

# EQUIPMENT PROOF OF PERFORMANCE

Occupied Bandwidth, Spurious and Harmonic Signal  
Measurements

For

Radio Translator Station KIXW-FM 107.3 MHz

Lenwood, California

Conducted on July 6, 2021

Measurements Performed by Burt I. Weiner

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# FOREWORD

This report contains the results of required measurements as required in §73.1590 of the Rules and Regulations of the Federal Communications Commission that were conducted on July 6, 2021 on behalf of Radio Station KIXW-FM. KIXW-FM operates on 107.3 MHz with an ERP of 1000 watts from Lenwood, California. The KIXW-FM transmitter is a Nautel model VS2.5. The KIXW-FM Audio processor is an OMNIA-ONE.

KIXW-FM is collocated with:

KWIE-FM	101.3 MHz
KHDR-FM	96.9 MHz
KXXZ-FM	95.9 MHz

Of these stations, KIXW-FM, KWIE-FM, and KHDR-FM share a common antenna utilizing a Shively 3-Section model 2630-3A-06 Combiner.

All stations were operating at licensed values at the time of these measurements.

These measurements show the extent to which KIXW-FM complies with the occupied bandwidth, harmonic, and Spurious emissions requirements of the Commission's rules, specifically, §73.317 regarding FM Transmission System Requirements.

## METHODS AND EQUIPMENT USED

For these tests an Anritsu Spectrum Analyzer model MS2721B was used. A Bird Electronics model 43 wattmeter Sample Section was inserted between the output of the transmitter and the feedline to the Shively 3-section combiner. A Bird Electronics Broadband Signal Extractor was inserted into the wattmeter's line section and a 10-foot length of RG-223U was connected between the Signal Extractor, through a 20 dB attenuator to the spectrum analyzer input. For the Mask spectrograph the analyzer was operated in the peak hold mode for numerous sweeps totaling approximately 10 minutes.

For harmonic measurements a Microwave Filter Company model 5KHP-120 high-pass filter was inserted between the 20 dB attenuator and the spectrum analyzer's input in order to prevent overload in the analyzer by providing a measured 63.9 dB of attenuation at the fundamental frequency. The insertion loss of the 5KHP-120 filter is less than 2 dB at any frequency between 120 MHz to 1000 MHz. Each of the harmonics were measured and compared to the measured level of the fundamental frequency prior to the insertion of the Hi-Pass filter.

## RESULTS

Figure 1 shows the Modulation Mask that was made with program containing both speech and music.

Table A shows the results of the measurements of harmonic and any spurious emissions, and any related signals found in the Aircraft Radio Spectrum from 118 MHz to 137 MHz, which were detected and determined to be associated with, but not necessarily attributable to the KIXW-FM broadcast facilities at the time of measurement.

All emissions attributable to the KIXW-FM translator facilities were found to meet the requirements of §73.317(b)(c)(d) of the Commission's Rules and Regulations.

## Qualifications of Engineer

Burt I. Weiner, whose office is located at 210 Allen Avenue Glendale, California, hereby states that he has been actively involved in broadcast engineering since 1957; that his qualifications as a technical consultant are a matter of record with the Federal Communications Commissions; that he has prepared this report for Radio Station KIXW-FM, Oxnard, California; that he made the equipment performance measurements of Radio Station KIXW-FM shown in this report; and that all of the data contained in this report is accurate and correct to the best of his knowledge and ability.

July 6, 2021

A handwritten signature in blue ink, appearing to read "Burt I. Weiner". The signature is fluid and cursive, with the first name "Burt" being the most prominent part.

Burt I. Weiner

## TABLE A

Harmonic and Spurious Signal emissions related to the operation of KIXW-FM  
July 6, 2021

<b>Frequency and Relationship</b>	<b>Signal Attenuation Relative to Carrier</b>	<b>Attenuation Required by 73.317</b>
107.3 MHz Carrier (Reference)	0.0 dBc	0.0 dBc
214.6 MHz 2 <sup>nd</sup> Harmonic*	-104.8 dBc	76 dBc
321.9 MHz 3 <sup>rd</sup> Harmonic	-87.5 dBc	76 dBc
429.2 MHz 4 <sup>th</sup> Harmonic*	-86.6 dBc	76 dBc
536.5 MHz 5 <sup>th</sup> Harmonic*	-101.3 dBc	76 dBc
643.8 MHz 6 <sup>th</sup> Harmonic*	-77.5 dBc	76 dBc
751.1 MHz 7 <sup>th</sup> Harmonic*	-99.6 dBc	76 dBc
858.4 MHz 8 <sup>th</sup> Harmonic*	-92.5 dBc	76 dBc
965.7 MHz 9 <sup>th</sup> Harmonic*	-77.5 dBc	76 dBc
1073.0 MHz 10 <sup>th</sup> Harmonic*	-87.9 dBc	76 dBc

\*At or below the noise floor.

### **Related signals found in the Aircraft Band from 108 MHz to 138 MHz**

117.70 MHz	-114.5 dBc	76 dBc
118.75 MHz	-111.6 dBc	76 dBc
124.58 MHz	-111.4 dBc	76 dBc
134.02 MHz	-123.0 dBc	76 dBc

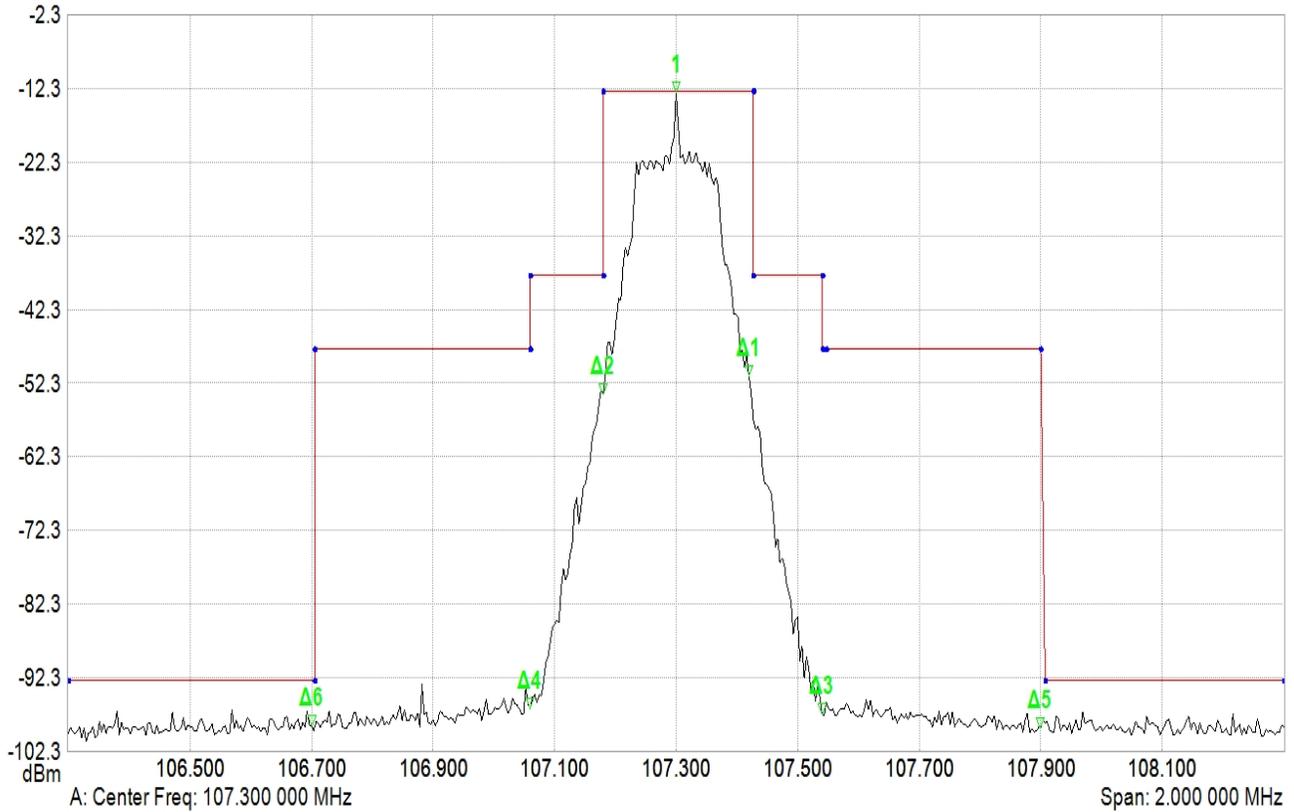
### **Intermodulation Products:**

Non were found.

No other related signals were found.

**Spectrum Analyzer Data**  
**KIXW-FM 107.3 MHz Modulation Mask 200 kHz/Division July 6, 2021**

Spectrum Analyzer



Mkr	Ref	Delta	Ref Freq	Ref Amp	Delta Freq	Delta Amp
1	■	■	107.300 003 MHz	-12.80 dBm	120.000 kHz	-38.50 dB
2		■			-120.000 kHz	-40.99 dB
3		■			240.000 kHz	-84.46 dB
4		■			-240.000 kHz	-83.66 dB
5		■			600.000 kHz	-86.32 dB
6		■			-600.000 kHz	-86.01 dB

Measurement Parameters

		Start Frequency	106.300 000 MHz
Trace Mode	Max Hold	Stop Frequency	108.300 000 MHz
Preamp	OFF	Frequency Span	2.000 000 MHz
Min Sweep Time	5E-05 S	Reference Level	-2.300 dBm
Reference Level Offset	0 dB	Scale	10.0 dB/div
Input Attenuation	0.0 dB	Serial Number	824065
RBW	1.0 kHz	Base Ver.	V3.10
VBW	3.0 kHz	App Ver.	V4.21
Detection	Peak	Date	7/6/2021 2:13:44 PM
Center Frequency	107.300 000 MHz	Device Name	Seymour

**Figure 1- Modulation Mask**

**Translator Station KIXW-FM**  
**Date: July 6, 2021**  
**Center Frequency: 107.3 MHz**  
**Span: 2.0 MHz; Vertical:10dB/Div; RBW: 1 kHz**