



OWL ENGINEERING & EMC TEST LABS, INC.

CONSULTING COMMUNICATIONS ENGINEERS · EMC TEST LABORATORIES

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PUBLIC FILE

**NRSC2, HARMONIC AND SPURIOUS
MEASUREMENTS ON RADIO STATION**

KSDN

ABERDEEN, SOUTH DAKOTA

PREPARED ON: NOVEMBER 24, 2023



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Radio station KSDN had the measurements required by FCC Rules and Regulation §73.44 for harmonic and spurious emissions performed by Owl Engineering, Inc. The measurements were performed at ground level at a distance of one (1) kilometer from the reference point of the antenna system. This measurement point was found utilizing a hand-held Global Positioning system Receiver (GPS). The reference coordinates were entered into the receiver and a radial and distance measurement was used to determine the exact measurement position.

A calibrated monopole active antenna, EMCO Model #3301B, was used since it provides useful measurement data from 20 kHz to 30 MHz. In order to increase the over-all system gain a tunable filter was used to notch the fundamental frequency to provide for over 80 dB of instrument range in order to accurately measure the harmonics of the station. An Anritsu spectrum analyzer with a laptop computer connected via a USB port interfaced to the antenna system and filter to provide the results that were stored on the computer and later plotted.

The spectrum analyzer was setup with the following conditions as required by §73.44 (a). The signals were sampled for a period of at least ten (10) minutes with a peak-hold detector and no video filtering. After the measurement period the spectrum analyzer screen was saved on the computer. The data was later plotted and is included in this report.

The spectrum analyzer was then adjusted to show the entire spectrum up to approximately 10 MHz and the results of this measurement were stored on the computer. This measurement indicated that no spurious signals were found to be above the required attenuation level of -80 dB

In addition to the spectrum analyzer the fundamental and harmonics were also monitored utilizing a Potomac FIM-41 field intensity meter. This allowed measurements to be taken in areas of the spectrum where other stations were in close proximity both in frequency and distance. Table One shows the requirements of §73.44 (b) of the tests in tabular form.



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Table One

FREQUENCY (Removed from Carrier)	LIMIT
10.2 TO 20 kHz	25 dB
20 TO 20 kHz	35 dB
30 TO 60 kHz	[5+1 DB/KHZ] (35 TO 65 dB)
60 TO 75 kHz	65 dB
ABOVE 75 kHz	43+10 Log(Watts) 500w = 70 dB, 1,000w = 73 dB 5,000 = 80 dB

Based on the measured data Radio Station KSDN was determined to be in compliance with FCC Rule §73.44

Garrett G. Lysiak, P.E.

November 24, 2023

