



## ***Engineering Report***

Community Broadcasting, Inc.  
Minor Modification to K205ER

This consultant has been retained by Community Broadcasting, Inc. (Community) for the purpose of preparing the technical portion of Form 349 in application for a minor modification to its construction permit for K205ER, Raytown, MO.

The supporting tower structure specified in the original K205ER permit has, subsequent to the grant of that permit, found to be structurally unable to support the permitted antenna and its associated transmission line. As such, Community negotiated with the tower owners, American Tower, to lease tower space on another one of its towers in the area. The tower structure proposed herein is but 3.33 km distant from the permitted tower and there is considerable overlap between the 60 dBu contours of the permitted operation and the proposed operation. As such, the proposed modification is a minor change.

### **Compliance with 47 CFR 73.1204**

The proposed operation, as was the permitted operation, is located very near to, second adjacent, full service, FM radio stations. Specifically the proposed operation is located 1.12 km distant from KCUR (FM), Kansas City, Missouri and 2.23 km distant from KLJC (FM) also of Kansas City, Missouri. As such, the 100 dBu interfering contour of the of the proposed operation is wholly contained within the protected contours of the above noted radio stations.

47 CFR 74.1204(d), in part, states that “[A]n application [for an FM Translator Construction Permit] otherwise precluded by this section will be accepted if it can be demonstrated that no actual interference[to FM Broadcast stations of FM translators] will occur due to...lack of population or other such factors as may be applicable.”

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Exhibit 1 of this report is a spacing study which identifies all stations or proposed stations to which interference might occur. The proposed Channel 205 operation is located in an area where both KCUR (FM) and KLJC (FM) has a very high signal levels. Exhibit 3 of this report is a digitally generated map which identifies the predicted KCUR signal level at the proposed K205ER tower site. That predicted signal level is 126 dBu. Similarly, Exhibit 4 identifies the predicted signal level from KLJC (FM) at the proposed K205ER tower site and that signal level is 119 dBu. The interfering contour from the proposed K205ER operation is 40 dBu above the contours of the two second adjacent radio stations and is thus 166 dBu to KCUR (FM) and 159 dBu to KLJC (FM).

Due to the low power of the proposed K205ER operation (92 Watts) and the high level of the interfering contour it is not possible to accurately predict the distance to the predicted interfering contour by employing the curves in figure 1a of 47 CFR 73.333. As such, free space calculations have been employed by utilizing the following formula:

$$E_{\text{freespace}}(\text{dB}\mu) = 106.85 - 20 \log(d_{\text{km}}) + 10 \log(\text{ERP}_{\text{kw}})$$

Solving for distance (d) the formula becomes:

$$d_{\text{km}} = \log^{-1} ( ( 106.85 + 10 \log(\text{ERP}_{\text{kw}}) - E_{\text{freespace}}(\text{dB}\mu) ) / 20 )$$

When the equation is solved for d the relevant distances to the interfering contours are as follows:

$$\text{KCUR (166 dB}\mu) = 0.0003 \text{ km (0.33 meters)}$$

$$\text{KLJC (159 dB}\mu) = 0.0007 \text{ km (0.75 meters)}$$

In both cases the interfering contour from the proposed K205ER operation extends less than 1 meter. There is no population within 1 meter of the antenna and, inasmuch as the proposed antenna is 127 meters above ground level the interfering contour will never reach ground level.

Exhibits 5 through 10 detail the lack of interference caused to any co-channel or first adjacent channel operations. The proposed operation is short spaced, as a Class A operation, the KYYs (FM) in Kansas City, Missouri however, inasmuch as the proposed operation specifies an ERP of 92 Watts which is less than 100 Watts, the proposed operation is exempt from IF spacing requirements under 47 CFR 74.1204(g).

### **TV Channel 6 Considerations**

The proposed K205ER operation is located 148.46 km from the licensed operation of KMOS-TV in Sedalia, Missouri. This distance exceeds the 140 km distance set forth in 47 CFR 74.1205(a).

### **RF Radiation Analysis**

The proposed operation operates with an ERP of less than 100 Watts, as such, the operation is exempt from consideration as set forth in 47 CFR 1.1307(b)(1)(Table 1). Even so the proposed operation was checked by employing the Commission's *FMMODEL* software and was found to have a maximum contribution of 0.035  $\mu\text{W}/\text{cm}^2$  which occurs at a distance 254.8 meters from the tower base. This power density represents but 0.0175% of the 0.2  $\text{mW}/\text{cm}^2$  limit established in ANSI C95.1. A copy of the power density plot is included in this report as Exhibit 11.

### **Certification**

All information in this report and its associated exhibits is true and accurate to the best of my belief. Having had numerous matters before the Commission, my qualifications are a matter of record.

\_\_\_\_\_  
June 3, 2003

Date

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R. Lee Wheeler

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