

Appendix A1

SR-2000 / SR-3000 Technical Appendices

SR-2000/3000 Antenna Transmit Pattern Tables

Table	Description	Page
A1	14.0GHz, Co-Polarized H-pol pattern, along tangent to the geostationary plane	A1-2
A2	14.0GHz, Co-Polarized V-pol pattern, along tangent to the geostationary plane	A1-9
A3	14.25GHz, Co-Polarized H-pol pattern, along tangent to the geostationary plane	A1-16
A4	14.25GHz, Co-Polarized V-pol pattern, along tangent to the geostationary plane	A1-23
A5	14.5GHz, Co-Polarized H-pol pattern, along tangent to the geostationary plane	A1-30
A6	14.5GHz, Co-Polarized V-pol pattern, along tangent to the geostationary plane	A1-37
B1	14.0GHz, Co-Polarized H-Pol pattern along perpendicular to the geostationary plane	A1-44
B2	14.0GHz, Co-Polarized V-Pol pattern along perpendicular to the geostationary plane	A1-51
B3	14.25GHz, Co-Polarized H-Pol pattern along perpendicular to the geostationary plane	A1-58
B4	14.25GHz, Co-Polarized V-Pol pattern along perpendicular to the geostationary plane	A1-65
B5	14.5GHz, Co-Polarized H-Pol pattern along perpendicular to the geostationary plane	A1-72
B6	14.5GHz, Co-Polarized V-Pol pattern along perpendicular to the geostationary plane	A1-79
C1	14.0GHz, Cross-Polarized H-Pol pattern along the tangent to the geostationary plane	A1-86
C2	14.0GHz, Cross-Polarized V-Pol pattern along the tangent to the geostationary plane	A1-91
C3	14.25GHz, Cross-Polarized H-Pol pattern along the tangent to the geostationary plane	A1-96
C4	14.25GHz, Cross-Polarized V-Pol pattern along the tangent to the geostationary plane	A1-101
C5	14.5GHz, Cross-Polarized H-Pol pattern along the tangent to the geostationary plane	A1-106
C6	14.5GHz, Cross-Polarized V-Pol pattern along the tangent to the geostationary plane	A1-111

SR-2000/3000 Link Budget Analysis

Table	Description	Page
D1	Remote to Hub Emission Designator 4M05G7W	A1-116
D2	Remote to Hub Emission Designator 8M06 G7W	A1-117
D3	Remote to Hub Emission Designator 12M36G7W	A1-118
D4	Hub to Remote Emission Designator 1M45G7W	A1-119
D5	Hub to Remote Emission Designator 36M0G7W	A1-120

SR-2000/3000 Antenna Radiation Hazard Study

Description	Page
Radiation Hazard Analysis	A1-121

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): 27.5
a2	Antenna Model:	SR3000	d	Frequency at which gain was measured (GHz): 14.0
a3	Antenna ID:	RAS	e	Max input power density (dBW/4kHz): - 18.1
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			Worst Case Co-Pol Gain Along Tangent to Geo Arc			Worst Case Co-Pol PSD Along Tangent to Geo Arc input PSD = -18.1dBW/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	-2.5	-2.5	-2.5	-2.5	-2.5	-2.5	-20.600	-20.600	-20.600	-14.000	-
-175	-2.5	-2.5	-2.5	-2.5	-2.5	-2.5	-20.600	-20.600	-20.600	-14.000	-
-170	-2.5	-2.5	-2.5	-2.5	-2.5	-2.5	-20.600	-20.600	-20.600	-14.000	-
-165	-2.5	-2.5	-2.5	-2.5	-2.5	-2.5	-20.600	-20.600	-20.600	-14.000	-
-160	-2.5	-2.5	-2.5	-2.5	-2.5	-2.5	-20.600	-20.600	-20.600	-14.000	-
-155	-2.5	-2.5	-2.5	-2.5	-2.5	-2.5	-20.600	-20.600	-20.600	-14.000	-
-150	-2.5	-2.5	-2.5	-2.5	-2.5	-2.5	-20.600	-20.600	-20.600	-14.000	-
-145	-2.5	-2.5	-2.5	-2.5	-2.5	-2.5	-20.600	-20.600	-20.600	-14.000	-
-140	-2.5	-2.5	-2.5	-2.5	-2.5	-2.5	-20.600	-20.600	-20.600	-14.000	-
-135	-2.5	-2.5	-2.5	-2.5	-2.5	-2.5	-20.600	-20.600	-20.600	-14.000	-
-130	-2.5	-2.5	-2.5	-2.5	-2.5	-2.5	-20.600	-20.600	-20.600	-14.000	-
-125	-2.5	-2.5	-2.5	-2.5	-2.5	-2.5	-20.600	-20.600	-20.600	-14.000	-
-120	-2.5	-2.5	-2.5	-2.5	-2.5	-2.5	-20.600	-20.600	-20.600	-14.000	-
-115	-2.5	-2.5	-2.5	-2.5	-2.5	-2.5	-20.600	-20.600	-20.600	-14.000	-
-110	-2.5	-2.5	-2.5	-2.5	-2.5	-2.5	-20.600	-20.600	-20.600	-14.000	-
-105	-2.5	-2.5	-2.5	-2.5	-2.5	-2.5	-20.600	-20.600	-20.600	-14.000	-
-100	-2.5	-2.5	-2.5	-2.5	-2.5	-2.5	-20.600	-20.600	-20.600	-14.000	-
-95	-2.5	-2.5	-2.5	-2.5	-2.5	-2.5	-20.600	-20.600	-20.600	-14.000	-
-90	-19.948	-23.502	-34.329	-19.662	-23.169	-33.611	-37.762	-41.269	-51.711	-14.000	-
-85	-18.112	-19.482	-27.619	-17.936	-19.346	-27.145	-36.036	-37.446	-45.245	-14.000	-
-80	-29.098	-19.352	-18.483	-26.021	-19.233	-17.735	-44.121	-37.333	-35.835	-24.000	-
-75	-19.805	-18.172	-17.555	-19.805	-18.167	-16.943	-37.905	-36.267	-35.043	-24.000	-
-70	-19.974	-18.557	-13.879	-18.572	-17.968	-13.015	-36.672	-36.068	-31.115	-24.000	-
-65	-24.902	-18.913	-6.393	-20.672	-18.024	-6.228	-38.772	-36.124	-24.328	-24.000	-
-60	-24.360	-11.739	-12.093	-23.533	-11.739	-10.765	-41.633	-29.839	-28.865	-24.000	-
-55	-24.112	-16.905	-15.603	-17.987	-16.445	-15.529	-36.087	-34.545	-33.629	-24.000	-
-50	-19.644	-21.815	-12.013	-13.623	-19.705	-11.978	-31.723	-37.805	-30.078	-24.000	-
-45	-14.777	-11.638	-5.445	-14.110	-11.622	-3.934	-32.210	-29.722	-22.034	-23.330	1.296
-40	-14.246	-14.218	-18.159	-12.466	-13.937	-18.135	-30.566	-32.037	-36.235	-22.051	-
-35	-15.121	-12.965	-7.662	-14.137	-12.085	-6.350	-32.237	-30.185	-24.450	-20.602	-
-30	-15.201	-18.156	-16.474	-12.295	-18.037	-13.782	-30.395	-36.137	-31.882	-18.928	-
-25	-9.273	-8.392	-9.122	-8.253	-8.264	-8.670	-26.353	-26.364	-26.770	-16.949	-
-20	-15.838	-16.139	-3.060	-10.101	-12.085	-2.981	-28.201	-30.185	-21.081	-14.526	-
-15	-10.781	-13.398	-2.138	-7.280	-12.203	-1.409	-25.380	-30.303	-19.509	-11.402	-
-10	-2.918	-1.200	-7.158	2.360	0.444	-5.505	-15.740	-17.656	-23.605	-7.000	-

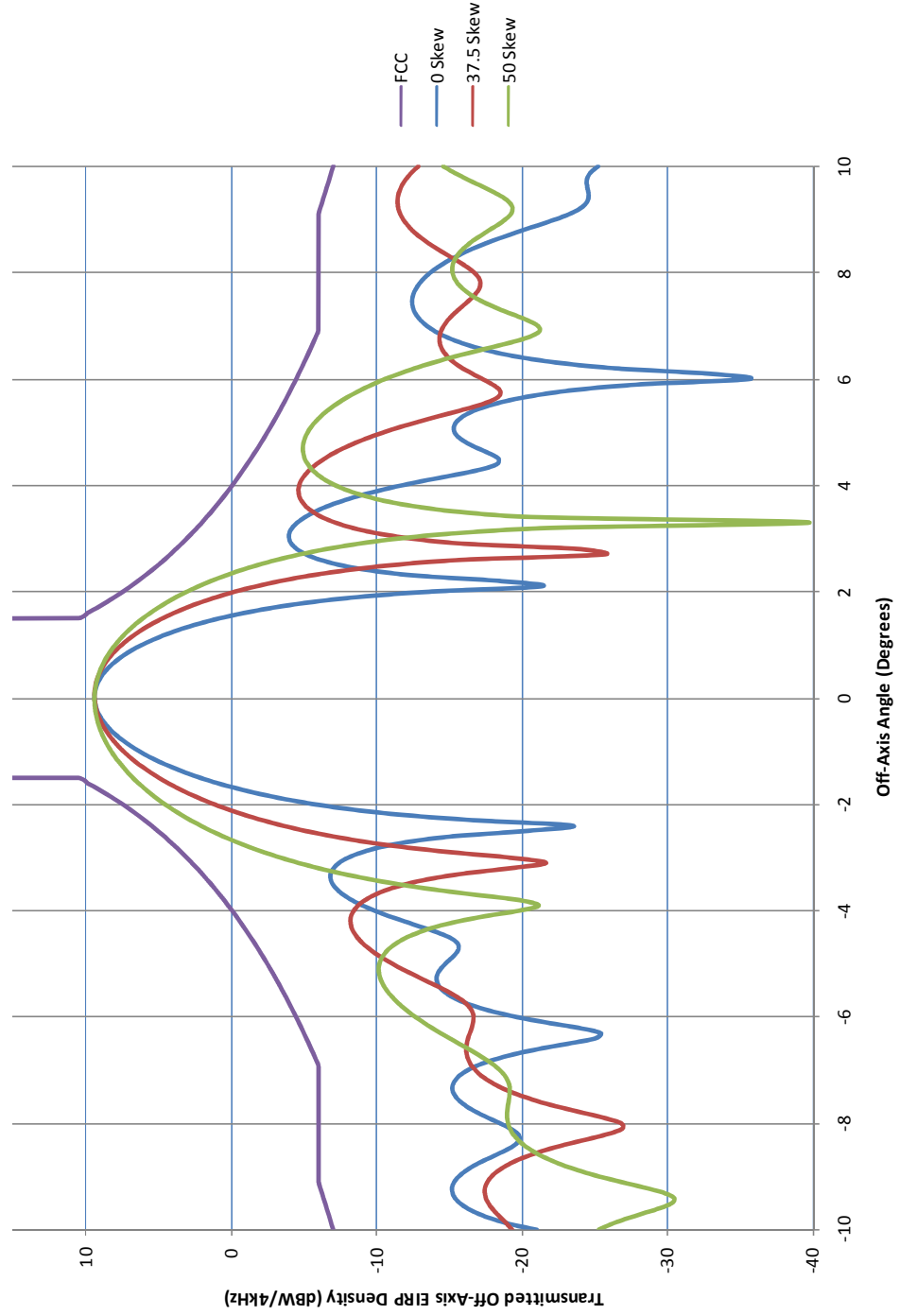
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-9.8	0.082	-0.504	-8.974	2.882	0.697	-5.727	-15.218	-17.403	-23.827	-6.781	-
-9.7	1.071	-0.138	-10.113	2.901	0.697	-6.046	-15.199	-17.403	-24.146	-6.669	-
-9.6	1.822	0.192	-11.301	2.901	0.697	-6.516	-15.199	-17.403	-24.616	-6.557	-
-9.5	2.360	0.444	-12.195	2.901	0.697	-7.158	-15.199	-17.403	-25.258	-6.443	-
-9.4	2.705	0.627	-12.356	2.901	0.697	-5.995	-15.199	-17.403	-24.095	-6.328	-
-9.3	2.882	0.697	-11.608	2.901	0.697	-4.872	-15.199	-17.403	-22.972	-6.212	-
-9.2	2.901	0.669	-10.223	2.901	0.697	-3.953	-15.199	-17.403	-22.053	-6.095	-
-9.1	2.757	0.519	-8.724	2.901	0.697	-3.156	-15.199	-17.403	-21.256	-6.000	-
-9	2.459	0.245	-7.255	2.901	0.697	-2.524	-15.199	-17.403	-20.624	-6.000	-
-8.9	2.021	-0.165	-5.995	2.901	0.697	-1.995	-15.199	-17.403	-20.095	-6.000	-
-8.8	1.446	-0.730	-4.872	2.901	0.697	-1.595	-15.199	-17.403	-19.695	-6.000	-
-8.7	0.738	-1.450	-3.953	2.901	0.669	-1.284	-15.199	-17.431	-19.384	-6.000	-
-8.6	-0.046	-2.371	-3.156	2.757	0.519	-1.074	-15.343	-17.581	-19.174	-6.000	-
-8.5	-0.809	-3.474	-2.524	2.459	0.245	-0.939	-15.641	-17.855	-19.039	-6.000	-
-8.4	-1.429	-4.798	-1.995	2.021	-0.165	-0.877	-16.079	-18.265	-18.977	-6.000	-
-8.3	-1.747	-6.292	-1.595	1.446	-0.730	-0.873	-16.654	-18.830	-18.973	-6.000	-
-8.2	-1.631	-7.746	-1.284	1.789	-1.450	-0.873	-16.311	-19.550	-18.973	-6.000	-
-8.1	-1.133	-8.750	-1.074	2.290	-2.371	-0.873	-15.810	-20.471	-18.973	-6.000	-
-8	-0.415	-8.690	-0.939	2.644	-2.020	-0.873	-15.456	-20.120	-18.973	-6.000	-
-7.9	0.378	-7.574	-0.877	2.847	-1.033	-0.873	-15.253	-19.133	-18.973	-6.000	-
-7.8	1.143	-6.062	-0.873	2.874	-0.238	-0.873	-15.226	-18.338	-18.973	-6.000	-
-7.7	1.789	-4.540	-0.909	2.874	0.411	-0.873	-15.226	-17.689	-18.973	-6.000	-
-7.6	2.290	-3.161	-0.971	2.874	0.941	-0.715	-15.226	-17.159	-18.815	-6.000	-
-7.5	2.644	-2.020	-1.029	2.874	1.331	-0.387	-15.226	-16.769	-18.487	-6.000	-
-7.4	2.847	-1.033	-1.063	2.874	1.635	0.044	-15.226	-16.465	-18.056	-6.000	-
-7.3	2.874	-0.238	-1.037	2.874	1.827	0.569	-15.226	-16.273	-17.531	-6.000	-
-7.2	2.722	0.411	-0.928	2.874	1.935	1.154	-15.226	-16.165	-16.946	-6.000	-
-7.1	2.388	0.941	-0.715	2.874	1.972	1.786	-15.226	-16.128	-16.314	-6.000	-
-7	1.852	1.331	-0.387	2.874	1.972	2.429	-15.226	-16.128	-15.671	-6.000	-
-6.9	1.072	1.635	0.044	2.874	1.972	3.078	-15.226	-16.128	-15.022	-5.971	-
-6.8	0.024	1.827	0.569	2.874	1.972	3.705	-15.226	-16.128	-14.395	-5.813	-
-6.7	-1.330	1.935	1.154	2.722	1.972	4.313	-15.378	-16.128	-13.787	-5.652	-
-6.6	-3.036	1.972	1.786	2.388	1.972	4.884	-15.712	-16.128	-13.216	-5.489	-
-6.5	-5.072	1.926	2.429	1.852	1.972	5.418	-16.248	-16.128	-12.682	-5.323	-
-6.4	-6.936	1.846	3.078	1.072	1.972	5.911	-17.028	-16.128	-12.189	-5.154	-
-6.3	-7.318	1.718	3.705	1.299	1.972	6.355	-16.801	-16.128	-11.745	-4.984	-
-6.2	-5.764	1.589	4.313	2.292	2.168	6.757	-15.808	-15.932	-11.343	-4.810	-
-6.1	-3.563	1.498	4.884	3.034	2.726	7.101	-15.066	-15.374	-10.999	-4.633	-
-6	-1.574	1.458	5.418	3.536	3.367	7.399	-14.564	-14.733	-10.701	-4.454	-
-5.9	0.030	1.553	5.911	3.838	4.095	7.630	-14.262	-14.005	-10.470	-4.271	-
-5.8	1.299	1.785	6.355	3.963	4.864	7.811	-14.137	-13.236	-10.289	-4.086	-
-5.7	2.292	2.168	6.757	3.963	5.606	7.913	-14.137	-12.494	-10.187	-3.897	-
-5.6	3.034	2.726	7.101	3.963	6.351	7.957	-14.137	-11.749	-10.143	-3.705	-
-5.5	3.536	3.367	7.399	3.963	7.026	7.957	-14.137	-11.074	-10.143	-3.509	-
-5.4	3.838	4.095	7.630	3.963	7.653	7.957	-14.137	-10.447	-10.143	-3.310	-
-5.3	3.963	4.864	7.811	3.963	8.224	7.957	-14.137	-9.876	-10.143	-3.107	-
-5.2	3.921	5.606	7.913	3.963	8.705	7.957	-14.137	-9.395	-10.143	-2.900	-
-5.1	3.714	6.351	7.957	3.963	9.129	7.957	-14.137	-8.971	-10.143	-2.689	-
-5	3.382	7.026	7.904	3.963	9.457	7.957	-14.137	-8.643	-10.143	-2.474	-
-4.9	2.990	7.653	7.781	3.983	9.707	7.957	-14.117	-8.393	-10.143	-2.255	-
-4.8	2.633	8.224	7.533	5.068	9.867	7.957	-13.032	-8.233	-10.143	-2.031	-
-4.7	2.443	8.705	7.192	6.183	9.919	7.957	-11.917	-8.181	-10.143	-1.802	-
-4.6	2.571	9.129	6.681	7.245	9.919	7.957	-10.855	-8.181	-10.143	-1.569	-
-4.5	3.101	9.457	6.035	8.218	9.919	7.904	-9.882	-8.181	-10.196	-1.330	-
-4.4	3.983	9.707	5.137	9.078	9.919	7.781	-9.022	-8.181	-10.319	-1.086	-
-4.3	5.068	9.867	4.017	9.800	9.919	7.533	-8.300	-8.181	-10.567	-0.837	-
-4.2	6.183	9.919	2.494	10.374	9.919	7.192	-7.726	-8.181	-10.908	-0.581	-
-4.1	7.245	9.879	0.614	10.813	9.919	6.681	-7.287	-8.181	-11.419	-0.320	-
-4	8.218	9.699	-1.659	11.115	9.919	6.607	-6.985	-8.181	-11.493	-0.051	-

-3.9	9.078	9.399	-3.054	11.266	9.919	8.712	-6.834	-8.181	-9.388	0.223	-
-3.8	9.800	8.928	-1.722	11.266	9.919	10.501	-6.834	-8.181	-7.599	0.505	-
-3.7	10.374	8.259	1.241	11.266	9.919	12.080	-6.834	-8.181	-6.020	0.795	-
-3.6	10.813	7.368	4.154	11.266	9.879	13.466	-6.834	-8.221	-4.634	1.092	-
-3.5	11.115	6.112	6.607	11.266	9.699	14.718	-6.834	-8.401	-3.382	1.398	-
-3.4	11.266	4.453	8.712	11.266	9.399	15.840	-6.834	-8.701	-2.260	1.713	-
-3.3	11.250	2.127	10.501	11.266	8.928	16.869	-6.834	-9.172	-1.231	2.037	-
-3.2	11.063	-1.024	12.080	11.266	8.990	17.804	-6.834	-9.110	-0.296	2.371	-
-3.1	10.683	-3.508	13.466	11.266	11.125	18.668	-6.834	-6.975	0.568	2.716	-
-3	10.057	-1.026	14.718	11.266	12.985	19.462	-6.834	-5.115	1.362	3.072	-
-2.9	9.115	2.972	15.840	11.266	14.540	20.198	-6.834	-3.560	2.098	3.440	-
-2.8	7.770	6.339	16.869	11.250	15.925	20.879	-6.850	-2.175	2.779	3.821	-
-2.7	5.829	8.990	17.804	11.063	17.166	21.512	-7.037	-0.934	3.412	4.216	-
-2.6	2.855	11.125	18.668	10.683	18.253	22.101	-7.417	0.153	4.001	4.626	-
-2.5	-2.100	12.985	19.462	12.285	19.267	22.648	-5.815	1.167	4.548	5.051	-
-2.4	-5.393	14.540	20.198	14.396	20.164	23.159	-3.704	2.064	5.059	5.495	-
-2.3	1.209	15.925	20.879	16.166	20.987	23.632	-1.934	2.887	5.532	5.957	-
-2.2	6.158	17.166	21.512	17.700	21.753	24.075	-0.400	3.653	5.975	6.439	-
-2.1	9.643	18.253	22.101	19.047	22.435	24.483	0.947	4.335	6.383	6.945	-
-2	12.285	19.267	22.648	20.219	23.079	24.865	2.119	4.979	6.765	7.474	-
-1.9	14.396	20.164	23.159	21.254	23.657	25.214	3.154	5.557	7.114	8.031	-
-1.8	16.166	20.987	23.632	22.185	24.188	25.540	4.085	6.088	7.440	8.618	-
-1.7	17.700	21.753	24.075	23.026	24.682	25.835	4.926	6.582	7.735	9.239	-
-1.6	19.047	22.435	24.483	23.772	25.119	26.110	5.672	7.019	8.010	9.897	-
-1.5	20.219	23.079	24.865	24.430	25.527	26.354	6.330	7.427	8.254	10.598	-
-1.4	21.254	23.657	25.214	25.018	25.888	26.580	6.918	7.788	8.480	-	-
-1.3	22.185	24.188	25.540	25.542	26.210	26.775	7.442	8.110	8.675	-	-
-1.2	23.026	24.682	25.835	26.001	26.502	26.953	7.901	8.402	8.853	-	-
-1.1	23.772	25.119	26.110	26.390	26.748	27.100	8.290	8.648	9.000	-	-
-1	24.430	25.527	26.354	26.719	26.965	27.230	8.619	8.865	9.130	-	-
-0.9	25.018	25.888	26.580	26.993	27.143	27.330	8.893	9.043	9.230	-	-
-0.8	25.542	26.210	26.775	27.209	27.284	27.412	9.109	9.184	9.312	-	-
-0.7	26.001	26.502	26.953	27.363	27.395	27.463	9.263	9.295	9.363	-	-
-0.6	26.390	26.748	27.100	27.459	27.462	27.498	9.359	9.362	9.398	-	-
-0.5	26.719	26.965	27.230	27.500	27.500	27.500	9.400	9.400	9.400	-	-
-0.4	26.993	27.143	27.330	27.500	27.500	27.500	9.400	9.400	9.400	-	-
-0.3	27.209	27.284	27.412	27.500	27.500	27.500	9.400	9.400	9.400	-	-
-0.2	27.363	27.395	27.463	27.500	27.500	27.500	9.400	9.400	9.400	-	-
-0.1	27.459	27.462	27.498	27.500	27.500	27.500	9.400	9.400	9.400	-	-
0	27.500	27.500	27.500	27.500	27.500	27.500	9.400	9.400	9.400	-	-
0.1	27.483	27.496	27.484	27.500	27.500	27.500	9.400	9.400	9.400	-	-
0.2	27.401	27.457	27.436	27.500	27.500	27.500	9.400	9.400	9.400	-	-
0.3	27.258	27.381	27.369	27.500	27.500	27.500	9.400	9.400	9.400	-	-
0.4	27.054	27.261	27.269	27.500	27.500	27.500	9.400	9.400	9.400	-	-
0.5	26.784	27.107	27.148	27.500	27.500	27.500	9.400	9.400	9.400	-	-
0.6	26.438	26.904	26.992	27.483	27.496	27.484	9.383	9.396	9.384	-	-
0.7	26.016	26.663	26.814	27.401	27.457	27.436	9.301	9.357	9.336	-	-
0.8	25.520	26.376	26.600	27.258	27.381	27.369	9.158	9.281	9.269	-	-
0.9	24.940	26.035	26.362	27.054	27.261	27.269	8.954	9.161	9.169	-	-
1	24.260	25.655	26.085	26.784	27.107	27.148	8.684	9.007	9.048	-	-
1.1	23.466	25.210	25.781	26.438	26.904	26.992	8.338	8.804	8.892	-	-
1.2	22.562	24.716	25.437	26.016	26.663	26.814	7.916	8.563	8.714	-	-
1.3	21.526	24.163	25.061	25.520	26.376	26.600	7.420	8.276	8.500	-	-
1.4	20.321	23.530	24.642	24.940	26.035	26.362	6.840	7.935	8.262	-	-
1.5	18.898	22.843	24.185	24.260	25.655	26.085	6.160	7.555	7.985	10.598	-
1.6	17.226	22.055	23.683	23.466	25.210	25.781	5.366	7.110	7.681	9.897	-
1.7	15.226	21.188	23.135	22.562	24.716	25.437	4.462	6.616	7.337	9.239	-
1.8	12.728	20.222	22.534	21.526	24.163	25.061	3.426	6.063	6.961	8.618	-
1.9	9.392	19.107	21.879	20.321	23.530	24.642	2.221	5.430	6.542	8.031	-

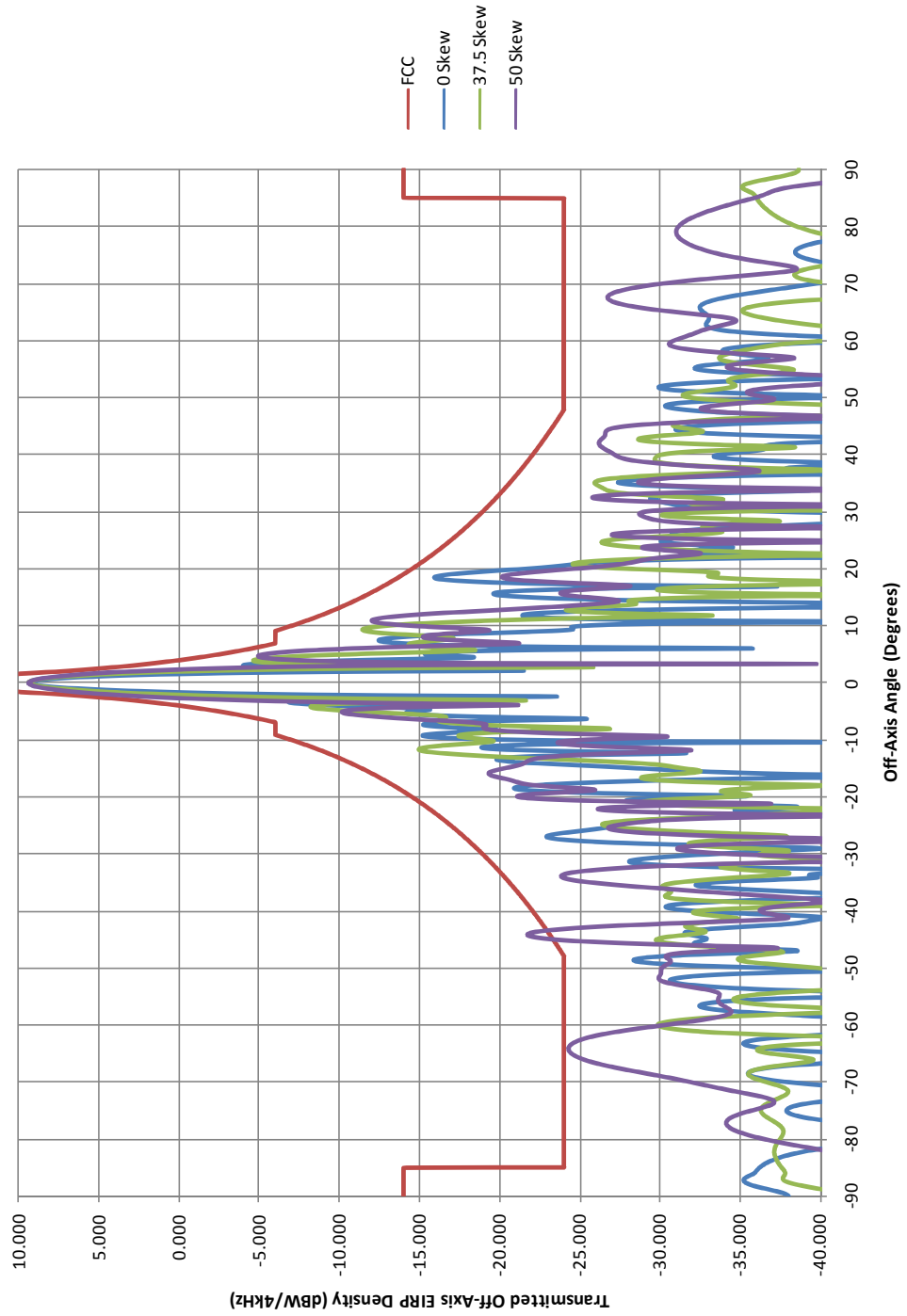
2	4.482	17.877	21.162	18.898	22.843	24.185	0.798	4.743	6.085	7.474	-
2.1	-3.228	16.434	20.375	17.226	22.055	23.683	-0.874	3.955	5.583	6.945	-
2.2	-0.505	14.766	19.512	15.226	21.188	23.135	-2.874	3.088	5.035	6.439	-
2.3	5.219	12.796	18.555	13.573	20.222	22.534	-4.527	2.122	4.434	5.957	-
2.4	8.502	10.289	17.498	13.951	19.107	21.879	-4.149	1.007	3.779	5.495	-
2.5	10.570	7.076	16.307	14.115	17.877	21.162	-3.985	-0.223	3.062	5.051	-
2.6	11.965	2.228	14.968	14.115	16.434	20.375	-3.985	-1.666	2.275	4.626	-
2.7	12.928	-7.533	13.415	14.115	14.766	19.512	-3.985	-3.334	1.412	4.216	-
2.8	13.573	-5.914	11.609	14.115	12.796	18.555	-3.985	-5.304	0.455	3.821	-
2.9	13.951	1.970	9.393	14.115	11.859	17.498	-3.985	-6.241	-0.602	3.440	-
3	14.115	5.712	6.603	14.115	12.498	16.307	-3.985	-5.602	-1.793	3.072	-
3.1	14.098	8.106	2.649	14.115	12.963	14.968	-3.985	-5.137	-3.132	2.716	-
3.2	13.912	9.770	-4.028	14.115	13.270	13.415	-3.985	-4.830	-4.685	2.371	-
3.3	13.556	10.957	-21.679	14.115	13.440	11.609	-3.985	-4.660	-6.491	2.037	-
3.4	13.044	11.859	-3.011	14.115	13.499	10.055	-3.985	-4.601	-8.045	1.713	-
3.5	12.381	12.498	2.332	14.115	13.499	10.924	-3.985	-4.601	-7.176	1.398	-
3.6	11.557	12.963	5.327	14.098	13.499	11.624	-4.002	-4.601	-6.476	1.092	-
3.7	10.548	13.270	7.412	13.912	13.499	12.143	-4.188	-4.601	-5.957	0.795	-
3.8	9.350	13.440	8.895	13.556	13.499	12.555	-4.544	-4.601	-5.545	0.505	-
3.9	7.967	13.499	10.055	13.044	13.499	12.837	-5.056	-4.601	-5.263	0.223	-
4	6.384	13.440	10.924	12.381	13.499	13.039	-5.719	-4.601	-5.061	-0.051	-
4.1	4.592	13.291	11.624	11.557	13.499	13.141	-6.543	-4.601	-4.959	-0.320	-
4.2	2.662	13.036	12.143	10.548	13.499	13.176	-7.552	-4.601	-4.924	-0.581	-
4.3	0.908	12.696	12.555	9.350	13.499	13.176	-8.750	-4.601	-4.924	-0.837	-
4.4	-0.187	12.265	12.837	7.967	13.499	13.176	-10.133	-4.601	-4.924	-1.086	-
4.5	-0.290	11.732	13.039	6.384	13.440	13.176	-11.716	-4.660	-4.924	-1.330	-
4.6	0.325	11.122	13.141	4.592	13.291	13.176	-13.508	-4.809	-4.924	-1.569	-
4.7	1.155	10.396	13.176	2.776	13.036	13.176	-15.324	-5.064	-4.924	-1.802	-
4.8	1.896	9.584	13.129	2.776	12.696	13.176	-15.324	-5.404	-4.924	-2.031	-
4.9	2.437	8.667	13.022	2.776	12.265	13.176	-15.324	-5.835	-4.924	-2.255	-
5	2.735	7.619	12.843	2.776	11.732	13.176	-15.324	-6.368	-4.924	-2.474	-
5.1	2.776	6.490	12.606	2.776	11.122	13.176	-15.324	-6.978	-4.924	-2.689	-
5.2	2.580	5.215	12.304	2.776	10.396	13.176	-15.324	-7.704	-4.924	-2.900	-
5.3	2.144	3.874	11.941	2.776	9.584	13.129	-15.324	-8.516	-4.971	-3.107	-
5.4	1.435	2.505	11.517	2.776	8.667	13.022	-15.324	-9.433	-5.078	-3.310	-
5.5	0.390	1.179	11.026	2.776	7.619	12.843	-15.324	-10.481	-5.257	-3.509	-
5.6	-1.036	0.182	10.476	2.776	6.490	12.606	-15.324	-11.610	-5.494	-3.705	-
5.7	-2.972	-0.348	9.848	2.580	5.215	12.304	-15.520	-12.885	-5.796	-3.897	-
5.8	-5.729	-0.308	9.158	2.144	3.874	11.941	-15.956	-14.226	-6.159	-4.086	-
5.9	-10.085	0.180	8.374	1.435	3.179	11.517	-16.665	-14.921	-6.583	-4.271	-
6	-17.553	0.848	7.523	0.390	3.491	11.026	-17.710	-14.609	-7.074	-4.454	-
6.1	-14.773	1.555	6.555	1.332	3.697	10.476	-16.768	-14.403	-7.624	-4.633	-
6.2	-8.408	2.206	5.510	2.472	3.799	9.848	-15.628	-14.301	-8.252	-4.810	-
6.3	-4.593	2.743	4.321	3.382	3.799	9.158	-14.718	-14.301	-8.942	-4.984	-
6.4	-1.991	3.179	3.049	4.089	3.799	8.374	-14.011	-14.301	-9.726	-5.154	-
6.5	-0.108	3.491	1.624	4.637	3.799	7.523	-13.463	-14.301	-10.577	-5.323	-
6.6	1.332	3.697	0.169	5.054	3.799	6.555	-13.046	-14.301	-11.545	-5.489	-
6.7	2.472	3.799	-1.303	5.356	3.799	5.510	-12.744	-14.301	-12.590	-5.652	-
6.8	3.382	3.793	-2.467	5.547	3.799	4.321	-12.553	-14.301	-13.779	-5.813	-
6.9	4.089	3.706	-3.105	5.639	3.799	3.049	-12.461	-14.301	-15.051	-5.971	-
7	4.637	3.514	-2.991	5.643	3.799	1.624	-12.457	-14.301	-16.476	-6.000	-
7.1	5.054	3.255	-2.322	5.643	3.799	1.719	-12.457	-14.301	-16.381	-6.000	-
7.2	5.356	2.920	-1.410	5.643	3.799	2.188	-12.457	-14.301	-15.912	-6.000	-
7.3	5.547	2.525	-0.460	5.643	3.793	2.533	-12.457	-14.307	-15.567	-6.000	-
7.4	5.639	2.113	0.388	5.643	3.706	2.758	-12.457	-14.394	-15.342	-6.000	-
7.5	5.643	1.686	1.126	5.643	3.514	2.881	-12.457	-14.586	-15.219	-6.000	-
7.6	5.561	1.331	1.719	5.643	3.255	2.885	-12.457	-14.845	-15.215	-6.000	-
7.7	5.392	1.075	2.188	5.643	2.920	2.885	-12.457	-15.180	-15.215	-6.000	-
7.8	5.141	0.992	2.533	5.643	3.069	2.885	-12.457	-15.031	-15.215	-6.000	-
7.9	4.813	1.103	2.758	5.643	3.678	2.885	-12.457	-14.422	-15.215	-6.000	-

8	4.405	1.416	2.881	5.643	4.272	2.885	-12.457	-13.828	-15.215	-6.000	-
8.1	3.908	1.882	2.885	5.561	4.805	2.885	-12.539	-13.295	-15.215	-6.000	-
8.2	3.326	2.446	2.804	5.392	5.280	2.885	-12.708	-12.820	-15.215	-6.000	-
8.3	2.664	3.069	2.602	5.141	5.693	2.885	-12.959	-12.407	-15.215	-6.000	-
8.4	1.914	3.678	2.329	4.813	6.028	2.885	-13.287	-12.072	-15.215	-6.000	-
8.5	1.065	4.272	1.935	4.405	6.300	2.885	-13.695	-11.800	-15.215	-6.000	-
8.6	0.122	4.805	1.488	3.908	6.495	2.885	-14.192	-11.605	-15.215	-6.000	-
8.7	-0.895	5.280	0.935	3.326	6.624	2.804	-14.774	-11.476	-15.296	-6.000	-
8.8	-1.971	5.693	0.372	2.664	6.682	2.602	-15.436	-11.418	-15.498	-6.000	-
8.9	-3.083	6.028	-0.232	1.914	6.682	2.329	-16.186	-11.418	-15.771	-6.000	-
9	-4.177	6.300	-0.739	1.065	6.682	1.935	-17.035	-11.418	-16.165	-6.000	-
9.1	-5.136	6.495	-1.125	0.122	6.682	1.488	-17.978	-11.418	-16.612	-6.000	-
9.2	-5.861	6.624	-1.255	-0.895	6.682	1.446	-18.995	-11.418	-16.654	-6.095	-
9.3	-6.300	6.682	-1.103	-1.971	6.682	2.182	-20.071	-11.418	-15.918	-6.212	-
9.4	-6.481	6.674	-0.686	-3.083	6.682	2.891	-21.183	-11.418	-15.209	-6.328	-
9.5	-6.478	6.600	-0.052	-4.177	6.682	3.516	-22.277	-11.418	-14.584	-6.443	-
9.6	-6.401	6.458	0.667	-5.136	6.682	4.085	-23.236	-11.418	-14.015	-6.557	-
9.7	-6.356	6.258	1.446	-5.861	6.682	4.569	-23.961	-11.418	-13.531	-6.669	-
9.8	-6.432	5.988	2.182	-6.300	6.682	4.988	-24.400	-11.418	-13.112	-6.781	-
9.9	-6.684	5.662	2.891	-6.356	6.674	5.331	-24.456	-11.426	-12.769	-6.891	-
10	-7.139	5.271	3.516	-6.356	6.600	5.609	-24.456	-11.500	-12.491	-7.000	-
15	-3.697	-14.924	-7.393	-1.583	-10.168	-5.885	-19.683	-28.268	-23.985	-11.402	-
20	-3.537	-9.910	-6.533	-0.874	-6.937	-4.333	-18.974	-25.037	-22.433	-14.526	-
25	-12.111	-8.658	-19.914	-11.950	-8.230	-10.622	-30.050	-26.330	-28.722	-16.949	-
30	-19.306	-16.125	-10.979	-14.958	-12.115	-10.612	-33.058	-30.215	-28.712	-18.928	-
35	-9.399	-7.800	-10.649	-9.294	-7.800	-10.538	-27.394	-25.900	-28.638	-20.602	-
40	-15.616	-11.987	-9.066	-15.260	-11.608	-8.768	-33.360	-29.708	-26.868	-22.051	-
45	-14.114	-12.762	-9.817	-12.887	-12.677	-8.792	-30.987	-30.777	-26.892	-23.330	-
50	-23.064	-13.738	-18.748	-15.981	-13.288	-17.706	-34.081	-31.388	-35.806	-24.000	-
55	-14.160	-20.080	-16.460	-14.076	-18.562	-16.073	-32.176	-36.662	-34.173	-24.000	-
60	-25.540	-22.412	-12.773	-20.639	-19.990	-12.479	-38.739	-38.090	-30.579	-24.000	-
65	-14.617	-17.065	-12.863	-14.432	-17.013	-11.334	-32.532	-35.113	-29.434	-24.000	-
70	-21.716	-22.694	-12.109	-20.449	-21.258	-10.827	-38.549	-39.358	-28.927	-24.000	-
75	-20.481	-27.977	-15.838	-20.347	-26.350	-15.119	-38.447	-44.450	-33.219	-24.000	-
80	-31.016	-20.404	-13.070	-28.502	-19.981	-12.953	-46.602	-38.081	-31.053	-24.000	-
85	-29.921	-17.899	-17.801	-29.443	-17.776	-17.123	-47.543	-35.876	-35.223	-14.000	-
90	-30.603	-20.533	-27.646	-30.475	-20.383	-27.498	-48.575	-38.483	-45.598	-14.000	-
95	-2.5	-2.5	-2.5	-2.5	-2.5	-2.5	-20.600	-20.600	-20.600	-14.000	-
100	-2.5	-2.5	-2.5	-2.5	-2.5	-2.5	-20.600	-20.600	-20.600	-14.000	-
105	-2.5	-2.5	-2.5	-2.5	-2.5	-2.5	-20.600	-20.600	-20.600	-14.000	-
110	-2.5	-2.5	-2.5	-2.5	-2.5	-2.5	-20.600	-20.600	-20.600	-14.000	-
115	-2.5	-2.5	-2.5	-2.5	-2.5	-2.5	-20.600	-20.600	-20.600	-14.000	-
120	-2.5	-2.5	-2.5	-2.5	-2.5	-2.5	-20.600	-20.600	-20.600	-14.000	-
125	-2.5	-2.5	-2.5	-2.5	-2.5	-2.5	-20.600	-20.600	-20.600	-14.000	-
130	-2.5	-2.5	-2.5	-2.5	-2.5	-2.5	-20.600	-20.600	-20.600	-14.000	-
135	-2.5	-2.5	-2.5	-2.5	-2.5	-2.5	-20.600	-20.600	-20.600	-14.000	-
140	-2.5	-2.5	-2.5	-2.5	-2.5	-2.5	-20.600	-20.600	-20.600	-14.000	-
145	-2.5	-2.5	-2.5	-2.5	-2.5	-2.5	-20.600	-20.600	-20.600	-14.000	-
150	-2.5	-2.5	-2.5	-2.5	-2.5	-2.5	-20.600	-20.600	-20.600	-14.000	-
155	-2.5	-2.5	-2.5	-2.5	-2.5	-2.5	-20.600	-20.600	-20.600	-14.000	-
160	-2.5	-2.5	-2.5	-2.5	-2.5	-2.5	-20.600	-20.600	-20.600	-14.000	-
165	-2.5	-2.5	-2.5	-2.5	-2.5	-2.5	-20.600	-20.600	-20.600	-14.000	-
170	-2.5	-2.5	-2.5	-2.5	-2.5	-2.5	-20.600	-20.600	-20.600	-14.000	-
175	-2.5	-2.5	-2.5	-2.5	-2.5	-2.5	-20.600	-20.600	-20.600	-14.000	-
180	-2.5	-2.5	-2.5	-2.5	-2.5	-2.5	-20.600	-20.600	-20.600	-14.000	-

14.0GHz H-Pol, Nominal Transmitted Co-Pol PSD with -18.1dBW/4KHz at Input



14.0GHz H-Pol Nominal Transmitted Co-Pol PSD with-18.1dBW/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): 27.5
a2	Antenna Model:	SR3000	D Frequency at which gain was measured (GHz): 14.0
a3	Antenna ID:	RAS	E Max input power density (dBW/4kHz): -18.1
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 = -18.1dBW/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	-2.5	-2.5	-2.5	-2.5	-2.5	-2.5	-20.600	-20.600		
-175	-2.5	-2.5	-2.5	-2.5	-2.5	-2.5	-20.600	-20.600	-20.600	-14.000	-
-170	-2.5	-2.5	-2.5	-2.5	-2.5	-2.5	-20.600	-20.600	-20.600	-14.000	-
-165	-2.5	-2.5	-2.5	-2.5	-2.5	-2.5	-20.600	-20.600	-20.600	-14.000	-
-160	-2.5	-2.5	-2.5	-2.5	-2.5	-2.5	-20.600	-20.600	-20.600	-14.000	-
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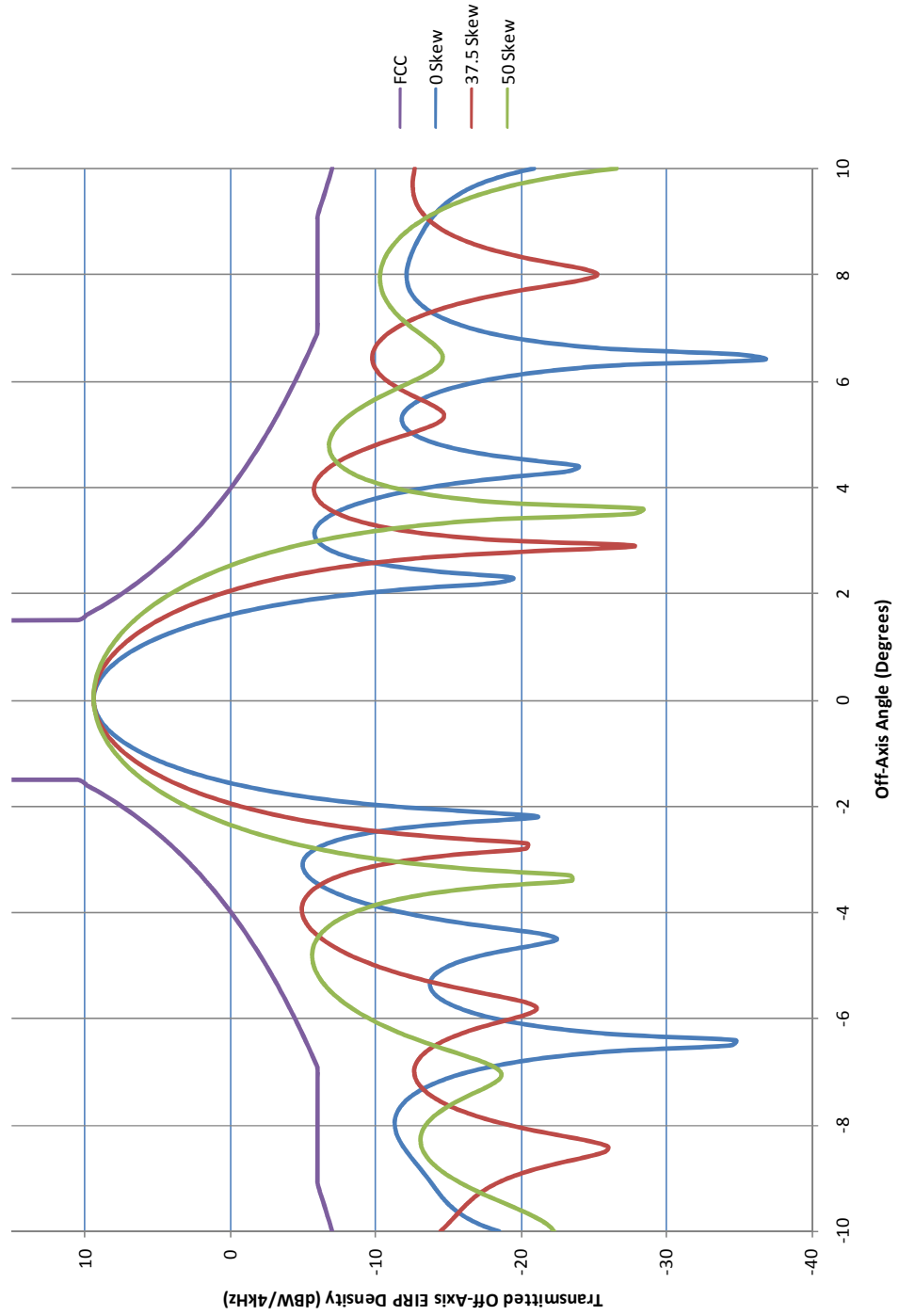
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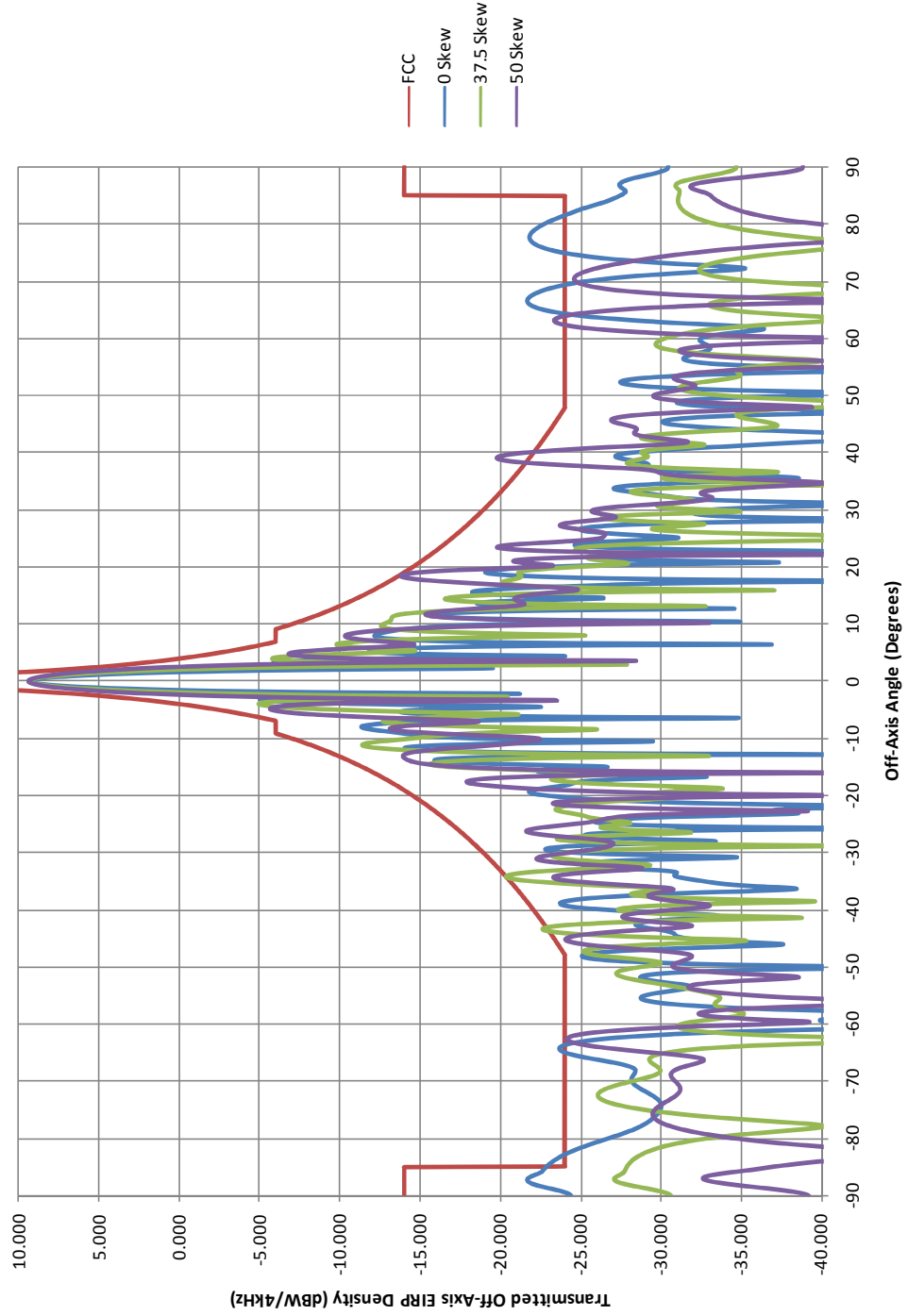
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2.1	5.257	17.529	21.571	18.173	22.351	24.281	0.073	4.251	6.181	6.945	-
2.2	-0.078	16.171	20.880	16.552	21.583	23.823	-1.548	3.483	5.723	6.439	-
2.3	-1.348	14.621	20.128	14.632	20.738	23.328	-3.468	2.638	5.228	5.957	-
2.4	3.136	12.747	19.303	12.270	19.777	22.790	-5.830	1.677	4.690	5.495	-
2.5	6.418	10.527	18.399	12.111	18.730	22.206	-5.989	0.630	4.106	5.051	-
2.6	8.574	7.652	17.396	12.280	17.529	21.571	-5.820	-0.571	3.471	4.626	-
2.7	10.048	3.647	16.286	12.280	16.171	20.880	-5.820	-1.929	2.780	4.216	-
2.8	11.061	-2.810	15.029	12.280	14.621	20.128	-5.820	-3.479	2.028	3.821	-
2.9	11.722	-9.732	13.612	12.280	12.747	19.303	-5.820	-5.353	1.203	3.440	-
3	12.111	-0.924	11.953	12.280	10.649	18.399	-5.820	-7.451	0.299	3.072	-
3.1	12.280	3.705	10.005	12.280	11.355	17.396	-5.820	-6.745	-0.704	2.716	-
3.2	12.250	6.483	7.575	12.280	11.846	16.286	-5.820	-6.254	-1.814	2.371	-
3.3	12.024	8.334	4.432	12.280	12.155	15.029	-5.820	-5.945	-3.071	2.037	-
3.4	11.617	9.688	-0.270	12.280	12.318	13.612	-5.820	-5.782	-4.488	1.713	-
3.5	11.033	10.649	-9.566	12.280	12.333	11.953	-5.820	-5.767	-6.147	1.398	-
3.6	10.253	11.355	-10.250	12.280	12.333	10.005	-5.820	-5.767	-8.095	1.092	-
3.7	9.241	11.846	-1.397	12.250	12.333	9.228	-5.850	-5.767	-8.872	0.795	-
3.8	7.970	12.155	2.706	12.024	12.333	9.943	-6.076	-5.767	-8.157	0.505	-
3.9	6.402	12.318	5.199	11.617	12.333	10.494	-6.483	-5.767	-7.606	0.223	-
4	4.436	12.333	6.977	11.033	12.333	10.871	-7.067	-5.767	-7.229	-0.051	-
4.1	1.897	12.229	8.247	10.253	12.333	11.132	-7.847	-5.767	-6.968	-0.320	-
4.2	-1.410	11.991	9.228	9.241	12.333	11.266	-8.859	-5.767	-6.834	-0.581	-
4.3	-5.084	11.642	9.943	7.970	12.333	11.305	-10.130	-5.767	-6.795	-0.837	-
4.4	-5.878	11.170	10.494	6.402	12.333	11.305	-11.698	-5.767	-6.795	-1.086	-
4.5	-2.936	10.571	10.871	5.467	12.333	11.305	-12.633	-5.767	-6.795	-1.330	-
4.6	-0.019	9.866	11.132	5.963	12.229	11.305	-12.137	-5.871	-6.795	-1.569	-
4.7	2.100	9.014	11.266	6.222	11.991	11.305	-11.878	-6.109	-6.795	-1.802	-
4.8	3.609	8.068	11.305	6.282	11.642	11.305	-11.818	-6.458	-6.795	-2.031	-
4.9	4.697	7.011	11.242	6.282	11.170	11.305	-11.818	-6.930	-6.795	-2.255	-
5	5.467	5.889	11.094	6.282	10.571	11.305	-11.818	-7.529	-6.795	-2.474	-
5.1	5.963	4.824	10.859	6.282	9.866	11.305	-11.818	-8.234	-6.795	-2.689	-
5.2	6.222	3.928	10.542	6.282	9.014	11.305	-11.818	-9.086	-6.795	-2.900	-
5.3	6.282	3.445	10.148	6.282	8.068	11.305	-11.818	-10.032	-6.795	-3.107	-
5.4	6.155	3.442	9.671	6.282	7.011	11.242	-11.818	-11.089	-6.858	-3.310	-
5.5	5.833	3.900	9.128	6.282	7.299	11.094	-11.818	-10.801	-7.006	-3.509	-
5.6	5.315	4.581	8.501	6.282	7.716	10.859	-11.818	-10.384	-7.241	-3.705	-
5.7	4.598	5.365	7.825	6.282	8.036	10.542	-11.818	-10.064	-7.558	-3.897	-
5.8	3.653	6.100	7.076	6.282	8.233	10.148	-11.818	-9.867	-7.952	-4.086	-
5.9	2.412	6.745	6.315	6.155	8.327	9.671	-11.945	-9.773	-8.429	-4.271	-
6	0.801	7.299	5.525	5.833	8.327	9.128	-12.267	-9.773	-8.972	-4.454	-
6.1	-1.297	7.716	4.806	5.315	8.327	8.501	-12.785	-9.773	-9.599	-4.633	-
6.2	-4.189	8.036	4.166	4.598	8.327	7.825	-13.502	-9.773	-10.275	-4.810	-
6.3	-8.709	8.233	3.724	3.653	8.327	7.076	-14.447	-9.773	-11.024	-4.984	-
6.4	-18.616	8.327	3.496	2.412	8.327	6.315	-15.688	-9.773	-11.785	-5.154	-
6.5	-16.905	8.318	3.518	1.611	8.327	5.583	-16.489	-9.773	-12.517	-5.323	-
6.6	-8.463	8.200	3.754	2.710	8.327	6.022	-15.390	-9.773	-12.078	-5.489	-
6.7	-4.355	7.988	4.128	3.586	8.327	6.441	-14.514	-9.773	-11.659	-5.652	-
6.8	-1.683	7.660	4.604	4.271	8.327	6.783	-13.829	-9.773	-11.317	-5.813	-
6.9	0.202	7.235	5.085	4.795	8.327	7.094	-13.305	-9.773	-11.006	-5.971	-
7	1.611	6.685	5.583	5.201	8.318	7.330	-12.899	-9.782	-10.770	-6.000	-
7.1	2.710	6.018	6.022	5.511	8.200	7.530	-12.589	-9.900	-10.570	-6.000	-
7.2	3.586	5.219	6.441	5.729	7.988	7.663	-12.371	-10.112	-10.437	-6.000	-
7.3	4.271	4.247	6.783	5.863	7.660	7.759	-12.237	-10.440	-10.341	-6.000	-
7.4	4.795	3.122	7.094	5.934	7.235	7.795	-12.166	-10.865	-10.305	-6.000	-
7.5	5.201	1.754	7.330	5.954	6.685	7.795	-12.146	-11.415	-10.305	-6.000	-
7.6	5.511	0.153	7.530	5.954	6.018	7.795	-12.146	-12.082	-10.305	-6.000	-
7.7	5.729	-1.734	7.663	5.954	5.219	7.795	-12.146	-12.881	-10.305	-6.000	-
7.8	5.863	-3.943	7.759	5.954	4.247	7.795	-12.146	-13.853	-10.305	-6.000	-
7.9	5.934	-6.062	7.795	5.954	3.122	7.795	-12.146	-14.978	-10.305	-6.000	-

8	5.954	-7.158	7.792	5.954	1.754	7.795	-12.146	-16.346	-10.305	-6.000	-
8.1	5.923	-6.339	7.736	5.954	1.572	7.795	-12.146	-16.528	-10.305	-6.000	-
8.2	5.845	-4.446	7.638	5.954	2.478	7.795	-12.146	-15.622	-10.305	-6.000	-
8.3	5.737	-2.517	7.493	5.954	3.229	7.795	-12.146	-14.871	-10.305	-6.000	-
8.4	5.606	-0.901	7.300	5.954	3.820	7.795	-12.146	-14.280	-10.305	-6.000	-
8.5	5.452	0.478	7.063	5.954	4.319	7.792	-12.146	-13.781	-10.308	-6.000	-
8.6	5.272	1.572	6.770	5.923	4.697	7.736	-12.177	-13.403	-10.364	-6.000	-
8.7	5.079	2.478	6.434	5.845	4.997	7.638	-12.255	-13.103	-10.462	-6.000	-
8.8	4.877	3.229	6.030	5.737	5.227	7.493	-12.363	-12.873	-10.607	-6.000	-
8.9	4.656	3.820	5.581	5.606	5.378	7.300	-12.494	-12.722	-10.800	-6.000	-
9	4.402	4.319	5.045	5.452	5.489	7.063	-12.648	-12.611	-11.037	-6.000	-
9.1	4.120	4.697	4.458	5.272	5.535	6.770	-12.828	-12.565	-11.330	-6.000	-
9.2	3.803	4.997	3.759	5.079	5.549	6.434	-13.021	-12.551	-11.666	-6.095	-
9.3	3.434	5.227	2.991	4.877	5.549	6.030	-13.223	-12.551	-12.070	-6.212	-
9.4	2.980	5.378	2.071	4.656	5.549	5.581	-13.444	-12.551	-12.519	-6.328	-
9.5	2.437	5.489	1.046	4.402	5.549	5.045	-13.698	-12.551	-13.055	-6.443	-
9.6	1.790	5.535	-0.202	4.120	5.549	4.458	-13.980	-12.551	-13.642	-6.557	-
9.7	1.001	5.549	-1.630	3.803	5.549	3.759	-14.297	-12.551	-14.341	-6.669	-
9.8	0.006	5.528	-3.430	3.434	5.549	2.991	-14.666	-12.551	-15.109	-6.781	-
9.9	-1.241	5.474	-5.594	2.980	5.549	2.071	-15.120	-12.551	-16.029	-6.891	-
10	-2.803	5.413	-8.475	2.437	5.549	1.046	-15.663	-12.551	-17.054	-7.000	-
15	-3.172	-0.424	-3.392	-0.199	1.537	-2.760	-18.299	-16.563	-20.860	-11.402	-
20	-4.721	-6.546	-4.156	-1.646	-3.875	0.462	-19.746	-21.975	-17.638	-14.526	-
25	-12.840	-27.988	-8.049	-9.076	-18.517	-6.071	-27.176	-36.617	-24.171	-16.949	-
30	-15.028	-15.080	-7.692	-13.943	-11.824	-7.552	-32.043	-29.924	-25.652	-18.928	-
35	-16.283	-14.836	-20.507	-11.519	-11.975	-15.952	-29.619	-30.075	-34.052	-20.602	-
40	-10.089	-10.642	-3.437	-9.089	-10.642	-2.027	-27.189	-28.742	-20.127	-22.051	1.924
45	-12.432	-18.971	-9.438	-11.978	-18.144	-8.829	-30.078	-36.244	-26.929	-23.330	-
50	-21.973	-15.782	-11.404	-15.289	-14.066	-11.398	-33.389	-32.166	-29.498	-24.000	-
55	-19.842	-17.566	-22.068	-15.399	-16.644	-16.822	-33.499	-34.744	-34.922	-24.000	-
60	-14.374	-12.130	-26.511	-14.297	-11.717	-15.788	-32.397	-29.817	-33.888	-24.000	-
65	-4.585	-16.018	-9.263	-4.009	-15.074	-7.279	-22.109	-33.174	-25.379	-24.000	1.891
70	-7.272	-17.861	-6.566	-6.155	-16.073	-6.464	-24.255	-34.173	-24.564	-24.000	-
75	-5.778	-19.844	-13.986	-4.979	-18.160	-12.477	-23.079	-36.260	-30.577	-24.000	0.921
80	-4.615	-15.269	-21.738	-4.286	-14.644	-20.146	-22.386	-32.744	-38.246	-24.000	1.614
85	-9.364	-12.992	-14.952	-8.977	-12.950	-14.588	-27.077	-31.050	-32.688	-14.000	-
90	-12.337	-16.556	-20.701	-12.201	-16.406	-20.451	-30.301	-34.506	-38.551	-14.000	-
95	-2.5	-2.5	-2.5	-2.5	-2.5	-2.5	-20.600	-20.600	-20.600	-14.000	-
100	-2.5	-2.5	-2.5	-2.5	-2.5	-2.5	-20.600	-20.600	-20.600	-14.000	-
105	-2.5	-2.5	-2.5	-2.5	-2.5	-2.5	-20.600	-20.600	-20.600	-14.000	-
110	-2.5	-2.5	-2.5	-2.5	-2.5	-2.5	-20.600	-20.600	-20.600	-14.000	-
115	-2.5	-2.5	-2.5	-2.5	-2.5	-2.5	-20.600	-20.600	-20.600	-14.000	-
120	-2.5	-2.5	-2.5	-2.5	-2.5	-2.5	-20.600	-20.600	-20.600	-14.000	-
125	-2.5	-2.5	-2.5	-2.5	-2.5	-2.5	-20.600	-20.600	-20.600	-14.000	-
130	-2.5	-2.5	-2.5	-2.5	-2.5	-2.5	-20.600	-20.600	-20.600	-14.000	-
135	-2.5	-2.5	-2.5	-2.5	-2.5	-2.5	-20.600	-20.600	-20.600	-14.000	-
140	-2.5	-2.5	-2.5	-2.5	-2.5	-2.5	-20.600	-20.600	-20.600	-14.000	-
145	-2.5	-2.5	-2.5	-2.5	-2.5	-2.5	-20.600	-20.600	-20.600	-14.000	-
150	-2.5	-2.5	-2.5	-2.5	-2.5	-2.5	-20.600	-20.600	-20.600	-14.000	-
155	-2.5	-2.5	-2.5	-2.5	-2.5	-2.5	-20.600	-20.600	-20.600	-14.000	-
160	-2.5	-2.5	-2.5	-2.5	-2.5	-2.5	-20.600	-20.600	-20.600	-14.000	-
165	-2.5	-2.5	-2.5	-2.5	-2.5	-2.5	-20.600	-20.600	-20.600	-14.000	-
170	-2.5	-2.5	-2.5	-2.5	-2.5	-2.5	-20.600	-20.600	-20.600	-14.000	-
175	-2.5	-2.5	-2.5	-2.5	-2.5	-2.5	-20.600	-20.600	-20.600	-14.000	-
180	-2.5	-2.5	-2.5	-2.5	-2.5	-2.5	-20.600	-20.600	-20.600	-14.000	-

14.0GHz V-Pol, Nominal Transmitted Co-Pol PSD with -18.1dBW/4KHz at Input



14.0GHz V-Pol Nominal Transmitted Co-Pol PSD with-18.1dBW/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): 27.5
a2	Antenna Model:	SR3000	D Frequency at which gain was measured (GHz): 14.25
a3	Antenna ID:	RAS	E Max input power density (dBW/4kHz): -18.1
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 = -18.1dBW/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	-2.5	-2.5	-2.5	-2.5	-2.5	-2.5	-20.600	-20.600	-20.600	-14.000	-
-175	-2.5	-2.5	-2.5	-2.5	-2.5	-2.5	-20.600	-20.600	-20.600	-14.000	-
-170	-2.5	-2.5	-2.5	-2.5	-2.5	-2.5	-20.600	-20.600	-20.600	-14.000	-
-165	-2.5	-2.5	-2.5	-2.5	-2.5	-2.5	-20.600	-20.600	-20.600	-14.000	-
-160	-2.5	-2.5	-2.5	-2.5	-2.5	-2.5	-20.600	-20.600	-20.600	-14.000	-
-155	-2.5	-2.5	-2.5	-2.5	-2.5	-2.5	-20.600	-20.600	-20.600	-14.000	-
-150	-2.5	-2.5	-2.5	-2.5	-2.5	-2.5	-20.600	-20.600	-20.600	-14.000	-
-145	-2.5	-2.5	-2.5	-2.5	-2.5	-2.5	-20.600	-20.600	-20.600	-14.000	-
-140	-2.5	-2.5	-2.5	-2.5	-2.5	-2.5	-20.600	-20.600	-20.600	-14.000	-
-135	-2.5	-2.5	-2.5	-2.5	-2.5	-2.5	-20.600	-20.600	-20.600	-14.000	-
-130	-2.5	-2.5	-2.5	-2.5	-2.5	-2.5	-20.600	-20.600	-20.600	-14.000	-
-125	-2.5	-2.5	-2.5	-2.5	-2.5	-2.5	-20.600	-20.600	-20.600	-14.000	-
-120	-2.5	-2.5	-2.5	-2.5	-2.5	-2.5	-20.600	-20.600	-20.600	-14.000	-
-115	-2.5	-2.5	-2.5	-2.5	-2.5	-2.5	-20.600	-20.600	-20.600	-14.000	-
-110	-2.5	-2.5	-2.5	-2.5	-2.5	-2.5	-20.600	-20.600	-20.600	-14.000	-
-105	-2.5	-2.5	-2.5	-2.5	-2.5	-2.5	-20.600	-20.600	-20.600	-14.000	-
-100	-2.5	-2.5	-2.5	-2.5	-2.5	-2.5	-20.600	-20.600	-20.600	-14.000	-
-95	-2.5	-2.5	-2.5	-2.5	-2.5	-2.5	-20.600	-20.600	-20.600	-14.000	-
-90	-14.903	-31.512	-21.056	-14.786	-31.318	-20.708	-32.886	-49.418	-38.808	-14.000	-
-85	-12.716	-28.446	-10.680	-12.715	-28.109	-10.406	-30.815	-46.209	-28.506	-14.000	-
-80	-18.111	-28.014	-11.361	-16.661	-27.783	-11.176	-34.761	-45.883	-29.276	-24.000	-
-75	-17.259	-52.342	-14.003	-17.164	-38.936	-13.759	-35.264	-57.036	-31.859	-24.000	-
-70	-13.929	-20.432	-15.173	-13.904	-20.085	-15.173	-32.004	-38.185	-33.273	-24.000	-
-65	-13.726	-20.925	-13.485	-13.484	-20.671	-12.466	-31.584	-38.771	-30.566	-24.000	-
-60	-10.534	-22.087	-16.270	-9.983	-18.050	-13.979	-28.083	-36.150	-32.079	-24.000	-
-55	-15.946	-23.641	-8.619	-12.514	-20.366	-8.363	-30.614	-38.466	-26.463	-24.000	-
-50	-7.798	-11.227	-38.448	-7.380	-9.664	-19.736	-25.480	-27.764	-37.836	-24.000	-
-45	-15.463	-15.006	-10.810	-11.518	-14.660	-10.687	-29.618	-32.760	-28.787	-23.330	-
-40	-25.588	-22.616	-9.115	-11.906	-17.718	-7.328	-30.006	-35.818	-25.428	-22.051	-
-35	-16.166	-21.352	-8.948	-12.175	-13.256	-8.944	-30.275	-31.356	-27.044	-20.602	-
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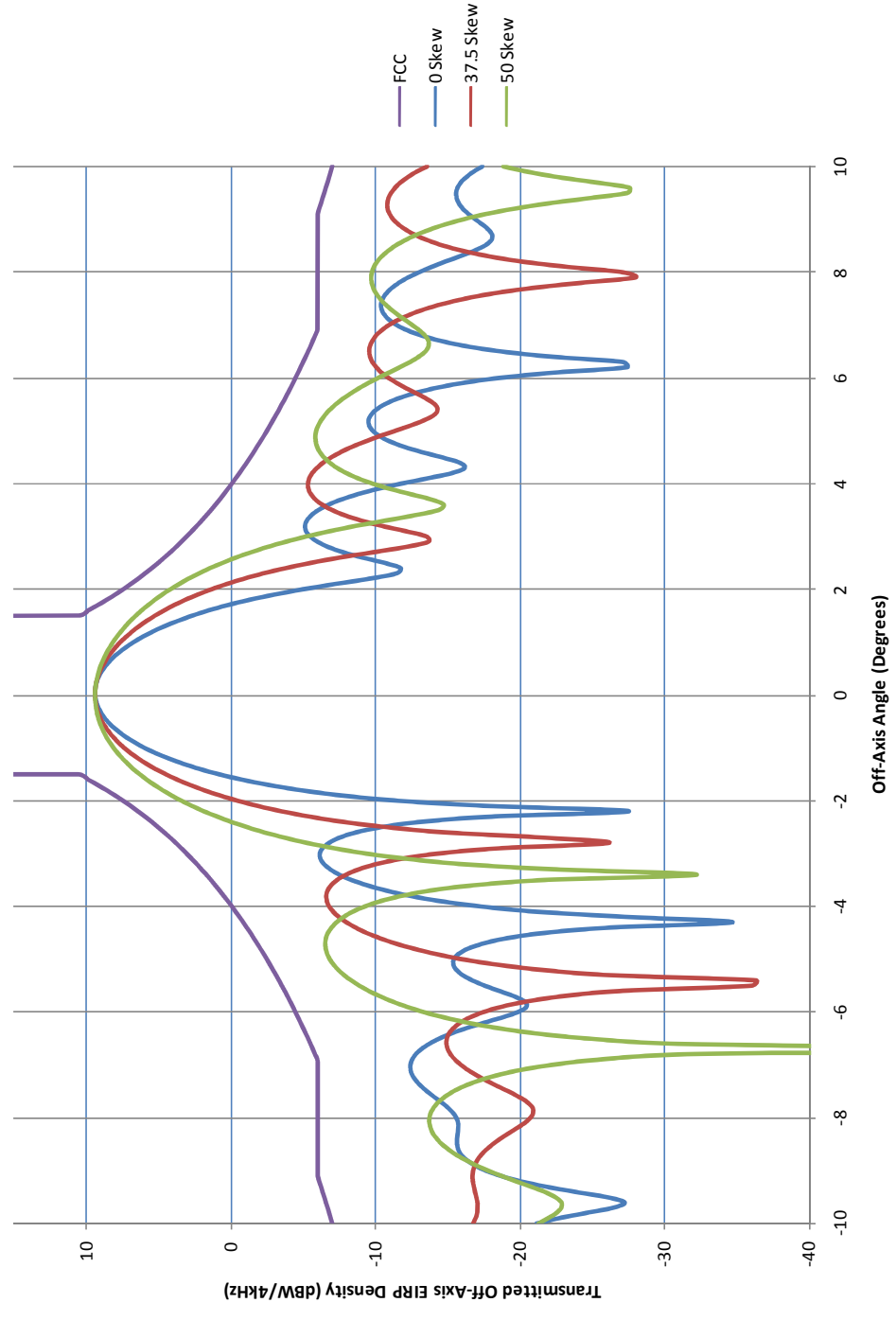
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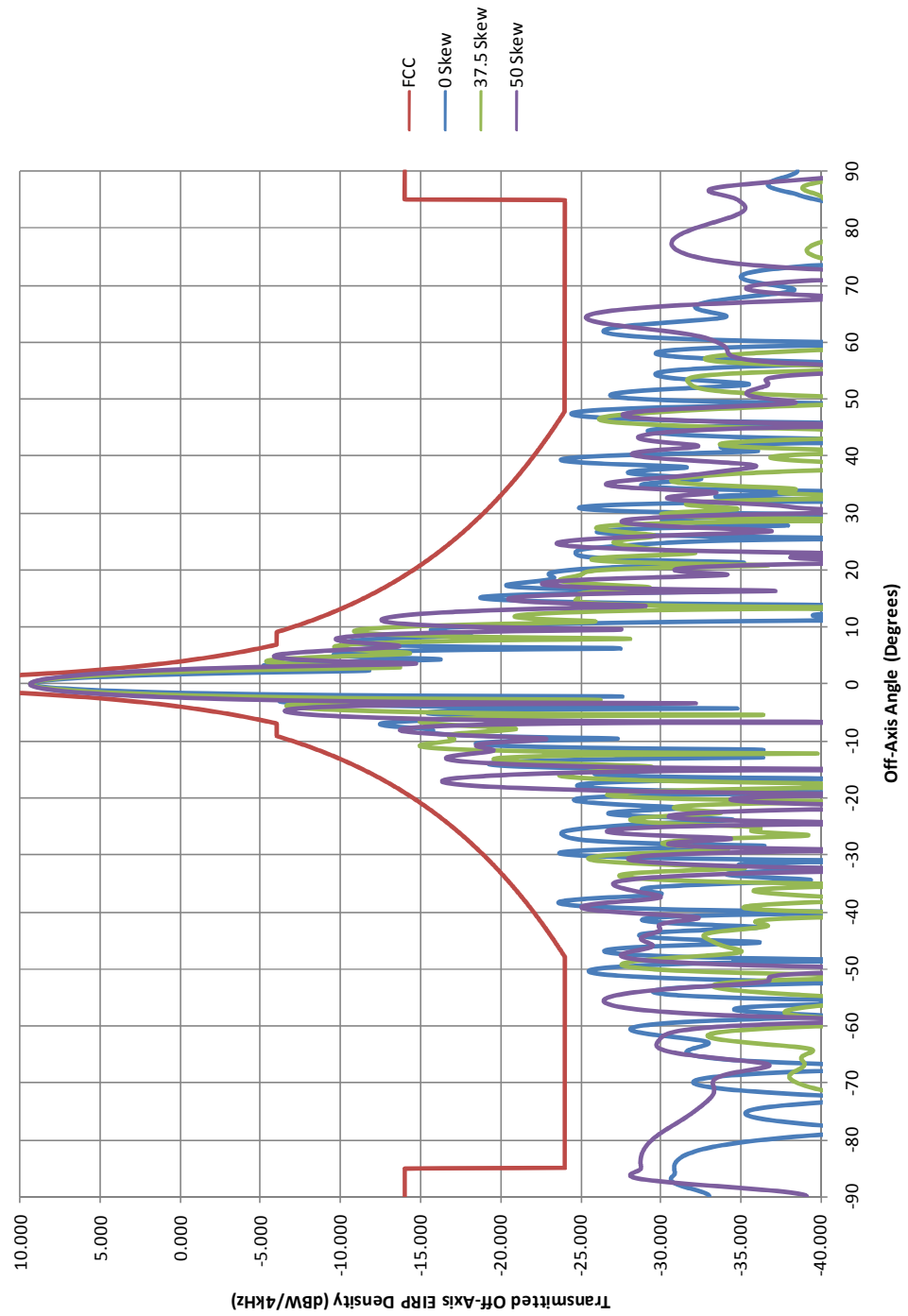
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4.7	6.150	9.684	12.152	8.560	12.459	12.262	-9.540	-5.641	-5.838	-1.802	-
4.8	7.102	8.771	12.247	8.560	12.125	12.262	-9.540	-5.975	-5.838	-2.031	-
4.9	7.800	7.791	12.262	8.560	11.695	12.262	-9.540	-6.405	-5.838	-2.255	-
5	8.269	6.714	12.203	8.560	11.128	12.262	-9.540	-6.972	-5.838	-2.474	-
5.1	8.522	5.649	12.068	8.560	10.462	12.262	-9.540	-7.638	-5.838	-2.689	-
5.2	8.560	4.703	11.870	8.560	9.684	12.262	-9.540	-8.416	-5.838	-2.900	-
5.3	8.397	4.022	11.597	8.560	8.771	12.262	-9.540	-9.329	-5.838	-3.107	-
5.4	8.033	3.782	11.267	8.560	7.791	12.262	-9.540	-10.309	-5.838	-3.310	-
5.5	7.453	3.974	10.860	8.560	7.176	12.203	-9.540	-10.924	-5.897	-3.509	-
5.6	6.622	4.521	10.400	8.560	7.669	12.068	-9.540	-10.431	-6.032	-3.705	-
5.7	5.510	5.198	9.862	8.560	8.033	11.870	-9.540	-10.067	-6.230	-3.897	-
5.8	4.058	5.932	9.278	8.397	8.304	11.597	-9.703	-9.796	-6.503	-4.086	-
5.9	2.138	6.600	8.617	8.033	8.463	11.267	-10.067	-9.637	-6.833	-4.271	-
6	-0.499	7.176	7.927	7.453	8.516	10.860	-10.647	-9.584	-7.240	-4.454	-
6.1	-4.287	7.669	7.181	6.622	8.516	10.400	-11.478	-9.584	-7.700	-4.633	-
6.2	-9.325	8.033	6.449	5.510	8.516	9.862	-12.590	-9.584	-8.238	-4.810	-
6.3	-9.061	8.304	5.730	4.878	8.516	9.278	-13.222	-9.584	-8.822	-4.984	-
6.4	-4.187	8.463	5.126	5.875	8.516	8.617	-12.225	-9.584	-9.483	-5.154	-
6.5	-0.638	8.516	4.663	6.619	8.516	7.927	-11.481	-9.584	-10.173	-5.323	-
6.6	1.806	8.470	4.438	7.139	8.516	7.181	-10.961	-9.584	-10.919	-5.489	-
6.7	3.564	8.310	4.446	7.476	8.516	6.591	-10.624	-9.584	-11.509	-5.652	-
6.8	4.878	8.050	4.682	7.657	8.516	7.062	-10.443	-9.584	-11.038	-5.813	-
6.9	5.875	7.660	5.078	7.692	8.516	7.465	-10.408	-9.584	-10.635	-5.971	-
7	6.619	7.155	5.565	7.692	8.516	7.810	-10.408	-9.584	-10.290	-6.000	-
7.1	7.139	6.503	6.088	7.692	8.470	8.071	-10.408	-9.630	-10.029	-6.000	-
7.2	7.476	5.683	6.591	7.692	8.310	8.265	-10.408	-9.790	-9.835	-6.000	-
7.3	7.657	4.688	7.062	7.692	8.050	8.371	-10.408	-10.050	-9.729	-6.000	-
7.4	7.692	3.420	7.465	7.692	7.660	8.405	-10.408	-10.440	-9.695	-6.000	-
7.5	7.581	1.871	7.810	7.692	7.155	8.405	-10.408	-10.945	-9.695	-6.000	-
7.6	7.334	-0.111	8.071	7.692	6.503	8.405	-10.408	-11.597	-9.695	-6.000	-
7.7	6.961	-2.748	8.265	7.692	5.683	8.405	-10.408	-12.417	-9.695	-6.000	-
7.8	6.461	-6.171	8.371	7.692	4.688	8.405	-10.408	-13.412	-9.695	-6.000	-
7.9	5.826	-9.913	8.405	7.692	3.420	8.405	-10.408	-14.680	-9.695	-6.000	-

8	5.065	-9.017	8.349	7.581	3.362	8.405	-10.519	-14.738	-9.695	-6.000	-
8.1	4.199	-5.245	8.216	7.334	4.434	8.405	-10.766	-13.666	-9.695	-6.000	-
8.2	3.252	-2.076	7.988	6.961	5.305	8.405	-11.139	-12.795	-9.695	-6.000	-
8.3	2.262	0.210	7.676	6.461	5.966	8.405	-11.639	-12.134	-9.695	-6.000	-
8.4	1.304	1.986	7.258	5.826	6.481	8.405	-12.274	-11.619	-9.695	-6.000	-
8.5	0.529	3.362	6.743	5.065	6.857	8.349	-13.035	-11.243	-9.751	-6.000	-
8.6	0.072	4.434	6.103	4.199	7.103	8.216	-13.901	-10.997	-9.884	-6.000	-
8.7	-0.005	5.305	5.343	3.252	7.243	7.988	-14.848	-10.857	-10.112	-6.000	-
8.8	0.238	5.966	4.424	2.308	7.264	7.676	-15.792	-10.836	-10.424	-6.000	-
8.9	0.669	6.481	3.341	2.459	7.264	7.258	-15.641	-10.836	-10.842	-6.000	-
9	1.165	6.857	2.034	2.489	7.264	6.743	-15.611	-10.836	-11.357	-6.000	-
9.1	1.638	7.103	0.469	2.489	7.264	6.103	-15.611	-10.836	-11.997	-6.000	-
9.2	2.032	7.243	-1.449	2.489	7.264	5.343	-15.611	-10.836	-12.757	-6.095	-
9.3	2.308	7.264	-3.803	2.489	7.264	4.424	-15.611	-10.836	-13.676	-6.212	-
9.4	2.459	7.189	-6.637	2.489	7.264	3.341	-15.611	-10.836	-14.759	-6.328	-
9.5	2.489	7.006	-9.311	2.489	7.264	2.034	-15.611	-10.836	-16.066	-6.443	-
9.6	2.395	6.724	-9.445	2.489	7.264	0.599	-15.611	-10.836	-17.501	-6.557	-
9.7	2.166	6.341	-7.089	2.489	7.264	1.677	-15.611	-10.836	-16.423	-6.669	-
9.8	1.800	5.843	-4.496	2.489	7.264	2.550	-15.611	-10.836	-15.550	-6.781	-
9.9	1.309	5.248	-2.403	2.489	7.189	3.266	-15.611	-10.911	-14.834	-6.891	-
10	0.690	4.515	-0.727	2.489	7.006	3.849	-15.611	-11.094	-14.251	-7.000	-
15	-0.796	-6.690	-2.419	-0.617	-6.555	-2.375	-18.717	-24.655	-20.475	-11.402	-
20	-6.232	-8.266	-12.777	-4.987	-7.084	-12.777	-23.087	-25.184	-30.877	-14.526	-
25	-13.985	-8.991	-5.831	-10.679	-8.944	-5.422	-28.779	-27.044	-23.522	-16.949	-
30	-15.032	-12.385	-22.790	-8.136	-11.912	-14.271	-26.236	-30.012	-32.371	-18.928	-
35	-10.710	-14.472	-8.504	-10.644	-12.656	-8.502	-28.744	-30.756	-26.602	-20.602	-
40	-8.217	-19.176	-10.471	-5.792	-18.746	-10.116	-23.892	-36.846	-28.216	-22.051	-
45	-13.345	-16.737	-19.384	-11.129	-11.406	-13.991	-29.229	-29.506	-32.091	-23.330	-
50	-10.641	-30.975	-18.721	-8.842	-21.607	-17.621	-26.942	-39.707	-35.721	-24.000	-
55	-12.635	-22.464	-29.842	-11.591	-16.588	-22.430	-29.691	-34.688	-40.530	-24.000	-
60	-21.910	-24.201	-15.430	-13.706	-24.201	-14.975	-31.806	-42.301	-33.075	-24.000	-
65	-15.424	-38.016	-7.757	-14.524	-35.655	-7.275	-32.624	-53.755	-25.375	-24.000	-
70	-18.867	-29.231	-17.894	-17.777	-27.233	-17.256	-35.877	-45.333	-35.356	-24.000	-
75	-32.373	-21.579	-14.012	-28.916	-21.173	-13.415	-47.016	-39.273	-31.515	-24.000	-
80	-26.935	-24.637	-14.104	-25.101	-24.298	-13.632	-43.201	-42.398	-31.732	-24.000	-
85	-21.561	-22.125	-16.698	-20.839	-21.926	-16.221	-38.939	-40.026	-34.321	-14.000	-
90	-20.415	-25.320	-25.370	-20.177	-24.899	-24.626	-38.277	-42.999	-42.726	-14.000	-
95	-2.5	-2.5	-2.5	-2.5	-2.5	-2.5	-20.600	-20.600	-20.600	-14.000	-
100	-2.5	-2.5	-2.5	-2.5	-2.5	-2.5	-20.600	-20.600	-20.600	-14.000	-
105	-2.5	-2.5	-2.5	-2.5	-2.5	-2.5	-20.600	-20.600	-20.600	-14.000	-
110	-2.5	-2.5	-2.5	-2.5	-2.5	-2.5	-20.600	-20.600	-20.600	-14.000	-
115	-2.5	-2.5	-2.5	-2.5	-2.5	-2.5	-20.600	-20.600	-20.600	-14.000	-
120	-2.5	-2.5	-2.5	-2.5	-2.5	-2.5	-20.600	-20.600	-20.600	-14.000	-
125	-2.5	-2.5	-2.5	-2.5	-2.5	-2.5	-20.600	-20.600	-20.600	-14.000	-
130	-2.5	-2.5	-2.5	-2.5	-2.5	-2.5	-20.600	-20.600	-20.600	-14.000	-
135	-2.5	-2.5	-2.5	-2.5	-2.5	-2.5	-20.600	-20.600	-20.600	-14.000	-
140	-2.5	-2.5	-2.5	-2.5	-2.5	-2.5	-20.600	-20.600	-20.600	-14.000	-
145	-2.5	-2.5	-2.5	-2.5	-2.5	-2.5	-20.600	-20.600	-20.600	-14.000	-
150	-2.5	-2.5	-2.5	-2.5	-2.5	-2.5	-20.600	-20.600	-20.600	-14.000	-
155	-2.5	-2.5	-2.5	-2.5	-2.5	-2.5	-20.600	-20.600	-20.600	-14.000	-
160	-2.5	-2.5	-2.5	-2.5	-2.5	-2.5	-20.600	-20.600	-20.600	-14.000	-
165	-2.5	-2.5	-2.5	-2.5	-2.5	-2.5	-20.600	-20.600	-20.600	-14.000	-
170	-2.5	-2.5	-2.5	-2.5	-2.5	-2.5	-20.600	-20.600	-20.600	-14.000	-
175	-2.5	-2.5	-2.5	-2.5	-2.5	-2.5	-20.600	-20.600	-20.600	-14.000	-
180	-2.5	-2.5	-2.5	-2.5	-2.5	-2.5	-20.600	-20.600	-20.600	-14.000	-

14.25GHz H-Pol, Nominal Transmitted Co-Pol PSD with -18.1dBW/4KHz at Input



14.25GHz H-Pol Nominal Transmitted Co-Pol PSD with -18.1dBW/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): 27.5
a2	Antenna Model:	SR3000	D Frequency at which gain was measured (GHz): 14.25
a3	Antenna ID:	RAS	E Max input power density (dBW/4kHz): -18.1
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 = -18.1dBW/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	-2.5	-2.5	-2.5	-2.5	-2.5	-2.5	-20.600	-20.600	-20.600	-14.000	-
-175	-2.5	-2.5	-2.5	-2.5	-2.5	-2.5	-20.600	-20.600	-20.600	-14.000	-
-170	-2.5	-2.5	-2.5	-2.5	-2.5	-2.5	-20.600	-20.600	-20.600	-14.000	-
-165	-2.5	-2.5	-2.5	-2.5	-2.5	-2.5	-20.600	-20.600	-20.600	-14.000	-
-160	-2.5	-2.5	-2.5	-2.5	-2.5	-2.5	-20.600	-20.600	-20.600	-14.000	-
-155	-2.5	-2.5	-2.5	-2.5	-2.5	-2.5	-20.600	-20.600	-20.600	-14.000	-
-150	-2.5	-2.5	-2.5	-2.5	-2.5	-2.5	-20.600	-20.600	-20.600	-14.000	-
-145	-2.5	-2.5	-2.5	-2.5	-2.5	-2.5	-20.600	-20.600	-20.600	-14.000	-
-140	-2.5	-2.5	-2.5	-2.5	-2.5	-2.5	-20.600	-20.600	-20.600	-14.000	-
-135	-2.5	-2.5	-2.5	-2.5	-2.5	-2.5	-20.600	-20.600	-20.600	-14.000	-
-130	-2.5	-2.5	-2.5	-2.5	-2.5	-2.5	-20.600	-20.600	-20.600	-14.000	-
-125	-2.5	-2.5	-2.5	-2.5	-2.5	-2.5	-20.600	-20.600	-20.600	-14.000	-
-120	-2.5	-2.5	-2.5	-2.5	-2.5	-2.5	-20.600	-20.600	-20.600	-14.000	-
-115	-2.5	-2.5	-2.5	-2.5	-2.5	-2.5	-20.600	-20.600	-20.600	-14.000	-
-110	-2.5	-2.5	-2.5	-2.5	-2.5	-2.5	-20.600	-20.600	-20.600	-14.000	-
-105	-2.5	-2.5	-2.5	-2.5	-2.5	-2.5	-20.600	-20.600	-20.600	-14.000	-
-100	-2.5	-2.5	-2.5	-2.5	-2.5	-2.5	-20.600	-20.600	-20.600	-14.000	-
-95	-2.5	-2.5	-2.5	-2.5	-2.5	-2.5	-20.600	-20.600	-20.600	-14.000	-
-90	-16.842	-20.089	-34.593	-16.607	-19.653	-33.861	-34.707	-37.753	-51.961	-14.000	-
-85	-16.345	-14.983	-23.545	-16.267	-14.765	-23.111	-34.367	-32.865	-41.211	-14.000	-
-80	-13.060	-13.368	-19.128	-12.887	-13.362	-18.912	-30.987	-31.462	-37.012	-24.000	-
-75	-14.344	-21.983	-17.909	-14.086	-19.635	-17.688	-32.186	-37.735	-35.788	-24.000	-
-70	-21.090	-16.738	-20.835	-17.908	-16.245	-19.911	-36.008	-34.345	-38.011	-24.000	-
-65	-10.734	-20.511	-10.096	-8.323	-19.107	-9.044	-26.423	-37.207	-27.144	-24.000	-
-60	-20.938	-29.887	-12.787	-12.543	-25.907	-10.542	-30.643	-44.007	-28.642	-24.000	-
-55	-9.014	-11.128	-11.560	-6.750	-10.834	-8.957	-24.850	-28.934	-27.057	-24.000	-
-50	-5.728	-11.126	-9.904	-3.548	-9.939	-9.427	-21.648	-28.039	-27.527	-24.000	2.352
-45	-7.343	-2.721	-21.295	-5.217	-2.721	-15.383	-23.317	-20.821	-33.483	-23.330	2.509
-40	-17.263	-10.388	-6.927	-10.095	-9.167	-6.790	-28.195	-27.267	-24.890	-22.051	-
-35	-6.047	-1.277	-14.905	-5.746	-1.122	-12.824	-23.846	-19.222	-30.924	-20.602	1.380
-30	-13.381	-18.173	-6.670	-10.017	-8.829	-5.455	-28.117	-26.929	-23.555	-18.928	-
-25	-10.089	-10.417	-2.019	-5.034	-8.405	-1.451	-23.134	-26.505	-19.551	-16.949	-
-20	-18.153	-5.192	-5.212	-13.975	-2.897	-4.092	-32.075	-20.997	-22.192	-14.526	-
-15	-11.181	-13.622	0.531	-6.810	-9.752	0.884	-24.910	-27.852	-17.216	-11.402	-
-10	-1.431	1.698	-0.242	0.199	3.827	3.557	-17.901	-14.273	-14.543	-7.000	-

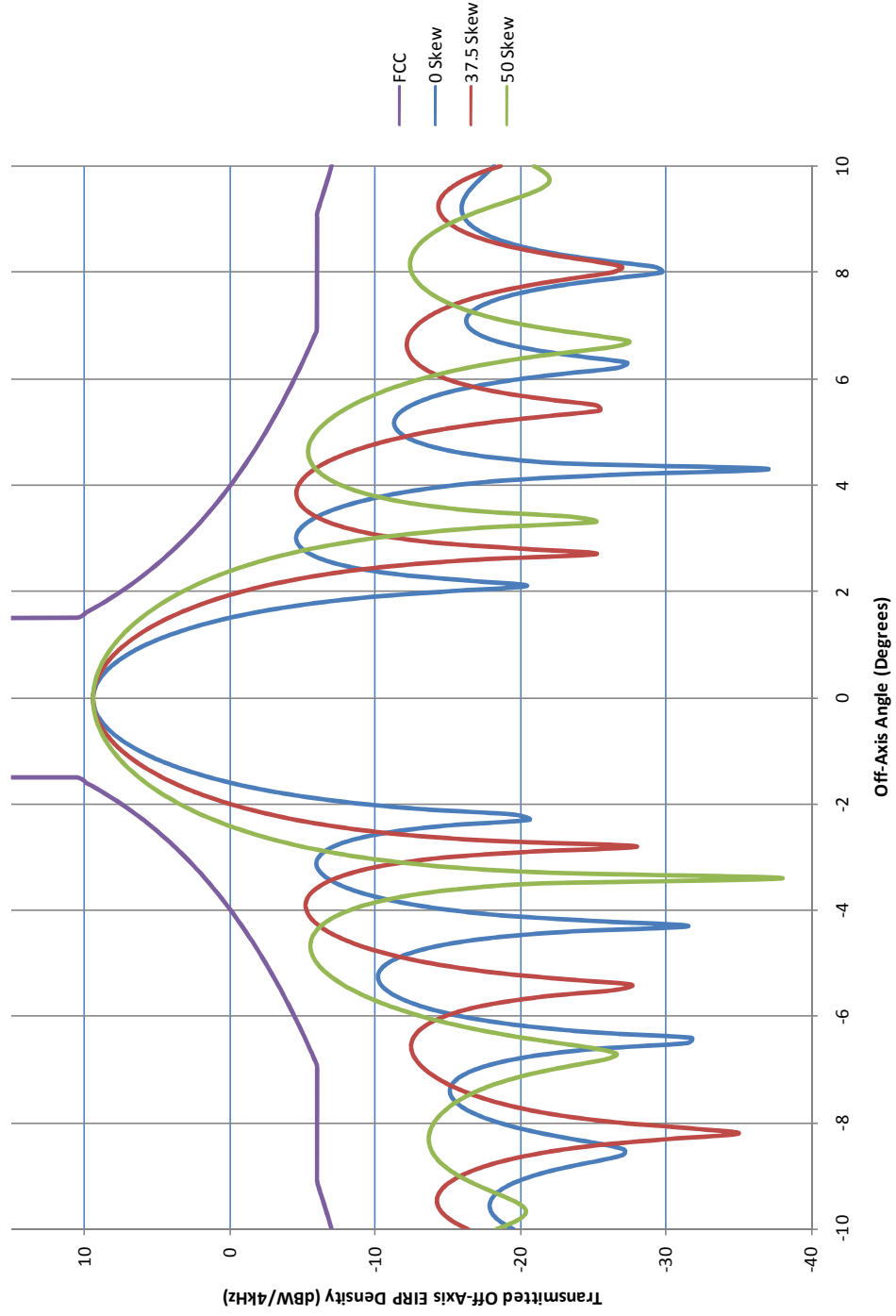
-9.9	-0.765	2.451	-1.150	0.199	3.827	3.004	-17.901	-14.273	-15.096	-6.891	-
-9.8	-0.273	3.016	-1.869	0.199	3.827	2.336	-17.901	-14.273	-15.764	-6.781	-
-9.7	0.050	3.439	-2.258	0.199	3.827	1.559	-17.901	-14.273	-16.541	-6.669	-
-9.6	0.199	3.704	-2.164	0.199	3.827	1.644	-17.901	-14.273	-16.456	-6.557	-
-9.5	0.183	3.827	-1.658	0.199	3.827	2.330	-17.901	-14.273	-15.770	-6.443	-
-9.4	0.004	3.809	-0.881	0.199	3.827	2.920	-17.901	-14.273	-15.180	-6.328	-
-9.3	-0.353	3.643	-0.005	0.199	3.827	3.396	-17.901	-14.273	-14.704	-6.212	-
-9.2	-0.919	3.338	0.853	0.199	3.827	3.782	-17.901	-14.273	-14.318	-6.095	-
-9.1	-1.699	2.863	1.644	0.199	3.827	4.065	-17.901	-14.273	-14.035	-6.000	-
-9	-2.718	2.233	2.330	0.183	3.827	4.267	-17.917	-14.273	-13.833	-6.000	-
-8.9	-4.021	1.398	2.920	0.004	3.809	4.378	-18.096	-14.291	-13.722	-6.000	-
-8.8	-5.650	0.344	3.396	-0.353	3.643	4.417	-18.453	-14.457	-13.683	-6.000	-
-8.7	-7.490	-0.975	3.782	-0.919	3.338	4.417	-19.019	-14.762	-13.683	-6.000	-
-8.6	-8.963	-2.693	4.065	-1.699	2.863	4.417	-19.799	-15.237	-13.683	-6.000	-
-8.5	-9.028	-4.882	4.267	-0.483	2.233	4.417	-18.583	-15.867	-13.683	-6.000	-
-8.4	-7.502	-7.907	4.378	0.608	1.398	4.417	-17.492	-16.702	-13.683	-6.000	-
-8.3	-5.399	-12.270	4.417	1.471	0.344	4.417	-16.629	-17.756	-13.683	-6.000	-
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-8.1	-1.820	-13.501	4.258	2.571	-0.110	4.417	-15.529	-18.210	-13.683	-6.000	-
-8	-0.483	-8.885	4.061	2.851	1.061	4.417	-15.249	-17.039	-13.683	-6.000	-
-7.9	0.608	-5.682	3.797	2.952	2.038	4.417	-15.148	-16.062	-13.683	-6.000	-
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-7.7	2.116	-1.558	3.015	2.952	3.566	4.371	-15.148	-14.534	-13.729	-6.000	-
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0.7	25.741	26.416	26.783	27.340	27.398	27.434	9.240	9.298	9.334	-	-
0.8	25.191	26.092	26.573	27.160	27.288	27.357	9.060	9.188	9.257	-	-
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1	23.824	25.291	26.056	26.601	26.939	27.126	8.501	8.839	9.026	-	-
1.1	22.975	24.814	25.746	26.212	26.699	26.973	8.112	8.599	8.873	-	-
1.2	22.000	24.278	25.415	25.741	26.416	26.783	7.641	8.316	8.683	-	-
1.3	20.891	23.695	25.038	25.191	26.092	26.573	7.091	7.992	8.473	-	-
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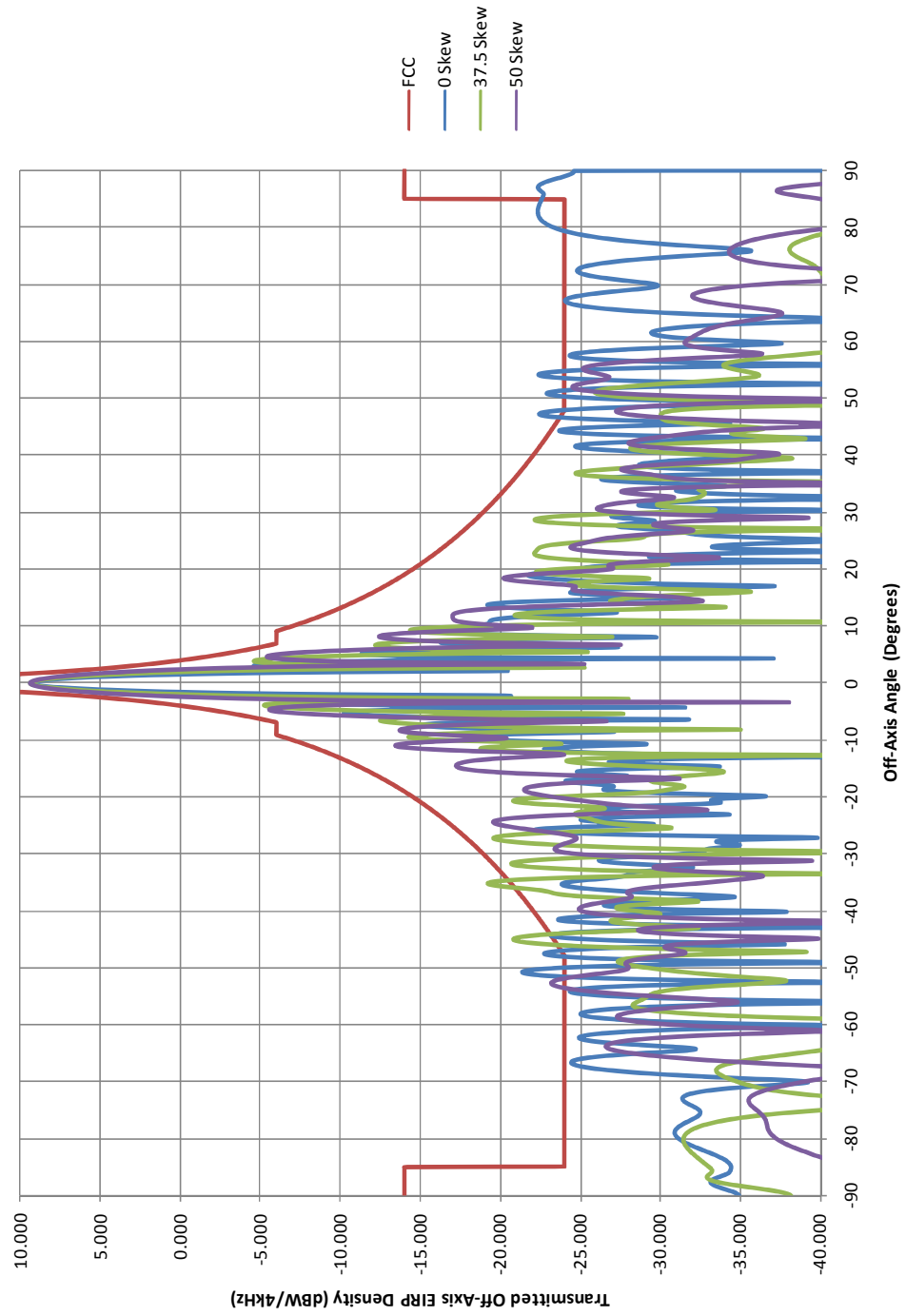
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3.6	10.259	13.130	4.182	13.434	13.503	11.224	-4.666	-4.597	-6.876	1.092	-
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6	-2.071	3.245	4.874	5.598	5.811	9.678	-12.502	-12.289	-8.422	-4.454	-
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6.7	-0.290	5.896	-9.384	1.824	5.910	1.831	-16.276	-12.190	-16.269	-5.652	-
6.8	0.727	5.779	-7.330	1.824	5.910	1.951	-16.276	-12.190	-16.149	-5.813	-
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7	1.729	5.224	-2.408	1.824	5.910	3.649	-16.276	-12.190	-14.451	-6.000	-
7.1	1.824	4.784	-0.617	1.824	5.910	4.262	-16.276	-12.190	-13.838	-6.000	-
7.2	1.665	4.203	0.795	1.824	5.896	4.760	-16.276	-12.204	-13.340	-6.000	-
7.3	1.244	3.491	1.951	1.824	5.779	5.136	-16.276	-12.321	-12.964	-6.000	-
7.4	0.561	2.612	2.880	1.824	5.559	5.420	-16.276	-12.541	-12.680	-6.000	-
7.5	-0.407	1.518	3.649	1.824	5.224	5.598	-16.276	-12.876	-12.502	-6.000	-
7.6	-1.724	0.207	4.262	1.824	4.784	5.693	-16.276	-13.316	-12.407	-6.000	-
7.7	-3.499	-1.444	4.760	1.665	4.203	5.693	-16.435	-13.897	-12.407	-6.000	-
7.8	-5.842	-3.450	5.136	1.244	3.491	5.693	-16.856	-14.609	-12.407	-6.000	-
7.9	-8.813	-5.837	5.420	0.561	2.612	5.693	-17.539	-15.488	-12.407	-6.000	-

8	-11.627	-8.224	5.598	-0.407	1.518	5.693	-18.507	-16.582	-12.407	-6.000	-
8.1	-11.181	-8.898	5.693	-0.539	0.404	5.693	-18.639	-17.696	-12.407	-6.000	-
8.2	-8.193	-7.161	5.689	0.384	1.460	5.693	-17.716	-16.640	-12.407	-6.000	-
8.3	-5.463	-4.737	5.605	1.066	2.283	5.693	-17.034	-15.817	-12.407	-6.000	-
8.4	-3.367	-2.650	5.421	1.559	2.889	5.693	-16.541	-15.211	-12.407	-6.000	-
8.5	-1.767	-0.926	5.156	1.893	3.334	5.693	-16.207	-14.766	-12.407	-6.000	-
8.6	-0.539	0.404	4.787	2.083	3.603	5.693	-16.017	-14.497	-12.407	-6.000	-
8.7	0.384	1.460	4.332	2.142	3.732	5.689	-15.958	-14.368	-12.411	-6.000	-
8.8	1.066	2.283	3.764	2.142	3.732	5.605	-15.958	-14.368	-12.495	-6.000	-
8.9	1.559	2.889	3.102	2.142	3.732	5.421	-15.958	-14.368	-12.679	-6.000	-
9	1.893	3.334	2.322	2.142	3.732	5.156	-15.958	-14.368	-12.944	-6.000	-
9.1	2.083	3.603	1.445	2.142	3.732	4.787	-15.958	-14.368	-13.313	-6.000	-
9.2	2.142	3.732	0.459	2.142	3.732	4.332	-15.958	-14.368	-13.768	-6.095	-
9.3	2.094	3.714	-0.597	2.142	3.732	3.764	-15.958	-14.368	-14.336	-6.212	-
9.4	1.951	3.558	-1.679	2.142	3.732	3.102	-15.958	-14.368	-14.998	-6.328	-
9.5	1.724	3.267	-2.687	2.142	3.732	2.322	-15.958	-14.368	-15.778	-6.443	-
9.6	1.422	2.826	-3.462	2.142	3.732	1.445	-15.958	-14.368	-16.655	-6.557	-
9.7	1.067	2.250	-3.872	2.142	3.732	0.459	-15.958	-14.368	-17.641	-6.669	-
9.8	0.681	1.499	-3.824	2.094	3.714	-0.597	-16.006	-14.386	-18.697	-6.781	-
9.9	0.284	0.585	-3.433	1.951	3.558	-0.445	-16.149	-14.542	-18.545	-6.891	-
10	-0.108	-0.529	-2.821	1.724	3.267	-0.042	-16.376	-14.833	-18.142	-7.000	-
15	-13.602	-10.367	-13.086	-6.016	-8.863	-10.093	-24.116	-26.963	-28.193	-11.402	-
20	-6.649	-5.760	-8.830	-5.000	-4.137	-6.424	-23.100	-22.237	-24.524	-14.526	-
25	-23.495	-8.586	-7.748	-18.351	-5.951	-6.974	-36.451	-24.051	-25.074	-16.949	-
30	-15.641	-12.346	-9.154	-9.391	-7.145	-7.951	-27.491	-25.245	-26.051	-18.928	-
35	-12.748	-24.207	-31.758	-8.805	-15.627	-15.515	-26.905	-33.727	-33.615	-20.602	-
40	-17.923	-15.748	-18.934	-11.794	-11.858	-17.422	-29.894	-29.958	-35.522	-22.051	-
45	-8.829	-17.183	-21.442	-5.854	-14.083	-16.832	-23.954	-32.183	-34.932	-23.330	-
50	-7.590	-10.917	-19.282	-5.228	-8.572	-11.841	-23.328	-26.672	-29.941	-24.000	0.672
55	-7.552	-16.653	-7.085	-4.827	-15.975	-7.047	-22.927	-34.075	-25.147	-24.000	1.073
60	-17.063	-25.876	-13.455	-13.529	-23.530	-13.404	-31.629	-41.630	-31.504	-24.000	-
65	-12.189	-26.149	-19.462	-9.336	-25.376	-18.640	-27.436	-43.476	-36.740	-24.000	-
70	-11.564	-24.500	-18.287	-10.229	-23.433	-16.248	-28.329	-41.533	-34.348	-24.000	-
75	-13.646	-20.350	-16.388	-11.065	-20.103	-16.191	-29.165	-38.203	-34.291	-24.000	-
80	-5.215	-23.866	-22.951	-4.835	-23.042	-21.358	-22.935	-41.142	-39.458	-24.000	1.065
85	-4.510	-28.136	-21.877	-4.423	-27.773	-20.610	-22.523	-45.873	-38.710	-14.000	-
90	-22.021	-25.330	-25.390	-6.399	-25.330	-25.390	-24.499	-43.430	-43.490	-14.000	-
95	-2.5	-2.5	-2.5	-2.5	-2.5	-2.5	-20.600	-20.600	-20.600	-14.000	-
100	-2.5	-2.5	-2.5	-2.5	-2.5	-2.5	-20.600	-20.600	-20.600	-14.000	-
105	-2.5	-2.5	-2.5	-2.5	-2.5	-2.5	-20.600	-20.600	-20.600	-14.000	-
110	-2.5	-2.5	-2.5	-2.5	-2.5	-2.5	-20.600	-20.600	-20.600	-14.000	-
115	-2.5	-2.5	-2.5	-2.5	-2.5	-2.5	-20.600	-20.600	-20.600	-14.000	-
120	-2.5	-2.5	-2.5	-2.5	-2.5	-2.5	-20.600	-20.600	-20.600	-14.000	-
125	-2.5	-2.5	-2.5	-2.5	-2.5	-2.5	-20.600	-20.600	-20.600	-14.000	-
130	-2.5	-2.5	-2.5	-2.5	-2.5	-2.5	-20.600	-20.600	-20.600	-14.000	-
135	-2.5	-2.5	-2.5	-2.5	-2.5	-2.5	-20.600	-20.600	-20.600	-14.000	-
140	-2.5	-2.5	-2.5	-2.5	-2.5	-2.5	-20.600	-20.600	-20.600	-14.000	-
145	-2.5	-2.5	-2.5	-2.5	-2.5	-2.5	-20.600	-20.600	-20.600	-14.000	-
150	-2.5	-2.5	-2.5	-2.5	-2.5	-2.5	-20.600	-20.600	-20.600	-14.000	-
155	-2.5	-2.5	-2.5	-2.5	-2.5	-2.5	-20.600	-20.600	-20.600	-14.000	-
160	-2.5	-2.5	-2.5	-2.5	-2.5	-2.5	-20.600	-20.600	-20.600	-14.000	-
165	-2.5	-2.5	-2.5	-2.5	-2.5	-2.5	-20.600	-20.600	-20.600	-14.000	-
170	-2.5	-2.5	-2.5	-2.5	-2.5	-2.5	-20.600	-20.600	-20.600	-14.000	-
175	-2.5	-2.5	-2.5	-2.5	-2.5	-2.5	-20.600	-20.600	-20.600	-14.000	-
180	-2.5	-2.5	-2.5	-2.5	-2.5	-2.5	-20.600	-20.600	-20.600	-14.000	-

14.25GHz V-Pol, Nominal Transmitted Co-Pol PSD with -18.1dBW/4KHz at Input



14.25GHz V-Pol Nominal Transmitted Co-Pol PSD with -18.1dBW/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): 27.5
a2	Antenna Model:	SR3000	D Frequency at which gain was measured (GHz): 14.5
a3	Antenna ID:	RAS	E Max input power density (dBW/4kHz): -18.1
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 = -18.1dBW/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	-2.5	-2.5	-2.5	-2.5	-2.5	-2.5	-20.600	-20.600	-20.600	-14.000
-175	-2.5	-2.5	-2.5	-2.5	-2.5	-2.5	-20.600	-20.600	-20.600	-14.000	-
-170	-2.5	-2.5	-2.5	-2.5	-2.5	-2.5	-20.600	-20.600	-20.600	-14.000	-
-165	-2.5	-2.5	-2.5	-2.5	-2.5	-2.5	-20.600	-20.600	-20.600	-14.000	-
-160	-2.5	-2.5	-2.5	-2.5	-2.5	-2.5	-20.600	-20.600	-20.600	-14.000	-
-155	-2.5	-2.5	-2.5	-2.5	-2.5	-2.5	-20.600	-20.600	-20.600	-14.000	-
-150	-2.5	-2.5	-2.5	-2.5	-2.5	-2.5	-20.600	-20.600	-20.600	-14.000	-
-145	-2.5	-2.5	-2.5	-2.5	-2.5	-2.5	-20.600	-20.600	-20.600	-14.000	-
-140	-2.5	-2.5	-2.5	-2.5	-2.5	-2.5	-20.600	-20.600	-20.600	-14.000	-
-135	-2.5	-2.5	-2.5	-2.5	-2.5	-2.5	-20.600	-20.600	-20.600	-14.000	-
-130	-2.5	-2.5	-2.5	-2.5	-2.5	-2.5	-20.600	-20.600	-20.600	-14.000	-
-125	-2.5	-2.5	-2.5	-2.5	-2.5	-2.5	-20.600	-20.600	-20.600	-14.000	-
-120	-2.5	-2.5	-2.5	-2.5	-2.5	-2.5	-20.600	-20.600	-20.600	-14.000	-
-115	-2.5	-2.5	-2.5	-2.5	-2.5	-2.5	-20.600	-20.600	-20.600	-14.000	-
-110	-2.5	-2.5	-2.5	-2.5	-2.5	-2.5	-20.600	-20.600	-20.600	-14.000	-
-105	-2.5	-2.5	-2.5	-2.5	-2.5	-2.5	-20.600	-20.600	-20.600	-14.000	-
-100	-2.5	-2.5	-2.5	-2.5	-2.5	-2.5	-20.600	-20.600	-20.600	-14.000	-
-95	-2.5	-2.5	-2.5	-2.5	-2.5	-2.5	-20.600	-20.600	-20.600	-14.000	-
-90	-15.853	-21.541	-19.002	-15.638	-20.883	-18.705	-33.738	-38.983	-36.805	-14.000	-
-85	-13.288	-15.586	-15.209	-13.098	-15.018	-15.117	-31.198	-33.118	-33.217	-14.000	-
-80	-14.534	-43.244	-14.027	-13.903	-32.018	-13.803	-32.003	-50.118	-31.903	-24.000	-
-75	-18.684	-18.594	-11.740	-17.971	-18.399	-11.651	-36.071	-36.499	-29.751	-24.000	-
-70	-20.242	-28.060	-20.504	-19.493	-23.985	-17.074	-37.593	-42.085	-35.174	-24.000	-
-65	-9.453	-11.074	-12.329	-9.356	-10.549	-11.318	-27.456	-28.649	-29.418	-24.000	-
-60	-17.880	-15.045	-15.428	-14.346	-14.621	-13.661	-32.446	-32.721	-31.761	-24.000	-
-55	-18.202	-21.992	-9.214	-16.544	-19.007	-8.539	-34.644	-37.107	-26.639	-24.000	-
-50	-16.926	-18.918	-9.686	-14.373	-18.689	-7.005	-32.473	-36.789	-25.105	-24.000	-
-45	-14.393	-12.955	-7.302	-11.966	-11.873	-4.804	-30.066	-29.973	-22.904	-23.330	0.426
-40	-16.062	-16.212	-11.261	-15.171	-14.433	-10.015	-33.271	-32.533	-28.115	-22.051	-
-35	-29.720	-11.601	-8.398	-22.478	-10.628	-6.022	-40.578	-28.728	-24.122	-20.602	-
-30	-6.091	-13.056	-21.807	-5.870	-10.280	-14.476	-23.970	-28.380	-32.576	-18.928	-
-25	-15.280	-11.296	-7.861	-9.357	-9.994	-6.684	-27.457	-28.094	-24.784	-16.949	-
-20	-21.858	-12.825	-17.237	-8.811	-11.285	-10.952	-26.911	-29.385	-29.052	-14.526	-
-15	-4.597	-6.965	1.708	-4.213	-2.383	3.620	-22.313	-20.483	-14.480	-11.402	-
-10	7.346	0.656	-8.084	7.964	4.448	-8.033	-10.136	-13.652	-26.133	-7.000	-

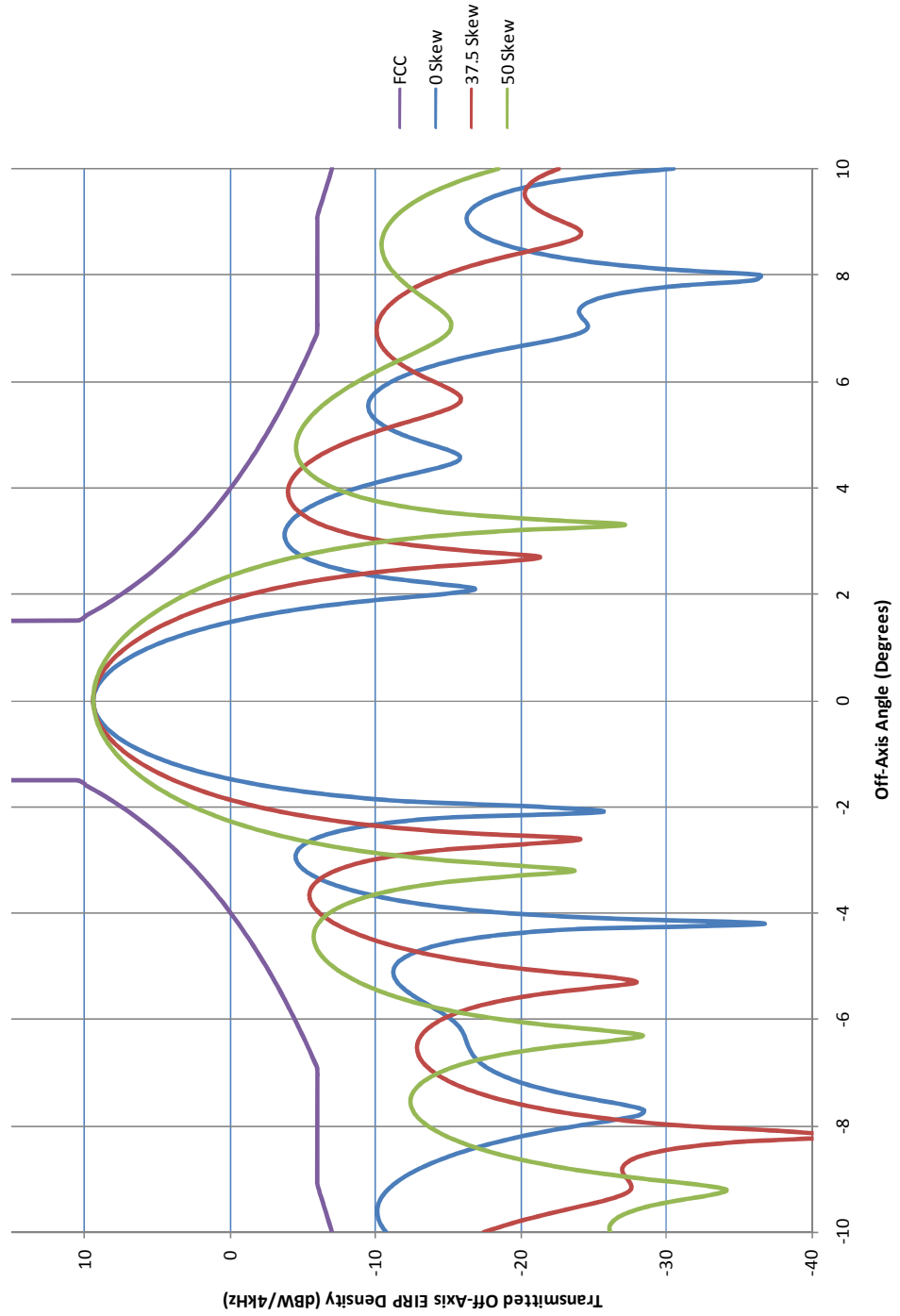
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-9.8	7.814	-1.678	-8.256	7.964	3.224	-8.033	-10.136	-14.876	-26.133	-6.781	-
-9.7	7.929	-3.079	-8.737	7.964	2.461	-8.033	-10.136	-15.639	-26.133	-6.669	-
-9.6	7.964	-4.592	-9.612	7.964	1.617	-8.033	-10.136	-16.483	-26.133	-6.557	-
-9.5	7.918	-6.163	-10.875	7.964	0.656	-8.033	-10.136	-17.444	-26.133	-6.443	-
-9.4	7.787	-7.695	-12.747	7.964	-0.460	-7.647	-10.136	-18.560	-25.747	-6.328	-
-9.3	7.565	-8.851	-14.953	7.964	-1.678	-5.138	-10.136	-19.778	-23.238	-6.212	-
-9.2	7.250	-9.468	-16.095	7.964	-3.079	-3.135	-10.136	-21.179	-21.235	-6.095	-
-9.1	6.847	-9.483	-14.025	7.964	-4.592	-1.406	-10.136	-22.692	-19.506	-6.000	-
-9	6.351	-9.245	-10.592	7.918	-6.163	0.006	-10.182	-24.263	-18.094	-6.000	-
-8.9	5.753	-8.967	-7.647	7.787	-7.695	1.244	-10.313	-25.795	-16.856	-6.000	-
-8.8	5.044	-8.897	-5.138	7.565	-8.851	2.259	-10.535	-26.951	-15.841	-6.000	-
-8.7	4.233	-9.158	-3.135	7.250	-8.897	3.147	-10.850	-26.997	-14.953	-6.000	-
-8.6	3.313	-9.811	-1.406	6.847	-8.897	3.861	-11.253	-26.997	-14.239	-6.000	-
-8.5	2.267	-11.081	0.006	6.351	-8.897	4.467	-11.749	-26.997	-13.633	-6.000	-
-8.4	1.062	-13.201	1.244	5.753	-8.897	4.929	-12.347	-26.997	-13.171	-6.000	-
-8.3	-0.316	-16.920	2.259	5.044	-6.134	5.289	-13.056	-24.234	-12.811	-6.000	-
-8.2	-1.876	-23.595	3.147	4.233	-3.837	5.521	-13.867	-21.937	-12.579	-6.000	-
-8.1	-3.666	-20.103	3.861	3.313	-1.996	5.650	-14.787	-20.096	-12.450	-6.000	-
-8	-5.738	-13.354	4.467	2.267	-0.460	5.655	-15.833	-18.560	-12.445	-6.000	-
-7.9	-8.048	-9.172	4.929	1.062	0.786	5.655	-17.038	-17.314	-12.445	-6.000	-
-7.8	-10.007	-6.134	5.289	-0.316	1.844	5.655	-18.416	-16.256	-12.445	-6.000	-
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-7.4	-5.005	0.786	5.547	0.446	4.489	5.655	-17.654	-13.611	-12.445	-6.000	-
-7.3	-3.398	1.844	5.309	0.940	4.835	5.655	-17.160	-13.265	-12.445	-6.000	-
-7.2	-2.106	2.722	4.937	1.289	5.075	5.655	-16.811	-13.025	-12.445	-6.000	-
-7.1	-1.064	3.437	4.412	1.532	5.199	5.655	-16.568	-12.901	-12.445	-6.000	-
-7	-0.223	4.033	3.711	1.706	5.226	5.655	-16.394	-12.874	-12.445	-6.000	-
-6.9	0.446	4.489	2.801	1.843	5.226	5.547	-16.257	-12.874	-12.553	-5.971	-
-6.8	0.940	4.835	1.626	1.976	5.226	5.309	-16.124	-12.874	-12.791	-5.813	-
-6.7	1.289	5.075	0.109	2.161	5.226	4.937	-15.939	-12.874	-13.163	-5.652	-
-6.6	1.532	5.199	-1.892	2.447	5.226	4.412	-15.653	-12.874	-13.688	-5.489	-
-6.5	1.706	5.226	-4.582	2.860	5.226	3.711	-15.240	-12.874	-14.389	-5.323	-
-6.4	1.843	5.136	-8.093	3.386	5.226	2.801	-14.714	-12.874	-15.299	-5.154	-
-6.3	1.976	4.938	-10.331	3.978	5.226	3.494	-14.122	-12.874	-14.606	-4.984	-
-6.2	2.161	4.616	-7.511	4.595	5.226	5.051	-13.505	-12.874	-13.049	-4.810	-
-6.1	2.447	4.153	-3.654	5.201	5.226	6.327	-12.899	-12.874	-11.773	-4.633	-
-6	2.860	3.548	-0.696	5.758	5.226	7.446	-12.342	-12.874	-10.654	-4.454	-
-5.9	3.386	2.733	1.653	6.227	5.136	8.379	-11.873	-12.964	-9.721	-4.271	-
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-5.7	4.595	0.361	5.051	6.789	4.616	9.903	-11.311	-13.484	-8.197	-3.897	-
-5.6	5.201	-1.448	6.327	6.858	4.153	10.517	-11.242	-13.947	-7.583	-3.705	-
-5.5	5.758	-3.813	7.446	6.858	3.548	11.019	-11.242	-14.552	-7.081	-3.509	-
-5.4	6.227	-7.051	8.379	6.858	2.733	11.451	-11.242	-15.367	-6.649	-3.310	-
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-4.7	5.039	5.604	12.050	6.858	10.846	12.319	-11.242	-7.254	-5.781	-1.802	-
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-4.2	-18.682	10.846	12.032	7.667	12.622	12.319	-10.433	-5.478	-5.781	-0.581	-
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-3.6	9.263	12.600	7.384	13.326	12.622	11.718	-4.774	-5.478	-6.382	1.092	-
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-3.4	11.560	12.105	2.728	13.568	12.622	10.660	-4.532	-5.478	-7.440	1.713	-
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-3.2	12.930	10.841	-5.633	13.568	12.622	11.920	-4.532	-5.478	-6.180	2.371	-
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-2	-3.230	16.149	20.609	17.680	21.953	23.869	-0.420	3.853	5.769	7.474	-
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-1.3	20.691	23.475	24.816	25.221	26.056	26.505	7.121	7.956	8.405	-	-
-1.2	21.871	24.114	25.234	25.787	26.405	26.732	7.687	8.305	8.632	-	-
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0.6	26.138	26.695	26.992	27.455	27.476	27.487	9.355	9.376	9.387	-	-
0.7	25.639	26.398	26.797	27.336	27.409	27.450	9.236	9.309	9.350	-	-
0.8	25.056	26.059	26.581	27.145	27.300	27.377	9.045	9.200	9.277	-	-
0.9	24.385	25.661	26.322	26.883	27.141	27.281	8.783	9.041	9.181	-	-
1	23.617	25.216	26.042	26.549	26.942	27.148	8.449	8.842	9.048	-	-
1.1	22.736	24.719	25.716	26.138	26.695	26.992	8.038	8.595	8.892	-	-
1.2	21.720	24.151	25.369	25.639	26.398	26.797	7.539	8.298	8.697	-	-
1.3	20.562	23.534	24.973	25.056	26.059	26.581	6.956	7.959	8.481	-	-
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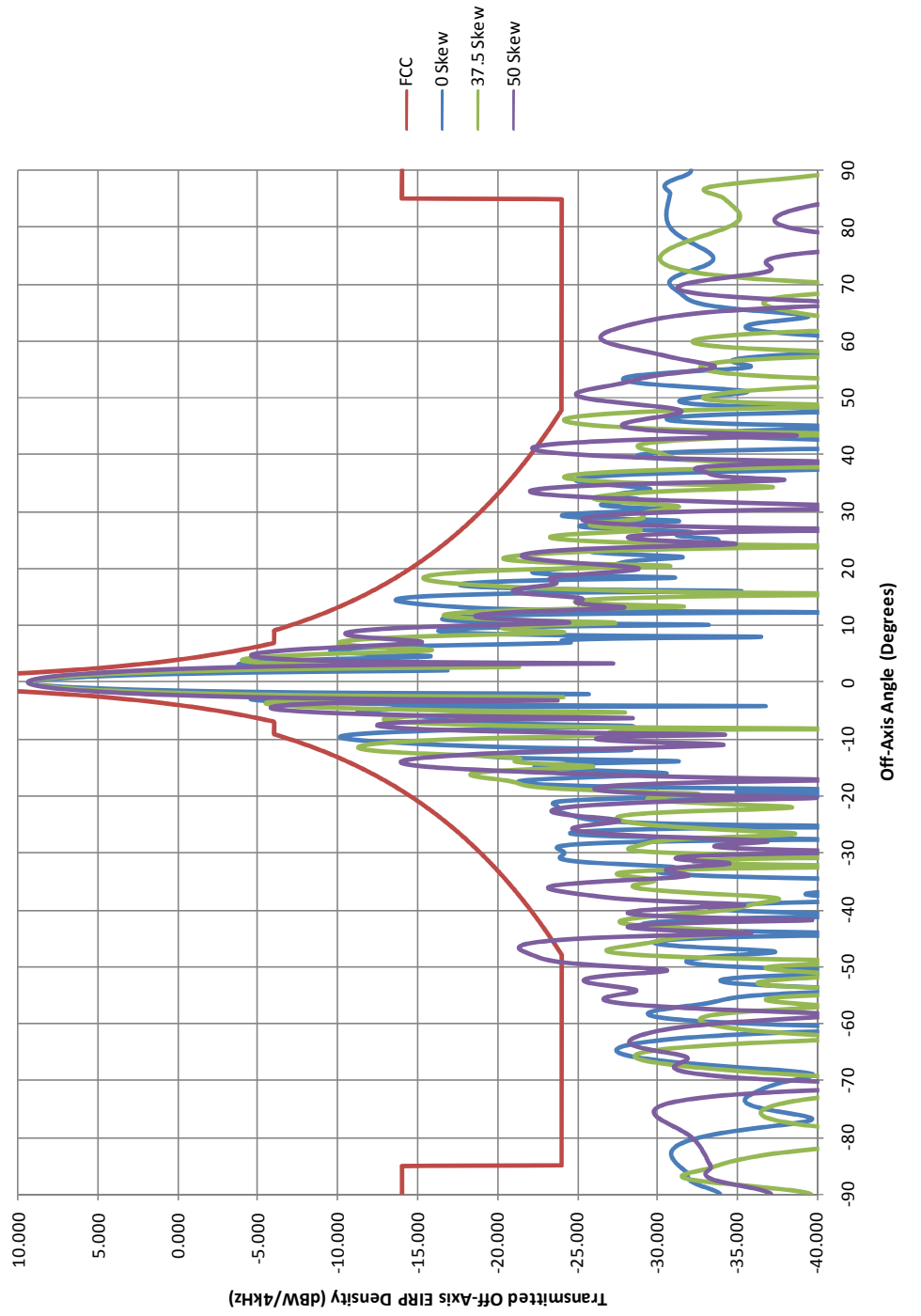
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2.5	10.997	4.774	16.327	14.255	16.684	21.066	-3.845	-1.416	2.966	5.051	-
2.6	12.176	-0.255	15.041	14.340	15.151	20.283	-3.760	-2.949	2.183	4.626	-
2.7	13.031	-3.223	13.554	14.340	13.344	19.445	-3.760	-4.756	1.345	4.216	-
2.8	13.630	1.119	11.834	14.340	11.734	18.504	-3.760	-6.366	0.404	3.821	-
2.9	14.025	4.893	9.760	14.340	12.521	17.484	-3.760	-5.579	-0.616	3.440	-
3	14.255	7.480	7.164	14.340	13.113	16.327	-3.760	-4.987	-1.773	3.072	-
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3.3	14.108	11.734	-9.094	14.340	14.032	11.834	-3.760	-4.068	-6.266	2.037	-
3.4	13.809	12.521	-3.425	14.340	14.104	9.991	-3.760	-3.996	-8.109	1.713	-
3.5	13.394	13.113	1.823	14.340	14.104	10.949	-3.760	-3.996	-7.151	1.398	-
3.6	12.857	13.554	5.015	14.340	14.104	11.688	-3.760	-3.996	-6.412	1.092	-
3.7	12.185	13.849	7.175	14.289	14.104	12.278	-3.811	-3.996	-5.822	0.795	-
3.8	11.369	14.032	8.782	14.108	14.104	12.725	-3.992	-3.996	-5.375	0.505	-
3.9	10.412	14.104	9.991	13.809	14.104	13.067	-4.291	-3.996	-5.033	0.223	-
4	9.298	14.074	10.949	13.394	14.104	13.306	-4.706	-3.996	-4.794	-0.051	-
4.1	8.009	13.955	11.688	12.857	14.104	13.461	-5.243	-3.996	-4.639	-0.320	-
4.2	6.540	13.735	12.278	12.185	14.104	13.537	-5.915	-3.996	-4.563	-0.581	-
4.3	4.957	13.434	12.725	11.369	14.104	13.541	-6.731	-3.996	-4.559	-0.837	-
4.4	3.468	13.038	13.067	10.412	14.104	13.541	-7.688	-3.996	-4.559	-1.086	-
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4.8	4.119	10.516	13.541	8.165	13.434	13.541	-9.935	-4.666	-4.559	-2.031	-
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5.9	7.583	3.305	9.900	8.574	6.737	12.311	-9.526	-11.363	-5.789	-4.271	-
6	6.959	4.093	9.277	8.574	7.159	11.926	-9.526	-10.941	-6.174	-4.454	-
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6.7	-2.580	7.744	4.178	5.208	7.999	7.912	-12.892	-10.101	-10.188	-5.652	-
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7	-6.494	7.999	2.881	1.127	7.999	5.640	-16.973	-10.101	-12.460	-6.000	-
7.1	-6.434	7.932	2.866	-0.648	7.999	4.884	-18.748	-10.101	-13.216	-6.000	-
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7.4	-6.066	7.250	3.851	-5.866	7.999	6.297	-23.966	-10.101	-11.803	-6.000	-
7.5	-6.651	6.859	4.372	-5.917	7.999	6.662	-24.017	-10.101	-11.438	-6.000	-
7.6	-7.785	6.385	4.884	-5.917	7.932	6.984	-24.017	-10.168	-11.116	-6.000	-
7.7	-9.700	5.803	5.401	-5.917	7.781	7.234	-24.017	-10.319	-10.866	-6.000	-
7.8	-12.862	5.132	5.863	-5.351	7.558	7.435	-23.451	-10.542	-10.665	-6.000	-
7.9	-17.876	4.342	6.297	-3.251	7.250	7.565	-21.351	-10.850	-10.535	-6.000	-

8	-18.353	3.420	6.662	-1.664	6.859	7.640	-19.764	-11.241	-10.460	-6.000	-
8.1	-12.439	2.382	6.984	-0.448	6.385	7.646	-18.548	-11.715	-10.454	-6.000	-
8.2	-8.244	1.165	7.234	0.474	5.803	7.646	-17.626	-12.297	-10.454	-6.000	-
8.3	-5.351	-0.186	7.435	1.131	5.132	7.646	-16.969	-12.968	-10.454	-6.000	-
8.4	-3.251	-1.680	7.565	1.557	4.342	7.646	-16.543	-13.758	-10.454	-6.000	-
8.5	-1.664	-3.279	7.640	1.778	3.420	7.646	-16.322	-14.680	-10.454	-6.000	-
8.6	-0.448	-4.744	7.646	1.803	2.382	7.646	-16.297	-15.718	-10.454	-6.000	-
8.7	0.474	-5.804	7.592	1.803	1.165	7.646	-16.297	-16.935	-10.454	-6.000	-
8.8	1.131	-6.071	7.471	1.803	-0.186	7.646	-16.297	-18.286	-10.454	-6.000	-
8.9	1.557	-5.654	7.282	1.803	-1.680	7.646	-16.297	-19.780	-10.454	-6.000	-
9	1.778	-4.827	7.027	1.803	-2.191	7.646	-16.297	-20.291	-10.454	-6.000	-
9.1	1.803	-3.982	6.695	1.803	-2.191	7.646	-16.297	-20.291	-10.454	-6.000	-
9.2	1.623	-3.260	6.294	1.803	-2.191	7.592	-16.297	-20.291	-10.508	-6.095	-
9.3	1.227	-2.691	5.805	1.803	-2.191	7.471	-16.297	-20.291	-10.629	-6.212	-
9.4	0.606	-2.353	5.241	1.803	-2.191	7.282	-16.297	-20.291	-10.818	-6.328	-
9.5	-0.271	-2.191	4.574	1.803	-2.191	7.027	-16.297	-20.291	-11.073	-6.443	-
9.6	-1.466	-2.243	3.824	1.803	-2.191	6.695	-16.297	-20.291	-11.405	-6.557	-
9.7	-3.086	-2.493	2.948	1.623	-2.191	6.294	-16.477	-20.291	-11.806	-6.669	-
9.8	-5.269	-2.947	1.975	1.227	-2.191	5.805	-16.873	-20.291	-12.295	-6.781	-
9.9	-8.275	-3.631	0.854	0.606	-2.191	5.241	-17.494	-20.291	-12.859	-6.891	-
10	-12.402	-4.525	-0.375	-0.271	-2.191	4.574	-18.371	-20.291	-13.526	-7.000	-
15	3.250	-12.844	-6.413	4.474	-7.586	-4.104	-13.626	-25.686	-22.204	-11.402	-
20	-6.207	-6.127	-10.693	-4.204	-0.718	-9.241	-22.304	-18.818	-27.341	-14.526	-
25	-15.741	-6.484	-11.373	-14.105	-5.184	-10.035	-32.205	-23.284	-28.135	-16.949	-
30	-10.119	-11.382	-13.875	-6.234	-10.958	-9.507	-24.334	-29.058	-27.607	-18.928	-
35	-7.766	-10.948	-12.482	-6.802	-7.327	-7.130	-24.902	-25.427	-25.230	-20.602	-
40	-10.885	-12.386	-7.065	-10.653	-11.778	-4.949	-28.753	-29.878	-23.049	-22.051	-
45	-24.550	-8.773	-9.718	-15.709	-6.819	-9.652	-33.809	-24.919	-27.752	-23.330	-
50	-14.161	-14.764	-7.289	-13.314	-14.764	-6.796	-31.414	-32.864	-24.896	-24.000	-
55	-16.102	-14.821	-14.872	-13.130	-14.603	-13.418	-31.230	-32.703	-31.518	-24.000	-
60	-28.607	-14.140	-8.513	-24.968	-14.111	-8.319	-43.068	-32.211	-26.419	-24.000	-
65	-19.434	-20.551	-14.928	-17.311	-19.653	-13.286	-35.411	-37.753	-31.386	-24.000	-
70	-12.690	-24.472	-13.594	-12.670	-20.427	-13.155	-30.770	-38.527	-31.255	-24.000	-
75	-15.361	-12.131	-19.877	-15.164	-12.075	-19.026	-33.264	-30.175	-37.126	-24.000	-
80	-12.715	-16.312	-20.009	-12.604	-15.877	-19.477	-30.704	-33.977	-37.577	-24.000	-
85	-12.657	-16.108	-23.960	-12.613	-15.738	-22.850	-30.713	-33.838	-40.950	-14.000	-
90	-14.028	-22.993	-40.327	-13.930	-22.687	-40.016	-32.030	-40.787	-58.116	-14.000	-
95	-2.5	-2.5	-2.5	-2.5	-2.5	-2.5	-20.600	-20.600	-20.600	-14.000	-
100	-2.5	-2.5	-2.5	-2.5	-2.5	-2.5	-20.600	-20.600	-20.600	-14.000	-
105	-2.5	-2.5	-2.5	-2.5	-2.5	-2.5	-20.600	-20.600	-20.600	-14.000	-
110	-2.5	-2.5	-2.5	-2.5	-2.5	-2.5	-20.600	-20.600	-20.600	-14.000	-
115	-2.5	-2.5	-2.5	-2.5	-2.5	-2.5	-20.600	-20.600	-20.600	-14.000	-
120	-2.5	-2.5	-2.5	-2.5	-2.5	-2.5	-20.600	-20.600	-20.600	-14.000	-
125	-2.5	-2.5	-2.5	-2.5	-2.5	-2.5	-20.600	-20.600	-20.600	-14.000	-
130	-2.5	-2.5	-2.5	-2.5	-2.5	-2.5	-20.600	-20.600	-20.600	-14.000	-
135	-2.5	-2.5	-2.5	-2.5	-2.5	-2.5	-20.600	-20.600	-20.600	-14.000	-
140	-2.5	-2.5	-2.5	-2.5	-2.5	-2.5	-20.600	-20.600	-20.600	-14.000	-
145	-2.5	-2.5	-2.5	-2.5	-2.5	-2.5	-20.600	-20.600	-20.600	-14.000	-
150	-2.5	-2.5	-2.5	-2.5	-2.5	-2.5	-20.600	-20.600	-20.600	-14.000	-
155	-2.5	-2.5	-2.5	-2.5	-2.5	-2.5	-20.600	-20.600	-20.600	-14.000	-
160	-2.5	-2.5	-2.5	-2.5	-2.5	-2.5	-20.600	-20.600	-20.600	-14.000	-
165	-2.5	-2.5	-2.5	-2.5	-2.5	-2.5	-20.600	-20.600	-20.600	-14.000	-
170	-2.5	-2.5	-2.5	-2.5	-2.5	-2.5	-20.600	-20.600	-20.600	-14.000	-
175	-2.5	-2.5	-2.5	-2.5	-2.5	-2.5	-20.600	-20.600	-20.600	-14.000	-
180	-2.5	-2.5	-2.5	-2.5	-2.5	-2.5	-20.600	-20.600	-20.600	-14.000	-

14.5GHz H-Pol, Nominal Transmitted Co-Pol PSD with -18.1dBW/4KHz at Input



14.5GHz H-Pol Nominal Transmitted Co-Pol PSD with -18.1dBW/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): 27.5
a2	Antenna Model:	SR3000	D	Frequency at which gain was measured (GHz): 14.5
a3	Antenna ID:	RAS	E	Max input power density (dBW/4kHz): -18.1
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 = -18.1dBW/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	-2.5	-2.5	-2.5	-2.5	-2.5	-2.5	-20.600	-20.600	-20.600	-14.000
-175	-2.5	-2.5	-2.5	-2.5	-2.5	-2.5	-20.600	-20.600	-20.600	-14.000	-
-170	-2.5	-2.5	-2.5	-2.5	-2.5	-2.5	-20.600	-20.600	-20.600	-14.000	-
-165	-2.5	-2.5	-2.5	-2.5	-2.5	-2.5	-20.600	-20.600	-20.600	-14.000	-
-160	-2.5	-2.5	-2.5	-2.5	-2.5	-2.5	-20.600	-20.600	-20.600	-14.000	-
-155	-2.5	-2.5	-2.5	-2.5	-2.5	-2.5	-20.600	-20.600	-20.600	-14.000	-
-150	-2.5	-2.5	-2.5	-2.5	-2.5	-2.5	-20.600	-20.600	-20.600	-14.000	-
-145	-2.5	-2.5	-2.5	-2.5	-2.5	-2.5	-20.600	-20.600	-20.600	-14.000	-
-140	-2.5	-2.5	-2.5	-2.5	-2.5	-2.5	-20.600	-20.600	-20.600	-14.000	-
-135	-2.5	-2.5	-2.5	-2.5	-2.5	-2.5	-20.600	-20.600	-20.600	-14.000	-
-130	-2.5	-2.5	-2.5	-2.5	-2.5	-2.5	-20.600	-20.600	-20.600	-14.000	-
-125	-2.5	-2.5	-2.5	-2.5	-2.5	-2.5	-20.600	-20.600	-20.600	-14.000	-
-120	-2.5	-2.5	-2.5	-2.5	-2.5	-2.5	-20.600	-20.600	-20.600	-14.000	-
-115	-2.5	-2.5	-2.5	-2.5	-2.5	-2.5	-20.600	-20.600	-20.600	-14.000	-
-110	-2.5	-2.5	-2.5	-2.5	-2.5	-2.5	-20.600	-20.600	-20.600	-14.000	-
-105	-2.5	-2.5	-2.5	-2.5	-2.5	-2.5	-20.600	-20.600	-20.600	-14.000	-
-100	-2.5	-2.5	-2.5	-2.5	-2.5	-2.5	-20.600	-20.600	-20.600	-14.000	-
-95	-2.5	-2.5	-2.5	-2.5	-2.5	-2.5	-20.600	-20.600	-20.600	-14.000	-
-90	-9.708	-16.656	-18.392	-9.507	-16.007	-18.074	-27.607	-34.107	-36.174	-14.000	-
-85	-11.156	-10.210	-13.514	-10.769	-9.857	-13.261	-28.869	-27.957	-31.361	-14.000	-
-80	-6.147	-14.874	-11.288	-5.520	-14.609	-11.270	-23.620	-32.709	-29.370	-24.000	0.380
-75	-9.044	-11.885	-20.451	-7.353	-11.688	-18.590	-25.453	-29.788	-36.690	-24.000	-
-70	-7.786	-24.327	-8.664	-7.786	-21.974	-8.360	-25.886	-40.074	-26.460	-24.000	-
-65	-10.216	-22.604	-26.754	-9.234	-22.181	-21.870	-27.334	-40.281	-39.970	-24.000	-
-60	-6.146	-13.699	-11.657	-6.134	-12.570	-10.854	-24.234	-30.670	-28.954	-24.000	-
-55	-15.871	-9.741	-16.769	-11.593	-9.289	-12.598	-29.693	-27.389	-30.698	-24.000	-
-50	-9.237	-16.495	-8.575	-7.158	-15.949	-8.564	-25.258	-34.049	-26.664	-24.000	-
-45	-15.647	-6.931	-4.611	-9.416	-5.439	-4.423	-27.516	-23.539	-22.523	-23.330	0.807
-40	-13.091	-9.808	-8.827	-12.317	-8.917	-6.274	-30.417	-27.017	-24.374	-22.051	-
-35	-11.428	-10.902	-8.068	-8.632	-7.853	-6.583	-26.732	-25.953	-24.683	-20.602	-
-30	-19.699	-8.608	-18.640	-12.991	-7.281	-14.155	-31.091	-25.381	-32.255	-18.928	-
-25	-9.912	-19.139	-3.661	-6.596	-16.253	-3.188	-24.696	-34.353	-21.288	-16.949	-
-20	-8.157	-14.889	-6.379	-6.899	-11.054	-4.593	-24.999	-29.154	-22.693	-14.526	-
-15	-3.956	-4.168	-7.694	-3.278	-0.389	-4.436	-21.378	-18.489	-22.536	-11.402	-
-10	-14.548	-1.083	-2.328	-6.728	1.196	-0.802	-24.828	-16.904	-18.902	-7.000	-

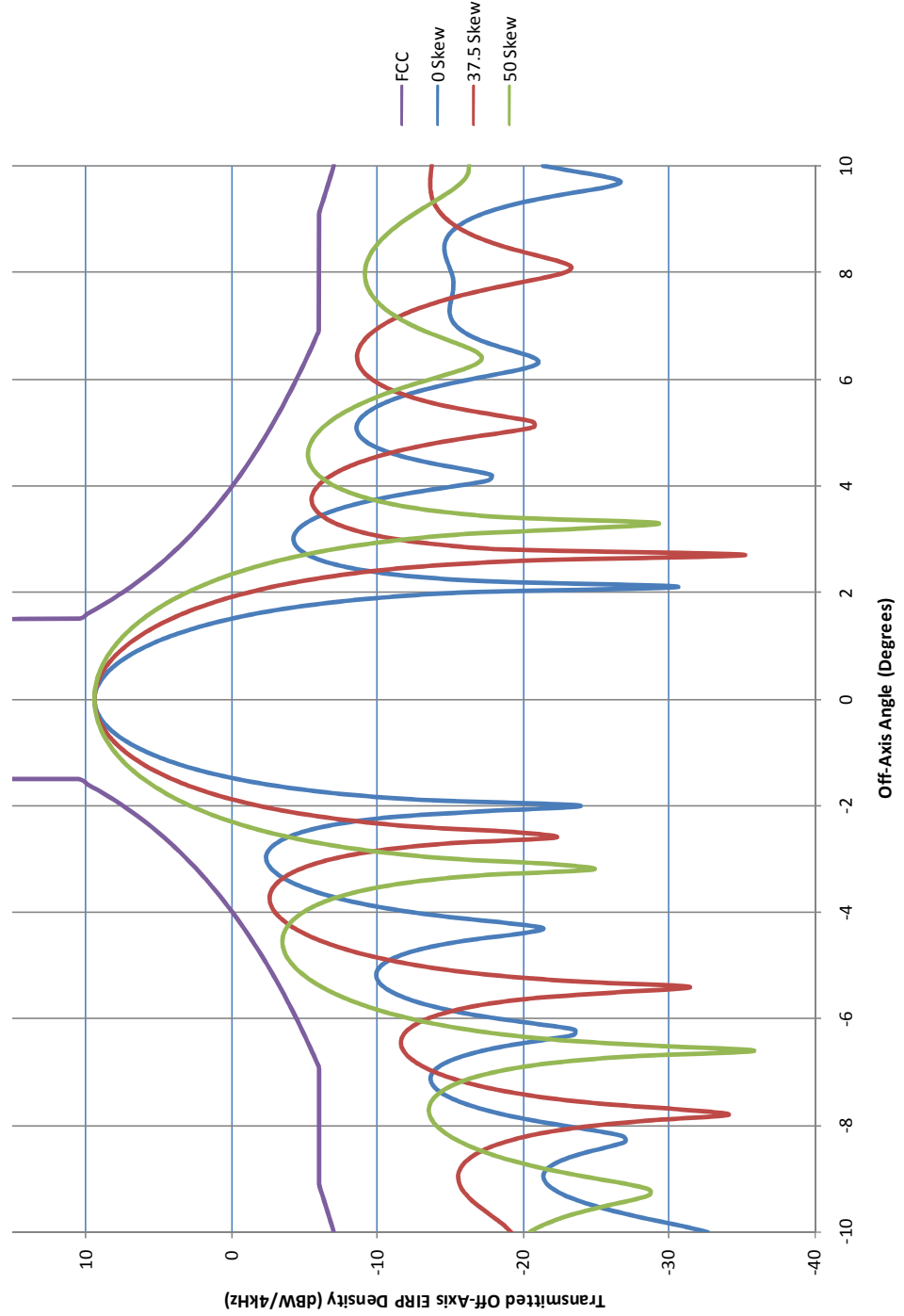
-9.9	-13.075	-0.728	-2.987	-5.593	1.628	-0.910	-23.693	-16.472	-19.010	-6.891	-
-9.8	-11.317	-0.283	-3.851	-4.681	1.979	-1.093	-22.781	-16.121	-19.193	-6.781	-
-9.7	-9.610	0.223	-4.876	-4.006	2.265	-1.394	-22.106	-15.835	-19.494	-6.669	-
-9.6	-8.070	0.718	-6.179	-3.553	2.447	-1.786	-21.653	-15.653	-19.886	-6.557	-
-9.5	-6.728	1.196	-7.664	-3.318	2.537	-2.328	-21.418	-15.563	-20.428	-6.443	-
-9.4	-5.593	1.628	-9.325	-3.318	2.537	-2.987	-21.418	-15.563	-21.087	-6.328	-
-9.3	-4.681	1.979	-10.561	-3.318	2.537	-3.215	-21.418	-15.563	-21.315	-6.212	-
-9.2	-4.006	2.265	-10.533	-3.318	2.537	-1.716	-21.418	-15.563	-19.816	-6.095	-
-9.1	-3.553	2.447	-9.088	-3.318	2.537	-0.386	-21.418	-15.563	-18.486	-6.000	-
-9	-3.318	2.537	-6.993	-3.318	2.537	0.707	-21.418	-15.563	-17.393	-6.000	-
-8.9	-3.320	2.522	-5.024	-3.318	2.537	1.669	-21.418	-15.563	-16.431	-6.000	-
-8.8	-3.593	2.376	-3.215	-3.318	2.537	2.449	-21.418	-15.563	-15.651	-6.000	-
-8.7	-4.162	2.118	-1.716	-3.318	2.537	3.120	-21.418	-15.563	-14.980	-6.000	-
-8.6	-5.048	1.689	-0.386	-3.318	2.537	3.641	-21.418	-15.563	-14.459	-6.000	-
-8.5	-6.265	1.099	0.707	-3.318	2.537	4.059	-21.418	-15.563	-14.041	-6.000	-
-8.4	-7.725	0.309	1.669	-2.484	2.522	4.343	-20.584	-15.578	-13.757	-6.000	-
-8.3	-8.904	-0.782	2.449	-0.672	2.376	4.519	-18.772	-15.724	-13.581	-6.000	-
-8.2	-8.711	-2.177	3.120	0.798	2.118	4.566	-17.302	-15.982	-13.534	-6.000	-
-8.1	-6.944	-4.110	3.641	1.983	1.689	4.566	-16.117	-16.411	-13.534	-6.000	-
-8	-4.642	-6.834	4.059	2.921	1.099	4.566	-15.179	-17.001	-13.534	-6.000	-
-7.9	-2.484	-10.823	4.343	3.634	0.309	4.566	-14.466	-17.791	-13.534	-6.000	-
-7.8	-0.672	-15.996	4.519	4.117	0.368	4.566	-13.983	-17.732	-13.534	-6.000	-
-7.7	0.798	-12.795	4.566	4.385	1.907	4.566	-13.715	-16.193	-13.534	-6.000	-
-7.6	1.983	-7.689	4.487	4.448	3.123	4.566	-13.652	-14.977	-13.534	-6.000	-
-7.5	2.921	-4.100	4.268	4.448	4.132	4.566	-13.652	-13.968	-13.534	-6.000	-
-7.4	3.634	-1.592	3.892	4.448	4.912	4.566	-13.652	-13.188	-13.534	-6.000	-
-7.3	4.117	0.368	3.340	4.448	5.527	4.566	-13.652	-12.573	-13.534	-6.000	-
-7.2	4.385	1.907	2.564	4.448	5.989	4.566	-13.652	-12.111	-13.534	-6.000	-
-7.1	4.448	3.123	1.523	4.448	6.286	4.487	-13.652	-11.814	-13.613	-6.000	-
-7	4.298	4.132	0.096	4.448	6.450	4.268	-13.652	-11.650	-13.832	-6.000	-
-6.9	3.906	4.912	-1.861	4.448	6.451	3.892	-13.652	-11.649	-14.208	-5.971	-
-6.8	3.239	5.527	-4.762	4.448	6.451	3.340	-13.652	-11.649	-14.760	-5.813	-
-6.7	2.267	5.989	-9.512	4.448	6.451	2.564	-13.652	-11.649	-15.536	-5.652	-
-6.6	0.927	6.286	-17.743	4.448	6.451	4.033	-13.652	-11.649	-14.067	-5.489	-
-6.5	-0.869	6.450	-10.660	4.298	6.451	5.746	-13.802	-11.649	-12.354	-5.323	-
-6.4	-3.159	6.451	-4.589	3.906	6.451	7.200	-14.194	-11.649	-10.900	-5.154	-
-6.3	-5.344	6.302	-0.800	3.771	6.451	8.422	-14.329	-11.649	-9.678	-4.984	-
-6.2	-5.387	5.979	1.907	5.162	6.451	9.494	-12.938	-11.649	-8.606	-4.810	-
-6.1	-3.012	5.449	4.033	6.244	6.451	10.410	-11.856	-11.649	-7.690	-4.633	-
-6	-0.301	4.702	5.746	7.069	6.451	11.222	-11.031	-11.649	-6.878	-4.454	-
-5.9	1.983	3.624	7.200	7.661	6.451	11.917	-10.439	-11.649	-6.183	-4.271	-
-5.8	3.771	2.157	8.422	8.022	6.302	12.532	-10.078	-11.798	-5.568	-4.086	-
-5.7	5.162	0.086	9.494	8.171	5.979	13.049	-9.929	-12.121	-5.051	-3.897	-
-5.6	6.244	-3.109	10.410	8.171	5.449	13.498	-9.929	-12.651	-4.602	-3.705	-
-5.5	7.069	-8.377	11.222	8.171	5.258	13.861	-9.929	-12.842	-4.239	-3.509	-
-5.4	7.661	-13.340	11.917	8.171	7.229	14.160	-9.929	-10.871	-3.940	-3.310	-
-5.3	8.022	-5.753	12.532	8.171	8.866	14.379	-9.929	-9.234	-3.721	-3.107	-
-5.2	8.171	-0.685	13.049	8.171	10.193	14.530	-9.929	-7.907	-3.570	-2.900	-
-5.1	8.113	2.767	13.498	8.171	11.333	14.604	-9.929	-6.767	-3.496	-2.689	-
-5	7.833	5.258	13.861	8.171	12.295	14.604	-9.929	-5.805	-3.496	-2.474	-
-4.9	7.293	7.229	14.160	8.171	13.094	14.604	-9.929	-5.006	-3.496	-2.255	-
-4.8	6.446	8.866	14.379	8.171	13.782	14.604	-9.929	-4.318	-3.496	-2.031	-
-4.7	5.237	10.193	14.530	8.171	14.331	14.604	-9.929	-3.769	-3.496	-1.802	-
-4.6	3.555	11.333	14.604	8.113	14.774	14.604	-9.987	-3.326	-3.496	-1.569	-
-4.5	1.235	12.295	14.602	7.833	15.114	14.604	-10.267	-2.986	-3.496	-1.330	-
-4.4	-1.704	13.094	14.519	8.005	15.336	14.604	-10.095	-2.764	-3.496	-1.086	-
-4.3	-3.272	13.782	14.346	9.834	15.462	14.604	-8.266	-2.638	-3.496	-0.837	-
-4.2	-0.726	14.331	14.080	11.302	15.470	14.604	-6.798	-2.630	-3.496	-0.581	-
-4.1	2.791	14.774	13.699	12.500	15.470	14.604	-5.600	-2.630	-3.496	-0.320	-
-4	5.697	15.114	13.200	13.481	15.470	14.602	-4.619	-2.630	-3.498	-0.051	-

-3.9	8.005	15.336	12.541	14.273	15.470	14.519	-3.827	-2.630	-3.581	0.223	-
-3.8	9.834	15.462	11.709	14.881	15.470	14.346	-3.219	-2.630	-3.754	0.505	-
-3.7	11.302	15.470	10.628	15.318	15.470	14.080	-2.782	-2.630	-4.020	0.795	-
-3.6	12.500	15.364	9.236	15.599	15.470	13.699	-2.501	-2.630	-4.401	1.092	-
-3.5	13.481	15.135	7.361	15.724	15.470	13.200	-2.376	-2.630	-4.900	1.398	-
-3.4	14.273	14.752	4.724	15.724	15.470	12.541	-2.376	-2.630	-5.559	1.713	-
-3.3	14.881	14.222	0.611	15.724	15.470	11.709	-2.376	-2.630	-6.391	2.037	-
-3.2	15.318	13.476	-6.687	15.724	15.470	12.152	-2.376	-2.630	-5.948	2.371	-
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-2.9	15.680	9.350	6.939	15.724	14.752	16.940	-2.376	-3.348	-1.160	3.440	-
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-1.9	4.434	17.805	21.713	19.404	22.971	24.617	1.304	4.871	6.517	8.031	-
-1.8	9.759	19.143	22.419	20.807	23.686	25.037	2.707	5.586	6.937	8.618	-
-1.7	13.190	20.277	23.039	21.991	24.306	25.433	3.891	6.206	7.333	9.239	-
-1.6	15.725	21.294	23.623	23.004	24.860	25.775	4.904	6.760	7.675	9.897	-
-1.5	17.738	22.188	24.134	23.880	25.359	26.094	5.780	7.259	7.994	10.598	-
-1.4	19.404	22.971	24.617	24.641	25.785	26.366	6.541	7.685	8.266	-	-
-1.3	20.807	23.686	25.037	25.295	26.166	26.616	7.195	8.066	8.516	-	-
-1.2	21.991	24.306	25.433	25.846	26.493	26.824	7.746	8.393	8.724	-	-
-1.1	23.004	24.860	25.775	26.306	26.767	27.010	8.206	8.667	8.910	-	-
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0.4	26.928	27.152	27.281	27.500	27.500	27.500	9.400	9.400	9.400	-	-
0.5	26.616	26.964	27.154	27.500	27.500	27.500	9.400	9.400	9.400	-	-
0.6	26.231	26.729	27.006	27.460	27.474	27.483	9.360	9.374	9.383	-	-
0.7	25.764	26.447	26.820	27.350	27.408	27.445	9.250	9.308	9.345	-	-
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0.9	24.584	25.746	26.368	26.928	27.152	27.281	8.828	9.052	9.181	-	-
1	23.859	25.321	26.100	26.616	26.964	27.154	8.516	8.864	9.054	-	-
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1.2	22.059	24.296	25.451	25.764	26.447	26.820	7.664	8.347	8.720	-	-
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1.5	18.206	22.268	24.188	23.859	25.321	26.100	5.759	7.221	8.000	10.598	-
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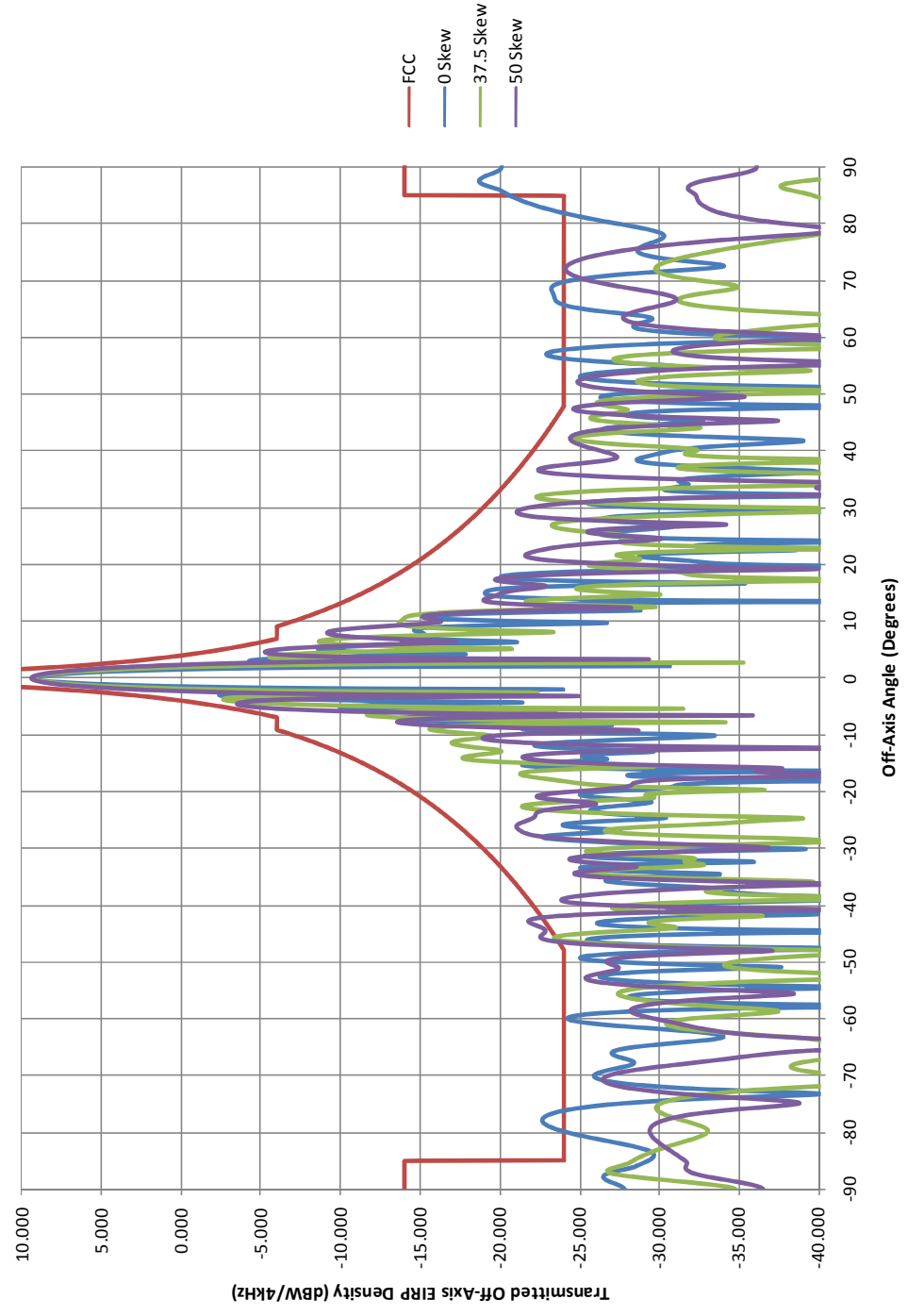
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3.3	12.990	11.024	-11.097	13.853	12.584	11.295	-4.247	-5.516	-6.805	2.037	-
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4.3	1.976	10.525	12.481	8.731	12.576	12.859	-9.369	-5.524	-5.241	-0.837	-
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6	1.640	8.488	4.417	8.015	9.475	9.508	-10.085	-8.625	-8.592	-4.454	-
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6.7	0.774	9.083	2.973	3.118	9.475	6.982	-14.982	-8.625	-11.118	-5.652	-
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7	2.706	7.798	5.662	3.146	9.446	8.270	-14.954	-8.654	-9.830	-6.000	-
7.1	2.980	7.155	6.381	3.146	9.314	8.536	-14.954	-8.786	-9.564	-6.000	-
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7.4	3.105	4.455	7.922	3.146	8.325	8.941	-14.954	-9.775	-9.159	-6.000	-
7.5	3.027	3.256	8.270	3.146	7.798	8.954	-14.954	-10.302	-9.146	-6.000	-
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7.7	2.883	0.260	8.737	3.301	6.388	8.954	-14.799	-11.712	-9.146	-6.000	-
7.8	2.874	-1.499	8.869	3.425	5.506	8.954	-14.675	-12.594	-9.146	-6.000	-
7.9	2.924	-3.337	8.941	3.498	4.455	8.954	-14.602	-13.645	-9.146	-6.000	-

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55	-12.545	-12.570	-20.597	-9.493	-9.956	-14.536	-27.593	-28.056	-32.636	-24.000	-
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115	-2.5	-2.5	-2.5	-2.5	-2.5	-2.5	-20.600	-20.600	-20.600	-14.000	-
120	-2.5	-2.5	-2.5	-2.5	-2.5	-2.5	-20.600	-20.600	-20.600	-14.000	-
125	-2.5	-2.5	-2.5	-2.5	-2.5	-2.5	-20.600	-20.600	-20.600	-14.000	-
130	-2.5	-2.5	-2.5	-2.5	-2.5	-2.5	-20.600	-20.600	-20.600	-14.000	-
135	-2.5	-2.5	-2.5	-2.5	-2.5	-2.5	-20.600	-20.600	-20.600	-14.000	-
140	-2.5	-2.5	-2.5	-2.5	-2.5	-2.5	-20.600	-20.600	-20.600	-14.000	-
145	-2.5	-2.5	-2.5	-2.5	-2.5	-2.5	-20.600	-20.600	-20.600	-14.000	-
150	-2.5	-2.5	-2.5	-2.5	-2.5	-2.5	-20.600	-20.600	-20.600	-14.000	-
155	-2.5	-2.5	-2.5	-2.5	-2.5	-2.5	-20.600	-20.600	-20.600	-14.000	-
160	-2.5	-2.5	-2.5	-2.5	-2.5	-2.5	-20.600	-20.600	-20.600	-14.000	-
165	-2.5	-2.5	-2.5	-2.5	-2.5	-2.5	-20.600	-20.600	-20.600	-14.000	-
170	-2.5	-2.5	-2.5	-2.5	-2.5	-2.5	-20.600	-20.600	-20.600	-14.000	-
175	-2.5	-2.5	-2.5	-2.5	-2.5	-2.5	-20.600	-20.600	-20.600	-14.000	-
180	-2.5	-2.5	-2.5	-2.5	-2.5	-2.5	-20.600	-20.600	-20.600	-14.000	-

14.5GHz V-Pol, Nominal Transmitted Co-Pol PSD with -18.1dBW/4KHz at Input



14.5GHz V-Pol Nominal Transmitted Co-Pol PSD with -18.1dBW/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):** 27.5
a2 Antenna Model: SR3000 **D Frequency at which gain was measured (GHz):** 14.0
a3 Antenna ID: RAS **E Max input power density (dBW/4kHz):** -18.1
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 = -18.1dBW/4kHz (dBW/4kHz) 0° Skew	FCC Mask (dBW/4kHz)	Mask Exceedence (dB)
-180	-2.750	-2.750	-20.850	-14	-
-175	-2.750	-2.750	-20.850	-14	-
-170	-2.750	-2.750	-20.850	-14	-
-165	-2.750	-2.750	-20.850	-14	-
-160	-2.750	-2.750	-20.850	-14	-
-155	-2.750	-2.750	-20.850	-14	-
-150	-2.750	-2.750	-20.850	-14	-
-145	-2.750	-2.750	-20.850	-14	-
-140	-2.750	-2.750	-20.850	-14	-
-135	-2.750	-2.750	-20.850	-14	-
-130	-2.750	-2.750	-20.850	-14	-
-125	-2.750	-2.750	-20.850	-14	-
-120	-2.750	-2.750	-20.850	-14	-
-115	-2.750	-2.750	-20.850	-14	-
-110	-2.750	-2.750	-20.850	-14	-
-105	-2.750	-2.750	-20.850	-14	-
-100	-2.750	-2.750	-20.850	-14	-
-95	-2.750	-2.750	-20.850	-14	-
-90	-5.410	-5.375	-23.475	-14	-
-85	-3.789	-3.594	-21.694	-24	2.306
-80	-2.764	-2.168	-20.268	-24	3.732
-75	4.001	4.545	-13.555	-24	10.445
-70	6.763	6.783	-11.317	-24	12.683
-65	3.070	3.622	-14.478	-24	9.522
-60	2.184	2.470	-15.630	-24	8.370
-55	-1.695	-1.168	-19.268	-24	4.732
-50	6.017	6.366	-11.734	-24	12.266
-45	10.202	10.358	-7.742	-23.330	15.588
-40	-0.140	1.344	-16.756	-22.051	5.295
-35	0.283	1.617	-16.483	-20.602	4.119
-30	11.422	11.685	-6.415	-18.928	12.513
-25	12.147	12.217	-5.883	-16.949	11.066
-20	6.565	7.943	-10.157	-14.526	4.369
-15	13.438	14.636	-3.464	-11.402	7.938

-10	22.358	22.894	4.794	-7.000	11.794
-9.9	22.470	22.995	4.895	-6.891	11.786
-9.8	22.579	23.093	4.993	-6.781	11.774
-9.7	22.686	23.191	5.091	-6.669	11.760
-9.6	22.791	23.286	5.186	-6.557	11.743
-9.5	22.894	23.380	5.280	-6.443	11.723
-9.4	22.995	23.473	5.373	-6.328	11.701
-9.3	23.093	23.564	5.464	-6.212	11.676
-9.2	23.191	23.653	5.553	-6.095	11.648
-9.1	23.286	23.742	5.642	-5.976	11.618
-9	23.380	23.829	5.729	-5.856	11.585
-8.9	23.473	23.915	5.815	-5.735	11.550
-8.8	23.564	24.000	5.900	-5.612	11.512
-8.7	23.653	24.084	5.984	-5.488	11.472
-8.6	23.742	24.167	6.067	-5.362	11.429
-8.5	23.829	24.249	6.149	-5.235	11.384
-8.4	23.915	24.330	6.230	-5.107	11.337
-8.3	24.000	24.411	6.311	-4.977	11.288
-8.2	24.084	24.490	6.390	-4.845	11.235
-8.1	24.167	24.569	6.469	-4.712	11.181
-8	24.249	24.647	6.547	-4.577	11.124
-7.9	24.330	24.725	6.625	-4.441	11.066
-7.8	24.411	24.802	6.702	-4.302	11.004
-7.7	24.490	24.878	6.778	-4.162	10.940
-7.6	24.569	24.954	6.854	-4.020	10.874
-7.5	24.647	25.029	6.929	-3.877	10.806
-7.4	24.725	25.103	7.003	-3.731	10.734
-7.3	24.802	25.176	7.076	-3.583	10.659
-7.2	24.878	25.249	7.149	-3.433	10.582
-7.1	24.954	25.321	7.221	-3.281	10.502
-7	25.029	25.392	7.292	-3.127	10.419
-6.9	25.103	25.462	7.362	-2.971	10.333
-6.8	25.176	25.531	7.431	-2.813	10.244
-6.7	25.249	25.600	7.500	-2.652	10.152
-6.6	25.321	25.668	7.568	-2.489	10.057
-6.5	25.392	25.734	7.634	-2.323	9.957
-6.4	25.462	25.800	7.700	-2.154	9.854
-6.3	25.531	25.865	7.765	-1.984	9.749
-6.2	25.600	25.928	7.828	-1.810	9.638
-6.1	25.668	25.991	7.891	-1.633	9.524
-6	25.734	26.052	7.952	-1.454	9.406
-5.9	25.800	26.113	8.013	-1.271	9.284
-5.8	25.865	26.172	8.072	-1.086	9.158
-5.7	25.928	26.229	8.129	-0.897	9.026
-5.6	25.991	26.286	8.186	-0.705	8.891
-5.5	26.052	26.341	8.241	-0.509	8.750
-5.4	26.113	26.395	8.295	-0.310	8.605
-5.3	26.172	26.447	8.347	-0.107	8.454
-5.2	26.229	26.498	8.398	0.100	8.298
-5.1	26.286	26.548	8.448	0.311	8.137
-5	26.341	26.596	8.496	0.526	7.970
-4.9	26.395	26.643	8.543	0.745	7.798
-4.8	26.447	26.689	8.589	0.969	7.620
-4.7	26.498	26.733	8.633	1.198	7.435
-4.6	26.548	26.775	8.675	1.431	7.244

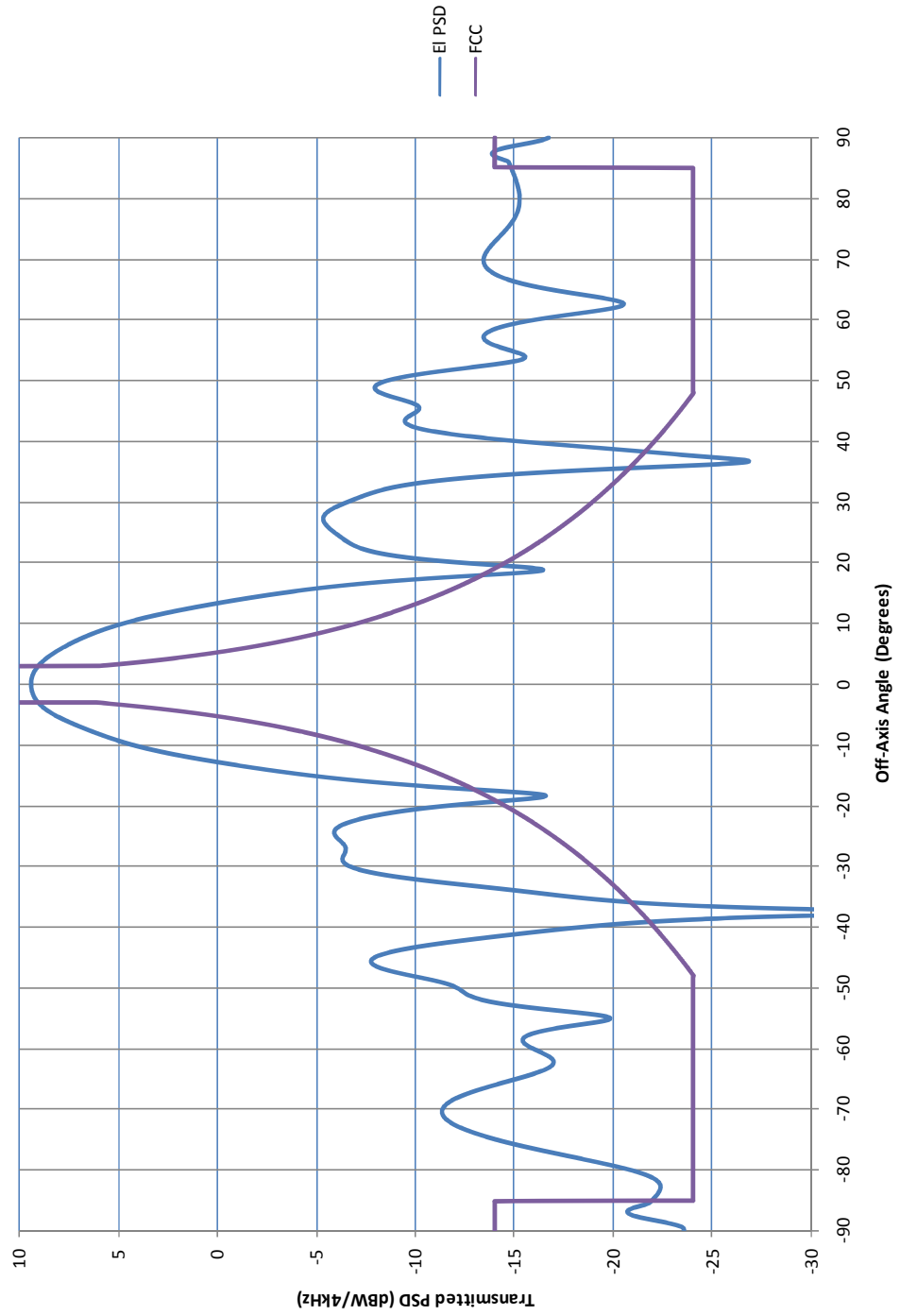
-4.5	26.596	26.816	8.716	1.670	7.046
-4.4	26.643	26.856	8.756	1.914	6.842
-4.3	26.689	26.894	8.794	2.163	6.631
-4.2	26.733	26.931	8.831	2.419	6.412
-4.1	26.775	26.966	8.866	2.680	6.186
-4	26.816	27.000	8.900	2.949	5.951
-3.9	26.856	27.033	8.933	3.223	5.710
-3.8	26.894	27.064	8.964	3.505	5.459
-3.7	26.931	27.094	8.994	3.795	5.199
-3.6	26.966	27.122	9.022	4.092	4.930
-3.5	27.000	27.150	9.050	4.398	4.652
-3.4	27.033	27.175	9.075	4.713	4.362
-3.3	27.064	27.200	9.100	5.037	4.063
-3.2	27.094	27.224	9.124	5.371	3.753
-3.1	27.122	27.246	9.146	5.716	3.430
-3	27.150	27.267	9.167	6.072	3.095
-2.9	27.175	27.287	9.187	-	-
-2.8	27.200	27.306	9.206	-	-
-2.7	27.224	27.324	9.224	-	-
-2.6	27.246	27.341	9.241	-	-
-2.5	27.267	27.357	9.257	-	-
-2.4	27.287	27.371	9.271	-	-
-2.3	27.306	27.385	9.285	-	-
-2.2	27.324	27.398	9.298	-	-
-2.1	27.341	27.410	9.310	-	-
-2	27.357	27.422	9.322	-	-
-1.9	27.371	27.432	9.332	-	-
-1.8	27.385	27.442	9.342	-	-
-1.7	27.398	27.450	9.350	-	-
-1.6	27.410	27.458	9.358	-	-
-1.5	27.422	27.466	9.366	-	-
-1.4	27.432	27.472	9.372	-	-
-1.3	27.442	27.478	9.378	-	-
-1.2	27.450	27.483	9.383	-	-
-1.1	27.458	27.488	9.388	-	-
-1	27.466	27.491	9.391	-	-
-0.9	27.472	27.495	9.395	-	-
-0.8	27.478	27.497	9.397	-	-
-0.7	27.483	27.499	9.399	-	-
-0.6	27.488	27.500	9.400	-	-
-0.5	27.491	27.500	9.400	-	-
-0.4	27.495	27.500	9.400	-	-
-0.3	27.497	27.500	9.400	-	-
-0.2	27.499	27.500	9.400	-	-
-0.1	27.500	27.500	9.400	-	-
0	27.500	27.500	9.400	-	-
0.1	27.500	27.500	9.400	-	-
0.2	27.499	27.500	9.400	-	-
0.3	27.497	27.500	9.400	-	-
0.4	27.495	27.500	9.400	-	-
0.5	27.492	27.500	9.400	-	-
0.6	27.489	27.500	9.400	-	-
0.7	27.484	27.499	9.399	-	-
0.8	27.479	27.497	9.397	-	-
0.9	27.473	27.495	9.395	-	-

1	27.467	27.492	9.392	-	
1.1	27.459	27.489	9.389	-	
1.2	27.451	27.484	9.384	-	
1.3	27.442	27.479	9.379	-	
1.4	27.432	27.473	9.373	-	
1.5	27.422	27.467	9.367	-	
1.6	27.410	27.459	9.359	-	
1.7	27.398	27.451	9.351	-	
1.8	27.385	27.442	9.342	-	
1.9	27.371	27.432	9.332	-	
2	27.355	27.422	9.322	-	
2.1	27.339	27.410	9.310	-	
2.2	27.322	27.398	9.298	-	
2.3	27.304	27.385	9.285	-	
2.4	27.285	27.371	9.271	-	
2.5	27.265	27.355	9.255	-	
2.6	27.244	27.339	9.239	-	
2.7	27.222	27.322	9.222	-	
2.8	27.199	27.304	9.204	-	
2.9	27.175	27.285	9.185	-	
3	27.150	27.265	9.165	6.072	3.093
3.1	27.124	27.244	9.144	5.716	3.428
3.2	27.096	27.222	9.122	5.371	3.751
3.3	27.068	27.199	9.099	5.037	4.062
3.4	27.038	27.175	9.075	4.713	4.362
3.5	27.008	27.150	9.050	4.398	4.652
3.6	26.976	27.124	9.024	4.092	4.932
3.7	26.943	27.096	8.996	3.795	5.201
3.8	26.910	27.068	8.968	3.505	5.463
3.9	26.875	27.038	8.938	3.223	5.715
4	26.839	27.008	8.908	2.949	5.959
4.1	26.802	26.976	8.876	2.680	6.196
4.2	26.764	26.943	8.843	2.419	6.424
4.3	26.725	26.910	8.810	2.163	6.647
4.4	26.685	26.875	8.775	1.914	6.861
4.5	26.645	26.839	8.739	1.670	7.069
4.6	26.603	26.802	8.702	1.431	7.271
4.7	26.560	26.764	8.664	1.198	7.466
4.8	26.516	26.725	8.625	0.969	7.656
4.9	26.472	26.685	8.585	0.745	7.840
5	26.426	26.645	8.545	0.526	8.019
5.1	26.379	26.603	8.503	0.311	8.192
5.2	26.332	26.560	8.460	0.100	8.360
5.3	26.284	26.516	8.416	-0.107	8.523
5.4	26.235	26.472	8.372	-0.310	8.682
5.5	26.185	26.426	8.326	-0.509	8.835
5.6	26.134	26.379	8.279	-0.705	8.984
5.7	26.083	26.332	8.232	-0.897	9.129
5.8	26.030	26.284	8.184	-1.086	9.270
5.9	25.977	26.235	8.135	-1.271	9.406
6	25.923	26.185	8.085	-1.454	9.539
6.1	25.869	26.134	8.034	-1.633	9.667
6.2	25.813	26.083	7.983	-1.810	9.793
6.3	25.757	26.030	7.930	-1.984	9.914
6.4	25.700	25.977	7.877	-2.154	10.031

6.5	25.642	25.923	7.823	-2.323	10.146
6.6	25.583	25.869	7.769	-2.489	10.258
6.7	25.524	25.813	7.713	-2.652	10.365
6.8	25.463	25.757	7.657	-2.813	10.470
6.9	25.402	25.700	7.600	-2.971	10.571
7	25.340	25.642	7.542	-3.127	10.669
7.1	25.277	25.583	7.483	-3.281	10.764
7.2	25.213	25.524	7.424	-3.433	10.857
7.3	25.148	25.463	7.363	-3.583	10.946
7.4	25.083	25.402	7.302	-3.731	11.033
7.5	25.016	25.340	7.240	-3.877	11.117
7.6	24.948	25.277	7.177	-4.020	11.197
7.7	24.879	25.213	7.113	-4.162	11.275
7.8	24.809	25.148	7.048	-4.302	11.350
7.9	24.737	25.083	6.983	-4.441	11.424
8	24.665	25.016	6.916	-4.577	11.493
8.1	24.591	24.948	6.848	-4.712	11.560
8.2	24.516	24.879	6.779	-4.845	11.624
8.3	24.440	24.809	6.709	-4.977	11.686
8.4	24.362	24.737	6.637	-5.107	11.744
8.5	24.283	24.665	6.565	-5.235	11.800
8.6	24.202	24.591	6.491	-5.362	11.853
8.7	24.120	24.516	6.416	-5.488	11.904
8.8	24.036	24.440	6.340	-5.612	11.952
8.9	23.950	24.362	6.262	-5.735	11.997
9	23.863	24.283	6.183	-5.856	12.039
9.1	23.774	24.202	6.102	-5.976	12.078
9.2	23.684	24.120	6.020	-6.095	12.115
9.3	23.592	24.036	5.936	-6.212	12.148
9.4	23.497	23.950	5.850	-6.328	12.178
9.5	23.401	23.863	5.763	-6.443	12.206
9.6	23.303	23.774	5.674	-6.557	12.231
9.7	23.204	23.684	5.584	-6.669	12.253
9.8	23.102	23.592	5.492	-6.781	12.273
9.9	22.997	23.497	5.397	-6.891	12.288
10	22.892	23.401	5.301	-7.000	12.301
15	14.954	15.987	-2.113	-11.402	9.289
20	5.745	7.518	-10.582	-14.526	3.944
25	12.209	12.397	-5.703	-16.949	11.246
30	11.567	11.929	-6.171	-18.928	12.757
35	1.131	3.599	-14.501	-20.602	6.101
40	2.876	4.491	-13.609	-22.051	8.442
45	8.019	8.259	-9.841	-23.330	13.489
50	9.550	9.968	-8.132	-24	15.868
55	3.367	3.869	-14.231	-24	9.769
60	2.120	2.946	-15.154	-24	8.846
65	1.326	2.115	-15.985	-24	8.015
70	4.682	4.686	-13.414	-24	10.586

75	3.520	3.657	-14.443	-24	9.557
80	2.867	2.877	-15.223	-24	8.777
85	3.293	3.357	-14.743	-24	9.257
90	1.413	1.857	-16.243	-14	-
95	-2.750	-2.750	-20.850	-14	-
100	-2.750	-2.750	-20.850	-14	-
105	-2.750	-2.750	-20.850	-14	-
110	-2.750	-2.750	-20.850	-14	-
115	-2.750	-2.750	-20.850	-14	-
120	-2.750	-2.750	-20.850	-14	-
125	-2.750	-2.750	-20.850	-14	-
130	-2.750	-2.750	-20.850	-14	-
135	-2.750	-2.750	-20.850	-14	-
140	-2.750	-2.750	-20.850	-14	-
145	-2.750	-2.750	-20.850	-14	-
150	-2.750	-2.750	-20.850	-14	-
155	-2.750	-2.750	-20.850	-14	-
160	-2.750	-2.750	-20.850	-14	-
165	-2.750	-2.750	-20.850	-14	-
170	-2.750	-2.750	-20.850	-14	-
175	-2.750	-2.750	-20.850	-14	-
180	-2.750	-2.750	-20.850	-14	-

14.0GHz, H-Pol Co-Pol Elevation PSD with -18.1dBW/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):** 27.5
a2 Antenna Model: SR3000 **D Frequency at which gain was measured (GHz):** 14.0
a3 Antenna ID: RAS **E Max input power density (dBW/4kHz):** -18.1
b Transmit Band (b): 14GHz **Pattern ID** Table B2
Pattern Description: 14.0GHz 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 = -18.1dBW/4kHz (dBW/4kHz) 0° Skew	FCC Mask (dBW/4kHz)	Mask Exceedence (dB)
-180	-2.750	-2.750	-20.850	-14	-
-175	-2.750	-2.750	-20.850	-14	-
-170	-2.750	-2.750	-20.850	-14	-
-165	-2.750	-2.750	-20.850	-14	-
-160	-2.750	-2.750	-20.850	-14	-
-155	-2.750	-2.750	-20.850	-14	-
-150	-2.750	-2.750	-20.850	-14	-
-145	-2.750	-2.750	-20.850	-14	-
-140	-2.750	-2.750	-20.850	-14	-
-135	-2.750	-2.750	-20.850	-14	-
-130	-2.750	-2.750	-20.850	-14	-
-125	-2.750	-2.750	-20.850	-14	-
-120	-2.750	-2.750	-20.850	-14	-
-115	-2.750	-2.750	-20.850	-14	-
-110	-2.750	-2.750	-20.850	-14	-
-105	-2.750	-2.750	-20.850	-14	-
-100	-2.750	-2.750	-20.850	-14	-
-95	-2.750	-2.750	-20.850	-14	-
-90	-3.125	-2.913	-21.013	-14	-
-85	-0.371	-0.222	-18.322	-24	5.678
-80	1.203	1.483	-16.617	-24	7.383
-75	4.531	4.806	-13.294	-24	10.706
-70	4.996	5.194	-12.906	-24	11.094
-65	5.706	5.993	-12.107	-24	11.893
-60	2.130	3.200	-14.900	-24	9.100
-55	-12.095	-7.755	-25.855	-24	-
-50	6.225	6.848	-11.252	-24	12.748
-45	7.465	7.797	-10.303	-23.330	13.027
-40	3.314	4.113	-13.987	-22.051	8.064
-35	2.566	2.981	-15.119	-20.602	5.483
-30	10.536	10.942	-7.158	-18.928	11.770
-25	14.627	14.688	-3.412	-16.949	13.537
-20	12.128	13.053	-5.047	-14.526	9.479
-15	6.886	9.756	-8.344	-11.402	3.058

-10	20.729	21.351	3.251	-7.000	10.251
-9.9	20.855	21.472	3.372	-6.891	10.263
-9.8	20.980	21.593	3.493	-6.781	10.274
-9.7	21.105	21.713	3.613	-6.669	10.282
-9.6	21.228	21.832	3.732	-6.557	10.289
-9.5	21.351	21.949	3.849	-6.443	10.292
-9.4	21.472	22.066	3.966	-6.328	10.294
-9.3	21.593	22.182	4.082	-6.212	10.294
-9.2	21.713	22.297	4.197	-6.095	10.292
-9.1	21.832	22.410	4.310	-5.976	10.286
-9	21.949	22.522	4.422	-5.856	10.278
-8.9	22.066	22.633	4.533	-5.735	10.268
-8.8	22.182	22.742	4.642	-5.612	10.254
-8.7	22.297	22.850	4.750	-5.488	10.238
-8.6	22.410	22.957	4.857	-5.362	10.219
-8.5	22.522	23.062	4.962	-5.235	10.197
-8.4	22.633	23.166	5.066	-5.107	10.173
-8.3	22.742	23.268	5.168	-4.977	10.145
-8.2	22.850	23.368	5.268	-4.845	10.113
-8.1	22.957	23.467	5.367	-4.712	10.079
-8	23.062	23.564	5.464	-4.577	10.041
-7.9	23.166	23.659	5.559	-4.441	10.000
-7.8	23.268	23.753	5.653	-4.302	9.955
-7.7	23.368	23.845	5.745	-4.162	9.907
-7.6	23.467	23.936	5.836	-4.020	9.856
-7.5	23.564	24.025	5.925	-3.877	9.802
-7.4	23.659	24.112	6.012	-3.731	9.743
-7.3	23.753	24.197	6.097	-3.583	9.680
-7.2	23.845	24.281	6.181	-3.433	9.614
-7.1	23.936	24.364	6.264	-3.281	9.545
-7	24.025	24.445	6.345	-3.127	9.472
-6.9	24.112	24.524	6.424	-2.971	9.395
-6.8	24.197	24.603	6.503	-2.813	9.316
-6.7	24.281	24.680	6.580	-2.652	9.232
-6.6	24.364	24.755	6.655	-2.489	9.144
-6.5	24.445	24.830	6.730	-2.323	9.053
-6.4	24.524	24.903	6.803	-2.154	8.957
-6.3	24.603	24.975	6.875	-1.984	8.859
-6.2	24.680	25.047	6.947	-1.810	8.757
-6.1	24.755	25.117	7.017	-1.633	8.650
-6	24.830	25.186	7.086	-1.454	8.540
-5.9	24.903	25.255	7.155	-1.271	8.426
-5.8	24.975	25.323	7.223	-1.086	8.309
-5.7	25.047	25.390	7.290	-0.897	8.187
-5.6	25.117	25.457	7.357	-0.705	8.062
-5.5	25.186	25.522	7.422	-0.509	7.931
-5.4	25.255	25.588	7.488	-0.310	7.798
-5.3	25.323	25.653	7.553	-0.107	7.660
-5.2	25.390	25.717	7.617	0.100	7.517
-5.1	25.457	25.780	7.680	0.311	7.369
-5	25.522	25.843	7.743	0.526	7.217
-4.9	25.588	25.906	7.806	0.745	7.061
-4.8	25.653	25.968	7.868	0.969	6.899
-4.7	25.717	26.029	7.929	1.198	6.731
-4.6	25.780	26.090	7.990	1.431	6.559

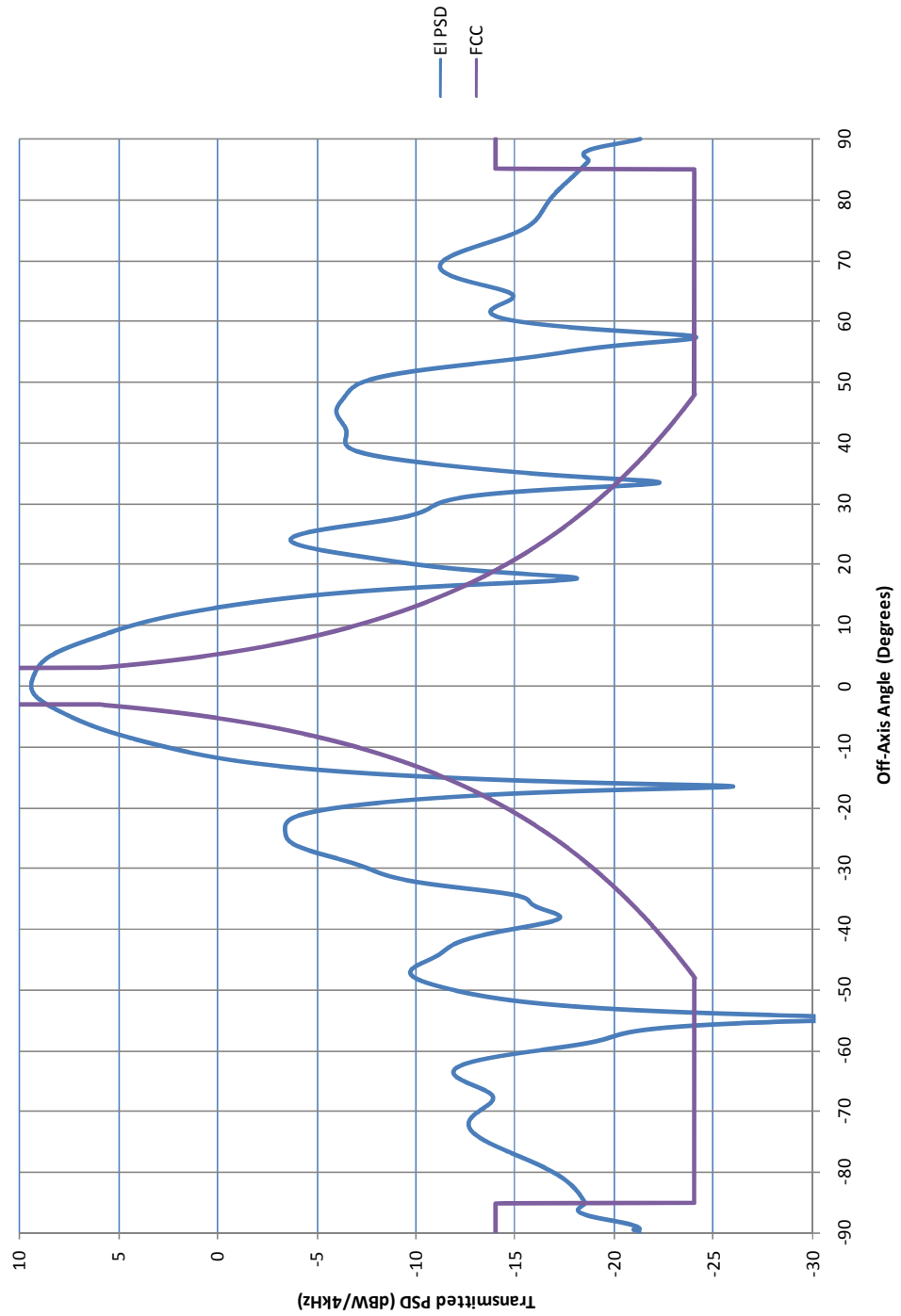
-4.5	25.843	26.150	8.050	1.670	6.380
-4.4	25.906	26.210	8.110	1.914	6.196
-4.3	25.968	26.269	8.169	2.163	6.006
-4.2	26.029	26.327	8.227	2.419	5.808
-4.1	26.090	26.385	8.285	2.680	5.605
-4	26.150	26.442	8.342	2.949	5.393
-3.9	26.210	26.498	8.398	3.223	5.175
-3.8	26.269	26.553	8.453	3.505	4.948
-3.7	26.327	26.607	8.507	3.795	4.712
-3.6	26.385	26.660	8.560	4.092	4.468
-3.5	26.442	26.712	8.612	4.398	4.214
-3.4	26.498	26.762	8.662	4.713	3.949
-3.3	26.553	26.812	8.712	5.037	3.675
-3.2	26.607	26.860	8.760	5.371	3.389
-3.1	26.660	26.907	8.807	5.716	3.091
-3	26.712	26.952	8.852	6.072	2.780
-2.9	26.762	26.995	8.895		-
-2.8	26.812	27.037	8.937		-
-2.7	26.860	27.078	8.978		-
-2.6	26.907	27.116	9.016		-
-2.5	26.952	27.153	9.053		-
-2.4	26.995	27.188	9.088		-
-2.3	27.037	27.221	9.121		-
-2.2	27.078	27.253	9.153		-
-2.1	27.116	27.282	9.182		-
-2	27.153	27.310	9.210		-
-1.9	27.188	27.335	9.235		-
-1.8	27.221	27.359	9.259		-
-1.7	27.253	27.380	9.280		-
-1.6	27.282	27.400	9.300		-
-1.5	27.310	27.418	9.318		-
-1.4	27.335	27.434	9.334		-
-1.3	27.359	27.448	9.348		-
-1.2	27.380	27.460	9.360		-
-1.1	27.400	27.471	9.371		-
-1	27.418	27.480	9.380		-
-0.9	27.434	27.487	9.387		-
-0.8	27.448	27.492	9.392		-
-0.7	27.460	27.496	9.396		-
-0.6	27.471	27.499	9.399		-
-0.5	27.480	27.500	9.400		-
-0.4	27.487	27.500	9.400		-
-0.3	27.492	27.500	9.400		-
-0.2	27.496	27.500	9.400		-
-0.1	27.499	27.500	9.400		-
0	27.500	27.500	9.400		-
0.1	27.499	27.500	9.400		-
0.2	27.498	27.500	9.400		-
0.3	27.495	27.500	9.400		-
0.4	27.491	27.500	9.400		-
0.5	27.486	27.500	9.400		-
0.6	27.480	27.499	9.399		-
0.7	27.474	27.498	9.398		-
0.8	27.466	27.495	9.395		-
0.9	27.458	27.491	9.391		-

1	27.449	27.486	9.386	-	
1.1	27.439	27.480	9.380	-	
1.2	27.429	27.474	9.374	-	
1.3	27.418	27.466	9.366	-	
1.4	27.407	27.458	9.358	-	
1.5	27.395	27.449	9.349	-	
1.6	27.383	27.439	9.339	-	
1.7	27.371	27.429	9.329	-	
1.8	27.358	27.418	9.318	-	
1.9	27.345	27.407	9.307	-	
2	27.331	27.395	9.295	-	
2.1	27.317	27.383	9.283	-	
2.2	27.303	27.371	9.271	-	
2.3	27.288	27.358	9.258	-	
2.4	27.273	27.345	9.245	-	
2.5	27.258	27.331	9.231	-	
2.6	27.242	27.317	9.217	-	
2.7	27.225	27.303	9.203	-	
2.8	27.208	27.288	9.188	-	
2.9	27.190	27.273	9.173	-	
3	27.171	27.258	9.158	6.072	3.086
3.1	27.152	27.242	9.142	5.716	3.426
3.2	27.131	27.225	9.125	5.371	3.754
3.3	27.110	27.208	9.108	5.037	4.071
3.4	27.087	27.190	9.090	4.713	4.377
3.5	27.064	27.171	9.071	4.398	4.673
3.6	27.039	27.152	9.052	4.092	4.960
3.7	27.013	27.131	9.031	3.795	5.236
3.8	26.985	27.110	9.010	3.505	5.505
3.9	26.956	27.087	8.987	3.223	5.764
4	26.925	27.064	8.964	2.949	6.015
4.1	26.893	27.039	8.939	2.680	6.259
4.2	26.859	27.013	8.913	2.419	6.494
4.3	26.823	26.985	8.885	2.163	6.722
4.4	26.786	26.956	8.856	1.914	6.942
4.5	26.746	26.925	8.825	1.670	7.155
4.6	26.705	26.893	8.793	1.431	7.362
4.7	26.662	26.859	8.759	1.198	7.561
4.8	26.616	26.823	8.723	0.969	7.754
4.9	26.569	26.786	8.686	0.745	7.941
5	26.520	26.746	8.646	0.526	8.120
5.1	26.468	26.705	8.605	0.311	8.294
5.2	26.415	26.662	8.562	0.100	8.462
5.3	26.359	26.616	8.516	-0.107	8.623
5.4	26.302	26.569	8.469	-0.310	8.779
5.5	26.242	26.520	8.420	-0.509	8.929
5.6	26.181	26.468	8.368	-0.705	9.073
5.7	26.117	26.415	8.315	-0.897	9.212
5.8	26.052	26.359	8.259	-1.086	9.345
5.9	25.985	26.302	8.202	-1.271	9.473
6	25.916	26.242	8.142	-1.454	9.596
6.1	25.845	26.181	8.081	-1.633	9.714
6.2	25.773	26.117	8.017	-1.810	9.827
6.3	25.699	26.052	7.952	-1.984	9.936
6.4	25.624	25.985	7.885	-2.154	10.039

6.5	25.547	25.916	7.816	-2.323	10.139
6.6	25.469	25.845	7.745	-2.489	10.234
6.7	25.390	25.773	7.673	-2.652	10.325
6.8	25.309	25.699	7.599	-2.813	10.412
6.9	25.228	25.624	7.524	-2.971	10.495
7	25.145	25.547	7.447	-3.127	10.574
7.1	25.062	25.469	7.369	-3.281	10.650
7.2	24.978	25.390	7.290	-3.433	10.723
7.3	24.893	25.309	7.209	-3.583	10.792
7.4	24.807	25.228	7.128	-3.731	10.859
7.5	24.721	25.145	7.045	-3.877	10.922
7.6	24.635	25.062	6.962	-4.020	10.982
7.7	24.547	24.978	6.878	-4.162	11.040
7.8	24.460	24.893	6.793	-4.302	11.095
7.9	24.372	24.807	6.707	-4.441	11.148
8	24.283	24.721	6.621	-4.577	11.198
8.1	24.194	24.635	6.535	-4.712	11.247
8.2	24.105	24.547	6.447	-4.845	11.292
8.3	24.016	24.460	6.360	-4.977	11.337
8.4	23.926	24.372	6.272	-5.107	11.379
8.5	23.835	24.283	6.183	-5.235	11.418
8.6	23.745	24.194	6.094	-5.362	11.456
8.7	23.654	24.105	6.005	-5.488	11.493
8.8	23.562	24.016	5.916	-5.612	11.528
8.9	23.469	23.926	5.826	-5.735	11.561
9	23.376	23.835	5.735	-5.856	11.591
9.1	23.283	23.745	5.645	-5.976	11.621
9.2	23.188	23.654	5.554	-6.095	11.649
9.3	23.092	23.562	5.462	-6.212	11.674
9.4	22.996	23.469	5.369	-6.328	11.697
9.5	22.898	23.376	5.276	-6.443	11.719
9.6	22.799	23.283	5.183	-6.557	11.740
9.7	22.699	23.188	5.088	-6.669	11.757
9.8	22.597	23.092	4.992	-6.781	11.773
9.9	22.493	22.996	4.896	-6.891	11.787
10	22.388	22.898	4.798	-7.000	11.798
15	13.101	14.565	-3.535	-11.402	7.867
20	8.085	9.189	-8.911	-14.526	5.615
25	13.941	14.338	-3.762	-16.949	13.187
30	7.051	7.345	-10.755	-18.928	8.173
35	2.286	4.089	-14.011	-20.602	6.591
40	11.686	11.692	-6.408	-22.051	15.643
45	12.131	12.136	-5.964	-23.330	17.366
50	10.822	11.144	-6.956	-24	17.044
55	0.504	1.534	-16.566	-24	7.434
60	2.979	3.760	-14.340	-24	9.660
65	3.650	4.178	-13.922	-24	10.078
70	6.746	6.886	-11.214	-24	12.786

75	2.846	3.188	-14.912	-24	9.088
80	1.399	1.511	-16.589	-24	7.411
85	-0.139	0.022	-18.078	-24	5.922
90	-3.144	-2.446	-20.546	-14	-
95	-2.750	-2.750	-20.850	-14	-
100	-2.750	-2.750	-20.850	-14	-
105	-2.750	-2.750	-20.850	-14	-
110	-2.750	-2.750	-20.850	-14	-
115	-2.750	-2.750	-20.850	-14	-
120	-2.750	-2.750	-20.850	-14	-
125	-2.750	-2.750	-20.850	-14	-
130	-2.750	-2.750	-20.850	-14	-
135	-2.750	-2.750	-20.850	-14	-
140	-2.750	-2.750	-20.850	-14	-
145	-2.750	-2.750	-20.850	-14	-
150	-2.750	-2.750	-20.850	-14	-
155	-2.750	-2.750	-20.850	-14	-
160	-2.750	-2.750	-20.850	-14	-
165	-2.750	-2.750	-20.850	-14	-
170	-2.750	-2.750	-20.850	-14	-
175	-2.750	-2.750	-20.850	-14	-
180	-2.750	-2.750	-20.850	-14	-

14.0GHz, V-Pol Co-Pol Elevation PSD with -18.1dBW/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):** 27.5
a2 Antenna Model: SR3000 **D Frequency at which gain was measured (GHz):** 14.25
a3 Antenna ID: RAS **E Max input power density (dBW/4kHz):** -18.1
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 = -18.1dBW/4kHz (dBW/4kHz) 0° Skew	FCC Mask (dBW/4kHz)	Mask Exceedence (dB)
-180	-2.750	-2.750	-20.850	-14	-
-175	-2.750	-2.750	-20.850	-14	-
-170	-2.750	-2.750	-20.850	-14	-
-165	-2.750	-2.750	-20.850	-14	-
-160	-2.750	-2.750	-20.850	-14	-
-155	-2.750	-2.750	-20.850	-14	-
-150	-2.750	-2.750	-20.850	-14	-
-145	-2.750	-2.750	-20.850	-14	-
-140	-2.750	-2.750	-20.850	-14	-
-135	-2.750	-2.750	-20.850	-14	-
-130	-2.750	-2.750	-20.850	-14	-
-125	-2.750	-2.750	-20.850	-14	-
-120	-2.750	-2.750	-20.850	-14	-
-115	-2.750	-2.750	-20.850	-14	-
-110	-2.750	-2.750	-20.850	-14	-
-105	-2.750	-2.750	-20.850	-14	-
-100	-2.750	-2.750	-20.850	-14	-
-95	-2.750	-2.750	-20.850	-14	-
-90	-1.389	-1.273	-19.373	-14	-
-85	-0.172	0.366	-17.734	-24	6.266
-80	-2.874	-2.557	-20.657	-24	3.343
-75	-5.283	-5.144	-23.244	-24	0.756
-70	-9.921	-8.964	-27.064	-24	-
-65	-6.829	-6.549	-24.649	-24	-
-60	-13.008	-12.022	-30.122	-24	-
-55	4.366	5.425	-12.675	-24	11.325
-50	9.066	9.329	-8.771	-24	15.229
-45	6.968	7.918	-10.182	-23.330	13.148
-40	7.536	7.568	-10.532	-22.051	11.519
-35	-4.127	-2.366	-20.466	-20.602	0.136
-30	9.590	9.866	-8.234	-18.928	10.694
-25	12.945	13.028	-5.072	-16.949	11.877
-20	8.797	9.638	-8.462	-14.526	6.064
-15	10.064	11.754	-6.346	-11.402	5.056

-10	21.026	21.703	3.603	-7.000	10.603
-9.9	21.166	21.833	3.733	-6.891	10.624
-9.8	21.304	21.960	3.860	-6.781	10.641
-9.7	21.439	22.085	3.985	-6.669	10.654
-9.6	21.572	22.207	4.107	-6.557	10.664
-9.5	21.703	22.328	4.228	-6.443	10.671
-9.4	21.833	22.447	4.347	-6.328	10.675
-9.3	21.960	22.564	4.464	-6.212	10.676
-9.2	22.085	22.678	4.578	-6.095	10.673
-9.1	22.207	22.791	4.691	-5.976	10.667
-9	22.328	22.902	4.802	-5.856	10.658
-8.9	22.447	23.010	4.910	-5.735	10.645
-8.8	22.564	23.117	5.017	-5.612	10.629
-8.7	22.678	23.221	5.121	-5.488	10.609
-8.6	22.791	23.324	5.224	-5.362	10.586
-8.5	22.902	23.424	5.324	-5.235	10.559
-8.4	23.010	23.523	5.423	-5.107	10.530
-8.3	23.117	23.619	5.519	-4.977	10.496
-8.2	23.221	23.714	5.614	-4.845	10.459
-8.1	23.324	23.807	5.707	-4.712	10.419
-8	23.424	23.898	5.798	-4.577	10.375
-7.9	23.523	23.987	5.887	-4.441	10.328
-7.8	23.619	24.074	5.974	-4.302	10.276
-7.7	23.714	24.159	6.059	-4.162	10.221
-7.6	23.807	24.243	6.143	-4.020	10.163
-7.5	23.898	24.324	6.224	-3.877	10.101
-7.4	23.987	24.404	6.304	-3.731	10.035
-7.3	24.074	24.483	6.383	-3.583	9.966
-7.2	24.159	24.560	6.460	-3.433	9.893
-7.1	24.243	24.635	6.535	-3.281	9.816
-7	24.324	24.709	6.609	-3.127	9.736
-6.9	24.404	24.782	6.682	-2.971	9.653
-6.8	24.483	24.853	6.753	-2.813	9.566
-6.7	24.560	24.923	6.823	-2.652	9.475
-6.6	24.635	24.992	6.892	-2.489	9.381
-6.5	24.709	25.059	6.959	-2.323	9.282
-6.4	24.782	25.126	7.026	-2.154	9.180
-6.3	24.853	25.191	7.091	-1.984	9.075
-6.2	24.923	25.256	7.156	-1.810	8.966
-6.1	24.992	25.320	7.220	-1.633	8.853
-6	25.059	25.382	7.282	-1.454	8.736
-5.9	25.126	25.444	7.344	-1.271	8.615
-5.8	25.191	25.506	7.406	-1.086	8.492
-5.7	25.256	25.567	7.467	-0.897	8.364
-5.6	25.320	25.627	7.527	-0.705	8.232
-5.5	25.382	25.686	7.586	-0.509	8.095
-5.4	25.444	25.745	7.645	-0.310	7.955
-5.3	25.506	25.803	7.703	-0.107	7.810
-5.2	25.567	25.861	7.761	0.100	7.661
-5.1	25.627	25.918	7.818	0.311	7.507
-5	25.686	25.975	7.875	0.526	7.349
-4.9	25.745	26.031	7.931	0.745	7.186
-4.8	25.803	26.087	7.987	0.969	7.018
-4.7	25.861	26.143	8.043	1.198	6.845
-4.6	25.918	26.197	8.097	1.431	6.666

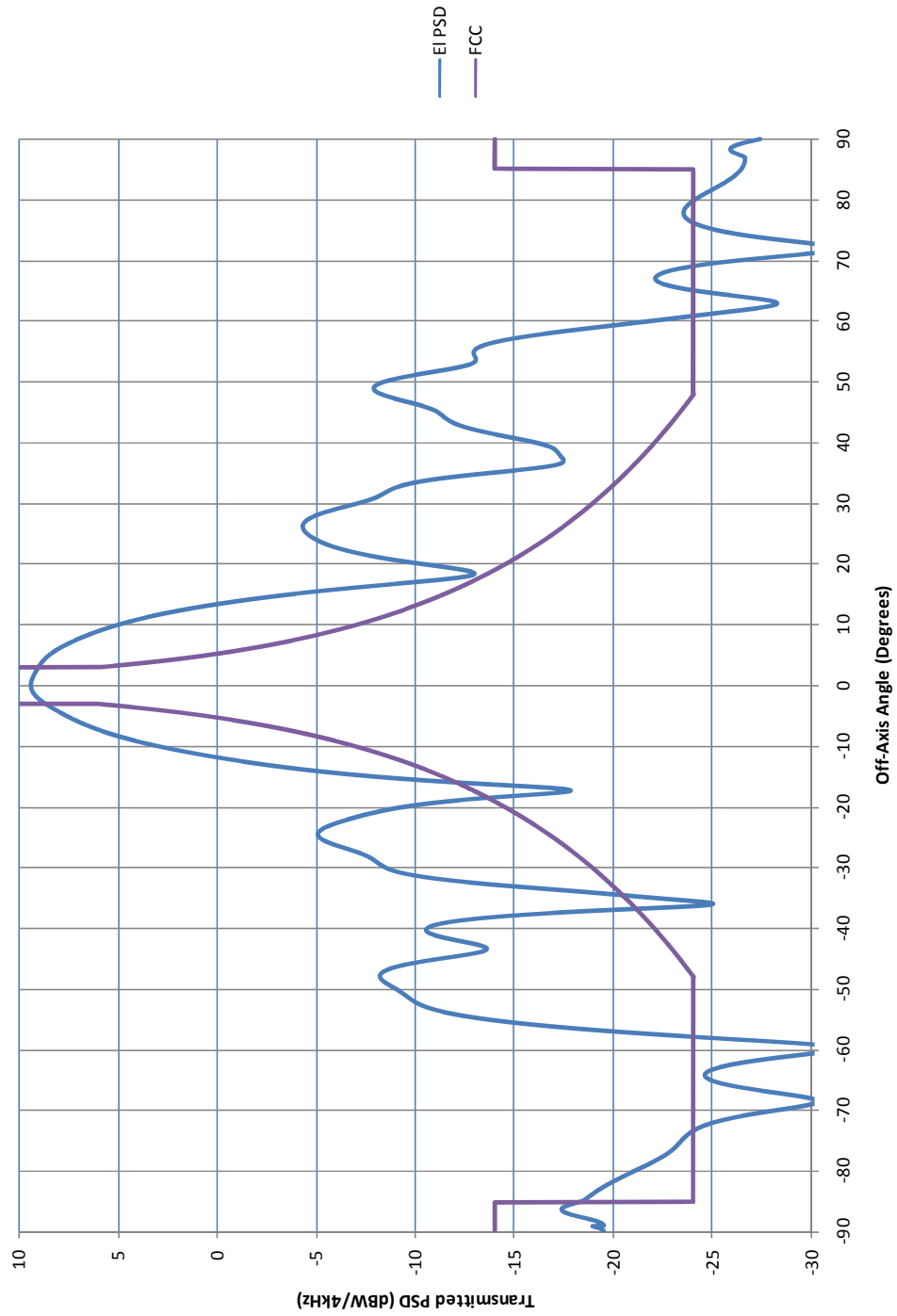
-4.5	25.975	26.252	8.152	1.670	6.482
-4.4	26.031	26.305	8.205	1.914	6.291
-4.3	26.087	26.359	8.259	2.163	6.096
-4.2	26.143	26.411	8.311	2.419	5.892
-4.1	26.197	26.463	8.363	2.680	5.683
-4	26.252	26.514	8.414	2.949	5.465
-3.9	26.305	26.565	8.465	3.223	5.242
-3.8	26.359	26.615	8.515	3.505	5.010
-3.7	26.411	26.664	8.564	3.795	4.769
-3.6	26.463	26.712	8.612	4.092	4.520
-3.5	26.514	26.759	8.659	4.398	4.261
-3.4	26.565	26.805	8.705	4.713	3.992
-3.3	26.615	26.850	8.750	5.037	3.713
-3.2	26.664	26.894	8.794	5.371	3.423
-3.1	26.712	26.937	8.837	5.716	3.121
-3	26.759	26.978	8.878	6.072	2.806
-2.9	26.805	27.018	8.918		-
-2.8	26.850	27.057	8.957		-
-2.7	26.894	27.094	8.994		-
-2.6	26.937	27.130	9.030		-
-2.5	26.978	27.165	9.065		-
-2.4	27.018	27.198	9.098		-
-2.3	27.057	27.229	9.129		-
-2.2	27.094	27.258	9.158		-
-2.1	27.130	27.286	9.186		-
-2	27.165	27.313	9.213		-
-1.9	27.198	27.337	9.237		-
-1.8	27.229	27.360	9.260		-
-1.7	27.258	27.381	9.281		-
-1.6	27.286	27.400	9.300		-
-1.5	27.313	27.418	9.318		-
-1.4	27.337	27.434	9.334		-
-1.3	27.360	27.448	9.348		-
-1.2	27.381	27.460	9.360		-
-1.1	27.400	27.471	9.371		-
-1	27.418	27.480	9.380		-
-0.9	27.434	27.487	9.387		-
-0.8	27.448	27.492	9.392		-
-0.7	27.460	27.497	9.397		-
-0.6	27.471	27.499	9.399		-
-0.5	27.480	27.500	9.400		-
-0.4	27.487	27.500	9.400		-
-0.3	27.492	27.500	9.400		-
-0.2	27.497	27.500	9.400		-
-0.1	27.499	27.500	9.400		-
0	27.500	27.500	9.400		-
0.1	27.499	27.500	9.400		-
0.2	27.498	27.500	9.400		-
0.3	27.495	27.500	9.400		-
0.4	27.491	27.500	9.400		-
0.5	27.486	27.500	9.400		-
0.6	27.479	27.499	9.399		-
0.7	27.472	27.498	9.398		-
0.8	27.464	27.495	9.395		-
0.9	27.454	27.491	9.391		-

1	27.444	27.486	9.386	-	
1.1	27.433	27.479	9.379	-	
1.2	27.422	27.472	9.372	-	
1.3	27.409	27.464	9.364	-	
1.4	27.396	27.454	9.354	-	
1.5	27.383	27.444	9.344	-	
1.6	27.369	27.433	9.333	-	
1.7	27.354	27.422	9.322	-	
1.8	27.339	27.409	9.309	-	
1.9	27.324	27.396	9.296	-	
2	27.308	27.383	9.283	-	
2.1	27.292	27.369	9.269	-	
2.2	27.276	27.354	9.254	-	
2.3	27.259	27.339	9.239	-	
2.4	27.242	27.324	9.224	-	
2.5	27.225	27.308	9.208	-	
2.6	27.207	27.292	9.192	-	
2.7	27.189	27.276	9.176	-	
2.8	27.171	27.259	9.159	-	
2.9	27.152	27.242	9.142	-	
3	27.133	27.225	9.125	6.072	3.053
3.1	27.113	27.207	9.107	5.716	3.391
3.2	27.093	27.189	9.089	5.371	3.718
3.3	27.072	27.171	9.071	5.037	4.034
3.4	27.051	27.152	9.052	4.713	4.339
3.5	27.029	27.133	9.033	4.398	4.635
3.6	27.007	27.113	9.013	4.092	4.921
3.7	26.984	27.093	8.993	3.795	5.198
3.8	26.960	27.072	8.972	3.505	5.467
3.9	26.935	27.051	8.951	3.223	5.728
4	26.909	27.029	8.929	2.949	5.980
4.1	26.883	27.007	8.907	2.680	6.227
4.2	26.855	26.984	8.884	2.419	6.465
4.3	26.827	26.960	8.860	2.163	6.697
4.4	26.797	26.935	8.835	1.914	6.921
4.5	26.767	26.909	8.809	1.670	7.139
4.6	26.735	26.883	8.783	1.431	7.352
4.7	26.702	26.855	8.755	1.198	7.557
4.8	26.667	26.827	8.727	0.969	7.758
4.9	26.632	26.797	8.697	0.745	7.952
5	26.595	26.767	8.667	0.526	8.141
5.1	26.557	26.735	8.635	0.311	8.324
5.2	26.517	26.702	8.602	0.100	8.502
5.3	26.477	26.667	8.567	-0.107	8.674
5.4	26.434	26.632	8.532	-0.310	8.842
5.5	26.391	26.595	8.495	-0.509	9.004
5.6	26.346	26.557	8.457	-0.705	9.162
5.7	26.299	26.517	8.417	-0.897	9.314
5.8	26.252	26.477	8.377	-1.086	9.463
5.9	26.202	26.434	8.334	-1.271	9.605
6	26.152	26.391	8.291	-1.454	9.745
6.1	26.100	26.346	8.246	-1.633	9.879
6.2	26.047	26.299	8.199	-1.810	10.009
6.3	25.992	26.252	8.152	-1.984	10.136
6.4	25.936	26.202	8.102	-2.154	10.256

6.5	25.879	26.152	8.052	-2.323	10.375
6.6	25.821	26.100	8.000	-2.489	10.489
6.7	25.761	26.047	7.947	-2.652	10.599
6.8	25.701	25.992	7.892	-2.813	10.705
6.9	25.639	25.936	7.836	-2.971	10.807
7	25.576	25.879	7.779	-3.127	10.906
7.1	25.511	25.821	7.721	-3.281	11.002
7.2	25.446	25.761	7.661	-3.433	11.094
7.3	25.380	25.701	7.601	-3.583	11.184
7.4	25.313	25.639	7.539	-3.731	11.270
7.5	25.244	25.576	7.476	-3.877	11.353
7.6	25.174	25.511	7.411	-4.020	11.431
7.7	25.104	25.446	7.346	-4.162	11.508
7.8	25.032	25.380	7.280	-4.302	11.582
7.9	24.960	25.313	7.213	-4.441	11.654
8	24.886	25.244	7.144	-4.577	11.721
8.1	24.811	25.174	7.074	-4.712	11.786
8.2	24.735	25.104	7.004	-4.845	11.849
8.3	24.659	25.032	6.932	-4.977	11.909
8.4	24.580	24.960	6.860	-5.107	11.967
8.5	24.501	24.886	6.786	-5.235	12.021
8.6	24.421	24.811	6.711	-5.362	12.073
8.7	24.339	24.735	6.635	-5.488	12.123
8.8	24.256	24.659	6.559	-5.612	12.171
8.9	24.172	24.580	6.480	-5.735	12.215
9	24.086	24.501	6.401	-5.856	12.257
9.1	23.999	24.421	6.321	-5.976	12.297
9.2	23.910	24.339	6.239	-6.095	12.334
9.3	23.820	24.256	6.156	-6.212	12.368
9.4	23.728	24.172	6.072	-6.328	12.400
9.5	23.635	24.086	5.986	-6.443	12.429
9.6	23.540	23.999	5.899	-6.557	12.456
9.7	23.443	23.910	5.810	-6.669	12.479
9.8	23.344	23.820	5.720	-6.781	12.501
9.9	23.243	23.728	5.628	-6.891	12.519
10	23.141	23.635	5.535	-7.000	12.535
15	14.539	15.790	-2.310	-11.402	9.092
20	7.671	8.743	-9.357	-14.526	5.169
25	13.568	13.711	-4.389	-16.949	12.560
30	11.050	11.630	-6.470	-18.928	12.458
35	4.463	5.912	-12.188	-20.602	8.414
40	2.008	2.716	-15.384	-22.051	6.667
45	6.970	7.267	-10.833	-23.330	12.497
50	9.725	10.079	-8.021	-24	15.979
55	5.161	5.171	-12.929	-24	11.071
60	-3.644	-2.353	-20.453	-24	3.547
65	-6.063	-5.161	-23.261	-24	0.739
70	-8.130	-6.820	-24.920	-24	-

75	-7.097	-6.496	-24.596	-24	-
80	-5.971	-5.760	-23.860	-24	0.140
85	-8.312	-8.174	-26.274	-24	-
90	-9.266	-8.606	-26.706	-14	-
95	-2.750	-2.750	-20.850	-14	-
100	-2.750	-2.750	-20.850	-14	-
105	-2.750	-2.750	-20.850	-14	-
110	-2.750	-2.750	-20.850	-14	-
115	-2.750	-2.750	-20.850	-14	-
120	-2.750	-2.750	-20.850	-14	-
125	-2.750	-2.750	-20.850	-14	-
130	-2.750	-2.750	-20.850	-14	-
135	-2.750	-2.750	-20.850	-14	-
140	-2.750	-2.750	-20.850	-14	-
145	-2.750	-2.750	-20.850	-14	-
150	-2.750	-2.750	-20.850	-14	-
155	-2.750	-2.750	-20.850	-14	-
160	-2.750	-2.750	-20.850	-14	-
165	-2.750	-2.750	-20.850	-14	-
170	-2.750	-2.750	-20.850	-14	-
175	-2.750	-2.750	-20.850	-14	-
180	-2.750	-2.750	-20.850	-14	-

14.25GHz, H-Pol Co-Pol Elevation PSD with -18.1dBW/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):** 27.5
a2 Antenna Model: SR3000 **D Frequency at which gain was measured (GHz):** 14.25
a3 Antenna ID: RAS **E Max input power density (dBW/4kHz):** -18.1
b Transmit Band (b): 14GHz **Pattern ID** Table B4
Pattern Description: 14.25GHz 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 = -18.1dBW/4kHz (dBW/4kHz) 0° Skew	FCC Mask (dBW/4kHz)	Mask Exceedence (dB)
-180	-2.750	-2.750	-20.850	-14	-
-175	-2.750	-2.750	-20.850	-14	-
-170	-2.750	-2.750	-20.850	-14	-
-165	-2.750	-2.750	-20.850	-14	-
-160	-2.750	-2.750	-20.850	-14	-
-155	-2.750	-2.750	-20.850	-14	-
-150	-2.750	-2.750	-20.850	-14	-
-145	-2.750	-2.750	-20.850	-14	-
-140	-2.750	-2.750	-20.850	-14	-
-135	-2.750	-2.750	-20.850	-14	-
-130	-2.750	-2.750	-20.850	-14	-
-125	-2.750	-2.750	-20.850	-14	-
-120	-2.750	-2.750	-20.850	-14	-
-115	-2.750	-2.750	-20.850	-14	-
-110	-2.750	-2.750	-20.850	-14	-
-105	-2.750	-2.750	-20.850	-14	-
-100	-2.750	-2.750	-20.850	-14	-
-95	-2.750	-2.750	-20.850	-14	-
-90	0.433	0.619	-17.481	-14	-
-85	2.685	2.822	-15.278	-24	8.722
-80	3.132	3.197	-14.903	-24	9.097
-75	1.161	1.359	-16.741	-24	7.259
-70	7.343	7.749	-10.351	-24	13.649
-65	6.959	7.213	-10.887	-24	13.113
-60	8.340	8.558	-9.542	-24	14.458
-55	-0.858	0.233	-17.867	-24	6.133
-50	5.509	6.305	-11.795	-24	12.205
-45	9.740	9.747	-8.353	-23.330	14.977
-40	8.418	8.470	-9.630	-22.051	12.421
-35	8.535	8.945	-9.155	-20.602	11.447
-30	8.196	8.212	-9.888	-18.928	9.040
-25	14.882	15.039	-3.061	-16.949	13.888
-20	12.548	13.104	-4.996	-14.526	9.530
-15	-0.295	4.108	-13.992	-11.402	-

-10	18.282	19.280	1.180	-7.000	8.180
-9.9	18.479	19.481	1.381	-6.891	8.272
-9.8	18.677	19.682	1.582	-6.781	8.363
-9.7	18.877	19.884	1.784	-6.669	8.453
-9.6	19.078	20.085	1.985	-6.557	8.542
-9.5	19.280	20.285	2.185	-6.443	8.628
-9.4	19.481	20.484	2.384	-6.328	8.712
-9.3	19.682	20.680	2.580	-6.212	8.792
-9.2	19.884	20.876	2.776	-6.095	8.871
-9.1	20.085	21.069	2.969	-5.976	8.945
-9	20.285	21.259	3.159	-5.856	9.015
-8.9	20.484	21.446	3.346	-5.735	9.081
-8.8	20.680	21.630	3.530	-5.612	9.142
-8.7	20.876	21.811	3.711	-5.488	9.199
-8.6	21.069	21.988	3.888	-5.362	9.250
-8.5	21.259	22.160	4.060	-5.235	9.295
-8.4	21.446	22.329	4.229	-5.107	9.336
-8.3	21.630	22.493	4.393	-4.977	9.370
-8.2	21.811	22.653	4.553	-4.845	9.398
-8.1	21.988	22.808	4.708	-4.712	9.420
-8	22.160	22.958	4.858	-4.577	9.435
-7.9	22.329	23.104	5.004	-4.441	9.445
-7.8	22.493	23.245	5.145	-4.302	9.447
-7.7	22.653	23.381	5.281	-4.162	9.443
-7.6	22.808	23.511	5.411	-4.020	9.431
-7.5	22.958	23.637	5.537	-3.877	9.414
-7.4	23.104	23.759	5.659	-3.731	9.390
-7.3	23.245	23.876	5.776	-3.583	9.359
-7.2	23.381	23.988	5.888	-3.433	9.321
-7.1	23.511	24.095	5.995	-3.281	9.276
-7	23.637	24.198	6.098	-3.127	9.225
-6.9	23.759	24.297	6.197	-2.971	9.168
-6.8	23.876	24.392	6.292	-2.813	9.105
-6.7	23.988	24.483	6.383	-2.652	9.035
-6.6	24.095	24.570	6.470	-2.489	8.959
-6.5	24.198	24.654	6.554	-2.323	8.877
-6.4	24.297	24.735	6.635	-2.154	8.789
-6.3	24.392	24.813	6.713	-1.984	8.697
-6.2	24.483	24.887	6.787	-1.810	8.597
-6.1	24.570	24.960	6.860	-1.633	8.493
-6	24.654	25.030	6.930	-1.454	8.384
-5.9	24.735	25.098	6.998	-1.271	8.269
-5.8	24.813	25.164	7.064	-1.086	8.150
-5.7	24.887	25.229	7.129	-0.897	8.026
-5.6	24.960	25.292	7.192	-0.705	7.897
-5.5	25.030	25.354	7.254	-0.509	7.763
-5.4	25.098	25.416	7.316	-0.310	7.626
-5.3	25.164	25.476	7.376	-0.107	7.483
-5.2	25.229	25.536	7.436	0.100	7.336
-5.1	25.292	25.595	7.495	0.311	7.184
-5	25.354	25.654	7.554	0.526	7.028
-4.9	25.416	25.713	7.613	0.745	6.868
-4.8	25.476	25.772	7.672	0.969	6.703
-4.7	25.536	25.831	7.731	1.198	6.533
-4.6	25.595	25.890	7.790	1.431	6.359

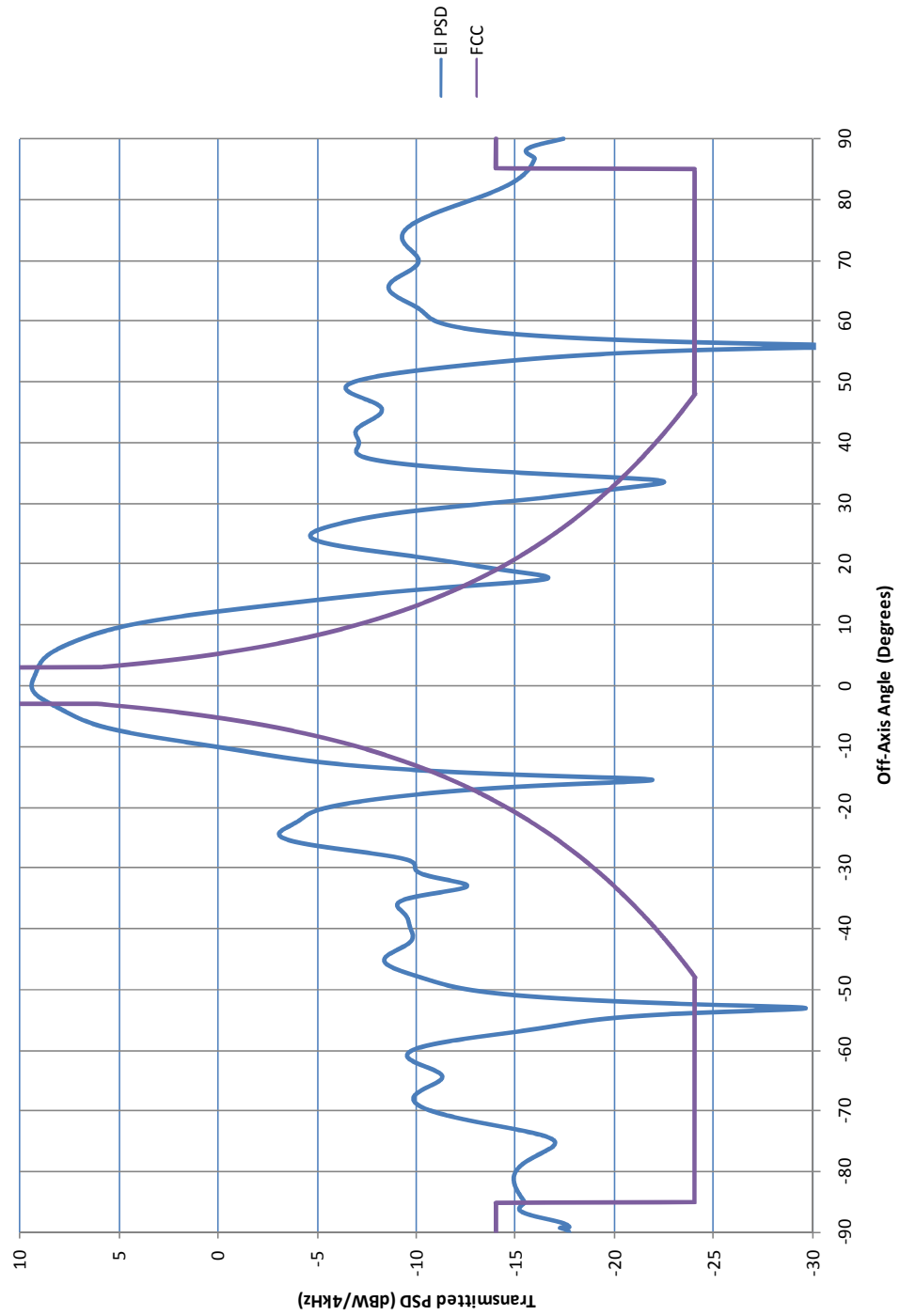
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-4.3	25.772	26.067	7.967	2.163	5.804
-4.2	25.831	26.126	8.026	2.419	5.607
-4.1	25.890	26.186	8.086	2.680	5.406
-4	25.949	26.246	8.146	2.949	5.197
-3.9	26.008	26.305	8.205	3.223	4.982
-3.8	26.067	26.364	8.264	3.505	4.759
-3.7	26.126	26.423	8.323	3.795	4.528
-3.6	26.186	26.482	8.382	4.092	4.290
-3.5	26.246	26.540	8.440	4.398	4.042
-3.4	26.305	26.598	8.498	4.713	3.785
-3.3	26.364	26.654	8.554	5.037	3.517
-3.2	26.423	26.710	8.610	5.371	3.239
-3.1	26.482	26.765	8.665	5.716	2.949
-3	26.540	26.819	8.719	6.072	2.647
-2.9	26.598	26.871	8.771		-
-2.8	26.654	26.922	8.822		-
-2.7	26.710	26.972	8.872		-
-2.6	26.765	27.019	8.919		-
-2.5	26.819	27.065	8.965		-
-2.4	26.871	27.109	9.009		-
-2.3	26.922	27.151	9.051		-
-2.2	26.972	27.190	9.090		-
-2.1	27.019	27.228	9.128		-
-2	27.065	27.262	9.162		-
-1.9	27.109	27.295	9.195		-
-1.8	27.151	27.325	9.225		-
-1.7	27.190	27.353	9.253		-
-1.6	27.228	27.378	9.278		-
-1.5	27.262	27.401	9.301		-
-1.4	27.295	27.421	9.321		-
-1.3	27.325	27.439	9.339		-
-1.2	27.353	27.454	9.354		-
-1.1	27.378	27.467	9.367		-
-1	27.401	27.478	9.378		-
-0.9	27.421	27.487	9.387		-
-0.8	27.439	27.493	9.393		-
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-0.6	27.467	27.499	9.399		-
-0.5	27.478	27.500	9.400		-
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-0.3	27.493	27.500	9.400		-
-0.2	27.497	27.500	9.400		-
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0	27.500	27.500	9.400		-
0.1	27.498	27.500	9.400		-
0.2	27.495	27.500	9.400		-
0.3	27.491	27.500	9.400		-
0.4	27.485	27.500	9.400		-
0.5	27.478	27.500	9.400		-
0.6	27.470	27.498	9.398		-
0.7	27.461	27.495	9.395		-
0.8	27.450	27.491	9.391		-
0.9	27.440	27.485	9.385		-

1	27.428	27.478	9.378	-	
1.1	27.416	27.470	9.370	-	
1.2	27.404	27.461	9.361	-	
1.3	27.391	27.450	9.350	-	
1.4	27.378	27.440	9.340	-	
1.5	27.365	27.428	9.328	-	
1.6	27.352	27.416	9.316	-	
1.7	27.339	27.404	9.304	-	
1.8	27.326	27.391	9.291	-	
1.9	27.313	27.378	9.278	-	
2	27.301	27.365	9.265	-	
2.1	27.288	27.352	9.252	-	
2.2	27.275	27.339	9.239	-	
2.3	27.263	27.326	9.226	-	
2.4	27.250	27.313	9.213	-	
2.5	27.238	27.301	9.201	-	
2.6	27.225	27.288	9.188	-	
2.7	27.213	27.275	9.175	-	
2.8	27.200	27.263	9.163	-	
2.9	27.187	27.250	9.150	-	
3	27.174	27.238	9.138	6.072	3.066
3.1	27.160	27.225	9.125	5.716	3.409
3.2	27.146	27.213	9.113	5.371	3.742
3.3	27.131	27.200	9.100	5.037	4.063
3.4	27.116	27.187	9.087	4.713	4.374
3.5	27.099	27.174	9.074	4.398	4.676
3.6	27.082	27.160	9.060	4.092	4.968
3.7	27.064	27.146	9.046	3.795	5.251
3.8	27.044	27.131	9.031	3.505	5.526
3.9	27.024	27.116	9.016	3.223	5.793
4	27.002	27.099	8.999	2.949	6.050
4.1	26.978	27.082	8.982	2.680	6.302
4.2	26.953	27.064	8.964	2.419	6.545
4.3	26.927	27.044	8.944	2.163	6.781
4.4	26.899	27.024	8.924	1.914	7.010
4.5	26.869	27.002	8.902	1.670	7.232
4.6	26.838	26.978	8.878	1.431	7.447
4.7	26.804	26.953	8.853	1.198	7.655
4.8	26.769	26.927	8.827	0.969	7.858
4.9	26.732	26.899	8.799	0.745	8.054
5	26.693	26.869	8.769	0.526	8.243
5.1	26.652	26.838	8.738	0.311	8.427
5.2	26.610	26.804	8.704	0.100	8.604
5.3	26.565	26.769	8.669	-0.107	8.776
5.4	26.519	26.732	8.632	-0.310	8.942
5.5	26.470	26.693	8.593	-0.509	9.102
5.6	26.420	26.652	8.552	-0.705	9.257
5.7	26.369	26.610	8.510	-0.897	9.407
5.8	26.315	26.565	8.465	-1.086	9.551
5.9	26.260	26.519	8.419	-1.271	9.690
6	26.203	26.470	8.370	-1.454	9.824
6.1	26.145	26.420	8.320	-1.633	9.953
6.2	26.085	26.369	8.269	-1.810	10.079
6.3	26.023	26.315	8.215	-1.984	10.199
6.4	25.960	26.260	8.160	-2.154	10.314

6.5	25.896	26.203	8.103	-2.323	10.426
6.6	25.830	26.145	8.045	-2.489	10.534
6.7	25.763	26.085	7.985	-2.652	10.637
6.8	25.694	26.023	7.923	-2.813	10.736
6.9	25.624	25.960	7.860	-2.971	10.831
7	25.553	25.896	7.796	-3.127	10.923
7.1	25.481	25.830	7.730	-3.281	11.011
7.2	25.408	25.763	7.663	-3.433	11.096
7.3	25.333	25.694	7.594	-3.583	11.177
7.4	25.256	25.624	7.524	-3.731	11.255
7.5	25.179	25.553	7.453	-3.877	11.330
7.6	25.100	25.481	7.381	-4.020	11.401
7.7	25.020	25.408	7.308	-4.162	11.470
7.8	24.937	25.333	7.233	-4.302	11.535
7.9	24.854	25.256	7.156	-4.441	11.597
8	24.769	25.179	7.079	-4.577	11.656
8.1	24.682	25.100	7.000	-4.712	11.712
8.2	24.593	25.020	6.920	-4.845	11.765
8.3	24.503	24.937	6.837	-4.977	11.814
8.4	24.410	24.854	6.754	-5.107	11.861
8.5	24.315	24.769	6.669	-5.235	11.904
8.6	24.218	24.682	6.582	-5.362	11.944
8.7	24.118	24.593	6.493	-5.488	11.981
8.8	24.015	24.503	6.403	-5.612	12.015
8.9	23.910	24.410	6.310	-5.735	12.045
9	23.802	24.315	6.215	-5.856	12.071
9.1	23.691	24.218	6.118	-5.976	12.094
9.2	23.576	24.118	6.018	-6.095	12.113
9.3	23.458	24.015	5.915	-6.212	12.127
9.4	23.337	23.910	5.810	-6.328	12.138
9.5	23.211	23.802	5.702	-6.443	12.145
9.6	23.082	23.691	5.591	-6.557	12.148
9.7	22.949	23.576	5.476	-6.669	12.145
9.8	22.811	23.458	5.358	-6.781	12.139
9.9	22.670	23.337	5.237	-6.891	12.128
10	22.523	23.211	5.111	-7.000	12.111
15	10.638	12.077	-6.023	-11.402	5.379
20	5.640	6.616	-11.484	-14.526	3.042
25	13.421	13.471	-4.629	-16.949	12.320
30	4.551	6.142	-11.958	-18.928	6.970
35	2.570	5.209	-12.891	-20.602	7.711
40	11.020	11.060	-7.040	-22.051	15.011
45	9.890	10.035	-8.065	-23.330	15.265
50	11.262	11.587	-6.513	-24	17.487
55	-4.203	-0.841	-18.941	-24	5.059
60	7.169	7.443	-10.657	-24	13.343
65	9.475	9.529	-8.571	-24	15.429
70	8.018	8.075	-10.025	-24	13.975

75	8.689	8.798	-9.302	-24	14.698
80	5.287	5.717	-12.383	-24	11.617
85	2.468	2.599	-15.501	-24	8.499
90	0.732	1.383	-16.717	-14	-
95	-2.750	-2.750	-20.850	-14	-
100	-2.750	-2.750	-20.850	-14	-
105	-2.750	-2.750	-20.850	-14	-
110	-2.750	-2.750	-20.850	-14	-
115	-2.750	-2.750	-20.850	-14	-
120	-2.750	-2.750	-20.850	-14	-
125	-2.750	-2.750	-20.850	-14	-
130	-2.750	-2.750	-20.850	-14	-
135	-2.750	-2.750	-20.850	-14	-
140	-2.750	-2.750	-20.850	-14	-
145	-2.750	-2.750	-20.850	-14	-
150	-2.750	-2.750	-20.850	-14	-
155	-2.750	-2.750	-20.850	-14	-
160	-2.750	-2.750	-20.850	-14	-
165	-2.750	-2.750	-20.850	-14	-
170	-2.750	-2.750	-20.850	-14	-
175	-2.750	-2.750	-20.850	-14	-
180	-2.750	-2.750	-20.850	-14	-

14.25GHz, V-Pol Co-Pol Elevation PSD with -18.1dBW/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):	27.5
a2	Antenna Model:	SR3000	d	Frequency at which gain was measured (GHz):	14.5
a3	Antenna ID:	RAS	e	Max input power density (dBW/4kHz):	-18.1
b	Transmit Band (b):	14GHz	Pattern ID	Table B5	
	Pattern Description:	14.5GHz H-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	Mask Exceedence
(Degrees)	(dBi)	(dBi)	(dBW/4kHz)	(dBW/4kHz)	(dB)
	0° Skew	0° Skew	0° Skew		
-180	-2.750	-2.750	-20.850	-14	-
-175	-2.750	-2.750	-20.850	-14	-
-170	-2.750	-2.750	-20.850	-14	-
-165	-2.750	-2.750	-20.850	-14	-
-160	-2.750	-2.750	-20.850	-14	-
-155	-2.750	-2.750	-20.850	-14	-
-150	-2.750	-2.750	-20.850	-14	-
-145	-2.750	-2.750	-20.850	-14	-
-140	-2.750	-2.750	-20.850	-14	-
-135	-2.750	-2.750	-20.850	-14	-
-130	-2.750	-2.750	-20.850	-14	-
-125	-2.750	-2.750	-20.850	-14	-
-120	-2.750	-2.750	-20.850	-14	-
-115	-2.750	-2.750	-20.850	-14	-
-110	-2.750	-2.750	-20.850	-14	-
-105	-2.750	-2.750	-20.850	-14	-
-100	-2.750	-2.750	-20.850	-14	-
-95	-2.750	-2.750	-20.850	-14	-
-90	5.501	5.658	-12.442	-14	1.558
-85	6.763	6.815	-11.285	-24	12.715
-80	7.281	7.284	-10.816	-24	13.184
-75	5.651	6.051	-12.049	-24	11.951
-70	-6.685	-4.153	-22.253	-24	1.747
-65	-2.982	-2.737	-20.837	-24	3.163
-60	-4.261	-3.964	-22.064	-24	1.936
-55	1.658	2.014	-16.086	-24	7.914
-50	7.821	8.216	-9.884	-24	14.116
-45	11.709	11.924	-6.176	-23.330	17.154
-40	2.601	4.865	-13.235	-22.051	8.816
-35	-10.537	-5.193	-23.293	-20.602	-
-30	9.158	10.115	-7.985	-18.928	10.943
-25	13.155	13.208	-4.892	-16.949	12.057
-20	8.521	9.444	-8.656	-14.526	5.870
-15	11.427	12.722	-5.378	-11.402	6.024

-10	21.765	22.395	4.295	-7.000	11.295
-9.9	21.897	22.512	4.412	-6.891	11.303
-9.8	22.026	22.627	4.527	-6.781	11.308
-9.7	22.152	22.739	4.639	-6.669	11.308
-9.6	22.275	22.848	4.748	-6.557	11.305
-9.5	22.395	22.956	4.856	-6.443	11.299
-9.4	22.512	23.060	4.960	-6.328	11.288
-9.3	22.627	23.163	5.063	-6.212	11.275
-9.2	22.739	23.264	5.164	-6.095	11.259
-9.1	22.848	23.363	5.263	-5.976	11.239
-9	22.956	23.460	5.360	-5.856	11.216
-8.9	23.060	23.555	5.455	-5.735	11.190
-8.8	23.163	23.649	5.549	-5.612	11.161
-8.7	23.264	23.741	5.641	-5.488	11.129
-8.6	23.363	23.833	5.733	-5.362	11.095
-8.5	23.460	23.922	5.822	-5.235	11.057
-8.4	23.555	24.011	5.911	-5.107	11.018
-8.3	23.649	24.098	5.998	-4.977	10.975
-8.2	23.741	24.185	6.085	-4.845	10.930
-8.1	23.833	24.270	6.170	-4.712	10.882
-8	23.922	24.355	6.255	-4.577	10.832
-7.9	24.011	24.439	6.339	-4.441	10.780
-7.8	24.098	24.522	6.422	-4.302	10.724
-7.7	24.185	24.604	6.504	-4.162	10.666
-7.6	24.270	24.686	6.586	-4.020	10.606
-7.5	24.355	24.766	6.666	-3.877	10.543
-7.4	24.439	24.846	6.746	-3.731	10.477
-7.3	24.522	24.926	6.826	-3.583	10.409
-7.2	24.604	25.005	6.905	-3.433	10.338
-7.1	24.686	25.083	6.983	-3.281	10.264
-7	24.766	25.160	7.060	-3.127	10.187
-6.9	24.846	25.236	7.136	-2.971	10.107
-6.8	24.926	25.312	7.212	-2.813	10.025
-6.7	25.005	25.387	7.287	-2.652	9.939
-6.6	25.083	25.461	7.361	-2.489	9.850
-6.5	25.160	25.534	7.434	-2.323	9.757
-6.4	25.236	25.606	7.506	-2.154	9.660
-6.3	25.312	25.677	7.577	-1.984	9.561
-6.2	25.387	25.747	7.647	-1.810	9.457
-6.1	25.461	25.816	7.716	-1.633	9.349
-6	25.534	25.883	7.783	-1.454	9.237
-5.9	25.606	25.950	7.850	-1.271	9.121
-5.8	25.677	26.015	7.915	-1.086	9.001
-5.7	25.747	26.079	7.979	-0.897	8.876
-5.6	25.816	26.141	8.041	-0.705	8.746
-5.5	25.883	26.202	8.102	-0.509	8.611
-5.4	25.950	26.261	8.161	-0.310	8.471
-5.3	26.015	26.320	8.220	-0.107	8.327
-5.2	26.079	26.376	8.276	0.100	8.176
-5.1	26.141	26.431	8.331	0.311	8.020
-5	26.202	26.485	8.385	0.526	7.859
-4.9	26.261	26.537	8.437	0.745	7.692
-4.8	26.320	26.587	8.487	0.969	7.518
-4.7	26.376	26.636	8.536	1.198	7.338
-4.6	26.431	26.683	8.583	1.431	7.152

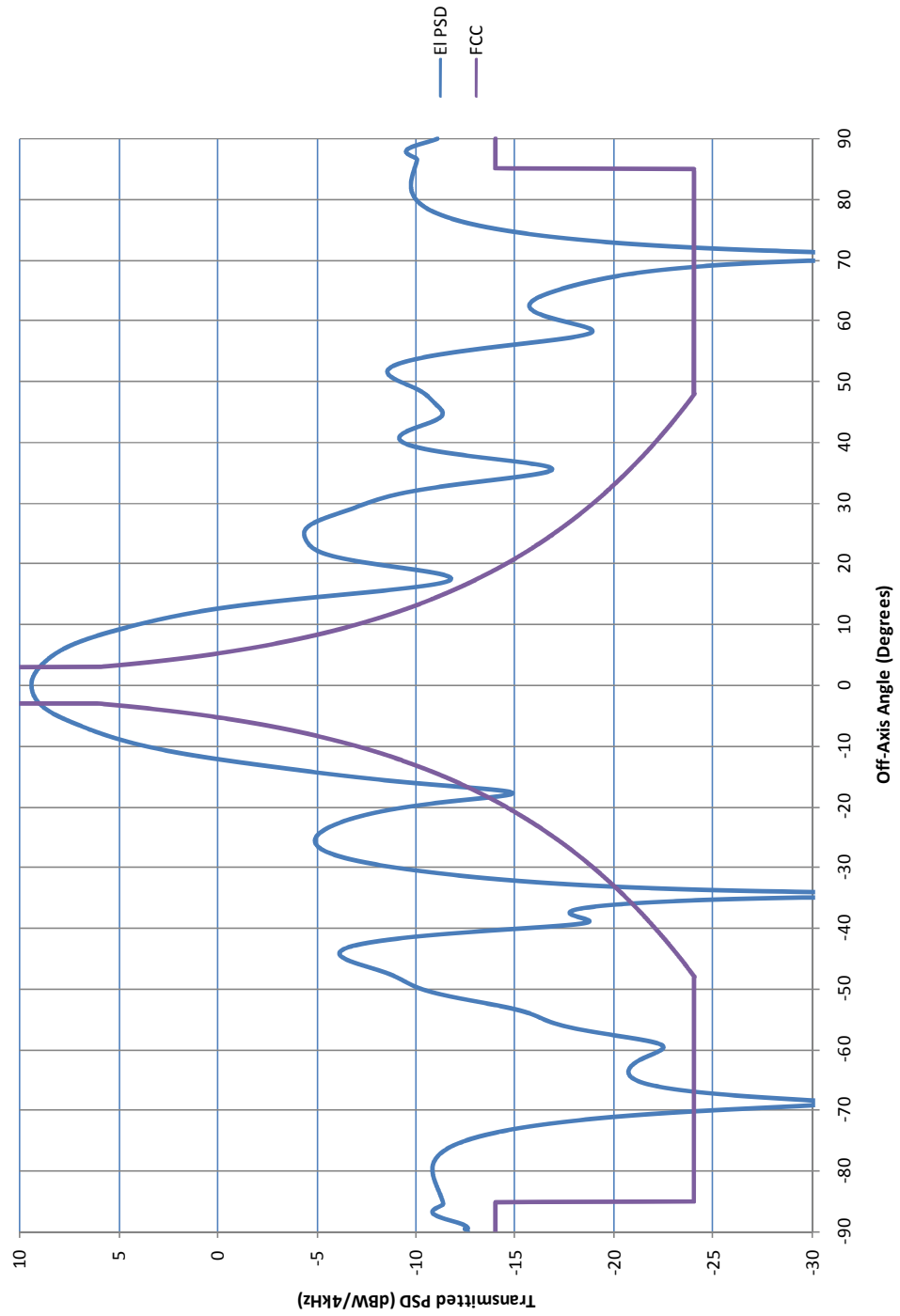
-4.5	26.485	26.728	8.628	1.670	6.958
-4.4	26.537	26.772	8.672	1.914	6.758
-4.3	26.587	26.815	8.715	2.163	6.552
-4.2	26.636	26.855	8.755	2.419	6.336
-4.1	26.683	26.895	8.795	2.680	6.115
-4	26.728	26.932	8.832	2.949	5.883
-3.9	26.772	26.968	8.868	3.223	5.645
-3.8	26.815	27.003	8.903	3.505	5.398
-3.7	26.855	27.036	8.936	3.795	5.141
-3.6	26.895	27.068	8.968	4.092	4.876
-3.5	26.932	27.098	8.998	4.398	4.600
-3.4	26.968	27.127	9.027	4.713	4.314
-3.3	27.003	27.155	9.055	5.037	4.018
-3.2	27.036	27.181	9.081	5.371	3.710
-3.1	27.068	27.206	9.106	5.716	3.390
-3	27.098	27.229	9.129	6.072	3.057
-2.9	27.127	27.252	9.152		-
-2.8	27.155	27.273	9.173		-
-2.7	27.181	27.293	9.193		-
-2.6	27.206	27.312	9.212		-
-2.5	27.229	27.330	9.230		-
-2.4	27.252	27.347	9.247		-
-2.3	27.273	27.363	9.263		-
-2.2	27.293	27.378	9.278		-
-2.1	27.312	27.392	9.292		-
-2	27.330	27.404	9.304		-
-1.9	27.347	27.417	9.317		-
-1.8	27.363	27.428	9.328		-
-1.7	27.378	27.438	9.338		-
-1.6	27.392	27.448	9.348		-
-1.5	27.404	27.456	9.356		-
-1.4	27.417	27.464	9.364		-
-1.3	27.428	27.471	9.371		-
-1.2	27.438	27.478	9.378		-
-1.1	27.448	27.483	9.383		-
-1	27.456	27.488	9.388		-
-0.9	27.464	27.492	9.392		-
-0.8	27.471	27.495	9.395		-
-0.7	27.478	27.497	9.397		-
-0.6	27.483	27.499	9.399		-
-0.5	27.488	27.500	9.400		-
-0.4	27.492	27.500	9.400		-
-0.3	27.495	27.500	9.400		-
-0.2	27.497	27.500	9.400		-
-0.1	27.499	27.500	9.400		-
0	27.500	27.500	9.400		-
0.1	27.499	27.500	9.400		-
0.2	27.498	27.500	9.400		-
0.3	27.497	27.500	9.400		-
0.4	27.494	27.500	9.400		-
0.5	27.490	27.500	9.400		-
0.6	27.486	27.499	9.399		-
0.7	27.480	27.498	9.398		-
0.8	27.474	27.497	9.397		-
0.9	27.467	27.494	9.394		-

1	27.459	27.490	9.390	-	
1.1	27.449	27.486	9.386	-	
1.2	27.439	27.480	9.380	-	
1.3	27.428	27.474	9.374	-	
1.4	27.416	27.467	9.367	-	
1.5	27.403	27.459	9.359	-	
1.6	27.389	27.449	9.349	-	
1.7	27.374	27.439	9.339	-	
1.8	27.358	27.428	9.328	-	
1.9	27.341	27.416	9.316	-	
2	27.322	27.403	9.303	-	
2.1	27.303	27.389	9.289	-	
2.2	27.284	27.374	9.274	-	
2.3	27.263	27.358	9.258	-	
2.4	27.241	27.341	9.241	-	
2.5	27.218	27.322	9.222	-	
2.6	27.195	27.303	9.203	-	
2.7	27.170	27.284	9.184	-	
2.8	27.145	27.263	9.163	-	
2.9	27.119	27.241	9.141	-	
3	27.092	27.218	9.118	6.072	3.046
3.1	27.064	27.195	9.095	5.716	3.379
3.2	27.036	27.170	9.070	5.371	3.699
3.3	27.006	27.145	9.045	5.037	4.008
3.4	26.976	27.119	9.019	4.713	4.306
3.5	26.945	27.092	8.992	4.398	4.594
3.6	26.914	27.064	8.964	4.092	4.872
3.7	26.881	27.036	8.936	3.795	5.141
3.8	26.848	27.006	8.906	3.505	5.401
3.9	26.814	26.976	8.876	3.223	5.653
4	26.780	26.945	8.845	2.949	5.896
4.1	26.744	26.914	8.814	2.680	6.134
4.2	26.708	26.881	8.781	2.419	6.362
4.3	26.671	26.848	8.748	2.163	6.585
4.4	26.633	26.814	8.714	1.914	6.800
4.5	26.595	26.780	8.680	1.670	7.010
4.6	26.555	26.744	8.644	1.431	7.213
4.7	26.515	26.708	8.608	1.198	7.410
4.8	26.473	26.671	8.571	0.969	7.602
4.9	26.431	26.633	8.533	0.745	7.788
5	26.387	26.595	8.495	0.526	7.969
5.1	26.343	26.555	8.455	0.311	8.144
5.2	26.297	26.515	8.415	0.100	8.315
5.3	26.251	26.473	8.373	-0.107	8.480
5.4	26.203	26.431	8.331	-0.310	8.641
5.5	26.153	26.387	8.287	-0.509	8.796
5.6	26.103	26.343	8.243	-0.705	8.948
5.7	26.050	26.297	8.197	-0.897	9.094
5.8	25.997	26.251	8.151	-1.086	9.237
5.9	25.942	26.203	8.103	-1.271	9.374
6	25.885	26.153	8.053	-1.454	9.507
6.1	25.827	26.103	8.003	-1.633	9.636
6.2	25.767	26.050	7.950	-1.810	9.760
6.3	25.705	25.997	7.897	-1.984	9.881
6.4	25.641	25.942	7.842	-2.154	9.996

6.5	25.576	25.885	7.785	-2.323	10.108
6.6	25.508	25.827	7.727	-2.489	10.216
6.7	25.439	25.767	7.667	-2.652	10.319
6.8	25.368	25.705	7.605	-2.813	10.418
6.9	25.295	25.641	7.541	-2.971	10.512
7	25.219	25.576	7.476	-3.127	10.603
7.1	25.142	25.508	7.408	-3.281	10.689
7.2	25.063	25.439	7.339	-3.433	10.772
7.3	24.981	25.368	7.268	-3.583	10.851
7.4	24.898	25.295	7.195	-3.731	10.926
7.5	24.812	25.219	7.119	-3.877	10.996
7.6	24.725	25.142	7.042	-4.020	11.062
7.7	24.636	25.063	6.963	-4.162	11.125
7.8	24.544	24.981	6.881	-4.302	11.183
7.9	24.451	24.898	6.798	-4.441	11.239
8	24.356	24.812	6.712	-4.577	11.289
8.1	24.259	24.725	6.625	-4.712	11.337
8.2	24.160	24.636	6.536	-4.845	11.381
8.3	24.060	24.544	6.444	-4.977	11.421
8.4	23.958	24.451	6.351	-5.107	11.458
8.5	23.854	24.356	6.256	-5.235	11.491
8.6	23.749	24.259	6.159	-5.362	11.521
8.7	23.642	24.160	6.060	-5.488	11.548
8.8	23.534	24.060	5.960	-5.612	11.572
8.9	23.424	23.958	5.858	-5.735	11.593
9	23.313	23.854	5.754	-5.856	11.610
9.1	23.201	23.749	5.649	-5.976	11.625
9.2	23.088	23.642	5.542	-6.095	11.637
9.3	22.974	23.534	5.434	-6.212	11.646
9.4	22.858	23.424	5.324	-6.328	11.652
9.5	22.741	23.313	5.213	-6.443	11.656
9.6	22.623	23.201	5.101	-6.557	11.658
9.7	22.504	23.088	4.988	-6.669	11.657
9.8	22.384	22.974	4.874	-6.781	11.655
9.9	22.263	22.858	4.758	-6.891	11.649
10	22.141	22.741	4.641	-7.000	11.641
15	11.633	13.214	-4.886	-11.402	6.516
20	10.219	11.172	-6.928	-14.526	7.598
25	13.753	13.753	-4.347	-16.949	12.602
30	10.570	10.996	-7.104	-18.928	11.824
35	1.686	2.584	-15.516	-20.602	5.086
40	8.768	8.941	-9.159	-22.051	12.892
45	6.776	6.872	-11.228	-23.330	12.102
50	8.916	9.226	-8.874	-24	15.126
55	5.830	6.847	-11.253	-24	12.747
60	0.745	1.319	-16.781	-24	7.219
65	1.046	1.494	-16.606	-24	7.394
70	-12.554	-8.806	-26.906	-24	-

75	3.821	4.658	-13.442	-24	10.558
80	8.116	8.223	-9.877	-24	14.123
85	8.196	8.243	-9.857	-24	14.143
90	7.038	7.495	-10.605	-14	3.395
95	-2.750	-2.750	-20.850	-14	-
100	-2.750	-2.750	-20.850	-14	-
105	-2.750	-2.750	-20.850	-14	-
110	-2.750	-2.750	-20.850	-14	-
115	-2.750	-2.750	-20.850	-14	-
120	-2.750	-2.750	-20.850	-14	-
125	-2.750	-2.750	-20.850	-14	-
130	-2.750	-2.750	-20.850	-14	-
135	-2.750	-2.750	-20.850	-14	-
140	-2.750	-2.750	-20.850	-14	-
145	-2.750	-2.750	-20.850	-14	-
150	-2.750	-2.750	-20.850	-14	-
155	-2.750	-2.750	-20.850	-14	-
160	-2.750	-2.750	-20.850	-14	-
165	-2.750	-2.750	-20.850	-14	-
170	-2.750	-2.750	-20.850	-14	-
175	-2.750	-2.750	-20.850	-14	-
180	-2.750	-2.750	-20.850	-14	-

14.5GHz, H-Pol Co-Pol Elevation PSD with -18.1dBW/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):	27.5
a2	Antenna Model:	SR3000	d	Frequency at which gain was measured (GHz):	14.5
a3	Antenna ID:	RAS	e	Max input power density (dBW/4kHz):	-18.1
b	Transmit Band (b):	14GHz	Pattern ID	Table B6	
	Pattern Description:	14.5GHz 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	-20.850	-14	-
-175	-2.750	-2.750	-20.850	-14	-
-170	-2.750	-2.750	-20.850	-14	-
-165	-2.750	-2.750	-20.850	-14	-
-160	-2.750	-2.750	-20.850	-14	-
-155	-2.750	-2.750	-20.850	-14	-
-150	-2.750	-2.750	-20.850	-14	-
-145	-2.750	-2.750	-20.850	-14	-
-140	-2.750	-2.750	-20.850	-14	-
-135	-2.750	-2.750	-20.850	-14	-
-130	-2.750	-2.750	-20.850	-14	-
-125	-2.750	-2.750	-20.850	-14	-
-120	-2.750	-2.750	-20.850	-14	-
-115	-2.750	-2.750	-20.850	-14	-
-110	-2.750	-2.750	-20.850	-14	-
-105	-2.750	-2.750	-20.850	-14	-
-100	-2.750	-2.750	-20.850	-14	-
-95	-2.750	-2.750	-20.850	-14	-
-90	-2.628	-2.467	-20.567	-14	-
-85	-0.376	-0.153	-18.253	-24	5.747
-80	3.733	4.168	-13.932	-24	10.068
-75	6.329	6.329	-11.771	-24	12.229
-70	6.807	7.369	-10.731	-24	13.269
-65	11.038	11.038	-7.062	-24	16.938
-60	10.149	10.165	-7.935	-24	16.065
-55	6.141	6.422	-11.678	-24	12.322
-50	5.603	7.293	-10.807	-24	13.193
-45	9.922	10.559	-7.541	-23.330	15.789
-40	11.194	11.490	-6.610	-22.051	15.441
-35	11.470	11.696	-6.404	-20.602	14.198
-30	8.006	8.198	-9.902	-18.928	9.026
-25	13.848	14.197	-3.903	-16.949	13.046
-20	12.310	12.407	-5.693	-14.526	8.833
-15	2.553	4.817	-13.283	-11.402	-

-10	19.202	20.029	1.929	-7.000	8.929
-9.9	19.375	20.185	2.085	-6.891	8.976
-9.8	19.544	20.339	2.239	-6.781	9.020
-9.7	19.709	20.491	2.391	-6.669	9.060
-9.6	19.870	20.642	2.542	-6.557	9.099
-9.5	20.029	20.791	2.691	-6.443	9.134
-9.4	20.185	20.939	2.839	-6.328	9.167
-9.3	20.339	21.085	2.985	-6.212	9.197
-9.2	20.491	21.231	3.131	-6.095	9.226
-9.1	20.642	21.375	3.275	-5.976	9.251
-9	20.791	21.518	3.418	-5.856	9.274
-8.9	20.939	21.661	3.561	-5.735	9.296
-8.8	21.085	21.802	3.702	-5.612	9.314
-8.7	21.231	21.941	3.841	-5.488	9.329
-8.6	21.375	22.079	3.979	-5.362	9.341
-8.5	21.518	22.216	4.116	-5.235	9.351
-8.4	21.661	22.351	4.251	-5.107	9.358
-8.3	21.802	22.483	4.383	-4.977	9.360
-8.2	21.941	22.613	4.513	-4.845	9.358
-8.1	22.079	22.741	4.641	-4.712	9.353
-8	22.216	22.867	4.767	-4.577	9.344
-7.9	22.351	22.990	4.890	-4.441	9.331
-7.8	22.483	23.110	5.010	-4.302	9.312
-7.7	22.613	23.226	5.126	-4.162	9.288
-7.6	22.741	23.340	5.240	-4.020	9.260
-7.5	22.867	23.450	5.350	-3.877	9.227
-7.4	22.990	23.558	5.458	-3.731	9.189
-7.3	23.110	23.661	5.561	-3.583	9.144
-7.2	23.226	23.761	5.661	-3.433	9.094
-7.1	23.340	23.858	5.758	-3.281	9.039
-7	23.450	23.951	5.851	-3.127	8.978
-6.9	23.558	24.041	5.941	-2.971	8.912
-6.8	23.661	24.127	6.027	-2.813	8.840
-6.7	23.761	24.211	6.111	-2.652	8.763
-6.6	23.858	24.291	6.191	-2.489	8.680
-6.5	23.951	24.368	6.268	-2.323	8.591
-6.4	24.041	24.442	6.342	-2.154	8.496
-6.3	24.127	24.514	6.414	-1.984	8.398
-6.2	24.211	24.583	6.483	-1.810	8.293
-6.1	24.291	24.650	6.550	-1.633	8.183
-6	24.368	24.715	6.615	-1.454	8.069
-5.9	24.442	24.779	6.679	-1.271	7.950
-5.8	24.514	24.840	6.740	-1.086	7.826
-5.7	24.583	24.900	6.800	-0.897	7.697
-5.6	24.650	24.960	6.860	-0.705	7.565
-5.5	24.715	25.018	6.918	-0.509	7.427
-5.4	24.779	25.076	6.976	-0.310	7.286
-5.3	24.840	25.134	7.034	-0.107	7.141
-5.2	24.900	25.191	7.091	0.100	6.991
-5.1	24.960	25.248	7.148	0.311	6.837
-5	25.018	25.306	7.206	0.526	6.680
-4.9	25.076	25.364	7.264	0.745	6.519
-4.8	25.134	25.423	7.323	0.969	6.354
-4.7	25.191	25.482	7.382	1.198	6.184
-4.6	25.248	25.543	7.443	1.431	6.012

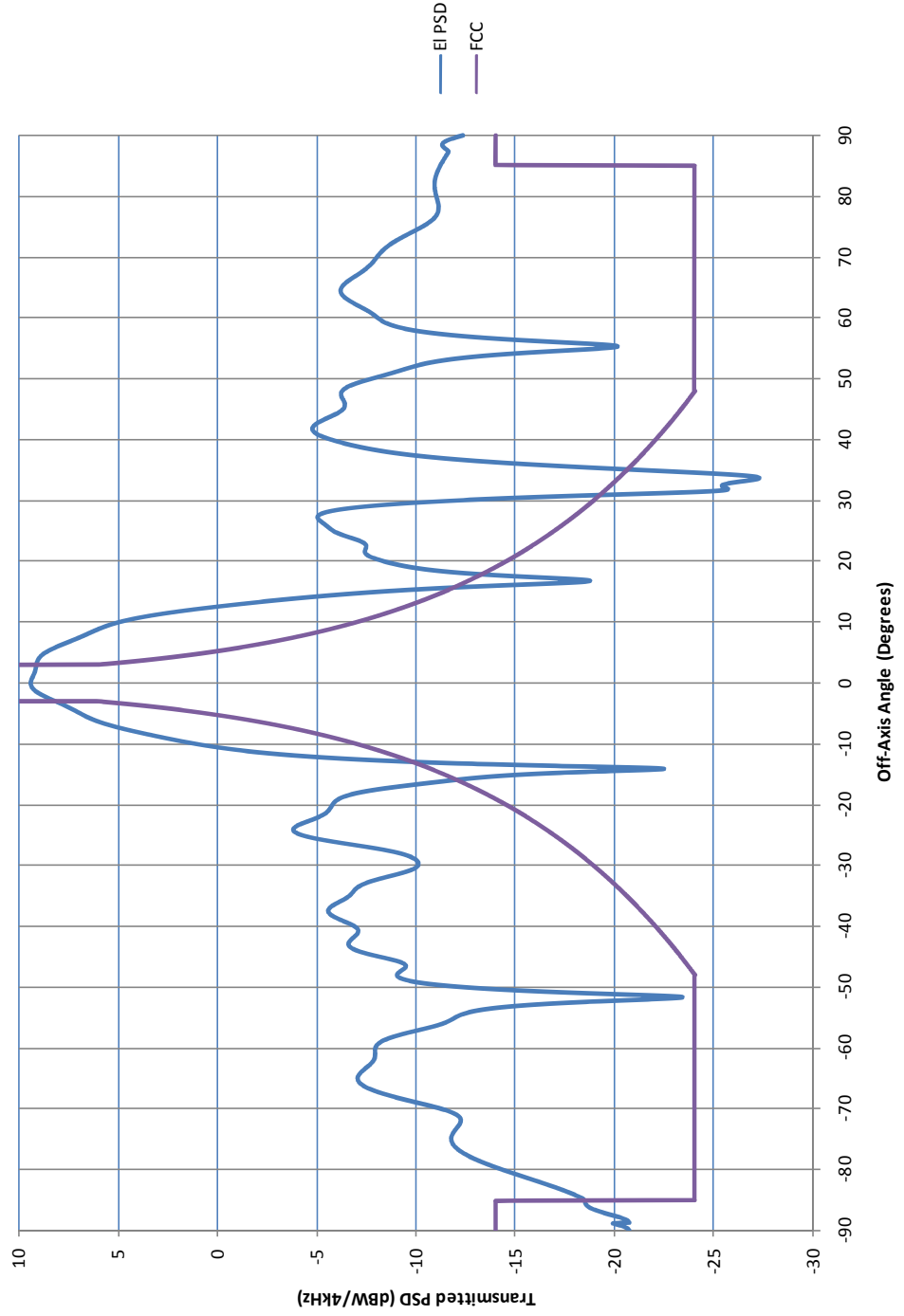
-4.5	25.306	25.604	7.504	1.670	5.834
-4.4	25.364	25.666	7.566	1.914	5.652
-4.3	25.423	25.729	7.629	2.163	5.466
-4.2	25.482	25.794	7.694	2.419	5.275
-4.1	25.543	25.859	7.759	2.680	5.079
-4	25.604	25.925	7.825	2.949	4.876
-3.9	25.666	25.992	7.892	3.223	4.669
-3.8	25.729	26.060	7.960	3.505	4.455
-3.7	25.794	26.128	8.028	3.795	4.233
-3.6	25.859	26.197	8.097	4.092	4.005
-3.5	25.925	26.266	8.166	4.398	3.768
-3.4	25.992	26.335	8.235	4.713	3.522
-3.3	26.060	26.404	8.304	5.037	3.267
-3.2	26.128	26.473	8.373	5.371	3.002
-3.1	26.197	26.541	8.441	5.716	2.725
-3	26.266	26.608	8.508	6.072	2.436
-2.9	26.335	26.675	8.575	-	-
-2.8	26.404	26.739	8.639	-	-
-2.7	26.473	26.803	8.703	-	-
-2.6	26.541	26.864	8.764	-	-
-2.5	26.608	26.924	8.824	-	-
-2.4	26.675	26.981	8.881	-	-
-2.3	26.739	27.036	8.936	-	-
-2.2	26.803	27.089	8.989	-	-
-2.1	26.864	27.138	9.038	-	-
-2	26.924	27.185	9.085	-	-
-1.9	26.981	27.228	9.128	-	-
-1.8	27.036	27.269	9.169	-	-
-1.7	27.089	27.306	9.206	-	-
-1.6	27.138	27.340	9.240	-	-
-1.5	27.185	27.371	9.271	-	-
-1.4	27.228	27.398	9.298	-	-
-1.3	27.269	27.422	9.322	-	-
-1.2	27.306	27.442	9.342	-	-
-1.1	27.340	27.459	9.359	-	-
-1	27.371	27.474	9.374	-	-
-0.9	27.398	27.484	9.384	-	-
-0.8	27.422	27.492	9.392	-	-
-0.7	27.442	27.498	9.398	-	-
-0.6	27.459	27.499	9.399	-	-
-0.5	27.474	27.500	9.400	-	-
-0.4	27.484	27.500	9.400	-	-
-0.3	27.492	27.500	9.400	-	-
-0.2	27.498	27.500	9.400	-	-
-0.1	27.499	27.500	9.400	-	-
0	27.500	27.500	9.400	-	-
0.1	27.498	27.500	9.400	-	-
0.2	27.493	27.500	9.400	-	-
0.3	27.487	27.500	9.400	-	-
0.4	27.478	27.500	9.400	-	-
0.5	27.469	27.500	9.400	-	-
0.6	27.458	27.498	9.398	-	-
0.7	27.446	27.493	9.393	-	-
0.8	27.433	27.487	9.387	-	-
0.9	27.419	27.478	9.378	-	-

1	27.405	27.469	9.369	-	
1.1	27.391	27.458	9.358	-	
1.2	27.377	27.446	9.346	-	
1.3	27.362	27.433	9.333	-	
1.4	27.349	27.419	9.319	-	
1.5	27.335	27.405	9.305	-	
1.6	27.322	27.391	9.291	-	
1.7	27.310	27.377	9.277	-	
1.8	27.299	27.362	9.262	-	
1.9	27.288	27.349	9.249	-	
2	27.278	27.335	9.235	-	
2.1	27.269	27.322	9.222	-	
2.2	27.261	27.310	9.210	-	
2.3	27.253	27.299	9.199	-	
2.4	27.247	27.288	9.188	-	
2.5	27.240	27.278	9.178	-	
2.6	27.235	27.269	9.169	-	
2.7	27.229	27.261	9.161	-	
2.8	27.224	27.253	9.153	-	
2.9	27.219	27.247	9.147	-	
3	27.213	27.240	9.140	6.072	3.068
3.1	27.207	27.235	9.135	5.716	3.419
3.2	27.201	27.229	9.129	5.371	3.758
3.3	27.194	27.224	9.124	5.037	4.087
3.4	27.185	27.219	9.119	4.713	4.406
3.5	27.176	27.213	9.113	4.398	4.715
3.6	27.165	27.207	9.107	4.092	5.015
3.7	27.152	27.201	9.101	3.795	5.306
3.8	27.138	27.194	9.094	3.505	5.589
3.9	27.121	27.185	9.085	3.223	5.862
4	27.103	27.176	9.076	2.949	6.127
4.1	27.082	27.165	9.065	2.680	6.385
4.2	27.058	27.152	9.052	2.419	6.633
4.3	27.032	27.138	9.038	2.163	6.875
4.4	27.003	27.121	9.021	1.914	7.107
4.5	26.971	27.103	9.003	1.670	7.333
4.6	26.936	27.082	8.982	1.431	7.551
4.7	26.899	27.058	8.958	1.198	7.760
4.8	26.858	27.032	8.932	0.969	7.963
4.9	26.814	27.003	8.903	0.745	8.158
5	26.768	26.971	8.871	0.526	8.345
5.1	26.718	26.936	8.836	0.311	8.525
5.2	26.665	26.899	8.799	0.100	8.699
5.3	26.610	26.858	8.758	-0.107	8.865
5.4	26.552	26.814	8.714	-0.310	9.024
5.5	26.492	26.768	8.668	-0.509	9.177
5.6	26.429	26.718	8.618	-0.705	9.323
5.7	26.363	26.665	8.565	-0.897	9.462
5.8	26.296	26.610	8.510	-1.086	9.596
5.9	26.227	26.552	8.452	-1.271	9.723
6	26.157	26.492	8.392	-1.454	9.846
6.1	26.085	26.429	8.329	-1.633	9.962
6.2	26.011	26.363	8.263	-1.810	10.073
6.3	25.937	26.296	8.196	-1.984	10.180
6.4	25.861	26.227	8.127	-2.154	10.281

6.5	25.786	26.157	8.057	-2.323	10.380
6.6	25.710	26.085	7.985	-2.489	10.474
6.7	25.633	26.011	7.911	-2.652	10.563
6.8	25.557	25.937	7.837	-2.813	10.650
6.9	25.481	25.861	7.761	-2.971	10.732
7	25.406	25.786	7.686	-3.127	10.813
7.1	25.331	25.710	7.610	-3.281	10.891
7.2	25.256	25.633	7.533	-3.433	10.966
7.3	25.182	25.557	7.457	-3.583	11.040
7.4	25.109	25.481	7.381	-3.731	11.112
7.5	25.037	25.406	7.306	-3.877	11.183
7.6	24.966	25.331	7.231	-4.020	11.251
7.7	24.896	25.256	7.156	-4.162	11.318
7.8	24.826	25.182	7.082	-4.302	11.384
7.9	24.757	25.109	7.009	-4.441	11.450
8	24.689	25.037	6.937	-4.577	11.514
8.1	24.621	24.966	6.866	-4.712	11.578
8.2	24.553	24.896	6.796	-4.845	11.641
8.3	24.485	24.826	6.726	-4.977	11.703
8.4	24.417	24.757	6.657	-5.107	11.764
8.5	24.349	24.689	6.589	-5.235	11.824
8.6	24.280	24.621	6.521	-5.362	11.883
8.7	24.209	24.553	6.453	-5.488	11.941
8.8	24.138	24.485	6.385	-5.612	11.997
8.9	24.065	24.417	6.317	-5.735	12.052
9	23.990	24.349	6.249	-5.856	12.105
9.1	23.913	24.280	6.180	-5.976	12.156
9.2	23.833	24.209	6.109	-6.095	12.204
9.3	23.750	24.138	6.038	-6.212	12.250
9.4	23.663	24.065	5.965	-6.328	12.293
9.5	23.574	23.990	5.890	-6.443	12.333
9.6	23.480	23.913	5.813	-6.557	12.370
9.7	23.381	23.833	5.733	-6.669	12.402
9.8	23.279	23.750	5.650	-6.781	12.431
9.9	23.171	23.663	5.563	-6.891	12.454
10	23.059	23.574	5.474	-7.000	12.474
15	9.929	12.021	-6.079	-11.402	5.323
20	9.727	10.217	-7.883	-14.526	6.643
25	12.265	12.483	-5.617	-16.949	11.332
30	6.039	8.761	-9.339	-18.928	9.589
35	-3.201	-0.045	-18.145	-20.602	2.457
40	12.394	12.828	-5.272	-22.051	16.779
45	11.777	11.979	-6.121	-23.330	17.209
50	10.367	10.886	-7.214	-24	16.786
55	-1.299	1.373	-16.727	-24	7.273
60	10.034	10.232	-7.868	-24	16.132
65	11.851	11.897	-6.203	-24	17.797
70	10.070	10.191	-7.909	-24	16.091

75	7.788	8.069	-10.031	-24	13.969
80	7.081	7.119	-10.981	-24	13.019
85	6.882	6.959	-11.141	-24	12.859
90	5.749	6.259	-11.841	-14	2.159
95	-2.750	-2.750	-20.850	-14	-
100	-2.750	-2.750	-20.850	-14	-
105	-2.750	-2.750	-20.850	-14	-
110	-2.750	-2.750	-20.850	-14	-
115	-2.750	-2.750	-20.850	-14	-
120	-2.750	-2.750	-20.850	-14	-
125	-2.750	-2.750	-20.850	-14	-
130	-2.750	-2.750	-20.850	-14	-
135	-2.750	-2.750	-20.850	-14	-
140	-2.750	-2.750	-20.850	-14	-
145	-2.750	-2.750	-20.850	-14	-
150	-2.750	-2.750	-20.850	-14	-
155	-2.750	-2.750	-20.850	-14	-
160	-2.750	-2.750	-20.850	-14	-
165	-2.750	-2.750	-20.850	-14	-
170	-2.750	-2.750	-20.850	-14	-
175	-2.750	-2.750	-20.850	-14	-
180	-2.750	-2.750	-20.850	-14	-

14.5GHz, V-Pol Co-Pol Elevation PSD with -18.1dBW/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): 27.5
 a2 Antenna Model: SR3000 d Frequency at which gain was measured (GHz): 14.0
 a3 Antenna ID: RAS e Max input power density (dBW/4kHz): -18.1
 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

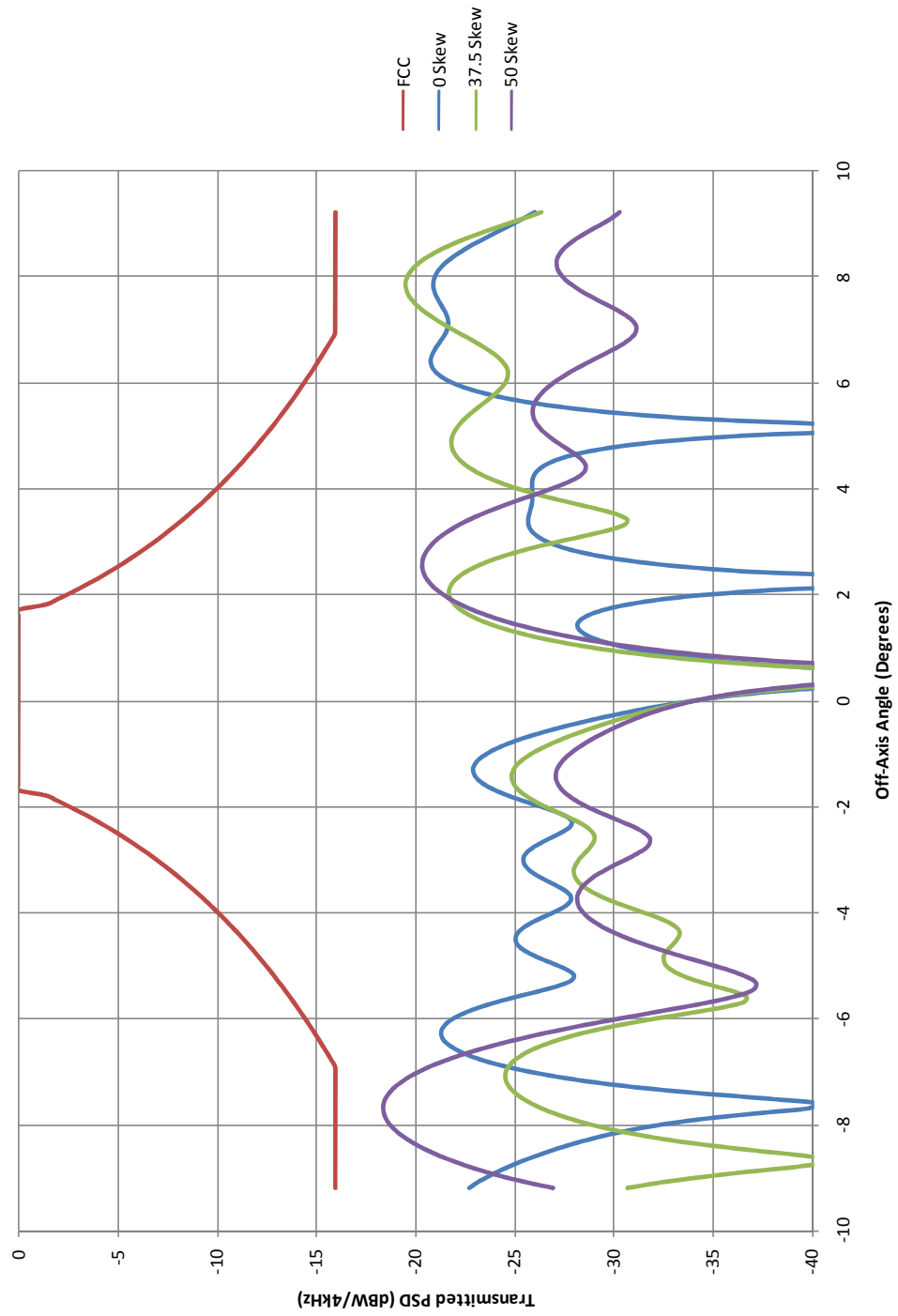
Offset Angles (Degrees)	Nominal X-Pol Gain Along Tangent to Geo Arc (dBi)			Worst Case X-Pol Gain Along Tangent to Geo Arc (dBi)			Worst Case X-Pol PSD Along Tangent to Geo Arc input PSD = -18.1dBW/4kHz (dBW/4kHz)			FCC Mask (dBW/4kHz)	Mask Exceedence (dB)
	0° Skew	37.5° Skew	50° Skew	0° Skew	37.5° Skew	50° Skew	0° Skew	37.5° Skew	50° Skew		
	-9.2	-4.636	-12.590	-8.844	-4.636	-12.590	-3.854	-22.736	-30.690		
-9.1	-5.030	-14.212	-7.583	-4.636	-12.590	-3.166	-22.736	-30.690	-21.266	-16.000	-
-9	-5.500	-16.206	-6.466	-4.636	-12.590	-2.566	-22.736	-30.690	-20.666	-16.000	-
-8.9	-6.031	-18.537	-5.492	-4.636	-12.590	-2.032	-22.736	-30.690	-20.132	-16.000	-
-8.8	-6.616	-21.154	-4.620	-4.636	-12.590	-1.579	-22.736	-30.690	-19.679	-16.000	-
-8.7	-7.259	-22.743	-3.854	-4.636	-12.590	-1.188	-22.736	-30.690	-19.288	-16.000	-
-8.6	-7.969	-21.636	-3.166	-5.030	-11.817	-0.873	-23.130	-29.917	-18.973	-16.000	-
-8.5	-8.739	-19.138	-2.566	-5.500	-10.677	-0.621	-23.600	-28.777	-18.721	-16.000	-
-8.4	-9.578	-16.782	-2.032	-6.031	-9.739	-0.443	-24.131	-27.839	-18.543	-16.000	-
-8.3	-10.513	-14.776	-1.579	-6.616	-8.926	-0.333	-24.716	-27.026	-18.433	-16.000	-
-8.2	-11.586	-13.161	-1.188	-7.259	-8.258	-0.294	-25.359	-26.358	-18.394	-16.000	-
-8.1	-12.857	-11.817	-0.873	-7.969	-7.702	-0.294	-26.069	-25.802	-18.394	-16.000	-
-8	-14.411	-10.677	-0.621	-8.739	-7.242	-0.294	-26.839	-25.342	-18.394	-16.000	-
-7.9	-16.384	-9.739	-0.443	-9.578	-6.897	-0.294	-27.678	-24.997	-18.394	-16.000	-
-7.8	-18.910	-8.926	-0.333	-10.513	-6.637	-0.294	-28.613	-24.737	-18.394	-16.000	-
-7.7	-21.678	-8.258	-0.294	-10.778	-6.482	-0.294	-28.878	-24.582	-18.394	-16.000	-
-7.6	-22.101	-7.702	-0.329	-9.008	-6.426	-0.294	-27.108	-24.526	-18.394	-16.000	-
-7.5	-19.094	-7.242	-0.433	-7.559	-6.426	-0.294	-25.659	-24.526	-18.394	-16.000	-
-7.4	-15.753	-6.897	-0.618	-6.358	-6.426	-0.294	-24.458	-24.526	-18.394	-16.000	-
-7.3	-12.985	-6.637	-0.872	-5.376	-6.426	-0.294	-23.476	-24.526	-18.394	-16.000	-
-7.2	-10.778	-6.482	-1.215	-4.610	-6.426	-0.294	-22.710	-24.526	-18.394	-16.000	-
-7.1	-9.008	-6.426	-1.626	-4.022	-6.426	-0.329	-22.122	-24.526	-18.429	-16.000	-
-7	-7.559	-6.462	-2.135	-3.594	-6.426	-0.433	-21.694	-24.526	-18.533	-16.000	-
-6.9	-6.358	-6.615	-2.714	-3.325	-6.426	-0.618	-21.425	-24.526	-18.718	-15.971	-
-6.8	-5.376	-6.865	-3.399	-3.225	-6.426	-0.872	-21.325	-24.526	-18.972	-15.813	-
-6.7	-4.610	-7.244	-4.157	-3.225	-6.426	-1.215	-21.325	-24.526	-19.315	-15.652	-
-6.6	-4.022	-7.741	-5.030	-3.225	-6.426	-1.626	-21.325	-24.526	-19.726	-15.489	-
-6.5	-3.594	-8.380	-5.980	-3.225	-6.462	-2.135	-21.325	-24.562	-20.235	-15.323	-
-6.4	-3.325	-9.170	-7.054	-3.225	-6.615	-2.714	-21.325	-24.715	-20.814	-15.154	-
-6.3	-3.225	-10.116	-8.204	-3.225	-6.865	-3.399	-21.325	-24.965	-21.499	-14.984	-
-6.2	-3.281	-11.264	-9.481	-3.225	-7.244	-4.157	-21.325	-25.344	-22.257	-14.810	-
-6.1	-3.489	-12.583	-10.828	-3.225	-7.741	-5.030	-21.325	-25.841	-23.130	-14.633	-

-6	-3.859	-14.116	-12.280	-3.225	-8.380	-5.980	-21.325	-26.480	-24.080	-14.454	-
-5.9	-4.405	-15.762	-13.768	-3.225	-9.170	-7.054	-21.325	-27.270	-25.154	-14.271	-
-5.8	-5.114	-17.326	-15.268	-3.225	-10.116	-8.204	-21.325	-28.216	-26.304	-14.086	-
-5.7	-5.971	-18.424	-16.687	-3.281	-11.264	-9.481	-21.381	-29.364	-27.581	-13.897	-
-5.6	-6.962	-18.604	-17.874	-3.489	-12.583	-10.828	-21.589	-30.683	-28.928	-13.705	-
-5.5	-8.034	-17.981	-18.734	-3.859	-14.116	-12.280	-21.959	-32.216	-30.380	-13.509	-
-5.4	-9.027	-17.048	-19.071	-4.405	-14.420	-13.768	-22.505	-32.520	-31.868	-13.310	-
-5.3	-9.717	-16.115	-18.987	-5.114	-14.420	-15.037	-23.214	-32.520	-33.137	-13.107	-
-5.2	-9.917	-15.372	-18.469	-5.971	-14.420	-14.174	-24.071	-32.520	-32.274	-12.900	-
-5.1	-9.630	-14.846	-17.749	-6.962	-14.420	-13.364	-25.062	-32.520	-31.464	-12.689	-
-5	-9.051	-14.522	-16.863	-6.971	-14.420	-12.639	-25.071	-32.520	-30.739	-12.474	-
-4.9	-8.390	-14.420	-15.956	-6.971	-14.420	-11.997	-25.071	-32.520	-30.097	-12.255	-
-4.8	-7.786	-14.456	-15.037	-6.971	-14.420	-11.442	-25.071	-32.520	-29.542	-12.031	-
-4.7	-7.322	-14.650	-14.174	-6.971	-14.420	-10.986	-25.071	-32.520	-29.086	-11.802	-
-4.6	-7.048	-14.896	-13.364	-6.971	-14.103	-10.611	-25.071	-32.203	-28.711	-11.569	-
-4.5	-6.971	-15.112	-12.639	-6.971	-13.351	-10.344	-25.071	-31.451	-28.444	-11.330	-
-4.4	-7.069	-15.229	-11.997	-6.971	-12.590	-10.154	-25.071	-30.690	-28.254	-11.086	-
-4.3	-7.335	-15.092	-11.442	-6.971	-11.867	-10.075	-25.071	-29.967	-28.175	-10.837	-
-4.2	-7.764	-14.703	-10.986	-6.971	-11.221	-10.071	-25.071	-29.321	-28.171	-10.581	-
-4.1	-8.317	-14.103	-10.611	-6.971	-10.712	-10.071	-25.071	-28.812	-28.171	-10.320	-
-4	-8.900	-13.351	-10.344	-6.971	-10.306	-10.071	-25.071	-28.406	-28.171	-10.051	-
-3.9	-9.405	-12.590	-10.154	-7.069	-10.046	-10.071	-25.169	-28.146	-28.171	-9.777	-
-3.8	-9.715	-11.867	-10.075	-7.335	-9.906	-10.071	-25.435	-28.006	-28.171	-9.495	-
-3.7	-9.746	-11.221	-10.071	-7.641	-9.883	-10.071	-25.741	-27.983	-28.171	-9.205	-
-3.6	-9.488	-10.712	-10.183	-7.422	-9.883	-10.071	-25.522	-27.983	-28.171	-8.908	-
-3.5	-9.026	-10.306	-10.365	-7.360	-9.883	-10.071	-25.460	-27.983	-28.171	-8.602	-
-3.4	-8.491	-10.046	-10.664	-7.360	-9.883	-10.071	-25.460	-27.983	-28.171	-8.287	-
-3.3	-8.004	-9.906	-11.026	-7.360	-9.883	-10.071	-25.460	-27.983	-28.171	-7.963	-
-3.2	-7.641	-9.883	-11.495	-7.360	-9.883	-10.071	-25.460	-27.983	-28.171	-7.629	-
-3.1	-7.422	-9.985	-11.997	-7.360	-9.883	-10.183	-25.460	-27.983	-28.283	-7.284	-
-3	-7.360	-10.156	-12.556	-7.360	-9.883	-10.365	-25.460	-27.983	-28.465	-6.928	-
-2.9	-7.474	-10.404	-13.061	-7.360	-9.883	-10.664	-25.460	-27.983	-28.764	-6.560	-
-2.8	-7.768	-10.654	-13.493	-7.360	-9.883	-11.026	-25.460	-27.983	-29.126	-6.179	-
-2.7	-8.206	-10.845	-13.711	-7.360	-9.540	-11.495	-25.460	-27.640	-29.595	-5.784	-
-2.6	-8.732	-10.938	-13.711	-7.360	-8.958	-11.062	-25.460	-27.058	-29.162	-5.374	-
-2.5	-9.264	-10.834	-13.418	-7.360	-8.381	-10.504	-25.460	-26.481	-28.604	-4.949	-
-2.4	-9.678	-10.549	-12.955	-7.337	-7.867	-10.009	-25.437	-25.967	-28.109	-4.505	-
-2.3	-9.805	-10.105	-12.332	-6.581	-7.440	-9.618	-24.681	-25.540	-27.718	-4.043	-
-2.2	-9.547	-9.540	-11.701	-5.934	-7.101	-9.313	-24.034	-25.201	-27.413	-3.561	-
-2.1	-8.947	-8.958	-11.062	-5.427	-6.883	-9.115	-23.527	-24.983	-27.215	-3.055	-
-2	-8.156	-8.381	-10.504	-5.078	-6.761	-9.001	-23.178	-24.861	-27.101	-2.526	-
-1.9	-7.337	-7.867	-10.009	-4.883	-6.756	-8.990	-22.983	-24.856	-27.090	-1.969	-
-1.8	-6.581	-7.440	-9.618	-4.834	-6.756	-8.990	-22.934	-24.856	-27.090	-1.382	-
-1.7	-5.934	-7.101	-9.313	-4.834	-6.756	-8.990	-22.934	-24.856	-27.090	-	-
-1.6	-5.427	-6.883	-9.115	-4.834	-6.756	-8.990	-22.934	-24.856	-27.090	-	-
-1.5	-5.078	-6.761	-9.001	-4.834	-6.756	-8.990	-22.934	-24.856	-27.090	-	-
-1.4	-4.883	-6.756	-8.990	-4.834	-6.756	-8.990	-22.934	-24.856	-27.090	-	-
-1.3	-4.834	-6.863	-9.055	-4.834	-6.756	-8.990	-22.934	-24.856	-27.090	-	-
-1.2	-4.931	-7.062	-9.213	-4.834	-6.756	-8.990	-22.934	-24.856	-27.090	-	-
-1.1	-5.182	-7.390	-9.441	-4.834	-6.756	-8.990	-22.934	-24.856	-27.090	-	-
-1	-5.573	-7.790	-9.741	-4.834	-6.756	-8.990	-22.934	-24.856	-27.090	-	-
-0.9	-6.091	-8.298	-10.106	-4.834	-6.756	-8.990	-22.934	-24.856	-27.090	-	-
-0.8	-6.739	-8.884	-10.520	-4.834	-6.863	-9.055	-22.934	-24.963	-27.155	-	-
-0.7	-7.519	-9.532	-10.992	-4.931	-7.062	-9.213	-23.031	-25.162	-27.313	-	-
-0.6	-8.419	-10.261	-11.499	-5.182	-7.390	-9.441	-23.282	-25.490	-27.541	-	-
-0.5	-9.414	-11.022	-12.062	-5.573	-7.790	-9.741	-23.673	-25.890	-27.841	-	-
-0.4	-10.504	-11.846	-12.666	-6.091	-8.298	-10.106	-24.191	-26.398	-28.206	-	-
-0.3	-11.698	-12.724	-13.347	-6.739	-8.884	-10.520	-24.839	-26.984	-28.620	-	-
-0.2	-13.002	-13.690	-14.116	-7.519	-9.532	-10.992	-25.619	-27.632	-29.092	-	-
-0.1	-14.454	-14.802	-15.032	-8.419	-10.261	-11.499	-26.519	-28.361	-29.599	-	-

0	-16.155	-16.154	-16.154	-9.414	-11.022	-12.062	-27.514	-29.122	-30.162	-
0.1	-18.287	-17.914	-17.593	-10.504	-11.846	-12.666	-28.604	-29.946	-30.766	-
0.2	-21.240	-20.413	-19.545	-11.698	-12.724	-13.347	-29.798	-30.824	-31.447	-
0.3	-26.100	-24.417	-22.368	-13.002	-13.690	-14.116	-31.102	-31.790	-32.216	-
0.4	-38.835	-32.847	-27.032	-13.869	-12.495	-15.032	-31.969	-30.595	-33.132	-
0.5	-29.689	-30.778	-34.175	-12.443	-10.619	-12.892	-30.543	-28.719	-30.992	-
0.6	-22.431	-22.506	-27.602	-11.389	-9.098	-11.108	-29.489	-27.198	-29.208	-
0.7	-18.451	-17.937	-21.650	-10.661	-7.817	-9.620	-28.761	-25.917	-27.720	-
0.8	-15.787	-14.858	-17.845	-10.234	-6.774	-8.344	-28.334	-24.874	-26.444	-
0.9	-13.869	-12.495	-15.067	-10.081	-5.900	-7.258	-28.181	-24.000	-25.358	-
1	-12.443	-10.619	-12.892	-10.081	-5.185	-6.309	-28.181	-23.285	-24.409	-
1.1	-11.389	-9.098	-11.108	-10.081	-4.621	-5.501	-28.181	-22.721	-23.601	-
1.2	-10.661	-7.817	-9.620	-10.081	-4.176	-4.794	-28.181	-22.276	-22.894	-
1.3	-10.234	-6.774	-8.344	-10.081	-3.866	-4.201	-28.181	-21.966	-22.301	-
1.4	-10.081	-5.900	-7.258	-10.081	-3.663	-3.687	-28.181	-21.763	-21.787	-
1.5	-10.202	-5.185	-6.309	-10.081	-3.582	-3.270	-28.181	-21.682	-21.370	-
1.6	-10.633	-4.621	-5.501	-10.081	-3.582	-2.920	-28.181	-21.682	-21.020	-
1.7	-11.412	-4.176	-4.794	-10.081	-3.582	-2.658	-28.181	-21.682	-20.758	-
1.8	-12.605	-3.866	-4.201	-10.081	-3.582	-2.454	-28.181	-21.682	-20.554	-1.382
1.9	-14.365	-3.663	-3.687	-10.081	-3.582	-2.330	-28.181	-21.682	-20.430	-1.969
2	-17.043	-3.582	-3.270	-10.202	-3.582	-2.263	-28.302	-21.682	-20.363	-2.526
2.1	-21.533	-3.608	-2.920	-10.633	-3.582	-2.263	-28.733	-21.682	-20.363	-3.055
2.2	-32.300	-3.744	-2.658	-11.412	-3.582	-2.263	-29.512	-21.682	-20.363	-3.561
2.3	-28.158	-4.001	-2.454	-10.099	-3.582	-2.263	-28.199	-21.682	-20.363	-4.043
2.4	-19.908	-4.359	-2.330	-9.139	-3.582	-2.263	-27.239	-21.682	-20.363	-4.505
2.5	-15.824	-4.857	-2.263	-8.467	-3.582	-2.263	-26.567	-21.682	-20.363	-4.949
2.6	-13.231	-5.464	-2.270	-8.020	-3.608	-2.263	-26.120	-21.708	-20.363	-5.374
2.7	-11.419	-6.209	-2.332	-7.750	-3.744	-2.263	-25.850	-21.844	-20.363	-5.784
2.8	-10.099	-7.104	-2.468	-7.623	-4.001	-2.263	-25.723	-22.101	-20.363	-6.179
2.9	-9.139	-8.113	-2.659	-7.607	-4.359	-2.263	-25.707	-22.459	-20.363	-6.560
3	-8.467	-9.275	-2.922	-7.607	-4.857	-2.263	-25.707	-22.957	-20.363	-6.928
3.1	-8.020	-10.479	-3.243	-7.607	-5.464	-2.270	-25.707	-23.564	-20.370	-7.284
3.2	-7.750	-11.600	-3.638	-7.607	-6.209	-2.332	-25.707	-24.309	-20.432	-7.629
3.3	-7.623	-12.416	-4.094	-7.607	-7.104	-2.468	-25.707	-25.204	-20.568	-7.963
3.4	-7.607	-12.575	-4.622	-7.607	-7.827	-2.659	-25.707	-25.927	-20.759	-8.287
3.5	-7.652	-12.063	-5.213	-7.607	-6.925	-2.922	-25.707	-25.025	-21.022	-8.602
3.6	-7.722	-11.101	-5.871	-7.607	-6.158	-3.243	-25.707	-24.258	-21.343	-8.908
3.7	-7.787	-9.961	-6.584	-7.607	-5.507	-3.638	-25.707	-23.607	-21.738	-9.205
3.8	-7.824	-8.844	-7.342	-7.607	-4.968	-4.094	-25.707	-23.068	-22.194	-9.495
3.9	-7.822	-7.827	-8.117	-7.607	-4.535	-4.622	-25.707	-22.635	-22.722	-9.777
4	-7.805	-6.925	-8.874	-7.652	-4.196	-5.213	-25.752	-22.296	-23.313	-10.051
4.1	-7.804	-6.158	-9.549	-7.722	-3.952	-5.871	-25.822	-22.052	-23.971	-10.320
4.2	-7.855	-5.507	-10.086	-7.787	-3.790	-6.584	-25.887	-21.890	-24.684	-10.581
4.3	-8.007	-4.968	-10.408	-7.804	-3.713	-7.342	-25.904	-21.813	-25.442	-10.837
4.4	-8.321	-4.535	-10.504	-7.804	-3.711	-8.117	-25.904	-21.811	-26.217	-11.086
4.5	-8.844	-4.196	-10.369	-7.804	-3.711	-8.541	-25.904	-21.811	-26.641	-11.330
4.6	-9.642	-3.952	-10.085	-7.804	-3.711	-8.247	-25.904	-21.811	-26.347	-11.569
4.7	-10.819	-3.790	-9.695	-7.855	-3.711	-8.035	-25.955	-21.811	-26.135	-11.802
4.8	-12.547	-3.713	-9.290	-8.007	-3.711	-7.890	-26.107	-21.811	-25.990	-12.031
4.9	-15.125	-3.711	-8.886	-8.321	-3.711	-7.829	-26.421	-21.811	-25.929	-12.255
5	-19.302	-3.780	-8.541	-8.844	-3.711	-7.829	-26.944	-21.811	-25.929	-12.474
5.1	-26.432	-3.921	-8.247	-7.853	-3.711	-7.829	-25.953	-21.811	-25.929	-12.689
5.2	-22.522	-4.117	-8.035	-6.369	-3.711	-7.829	-24.469	-21.811	-25.929	-12.900
5.3	-16.271	-4.374	-7.890	-5.228	-3.711	-7.829	-23.328	-21.811	-25.929	-13.107
5.4	-12.462	-4.668	-7.829	-4.349	-3.711	-7.829	-22.449	-21.811	-25.929	-13.310
5.5	-9.819	-4.996	-7.837	-3.687	-3.780	-7.829	-21.787	-21.880	-25.929	-13.509
5.6	-7.853	-5.339	-7.925	-3.219	-3.921	-7.829	-21.319	-22.021	-25.929	-13.705
5.7	-6.369	-5.676	-8.079	-2.914	-4.117	-7.829	-21.014	-22.217	-25.929	-13.897
5.8	-5.228	-5.991	-8.302	-2.746	-4.374	-7.829	-20.846	-22.474	-25.929	-14.086
5.9	-4.349	-6.255	-8.590	-2.700	-4.668	-7.829	-20.800	-22.768	-25.929	-14.271

6	-3.687	-6.449	-8.931	-2.700	-4.996	-7.837	-20.800	-23.096	-25.937	-14.454	-
6.1	-3.219	-6.551	-9.337	-2.700	-5.339	-7.925	-20.800	-23.439	-26.025	-14.633	-
6.2	-2.914	-6.554	-9.777	-2.700	-5.139	-8.079	-20.800	-23.239	-26.179	-14.810	-
6.3	-2.746	-6.448	-10.273	-2.700	-4.670	-8.302	-20.800	-22.770	-26.402	-14.984	-
6.4	-2.700	-6.238	-10.778	-2.700	-4.186	-8.590	-20.800	-22.286	-26.690	-15.154	-
6.5	-2.759	-5.945	-11.314	-2.700	-3.711	-8.931	-20.800	-21.811	-27.031	-15.323	-
6.6	-2.889	-5.562	-11.822	-2.700	-3.241	-9.337	-20.800	-21.341	-27.437	-15.489	-
6.7	-3.062	-5.139	-12.303	-2.700	-2.815	-9.777	-20.800	-20.915	-27.877	-15.652	-
6.8	-3.252	-4.670	-12.687	-2.700	-2.424	-10.273	-20.800	-20.524	-28.373	-15.813	-
6.9	-3.425	-4.186	-12.955	-2.700	-2.087	-10.778	-20.800	-20.187	-28.878	-15.971	-
7	-3.541	-3.711	-13.048	-2.759	-1.814	-11.302	-20.859	-19.914	-29.402	-16.000	-
7.1	-3.584	-3.241	-12.964	-2.889	-1.599	-10.801	-20.989	-19.699	-28.901	-16.000	-
7.2	-3.552	-2.815	-12.707	-2.887	-1.463	-10.307	-20.987	-19.563	-28.407	-16.000	-
7.3	-3.450	-2.424	-12.307	-2.828	-1.396	-9.902	-20.928	-19.496	-28.002	-16.000	-
7.4	-3.300	-2.087	-11.833	-2.828	-1.396	-9.540	-20.928	-19.496	-27.640	-16.000	-
7.5	-3.142	-1.814	-11.302	-2.828	-1.396	-9.290	-20.928	-19.496	-27.390	-16.000	-
7.6	-2.998	-1.599	-10.801	-2.828	-1.396	-9.104	-20.928	-19.496	-27.204	-16.000	-
7.7	-2.887	-1.463	-10.307	-2.828	-1.396	-9.034	-20.928	-19.496	-27.134	-16.000	-
7.8	-2.828	-1.396	-9.902	-2.828	-1.396	-9.034	-20.928	-19.496	-27.134	-16.000	-
7.9	-2.841	-1.411	-9.540	-2.828	-1.396	-9.034	-20.928	-19.496	-27.134	-16.000	-
8	-2.928	-1.503	-9.290	-2.828	-1.396	-9.034	-20.928	-19.496	-27.134	-16.000	-
8.1	-3.085	-1.677	-9.104	-2.828	-1.396	-9.034	-20.928	-19.496	-27.134	-16.000	-
8.2	-3.318	-1.936	-9.034	-2.828	-1.396	-9.034	-20.928	-19.496	-27.134	-16.000	-
8.3	-3.625	-2.271	-9.041	-2.828	-1.396	-9.034	-20.928	-19.496	-27.134	-16.000	-
8.4	-3.992	-2.699	-9.158	-2.841	-1.411	-9.034	-20.941	-19.511	-27.134	-16.000	-
8.5	-4.411	-3.195	-9.358	-2.928	-1.503	-9.034	-21.028	-19.603	-27.134	-16.000	-
8.6	-4.878	-3.778	-9.655	-3.085	-1.677	-9.034	-21.185	-19.777	-27.134	-16.000	-
8.7	-5.381	-4.427	-10.022	-3.318	-1.936	-9.034	-21.418	-20.036	-27.134	-16.000	-
8.8	-5.899	-5.133	-10.462	-3.625	-2.271	-9.041	-21.725	-20.371	-27.141	-16.000	-
8.9	-6.420	-5.904	-10.931	-3.992	-2.699	-9.158	-22.092	-20.799	-27.258	-16.000	-
9	-6.942	-6.684	-11.415	-4.411	-3.195	-9.358	-22.511	-21.295	-27.458	-16.000	-
9.1	-7.461	-7.486	-11.847	-4.878	-3.778	-9.655	-22.978	-21.878	-27.755	-16.000	-
9.2	-7.943	-8.242	-12.191	-5.381	-4.427	-10.022	-23.481	-22.527	-28.122	-16.000	-

Nominal 14.0GHz, H-Polarized, X-pol PSD, with -18.1dBW/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): 27.5
 a2 Antenna Model: SR3000 d Frequency at which gain was measured (GHz): 14.0
 a3 Antenna ID: RAS e Max input power density (dBW/4kHz): -18.1
 b Transmit Band (b): 14GHz Pattern ID Table C2
 Pattern Description: 14.0GHz V-polarization, X-polarized tangent to the geosynchronous plane

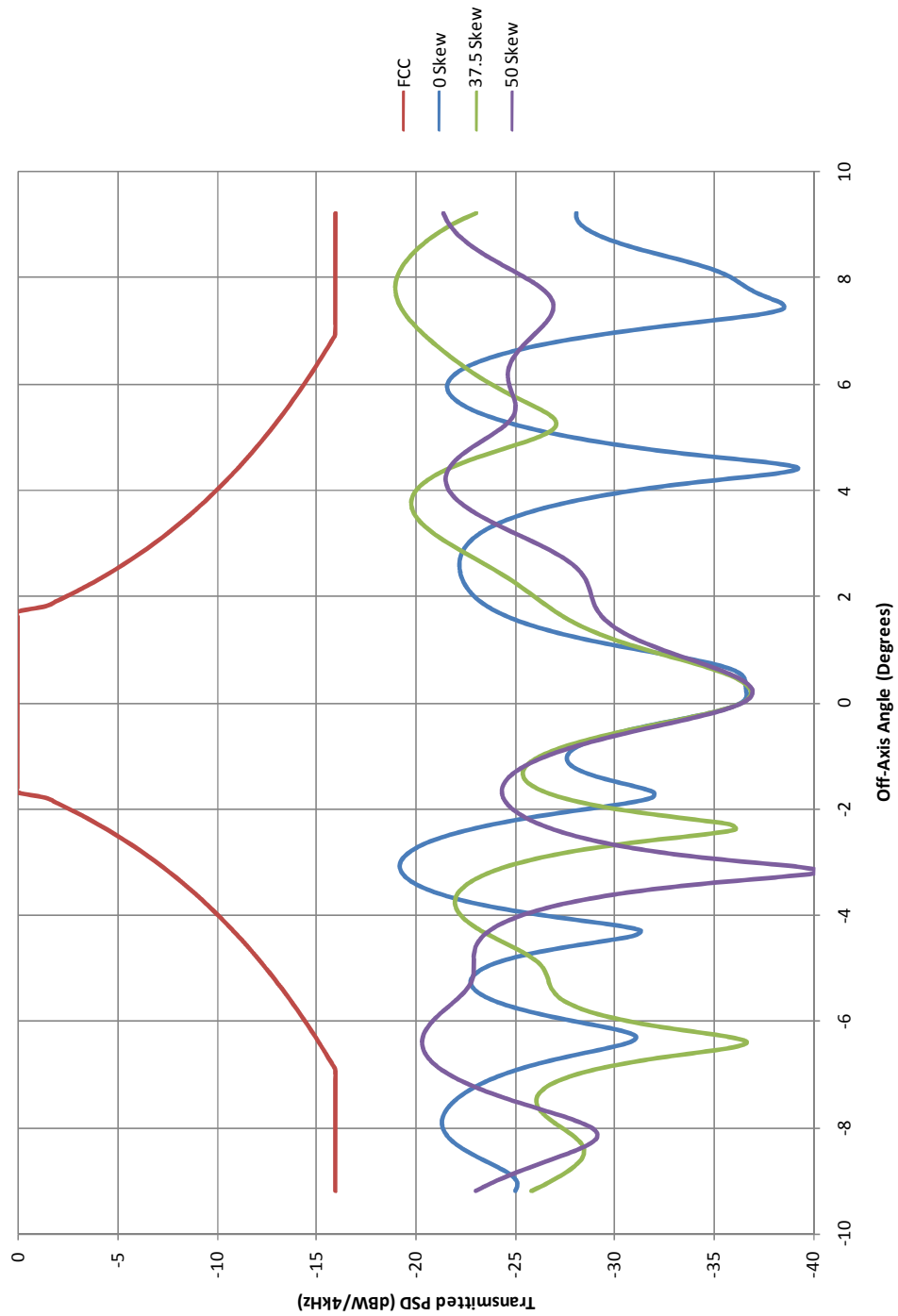
Offset Angles (Degrees)	Nominal X-Pol Gain Along Tangent to Geo Arc (dBi)			Worst Case X-Pol Gain Along Tangent to Geo Arc (dBi)			Worst Case X-Pol PSD Along Tangent to Geo Arc input PSD = -18.1dBW/4kHz (dBW/4kHz)			FCC Mask (dBW/4kHz)	Mask Exceedence (dB)
	0° Skew	37.5° Skew	50° Skew	0° Skew	37.5° Skew	50° Skew	0° Skew	37.5° Skew	50° Skew		
	-9.2	-6.914	-7.733	-4.936	-5.756	-7.733	-4.936	-23.856	-25.833		
-9.1	-7.033	-8.302	-5.456	-5.217	-7.733	-4.936	-23.317	-25.833	-23.036	-16.000	-
-9	-6.969	-8.799	-6.030	-4.704	-7.733	-4.936	-22.804	-25.833	-23.036	-16.000	-
-8.9	-6.704	-9.275	-6.663	-4.245	-7.733	-4.936	-22.345	-25.833	-23.036	-16.000	-
-8.8	-6.276	-9.675	-7.340	-3.863	-7.733	-4.936	-21.963	-25.833	-23.036	-16.000	-
-8.7	-5.756	-10.009	-8.061	-3.574	-7.733	-4.936	-21.674	-25.833	-23.036	-16.000	-
-8.6	-5.217	-10.261	-8.796	-3.373	-8.302	-5.456	-21.473	-26.402	-23.556	-16.000	-
-8.5	-4.704	-10.382	-9.526	-3.258	-8.799	-6.030	-21.358	-26.899	-24.130	-16.000	-
-8.4	-4.245	-10.380	-10.188	-3.227	-8.823	-6.663	-21.327	-26.923	-24.763	-16.000	-
-8.3	-3.863	-10.230	-10.711	-3.227	-8.481	-7.340	-21.327	-26.581	-25.440	-16.000	-
-8.2	-3.574	-9.965	-11.016	-3.227	-8.210	-8.061	-21.327	-26.310	-26.161	-16.000	-
-8.1	-3.373	-9.606	-11.005	-3.227	-8.035	-7.645	-21.327	-26.135	-25.745	-16.000	-
-8	-3.258	-9.217	-10.705	-3.227	-7.986	-6.784	-21.327	-26.086	-24.884	-16.000	-
-7.9	-3.227	-8.823	-10.105	-3.227	-7.986	-6.008	-21.327	-26.086	-24.108	-16.000	-
-7.8	-3.282	-8.481	-9.364	-3.227	-7.986	-5.269	-21.327	-26.086	-23.369	-16.000	-
-7.7	-3.410	-8.210	-8.496	-3.227	-7.986	-4.632	-21.327	-26.086	-22.732	-16.000	-
-7.6	-3.607	-8.035	-7.645	-3.227	-7.986	-4.050	-21.327	-26.086	-22.150	-16.000	-
-7.5	-3.873	-7.986	-6.784	-3.227	-7.986	-3.567	-21.327	-26.086	-21.667	-16.000	-
-7.4	-4.212	-8.056	-6.008	-3.227	-7.986	-3.148	-21.327	-26.086	-21.248	-16.000	-
-7.3	-4.623	-8.298	-5.269	-3.282	-7.986	-2.819	-21.382	-26.086	-20.919	-16.000	-
-7.2	-5.111	-8.678	-4.632	-3.410	-7.986	-2.561	-21.510	-26.086	-20.661	-16.000	-
-7.1	-5.688	-9.280	-4.050	-3.607	-7.986	-2.384	-21.707	-26.086	-20.484	-16.000	-
-7	-6.371	-10.069	-3.567	-3.873	-7.986	-2.280	-21.973	-26.086	-20.380	-16.000	-
-6.9	-7.179	-11.109	-3.148	-4.212	-8.056	-2.249	-22.312	-26.156	-20.349	-15.971	-
-6.8	-8.128	-12.466	-2.819	-4.623	-8.298	-2.249	-22.723	-26.398	-20.349	-15.813	-
-6.7	-9.223	-14.078	-2.561	-5.111	-8.678	-2.249	-23.211	-26.778	-20.349	-15.652	-
-6.6	-10.446	-16.039	-2.384	-5.688	-9.280	-2.249	-23.788	-27.380	-20.349	-15.489	-
-6.5	-11.696	-17.871	-2.280	-6.371	-10.069	-2.249	-24.471	-28.169	-20.349	-15.323	-
-6.4	-12.694	-18.595	-2.249	-7.179	-11.109	-2.249	-25.279	-29.209	-20.349	-15.154	-
-6.3	-13.005	-17.654	-2.291	-7.370	-10.433	-2.249	-25.470	-28.533	-20.349	-14.984	-
-6.2	-12.408	-15.864	-2.395	-6.437	-9.783	-2.249	-24.537	-27.883	-20.349	-14.810	-
-6.1	-11.189	-14.016	-2.568	-5.707	-9.269	-2.249	-23.807	-27.369	-20.349	-14.633	-

-6	-9.796	-12.554	-2.784	-5.182	-8.968	-2.249	-23.282	-27.068	-20.349	-14.454	-
-5.9	-8.497	-11.360	-3.058	-4.844	-8.763	-2.249	-22.944	-26.863	-20.349	-14.271	-
-5.8	-7.370	-10.433	-3.349	-4.685	-8.635	-2.291	-22.785	-26.735	-20.391	-14.086	-
-5.7	-6.437	-9.783	-3.670	-4.685	-8.569	-2.395	-22.785	-26.669	-20.495	-13.897	-
-5.6	-5.707	-9.269	-3.969	-4.685	-8.455	-2.568	-22.785	-26.555	-20.668	-13.705	-
-5.5	-5.182	-8.968	-4.261	-4.685	-8.314	-2.784	-22.785	-26.414	-20.884	-13.509	-
-5.4	-4.844	-8.763	-4.487	-4.685	-8.067	-3.058	-22.785	-26.167	-21.158	-13.310	-
-5.3	-4.685	-8.635	-4.677	-4.685	-7.698	-3.349	-22.785	-25.798	-21.449	-13.107	-
-5.2	-4.716	-8.569	-4.780	-4.685	-7.263	-3.670	-22.785	-25.363	-21.770	-12.900	-
-5.1	-4.949	-8.455	-4.848	-4.685	-6.735	-3.969	-22.785	-24.835	-22.069	-12.689	-
-5	-5.381	-8.314	-4.851	-4.685	-6.202	-4.261	-22.785	-24.302	-22.361	-12.474	-
-4.9	-6.030	-8.067	-4.856	-4.685	-5.676	-4.487	-22.785	-23.776	-22.587	-12.255	-
-4.8	-6.940	-7.698	-4.843	-4.685	-5.180	-4.677	-22.785	-23.280	-22.777	-12.031	-
-4.7	-8.153	-7.263	-4.879	-4.716	-4.762	-4.780	-22.816	-22.862	-22.880	-11.802	-
-4.6	-9.644	-6.735	-4.942	-4.949	-4.404	-4.843	-23.049	-22.504	-22.943	-11.569	-
-4.5	-11.340	-6.202	-5.095	-5.381	-4.143	-4.843	-23.481	-22.243	-22.943	-11.330	-
-4.4	-12.860	-5.676	-5.308	-6.030	-3.966	-4.843	-24.130	-22.066	-22.943	-11.086	-
-4.3	-13.227	-5.180	-5.645	-5.031	-3.887	-4.843	-23.131	-21.987	-22.943	-10.837	-
-4.2	-11.958	-4.762	-6.069	-3.920	-3.887	-4.879	-22.020	-21.987	-22.979	-10.581	-
-4.1	-10.004	-4.404	-6.651	-3.030	-3.887	-4.942	-21.130	-21.987	-23.042	-10.320	-
-4	-8.091	-4.143	-7.349	-2.323	-3.887	-5.095	-20.423	-21.987	-23.195	-10.051	-
-3.9	-6.419	-3.966	-8.249	-1.784	-3.887	-5.308	-19.884	-21.987	-23.408	-9.777	-
-3.8	-5.031	-3.887	-9.318	-1.415	-3.887	-5.645	-19.515	-21.987	-23.745	-9.495	-
-3.7	-3.920	-3.911	-10.666	-1.194	-3.887	-6.069	-19.294	-21.987	-24.169	-9.205	-
-3.6	-3.030	-4.025	-12.287	-1.107	-3.887	-6.651	-19.207	-21.987	-24.751	-8.908	-
-3.5	-2.323	-4.268	-14.350	-1.107	-3.887	-7.349	-19.207	-21.987	-25.449	-8.602	-
-3.4	-1.784	-4.604	-16.893	-1.107	-3.887	-8.249	-19.207	-21.987	-26.349	-8.287	-
-3.3	-1.415	-5.081	-19.958	-1.107	-3.887	-9.318	-19.207	-21.987	-27.418	-7.963	-
-3.2	-1.194	-5.689	-22.259	-1.107	-3.911	-10.666	-19.207	-22.011	-28.766	-7.629	-
-3.1	-1.107	-6.442	-21.085	-1.107	-4.025	-10.780	-19.207	-22.125	-28.880	-7.284	-
-3	-1.158	-7.407	-18.266	-1.107	-4.268	-9.722	-19.207	-22.368	-27.822	-6.928	-
-2.9	-1.355	-8.553	-15.689	-1.107	-4.604	-8.857	-19.207	-22.704	-26.957	-6.560	-
-2.8	-1.692	-9.989	-13.678	-1.107	-5.081	-8.144	-19.207	-23.181	-26.244	-6.179	-
-2.7	-2.170	-11.746	-12.065	-1.107	-5.689	-7.559	-19.207	-23.789	-25.659	-5.784	-
-2.6	-2.805	-13.844	-10.780	-1.107	-6.442	-7.097	-19.207	-24.542	-25.197	-5.374	-
-2.5	-3.623	-16.248	-9.722	-1.158	-7.407	-6.733	-19.258	-25.507	-24.833	-4.949	-
-2.4	-4.625	-18.006	-8.857	-1.355	-8.553	-6.480	-19.455	-26.653	-24.580	-4.505	-
-2.3	-5.824	-17.709	-8.144	-1.692	-9.277	-6.314	-19.792	-27.377	-24.414	-4.043	-
-2.2	-7.247	-15.696	-7.559	-2.170	-8.456	-6.255	-20.270	-26.556	-24.355	-3.561	-
-2.1	-8.927	-13.597	-7.097	-2.805	-7.883	-6.255	-20.905	-25.983	-24.355	-3.055	-
-2	-10.794	-11.766	-6.733	-3.623	-7.504	-6.255	-21.723	-25.604	-24.355	-2.526	-
-1.9	-12.594	-10.369	-6.480	-4.625	-7.327	-6.255	-22.725	-25.427	-24.355	-1.969	-
-1.8	-13.798	-9.277	-6.314	-5.824	-7.315	-6.255	-23.924	-25.415	-24.355	-1.382	-
-1.7	-13.887	-8.456	-6.255	-7.247	-7.315	-6.255	-25.347	-25.415	-24.355	-	-
-1.6	-13.070	-7.883	-6.282	-8.927	-7.315	-6.255	-27.027	-25.415	-24.355	-	-
-1.5	-11.977	-7.504	-6.417	-9.533	-7.315	-6.255	-27.633	-25.415	-24.355	-	-
-1.4	-10.988	-7.327	-6.643	-9.533	-7.315	-6.255	-27.633	-25.415	-24.355	-	-
-1.3	-10.233	-7.315	-6.979	-9.533	-7.315	-6.255	-27.633	-25.415	-24.355	-	-
-1.2	-9.750	-7.480	-7.412	-9.533	-7.315	-6.255	-27.633	-25.415	-24.355	-	-
-1.1	-9.533	-7.801	-7.961	-9.533	-7.315	-6.282	-27.633	-25.415	-24.382	-	-
-1	-9.551	-8.282	-8.612	-9.533	-7.315	-6.417	-27.633	-25.415	-24.517	-	-
-0.9	-9.794	-8.931	-9.383	-9.533	-7.315	-6.643	-27.633	-25.415	-24.743	-	-
-0.8	-10.267	-9.717	-10.259	-9.533	-7.315	-6.979	-27.633	-25.415	-25.079	-	-
-0.7	-10.974	-10.686	-11.244	-9.533	-7.480	-7.412	-27.633	-25.580	-25.512	-	-
-0.6	-11.875	-11.769	-12.326	-9.533	-7.801	-7.961	-27.633	-25.901	-26.061	-	-
-0.5	-12.960	-12.990	-13.475	-9.551	-8.282	-8.612	-27.651	-26.382	-26.712	-	-
-0.4	-14.211	-14.295	-14.672	-9.794	-8.931	-9.383	-27.894	-27.031	-27.483	-	-
-0.3	-15.553	-15.589	-15.826	-10.267	-9.717	-10.259	-28.367	-27.817	-28.359	-	-
-0.2	-16.794	-16.803	-16.901	-10.974	-10.686	-11.244	-29.074	-28.786	-29.344	-	-
-0.1	-17.763	-17.764	-17.764	-11.875	-11.769	-12.326	-29.975	-29.869	-30.426	-	-

0	-18.349	-18.432	-18.398	-12.960	-12.990	-13.475	-31.060	-31.090	-31.575	-
0.1	-18.560	-18.733	-18.735	-14.211	-14.295	-14.672	-32.311	-32.395	-32.772	-
0.2	-18.551	-18.802	-18.828	-15.553	-15.589	-15.826	-33.653	-33.689	-33.926	-
0.3	-18.519	-18.619	-18.682	-15.851	-15.234	-15.691	-33.951	-33.334	-33.791	-
0.4	-18.488	-18.264	-18.346	-14.403	-14.277	-14.918	-32.503	-32.377	-33.018	-
0.5	-18.345	-17.742	-17.840	-12.897	-13.366	-14.169	-30.997	-31.466	-32.269	-
0.6	-17.904	-17.004	-17.200	-11.471	-12.485	-13.492	-29.571	-30.585	-31.592	-
0.7	-17.068	-16.175	-16.471	-10.195	-11.713	-12.879	-28.295	-29.813	-30.979	-
0.8	-15.851	-15.234	-15.691	-9.071	-11.010	-12.362	-27.171	-29.110	-30.462	-
0.9	-14.403	-14.277	-14.918	-8.094	-10.389	-11.919	-26.194	-28.489	-30.019	-
1	-12.897	-13.366	-14.169	-7.259	-9.854	-11.570	-25.359	-27.954	-29.670	-
1.1	-11.471	-12.485	-13.492	-6.563	-9.367	-11.288	-24.663	-27.467	-29.388	-
1.2	-10.195	-11.713	-12.879	-5.986	-8.946	-11.084	-24.086	-27.046	-29.184	-
1.3	-9.071	-11.010	-12.362	-5.510	-8.557	-10.928	-23.610	-26.657	-29.028	-
1.4	-8.094	-10.389	-11.919	-5.125	-8.183	-10.822	-23.225	-26.283	-28.922	-
1.5	-7.259	-9.854	-11.570	-4.821	-7.829	-10.734	-22.921	-25.929	-28.834	-
1.6	-6.563	-9.367	-11.288	-4.582	-7.457	-10.663	-22.682	-25.557	-28.763	-
1.7	-5.986	-8.946	-11.084	-4.398	-7.080	-10.570	-22.498	-25.180	-28.670	-
1.8	-5.510	-8.557	-10.928	-4.263	-6.682	-10.459	-22.363	-24.782	-28.559	-1.382
1.9	-5.125	-8.183	-10.822	-4.171	-6.253	-10.285	-22.271	-24.353	-28.385	-1.969
2	-4.821	-7.829	-10.734	-4.119	-5.814	-10.061	-22.219	-23.914	-28.161	-2.526
2.1	-4.582	-7.457	-10.663	-4.109	-5.348	-9.753	-22.209	-23.448	-27.853	-3.055
2.2	-4.398	-7.080	-10.570	-4.109	-4.877	-9.383	-22.209	-22.977	-27.483	-3.561
2.3	-4.263	-6.682	-10.459	-4.109	-4.407	-8.934	-22.209	-22.507	-27.034	-4.043
2.4	-4.171	-6.253	-10.285	-4.109	-3.940	-8.440	-22.209	-22.040	-26.540	-4.505
2.5	-4.119	-5.814	-10.061	-4.109	-3.500	-7.892	-22.209	-21.600	-25.992	-4.949
2.6	-4.109	-5.348	-9.753	-4.109	-3.084	-7.333	-22.209	-21.184	-25.433	-5.374
2.7	-4.143	-4.877	-9.383	-4.109	-2.708	-6.755	-22.209	-20.808	-24.855	-5.784
2.8	-4.226	-4.407	-8.934	-4.109	-2.383	-6.203	-22.209	-20.483	-24.303	-6.179
2.9	-4.370	-3.940	-8.440	-4.109	-2.106	-5.661	-22.209	-20.206	-23.761	-6.560
3	-4.583	-3.500	-7.892	-4.109	-1.899	-5.174	-22.209	-19.999	-23.274	-6.928
3.1	-4.871	-3.084	-7.333	-4.109	-1.752	-4.720	-22.209	-19.852	-22.820	-7.284
3.2	-5.247	-2.708	-6.755	-4.143	-1.685	-4.337	-22.243	-19.785	-22.437	-7.629
3.3	-5.727	-2.383	-6.203	-4.226	-1.685	-4.006	-22.326	-19.785	-22.106	-7.963
3.4	-6.319	-2.106	-5.661	-4.370	-1.685	-3.755	-22.470	-19.785	-21.855	-8.287
3.5	-7.032	-1.899	-5.174	-4.583	-1.685	-3.568	-22.683	-19.785	-21.668	-8.602
3.6	-7.883	-1.752	-4.720	-4.871	-1.685	-3.464	-22.971	-19.785	-21.564	-8.908
3.7	-8.905	-1.685	-4.337	-5.247	-1.685	-3.430	-23.347	-19.785	-21.530	-9.205
3.8	-10.119	-1.693	-4.006	-5.727	-1.685	-3.430	-23.827	-19.785	-21.530	-9.495
3.9	-11.539	-1.785	-3.755	-6.319	-1.685	-3.430	-24.419	-19.785	-21.530	-9.777
4	-13.219	-1.965	-3.568	-7.032	-1.685	-3.430	-25.132	-19.785	-21.530	-10.051
4.1	-15.245	-2.230	-3.464	-7.883	-1.685	-3.430	-25.983	-19.785	-21.530	-10.320
4.2	-17.653	-2.599	-3.430	-8.905	-1.685	-3.430	-27.005	-19.785	-21.530	-10.581
4.3	-20.060	-3.053	-3.481	-10.119	-1.693	-3.430	-28.219	-19.793	-21.530	-10.837
4.4	-21.164	-3.609	-3.604	-11.031	-1.785	-3.430	-29.131	-19.885	-21.530	-11.086
4.5	-19.791	-4.261	-3.805	-9.518	-1.965	-3.430	-27.618	-20.065	-21.530	-11.330
4.6	-17.241	-4.989	-4.074	-8.214	-2.230	-3.430	-26.314	-20.330	-21.530	-11.569
4.7	-14.819	-5.802	-4.405	-7.117	-2.599	-3.430	-25.217	-20.699	-21.530	-11.802
4.8	-12.773	-6.635	-4.789	-6.183	-3.053	-3.481	-24.283	-21.153	-21.581	-12.031
4.9	-11.031	-7.457	-5.200	-5.388	-3.609	-3.604	-23.488	-21.709	-21.704	-12.255
5	-9.518	-8.185	-5.628	-4.731	-4.261	-3.805	-22.831	-22.361	-21.905	-12.474
5.1	-8.214	-8.711	-6.028	-4.224	-4.989	-4.074	-22.324	-23.089	-22.174	-12.689
5.2	-7.117	-8.975	-6.389	-3.854	-5.802	-4.405	-21.954	-23.902	-22.505	-12.900
5.3	-6.183	-8.937	-6.661	-3.610	-6.590	-4.789	-21.710	-24.690	-22.889	-13.107
5.4	-5.388	-8.660	-6.850	-3.496	-6.086	-5.200	-21.596	-24.186	-23.300	-13.310
5.5	-4.731	-8.207	-6.929	-3.496	-5.605	-5.628	-21.596	-23.705	-23.728	-13.509
5.6	-4.224	-7.683	-6.932	-3.496	-5.170	-6.028	-21.596	-23.270	-24.128	-13.705
5.7	-3.854	-7.128	-6.867	-3.496	-4.755	-6.389	-21.596	-22.855	-24.489	-13.897
5.8	-3.610	-6.590	-6.775	-3.496	-4.366	-6.554	-21.596	-22.466	-24.654	-14.086
5.9	-3.496	-6.086	-6.678	-3.496	-4.003	-6.554	-21.596	-22.103	-24.654	-14.271

6	-3.526	-5.605	-6.598	-3.496	-3.641	-6.554	-21.596	-21.741	-24.654	-14.454	-
6.1	-3.692	-5.170	-6.554	-3.496	-3.306	-6.554	-21.596	-21.406	-24.654	-14.633	-
6.2	-3.994	-4.755	-6.556	-3.496	-2.975	-6.554	-21.596	-21.075	-24.654	-14.810	-
6.3	-4.443	-4.366	-6.606	-3.496	-2.657	-6.554	-21.596	-20.757	-24.654	-14.984	-
6.4	-5.062	-4.003	-6.713	-3.496	-2.362	-6.554	-21.596	-20.462	-24.654	-15.154	-
6.5	-5.845	-3.641	-6.862	-3.526	-2.069	-6.554	-21.626	-20.169	-24.654	-15.323	-
6.6	-6.798	-3.306	-7.065	-3.692	-1.815	-6.554	-21.792	-19.915	-24.654	-15.489	-
6.7	-7.951	-2.975	-7.292	-3.994	-1.574	-6.556	-22.094	-19.674	-24.656	-15.652	-
6.8	-9.352	-2.657	-7.561	-4.443	-1.365	-6.606	-22.543	-19.465	-24.706	-15.813	-
6.9	-10.997	-2.362	-7.828	-5.062	-1.194	-6.713	-23.162	-19.294	-24.813	-15.971	-
7	-12.883	-2.069	-8.110	-5.845	-1.048	-6.862	-23.945	-19.148	-24.962	-16.000	-
7.1	-15.014	-1.815	-8.359	-6.798	-0.954	-7.065	-24.898	-19.054	-25.165	-16.000	-
7.2	-17.306	-1.574	-8.586	-7.951	-0.891	-7.292	-26.051	-18.991	-25.392	-16.000	-
7.3	-19.347	-1.365	-8.744	-9.352	-0.875	-7.561	-27.452	-18.975	-25.661	-16.000	-
7.4	-20.410	-1.194	-8.832	-10.997	-0.875	-7.804	-29.097	-18.975	-25.904	-16.000	-
7.5	-20.333	-1.048	-8.824	-12.883	-0.875	-7.342	-30.983	-18.975	-25.442	-16.000	-
7.6	-19.705	-0.954	-8.709	-15.014	-0.875	-6.884	-33.114	-18.975	-24.984	-16.000	-
7.7	-19.060	-0.891	-8.501	-16.364	-0.875	-6.379	-34.464	-18.975	-24.479	-16.000	-
7.8	-18.566	-0.875	-8.178	-15.423	-0.875	-5.919	-33.523	-18.975	-24.019	-16.000	-
7.9	-18.163	-0.904	-7.804	-14.388	-0.875	-5.446	-32.488	-18.975	-23.546	-16.000	-
8	-17.726	-0.969	-7.342	-13.360	-0.875	-5.041	-31.460	-18.975	-23.141	-16.000	-
8.1	-17.136	-1.087	-6.884	-12.434	-0.875	-4.644	-30.534	-18.975	-22.744	-16.000	-
8.2	-16.364	-1.233	-6.379	-11.646	-0.875	-4.322	-29.746	-18.975	-22.422	-16.000	-
8.3	-15.423	-1.429	-5.919	-11.000	-0.875	-4.020	-29.100	-18.975	-22.120	-16.000	-
8.4	-14.388	-1.655	-5.446	-10.506	-0.904	-3.789	-28.606	-19.004	-21.889	-16.000	-
8.5	-13.360	-1.917	-5.041	-10.178	-0.969	-3.582	-28.278	-19.069	-21.682	-16.000	-
8.6	-12.434	-2.221	-4.644	-10.010	-1.087	-3.436	-28.110	-19.187	-21.536	-16.000	-
8.7	-11.646	-2.545	-4.322	-9.991	-1.233	-3.315	-28.091	-19.333	-21.415	-16.000	-
8.8	-11.000	-2.927	-4.020	-9.991	-1.429	-3.315	-28.091	-19.529	-21.415	-16.000	-
8.9	-10.506	-3.338	-3.789	-9.991	-1.655	-3.315	-28.091	-19.755	-21.415	-16.000	-
9	-10.178	-3.808	-3.582	-9.991	-1.917	-3.315	-28.091	-20.017	-21.415	-16.000	-
9.1	-10.010	-4.350	-3.436	-9.991	-2.221	-3.315	-28.091	-20.321	-21.415	-16.000	-
9.2	-9.991	-4.955	-3.315	-9.991	-2.545	-3.315	-28.091	-20.645	-21.415	-16.000	-

Nominal 14.0GHz, V-Polarized, X-pol PSD, with -18.1dBW/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): 27.5
 a2 Antenna Model: SR3000 d Frequency at which gain was measured (GHz): 14.25
 a3 Antenna ID: RAS e Max input power density (dBW/4kHz): -18.1
 b Transmit Band (b): 14GHz Pattern ID Table C3
 Pattern Description: 14.25GHz H-polarization, X-polarized tangent to the geosynchronous plane

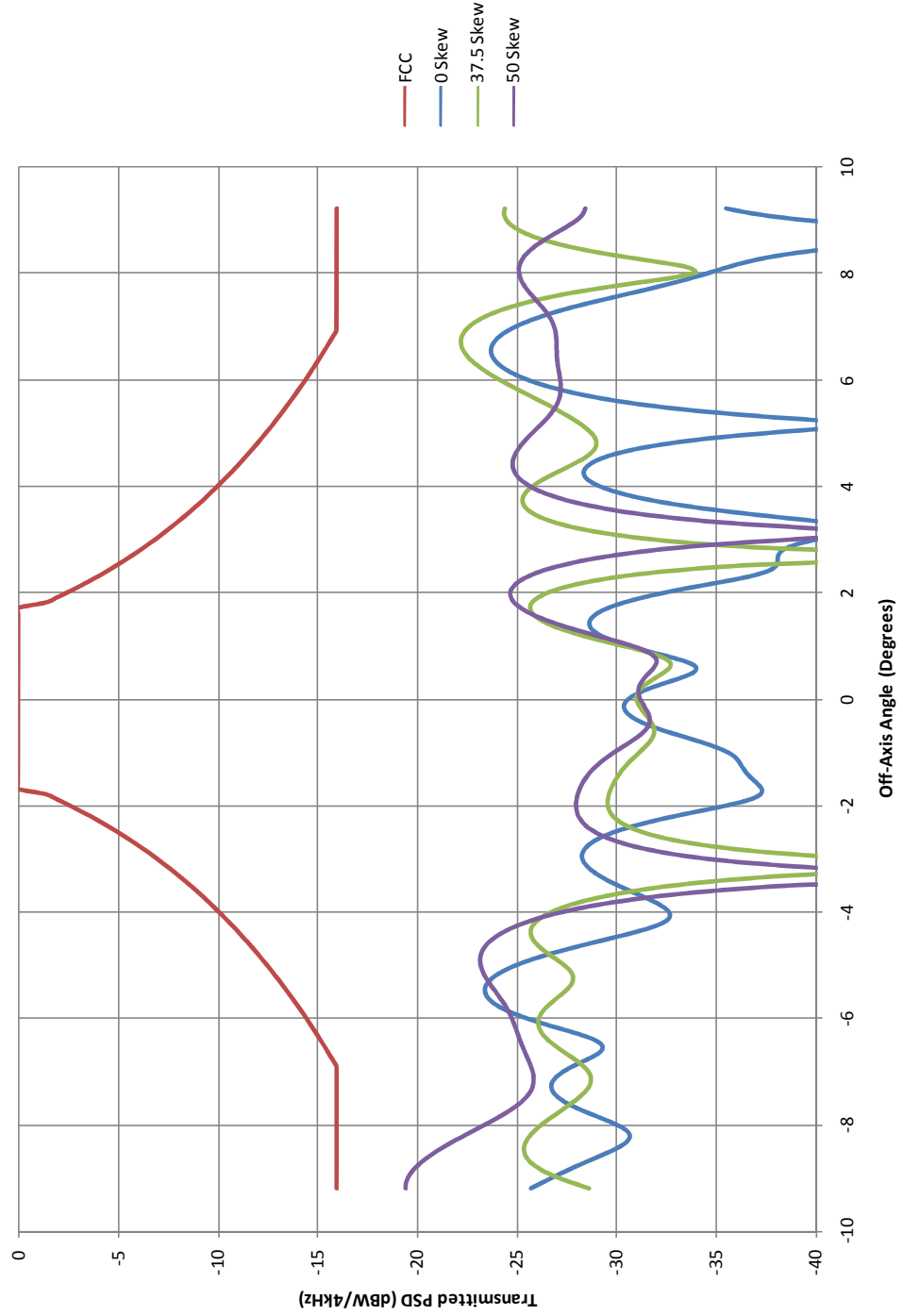
Offset Angles (Degrees)	Nominal X-Pol Gain Along Tangent to Geo Arc (dBi)			Worst Case X-Pol Gain Along Tangent to Geo Arc (dBi)			Worst Case X-Pol PSD Along Tangent to Geo Arc input PSD = -18.1dBW/4kHz (dBW/4kHz)			FCC Mask (dBW/4kHz)	Mask Exceedence (dB)
	0° Skew	37.5° Skew	50° Skew	0° Skew	37.5° Skew	50° Skew	0° Skew	37.5° Skew	50° Skew		
	-9.2	-7.616	-10.559	-1.318	-7.616	-7.596	-1.318	-25.716	-25.696		
-9.1	-8.140	-9.742	-1.335	-7.616	-7.394	-1.318	-25.716	-25.494	-19.418	-16.000	-
-9	-8.676	-9.011	-1.436	-7.616	-7.305	-1.318	-25.716	-25.405	-19.418	-16.000	-
-8.9	-9.228	-8.398	-1.601	-7.616	-7.305	-1.318	-25.716	-25.405	-19.418	-16.000	-
-8.8	-9.806	-7.937	-1.840	-7.616	-7.305	-1.318	-25.716	-25.405	-19.418	-16.000	-
-8.7	-10.408	-7.596	-2.132	-7.616	-7.305	-1.318	-25.716	-25.405	-19.418	-16.000	-
-8.6	-11.029	-7.394	-2.487	-8.140	-7.305	-1.335	-26.240	-25.405	-19.435	-16.000	-
-8.5	-11.633	-7.305	-2.885	-8.676	-7.305	-1.436	-26.776	-25.405	-19.536	-16.000	-
-8.4	-12.148	-7.321	-3.328	-9.228	-7.305	-1.601	-27.328	-25.405	-19.701	-16.000	-
-8.3	-12.490	-7.435	-3.802	-9.806	-7.305	-1.840	-27.906	-25.405	-19.940	-16.000	-
-8.2	-12.574	-7.623	-4.301	-9.953	-7.305	-2.132	-28.053	-25.405	-20.232	-16.000	-
-8.1	-12.357	-7.889	-4.808	-9.411	-7.305	-2.487	-27.511	-25.405	-20.587	-16.000	-
-8	-11.879	-8.196	-5.319	-9.005	-7.305	-2.885	-27.105	-25.405	-20.985	-16.000	-
-7.9	-11.255	-8.555	-5.809	-8.745	-7.321	-3.328	-26.845	-25.421	-21.428	-16.000	-
-7.8	-10.588	-8.927	-6.275	-8.636	-7.435	-3.802	-26.736	-25.535	-21.902	-16.000	-
-7.7	-9.953	-9.308	-6.690	-8.636	-7.623	-4.301	-26.736	-25.723	-22.401	-16.000	-
-7.6	-9.411	-9.688	-7.051	-8.636	-7.889	-4.808	-26.736	-25.989	-22.908	-16.000	-
-7.5	-9.005	-10.026	-7.337	-8.636	-8.196	-5.319	-26.736	-26.296	-23.419	-16.000	-
-7.4	-8.745	-10.324	-7.548	-8.636	-8.555	-5.809	-26.736	-26.655	-23.909	-16.000	-
-7.3	-8.636	-10.537	-7.678	-8.636	-8.927	-6.275	-26.736	-27.027	-24.375	-16.000	-
-7.2	-8.690	-10.646	-7.738	-8.636	-9.308	-6.690	-26.736	-27.408	-24.790	-16.000	-
-7.1	-8.909	-10.640	-7.731	-8.636	-9.139	-7.051	-26.736	-27.239	-25.151	-16.000	-
-7	-9.276	-10.501	-7.679	-8.636	-8.774	-7.140	-26.736	-26.874	-25.240	-16.000	-
-6.9	-9.761	-10.254	-7.589	-8.636	-8.462	-7.035	-26.736	-26.562	-25.135	-15.971	-
-6.8	-10.321	-9.915	-7.482	-8.636	-8.221	-6.941	-26.736	-26.321	-25.041	-15.813	-
-6.7	-10.855	-9.535	-7.365	-8.690	-8.072	-6.842	-26.790	-26.172	-24.942	-15.652	-
-6.6	-11.182	-9.139	-7.249	-8.159	-8.014	-6.745	-26.259	-26.114	-24.845	-15.489	-
-6.5	-11.154	-8.774	-7.140	-7.339	-8.014	-6.631	-25.439	-26.114	-24.731	-15.323	-
-6.4	-10.728	-8.462	-7.035	-6.637	-8.014	-6.506	-24.737	-26.114	-24.606	-15.154	-
-6.3	-9.980	-8.221	-6.941	-6.069	-8.014	-6.355	-24.169	-26.114	-24.455	-14.984	-
-6.2	-9.067	-8.072	-6.842	-5.661	-8.014	-6.192	-23.761	-26.114	-24.292	-14.810	-
-6.1	-8.159	-8.014	-6.745	-5.412	-8.014	-6.001	-23.512	-26.114	-24.101	-14.633	-

-6	-7.339	-8.058	-6.631	-5.308	-8.014	-5.814	-23.408	-26.114	-23.914	-14.454	-
-5.9	-6.637	-8.194	-6.506	-5.308	-8.014	-5.613	-23.408	-26.114	-23.713	-14.271	-
-5.8	-6.069	-8.419	-6.355	-5.308	-8.014	-5.438	-23.408	-26.114	-23.538	-14.086	-
-5.7	-5.661	-8.708	-6.192	-5.308	-8.014	-5.272	-23.408	-26.114	-23.372	-13.897	-
-5.6	-5.412	-9.035	-6.001	-5.308	-8.014	-5.153	-23.408	-26.114	-23.253	-13.705	-
-5.5	-5.308	-9.355	-5.814	-5.308	-8.058	-5.071	-23.408	-26.158	-23.171	-13.509	-
-5.4	-5.344	-9.612	-5.613	-5.308	-8.194	-5.056	-23.408	-26.294	-23.156	-13.310	-
-5.3	-5.528	-9.754	-5.438	-5.308	-8.419	-5.056	-23.408	-26.519	-23.156	-13.107	-
-5.2	-5.862	-9.742	-5.272	-5.308	-8.179	-5.056	-23.408	-26.279	-23.156	-12.900	-
-5.1	-6.331	-9.575	-5.153	-5.308	-7.898	-5.056	-23.408	-25.998	-23.156	-12.689	-
-5	-6.933	-9.278	-5.071	-5.308	-7.710	-5.056	-23.408	-25.810	-23.156	-12.474	-
-4.9	-7.671	-8.913	-5.056	-5.344	-7.636	-5.056	-23.444	-25.736	-23.156	-12.255	-
-4.8	-8.548	-8.529	-5.099	-5.528	-7.636	-5.056	-23.628	-25.736	-23.156	-12.031	-
-4.7	-9.533	-8.179	-5.227	-5.862	-7.636	-5.056	-23.962	-25.736	-23.156	-11.802	-
-4.6	-10.589	-7.898	-5.436	-6.331	-7.636	-5.056	-24.431	-25.736	-23.156	-11.569	-
-4.5	-11.677	-7.710	-5.748	-6.933	-7.636	-5.056	-25.033	-25.736	-23.156	-11.330	-
-4.4	-12.741	-7.636	-6.166	-7.671	-7.636	-5.056	-25.771	-25.736	-23.156	-11.086	-
-4.3	-13.664	-7.688	-6.710	-8.548	-7.636	-5.099	-26.648	-25.736	-23.199	-10.837	-
-4.2	-14.305	-7.880	-7.398	-9.533	-7.636	-5.227	-27.633	-25.736	-23.327	-10.581	-
-4.1	-14.588	-8.223	-8.247	-10.589	-7.636	-5.436	-28.689	-25.736	-23.536	-10.320	-
-4	-14.520	-8.734	-9.308	-11.677	-7.636	-5.748	-29.777	-25.736	-23.848	-10.051	-
-3.9	-14.185	-9.439	-10.605	-11.367	-7.636	-6.166	-29.467	-25.736	-24.266	-9.777	-
-3.8	-13.692	-10.356	-12.256	-10.920	-7.688	-6.710	-29.020	-25.788	-24.810	-9.495	-
-3.7	-13.113	-11.556	-14.346	-10.564	-7.880	-7.398	-28.664	-25.980	-25.498	-9.205	-
-3.6	-12.501	-13.087	-17.218	-10.310	-8.223	-8.247	-28.410	-26.323	-26.347	-8.908	-
-3.5	-11.903	-15.094	-21.441	-10.183	-8.734	-9.308	-28.283	-26.834	-27.408	-8.602	-
-3.4	-11.367	-17.856	-29.763	-10.183	-9.439	-10.605	-28.283	-27.539	-28.705	-8.287	-
-3.3	-10.920	-21.938	-32.858	-10.183	-10.356	-12.256	-28.283	-28.456	-30.356	-7.963	-
-3.2	-10.564	-29.724	-23.124	-10.183	-11.556	-12.037	-28.283	-29.656	-30.137	-7.629	-
-3.1	-10.310	-34.503	-18.862	-10.183	-13.087	-11.291	-28.283	-31.187	-29.391	-7.284	-
-3	-10.183	-24.328	-16.164	-10.183	-13.137	-10.771	-28.283	-31.237	-28.871	-6.928	-
-2.9	-10.207	-19.853	-14.357	-10.183	-12.469	-10.379	-28.283	-30.569	-28.479	-6.560	-
-2.8	-10.379	-17.184	-13.003	-10.183	-12.019	-10.133	-28.283	-30.119	-28.233	-6.179	-
-2.7	-10.700	-15.358	-12.037	-10.183	-11.727	-9.965	-28.283	-29.827	-28.065	-5.784	-
-2.6	-11.187	-14.060	-11.291	-10.183	-11.559	-9.891	-28.283	-29.659	-27.991	-5.374	-
-2.5	-11.869	-13.137	-10.771	-10.183	-11.494	-9.861	-28.283	-29.594	-27.961	-4.949	-
-2.4	-12.743	-12.469	-10.379	-10.207	-11.494	-9.861	-28.307	-29.594	-27.961	-4.505	-
-2.3	-13.787	-12.019	-10.133	-10.379	-11.494	-9.861	-28.479	-29.594	-27.961	-4.043	-
-2.2	-14.981	-11.727	-9.965	-10.700	-11.494	-9.861	-28.800	-29.594	-27.961	-3.561	-
-2.1	-16.281	-11.559	-9.891	-11.187	-11.494	-9.861	-29.287	-29.594	-27.961	-3.055	-
-2	-17.571	-11.494	-9.861	-11.869	-11.494	-9.861	-29.969	-29.594	-27.961	-2.526	-
-1.9	-18.596	-11.497	-9.892	-12.743	-11.494	-9.861	-30.843	-29.594	-27.961	-1.969	-
-1.8	-19.140	-11.555	-9.947	-13.787	-11.494	-9.861	-31.887	-29.594	-27.961	-1.382	-
-1.7	-19.199	-11.653	-10.049	-14.981	-11.494	-9.861	-33.081	-29.594	-27.961	-	-
-1.6	-18.975	-11.777	-10.171	-16.281	-11.494	-9.861	-34.381	-29.594	-27.961	-	-
-1.5	-18.690	-11.931	-10.340	-17.429	-11.494	-9.861	-35.529	-29.594	-27.961	-	-
-1.4	-18.434	-12.108	-10.539	-16.783	-11.497	-9.892	-34.883	-29.597	-27.992	-	-
-1.3	-18.239	-12.319	-10.793	-15.977	-11.555	-9.947	-34.077	-29.655	-28.047	-	-
-1.2	-18.072	-12.558	-11.088	-15.099	-11.653	-10.049	-33.199	-29.753	-28.149	-	-
-1.1	-17.847	-12.829	-11.438	-14.235	-11.777	-10.171	-32.335	-29.877	-28.271	-	-
-1	-17.429	-13.110	-11.826	-13.484	-11.931	-10.340	-31.584	-30.031	-28.440	-	-
-0.9	-16.783	-13.390	-12.243	-12.904	-12.108	-10.539	-31.004	-30.208	-28.639	-	-
-0.8	-15.977	-13.620	-12.655	-12.509	-12.319	-10.793	-30.609	-30.419	-28.893	-	-
-0.7	-15.099	-13.777	-13.036	-12.306	-12.558	-11.088	-30.406	-30.658	-29.188	-	-
-0.6	-14.235	-13.828	-13.328	-12.306	-12.829	-11.438	-30.406	-30.929	-29.538	-	-
-0.5	-13.484	-13.749	-13.516	-12.306	-12.938	-11.826	-30.406	-31.038	-29.926	-	-
-0.4	-12.904	-13.596	-13.563	-12.306	-12.938	-12.243	-30.406	-31.038	-30.343	-	-
-0.3	-12.509	-13.374	-13.509	-12.306	-12.938	-12.655	-30.406	-31.038	-30.755	-	-
-0.2	-12.306	-13.164	-13.363	-12.306	-12.938	-13.005	-30.406	-31.038	-31.105	-	-
-0.1	-12.313	-13.009	-13.213	-12.306	-12.938	-13.005	-30.406	-31.038	-31.105	-	-

0	-12.550	-12.938	-13.067	-12.306	-12.938	-13.005	-30.406	-31.038	-31.105	-
0.1	-13.005	-13.005	-13.005	-12.306	-12.938	-13.005	-30.406	-31.038	-31.105	-
0.2	-13.652	-13.192	-13.012	-12.306	-12.938	-13.005	-30.406	-31.038	-31.105	-
0.3	-14.439	-13.523	-13.135	-12.306	-12.938	-13.005	-30.406	-31.038	-31.105	-
0.4	-15.244	-13.941	-13.325	-12.313	-12.938	-13.005	-30.413	-31.038	-31.105	-
0.5	-15.817	-14.351	-13.585	-12.365	-12.099	-12.551	-30.465	-30.199	-30.651	-
0.6	-15.866	-14.630	-13.797	-11.588	-11.016	-11.648	-29.688	-29.116	-29.748	-
0.7	-15.311	-14.555	-13.909	-11.014	-10.031	-10.672	-29.114	-28.131	-28.772	-
0.8	-14.359	-14.036	-13.742	-10.664	-9.175	-9.738	-28.764	-27.275	-27.838	-
0.9	-13.314	-13.174	-13.299	-10.544	-8.508	-8.881	-28.644	-26.608	-26.981	-
1	-12.365	-12.099	-12.551	-10.544	-8.013	-8.152	-28.644	-26.113	-26.252	-
1.1	-11.588	-11.016	-11.648	-10.544	-7.712	-7.543	-28.644	-25.812	-25.643	-
1.2	-11.014	-10.031	-10.672	-10.544	-7.610	-7.088	-28.644	-25.710	-25.188	-
1.3	-10.664	-9.175	-9.738	-10.544	-7.610	-6.761	-28.644	-25.710	-24.861	-
1.4	-10.544	-8.508	-8.881	-10.544	-7.610	-6.599	-28.644	-25.710	-24.699	-
1.5	-10.642	-8.013	-8.152	-10.544	-7.610	-6.569	-28.644	-25.710	-24.669	-
1.6	-10.955	-7.712	-7.543	-10.544	-7.610	-6.569	-28.644	-25.710	-24.669	-
1.7	-11.495	-7.610	-7.088	-10.544	-7.610	-6.569	-28.644	-25.710	-24.669	-
1.8	-12.283	-7.700	-6.761	-10.544	-7.610	-6.569	-28.644	-25.710	-24.669	-1.382
1.9	-13.295	-8.035	-6.599	-10.544	-7.610	-6.569	-28.644	-25.710	-24.669	-1.969
2	-14.513	-8.593	-6.569	-10.642	-7.610	-6.569	-28.742	-25.710	-24.669	-2.526
2.1	-15.907	-9.459	-6.720	-10.955	-7.610	-6.569	-29.055	-25.710	-24.669	-3.055
2.2	-17.382	-10.683	-7.013	-11.495	-7.610	-6.569	-29.595	-25.710	-24.669	-3.561
2.3	-18.695	-12.358	-7.522	-12.283	-7.700	-6.569	-30.383	-25.800	-24.669	-4.043
2.4	-19.565	-14.822	-8.202	-13.295	-8.035	-6.569	-31.395	-26.135	-24.669	-4.505
2.5	-19.940	-18.494	-9.168	-14.513	-8.593	-6.569	-32.613	-26.693	-24.669	-4.949
2.6	-20.007	-25.393	-10.383	-15.907	-9.459	-6.720	-34.007	-27.559	-24.820	-5.374
2.7	-20.050	-31.430	-12.046	-17.382	-9.918	-7.013	-35.482	-28.018	-25.113	-5.784
2.8	-20.329	-21.111	-14.177	-18.695	-8.881	-7.522	-36.795	-26.981	-25.622	-6.179
2.9	-21.023	-16.281	-17.225	-19.565	-8.127	-8.202	-37.665	-26.227	-26.302	-6.560
3	-22.135	-13.378	-21.343	-17.694	-7.632	-9.168	-35.794	-25.732	-27.268	-6.928
3.1	-23.416	-11.377	-24.829	-15.631	-7.337	-10.383	-33.731	-25.437	-28.483	-7.284
3.2	-23.901	-9.918	-21.472	-13.956	-7.227	-9.591	-32.056	-25.327	-27.691	-7.629
3.3	-22.546	-8.881	-17.306	-12.655	-7.227	-8.696	-30.755	-25.327	-26.796	-7.963
3.4	-20.114	-8.127	-14.467	-11.672	-7.227	-7.986	-29.772	-25.327	-26.086	-8.287
3.5	-17.694	-7.632	-12.337	-10.959	-7.227	-7.480	-29.059	-25.327	-25.580	-8.602
3.6	-15.631	-7.337	-10.806	-10.495	-7.227	-7.101	-28.595	-25.327	-25.201	-8.908
3.7	-13.956	-7.227	-9.591	-10.279	-7.227	-6.865	-28.379	-25.327	-24.965	-9.205
3.8	-12.655	-7.279	-8.696	-10.279	-7.227	-6.724	-28.379	-25.327	-24.824	-9.495
3.9	-11.672	-7.462	-7.986	-10.279	-7.227	-6.687	-28.379	-25.327	-24.787	-9.777
4	-10.959	-7.792	-7.480	-10.279	-7.227	-6.687	-28.379	-25.327	-24.787	-10.051
4.1	-10.495	-8.200	-7.101	-10.279	-7.227	-6.687	-28.379	-25.327	-24.787	-10.320
4.2	-10.279	-8.701	-6.865	-10.279	-7.227	-6.687	-28.379	-25.327	-24.787	-10.581
4.3	-10.307	-9.244	-6.724	-10.279	-7.279	-6.687	-28.379	-25.379	-24.787	-10.837
4.4	-10.577	-9.770	-6.687	-10.279	-7.462	-6.687	-28.379	-25.562	-24.787	-11.086
4.5	-11.107	-10.266	-6.723	-10.279	-7.792	-6.687	-28.379	-25.892	-24.787	-11.330
4.6	-11.939	-10.632	-6.833	-10.279	-8.200	-6.687	-28.379	-26.300	-24.787	-11.569
4.7	-13.137	-10.867	-6.998	-10.279	-8.701	-6.687	-28.379	-26.801	-24.787	-11.802
4.8	-14.781	-10.928	-7.208	-10.307	-9.244	-6.687	-28.407	-27.344	-24.787	-12.031
4.9	-17.014	-10.843	-7.453	-10.577	-9.041	-6.687	-28.677	-27.141	-24.787	-12.255
5	-20.011	-10.627	-7.715	-11.107	-8.551	-6.723	-29.207	-26.651	-24.823	-12.474
5.1	-23.119	-10.308	-7.989	-11.682	-8.028	-6.833	-29.782	-26.128	-24.933	-12.689
5.2	-22.532	-9.942	-8.250	-10.216	-7.517	-6.998	-28.316	-25.617	-25.098	-12.900
5.3	-19.046	-9.497	-8.498	-9.042	-6.984	-7.208	-27.142	-25.084	-25.308	-13.107
5.4	-15.943	-9.041	-8.704	-8.092	-6.478	-7.453	-26.192	-24.578	-25.553	-13.310
5.5	-13.547	-8.551	-8.877	-7.322	-5.997	-7.715	-25.422	-24.097	-25.815	-13.509
5.6	-11.682	-8.028	-8.993	-6.714	-5.540	-7.989	-24.814	-23.640	-26.089	-13.705
5.7	-10.216	-7.517	-9.070	-6.252	-5.146	-8.250	-24.352	-23.246	-26.350	-13.897
5.8	-9.042	-6.984	-9.093	-5.919	-4.797	-8.498	-24.019	-22.897	-26.598	-14.086
5.9	-8.092	-6.478	-9.093	-5.707	-4.517	-8.704	-23.807	-22.617	-26.804	-14.271

6	-7.322	-5.997	-9.056	-5.611	-4.313	-8.877	-23.711	-22.413	-26.977	-14.454	-
6.1	-6.714	-5.540	-9.020	-5.611	-4.180	-8.880	-23.711	-22.280	-26.980	-14.633	-
6.2	-6.252	-5.146	-8.968	-5.611	-4.143	-8.880	-23.711	-22.243	-26.980	-14.810	-
6.3	-5.919	-4.797	-8.937	-5.611	-4.143	-8.855	-23.711	-22.243	-26.955	-14.984	-
6.4	-5.707	-4.517	-8.903	-5.611	-4.143	-8.822	-23.711	-22.243	-26.922	-15.154	-
6.5	-5.611	-4.313	-8.895	-5.611	-4.143	-8.741	-23.711	-22.243	-26.841	-15.323	-
6.6	-5.638	-4.180	-8.880	-5.611	-4.143	-8.631	-23.711	-22.243	-26.731	-15.489	-
6.7	-5.784	-4.143	-8.881	-5.611	-4.143	-8.466	-23.711	-22.243	-26.566	-15.652	-
6.8	-6.047	-4.192	-8.855	-5.611	-4.143	-8.271	-23.711	-22.243	-26.371	-15.813	-
6.9	-6.432	-4.350	-8.822	-5.611	-4.143	-8.041	-23.711	-22.243	-26.141	-15.971	-
7	-6.948	-4.614	-8.741	-5.611	-4.143	-7.803	-23.711	-22.243	-25.903	-16.000	-
7.1	-7.594	-5.002	-8.631	-5.638	-4.143	-7.569	-23.738	-22.243	-25.669	-16.000	-
7.2	-8.363	-5.535	-8.466	-5.784	-4.143	-7.355	-23.884	-22.243	-25.455	-16.000	-
7.3	-9.251	-6.210	-8.271	-6.047	-4.192	-7.184	-24.147	-22.292	-25.284	-16.000	-
7.4	-10.260	-7.084	-8.041	-6.432	-4.350	-7.059	-24.532	-22.450	-25.159	-16.000	-
7.5	-11.370	-8.153	-7.803	-6.948	-4.614	-7.003	-25.048	-22.714	-25.103	-16.000	-
7.6	-12.521	-9.461	-7.569	-7.594	-5.002	-7.003	-25.694	-23.102	-25.103	-16.000	-
7.7	-13.656	-11.067	-7.355	-8.363	-5.535	-7.003	-26.463	-23.635	-25.103	-16.000	-
7.8	-14.728	-12.878	-7.184	-9.251	-6.210	-7.003	-27.351	-24.310	-25.103	-16.000	-
7.9	-15.723	-14.739	-7.059	-10.260	-7.084	-7.003	-28.360	-25.184	-25.103	-16.000	-
8	-16.630	-15.872	-7.003	-11.370	-8.153	-7.003	-29.470	-26.253	-25.103	-16.000	-
8.1	-17.508	-15.455	-7.010	-12.521	-8.355	-7.003	-30.621	-26.455	-25.103	-16.000	-
8.2	-18.497	-13.929	-7.103	-13.656	-7.583	-7.003	-31.756	-25.683	-25.103	-16.000	-
8.3	-19.793	-12.191	-7.265	-14.728	-7.015	-7.003	-32.828	-25.115	-25.103	-16.000	-
8.4	-21.656	-10.628	-7.519	-15.723	-6.619	-7.003	-33.823	-24.719	-25.103	-16.000	-
8.5	-24.370	-9.365	-7.834	-16.630	-6.394	-7.003	-34.730	-24.494	-25.103	-16.000	-
8.6	-28.523	-8.355	-8.233	-17.508	-6.298	-7.010	-35.608	-24.398	-25.110	-16.000	-
8.7	-32.809	-7.583	-8.663	-17.409	-6.298	-7.103	-35.509	-24.398	-25.203	-16.000	-
8.8	-28.588	-7.015	-9.136	-17.409	-6.298	-7.265	-35.509	-24.398	-25.365	-16.000	-
8.9	-23.933	-6.619	-9.572	-17.409	-6.298	-7.519	-35.509	-24.398	-25.619	-16.000	-
9	-20.902	-6.394	-9.965	-17.409	-6.298	-7.834	-35.509	-24.398	-25.934	-16.000	-
9.1	-18.840	-6.298	-10.214	-17.409	-6.298	-8.233	-35.509	-24.398	-26.333	-16.000	-
9.2	-17.409	-6.343	-10.328	-17.409	-6.298	-8.663	-35.509	-24.398	-26.763	-16.000	-

Nominal 14.25GHz, H-Polarized, X-pol PSD, with -18.1dBW/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): 27.5
 a2 Antenna Model: SR3000 d Frequency at which gain was measured (GHz): 14.25
 a3 Antenna ID: RAS e Max input power density (dBW/4kHz): -18.1
 b Transmit Band (b): 14GHz Pattern ID Table C4
 Pattern Description: 14.25GHz V-polarization, X-polarized tangent to the geosynchronous plane

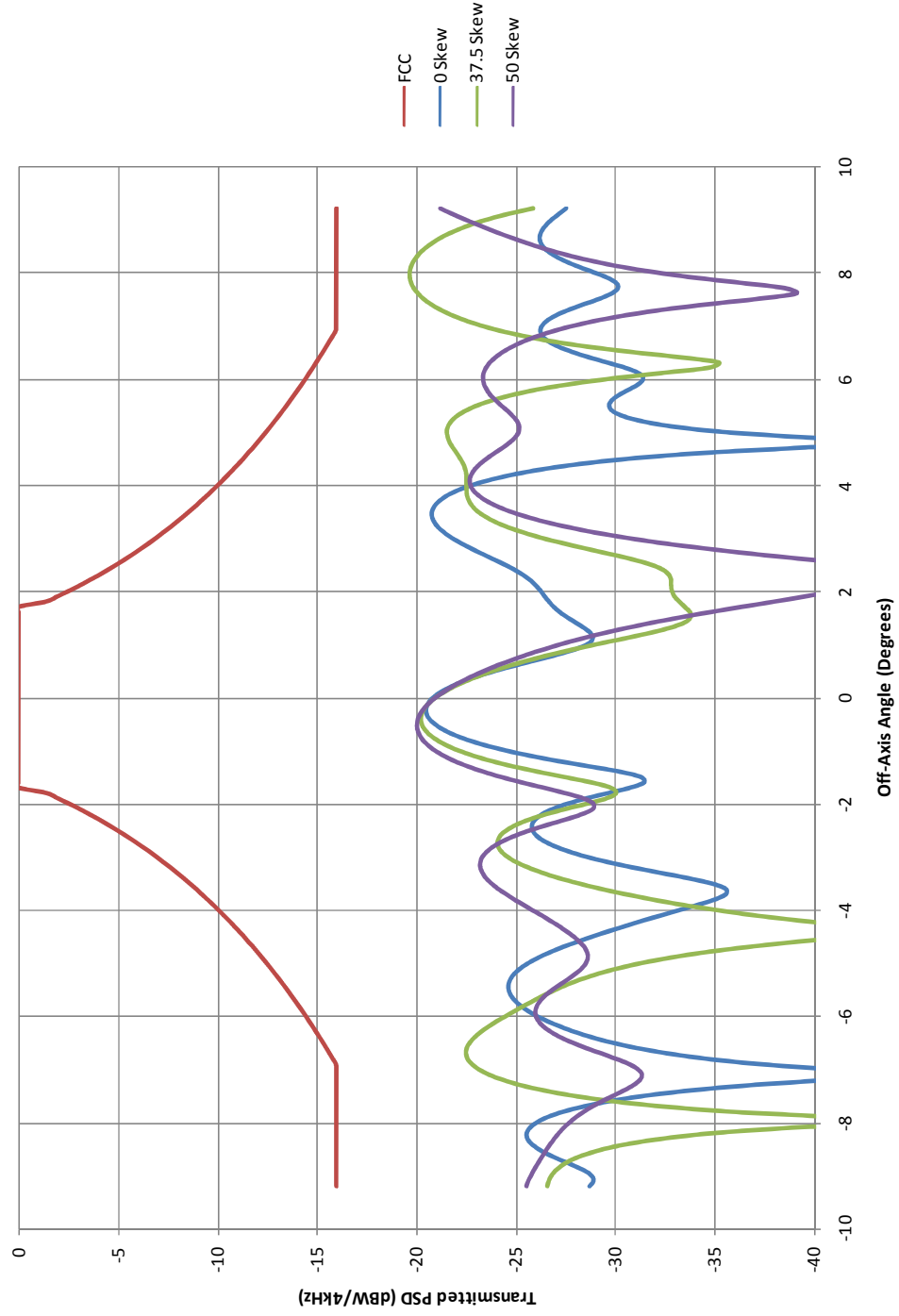
Offset Angles (Degrees)	Nominal X-Pol Gain Along Tangent to Geo Arc (dBi)			Worst Case X-Pol Gain Along Tangent to Geo Arc (dBi)			Worst Case X-Pol PSD Along Tangent to Geo Arc input PSD = -18.1dBW/4kHz (dBW/4kHz)			FCC Mask (dBW/4kHz)	Mask Exceedence (dB)
	0° Skew	37.5° Skew	50° Skew	0° Skew	37.5° Skew	50° Skew	0° Skew	37.5° Skew	50° Skew		
	-9.2	-10.637	-8.473	-7.417	-9.114	-8.473	-7.417	-27.214	-26.573		
-9.1	-10.838	-8.560	-7.513	-8.531	-8.473	-7.417	-26.631	-26.573	-25.517	-16.000	-
-9	-10.725	-8.692	-7.645	-8.053	-8.473	-7.417	-26.153	-26.573	-25.517	-16.000	-
-8.9	-10.334	-8.917	-7.784	-7.703	-8.473	-7.417	-25.803	-26.573	-25.517	-16.000	-
-8.8	-9.755	-9.261	-7.945	-7.504	-8.473	-7.417	-25.604	-26.573	-25.517	-16.000	-
-8.7	-9.114	-9.730	-8.102	-7.485	-8.473	-7.417	-25.585	-26.573	-25.517	-16.000	-
-8.6	-8.531	-10.437	-8.276	-7.485	-8.560	-7.513	-25.585	-26.660	-25.613	-16.000	-
-8.5	-8.053	-11.354	-8.445	-7.485	-8.692	-7.645	-25.585	-26.792	-25.745	-16.000	-
-8.4	-7.703	-12.641	-8.634	-7.485	-8.917	-7.784	-25.585	-27.017	-25.884	-16.000	-
-8.3	-7.504	-14.436	-8.826	-7.485	-9.261	-7.945	-25.585	-27.361	-26.045	-16.000	-
-8.2	-7.485	-16.935	-9.049	-7.485	-9.730	-8.102	-25.585	-27.830	-26.202	-16.000	-
-8.1	-7.644	-20.820	-9.291	-7.485	-10.437	-8.276	-25.585	-28.537	-26.376	-16.000	-
-8	-7.986	-25.377	-9.579	-7.485	-9.789	-8.445	-25.585	-27.889	-26.545	-16.000	-
-7.9	-8.531	-22.805	-9.905	-7.485	-8.311	-8.634	-25.585	-26.411	-26.734	-16.000	-
-7.8	-9.315	-17.727	-10.295	-7.485	-7.130	-8.826	-25.585	-25.230	-26.926	-16.000	-
-7.7	-10.356	-14.263	-10.731	-7.485	-6.232	-9.049	-25.585	-24.332	-27.149	-16.000	-
-7.6	-11.695	-11.697	-11.235	-7.644	-5.530	-9.291	-25.744	-23.630	-27.391	-16.000	-
-7.5	-13.420	-9.789	-11.765	-7.986	-5.019	-9.579	-26.086	-23.119	-27.679	-16.000	-
-7.4	-15.701	-8.311	-12.309	-8.531	-4.669	-9.905	-26.631	-22.769	-28.005	-16.000	-
-7.3	-18.741	-7.130	-12.790	-9.315	-4.461	-10.295	-27.415	-22.561	-28.395	-16.000	-
-7.2	-22.615	-6.232	-13.121	-10.356	-4.388	-10.731	-28.456	-22.488	-28.831	-16.000	-
-7.1	-25.187	-5.530	-13.221	-11.695	-4.388	-10.402	-29.795	-22.488	-28.502	-16.000	-
-7	-22.542	-5.019	-13.011	-11.760	-4.388	-9.725	-29.860	-22.488	-27.825	-16.000	-
-6.9	-19.036	-4.669	-12.550	-10.746	-4.388	-9.128	-28.846	-22.488	-27.228	-15.971	-
-6.8	-16.433	-4.461	-11.883	-9.903	-4.388	-8.648	-28.003	-22.488	-26.748	-15.813	-
-6.7	-14.501	-4.388	-11.149	-9.176	-4.388	-8.276	-27.276	-22.488	-26.376	-15.652	-
-6.6	-12.991	-4.425	-10.402	-8.537	-4.388	-8.028	-26.637	-22.488	-26.128	-15.489	-
-6.5	-11.760	-4.578	-9.725	-7.984	-4.388	-7.891	-26.084	-22.488	-25.991	-15.323	-
-6.4	-10.746	-4.811	-9.128	-7.525	-4.388	-7.870	-25.625	-22.488	-25.970	-15.154	-
-6.3	-9.903	-5.129	-8.648	-7.154	-4.388	-7.870	-25.254	-22.488	-25.970	-14.984	-
-6.2	-9.176	-5.507	-8.276	-6.866	-4.388	-7.870	-24.966	-22.488	-25.970	-14.810	-
-6.1	-8.537	-5.926	-8.028	-6.666	-4.425	-7.870	-24.766	-22.525	-25.970	-14.633	-

-6	-7.984	-6.385	-7.891	-6.569	-4.578	-7.870	-24.669	-22.678	-25.970	-14.454	-
-5.9	-7.525	-6.854	-7.870	-6.569	-4.811	-7.870	-24.669	-22.911	-25.970	-14.271	-
-5.8	-7.154	-7.340	-7.954	-6.569	-5.129	-7.870	-24.669	-23.229	-25.970	-14.086	-
-5.7	-6.866	-7.836	-8.136	-6.569	-5.507	-7.870	-24.669	-23.607	-25.970	-13.897	-
-5.6	-6.666	-8.354	-8.405	-6.569	-5.926	-7.870	-24.669	-24.026	-25.970	-13.705	-
-5.5	-6.569	-8.911	-8.742	-6.569	-6.385	-7.870	-24.669	-24.485	-25.970	-13.509	-
-5.4	-6.571	-9.531	-9.124	-6.569	-6.854	-7.870	-24.669	-24.954	-25.970	-13.310	-
-5.3	-6.668	-10.239	-9.521	-6.569	-7.340	-7.954	-24.669	-25.440	-26.054	-13.107	-
-5.2	-6.864	-11.075	-9.892	-6.569	-7.836	-8.136	-24.669	-25.936	-26.236	-12.900	-
-5.1	-7.166	-12.063	-10.205	-6.569	-8.354	-8.405	-24.669	-26.454	-26.505	-12.689	-
-5	-7.573	-13.251	-10.408	-6.569	-8.911	-8.742	-24.669	-27.011	-26.842	-12.474	-
-4.9	-8.067	-14.697	-10.507	-6.571	-9.531	-9.124	-24.671	-27.631	-27.224	-12.255	-
-4.8	-8.643	-16.431	-10.458	-6.668	-10.239	-9.021	-24.768	-28.339	-27.121	-12.031	-
-4.7	-9.300	-18.579	-10.324	-6.864	-11.075	-8.581	-24.964	-29.175	-26.681	-11.802	-
-4.6	-10.032	-21.107	-10.068	-7.166	-12.063	-8.152	-25.266	-30.163	-26.252	-11.569	-
-4.5	-10.812	-23.726	-9.776	-7.573	-13.251	-7.679	-25.673	-31.351	-25.779	-11.330	-
-4.4	-11.625	-24.940	-9.401	-8.067	-14.697	-7.235	-26.167	-32.797	-25.335	-11.086	-
-4.3	-12.473	-23.543	-9.021	-8.643	-13.681	-6.773	-26.743	-31.781	-24.873	-10.837	-
-4.2	-13.352	-21.115	-8.581	-9.300	-12.334	-6.362	-27.400	-30.434	-24.462	-10.581	-
-4.1	-14.263	-18.818	-8.152	-10.032	-11.090	-5.968	-28.132	-29.190	-24.068	-10.320	-
-4	-15.202	-16.907	-7.679	-10.812	-10.018	-5.648	-28.912	-28.118	-23.748	-10.051	-
-3.9	-16.137	-15.162	-7.235	-11.625	-9.030	-5.377	-29.725	-27.130	-23.477	-9.777	-
-3.8	-16.969	-13.681	-6.773	-12.473	-8.192	-5.200	-30.573	-26.292	-23.300	-9.495	-
-3.7	-17.497	-12.334	-6.362	-12.761	-7.488	-5.098	-30.861	-25.588	-23.198	-9.205	-
-3.6	-17.451	-11.090	-5.968	-11.513	-6.893	-5.098	-29.613	-24.993	-23.198	-8.908	-
-3.5	-16.720	-10.018	-5.648	-10.449	-6.462	-5.098	-28.549	-24.562	-23.198	-8.602	-
-3.4	-15.515	-9.030	-5.377	-9.568	-6.154	-5.098	-27.668	-24.254	-23.198	-8.287	-
-3.3	-14.132	-8.192	-5.200	-8.858	-5.993	-5.098	-26.958	-24.093	-23.198	-7.963	-
-3.2	-12.761	-7.488	-5.098	-8.312	-5.989	-5.098	-26.412	-24.089	-23.198	-7.629	-
-3.1	-11.513	-6.893	-5.105	-7.949	-5.989	-5.098	-26.049	-24.089	-23.198	-7.284	-
-3	-10.449	-6.462	-5.211	-7.764	-5.989	-5.098	-25.864	-24.089	-23.198	-6.928	-
-2.9	-9.568	-6.154	-5.440	-7.750	-5.989	-5.098	-25.850	-24.089	-23.198	-6.560	-
-2.8	-8.858	-5.993	-5.787	-7.750	-5.989	-5.098	-25.850	-24.089	-23.198	-6.179	-
-2.7	-8.312	-5.989	-6.268	-7.750	-5.989	-5.098	-25.850	-24.089	-23.198	-5.784	-
-2.6	-7.949	-6.125	-6.882	-7.750	-5.989	-5.105	-25.850	-24.089	-23.205	-5.374	-
-2.5	-7.764	-6.443	-7.629	-7.750	-5.989	-5.211	-25.850	-24.089	-23.311	-4.949	-
-2.4	-7.750	-6.917	-8.484	-7.750	-5.989	-5.440	-25.850	-24.089	-23.540	-4.505	-
-2.3	-7.906	-7.582	-9.390	-7.750	-5.989	-5.787	-25.850	-24.089	-23.887	-4.043	-
-2.2	-8.254	-8.430	-10.210	-7.750	-5.989	-6.268	-25.850	-24.089	-24.368	-3.561	-
-2.1	-8.807	-9.425	-10.755	-7.750	-6.125	-6.882	-25.850	-24.225	-24.982	-3.055	-
-2	-9.563	-10.525	-10.765	-7.750	-6.443	-6.141	-25.850	-24.543	-24.241	-2.526	-
-1.9	-10.511	-11.486	-10.259	-7.750	-6.917	-5.226	-25.850	-25.017	-23.326	-1.969	-
-1.8	-11.609	-11.950	-9.311	-7.906	-6.735	-4.461	-26.006	-24.835	-22.561	-1.382	-
-1.7	-12.699	-11.660	-8.247	-8.254	-5.654	-3.789	-26.354	-23.754	-21.889	-	-
-1.6	-13.386	-10.660	-7.134	-7.628	-4.752	-3.252	-25.728	-22.852	-21.352	-	-
-1.5	-13.209	-9.314	-6.141	-6.399	-3.981	-2.798	-24.499	-22.081	-20.898	-	-
-1.4	-12.140	-7.982	-5.226	-5.351	-3.377	-2.459	-23.451	-21.477	-20.559	-	-
-1.3	-10.611	-6.735	-4.461	-4.476	-2.895	-2.195	-22.576	-20.995	-20.295	-	-
-1.2	-9.042	-5.654	-3.789	-3.780	-2.533	-2.029	-21.880	-20.633	-20.129	-	-
-1.1	-7.628	-4.752	-3.252	-3.241	-2.291	-1.931	-21.341	-20.391	-20.031	-	-
-1	-6.399	-3.981	-2.798	-2.840	-2.146	-1.921	-20.940	-20.246	-20.021	-	-
-0.9	-5.351	-3.377	-2.459	-2.570	-2.111	-1.921	-20.670	-20.211	-20.021	-	-
-0.8	-4.476	-2.895	-2.195	-2.436	-2.111	-1.921	-20.536	-20.211	-20.021	-	-
-0.7	-3.780	-2.533	-2.029	-2.433	-2.111	-1.921	-20.533	-20.211	-20.021	-	-
-0.6	-3.241	-2.291	-1.931	-2.433	-2.111	-1.921	-20.533	-20.211	-20.021	-	-
-0.5	-2.840	-2.146	-1.921	-2.433	-2.111	-1.921	-20.533	-20.211	-20.021	-	-
-0.4	-2.570	-2.111	-1.972	-2.433	-2.111	-1.921	-20.533	-20.211	-20.021	-	-
-0.3	-2.436	-2.164	-2.103	-2.433	-2.111	-1.921	-20.533	-20.211	-20.021	-	-
-0.2	-2.433	-2.313	-2.291	-2.433	-2.111	-1.921	-20.533	-20.211	-20.021	-	-
-0.1	-2.552	-2.552	-2.552	-2.433	-2.111	-1.921	-20.533	-20.211	-20.021	-	-

0	-2.792	-2.869	-2.865	-2.433	-2.111	-1.921	-20.533	-20.211	-20.021	-
0.1	-3.162	-3.288	-3.248	-2.433	-2.111	-1.972	-20.533	-20.211	-20.072	-
0.2	-3.671	-3.777	-3.678	-2.433	-2.164	-2.103	-20.533	-20.264	-20.203	-
0.3	-4.302	-4.359	-4.174	-2.433	-2.313	-2.291	-20.533	-20.413	-20.391	-
0.4	-5.053	-5.033	-4.711	-2.552	-2.552	-2.552	-20.652	-20.652	-20.652	-
0.5	-5.926	-5.778	-5.315	-2.792	-2.869	-2.865	-20.892	-20.969	-20.965	-
0.6	-6.916	-6.645	-5.959	-3.162	-3.288	-3.248	-21.262	-21.388	-21.348	-
0.7	-7.972	-7.583	-6.674	-3.671	-3.777	-3.678	-21.771	-21.877	-21.778	-
0.8	-9.001	-8.624	-7.429	-4.302	-4.359	-4.174	-22.402	-22.459	-22.274	-
0.9	-9.899	-9.785	-8.269	-5.053	-5.033	-4.711	-23.153	-23.133	-22.811	-
1	-10.534	-10.994	-9.159	-5.926	-5.778	-5.315	-24.026	-23.878	-23.415	-
1.1	-10.795	-12.285	-10.154	-6.916	-6.645	-5.959	-25.016	-24.745	-24.059	-
1.2	-10.697	-13.520	-11.217	-7.972	-7.583	-6.674	-26.072	-25.683	-24.774	-
1.3	-10.373	-14.601	-12.407	-8.587	-8.624	-7.429	-26.687	-26.724	-25.529	-
1.4	-9.953	-15.355	-13.689	-8.374	-9.785	-8.269	-26.474	-27.885	-26.369	-
1.5	-9.524	-15.690	-15.106	-8.172	-10.994	-9.159	-26.272	-29.094	-27.259	-
1.6	-9.141	-15.666	-16.624	-7.945	-12.285	-10.154	-26.045	-30.385	-28.254	-
1.7	-8.834	-15.402	-18.228	-7.657	-13.520	-11.217	-25.757	-31.620	-29.317	-
1.8	-8.587	-15.128	-19.882	-7.294	-14.601	-12.407	-25.394	-32.701	-30.507	-1.382
1.9	-8.374	-14.879	-21.465	-6.855	-14.300	-13.689	-24.955	-32.400	-31.789	-1.969
2	-8.172	-14.759	-22.990	-6.345	-13.654	-15.106	-24.445	-31.754	-33.206	-2.526
2.1	-7.945	-14.712	-24.318	-5.787	-12.721	-16.624	-23.887	-30.821	-34.724	-3.055
2.2	-7.657	-14.713	-25.508	-5.222	-11.580	-18.228	-23.322	-29.680	-36.328	-3.561
2.3	-7.294	-14.610	-26.223	-4.677	-10.385	-16.369	-22.777	-28.485	-34.469	-4.043
2.4	-6.855	-14.300	-25.797	-4.167	-9.250	-14.245	-22.267	-27.350	-32.345	-4.505
2.5	-6.345	-13.654	-23.969	-3.707	-8.178	-12.451	-21.807	-26.278	-30.551	-4.949
2.6	-5.787	-12.721	-21.376	-3.323	-7.275	-10.850	-21.423	-25.375	-28.950	-5.374
2.7	-5.222	-11.580	-18.735	-3.029	-6.490	-9.521	-21.129	-24.590	-27.621	-5.784
2.8	-4.677	-10.385	-16.369	-2.826	-5.844	-8.345	-20.926	-23.944	-26.445	-6.179
2.9	-4.167	-9.250	-14.245	-2.720	-5.350	-7.385	-20.820	-23.450	-25.485	-6.560
3	-3.707	-8.178	-12.451	-2.720	-4.955	-6.555	-20.820	-23.055	-24.655	-6.928
3.1	-3.323	-7.275	-10.850	-2.720	-4.698	-5.907	-20.820	-22.798	-24.007	-7.284
3.2	-3.029	-6.490	-9.521	-2.720	-4.528	-5.373	-20.820	-22.628	-23.473	-7.629
3.3	-2.826	-5.844	-8.345	-2.720	-4.433	-4.999	-20.820	-22.533	-23.099	-7.963
3.4	-2.720	-5.350	-7.385	-2.720	-4.412	-4.728	-20.820	-22.512	-22.828	-8.287
3.5	-2.724	-4.955	-6.555	-2.720	-4.402	-4.599	-20.820	-22.502	-22.699	-8.602
3.6	-2.852	-4.698	-5.907	-2.720	-4.402	-4.567	-20.820	-22.502	-22.667	-8.908
3.7	-3.108	-4.528	-5.373	-2.720	-4.398	-4.567	-20.820	-22.498	-22.667	-9.205
3.8	-3.499	-4.433	-4.999	-2.720	-4.332	-4.567	-20.820	-22.432	-22.667	-9.495
3.9	-4.050	-4.412	-4.728	-2.720	-4.235	-4.567	-20.820	-22.335	-22.667	-9.777
4	-4.792	-4.402	-4.599	-2.724	-4.075	-4.567	-20.824	-22.175	-22.667	-10.051
4.1	-5.740	-4.414	-4.567	-2.852	-3.898	-4.567	-20.952	-21.998	-22.667	-10.320
4.2	-6.928	-4.398	-4.659	-3.108	-3.721	-4.567	-21.208	-21.821	-22.667	-10.581
4.3	-8.432	-4.332	-4.837	-3.499	-3.554	-4.567	-21.599	-21.654	-22.667	-10.837
4.4	-10.379	-4.235	-5.113	-4.050	-3.458	-4.567	-22.150	-21.558	-22.667	-11.086
4.5	-12.954	-4.075	-5.449	-4.792	-3.419	-4.567	-22.892	-21.519	-22.667	-11.330
4.6	-16.454	-3.898	-5.839	-5.740	-3.419	-4.567	-23.840	-21.519	-22.667	-11.569
4.7	-21.486	-3.721	-6.229	-6.928	-3.419	-4.659	-25.028	-21.519	-22.759	-11.802
4.8	-25.459	-3.554	-6.595	-8.432	-3.419	-4.837	-26.532	-21.519	-22.937	-12.031
4.9	-20.963	-3.458	-6.868	-10.379	-3.419	-5.113	-28.479	-21.519	-23.213	-12.255
5	-17.094	-3.419	-7.035	-11.622	-3.419	-5.449	-29.722	-21.519	-23.549	-12.474
5.1	-14.711	-3.483	-7.043	-11.622	-3.419	-5.834	-29.722	-21.519	-23.934	-12.689
5.2	-13.194	-3.659	-6.935	-11.622	-3.419	-5.579	-29.722	-21.519	-23.679	-12.900
5.3	-12.248	-3.950	-6.700	-11.622	-3.419	-5.399	-29.722	-21.519	-23.499	-13.107
5.4	-11.746	-4.408	-6.427	-11.622	-3.419	-5.272	-29.722	-21.519	-23.372	-13.310
5.5	-11.622	-5.010	-6.112	-11.622	-3.419	-5.233	-29.722	-21.519	-23.333	-13.509
5.6	-11.789	-5.812	-5.834	-11.622	-3.483	-5.233	-29.722	-21.583	-23.333	-13.705
5.7	-12.166	-6.844	-5.579	-11.622	-3.659	-5.233	-29.722	-21.759	-23.333	-13.897
5.8	-12.660	-8.115	-5.399	-11.514	-3.950	-5.233	-29.614	-22.050	-23.333	-14.086
5.9	-13.123	-9.766	-5.272	-10.580	-4.408	-5.233	-28.680	-22.508	-23.333	-14.271

6	-13.330	-11.781	-5.233	-9.746	-5.010	-5.233	-27.846	-23.110	-23.333	-14.454	-
6.1	-13.094	-14.211	-5.262	-9.062	-5.812	-5.233	-27.162	-23.912	-23.333	-14.633	-
6.2	-12.426	-16.611	-5.381	-8.559	-6.844	-5.233	-26.659	-24.944	-23.333	-14.810	-
6.3	-11.514	-17.114	-5.576	-8.258	-7.251	-5.233	-26.358	-25.351	-23.333	-14.984	-
6.4	-10.580	-15.111	-5.864	-8.166	-6.058	-5.233	-26.266	-24.158	-23.333	-15.154	-
6.5	-9.746	-12.634	-6.238	-8.166	-5.086	-5.233	-26.266	-23.186	-23.333	-15.323	-
6.6	-9.062	-10.462	-6.716	-8.166	-4.285	-5.262	-26.266	-22.385	-23.362	-15.489	-
6.7	-8.559	-8.668	-7.297	-8.166	-3.601	-5.381	-26.266	-21.701	-23.481	-15.652	-
6.8	-8.258	-7.251	-8.008	-8.166	-3.056	-5.576	-26.266	-21.156	-23.676	-15.813	-
6.9	-8.166	-6.058	-8.855	-8.166	-2.600	-5.864	-26.266	-20.700	-23.964	-15.971	-
7	-8.264	-5.086	-9.881	-8.166	-2.236	-6.238	-26.266	-20.336	-24.338	-16.000	-
7.1	-8.546	-4.285	-11.109	-8.166	-1.962	-6.716	-26.266	-20.062	-24.816	-16.000	-
7.2	-9.011	-3.601	-12.608	-8.166	-1.749	-7.297	-26.266	-19.849	-25.397	-16.000	-
7.3	-9.646	-3.056	-14.427	-8.166	-1.622	-8.008	-26.266	-19.722	-26.108	-16.000	-
7.4	-10.387	-2.600	-16.651	-8.166	-1.552	-8.855	-26.266	-19.652	-26.955	-16.000	-
7.5	-11.136	-2.236	-19.123	-8.264	-1.549	-9.881	-26.364	-19.649	-27.981	-16.000	-
7.6	-11.749	-1.962	-20.991	-8.546	-1.549	-11.109	-26.646	-19.649	-29.209	-16.000	-
7.7	-12.062	-1.749	-20.384	-9.011	-1.549	-10.834	-27.111	-19.649	-28.934	-16.000	-
7.8	-11.963	-1.622	-18.160	-8.914	-1.549	-9.678	-27.014	-19.649	-27.778	-16.000	-
7.9	-11.493	-1.552	-15.786	-8.515	-1.549	-8.693	-26.615	-19.649	-26.793	-16.000	-
8	-10.815	-1.549	-13.821	-8.255	-1.549	-7.806	-26.355	-19.649	-25.906	-16.000	-
8.1	-10.094	-1.612	-12.176	-8.139	-1.549	-7.014	-26.239	-19.649	-25.114	-16.000	-
8.2	-9.446	-1.730	-10.834	-8.139	-1.549	-6.267	-26.239	-19.649	-24.367	-16.000	-
8.3	-8.914	-1.923	-9.678	-8.139	-1.549	-5.575	-26.239	-19.649	-23.675	-16.000	-
8.4	-8.515	-2.170	-8.693	-8.139	-1.549	-4.902	-26.239	-19.649	-23.002	-16.000	-
8.5	-8.255	-2.498	-7.806	-8.139	-1.549	-4.271	-26.239	-19.649	-22.371	-16.000	-
8.6	-8.139	-2.900	-7.014	-8.139	-1.612	-3.656	-26.239	-19.712	-21.756	-16.000	-
8.7	-8.151	-3.381	-6.267	-8.139	-1.730	-3.085	-26.239	-19.830	-21.185	-16.000	-
8.8	-8.269	-3.985	-5.575	-8.139	-1.923	-3.085	-26.239	-20.023	-21.185	-16.000	-
8.9	-8.481	-4.679	-4.902	-8.139	-2.170	-3.085	-26.239	-20.270	-21.185	-16.000	-
9	-8.772	-5.539	-4.271	-8.139	-2.498	-3.085	-26.239	-20.598	-21.185	-16.000	-
9.1	-9.115	-6.558	-3.656	-8.139	-2.900	-3.085	-26.239	-21.000	-21.185	-16.000	-
9.2	-9.460	-7.762	-3.085	-8.151	-3.381	-3.085	-26.251	-21.481	-21.185	-16.000	-

Nominal 14.25GHz, V-Polarized, X-pol PSD, with -18.1dBW/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):** 27.5
a2 Antenna Model: SR3000 **d Frequency at which gain was measured (GHz):** 14.5
a3 Antenna ID: RAS **e Max input power density (dBW/4kHz):** -18.1
b Transmit Band (b): 14GHz **Pattern ID** Table C5
Pattern Description: 14.5GHz H-polarization, X-polarized tangent to the geosynchronous plane

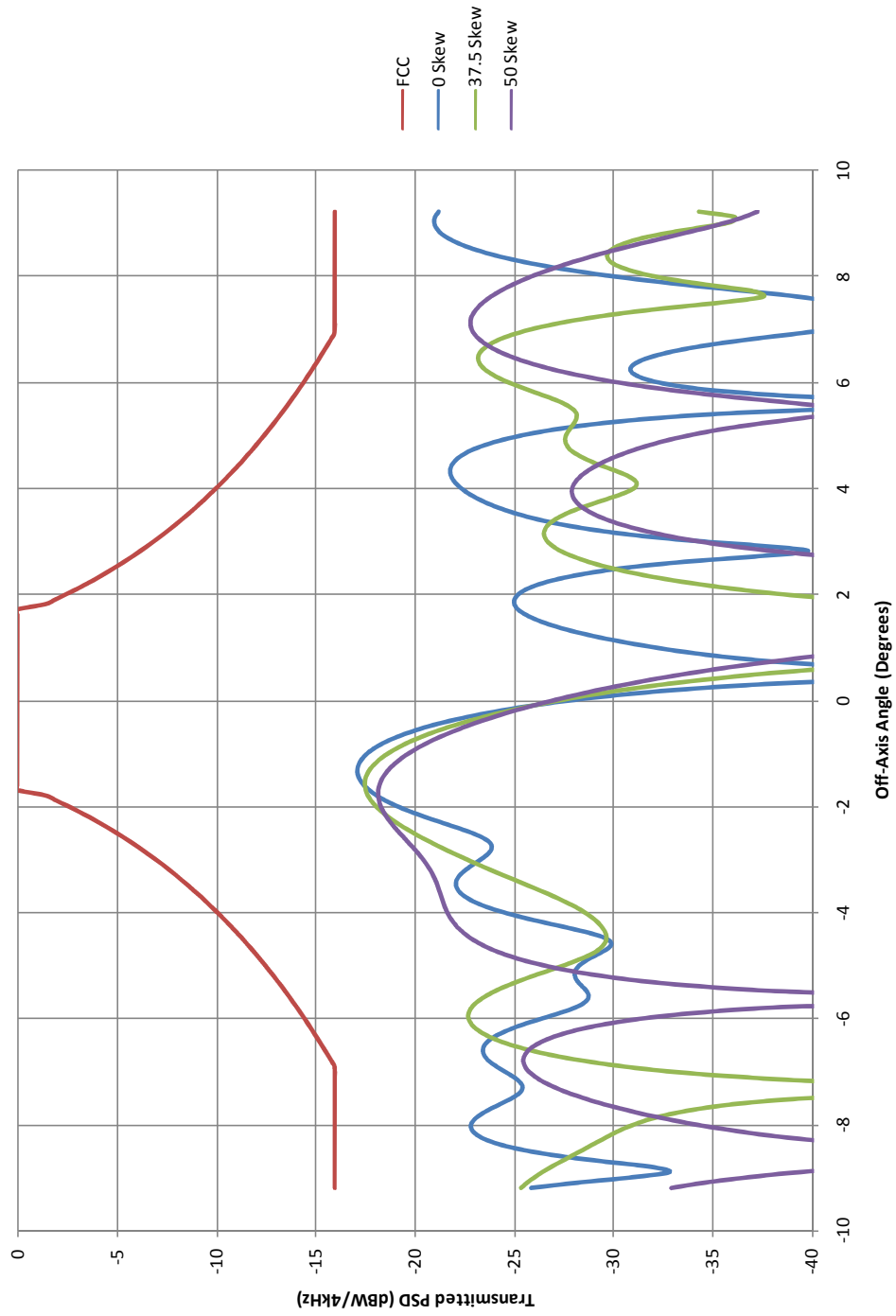
Offset Angles (Degrees)	Nominal X-Pol Gain Along Tangent to Geo Arc (dBi)			Worst Case X-Pol Gain Along Tangent to Geo Arc (dBi)			Worst Case X-Pol PSD Along Tangent to Geo Arc input PSD = -18.1dBW/4kHz (dBW/4kHz)			FCC Mask (dBW/4kHz)	Mask Exceedence (dB)
	0° Skew	37.5° Skew	50° Skew	0° Skew	37.5° Skew	50° Skew	0° Skew	37.5° Skew	50° Skew		
	-9.2	-7.750	-7.245	-14.830	-7.750	-7.245	-14.830	-25.850	-25.345		
-9.1	-10.103	-7.550	-16.517	-7.750	-7.245	-14.830	-25.850	-25.345	-32.930	-16.000	-
-9	-12.831	-7.918	-18.694	-7.562	-7.245	-14.830	-25.662	-25.345	-32.930	-16.000	-
-8.9	-14.720	-8.323	-21.344	-6.353	-7.245	-14.830	-24.453	-25.345	-32.930	-16.000	-
-8.8	-13.739	-8.783	-25.258	-5.525	-7.245	-14.830	-23.625	-25.345	-32.930	-16.000	-
-8.7	-11.356	-9.265	-31.491	-5.012	-7.245	-14.830	-23.112	-25.345	-32.930	-16.000	-
-8.6	-9.212	-9.765	-46.383	-4.759	-7.550	-16.517	-22.859	-25.650	-34.617	-16.000	-
-8.5	-7.562	-10.271	-30.928	-4.732	-7.918	-15.959	-22.832	-26.018	-34.059	-16.000	-
-8.4	-6.353	-10.758	-25.182	-4.732	-8.323	-14.593	-22.832	-26.423	-32.693	-16.000	-
-8.3	-5.525	-11.260	-21.972	-4.732	-8.783	-13.314	-22.832	-26.883	-31.414	-16.000	-
-8.2	-5.012	-11.760	-19.480	-4.732	-9.265	-12.231	-22.832	-27.365	-30.331	-16.000	-
-8.1	-4.759	-12.307	-17.625	-4.732	-9.765	-11.215	-22.832	-27.865	-29.315	-16.000	-
-8	-4.732	-12.967	-15.959	-4.732	-10.271	-10.360	-22.832	-28.371	-28.460	-16.000	-
-7.9	-4.916	-13.763	-14.593	-4.732	-10.758	-9.577	-22.832	-28.858	-27.677	-16.000	-
-7.8	-5.276	-14.865	-13.314	-4.732	-11.260	-8.940	-22.832	-29.360	-27.040	-16.000	-
-7.7	-5.756	-16.358	-12.231	-4.732	-11.760	-8.384	-22.832	-29.860	-26.484	-16.000	-
-7.6	-6.298	-18.518	-11.215	-4.732	-12.307	-7.968	-22.832	-30.407	-26.068	-16.000	-
-7.5	-6.817	-22.106	-10.360	-4.732	-12.967	-7.645	-22.832	-31.067	-25.745	-16.000	-
-7.4	-7.195	-29.211	-9.577	-4.916	-12.177	-7.461	-23.016	-30.277	-25.561	-16.000	-
-7.3	-7.318	-35.494	-8.940	-5.276	-10.320	-7.386	-23.376	-28.420	-25.486	-16.000	-
-7.2	-7.174	-23.045	-8.384	-5.388	-8.816	-7.386	-23.488	-26.916	-25.486	-16.000	-
-7.1	-6.832	-17.946	-7.968	-5.324	-7.650	-7.386	-23.424	-25.750	-25.486	-16.000	-
-7	-6.392	-14.572	-7.645	-5.324	-6.693	-7.386	-23.424	-24.793	-25.486	-16.000	-
-6.9	-5.952	-12.177	-7.461	-5.324	-5.949	-7.386	-23.424	-24.049	-25.486	-15.971	-
-6.8	-5.603	-10.320	-7.386	-5.324	-5.388	-7.386	-23.424	-23.488	-25.486	-15.813	-
-6.7	-5.388	-8.816	-7.459	-5.324	-4.973	-7.386	-23.424	-23.073	-25.486	-15.652	-
-6.6	-5.324	-7.650	-7.661	-5.324	-4.724	-7.386	-23.424	-22.824	-25.486	-15.489	-
-6.5	-5.423	-6.693	-8.037	-5.324	-4.600	-7.386	-23.424	-22.700	-25.486	-15.323	-
-6.4	-5.698	-5.949	-8.575	-5.324	-4.600	-7.386	-23.424	-22.700	-25.486	-15.154	-
-6.3	-6.150	-5.388	-9.345	-5.324	-4.600	-7.386	-23.424	-22.700	-25.486	-14.984	-
-6.2	-6.758	-4.973	-10.351	-5.324	-4.600	-7.459	-23.424	-22.700	-25.559	-14.810	-
-6.1	-7.504	-4.724	-11.721	-5.324	-4.600	-7.661	-23.424	-22.700	-25.761	-14.633	-

-6	-8.350	-4.600	-13.522	-5.423	-4.600	-8.037	-23.523	-22.700	-26.137	-14.454	-
-5.9	-9.220	-4.614	-16.104	-5.698	-4.600	-8.575	-23.798	-22.700	-26.675	-14.271	-
-5.8	-9.966	-4.758	-19.948	-6.150	-4.600	-9.345	-24.250	-22.700	-27.445	-14.086	-
-5.7	-10.459	-5.010	-27.157	-6.758	-4.600	-10.351	-24.858	-22.700	-28.451	-13.897	-
-5.6	-10.643	-5.400	-28.786	-7.504	-4.600	-9.600	-25.604	-22.700	-27.700	-13.705	-
-5.5	-10.556	-5.880	-20.592	-8.350	-4.600	-8.337	-26.450	-22.700	-26.437	-13.509	-
-5.4	-10.309	-6.468	-16.245	-9.220	-4.614	-7.290	-27.320	-22.714	-25.390	-13.310	-
-5.3	-10.070	-7.156	-13.315	-9.948	-4.758	-6.464	-28.048	-22.858	-24.564	-13.107	-
-5.2	-9.948	-7.880	-11.239	-9.948	-5.010	-5.768	-28.048	-23.110	-23.868	-12.900	-
-5.1	-9.987	-8.672	-9.600	-9.948	-5.400	-5.221	-28.048	-23.500	-23.321	-12.689	-
-5	-10.198	-9.444	-8.337	-9.948	-5.880	-4.762	-28.048	-23.980	-22.862	-12.474	-
-4.9	-10.575	-10.131	-7.290	-9.948	-6.468	-4.404	-28.048	-24.568	-22.504	-12.255	-
-4.8	-11.078	-10.754	-6.464	-9.624	-7.156	-4.109	-27.724	-25.256	-22.209	-12.031	-
-4.7	-11.562	-11.180	-5.768	-8.431	-7.880	-3.882	-26.531	-25.980	-21.982	-11.802	-
-4.6	-11.789	-11.432	-5.221	-7.300	-8.672	-3.698	-25.400	-26.772	-21.798	-11.569	-
-4.5	-11.526	-11.549	-4.762	-6.301	-9.444	-3.556	-24.401	-27.544	-21.656	-11.330	-
-4.4	-10.734	-11.500	-4.404	-5.471	-9.962	-3.438	-23.571	-28.062	-21.538	-11.086	-
-4.3	-9.624	-11.344	-4.109	-4.835	-9.425	-3.343	-22.935	-27.525	-21.443	-10.837	-
-4.2	-8.431	-11.123	-3.882	-4.382	-8.851	-3.252	-22.482	-26.951	-21.352	-10.581	-
-4.1	-7.300	-10.799	-3.698	-4.098	-8.239	-3.166	-22.198	-26.339	-21.266	-10.320	-
-4	-6.301	-10.408	-3.556	-3.971	-7.590	-3.072	-22.071	-25.690	-21.172	-10.051	-
-3.9	-5.471	-9.962	-3.438	-3.971	-6.947	-2.965	-22.071	-25.047	-21.065	-9.777	-
-3.8	-4.835	-9.425	-3.343	-3.971	-6.304	-2.840	-22.071	-24.404	-20.940	-9.495	-
-3.7	-4.382	-8.851	-3.252	-3.971	-5.664	-2.693	-22.071	-23.764	-20.793	-9.205	-
-3.6	-4.098	-8.239	-3.166	-3.971	-5.053	-2.521	-22.071	-23.153	-20.621	-8.908	-
-3.5	-3.971	-7.590	-3.072	-3.971	-4.451	-2.327	-22.071	-22.551	-20.427	-8.602	-
-3.4	-3.999	-6.947	-2.965	-3.971	-3.870	-2.111	-22.071	-21.970	-20.211	-8.287	-
-3.3	-4.177	-6.304	-2.840	-3.971	-3.313	-1.878	-22.071	-21.413	-19.978	-7.963	-
-3.2	-4.475	-5.664	-2.693	-3.971	-2.775	-1.634	-22.071	-20.875	-19.734	-7.629	-
-3.1	-4.852	-5.053	-2.521	-3.971	-2.262	-1.385	-22.071	-20.362	-19.485	-7.284	-
-3	-5.250	-4.451	-2.327	-3.971	-1.779	-1.140	-22.071	-19.879	-19.240	-6.928	-
-2.9	-5.591	-3.870	-2.111	-3.933	-1.322	-0.906	-22.033	-19.422	-19.006	-6.560	-
-2.8	-5.769	-3.313	-1.878	-3.124	-0.907	-0.690	-21.224	-19.007	-18.790	-6.179	-
-2.7	-5.688	-2.775	-1.634	-2.340	-0.532	-0.498	-20.440	-18.632	-18.598	-5.784	-
-2.6	-5.315	-2.262	-1.385	-1.615	-0.199	-0.338	-19.715	-18.299	-18.438	-5.374	-
-2.5	-4.698	-1.779	-1.140	-0.968	0.077	-0.213	-19.068	-18.023	-18.313	-4.949	-
-2.4	-3.933	-1.322	-0.906	-0.410	0.304	-0.130	-18.510	-17.796	-18.230	-4.505	-
-2.3	-3.124	-0.907	-0.690	0.052	0.471	-0.092	-18.048	-17.629	-18.192	-4.043	-
-2.2	-2.340	-0.532	-0.498	0.418	0.575	-0.092	-17.682	-17.525	-18.192	-3.561	-
-2.1	-1.615	-0.199	-0.338	0.694	0.619	-0.092	-17.406	-17.481	-18.192	-3.055	-
-2	-0.968	0.077	-0.213	0.882	0.619	-0.092	-17.218	-17.481	-18.192	-2.526	-
-1.9	-0.410	0.304	-0.130	0.982	0.619	-0.092	-17.118	-17.481	-18.192	-1.969	-
-1.8	0.052	0.471	-0.092	0.990	0.619	-0.092	-17.110	-17.481	-18.192	-1.382	-
-1.7	0.418	0.575	-0.100	0.990	0.619	-0.092	-17.110	-17.481	-18.192	-	-
-1.6	0.694	0.619	-0.162	0.990	0.619	-0.092	-17.110	-17.481	-18.192	-	-
-1.5	0.882	0.591	-0.270	0.990	0.619	-0.092	-17.110	-17.481	-18.192	-	-
-1.4	0.982	0.499	-0.439	0.990	0.619	-0.092	-17.110	-17.481	-18.192	-	-
-1.3	0.990	0.335	-0.657	0.990	0.619	-0.092	-17.110	-17.481	-18.192	-	-
-1.2	0.906	0.097	-0.938	0.990	0.619	-0.100	-17.110	-17.481	-18.200	-	-
-1.1	0.732	-0.207	-1.269	0.990	0.619	-0.162	-17.110	-17.481	-18.262	-	-
-1	0.462	-0.596	-1.666	0.990	0.591	-0.270	-17.110	-17.509	-18.370	-	-
-0.9	0.090	-1.056	-2.113	0.990	0.499	-0.439	-17.110	-17.601	-18.539	-	-
-0.8	-0.398	-1.592	-2.629	0.990	0.335	-0.657	-17.110	-17.765	-18.757	-	-
-0.7	-1.001	-2.225	-3.195	0.906	0.097	-0.938	-17.194	-18.003	-19.038	-	-
-0.6	-1.729	-2.924	-3.833	0.732	-0.207	-1.269	-17.368	-18.307	-19.369	-	-
-0.5	-2.596	-3.727	-4.523	0.462	-0.596	-1.666	-17.638	-18.696	-19.766	-	-
-0.4	-3.628	-4.627	-5.285	0.090	-1.056	-2.113	-18.010	-19.156	-20.213	-	-
-0.3	-4.855	-5.610	-6.108	-0.398	-1.592	-2.629	-18.498	-19.692	-20.729	-	-
-0.2	-6.289	-6.740	-7.002	-1.001	-2.225	-3.195	-19.101	-20.325	-21.295	-	-
-0.1	-7.970	-7.970	-7.970	-1.729	-2.924	-3.833	-19.829	-21.024	-21.933	-	-

0	-9.969	-9.336	-9.010	-2.596	-3.727	-4.523	-20.696	-21.827	-22.623	-
0.1	-12.418	-10.917	-10.146	-3.628	-4.627	-5.285	-21.728	-22.727	-23.385	-
0.2	-15.562	-12.643	-11.359	-4.855	-5.610	-6.108	-22.955	-23.710	-24.208	-
0.3	-19.853	-14.650	-12.704	-6.289	-6.740	-7.002	-24.389	-24.840	-25.102	-
0.4	-26.999	-17.014	-14.135	-7.970	-7.970	-7.970	-26.070	-26.070	-26.070	-
0.5	-43.532	-19.730	-15.760	-9.969	-9.336	-9.010	-28.069	-27.436	-27.110	-
0.6	-25.886	-23.204	-17.484	-12.212	-10.917	-10.146	-30.312	-29.017	-28.246	-
0.7	-20.715	-27.451	-19.488	-10.881	-12.643	-11.359	-28.981	-30.743	-29.459	-
0.8	-17.692	-31.696	-21.569	-9.757	-14.650	-12.704	-27.857	-32.750	-30.804	-
0.9	-15.510	-32.209	-23.905	-8.823	-17.014	-14.135	-26.923	-35.114	-32.235	-
1	-13.737	-29.807	-25.790	-8.067	-19.730	-15.760	-26.167	-37.830	-33.860	-
1.1	-12.212	-28.027	-26.927	-7.487	-23.204	-17.484	-25.587	-41.304	-35.584	-
1.2	-10.881	-27.289	-26.530	-7.095	-27.289	-19.488	-25.195	-45.389	-37.588	-
1.3	-9.757	-27.435	-25.560	-6.908	-26.643	-21.569	-25.008	-44.743	-39.669	-
1.4	-8.823	-28.315	-24.401	-6.908	-23.084	-22.589	-25.008	-41.184	-40.689	-
1.5	-8.067	-30.133	-23.528	-6.908	-20.085	-22.589	-25.008	-38.185	-40.689	-
1.6	-7.487	-31.977	-22.882	-6.908	-17.739	-22.589	-25.008	-35.839	-40.689	-
1.7	-7.095	-30.423	-22.590	-6.908	-15.774	-22.589	-25.008	-33.874	-40.689	-
1.8	-6.908	-26.643	-22.589	-6.908	-14.103	-22.589	-25.008	-32.203	-40.689	-1.382
1.9	-6.924	-23.084	-22.983	-6.908	-12.753	-22.589	-25.008	-30.853	-40.689	-1.969
2	-7.150	-20.085	-23.786	-6.908	-11.581	-22.589	-25.008	-29.681	-40.689	-2.526
2.1	-7.610	-17.739	-25.261	-6.908	-10.634	-22.589	-25.008	-28.734	-40.689	-3.055
2.2	-8.347	-15.774	-27.613	-6.908	-9.871	-22.589	-25.008	-27.971	-40.689	-3.561
2.3	-9.407	-14.103	-32.186	-6.908	-9.252	-20.024	-25.008	-27.352	-38.124	-4.043
2.4	-10.850	-12.753	-45.476	-6.924	-8.823	-17.755	-25.024	-26.923	-35.855	-4.505
2.5	-12.799	-11.581	-34.801	-7.150	-8.536	-15.959	-25.250	-26.636	-34.059	-4.949
2.6	-15.462	-10.634	-27.260	-7.610	-8.404	-14.496	-25.710	-26.504	-32.596	-5.374
2.7	-19.001	-9.871	-22.986	-8.347	-8.404	-13.303	-26.447	-26.504	-31.403	-5.784
2.8	-21.688	-9.252	-20.024	-9.335	-8.404	-12.331	-27.435	-26.504	-30.431	-6.179
2.9	-19.386	-8.823	-17.755	-8.080	-8.404	-11.541	-26.180	-26.504	-29.641	-6.560
3	-15.809	-8.536	-15.959	-7.071	-8.404	-10.925	-25.171	-26.504	-29.025	-6.928
3.1	-13.024	-8.404	-14.496	-6.246	-8.404	-10.451	-24.346	-26.504	-28.551	-7.284
3.2	-10.935	-8.440	-13.303	-5.564	-8.404	-10.122	-23.664	-26.504	-28.222	-7.629
3.3	-9.335	-8.617	-12.331	-5.001	-8.404	-9.915	-23.101	-26.504	-28.015	-7.963
3.4	-8.080	-8.971	-11.541	-4.543	-8.404	-9.830	-22.643	-26.504	-27.930	-8.287
3.5	-7.071	-9.471	-10.925	-4.181	-8.404	-9.830	-22.281	-26.504	-27.930	-8.602
3.6	-6.246	-10.118	-10.451	-3.913	-8.404	-9.830	-22.013	-26.504	-27.930	-8.908
3.7	-5.564	-10.900	-10.122	-3.740	-8.440	-9.830	-21.840	-26.540	-27.930	-9.205
3.8	-5.001	-11.708	-9.915	-3.674	-8.617	-9.830	-21.774	-26.717	-27.930	-9.495
3.9	-4.543	-12.463	-9.830	-3.674	-8.971	-9.830	-21.774	-27.071	-27.930	-9.777
4	-4.181	-12.971	-9.859	-3.674	-9.471	-9.830	-21.774	-27.571	-27.930	-10.051
4.1	-3.913	-13.046	-9.993	-3.674	-10.118	-9.830	-21.774	-28.218	-27.930	-10.320
4.2	-3.740	-12.714	-10.232	-3.674	-9.756	-9.830	-21.774	-27.856	-27.930	-10.581
4.3	-3.674	-12.109	-10.566	-3.674	-9.543	-9.830	-21.774	-27.643	-27.930	-10.837
4.4	-3.728	-11.375	-11.001	-3.674	-9.464	-9.830	-21.774	-27.564	-27.930	-11.086
4.5	-3.910	-10.712	-11.523	-3.674	-9.464	-9.859	-21.774	-27.564	-27.959	-11.330
4.6	-4.235	-10.169	-12.152	-3.674	-9.464	-9.993	-21.774	-27.564	-28.093	-11.569
4.7	-4.727	-9.756	-12.875	-3.674	-9.464	-10.232	-21.774	-27.564	-28.332	-11.802
4.8	-5.417	-9.543	-13.737	-3.674	-9.464	-10.566	-21.774	-27.564	-28.666	-12.031
4.9	-6.331	-9.464	-14.728	-3.728	-9.464	-11.001	-21.828	-27.564	-29.101	-12.255
5	-7.512	-9.528	-15.941	-3.910	-9.464	-11.523	-22.010	-27.564	-29.623	-12.474
5.1	-9.036	-9.700	-17.377	-4.235	-9.296	-12.152	-22.335	-27.396	-30.252	-12.689
5.2	-11.045	-9.887	-19.178	-4.727	-8.637	-12.875	-22.827	-26.737	-30.975	-12.900
5.3	-13.790	-10.032	-21.223	-5.417	-7.887	-13.737	-23.517	-25.987	-31.837	-13.107
5.4	-17.778	-10.027	-23.092	-6.331	-7.165	-13.548	-24.431	-25.265	-31.648	-13.310
5.5	-24.855	-9.766	-22.982	-7.512	-6.493	-11.826	-25.612	-24.593	-29.926	-13.509
5.6	-35.588	-9.296	-20.767	-9.036	-5.938	-10.379	-27.136	-24.038	-28.479	-13.705
5.7	-22.517	-8.637	-18.031	-11.045	-5.515	-9.155	-29.145	-23.615	-27.255	-13.897
5.8	-17.870	-7.887	-15.597	-12.762	-5.226	-8.125	-30.862	-23.326	-26.225	-14.086
5.9	-15.387	-7.165	-13.548	-12.762	-5.099	-7.259	-30.862	-23.199	-25.359	-14.271

6	-13.925	-6.493	-11.826	-12.762	-5.099	-6.543	-30.862	-23.199	-24.643	-14.454	-
6.1	-13.101	-5.938	-10.379	-12.762	-5.099	-5.960	-30.862	-23.199	-24.060	-14.633	-
6.2	-12.762	-5.515	-9.155	-12.762	-5.099	-5.500	-30.862	-23.199	-23.600	-14.810	-
6.3	-12.852	-5.226	-8.125	-12.762	-5.099	-5.153	-30.862	-23.199	-23.253	-14.984	-
6.4	-13.325	-5.099	-7.259	-12.762	-5.099	-4.914	-30.862	-23.199	-23.014	-15.154	-
6.5	-14.153	-5.119	-6.543	-12.762	-5.099	-4.772	-30.862	-23.199	-22.872	-15.323	-
6.6	-15.340	-5.311	-5.960	-12.762	-5.099	-4.729	-30.862	-23.199	-22.829	-15.489	-
6.7	-16.922	-5.673	-5.500	-12.762	-5.099	-4.729	-30.862	-23.199	-22.829	-15.652	-
6.8	-18.905	-6.211	-5.153	-12.852	-5.099	-4.729	-30.952	-23.199	-22.829	-15.813	-
6.9	-21.112	-6.973	-4.914	-13.325	-5.099	-4.729	-31.425	-23.199	-22.829	-15.971	-
7	-23.122	-7.939	-4.772	-14.153	-5.119	-4.729	-32.253	-23.219	-22.829	-16.000	-
7.1	-24.281	-9.185	-4.729	-15.340	-5.311	-4.729	-33.440	-23.411	-22.829	-16.000	-
7.2	-24.438	-10.750	-4.770	-16.922	-5.673	-4.729	-35.022	-23.773	-22.829	-16.000	-
7.3	-24.138	-12.661	-4.904	-16.014	-6.211	-4.729	-34.114	-24.311	-22.829	-16.000	-
7.4	-23.711	-15.046	-5.113	-13.609	-6.973	-4.729	-31.709	-25.073	-22.829	-16.000	-
7.5	-22.860	-17.625	-5.407	-11.495	-7.939	-4.729	-29.595	-26.039	-22.829	-16.000	-
7.6	-21.126	-19.451	-5.768	-9.662	-9.185	-4.729	-27.762	-27.285	-22.829	-16.000	-
7.7	-18.645	-18.919	-6.211	-8.084	-10.750	-4.770	-26.184	-28.850	-22.870	-16.000	-
7.8	-16.014	-17.033	-6.714	-6.766	-11.639	-4.904	-24.866	-29.739	-23.004	-16.000	-
7.9	-13.609	-15.149	-7.300	-5.686	-11.596	-5.113	-23.786	-29.696	-23.213	-16.000	-
8	-11.495	-13.681	-7.939	-4.805	-11.596	-5.407	-22.905	-29.696	-23.507	-16.000	-
8.1	-9.662	-12.664	-8.664	-4.099	-11.596	-5.768	-22.199	-29.696	-23.868	-16.000	-
8.2	-8.084	-11.974	-9.442	-3.557	-11.596	-6.211	-21.657	-29.696	-24.311	-16.000	-
8.3	-6.766	-11.639	-10.311	-3.182	-11.596	-6.714	-21.282	-29.696	-24.814	-16.000	-
8.4	-5.686	-11.596	-11.232	-2.959	-11.596	-7.300	-21.059	-29.696	-25.400	-16.000	-
8.5	-4.805	-11.847	-12.248	-2.872	-11.596	-7.939	-20.972	-29.696	-26.039	-16.000	-
8.6	-4.099	-12.427	-13.302	-2.872	-11.596	-8.664	-20.972	-29.696	-26.764	-16.000	-
8.7	-3.557	-13.336	-14.434	-2.872	-11.596	-9.442	-20.972	-29.696	-27.542	-16.000	-
8.8	-3.182	-14.642	-15.545	-2.872	-11.596	-10.311	-20.972	-29.696	-28.411	-16.000	-
8.9	-2.959	-16.272	-16.659	-2.872	-11.596	-11.232	-20.972	-29.696	-29.332	-16.000	-
9	-2.872	-17.789	-17.633	-2.872	-11.847	-12.248	-20.972	-29.947	-30.348	-16.000	-
9.1	-2.915	-17.983	-18.500	-2.872	-12.427	-13.302	-20.972	-30.527	-31.402	-16.000	-
9.2	-3.092	-16.193	-19.159	-2.872	-13.336	-14.434	-20.972	-31.436	-32.534	-16.000	-

Nominal 14.5GHz, H-Polarized, X-pol PSD, with -18.1dBW/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):	27.5
a2	Antenna Model:	SR3000	d	Frequency at which gain was measured (GHz):	14.5
a3	Antenna ID:	RAS	e	Max input power density (dBW/4kHz):	-18.1
b	Transmit Band (b):	14GHz	Pattern ID	Table C6	
	Pattern Description:	14.5GHz V-polarization, X-polarized tangent to the geosynchronous plane			

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 = -18.1dBW/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	1.528	-0.693	-14.370	1.528	-0.559	-14.370	-16.572	-18.659		
-9.1	0.872	-0.599	-15.647	1.528	-0.559	-14.370	-16.572	-18.659	-32.470	-16.000	-
-9	0.012	-0.559	-16.899	1.528	-0.559	-14.370	-16.572	-18.659	-32.470	-16.000	-
-8.9	-1.103	-0.568	-17.838	1.528	-0.559	-13.691	-16.572	-18.659	-31.791	-16.000	-
-8.8	-2.534	-0.626	-18.107	1.528	-0.559	-12.570	-16.572	-18.659	-30.670	-16.000	-
-8.7	-4.352	-0.719	-17.509	1.528	-0.559	-11.607	-16.572	-18.659	-29.707	-16.000	-
-8.6	-6.729	-0.855	-16.335	0.872	-0.559	-10.847	-17.228	-18.659	-28.947	-16.000	-
-8.5	-10.025	-1.023	-14.992	0.012	-0.559	-10.237	-18.088	-18.659	-28.337	-16.000	-
-8.4	-15.132	-1.216	-13.691	-1.103	-0.568	-9.801	-19.203	-18.668	-27.901	-16.000	-
-8.3	-22.490	-1.446	-12.570	-2.534	-0.626	-9.495	-20.634	-18.726	-27.595	-16.000	-
-8.2	-17.387	-1.686	-11.607	-4.352	-0.719	-9.336	-22.452	-18.819	-27.436	-16.000	-
-8.1	-12.264	-1.943	-10.847	-4.634	-0.855	-9.289	-22.734	-18.955	-27.389	-16.000	-
-8	-9.239	-2.211	-10.237	-4.397	-1.023	-9.289	-22.497	-19.123	-27.389	-16.000	-
-7.9	-7.278	-2.462	-9.801	-4.397	-1.216	-9.289	-22.497	-19.316	-27.389	-16.000	-
-7.8	-5.984	-2.714	-9.495	-4.397	-1.446	-9.289	-22.497	-19.546	-27.389	-16.000	-
-7.7	-5.143	-2.938	-9.336	-4.397	-1.686	-9.289	-22.497	-19.786	-27.389	-16.000	-
-7.6	-4.634	-3.129	-9.289	-4.397	-1.943	-9.289	-22.497	-20.043	-27.389	-16.000	-
-7.5	-4.397	-3.307	-9.363	-4.397	-2.211	-9.289	-22.497	-20.311	-27.389	-16.000	-
-7.4	-4.402	-3.445	-9.523	-4.397	-2.462	-9.289	-22.497	-20.562	-27.389	-16.000	-
-7.3	-4.626	-3.567	-9.773	-4.397	-2.714	-9.289	-22.497	-20.814	-27.389	-16.000	-
-7.2	-5.039	-3.693	-10.059	-4.397	-2.938	-9.289	-22.497	-21.038	-27.389	-16.000	-
-7.1	-5.627	-3.810	-10.374	-4.397	-3.129	-9.289	-22.497	-21.229	-27.389	-16.000	-
-7	-6.392	-3.970	-10.633	-4.397	-3.307	-9.363	-22.497	-21.407	-27.463	-16.000	-
-6.9	-7.333	-4.165	-10.814	-4.402	-3.445	-9.029	-22.502	-21.545	-27.129	-15.971	-
-6.8	-8.427	-4.414	-10.815	-4.626	-3.567	-8.302	-22.726	-21.667	-26.402	-15.813	-
-6.7	-9.650	-4.761	-10.643	-5.039	-3.693	-7.541	-23.139	-21.793	-25.641	-15.652	-
-6.6	-10.991	-5.184	-10.248	-5.627	-3.810	-6.795	-23.727	-21.910	-24.895	-15.489	-
-6.5	-12.427	-5.724	-9.707	-6.392	-3.970	-6.071	-24.492	-22.070	-24.171	-15.323	-
-6.4	-13.909	-6.408	-9.029	-7.333	-4.165	-5.381	-25.433	-22.265	-23.481	-15.154	-
-6.3	-15.339	-7.219	-8.302	-8.427	-4.414	-4.733	-26.527	-22.514	-22.833	-14.984	-
-6.2	-16.616	-8.227	-7.541	-9.650	-4.761	-4.121	-27.750	-22.861	-22.221	-14.810	-
-6.1	-17.611	-9.423	-6.795	-10.991	-5.184	-3.555	-29.091	-23.284	-21.655	-14.633	-

-6	-18.182	-10.820	-6.071	-12.427	-5.724	-3.020	-30.527	-23.824	-21.120	-14.454	-
-5.9	-18.246	-12.456	-5.381	-13.909	-6.408	-2.531	-32.009	-24.508	-20.631	-14.271	-
-5.8	-17.873	-14.143	-4.733	-14.758	-7.219	-2.069	-32.858	-25.319	-20.169	-14.086	-
-5.7	-17.236	-15.508	-4.121	-14.511	-8.227	-1.653	-32.611	-26.327	-19.753	-13.897	-
-5.6	-16.503	-15.812	-3.555	-14.416	-8.193	-1.265	-32.516	-26.293	-19.365	-13.705	-
-5.5	-15.796	-14.816	-3.020	-14.407	-6.868	-0.924	-32.507	-24.968	-19.024	-13.509	-
-5.4	-15.189	-13.119	-2.531	-14.375	-5.683	-0.614	-32.475	-23.783	-18.714	-13.310	-
-5.3	-14.758	-11.336	-2.069	-14.173	-4.595	-0.356	-32.273	-22.695	-18.456	-13.107	-
-5.2	-14.511	-9.692	-1.653	-13.633	-3.640	-0.134	-31.733	-21.740	-18.234	-12.900	-
-5.1	-14.416	-8.193	-1.265	-12.692	-2.772	0.031	-30.792	-20.872	-18.069	-12.689	-
-5	-14.407	-6.868	-0.924	-11.443	-2.000	0.153	-29.543	-20.100	-17.947	-12.474	-
-4.9	-14.375	-5.683	-0.614	-10.057	-1.339	0.213	-28.157	-19.439	-17.887	-12.255	-
-4.8	-14.173	-4.595	-0.356	-8.708	-0.754	0.222	-26.808	-18.854	-17.878	-12.031	-
-4.7	-13.633	-3.640	-0.134	-7.476	-0.283	0.222	-25.576	-18.383	-17.878	-11.802	-
-4.6	-12.692	-2.772	0.031	-6.381	0.092	0.222	-24.481	-18.008	-17.878	-11.569	-
-4.5	-11.443	-2.000	0.153	-5.431	0.379	0.222	-23.531	-17.721	-17.878	-11.330	-
-4.4	-10.057	-1.339	0.213	-4.630	0.550	0.222	-22.730	-17.550	-17.878	-11.086	-
-4.3	-8.708	-0.754	0.222	-3.993	0.633	0.222	-22.093	-17.467	-17.878	-10.837	-
-4.2	-7.476	-0.283	0.166	-3.508	0.633	0.222	-21.608	-17.467	-17.878	-10.581	-
-4.1	-6.381	0.092	0.055	-3.159	0.633	0.222	-21.259	-17.467	-17.878	-10.320	-
-4	-5.431	0.379	-0.124	-2.939	0.633	0.222	-21.039	-17.467	-17.878	-10.051	-
-3.9	-4.630	0.550	-0.360	-2.846	0.633	0.222	-20.946	-17.467	-17.878	-9.777	-
-3.8	-3.993	0.633	-0.660	-2.846	0.633	0.222	-20.946	-17.467	-17.878	-9.495	-
-3.7	-3.508	0.609	-1.011	-2.846	0.633	0.166	-20.946	-17.467	-17.934	-9.205	-
-3.6	-3.159	0.483	-1.415	-2.846	0.633	0.055	-20.946	-17.467	-18.045	-8.908	-
-3.5	-2.939	0.265	-1.847	-2.846	0.633	-0.124	-20.946	-17.467	-18.224	-8.602	-
-3.4	-2.846	-0.059	-2.307	-2.846	0.633	-0.360	-20.946	-17.467	-18.460	-8.287	-
-3.3	-2.882	-0.463	-2.752	-2.846	0.633	-0.660	-20.946	-17.467	-18.760	-7.963	-
-3.2	-3.030	-0.950	-3.181	-2.846	0.609	-1.011	-20.946	-17.491	-19.111	-7.629	-
-3.1	-3.276	-1.503	-3.535	-2.846	0.483	-1.415	-20.946	-17.617	-19.515	-7.284	-
-3	-3.609	-2.078	-3.827	-2.846	0.265	-1.847	-20.946	-17.835	-19.947	-6.928	-
-2.9	-4.016	-2.670	-4.000	-2.846	-0.059	-2.307	-20.946	-18.159	-20.407	-6.560	-
-2.8	-4.473	-3.203	-4.101	-2.882	-0.463	-2.752	-20.982	-18.563	-20.852	-6.179	-
-2.7	-4.934	-3.636	-4.097	-3.030	-0.950	-3.181	-21.130	-19.050	-21.281	-5.784	-
-2.6	-5.354	-3.952	-4.057	-3.276	-1.503	-3.535	-21.376	-19.603	-21.635	-5.374	-
-2.5	-5.689	-4.101	-3.960	-3.609	-2.078	-3.666	-21.709	-20.178	-21.766	-4.949	-
-2.4	-5.905	-4.117	-3.876	-4.016	-2.670	-3.657	-22.116	-20.770	-21.757	-4.505	-
-2.3	-5.979	-4.039	-3.779	-4.473	-3.203	-3.657	-22.573	-21.303	-21.757	-4.043	-
-2.2	-5.907	-3.887	-3.724	-4.386	-3.261	-3.657	-22.486	-21.361	-21.757	-3.561	-
-2.1	-5.712	-3.728	-3.672	-4.028	-3.202	-3.657	-22.128	-21.302	-21.757	-3.055	-
-2	-5.431	-3.574	-3.666	-3.678	-3.151	-3.622	-21.778	-21.251	-21.722	-2.526	-
-1.9	-5.100	-3.436	-3.657	-3.340	-3.084	-3.548	-21.440	-21.184	-21.648	-1.969	-
-1.8	-4.747	-3.341	-3.677	-3.013	-3.003	-3.421	-21.113	-21.103	-21.521	-1.382	-
-1.7	-4.386	-3.261	-3.673	-2.702	-2.891	-3.258	-20.802	-20.991	-21.358	-	-
-1.6	-4.028	-3.202	-3.671	-2.410	-2.746	-3.055	-20.510	-20.846	-21.155	-	-
-1.5	-3.678	-3.151	-3.622	-2.137	-2.572	-2.825	-20.237	-20.672	-20.925	-	-
-1.4	-3.340	-3.084	-3.548	-1.886	-2.376	-2.579	-19.986	-20.476	-20.679	-	-
-1.3	-3.013	-3.003	-3.421	-1.662	-2.165	-2.327	-19.762	-20.265	-20.427	-	-
-1.2	-2.702	-2.891	-3.258	-1.474	-1.951	-2.083	-19.574	-20.051	-20.183	-	-
-1.1	-2.410	-2.746	-3.055	-1.323	-1.749	-1.852	-19.423	-19.849	-19.952	-	-
-1	-2.137	-2.572	-2.825	-1.210	-1.562	-1.649	-19.310	-19.662	-19.749	-	-
-0.9	-1.886	-2.376	-2.579	-1.135	-1.408	-1.472	-19.235	-19.508	-19.572	-	-
-0.8	-1.662	-2.165	-2.327	-1.107	-1.289	-1.337	-19.207	-19.389	-19.437	-	-
-0.7	-1.474	-1.951	-2.083	-1.107	-1.213	-1.238	-19.207	-19.313	-19.338	-	-
-0.6	-1.323	-1.749	-1.852	-1.107	-1.193	-1.193	-19.207	-19.293	-19.293	-	-
-0.5	-1.210	-1.562	-1.649	-1.107	-1.193	-1.192	-19.207	-19.293	-19.292	-	-
-0.4	-1.135	-1.408	-1.472	-1.107	-1.193	-1.192	-19.207	-19.293	-19.292	-	-
-0.3	-1.107	-1.289	-1.337	-1.107	-1.193	-1.192	-19.207	-19.293	-19.292	-	-
-0.2	-1.127	-1.213	-1.238	-1.107	-1.193	-1.192	-19.207	-19.293	-19.292	-	-
-0.1	-1.193	-1.193	-1.193	-1.107	-1.193	-1.192	-19.207	-19.293	-19.292	-	-

0	-1.304	-1.224	-1.192	-1.107	-1.193	-1.192	-19.207	-19.293	-19.292	-
0.1	-1.464	-1.329	-1.256	-1.107	-1.193	-1.192	-19.207	-19.293	-19.292	-
0.2	-1.678	-1.499	-1.374	-1.107	-1.193	-1.192	-19.207	-19.293	-19.292	-
0.3	-1.942	-1.749	-1.569	-1.127	-1.193	-1.192	-19.227	-19.293	-19.292	-
0.4	-2.249	-2.095	-1.828	-1.193	-1.193	-1.192	-19.293	-19.293	-19.292	-
0.5	-2.601	-2.523	-2.183	-1.304	-1.224	-1.192	-19.404	-19.324	-19.292	-
0.6	-2.995	-3.070	-2.613	-1.464	-1.329	-1.256	-19.564	-19.429	-19.356	-
0.7	-3.429	-3.723	-3.162	-1.678	-1.499	-1.374	-19.778	-19.599	-19.474	-
0.8	-3.879	-4.480	-3.798	-1.942	-1.749	-1.569	-20.042	-19.849	-19.669	-
0.9	-4.323	-5.369	-4.579	-2.249	-2.095	-1.828	-20.349	-20.195	-19.928	-
1	-4.745	-6.309	-5.452	-2.601	-2.523	-2.183	-20.701	-20.623	-20.283	-
1.1	-5.121	-7.261	-6.479	-2.995	-3.070	-2.613	-21.095	-21.170	-20.713	-
1.2	-5.421	-8.069	-7.548	-3.429	-3.723	-3.162	-21.529	-21.823	-21.262	-
1.3	-5.619	-8.511	-8.637	-3.879	-4.480	-3.798	-21.979	-22.580	-21.898	-
1.4	-5.716	-8.450	-9.489	-4.323	-4.287	-4.579	-22.423	-22.387	-22.679	-
1.5	-5.725	-7.873	-9.869	-4.745	-3.563	-5.452	-22.845	-21.663	-23.552	-
1.6	-5.663	-7.027	-9.610	-5.121	-3.002	-4.583	-23.221	-21.102	-22.683	-
1.7	-5.554	-6.040	-8.780	-5.203	-2.556	-3.793	-23.303	-20.656	-21.893	-
1.8	-5.436	-5.114	-7.726	-5.203	-2.246	-3.103	-23.303	-20.346	-21.203	-1.382
1.9	-5.334	-4.287	-6.573	-5.203	-2.068	-2.562	-23.303	-20.168	-20.662	-1.969
2	-5.261	-3.563	-5.540	-5.203	-2.000	-2.114	-23.303	-20.100	-20.214	-2.526
2.1	-5.218	-3.002	-4.583	-5.203	-2.000	-1.794	-23.303	-20.100	-19.894	-3.055
2.2	-5.203	-2.556	-3.793	-5.192	-2.000	-1.557	-23.292	-20.100	-19.657	-3.561
2.3	-5.218	-2.246	-3.103	-5.085	-2.000	-1.432	-23.185	-20.100	-19.532	-4.043
2.4	-5.247	-2.068	-2.562	-4.934	-2.000	-1.382	-23.034	-20.100	-19.482	-4.505
2.5	-5.265	-2.000	-2.114	-4.746	-2.000	-1.382	-22.846	-20.100	-19.482	-4.949
2.6	-5.251	-2.065	-1.794	-4.545	-2.000	-1.382	-22.645	-20.100	-19.482	-5.374
2.7	-5.192	-2.236	-1.557	-4.358	-2.000	-1.382	-22.458	-20.100	-19.482	-5.784
2.8	-5.085	-2.524	-1.432	-4.217	-2.000	-1.382	-22.317	-20.100	-19.482	-6.179
2.9	-4.934	-2.927	-1.382	-4.135	-2.000	-1.382	-22.235	-20.100	-19.482	-6.560
3	-4.746	-3.420	-1.432	-4.126	-2.000	-1.382	-22.226	-20.100	-19.482	-6.928
3.1	-4.545	-4.030	-1.552	-4.126	-2.065	-1.382	-22.226	-20.165	-19.482	-7.284
3.2	-4.358	-4.707	-1.762	-4.126	-2.236	-1.382	-22.226	-20.336	-19.482	-7.629
3.3	-4.217	-5.438	-2.034	-4.126	-2.524	-1.382	-22.226	-20.624	-19.482	-7.963
3.4	-4.135	-6.211	-2.391	-4.126	-2.927	-1.382	-22.226	-21.027	-19.482	-8.287
3.5	-4.126	-6.924	-2.799	-4.126	-3.420	-1.432	-22.226	-21.520	-19.532	-8.602
3.6	-4.208	-7.553	-3.285	-4.126	-4.030	-1.552	-22.226	-22.130	-19.652	-8.908
3.7	-4.393	-8.020	-3.803	-4.126	-4.707	-1.762	-22.226	-22.807	-19.862	-9.205
3.8	-4.684	-8.265	-4.385	-4.126	-5.438	-2.034	-22.226	-23.538	-20.134	-9.495
3.9	-5.057	-8.332	-4.971	-4.126	-6.211	-2.391	-22.226	-24.311	-20.491	-9.777
4	-5.486	-8.238	-5.586	-4.126	-6.924	-2.799	-22.226	-25.024	-20.899	-10.051
4.1	-5.928	-8.039	-6.156	-4.208	-7.248	-3.285	-22.308	-25.348	-21.385	-10.320
4.2	-6.306	-7.829	-6.692	-4.393	-7.248	-3.803	-22.493	-25.348	-21.903	-10.581
4.3	-6.503	-7.611	-7.109	-3.862	-7.248	-4.385	-21.962	-25.348	-22.485	-10.837
4.4	-6.418	-7.435	-7.412	-3.111	-7.248	-4.971	-21.211	-25.348	-23.071	-11.086
4.5	-6.038	-7.319	-7.535	-2.450	-7.248	-5.586	-20.550	-25.348	-23.686	-11.330
4.6	-5.422	-7.248	-7.506	-1.895	-7.248	-5.859	-19.995	-25.348	-23.959	-11.569
4.7	-4.663	-7.255	-7.320	-1.457	-7.248	-5.492	-19.557	-25.348	-23.592	-11.802
4.8	-3.862	-7.319	-7.021	-1.148	-7.248	-5.182	-19.248	-25.348	-23.282	-12.031
4.9	-3.111	-7.441	-6.654	-0.977	-7.248	-4.932	-19.077	-25.348	-23.032	-12.255
5	-2.450	-7.652	-6.251	-0.940	-7.248	-4.765	-19.040	-25.348	-22.865	-12.474
5.1	-1.895	-7.919	-5.859	-0.940	-7.248	-4.679	-19.040	-25.348	-22.779	-12.689
5.2	-1.457	-8.278	-5.492	-0.940	-7.255	-4.679	-19.040	-25.355	-22.779	-12.900
5.3	-1.148	-8.741	-5.182	-0.940	-7.319	-4.679	-19.040	-25.419	-22.779	-13.107
5.4	-0.977	-9.297	-4.932	-0.940	-7.441	-4.679	-19.040	-25.541	-22.779	-13.310
5.5	-0.940	-10.004	-4.765	-0.940	-7.652	-4.679	-19.040	-25.752	-22.779	-13.509
5.6	-1.037	-10.849	-4.679	-0.940	-7.919	-4.679	-19.040	-26.019	-22.779	-13.705
5.7	-1.275	-11.863	-4.691	-0.940	-8.278	-4.679	-19.040	-26.378	-22.779	-13.897
5.8	-1.667	-13.109	-4.796	-0.940	-8.741	-4.679	-19.040	-26.841	-22.779	-14.086
5.9	-2.216	-14.544	-5.014	-0.940	-9.297	-4.679	-19.040	-27.397	-22.779	-14.271

6	-2.930	-16.220	-5.334	-0.940	-10.004	-4.679	-19.040	-28.104	-22.779	-14.454	-
6.1	-3.830	-18.060	-5.780	-1.037	-10.849	-4.679	-19.137	-28.949	-22.779	-14.633	-
6.2	-4.951	-19.734	-6.335	-1.275	-11.863	-4.691	-19.375	-29.963	-22.791	-14.810	-
6.3	-6.336	-20.812	-7.030	-1.667	-13.109	-4.796	-19.767	-31.209	-22.896	-14.984	-
6.4	-8.021	-20.855	-7.833	-2.216	-14.544	-5.014	-20.316	-32.644	-23.114	-15.154	-
6.5	-10.093	-20.174	-8.782	-2.930	-16.220	-5.334	-21.030	-34.320	-23.434	-15.323	-
6.6	-12.716	-19.440	-9.816	-3.830	-18.060	-5.780	-21.930	-36.160	-23.880	-15.489	-
6.7	-16.193	-18.866	-10.970	-4.951	-18.626	-6.335	-23.051	-36.726	-24.435	-15.652	-
6.8	-21.041	-18.626	-12.121	-6.336	-18.626	-7.030	-24.436	-36.726	-25.130	-15.813	-
6.9	-26.356	-18.802	-13.286	-8.021	-18.626	-7.833	-26.121	-36.726	-25.933	-15.971	-
7	-24.225	-19.278	-14.274	-10.093	-18.626	-8.782	-28.193	-36.726	-26.882	-16.000	-
7.1	-20.499	-20.104	-15.158	-12.716	-16.956	-9.816	-30.816	-35.056	-27.916	-16.000	-
7.2	-18.294	-20.952	-15.811	-16.193	-15.195	-10.970	-34.293	-33.295	-29.070	-16.000	-
7.3	-17.174	-21.269	-16.487	-16.836	-13.782	-12.121	-34.936	-31.882	-30.221	-16.000	-
7.4	-16.836	-20.482	-17.198	-16.836	-12.628	-13.286	-34.936	-30.728	-31.386	-16.000	-
7.5	-17.139	-18.817	-18.281	-16.836	-11.767	-14.274	-34.936	-29.867	-32.374	-16.000	-
7.6	-18.076	-16.956	-19.849	-16.836	-11.192	-15.158	-34.936	-29.292	-33.258	-16.000	-
7.7	-19.719	-15.195	-22.493	-16.295	-10.849	-15.811	-34.395	-28.949	-33.911	-16.000	-
7.8	-22.025	-13.782	-26.832	-14.028	-10.792	-13.186	-32.128	-28.892	-31.286	-16.000	-
7.9	-23.801	-12.628	-31.210	-12.283	-10.792	-11.135	-30.383	-28.892	-29.235	-16.000	-
8	-22.390	-11.767	-24.727	-10.928	-10.792	-9.461	-29.028	-28.892	-27.561	-16.000	-
8.1	-19.190	-11.192	-19.403	-9.878	-10.792	-8.122	-27.978	-28.892	-26.222	-16.000	-
8.2	-16.295	-10.849	-15.865	-9.081	-10.792	-7.013	-27.181	-28.892	-25.113	-16.000	-
8.3	-14.028	-10.792	-13.186	-8.514	-10.792	-6.131	-26.614	-28.892	-24.231	-16.000	-
8.4	-12.283	-10.976	-11.135	-8.149	-10.792	-5.414	-26.249	-28.892	-23.514	-16.000	-
8.5	-10.928	-11.434	-9.461	-7.955	-10.792	-4.874	-26.055	-28.892	-22.974	-16.000	-
8.6	-9.878	-12.169	-8.122	-7.912	-10.792	-4.468	-26.012	-28.892	-22.568	-16.000	-
8.7	-9.081	-13.114	-7.013	-7.912	-10.792	-4.209	-26.012	-28.892	-22.309	-16.000	-
8.8	-8.514	-14.164	-6.131	-7.912	-10.792	-4.209	-26.012	-28.892	-22.309	-16.000	-
8.9	-8.149	-14.866	-5.414	-7.912	-10.976	-4.209	-26.012	-29.076	-22.309	-16.000	-
9	-7.955	-14.581	-4.874	-7.912	-11.434	-4.209	-26.012	-29.534	-22.309	-16.000	-
9.1	-7.912	-13.290	-4.468	-7.912	-11.481	-4.209	-26.012	-29.581	-22.309	-16.000	-
9.2	-8.005	-11.481	-4.209	-7.912	-11.481	-4.209	-26.012	-29.581	-22.309	-16.000	-

Nominal 14.5GHz, V-Polarized, X-pol PSD, with -18.1dBW/4kHz Input

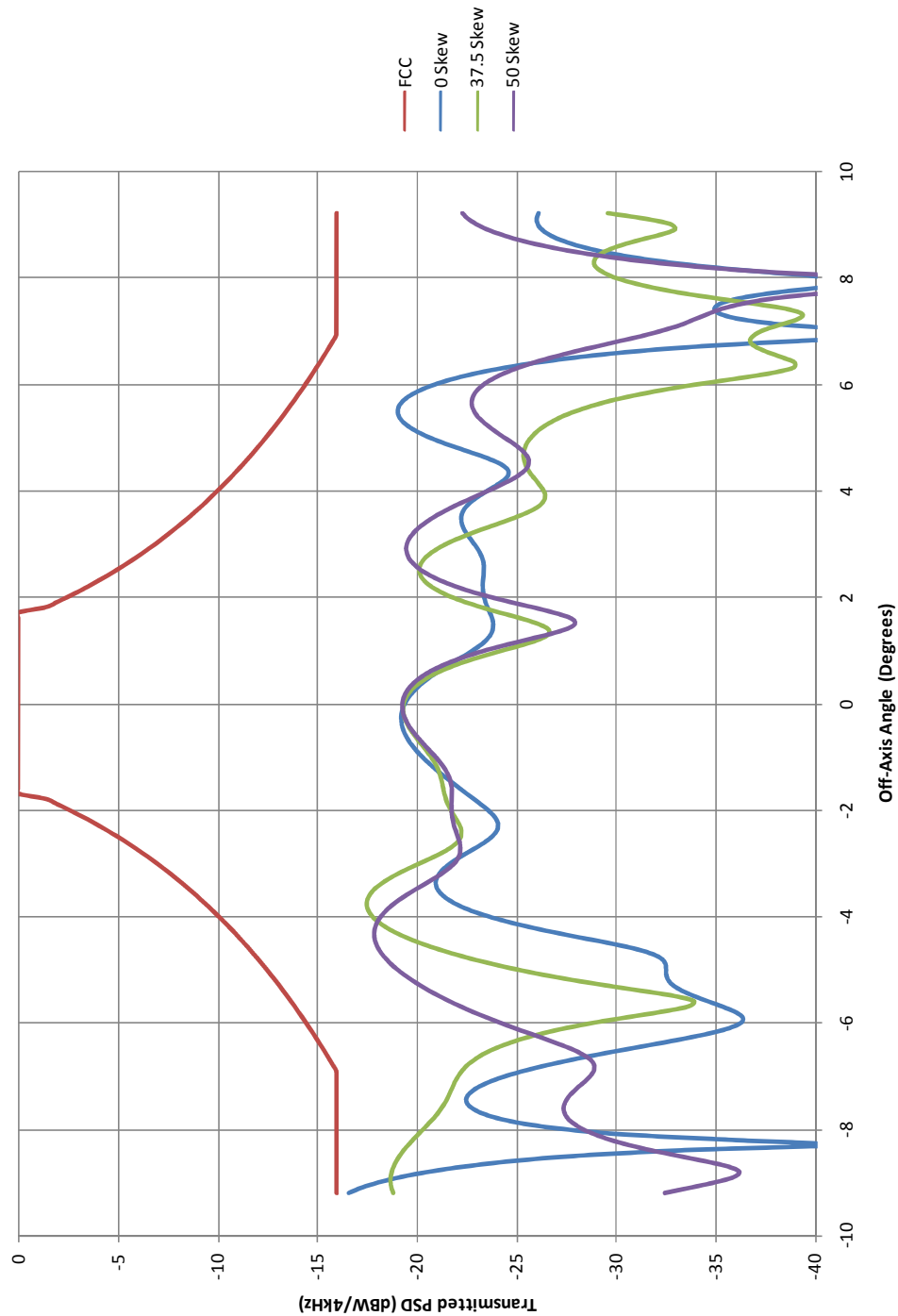


Table D1
Remote to Hub Emission Designator 4M05G7W

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	27.5 dBi
Ant Gain	55 dBi	Tx Loss	1.5 dB
System Temp	150 K	Radome loss	0.5 dB
		Pointing Loss	0.35 dB
		Tx HPA	22.15 W
Interference Parameters		DownLink Fade	5.5 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/Io Uplink WRT Saturation	43.9 dB/Hz		
C/Io 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	38.6 dBW	OPBO	29.6 dB
Uplink C/No	64.0 dB-Hz	D/L EIRP	18.4 dBW
U/L C/N	-0.8 dB	D/L C/No	74.0 dB/Hz
G(1m ²) Tx	44.5 dBi	D/L C/N	9.3 dB
U/L flux density @ satellite	-124.6 dBW/m ²		
IPBO	34.6 dB	Spread Factor	1
C/I up	13.7 dB		
C/I dn	20.3 dB		
Clear Sky C/(N + I)	-1.35 dB		
CS Eb/No	3.70 dB		
Clear Sky (CS)Margin	1.70 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	-18.1 dBW / 4KHz		
Occupied BW	4050.0 KHz		
D/L PSD/4KHz	-11.6 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 8M06G7W

Data Parameters		Satellite Parameters	
Data Rate	1989.1 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	5.97 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	27.5 dBi
Ant Gain	55 dBi	Tx Loss	1.5 dB
System Temp	150 K	Radome loss	0.5 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/lo Uplink WRT Saturation 49.1 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	41.2 dBW	OPBO	27.0 dB
Uplink C/No	66.6 dB-HZ	D/L EIRP	21.0 dBW
U/L C/N	-1.2 dB	D/L C/No	76.6 dB/Hz
G(1m ²) Tx	44.5 dBi	D/L C/N	8.9 dB
U/L flux density @ satellite	-122.0 dBW/m ²	Spread Factor	1
IPBO	32.0 dB		

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 -18.5 dBW / 4KHz
 Occupied BW 8055.8 KHz
 D/L PSD/4KHz -12.1 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 12M36G7W

Data Parameters		Satellite Parameters	
Data Rate	1144.0 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	3.40 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	9.15 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	27.5 dBi
Ant Gain	55 dBi	Tx Loss	1.5 dB
System Temp	150 K	Radome loss	0.5 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 -5.63 dB
C/lo Uplink WRT Saturation 49.1 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	41.2 dBW	OPBO	27.0 dB
Uplink C/No	66.6 dB-HZ	D/L EIRP	21.0 dBW
U/L C/N	-3.1 dB	D/L C/No	76.6 dB/Hz
G(1m ²) Tx	44.5 dBi	D/L C/N	7.0 dB
U/L flux density @ satellite	-122.0 dBW/m ²		
IPBO	32.0 dB	Spread Factor	4

C/I up 11.5 dB
C/I dn 18.0 dB

Clear SkyC/(N+I) with 1 carrier -3.63 dB
CS Eb/No with 1 carriers 5.40 dB
CS Margin with 1 carriers 2.00 dB

D/L Faded C/(N+I) -5.63 dB
D/L Faded Eb/No with 1 carrier 3.40 dB
D/L Faded Margin 0.00 dB

Aggregate PSD @ ant Flange -20.4 dBW / 4KHz
Occupied BW 12355.2 KHz
D/L PSD/4KHz -13.9 dBW/4KHz

	Tx Site	Rx Site	
Az Angle	183.18	183.18	deg
EI Angle	44.80	44.80	deg
PoI 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	9 dB/K	Tx Ant Gain	60.3 dBi
Ant Gain	30.76 dBi	Tx Loss	4.5 dB
System Temp	150 K	Radome loss	0 dB
		Pointing Loss	0.1 dB
		Tx HPA	0.78 W
Interference Parameters		DownLink Fade	2.1 dB
ASI U/L EIRP in our direction	-3.9 dBW/4KHz		
DL interference, dBW/4KHz	6 dBW/4KHz		



Threshold C/N	-0.21 dB		
C/lo Uplink WRT Saturation	76.0 dB/Hz		
C/lo Downlink WRT Saturation	78.0 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	54.6 dBW	OPBO	13.6 dB
Uplink C/No	80.0 dB-Hz	D/L EIRP	34.4 dBW
U/L C/N	19.7 dB	D/L C/No	66.1 dB/Hz
G(1m ²) Tx	44.5 dBi	D/L C/N	5.8 dB
U/L flux density @ satellite	-108.6 dBW/m ²		
IPBO	18.6 dB	Spread Factor	1
C/I up	34.2 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	-31.2 dBW / 4KHz		
Occupied BW	1448.2 KHz		
D/L PSD/4KHz	8.9 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 36M0G7W

Data Parameters		Satellite Parameters	
Data Rate	16426.7 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	26.67 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	9 dB/K	Tx Ant Gain	60.3 dBi
Ant Gain	30.76 dBi	Tx Loss	4.5 dB
System Temp	150 K	Radome loss	0 dB
		Pointing Loss	0.1 dB
		Tx HPA	16.92 W
Interference Parameters		DownLink Fade	2.1 dB
ASI U/L EIRP in our direction	-3.9 dBW/4KHz		
DL interference, dBW/4KHz	6 dBW/4KHz		



Threshold C/N -0.80 dB
 C/Io Uplink WRT Saturation 102.7 dB/Hz
 C/Io Downlink WRT Saturation 78.0 dB/Hz

Tx Slant Range 37536418.2 m
 Tx FSL 207.0 dB
 Uplink EIRP 68.0 dBW
 Uplink C/No 93.4 dB-Hz
 U/L C/N 19.1 dB
 G(1m²) Tx 44.5 dBi
 U/L flux density @ satellite -95.2 dBW/m²
 IPBO 5.2 dB

Rx Slant Range 37536418.2 m
 Rx FSL 205.5 dB
 OPBO 0.2 dB
 D/L EIRP 47.8 dBW
 D/L C/No 79.4 dB/Hz
 D/L C/N 5.2 dB

Spread Factor	1
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C/I up 33.6 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 -31.8 dBW / 4KHz
 Occupied BW 36000.0 KHz
 D/L PSD/4KHz 8.3 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

Radiation Hazard Analysis SR-2000 / SR-3000

This analysis predicts the radiation levels around a proposed earth station complex, comprised of a single panel type antenna. 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 a 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 Aperture Size	0.59 m x 0.08m
Antenna Effective Diameter	0.245 meters
Antenna Surface Area	0.047 sq. meters
Antenna Isotropic Gain	27.5 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	40.0 Watts
Number of Carriers	1
Total Transmit Power	40.0 Watts
W/G Loss from Transmitter to Feed	1.5 dB
Total Feed Input Power	28.32 Watts
Radome Losses	0.5 dB
Effective RF Power at radome	25.24 Watts
Near Field Limit	$R_{nf} = D^2/4\lambda = 0.714$ meters
Far Field Limit	$R_{ff} = 0.6 D^2/\lambda = 1.71$ meters

Transition Region

R_{nf} to R_{ff} = 0.714 meters to 1.71 meters

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:

$$PD_{as} = 4P/A = \mathbf{240.29} \text{ mW/cm}^2 \quad (1)$$

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 0.5 dB of loss. The worst case power density at the surface of the radome is shown below:

$$PD_{radome} = 4P_{rad}/A = \mathbf{214.16} \text{ mW/cm}^2 \quad (2)$$

Where: Prad = total power at feed less radome losses, milliwatts

A = Total area of reflector, sq. cm (this would represent 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:

$$PD_{nf} = (16\epsilon P)/(\pi D^2) = \mathbf{90.10} \text{ mW/cm}^2 \quad (3)$$

from 0 to 0.713 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:

$$PD_{tr} = (PD_{nf})(R_{nf})/R = \text{dependent on } R \quad (4)$$

where: PD_{nf} = near field power density

R_{nf} = near field distance

R = distance to point of interest

$$PD_{tr} = \mathbf{90.10} \text{ mW/cm}^2$$

For: $0.713 < R < 1.71$ meters

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} : 64.2

Controlled Environment Safe Operating Distance, (meters), R_{safec} : 12.8

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:

$$PD_{ff} = PG/(4\pi R^2) = \text{dependent on } R \quad (5)$$

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: $R > R_{ff} = 1.71$ meters

$$PD_{ff} = 38.60 \text{ mW/cm}^2 \text{ at } R_{ff}$$

We use Eq (5) 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 Far Field 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:

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

$$PD_{2 \text{ deg off-axis}} = PD_{ff} \times 280.2/G = 19.23 \text{ mW/cm}^2 \text{ (6)}$$

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:

$$PD_{\text{nf(off-axis)}} = PD_{\text{nf}} / 100 = \mathbf{0.901} \text{ mW/cm}^2 \text{ at D off axis (7)}$$

See Section 7 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:

$$S = (D / \sin \alpha) + (2h - D - 2) / (2 \tan \alpha) \text{ (8)}$$

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 (8), the radiation hazard will be below safe levels for all but the most powerful stations (> 4 kilowatts RF at the feed).

For	α =	20 degrees, minimum elevation angle of antenna
	h =	2.0 meters, delta between antenna and object >1 m

Then:

α	S
10	0.7 meters
15	0.5 meters
20	0.4 meters
25	0.3 meters
30	0.3 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 18 provided below:

(18) - The Raysat Antenna Systems LLC shall take all reasonable and customary measures to ensure that the MET does not create potential for harmful non-ionizing radiation to persons who may be in the vicinity of the MET when it is in operation. At a minimum, permanent warning label(s) shall be affixed to the MET warning of the radiation hazard and including a diagram showing the regions around the MET where the radiation levels could exceed 1.0mW/cm². The operator of the MET shall be responsible for assuring that individuals do not stray into the region around the MET where there is a potential for exceeding the maximum permissible exposure limits required by Section 1.1310 of the Commission ' s rules 47 C.F.R § 1.1310. This shall be accomplished by means of signs, caution tape, verbal warnings, placement of the MET so as to minimize access to the hazardous region and/or any other appropriate means

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	0.245	meters	$(\pi * Df^2) / 4$
Antenna Centerline	h	2	meters	
Antenna Surface Area	Sa	0.047	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}	40	watts	
HPA to Antenna Loss	L _{Tx}	1.5	dB	
Radome Loss	L _{Rad}	0.5	dB	
Transmit Power at Flange	P	28.32	watts	
Effective Power after Radome		25.24	watts	$P / 10 \log^{-1}(\text{Radome Loss} / 10)$
Antenna Gain	G _{es}	27.5	dBi	does not include radome loss
Antenna Aperature Efficiency	η	42%	n/a	
1. Reflector Surface Region Calculations				
Antenna Surface Power Density	P _{das}	2402.9	W/m ²	$(16 * P) / (\pi * D^2)$
		240.29	mW/cm ²	
Power at Radome Surface (outside radome)	P _{drad}	2141.6	W/m ²	$(16 * P) / (\pi * D^2)$ Does not meet controlled limits Does not meet uncontrolled limits
		214.16	mW/cm ²	
2. On Axis Near Field Calculations				
Extent of Near Field	R _n	0.713	meters	$D^2 / (4 * \lambda)$
		2.338	feet	
Near Field Power Density	PD _{nf}	901.0	w/m ²	
		90.10	mW/cm ²	
3. On Axis Transition Region Calculations				
Extent of Transition Region (min)	R _{Tr}	0.713	meters	$D^2 / (4 * \lambda)$
Extent of Transition Region (min)		2.338	feet	
Extent of Transition Region (max)	R _{Tr}	1.711	meters	$0.6 * D^2 / \lambda$
Extent of Transition Region (max)		5.612	feet	
Worst Case Transition Region Power Density	PD _{tr}	901.0	w/m ²	Does not meet controlled limits Does not meet uncontrolled limits
		90.10	mW/cm ²	
Uncontrolled enviornment safe operating distance	R _{su}	64.2	meters	$(PD_{nf} / R_{nf}) / R_{su}$
Controlled enviornment safe operating distance	R _{sc}	12.8	meters	$(PD_{nf} / R_{nf}) / R_{sc}$
4. On Axis Far Field Calculations				
Distance to Far Field Region	R _f	1.71	meters	$0.6 * D^2 / \lambda$
		5.61	feet	
On Axis Power Density in the Far Field	PD _{ff}	386.0	W/m ²	
		38.60	mW/cm ²	
5. Off-axis Power Density in the Far Field Limit and Beyond				
Antenna Surface Power Density	PDs	192.3	W/m ²	$(G_{es} * P) / (4 * \pi * R_f^2) * (Goa / G_{es})$ $Goa = 32 - 25 * \log(\theta)$
Goa/Ges at a sample angle of $\theta=2$ degrees		0.498		
		19.23	mW/cm ²	
6. Off Axis Power Density in the Near Field and Transitional Region Calculations				
Power Density of Wn/100 for 1 diameter removed	PDs	9.01	W/m ²	$[(16 * \eta * P) / (\pi * D^2)] / 100$ Meets controlled limits Meets Uncontrolled limits
		0.901	mW/cm ²	
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	2	meter	
Groun elevation delta antenna-obstacle elevation ang	GD	S		
	10	0.7	meter	
	15	0.5	meter	
	20	0.4	meter	
	25	0.3	meter	
	30	0.3	meter	
Note: Maximum FCC power density limits for 6GHz is 1mW/cm2 for general population exposure as per FCC OS&T				