

ENGINEERING EXHIBIT

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

Gray Television Licensee, LLC
WLNLM-LD Lansing, MI
Facility ID 67779
Ch. 29 15 kW Directional

Gray Television Licensee, LLC (“Gray”) is the licensee of digital Low Power Television station WLNLM-LD, Channel 29, Facility ID 67779, Lansing MI. WLNLM-LD is licensed to operate at 15 kW effective radiated power (“ERP”) with a nondirectional antenna (file# 0000124986). *Gray* herein seeks a minor modification Construction Permit to relocate WLNLM-LD and to utilize a directional antenna at increased height.

The proposed facility will employ a new antenna to be side-mounted on the tower structure associated with FCC Antenna Structure Registration number 1265362, located 11.3 km (7.0 miles) from the licensed site. No change to the overall structure height is proposed.

The proposed antenna is a Dielectric model TLP-12W/VP having elliptical polarization. The proposed ERP is 15 kW horizontally polarized and 4.5 kW vertically polarized 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 51 dB μ coverage contour of the proposed and licensed facilities, 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

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 0.2 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.

Class A stations. FCC processing of this proposal is requested using a 1.0 km cell size and 0.2 km terrain profile increment. The results, summarized in Table 1, show that any new interference does not 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 except with respect to WNEM-TV which does not present a conflict for the proposal.

WNEM-TV (Ch. 30, Fac ID 41221, Bay City MI, file# 0000185174) would receive 0.53 percent new interference, which exceeds the 0.5 percent limit towards full-service television stations. *Gray* is also the licensee of WNEM-TV and consents to interference exceeding 0.5 percent from the proposed WLNМ-LD facility. Accordingly, the proposal complies with §74.793 regarding interference protection to digital television, low power television, television translator, and Class A television facilities.

Human Exposure to Radiofrequency Electromagnetic Field (Environmental)

The proposed facility 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 20 percent antenna relative field in downward elevations (pattern data shows 20 percent or less relative field at angles 10 to 90 degrees below the antenna), the calculated power density attributable to the proposed facility at locations near the transmitter site at a height of two meters above ground level is $0.4 \mu\text{W}/\text{cm}^2$, which is 0.1 percent of the general population / uncontrolled maximum permissible 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.

Engineering Exhibit
Gray Television Licensee, LLC (WLNM-LD)
(page 3 of 3)

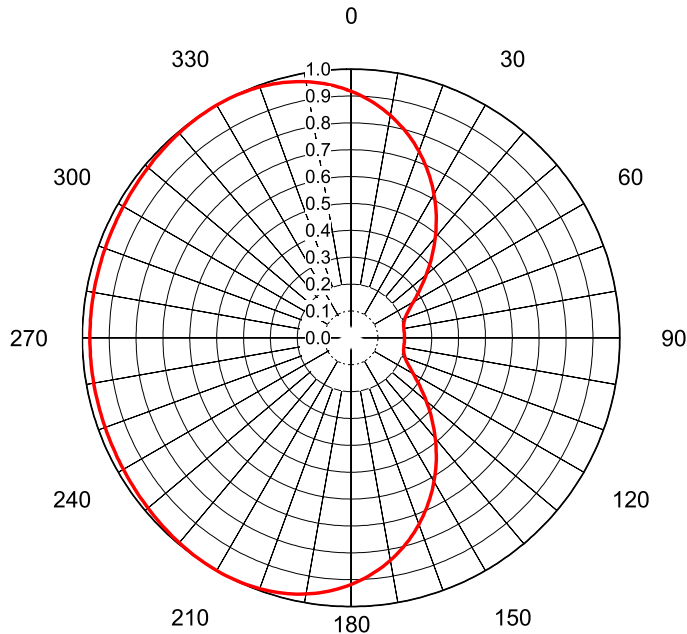


List of Attachments

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 29, 2024	
207 Old Dominion Road	Yorktown, VA 23692	703-650-9600



AZIMUTH PATTERN Horizontal Polarization

Proposal No. **20240228jmd**
Date **28-Feb-24**
Call Letters **WLNM-LD**
Channel **29**
Frequency **563 MHz**
Antenna Type **TLP-12W/VP**
Gain **1.6 (2.05dB)**
Calculated

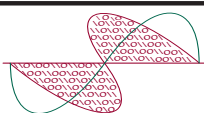
Pattern Number **TLP-W-29 Hpol**

Deg	Value	Deg	Value	Deg	Value	Deg	Value	Deg	Value	Deg	Value	Deg	Value	Deg	Value	Deg	Value
0	0.918	36	0.540	72	0.208	108	0.208	144	0.540	180	0.918	216	0.998	252	0.973	288	0.973
1	0.911	37	0.527	73	0.206	109	0.211	145	0.553	181	0.924	217	0.997	253	0.973	289	0.974
2	0.905	38	0.514	74	0.205	110	0.214	146	0.566	182	0.930	218	0.997	254	0.973	290	0.974
3	0.898	39	0.501	75	0.203	111	0.217	147	0.579	183	0.936	219	0.996	255	0.973	291	0.974
4	0.890	40	0.488	76	0.202	112	0.221	148	0.592	184	0.941	220	0.995	256	0.973	292	0.975
5	0.883	41	0.475	77	0.201	113	0.225	149	0.604	185	0.946	221	0.994	257	0.973	293	0.975
6	0.875	42	0.462	78	0.200	114	0.230	150	0.617	186	0.951	222	0.993	258	0.972	294	0.975
7	0.867	43	0.449	79	0.200	115	0.235	151	0.630	187	0.956	223	0.993	259	0.972	295	0.976
8	0.858	44	0.437	80	0.199	116	0.241	152	0.643	188	0.960	224	0.992	260	0.972	296	0.976
9	0.850	45	0.424	81	0.199	117	0.247	153	0.655	189	0.964	225	0.991	261	0.972	297	0.977
10	0.841	46	0.412	82	0.199	118	0.253	154	0.667	190	0.968	226	0.990	262	0.972	298	0.977
11	0.832	47	0.400	83	0.199	119	0.260	155	0.680	191	0.971	227	0.989	263	0.972	299	0.978
12	0.822	48	0.388	84	0.199	120	0.268	156	0.692	192	0.975	228	0.988	264	0.972	300	0.978
13	0.813	49	0.376	85	0.199	121	0.276	157	0.704	193	0.978	229	0.987	265	0.972	301	0.979
14	0.803	50	0.365	86	0.199	122	0.284	158	0.716	194	0.981	230	0.986	266	0.972	302	0.980
15	0.792	51	0.354	87	0.199	123	0.293	159	0.727	195	0.983	231	0.985	267	0.972	303	0.980
16	0.782	52	0.343	88	0.199	124	0.302	160	0.739	196	0.986	232	0.984	268	0.972	304	0.981
17	0.772	53	0.332	89	0.199	125	0.312	161	0.750	197	0.988	233	0.984	269	0.972	305	0.982
18	0.761	54	0.322	90	0.199	126	0.322	162	0.761	198	0.990	234	0.983	270	0.972	306	0.983
19	0.750	55	0.312	91	0.199	127	0.332	163	0.772	199	0.992	235	0.982	271	0.972	307	0.984
20	0.739	56	0.302	92	0.199	128	0.343	164	0.782	200	0.993	236	0.981	272	0.972	308	0.984
21	0.727	57	0.293	93	0.199	129	0.354	165	0.792	201	0.995	237	0.980	273	0.972	309	0.985
22	0.716	58	0.284	94	0.199	130	0.365	166	0.803	202	0.996	238	0.980	274	0.972	310	0.986
23	0.704	59	0.276	95	0.199	131	0.376	167	0.813	203	0.997	239	0.979	275	0.972	311	0.987
24	0.692	60	0.268	96	0.199	132	0.388	168	0.822	204	0.998	240	0.978	276	0.972	312	0.988
25	0.680	61	0.260	97	0.199	133	0.400	169	0.832	205	0.999	241	0.978	277	0.972	313	0.989
26	0.667	62	0.253	98	0.199	134	0.412	170	0.841	206	0.999	242	0.977	278	0.972	314	0.990
27	0.655	63	0.247	99	0.199	135	0.424	171	0.850	207	1.000	243	0.977	279	0.972	315	0.991
28	0.643	64	0.241	100	0.199	136	0.437	172	0.858	208	1.000	244	0.976	280	0.972	316	0.992
29	0.630	65	0.235	101	0.200	137	0.449	173	0.867	209	1.000	245	0.976	281	0.972	317	0.993
30	0.617	66	0.230	102	0.200	138	0.462	174	0.875	210	1.000	246	0.975	282	0.972	318	0.993
31	0.604	67	0.225	103	0.201	139	0.475	175	0.883	211	1.000	247	0.975	283	0.973	319	0.994
32	0.592	68	0.221	104	0.202	140	0.488	176	0.890	212	1.000	248	0.975	284	0.973	320	0.995
33	0.579	69	0.217	105	0.203	141	0.501	177	0.898	213	0.999	249	0.974	285	0.973	321	0.996
34	0.566	70	0.214	106	0.205	142	0.514	178	0.905	214	0.999	250	0.974	286	0.973	322	0.997
35	0.553	71	0.211	107	0.206	143	0.527	179	0.911	215	0.999	251	0.974	287	0.973	323	0.997

Figure 1
Antenna Azimuthal Pattern
WLNM-LD Lansing, MI
Facility ID 67779
Ch. 29 15 kW Directional

prepared for
Gray Television Licensee, LLC

February, 2024



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

prepared for
Revision Licensee, LLC
February, 2024

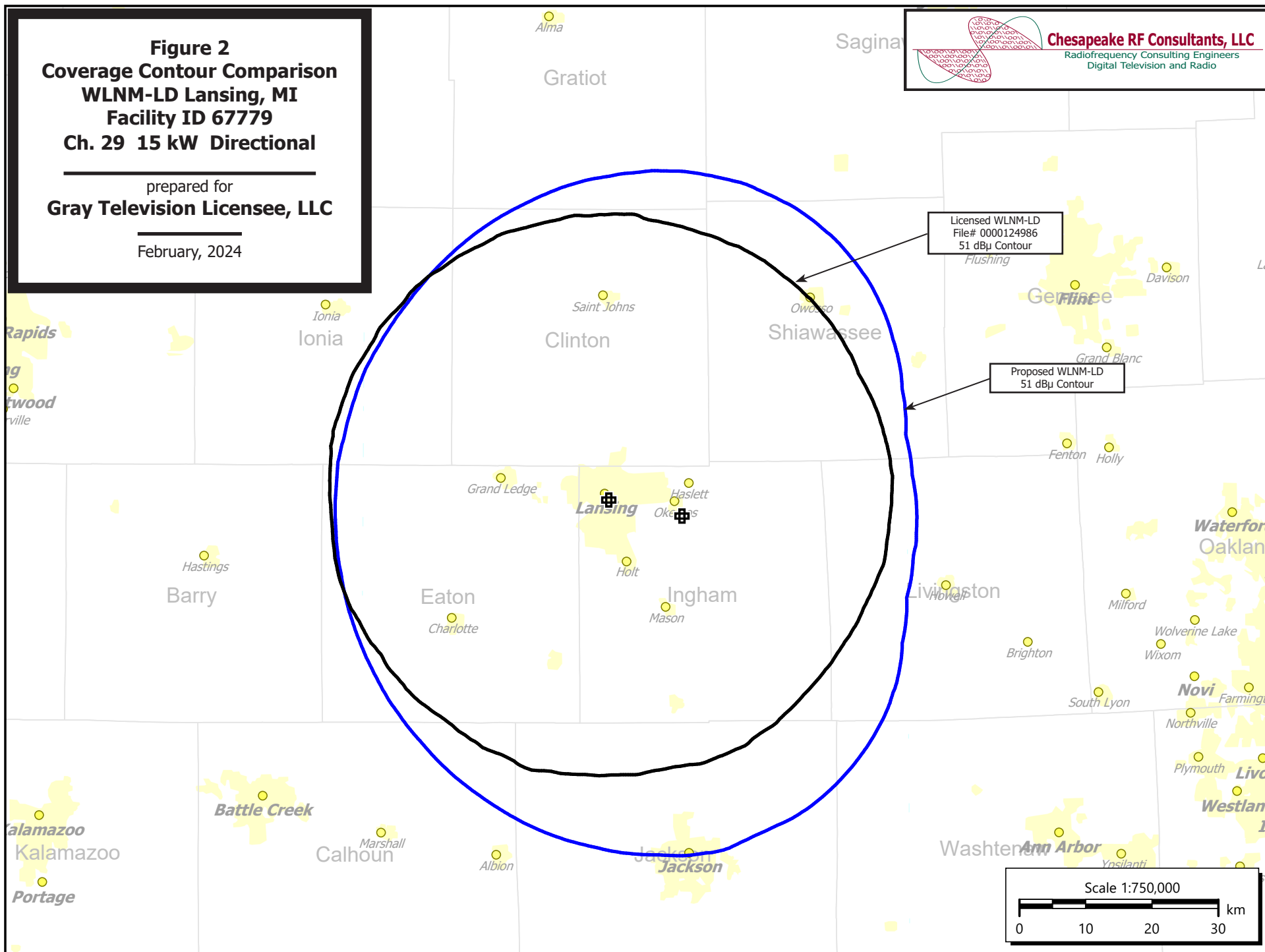


Table 1 WILM-LD TVStudy Analysis of Proposal
(page 1 of 5)



tvstudy v2.2.5 (4uoc83)
Database: localhost, Study: WILM-LD_1265362 TLP-W 1.0-0.2, Model: Longley-Rice
Start: 2024.02.28 13:40:15

Study created: 2024.02.28 13:40:15

Study build station data: LMS TV 2024-02-28

Proposal: WILM-LD D29 LD APP LANSING, MI
File number: WILM-LD_1265362 TLP-W
Facility ID: 67779
Station data: User record
Record ID: 291
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	WKNX-LD	N22z	TX	LIC	PINCONNING, MI	BLTTL20030714AEI	116.2 km
No	DDWFHD-LP	N27z	TX	APP	ANN ARBOR, MI	BLTT20000925AAY	72.4
No	WMYS-LD	D28	LD	LIC	SOUTH BEND, IN	BLANK0000086895	189.5
No	WSYM-TV	D28	DT	LIC	LANSING, MI	BLANK0000177429	32.5
No	WSYM-TV	D28	DT	CP	LANSING, MI	BLANK0000181141	32.5
No	WBWM-LD	D28	LD	LIC	MT PLEASANT, MI	BLANK0000152432	104.2
No	WBWM-LD	D28	LD	CP	MT PLEASANT, MI	BLANK0000163180	105.3
No	WLPC-LD	D28	LD	LIC	Redford, MI	BLANK0000112211	119.4
No	WLPC-LD	D28	LD	CP	Redford, MI	BLANK0000214854	105.4
No	WAUR-LD	D29	LD	LIC	AURORA, IL	BLANK0000107754	361.7
No	WAUR-LD	D29	LD	CP	AURORA, IL	BLANK0000212601	316.5
No	WMAQ-TV	D29	DT	LIC	CHICAGO, IL	BLANK0000236668	280.3
No	WFYI-LD	D29	LD	LIC	INDIANAPOLIS, IN	BLANK0000200980	345.4
Yes	WSBT-TV	D29	DT	LIC	SOUTH BEND, IN	BLANK0000216340	191.4
Yes	WXON-LD	D29+	LD	LIC	FLINT, MI	BLANK0000152405	79.3
Yes	WUHQ-LD	D29	LD	LIC	GRAND RAPIDS, MI	BLDTL20111121AAI	108.4
Yes	WOMS-CD	D29	DC	LIC	MUSKEGON, MI	BLDTA20110812ACT	148.9
Yes	WGTU	D29	DT	LIC	TRAVERSE CITY, MI	BLANK0000222530	233.4
No	WNEO	D29	DT	LIC	ALLIANCE, OH	BLANK0000120667	352.1
No	WAMS-LD	D29z	LD	LIC	MINSTER/NEW BREMEN, OH	BLANK0000106606	257.2
No	WPTO	D29	DT	LIC	OXFORD, OH	BLANK0000214011	397.8
Yes	WGTE-TV	D29	DT	LIC	TOLEDO, OH	BLDT20031110AKO	141.5
No	WOOH-LD	D29	LD	LIC	ZANESVILLE, OH	BLANK0000193625	316.1
No	WDJT-TV	D29	DT	LIC	MILWAUKEE, WI	BLANK0000086892	289.9
No	WPVS-LD	N29z	TX	LIC	MILWAUKEE, WI	BLTTL20080221AAP	300.0
No	WSJV	D30	DT	LIC	ELKHART, IN	BLANK0000214903	191.4
No	WSJV	D30	DT	LIC	ELKHART, IN	BLANK0000233422	191.4
Yes	WNEM-TV	D30	DT	LIC	BAY CITY, MI	BLANK0000185174	97.2

No non-directional AM stations found within 0.8 km

No directional AM stations found within 3.2 km

Record parameters as studied:

Channel: D29
Mask: Full Service
Latitude: 42 42 6.90 N (NAD83)
Longitude: 84 24 47.80 W
Height AMSL: 509.0 m
HAAT: 0.0 m
Peak ERP: 15.0 kW
Antenna: DIE TLP-W 270.0 deg
Elev Pattn: Generic
Elec Tilt: 1.00

50.2 dBu contour:
Azimuth ERP HAAT Distance
0.0 deg 12.6 kW 252.2 m 52.8 km

Table 1 WILM-LD TVStudy Analysis of Proposal
(page 2 of 5)



45.0	2.73	237.6	44.0
90.0	0.594	240.6	36.1
135.0	2.73	232.1	43.7
180.0	12.6	237.5	51.9
225.0	14.7	239.5	52.8
270.0	14.2	246.6	53.0
315.0	14.7	248.6	53.3

Database HAAT does not agree with computed HAAT
Database HAAT: 0 m Computed HAAT: 242 m

**Proposal 25.23 dBu contour crosses Canadian border, coordination required
Distance to Canadian border: 117.2 km

Distance to Mexican border: 2086.5 km

Conditions at FCC monitoring station: Allegan MI
Bearing: 265.7 degrees Distance: 126.5 km

Proposal is not within the West Virginia quiet zone area

Conditions at Table Mountain receiving zone:
Bearing: 267.8 degrees Distance: 1752.8 km

Study cell size: 1.00 km
Profile point spacing: 0.20 km

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

Interference to BLANK0000216340 LIC scenario 1

Desired:	Call	Chan	Svc	Status	City, State	File Number	Distance
	WSBT-TV	D29	DT	LIC	SOUTH BEND, IN	BLANK0000216340	
Undesireds:	WLNLM-LD	D29	LD	APP	LANSING, MI	WLNLM-LD_1265362 TLP-W	191.4 km
	WSYM-TV	D28	DT	LIC	LANSING, MI	BLANK0000177429	160.1
	WOMS-CD	D29	DC	LIC	MUSKEGON, MI	BLDTA20110812ACT	183.3
	WGTU	D29	DT	LIC	TRAVERSE CITY, MI	BLANK0000222530	360.3
	WPTO	D29	DT	LIC	OXFORD, OH	BLANK0000214011	312.0
	WGTE-TV	D29	DT	LIC	TOLEDO, OH	BLDT20031110AKO	231.4
	WDJT-TV	D29	DT	LIC	MILWAUKEE, WI	BLANK0000086892	217.7
	WSJV	D30	DT	LIC	ELKHART, IN	BLANK0000214903	0.0
Service area		Terrain-limited		IX-free, before		IX-free, after	Percent New IX
27524.9		1,754,373		27499.7		1,702,446	0.06 0.23
Undesired		Total IX		Unique IX, before		Unique IX, after	
WLNLM-LD D29 LD APP		21.9		4,739		16.9	3,921
WOMS-CD D29 DC LIC		2.0		26		0.0	0
WGTU D29 DT LIC		3.0		168		1.0	168
WPTO D29 DT LIC		5.0		78		4.0	38
WGTE-TV D29 DT LIC		7.0		1,213		0.0	0
WDJT-TV D29 DT LIC		204.7		39,885		197.7	39,269

Interference to BLANK0000152405 LIC scenario 1

Desired:	Call	Chan	Svc	Status	City, State	File Number	Distance
	WXON-LD	D29+	LD	LIC	FLINT, MI	BLANK0000152405	
Undesireds:	WLNLM-LD	D29	LD	APP	LANSING, MI	WLNLM-LD_1265362 TLP-W	79.3 km
	WSYM-TV	D28	DT	LIC	LANSING, MI	BLANK0000177429	111.4
	WBWM-LD	D28	LD	LIC	MT PLEASANT, MI	BLANK0000152432	99.7
	WLPC-LD	D28	LD	LIC	Redford, MI	BLANK0000112211	106.9
	WNEM-TV	D30	DT	LIC	BAY CITY, MI	BLANK0000185174	35.6
Service area		Terrain-limited		IX-free, before		IX-free, after	Percent New IX
4627.9		621,789		4627.9		576,957	4.64 1.82

Table 1 WILM-LD TVStudy Analysis of Proposal
(page 3 of 5)



Undesired		Total IX	Unique IX, before	Unique IX, after
WILM-LD D29 LD APP	213.7	10,568	208.7	10,515
WNEM-TV D30 DT LIC	130.6	44,832	130.6	44,779

Interference to BLDL20111121AAI LIC scenario 1

Desired:	Call	Chan	Svc	Status	City, State	File Number	Distance
	WUHQ-LD	D29	LD	LIC	GRAND RAPIDS, MI	BLDL20111121AAI	
Undesireds:	WILM-LD	D29	LD	APP	LANSING, MI	WILM-LD_1265362 TLP-W	108.4 km
	WSYM-TV	D28	DT	LIC	LANSING, MI	BLANK0000177429	101.1
	WBWM-LD	D28	LD	LIC	MT PLEASANT, MI	BLANK0000152432	104.6
	WAUR-LD	D29	LD	LIC	AURORA, IL	BLANK0000107754	276.5
	WSBT-TV	D29	DT	LIC	SOUTH BEND, IN	BLANK0000216340	154.6
	WOMS-CD	D29	DC	LIC	MUSKEGON, MI	BLDL20110812ACT	46.0
	WGTU	D29	DT	LIC	TRAVERSE CITY, MI	BLANK0000222530	205.7
	WDJT-TV	D29	DT	LIC	MILWAUKEE, WI	BLANK0000086892	182.2
Service area		Terrain-limited		IX-free, before		IX-free, after	Percent New IX
3071.9		724,992		2942.2		716,669	1.19 0.19

Undesired		Total IX	Unique IX, before	Unique IX, after
WILM-LD D29 LD APP	46.2	1,962	35.1	1,353
WSBT-TV D29 DT LIC	79.3	5,122	68.3	4,841
WOMS-CD D29 DC LIC	47.3	2,961	38.2	2,693
WGTU D29 DT LIC	4.0	18	0.0	0
WDJT-TV D29 DT LIC	1.0	0	1.0	0

Interference to BLDTA20110812ACT LIC scenario 1

Desired:	Call	Chan	Svc	Status	City, State	File Number	Distance
	WOMS-CD	D29	DC	LIC	MUSKEGON, MI	BLDTA20110812ACT	
Undesireds:	WILM-LD	D29	LD	APP	LANSING, MI	WILM-LD_1265362 TLP-W	148.9 km
	WSBT-TV	D29	DT	LIC	SOUTH BEND, IN	BLANK0000216340	183.3
	WDJT-TV	D29	DT	LIC	MILWAUKEE, WI	BLANK0000086892	151.2
Service area		Terrain-limited		IX-free, before		IX-free, after	Percent New IX
3064.2		261,532		3042.1		260,441	0.00 0.00

Undesired		Total IX	Unique IX, before	Unique IX, after
WILM-LD D29 LD APP	1.0	3	0.0	0
WSBT-TV D29 DT LIC	8.0	174	1.0	6
WDJT-TV D29 DT LIC	19.0	991	12.0	823

Interference to BLANK0000222530 LIC scenario 1

Desired:	Call	Chan	Svc	Status	City, State	File Number	Distance
	WGTU	D29	DT	LIC	TRAVERSE CITY, MI	BLANK0000222530	
Undesireds:	WILM-LD	D29	LD	APP	LANSING, MI	WILM-LD_1265362 TLP-W	233.4 km
	WSBT-TV	D29	DT	LIC	SOUTH BEND, IN	BLANK0000216340	360.3
	WOMS-CD	D29	DC	LIC	MUSKEGON, MI	BLDTA20110812ACT	183.7
	WDJT-TV	D29	DT	LIC	MILWAUKEE, WI	BLANK0000086892	292.5
	WNEM-TV	D30	DT	LIC	BAY CITY, MI	BLANK0000185174	172.4
Service area		Terrain-limited		IX-free, before		IX-free, after	Percent New IX
23931.3		384,794		22763.5		375,456	0.15 0.09

Undesired		Total IX	Unique IX, before	Unique IX, after
WILM-LD D29 LD APP	104.8	1,734	33.3	356
WSBT-TV D29 DT LIC	35.3	695	9.1	381
WOMS-CD D29 DC LIC	2.0	29	0.0	0
WDJT-TV D29 DT LIC	197.5	1,112	174.4	870
WNEM-TV D30 DT LIC	111.8	1,162	108.8	1,090

Interference to BLEDT20031110AKO LIC scenario 1

Call	Chan	Svc	Status	City, State	File Number	Distance
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Table 1 WILM-LD TVStudy Analysis of Proposal
(page 4 of 5)

Desired:	WGTE-TV	D29	DT	LIC	TOLEDO, OH	BLEDT20031110AKO				
Undesireds:	WLNm-LD	D29	LD	APP	LANSING, MI	WLNm-LD_1265362	TLP-W	141.5 km		
	WSYM-TV	D28	DT	LIC	LANSING, MI	BLANK0000177429		135.1		
	WSBT-TV	D29	DT	LIC	SOUTH BEND, IN	BLANK0000216340		231.4		
	WNEO	D29	DT	LIC	ALLIANCE, OH	BLANK0000120667		226.5		
	WPTO	D29	DT	LIC	OXFORD, OH	BLANK0000214011		296.3		
	WWAT-CD	D29	DC	LIC	CHARLEROI, PA	BLANK0000101490		337.2		
Service area		Terrain-limited			IX-free, before		IX-free, after		Percent New IX	
16233.8	2,203,311	16233.8	2,203,311		16209.9	2,200,614	16177.1	2,197,145	0.20	0.16
2163.7	144,205	2163.7	144,205		2163.7	144,205	2163.7	144,205	0.00	0.00
(in Canada)										

Undesired		Total IX	Unique IX, before		Unique IX, after	
WLNm-LD D29 LD APP	47.7	5,931			32.8	3,469
WSYM-TV D28 DT LIC	5.0	682	4.0	373	1.0	53
WSBT-TV D29 DT LIC	12.9	2,195	7.0	501	1.0	53
WNEO D29 DT LIC	13.0	1,823	7.0	129	7.0	129
WPTO D29 DT LIC	1.0	16	0.0	0	0.0	

Interference to BLEDT20031110AKO LIC scenario 2

Desired:	Call WGTE-TV	Chan D29	Svc DT	Status LIC	City, State TOLEDO, OH	File Number BLEDT20031110AKO	Distance	
Undesireds:	WLNm-LD	D29	LD	APP	LANSING, MI	WLNm-LD_1265362	TLP-W	141.5 km
	WSYM-TV	D28	DT	CP	LANSING, MI	BLANK0000181141		135.1
	WSBT-TV	D29	DT	LIC	SOUTH BEND, IN	BLANK0000216340		231.4
	WNEO	D29	DT	LIC	ALLIANCE, OH	BLANK0000120667		226.5
	WPTO	D29	DT	LIC	OXFORD, OH	BLANK0000214011		296.3
	WWAT-CD	D29	DC	LIC	CHARLEROI, PA	BLANK0000101490		337.2
	Service area	Terrain-limited		IX-free, before		IX-free, after		Percent New IX
16233.8	2,203,311	16233.8	2,203,311	16206.9	2,200,503	16176.1	2,197,053	0.19 0.16
2163.7	144,205	2163.7	144,205	2163.7	144,205	2163.7	144,205	0.00 0.00
(in Canada)								

Undesired	Total IX		Unique IX, before		Unique IX, after	
WLNm-LD D29 LD APP	47.7	5,931			30.8	3,450
WSYM-TV D28 DT CP	10.0	874	7.0	484	2.0	145
WSBT-TV D29 DT LIC	12.9	2,195	5.0	420	1.0	53
WNEO D29 DT LIC	13.0	1,823	7.0	129	7.0	129
WPTO D29 DT LIC	1.0	16	0.0	0	0.0	0

Interference to BLANK0000185174 LIC scenario 1

****IX: 0.53% interference caused**

WNEM-TV is accepting 0.53% interference – see text

Desired:	Call WNEM-TV	Chan D30	Svc DT	Status LIC	City, State BAY CITY, MI	File Number BLANK0000185174	Distance	
Undesireds:	WLNm-LD	D29	LD	APP	LANSING, MI	WLNm-LD_1265362	TLP-W 97.2 km	
	WSJV	D30	DT	LIC	ELKHART, IN	BLANK0000214903	283.2	
	WMYD	D31	DT	LIC	DETROIT, MI	BLANK0000227624	126.1	
Service area		Terrain-limited		IX-free, before		IX-free, after		Percent New IX
25675.2	1,476,679	25654.0	1,470,470	25463.6	1,422,120	25435.4	1,414,623	0.11 0.53

Undesired		Total IX	Unique IX, before		Unique IX, after	
WLNm-LD D29 LD APP	28.2	7,497			28.2	7,497
WSJV D30 DT LIC	5.0	1,319	3.0	193	3.0	193
WMYD D31 DT LIC	187.4	48,157	185.4	47,031	185.4	47,031

Interference to BLANK0000185174 LIC scenario 2

****IX: 0.53% interference caused**

WNEM-TV is accepting 0.53% interference – see text

Desired:	Call	Chan	Svc	Status	City, State	File Number	Distance
	WNEM-TV	D30	DT	LIC	BAY CITY, MI	BLANK0000185174	

Table 1 WILM-LD TVStudy Analysis of Proposal
(page 5 of 5)



Undesireds:	WLNm-LD	D29	LD	APP	LANSING, MI	WLNm-LD_1265362	TLP-W	97.2 km
	WSJV	D30	DT	LIC	ELKHART, IN	BLANK0000233422		283.2
	WMYD	D31	DT	LIC	DETROIT, MI	BLANK0000227624		126.1

Service area	Terrain-limited	IX-free, before	IX-free, after	Percent New IX
25675.2 1,476,679	25654.0 1,470,470	25463.6 1,422,120	25435.4 1,414,623	0.11 0.53

Undesired	Total IX	Unique IX, before	Unique IX, after
WLNm-LD D29 LD APP	28.2 7,497	28.2 7,497	
WSJV D30 DT LIC	5.0 1,319	3.0 193	3.0 193
WMYD D31 DT LIC	187.4 48,157	185.4 47,031	185.4 47,031

Interference to proposal scenario 1
2.27% interference received

Desired:	Call	Chan	Svc	Status	City, State	File Number	Distance
	WLNm-LD	D29	LD	APP	LANSING, MI	WLNm-LD_1265362 TLP-W	
Undesireds:	WSYM-TV	D28	DT	LIC	LANSING, MI	BLANK0000177429	32.5 km
	WBWM-LD	D28	LD	LIC	MT PLEASANT, MI	BLANK0000152432	104.2
	WLPC-LD	D28	LD	LIC	Redford, MI	BLANK0000112211	119.4
	WXON-LD	D29+	LD	LIC	FLINT, MI	BLANK0000152405	79.3
	WGTE-TV	D29	DT	LIC	TOLEDO, OH	BLEDT20031110AKO	141.5
	WNEM-TV	D30	DT	LIC	BAY CITY, MI	BLANK0000185174	97.2

Service area	Terrain-limited	IX-free	Percent IX
7461.3 650,215	7461.3 650,215	7217.4 635,433	3.27 2.27

Undesired	Total IX	Unique IX	Prcnt Unique IX
WSYM-TV D28 DT LIC	126.4 9,306	125.4 9,306	1.68 1.43
WXON-LD D29+ LD LIC	117.5 5,476	116.5 5,437	1.56 0.84
WGTE-TV D29 DT LIC	1.0 0	0.0 0	0.00 0.00
WNEM-TV D30 DT LIC	1.0 39	0.0 0	0.00 0.00

Interference to proposal scenario 2
3.63% interference received

Desired:	Call	Chan	Svc	Status	City, State	File Number	Distance
	WLNm-LD	D29	LD	APP	LANSING, MI	WLNm-LD_1265362 TLP-W	
Undesireds:	WSYM-TV	D28	DT	CP	LANSING, MI	BLANK0000181141	32.5 km
	WBWM-LD	D28	LD	LIC	MT PLEASANT, MI	BLANK0000152432	104.2
	WLPC-LD	D28	LD	LIC	Redford, MI	BLANK0000112211	119.4
	WXON-LD	D29+	LD	LIC	FLINT, MI	BLANK0000152405	79.3
	WGTE-TV	D29	DT	LIC	TOLEDO, OH	BLEDT20031110AKO	141.5
	WNEM-TV	D30	DT	LIC	BAY CITY, MI	BLANK0000185174	97.2

Service area	Terrain-limited	IX-free	Percent IX
7461.3 650,215	7461.3 650,215	7178.4 626,606	3.79 3.63

Undesired	Total IX	Unique IX	Prcnt Unique IX
WSYM-TV D28 DT CP	165.4 18,133	164.4 18,133	2.20 2.79
WXON-LD D29+ LD LIC	117.5 5,476	116.5 5,437	1.56 0.84
WGTE-TV D29 DT LIC	1.0 0	0.0 0	0.00 0.00
WNEM-TV D30 DT LIC	1.0 39	0.0 0	0.00 0.00

**Channel and
Facility
Information**

Section	Question	Response
Facility ID	67779	
State	Michigan	
City	LANSING	
LPD Channel	29	

Antenna Location
Data

Section	Question	Response
Antenna Structure Registration	Do you have an FCC Antenna Structure Registration (ASR) Number?	Yes
	ASR Number	1265362
Coordinates (NAD83)	Latitude	42° 42' 06.9" N+
	Longitude	084° 24' 47.8" W-
	Structure Type	TOWER-A free standing or guyed struct
	Overall Structure Height	313.3 meters
	Support Structure Height	297.8 meters
	Ground Elevation (AMSL)	259.1 meters
Antenna Data	Height of Radiation Center Above Ground Level	249.9 meters
	Height of Radiation Center Above Mean Sea Level	509.0 meters
	Effective Radiated Power	15.0 kW

Antenna
Technical Data

Section	Question	Response
Antenna Type	Antenna Type	Directional Custom
	Do you have an Antenna ID?	No
	Antenna ID	
Antenna Manufacturer and Model	Manufacturer:	Dielectric
	Model	TLP-12W/VP
	Rotation	270 degrees
	Electrical Beam Tilt	1.0
	Mechanical Beam Tilt	Not Applicable
	toward azimuth	
	Polarization	Elliptical
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	0.972	90	0.918	180	0.199	270	0.918
10	0.972	100	0.841	190	0.199	280	0.968
20	0.974	110	0.739	200	0.214	290	0.993
30	0.978	120	0.617	210	0.268	300	1.000
40	0.986	130	0.488	220	0.365	310	0.995
50	0.995	140	0.365	230	0.488	320	0.986
60	1.000	150	0.268	240	0.617	330	0.978
70	0.993	160	0.214	250	0.739	340	0.974
80	0.968	170	0.199	260	0.841	350	0.972

Additional Azimuths

Degree	V _A
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