

ENGINEERING EXHIBIT

Digital Low Power Television Station Application for Minor Modification of Licensed Facility prepared for

Gray Television Licensee, LLC
WTGB-LD Jasper, FL
Facility ID 186186
Ch. 34 2.5 kW Directional

Gray Television Licensee, LLC (“Gray”) is the licensee of digital Low Power Television station WTGB-LD, Channel 34, Facility ID 186186, Jasper FL (file# 0000198529, granted September 7, 2022). *Gray* proposes herein a minor modification Construction Permit to specify relocation of WTGB-LD.

As proposed herein, WTGB-LD will relocate its existing side-mount antenna to the tower structure associated with FCC Antenna Structure Registration number 1056576, located 39.1 km (24.3 miles) from the licensed site. No change to the overall structure height is proposed.

The WTGB-LD antenna is a Dielectric model DLP-8B having horizontal polarization. The proposed effective radiated power is 2.5 kW directional, using a “full service” out of channel emission mask. A plot of the directional antenna’s azimuthal pattern is supplied in Figure 1. Figure 2 depicts the coverage contour of the proposed facility as well as that of the licensed facility, demonstrating compliance with §73.3572 for a minor change.

Interference study per OET Bulletin 69¹ shows that the proposal complies with the FCC’s interference protection requirements toward all digital television, television translator, LPTV, and Class A stations. The results, summarized in Table 1, show that any new interference does not

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, 1 km cell size, and 1.0 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.

exceed the FCC's interference limits (0.5 percent to full power and Class A stations, and 2.0 percent to secondary stations) to any facility.

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 25 percent antenna relative field in downward elevations (antenna elevation pattern data shows 25 percent relative field or less for angles 10-90 degrees below the horizontal), the calculated signal density near the tower at two meters above ground level attributable to the proposed facility is $6.4 \mu\text{W}/\text{cm}^2$, which is 1.6 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.

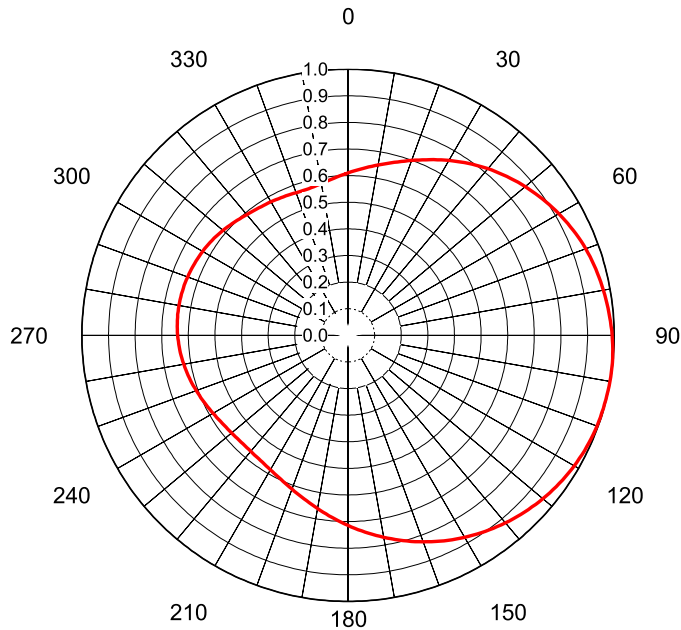
The general public will not be exposed to RF levels attributable to the proposal in excess of the FCC's guidelines. RF exposure warning signs will continue to be posted. With respect to worker safety, the applicant will coordinate exposure procedures with all pertinent stations and will reduce power 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	Antenna Azimuthal Pattern
Figure 2	Coverage Contour Comparison
Table 1	TVStudy Analysis of Proposal
Form 2100	Saved Version of Engineering Sections of FCC Form at Time of Upload

Chesapeake RF Consultants, LLC

Joseph M. Davis, P.E.	February 8, 2024	
207 Old Dominion Road	Yorktown, VA 23692	703-650-9600



AZIMUTH PATTERN Horizontal Polarization

Proposal No. **20240208jmd**
Date **8-Feb-24**
Call Letters **WTGB-LD**
Channel **34**
Frequency **593 MHz**
Antenna Type **DLP-8B**
Gain **1.76 (2.45dB)**
Calculated

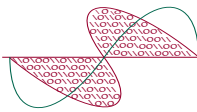
Pattern Number **TLP-B-34 Hpol**

Deg	Value	Deg	Value	Deg	Value	Deg	Value	Deg	Value	Deg	Value	Deg	Value	Deg	Value	Deg	Value
0	0.610	36	0.795	72	0.956	108	0.997	144	0.904	180	0.714	216	0.573	252	0.611	288	0.643
1	0.614	37	0.801	73	0.959	109	0.996	145	0.899	181	0.709	217	0.571	253	0.614	289	0.642
2	0.618	38	0.806	74	0.962	110	0.996	146	0.895	182	0.703	218	0.570	254	0.616	290	0.641
3	0.622	39	0.812	75	0.964	111	0.995	147	0.890	183	0.698	219	0.569	255	0.618	291	0.640
4	0.625	40	0.817	76	0.966	112	0.994	148	0.886	184	0.692	220	0.569	256	0.619	292	0.640
5	0.629	41	0.823	77	0.968	113	0.993	149	0.881	185	0.687	221	0.568	257	0.621	293	0.639
6	0.633	42	0.828	78	0.971	114	0.992	150	0.876	186	0.682	222	0.568	258	0.623	294	0.638
7	0.637	43	0.834	79	0.973	115	0.990	151	0.872	187	0.676	223	0.568	259	0.625	295	0.637
8	0.641	44	0.839	80	0.975	116	0.989	152	0.867	188	0.671	224	0.568	260	0.627	296	0.636
9	0.646	45	0.844	81	0.977	117	0.987	153	0.862	189	0.666	225	0.568	261	0.628	297	0.634
10	0.650	46	0.849	82	0.979	118	0.985	154	0.857	190	0.661	226	0.568	262	0.630	298	0.633
11	0.654	47	0.854	83	0.980	119	0.983	155	0.852	191	0.656	227	0.569	263	0.632	299	0.632
12	0.659	48	0.859	84	0.982	120	0.981	156	0.847	192	0.651	228	0.569	264	0.633	300	0.631
13	0.663	49	0.864	85	0.984	121	0.979	157	0.842	193	0.646	229	0.570	265	0.634	301	0.629
14	0.668	50	0.869	86	0.986	122	0.977	158	0.836	194	0.641	230	0.571	266	0.636	302	0.628
15	0.673	51	0.874	87	0.988	123	0.975	159	0.831	195	0.637	231	0.572	267	0.637	303	0.626
16	0.678	52	0.879	88	0.990	124	0.972	160	0.826	196	0.632	232	0.573	268	0.638	304	0.625
17	0.683	53	0.883	89	0.991	125	0.970	161	0.820	197	0.628	233	0.574	269	0.639	305	0.623
18	0.688	54	0.888	90	0.993	126	0.967	162	0.815	198	0.624	234	0.575	270	0.640	306	0.621
19	0.694	55	0.893	91	0.994	127	0.964	163	0.810	199	0.619	235	0.577	271	0.641	307	0.619
20	0.699	56	0.897	92	0.995	128	0.961	164	0.804	200	0.615	236	0.578	272	0.642	308	0.618
21	0.705	57	0.902	93	0.996	129	0.958	165	0.799	201	0.612	237	0.580	273	0.643	309	0.616
22	0.711	58	0.906	94	0.997	130	0.955	166	0.793	202	0.608	238	0.582	274	0.643	310	0.613
23	0.716	59	0.910	95	0.998	131	0.952	167	0.787	203	0.604	239	0.584	275	0.644	311	0.611
24	0.722	60	0.914	96	0.999	132	0.949	168	0.782	204	0.601	240	0.586	276	0.644	312	0.609
25	0.728	61	0.919	97	0.999	133	0.946	169	0.776	205	0.597	241	0.588	277	0.645	313	0.607
26	0.734	62	0.923	98	0.999	134	0.942	170	0.771	206	0.594	242	0.590	278	0.645	314	0.605
27	0.740	63	0.927	99	1.000	135	0.939	171	0.765	207	0.591	243	0.592	279	0.645	315	0.602
28	0.747	64	0.930	100	1.000	136	0.935	172	0.759	208	0.589	244	0.594	280	0.645	316	0.600
29	0.753	65	0.934	101	1.000	137	0.932	173	0.754	209	0.586	245	0.596	281	0.645	317	0.598
30	0.759	66	0.938	102	0.999	138	0.928	174	0.748	210	0.583	246	0.598	282	0.645	318	0.596
31	0.765	67	0.941	103	0.999	139	0.924	175	0.742	211	0.581	247	0.600	283	0.645	319	0.594
32	0.771	68	0.944	104	0.999	140	0.920	176	0.737	212	0.579	248	0.603	284	0.645	320	0.592
33	0.777	69	0.948	105	0.998	141	0.916	177	0.731	213	0.577	249	0.605	285	0.644	321	0.590
34	0.783	70	0.951	106	0.998	142	0.912	178	0.726	214	0.575	250	0.607	286	0.644	322	0.589
35	0.789	71	0.954	107	0.998	143	0.908	179	0.720	215	0.574	251	0.609	287	0.643	323	0.587

Figure 1
Antenna Azimuthal Pattern
WTGB-LD Jasper, FL
Facility ID 186186
Ch. 34 2.5 kW Directional

prepared for
Gray Television Licensee, LLC

February, 2024



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

Figure 2
Coverage Contour Comparison
WTGB-LD Jasper, FL
Facility ID 186186
Ch. 34 2.5 kW Directional

prepared for
Gray Television Licensee, LLC

February, 2024

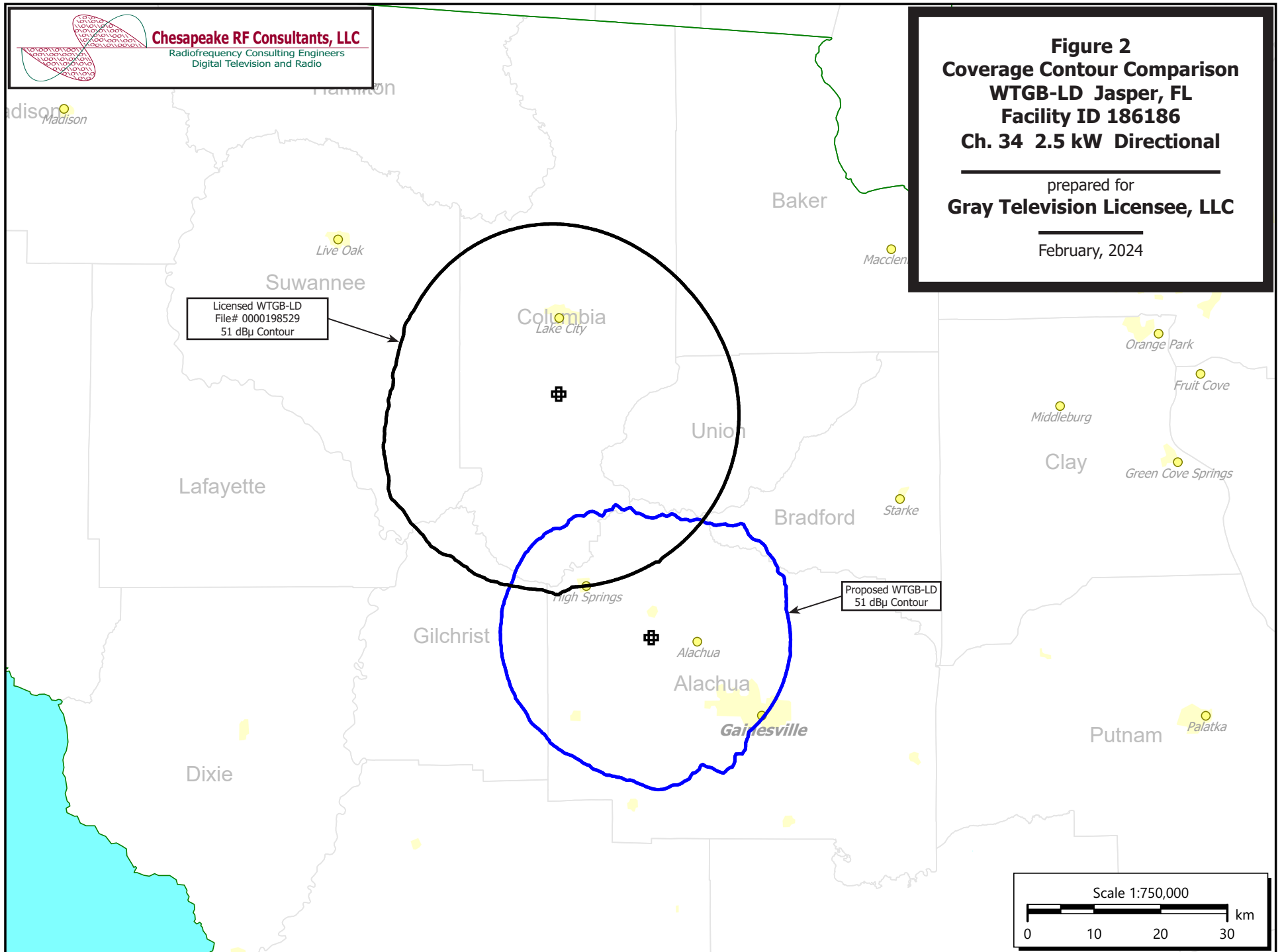


Table 1 WTGB-LD TVStudy Analysis of Proposal (page 1 of 2)



tvstudy v2.2.5 (4uoc83)
Database: localhost, Study: WTGB-LD_1056576, Model: Longley-Rice
Start: 2024.02.08 13:22:18

Study created: 2024.02.08 13:22:17

Study build station data: LMS TV 2024-02-08

Proposal: WTGB-LD D34 LD LIC JASPER, FL
File number: WTGB-LD_1056576
Facility ID: 186186
Station data: User record
Record ID: 272
Country: U.S.

Build options:
Protect pre-transition records not on baseline channel

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	WWRJ-LD	N27-	TX	LIC	JACKSONVILLE, FL	BLTTL20140115AAF	100.0 km
No	WXCK-LD	D33	LD	LIC	CHIEFLAND, FL	BLANK0000151345	43.7
No	WXCK-LD	N33	TX	LIC	CHIEFLAND, FL	BLTTL19960415IC	43.7
No	WUJF-LD	D33	LD	LIC	JACKSONVILLE, FL	BLANK0000164521	106.7
No	WTLV	D33	DT	APP	JACKSONVILLE, FL	BLANK0000235765	107.4
No	WOFL	D33	DT	LIC	ORLANDO, FL	BLANK0000216446	187.5
No	WNXG-LD	D33	LD	LIC	TALLAHASSEE, FL	BLANK0000129630	187.5
No	WGCT-LD	D33	LD	LIC	Tampa, FL	BLANK0000059159	213.4
No	WTSB-LD	D33	LD	LIC	Tifton, GA	BLANK0000202617	218.5
No	W33EV-D	D33	LD	LIC	VALDOSTA, GA	BLANK0000194524	146.3
No	W33EV-D	D33	LD	CP	VALDOSTA, GA	BLANK0000217792	160.4
No	WFTX-TV	D34	DT	LIC	CAPE CORAL, FL	BLANK0000117402	336.2
No	WBXJ-CD	D34	DC	LIC	JACKSONVILLE, ETC., FL	BLANK0000108581	106.7
No	WUCF-TV	D34	DT	LIC	ORLANDO, FL	BLANK0000150045	187.1
No	W34FF-D	D34-	LD	LIC	PANAMA CITY, FL	BLANK0000179306	313.7
No	W34FF-D	D34-	LD	CP	PANAMA CITY, FL	BLANK0000234035	290.5
No	WDNP-LD	D34	LD	LIC	ST. PETERSBURG, FL	BLANK0000123622	203.0
No	WDNP-LD	D34	LD	CP	ST. PETERSBURG, FL	BLANK0000222214	203.0
No	WHDH	D34	DT	LIC	STUART, FL	BLANK0000085738	416.9
No	WXVK-LD	D34z	LD	LIC	Columbus, GA	BLANK0000115071	366.3
No	WXVK-LD	D34z	LD	CP	Columbus, GA	BLANK0000217326	407.6
No	WXVK-LD	D34z	LD	LIC	Columbus, GA	BLANK0000232628	407.6
No	WSST-TV	D34	DT	LIC	CORDELE, GA	BLANK0000064103	268.3
No	W34FX-D	D34	LD	LIC	MONTROSE, GA	BLANK0000194505	298.6
No	WGUG	D34	DT	LIC	CHARLESTON, SC	BLANK0000199719	441.0
No	W35DH-D	D35	LD	LIC	GREENVILLE, FL	BLANK0000178364	171.9
No	W35EC-D	D35	LD	LIC	LAKE CITY, FL	BLANK0000233644	58.1
No	WRCZ-LD	D35	LD	LIC	OCALA, FL	BLANK0000013902	106.7
No	WFTV	D35	DT	LIC	ORLANDO, FL	BLANK0000149068	192.4
No	WTAM-LD	D35	LD	LIC	TAMPA, FL	BLANK0000106115	216.5
No	WSCG	D35	DT	LIC	BAXLEY, GA	BLCDT20071120AJC	277.3
No	WBVJ-CD	D35+	DC	LIC	VALDOSTA, GA	BLANK0000004708	154.8
No	WBVJ-CD	D35+	DC	CP	VALDOSTA, GA	BLANK0000035757	154.8

No non-directional AM stations found within 0.8 km

No directional AM stations found within 3.2 km

Record parameters as studied:

Channel: D34
Mask: Full Service
Latitude: 29 45 24.30 N (NAD83)
Longitude: 82 29 46.00 W
Height AMSL: 76.2 m
HAAT: 0.0 m
Peak ERP: 2.50 kW
Antenna: Dielectric-DLP-8B (ID 1010939) 100.0 deg
Elev Pattn: Generic

Table 1 WTGB-LD TVStudy Analysis of Proposal
(page 2 of 2)



Elec Tilt: 1.00

50.7 dBu contour:

Azimuth	ERP	HAAT	Distance
0.0 deg	0.930 kW	34.0 m	17.7 km
45.0	1.78	36.6	21.5
90.0	2.47	27.9	21.3
135.0	2.20	31.0	21.0
180.0	1.27	47.8	22.9
225.0	0.812	50.2	21.2
270.0	1.02	50.5	22.4
315.0	0.908	51.2	22.0

Database HAAT does not agree with computed HAAT
Database HAAT: 0 m Computed HAAT: 41 m

Distance to Canadian border: 1324.9 km

Distance to Mexican border: 1477.5 km

Conditions at FCC monitoring station: Vero Beach FL
Bearing: 142.3 degrees Distance: 300.1 km

Proposal is not within the West Virginia quiet zone area

Conditions at Table Mountain receiving zone:
Bearing: 305.3 degrees Distance: 2359.7 km

Study cell size: 1.00 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%

Interference to proposal scenario 1

	Call	Chan	Svc	Status	City, State	File Number	Distance
Desired:	WTGB-LD	D34	LD	LIC	JASPER, FL	WTGB-LD_1056576	
Undesireds:	WXCK-LD	D33	LD	LIC	CHIEFLAND, FL	BLANK0000151345	43.7 km
	W34FF-D	D34-	LD	LIC	PANAMA CITY, FL	BLANK0000179306	313.7
	WDNP-LD	D34	LD	LIC	ST. PETERSBURG, FL	BLANK0000123622	203.0
	Service area			Terrain-limited		IX-free	Percent IX
	1433.2	214,752	1433.2	214,752	1433.2	214,752	0.00 0.00

**Channel and
Facility
Information**

Section	Question	Response
Facility ID	186186	
State	Florida	
City	JASPER	
LPD Channel	34	

Antenna Location
Data

Section	Question	Response
Antenna Structure Registration	Do you have an FCC Antenna Structure Registration (ASR) Number?	Yes
	ASR Number	1056576
Coordinates (NAD83)	Latitude	29° 45' 24.3" N+
	Longitude	082° 29' 46.0" W-
	Structure Type	GTOWER-Guyed Structure Used for Communication Purposes
	Overall Structure Height	98.1 meters
	Support Structure Height	91.4 meters
	Ground Elevation (AMSL)	45.7 meters
Antenna Data	Height of Radiation Center Above Ground Level	30.5 meters
	Height of Radiation Center Above Mean Sea Level	76.2 meters
	Effective Radiated Power	2.5 kW

Antenna
Technical Data

Section	Question	Response
Antenna Type	Antenna Type	Directional Custom
	Do you have an Antenna ID?	Yes
	Antenna ID	1010939
Antenna Manufacturer and Model	Manufacturer:	Dielectric
	Model	DLP-8B
	Rotation	100 degrees
	Electrical Beam Tilt	1.0
	Mechanical Beam Tilt	Not Applicable
	toward azimuth	
	Polarization	Horizontal
Elevation Radiation 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	
	Out-of-Channel Emission Mask:	Full Service

Directional Antenna Relative Field Values (Pre-rotated Pattern)

Degree	Value	Degree	Value	Degree	Value	Degree	Value
0	1.000	90	0.661	180	0.645	270	0.650
10	0.996	100	0.615	190	0.641	280	0.699
20	0.981	110	0.583	200	0.631	290	0.759
30	0.955	120	0.569	210	0.613	300	0.817
40	0.920	130	0.571	220	0.592	310	0.869
50	0.876	140	0.586	230	0.579	320	0.914
60	0.826	150	0.607	240	0.570	330	0.951
70	0.771	160	0.627	250	0.579	340	0.975
80	0.714	170	0.640	260	0.610	350	0.993

Additional Azimuths

Degree	V _A
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