

Technical Engineering Report

SPURIOUS EMISSIONS MEASUREMENTS STUDY

Pursuant to 47 C.F.R. §73.317(b) associated with the licensing of:

*K281CJ.C - Omaha, NE
BMPFT-20170216AAM
(FAC ID: 153185)*

and

*K233CO.L - Omaha, NE
BLFT-20161107ABH
(FAC ID: 146285)*

April 2017

EXPLANATION OF STUDY: The applicant has prepared the required Spurious Emissions Measurement Study for the di-plexed operation of FM Translator(s) K281CJ.C - Omaha, NE and K233CO.L - Omaha, NE. This study has been conducted pursuant to 47 C.F.R. §73.317(b) and is associated with, and a condition of licensing for, K281CJ.C Construction Permit BMPFT-20170216AAM.

SUMMARY OF STATIONS: K281CJ.C operates on 104.1 MHz with a maximum effective radiated power (ERP) of 0.250 kW circular (H&V) polarization. K233CO.L operates on 94.5 MHz with a maximum effective radiated power (ERP) of 0.250 kW circular (H&V) polarization. The common antenna is mounted on the tower bearing ASR #1025322. The common FM antenna is a one (1) bay, Shively 6832 (NDA) "Opposed V Dipole" antenna mounted with a Center of Radiation 73 meters above ground level (AGL). The antenna is matched with a Shively, Model 2930-2/3 Branched Combiner. The combiner was set using manufacturer specifications as well as information from the FCC database concerning the above mentioned operating parameters.

MEASUREMENT RESULTS: RF Spurious Emissions Measurements were conducted on April 7, 2017 during the equipment test operations associated with the K281CJ.C Construction Permit. Measurements were conducted by Mr. Greg Gade, chief engineer for K281CJ.C licensee, Walnut Radio, LLC. Measurements were conducted utilizing a Rigol DSA815 Spectrum Analyzer, Serial Number DSA8A161750303 with the FM transmitters in full operation employing the branched combiner for the multiple FM Translator operations. A broad spectral sweep found no obvious products above the analyzer noise floor. Using a computer generated mixing product chart, high resolution, low noise floor measurements were also made out to the 1st through 3rd orders. With the exception of noted carrier frequencies, nothing was observed over the noise floor of the analyzer as reported at the end of this report.

The following is a copy of the 1st through 3rd order potential mixing product measurement results for the spurious relationships associated with the 94.5 MHz and 104.1 MHz di-plexed operations. As a result of these studies, it has been concluded the di-plexed operation(s) meets or exceeds the requirements of 47 C.F.R. §73.317(b) and the special condition of licensing associated with K281CJ.C Construction Permit BMPFT-20170216AAM.

For a K233CO.L operational power of 0.250 kW, the minimum attenuation level is -67 dBc.

For a K281CJ.L operational power of 0.250 kW, the minimum attenuation level is -67 dBc.

Frequency (in MHz)	Measurement (in dBc)	Frequency (in MHz)	Measurement (in dBc)	Frequency (in MHz)	Measurement (in dBc)	Frequency (in MHz)	Measurement (in dBc)
9.60 MHz	-70 dBc						
19.20 MHz	-74 dBc						
84.90 MHz	-78 dBc						
94.50 MHz	<i>K233CO.L Carrier*</i>						
104.10 MHz	<i>K281CJ.C Carrier*</i>						
113.70 MHz	-75 dBc						
189.00 MHz	-72 dBc						
198.60 MHz	-68 dBc						
208.20 MHz	-75 dBc						
283.50 MHz	-77 dBc						
293.10 MHz	-70 dBc						
302.70 MHz	-77 dBc						
312.30 MHz	-79 dBc						
378.00 MHz	-77 dBc						
397.20 MHz	-77 dBc						
416.40 MHz	-77 dBc						

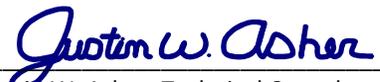
*No intermodulation mixing was noted on any carrier frequency

CITATION OF RULES:

Title 47: Telecommunication:
PART 73 - RADIO BROADCAST SERVICES
Subpart B: FM Broadcast Stations § 73.317 FM transmission system requirements.

Title 47: Telecommunication:
PART 74 - EXPERIMENTAL RADIO, AUXILIARY, SPECIAL BROADCAST AND OTHER SERVICES
Subpart L: FM Broadcast Translator Stations and Broadcast Booster Stations: § 74.1236 Emission and bandwidth.

CERTIFICATION OF TECHNICAL CONSULTANT: I declare, under penalty of perjury, that the contents of this report are true and accurate to the best of my knowledge and belief. I further certify I have over eighteen years of experience as a broadcast technical consultant before the Federal Communications Commission (“the FCC”); and am familiar with the Code of Federal Regulations Title 47 (“the Rules”) as pertaining to this report and its contents herein. The underlying data utilized in this report was taken directly from FCC databases or indirectly through third party software vendors securing data directly from FCC databases. The information contained herein is believed accurate to the date reported below.



Justin W. Asher, Technical Consultant

April 8, 2017