E B N e w s l e t t e r . . . . . .

July 1, 1987 Vol. 4, No. 7

COPY, COPY, WHO'S GOING TO COPY?

Everyone wants to protect their work against illegal copying. You can't blame them. When a person, or several persons, put many hours of their talent and creativity into something they want to be assured they get some reward for it. The reward of course is usually money. If private copies are made of the work then fewer records or tapes are sold and the artist (royalty company) loses money.

The royalty companies' primary purpose is to watch out for the interests of their recording artists. Theoretically every time a record or tape is played the artist gets a small bit of money. This is all pre-calculated and figured into the sales price of the record or tape.

Radio stations play records and tapes much more than the average person. In most cases they don't pay for the product but receive "promotional" copies instead. In this case the royalty companies charge a fixed fee based on the station's coverage area and/or audience.

All of this has worked out pretty much OK. Some of the minor intrusions, such as copying a record onto cartridge tapes for air play, have simply been ignored. After all, the copy was not made for resale just in-station use.

Various methods of guarding against copying have been used over the years. None have been very effective. Now however, with the Advent of digital audio recording, anti-copying schemes are back in the news. The results may hurt broadcasters and private individuals alike.

For example, its been proposed to levy taxes on the sale of recorders and even blank recording tape. This kind of thinking assumes that everyone is going to copy an artist's work and redistribute or resell it. What about the people that want to record their own work whether it be music, song, or speech? Even the innocent ones suffer by this blanket approach.

Another proposal is to install an "anti-taping chip" in all new Digital Audio Tape recorders. And it's further proposed that this be carried over to all digital PCM processors (used by about 60 radio stations at this time). PCM processors are used for live remote broadcasts and satellite tape feeds.

TAPELESS CARTRIDGES ?

Computer techniques and audio are getting together. A company in California, COMPUSONICS, is advertising a tapeless cartridge recorder. It uses magnetic discs. They claim (1) perfect stereo (2) 88 dB dynamic range (3) jam-free (4) erasable and re-usable discs (5) guaranteed to play 5000 times. For more information contact Compusonics, 2345 Yale St., Palo Alto, CA 94306 or phone (415) 494-1184

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The "chip" is apparently patented by CBS. It appears not to be very sophisticated in how it goes about the job. This copy-code chip is simply triggered into operation by a notch filter with a center frequency of 3840 Hertz. This scheme may lead to additional problems. There may be some evidence that the chip can be triggered into operation by certain tones unexpectedly. If this is the case taped live shows could wind up with blank spots.

Even if you never intend to copy a digital recording you may still be affected. Its been reported that CBS conducted a demonstration in which the effects of the frequency notch could not be heard.

On the other hand Len Feldman, and audio writer, showed that the effect was indeed audible. This is playing around with audio quality - something the consumer (or radio station) should not have to put up with.

A folder of information concerning the above is available from the Home Recording Rights Coalition in Washington, DC. Just call 800-282-TAPE.

Pleasures and Perils of Pirating

still needs your help. Please send whatever information and photos you may have on pirate activity. All submissions will be appreciated. Send to EBN, c/o Panaxis, PO Box 130, Paradise, CA 95967. Thanks.

AM STATION COVERAGE

A "new" method of AM broadcasting has been getting some attention lately. It's not really new however. The theory and some of the technology has been around a long time. It is just now being re-examined as a viable method for increasing coverage. Its called Synchronous Transmission.

Consider for a moment the ways of extending coverage of an AM station.

(a) Increase transmitter output power.

(b) Increase antenna gain and/or directivity

(c) Add "repeater transmitters" at fixed points from the main transmitter.

Consider now the disadvantages of each of the above.

(a) Area around the station is saturated with RF. It gets into telephones, public address systems, audio equipment, studio equipment, overdrives nearby radios, and may even be hazardous to your health.

(b) Expensive. Requires a lot of land for the antenna installation. May have to give up coverage in one direction to gain coverage in another.

(c) Two or more transmitters operating on the same frequency are prone to causing interference to each other's signal. If one station

is at 640,000 Hertz and its repeater is at 640,002 Hertz receivers may detect a 2 Hertz "beat note". Although this can't be heard directly it could cause a 2 Hertz flutter (loud and soft alternately at 2 Hertz). In addition the signal strength would vary in different directions due to phase differences in the wave fronts radiated from each station.

Item (c) is the process the FCC is now considering. If the technical problems can be worked out this method of transmission may prove to have several advantages of its own. For example, lower power transmitters may be used to cover a given area. This results in less RF interference, less health hazard, and perhaps less cost.

Two AM stations have been granted experimental licenses to conduct tests of Synchronous Transmission. They are KKOB in Albuquergue, New Mexico and KROL in Laughlin, Nevada.

The FCC has set a specification of .2 Hertz or less frequency difference between the two transmitters. Herein lays part of the technical problems. Even though the two transmitters are crystal controlled the chances of their frequency's being EXACTLY the same (or even within .2 Hertz) is uncertain. For this reason the present technique is to use a common crystal oscillator reference for both transmitters.

Transmitter (1) is driven directly from the oscillator. Transmitter (2) receives its reference via a separate radio link (most likely at microwave frequencies). The oscillator frequency is transmitted by an STL (studio transmitter link) to the second transmitter site. Where the distance is too great between sites it requires double and even triple "hop" (2 to 3 STL's) to get there.

This procedure is less than perfect as you might have guessed. Phase delays and noise generated in each of the STL's tends toward an unstable system. Propagation characteristics between STL sites don't help much either. These include things like SMOG, rain, snow, sleet, aircraft in the beam, and delay time in traveling from one point to another.

The received oscillator frequency may contain too much noise to be used directly to establish the second carrier. It is therefore used to "lock" a second oscillator which in turns drives the second transmitter. So far the equipment in use is just barely able to keep the two transmitters within .2 Hertz of each other.

The ultimate goal of course is exact frequency synchronization differing only slightly in phase relationships. Apparently Europe has several successful synchronous AM stations. Perhaps it would be wise to learn what they are doing right instead of trying to re-invent the wheel (so-to-speak). For further information call the FCC new media information line at (202) 632-5050.

Dear EBN,

I just received the EBN for June 1, 1987. The new format looks great. I appreciate the information the EBN provides. I'm in total agreement with your editorial a couple of issues ago concerning the "responsible medium" that radio stations should maintain (especially experimental broadcasters).

Parties in this area of activity should realize that their indiscretions bruise the reputation and hamper the operations of well intentioned experimental broadcasters.

In response to your request for info on pirate operations, presently, all I can submit is that of my own. At this time I am conducting low power field tests using 250 milliwatts at 91.1 MHz. Range, using a very home-brew 1/4 wave co- phased array (omni-directional) antenna is 1 1/2 miles reliably, 4 miles fringe. Plans are in the works to upgrade the power level to 10 watts as well as improvements with the antenna system.

I have constructed a rudimentary control room/studio consisting of (2) turntables, microphone, control/mixer board and misc related audio equipment. This is all located at my home. The area served is very rural.

The station is an offshoot of, or better yet, a rebirth of a station I and a couple of others operated a bout 30 miles away in 1979. We only pushed about 100 milliwatts but we were in a more urban area and realized a good listenership. The call letters now are the same as then - WRBL Confederate Radio.

Again, station is in the test phase and soon to go full power. Some programming can be heard locally in the evening hours and on weekends. When fully up and running we'll be covering parts of 3 counties.

R.V.

Dear EBN,

Hello again from the great Northeast! Just received your newsletter and I think it looks fantastic. Nice to see things are looking professional.

I 've upgraded my transmitter with a 100 watt amp and a 50 amp Lambda power supply regulated at 13.8 VDC. very low ripple, no hum. I also have a separate 12 volt, 4 amp, regulated power supply for the transmitter itself. I've installed a time delay between the two supplies so the amp won't come on until the transmitter is stabilized. Works excellent - no problems. I have 6 of these supplies. All work excellent, have crow-bar shut down & thermal protection. I have a couple to spare if anyone is interested - $100.00 or best offer, shipping weight is 32 pounds.

When I got on the air in February we had great coverage. Our beam worked great - good match throughout the band. We got up to 25 miles away with only a little background hiss but excellent stereo. WTNT -103.1 FM

Dear EBN,

There are only 2 pirates I've come in contact with, both from Brooklyn. Both have admitted to horizontal antenna system. One comes on Friday nights at Midnight until 5 A.M. Its call letters are WFUN and admitted to about 160 watts. They broadcast in stereo. I can pick them up on the hills in Jersey. Their format is 50's rock. The D.J.'s name is Neil Down (ha). They also take calls live on the air. WFUN doesn't use profanity.

The other station, WJPL also admitted to horizontal polarization but with 50 watts in mono. Their format is rock from the 70's and 80's. Hours are from Midnight to 7 A.M. on Saturday. They also take live phone calls. Profanity is used extensively. They also play a cart message threatening the FCC and daring them to catch them. One D.J. calls himself "Johnny Lightening", the other D.J. calls himself "Ed Armstrong" (ha ha).

Both stations broadcast at 91.9. It's the only available FM slot in New York City - extremely crowded.

Jeff

Dear EBN,

Sorry we've been out of contact for almost a year. We've been very busy building two new studios and a separate building to put them in. Its taken me about eight months to construct and move all my equipment in.

The building is a two story Dutch house. The bottom floor is used as a two car garage. The top floor has both am and fm studios and a good size lobby.

Although I designed the equipment layout, size of the studio, etc, I could not have done it all by myself. The project would not have been successful without the help of Brian from WBDS and Robert from WBNO. They helped me overcome many problems I couldn't have figured out by myself.

- This is the equipment layout:

FM STATION.....87.9 MHz (2) GATES turntables (2) FIVE SPOTS cart machines (1) 6 channel GATES audio board (3) Reel-to-Reel tape machines (1) YAMAHA compressor/limiter (1) GATES TE-1 10 watt FM transmitter (1) 2 watt back up FM transmitter (1) forty foot ROHN tower with RADIOSHACK 10 element beam

AM STATION.....1610 KHz (2) RADIOSHACK turntables (1) FIVE SPOT cart machine (1) 8 channel GATES audio board (1) GATES cart recorder (2) Recl-to-Reel tape machines (2) 8-track play/record machines (1) BOSS compressor/limiter (1) TX 2-20 AM transmitter (1) AM antenna system *

The antenna system consists of a 38 foot telescoping mast supported by 6" of PVC pipe at its base for the insulator. Ground radials are #6 wire buried in the ground. A loading coil is used at the base of antenna. A "top hat" capacitive loading system is made from the guy wires at the top of the mast.

Take Care John, Sea View Communications

Editor's comments concerning this month's letters:

Sorry John that I didn't get your letter published earlier. The pictures, and your facilities, look excellent. The reason for the delay is because:

Until recently the EBN had no easy way to reproduce pictures for publication. Pictures either had to be photographically "half-tone screened" or "screened" on a photocopy machine. The first process was cost prohibitive and the latter produced mixed results.

Our new desk-top publishing equipment has the capability of making pretty fair reproductions (and reductions) of both black & white and of color snapshots. However.....not all the pieces are here yet. We're still waiting for our Hewlett Packard Scan-Jet®. This is a flat plate scanner which digitizes photos, line drawings, or text and stores the information on a computer disk. HP has had problems meeting the demand of sales. We've been waiting almost 60 days for ours to arrive. Hopefully it'll arrive this month and we'll learn how to use it by our next issue.

When all this happens letters to the EBN can also be copied directly into the computer. If the letters are typewritten it may also be possible to import them as an ASCII input. They could then be edited, type faces changed, spelling errors corrected and other such stuff. *Lordy, ain't electronics grand!*

Obscenity on the airwaves is apparently part of the New York culture. I think it shows a lack of creativity - a grasping at straws to get an audience's attention. Some do it perhaps to be "cute" - I think that shows a lack of intelligence.

The Brooklyn D.J.'s mentioned at least show a little creativity in their choice of "air names". How ironic one should have picked "Ed Armstrong" - Major Edwin Armstrong was the inventor of FM ! It's a wonder the profane D.J.'s haven't coined names more suitable to their endeavors such as "Noah Brains" or "A. Hole".

Another EBN subscriber reported that indecency is now invading TV. Perhaps not lacking in creativity but certainly lacking in respect for human kind comes the latest in do-it-yourself T.V. It seems there's a character in Brooklyn that gets on the air (T.V.) during kiddie programs on week-end mornings. His style is coaching the kids to watch for his 6 foot "trouser snake" and then displays himself for all to see.....A TV "flasher" ..... SICK !

HOW LOUD IS LOUD?

But what's the alternative?

Audio processing manufacturers are tending to agree that LOUD may have reached its max. There is only so much you can do to compress, limit, and use frequency selective compression, to make your audio louder. At some point the overall audio quality begins to suffer. That point apparently has been reached.

That doesn't mean however that further audio processing is going to come to an end. Far from it. One audio processor manufacturer recently introduced a system to spatially expand stereo. Its said to provide a "wider stereo field" enabling a station to have their own unique sound.

Digital audio processing is also on the rise. Look for a flood of new digital audio equipment in the near future.

Any experimental broadcasters out there that want to experiment with enhancing their stereo? There are several easy techniques which can be tried. These include:

(1) introduce a slight time delay between your left and right inputs

(2) increase the amount of L-R modulation (caution - main channel (L+R) audio will appear to decrease).

(3) boost selected frequencies within just the L-R modulation.

Any one or all of the above can be tried simultaneously.

Let the EBN know how you make out.

MINI LESSON TOPICS NEEDED

If you have any ideas for mini-lesson please let us know. Do you have questions about antennas, audio circuits, oscillators, filters, RFI suppression, modulation methods, etc.? We'll be glad to put something together for publication in the EBN.

WHAT'S NEW AT THE FCC

Stations are required to keep copies of their FCC applications in a "public inspection" file for 7 years. The FCC proposes to modify this time period to just one renewal term or until a license renewal, whichever is later.

For your information stations are required to keep all pertinent papers dealing with their station in a public inspection file. These papers include copies of construction permit and license applications, engineering data, letters from the public, etc. They are required by FCC Rules to make these papers available for inspection by any member of the public during normal working hours.

WANTED, FOR SALE, BARTER, BULLETIN BOARD

WANTED: AM antenna and carrier current coupler, cart R/P, 4-ch mixer with cue, FM mono transmitter. Have a 5 watt AM C-C transmitter for sale or trade. Contact Mike at (904) 623-2911

WANTED: Revox A-77 Reel-Reel. OK if it needs some repair. Contact F. Vobbe, 706 MacKenzie, Lima, Oh 45805. Phone 419-224-1335

NOTICE: Pick of The Pops Show, a monthly 60 minute program featuring the latest in Canadian pop music. The music and program are recorded in real-time stereo, mastered from a 30 cm/second tape. A playlist accompanies the program indicating segment times and optional cutaways for local commercials. The program is also available in a "music-only" edition without the announcer. Send $5.00 for cost of chrome tape copy of either version, or your own tape plus $1.00 to cover postage. Write LPBN, 514 Vincil St. Moberly, MO 65270

TRADE: I am interested in doing custom programming for your station in exchange for your custom "DEE-JAY" demo cassette using your station's call letters. John Dutton, 514 Vincil St. Moberly, MO 65270

FOR SALE: Gates Stereo 80 console. Needs meter. Comes with manual. Works well. $800.00, R. Lane, KTYD, 5360 Hellister, Santa Barbara, CA 93111. Phone (805) 967-4511

FOR SALE: Gates Stereo Statesman 6 ch stereo console, working condition with manual $200.00 plus shipping. R Phipps, KHLC, 998 A Sidney Baker So, Kerrville, TX 78028, (512) 257-7711

NOTICE:

WE NOW HAVE OVER 200 EBN SUBSCRIBERS. THIS MEANS FUTURE ISSUES WILL BE MAILED IN BULK RATHER THAN BY FIRST CLASS POSTAGE. THIS MAY CAUSE A DELIVERY DELAY OF 3 TO 5 DAYS OVER NORMAL DELIVERY TIME.