



ENGINEERING EXHIBIT

Digital Television Application for Modification of License

prepared for

Gray Television Licensee, LLC

WFIE(DT) Evansville, IN

Facility ID 13991

Ch. 26 200 kW 310 m

Gray Television Licensee, LLC (“Gray”) is the licensee of WFIE(DT), Channel 26, Facility ID 13991, Evansville IN. WFIE is licensed to operate with 200 kW effective radiated power (“ERP”) directional and an antenna height above average terrain (“HAAT”) of 310 meters (file# 0000087068). *Gray* herein seeks a modification of the WFIE license to cover replacement of the main antenna and transmission line, change to elliptical polarization, and increased transmitter power output.

The replacement antenna is an elliptically polarized nondirectional ERI model ATW33H4-ETO-26L (32 percent vertical polarization). The horizontally polarized ERP is 200 kW and the vertically polarized ERP is 64 kW. Updated operating constants are provided on the accompanying Form 2100 and the new transmitter power output is 10.24 kW.

Historically, an increase in vertically polarized ERP is permitted by §73.1690(c)(4) to be specified on a license application. However, electronic filing currently provided by the FCC’s Licensing and Management System (“LMS”) does not provide opportunity for the applicant to change polarization. Therefore, a response of “NO” is provided to the “Constructed Facility” certification question on the accompanying license modification LMS form.

Gray requests that the modified WFIE license record specify elliptical polarization and the corresponding antenna make and model number. The nondirectional ERP, antenna location, and antenna height as constructed match the values authorized in the current license 0000087068. A

summary of the antenna description values which differ from those authorized in the license is provided in the following.

	<u>Lic File# 0000087068</u>	<u>Values for Modified License</u>
Antenna Make	AND	ERI
Antenna Model	ABBP16H4-HTO-4-14/46	ATW33H4-ETO-26L
Polarization	Horizontal	<u>Elliptical</u>

Regarding RF exposure, calculations per FCC OET Bulletin Number 65 (considering 10 percent antenna relative field in downward elevations) show that the signal density near the tower at two meters above ground level attributable to the modified WFIE facility is $1.2 \mu\text{W}/\text{cm}^2$, which is 0.3 percent of the general population/uncontrolled maximum permitted exposure limit. This is well below the five percent threshold limit described in §1.1307(b) regarding sites with multiple emitters, categorically excluding the applicant from responsibility for taking any corrective action in the areas where the proposal's contribution is less than five percent. The applicant will coordinate exposure procedures with all pertinent stations and will reduce power or cease operation as necessary to protect persons having access to the site, tower, or antenna from RF electromagnetic field exposure in excess of FCC guidelines.

Chesapeake RF Consultants, LLC

Joseph M. Davis, P.E. August 9, 2021
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