Comprehensive Engineering Exhibit
Minor Change Application
W221CE, Facility ID No. 148955

This minor change, fill-in application seeks to modify W221CE by changing the antenna location, power, antenna type and channel. It is proposed to use the I.F. related mutually exclusive channel 275, to operate with 250 watts ERP, with a Non-directional antenna mounted 55 meters above ground level, on a tower identified by ASR Number 1036790.

Below as Figure 1 is a spacing/clearance table from which it can be determined that the "Living Way" method is to be utilized to demonstrate no actual interference will be caused to WFUS(FM) or WHPT(FM).

As shown in Figure 2, in the vicinity of the proposed location, WFUS(FM) is predicted to have a signal of 85.8 dBu and WHPT(FM) is predicted to have a signal of 71.1 dBu, thus the respective +40 dB interfering signals are 125.8 and 111.1 dBu. This instant proposal, due to the vertical directivity of the antenna and its height above ground, will not create any actual interference to either station as shown in Figures 3 and 4. Figure 5 is an aerial image allowing determination that no tall buildings are located in the vicinity of the proposed antenna site.

The application seeks a minor change to a long existing facility and provides contour overlap as demonstrated by the contour map in Figure 6. From Figure 7 it can be seen that the entire 60 dBu contour fits within that of the required limits of the primary station for which this translator is to be "fill-in".

The proposed facilities were evaluated in terms of potential radio frequency radiation exposure at ground level in accordance with OET Bulletin No. 65, "Evaluating Compliance With FCC-Specified Guidelines for Human Exposure to Radio Frequency Radiation."

The proposed antenna system is a RFS Model CPF500-1, single-bay antenna mounted 55 meters above ground. For purposes of this analysis the FM Model program has been set to calculate values for a worst case "Ring Stub" antenna element, operated with an effective radiated power of 0.250 Kilowatts in both the horizontal and vertical polarizations. At 2 meters above the surface, at 14 meters from the base of the tower, this proposal will contribute worst case, 3.58 microwatts per square centimeter, or 0.36 percent of the allowable ANSI limit for controlled exposure, and 1.79 percent of the allowable limit for uncontrolled exposure. This figure is less the 5% of the applicable FCC limit at all locations extending out from the base of the tower. Section 1.1307(b)(3) excludes applications when the calculated level is predicted to be less than 5% of the applicable exposure limit. It is therefore believed that his proposal is in compliance with OET Bulletin Number 65 as required by the FCC.

Further, the applicant will see that signs are posted in the vicinity of the tower, warning of potential radio frequency hazards at the site. The site itself is restricted from public access. The applicant will cooperate with other users of the tower to reduce power of the facility, or discontinue operation, was necessary to limit human exposure to levels less than specified by the FCC should anyone be required to climb the tower for maintenance or inspection.

Figure 1. Spacing/Clearance Table

Callsign	Channel	ERP_w	ARN	Class	Status	Dist_km	Sep	Clr	Clr Notes
WFUS	278	66000	BLH-20111004ADI	C0	LIC	25.96	0	-26.64 dB	Living Way
WHPT	273	100000	BMLH-20100212AAW	C	LIC	59.49	0	-11.63 dB	Living Way
W275AX	275	240	BLFT-20130906AAJ	D	LIC	59.24	0	4.41 dB	Clear
WZEU-LP	275	30.8	BNPL-20131017AGQ	LP100	CP	73.8	24	11.83 dB	Clear
W274BP	274	120	BNPFT-20131017ADZ	D	CP	53.16	0	19.37 dB	Clear
W276CR	276	80	BNPFT-20130822AFU	D	CP	56.85	0	20.04 dB	Clear
WJGO	275	96000	BLH-20071212ABB	C1	LIC	165.95	0	20.65 dB	Clear
WHKQ	276	22000	BLH-20090317ACS	C2	LIC	116.46	0	21.85 dB	Clear
W273CP	273	38	BNPFT-20131021ACK	D	CP	41.48	0	25.99 dB	Clear
WXIO-LP	274	100	BNPL-20131113BRZ	LP100	CP	75.73	13	26.28 dB	Clear
NEW	275	96.7	BNPL-20131114ACI	LP100	APP	148.15	24	27.05 dB	Clear
W274BB	274	10	BLFT-20090730AEI	D	LIC	90.75	0	29.61 dB	Clear

Figure 2 - Contour Map

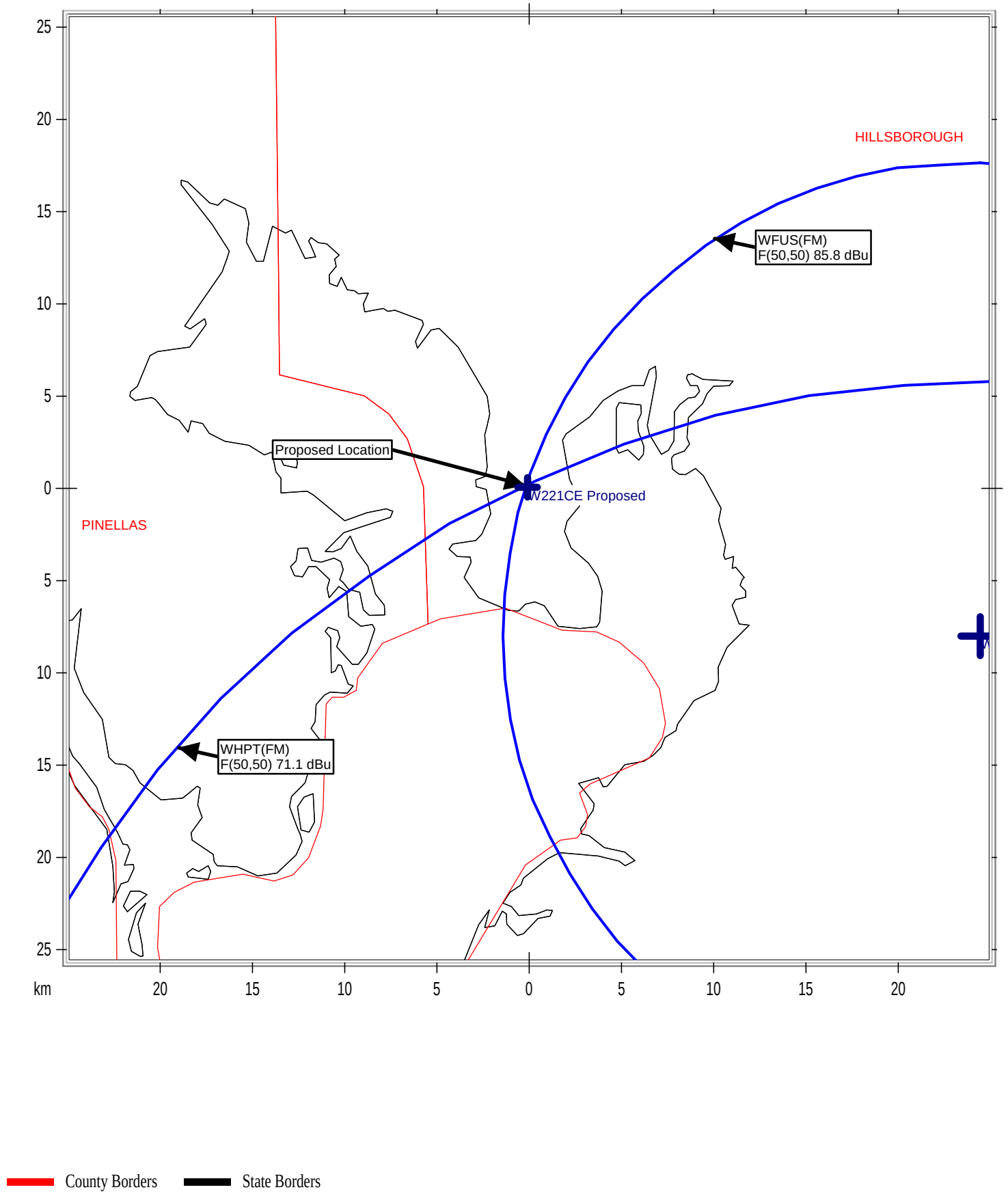

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Figure 3. Distance to Signal Contour WFUS(FM)

Proposed Antenna:	RFS CPF500-1		
Proposed Power:	0.25	kW	Fill in "yellow" cells
Antenna Height AGL:	55	meters	
Interference Contour:	125.8	dBu	
Artificial Rcv Antenna Height:	2	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°	1.000	0.250	-6.02	56.88 m	infinite	---	infinite	---
-5°	0.949	0.225	-6.48	53.97 m	608.11 m	104.76 dBu	631.05 m	104.44 dBu
-10°	0.805	0.162	-7.91	45.78 m	305.21 m	109.32 dBu	316.73 m	109.00 dBu
-15°	0.594	0.088	-10.55	33.78 m	204.78 m	110.15 dBu	212.50 m	109.82 dBu
-20°	0.353	0.031	-15.06	20.08 m	154.96 m	108.05 dBu	160.81 m	107.73 dBu
-25°	0.123	0.004	-24.24	6.99 m	125.41 m	100.72 dBu	130.14 m	100.40 dBu
-30°	0.062	0.001	-30.21	3.51 m	106.00 m	96.20 dBu	110.00 m	95.88 dBu
-35°	0.178	0.008	-21.04	10.10 m	92.40 m	106.57 dBu	95.89 m	106.25 dBu
-40°	0.217	0.012	-19.28	12.35 m	82.45 m	109.31 dBu	85.56 m	108.99 dBu
-45°	0.189	0.009	-20.47	10.77 m	74.95 m	108.95 dBu	77.78 m	108.63 dBu
-50°	0.115	0.003	-24.78	6.56 m	69.19 m	105.34 dBu	71.80 m	105.02 dBu
-55°	0.023	0.000	-38.79	1.31 m	64.70 m	91.92 dBu	67.14 m	91.59 dBu
-60°	0.060	0.001	-30.40	3.44 m	61.20 m	100.79 dBu	63.51 m	100.46 dBu
-65°	0.114	0.003	-24.88	6.48 m	58.48 m	106.70 dBu	60.69 m	106.38 dBu
-70°	0.128	0.004	-23.89	7.27 m	56.40 m	108.00 dBu	58.53 m	107.68 dBu
-75°	0.104	0.003	-25.71	5.89 m	54.87 m	106.42 dBu	56.94 m	106.10 dBu
-80°	0.053	0.001	-31.54	3.01 m	53.82 m	100.77 dBu	55.85 m	100.44 dBu
-85°	0.007	0.000	-49.12	0.40 m	53.20 m	83.28 dBu	55.21 m	82.96 dBu
-90°	0.058	0.001	-30.72	3.31 m	53.00 m	101.71 dBu	55.00 m	101.39 dBu

Figure 4. Distance to Signal Contour WHPT(FM)

Proposed Antenna:	RFS CPF500-1	
Proposed Power:	0.25	kW
Antenna Height AGL:	55	meters
Interference Contour:	111.1	dBu
Artificial Rcv Antenna Height:	2	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]	

Fill in "yellow" cells

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°	1.000	0.250	-6.02	309.01 m	infinite	---	infinite	---
-5°	0.949	0.225	-6.48	293.22 m	608.11 m	104.76 dBu	631.05 m	104.44 dBu
-10°	0.805	0.162	-7.91	248.69 m	305.21 m	109.32 dBu	316.73 m	109.00 dBu
-15°	0.594	0.088	-10.55	183.49 m	204.78 m	110.15 dBu	212.50 m	109.82 dBu
-20°	0.353	0.031	-15.06	109.11 m	154.96 m	108.05 dBu	160.81 m	107.73 dBu
-25°	0.123	0.004	-24.24	37.95 m	125.41 m	100.72 dBu	130.14 m	100.40 dBu
-30°	0.062	0.001	-30.21	19.07 m	106.00 m	96.20 dBu	110.00 m	95.88 dBu
-35°	0.178	0.008	-21.04	54.85 m	92.40 m	106.57 dBu	95.89 m	106.25 dBu
-40°	0.217	0.012	-19.28	67.12 m	82.45 m	109.31 dBu	85.56 m	108.99 dBu
-45°	0.189	0.009	-20.47	58.53 m	74.95 m	108.95 dBu	77.78 m	108.63 dBu
-50°	0.115	0.003	-24.78	35.66 m	69.19 m	105.34 dBu	71.80 m	105.02 dBu
-55°	0.023	0.000	-38.79	7.11 m	64.70 m	91.92 dBu	67.14 m	91.59 dBu
-60°	0.060	0.001	-30.40	18.66 m	61.20 m	100.79 dBu	63.51 m	100.46 dBu
-65°	0.114	0.003	-24.88	35.23 m	58.48 m	106.70 dBu	60.69 m	106.38 dBu
-70°	0.128	0.004	-23.89	39.49 m	56.40 m	108.00 dBu	58.53 m	107.68 dBu
-75°	0.104	0.003	-25.71	32.01 m	54.87 m	106.42 dBu	56.94 m	106.10 dBu
-80°	0.053	0.001	-31.54	16.38 m	53.82 m	100.77 dBu	55.85 m	100.44 dBu
-85°	0.007	0.000	-49.12	2.16 m	53.20 m	83.28 dBu	55.21 m	82.96 dBu
-90°	0.058	0.001	-30.72	17.98 m	53.00 m	101.71 dBu	55.00 m	101.39 dBu

Figure 5. Proposed Location Aerial Image

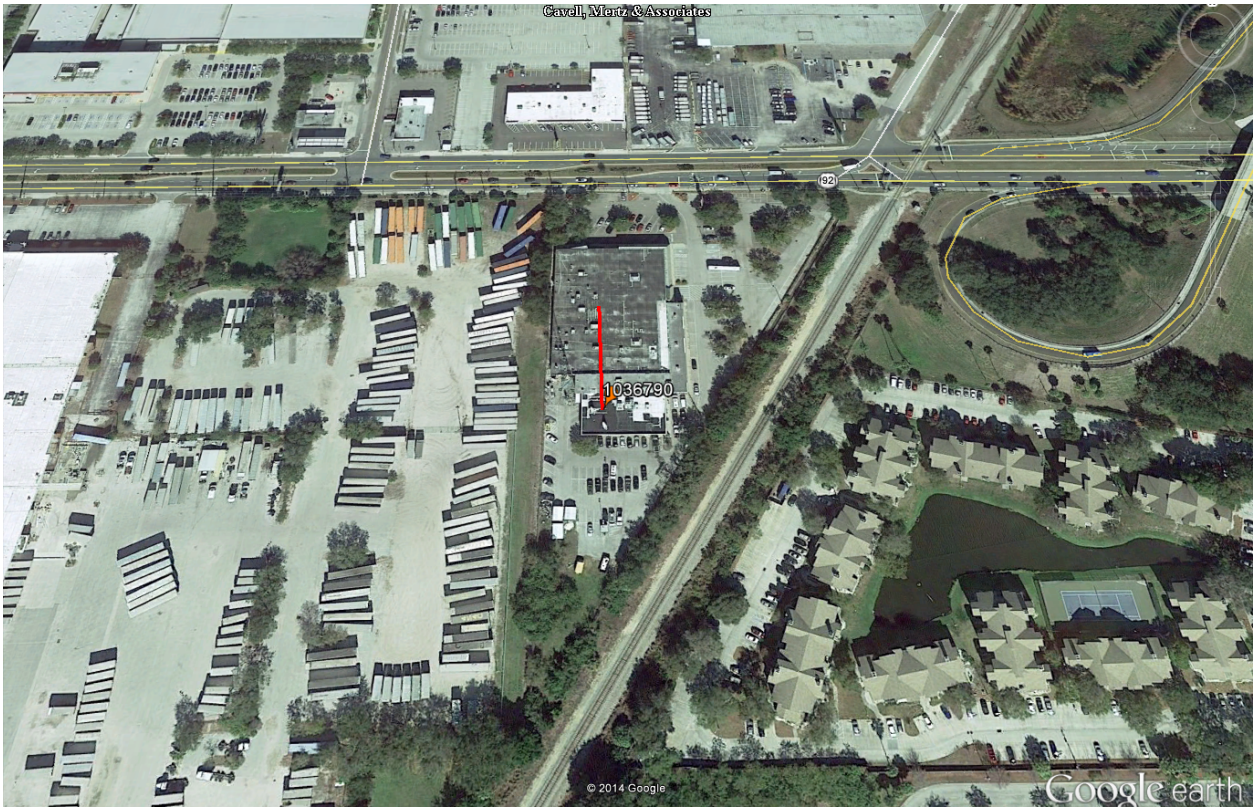

Figure 6 - 60 dBu Contour Overlap with Licensed Facility

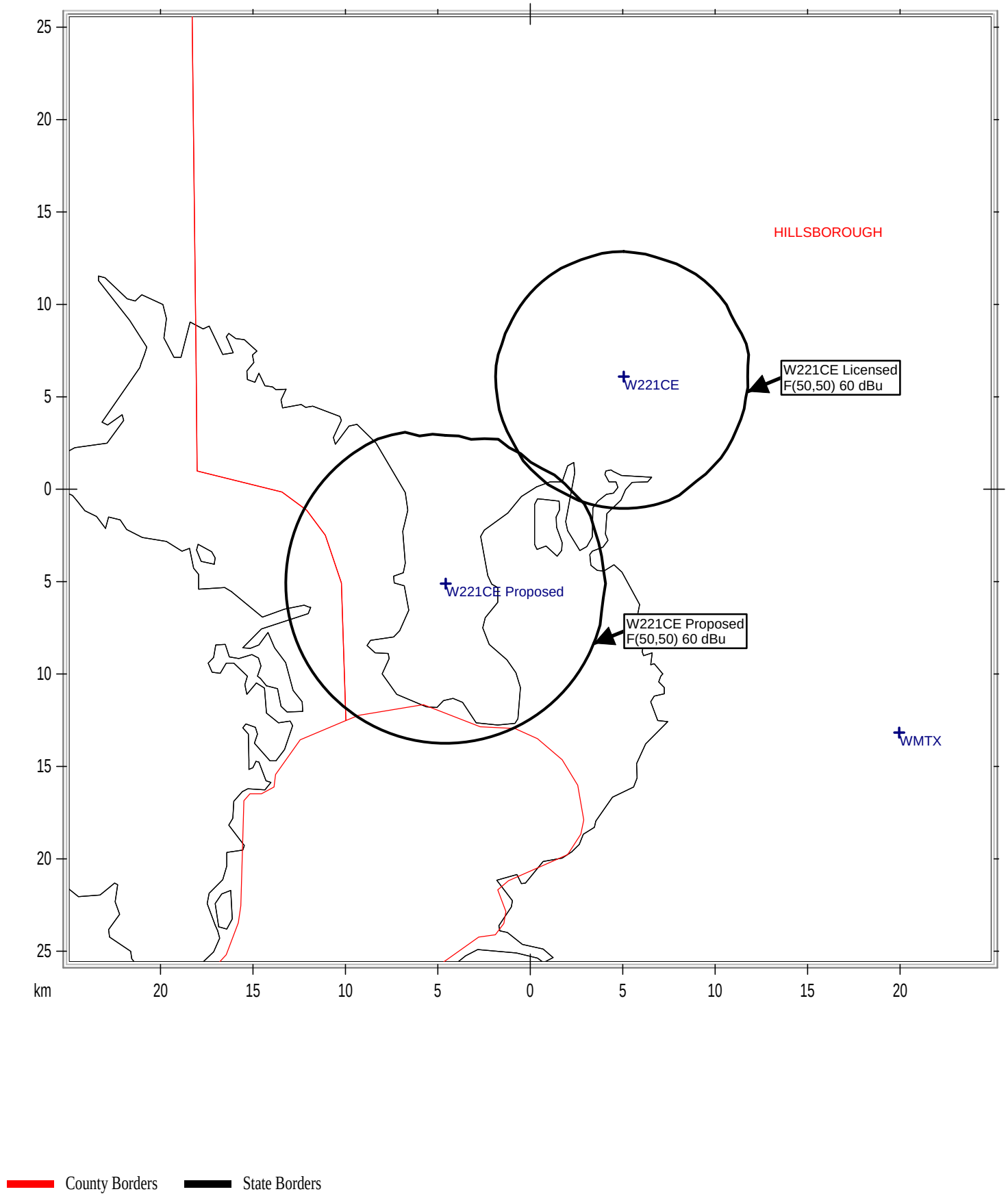

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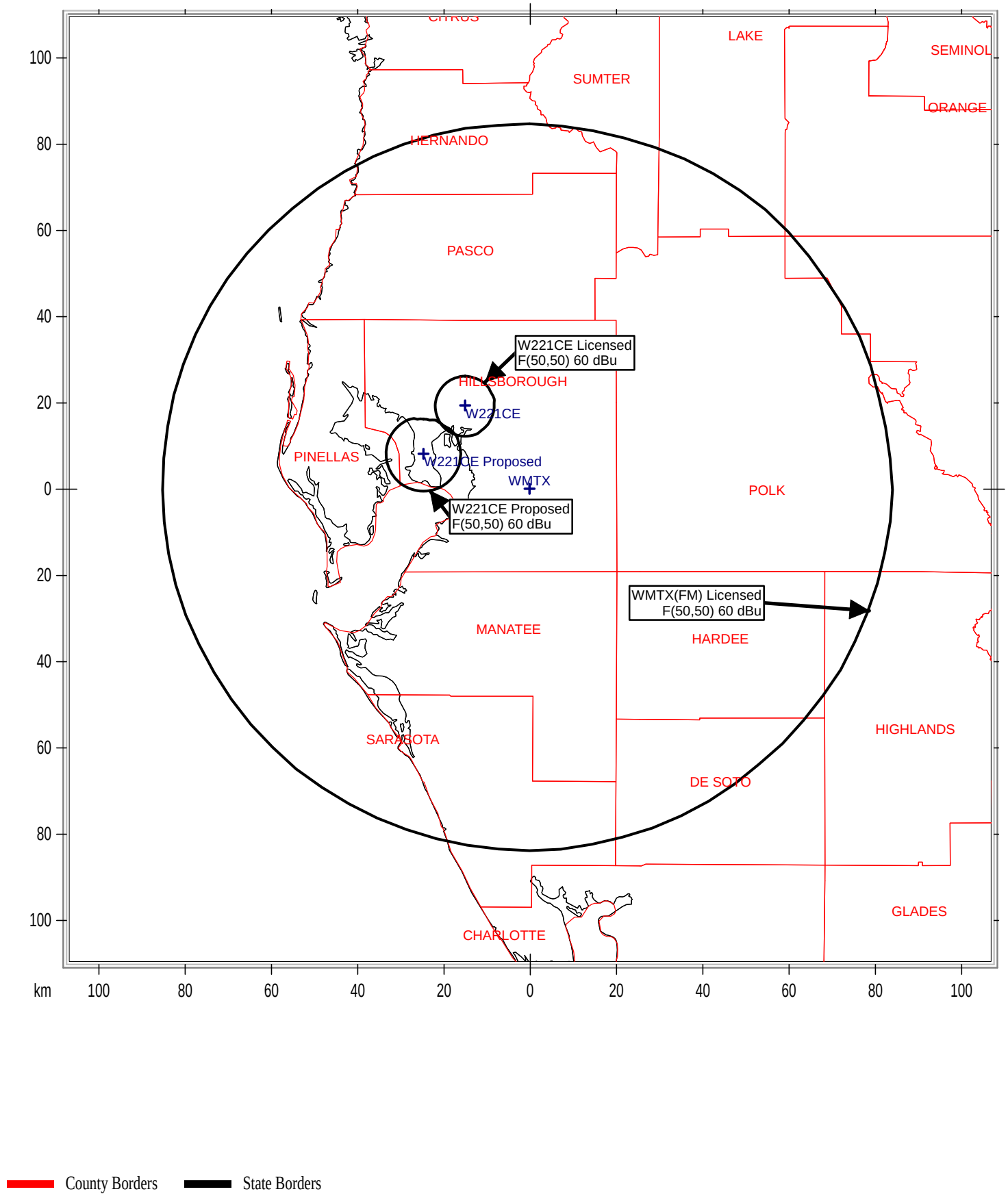
Figure 7 - 60 dBu Contours



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