July 2016

Society of Broadcast Engineers
Chapter 24
Newsletter
Madison, Wisconsin

Next Meeting

Tuesday, July 19

WVMO LPFM Studio Tour

Lindsay Wood Davis, one of the principles behind WVMO, will start the tour with an introductory presentation called "Purpose, Process and Payoff" and introduce the WVMO team. John Bauer, Mike Norton and Paul Meyer will then give us a tour of the station. Following the tour, we'll gather in the Monona Conference room to learn how WVMO operates, the history and challenges of LPFM in general and of WVMO in particular, with attention to potential technical changes for the service, current FCC attitudes and the NAB's position. Will Nimmow, Monona's Director of Community Media will give a brief overview of the Madison area LPFM scene. To wrap up, Fred Sperry will discuss what operating a volunteer radio station is really like!

See map on page 6

Dutch Treat Dinner at 5:30pm
Red Robin Gourmet Burgers
Pier 37 Shopping Center
6522 Monona Drive
Monona, WI

Meeting and Program at 7:00PM
WMVO Monona Public Radio
5211 Schlulter Road
Monona, WI

Visitors & guests are welcome at all Chapter 24 events!

Part One Concludes

>>> by Tom Smith

On June 29, the FCC concluded the first part of the Incentive Auction (https://auctiondata.fcc.gov/public/projects/1000) which was the Reverse Auction in which the FCC made offers to broadcasters to give up the spectrum that they operate on. The auction went for 52 rounds in which the FCC offered a reduced amount in each successive round for the broadcaster to give up their spectrum until the amount of stations remaining matched the number of stations the FCC requires to clear the spectrum that will be needed to meet the target to be freed up for wireless broadband use.

The Auction started on May 30 with one round of bidding by the FCC the first two days. The FCC then went to two rounds a day until June 13 when the auction went to three rounds per day. On June 29, the FCC announced that the reverse auction concluded as the last bid offer was for $0.00. The final total offer for the FCC to payout for all of the remaining participating broadcasters to give their spectrum, share a channel or move to the VHF band is $86,422,558,704. Add the $1.75 billion that is to be set aside to repack the remaining TV stations in the reduced TV bands and the cost of conducting the auction and the amount that the wireless broadband provides would have to bid to obtain the newly released spectrum would be over $88.5 billion.

The question now is will the wireless industry be willing to pay that much for the spectrum. For the remaining 100 MHz of spectrum after the guard bands are subtracted for the 126 MHz of spectrum that the FCC is seeking, the cost to the wireless companies would be over $2.75 per MHz Per Pop (person). The total of $88.5 billion would be double the final total of $41,329.673,000 for the auction of the AWS-3 band (1695-1710 MHz, 1755-1780 MHz, 2155-2180 MHz) which is the current highest grossing auction and almost 4.5 times at the $18,957.502,000 amount raised in the 700 MHz auction (14 channels out of TV channels 52-69).

The first indication will be when the FCC announces the bidders that made their down payments on July 1 to participate in the forward auction. If there is high participation, then maybe the FCC will meet its goal, if not, the process will have to start all over again with a new target of freeing 114 MHz of spectrum.

FCC Opens Inquiry into RF Noise

>>> by Tom Smith

On June 15, the Office of Engineering and Technology announced an inquiry (http://transition.fcc.gov/Daily_Releases/Daily_Business/2016/db0615/DA-16-676A1.pdf) into radio frequency noise floor. They are asking for comments in order to determine if there is an increase in RF noise over the past 20 years and

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Coming Up

Wed.,	Aug. 24	Remembering the Hi-Fi Fad
Thur.,	Sept. 22	Bob Orban on Audio Processing
Wed.,	Oct. 12	Broadcasters Clinic

In this Issue

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Meeting Minutes

from the June 2016 Business Meeting

On Thursday, June 16, 2016, Chapter 24 of the Society of Broadcast Engineers held their annual family picnic at Badger Prairie Park in Verona. There were 8 members present, 6 who were certified, and 2 guests.

The weather was cloudy with a slight breeze as people began arriving in the late afternoon and the charcoal was lit. Discussion and socializing occurred as Kevin Ruppert of Trailing Edge Entertainment supplied a steady stream of music. With burgers and brats hot off the grill, everyone enjoyed cool beverages and the array of food.

There was no formal business meeting, however Steve Paugh mentioned the upcoming tour of WVMO-LP in July, followed by a presentation on Remembering The Hi-Fi Fad in August. Kevin Ruppert thanked Steve Paugh for another great job of organizing the picnic and for handling grilling duties. The group continued with relaxed discussion into the early evening.

Submitted by Mike Norton, Secretary

August 2016 Chapter 24 Newsletter Deadline:
Wednesday, August 3, midnight
pgstoffel@gmail.com
edited using Adobe InDesign CC

Thanks to Leonard Charles for maintaining the Chapter 24 web site and to Steve Paugh for mailing the meeting reminder postcards.

Amateur Radio News

compiled by Tom Weeden, WJ9H

● The FCC transitioned to a new Electronic Comment Filing System (ECFS) with a "hard launch" on Monday, June 20. The FCC said its legacy system no longer is available, but all documents and files remain accessible in the new system, and saved links (bookmarks or favorites) to documents and proceedings should not need to be adjusted. The modernization project is expected to significantly improve the resiliency and performance of ECFS, the FCC said.

"This system contains the entire history of docketed proceedings from 1992 to the present," the FCC said. "New submissions will be added to the public record. We will continue to refine this system in response to user feedback."

The ECFS has become the most popular way to gather public comments on Amateur Radio-related proceedings. The FCC said the public can use the ECFS to retrieve any document in the system, including selected pre-1992 documents that have been scanned into the system. The system also lets users browse popular proceedings.

It's also possible to submit a filing via the ECFS, using Word, PDF, or Excel files, and the system lets filers check the status of their submissions and to see if a filing now is available online. <https://www.fcc.gov/ecfs/>

● In a knowledge database paper released on June 17, the FCC's Office of Engineering and Technology (OET) has clarified that all RF LED lighting devices falling under Part 15 rules as "unintentional radiators" must meet conducted and radiated emissions limits set forth in those rules. "Manufacturers and users should therefore note that lighting devices are required to cease operation, if harmful interference occurs."

The OET said radiated emissions measurements must be performed at least from 30 MHz to 1000 MHz to adequately demonstrate compliance with Part 15 (15.109). Its guidance, the OET continued, applies to RF LED lighting devices that, in the past, have been considered to operate on frequencies below 1.705 MHz. Previously, devices operating between 9 kHz and 1705 kHz had to be tested only for radiated emissions up to 30 MHz, where no specified radiated emissions limits exist, and were exempt from testing from 30 MHz to 1000 MHz. The OET said it recognizes that routine radiated emissions measurements are needed under Part 15, based on the highest frequency generated or used in the device.

"[W]e have found that emissions from RF LED lighting devices are non-periodic, broadband in nature, and are produced as a byproduct of the internal driver circuitry within the RF LED lighting device," the OET "knowledge data base" paper said. "These types of emissions have adequate energy and potential to generate radiated emissions well above 30 MHz."

Link to OET paper: <https://apps.fcc.gov/kdb/GetAttachment.html?id=K0pZdRE7biF3aqgO4XZ8cw%3D%3D&desc=640677%20D01%20RF%20LED%20LIGHTING%20v01&tracking_number=20518>

"Not only are the emissions limits higher for Part 15 LED bulbs — as opposed to Part 18 fluorescent and CFL bulbs — they seem to be winning out in terms of consumer popularity," according to the American Radio Relay League (ARRL) Lab's Electromagnetic Compatibility Engineer Mike Gruber, W1MG. "Higher limits and more bulbs probably make for more complaints." Gruber said the Lab has seen LED lighting devices causing problems in the 2 meter band (144-148 MHz). "Since conducted emissions limits do not apply above 30 MHz, radiated emissions limits can be the first line of defense against radio-frequency interference at these higher frequencies."

(Excerpts from the American Radio Relay League's <arrl.org> web site)

RF Noise >>> continued from page 1

what steps should be taken to make such a determination. The FCC is asking for comment on four groups of questions. Each group has several questions that could further define the issues surrounding RF noise. The four groups of questions from the FCC release are as follows:

1. Is there a noise problem?

a. If so, what are the expected major sources of noise that are of concern?
b. What services are being most impacted by a rising spectrum noise floor?
c. If incidental radiators are a concern, what sorts of government, industry, and civil society efforts might be appropriate to ameliorate the noise they produce?

2. Where does the problem exist?

a. Spectrally
    i. What frequency bands are of the most interest?
b. Spatially
    i. Indoors vs. outdoors?
    ii. Cities vs. rural settings?
    iii. How close in proximity to incidental radiators or other noise sources?
    iv. How can natural propagation effects be accounted for in a noise study?
c. Temporally
    i. Night versus day?
    ii. Seasonally?

3. Is there quantitative evidence of the overall increase in the total integrated noise floor across various segments of the radio frequency spectrum?

a. At what levels does the noise floor cause harmful interference to particular radio services?
b. What RF environment data from the past 20 years is available, showing the contribution of the major sources of noise?
c. Please provide references to scholarly articles or other sources of spectrum noise measurements.

4. How should a noise study be performed?

a. What should be the focus of the noise study?
b. How should it be funded?
c. What methods should be used?
d. How should noise be measured?
    i. What is the optimal instrumentation that should be used?
    ii. What measurement parameters should be used for that instrumentation?
    iii. At what spatial and temporal scales should noise be measured?
    iv. Should the monitoring instrumentation be capable of determining the directions of the noise sources? If so, how would those data be used?
    v. Is there an optimal height above ground for measurements?
e. What measurement accuracy is needed?
    i. What are the statistical requirements for sufficient data? Would these requirements vary based on spectral, spatial and temporal factors?
    ii. Can measurements from uncalibrated, or minimally calibrated, devices be combined?
    iii. Is it possible to "crowd source" a noise study?
f. Would receiver noise measurements commonly logged by certain users (e.g. radio astronomers, cellular, and broadcast auxiliary licensees) be available and useful for noise floor studies?
g. How much data must be collected to reach a conclusion?
h. How can noise be distinguished from signals?
    i. Can noise be characterized and its source identified?
    ii. Is there a threshold level, below which measurements should be ignored?

For those who work in the various RF related businesses such as broadcasting, land mobile, common carrier microwave or the wireless broadband/cellular providers, all are well aware of issues concerning increased RF noise, but the Commission needs information that can be documented to write any rules that can set better standards and can be enforced against manufacturers of equipment the fails those standards as well as operators of equipment and systems including electric utilities that may sources of RF noise. Comments are due on August 11.

SBE Chapter 24 Certification News

2016 - 2017 Exam Schedule:

Exam Dates	Location	Application Deadline (to SBE National Office)
November 4-20, 2016	Local Chapters (Madison Area)	Sept. 30, 2016
February 3-13, 2017	Local Chapters (Madison Area)	December 31, 2016
April 25, 2017	NAB Show (Las Vegas)	March 17, 2017
June 2-12, 2017	Local Chapters (Madison Area)	April 21, 2017
August 4-14, 2017	Local Chapters (Madison Area)	June 5, 2017
November 3-13, 2017	Local Chapters (Madison Area)	September 25, 2017

When you are ready to take an SBE exam, please fill out the appropriate application and send it into the SBE National office (see address below). You will be notified once your application has been approved. Approximately 3 weeks before the exam time, your local certification chairman will receive a list of applicants in his/her area. He/she will then contact those applicants to schedule a date, time and place for the exams. The exams will be mailed back to the National office for grading. The pass/fail grades will then be mailed directly to the applicants.

You may mail, email or fax your applications to:

Megan E. Clappe, Certification Director
9102 N. Meridian St. Suite 150
Indianapolis, IN 46260
317-846-9120 Fax
mclappe@sbe.org

SBE CERTIFIED

CHAPTER 24 SUSTAINING MEMBERS

Thanks to all our Sustaining Members:

Alpha Video
AVI Systems
Belden, Inc.
Clark Wire and Cable
Full Compass Systems
GEPCO International, Inc.
Heartland Video Systems
Joseph Electronics
Resonant Results, Ltd.
Ross Video
Sound Devices, LLC
Token Creek Productions
WISC-TV 3
WMTV-TV 15
WKOW-TV 27
WMSN-TV 47

July Meeting Map

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