

ENGINEERING EXHIBIT

Digital Television Station Application for Minor Modification of Licensed Facility

prepared for

Gray Television Licensee, LLC

WWSB(DT) Sarasota, FL

Facility ID 61251

Ch. 24 410 kW 234 m

Gray Television Licensee, LLC (“Gray”) is the licensee of television station WWSB(DT), Channel 24, Facility ID 61251, Sarasota FL. WWSB is licensed to operate at 90 kW effective radiated power (“ERP”) with a nondirectional antenna having a height above average terrain (“HAAT”) of 234 meters (file# 0000217791). *Gray* herein seeks a minor modification Construction Permit to authorize increased power for WWSB.

No change to the site location or antenna is proposed. The WWSB antenna is top-mounted on the tower structure corresponding to FCC Antenna Structure Registration (“ASR”) number 1028035.

As proposed herein, the WWSB ERP will be increased to 410 kW. The transmitting antenna is an elliptically polarized nondirectional Dielectric model TFU-24JTH/VP-R O4 (25 percent vertical polarization). The proposed horizontally polarized ERP is 410 kW and the corresponding vertically polarized ERP is 102.5 kW.

Figure 1 supplies a map that demonstrates compliance with §73.625(a)(1) regarding coverage of the entire principal community. The proposed WWSB facility’s predicted population exceeds 95 percent of the baseline facility’s population as described in the *Incentive Auction Closing and Channel Reassignment Public Notice* (“CCRPN”, DA 17-317, released April 13, 2017).

The proposed WWSB service contour area expands beyond that established by the *CCRPN*. Interference study per FCC OET Bulletin 69¹ shows that the proposal complies with the 0.5 percent limit of new interference caused to pertinent nearby full service and Class A television stations as required by §73.616. FCC processing of this proposal is requested using a 2.0 km cell size and 0.1 km terrain profile increment. The interference study output report is provided as Table 1.

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 10 percent antenna relative field in downward elevations (pattern data shows less than 10 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 $3.1 \mu\text{W}/\text{cm}^2$, which is 0.9 percent of the general population/uncontrolled maximum permitted exposure limit. This is 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 WWSB 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.

¹FCC Office of Engineering and Technology Bulletin number 69, *Longley-Rice Methodology for Evaluating TV Coverage and Interference*, February 6, 2004 ("OET-69"). This analysis employed the FCC's current "TVStudy" software with the default application processing template settings, 2 km cell size, and 0.1 km terrain increment. Comparisons of various results of this computer program (run on a Mac processor) to the FCC's implementation of TVStudy show excellent correlation.

Engineering Exhibit
Gray Television Licensee, LLC (WWSB)
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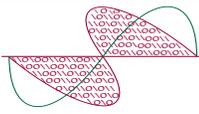


List of Attachments

Figure 1 Proposed Coverage Contours
Table 1 TVStudy Analysis of Proposal
Form 2100 Saved Version of Engineering Sections from FCC Form at Time of Upload

Chesapeake RF Consultants, LLC

Joseph M. Davis, P.E. July 24, 2023
207 Old Dominion Road Yorktown, VA 23692 703-650-9600

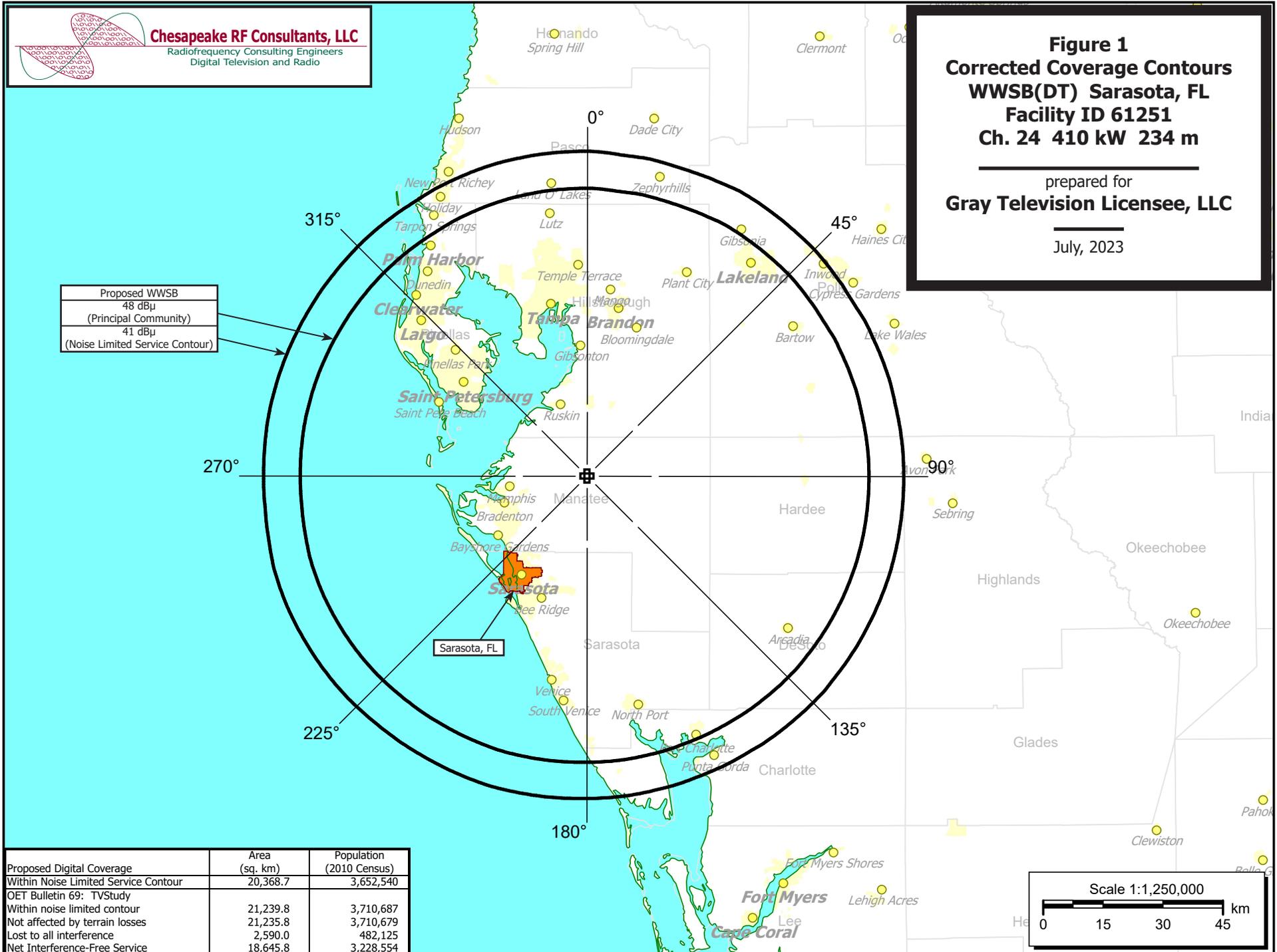


Chesapeake RF Consultants, LLC
 Radiofrequency Consulting Engineers
 Digital Television and Radio

Figure 1
Corrected Coverage Contours
WWSB(DT) Sarasota, FL
Facility ID 61251
Ch. 24 410 kW 234 m

prepared for
Gray Television Licensee, LLC
 July, 2023

Proposed WWSB
48 dBμ
(Principal Community)
41 dBμ
(Noise Limited Service Contour)



Proposed Digital Coverage	Area (sq. km)	Population (2010 Census)
Within Noise Limited Service Contour	20,368.7	3,652,540
OET Bulletin 69: TVStudy		
Within noise limited contour	21,239.8	3,710,687
Not affected by terrain losses	21,235.8	3,710,679
Lost to all interference	2,590.0	482,125
Net Interference-Free Service	18,645.8	3,228,554

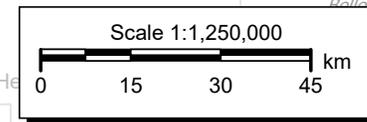


Table 1 WWSB TV Study Analysis of Proposal
 (page 1 of 3)



tvstudy v2.2.5 (4uoc83)
 Database: localhost, Study: WWSB_410kW 2.0-0.1, Model: Longley-Rice
 Start: 2023.07.24 09:21:02

Study created: 2023.07.24 09:21:02

Study build station data: LMS TV 2023-07-24

Proposal: WWSB D24 DT APP SARASOTA, FL
 File number: WWSB_410kW
 Facility ID: 61251
 Station data: User record
 Record ID: 38
 Country: U.S.
 Zone: III

Search options:
 Baseline record excluded if station has CP

Stations potentially affected by proposal:

IX	Call	Chan	Svc	Status	City, State	File Number	Distance
Yes	WKCF	D23	DT	LIC	CLERMONT, FL	BLANK0000143772	170.0 km
No	WLTW-DT	D23	DT	LIC	MIAMI, FL	BLANK0000205147	276.5
No	WAMI-DT	D24	DT	LIC	HOLLYWOOD, FL	BLANK0000068250	277.5
Yes	WYKE-CD	D24	DC	LIC	INGLIS/YANKEETOWN, FL	BLANK0000099919	148.1
Yes	WDSC-TV	D24	DT	LIC	NEW SMYRNA BEACH, FL	BLANK0000090505	173.4
No	WTLF	D24	DT	LIC	TALLAHASSEE, FL	BLANK0000210947	380.5
No	WPXC-TV	D24	DT	LIC	BRUNSWICK, GA	BLCDT20110426AAQ	368.4
No	WBEC-TV	D25	DT	LIC	BOCA RATON, FL	BLANK0000064037	277.5
Yes	WFTT-TV	D25	DT	LIC	VENICE, FL	BLANK0000001148	30.8

No non-directional AM stations found within 0.8 km

No directional AM stations found within 3.2 km

Record parameters as studied:

Channel: D24
 Latitude: 27 33 30.40 N (NAD83)
 Longitude: 82 21 57.10 W
 Height AMSL: 247.7 m
 HAAT: 233.9 m
 Peak ERP: 410 kW
 Antenna: Omnidirectional
 Elev Pattn: Generic
 Elec Tilt: 0.50

39.8 dBu contour:

Azimuth	ERP	HAAT	Distance
0.0 deg	410 kW	240.6 m	82.8 km
45.0	410	230.2	81.9
90.0	410	218.3	81.0
135.0	410	227.2	81.7
180.0	410	233.4	82.2
225.0	410	243.2	83.0
270.0	410	237.7	82.5
315.0	410	240.1	82.7

Distance to Canadian border: 1569.2 km

Distance to Mexican border: 1454.6 km

Conditions at FCC monitoring station: Vero Beach FL
 Bearing: 87.8 degrees Distance: 170.6 km

Proposal is not within the West Virginia quiet zone area

Conditions at Table Mountain receiving zone:
 Bearing: 309.5 degrees Distance: 2518.4 km

Study cell size: 2.00 km
 Profile point spacing: 0.10 km

Table 1 WWSB TV Study Analysis of Proposal
(page 2 of 3)



Maximum new IX to full-service and Class A: 0.50%
Maximum new IX to LPTV: 2.00%

Interference to BLANK0000143772 LIC scenario 1

Call	Chan	Svc	Status	City, State	File Number	Distance			
Desired: WKCF	D23	DT	LIC	CLERMONT, FL	BLANK0000143772				
Undesireds: WWSB	D24	DT	BL	SARASOTA, FL	DTVBL61251	170.0 km			
WWSB	D24	DT	APP	SARASOTA, FL	WWSB_410kW	170.0			
WLTV-DT	D23	DT	LIC	MIAMI, FL	BLANK0000205147	303.1			
WYKE-CD	D24	DC	LIC	INGLIS/YANKEETOWN, FL	BLANK0000099919	144.1			
Service area	Terrain-limited	IX-free, before	IX-free, after	Percent New IX					
40690.7	4,241,181	40650.2	4,239,361	40461.1	4,233,928	40416.6	4,214,314	0.11	0.46
Undesired		Total IX	Unique IX, before	Unique IX, after					
WWSB D24 DT BL	4.1	2,272	0.0	0					
WWSB D24 DT APP	48.6	21,886		44.6	19,614				
WLTV-DT D23 DT LIC	24.3	2,609	20.3	337	20.3	337			
WYKE-CD D24 DC LIC	164.8	2,824	164.8	2,824	164.8	2,824			

Interference to BLANK0000099919 LIC scenario 1

Call	Chan	Svc	Status	City, State	File Number	Distance			
Desired: WYKE-CD	D24	DC	LIC	INGLIS/YANKEETOWN, FL	BLANK0000099919				
Undesireds: WWSB	D24	DT	BL	SARASOTA, FL	DTVBL61251	148.4 km			
WWSB	D24	DT	APP	SARASOTA, FL	WWSB_410kW	148.1			
WTLF	D24	DT	LIC	TALLAHASSEE, FL	BLANK0000210947	243.8			
Service area	Terrain-limited	IX-free, before	IX-free, after	Percent New IX					
4394.3	231,446	4390.2	231,061	4358.0	227,740	4354.0	227,733	0.09	0.00
Undesired		Total IX	Unique IX, before	Unique IX, after					
WWSB D24 DT BL	8.1	1,033	8.1	1,033					
WWSB D24 DT APP	20.1	2,429		12.1	1,040				
WTLF D24 DT LIC	24.2	2,288	24.2	2,288	16.1	899			

Interference to BLANK0000090505 LIC scenario 1

Call	Chan	Svc	Status	City, State	File Number	Distance			
Desired: WDSC-TV	D24	DT	LIC	NEW SMYRNA BEACH, FL	BLANK0000090505				
Undesireds: WWSB	D24	DT	BL	SARASOTA, FL	DTVBL61251	173.4 km			
WWSB	D24	DT	APP	SARASOTA, FL	WWSB_410kW	173.4			
WKCF	D23	DT	LIC	CLERMONT, FL	BLANK0000143772	3.4			
WYKE-CD	D24	DC	LIC	INGLIS/YANKEETOWN, FL	BLANK0000099919	145.8			
WTLF	D24	DT	LIC	TALLAHASSEE, FL	BLANK0000210947	363.5			
WPXC-TV	D24	DT	LIC	BRUNSWICK, GA	BLCDT20110426AAQ	255.1			
WJGV-CD	D25	DC	LIC	PALATKA, FL	BLDTA20110519ACL	124.5			
Service area	Terrain-limited	IX-free, before	IX-free, after	Percent New IX					
28958.3	3,389,559	28958.3	3,389,559	28402.8	3,346,398	28205.0	3,333,057	0.70	0.40
Undesired		Total IX	Unique IX, before	Unique IX, after					
WWSB D24 DT BL	101.1	14,812	64.7	11,483					
WWSB D24 DT APP	431.7	31,425		262.5	24,824				
WKCF D23 DT LIC	261.9	14,142	165.2	5,473	96.6	5,002			
WYKE-CD D24 DC LIC	249.3	20,772	136.7	12,275	104.5	11,246			
WTLF D24 DT LIC	8.0	0	0.0	0	0.0	0			
WPXC-TV D24 DT LIC	60.1	4,034	32.0	2,005	28.0	1,910			
WJGV-CD D25 DC LIC	20.0	663	20.0	663	20.0	663			

Interference to BLANK0000001148 LIC scenario 1

Call	Chan	Svc	Status	City, State	File Number	Distance
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Table 1 WWSB TVStudy Analysis of Proposal
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Desired:	WFTT-TV	D25	DT	LIC	VENICE, FL	BLANK000001148				
Undesireds:	WWSB	D24	DT	BL	SARASOTA, FL	DTVBL61251	31.0	km		
	WWSB	D24	DT	APP	SARASOTA, FL	WWSB_410kW	30.8			
	WYKE-CD	D24	DC	LIC	INGLIS/YANKEETOWN, FL	BLANK0000099919	121.0			
	WBEC-TV	D25	DT	LIC	BOCA RATON, FL	BLANK0000064037	289.0			
	WHDN-CD	D26	DC	CP	NAPLES, FL	BLANK0000159121	151.6			
	WKMG-TV	D26	DT	LIC	ORLANDO, FL	BLANK0000149963	146.8			
	Service area		Terrain-limited		IX-free, before	IX-free, after	Percent New IX			
	32904.6	4,523,828	32896.6	4,523,596	32392.1	4,468,200	32388.1	4,468,200	0.01	0.00
Undesired				Total IX	Unique IX, before	Unique IX, after				
WWSB D24 DT BL				0.0	0	0				
WWSB D24 DT APP				4.0	0	4.0		0		
WYKE-CD D24 DC LIC				144.9	5,008	144.9	5,008	144.9	5,008	
WBEC-TV D25 DT LIC				4.0	1,121	4.0	1,121	4.0	1,121	
WKMG-TV D26 DT LIC				355.6	49,267	355.6	49,267	355.6	49,267	

Interference to proposal scenario 1
12.99% interference received

Desired:	Call	Chan	Svc	Status	City, State	File Number	Distance	
	WWSB	D24	DT	APP	SARASOTA, FL	WWSB_410kW		
Undesireds:	WYKE-CD	D24	DC	LIC	INGLIS/YANKEETOWN, FL	BLANK0000099919	148.1 km	
	WDSC-TV	D24	DT	LIC	NEW SMYRNA BEACH, FL	BLANK0000090505	173.4	
	WFTT-TV	D25	DT	LIC	VENICE, FL	BLANK0000001148	30.8	
	Service area		Terrain-limited		IX-free	Percent IX		
	21239.8	3,710,687	21235.8	3,710,679	18645.8	3,228,554	12.20	12.99
Undesired				Total IX	Unique IX	Prcnt Unique IX		
WYKE-CD D24 DC LIC				20.2	5,627	0.0	0.00	0.00
WDSC-TV D24 DT LIC				830.0	162,826	93.0	0.44	0.36
WFTT-TV D25 DT LIC				2496.9	468,854	1743.8	8.21	8.46

**Channel and
Facility
Information**

Section	Question	Response
Proposed Community of License	Facility ID	61251
	State	Florida
	City	SARASOTA
	DTV Channel	24
	Designated Market Area	Tampa-St. Pete (Sarasota)
Facility Type	Facility Type	Commercial
	Station Type	Main
Zone	Zone	3

**Antenna Location
Data**

Section	Question	Response
Antenna Structure Registration	Do you have an FCC Antenna Structure Registration (ASR) Number?	Yes
	ASR Number	1028035
Coordinates (NAD83)	Latitude	27° 33' 30.4" N+
	Longitude	082° 21' 57.1" W-
	Structure Type	GTOWER-Guyed Structure Used for Communication Purposes
	Overall Structure Height	248.4 meters
	Support Structure Height	230.4 meters
	Ground Elevation (AMSL)	9.7 meters
Antenna Data	Height of Radiation Center Above Ground Level	238 meters
	Height of Radiation Center Above Average Terrain	233.9 meters
	Height of Radiation Center Above Mean Sea Level	247.7 meters
	Effective Radiated Power	410 kW

**Antenna
Technical Data**

Section	Question	Response
Antenna Type	Antenna Type	Non-Directional
	Do you have an Antenna ID?	
	Antenna ID	
Antenna Manufacturer and Model	Manufacturer:	Dielectric
	Model	TFU-24JTH/VP O4
	Rotation	
	Electrical Beam Tilt	0.5
	Mechanical Beam Tilt	Not Applicable
	toward azimuth	
	Polarization	Elliptical
DTV and DTS: Elevation Pattern	Does the proposed antenna propose elevation radiation patterns that vary with azimuth for reasons other than the use of mechanical beam tilt?	No
	Uploaded file for elevation antenna (or radiation) pattern data	