

ENGINEERING STATEMENT
IN SUPPORT OF
AN APPLICATION FOR STATION LICENSE
FOR COMMUNITY BOOSTER STATIONS
KJMY-FM1, KODJ-FM1, KOSY-FM1,
KRCL-FM1, AND KZHT-FM1
ON BEHALF OF CLEAR CHANNEL, INC.

SEPTEMBER, 2007

MARIO HIEB, P.E.
CONSULTING ENGINEER
SALT LAKE CITY, UT

NARRATIVE

This report is a summary of tests conducted on a community antenna system for Clear Channel, Inc. on August 22, 2007 to verify system performance and compliance with FCC Rules.

The system is comprised of a community antenna manufactured by Jampro Antennas, Inc. The parameters of this antenna and combiner are as follows:

MODEL: JCPD-2/1(2) RFR.95

SERIAL NUMBER: 13363

FREQUENCY: 90.0, 94.1, 87.1, 99.5, 106.5 MHz.

POLARIZATION: Circular

AZUMITH PATTERN: Directional

GAIN: 6.4X (8.0 dBd)

BEAM TILT: 0.0 degrees

NULL FILL: 0%

INPUT POWER: 5 kW average

MAXIMUM VSWR: 1.1:1

The site is located on Lewis Peak in Summit County, Utah. The recently constructed community antenna site is comprised of the following FM booster stations:

- KJMY-FM2
- KODJ-FM1
- KOSY-FM1
- KRCL-FM1
- KZHT-FM1

Existing FM booster stations on the site include:

- KBZN-FM1
- KXRK-FM1

Also at the site are FM translators, two-way radio, microwave, etc.

RFR TESTING

DATE/TIME: August 22, 2007 4:10 PM

METER: Narda 8718B

SERIAL NUMBER: 1205

CALIBRATED: 4/11/06

PROBE: Isotropic E probe

SERIAL NUMBER: 1101

CALIBRATED: 4/06

CORRECTION FACTOR: 1.07

FREQUENCY: 99.9 MHz.,

PROBE BANDWIDTH: 300 kHz. – 3 GHz.

The maximum peak reading taken at the site, with all FM stations operating at full power, was $70.6 \mu\text{W}/\text{cm}^2$ or 35.3% of the General Population Exposure limit of $200 \mu\text{W}/\text{cm}^2$. The stations are therefore in compliance with non-ionizing radiation requirements of OET Bulletin 65.

ANTENNA ORIENTATION

To verify the antennas orientation, a string line was tied directly to the tower leg that the panel antenna was mounted to. This string line was extended a distance away from the leg as seen in Figure 1, directly below the antenna elements.

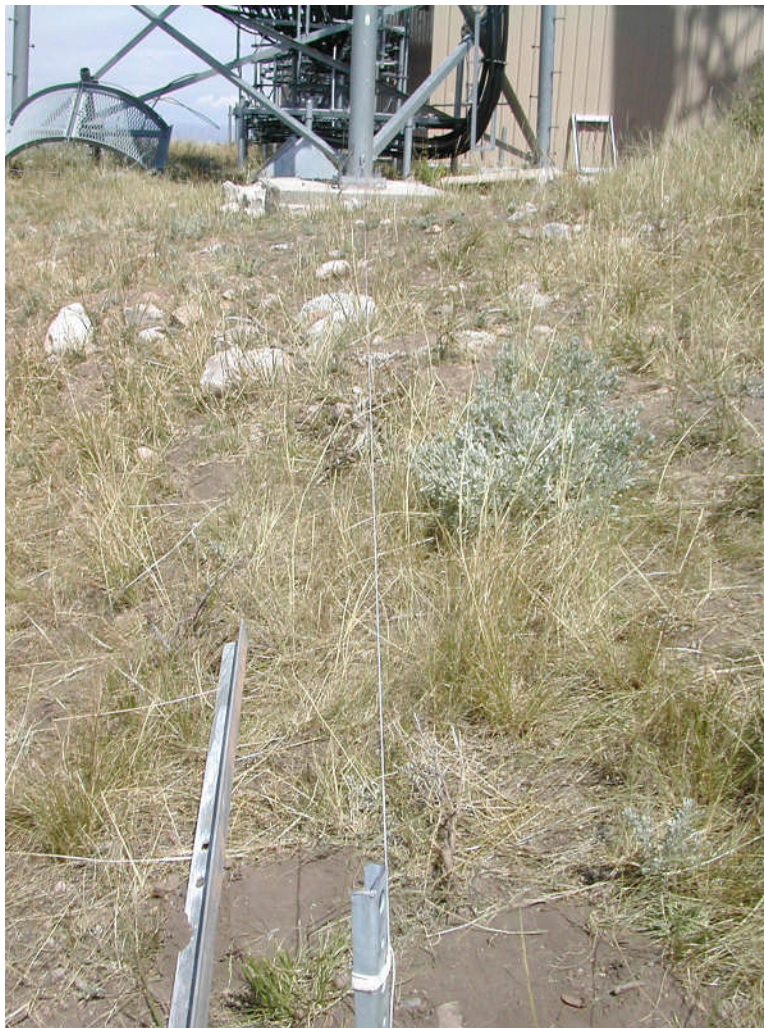


Figure 1: Line for azimuth measurement.

The line is now at a distance where a compass will not be affected by the metal in the tower. Using a large protractor and a compass, the bearing of the line was verified to be 190 degrees. Magnetic North is 13 degrees east of True North at this location.



Figure 2: Radiating element of community antenna.

Figure 2 is a photo of the community antenna element as seen from behind the grid reflector. The element is aimed toward Quarry Mountain, which is directly on bearing, as shown in Figure 3.

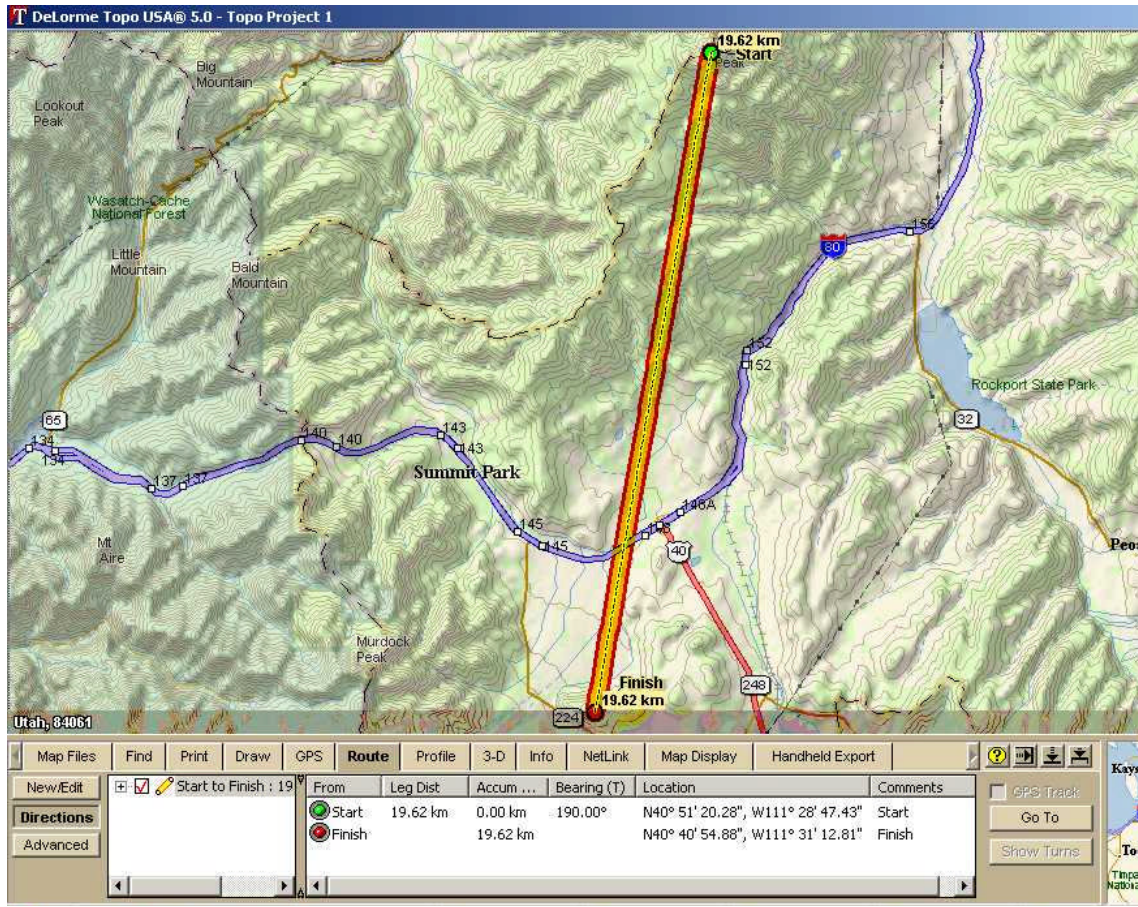


Figure 3: Map showing orientation of the community antenna and bearing to Quarry Mountain.

The azimuthal orientation of the station's community antenna is in compliance with the azimuth specified in the station's construction permit.

SPECTRAL EMISSIONS

Spectral emissions were measured using the following:

ANALYZER: Agilent

MODEL: E4401B

SERIAL NUMBER: MY41440302

CALIBRATED: 5-16-06

Figures 4 through 8 are stored images of the actual screen display of the measured spectrum emissions of the respective stations.

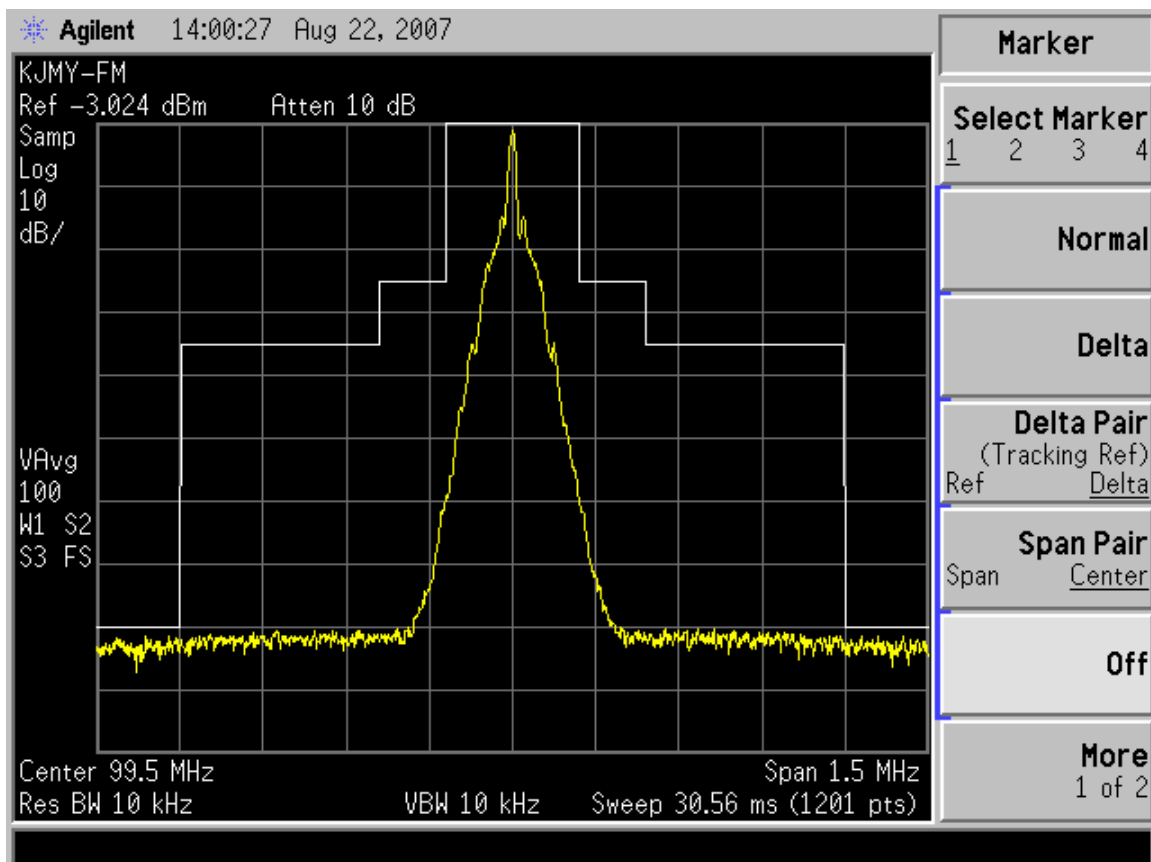


FIGURE 4: Spectrum Display of KJMY-FM1.

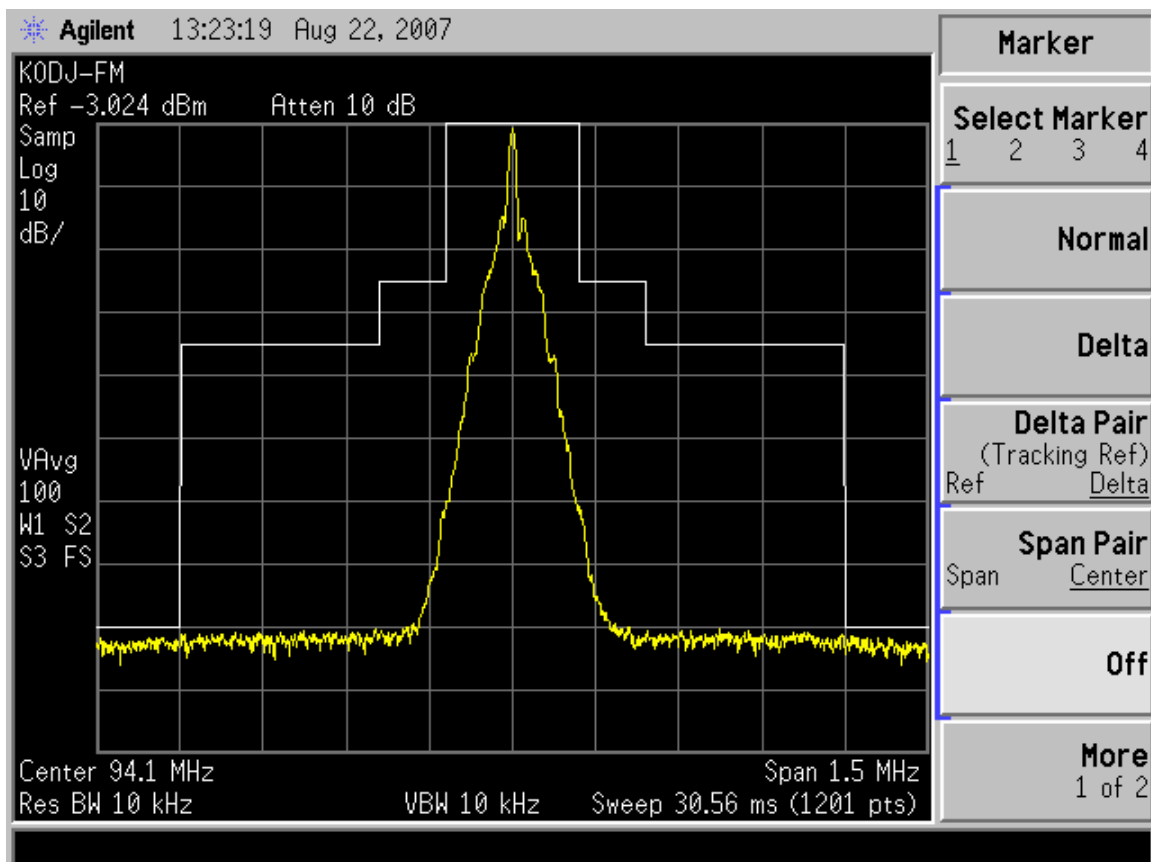


FIGURE 5: Spectrum Display of KODJ-FM1.

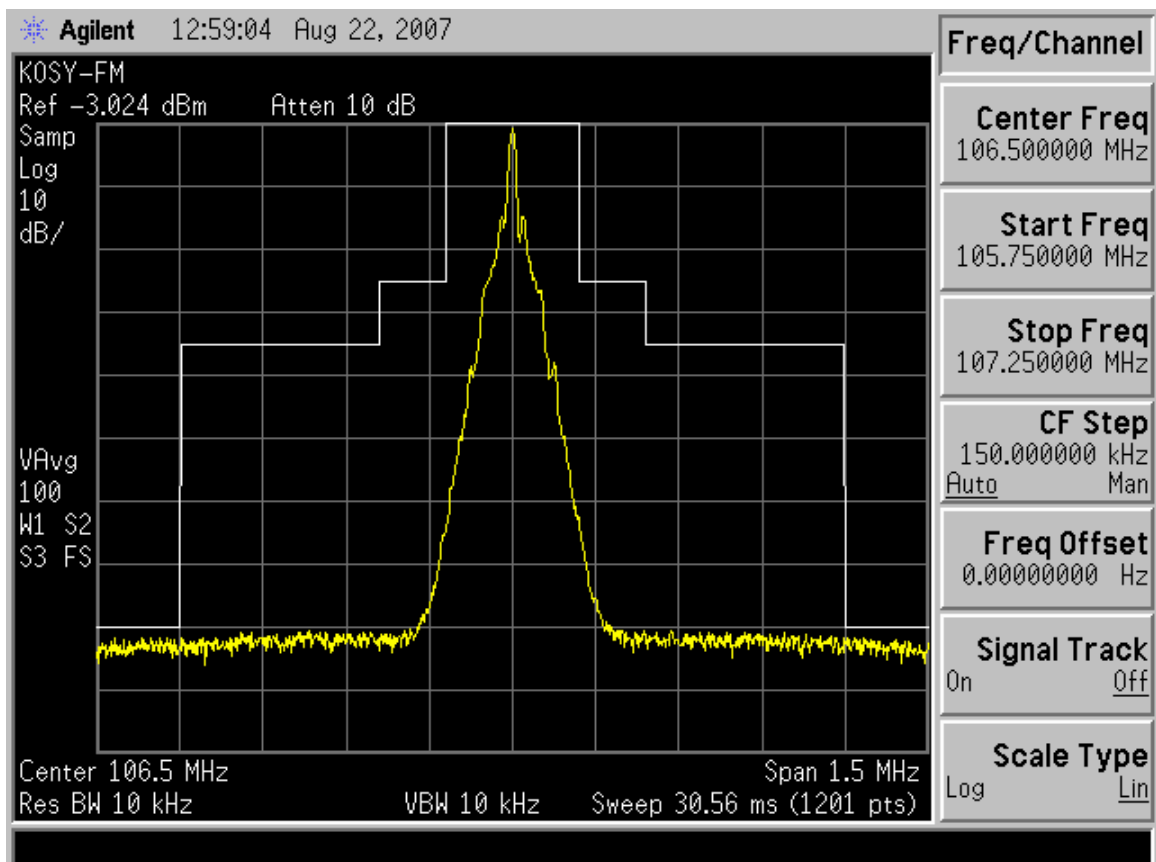


FIGURE 6: Spectrum Display of KOSY-FM1.

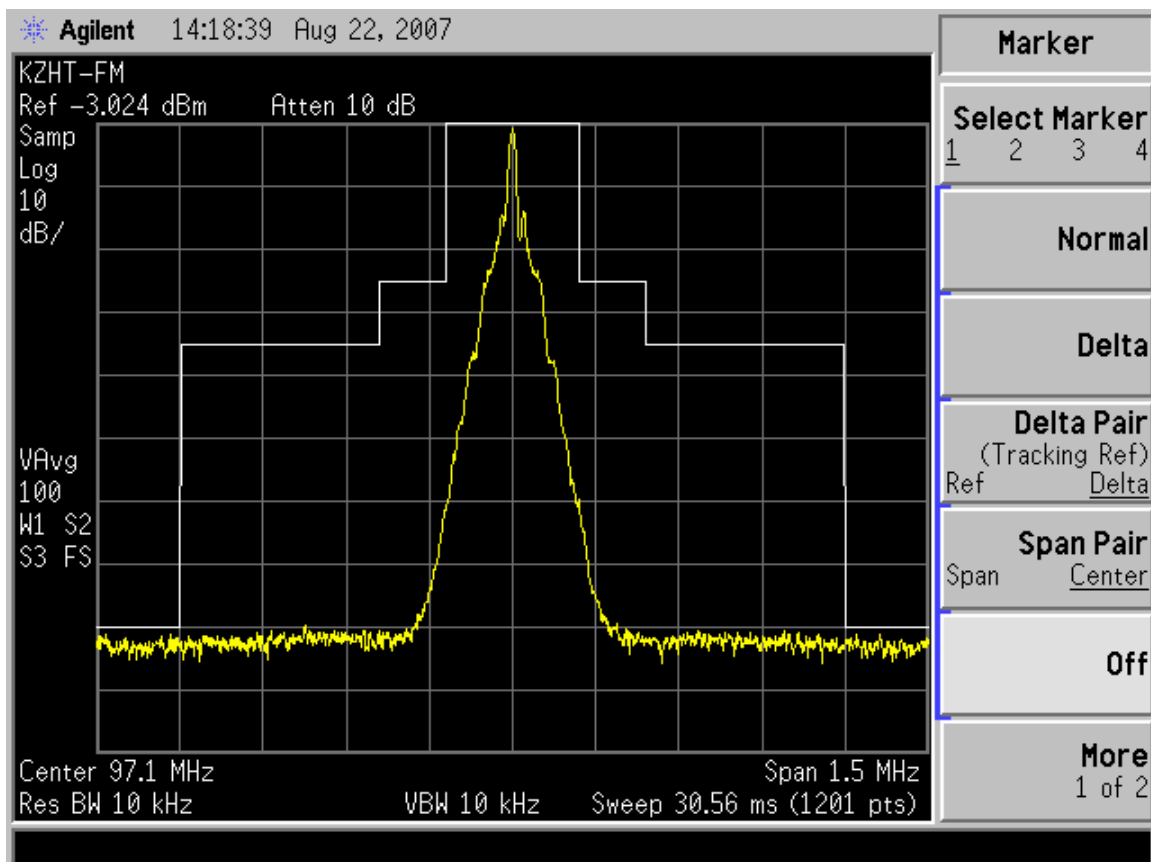


FIGURE 8: Spectrum Display of KZHT-FM1.

47 CFR 73.317 (d) states that “Any emission appearing on a frequency removed from the carrier by more than 600 kHz must be attenuated at least $43 + 10 \log_{10}(\text{Power, in watts})$ dB below the level of the un-modulated carrier, or 80 dB, whichever is the lesser attenuation.”

Table 1 shows the power output of each of the community antenna stations and calculated maximum emission level for frequencies greater than 600 kHz from carrier.

CALL	FREQ	TPO	insertion loss (dB)	combiner out (watts)	ERP (watts)	> 600 kHz (dB)
KJMY	99.5	210.0	-1.005	166.6	1000	65.2
KODJ	94.1	205.7	-0.915	166.6	1000	65.2
KOSY	106.5	212.8	-1.062	166.6	1000	65.2
KZHT	97.1	243.1	-1.641	166.6	1000	65.2
KRCL	90.9	20.7	-0.987	16.5	99	55.2

TABLE 1: Power output of community antenna stations and calculated maximum emission level for frequencies greater than 600 kHz from carrier.

Each station complies with the more stringent 80 dB emission requirement of 47 CFR 73.317, as shown in Table 2.

		HARMONIC LEVEL (dBm)									
CALL	FREQ	FND	2	3	4	5	6	7	8	9	10
KOSY	106.5	-3.0	-84.8	-84.4	-95.5	-94.2	-97.5	-97.6	-95.8	-93.2	-96.1
KODJ	94.1	-3.0	-84.3	-88.3	-94.2	-94.2	-91.4	-96.4	-93.3	-93.1	94.3
KJMY	99.5	-3.0	-88.8	-86.5	-94.4	-99.6	-95.9	-93.3	-93.8	-94.9	-93.5
KZHT	97.1	-3.0	-84.3	-88.6	-94.9	-94.3	-95.7	-92.7	-94.6	-94.2	-94.7
KRCL	90.9	-3.0	-92.5	-91.9	-98.4	-99.4	-98.8	-94.9	-92.5	-97.3	-100.5

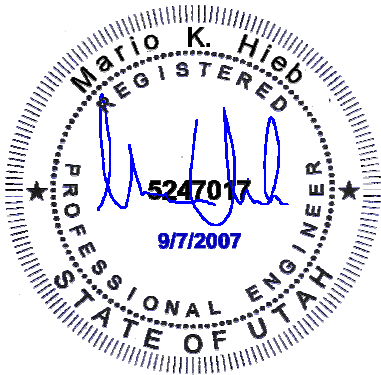
TABLE 2. Summary of Harmonic Measurements.

These measurements confirm that the constructed stations are in compliance with 47 CFR 74.126 and 47 CFR 73.317 regarding emission and bandwidth and FM transmission system requirements.

CERTIFICATION

Mario K. Hieb, P.E., hereby states that:

- He is a graduate Electrical Engineer and a Registered Professional Engineer in the State of Utah;
- His qualifications are a matter of record with the Federal Communications Commission;
- The attached engineering report was prepared by him or under his supervision and direction.



Mario K. Hieb

Utah Professional Engineer