



Kessler and Gehman Associates
Consultants • Broadcast • Wireless

MINOR MODIFICATION APPLICATION OF A LICENSED DIGITAL TELEVISION TRANSLATOR

CALL SIGN: W17EF-D
FACILITY ID: 167354
LOCATION: Wheeling, WV

Prepared For:

West Virginia Educational
Broadcasting Authority
600 Capitol Street
Charleston, WV 25301

Prepared By:

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1.0 INTRODUCTION AND SCOPE OF WORK

West Virginia Public Broadcasting is the licensee of a digital television translator broadcast station having call sign W17EF-D. W17EF-D is licensed¹ to operate on channel 17 using a directional antenna having an ERP of 15kW at a height of 200ft AGL on a support structure which has an FCC tower registration number of 1035124. It is proposed to reduce the antenna height above ground level from 200' to 176'. No other changes are proposed.

The proposed modification is considered “minor” pursuant to 74.787(b) since

- there is no change in frequency (output channel),
- there is no change in transmitting antenna location where the protected contour resulting from the change does not overlap some portion of the protected contour of the authorized facilities of the existing station as demonstrated in Appendix B,
- there is no change in transmitting antenna location of greater than 30 miles (48 kilometers) from the reference coordinates of the existing station's antenna location as demonstrated in Appendix B.

2.0 STATION TRANSMITTER LOCATION AND TOWER ELEVATION

It is proposed to side mount the W17EF-D antenna to FCC tower registration number 1035124. The instant application does not propose to increase or modify the existing support structure and thus FAA and FCC structure registration modifications are not necessary for the grant of this application.

3.0 ALLOCATION ANALYSIS

Appendix A are the summarized results from TVStudy V2.2.5 which illustrate that there are no interference failures to other facilities.

¹ FCC File No.: 0000214695

4.0 NATIONAL ENVIRONMENTAL POLICY ACT (NEPA)

4.1 General Environmental Requirements

As indicated in Section 2.0, the proposed antenna is side mounted to an existing structure which is registered with the FCC and will not require modification to support the proposed antenna. Since the existing structure is already registered and unmodified, it is presumed that the following screening criteria is already mitigated:

- Require high intensity white lighting.
- Is not located in an official designated wilderness area or wildlife preserve.
- Does not threaten the existence or habitat of endangered species.
- Does not affect districts, sites, buildings, structures or objects significant in American history, architecture, archaeology, engineering or culture that are listed in the National Register of Historic Places or are eligible for listing.
- Does not affect Indian religious sites.
- Is not located in a floodplain
- Does not require construction that involves significant changes in surface features (e.g., wetland fill, deforestation, or water diversion).

4.2 Radio Frequency Radiation (RFR) Compliance.

A theoretical analysis has been conducted of the human exposure to radio frequency radiation (“RFR”) using the calculation methodology described in OET Bulletin 65, Edition 97-01. The RFR analysis is conducted pursuant to the following methodology:

Terrain extraction is compiled from the support structure site, if the support structure is on a rooftop with no higher elevations (e.g., elevator shaft) then flat terrain is compiled. Terrain is extracted using radial lengths of 0.25 miles in 0.001-mile increments for 360 radials. The power density is calculated for each terrain point at 6 feet above ground level using the elevation and azimuth pattern of the proposed broadcast antenna. The power density calculations are conducted using the lower edge of the proposed channel frequency. To account for ground reflections, a coefficient of 1.6 was included in the calculation.

The resulting cylindrical polar analysis is then summarized into a coordinate plane graph using the following methodology:

Starting from the origin the maximum calculated RFR value is determined among the 360-degree radials for each 0.001 mile increment, the value is then converted into a percentage of the maximum allowable general population or uncontrolled exposure and plotted as a function of perpendicular distance from the tower.

The resulting RFR study in Appendix C demonstrates that the peak exposure is 0.45% of the most restrictive permissible exposure threshold. Pursuant to OET Bulletin 65 concerning multiple-user transmitters that produce power density levels greater than 5.0% of the exposure limit are considered significant contributors to RFR and require a cumulative study including all emitters in the proximity of the proposed transmitter site. The proposed facility is well below the 5.0% threshold and is not considered a significant contributor to RFR and thus has no significant effect on human exposure and is thus categorically excluded from environmental processing.

5.0 CERTIFICATION

The foregoing statement and the report regarding the engineering work are true and correct to the best of my knowledge. Executed May 23, 2023.

Kessler and Gehman Associates, Inc.



Ryan Wilhour
Consulting Engineer

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Wheeling, WV

APPENDIX A – TVStudy V2.2.5 Allocation Analysis

Study created: 2023.05.23 12:56:08

Study build station data: LMS TV 2023-05-23

Proposal: W17EF-D D17 LD LIC WHEELING, WV
File number: Proposed
Facility ID: 167354
Station data: User record
Record ID: 1258
Country: U.S.

Build options:

Protect pre-transition records not on baseline channel

Stations potentially affected by proposal:

IX	Call	Chan	Svc	Status	City, State	File Number	Distance
No	WRAP-LD	D16-	LD	LIC	CLEVELAND, OH	BLANK0000176891	161.2 km
No	WOSU-TV	D16	DT	LIC	COLUMBUS, OH	BLANK0000111772	200.9
Yes	WINP-TV	D16	DT	LIC	PITTSBURGH, PA	BLANK0000214889	56.5
No	WUSV-LD	D16	LD	CP	Fairmont, WV	BLANK0000072244	106.9
No	WUSV-LD	D16	LD	LIC	Fairmont, WV	BLDTL20140616AEQ	106.9
No	W41DK-D	D16	LD	CP	KEYSER, WV	BLANK0000202709	156.7
No	WEIJ-LD	D17	LD	LIC	FORT WAYNE, IN	BLANK0000177440	402.8
No	W17EJ-D	D17	LD	CP	ELMIRA, NY	BLANK0000193266	366.8
No	W17EJ-D	D17	LD	LIC	ELMIRA, NY	BLANK0000198122	366.8
No	W17ED-D	D17	LD	LIC	HORNELL, ALFRED, NY	BLANK0000166828	367.8
Yes	WBNX-TV	D17	DT	LIC	AKRON, OH	BLANK0000100132	161.2
No	WCET	D17	DT	LIC	CINCINNATI, OH	BLANK0000214010	360.1
No	W17EB-D	D17	LD	LIC	COLUMBUS, OH	BLANK0000153383	211.7
No	WTLW-LD	D17	LD	LIC	LIMA, OH	BLANK0000068365	312.4
Yes	WJMB-CD	D17	DC	LIC	BUTLER, PA	BLDTA20121108ALX	96.8
Yes	WJMB-CD	D17	DC	CP	BUTLER, PA	BLANK0000131009	96.8
No	WPHL-TV	D17	DT	LIC	PHILADELPHIA, PA	BLANK0000040408	452.4
No	WPHL-TV	D17	DT	CP	PHILADELPHIA, PA	BLANK0000127575	452.4
No	WBZM-LD	D17	LD	LIC	Wilkes-Barre, PA	BLANK0000202889	409.6
No	DWXOB-LP	D17z	LD	APP	RICHMONT, VA	BLTTA20020809AAN	390.9
No	WVVA	D17	DT	LIC	BLUEFIELD, WV	BLANK0000087309	333.4
No	WVVA	D17	DT	CP	BLUEFIELD, WV	BLANK0000127491	333.4
No	W18EY-D	D18	LD	LIC	CANTON, OH	BLANK0000195951	78.2
No	W18EY-D	D18	LD	APP	CANTON, OH	BLANK0000212511	78.2
No	WCBZ-CD	D18	DC	LIC	Columbus, OH	BLANK0000069165	206.2
No	W18ES-D	D18	LD	LIC	MANSFIELD, OH	BLANK0000087113	172.0
No	WOIO	D18	LD	LIC	SHAKER HEIGHTS, OH	BLANK0000079849	127.9
No	WLPX-TV	D18	DT	LIC	CHARLESTON, WV	BLANK0000118002	237.2
No	W18FB-D	D18	LD	LIC	SUTTON, WV	BLANK0000197243	173.1

No non-directional AM stations found within 0.8 km

No directional AM stations found within 3.2 km

Record parameters as studied:

Channel: D17
Mask: Full Service
Latitude: 40 12 58.00 N (NAD83)
Longitude: 80 33 30.00 W
Height AMSL: 425.5 m
HAAT: 93.4 m
Peak ERP: 15.0 kW
Antenna: Propagation Systems, Inc.-PSILP12DW-17-E (ID 1010698) 0.0 deg
Elev Pattn: Generic
Elec Tilt: 1.00

49.0 dBu contour:

Azimuth	ERP	HAAT	Distance
0.0 deg	2.71 kW	96.6 m	36.1 km

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Wheeling, WV

45.0	0.594	72.4	25.2
90.0	2.70	78.3	33.6
135.0	12.5	77.0	41.0
180.0	14.7	68.7	40.4
225.0	14.2	94.6	44.0
270.0	14.7	117.8	46.6
315.0	12.5	141.7	47.5

Proposal 24.04 dBu contour does not cross Canadian border
Distance to Canadian border: 224.0 km

Distance to Mexican border: 2190.0 km

Conditions at FCC monitoring station: Laurel MD
Bearing: 108.9 degrees Distance: 340.3 km

Proposal is not within the West Virginia quiet zone area

Conditions at Table Mountain receiving zone:
Bearing: 277.8 degrees Distance: 2087.8 km

No land mobile station failures found

Proposal is not within the Offshore Radio Service protected area

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%

Proposal causes 0.22% interference to BLANK0000214889 LIC scenario 1
Proposal causes 0.23% interference to BLANK0000100132 LIC scenario 1
Proposal causes 0.01% interference to BLDTA20121108ALX LIC scenario 1
Proposal causes 0.02% interference to BLANK0000131009 CP scenario 1

---- Below is IX received by proposal BLANK0000214695 ----

Proposal receives 3.72% interference from scenario 1
**MX with BLANK0000212511 APP scenario 2, 3.77% interference received
Proposal receives 4.04% interference from scenario 3
**MX with BLANK0000212511 APP scenario 4, 4.09% interference received

APPENDIX C – Far Field Exposure to RF Emissions

