



Occupied Bandwidth Study

And Spurious Emissions Measurements

KSOK (AM) – 1280 kHz
Arkansas City, KS – Facility ID No. 14238

Prepared for:

Cowley County Broadcasting, Inc.

To Demonstrate Compliance with §73.44(b) of the
FCC Rules and Regulations

March 26, 2019

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Exhibit 1-A

Engineering Statement of Purpose

This firm has been retained by Cowley County Broadcasting, Inc. (Cowley), to prepare this Occupied Bandwidth Study for their licensed facility KSOK (AM), Arkansas City, KS.

Measurements were conducted to demonstrate that KSOK (AM), Arkansas City, KS, complies with §73.44(b) of the FCC Rules and Regulations. William H. Nolan conducted the measurements on March 26, 2019. The spectrum analyzer used for the measurements was an Anritsu model MS 2721B, S/N 1117086. A sample of the KSOK (AM) signal was derived using a 10-foot length of RG-58 coax, and a calibrated AM loop antenna (Potomac FIM-4100, Serial No. 220). The internal attenuator of the analyzer was employed as necessary to ensure the front-end of the analyzer was not overloaded. The loop antenna was oriented towards the array and peaked for maximum signal and minimum off-axis interference.

The location of the measurements was chosen to be at least 1.0 km distant from the array, and in the main lobe if a directional station. The location of the measurements is certified in Exhibits 1-C and 1-D utilizing high accuracy GPS.

All measurements were conducted with the transmitter and associated equipment adjusted as used in normal program operation.

For all occupied bandwidth measurements, the spectrum analyzer was placed in the peak hold mode for at least 10 minutes per measurement before the waveforms were observed. As shown in Exhibit 1-C and Exhibit 1-D, station KSOK (AM) was observed to be in full compliance with §73.44(b) of the FCC Rules with emissions appearing on frequencies removed from the carrier frequencies by between 10.2 kHz and 75 kHz. Exhibit 1-C displays numerous carriers visible to the receiving antenna. The energy displayed above §73.44(b) limitations is a direct result of the presence of these carriers within the span of these measurements.

The results of these measurements confirm that the operation of KSOK (AM) is in full compliance with §73.44(b) of the FCC Rules and Regulations.

RF Results, LLC

804 Bear Run • Enid, OK 73703

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Exhibit 1-B

Engineer's Certification

I, William H. Nolan, with offices at 804 Bear Run, Enid, OK, have been retained for the purpose of preparing the technical data forming this report.

My work is a matter of record before the Federal Communications Commission. I have filed numerous applications that have been subsequently granted by the Commission. I have spent 39 years in the broadcast industry and have designed and constructed numerous radio stations in that time, including AM and FM facilities.

I declare under penalty of perjury that the contents of this report are true and accurate to the best of my knowledge and belief.

Signed:

A handwritten signature in black ink that reads 'William H. Nolan'.

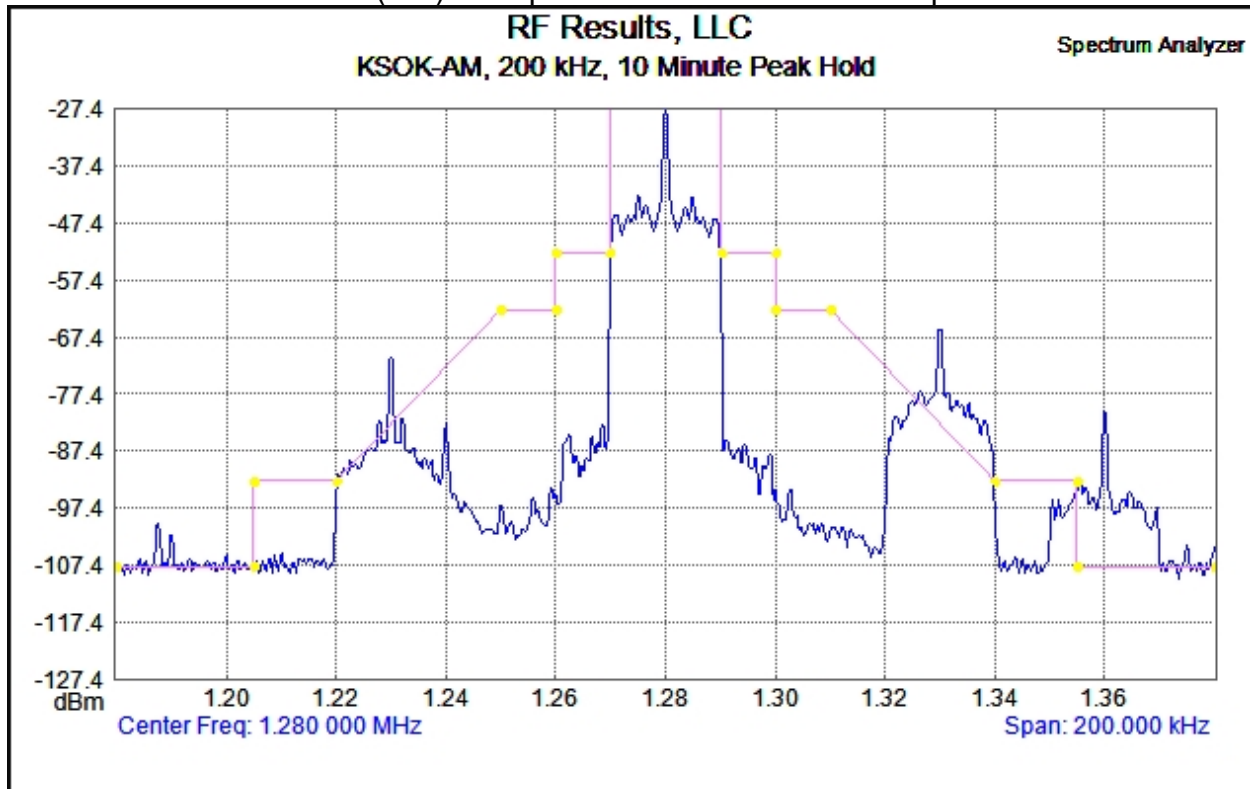
Date: 03-26-2019

William H. Nolan
Senior Broadcast Engineer
RF Results, LLC



Exhibit 1-C

KSOK (AM) Occupied Bandwidth – 200 kHz Span



Measurement Parameters

		Reference Level	-27.401 dBm
Trace Mode	Max Hold	Scale	10.0 dB/div
Preamp	OFF	GPS Longitude	W 97 2 7
Min Sweep Time	0.001 S	GPS Latitude	N 37 4 37
Reference Level Offset	0 dB	GPS Fix Time	03 26 2019 17 08 21
Input Attenuation	0.0 dB	Serial Number	1117086
RBW	300.0 Hz	Base Ver.	V4.13
VBW	3.0 MHz	App Ver.	V5.34
Detection	Peak	Model	MS2721B
Center Frequency	1.280 000 MHz	Options	9, 20, 31
Start Frequency	1.180 000 MHz	Date	3/26/2019 12:07:51 PM
Stop Frequency	1.380 000 MHz	Device Name	
Frequency Span	200.000 000 kHz		

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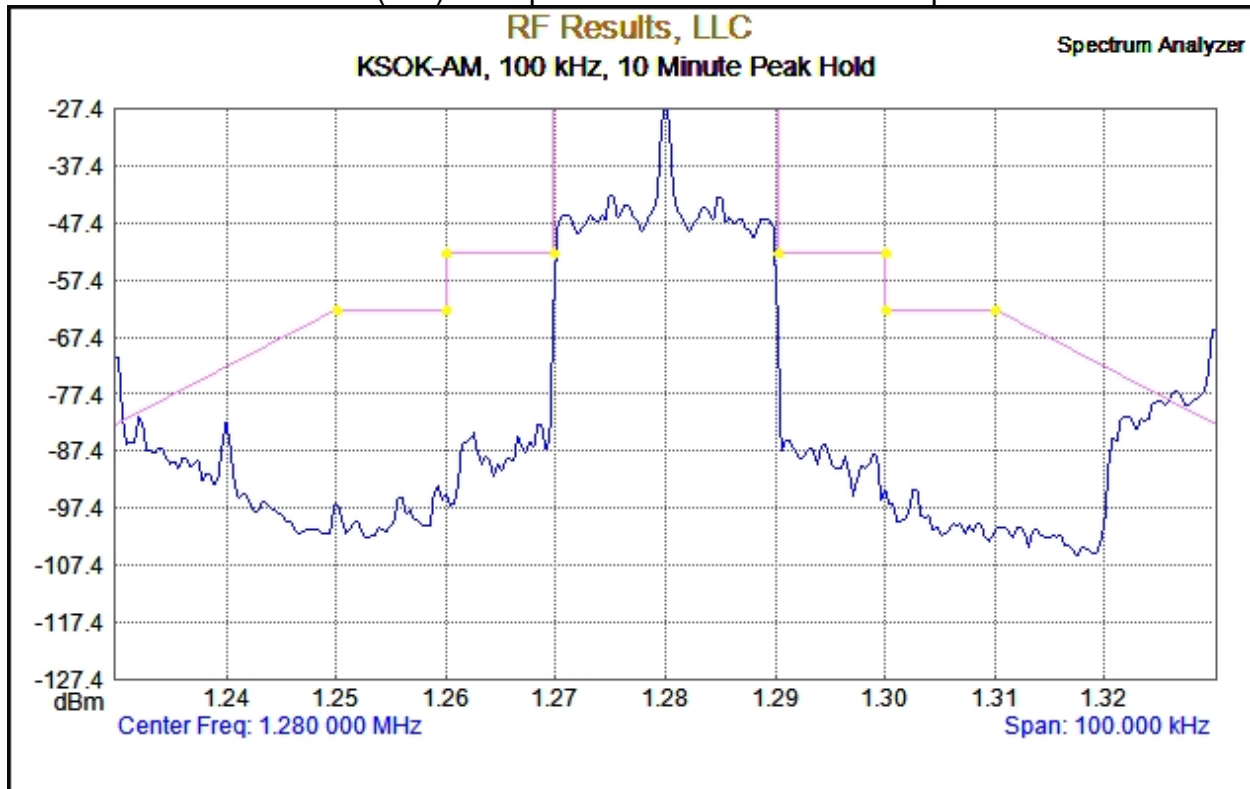
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Exhibit 1-D

KSOK (AM) Occupied Bandwidth – 100 kHz Span



Measurement Parameters

		Reference Level	-27.401 dBm
Trace Mode	Max Hold	Scale	10.0 dB/div
Preamp	OFF	GPS Longitude	W 97 2 7
Min Sweep Time	0.001 S	GPS Latitude	N 37 4 37
Reference Level Offset	0 dB	GPS Fix Time	03 26 2019 17 08 21
Input Attenuation	0.0 dB	Serial Number	1117086
RBW	300.0 Hz	Base Ver.	V4.13
VBW	3.0 MHz	App Ver.	V5.34
Detection	Peak	Model	MS2721B
Center Frequency	1.280 000 MHz	Options	9, 20, 31
Start Frequency	1.180 000 MHz	Date	3/26/2019 12:07:51 PM
Stop Frequency	1.380 000 MHz	Device Name	
Frequency Span	200.000 000 kHz		

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Exhibit 1-E

Harmonic Measurements

Measurements were conducted to demonstrate that KSOK (AM), Arkansas City, KS, complies with §73.44(b) of the FCC Rules and Regulations, regarding transmitter harmonics. William H. Nolan conducted the measurements on March 26, 2019. A sample of the KSOK (AM) signal was derived using, a Potomac FIM-4100, Serial No. 220 calibrated AM loop antenna. The loop antenna was oriented towards the array and peaked for maximum signal and minimum off-axis interference.

The measurements were confirmed by careful adherence to Potomac's procedural guidelines regarding harmonic measurements. A signal level of between 300mV/m and 3 V/m (110 - 130 dBuV/m) was achieved in the main lobe of the array. Averaging was employed to stabilize the measurements, and the following figures are "worst-case" values.

- | | |
|---------------------------------------|------------------------------|
| • 2 nd Harmonic (2.56 MHz) | -080.2 dBc (Limit -80.0 dBc) |
| • 3 rd Harmonic (3.84 MHz) | -084.7 dBc (Limit -80.0 dBc) |
| • 4 th Harmonic (5.12 MHz) | -092.7 dBc (Limit -80.0 dBc) |
| • 5 th Harmonic (6.40 MHz) | -093.2 dBc (Limit -80.0 dBc) |

The results of these measurements confirm that the operation of KSOK (AM) is in full compliance with §73.44(b) of the FCC Rules and Regulations regarding transmitter harmonics, and the KSOK (AM) transmitter falls within the manufacturer's specifications for harmonic suppression.