters	
Data Rate	937.5 kbps	Sat Name	TestSat
FEC	5/16 Turbo	Sat Long.	79 deg
Modulation	bpsk BPSK / QPSK	Sat Rx, G/T	4.5 dB/K
Threshold Eb/No	2.00 dB	Sat Tx, EIRP	48 dBW
Occ BW	1.35	SFD	-90 dBW/m ²
Spread Spectrum	n (Y / N)	IP / OP ratio	5 dB
Chip Rate	3.00 Mchips/s	U/L Freq	14.25 GHz
Total # of spread Links	1	D/L Freq.	11.95 GHz
Beta Factor	1.00		
Rx Site Parameters		Tx Site Parameters	
Rx Site Name	Hub	Tx Site Name	Remote
Rx Lat	39 deg	Tx Lat	39 deg
Rx Long	77 deg	Tx Long	77 deg
Rx G/T	33 dB/K	Tx Ant Gain	30.5 dBi
Ant Gain	55 dBi	Tx Loss	2.5 dB
System Temp	150 K	Radome loss	0.25 dB
		Pointing Loss	0.35 dB
		Tx HPA	14.14 W
Interference Parameters		DownLink Fade	6.1 dB
ASI U/L EIRP in our direction	-3.9 dBW/4KHz		
DL interference, dBW/4KHz	-30.6 dBW/4KHz		



Threshold C/N	-3.05 dB		
C/lo Uplink WRT Saturation	44.5 dB/Hz		
C/lo Downlink WRT Saturation	114.6 dB/Hz		
Tx Slant Range	37536418.2 m	Rx Slant Range	37536418.2 m
Tx FSL	207.0 dB	Rx FSL	205.5 dB
Uplink EIRP	38.9 dBW	OPBO	29.3 dB
Uplink C/No	64.3 dB-Hz	D/L EIRP	18.7 dBW
U/L C/N	-0.5 dB	D/L C/No	74.3 dB/Hz
G(1m ²) Tx	44.5 dBi	D/L C/N	9.6 dB
U/L flux density @ satellite	-124.3 dBW/m ²		
IPBO	34.3 dB	Spread Factor	1
C/I up	14.0 dB		
C/I dn	20.6 dB		
Clear Sky C/(N + I)	-1.05 dB		
CS Eb/No	4.00 dB		
Clear Sky (CS)Margin	2.00 dB		
D/L Faded C/(N+I)	-3.05 dB		
D/L faded Eb/No	2.00 dB		
D/L Faded Margin	0.00 dB		
PSD @ ant Flange	-21.0 dBW / 4KHz		
Occupied BW	4050.0 KHz		
D/L PSD/4KHz	-11.3 dBW/4KHz		

	Tx Site	Rx Site	
Az Angle	183.18	183.18	deg
EI Angle	44.80	44.80	deg
Pol Angle	2.47	2.47	deg

Table D2
Remote to Hub Emission Designator 10M13G7W

Data Parameters		Satellite Parameters	
Data Rate	937.5 kbps	Sat Name	TestSat
FEC	0.500 Turbo	Sat Long.	79 deg
Modulation	bpsk BPSK / QPSK	Sat Rx, G/T	4.5 dB/K
Threshold Eb/No	3.50 dB	Sat Tx, EIRP	48 dBW
Occ BW	1.35	SFD	-90 dBW/m ²
Spread Spectrum	y (Y / N)	IP / OP ratio	5 dB
Chip Rate	7.50 Mchips/s	U/L Freq	14.25 GHz
Total # of spread Links	1	D/L Freq.	11.95 GHz
Beta Factor	1.00		
Rx Site Parameters		Tx Site Parameters	
Rx Site Name	Hub	Tx Site Name	Remote
Rx Lat	39 deg	Tx Lat	39 deg
Rx Long	77 deg	Tx Long	77 deg
Rx G/T	33 dB/K	Tx Ant Gain	30.5 dBi
Ant Gain	55 dBi	Tx Loss	2.5 dB
System Temp	150 K	Radome loss	0.25 dB
		Pointing Loss	0.35 dB
		Tx HPA	19.97 W
Interference Parameters		DownLink Fade	6.1 dB
ASI U/L EIRP in our direction	-3.9 dBW/4KHz		
DL interference, dBW/4KHz	-30.6 dBW/4KHz		



Threshold C/N	-5.53 dB		
C/lo Uplink WRT Saturation	47.5 dB/Hz		
C/lo Downlink WRT Saturation	114.6 dB/Hz		
Tx Slant Range	37536418.2 m	Rx Slant Range	37536418.2 m
Tx FSL	207.0 dB	Rx FSL	205.5 dB
Uplink EIRP	40.4 dBW	OPBO	27.8 dB
Uplink C/No	65.8 dB-Hz	D/L EIRP	20.2 dBW
U/L C/N	-3.0 dB	D/L C/No	75.8 dB/Hz
G(1m ²) Tx	44.5 dBi	D/L C/N	7.1 dB
U/L flux density @ satellite	-122.8 dBW/m ²		
IPBO	32.8 dB	Spread Factor	4
C/I up	11.6 dB		
C/I dn	18.1 dB		
Clear SkyC/(N+I) with 1 carrier	-3.53 dB		
CS Eb/No with 1 carriers	5.50 dB		
CS Margin with 1 carriers	2.00 dB		
D/L Faded C/(N+I)	-5.53 dB		
D/L Faded Eb/No with 1 carrier	3.50 dB		
D/L Faded Margin	0.00 dB		
Aggregate PSD @ ant Flange	-23.5 dBW / 4KHz		
Occupied BW	10125.0 KHz		
D/L PSD/4KHz	-13.8 dBW/4KHz		

	Tx Site	Rx Site	
Az Angle	183.18	183.18	deg
EI Angle	44.80	44.80	deg
Pol Angle	2.47	2.47	deg

Table D3
Remote to Hub Emission Designator 13M52G7W

Data Parameters		Satellite Parameters	
Data Rate	3338.1 kbps	Sat Name	TestSat
FEC	0.333 Turbo	Sat Long.	79 deg
Modulation	bpsk BPSK / QPSK	Sat Rx, G/T	4.5 dB/K
Threshold Eb/No	1.00 dB	Sat Tx, EIRP	48 dBW
Occ BW	1.35	SFD	-90 dBW/m ²
Spread Spectrum	n (Y / N)	IP / OP ratio	5 dB
Chip Rate	10.01 Mchips/s	U/L Freq	14.25 GHz
Total # of spread Links	1	D/L Freq.	11.95 GHz
Beta Factor	1.00		
Rx Site Parameters		Tx Site Parameters	
Rx Site Name	Hub	Tx Site Name	Remote
Rx Lat	39 deg	Tx Lat	39 deg
Rx Long	77 deg	Tx Long	77 deg
Rx G/T	33 dB/K	Tx Ant Gain	30.5 dBi
Ant Gain	55 dBi	Tx Loss	2.5 dB
System Temp	150 K	Radome loss	0.25 dB
		Pointing Loss	0.35 dB
		Tx HPA	40.00 W
Interference Parameters		DownLink Fade	6.1 dB
ASI U/L EIRP in our direction	-3.9 dBW/4KHz		
DL interference, dBW/4KHz	-30.6 dBW/4KHz		



Threshold C/N -3.77 dB
 C/Io Uplink WRT Saturation 53.6 dB/Hz
 C/Io Downlink WRT Saturation 114.6 dB/Hz

Tx Slant Range 37536418.2 m
 Tx FSL 207.0 dB
 Uplink EIRP 43.4 dBW
 Uplink C/No 68.8 dB-Hz
 U/L C/N -1.2 dB
 G(1m²) Tx 44.5 dBi
 U/L flux density @ satellite -119.8 dBW/m²
 IPBO 29.8 dB

Rx Slant Range 37536418.2 m
 Rx FSL 205.5 dB
 OPBO 24.8 dB
 D/L EIRP 23.2 dBW
 D/L C/No 78.9 dB/Hz
 D/L C/N 8.9 dB

Spread Factor	1
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C/I up 13.3 dB
 C/I dn 19.8 dB

Clear Sky C/(N + I) -1.77 dB
CS Eb/No 3.00 dB
Clear Sky (CS)Margin 2.00 dB

D/L Faded C/(N+I) -3.77 dB
D/L faded Eb/No 1.00 dB
D/L Faded Margin 0.00 dB

PSD @ ant Flange -21.8 dBW / 4KHz
 Occupied BW 13519.2 KHz
 D/L PSD/4KHz -12.0 dBW/4KHz

	Tx Site	Rx Site	
Az Angle	183.18	183.18	deg
EI Angle	44.80	44.80	deg
Pol Angle	2.47	2.47	deg

Table D4
Hub to Remote Emission Designator 1M45G7W

Data Parameters		Satellite Parameters	
Data Rate	512.0 kbps	Sat Name	TestSat
FEC	21/44 Turbo	Sat Long.	79 deg
Modulation	bpsk BPSK / QPSK	Sat Rx, G/T	4.5 dB/K
Threshold Eb/No	3.00 dB	Sat Tx, EIRP	48 dBW
Occ BW	1.35	SFD	-90 dBW/m ²
Spread Spectrum	n (Y / N)	IP / OP ratio	5 dB
Chip Rate	1.07 Mchips/s	U/L Freq	14.25 GHz
Total # of spread Links	1	D/L Freq.	11.95 GHz
Beta Factor	1.00		
Rx Site Parameters		Tx Site Parameters	
Rx Site Name	Hub	Tx Site Name	Remote
Rx Lat	39 deg	Tx Lat	39 deg
Rx Long	77 deg	Tx Long	77 deg
Rx G/T	7.5 dB/K	Tx Ant Gain	60.3 dBi
Ant Gain	29.26 dBi	Tx Loss	4.5 dB
System Temp	150 K	Radome loss	0 dB
		Pointing Loss	0.1 dB
		Tx HPA	1.10 W
Interference Parameters		DownLink Fade	2.1 dB
ASI U/L EIRP in our direction	-3.9 dBW/4KHz		
DL interference, dBW/4KHz	7.5 dBW/4KHz		



Threshold C/N	-0.21 dB		
C/Io Uplink WRT Saturation	78.9 dB/Hz		
C/Io Downlink WRT Saturation	76.5 dB/Hz		
Tx Slant Range	37536418.2 m	Rx Slant Range	37536418.2 m
Tx FSL	207.0 dB	Rx FSL	205.5 dB
Uplink EIRP	56.1 dBW	OPBO	12.1 dB
Uplink C/No	81.5 dB-HZ	D/L EIRP	35.9 dBW
U/L C/N	21.2 dB	D/L C/No	66.0 dB/Hz
G(1m ²) Tx	44.5 dBi	D/L C/N	5.7 dB
U/L flux density @ satellite	-107.1 dBW/m ²	Spread Factor	1
IPBO	17.1 dB		
C/I up	35.7 dB		
C/I dn	4.1 dB		
Clear Sky C/(N + I)	1.79 dB		
CS Eb/No	5.00 dB		
Clear Sky (CS)Margin	2.00 dB		
D/L Faded C/(N+I)	-0.21 dB		
D/L faded Eb/No	3.00 dB		
D/L Faded Margin	0.00 dB		
PSD @ ant Flange	-29.7 dBW / 4KHz		
Occupied BW	1448.2 KHz		
D/L PSD/4KHz	10.3 dBW/4KHz		

	Tx Site	Rx Site	
Az Angle	183.18	183.18	deg
EI Angle	44.80	44.80	deg
Pol Angle	2.47	2.47	deg

Table D5
Hub to Remote Emission Designator 26M8G7W

Data Parameters		Satellite Parameters	
Data Rate	12228.0 kbps	Sat Name	TestSat
FEC	4/13 1/3 DVB-S2	Sat Long.	79 deg
Modulation	qpsk BPSK / QPSK	Sat Rx, G/T	4.5 dB/K
Threshold Eb/No	1.30 dB	Sat Tx, EIRP	48 dBW
Occ BW	1.35	SFD	-90 dBW/m ²
Spread Spectrum	n (Y / N)	IP / OP ratio	5 dB
Chip Rate	19.85 Mchips/s	U/L Freq	14.25 GHz
Total # of spread Links	1	D/L Freq.	11.95 GHz
Beta Factor	1.00		
Rx Site Parameters		Tx Site Parameters	
Rx Site Name	Hub	Tx Site Name	Remote
Rx Lat	39 deg	Tx Lat	39 deg
Rx Long	77 deg	Tx Long	77 deg
Rx G/T	7.5 dB/K	Tx Ant Gain	60.3 dBi
Ant Gain	29.26 dBi	Tx Loss	4.5 dB
System Temp	150 K	Radome loss	0 dB
		Pointing Loss	0.1 dB
		Tx HPA	17.71 W
Interference Parameters		DownLink Fade	2.1 dB
ASI U/L EIRP in our direction	-3.9 dBW/4KHz		
DL interference, dBW/4KHz	7.5 dBW/4KHz		



Threshold C/N	-0.80 dB		
C/lo Uplink WRT Saturation	103.1 dB/Hz		
C/lo Downlink WRT Saturation	76.5 dB/Hz		
Tx Slant Range	37536418.2 m	Rx Slant Range	37536418.2 m
Tx FSL	207.0 dB	Rx FSL	205.5 dB
Uplink EIRP	68.2 dBW	OPBO	0.0 dB
Uplink C/No	93.6 dB-Hz	D/L EIRP	48.0 dBW
U/L C/N	20.6 dB	D/L C/No	78.1 dB/Hz
G(1m ²) Tx	44.5 dBi	D/L C/N	5.1 dB
U/L flux density @ satellite	-95.0 dBW/m ²		
IPBO	5.0 dB	Spread Factor	1
C/I up	35.1 dB		
C/I dn	3.5 dB		
Clear Sky C/(N + I)	1.20 dB		
CS Eb/No	3.30 dB		
Clear Sky (CS)Margin	2.00 dB		
D/L Faded C/(N+I)	-0.80 dB		
D/L faded Eb/No	1.30 dB		
D/L Faded Margin	0.00 dB		
PSD @ ant Flange	-30.3 dBW / 4KHz		
Occupied BW	26798.3 KHz		
D/L PSD/4KHz	9.7 dBW/4KHz		

	Tx Site	Rx Site	
Az Angle	183.18	183.18	deg
EI Angle	44.80	44.80	deg
Pol Angle	2.47	2.47	deg

Radiation Hazard Analysis SR5000

This analysis predicts the radiation levels around a proposed earth station complex, comprised of one (reflector) type antennas. This report is developed in accordance with the prediction methods contained in OET Bulletin No. 65, Evaluating Compliance with FCC Guidelines for Human Exposure to Radio Frequency Electromagnetic Fields, Edition 97-01, pp 26-30. The maximum level of non-ionizing radiation to which employees may be exposed is limited to a power density level of 5 milliwatts per square centimeter (5 mW/cm²) averaged over any 6 minute period in a controlled environment and the maximum level of non-ionizing radiation to which the general public is exposed is limited to a power density level of 1 milliwatt per square centimeter (1 mW/cm²) averaged over any 30 minute period in an uncontrolled environment. Note that the worse-case radiation hazards exist along the beam axis. Under normal circumstances, it is highly unlikely that the antenna axis will be aligned with any occupied area since that would represent a blockage to the desired signals, thus rendering the link unusable.

Earth Station Technical Parameter Table

Antenna Effective Diameter	0.347 meters
Antenna Surface Area	0.094sq. meters
Antenna Isotropic Gain	30.5 dBi
Number of Identical Adjacent Antennas	1
Nominal Antenna Efficiency (ϵ)	42%
Nominal Frequency	14.25 GHz
Nominal Wavelength (λ)	0.0211 meters
Maximum Transmit Power / Carrier	50 Watts
Number of Carriers	1
Total Transmit Power	50.0 Watts
W/G Loss from Transmitter to Feed	2.8dB
Total Feed Input Power	26.24Watts
Radome Losses	0.25dB
Near Field Limit	$R_{nf} = D^2/4\lambda = 1.43$ meters
Far Field Limit	$R_{ff} = 0.6 D^2/\lambda = 3.43$ meters
Transition Region	R_{nf} to R_{ff}

In the following sections, the power density in the above regions, as well as other critically important areas will be calculated and evaluated. The calculations are done in the order discussed in OET Bulletin 65.

1.0 At the Antenna Surface

The power density at the reflector surface can be calculated from the expression:

$$PD_{\text{refl}} = 4P/A = 169.5 \text{ mW/cm}^2 \quad (1)$$

Where: P = total power at feed, milliwatts

A = Total area of reflector, sq. cm

In the normal range of transmit powers for satellite antennas, the power densities at or around the reflector surface is expected to exceed safe levels. This area will not be accessible to the general public.

This antenna will incorporate a radome which has 0.25dB of loss. The worst case power density at the surface of the radome is shown below:

$$PD_{\text{radome}} = 4P_{\text{rad}}/A = 111.9 \text{ mW/cm}^2$$

Where: P_{rad} = total power at feed less radome losses in milliwatts

A = Total of reflector in sq. cm (this would represent the worst case)

Operators and technicians should receive training specifying this area as a high exposure area. Procedures must be established that will assure that all transmitters are rerouted or turned off before access by maintenance personnel to this area is possible.

2.0 On-Axis Near Field Region

The geometrical limits of the radiated power in the near field approximate a cylindrical volume with a diameter equal to that of the antenna. In the near field, the power density is neither uniform nor does its value vary uniformly with distance from the antenna. For the purpose of considering radiation hazard it is assumed that the on-axis flux density is at its maximum value throughout the length of this region. The length of this region, i.e., the distance from the antenna to the end of the near field, is computed as R_{nf} above.

The maximum power density in the near field is given by:

$$PD_{\text{nf}} = (16\epsilon P)/(\pi D^2) = 44.0 \text{ mW/cm}^2 \quad (2)$$

from 0 to 1.43 meters

Evaluation

Uncontrolled Environment: **Does Not Meet Controlled Limits**

Controlled Environment: **Does Not Meet Uncontrolled Limits**

3.0 On-Axis Transition Region

The transition region is located between the near and far field regions. As stated in Bulletin 65, the power density begins to vary inversely with distance in the transition region. The maximum power density in the transition region will not exceed that calculated for the near field region, and the transition region begins at that value. The maximum value for a given distance within the transition region may be computed for the point of interest according to:

$$PD_{tr} = (PD_{nf})(R_{nf})/R = \text{dependent on } R \quad (3)$$

where: PD_{nf} = near field power density

R_{nf} = near field distance

R = distance to point of interest

For: $1.43 < R < 3.43$ meters

We use Eq (3) to determine the safe on-axis distances required for the two occupancy conditions:

Evaluation

Uncontrolled Environment Safe Operating Distance,(meters), R_{safeU} : 62.8

Controlled Environment Safe Operating Distance,(meters), R_{safeC} : 12.6

4.0 On-Axis Far-Field Region

The on- axis power density in the far field region (PD_{ff}) varies inversely with the square of the distance as follows:

$$PD_{ff} = PG/(4\pi R^2) = \text{dependent on } R \quad (4)$$

where: P = total power at feed

G = Numeric Antenna gain in the direction of interest relative to isotropic radiator

R = distance to the point of interest

For: $R = R_{ff} = 3.43$ meters

$PD_{ff} = 18.85$ mW/cm² at R_{ff}

We use Eq (4) to determine the safe on-axis distances required for the two occupancy conditions:

Evaluation

Uncontrolled Environment Safe Operating Distance,(meters), R_{safeu} : See Section 3

Controlled Environment Safe Operating Distance,(meters), R_{safec} : See Section 3

5.0 Off-Axis Levels at the FarField Limit and Beyond

In the far field region, the power is distributed in a pattern of maxima and minima (sidelobes) as a function of the off-axis angle between the antenna center line and the point of interest. Off-axis power density in the far field can be estimated using the antenna radiation patterns prescribed for the antenna in use. Usually this will correspond to the antenna gain pattern envelope defined by the FCC or the ITU, which takes the form of:

$$G_{off} = 32 - 25\log(\Theta)$$

for Θ from 1 to 48 degrees; -10 dBi from 48 to 180 degrees

(Applicable for commonly used satellite transmit antennas)

Considering that satellite antenna beams are aimed skyward, power density in the far field will usually not be a problem except at low look angles. In these cases, the off axis gain reduction may be used to further reduce the power density levels.

For example: At two (2) degrees off axis At the far-field limit, we can calculate the power density as:

$$G_{off} = 32 - 25\log(2) = 32 - 7.52 \text{ dBi} = 280.2 \text{ numeric}$$

$$PD_{2 \text{ deg off-axis}} = PD_{ff} \times 280.2/G = 9.0 \text{ mW/cm}^2 \text{ (5)}$$

6.0 Off-Axis power density in the Near Field and Transitional Regions

According to Bulletin 65, off-axis calculations in the near field may be performed as follows: assuming that the point of interest is at least one antenna diameter removed from the center of the main beam, the power density at that point is at least a factor of 100 (20 dB) less than the value calculated for the equivalent on-axis power density in the main beam. Therefore, for regions at least D meters away from the center line of the dish, whether behind, below, or in front under of the antenna's main beam, the power density exposure is at least 20 dB below the main beam level as follows:

$$PD_{nf(off-axis)} = PD_{nf} / 100 = 0.440 \text{ mW/cm}^2 \text{ at D off axis (6)}$$

See Section 8 for the calculation of the distance vs. elevation angle required to achieve this rule for a given object height.

7.0 Evaluation of Safe Occupancy Area in Front of Antenna

The distance (S) from a vertical axis passing through the dish center to a safe off axis location in front of the antenna can be determined based on the dish diameter rule (Item 6.0). Assuming a flat terrain in front of the antenna, the relationship is:

$$S = (D / \sin \alpha) + (2h - D - 2) / (2 \tan \alpha) \quad (7)$$

Where: α = minimum elevation angle of antenna

D = dish diameter in meters

h = maximum height of object to be cleared, meters

For distances equal or greater than determined by equation (7), the radiation hazard will be below safe levels for all but the most powerful stations (> 4 kilowatts RF at the feed).

For D = 0.347 meters

 h = 1.0 meters, delta between antenna and object >1 m

Then:

α	S
10	1.0 meters
15	0.7meters
20	0.5 meters
25	0.4 meters
30	0.4 meters

8.0 Summary of Results

The earth station site will be protected from uncontrolled access by virtue of the fact that it will be mounted on the roof of a vehicle. There will also be proper emission warning signs placed and all operating personnel will be aware of the human exposure levels at and around the earth station. The applicant agrees to abide by the conditions specified in Condition 5208 provided below:

Condition 5208 - The licensee shall take all necessary measures to ensure that the antenna does not create potential exposure of humans to radiofrequency radiation in excess of the FCC exposure limits defined in 47 CFR 1.1307(b) and 1.1310 wherever such exposures might occur. Measures must be taken to ensure compliance with limits for both occupational/controlled exposure and for general population/uncontrolled exposure, as defined in these rule sections. Compliance can be accomplished in most cases by appropriate restrictions such as fencing. Requirements for restrictions can be determined by predictions based on calculations, modeling or by field measurements. The FCC's OET Bulletin 65 (available on-line at www.fcc.gov/oet/rfsafety) provides information on predicting exposure levels and on methods for ensuring compliance, including the use of warning and alerting signs and protective equipment for worker.

The table below summarizes all of the above calculations.

<u>Parameter</u>	<u>Abbr.</u>		<u>Units</u>	<u>Formula</u>
Antenna Effective Diameter	Df	0.347	meters	$(\pi * D_f^2) / 4$
Height of Object	h	1	meters	
Antenna Surface Area	Sa	0.094	meter ²	
Antenna Ground Elevation	GE	2	meters	
Frequency of Operation	f	14.25	GHz	
Wavelength	λ	0.0211	meters	
HPA Output Power	P _{HPA}	50	watts	
HPA to Antenna Loss	L _{Tx}	2.8	dB	
Radome Loss	L _{Rad}	0.25	dB	
Transmit Power at Flange	P	26.240373	watts	
Effective Power after Radome		24.77	watts	$P / 10 \text{Log}^{-1}(L_{Tx} / 10)$
Antenna Gain	G _{es}	30.5	dBi	$P / 10 \text{Log}^{-1}(\text{Radome Loss} / 10)$
Antenna Aperature Efficiency	η	42%	n/a	does not include radome loss
1. Reflector Surface Region Calculations				
Antenna Surface Power Density	P _{das}	1111.9	W/m ²	$(16 * P) / (\pi * D^2)$
		111.19	mW/cm ²	
Power at Radome Surface (outside radome)	P _{drad}	1049.7	W/m ²	$(16 * P) / (\pi * D^2)$
		104.97	mW/cm ²	Does not meet controlled limits Does not meet uncontrolled limits
2. On Axis Near Field Calculations				
Extent of Near Field	R _n	1.427	meters	$D^2 / (4 * \lambda)$
		4.683	feet	
Near Field Power Density	PD _{nf}	440.0	w/m ²	$(16 * \eta * P) / (\pi * D^2)$
		44.00	mW/cm ²	Does not meet controlled limits Does not meet uncontrolled limits
3. On Axis Transition Region Calculations				
Extent of Transition Region (min)	R _{Tr}	1.427	meters	$D^2 / (4 * \lambda)$
Extent of Transition Region (min)		4.683	feet	
Extent of Transition Region (max)	R _{Tr}	3.426	meters	$0.6 * D^2 / \lambda$
Extent of Transition Region (max)		11.239	feet	
Worst Case Transition Region Power Density	PD _{tr}	440.0	w/m ²	
		44.00	mW/cm ²	Does not meet controlled limits Does not meet uncontrolled limits
Uncontrolled enviornment safe operating distance	R _{su}	62.8	meters	$(PD_{nf}) / R_{nf} / R_{su}$
Controlled enviornment safe operating distance	R _{sc}	12.6	meters	$(PD_{nf}) / R_{nf} / R_{sc}$
4. On Axis Far Field Calculations				
Distance to Far Field Region	R _f	3.43	meters	$0.6 * D^2 / \lambda$
		11.24	feet	
On Axis Power Density in the Far Field	PD _{ff}	188.5	W/m ²	$(G_{es} * P) / (4 * \pi * R_f^2)$
		18.85	mW/cm ²	Does not meet controlled limits Does not meet uncontrolled limits
5. Off-axis Power Density in the Far Field Limit and Beyond				
Antenna Surface Power Density	PDs	47.1	W/m ²	$(G_{es} * P) / (4 * \pi * R_f^2) * (Goa / Ges)$
Goa/Ges at a sample angle of $\theta=2$ degrees		0.250		$Goa = 32 - 25 * \log(\theta)$
		4.7	mW/cm ²	Meets controlled limits Meets Uncontrolled limits
6. Off Axis Power Density in the Near Field and Transitional Region Calculations				
Power Density of Wn/100 for 1 diameter removed	PDs	4.40	W/m ²	$[(16 * \eta * P) / (\pi * D^2)] / 100$
		0.440	mW/cm ²	Meets controlled limits Meets Uncontrolled limits
7.0 Off-axis Safe Distances from Earth Station				
minimum elevation angle of antenna	α	10	degree	$S = (D / \sin \alpha) + (2h - D - 2) / (2 \tan \alpha)$
hieght of object to be cleared	h	1	meter	
Ground elevation delta antenna-obstacle elevation angle	GD	S		
	10	1.0	meter	
	15	0.7	meter	
	20	0.5	meter	
	25	0.4	meter	
	30	0.4	meter	

Note: Maximum FCC power density limits for 6GHz is 1mW/cm² for general population exposure as per FCC OS&T Bulletin No. 65, Edition 97-01 August 1997, Appendix A page 67.