

Lloyd W. Collins

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AM Performance Measurement Report

Radio Station

KMMO

Marshall, Mo.

Date:9/17/15

AM Performance Measurement Report

Includes NRSC Spectral Data

INTRODUCTION

This consultant has been engaged to perform AM performance measurements on the station in accordance with section 73.44 of the current FCC rules. These measurements were performed on the stated date in accordance with those rules and in conformance with "Emission Limitation for AM Broadcast Transmission" recommendations of the National Radio Systems Committee. The measurements were made with a swept frequency spectrum analyzer Harmonic measurements may have been made by use of a field intensity meter as shown in the accompanying report. All measurements were personally conducted by the undersigned technical consultant.

METHOD OF MEASUREMENT

The occupied bandwidth measurements were made with a modern digitally controlled spectrum analyzer. The analyzer was configured as prescribed in FCC R&R 73.44. the center frequency was set to the stations carrier frequency and the reference level was set at or near the carrier level of the station. The analyzer was connected to a calibrated (NIST traceable) loop antenna which was tripod mounted near the measurement vehicle. All measurements were made in the field at a distance from the antenna to obtain suitable carrier level for measurement detail . The distance is specified in the measurement report section. The test equipment received power from an on-board generator which was monitored for proper voltage and frequency output during the tests. Measurement was made with normal programming being broadcast. The spectrum analyzer was configured to measure and store the highest level received at any measurement frequency during the period of testing. All types of normally broadcast programming were included during the testing period. In no case was the test data stored for LESS than 10 minutes with 20 minutes being the average length of programming monitored. If the station uses more than one transmitter or antenna system on a regular basis , every effort was made to use measure the station under those combinations individually for these tests.

Spectrum analyzer screen data was printed and is included with this report. The measurement data for frequency spans of 200Khz , and 500Khz is shown. Where other stations show on the spectrum analyzer sweep , they are identified when positive ID could be made.

Harmonic radiation measurements were made distance specified in the test report from the antenna system. The measurement distance is specified herein as well as a description of the measurement location. These measurements were performed according to the instructions from the manufacturer of the test equipment used.

QUALIFICATIONS

The measurements contained herein were made by or under the direct supervision of the undersigned technical consultant who is a SBE certified Professional Broadcast Engineer and holds a FCC General Radiotelephone Operator License issued 1/2/85. This consultant has placed numerous proceedings before the Commission and his qualifications are a matter of record with the Commission.

CERTIFICATION

The undersigned hereby states that he has directly conducted or supervised measurements contained in this report . He further states that , to the best of his knowledge , all measurements and analysis are true and were conducted in a manner acceptable to the Commission.

The results of the measurements show the station IS in compliance with the applicable AM occupied bandwidth and emission standards.

Signed



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FCC PG-17-11402
SBE Cert. 50544

EQUIPMENT USED

SPECTRUM ANALYZER

Anritsu MS2721A Cal 8/14

ANTENNA

Chris Scott and Associates LP-3

Shielded loop

Cal 5/15/14

MF NOTCH FILTER

Chris Scott and Associates (no model #)

MEASUREMENT LOCATION

See enclosed map.

AM Emission Measurement Worksheet

DATE: 9/17/2015

Station Call Letters	Frequency, Khz	Power, KW	Antenna
KMMO	1300	1	ND

NRSC Bandwidth Measurements

Analyzer	Antenna	Preamplifier ?	Res BW	Video Filter	Measured Carrier
2601A	LP3	no	300 Hz	1 Khz	-29.1

+/- Khz reference carrier	Measured Max Level -dBc	FCC Limit
10.2 Khz	-28.24	-25dBc
20 Khz	-56.9	-35 dBc
30 Khz	-71.94	-35 dBc
40 Khz	-73.78	-45 dBc
50 Khz	-73.58	-55 dBc
60 Khz	-71.06	-65 dBc
>75 Khz	-73.93	43+log ₁₀ (pwr) or 80 dBc

**>75 Khz Limits: <150 watts, -65 dBc 250 watts, -67dBc 500 watts, -70 dBc
1000 watts, -73 dBc 2500 watts, -77 dBc 5000watts +, -80 dBc**

Harmonic Measurements

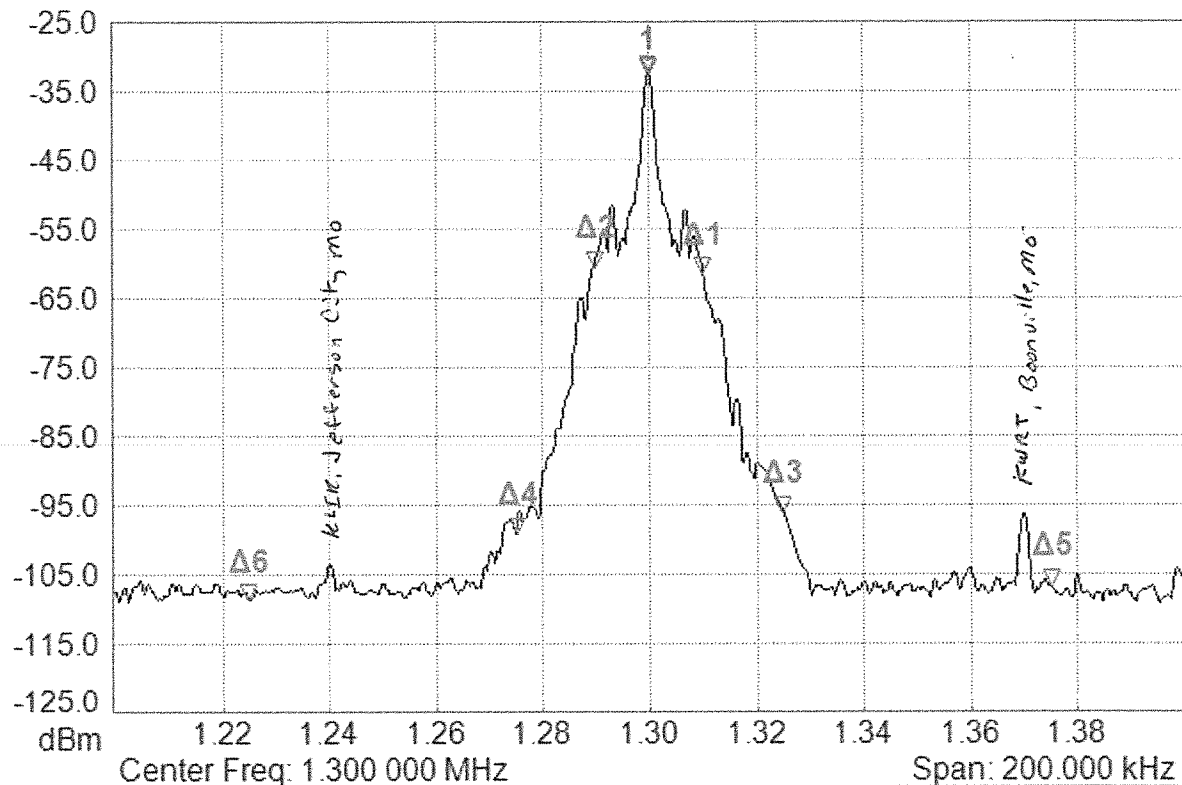
Harmonic measurements are referenced to carrier level in millivolts as measured directly by the analyzer and corrected for antenna K factor supplied by manufacturer's antenna calibration data. Data shown for carrier reference and second and third harmonics. A notch filter was used to suppress carrier during harmonic measurements

Frequency, Khz	Measured level, mV	Correction multiplier	Level in mV/m	Level below carrier dB
carrier	5.35	334.2	1787.97	0
2600	0.0003	210	0.06	-89.48
3900	0.0020	172.4	0.35	-74.29

Spectrum Analyzer Data

KMMO_2015_200 (9/17/2015 2:53:04 PM)

Spectrum Analyzer



Mkr	Ref	Delta	Ref Freq	Ref Amp	Delta Freq	Delta Amp
1	■	■	1.300 0 MHz	-32.40 dBm	10.200 0 kHz	-29.10 dB
2	□	■	--	--	-10.200 0 kHz	-28.24 dB
3	□	■	--	--	25.000 0 kHz	-63.73 dB
4	□	■	--	--	-25.000 0 kHz	-66.74 dB
5	□	■	--	--	75.000 0 kHz	-74.31 dB
6	□	■	--	--	-75.000 0 kHz	-76.33 dB

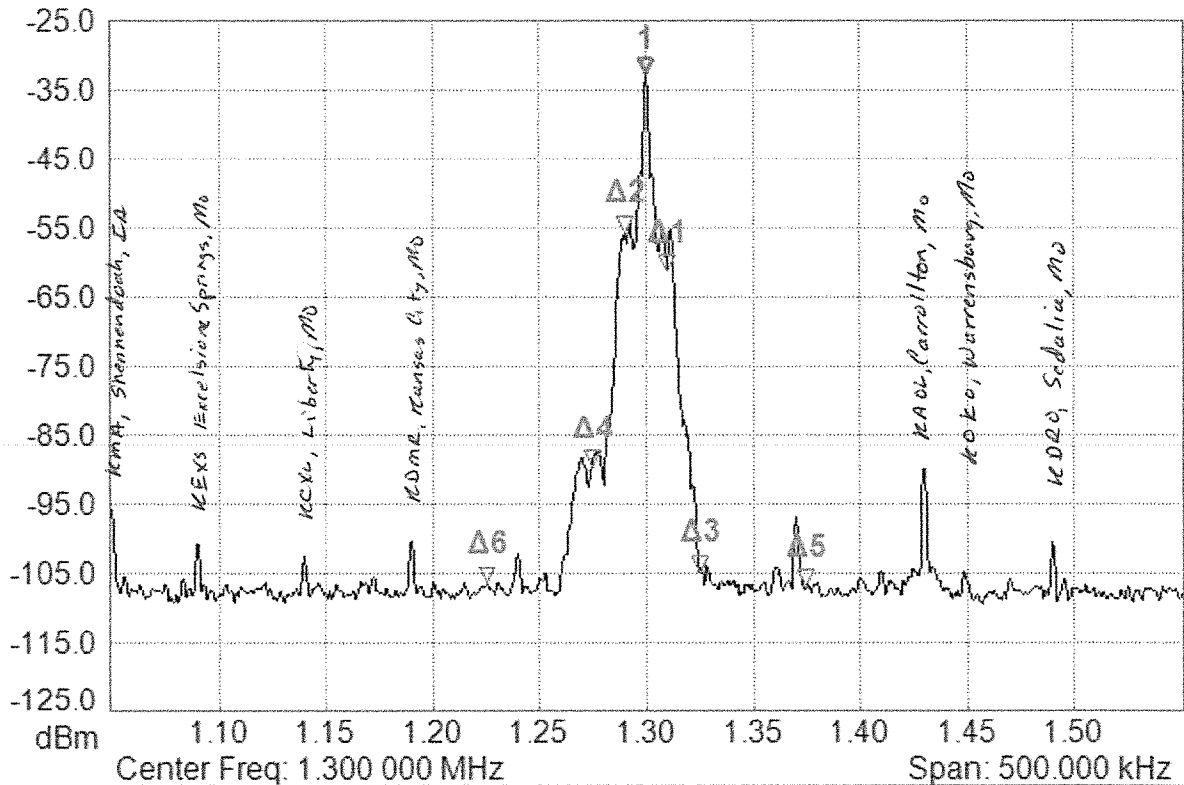
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 Trace Mode = Max Hold
 Preamp = OFF
 Min Sweep Time = 5E-05 S
 Reference Level Offset = 0.0 dB
 Input Attenuation = 0.0 dB
 RBW = 1.0 kHz
 VBW = 1.0 kHz
 Detection = Peak
 Center Frequency = 1.300 000 MHz
 Start Frequency = 1.200 000 MHz

Stop Frequency = 1.400 000 MHz
 Frequency Span = 200.000 000 kHz
 Reference Level = -25.000 dBm
 Scale = 10.0 dB/div
 Operator Name =
 Tower =
 Serial Number = 509083
 Base Ver. = V1.78
 App Ver. = V1.79
 Date = 9/17/2015 2:53:04 PM
 Device Name =

Spectrum Analyzer Data

Spectrum Analyzer

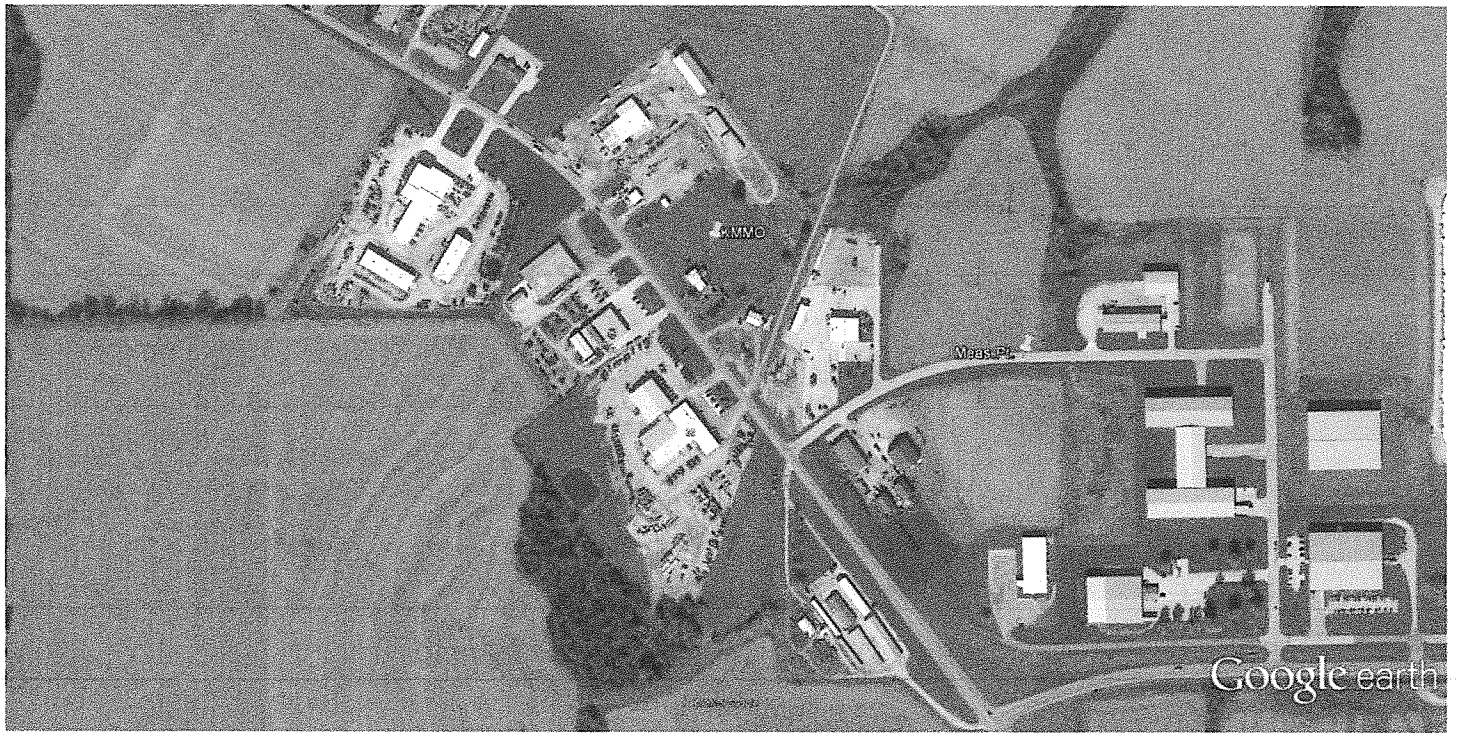
KMMO_2015_500(1) (9/17/2015 3:06:27 PM)



Mkr	Ref	Delta	Ref Freq	Ref Amp	Delta Freq	Delta Amp
1	■	■	1.300 0 MHz	-32.52 dBm	10.200 0 kHz	-28.69 dB
2	□	■	--	--	-10.200 0 kHz	-23.04 dB
3	□	■	--	--	25.000 0 kHz	-72.26 dB
4	□	■	--	--	-25.000 0 kHz	-57.03 dB
5	□	■	--	--	75.000 0 kHz	-74.26 dB
6	□	■	--	--	-75.000 0 kHz	-73.75 dB

Trace Mode = Max Hold
 Trace Mode = Max Hold
 Preamp = OFF
 Min Sweep Time = 5E-05 S
 Reference Level Offset = 0.0 dB
 Input Attenuation = 0.0 dB
 RBW = 1.0 kHz
 VBW = 1.0 kHz
 Detection = Peak
 Center Frequency = 1.300 000 MHz
 Start Frequency = 1.050 000 MHz

Stop Frequency = 1.550 000 MHz
 Frequency Span = 500.000 000 kHz
 Reference Level = -25.000 dBm
 Scale = 10.0 dB/div
 Operator Name =
 Tower =
 Serial Number = 509083
 Base Ver. = V1.78
 App Ver. = V1.79
 Date = 9/17/2015 3:06:27 PM
 Device Name =



Google earth

