

2011



Broadcasters Clinic

And

Upper Midwest Regional Society of Broadcast Engineers Meeting

October 11-13, 2011
Marriott West
Middleton, WI



BROADCASTERS CLINIC 2011

Program Agenda

SBE

TUESDAY, OCTOBER 11

7:45 AM: Registration & Continental Breakfast

Sponsored By: Harris

HARRIS

9:00 AM: Content Delivery to All Consumer Devices

Speaker



Jeff Littlejohn
Clear Channel Radio

Moderator



Leonard Charles
Television WI Inc.

At one time
"Radio" described
a delivery
method... using
AM and FM
frequencies for
content delivery
over the air.
However, over
time, radio has

come to mean the "content" that is created and the particular delivery method is less defined. Consumers have an ever widening choice of how to receive content and an ever widening variety of the content that is available.... Certainly AM and FM are still the most important technologies, but PCs, Mobile Phones, Connected TVs, Game Consoles, Satellite and HD Radio present new choice and opportunity for delivery of content. Each of these methods also has its own opportunities for how broadcasters can enhance their relationship with their listeners.

9:45 AM: A New Approach to Solid-State

High-Power FM Amplifiers

Speaker



Timothy Anderson
Harris Corporation

Moderator



Keith Kintner
UW-Oshkosh

Continued
innovations have led
to a new generation
of solid state RF
power amplifier
technology providing
significantly higher
output power, density,
and greater efficiency
resulting in lower

purchase and operating costs with improved RF performance and robustness on par with tube based RF power amplifiers. These improvements in cost and efficiency will make solid state transmitters more cost competitive.

The author will discuss the history of solid-state FM transmitter design, the current architectures used along with the most recent developments in solid state device technology along with the challenges and solutions in high-power RF amplifier design, cooling, combining, control and power supply systems for the next generation of solid state, high-power, digital / FM transmitters.

10:30 AM: Break

Sponsored By: Alpha Video



**10:45 AM: FM Directional Antenna Systems;
Making the Impossible Possible**

Speaker



Bob Surette
Shively Labs

Moderator



Gary Mach

With the FM band becoming more and more congested with move-ins, translators and boosters, directional antennas are becoming more and more popular. In this paper I will discuss how at first, consultants and

broadcast engineers simply did the math for a directional antenna system without concern of whether an antenna could be built to meet the directional pattern or not. I will show examples of some of these impossible patterns and show how a degree of reality has made the manufacture's job easier. I will also describe how one antenna can be used for more than one directional requirement using a side mounted antenna and a panel antenna system.

**11:30 AM: Cooling Technologies for High Power
FM Transmitters**

Speaker



Jeff Welton
Nautel

Moderator



Greg Dahl
Second Opinion
Communications

As authorized HD Radio™ digital injection levels increase, the overall AC to RF efficiency of the typical FM broadcast transmitter is compromised. At the same time, the

options for, and use of, high power hybrid solutions (both tube and solid state) has increased significantly since the HD Radio rollout began. This presents a challenge to both the manufacturer and the broadcaster to improve cooling techniques and operating environment. While FM broadcast transmitters have been traditionally air cooled, water cooled approaches have also been tried. This paper examines the relative advantages and disadvantages of air vs. water cooling for high power HD Radio hybrid FM transmitters, as well as some discussion about facility cooling in general, for various transmitter types and sizes.

12:15 PM: Lunch

Sponsored By: Ross Video



**1:45 PM: Audio Processing That Sounds Correct
All The Time!**

Speaker



Cornelius Gould
Telos

Moderator



Gordon Carter
Professional
Audio Services

Traditionally, audio processors have relied on limiters and clippers in achieving target loudness. While this technique generally works, major improvements can be had by the use of intelligent gain control

in the AGC sections of an audio processor to gain spot-on level control as well as building a large amount of RMS energy which leaves the limiters and clippers to do what they do best - limit peaks.

This feat is derived by brand new techniques never before seen for "wideband" AGC control as well as intelligent multiband AGC's. The end result is greatly improved source-to-source program consistency, levels that are "always right", as well as clean loudness.

Cornelius will share some of our discoveries while developing the latest line of audio processing gear at Omnia Audio.

2:30 PM: Creative Use of FM Translators and Boosters

Speaker



Doug Vernier
V-Soft Comm.

Moderator



Jason Mielke
WCLOW/JVL

This session will discuss strategies for improving translators and boosters. The rules have changed, with new ideas for translator site improvements, daytime AM translators that can

be programmed at night and translators with HD2 primary signal inputs. The session will include real-life examples of creative translator use of stations now on the air. Included will be dangers of interference to translator inputs and from translator outputs. Also, how new LPFM rules will impact translators. The session will include several examples of synchronous boosters that are working well today.

3:30 PM: Break

Sponsored By: Alpha Video



3:45 PM: Remotes Are Changing

Speaker



John Bisset
Tieline

Moderator



Keith Kintner
UW-Oshkosh

This session will discuss a variety of techniques that can be used to provide efficient, yet high quality remote broadcasts. Engineers are always being told to do more with less. With the advent of 3G/4G cellular, IP, and

Smartphones, today's engineer has multiple choices for engineering a remote - not just POTS (plain old telephone service). See where the technology is heading, and what services are being discontinued. Every broadcast engineer should add these techniques to their engineering arsenal.

4:30 PM: Exhibits Open/Reception

7:30 PM: Nuts & Bolts

Beer & Brats Sponsored By:

Continental Electronics Corp.



WEDNESDAY, OCTOBER 12

7:45 AM: Registration & Continental Breakfast

Sponsored in Part By: Nautel



8:30 AM: Using Tower Design Codes to Your Advantage

Speaker



David Davies
Consolidated
Engineering Inc.

Moderator



Leonard Charles
Television WI Inc.

"That's why we carry insurance!" is the all-to-often response when a station's tower must be analyzed and/or reinforced. Consider the tower built 30 years ago in a remote location, now surrounded by 300 homes, for which antenna changes become necessary. How would you proceed and how can you control the costs?

Broadcasters do have options concerning which structural design Standard or portions of a Standard to implement, with respect to analyzing and/or reinforcing their tower. This presentation will explain how to effectively use the intricacies within each design Standard to achieve the broadcaster's objectives, including: increasing the tower's antenna load capacity and/or meeting insurance carrier or community requirements. We will explore which Standard is best-suited to maximize owner options while minimizing the need and cost of reinforcing.

9:15 AM: We're Still Out There

FCC Enforcement Actions - An Analysis of Broadcast Violations.

Speaker



Jim Roop
FCC Chicago Field
Office (Invited)

Moderator



Kent Aschenbrenner
Milwaukee Public
Television

What are the top ten violations committed by broadcasters? What does the broadcaster need to focus on to avoid violations and the resulting forfeitures?

10:00 AM: Exclusive Exhibit Time

11:00 AM: Lunch

Sponsored By: Comrex



1:30 PM: RF Safety

Speaker



Jeremy Ruck
D.L. Markley &
Associates, Inc.

Moderator



Greg Dahl
Second Opinion
Communications

Addressing RF safety at facilities is an issue that all broadcasters must face. In this presentation we will look at the standards that are currently in effect in the United

States, the effects of and science behind RF exposure, and the development of RF safety plans for the broadcaster.

2:15 PM: Case Histories in Lightning Protection and Grounding

Speaker



David Brender
Copper Development
Association Inc.

Moderator



Jason Mielke
WCLO/WJVL

This slide talk discusses the elements of a building's wiring and grounding systems (including lightning protection) that pertain to power quality at communications facilities and

improved up-time. Proper wiring and grounding, beyond those minimal requirements of the NEC, can greatly alleviate power quality problems in broadcast and public service communications facilities. These improvements can be very cost-effective, usually simple in description, and help prevent costly downtime. The presentation concentrates on actual experiences at broadcast facilities where grounding and lightning protection were of paramount importance in maintaining system availability. Case histories of several communications facilities will be discussed, including proper and improper grounding and bonding, with liberal use of on-site photographs to show what these systems and devices look like in actual installations. Some discussion of general wiring techniques applicable to all facilities will be included.

3:00 PM: Break

Sponsored By: Nautel



3:15 PM: Are Your Antennas Ready For The Worst?

Speaker



Rich Wood
Resonant Results

Moderator



Jason Mielke
WCLO/WJVL

This presentation will focus on preparing your physical plant, especially the antenna systems for the worst case. The number of extreme storms appears to be on the increase and Broadcasting is the life line for a community

when a disaster strikes. Being prepared for the worst starts with a solid plan, which involves all station personnel, and the physical plant to support the plan. The antenna systems are the key component for getting the information out, and having primary systems that are ready for the task and back up systems or equipment on hand and ready to go is a key feature to proper preparedness. Also, site break ins are on the rise and methods of deterring theft will be covered.

4:00 PM: When a 2000 Foot Tower Collapses, What's Next

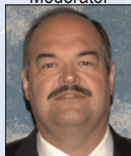
The Night the Ground Shook In Fairchild

Speaker



Ron Viste
WEAU-TV

Moderator



Leonard Charles
Television WI Inc.

On the wintry night of March 22, 2011 the ground was covered with sleet, snow, ice and something much more incredible—the steel remnants of a tower that had soared 2000 ft into the air for 45 years. Excessive

ice and wind proved too much for the WEAU-TV tower.

We'll review the amazing events and aftermath of the unforgettable night the ground shook in Fairchild, WI.

5:30 PM: Dinner

7:00 PM: SBE Meeting



"How Government Schizophrenia Has Both Promoted and Impaired Broadband Development in the US"

Speaker



Dr. Barry Orton

Government at the local, state and federal level has, in many cases, both promoted and impaired the growth of broadband capacity, often simultaneously. In some places, local utilities have tried to expand broadband plants using federal funds, only to have state legislation impede or forbid the projects. Here in Wisconsin, the state rejected federal broadband funds so privately-owned networks could continue to serve public entities, and also tried to ban the UW-Extension from using federal broadband funds to build public/private rural broadband. This examination of the political economics of broadband will touch on the role of the FCC, the courts, and elected officials on the local, state and federal level as well as the political lobbying and public relations campaigns of the major providers.

Beer & Pizza Sponsored By: RCS



THURSDAY, OCTOBER 13

7:45 AM: Registration & Continental Breakfast

Sponsored By: Harris



8:30 AM: BER Testing Circular Polarization for Mobile TV

Reliability is the key to the success of Mobile TV. Reliable

Speaker



John Schadler
SPX Communication
Technology

Moderator



Leonard Charles
Television WI Inc.

reception of mobile TV depends on the spatial immunity of the handheld receiver. Spatial immunity of the receiver can only be achieved with sufficient margin to provide the necessary bit error

rates required for digital service. New experimental field data comparing linear and circular polarization based on bit error rates will be presented to help quantify the benefits of circular polarization in real world mobile applications.

9:15 AM: Taking Control of MPEG Transport Streams

From our early history of analog composite video, today's

Speaker



David Wood
Ensemble Designs

Moderator



Keith Kintner
UW-Oshkosh

broadcast engineer must be adept in implementing and troubleshooting digital transport streams that can carry multiple programs with compressed audio and video services. This

presentation begins with a primer to give engineers a

better understanding of the hows and whys of transport streams. Particular attention is paid to the critical step of digital modulation in ATSC over-the-air transmission. Three important innovations in transport stream infrastructure are explored – methods for restoring clock accuracy; tracking and identifying errors; and automatic back-up switching of critical paths.

10:00 AM: Break

Sponsored By: Nautel



10:15 AM: OLED What is it?

The world has moved on flat panel displays and CRTs have gone the way of the dinosaur. However, up until now, neither plasma or LCD have provided a satisfactory replacement. Organic Light Emitting Diode or "OLED" is seen as an improvement to these and has even shown to outperform the old CRT. This presentation will talk about what OLED is, how it operates, and how it compares with all of the previous technologies.



Gary Mandle
Sony



Gary Mach

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these and has even shown to outperform the old CRT. This presentation will talk about what OLED is, how it operates, and how it compares with all of the previous technologies.

11:00 AM: The CALM Act, ITU-R BS.1770 Revisited

The presentation reports how loudness based guidelines are being adopted around the world. With the CALM act now passed by the Senate and by the Congress, transparent and predictable normalization of



Thomas Lund
TC Electronics



Kent Aschenbrenner
Milwaukee Public Television

lines are being adopted around the world. With the CALM act now passed by the Senate and by the Congress, transparent and predictable normalization of

interstitials has become even more essential to production companies and to broadcasters.

Recent additions to the ITU-R BS.1770 standard enable improved leveling of commercials and promos without sacrificing the possibility for broadcasting wide loudness range content such as film, drama and music. The presentation describes how to root production, transmission and logging in a revised set of rules that may be used to create tight delivery specifications; and it offers strategies for efficient cross-platform workflow encompassing linear audio, AC3 and mobile platforms.

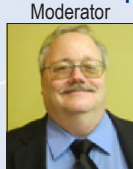
Noon: Lunch

Sponsored By: Panasonic

1:15 PM: The One Man News Crew: Cellular Wireless for ENG Applications



Cahit Akin
Mushroom Networks, Inc.



Mark Burg
Grant Media LLC

Until recently, cellular wireless data connections haven't been fast and reliable enough for live video streaming applications. The latest innovations in networking, such as broadband bonding, are now enabling

reliable and high-quality live video streaming over bonded cellular data cards. Coinciding with the crowd sourcing of

news and content in general, these types of inexpensive, light-weight broadcast technologies will enable one-man crews to do the work of a satellite truck. We will have a detailed look into the technology, its applications and short-, mid- and long-term implications of this technology in the broadcasting and video-on-the-web verticals.

2:00 PM: Time to Get Serious with Interactive TV

Although mainstream ITV has largely been an unfulfilled promise for over 30 years, there is a perfect storm of recent events that suggests ITV is about to become an important factor in next generation media and supporting CE devices. In the multi-channel video and broadcast industries smart tv receivers, set-top-boxes, and other delivery platforms are incorporating widgets, applications, and/or middleware (e.g. EBIF and OCAP) with talk back mechanisms. The new ATSC/MH over-the-air broadcast standard supporting video delivery to cellphones incorporates an interactivity framework with a back channel for interactivity. Switched digital video and audience measurement systems in cable are facilitating targeting advertising and could lead to synthetic channels personalized down to the household level. DVRs employ local intelligence to insert commercials. If that were not enough, we now see substantial video moving beyond user generated content being delivered to personal computers with talk-back channels.

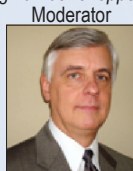
Audience participation shows such as American Idol have demonstrated the consumer appeal of ITV and with the perfect storm of new infrastructure rolling out, it is likely we will see near term rapid deployments of ITV.

2:45 PM: Can Broadcasters Play a Role in Broadband Evolution

There are an increasing number of opportunities for existing



Greg Herman
SpectrumEvolution.org



Kevin Ruppert
WISC-TV

broadcasters to provide broadband services. Whether using the existing 8-VSB standard for fixed content delivery, or through the appropriate deployment of more sophisticated, next generation OFDM based modulation, which will enable highly efficient enhanced mobile multicast services, broadcasters must move now to ensure that the spectrum they currently occupy, not just the content they produce, is relevant in the daily lives of nearly every American citizen.

**Join us next year for the 2012
Broadcasters Clinic
October 9-11
Madison Marriott West Hotel**

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Clinic Committee and WBA Staff

Kent Aschenbrenner - Milwaukee Public Television

Steve Brown - Woodward Communications, Inc.

Mark Burg - Grant Media LLC

Gordon Carter - Professional Audio Services

Leonard Charles - Television Wisconsin, Inc.

Greg Dahl - Second Opinion Communications, Inc.

Clif Groth - New Radio Group

Bill Hubbard - UW-Green Bay

Vern Killion

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Gary Mach

Jason Mielke - WCLO/WJVL

Kevin Ruppert - WISC-TV

Tom Smith

Michelle Vetterkind - CAE, WBA President & CEO

Linda Baun - WBA Vice President

Mandy Endicott - WBA Administrative Assistant

EXHIBITORS

The Broadcasters Clinic Committee and the Wisconsin Broadcasters Association wishes to extend our gratitude to: The Broadcast Clinic Exhibitors and The Prize Donors

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(List is inconclusive. See Exhibitors Map in your Attendee Packet for complete listing.)

BROADCASTERS CLINIC 2011 REGISTRATION FORM

October 11-13, 2011

I will attend: (Please check) ☐ Tuesday ☐ Wednesday ☐ Thursday

Fees: \$130 (Any two days) \$150 (All three days)

PLEASE FILL OUT COMPLETELY

Name: _____

Company: _____

Business Address: _____

Phone: _____ Email: _____

Amount enclosed: \$ _____

Mail this form and your check by September 23, 2011 made payable to Broadcasters Clinic:

To pay by credit card please complete the following:

Name on Card: _____	Daytime Phone: _____
Billing Address: _____	
Credit Card Number: _____	Type of Card: <input type="checkbox"/> VISA <input type="checkbox"/> MasterCard
Expires: _____	CSC#: _____
Signature Required: _____	

Linda Baun
WBA
44 E. Mifflin Street, Suite 900
Madison, WI 53703

To Register By:
Phone: 1-800-236-1922
Fax: 1-608-256-3986
Online: www.wi-broadcasters.org

GENERAL INFORMATION

DATES

Tuesday through Thursday, October 11-13, 2011

LOCATION & ACCOMMODATIONS:

All sessions of the Broadcasters Clinic 2011 are held at the Madison Marriott West, located at 1313 John Q. Hammons Drive, Middleton. Please make your own room reservations with the Marriott West. The hotel telephone number is 1-608-831-2000. We suggest that you make your reservations before Tuesday, September 13, 2011, while discounted rooms are being held for the clinic. The discount rate is \$114. Please specify that you are attending the 2011 Broadcasters Clinic.

with hot hors d'oeuvres (cash bar). Vegetarian meals can be requested by calling the WBA office at 1-800-236-1922, by **September 23, 2011**.

The WBA will need to guarantee meal counts with the hotel, therefore the WBA will NOT refund any cancellations made after **Friday, September 23, 2011**. The WBA will also invoice for all "no-shows."

INFORMATION

For further conference or exhibitor information, contact: Linda Baun 1-800-236-1922, lbaun@wi-broadcasters.org

FEE

\$130 - Any two days \$150 - All three days

Fee covers program materials, continental breakfasts and luncheons as indicated, refreshment breaks, and an evening reception

REGISTRATION

To register by phone, please call: 1-800-236-1922
Fax to: 1-608-256-3986
Register Online at: www.wi-broadcasters.org