

- W225AP.P (225)
- KTCZ-FM (246)

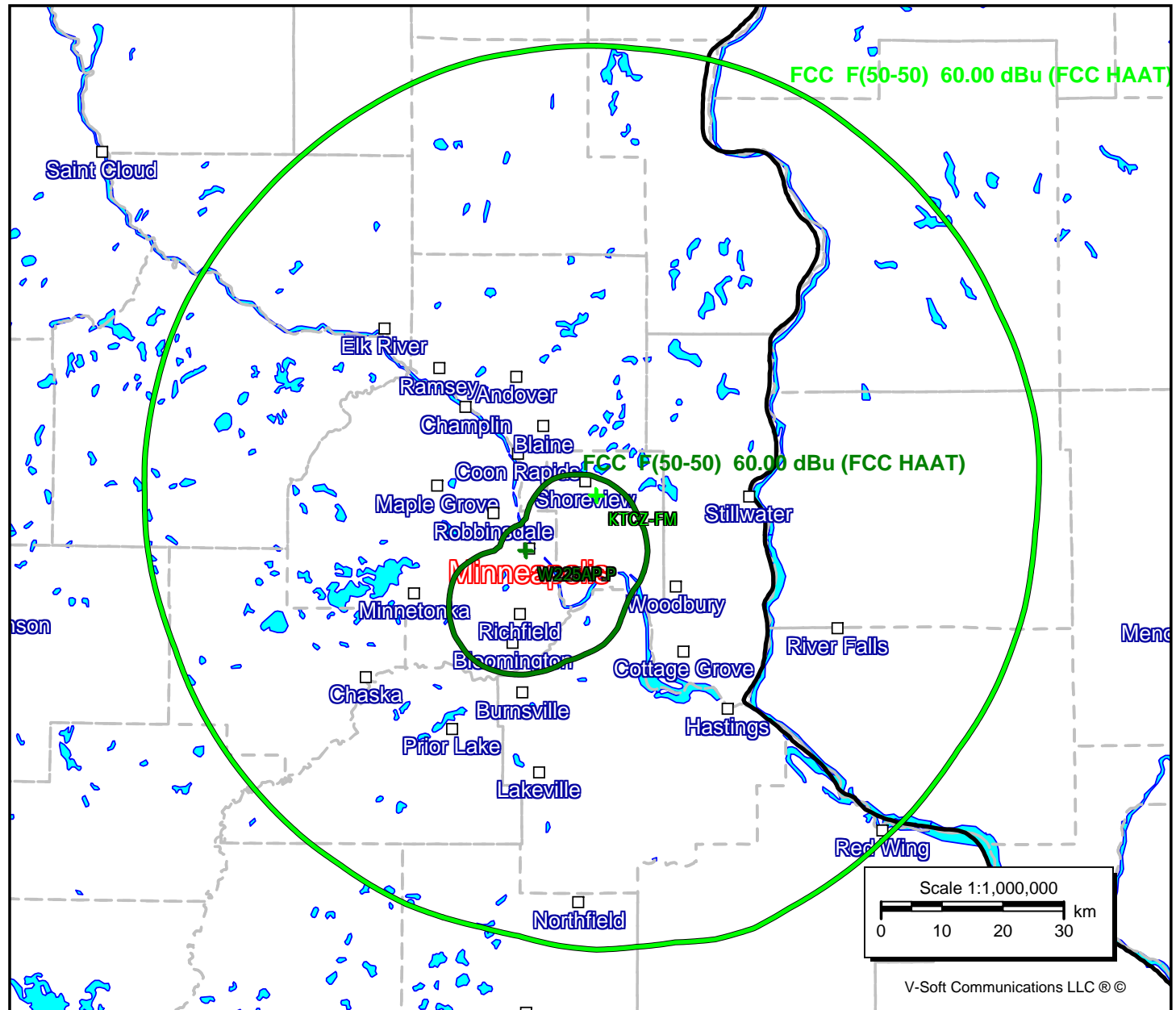
## Exhibit 10 Fill In Contour

### W225AP.P

Latitude: 44-58-36 N  
Longitude: 093-16-15 W  
ERP: 0.25 kW  
Channel: 225  
Frequency: 92.9 MHz  
AMSL Height: 504.0 m  
Elevation: 259.0 m  
Horiz. Pattern: Directional  
Vert. Pattern: No  
Prop Model: None

### KTCZ-FM

BLH19910814KC  
Latitude: 45-03-30 N  
Longitude: 093-07-27 W  
ERP: 100.00 kW  
Channel: 246  
Frequency: 97.1 MHz  
AMSL Height: 593.0 m  
Elevation: 277.0 m  
Horiz. Pattern: Omni  
Vert. Pattern: No  
Prop Model: None



### Channel Study

REFERENCE CH# 225D - 92.9 MHz, Pwr= 0.25 kW DA, HAAT= 233.3 M, COR= 504 M DISPLAY DATES  
 44 58 35.9 N. Average Protected F(50-50)= 20.0 km DATA 07-17-20  
 93 16 15.8 W. Standard Directional SEARCH 07-20-20

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*
223C Golden Valley	KQRS-FM	LIC MN		51.7 231.8	14.67 BLH19910814KB	45 03 29.80 93 07 27.70	100.000 315	10.4 593	73.7 Radio License Holdings LLC	-13.4*	-60.0*
225D St. Paul	W225AP!	LIC MN		97.5 277.6	15.51 BLFT20170707ABE	44 57 29.90 93 04 31.80	0.250	287	---Reference--- Educational Media Foundati		
225D St. Paul	W225AP!	LIC D MN		0.0 0.0	0.00 BMPFT20180706AAM	44 58 35.80 93 16 15.80	0.250	504	---Reference--- Educational Media Foundati		
227D Shoreview	W227BF	LIC MN		240.5 60.5	0.12 BLFT20170724ABF	44 58 33.90 93 16 20.80	0.099	0.7 504	15.2 Capstar Tx, LLC	-14.8*	-15.7*
225C3 St. Joseph	KKJM	LIC MN		310.9 130.1	113.33 BLH19960510KA	45 38 18.80 94 22 23.90	25.000 100	116.6 448	41.9 Gabriel Media	-9.0*	56.1
226D River Falls	W226CK	CP WI		101.1 281.6	49.79 BNPFT20171201ACY	44 53 18.90 92 39 02.70	0.250	22.1 393	14.3 Hanten Broadcasting Co. In	8.4	6.3
226C1 New Ulm	KATO-FM	LIC MN		218.0 37.3	118.96 BMLH20140612ACV	44 07 45.90 94 11 17.90	100.000 149	88.0 440	58.4 Subarctic Media, LLC	11.8	33.0
225A Rochester	KFSI	LIC MN		151.2 331.7	120.59 BLED19810507AJ	44 01 26.80 92 32 36.60	6.000 97	85.9 443	27.0 Faith Sound, Inc.	15.2	32.2
225A Elk Mound	WECL	LIC WI		93.8 275.0	133.13 BLH19920720KI	44 53 03.80 91 35 04.50	3.300 136	83.1 424	28.2 Clear Water Brands, Inc.	30.2	44.0
225A Lake Hallie	WECL	CP N WI		95.8 277.1	144.57 BPH20170303ABG	44 49 46.90 91 26 48.60	5.800 92	86.4 372	28.3 Clear Water Brands, Inc.	38.4	55.3
225C1 Duluth	WSCD-FM	LIC N MN		23.5 204.3	220.35 BMLED19940823KA	46 47 19.70 92 07 04.60	70.000 185	163.5 492	69.2 Minnesota Public Radio	41.3	106.4
226L1 Amery	WPCA-LP	LIC WI		62.2 242.9	82.16 BLL20120523AAS	45 19 01.90 92 20 27.70	0.050 42			53.1	47.0

Terrain database is USGS 03 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= West Zone, Co to 3rd adjacent.  
 All separation margins (if shown) include rounding. Call signs with exclamation marks 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)  
 "\*"affixed to 'IN' or 'OUT' values = site inside restricted contour.

**Compliance with C.F.R. 74.1204**

The proposed FM Translator is located within the protected 60dBu contour of second adjacent channel station KQRS, channel 223C, Golden Valley, MN. According to 74.1204(a)(3), in order to protect second and third adjacent facilities, the difference in dBu between the two facilities must not exceed 40dBu.

The proposed ERP for W225AP.P:	250 watts
The proposed COR for W225AP.P:	245 meters
KQRS F(50/50) contour at proposed site:	94.0dBu
The F(50/10) contour of proposed W225AP.P:	134.0dBu

The predicted distance to the 134.0dbu interfering contour is 22 meters. The antenna array will be mounted on a building rooftop. Taking into account the vertical elevation pattern of the Scala CLFM dual antenna array, and a center of radiation of 4m above the rooftop, it has been determined that the interfering contour of 134.0dbu does not extend to any regularly occupied structures. As seen in exhibit 13-A1, the interfering contour extends 3.1m below the rooftop. This is well above any regularly occupied areas of this building as the top floors are mechanical rooms and elevator control and motor rooms.

Exhibit 13–A2 shows the building location on Google Earth. It has been determined that no other nearby buildings extend higher or are near enough to enter into the interfering aperture.

Therefore, EMF respectfully requests a waiver of C.F.R. 74.1204 based on no population within the area of predicted interference.

EXHIBIT 13 - A1  
74.1204(d) Showing  
W225AP  
St Paul, MN

ERP (kw): 0.25  
Height of Antenna above Roof (m): 4  
Translator's IX Contour: 134  
Antenna Type: Scala CL-V

<u>Depression Angle from Horizon</u>	<u>Antenna Relative Field</u>	<u>ERP (kw) from the Antenna RF</u>	<u>Dist. To IX Contour (m)</u>	<u>Height IX Contour Above Ground (m)</u>
0	1.000	0.2500	22.1294	4.000
5	0.980	0.2401	21.6868	2.110
10	0.950	0.2256	21.0229	0.349
15	0.895	0.2003	19.8058	-1.126
20	0.820	0.1681	18.1461	-2.206
25	0.735	0.1351	16.2651	-2.874
30	0.645	0.1040	14.2735	-3.137
35	0.563	0.0791	12.4478	-3.140
40	0.470	0.0552	10.4008	-2.686
45	0.360	0.0324	7.9666	-1.633
50	0.250	0.0156	5.5324	-0.238
55	0.155	0.0060	3.4301	1.190
60	0.085	0.0018	1.8810	2.371
65	0.045	0.0005	0.9958	3.097
70	0.020	0.0001	0.4426	3.584
75	0.010	0.0000	0.2213	3.786
80	0.010	0.0000	0.2213	3.782
85	0.010	0.0000	0.2213	3.780
90	0.010	0.0000	0.2213	3.779

**Compliance with C.F.R. 74.1204**

The proposed FM Translator is located within the protected 60dBu contour of second adjacent channel station W227BF, channel 227D, Shoreview, MN. According to 74.1204(a)(3), in order to protect second and third adjacent facilities, the difference in dBu between the two facilities must not exceed 40dBu.

The proposed ERP for W225AP.P:	250 watts
The proposed COR for W225AP.P:	245 meters
W227BF F(50/50) contour at proposed site:	114.9dBu
The F(50/10) contour of proposed W225AP.P:	154.9dBu

The predicted distance to the 154.9dbu interfering contour is 2 meters. The antenna array will be mounted on a building rooftop. Taking into account the vertical elevation pattern of the Scala CLFM dual antenna array, and a center of radiation of 4m above the rooftop, it has been determined that the interfering contour of 154.9dbu does not extend to any regularly occupied structures. As seen in exhibit 13-A1, the lowest interfering contour extends 3.4m above the rooftop. This is well above any regularly occupied areas of this building as the top floors are mechanical rooms and elevator control and motor rooms.

Exhibit 13–A2 shows the building location on Google Earth. It has been determined that no other nearby buildings extend higher or are near enough to enter into the interfering aperture.

Therefore, EMF respectfully requests a waiver of C.F.R. 74.1204 based on no population within the area of predicted interference.

EXHIBIT 13 - A1  
74.1204(d) Showing  
W225AP  
St Paul, MN

ERP (kw): 0.25  
Height of Antenna above Roof (m): 4  
Translator's IX Contour: 154.9  
Antenna Type: Scala CL-V

<u>Depression Angle from Horizon</u>	<u>Antenna Relative Field</u>	<u>ERP (kw) from the Antenna RF</u>	<u>Dist. To IX Contour (m)</u>	<u>Height IX Contour Above Ground (m)</u>
0	1.000	0.2500	1.9951	4.000
5	0.980	0.2401	1.9552	3.830
10	0.950	0.2256	1.8954	3.671
15	0.895	0.2003	1.7856	3.538
20	0.820	0.1681	1.6360	3.440
25	0.735	0.1351	1.4664	3.380
30	0.645	0.1040	1.2869	3.357
35	0.563	0.0791	1.1223	3.356
40	0.470	0.0552	0.9377	3.397
45	0.360	0.0324	0.7182	3.492
50	0.250	0.0156	0.4988	3.618
55	0.155	0.0060	0.3092	3.747
60	0.085	0.0018	0.1696	3.853
65	0.045	0.0005	0.0898	3.919
70	0.020	0.0001	0.0399	3.963
75	0.010	0.0000	0.0200	3.981
80	0.010	0.0000	0.0200	3.980
85	0.010	0.0000	0.0200	3.980
90	0.010	0.0000	0.0200	3.980



Google Earth

feet  
meters

700  
200



Yellow Pin Marker

NAD 27

44-58-36.0 N 93-16-15.0 W

### **Environmental Protection**

The proposed facility is to be built using a dual Scala CLFM-V vertically polarized antenna array mounted on an existing building rooftop.

As can be seen in Exhibit 17-A, the maximum theoretical RF value on the rooftop would be  $72.46 \mu\text{W}/\text{cm}^2$  at a distance of 10 meters from the antenna, which is 36.2% of the  $200 \mu\text{W}/\text{cm}^2$  permitted for public (uncontrolled) exposure, and 7.2% of the  $1000 \mu\text{W}/\text{cm}^2$  permitted for worker (controlled) exposure. The rooftop of this building is restricted access to the general public.

Therefore, the proposed facility complies with the requirements of OET 65.

EMF will fully cooperate with other site users to temporarily reduce power or cease broadcasting, as necessary, to protect workers and others having access to the site from excessive levels of RF Radiation.



## Specific Antenna RF Power Density Calculator

Based on Equation 10 of OET-65  
Exhibit 17-A / Detailed Report

**ERP** 0.25 kW      % of OET-65  
**Height above ground** 4.0 meters      36.2% Uncontrolled  
**Height above head** 2.0 meters      7.2% Controlled  
**Antenna Brand Scala**  
**Antenna Model CLFM/V/2**

Horizontal distance from tower (meters)	Angle (°)	Distance (m)	Field	Power (W)	Power Density (uW/cm <sup>2</sup> )
0	90	2.0	0.01	2.5	0.209
10	11	10.2	0.95	237.5	72.460
20	6	20.1	1	250	20.668
30	4	30.1	1	250	9.237
40	3	40.0	1	250	5.206
50	2	50.0	1	250	3.335
60	2	60.0	1	250	2.317
70	2	70.0	1	250	1.703
80	1	80.0	1	250	1.304
90	1	90.0	1	250	1.030
100	1	100.0	1	250	0.835

