

RF EQUIPMENT PERFORMANCE MEASUREMENTS

OF TRANSLATOR K239BG

CITY OF LICENSE GRAFTON, NORTH DAKOTA

LOCATED IN GRAND FORKS, ND

LICENSED TO LEIGHTON ENTERPRISES, INC.

PERFORMED BY

OFFERDAHL BROADCAST SERVICE, INC.

ON

NOVEMBER 16, 2011

OFFERDAHL BROADCAST SERVICE, INC.

705 EATON AVENUE NORTH

FOSSTON, MN 56542

QUALIFICATIONS OF

James R. Offerdahl

James R. Offerdahl has been a Broadcast Engineer since 2002. He maintains numerous AM and FM transmitters, studio facilities, studio to transmitter links, remote control systems and other broadcast related equipment. Mr. Offerdahl has installed new and used AM and FM transmitters as well as supervised the construction of many new FM translator stations as well as assisted with the preparation and filing of the FCC form 302s for the same, which have been approved by the FCC..

Mr. Offerdahl has been mentored by Mark W. Persons of Brainerd, MN, a Broadcast Engineer who is well known to the FCC. Mr. Persons has trained Mr. Offerdahl in the proper practices and procedures required to properly perform this proof of performance.

Mr. Offerdahl is a member in good standing with the Society of Broadcast Engineers.

I, James R. Offerdahl, certify that this report is true and accurate to the best of my knowledge and belief.

November 16, 2011

*James R. Offerdahl*

## **STATEMENT**

RF occupied bandwidth and harmonic measurements were made on the K239BG Translator of KGFK on November 16, 2011. The translator was running at the licensed transmitter output power of 411 watts. The purpose of the measurements was to assure compliance with FCC rules and regulations.

## **PROCEDURE**

Anritsu MS2721B Spectrum Analyzer serial number 843006 was used to make the measurements. It was connected to an inline sample port manufactured by MW Persons and Associates that was inserted between the transmitter system and the transmission line that goes to the antenna.

Attached is Spectrum Analyzer Data marked exhibit #1 showing the carrier fully modulated with the results peak stored on the analyzer for ten minutes. Exhibit #2 shows a wider sweep.

All data taken showed the station to be in compliance with FCC rules and regulations

OFFERDAHL BROADCAST SERVICE, INC.

November 16, 2011

*James R. Offerdahl*

## **FM OCCUPIED BANDWIDTH MEASUREMENTS**

### **OFFERDAHL BROADCAST SERVICE, INC. FOSSTON, MN**

Station: K239BG      Location: Grand Forks, ND      Date: November 16, 2011

Licensee: Leighton Enterprises, Inc.

Equipment:

Crown 500 FM translator to a Telewave TWPC-1005-3 Cavity Filter to an MW Persons sample port to an Anritsu MS2721B Spectrum Analyzer.

Transmitter Output Power: .411 KW

Carrier Center Frequency: 95.7 MHZ

Harmonic Frequency In Carrier	Measured Level In dB Below Carrier	Harmonic Frequency In Megahertz	Measured Level In dB Below Megahertz Carrier
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191.40	-76	287.10	-84
382.80	-88	478.50	-89
574.20	-92	669.90	-93
765.60	-95	861.30	-96
957.00	-98	1052.7	-99

FCC Requirements: Section 73.317, 73.1590 & 74.1236. Emission from center frequency of carrier must be attenuated to or greater than the limits listed below:

From Carrier Frequency	Must Exceed Limit	Measured Level
120 to 240 KHz	25 dBc	28 dBc
240 to 600 KHz	35 dBc	72 dBc Beyond
600 KHz	dBc (see below)	76 dBc

Spurious and harmonic radiation beyond 600 KHz from carrier must be suppressed below the limits listed below. 1 & 10 watt translators are allowed 60 dBc. The term "dBc" means dB below carrier.

250 Watts = 66.9 dBc

2500 Watts = 77.0 dBc

500 Watts = 70.0 dBc

3500 Watts = 78.4 dBc

1000 Watts = 73.0 dBc

5000 Watts = 80.0 dBc

1500 Watts = 74.7 dBc

Formula: Power in watts Log x 10 + 43 dB suppression required.

Other Radiation Noted: NONE

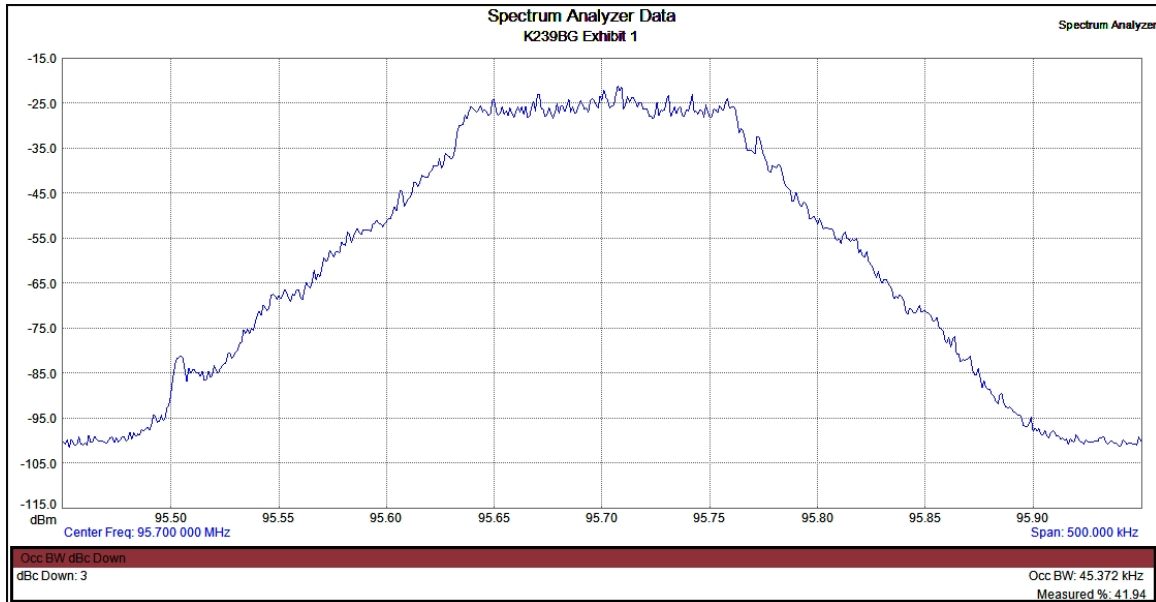
November 16, 2011

*James R. Offerdahl*

# Proof of Performance

Offerdahl Broadcast Service, Inc.

Date: 11/16/2011 10:56:56 AM



Measurement Summary			
Trace A data		Center Frequency	95.700 000 MHz
Trace Mode	Max Hold	Start Frequency	95.450 000 MHz
Preamplifier	OFF	Stop Frequency	95.950 000 MHz
Min Sweep Time	0.001 S	Frequency Span	500.000 000 kHz
Reference Level Offset	20 dB	Reference Level	5.000 dBm
Input Attenuation	20.0 dB	Scale	10.0 dB/div
RBW	1.0 kHz		
VBW	300.0 Hz	GPS Longitude	W 97 2 34
Detection	RMS	GPS Latitude	N 47 55 52

Device Summary			
Serial Number	843006	App Ver.	V4.21
Base Ver.	V3.10	Date	11/16/2011 10=56=56 AM

Prepared by: \_\_\_\_\_

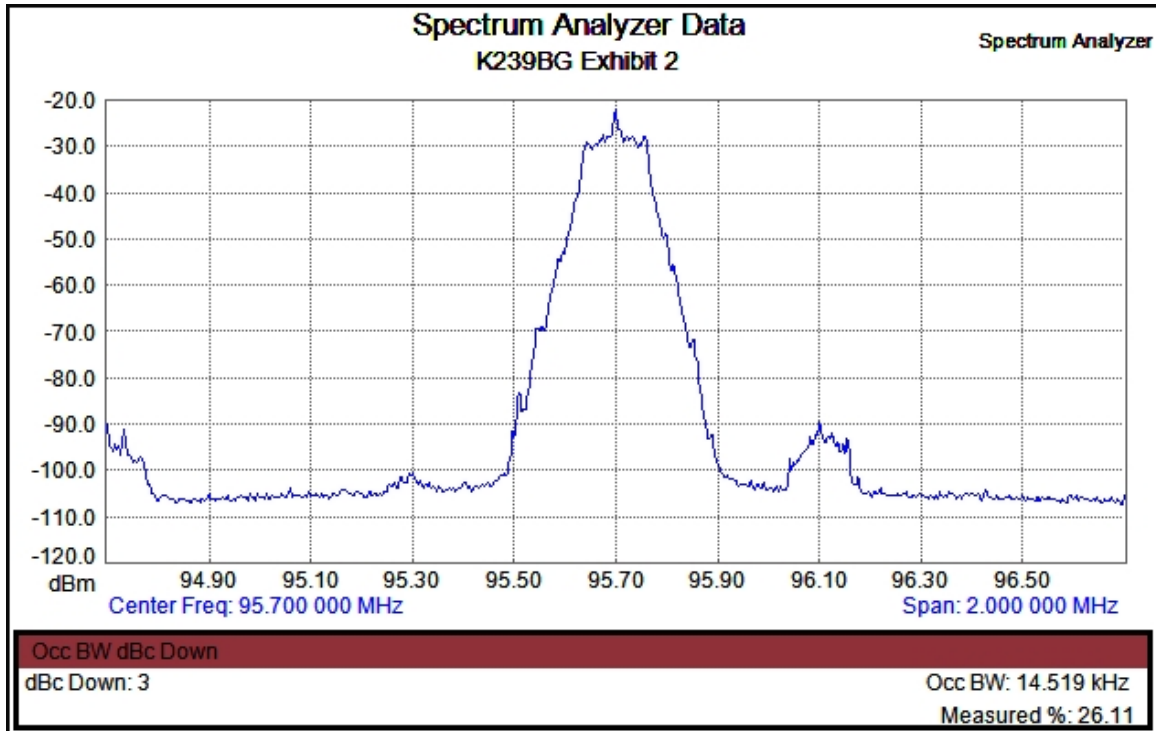
## Proof of Performance

Offerdahl Broadcast Service, Inc.

Prepared for:

Location: N 47° 55'53" W 97° 2'34"

Date: 11/16/2011 10:42:43 AM



Measurement Summary			
Trace A data		Center Frequency	95.700 000 MHz
Trace Mode	Max Hold	Start Frequency	94.700 000 MHz
Preamplifier	OFF	Stop Frequency	96.700 000 MHz
Min Sweep Time	0.001 S	Frequency Span	2.000 000 MHz
Reference Level Offset	20 dB	Reference Level	0.000 dBm
Input Attenuation	20.0 dB	Scale	10.0 dB/div
RBW	1.0 kHz		
VBW	300.0 Hz	GPS Longitude	W 97 2 34
Detection	RMS	GPS Latitude	N 47 55 53

Device Summary			
Serial Number	843006	App Ver.	V4.21
Base Ver.	V3.10	Date	11/16/2011 10=42=43 AM

Prepared by: \_\_\_\_\_