

Compliance Measurement Report

For

WUBT and WGCI-FM

Combined Transmitter Facility

At

Sears Tower, Chicago

103.5 MHz & 107.5 MHz

#### Compliance Statement:

On January 11th, 2001, the combined WGCI/WUBT transmitter site was measured for compliance of part 73.317(d) by Dan Mettler and John Boehm, both of Clear Channel Communications, Inc. Measurements were conducted to demonstrate that the two stations operating into the two-station branch combiner do not generate any spurious or inter-modulation signals between them, nor do these two carriers generate any spurious or inter-modulation signals with any of the other co-located FM carriers.

Spectrum Analyzer measurements were accomplished by connecting the analyzer input to a capacitive-coupled probe in the transmission line between the branch combiner output and the antenna system impedance matching input.

Once each of the two carrier's signal strengths was measured to establish a reference level, a pair of two-pole notch filters, one for each frequency, was inserted in a series connection with the analyzer input line. The attenuation at carrier was 50dB at 107.5 MHz and 52dB at 103.5 MHz.

First-order mix product frequencies were calculated simply by adding the carrier frequency to the interfering frequency.

Second-order mix product frequencies were calculated by first multiplying each carrier frequency present at the site by a factor of 2 to locate the second harmonic frequency. Subtracting the lesser 2<sup>nd</sup> harmonic from the greater 2<sup>nd</sup> harmonic in question yields a "difference" which is added to the interfering frequency if the carrier frequency is greater than the interfering frequency. If the carrier frequency is less than the interfering frequency that "difference" is subtracted from the interfering frequency. Another way to achieve the same second-order measurement frequency is to subtract the interfering frequency from the carrier frequency. Then add the resulting "difference" frequency to the carrier frequency, being sure to note the +/- value of the difference when completing calculations. These calculation results can be viewed in Table 3.



Table 1

IM Product Compliance Measurements

First-order Product Frequency (MHz)	Measured Level (-dB)	Second-order Product Frequency (MHz)	Measured Level (-dB)	Carrier Frequency (MHz)	Interfering Frequency (MHz)
201.4	87	121.1	87	107.5	93.9
202.2	86	120.3	87	107.5	94.7
203.8	86	118.7	84	107.5	96.3
206.2	86	116.3	86	107.5	98.7
209.4	85	113.1	84	107.5	101.9
211	84	111.5	91	107.5	103.5
211.8	86	110.7	92	107.5	104.3
213.4	87	109.1	87	107.5	105.9
197.4	87	113.1	86	103.5	93.9
198.2	85	112.3	84	103.5	94.7
199.8	85	110.7	85	103.5	96.3
202.2	85	108.3	87	103.5	98.7
205.4	85	105.1	86	103.5	101.9
207.8	86	102.7	85	103.5	104.3
209.4	84	101.1	86	103.5	105.9
211	88	99.5	85	103.5	107.5

Table 2

Harmonic Measurements

<u>Carrier</u>	<u>2nd Harmonic</u>	<u>Attenuation</u>	<u>3rd Harmonic</u>	<u>Attenuation</u>	<u>Fc + 600 kHz</u>	<u>Attenuation</u>	<u>Fc - 600 kHz</u>	<u>Attenuation</u>
103.5 MHz	207.0 MHz	84dB	310.5 MHz	85dB	104.1 MHz	86dB	102.9 MHz	85dB
107.5 MHz	215.0 MHz	88dB	322.5 MHz	84dB	108.1 MHz	86dB	106.9 MHz	85dB

**Table 3**

**Second – Order Mix Product Frequency Calculation**

Interfering Frequency (MHz)	<u>Carrier Frequency</u>	
	103.5	107.5
93.9	113.1	121.1
94.7	112.3	120.3
96.3	110.7	118.7
98.7	108.3	116.3
101.9	105.1	113.1
103.5	n/a	111.5
104.3	102.7	110.7
105.9	101.1	109.1
107.5	99.5	n/a