

**ENGINEERING REPORT  
FM OCCUPIED SPECTRUM ANALYSIS**

**CFR 47 §73.317 COMPLIANCE**

**W243EN(FX) – Big Rapids, MI  
WYBR(FM) – Big Rapids, MI  
Plus Additional Mixing Products**

**November 24, 2021**

## **Discussion**

The measurement data obtained for this report indicates the operation of W243EN(FX) to be IN COMPLIANCE with the provisions of §73.317 of the FCC rules regarding FM Broadcast Stations. Occupied Spectrum measurements were taken on November 24, 2021 by Mark V Wittkoski, engineering consultant employ of Ameko Group, LLC. The stored spectrum data gathered by the analyzer has been processed and displayed in this report as Figure A, Figure B & Figure C.

## **Equipment Employed**

Rohde & Schwarz FPC1500 Spectrum Analyzer (s/n 101911/003)

Technical specifications of the Rohde & Schwarz FPC1500 are available on the Internet at [www.rohde-schwarz.com](http://www.rohde-schwarz.com).

Based on these spectrum measurement and the data logged in Table 1 the operation of W243EN(FX), Big Rapids, MI, WYBR(FM), Big Rapids, MI are within the requirements set forth in §73.317 of the Rules governing FM Broadcast Stations.

## **EXHIBITS**

**Figure A** - PLOT of W243EN(FX) SPECTRUM - 500 KHz/division

**Figure B** - PLOT of W243EN(FX) SPECTRUM - 2.0 MHZ/division

**Figure C** - PLOT of Mixing Product at 90.7MHz - 2.0 MHZ/division

Harmonic measurements and mixing products up to the third harmonic were measured using the Rohde & Schwarz FPC1500 Spectrum Analyzer on the output of the BEXT FFC08 Filter (s/n FF-21-168A). Readings were taken on the fundamental carrier frequency and up to the fourth harmonic.

Other stations located on the same tower are included in the measurements of the mixing products. The translator station in question operates at 250 watts ERP. For this power level all mixing products must be 66.98 dB below the carriers of the translator station. Table A indicates that all mixing products are below the -66.98 dB Limit.

**TABLE A**

Frequency MHz.	Relation	Level in dB.
96.5	A	Carrier
102.3	B	Carrier
90.7	2A-B	-69.83 dB
108.1	2B-A	-73.60 dB
193.0	2A	-72.98 dB
198.8	A+B	-74.05 dB
204.6	2B	-73.85 dB
289.5	3A	-69.83 dB
301.1	2B+A	-73.44 dB
306.9	3B	-73.49 dB
386.0	2A+2A	-74.38 dB
397.6	2A+2B	-75.18 dB


## **CERTIFICATION OF REPORT**

Ameko Group, LLC, Broadcast Engineering Consultant, with offices at 5542 Lamont Farms Drive, Coopersville, Michigan, has been retained for the purpose of preparing the technical data forming this report.

The data utilized in this report is based on measurements made by the undersigned on the dates and times indicated in the report.

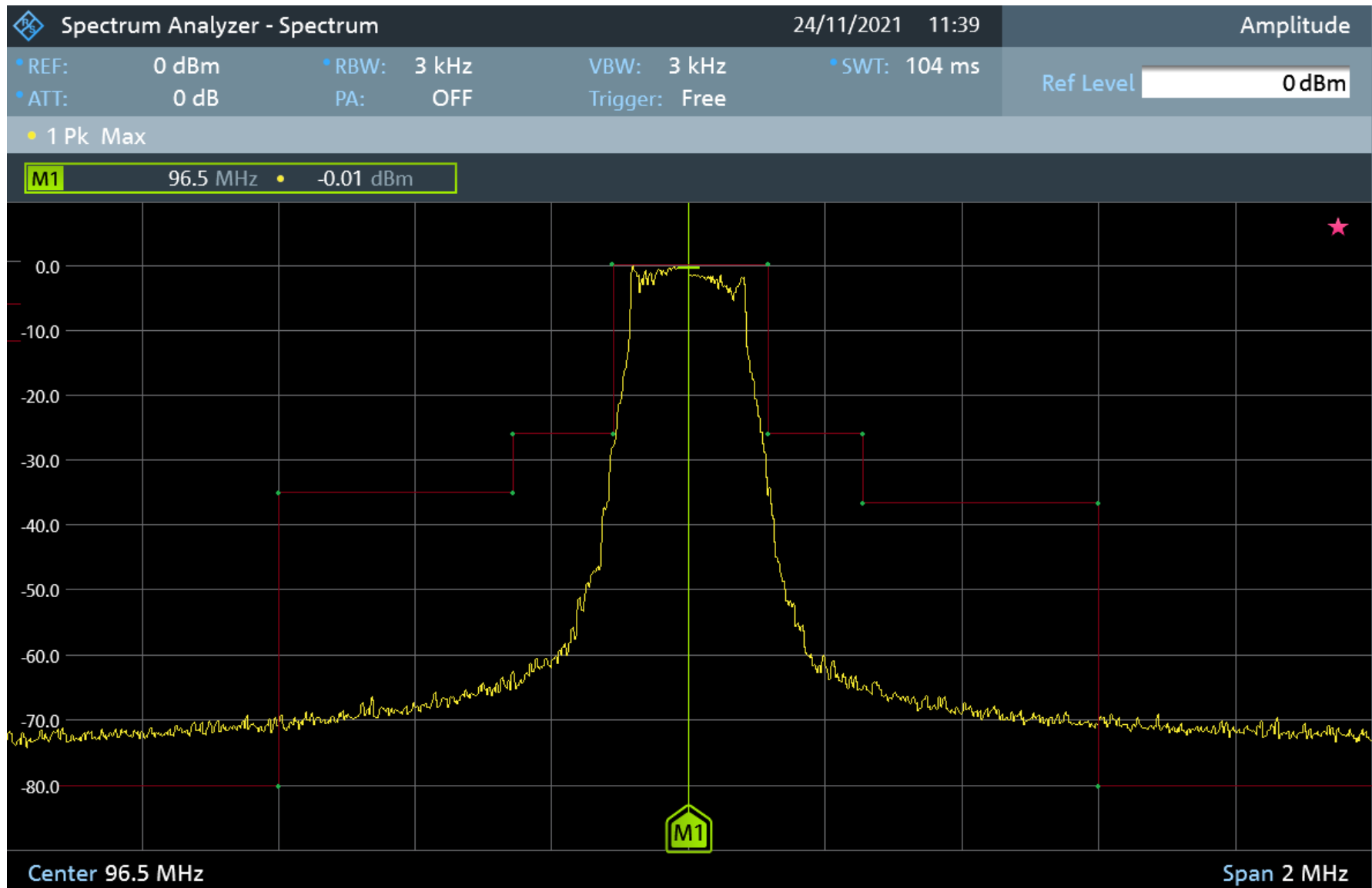
I declare under penalty of perjury that the contents of this report are true and accurate to the best of my knowledge and belief.

November 24, 2021

By 

Mark V. Wittkoski

FIGURE A

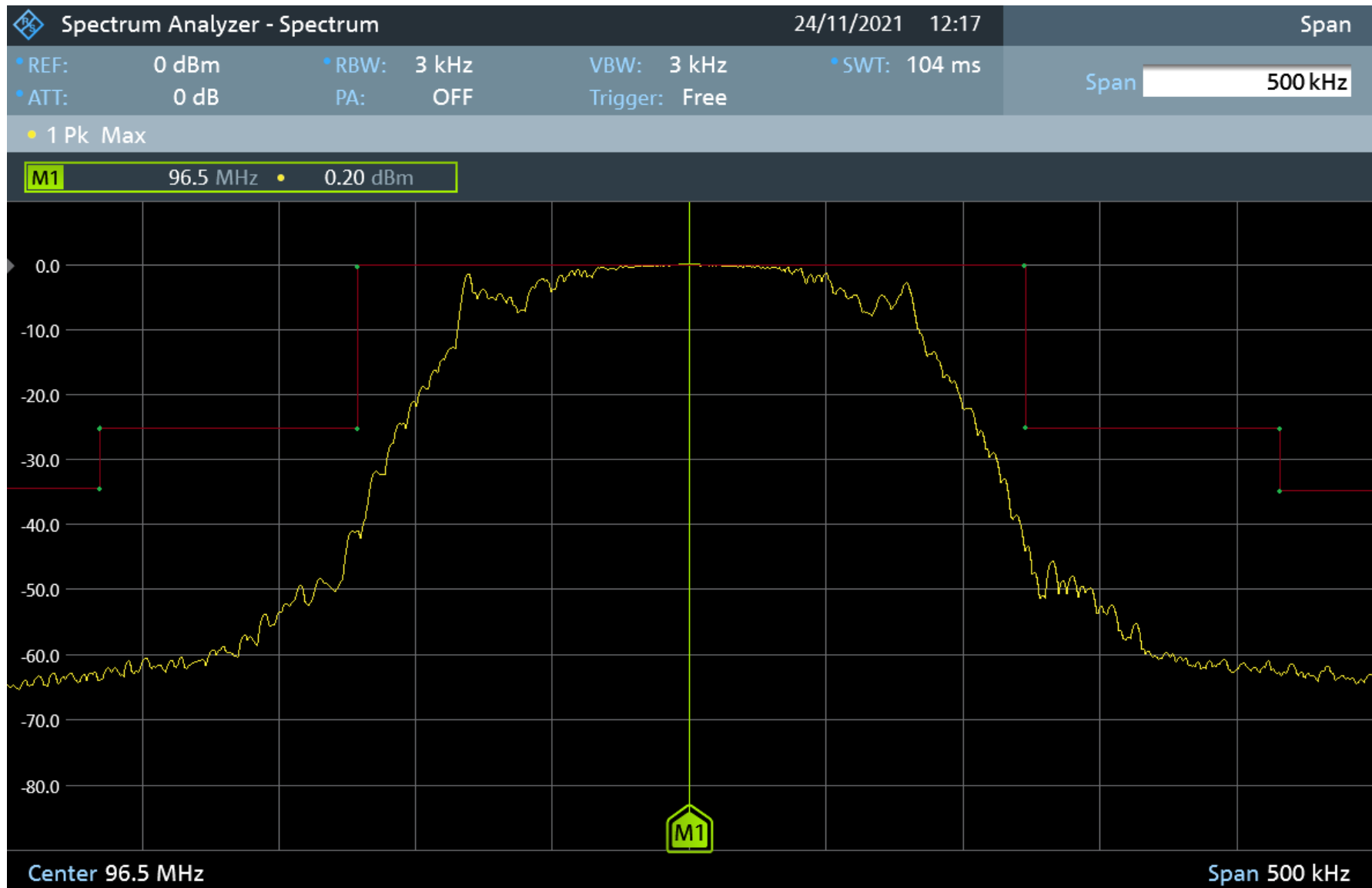


Trace Data:  
 Trace Mode = Max Hold  
 Preamp = OFF  
 Min Sweep Time = 104 mS  
 Reference Level Offset = 0 dB

Input Attenuation = 0dB  
 RBW = 3 kHz  
 VBW = 3 kHz  
 Trace Detection = Peak  
 Center Frequency = 96.5MHz

Start Frequency = 95.5 MHz  
 Stop Frequency = 97.5 MHz  
 Frequency Span = 2 MHz  
 Reference Level = 0dB  
 Scale = 10.0 dB/div

FIGURE B

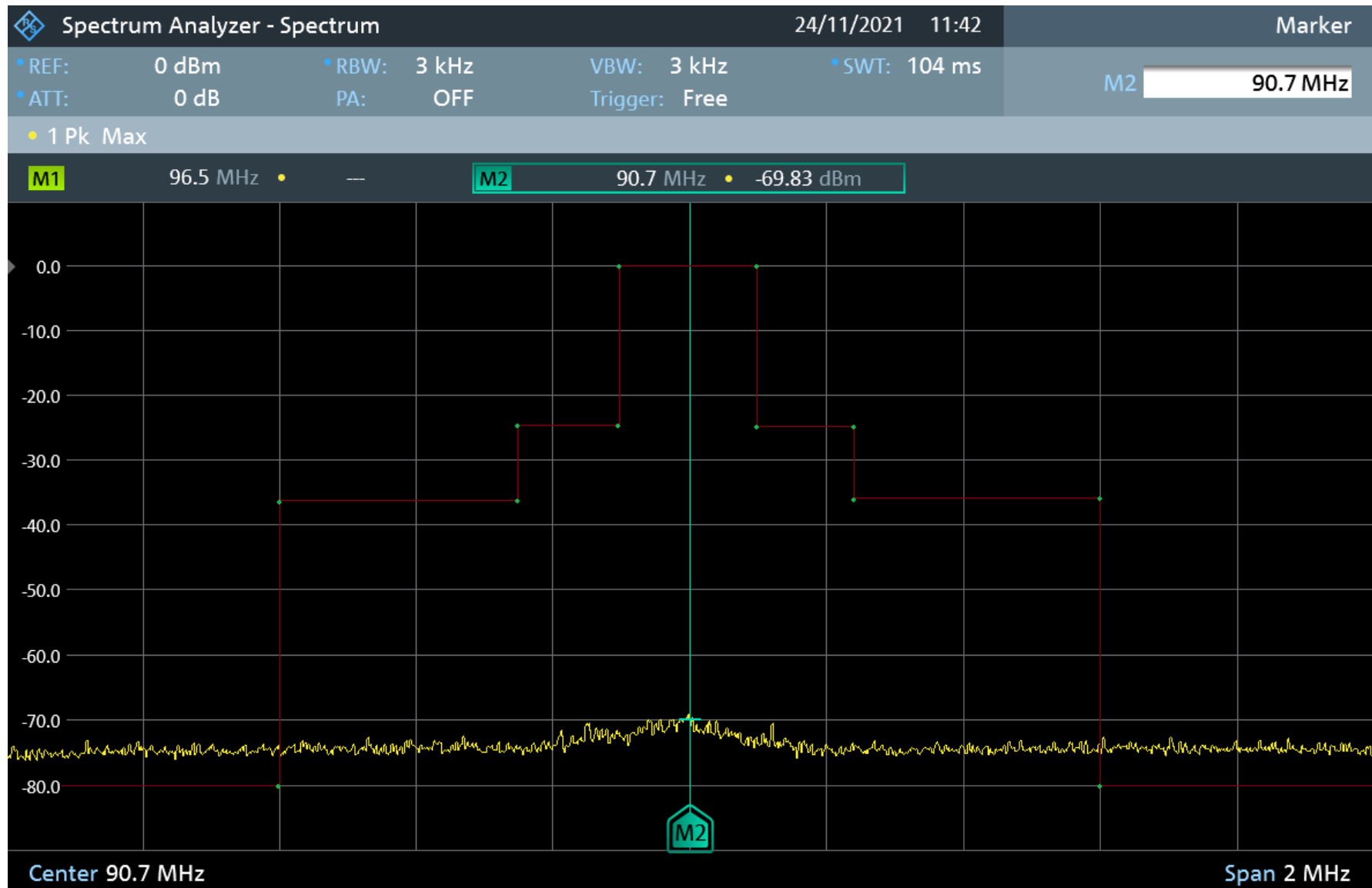


Trace Data:  
 Trace Mode = Max Hold  
 Preamp = OFF  
 Min Sweep Time = 104 mS  
 Reference Level Offset = 0 dB

Input Attenuation = 0dB  
 RBW = 3 kHz  
 VBW = 3 kHz  
 Trace Detection = Peak  
 Center Frequency = 96.5MHz

Start Frequency = 96.25 MHz  
 Stop Frequency = 96.75 MHz  
 Frequency Span = 500 KHz  
 Reference Level = 0dB  
 Scale = 10.0 dB/div

FIGURE C



Trace Data:  
 Trace Mode = Max Hold  
 Preamp = OFF  
 Min Sweep Time = 104 mS  
 Reference Level Offset = 0 dB

Input Attenuation = 0dB  
 RBW = 3 kHz  
 VBW = 3 kHz  
 Trace Detection = Peak  
 Center Frequency = 90.7MHz

Start Frequency = 89.7 MHz  
 Stop Frequency = 91.7 MHz  
 Frequency Span = 2 MHz  
 Reference Level = 0dB  
 Scale = 10.0 dB/div