

## **Compliance with Special Operating Conditions**

The KBMK Construction Permit (File Number 0000117501) contains Two Special Operating Conditions:

1. *The permittee/licensee in coordination with other users of the site must reduce power or cease operation as necessary to protect persons having access to the site, tower or antenna from radiofrequency electromagnetic fields in excess of FCC guidelines.*
2. *BEFORE PROGRAM TESTS COMMENCE, sufficient measurements shall be made to establish that the operation authorized in this construction permit is in compliance with the spurious emissions requirements of 47 C.F.R. Sections 73.317(b) through 73.317(d). All measurements must be made with all stations simultaneously utilizing the shared antenna. These measurements shall be submitted to the Commission along with the FCC application for FM license.*

Educational Media Foundation ("EMF") complies with, or agrees to, the conditions as follows:

1. EMF in coordination with other users of the site agrees to reduce power or cease operation as necessary to protect persons having access to the site, tower, or antenna, from radiofrequency electromagnetic fields in excess of FCC guidelines.
2. Spurious Emission Measurements have been done and the results are seen in Exhibit 1-A.

# **Proof of Performance Report**

KBMK Bismarck, ND

FIN: 93533

88.3 MHz

January 20, 2021

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## **Introduction**

The permittee for the KBMK Bismarck, ND (file number 0000117501) construction permit is Educational Media Foundation. Stephen Wilde completed the KBMK combiner proof of performance.

## **Test Equipment**

- Agilent N9912A Spectrum Analyzer, Serial Number MY51464885
- AAT Directional Coupler
- Mini-Circuits High Pass filters
- FM 2-Pole Bandpass Filter

## **Station Equipment**

- BE FM Transmitter
- AAT FM Combiner System
- ERI FM Antenna

## **Summary**

Harmonics, Intermodulation, Spurious, and Occupied Bandwidth emissions measurements were completed at the output of the transmission network. The KBMK transmitter was operating at 100% power during the time of measurements. The measurements were completed in order to ensure compliance with the requirements of FCC Part 73.317.

Affidavit

STATE OF CALIFORNIA  
Sacramento County

I, Steve Wilde, do affirm that:

1. I have been engaged in the RF engineering and installation of broadcast facilities since 2005.
2. I hold Bachelor of Science degree in Electrical Engineering from DeVry University Chicago, IL.
3. I further declare, under penalty of perjury, that the statements contained herein are true and correct to the best of my knowledge.

Stephen Wilde  
SWE Services, LLC  
January 20th 2021

X

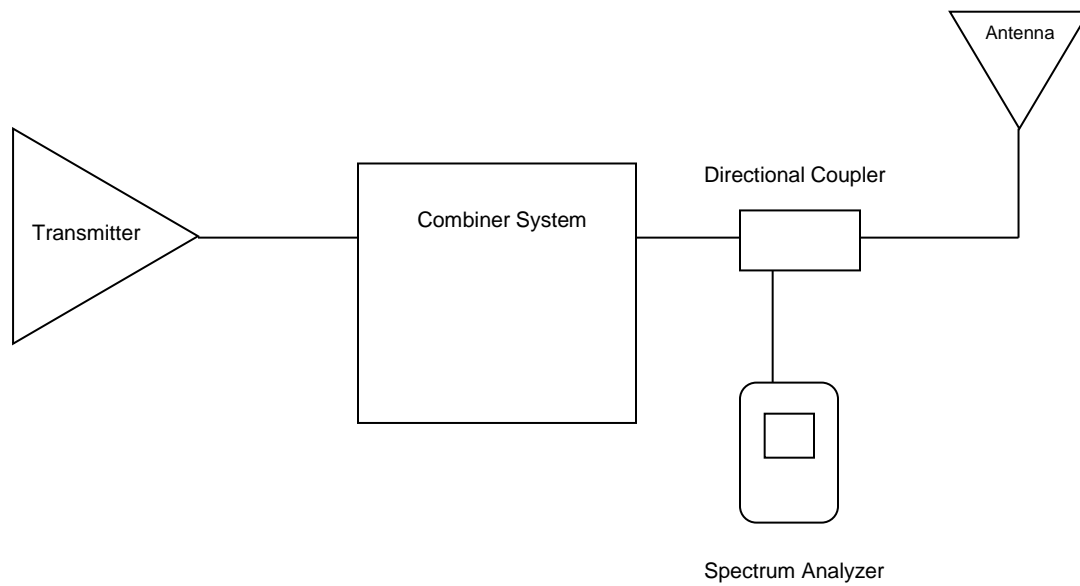


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Stephen Wilde

# Measurement Diagrams

## Harmonic Emissions & Spurious Emissions Measurement Configuration



## Measurement Results

### Fundamental Frequency Measurement

Assigned Frequency	88.3000000	MHz	Variance in Hz
Measured Frequency	88.3000513	MHz	51.3

### Measurement Methodology

To ensure accurate measurements, the frequency response of all couplers, RF filters, and sample ports were measured. The resulting dB characteristics were added to the recorded spectrum analysis measurements to ensure accurate calculations.

The test instrument reference point of the fundamental frequency is 0.10 dBm. The characteristics of the directional coupler forward sample-port is a dB reference relative to the fundamental frequency. Therefore, the directional coupler forward sample-port loss or gain, high pass filter loss, and dB reference point are added to the instrument measurement to provide the resulting dBc calculation.

Harmonic Emissions Measurement

Harmonic	Frequency (MHz)	Directional Coupler (dB)	High Pass Filter (dB)	Reference Level (dB)	Instrument Reading (dB)	Corrected Measurement (dBc)	FCC Limit (dBc)	Clearance (dB)
X2	176.60	0.06	0.50	-0.10	-108.50	<b>-108.04</b>	-80.00	<b>28.04</b>
X3	264.90	1.26	0.40	-0.10	-108.80	<b>-107.24</b>	-80.00	<b>27.24</b>
X4	353.20	3.86	0.30	-0.10	-108.20	<b>-104.14</b>	-80.00	<b>24.14</b>
X5	441.50	6.66	0.10	-0.10	-107.40	<b>-100.74</b>	-80.00	<b>20.74</b>
X6	529.80	8.96	0.10	-0.10	-106.20	<b>-97.24</b>	-80.00	<b>17.24</b>
X7	618.10	11.16	0.10	-0.10	-107.30	<b>-96.14</b>	-80.00	<b>16.14</b>
X8	706.40	11.96	0.10	-0.10	-106.10	<b>-94.14</b>	-80.00	<b>14.14</b>
X9	794.70	13.26	0.20	-0.10	-109.60	<b>-96.24</b>	-80.00	<b>16.24</b>

Intermodulation Emissions Measurements

The KBMK transmission circuit was analyzed using an Agilent N9912A spectrum analyzer while all combiner circuits operated at 100% power. The KBMK transmission circuit meets the intermodulation spurious emissions requirements.

IM Frequency (MHz)	Directional Coupler (dB)	Band Pass Filter (dB)	Reference Level (dB)	Instrument Reading (dB)	Corrected Measurement (dBc)	FCC Limit (dBc)	Clearance (dB)
91.1	0.00	0.00	-0.10	-88.51	<b>-88.61</b>	-80.00	<b>8.61</b>
86.9	0.00	0.00	-0.10	-87.55	<b>-87.65</b>	-80.00	<b>7.65</b>