September 13, 2010

Radio TechCheck

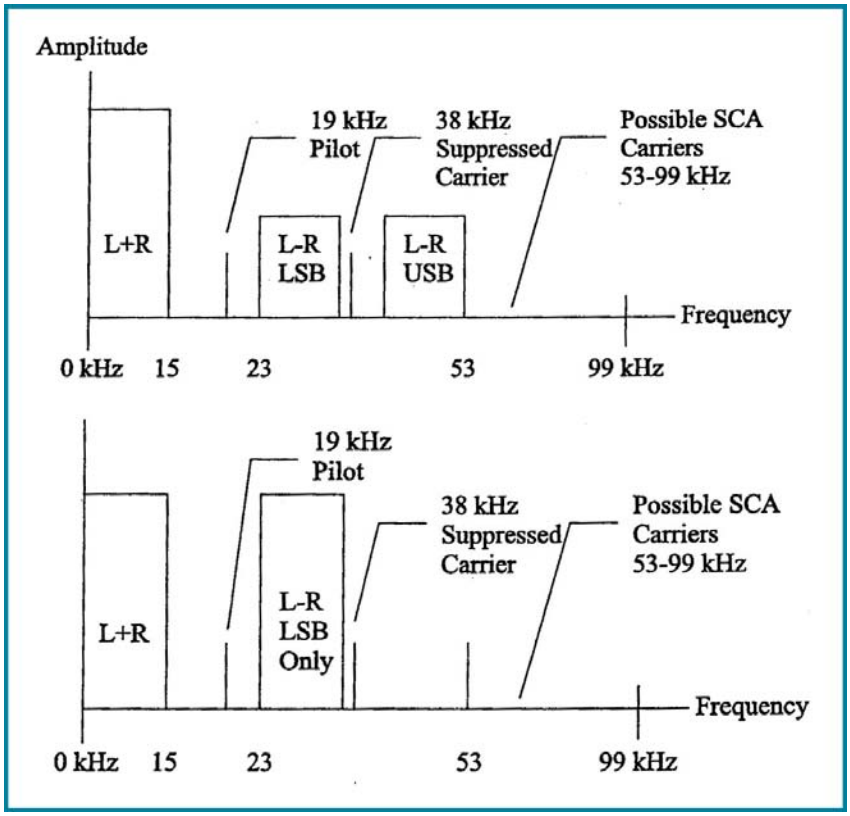
NAB NATIONAL ASSOCIATION OF BROADCASTERS

The Weekly NAB Newsletter for Radio Broadcast Engineers

Method to Improve FM Stereo to be Discussed at NRSC Meeting

Each year the National Radio Systems Committee (www.nrscstandards.org) holds meetings of its active Subcommittees in conjunction with The Radio Show which is being held this year in Washington, D.C. from September 29-October 1 (see www.radioshowweb.com for additional information). In addition to conducting committee business, these meetings offer an opportunity for the NRSC to hear about new broadcast technologies or proposals or ways to make existing technologies better. Frank Foti, President of Omnia Audio, will be making just such a presentation to the NRSC on the afternoon of September 29, 2010, to discuss a method for improving conventional FM stereo transmission performance that involves modifying the L-R stereo subcarrier signal.

Frank's presentation will be based on a White Paper that he submitted to the NRSC in June of this year entitled "Method to Improve Conventional FM-Stereo Transmission Performance, Reduce Multipath, and Provide Increased Protection to the Baseband Spectrum." In his paper he discusses a method utilizing single sideband suppressed carrier (SSB-SC) modulation of the stereophonic subcarrier in the FM multiplex baseband that he believes is compatible with existing radio receivers. Frank notes that this is not an entirely new proposal and references a technical paper from the 1997 NAB Broadcast Engineering Conference (BEC) by William H. Gillman entitled "A New Method of Generating FM and Television Stereo Composite Baseband Yields Improved Broadcast Performance."



The illustration at right, taken from the 1997 BEC paper, illustrates the concept being proposed. The upper spectrum in this figure depicts a conventional baseband FM stereo spectrum, showing the double sideband suppressed carrier (DSB-SC) L-R audio channel, centered at 38 kHz. In the lower spectrum, the upper sideband of the L-R subcarrier is eliminated and the amplitude of the lower sideband is increased by 6 dB, to support the correct L+R/L-R matrixing in the receiver. The benefits of this configuration as stated by both authors in their respective papers include the following:

- Reduces occupied bandwidth in the L-R subchannel range, thereby increasing the FM modulation index by a factor of two, which directly reduces multipath;

- Narrows the overall FM transmission bandwidth and reduces degradation of stereo performance caused by finite bandwidth of passband filters, cavities, multiplexing systems and antennas. If adopted internationally, this would further benefit broadcasters in countries that use a 100 kHz channel spacing, as compared to the 200 kHz spacing used here in the U.S.;

- Creates additional and significant protection for Radio Data System (RDS) and analog FM subcarriers, as well as protection for host and adjacent-channel HD Radio signals;

- Compatible with all existing modulation monitoring systems and receivers which make use of phase-locked loop (PLL) detectors (essentially all receivers made after 1973);

- Less harmonic content generated throughout the channel spectrum when composite clipping is employed in the transmission audio processor.

Frank notes that as a result of technological advances since 1997, the proposed SSB-SC technique becomes much more plausible, and that implementation in transmission equipment is easily accomplished using digital signal processor (DSP) devices commonly found in such equipment. Further, it is noted that since the FCC rules, in §73.322 (a)(4), require DSB-SC modulation of the L-R channel, it would be necessary to petition for a change to these rules in order to make this proposed technique permissible (notwithstanding any temporary permission obtained on a case-by-case basis under STA).

Attendance at NRSC meetings is open to all but members of the press (who are excluded so as to foster open discussion among NRSC members), and those interested in hearing Frank's presentation are encouraged to attend. Meetings begin at 1 p.m. EDT in the Conference Theater of the Grand Hyatt Washington, 1000 H Street, N.W., Washington, D.C. In addition to Frank's presentation, the NRSC will also hear brief presentations from the Internet Media Device Alliance (IMDA, www.imdalliance.org) and RadioDNS (www.radiodns.org).

RADIO SHOW
Produced by RAB and NAB

Ask the Experts at the Radio Show

September 29–October 1, 2010
Grand Hyatt Washington ● Washington, D.C.

Ask *the Experts* is a series of sessions specifically designed by NAB Science and Technology for radio engineers and others interested in the future for radio broadcasting from a technology perspective. It will put you in front of people who are changing the rules, crafting new ones and enforcing compliance. Whether you handle technical operations at a small station, are in charge of a station group, or a consultant in the radio industry, *Ask the Experts* will offer a unique opportunity to join your colleagues and peers grilling our speakers for accurate answers to your most pressing questions. You may find the schedule for *Ask the Experts* and the other events plus information on registration and housing on the Radio Show website.

NAB Broadcast Engineering Conference Committee Meets to Begin 2011 Conference Planning

The 2011 NAB Broadcast Engineering Conference Committee met at NAB headquarters last week to begin planning for the 2011 conference. Pictured from left to right are: IEEE BTS representative, Lynn Nass, CBS Corporation; Jim Kutzner, PBS; SBE representative, Fred Baumgartner, Harris Corporation; Jim Stagnitto, WNYC/WQXR Radio; SBE representative, John Poray, SBE; Brett Jenkins, ION Media Networks; Steve Fluker, Cox Media Group, Orlando; Jeff Andrew, WTTG-TV; Martin Stabbert, Citadel Communications and BEC Committee chairperson, Dom Bordonaro, Cox Radio. (Committee members missing: Greg DePriest, NBC Universal, Ardell Hill, Media General, Glynn Walden, CBS Radio.)

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Sign up for NAB's 2010 Satellite Uplink Operators Training Seminar

October 4–7, 2010 ● Washington, D.C.

n just four days, NAB will teach you the skills necessary for the proper operation of the satellite uplinks. Now certified by the Satellite Users Interference Reduction Group (SUIRG), this course offers expert training for you and your staff. Interference is an industry-wide problem. One solution is well-trained operators. The seminar includes: in-depth information about the theory of satellite communications, a satellite newsgathering truck demonstration and a half-day field trip to SES Americom

Plan to Attend
The IEEE Broadcast Technology Society
60th Annual IEEE Broadcast Symposium

October 20–22, 2010
The Westin Alexandria ● Alexandria, Va.

Keynote speakers for this year's symposium include James Martin, Director, ISR Programs for the U.S. Department of Defense and James O'Neal, Technology Editor, *TV Technology, USA*. Additional details on the technical program and how to register are availale on the IEEE Broadcast Technology Symposium website. The advance registration deadline is October 1!

Submit Your Proposal for Now
2011 NAB Broadcast Engineering Conference

Las Vegas Convention Center, Las Vegas, Nevada
Conferences April 9–14, 2011/Exhibits April 11 – 14, 2011
Deadline for submissions is October 22, 2010.

The 2011 NAB Show will host the 65th NAB Broadcast Engineering Conference. This world-class conference addresses the most recent developments in broadcast technology and focuses on the opportunities and challenges that face broadcast engineering professionals. Each year hundreds of broadcast professionals from around the world attend the conference. They include practicing broadcast engineers and technicians, engineering consultants, contract engineers, broadcast equipment manufacturers, distributors, R&D engineers plus anyone specifically interested in the latest broadcast technologies.

In order to be considered, proposals must explain what attendees can expect to learn from the paper, must not be a sales pitch and should be no more than 200 words in length.

Papers accepted for presentation at the 2011 NAB Broadcast Engineering Conference will be eligible for the NAB Best Paper Award. Established in 2010, the Best Paper Award honors the author(s) of a paper of exceptional merit published in the *NAB Broadcast Engineering Conference Proceedings*. The yearly proceedings, published as both a book and a CD-ROM is a compendium of these technical papers, and an important archive of the leading edge of broadcast engineering issues.

Technical paper proposals submitted for the 65th annual Broadcast Engineering Conference will be accepted until the October 22 deadline. If you have any questions, contact John Marino, VP NAB Science and Technology at (202) 429-5346.