



Engineering Statement

University of Wyoming, KBUW

2/12/2021

The applicant proposes a minor change application to change coordinates and increase power.

File BLED-19991117ABW, Facility ID No: 88434.

Geographic Coordinates: N. Lat. 44-37-23.29, W. Long. 107-07-02.40 (NAD 83)

Elevation at the site, 2347 m

Channel number: 213, 90.5 MHz

Antenna height C.O.R. above ground, 23.9 m

Proposed Antenna COR, 2371 m AMSL, HAAT: 382.9 m (8 cardinal radials, GLOBE 30 arc-sec terrain data)

Tower height above ground, 30.05 m

Antenna Type, ERI MP-5E, EPA type 1

ERP: 20.0 kW, circularly polarized

Page #2 of this statement is a coverage map showing the 60 dBu contour. As shown on the map, the principal city of Buffalo, WY is fully covered by the principal city contour.

Page #3 is distance to contour and HAAT table for the eight cardinal radials.

Pages #4 through #11 is the **channel study** using our, V-Soft Communications, FMCommander program that is in wide use throughout the industry. This study shows that the proposed facilities will not cause, nor receive, contour overlap interference as per section 73.509 of the Commission's rules.

RF hazard

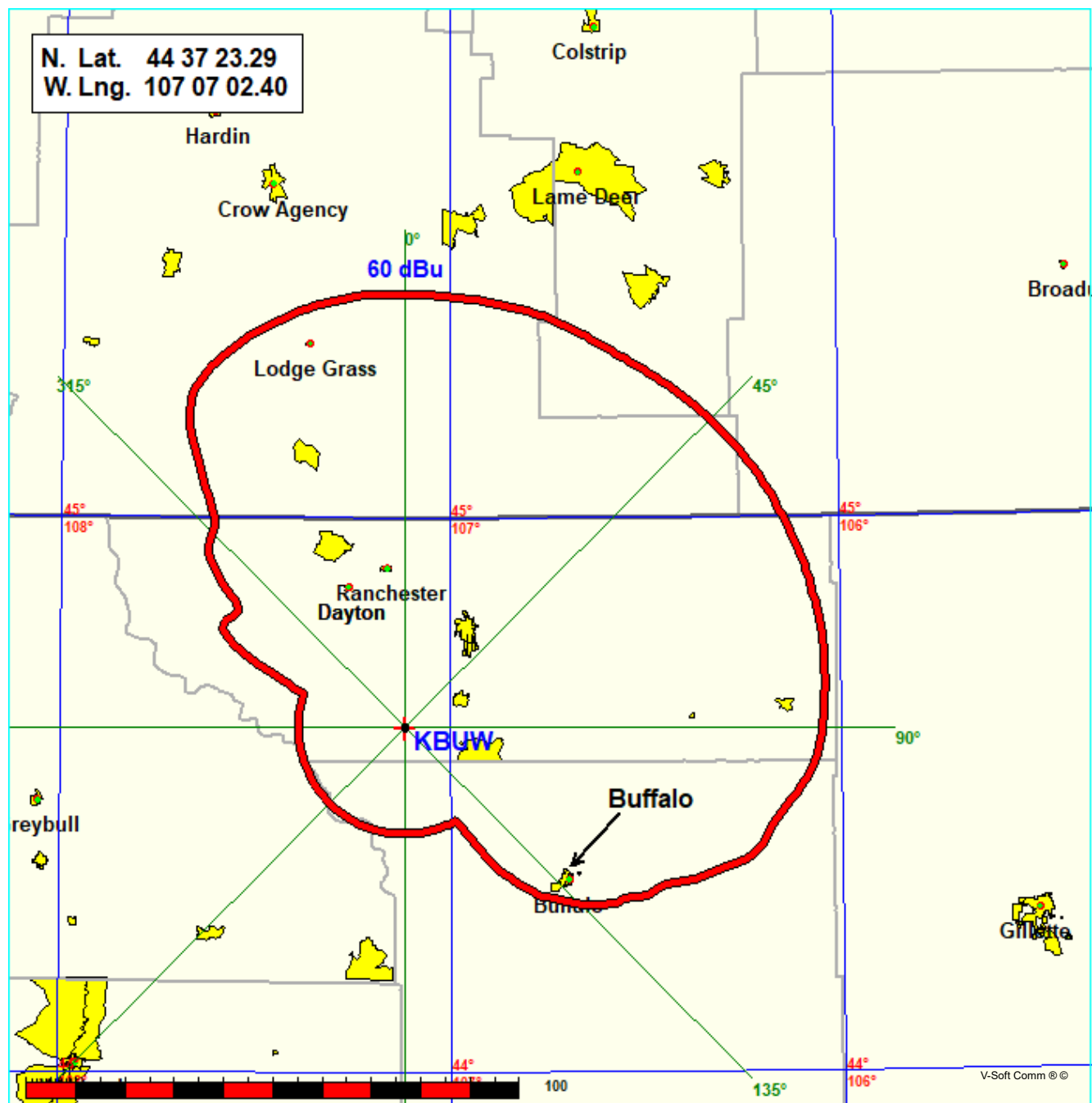
The proposed facility will share the existing tower with sister station KSUW at the KBUW corrected coordinates. Pages #12 through #14 is an OET 65 power density study showing that the existing 8-bay type #3 antenna on channel 217, transmitting with 20 kW and with its C.O.R. at 18 meters A.G. (head height of 16 meter) produces $581.7 \mu\text{W}.\text{cm}^2$ at the tower base while the proposed 6-bay, type #3 antenna with 20 kW, on channel 213, and with its center at 21.9 m A.G. (head height), produces $114.0 \mu\text{W}.\text{cm}^2$ at the tower base, for a combined total $695.69 \mu\text{W}.\text{cm}^2$, which is 69.5% of the maximum for the fenced-in and locked area around the transmitter building. The graph and table shown on page #13 through #15 shows the composite of the two signals. Note that there is no point along the graph where the power density exceeds the maximum allowed under the rules ($1,000 \mu\text{W}.\text{cm}^2$). The applicant will reduce power or terminate transmissions when necessary to protect the public or workers on or near the tower.

Page #15 is a description of how the contour-to-contour channel study should be read and the abbreviations used therein. Page #16 is a site map showing the KBUW site at the KSUW corrected coordinates. Page #17 is an exhibit stating the qualifications of the preparer.

60 dBu - Service to Buffalo - Principal City, Pop. 38,367
University Of Wyoming

Coverage Study - GLOBE 30 Sec
01-25-2021

KBUW CH213 C1, 20.0 kW, 382.9m HAAT, 2371.0m COR AMSL
Service Contour = 60 dBu.



N. Lat. = 44-37-23.29 W. Lng. = 107-07-02.4
 HAAT and Distance to Contour,
 FCC, FM 2-10 Mi, 51 pts Method - GLOBE 30 SEC

Azi.	AV EL	HAAT	ERP kW	dBk	Field	60-F5
000	1393.2	977.8	20.0000	13.01	1.000	86.60
010	1389.7	981.3	20.0000	13.01	1.000	86.67
020	1379.7	991.3	20.0000	13.01	1.000	86.88
030	1412.2	958.8	20.0000	13.01	1.000	86.19
040	1370.7	1000.3	20.0000	13.01	1.000	87.07
050	1344.6	1026.4	20.0000	13.01	1.000	87.61
060	1343.3	1027.7	20.0000	13.01	1.000	87.63
070	1362.7	1008.3	20.0000	13.01	1.000	87.24
080	1402.3	968.7	20.0000	13.01	1.000	86.40
090	1477.1	893.9	20.0000	13.01	1.000	84.75
100	1633.0	738.0	20.0000	13.01	1.000	80.26
110	1770.6	600.4	20.0000	13.01	1.000	75.18
120	1979.6	391.4	20.0000	13.01	1.000	62.49
130	2091.2	279.8	20.0000	13.01	1.000	55.11
140	2218.0	153.0	20.0000	13.01	1.000	44.45
150	2332.6	38.4	20.0000	13.01	1.000	23.95
160	2453.0	-82.0	20.0000	13.01	1.000	21.52
170	2582.1	-211.1	20.0000	13.01	1.000	21.52
180	2571.4	-200.4	20.0000	13.01	1.000	21.52
190	2495.2	-124.2	20.0000	13.01	1.000	21.52
200	2548.3	-177.3	20.0000	13.01	1.000	21.52
210	2539.7	-168.7	20.0000	13.01	1.000	21.52
220	2493.5	-122.5	20.0000	13.01	1.000	21.52
230	2558.7	-187.7	20.0000	13.01	1.000	21.52
240	2516.1	-145.1	20.0000	13.01	1.000	21.52
250	2510.5	-139.5	20.0000	13.01	1.000	21.52
260	2468.3	-97.3	20.0000	13.01	1.000	21.52
270	2411.4	-40.4	20.0000	13.01	1.000	21.52
280	2374.0	-3.0	20.0000	13.01	1.000	21.52
290	2326.8	44.2	20.0000	13.01	1.000	25.60
300	2234.9	136.1	20.0000	13.01	1.000	42.25
310	2148.2	222.8	20.0000	13.01	1.000	50.93
320	1969.2	401.8	20.0000	13.01	1.000	63.12
330	1598.2	772.8	20.0000	13.01	1.000	81.40
340	1472.7	898.3	20.0000	13.01	1.000	84.86
350	1397.5	973.5	20.0000	13.01	1.000	86.50

Ave El= 1988.06 M HAAT= 382.94 M AMSL= 2371.0

Contour-to-Contour Single-Channel Allocations Study - KBUW

REFERENCE
44 37 23.29 N.
107 07 02.40 W.

CH# 213C1 - 90.5 MHz, Pwr= 20 kW, HAAT= 387.9 M, COR= 2376 M
Average Protected F(50-50)= 62.28 km
Omni-directional

DISPLAY DATES
DATA 01-24-21
SEARCH 01-25-21

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*
213A Buffalo	KBUW	LIC_CN WY		134.4 314.7	43.74 BLED19991117ABW	44 20 49.90 106 43 27.20	0.430 -60	1530	---Reference---		
213C3 Columbus	KMTJ	LIC_CN MT		290.7 109.1	186.34 BLED20181203ABJ	45 11 38.80 109 20 32.60	1.000 375	121.7 2423	50.7 Hi-Line Radio Fellowship I	9.1	25.9
212C Casper	KCSP-FM	LIC_CN WY		162.4 343.0	219.27 BLED20140923ABP	42 44 23.90 106 18 25.10	100.000 593	149.2 2554	102.5 Western Inspirational Broa	25.9	71.9
210C2 Colstrip	KYPC	LIC_CN MT		6.9 187.1	136.09 BLED20091104AEO	45 50 16.90 106 54 18.10	3.500 357	3.3 1473	40.2 Montana State University -	46.1	86.7
215A Gillette	KUWG	LIC_CN WY		108.8 289.9	138.79 BLED19971117KB	44 12 33.90 105 28 06.00	0.450 126	1.5 1554	16.3 University Of Wyoming	59.0	114.4
213A Newcastle	KUWN	LIC_CN WY		109.8 291.9	247.02 BLED19971201KA	43 49 56.90 104 13 09.80	0.400 62	56.3 1406	18.1 University Of Wyoming	111.4	63.8
216C2 Cody	KOFG	CP_CN WY		268.2 87.0	134.98 BPED20180717AAE	44 34 19.80 108 49 15.40	4.000 444	4.0 1977	55.5 Gospel Messengers	96.5	76.3
214A Miles City	KYPR	LIC_CN MT		27.9 208.9	223.16 BLED19881209KE	46 23 22.00 105 45 24.00	0.500 153	30.4 950	20.5 Montana State University -	106.3	76.5
215C3 Billings	KLRV	LIC_VN MT		320.9 140.0	164.66 BLED20050531AIX	45 45 53.80 108 27 21.50	7.500 181	3.3 1230	34.6 Educational Media Foundati	81.8	122.2
211A Billings	KBLW	LIC_CN MT		320.8 139.9	164.12 BLED20151228BAE	45 45 36.80 108 27 11.50	1.600 137	1.8 1187	20.5 Hi-Line Radio Fellowship,	82.8	136.0
216C1 Cody	KOFG	LIC_DCN WY		265.7 84.3	161.89 BLED20101006AAV	44 29 45.80 109 09 11.50	8.700 547	5.9 2333	72.4 Gospel Messengers	122.2	87.3
211C3 Powell	KUWP	LIC_CN WY		268.9 87.7	137.43 BLED19991109ABZ	44 35 13.80 108 51 10.40	0.430 495	1.5 2019	36.8 University Of Wyoming	101.1	98.4

Terrain database is GLOBE 30 Sec , R= 73.215 qualifying spacings or FCC minimum Spacings in KM, M= Margin in KM
In & Out distances between contours are shown at closest points. Reference zone= - Zone 2, 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.
« = Station meets FCC minimum distance spacing for its class.

KMTJ vs KBUW - Contour-to-Contour Map
University Of Wyoming

FMCommander Single Allocation Study - 01-25-2021 - GLOBE 30 Sec
KBUW's Overlaps (In= 9.2 km, Out= 26.78 km)

KBUW CH 213 C1

Lat= 44 37 23.29, Lng= 107 07 02.40

20.0 kW 382.9 m HAAT, 2371 m COR

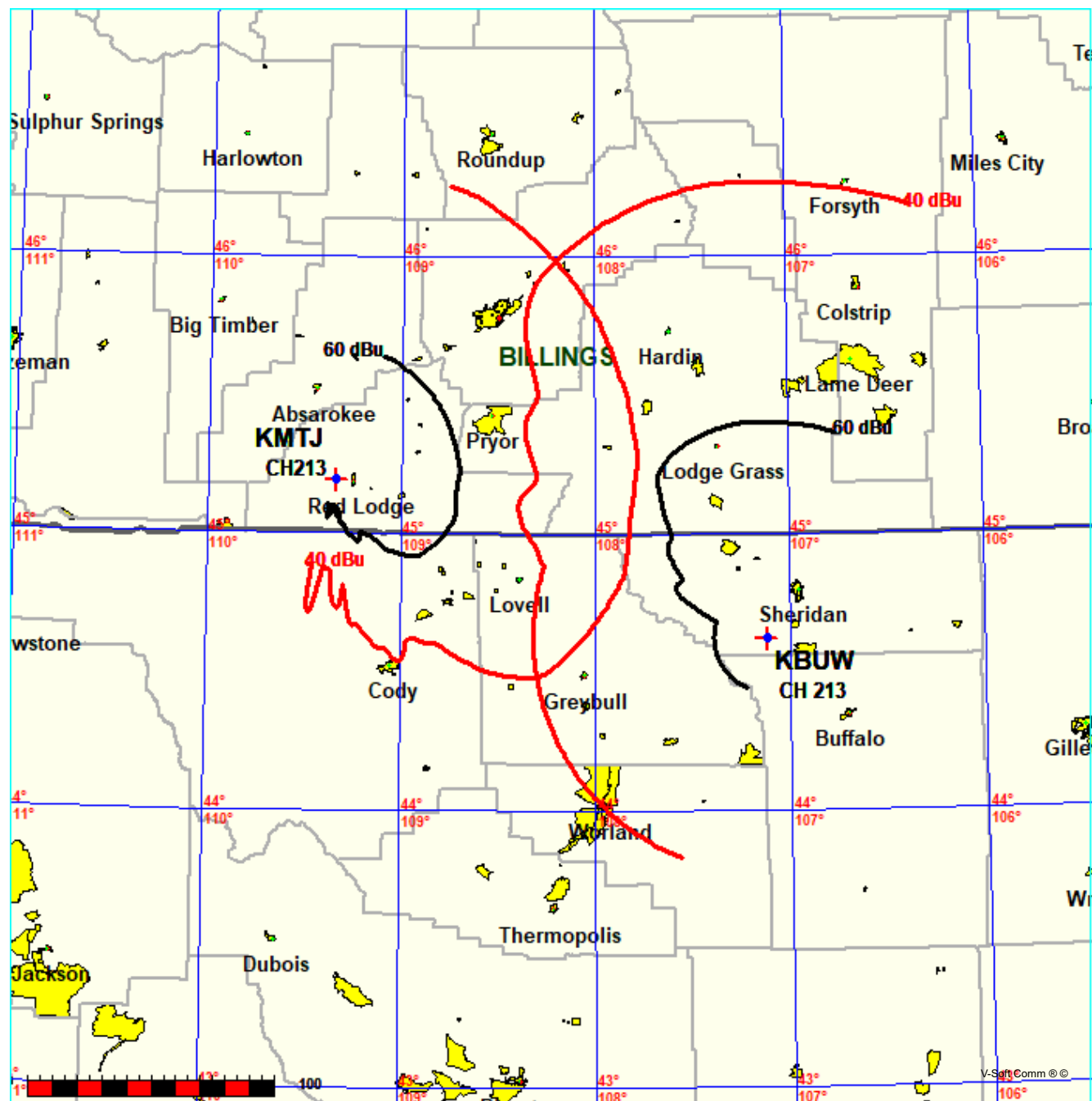
Prot.= 60 dBu, Intef.= 40 dBu

KMTJ CH 213 C3 BLED20181203ABJ

Lat= 45 11 38.80, Lng= 109 20 32.60

1.0 kW 375 m HAAT, 2423 m COR

Prot.= 60 dBu, Intef.= 40 dBu



01-25-2021

Terrain Data: GLOBE 30 Sec

FMOver Analysis

KBUW

KMTJ BLED20181203ABJ

Channel = 213C1
 Max ERP = 20 kW
 RCAMSL = 2371 m
 N. Lat. 44 37 23.29
 W. Lng. 107 07 02.40
 Protected
 60 dBu

Channel = 213C3
 Max ERP = 1 kW
 RCAMSL = 2423 m
 N. Lat. 45 11 38.80
 W. Lng. 109 20 32.60
 Interfering
 40 dBu

Azimuth (degrees)	ERP (kW)	HAAT (m)	Dist (km)	Azimuth (degrees)	ERP (kW)	HAAT (m)	Dist (km)	Actual (dBu)	IX (km)
231.0	020.0000	-0190.5	021.5	115.2	001.0000	0740.3	176.5	25.76	
232.0	020.0000	-0192.2	021.5	115.1	001.0000	0740.5	176.1	25.84	
233.0	020.0000	-0191.9	021.5	115.1	001.0000	0740.7	175.8	25.91	
234.0	020.0000	-0187.3	021.5	115.0	001.0000	0740.9	175.5	25.99	
235.0	020.0000	-0178.7	021.5	115.0	001.0000	0741.1	175.1	26.07	
236.0	020.0000	-0167.4	021.5	114.9	001.0000	0741.3	174.8	26.15	
237.0	020.0000	-0157.6	021.5	114.8	001.0000	0741.5	174.5	26.22	
238.0	020.0000	-0150.8	021.5	114.8	001.0000	0741.7	174.1	26.30	
239.0	020.0000	-0147.0	021.5	114.7	001.0000	0741.9	173.8	26.38	
240.0	020.0000	-0145.1	021.5	114.6	001.0000	0742.1	173.5	26.45	
241.0	020.0000	-0144.8	021.5	114.6	001.0000	0742.3	173.2	26.53	
242.0	020.0000	-0147.5	021.5	114.5	001.0000	0742.5	172.9	26.60	
243.0	020.0000	-0152.7	021.5	114.4	001.0000	0742.8	172.6	26.67	
244.0	020.0000	-0157.8	021.5	114.3	001.0000	0743.0	172.3	26.75	
245.0	020.0000	-0160.7	021.5	114.3	001.0000	0743.3	172.0	26.82	
246.0	020.0000	-0160.7	021.5	114.2	001.0000	0743.6	171.7	26.89	
247.0	020.0000	-0157.6	021.5	114.1	001.0000	0743.9	171.4	26.96	
248.0	020.0000	-0152.3	021.5	114.0	001.0000	0744.2	171.2	27.04	
249.0	020.0000	-0146.2	021.5	113.9	001.0000	0744.6	170.9	27.11	
250.0	020.0000	-0139.5	021.5	113.8	001.0000	0745.0	170.6	27.18	
251.0	020.0000	-0132.9	021.5	113.8	001.0000	0745.4	170.3	27.25	
252.0	020.0000	-0126.3	021.5	113.7	001.0000	0745.9	170.1	27.31	
253.0	020.0000	-0121.1	021.5	113.6	001.0000	0746.4	169.8	27.38	
254.0	020.0000	-0117.1	021.5	113.5	001.0000	0746.9	169.6	27.45	
255.0	020.0000	-0113.8	021.5	113.4	001.0000	0747.5	169.3	27.52	
256.0	020.0000	-0109.1	021.5	113.3	001.0000	0748.1	169.1	27.58	
257.0	020.0000	-0102.8	021.5	113.2	001.0000	0748.8	168.9	27.65	
258.0	020.0000	-0098.2	021.5	113.1	001.0000	0749.6	168.6	27.71	
259.0	020.0000	-0095.9	021.5	113.0	001.0000	0750.3	168.4	27.77	
260.0	020.0000	-0097.3	021.5	112.9	001.0000	0751.2	168.2	27.84	
261.0	020.0000	-0100.1	021.5	112.8	001.0000	0752.2	168.0	27.90	
262.0	020.0000	-0101.2	021.5	112.7	001.0000	0753.2	167.8	27.96	
263.0	020.0000	-0101.4	021.5	112.6	001.0000	0754.2	167.6	28.02	
264.0	020.0000	-0098.5	021.5	112.4	001.0000	0755.2	167.4	28.08	
265.0	020.0000	-0091.1	021.5	112.3	001.0000	0756.2	167.2	28.14	
266.0	020.0000	-0081.1	021.5	112.2	001.0000	0757.3	167.0	28.19	

Azimuth (degrees)	ERP (kW)	HAAT (m)	Dist (km)	Azimuth (degrees)	ERP (kW)	HAAT (m)	Dist (km)	Actual (dBu)
267.0	020.0000	-0067.7	021.5	112.1	001.0000	0758.4	166.9	28.25
268.0	020.0000	-0054.9	021.5	112.0	001.0000	0759.5	166.7	28.30
269.0	020.0000	-0044.2	021.5	111.9	001.0000	0760.8	166.5	28.36
270.0	020.0000	-0040.4	021.5	111.7	001.0000	0762.0	166.4	28.41
271.0	020.0000	-0036.8	021.5	111.6	001.0000	0763.3	166.2	28.46
272.0	020.0000	-0033.2	021.5	111.5	001.0000	0764.6	166.1	28.51
273.0	020.0000	-0029.9	021.5	111.4	001.0000	0765.9	166.0	28.56
274.0	020.0000	-0026.8	021.5	111.3	001.0000	0767.3	165.8	28.60
275.0	020.0000	-0023.2	021.5	111.1	001.0000	0768.5	165.7	28.64
276.0	020.0000	-0018.0	021.5	111.0	001.0000	0769.8	165.6	28.69
277.0	020.0000	-0011.2	021.5	110.9	001.0000	0771.0	165.5	28.73
278.0	020.0000	-0008.6	021.5	110.8	001.0000	0772.3	165.4	28.76
279.0	020.0000	-0005.2	021.5	110.6	001.0000	0773.3	165.3	28.80
280.0	020.0000	-0003.0	021.5	110.5	001.0000	0774.3	165.2	28.83
281.0	020.0000	-0002.5	021.5	110.4	001.0000	0775.2	165.2	28.86
282.0	020.0000	0000.7	021.5	110.3	001.0000	0776.1	165.1	28.88
283.0	020.0000	0004.1	021.5	110.1	001.0000	0776.9	165.0	28.91
284.0	020.0000	0007.6	021.5	110.0	001.0000	0777.5	165.0	28.93
285.0	020.0000	0012.2	021.5	109.9	001.0000	0778.1	164.9	28.95
286.0	020.0000	0016.2	021.5	109.7	001.0000	0778.7	164.9	28.96
287.0	020.0000	0021.9	021.5	109.6	001.0000	0779.3	164.9	28.98
288.0	020.0000	0029.7	021.5	109.5	001.0000	0779.7	164.9	28.99
289.0	020.0000	0037.2	023.6	109.4	001.0000	0780.1	162.7	29.52
290.0	020.0000	0044.2	025.6	109.2	001.0000	0780.5	160.7	30.02
291.0	020.0000	0051.2	027.4	109.1	001.0000	0780.9	158.9	30.48
292.0	020.0000	0059.9	029.5	108.9	001.0000	0781.3	156.9	30.98
293.0	020.0000	0072.9	032.2	108.6	001.0000	0781.7	154.2	31.65
294.0	020.0000	0087.3	035.1	108.4	001.0000	0781.9	151.3	32.38
295.0	020.0000	0101.3	037.5	108.0	001.0000	0781.9	148.9	32.99
296.0	020.0000	0113.8	039.4	107.7	001.0000	0781.7	147.2	33.45
297.0	020.0000	0123.7	040.7	107.4	001.0000	0781.3	146.0	33.76
298.0	020.0000	0131.7	041.7	107.0	001.0000	0780.9	145.1	33.99
299.0	020.0000	0135.9	042.2	106.7	001.0000	0780.6	144.7	34.10
300.0	020.0000	0136.1	042.3	106.4	001.0000	0780.1	144.8	34.06
301.0	020.0000	0133.2	041.9	106.2	001.0000	0779.4	145.3	33.91
302.0	020.0000	0130.4	041.5	105.9	001.0000	0778.5	145.9	33.76
303.0	020.0000	0127.7	041.2	105.7	001.0000	0777.4	146.4	33.61
304.0	020.0000	0126.4	041.0	105.4	001.0000	0776.1	146.7	33.50
305.0	020.0000	0128.5	041.3	105.1	001.0000	0774.4	146.7	33.49
306.0	020.0000	0138.6	042.6	104.7	001.0000	0771.5	145.7	33.72
307.0	020.0000	0155.2	044.7	104.1	001.0000	0767.0	144.0	34.13
308.0	020.0000	0176.0	047.1	103.5	001.0000	0762.2	142.1	34.58
309.0	020.0000	0198.9	049.0	102.8	001.0000	0758.9	140.7	34.92
310.0	020.0000	0222.8	050.9	102.2	001.0000	0755.2	139.3	35.25
311.0	020.0000	0243.3	052.5	101.6	001.0000	0750.9	138.3	35.46
312.0	020.0000	0257.0	053.5	101.0	001.0000	0747.0	137.9	35.52
313.0	020.0000	0265.8	054.1	100.6	001.0000	0743.9	137.8	35.51
314.0	020.0000	0273.3	054.6	100.1	001.0000	0741.1	137.9	35.46
315.0	020.0000	0279.4	055.1	099.7	001.0000	0738.0	138.0	35.38
316.0	020.0000	0286.5	055.6	099.2	001.0000	0734.8	138.2	35.30
317.0	020.0000	0300.6	056.5	098.7	001.0000	0731.9	137.9	35.32

Azimuth (degrees)	ERP (kW)	HAAT (m)	Dist (km)	Azimuth (degrees)	ERP (kW)	HAAT (m)	Dist (km)	Actual (dBu)
318.0	020.0000	0325.8	058.3	097.9	001.0000	0729.3	137.2	35.49
319.0	020.0000	0361.5	060.6	096.9	001.0000	0728.3	136.0	35.79
320.0	020.0000	0401.8	063.1	095.9	001.0000	0729.3	134.9	36.11
321.0	020.0000	0441.3	065.6	094.8	001.0000	0731.0	133.9	36.40
322.0	020.0000	0480.0	068.2	093.7	001.0000	0732.6	132.9	36.69
323.0	020.0000	0522.4	071.1	092.4	001.0000	0736.6	131.8	37.04
324.0	020.0000	0570.3	073.8	091.1	001.0000	0742.3	131.1	37.32
325.0	020.0000	0619.6	075.9	090.0	001.0000	0747.1	130.8	37.45
326.0	020.0000	0665.1	077.7	089.1	001.0000	0751.5	130.9	37.48
327.0	020.0000	0703.3	079.1	088.2	001.0000	0758.4	131.2	37.47
328.0	020.0000	0733.2	080.1	087.5	001.0000	0764.2	131.9	37.37
329.0	020.0000	0755.4	080.8	086.9	001.0000	0769.0	132.7	37.20
330.0	020.0000	0772.8	081.4	086.4	001.0000	0773.1	133.7	36.98
331.0	020.0000	0788.0	081.9	086.0	001.0000	0776.9	134.7	36.74
332.0	020.0000	0802.2	082.3	085.6	001.0000	0780.0	135.8	36.48
333.0	020.0000	0815.9	082.7	085.2	001.0000	0781.1	137.0	36.18
334.0	020.0000	0830.1	083.1	084.8	001.0000	0780.4	138.2	35.85
335.0	020.0000	0845.0	083.5	084.4	001.0000	0779.3	139.4	35.51
336.0	020.0000	0858.7	083.9	084.0	001.0000	0778.3	140.6	35.16
337.0	020.0000	0870.9	084.2	083.7	001.0000	0777.2	141.9	34.81
338.0	020.0000	0881.7	084.5	083.4	001.0000	0776.3	143.2	34.44
339.0	020.0000	0891.1	084.7	083.2	001.0000	0775.4	144.6	34.07
340.0	020.0000	0898.3	084.9	083.0	001.0000	0774.6	145.9	33.69
341.0	020.0000	0906.6	085.0	082.8	001.0000	0773.9	147.3	33.32
342.0	020.0000	0917.2	085.3	082.5	001.0000	0773.1	148.7	32.95
343.0	020.0000	0927.9	085.5	082.3	001.0000	0772.2	150.2	32.58
344.0	020.0000	0935.8	085.7	082.2	001.0000	0771.5	151.6	32.20
345.0	020.0000	0942.9	085.8	082.0	001.0000	0771.0	153.0	31.83
346.0	020.0000	0950.6	086.0	081.9	001.0000	0770.6	154.5	31.46
347.0	020.0000	0958.1	086.2	081.8	001.0000	0770.2	156.0	31.09
348.0	020.0000	0964.7	086.3	081.7	001.0000	0770.0	157.5	30.72
349.0	020.0000	0969.5	086.4	081.6	001.0000	0769.8	159.0	30.35
350.0	020.0000	0973.5	086.5	081.5	001.0000	0769.6	160.5	29.97

01-25-2021

Terrain Data: GLOBE 30 Sec

FMOver Analysis

KMTJ BLED20181203ABJ

KBUW

Channel = 213C3

Max ERP = 1 kW

RCAMSL = 2423 m

N. Lat. 45 11 38.80

W. Lng. 109 20 32.60

Protected

60 dBu

Channel = 213C1

Max ERP = 20 kW

RCAMSL = 2371 m

N. Lat. 44 37 23.29

W. Lng. 107 07 02.40

Interfering

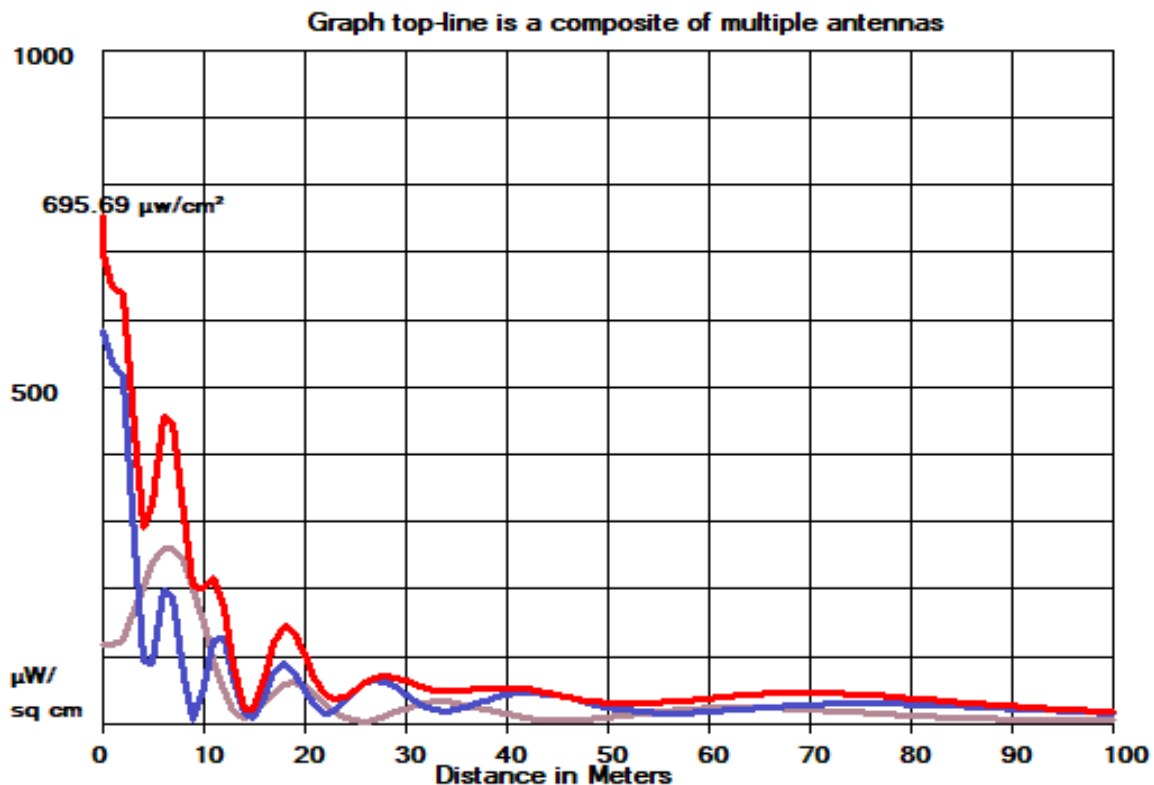
40 dBu

Azimuth (degrees)	ERP (kW)	HAAT (m)	Dist (km)	Azimuth (degrees)	ERP (kW)	HAAT (m)	Dist (km)	Actual (dBu)	IX (km)
049.0	001.0000	0822.2	051.8	306.3	020.0000	0143.8	166.7	30.79	
050.0	001.0000	0820.5	051.8	306.2	020.0000	0142.2	165.8	30.90	
051.0	001.0000	0818.8	051.7	306.1	020.0000	0140.6	165.0	31.01	
052.0	001.0000	0817.1	051.7	306.0	020.0000	0139.0	164.1	31.12	
053.0	001.0000	0815.4	051.6	305.9	020.0000	0137.5	163.3	31.23	
054.0	001.0000	0813.5	051.6	305.8	020.0000	0136.0	162.5	31.34	
055.0	001.0000	0811.3	051.5	305.7	020.0000	0134.5	161.6	31.44	
056.0	001.0000	0808.8	051.5	305.5	020.0000	0133.0	160.8	31.54	
057.0	001.0000	0806.3	051.4	305.4	020.0000	0131.4	160.0	31.64	
058.0	001.0000	0803.6	051.3	305.2	020.0000	0130.0	159.2	31.74	
059.0	001.0000	0800.7	051.2	305.1	020.0000	0128.9	158.5	31.84	
060.0	001.0000	0797.4	051.1	304.9	020.0000	0128.0	157.7	31.94	
061.0	001.0000	0794.1	051.0	304.7	020.0000	0127.3	156.9	32.05	
062.0	001.0000	0791.0	051.0	304.5	020.0000	0126.9	156.2	32.16	
063.0	001.0000	0788.1	050.9	304.3	020.0000	0126.8	155.5	32.28	
064.0	001.0000	0785.2	050.8	304.2	020.0000	0126.6	154.8	32.39	
065.0	001.0000	0782.0	050.7	303.9	020.0000	0126.3	154.1	32.50	
066.0	001.0000	0779.1	050.6	303.7	020.0000	0126.2	153.4	32.60	
067.0	001.0000	0776.7	050.5	303.5	020.0000	0126.5	152.7	32.72	
068.0	001.0000	0774.8	050.5	303.3	020.0000	0127.0	152.0	32.85	
069.0	001.0000	0773.9	050.5	303.1	020.0000	0127.5	151.3	32.97	
070.0	001.0000	0773.0	050.4	302.9	020.0000	0128.0	150.6	33.09	
071.0	001.0000	0772.6	050.4	302.7	020.0000	0128.5	149.9	33.22	
072.0	001.0000	0772.9	050.4	302.5	020.0000	0129.2	149.3	33.35	
073.0	001.0000	0774.1	050.5	302.3	020.0000	0129.8	148.6	33.47	
074.0	001.0000	0774.8	050.5	302.0	020.0000	0130.3	147.9	33.60	
075.0	001.0000	0774.6	050.5	301.8	020.0000	0131.0	147.3	33.72	
076.0	001.0000	0772.6	050.4	301.5	020.0000	0131.7	146.7	33.84	
077.0	001.0000	0769.8	050.3	301.3	020.0000	0132.4	146.2	33.95	
078.0	001.0000	0767.4	050.3	301.0	020.0000	0133.2	145.6	34.07	
079.0	001.0000	0767.2	050.3	300.7	020.0000	0134.1	145.1	34.20	
080.0	001.0000	0767.6	050.3	300.5	020.0000	0134.9	144.5	34.32	
081.0	001.0000	0768.5	050.3	300.2	020.0000	0135.7	143.9	34.44	

Azimuth (degrees)	ERP (kW)	HAAT (m)	Dist (km)	Azimuth (degrees)	ERP (kW)	HAAT (m)	Dist (km)	Actual (dBu)
082.0	001.0000	0770.9	050.4	299.9	020.0000	0136.2	143.4	34.57
083.0	001.0000	0774.7	050.5	299.7	020.0000	0136.4	142.8	34.68
084.0	001.0000	0778.1	050.6	299.4	020.0000	0136.3	142.2	34.79
085.0	001.0000	0781.0	050.7	299.1	020.0000	0136.1	141.6	34.89
086.0	001.0000	0776.8	050.5	298.8	020.0000	0135.4	141.3	34.94
087.0	001.0000	0768.5	050.3	298.4	020.0000	0134.1	141.0	34.95
088.0	001.0000	0760.3	050.1	298.1	020.0000	0132.0	140.8	34.93
089.0	001.0000	0752.1	049.8	297.7	020.0000	0129.6	140.6	34.91
090.0	001.0000	0747.3	049.7	297.4	020.0000	0126.8	140.4	34.88
091.0	001.0000	0742.8	049.5	297.0	020.0000	0123.8	140.1	34.84
092.0	001.0000	0738.3	049.4	296.7	020.0000	0120.5	139.9	34.80
093.0	001.0000	0734.1	049.2	296.3	020.0000	0117.2	139.7	34.75
094.0	001.0000	0732.1	049.2	296.0	020.0000	0113.5	139.5	34.69
095.0	001.0000	0730.7	049.1	295.6	020.0000	0109.5	139.2	34.63
096.0	001.0000	0729.1	049.1	295.3	020.0000	0105.2	139.0	34.54
097.0	001.0000	0728.3	049.1	295.0	020.0000	0100.8	138.8	34.46
098.0	001.0000	0729.5	049.1	294.6	020.0000	0096.2	138.5	34.37
099.0	001.0000	0733.6	049.2	294.3	020.0000	0091.5	138.2	34.29
100.0	001.0000	0740.4	049.4	294.0	020.0000	0086.8	137.7	34.21
101.0	001.0000	0746.8	049.6	293.6	020.0000	0081.9	137.4	34.13
102.0	001.0000	0754.0	049.9	293.3	020.0000	0077.1	137.0	34.03
103.0	001.0000	0759.6	050.0	292.9	020.0000	0072.0	136.7	33.92
104.0	001.0000	0766.0	050.2	292.6	020.0000	0067.2	136.4	33.81
105.0	001.0000	0773.5	050.4	292.2	020.0000	0062.5	136.1	33.70
106.0	001.0000	0778.8	050.6	291.9	020.0000	0058.5	135.8	33.59
107.0	001.0000	0780.9	050.7	291.5	020.0000	0055.1	135.7	33.47
108.0	001.0000	0781.9	050.7	291.1	020.0000	0052.1	135.7	33.35
109.0	001.0000	0781.1	050.7	290.7	020.0000	0049.4	135.7	33.21
110.0	001.0000	0777.5	050.6	290.4	020.0000	0046.8	135.8	33.05
111.0	001.0000	0770.0	050.3	290.0	020.0000	0044.3	136.0	32.87
112.0	001.0000	0759.4	050.0	289.6	020.0000	0041.8	136.4	32.66
113.0	001.0000	0750.2	049.7	289.3	020.0000	0039.4	136.7	32.46
114.0	001.0000	0744.3	049.6	288.9	020.0000	0036.7	137.0	32.25
115.0	001.0000	0740.9	049.5	288.6	020.0000	0034.1	137.2	32.04
116.0	001.0000	0737.1	049.3	288.2	020.0000	0031.5	137.5	31.83
117.0	001.0000	0731.5	049.2	287.9	020.0000	0028.9	137.8	31.68
118.0	001.0000	0724.0	048.9	287.6	020.0000	0026.4	138.2	31.60
119.0	001.0000	0715.9	048.7	287.3	020.0000	0023.8	138.7	31.52
120.0	001.0000	0708.4	048.4	286.9	020.0000	0021.5	139.1	31.44
121.0	001.0000	0701.3	048.2	286.6	020.0000	0019.5	139.6	31.35
122.0	001.0000	0693.9	047.9	286.3	020.0000	0017.8	140.0	31.26
123.0	001.0000	0685.6	047.6	286.0	020.0000	0016.4	140.6	31.17
124.0	001.0000	0677.3	047.3	285.8	020.0000	0015.3	141.1	31.07
125.0	001.0000	0669.8	047.1	285.5	020.0000	0014.2	141.6	30.97
126.0	001.0000	0663.6	046.9	285.2	020.0000	0013.1	142.1	30.88
127.0	001.0000	0657.2	046.6	284.9	020.0000	0012.0	142.7	30.78
128.0	001.0000	0650.1	046.4	284.7	020.0000	0010.8	143.2	30.68
129.0	001.0000	0642.3	046.1	284.4	020.0000	0009.7	143.8	30.57
130.0	001.0000	0634.9	045.9	284.2	020.0000	0008.6	144.4	30.46
131.0	001.0000	0627.1	045.6	284.0	020.0000	0007.5	145.0	30.34
132.0	001.0000	0616.8	045.2	283.8	020.0000	0006.7	145.8	30.21

Azimuth (degrees)	ERP (kW)	HAAT (m)	Dist (km)	Azimuth (degrees)	ERP (kW)	HAAT (m)	Dist (km)	Actual (dBu)
133.0	001.0000	0601.0	044.6	283.6	020.0000	0006.1	146.6	30.05
134.0	001.0000	0579.5	043.8	283.5	020.0000	0005.7	147.7	29.86
135.0	001.0000	0554.3	042.8	283.5	020.0000	0005.6	149.0	29.63
136.0	001.0000	0530.3	041.7	283.5	020.0000	0005.6	150.3	29.39
137.0	001.0000	0509.1	040.7	283.5	020.0000	0005.6	151.6	29.17
138.0	001.0000	0489.1	039.8	283.5	020.0000	0005.5	152.7	28.97
139.0	001.0000	0467.7	038.9	283.5	020.0000	0005.5	153.9	28.76
140.0	001.0000	0445.4	037.9	283.5	020.0000	0005.6	155.0	28.55
141.0	001.0000	0421.1	036.9	283.5	020.0000	0005.8	156.2	28.34
142.0	001.0000	0392.7	035.7	283.6	020.0000	0006.1	157.5	28.10
143.0	001.0000	0362.7	034.5	283.8	020.0000	0006.6	158.9	27.86
144.0	001.0000	0332.7	033.0	284.0	020.0000	0007.4	160.4	27.58
145.0	001.0000	0300.2	031.2	284.2	020.0000	0008.6	162.1	27.27
146.0	001.0000	0264.1	029.3	284.5	020.0000	0010.1	163.8	26.94
147.0	001.0000	0231.4	027.6	284.8	020.0000	0011.5	165.5	26.64
148.0	001.0000	0212.0	026.4	285.0	020.0000	0012.2	166.6	26.42
149.0	001.0000	0204.0	025.9	285.0	020.0000	0012.2	167.3	26.30
150.0	001.0000	0197.6	025.5	285.0	020.0000	0012.2	167.9	26.19
151.0	001.0000	0187.7	025.0	285.0	020.0000	0012.3	168.6	26.06
152.0	001.0000	0176.8	024.3	285.1	020.0000	0012.6	169.3	25.92
153.0	001.0000	0167.3	023.7	285.1	020.0000	0012.9	170.0	25.79
154.0	001.0000	0161.3	023.4	285.2	020.0000	0012.9	170.6	25.68
155.0	001.0000	0161.2	023.4	285.1	020.0000	0012.5	170.9	25.62
156.0	001.0000	0167.4	023.8	284.9	020.0000	0011.7	171.0	25.61
157.0	001.0000	0181.4	024.6	284.6	020.0000	0010.2	170.8	25.64
158.0	001.0000	0198.8	025.6	284.2	020.0000	0008.6	170.6	25.68
159.0	001.0000	0211.8	026.4	283.9	020.0000	0007.2	170.5	25.69
160.0	001.0000	0214.0	026.5	283.8	020.0000	0006.7	170.8	25.63
161.0	001.0000	0202.4	025.8	283.9	020.0000	0007.2	171.6	25.49
162.0	001.0000	0181.4	024.6	284.2	020.0000	0008.4	172.6	25.30
163.0	001.0000	0163.3	023.5	284.4	020.0000	0009.6	173.5	25.13
164.0	001.0000	0158.2	023.2	284.5	020.0000	0009.7	174.1	25.04
165.0	001.0000	0158.2	023.2	284.4	020.0000	0009.4	174.4	24.97
166.0	001.0000	0151.7	022.7	284.5	020.0000	0009.7	175.0	24.87
167.0	001.0000	0136.5	021.6	284.7	020.0000	0010.9	175.8	24.71
168.0	001.0000	0125.5	020.8	284.9	020.0000	0011.8	176.5	24.58

KBUW Ant = 5 bay Type 3 (Brown), KSUW Ant = 8 bay Type 3 (Blue)



HORZ. DISTANCE FROM RADIATOR(S) vs POWER DENSITY (Microwatt/Square cm)
 Dist(Meters) Total (uW/cm2) Percent of Max(1000)

0	695.69	69.6
1	647.131	64.7
2	635.299	63.5
3	471.847	47.2
4	288.521	28.9
5	323.217	32.3
6	452.432	45.2
7	444.465	44.4
8	306.361	30.6
9	200.222	20.0
10	197.021	19.7
11	213.012	21.3
12	169.155	16.9
13	81.775	8.2
14	18.396	1.8
15	17.85	1.8
16	64.554	6.5
17	116.459	11.6
18	141.438	14.1
19	131.739	13.2
20	99.945	10.0
21	64.595	6.5
22	40.568	4.1
23	32.054	3.2
24	35.959	3.6
25	46.324	4.6

Dist(Meters)	PD (H)	PD (V)	Total(uW/cm2)	Percent Max.
	26	57.144	5.7	
	27	64.438	6.4	
	28	66.837	6.7	
	29	64.881	6.5	
	30	60.175	6.0	
	31	54.333	5.4	
	32	49.397	4.9	
	33	46.164	4.6	
	34	44.788	4.5	
	35	45.078	4.5	
	36	46.429	4.6	
	37	48.10	4.8	
	38	49.544	5.0	
	39	50.39	5.0	
	40	50.423	5.0	
	41	49.564	5.0	
	42	47.888	4.8	
	43	45.552	4.6	
	44	42.778	4.3	
	45	39.808	4.0	
	46	36.849	3.7	
	47	34.081	3.4	
	48	31.649	3.2	
	49	29.654	3.0	
	50	28.158	2.8	
	51	27.185	2.7	
	52	26.727	2.7	
	53	26.726	2.7	
	54	27.152	2.7	
	55	27.949	2.8	
	56	29.049	2.9	
	57	30.367	3.0	
	58	31.828	3.2	
	59	33.363	3.3	
	60	34.908	3.5	
	61	36.408	3.6	
	62	37.819	3.8	
	63	39.101	3.9	
	64	40.226	4.0	
	65	41.173	4.1	
	66	41.929	4.2	
	67	42.487	4.2	
	68	42.843	4.3	
	69	43.002	4.3	
	70	42.97	4.3	
	71	42.757	4.3	
	72	42.375	4.2	
	73	41.838	4.2	
	74	41.161	4.1	
	75	40.344	4.0	
	76	39.417	3.9	
	77	38.399	3.8	

Dist(Meters)	PD (H)	PD (V)	Total(uW/cm2)	Percent Max.

	78	37.306	3.7	
	79	36.155	3.6	
	80	34.96	3.5	
	81	33.735	3.4	
	82	32.488	3.2	
	83	31.231	3.1	
	84	29.974	3.0	
	85	28.726	2.9	
	86	27.495	2.7	
	87	26.289	2.6	
	88	25.112	2.5	
	89	23.971	2.4	
	90	22.87	2.3	
	91	21.814	2.2	
	92	20.804	2.1	
	93	19.843	2.0	
	94	18.933	1.9	
	95	18.075	1.8	
	96	17.271	1.7	
	97	16.52	1.7	
	98	15.822	1.6	
	99	15.178	1.5	
	100	14.585	1.5	

HOW TO READ THE FM COMPUTER PRINT-OUT

The computer printout should be self-explanatory for the most part. The parameters of the station being checked, (reference station) are printed in the heading. Contour distances are in kilometers and are predicted using the Commission's TVFMINT FORTRAN subroutine. When interference contour distances are less than 16 kilometers the F(50-50) tables are used. If signal contour distances are less than 1.6 km the free-space equation is used.

The column listed "IN " is the difference in kilometers between of the reference station's protected contour and the data file station's interference contour at the closest point between the contours. (All distances are derived by the method detailed in Sec. 73.208 of the Rules and Regulations as amended in Docket 80-90.) Therefore, "IN" column is a measure of incoming interference. Negative distances in this column indicate the presence of contour overlap. Listed antenna heights and power are those given in the FCC database. The column labeled "OUT " shows the greatest distance in kilometers of overlap or smallest of clearance between the reference station's interference contour and the database station's protected contour. Negative distance figures in this column indicate outgoing contour overlap.

Under the "AZI" column, the first row of numbers indicate the True North bearings from the reference station toward the database stations, while the numbers in the second row indicate the reverse bearings from the database stations to the reference station.

The columns labeled "INT" and "PRO" contain the distance in kilometers of the appropriate interference contour and the protected contour of a data base station.

For I.F. relationships, some channel-six TV relationships and relationships with commercial channel stations providing clearance the minimum spacings values the "IN" and "OUT" columns can change their significance. The letter "R" stands for the minimum **required** distance in kilometers, while the letter "M" in the next column follows the **available clear space** (or lack of it) in kilometers. Minimum separation distances when displayed are taken from Sec 73.207 of the rules as amended. Canadian and Mexican separation distances, U/D ratios and protected contour values are from the US/Mexican Working Agreement and the US/Canada Working Agreement".

The call letters of stations meeting the minimum separation distances under the rules will be flagged by the characters "<<" appended to the right-hand side of the call sign. The "^" character appended to the call sign means the station has been "max-classed" according to the provisions of section 73.525 of the Rules.

The first three letters of the "TYPE" column identify the current FCC status of the stations. The fourth letter will be a "D" if the facility is directional. "Z" indicates a 73.215 directional. An "N" indicates it is a 73.215 station that operates with an omni-directional antenna. The fifth letter will be an E, H or V depending on the type of antenna polarization. The sixth letter will be a "Y" if the antenna uses beam tilt or an "X" if the commission is not sure, otherwise it will be an "N" or left blank.

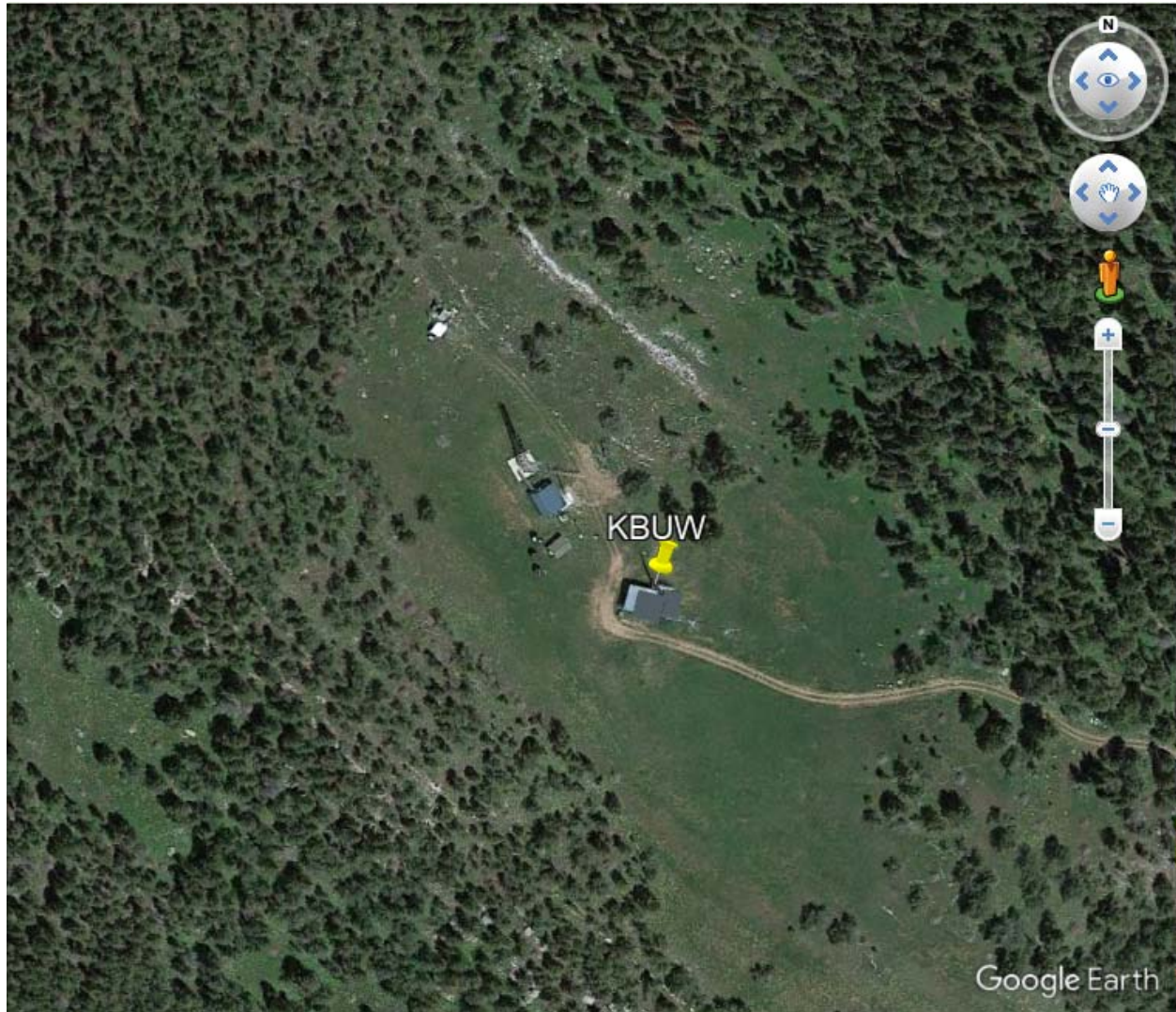
Translator relationships with LPTV/Translators are calculated using the 62 dBu protected and the F(50-10) interference contour, as defined in section 74.1205 of the Rules.

Proposed KBUW Existing Tower Site (Also KSUW tower Site)

N. Lat. 44-37-23.29

W. Long. 107-07-02.43

Base Elevation 2347 m



Declaration:

I, Douglas L. Vernier, declare that I have received training as an engineer from the University of Michigan, School of Engineering. That, I have received degrees from the University in the field of Broadcast Telecommunications. That, I have been active in broadcast consulting for over 40 years.

That, I have held a Federal Communications Commission First Class Radiotelephone License continually since 1964. In 1985, this license was reissued by the Commission as a lifetime General Radiotelephone license no. PG-16-16464.

That, I am certified as a Professional Broadcast Engineer (#50258) by the Society of Broadcast Engineers, Indianapolis, Indiana. (Life-time Certification received in 2010).

That, my qualifications are a matter of record with the Federal Communications Commission.

That, I have been retained by the the University of Wyoming (KBW) to prepare the engineering showings appended hereto.

That, I have prepared these broadcast engineering showings, the technical information contained in same and the facts stated within are true of my knowledge.

That, under penalty of perjury, I declare that the foregoing is correct.

Douglas L. Vernier

A handwritten signature in blue ink, appearing to read "Doug Vernier", with a large, stylized initial "D" and a horizontal line extending to the right.

Executed of February 12, 2021