

# **HARPER ENGINEERING**

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**FM Performance  
and  
Emission Measurements**

**Translator W298BC  
Montgomery, Alabama  
107.5 MHz.**

**January 21, 2010**

## **EQUIPMENT**

The equipment used to take the emission measurements and the equipment necessary to generate the performance measurement graphs contained in this report were completed using an Agilent E-4401B spectrum analyzer with a variable frequency notch cavity and a Bird wattmeter with a variable coupler appropriate for the frequencies measured.

## **PROCEDURE**

The spectrum analyzer was connected to power and the RF sample port on the wattmeter. All equipment was allowed to reach operating temperature prior to any measurements being taken.

Measurements were taken to verify the main channel occupied bandwidth. A notch filter was inserted into the analyzer input to reduce the main channel carrier level by 20 db. This reduces the possibility of intermod products being generated in the spectrum analyzer mixer and showing as spurs and harmonics.

Measurements were made at the second and third harmonics to verify compliance with FCC rules. A sweep up to ten (10) times the operating frequency was performed to search for possible spurs or harmonics.

## **LOCATION**

The test equipment was set up at the transmitter site, 3251 Harrison Road, Montgomery, Alabama. Care was given to selecting cables and equipment location to minimize sources of potential interference to the measured signals.

## **RESULTS**

The emission performance measurements contained in this report indicate compliance with the FCC rules and regulations relating to occupied bandwidth and emissions purity.

## **QUALIFICATIONS**

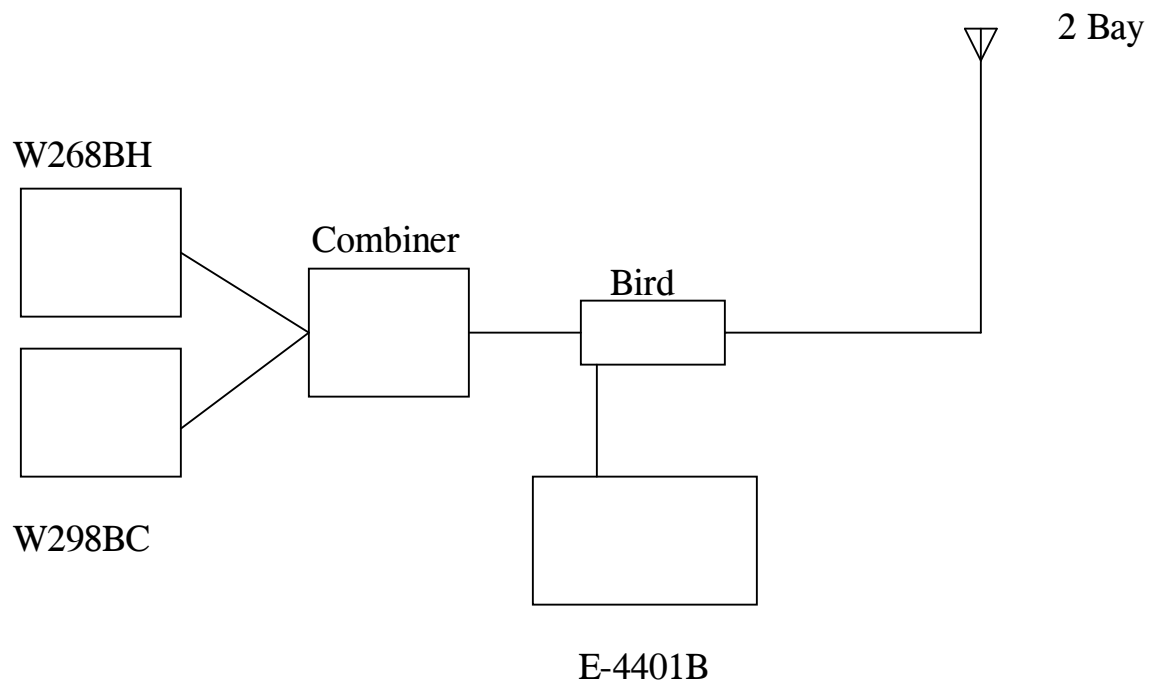
The equipment is owned and operated by Harper Engineering, Broadcast Technical Consultants, Auburn, Alabama. The system has current calibration with accuracy traceable to the NBS.

The data collection for the emission performance measurements contained in this report was performed by personnel familiar with the operation of the apparatus and FCC performance requirements for broadcast facilities.

Harper Engineering has, to the best of my knowledge and belief, made every effort to collect and present accurate and complete data in this report.

**Terry W. Harper**  
FCC License # PG-6-17008

## Transmission System Diagram:

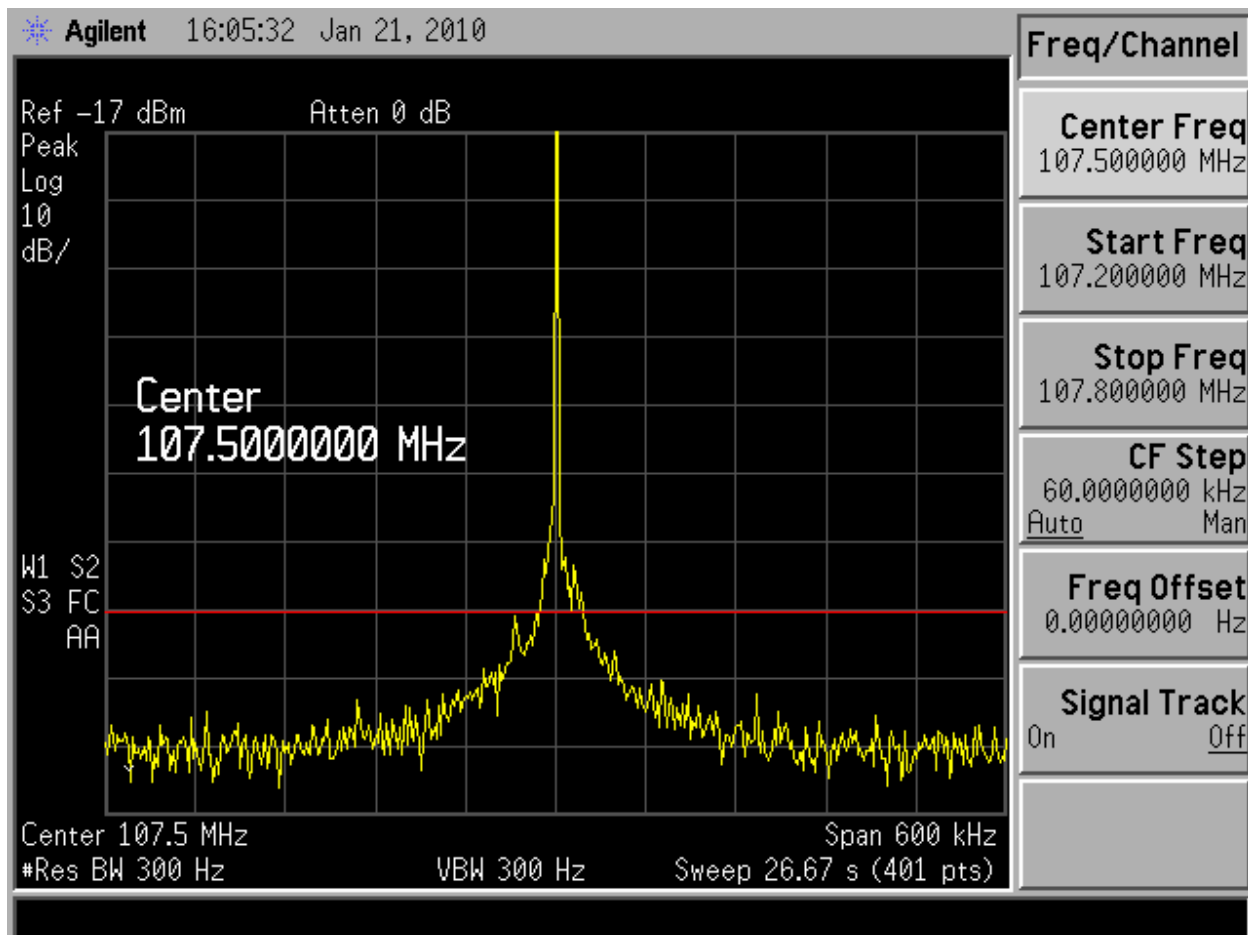


## Equipment:

W268BH	Crown FMR250 (.027 kw TPO)
W298BC	Harris ZX 1000 (.51 kw TPO)
Antenna	Jampro JCPB-2M broadband 2 bay
Combiner	Jampro RCCS-102-5.5H 2 port low power

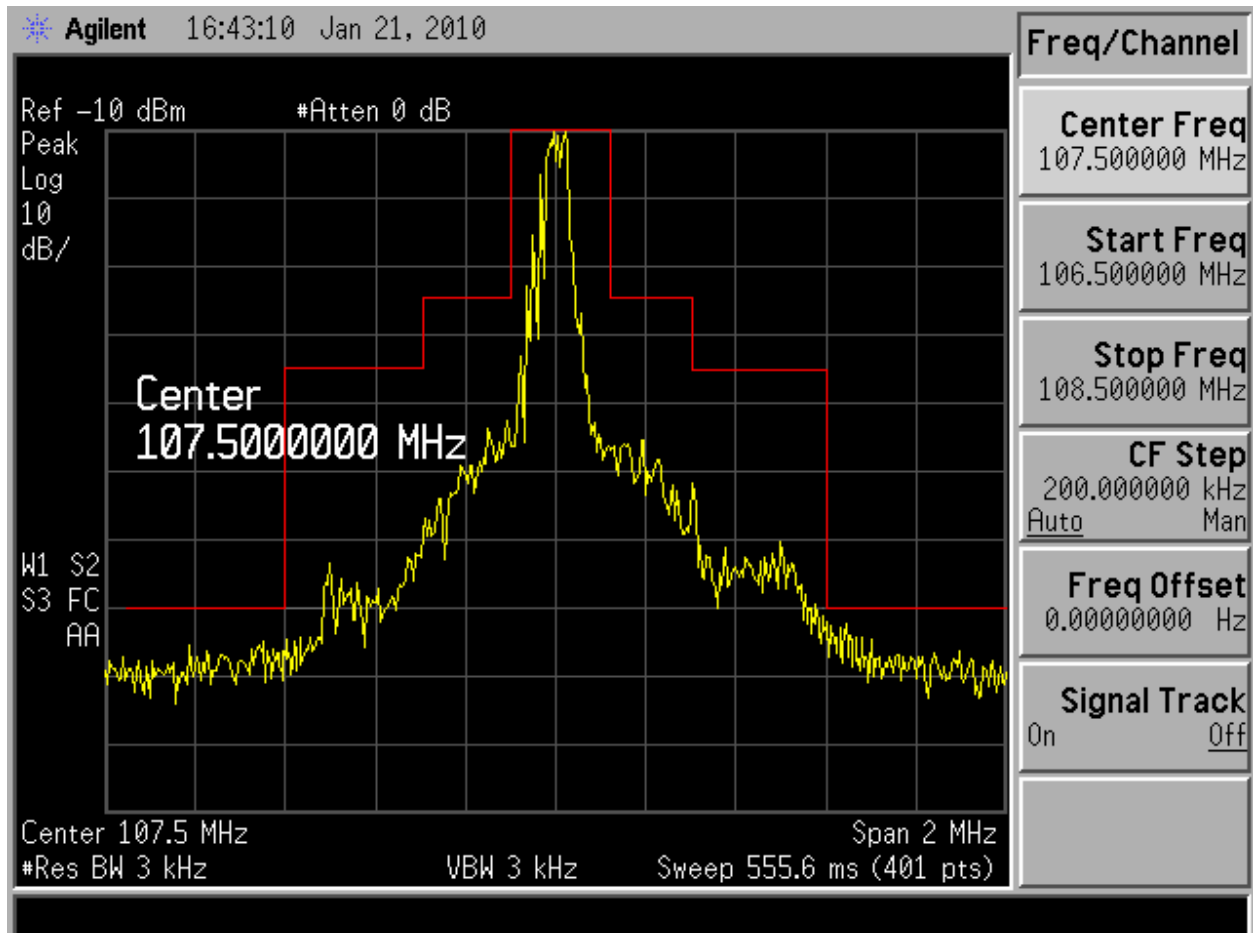
Spectrum Analyzer	Agilent E-4401B
Coupler	Bird

Compliance with section 73.317(d)

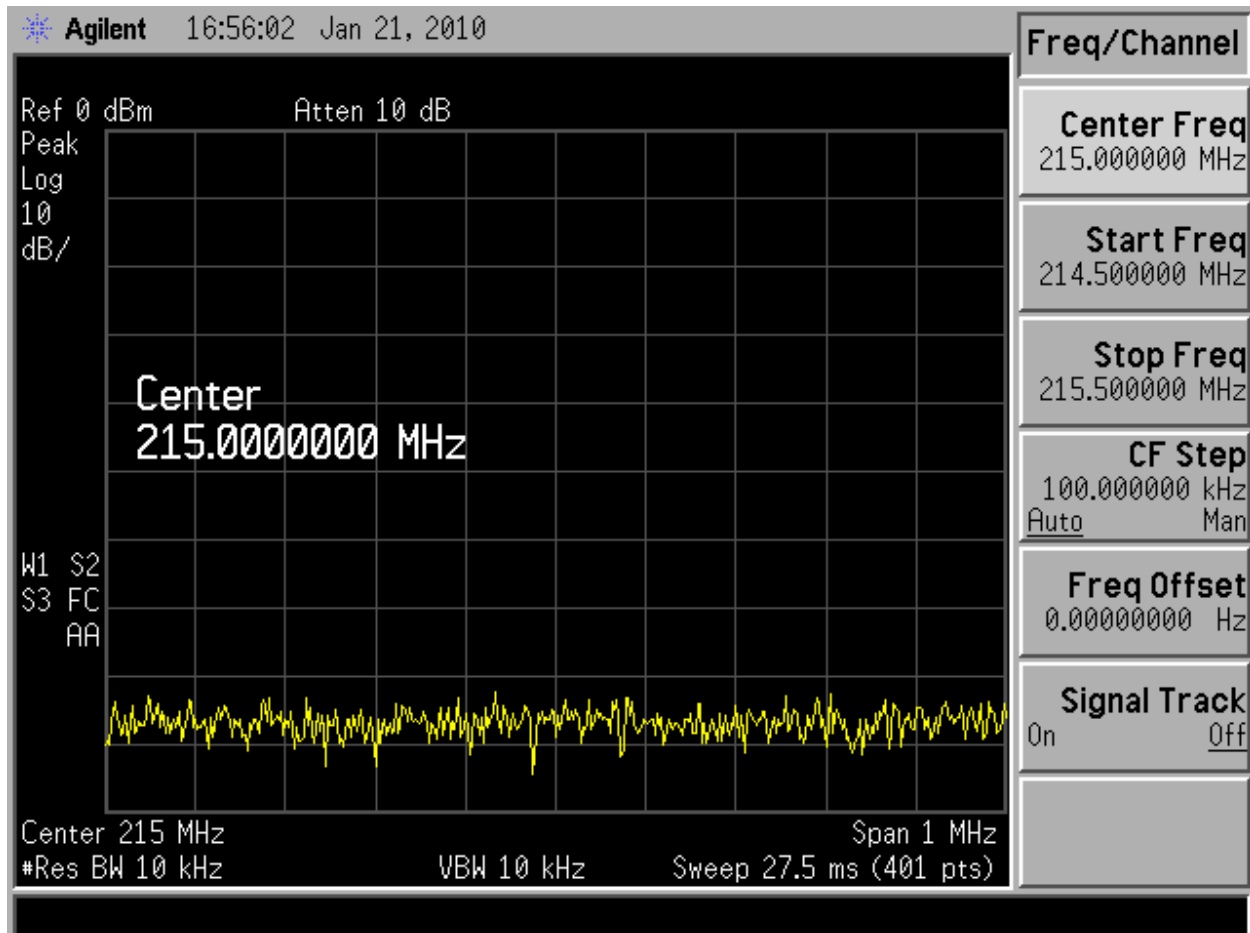


Note: 73.317(d) requires emissions appearing more than 600 khz from the carrier must be attenuated at least  $43 + 10\log(\text{power in watts})$  or 80 db below the unmodulated carrier whichever is the lesser. The transmitter output power is 510 watts, thus the limit for section (d) is 70 db.

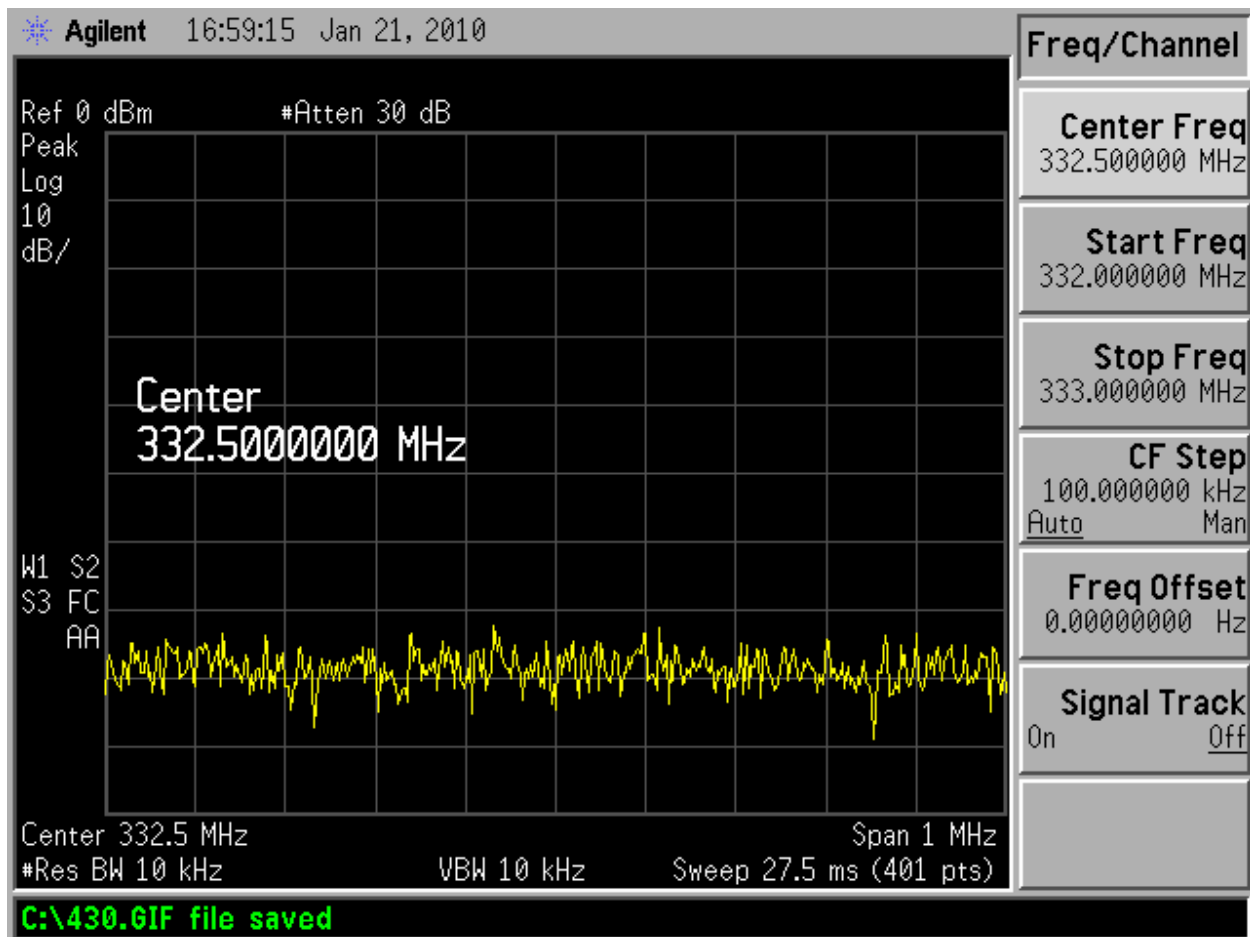
Occupied Bandwidth:



Second Harmonic:

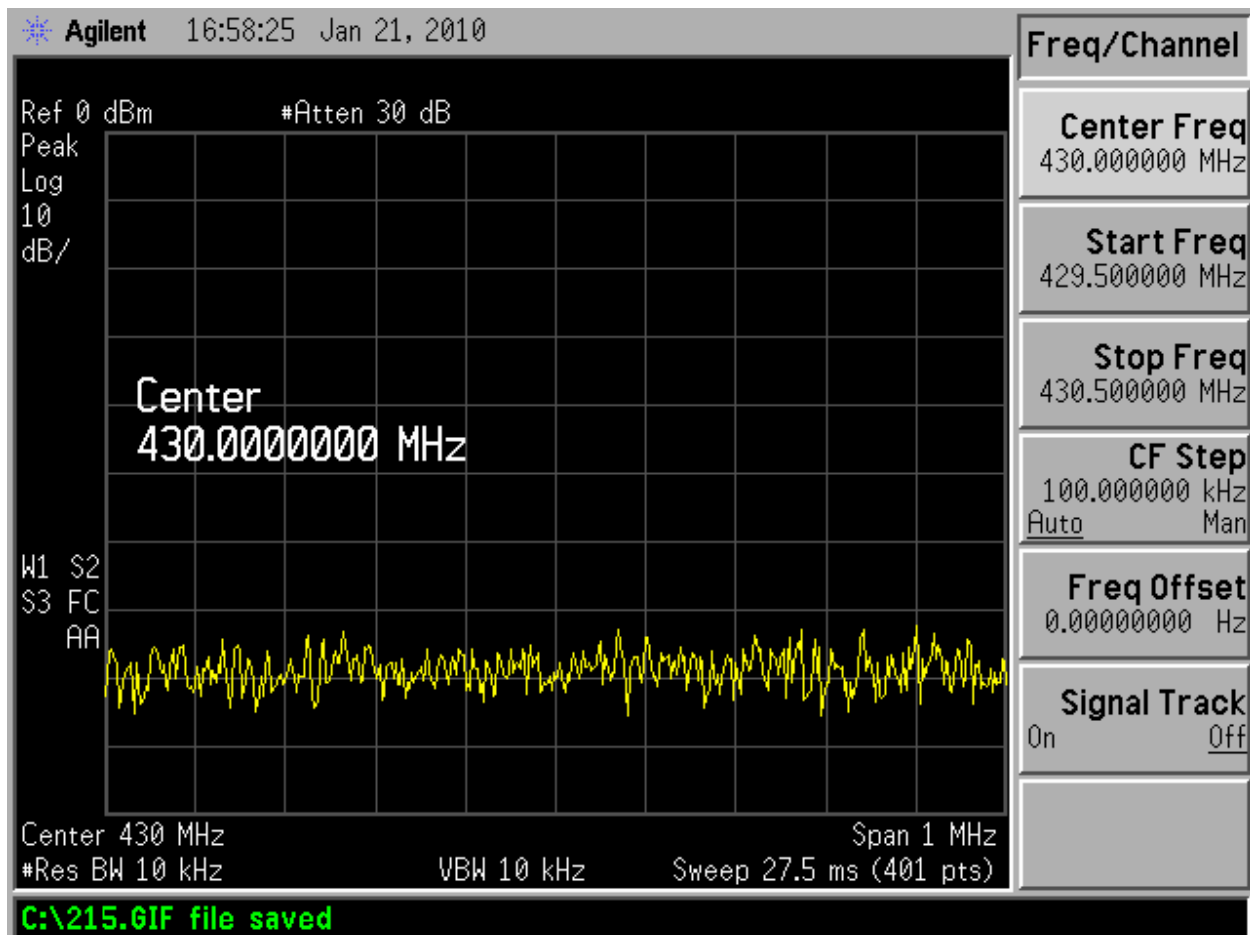


Third Harmonic:





Fourth Harmonic:



Additional Harmonics: None measurable