

**ENGINEERING TECHNICAL STATEMENT PREPARED BY WILLIAM T. GODFREY, JR. OF THE FIRM KESSLER AND GEHMAN ASSOCIATES, INC., TELECOMMUNICATIONS CONSULTING ENGINEERS IN CONNECTION WITH A NEW CHANNEL 206 (89.1 MHZ) CLASS C3 NONCOMMERCIAL EDUCATIONAL FM (NCE-FM) CONSTRUCTION PERMIT APPLICATION FOR SOUTH CAROLINA EDUCATIONAL TELEVISION COMMISSION (SCETV) REQUESTING TO SERVE FLORENCE, SOUTH CAROLINA AND SURROUNDING COMMUNITIES.**

The firm Kessler and Gehman Associates was retained by South Carolina Educational Television Commission (SCETV) to prepare engineering studies and the engineering portion of a construction permit application for a new noncommercial education FM (NCE FM) facility which will be electronically filed in the 2021 filing window for new reserved band (channels 201-220) NCE FM radio stations.<sup>1</sup> The proposed NCE FM facility will distribute valuable educational broadcasting services over the air to the public within the state of South Carolina and will provide an NCE aural service to 190,280 people within its 60 dBu contour which encompasses an area of 3,777.7 sq. km (excluding water) and will also provide a second NCE aural service to 9,651 persons within the proposed station's 60 dBu contour.

**DISCUSSION**

SCETV is the state's public educational broadcasting network and is the licensee of eleven NCE digital television full-service broadcast stations<sup>2</sup> and eight NCE FM full-service broadcast stations<sup>3</sup> providing an educational television and radio network service to the public in the state of South Carolina. SCETV understands its responsibilities as a public radio network and realizes the importance of maximizing coverage in the state of South Carolina to the highest degree for the benefit of the public and the need to provide substantive and meaningful educational programming as well as essential "state of emergency" type notifications for immediate response type conditions. Accordingly, SCETV is responsibly utilizing this rare NCE FM filing window opportunity to respectfully request FCC authorization

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<sup>1</sup> DA 21-463

<sup>2</sup> WEBA-TV, WHMC-TV, WITV-TV, WJWJ-TV, WJPM-TV, WNEH-TV, WNSC-TV, WNTV-TV, WRET-TV, WRJA-TV, WRLK-TV

<sup>3</sup> WEPR-FM, WHMC-FM, WJWJ-FM, WLJK-FM, WLTR-FM, WNSC-FM, WRJA-FM, WSCI-FM

for a new NCE FM full-service broadcast facility in the vicinity of Florence, South Carolina to expand its public radio coverage to thousands of people in the state of South Carolina that do not currently receive a second NCE FM aural service. Referring to the attached SCETV Statewide NCE FM map, it can be seen that SCETV's eight licensed NCE FM full-service facilities do not fully serve the state South Carolina (green 60 dBu contours) and that the proposed Channel 206 station (red 60 dBu contour) would provide NCE FM service to areas not currently served by SCETV in the state of South Carolina. The addition of the proposed NCE FM Channel 206 Florence, SC station would fill-in areas in South Carolina encompassing portions of the following seven counties: 1) Chesterfield County; 2) Darlington County; 3) Dillon County; 4) Florence County; 5) Lee County; 6) Marion County; and 7) Marlboro County. The proposed new NCE FM station would provide valuable educational content to 6 of the 7 aforementioned counties that are currently unserved by SCETV and would therefore greatly serve the public interest.

**TRANSMITTER LOCATION (REASONABLE SITE ASSURANCE)**

The proposed new NCE-FM facility's antenna shall be side-mounted on an existing 810 ft AGL support structure owned by SCETV with antenna structure registration number 1059180 and located approximately 9.5 km north (11°) of Florence, SC. It is proposed to side-mount a directional, circularly polarized antenna on the tower with an antenna height radiation center 660 AGL. Since SCETV owns the existing support structure to be used for the proposed new NCE FM station, it automatically has reasonable site assurance that the specified site will be available. SCETV reviewed the latest structural analysis and determined that the existing support structure has space available at the proposed height to mount a new 4-bay FM antenna with an antenna height radiation center of 660 ft AGL. Accordingly, the proposed facility complies with the "Reasonable Site Assurance" requirement that its specified site will be available for the construction and operation of its proposed facilities requirement<sup>4</sup>.

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<sup>4</sup> See Schedule 340, *Technical Certifications – Reasonable Site Assurance*.

**ANTENNA DATA**

The antenna azimuth pattern for the proposed new NCE FM Channel 206 facility is a calculated envelope pattern. The attached NCE FM Antenna Envelope Azimuth Pattern exhibit plots the proposed azimuth pattern every ten degrees and demonstrates that the 2 dB per 10 degree requirement and the 15 dB front to back ratio requirement are satisfied pursuant to §73.316 of the FCC rules.

**PRINCIPAL COMMUNITY**

The attached “Technical Parameters” exhibit demonstrates compliance with §73.515 of the FCC rules such that the that the proposed principal community of Florence, SC will be completely encompassed by the proposed new NCE-FM facility’s F(50,50) 60.0 dBuV/m contour in all azimuthal directions. Therefore, the proposed transmitter location, based on the proposed effective radiated power (ERP) and antenna height above average terrain (HAAT), will provide a minimum field strength of 1 mV/m (60 dBu) over at least 50 percent of the proposed Florence, SC community of license and it will also reach more than 50 percent of the population within the community as required.

**1<sup>ST</sup> NCE AURAL SERVICE**

N/A – station would not provide a 1<sup>st</sup> NCE aural service.

**2<sup>ND</sup> OR AGGREGATED 1<sup>ST</sup> & 2<sup>ND</sup> NCE AURAL SERVICE**

N/A – station would provide 2<sup>nd</sup> NCE service to more than 2,000 people but not more than 10%

- Station would provide a 2<sup>nd</sup> NCE aural service to more than 2,000 people within the station's 60 dBu (1mV/m) service contour (9,651 persons).
- Station would not provide a 2<sup>nd</sup> NCE aural service to more than 10% of the population within the station's 60 dBu (1mV/m) service contour (5.1%).

**INTERFERENCE STUDIES**

The attached NCE FM Interference Study was calculated using V-Soft’s FMCommander Version 7.1.43 professional FM allocation software, USGS 03 second terrain elevation

database, and the most recent FCC FM and TV (for TV6) databases. The attached NCE FM Interference Study verifies that the proposed new NCE-FM Channel 206 facility's F(50,10) interfering contours will not overlap any applicable station's F(50,50) 60.0 dBuV/m protected service contours and that the proposed new NCE-FM Channel 206 facility's F(50,50) 60.0 dBuV/m protected service contour will not be overlapped by any applicable station's F(50,10) interfering contours.

### **TV CHANNEL 6 STUDIES**

The attached TV Channel 6 spacing study was calculated using V-Soft's FMCommander Version 7.1.43 professional FM allocation software, the USGS 3 second terrain elevation database, and the most recent FCC FM and TV (for TV Channel 6 studies) databases. §73.525(a)(1) of the FCC Rules states that an affected TV Channel 6 station is a TV broadcast station operating on Channel 6 that is located within 211 km of a NCE FM station operating on Channel 206. The attached TV Channel 6 spacing study demonstrates that the licensed WCES-DT Channel \*6 post-transition DTV facility is the closest TV Channel 6 station with respect to the proposed new NCE FM facility's transmitter site location. The proposed new NCE FM facility's tower site is approximately 261.3 km from the WCES-DT Channel \*6 DTV facility (see attached TV Channel 6 study); therefore, the WCES-DT Channel \*6 post-transition DTV facility is not considered an affected TV Channel 6 station since it is not within 211 km of the proposed new NCE-FM Channel 206 facility. Accordingly, the new NCE-FM station fully complies with §73.525 of the FCC rules pertaining to TV Channel 6 stations.

### **AREA AND POPULATION ANALYSIS**

The population counts within the proposed new NCE-FM facility's 60 dBu (1 mV/m) service contour were determined using U.S. Census 2010 data as specified in NCE FM New Station Filing Procedures and Requirements Public Notice (DA 21-885). The area excluding water and population gain within the proposed new NCE-FM facility's 60 dBu (1 mV/m contour) is predicted to be 3,777.7 sq. km and 190,280 persons respectively. The attached Technical

Parameters exhibit was calculated using V-Soft's Probe 5 professional signal propagation software as well as Worksheet #8 (Technical Parameters) which utilizes the centroid method of counting persons within each of the relevant census blocks using 2010 Census data and calculates contours based on the standard predicted contours established in §73.313(c) of the FCC Rules.

### **INTERMEDIATE FREQUENCY INTERFERENCE (53RD & 54TH CHANNELS)**

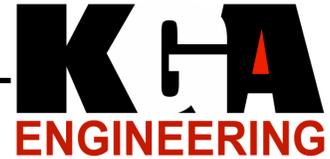
The proposed new NCE-FM facility's site will meet all separation requirements pertaining to intermediate frequency ("IF") interference. The IF station with the narrowest gap with respect to distance from the proposed new NCE-FM facility's transmitter site ( $206 + 53 = 259$  &  $206 + 54 = 260$ ) is the licensed WRFX-FM Channel 259 Class C1 facility located approximately 141.7 km from the proposed new NCE-FM facility's transmitter site where a separation of 23.5 km is required; therefore, the distance is easily met with a margin of 118.2 km.

### **FM BLANKETING INTERFERENCE**

Blanketing is defined as interference to the reception of other broadcast stations which is caused by the presence of an FM broadcast signal of 115 dBu (562 mV/m) or greater signal strength in the area adjacent to the antenna of the transmitting station. The 115 dBu contour is referred to as the blanketing contour and the area within this contour is referred to as the blanketing area. The proposed new NCE-FM Channel 206 facility's blanketing contour extends 0.94 km from its transmitter and it is understood that SCETV must assume full financial responsibility for remedying new complaints of blanketing interference for a period of one year to all broadcast stations within the proposed new NCE-FM facility's blanketing contour.

### **CERTIFICATION**

This engineering technical statement was prepared by William T. Godfrey, Jr., with the professional firm Kessler and Gehman Associates, Inc., Telecommunications Consulting Engineers having offices in Gainesville, Florida, and has been working with the firm in the field of television and radio broadcast consulting since 1998 and his qualifications are a



matter of record with the Federal Communications Commission. Mr. Godfrey is a Graduate from the University of North Florida and a Distinguished Military Graduate from the University of Florida. As a Professional in the field of Telecommunications he states under penalty of perjury that the information contained in this report is true and correct to the best of his knowledge and belief.

A handwritten signature in blue ink that reads "William T. Godfrey, Jr." with a stylized flourish at the end.

WILLIAM T. GODFREY, JR., CBT  
Kessler and Gehman Associates, Inc.  
Consulting Engineers

October 31, 2021