

TECHNICAL SUMMARY
APPLICATION FOR CONSTRUCTION PERMIT
TV STATION KQCK
CHEYENNE, WYOMING
CHANNEL 11 16 KW (DA) 403 m

1. The purpose of this instant application is to change the KQCK directional antenna (DA) system from an SWR model SWDDPD2-0-2-0/11 DA to a Dielectric model TLS-V4M-R DA and slightly increase the antenna radiation center height above ground level from 15 meters to 19.8 meters. No other changes are proposed, including to change in transmitter site or ERP (16 kW). Specifically, operation will be on channel 11 with a DA maximum ERP 16 kW and an HAAT of 403 meters.¹ There will be no change in the overall structure height of the existing tower that will be utilized for the proposed operation (ASRN 1224099).

2. City Coverage Compliance: Figure 1 shows demonstrates that the predicted 43 dBu, F(50,90) contour encompasses 100% of the Cheyenne city limits (obtained from the 2010 Census).

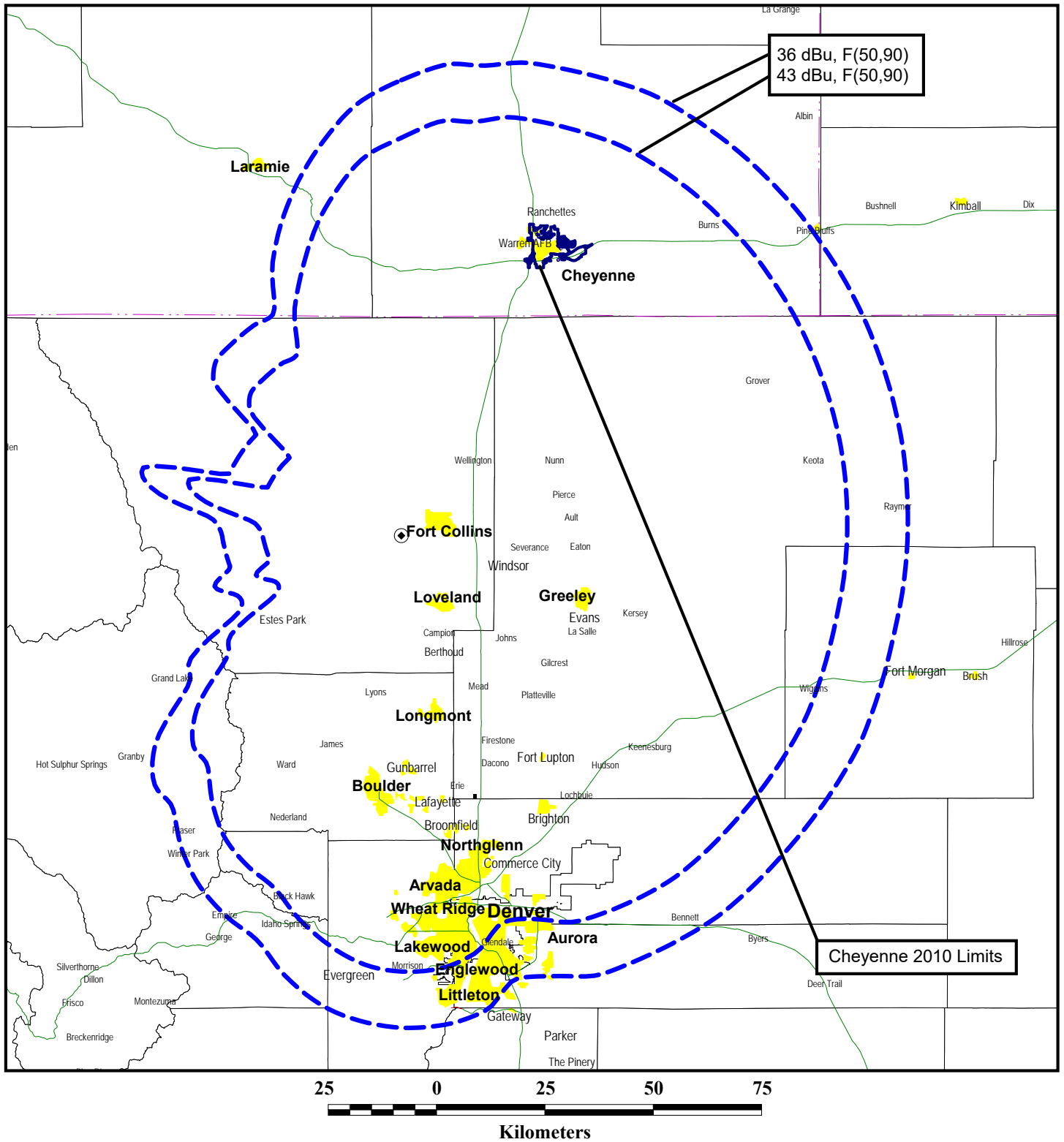
3. As demonstrated in the attached *TVStudy* analysis exhibit, the proposal complies with the FCC's interference protection requirements based on a cell size of 2 km and profile resolution of 1 point/km.

4. RFR Compliance: The proposed facilities were evaluated in terms of potential radiofrequency radiation (RFR) exposure at ground level to workers and the general public. The radiation center for the proposed DTV antenna will be located 19.8 meters above ground level. The total DTV ERP is 16 kW (horizontal polarization only). A conservative vertical plane relative field value of 0.15 is presumed for the antenna's downward radiation in both the horizontal and vertical planes of polarization (for angles below 60 degrees downward, see attached antenna data). The calculated power density at a point 2 meters above ground level is 37.95 uW/cm² which is 19% of the FCC's recommended limit of 200 uW/cm² for channel 11 for an uncontrolled environment. Therefore, as KQCK is the only broadcast user on the tower, the proposal will comply with the RF emission rules.

¹ The HAAT is being corrected from 650 meters to 403 meters.

Access to the transmitting site is restricted and appropriately marked with RFR warning signs. Furthermore, a formal RFR protection protocol is in effect in the event that workers or other authorized personnel enter the restricted area or climb the tower to ensure that appropriate measure will be taken to assure worker safety with respect to RFR exposure. Such measures include limiting the exposure time, wearing protective clothing, reducing power to an acceptable level or termination of transmitter output power all together until workers leave the restricted area.

Figure 1



FCC PREDICTED COVERAGE CONTOURS

TV STATION KQCK
CHEYENNE, WYOMING
CH 11 16 KW (DA) 403 M

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

tvstudy v2.2.5 (4uoc83)
Database: localhost, Study: KQCK App 16 kW-403 m, Model: Longley-Rice
Start: 2021.02.08 13:04:46

Study created: 2021.02.08 13:04:45

Study build station data: LMS TV 2021-02-05

Proposal: KQCK D11 DT APP CHEYENNE, WY
File number: KQCK App 16 kW/403 m
Facility ID: 18287
Station data: User record
Record ID: 3565
Country: U.S.
Zone: II

Stations potentially affected by proposal:

IX	Call	Chan	Svc	Status	City, State	File Number	Distance
No	KRMZ	D10	DT	LIC	STEAMBOAT SPRINGS, CO	BLCDT20060711ABO	140.0 km
No	KCWY-DT	D12	DT	CP	CASPER, WY	BLANK0000127681	261.0

No non-directional AM stations found within 0.8 km

No directional AM stations found within 3.2 km

Record parameters as studied:

Channel: D11
Latitude: 40 32 46.50 N (NAD83)
Longitude: 105 11 51.90 W
Height AMSL: 2197.3 m
HAAT: 403.0 m
Peak ERP: 16.0 kW
Antenna: Dielectric TLS-V4M-R 0.0 deg
Elev Pattn: Generic
Elec Tilt: 0.75

36.0 dBu contour:

Azimuth	ERP	HAAT	Distance
0.0 deg	9.10 kW	486.5 m	105.0 km
45.0	15.9	630.9	117.7
90.0	13.3	651.2	116.8
135.0	14.0	593.4	114.8
180.0	15.6	553.1	113.6
225.0	4.90	198.9	81.2
270.0	1.73	12.6	41.5
315.0	1.43	97.9	59.1

Distance to Canadian border: 939.6 km

Distance to Mexican border: 981.2 km

Conditions at FCC monitoring station: Grand Island NE
Bearing: 83.6 degrees Distance: 571.5 km

Proposal is not within the West Virginia quiet zone area

Conditions at Table Mountain receiving zone:
Bearing: 182.8 degrees Distance: 47.7 km
ERP: 15.2 kW Field strength: 77.1 dBu, 7.1 mV/m

Study cell size: 2.00 km
Profile point spacing: 1.00 km

Maximum new IX to full-service and Class A: 0.50%
Maximum new IX to LPTV: 2.00%

Interference to proposal scenario 1

	Call	Chan	Svc	Status	City, State	File Number	Distance
Desired:	KQCK	D11	DT	APP	CHEYENNE, WY	KQCK App 16 kW/403 m	

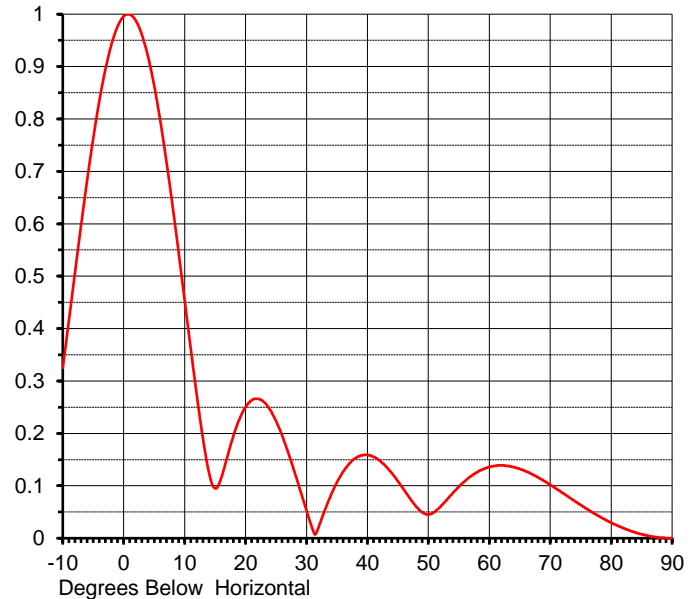
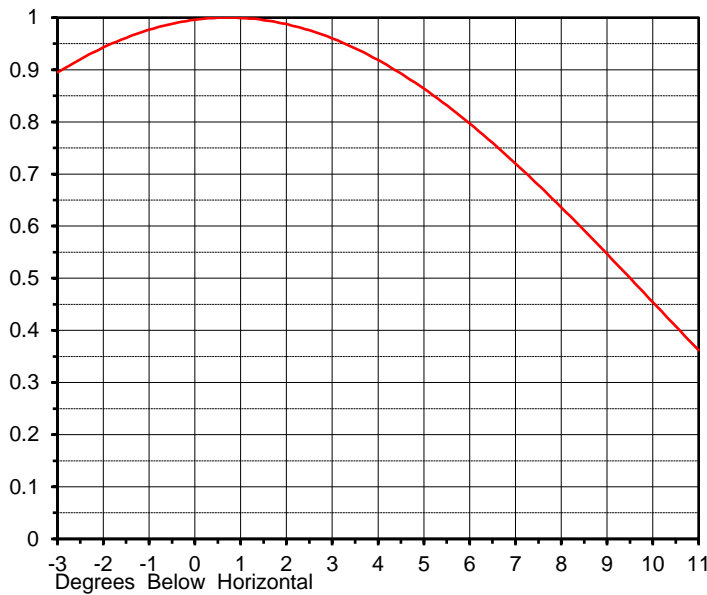
	Service area	Terrain-limited	IX-free	Percent IX
30135.1	3,216,059	28299.7	3,185,307	0.00 0.00

ELEVATION PATTERN

Proposal No. **C-71661-1**
 Date **21-Dec-20**
 Call Letters **KQCK**
 Channel **11**
 Frequency **201 MHz**
 Antenna Type **TLS-V4M-R**

RMS Directivity at Main Lobe **4.3 (6.33 dB)**
 RMS Directivity at Horizontal **4.3 (6.33 dB)**
Calculated

Beam Tilt **0.75 deg**
 Pattern Number **04T043075-11**



Angle	Field	Angle	Field	Angle	Field	Angle	Field	Angle	Field
-10.0	0.325	10.0	0.454	30.0	0.053	50.0	0.045	70.0	0.102
-9.0	0.415	11.0	0.362	31.0	0.017	51.0	0.050	71.0	0.094
-8.0	0.506	12.0	0.273	32.0	0.021	52.0	0.060	72.0	0.087
-7.0	0.597	13.0	0.191	33.0	0.053	53.0	0.073	73.0	0.079
-6.0	0.683	14.0	0.125	34.0	0.082	54.0	0.086	74.0	0.071
-5.0	0.763	15.0	0.095	35.0	0.107	55.0	0.098	75.0	0.063
-4.0	0.834	16.0	0.115	36.0	0.127	56.0	0.109	76.0	0.056
-3.0	0.895	17.0	0.155	37.0	0.142	57.0	0.118	77.0	0.049
-2.0	0.943	18.0	0.195	38.0	0.152	58.0	0.126	78.0	0.042
-1.0	0.977	19.0	0.227	39.0	0.158	59.0	0.132	79.0	0.036
0.0	0.996	20.0	0.250	40.0	0.159	60.0	0.136	80.0	0.030
1.0	0.999	21.0	0.263	41.0	0.155	61.0	0.138	81.0	0.024
2.0	0.988	22.0	0.266	42.0	0.148	62.0	0.139	82.0	0.019
3.0	0.960	23.0	0.260	43.0	0.137	63.0	0.138	83.0	0.015
4.0	0.919	24.0	0.245	44.0	0.124	64.0	0.136	84.0	0.011
5.0	0.864	25.0	0.224	45.0	0.109	65.0	0.132	85.0	0.008
6.0	0.797	26.0	0.196	46.0	0.092	66.0	0.128	86.0	0.005
7.0	0.720	27.0	0.163	47.0	0.076	67.0	0.122	87.0	0.003
8.0	0.636	28.0	0.128	48.0	0.060	68.0	0.116	88.0	0.001
9.0	0.547	29.0	0.090	49.0	0.049	69.0	0.109	89.0	0.000
								90.0	0.000

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