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AM DIRECTIONAL ANTENNA FIELD WORK • COMPLIANCE INSPECTIONS • DIRECTIONAL ANTENNA SEMINARS
ASSET EVALUATIONS • TECHNICAL DUE DILIGENCE INSPECTIONS • STRUCTURE DETUNING

WCMD Cumberland, MD
1230 kHz 1kW-U Non-D
Base Impedance Measurements
July 18, 2007

A base impedance measurement was made on the WCMD(AM) base insulated series fed vertical radiator (ASR #1036995 located at N 39° 30' 38.2" W 78° 44' 30.9") on the morning of July 18, 2007. The structure is a 205 foot uniform cross section guyed tower. The measurements were made after a single bay FM antenna and associated 1/2 inch transmission line was installed on the structure. An AudioLabs ICR-100-DIN isocoupler brings the transmission line across the base insulator. The instrumentation used to make these measurements was a Delta Electronics OIB-3 extended range impedance bridge (s/n 336) and a Potomac Instruments FIM-41 field intensity meter (s/n 1002) (used as a null detector). The WCMD transmitter, set for low power operation, was used as a signal generator for these measurements. The antenna lead was opened on the tower side of the thermocouple RF ammeter. The base impedance measurement was made at this point. The only shunt elements remaining in the circuit beyond this point were a static drain choke and a 3 wire lighting choke (and the aforementioned isocoupler). The measured input impedance to the radiator at 1230 kHz was

48 +j62.7

The base current for 1000 watt operation is 4.56 amperes.

Measurements at adjacent frequencies, using a signal generator, were impossible at this time. A nearby AM station created interference that made such measurements impossible, at worst, or unreliable, at best.

Previous to these measurements, on November 14, 2007, before the installation of the antenna, transmission line and isocoupler, the undersigned made impedance measurements on this same system. Those results are tabulated below. As can be seen, the impedance at the WCMD operating frequency remained essentially unchanged.

WCMD ANTENNA BASE IMPEDANCE MEASUREMENTS 11/14/06

FREQUENCY	RESISTANCE	REACTANCE
1200 kHz	42.5	+48.0
1205 kHz	43.5	+50.0
1210 kHz	44.5	+53.8
1215 kHz	45.0	+55.9
1220 kHz	45.0	+59.2
1225 kHz	46.0	+61.3
1230 kHz	**47.0**	**+62.7**
1235 kHz	50.0	+64.2
1240 kHz	50.0	+68.2
1245 kHz	51.0	+69.7
1250 kHz	55.0	+72.5

Note : Measurements beyond 1250 kHz impossible due to a local station on 1270 kHz

Note: Calculated RF current for 1000 watts 4.61 amperes - RF ammeter inoperative - not able to observe actual current

Jack Layton

Jack Layton

7-23-07

Date

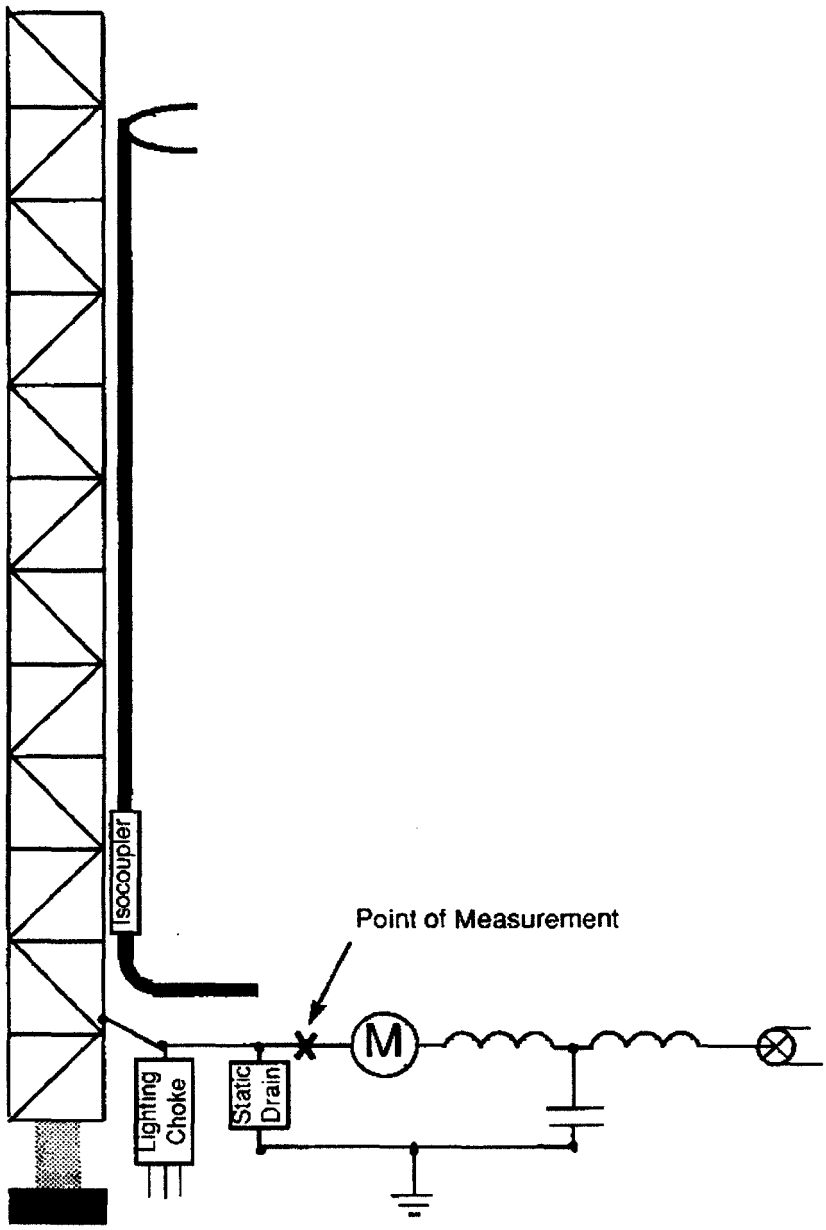

Figure 1 - Schematic diagram of the WCMD 205 foot vertical radiator with installed single bay FM antenna, half inch transmission line, isocoupler and antenna tuning network.