

**MINOR CHANGE APPLICATION**  
**CUMBERLAND BROADCASTING COMPANY**  
**NEW FM TRANSLATOR STATION**  
**CH 276D - 103.1 MHZ - 0.155 KW**  
**CUMBERLAND, MARYLAND**  
**April 2018**

**EXHIBIT C**

**Radio Frequency Radiation Study**

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 stations and utilizes the appropriate formulas contained in the Bulletin.

This radio frequency radiation study is being conducted to determine whether this proposal is in compliance with OET Bulletin Number 65 and Number 65A, both dated August 1997, regarding human exposure to radio frequency radiation in the vicinity of broadcast towers. This study considers all nearby contributing stations and utilizes the appropriate formulas contained in the OET Bulletin.

The proposed new translator's antenna will be mounted with its center of radiation 15.0 meters (49.2 feet) above the ground at the tower location and will operate with an effective radiated power of 0.155 kilowatt in the vertical and horizontal planes (circularly polarized). The proposed new translator will utilize a single bay FCC Type 2 FM antenna. At 2.0 meters above the ground at a radius of 13.4 meters the proposed new translator's antenna will contribute

0.0169 mw/cm<sup>2</sup>. Based on exposure limitations for a controlled environment, 1.7 % of the allowable limit is reached at 2.0 meters above the ground at the base of the tower. For uncontrolled environments, 8.5 % of the ANSI limit is reached at 2.0 meters above the ground at the tower base.

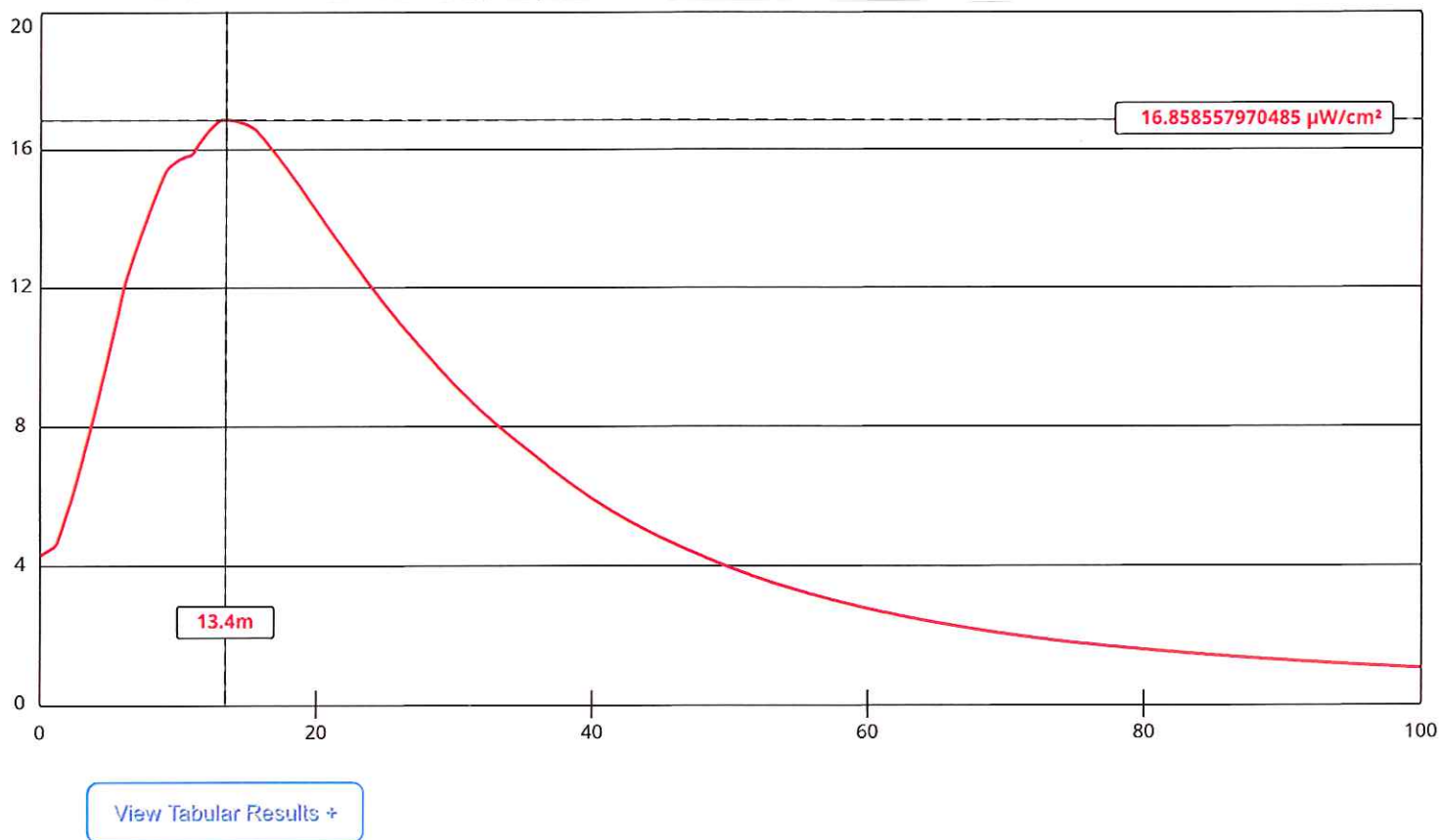
WCBC, 1270 kHz, Cumberland, Maryland is located in close proximity to this proposed translator. The WCBC antenna system is analyzed with the assumption that the station's full 5.0 kilowatts of power is radiated from each tower structure. The closest tower to the 13.4 meter circumference detailed above is the northern tower, which is 45.4 meters from the highest FM translator contribution, as shown in Exhibit C2. The tower structure is 88.3° in electrical height. By reference to Figure 2 of OET 65-A, a tower radiating 5.0 kilowatts will deliver 17.3 V/m (electric field) or 0.13 A/m (magnetic field) at this location. Since WCBC operates at 1270 kHz, the controlled and uncontrolled limits are the same. These figures represent 2.8% of the electric field limit of 614.0 V/m and 8.0% of the magnetic field limit of 1.63 A/m. The magnetic field contribution of 8.0 % is considered as a worst case scenario.

When combining the contribution of the proposed FM translator and WCBC, a total of 16.5% contribution to the uncontrolled contribution limit is reached as a worst case scenario. This is well below the 100% limit established by the FCC. The proposed new translator is believed to be in compliance with the radio frequency radiation exposure limits, as by the Federal Communications Commission. Further, Cumberland will ensure warning signs are posted in the vicinity of the tower and at the gated access point warning of potential radio frequency radiation hazards at the site. In addition, Cumberland 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.

# FM Model

The FM Model calculator determines the potential exposure from radiofrequency (RF) electromagnetic fields produced by FM broadcast station antennas at ground level. The FM Model software was originally developed by the FCC in 1997 as a standalone executable program and this improved version provides more precise predictions and runs via a JavaScript enabled web browser. The FM Model is originally based on measured data [published in 1985 by the EPA](#)



## Channel Selection

[Antenna | 1000 ft](#)

Height (m)

ERP-H (W)

Num of Elements

Num of Points

Channel 250 (97.9 MHz) ▾

EPA Type 2: Opposed V Dipole ▾

15

Distance (m)

155

ERP-V (W)

1

Element Spacing ( $\lambda$ )

500

100

155

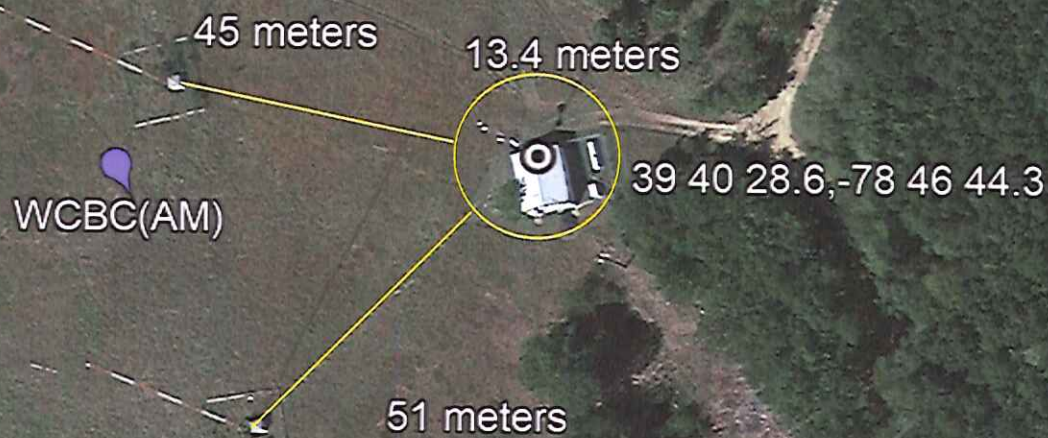
1

Apply

**EXHIBIT C1**  
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**EXHIBIT C2**  
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Google Earth

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400 ft

