National Association of NAB BROADCASTERS
TV TechCheck
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FCC SEEKS COMMENT ON SHVERA DTV SIGNAL STRENGTH MEASUREMENT PROCEDURES

On April 24, the FCC released a *Notice of Proposed Rulemaking,* which seeks comment on the measurement procedure for determining the strength of a digital broadcast television (DTV) signal at any specific location. This procedure would be used to determine whether a household could be considered "unserved" by a local network affiliated DTV station and thus would be eligible to receive a distant DTV network signal retransmitted by DTH satellite carriers (e.g DirecTV or Dish Network). The Commission is taking this action as a consequence of the Satellite Home Viewer Extension and Reauthorization Act (SHVERA) enacted by Congress in December 2004.

SHVERA includes new provisions for distant DTV signal reception and provides three methods by which a satellite subscriber is eligible to receive such signals. First, a subscriber is eligible to receive the distant digital signal of a particular network if their household is predicted to be unserved by the over-the-air analog signal of any affiliate of that network or is determined by on site testing to be unserved by the over-the-air analog signal of any affiliate of that network. Second, after certain dates (generally, April 30, 2006 in the top 100 DMA's and July 15, 2007 everywhere else), a subscriber whose household is predicted to be served with a local station's analog signal will have the ability to request an on site signal strength test to determine if his or her household is unable to receive a particular local station's digital signal and is thus eligible to receive a distant digital signal from the same network. SHVERA gives subscribers the right to request and pay for a test to determine their eligibility if their satellite carrier does not request the test or refuses to do so. Third, a satellite subscriber can receive distant digital signals if the local television network station grants a waiver.

SHVERA also directed the Commission to conduct an inquiry and issue a report on whether the Commission should revise its digital TV signal strength standards and signal measurement procedures used to identify if a household is "unserved". On December 8, 2005, the FCC issued the *SHVERA Report* to Congress that, in relevant part, stated that the Commission needs to conduct a rulemaking proceeding to specify procedures for measuring the field strength of digital television signals at individual locations. (See *TV TechCheck* from December 12, 2005).

The NPRM seeks comment on a proposed DTV measurement procedure that is based upon the existing measurement procedure for analog signals. The Commission has modified the procedures based on its recommendations in the *SHVERA Report*. In addition to comments on the procedure itself, the FCC also requests comment on whether there are ways, such as by choice of equipment or by designation of procedures, to minimize the cost of digital signal strength tests while at the same time ensuring the accuracy and reliability of the results. Since SHVERA provides that testing of digital signal strength for this purpose could begin as early as April 30, 2006, the Commission will allow subscribers and satellite carriers to use the proposed DTV measurement procedures for evaluating DTV signal strengths pending the adoption of final rules.

The proposed procedure is shown below. A copy of the NPRM is available on the FCC's Web page at http://hraunfoss.fcc.gov/edocs_public/attachmatch/FCC-06-51A1.pdf. The NPRM has not yet been published in the *Federal Register*. Comments will be due to the FCC 30 days after that.

> (e) *DTV - Collection of field strength data to determine DTV television signal intensity at an individual location--cluster measurements*—(1) Preparation for measurements-- (i) Testing antenna. The test antenna shall be either a standard half-wave dipole tuned to the center frequency of the channel being tested or a gain antenna provided its antenna factor for the channel(s) under test

has been determined. Use the antenna factor supplied by the antenna manufacturer as determined on an antenna range.

(ii) *Testing locations* - At the test site, choose a minimum of five locations as close as possible to the specific site where the site's receiving antenna is located. If there is no receiving antenna at the site, choose a minimum of five locations as close as possible to a reasonable and likely spot for the antenna. The locations shall be at least three meters apart, enough so that the testing is practical. If possible, the first testing point should be chosen as the center point of a square whose corners are the four other locations. Calculate the median of the five measurements (in units of dBu) and report it as the measurement.

(iii) *Multiple signals* - If more than one signal is being measured (i.e., signals from different transmitters), use the same locations to measure each signal.

(2) *Measurement procedure*. Measurements shall be made in accordance with good engineering practice and in accordance with this section of the Rules. At each measuring location, the following procedure shall be employed:

(i) *Testing equipment.* Perform an on-site calibration of the test instrument in accordance with the manufacturer's specifications. Tune a calibrated instrument to the center of the channel being tested. Measure the integrated average power over the full 6 megahertz bandwidth of the television signal. The intermediate frequency ("i.f.") of the instrument must be less than or equal to 6 megahertz and the instrument must be capable of integrating over the selected i.f. Take all measurements with a horizontally polarized antenna. Use a shielded transmission line between the testing antenna and the field strength meter. Match the antenna impedance to the transmission line at all frequencies measured, and, if using an un-balanced line, employ a suitable balun. Take account of the transmission line loss for each frequency being measured.

(ii) *Weather.* Do not take measurements in inclement weather or when major weather fronts are moving through the measurement area.

(iii) *Antenna elevation.* When field strength is being measured for a one-story building, elevate the testing antenna to 6.1 meters (20 feet) above the ground. In situations where the field strength is being measured for a building taller than one-story, elevate the testing antenna 9.1 meters (30 feet) above the ground.

(iv) *Antenna orientation*. Orient the testing antenna in the direction which maximizes the value of field strength for the signal being measured. If more than one station's signal is being measured, orient the testing antenna separately for each station.

(3) Written record shall be made and shall include at least the following:

(i) A list of calibrated equipment used in the field strength survey, which for each instrument, specifies the manufacturer, type, serial number and rated accuracy, and the date of the most recent calibration by the manufacturer or by a laboratory. Include complete details of any instrument not of standard manufacture.

(ii) A detailed description of the calibration of the measuring equipment, including field strength meters, measuring antenna, and connecting cable.

(iii) For each spot at the measuring site, all factors which may affect the recorded field, such as topography, height and types of vegetation, buildings, obstacles, weather, and other local features.

(iv) A description of where the cluster measurements were made.

(v) Time and date of the measurements and signature of the person making the measurements.

(vi) For each channel being measured, a list of the measured value of field strength (in units of dBu after adjustment for line loss and antenna factor) of the five readings made during the cluster measurement process, with the median value highlighted.

ART ALLISON WINS ATSC AWARD

Art Allison accepts the Bernard J. Lechner award at ATSC Annual Meeting (l-r: ATSC President, Mark Richer, Art Allison, ATSC Chairman, Robert Rast)

Art Allison, Director of Advanced Engineering in the Science and Technology department at NAB, is this year's recipient of the Advanced Television Systems Committee's Bernard J. Lechner Outstanding Contributor Award. The presentation was made during the ATSC Annual Meeting held Wednesday, May 10, 2006. The Bernard J. Lechner Award was established by ATSC in 2000 to recognize outstanding technical contributions to the ATSC. The award is named after the first honoree, Bernard J. Lechner, now a consultant to government and industry and an expert on all aspects of television and display systems.

Mark Richer, ATSC President, remarked: "Art Allison has been an outstanding contributor to the work of the ATSC for over a decade, and in a variety of other standards forums as well throughout his career. Art epitomizes the values of dedication, hard work, and cooperation that are vital to the success of the ATSC. Art's commitment to the standards development process and his attention to detail has been a key factor in the development of ATSC Standards and Recommended Practices."

REGISTER TODAY FOR THE 2006 NAB SATELLITE UPLINK OPERATORS TRAINING SEMINAR

You have one opportunity left to attend NAB's Satellite Uplink Operators Training Seminar this year on October 2–5, 2006. For additional details and to register go to 2006 October Satellite Seminar or call NAB Science & Technology at 202-429-5346.

VSB SEMINAR OFFERINGS

VSB Fundamentals – Tuesday, May 23, 2006 Days Inn, Knoxville, TN

A one-day seminar on the ATSC's Digital Television (DTV) VSB transmission system will be presented by Gary Sgrignoli of Meintel, Sgrignoli & Wallace from 8:30 am–5:45 pm on Tuesday, May 23 at the Days Inn in Knowville, TN. This seminar is a prerequisite for the VSB Measurements seminar.

VSB Measurements – Friday, May 19, 2006 University of Denver, DENVER, CO

This seminar that focuses on the types of VSB measurements that are desired in the laboratory, at transmitter sites and at remote field sites will be also presented by Gary Sgrignoli of Meintel, Sgrignoli & Wallace from 8:30 – 5:45 pm on May 19 at KRMA-TV in Denver, CO. For additional information on either of these seminars, contact Gary Sgrignoli, (847) 259-3352, gary.sgrignoli@ieee.org or check out the Meintel, Sgrignoli and Wallace Web site at www.mswdtv.com.