

## **ENGINEERING STATEMENT**

### **Application for License to Cover Construction Permit Full Power FM Station**

prepared for

#### **Ramar Communications, Inc.**

KXTQ-FM Lubbock, TX

Facility ID 4019

Ch. 293C2 (106.5 MHz) 22.5 kW 227 m

*Ramar Communications, Inc. ("Ramar")* is the licensee of KXTQ-FM, Channel 293C2, Facility ID 4019, Lubbock, TX. KXTQ-FM is licensed (file number BLH-19920323KC) to operate at 34 kW effective radiated power ("ERP") and 179 meters antenna height above average terrain ("HAAT"). A minor modification Construction Permit ("CP" file# 0000212880) authorizes relocation of KXTQ-FM to an adjacent tower structure, increase the antenna HAAT to 227 meters and decrease the ERP to 22.5 kW. This statement supports an Application for License to cover the CP.

As authorized in the CP, the KXTQ-FM transmitting antenna is a Dielectric model DCRM12DC50R(SP), an EPA Type 5 (Four-Piece Spiral) consisting of twelve elements at nonuniform spacing. The spacing between seven of the bays is 1.096 wavelength and the spacing between four of the bays is 0.548 wavelength as listed below.

**Bay Spacing at 106.5 MHz**

Bay 1 to Bay 2	0.548 wavelength
Bay 2 to Bay 3	1.096 wavelength
Bay 3 to Bay 4	1.096 wavelength
Bay 4 to Bay 5	1.096 wavelength
Bay 5 to Bay 6	0.548 wavelength
Bay 6 to Bay 7	1.096 wavelength
Bay 7 to Bay 8	0.548 wavelength
Bay 8 to Bay 9	1.096 wavelength
Bay 9 to Bay 10	1.096 wavelength
Bay 10 to Bay 11	1.096 wavelength
Bay 11 to Bay 12	0.548 wavelength

The FM license application requires submission of the transmitting antenna make, model, number of sections, and spacing between sections. Since the FCC's electronic filing system LMS cannot consider nonuniform bay spacing, the dominant spacing of 1.096 wavelength is provided on that form.

The transmitting antenna is shared with *Ramar's* stations KLBB-FM (Ch. 229C1, Facility ID 55062, Lubbock TX) and KTTU-FM (Ch. 247C2, Facility ID 54684, New Deal TX). At final commissioning of the antenna and combiner system, spurious emissions measurements were conducted with all stations operating at their authorized power. System performance was verified with respect to occupied bandwidth, harmonic attenuation, and intermodulation products by Intelligent Design and Services Inc ("IDSI"). The IDSI measurement report summary is attached separately. The measurements showed that KXTQ-FM is in compliance with sections 73.317(b) through 73.317(d) of the FCC's rules, as summarized in the following.

§73.317(b): Any emission appearing on a frequency removed from the carrier by between 120 kHz and 240 kHz inclusive was found to be attenuated at least 25 dB below the level of the unmodulated carrier.

§73.317(c): Any emission appearing on a frequency removed from the carrier by more than 240 kHz and up to and including 600 kHz was found to be attenuated at least 35 dB below the level of the unmodulated carrier.

§73.317(d) Any emission appearing on a frequency removed from the carrier by more than 600 kHz was found to be attenuated at least  $43 + 10 \log_{10}(\text{Power, in Watts})$  dB below the level of the unmodulated carrier, or 80 dB, whichever is the lesser attenuation.

The IDSI report also provides a summary of the shared antenna/line system gains and losses, indicating that the KXTQ-FM authorized ERP of 22.5 kW requires a transmitter power output of 5.9 kW (rounded pursuant to §73.212).

**Chesapeake RF Consultants, LLC**

Joseph M. Davis, P.E.	June 5, 2023	
207 Old Dominion Road	Yorktown, VA 23692	703-650-9600