K244EQ; Facility ID No.: 147274
Comprehensive Engineering Exhibit
September 2014

K244EQ is seeking to increase power to 200 watts at a location 244 meters above ground level, at an existing rooftop site identified by ASR No. 1029018, utilizing a non-directional Bext TFLBDI antenna which is to be shared **with K273BH and W227BF** which are either licensed or permitted for this antenna.

Below as Figure 1 is an overlap and spacing study from which it can be determined that this proposal is within the protected contour of second adjacent channel stations KTCZ-FM and KTWN-FM.

Section 74.1204(d) states that "*The provisions of this section concerning prohibited overlap will not apply where the area of such overlap lies entirely over water. In addition, an application otherwise precluded by this section will be accepted if it can be demonstrated that no actual interference will occur due to intervening terrain, lack of population or such other factors as may be applicable*."

We will demonstrate that a lack of population and/or other factors allow this proposal to be compliant with 74.1204. The process commonly called "Living Way"[1], allows for the use of U/D Analysis, also known as "signal strength ratio methodology" to be utilized. In this instant case the facilities to be protected are second adjacent and are to be afforded protection from signals 40 dB stronger than they present in the location of the proposed antenna location.

Figure 2 is a map showing the predicted signal contours of KTCZ-FM and KTWN-FM more than 500 meters from the proposed antenna location utilizing the FCC F50:50 curve. KTCZ-FM has a stronger signal in the area of this proposed location than KTWN-FM does. Thus, protection of the KTWN-FM 82.0 dBu contour from a signal produced by this proposal exceeding 122.0 is required, and by protecting this "weaker" signal as compared to KTCZ-FM, the protection requirements are demonstrated.

The antenna is located 244 meters above ground level upon the building mounted support structure shown in Figure 4. Utilizing the line of sight equation[2] as well as the published vertical elevation pattern of the antenna, it will be demonstrated that a 122 dBu signal developed by 200 watts, emitted by the proposed antenna, does not reach habitable space. From Figure 3 the maximum horizontal distance of a 122 dBu signal has been determined to be 78 meters. In the images of Figure 4 a 78 meter radius circle has been projected around the antenna location, and a careful examination of the area has found the tallest structure, other than the support building, that lies within this radius has a maximum height above ground level of 142 meters. That height was input the calculations of Figure 3 and found to free of predicted

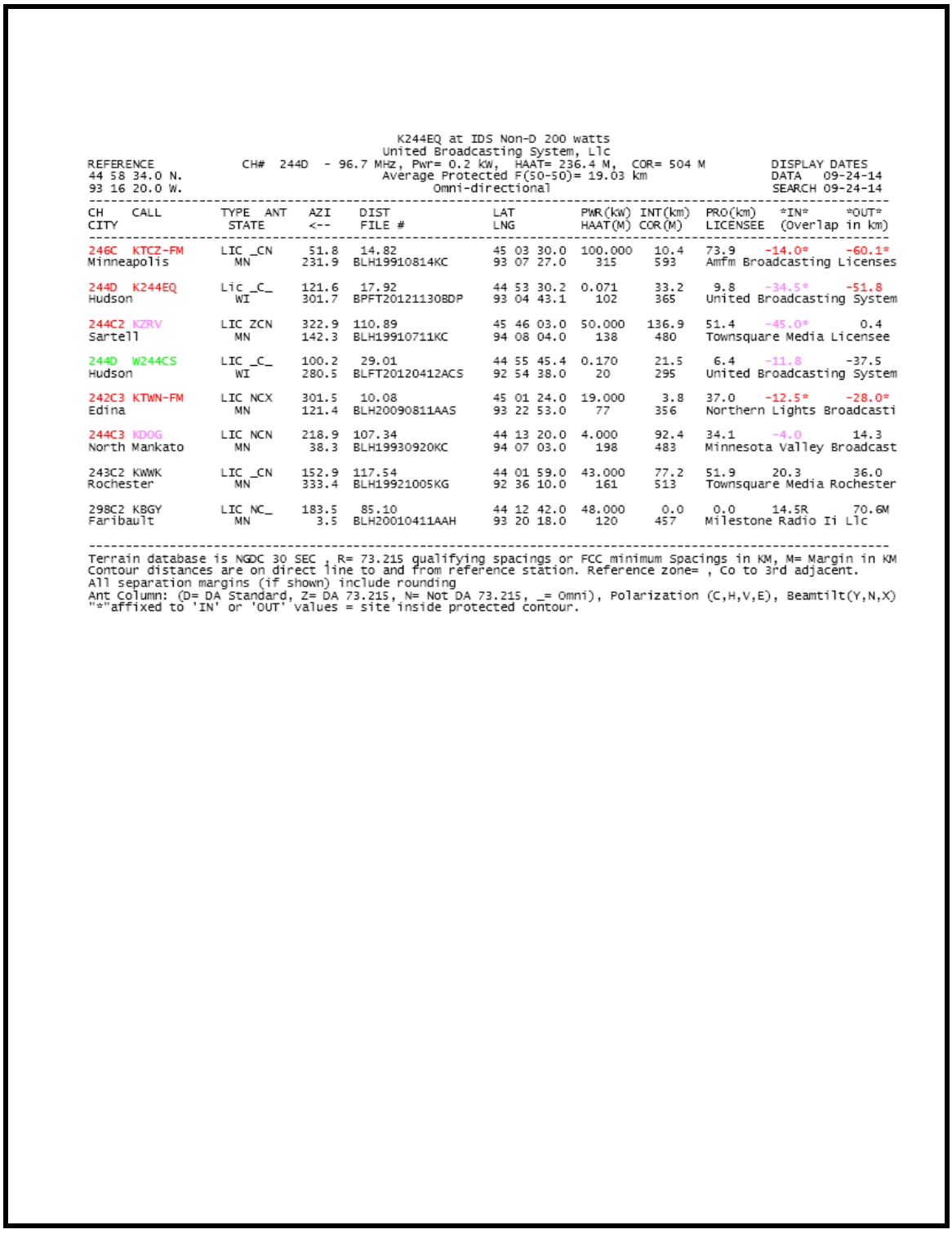
[1] As recently described in FCC 08-242 in connection with BPFT-19981001TA
[2] ReachDistMeters=106.92-(20*(LOG10[DistMeters]/1000)))+[ERPin dBk]

interference, thus demonstrating that a lack of population and/or other factors allow this proposal to be compliant with 74.1204.

A map of the proposed and licensed 60 dBu contours is given in Figure 5, demonstrating compliance with the contour overlap requirement for minor change applications. Also made part of Figure 6 is the 60 dBu contour of the primary station establishing compliance with fill-in requirements.

Due to the complexity of the rooftop, the applicant will take power density measurements prior to filing of an application for license to demonstrate compliance with 73 CFR 1.1306.

Figure 1- Spacing Study



K244EQ at IDS Non-D 200 watts
United Broadcasting System, Llc

REFERENCE CH# 244D - 96.7 MHz, Pwr= 0.2 kW, HAAT= 236.4 M, COR= 504 M
44 58 34.0 N. Average Protected F(50-50)= 19.03 km
93 16 20.0 W. Omni-directional

DISPLAY DATES
DATA 09-24-14
SEARCH 09-24-14

CH CALL CITY	TYPE ANT STATE	AZI <--	DIST FILE #	LAT LNG	PWR(kW) INT(km) HAAT(M) COR(M)	PRO(km) LICENSEE	*IN* (Overlap in km)	*OUT*
246C KTCZ-FM Minneapolis	LIC _CN MN	51.8 231.9	14.82 BLH19910814KC	45 03 30.0 93 07 27.0	100.000 10.4 315 593	73.9 Amfm Broadcasting Licenses	-14.0*	-60.1*
244D K244EQ Hudson	Lic _C_ WI	121.6 301.7	17.92 BPFT20121130BDP	44 53 30.2 93 04 43.1	0.071 33.2 102 365	9.8 United Broadcasting System	-34.5*	-51.8
244C2 KZRV Sartell	LIC ZCN MN	322.9 142.3	110.89 BLH19910711KC	45 46 03.0 94 08 04.0	50.000 136.9 138 480	51.4 Townsquare Media Licensee	-45.0*	0.4
244D W244CS Hudson	LIC _C_ WI	100.2 280.5	29.01 BLFT20120412ACS	44 55 45.4 92 54 38.0	0.170 21.5 20 295	6.4 United Broadcasting System	-11.8	-37.5
242C3 KTWN-FM Edina	LIC NCX MN	301.5 121.4	10.08 BLH20090811AAS	45 01 24.0 93 22 53.0	19.000 3.8 77 356	37.0 Northern Lights Broadcasti	-12.5*	-28.0*
244C3 KDOG North Mankato	LIC NCN MN	218.9 38.3	107.34 BLH19930920KC	44 13 20.0 94 07 03.0	4.000 92.4 198 483	34.1 Minnesota Valley Broadcast	-4.0	14.3
243C2 KWWK Rochester	LIC _CN MN	152.9 333.4	117.54 BLH19921005KG	44 01 59.0 92 36 10.0	43.000 77.2 161 513	51.9 Townsquare Media Rochester	20.3	36.0
298C2 KBGY Faribault	LIC NC_ MN	183.5 3.5	85.10 BLH20010411AAH	44 12 42.0 93 20 18.0	48.000 0.0 120 457	0.0 Milestone Radio Ii Llc	14.5R	70.6M

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 protected contour.

Figure 2- Contour Map

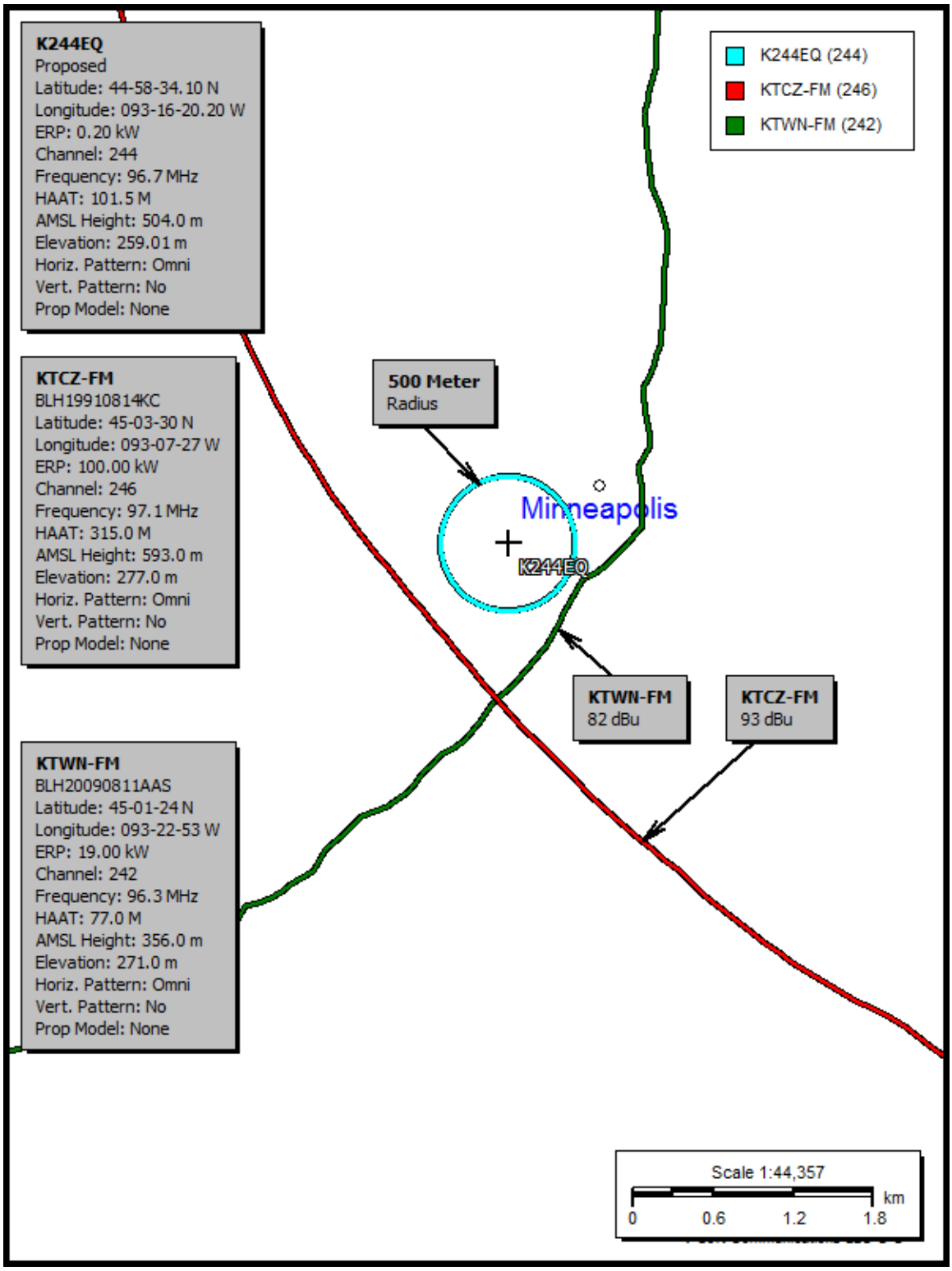


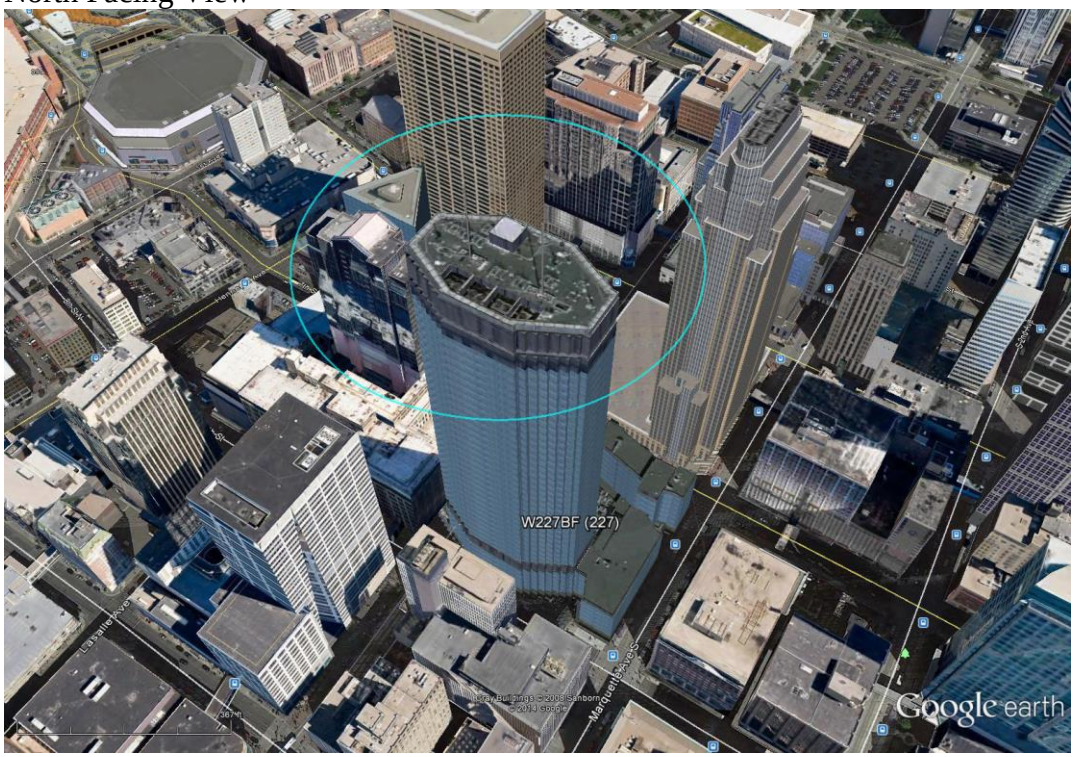
Figure 3- Distance to Signal Table

Proposed Antenna:	TFLBDI 1-bay	
Proposed Power:	0.2	kW
Antenna Height AGL:	244	meters
Interference Contour:	122	dBu f(50:10)
Artificial Rcv Antenna Height:	142	meters
Distance (Free Space) Equation:	=(10^((106.92-[desired dBu]+[ERP in dBk])/20))*1000	
Field Strength (dBu) Equation	"=106.92-(20*(LOG10[DistMeters]/1000)))+[ERPin dBk]	

Depression Angle Below Horizon	Antenna Relative Field	ERP in kW	ERP in dBk	Distance from Ant. to Interf Contour	Distance from Ant. to Artificial Plane	Field Strength in dBu @ Artificial Plane	Distance from Ant. to Ground Level	Field Strength in dBu @ Ground Level
0°	0.991	0.196	-7.07	78.09 m	infinite	---	infinite	---
-5°	1.000	0.200	-6.99	78.80 m	1170.32 m	98.56 dBu	2799.59 m	90.99 dBu
-10°	0.998	0.199	-7.01	78.64 m	587.39 m	104.53 dBu	1405.14 m	96.96 dBu
-15°	0.979	0.192	-7.17	77.14 m	394.10 m	107.83 dBu	942.74 m	100.26 dBu
-20°	0.957	0.183	-7.37	75.41 m	298.23 m	110.06 dBu	713.41 m	102.48 dBu
-25°	0.925	0.171	-7.67	72.89 m	241.35 m	111.60 dBu	577.35 m	104.02 dBu
-30°	0.884	0.156	-8.06	69.66 m	204.00 m	112.67 dBu	488.00 m	105.09 dBu
-35°	0.838	0.140	-8.52	66.03 m	177.83 m	113.40 dBu	425.40 m	105.82 dBu
-40°	0.784	0.123	-9.10	61.78 m	158.68 m	113.81 dBu	379.60 m	106.23 dBu
-45°	0.713	0.102	-9.93	56.18 m	144.25 m	113.81 dBu	345.07 m	106.23 dBu
-50°	0.665	0.088	-10.53	52.40 m	133.15 m	113.90 dBu	318.52 m	106.32 dBu
-55°	0.598	0.072	-11.46	47.12 m	124.52 m	113.56 dBu	297.87 m	105.98 dBu
-60°	0.539	0.058	-12.36	42.47 m	117.78 m	113.14 dBu	281.75 m	105.56 dBu
-65°	0.469	0.044	-13.57	36.96 m	112.54 m	112.33 dBu	269.22 m	104.75 dBu
-70°	0.400	0.032	-14.95	31.52 m	108.55 m	111.26 dBu	259.66 m	103.68 dBu
-75°	0.334	0.022	-16.51	26.32 m	105.60 m	109.93 dBu	252.61 m	102.36 dBu
-80°	0.268	0.014	-18.43	21.12 m	103.57 m	108.19 dBu	247.76 m	100.61 dBu
-85°	0.208	0.009	-20.63	16.39 m	102.39 m	106.09 dBu	244.93 m	98.51 dBu
-90°	0.145	0.004	-23.76	11.43 m	102.00 m	102.99 dBu	244.00 m	95.41 dBu

Figure 4- Transmitter Location

North Facing View



South Facing View

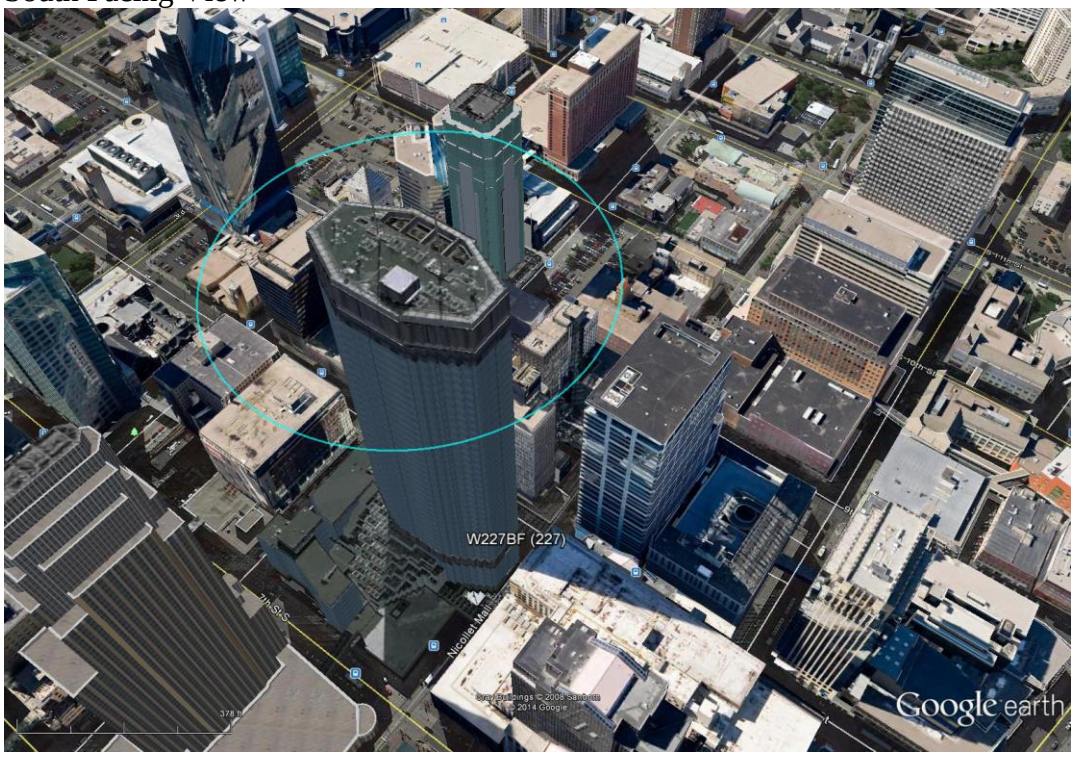


Figure 5- 60 dBu Contour Map