



## Broadcast Ownership Rules Loosened

*By Tom Smith*

As expected, the FCC voted on June 2nd to allow a number of rule changes in the broadcast ownership rules. The vote was three to two and followed political party lines. The three republicans, FCC Chairman Michael Powell and Commissioners Kathleen Abernathy and Kevin Martin voted for the new rules while democrats Michael Copps and Jonathan Adelstein voted against the new rules. In May, Copps and Adelstein had asked Chairman Powell to delay the vote on the ownership rules, which the Chairman refused to do. A number of members of the House and Senate also requested a delay.

All of the Commissioners released comments on the action with Chairman Powell's comments in favor taking a page and a half, Abernathy taking four pages and Martin's taking three pages. Both Copps and Adelstein's objections were much longer than normal. The normal length of either a Commissioner's comments for or against an action is seldom longer than four or five pages, with a few going to six or seven pages. Commissioners Adelstein and Copps' dissents were both 23 pages long and Commissioner Copps issued a six page bench remark along with a separate press statement.

The rule changes will allow for common ownership of newspapers, TV stations and radio stations and ownership of two TV stations in a market, with the ownership of three TV stations in some markets. The new rules are as follows for the number of stations one can own in a market.

- In markets with five or more TV stations, a company can own one of the four top rated stations along with a second lower rated station.
- In markets with 18 or more TV stations, one company could own up to three stations with only one being a top four rated station.

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## Next Meeting:

**Tuesday,  
June 17, 2003**

**Annual Chapter 24  
Picnic**

**5:00pm - 9:00pm**

**Badger Prairie Park,  
Shelter #1,  
Verona  
(see map inside)**

**There will be a brief  
business meeting at  
about 7:00pm.**

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## SBE 2003 Picnic "Sure To Please!"

*By Kevin Ruppert*

Everyone thought that we hyped it quite a bit last year. Here we are again, getting ready to hype it again in 2003! The only real way to find out if it is all hype is to come and see for yourself!

Trailing Edge Entertainment will provide a unique and intensely entertaining aural experience that has only been presented once before. (That was at the 2002 SBE picnic.)

We are planning to once again present old radio jingles, air checks,

and trivia. There also will be *Name That Voice* and song capsule contests for you to try. You might even win one of the real prizes we have set aside (or have to settle for one of the "not so real" prizes!)

The Chapter will supply burgers and brats for the grill, as well as condiments and buns. The park-provided charcoal grill will be started at 5:30pm. Paper plates, napkins, plastic ware, and cups will also be provided. Please bring a dish to pass, your own drinks (alcohol is allowed), and an entree if you prefer something other than brats or burgers.

There is a nice play ground setup for younger children. There is even a rumor that the horseshoe tournament may return this year. Join us for superb music and an historic look at radio and television!

Because of another commitment in July, this year's Chapter 24 picnic will be held on June 17 in Badger Prairie park. A map showing roads and other commonly used landmarks can be found on the program flyer inside, for you to use in finding your way to the fun fest that we are planning to present to all of you!

## CHAPTER 24 OFFICERS

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## May Business Meeting Minutes

Chapter 24 of the Society of Broadcast Engineers met on Thursday, May 22, 2003 at the Wisconsin Public Broadcasting Center in Madison, Wisconsin for the chapter's monthly meeting. There were 15 members in attendance, 10 of whom were certified and 4 guests.

The meeting was called to order at 7:00 PM by Chapter Chair Vicki Kipp. Minutes of the previous meeting were approved as published in the May issue of the newsletter.

Newsletter editor Mike Norton announced the deadline for articles for the June issue will be midnight, Friday, May 30<sup>th</sup>. The folding party will be held Wednesday, June 4<sup>th</sup> at 5:30 PM at WKOW-TV. Treasurer Stan Sarch reported a positive balance in the chapter bank account.

Program Committee Chair Steve Paugh reported that the next meeting will be the Chapter's annual picnic at Badger Prairie State Park on June 17<sup>th</sup>. Kevin Ruppert and Kevin Peckham will be providing the entertainment. The July meeting will be held on July 15<sup>th</sup> at the studios of WISC and will be A Taste of NAB presented by Larry Bloomfield.

There were no membership or sustaining membership reports. Special Events Chair Lonnie Cooks had nothing to report.

Certification Chair Jim Hermanson had submitted his report that the next local exam dates are June 6-16 but the application deadline has passed. The next local exam dates are August 15-25 with an application deadline of June 13 and November 7-17 with a deadline of September 26. The Certification Handbook for Radio Operators is available from the national office for \$42 plus shipping and includes the exam fee.

Frequency Coordinator Tom Smith submitted his report that Midwest Family has requested 950MHz information to apply for a STL from their studios to Sun Prairie for the DeForest FM construction permit they hold. He also reminds stations to check the FCC Universal License System to see if your licenses are in order. All remote pick-up licenses need to have the coordinates for the receiver sites. The FCC needs applications to correct the information before October 2003. New ownership rules will be announced on June 2<sup>nd</sup> unless Congress steps in and stops the FCC from acting.

National Liaison Leonard Charles reported that the deadline for nominations for the SBE National Awards is May 31<sup>st</sup>. Winners will be announced this summer and will be presented their awards during the SBE National Meeting on October 15<sup>th</sup> here in Madison. The candidates for SBE National Offices for 2003-2004 have been announced. They are:

President	Raymond C Benedict, CPBE, Washington DC
Vice President	Samuel E. Garfield, CPBE, Raleigh, NC
Secretary	Ralph Hogan, CPBE, Pullman, WA
Treasurer	Robert "RJ" Russell, CBTE, Yuma, AZ

(continued on next page)

## May Business Meeting Minutes (continued)

The Nominations Committee has developed a slate of 13 candidates for the six available board seats.

They are: Ralph Beaver, CBT, Tampa, FL; Paul T. Black, CSRE, Pleasant Hill, CA; Dominic L. Bordonaro, CSRE, Stratford, CT; Peter Boyce, CPBE/CBNT, New Albany, IN; Andrea B. Cummis, CBT, Roseland, NJ; Dane E. Ericksen, PE/CSRTE, San Francisco, CA; Clay Freinwald, CPBE, Seattle, WA; Randy Dale Gehman, CPBE/CBNT, Akron, PA; Jeffrey R. Hugabone, CBRE/CBNT, Chicopee, MA; David Hultsman, CSRE, Birmingham, AL; Mark S. Oikowski, CPBE, New York, NY; Henry B. Ruhwiedel, CPBE, Merrillville, IN; and Andrew D. Suk, CPBE, Nampa, ID.

The WBA Summer Workshop is June 18<sup>th</sup> at House on The Rock Resort in Spring Green, Wisconsin.

Leonard also reported on the Program Committee of the Broadcast Clinic (October 14-16) and that there will be a Digital Production Clinic featuring Sonic Foundry and Avid products in addition to the RF Maintenance Clinic. The Program Committee is working to make the clinic more timely and more affordable. In addition, there will be an early bird registration discount. A tentative schedule and fee information should be on the chapter website the week of May 26<sup>th</sup>.

In new business, Chapter Chair Vicki Kipp announced that she would try to keep the business portion of the meeting under 30 minutes.

For Professional Announcements, Member Herb Jordan introduced a fellow amateur radio enthusiast, Doug

## AMATEUR RADIO NEWS

By Tom Weeden, WJ9H

- In a compromise with government users, the FCC will soon give amateurs secondary access to five discrete 2.8-kHz-wide channels in the vicinity of 5 MHz instead of the 150-kHz band requested by the American Radio Relay League (ARRL). The channelized scheme puts unfamiliar technical compliance demands on US hams who have, until now, not had to worry much about frequency stability or transmitted audio bandwidth. The FCC has granted amateurs 5332, 5348, 5368, 5373, and 5405 kHz. Additionally, the FCC has restricted operation to upper sideband only, with a maximum effective radiated power (ERP) of 50 W. Just when amateurs will get their first crack at 60 meters is not yet clear. The changes to Part 97 go into effect 30 days after publication of the Report and Order (R&O) in The Federal Register, which has not yet happened.

- The FCC has proposed making another 255 MHz of 5-GHz spectrum available for unlicensed use at 5.470 to 5.725 GHz. Amateur radio has a secondary allocation at 5.650 to 5.925 GHz, which it shares with government and nongovernment radars and—in part of the band—nongovernment fixed satellite uplinks. In a Notice of Proposed Rulemaking (NPRM) in ET Docket 03-122—approved May 15 but not yet released—the FCC suggested that the additional spectrum be made available for use by unlicensed National Information Infrastructure (U-NII) devices, including Radio Local Area Networks (RLANs), operating under Part 15 of the FCC's rules. The FCC's action comes in response to a petition for rule making from the Wi-Fi Alliance—an industry coalition formerly known as the Wireless Ethernet Compatibility Alliance (WECA). If the FCC goes through with the proposal—and it appears likely that it will—amateur radio will be left with a 25-MHz segment at 5 GHz—5.825 to 5.850 GHz—that's not already earmarked for unlicensed services.

*(Excerpts from the American Radio Relay League's "The ARRL Letter" and the [www.arrl.org](http://www.arrl.org) web site)*

Ward, who had worked for the Voice of America and NASA before retiring here in Madison.

The meeting adjourned at 7:11 PM.

The program this month was a technical presentation by Greg Morton and Hal Spooner of e2v Technologies on IOTs. Pizza and soda before the meeting had been graciously provided by e2v Technologies.

Submitted by Jim Magee, Secretary

Thanks to Steve Paugh and Fred Sperry for arranging the E2V presentation for the May meeting.

Thanks to WKOW-TV for providing copying and folding facilities for the Chapter 24 newsletter!

Thanks to WISC-TV for maintaining the web server for the Chapter 24 Web page!

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## Broadcast Ownership Rules Loosened (continued from page 1)

In determining the station count, both commercial and non-commercial stations will be counted. The FCC also adopted a waiver process to allow two top rated stations to merge in markets with 11 or few stations.

The FCC also modified the national TV ownership limits. The changes are as follows. The FCC raised the limit on the number of homes one company's stations can reach, from 35% of the nation's homes to 45% of the nation's homes. The FCC also retained the 50% UHF discount rule. That rule states that a UHF station is only able to reach half of the homes in a market, so if the local VHF station is credited for reaching one million homes, the UHF is credited for reaching a half a million homes.

The FCC modified the rules concerning the number of radio stations that could be owned in one market by changing the way ownership limits are figured. The FCC will change from using signal contour overlap, which led to a number of stations taking advantage of loopholes in the rule. The new rule will limit the number of stations for one owner to be based on the number of stations in a geographic market area as defined by the Arbitron rating service.

- In a market with 45 or more stations, one could own up to 8 stations with no more than 5 of one type, AM or FM.
- In a market with 30-44 stations, one could own up to 7 stations with up to 4 stations of one type.
- In a market with 15-29 stations, one could own 6 stations with 4 of one type.

In markets with less than 14 stations

one may own 5 stations with 3 of one type.

The FCC will create a modified contour method for non-Arbitron markets until it holds a inquiry to create new rules for those markets. These were the only action in the notice that increased ownership restrictions.

The final rule changes will allow for common ownership of TV and radio stations and newspapers in the same market.

- In markets with fewer than 3 TV stations, no common ownership of a newspaper and either a TV or radio station will be allowed.
- In markets with 4-8 TV stations, one could own a newspaper, a TV station and up to on half of the number of radio stations allowed in that market.
- Or, they may own a newspaper and the full limit of radio stations and no TV.
- Or, one could own two TV stations and the full limit of radio stations and no newspaper.

In markets with more than 8 TV stations, the FCC is using a "Diversity Index" to determine the ownership limit in those markets. This "Index" uses a mathematical formula based on audience share to determine whether one could own a newspaper and broadcast facilities, and how many one could own.

The new rules are controversial and we will hear much about then in the weeks to come. The FCC received hundreds of thousands of comments on the proposed rules, mostly against the proposals. Congress held hearings in May on the proposed rules,

and the five Commissioners were to meet with the Senate on June 4th. In the May hearing, members of both parties stated their opposition to the prospect of more consolidation.

The FCC meeting and vote was covered live on C-Span, and shortly after the FCC meeting and vote Senators Trent Lott (R), Ernest Hollings (D), and Byron Dorgan (D) appeared on C-Span and made statements condemning the new rules.

The FCC also released a notice freezing all new form 314 and 315 applications for ownership changes until new forms are adopted to reflect the rule changes. Pending applications using those forms may amend their applications to demonstrate compliance with the new rules. The full report has not been published, but a ten-page press release has been issued describing the new rules.

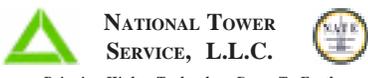
From FCC Releases ([www.fcc.gov](http://www.fcc.gov))

### 2003 Broadcast Clinic Early Bird Notice

By Leonard Charles

The 2003 Broadcast Clinic will take on a new format this year, including a lower fee structure and a conjunctive digital video production workshop. The National SBE Meetings will also be held at the Clinic this year.

Please check out the early bird program schedule at [www.sbe24.org](http://www.sbe24.org), click on 2003 Broadcast Clinic, then mark your calendar to take advantage of the early bird registration discount.



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## HD Radio™ Inevitable

By Vicki W. Kipp

The proprietary standard initially known as In-Band On Channel (IBOC) has been re-titled "HD Radio" by iBiquity. Whether you refer to it as IBOC or HD Radio, there is no question that this standard will catch on.

Created in 2000 when USA Digital Radio and Lucent Digital Radio merged, the privately held iBiquity Digital Corporation holds exclusive licensing rights to HD Radio digital AM/FM broadcast technology. The introduction of HD Radio marks the first time that broadcasters have to pay a fee to use a modulation scheme. Based in Columbia, Md., iBiquity Digital Corporation developed a digital AM/FM radio technology that fits within an existing analog AM or FM channel can be broadcast simultaneously with the analog signal.

### MOTIVATION

As the last remaining major analog technology, terrestrial broadcast radio is due to undergo a digital conversion. Improvements to signal quality and wireless data transmission are among the impetus for radio's transition to digital. HD Radio enables AM and FM to broadcast digital quality audio, within the spectrum that they are already using for analog radio broadcast, concurrently with their analog program. Tangible improvement has been promised: AM will sound like FM, and FM will sound like a CD. Digital radios can overcome signal multipath interference. According to iBiquity, HD Radio will spare the listener from signal fades, static, hiss, and pops. The HD Radio receiver should be able to dynamically change between digital or analog reception on signal fringe areas to pull in the best signal.

In addition to improved audio quality, HD Radio includes wireless data services. Traffic updates, station program schedules, weather, breaking news, sports highlights, financial market updates, mobile commerce, and artist and song information will be available upon request.

### FCC APPROVED

In October of 2002, iBiquity's HD Radio was approved by the FCC as the AM/FM IBOC digital broadcast technology. On March 20, 2003, the FCC gave iBiquity a further boost by relieving stations of the obligation to acquire a Special Temporary Authority from the FCC to broadcast HD Radio. In lieu of getting an STA, stations only needed to notify the FCC within 10 days of commencing digital operations.

### THEY'VE GOT BACKING

With an ever-growing group of investors, manufacturers, vendors, content providers, and broadcast partners creating iBiquity-licensed products and services, the alliance of people who want HD Radio to succeed keeps gaining momentum. Thus far, iBiquity has licensed 7 component manufacturers and 12 receiver manufacturers. More than 130 radio stations in over 40 markets in 25 states have purchased a license to broadcast HD Radio from iBiquity.

iBiquity received funding from investors such as J.P. Morgan Partners, Pequot Capital, and New Venture Partners.

Application developers and service providers have signed on with iBiquity in a commitment to create content. HD Radio listeners will be offered content such as traffic information from TeleAtlas and dMarc, weather from

Accuweather, news from the Associated Press (AP), sports data from Bluestreak Media, enhanced advertisements and distribution from dMarc Networks, material from Hollywood.com, material from MovieTickets.com, reading for people who are blind by Sun Sounds of Arizona and International Association of Audio Information Services (IAAIS), and the programs "All Things Considered" and "Car Talk" from National Public Radio (NPR).

HD Radio has its own custom XML-based markup language. HD BML™ (Broadcast Multimedia Language) is part of the Synchronized Multimedia Integrated Language standard for web-based delivery of multimedia content. HD BML™ can be used to create real-time or on-demand interactive audio programming with wireless data. HD Radio content is produced on a D.A.V.I.D. studio automation system with iBiquity's HD BML authoring system. D.A.V.I.D. studio automation can create enhanced metadata tagging without human intervention. This tagging enables smooth integration of programming-specific audio and content.

Software from Command Audio allows iBiquity listeners to store digital radio signals on their stereo's hard drive, similar to using a Personal Video Recorder (PVR) for television.

Media giants such as ABC, Beasley, Bonneville, Citadel, Clear Channel, Cox Radio, Cumulus, Emmis, Entercom, Hispanic Broadcasting, Radio One, Regent, Saga, Susquehanna, and Viacom are amongst iBiquity's broadcast partners.

Harris Corporation, BE Corporation, and Nautel Corporation have signed

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District Sales Manager—Radio

## Coming Soon, the 2003 WBA-SBE Summer Engineering Workshop

By Leonard Charles

The WBA-SBE Summer Engineering Workshop is drawing near. The event will be held Wednesday, June 18<sup>th</sup> at the House On The Rock Resort in Spring Green. This year's program will consist of an all-day tutorial presented by Terry Baun. This program is designed to present the fundamentals of RF systems design and maintenance to broadcast engineers and operators who may not normally deal with those issues on an everyday basis.

Studio and operations personnel who may be controlling transmission plants as part of their assigned duties need to have an understanding of the RF system to permit them to ascertain proper system performance, control operation within legal limits, understand environmental effects, and possibly perform first level maintenance utilizing proper safety procedures. This seminar is designed to provide that level of information.

In addition, RF propagation issues

for AM, VHF, and UHF will be discussed, as will basic tower construction and associated Federal requirements for tower marking, painting, and protection of the public from RF radiation. Also to be treated will be the upcoming ATSC DTV and IBOC conversions and their impact upon RF systems.

The seminar is designed for those who are currently employed in broadcast operations/engineering, but who are not necessarily RF engineers. Consequently, a basic understanding of broadcast technology is assumed.

Handouts will be provided as will a Certificate of Completion for those who complete the seminar.

Check out the day's schedule at [www.sbe24.org](http://www.sbe24.org) by clicking on Summer Engineering Workshop. The cost of registration remains at a low \$25 for the day. Check it out then call the WBA to register and reserve your seat. Call 608-255-2600, or 800-236-1922, or go to <http://www.wi-broadcasters.org>.

## HD Radio (continued from page 5)

license agreements with iBiquity. Andrew Corporation, Armstrong, Continental Electronics, D.A.V.I.D. Systems, Dielectric, ENCO, Energy-Onix, Jampro RF Systems, LPB, Moseley Associates, MYAT, Orban, QEI, RCS, Shively Labs, and Telos/Omnia have strategic alliances with iBiquity.

Ford Motor Company's affiliated component supplier Visteon Corporation and General Motor's affiliated component supplier Delphi Corporation will make components for HD Radio automotive receivers. ALPS, TOKO, TBK, Kiryung Electronics Microtune, Personal Telecom, and Ty Telestar will also manufacture electronic parts for HD Radio receivers.

HD Radio receivers will be sold by Alpine, Clarion, Fujitsu Ten (manufacturer of ECLIPSE brand), Harman Kardon, JVC, Kenwood USA, Matsushita Electric Industrial Co. (manufacturer of Panasonic brand), Orient Power, Sanyo, and Yamaha. Due to the extra processing chips required, HD Radio receivers will cost about \$100 more than a similar analog radio. For the foreseeable future, vehicles will contain a mix of either or both analog and HD Radio stereos. During the transition, car stereo technicians will have the challenge of supporting both systems.

Since analog stereos will continue to be functional as long as broadcasters transmit analog radio signals, consumers are likely to replace stereos over time. Some predict that the HD Radio conversion will take 10- to 15- years. While the transition may proceed in a gradual manner, I think that the outcome is certain.

Information for this article came from: FCC Public Notice: DA 03-831, March 20 2003, OMB Control No. 3060-1034; "Tower of Power" by Lindsay Chappell, *Crain Automotive News* Oct. 21, 2002; [www.iBiquity.com](http://www.iBiquity.com); "Soundbytes" by Justin Hibbard, Issue 120, Dec. 2002 *Redherring*.

## SBE Short Circuits – June 2003

By John L. Poray, CAE  
SBE Executive Director

### SBE SIGNAL NOW BI-MONTHLY

Beginning with the June issue, the SBE Signal will now be published every other month. It has been a quarterly publication for many years. The expanded SBE Signal will offer more information and news on more topics of interest to members.

### RENEW MEMBERSHIP TODAY!

Members who have not yet renewed their membership can still do so and not miss out on valuable member benefits like The SBE Signal, discounts on publications and certification, access to SBE JobsOnline, Resume Service or life, health or business insurance. If you need a new form, call or e-mail Angel Bates at the SBE National Office at (317) 846-9000 or [abates@sbe.org](mailto:abates@sbe.org).

### NORTHERN NEW ENGLAND HOSTS CONVENTION

The Northern New England Broadcasters' Show will be held June 19 at the Center of New Hampshire in Manchester. For more information, contact Betty Teffner at (802) 253-4766 or Bob Ross at (603) 332-8931.

### CERTIFICATION EXAM SESSION DATES ANNOUNCED FOR 2003

The SBE National Certification Committee has announced exam session dates for the remainder of 2003. Check the list at [www.sbe.org](http://www.sbe.org) for the exam period that is best for you. For more information about SBE Certification, see your Chapter Certification Chair or contact Linda Baun, Certification Director at the SBE National Office at (317) 846-9000 or [lbaun@sbe.org](mailto:lbaun@sbe.org).



## FCC Rulemakings

Compiled by Tom Smith

### FINAL RULEMAKINGS

#### **WT Docket No. 00-230 Promoting Efficient Use of Spectrum Through Elimination of Barriers to Development of Secondary Market**

The FCC has adopted rules that would allow for the leasing of spectrum. In this action, the FCC is allowing licensees in the Cellular, Personal Communication Services (PCS), Specialized Mobile Radio (SMR), Local Multipoint Distribution (LMDS), fixed microwave, 24 GHz and 39 GHz bands—and other fixed and mobile services with exclusive rights to their assigned spectrum—to enter into leasing arrangements for their spectrum to other users. Broadcast spectrum is not covered in the ruling.

The FCC will require application to the Commission to enter into a lease agreement, but the process will be streamlined in relation to the standard ownership transfer (not longer than 21 days). The lessee will be responsible for violations of the FCC rules. The original licensee will only be held accountable if they have knowledge of the violation. If the lessee is for a short term of under 360 days, the processing time of the application will be 10 days under the FCC's rules for Special Temporary Authority (STA). The lessee will still be responsible for compliance to the rules, except for rules pertaining to certain use restrictions, designated entity/entrepreneur policies, and policies concerning spectrum aggregation will not be applied to the lessee. The FCC can investigate and nullify a leasing arrangement if it violates public interest concerns.

The FCC is also issuing a Further Notice of Rulemaking on the development of a mechanism to create a marketplace for available Spectrum. The Commission also seeks comment on expansion of leasing to other services and other issues relating to transfer of control.

This Notice was adopted and released on May 15, 2003

### PROPOSED RULEMAKING

#### **ET Docket No.03-65; FCC 03-54 Interference Immunity Performance Specifications For Radio Receivers**

The FCC has published their Notice of Inquiry concerning the creation of receiver performance specifications into its spectrum policy. The Commission believes that by setting standards for receivers, the spectrum could be used more efficiently. Much of the allocation policies are determined by interference to the receiver due to poor selectivity, sensitivity, and rejection of spurious signals, and not by the limitations caused by the noise in the atmosphere. This notice was discussed in the April newsletter.

Comments are due on July 21, 2003 and replies are due August 18, 2003. The notice was published in the FEDERAL REGISTER on May 5th on pages 23,677-23,686.

#### **ET Docket No. 03-122 Revision of Parts 2 and 15 of the Commission's Rules to Permit Unlicensed National Information Infrastructure (U-NII) Devices in the 5 GHz Band**

The FCC is proposing to add an additional 255 MHz of spectrum for use

by Part 15 devices. This band goes from 5.470 GHz to 5.725 GHz and is adjacent to 5.725-5.850 GHz band. This band would be used by computer network devices such as Wi-Fi computer networks and Radio Local Area Networks. This new band will better match those in other countries and allow for more products that can be used in both the United States and other nations.

This notice of proposed rule making was adopted and announced on May 15, 2003.

#### **ET Docket No. 03-126 Unlicensed and Unshackled: A Joint OSP-OET White Paper on Unlicensed Devices and Their Regulatory Issues**

The FCC, through the Office of Strategic Planning and the Office of Engineering Technology, have published a white paper on unlicensed devices: what they are, rules concerning such devices, the market for them, and regulatory issues including interference caused by such devices. There is a history of the regulation of unlicensed devices, description of the various frequency bands covered under Part 15 of the rules, and facts and figures on the size of the market for unlicensed devices.

This white paper is 61 pages long and gives the reader some idea of future rules concerning Part 15 unlicensed devices. The FCC is seeking comment on the paper with the comments due on August 21, 2003. There is no reply date.

From FCC Releases ([www.fcc.gov](http://www.fcc.gov)) and the FEDERAL REGISTER ([www.access.gpo.gov](http://www.access.gpo.gov))



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## TRANSMITTER CROWBAR EXPLAINED

By Vicki W. Kipp

### Define Crowbar

Although I was familiar with a crowbar as a device for prying, I wasn't as familiar with the transmitter crowbar. Inquiries about the crowbar yielded various definitions- all correct, but not all relevant to the transmitter. The brooding band Crowbar, a sludge metal band from the 1990s, played the club circuit and not the transmitter circuit. Likewise, the Canadian blues-rock band Crowbar was well known in the 1970s, but of no use in a transmitter. The practical crowbar tool, a flat metal lever with a chiseled end, is helpful for prying but should not be used with a transmitter.

As it relates to a transmitter, the crowbar is named for the concept of a grounded metal bar touching all the transmitter terminals when a high voltage surge occurs. Transmitters running at extremely high voltage need to be shut down immediately in the event of a component problem or voltage surge to prevent damage to the transmitter. Upon a surge, the crowbar swiftly diverts the voltage to ground and drains voltage from the transmitter's capacitor bank. The crowbar isn't really a metal bar at all. In the case of my employer's Comark IOT and Acrodyne Diacrode transmitters, the crowbar is a small gas-filled tube.

Two generations of shunt crowbars have been developed. The triggered spark gap is a first generation crowbar. This crowbar works well enough when it works. Unfortunately, the triggered spark gap crowbar is not infallible and ages each time it fires. The second-generation crowbar is the hydrogen thyatron. Operating ten times faster than a triggered spark gap crowbar, the thyatron has an active cathode and

reservoir that will gradually break down. The hydrogen thyatron is considered the more elaborate crowbar because it demands isolated high voltage power and has many components floating at high voltage levels.

### Not A Fuse

A crowbar is different than a fuse because a fuse creates an open circuit in the event of a voltage surge, while a crowbar creates a controlled short when a voltage surge occurs. The crowbar shorts high voltage to ground by discharging the capacitor bank when a voltage surge occurs.

The crowbar device is unique to Inductive Output Tube (IOT) transmitters. Klystron tube transmitters and solid-state transmitters don't use a crowbar. IOT transmitters require a crowbar because the tubes are very small and if gas builds up inside the tube, there is not enough room for the tube to diffuse the accumulation. If not for the crowbar, the amassing gas would seriously harm the IOT tube. The IOT would create a voltage surge that could melt transmitter components if not immediately shorted to ground.

### Crowbar Firing

When the crowbar shorts, there is a violent reaction. The crowbar is draining 32 kV (or more) of electricity to ground in less than 10 milliseconds. This rapid shunting of extremely high voltage strains the equipment. To test that their crowbar is working properly, engineers can run a 40-gage wire (the diameter of a human hair) from the transmitter power supply to ground. For correct operation, the crowbar must short the high voltage to ground before the 40-gage wire burns up.

When the crowbar shorts high-

voltage to ground, this is referred to as crowbar "firing." A typical crowbar should be able to tolerate being fired about 50 times before needing to be replaced. The crowbar is connected to a relay that tells the transmitter to attempt to restart after the crowbar finishes shorting the high voltage. If the transmitter does not restart successful before the crowbar has fired three times, then the transmitter tube will be shut down entirely. If the tube hasn't overcome the problem within three attempts, it is likely that there is a very serious problem that could damage the tube if it continues to operate while impaired.

### Days Numbered

As the energy-efficient Multi-Stage Depressed Collector (MSDC) transmitter tube catches on for use in digital transmission, the crowbar is being excluded from these new transmitters.

Crowbar firing is stressful for a transmitter. Additionally, a crowbar is a common source of problems in IOT transmitters. Excluding the crowbar will increase transmitter reliability—at least that's what MSDC transmitter vendors claim. Not having a crowbar spares the transmitter from extended periods of downtime when the crowbar fires and then attempts to restart the tube. Several vendors are using fast switching power supplies that create an open circuit in the high voltage power circuit in a matter of nanoseconds— versus the milliseconds a crowbar needs to react— when a problem occurs. The fast acting power supplies pass the 40-gage wire test, and make the crowbar unnecessary.

*Information for this article came from: Dave Schilz of WHA-TV; Thales Broadcast & Multimedia; ARRL Extra Class License Manual.*



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**LOCAL LEGALS**

Compiled by Tom Smith

**GRANTED**

**W23BW (LPTV) Channel 23  
Madison, WI**

Three Angels Broadcasting Network has been granted a modification for its construction permit by an amended application. The effective radiated power is to be 38.5 kW instead of the 70.5 kW as stated in the original application. Action announced on May 15, 2003.

**PROPOSED**

**WPDR(AM)/WDDC(FM)  
Portage, WI**

Kramer Broadcasting Inc. (Ed Kramer) wishes to transfer its WPDR/WDDC to Zoe Communications Inc. (Michael Oberg), for \$1.1 million. Zoe Communications owns WCSW (AM)/WGMO (FM) Shell Lake, WI and WRDN (AM)/WJRV (FM) Durand/Menomonie, WI. WPDR operates at 1350 kHz with 1 kW day and 41 watts at night. WDDC operates on 100.1 MHz with 3 KW at 374 ft. HAAT.

This application was announced May 7, 2003.

**WRDB(AM)/WNFN(FM)/  
WBDL(FM) Reedsburg, WI  
W290AL (FM translator)  
Baraboo, WI**

New Radio Group, LLC owned by Quass Communications, LLC seeks to transfer these and seven other AM and twelve other FM licenses located in Wisconsin and Illinois to Alta NGR Holdings, Inc. Quass Communications operated three of

the stations in Northern Wisconsin under the name Raven Broadcasting Corporation.

WRDB operates on 1400 kHz, WNFN operates on 104.9 MHz, WBDL operates on 102.9 MHz and W290AL operates on 105.9 MHz.

These applications were announced on May 8, 2003.

**WIBU (AM)/WNNO-FM Wisconsin  
Dells, WI; WBKY(FM) Portage, WI**

Magnum Communications (David Magnum) wishes to transfer its licenses to Mid-West Management, Inc. Magnum Communications also owns WTMB (AM)/WBOG(FM)/WXYM(FM) Tomah, WI which it is selling to Family Radio Inc. and WAUN(FM) Kewaunee, WI.

Mid-West Management Inc. owns W T D Y ( A M ) / W T U X ( A M ) / W M G N ( F M ) / W W Q M ( F M ) / W J J O ( F M ) Madison, WI and a construction permits for new FM stations in DeForest and Mount Horeb. They also own WLMV(AM) which carries Spanish Programming produced by an outside local group. Mid-West Management bought the construction permit for Mount Horeb from Magnum Communications in the Fall of 2002.

WIBU operates on 900 kHz, WNNO operates on 106.9 MHz, and WBKY operates on 95.9 MHz.

This application was announced on May 9, 2003.

*From FCC Releases (www.fcc.gov) with additional information from Broadcasting and Cable magazine and WI. Broadcasters Association 2002-2003 Directory*

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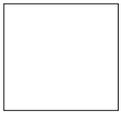
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**FIRST CLASS MAIL**

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# JUNE MEETING and PROGRAM

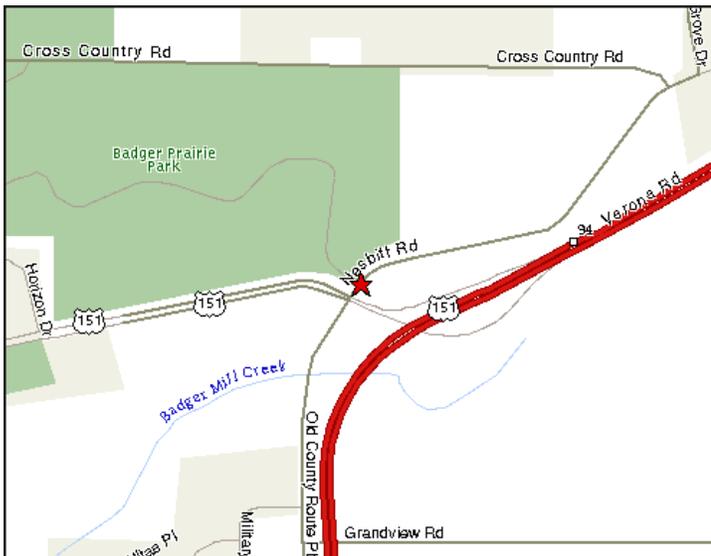


## Society of Broadcast Engineers CHAPTER 24 MADISON, WISCONSIN Tuesday, June 17, 2003

### Annual Chapter 24 Picnic

The Chapter will supply burgers and brats for the grill, as well as condiments and buns. The park-provided charcoal grill will be started at 5:30pm. Paper plates, napkins, plastic ware, and cups will also be provided. Please bring a dish to pass, your own drinks (alcohol is allowed), and an entree if you prefer something other than brats or burgers.

There is a nice play ground setup for younger children. Bring your own games or join in the entertainment. Again this year we will be treated to the Kevin and Kevin show.



Brush up on your TV, radio, and music trivia. There is even a rumor that the horseshoe tournament may return this year.

Come for the food and company, stay for the entertainment!

5:00pm - 9:00pm  
Badger Prairie Park, Shelter #1, Verona  
No Park Admission is required.  
There will be a brief business meeting at about 7pm.

Visitors and guests are welcome at all of our SBE meetings!

#### 2003 UPCOMING MEETING/PROGRAM DATES:

<u>Day</u>	<u>Date</u>	<u>Program</u>
Tuesday	July 15, 2003	Taste of NAB
Wednesday	August 13, 2003	Richardson Broadcast
Thursday	September 18, 2003	WMMM-WOLX Studio Tour

Program Committee:

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