



**REPORT OF INTERMODULATION  
PRODUCT FINDINGS  
94.9 FM and 101.5 FM  
ORLANDO, FLORIDA  
October, 2017**

**Introduction :**

This investigation involves a new two station combiner for the above titled FM radio stations. This site is located in Western Orlando, Florida and is about 160 meters in elevation AGL at the antenna. This new installation was tested for the required operational tests pursuant to FCC, CFR 73.317 (b) and 73.317 (d). As these stations are low powered, the criteria for acceptance of spurious and harmonic carriers is relaxed to a level of -74dBm relative to the peak of the un-modulated carriers of the two signals.

Signal sampling was accessed into the transmission line system through an embedded sample coupler with a nominal -45dB non-directional broad band tap. This tap is subject to the sensitivity change of +6dBm per octave of any recovered signals, though none were observed throughout the Harmonic spectrum through the 11th harmonic. While testing for the IM products of the direct math mix of the two stations, an initial signal was encountered at the mathematic product of 88.3mc. Further testing and observation revealed that this level was unstable and with either of the local product contribution transmitters switched off, the product diminished dramatically. This observed product was clearly a received signal from the local WPOZ 88.3 transmitter system which was only about 22 miles away. Both target mathematic IM products were greater than -80dBm down from the peak of both carriers.



**Discussion :** Using a Anritsu MS-2665C Spectrum Analyzer, attenuation accessories, and an installed broadbanded coupler in output of the combiner, a series of measurements were taken with both systems operating at their authorized power (as indicated in its permit) The measurements were conducted on October 2, 2017. Graphical print outs are available if need be for inspection of the method and result..

The data and on-site measurements find that with both of the new stations operating at full authorized power that there are no improper harmonic or spurious emissions emanating from the antenna system as a result of the operations on the new antenna. Therefore, these stations are in compliance with 47 CFR Sections 73.317(b) through 73.317(d) of the Commissions rules and station authorization.

**Certification:** All measurements were taken by or under the supervision of Gary A. Minker, President of Radio Works R.F. Consulting of Lake Worth, Florida. I have a valid Federal Communications Commission General Radiotelephone license, PG-7-13549, dated 11/06/86. I have been active in broadcast engineering since (1976).

Signed : Gary A. Minker

Date: 10/2/2017

Gary A. Minker  
Radio Works R.F. Consulting  
Titusville, Florida

## TESTING CERTIFICATION:

**Certification :** All measurements were taken by or under the supervision of Gary A. Minker, President of Radio Works R.F. Consulting of Lake Worth, Florida. I have a valid Federal Communications Commission General Radiotelephone license, PG-7-13549, dated 11/06/86. I have been active in broadcast engineering since (1976).

## TESTING EQUIPMENT;

Anritsu spectrum analyzer Model MS2713E

Coaxial Dynamics sample port insert

Various cables

Stepped attenuator

Fixed attenuator

All equipment is in good repair and had valid calibration certificates where required.

Due care and best efforts are utilized during all measurement and diagnostic endeavors.

Signed : Gary A. Minker

Date: 10/2/2017

Gary A. Minker

Radio Works R.F. Consulting

Titusville, Florida