

**MINOR CHANGE APPLICATION**  
**MODIFICATION OF BNPFT-20131017AJY**  
**MILLER COMMUNICATIONS, INC.**  
**W258CP FM TRANSLATOR STATION**  
**CH 258D - 99.5 MHZ 0.23 KW**  
**ORANGEBURG, SOUTH CAROLINA**  
**December 2014**

**EXHIBIT D**

**Radio Frequency Assessment**

A study has been made to determine whether this proposal is in compliance with 47 C.F.R. §1.1307 of the Commission's rules and with OET Bulletin #65, dated August 1997 ("Bulletin"), regarding human exposure to radio frequency radiation in the vicinity of broadcast towers. This study considers all nearby facilities and utilizes the appropriate formulas contained in the OET Bulletin.<sup>1</sup>

The W258CP antenna system will be mounted with its center of radiation 121.9 meters (400 feet) above the ground at the tower location and will operate with an effective radiated power of 0.23 kilowatt (230 watts) in the horizontal and vertical planes (circularly polarized). At 2.0 meters above the ground at the base of the tower, the height of an average person, the W258CP antenna system will contribute  $0.00064 \text{ mw/cm}^2$ .<sup>2</sup> Based on exposure limitations for a controlled environment, less than 1.0% of the allowable ANSI limit is reached at 2.0 meters above the ground at the base of the tower. For uncontrolled environments 0.32% of the ANSI limit is reached at 2.0 meters above the ground at the base of the tower.

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- 1) The contributions of the FM stations were calculated with the FMModel program. The EPA single bay dipole antenna was used for calculations unless otherwise noted.
  - 2) This level occurs at 32.5 meters out from the base of the tower and is considered worst case.

FM translator W235CH is co-located with W258CP. The W235CH antenna system is mounted with its center of radiation 121.9 meters (400 feet) above the ground at the tower location and will operate with an effective radiated power of 0.25 kilowatt (250 watts) in the horizontal and vertical planes (circularly polarized). At 2.0 meters above the ground at the base of the tower, the height of an average person, the W235CH antenna system will contribute  $0.0007 \text{ mw/cm}^2$ .<sup>3</sup> Based on exposure limitations for a controlled environment, less than 1.0% of the allowable ANSI limit is reached at 2.0 meters above the ground at the base of the tower. For uncontrolled environments 0.35% of the ANSI limit is reached at 2.0 meters above the ground at the base of the tower.

FM station WHXT is also co-located with W235CH. The WHXT antenna system is mounted with its center of radiation 132.0 meters (433 feet) above the ground at the tower location and operates with an effective radiated power of 9.2 kilowatts in the horizontal and vertical planes (circularly polarized). At 2.0 meters above the ground at the base of the tower, the height of an average person, the WHXT antenna system contributes  $0.0219 \text{ mw/cm}^2$ .<sup>4</sup> Based on exposure limitations for a controlled environment, less than 2.2% of the allowable ANSI limit is reached at 2.0 meters above the ground at the base of the tower. For uncontrolled environments 11.0% of the ANSI limit is reached at 2.0 meters above the ground at the base of the tower.

Combining the contributions of W235CH, W258CB, and WHXT, less than 6.0% of the exposure limit is reached at the base of the tower. Since this level for an uncontrolled

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3) See Footnote #2, *supra*.

4) This level occurs at 39.0 meters out from the base of the tower and is considered worst case.

environment is less than the level defined by the Commission, W235CH is believed to be in compliance with the radio frequency radiation exposure limits, as required by the Federal Communications Commission. Further, Miller will post warning signs in the vicinity of the tower warning of potential radio frequency radiation hazards at the site. In addition, Miller will reduce the power of the proposed facility or cease operation, in cooperation and coordination with other tower users, as necessary, to protect persons having access to the site, tower or antenna from radio frequency radiation in excess of FCC guidelines.

**RF WORKSHEET #1 - FM (including translators & boosters)**

**PLEASE COPY BEFORE USING. THE DETERMINATION OF COMPLIANCE MAY INVOLVE REPEATED CALCULATIONS. IF LOCATED ON A MULTIPLE FM USER TOWER, PLEASE COMPLETE RF WORKSHEET 1A BEFORE PROCEEDING.**

**EFFECTIVE RADIATION CENTER HEIGHT**

Enter proposed "Height of radiation center above ground" OR as listed in line 1 132.0 m (1)  
or Worksheet 1A

Is antenna supporting structure located on the roof of a building? (check one) ☐ Yes ☒ NO (2)

If line 2 is "yes," enter the building height measured at the base of the antenna supporting structure in line 3

If line 2 is "no," enter "0" in line 3 0.0 m (3)

Subtract line (3) from line (1) 132.0 m (4)

Subtract the value 2.0 from line (4) 130.0 m (5)

**TOTAL EFFECTIVE RADIATED POWER**

(If "beam tilt" is utilized, list maximum values)

List Effective Radiated Power in the Horizontal Plane            kW (6)

List Effective Radiated Power in the Vertical Plane            kW (7)

Add Lines (6) and (7) OR list value from Line 2 in Worksheet 1A 19.30 kW (8)

**PERCENTAGE OF FCC RF LIMIT(S) FOR MAXIMUM PERMISSIBLE EXPOSURE**

Multiply Line (8) by 33.41 644.813 (9)

Multiply the value listed in line (5) by itself 16,900 (10)

Divide Line (9) by line (10) 0.0382 (11)

Multiply Line (11) by (100) 3.82 % (12)

**DETERMINATION OF COMPLIANCE WITH CONTROLLED/OCCUPATIONAL LIMIT**

Does Line (12) exceed 100% ☐ Yes ☒ NO (13)

**IF YOU ANSWERED "YES" IN LINE (13), THE WORKSHEETS MAY NOT BE USED IN THIS CASE. \***

**IF YOU ANSWERED "NO" IN LINE (13), THEN THE SITE SHOULD COMPLY WITH THE FCC'S CONTROLLED/OCCUPATIONAL RF EXPOSURE LIMITS FOR GROUND LEVEL EXPOSURE. #**

**CONTINUE**

**\*In this case, you may need to prepare an Environmental Assessment. See Instructions for Section III-A, Item 15 of FCC Form 349.**

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**RF WORKSHEET #1 - FM (continued)**

**DETERMINATION OF COMPLIANCE WITH THE UNCONTROLLED/GENERAL POPULATION LIMIT**

Does Line (12) exceed 20% ..... ☐ Yes ☒ No (14)

**IF YOU ANSWERED "NO" IN LINE (14), THEN THE SITE SHOULD COMPLY WITH THE FCC'S UNCONTROLLED/GENERAL POPULATION RF EXPOSURE LIMITS FOR GROUND LEVEL EXPOSURE. NO FURTHER STUDY REQUIRED.**

**IF YOU ANSWERED "YES" IN LINE (14), CONTINUE.**

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**Rooftop with restricted access.**

If you answered "yes" in Line (14) and "yes" in Line (2) (indicating that the tower is located on the roof of a building), and the general public is not allowed access to the rooftop level, repeat lines 5 through 12, entering the value in Line (1) directly in Line (4). (If Multiple FM Use Tower, recalculations should be in accordance with instructions on Worksheet #1A.) **Otherwise, go to the next section.**

Upon recalculation, Does Line (12) exceed 20%..... ☐ Yes ☐ No (15)

**IF YOU ANSWERED "YES" IN LINE (15), THE WORKSHEETS MAY NOT BE USED IN THIS CASE. \***

**IF YOU ANSWERED "NO" IN LINE (15), THEN THE AREA AT GROUND LEVEL SHOULD COMPLY WITH THE FCC'S UNCONTROLLED/GENERAL POPULATION EXPOSURE LIMIT. NO FURTHER STUDY REQUIRED.**

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**Access to base of tower restricted by fencing.**

If the tower is not located on the roof of a building, is the base of the tower surrounded by fencing or other restrictive barrier and are appropriate warning signs posted on the fence that adequately detail the nature of the RF exposure environment contained therein? ☐ Yes ☐ No (16)

**IF YOU ANSWERED "NO" IN LINE (16), THE WORKSHEETS MAY NOT BE USED IN THIS CASE. \***

If you answered "yes" in line (16), what is the distance from the base of the tower to the fence or barrier at its nearest point ..... \_\_\_\_\_ m (17)  
Multiply Line (9) (as calculated previously) by 5 ..... \_\_\_\_\_ (18)  
Subtract Line (10) (as calculated previously) from Line (18) ..... \_\_\_\_\_ (19)  
Take the square root of Line (19) ..... \_\_\_\_\_ m (20)  
Is Line (20) less than or equal to Line (17)..... ☐ Yes ☐ No (21)

**IF YOU ANSWERED "YES" IN LINE (21), THEN THE RF FIELD OUTSIDE THE FENCE COMPLIES WITH THE FCC'S UNCONTROLLED/GENERAL POPULATION EXPOSURE LIMIT. NO FURTHER STUDY REQUIRED.**

**IF YOU ANSWERED "NO" IN LINE (21), THE WORKSHEETS MAY NOT BE USED IN THIS CASE. \***

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**\*In this case, you may need to prepare an Environmental Assessment. See Instructions for Section III-C, Item 15 of FCC Form 349.**

### RF WORKSHEET #1A - Multiple FM User Tower

The procedure below will allow for a “worst-case” determination to be made in situations where several FM stations share a common tower. This determination is based upon the “worst case” assumption that all RF energy is emanating from a single antenna located at the same height (i.e., antenna center of radiation above ground level) as the lowest user on the tower.

**Complete this sheet for all call signs.**

For each call sign, the **total** of the Horizontal and the Vertical ERP’s must be used. If “beam tilt” is utilized, list maximum values.

COLUMN 1 CALL SIGN	COLUMN 2 HEIGHT OF ANTENNA RADIATION CENTER ABOVE GROUND LEVEL	COLUMN 3 TOTAL EFFECTIVE RADIATED POWER (HORIZONTAL AND VERTICAL)
W235CH	132.0 meters	0.5 kilowatts
W258CP	132.0 meters	0.4 kilowatts
WHXT	147.0 meters	18.4 kilowatts
	meters	kilowatts
	meters	kilowatts
	meters	kilowatts

List the smallest value in Column 2 ..... 132.0 m (1)  
List the total of all values in Column 3 ..... 19.3 kW (2)

The value listed in line (1) above must be used in line (1) on Worksheet 1.

The value listed in line (2) above must be used in line (8) on Worksheet 2.

Now complete worksheet 1 (except for lines 6 and 7).