

ENGINEERING STATEMENT
SUPPORTING REQUEST FOR WAIVER
TELEVISION STATION WKAR-TV
(FACILITY ID NO. 6104)
EAST LANSING, MICHIGAN
CHANNEL 33

Background

This statement was prepared on behalf of Board of Trustees, Michigan State University, licensee of WKAR-TV, in support of a request for waiver of the FCC's Phase Assignment, Testing Period, and Phase Completion Date for television station WKAR-TV, East Lansing, Michigan, in the Lansing DMA¹. WKAR-TV is licensed for operation on RF Channel 40 with a maximum directional effective radiated power (ERP) of 425 kW and an antenna height above average terrain (HAAT) of 295.5 m.

As a result of the FCC's Incentive Auction repack process, the WKAR-TV facility was reassigned to RF Channel 33. WKAR-TV holds a construction permit for operation on Channel 33 with a maximum directional ERP of 376 kW and an antenna HAAT of 297 m.² A summary of the FCC engineering database information for the WKAR-TV construction permit facility is attached hereto for reference.

In coordination with the wireless carrier, T-Mobile, WKAR-TV seeks a waiver of the FCC's Phase Assignment, Testing Period, and Phase Completion Date to allow WKAR-TV to make the transition to Channel 33 earlier than its given phase transition date. This will facilitate the early deployment of new 600 MHz band wireless broadband services.

This statement demonstrates that WKAR-TV can transition to Channel 33 before its assigned phase date without any disruption to the FCC's transition plans. Specifically, it is demonstrated that the operation of WKAR-TV on Channel 33 as authorized in its construction permit will have no adverse interference consequences, either caused or received, under the current repack allocation environment.

¹ Nielsen Designated Market Area abbreviated as DMA.

² See FCC File No. 0000027882.

Assigned Phase

WKAR-TV was assigned to transition Phase 7, with a testing begin date of October 19, 2019. This is based on the latest FCC Phase Assignment spreadsheet dated August 17, 2017.

Linked Station Sets and Linked Station Neighbor Stations

An inspection of the latest FCC Linked Station Set (LSS) and Linked Station Neighbor (LSN) spreadsheet databases indicates that the WKAR-TV facility is not part of any LSSs or LSNs. These are based on the latest LSS and LSN spreadsheets available from the FCC, both dated July 3, 2017.

Interference Caused Analysis Under Current Allocation Environment

An interference analysis was conducted for the WKAR-TV Channel 33 facility utilizing the latest version³ of the FCC's *TVStudy* coverage and interference analysis prediction software. The report of the results is attached hereto entitled 'Interference Caused Analysis for WKAR-TV Channel 33 Facility Under Current Allocation Environment.'

The results of the analysis indicate that there are no cases of outgoing (caused) interference exceeding the normal 0.5% rounding tolerance level to any other protected full-power or Class A television stations now operating.

Interference Received Analysis Under Current Allocation Environment

An interference analysis specifically for the 'received case' of interference was conducted for the WKAR-TV Channel 33 facility utilizing the aforementioned *TVStudy* prediction software. The report of the results is attached hereto entitled 'Interference Received Analysis for WKAR-TV Channel 33 Facility Under Current Allocation Environment.' The purpose of this study is to evaluate all current environment records in the received interference analysis.

The results of the analysis indicate that there is one case of incoming (received) unique interference exceeding 0.5% to the WKAR-TV Channel 33 facility. This is from

³ TVStudy Version 2.2.3

the licensed facility of W33BY-D, Detroit, MI (Channel 33). As indicated in the study, the total interference predicted to the WKAR-TV facility is 1.17%, with a lesser pairwise interference level from W33BY-D. This level of interference is within the FCC's permitted temporary transitional interference level of 2%. WKAR-TV agrees to accept the additional interference to its Channel 33 facility on a temporary transitional basis to facilitate the TV repack and the early move of the WKAR-TV facility to Channel 33.

Effects on Linked Station Sets

Based on these results, the transition of the WKAR-TV facility to Channel 33 in advance of its phase transition date will not create any pairwise interference cases or new linked station sets.

Conclusion

It is concluded that the early transition of the WKAR-TV facility on Channel 33 will not result in any interference cases, either caused or received, that would result in the creation or alteration of any linked station sets established in the Incentive Auction repack process.

Louis R. du Treil, Jr., P.E.

du Treil, Lundin & Rackley, Inc.
3135 Southgate Circle
Sarasota, Florida 34239

September 12, 2017

TV Inquiry

du Treil, Lundin, & Rackley, Inc., Sarasota, Florida



Callsign: WKAR-TV	Service: DT	Status: CP	App. Status: GRANT	Border Code:	Rec. Type: C
Channel: 33	Offset:	Zone: 1	Docket Number:	DTV Type: POSTTRAN	
Fac. ID: 6104	Assoc. ID:	Application File No.: BLANK-0000027882		DT Emission Mask:	
City: EAST LANSING	State: MI		Country: US	CP Expiration Date:	
Party Name: BOARD OF TRUSTEES, MICHIGAN STATE UNIVERSITY				Last Change Date: 8/7/2017	

Latitude (NAD 27):	Height AGL (m):	304.7	Polarization:	E
Longitude (NAD 27):	Overall Height AGL (m):	313.3	Electrical Tilt (°):	1
Latitude (NAD 83):	ERP (kW):	376	Mechanical Tilt (°):	
Longitude (NAD 83):	Maximum ERP (kW):		Mechanical Tilt Azimuth (°):	
RCAMSL (m): 563.8	Maximum ERP (dBk):	25.8	Degrees True (°):	
Site Elevation AMSL (m): 259.1	Maximum ERP at any Angle (kW):		Antenna Make:	
HAAT (m): 297			Antenna Model:	
Maximum HAAT (m):				

Antenna Type: D **Antenna ID:** 1001721 **Rotation (°):** 0

0° 0.940	90° 0.245	180° 0.940	270° 0.899
10° 0.854	100° 0.232	190° 0.987	280° 0.900
20° 0.733	110° 0.207	200° 1.000	290° 0.905
30° 0.588	120° 0.218	210° 0.988	300° 0.917
40° 0.437	130° 0.302	220° 0.963	310° 0.936
50° 0.302	140° 0.437	230° 0.936	320° 0.963
60° 0.218	150° 0.588	240° 0.917	330° 0.988
70° 0.207	160° 0.733	250° 0.905	340° 1.000
80° 0.232	170° 0.854	260° 0.900	350° 0.987

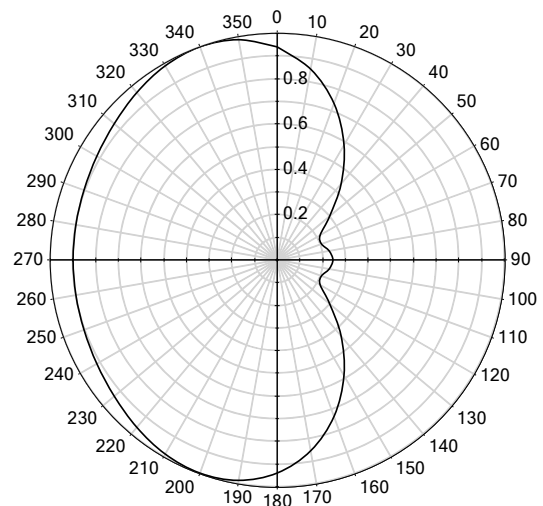
Standard Pattern:

Antenna Make: Ali

Antenna Model: AT-BCE322C1-V1-33

Last Change Date:

Note: Rotation or tilt is not applied to the pattern shown



Type: TOWER	ASRN: 1265362	FAA Study No.: 2011-AGL-4543-OE	Structure Height (m):	297.8
Latitude (NAD 27): 042-42-06.8	Date Received: 02/06/2012		Structure Height (ft):	977.0
Longitude (NAD 27): 084-24-47.9	Date Entered: 02/06/2012		Ground Elevation (m):	259.1
Latitude (NAD 83): 42-42-06.9	Date Issued: 12/22/2011		Ground Elevation (ft):	850.1
Longitude (NAD 83): 084-24-47.8	Date Constructed: 07/05/2011		Overall Height AGL (m):	313.3
	Date Dismantled:		Overall Height AGL (ft):	1027.9
Struct. Address:			Overall Height AMSL (m):	572.4
4101 Dobie Road			Overall Height AMSL (ft):	1878.0
Okemos MI				
Entity Name: Board of Trustees, Michigan State University				

INTERFERENCE CAUSED ANALYSIS FOR WKAR-TV CHANNEL 33

FACILITY UNDER CURRENT ALLOCATION ENVIRONMENT

tvstudy v2.2.3 (Dxtpx3)

Database: localhost, Study: wkar33pre3, Model: Longley-Rice

Study build station data: LMS TV 2017-09-11 (50)

Proposal: WKAR33PRE3 D33 DT CP EAST LANSING, MI
File number: wkar33pre3
Facility ID: 6104
Station data: User record
Record ID: 1241
Country: U.S.
Zone: I

Build options:
Protect records not on baseline channel

Search options:

Non-U.S. records included

Individual records excluded:

0000024782 WFMJ-TV D33 DT CP YOUNGSTOWN, OH BLANK0000024782
0000024957 WOGB-CD D32 DC CP MARION, OH BLANK0000024957
0000025295 WHIO-TV D33 DT CP DAYTON, OH BLANK0000025295
0000025297 WKHA D33 DT CP HAZARD, KY BLANK0000025297
0000025689 WKEF D34 DT CP DAYTON, OH BLANK0000025689
0000026191 WKBD-TV D34 DT CP DETROIT, MI BLANK0000026191
0000026765 WTMJ-TV D32 DT CP MILWAUKEE, WI BLANK0000026765
0000027619 WLAX D33 DT CP LA CROSSE, WI BLANK0000027619
0000027665 WISE-TV D34 DT CP FORT WAYNE, IN BLANK0000027665
0000027668 WANE-TV D32 DT CP FORT WAYNE, IN BLANK0000027668
0000027731 WOKZ-CD D33 DC CP KALAMAZOO, MI BLANK0000027731
0000027841 WKHU-CD D32 DC APP *P KITTANNING, PA BLANK0000027841
0000027872 WDIV-TV D32 DT CP DETROIT, MI BLANK0000027872
0000027946 WMAQ-TV D33 DT CP CHICAGO, IL BLANK0000027946
0000028263 WAOE D33 DT CP PEORIA, IL BLANK0000028263
0000028320 WTIU D33 DT CP BLOOMINGTON, IN BLANK0000028320
13960 WISE-TV D34 DT BL FORT WAYNE, IN DTVBL13960
2710 WLAX D33 DT BL LA CROSSE, WI DTVBL2710
34196 WKHA D33 DT BL HAZARD, KY DTVBL34196
36841 WOKZ-CD D33 DC BL KALAMAZOO, MI DTVBL36841
39270 WANE-TV D32 DT BL FORT WAYNE, IN DTVBL39270
41458 WHIO-TV D33 DT BL DAYTON, OH DTVBL41458
47905 WMAQ-TV D33 DT BL CHICAGO, IL DTVBL47905
51570 WKBD-TV D34 DT BL DETROIT, MI DTVBL51570
52280 WAOE D33 DT BL PEORIA, IL DTVBL52280
53114 WDIV-TV D32 DT BL DETROIT, MI DTVBL53114
6104 WKAR-TV D33 DT BL EAST LANSING, MI DTVBL6104
66536 WTIU D33 DT BL BLOOMINGTON, IN DTVBL66536
68401 WKHU-CD D32 DC BL KITTANNING, PA DTVBL68401
72062 WFMJ-TV D33 DT BL YOUNGSTOWN, OH DTVBL72062
73155 WKEF D34 DT BL DAYTON, OH DTVBL73155
74098 WTMJ-TV D32 DT BL MILWAUKEE, WI DTVBL74098
9939 WOGB-CD D32 DC BL MARION, OH DTVBL9939

Stations affected by proposal:

Call	Chan	Svc	Status	City, State	File Number	Distance
WOHO-CD	D33	DC	LIC	HOLLAND, MI	BLDTA20120316ACT	126.5 km

No non-directional AM stations found within 0.8 km

No directional AM stations found within 3.2 km

Record parameters as studied:

Channel: D33

Latitude: 42 42 6.90 N (NAD83)
Longitude: 84 24 47.80 W
Height AMSL: 563.8 m
HAAT: 297.0 m
Peak ERP: 376 kW
Antenna: Alive-AT-BCE322C1-V1-33 (ID 1001721) 0.0 deg

INTERFERENCE CAUSED ANALYSIS FOR WKAR-TV CHANNEL 33 FACILITY UNDER CURRENT ALLOCATION ENVIRONMENT

Elev Pattn: Generic
Elec Tilt: 1.0

40.6 dBu contour:

Azimuth	ERP	HAAT	Distance
0.0 deg	332 kW	307.0 m	88.5 km
45.0	51.3	292.4	74.4
90.0	22.6	295.4	70.2
135.0	51.3	286.9	74.0
180.0	332	292.3	86.5
225.0	339	294.3	87.0
270.0	304	301.4	87.0
315.0	339	303.4	88.2

**Proposal is within coordination distance of Canadian border
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: 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%

Interference to BLDTA20120316ACT LIC, scenario 1

Desired:	Call	Chan	Svc	Status	City, State	File Number	Distance
	WOHO-CD	D33	DC	LIC	HOLLAND, MI	BLDTA20120316ACT	
Undesireds:	WKAR33PRE3D33	DT	CP		EAST LANSING, MI	wkar33pre3	126.5 km
	Service area		Terrain-limited		IX-free, before	IX-free, after	Percent New IX
	1544.6	190,155	1544.6	190,155	1544.6	190,155	1516.6 189,915 1.82 0.13
Undesired				Total IX	Unique IX, before	Unique IX, after	
WKAR33PRE3	D33	DT	CP	28.0	240	28.0	240

INTERFERENCE RECEIVED ANALYSIS FOR WKAR-TV CHANNEL 33 FACILITY UNDER CURRENT ALLOCATION ENVIRONMENT

tvstudy v2.2.3 (Dxtpx3)

Database: localhost
Station Data: LMS TV 2017-09-11 (50)
Study: A_LMS_17Sep12
Model: Longley-Rice
Scenario: wkar33pre3r1

Desired station	Service area		Terrain-limited		Interference-free	
Undesired station	Total interference		Unique interference			
WKAR33PRE3 D33 DT CP EAST LANSING, MI	21152.7	1,699,350	21128.7	1,695,807	20996.5	1,675,968
W33BY-D D33 DC LIC DETROIT, MI	116.1	19,128	80.1	14,363	(0.85%)	
WOHO-CD D33 DC LIC HOLLAND, MI	8.0	600	4.0	137	(0.01%)	
WITI D33 DT LIC MILWAUKEE, WI	4.0	463	0.0	0		
CIII-DT-22 D33 DT LIC STEVENSON, ON	48.0	5,339	8.0	111	(0.01%)	

Note: The total interference received to the WKAR-TV Channel 33 facility is 19,839, which is 1.17% of the terrain-limited service area baseline.