

# Report of 2nd Harmonic and Spurious Emission Testing for W290DB and W239CL

April 10, 2017

This report shows the results of second harmonic and spurious emission testing for translator stations W290DB owned by Sun Broadcasting and W239CL owned by Ft. Myers Broadcasting, both stations being combined into a Bext FDCSTC05 two channel combiner.

These measurements were made between 12:30pm and 1:30pm on Monday, April 10, 2017 at 5651 Shirley St., Naples, Florida. The ERP of W290DB was set to 0.25KW as per construction permit BPFT-20160729ABA and an ERP of 0.23KW for W239CL as per construction permit BPFT-20161024ABY.

The transmission system consists of two Bext XT 500 LP transmitters each feeding the inputs of a two channel Bext FDCSTC05 combiner. The output of the combiner feeds 310' of LDF4-50 1/2" transmission line to a Bext 4 bay halfwave side mounted antenna.

The antenna power gain ratio being 1.16 dBd for the antenna and the transmission line efficiency of 60% plus a 0.4dB insertion loss for the combiner works out to a transmitter TPO of 0.350 KW for W290DB and a transmitter TPO of 0.322 KW for W239CL.

W290DB ERP calculations:

(TPO) 350 watts minus (Filter insertion loss 0.4 dB) 30 watts minus (Line loss 2.2 dB) 130 watts plus (antenna gain 1.16 dBd) 60 watts = ERP 250 watts

W239CL ERP Calculations:

(TPO) 322 watts minus (Filter insertion loss 0.4dB) 30 watts minus (Line Loss 2.2db) 116 watts plus (antenna gain 1.16 dBd) 54 watts = ERP 230 watts

The 2<sup>nd</sup> harmonic testing of each station was made using an Agilent E4402B spectrum analyzer connected to an FM wideband dipole antenna. The fundamental frequencies of each station was compared to the 2<sup>nd</sup> harmonic frequencies of each station. Spurious emissions were check throughout the FM band as well as on either side of the FM band. The carriers were dropped one at a time while looking for unwanted carriers. None were found.

In conclusion, it was determined that both W290DB and W239CL are in compliance with 47 CFR Section 17.317b through Section 17.317d. The formula “ $43.10 \log_{10}(250w)$ ” and “ $43.10 \log_{10}(230w)$ ” was used to determine the compliance level.

Testing conducted by:

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