

AMENDMENT TO PENDING APPLICATION FOR LICENSE
KFCO-FM3 AURORA, COLORADO FILE # 0000141248

Attached please find RF Spectrum Measurements in Support of the Pending License Application

**KFCO-FM3 BOOSTER 107.1 MHz.
FACILITY ID# 164514
RF EQUIPMENT PERFORMANCE MEASUREMENTS
AURORA, COLORADO
APRIL 2021**

TABLE OF CONTENTS

<u>EXHIBIT</u>	<u>TITLE</u>
200	TECHNICAL STATEMENT
300	EQUIPMENT PERFORMANCE MEASUREMENT DATA
400	BROADBAND SPECTRUM ANALYSIS 600 KHz. SPAN
500	SAMPLE DIPOLE SPECIFICATIONS AND DATA

KFCO-FM3 Booster, 107.1 MHz.
Facility ID# 164514
RF Equipment Performance Measurements
Aurora, Colorado
April 2021

EXHIBIT 200

Technical Statement:

KFCO Radio has retained the services of J.C. Humke and Associates, Inc. to perform RF Equipment Performance Measurements for the KFCO-FM3 booster facility, as required by FCC rules section 73.1590.

This regulation requires that the transmitted signal of the station be measured for compliance with the FM transmission system requirements set forth in FCC rules section 73.317, which states as follows:

FM transmission system requirements. – (a) FM broadcast stations employing transmitters authorized after January 1, 1960, must maintain the bandwidth occupied by their emissions in accordance with the specifications detailed below. FM broadcast stations employing transmitters installed or type accepted before January 1, 1960, must achieve the highest degree of compliance with these specifications practicable with their existing equipment. In either case, should harmful interference to other authorized stations occur, the licensee shall correct the problem promptly or cease operation.

(b) Any emission appearing on a frequency removed from the carrier by between 120 kHz and 240 kHz inclusive must be attenuated by at least 25 dB below the level of the unmodulated carrier. Compliance with this requirement will be deemed to show the occupied bandwidth to be 240 kHz or less.

(c) Any emission appearing on a frequency removed from the carrier by more than 240 kHz and up to and including 600 kHz must be attenuated by at least 35 dB below the level of the unmodulated carrier.

(d) Any emission appearing on a frequency removed from the carrier by more than 600 kHz must be attenuated by at least $43 + 10 \log_{10}(\text{Power, in watts})$ dB below the level of the unmodulated carrier, or 80 dB, whichever is the lesser attenuation.

(e) Preemphasis shall not be greater than the impedance-frequency characteristics of a series resistance network having a time constant of 75 microseconds. (see upper curve of Figure 2 of 73.333.)

* * * * *

J.C. Humke and Associates, Inc., 5457 South Jericho Way, Centennial, CO 80015-3648

KFCO-FM3 Booster, 107.1 MHz.
Facility ID# 164514
RF Equipment Performance Measurements
Aurora, Colorado
April 2021

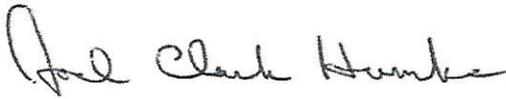
EXHIBIT 200
Page 2 of 2

Spectrum analysis measurements performed near the KFCO-FM3 booster site on Saturday, April 10, 2021, between 10:15 AM and 11:15 AM Mountain Daylight Time, show that the transmitter facility far exceeds the requirements of FCC rule 73.317.

The measurements are included as Exhibit 300. An Anritsu model MS2721B spectrum analyzer was used, serial number 808076. During the measurement of the second and third harmonics, a fundamental carrier filter was used to prevent overload of the analyzer input amplifier and mixer stages from producing harmonic signals within the analyzer itself. This filter affects the levels of actual harmonics by less than 1 dB, while lowering the fundamental carrier input by approximately 30 dB.

The measurements were performed with a frequency adjustable half wave dipole antenna and balun approximately 100 yards east of the transmitter in an open parking lot, at coordinates 39° 40.513' N., 104° 52.349' W.

Respectfully submitted,



Joel Clark Humke
FCC PG-15-8908

J.C. Humke and Associates, Inc.
5457 South Jericho Way
Centennial, Colorado 80015-3648

J.C. Humke and Associates, Inc., 5457 South Jericho Way, Centennial, CO 80015-3648

KFCO-FM3 Booster, 107.1 MHz.
Facility ID# 164514
RF Equipment Performance Measurements
Aurora, Colorado
April 2021

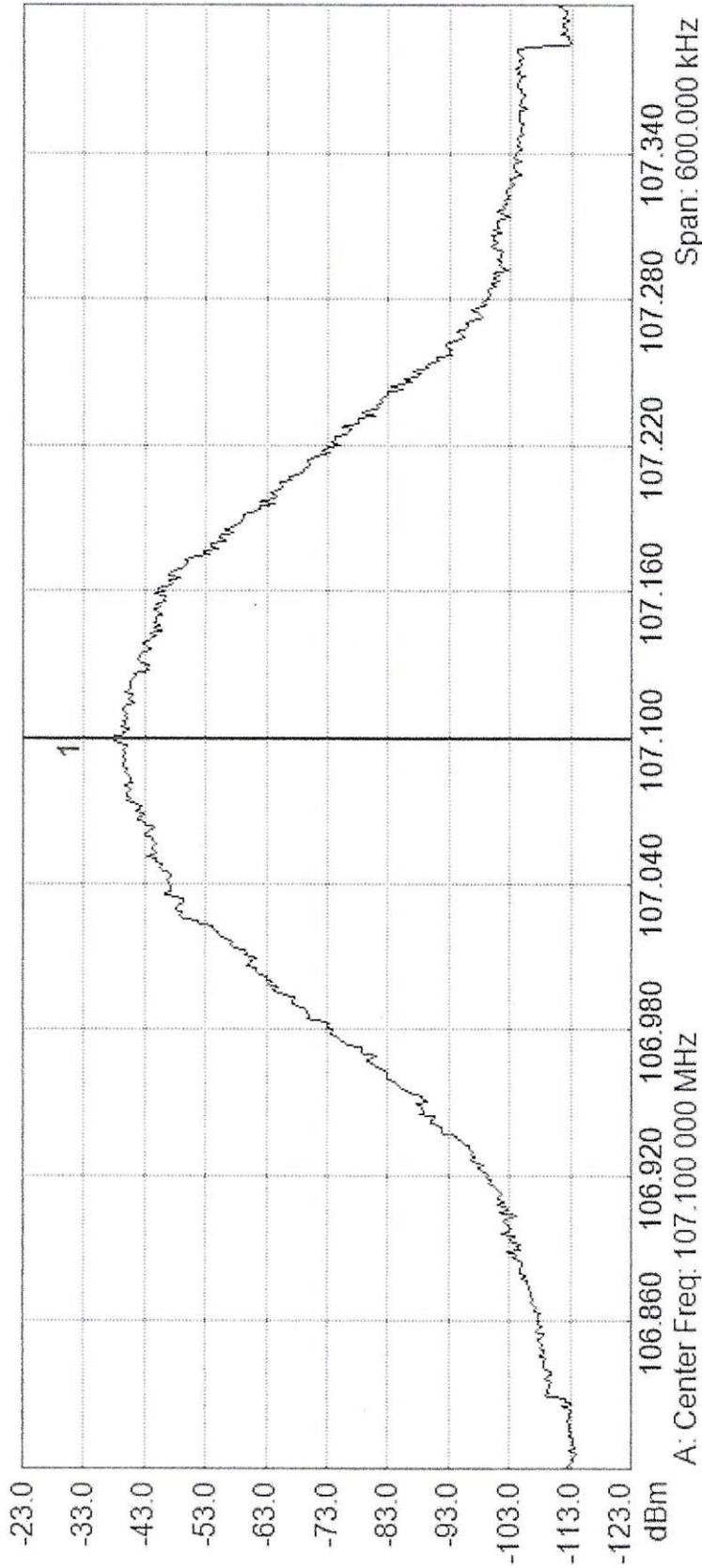
EXHIBIT 300

KFCO BOOSTER EQUIPMENT PERFORMANCE MEASUREMENTS

<u>Frequency from Carrier</u>	<u>Measured Suppression</u>	<u>FCC Required Suppression</u>	
120 KHz.	- 36.85 dB		-25 dB
121 to 239 KHz.	>-40 dB		-25 dB
240 KHz.	- 71.85 dB		-25 dB
241 KHz to 599 KHz.	>-70 dB		-35 dB
600 KHz.	> -85 dB		-35 dB
601 KHz Up	> -82 dB		-80 dB
107.1 MHz. Fundamental	-35.95 dBm Marker 1	0 dB ref	0 dB
214.2 MHz. 2 nd Harmonic	-118. dBm	-82.05dB	-80 dB
321.3 MHz. 3 rd Harmonic	-122 dBm noise floor	>-86.05dB	-80 dB

Spectrum Analyzer Data
KFCO (4/10/2021 10:49:55 AM)

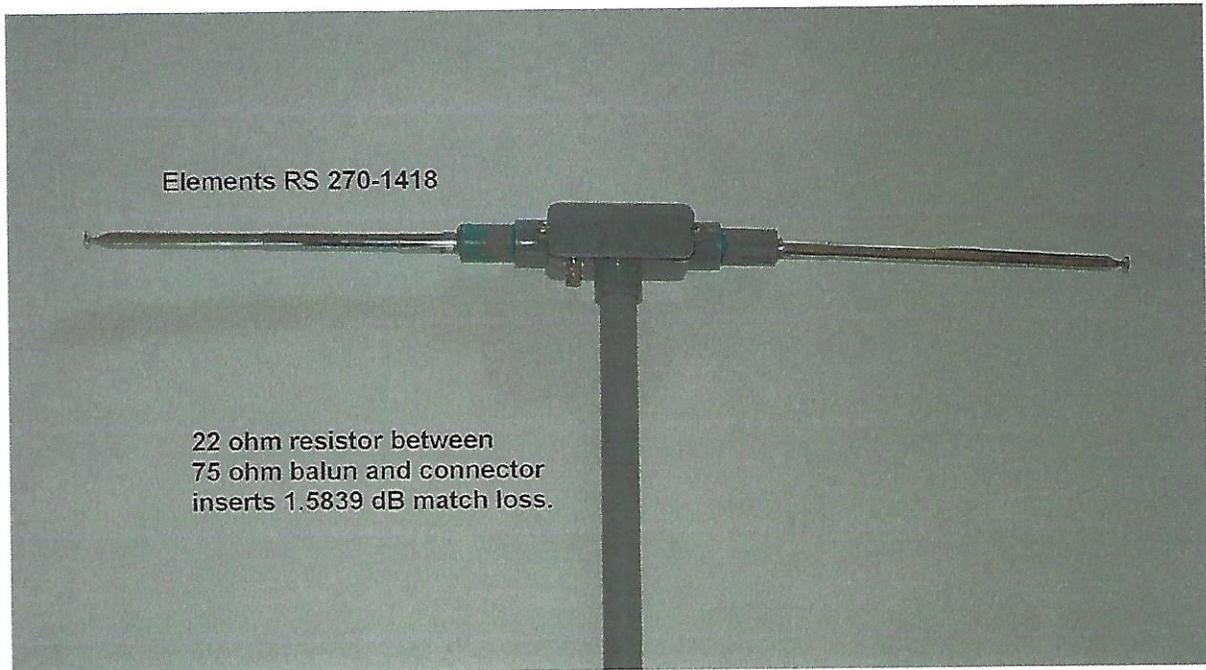
Spectrum Analyzer



Trace A data: Trace Average = 50
Trace Mode = Average
Preamp = OFF
Min Sweep Time = 1 S
Reference Level Offset = 0 dB
Input Attenuation = 0.0 dB
RBW = 300.0 Hz
VBW = 3.0 MHz

Detection = Sample
Center Frequency = 107.100 000 MHz
Start Frequency = 106.800 000 MHz
Stop Frequency = 107.400 000 MHz
Frequency Span = 600.000 000 kHz
Reference Level = -23.000 dBm
Scale = 10.0 dB/div
Serial Number = 808076

Base Ver. = V4.32
App Ver. = V5.73
Model = MS2721B
Options =
Date = 4/10/2021 10:49:55 AM
Device Name =



DIPOLE DATA Elements Radio Shack 270-1418 Element Length = $2952'' / F$ (MHz.)

<u>SECTION</u>	<u>LENGTH</u>	<u>FREQUENCY</u>	<u>K: ANTENNA FACTOR</u>
1	5.125''	576.00 MHz.	23.125 dB
2	9.000''	328.00 MHz.	18.234 dB
3	12.50''	236.16 MHz.	15.381 dB
4	15.87''	185.95 MHz.	13.304 dB
5	19.25''	153.35 MHz.	11.630 dB
6	22.50''	131.20 MHz.	10.275 dB
7	25.62''	115.20 MHz.	9.145 dB
8	28.87''	102.23 MHz.	8.108 dB
9	32.00''	92.25 MHz.	7.216 dB
10	35.00''	84.34 MHz.	6.437 dB
11	38.00''	77.68 MHz.	5.722 dB

$$k \text{ (dB)} = 20 \log (6.28F/300)+1.5$$