

SUPPLEMENTAL INTERFERENCE STUDY  
K242CI CASPER, WY  
MOUNTAIN COMMUNITY TRANSLATORS, LLC  
MINOR CHANGE APPLICATION  
JULY 2022

This supplemental interference study is being provided per a staff inquiry seeking additional information regarding current interference being caused by KRNK(FM) Casper, Wyoming operating on channel 244C2, facility ID 200635 to K242CI Casper, Wyoming on second adjacent channel 242D.

K242CI is seeking to change its channel of operation from channel 242 to 258. This change will allow K242CI to operate basically interference free from any same, or pertinent 1<sup>st</sup> 2<sup>nd</sup> or 3<sup>rd</sup> adjacent channels.

While K242CI was licensed to operate via waiver of the commission rules on a second adjacent channel to KRNK(FM) by demonstrating a lack of prohibitive interference to KRNK in populated areas. K242CI does receive incoming interference from KRNK in populated areas. FM translators are not normally protected from such interference. However, as will be documented, a channel change from 242 to 258 will allow K242CI to benefit from greater interference free coverage to its listeners.

Figure 1 documents a Longley-Rice coverage map showing the areas where KRNK's predicted signal exceeds the predicted coverage of K242CI by more than 20 dB $\mu$ . KRNK transmits from a nearby tower site to the K242CI transmitter site at the same Casper Mountain Communications site. KRNK operates with 2.7 KW Effective Radiated Power ("ERP") with similar antenna heights of K242CI. K242CI operates with only 0.01 KW ERP (10 watts). Thus, KRNK operates with 270 times (24.3 dB) the ERP of K242CI with similar transmitter antenna facilities. While many newer digital receivers have enough adjacent channel selectivity to

receive K242CI adequately, there are still many non-digital older, lower quality receivers that don't have enough adjacent channel selectivity and/or have "Automatic Frequency Control" or AFC that will lock onto the stronger FM signal only being two channels removed. Full power FM stations are protected for this reason from 2<sup>nd</sup> and 3<sup>rd</sup> adjacent channel interference.

Figure 3 is a contour study between KRNK and K242CI which shows the overlap of the 100 dB $\mu$  interference contour of KRNK with the 60 dB $\mu$  normally protected contour of K242CI. Figure 2 documents the population located within these areas of interference. For example, in Natrona County, or the County where the city of license is located for K242CI, the KRNK field strength is greater than 20 dB $\mu$  in areas containing 30,089 persons. Figure 4 shows the predicted 100 dB $\mu$  interference contour for KRNK located entirely within the 60 dB $\mu$  of K242CI. There are 215 persons located within this interference contour of KRNK. Thus, that while it has been documented previously that K242CI doesn't not cover any population within its interference contour towards KRNK, K242CI does receive normally prohibitive interference from KRNK.

It should also be noted that this FCC application is fully compliant with Section 74.1204(a) of the FCC Rules such that no new interference will be caused to any pertinent co-channel and adjacent channel facilities or proposed facilities. This application proposes a 60 dBu (1 mV/m) coverage contour that overlaps all of the currently licensed K242CI 60 dBu (1 mV/m) licensed coverage contour, thus adhering to the requirement in Section 74.1233(a)(1)(ii) to be considered a Minor Modification application. As such, because the requested channel change will mitigate interference at the current existing frequency and will not cause any new interference at the new frequency, this application may be considered a Minor Modification in accordance with Section 74.1233(a)(1) (i)(B) of the FCC Rules.

K242CI respectfully requests that it be allowed to change its channel of operation from channel 242 to 258 to provide increased interference free coverage.

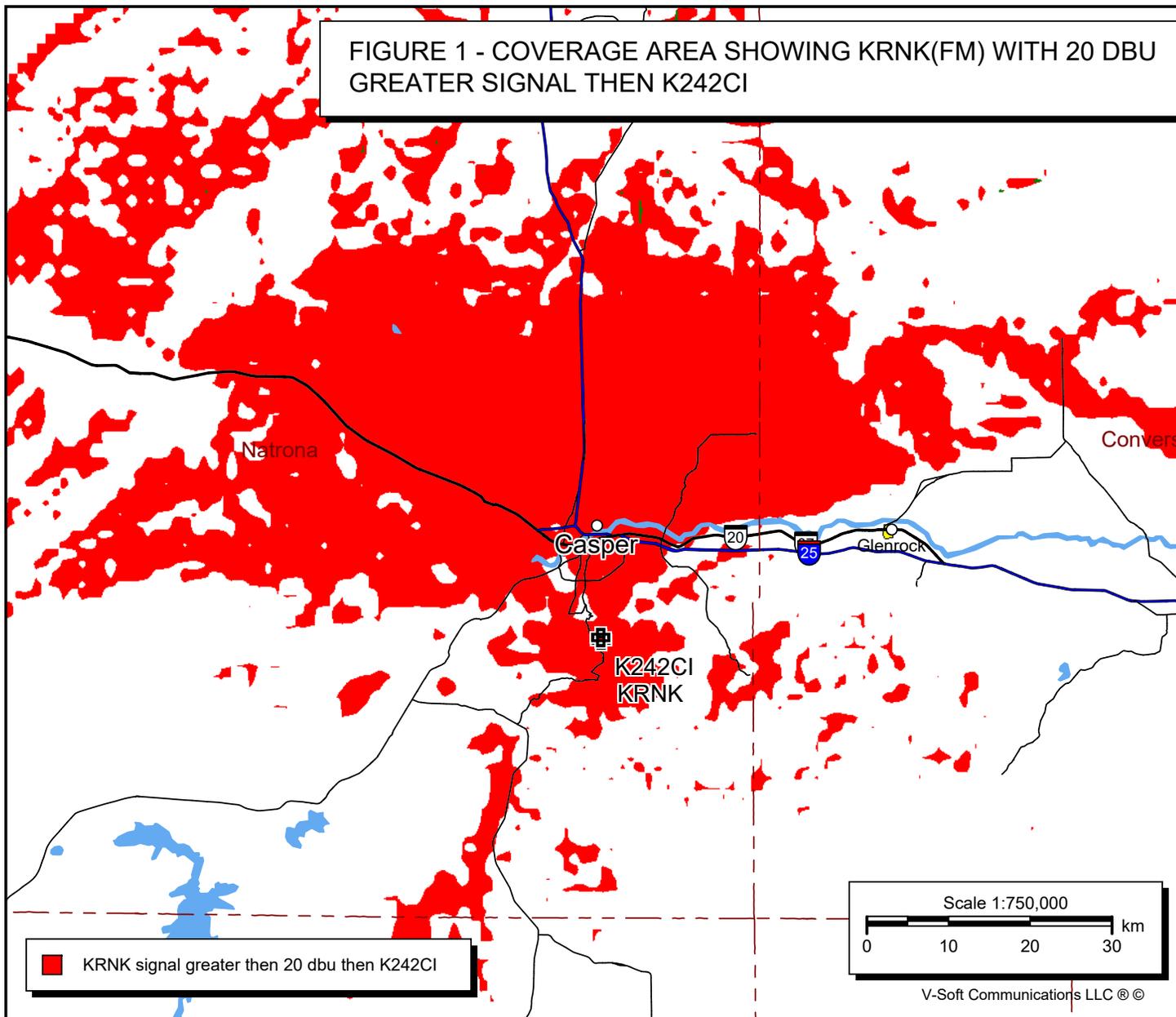
**K242CI**

BLFT20160412ACZ  
Latitude: 42-44-26.80 N  
Longitude: 106-18-24 W  
ERP: 0.01 kW  
Channel: 242  
Frequency: 96.3 MHz  
AMSL Height: 2466.0 m  
Elevation: 2458.0 m  
Horiz. Pattern: Omni  
Vert. Pattern: No  
Prop Model: Longley/Rice  
Climate: Cont temperate  
Conductivity: 0.0050  
Dielec Const: 15.0  
Refractivity: 311.0  
Receiver Ht AG: 9.1 m  
Receiver Gain: 0 dB  
Time Variability: 50.0%  
Sit. Variability: 50.0%  
ITM Mode: Broadcast

**KR NK**

BLH20110804ABG  
Latitude: 42-44-36.90 N  
Longitude: 106-18-26.10 W  
ERP: 2.70 kW  
Channel: 244  
Frequency: 96.7 MHz  
AMSL Height: 2524.0 m  
Elevation: 2445.0 m  
Horiz. Pattern: Omni  
Vert. Pattern: No  
Prop Model: Longley/Rice  
Climate: Cont temperate  
Conductivity: 0.0050  
Dielec Const: 15.0  
Refractivity: 311.0  
Receiver Ht AG: 9.1 m  
Receiver Gain: 0 dB  
Time Variability: 10.0%  
Sit. Variability: 50.0%  
ITM Mode: Broadcast

**FIGURE 1 - COVERAGE AREA SHOWING KR NK(FM) WITH 20 DBU GREATER SIGNAL THEN K242CI**



■ KR NK signal greater than 20 dbu then K242CI

Scale 1:750,000  
0 10 20 30 km

V-Soft Communications LLC ©

FIGURE 2 - D/U Ratio Study

Signal Resolution: 1.25 km

Study Date: 7/7/2022

Population Database: 2010 US Census (PL)

Reference Station:

K242CI (242) Casper, WY BLFT20160412ACZ  
 0.01 kW - ND - 2466 m AMSL

Settings:

Threshold for Reception: 40.0 dBu  
 Front-To-Back Ratio: 0.0 dB  
 Using Signal Interpolation: No

Interfering:

| Call Letters | City   | State | Dist | Bear  |
|--------------|--------|-------|------|-------|
| KR NK (244)  | Casper | WY    | 0.3  | 351.3 |

| D/U Ratio (dB) | Housing Units | Population | %      |
|----------------|---------------|------------|--------|
| < 0.0          | 30,209        | 68,003     | 100.00 |
| < -10.0        | 30,209        | 68,003     | 100.00 |
| < -20.0        | 30,209        | 68,003     | 100.00 |
| Coverage       | 30,209        | 68,003     |        |

| D/U Ratio (dB) | Area (sq. km) | %      |
|----------------|---------------|--------|
| < 0.0          | 5934.82       | 100.00 |
| < -10.0        | 5934.82       | 100.00 |
| < -20.0        | 5898.65       | 99.39  |
| Coverage       | 5934.82       |        |

"Coverage" indicates the area under study where the field strength is greater than 40.0 dBu.

|                 | Housing Units | Population |
|-----------------|---------------|------------|
| Wyoming         |               |            |
| Carbon County   |               |            |
| Total           | 8,576         | 15,885     |
| < 0.0           | 2             | 0          |
| < -10.0         | 2             | 0          |
| < -20.0         | 2             | 0          |
| Converse County |               |            |

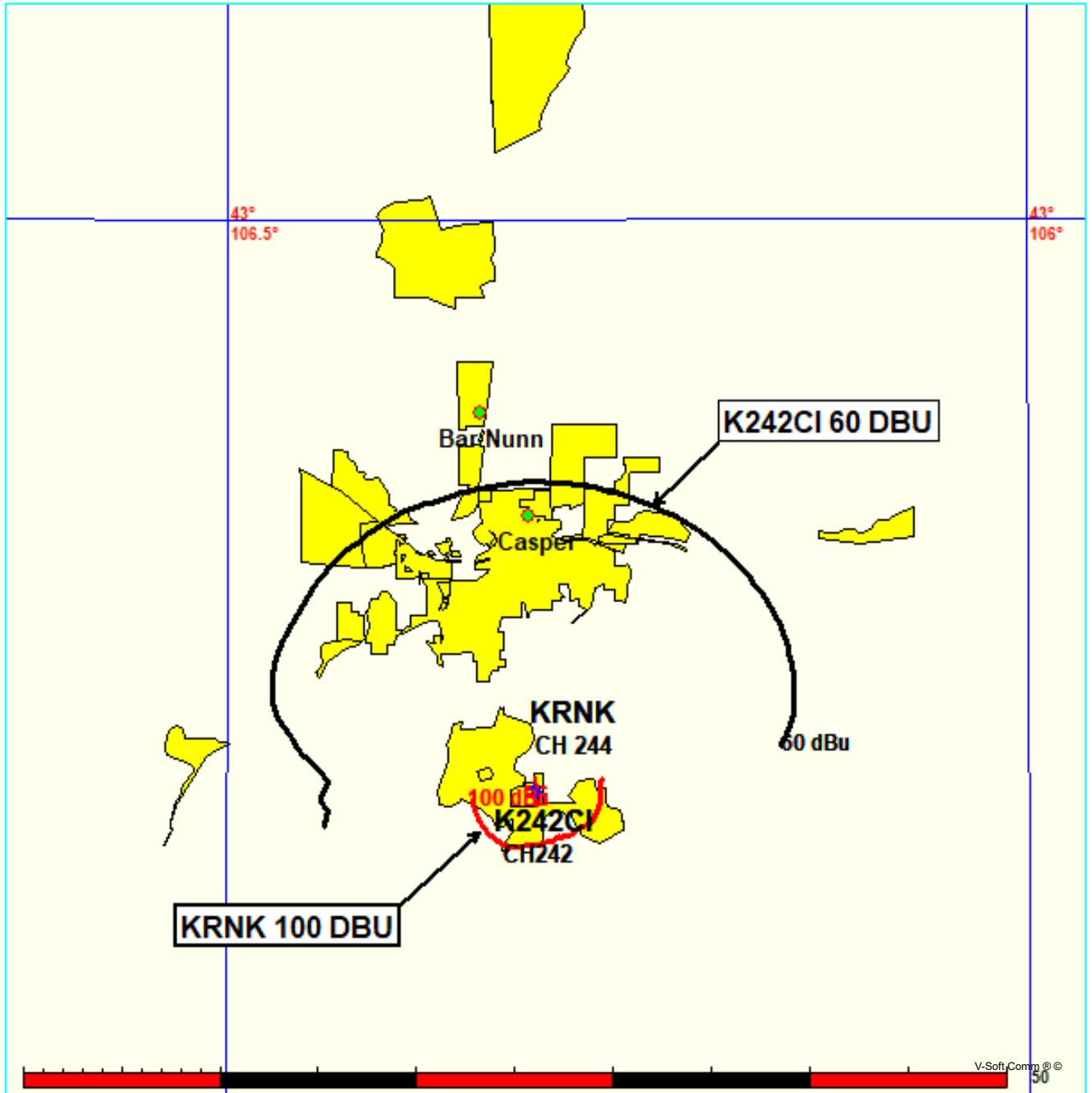
|                |        |        |
|----------------|--------|--------|
| Total          | 6,403  | 13,833 |
| < 0.0          | 118    | 276    |
| < -10.0        | 118    | 276    |
| < -20.0        | 118    | 276    |
| Johnson County |        |        |
| Total          | 4,553  | 8,569  |
| < 0.0          | 0      | 0      |
| < -10.0        | 0      | 0      |
| < -20.0        | 0      | 0      |
| Natrona County |        |        |
| Total          | 33,807 | 75,450 |
| < 0.0          | 30,089 | 67,727 |
| < -10.0        | 30,089 | 67,727 |
| < -20.0        | 30,089 | 67,727 |

FIGURE 3 - KRNK(FM) INTERFERENCE CONTOUR WITH K242CI  
K242CI CASPER, WY, CH. 242D

FMCommander Single Allocation Study - 07-07-2022 - GLOBE 30 Sec  
KRNK's Overlaps (In= -33.43 km, Out= -18.13 km)

KR NK CH 244 C2 73.215 N  
Lat= 42 44 36.90, Lng= 106 18 26.10  
2.7 kW 579.9 m HAAT, 2524 m COR  
Prot.= 60 dBu, Intef.= 100 dBu

K242CI CH 242 D BLFT20160412ACZ  
Lat= 42 44 26.80, Lng= 106 18 24.00  
0.01 kW 0 m HAAT, 2466 m COR  
Prot.= 60 dBu, Intef.= 100 dBu



**FIGURE 4 - KRNK PREDICTED 100 DBU CONTOUR  
K242CI CASPER, WY, CH. 242D**

Coverage Study - GLOBE 30 Sec  
07-07-2022

KRNK CH244 C2, 2.7 kW, 579.9m HAAT, 2524.0m COR AMSL  
Service Contour = 100 dBu. Population = 215

