

TELECOMMUNICATIONS ENGINEERING
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OCCUPIED BANDWIDTH AND SPURIOUS EMISSIONS MEASUREMENTS
KUXU – FM, MONROE, UTAH

21 December 2019

ENGINEERING REPORT

On the morning of 18 November, I made the equipment performance measurements contemplated in 47 CFR §73.1590 (a & b) and described in 47 CFR §73.317 (b-d), for radio station KUXU, Monroe, Utah. These measurements were occasioned by a change in frequency permitted in BPED-20190716AAX.

Measurements were made while the station was broadcasting programming material typical of its daily operation. KUXU operates monophonically with no SCA's. KUXU was operating at its full permitted power of 2.5 KW ERP. KUXU shares a common antenna with the facilities of KUSL, Richfield, Utah. Both stations were operating at full licensed power at the time these measurements were made.

A sample of the KUXU signal was taken at the output of the transmitter combiner using a directional coupler.

This sample was fed to a Rhode and Schwartz Model FSP-3 spectrum analyzer, Serial Number 835151/011, within current calibration. The analyzer was set to a center frequency of 88.3 MHz, span of 1.5 MHz, resolution bandwidth of 1 kHz, video filtering of 3 kHz and using a peak detector. An unmodulated carrier was used to set the reference level at the top of the screen. Modulation was then applied and the analyzer set to peak hold mode and allowed to collect data for 10 minutes.

47 CFR §73.317 (b) & (c) requires that all signals between 120 and 240 kHz removed from the carrier be attenuated below the level of the carrier by at least 25 dB; that all signals between 240 kHz and 600 kHz removed from the carrier be attenuated by at least 35 dB below the level of the carrier; and that all signals greater than 600 kHz removed from the carrier be attenuated by at least 77 dB below the level of the carrier. These limits are superimposed on the plot.

An inspection of the results on the spectrum analyzer, showed that the Occupied Bandwidth of the KUXU signal remains comfortably within the limits described above. (Unanticipated software issues prevented making a copy of the analyzer screen for inclusion in this report.)

To measure spurious signals and harmonics beyond 600 kHz from the carrier, the spectrum analyzer was set to 20 MHz span, 3 kHz resolution bandwidth, and 10 kHz video filtering. At this resolution bandwidth, the internal noise of the analyzer is reduced sufficiently to resolve signals below -77.0 dBC. The analyzer was initially set at 10 MHz center frequency and then incremented successively by 20 MHz to scan the spectrum from 9 kHz to 1 GHz. Any signals that were greater than -77.0 dBC were noted. No such signals were found. No intermodulation products, spurious signals or harmonics were found that could be attributed to the operation of KUXU.

In light of the above measurements I believe that KUXU is in full compliance with the requirements of 47 CFR § 73.317 (a) through (d).

ENGINEER'S STATEMENT

I hereby affirm that:

I have been retained by The University of Utah, licensee of KUXU, to ascertain its station's compliance with 47 CFR §73.1590 (a) & (b) and 47 CFR § 73.317 (b-d) and to prepare this report;

This report and associated exhibits were prepared by me, and are based on measurements made by me;

To the best of my knowledge all statements made herein are true and reflect the actual facts of the matter;

I am a Broadcast Engineer of 53 years experience and;

My qualifications are a matter of record with the Commission.

Respectfully submitted this 21st day of December 2019,


ELECTRONIC SIGNATURE
Gray Frierson Haertig