

## **Comprehensive Engineering Statement – September 30, 2021**

### **Iowa Public Radio**

This proposal is for a new non-commercial educational FM station to serve Manly, Iowa.

Geographic Coordinates: N. Lat. 43-16-43.5, W. Long. 93-22-06.4 (NAD 83)

Channel number: 214, 90.7 Mhz., Class C3, ERP: 10.0 kW, circularly polarized.

Proposed Antenna C.O.R: 440.7 m AMSL, HAAT: 62.4 m (8 cardinal radials, GLOBE terrain data.)

Antenna COR: 78.7m A.G.: Shively 6810, 3-bay, full-wave, EPA type 1.

Base elevation at the site: 362 m.

Total structure height above ground: 91 m, (existing tower.) ASR # 1258983

Pages #2 through #18 compose a contour-to-contour channel study using our FMCommander program that is in wide use throughout the industry. This study uses GLOBE 30 m terrain data to show that, per section 73.509 of the Commission's rules, the proposed facilities will neither cause nor receive contour overlap with 1<sup>st</sup> adjacent KLSE, Rochester, Minnesota. This is followed by similar studies showing contour overlap is neither caused nor received with first adjacent, KUNI, Cedar Falls, Iowa, and KNGA, St. Peter, Minnesota. These are the only three stations where such detailed studies were needed.

Page #19 is a coverage map showing the 60 dBu City service contour. As shown on the map, the proposed city of license, Manly, IA is covered 100 percent by the principal city contour. Page #20 is distance to contour and HAAT table for the eight cardinal radials.

Page # 21 through #23 is an RF hazard graph and table that shows that the proposed, full-wave, 3-bay Shively Labs antenna produces a power density well below the Commission's 200  $\mu\text{W}/\text{cm}^2$  maximum for this uncontrolled area. Using the OET 65 formulas with the proposed, type #1 antenna, at head height, at the tower base, a total of 60.3  $\mu\text{W}/\text{cm}^2$  is predicted which is 30.01 percent of the maximum. The maximum power density of 70.74  $\mu\text{W}/\text{cm}^2$  is located at a horizontal distance of 15 meters from the tower base located in pure Iowa farmland. This is 35.4 percent of the maximum. The applicant proposes to use an existing registered tower (ASR #1258983) that has not been the target of environmental objections. There will be no changes to the tower height or other changes that may call for a detailed environmental analysis. The tower is gated and locked with appropriate signage. The applicant will reduce power or terminate transmissions as necessary to protect the public and workers on the tower. There is no other broadcast related R.F. source within 9.7 km of the tower.

Page # 24 is a 307-B map showing the 60 dBu and the calculated first and second service areas therein. There is no first service population. Using the 2010 U.S. block level census, we find the second service shows a population of 8,183 at 14.5 percent of the full 60 dBu. The total 2010 population within the 60 dBu has been calculated to be 56,341.

Page # 25 shows the total area within the 60 dBu, without including water bodies and inlets, is 1,993.9 square kilometers. This area was determined by the computerized polar planimeter of Probe 5, a V-Soft Communication's program in wide use throughout the broadcast engineering community.

Page #26 is a map showing all stations of the Iowa Public Radio stations operating under the authority of the State Board of Regents. There is a total of 24 stations operating under Iowa university licenses, operated, and maintained by Iowa Public Radio. Two additional stations, KGYM and KZIA are owned by a Board member, however their principal city contour does not cross the proposed 60 dBu service contour. Page #27 is an exhibit stating the qualifications of the preparer.

REFERENCE		Iowa Public Radio Proposed Manly Iowa NCE Station								DISPLAY DATES	
43 16 43.50 N.		CH# 214C3 - 90.7 MHz, Pwr= 10 kW, HAAT= 62.4 M, COR= 440.7 M								DATA 09-26-21	
93 22 06.40 W.		Average Protected F(50-50)= 25.63 km Omni-directional								SEARCH 09-26-21	
CH CITY	CALL	TYPE ANT STATE	AZI <--	DIST FILE #	LAT LNG	PWR(kw) HAAT(M)	INT(km) COR(M)	PRO(km) LICENSEE	*IN* (Overlap in km)	*OUT*	
214C3 Rochester	KLSE	LIC _CN MN	43.9 224.6	118.40 BLED19980504KH	44 02 27.90 92 20 25.60	1.100 263	84.6 608	30.3 Minnesota	9.3 Public Radio	0.5	
215C Cedar Falls	KUNI	LIC _CN IA	130.5 311.5	163.14 BMLED19841106LW	42 18 58.90 91 51 31.60	100.000 524	131.3 799	87.8 University Of Northern Iow	3.0	30.1	
213C1 St. Peter	KNGA	LIC _CN MN	330.4 149.9	120.92 BMLED20120501AAX	44 13 19.90 94 07 03.90	75.000 216	94.1 504	63.5 Minnesota	3.2 Public Radio	21.5	
211A Austin	KNSE	LIC DCN MN	23.8 203.9	44.01 BLED20031230AAP	43 38 26.90 93 08 51.70	6.000 97	1.8 476	19.6 Minnesota	18.4 Public Radio	21.3	
216C Fort Dodge	KNSK	LIC _CN IA	239.2 58.5	99.06 BLED20070911ABL	42 49 02.90 94 24 41.90	100.000 326	10.6 676	74.5 Iowa State University Of S	62.4	21.9	
217A Austin	KMSK	LIC _CN MN	33.6 213.9	53.31 BLED19890831KA	43 40 38.80 93 00 04.60	0.135 59	0.8 436	9.2 Minnesota	28.1 State University	41.6	
268A Rudd	AL3621«	VAC _N IA	114.2 294.5	41.25 RM	43 07 33.89 92 54 20.71	6.000 100	30.5 435	9.0	12.0R	29.3M	
214A Okoboji	KOJI	LIC _CN IA	266.1 84.8	159.01 BLED20020814AAZ	43 09 52.90 95 19 30.00	4.500 113	87.0 538	29.7 Western Iowa Tech Communit	46.0	40.4	
214C3 Carroll	KNSC	LIC _CN IA	223.0 42.0	174.72 BLED20021121AAF	42 07 13.90 94 48 49.90	10.000 88	97.0 464	33.7 Iowa State University Of S	51.8	53.3	
211C Ames	WOI-FM	LIC _CN IA	187.1 7.0	164.63 BLED978	41 48 32.90 93 36 53.70	100.000 454	12.1 745	83.0 Iowa State University Of S	128.2	79.1	
215C3 Windom	KJWR	LIC _CN MN	299.3 118.1	168.27 BLED20080729AAL	44 00 21.80 95 12 10.00	25.000 100	60.6 534	39.5 Minn-Iowa Christian Broadc	82.9	90.6	

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.  
Ant Column: (D= DA Standard, Z= DA 73.215, N= Not DA 73.215, \_= Omni), Polarization (C,H,V,E), Beamtilt(Y,N,X)  
« = Station meets FCC minimum distance spacing for its class.

## 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.

FMCommander Single Allocation Study - 09-27-2021 - GLOBE 30 Sec  
NEW!'s Overlaps (In= 9.28 km, Out= 0.48 km)

NEW! CH 214 C3

Lat= 43 16 43.50, Lng= 93 22 06.40

10.0 kW 62.4 m HAAT, 440.7 m COR

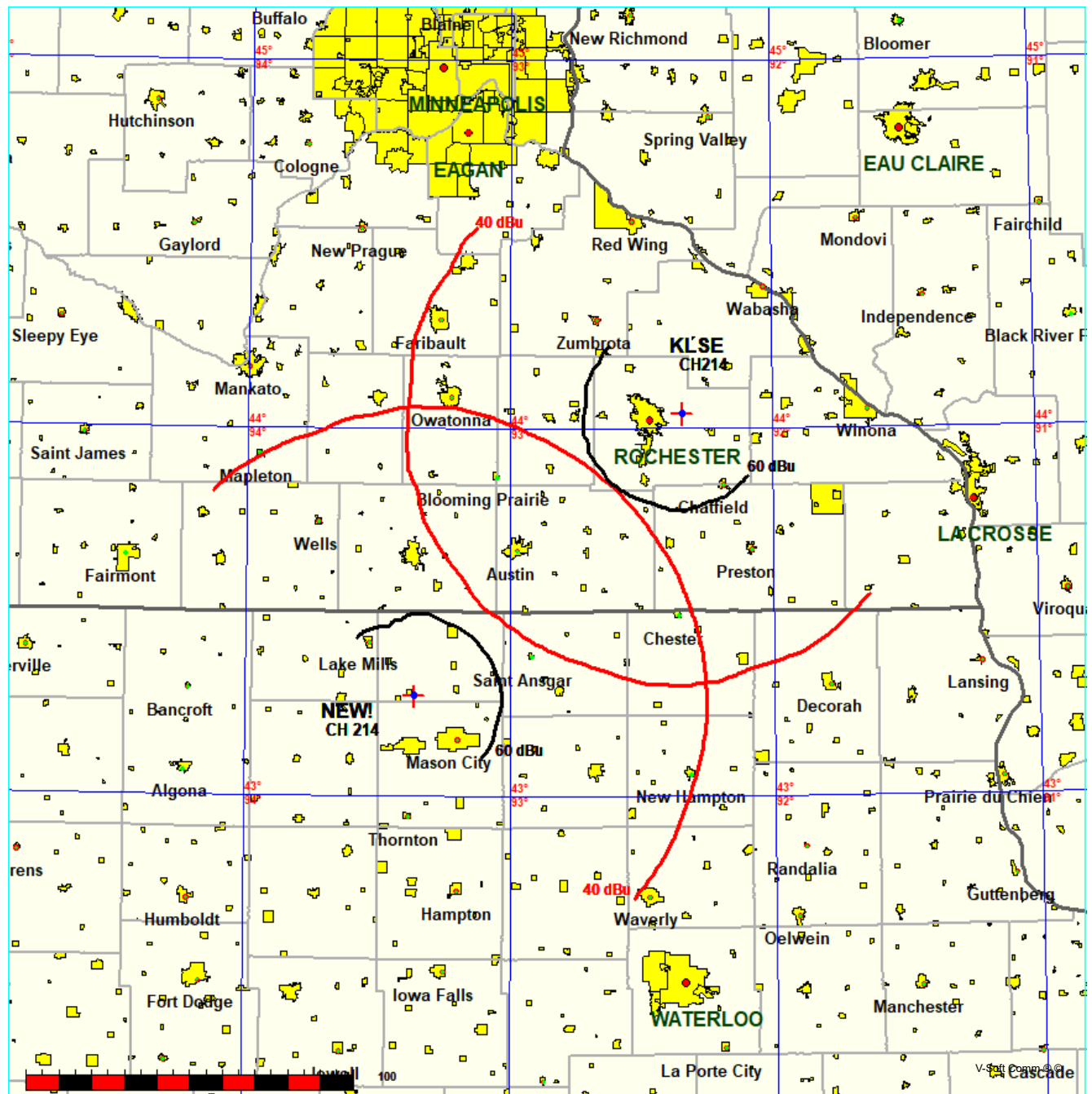
Prot.= 60 dBu, Intef.= 40 dBu

KLSE CH 214 C3 BLED19980504KH

Lat= 44 02 27.90, Lng= 92 20 25.60

1.1 kW 263 m HAAT, 608 m COR

Prot.= 60 dBu, Intef.= 40 dBu



NEW!

KLSE BLED19980504KH

Channel = 214C3  
 Max ERP = 10 kW  
 RCAMSL = 440.7 m  
 N. Lat. 43 16 43.50  
 W. Lng. 93 22 06.40  
 Protected  
 60 dBu

Channel = 214C3  
 Max ERP = 1.1 kW  
 RCAMSL = 608 m  
 N. Lat. 44 02 27.90  
 W. Lng. 92 20 25.60  
 Interfering  
 40 dBu

Azimuth (degrees)	ERP (kW)	HAAT (m)	Dist (km)	Azimuth (degrees)	ERP (kW)	HAAT (m)	Dist (km)	Actual (dBu)	IX (km)
344.0	010.0000	0046.9	022.5	235.0	001.1000	0266.5	108.9	32.37	
345.0	010.0000	0047.6	022.7	235.0	001.1000	0266.5	108.5	32.49	
346.0	010.0000	0048.3	022.8	235.0	001.1000	0266.5	108.0	32.60	
347.0	010.0000	0048.6	022.9	234.9	001.1000	0266.6	107.6	32.71	
348.0	010.0000	0048.6	022.9	234.8	001.1000	0266.6	107.3	32.82	
349.0	010.0000	0048.2	022.8	234.7	001.1000	0266.7	106.9	32.91	
350.0	010.0000	0047.8	022.7	234.6	001.1000	0266.9	106.6	33.00	
351.0	010.0000	0047.8	022.7	234.5	001.1000	0267.0	106.3	33.11	
352.0	010.0000	0048.3	022.8	234.4	001.1000	0267.0	105.9	33.22	
353.0	010.0000	0049.2	023.0	234.4	001.1000	0267.0	105.4	33.35	
354.0	010.0000	0050.1	023.2	234.4	001.1000	0267.0	105.0	33.49	
355.0	010.0000	0051.3	023.5	234.4	001.1000	0267.0	104.5	33.63	
356.0	010.0000	0052.2	023.7	234.4	001.1000	0267.1	104.0	33.76	
357.0	010.0000	0053.0	023.9	234.3	001.1000	0267.1	103.6	33.89	
358.0	010.0000	0053.6	024.0	234.3	001.1000	0267.2	103.2	34.02	
359.0	010.0000	0054.2	024.1	234.2	001.1000	0267.3	102.8	34.15	
000.0	010.0000	0054.1	024.1	234.0	001.1000	0267.5	102.4	34.25	
001.0	010.0000	0054.1	024.1	233.9	001.1000	0267.7	102.1	34.36	
002.0	010.0000	0054.0	024.1	233.7	001.1000	0268.0	101.8	34.46	
003.0	010.0000	0054.0	024.1	233.6	001.1000	0268.2	101.5	34.57	
004.0	010.0000	0054.0	024.1	233.4	001.1000	0268.5	101.1	34.67	
005.0	010.0000	0054.4	024.2	233.3	001.1000	0268.7	100.8	34.79	
006.0	010.0000	0055.1	024.3	233.2	001.1000	0268.9	100.4	34.92	
007.0	010.0000	0055.9	024.5	233.1	001.1000	0269.0	099.9	35.06	
008.0	010.0000	0056.6	024.6	233.0	001.1000	0269.2	099.5	35.18	
009.0	010.0000	0056.9	024.7	232.8	001.1000	0269.5	099.2	35.29	
010.0	010.0000	0056.7	024.6	232.6	001.1000	0269.8	098.9	35.39	
011.0	010.0000	0056.3	024.5	232.4	001.1000	0270.1	098.7	35.47	
012.0	010.0000	0055.9	024.5	232.2	001.1000	0270.4	098.5	35.54	
013.0	010.0000	0055.6	024.4	232.0	001.1000	0270.7	098.3	35.62	
014.0	010.0000	0055.3	024.3	231.8	001.1000	0271.0	098.1	35.69	
015.0	010.0000	0054.9	024.3	231.5	001.1000	0271.2	097.9	35.76	
016.0	010.0000	0054.3	024.1	231.3	001.1000	0271.6	097.7	35.81	
017.0	010.0000	0053.9	024.0	231.1	001.1000	0271.8	097.6	35.87	
018.0	010.0000	0053.6	024.0	230.8	001.1000	0272.0	097.4	35.93	
019.0	010.0000	0053.4	023.9	230.6	001.1000	0272.2	097.2	35.99	

Azimuth (degrees)	ERP (kW)	HAAT (m)	Dist (km)	Azimuth (degrees)	ERP (kW)	HAAT (m)	Dist (km)	Actual (dBu)
020.0	010.0000	0053.2	023.9	230.4	001.1000	0272.3	097.0	36.06
021.0	010.0000	0053.0	023.9	230.2	001.1000	0272.5	096.9	36.11
022.0	010.0000	0052.7	023.8	229.9	001.1000	0272.8	096.7	36.16
023.0	010.0000	0052.3	023.7	229.7	001.1000	0273.0	096.6	36.20
024.0	010.0000	0052.1	023.7	229.4	001.1000	0273.3	096.5	36.26
025.0	010.0000	0052.1	023.7	229.2	001.1000	0273.5	096.3	36.31
026.0	010.0000	0052.3	023.7	229.0	001.1000	0273.8	096.1	36.39
027.0	010.0000	0052.7	023.8	228.8	001.1000	0274.1	095.9	36.47
028.0	010.0000	0053.1	023.9	228.6	001.1000	0274.4	095.7	36.55
029.0	010.0000	0053.5	024.0	228.4	001.1000	0274.7	095.5	36.62
030.0	010.0000	0053.7	024.0	228.1	001.1000	0275.0	095.3	36.69
031.0	010.0000	0054.1	024.1	227.9	001.1000	0275.3	095.1	36.75
032.0	010.0000	0054.3	024.1	227.7	001.1000	0275.5	094.9	36.81
033.0	010.0000	0054.5	024.2	227.4	001.1000	0275.6	094.8	36.86
034.0	010.0000	0054.9	024.3	227.2	001.1000	0275.8	094.6	36.92
035.0	010.0000	0055.3	024.3	226.9	001.1000	0275.8	094.4	36.97
036.0	010.0000	0055.6	024.4	226.7	001.1000	0275.7	094.3	37.01
037.0	010.0000	0055.8	024.4	226.4	001.1000	0275.5	094.2	37.04
038.0	010.0000	0056.0	024.5	226.2	001.1000	0275.0	094.1	37.05
039.0	010.0000	0056.1	024.5	225.9	001.1000	0274.5	094.0	37.06
040.0	010.0000	0056.3	024.5	225.7	001.1000	0273.9	093.9	37.07
041.0	010.0000	0056.5	024.6	225.4	001.1000	0273.1	093.9	37.07
042.0	010.0000	0056.8	024.6	225.2	001.1000	0272.2	093.8	37.06
043.0	010.0000	0057.2	024.7	224.9	001.1000	0271.1	093.7	37.06
044.0	010.0000	0057.5	024.8	224.6	001.1000	0270.1	093.6	37.04
045.0	010.0000	0057.8	024.8	224.4	001.1000	0269.1	093.6	37.03
046.0	010.0000	0058.2	024.9	224.1	001.1000	0268.0	093.5	37.01
047.0	010.0000	0058.6	025.0	223.8	001.1000	0267.0	093.5	37.00
048.0	010.0000	0058.8	025.0	223.6	001.1000	0266.0	093.5	36.97
049.0	010.0000	0059.0	025.0	223.3	001.1000	0265.2	093.5	36.94
050.0	010.0000	0059.1	025.1	223.0	001.1000	0264.5	093.5	36.91
051.0	010.0000	0059.2	025.1	222.8	001.1000	0264.0	093.6	36.88
052.0	010.0000	0059.2	025.1	222.5	001.1000	0263.6	093.6	36.84
053.0	010.0000	0059.3	025.1	222.2	001.1000	0263.4	093.7	36.82
054.0	010.0000	0059.5	025.1	222.0	001.1000	0263.4	093.8	36.80
055.0	010.0000	0059.6	025.2	221.7	001.1000	0263.5	093.8	36.78
056.0	010.0000	0059.8	025.2	221.4	001.1000	0263.6	093.9	36.76
057.0	010.0000	0060.1	025.2	221.2	001.1000	0263.8	094.0	36.74
058.0	010.0000	0060.4	025.3	220.9	001.1000	0264.0	094.1	36.72
059.0	010.0000	0060.8	025.4	220.6	001.1000	0264.1	094.2	36.70
060.0	010.0000	0061.2	025.4	220.4	001.1000	0264.1	094.2	36.67
061.0	010.0000	0061.6	025.5	220.1	001.1000	0264.0	094.3	36.64
062.0	010.0000	0062.0	025.6	219.8	001.1000	0263.9	094.4	36.60
063.0	010.0000	0062.6	025.7	219.6	001.1000	0263.6	094.5	36.56
064.0	010.0000	0063.1	025.7	219.3	001.1000	0263.3	094.6	36.52
065.0	010.0000	0063.5	025.8	219.0	001.1000	0262.8	094.8	36.46
066.0	010.0000	0063.7	025.8	218.8	001.1000	0262.4	095.0	36.39
067.0	010.0000	0063.8	025.9	218.5	001.1000	0262.0	095.2	36.32
068.0	010.0000	0063.9	025.9	218.3	001.1000	0261.5	095.4	36.24
069.0	010.0000	0064.0	025.9	218.1	001.1000	0261.1	095.6	36.16
070.0	010.0000	0064.3	026.0	217.8	001.1000	0260.7	095.8	36.09

Azimuth (degrees)	ERP (kW)	HAAT (m)	Dist (km)	Azimuth (degrees)	ERP (kW)	HAAT (m)	Dist (km)	Actual (dBu)
071.0	010.0000	0064.6	026.0	217.6	001.1000	0260.3	096.0	36.01
072.0	010.0000	0065.0	026.1	217.3	001.1000	0260.0	096.2	35.93
073.0	010.0000	0065.3	026.1	217.1	001.1000	0259.7	096.4	35.85
074.0	010.0000	0065.5	026.1	216.9	001.1000	0259.5	096.7	35.77
075.0	010.0000	0065.6	026.2	216.6	001.1000	0259.4	096.9	35.68
076.0	010.0000	0065.7	026.2	216.4	001.1000	0259.3	097.2	35.59
077.0	010.0000	0066.0	026.2	216.2	001.1000	0259.2	097.5	35.51
078.0	010.0000	0066.3	026.3	216.0	001.1000	0259.2	097.7	35.43
079.0	010.0000	0066.6	026.3	215.8	001.1000	0259.3	098.0	35.34
080.0	010.0000	0067.1	026.4	215.5	001.1000	0259.4	098.3	35.26
081.0	010.0000	0067.7	026.5	215.3	001.1000	0259.4	098.6	35.18
082.0	010.0000	0068.4	026.6	215.1	001.1000	0259.6	098.8	35.11
083.0	010.0000	0069.0	026.7	214.9	001.1000	0259.6	099.1	35.03
084.0	010.0000	0069.3	026.8	214.7	001.1000	0259.7	099.4	34.93
085.0	010.0000	0069.5	026.8	214.5	001.1000	0259.7	099.8	34.83
086.0	010.0000	0069.6	026.8	214.3	001.1000	0259.6	100.1	34.71
087.0	010.0000	0070.0	026.9	214.1	001.1000	0259.6	100.5	34.61
088.0	010.0000	0070.3	027.0	213.9	001.1000	0259.5	100.8	34.50
089.0	010.0000	0070.7	027.0	213.7	001.1000	0259.4	101.1	34.39
090.0	010.0000	0071.1	027.1	213.6	001.1000	0259.2	101.5	34.28
091.0	010.0000	0071.4	027.1	213.4	001.1000	0259.0	101.9	34.16
092.0	010.0000	0071.7	027.2	213.2	001.1000	0258.8	102.3	34.04
093.0	010.0000	0072.1	027.2	213.1	001.1000	0258.6	102.6	33.92
094.0	010.0000	0072.3	027.3	212.9	001.1000	0258.3	103.0	33.80
095.0	010.0000	0072.4	027.3	212.8	001.1000	0258.1	103.4	33.67
096.0	010.0000	0072.6	027.3	212.7	001.1000	0257.9	103.9	33.54
097.0	010.0000	0072.7	027.4	212.5	001.1000	0257.6	104.3	33.41
098.0	010.0000	0072.7	027.3	212.4	001.1000	0257.5	104.7	33.28
099.0	010.0000	0072.4	027.3	212.4	001.1000	0257.4	105.2	33.14
100.0	010.0000	0072.2	027.3	212.3	001.1000	0257.2	105.6	33.01
101.0	010.0000	0072.0	027.2	212.2	001.1000	0257.1	106.1	32.88
102.0	010.0000	0071.8	027.2	212.1	001.1000	0257.0	106.6	32.75
103.0	010.0000	0071.6	027.2	212.1	001.1000	0256.9	107.0	32.62

09-27-2021

Terrain Data: GLOBE 30 Sec

FMOver Analysis

KLSE BLED19980504KH

NEW!

Channel = 214C3  
 Max ERP = 1.1 kW  
 RCAMSL = 608 m  
 N. Lat. 44 02 27.90  
 W. Lng. 92 20 25.60  
 Protected  
 60 dBu

Channel = 214C3  
 Max ERP = 10 kW  
 RCAMSL = 440.7 m  
 N. Lat. 43 16 43.50  
 W. Lng. 93 22 06.40  
 Interfering  
 40 dBu

Azimuth (degrees)	ERP (kW)	HAAT (m)	Dist (km)	Azimuth (degrees)	ERP (kW)	HAAT (m)	Dist (km)	Actual (dBu)	IX (km)
165.0	001.1000	0226.0	027.8	056.9	010.0000	0060.0	107.1	35.89	
166.0	001.1000	0226.5	027.9	056.8	010.0000	0060.0	106.6	35.97	
167.0	001.1000	0228.3	028.0	056.8	010.0000	0060.0	106.1	36.06	
168.0	001.1000	0231.6	028.2	056.8	010.0000	0060.0	105.6	36.16	
169.0	001.1000	0234.9	028.4	056.8	010.0000	0060.0	105.0	36.26	
170.0	001.1000	0237.0	028.5	056.8	010.0000	0060.0	104.5	36.36	
171.0	001.1000	0238.9	028.6	056.7	010.0000	0060.0	104.0	36.45	
172.0	001.1000	0241.6	028.8	056.7	010.0000	0060.0	103.5	36.55	
173.0	001.1000	0243.1	028.8	056.6	010.0000	0060.0	103.0	36.64	
174.0	001.1000	0243.1	028.8	056.5	010.0000	0059.9	102.6	36.73	
175.0	001.1000	0242.8	028.8	056.4	010.0000	0059.9	102.1	36.81	
176.0	001.1000	0242.8	028.8	056.2	010.0000	0059.9	101.7	36.90	
177.0	001.1000	0244.7	028.9	056.1	010.0000	0059.9	101.2	36.99	
178.0	001.1000	0248.1	029.1	056.1	010.0000	0059.8	100.7	37.10	
179.0	001.1000	0251.1	029.3	056.0	010.0000	0059.8	100.1	37.20	
180.0	001.1000	0251.3	029.3	055.9	010.0000	0059.8	099.7	37.29	
181.0	001.1000	0251.1	029.3	055.7	010.0000	0059.8	099.3	37.37	
182.0	001.1000	0250.8	029.3	055.5	010.0000	0059.7	098.9	37.46	
183.0	001.1000	0249.5	029.2	055.3	010.0000	0059.7	098.5	37.53	
184.0	001.1000	0247.6	029.1	055.1	010.0000	0059.6	098.2	37.60	
185.0	001.1000	0249.2	029.2	054.9	010.0000	0059.6	097.7	37.69	
186.0	001.1000	0251.3	029.3	054.8	010.0000	0059.6	097.3	37.79	
187.0	001.1000	0253.0	029.4	054.6	010.0000	0059.6	096.8	37.89	
188.0	001.1000	0252.4	029.4	054.4	010.0000	0059.5	096.5	37.96	
189.0	001.1000	0251.5	029.3	054.2	010.0000	0059.5	096.1	38.03	
190.0	001.1000	0249.7	029.2	053.9	010.0000	0059.4	095.8	38.10	
191.0	001.1000	0247.8	029.1	053.7	010.0000	0059.4	095.5	38.16	
192.0	001.1000	0246.5	029.0	053.4	010.0000	0059.4	095.3	38.22	
193.0	001.1000	0246.2	029.0	053.2	010.0000	0059.3	094.9	38.29	
194.0	001.1000	0245.6	029.0	052.9	010.0000	0059.3	094.6	38.36	
195.0	001.1000	0244.5	028.9	052.7	010.0000	0059.3	094.4	38.42	
196.0	001.1000	0243.3	028.9	052.4	010.0000	0059.3	094.1	38.47	
197.0	001.1000	0242.4	028.8	052.1	010.0000	0059.2	093.8	38.53	



Azimuth (degrees)	ERP (kW)	HAAT (m)	Dist (km)	Azimuth (degrees)	ERP (kW)	HAAT (m)	Dist (km)	Actual (dBu)
198.0	001.1000	0241.9	028.8	051.9	010.0000	0059.2	093.6	38.59
199.0	001.1000	0241.9	028.8	051.6	010.0000	0059.2	093.3	38.66
200.0	001.1000	0242.4	028.8	051.4	010.0000	0059.2	093.0	38.73
201.0	001.1000	0243.1	028.8	051.1	010.0000	0059.2	092.7	38.80
202.0	001.1000	0243.9	028.9	050.9	010.0000	0059.2	092.4	38.86
203.0	001.1000	0245.1	029.0	050.6	010.0000	0059.2	092.1	38.93
204.0	001.1000	0246.7	029.0	050.3	010.0000	0059.2	091.8	39.01
205.0	001.1000	0248.6	029.1	050.1	010.0000	0059.1	091.5	39.08
206.0	001.1000	0249.9	029.2	049.8	010.0000	0059.1	091.2	39.15
207.0	001.1000	0250.5	029.3	049.5	010.0000	0059.1	091.0	39.20
208.0	001.1000	0251.2	029.3	049.2	010.0000	0059.0	090.7	39.26
209.0	001.1000	0252.5	029.4	049.0	010.0000	0059.0	090.5	39.32
210.0	001.1000	0254.0	029.4	048.7	010.0000	0059.0	090.2	39.37
211.0	001.1000	0255.3	029.5	048.4	010.0000	0058.9	090.0	39.43
212.0	001.1000	0256.8	029.6	048.1	010.0000	0058.9	089.8	39.48
213.0	001.1000	0258.4	029.7	047.8	010.0000	0058.8	089.5	39.54
214.0	001.1000	0259.6	029.8	047.5	010.0000	0058.7	089.3	39.58
215.0	001.1000	0259.6	029.8	047.1	010.0000	0058.6	089.2	39.60
216.0	001.1000	0259.2	029.7	046.8	010.0000	0058.5	089.1	39.62
217.0	001.1000	0259.6	029.8	046.5	010.0000	0058.4	089.0	39.64
218.0	001.1000	0261.0	029.8	046.2	010.0000	0058.3	088.8	39.68
219.0	001.1000	0262.8	029.9	045.8	010.0000	0058.1	088.7	39.71
220.0	001.1000	0264.0	030.0	045.5	010.0000	0058.0	088.5	39.74
221.0	001.1000	0263.9	030.0	045.2	010.0000	0057.9	088.5	39.74
222.0	001.1000	0263.4	030.0	044.8	010.0000	0057.8	088.5	39.74
223.0	001.1000	0264.5	030.0	044.5	010.0000	0057.6	088.4	39.75
224.0	001.1000	0267.6	030.2	044.2	010.0000	0057.5	088.2	39.80
225.0	001.1000	0271.5	030.4	043.8	010.0000	0057.4	088.0	39.84
226.0	001.1000	0274.6	030.6	043.5	010.0000	0057.3	087.8	39.88
227.0	001.1000	0275.8	030.6	043.1	010.0000	0057.2	087.8	39.88
228.0	001.1000	0275.1	030.6	042.8	010.0000	0057.1	087.9	39.86
229.0	001.1000	0273.8	030.5	042.4	010.0000	0057.0	088.0	39.82
230.0	001.1000	0272.7	030.5	042.1	010.0000	0056.9	088.1	39.79
231.0	001.1000	0271.9	030.4	041.8	010.0000	0056.7	088.2	39.75
232.0	001.1000	0270.7	030.4	041.4	010.0000	0056.6	088.4	39.71
233.0	001.1000	0269.2	030.3	041.1	010.0000	0056.5	088.6	39.66
234.0	001.1000	0267.6	030.2	040.8	010.0000	0056.5	088.8	39.61
235.0	001.1000	0266.5	030.1	040.4	010.0000	0056.4	088.9	39.57
236.0	001.1000	0266.7	030.1	040.1	010.0000	0056.3	089.1	39.53
237.0	001.1000	0268.1	030.2	039.8	010.0000	0056.2	089.1	39.51
238.0	001.1000	0270.2	030.3	039.4	010.0000	0056.2	089.2	39.50
239.0	001.1000	0272.4	030.5	039.1	010.0000	0056.1	089.2	39.48
240.0	001.1000	0274.3	030.6	038.7	010.0000	0056.1	089.3	39.46
241.0	001.1000	0275.8	030.6	038.4	010.0000	0056.0	089.4	39.43
242.0	001.1000	0276.8	030.7	038.1	010.0000	0056.0	089.6	39.39
243.0	001.1000	0277.6	030.7	037.7	010.0000	0055.9	089.8	39.35
244.0	001.1000	0278.8	030.8	037.4	010.0000	0055.9	089.9	39.30
245.0	001.1000	0280.6	030.9	037.1	010.0000	0055.8	090.1	39.26
246.0	001.1000	0282.4	031.0	036.8	010.0000	0055.8	090.2	39.22
247.0	001.1000	0284.2	031.1	036.4	010.0000	0055.7	090.4	39.18
248.0	001.1000	0285.5	031.2	036.1	010.0000	0055.7	090.6	39.12

Azimuth (degrees)	ERP (kW)	HAAT (m)	Dist (km)	Azimuth (degrees)	ERP (kW)	HAAT (m)	Dist (km)	Actual (dBu)
249.0	001.1000	0284.8	031.1	035.8	010.0000	0055.6	091.0	39.04
250.0	001.1000	0282.9	031.0	035.6	010.0000	0055.5	091.3	38.95
251.0	001.1000	0279.8	030.9	035.4	010.0000	0055.5	091.8	38.84
252.0	001.1000	0276.3	030.7	035.2	010.0000	0055.4	092.2	38.73
253.0	001.1000	0273.7	030.5	034.9	010.0000	0055.3	092.7	38.63
254.0	001.1000	0272.2	030.4	034.7	010.0000	0055.2	093.1	38.53
255.0	001.1000	0273.2	030.5	034.4	010.0000	0055.1	093.4	38.46
256.0	001.1000	0276.3	030.7	034.1	010.0000	0054.9	093.6	38.40
257.0	001.1000	0280.3	030.9	033.8	010.0000	0054.8	093.8	38.35
258.0	001.1000	0284.2	031.1	033.5	010.0000	0054.6	094.0	38.30
259.0	001.1000	0285.1	031.1	033.2	010.0000	0054.5	094.3	38.21
260.0	001.1000	0283.9	031.1	033.0	010.0000	0054.5	094.8	38.12
261.0	001.1000	0281.5	031.0	032.8	010.0000	0054.4	095.3	38.01
262.0	001.1000	0279.5	030.8	032.7	010.0000	0054.4	095.7	37.90
263.0	001.1000	0278.9	030.8	032.5	010.0000	0054.4	096.2	37.81
264.0	001.1000	0277.7	030.7	032.3	010.0000	0054.3	096.6	37.71
265.0	001.1000	0276.2	030.7	032.1	010.0000	0054.3	097.1	37.61
266.0	001.1000	0274.3	030.6	032.0	010.0000	0054.3	097.6	37.50
267.0	001.1000	0272.6	030.5	031.9	010.0000	0054.2	098.1	37.40
268.0	001.1000	0271.7	030.4	031.7	010.0000	0054.2	098.5	37.30
269.0	001.1000	0271.1	030.4	031.5	010.0000	0054.2	099.0	37.21
270.0	001.1000	0269.5	030.3	031.4	010.0000	0054.2	099.5	37.11
271.0	001.1000	0267.9	030.2	031.3	010.0000	0054.1	100.0	37.01
272.0	001.1000	0266.3	030.1	031.2	010.0000	0054.1	100.5	36.91
273.0	001.1000	0264.9	030.0	031.1	010.0000	0054.1	101.0	36.81
274.0	001.1000	0264.1	030.0	031.0	010.0000	0054.1	101.5	36.71
275.0	001.1000	0263.7	030.0	030.8	010.0000	0054.0	101.9	36.62
276.0	001.1000	0263.9	030.0	030.7	010.0000	0054.0	102.4	36.53
277.0	001.1000	0265.0	030.1	030.6	010.0000	0053.9	102.8	36.44
278.0	001.1000	0266.6	030.1	030.4	010.0000	0053.9	103.3	36.35
279.0	001.1000	0267.9	030.2	030.2	010.0000	0053.8	103.7	36.27
280.0	001.1000	0269.8	030.3	030.1	010.0000	0053.8	104.2	36.18
281.0	001.1000	0271.6	030.4	029.9	010.0000	0053.7	104.7	36.09
282.0	001.1000	0273.5	030.5	029.8	010.0000	0053.7	105.1	36.00
283.0	001.1000	0276.1	030.7	029.6	010.0000	0053.6	105.6	35.91
284.0	001.1000	0277.4	030.7	029.5	010.0000	0053.6	106.1	35.82

Iowa Public Radio- Contour-to-Contour - vs - KUNI  
Proposed Manly, Iowa NCE Station

FMCommander Single Allocation Study - 09-27-2021 - GLOBE 30 Sec  
NEW!'s Overlaps (In= 3.02 km, Out= 30.06 km)

NEW! CH 214 C3

Lat= 43 16 43.50, Lng= 93 22 06.40

10.0 kW 62.4 m HAAT, 440.7 m COR

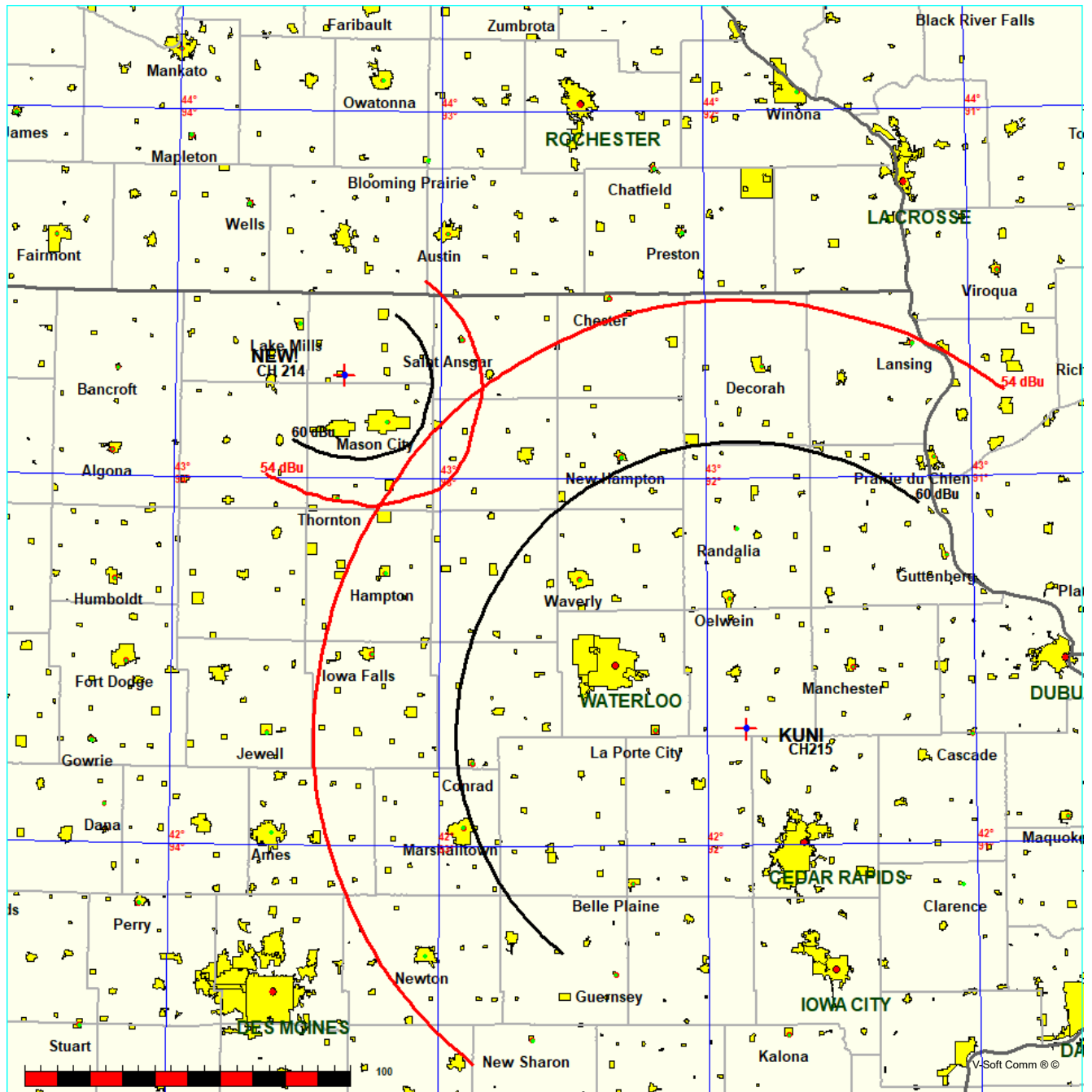
Prot.= 60 dBu, Intef.= 54 dBu

KUNI CH 215 C BMLED19841106LW

Lat= 42 18 58.90, Lng= 91 51 31.60

100.0 kW 524 m HAAT, 799 m COR

Prot.= 60 dBu, Intef.= 54 dBu



09-27-2021

Terrain Data: GLOBE 30 Sec

FMOver Analysis

NEW!

KUNI BMLED19841106LW

Channel = 214C3

Max ERP = 10 kW

RCAMSL = 440.7 m

N. Lat. 43 16 43.50

W. Lng. 93 22 06.40

Protected

60 dBu

Channel = 215C

Max ERP = 100 kW

RCAMSL = 799 m

N. Lat. 42 18 58.90

W. Lng. 91 51 31.60

Interfering

54 dBu

Azimuth (degrees)	ERP (kW)	HAAT (m)	Dist (km)	Azimuth (degrees)	ERP (kW)	HAAT (m)	Dist (km)	Actual (dBu)	IX (km)
070.0	010.0000	0064.3	026.0	320.0	100.0000	0516.0	152.0	48.67	
071.0	010.0000	0064.6	026.0	320.0	100.0000	0516.0	151.6	48.78	
072.0	010.0000	0065.0	026.1	319.9	100.0000	0516.1	151.2	48.88	
073.0	010.0000	0065.3	026.1	319.9	100.0000	0516.1	150.7	48.99	
074.0	010.0000	0065.5	026.1	319.8	100.0000	0516.1	150.3	49.09	
075.0	010.0000	0065.6	026.2	319.8	100.0000	0516.1	149.9	49.19	
076.0	010.0000	0065.7	026.2	319.7	100.0000	0516.2	149.5	49.29	
077.0	010.0000	0066.0	026.2	319.6	100.0000	0516.2	149.0	49.39	
078.0	010.0000	0066.3	026.3	319.6	100.0000	0516.2	148.6	49.50	
079.0	010.0000	0066.6	026.3	319.5	100.0000	0516.2	148.2	49.60	
080.0	010.0000	0067.1	026.4	319.4	100.0000	0516.2	147.7	49.71	
081.0	010.0000	0067.7	026.5	319.4	100.0000	0516.3	147.3	49.82	
082.0	010.0000	0068.4	026.6	319.3	100.0000	0516.3	146.8	49.93	
083.0	010.0000	0069.0	026.7	319.2	100.0000	0516.3	146.4	50.04	
084.0	010.0000	0069.3	026.8	319.1	100.0000	0516.4	146.0	50.14	
085.0	010.0000	0069.5	026.8	319.0	100.0000	0516.4	145.6	50.24	
086.0	010.0000	0069.6	026.8	318.9	100.0000	0516.4	145.2	50.34	
087.0	010.0000	0070.0	026.9	318.8	100.0000	0516.5	144.8	50.45	
088.0	010.0000	0070.3	027.0	318.7	100.0000	0516.5	144.4	50.55	
089.0	010.0000	0070.7	027.0	318.6	100.0000	0516.6	144.0	50.65	
090.0	010.0000	0071.1	027.1	318.5	100.0000	0516.6	143.6	50.75	
091.0	010.0000	0071.4	027.1	318.4	100.0000	0516.7	143.2	50.85	
092.0	010.0000	0071.7	027.2	318.3	100.0000	0516.7	142.9	50.95	
093.0	010.0000	0072.1	027.2	318.2	100.0000	0516.7	142.5	51.05	
094.0	010.0000	0072.3	027.3	318.0	100.0000	0516.8	142.1	51.14	
095.0	010.0000	0072.4	027.3	317.9	100.0000	0516.8	141.8	51.23	
096.0	010.0000	0072.6	027.3	317.8	100.0000	0516.9	141.5	51.32	
097.0	010.0000	0072.7	027.4	317.6	100.0000	0516.9	141.1	51.40	
098.0	010.0000	0072.7	027.3	317.5	100.0000	0517.0	140.8	51.48	
099.0	010.0000	0072.4	027.3	317.3	100.0000	0517.0	140.6	51.55	
100.0	010.0000	0072.2	027.3	317.1	100.0000	0517.0	140.3	51.61	
101.0	010.0000	0072.0	027.2	317.0	100.0000	0517.1	140.1	51.68	
102.0	010.0000	0071.8	027.2	316.8	100.0000	0517.1	139.8	51.74	
103.0	010.0000	0071.6	027.2	316.6	100.0000	0517.1	139.6	51.80	
104.0	010.0000	0071.6	027.2	316.5	100.0000	0517.1	139.4	51.87	
105.0	010.0000	0071.6	027.2	316.3	100.0000	0517.2	139.1	51.93	

Azimuth (degrees)	ERP (kW)	HAAT (m)	Dist (km)	Azimuth (degrees)	ERP (kW)	HAAT (m)	Dist (km)	Actual (dBu)
106.0	010.0000	0071.7	027.2	316.1	100.0000	0517.2	138.9	52.00
107.0	010.0000	0071.8	027.2	316.0	100.0000	0517.2	138.6	52.06
108.0	010.0000	0071.9	027.2	315.8	100.0000	0517.2	138.4	52.12
109.0	010.0000	0072.0	027.2	315.6	100.0000	0517.2	138.2	52.18
110.0	010.0000	0072.2	027.3	315.5	100.0000	0517.3	137.9	52.24
111.0	010.0000	0072.4	027.3	315.3	100.0000	0517.3	137.7	52.30
112.0	010.0000	0072.7	027.4	315.1	100.0000	0517.3	137.5	52.36
113.0	010.0000	0073.1	027.4	314.9	100.0000	0517.4	137.2	52.42
114.0	010.0000	0073.6	027.5	314.8	100.0000	0517.4	137.0	52.48
115.0	010.0000	0074.2	027.6	314.6	100.0000	0517.4	136.7	52.55
116.0	010.0000	0075.0	027.7	314.4	100.0000	0517.5	136.5	52.63
117.0	010.0000	0075.8	027.9	314.2	100.0000	0517.5	136.2	52.70
118.0	010.0000	0076.6	028.0	314.0	100.0000	0517.6	135.9	52.76
119.0	010.0000	0077.5	028.1	313.9	100.0000	0517.6	135.7	52.84
120.0	010.0000	0078.4	028.3	313.7	100.0000	0517.7	135.4	52.90
121.0	010.0000	0079.1	028.4	313.5	100.0000	0517.8	135.2	52.96
122.0	010.0000	0079.5	028.5	313.3	100.0000	0517.8	135.0	53.01
123.0	010.0000	0079.7	028.5	313.1	100.0000	0517.9	134.9	53.04
124.0	010.0000	0079.8	028.5	312.9	100.0000	0518.0	134.8	53.06
125.0	010.0000	0079.8	028.5	312.7	100.0000	0518.1	134.8	53.08
126.0	010.0000	0080.0	028.6	312.4	100.0000	0518.2	134.7	53.10
127.0	010.0000	0080.3	028.6	312.2	100.0000	0518.3	134.6	53.13
128.0	010.0000	0080.7	028.7	312.0	100.0000	0518.4	134.5	53.16
129.0	010.0000	0081.1	028.7	311.8	100.0000	0518.4	134.4	53.18
130.0	010.0000	0081.4	028.8	311.6	100.0000	0518.5	134.3	53.20
131.0	010.0000	0081.6	028.8	311.4	100.0000	0518.5	134.3	53.21
132.0	010.0000	0081.8	028.9	311.2	100.0000	0518.6	134.3	53.22
133.0	010.0000	0081.8	028.9	311.0	100.0000	0518.6	134.3	53.21
134.0	010.0000	0081.8	028.9	310.7	100.0000	0518.6	134.3	53.21
135.0	010.0000	0081.8	028.9	310.5	100.0000	0518.5	134.4	53.19
136.0	010.0000	0081.7	028.8	310.3	100.0000	0518.5	134.5	53.17
137.0	010.0000	0081.4	028.8	310.1	100.0000	0518.4	134.6	53.14
138.0	010.0000	0081.0	028.7	309.9	100.0000	0518.3	134.7	53.10
139.0	010.0000	0080.5	028.6	309.7	100.0000	0518.2	134.9	53.05
140.0	010.0000	0079.9	028.5	309.5	100.0000	0518.1	135.1	53.00
141.0	010.0000	0079.0	028.4	309.3	100.0000	0517.9	135.3	52.93
142.0	010.0000	0078.0	028.2	309.1	100.0000	0517.8	135.6	52.86
143.0	010.0000	0076.9	028.0	308.9	100.0000	0517.6	135.9	52.78
144.0	010.0000	0075.9	027.9	308.7	100.0000	0517.5	136.2	52.69
145.0	010.0000	0074.9	027.7	308.6	100.0000	0517.3	136.5	52.61
146.0	010.0000	0074.0	027.6	308.4	100.0000	0517.2	136.8	52.54
147.0	010.0000	0073.2	027.4	308.2	100.0000	0517.0	137.1	52.46
148.0	010.0000	0072.3	027.3	308.1	100.0000	0516.9	137.4	52.37
149.0	010.0000	0071.5	027.2	307.9	100.0000	0516.7	137.7	52.29
150.0	010.0000	0070.8	027.0	307.7	100.0000	0516.5	138.0	52.21
151.0	010.0000	0070.1	026.9	307.6	100.0000	0516.4	138.3	52.13
152.0	010.0000	0069.6	026.8	307.4	100.0000	0516.2	138.5	52.06
153.0	010.0000	0069.3	026.8	307.3	100.0000	0516.1	138.8	51.99
154.0	010.0000	0069.1	026.7	307.1	100.0000	0515.9	139.0	51.92
155.0	010.0000	0068.6	026.7	306.9	100.0000	0515.8	139.3	51.84
156.0	010.0000	0068.0	026.6	306.8	100.0000	0515.6	139.6	51.75

Azimuth (degrees)	ERP (kW)	HAAT (m)	Dist (km)	Azimuth (degrees)	ERP (kW)	HAAT (m)	Dist (km)	Actual (dBu)
157.0	010.0000	0067.4	026.5	306.7	100.0000	0515.5	140.0	51.67
158.0	010.0000	0066.9	026.4	306.5	100.0000	0515.4	140.3	51.58
159.0	010.0000	0066.5	026.3	306.4	100.0000	0515.2	140.6	51.50
160.0	010.0000	0066.2	026.3	306.2	100.0000	0515.1	140.9	51.42
161.0	010.0000	0065.8	026.2	306.1	100.0000	0515.0	141.2	51.34
162.0	010.0000	0065.4	026.1	306.0	100.0000	0514.9	141.5	51.25
163.0	010.0000	0065.1	026.1	305.8	100.0000	0514.8	141.8	51.17
164.0	010.0000	0065.0	026.1	305.7	100.0000	0514.7	142.2	51.09
165.0	010.0000	0064.8	026.0	305.5	100.0000	0514.6	142.5	51.00
166.0	010.0000	0064.5	026.0	305.4	100.0000	0514.5	142.8	50.91
167.0	010.0000	0064.2	025.9	305.3	100.0000	0514.4	143.1	50.82
168.0	010.0000	0063.8	025.9	305.2	100.0000	0514.3	143.5	50.73
169.0	010.0000	0063.1	025.7	305.1	100.0000	0514.2	143.9	50.63
170.0	010.0000	0062.0	025.6	305.0	100.0000	0514.2	144.3	50.51
171.0	010.0000	0060.9	025.4	305.0	100.0000	0514.2	144.8	50.40
172.0	010.0000	0059.8	025.2	304.9	100.0000	0514.1	145.2	50.28
173.0	010.0000	0058.9	025.0	304.8	100.0000	0514.1	145.7	50.17
174.0	010.0000	0058.1	024.9	304.8	100.0000	0514.1	146.1	50.06
175.0	010.0000	0057.5	024.8	304.7	100.0000	0514.0	146.5	49.96
176.0	010.0000	0057.3	024.7	304.6	100.0000	0514.0	146.9	49.87
177.0	010.0000	0057.0	024.7	304.5	100.0000	0514.0	147.3	49.78
178.0	010.0000	0056.9	024.6	304.4	100.0000	0513.9	147.6	49.69
179.0	010.0000	0056.6	024.6	304.3	100.0000	0513.9	148.0	49.59
180.0	010.0000	0056.4	024.6	304.3	100.0000	0513.9	148.4	49.50
181.0	010.0000	0056.2	024.5	304.2	100.0000	0513.9	148.8	49.41
182.0	010.0000	0056.1	024.5	304.1	100.0000	0513.9	149.1	49.32
183.0	010.0000	0055.9	024.5	304.0	100.0000	0513.8	149.5	49.22
184.0	010.0000	0055.8	024.4	304.0	100.0000	0513.8	149.9	49.13
185.0	010.0000	0055.6	024.4	303.9	100.0000	0513.8	150.3	49.04
186.0	010.0000	0055.5	024.4	303.8	100.0000	0513.8	150.7	48.95
187.0	010.0000	0055.3	024.3	303.8	100.0000	0513.8	151.1	48.85
188.0	010.0000	0055.3	024.3	303.7	100.0000	0513.8	151.5	48.76
189.0	010.0000	0055.0	024.3	303.7	100.0000	0513.8	151.9	48.66

09-27-2021

Terrain Data: GLOBE 30 Sec

FMOver Analysis

KUNI BMLED19841106LW

NEW!

Channel = 215C

Max ERP = 100 kW

RCAMSL = 799 m

N. Lat. 42 18 58.90

W. Lng. 91 51 31.60

Protected

60 dBu

Channel = 214C3

Max ERP = 10 kW

RCAMSL = 440.7 m

N. Lat. 43 16 43.50

W. Lng. 93 22 06.40

Interfering

54 dBu

Azimuth (degrees)	ERP (kW)	HAAT (m)	Dist (km)	Azimuth (degrees)	ERP (kW)	HAAT (m)	Dist (km)	Actual (dBu)	IX (km)
251.0	100.0000	0528.9	088.4	163.2	010.0000	0065.1	142.2	29.63	
252.0	100.0000	0529.2	088.5	163.3	010.0000	0065.1	140.7	29.92	
253.0	100.0000	0529.8	088.5	163.3	010.0000	0065.1	139.1	30.21	
254.0	100.0000	0530.4	088.5	163.3	010.0000	0065.0	137.6	30.50	
255.0	100.0000	0530.8	088.6	163.3	010.0000	0065.0	136.0	30.79	
256.0	100.0000	0531.3	088.6	163.3	010.0000	0065.0	134.5	31.08	
257.0	100.0000	0531.8	088.6	163.3	010.0000	0065.0	132.9	31.37	
258.0	100.0000	0532.5	088.7	163.3	010.0000	0065.1	131.4	31.66	
259.0	100.0000	0533.2	088.7	163.3	010.0000	0065.1	129.9	31.95	
260.0	100.0000	0533.9	088.7	163.2	010.0000	0065.1	128.3	32.24	
261.0	100.0000	0534.5	088.8	163.2	010.0000	0065.1	126.8	32.52	
262.0	100.0000	0534.8	088.8	163.1	010.0000	0065.1	125.2	32.80	
263.0	100.0000	0534.9	088.8	163.0	010.0000	0065.1	123.7	33.07	
264.0	100.0000	0534.5	088.8	162.9	010.0000	0065.1	122.2	33.35	
265.0	100.0000	0534.0	088.7	162.7	010.0000	0065.2	120.6	33.62	
266.0	100.0000	0533.5	088.7	162.5	010.0000	0065.2	119.1	33.89	
267.0	100.0000	0532.9	088.7	162.4	010.0000	0065.3	117.6	34.15	
268.0	100.0000	0532.0	088.6	162.2	010.0000	0065.3	116.1	34.42	
269.0	100.0000	0531.3	088.6	161.9	010.0000	0065.4	114.7	34.69	
270.0	100.0000	0530.6	088.5	161.7	010.0000	0065.5	113.2	34.96	
271.0	100.0000	0530.0	088.5	161.4	010.0000	0065.6	111.7	35.23	
272.0	100.0000	0529.3	088.5	161.1	010.0000	0065.8	110.3	35.49	
273.0	100.0000	0528.7	088.4	160.8	010.0000	0065.9	108.9	35.76	
274.0	100.0000	0528.2	088.4	160.5	010.0000	0066.0	107.4	36.03	
275.0	100.0000	0527.7	088.4	160.2	010.0000	0066.1	106.0	36.30	
276.0	100.0000	0527.1	088.3	159.8	010.0000	0066.2	104.6	36.56	
277.0	100.0000	0526.2	088.3	159.4	010.0000	0066.3	103.3	36.83	
278.0	100.0000	0525.2	088.2	159.0	010.0000	0066.5	101.9	37.10	
279.0	100.0000	0524.3	088.2	158.6	010.0000	0066.6	100.6	37.38	
280.0	100.0000	0523.5	088.1	158.1	010.0000	0066.8	099.3	37.65	
281.0	100.0000	0523.1	088.1	157.6	010.0000	0067.0	098.0	37.94	
282.0	100.0000	0522.8	088.1	157.1	010.0000	0067.3	096.7	38.23	
283.0	100.0000	0522.4	088.1	156.6	010.0000	0067.6	095.5	38.52	

Azimuth (degrees)	ERP (kW)	HAAT (m)	Dist (km)	Azimuth (degrees)	ERP (kW)	HAAT (m)	Dist (km)	Actual (dBu)
284.0	100.0000	0521.8	088.0	156.0	010.0000	0068.0	094.3	38.82
285.0	100.0000	0521.3	088.0	155.4	010.0000	0068.3	093.1	39.11
286.0	100.0000	0521.0	088.0	154.8	010.0000	0068.7	091.9	39.41
287.0	100.0000	0520.8	088.0	154.2	010.0000	0069.0	090.7	39.71
288.0	100.0000	0520.5	087.9	153.5	010.0000	0069.2	089.6	40.00
289.0	100.0000	0520.1	087.9	152.8	010.0000	0069.4	088.5	40.28
290.0	100.0000	0519.7	087.9	152.1	010.0000	0069.6	087.5	40.55
291.0	100.0000	0519.3	087.9	151.3	010.0000	0069.9	086.5	40.83
292.0	100.0000	0518.9	087.9	150.5	010.0000	0070.5	085.5	41.11
293.0	100.0000	0518.5	087.8	149.7	010.0000	0071.0	084.6	41.38
294.0	100.0000	0518.3	087.8	148.9	010.0000	0071.6	083.7	41.65
295.0	100.0000	0518.2	087.8	148.0	010.0000	0072.3	082.8	41.91
296.0	100.0000	0518.2	087.8	147.1	010.0000	0073.1	082.0	42.17
297.0	100.0000	0517.9	087.8	146.2	010.0000	0073.9	081.2	42.41
298.0	100.0000	0517.3	087.8	145.2	010.0000	0074.7	080.5	42.65
299.0	100.0000	0516.5	087.7	144.2	010.0000	0075.6	079.8	42.87
300.0	100.0000	0515.7	087.7	143.2	010.0000	0076.7	079.2	43.08
301.0	100.0000	0514.9	087.6	142.2	010.0000	0077.8	078.6	43.29
302.0	100.0000	0514.3	087.6	141.1	010.0000	0078.9	078.1	43.49
303.0	100.0000	0513.9	087.6	140.1	010.0000	0079.8	077.6	43.67
304.0	100.0000	0513.8	087.6	139.0	010.0000	0080.5	077.2	43.83
305.0	100.0000	0514.2	087.6	137.9	010.0000	0081.1	076.8	43.97
306.0	100.0000	0514.9	087.6	136.8	010.0000	0081.5	076.4	44.10
307.0	100.0000	0515.8	087.7	135.7	010.0000	0081.7	076.1	44.20
308.0	100.0000	0516.8	087.7	134.5	010.0000	0081.8	075.8	44.29
309.0	100.0000	0517.7	087.8	133.4	010.0000	0081.9	075.5	44.35
310.0	100.0000	0518.4	087.8	132.2	010.0000	0081.8	075.4	44.39
311.0	100.0000	0518.6	087.8	131.0	010.0000	0081.6	075.3	44.40
312.0	100.0000	0518.4	087.8	129.9	010.0000	0081.3	075.3	44.38
313.0	100.0000	0518.0	087.8	128.7	010.0000	0081.0	075.4	44.33
314.0	100.0000	0517.6	087.8	127.6	010.0000	0080.5	075.5	44.27
315.0	100.0000	0517.4	087.8	126.4	010.0000	0080.1	075.7	44.20
316.0	100.0000	0517.2	087.8	125.3	010.0000	0079.8	076.0	44.12
317.0	100.0000	0517.1	087.7	124.1	010.0000	0079.8	076.3	44.03
318.0	100.0000	0516.8	087.7	123.0	010.0000	0079.7	076.6	43.93
319.0	100.0000	0516.4	087.7	121.9	010.0000	0079.5	077.0	43.81
320.0	100.0000	0516.0	087.7	120.8	010.0000	0079.0	077.5	43.65
321.0	100.0000	0515.6	087.7	119.8	010.0000	0078.2	078.0	43.47
322.0	100.0000	0515.3	087.6	118.7	010.0000	0077.3	078.6	43.27
323.0	100.0000	0514.8	087.6	117.7	010.0000	0076.4	079.2	43.06
324.0	100.0000	0514.4	087.6	116.7	010.0000	0075.6	079.9	42.83
325.0	100.0000	0513.8	087.5	115.8	010.0000	0074.9	080.6	42.60
326.0	100.0000	0513.1	087.5	114.9	010.0000	0074.1	081.4	42.36
327.0	100.0000	0512.3	087.5	114.0	010.0000	0073.6	082.3	42.11
328.0	100.0000	0511.5	087.4	113.1	010.0000	0073.1	083.1	41.86
329.0	100.0000	0510.9	087.4	112.2	010.0000	0072.8	084.0	41.61
330.0	100.0000	0510.3	087.3	111.4	010.0000	0072.6	085.0	41.36
331.0	100.0000	0510.0	087.3	110.6	010.0000	0072.3	085.9	41.09
332.0	100.0000	0509.8	087.3	109.9	010.0000	0072.2	086.9	40.83
333.0	100.0000	0509.6	087.3	109.1	010.0000	0072.1	087.9	40.56
334.0	100.0000	0509.3	087.3	108.4	010.0000	0072.0	089.0	40.28



Azimuth (degrees)	ERP (kW)	HAAT (m)	Dist (km)	Azimuth (degrees)	ERP (kW)	HAAT (m)	Dist (km)	Actual (dBu)
335.0	100.0000	0509.1	087.3	107.7	010.0000	0071.9	090.1	40.00
336.0	100.0000	0509.2	087.3	107.1	010.0000	0071.8	091.2	39.72
337.0	100.0000	0509.4	087.3	106.5	010.0000	0071.7	092.4	39.44
338.0	100.0000	0509.7	087.3	105.8	010.0000	0071.7	093.5	39.16
339.0	100.0000	0509.8	087.3	105.3	010.0000	0071.6	094.7	38.87
340.0	100.0000	0510.0	087.3	104.7	010.0000	0071.6	095.9	38.59
341.0	100.0000	0510.4	087.3	104.2	010.0000	0071.6	097.2	38.31
342.0	100.0000	0511.3	087.4	103.7	010.0000	0071.6	098.4	38.04
343.0	100.0000	0512.0	087.4	103.2	010.0000	0071.6	099.7	37.77
344.0	100.0000	0512.4	087.5	102.7	010.0000	0071.6	101.0	37.50
345.0	100.0000	0512.3	087.5	102.3	010.0000	0071.7	102.3	37.23
346.0	100.0000	0511.9	087.4	101.9	010.0000	0071.8	103.7	36.96
347.0	100.0000	0511.5	087.4	101.6	010.0000	0071.8	105.1	36.69
348.0	100.0000	0511.1	087.4	101.2	010.0000	0071.9	106.5	36.42
349.0	100.0000	0510.5	087.4	100.9	010.0000	0072.0	107.9	36.16
350.0	100.0000	0509.9	087.3	100.6	010.0000	0072.0	109.3	35.89
351.0	100.0000	0509.2	087.3	100.4	010.0000	0072.1	110.7	35.63
352.0	100.0000	0508.5	087.2	100.1	010.0000	0072.1	112.2	35.37
353.0	100.0000	0507.8	087.2	099.9	010.0000	0072.2	113.6	35.11
354.0	100.0000	0507.4	087.2	099.7	010.0000	0072.2	115.1	34.85
355.0	100.0000	0506.9	087.1	099.5	010.0000	0072.3	116.6	34.59
356.0	100.0000	0506.4	087.1	099.3	010.0000	0072.3	118.0	34.33
357.0	100.0000	0506.0	087.1	099.2	010.0000	0072.4	119.5	34.07
358.0	100.0000	0505.8	087.1	099.0	010.0000	0072.4	121.0	33.81
359.0	100.0000	0505.7	087.1	098.9	010.0000	0072.5	122.5	33.55
000.0	100.0000	0504.8	087.0	098.8	010.0000	0072.5	124.0	33.28
001.0	100.0000	0504.0	087.0	098.7	010.0000	0072.5	125.5	33.02
002.0	100.0000	0503.1	086.9	098.6	010.0000	0072.5	127.0	32.74
003.0	100.0000	0502.8	086.9	098.5	010.0000	0072.5	128.5	32.47
004.0	100.0000	0502.6	086.9	098.5	010.0000	0072.6	130.0	32.19
005.0	100.0000	0502.7	086.9	098.4	010.0000	0072.6	131.5	31.91
006.0	100.0000	0502.7	086.9	098.3	010.0000	0072.6	133.1	31.62
007.0	100.0000	0502.7	086.9	098.3	010.0000	0072.6	134.6	31.34
008.0	100.0000	0502.4	086.9	098.3	010.0000	0072.6	136.1	31.05
009.0	100.0000	0501.3	086.8	098.3	010.0000	0072.6	137.6	30.76
010.0	100.0000	0499.6	086.7	098.4	010.0000	0072.6	139.1	30.47

FMCommander Single Allocation Study - 09-27-2021 - GLOBE 30 Sec  
NEW!'s Overlaps (In= 3.22 km, Out= 21.53 km)

NEW! CH 214 C3

Lat= 43 16 43.50, Lng= 93 22 06.40

10.0 kW 62.4 m HAAT, 440.7 m COR

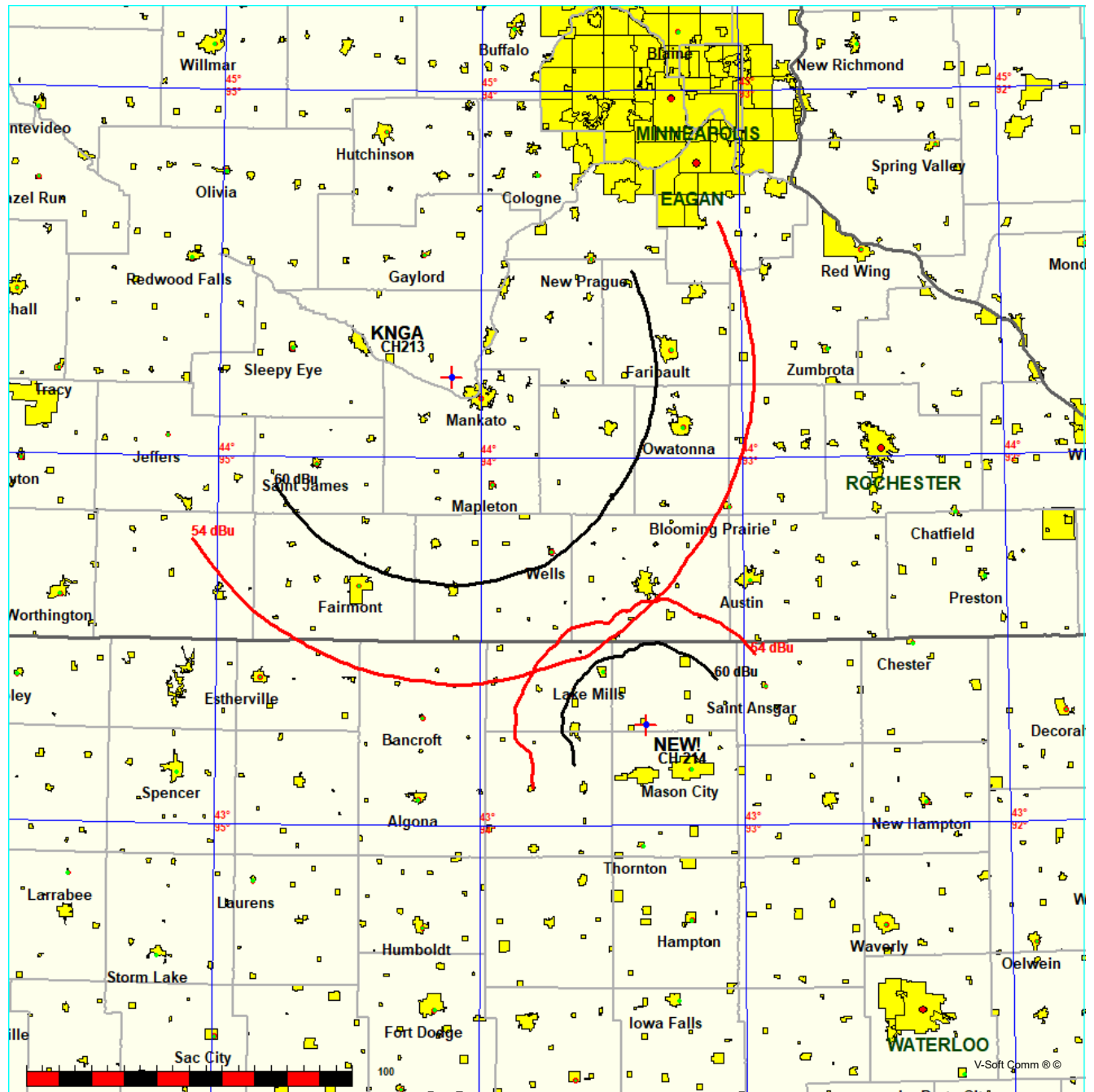
Prot.= 60 dBu, Intef.= 54 dBu

KNGA CH 213 C1 BMLED20120501AAX

Lat= 44 13 19.90, Lng= 94 07 03.90

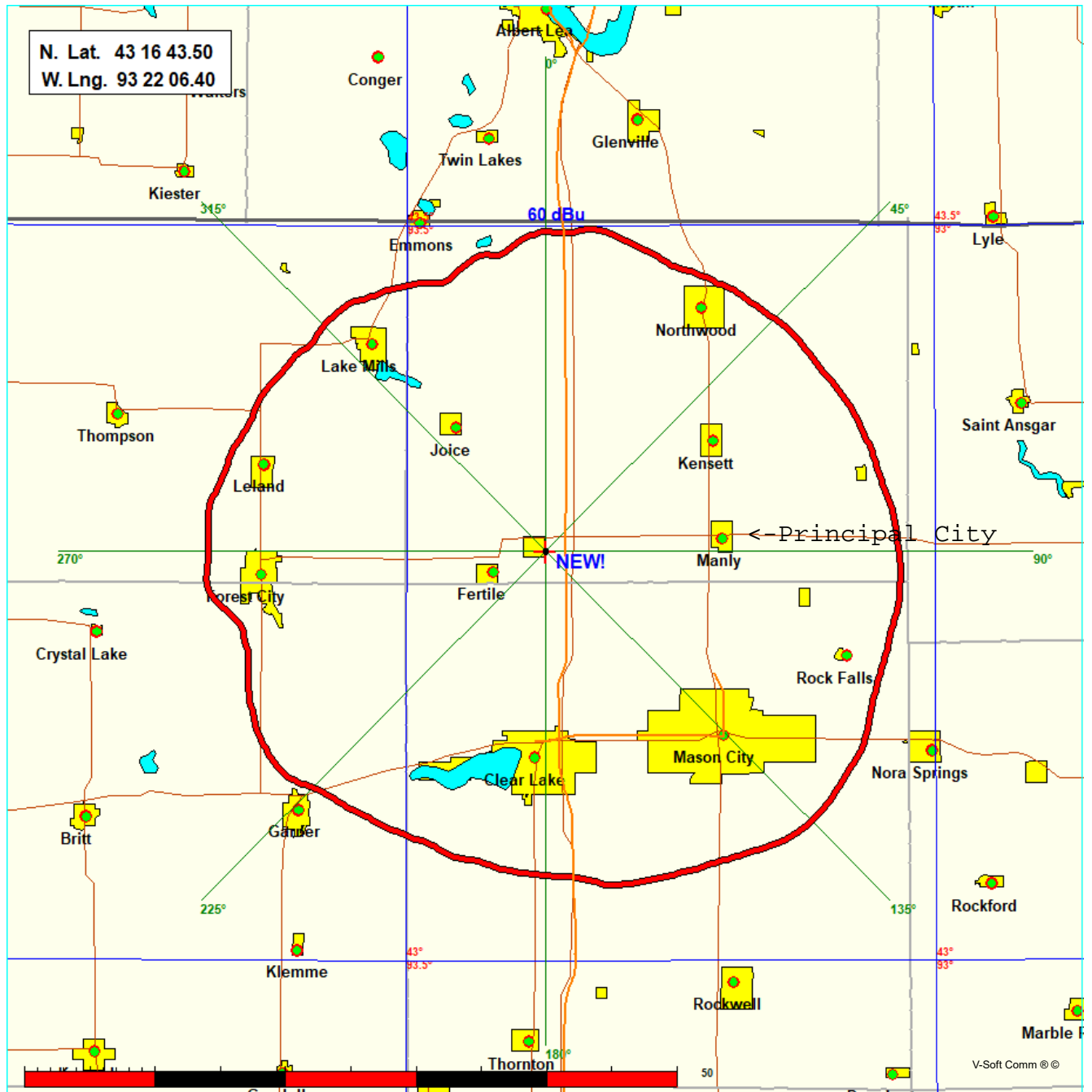
75.0 kW 216 m HAAT, 504 m COR

Prot.= 60 dBu, Intef.= 54 dBu



Coverage Study - GLOBE 30 Sec  
09-27-2021

NEW! CH214 C3, 10.0 kW, 62.4m HAAT, 440.7m COR AMSL  
Service Contour = 60 dBu.



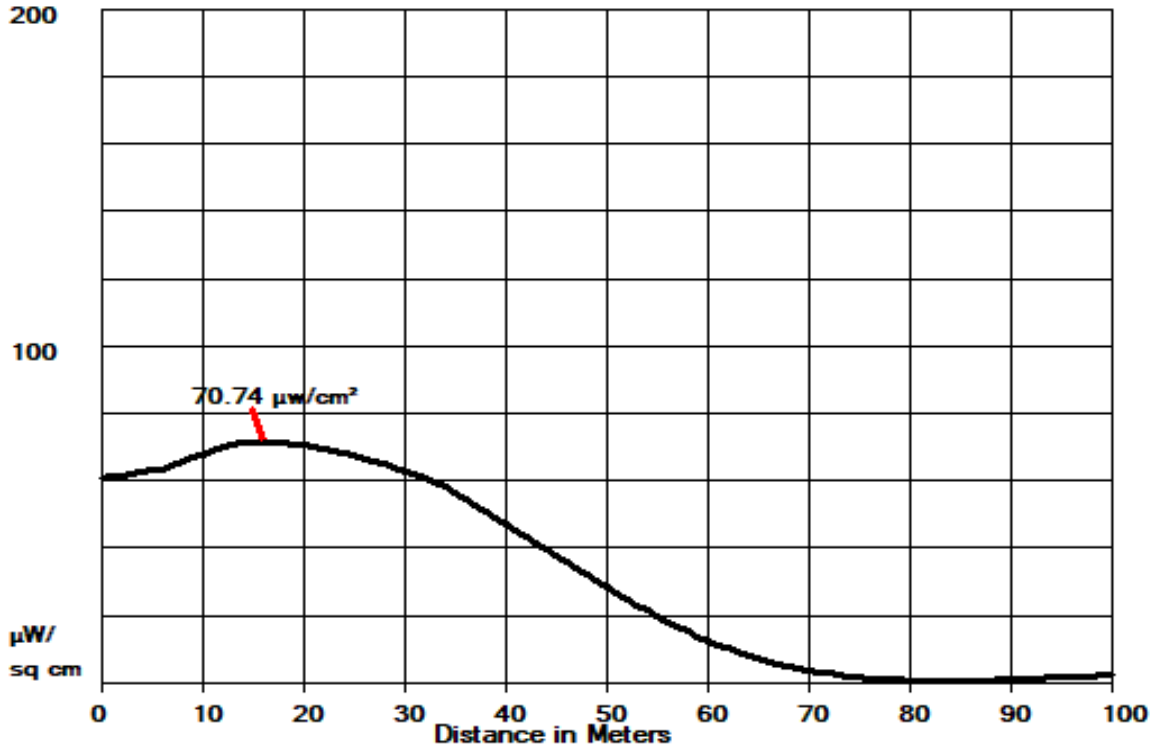
N. Lat. = 43 16 43.5    W. Lng. = 93 22 06.4  
 HAAT and Distance to Contour,  
 FCC, FM 2-10 Mi, 51 pts Method - GLOBE 30 SEC

## Distance to Contour and HAAT Table

Azi.	AV EL	HAAT	ERP kW	dBk	Field	60-F5
000	386.6	54.1	10.0000	10.00	1.000	24.11
045	382.9	57.8	10.0000	10.00	1.000	24.83
090	369.6	71.1	10.0000	10.00	1.000	27.08
135	358.9	81.8	10.0000	10.00	1.000	28.87
180	384.3	56.4	10.0000	10.00	1.000	24.55
225	380.2	60.5	10.0000	10.00	1.000	25.31
270	377.3	63.4	10.0000	10.00	1.000	25.79
315	386.7	54.0	10.0000	10.00	1.000	24.08

Ave El= 378.31 M    HAAT= 62.39 M    AMSL= 440.7

EPA Type 1: Ring-stub or any unknown, 3 Bays, Spac= 1, H=10 kW, V=10 kW, 76.7 M AG



HORZ. DISTANCE FROM FM RADIATOR VS POWER DENSITY (Microwatt/Square cm)  
 Dist(Meters) PD (H) PD (V) Total (uW/cm2) Percent Max. (200)

Dist(Meters)	PD (H)	PD (V)	Total (uW/cm2)	Percent Max. (200)
0	11.41	48.62	60.03	30.0
1	11.58	48.98	60.57	30.3
2	11.76	49.32	61.08	30.5
3	11.93	49.64	61.57	30.8
4	12.10	49.95	62.05	31.0
5	12.26	50.23	62.49	31.2
6	12.42	50.49	62.91	31.5
7	12.61	51.09	63.70	31.8
8	12.84	52.07	64.91	32.5
9	13.06	53.03	66.09	33.0
10	13.27	53.97	67.24	33.6
11	13.47	54.87	68.34	34.2
12	13.67	55.73	69.40	34.7
13	13.85	56.55	70.41	35.2
14	14.01	56.66	70.67	35.3
15	14.16	56.58	70.74	35.4
16	14.29	56.45	70.74	35.4
17	14.41	56.26	70.67	35.3
18	14.51	56.03	70.53	35.3
19	14.59	55.73	70.33	35.2
20	14.66	55.38	70.04	35.0
21	14.69	54.89	69.58	34.8
22	14.70	54.33	69.04	34.5
23	14.69	53.72	68.41	34.2
24	14.66	53.04	67.70	33.9
25	14.61	52.30	66.91	33.5

Dist (Meters)	PD (H)	PD (V)	Total (uW/cm2)	Percent Max.
26	14.54	51.50	66.03	33.0
27	14.44	50.63	65.07	32.5
28	14.31	49.91	64.22	32.1
29	14.15	49.16	63.31	31.7
30	13.98	48.34	62.31	31.2
31	13.78	47.45	61.23	30.6
32	13.55	46.49	60.05	30.0
33	13.31	45.47	58.78	29.4
34	13.04	44.39	57.43	28.7
35	12.76	43.19	55.95	28.0
36	12.49	41.66	54.15	27.1
37	12.20	40.11	52.31	26.2
38	11.89	38.54	50.43	25.2
39	11.56	36.96	48.52	24.3
40	11.21	35.36	46.58	23.3
41	10.85	33.77	44.62	22.3
42	10.48	32.17	42.65	21.3
43	10.09	30.58	40.67	20.3
44	9.63	29.16	38.79	19.4
45	9.17	27.75	36.92	18.5
46	8.71	26.35	35.06	17.5
47	8.24	24.95	33.20	16.6
48	7.79	23.56	31.35	15.7
49	7.33	22.19	29.53	14.8
50	6.89	20.84	27.73	13.9
51	6.45	19.52	25.97	13.0
52	6.02	18.22	24.24	12.1
53	5.61	16.86	22.48	11.2
54	5.22	15.52	20.74	10.4
55	4.84	14.24	19.08	9.5
56	4.47	13.02	17.48	8.7
57	4.11	11.86	15.97	8.0
58	3.76	10.76	14.52	7.3
59	3.43	9.72	13.16	6.6
60	3.12	8.75	11.87	5.9
61	2.82	7.84	10.66	5.3
62	2.54	6.99	9.53	4.8
63	2.27	6.20	8.47	4.2
64	2.03	5.47	7.50	3.7
65	1.80	4.79	6.59	3.3
66	1.59	4.17	5.76	2.9
67	1.39	3.61	4.99	2.5
68	1.20	3.09	4.29	2.1
69	1.03	2.62	3.66	1.8
70	0.88	2.21	3.09	1.5
71	0.74	1.83	2.57	1.3
72	0.61	1.50	2.11	1.1
73	0.50	1.21	1.71	0.9
74	0.40	0.96	1.36	0.7
75	0.31	0.74	1.05	0.5
76	0.24	0.55	0.79	0.4
77	0.17	0.40	0.57	0.3

Dist (Meters)	PD (H)	PD (V)	Total (uW/cm2)	Percent Max.
78	0.12	0.27	0.40	0.2
79	0.08	0.18	0.25	0.1
80	0.05	0.10	0.15	0.1
81	0.02	0.05	0.07	0.0
82	0.01	0.02	0.03	0.0
83	0.00	0.00	0.00	0.0
84	0.00	0.00	0.00	0.0
85	0.01	0.02	0.03	0.0
86	0.02	0.04	0.07	0.0
87	0.04	0.08	0.12	0.1
88	0.07	0.12	0.19	0.1
89	0.10	0.18	0.27	0.1
90	0.13	0.24	0.37	0.2
91	0.16	0.31	0.47	0.2
92	0.20	0.38	0.59	0.3
93	0.24	0.46	0.71	0.4
94	0.29	0.55	0.84	0.4
95	0.33	0.63	0.97	0.5
96	0.38	0.73	1.11	0.6
97	0.43	0.82	1.24	0.6
98	0.47	0.91	1.39	0.7
99	0.52	1.01	1.53	0.8
100	0.57	1.10	1.67	0.8

**NEW!**

Tower # 1258983  
 Latitude: 43-16-43.50 N  
 Longitude: 093-22-06.40 W  
 ERP: 10.00 kW  
 Channel: 214  
 Frequency: 90.7 MHz  
 AMSL Height: 440.7 m  
 Elevation: 362 m  
 Horiz. Pattern: Omni  
 Prop Model: None

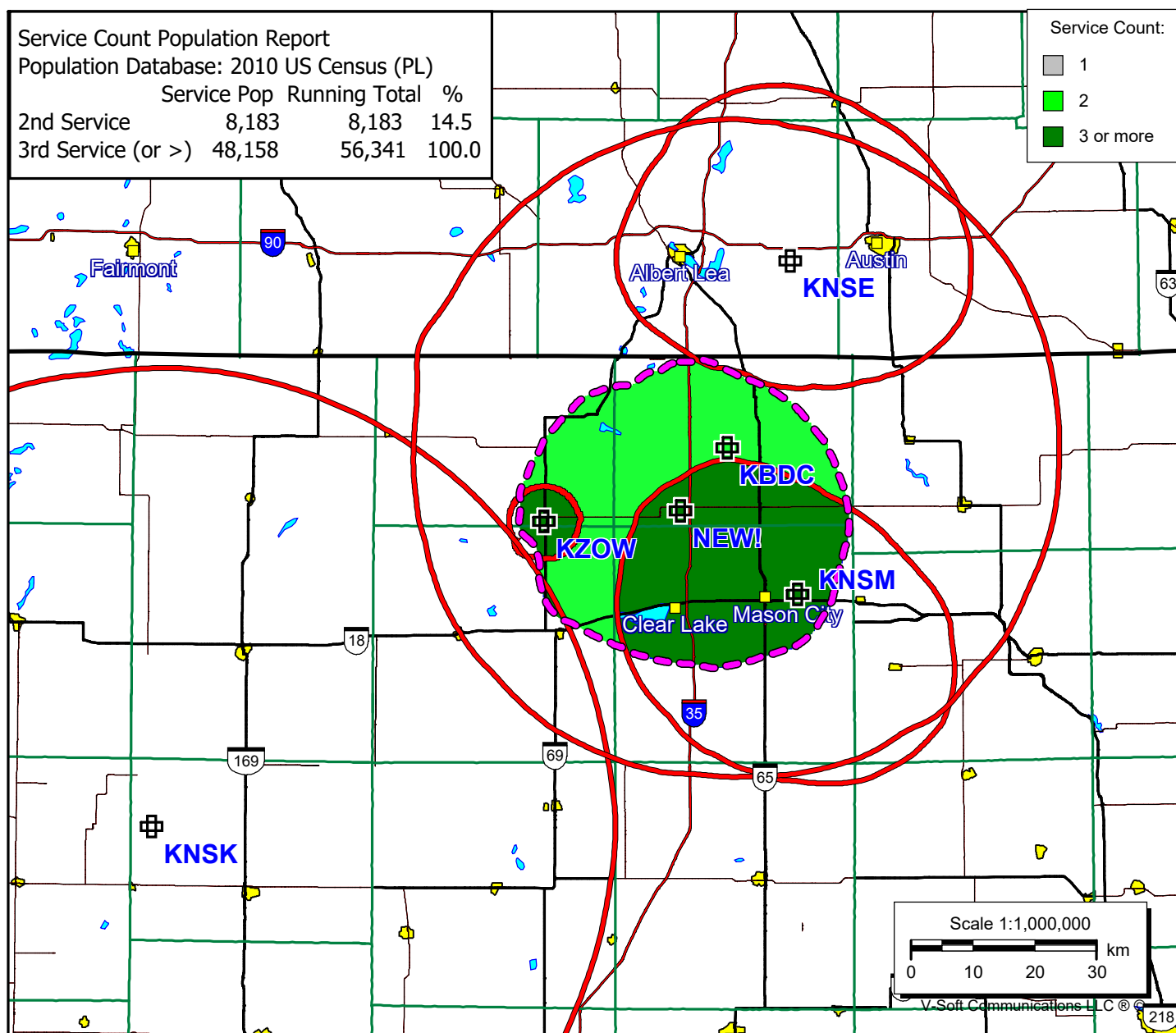
## Service Count Population Report

Population Database: 2010 US Census (PL)

	Service Pop	Running Total	%
2nd Service	8,183	8,183	14.5
3rd Service (or >)	48,158	56,341	100.0

Service Count:

1  
 2  
 3 or more



**Doug Vernier**  
 1600 Picturesque Dr.  
 Cedar Falls, Iowa 50613  
 Telecommunication Consultants

V-Soft Communications LLC © 218

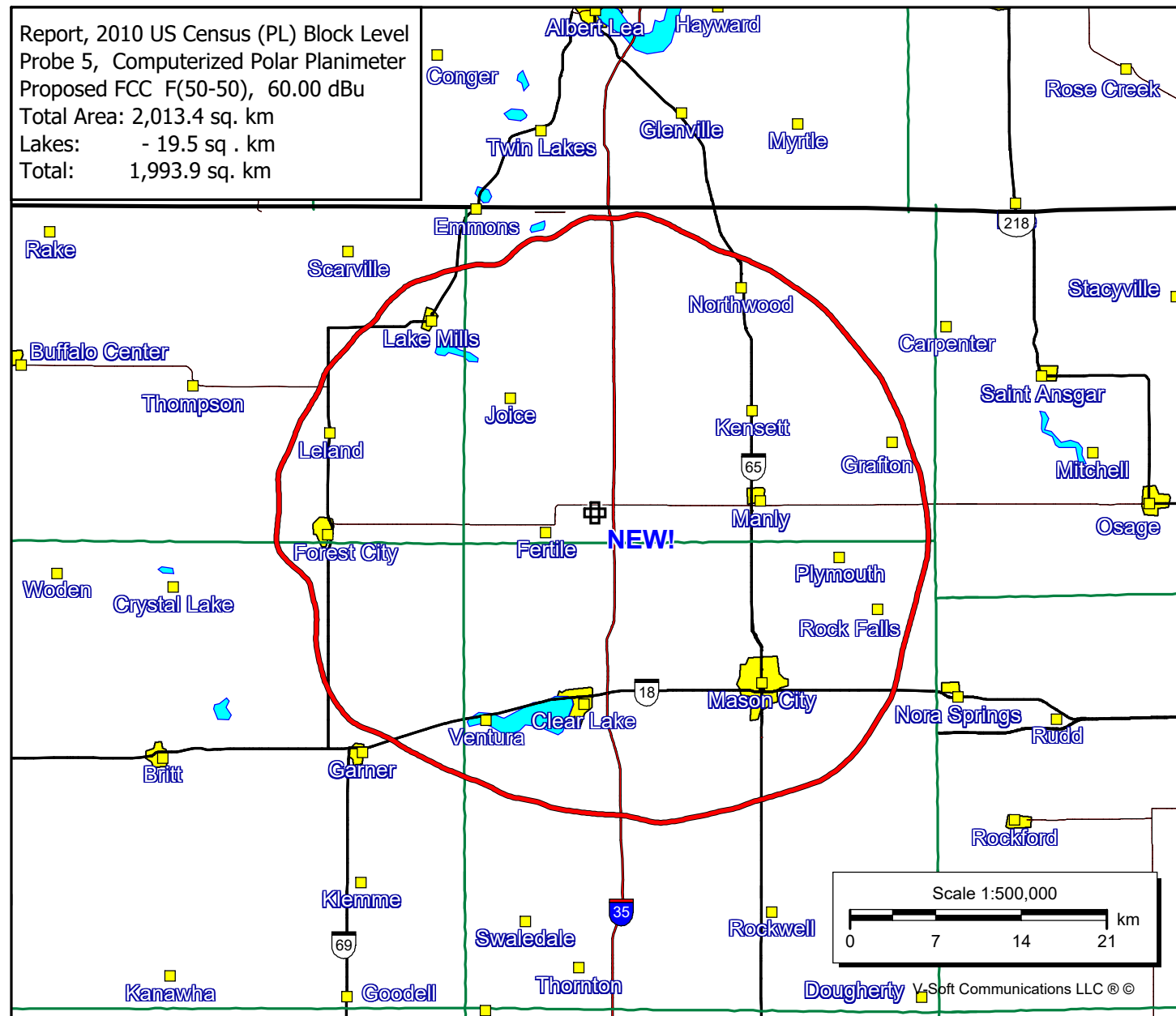


## Total 60 dBu Area - Subtract Lakes

**NEW!**

Latitude: 43-16-43.50 N  
 Longitude: 093-22-06.40 W  
 ERP: 10.00 kW  
 Channel: 214  
 Frequency: 90.7 MHz  
 AMSL Height: 440.7 m  
 Elevation: 362 m  
 Horiz. Pattern: Omni

Report, 2010 US Census (PL) Block Level  
 Probe 5, Computerized Polar Planimeter  
 Proposed FCC F(50-50), 60.00 dBu  
 Total Area: 2,013.4 sq. km  
 Lakes: - 19.5 sq. km  
 Total: 1,993.9 sq. km

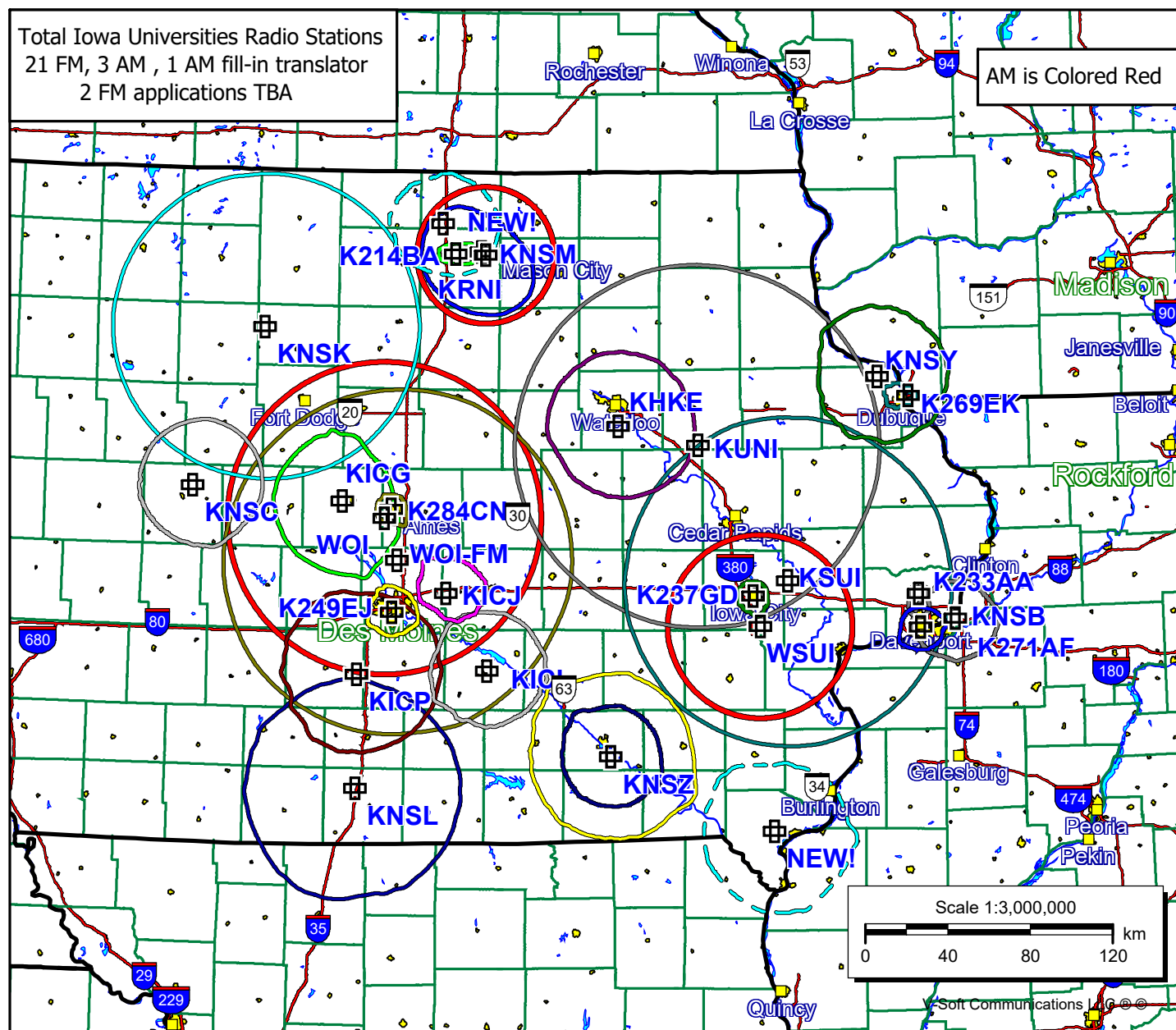


**Doug Vernier**  
 1600 Picturesque Dr.  
 Cedar Falls, Iowa 50613  
 Telecommunication Consultants

Latitude: 43-16-43.50 N  
Longitude: 093-22-06.40 W  
ERP: 10.00 kW  
Channel: 214  
Frequency: 90.7 MHz  
AMSL Height: 440.7 m  
Elevation: 378.46 m  
Horiz. Pattern: Omni  
Vert. Pattern: No  
Prop Model: None

Total Iowa Universities Radio Stations  
21 FM, 3 AM , 1 AM fill-in translator  
2 FM applications TBA

AM is Colored Red



**Declaration and  
Statement of Qualifications**

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 Iowa Public Radio to prepare the engineering showing appended hereto;

That, I have prepared this broadcast engineering showing, 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 on September 30, 2021