

**Kessler and Gehman Associates**  
Consultants • Broadcast • Wireless

# MINOR MODIFICATION TO A LICENSED NON-COMMERCIAL FM BROADCAST STATION

**CALL SIGN: WVPG**  
**FACILITY ID: 70642**  
**FCC FILE NO.: BMLD-20110819AAW**  
**LOCATION: PARKERSBURG, WV**

## Prepared For:

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

## Prepared By:

Ryan Wilhour  
Consulting Engineer  
Kessler and Gehman Associates  
14260 W Newberry Road #412  
Newberry, FL 32669-276  
352-332-3157 Extension 3  
ryan@kesslerandgehman.com  
www.kesslerandgehman.com

April 16, 2024

**WVPB – Minor Modification Application**

---

Parkersburg, WV

1.0 MINOR MODIFICATION APPLICATION ..... 2

2.0 FREQUENCY ALLOCATION STUDY ..... 2

3.0 FM TRANSMITTER LOCATION AND COVERAGE REQUIREMENTS ..... 3

4.0 National Environmental Policy Act (NEPA)..... 3

    4.1 General Environmental Requirements ..... 3

    4.2 Radio Frequency Radiation (RFR) Compliance..... 4

5.0 CERTIFICATION ..... 5

APPENDIX A – Height Above Average Terrain Calculation ..... 6

APPENDIX B – Maximum Allowable ERP for Station Class ..... 7

APPENDIX C – Allocation Studies and Maps ..... 8

APPENDIX D – 47 CFR § 73.313 - Prediction of Coverage..... 11

APPENDIX E – OET65 Far Field Exposure to RF Emissions ..... 12

## **1.0 MINOR MODIFICATION APPLICATION**

West Virginia Educational Broadcasting Authority is the licensee of an FM broadcast station having call sign WVPG facility ID 70642. It is proposed to move the transmitter to a new site having ASR 1282649 and side mount a new antenna near the top of the support structure. The side mounting of the new antenna will not require FAA or FCC ASR structure registration modifications since there will be no change to the structure height. It is herein proposed to modify the licensed facility as follows:

- Change the Antenna Structure Registration from 1035125 to 1282649
- Change the NAD 83 Site Coordinates from
  - 39° 12' 44.3" N 81° 35' 29.5" W to
  - 39° 14' 48.1" N 81° 25' 01.0" W
- Change the center of radiation height from
  - 52m to 87.2m above ground level
  - 331m to 399.0m above mean sea level
  - 98m to 154m above average terrain
- Change the antenna from omni-directional to directional

Pursuant to 47 CFR § 73.3573 the instant application is considered a minor modification and not subject to a filing freeze.

## **2.0 FREQUENCY ALLOCATION STUDY**

Appendix C demonstrates compliance with the following sections of the FCC rules:

- 47 CFR § 73.509 – Contour overlap Protection
- 47 CFR § 73.207 – Spacing Requirements
- 47 CFR § 73.525 – Television Channel 6 Protection

All contours were generated in accordance with 47 CFR § 73.333 engineering charts utilizing 30 arc second Globe terrain data. Appendix C illustrates that there is no prohibited contour overlap with surrounding stations.

### **3.0 FM TRANSMITTER LOCATION AND COVERAGE REQUIREMENTS**

Appendix D demonstrates that the transmitter location has been chosen so that based on the effective radiated power and antenna height above average terrain, a minimum field strength of 60 dB $\mu$ V/m (1- mV/m) will be provided over the entire principal community of Parkersburg, WV.

### **4.0 National Environmental Policy Act (NEPA)**

#### **4.1 General Environmental Requirements**

The existing structure has been previously accepted by the FAA and the FCC and it is thus presumed that the following has already been 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 E demonstrates that the peak exposure is 2.373% 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 in a complex RF environment and is beyond the scope of theoretical calculations to formulate the cumulative effect. Individually the proposed facility has no significant effect on human exposure but cumulatively may and is thus not categorically excluded from environmental processing.

## **5.0 CERTIFICATION**

The foregoing statement and the report regarding the aforementioned engineering work are true and correct to the best of my knowledge. Executed on April 16, 2024.

KESSLER AND GEHMAN ASSOCIATES, INC.



Ryan Wilhour  
Consulting Engineer

## APPENDIX A – Height Above Average Terrain Calculation

The Height Above Average Terrain (HAAT) was calculated from the FCC's HAAT Calculator tool:

<https://www.fcc.gov/media/radio/haat-calculator>

Results are as follows:

### Antenna Height Above Average Terrain Calculations -- Results

#### Input Data

Latitude **39° 14' 48.1" North**

Longitude **81° 25' 1" West (NAD 83)**

These coordinates convert to NAD 27 coordinates of  
39° 14' 47.83", North, 81° 25' 01.57" West (NAD 27).

Height of antenna radiation center above mean sea level: **399 meters AMSL**

Number of Evenly Spaced Radials = **8**      0° is referenced to True North

#### Results

Calculated HAAT = **154 meters**

Antenna Height Above Average Terrain calculated  
using FCC 30 second terrain database (continental USA only)

#### Individual "Radial HAAT" Values, in meters

0°	154.5 m
45°	141.3 m
90°	114.8 m
135°	139.9 m
180°	159.8 m
225°	179.6 m
270°	178.3 m
315°	166.3 m

## APPENDIX B – Maximum Allowable ERP for Station Class

The Maximum ERP for an FM Station Class was calculated from the FCC's Calculator tool:

<https://www.fcc.gov/media/radio/fmpower>

Results are as follows:

Choose a U.S. State or Possession:	WV - West Virginia
Station Class:	Class B1
154	meters Antenna Height Above Average Terrain (HAAT)
<input type="button" value="Find Result"/>	<input type="button" value="Print"/> <input type="button" value="Clear Data"/>

Results:

<b>Calculated ERP (rounded per Section 73.212) = 10.500 kW</b>
Unrounded ERP = 10.464605 kW
Comments:
<b>Class B and B1 stations are authorized in WV.</b>
Maximum class limit determined from: Class: B1 Reference ERP: 25 kW Reference HAAT: 100 meters Distance to 60 dBu F(50,50) contour: 39.1 km

# WVPB – Minor Modification Application

Parkersburg, WV

## APPENDIX C – Allocation Studies and Maps

West Virginia Educational Bro											
REFERENCE	CH#	212B1- 90.3 MHz, Pwr= 10.5 kW DA, HAAT= 154.0 M, COR= 399 M								DISPLAY DATES	
39 14 48.1 N.		Average Protected F(50-50)= 39.3 km								DATA 04-15-24	
81 25 01.0 W.		Standard Directional								SEARCH 04-15-24	
CH	CALL	TYPE	ANT	AZI.	DIST	LAT.	Pwr (kW)	INT (km)	PRO (km)	*IN*	*OUT*
CITY		STATE		<--	FILE #	LNG.	HAAT (M)	COR (M)	LICENSEE	(Overlap	in km)
211B1	WYXA	LIC	CN	84.5	88.73	39 19 08.19	4.000	52.5	35.3	2.1	1.2
Clarksburg			WV	265.1	0000143283	80 23 33.20	211	565	Educational Media Foundati		
211A	WOUZ-FM	LIC	VN	323.9	78.16	39 48 50.20	3.000	21.5	14.3	19.8	8.9
Zanesville			OH	143.6	BLED19931006KG	81 57 20.40	85	354	Ohio University		
214A	WLKV	LIC	CN	208.2	55.20	38 48 29.70	2.500	2.2	24.2	12.6	27.0
Ripley			WV	28.0	BLED20160216ABJ	81 43 04.59	88	328	Educational Media Foundati		
209A	WVGW	LIC	CN	84.6	53.07	39 17 22.20	2.350	2.3	25.6	16.6	24.1
West Union			WV	265.0	BLED20110725AGL	80 48 15.31	120	430	Araiza Revival Ministries,		
213B	WMLJ	LIC	CN	150.3	144.73	38 06 42.40	11.000	88.2	59.2	17.9	27.8
Summersville			WV	330.8	BLED20040830ACA	80 35 51.29	315	1269	Grace Missionary Baptist C		
212C1	WMKY	LIC	DCN	236.0	209.67	38 10 38.31	37.000	141.5	57.5	27.3	45.8
Morehead			KY	54.8	BLED20031022ALF	83 24 16.70	276	571	Morehead State University		
265A	WJAW-FM«	LIC	CN	312.8	50.69	39 33 19.31	1.900	0.0	0.0	11.5R	39.2M
Mcconnelsville			OH	132.5	BLH20161230AAY	81 51 02.49	179	439	Jawco, Inc.		
214A	WMCO	LIC	CN	341.9	88.23	40 00 06.19	1.200	1.6	11.4	46.4	72.9
New Concord			OH	161.7	BLED20131030AIB	81 44 18.39	44	327	Muskingum University		

-----  
Terrain database is GLOBE 30 Sec, R= 73.215 qualifying spacings or FCC minimum spacings in KM, M= Margin in KM  
Contour distances are on direct line to and from reference station. Reference Zone= - ZN1, Co to 3rd adjacent.  
All separation margins (if shown) include rounding.  
Ant Column: (D= DA Standard, Z= DA 73.215, N= Not DA 73.215, \_= Omni), Polarization (C,H,V,E), Beamtilt(Y,N,X)  
« = Station meets FCC minimum distance spacing for its class.

# WVPB – Minor Modification Application

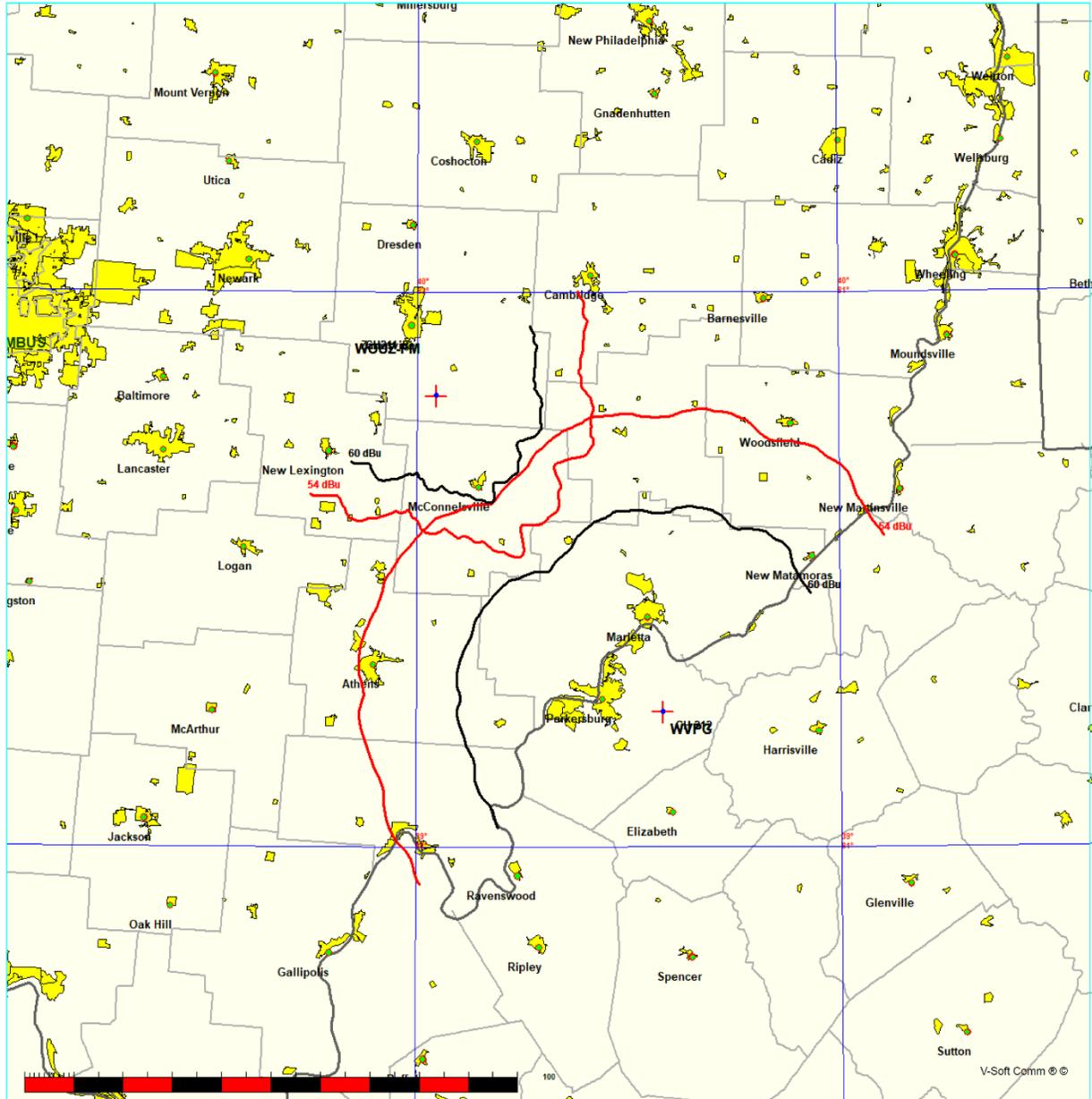
Parkersburg, WV

West Virginia Educational Bro

FMCommander Single Allocation Study - 04-15-2024 - GLOBE 30 Sec  
WVPG's Overlaps (In= 19.81 km, Out= 8.92 km)

WVPG CH 212 B1 DA  
Lat= 39 14 48.10, Lng= 81 25 01.00  
10.5 kW 155.6 m HAAT, 399 m COR  
Prot.= 60 dBu, Intef.= 54 dBu

WOUZ-FM CH 211 A BLED19931006KG  
Lat= 39 48 50.20, Lng= 81 57 20.40  
3.0 kW 85 m HAAT, 354 m COR  
Prot.= 60 dBu, Intef.= 54 dBu



# WVPB – Minor Modification Application

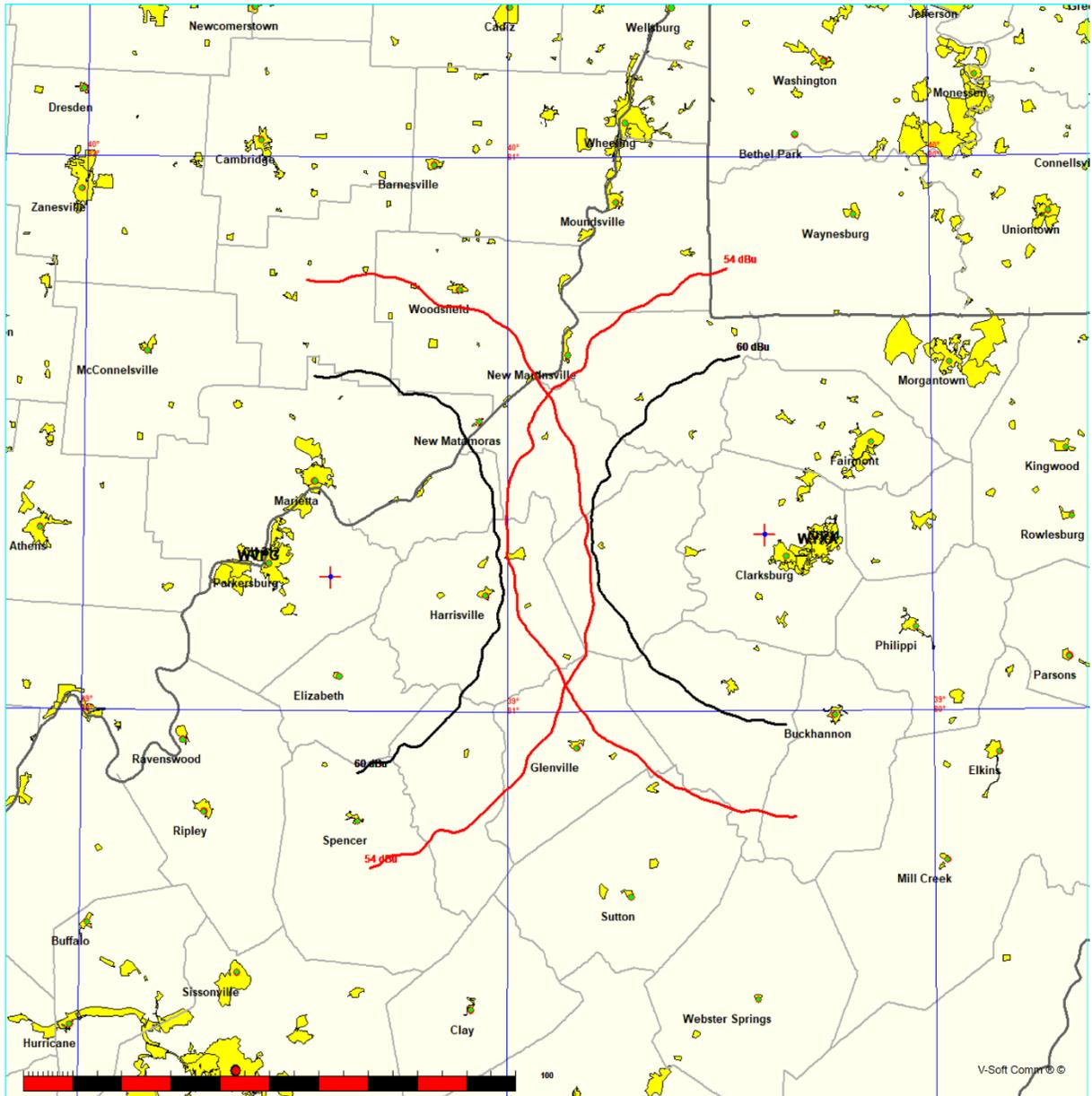
Parkersburg, WV

West Virginia Educational Bro

FMCommander Single Allocation Study - 04-15-2024 - GLOBE 30 Sec  
WVPG's Overlaps (In= 2.08 km, Out= 1.17 km)

WVPG CH 212 B1 DA  
Lat= 39 14 48.10, Lng= 81 25 01.00  
10.5 kW 155.6 m HAAT, 399 m COR  
Prot.= 60 dBu, Intef.= 54 dBu

WYXA CH 211 B1 0000143283  
Lat= 39 19 08.19, Lng= 80 23 33.20  
4.0 kW 211 m HAAT, 565 m COR  
Prot.= 60 dBu, Intef.= 54 dBu





APPENDIX E – OET65 Far Field Exposure to RF Emissions

