Dielectric®

Antenna Model: **DCRQ2E50**

Proposal Number:	**C-80084**
Date:	**18-Aug-23**
Customer:	**Wave Central**
Location:	**Wendover, UT**

Electrical Specifications

Polarization:	**Elliptical**		
Azimuth Pattern:	**Directional**		
Antenna Input:	**1-5/8"**	**50 Ohm**	**EIA/DCA**
VSWR:	Channel	**1.10 : 1**	
Bandwidth:	**6 MHz**		
Rated Input Power:	**10 kW**	**(10.00 dBk)**	**Maximum Average Power**

Mechanical Specifications

Mounting:	**Side Mounted**			
Environmental Protection:	**Feed Point**			
Height:	**7.8 ft (2.4m)**			
Weight:	**500 lb (0.2t)**	Excludes Mounts		
Effective Projected Area:	**21.2 ft² (2m²)**	**TIA-222-G**	Basic Wind Speed:	**90 m/h (144.8 km/h)**

Channel Specifications

Call	CH	Freq	Hpol ERP	Vpol ERP	TPO	Peak Main Lobe Hpol Gain	Peak Main Lobe Vpol Gain	Peak at Horizontal Hpol Gain	Peak at Horizontal Vpol Gain
K03JD	3	63 MHz	3.00 kW (4.77 dBk)	2.77 kW (4.42 dBk)	2.61 kW (4.17 dBk)	1.22 (0.85dB)	1.12 (0.50dB)	1.22 (0.85dB)	1.12 (0.50dB)

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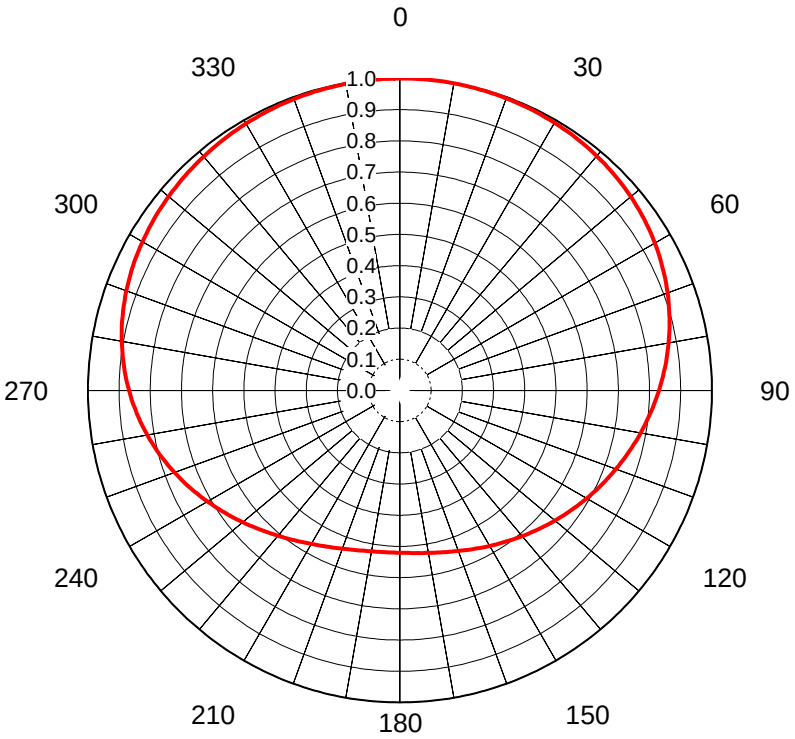
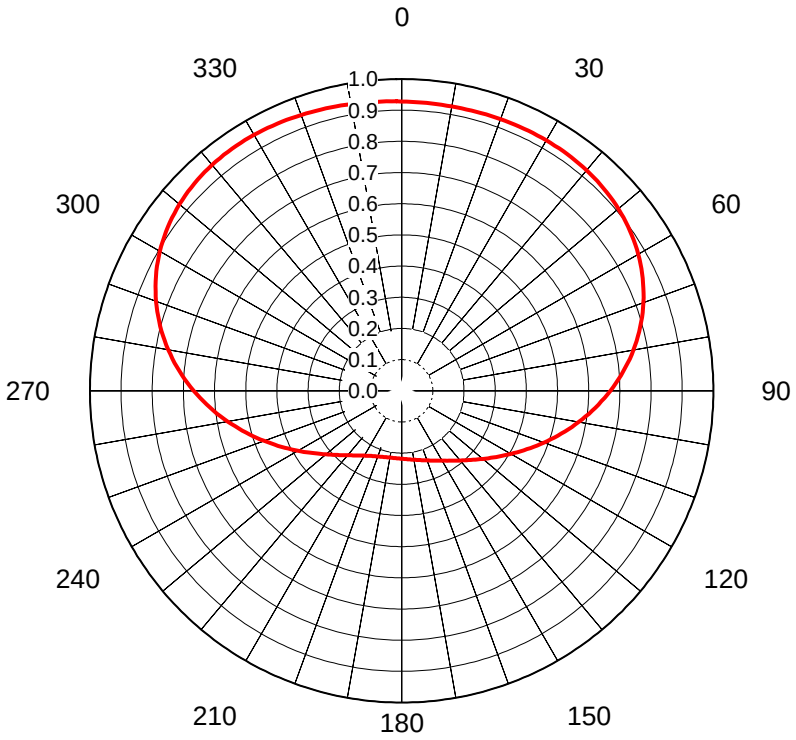


AZIMUTH PATTERN
Horizontal Polarization

In Free Space

Proposal No.	**C-80084**
Date	**18-Aug-23**
Call Letters	**K03JD**
Channel	**3**
Frequency	**63 MHz**
Antenna Type	**DCRQ2E50**
Gain	**1.48 (1.7dB)**
	Calculated

Deg	Value	Deg	Value	Deg	Value	Deg	Value	Deg	Value	Deg	Value	Deg	Value	Deg	Value	Deg	Value	Deg	Value
0	1.000	36	0.986	72	0.906	108	0.746	144	0.595	180	0.520	216	0.591	252	0.780	288	0.928	324	0.982
1	1.000	37	0.985	73	0.902	109	0.742	145	0.592	181	0.520	217	0.595	253	0.785	289	0.931	325	0.983
2	1.000	38	0.984	74	0.899	110	0.737	146	0.589	182	0.520	218	0.599	254	0.791	290	0.933	326	0.984
3	1.000	39	0.982	75	0.895	111	0.732	147	0.585	183	0.520	219	0.604	255	0.796	291	0.935	327	0.985
4	1.000	40	0.981	76	0.891	112	0.728	148	0.582	184	0.520	220	0.608	256	0.801	292	0.938	328	0.985
5	1.000	41	0.980	77	0.887	113	0.723	149	0.579	185	0.520	221	0.613	257	0.807	293	0.940	329	0.986
6	1.000	42	0.979	78	0.883	114	0.719	150	0.576	186	0.521	222	0.617	258	0.812	294	0.942	330	0.987
7	1.000	43	0.977	79	0.879	115	0.714	151	0.572	187	0.521	223	0.622	259	0.817	295	0.944	331	0.988
8	1.000	44	0.976	80	0.875	116	0.710	152	0.569	188	0.522	224	0.627	260	0.822	296	0.946	332	0.989
9	1.000	45	0.975	81	0.870	117	0.705	153	0.566	189	0.523	225	0.632	261	0.827	297	0.948	333	0.989
10	0.999	46	0.973	82	0.866	118	0.701	154	0.563	190	0.524	226	0.637	262	0.832	298	0.949	334	0.990
11	0.999	47	0.971	83	0.862	119	0.696	155	0.561	191	0.525	227	0.642	263	0.837	299	0.951	335	0.991
12	0.999	48	0.970	84	0.858	120	0.692	156	0.558	192	0.526	228	0.647	264	0.842	300	0.953	336	0.991
13	0.999	49	0.968	85	0.853	121	0.687	157	0.555	193	0.527	229	0.652	265	0.846	301	0.955	337	0.992
14	0.998	50	0.966	86	0.849	122	0.683	158	0.553	194	0.529	230	0.657	266	0.851	302	0.956	338	0.993
15	0.998	51	0.964	87	0.844	123	0.678	159	0.550	195	0.530	231	0.663	267	0.855	303	0.958	339	0.993
16	0.998	52	0.962	88	0.840	124	0.674	160	0.548	196	0.532	232	0.668	268	0.860	304	0.959	340	0.994
17	0.998	53	0.960	89	0.835	125	0.670	161	0.545	197	0.534	233	0.673	269	0.864	305	0.961	341	0.994
18	0.997	54	0.958	90	0.831	126	0.666	162	0.543	198	0.535	234	0.679	270	0.868	306	0.962	342	0.995
19	0.997	55	0.956	91	0.826	127	0.661	163	0.541	199	0.538	235	0.684	271	0.873	307	0.964	343	0.995
20	0.997	56	0.954	92	0.821	128	0.657	164	0.539	200	0.540	236	0.690	272	0.877	308	0.965	344	0.996
21	0.996	57	0.951	93	0.817	129	0.653	165	0.537	201	0.542	237	0.695	273	0.881	309	0.966	345	0.996
22	0.996	58	0.949	94	0.812	130	0.649	166	0.535	202	0.544	238	0.701	274	0.884	310	0.967	346	0.997
23	0.995	59	0.946	95	0.807	131	0.645	167	0.533	203	0.547	239	0.707	275	0.888	311	0.969	347	0.997
24	0.995	60	0.944	96	0.803	132	0.641	168	0.532	204	0.550	240	0.712	276	0.892	312	0.970	348	0.997
25	0.994	61	0.941	97	0.798	133	0.637	169	0.530	205	0.552	241	0.718	277	0.895	313	0.971	349	0.998
26	0.993	62	0.938	98	0.793	134	0.633	170	0.529	206	0.555	242	0.724	278	0.899	314	0.972	350	0.998
27	0.993	63	0.935	99	0.789	135	0.629	171	0.527	207	0.558	243	0.729	279	0.902	315	0.973	351	0.998
28	0.992	64	0.932	100	0.784	136	0.625	172	0.526	208	0.562	244	0.735	280	0.905	316	0.974	352	0.999
29	0.992	65	0.929	101	0.779	137	0.621	173	0.525	209	0.565	245	0.741	281	0.909	317	0.975	353	0.999
30	0.991	66	0.926	102	0.774	138	0.617	174	0.524	210	0.568	246	0.746	282	0.912	318	0.976	354	0.999
31	0.990	67	0.923	103	0.770	139	0.614	175	0.523	211	0.572	247	0.752	283	0.915	319	0.977	355	0.999
32	0.989	68	0.920	104	0.765	140	0.610	176	0.522	212	0.575	248	0.758	284	0.918	320	0.978	356	0.999
33	0.988	69	0.916	105	0.760	141	0.606	177	0.522	213	0.579	249	0.763	285	0.920	321	0.979	357	1.000
34	0.988	70	0.913	106	0.756	142	0.603	178	0.521	214	0.583	250	0.769	286	0.923	322	0.980	358	1.000
35	0.987	71	0.910	107	0.751	143	0.599	179	0.521	215	0.587	251	0.774	287	0.926	323	0.981	359	1.000



AZIMUTH PATTERN
Vertical Polarization

In Free Space

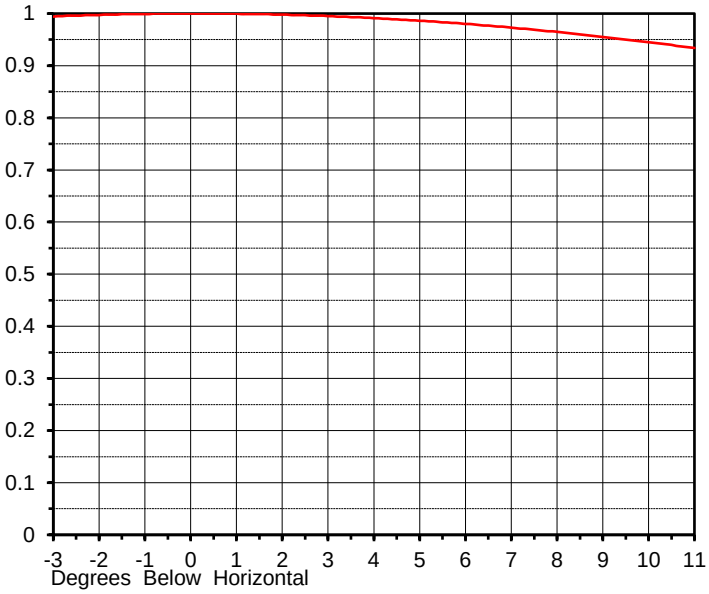
Proposal No.	**C-80084**
Date	**18-Aug-23**
Call Letters	**K03JD**
Channel	**3**
Frequency	**63 MHz**
Antenna Type	**DCRQ2E50**
Gain	**1.94 (2.87dB)**
	Calculated

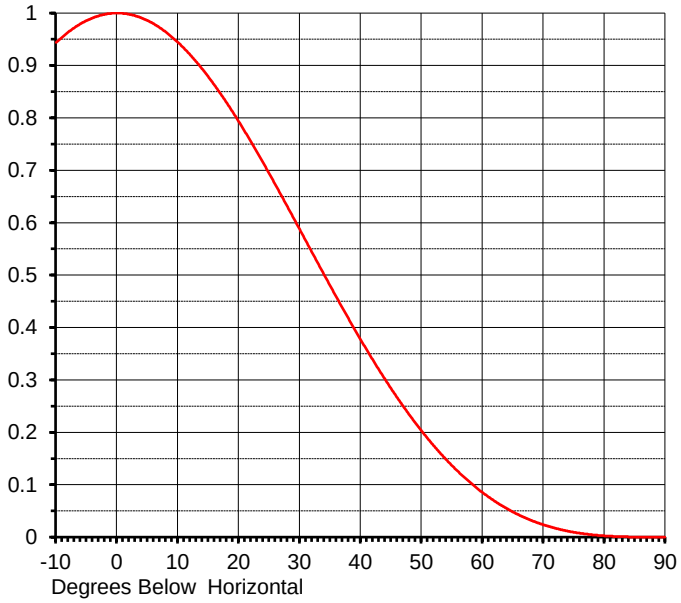
Deg	Value	Deg	Value	Deg	Value	Deg	Value	Deg	Value	Deg	Value	Deg	Value	Deg	Value	Deg	Value	Deg	Value
0	0.928	36	0.926	72	0.813	108	0.503	144	0.277	180	0.218	216	0.256	252	0.488	288	0.824	324	0.948
1	0.928	37	0.925	73	0.806	109	0.495	145	0.274	181	0.218	217	0.259	253	0.498	289	0.831	325	0.948
2	0.927	38	0.925	74	0.799	110	0.486	146	0.271	182	0.217	218	0.263	254	0.508	290	0.838	326	0.948
3	0.927	39	0.924	75	0.792	111	0.477	147	0.268	183	0.217	219	0.266	255	0.517	291	0.845	327	0.948
4	0.927	40	0.923	76	0.785	112	0.469	148	0.265	184	0.217	220	0.270	256	0.527	292	0.851	328	0.948
5	0.927	41	0.922	77	0.778	113	0.460	149	0.262	185	0.217	221	0.274	257	0.537	293	0.858	329	0.948
6	0.926	42	0.921	78	0.770	114	0.452	150	0.259	186	0.217	222	0.278	258	0.547	294	0.864	330	0.948
7	0.926	43	0.920	79	0.763	115	0.444	151	0.257	187	0.217	223	0.282	259	0.557	295	0.870	331	0.947
8	0.926	44	0.919	80	0.755	116	0.436	152	0.254	188	0.217	224	0.287	260	0.567	296	0.875	332	0.947
9	0.926	45	0.917	81	0.747	117	0.428	153	0.252	189	0.217	225	0.291	261	0.577	297	0.881	333	0.946
10	0.926	46	0.916	82	0.739	118	0.420	154	0.249	190	0.218	226	0.296	262	0.587	298	0.886	334	0.946
11	0.926	47	0.914	83	0.731	119	0.412	155	0.247	191	0.218	227	0.301	263	0.597	299	0.891	335	0.945
12	0.926	48	0.912	84	0.722	120	0.405	156	0.245	192	0.218	228	0.306	264	0.607	300	0.895	336	0.944
13	0.926	49	0.910	85	0.714	121	0.398	157	0.243	193	0.219	229	0.312	265	0.617	301	0.900	337	0.944
14	0.926	50	0.908	86	0.705	122	0.391	158	0.241	194	0.219	230	0.317	266	0.627	302	0.904	338	0.943
15	0.926	51	0.905	87	0.696	123	0.384	159	0.239	195	0.220	231	0.323	267	0.637	303	0.908	339	0.942
16	0.926	52	0.903	88	0.688	124	0.377	160	0.238	196	0.221	232	0.329	268	0.647	304	0.912	340	0.942
17	0.927	53	0.900	89	0.679	125	0.370	161	0.236	197	0.221	233	0.336	269	0.657	305	0.916	341	0.941
18	0.927	54	0.897	90	0.670	126	0.364	162	0.234	198	0.222	234	0.342	270	0.667	306	0.919	342	0.940
19	0.927	55	0.894	91	0.661	127	0.358	163	0.233	199	0.223	235	0.349	271	0.677	307	0.922	343	0.939
20	0.927	56	0.891	92	0.651	128	0.352	164	0.232	200	0.224	236	0.355	272	0.686	308	0.925	344	0.938
21	0.927	57	0.888	93	0.642	129	0.346	165	0.230	201	0.225	237	0.362	273	0.696	309	0.928	345	0.938
22	0.927	58	0.884	94	0.633	130	0.340	166	0.229	202	0.227	238	0.370	274	0.706	310	0.930	346	0.937
23	0.927	59	0.880	95	0.624	131	0.334	167	0.228	203	0.228	239	0.377	275	0.715	311	0.933	347	0.936
24	0.928	60	0.876	96	0.614	132	0.329	168	0.227	204	0.229	240	0.385	276	0.724	312	0.935	348	0.935
25	0.928	61	0.872	97	0.605	133	0.324	169	0.225	205	0.231	241	0.392	277	0.734	313	0.937	349	0.935
26	0.928	62	0.868	98	0.596	134	0.319	170	0.225	206	0.232	242	0.400	278	0.743	314	0.939	350	0.934
27	0.928	63	0.863	99	0.586	135	0.314	171	0.224	207	0.234	243	0.409	279	0.752	315	0.940	351	0.933
28	0.928	64	0.858	100	0.577	136	0.309	172	0.223	208	0.236	244	0.417	280	0.760	316	0.942	352	0.932
29	0.928	65	0.853	101	0.568	137	0.305	173	0.222	209	0.238	245	0.425	281	0.769	317	0.943	353	0.932
30	0.928	66	0.848	102	0.558	138	0.300	174	0.221	210	0.240	246	0.434	282	0.777	318	0.944	354	0.931
31	0.928	67	0.843	103	0.549	139	0.296	175	0.220	211	0.243	247	0.443	283	0.786	319	0.945	355	0.931
32	0.927	68	0.837	104	0.540	140	0.292	176	0.220	212	0.245	248	0.452	284	0.794	320	0.946	356	0.930
33	0.927	69	0.831	105	0.531	141	0.288	177	0.219	213	0.248	249	0.461	285	0.802	321	0.947	357	0.929
34	0.927	70	0.825	106	0.521	142	0.284	178	0.219	214	0.250	250	0.470	286	0.809	322	0.947	358	0.929
35	0.926	71	0.819	107	0.512	143	0.281	179	0.218	215	0.253	251	0.479	287	0.817	323	0.948	359	0.928

ELEVATION PATTERN

Proposal No.	**C-80084**
Date	**18-Aug-23**
Call Letters	**K03JD**
Channel	**3**
Frequency	**63 MHz**
Antenna Type	**DCRQ2E50**

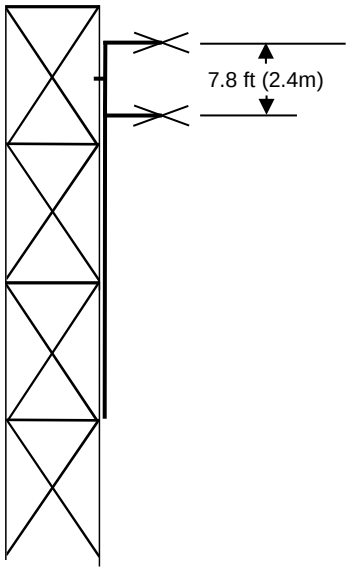
RMS Directivity at Main Lobe	**1.4 (1.46 dB)**	Beam Tilt	**0.00 deg**
RMS Directivity at Horizontal	**1.4 (1.46 dB)**	Pattern Number	**02Q014000**
	Calculated		





Angle	Field	Angle	Field	Angle	Field	Angle	Field	Angle	Field
-10.0	0.944	10.0	0.944	30.0	0.587	50.0	0.202	70.0	0.023
-9.0	0.954	11.0	0.933	31.0	0.565	51.0	0.188	71.0	0.020
-8.0	0.964	12.0	0.920	32.0	0.543	52.0	0.174	72.0	0.017
-7.0	0.972	13.0	0.907	33.0	0.522	53.0	0.161	73.0	0.014
-6.0	0.980	14.0	0.893	34.0	0.500	54.0	0.148	74.0	0.011
-5.0	0.986	15.0	0.878	35.0	0.479	55.0	0.136	75.0	0.009
-4.0	0.991	16.0	0.862	36.0	0.458	56.0	0.125	76.0	0.007
-3.0	0.995	17.0	0.846	37.0	0.437	57.0	0.114	77.0	0.006
-2.0	0.998	18.0	0.829	38.0	0.417	58.0	0.104	78.0	0.004
-1.0	0.999	19.0	0.811	39.0	0.396	59.0	0.094	79.0	0.003
0.0	1.000	20.0	0.792	40.0	0.376	60.0	0.085	80.0	0.002
1.0	0.999	21.0	0.773	41.0	0.357	61.0	0.076	81.0	0.002
2.0	0.998	22.0	0.754	42.0	0.338	62.0	0.068	82.0	0.001
3.0	0.995	23.0	0.734	43.0	0.319	63.0	0.061	83.0	0.001
4.0	0.991	24.0	0.714	44.0	0.301	64.0	0.054	84.0	0.000
5.0	0.986	25.0	0.693	45.0	0.283	65.0	0.048	85.0	0.000
6.0	0.980	26.0	0.672	46.0	0.266	66.0	0.042	86.0	0.000
7.0	0.972	27.0	0.651	47.0	0.249	67.0	0.037	87.0	0.000
8.0	0.964	28.0	0.630	48.0	0.233	68.0	0.032	88.0	0.000
9.0	0.954	29.0	0.608	49.0	0.217	69.0	0.027	89.0	0.000
								90.0	0.000

MECHANICAL SPECIFICATIONS



Proposal No.	**C-80084**
Date	**18-Aug-23**
Call Letters	**K03JD**
Channel	**3**
Frequency	**63 MHz**
Antenna Type	**DCRQ2E50**

Preliminary Specifications

Side Mounted

With ice TIA-222-G

Basic Wind Speed	90 m/h (144.8 km/h)
Structure Class	II
Exposure Category	C
Topography Category	1
Design Ice	1 in t_{iz} = 2.80 in
Wind Speed w/Ice	40 m/h (64.4 km/h)

Mechanical Specifications		**without ice**	**with ice**	
Height	H2	7.8 ft (2.4m)		
Height of Center of Radiation	H3	3.9 ft (1.2m)		
Effective Projected Area	$(EPA)_A$	21.2 ft² (2m²)	68 ft² (6.3m²)	Mounts Excluded
Weight	W	500 lb (0.2t)	2000 lb (0.9t)	Mounts Excluded

Antenna designed in accordance with AISC specifications for design of structural steel as prescribed by TIA-222-G

Prepared by: CAB **Date:** 18-Aug-23 **ME:** **EE:**

Summary

Proposal No.	**C-80084**
Date	**18-Aug-23**
Call Letters	**K03JD**
Channel	**3**
Frequency	**63 MHz**
Antenna Type	**DCRQ2E50**

Antenna

	Hpol		Vpol	
ERP:	**3.00 kW**	**(4.77 dBk)**	**2.77 kW**	**(4.42 dBk)**
Peak Gain*	1.22	(0.85 dB)	1.12	(0.50 dB)

Antenna Input Power

2.47 kW **(3.92 dBk)**

Transmission Line

Type:	**Flexline Foam**	Attenuation:	**(0.24 dB)**
Size:	**1-5/8"**	Efficiency:	**94.5%**
Impedance:	**50 Ohm**		
Length:	**150 ft**	**45.7 m**	

Transmitter Output

2.61 kW **(4.17 dBk)**

Transmitter filter losses not included

* Directivity and Gain are with respect to half wave dipole. The gain includes feed system losses