

W292DT Comprehensive Engineering Exhibit
Minor Modification of CP BPFT-20111024AAW
May 2012

This minor modification application is to revise the facility antenna to a full-wave design; and to make a 6 meter downward adjustment in the as built height.

W292DT was granted an increase of power to 250 watts ERP, upon an existing tower identified by ASR No. 1013596, utilizing a directional antenna. This application seeks to correct the height from the permitted value of 185 meters AGL to 179 meters AGL, a change of 6 meters lower, necessitated by construction details of the support tower encountered at the time of construction, not know at permit application stage. This application also specifies the correct bay spacing of the antenna.

The facility will be utilized as a “fill-in” translator for primary station WEBN (FM). The 54 dBu service contour of the proposed facility is within that of the primary station, as demonstrated in Figure 1, where it can also be seen that the 60 dBu contour of the facility as proposed overlaps the existing licensed, making this application compliant for filing as a minor modification.

Attached as Figure 2 is an allocation overlap and spacing report wherein it can be determined that the permitted location is within the protected contour of 2nd adjacent primary facilities of WNKN. The 112.0 dBu F50:10 dBu interfering contour to the WNKN 72.0 contour near the translator location does not reach any habitable area as demonstrated in Figure 3, and observed from the aerial image of Figure 4. The 72 dBu value for WNKN can be verified via the contour map of Figure 1.

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.”

As the proposed antenna is not modeled in “FM Model”, the proposed facility has been evaluated using the antenna element in “FM Model” set for EPA type 1, 2- element, 1.0 wave spaced, “Ring Stub “ antenna, as a “worst case” example, mounted with its center of radiation 179 meters above ground level, and operated with an effective radiated power of 0.250 Kilowatts in the vertical plane. At 2 meters above ground, at 50 meters from the base of the tower, this proposal will contribute worst case, 0.04 microwatts per square centimeter, or 0.004 percent of the allowable ANSI limit for controlled exposure, and 0.02 percent of the allowable limit for uncontrolled exposure. It is therefore believed that this proposal is in compliance with OET Bulletin Number 65 as required by the Federal Communications Commission.

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, as necessary to limit human exposure to levels less than specified by the Federal Communications Commission should anyone be required to climb the tower for maintenance or inspection.

Figure 1.

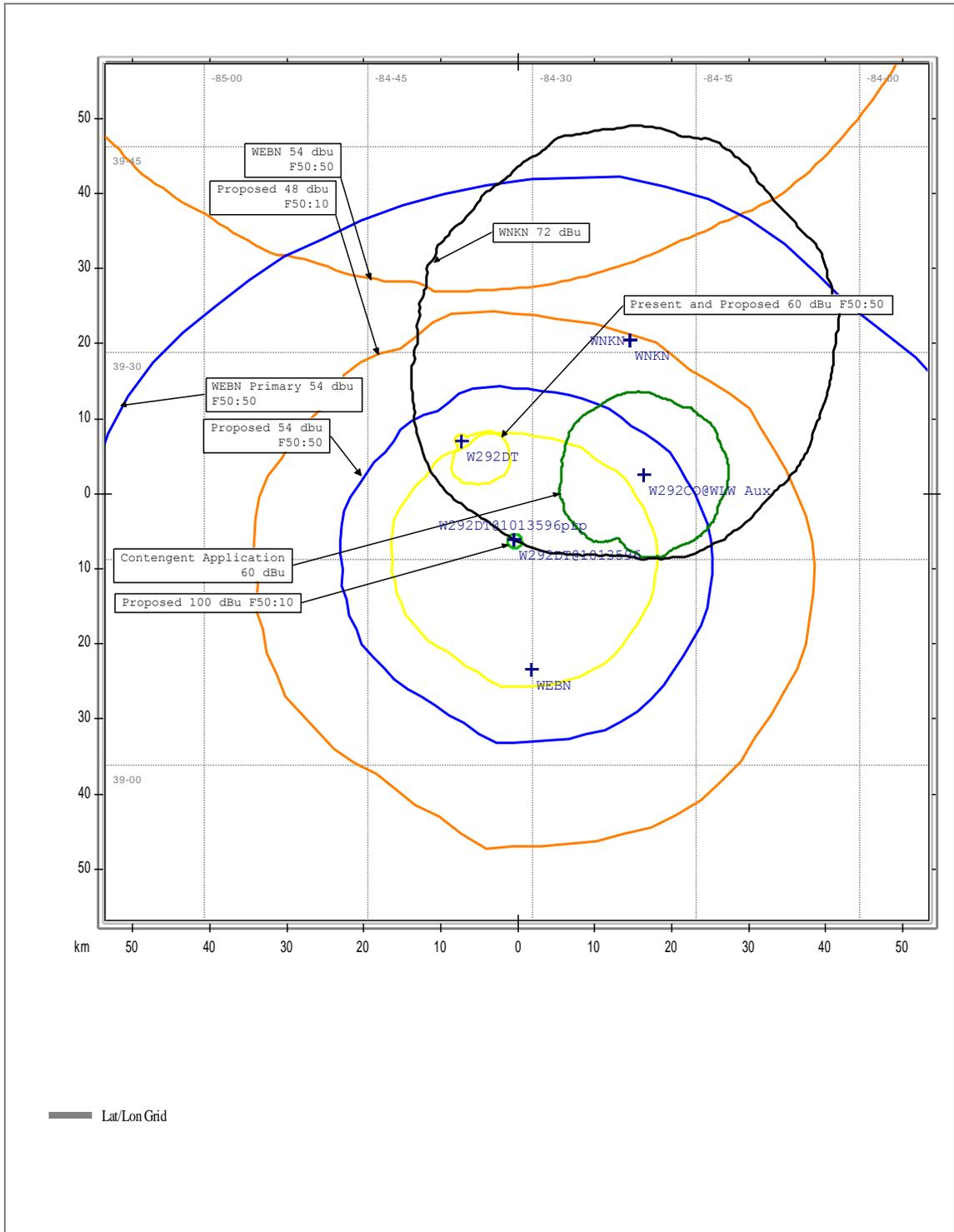


Figure 2. Spacing Study

w292DT May Rev											
Educational Media Foundation											
REFERENCE CH# 292D - 106.3 MHz, Pwr= 0.25 kw DA, HAAT= 0.0 M, COR= 425 M DISPLAY DATES											
39 16 23.8 N. DATA 04-26-12											
84 31 37.2 W. Average Protected F(50-50)= 7.09 km SEARCH 05-02-12											
Standard Directional											
CH	CALL	TYPE	ANT	AZI	DIST	LAT	PWR(kw)	INT(km)	PRO(km)	*IN*	*OUT*
CITY		STATE		<--	FILE #	LNG	HAAT(M)	COR(M)	LICENSEE	(Overlap in km)	
292D	w292DT	CP DV_		0.0	0.00	39 16 23.8	0.250	46.0	13.9	-59.6*	-59.2*
Auburn		OH		0.0	BMPFT20120306ACD	84 31 37.2		431	Educational Media Foundati		
290B	WNKN	LIC _CX		29.2	30.88	39 30 57.0	34.000	6.2	67.2	10.6	-37.5*
Middletown		OH		209.3	BMLED20110330ACO	84 21 05.0	181	419	Northern Kentucky Universi		
292D	w292DT	LIC DV_		332.8	14.96	39 23 35.0	0.010	21.4	6.4	-19.9*	-35.9
Auburn		OH		152.8	BLFT20090407AIN	84 36 24.0	136	358	Educational Media Foundati		
294D	w294BM	LIC _C_		62.5	19.23	39 21 10.8	0.100	0.7	11.5	2.7	6.9
Middletown		OH		242.6	BLFT20120323AFK	84 19 44.2		345	Educational Media Foundati		
293B	WDSJ	LIC _CN		355.8	97.26	40 08 49.0	50.000	77.0	64.0	6.4	3.8
Greenville		OH		175.8	BLH19901105KD	84 36 36.0	146	460	Aloha Station Trust, Llc		
291B	WWVY	LIC _CN		257.6	104.15	39 04 02.0	50.000	74.6	61.8	14.0	9.4
North Vernon		IN		76.9	BLH19850905KC	85 42 10.0	148	355	White River Broadcasting C		
294B	R59693	DEL ___		98.3	80.34	39 09 58.0	50.000	5.8	63.9	56.6	14.7
Hillsboro		OH		278.8		83 36 25.0	150	460	Citicasters Licenses, Inc.		
292A	WXMG	LIC ZCN		53.9	116.63	39 53 05.0	6.000	83.0	25.6	18.5	41.5
London		OH		234.7	BLH19920828KF	83 25 23.0	100	414	Blue chip Broadcasting Lic		
292A	WCDA	LIC _CN		179.0	136.09	38 02 51.0	3.700	85.9	29.6	31.5	47.9
Versailles		KY		359.0	BLH19990115KB	84 29 57.0	128	416	L.m. Communications, Inc		
294A	WNKR	LIC _CX		184.4	65.10	38 41 19.0	1.800	2.3	27.5	43.8	36.5
Williamstown		KY		4.4	BLH20080424AAY	84 35 07.0	185	432	Grant County Broadcasters,		
294D	636900	APP DC_		28.5	62.20	39 45 53.3	0.250	0.0	1.7	48.1	59.9
Dayton		OH		208.7	BNPFT20030314BRN	84 10 47.1	22	287	Citicasters Licenses, L.p.		
295D	WWSU	LIC _CX		35.0	69.26	39 46 57.2	0.020	0.3	4.5	54.6	64.1
Fairborn		OH		215.3	BLED20081201DMK	84 03 42.0	64	332	wright State University		
291C3	WMOR-FM	LIC _CX		142.0	153.16	38 10 56.0	19.500	61.6	40.8	72.2	83.6
Morehead		KY		322.7	BLH20020611AAA	83 26 56.0	114	398	Morgan County Industries,		

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.
 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 3 Ground Level Signal

Proposed Antenna:	Scala FMV	
Proposed Power:	0.025	kW
Antenna Height AGL:	179	meters
Interference Contour:	112	dBu f(50:10)
Artificial Rcv Antenna Height:	2	meters
Distance (Free Space) Equation:	$= (10^{((106.92 - [\text{desired dBu}] + [\text{ERP in dBk}]) / 20)}) * 1000$ $= 106.92 - (20 * (\text{LOG}_{10}[\text{DistMeters} / 1000])) + [\text{ERP in dBk}]$	
Field Strength (dBu) Equation	dBk]	

Fill in "yellow" cells

Depression				Distance				
Angle	Antenna			from Ant.	Distance	Field Strength	Distance	Field Strength
Below	Relative	ERP	ERP	to Interf	from Ant. to	in dBu @	from Ant. to	in dBu @
Horizon	Field	in kW	in dBk	Contour	Artificial Plane	Artificial Plane	Ground Level	Ground Level
0°	1.000	0.025	-16.02	88.10 m	infinite	---	infinite	---
-5°	0.995	0.025	-16.06	87.66 m	2030.85 m	84.70 dBu	2053.79 m	84.60 dBu
-10°	0.982	0.024	-16.18	86.51 m	1019.30 m	90.58 dBu	1030.82 m	90.48 dBu
-15°	0.950	0.023	-16.47	83.69 m	683.88 m	93.75 dBu	691.60 m	93.66 dBu
-20°	0.918	0.021	-16.76	80.87 m	517.51 m	95.88 dBu	523.36 m	95.78 dBu
-25°	0.867	0.019	-17.26	76.38 m	418.82 m	97.22 dBu	423.55 m	97.12 dBu
-30°	0.803	0.016	-17.93	70.74 m	354.00 m	98.01 dBu	358.00 m	97.92 dBu
-35°	0.727	0.013	-18.79	64.05 m	308.59 m	98.34 dBu	312.08 m	98.24 dBu
-40°	0.645	0.010	-19.83	56.82 m	275.36 m	98.29 dBu	278.47 m	98.19 dBu
-45°	0.558	0.008	-21.09	49.16 m	250.32 m	97.86 dBu	253.14 m	97.76 dBu
-50°	0.472	0.006	-22.54	41.58 m	231.06 m	97.10 dBu	233.67 m	97.01 dBu
-55°	0.388	0.004	-24.24	34.18 m	216.08 m	95.98 dBu	218.52 m	95.89 dBu
-60°	0.310	0.002	-26.19	27.31 m	204.38 m	94.52 dBu	206.69 m	94.42 dBu
-65°	0.240	0.001	-28.42	21.14 m	195.30 m	92.69 dBu	197.50 m	92.59 dBu
-70°	0.176	0.001	-31.11	15.51 m	188.36 m	90.31 dBu	190.49 m	90.21 dBu
-75°	0.119	0.000	-34.51	10.48 m	183.24 m	87.15 dBu	185.31 m	87.05 dBu
-80°	0.067	0.000	-39.50	5.90 m	179.73 m	82.33 dBu	181.76 m	82.23 dBu
-85°	0.019	0.000	-50.45	1.67 m	177.68 m	71.48 dBu	179.68 m	71.38 dBu
-90°	0.025	0.000	-48.06	2.20 m	177.00 m	73.90 dBu	179.00 m	73.80 dBu

Figure 4 Aerial Image of Proposed Antenna Location

