

ENGINEERING EXHIBIT

Incentive Auction Channel Reassignment

Application for Digital Television Station Auxiliary Antenna Construction Permit

prepared for

Gray Television Licensee, LLC

WJHG-TV Panama City, FL

Facility ID 73136

Ch. 16 82 kW 232 m

Gray Television Licensee, LLC (“Gray”) is the licensee of digital television station WJHG-TV, Facility ID 73136, Panama City, FL. A Construction Permit (“CP”, file# 0000025385) authorizes construction of the WJHG-TV post-auction facility on Channel 16, as established in the *Incentive Auction Closing and Channel Reassignment Public Notice* (DA-17-317, released April 13, 2017). *Gray* proposes herein to construct an auxiliary antenna for WJHG-TV on its post-auction Channel 16. The initial operation on reassignment Channel 16 will commence with the auxiliary antenna proposed herein, in order to accommodate tower work including removal of existing WJHG-TV Channel 18 main antenna, replacement of the main transmission line, and installation of post-auction Channel 16 main antenna.

The CP authorizes WJHG-TV to operate with a directional antenna at 1000 kW ERP and 411 meters HAAT. The proposed auxiliary antenna will be side-mounted on a separate existing tower that is located 9.3 km distant, and will operate at 82 kW ERP (directional) and an antenna HAAT of 232 meters. The tower structure corresponds to FCC Antenna Structure Registration number 1029017.

The proposed antenna is a horizontally polarized Dielectric model TLP-16B. The directional antenna’s azimuthal pattern is supplied in Figure 1 and the elevation pattern is depicted in Figure 2 and 2A.

Figure 3 shows that the 41 dB μ contour of the proposed auxiliary facility does not extend beyond the 41 dB μ contour of the authorized main facility. Thus the proposal complies with §73.1675(a).

Human Exposure to Radiofrequency Electromagnetic Field (Environmental)

The proposed operation was evaluated for human exposure to RF energy using the procedures outlined in the FCC's OET Bulletin Number 65. Based on OET-65 equation (10), and considering 20 percent antenna relative field in downward elevations (pattern data shows less than 20 percent relative field at angles 10 to 90 degrees below the antenna), the calculated signal density near the tower at two meters above ground level attributable to the proposed facility is 2.1 $\mu\text{W}/\text{cm}^2$, which is 0.7 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 general public will not be exposed to RF levels attributable to the proposal in excess of the FCC's guidelines. RF exposure warning signs will continue to be posted. With respect to worker safety, 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. This exhibit is limited to the evaluation of exposure to RF electromagnetic field.

List of Attachments

Figure 1	Antenna Azimuthal Pattern
Figure 2, 2A	Antenna Elevation Pattern
Figure 3	Proposed Auxiliary Contours

Chesapeake RF Consultants, LLC

Joseph M. Davis, P.E.	August 10, 2018	
207 Old Dominion Road	Yorktown, VA 23692	703-650-9600

AZIMUTH PATTERN

Gain
 Calculated / Measured

1.70 (2.30 dB)
Calculated

Frequency
 Drawing #

485 MHz
TLP-B

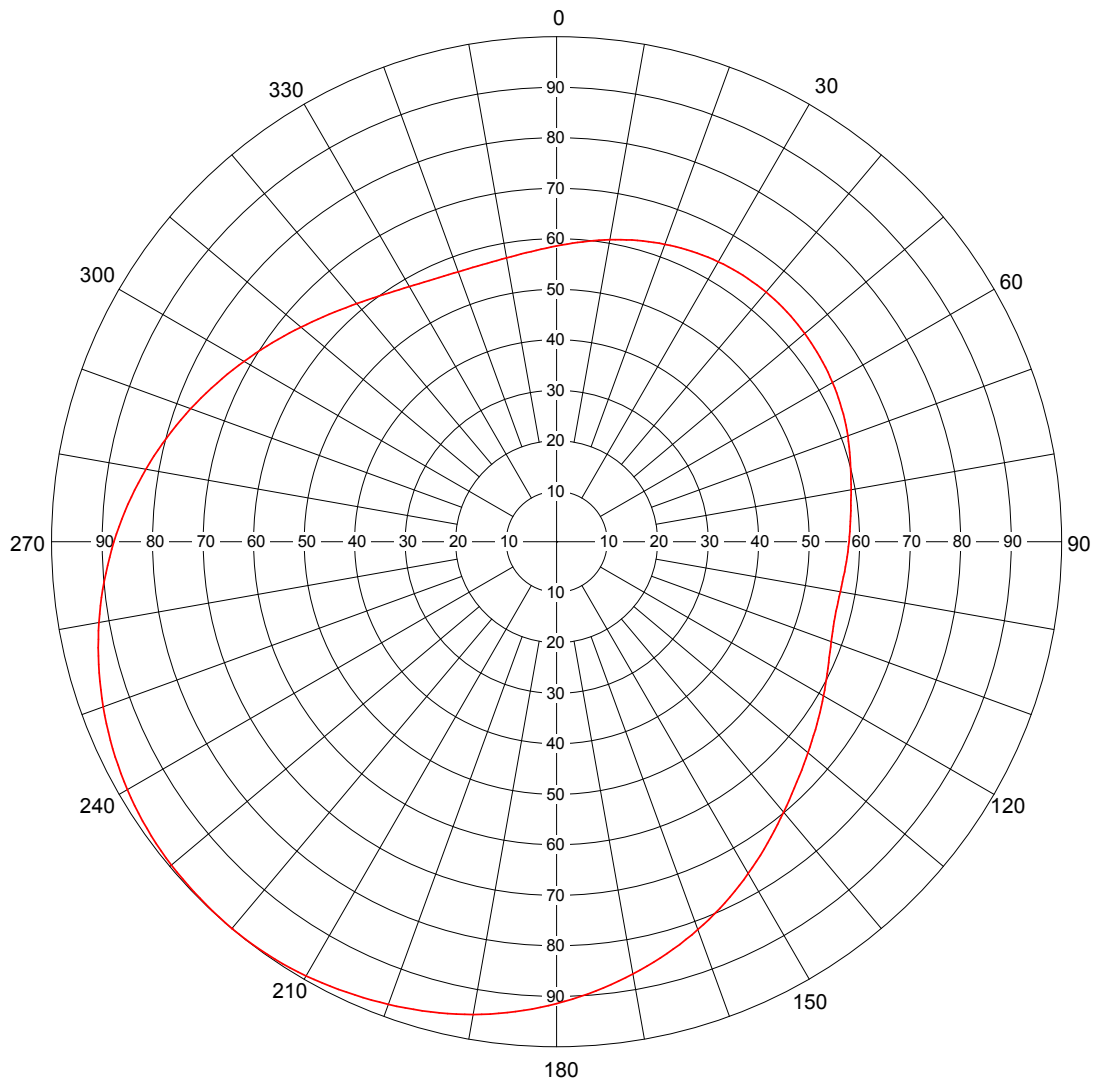


Figure 1
Auxiliary Antenna Azimuthal Pattern
WJHG-TV Panama City, FL
Facility ID 73136
Ch. 16 82 kW 232 m

prepared for
Gray Television Licensee, LLC

August, 2018



Date **10 Aug 2018**
Call Letters
Location
Customer
Antenna Type **TLP-16B**
Channel **16**

ELEVATION PATTERN

RMS Gain at Main Lobe	16.0 (12.04 dB)	Beam Tilt	1.00 Degrees
RMS Gain at Horizontal	11.3 (10.53 dB)	Frequency	485.00 MHz
Calculated / Measured	Calculated	Drawing #	16L160100-90

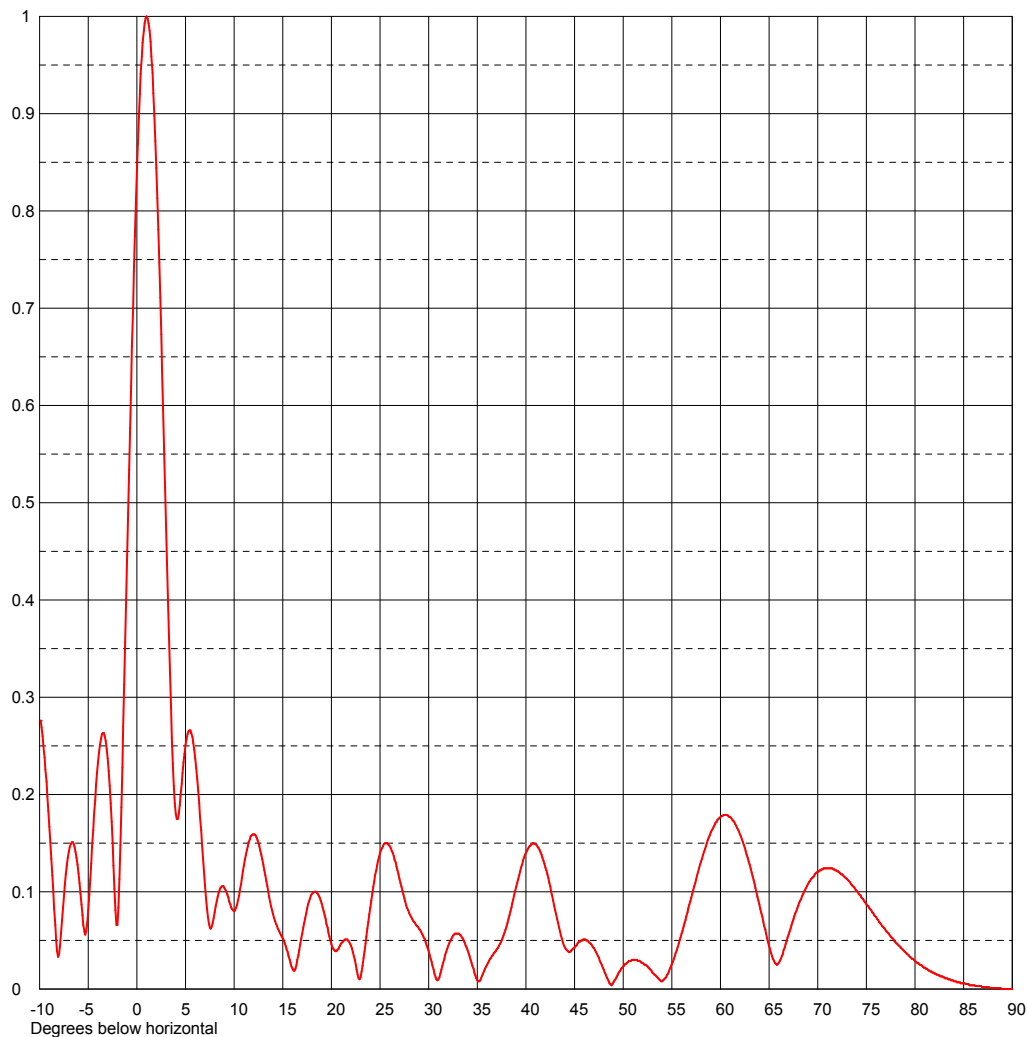


Figure 2
Auxiliary Antenna Elevation Pattern
WJHG-TV Panama City, FL
Facility ID 73136
Ch. 16 82 kW 232 m

prepared for
Gray Television Licensee, LLC

August, 2018



Date **10 Aug 2018**

Call Letters

Channel **16**

Location

Customer

Antenna Type **TLP-16B**

ELEVATION PATTERN

RMS Gain at Main Lobe

16.0 (12.04 dB)

Beam Tilt

1.00 Degrees

RMS Gain at Horizontal

11.3 (10.53 dB)

Frequency

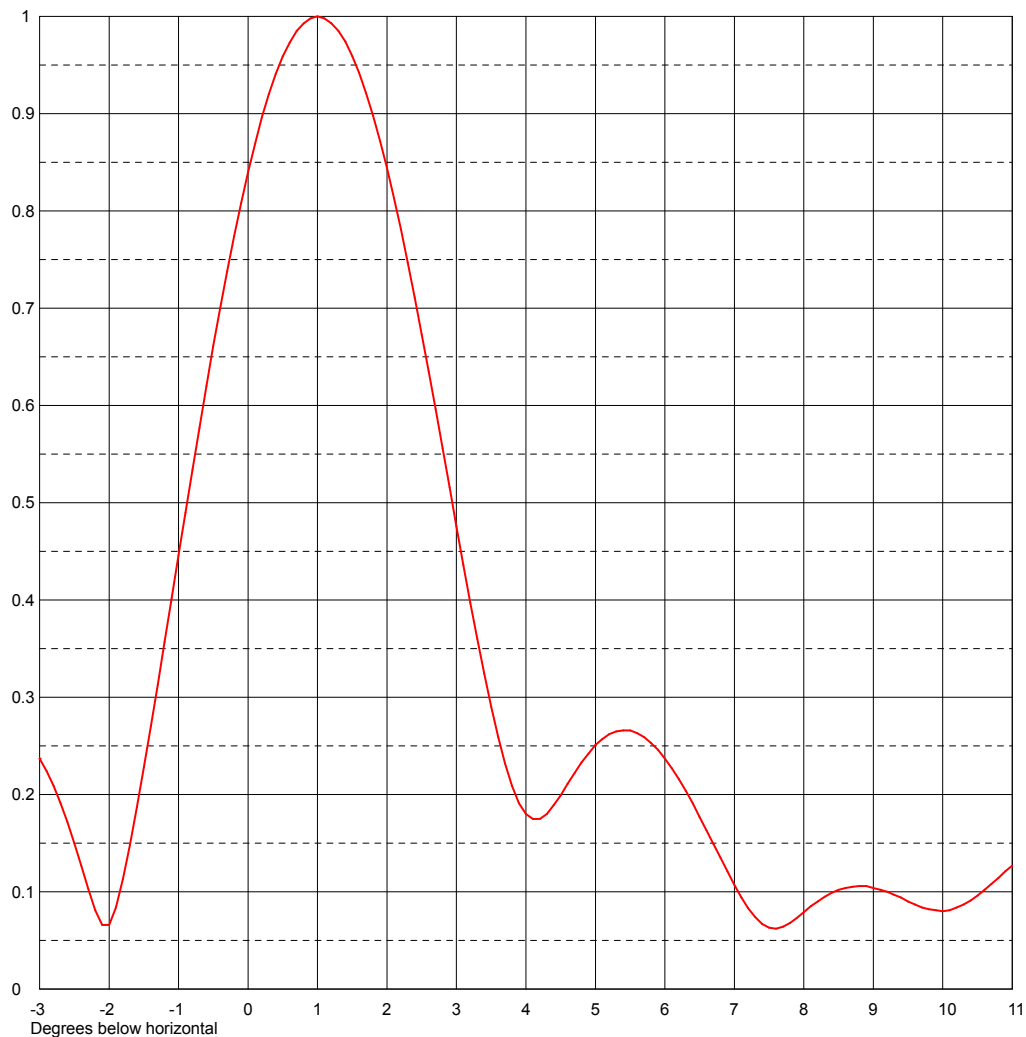
485.00 MHz

Calculated / Measured

Calculated

Drawing #

16L160100



**Figure 2A - Detail
Auxiliary Antenna Elevation Pattern
WJHG-TV Panama City, FL
Facility ID 73136
Ch. 16 82 kW 232 m**

prepared for
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August, 2018



Chesapeake RF Consultants, LLC
Radiofrequency Consulting Engineers
Digital Television and Radio

Figure 3
Proposed Auxiliary Contours
WJHG-TV Panama City, FL
Facility ID 73136
Ch. 16 82 kW 232 m

prepared for
Gray Television Licensee, LLC

August, 2018

Authorized Reassignment Ch. 16
CP File# 0000025385
1000 kW 411 m directional
41 dBμ Contour

Proposed Auxiliary Ch. 16
82 kW 232 m directional
48 dBμ (Principal Community)
41 dBμ (NLSC)

Auxiliary Site

CP Site

Panama City, FL

Scale 1:1,500,000

0 20 40 60 km