

EQUIPMENT PROOF OF PERFORMANCE

Occupied Bandwidth, Spurious and Harmonic Signal
Measurements

For

Radio Translator Station KHDR-FM 96.9 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 described 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 KHDR-FM. KHDR-FM operates on 96.9 MHz with an ERP of 1.0 Kilowatts from Lenwood, California. The KHDR-FM transmitter is a Nautel model VS2.5. The KHDR-FM Audio processor is an OMNIA-ONE.

KHDR-FM is collocated with:

KIXW-FM	107.3 MHz
KWIE-FM	101.3 MHz
KXXZ-FM	95.9 MHz

Of these stations, KHDR-FM, KIXW-FM, and KWIE-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 KHDR-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 75.5 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 KHDR-FM broadcast facilities at the time of measurement.

All emissions attributable to the KHDR-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 KHDR-FM, Oxnard, California; that he made the equipment performance measurements of Radio Station KHDR-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 a prominent initial "B" and "W".

Burt I. Weiner

TABLE A

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

Frequency and Relationship	Signal Attenuation Relative to Carrier	Attenuation Required by 73.317
96.9 MHz Carrier (Reference)	0.0 dBc	0.0 dBc
193.8 MHz 2 nd Harmonic*	-96.7 dBc	76 dBc
290.7 MHz 3 rd Harmonic	-81.3 dBc	76 dBc
387.6 MHz 4 th Harmonic*	-87.6 dBc	76 dBc
484.5 MHz 5 th Harmonic*	-86.6 dBc	76 dBc
581.4 MHz 6 th Harmonic*	-89.8 dBc	76 dBc
678.3 MHz 7 th Harmonic*	-83.8 dBc	76 dBc
775.2 MHz 8 th Harmonic*	-114.4 dBc	76 dBc
872.1 MHz 9 th Harmonic*	-106.2 dBc	76 dBc
969.0 MHz 10 th Harmonic*	-93.9 dBc	76 dBc

*At or below the noise floor.

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

Non were found

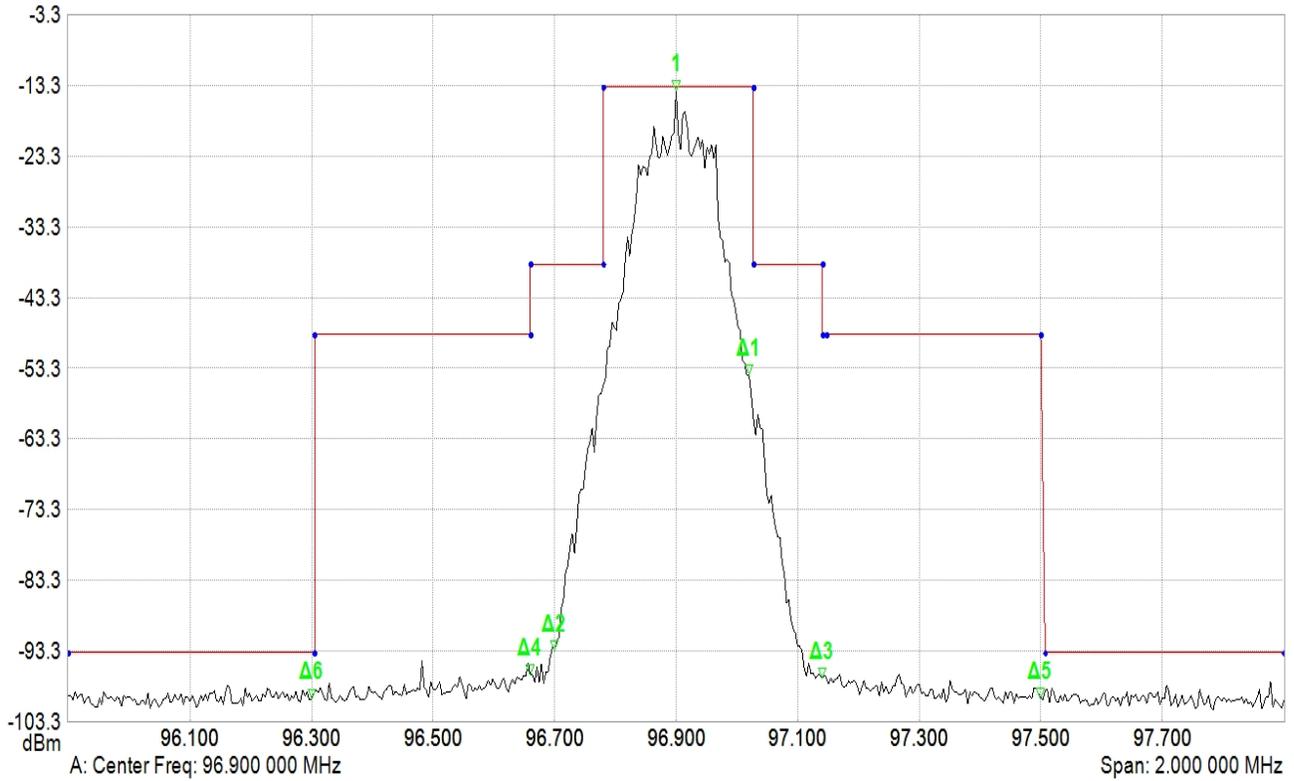
Intermodulation Products:

Non were found.

No other related signals were found.

Spectrum Analyzer Data
 KHDR-FM 96.9 MHz Modulation Mask 200 kHz/Division July 6, 2021

Spectrum Analyzer



Mkr	Ref	Delta	Ref Freq	Ref Amp	Delta Freq	Delta Amp
1	■	■	96.900 002 MHz	-14.04 dBm	120.000 kHz	-40.18 dB
2		■			-200.000 kHz	-79.20 dB
3		■			240.000 kHz	-83.07 dB
4		■			-240.000 kHz	-82.58 dB
5		■			600.000 kHz	-85.94 dB
6		■			-600.000 kHz	-86.03 dB

Measurement Parameters

		Start Frequency	95.900 000 MHz
		Stop Frequency	97.900 000 MHz
Trace Mode	Max Hold	Frequency Span	2.000 000 MHz
Preamp	OFF	Reference Level	-3.300 dBm
Min Sweep Time	5E-05 S	Scale	10.0 dB/div
Reference Level Offset	0 dB	Serial Number	824065
Input Attenuation	0.0 dB	Base Ver.	V3.10
RBW	1.0 kHz	App Ver.	V4.21
VBW	3.0 kHz	Date	7/6/2021 1:41:34 PM
Detection	Peak	Device Name	Seymour
Center Frequency	96.900 000 MHz		

Figure 1- Modulation Mask

—Translator Station KHDR-FM
 Date: July 6, 2021
 Center Frequency: 96.9 MHz
 Span: 2.0 MHz; Vertical:10dB/Div; RBW: 1 kHz