

# Comprehensive Engineering Exhibit

## Minor Modification to BPFT-20140128AFU

### Facility ID No. 140060, W242BF

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This exhibit is for the minor change modification application of translator W242BF seeking to relocate onto an existing tower via use of a Mattoon waiver, to become fill-in for AM station WDIZ, Facility ID No.: 66666, Panama City, Florida.

### Antenna Location

The proposed antenna is to be mounted on the existing tower identified by Antenna Registration No.: 1263140, with a radiation center at 100 meters above ground, using a non-directional antenna with a maximum effective radiated power of 250 watts.

Below as Figure 1 is an overlap and spacing study, incorporating the antenna pattern, from which it can be determined that this proposal is within the protected contour of second adjacent channel stations WRBA. 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”<sup>1</sup>, 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 contour of WRBA more than 500 meters beyond the proposed antenna location utilizing the FCC F50:50 curve. Thus, protection of the WRBA 78.0 dBu contour from a signal produced by this proposal exceeding 118.0 dBu (78.0 + 40.0) is required, and by protecting this signal the protection requirements are demonstrated.

The proposed 2-bay, half wave spaced, ERI 100A antenna is to be located 100 meters above ground level upon the tower shown in the Google Earth picture of Figure 3. Utilizing the line of sight equation of Figure 4 it has been determined that a 118.0 dBu signal developed by 250 watts, emitted by the proposed antenna, does not reach any habitable area in Figure 3. The provisions of the rules section concerning prohibited overlap will not apply as it has been demonstrated that no actual interference will occur due to a lack of population and other factors as applied in this instant proposal.

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<sup>1</sup> As recently described in FCC 08-242 in connection with BPFT-19981001TA

## **RF Fields Statement**

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 an ERI "ERI 100A", 2- element; half-wave spaced antenna mounted 100 meters above ground. As this element type is modeled in the FM Model program has been set to calculate values for "worst case" element design- a "ring stub" type of antenna element in a half wave 2-bay array, operated with an effective radiated power of 0.250 Kilowatts in both horizontal and vertical. At 2 meters above the surface, at 150 meters from the base of the tower, this proposal will contribute worst case, 0.20 microwatts per square centimeter, or 0.02 percent of the allowable ANSI limit for controlled exposure, and 0.1 percent of the allowable limit for uncontrolled exposure. This figure is less than 5% of the applicable FCC exposure 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 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. Spacing Study

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W242BF to ASR 1263140 Minor Mod of 20140128AFU

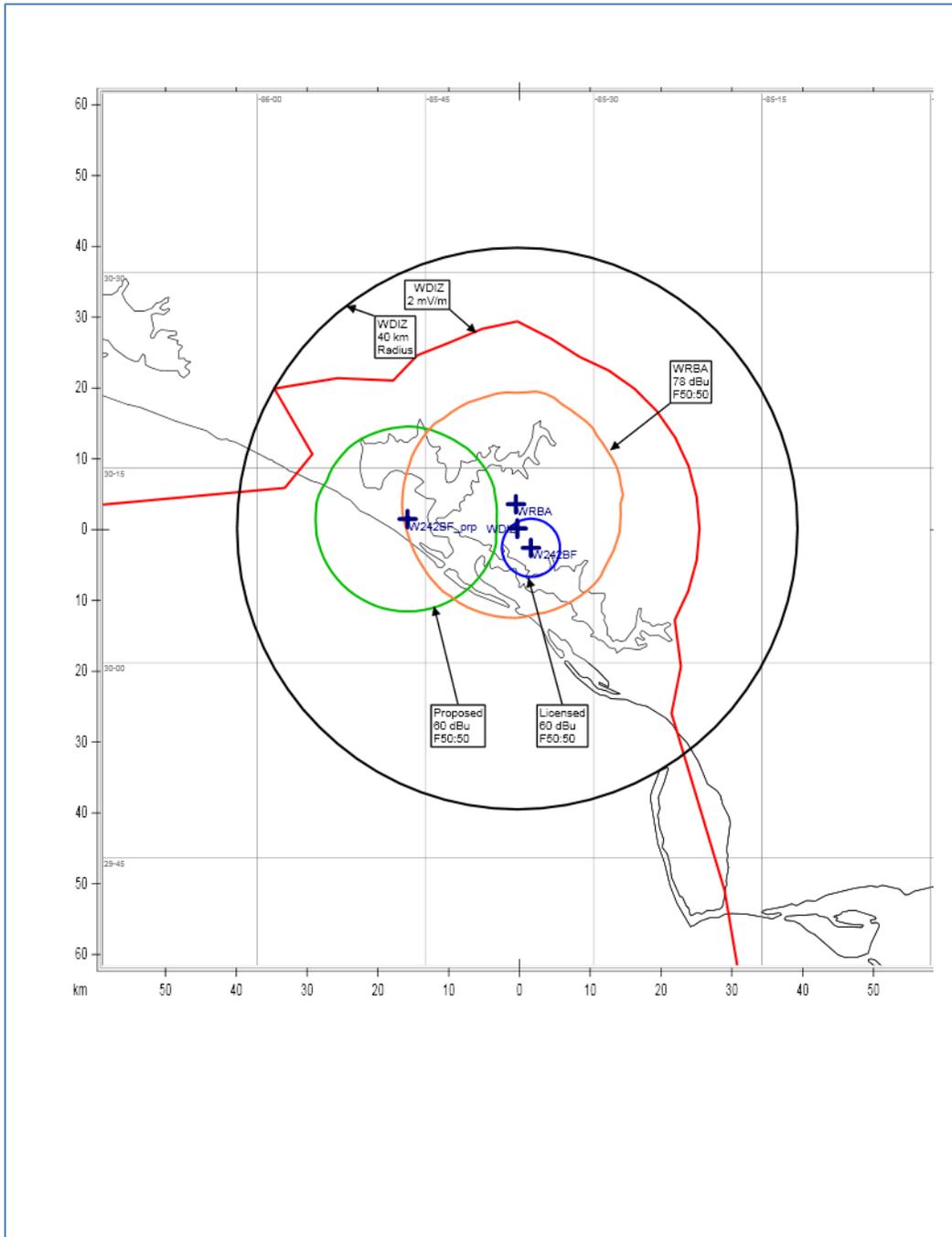
Way Media , Inc.

REFERENCE CH# 242D - 96.3 MHz, Pwr= 0.25 kW, HAAT= 104.3 M, COR= 105 M DISPLAY DATES  
30 11 04.1 N. Average Protected F(50-50)= 13.1 km DATA 02-18-15  
85 46 35.8 W. Omni-directional SEARCH 02-18-15

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*
242D Panama City	W242BF!	CP	C FL	85.3 265.4	14.08 BFFT20140128AFU	30 11 41.0 85 37 51.0	0.250 8	43.8 99	12.7 Way Media , Inc.	-42.7	-43.2
242D Springfield	W242BF!	LIC	V FL	103.1 283.2	18.12 BLFT20070706ABS	30 08 51.0 85 35 36.0	0.030 8	13.2 12	4.1 Way Media , Inc.	-8.2	-31.0
240C2 Springfield	WRBA	LIC	CN FL	82.2 262.3	15.62 BLH19930518KC	30 12 12.0 85 36 57.0	50.000 86	4.6 90	42.6 Powell Broadcasting Compan	-1.9<	-28.1*<
243C1 Fort Walton Beach	WZNS	LIC	CX FL	287.6 107.1	85.73 BLH20030304AAG	30 24 50.0 86 37 40.0	100.000 134	86.7 140	57.2 Cumulus Licensing Llc	-14.1*<	8.9
245C0 Enterprise	WDJR	LIC	CX AL	2.1 182.1	81.81 BLH20060912ABV	30 55 19.0 85 44 41.0	100.000 316	10.5 354	74.2 Gulf South Communications,	58.1	6.5
245C0 Hartford	WDJR	CP	CX AL	2.1 182.1	81.81 BPH20121119AOD	30 55 19.0 85 44 41.0	100.000 316	10.5 354	74.2 Gulf South Communications,	58.1	6.5

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. 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), Beamtlt(Y,N,X)  
"\*"affixed to 'IN' or 'OUT' values = site inside restricted contour.  
< = Contour Overlap

**Figure 2. Contour Map**



**Figure 3. View of Antenna Location.**



**Figure 4. Distance to Signal Level Table.**

<p><b>Proposed Antenna:</b> ERI A 100-2H2-bay half wave</p> <p><b>Proposed Power:</b> 0.25 kW</p> <p><b>Antenna Height AGL:</b> 100 meters</p> <p><b>Interference Contour:</b> 118 dBu f(50:10)</p> <p><b>Artificial Rcv Antenna Height:</b> 2 meters</p> <p><b>Distance (Free Space) Equation:</b> <math>= (10^{((106.92 - [\text{desired dBu}] + [\text{ERP in dBk}]) / 20)}) * 1000</math></p> <p><b>Field Strength (dBu) Equation:</b> <math>= 106.92 - (20 * (\text{LOG10}[\text{DistMeters} / 1000])) + [\text{ERP in dBk}]</math></p>								
<div style="border: 1px solid black; background-color: yellow; padding: 5px; display: inline-block;">                 Fill in "yellow" cells             </div>								
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.	in dBu @
Horizon	Field	in kW	in dBk	Contour	Artificial Plane	Artificial Plane	Ground	Ground Level
0°	1.000	0.250	-6.02	139.63 m	infinite	---	infinite	---
-5°	0.984	0.242	-6.16	137.39 m	1124.42 m	99.74 dBu	#####	99.57 dBu
-10°	0.938	0.220	-6.58	130.97 m	564.36 m	105.31 dBu	575.88 m	105.14 dBu
-15°	0.865	0.187	-7.28	120.78 m	378.64 m	108.08 dBu	386.37 m	107.90 dBu
-20°	0.772	0.149	-8.27	107.79 m	286.53 m	109.51 dBu	292.38 m	109.33 dBu
-25°	0.665	0.111	-9.56	92.85 m	231.89 m	110.05 dBu	236.62 m	109.87 dBu
-30°	0.553	0.076	-11.17	77.21 m	196.00 m	109.91 dBu	200.00 m	109.73 dBu
-35°	0.442	0.049	-13.11	61.72 m	170.86 m	109.16 dBu	174.34 m	108.98 dBu
-40°	0.339	0.029	-15.42	47.33 m	152.46 m	107.84 dBu	155.57 m	107.66 dBu
-45°	0.248	0.015	-18.13	34.63 m	138.59 m	105.95 dBu	141.42 m	105.78 dBu
-50°	0.172	0.007	-21.31	24.02 m	127.93 m	103.47 dBu	130.54 m	103.30 dBu
-55°	0.112	0.003	-25.04	15.64 m	119.64 m	100.33 dBu	122.08 m	100.15 dBu
-60°	0.068	0.001	-29.37	9.49 m	113.16 m	96.48 dBu	115.47 m	96.30 dBu
-65°	0.037	0.000	-34.66	5.17 m	108.13 m	91.58 dBu	110.34 m	91.41 dBu
-70°	0.018	0.000	-40.92	2.51 m	104.29 m	85.64 dBu	106.42 m	85.46 dBu
-75°	0.007	0.000	-49.12	0.98 m	101.46 m	77.68 dBu	103.53 m	77.50 dBu
-80°	0.002	0.000	-60.00	0.28 m	99.51 m	66.96 dBu	101.54 m	66.79 dBu
-85°	0.001	0.000	-66.02	0.14 m	98.37 m	61.04 dBu	100.38 m	60.87 dBu
-90°	0.001	0.000	-66.02	0.14 m	98.00 m	61.07 dBu	100.00 m	60.90 dBu