

TECHNICAL EXHIBIT
APPLICATION FOR MODIFICATION OF
DTV CONSTRUCTION PERMIT
DTV STATION KNLJ
FACILITY ID: 48521
JEFFERSON CITY, MISSOURI
CH 20 1000 KW (MAX-DA) 316 M

Technical Narrative

This technical exhibit was prepared in support of an application for modification of construction permit for DTV station KNLJ), at Jefferson City, Missouri. Station KNLJ is currently authorized for digital operation on channel 20 (506-512 MHz) with a maximum directional effective radiated power (ERP) of 1000 kilowatts (kW) and an antenna radiation center height above average terrain (HAAT) of 314 meters. By means of this application, KNLJ proposes to operate with a directional antenna instead of a non-directional antenna. This will ultimately increase the antenna HAAT by 2 meters. No other changes are proposed.

Station KNLJ proposes to operate from its licensed site location with a maximum directional ERP of 1000 kilowatts, employing an ERI ATW29H3-HTC1-20H directional antenna. The transmitter site is located at 9810 SR AE New Bloomfield, Missouri. The site location is uniquely described by the following coordinates, N38° 42' 15" W92° 05' 21".

The ERI ATW29H3-HTC1-20H horizontally polarized antenna will be top-mounted on an existing 271.2 meter (889.8 foot tower/antenna structure). The antenna will be oriented at 265° true. The FCC Tower Registration number for the existing structure is 1006735. Since the proposed top-mounted antenna will increase the overall height of the structure by 4.3 meters, notification to the FAA has been submitted. Once an FAA Determination of No Hazard has been issued, the tower registration will be revised to reflect the new overall height of the tower. The FCC will then be notified of the new registration.

Figure 1 provides the antenna data for the ERI ATW29H3-HTC1-20H directional antenna system.

The following is a tabulation of AM stations within 5 kilometers (3 miles). In addition, the following tabulates authorized FM stations and Class A stations within 16 kilometers (10 miles) of the site. It is noted that there are no full service DTV stations within 16 kilometers.

Call Sign	City	State	Frequency (kHz)	Distance (km)
WQQW	Belleville	IL	1530	3.2
KMOX	St. Louis	MO	1120	3.6
KJSL	St. Louis	MO	630	4.2
Call Sign	City	State	Channel	Distance (km)
WSIE	Edwardsville	IL	204B	12.7
WCBW-FM	East St. Louis	FL	300C1	0
Call Sign	City	State	Channel	Distance (km)
K49DC	St. Louis	MO	49	14.9

Although no prohibitive electromagnetic interference is expected, the applicant recognizes its responsibility to correct problems, which may arise due to its proposed operation.

The proposed transmitter site is approximately 843 kilometers from the closest point of the Canadian border. The proposed site is 1311 kilometers from the closest point of the Mexican border. The closest FCC monitoring station is at Grand Isle, Nebraska, approximately 596 kilometers to the northwest. The proposed site is outside the National Radio Quiet Zone (VA/WVA), the closest point being 1006 kilometers to the east. The closest point of the Table Mountain Radio Quiet Zone (CO) is approximately 1142 kilometers to the west. The closest radio astronomy site operating on TV channel 37 is at North Liberty, Iowa, approximately 343 kilometers to the north. These separations are sufficient to not be a concern for coordination purposes.

Coverage Contours

Figure 2 is a map showing the FCC Predicted 41 dBu f(50,90) and 48 dBu f(50,90) contours for the proposed KNLJ operation. The extent of the contours has been calculated using the normal FCC prediction method and employing the USGS 3-second terrain database. The City Grade Contour encompasses 100% of Jefferson City. The limits of Jefferson City are identified and are based on information contained in the 2000 Census for Missouri.

Domestic Allocation Considerations

The proposed KNLJ operation meets the FCC's 0.5% post-transition interference standards to pertinent Class A and DTV facilities using the procedures outlined in the FCC's OET-69 Bulletin and a standard 2 kilometer cell size and 1 kilometer terrain distance increment.

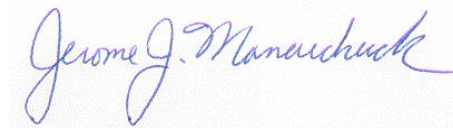
Environmental Consideration

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 281 meters above ground level. The maximum DTV ERP is 1000 kW (horizontal polarization). A vertical plane relative field value of 0.1 (for angles -60 to -90 degrees downward) was presumed for the antenna's downward radiation (see Figure 2). The calculated power density at a point 2 meters above ground level is 0.0043 mW/cm². This is 1.27% of the FCC's recommended limit of 0.3393 mW/cm² for channel 20 for an "uncontrolled" environment. Therefore, based on the responsibility threshold of 5%, the proposal will comply with the RF emission rules.

Access to the transmitting site is restricted and the site is also appropriately marked with RFR warning signs. As this is a multi-user site, an agreement will be in effect with the other stations in the event that workers or other authorized personnel enter

the restricted area or climb the tower, 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.



Jerome J. Manarchuck

du Treil, Lundin & Rackley, Inc.
201 Fletcher Avenue
Sarasota, Florida 34237-6019
(941) 329-6000
JERRY@DLR.COM

June 29, 2010

AZIMUTH PATTERN

Type: ATW-C1

Numeric	dBd
<u>1.52</u>	<u>1.82</u>

Directivity: 1.52

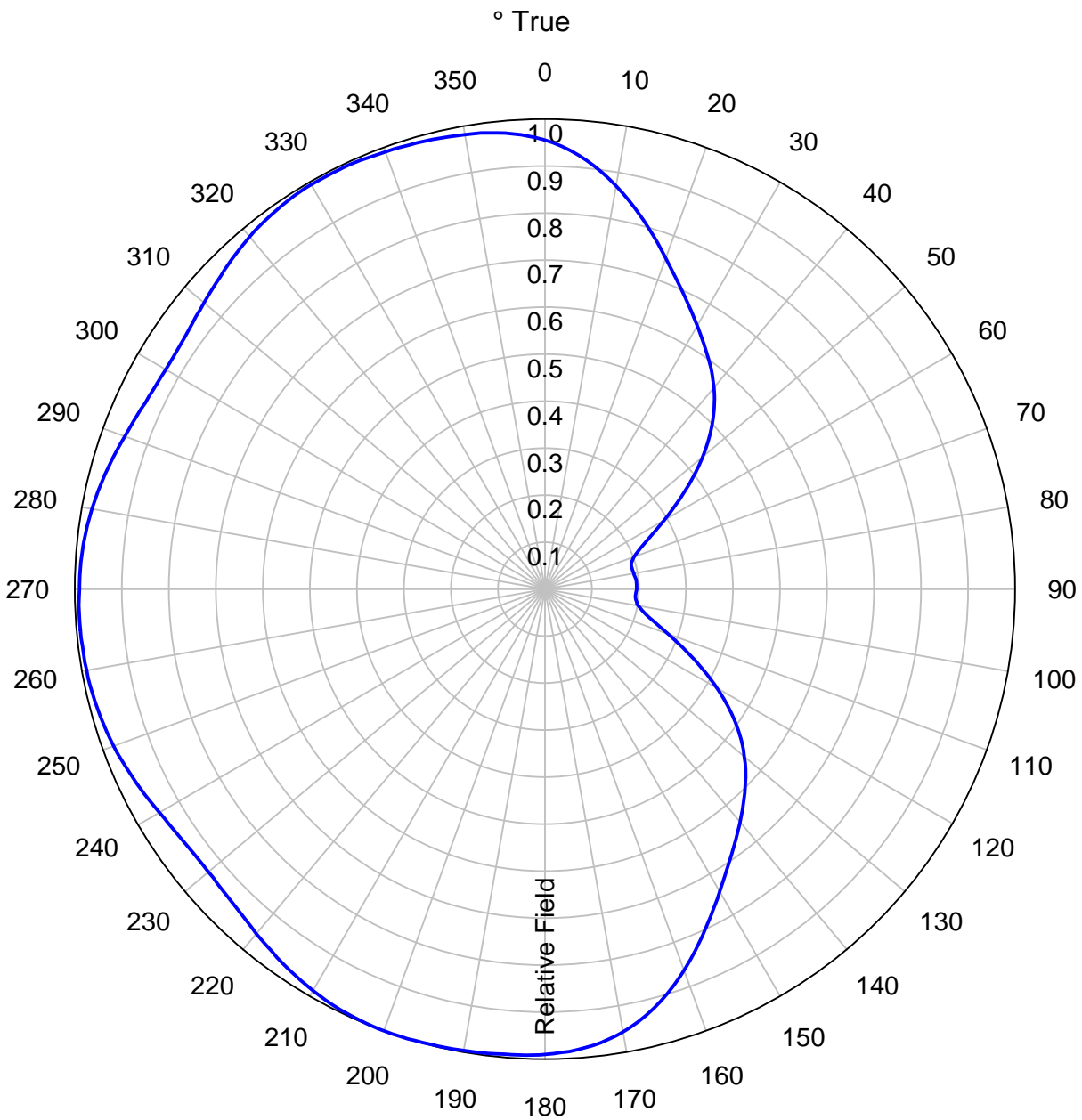
Peak(s) at:

Channel: 20

Location:

Polarization: Horizontal

Note: Pattern shape and directivity may vary with channel and mouting configuration.



Preliminary, subject to final design and review.

TABULATED DATA FOR AZIMUTH PATTERN

Type: ATW-C1

Polarization: Horizontal

ANGLE	FIELD	dB	ANGLE	FIELD	dB	ANGLE	FIELD	dB	ANGLE	FIELD	dB
0	0.955	-0.40	92	0.194	-14.24	184	0.993	-0.06	276	0.986	-0.12
2	0.944	-0.50	94	0.193	-14.29	186	0.994	-0.05	278	0.983	-0.15
4	0.929	-0.64	96	0.194	-14.24	188	0.995	-0.04	280	0.979	-0.18
6	0.912	-0.80	98	0.197	-14.11	190	0.997	-0.03	282	0.974	-0.23
8	0.892	-0.99	100	0.202	-13.89	192	0.998	-0.02	284	0.969	-0.27
10	0.871	-1.20	102	0.210	-13.56	194	0.998	-0.02	286	0.963	-0.33
12	0.848	-1.43	104	0.221	-13.11	196	0.999	-0.01	288	0.957	-0.38
14	0.824	-1.68	106	0.237	-12.51	198	1.000	0.00	290	0.951	-0.44
16	0.799	-1.95	108	0.256	-11.84	200	1.000	0.00	292	0.946	-0.48
18	0.775	-2.21	110	0.279	-11.09	202	0.999	-0.01	294	0.941	-0.53
20	0.750	-2.50	112	0.304	-10.34	204	0.997	-0.03	296	0.937	-0.57
22	0.727	-2.77	114	0.333	-9.55	206	0.995	-0.04	298	0.934	-0.59
24	0.706	-3.02	116	0.363	-8.80	208	0.991	-0.08	300	0.932	-0.61
26	0.685	-3.29	118	0.393	-8.11	210	0.986	-0.12	302	0.932	-0.61
28	0.666	-3.53	120	0.423	-7.47	212	0.981	-0.17	304	0.934	-0.59
30	0.647	-3.78	122	0.453	-6.88	214	0.975	-0.22	306	0.937	-0.57
32	0.630	-4.01	124	0.481	-6.36	216	0.969	-0.27	308	0.942	-0.52
34	0.613	-4.25	126	0.507	-5.90	218	0.962	-0.34	310	0.947	-0.47
36	0.596	-4.50	128	0.532	-5.48	220	0.956	-0.39	312	0.953	-0.42
38	0.578	-4.76	130	0.553	-5.15	222	0.949	-0.45	314	0.959	-0.36
40	0.559	-5.05	132	0.574	-4.82	224	0.944	-0.50	316	0.966	-0.30
42	0.538	-5.38	134	0.593	-4.54	226	0.940	-0.54	318	0.972	-0.25
44	0.515	-5.76	136	0.611	-4.28	228	0.937	-0.57	320	0.978	-0.19
46	0.492	-6.16	138	0.628	-4.04	230	0.935	-0.58	322	0.983	-0.15
48	0.466	-6.63	140	0.645	-3.81	232	0.935	-0.58	324	0.987	-0.11
50	0.438	-7.17	142	0.663	-3.57	234	0.936	-0.57	326	0.990	-0.09
52	0.408	-7.79	144	0.681	-3.34	236	0.939	-0.55	328	0.993	-0.06
54	0.378	-8.45	146	0.701	-3.09	238	0.943	-0.51	330	0.994	-0.05
56	0.348	-9.17	148	0.721	-2.84	240	0.948	-0.46	332	0.994	-0.05
58	0.319	-9.92	150	0.743	-2.58	242	0.954	-0.41	334	0.994	-0.05
60	0.292	-10.69	152	0.766	-2.32	244	0.960	-0.35	336	0.994	-0.05
62	0.267	-11.47	154	0.790	-2.05	246	0.966	-0.30	338	0.992	-0.07
64	0.245	-12.22	156	0.815	-1.78	248	0.971	-0.26	340	0.990	-0.09
66	0.227	-12.88	158	0.839	-1.52	250	0.976	-0.21	342	0.989	-0.10
68	0.213	-13.43	160	0.864	-1.27	252	0.980	-0.18	344	0.988	-0.10
70	0.202	-13.89	162	0.886	-1.05	254	0.984	-0.14	346	0.986	-0.12
72	0.195	-14.20	164	0.907	-0.85	256	0.986	-0.12	348	0.984	-0.14
74	0.191	-14.38	166	0.926	-0.67	258	0.989	-0.10	350	0.982	-0.16
76	0.190	-14.42	168	0.942	-0.52	260	0.990	-0.09	352	0.980	-0.18
78	0.191	-14.38	170	0.956	-0.39	262	0.991	-0.08	354	0.976	-0.21
80	0.192	-14.33	172	0.967	-0.29	264	0.992	-0.07	356	0.971	-0.26
82	0.193	-14.29	174	0.976	-0.21	266	0.992	-0.07	358	0.964	-0.32
84	0.195	-14.20	176	0.982	-0.16	268	0.992	-0.07	360	0.955	-0.40
86	0.195	-14.20	178	0.986	-0.12	270	0.990	-0.09			
88	0.195	-14.20	180	0.990	-0.09	272	0.989	-0.10			
90	0.195	-14.20	182	0.992	-0.07	274	0.988	-0.10			

Preliminary, subject to final design and review.

TABULATED DATA FOR AZIMUTH PATTERN FCC FILING FORMAT

Type: ATW-C1

PolarizationHorizontal

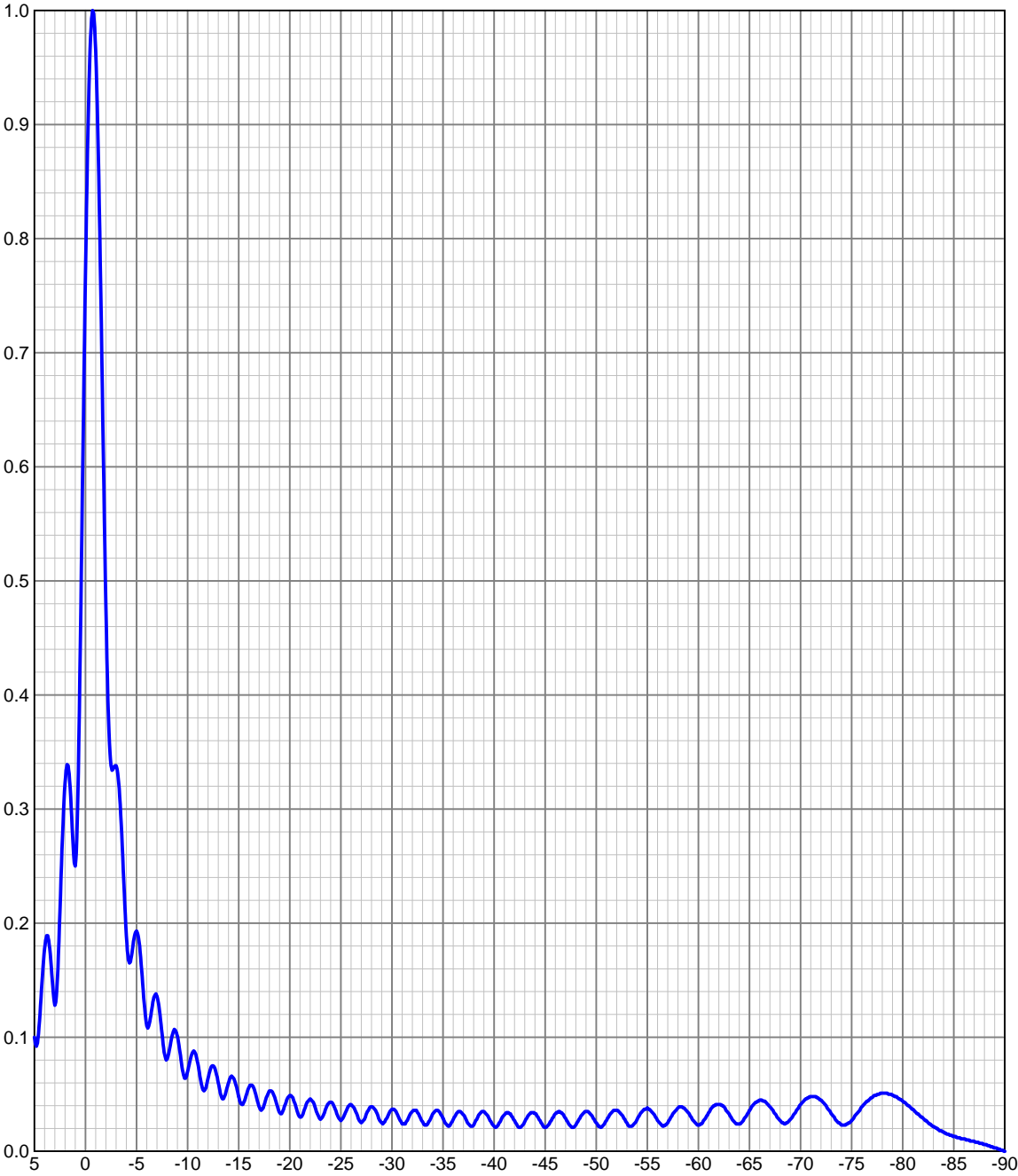
ANGLE	FIELD	ERP (kW)	ERP (dBk)
0	0.955	912.025	29.600
10	0.871	758.641	28.800
20	0.750	562.500	27.501
30	0.647	418.609	26.218
40	0.559	312.481	24.948
50	0.438	191.844	22.829
60	0.292	85.264	19.308
70	0.202	40.804	16.107
80	0.192	36.864	15.666
90	0.195	38.025	15.801
100	0.202	40.804	16.107
110	0.279	77.841	18.912
120	0.423	178.929	22.527
130	0.553	305.809	24.855
140	0.645	416.025	26.191
150	0.743	552.049	27.420
160	0.864	746.496	28.730
170	0.956	913.936	29.609
180	0.990	980.100	29.913
190	0.997	994.009	29.974
200	1.000	1000.000	30.000
210	0.986	972.196	29.878
220	0.956	913.936	29.609
230	0.935	874.225	29.416
240	0.948	898.704	29.536
250	0.976	952.576	29.789
260	0.990	980.100	29.913
270	0.990	980.100	29.913
280	0.979	958.441	29.816
290	0.951	904.401	29.564
300	0.932	868.624	29.388
310	0.947	896.809	29.527
320	0.978	956.484	29.807
330	0.994	988.036	29.948
340	0.990	980.100	29.913
350	0.982	964.324	29.842

Preliminary, subject to final design and review.

ELEVATION PATTERN

Type:	ATW29H3H		Channel:	20
Directivity:	Numeric	dBd	Location:	
Main Lobe:	29.00	14.62	Beam Tilt:	-0.75
Horizontal:	17.19	12.35	Polarization:	Horizontal

Relative Field



Preliminary, subject to final design and review.

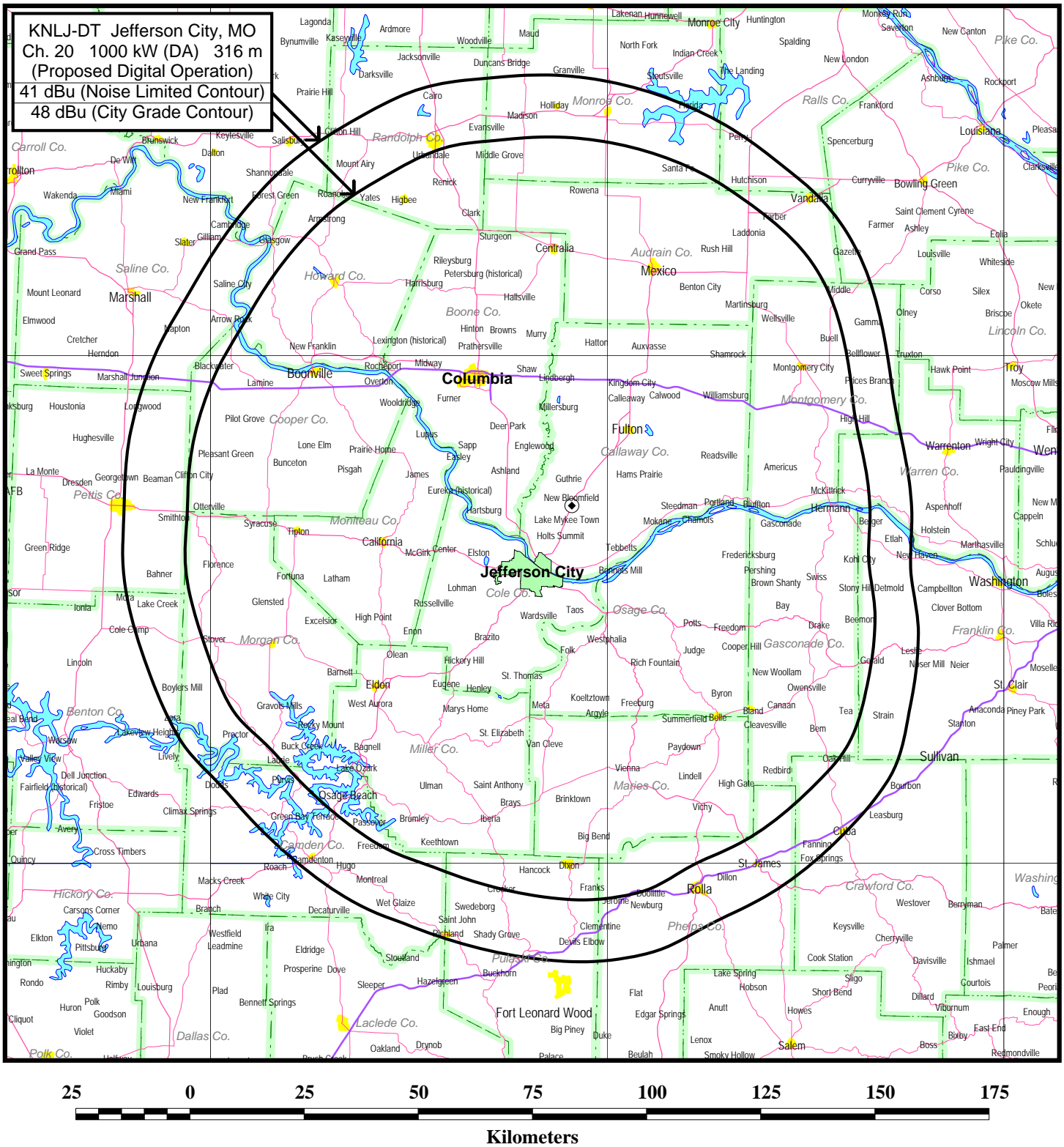
TABULATED DATA FOR ELEVATION PATTERN

Type: ATW29H3H
Polarization: Horizontal

ANGLEFIELD	dB	ANGLEFIELD	dB	ANGLEFIELD	dB	ANGLEFIELD	dB	ANGLEFIELD	dB
5.00	0.100	-20.00	-6.75	0.136	-17.33	-27.00	0.025	-32.04	-50.50
4.75	0.093	-20.58	-7.00	0.136	-17.33	-27.50	0.033	-29.63	-51.00
4.50	0.114	-18.86	-7.25	0.123	-18.20	-28.00	0.039	-28.18	-51.50
4.25	0.149	-16.54	-7.50	0.103	-19.74	-28.50	0.034	-29.37	-52.00
4.00	0.178	-14.99	-7.75	0.085	-21.41	-29.00	0.025	-32.04	-52.50
3.75	0.189	-14.47	-8.00	0.081	-21.83	-29.50	0.029	-30.75	-53.00
3.50	0.178	-14.99	-8.25	0.090	-20.87	-30.00	0.037	-28.64	-53.50
3.25	0.150	-16.48	-8.50	0.102	-19.83	-30.50	0.033	-29.63	-54.00
3.00	0.128	-17.86	-8.75	0.106	-19.45	-31.00	0.024	-32.40	-54.50
2.75	0.151	-16.42	-9.00	0.101	-19.91	-31.50	0.027	-31.37	-55.00
2.50	0.210	-13.56	-9.25	0.087	-21.21	-32.00	0.035	-29.12	-55.50
2.25	0.275	-11.20	-9.50	0.071	-22.97	-32.50	0.034	-29.37	-56.00
2.00	0.323	-9.82	-9.75	0.064	-23.88	-33.00	0.026	-31.70	-56.50
1.75	0.339	-9.41	-10.00	0.070	-23.10	-33.50	0.024	-32.40	-57.00
1.50	0.319	-9.92	-10.50	0.087	-21.21	-34.00	0.033	-29.63	-57.50
1.25	0.275	-11.21	-11.00	0.077	-22.27	-34.50	0.036	-28.87	-58.00
1.00	0.250	-12.04	-11.50	0.054	-25.35	-35.00	0.029	-30.75	-58.50
0.75	0.310	-10.16	-12.00	0.064	-23.88	-35.50	0.022	-33.15	-59.00
0.50	0.446	-7.01	-12.50	0.075	-22.50	-36.00	0.028	-31.06	-59.50
0.25	0.612	-4.26	-13.00	0.060	-24.44	-36.50	0.035	-29.12	-60.00
0.00	0.770	-2.27	-13.50	0.046	-26.74	-37.00	0.032	-29.90	-60.50
-0.25	0.897	-0.94	-14.00	0.060	-24.44	-37.50	0.024	-32.40	-61.00
-0.50	0.977	-0.20	-14.50	0.064	-23.88	-38.00	0.023	-32.77	-61.50
-0.75	0.998	-0.01	-15.00	0.048	-26.38	-38.50	0.032	-29.90	-62.00
-1.00	0.965	-0.31	-15.50	0.043	-27.33	-39.00	0.035	-29.12	-62.50
-1.25	0.877	-1.14	-16.00	0.056	-25.04	-39.50	0.029	-30.75	-63.00
-1.50	0.753	-2.46	-16.50	0.055	-25.19	-40.00	0.022	-33.15	-63.50
-1.75	0.611	-4.29	-17.00	0.039	-28.18	-40.50	0.025	-32.04	-64.00
-2.00	0.477	-6.43	-17.50	0.041	-27.74	-41.00	0.032	-29.90	-64.50
-2.25	0.381	-8.38	-18.00	0.053	-25.51	-41.50	0.033	-29.63	-65.00
-2.50	0.338	-9.42	-18.50	0.048	-26.38	-42.00	0.027	-31.37	-65.50
-2.75	0.336	-9.47	-19.00	0.034	-29.37	-42.50	0.021	-33.56	-66.00
-3.00	0.338	-9.42	-19.50	0.040	-27.96	-43.00	0.026	-31.70	-66.50
-3.25	0.323	-9.82	-20.00	0.049	-26.20	-43.50	0.033	-29.63	-67.00
-3.50	0.287	-10.84	-20.50	0.042	-27.54	-44.00	0.033	-29.63	-67.50
-3.75	0.236	-12.52	-21.00	0.030	-30.46	-44.50	0.027	-31.37	-68.00
-4.00	0.189	-14.47	-21.50	0.038	-28.40	-45.00	0.021	-33.56	-68.50
-4.25	0.167	-15.57	-22.00	0.046	-26.74	-45.50	0.026	-31.70	-69.00
-4.50	0.171	-15.34	-22.50	0.038	-28.40	-46.00	0.033	-29.63	-69.50
-4.75	0.186	-14.59	-23.00	0.028	-31.06	-46.50	0.034	-29.37	-70.00
-5.00	0.193	-14.29	-23.50	0.037	-28.64	-47.00	0.029	-30.75	-70.50
-5.25	0.183	-14.73	-24.00	0.043	-27.33	-47.50	0.022	-33.15	-71.00
-5.50	0.159	-15.97	-24.50	0.036	-28.87	-48.00	0.023	-32.77	-71.50
-5.75	0.130	-17.72	-25.00	0.027	-31.37	-48.50	0.031	-30.17	-72.00
-6.00	0.110	-19.17	-25.50	0.035	-29.12	-49.00	0.035	-29.12	-72.50
-6.25	0.112	-19.02	-26.00	0.041	-27.74	-49.50	0.032	-29.90	-73.00
-6.50	0.125	-18.06	-26.50	0.034	-29.37	-50.00	0.025	-32.04	-73.50

Preliminary, subject to final design and review.

Figure 2



FCC PREDICTED COVERAGE CONTOURS

DTV STATION KNLJ-DT
JEFFERSON CITY, MISSOURI
CH 20 1000 KW (DA) 316 m

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