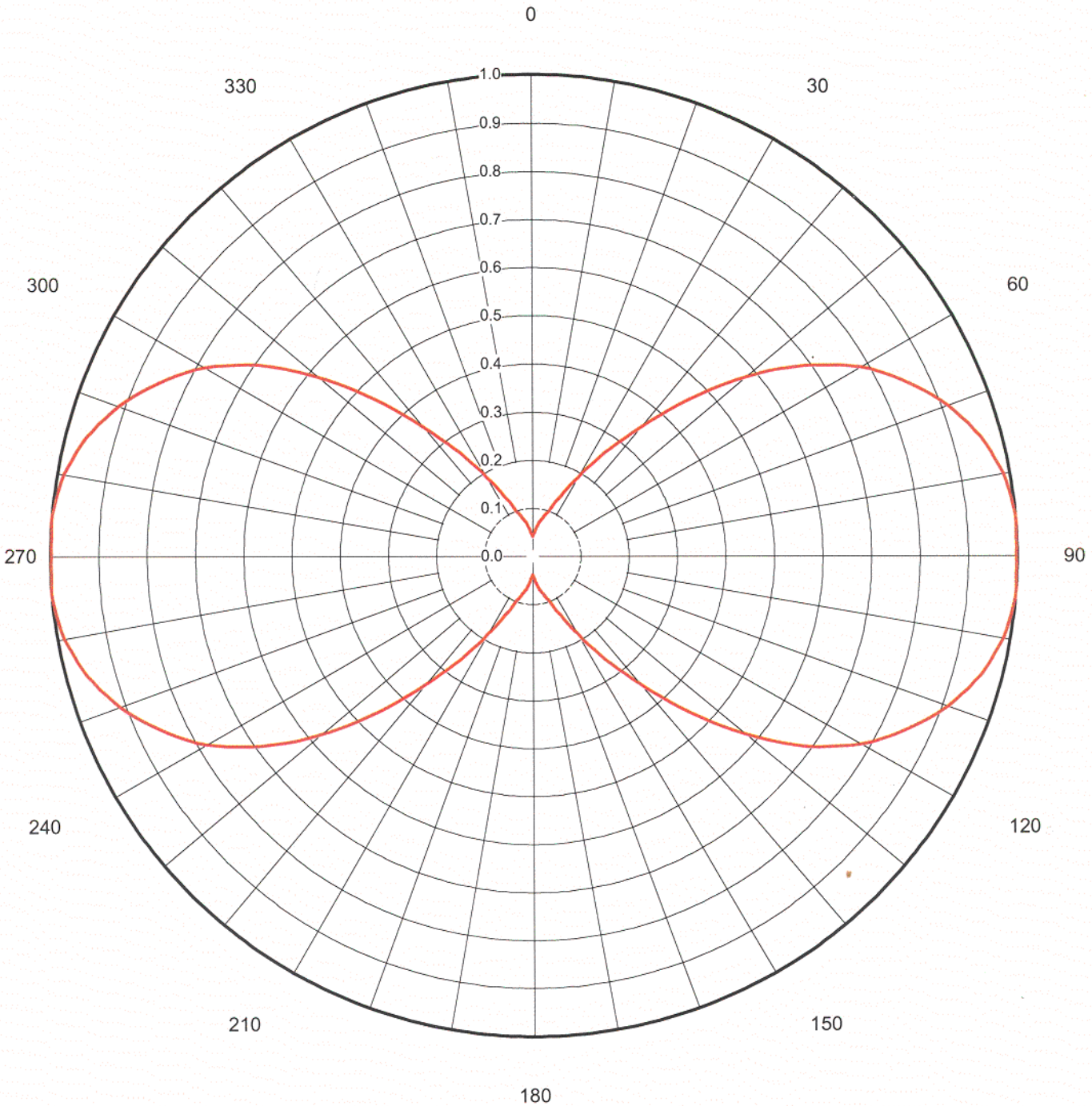
Proposal Number	**DCA-9073**	Revision:	**2**
Date	**15-Jan-01**		
Call Letters	**KBZK-DT**	Channel	**13**
Location	**Bozeman, MT**		
Customer	**Cordillera**		
Antenna Type	**THA-P2-2H/4HD-1**		

AZIMUTH PATTERN

Exhibit E-2a

Gain	**2.62** **(4.19 dB)**	Frequency	**213.00 MHz**
Calculated / Measured	**Calculated**	Drawing #	**THA-P4-13**



Proposal Number	**DCA-9073**	Revision:	**2**
Date	**15-Jan-01**		
Call Letters	**KBZK-DT**	Channel	**13**
Location	**Bozeman, MT**		
Customer	**Cordillera**		
Antenna Type	**THA-P2-2H/4HD-1**		

TABULATION OF AZIMUTH PATTERN

Exhibit E-2b

Azimuth Pattern Drawing #: **THA-P4-13**

Angle	Field	Angle	Field	Angle	Field	Angle	Field	Angle	Field	Angle	Field	Angle	Field	Angle	Field
0	0.040	45	0.459	90	0.998	135	0.459	180	0.040	225	0.459	270	0.998	315	0.459
1	0.041	46	0.483	91	0.999	136	0.436	181	0.041	226	0.483	271	0.999	316	0.436
2	0.043	47	0.506	92	0.999	137	0.414	182	0.043	227	0.506	272	0.999	317	0.414
3	0.045	48	0.530	93	0.999	138	0.391	183	0.045	228	0.530	273	0.999	318	0.391
4	0.047	49	0.554	94	1.000	139	0.370	184	0.047	229	0.554	274	1.000	319	0.370
5	0.048	50	0.578	95	1.000	140	0.348	185	0.048	230	0.578	275	1.000	320	0.348
6	0.053	51	0.601	96	0.997	141	0.329	186	0.053	231	0.601	276	0.997	321	0.329
7	0.057	52	0.623	97	0.995	142	0.311	187	0.057	232	0.623	277	0.995	322	0.311
8	0.061	53	0.645	98	0.992	143	0.294	188	0.061	233	0.645	278	0.992	323	0.294
9	0.064	54	0.667	99	0.989	144	0.278	189	0.064	234	0.667	279	0.989	324	0.278
10	0.068	55	0.688	100	0.987	145	0.262	190	0.068	235	0.688	280	0.987	325	0.262
11	0.071	56	0.708	101	0.981	146	0.246	191	0.071	236	0.708	281	0.981	326	0.246
12	0.074	57	0.727	102	0.975	147	0.231	192	0.074	237	0.727	282	0.975	327	0.231
13	0.077	58	0.746	103	0.969	148	0.216	193	0.077	238	0.746	283	0.969	328	0.216
14	0.079	59	0.765	104	0.963	149	0.202	194	0.079	239	0.765	284	0.963	329	0.202
15	0.081	60	0.783	105	0.957	150	0.189	195	0.081	240	0.783	285	0.957	330	0.189
16	0.086	61	0.798	106	0.948	151	0.178	196	0.086	241	0.798	286	0.948	331	0.178
17	0.089	62	0.812	107	0.940	152	0.167	197	0.089	242	0.812	287	0.940	332	0.167
18	0.093	63	0.826	108	0.931	153	0.157	198	0.093	243	0.826	288	0.931	333	0.157
19	0.096	64	0.839	109	0.922	154	0.147	199	0.096	244	0.839	289	0.922	334	0.147
20	0.098	65	0.852	110	0.913	155	0.137	200	0.098	245	0.852	290	0.913	335	0.137
21	0.106	66	0.865	111	0.901	156	0.129	201	0.106	246	0.865	291	0.901	336	0.129
22	0.114	67	0.877	112	0.889	157	0.122	202	0.114	247	0.877	292	0.889	337	0.122
23	0.122	68	0.889	113	0.877	158	0.114	203	0.122	248	0.889	293	0.877	338	0.114
24	0.129	69	0.901	114	0.865	159	0.106	204	0.129	249	0.901	294	0.865	339	0.106
25	0.137	70	0.913	115	0.852	160	0.098	205	0.137	250	0.913	295	0.852	340	0.098
26	0.147	71	0.922	116	0.839	161	0.096	206	0.147	251	0.922	296	0.839	341	0.096
27	0.157	72	0.931	117	0.826	162	0.093	207	0.157	252	0.931	297	0.826	342	0.093
28	0.167	73	0.940	118	0.812	163	0.089	208	0.167	253	0.940	298	0.812	343	0.089
29	0.178	74	0.948	119	0.798	164	0.086	209	0.178	254	0.948	299	0.798	344	0.086
30	0.189	75	0.957	120	0.783	165	0.081	210	0.189	255	0.957	300	0.783	345	0.081
31	0.202	76	0.963	121	0.765	166	0.079	211	0.202	256	0.963	301	0.765	346	0.079
32	0.216	77	0.969	122	0.747	167	0.077	212	0.216	257	0.969	302	0.747	347	0.077
33	0.231	78	0.975	123	0.729	168	0.074	213	0.231	258	0.975	303	0.729	348	0.074
34	0.246	79	0.981	124	0.710	169	0.071	214	0.246	259	0.981	304	0.710	349	0.071
35	0.262	80	0.987	125	0.691	170	0.068	215	0.262	260	0.987	305	0.691	350	0.068
36	0.278	81	0.989	126	0.669	171	0.064	216	0.278	261	0.989	306	0.669	351	0.064
37	0.294	82	0.992	127	0.647	172	0.061	217	0.294	262	0.992	307	0.647	352	0.061
38	0.311	83	0.995	128	0.625	173	0.057	218	0.311	263	0.995	308	0.625	353	0.057
39	0.329	84	0.997	129	0.602	174	0.053	219	0.329	264	0.997	309	0.602	354	0.053
40	0.348	85	1.000	130	0.578	175	0.048	220	0.348	265	1.000	310	0.578	355	0.048
41	0.370	86	1.000	131	0.554	176	0.047	221	0.370	266	1.000	311	0.554	356	0.047
42	0.391	87	0.999	132	0.530	177	0.045	222	0.391	267	0.999	312	0.530	357	0.045
43	0.414	88	0.999	133	0.506	178	0.043	223	0.414	268	0.999	313	0.506	358	0.043
44	0.436	89	0.999	134	0.483	179	0.041	224	0.436	269	0.999	314	0.483	359	0.041

Proposal Number	**DCA-9073**	Revision:	**2**
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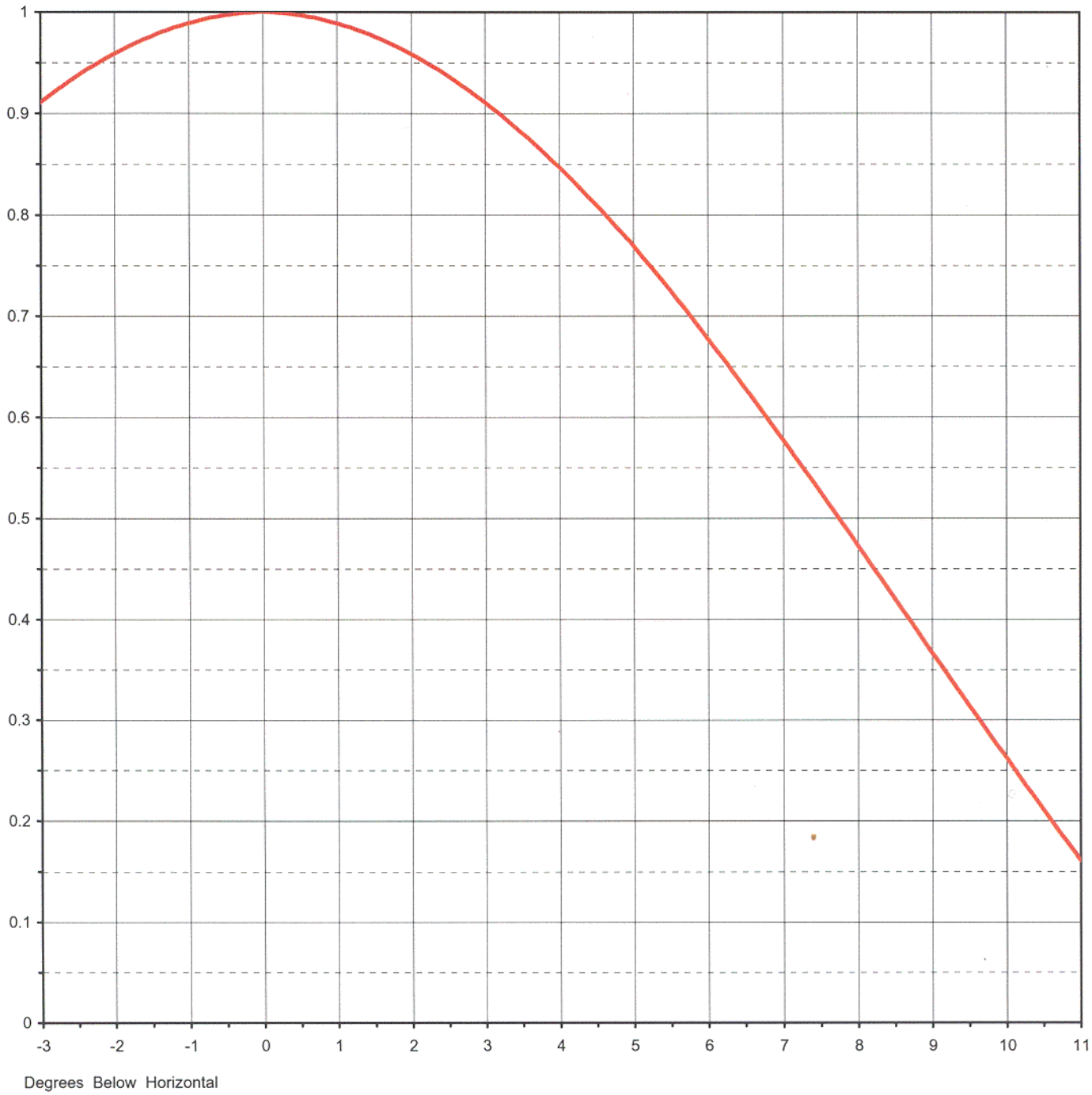
Call Letters	**KBZK-DT**	Channel	**13**
Location	**Bozeman, MT**		
Customer	**Cordillera**		
Antenna Type	**THA-P2-2H/4HD-1**		

ELEVATION PATTERN

Exhibit E-3a

RMS Gain at Main Lobe	**4.80 (6.81 dB)**	Beam Tilt	**0.00 deg**
RMS Gain at Horizontal	**4.80 (6.81 dB)**	Frequency	**213.00 MHz**
Calculated / Measured	**Calculated**	Drawing #	**02H048000**

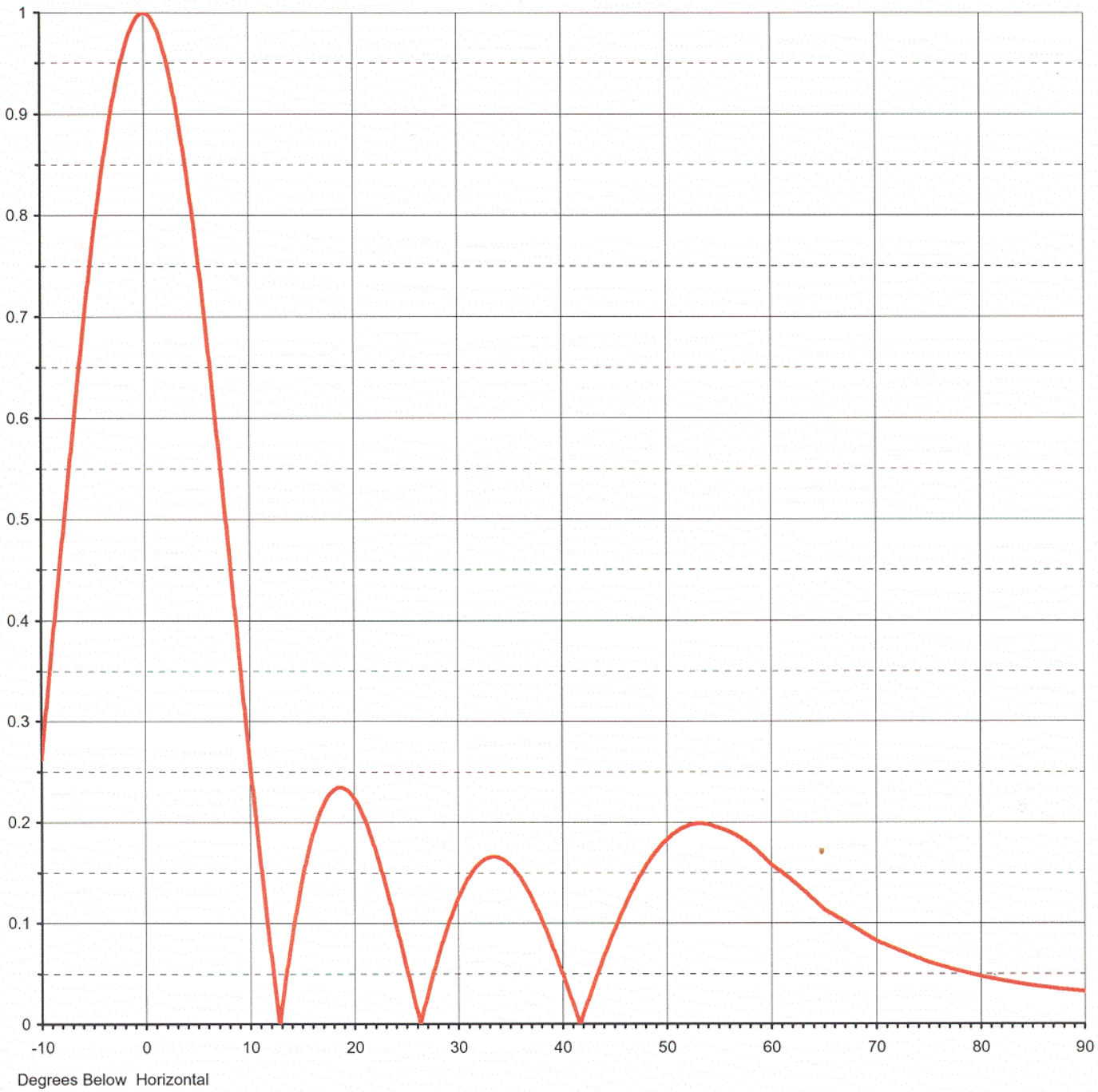


Proposal Number	**DCA-9073**	Revision:	**2**
Date	**15-Jan-01**		
Call Letters	**KBZK-DT**	Channel	**13**
Location	**Bozeman, MT**		
Customer	**Cordillera**		
Antenna Type	**THA-P2-2H/4HD-1**		

ELEVATION PATTERN

Exhibit E-3b

RMS Gain at Main Lobe	**4.80 (6.81 dB)**	Beam Tilt	**0.00 deg**
RMS Gain at Horizontal	**4.80 (6.81 dB)**	Frequency	**213.00 MHz**
Calculated / Measured	**Calculated**	Drawing #	**02H048000-90**



Proposal Number	**DCA-9073**	Revision:	**2**
Date	**15-Jan-01**		
Call Letters	**KBZK-DT**	Channel	**13**
Location	**Bozeman, MT**		
Customer	**Cordillera**		
Antenna Type	**THA-P2-2H/4HD-1**		

TABULATION OF ELEVATION PATTERN

Exhibit E-3c

Elevation Pattern Drawing #: **02H048000-90**

Angle	Field	Angle	Field	Angle	Field	Angle	Field	Angle	Field	Angle	Field
-10.0	0.262	2.4	0.941	10.6	0.211	30.5	0.134	51.0	0.190	71.5	0.076
-9.5	0.314	2.6	0.932	10.8	0.191	31.0	0.144	51.5	0.193	72.0	0.073
-9.0	0.366	2.8	0.921	11.0	0.171	31.5	0.152	52.0	0.196	72.5	0.071
-8.5	0.420	3.0	0.910	11.5	0.123	32.0	0.158	52.5	0.197	73.0	0.069
-8.0	0.473	3.2	0.899	12.0	0.077	32.5	0.162	53.0	0.198	73.5	0.067
-7.5	0.525	3.4	0.887	12.5	0.034	33.0	0.165	53.5	0.198	74.0	0.065
-7.0	0.577	3.6	0.874	13.0	0.007	33.5	0.166	54.0	0.198	74.5	0.063
-6.5	0.628	3.8	0.861	13.5	0.045	34.0	0.165	54.5	0.196	75.0	0.061
-6.0	0.677	4.0	0.847	14.0	0.079	34.5	0.162	55.0	0.194	75.5	0.060
-5.5	0.724	4.2	0.832	14.5	0.111	35.0	0.159	55.5	0.193	76.0	0.058
-5.0	0.769	4.4	0.817	15.0	0.139	35.5	0.153	56.0	0.191	76.5	0.056
-4.5	0.809	4.6	0.802	15.5	0.163	36.0	0.146	56.5	0.188	77.0	0.055
-4.0	0.847	4.8	0.786	16.0	0.184	36.5	0.138	57.0	0.185	77.5	0.054
-3.5	0.881	5.0	0.769	16.5	0.201	37.0	0.128	57.5	0.182	78.0	0.052
-3.0	0.911	5.2	0.751	17.0	0.214	37.5	0.118	58.0	0.178	78.5	0.051
-2.8	0.921	5.4	0.733	17.5	0.224	38.0	0.106	58.5	0.174	79.0	0.049
-2.6	0.932	5.6	0.715	18.0	0.231	38.5	0.094	59.0	0.169	79.5	0.048
-2.4	0.941	5.8	0.696	18.5	0.234	39.0	0.081	59.5	0.164	80.0	0.047
-2.2	0.950	6.0	0.677	19.0	0.234	39.5	0.067	60.0	0.159	80.5	0.046
-2.0	0.958	6.2	0.658	19.5	0.231	40.0	0.053	60.5	0.155	81.0	0.045
-1.8	0.966	6.4	0.638	20.0	0.225	40.5	0.039	61.0	0.151	81.5	0.044
-1.6	0.973	6.6	0.618	20.5	0.216	41.0	0.024	61.5	0.147	82.0	0.043
-1.4	0.979	6.8	0.598	21.0	0.205	41.5	0.009	62.0	0.143	82.5	0.042
-1.2	0.984	7.0	0.577	21.5	0.192	42.0	0.006	62.5	0.138	83.0	0.041
-1.0	0.988	7.2	0.557	22.0	0.177	42.5	0.021	63.0	0.134	83.5	0.040
-0.8	0.992	7.4	0.536	22.5	0.160	43.0	0.036	63.5	0.129	84.0	0.039
-0.6	0.995	7.6	0.515	23.0	0.141	43.5	0.050	64.0	0.124	84.5	0.038
-0.4	0.998	7.8	0.494	23.5	0.122	44.0	0.064	64.5	0.119	85.0	0.038
-0.2	0.999	8.0	0.473	24.0	0.102	44.5	0.077	65.0	0.114	85.5	0.037
0.0	1.000	8.2	0.451	24.5	0.081	45.0	0.090	65.5	0.111	86.0	0.036
0.2	0.999	8.4	0.430	25.0	0.060	45.5	0.103	66.0	0.108	86.5	0.036
0.4	0.998	8.6	0.409	25.5	0.038	46.0	0.115	66.5	0.105	87.0	0.035
0.6	0.995	8.8	0.388	26.0	0.017	46.5	0.126	67.0	0.101	87.5	0.034
0.8	0.992	9.0	0.366	26.5	0.004	47.0	0.136	67.5	0.098	88.0	0.034
1.0	0.988	9.2	0.345	27.0	0.024	47.5	0.146	68.0	0.095	88.5	0.034
1.2	0.984	9.4	0.324	27.5	0.043	48.0	0.154	68.5	0.092	89.0	0.033
1.4	0.979	9.6	0.303	28.0	0.062	48.5	0.162	69.0	0.089	89.5	0.032
1.6	0.973	9.8	0.293	28.5	0.079	49.0	0.169	69.5	0.085	90.0	0.032
1.8	0.966	10.0	0.272	29.0	0.095	49.5	0.176	70.0	0.082		
2.0	0.958	10.2	0.252	29.5	0.109	50.0	0.181	70.5	0.080		
2.2	0.950	10.4	0.231	30.0	0.123	50.5	0.186	71.0	0.078		