

FCC Form 302-FM
Minnesota Public Radio (FRN 0002-6425-10)
Exhibit 10
KNBJ (FM) - Facility No 42966
KCRB (FM) – Facility No 42970

Intermodulation and Second Harmonic Levels
Measured at KCRB/KNBJ, Bemidji, Minnesota, at 10:30 PM, 22 April 2003

Procedure:

The measurements were performed using a Hewlett Packard 8591E spectrum analyzer, a DB Products 8591E band pass cavity, a 3dB power pad, and a Microwave Filters 6367 notch filter. The RF sample was taken from an ERI directional coupler located in the output of the combiner. The 3 dB pad was used to isolate the test set up from the coupler, and to present a good 50ohm source to the measurement devices. This pad was left in for all measurements.

The Intermodulation products were measured using the HP spectrum analyzer, and the DB Products cavity. Both carriers were operated at their full, authorized power for this test. The cavity loss was calibrated out of the system, and the analyzer was zero referenced to the carrier producing the intermodulation product. The cavity was then tuned to the intermodulation product in question, and the product level was measured in dB below the carrier.

The Second Harmonic levels were measured using the HP spectrum analyzer, and the Microwave Filters notch filter. Each carrier was measured with the other carrier turned off. The analyzer was first zero referenced to the carrier under test. The notch filter was then inserted to lower the carrier level by a minimum of 20 dB, allowing the analyzer's dynamic range to be increased by 20 dB. This allowed measurements to be made to as low as 95 dB below the reference carrier. The analyzer noise floor made lower level measurements questionable.

Results:

Intermodulation products:

| <u>Call Sign</u> | <u>Frequency</u> | <u>IM Frequency</u> | <u>IM Level</u> |
|------------------|------------------|---------------------|-----------------|
| KCRB | 88.5 MHz | 85.7 MHz | -87 dBc |
| KNBJ | 91.3 MHz | 94.1 MHz | -85 dBc |

Second Harmonic Levels:

| <u>Call Sign</u> | <u>Frequency</u> | <u>Second Harmonic</u> | <u>Level</u> |
|------------------|------------------|------------------------|--------------|
| KCRB | 88.5 MHz | 177 MHz | -89 dBc |
| KNBJ | 91.3 MHz | 182.6 MHz | -87 dBc |

All other harmonics, from both transmitters, were measured to be greater than – 95 dBc

Measurements performed by:
Ralph E. Hornberger
Senior Design Engineer
Minnesota Public Radio