

## **ENGINEERING EXHIBIT**

### **Incentive Auction Channel Reassignment**

#### **Application for Modification of Digital Television Station Construction Permit**

prepared for

**Hearst Properties Inc.**

WMOR-TV Lakeland, FL

Facility ID 53819

Ch. 18 1000 kW 459 m

*Hearst Properties Inc. ("Hearst")* is the licensee of digital television station WMOR-TV, Channel 19, Facility ID 53819, Lakeland, FL. Reassignment of WMOR-TV from Channel 19 to Channel 18 was specified in the *Incentive Auction Closing and Channel Reassignment Public Notice* ("CCRPN", DA 17-317, released April 13, 2017). A Construction Permit ("CP" file# 0000034551) authorizes WMOR-TV to operate on Channel 18 at 1000 kW effective radiated power ("ERP") with a nondirectional antenna at 478 meters height above average terrain ("HAAT"). *Hearst* proposes herein a minor modification of the reassignment CP to reduce the antenna HAAT to 459 m and use a different nondirectional antenna. No other changes are sought.

The WMOR-TV Channel 18 CP authorizes operation with a new shared broadband antenna that was to be installed and owned by the tower structure owner, American Tower Corporation ("ATC"). ATC has advised *Hearst* that the planned broadband antenna will not be installed, but will instead permit WMOR-TV to replace its existing individual station antenna.

Therefore, the proposed Channel 18 operation will employ a new antenna system to be installed on ATC's candelabra tower in lieu of the existing WMOR-TV Channel 19 antenna. As with the licensed WMOR-TV Channel 19 antenna, the proposed Channel 18 antenna will be the bottom antenna in a stack of two television station antennas. The existing tower structure corresponds to FCC Antenna Structure Registration number 1057473. No change to the overall structure height will result.

*Hearst* proposes herein to operate WMOR-TV with an ERP of 1000 kW at 459 meters antenna HAAT. The proposed antenna is a horizontally polarized nondirectional Dielectric model TFU-30GBH O8.

Figure 1 supplies a map that demonstrates compliance with §73.625(a)(1) regarding coverage of the entire principal community. The proposed facility's predicted population exceeds 95 percent of the *CCRPN* baseline facility's population.

At 1000 kW ERP and 478 m HAAT, the presently authorized WMOR-TV noise limited service contour ("NLSC") extends beyond that of the *CCRPN* facility and resulted from a minor modification application filed during the second filing window.<sup>1</sup> The modification sought herein to reduce antenna HAAT to 459 meters provides an NLSC which also exceeds that of the *CCRPN* facility (976 kW ERP at 458 m HAAT) but is within that of the present authorization.

Interference study per FCC OET Bulletin 69<sup>2</sup> shows that the proposal complies with the 0.5 percent limit of new interference caused to pertinent nearby post-auction full service and Class A television stations and reassignments as required by §73.616. The interference study output report is provided as Table 1.

The proposed 1000 kW ERP exceeds the maximum permitted by §73.622(f)(8)(i) for the proposed antenna HAAT of 459 meters. Section 73.622(f)(5) permits the maximum ERP to be exceeded in order to provide the same geographic coverage area as the largest station within the same market. As demonstrated in Figure 2, the total area within the proposed WMOR-TV NLSC is 38,934 square kilometers, which does not exceed the NLSC area of WTVT(DT)

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<sup>1</sup>Public Notice "Incentive Auction Task Force and Media Bureau Announce the Opening of the Second Filing Window for Eligible Full Power and Class A Television Station—October 3 Through November 2, 2017" DA 17-911, released September 20, 2017.

<sup>2</sup>FCC 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 1 km terrain profile increment. Comparisons of various results of this computer program (run on a Mac processor) to the FCC's implementation of TVStudy show excellent correlation.

(43,998 sq. km, Ch. 12, Tampa FL, BLCDT-20080410AAF). Thus, the 1000 kW ERP specified herein is in compliance with §73.622(f)(5).

### **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  $1.6 \mu\text{W}/\text{cm}^2$ , which is 0.5 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. No increase in structure height is proposed.

#### List of Attachments

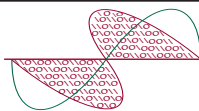
Figure 1	Proposed Coverage Contours
Figure 2	Maximum ERP power §73.622(f)
Table 1	TVStudy Analysis of Proposal
Form 2100	Saved Version of Engineering Sections from FCC Form at Time of Upload

### **Chesapeake RF Consultants, LLC**

Joseph M. Davis, P.E.  
207 Old Dominion Road

December 20, 2018  
Yorktown, VA 23692

703-650-9600



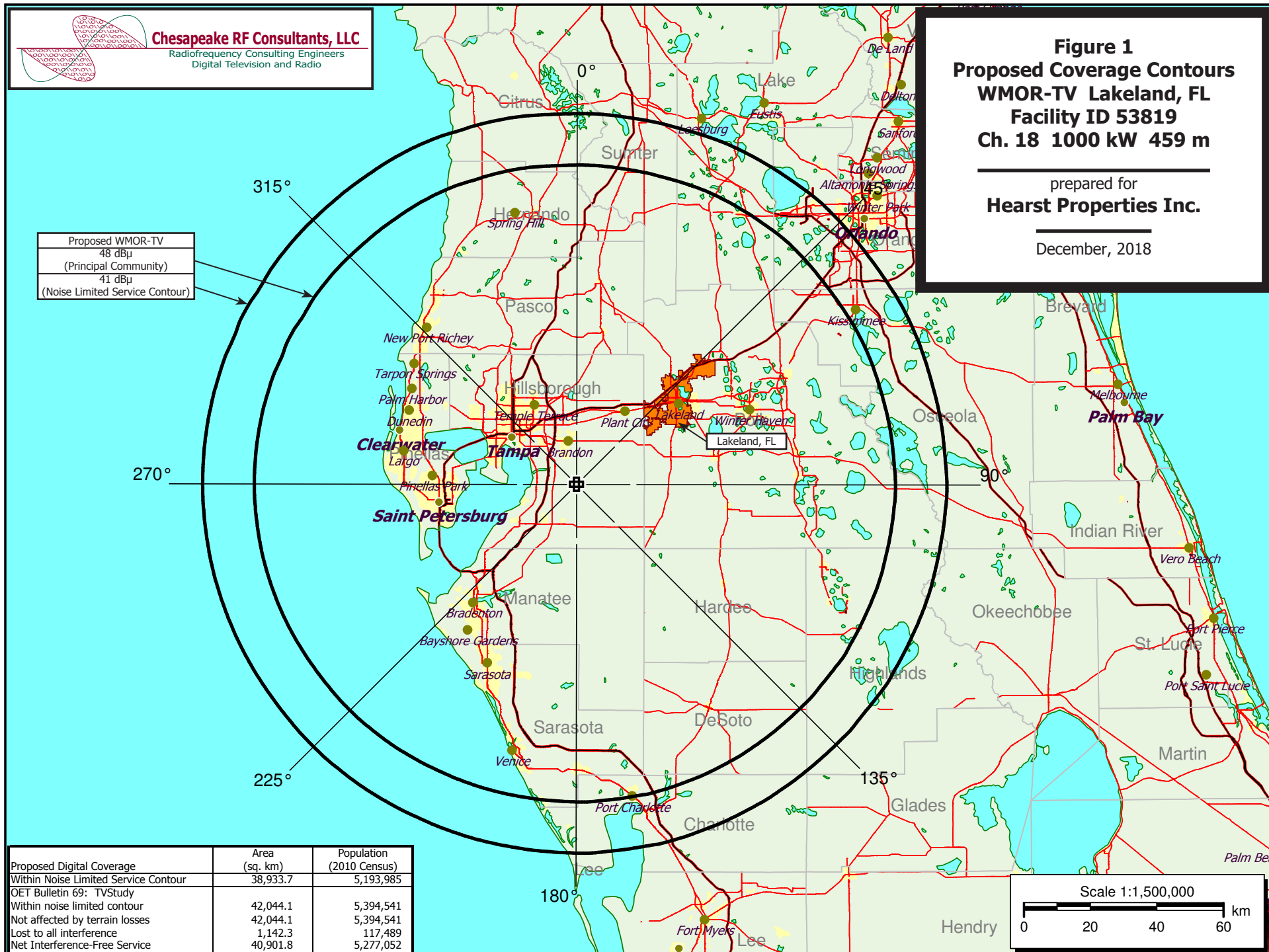
**Chesapeake RF Consultants, LLC**  
Radiofrequency Consulting Engineers  
Digital Television and Radio

**Figure 1**  
**Proposed Coverage Contours**  
**WMOR-TV Lakeland, FL**  
**Facility ID 53819**  
**Ch. 18 1000 kW 459 m**

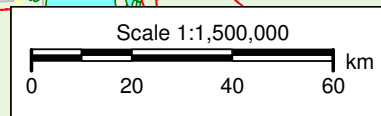
prepared for  
**Hearst Properties Inc.**

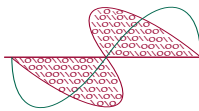
December, 2018

Proposed WMOR-TV
48 dBu
(Principal Community)
41 dBu
(Noise Limited Service Contour)



Proposed Digital Coverage	Area (sq. km)	Population (2010 Census)
Within Noise Limited Service Contour	38,933.7	5,193,985
OET Bulletin 69: TVStudy		
Within noise limited contour	42,044.1	5,394,541
Not affected by terrain losses	42,044.1	5,394,541
Lost to all interference	1,142.3	117,489
Net Interference-Free Service	40,901.8	5,277,052





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

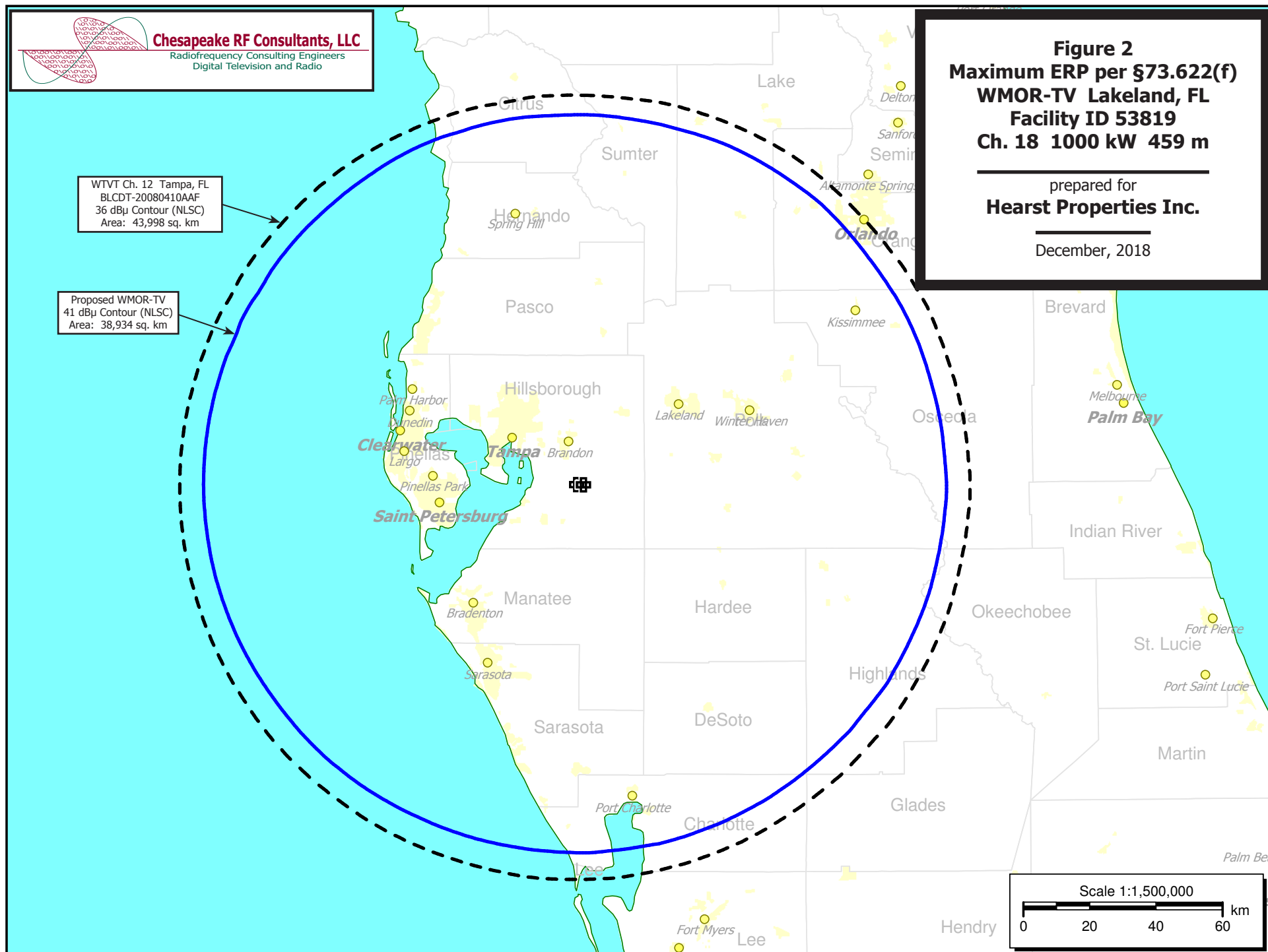
**Figure 2**  
**Maximum ERP per §73.622(f)**  
**WMOR-TV Lakeland, FL**  
**Facility ID 53819**  
**Ch. 18 1000 kW 459 m**

prepared for  
**Hearst Properties Inc.**

December, 2018

WTVT Ch. 12 Tampa, FL  
BLCDT-20080410AAF  
36 dBμ Contour (NLSC)  
Area: 43,998 sq. km

Proposed WMOR-TV  
41 dBμ Contour (NLSC)  
Area: 38,934 sq. km



**Table 1 WMOR-TV TVStudy Analysis of Proposal**  
(page 1 of 3)



tvstudy v2.2.5 (4uoc83)

Database: localhost, Study: WMOR-TV 1000kW Bottom Prop #8455, Model: Longley-Rice  
Start: 2018.12.20 10:21:53

Study created: 2018.12.20 10:21:53

Study build station data: LMS TV 2018-12-19

Proposal: WMOR-TV D18 DT APP LAKE LAND, FL  
File number: WMOR-TV 1000kW Bottom Prop  
Facility ID: 53819  
Station data: User record  
Record ID: 2444  
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
No	WTCN-CA	D17	DC	CP	PALM BEACH, FL	BLANK0000033632	223.6 km
Yes	WFTS-TV	D17	DT	CP	TAMPA, FL	BLANK0000034831	2.5
Yes	WTCE-TV	D18	DT	CP	FORT PIERCE, FL	BLANK0000034883	223.6
Yes	WJXT	D18	DT	CP	JACKSONVILLE, FL	BLANK0000034420	281.3
Yes	WTOG	D19	DT	CP	ST. PETERSBURG, FL	BLANK0000064125	1.2

No non-directional AM stations found within 0.8 km

No directional AM stations found within 3.2 km

Record parameters as studied:

Channel: D18  
Latitude: 27 49 10.80 N (NAD83)  
Longitude: 82 15 38.00 W  
Height AMSL: 479.2 m  
HAAT: 459.0 m  
Peak ERP: 1000 kW  
Antenna: Omnidirectional  
Elev Pattn: Generic  
Elec Tilt: 0.75

39.1 dBu contour:

Azimuth	ERP	HAAT	Distance
0.0 deg	1000 kW	458.8 m	115.7 km
45.0	1000	462.4	116.0
90.0	1000	456.0	115.5
135.0	1000	445.8	114.7
180.0	1000	450.3	115.1
225.0	1000	460.5	115.9
270.0	1000	469.6	116.5
315.0	1000	468.2	116.4

ERP exceeds maximum

ERP: 1000 kW ERP maximum: 634 kW

Distance to Canadian border: 1540.2 km

Distance to Mexican border: 1467.0 km

Conditions at FCC monitoring station: Vero Beach FL  
Bearing: 98.1 degrees Distance: 161.7 km

Proposal is not within the West Virginia quiet zone area

Conditions at Table Mountain receiving zone:  
Bearing: 309.0 degrees Distance: 2508.0 km

No land mobile station failures found

**Table 1 WMOR-TV TVStudy Analysis of Proposal**  
(page 2 of 3)



Study cell size: 2.00 km  
Profile point spacing: 1.00 km

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

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Interference to BLANK0000034831 CP scenario 1

	Call	Chan	Svc	Status	City, State	File Number	Distance
Desired:	WFTS-TV	D17	DT	CP	TAMPA, FL	BLANK0000034831	
Undesireds:	WMOR-TV	D18	DT	BL	LAKELAND, FL	DTVBL53819	2.5 km
	WMOR-TV	D18	DT	APP	LAKELAND, FL	WMOR-TV 1000kW Bottom	2.5
	WFXU	D17	DT	CP	LIVE OAK, FL	BLANK0000026640	309.7
	WTCN-CA	D17	DC	CP	PALM BEACH, FL	BLANK0000033632	224.7
Service area		Terrain-limited		IX-free, before		IX-free, after	Percent New IX
40227.4 5,236,379		40219.4 5,236,287		40175.5 5,234,683		40175.5 5,234,683	0.00 0.00
Undesired		Total IX		Unique IX, before		Unique IX, after	
WMOR-TV D18 DT BL		20.0 788		20.0 788			
WMOR-TV D18 DT APP		20.0 788		20.0 788			
WTCN-CA D17 DC CP		23.8 816		23.8 816			

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Interference to BLANK0000034831 CP scenario 2

	Call	Chan	Svc	Status	City, State	File Number	Distance
Desired:	WFTS-TV	D17	DT	CP	TAMPA, FL	BLANK0000034831	
Undesireds:	WMOR-TV	D18	DT	BL	LAKELAND, FL	DTVBL53819	2.5 km
	WMOR-TV	D18	DT	APP	LAKELAND, FL	WMOR-TV 1000kW Bottom	2.5
	WFXU	D17	DT	APP	LIVE OAK, FL	BLANK0000034412	313.0
	WTCN-CA	D17	DC	CP	PALM BEACH, FL	BLANK0000033632	224.7
Service area		Terrain-limited		IX-free, before		IX-free, after	Percent New IX
40227.4 5,236,379		40219.4 5,236,287		40095.2 5,229,524		40095.2 5,229,524	0.00 0.00
Undesired		Total IX		Unique IX, before		Unique IX, after	
WMOR-TV D18 DT BL		20.0 788		20.0 788			
WMOR-TV D18 DT APP		20.0 788		20.0 788			
WFXU D17 DT APP		80.4 5,159		80.4 5,159			
WTCN-CA D17 DC CP		23.8 816		23.8 816			

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Interference to BLANK0000034883 CP scenario 1

	Call	Chan	Svc	Status	City, State	File Number	Distance
Desired:	WTCE-TV	D18	DT	CP	FORT PIERCE, FL	BLANK0000034883	
Undesireds:	WMOR-TV	D18	DT	BL	LAKELAND, FL	DTVBL53819	223.6 km
	WMOR-TV	D18	DT	APP	LAKELAND, FL	WMOR-TV 1000kW Bottom	223.6
	WSBS-CD	D19	DC	CP	MIAMI, ETC., FL	BLANK0000034105	115.5
Service area		Terrain-limited		IX-free, before		IX-free, after	Percent New IX
24305.2 2,620,599		24305.2 2,620,599		24297.3 2,620,556		24293.2 2,620,539	0.02 0.00
Undesired		Total IX		Unique IX, before		Unique IX, after	
WMOR-TV D18 DT BL		4.0 43		4.0 43			
WMOR-TV D18 DT APP		8.0 60		8.0 60			
WSBS-CD D19 DC CP		4.0 0		4.0 0			

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Interference to BLANK0000034420 CP scenario 1

	Call	Chan	Svc	Status	City, State	File Number	Distance
Desired:	WJXT	D18	DT	CP	JACKSONVILLE, FL	BLANK0000034420	
Undesireds:	WMOR-TV	D18	DT	BL	LAKELAND, FL	DTVBL53819	281.3 km
	WMOR-TV	D18	DT	APP	LAKELAND, FL	WMOR-TV 1000kW Bottom	281.3
	WFXU	D17	DT	CP	LIVE OAK, FL	BLANK0000026640	143.3

**Table 1 WMOR-TV TVStudy Analysis of Proposal**  
(page 3 of 3)



Service area		Terrain-limited		IX-free, before		IX-free, after		Percent New IX	
27971.8	1,622,616	27971.8	1,622,616	27704.3	1,617,402	27688.4	1,616,563	0.06	0.05

Undesired		Total IX		Unique IX, before		Unique IX, after	
WMOR-TV D18 DT BL	267.5	5,214	267.5	5,214			
WMOR-TV D18 DT APP	283.4	6,053			283.4	6,053	

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Interference to BLANK0000064125 CP scenario 1

Desired:	Call	Chan	Svc	Status	City, State	File Number	Distance
	WTOG	D19	DT	CP	ST. PETERSBURG, FL	BLANK0000064125	
Undesireds:	WMOR-TV	D18	DT	BL	LAKELAND, FL	DTVBL53819	1.2 km
	WMOR-TV	D18	DT	APP	LAKELAND, FL	WMOR-TV 1000kW Bottom	1.2
	WJAX-TV	D19	DT	LIC	JACKSONVILLE, FL	BLCDT20030328ANV	280.7
	WTLH	D19	DT	CP	BAINBRIDGE, GA	BLANK0000034478	357.5
	WVEA-TV	D20	DT	CP	TAMPA, FL	BLANK0000034006	2.0

Service area		Terrain-limited		IX-free, before		IX-free, after		Percent New IX	
39252.4	5,252,656	39232.2	5,252,360	38838.0	5,171,824	38838.0	5,171,824	0.00	0.00

Undesired		Total IX		Unique IX, before		Unique IX, after	
WMOR-TV D18 DT BL	16.0	529	16.0	529			
WMOR-TV D18 DT APP	16.0	529			16.0	529	
WJAX-TV D19 DT LIC	374.3	80,007	362.2	79,254	362.2	79,254	
WTLH D19 DT CP	12.1	753	0.0	0	0.0	0	
WVEA-TV D20 DT CP	4.0	0	4.0	0	4.0	0	

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Interference to proposal scenario 1  
2.18% interference received

Desired:	Call	Chan	Svc	Status	City, State	File Number	Distance
	WMOR-TV	D18	DT	APP	LAKELAND, FL	WMOR-TV 1000kW Bottom	
Undesireds:	WFTS-TV	D17	DT	CP	TAMPA, FL	BLANK0000034831	2.5 km
	WTCE-TV	D18	DT	CP	FORT PIERCE, FL	BLANK0000034883	223.6
	WJXT	D18	DT	CP	JACKSONVILLE, FL	BLANK0000034420	281.3
	WTOG	D19	DT	CP	ST. PETERSBURG, FL	BLANK0000064125	1.2

Service area		Terrain-limited		IX-free		Percent IX	
42044.1	5,394,541	42044.1	5,394,541	40901.8	5,277,052	2.72	2.18

Undesired		Total IX		Unique IX		Prcnt Unique IX	
WFTS-TV D17 DT CP	16.1	3,412	16.1	3,412	0.04	0.06	
WTCE-TV D18 DT CP	828.6	37,893	735.8	15,651	1.75	0.29	
WJXT D18 DT CP	382.3	98,054	289.5	75,812	0.69	1.41	
WTOG D19 DT CP	8.1	372	8.1	372	0.02	0.01	



**Channel and  
Facility  
Information**

Section	Question	Response
Proposed Community of License	Facility ID	53819
	State	Florida
	City	LAKELAND
	DTV Channel	18
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	1057473
Coordinates (NAD83)	Latitude	27° 49' 10.8" N+
	Longitude	082° 15' 38.0" W-
	Structure Type	GTOWER-Guyed Structure Used for Communication Purposes
	Overall Structure Height	485.5 meters
	Support Structure Height	440.1 meters
	Ground Elevation (AMSL)	22.9 meters
Antenna Data	Height of Radiation Center Above Ground Level	456.3 meters
	Height of Radiation Center Above Average Terrain	459.0 meters
	Height of Radiation Center Above Mean Sea Level	479.2 meters
	Effective Radiated Power	1000 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:	DIE
	Model	TFU-30GBH O8
	Rotation	
	Electrical Beam Tilt	0.75
	Mechanical Beam Tilt	Not Applicable
	toward azimuth	
	Polarization	Horizontal
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	

**Construction  
Permit  
Certifications**

Section	Question	Response
<b>Post-Incentive Auction Expedited Processing</b>	It will operate on the DTV channel for this station as established in the post-incentive auction channel reassignment public notice.	Yes
	It will operate post-incentive auction facilities that do not expand the noise-limited service contour in any direction beyond that established by the post-incentive auction channel reassignment public notice.	No
	It will operate post-incentive auction facilities that match or reduce by no more than five percent with respect to predicted population from those defined in the post-incentive auction channel reassignment public notice.	Yes
	The antenna structure to be used by this facility has been registered by the Commission and will not require re-registration to support the proposed antenna, OR the FAA has previously determined that the proposed structure will not adversely affect safety in air navigation and this structure qualifies for later registration under the Commission's phased registration plan, OR the proposed installation on this structure does not require notification to the FAA pursuant to 47 C.F.R. Section 17.7.	Yes
<b>Environmental Effect</b>	Would a Commission grant of Authorization for this location be an action which may have a significant environmental effect? (See Section 1.1306 of 47 C.F.R.)	No
<b>Broadcast Facility</b>	The proposed facility complies with the applicable engineering standards and assignment requirements of 47 C. F.R. Sections 73.616, 73.622(i), 73.623(e), 73.625, 73.1030, and 73.1125.	Yes