Comprehensive Engineering Exhibit
W293AH – Huntsville, Alabama
Facility ID No. 25384

This application seeks to modify the facilities of FM Translator W293AH by changing the location, antenna type and height above ground. The applicant proposed to utilize 250 watts ERP, with a directional antenna mounted 183 meters above ground level, on a tower identified by ASR No. 1043727 to serve as a fill-in translator for station WQRV.

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 WTAK-FM. As shown in Figure 2, in the vicinity of the proposed location, WTAK-FM is predicted to have a signal of 65 dBu, thus the respective +40 dB interfering signal is 105 dBu. This instant proposal, due to the vertical directivity of the antenna and its height above ground, will not create any actual interference to WTAK-FM as shown in Figures 3. Figure 4 is an aerial image allowing determination that no habitable space is located near the antenna.

As shown in Figure 5, the entire 60 dBu contour fits within the 60 dBu contour 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 an ERI Model 100A-2F-HW-DA, two-element, half-wave spaced antenna mounted 183 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 285 meters from the base of the tower, this proposal will contribute worst case, 0.061 microwatts per square centimeter, or 0.006 percent of the allowable ANSI limit for controlled exposure, and 0.031 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

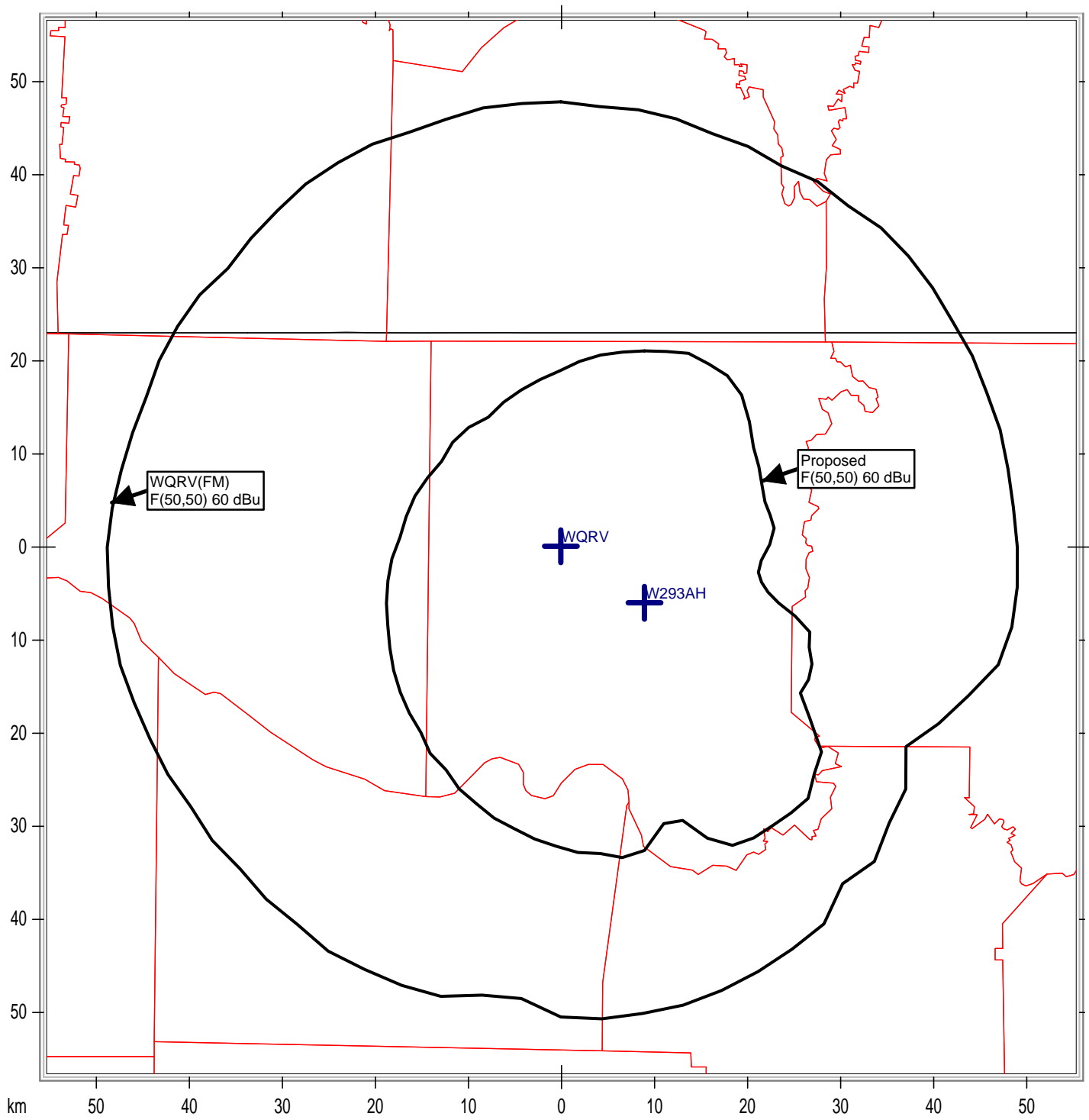| Callsign	Channel	ERP_w	ARN	Class	Status	Dist_km	Sep	Clr	Clr Notes
WTAK-FM	291	5400	BLH19931026KB	C3	LIC	32.27	0	-5.64 dB	Living Way
WSKZ	293	100000	BLH7303	C	LIC	120.41	0	0.71 dB	Clear
WDXE-FM	294	6000	BLH20000120AAQ	A	LIC	91.14	0	8.73 dB	Clear
WBTG-FM	292	6000	BLH19931202KF	C3	LIC	115.97	0	11.17 dB	Clear
W295AE	295	250	BLFT20001023ACM	D	LIC	50.46	0	11.22 dB	Clear
NEW	293	34	BNPFT20030317IQC	D	APP	141.45	0	13.31 dB	Clear
NEW	293	22	BNPFT20130830AQA	D	APP	141.39	0	13.01 dB	Clear
WJEC	293	6000	BMLH20001026AAB	A	LIC	169.37	0	16.00 dB	Clear
WLVS-FM	293	3800	BLH20020816AAE	A	LIC	165.6	0	15.42 dB	Clear
W292EI	292	10	BNPFT20130325AKF	D	CP	101.76	0	17.70 dB	Clear
WBPT	295	97000	BLH20130207ABS	C0	LIC	141.39	0	21.04 dB	Clear
WNRQ	290	98000	BLH19831212AN	C	LIC	146.75	0	23.87 dB	Clear
W295AV	295	250	BPFT20130730AGR	D	APP	63.39	0	23.65 dB	Clear
W292ED	292	250	BNPFT20130228ARV	D	CP	119.6	0	23.07 dB	Clear
W295AV	295	120	BLFT20070815ABR	D	LIC	63.39	0	23.72 dB	Clear
WNFN	294	2950	BLH20080428AAO	C3	LIC	170.89	0	27.68 dB	Clear
WTSH-FM	296	100000	BLH20120522ADU	C1	LIC	152.08	0	29.56 dB	Clear

Figure 2. Contour Map
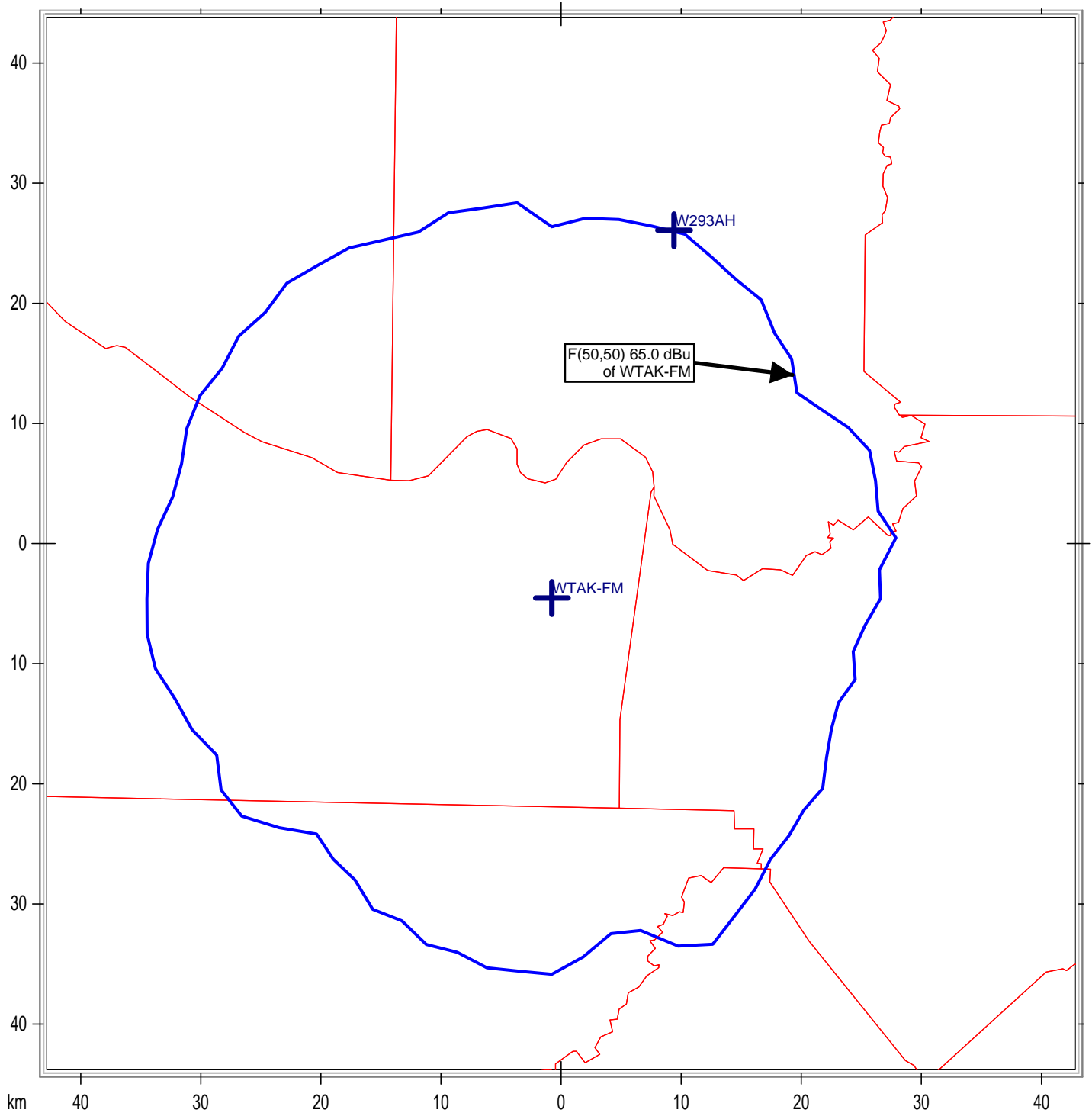
County Borders   State Borders

Figure 3. Distance to Signal Contour WTAK-FM

Proposed Antenna:	ERI 100A 2-bay half wave	
Proposed Power:	0.25	kW
Antenna Height AGL:	183	meters
Interference Contour:	105	dBu f(50:10)
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	623.69 m	infinite	---	infinite	---
-5°	0.984	0.242	-6.16	613.71 m	2076.74 m	94.41 dBu	2099.69 m	94.32 dBu
-10°	0.938	0.220	-6.58	585.02 m	1042.34 m	99.98 dBu	1053.85 m	99.89 dBu
-15°	0.865	0.187	-7.28	539.49 m	699.33 m	102.75 dBu	707.06 m	102.65 dBu
-20°	0.772	0.149	-8.27	481.49 m	529.21 m	104.18 dBu	535.06 m	104.08 dBu
-25°	0.665	0.111	-9.56	414.76 m	428.28 m	104.72 dBu	433.01 m	104.63 dBu
-30°	0.553	0.076	-11.17	344.90 m	362.00 m	104.58 dBu	366.00 m	104.48 dBu
-35°	0.442	0.049	-13.11	275.67 m	315.56 m	103.83 dBu	319.05 m	103.73 dBu
-40°	0.339	0.029	-15.42	211.43 m	281.59 m	102.51 dBu	284.70 m	102.42 dBu
-45°	0.248	0.015	-18.13	154.68 m	255.97 m	100.62 dBu	258.80 m	100.53 dBu
-50°	0.172	0.007	-21.31	107.27 m	236.28 m	98.14 dBu	238.89 m	98.05 dBu
-55°	0.112	0.003	-25.04	69.85 m	220.96 m	95.00 dBu	223.40 m	94.90 dBu
-60°	0.068	0.001	-29.37	42.41 m	209.00 m	91.15 dBu	211.31 m	91.05 dBu
-65°	0.037	0.000	-34.66	23.08 m	199.71 m	86.26 dBu	201.92 m	86.16 dBu
-70°	0.018	0.000	-40.92	11.23 m	192.62 m	80.31 dBu	194.74 m	80.22 dBu
-75°	0.007	0.000	-49.12	4.37 m	187.38 m	72.35 dBu	189.46 m	72.25 dBu
-80°	0.002	0.000	-60.00	1.25 m	183.79 m	61.63 dBu	185.82 m	61.54 dBu
-85°	0.001	0.000	-66.02	0.62 m	181.69 m	55.71 dBu	183.70 m	55.62 dBu
-90°	0.001	0.000	-66.02	0.62 m	181.00 m	55.75 dBu	183.00 m	55.65 dBu

Figure 4. Proposed Location Aerial Image

Figure 5. Contour Map

WQRV(FM)
F(50,50) 60 dBu

Proposed
F(50,50) 60 dBu

WQRV

W293AH

km   50   40   30   20   10   0   10   20   30   40   50

— County Borders   — State Borders