

# W5YI

America's Oldest Ham Radio Newsletter

## REPORT

Up to the minute news from the world of amateur radio, personal computing and emerging electronics. While no guarantee is made, information is from sources we believe to be reliable.

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## FCC QSLs FIVE ALLEGED PIRATE FM RADIO STATIONS!

The pirate radio explosion keeps troubling the FCC. Commission Chairman William Kennard still supports the creation of some form of "microbroadcasting" in the United States, according to his recent statements.

But FCC enforcement agents continue to "DF" (locate by means of RF Direction Finding) unlicensed broadcasters and order them, verbally and in writing, to get off the air. These actions are strongly advocated by the National Association of Broadcasters (NAB) and, in some cases, have been requested by the Federal Aviation Administration.

Four times in the last five months, the FCC had to shut down unlicensed stations that were allegedly interfering with aviation communications.

On April 6 -- possibly timed to coincide with the NAB convention -- the FCC issued "Orders to Show Cause and Notice of Opportunity for Hearing" to five alleged unlicensed FM operators. Each had been visited by FCC agents. The orders direct the operators to file notices of appearance at a hearing before a FCC Administrative Law Judge; to explain why the FCC should not order the station to "cease and desist" operation; and to show why an \$11,000 civil fine should not be imposed.

(In addition to fines and forfeiture of radio equipment, the Commission pointed out, violators are also subject to criminal fines imposed by the Justice Department of up to \$100,000, and/or

imprisonment for up to one year, or both, for a first offense. Such cases rarely occur, but in February the FCC obtained a 14-count criminal conviction of the operator of an unlicensed station in Lutz, FL.)

At least some of the five operators had not complied with the FCC's demands and apparently were still broadcasting as this issue went to press.

One of these stations, Micro KIND Radio 105.9 MHz, in San Marcos TX, prevailed in a local court case against attempts by local government to shut it down for zoning violations. KIND owner Joe Ptak runs the unlicensed 30 W station from his home.

"Micro Kind Radio is not breaking any municipal, state or federal laws because of its operation," the station claims.

One week before they went on the air in March 1997, KIND organizers sent a letter to the FCC telling of their plans. Prompted by complaints from San Marcos police, FCC agents from the Commission's Houston and Dallas offices inspected the station in April 1997 and ordered it off the air.

Ptak said the programs reflect a broad spectrum of political participation. "It's all individuals; there's no group affiliation or political agendas. These are all just citizens representing their own ideas or interests or talents. Our only restrictions are: no commercials, no pornography and no slander."

The station features "Rev. Coffeebreath Cade"

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and the "Kneeling Drunkard's Plea," a religious program; "Bring Me the Head of Jerry Garcia," and "Dissent", a radical politics forum. According to the FCC, Mr. Ptak refused to stop transmitting and was still broadcasting on March 20, 1998.

Another station, "Grid Radio," has operated for three years on 96.9 MHz from a Cleveland nightclub, "The Grid." The club advertises "Hot Strippers," "Party Boys" and a "nice mix of men" from its web site at [www.thegrid.com](http://www.thegrid.com). The station's signal could be heard for about 18.6 miles, FCC agents said.

Cleveland is a hotbed of pirate radio, with five active FM pirates, according to reports.

Grid Radio broadcasts nightclub music from 4 PM to 3 AM daily. Jerry Szoka, station owner, told us that his strategy for dealing with the FCC citation is to collect signatures and letters from audience members, attesting that the station is performing a community service. He also believes that an improved climate for microbroadcasters has led the Commission to tread more tentatively.

"I see the FCC's point," Szoka said. "You can't have every Tom, Dick and Harry setting up a station. You need some guidelines. But now, the FCC is not shutting us down. They are asking us to show why they should not shut us down. That is an enormous difference and has never been done before."

(In fact, an FCC order to "show cause" why it should not take some enforcement action is a routine procedure that it has long followed.)

Another operator cited by the FCC is Keith Perry of Leander, near Austin, TX. His station, operating on 88.5 MHz from a residence, was picked up by Commission agents in a mobile DF vehicle.

Perry allegedly refused to let the agents inspect the station. But he showed them a window from which they could view the transmitting equipment. They were able to perform an in-line power measurement which showed 30 W at the transmitter output.

Last June, the agents sent Perry a letter ordering that the station cease operation immediately. According to the FCC, Perry replied that the FCC has no power to regulate FM broadcast stations operating with transmitter power of less than 100 watts; that the agents trespassed on his property and illegally parked their vehicle in front of his home; that the FCC has no authority to inspect unlicensed stations; that the agents had no authority to operate the transmitter while conducting tests; that the agents "slandered Keith Perry to the Leander Police Department;" and that the FCC used insufficient postage on the warning letter. The Commission declined to address these complaints in the Order to Show Cause.

(With regard to inspecting stations, the FCC said in 1996 that "The right to inspect a station is one of the cor-

nerstones of the FCC's ability to ensure compliance with the Communications Act and FCC regulations. A refusal to inspect or a significant delay in inspection can often shelter egregious violations and is thus a serious violation. The FCC is not required to inspect by appointment.")

Two individuals in the state of Washington also received warning letters. One of them was a ham radio operator. Lewis Arnold, KJ7VR, allegedly operated an unlicensed FM station on 95.3 MHz in Chewelah, WA. Upon request of FCC agents on a visit in August 1997, Mr. Arnold stopped transmitting and permitted the agents to inspect his station. The FCC said that after sending him written warnings, Arnold resumed transmitting and was still on the air late last month.

The FCC said that also in August 1997, its agents found an unauthorized station on 105.1 MHz operated by Mark Rabenold in Oroville, WA. Rabenold did not permit FCC agents to inspect the station. He apparently received FCC warning letters, but did not respond to them. The Commission also found this station still on the air late last month.

## Microradio Makes Proposal at 1998 NAB Convention

On January 20, 1995, for the first time in the FCC's history, a federal judge refused to grant the agency an injunction to shut down an unlicensed radio station. That station was Free Radio Berkeley, a low-power FM operation started by broadcast engineer Stephen Dunifer in April 1993. Citing constitutional concerns, U.S. District Court Judge Claudia Wilkin has allowed Dunifer to continue broadcasting until she hears his administrative appeal in late September.

Dunifer's view and that of his attorney, Louis Hiken, the heart of the matter is freedom of speech and democratic access to the airwaves. In a country dominated by media conglomerates, they argue, low-cost, low-power 'micro radio' offers the little guy an opportunity to be heard or would, if the FCC would legalize it.

The FCC's view is that the case represents a choice between order and chaos. The agency says FM pirate broadcasts interfere with other broadcasters, and that microradio if authorized could lead to a complete breakdown of radio order.

On April 6th, Dunifer's attorney Louis Hiken (of the *National Lawyer's Guild Committee on Democratic Communications*) presented a position paper before a panel at the *National Association of Broadcasters 1998 Convention* held in Las Vegas. His talk was entitled:

**Broadcasting, The Constitution, And Democracy. Is a Media Regime Based on Private Profit Constitutional?** (Follows is a capsule summary of his talk:)

All ideas must have a hearing. Society "...requires

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a media system which is open to the widest possible range of views and in which all citizens can effectively express and communicate their ideals, thoughts and concerns, as well as receive and consider the thoughts, ideas and concerns of their fellow citizens.

"The *Communications Act of 1934* says that it is enacted '...so as to make available, so far as possible, to all the people of the United States, without discrimination on the basis of race, color, religion, national origin, or sex, a rapid, efficient, nation-wide, and world-wide wire and radio communication service with adequate facilities at reasonable charges...'

"...Is a media system which grants access to only a narrow range of views Constitutional? Is a media system where the price of a soapbox is millions and millions of dollars constitutional? Hiken said the recent consolidation of radio stations "...have given a handful of companies a lock on the airwaves in the nation's big cities."

## **Access to the Airwaves.**

"Since 1979, the Federal Communications Commission, by regulation has decreed that no radio station can be licensed at a broadcast power of less than 100 watts, and the FCC requires all potential licensees to conduct expensive engineering studies, which with associated legal and hardware expenses for a typical new station amounts to over \$250,000.

"It is as if a "Federal Newspaper Commission" in the name of efficiency, has said that, to conserve paper and ink, only newspapers of at least 1 million general circulation would be legal. All church newsletters, PTA bulletins, and community weeklies would be banned. The situation in broadcasting is quite analogous."

Hiken said "...the ban on low power radio today fails constitutional muster. ...The Commission will license a ten watt translator sitting on top of a mountain, retransmitting into a small town in a rural valley a signal from a 50,000 watt station in a city 50 to 100 miles away. Yet, it will not permit that small town to have this translator/-transmitter send any local news, information or entertainment down to the same town over the same transmitter."

## **The Response of the Grass Roots.**

"Starting in 1989, with Mbanna Kantako, an unemployed black man living in a housing project in southern Illinois, the Microradio Movement has grown as an indigenous grass roots response to the terrible and unconstitutional vacuum on the airways. Spurred on by the efforts of Stephen Dunifer, an engineer and philosophical anarchist, spurred on by the recognition of United States District Court Judge Claudia Wilken that the constitutional challenge to the present regulatory regime was a serious one meriting a very close look by the FCC and the courts, the Micro Radio movement has grown to the point that there are probably 1,000 stations on the air in

the United States." [Hiken added that "Anarchism is a philosophical system emphasizing self-reliant, small unit organizations and grass roots activity. It is by no means synonymous with chaos."]

"In Central California "Excellent Radio" broadcasts the local city council meeting every week. This non-licensed station replaced a service abandoned by a local commercial station in search of greater profits and more advertising revenue. In the Northwestern United States, Korean communities served in their own language by non commercial broadcasters have set up their own non-licensed Korean service."

## **The micro radio movement is international.**

"In regard to the global dimension of this movement, Dunifer has twice visited Haiti, where he acted as a technical consultant to the network of Haitian micro-power radio stations presently beginning to flex their muscles with the support of the Lavalas (Cleansing Flood) party, whose logo is of people sitting equally around a table. Dunifer found support for his ideas in former President Aristide and with his help Dunifer seeks to place a transmitter at the center of the Lavalas table.

"Several years ago, in the same week that Stephen Dunifer received a *Notice of Apparent Liability* in the sum of \$20,000 from the FCC, he received from United Nations Educational Scientific and Cultural Organization (UNESCO) an order for \$5,000 worth of micro-radio transmitters for UNESCO's community development project in the Philippines.

"Since Dunifer's Free Radio Berkeley went on the air in 1993, there have been five conferences of micro broadcasters, each larger than the last. Three days ago several hundred micro broadcasters met in Philadelphia to consolidate their plans and continue growing the movement. As we meet today, several hundred more micro broadcasters are meeting here in Las Vegas with the same purpose.

## **Response by the FCC, the NAB and Micro Radio**

"The FCC has released a *Notice of Inquiry* with respect to the question of whether it should open a formal rulemaking proceeding to review the ban on low power radio. FCC Chair William Kennard has conceded that micro-broadcasters have a point when they complain that it is hard for community broadcasters to get on the air. He has said that he thinks that micro-broadcasting has exploded in popularity in the last five years as a backlash against the consolidation of station ownership spurred by the 1996 federal communications law.

"The National Association of Broadcasters assembled this weekend has a historic opportunity to show the world that it too is committed to the Constitution and democracy, and to the sharing of the electronic spectrum between the commercial broadcast industry and

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democracy at the grass roots.

"The Micro Radio community has come together to present here and in the rulemaking a simple, practical and democratic proposal for a low power radio regime. We in the Micro Radio community urge the National Association of Broadcasters to join in this inevitable and necessary democratization of the airwaves.

## Micro Radio's Proposal for Low Power FM Service

1. A micropower station may be established on any unused frequency within the FM broadcast band and extending down to 87.5. Second adjacent channel would be the closest spacing allowed. A micro station shall fill out a simple registration form, and send one copy with an appropriate registration fee to the FCC, and a second copy to the voluntary body setup by the micropower broadcast community to oversee the micro power stations.
2. Maximum power shall be 50 watts urban and 100 watts rural. In the event of interference due to power level a station shall have the option to reduce power to remedy the situation or else be shut down.
3. Equipment shall meet a basic technical criteria in respect to stability, filtering, modulation control, etc.
4. Only one station per organization. The organization must be based in the local community and not be a profit-making organization. Local origination of programming is encouraged as much as possible.
5. No commercial sponsorship shall be allowed.
6. There shall be no content requirements. Stations shall deal with "community standards" issues on an individual basis and in accordance with their own particular mission statements.
7. When television broadcast stations go digital, leaving Channel 6 free, it shall be allocated as an extension to the bottom of the FM band strictly for low power community FM service. This would add 30 new channels since the TV channel is 6 Mhz wide and an FM broadcast channel is only 200 Khz wide. Radio receivers manufactured or entering the country after that allocation must meet this band extension.
8. Registration shall be valid for four years.
9. Problems whether technical or otherwise shall be solved, if at all possible, at the community level first by technical assistance or voluntary mediation. The FCC shall be the court of last resort. Hiken added that "Such models of self-regulation already exist within the ham radio community and the commercial broadcast arena."
10. Micro broadcasting of special events (demonstrations, rallies, festivals, etc.) do not need to be registered but are encouraged to meet all technical specifications. "One frequency could be set aside for this, in the San Francisco Bay Area, 87.9 serves this purpose."
11. Democracy will take a great leap forward in the United States.

## CONGRESS PASSES LATEST CELLULAR BILL

On April 2, the Senate passed the latest in a series of wireless interception and fraud bills relentlessly promoted by the cellular industry. Having been conformed with House language adopted in February, the Wireless Telephone Protection Act (WTPA, S. 493) will be sent to the President for his signature.

The WTPA is intended to crack down on criminals who use receivers to pick up mobile unit identifiers from analog cellular phones and then program the identifiers into other phones. Calls made from these "clone" phones are billed to the victim owner of the original phone.

Cloning fraud costs the cellular industry huge losses, and has prompted the installation of expensive anti-fraud measures, especially RF "fingerprinting" (rapid analysis of transmitter key-on characteristics of each phone).

The final language of the bill did not limit some of its wording to cellular phones. For example, it prohibits "interception" of the "electronic serial number, mobile identification number, or other identifier of any telecommunications service, equipment, or instrument." (Emphasis ours.)

Also prohibited is "knowingly and with intent to defraud," possessing, using, producing, trafficking in, or having control or custody of a "scanning receiver" or "hardware or software, knowing it has been configured to insert or modify telecommunication identifying information associated with or contained in a telecommunications instrument so that such instrument may be used to obtain telecommunications service without authorization."

(The term "telecommunication identifying information" means "electronic serial number or any other number or signal that identifies a specific telecommunications instrument or account, or a specific communication transmitted from a telecommunications instrument.")

Violations of WTPA could incur a fine and 15 year prison sentence for a first offense. Law enforcement and telecommunications service providers are allowed to possess otherwise illegal cloning equipment and software or altered phones or radios as part of their investigative activities.

The bill also is supposed to stop cellular extension phones, which permit a cellular call to ring on more than one phone owned by a legitimate customer. FCC staffers once said that some customers may want extension phones and that a FCC proceeding was being prepared to address this need. But the bill appears to prevent any extension phones not specifically authorized by the cellular carrier.

"This is a great day for wireless service customers," according to Thomas Wheeler, President and CEO of the Cellular Telecommunications Industry Association. "This bill will make it more difficult to traffic and possess equipment that is used for cloning wireless telephones."

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## HOUSE APPROVES WIRELESS PRIVACY ACT

The House of Representatives has passed the *Wireless Privacy Enhancement Act of 1998* and sent the bill to the Senate. The bill was drafted after a Florida couple recorded and released an embarrassing cellular telephone conversation between Rep. John Boehner (R-Oh), House Speaker Newt Gingrich (R-Ga) and House Majority Leader Dick Armey (R-Tx) in 1996.

The legislation amends Section 302 of the *Communications Act of 1934* to prohibit the modification of any electronic communication device, equipment, or system in a manner which causes it to fail to comply with regulations governing electronic eavesdropping devices.

The FCC is also directed within 90 days of enactment of the legislation to prescribe regulations (and review and revise them when necessary in response to changes in technology and behavior) denying equipment authorization for any scanning receiver capable of:

- (1) receiving transmissions in frequencies allocated to the domestic cellular or personal communications service;
- (2) being readily altered to receive such transmissions; ["The Commission should consider defining 'capable of readily being altered' to require scanning receivers to be manufactured in a manner that effectively precludes alteration of equipment features and functions as necessary to prevent commerce in devices that may be used unlawfully to intercept or divulge radio communication."]
- (3) being equipped with decoders that convert domestic cellular or personal communications service or protected specialized mobile radio service transmissions to analog voice audio, or which convert protected paging service transmissions to alphanumeric text; or
- (4) being equipped with devices that otherwise encode encrypted radio transmissions for purposes of unauthorized interception.

The bill also directs the FCC, with respect to scanning receivers capable of receiving transmissions in frequencies used by commercial mobile services and that are shared by public safety users [that is, the police], to examine methods and prescribe regulations to enhance the privacy of users of such frequencies. The bill requires the Commission to consider tampering prevention measures and warning labels in prescribing such regulations.

Section 705 of the Communications Act would be changed to make it unlawful for "...any receipt, interception, divulgence, publication, or utilization (instead of interception and divulging) of protected communications.

The Senate has referred the bill to their Committee on Commerce, Science, and Transportation.

*(Action by the House of Representatives, March 5, 1998)*

## LITTLE LEO SATELLITES FINALLY UNDERWAY

The long process of FCC authorizing the commercial "Little LEO" satellites is now finished. All applicants have been licensed, and the first hand-held Little LEO satellite transceiver has just been announced.

Little LEO satellites are in Low Earth Orbit at about 500 miles altitude.

To eliminate the need for tracking, large numbers of satellites are orbited. They downlink in 137-138 MHz and 400.15-401 MHz, and uplink in 148-150.5 MHz and 399.9-400.05 MHz.

These bands are shared with various other systems, including the Little LEO operations of other nations and the U.S. civil and defense weather satellite program. The technology was pioneered in the Amateur Satellite Service with the AMSAT/OSCAR program.

Officially called the Non-Voice Non-Geostationary Mobile Satellite Service, Little LEOs are optimized for short E-mail messages, telemetry, or brief command instructions to equipment. Voice and lengthy file transmission is not appropriate in the service.

Little LEO markets include vehicle and cargo tracking, security and alarms, industrial remote control, pilot weather and airport information, scientific data gathering, and personal communications for the maritime and outdoors user.

The first commercial Little LEO licensee is Orbital Communications Corp. ([www.orbcomm.com](http://www.orbcomm.com)), partly owned by launch vehicle manufacturer Orbital Sciences Corp. of Dulles, Va. Orbcomm operates two disk-like Little LEO satellites and is testing several more now in orbit. The FCC has authorized Orbcomm to launch up to 48 satellites.

Users transmit messages to the satellite, where they are stored onboard if a ground station is not in view, or delivered immediately if the ground station is in view. From the ground station and Orbcomm network, the messages are delivered to computers at the headquarters of the Orbcomm reseller responsible for the customer, and then delivered to the recipient via the Internet, dedicated line, fax, or to another Orbcomm radio via another trip through the satellites. The user radios can also transmit their location via satellite ranging, or by using a GPS receiver if it is so equipped.

Because only two Orbcomm satellites are in revenue service, several hours elapse in message delivery. However, the company expects to have full 24-hour service next year. Because Little LEO coverage is international, the service is sold through resellers in each country.

On April 1, Orbcomm and Magellan, maker of GPS receivers, announced the \$999 GSC-100 hand-held

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Global Satellite Communicator with antenna, LCD screen and keyboard. The companies expect to sell 5000-20,000 GSC-100s a year for the first two years. The unit stores up to 100 messages and 150 addresses, and includes a GPS receiver with graphic map displays.

The GSC-100 sends and receives E-mail through the Orbcomm satellites. Initially, service activation costs \$49.95, with monthly access free for 6 months including 10 messages per month with 30 message checks per month.

Additional messages cost one cent per character; additional message checks are 20 cents per check. After Sept. 30, 1998, monthly access is \$29.95.

Another interesting Orbcomm product is the Quick-Sensor, a small device that can be programmed to periodically report the status of analog and digital sensors (such as temperature, door closures, alarms) via satellite. A Windows application enables programming the device without writing code.

Other manufacturers of Orbcomm-compatible radios are Panasonic, Stellar Satellite and Scientific Atlanta.

The only Orbcomm reseller in the U.S. that offers services to private individuals for personal use (including rental of satellite radios) is Personal Satellite Network, Inc. of Manassas, Va. ([www.skyhelp.net](http://www.skyhelp.net)), operated by Don Rickerson. (Don is also a ham operator, his station call sign is KE4OIK.)

Orbcomm will have competitors. The FCC has licensed E-Sat, Leo One, and Final Analysis Communication Services to launch Little LEO constellations. Volunteers in Technical Assistance (VITA) is licensed for two noncommercial Little LEO satellites to provide E-mail to its field personnel in developing countries.

## GPS GETS A SECOND CIVILIAN FREQUENCY

Vice president Al Gore announced on March 30<sup>th</sup> that a second civilian signal will be provided by the U.S., Global Positioning System. The good news is that it won't be in the middle of the 23-cm ham band.

The NAVSTAR Global Positioning System (GPS) is a constellation of 24 satellites launched and maintained by the U.S. Air Force that provides positioning, timing and navigation signals free of charge to military and civilian users around the world.

The addition of a second civil frequency will improve the accuracy of civilian GPS receivers by allowing them to make more effective corrections for the distorting effects of the Earth's atmosphere on the signals from space, according to a White House announcement. GPS has always provided signals on two frequencies for military users; now civilians will have access to the same type of capability.

The Interagency GPS Executive Board (IGEB) selected the 1227.6 MHz band (known as the L2 signal) for the addition of new civil capacity. The ARRL had said that the second frequency could wind up within Amateur Radio's secondary allocation at 1240 to 1300 MHz but such was not the case. A third signal, however, will also be added, and a decision on that frequency will be made in August of this year.

The new signals will be available to all civil users worldwide. Among the users of the GPS system are cars, trucks, ships and planes. GPS is also used in civil aviation, earthquake monitoring, surveying, hiking and backpacking.

"The addition of a second civil signal represents a strong commitment by the United States to civil GPS users worldwide and is a major step in the evolution of GPS as a global information utility," Gore said. "Much like the Internet, GPS is becoming increasingly indispensable for navigation, positioning and timing by users around the world. Also like the Internet, GPS has become an engine of economic growth and efficiency as businesses and consumers continue to develop new and creative applications of this technology." (Source: Office of VP, White House.)

## AMATEUR RADIO STATION CALL SIGNS

...sequentially issued as of the first of April 1998:

Radio District	Group A Extra	Group B Advanced	Group C Tech/Gen.	Group D Novice
0 (*)	AB0HJ	KI0MI	(***)	KC0DDQ
1 (*)	AA1TM	KE1JJ	(***)	KB1CPX
2 (*)	AB2FD	KG2NZ	(***)	KC2DIB
3 (*)	AA3QX	KF3BJ	(***)	KB3CIY
4 (*)	AF4JA	KU4QO	(***)	KF4WSW
5 (*)	AC5PK	KM5PU	(***)	KD5DUP
6 (*)	AD6EU	KQ6VD	(***)	KF6QGU
7 (*)	AB7XQ	KK7MR	(***)	KD7BEJ
8 (*)	AB8CG	KI8FK	(***)	KC8JSY
9 (*)	AA9VV	KG9MX	(***)	KB9SLZ
N. Mariana	NH0E	AH0AY	KH0GW	WH0ABI
Guam	(**)	AH2DG	KH2TI	WH2ANV
Hawaii	NH7G	AH6PH	KH7JD	WH6DEN
Am. Samoa	AH8P	AH8AH	KH8DL	WH8ABF
Alaska	AL0J	AL7RC	KL0OA	WL7CUS
Virgin Isl.	(**)	KP2CN	NP2KA	WP2AIJ
Puerto Rico	NP3V	KP3BF	NP3VG	WP4NNQ

\* = All 1-by-2 & 2-by-1 call signs have been assigned.

\*\* = All 2-by-1 call signs have been assigned.

\*\*\* = Group "C" (N-by-3) call signs have now run out in all districts. 2-by-3 call signs now being issued.

**Note:** New prefix numerals now being assigned in Puerto Rico (KP3/NP3), Hawaii (AH7/KH7/NH7) and Alaska (AL0/KL0)

[Source: FCC Licensing Facility, Gettysburg, PA]

## CUTTING EDGE TECHNOLOGY

■ **Electronic Ink from Spherical Dipoles** - An amazing invention by researchers at the *Massachusetts Institute of Technology* promises to make cheap electronic books and computer displays a reality. Called "electronic ink" or "e-ink," it consists of "microparticles," or spherical dipoles, that rotate in the presence of an electric field.

Half of each sphere is black and the other half white. The spheres are addressed by their row and column locations and rotated to make the black or white half visible, forming letters and images on a page. After it is addressed, no further energy is needed to keep the sphere in its desired orientation.

The spheres and the electrodes that turn them are contained in a very thin coating that can be printed on paper or other materials. An 8.5" x 11" piece of paper with an e-ink display would be about 200 microns thick -- only about 2.5 times thicker than an uncoated piece of paper -- and would cost \$1.00-10.00. The display would draw only about 12 mW and provide 100 dots per inch resolution.

The low power requirement and low cost are more impressive than the specs of any flat display technology available. Today a standard thin-film transistor flat-panel display for laptop PCS sells for about \$1000 to the computer manufacturer. Such a display consumes about 2.5 W.

The researchers say that an e-ink book need have no battery or memory. You could simply connect it to a computer and download a book of interest to it. You could replace that text by other text indefinitely. Because the e-ink display can be printed on paper, the book can have pages like any conventional book.

Adding storage capacity could make the e-ink book even more valuable. With a PCMCIA plug-in drive, the book could store about 350 books; with magnetoresistance storage technology now being developed, it could hold as much as 35 GB (more books than the average person reads in a lifetime).

This technology already has been shown to hold 10 terabytes (TB) in a PCMCIA-sized device -- storing the entire holdings of the Library of Congress.

■ Clandestine technology goes public!  
**Want to buy a "spy picture" of your**

**home (or any place else in the south-eastern U.S.) from Russia?** Check out <http://www.spinz.com> on the World Wide Web. A Russian satellite has just returned to Earth with "spy in the sky" images that will be commercially available for downloading from the Internet. Resolution is so sharp, it can detail an object just six feet across.

A U.S. company (Aerial Images, Inc., of Raleigh, NC) and SovinFromSputnik (the commercial arm of the Russian Space Agency) are collaborating to offer digitized images at \$8.95 to \$24.95 each that were collected from space. The customer chooses the coverage area. Three more missions are planned that will ultimately offer photos of the entire United States. Kodak is also offering high quality poster-size prints.

## EMERGING COMMUNICATIONS

■ **Would be local telephone service providers say they can't make money paying the Baby Bells to carry the calls.** And the cost to deploy their own fiber-optic networks is prohibitive. So look for emerging local phone companies to use other ways to get into your home and business. They are testing cable-TV wires, utility lines, microwave links and other wireless products.

The FCC recently auctioned off high-capacity LMDS (local multipoint distribution services) spectrum which could be used to replace the hardwired telephone network. LMDS can also be used to deliver high-quality video and Internet access. You will be hearing a lot about it next year.

The stakes are high; there are 100 million local households alone. All in all, it is a \$100 billion market. One thing for sure. The local telephone line coming into your home or business is going to have company soon. Electric power companies are even placing fiber-optic lines on their utility poles and teaming up with phone companies.

Telephone service costs will continue to plummet as consumers and businesses have more choices. Don't sign any long term contracts for telephone service. With competition, comes lower prices.

■ **According to a \$2395 Find/SVP research report, the Internet appliance market is poised to take off.** The study says that 85 million U.S. adults are

receptive to Internet appliances. Internet TV, screenphones and portable Internet devices will be used primarily by younger adults.

"The race to create Internet appliances began in 1996 and is now in full stride," Find/SVP says. The increasing reliance on e-mail will fuel interest in Internet appliances. "Subscriptions, transactions, access fees and on-line advertising will generate mountains of revenue in the coming years for service and content providers."

Find/SCP believes that Internet TV is best positioned to achieve high penetration in the shortest amount of time. Screenphone providers will capitalize on the communications orientation of the devices, with applications centered around e-mail, national directory assistance, and local merchant directories.

"To achieve serious market penetration, Internet appliances will have to be distributed on the cellular phone or cable set-top box model." The report concludes there will be 16.9 million Internet appliance users within five years.

■ **Billionaire Paul Allen (a founder of Microsoft Corp.) has bought Marcus Cable Co. for \$2.78 billion.**

Allen, the nation's third richest man at \$20 billion, joins Microsoft's Bill Gates in a bet that cable television will provide a highway into the home. Microsoft invested \$1 billion in Comcast Corp. last year, the nation's fourth-largest cable company.

## COMPUTER INFO

■ **Japan's Fuji TV will start broadcasting to personal computers next month!** They will begin by using a system adopted by Tokyo Broadcasting Systems, Inc. in preparation for moving into satellite digital broadcasting.

■ **A research study says 60% of U.S. households still don't own a PC.**

63% are waiting for lower prices  
63% want prices to stabilize  
51% say they lack knowledge to choose  
43% are waiting for more power at right price  
32% waiting for new technologies like PC/TV  
23% have uncertainty about computer skills  
23% say no one's available to help them

■ **Shipments of Network Computers are less than expected!** NCs are stripped down computers that latch onto

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servers and get their power from the Internet. Dataquest, a respected (Palo Alto, CA) research firm, says that less than 150,000 were shipped in 1997 and only 500,000 will be sold this year. By contrast, 90 million PCS were shipped in last year. They say interest in NCs has been lagging because of plummeting PC prices.

■ **Expect a PC shakedown as prices fall even further!** National Semiconductor Corp. (Santa Clara, CA) has unveiled an ultra-powerful (300-MHz) computer-on-a-chip." which could result in \$400 PCS. It will be compatible with both Intel and Microsoft (Windows) technology. They plan to have it on the market next year. And a Cyrix chip based PC already sells for \$499 without a monitor (180 MHz, 16 MB memory, 2 GB hard drive, a 16X CD ROM and a 33.6 kbs modem). Cyrix was bought by National Semiconductor last year. The least expensive Intel chip machine costs \$800. (A 300-MHz Intel Pentium II chip alone sells for \$400.)

IBM has just begun shipping 300-MHz Aptiva PCS (with an AMD K-6 chip) at \$1499. By the end of the year, half of all personal computers sold will be under \$1,000.

■ **Seiko (the wristwatch people) are the first to sell a wristwatch PC.** Called the "Ruputer," it is the world's first wearable computer. (16-bit, 128K main memory.)

## INTERNET NEWS

■ **Telephoning over the Internet could reduce long distance costs by 90%.** That is, if Internet carriers are not subject to the access fees now paid by traditional (analog) long distance carriers. Access fees are paid to local phone companies to compensate them for the use of their facilities.

Responding to the long distance telcos who are screaming "unfair competition," the FCC now plans to treat Internet phone companies the same as regular common carriers.

Internet phone companies now have the capability to route phone calls originating and terminating on traditional business and residential telephone equipment over the Internet.

The FCC believes that calls made from one phone to another, even if they are transmitted over the Internet, should be subject to the access fees that local

phone companies now collect for connecting long-distance calls.

That is because those calls "are functionally the same as a long-distance phone call on the analog network," FCC Chairman William Kennard said.

If the fees are implemented, efforts by several Internet telephone companies to lower long distance domestic and international telephone calls to the five cents a minute range will be ended! On the Internet all phone calls cost about the same as a local call.

In short, the FCC wants them to pay access fees just like other long distance providers since they go through the local public switched telephone network (PSTN.) Without a provision for fees, local telcos would not be able to collect the approximate five cent per minute average fee from Internet telcos that regular long distance carriers currently pay them.

LD telephone calls over the Internet now account for only a minute percentage of calls ...and the audio is not the best. But better quality Internet telephoning is expected within five years. And according to a research company, Internet calls could account for 15% of all long distance calls, a potential \$15 billion dollar a year business!

If Internet phone companies pass on the fee, it would boost long distance domestic and international telephone calls to the ten cent per minute range -- still a big savings over that charged by today's long distance phone companies.

## WASHINGTON WHISPERS

■ **The FCC is on an "electronic kick!"** Besides the new Electronic Licensing System (ULS) that we covered in our last issue, the Commission will be allowing electronic filing of documents in rulemaking proceedings.

Their new ECFS (Electronic Comment Filing System) will make it simpler to file comments and replies. Eliminated will be the necessity to file multiple paper copies which require postage or courier fees.

ECFS will also permit the public to review and print documents online through the Internet, rather than rely on paper copies accessible through the FCC reference room or copy contractor. The new system is expected to go into effect in June. (GC Docket 97-113, adopted April 2, 1998.)

■ **Forget the term "FCC Type Acceptance" of transmitters. It will no longer be used!** Transmitter manufacturers and importers will be glad to hear that the Commission has made major revisions to its equipment authorization process. The FCC will now permit electronic filing of equipment authorization applications. And that is not all.

The number of transmitters and other RF radiators requiring authorization is being drastically reduced by 49% ... from 3500 to 1800. The FCC said the new procedures will result in savings of at least \$100 million to manufacturers and importers covered by the change.

There will only be three different authorization categories: *Certification*, where applications are sent to the FCC, and two manufacturer self-authorization programs, *Declaration of Conformity*, and *Verification*. The *Notification* program was eliminated and the *Type Acceptance* program combined with the *Certification* program. Under the *Certification* program, third-party organizations other than the FCC will be permitted to certify products.

Commissioner Susan Ness issued a separate statement saying she "...strongly supported reducing unnecessary paperwork and delays." She added, however, that agency resources freed up by liberalizing the new equipment authorization process should "be redirected to enforcement activities, so that instances of harmful interference can be swiftly remedied."

The Commission said the new system could be in place as early as next month. At first, the FCC will accept dual paper and electronically filed applications to allow manufacturers time to become familiar with the new system. The requirement for (only) electronic equipment authorization filing goes into effect in one year.

(ET Docket 97-94 adopted April 2, 1998)

The FCC also issued a *Notice of Proposed Rulemaking* seeking to require mandatory electronic filing of several broadcast applications and other forms. Many broadcast forms would be revised and shortened and some burdensome rules would be eliminated.

(MM Docket 98-43 adopted April 2, 1998.)

■ **Congress is having trouble agreeing on when Internet taxation should start.** The original 6 year national moratorium on not taxing Internet transactions is apparently only a starting point.



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The legislation was originated in the House of Representatives by Rep. Chris Cox, (R-Ca.) The *National Governors' Association* and other state and local officials oppose the 6 year time-out, and are backing a 3 year plan.

The House has now revised their bill to the 3 year ban. The bill bans taxes on Internet access and online services, bit and bandwidth taxes and any sales taxes on electronic commerce. President Clinton welcomed the compromise between state and congressional lawmakers.

Now comes word that the U.S. Senate is not buying into the 3 year deal. Sen. Ron Wyden (D-Or) has countered with legislation offering a 5 year moratorium on state and local Internet taxation.

The Senate version would also impel a congressional commission to study the entire issue of Internet taxation since there are more than 30,000 state and local taxing authorities!

■ **Vanity toll-free telephone numbers, like Vanity amateur station call signs are very popular!** Toll-free "800" calling began in 1967. In the Spring of 1995, they were joined by the "888" code. Now "877" toll-free numbers are on the horizon. And "866" will be next.

The reason for the need for more toll-free prefixes is that the lower cost of toll-free service has generally made them more cost effective for business. And vanity toll-free numbers (like 1-800-FLOWERS) have proven to be a good business tool.

When the 888 code was deployed, concern about consumer confusion, misdials and trademark erosion, motivated the FCC to permit holders of 800 numbers to request that corresponding 888 numbers be set aside in an "unavailable pool." Some 375,000 (about 5% of the possible 8 million numbers) were set aside in the 888 code.

But that won't happen again. In the interest of having the maximum amount of toll-free numbers available, the FCC has now voted not to reserve corresponding vanity numbers when they deploy the 877/866 codes.

Not everyone is happy about that, including Commissioner Harold Furchtgott-Roth who issued a dissenting statement. He feels the agency should extend a "right of first refusal" rather than dispense toll-free numbers on a "first come-first-served" basis.

## AMATEUR RADIO

■ This was posted to the amateur repeater owner's re-mailer by someone who attended the NAB convention:

"As for the new Compliance Bureau Chief Richard Lee, (USMC, Ret.), he said compliance is a major issue which IS going to change under his direction. This was greeted by a big round of applause at the Amateur's cocktail party last night. And in private comments to me, he assured me our concerns would be addressed. This man is one of action (based on experiences in other services). I expect a different FCC enforcement policy under him."

■ **ICOM America has a new 29-foot FunMobile.** "Wait until you see what's on the inside," comments Icom's Pat Marcy, W7PX. "We have high frequency ...we have VHF and UHF plus satellite equipment turned on an ready to go ...aviation radio, marine radio and land-mobile radio, too," adds Marcy. "We'll be sending signals on APRS, and we will have the very latest in digital signal processing turned on for everyone to listen in to what's new at Icom."

Every afternoon and evening the Fun-Mobile may be available for an amateur radio club or ham radio service organization demonstration. Several operating positions are available on the inside for hams to get the feel of the very latest in new technology equipment. All inside gear is live, turned on, and working off of numerous systems on the top of the vehicle.

Driven by well-known ham operator Chuck Northcutt, W7SRZ, the ICOM FunMobile will also carry a log book for everyone to sign in, and there will be free handouts given to everyone who steps inside. The FunMobile tour has already started. Here's the schedule:

April 25-26	Las Vegas
April 17-May 1	Arizona & New Mexico
May 1-8	Texas
May 10-12	Louisiana
May 13	Nashville
May 14-17	Dayton HamVention
May 18	Cincinnati
May 19-20	Toronto, Canada
May 25-26	Chicago
May 27	Detroit
May 29-June 19	East Coast, ARRL June 3

Amateur radio clubs and emergency groups can get onto the schedule by calling Pat Marcy at ICOM America at (206) 454-8155 or FAXing ICOM at (206) 454-1509. You can also track the Icom FunMobile both on APRS on 10 MHz, as

well as watch it travel on the Web at URL: <http://www.icomamerican.com>

■ **Biologists from the Canadian Wildlife Service are seeking help** from ham operators and monitoring enthusiasts. Twelve endangered Burrowing Owls were being followed on their migration south from Saskatchewan last fall. Bad weather kept tracking aircraft grounded and the signals from the owls' radio collars were lost in North Dakota. Researchers think, that if alive, the owls are now in southern Texas or nearby in Mexico. The exact migration time is uncertain and it could extend to mid-May. If you have a scanner or extended range two meter receiver and live in central states between Texas and North Dakota, you can assist by listening for the radio tags, which are pulsed signals near 170 MHz. The greatest range is at night when the birds are in flight. More info is available from the K0OV website at: <http://members.aol.com/homingin/>

■ **On March 21<sup>st</sup>, the Oklahoma Repeater Society, Inc. held their winter semi-annual meeting.** The membership was informed about National Frequency Coordinating Council's decision not to extend their deadline for charter membership past March 15, 1998. The membership was noticeably annoyed at the NFCC's lack of consideration and voted unanimously not to make application for membership in the NFCC's organization now, or in the foreseeable future.

## NEW AND UPGRADING AMATEUR RADIO STATISTICS

Month of March 1996, 1997 & 1998

License Class	New Amateurs		
	1996	1997	1998
Novice	140	0	70
Technician	2841	2398	1958
Tech Plus	289	223	199
General	31	26	43
Advanced	4	5	2
Extra Class	0	1	2
<b>Total:</b>	<b>3305</b>	<b>2653</b>	<b>2274</b>
<b>Decrease:</b>		<b>(19.7%)</b>	<b>(14.3%)</b>

License Class	Upgrading Amateurs		
	1996	1997	1998
Novice	0	0	5
Technician	0	1	4
Tech Plus	570	469	362
General	540	431	427
Advanced	342	326	305
Extra Class	325	226	232
<b>Total:</b>	<b>1777</b>	<b>1453</b>	<b>1335</b>
<b>Decrease</b>		<b>(18.2%)</b>	<b>(8.1%)</b>

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## MICROSOFT IS CONTINUALLY IN THE NEWS!

No technology company gets as much press coverage and attention as Microsoft Corp. (Redmond, WA.) That's understandable since its CEO, is the world's richest man. Just what does a person do with \$40 billion? Bill Gates is obviously driven by doing it first, better and cheaper ...and maintaining his number one position.

1.) **Windows 98 will go on sale to the public June 25<sup>th</sup>** with or without a browser icon. Personal computer makers will get it May 15<sup>th</sup> so their PCs will have it installed by June 25. Two versions are being prepared. One with the Internet Explorer icon - and another without to avoid a conflict with a preliminary court injunction. We heard a retail price of \$99 - although the street price should be less. Upgrades from Win-95 could go for as low as \$25 -- or so it is rumored.

2.) **Windows 98 introduction will be much more subdued than Windows 95 which cost \$200 million.** There are a lot of theories as to why the lack of interest. One explanation is that Windows 98 does not contain many new features compared to Windows 95. Another is that the corporate world is waiting for the next release of Windows NT 5.0 scheduled for later this year.

Windows 98 primary feature is that it weaves the Microsoft Internet Explorer browser into the operating system. It also provides for DVD (digital video disks), running two monitors at once, faster loading of applications, managing disk storage better and more efficient installation of peripherals.

Another, more believable, explanation is that Microsoft does not want to further attract the attention of the Justice Department which is looking into their supposed anti-competitive business practices. The feds want Microsoft to separate its software applications - including its browser - from its operating system.

A low key "by invitation-only" satellite-broadcast in 45 movie theaters recently showed the new Windows 98 operating system to 40,000 computer enthusiasts.

3.) **Look for the Justice Department to bring still more anti-trust charges against Microsoft.** The feds are not happy that Microsoft is bundling browser and other application software with its operating system and calling it an extension of the operating system. Since they "own" the desk top through its Windows operating system, Microsoft has a big market share advantage with any software that is tied to it. More than 90% of the world's new PCs run Windows 95.

We hear that the Justice Dept. will take action before Windows 98 is released May 15<sup>th</sup> to computer makers. The Justice Dept. will ask for temporary and permanent restrictions on Microsoft's marketing practices. Both Netscape browser and Sun Microsystem's "Java" are looked upon by Microsoft as a threat to their control of the desktop since they offer alternative operating platforms

from which to run computer programs.

Computer industry executives have already provided the U.S. Justice Dept. with a set of 10 proposals which they believe will reduce Microsoft's monopoly power. At press time, to head off a new government antitrust lawsuit, Microsoft is scheduling a face-to-face meeting with Justice Dept. officials. The meeting may signal that Microsoft is interested in reaching an out-of-court settlement.

4.) **It's not news that Microsoft, the leading U.S. computer software company, continues to make more money!** Its third quarter earning beat estimates. Strangely, Intel - the leading microprocessor maker and Compaq, the number one computer manufacturer have been hit by falling retail prices.

5.) **Microsoft is developing an online real estate service website to do for home sales** what its *CarPoint* does for car shopping. *HomeAdvisor* (at <http://www-homeadvisor.com>) - will help purchasers buy a house by connecting them to lenders, agents, builders and home product suppliers who will pay a fee for being listed. Microsoft is very serious about the new site and is preparing a \$5 million print, radio and online ad campaign to introduce the new service. You will see it in July.

6.) **Microsoft is venturing into the overnight courier/postal business in Great Britain.** In a project called "RelayOne," e-mail messages would be transferred to the British "snail mail" system. The Royal Mail will download messages and guarantee next day delivery at a cost as low as \$2.50 ...much less than other overnight delivery services.

7.) **TCs and computers to meld. Sony and Microsoft have entered into a cross-licensing software agreement to enhance their leadership** in computer software and audio-visual home electronics. Sony will use Microsoft's slimmed-down Windows CE operating system in its Home Networking Module.

Sony supposedly will have a home network centered around a machine to be used as a PC and digital TV set for terrestrial, cable and satellite broadcasts. The network would include various digital appliances such as a digital camera, DVD player and printer.

In exchange, Microsoft will endorse various Sony formats that will work in both PCs and digital TV sets.

8.) **And Intel and Microsoft will collaborate on providing an integrated system** for broadcasting interactive television programming to personal computers equipped with TV tuners and other devices. Intel's InterCast software will be incorporated into Microsoft products starting with WebTV for Windows.

InterCast technology allows TV broadcasters to create full-screen interactive programming. WebTV was purchased by Microsoft last year for \$425 million. WebTV is being launched in Japan and is being tested in the UK.