

# **ENGINEERING EXHIBIT**

## **Application for an LPTV Station Construction Permit**

prepared for

**5GTV, LLC**

KVHC-LD Kerrville, Texas

Facility ID 125586

Ch. 11 3 kW 451.4 m AMSL

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**COMPREHENSIVE ENGINEERING STATEMENT**  
prepared for  
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KVHC-LD Kerrville, Texas  
Facility ID 125586  
Ch. 11 3 kW 451.4 m AMSL

*5GTV, LLC* (“*5GTV*”) is the licensee of television translator station KVHC-LD, Channel 11, Kerrville, Texas, Facility ID 125586 (LMS File No. 0000159122). *5GTV* herein requests a minor modification to move the transmitter to a new location. Specifically, *5GTV* proposes to operate on Channel 11 from registered structure (ASRN 1049301) with coordinates 29° 37’ 19.20” N Latitude and 98° 34’ 14.40” W Longitude (NAD 83) at 3 kW Effective Radiated Power, using an omnioid directional antenna centered at 451.4 meters AMSL.

### **Nature of the Proposal**

The proposed antenna system for the KVHC-LD operation is a directional antenna which will be side-mounted on an existing tower structure with the Antenna Structure Registration Number 1049301. No change in structure overall height is necessary to carry out this proposal. Since no change to the structure’s overall height is proposed, no change to structure marking/lighting requirements set forth in the aeronautical study will result.

The proposed digital facility will operate on Channel 11 using a “Full Service” out of channel emission mask, a maximum effective radiated power of 3 kW, and an antenna height of 451.4 meters AMSL. **Figure 1** depicts the 48 dB $\mu$  F(50,90) coverage contour of the authorized facility, as well as the 48 km (30 mile) move limit for minor modifications from the licensed coordinates. As demonstrated on the provided map, the service area overlap shown demonstrates compliance with §74.787 of the Rules for minor modifications.

### **Allocation Considerations**

The instant proposal complies with the Commission’s interference protection requirements toward all DTV, television translator, LPTV, and Class A stations. A detailed interference study was conducted using the FCC’s TV Study program version 2.2.5<sup>1</sup>. The interference study results are provided as an attachment to this Engineering Statement and show that any new interference does not exceed the Commission’s interference limits (0.5 percent to full service and Class A stations or 2.0 percent to LPTV stations). Accordingly, the instant proposal complies with FCC Rules regarding interference protection to DTV, television translator, LPTV and Class A television facilities.

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<sup>1</sup> The TV Study program was configured to perform its calculations using a cell size of 2 km, a terrain profile increment of 1 km, and using the “default” template. This utilizes the same parameters that the Mexican authorities prefer. The proposed facility also passes TV Study using default settings.

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**International Coordination**

The proposed transmitter site is located 1,945.2 km from the U.S.-Canadian border, and 211.1 km from the U.S.-Mexican border. The distance is within the required coordination distance specified for digital low power television stations to Mexico. *5GTV* respectfully requests that international coordination be conducted as necessary for the instant proposal.

**Other Allocation Considerations**

The nearest FCC monitoring station is at Kingsville, TX, at a distance of 251.5 km from the proposed site. This exceeds by a great margin the threshold minimum distance specified in §73.1030(c)(3) that would suggest consideration of the monitoring station. The proposed site is also located outside the areas specified in §73.1030(a)(1) and §73.1030(b). Thus, notification of the instant proposal to the National Radio Astronomy Observatory at Green Bank, West Virginia, or the Table Mountain Radio Receiving Zone in Boulder County, Colorado is not required. There are no AM broadcast stations located within 3.2 km (2 miles) of the proposed site, according to information extracted from the Commission's engineering database.

**Environmental Considerations**

The instant proposal is not believed to have a significant environmental impact as defined under §1.1306 of the Commission's Rules. Consequently, preparation of an Environmental Assessment is not required. *5GTV* herein proposes to construct the facility on an existing tower structure with the Antenna Structure Registration Number 1049301. The use of an existing tower structure has been characterized as being environmentally preferable by the Commission, according to Note 1 of §1.1306 of the FCC Rules. No change in structure height is proposed, thus no change in current structure marking and lighting requirements is anticipated. Therefore, it is believed that this application may be categorically excluded from environmental processing pursuant to §1.1306 of the Commission's rules.

**Human Exposure to Radiofrequency Electromagnetic Field**

The proposed operation was evaluated for human exposure to radiofrequency electromagnetic field using the procedures outlined in the Commission's OET Bulletin 65 ("OET 65"). OET 65 describes a means of determining whether a proposed facility exceeds the radiofrequency exposure guidelines adopted in §1.1310. Under present Commission policy, a facility may be presumed to comply with the limits specified in §1.1310 if it satisfies the exposure criteria set forth in OET 65. Based upon that methodology, and as demonstrated in the following, the proposed transmitting system will comply with the cited adopted guidelines.

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The KVHC-LD Channel 11 antenna center of radiation will be 112.8 meters above ground level. An effective radiated power of 3 kilowatts, elliptically polarized, will be employed utilizing an Alive Telecom model BCC42M-V3-11 VHF low power antenna. Based on the manufacturer's data, a "worst-case" relative field value of 41 percent is assumed for purposes of the calculation. For simplicity, circular polarization is assumed as a worst case. The "uncontrolled/general population" limit specified in §1.1310 for Channel 11 (center frequency 201 MHz) is 200.0  $\mu\text{W}/\text{cm}^2$ .

OET 65's formula for television transmitting antennas is based on the NTSC transmission standards, where the average power is normally much less than the peak power. For the DTV facility in the instant proposal, the peak-to-average ratio is different than the NTSC ratio. The DTV ERP figure herein refers to the average power level. The formula used for calculating DTV signal density in this analysis is essentially the same as equation (10) in OET 65.

$$S = (33.4098) (F^2) (ERP) / D^2$$

Where:

- S = power density in microwatts/cm<sup>2</sup>
- ERP = total (average) ERP in Watts
- F = relative field factor
- D = distance in meters

Using this formula and the above assumptions, the proposed facility would contribute a power density of 2.7  $\mu\text{W}/\text{cm}^2$  at two meters above ground level near the antenna support structure, or 1.35 percent of the general population/uncontrolled limit. There are no full service broadcast facilities within 2 km and two FM translators within 1,110 meters of the proposed site. Accordingly, it is believed that the impact of the proposed operation should not be considered to be a factor at or near ground level as defined under §1.1307(b).

### **Safety of Tower Workers and the General Public**

As demonstrated herein, excessive levels of RF energy attributable to the proposal will not be caused at publicly accessible areas at ground level or near the base of the antenna supporting structure. Consequently, members of the general public will not be exposed to RF levels in excess of the Commission's guidelines. Nevertheless, access will be restricted and controlled through the use access controls. Additionally, appropriate RF exposure warning signs will be posted.

With respect to worker safety, it is believed that based on the preceding analysis, excessive exposure would not occur in areas at ground level. A site exposure policy will be employed protecting maintenance workers from excessive exposure when work must be performed on the tower or in areas where high RF levels

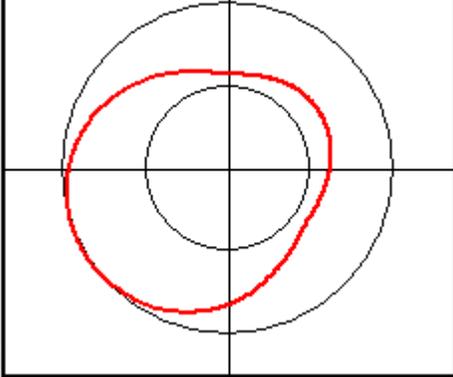
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may be present. Such protective measures may include, but will not be limited to, restriction of access to areas where levels in excess of the guidelines may be expected, power reduction, or the complete shutdown of facilities when work or inspections must be performed in areas where the exposure guidelines would otherwise be exceeded. On-site RF exposure measurements may also be undertaken to establish the bounds of safe working areas. The applicant will coordinate exposure procedures with all pertinent stations.

**Conclusion**

Based on the preceding, it is believed that the instant proposal complies with all Commission Rules and policies.

Rotation Angle = 240



**FIGURE 1  
COVERAGE CONTOUR COMPARISON**

*prepared September 2021 for*

**5GTV, LLC  
KVHC-LD Kerrville, TX  
Facility ID 125586  
Ch. 11 3 kW 451.4 m AMSL**

**Cavell, Mertz & Associates, Inc.  
Manassas, Virginia**

Real

**KVHC-LD License**  
Ch 11 0.4 kW  
48 dBμ F(50,90)

**KVHC-LD Proposed**  
Ch 11 3 kW  
48 dBμ F(50,90)

