

K240DU

Bozeman, MT

Proposed Minor Modification
of Licensed Translator Facility

Application Overview:

As a result of the recent grant of BLED-20180511AAQ, the primary service of KGVM(FM) has been licensed to serve the community of Bozeman, MT, on Channel 240C3 which is co-channel to the currently licensed, secondary services of translator K240DU. As demonstrated in the following channel study, the permitted KGVM(FM) operations at Bozeman and the licensed K240DU operations are in relative proximity to each other and will therefore cause impermissible interference towards each other.

Therefore, the Applicant proposes to modify BLFT-20080424ABT using the following parameters on a non-adjacent displacement channel:

Tech Box:

Channel:	252
Antenna Coordinates:	N45-38-44, W111-01-14 (NAD 27)
ASRN:	N/A
Tower Site Base AMSL:	1561 m
Overall Tower Height AGL:	8 m
COR AGL:	7 m
ERP:	0.25 kW
Directional Antenna:	Yes - see Exhibit 4

Primary Station and Translator Protected Contour Relationship:

Exhibit 1 demonstrates that the proposed fill-in translator facility's protected contour is completely encompassed by the protected contour of the primary station being rebroadcast.

Interference Study (Displacement Channel Requested)

In order to prevent the imminent interference from occurring, and due to the nature of the translator being a secondary service to KGVM(FM), the Applicant seeks a channel displacement change for K240DU. Unfortunately, the applicant has determined that it is precluded from moving to an adjacent channel or intermediate frequency in accordance with Section 74.1233(a)(1) to mitigate the impending interference due to Section 74.1204 prohibited overlap issues with other stations on those channels.

Exhibit 2A includes a contour overlap study for the instant K240DU channel as well as studies for adjacent and intermediate channels to which K240DU could investigate moving to under the minor change provisions of the Rules (Adjacent Channels 237 through 239 and 241 through 243 or I.F. channels 293 or 294). As can be seen in the Preclusion Study, however, Adjacent Channels and I.F. channels are not available for K240DU as operations on those channels would cause interference to the following:

Channel 237: Prohibited Interference towards KMMS(FM) 236C1

Channel 238: Prohibited Interference towards KMBR(FM) 238C

Channel 239: Prohibited Interference towards KGVM(FM) 240C3

Channel 241: Prohibited Interference towards KGVM(FM) 240C3

Channel 242: Prohibited Interference towards KISN(FM) 244C2

Channel 243: Prohibited Interference towards KISN(FM) 244C2

Channel 293: Prohibited Interference towards KJZS-LP 292L1 & KSCY(FM) 295C3

Channel 294: Prohibited Interference towards KSCY(FM) 295C3

As will be demonstrated herein, the Applicant has determined that Channel 252 can be made available for the instant facility's use. However, a move to this channel change would be considered non-adjacent. Therefore, the Applicant respectfully seeks a waiver Section 74.1233(a)(1) of the Commission's Rules that would otherwise consider the relocation to a non-adjacent channel to be a "major change." Although K240DU is considered a secondary service as a translator, it provides an extremely valuable service to the public. The translator is located in the mountainous community of Bozeman, MT, and provides fill-in service to areas obstructed from the primary signal of KBMC. Termination of K240DU's operations would disserve the listening public and grant of a waiver due to the unique circumstances of this request would further the public interest. *See WAIT Radio v. FCC*, 418 F. 2d 1153, 1157 (D.C. Cir. 1969), *cert denied*, 409 U.S. 1027 (1972).

Exhibit 2B is a contour overlap study demonstrating that the proposed antenna site provides requisite contour protection towards all applications, authorizations, and permits pursuant to Section 74.1204.

No Other Co-Located directional Emitters:

No other directional emitters are authorized to use the proposed tower below the proposed antenna.

Downward Radiation Study (Measure Upon Construction)

The proposed FM Facility has been evaluated in terms of potential radiofrequency electromagnetic field exposure at ground level in accordance with OET Bulletin No. 65, Evaluating Compliance with FCC Specified Guidelines for Human Exposure to Radiofrequency Electromagnetic Fields (OET Bulletin 65, Second Edition 97-01, August, 1997). The Commission's FM Model Power Density Prediction program was employed to determine the field. By inputting the elevation pattern data taken from the manufacturer's published literature into the FM Model program, as well as the wavelength spacing, and the AGL height and ERP proposed in this application, the highest predicted power density 2 meters above ground is less than 72% of the Uncontrolled Standard with a Power Density of 141.5 microwatts per square centimeter 5.6 meters from the base of the tower (See FM Model output in Exhibit 5).

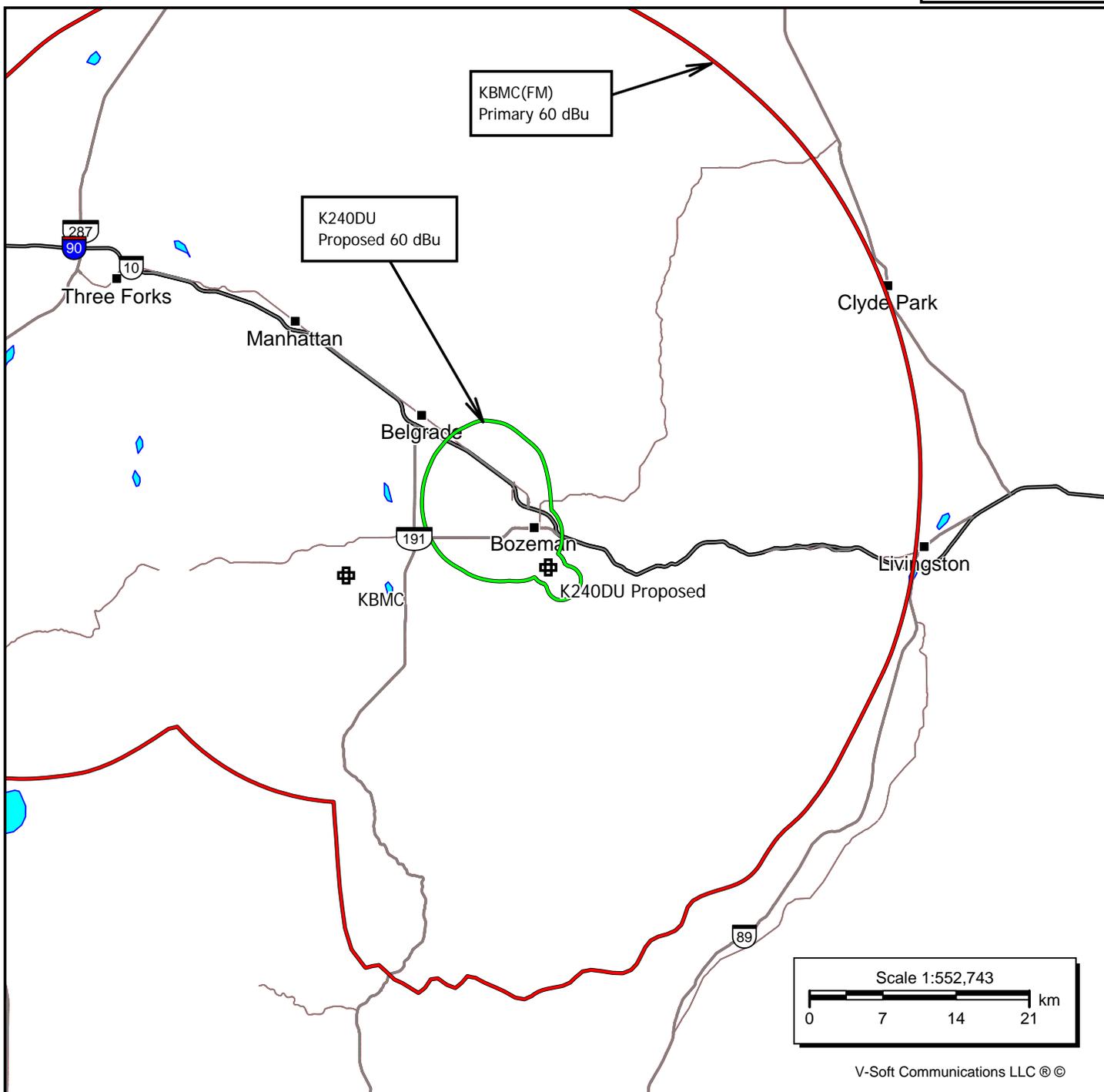
Even though the site will fully comply with the Uncontrolled Site Standards, access to the transmitting site will be restricted and appropriately marked with warning signs. When it becomes necessary for workers to ascend the tower, appropriate measures, such as reduction or shut down of power if necessary, shall be taken to ensure that the human exposure to radiofrequency radiation will not exceed the FCC guidelines.

Existing Tower:

The proposed facility is exempt from environmental processing because the facility is not located at a location specified in Section 1.1307(a)(1)-(8) of the Commission's Rules and since the tower in question already exists.

Exhibit 1

**Primary Station Protected Contour
vs.
Proposed Translator Protected Contour**



V-Soft Communications LLC ©

K240DU Proposed

Channel: 252D
 Frequency: 98.3 MHz
 Latitude: 45-38-44 N
 Longitude: 111-01-14 W
 COR AGL Height: 7.0 m
 COR AMSL Height: 1568.0 m
 Base Elevation: 1561.0 m
 COR HAAT: -98.8 m
 ERP: 0.25 kW
 Horiz. Pattern: Directional
 Vert. Pattern: No
 Prop Model: None

KBMC

BLED19940223KA
 Channel: 271C2
 Frequency: 102.1 MHz
 Latitude: 45-38-18 N
 Longitude: 111-16-05 W
 COR AGL Height: 53.0 m
 COR AMSL Height: 1770.0 m
 Base Elevation: 1717.0 m
 COR HAAT: 222.0 m
 ERP: 20.50 kW
 Horiz. Pattern: Omni
 Vert. Pattern: No
 Prop Model: None

Exhibit 2A

Contour Overlap Studies

- Current Channel 240

- Adjacent Channels

- I.F. Channels

K240DU Bozeman, MT - Current Channel

Montana State University - Billings

REFERENCE
45 38 44.0 N.
111 01 14.0 W.

CH# 240D - 95.9 MHz, Pwr= 0.25 kW DA, HAAT= -98.8 M, COR= 1568 M
Average Protected F(50-50)= 7.09 km
Standard Directional

DISPLAY DATES
DATA 06-07-18
SEARCH 06-12-18

CH CITY	CALL	TYPE STATE	ANT	AZI <--	DIST FILE #	LAT LNG	PWR(kW) HAAT(M)	INT(km) COR(M)	PRO(km) LICENSEE	*IN* (Overlap in km)	*OUT*
240C3 Bozeman	KGVM	LIC_CX MT		267.9 87.7	19.11 BLED20180511AAQ	45 38 20.0 111 15 56.0	3.600 238	101.6 1783	40.0 Gallatin Valley Community	-90.7*	-48.0*
240D Bozeman	K240DU	LIC_DC_ MT		0.0 0.0	0.00 BLFT20080424ABT	45 38 44.0 111 01 14.0	0.250 -99	28.3 1568	8.5 Montana State University -	-36.8*	-36.8*
240D Livingston	K240CO	LIC_DCN MT		73.5 253.7	20.52 BLFT19961104TC	45 41 51.0 110 46 04.0	0.027 377	24.7 2212	5.8 Reier Broadcasting Company	-5.8*	10.0
238C Butte	KMBR	LIC_CN MT		290.6 109.6	117.55 BLH19800128AE	46 00 29.0 112 26 30.0	50.000 555	11.3 2544	86.9 Ccr-butte Iv, Lic	93.6	29.7
240D Big Sky	K240CI	LIC_DCN MT		215.2 35.0	50.58 BLFT19921117TC	45 16 25.0 111 23 36.0	0.010 198	8.0 2652	2.5 Montana State University -	41.0	44.1

Terrain database is NGDC 30 SEC, R= 73.215 qualifying spacings or FCC minimum spacings in KM, M= Margin in KM
Contour distances are on direct line to and from reference station. Reference zone= , Co to 3rd adjacent.
All separation margins (if shown) include rounding. Call signs with strikeout need not be protected.
Ant Column: (D= DA Standard, Z= DA 73.215, N= Not DA 73.215, _= Omni), Polarization (C,H,V,E), Beam tilt (Y,N,X)
"*"affixed to 'IN' or 'OUT' values = site inside restricted contour.

K240DU on Channel 237
 Montana State University - Billings

REFERENCE 45 38 44.0 N. 111 01 14.0 W. CH# 237D - 95.3 MHz, Pwr= 0.25 kW DA, HAAT= -98.8 M, COR= 1568 M DISPLAY DATES DATA 06-07-18 SEARCH 06-07-18
 Average Protected F(50-50)= 7.09 km
 Standard Directional

CH CITY	CALL	TYPE STATE	ANT	AZI <--	DIST FILE #	LAT LNG	PWR(kW) HAAT(M)	INT(km) COR(M)	PRO(km) LICENSEE	*IN* (Overlap in km)	*OUT*
236C1 Bozeman	KMMS-FM	LIC_CY MT		75.4 255.5	12.34 BLH19860825KA	45 40 24.0 110 52 02.0	100.000 238	132.5 2097	88.7 Townsquare Media	-121.8*	-78.6*
238C Butte	KMBR	LIC_CN MT		290.6 109.6	117.55 BLH19800128AE	46 00 29.0 112 26 30.0	50.000 555	128.0 2544	86.9 Ccr-butte Iv, Lic	-23.1*	11.9
240C3 Bozeman	KGVM	LIC_CX MT		267.9 87.7	19.11 BLED20180511AAQ	45 38 20.0 111 15 56.0	3.600 238	3.3 1783	40.0 Gallatin Valley Community	7.7	-21.6*
240D Bozeman	K240DU	LIC_DC_ MT		0.0 0.0	0.00 BLFT20080424ABT	45 38 44.0 111 01 14.0	0.250 -99	0.7 1568	8.5 Montana State University -	-9.3*	-9.3*
240D Livingston	K240CO	LIC_DCN MT		73.5 253.7	20.52 BLFT19961104TC	45 41 51.0 110 46 04.0	0.027 377	0.1 2212	5.8 Reier Broadcasting Company	18.9	14.7
240D Big Sky	K240CI	LIC_DCN MT		215.2 35.0	50.58 BLFT19921117TC	45 16 25.0 111 23 36.0	0.010 198	0.1 2652	2.5 Montana State University -	48.9	48.0
237C Jackson	KZJH	LIC_CN WY		174.9 355.1	243.67 BLH19890714KA	43 27 40.0 110 45 09.0	100.000 322	191.7 2474	87.6 Rp Broadcasting Ls, Lic	49.3	147.7

Terrain database is NGDC 30 SEC , R= 73.215 qualifying spacings or FCC minimum Spacings in KM, M= Margin in KM
 Contour distances are on direct line to and from reference station. Reference zone= , Co to 3rd adjacent.
 All separation margins (if shown) include rounding.
 Ant Column: (D= DA Standard, Z= DA 73.215, N= Not DA 73.215, _= Omni), Polari zation (C, H, V, E), Beamtil t(Y, N, X)
 "*"affixed to 'IN' or 'OUT' values = site inside restricted contour.

K240DU on Channel 238

Montana State University - Billings

REFERENCE
45 38 44.0 N.
111 01 14.0 W.

CH# 238D - 95.5 MHz, Pwr= 0.25 kW DA, HAAT= -98.8 M, COR= 1568 M
Average Protected F(50-50)= 7.09 km
Standard Directional

DISPLAY DATES
DATA 06-07-18
SEARCH 06-07-18

CH CITY	CALL	TYPE STATE	ANT	AZI <--	DIST FILE #	LAT LNG	PWR(kW) HAAT(M)	INT(km) COR(M)	PRO(km) LICENSEE	*IN* (Overlap in km)	*OUT*
238C Butte	KMBR	LIC_CN MT		290.6 109.6	117.55 BLH19800128AE	46 00 29.0 112 26 30.0	50.000 555	185.3 2544	86.9 Ccr-butte Iv, Lic	-80.4*	-12.5
236C1 Bozeman	KMMS-FM	LIC_CY MT		75.4 255.5	12.34 BLH19860825KA	45 40 24.0 110 52 02.0	100.000 238	12.9 2097	88.7 Townsquare Medi a Bozeman L	-2.1*	-76.9*
240C3 Bozeman	KGVM	LIC_CX MT		267.9 87.7	19.11 BLED20180511AAQ	45 38 20.0 111 15 56.0	3.600 238	3.3 1783	40.0 Gallatin Valley Community	7.7	-23.5*
240D Bozeman	K240DU	LIC_DC_ MT		0.0 0.0	0.00 BLFT20080424ABT	45 38 44.0 111 01 14.0	0.250 -99	0.7 1568	8.5 Montana State Uni versity -	-9.3*	-11.2*
240D Li vi ngston	K240CO	LIC_DCN MT		73.5 253.7	20.52 BLFT19961104TC	45 41 51.0 110 46 04.0	0.027 377	0.1 2212	5.8 Reier Broadcasting Company	18.9	14.2
238C1 Worden	KCHH	CP_CX MT		85.2 267.1	200.22 BPH20170131AAT	45 45 59.0 108 27 19.0	100.000 152	164.6 1203	66.1 Townsquare Medi a Billings	33.6	127.8
240D Big Sky	K240CI	LIC_DCN MT		215.2 35.0	50.58 BLFT19921117TC	45 16 25.0 111 23 36.0	0.010 198	0.1 2652	2.5 Montana State Uni versity -	48.9	47.7
238C0 Worden	KCHH	LIC_CX MT		86.2 268.3	224.73 BLH20080807ABL	45 44 29.0 108 08 19.0	100.000 300	171.1 1392	71.7 Townsquare Medi a Billings	51.5	146.5

Terrain database is NGDC 30 SEC , R= 73.215 qualifying spacings or FCC minimum spacings in KM, M= Margin in KM
Contour distances are on direct line to and from reference station. Reference zone= , Co to 3rd adjacent.
All separation margins (if shown) include rounding.
Ant Column: (D= DA Standard, Z= DA 73.215, N= Not DA 73.215, _= Omni), Polari zation (C, H, V, E), Beamtil t(Y, N, X)
"*"affixed to 'IN' or 'OUT' values = site inside restricted contour.

K240DU on Channel 239
 Montana State University - Billings

REFERENCE 45 38 44.0 N. 111 01 14.0 W. CH# 239D - 95.7 MHz, Pwr= 0.25 kW DA, HAAT= -98.8 M, COR= 1568 M DISPLAY DATES DATA 06-07-18 SEARCH 06-07-18
 Average Protected F(50-50)= 7.09 km
 Standard Directional

CH CITY	CALL	TYPE STATE	ANT	AZI <--	DIST FILE #	LAT LNG	PWR(kW) HAAT(M)	INT(km) COR(M)	PRO(km) LICENSEE	*IN* (Overlap in km)	*OUT*
236C1 Bozeman	KMMS-FM	LIC_CY MT		75.4 255.5	12.34 BLH19860825KA	45 40 24.0 110 52 02.0	100.000 238	12.9 2097	88.7 Townsquare Media	-2.1*	-76.4*
240C3 Bozeman	KGVM	LIC_CX MT		267.9 87.7	19.11 BLED20180511AAQ	45 38 20.0 111 15 56.0	3.600 238	59.5 1783	40.0 Gallatin Valley Community	-48.5*	-32.4*
238C Butte	KMBR	LIC_CN MT		290.6 109.6	117.55 BLH19800128AE	46 00 29.0 112 26 30.0	50.000 555	128.0 2544	86.9 Ccr-butte Iv, Lic	-23.1*	11.9
240D Bozeman	K240DU	LIC_DC_ MT		0.0 0.0	0.00 BLFT20080424ABT	45 38 44.0 111 01 14.0	0.250 -99	12.1 1568	8.5 Montana State University -	-20.6*	-20.6*
240D Livingston	K240CO	LIC_DCN MT		73.5 253.7	20.52 BLFT19961104TC	45 41 51.0 110 46 04.0	0.027 377	9.6 2212	5.8 Reier Broadcasting Company	9.4	12.5
240D Big Sky	K240CI	LIC_DCN MT		215.2 35.0	50.58 BLFT19921117TC	45 16 25.0 111 23 36.0	0.010 198	3.6 2652	2.5 Montana State University -	45.4	46.2

Terrain database is NGDC 30 SEC , R= 73.215 qualifying spacings or FCC minimum Spacings in KM, M= Margin in KM
 Contour distances are on direct line to and from reference station. Reference zone= , Co to 3rd adjacent.
 All separation margins (if shown) include rounding.
 Ant Column: (D= DA Standard, Z= DA 73.215, N= Not DA 73.215, _= Omni), Polarization (C,H,V,E), Beamtilt(Y,N,X)
 "*"affixed to 'IN' or 'OUT' values = site inside restricted contour.

K240DU on Channel 241
 Montana State University - Billings

REFERENCE 45 38 44.0 N. 111 01 14.0 W. CH# 241D - 96.1 MHz, Pwr= 0.25 kW DA, HAAT= -98.8 M, COR= 1568 M DISPLAY DATES DATA 06-07-18 SEARCH 06-07-18
 Average Protected F(50-50)= 7.09 km
 Standard Directional

CH CITY	CALL	TYPE STATE	ANT	AZI <--	DIST FILE #	LAT LNG	PWR(kW) HAAT(M)	INT(km) COR(M)	PRO(km) LICENSEE	*IN* (Overlap in km)	*OUT*
244C2 Belgrade	KISN	LIC_CX MT		75.4 255.5	12.34 BLH20060921ABM	45 40 24.0 110 52 02.0	18.500 248	7.4 2097	70.9 Townsquare Media	3.4	-58.7*
240C3 Bozeman	KGVM	LIC_CX MT		267.9 87.7	19.11 BLED20180511AAQ	45 38 20.0 111 15 56.0	3.600 238	59.5 1783	40.0 Gallatin Valley Community	-48.5*	-32.4*
240D Bozeman	K240DU	LIC_DC_ MT		0.0 0.0	0.00 BLFT20080424ABT	45 38 44.0 111 01 14.0	0.250 -99	12.1 1568	8.5 Montana State University -	-20.6*	-20.6*
295C3 Four Corners	KSCY	LIC_CX MT		267.9 87.7	19.11 BLH20080305AEA	45 38 20.0 111 15 56.0	4.000 197	99.4 1757	36.3 Silver Star Communications	11.5R	7.6M
240D Livingston	K240CO	LIC_DCN MT		73.5 253.7	20.52 BLFT19961104TC	45 41 51.0 110 46 04.0	0.027 377	9.6 2212	5.8 Reier Broadcasting Company	9.4	12.5
238C Butte	KMBR	LIC_CN MT		290.6 109.6	117.55 BLH19800128AE	46 00 29.0 112 26 30.0	50.000 555	11.3 2544	86.9 Ccr-butte Iv, Lic	93.6	29.7
240D Big Sky	K240CI	LIC_DCN MT		215.2 35.0	50.58 BLFT19921117TC	45 16 25.0 111 23 36.0	0.010 198	3.6 2652	2.5 Montana State University -	45.4	46.2

Terrain database is NGDC 30 SEC , R= 73.215 qualifying spacings or FCC minimum Spacings in KM, M= Margin in KM
 Contour distances are on direct line to and from reference station. Reference zone= , Co to 3rd adjacent.
 All separation margins (if shown) include rounding.
 Ant Column: (D= DA Standard, Z= DA 73.215, N= Not DA 73.215, _= Omni), Polari zation (C, H, V, E), Beamtil t(Y, N, X)
 "*"affixed to 'IN' or 'OUT' values = site inside restricted contour.

K240DU on Channel 242
 Montana State University - Billings

REFERENCE 45 38 44.0 N. 111 01 14.0 W. CH# 242D - 96.3 MHz, Pwr= 0.25 kW DA, HAAT= -98.8 M, COR= 1568 M DISPLAY DATES DATA 06-07-18 SEARCH 06-07-18
 Average Protected F(50-50)= 7.09 km
 Standard Directional

CH CITY	CALL	TYPE STATE	ANT	AZI <--	DIST FILE #	LAT LNG	PWR(kW) HAAT(M)	INT(km) COR(M)	PRO(km) LICENSEE	*IN* (Overlap in km)	*OUT*
244C2 Belgrade	KISN	LIC_CX MT		75.4 255.5	12.34 BLH20060921ABM	45 40 24.0 110 52 02.0	18.500 248	7.4 2097	70.9 Townsquare Media	3.4	-59.1*
240C3 Bozeman	KGVM	LIC_CX MT		267.9 87.7	19.11 BLED20180511AAQ	45 38 20.0 111 15 56.0	3.600 238	3.3 1783	40.0 Gallatin Valley Community	7.7	-23.5*
240D Bozeman	K240DU	LIC_DC_ MT		0.0 0.0	0.00 BLFT20080424ABT	45 38 44.0 111 01 14.0	0.250 -99	0.7 1568	8.5 Montana State University -	-9.3*	-11.2*
295C3 Four Corners	KSCY	LIC_CX MT		267.9 87.7	19.11 BLH20080305AEA	45 38 20.0 111 15 56.0	4.000 197	99.4 1757	36.3 Silver Star Communications	11.5R	7.6M
240D Livingston	K240CO	LIC_DCN MT		73.5 253.7	20.52 BLFT19961104TC	45 41 51.0 110 46 04.0	0.027 377	0.1 2212	5.8 Reier Broadcasting Company	18.9	14.2
242C1 Billings	KRZN	LIC_CN MT		85.4 267.3	200.40 BLH19981117KA	45 45 37.0 108 27 09.0	100.000 212	170.9 1264	71.5 Connoisseur Media Licenses	27.4	122.5
240D Big Sky	K240CI	LIC_DCN MT		215.2 35.0	50.58 BLFT19921117TC	45 16 25.0 111 23 36.0	0.010 198	0.1 2652	2.5 Montana State University -	48.9	47.7

Terrain database is NGDC 30 SEC , R= 73.215 qualifying spacings or FCC minimum Spacings in KM, M= Margin in KM
 Contour distances are on direct line to and from reference station. Reference zone= , Co to 3rd adjacent.
 All separation margins (if shown) include rounding.
 Ant Column: (D= DA Standard, Z= DA 73.215, N= Not DA 73.215, _= Omni), Polari zation (C, H, V, E), Beamtil t(Y, N, X)
 "*"affixed to 'IN' or 'OUT' values = site inside restricted contour.

K240DU on Channel 243
 Montana State University - Billings

REFERENCE 45 38 44.0 N. 111 01 14.0 W. CH# 243D - 96.5 MHz, Pwr= 0.25 kW DA, HAAT= -98.8 M, COR= 1568 M DISPLAY DATES DATA 06-07-18 SEARCH 06-07-18
 Average Protected F(50-50)= 7.09 km
 Standard Directional

CH CITY	CALL	TYPE STATE	ANT	AZI <--	DIST FILE #	LAT LNG	PWR(kW) HAAT(M)	INT(km) COR(M)	PRO(km) LICENSEE	*IN* (Overlap in km)	*OUT*
244C2 Belgrade	KISN	LIC_CX MT		75.4 255.5	12.34 BLH20060921ABM	45 40 24.0 110 52 02.0	18.500 248	104.5 2097	70.9 Townsquare Media	-93.8*	-60.9*
240C3 Bozeman	KGVM	LIC_CX MT		267.9 87.7	19.11 BLED20180511AAQ	45 38 20.0 111 15 56.0	3.600 238	3.3 1783	40.0 Gallatin Valley Community	7.7	-21.6*
246D Bozeman	K246BA	LIC_C_ MT		319.1 139.1	3.06 BLFT20100128AGJ	45 39 59.0 111 02 47.0	0.028 -93	0.4 1523	4.1 Board Of Regents - Montana	-12.7*	-2.1*
240D Bozeman	K240DU	LIC_DC_ MT		0.0 0.0	0.00 BLFT20080424ABT	45 38 44.0 111 01 14.0	0.250 -99	0.7 1568	8.5 Montana State University -	-9.3*	-9.3*
246D Livingston	K246BL	LIC_DV_ MT		73.7 253.9	20.52 BLFT20070821AEN	45 41 49.0 110 46 03.0	0.010 385	0.1 2218	8.5 Hi-Line Radio Fellowship,	18.9	11.9
240D Livingston	K240CO	LIC_DCN MT		73.5 253.7	20.52 BLFT19961104TC	45 41 51.0 110 46 04.0	0.027 377	0.1 2212	5.8 Reier Broadcasting Company	18.9	14.7
240D Big Sky	K240CI	LIC_DCN MT		215.2 35.0	50.58 BLFT19921117TC	45 16 25.0 111 23 36.0	0.010 198	0.1 2652	2.5 Montana State University -	48.9	48.0

Terrain database is NGDC 30 SEC , R= 73.215 qualifying spacings or FCC minimum Spacings in KM, M= Margin in KM
 Contour distances are on direct line to and from reference station. Reference zone= , Co to 3rd adjacent.
 All separation margins (if shown) include rounding.
 Ant Column: (D= DA Standard, Z= DA 73.215, N= Not DA 73.215, _= Omni), Polari zation (C,H,V,E), Beamtil t(Y,N,X)
 "*"affixed to 'IN' or 'OUT' values = site inside restricted contour.

K240DU on IF Channel 293
 Montana State University - Billings
 CH# 293D - 106.5 MHz, Pwr= 0.25 kW DA, HAAT= -98.8 M, COR= 1568 M
 Average Protected F(50-50)= 7.09 km
 Standard Directional

REFERENCE
 45 38 44.0 N.
 111 01 14.0 W.

DISPLAY DATES
 DATA 06-07-18
 SEARCH 06-07-18

CH CITY	CALL	TYPE STATE	ANT	AZI <--	DIST FILE #	LAT LNG	PWR(kW) HAAT(M)	INT(km) COR(M)	PRO(km) LICENSEE	*IN* (Overlap in km)	*OUT*
295C3 Four Corners	KSCY	LIC_CX MT		267.9 87.7	19.11 BLH20080305AEA	45 38 20.0 111 15 56.0	4.000 197	3.4 1757	39.3 Silver Star	7.6 Communications	-22.7*
292L1 Bozeman	KJZS-LP	LIC____ MT		288.2 108.1	3.57 BLL20170126AAX	45 39 20.0 111 03 51.0	0.100	1537	Grace Bible Church	Li mi ted	-16.7* -20.2*
293C2 Helena Valley Se	KYPX	LIC_NCX MT		338.4 157.9	141.29 BMLED20170420AAT	46 49 30.0 111 42 13.0	1.800 652	129.2 2369	54.3 Montana State Uni versity -	-2.8	37.8
240C3 Bozeman	KGVM	LIC_CX MT		267.9 87.7	19.11 BLED20180511AAQ	45 38 20.0 111 15 56.0	3.600 238	101.6 1783	40.0 Gallatin Valley Communi ty	11.5R 7.6M	
293L1 Whi tehal l	KESW-LP	LIC____ MT		287.0 106.2	87.63 BLL20040514AEG	45 52 12.0 112 06 01.0	0.100	1376	Jefferson County Di saster	54.2	39.8
292D Mammoth	K292BQ	LIC_CN WY		162.6 342.9	82.84 BLFT19860121TF	44 56 02.0 110 42 23.0	0.047 299	35.0 2601	22.7 Mammoth Communi ty Tv And F	44.6	55.6
291D Townsend	K291BN	LIC_DV_ MT		330.0 149.6	81.38 BLFT20120918AAD	46 16 40.0 111 33 01.0	0.170 165	0.9 1530	20.6 Hi -line Radio Fel lowshi p,	65.0	55.9
296D Mammoth Hot Springs	K296EF	LIC ?HN WY		162.6 342.9	83.10 BLFT19911219TF	44 55 54.0 110 42 19.0	0.079 314	0.6 2618	25.9 Mammoth Communi ty Tv & Fm	79.3	57.0

Terrain database is NGDC 30 SEC , R= 73.215 qualifying spacings or FCC minimum spacings in KM, M= Margin in KM
 Contour distances are on direct line to and from reference station. Reference zone= , Co to 3rd adjacent.
 All separation margins (if shown) include rounding.
 Ant Column: (D= DA Standard, Z= DA 73.215, N= Not DA 73.215, _= Omni), Pol arization (C, H, V, E), Beamtil t(Y, N, X)
 "*"affixed to 'IN' or 'OUT' values = site inside restricted contour.

K240DU on IF Channel 294
 Montana State University - Billings
 CH# 294D - 106.7 MHz, Pwr= 0.25 kW DA, HAAT= -98.8 M, COR= 1568 M
 Average Protected F(50-50)= 7.09 km
 Standard Directional

REFERENCE
 45 38 44.0 N.
 111 01 14.0 W.

DISPLAY DATES
 DATA 06-07-18
 SEARCH 06-07-18

CH CITY	CALL	TYPE STATE	ANT	AZI <--	DI ST FILE #	LAT LNG	PWR(kW) HAAT(M)	INT(km) COR(M)	PRO(km) LICENSEE	*IN* (Overlap in km)	*OUT*
295C3 Four Corners	KSCY	LIC_CX MT		267.9 87.7	19.11 BLH20080305AEA	45 38 20.0 111 15 56.0	4.000 197	58.4 1757	39.3 Silver Star	-47.4*	-31.7*
240C3 Bozeman	KGVM	LIC_CX MT		267.9 87.7	19.11 BLED20180511AAQ	45 38 20.0 111 15 56.0	3.600 238	101.6 1783	40.0 Gallatin Valley	11.5R	7.6M
294C1 Lockwood	KPLN	LIC_CX MT		85.3 267.1	200.21 BLH20060313ABL	45 45 54.0 108 27 19.0	100.000 156	165.0 1206	66.4 Connoisseur	33.2	127.4 Media Licenses
293C2 Helena Valley Se	KYPX	LIC_NCX MT		338.4 157.9	141.29 BMLED20170420AAT	46 49 30.0 111 42 13.0	1.800 652	81.0 2369	54.3 Montana State Uni	45.4	64.5 versity -
297C Townsend	KIMO	LIC_DHX MT		338.4 157.9	141.29 BLH20160629ACE	46 49 30.0 111 42 13.0	86.000 659	13.4 2376	93.0 The Montana Radi	113.0	47.3 o Company,
294D Boulder	K294BZ	LIC_H_ MT		308.3 127.5	111.14 BLFT20121029ACH	46 15 33.0 112 09 09.0	0.010 -43	31.2 1807	9.4 Boulder Tv	65.3	52.8 Associati on
296D Mammoth Hot Springs	K296EF	LIC ?HN WY		162.6 342.9	83.10 BLFT19911219TF	44 55 54.0 110 42 19.0	0.079 314	0.6 2618	25.9 Mammoth Communi	79.3	55.6 ty Tv & Fm
292D Mammoth	K292BQ	LIC_CN WY		162.6 342.9	82.84 BLFT19860121TF	44 56 02.0 110 42 23.0	0.047 299	0.5 2601	22.7 Mammoth Communi	79.2	58.5 ty Tv And F
291D Townsend	K291BN	LIC_DV_ MT		330.0 149.6	81.38 BLFT20120918AAD	46 16 40.0 111 33 01.0	0.170 165	0.9 1530	20.6 Hi-line Radi	65.0	59.7 o Fel lowshi p,

Terrain database is NGDC 30 SEC , R= 73.215 qualifying spacings or FCC minimum spacings in KM, M= Margin in KM
 Contour distances are on direct line to and from reference station. Reference zone= , Co to 3rd adjacent.
 All separation margins (if shown) include rounding.
 Ant Column: (D= DA Standard, Z= DA 73.215, N= Not DA 73.215, _= Omni), Polarization (C, H, V, E), Beam tilt (Y, N, X)
 "*"affixed to 'IN' or 'OUT' values = site inside restricted contour.

Exhibit 2B
Proposed Channel 252
Section 74.1204
Interference Tabulations

K240DU Bozeman, MT - Proposed Channel
 Montana State University - Billings
 CH# 252D - 98.3 MHz, Pwr= 0.25 kW DA, HAAT= -98.8 M, COR= 1568 M
 Average Protected F(50-50)= 7.09 km
 Standard Directional

REFERENCE
 45 38 44.0 N.
 111 01 14.0 W.

DISPLAY DATES
 DATA 06-07-18
 SEARCH 06-12-18

CH CITY	CALL	TYPE STATE	ANT	AZI <--	DIST FILE #	LAT LNG	PWR(kW) HAAT(M)	INT(km) COR(M)	PRO(km) LICENSEE	*IN* (Overlap in km)	*OUT*
252C3 Dillon	KBEV-FM	LIC_CN MT		251.2 70.1	136.53 BLH19930625KB	45 14 22.0 112 40 03.0	10.500 151	115.7 1805	46.9 Dead-air	16.9 Broadcasting Comp	77.1
252L1 Townsend	KDGZ-LP	LIC____ MT		333.2 152.9	84.26 BLL20051018AEF	46 19 15.0 111 30 53.0	0.100	1188	Townsend	K12 School Distri	50.3 28.1
254D Livingston	K254AL	LIC_C_ MT		85.2 265.6	37.63 BLFT20061027AAM	45 40 21.0 110 32 21.0	0.250 -274	1.1 1339	7.1 Townsquare	34.7 Medi a Bozeman L	30.5

Terrain database is NGDC 30 SEC , R= 73.215 qualifying spacings or FCC minimum Spacings in KM, M= Margin in KM
 Contour distances are on direct line to and from reference station. Reference zone= , Co to 3rd adjacent.
 All separation margins (if shown) include rounding. Call signs with strikeout need not be protected.
 Ant Column: (D= DA Standard, Z= DA 73.215, N= Not DA 73.215, _= Omni), Polarization (C,H,V,E), Beamtilt(Y,N,X)

Exhibit 4

Antenna Azimuth Pattern

Antenna Pattern

Pre-Rotation Antenna Pattern....

Azimuth (deg)	Relative Field
0.0	1.0
10.0	0.979
20.0	0.92
30.0	0.829
40.0	0.715
50.0	0.57
60.0	0.388
70.0	0.187
80.0	0.045
90.0	0.03
100.0	0.032
110.0	0.037
120.0	0.046
130.0	0.065
140.0	0.142
150.0	0.202
160.0	0.234
170.0	0.25
180.0	0.26
190.0	0.25
200.0	0.234
210.0	0.202
220.0	0.142
230.0	0.065
240.0	0.046
250.0	0.037
260.0	0.032
270.0	0.03
280.0	0.045
290.0	0.187
300.0	0.388
310.0	0.57
320.0	0.715
330.0	0.829
340.0	0.92
350.0	0.979

Rotation Angle = 315

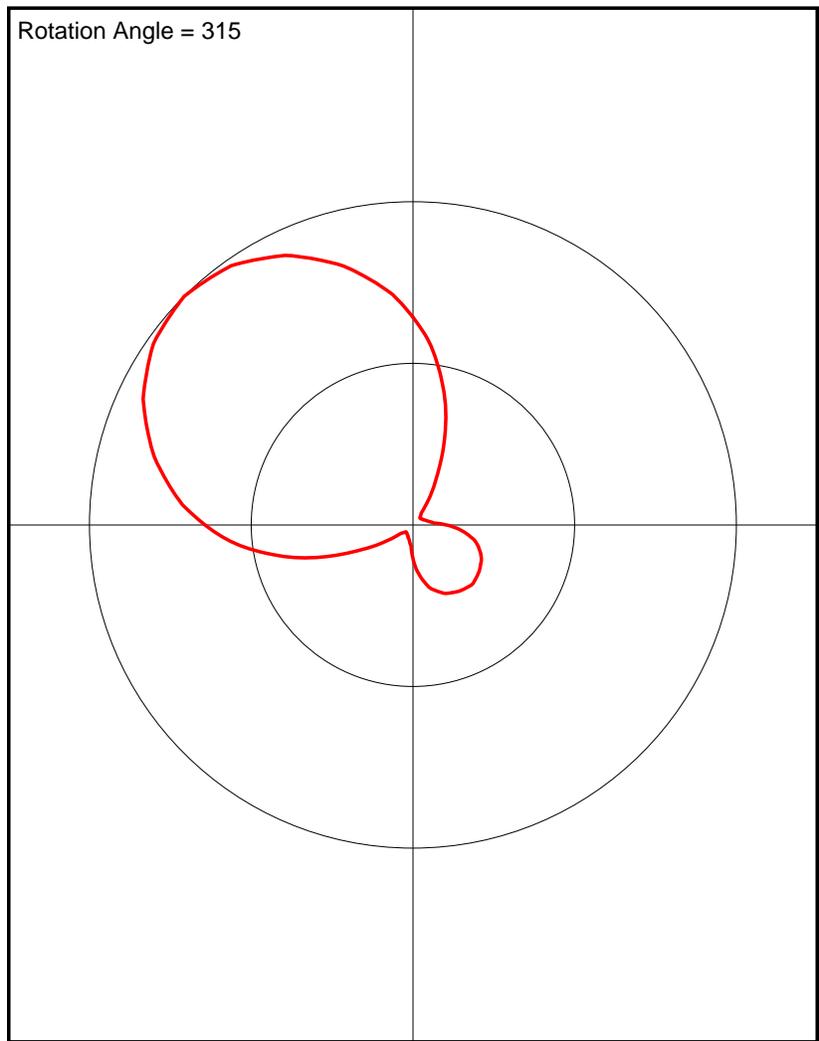


Exhibit 5

FM Model Output

Scala CA2FM-CP
250 Watts, 7 Meters AGL

Power Density vs Distance

