

ENGINEERING STATEMENT

The engineering data contained herein have been prepared on behalf of NEW YORK PUBLIC RADIO, licensee of commercial FM station WQXR-FM, Channel 290B1 (105.9 MHz) in Newark, New Jersey, in support of this Application for Construction Permit to operate with a new auxiliary facility on the broadcast tower atop the Empire State Building.

A 19-station antenna will be mounted at the 384.6-meter level of the building. The antenna will be a three-bay, omnidirectional, circularly polarized model constructed and installed by Electronics Research, Incorporated (ERI). The proposed effective radiated power for the WQXR-FM auxiliary will be 0.71 kW. The predicted 57 dBu service contour that results from this proposed facility is plotted in Exhibit B. In Exhibit C, we compare the 60 dBu service contour of the station's main facility with that of the proposed auxiliary facility. Clearly, the contour of the auxiliary facility does not exceed that of the main facility at any azimuth, a requirement of the Commission's Rules for auxiliary facilities.

Exhibit D is an elevation pattern for the proposed auxiliary antenna and Exhibit E is a power density calculation.

While no interference to any authorized communications facility at the proposed site is expected to be caused by the proposed auxiliary operation, the applicant accepts its responsibility for correcting any such interference that may occur. In addition, the applicant will satisfy any complaint of interference to any FCC-listed device within the auxiliary facility's predicted blanketing contour.

EXHIBIT A

Because no change in the overall height or location of the existing tower is proposed herein, the FAA has not been advised of this proposal. In addition the FCC has assigned Antenna Structure Registration Number 1007048 to this tower.

I declare, under penalty of perjury, that the foregoing statements and attached engineering exhibits, which were prepared by me, are true and correct to the best of my knowledge and belief.

A handwritten signature in blue ink, appearing to read "K. T. Fisher". The signature is stylized with a large initial "K" and a long horizontal stroke at the end.

KEVIN T. FISHER

May 17, 2017





■ Main 60 dBU Contour  
■ Proposed Auxiliary 60 dBU Contour



**EXHIBIT C**  
**CONTOUR COMPARISON**  
**MAIN VS. PROPOSED AUXILIARY**  
**WQXR-FM**  
**CH. 290B1 - NEWARK, NEW JERSEY**



Electronics Research, Inc.  
7777 Gardner Road  
Chandler, In. 47610

Figure 17

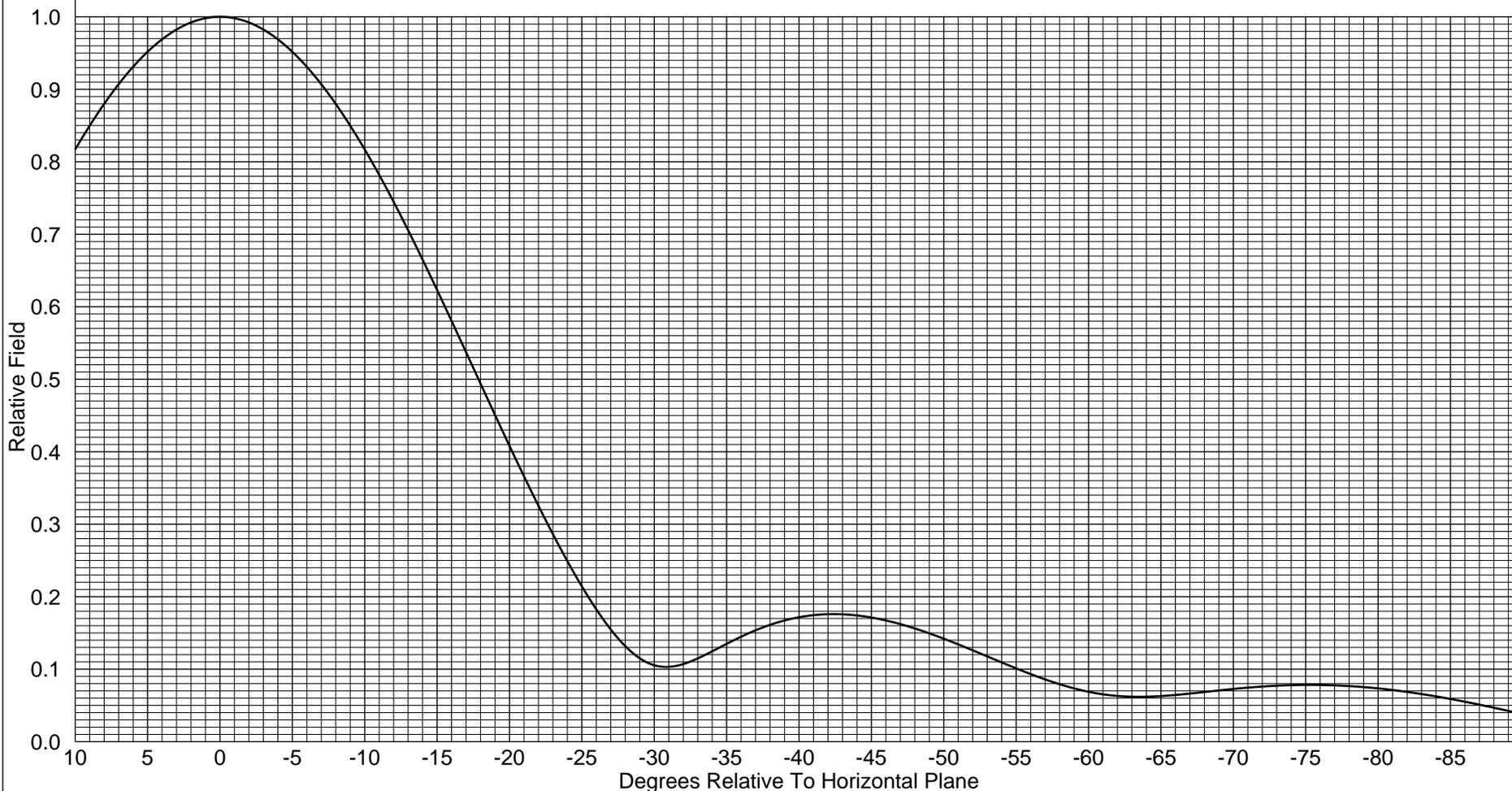
---Theoretical---

11/5/2015 8:02:52 AM

Vertical Plane Relative Field  
ERI 1184-3CP-2 FM Antenna  
0.00 Degree(s) Electrical Beam Tilt  
10.1 Percent First Null Fill  
5.3 Percent Second Null Fill  
Power Gain is 1.227 In The Horizontal Plane(1.227 In The Max.)  
95% Efficiency

105.9 MHz

Element Spacing:  
80 Inches



POWER DENSITY CALCULATION

PROPOSED WQXR-FM AUXILIARY  
CHANNEL 290B1 (105.9 MHZ) – NEWARK, NEW JERSEY

Since the FCC considers the possible biological effects of RF transmissions in its environmental determinations, we have studied the matter with respect to this Newark facility. Employing the methods set forth in *OET Bulletin No. 65* and considering a main-lobe effective radiated power of 0.71 kW (H, V), an antenna radiation center 384.6 meters above ground, and the vertical pattern of the ERI 3-bay FM antenna, maximum power density two meters above ground of 0.0000046 mW/cm<sup>2</sup> is calculated to occur 418 meters from the base of the building. Since this is significantly less than 0.1 percent of the 0.2 mW/cm<sup>2</sup> reference for uncontrolled environments (areas with public access) surrounding a facility operating in the FM Band, a grant of this proposal may be considered a minor environmental action with respect to public exposure to non-ionizing electromagnetic radiation.

Further, the station owner will take whatever precautionary steps are necessary, such as reducing power or leaving the air temporarily, to ensure that workers operating in the vicinity of the antenna are not exposed to excessive non-ionizing radiation.

In addition, the firm of Smith and Fisher, LLC will conduct a comprehensive power density survey of the upper floors of the Empire State Building once the new auxiliary antenna is operational. This survey will include the parapets on the 81<sup>st</sup> Floor (east and west), the 86<sup>th</sup> Floor Observatory, the 87<sup>th</sup> Floor HVAC area, the east 88<sup>th</sup> Floor parapet, the exterior areas around the base of the Mooring Mast (DD-level), the six interior levels of the Mooring Mast

EXHIBIT E

(Levels DD, E-1, E-2, E-3, E-4, and the 101<sup>st</sup> Floor), the 102<sup>nd</sup> Floor Observatory, the 103<sup>rd</sup> Floor interior and parapet, and the 104<sup>th</sup> Floor. The purpose of this survey will be to document the RF levels in each of these areas and show compliance with the Commission's guidelines for human exposure to RF energy in public (uncontrolled) and occupational (controlled) environments. A statement summarizing the results of the survey will be included in the station's application for license.