

WDAC Radio Company
W280CQ / W300BZ Reading, PA
Exhibit 11 -- Measurements of RF Emissions
July 24, 2012

Introduction

These measurements are provided to the FCC in response to Special Operating Condition 1, included in Construction Permits BPFT-20111118CSV and BMPFT-20111118CSU:

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 Form 350-FM application for license.

Translator Specifications

W280CQ, Facility ID 71313

Construction Permit BPFT-20111118CSV (CP call sign W279CB)
Primary Station: WDAC, 94.5 MHz, Lancaster, PA Output Freq.: 103.7 MHz
Transmit Antenna: Aldena model ALP05.02.912 Log Periodic, H and V Polarized
Antenna Gain (each polarization, per manufacturer spec at 103.7 MHz): 5.74 dB
Antenna Power Divider and Phasing Harness Loss: -3.1 dB
Transmission Line Loss (61 m Andrew LDF-5-50A): -0.742 dB
Transmit Combiner Loss (measured): -0.55 dB

Net Gain: 1.348 dB, which is a power multiplication factor of 1.364
Required Transmitter Power Output: 0.0044 kW for
Effective Radiated Power: 0.006 kW per polarization
73.317(d) requires 60 dBc attenuation of emissions > 600 kHz removed

W300BZ, Facility ID 87062

Construction Permit BMPFT-20111118CSU
Primary Station: WBYN, 107.5 MHz, Boyertown, PA Output freq.: 107.9 MHz
Transmit Antenna: Aldena model ALP05.02.912 Log Periodic, H and V Polarized
Antenna Gain (each polarization, per manufacturer spec at 107.9 MHz): 4.93 dB
Antenna Power Divider and Phasing Harness Loss: -3.1 dB
Transmission Line Loss (61 m Andrew LDF-5-50A): -0.756 dB
Transmit Combiner Loss (measured): -0.79 dB

Net Gain: 0.284 dB, which is a power multiplication factor of 1.068
Required Transmitter Power Output: 0.234 kW for
Effective Radiated Power: 0.250 kW per polarization
73.317(d) requires 67 dBc attenuation of emissions > 600 kHz removed

Test Equipment and Procedure

With both translators operating at authorized power output with typical program audio modulation, RF energy was sampled at a point between the output of the Bext/RVR transmit combiner and input to the 50 ohm transmission line with a Bird Electronic -50 dB broadband sample element fitted in a Bird 4304A "ThruLine" wattmeter.

To determine carrier fundamental reference levels, the sampled RF energy was fed directly to the input of a Rohde & Schwarz FSH-23 spectrum analyzer, set for 300 kHz resolution bandwidth. This plot is shown in [Figure 1](#).

To improve resolution and lower the noise floor, resolution bandwidth of the analyzer was narrowed to 100 kHz, its sensitivity was increased 30 dB, and the range 50 to 550 MHz was examined for spurious emissions and harmonics. The only apparent spurs indicated were the two third-order intermodulation products at 99.5 and 112.1 Mhz, which extended about 10 dB above the noise floor. A 107.9 MHz notch filter was then inserted between the sample element and the input of the spectrum analyzer to attenuate the W300BZ fundamental signal by approximately 27 dB. This caused the analyzer's internally-generated intermodulation and harmonic distortion products to drop below the noise floor, making it possible to verify compliance with 47 C.F.R. Section 73.317(d). The resulting plot is shown below in [Figure 2](#).

[Figure 3](#) was obtained with both translators turned off. It shows that the signals indicated in [Figure 2](#) at 98.5 ,100.1, 102.5 and 105.1 MHz are those of other local FM stations.

[Figure 4](#) is a 2 MHz span centered at 103.7 MHz with resolution bandwidth narrowed to 1 kHz. The analyzer was set to "peak hold" for several minutes before the plot was saved. It verifies compliance with the FM occupied bandwidth "mask" defined in 47 C.F.R. Section 73.317 (b) and (c).

[Figure 5](#) is a 2 MHz span centered at 107.9 MHz with resolution bandwidth narrowed to 1 kHz. The analyzer was set to "peak hold" for several minutes before the plot was saved. It verifies compliance with the FM occupied bandwidth "mask" defined in 47 C.F.R. Section 73.317 (b) and (c). Note that the two emissions centered at +/- 400 kHz from fundamental are attenuated at least 50 dB, exceeding the 35 dB requirement that applies at frequencies removed from the carrier by more than 240 kHz and up to and including 600 kHz.

Finally, the analyzer was set to "receiver mode" at 100 kHz bandwidth and the following measurements were obtained at discrete frequencies of particular interest:

Frequency	Relationship	Reading (dBm)	Relative Level (dB)
103.7	Fundamental A	- 14.8	0
99.5	Lower IM 2A-B	- 87.8	- 73.0
112.1	Upper IM 2B-A	- 89.6	- 75.4
207.4	Harmonic 2A	- 87.8	- 73.0
311.1	Harmonic 3A	- 90.8	- 76.0

107.9	Fundamental B	+ 2.4 *	0
99.5	Lower IM 2A-B	- 87.8	- 90.2
112.1	Upper IM 2B-A	- 89.6	- 92.0
211.0	Harmonic 2B	- 91.7	- 94.1
316.5	Harmonic 3B	- 90.8	- 93.2

* Fundamental level measured with 107.9 MHz notch filter removed from sample line.

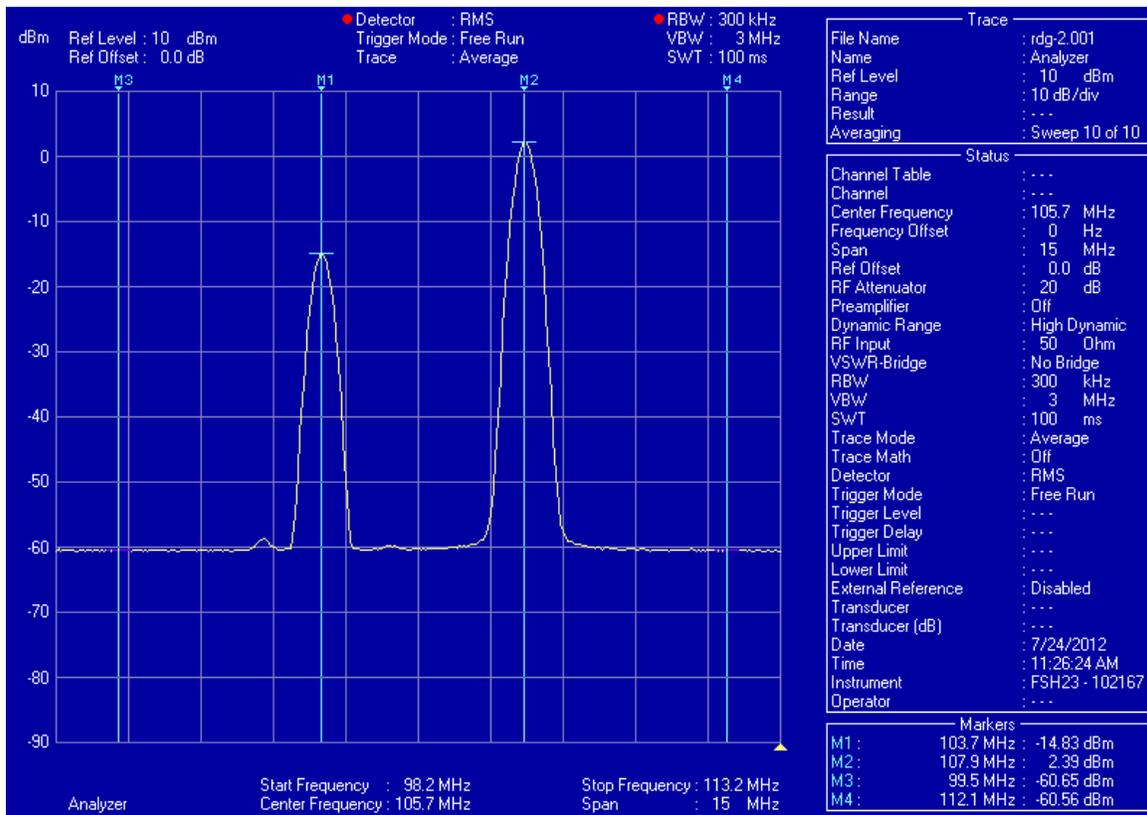


Figure 1 – Sampled W280CQ and W300BZ Carrier Level References

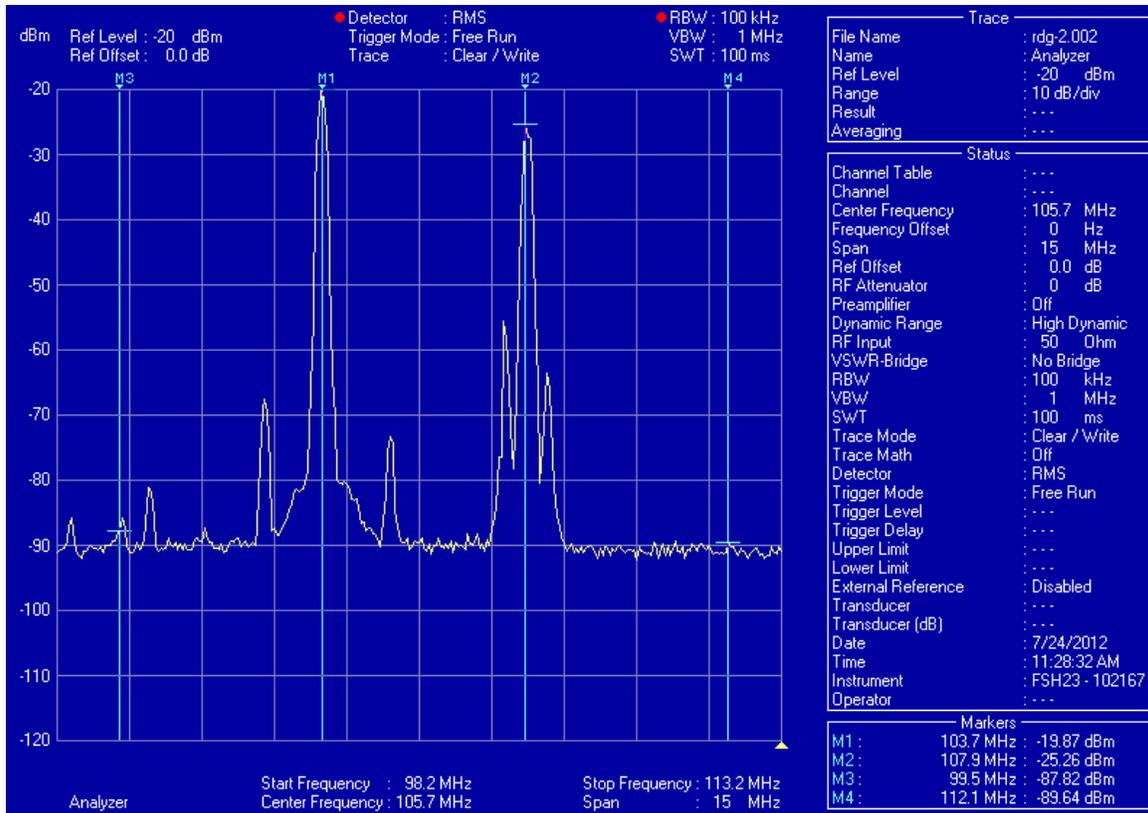


Figure 2 – 100 kHz RBW, 15 MHz span, 107.9 MHz Notch Filter in line with Analyzer

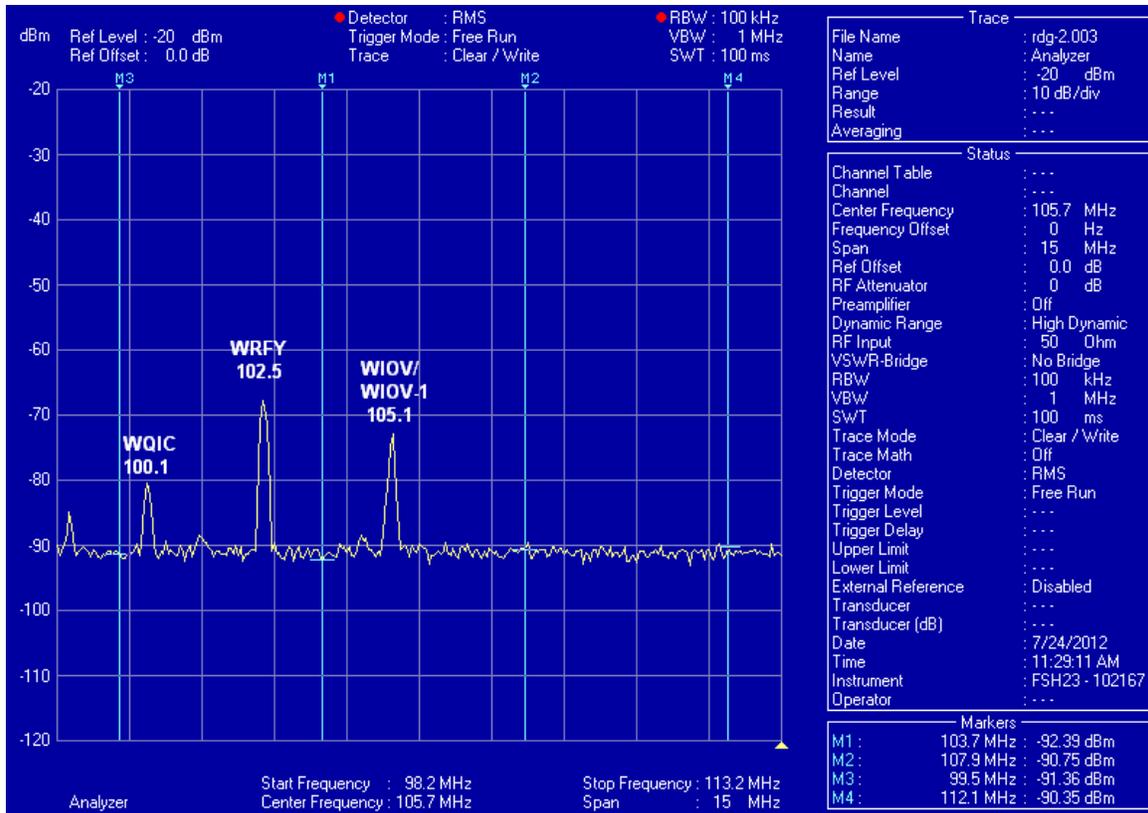


Figure 3 -- Sampled Ambient Signals of Local Stations, W280CQ and W300BZ off

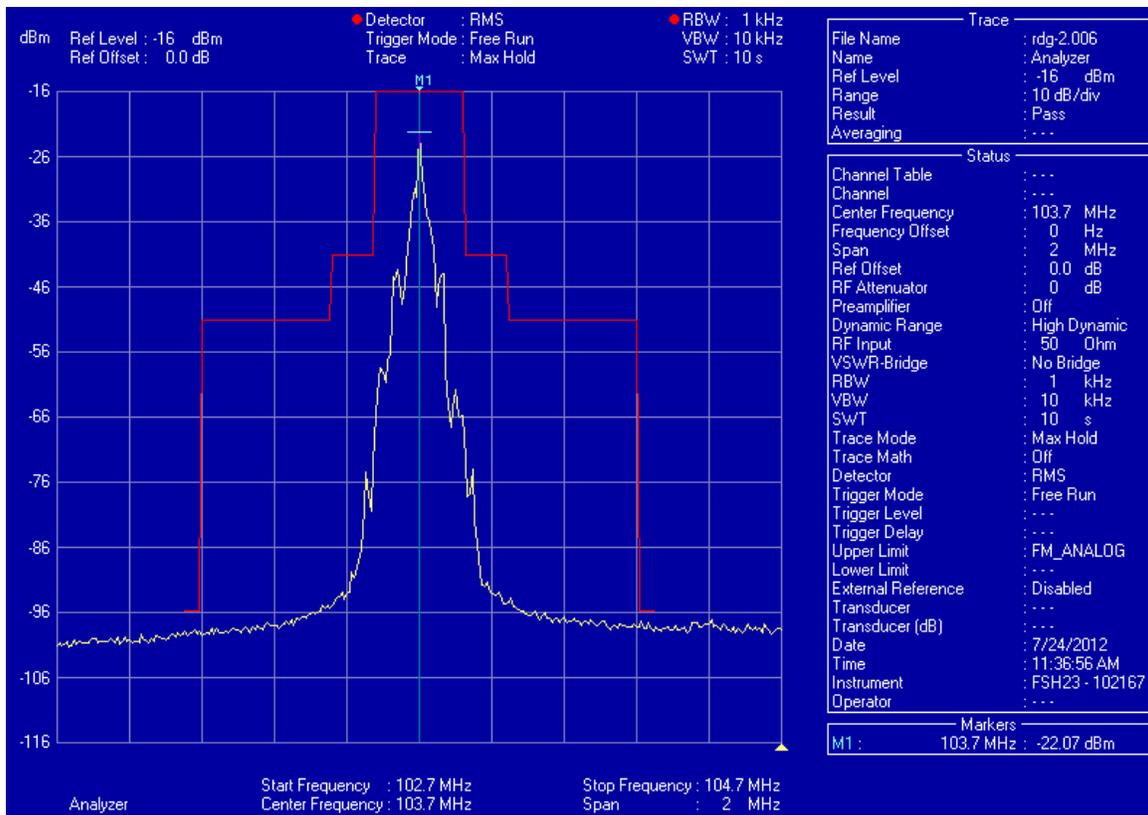


Figure 4 – W280CQ 2 MHz Span at 1 kHz RBW, showing Mask Compliance

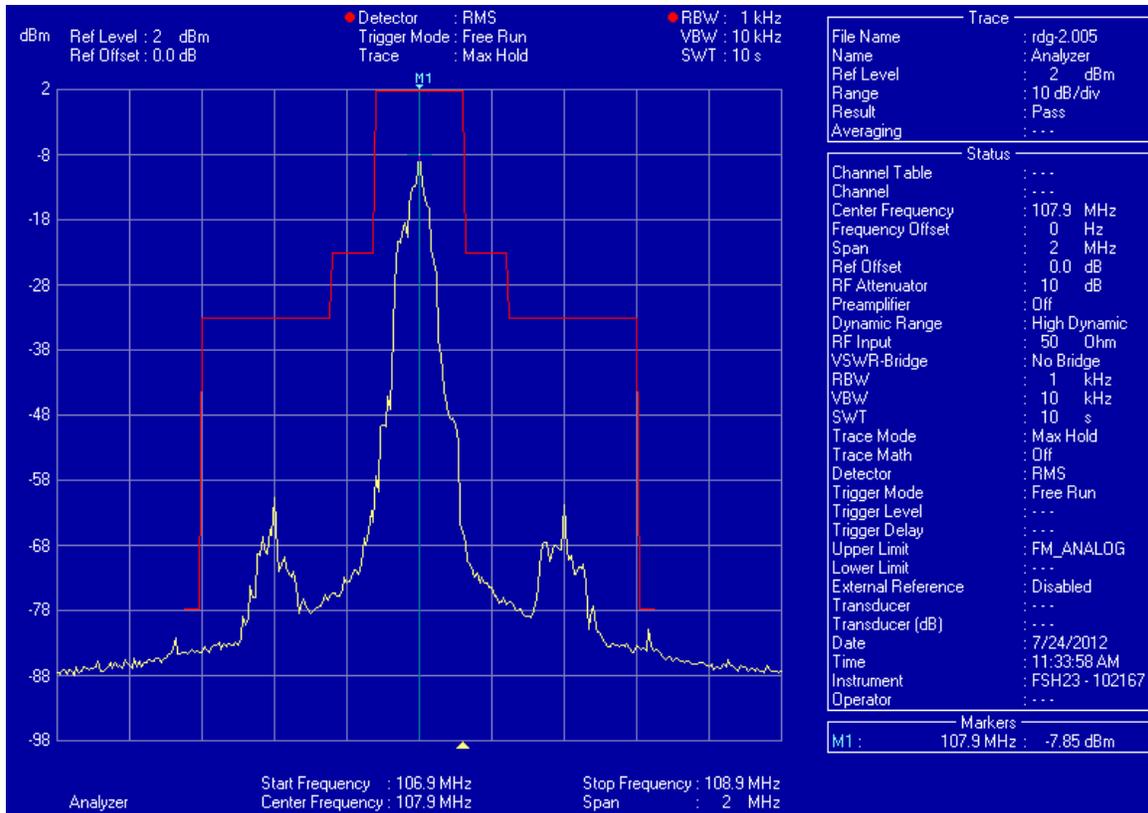


Figure 5 -- W300BZ 2 MHz Span at 1 kHz RBW, showing Mask Compliance

Conclusion

According to these measurements made by me on July 24, 2012, the combined W280CQ and W300BZ Reading, PA translator facility complies fully with applicable FCC requirements for occupied bandwidth and spurious emissions.

/s/

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 July 25, 2012