EQUIPMENT PROOF OF PERFORMANCE

Occupied Bandwidth, Spurious and Harmonic Signal Measurements

For

Radio Station KLVE-FM1, Santa Clarita, California
Oat Mountain Booster for KLVE-FM

Conducted on August 1, 2013

Measurements Performed by Burt I. Weiner

Burt I. Weiner Associates
Glendale, California 91201-3491
818-409-0185

www.biwa.cc

FOREWORD

This report contains the results of measurements as described in Section 73.1590 of the Rules and Regulations of the Federal Communications Commission conducted on August 1, 2013 on behalf of Radio Station KLVE-FM1, Santa Clarita, California. KLVE-FM1 is a Booster for KLVE-FM and operates on 107.5 MHz with an ERP of 100 Watts from Oat Mountain located at the northeast edge of the San Fernando Valley. The KLVE-FM1 transmitter is a Harris Digit Exciter followed by a Microwave Filter Company (MFC) model 7123 Low Pass Filter. Program audio for the booster is received at the KLVE studios from an Off-Air receiver and fed to the booster via a T1 Link.

The KLVE-FM1 transmitter is co-located with boosters for KUSC FM1 91.5 MHz, KKGO-FM1 105.1 MHz, KROQ-FM1 106.7 MHz, and KSCA-FM1 107.5 MHz. The KLVE-FM1 and KSCA-FM1 transmitters are combined and feed a common antenna.

These measurements show the extent to which KLVE-FM1 complies with the occupied bandwidth and harmonic and spurious emission requirements of the Commission's rules, specifically, Sections 73.317 regarding: FM Transmission System Requirements.

METHODS AND EQUIPMENT USED

For these measurements an Anritsu Spectrum Analyzer model MS2721B was used. A Bird Electronics model 43 wattmeter was inserted between the output of the MFC Low Pass Filter and the input to the KLVE-FM1 and KSCA-FM1 combiner. A Bird Electronics Signal Extractor Probe was inserted into the wattmeter and connected through a 20 dB power attenuator to the spectrum analyzer’s input with 10 feet of RG-223U double-shielded coaxial cable.

For the modulation mask spectrograph the analyzer was operated in the peak hold mode for numerous sweeps totaling approximately 10 minutes.

Particular attention was paid to the aircraft band located in the 108 MHz to 140 MHz spectrum.

For harmonic measurements, a Microwave Filter Company model 5KHP High Pass filter was inserted between the 20 dB attenuator and the spectrum analyzer’s input in order to prevent overload to the analyzer by providing a measured 50.1 dB of attenuation at the fundamental frequency. The insertion loss of the 5KHP 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 High Pass filter.

RESULTS

Table A shows the results of the measurements of harmonics and any spurious emissions which were detected and determined to be associated with, but not necessarily attributable to the KLVE-FM1 broadcast facilities at the time of measurement.

Figure 1 shows the Occupied Bandwidth of the modulation mask.

Figure 2 shows spurious signal found in the aircraft band. These signals do not exceed FCC limits.

Figure 3 shows the spectrum from 0 Hz to 1000 MHz. Only KLVE-FM1 harmonic signals are marked.

All emissions attributable to the KLVE-FM1 broadcast facilities were found to meet the requirements of Section 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 1961; 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 KLVE-FM1, Santa Clarita, California; that he made the equipment performance measurements of Radio Station KLVE-FM1 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.

Burt I. Weiner

August 1, 2013

TABLE A

Harmonic and Spurious emissions observed
relative to the operation of KLVE-FM1
August 1, 2013

Frequency and Relationship	**Signal Attenuation Relative to Carrier**	**Attenuation required by 73.317**
107.5 MHz Fundamental	0 dBc (-18.8 dBm)	REF 0.0 dBc
215.0 MHz 2nd Harmonic	>-105.6 dBc*	55 dBc
322.5 MHz 3rd Harmonic	>-106.6 dBc*	55 dBc
430.0 MHz 4th Harmonic	>-106.6 dBc*	55 dBc
537.5 MHz 5th Harmonic	>-107.6 dBc*	55 dBc
645.0 MHz 6th Harmonic	>-108.6 dBc*	55 dBc
752.5 MHz 7th Harmonic	>-107.6 dBc*	55 dBc
860.0 MHz 8th Harmonic	>-107.6 dBc	55 dBc
967.5 MHz 9th Harmonic	>-108.6 dBc*	55 dBc
1075.0 MHz 10th Harmonic	>-108.6 dBc*	55 dBc

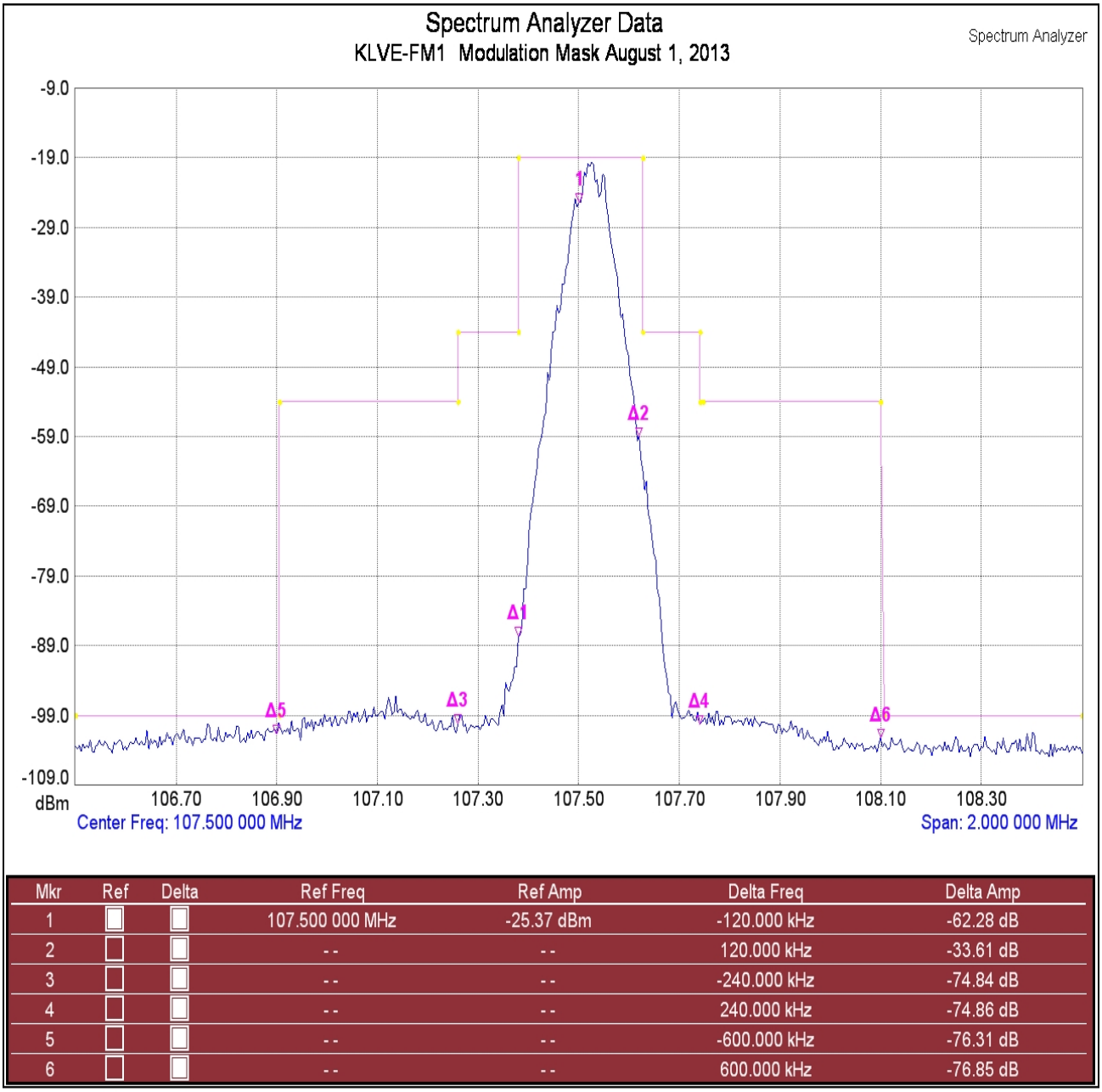
Aircraft Spectrum 108 MHz to 142 MHz measurements

115.6 MHz Spurious Signal	-86.3 dBc	55 dBc
129.7 MHz Spurious Signal	-87.2 dBc	55 dBc

Harmonic and Spurious signal measurements were made without modulation of the fundamental carrier for easy identification. Spurious signals were identified and confirmed to be coming from the KLVE-FM1 facilities by turning the transmitter off and on.

* Indicates that measurements were at or below the noise floor.

No other related signals were observed.

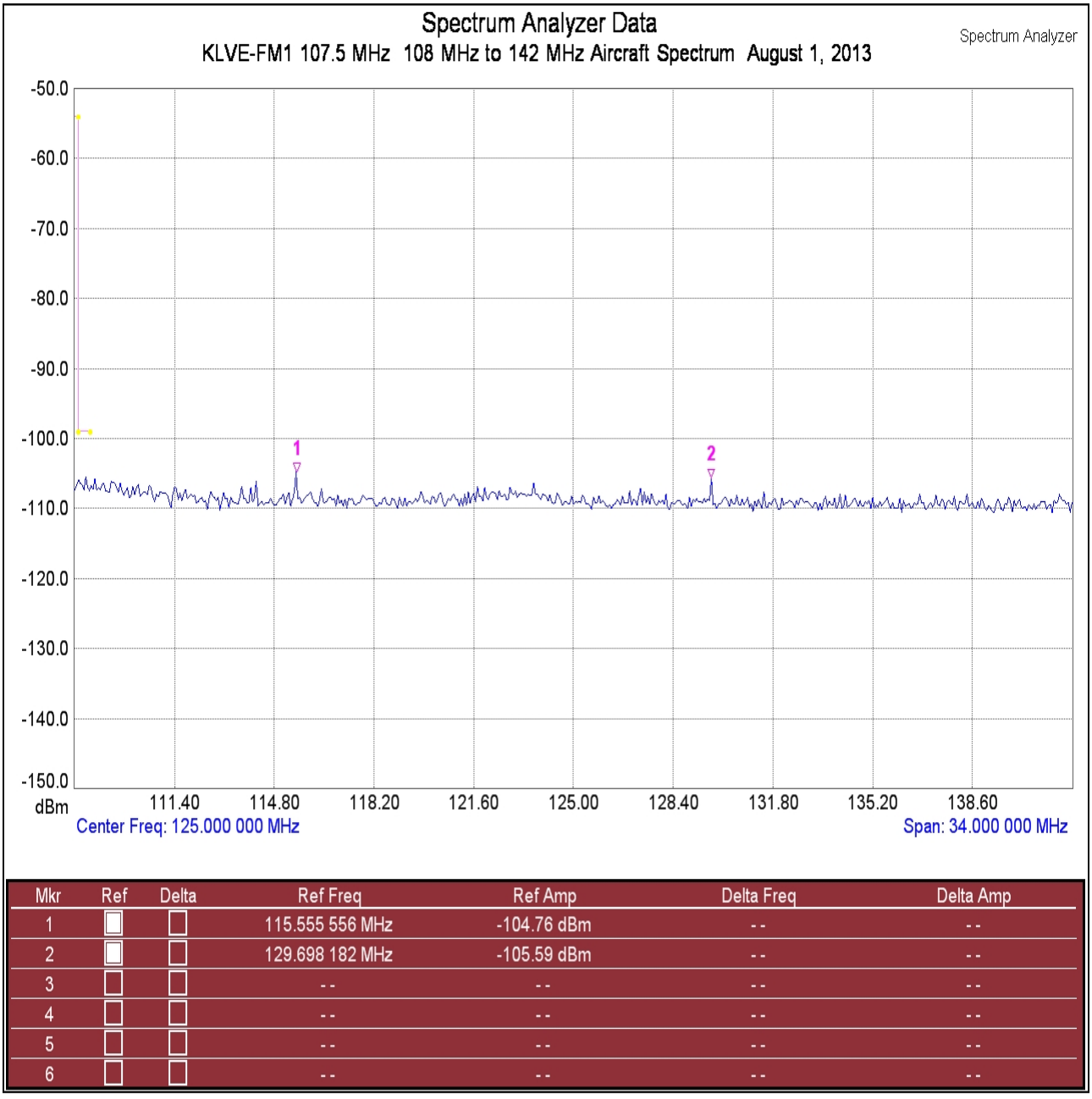


Mkr	Ref	Delta	Ref Freq	Ref Amp	Delta Freq	Delta Amp
1			107.500 000 MHz	-25.37 dBm	-120.000 kHz	-62.28 dB
2			- -	- -	120.000 kHz	-33.61 dB
3			- -	- -	-240.000 kHz	-74.84 dB
4			- -	- -	240.000 kHz	-74.86 dB
5			- -	- -	-600.000 kHz	-76.31 dB
6			- -	- -	600.000 kHz	-76.85 dB

Measurement Parameters

		Start Frequency	106.500 000 MHz
Trace Mode	Max Hold	Stop Frequency	108.500 000 MHz
Preamp	OFF	Frequency Span	2.000 000 MHz
Min Sweep Time	5E-05 S	Reference Level	-9.000 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	1.0 kHz	App Ver.	V4.21
Detection	Peak	Date	8/1/2013 11:33:51 AM
Center Frequency	107.500 000 MHz	Device Name	Seymour

Figure 1 KLVE-FM1 107.5 MHz Modulation Mask
DATE: August 1, 2013
CF = 107.5 MHz; SPAN = 2.0 MHz; RBW = 1 kHz

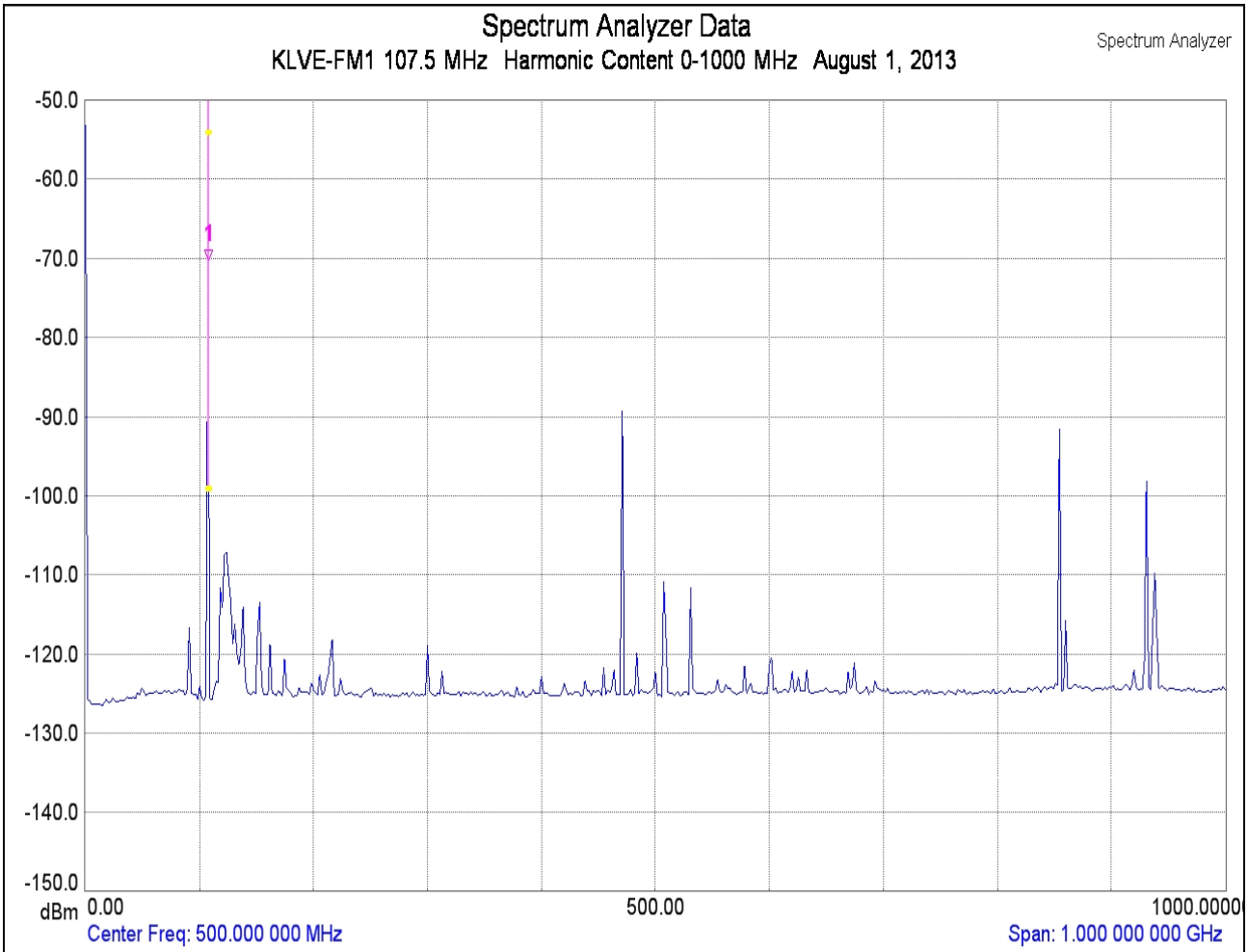


Mkr	Ref	Delta	Ref Freq	Ref Amp	Delta Freq	Delta Amp
1	☐	☐	115.555 556 MHz	-104.76 dBm	--	--
2	☐	☐	129.698 182 MHz	-105.59 dBm	--	--
3	☐	☐	--	--	--	--
4	☐	☐	--	--	--	--
5	☐	☐	--	--	--	--
6	☐	☐	--	--	--	--

Measurement Parameters

		Start Frequency	108.000 000 MHz
Trace Mode	Normal	Stop Frequency	142.000 000 MHz
Preamp	OFF	Frequency Span	34.000 000 MHz
Min Sweep Time	5E-05 S	Reference Level	-50.000 dBm
Reference Level Offset	0 dB	Scale	10.0 dB/div
Input Attenuation	10.0 dB	Serial Number	824065
RBW	1.0 kHz	Base Ver.	V3.10
VBW	100.0 Hz	App Ver.	V4.21
Detection	Peak	Date	8/1/2013 11:52:19 AM
Center Frequency	125.000 000 MHz	Device Name	Seymour

Figure 2 KLVE-FM1 Aircraft Spectrum 108-142 MHz Spurious Signals
Date: August 1, 2013
KLVE-FM1 Modulation removed



Mkr	Ref	Delta	Ref Freq	Ref Amp	Delta Freq	Delta Amp
1	☐	☐	107.500 000 MHz	-70.18 dBm	- -	- -
2	☐	☐	- -	- -	- -	- -
3	☐	☐	- -	- -	- -	- -
4	☐	☐	- -	- -	- -	- -
5	☐	☐	- -	- -	- -	- -
6	☐	☐	- -	- -	- -	- -

Measurement Parameters

		Start Frequency	0.000 000 Hz
Trace Mode	Normal	Stop Frequency	1.000 000 000 GHz
Preamp	ON	Frequency Span	1.000 000 000 GHz
Min Sweep Time	5E-05 S	Reference Level	-50.000 dBm
Reference Level Offset	0 dB	Scale	10.0 dB/div
Input Attenuation	0.0 dB	Serial Number	824065
RBW	10.0 kHz	Base Ver.	V3.10
VBW	100.0 Hz	App Ver.	V4.21
Detection	Peak	Date	8/1/2013 12:09:34 PM
Center Frequency	500.000 000 MHz	Device Name	Seymour

Figure 3 KLVE-FM1 Harmonics 0-1000 MHz SPAN
Date: August 1, 2013; Related Signals
Center Frequency: 500 MHz; 100 MHz/Div