

TECHNICAL REPORT WWMH(FM) 205A CP Minor Modifications

- **GLOBE 30 Second Terrain Used**
- **Comparative Populations Maintained**
- **Channel 6 Compliance Demonstrated**

Globe 30 Second Terrain Utilized:

Commission staff has confirmed that Globe 30 second terrain is acceptable in a number of grants. Detailed showings are included with HAAT determined over relevant radials from the V-Soft provided Globe 30 second terrain database. It is noted that several recent applications using Globe 30 second terrain have been granted even though an overlap was evident using other databases (e.g. 0000166563 at Manly, IA showed a 1.2 km overlap with FCC 30 meter, and was initially dismissed yet reinstated and granted as originally filed. Also, application # 0000166942 at Sylva, NC was initially dismissed with a 1.7 km incoming overlap using FCC 30 meter data but reinstated and subsequently granted). The Audio Division's HAAT tool provided at <https://www.fcc.gov/media/radio/haat-calculator> uses GLOBE 30 second as the default database¹. **The applicant has elected its use for the instant application.**

¹ Section 73.212 permits the use of a computerized terrain database "except in cases of dispute," but does not prescribe a specific database, thereby permitting an applicant to use any recognized computerized terrain database.

§ 73.312 Topographic data.

(d) In lieu of maps, **the average terrain elevation may be computer generated except in cases of dispute, using elevations from a 30 second, point or better topographic data file.** The file must be identified and the data processed for intermediate points along each radial using linear interpolation techniques. The height above mean sea level of the antenna site must be obtained manually using appropriate topographic maps. (emphasis added)

Comparative Coverage Position Maintained:

As required by the construction permit, the WWMH comparative position relative to other competing applications in NCE MX Group 145 is maintained based on the 2010 U.S. Census database and the same methodology used in the original application². See exhibits E-7 for 60 dBu comparison and E-8 for NCE services.

	1ST NCE Service	2ND NCE Service	1ST + 2ND NCE	Total	Area
WWMH-AP	38,942	54,115	93,057	225,218	531.5
WWMH-CP	36,190	47,532	83,722	117,699	431.0

² Group 145.

1. This group consists of five applications to serve different communities in New Jersey. Casa de Destino (CDD) and Calvary Chapel Morris Hills (CCMH) each proposes to serve Bernardsville; Redeemer Broadcasting, Inc. (RBI) proposes to serve Mendham; Transmission Communications Network (TCN) proposes to serve Millington; and Cantico Nuevo Ministry, Inc. (CNM) proposes to serve Watchung. CDD, CCMH, and RBI each claim eligibility for a fair distribution preference. TCN and CNM do not claim eligibility for a fair distribution preference. Although CDD certifies that it is eligible for a fair distribution preference, it failed to timely provide sufficient documentation to support its claim in its original application. Accordingly, TCN, CNM, and CDD are each eliminated. CCMH claims to provide new first NCE service to 36,190 people; RBI to 38,643 people. **The proposals of CCMH and RBI are comparable because neither proposal exceeds the other by at least 5,000 people. Accordingly, we consider combined first and second NCE service population totals. CCMH would provide a first or second NCE service to 83,722 people (36,190 first service plus 47,532 second service); RBI to 88,378 people (38,643 first service plus 49,735 second service).** Because the CCMH and RBI applications are still comparable, CCMH and RBI proceed to a point system analysis. (emphasis added)

2. CCMH claims three points as an established local applicant; RBI does not. Both CCMH and RBI claim two points for diversity of ownership, with CCMH's claim based on a pledge to divest LPFM station WCFT-LP, Dover, New Jersey. Neither applicant claims points as a state-wide network. With respect to technical parameters, CCMH's proposed 60 dBu contour would encompass 431 square kilometers with a population of 177,699. RBI's proposed 60 dBu contour would encompass 457 square kilometers with a population of 157,527. Because neither applicant's proposal would serve at least 10% more area and population than the other, we do not award points for this criterion. Accordingly, CCMH is credited with a total of five points, and RBI is credited with a total of two points. CCMH is, therefore, the tentative selectee in Group 145.

Allocations Analysis:

This technical report has been developed in support of an application for a minor modification to the WWMH(FM) 205A CP at Bernardsville, NJ, FCC facility I.D. 767773. Changes in the directional antenna and ERP are proposed.

An overlap study (exhibit E-1) shows the WWMH(FM) 205A.CP modification does not produce any interference overlaps to existing facilities. The WWMH(FM) 205A.CP modification places a 60 dBu contour over 100% of the Bernardsville, NJ community of license (exhibit E-2).

Channel 6 Analysis - WPVI-TV Compliance with §73.525:

The proposed 4.0 kW directional facility is within the 225 km §73.525(a)(1) impact distance to Station WPVI-TV's licensed facility at 94.87 km.

§73.525(c) specifies that a new NCE application may only create interference to 3,000 persons. The appropriate U/D ratios utilized for the WPVI-TV licensed facility were derived from §73.599 Figures 1 and 2, using V-Soft's FMCommander program, and are appended to this report as E-10. Exhibit E-9 demonstrates that there is no community of 50,000 or greater population within the 59 dBu (50:10) contour without the 6 dB adjustment. Therefore, the ERP may be divided by 40 for the purposes of the interference analysis ($1 \text{ Watt H} + 4,000/40 \text{ V Watts} = 0.101 \text{ kW}$) in accordance with §73.525(e)(4).

The direction to WPVI-TV from the proposed Washington facility is 220.7° with an arc spanning from 150.7° to 290.7° for the +6 dB adjustment. Exhibit E-9 shows the resulting interference area to contain a 2020 population of 826 using U.S. Census Block Data. The interference area is 1.55 sq. km. It is concluded that the proposed minor changes comply with the Commission's channel 6 rules and policies.

Antenna System:

The facility is located on the existing tower, ASR no. 1228821, at coordinates:

40-41-30.6N 074-30-55.9W (NAD83)

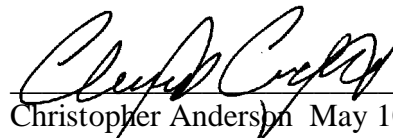
A vertical dipole, directional antenna (exhibit E-3) will be mounted at a COR AGL of 41.0 meters, 110.8 meters AMSL, 8.6 meter HAAT (exhibit E-4) and will operate at an ERP of 4.0 kW ERP horizontal and 0.001 kW ERP vertical.

RF Exposure Calculation:

The RF for the proposed facility was calculated using the Commission's FMMODEL program (exhibit E-5) to be 83.75 $\mu\text{Watts}/\text{cm}^2$ at a distance of 9 meters from the tower, which is less than the 200 $\mu\text{Watts}/\text{cm}^2$ maximum for general public, controlled exposure.

Conclusion:

It is concluded that the minor modification of the WWMH(FM) 205A proposal is in full compliance with the Commission rules and policies.



Christopher Anderson May 10, 2023
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E-1 WWMH(FM) 205A.CP Mod. Overlap Study

REFERENCE CH# 205A - 88.9 MHz, Pwr= 4 kW DA, HAAT= 8.6 M, COR= 110.8 M DISPLAY DATES
 40 41 30.60 N. Average Protected F(50-50)= 14.18 km DATA 05-11-23
 74 30 55.90 W. Standard Directional SEARCH 05-11-23

CH CITY	CALL	TYPE STATE	ANT AZI <--	DIST FILE #	LAT LNG	PWR(kW) HAAT(M)	INT(km) COR(M)	PRO(km) LICENSEE	*IN* (Overlap in km)	*OUT*
205A WWMH Bernardsville	CP DEN NJ	0.0 0.0	0.00 0000167028	40 41 30.60 74 30 55.90	2.500 16	111	---Reference---	Calvary Chapel Morris Hill		
206B U New York	VAC __N NY	81.8 262.2	46.57	40 45 00.37 73 58 05.50	50.000 150	79.0 167	53.0	-46.6*	-26.4*	
206B AL01846 New York	ALO ____ NY	81.8 262.2	46.57	40 45 00.40 73 58 05.50	50.000 150	79.0 167	53.0	-46.6*	-26.4*	
06 1C WPVI-TV Philadelphia	STA _HN PA	220.7 40.2	94.62 0000034890	39 37 01.30 78 12 59.00	56.000 332	13.1 404	98.2	111.4R	-16.8M	

See E-9 and E-10 for WPVI-TV channel 6 analysis.

06 1C WPVI-TV Philadelphia	LI _CY PA	220.7 40.2	94.87 BLCDT-20111019ACJ	39 37 01.30 78 12 59.00	34.000 330	13.1 395	92.4	105.5R	-10.6M
205A WRPJ Port Jervis	LIC _CN NY	356.2 176.1	81.89 BLED19921112KZ	41 25 36.30 74 34 52.50	0.500 180	66.8 427	21.5	1.8	0.5
205A WBYO Sellersville	LIC DVN PA	244.4 63.8	78.38 BLED19950531KB	40 23 02.30 75 21 00.60	0.900 133	63.5 274	20.2	0.6	0.5
204A WRSU-FM New Brunswick	LIC _CN NJ	165.1 345.2	25.88 BLED1206	40 28 00.30 74 26 13.50	1.350 38	17.3 62	11.2	0.8	3.1
204A WPSC-FM Wayne	LIC _CN NJ	30.2 210.4	39.19 BLED19881216KB	40 59 46.40 74 16 49.50	0.200 79	23.0 211	14.3	2.9	3.6
208A WSOU South Orange	LIC _CN NJ	76.4 256.6	23.48 BMLED20050909ABX	40 44 28.40 74 14 40.50	2.400 95	1.8 149	15.7	7.0	4.8
206B1 WFDU Teaneck	LIC DCN NJ	58.8 239.2	58.16 BLED20151103AYC	40 57 39.40 73 55 21.50	3.000 195	35.8 236	23.8	6.4	10.4
202B1 WBGO Newark	LIC DCN NJ	80.7 261.1	45.16 BLED20111213ABV	40 45 22.40 73 59 10.50	2.500 269	2.9 284	36.7	27.7	6.9
207A WNJY Netcong	LIC DEN NJ	324.8 144.7	26.62 BLED20080707AEO	40 53 14.40 74 41 53.60	0.520 131	1.1 385	14.7	11.4	7.6
202B1 WBGO Newark	STA _CN NJ	80.1 260.4	29.47 0000197763	40 44 12.20 74 10 15.00	1.200 125	1.5 159	18.7	13.5	8.4
206B1 WNYU-FM New York	LIC DCN NY	69.9 250.3	53.97 BLED1123	40 51 26.30 73 54 46.40	8.300 78	25.9 106	17.4	12.5	11.9
206A WWFM Trenton	LIC _CN NJ	193.3 13.2	49.49 BMLED20101201APO	40 15 30.40 74 38 57.60	1.150 89	26.4 118	17.9	12.8	18.1
206A WNJQ Washington	CP DEN NJ	280.9 100.6	46.71 0000213642	40 46 13.00 75 03 37.00	0.150 306	15.7 469	10.9	17.0	14.6
205A WMCX West Long Branch	LIC _EN NJ	136.7 317.0	62.90 BLED19881227KB	40 16 44.40 74 00 24.40	1.000 36	35.6 48	10.2	17.8	21.0
204B1 WBYX Stroudsburg	LIC DEN PA	298.7 118.1	82.49 BLED20120928AXY	41 02 40.30 75 22 43.60	4.000 242	48.6 652	31.4	19.9	29.7
205B1 WBZC Pemberton	LIC DEN NJ	181.5 1.5	94.41 BLED20060724ADI	39 50 34.40 74 32 38.60	10.000 67	64.6 96	18.8	20.2	46.1
205A WWES Mount Kisco	LIC DEN NY	48.6 229.1	93.66 0000136027	41 14 46.00 73 40 31.00	0.400 19	24.8 158	7.2	53.2	25.3
203A WNJP Sussex	LIC DCN NJ	357.9 177.8	50.27 BLED19980729KC	41 08 37.30 74 32 16.60	0.450 194	1.5 454	16.3	34.6	30.5
258B WBAI « New York	LIC _CN NY	80.7 261.1	45.28 BLED20190308AAE	40 45 22.40 73 59 10.50	10.000 282	42.6 297	28.1	14.5R	30.8M

Pacifica Foundation, Inc.

CH CITY	CALL	TYPE STATE	ANT STATE	AZI <--	DIST FILE #	LAT LNG	PWR(kW) HAAT(M)	INT(km) COR(M)	PRO(km) LICENSEE	*IN* (Overlap in km)	*OUT*
207B1 Freehold	WFJS-FM	LIC DEN NJ		147.2 327.5	55.15 BLED20171002AEX	40 16 27.00 74 09 48.80	15.000 50	1.6 78	12.7 Domestic Church Media Foun	44.3	38.4
205A Smi thtown	WFRS	LIC DEN NY		83.0 263.9	113.25 BMLED20130530AMD	40 48 27.40 73 10 46.40	1.500 132	51.3 154	15.5 Family Stations, Inc.	47.4	42.2
204A Hempstead	WRHU	LIC _CN NY		87.6 268.2	76.97 BMLED19881011KA	40 43 03.30 73 36 10.40	0.470 55	16.1 78	11.5 Hofstra University	46.9	46.7

Terrain database is GLOBE 30 Sec , R= 73.215 qualifying spacings or FCC minimum Spacings in KM, M= Margin in KM
In & Out distances between contours are shown at closest points. Reference zone= - Zone 1, 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)
""affixed to 'IN' or 'OUT' values = site inside restricted contour.
« = Station meets FCC minimum distance spacing for its class.

WWMH(FM).CP Mod.
 0000167028
 Latitude: 40-41-30.60 N
 Longitude: 074-30-55.90 W
 ERP: 4.00 kW
 Channel: 205
 Frequency: 88.9 MHz
 AMSL Height: 110.8 m
 Elevation: 69.8 m
 Horiz. Pattern: Directional
 Vert. Pattern: No
 Prop Model: None

60 F(50-50) dBu Contour

WWMH(FM).CP Mod.

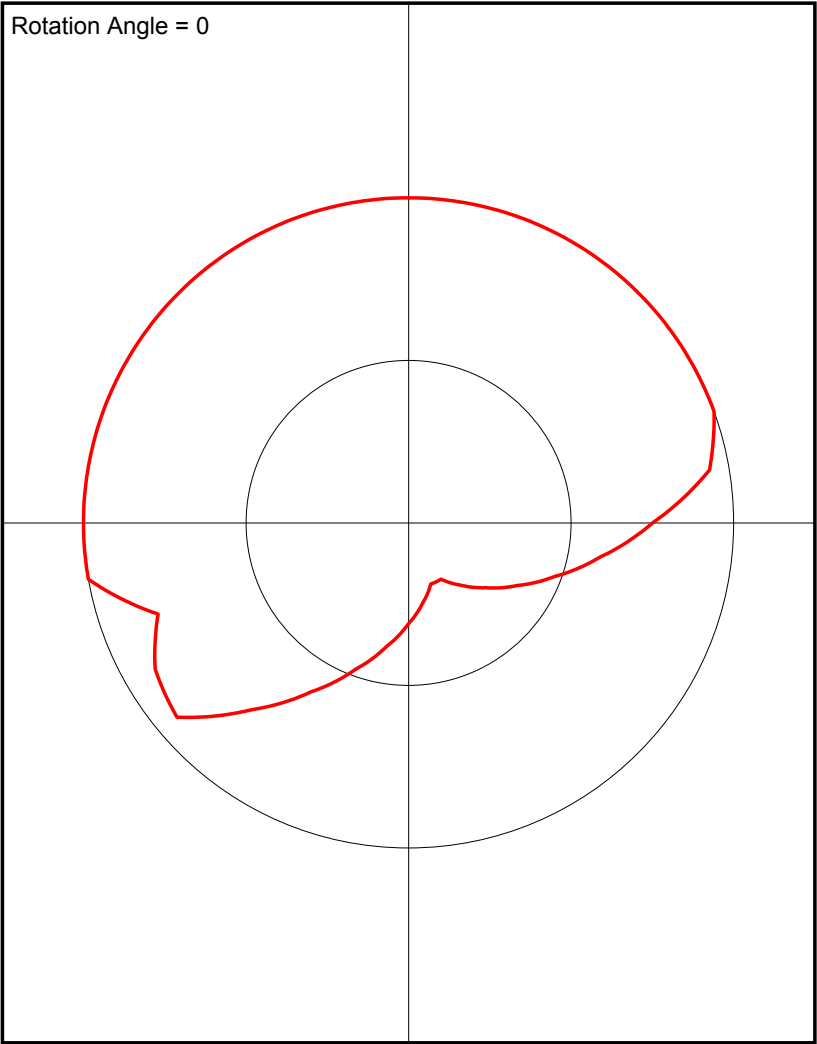
Parsippany

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Scale 1:200,000
 0 2 4 6 km

E-3 WWMH(FM) 205A.CP Mod. Antenna Pattern

Azimuth (deg)	Relative Field
0.0	1.0
10.0	1.0
20.0	1.0
30.0	1.0
40.0	1.0
50.0	1.0
60.0	1.0
70.0	1.0
80.0	0.94
90.0	0.75
100.0	0.6
110.0	0.48
120.0	0.385
130.0	0.31
140.0	0.25
150.0	0.2
160.0	0.2
170.0	0.25
180.0	0.31
190.0	0.385
200.0	0.48
210.0	0.6
220.0	0.75
230.0	0.93
240.0	0.9
250.0	0.82
260.0	1.0
270.0	1.0
280.0	1.0
290.0	1.0
300.0	1.0
310.0	1.0
320.0	1.0
330.0	1.0
340.0	1.0
350.0	1.0



E-4 WWMH(FM) 205A.CP Mod. HAAT Calculation

N. Lat. = 404130.6 W. Lng. = 743055.9

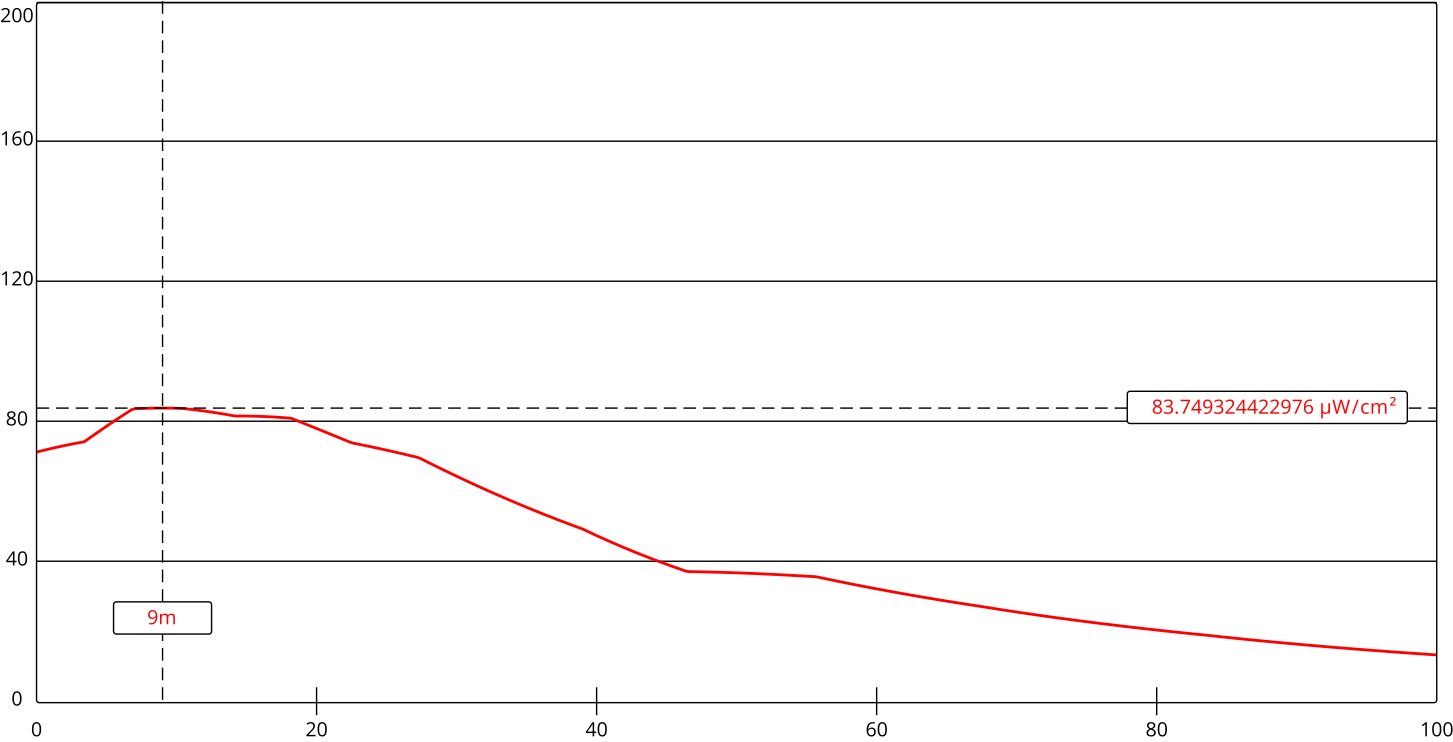
HAAT and Distance to Contour,

FCC, FM 2-10 Mi, 51 pts Method - GLOBE 30 SEC

Azi.	AV EL	HAAT	ERP kW	60-F(50-50)
000	149.3	-38.5	4.0000	14.18
045	79.1	31.7	4.0000	14.53
090	92.7	18.1	0.7569	09.48
135	63.7	47.1	0.1296	07.49
180	75.1	35.7	0.1296	06.50
225	89.9	20.9	0.7832	09.56
270	90.6	20.2	2.2500	12.35
315	177.4	-66.6	4.0000	14.18

Ave El= 102.23 M HAAT= 8.57 M AMSL= 110.8

E-5 WWMH(FM) 205A.CP Mod. RF Calculation



Channel Selection	Channel 205 (88.9 MHz) ▾		
Antenna Type +	EPA Type 1: Ring-and-Stub or "Other" ▾		
Height (m)	41	Distance (m)	100
ERP-H (W)	1	ERP-V (W)	4000
Num of Elements	1	λ	1
Num of Points	500		

ASR Registration 1228821

Registration Detail

Reg Number	1228821	Status	Constructed
File Number	A1182156	Constructed	04/01/2001
EMI	No	Dismantled	
NEPA	No		

Antenna Structure

Structure Type LTOWER - Lattice Tower

Location (in NAD83 Coordinates)

Lat/Long	40-41-30.6 N 074-30-55.9 W	Address	446 Carlton Road
City, State	Millington , NJ		
Zip	07946	County	MORRIS
Center of AM Array		Position of Tower in Array	

Heights (meters)

Elevation of Site Above Mean Sea Level	Overall Height Above Ground (AGL)
69.8	60.7
Overall Height Above Mean Sea Level	Overall Height Above Ground w/o Appurtenances
130.5	59.4

Painting and Lighting Specifications

None

FAA Notification

FAA Study	02-AEA-0563-OE	FAA Issue Date	03/25/2002
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Owner & Contact Information

FRN	0011498342	Owner Entity Type	Limited Liability Company
Assignor FRN	0024654543	Assignor ID	L01949451

Owner

American Towers LLC
Attention To: FAA-FCC Regulatory Team
10 Presidential Way
Woburn , MA 01801

P: (781)926-4500
F:
E: faa-fcc@americantower.com

Contact

Attention To: FAA-FCC Regulatory Team
10 Presidential Way
Woburn , MA 01801

P: (781)926-4500
F:
E: faa-fcc@americantower.com

Last Action Status

Status	Constructed	Received	01/05/2021
Purpose	Change Owner	Entered	01/05/2021
Mode	Interactive		

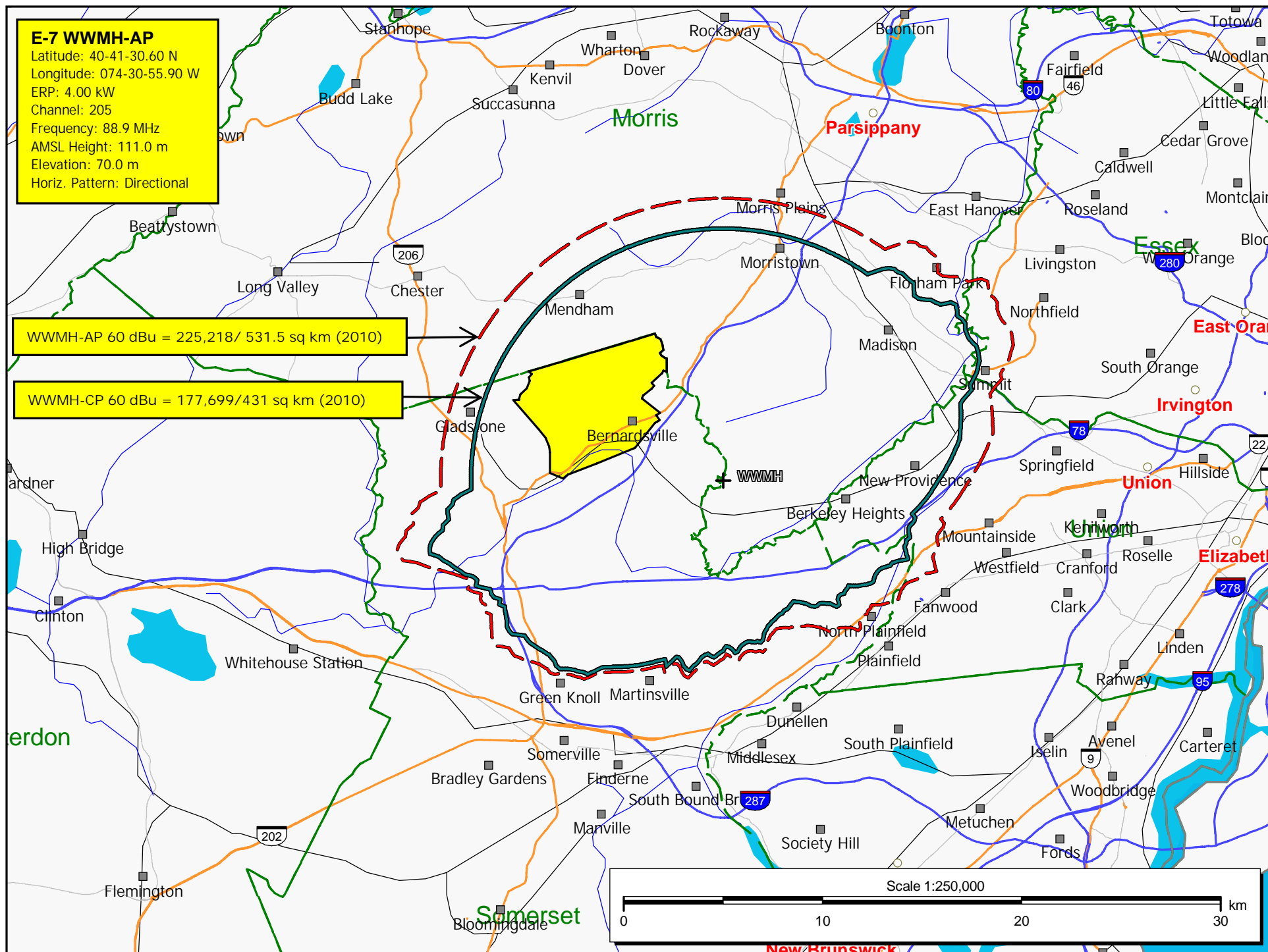
Related Applications

01/05/2021 A1182156 - Change Owner (OC)

Latitude: 40-41-30.60 N
Longitude: 074-30-55.90 W
ERP: 4.00 kW
Channel: 205
Frequency: 88.9 MHz
AMSL Height: 111.0 m
Elevation: 70.0 m
Horiz. Pattern: Directional

Latitude: 40-41-30.60 N
Longitude: 074-30-55.90 W
ERP: 4.00 kW
Channel: 205
Frequency: 88.9 MHz
AMSL Height: 111.0 m
Elevation: 70.0 m
Horiz. Pattern: Directional

WWMH-CP 60 dBu = 177,699/431 sq km (2010)



E-8 WWMH-AP

Latitude: 40-41-30.60 N
Longitude: 074-30-55.90 W
ERP: 4.00 kW
Channel: 205
Frequency: 88.9 MHz
AMSL Height: 110.8 m
Elevation: 69.8 m
Horiz. Pattern: Directional

WWMH-AP 60 dBu

NCE Service Count Population Report - 60.00 dBu

Reference Area: WWMH-AP 60.00 dBu
Counting Grid Cell Size: 0.05 sq. km
Population Database: 2010 US Census (PL)

Services Included in Count:

WWMH-AP (205):
WBGO (202)
WNJY (207)
WSOU (208)
WJSV (213)
WFMU (216)
WXPJ (220)
WKCR-FM (210)
WNYE (218)

Count Area	Population	Area (sq. km)
------------	------------	---------------

1 Service	38,942	109.09
2 Service	54,115	213.09
3 or more	132,161	209.29

NCE 60 dBu Service Count

1
2
3 or more

Scale 1:500,000

0 10 20 30 40 50 60 km

E-9 WPVI-TV Analysis

WPVI-TV CHANNEL 6 ANALYSIS PER §73.525

Proposed ERP reduced by a factor of 40 based
On vertical only radiation per §73.525(e)(4).
6 dB added to interference contour per §73.525(e)(1)(iii)
Since the entire overlap is within the specified correction arc.

Interference population determined to be 826 (2020)
In an area of 1.55 sq km (Green area)

WWMH
0000167028
Latitude: 40-41-30.60 N
Longitude: 074-30-55.90 W
ERP: 0.101 kW
Channel: 205
Frequency: 88.9 MHz
AMSL Height: 110.8 m
Elevation: 69.8 m
Horiz. Pattern: Directional
Vert. Pattern: No
Prop Model: FCC Model
Loc. Variability: 50.0%
Time Variability: 10.0%
HAAT Mthd: FCC

WPVI-TV LIC
Latitude: 40-02-33 N
Longitude: 075-14-32 W
ERP: 34.00 kW
Channel: 6
AMSL Height: 394.7 m
Elevation: 74.0 m
Horiz. Pattern: Omni
Vert. Pattern: No
Prop Model: FCC Model
Loc. Variability: 50.0%
Time Variability: 50.0%
HAAT Mthd: FCC

WPVI-TV 47 dBu (50:50)

290.7°

WPVI-TV 47.5 dBu (50:50)

Channel 6 Interference Area (Green) = 1.55 sq km / 826 (2020)

65.6 dBu (50:10)

WWMH

WWMH 205A 65 dBu (50:10)
+6 dB Adjustment used
for 150.7 to 290.7 degrees.

150.7°

WWMH 59 dBu (50:10) without 6 dB
correction does not encompass any community of 50,000
within the WPVI-TV 47 dBu licensed contour.

220.7°

Scale 1:75,000

0 2 4 6 km

E-10 WPVI-TV DATA

WPVI-TV LI 06 1C Dom 34.000 kW 330 m HAAT TCY Non-DA
 Philadelphia PA 394.7 m COR AMSL -
 Lat = 40 02 33.00, Lng = 75 14 32.01 - NAD 83
 Dist = 94.87 km, Azi = 220.7°, Rev Azi = 40.2°

Direct line HAAT Grade B, 47 dBu = 92.36 km & Grade A = 44.89 km
 Distance from reference to TV6 Grade B = 2.51 km
 Cutoff Dist from Full Service or Class CA = 225 km
 Reference's maximum interference contour distance = 13.14 km
 Database station's protected contour distance = 92.36 km
 WPVI-TV Signal Contour at Reference location = 45.9 dBu
 Add 6 dB to FM Contour value if within angle.

TV/FM D to U values.

47.0	59.0	55.0	63.5	63.0	68.1	71.0	73.6	79.0	79.9	87.0	86.3
48.0	59.6	56.0	64.0	64.0	68.8	72.0	74.4	80.0	80.7	88.0	87.1
49.0	60.1	57.0	64.6	65.0	69.4	73.0	75.1	81.0	81.4	89.0	87.9
50.0	60.7	58.0	65.2	66.0	70.1	74.0	75.9	82.0	82.2	90.0	88.8
51.0	61.3	59.0	65.8	67.0	70.7	75.0	76.7	83.0	83.0	91.0	88.8
52.0	61.8	60.0	66.3	68.0	71.4	76.0	77.5	84.0	83.8	92.0	88.8
53.0	62.4	61.0	66.9	69.0	72.1	77.0	78.3	85.0	84.6	93.0	88.8
54.0	62.9	62.0	67.5	70.0	72.9	78.0	79.1	86.0	85.5	94.0	88.8