

TECHNICAL EXHIBIT
APPLICATION FOR DTV CONSTRUCTION PERMIT
FACILITY ID 178233
STATION KWHD-DT
CASTLE ROCK, COLORADO
CH 45 1000 KW(MAX-DA) 188 M

Technical Narrative

This technical exhibit was prepared in support of an application for construction permit for station KWHD-DT at Castle Rock, Colorado. Station KWHD-DT filed a petition for rulemaking (BPRM-20080619AEZ) to change its post transition DTV channel from 46 to 45. On September 3, 2008, the FCC released a Report and Order (MB Docket No. 08-106) substituting channel 45 for channel 46 at Castle Rock. In addition, the FCC ordered KWHD-DT to file a minor change application specifying a DTV operation on channel 45 within 45 days of the effective date (October 20, 2008). Therefore, this application is being filed in response to the FCC's Report and Order.

By means of this application, KWHD-DT proposes a post transition DTV operation on channel 45 with a maximum directional effective radiated power (ERP) of 1000 kW and an antenna radiation center height above average terrain (HAAT) of 188 meters. No other changes are proposed. The instant application is considered a minor change in facilities pursuant to Section 73.3572(a).

Proposed Facilities

It is proposed to operate KWHD-DT from its licensed site (FCC Tower registration 1025148; NAD27 coordinates: 39-25-57 N, 104-39-18 W) on DTV channel 45 (656-662 MHz) with a directional antenna maximum ERP of 1000 kW and an antenna HAAT of 188 meters. It is proposed to utilize a Dielectric TFU-21ETT-R4C120SP directional antenna which will be top-mounted at the 100 meter level on the existing tower structure and will incorporate an electrical beam tilt of 0.75 degrees. The proposed antenna radiation center height above mean sea level will be 2127 meters.

Antenna Data

Figure 1 is a graph and tabulation of the horizontal and vertical patterns for the proposed Dielectric TFU-21ETT-R 4C120 SP, horizontally polarized, directional antenna system.

Response to Paragraph 11 - Interference Protection

An interference analysis has been conducted using the procedures outlined in the FCC's OET-69 bulletin which demonstrates that the proposal complies with the interference protection provisions of Section 73.623(c)(2).¹

Class A Allocation Considerations

A study has been conducted which indicates that the KWHD-DT proposal will not create prohibited interference to other existing, authorized or proposed Class A stations.

City Coverage and Replication of Appendix B Service

Figure 2 depicts the FCC Predicted 41 dBu and 48 dBu, F(50,90) coverage contours for the herein proposed KWHD-DT channel 45 operation. As indicated, Castle Rock is located within the 48 dBu contour. The Castle Rock city limits were derived from information contained in the 2000 U.S. Census for Colorado.

The distances to the predicted 41 dBu and 48 dBu, F(50,90) coverage contours were determined in accordance with the provisions of Section 73.625. The average elevations from 3.2 to 16.1 kilometers from the transmitter site, were obtained from the USGS 3-second terrain database and were used for determining the distances to coverage contours.

According to Appendix B, the allotted post transition operation of KWHD-DT on channel 46 serves 2,332,995 persons. Results of our interference analysis indicate that the proposed KWHD-DT operation on channel 45 will have an interference free

¹ The du Treil, Lundin & Rackley, Inc. DTV interference analysis program is based on the program and procedures outlined by the FCC in the Sixth Report and Order; subsequent Memorandum Opinion and Order; and FCC OET Bulletin No. 69. A nominal grid size resolution of 2 km and nominal terrain increment of 1 km were employed.

service population of 2,536,726. Therefore, the proposed operation replicates 108.7% of the Appendix B population.

Objectionable Interference

There are no AM stations located within 5.9 kilometers (3.7 miles) of the proposed transmitter site. There are no other full service FM or TV stations within 16 kilometers of the KWHD-DT site. Although no adverse electromagnetic impact is expected, the applicant recognizes its responsibility to correct problems, which are a result of its proposed operation.

The proposed site is more than 865.7 kilometers from the closest point of the Mexican border. The closest FCC monitoring station is at Grand Island, Nebraska located 556 kilometers to the east-northeast. The National Radio Quiet Zone (VA/WV) is 2083 kilometers to the east. The Table Mountain Radio Quiet Zone (CO) is more than 90 kilometers to the northwest. The closest radio astronomy site conducting research on TV channel 37 is at Los Alamos, New Mexico located 429.5 kilometers to the southwest. All these separations are considered sufficient to avoid interference from the proposed operation.

Environmental Protection Act

The proposed facilities were evaluated in terms of potential radio frequency (RF) energy exposure at ground level to workers and the general public. The radiation center for the proposed DTV antenna is located 100 meters above ground level. The maximum DTV ERP is 1000 kW (horizontal polarization). A conservative vertical plane relative field value of 0.1 (for angles below 60 degrees downward) is assumed for the antenna's downward radiation (see Sheet 3 of Figure 1). The calculated power density at a point 2 meters above ground level is 0.0087 mW/cm². This is 1.98% of the FCC's recommended limit of 0.44 mW/cm² for channel 45 for an "uncontrolled" environment. Thus, it is believed that the KWHD-DT facility complies with the FCC's RF emission rules.

Access to the transmitting site will be restricted and appropriately marked with RFR warning signs. Furthermore,

in the event that workers or other authorized personnel enter the restricted area or climb the tower to ensure that appropriate measures will be taken to assure worker safety with respect to radio frequency radiation exposure. Such measures include reducing the average exposure by spreading out the work over a longer period of time, wearing "accepted" RFR protective clothing and/or RFR exposure.

Finally, it is noted that this technical exhibit only addresses the potential for radio frequency electromagnetic field exposure. All other aspects of the environmental processing analysis will be or already has been provided to the FCC by the tower owner as part of the tower registration process.



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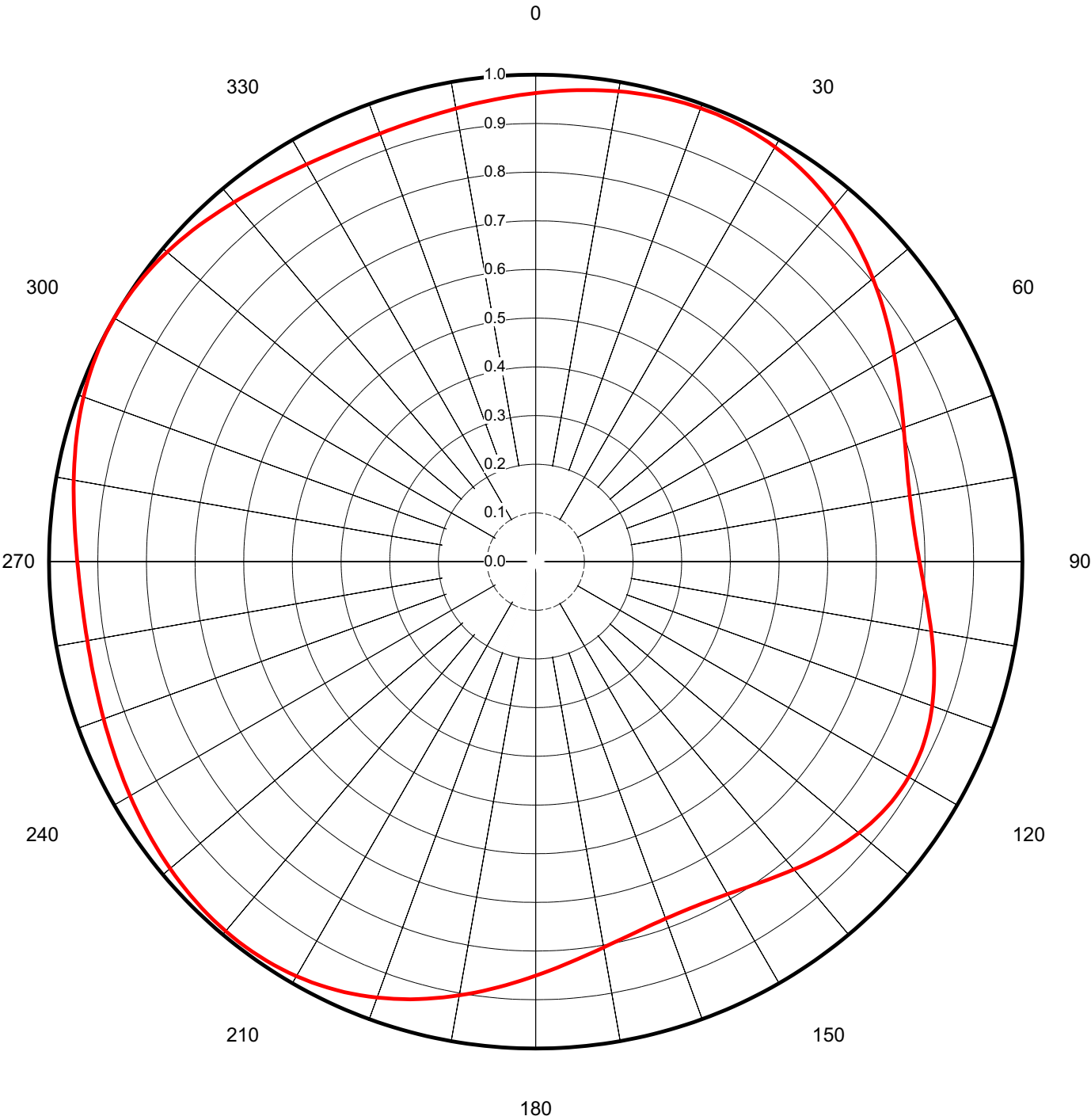
October 14, 2008



Proposal Number	C-02966		
Date	30-Sep-08		
Call Letters	KWHD-DT	Channel	45
Location	Castle Rock, CO		
Customer			
Antenna Type	TFU-21ETT-R 4C120 SP		

AZIMUTH PATTERN

Gain	1.20	(0.79 dB)	Frequency	659.00 MHz
Calculated / Measured	Calculated		Drawing #	TFU-4C120-6590



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 Location **Castle Rock, CO**
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 Antenna Type **TFU-21ETT-R 4C120 SP**

TABULATION OF AZIMUTH PATTERN

Azimuth Pattern Drawing #: **TFU-4C120-6590**

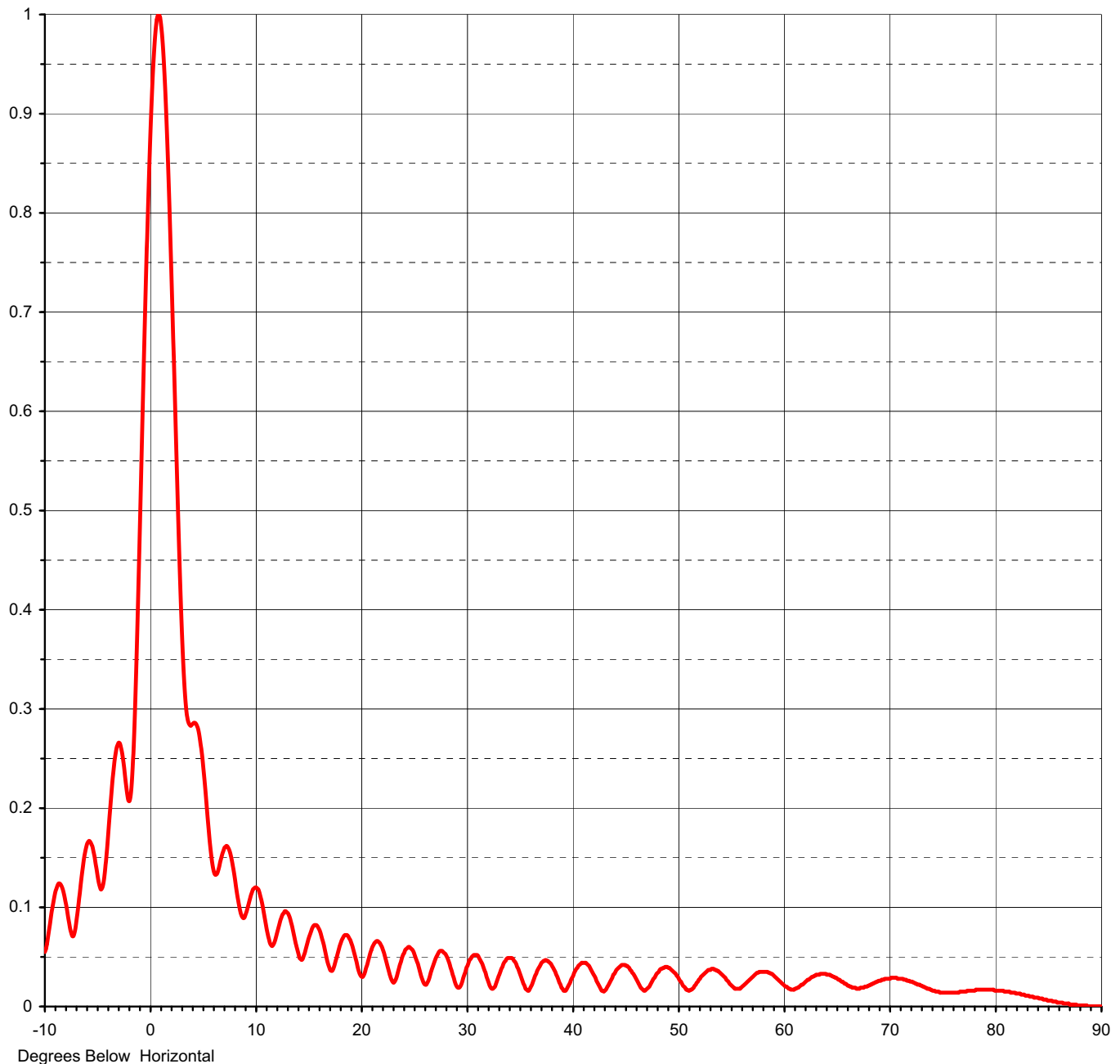
Angle	Field	Angle	Field	Angle	Field	Angle	Field	Angle	Field	Angle	Field	Angle	Field	Angle	Field
0	0.962	45	0.930	90	0.789	135	0.847	180	0.850	225	0.987	270	0.942	315	0.977
1	0.964	46	0.925	91	0.791	136	0.843	181	0.856	226	0.986	271	0.944	316	0.974
2	0.966	47	0.920	92	0.794	137	0.839	182	0.861	227	0.985	272	0.945	317	0.972
3	0.968	48	0.915	93	0.797	138	0.834	183	0.866	228	0.984	273	0.947	318	0.969
4	0.970	49	0.910	94	0.801	139	0.830	184	0.872	229	0.982	274	0.949	319	0.966
5	0.972	50	0.905	95	0.805	140	0.825	185	0.877	230	0.981	275	0.951	320	0.964
6	0.974	51	0.899	96	0.808	141	0.821	186	0.883	231	0.979	276	0.954	321	0.961
7	0.976	52	0.894	97	0.812	142	0.817	187	0.888	232	0.977	277	0.956	322	0.959
8	0.977	53	0.888	98	0.817	143	0.812	188	0.894	233	0.976	278	0.959	323	0.956
9	0.979	54	0.883	99	0.821	144	0.808	189	0.899	234	0.974	279	0.961	324	0.954
10	0.981	55	0.877	100	0.825	145	0.805	190	0.905	235	0.972	280	0.964	325	0.951
11	0.982	56	0.872	101	0.830	146	0.801	191	0.910	236	0.970	281	0.966	326	0.949
12	0.984	57	0.866	102	0.834	147	0.797	192	0.915	237	0.968	282	0.969	327	0.947
13	0.985	58	0.861	103	0.839	148	0.794	193	0.920	238	0.966	283	0.972	328	0.945
14	0.986	59	0.856	104	0.843	149	0.791	194	0.925	239	0.964	284	0.974	329	0.944
15	0.987	60	0.850	105	0.847	150	0.789	195	0.930	240	0.962	285	0.977	330	0.942
16	0.988	61	0.845	106	0.852	151	0.786	196	0.935	241	0.960	286	0.980	331	0.941
17	0.989	62	0.840	107	0.856	152	0.784	197	0.940	242	0.959	287	0.982	332	0.939
18	0.990	63	0.835	108	0.860	153	0.783	198	0.944	243	0.957	288	0.984	333	0.938
19	0.990	64	0.830	109	0.863	154	0.781	199	0.949	244	0.955	289	0.987	334	0.937
20	0.991	65	0.826	110	0.867	155	0.780	200	0.953	245	0.953	290	0.989	335	0.937
21	0.991	66	0.821	111	0.870	156	0.779	201	0.957	246	0.951	291	0.991	336	0.936
22	0.991	67	0.817	112	0.873	157	0.779	202	0.961	247	0.949	292	0.993	337	0.936
23	0.991	68	0.812	113	0.876	158	0.779	203	0.964	248	0.948	293	0.994	338	0.935
24	0.990	69	0.808	114	0.878	159	0.780	204	0.968	249	0.946	294	0.996	339	0.935
25	0.990	70	0.804	115	0.880	160	0.780	205	0.971	250	0.945	295	0.997	340	0.936
26	0.989	71	0.801	116	0.882	161	0.782	206	0.974	251	0.943	296	0.998	341	0.936
27	0.988	72	0.797	117	0.883	162	0.783	207	0.976	252	0.942	297	0.999	342	0.936
28	0.987	73	0.794	118	0.884	163	0.785	208	0.979	253	0.941	298	1.000	343	0.937
29	0.985	74	0.791	119	0.885	164	0.786	209	0.981	254	0.940	299	1.000	344	0.938
30	0.983	75	0.789	120	0.885	165	0.789	210	0.983	255	0.939	300	1.000	345	0.939
31	0.981	76	0.786	121	0.885	166	0.791	211	0.985	256	0.938	301	1.000	346	0.940
32	0.979	77	0.785	122	0.884	167	0.794	212	0.987	257	0.937	302	1.000	347	0.941
33	0.976	78	0.783	123	0.883	168	0.797	213	0.988	258	0.936	303	0.999	348	0.942
34	0.974	79	0.782	124	0.882	169	0.801	214	0.989	259	0.936	304	0.998	349	0.943
35	0.971	80	0.780	125	0.880	170	0.804	215	0.990	260	0.936	305	0.997	350	0.945
36	0.968	81	0.780	126	0.878	171	0.808	216	0.990	261	0.935	306	0.996	351	0.946
37	0.964	82	0.779	127	0.876	172	0.812	217	0.991	262	0.935	307	0.994	352	0.948
38	0.961	83	0.779	128	0.873	173	0.817	218	0.991	263	0.936	308	0.993	353	0.950
39	0.957	84	0.779	129	0.870	174	0.821	219	0.991	264	0.936	309	0.991	354	0.951
40	0.953	85	0.780	130	0.867	175	0.826	220	0.991	265	0.937	310	0.989	355	0.953
41	0.949	86	0.781	131	0.863	176	0.830	221	0.990	266	0.937	311	0.987	356	0.955
42	0.944	87	0.783	132	0.860	177	0.835	222	0.990	267	0.938	312	0.984	357	0.957
43	0.940	88	0.784	133	0.856	178	0.840	223	0.989	268	0.939	313	0.982	358	0.959
44	0.935	89	0.786	134	0.852	179	0.845	224	0.988	269	0.940	314	0.980	359	0.960



Proposal Number	C-02966	
Date	30-Sep-08	
Call Letters	KWHD-DT	Channel 45
Location	Castle Rock, CO	
Customer		
Antenna Type	TFU-21ETT-R 4C120 SP	

ELEVATION PATTERN

RMS Gain at Main Lobe	20.00 (13.01 dB)	Beam Tilt	0.75 deg
RMS Gain at Horizontal	15.60 (11.93 dB)	Frequency	659.00 MHz
Calculated / Measured	Calculated	Drawing #	21E200075-90





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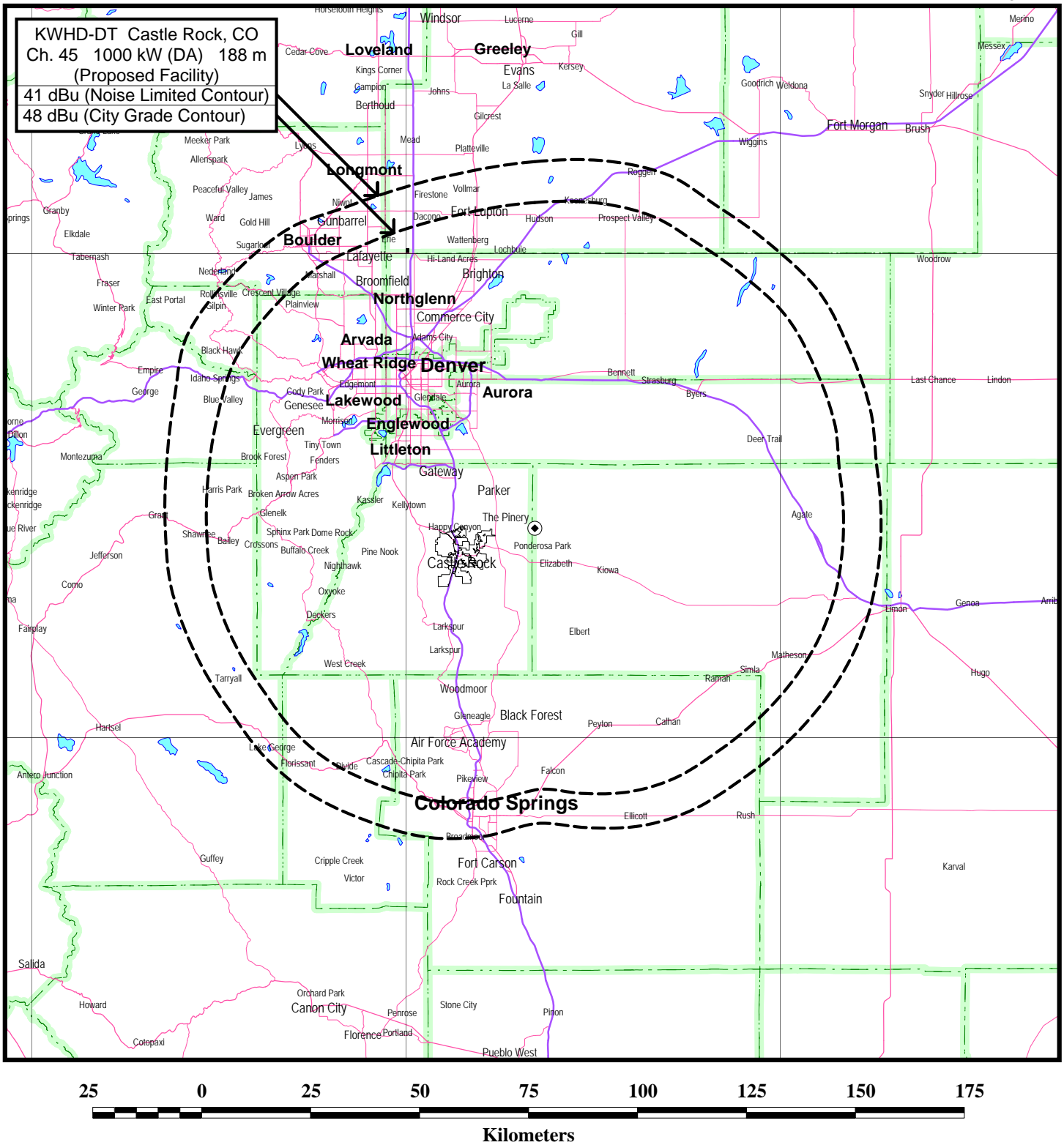
TABULATION OF ELEVATION PATTERN

Elevation Pattern Drawing #: **21E200075-90**

Angle	Field	Angle	Field	Angle	Field	Angle	Field	Angle	Field	Angle	Field
-10.0	0.055	2.4	0.575	10.6	0.107	30.5	0.050	51.0	0.016	71.5	0.027
-9.5	0.084	2.6	0.499	10.8	0.096	31.0	0.052	51.5	0.019	72.0	0.025
-9.0	0.116	2.8	0.429	11.0	0.084	31.5	0.043	52.0	0.027	72.5	0.023
-8.5	0.123	3.0	0.370	11.5	0.062	32.0	0.027	52.5	0.033	73.0	0.021
-8.0	0.103	3.2	0.326	12.0	0.071	32.5	0.018	53.0	0.037	73.5	0.018
-7.5	0.074	3.4	0.298	12.5	0.090	33.0	0.029	53.5	0.037	74.0	0.016
-7.0	0.087	3.6	0.286	13.0	0.095	33.5	0.043	54.0	0.034	74.5	0.015
-6.5	0.133	3.8	0.283	13.5	0.081	34.0	0.049	54.5	0.029	75.0	0.014
-6.0	0.164	4.0	0.285	14.0	0.057	34.5	0.046	55.0	0.022	75.5	0.014
-5.5	0.161	4.2	0.286	14.5	0.048	35.0	0.035	55.5	0.018	76.0	0.014
-5.0	0.131	4.4	0.283	15.0	0.066	35.5	0.021	56.0	0.019	76.5	0.014
-4.5	0.122	4.6	0.275	15.5	0.081	36.0	0.018	56.5	0.024	77.0	0.015
-4.0	0.175	4.8	0.260	16.0	0.079	36.5	0.031	57.0	0.029	77.5	0.016
-3.5	0.238	5.0	0.240	16.5	0.062	37.0	0.042	57.5	0.034	78.0	0.016
-3.0	0.266	5.2	0.217	17.0	0.040	37.5	0.047	58.0	0.035	78.5	0.017
-2.8	0.261	5.4	0.191	17.5	0.041	38.0	0.043	58.5	0.035	79.0	0.017
-2.6	0.249	5.6	0.167	18.0	0.061	38.5	0.032	59.0	0.032	79.5	0.017
-2.4	0.231	5.8	0.148	18.5	0.072	39.0	0.019	59.5	0.027	80.0	0.016
-2.2	0.214	6.0	0.136	19.0	0.067	39.5	0.018	60.0	0.022	80.5	0.016
-2.0	0.207	6.2	0.133	19.5	0.049	40.0	0.029	60.5	0.018	81.0	0.015
-1.8	0.221	6.4	0.137	20.0	0.031	40.5	0.039	61.0	0.017	81.5	0.014
-1.6	0.261	6.6	0.146	20.5	0.039	41.0	0.044	61.5	0.020	82.0	0.013
-1.4	0.324	6.8	0.154	21.0	0.057	41.5	0.042	62.0	0.024	82.5	0.012
-1.2	0.401	7.0	0.160	21.5	0.066	42.0	0.033	62.5	0.028	83.0	0.011
-1.0	0.486	7.2	0.162	22.0	0.060	42.5	0.022	63.0	0.031	83.5	0.010
-0.8	0.575	7.4	0.159	22.5	0.042	43.0	0.015	63.5	0.033	84.0	0.009
-0.6	0.662	7.6	0.152	23.0	0.025	43.5	0.023	64.0	0.033	84.5	0.007
-0.4	0.745	7.8	0.141	23.5	0.034	44.0	0.033	64.5	0.031	85.0	0.006
-0.2	0.819	8.0	0.128	24.0	0.052	44.5	0.040	65.0	0.028	85.5	0.005
0.0	0.884	8.2	0.113	24.5	0.060	45.0	0.042	65.5	0.025	86.0	0.004
0.2	0.936	8.4	0.101	25.0	0.055	45.5	0.037	66.0	0.021	86.5	0.003
0.4	0.973	8.6	0.092	25.5	0.039	46.0	0.029	66.5	0.019	87.0	0.002
0.6	0.995	8.8	0.089	26.0	0.023	46.5	0.019	67.0	0.018	87.5	0.002
0.8	1.000	9.0	0.093	26.5	0.029	47.0	0.017	67.5	0.019	88.0	0.001
1.0	0.989	9.2	0.100	27.0	0.046	47.5	0.024	68.0	0.021	88.5	0.001
1.2	0.963	9.4	0.108	27.5	0.056	48.0	0.033	68.5	0.024	89.0	0.000
1.4	0.922	9.6	0.115	28.0	0.053	48.5	0.038	69.0	0.026	89.5	0.000
1.6	0.868	9.8	0.118	28.5	0.039	49.0	0.040	69.5	0.028	90.0	0.000
1.8	0.804	10.0	0.120	29.0	0.022	49.5	0.036	70.0	0.028		
2.0	0.731	10.2	0.119	29.5	0.022	50.0	0.030	70.5	0.029		
2.2	0.654	10.4	0.115	30.0	0.039	50.5	0.021	71.0	0.028		

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Figure 2



FCC PREDICTED COVERAGE CONTOURS

DTV STATION KWHD-DT
 CASTLE ROCK, COLORADO
 CH 45 1000 KW (DA) 188 M

du Treil, Lundin & Rackley, Inc. Sarasota, Florida 34237