NAB Radio TechCheck

The Weekly NAB Newsletter for Radio Broadcast Engineers

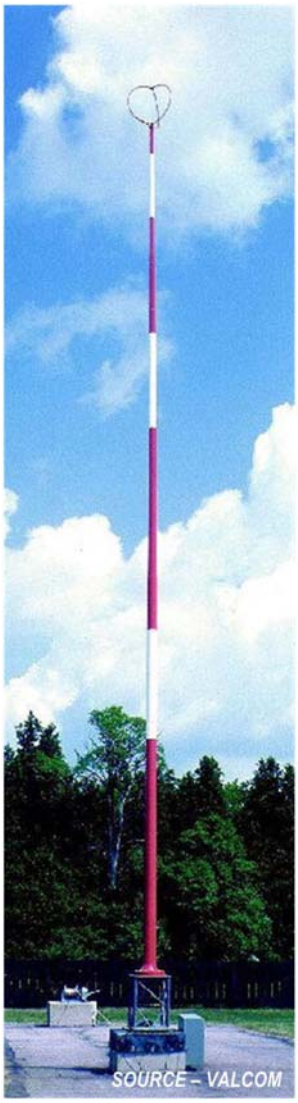
March 3, 2008

Valcom AM Antenna Regulatory Procedures Simplified

Valcom (Guelph, Ontario, Canada, www.valcom-guelph.com) manufactures self-supporting whip antennas (see photo) suitable for AM broadcasting which are shorter and more streamlined than the quarter-wavelength towers typically used by AM stations. In a recent Public Notice, the FCC's Media Bureau announced simplified procedures for AM station construction permit applications which specify Valcom antennas. As indicated in the Public Notice, based on FCC review of Valcom field tests and internal reports, the Bureau will not routinely require the submission of a proof of performance, current distribution measurements, or a formula for the vertical plane radiation characteristic for nondirectional AM facilities which utilize these antennas.

Parameter	Specifications
Power rating	2 kW (540-1000 kHz) 5 kW (1000-1700 kHz)
Height	23.0 m (75 ft)
Temperature	-50° to 65°C (-60° to 150°F)
Base insulator	Epoxy fiberglass
Weight	362 kg (800 lbs)
Center of gravity	7.6 m (25 ft)
Wind loading	To 241 km/h (150 mph)
Ice loading	1.87 cm (0.75 in) ice at 160 km/h (100 mph)

Some of the specifications of a 75 foot Valcom antenna are shown in the table. This antenna (as well as the 85 foot version) requires use of a 120-radial buried ground system with each radial 120 feet long. The Commission indicates in the Notice that low-profile Valcom antennas afford AM licensees the flexibility to place antennas in areas where taller towers may be unacceptable, and may be more economical to build and maintain than a standard antenna. Currently, the Commission will only authorize Valcom antennas for nondirectional use; however, authorization of directional Valcom arrays will be considered when more information is available on directional operation.



A principal part of Valcom's FCC submission (and upon which this action is based) is an Engineering Statement (dated January, 2007) from the consulting engineering firm of du Treil, Lundin & Rackley, Inc. This Statement was prepared to "...present and show the analysis of field strength measurements that were made to determine the radiation efficiency of an 85-foot pole transmitting antenna manufactured by the Valcom Manufacturing Group, Ltd. on 1200 kHz and 1390 kHz and for a 75-foot pole transmitting antenna of like construction on 1390 kHz and 1700 kHz."

In this Statement, signed by AM antenna expert Ron Rackley, the detailed procedures and results of numerous field strength measurements (nearly 500 in all) are presented, including graphical analyses of the antennas' measured performance. Mr. Rackley concludes that "...the observed unattenuated field values of Valcom poles exceed those shown for their physical heights on the graph which appears as Figure 8 of §73.190 of the FCC Rules." He states his belief that two aspects of the antenna design are responsible for this behavior–the "Valcosphere" top-loading, and the fact that the antenna loading coils that are situated far enough above ground to reduce the antenna-to-ground voltage in the base region which, in turn, reduces dielectric losses in the nearby soil. He further states that "...[t]he effects lead to antenna efficiency improvements that are predictable and measurable."

Additional specifics regarding licensing of facilities using these Valcom antennas are discussed in the Public Notice, including the following:

- The Engineering Statement establishes radiation efficiency values for the 75-

and 85-foot Valcom antennas within specified frequency ranges, all of which according to the FCC meet or exceed the minimum efficiency for Class B, C, and D AM stations;

- Applicants specifying a Valcom antenna shall use the antenna efficiency values established in the Engineering Statement, provided that both the antenna and the ground system are the same as those described therein. Use of any ground system other than one consisting of 120 radials, each 120 feet long requires submission of a proof of performance as set forth in §73.186;

- Applicants proposing to use Valcom antennas shall use the formula in §73.160(b)(1), based on the physical height of the radiator, in computing the vertical form factor commonly referred to as f(θ). This is a consequence of previous studies which demonstrated that the antenna elevation pattern can be represented by this formula;

- The requirement for current distribution measurements that is normally applied to non-standard antennas has been eliminated since the FCC's Office of Engineering and Technology concluded (in a 2003 memo) that the elevation pattern for a short vertical monopole such as the Valcom antenna is virtually independent of the current distribution along the radiating element.

The full text of the Public Notice is available online at http://hraunfoss.fcc.gov/edocs_public/attachmatch/DA-08-448A1.pdf, and the du Treil, Lundin & Rackley Engineering Statement is available at http://hraunfoss.fcc.gov/edocs_public/attachmatch/DA-08-448A2.pdf.

Just in from the FCC...

MEDIA BUREAU PROVIDES GUIDANCE FOR CONTINUED PRESUNRISE AND POSTSUNSET OPERATIONS DURING MARCH 2008 BY AM STATIONS IN AREAS WITH DAYLIGHT SAVING TIME

Daylight Saving Time ("DST") commences at 2:00 AM on March 9, 2008. Certain AM stations currently operate with Presunrise Service Authorizations ("PSRAs") and Postsunset Service Authorizations ("PSSAs"). Licensees with PSRAs and PSSAs located in communities with DST should use the April DST "Advanced" powers and time periods for the period between March 9, 2008, and March 31, 2008. This adjustment is necessitated by the enactment of the US Energy Policy Act of 2005 which extended the effective period for DST into March for the first time.

For additional information or to report potential interference which an AM station believes to be the result of PSRA or PSSA operation by another station during the DST portion of March 2008, contact Charles Miller, Susan Crawford or Son Nguyen of the Audio Division at (202) 418-2700.

2008 NAB Broadcast Engineering Conference Summary of Presentations

Check out the papers that will be presented at the 2008 NAB Broadcast Engineering Conference in Las Vegas, April 12 -17, 2008. Find registration, housing or additional information on the NAB Show at http://www.nabshow.com/.