

The WORLD SCANNER REPORT

A Journal of VHF-UHF Scanner Technology & Engineering

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LAST ISSUE FOR THE 1st HALF OF 1992

Just a reminder that it's that time of the year again, folks. We publish ten issues per year and this is the fifth of 1992. The next issue will be July's which will be mailed on or about the first of July. This issue serves as a "combined issue" for the months of May and June. Please don't expect a June issue.

TIME TO RENEW YOUR SUBSCRIPTION ?

Check your mailing label for a florescent pink slash through the expiration date which reads **EXPIRES: MAY 92**. If so, this will be the last issue you will receive unless you do one of three things: (1) renew your subscription before July 1, 1992. (2) If you can't renew right away because of budgetary onstraints, drop us a line saying so and we'll be glad to extend your subscription through the July issue to tide you over until you can get it together. (3) If you plan to NOT renew, also drop us a note saying so and why not and we'll send you the July issue anyway, just to say THANKS for trying us out.

NEW COMPUTER & SOFTWARE FOR WSR !!

We did it! This issue was composed and processed on our new Dell i386/33 computer using MicroSoft Works for Windows! Many of you may recall that we have been operating with a pair of ancient Apple IIe's all this time. They got the job done well enough, but entering the Information Age as we have been doing, it was best that we make the move to state-of-the-art equipment. The printing isn't our best yet, but all things in due time. A laser printer is in the budget for the near future, hopefully by year's end. In the interim, our Panasonic KX-P1624 will do nicely as you can see here.

MORE ON THE FIDONET: NEW SCANNER ECHO!

Last month, I gave you a detailed overview of the FidoNet worldwide computer network and the Shortwave Echo. Since then, I have learned of and joined a new echo that's exclusively dedicated to scanners and scanning, the SCAN-Z1 echo. By the time you get this, its name will probably have changed to the more international sounding SCANRADIO. The flavor and character of the SHORTWAVE echo will not change according to echo Moderator, Fred Hatfield and so it will stay available to scanner enthusiasts, too. So if you want a wide variety of

scanner, shortwave, and other radio information to pour into your computer, and overwhelm your mind, you should ask your local SysOp to carry both the SCANRADIO echo and the SHORTWAVE echo. If the SysOp reports back to you that his system can't find a SCANRADIO echo, then ask for it under its old name, SCAN-Z1. It's a new echo with a low to moderate volume of traffic, so it should be no problem to convince your SysOp to carry it for you. Ken Storm is the Moderator of SCANRADIO. Again, if you haven't found a FidoNet BBS in your area, drop me a SASE and a couple of loose extra stamps and I'll prepare a list for you. Please mention the Area Codes of the localities of your interest so that I can tailor the list for your needs.

OUR BBS IS COMING RIGHT ALONG: PLEASE JOIN !

The Hertzian Intercept BBS is steadily growing, adding new features and files. It's also a lot faster since I moved it into this whiz-bang Dell i386/33 computer. Its hours have expanded just for you WSR readers to the between 5:30pm-1:30pm, Pacific Times: (619)578-9247. Please, this phone is reserved for voice business ONLY between 1:30pm - 5:30pm. Absolutely no hobby chit-chat on the phone; business only. Please use the mail or the BBS for questions and non-business needs. If you have an urgent need to call voice, please talk to whoever answers; it is not likely that I can come to the phone for any but the most urgent of needs. My workload and prior commitments demand this be so. If you wonder what I do, it's usually one of two things: writing about or working on scanners, either of which requires my utmost concentration and mental dexterity. Distractions must be kept to a very minimum in my line of work. Thanks for your patience. Please use the BBS if you can; it's there for you!

FATMAN COMPUTER INTERFACE CORRECTIONS

Another obnoxious little gremlin has shown up in the FATMAN Computer Interface schematics. Please turn to V2N1, Jan 92, page 9 and make a pen & ink change as follows: in the almost exact center of the page between U-4a and U-4b, *draw a dot to signify a connection of Pins 2,3,16, 10 & 11 of U-4 and Pins 2 & 4 of U-9*. The connection dot should go right on the intersection of the wire from U-9, Pins 2 & 4 to Pin 10 of U-4b and the wire from U-4a. Pins 2,3 & 16 to U-4b, Pin 11. This is the only intersection of what looks like two wires crossing in this vicinity. The result of this correction is that +5v should be tied to U-4, Pins 2,3,16,10 & 11 and U-9, Pins 2 & 4. Sorry for any inconvenience this oversight may have caused.

FROM THE READERS

SCANNER BEAM TESTS: Dear Bill, Well, I finally finished my evaluation of scanner beam antennas. The antennas tested were:

1. Create Log Periodic - CLP5130-1
2. Grove Scanner Beam
3. Radio Shack VU110 TV Antenna

The antennas were mounted with vertical polarity and fed with equal lengths of RG-8X coax from a DIAWA CS-20G coax switch and fed to an ICOM R-9000 receiver. I used the R-9000 instead of the "Cheek-modified" R/S - PRO-2006 scanner only because of the very large "S" meter on the R-9000. (*I don't blame you! If I had an R-9000 and a "Cheek-modified" PRO-2006, I'd use the R-9000, too! /ED*)

The procedure for comparison was first to aim the antennas at Oklahoma City by peaking on the NOAA weather station at 162.400 MHz. Then other OK City stations were monitored in the 150, 450, and 860 MHz frequency ranges. Two antennas were switched back and forth on a given signal to compare relative signal strengths as indicated on the "S" meter. Preamps were not used in these tests.

I have not calibrated, nor does ICOM give a calibration for the S-Meter, so the comparison of the antennas was in relative "S" units. (*Which is plenty good enough! /ED*) There was complete silencing at all signal strengths above one "S" unit. Below this, signals were readable, but contained noticeable hiss. The "S" meter scale is logarithmic, so it is related to dB signal strength.

Two antennas were compared at a time and then the combination changed around. I took a lot of data for which the results are summarized as follows:

1. Both scanner beams were good and were equal to or better than the ICOM-7000 discone antenna.
2. The CLP-5130 was clearly the best antenna, averaging from 2 to 4 "S" units above the Grove Scanner Beam across all bands.
3. A typical example at 859.262 MHz, the Grove Beam yielded 0 "S" units, but the signal was still quite readable. The Log Periodic yielded +3 to +4 S-units with a perfect signal. Then I inserted a 10 db attenuator in the antenna circuit. The Grove Beam signal disappeared and the signal from the Log Periodic signal dropped to 0 S-units but was still readable. This indicates that, at least in this frequency range, the Log Periodic yields as much as 10 db more signal; a crucial difference.
4. The above test sequence was repeated in the 460 MHz range, the antennas were much closer, within 3 db.
5. Around 150 MHz, I found conflicting results among the antennas. On some signals in this range, the Log Periodic indicated 1 to 2 S-units over the Grove, but on other signals the difference was as

much as 4 S-units over the Grove. (possibly because the signals were off beam centers and each antenna has a different radiation pattern. /ED)

My conclusions are that if you are looking to catch signals in one general direction, then the investment in a beam is certainly worthwhile. The Grove Scanner Beam does a fine job, but if you win the lottery, go for the Log Periodic. It is definitely better.

The performance of the TV antenna was disappointing. It did a pretty good job on 860 MHz signals, slightly better than the Grove, but in all other ranges, the Grove was better.
-----William E. Bowers

A READER DOESN'T LIKE COMPUTERS!

Dear Mr. Cheek: Enclosed is a check for a six-month renewal for the WSR, July - Nov/Dec '92. I'm holding back six months, mostly because I don't own a computer. I am noticing your journal's articles catering more and more to them with scanners, if included, taking a back seat and further away from pure scanner-related topics.

I hope more of your subscribers are noticing this format change and can influence your style back to what it originally was, it seems to me, intended to be. Thanks for your consideration. -John A. Morris, WA

Dear John: Your letter was worse than the rare, but venomous variety. Nasty letters are easy to ignore and laugh at; and when people express their discontent in a provocative manner, they're wrong right off the bat and I feel no obligation to mess with them any further. Your letter, however, served to remind me of my frailty & inability to please everyone. There's no way I can be anything but sympathetic to your cause. And so I shall explain the situation as best as I can, not only for your benefit, but also for those who may feel as you do. No one else has complained of our focus on computers yet, but that doesn't mean much of anything.

The situation is that the world is moving into the computer age whether we like it or not. My line of work and the demands and needs of the majority of the hobbyists require me to stay abreast of the latest technology, which definitely includes computers and things digital. Now you're going to love this...my computer shows that you have a PRO-2004 and a Sangean ATS-803A. This information was available to me at the touch of a key; lightning quick. My computer makes it easier for me to be aware of and responsive to your needs, but THAT is not the point: it is the fact that each of your two radios is internally operated by a micro-computer and maybe you didn't even know it!

Now here is the real clincher: humans, as you are aptly aware, do not work with computers nearly so well as do other computers! This is why I have dedicated the WSR in 1992 to the computer-aided side of scanning. Do not fear

that the WSR will turn into a computer magazine; it will not. We will always maintain a strong focus on scanners & scanning but it is very important that we focus on BOTH the technology of scanning AND the tools of scanning. Computers are both a tool and a technology which demand our interest. Look at it this way: how long does it take to load 300 or 400 channels into your PRO-2004? And, how often are you motivated to repeat that process? Let me venture to guess that you try VERY HARD to preserve the memory of your scanner because you loathe the idea of having to finger-load all those frequencies in again. Therefore, you are limited as to how much fun and use you can get out of your scanner. No big deal so long as you enjoy what you have, BUT...many hobbyists have joined the computer age, and we have to stay on the leading edge of new developments to quickly transfer them to the hobby level. Computers are here to stay and are going to be forever glued to the Hobby Radio scene. Therefore, I don't have much of a choice in the matter. See another angle of what I mean in Perry Joseph's continuing series on "Scanner Frequency Management". Please think about it.

Take heart, however, because there is only so much that can be said about computers as related to scanners and a limit is in sight. We'll never truly reach an end to it, but the intensity of our present focus will lessen and the scanner will resume its rightful position as the nucleus of our attention. Actually, it's always been that way, but we deviated outside YOUR interests for a time. How come you aren't computer oriented yet? Is it because you are from the "old school" or are there other factors involved? I stayed with my antiqued, Apple computers for so long because of budgetary reasons. Alas, I had to upgrade; budget or no budget, because the world is not run on Apples anymore. I may be poorer but I am happier. Could this possibly apply for you? /BC

READER THINKS WIDEBAND RADIO IS IT!

Dear Bill: It was really promising to see the article covering the shortcomings of the ICOM R-1 wideband receiver in the April issue. I'm very excited about the appearance of wideband scanners on the market; have been ever since I first laid eyes on the groundbreaking SONY ICF-PRO80. A handheld full-spectrum receiver seems to be the ultimate way to observe conditions across vast stretches of frequency. Thank you for spreading your enthusiasm for wideband. Others have seemed to focus on the negatives, the limitations of the rigs available. I agree that units we've seen so far leave a bit to be desired in many areas of performance, but the concept is too exciting to let go by the wayside.

One possibility for the future of wideband radio is a longwave-to-microwave receiver to appear like ICOM's stunning IC-2SAT and IC-4SAT. These rigs are the sharpest yet in consumer electronics. To house a full-spectrum receiver in this format would be a step into the future. It should be able to receive SSB, in addition to WFM and selectable IF bandwidths of AM and NFM, to make it the radio of choice for full-function wideband monitoring.

We should write to the manufacturers, asking them to bring out more wideband receivers, with improved performance across their entire frequency range. It could be that this concept will fit very nicely into a future that could include direct-satellite broadcast. In addition to all the other signals we can tune into with our wideband receivers, we just might also be able to monitor satellite broadcasts!

Maybe KIWA Electronics can design a mod to sharpen up the R-1. They seem to be a natural to do this mod, judging from their ads in Monitoring Times. Thanks again for supporting wideband radio!! '73s/C. Ermatinger, MO

Nice, thoughtful letter, Chuck. I don't know whether to share your enthusiasm or to turn dull and despondent. You see, the manufacturers are not very responsive on a personal level to the hobby. I think time was when they were, but not anymore; not with the demise of Hammarlund, Hallicrafters, Atwater-Kent, etc. Mfgs are responsive to the market where the dollars are, but not to the Hobby where the people are. I think we will see more and better wideband handhelds coming out, but it won't be because the mfrs are tuned in to us. It will be a venture to make a buck. Pity, because the bucks are there to be made, but a line of communications simply does not exist between the Hobby and the mfgs. Some mfgs like Grove Enterprises are the exception, but they are few and far between. It seems that wherever you are willing to spend a buck carries more clout than a letter or a phone call. Now this more or less has to be so, because without the buck, the mfr cannot stay in business. Even then, it's awfully hard to STAY in business with costs of overhead, taxes, licenses, salaries, and such. I suppose this missing line of contact is something we have to accept, especially considering products from offshore companies like ICOM, Yaesu, & Kenwood. The USA offices of these companies really are little more than marketing, sales & service outlets and I think they have very little say-so in the products that come to market. In the case of domestic mfgs like Drake, MFJ Enterprises and Grove Enterprises, you are much more likely to be heard and I think they do encourage feedback from the Hobby. The trouble is that domestic mfgs cannot compete with the off-shore industry when it comes to economics of materials and labor. Most likely, it is not feasible to build a competitor for the "ICOM R-1" in this country; not for under \$1,000 anyway, and the R-1 is going for \$479 now! There is a lot more to a product than just cranking it out. For example, the R-1 may have taken several engineers a year to design, develop and prototype. The cost could easily reach \$400K before the first unit ever rolls off the production line.

I know that KIWA Electronics is aware of the R-1's deficiencies, but I don't know if they are working on a solution. The thing critical to the R-1 is high performance in a tiny package, and there's not much room in there to stick a quality filter. KIWA assembles filter units into modules, but they do not manufacture the

filter units. There may not be any small enough for the R-1 with any quality. You're right, though, that KIWA is in a good position to solve the problems in the R-1, if they're really solveable.... /BC

BUILD YOUR OWN CTCSS TONE FINDER

By: Professor Peabody

Geetings Scanner Fans: This month we nosedive into the world of CTCSS tones. Those wonderful subaudible tones that make or break our squelch. Pun intended...

We all know what CTCSS tones are and their purpose, but we can't know an incoming tone's frequency without aid of special and usually expensive test equipment. But only two simple items are all you REALLY need to find out what you want to know about these tones. Two cheap and easy-to-build circuits are used together to filter and display CTCSS, if present on incoming signals. First is the 300 Hz low pass filter that appeared in Bill's Scanner Modification Handbook, Vol-2, Mod # 31, page 176. Now if you already have a frequency counter, you can stop right here and feed your counter with the output of the Low Pass Filter and be done with all the fuss and muss. On the other hand, you may not want to tie up your counter for CTCSS tone reading so the rest of this circuit might be for you anyway! The output of the Low Pass Filter is fed to my simple counter circuit which counts up to 999. Three digits are all we need. When CTCSS tones are present for about 5-sec or longer, the display gives a direct readout of the tone in use. This circuit & modification should work quite well with most modern scanners. Here's how it works:

Figure 1, the schematic, shows the audio signal taken from the high lug of the scanner's squelch control (which is also the audio output of the NFM chip) and fed to the low pass filter, the output of which is then fed to a high gain amplifier that presents a 5 volt signal to the two Schmitt trigger NAND gates to square up the tones so they can be counted. Next, there is a precision one second gate time so the counter can count the number of pulses out of the amplifier. Instead of fooling with crystals, I chose an accurate reference signal that's in almost everyone's house in North America: 60 Hz AC power. A bit of the 60 Hz signal is sampled from the secondary of the power transformer and half wave rectified so only the top of the waveform is left. Then fed into another Schmitt trigger to clean up the signal. Two divide-by circuits divide the 60 Hertz pulses by 10 and then 6 (60 total) leaving a precision 1 Hertz pulse. But the pulse is 1 Hertz which means half the signal is low and the other half high. So our gate time is .5 seconds. Not what we want, so we just divide it by two again with a flip-flop (4013) and we now have a .5 Hertz signal which is one second low and one second high. Just what the Professor ordered!

The precision gate time is fed to a NAND gate that makes a "window" to allow the tones to be counted for the one

precision second and then the window closes for one second. Then opens for a second and closes for a second, continually repeating the cycle. The other NAND gates use RC time constants to create the LATCH and RESET pulses which clock the counted signals into the displays and then clear the counters for another cycle. The 14553 IC is neat because it has a three digit counter and three latches in it that holds the data. But then it multiplexes the data for the three digits to cut down on wiring. Only one transistor is on at a time and flashes the digit a 1000 Hertz rate so it looks constant to our eyes. The 14543 IC is a BCD-to-seven segment decoder-driver that makes the digits light up in the displays. The seven segment displays have the matching cathodes wired together and the anodes are connected to their corresponding transistors to be multiplexed. The gate LED is used to display the one second gate time and of course we need at least one LED in the project or why build it at all!

Build the circuit on one or two pieces of perf board or make your own PCB, whichever suits you best. Install the board(s) in a project box of suitable size to hold the circuit board(s) and the transformer. Everything can be self-contained in the enclosure and you can make it look pretty slick. Very little work needs to be done inside the scanner this way. In fact, you need only tap the audio output of the NFM chip in your scanner, which in many cases is as simple as the high lug of the SQUELCH control. This will be the case for the PRO-2004/5/6, PRO-34/37 and most other Realistic scanners. In worst cases, you can refer to back issues of the WSR, VIN4 & VIN9 to find which NFM chip is used by your scanner and which pin of the chip is the audio output. Whichever you select or find best for your needs, solder a 0.1-uF capacitor to the tap point and connect a shielded mini coax to the other lead of the capacitor and route this mini coax to a phono jack on the rear panel of your scanner. Ground each shield end of the coax and you're in business. Install a phono jack on the rear panel of your CTCSS Finder box and on the inside, connect it to the INPUT of the Low Pass Filter via another 0.1-uF capacitor.

Connect a mating patch cable between the new TONES OUT jack on the scanner and the TONES IN jack on the CTCSS Finder box. Plug it in to 110-vac and the Gate LED should start blinking. Adjust the voltage at pin 5 of U-1b, the op-amp, to 3.50 volts. Temporarily connect a 100-pf to 0.01-uF capacitor to one of the two secondary low-voltage leads of the transformer to the TONES IN of the Low Pass Filter. Slowly crank up the gain of VR1 and you should see 060 presented in the displays. You are now measuring the 60 Hz line voltage. If you see 061 displayed, move the cap to the other transformer secondary lead and you should see 060 displayed. That's the whole checkout procedure, nothing to it.

After connecting it to your scanner you will see random numbers displayed with no signal into the scanner. This

is because random noise is coming out of the squelch circuit. Perfectly normal. When a transmission is present that has the tones two or three gate times is all that is needed to accurately count the tones. If random numbers or 000 is displayed when a transmission is present that is known to have the CTCSS tones then crank up the gain with VR1 so you get a stable display. But don't have too much gain, enough is sufficient. I have found that this tone counter is very accurate and will display the tones to 1 Hertz accuracy. Not bad for a circuit that costs 12 bucks! So enjoy and have fun.

SCANNER FREQUENCY MANAGEMENT - PART 3

by Perry Joseph, President, DataFile, Inc.
Developer of ProScan Frequency Management System.

In my last installment, I described the general types of software which can be used for managing a frequency list. The conclusion: using a database program offers the most power and flexibility for our task.

Choosing the right type of database manager is VERY important. I say IMPORTANT and I mean it. I have witnessed enumerable instances of leap before look in the fine art of purchasing software. Before I discuss some of the specifics of database programs, let me offer you an invaluable tip for buying software. Purchase from a high volume retailer who offers 30-day money-back guarantees. This way, you can "afford" to make the wrong choice and try again. You'll find many of the national software retailers are competitive with mail order outlets. Any price difference will be a small price to pay to insure the purchase, unless of course, you are absolutely certain the software will suit your needs; only then would I consider buying from a mail order or discount outlet.

Please note that specific references to software are DOS-based programs. This month's installment is a rough summary and is not meant to be all-inclusive. Your needs and options may vary and must be carefully evaluated before buying a database program.

There are many questions to be answered when choosing a database program. What type of data will be maintained, what type of platform is required (DOS, Macintosh, etc) what type of hardware is required (do you have enough RAM and disk space), single-user or multi-user, etc. If, however, you are looking for a database program to simply manage a frequency list, we can eliminate some of the more tedious questions. Assuming the main job to track basic frequency info and data storage & retrieval requirements to be simple, we can consider the plain and inexpensive types of database systems commonly known as "flat-file", as opposed to "relational" which are used for more complex data structures. Most "flat-filers" offer plenty of features, such as data sorting, retrieval, conditional reporting, etc. These programs are easy to use, require a minimum hardware investment and are economical. Some flatfile database programs

include PC-File by ButtonWare, Inc. (206)454-0479, Q&A by Symantec Corp. (408)253-9600, and Rapidfile from Borland (408)438-8400. In addition, there are numerous database programs available under the shareware concept, which is "try it for free and if you like it, send us some money". Typically, these programs are found on electronic bulletin board services or for low dollars from "shareware" providers.

The more adventuresome might consider purchasing one of the more expensive programs. If, for example, we wanted to keep a daily log on active frequencies, we would have good reason to consider a "relational" database program. "Relational" offers an ability to maintain a file for the frequencies and a separate file for the log entries, thus eliminating redundant info every time a new entry is made to the log file for a specific freq (in other words, we would not have to enter the freq name, location, etc, every time we wanted to enter a new log record). When a frequency record is retrieved, the "related" log records are automatically brought along with it. In this example, relational programs offer a more flexible way of maintaining data.

Another issue worth discussing is programmability. Programming offers a capability to create custom screens, queries and reports for specific types of tasks, thus reducing the amount of time it takes to store, retrieve and maintain data. There are three general programming types of database programs: interactive or interpretive, programmable-only and non-programmable.

Interactive/interpretive database programs offer a combination of tools for both programmers as well as users. You can either program the database "engine" for specific or redundant tasks, or use built-in features which provide direct access to your data. These programs cover the gamut from simple to sophisticated. Some of the high end interactive/interpretive programs include askSam by askSam Systems (904)584-6590, dBase IV and Paradox by Borland Internl (408)438-8400, and FoxPro by Fox Software (419)874-0162 (Note: FoxPro was recently purchased by Microsoft).

Programmable-only database programs, sometimes referred to as compilers, do not offer interactive capabilities and therefore require additional development time, not to mention learning curves and high prices. The benefit of this type of program is faster running and a higher degree of flexibility and customization. These type of programs include Clipper by Nantucket (213) 390-7923, Quicksilver by WordTech Systems, Inc. (510) 254-0900 and Force by Dvorak Software (303) 494-0298.

Non-programmable database programs are used when extensive data management is not required. These programs have a fixed amount of built-in routines allowing for queries, sorting, design of data input and output screens as well as reports. This type of program includes the previously mentioned flat-file programs as well as relational programs like Professional File by

Software Publishing Corp. (408)986-8000, Personal R:BASE by Microrim (206)649-9500 and Alpha Four by Alpha Software Corp. (617)272-3680.

A few other thoughts in closing: Technical support policies vary widely from free to expensive and from instant phone support to "leave a message". A major issue is compatibility of files if you are interested in exporting/importing data from/to other sources (Note: The dBase type file format is the most popular with an estimated market share of 48%). I also suggest the more popular programs offer a greater degree of survivability in this very competitive marketplace.

Next month, we will explore some specific requirements needed to effectively manage a frequency list. /PJ

Inside GENie's Radio, Electronics & Broadcasting RoundTable

Say "radio" and a lot of people conjure up images of the quintessential nerd poring over a circuit diagram while fingering the keys of his 4000-function, programmable calculator. Alas! Such astereotypical impression is hard to overcome, but I can assure you we are simply NOT THAT WAY in the RADIO RoundTable.

Although our short name is the "RADIO RT", our official title is the "Radio, Electronics, and Broadcasting RoundTable". And even this long name hardly does service to the myriad of topics we address. We cover everything -- and I mean EVERYTHING -- related to the hobbies and professions of electronics:

Audio/video systems	Shortwave radio
Telephone systems	Amateur (ham) radio
Burglar alarms	Citizens Band radio
Satellite TV	Construction projects
Lasers	Marine electronics
Historical figures	Broadcasting
Equipment repair	Weather satellites
Facsimile machines	"Spy" communications
Cellular phones	Scanner radio listening
TV/FM reception	CD players

And a whole lot more!!!

As part of GENie*Basic Services, the RADIO RT Bulletin Board area is one of the least expensive ways imaginable to find the answer to your questions about the world of electronics. The Software Library has nearly 3000 files, including frequency lists, handy programs, broadcast schedules, and study guides.

RealTime Conferences are always a special treat in the RADIO RT. We have numerous interesting guests in RealTime Conferences each year. Just recently, we had RTCs on 900-number phone services and cellular telephone monitoring laws. (The notes are in the Software Library.) Every Sunday night at 9 PM Eastern time, shortwave enthusiasts gather in Room 2, in real-time

to share their monitoring successes. Besides shortwave broadcasts from around the world, they hear military action, air/sea rescues, Air Force 1, and even pirate (illegal) and clandestine broadcasters.

SOMETHING FOR EVERYONE

If, like many GENie users, you're a news hound, you'll be glad to know that the RADIO RT offers you late-breaking news with an international flavor. The RADIO RT was first on the scene with news straight from Radio Moscow on the recent coup. We had not only current news reports about the Gulf War, but we could listen in on some of the action as it took place! Exciting? You bet!!!

We can show you how to receive weather satellite photos directly from space. How about a conversation with an astronaut or cosmonaut? We can show you how to do that, too. It's all possible in the RADIO RT.

Are you thinking about buying a new stereo system or VCR? Visit the RADIO RT first. We have many ongoing, lively discussions about the best equipment to buy on any kind of budget, and where to buy it. If you need a new answering machine, pocket organizer, telephone, pager, or any other gadget, we have the answers to your questions.

Do you use a cordless or cellular telephone? Then you may be interested to find out just how easy it is for other people to monitor your conversations. It takes only a simple scanner radio. That's right. And while listening to cellular calls is illegal, listening to cordless telephones is NOT. Your neighbors or even your competition could be eavesdropping with ease on your private life. You will be shocked, but we can also help guide you in protecting your privacy.

WHAT MAKES US SPECIAL?

I think you'll find the RADIO RT an incredibly friendly place. No need to feel like you're asking a "dumb question," since we've all had to start from scratch at one time or another. As our ham radio topic leader Brian Murrey (MURREY) puts it, "The best things I see on the Radio RT are the amount of helpful information that can be had here. There are so many talented and helpful users and leaders here that it makes it hard to be a stranger for long." Allan Courtney (A.COURTNEY) sums it up even more succinctly: "The comradeship amongst the members of the RT can't be beat!"

The users make the RADIO RT a complete success. They come from all walks of life. Our online survey shows that only about half of our users work in electronics-related fields. We have the expected array of engineers and technicians, but we also have doctors, lawyers, housewives, students, and others. The common thread is SOME interest in SOME aspect of electronics.

Thanks to very strong talent, our staff can work with USERS and guide and manage our Bulletin Board, Real-Time

Conferences, and Software Libraries very effectively. After all, if you can't find info quickly and easily, you're wasting time and money. But we don't that to happen and we do want you to come back often.

The staff members offer strong credentials in their respective areas of expertise, too. Allan Courtney, for example, spends his non-GENie hours as a dentist, yet he brings 20+ years of shortwave listening experience to the RoundTable. Brian Murrey is a licensed ham radio operator and has been a GENie user since the earliest days. He runs his own ham radio BBS, and he edits the Fidonet Ham/Packet Digest, a digest of found-articles on electronic sources - definitely of interest to hams.

Ed Lentz (ELENTZ) and Will Loftis (W.LOFTIS) are scanner radio TOPic leaders. Their hobby and work focuses on police, fire, and other emergency comms. Ed also edits the Public Safety South Central US column for the Radio Communication Monitoring Association Journal, and he maintains frequency databases for Texas, Louisiana, Missouri, Oklahoma, Arkansas, Alabama and Mississippi.

Joe Pennington (J.PENNINGTQ4) and Doug Krile (D.KRILE) head up the broadcasting area with some impressive credentials. Joe is the News and Program Director for KDES-AM-FM in Palm Springs, California, and has a primary professional background in investigative radio and television journalism. He has also won a couple of Emmys for his TV work, the National Annual Award from the Aviation and Spacewriters Association for TV work, the Abraham Lincoln Award for radio documentary production, and a host of lesser-recognized awards. Joe stands for rights, too. Joe fought two serious First Amendment issues in the courts, including a 'refusal to identify news source' case which made its way to the U.S. Supreme Court. And Doug is the 10 PM news anchor for KARK-TV in Little Rock, Arkansas. Both men have served to increase GENie recognition amongst their fellow pros, but they also lead some interesting discussions for everyone in CATegory 16 of the RADIO RoundTable Bulletin Board.

Mike Chapple (M.CHAPPLE) brings his experience in the fields of education and video production to the Audio/Video and Consumer Electronics CATegories, two of the most interesting and informative places on GENie! Mike is a teacher during the day, and he has proven to be an exceptional TOPic leader. No doubt his professional skills as a teacher contribute. Always sensitive and diplomatic, if Mike doesn't know the answer, he's almost always sure to point you in the right direction for finding it. He is also a licensed ham radio operator. As he puts it, "The moment I set foot in the RADIO, ELECTRONICS, and BROADCASTING RoundTable, I was insanelly inspired to get my ham 'ticket' (license), and am now hooked on almost everything discussed in the RoundTable. Don't say you weren't warned!"

Bruce Robin (BRUCE-ROBIN) and Tom Robinson (TOM-ROBINSON) keep atop the exciting and fast-growing field of home automation. The X-10 light and appliance controls

introduced a decade ago spawned a whole new industry. Now you can automate your lifestyle through smart devices and your personal computer. Machines are here to help us. Make the most of yours by stopping by CAT 11.

Keith Whitton (MASTERWERKS) serves as assistant SysOp when he can find time. Keith has a rare breadth of experience servicing electronics, and he is our resident Mr. Fix-it. If it's broken, chances are good he can tell you why it's broken and whether or not it can be fixed.

And me? I founded the RADIO RoundTable just over three years ago. interests in shortwave radio began nearly 25 years ago. I am an avid listener to anything under the sun, and I hold amateur Extra Class license with the callsign NASE. My professional interests include radio physics as well as aerospace and radio systems engineering. I spend what little free time I have doing freelance writing, primarily for radio-related publications. AROUND THE RADIO RoundTable BULLETIN BOARD

The Bulletin Board is organized into logical areas or CATegories of general interest, defined as follows:

- 1 The Starting Point - RoundTable Help and SysOp Feedback
- 2 REB's Lounge and Conversation Cafe
- 3 Shortwave Listening
- 4 Scanning - Law Enforcement, Emergency, Military, and Air Comms
- 5 Electronics Service and Repair
- 6 Amateur Radio
- 7 Citizens Band Radio
- 8 The Trading Post - Wanted or For Sale
- 9 Audio & Video - Stereos, CD Players, VCRs, Camcorders, ad infinitum
- 10 Consumer Electronics - Telephones, Organizers, and Gadgets Galore!
- 11 Lifestyle Automation - Computer control of Home and Office
- 12 Satellites, Radio Astronomy, and Other Space Topics
- 13 High Technology and Professional Engineering
- 14 Construction Projects
- 15 Mini-Mall - Shopping for all your Electronic Needs
- 16 Broadcasting - The Profession and Programming
- 17 Odds and Ends <- Your hard-to-place questions go here!
- 18 General Mobile Radio Service (GMRS)

CATegory 1, The Starting Point ... is used to answer questions on Bulletin Board and Software Library operations. We also make RoundTable announcements, post information about recent file uploads, and solicit feedback and suggestions in this CATegory. If you are new to GENie, make sure you read all messages in CATegory 1, TOPic 1 for information on moving around the RoundTable with ease.

CATegory 2 ... serves as our general conversation area. At present we have an interesting discussion going on about "Monitoring Ethics." The debate covers everything from radar detectors to cellular phone eavesdropping, and you may want to join in. The Conversation Cafe also offers areas in which to introduce yourself as well as learn how to get started in electronics.

CATegory 3 ... shortwave listening (SWLing) has always been one of our busiest CATegories. It covers many subjects ... from which inexpensive receiver to buy, to current shortwave broadcast schedules. Also, CATegory 3 contains the results of our Sunday night RealTime Conferences. Here's a sample of loggings from one of the latest SWL RTCs. You can see we hear a wide variety of interesting signals from all over the world.

Frequency Time Comment

4820	0148	LV Evangelica, Honduras with SS OM. [Paul]
4826	0146	Tentative R. Cancao Nova in Peru. [Paul]
4914.6	0240	R. Cora, Lima, Peru in SS with ID. [Bob M.]
4985	0112	Presumed R. Brasil Central with OM in PP & pop mx.
5616	0221	Unid flight comms in USB. Ment. Gander. [Lew]
6020	0241	Radio Netherlands, Happy station with music. [Paul]
6135	0244	Swiss Radio International in SS. // 6125, 17730 [Paul]
6673	0106	Hurricane hunter a/c in comms w/ KJY24 USB. [Joe]
7415	0130	Pirate Radio Beaver with ID. Music. USB [Brian]
9590	0150	BBC WS via Sackville with Sitar music. [Jay]
9745	0107	HCBJ with contest for trip to Ecuador. [Mike]
11645	0115	Voice of Greece with music. [Jay]
13011	0143	CQ de WNU44...Slidell, La. marker. [Jay]
14335	0155	Hurricane Bob info by hams in USB. [Brian]

I realize some of the abbreviations may seem strange, but come visit CATegory 3 to learn what they mean! Regular visitors to CAT 3 include Bob Grove, Havana Moon, Tom Sundstrom, and many more of your SWL gurus. We even have a special support topic run by Japan Radio Company.

CATegory 4 ... dedicated to monitoring VHF/UHF public safety and similar communications. We trade frequency tips, techniques and suggestions to help tune in on all the excitement. Believe me, few things are exciting as listening to all the action in your town. It's easy to do, and it can be inexpensive, too. RCMA, Bill Cheek, and Uniden all participate in CAT 4 discussions.

CATegory 5 ... Did your new toy break? Check CATegory 5 for service and repair information. We can guide you through simple check-out procedures to make sure you really do have a problem before you spend big bucks on a new unit or repairs. For do-it-yourselfers, we offer parts sources, repair procedures, and more. Some very talented people inhabit this CATegory.

CATegory 6 ... Amateur radio is another very popular area. Here is the latest info on new products, licensing help, equipment mods, and loads of help for newcomers to the ham hobby. Ham radio operators can talk to people all over the world from kings (King Hussein of Jordan is JY1, and King Juan Carlos of Spain is EA0JC) to astronauts and cosmonauts (hams often go up on the Space Shuttle, and the cosmonauts aboard the MIR Spacelab are hams). Come see why this hobby is so popular, especially now that you don't need to take a Morse code test to get a license.

CATegory 7 ... No, CB radio didn't die in the late 1970s, as many people believe. It's alive and well, as the activity in CATegory 7 will show you.

CATegory 8 ... Want good deals on anything electronic, check out the Trading Post.

CATegory 9 ... The AUDIO/VIDEO CATegory covers all aspects of audio and video technology from "What camcorder should I buy?" to "What's the latest release on laserdisc?" There are lots of friendly people willing to help anyone from the rank amateur with brand new equipment to the seasoned pro who just can't find that obscure connector.

CATegory 10 ... Consumer electronics is very diverse. Here are discussions of all kinds of consumer electronics such as telephones, answering machines, pagers; even (900) numbers. Feel free to stop by and share with us! Although both the AUDIO/VIDEO and Consumer Electronics CATegories cover TOPics of interest to those who have absolutely no interest in radio, be forewarned. As Mike suggested above, you may just find yourself with a whole new repertoire of interests and hobbies!

CATegory 11 ... Lifestyle Automation, where you can learn how to control your home and office environments for maximum convenience and energy efficiency.

CATegory 12 ... Here you can learn about satellite TV, radio astronomy, weather photo reception, and much more.

CATegory 13 ... discussions on advanced technology, data protocols, networking, components, and other technical TOPics related to engineers and electronics professionals.

CATegory 14 ... We have plenty of users who like to build their own gadgets and projects, simple & complex, from timer circuits to robots. Warm up your soldering irons.

CATegory 15 ... This is the RADIO RT's "Mini-mall." There are vendors selling a wide range of amateur, scanning, and SWL-related equipment, books, & software. You can buy everything from Radio Shack products to music scheduling software for broadcast stations.

CATegory 16 ... Even if you're not interested in building something electronic or a ham license, you might be interested in TV and radio broadcasting. This is the place for info related to broad-cast station engineering & programming. Many network professionals and air personalities visit here, so take advantage of their presence to voice your questions and concerns.

CATegory 17 ... is home to all electronic "orphan" TOPics. Odds and ends go here. Almost anything goes.

CATegory 18 ... All about the General Mobile Radio Service: business & personal uses; equipment, too.

RADIO RoundTable SOFTWARE LIBRARIES

Our Software Libraries are organized into text file areas and machine-specific software areas for programs designed to run on specific computers.

1. General News
2. Amateur Radio
3. Shortwave Listening
4. Scanner Listening
5. Build It! (Electronics Projects)
6. AUDIO/VIDEO and Other Toys
7. Software - IBM
8. Software - Apple
9. Software - Commodore
10. Software - Tandy
11. Software - Atari
12. Software - Other
13. Satellites and Radio Astronomy
14. Engineering and Broadcasting
15. Odds and Ends
16. RoundTable Help Files and Programs

As an example, if you are someone with an IBM PC, and you're interested in learning about ham radio, you should check LIBRARY 2 for text files, and LIBRARY 7 for ham-related programs. Our Software Libraries contain nearly 3000 files. Some of the best of the more recent files include these:

File	Name	Description
2766	NEWSLINE.46	Amateur radio Newsline 46
2764	SANDIEGO.ARC	Scanner freqs for San Diego - ARCD
2762	AIR-292.SKD	Z92 Schedule for AIR
2759	TEXASFRQ.TXT	VHF/UHF scanner freqs for Texas
2758	PCT214.ZIP	PC-Track V2.14
2757	CALFREQS.TXT	List of uhf and vhf freqs for CA
2756	SCDX2152.TXT	Sweden Calling DXers 2152 for 3/17/92
2751	DX0320.TXT	W1AW DX Bulletin for 20 Mar 1992
2750	LORANCV.EXE	Loran-C conversion program (MS-DOS)
2749	HAMFIND.LZH	Amiga search program for Buckmaster
2747	KTWIN220.ZIP	Kenwood rig control for Windows
2745	PLUSTD.EXE	Music Scheduling Software
2734	EDXC92.TXT	Info on the 1992 EDXC meeting
2733	RADIO.TXT	Newsletter of radio promotion ideas

2264	SATFINDR.PAK	MS-DOS locator for geosync satellites
2267	900NUM.RTC	RTC notes on 900 number phone services
2276	PCCLK215.ZIP	Set PC clock to atomic standard
2286	NETROM.TXT	How to use NETROM packet nodes
2287	EXAMS.TXT	Ham radio exams around the US
2289	ECPA.ZIP	Electronic Comms Privacy Act of 1986

Some of the most popular files these days are aimed at helping with ham radio license study, too. About 40 percent of our users are licensed hams, so drop by the Bulletin Board for suggestions on files to download for ham radio study. And just for grins, check out our online electronics quiz on Page 345. Now, doesn't all this sound interesting? It's affordable, too! For only \$4.95 per month you can have UNLIMITED ACCESS to GENIE*Basic services during non-prime time (6PM to 8AM weekdays and all day weekends and holidays). GENIE*Basic services include dozens of bulletin boards, e-mail, and much more! GENIE Value services are also inexpensive. At only \$6 per hour you can access over 100,000 files, enjoy real-time conferencing, and track the latest financial reports. For more information, call 1-800-638-9636. Come join us real soon. And, as we say in radio, 73s (best wishes)!

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THE BELOW QUESTIONS ARE OPTIONAL BUT WILL HELP US HELP YOU!

Radio Interests? (Put YEARS OF EXPERIENCE in each block that applies)

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Scanning? Radio? Radio? Listening? Radio?

Career/Profession

Or Occupation?

List makes & models of your scanners & other radio equipment:

:

:

Describe your technical abilities & interests here

:

:

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OTHER LITERATURE AVAILABLE

HOBBY RADIO BUYER'S DIRECTORY \$14.95 ppd surf

SCANNER MOD HNOBK, Vol-1: \$17.95 + \$3.00 S&H *

SCANNER MOD HNOBK, Vol-2: \$17.95 + \$3.00 S&H *

* Canada US\$4 S&H; Other Foreign US\$5 S&H; extra for Air Mail

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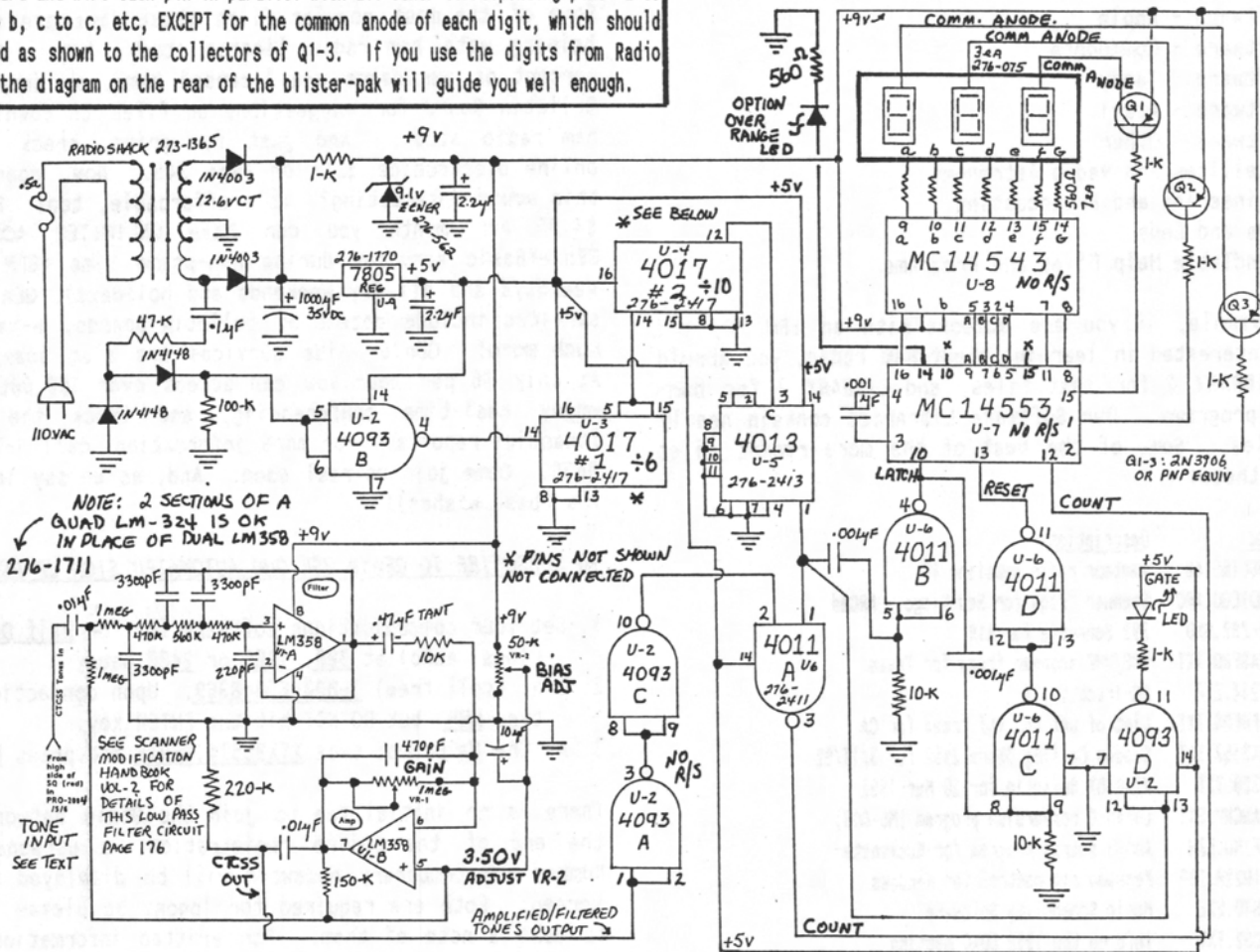
Include a #10 S.A.S.E. and one loose extra stamp if you want

hobby info & personal reply! Business inquiries exempt.

FIGURE 1: CTCSS TONE FINDER

NOTE: This circuit barks worse than it bites. U-1 is a dual 2-in-1 chip and U-2 & U-6 are quad 4-in-1 chips. The digital display is the worst thing to deal with here, but is easily handled. If you can't find a 3-segment display, use three individual LED digits, Radio Shack #276-#75. Position them on a piece of perf board and wire each pin in parallel with all other corresponding pins: a to a, b to b, c to c, etc, EXCEPT for the common anode of each digit, which should be wired as shown to the collectors of Q1-3. If you use the digits from Radio Shack, the diagram on the rear of the blister-pak will guide you well enough.

NOTE: Most parts are available from Radio Shack, but U-2, U-7 & U-8 must be obtained elsewhere. See back issues for addresses of Digi-Key and Easy Tech, both great sources of electronic parts. CAUTION: The capacitors and resistors in the Low Pass Filter must NOT be substituted! Very critical!



NOTE: RADIO SHACK PART #'S GIVEN WHERE AVAILABLE

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