# THUD

The Hackers Underground Digest

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Just wanna say HEY! to a few people, family, friends, aquaintences, and even a few ex'es...adam (best bud), alan (old times lost), alice (my aunt), bonnie (an ex), chris (another best bud), christopher (old friend), connie (and his wife), dad (miss you), damon (shiva rules!), david (hey big bro!), debbie (don't like california or sumthin?), ellen (i hear you're shrinking), genevieve (lost love), god, jan (best bud's girl), jeff, jeremy, jerome (hi bro!), jesse (how's the ribs?), jim (jimamma!), kristen (love that pony tail), laura (sorry I keep forgetting to call), lisa (hiya sis), liz (lizba), lori (yet another sis), marion (another aunt), mom (i owe you big time), niel (cool cousin), robyn (leather baby, yeah!), sandra (one of these days i'm gonna look you up), another sandra, sandy (i have your number but never call), scott (another bro who needs to get his head out from between his girls legs), another scott ('sup man), sean (dj, dj, calling dj), shannen (another leather wench), tom (theramin man), wendy (introduced me to Pink Floyd).

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# influence:

| | |
|---|---|
| *Another DeeJay*<br>*Bill Hayes*<br>*Solar Prophet*<br>*Blacklisted! 411*<br>*Mycal*<br>*Iron Feather Journal*<br>*Orion* | *Consumertronics*<br>*Dr. Whip*<br>*Telecode*<br>*Shiva*<br>*Oxygene*<br><br>*and, of course, those wishing to remain anonymous.* |

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# Brain Dump

## A message from the editor

Welcome, ladiez, gentz, hackerz, phreakerz, wormz, and whachamacallitz. You're staring at the premier issue of THUD, The Hackers Underground Digest. First, let me tell you what we're all about. Basically, we're a bunch of twits who figured we could make our own hacking magazine, and guess what! we did!! Cuz you're looking at it! But seriously though, we're not a bunch of people who think we can be better than anyone else. I for one hate people like that. I've been reading magz like 2600 and Blacklisted! 411 forever, and they're both really good. Each has it's strong points, as well as weaknesses. No publication is perfect, and I'm sure there's gonna be people out there who have their problems with THUD. Frankly, I'd be upset if people didn't write in spouting off shit about what's wrong with this, what's fucked up there, and what not. That's called feedback.

But anyway, what I am hoping to do with THUD is to provide yet another source of information for those of you out there that are into this shit. I am a firm believer in the phrase 'knowledge is power' and when I seek knowledge, I do not seek it from only one source. I try to corroborate by searching in many places. I would like to provide yet one more source for you. I would also like to provide more technically detailed information on the subjects we talk about. Oh, of course we're gonna have the usual shit like lists of freqencies, or what chemicals you 'shouldn't' be playing with and other general stuph like that. But beyond that, we're going to present to you articles written so that the beginner can understand, yet provide such a vast amount of information that even more advanced techno-philes should still learn a thing or two; or maybe to remind them of what they may have forgotten. We're gonna show you pictures, we're gonna give you schematics, we're gonna give you part sources, we're gonna give you assembly instructions, we're gonna give you operating instructions, we're gonna give you what you need to succeed. All you have to do is pay attention and understand and learn.

One thing that I've always felt uncomfortable with is the term 'hacker'. If you feel the same way, you can put your mind at ease by reading Bill Hayes article, "Just What Is A Hacker?" Bills, contribution basically put into words how I feel. Hackers are not the tongue-pierced, tattooed, only wear black, computer gadget in every pocket, can't live without electricity, evil malcontents bent on destroying the world by using the worlds electronics networks to wreak havoc on the unsuspecting public by destroying data and disrupting communications. Sure, I'll admit there are those types out there and frankly I think they've given the rest of us a bad name. SHAME ON YOU!! But also, much of the blame I think goes on the media for pushing that image onto the uneducated gullible world. To get a taste of what a REAL hacker is, read the article. You're gonna be surprised at who some the most famous hackers really are!

There's many fundamentals beginner electronics students learn. Mainly it's how everything is really broken down into little sections. And it's how to put simple circuits together to perform relatively simple tasks that's really important. Knowing on a fundamental level how something works, and having practical experience in using that knowledge really helps. In this issue you're gonna find an excellent article by Orion (gee, that's an obvious alias!) about the 555 timer IC. I remember when I learned about this little gizmo when I was in tech school. Man, it seemed like there wasn't anything that couldn't be done with a 555 and a few external components. Well, we present to you here a very in depth article that just about sums up all the basics of how to use the 555 timer. Oh, and it's well written too. The guy manages to desribe some of the sticky details, yet in such a way that a beginner shouldn't be overchallenged, yet it definately reminded me of some of the things that I learned waaaay back when. (no, I don't feel old....yet) Great article, I'm sure we'll have more from Orion in the future.

Ever hated listening to the radio? Turning that knob and checking out your twenty favorite stations...and even a few you don't like...and can't find ANYTHING worth listening to? Ever thought, man, if I had my own radion station, I know what I'd broadcast. Wanna do it? There's a nice little kit from Ramsey Electronics called the FM-10. It's a small kit, a low power FM radio broadcaster. That's right you can be your own disc jokey. The FM-10 kit is totally legal when unmodified. This issue contains an article from Mycal about all sorts of modifications you can make to the FM-10. Now, I must warn you that many of these modifications when used on the FM-10 and used to broadcast openly could get you into big trouble with the FCC. But the information is present to you none-the-less because knowledge is power. It is meant for educational purposes for those of us who are curious and want to know how these things work. Have fun but be careful, you're the one responsible for your own actions.

Anyway, you're also gonna find several other articles of great interest. There's a nifty little program called Cool Edit 96 that was given a great review by Solar Prophet. once I read the article I grabbed a copy myself and love it. There's also a short about the IRS being unable to prosecute certain individuals. Quite informative. You'll also find a list of all the U.S. Senators for all those of you who have something to gripe about. Come on, I know you've got a gripe!. We all do. For all you scanner buffs that also love amusement parks, there's a nice list of frequencies you'll find at your favorite entertainment facility. Shoved somewhere in these pages is a list of chemicals used for pyrotechnics, mostly fireworks. Lotsa info. There's also a short list of police codes. There's also a great review on a book and video about stopping power meters. Once again this is technically illegal but one can learn a lot about how these things work. And last but not least, a list of books that should be an excellent source of further information on quite a diverse range of subjects.

Lastly, I'd like to thank our friends at Blacklisted!411, Iron Feather Journal, those who contributed articles to us and the members of our staff for all the help in putting the rag together. The teamwork is great and it couldn't have happened without you. Congrats to all!

# Just What Is A Hacker?

**By: Bill Hayes**

This magazine is called "THUD - The Hackers Underground Digest," referring of course to "hackers." Hackers? Most people, even in 1998, still don't get it. The term, while it refers to most of us who read this magazine (and write for it), was not invented for the late '70s, when little computers came out, or the '80s, when they started to work well, or the '90s, when a lot of little computers (I'll define what a "little computer" is later) could outperform mainframes, and the Cray-on-a-desktop dream was a reality---for a price.

The word "hack" is a pretty old one. Seems the word dates back to the 1920s, when it was applied to quick, and not especially good, writers. But it was not CODE way back then that they wrote, but words. Journalists, pulp writers, novelist wannabes all were WRITERS, but some, for various and usually derogatory reasons, were called "hack writers," later shortened to "hacker." "Yeah, I gotta hack out last night's crime report for the evening paper."

The word "hacker" seems to apply to those of us, after about 1975, referring to writing code or doctoring programs. This does not, however, explain, in our present context, just what a hacker is right now.

When I was invited to write for the lead off issue of this magazine, the editor and I were discussing our own hacking abilities and likes. I mentioned Thomas Edison as the ultimate hacker; the editor stated his vote was for Alexander Graham Bell. But just what were these two men? They wrote no code---not the kind we use anyway (telegraphy and encryption "codes" do not count for this illustration). This is way before the age of the electronic computer. They were tinkerers, and in fact they were probably the best tinkerers of the 19th century.

Oh, so to be a hacker you must tinker---right? Well, it certainly helps. Is the person who can build a PC from mail-order components a hacker? Well, yes. Maybe. How about the Mr. Fixit, who never met a Sears tool he didn't like, and can fix any car or powered device? No. So, what's the difference?

A Hacker (and we deserve this capitalization) refers to electronics, generally computers, but specifically about doing things that are just not "out of the box." Can you get your just-ordered Dell right out of the box, and put it together and get it to boot up and run right the very first time? Congratulations, but that's what you're supposed to do. Anyone past tenth grade (at worst) should be able to accomplish such a "feat." However, can you take a friend's dead PC, strip it for parts, upgrade your box, put that bigger transformer on another friend's PC, hook up your sister's old stereo speakers to the sound card for some really big sounds on your game...that's more like it. Make an old 386 clone run like a champ with some memory upgrades, tinkering with the Bios, and defragging and partitioning the hard drive...you are there. But it's not just what you do with you hands and tools.

A Hacker is someone, male or female, with a specific mindset. Some of these people (poor victims of the current public school system, no doubt) aren't even into computers, but they have the right mindset, and they would do just fine if introduced to the right pieces of equipment. That mindset flows out from our knowledge of number crunchers, sound makers, game players, and word manipulators. We see the other, the possible but not available, that which is not offered as an option or add-on but we want NOW. And we try to do it ourselves. Like the similar-minded hot rodders of the '50s and '60s, who could make a '53 Chevy do things not exactly within its initial design parameters, and look quite a bit different from the show room floor, take a pickup truck, or VW Beetle, or fin-laden Caddy, and do with it that which was not exactly intended, designed, or even sought. But consider the outcome, and the designs, performance, options, availabilities, and variations now available, because of hot rodders in the last two generations. The Japanese sure caught on, and after a bit, so did Detroit and Wolfsburg. As with them, so with us.

Forgive me if I need to deviate to make my point. While this is not intended to be a history of small computing, this background is necessary, so please bear with me.

Consider if you will, way back in the summer of 1981, when what is now considered the modern era of computing began (well, some of you good readers may have been a little too young at the time; I was a Science Officer, spending 4 months testing prototype equipment in the desert in lovely El Paso, Texas, reading the business section of the paper when I read that it happened). Business computing got serious---or at least threatened as much. In a three week period, two business-only microcomputers were released, to huge fanfare. The Apple III, a business box running faster versions of VisiCalc, Peach Tree Accounting, and WordStar, seemed to dominate the papers: this was the box that would put Tandy in its place! One could hardly blink before the next big announcement: Charlie Chaplin's character, "The Little Tramp" from the movie "Modern Times" was the new logo and silent spokesperson for ***The I.B.M. Personal Computer*** (you just had to see the ads, hear it on the radio, to believe the voice inflections). Where did these two competing, totally incompatible boxes come from? Totally different from each company's past, that's for sure.

Apple, tired of the "rich man's toy" banner that so many had slapped on it, tried to go BUSINESS with this box, in a big way. For business applications, especially word processing, people were encouraged by the embryonic computer press, to go with Radio Shack, specifically the Tandy TRS III. The Apple II+, not quite as fast but in may ways a better system, seemed to suffer from its very abilities. It was a great game machine, had good built-in color (no color or graphics card needed), and generated decent sound, for serious playing of Star Castle, Pac-Man, and various other shoot-em-ups. Due to the fact that every kid (and adult) wanted the Apple II+ as a game player (that could also do neat layouts for word processing documents), it was labeled the game computer or the kid's computer. Not saddled with so many games or options, but still an excellent box, Tandy went after the "serious, business side" of computing. And for a while, both companies were winners.

A little point I should make here about "little computers." On a great (and now extinct) radio show called CBS Newsmark, Steve Jobs talked about not trusting big computers due to the "Big Brother" label that went along with them. He said that he was told, back before his Apple days, that you could trust a computer, but only one you could pick up. If you can't pick up the

computer in question, and throw it out the window, just don't trust it. Not too bad an idea for now, if you asked me...

Apple put its very best people into the Apple III, this very serious, business-only system. And its excellence for doing only business, and the lack of vision, killed an otherwise good product. Bad call: Jobs insisted the Apple III be completely incompatible with Apple II "recreation" software, and it would only display in monochrome, that is, beautiful green, or as an option, stunning black and white. "We won't be labeled as a kid's platform any more!" was the Cupertino battle cry for this business box. So, this inflexibility to run from the label of kid's computer killed the system. At that point, there were thousands of programs (only about half of which were games), that could run on the Apple II or II+. There were maybe a dozen (when it debuted) that would run on the far more expensive Apple III, all monochrome, no sound, all business, no games. Poor idea, one that would be the first of may near-fatal errors for such a great startup with so many talented, creative people, and wildly, rabidly loyal users and fans. (Note: I was one of them.)

International Business Machines, the bluest of any bluechip American company, took a totally different course. IBM, the home of the white shirt and dark blue tie as an employee requirement, was actually dealing with the enemy. Not trading with the Soviets or Chinese, but something just as outrageous. Having amateurs (those we'd now call Hackers) design the hardware and software of a small computer. The mind just boggled. Don Estridge, an IBM V.P., and head of the new division called "Entry Systems" in Boca Raton, Florida, had the vision to step away from the other blue suits, get a couple of kids (Gates and Allen) who'd shown some great innovation, if a lack of discipline, and try to make a desk top, that is, ***an entry system***, not in the mold of IBM, but more in the mold of a hobbyist's computer, a garage job. Dare it be said---a Hacked microcomputer and its operating system? Yes. Estridge, blue suit, white shirt, and engineering degree, had the vision. He could see things as they were not. And he brought in the talent to make it happen.

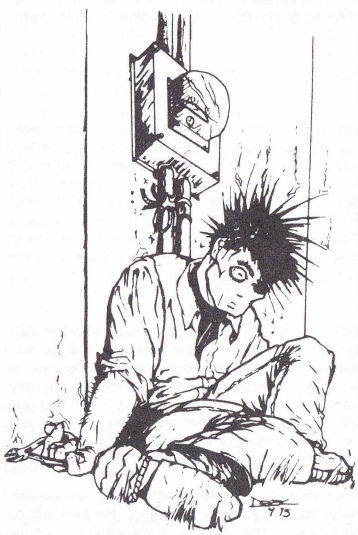
And this was not even IBM's first foray into desktop computing. Back in 1974, their engineers (all homegrown and party-line, it should be noted) built a giant typewriter looking thing that was a "desk top minicomputer" as they called it. Get this, it only ran the APL programming language. Bet you'd love to fly in an aircraft or drive a car designed by that, huh?

IBM, in spite of this serious failure (I think they sold about a thousand of the things), and had no non-IBM software developed for it due to the fact they refused to license anything, the engineers at IBM kept plugging. Some of them, Estridge at the top, knew they needed new ideas, new blood. After all, these guys were used to building computers that could be as big as a house, but only as small as a large refrigerator. Small computers had been around, in some shape or other, since the Altair 8800 debuted in 1975. New blood was brought in.

Bill Gates and Paul Allen, who'd written the BASIC for the Altair, and had written some game programs, were brought in. While they certainly did not fit into the corporate culture of IBM, they could see things in a different way, new computers could be great even if they weren't huge, and their input (but not really their design) has partially resulted in the computing world we have today---definitely in software, but somewhat in hardware as well. The vision of IBM, to do something greater and different from the "big iron" they'd successfully flooded the corporate and military world with, was broad enough to accept this new view: some of their customers wanted smaller ("Hey, I know, let's do smaller!"). Their stilted, military-industrial world view was able to produce a distinctly non-IBM vision, and with the input of amateurs, hackers, non-engineers, and college dropouts, thus came the IBM PC. The computer world, from that moment on, would never be the same. (Note an old saying from the Bible Belt that may be illustrative: "Amateurs build Noah's Ark, professionals built the Titannic.")

Do not think this is blanket and blind praise for Big Blue. Not from me! I've owned computers of some kind or other since 1980, and used computers since 1978. But I was of the old school---terminals, Z-80s, or Commodore, or Apple. My first expensive box was a Macintosh; I didn't cave in and buy a DOS or Windows anything until 1992, when I bought a Dell 486 from a Sam's Club. I'd felt for so long that so much creativity was diverted into "compatiblilty," and not into generating some


**BE ALL THAT YOU CAN BE**



***DON'T GET BURNED OUT, DUDE!***

# Blacklisted! 411

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of the neat things done by Apple or Commodore or Osborne, but these three companies all shot themselves in the foot, and while more creative, they wasted their early leads, failed to successfully compete, and therefore failed to thrive. Did these companies, in a blind race to embrace the "business market," ignore their hackers?

A brief mention of John Scully is in order. As you know, Scully was recruited by Jobs to run Apple, back in 1985 or so. It was thought that, as someone who'd run a significant #2 company (Pepsi) in an environment of a gigantic, global #1 (Coca-Cola), he'd be ideal to successfully run Apple versus the Goliath IBM. Good thought...wrong execution. Scully, great businessman that he had been with Pepsico, had no idea how to compete in the computer world (remember, he was recruited as a Suit). It is easy, from 1998, to see three different occasions when Scully could have killed off Windows as an OS, just by licensing the Mac's OS for cloning purposes. He didn't. Well, he did, but far too late to matter one bit. Look at what happened, and the environment we're stuck in. [Don't forget, Don Estridge, white-shirted, home grown VP of the evil empire, had the vision, not to try it with his own team, but to bring in the kids, see what might work, risk failure and his job, for a bunch of hackers...] The Mac's better interface could only be (legally) used in a more expensive Apple box. DOS, then Windows, not very friendly or even very good at first, just got better.

Apple, and to a lesser extent Tandy and Commodore, tried going business, and failed, yet IBM, that Great Satan of computerdom, developed the box that was the model for 90% of the world's desktops. Due to hiring amateurs with a vision. Allowing games to be played on their business systems. They brought in the tinkerers. Those who could see the same things as everyone else, but see a different end, a different result, a different end use. A whole different world. So who were these different thinkers? I believe we'd call them Hackers.

Some input from February 1998 might now be in order. In an interesting short news piece in an Investor's Business Daily article, the ISO, the International Standards Organization, selected Apple's QuickTime and QuickTime VR as the cross-platform viewing standard for video documents. Some of Apple's hackers, it seems, are still in place. Wozniak is gone, Kay is at Disney as an "Imagineer" or some such, and Steve Jobs, now King of Pixar, is the Man Who Would Be President of Disney. So Apple's **hackers** are still there. Just not in any position to establish policy, make decisions, direct the company.

Let's take a look at the two great inventors mentioned at the top of this article. Edison, home schooled due to his "inattentiveness" (actually, his near-deafness was the cause), learned to look for solutions, and looked for ways he could make money. Physical labor led to telegraphy (certainly less physical), which led to innovation, which lead to invention. Edison tinkered with everything he could get his hands on. Even in his now famous laboratory, where tinkerers and thinkers came up with all sorts of consumer products (now a little company called General Electric), when Edison had surpassed 1,000 issued patents, he still took apart, reassembled, and fussed with everything that came his way.

Bell, also with some difficulty in hearing, was fascinated by electrical currents, storage, phonics for the deaf, and box kites. Bell developed an entire phonetic alphabet for the deaf. He also loved to publish what he was doing, and what others were doing in the various scientific disciplines and exploratory fields. By the way, his publication is still available for all to read: National Geographic Magazine. Think of what we'd be missing without the works of these two tinkerers. These two men learned to look at the same things in a manner different from the rest of people at that time.

So, Hackers are not just people who love computers, or who wear a lot of black (although, that's usually true). Not just coders and writers, not just good with a keyboard or soldering gun or mini tool kit. And not just tinkerers. The Hacker sees things in a different way, for a different use. The "highest and best use" is a term used for specific assets (such as buildings or a well-located piece of vacant land) in the business world. The **alternative use** is more like it for the Hacker. What can this "black box" REALLY be used for? How can we use this whatzits in a better way? Why do we use such expensive stuff to do such-and-such? Remember, back in 1975, Steve Wozniak took a 5-1/4 inch disk drive, and reduced its total chip count from 50 to 9---and it worked. Same drive, same performance, but far cheaper to build, repair, upgrade. Same thing, viewed a different way. Hacked.

People who are not Hackers, who may not be "computer literate" (although I cringe at the overuse of that term), who view things merely as they are presented, think that we're a threat. We must be regulated, or we'll break something! (Or worse, break **into** something.) I've had people stare at me, dumbfounded, when I mention that my Cyrix 133 with all the gizmos on it is one that I slapped together one weekend. The fact that is was fun and saved me $600 completely misses the point with these folks. For every virus intentionally put into a company's network, for every domestic attempt on the Pentagon's network or NORAD's systems or Citicorp, there are a thousand acts of "Hey, I can fix that for ya" or "We can do this cheaper---let's try it this way" or "Wait for the Rep? I'll install it before lunch!" We see the alternatives, and if we risk a bit of failure with someone watching, one not as technically adept as are we, we still take the chance and try. This is a bad thing?

View things differently. Try alternatives with the unwashed (or the Suits) watching you. Wear black when it's just not fashionable. Be willing to break things when you attempt to fix or upgrade. It's OK. Hack. Go on. Be a Hacker.

---

Bill Hayes, a hacker who's been called much worse, writes for **THUD** and **Blacklisted! 411**, as well as other magazines. If you are interested in keeping your life from being hacked, try his book, "Take Back Your Privacy: Keeping Your Life Off The Information Superhighway." It's $20 total ($17 plus S&H), does not wear black, and will help keep the government and corporations from hacking you and yours. Bill Hayes, 12289 Pembroke Road, Suite 151, Pembroke Pines, Florida 33025.

## I've NEVER seen THUD before! What Gives?

***1. We're brand new and have not been for sale anywhere before this.***
***2. We're still looking for people to write for us.***
***3. We still need LETTERS sent in.***
***4. We still need photographs and artwork sent in, as well.***
***5. Read above.***

# Building Your Own Pirate Radio Station

by: mycal@mycal.net
reprinted from Iron Feather Journal
edited by: navig8er
graphics by: covert

### the dislaimer

Here is a rough compilation of information about the Ramsey FM-10, and other BA1404 Stereo FM broadcasters. Some of the modifications may make you BA1404 based broadcaster illegal to use on the open airwaves in the US and Canada. Also, it has been brought up the the stock Ramsey FM-10 kit may exceed FCC power limits when used with a proper antenna. The information contained in this article is in no way complete , nor do I take any responsibility for it's accuracy. With that in mind, along with the above paragraph, I must say "this file is for information purposes only."

### about this file

When I first started hacking on my FM-10, a few of us on alt.radio.pirate were exchanging information on the mods to improve the range, stability and audio quality of the FM-10. After a couple of posts about filters and amps, my mailbox was swamped with requests for copies of previously posted information and other questions about the FM-10. So rather than drive myself crazy with sending a piece of info here and there, I decided to dig through my mailbox and notes and compile this file. I hope it helps. Also, if anyone has more information about the FM-10 or FM transmitters, antennas, mixing equipment, programming information, stories about pirates, or anything else that falls into this realm, please send it to *mycal@netacsys.com*. I will try to update this file as new information becomes available. (editors note: please feel free to submit your information to THUD magazine, find addresses on back cover.)

### FM-10 mailing list

First things first. There is now a mailing list that deals with the topic of the Ramsey FM-10 and other BA1404 based FM Stereo Transmitters. Feel free to join up and contribute. To send a message to the mailing list, send your question, reply, comment, or contribution to *fm-10@dg-rtp.dg.com*. To add or delete yourself from the list, send a short message with the funtion (add/delete/change address) along with the relevant e-mail address to *fm-10-request@dg-rtp.dg.com*. If you have any questions I can be reached at *mycal@netacsys.com*.

### FM-10 archives

Yes, it is finally here; message archives of the FM-10 mailing list and a place to put/find schematics, reviews, stories, etc. and related to the FM-10 and other BA1404 based FM transmitters. Currently a 350mw amp plan, 800mw amp plans, "Radio is my Bomb" text, slim jim plans/info, and the BA1404 spec sheet are located there. People can FTP in *dg-rtp.dg.com* with the user name "anonymous" and your e-mail address as the password. In the FM-10 directory you'll currently find two sub-directories:

INCOMING - This is writable by everyone and this is where people should upload new stuff.

MSG-ARCHIVES - This directory will have files names according to the date they were last 'sealed'. The file "Currant" is a running log of all e-mail messages from the last 'seal' date of the archives. I want to thank Ed Savage and the guys at Data General, NC for making the list and the archive possible.

### snail mail info packet "Pirates Guide to FM Stereo"

The information packet has evolved yet again, it is now 24 pages. It includes plans for 4 amps; a 200mw, 350mw, 800mw, and a 5 watt. Instructions for modifying the Ramsey PA-1 for FM broadcast band operation. A section on how to design and build your own antenna. Plans for a power meter, regulated power supply, and a dummy load. A block diagram showing a typical station. Spec sheet for the BA1404. FM-10 modifications. Sources for parts and info. A more up to date design of my digitally synthesized transmitter. Loaded with schematics, board layouts and diagrams. And now, schematics and construction details of the FRB 5 watt transmitter. The price for this packet is $5 in the US and $8 overseas. Address to send the money to is:

mycal
P.O. Box 750381
Petaluma, CA
94975-0381

You can also use this address to send me any info that would be hard to send by e-mail. I will trade info packets for hard copy information, e-mail me for details. Note: this packet is in a constant state of change, more info could be added at any time.

### other places to look in cyberspace

alt.radio.pirate is another good forum to find or post information on FM radio transmitters. Although you may not have pirate aspirations, many of the things talked about can benefit everyone. Other places to scan are sci.electronics and the amateur radio groups. The American Radio Relay League (ARRL) has a useful service - the ARRL Information Mail Server. This is an automated mail server that lets you access many of our information files, containing information about various facets of amateur radio. Some of the information has technical value that is related to all radio services. To use it, mail messages to *info@arrl.org* with the message "help". This will give you all the information you need to use this service.

### radio resistors bulliten

A little 'zine that sometimes discusses pirate/micropower radio along with public radio stuph. Send Frank a buck to help out with the copying and stamps.

Frank Haulgren RRB
P.O. Box 3038
Bellingham WA
98227-3038

### FM-10 myths

There have been several myths about the FM-10 kit. The most prevelant are:

1) The FM-10 puts out 100mw of power. This is not true, or at least not true for the Ramsey FM-10's that I have tested. They put out between 8 and 12mw when driven with a 12 volt supply. (note: there has been several revisions of the FM-10 and it is possible that the original version put out more power, but I find even that highly unlikely since it would require another amplifier stage.) Also, the FM-10 is the only low-cost kit that I have seen with an amplifier stage. Most others have power outputs in the fraction of a milliwatt area.

2) The FM-10's output can be cranked up by reducing the value of R9. This, like the above is also not true. R9 and R10 are optimized for maximum output and greatest harmonic suppression at 12 volts. There are much better ways of getting more outpur power than to mess with this output stage. Lowering the value of R9 will most likely degrade the FM-10's performance and cause lots of interference.

### FM-10 improvements

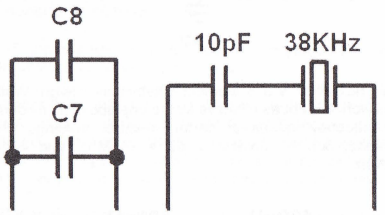
note: I sent this file and a list of other modifications to John Ramsey. Low and behold 4 months later the FM-10a is released. The new FM-10a incorporates all of these following mods.

### stereo pilot mod

One of the first problems experienced with the FM-10 is difficulty in getting the stereo pilot to operate correctly. One solution is to replace C7 and C8 with a 28KHz crystal. This works and is recommended. If you cannot find a 38KHz crystal, you can make your life a whole lot easier withg a couple of part changes. As indicated on the Ramsey schematic, about 100pF is necessary to tune the oscillator. The components supplied to achieve this are a small fixed value capacitor (C7) and a slightly larger value trimmer capacitor (C8). Since propper setting of the trimmer occurs within a very small 'window' (about 5% of the trimmers range), it can be difficult or impossible to adjust the pilot to 19KHz and have it stay put. This can be cured by increasing the value of C7 to 100pF and replacing C8 with a 6-50pF trimmer (Radio Shack #272-1340); a 5-30pF trimmer will do the trick also. The RS trimmer will not fit the holes in the PC board. You need to cut the leads off a spare resistor and solder them to the legs of the trimmer (or just use bits of stiff wire) to mount it on the component side of the board. On a second note, I replaced C7 with a 68pF cap and found it much easier to tune a rock solid 19KHz at the test point.

### crystal mod

Remove C7 and C8 and replace them with the 38KHz crystal and 10pF capacitor. Not that the 10pF and the crystal are running in series and the old cap setup is running in parallel.
note: there have been good and bad reports on using the Epson crystal from Digi-Key. From what I have heard the crystal is quite delicate, and in at least one case the experimenter destroyed the crystal. In on of the positive the C1 cap was replaced two 22pF caps run in parallel. This yielded a rock solid stereo.




### treble boost mod

Trebel boost is also known as pre-emphasis. The FM-10 appears to have been designed by someone outside the United States since it operates at the European audio standard of 50 microseconds. Receivers in the US are set up for 75 microsecond de-emphasis. R3 and R6 determine the time constant for the pre-emphasis curve. Replacing them 75K ohm resistors (standard value 68K ohm is close enough) will result in improved audio response.

A much better pre-emphasis/input circuit is shown in the July 1992 issue of *Radio Electronics*. Not only do they use 75K ohm resistors in their pre-emphasis, but they filter stray RF signals by inserting a .001uF cap between pin 1 (of the BA1404) and ground, and pin 18 and ground.

It has been noted that the above mod actually cause distortion on cheaper stereo receivers, since they were mass produced for the world market. They were designed for the European audio standard, which Japan and other Asian nations use too. Try it out and let me know what works for you.

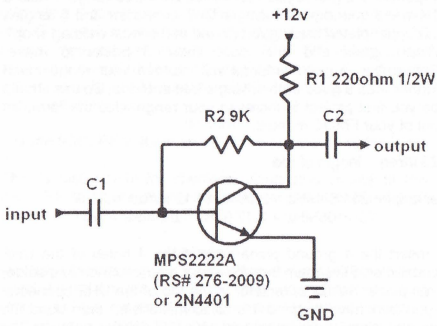
### anti-drift mod

There has been quite a bit of discussion on the FM-10's frequency stability. There have been complaints that digital receivers cannot lock onto the FM-10's signal for any great length of time. I have used the follwing mod with good results (I used an N750 negative temperature compensated disc), but I have been told that mylar or polystyrene caps are even better.

The FM-10 was designed to be inexpensive and cost saving measures with components are inevitable. Disc ceramic capacitors are less expensive than silver-mica caps, and also much less stable. Simply replace C16 with a silver-mica, tantalum oxide, or temperature compensated disc cap (say anywhere from N150 to N750) of the same value.

### Ramsey FM-10 70mw output amplifier

This mod provides almost 9dB gain to bring the output power of the Ramsey FM-10 Stereo Transmitter from 8mW to 70mW. Not the best design, but all the parts can be found at Radio Shack! Much better designs are available at the archive site.




You can also use 2 440 ohm 1/4 watt resistors run in parallel in place of R1. I built this thing right on the underside of the FM-10 kit. C1 is the cap that currently goes to the RCA antenna jack, the 9K and the 220 ohm resistor have to be bought. Not that if you cannot find 220 ohms you can make one by using two 440 ohm resistors in parallel; and that a 10K will work in place of the 9K but yields poorer performance (-5%).

The MPS2222A is from Radio Shack, part number 276-2009. Use this part! If you substitute it for a 2N2222A you will get only half the gain. Be very careful to get the leads in the correct orientation!

C2 is of the same value as C1. I took the one that goes to the on board antenna pad.

Important! The value for R1 that seems to be optimal is 220 ohms, but it is very close to the saturration point of the transistor. If the amp seems noisy (interference with the TV etc.) back this value off to 240 ohms. If you lower this value below 205 ohms the power meter may read higher power but this will not be true. The transistor will be spewing all kinds of junk and the power meter will mistake this for higher ouput (in reality the signal we want will drop considerably).

Well, that's it. Effective range with a good antenna should be a little over double.

### Ramsey PA-1 2-meter to 3-meter conversion mod

The Ramsey 2-meter amp (PA-1) can be converted for use on the FM broadcast band. The inductors L1 and L2 need to be changed to the following:

L1 - Should be replaced with a 1-turn 1/4" diamter coil. It is identical to the stock L2 coil shown in the PA-1 manual.

L2 - Should be replaced with a 2-turn 1/4" diameter coil, one more turn than the L1 coild above.

Tune up should be the same as in the PA-1 manual. Note that a FM-10 kit cannot be used to drive a PA-1 kit alone. The FM-10 kit doesn't put out enough power to turn on the PA-1 kit running class C. So you have two options. One, you can do the "biased on" (newer kits may call this class B) modification shown in the PA-1 manual. Doing this you can drive the PA-1 with a stock FM-10, yiedling about 200-300mW of output power. Or two, you can drive teh PA-1 with the output of the 70mW amp shown above and get close to a watt of output power.

It should be noted here that running the PA-1 "biased on" (or class B) produces a much cleaner output signal than running the PA-1 class C. Also note that you can run the PA-1 "biased on" while driving it with the 70mW amp, but you will show slightly less gain than in class C.

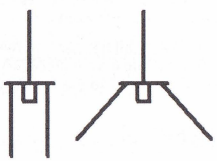
**antenna - most important**

Do you have a good antenna? I think that is the most important thing that you can do for extended range. I built a 1/4 wave gound plane using a UHF connector and 5 lengths of copper plated brazing rod (found at the local welding shop). Works great and only cost about 3 bucks to make. Remember, a good antenna will improve your range much further than a good amp driving a bad antenna. So this should be you first project to increase your range. Use the formulas out of your FM-10 manual.

234/freq. - length of rod

example: 234/88MHz = 2.66 feet * 12 in/foot = 31.0"
234/108MHz = 2.17 feet * 12 in/foot = 26"

Insert the 4 ground plane rods in the 4 holes of the UHF connector. Stick them through about a quarter inch and solder into place. Solder th radiator in the top of the UHF connector (you may have to grind it a bit to make it fit) then bend the ground plane rods downward to a 45 degree angle to the radiator. There you have it. Just connect it with a 50 ohm CB antenna cable to your amplified Ramsey, stick the antenna in a tree or in another high place and you should have about a mile of solid coverage (when using the above amp). Also, if you have an SWR meter you can cut the rods a little longer and start clipping the ends off until you get the best SWR reading.



That is one radiator pointing straight up and four ground plane radials. Sorry for the extreme desciption but there has been some confusion. Be careful when you bend the brazing rod, don't break the connector. Grab the rod right below the connector with a pair of vice-grips (or the likes) and bend the brazing rod at that point. Try not to have anything metal near the radiator as this will affect the radiation pattern. The radiation pattern should look a lot like a doughnut surrounding the radiator, though deformed a bit. I have been told that you can shorten the radiator and make the ground radials longer to lower your radiation angle, but I haven;t tried this, nor do I know what this would do to the antenna impedance.

**on the road**

Old magnetic mount CB antennas can make great mobile antennas. just take all of the base load out of them and cut the radiator to 1/4 wave length. If you need a longer radiator than the one that comes with the anenna use the above mentioned brazing rod. I've tried this antenna and it workds great! It is better than my di-pole at home and you can drive to a high optimal location for your broadcasts. Also, with this setup you need very little coax cable. Line loss using RU58u can be killer at 100MHz. You could also try a 5/8 wave length antenna. This would give you 2+dB gain, or almost 2x power gain on transmit.

**filter design for fm radio transmitters**

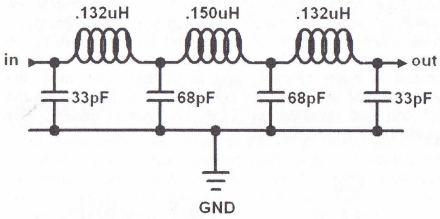
It is very important to have a clean signal. The way 99% of all people who get busted for illegal transmitting is that the people that live around them complain about interference. Most of this interference is caused by harmonics. Filters cut down these nasties. So don't draw attention to yourself. Keep everyone happy, including yourself. Be clean, use a filter!

When you amplify a signal, you get unwanted byproducts. These are called harmonics. They show up at multiples of your starting frequency. For example, if you amplify a 50MHz signal you may get echo's on 100MHz, 150MHz, 200MHz, 250MHz and so on... If you interfere with your neighbors TV, the local fire department, or anyone else, you are just asking for trouble. If you are only on the FM band, you will hardly be noticed.

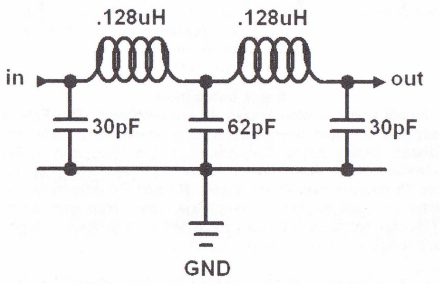
**filter designs**

These designs are basically from the charts in the ARRL handbook.

This is a 7 element Chebyshev filter. I run at 88.1 MHz so my first harmonic is at 176.2 MHz. This filter seem ideal. Inputs and outputs are at 50ohms. Fc = 85.8Mhz, 3db = 95.9Mhz, 20db = 116MHz, and 40db = 148Mhz.




This next filter is a 5 element Chebyshev design. While it does work it is not as effective as the one above as evidenced by frequency values at certain decibel readings. Fc = 81.8Mhz, 3db = 105MHz, 20db = 147Mhz, and 40db = 222Mhz.

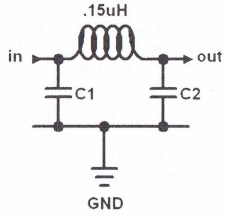



The difficult part in the above is winding the coils. 3 turns of #12 wire 1/2 inch diamter should be about .12uH. 4 turns is .17uH (but ugh, #12 wire is big stuff). You could just use molded inductors, I have found these work well. Try to use fiked value caps, or fixed value with small 5pf trimmers. The latter works well when you have a spectrum analyzer to tune these babies.

I just pulled a program off of a BBS that tells you how to wind inductors. Give it the value and wire size you have and it will

tell you how many turns and what size. Way cool! More on this later.

Here is a very simple Chebyshev filter. It won't knock the harmonics down as much as the other two designs but the good thing about this one is that it uses standard off the sehlf parts. The inductor is one of those molded jobbies that looks like a resistor so you can make this very small. You may stack these things to make a better filter. Each stage will knock the 1st harmonic down about 15db. Both C1 and C2 are of the same value. Use the following values for the range you operate at: 87-90Mhz use 62pF, 90-103MHz use 54pF, and for103-108Mhz use 50pF.




Also of interest is that the FM-10 puts out about 8-9mW and the 2nd harmonic is -25db off the fundamental frequency you are broadcasting on. The FM-4 kit by Ramsey puts out 130mW and the 2nd harmonic is only -12db off the fundamental, which means the 2nd harmonic of the FM-4 is about as powerful as the FM-10 itself. db is log10 so 3db is 2 times, 6db is 4 times, and 9 db is 8 times, etc...

**recommended test equipment**

An SWR/power meter is a giant help, a CB to 2 meter one will suffice. Power readings will not be accurate, but can be useful for peaking. The most important part is the SWR meter, this is very importatn when making an antenna.

A note on power meters. I recommonded the above type power meters because they are inexpensive and most people interested in hacking the FM-10 have very limited funds. These are by no means accurate but they will give you some idea what is going on. If you can spend the money you can get an accurate power meter that is designed for this band, but the cost is 10-15 times more.

An RF probe could also be used as a replacement for a powermeter. Construction plans follow.

A 50 ohm NON inductive load is also very helpful. For low power applications a 50ohm 1/4 or 1/2 watt carbon resistor works well. This can be used to tune up your kit and amp without interferring with anyone. Also note that you can run as much power you want, legally, as long as it doesn't radiate.

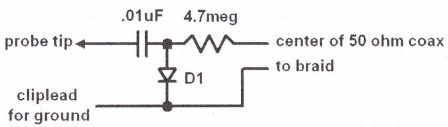
A VOM is also very helpful. I would put out the extra bucks and buy one with a frequency counter (if you shop around, about $6-$70). Buy one that covers audio to 20MHz (or more). If you are serious about electronics you need one of these!

**dummy loads**

Dummy loads are great for testing, without radiating a signal. In fact, you can run as much power as you want into one of these things legally! Basically you want to create a non-inductive 50ohm load. This can be done with regulare carbon resistors, or by buying pre-built amateur or CB radio loads. For low poer (less than 1/2 watt) an ethernet terminator works well (check temp when using, if it gets very hot lower input power, if it is still cool you may be able to go up 3/4 watt). Most CB loads use a 2-watt 50ohm carbon resistor you can build your own, as wimpy or as studly as you want by running resistors in parallel to create 50 ohms. IE two 100 ohm 1/4 watt resistors will create a 1/2 watt 50 ohm load. Do not use 50 ohm wire wound resistors, they are not 50 ohms at radio frequencies.

**rf probe**

For those of you (like me) who are in constant starving student mode, and DON'T have a good scope, you can use a good DMM for RF power calculations. All you need to do is build an RF probe. Here's the schematic (yes, taken from the 1989 ARRL handbook.




Anyway, the diode (arrow points to ground) should ideally be a Schottky diode (low rf capacitance) although a LN914 will work. To use just hook up to your digital meter, set on DC voltage. You will get very close to RMS RF voltage. This probe was specified for a 10 megohm meter. To calculate power into a KNOWN purely resistive load (a.k.a. a dummy load) use this formula:

(E^2)/R

E is the RMS RF voltage and R is the resistance of the load

This is also useful for checking inputs and ouputs of low power RF units, since the inexpensive power meters don't seem to do real well below 1 watt.

**paranoid?**

I've been talking to a few people that are worried about their 'voice' being on the air, since they are afraid of being recognized. So, I dusted off old stacks of Radio-Electronics and found two articles that may be of interest. In the January 1993 issue they have a "Build Your Own Digital Voice Changer" using a simple real time digital signal provessor. I think that this design is very similar to the voice changing telephones. It basically raises or lowers your voive pitch. A place called LNS Technologies at 1-800-886-7150 sells the kits for $59.

In their Septembet 1992 issue they have a "Buil dThis DSP Voice Effects Board" using a little more complex, programmable, real time digital signal processor. The software they include contains a harmonizer, echo, reverb, and pitch. The kit is sold by American Distributors, Inc. for $105 at 1-800-877-0510. You can also write your own software but the programmer is several hundered dollars.

DC Electronics has a Robot Voice kit for $15. I don't know how well this works or what it sounds like, but it claims to be adjustable for many different effects.

**Ramsey's address**

If you're looking to purchase an FM-10 kit and can't find one locally, try Ramsey Electronics, Inc. 793 Canning Parkway, Victor, New York 14564. Phone (716) 924-4560 FAX (716) 924-4555.

**sources**

BA1404's andother FM Broadcaster kits can be found at D.C.

**WANT TO START A THUD MEETING IN YOUR AREA?**
**PLEASE SEND YOUR IDEAS ON THIS TOPIC.**
**INCLUDE DAY/TIME WHEN YOU'D LIKE TO HAVE MEETINGS HELD.**
**INCLUDE CONTACT INFORMATION SO WE CAN DISCUSS YOUR IDEAS.**

Electronics. Phone 1-800-467-7736 & 1-800-423-0070. Fax 1-602-994-1707. They sell BA1404s for $2 each, seems to be the best deal going. Also they sell 38KHz crystals fro $5.99, which is also a fair deal. The crystals are tiny ones like the digi-key ones, but a different brand and work without problems

38Khz crystals can be obtained at Digi-Key at 1-800-DIGI-KEY. 38.000KHz by Epson America, Digi-Key part no. is SE3314 (see notes on crystal mod using this crystal, also note that this is a cylinder type crystal and kinda delicate. You are probably better off getting the 38KHz crystals from D.C. Electronics.)

Mouser Electronics 1-800-346-6873, fax 1-817-483-9384. Giant catalog! 239 pages of parts! Just about everything. No minimum order for North America. $100 minimum for overseas.

RF Parts 1320-16 Grand Ave. San Marcos, CA 92061 They have just about any RF transistor!

Dalbani - 2733 Carrier Ave. Los Angeles, CA 90040 1-800-325-2264 in the US or 1-213-727-0054 for the rest of the world. Fax is 1-213-727-6032. They have RF transistors and other semiconductors and more! 187 page catalog. $20 minimum order.

Panaxis Productions makes some very high quality FM transmitters. The last word in transmitting with tons of kits. Panaxis Productions P.O. Box 130 Paradise, CA 95967-0130 (right next to my old place of study, Chico State!) Phone 1-916-534-0416. Catalogs are $2 but well worth the price. A must have item.

Progressive Concepts sells plans for a 88MHz to 108MHz amp. The power curves show that 12mW in will yield 2.5 watts, but can be driven harder fro up to 12 watts. (I have not seen these plans) Plans only in U.S., $16 (a bit spendy, ouch!) Progressive Consepts 1313 N. Grand Ave #291 Walnut, CA 91789.

If you're looking to purchase an FM-10 kit (or a PA-1 kit) and can't find one locally try Ramsey Electronics, Inc. 793 Canning Parkway, Victor, new York 14564. Phone 1-716-924-4560 Fax 1-716-924-4555. Should be $29.
The makers of the infamous BA-1404: Rohm Corporation, Rohm Electronics Division, 3034 Owen Dr., Jackson Business Park, Antioch, TN 37013. Phone 1-615-641-2020 (ask for someone who deals with the BA1404) Fax 1-615-641-2022. Also available is P.O. Box 1399 Antioch, TN 37011-1399.

**other raw info**

The 2SC2570 is supposedly replaceable with an ECG10. Also I have used an MRF901 for a replacement, though tough to mount, try bottom of the pc board and connecting the whip antenna pad to ground plane. MPS901s seem to replace the 2SC2570 directly, same case too, check the pinouts though. I have also been told that MPS918s work well also.

The MRF239 can be used as direct replacement for the Ramsey 2 meter PA-1 kit. Cost is around $14 bucks.

Newark also has the 38KHz crystals fro $2.90 (I don't know Newark's address, this was sent to me in the mail, will try to find it though.) Once more, if you have any info, I stress "ANY", about this subject please drop me a byte or two. Have fun, your pal Mycal - mycal@netronix.com.

# DEADLINE

**IF YOU WANT TO GET ANY OF THE FOLLOWING INTO OUR NEXT (SUMMER) ISSUE OF "THE HACKERS UNDERGROUND DIGEST" PLEASE SEND THE MATERIAL TO US BEFORE THE DEADLINE.**

**WE'RE LOOKING FOR:**
**ORIGINAL ARTWORK**
**PHOTOGRAPHS OF YOUR FAVORITE HACKING RELATED ITEMS**
**ARTICLES ON CABLE TV, TELEPHONE, POWER, RADIO, ELECTRONICS, PROJECTS, COMPUTERS, ETC.**

**YOU NEED TO HAVE MATERIAL SENT TO US BY**

## June 10th, 1998

(Volume 1, Issue 2 Summer 1998)

DONT BE A DUMBSHIT....STAY IN SCHOOL AND LEARN SOMETHING

# THE UNITED STATES SENATE

**The United States Senate**, or Upper House of Congress, is comprised of two senators from each state. Senators were origiganlly chosen by the legislative powers of each state but since 1913 when the 17th Amendment went into effect, they have been chosen by popular vote of the citizens of each state. The requirements to become a senator are simple and straightforward. The candidate must be at least 30 years old, a citizen of the United States for at least 9 years, and a resident of the state for which they are to be a senator.

The vice-president of the United States acts as the presiding officer of congress and only votes whent he senate is deadlocked in a tie. Senators gather in committees to handle the legislative powers granted them by the Constitution. Among the 16 or so committees are those on Appropriations, Foreign Relations, Armed Services, Banking and Currency, Finance, Judiciary, and even Public Works.

The power of the senate, along with the House of Representatives, has the power, as outlined in Article 1, Section 8 of the Constitution, to collect taxes, regulate commerce between the states and with foreign nations, to coin money, raise and support armies, declare war, and make all laws necessary for the execution of it's own powers. However, the Senate has some specific duties as well, such as the confirmation of presidential appointments and the power to try impeachments. Impeachments, by the way, must be initiated by the House of Representatives.

Following is a list of all the current senators of the United States, listed by state, their snail-mail address and voice telephone numbers. Also included are their email addresses as well as web sites concerning each senator. You can also call the Congressional switchboard at 1-202-225-3121 and ask to be switched to your Senator.

Now you have the means of contacting your senator and either supporting or caomplaining about their work. The true power of America is meant to lie in the hands of it's citizens. Exercise that right and become involved in the politics of your nation. Don't be a shmuck and let someone else decide for you what is best for you. Decide for yourself!!!

**Alaska**

Murkowski, Frank H.
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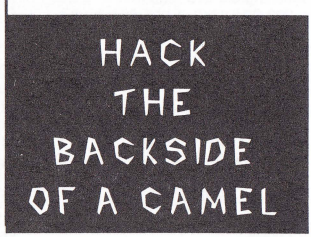
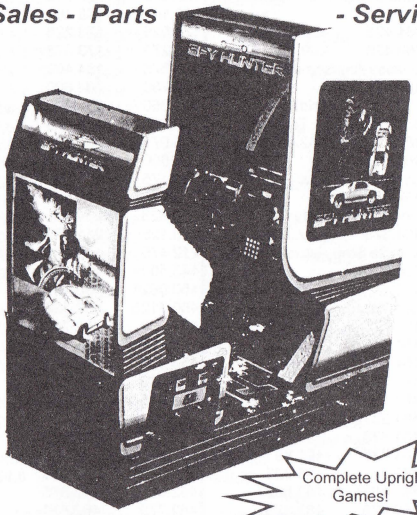
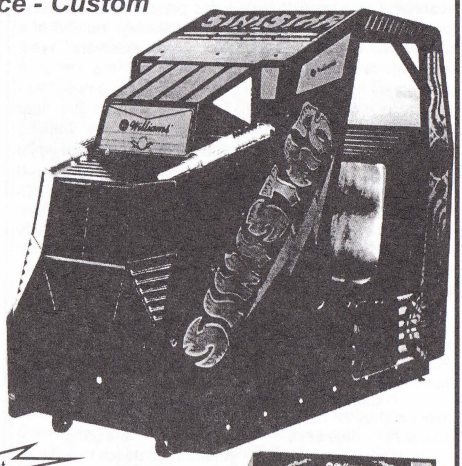


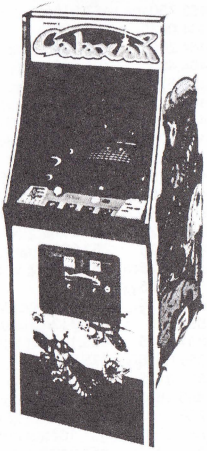
# ARCADE GAMES

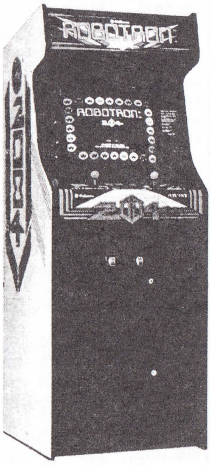
*Sales - Parts - Service - Custom*

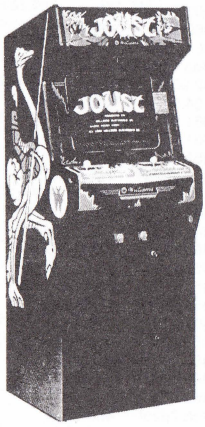


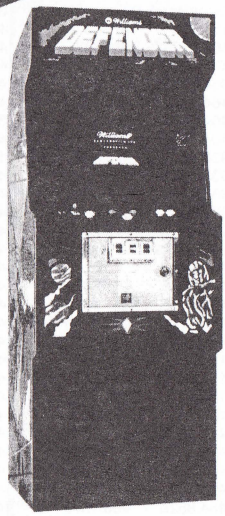




Complete Upright Games!




***If you're looking for one of those hard to find arcade games, this is the place to call. We have one of the largest selections of hard to find classic arcade games and pinballs. If you're looking for a part or you just want an arcade game for your business site or for home use, give us a call. Be sure to mention you saw the ad here in Blacklisted! 411.***

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- ✓ Quotes Available
- ✓ Selection of Marquee's & Backplates

## Eldorado Games, Ltd.

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**Voice (714)535-3300 Fax (714)535-3396**

# AMUSEMENT PARK FREQUENCIES

*by: Dr. Whip*

**ALRIGHTY THEN,** I'm sure there's quite a few of us out there who have spent a few dollars on at least a simple scanner. I also know there's some people who should be locked up for their obsession with scanning. Instead of a microwave oven they buy microwave receivers. Well, whatever level of scanner enthusiast you are I'm sure every once in a while we've gone to the local amusement park with friends or family. Some of us even live near them. Surely we've all noticed lotsa people walking around with walkie-talkies or other radio equipment while visiting and having a jolly ol' good time (NOT!) or even seen the odd utility cart with a radio on it. Now, for you're listening pleasure for those who just can't get away from a receiver while entertaining the kiddies we have a fairly comprehensive list of scanner frequencies. It's broken down by state so it shouldn't be too hard for you to find what you're looking for.

**Arkansas**

Magic Springs Family Theme Park
154.515 154.54

**California**

Belmont Park
464.8875 469.8875

Disneyland
154.625 461.85
464.5375 464.6375
464.4125 464.575
464.7625 464.5125
464.7125 464.1625
464.1125 464.9875
464.8875 938.3875
938.40 938.4125
938.425 938.4375
938.45 938.4625
938.475 938.4875
938.50

Hecker Pass: A Family Adventure
460.8875 461.8875
462.8875 463.8875
464.8875 465.8875

Knotts Berry Farm
151.625 151.655
151.685 151.745
154.54 154.57
154.6 158.46
461.1875 461.7875
462.0375 462.0625
462.1125 462.1375
463.5875 464.6625
464.8625 466.1875
466.3625 466.3875
466.6875 466.7875
467.0375 467.0625
467.1125 467.1375
468.5875 469.2625
469.6375 469.6625
469.7125 469.8625

Marine World-Africa USA
151.925 151.955
461.7375 464.6875
469.6875

Paramount's Great America
157.74 457.525
457.55 457.575
457.6 465.9
465.975 466.05
466.125 466.2
466.275 466.35
466.425 467.75
467.775 467.8
467.825 467.85
467.875 467.9
467.925 490.1625
490.2625 493.1625
493.2625

Raging Waters
462.6 463.9875
464.1375 464.9875

Santa Cruz Beach Boardwalk
461.0625 461.0875
462.0625 462.1625
463.925 466.0625
466.0875 467.0625
467.1625 468.925

Sea World of California
42.96 154.515
154.54 460.8875
461.0875 461.1625
461.3875 461.4875
461.5375 461.5875
461.6625 461.6875
461.7625 461.7875
462.06-25 462.0875
462.85 462.8875
463.6625 463.6875
463.7125 464.05
464.1875 464.2125
464.4375 464.4625
464.9125 465.8875
466.0875 466.1625
466.3875 466.4875
466.5375 466.5875
466.6625 466.6875
466.7625 466.7875
467.0625 467.0875
467.8875 468.6625
468.6875 468.7125
469.05 469.1875
469.2125 469.4375
469.4625 469.9125

Six Flags Magic Mountain
151.685 151.715
151.745 151.775
151.805 151.895
151.995 151.515
154.54 154.57
468.8125

Universal Studios Hollywood
151.745 151.83

**Colorado**

Elitch Gardens
466.3625 469.5125
469.5375 469.5625

Lakeside Park
457.575

Santa's Workshop
461.5 461.675

**Connecticut**

Lake Compounce Festival Park
464.425 464.475
469.425 469.475

Quassy Amusement Park
154.57

**Florida**

Busch Gardens Tampa
461.7125 462.0875
467.1125

Cypress Gardens
464.425

Lion Country Safari
464.375 469.375

Miracle Strip Amusement Park
462.1

Sea World of Florida
151.775 151.805
154.515 154.54
154.6 461.0125
461.0375 461.1
461.1625 461.2625
461.2875 461.5875
461.675 461.7375
461.775 461.85
462.0 463.325
463.3875 463.5625
463.675 463.825
463.9125 463.95
464.0375 464.0875
464.1 464.2125
464.2875 464.3375
464.3875 464.4375
464.4875 464.525
464.6625 464.725
464.775 464.825
464.875 464.975
465.0 466.0125
466.0375 466.1
466.1625 466.2625
466.2875 466.5875
466.675 466.7375
466.775 466.85
467.0 467.1375
467.8375 468.325
468.675 468.825
468.95 469.1
469.2125 469.2375
469.2625 469.2875
469.3125 469.3875
469.6625 469.725
469.825 896.6875
897.1875 898.1875
899.1875 899.7125
935.6875 936.1875
937.1875 938.1875
938.7125 957.05
957.65 959.35

Shipwreck Island
462.15

Wet 'N Wild
154.6

Universal Studios Florida
463.225 928.1625
952.1625

Walt Disney World
123.050 127.750
147.300 147.900
148.100 151.200
151.655 151.625
151.745 151.775
151.865 151.925
151.895 154.430
154.4787 154.47875
154.625 154.740
155.370 157.740
158.100 158.460
171.025 173.225
173.275 173.325
173.375 184.400
199.400 204.600
204.850 206.000
206.300 206.625
206.975 207.350
207.600 207.750
208.175 208.625
208.950 209.100
209.425 209.600
210.125 211.850
212.475 442.000
443.400 448.400
450.0625 450.1875
450.3125 450.4375
451.500 452.700
453.475 453.875
453.925 452.650
453.825 453.875
453.925 461.300
461.3375 461.600
461.700 461.9125
462.475 462.550
462.575 462.625
462.650 462.675
462.775 462.850
463.750 463.975
464.0625 464.125
464.200 464.200
464.400 464.500
464.525 464.600
464.625 464.800
464.9375 467.250
467.575 468.8125
469.3375 483.000
484.175 484.325
484.350 484.375
806.000 851.3125
851.5625 851.8875
852.1875 852.2375
852.3625 852.4125
852.5625 852.7375
852.8125 853.4625
53.4875 853.7125
854.3375 855.1875
855.6875 855.7875
855.8125 855.8875
855.9875 856.7875
856.8125 856.9125
857.1625 857.1875
857.7875 857.8125
858.0375 858.7875
858.8125 859.7875
859.8125 860.7875
915.000

**Georgia**

Six Flags Over Georgia
462.05 462.1
464.575 464.675
464.975 467.1
467.875 469.575
469.675 469.975

**Hawaii**

Waimea Falls Park
151.745 151.865
151.925

**Idaho**

Silverwood Theme Park
122.85 154.6
157.56 160.845
464.425 469.375
469.425

**Illinois**

Knight's Action Park
151.925 151.955
Six Flags Great America
457.525 457.55
457.575 457.6
460.6125 463.3625
463.6 464.375
464.475 464.675
464.775 464.875
465.9 465.975
466.05 466.125
466.2 466.275
466.35 466.425
467.75 467.775
467.8 467.825
467.85 467.875
467.9 467.925
468.6 469.375
469.475 469.675
469.775 469.875

**Indiana**

Indiana Beach
151.865 155.22
Old Indiana Fun Park
151.745

**Iowa**

Arnolds Park
461.975

**Kansas**

Joyland
154.6

**Kentucky**

Kentucky Kingdon
463.425 468.425

**Maine**

Palace Playland
151.655
York's Wild Kingdom Zoo and Amusement Park
151.655 151.755
151.805 151.835

**Massachusetts**

Riverside Park
154.625 464.525
464.5625 464.825
464.925
Whalom Park
154.515 154.57

**Michigan**

Michigan's Adventure Amusement Park
154.54

**Minnesota**

Valleyfair!
463.4625 463.5125
463.8625 463.9125
463.9375 463.9625
463.9875 464.0375
464.9875 469.0375

**Missouri**

Ocean's of Fun
463.775 468.75
468.775
Silver Dollar City
151.685 151.835
151.865 152.3
157.56 157.62
463.8125 465.0
468.8125
Six Flags Over Mid-America
461.2125 462.1375
463.2125 464.2625
464.325 464.3875
464.4125 464.5125
464.6875 469.325
White Water
461.0375
Worlds of Fun
461.7625 463.425
464.175 464.275
468.425 469.175
469.275 469.55

**Nebraska**

Peony Park
464.425

**Nevada**

Wet 'N Wild
461.3 461.975
464.0 464.375
466.3

**New Jersey**

Action Park
154.57 154.6
Mariner's Landing
151.895 151.985
Six Flags Great Adventure
154.54 154.6
461.775 464.325
464.425 464.625
464.675 464.825
464.975 466.775
469.325 469.425
469.675 469.825
469.975
Storybook Land
464.925

**New Mexico**

Cliff's Amusement Park
463.225 467.8
468.225

**New York**

Darien Lake
151.655 151.715
151.745 151.775
151.805 154.515
Fantasy Island
464.525

**North Carolina**

Emerald Point
151.745 154.54
Paramount's Carowinds
461.375 461.6
461.875 461.975
462.025 462.8
464.65
Santa's Land
151.685
Tweetsie Railroad
464.475 468.4
468.8875 468.9

**Ohio**

Beach Waterpark
463.9 468.9
Cedar Point
151.685 154.515
461.3 463.6125
463.8625 464.2125
464.3125 464.375
464.4125 464.5125
464.575 464.6125
466.3 468.8625
469.2125 469.3125
469.4125 469.5125
469.6125
Coney Island
151.925 154.515
154.54 154.57
154.6
Geauga Lake
154.515 154.57
Paramount's Kings Island
154.54 154.57
154.6 461.1625
461.325 462.1375
462.7625 462.8125
462.8625 463.2625
463.5125 463.6625
463.675 464.0375
464.4375 466.1625
466.325 466.4875
467.1375 467.7625
467.8125 467.8625
468.2625 468.5125
468.6625 468.675
469.0375 469.4375
Sea World of Ohio
154.54 154.6
462.025 463.2125
463.2625 463.3125
463.4625 463.5125
464.025 464.825
464.875 467.025
468.2125 468.2625
468.3125 468.4625
468.5125 469.875
Wyandot lake
151.655

**Oklahoma**

Bells Amusement Park
461.25 466.25
Frontier City
464.775 464.975

**Pennsylvania**

Bland's Park
464.2125 464.5125
464.7125
Dorney Park
151.835 151.865
151.895 151.925
Dutch Wonderland
151.715 151.745
Hersheypark
461.325 464.375
464.425 464.575
Idlewild Park
151.685 154.515
Kennywood
151.865
Sandcastle
151.745 466.3625
Sesame Place
151.685 151.715
151.805 151.895
151.955 154.515
Waldameer
154.54

**Rhode Island**

Rocky Point Park
464.825 464.925

**South Dakota**

Flintstones Bedrock City
151.805

**Tennessee**

Dollywood
463.525 463.575
463.8 463.825
463.925 464.025
464.05 464.1
464.675 464.7
464.725 468.525
468.575 468.8
468.925 469.025
469.05
Libertyland
464.775 464.825
464.925

**Texas**

AstroWorld
462.1625 462.1825
467.1625 467.1825
462.7 467.7
462.7875 461.4375
463.4375 462.8125
Fiesta Texas
461.1 461.125
461.6125 461.7625
462.1125 462.8625
462.8875 462.9
463.2125 463.2375
463.3875 463.7
463.7375 464.85
466.1 466.125
466.4375 466.7875
467.1125 468.7
468.7375 469.85
Sea World of Texas
461.15 461.35
461.65 461.6875
462.0625 462.0875
462.1625 463.45
464.0875 464.1875
464.2125 464.325
464.4625 464.5125
464.675 465.0
466.15 466.35
466.65 466.6875
467.0625 467.0875
467.1625 468.45
469.0875 469.1875
469.2125 469.325
469.4625 469.5125
469.675
Six Flags Over Texas
457.55 461.3125
462.1125 462.9125
463.8125 464.2125
464.3875 464.425
464.5125 464.7375
466.575 466.6625
468.5125 469.3875
469.425
Western Playland
154.515
Wet 'N Wild
461.0875 461.2125
461.7375 154.6
Wonderland Park
154.57

**Utah**

49th Street Galleria
464.575
Lagoon
154.515 154.54
158.46 461.0125
Raging Waters
461.3 462.0125
466.3 464.975

**Virginia**

Busch Gardens Williamsburg
334.4 463.225
464.175 468.225
469.175 806.0
Paramount's Kings Dominion
461.4125 461.975
464.175 464.35
464.475 464.925
466.975 469.175
469.35 469.475
469.925
Water Country USA
464.525

**Washington**

Fun Forest
461.6625

**Wisconsin**

Circle M Corral Family Fun Park
461.95 466.95
Circus World Museum
461.325 464.325
469.325
Noah's Ark Waterpark
154.57
Thumb Fun Park
151.715

# .....Hack Exchange.....

*Are you looking for those difficult to find parts? Or maybe just a simple novelty item for your entertainment? Or do you have a product or information you'd like to sell? The Hack Exchange is your buy/sell/trade resource. If you would like to place an ad in Hack Exchange.... Right now, all classified advertisments are FREE of charge. We must limit each person/company to two ads not more than 20 lines combined. Stay tuned for advertising rates in the future. To place an ad, send copy to the following address:*

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**THUD MONTHLY MEETINGS** We don't have any meetings for the magazine yet. If you're interested in setting one up in YOUR area, please contact us. For now, we suggest you hang out at the Blacklisted! 411 meetings until we can come up with our own. THUD Magazine, P.O. Box 2521, Cypress, CA 90630 "Come one, come all, just don't be a FED"

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**THUD MAGAZINE WANTS YOU!** We're still really new, so we're looking for a few things. If you're a hacker, artist, writer or all around freak, send us what ya got! We can offer free subscriptions in exchange for articles or artwork we end up printing. So, get off your butt and send us some good stuff to print in the magazine. THUD Magazine, P.O. Box 2521, Cypress, CA 90630.

**RUGA?** If you know what this is, I have one thing to say: Pobleet '87. WAX ANDERSON SHOKE MAYONASAL IT'S ONLY RUBBER DUDE RAUL OBI WAN CENTOBI AJBV87

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2-Receiving OK
4-OK
5-Relay
7-Out of Service
8-In Service
9-Repeat
10-Out of Service on Radio
12-Visitor/Officer Present
13-Weather/Road Conditions
14-Escort
15-Station with Prisoner
16-Pickup
18-Equipment Check
19-Return/Arrive at City Hall; (a)Pound; (b)Corp Yard; (c)Park Hdqtrs;(d)Airport
20-Location
21-Telephone Call
22-Cancel
23-Standby
24-File Check Permit/Record
25-Do You Have Contact
27-DDL Information
28-Registration
29-Check for Wants
30-Normal Radio Traffice
32-Drowning
33-Alarm Sounding
34-Open Door
35-Scramble Transmission
36-Correct Time
37-Restricted
39-Message Delivered
40-Available for Phone Call
45-Ambulance Needed
49-Proceed To
50-Obtain Report
53-Man Down
54-Possible Dead Body
56-Suicide
57-Firearms Discharged
60-Check Parking Meter
62-Meet the Citizen
65-Missing Person
66-Suspicious Persons
67-Person Called for Help
68-Tree/Limb Down
69-Wire Down
70-Prowler
73-How do You Receive
74-Check Road Conditions
75-Check Hole in Road
77-Check Barricade
78-Check Water Condition
79-Plugged Sewer
80-Explosion
81-Broken Water Main
82-Leaking Hydrant
83-Signal Light Out or Malfunction
84-Street Light Out
85-Make Inspection
86-Any Traffic
91-Stray Animal; (a)Vicious Animal; (b)Noisy Animal; (c)Injured Animal; (d)Dead Animal;(e)Animal Bite;(f)Sick Animal;(g)Pickup Animal; (h)Stray Horse; (j)Pickup Animal
97-Arrived at Scene
98-Finished Last Assignment

Eleven Codes:
24-Abandoned Vehicle
26-Abandoned Bicycle
27-DDL Information
28-Registration Information
44-Coroner's Case
54-Suspicious Vehicle
79-Accident Ambulance Enroute
80-Accident Injury
82-Accident Property Damage
83-Accident No Detail
84-Traffic Control
85-Tow Car Needed
96a-Out for Investigation
98-Meet Officer

Codes:
1-Acknowledge Call
2-Urgent No Siren
3-Emergency Siren
4-No Added Support Needed
5-Stakeout
6-Want
7-Out of Service
10-Bomb Threat
20-Assist Officer
30-Emergency Traffic
33-Clear Channel for Emergency

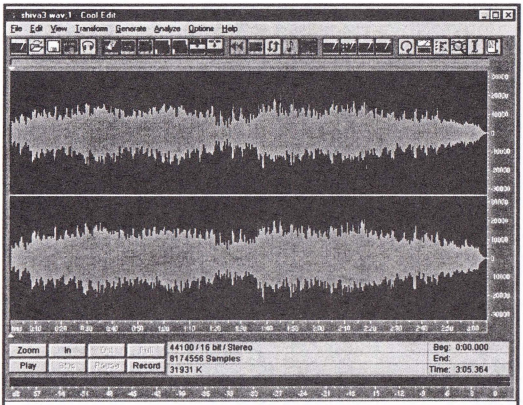
Vehicle Code:
10851-Stolen Vehicle
10852-Tampering With Car
10853-Malicious Mischief Vehicle
20001-Hit and Run (Felony)
20002-Hit and Run (Misdemeanor)
20007-Hit and Run (Parked Vehicle)
22500-Illegal Parking
23101-Drunk Driver (Felony)
23102-Drunk Driver (Misdemeanor)
23103-Reckless Driver
23109-Speed Contest
23110-Throwing at Vehicle

Penal Code:
148-Reisting Arrest
152-Drunk Driving
187-Homicide
207-Kidnapping
211-Robbery
212-Strongarm Robbery
213-Purse Snatch
216-Shots Fired
217-Shooting
219-Stabbing
221-Person With Gun
222-Person With Knife
240-Assault and Battery
245-Aggravated Assault/ADW
261-Sexual Assault/Rape
288-Lewd and Lascivious Conduct
311-Indescent Exposure
314-Indescent Exposure
400-Demonstration/Pickets
404-Riot
405-Citizens Holding Prisoner
406-Officer Needs Emergency Help
407-Prisoner Transport
408-Ambulance
409-Tow-Truck
410-ResquestedAssistance Responding
415-Noise Complaint
416-Citizen Standby
417-Person Ringing Doorbells
418-Fight or Dispute (No Weapons)
419-Fight or Disput (Weapons)
420-Juvenile Disturbance
459-Burglary
470-Fraud
476a-Fictitious Document
484-Petty Theft
488-Petty Theft
496-Stolen Property Receiving
518-Vehicle Accident (No Injury)
519-Vehicle Accident (Injury)
520-Aided Case
527-Bonfire
528-Fire
529-Explosion
530-Bomb Threat
531-Suspected Explosive Device Found
585-Traffic Stop
594-Malicious Mischief (Vandalism)
595-Malicious Mischief (Grafitti)
596-Abandoned Vehicle
600-Roadblock
601-Tresspassers
602-Person Breaking In
603-Prowler
647b-Prostitution
647f-Drunk
650-Threats
799-Senile Person
800-Mentally Disturbed Person
801-Person Attempting Suicide
802-Coroner's Case
806-Juvenile Beyond Parental Control
807-Missing Juvenile
809-Missing Person
811-Intoxicated Person
819-Reolling of Intoxicated Person
851-Stolen Vehicle
852-Auto Boost/Strip
853-Recovered Stolen Vehicle
901-Call Station (or other location)
902-Return to Station
904-Meet with Officer
904-Fire
905-Meet with City Employee
909-Citizen Requests Interview
910-Check on Well Being
911-Broken Window
912-Person Dumping Rubbish
913-Complaint Unknown
914-Person Down
916-Suspicious Person in Vehicle
917-Suspicious Person
918-Person Screaming for Help
980-Radioactive Support
5150-Insane Person

All power corrupts, but we need electricity.

# COOL EDIT 96

***a software review by: Solar Prophet***



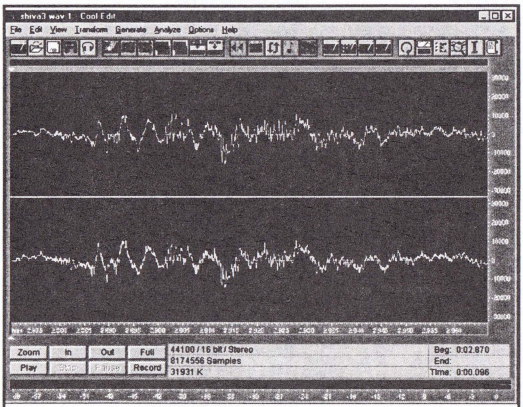

In this picture you can see the main interface screen of Cool Edit 96. Here I have a 3 minute 16bit 44.1KHz stereo WAV file of a song me and a friend composed. As you can see from the icon bar there are tons of functions right at your fingertips (or is it mousetip?) that will allow you to do just about anything you want to the sample. If you want any more sophistication you might as well get yourself a full fledged digital studio package, but I find this software sufficient for my needs, even with the needs of a startup band. I have used Cool Edit as a first step in preparing to convert my music to mp3 format.

All right all you phreakers, and anyone else that's interested in generating tones. Cool Edit 96 is a great little software package or the IBM PC that runs under Windows 95 or NT. It's basically a very sophisticated WAV file editor, with some extra perks.

There is a shareware version available which does disable the use of all functions simultaneously. If you haven't registered it, all functions are available but when you launch the program you will be shown a list of function sets and you are prompted to choose two of them to work with. I found Cool Edit 96 on www.slaughterhouse.com and they gave it a maximum "five skull" rating. I think it really deserves it.

Loading files is easy and accepts many formats. The common file name extensions being .VOX, .VOC, .WAV, and .PCM. Cool Edit can also save to these formats as well.

Cool Edit has many capabilities. It allows you to load WAV files and perform various functions on them. All WAV file bitrates are supported. It also handles mono and stereo. You can easily perform cut/paste/trim functions just like you'd do to a picture using Photoshop. You can even stretch the wavefroms, adjust their amplitude, change the sampling rates, add delay, flanging, echo, reverb and even reverse capability. You can even add distortion. Great for turning Bach into Metallica.




Here is a zoom into a portion of the WAV file. It's possible to zoom in to the point that individual samples show up as dots with an interpolated waveform drawn inbetween. Clicking and draging on a sample allows you to move it giving you the flexibility to edit bad samples to eliminate clipping from overdriving the input or to clean up pops and clicks.

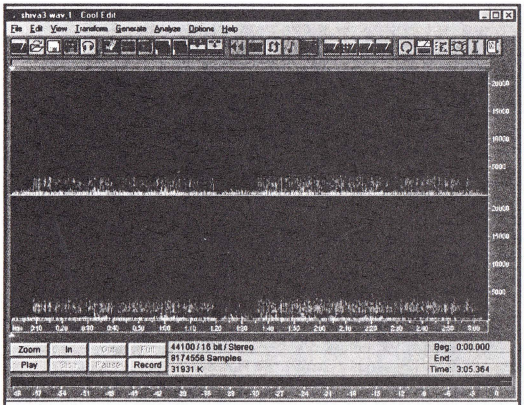
One of the more advanced functions is the ability to do a spectrum analysis on a waveform. This is great for seeing what fundamental and harmonics there are in a waveform. This can easily allow a user to identify the important characteristics of a sound sample and use that data to re-create the sound digitally using the built in tone generator.

The tone generator is the real beauty of this program. It allows you to create tones in various wave shapes. There's the customary sine, cosine, sawtooth, triangle, and square wave patterns as well as a few more exotic variations on these forms. One can take a fundamental and up to four harmonics. The tones can be swept across the spectrum in a controlled linear fashion or can be made to modulate to a lower rate. It's real easy to create red box tones using this program.

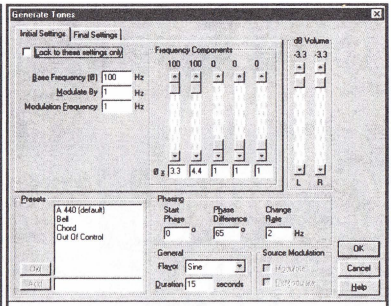
Along with the tone generator is another handy utility, a DTMF tone generator. You won't have to painstakingly generate each number and space them by hand. Using the DTMF generator you simply enter the number string to be created and set a few parameters such as tone length, spacing, and pause times. Press a button and voila, perfect DTMF tones without even trying. If you want to genereate DTMF tones but not at the standard frequencies used by telephones, there are even boxes to allow you to change the frequncies of each row or column on the keypad. Quite versatile.

The program is easy enough that in only 15 minutes I was able to create a small WAV file that had a dial tone, a few coins being dropped, a phone number being dialed and then a 2600Hz tone. Playback via a Sound Blaster or similar card and hooked up to the right recording equipment would lead to endless possibilies.

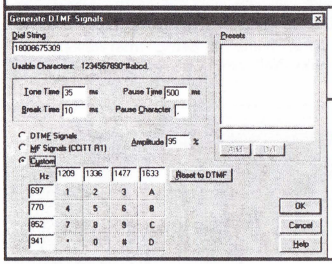
All in all Cool Edit 96 is a very easy program to use. The interface is standard Windows style and very intuitive; very easy to learn. A definate must get for anyone who needs to manipulate WAV files and generate tones.



This is the spectral analysis of the waveform. The image is actually in a visually pleasing color gradient. Time is reperesented on the X axis from left to right. Frequency is represented on the Y axis with 0 hertz on the bottom and 22050 hertz at the top of each section. The top is the left channel. The gradient represents the level of that freqency at that moment in time. It's kinda like the spectrum analyzer on your stereo or equalizer, except that it adds the dimension of time to create a graph of the selected space. It's also much more accurate. You can change how detailed the analysis is and several other factors by changing the setting under Options. To change between waveform and spectral view simply select the function under View in the main window menu bar.



Here's a shot of the Tone Generator window. You set the base frequency or fundamental first. If you want harmonics (up to five) you set their amplitude and value with the frequency component settings. In this example I have two components selected, one 3.3 times and the other 4.4 times the fundamental of 100 hertz. That means the generated tone will be a composite of 330 and 440 hertz. Other parameters allow you to change the modulating rate and amplitude of the tone. You may also control phasing which leads to a pleasing stereo effect. Under "general" you may select the type of waveform to use. Also note that there are two tabs, one for initial setting and one for final settings. This allows to to specify the start and end parameters of the tones you are generating. The computer will linearly sweep from the initial to the final settings over the time span specified in the duration box. There is also a section to program preset patterns, there are four that come with the program.



This is the DTMF signal generating window. As can be seen I have selected a famous number to call. There are setting to allow you to control the length of each DTMF tone, the spacing inbetween, and the pause time. All standard DTMF numbers can be generated (1234567890*#abcd,). I have selected custom simply to allow you to see the boxes for changing the base frequencies used to generate the tones. This will allow you to generate tones for non-standard DTMF devices, such as security boxes, etc. You may also specify presets of numbers in case you do lots of tone generating.

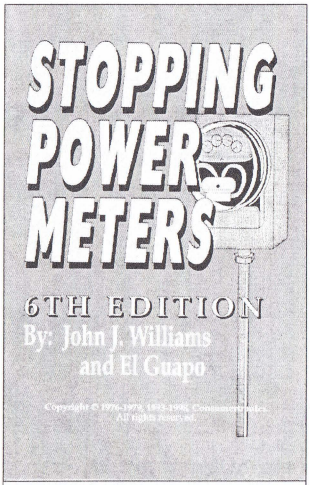
# Pager Frequencies

***(Listed in MHz)***

| Frequency | Channel | Frequency | Channel | Frequency | Channel | Frequency | Channel |
|---|---|---|---|---|---|---|---|
| 35.20 | P3-1 | 43.30 | P4-5 | 931.0875 | P9-4 | 931.5625 | P9-23 |
| 35.22 | P1 | 43.34 | P4-6 | 931.1125 | P9-5 | 931.5875 | P9-24 |
| 35.24 | P3-3 | 43.38 | P4-7 | 931.1375 | P9-6 | 931.6125 | P9-25 |
| 35.30 | P3-5 | 43.42 | P4-8 | 931.1625 | P9-7 | 931.6375 | P9-26 |
| 35.34 | P3-6 | 43.46 | P4-9 | 931.1875 | P9-8 | 931.6625 | P9-27 |
| 35.38 | P3-7 | 43.50 | P4-10 | 931.2125 | P9-9 | 931.6875 | P9-28 |
| 35.42 | P3-8 | 43.54 | P4-11 | 931.2375 | P9-10 | 931.7125 | P9-29 |
| 35.46 | P3-9 | 43.56 | P4-12 | 931.2625 | P9-11 | 931.7375 | P9-30 |
| 35.50 | P3-10 | 43.58 | P4 | 931.2875 | P9-12 | 931.7625 | P9-31 |
| 35.54 | P3-11 | 43.60 | P4-14 | 931.3125 | P9-13 | 931.7875 | P9-32 |
| 35.56 | P3-12 | 43.62 | P4-15 | 931.3375 | P9-14 | 931.8125 | P9-33 |
| 35.58 | P2 | 43.66 | P4-16 | 931.3625 | P9-15 | 931.8375 | P9-34 |
| 35.60 | P3-14 | 152.2 | P5 | 931.3875 | P9-16 | 931.8625 | P9-35 |
| 35.62 | P3-15 | 152.8 | P1-2 | 931.4125 | P9-17 | 931.8875 | P9-36 |
| 35.66 | P3-16 | 158.10 | P1-3 | 931.4375 | P9-18 | 931.9125 | P9-37 |
| 43.20 | P4-1 | 158.70 | P6 | 931.4625 | P9-19 | 931.9375 | P9-38 |
| 43.22 | P3 | 931.0125 | P9-1 | 931.4875 | P9-20 | 931.9625 | P9-39 |
| 43.24 | P4-3 | 931.0375 | P9-2 | 931.5125 | P9-21 | 931.9875 | P9-40 |
| 43.26 | P4-4 | 931.O625 | P9-3 | 931.5375 | P9-22 | | |

# STOPPING POWER METERS

*Review by: Shiva*




**Stopping Power Meters - The newest addition to a huge line up of educational hackers material available from Consumertronics, a veteran in the hacker community.**

**The Book:**

Stopping Power Meters is a small booklet written by John J. Williams and El Guapo. Don't let it's small size fool you however. I found the booklet to contain a great deal of information on your typical power meter. I'm sure I'm not the only one who wondered how they worked and how they could be 'adjusted'. As it turns out, there's actually a multitude of designs, each working on a variation of the same principle, all known as watthour meters, or more commonly, kilo-watthour meters.

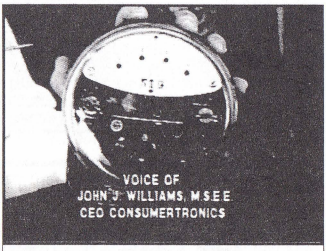
The booklet starts out by first explaining exactly what the meter does and how it works. "There is nothing magical, sacred or miraculous about watthour meters." Even different manufactures of meters are discussed with explanations of their differences.

After the theoretical background the booklet goes on to describe what it takes to calibrate a power meter, going on to mention that even with slight miscalibration the meter can cause over or undercharging of the customer. It is also noted the possible outcomes of a customer complaining about an inaccurate meter. There is some discussion about how the power company can track down discrepancies in usage over time, and how they usually find these to be in their favor (what else did you expect?) and how much it could cost YOU to have the 'problem' fixed. But not to worry folks, some example excuses are provided for your education.

**John Williams being interviewed by Mike Wallace of CBS's 60 Minutes.**

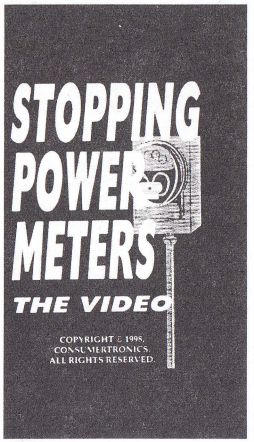
Following up adjustments is the inaccuracy department. It's amazing just how inaccurate these things can be! It also appears that they become more unreliable as time goes by. Think about it, how old is the house you live in? I bet it still has it's original power meter from way back then and has NEVER been calibrated to insure accuracy. Of course, these errors are almost always in the favor of the power company. It's almost as if it were by design that the meter fails over time.

The booklet doesn't just spout off that the meters are in error, it backs up these claims by explaining the causes of these inaccuracies. Meters, like any other scientific instrument, need constant care in order to provide accurate information. Explained are several sources or conditions that over time will cause the meter to slowly fail. It's quite detailed in some respects.




**John Williams narrates the video, seen here holding the meter used for demonstration.**

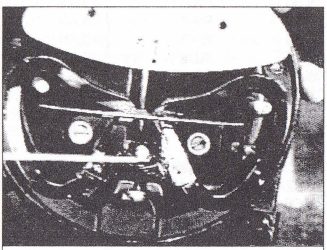
Now for the good part. The last half of the booklet discusses how to slow down, or even stop a power meter from registering. Now, it should be noted that tampering with a power meter is illegal. The booklet talks about this for several pages explaining how the utility suspects and determines if the meter has been messed with. But like anything else in this world, such tampering can be made very difficult to detect.



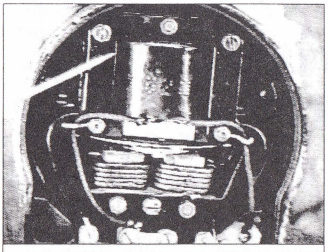

As for the actual methods of tampering, there's a lot more described between the covers than I suspected. These methods are described in detail, even providing actual schematics of the devices used. What more could you want? Well, there's a little sections describing some of the terminology used for the parts you'll need. And speaking of parts, there's even a section listing several electronics suppliers that are good places to start looking for the necessary components. Some books are also listed for those wishing to learn more about domestic electrical wiring.

**The Video:**

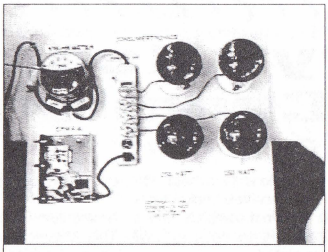
Also available is Stopping Power Meters: The Video. This 20 minute video, narrated by John J. Williams himself, highlights the most important basics that are discussed in the booklet. Covered are the internal mechanisms



**Front of the meter showing braking magnets. One of the adjustment screws is being pointed out.**



**Back of the meter showing the voltage and current coils.**



**Demonstration setup in video of device used to stop or slow meters.**

of meters, how the meter actually measures the power used, and how they are accessed.

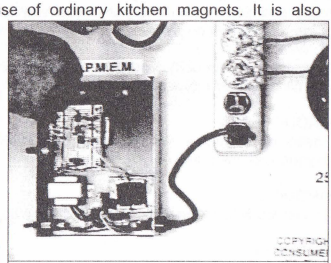
The video then goes on to demonstrate a power meter in action. The meter is hooked up to a series of high powered light bulbs to provide a load. Shown is the speed at which the meter runs. Hooked up to the test bed is another product available from Consumertronics, the Stopping Power Meters Educational Module. This is a device built along one of the principles described in detail in the booklet. The meter is shown both with the SPMEM on and off so one can readily see the effect of the module on the registration of the meter. It's quite a dramatic effect.

Also demonstrated is a method of slowing down the meter through the use of ordinary kitchen magnets. It is also demonstrated that the same magnets can also speed up the meter and how it is important to use them correctly.

The video, combined with the booklet, provide an excellent educational tour on the functionings of utility power meters found in most homes and small business. You will also learn of their shortcomings and methods of fouling their abiiity to register correctly.

About Consumertronics:

Consumertronics is the company who puts out Stopping Power Meters. They offer "hundreds of books, manuals, software, hardware, and services that primarily relate to computers, electronics, phones, energy, security, medical, and financial." The author, John Williams, was even interviewed on the CBS show 60 Minutes. For more information, look for the full page Consumertronics advertisement in this magazine.




**Closeup of the Stopping Power Meters Educational Module (S.P.M.E.M.) demonstrated in the video.**

***Note: This article appears in our sister publication, Blacklisted! 411 - Volume 5, Issue 1. For more information, contact Blacklisted! 411 at P.O. Box 2506, Cypress, CA 90630.***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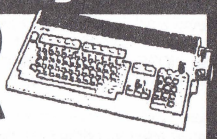

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# Pyrotechnic Chemicals

Within this booklet you will find descriptions of almost 150 chemicals that are used in fireworks, explosives, rocket fuels or are explosive in themselves. This list is not complete and is not intended to be complete. All of the uses are not given and only the related purposes of each are stated.

Whenever possible we explain which grades are thought to be best, the chemical formula, melting temperature, decomposition temperature, form (liquid, powder, crystal, etc.), if it will explode, if it is poisonous and its usage. Some of these chemicals cannot be purchased and are offered as a guide for information purposes only.

Chemicals have a certain purpose to perform in fireworks and can be classified into four groups.

GROUP I
These chemicals are the chemicals which produce the oxygen and are called oxidizers.

GROUP II
Those which combine with the oxidizers are called reducers.

GROUP III
These are the chemicals which regulate the rate of burning and help to produce the desired effect.

GROUP IV
This group of chemicals are those which impart color to the flame.

We believe that the information contained here-in is true and correct, however it is offered only as a guide and not to be used as a guarantee. We cannot assume responsibility nor liability for the use or misuse of the information contained here-in.

PLEASE NOTE: ALL REFERENCES TO TEMPERATURE ARE IN DEGREES FAHRENHEIT.

Aluminum
An element used for brilliancy in the fine powder form. It can be purchased as a fine silvery or gray powder. All grades from technical to superpure (99.9%) can be used. The danger is from inhaling the dust and explosive room condition if too much dust goes into the air.

Aluminum Chloride
This chemical must not come in contact with the skin, as severe burns can result. The yellowish-white crystals or powder have a strong attraction for water. Purchase only in the anhydrous grade.

Amber
This is a fossil resin of vegetable origin and is yellowish-brown in color. It is used in fireworks to a small extent.

Ammonium Bichromate & Dichromate
A mild poison used in the manufacture of tabletop volcanoes (sometimes called Vesuvius Fire). It is available as orange crystals in a technical grade. Also used in smoke formulas.

Ammonium Chloride
The common name is Sal Ammoniac. Comes as colorless crystals or a white powder. The technical grade is used to manufacture safety explosives and smokes.

Ammonium Oxalate
This compound takes the form of colorless, poisonous, crystals. The technical grade is suitable for the manufacture of saft explosives.

Ammonium Perchlorate
This chemical can be made to explode by either heat or shock. Besides exploding in itself, it is used to manufacture other explosives.

Ammonium Permanganate
A moderate explosive which can be detonated by either heat or shock.

Ammonium Picrate
These bright orange crystals are used in armor piercing shells and fireworks. If heated to 300 degrees it will explode or it can be set off by shock. If you do any work with this chemical, it is advisable to keep it wet.

Aniline Dyes
These are used in smoke powder formulas. They are organic coal tar derivatives. Available in many different colors.

Aniline Green
Also known as Malachite Green. One of the many aniline dyes. The green crystals are used in smoke formulas.

Anthracene
A coal tar derivative used as a source of dyestuff and for colored smokes. Available as colorless crystals which melt at 217 degrees.

Antimony
Another name for this metal element is Antimony Regulus. Purchase the black powder in a 99% purity. Not the yellow variety. It is used in pyrotechnics.

Antimony Fulminate
One of a group of unstable, explosive compounds related to Mercury Fulminate.

Antimony Potassium Tartrate
Also known under the name of tartar Emetic. These poisonous, transparent, odorless crystals (or white powder) are used to make Antimony Fulminate. The moisture that is present can be driven off by heating to 100 degrees. Do not exceed this temperature or the chemical will decompose.

Antimony Sulfide
This has a usefulness in sharpening the report of firecrackers, salutes, etc. or to add color to a fire. The technical, black powder is suitable. Avoid contact with the skin, dermatitis or worse will be the result.

Aqua Regia
A strong acid containing 1 part concentrated Nitric Acid and 3 parts concentrated Hydrochloric Acid. Store in a well closed glass bottle in a dark place. This acid will attack all metals, including gold and platinum. It is used in making some explosives.

Arsenic Sulfide, Red
The common name is Realgar and it is also known as Red Arsenic. Purchase the technical grade, which is available as a poisonous orange-red powder. It is used in fireworks to impart color to the flame.

Arsenic Sulfide, Yellow
This chemical is just as poisonous as its red brother and is also used in fireworks, somewhat. The common name is Kings Gold.

Arsenious Oxide
A white, highly poisonous powder used in fireworks. It is also known as Arsenious Trioxide, Arsenic Oxide and Arsenous Acid. Its uses are very similar to Paris Green.

Asphaltum
A black bituminous substance, best described as powdered tar.

Auramine Hydrochloride
Also known as Auramine. It is used in smoke formulas. Available as yellow flakes or powder, which readily dissolve in alcohol.

Auramine
A certified Biological stain used in smoke cartridges.

Barium Carbonate
This is a poisonous salt of Barium, which decomposes at a fairly high temperature, 1300 degrees. It is available as a fine white powder in the technical grade. It is used in fireworks as a color imparter.

Barium Chlorate
Available as white powder. It is poisonous, as are all Barium salts. It is used in fireworks, both as an oxidizer and color imparter. It is as powerful as Potassium Chlorate and should be handled with the same care. Melting point is 414 degrees.

Barium Nitrate
The uses and precautions are the same as above with a comparison equal to Potassium Nitrate instead of the Chlorate. It melts at 500 degrees.

Bismuth Fulminate
One of a group of unstable, explosive compounds derived from Fulminic Acid.

Brass
This is an alloy of Copper and Zinc. Some also contain a small percentage of Tin. The commercial grade is suitable in a powdered form. It is used in some firework formulas.

Calcium Carbide
These grayish, irregular lumps are normally packed in waterproof and airtight metal containers. It is used in toy cannons. Mixed with water it forms Acetylene Gas. (EXPLOSIVE)

Calcium Carbonate
This occurs as the mineral Calcite. It is used for Phosphorus Torpedoes, but does not have any dangerous properties in itself. Also as an acid absorber in fireworks.

Calcium Fluoride
This finds its use in a smokeless firework mixture and is not used elsewhere. It is a white powder, also known as Fluorspar.

Calcium Phosphide
This compound, which comes as gray lumps, must be kept dry. Upon contact with water it will form the flammable gas, Phosphine. It is used in signal fires.

Camphor
A ketone found in the wood of the Camphor tree, native to Formosa and a few of our States. For the best results, buy the granulated, technical grade. Used in explosives and fireworks.

Castor Oil
The common drug store variety is used in some powders to reduce the sensitiveness and to waterproof the mixture.

Charcoal
A form of the element, Carbon, it is used in fireworks and explosives as a reducing agent. It can be purchased as a dust on up to a coarse powder. The softwood variety is best and it should be black, not brown.

Chrysoidine
An organic dye available as a red-brown powder. It is used in smoke formulas.

Clay
This can be purchased in the powdered form. It is used dry for chokes, nozzles and sealing firework cases. You can mix it with water to form a paste if so desired.

Confectioners Sugar
Commonly called Powdered Sugar, it can be purchased as your local food store. The fineness is graded by the symbol XXXX. It is used in explosives.

Copper
As any pure metal used in fireworks, this must also be in a powdered state. It is reddish in color, in fact, it is the only element to be found in nature having that color.

Copper Acetoarsenite
The popular name for this is Paris Green. It is also called Kings Green or Vienna Green. It is readily available as an insecticide or as a technical grade, poisonous, emerald green powder. It is used in fireworks to add color.

Copper Arsenite
A fine, light green, poisonous powder. It is used in the technical grade for fireworks.

Copper Carbonate
Also known as Cupric Carbonate or Artificial Malachite. It is a green powder used in fireworks.

Copper Chlorate
Or, technically Cupric Chlorate. A poison used in fireworks as an oxidizer and to add color.

Copper Chloride
An oxidizer and color imparter used in fireworks. Purchase the brownish-yellow technical grade. This is a poisonous compound.

Copper Nitrate
Or Cupric Nitrate, Cupric and Cuprous are many times interchangeable with the word Copper. These blue crystals absorb water, as you can see from the formula. It is used in fireworks.

Copper Oxide
When ordering be sure to specify the black powder. It is also available in Red. The technical grade will serve the purpose for fireworks.

Copper Oxychloride
A green powder used to impart oxygen and color especially to blue star formulas. It is a poison and the dust should not be inhaled.

Copper Sulfate
Known as Blue Vitroil, this poisonous compound is available as blue crystals or blue powder. It can be purchased in some drugstores. Used in fireworks for blue stars.

Copper Sulfide
As are the other Copper salts, this is also used in fireworks to add color. The technical grade is suitable and is black in color. You can make your own, by passing Hydrogen Sulfide into a Copper salt.

Decaborane
This chemical is classed as a flammable solid and is used for rocket fuels. It will remain stable indefinitely at room temperature.

Dextrin
This can be purchased as a white or yellow powder. It is a good cheap glue for binding cases and stars in fireworks.

Diazoacetic Ester
A very severe explosive in the form of a yellow oil. It will explode on contact with Sulfuric Acid or when heated. Very volatile and explosive.

Diazoaminobenzene
These golden yellow crystals will explode when heated to 150 degrees.

P-Diazobenzeneslfonic Acid
Another severe explosive. It can be exploded by rubbing the white paste or powder, or by heating.

Diazodimitrophenol
An organic explosive in the same group as the above compound. Also very sensitive to shock or heat.

Diazomethane
Also known as Azimethylene. This yellow gas is also in the same group as above and can be exploded by heat or shock.

Dinitrotoluene
Known as DNT for short. These yellow crystals are used in the manufacture of other explosives.

Ethyl Alcohol
This alcohol is the only one that is useful for fireworks. It should be about 95% pure. It is poisonous because of the impurities. It is clear, like water and also a very flammable liquid.

Fluorine Perchlorate
A very sensitive colorless gas which will explode on the slightest contact with a rough surface. It can also be detonated by heating to 168 degrees. Avoid all contact with this gas, even a trace of it will attack the lungs.

Gallic Acid
A white or pale fawn colored powder used in fireworks to make whistles. When mixed with some Chlorates, Permanganates or Silver salts, it may explode.

Glycerol
Commonly known as Glycerin. It is obtained from oils and fats as a by-product when making soaps. It is a sweet warm tasting syrupy liquid which is used in several explosives. Contact with Chromium Trionide or Potassium Permanganate may cause an explosion.

Gold Explosive
A dark brown powder which explodes when heated or rubbed. Upon exploding, it yields Gold, Nitrogen and Ammonia. The exact composition is unknown because it is too explosive to be dried.

Guanidine Nitrate
Guanidine is found in turnip juice, rice hulls and earthworms. It is used in the preparation of this chemical. Or, it can be made from Ammonium Nitrate and Dicyanodiamide. To be of any value, it should be 95% pure. Guanidine Nitrate is not explosive itself, but is used in the manufacture of explosives. It is a white powder which melts at 210 degrees.

Gum Arabic
A dried, gummy, exudate from tropical trees. It is available as flakes, fragments and powder. It is used as a binder in firework formulas.

Hexachloroethane
Also known as Carbon Hexachloride, this chemical is used in smoke formulas. It can be obtained in either powder or crystals.

Indigo
A dark blue crystalline powder which is a commercial dye. You can purchase either the technical or pure grade for smokes.

Iodine
Heavy grayish metallic looking crystals or flakes. Poisonous. Purchase the U.S.P. grade. It is being used in making explosives.


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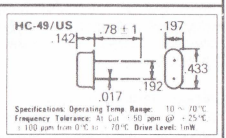


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Iron
The granular powder (at least 99% pure) is needed for several firework pieces. It is not a dangerous element, but will rust very easily, making it useless.

Iron Oxide
These black crystals are used in thermite mixtures. When ordering, it may be listed as Ferrous Oxide. Black.

Kieselguhr
This is a whitish powder used in dynamites. It is a siliceous earth, consisting mainly of diatoms. A good grade will absorb about four times its own weight.

Lactose
Also called milk sugar. This white powder has a sweet taste. The crude grade will do for smoke formulas.

Lampblack
This is another form of the element, carbon. It is a finely powdered black dust, resulting from the burning of crude oils. It is used for special effects in fireworks.

Lead Azide
This is a poisonous white powder which explodes by heating to 350 degrees or by concussion. The main usage is in primers. It can be made from Sodium Azide and Lead Nitrate.

Lead Bromate
Poisonous, colorless crystals. Pure Lead Bromate is not explosive unless it is made from precipitated Lead Acetate with an alkali bromate. Made in this manner, it can be exploded by rubbing or striking.

Lead Chloride
It is available as a white crystalline, poisonous powder which melts at 501 degrees. It is used in fireworks.

Lead Dioxide
Also known as Brown Lead Oxide, this dark brown powder is used as an oxidizor in matches and fireworks. Poisonous.

Lead Nitrate
Available as white or colorless crystals is the technical grade. The uses include matches and explosives. Poisonous.

Lead Oxide
Also known as Red Lead or Lead Totraoxide. A 95% purity is desired for matches. Also poisonous.

Linseed Oil
Available in many forms: Brown, boiled, raw and refined. All are made from the seed of the flax plant. The cheapest form is suitable for fireworks. Purchase from a paint store.

Lithium Chloride
The technical grade is sometimes used to add color to fireworks compositions. Available as a white powder.

Manganese Dioxide
Used in pyrotechnic mixtures, matches and match box friction surfaces. Available as a technical grade, black powder. This oxidizer decomposes at 535 degrees.

Magnesium
This metal is used in a powdered state for brilliancy in flares and will even burn vigorously underwater.

Mercuric Chloride
A white, poisonous powder. Also known as Corrosive Sublimate. It can be made by subliming Mercuric Sulfate with ordinary table salt and then purified by recrystallization. The U.S.P. grade is used for some firework compositions.

Mercuric Oxide
Available in two forms- red and yellow. Both forms give the same oxidizing effects in fireworks. The technical grade is suitable. All forms are Poisonous.

Mercuric Oxcyanide
In the pure state it is a violent poison which will explode when touched by flame or friction.

Mercuric Thiocyanate
A poisonous, white odorless powder used in the making of Pharoah's Serpents. Use the technical grade.

Mercurous Chloride
Also known as Calomel or Mercury Monochloride. This white, non-poisonous powder will brighten an otherwise dull colored mixture. Sometimes it is replaced by PVC or Hexachlorobenzene and even Antimony Sulfide, for the same purpose. Note that it is non-poisonous only when it is 100% PURE. Never confuse this chemical with Mercuric Chloride, which is poisonous in any form.

Mercury Fulminate
A crystalline compound used in primers, percussion caps, blasting caps and other detonators. Explodes very easily from heat or shock.

Methylene Blue
This dark green powder is used for smokes in the technical grade. Also called Methylthionine Chloride.

Mineral Jelly
Also known as Vaseline, Petrolatum or Petroleum-Jelly. This acts as a stabili- zer in fireworks and explosives.

Naphthalene
This is a tar product that you may know better as Moth Flakes. Only the 100% PURE form should be used in making smoke powders. The melting point is 100 degrees.

Nitric Acid
Also known as Aqua Fortis. It is a clear, colorless, corrosive liquid, which fumes in moist air. It can react violently with organic matter such as: Charcoal, Alcohol or Turpentine and consequently must be handled very carefully. It is available in three forms: White Fuming, Red Fuming and Concentrated (70 to 71%). The latter, with a specific gravity of 1.42, is the proper grade to buy. Whatever grade, avoid contact with the fumes or the liquid. Contact with the skin will cause it to burn and turn yellow. It is used to manufacture many explosives.

Nitroglycerin
A liquid with a sweet burning taste but do not taste it or it will produce a violent headache or acute poisoning. It can be made to explode by rapid heating of percussion. It is used as an explosive and also to make other explosives.

Nitroguanidine
A yellow solid make by dissolving Fuanidine in concentrated Sulfuric Acid and then diluting with water. Dangerous Explosive.

Nitromethane
An oily, poisonous liquid, which is used as rocket fuel.

Oil of Spike
This is a volatile oil obtained from the leaves of certain trees. Keep this colorless (or pale yellow) liquid well closed and away from light. It is used in some fireworks.

Paraffin
This is a white or transparent wax. It is normally sold in a solid block. You can use a file to make the required powder.

Paranitroaniline Red
A dye used in smoke formulas. It dissolves in alcohol and will melt at 139 degrees. It is also known as p-Aminophenyl.

Pentaerythrityl Tetranitrate
A high explosive known at PRTN. Besides being an explosive itself it is used in a detonating fuse called Irimacord.

Perchloryl Fluoride
A gas under normal air pressure. When brought in contact with alcohol, explosions have resulted.

Phosphorus
This element comes in three forms, with three different ways of reacting. They resemble each other in name only. Red Phosphorus is the only suitable form for fireworks and matches. It is a non- poisonous violet-red powder. It will ignite at 260 degrees. When making a formula containing Phosphorus, be sure to work with it in a wet state. This is a most dangerous chemical to work with and should be handled by the most experienced. Oxidizers have been known to detonate violently without warning when mixed with Red Phosphorus.

Phosphorus Pentasulfide
Also known as Phosphoric Sulfide. These light yellow crystals are used in matches.

Phosphorus Trisulfide
This chemical can catch fire from the moisture that is present in air, therefore the container should be kept tightly capped. The technical grade, purchased as grayish-yellow masses, is used in making matches.

Picric Acid
This is used to bring out and improve the tone of colors in various fireworks. It is also used to make other chemicals that are used in fireworks and explosives. Picric Acid can explode from heat or shock. It is interesting to note what it is called in other countries. Britain: Lyddite; France: Melinite; Japan: Shimo-
se.

Plaster of Paris
This is a white powder, composed mostly of Calcium Sulfate. It is used, by mixing with water, for end plugs in fireworks and also in some of the formulas.

Potassium
A soft silvery metal element. It will react vigorously with water and several acids. It is not used directly except for some experiments.

Potassium Chlorate
This, perhaps, is the most widely used chemical in fireworks. Before it was known, mixtures were never spectacular in performance. It opened the door to what fireworks are today. It is a poisonous, white powder that is used as an oxidizer. Never ram a mixture containing Potassium Chlorate. Do not store mixtures which contain this chemical for any great length of time, as they may explode spontaneously.

Potassium Dichromate
Also known as Potassium Bichromate. The commercial grade is used in fireworks and matches. The bright orange crystals are poisonous. Also used in smokes.

Potassium Ferrocyanide
Lemon yellow crystals or powder which will decompose at high temperatures. It is used in the manufacture of explosives.

Potassium Nitrate
Commonly called Saltpeter; this chemical is an oxidizer which decomposes at 400 degrees. It is well known as a component of gunpowder and is also used in other firework pieces. Available as a white powder.

Potassium Perchlorate
Much more stable than its Chlorate brother, this chemical is a white or slightly pink powder. It can often substitute for Potassium Chlorate to make the formula safer. It will not yield its oxygen as easily, but to make up for this, it gives off more oxygen. It is also poisonous.

Potassium Picrate
A salt of Picric Acid, this chemical comes in yellow, reddish or greenish crystals. It will explode when struck or heated. It is used in fireworks.

Potassium Thiocyanate
Colorless or white crystals which are used to make the Pharaoh's Serpent. The commercial grade or pure grade is suitable.

n-Propyl Nitrite
Prepared from Silver Nitrate and n-Propyl Bromide and is used as a jet propellant.

Red Gum
Rosin similar to Shellac and can often replace it in many fireworks formulas. Red Gum is obtained from the barks of trees.

Rhodamine B
A basic red fluorescent organic pigment also known as Rhodamine Red. Available in green or red crystals or powder. It is used in smoke formulas.

Shellac
An organic rosin made from the secretion of insects which live in India. The exact effect it produces in fireworks is not obtainable from other gums. The common mixture os Shellac and Alcohol sold in hardware stores should be avoided. Purchase the powdered variety, which is orange in color.

Silver Fulminate
A crystalline salt similar to Mercury Fulminate but more sensitive. In fact, too sensitive for commercial blasting. It is used for toy torpedoes and poppers.

Silver Oxide
Dark brown, odorless powder. It is potentially explosive and becomes increasingly more so with time. Keep away from Ammonia and combustible solvents. The technical grade, which is about 92% Silver, is suitable.


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**REMEMBER, THE WORLD IS COUNTING ON YOU!**

Sodium Aluminum Floride
Also known as the mineral, Cryolite. It is used in fireworks in the white powdered form.

Sodium Bicarbonate
When a formula calls for this chemical, you can use Baking Soda (NOT Baking Powder). It is a white, non poisonous powder.

Sodium Carbonate
This white powder is used in fireworks, but not to any great extent. The anhydrous grade is best.

Sodium Chlorate
An oxidizer similar to Potassium Chlorate, although not as powerful and also with the disadvantage of absorbing water. Decomposes at 325 degrees.

Sodium Chloride
This is used in fireworks. You can use the common form, table salt (or rock salt if made into a powder).

Sodium Nitrate
Also known as Chile Saltpeter; very similar to Saltpeter (Potassium Nitrate).
It is used where large amounts of powder are needed in fireworks and explosives. It will absorb water as do other sodium salts.

Sodium Oxalate
This is not a strong poison but is poisonous, and you should not come in contact with it or breathe the dust for any prolonged period. The technical grade is best for making yellow fires.

Sodium Perchlorate
This chemical is used in fireworks and explosives. It is very similar to Potassium Perchlorate with the exception that it will absorb water.

Sodium Peroxide
A yellowish-white powder. It can explode or ignite in contact with organic substances.

Sodium Picrate
Very similar to Potassium Picrate and should be handled with the same precautions. It is also known under the name of Sodium Trinitrophenolate.

Sodium Silicate
This chemical, commonly called water glass, is used as a fireproof glue. It is available in syrupy solution and can be thinned with water if necessary. When dry it resembles glass, hence the name. It can when desired be thickened with calcium carbonate, zinc oxide, powdered silica, or fibre glass (chopped) if extra strength is desired.

Stearin
Colorless, odorless, tasteless, soapy crystal or powder. Sometimes referred to as Stearic Acid, purchase the technical grade, powder. It can often take the place of Sulfur and Charcoal in fireworks.

Strontium Carbonate
Known in the natural state as Strontianite, this chemical is used for adding a red color to fires. It comes as a white powder in a pure, technical or natural state.

Strontium Chloride
A colorless or white granulated chemical used in pyrotechnics. It will absorb water and is not used often.

Strontium Nitrate
By far the most common chemical used to produce red in flares, stars and fires. Available in the technical powder grade. An oxidizer with 45% oxygen and absorbs H2O.

Strontium Sulfate
This does not absorb water as quick as nitrate and is used when storage is necessary. In its natural state it is known as Celestine, which compares to grades used in fireworks.

Sulfur
For an example type II burns as 250 degrees giving off choking fumes. Purchase good pyro grades low in acid. Used in many types of fireworks and explosives.

Sulfuric Acid
Also called oil of Vitriol, it is a clear liquid with the consistency of thin syrup. Bottles should be kept tightly closed as it is a very corrosive and dangerous chemical. It has a great affinity for water and will absorb it from any source. The effect can be a charred surface or fire. The grade used in explosives is 93-98%.

Sulfur Trioxide
This powder will combine with water with explosive violence to form Sulfuric Acid. If brought in contact with wood flour and a drop of water is added, a fire willstart. It is used to make some explosives.

Trinitrotoluene
Commonly known as TNT. The poisonous crystals are colorless in the pure state. It is more powerful and expensive than Dynamite. If not confined it will burn like dynamite. Used as a high explosive and to make others.

Wood Flour
This is merely another name for Sawdust or Wood Meal. It is used in fireworks and explosives.

Zinc
Of all the forms, only the dust is suitable in the technical or high purity grade. It is a gray powder used in star mixtures and for fuel in model rockets.

Zinc Borate
A white amorphous powder used in making smoke formulas. A relatively safe compound to handle.

Zinc Carbonate
Another white Zinc compound used in some smoke formulas. Also a safe compound to handle.

Zinc Oxide
Sometimes called Flowers of Zinc. This is a white or yellowish powder used in some fireworks formulas. It has also found use as a thickening agent in water glass when a stronger pyro paste is desired.

The preceding list was provided by an anonymous source.

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# CABLE TEST CHIP FAQ

## PROVIDED BY TELECODE

**PRE-INSTALLATION**

You are about to install a test device in a cable descrambler. There are several things you should be aware of before you open the package containing the chip or board. Once installed, you own the chip or board. Any damage done to the box or test chip/board is your responsibility. DO NOT install this chip or board in a box not owned by you unless you have permission from the owner of the box. If using the box with a test chip installed, it is the responsibility of the user to notify and get written permission fron the cable company supplying programming to the cable box or descrambler.

**HOW THEY WORK**

There is no magic involved with these chips or boards. They work by telling the microprocessor that all channels the box is normally capable of receiving are OK to "turn on". This DOES NOT necessarily mean that the chip or board, once installed, will "get all channels. It may or may not. These are "test" devices, NOT theft devices. There does NOT exist a chip or board to GET all channels for free. Programming MUST enter the box to be seen. Test chips or boards only "enable signals" that are there for testing box.

It may or may not be able to test all channels, depending upon the installation by your cable company of any extra "traps and filters". Please re-read the preceding until you understand this basic point. Once installed, ALL channels that the box is "capable of receiving" are "turned on" enable testing of individual channels of the descrambler. If you intend to view programming on continued basis, you must pay for the programming you watch.

**BEGIN TESTING**

After installation, begin testing. All channels that you previously received prior to the installation of the test chip or board should be viewable. If you then tune to a premium channel, such as HBO, which was NOT previously watchable, and it DOES NOT COME IN CLEARLY or AT ALL, the test board or chip is MOST LIKELY still working properly. The reason that the descrambler is NOT displaying the channel is most likely due to the cable company having installed a "trap" on the cable line servicing this descrambler. The "trap" has removed the HBO channel from the cable.

NO signal = NO picture.

The signal for HBO not being there means it cannot be displayed by the descrambler. The descrambler before the test chip was installed could not tune the channel. Now it can, but the channel is "missing" due to the "trap". This is common in some areas and not in others. It costs money to have an employee of the cable company come out and remove or re-install the trap each time you wish to view a PPV event or add Premium channels. So, the cable companies have mostly gone to addressable descramblers. Each addressable descrambler box has a unique electronic serial number (ESN) that can be "spoken to" by the cable company (CACO), or "head-end" as it is called. Authorization is done electronically by telling a specific ESN, what channels are authorized.

**IT WORKED FOR A WHILE...**

Installation of test chip or boards may enable all channels, including PPV and other Premium channels, but only for a short time. In these cases, Electronic Countermeasures (ECM) have most likely been sent from the headend to ALL boxes. Only those boxes WITH test chip or boards installed permanently will be affected. Click here for Starcom Diagnostic Codes. ECM signals are typically sent just before and during a PPV event, and at regular or non-regular intervals during other times. The ECM instructions "confuse" the box and it may shut-off some or all of its programming. ECM sometimes "kills" authorized boxes, also. Unplugging the box for 10 minutes and then plugging again may reset the box back to normal until the next ECM hit. If you have an authorized box and the programming disappears without reason, call the cable company and asked that the box be "re-initialized" or sent a "hit".

**ECM**

ECM can be "controlled" by installing a filter to trap out the ECM signal, which is usually transmitted as a 106MHZ carrierwave "on top" of the regular programming. These traps are known collectively as "Bullet Busters". Bullet Busters are specific to the frequency of the transmitted ECM signal, so they usually are adjustable. Follow the installation instructions for the particular Bullet Buster you are using.

**WARNING**

Installation of a test chip or test board does NOT MEAN you can watch channels that you have NOT PAID for. Use of the test chip or board is legally limited to testing descramblers and viewing channels that have been paid for but are otherwise not viewable. One example could be where a second box has been installed, with a test chip, in a house that has paid for cable programming and the cable company is unable to authorize the second box. Another example is where the descrambler, because of some electrical fault, is incapable of displaying channels that have been paid for.

Boxes with test chips will display all programming input to it, but you are legally only authorized to view programming you have paid for. If you have any doubt as to whether or not you would be breaking the law in you community, we suggest that you consult an attorney for legal advice before installing or testing any channels.

**DISCLAIMER**

The sale(s) of all test chips or boards are made with the understanding that the user of these device(s) will comply with all laws, both State and Federal. If in doubt, consult an attorney prior to use.

**TROUBLESHOOTING TIPS**

1. The most common cause of test device not functioning properly is from poor soldering or a bad connection during installation. Inspect connections before applying power to the unit. Solder connections should be shiny and smooth. If connections are dull and/or rough, it could be a "cold solder joint".

2. The second most common cause of test device not functioning, is that the device is not installed in accordance with the instructions supplied. Some test chips do not align pin 1 of test device with pin 1 of unit under test (Zenith ZF-1). Follow instructions "...to the letter". Be careful not to bend pins under chip when installing.

3. If installing the test device "piggyback" onto another chip, make sure that the pins of the test device are in contact with that of the "host" chip. Clean pins of host IC and solder on a socket first. Then plug the test chip into the socket.

*CONTINUED ON PAGE 49*

# TOP SECRET

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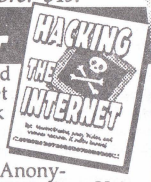


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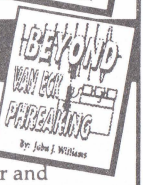


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(Late breaking news)

## Pirate Radio Trials And Tribulations

In November, three Tampa Bay, Florida residents got rude wake up calls from raiding parties involving SWAT teams, Federal Marshals, local police, customs agents, and a CIA agent. They were all led by agents from the FCC. The raids, conducted against, Arthur Kobres, Kelly Benjamin, and Doug Brewer were a successful attempt to shut down three area unlicensed micro-power FM broadcasters. They've succeeded for the time being.

Arthur Kobres, who operates 'Lutz Community Radio' and transmits on 96.7 FM was charged in a 14-count federal indictment for operating a radio without a license. He was eventually released on a $25,000 bond. Kelly Benjamin operates '87X' on 87.9 FM in Seminole Heights. Known on the air as Kelly Kombat, he was also arrested on state charges of possessing marijuana and other drug paraphernalia. He was later released on a $1,000 bond.

Doug Brewer, operating 102.1 FM's 'The Party Pirate' says some of the equipment seized from his home belonged to other groups, such as the Temple Terrace Golf & Country Club and was nothing more than ham radio repeater equipment unrelated to any 'pirate radio' broadcasting equipment. A 150 foot broadcasting tower was also dismantled. Brewer has been in trouble with the FCC before. He refused to pay a $1000 FCC fine and even taunted the FCC on and off the air. A web page even shows FCC agents outside his home measuring his broadcast strength.

Ralph Barlow, head of the FCC in Tampa had no comment but a Wall Street Journal article on Brewer quotes Barlow as saying "Sooner or later I'll nail him." Drew Rashbaum, VP and owner of several legal Tampa area radio stations had filed a complaint with the FCC about 102.1's 'The Party Pirate' about a year before claiming it's proximity to his station 102.5 was confusing listeners. Although Rashbaum doubts this will stop pirate broadcasters he says "to some degree, it makes the airwaves safer to listen to."

This rash of raids come son the heals of a California Federal Judge Claudia Wilken's ruling that refused to grant the FCC a permanent injunction to shut down Free Radio Berkeley. The ruling also questioned the FCC's involvement in violating the constitutional rights of citizens.

Richard Edmondson, speaking for SF Liberation Radio had strong words to say in regards to the matter. "The raid against Doug brewe and other microbroadcasters in Florida, coming as it has just a week after the Federal Court Ruling in California, is a display of lawless thuggery which demonstrates to me more clearly than ever that the US Government does not care about its own courts, its own laws, or its own Constitution."

In response to the raids there have been several organized demonstrations against Federal Buildings and the FCC. In San Marcos protestors showed up to the only Federal building in town, the Post Office. The peaceful protest was decorated with signs saying "Free the Tampa 3", "Micro Radio is not a crime", and "FCC: Obey Judge Wilken". Most citizens who say the protest were friendly and curious. Some were even shocked to learn about the victims civil rights being violated by our government once again.

In another protest a lone man showed up to the FCC office in the LA area to hand out flyers protesting the raids. Several security guards tried to force the man to leave but he was well armed saying that he had a right to be on the property because it was a public agency conducting public business. The guards had tried to convince him it was private property.

One of the many complaints towards the FCC from microbroadcasters is that they couldn't get licenses when they applied to the FCC. It appears the FCC simply won't grant a license to anyone unless it's a big money mongering corporation. But not to fear, there are already several legal actions in progress which could change all this in the future.

## Minor Threat's letter to the media

DATE: July 9, 1997
FROM: Chris Lamprecht (mthreat@paranoia.com)
TO: All interested journalists
SUBJ: Lamprecht challenges Internet ban on First Amendment grounds

Dear Journalist:

On May 5, 1995, I was sentenced to 70 months in federal prison. The judge ordered that upon my release I shall not use the "Internet or any other computer network." I became the first person to be banned from the Internet. Additionally, the judge prohibited me from getting a job as a computer programmer (my hobby since age 9, and my career throughout high school and college). If I violate these conditions I could be sent back to prison.

Although hacking was a "hobby" of mine for several years, I have never had a criminal charge for hacking, and my current crime has nothing to do with computer programming or the Internet. I admit that I have committed undisputed crimes involving theft and sale of telephone equipment (stolen from Southwestern Bell Telephone). And for this I will spend five years in prison as punishment. But banning me from the Internet and from programming computers when I am released from prison is unjust and will not help foster my rehabilitation into society.

So on April 22, 1997, I filed a Federal habeas corpus petition challenging my Internet ban on First Amendment (and other) grounds. I claimed that banning me from the Internet is a Free Speech violation in light of recent cases dealing with the Communications Decency Act (CDA), ACLU v. Reno, currently in the Supreme Court. The government has been ordered to respond to my petition by July 11, 1997. If I do not win in the district court, I will appeal to the U.S. Court of Appeals and, if necessary, to the United States Supreme Court.

I am writing this letter for this reason: Attorney George Lasko recently contacted me, and will be helping me fight my computer restrictions pro bono. However, we want to publicize what the government is doing with this absurd "Internet ban" restriction as a Free Speech violation.

While I may be the first person banned from the 'Net, I won't be the last. Recently, I learned through the Freedom of Information Act that the U.S. Department of Justice and the Parole Commission plan to add restrictions to ban parolees from the Internet and to prohibit parolees from using or possessing encryption software (like PGP, or even PKZIP, since it has an option to encrypt).

My story has been covered in magazines such as Texas Monthly (January 1996), Internet Underground (December 1996), SWING (March 1997), and on three television shows: TV.COM (CBS), Extra (ABC), and the KVUE-24 local Austin news. But the media attention so far hasn't been focused on the legal implications of an Internet ban on one's right to Free Speech on any medium, including the Internet.

If you are interested in helping, or want more information, please visit www.paranoia.com/~mthreat/ on the Web. To contact me in prison, mail me at this address:

Christopher Lamprecht
#61153-080, Houston Unit, PO Box 1010, Bastrop, TX 78602-1010

Thank you for taking the time to read this.

# Real Time Face Recognition Software

FaceIt DB is a new program from Visionics that allows real time scanning of video images of peoples faces that can be compared to a large data base giving a match within minutes. The software can search live video images or static images, even scanning multitudes of faces in a single frame for matches.

FaceIt uses Local Feature Analysis (LFA) that breaks up a face into local features making it possible to map an individuals face into a computer database. The program compares the target picture with those stored in its database and presents to the operator a a list of the top matches. The operator can then quickly scan for themselves the possible matches in order to confirm the actual identity.

The software can work even when the head is turned up to 35 degrees, can compensate for lighting, skin color, glasses, facial hair, facial expressions, and even compensate for natural aging. The software runs on a standard PC in either 95 or NT environments and can use standard file formats such as JPEG or TIFF. Once an image is scanned the program can store enough information for over a million images on a typical multi-gigabyte hard drive.

Uses for the software are wide ranging. Several examples given are the uses of identifying of terrorists in airports, snagging of shoplifters in stores, and searching for missing or exploited children by scanning the multitudes of pictures on the Internet.

This author fears the use of such programs, not that I have fear of being caught for any crime. It could readily be used to keep track of a persons where-abouts. Already in my city, and in hundreds of cities nationwide, cameras are being installed in public locations for uses unknown. There are many intersections in my area that have cameras on each of the four signal poles. That's four cameras in one intersection!! Face recognition software linked to such cameras could be used for tracking a person without their knowledge. Even if laws become enacted to prevent such tracking without a warrant, since when has that stopped anybody? There's even places where people already know about and accept cameras for 'security' reasons which could easily be used. Maybe it's time to start learning how to put on makeup and use disguises?

# New Jersey Resident Charged With Multiple Cable Violations

Andrew Anthony Christopher of Newark, New Jersey has been Indicted on 18 charges relating to the use and distribution of devices for cable TV theft. Some of the charges relate to using mail fraud, conspiracy, and alleged false statements to the Social Security Administration for the false collection of benefits. Other charges relate to unlawfully receiving cable service, possession of devices for such theft, and distribution and sale of such devices. Court documents also state that Christopher unlawfully possessed and distributed modified tone dialers for the use of simulating the tones pay phones use to recognize money being deposited (A.K.A. Red Box).

U.S. Attorney Faith Hochberg said that Christopher sold turned on cable boxes and descramblers "knowing they were to be used to descramble encrypted cable television programming without the authorization of the cable television provider and without the payment of the required fee."

The Indictment includes one count of conspiracy, seven counts of mail fraud, five counts of assisting in the unlawful reception of cable service, one count of possessing illegal telecommunications equipment, and four counts of making false statements to a government agency. Each count comes with a maximum of $250,000 fine and five years in prison except for the count on the telecom equipment, which is ten years.

These indictments were made by a Grand Jury, a group of 16 to 23 citizens who use a vote of at least 12 jurors to find probable cause that a crime has been committed. Defendants nor their jurors are allowed to be present during grand jury hearings.

# New Remotely Scannable Cards

SCS Corporation along with Hitachi Maxel Ltd. have announced their development of of SCS's Interactive Identification System labels into an ultra thin contactless card. The cards, only .25mm thick are read by radio frequency scanners to obtain the information stored on them. The cards can also be printed on using ordinary printers and copiers. No more sliding hard plastic cards through terminal slots.

The cards can store 1024 bits of information which is about 5 times as much as existing cards. Projected uses for such cards or strips are for airline tickets, payphones, libraries, pharmaceuticals, mass transit, and anyplace else where existing ID cards are in use.

The cards do not use batteries and are read/writeable, meaning they should last forever. New scanning systems for use with the cards will be capable of scanning multiple cards simultaneously. This could be useful in such places as subway terminals where users can just walk through a specified area without even removing their debit card from their wallets, or having to walk single file in a line.

The strips can also be placed on packages for tracking of inventories, dating of perishable items, or for retail anti-theft applications.

I would also imagine they could be used or hidden in such items as money. Since they can be accessed remotely a person can be scanned for the presence of such cards or strips and immediately all information on them can be accessed. This could even be done without the carriers knowledge. Just another way Big Brother could keep an eye on us all.

# Q&A

***This section will be for "letters to the editor" in future issues. Since we don't yet have any letters from our readers, we're going to list some standard questions that we've seen in the past and answer them. This will be a kind of hackers FAQ to start the ball rolling with the letters section. Please address all letters to:***
***THUD Letters***
***P.O. Box 2521***
***Cypress, CA 90630***

**Q: What is a Red Box and how can I make one? (we have seen this question millions of times.)**

*A Red Box, also known as a quarter box, is a little gizmo that simulates the tones made by a pay phone when coins are inserted. Since there are three coins used by phones there are three different signals that can be made. The basic tone is 1700Hz and 2200Hz combined. It's the pulse length, number of pulses and the spacing between them that counts. For a nickel it is one 60 millisecond pulse (.06 seconds). A dime is two 60ms pulses separated by 60ms of silence. A quarter is a little different; it is five 33ms pulses with 33ms silent spaces in-between each.*

*There are several ways to make a red box.*

*Radio Shack tone dialer mod:*

*Radio Shack has a handy little tone dialer. There's been several part numbers available. Part no. 43-141 which was stopped being made in 1994 is the older model with 33 presets. The current model is 43-146 There are two different versions with this same catalog number. One is supposed to be 'hacker-proof' in that the crystal is disguised (some say it looks like a capacitor) and is the newest model and is the one you are likely to get if you go out and buy one today. IT CAN STILL BE MODIFIED!!! The tone dialer is basically a DTMF encoder that can store and playback the tones needed to dial a number. The modification changes the crystal inside on of these to a different frequency so that the * key is close enough to the tones required. Then all one needs to do is program a preset to play back 5 *'s and voila! a quarter. All you do is change the 3.579545MHz crystal inside the tone dialer to either 6.5536MHz or just plain 6.5MHz. The 6.5 is preferred as it is closer to the frequencies needed, but the 6.5536 crystal is easier to obtain and will still work. See the Hack Exchange section (classified ads) in this issue for sellers of the necessary crystals.*

*Hallmark greeting card/digital memo recorders:*

*You ever get one of those greeting cards that allows you to record a personal message for the person you're giving it to? That is basically a simple form of a digital sound recorder. There's also those pocket digital memo recorders. Basically all you do is if you have something that can generate the necessary tones, you use one of these devices to record them. Then, when needed, you just whip out your memo recorder or greeting card and playback the tones into the mouthpiece of the pay phone. You may find it more convenient to remove the guts from the card. It'd look kinda funny seeing someone holding a greeting card up to a pay phone.*

*Tape recorder/walkman:*

*This is just a variation on the above digital recording trick. Do the same thing as above except that you are using a tape recorder instead.*

*Ways of generating tones:*

*If you don't have a modified tone dialer or some other little electronic device already set up to make the tones for you, you can use your computer. Just use a WAV file editor that allows you to create tones and make them as needed, then record them into your favorite device and there you have it. Check out the review on Cool Edit 96 in this issue for an EXCELLENT program for generating tones of all kinds.*

**Q: I'm familiar with some of the more common boxes, such as Red, Blue, and Gold. I know there's more out there. What are they?**

*A: Well, the most common are Beige, Blue, Chrome, Gold, Green, Infinity, Red, Silver, and White.*

*A Beige box is really nothing more than a poor man's version of a linemans test set. To make a simple one all you do is take a regular phone, preferably a baseless type. By baseless I mean the kind where the whole phone is contained in the handset, Kinda like a cordless, but the phone line hooks directly to the handset. All you do is take a phone cord, cut one end off and put alligator clips (or roach clips, if you prefer) on the inside pair of wires. Then all you do is clip your phone to someone else's line and you can make calls. Best access point is the telephone access box, or J-box on the back of the house or apartment.*

*A blue is a type of tone generator. Mainly, it generates the 2600Hz tone that's used to take control of a trunk line. The other tones are used to access the "operator touch tones" or operator functions that control what operation of the trunk. In essence, you become an operator. These don't work anymore cuz the phone company got wise to it a long time ago.*

*A chrome box is pretty much nothing more than a portable strobe light. When set to the correct flash rate it is used to trigger traffic lights to turn green, just like the strobes on fire engines and police cars. Of late, a new system has been starting to come into use. Infrared triggers are starting to be used. The advantage is that strobe lights won't work anymore, but they'll just say it's to keep epileptics from having seizures. There's a way around that one too. All you do is stand on a street corner near a fire station with one of those universal remote controls. Wait for them to come your way and point the remote in their direction and program the remote. Then whatever remote button you programmed will have the code pattern for the IR traffic trigger. Now all you do is point your remote at the traffic light and press your button to get a green light. You may have to make a modification to your transmitter by adding extra infrared LED's to have enough power to work, especially in daylight.*

*A gold box, also known as a call diverter, is a little device that is attached to two phone lines. When you place a call on one phone line, the Gold Box picks it up and automatically connects you to the other phone line giving you a dial tone. Then you dial your number and it's as if you are actually making the call from the second phone line. These are also sometimes called Dark, or Diverter Boxes.*

*A green box is similar to the Red, Silver, or White Boxes to generate tones except the tones it generates are those to make Coin Collect, Coin Return, and Ringback tones. Coin Return is just that, it gives you your money back. Coin Collect tells the phone to take the money that you entered and put it in it's box; can't get it back from there. Ringback tells the phone system to make the payphone ring once you hang up. These used to work in the 80's but don't anymore. Once again, there's actually a smart person at the phone company.*

*An Infinity Box is a neato little device that can allow you to spy on your home, or anywhere else. What you do with the device is you put it on your line or the line of the phone you're using. Then, when you call the number it picks up the line and turns on the microphone. Now all you do is sit back and listen. The microphone will pick up everything in the area and put it on the phone line for your listening pleasure.*

*A Red Box, sometimes referred to as a Quarter Box is used to generate the tones that a payphone makes when you drop coins in them. For more information see the above question on Red Boxes.*

*A Silver Box and a White Box are very similar. Both are devices that generate the DTMF tones used in dialing. The White Box can only generate tones for 0-9*# whereas a Silver Box can also generate the tones for ABCD.*

*A Black Box basically fools the phone company into thinking that the phone it's hooked up to hasn't picked up the phone. What happens is that even after the person picks up the phone it continues to ring. You talk between the rings and the call is never billed. All it is is a resistor and capacitor in series placed across the phone line. It does not work on the newer ESS type phone systems. Was a great one back in the early 80's.*

*A Clear Box is a telephone pickup coil and a small amp used to make free calls on Fortress Phones. Great for use on the newer phones that mute the pickup microphone.*

*A Color or Tan Box is a line activated telephone recorder. You can actually buy these at Radio Shack. They're known as phone line recorders.*

*A Tron Box reverses the phase of power to your house, causing your electric meter to run slower. For more information see the article in this issue on Stopping Power Meters. BTW, it has NOTHING to do with phone systems.*

**Q: Someone was telling me once about something called Tempest and he said that with this stuff someone parked in a van outside your house would be able to see what's on your computer monitor or tell what you are typing. Is this true?**

*A: All computers and electronic devices emit electromagnetic radiation of one form or another. Ever have a neighbor that had a HAM transmitter and liked to key down right when the winning play for the game was in progress and all you saw was a bunch of wavy lines? Well, this is called electromagnetic interference, or EMI for short. It's also sometimes referred to as radio frequency interference, or RFI. If you look at the sticker on the back of TV's and such you'll see an FCC compliance statement concerning the devices ability to not emit RFI but yet accept RFI from other sources.*

*It is these emissions that are picked up by very specialized and sensitive receivers that enable someone to 'see' what you are doing on your computer. Different devices emit on different frequencies. By having their equipment set up to scan only the frequencies for the device they want to surveil, they can home in on their suspect. Usually, they synchronize one of their monitors to the refresh sync pulses on your monitor so that they can see the image on your screen as you see it. It can also be applied to other devices.*

*Yes, it's very true, and you can thank our dear government for bringing it to us. Tempest stands for Transient Electromagnetic Pulse Surveillance Technology. Tempest is actually a U.S. Government program that evaluates electronic equipment and sets the standards for how much EMI devices can emit without compromising any information stored or processed on them. It uses shielding technology to prevent the EMI from getting out of the device. In the United States, Tempest shielding is illegal for the average Joe Blow citizen to use. I wonder why?*

**Q: What is war dialing and is it illegal?**

*A: War Dialing (a.k.a. scanning, demon dialing) is the process by which a person dials phone numbers for the purpose of finding intersting tones or carriers. It is usually done automatically by computer and modem in a search for other computer system dial in access points. Programs are usually written to scan all numbers in a given prefix. They can be set up to do so sequentially or randomly.*

*Many people have written their own war dialers. But, for those of you who are not computer programmers, you can find already made packags on the internet. Probably the best one available for the PC is ToneLoc. You can get the file on the internet at ftp.paranoia.com/pub/toneloc/.*

*Scanning IS illegal in SOME areas. You'll have to check your local laws to find out. Scanning is usually not complained about by the victims since they only receive one hang-up call. I'm sure we've all gotten them. Phone companies do not look kindly upon scanning. Some central offices are set up to automatically detect scanning and will shut down the offending line for a period of time. About the only way you might get in trouble is if there is a law specific to scanning or if you scan regularly and the telco catches it.*

**Q: What is LATA?**

*A: LATA stands for Local Access Transport Area. These are geographic areas used to determine whether the call is to be routed using the loacal network or if it is to be routed by a long distance carrier. If the source and destination are in seperate LATA's then the call is long distance.*

*LATA mapping is not restricted to geo-political boundaries. LATA's can take up a whole state or just a small region. Some LATA's even cross borders between states.*

*Maps of LATA boundaries can sometimes be found in phone books. It depends on whose phone book it is. The Center for Communications Managment Information also sells LATA maps and can be reached at 800-929-4824. It has also been mention that McGraw-Hill business publishing may have LATA maps.*

Q: Many times when I see schmatics for touch tone encoders or decoders I see the frequencies for the keys ABCD. What are they used for?

*A: The ABCD extensions originally came for the militry. They had need for a way to prioritize their calls. If say there was an emergency call because the Ruskies were about to nuke our ass and all the phone lines happened to be busy, they could just press a button and the phone system would drop line automatically so the call would go through. But this was only on the military's own phne network known as Autovon.*

*Originally the four keys ABCD were called FO, F, I, and P. They stood for Flash Override, Flash, Immediate, and Priority. These buttons ranked the priority of the call and would override calls of leser priority. FO was the highest and P the lowest.*

*Although these buttons are not in general commercial service, they are used in custom devices. Amateur radio repeaters make use of these tones for control. Security systems sometimes make use of these buttons as well, although for security reasons they don't use the same set of DTMF frequencies. You may also find that most DTMF generators are capable of making th e ABCD tones, including modems.*

**Q: I have a computer that I need to change the BIOS settings on it and it's password locked. Is there a way or a program that will crack the BIOS password?**

*A: Well, what kind of BIOS is it? What you need to do varies from machine to machine and from BIOS to BIOS. Common BIOS's include AMI, Award, IBM and Phoenix. There are several other kinds of BIOS's but these are the most common for non-proprietary systems.*

*Also, there are two types of passwords that may be set. One is a boot password, required when the user turns on the computer to allow it to boot up. The other is simply used to control access to the BIOS, which seems to be your problem.*

*The BIOS must store this password somewhere and that somewhere is usually accessible in RAM. If you can boot the machine and you know the memory address of where the BIOS password is stored, you can just read it directly. Of course, it may be scrambled in some way so you'll have to know that also. The best way is to have a program that knows both of these things.*

*Most BIOS cracking programs are written for the AMI BIOS. Some will give you the password in plain English (the best) while others just give you the ASCII codes. There are also some that just give you the keyboard scan codes. This not only varies from cracker to cracker but also from version of BIOS to BIOS as well. One place that you may be able to find the software you need is to ftp to oak.oakland.edu and look in /simtel/msdos/sysutil/.*

*Another common trick to use if you are able to boot the machine but just can't get into the BIOS is to simply boot the machine and then remove the power supply to the CMOS memory chip that stores the BIOS presets. A small battery on the motherboard is used to maintain the information when the computer is turned off. There's just one catch, though. ALL of the BIOS information will be lost; date/time, floppy drive settings, hard drive settings, and possibly even more critical information. Depending on the machine this could be considered a last resort tactic.*

**Q: What is an ANAC?**

*A: ANAC stands for Automatis Number Anouncment Circuit. When you call an ANAC a recording comes on that tells you the number that you are calling from. It's an excellent way to find out the number of a wire pair. They're very useful when Gold Boxing. Following is a large list of ANAC's. They are not guaranteed to work. DO NOT abuse ANAC's as the phone company will catch on and change the number.*

*United States:*

*201 958*
*203 970*
*205 300-555-5555*
*205 300-765-4321*
*205 300-833-3333*
*205 811*
*205 908-222-2222*
*207 958*
*209 211-9779*
*212 958*
*213 1223*
*213 211-2346*
*213 61056*
*214 790*
*214 970-611-1111*
*215 511*
*216 200-XXXX*
*216 959-9892*
*219 550*
*301 958-9968*
*310 1223*
*310 211-2346*
*312 290*
*312 1-200-555-1212*
*313 200-222-2222*
*313 200200200200200*
*315 953*
*315 998*
*317 559-222-2222*
*334 5572411*
*401 200-200-4444*
*402 311*
*404 940-xxx-xxxx*
*405 890-7777777*
*407 200-222-2222*
*408 760*
*409 951*
*410 200-6969*
*410 811*
*412 711-4411*
*413 958*
*414 330-2234*
*415 211-2111*
*415 640*
*415 7600-2222*
*502 2002222222*
*503 611*
*504 99882233*
*504 998*
*508 958*
*508 200-222-2222*
*509 560*
*512 830*
*515 5463*
*516 958*
*517 200-222-2222*
*518 511*
*518 998*
*606 997-555-1212*
*607 993*
*610 958*
*612 511*
*614 571*
*615 2002222222*
*616 200-222-2222*
*617 200-222-2222*
*617 220-2622*
*618 200-xxx-xxxx*
*619 211-2001*
*703 811*
*707 211-2222*
*708 1-200-8825*
*708 724-9951*
*713 380*
*713 811*
*714 211-2121*
*716 511*
*717 958*
*802 2-222-222-2222*
*802 1-700-222-2222*
*805 114*
*805 211-2346*
*806 970-xxxx*
*812 410-555-1212*
*815 200-xxx-xxxx*
*817 211*
*818 1223*
*818 211-2346*
*904 200-222-222*
*907 811*
*910 200*
*910 988*
*915 970-xxxx*
*916 461*
*919 711*

*202 811*
*205 300-222-2222*
*205 300-648-1111*
*205 300-798-1111*
*205 557-2311*
*205 841-1111*
*206 411*
*209 830-2121*
*210 830*
*213 114*
*213 211-2345*
*213 760-2???*
*214 570*
*214 970-222-2222*
*215 410-xxxx*
*215 958*
*216 331*
*217 200-xxx-xxxx*
*219 559*
*310 114*
*310 211-2345*
*312 200*
*312 1-200-8825*
*313 200-200-2002*
*313 200-xxx-xxxx*
*314 410-xxxx#*
*315 958*
*317 310-222-2222*
*317 743-1218*
*334 5572311*
*401 222-2222*
*404 311*
*404 990*
*405 897*
*408 300-xxx-xxxx*
*408 940*
*409 970-xxxx*
*410 200-555-1212*
*412 711-6633*
*412 999-xxxx*
*413 200-555-5555*
*415 200-555-1212*
*415 2222*
*415 760-2878*
*419 311*
*502 997-555-1212*
*503 999*
*504 201-269-1111*
*504 99851-0000000000*
*508 200-222-1234*
*508 26011*
*510 760-1111*
*512 970-xxxx*
*515 811*
*516 968*
*517 200200200200200*
*518 997*
*603 200-222-2222*
*606 711*
*609 958*
*610 958-4100*
*614 200*
*615 200200200200200*
*615 830*
*617 200-222-1234*
*617 200-444-4444*
*617 958*
*618 930*
*619 211-2121*
*704 311*
*708 1-200-555-1212*
*708 200-6153*
*708 356-9646*
*713 970-xxxx*
*714 114*
*714 211-2222*
*716 990*
*718 958*
*802 200-222-2222*
*802 111-2222*
*805 211-2345*
*805 830*
*810 200200200200200*
*813 311*
*815 290*
*817 970-611-1111*
*818 211-2345*
*903 970-611-1111*
*906 1-200-222-2222*
*908 958*
*910 311*
*914 990-1111*
*916 211-2222*
*919 200*

*Canada:*

*204 644-4444*
*403 311*
*403 999*
*506 1-555-1313*
*519 320-xxxx*
*604 1211*
*613 320-2232*
*306 115*
*403 908-222-2222*
*416 997-xxxx*
*514 320-xxxx*
*604 1116*
*604 211*
*705 320-4567*

*Australia:*

*+61 03-552-4111*
*+612 11544*
*+612 19123*

*United Kingdom:*

*175*

*Israel:*

*110*

**Q: Are caller ID and ANI the same thing?**

*A: Yes, and no. ANI, or Automatic Number Identification is the term describing the phone company's internal system for identifying the the caller. This is used for routing and billing purposes and is of itself not accessible to the public.*

*Caller ID, also called CNID or Call Display, is a service offered by the phone company to their customers that, for a fee, will display the number of the calling party on a special box attached to the phone which is bought seperately, again for a fee.*

*ANI has existed for a looooooooooooong time. All this crap we keep hearing from the phone companies that they can't do it is bunk. How do you think 911 operators get their info when someone needs help? A hangup call to 911 will result in a patrol car being sent to the location to confirm if there is an emergency or not. The 911 operator has the callers location shown on their computer display the moment the answer "911, what's the emergency?"*

*Basically, ANI has always existed, for how else does the phone company know who to bill? Caller ID is their way of letting you use ANI but making you pay for it.*

**Q: What does COCOT stand for?**

*A: COCOT is Coin Operated Customer Owned Telephone, or could be Customer Owned Coin Operated Telephone...either way it means the same thing. It's like a payphone in the sense that you have to drop coins into the phoen to make a call. The difference lies in who actually owns the phone itself.*

*A regular payphone which you might see lines on the streets is owned by the phone company itself. A COCOT on the other hand is owned by an individual. Of course the individual has to pay the phone company to access the network but the cost is low enough to allow the owener to make a profit from the use of the phone.*

*Sometimes individuals have COCOT's installed in their homes thinking that they can save money on their calls. Most often, however, the services they get are less than what is expected. Many times a COCOT is unsable to make long distance calls at all. Others have been knwn to have problems accessing new area codes when they go into effect.*

*COCOTs are also known to Red Boxers as "useless" since a red box proves to be ineffective on a COCOT. The reason for this is very simple. Red Boxes work on this principle: recreate the tone(s) that fool the phone company into thinking you inserted money into the payphone.*

*You see, the payphones on the street that are owned by the phone companies themselves are quite dumb, really. The payphone makes no decisions when it comes to handling calls. When a coin is inserted into one of these payphones, the phone creates the coin insertion tones (the same ones that the Red Boxes reproduce) and sends it off to the phone company switches. At that time, the phone company equipment at the closest CO decides if the tones are real and which amount of money was inserted. If everything goes all right, the CO allows the call to go through. It's a rather interesting cycle of events.*

*Now, the COCOTs don't work like this. COCOTs are special payphones that work on normal phone lines such as the phone line in your home. It works like this: You own your own line and put a payphone on it. The payphone itself has to make the decisions on when a coin is inserted and if the coin is counterfeit or not. The COCOT does not send a special tone to the phone company CO since the phone company does not operate the payphone. The Red Box tones are ineffective because of this. The COCOT does not generate tones anyway, so why would a Red Box work? A COCOT is much like a vending machine. It's self contained and owned by a vendor. COCOTs have their own flaws, though.*

**Q: What are DTMF tones and how do I make one?**

*A: DTMF stands for Dual Tone Multi-Frequency. When you dial a phone number with your telephone, the tones you hear are DTMF tones. Each tone actually consists of two tones. To create any kind of DTMF tone, you simply create two tones at the same time. For instance, the following is a list of the DTMF tones used on a phone:*

| | 1209Hz | 1336Hz | 1477Hz | 1633Hz |
|---|---|---|---|---|
| 697Hz | 1 | 2 | 3 | A |
| 770Hz | 4 | 5 | 6 | B |
| 852Hz | 7 | 8 | 9 | C |
| 941Hz | * | 0 | # | D |

*If you'd like to create these tones with a piece of software on your IBM compatible, check out the review on Cool Edit '96 in this issue of THUD.*

**Q: What are some good frequencies to scan to find interesting stuph?**

*A: Ok...that's a tall order, but I think we've got enough info to get you started.*

*Cellular Telephones*

*These are transmitted in FM and each channel is 30KHz apart. Channels 991-1023 are sometimes referred to as channels 800-832. The mobile transmits 45MHz below the base channel. i.e. channel 1 base channel is 870.030MHz so the mobile transmits at 825.030MHz and receives on 870.030MHz. Caution, the new digital systems are being allocated to some of these channels.*

| Ch. | Freq. (base) Use | | System |
|---|---|---|---|
| 991-1023 | 869.040 - 870.000 | A - RCC | voice |
| 001-312 | 870.030 - 879.360 | A - RCC | voice |
| 313-333 | 879.390 - 879.990 | A - RCC | data |
| 334-354 | 880.020 - 880.620 | B - Telco | data |
| 355-666 | 880.650 - 889.980 | B - Telco | voice |
| 667-716 | 890.010 - 891.480 | A - RCC | voice |
| 717-799 | 891.510 - 893.970 | B - Telco | voice |

*Cordless Telephones*

*Channels 16-25 we're once channels 1-15. These were the original 10 channels allocated. Channels ABCDE are also used for walkie-talkies, baby monitors and other low power uses.*

| Ch | Base | Handset | Ch | Base | Handset |
|---|---|---|---|---|---|
| 1 | 43.72 | 48.76 | 14 | 44.46 | 49.46 |
| 2 | 43.74 | 48.84 | 15 | 44.48 | 49.50 |
| 3 | 43.82 | 48.86 | 16 | 46.61 | 49.67 |
| 4 | 43.84 | 48.92 | 17B | 46.63 | 49.845 |
| 5 | 43.92 | 49.02 | 18C | 46.67 | 49.86 |
| 6 | 43.96 | 49.08 | 19 | 46.71 | 49.77 |
| 7 | 44.12 | 49.10 | 20D | 46.73 | 49.875 |
| 8 | 44.16 | 49.16 | 21A | 46.77 | 49.83 |
| 9 | 44.18 | 49.20 | 22E | 46.83 | 49.89 |
| 10 | 44.20 | 49.24 | 23 | 46.87 | 49.93 |
| 11 | 44.32 | 49.28 | 24 | 46.93 | 49.99 |
| 12 | 44.36 | 49.36 | 25 | 46.97 | 49.97 |
| 13 | 44.40 | 49.40 | | | |

*Mobile Telephones*

*These are FM transmissions. Many of the channels are now used for paging.*

| VHF - 30 kHz spacing | UHF - 25 kHz spacing |
|---|---|
| Base: | |
| 152.030 - 152.210 RCC | 454.025 - 454.350 RCC |
| 152.510 - 152.810 telco | 454.375 - 454.650 telco |
| Mobile: | |
| 157.770 - 158.070 telco | 459.025 - 459.350 RCC |
| 158.490 - 158.670 RCC | 459.375 - 459.650 telco |

*Air to Ground Telephones*

*These are FM transmissions used on private aircraft. Anywhere from one to four channels are used in a given area. The ground station repeats the airborne half of the conversation. They transmit a steady tone when not in use.*

| Ch | Ground | Airborne |
|---|---|---|
| Signal | 454.675 | (459.675) |
| 6 | 454.700 | 459.700 |
| 7 | 454.725 | 459.725 |
| 5 | 454.750 | 459.750 |
| 8 | 454.775 | 459.775 |
| 4 | 454.800 | 459.800 |
| 9 | 454.825 | 459.825 |
| 3 | 454.850 | 459.850 |
| 10 | 454.875 | 459.875 |
| 2 | 454.900 | 459.900 |
| 11 | 454.925 | 459.925 |
| 1 | 454.950 | 459.950 |
| 12 | 454.975 | 459.975 |

*800 MHz Air to Ground Telephones*

*These are AM or sometimes SSB transmissions in digital format and are used on commercial airliners. Channel spacing is 6KHz. Each geographic area is assigned a block of 29 unique channels. Ground stations do not echo the airborne half. Guard Band between each channel is xxx.x765 - xxx.x797. Control Channels for each channel is xxx.x813 - xxx.x973.*

| Block | Airborne Ch 1 - Ch 29 | Ground Ch 1 - Ch 29 |
|---|---|---|
| 10 | 894.0055 - 894.1735 | 849.0055 - 849.1735 |
| 9 | 894.2055 - 894.3735 | 849.2055 - 849.3735 |
| 8 | 894.4055 - 894.5735 | 849.4055 - 849.5735 |
| 7 | 894.6055 - 894.7735 | 849.6055 - 849.7735 |
| 6 | 894.8055 - 894.9735 | 849.8055 - 849.9735 |
| 5 | 895.0055 - 895.1735 | 850.0055 - 850.1735 |
| 4 | 895.2055 - 895.3735 | 850.2055 - 850.3735 |
| 3 | 895.4055 - 895.5735 | 850.4055 - 850.5735 |
| 2 | 895.6055 - 895.7735 | 850.6055 - 850.7735 |
| 1 | 895.8055 - 895.9735 | 850.8055 - 850.9735 |

*Television*

*Yeah, TV, the boob-toob, eye-ball burner....anyway, each TV channel is 6MHz wide (WOW!). The video is upper sideband, supressed carrier 1.25MHz into the band. Audio is 200KHz wide FM with it's carrier .25MHz below the end of the band. Some stations might be off by +/- 10KHz, not much compared to the total bandwidth. Note the gaps between chs 4/5, 6/7, and 13/14. In some areas the frequencies in channels 14-20 are used for Public Service mobile use. For some oddball reason channel 37 is not used.*

| Ch | Range | Video | Audio |
|---|---|---|---|
| 2 | 54 - 60 | 55.250 | 59.750 |
| 3 | 60 - 66 | 61.250 | 65.750 |
| 4 | 66 - 72 | 67.250 | 71.750 |
| 5 | 76 - 82 | 77.250 | 81.750 |
| 6 | 82 - 88 | 83.250 | 87.750 |
| 7 | 174 - 180 | 175.250 | 179.750 |
| 8 | 180 - 186 | 181.250 | 185.750 |
| 9 | 186 - 192 | 187.250 | 191.750 |
| 10 | 192 - 198 | 193.250 | 197.750 |
| 11 | 198 - 204 | 199.250 | 203.750 |
| 12 | 204 - 210 | 205.250 | 209.750 |
| 13 | 210 - 216 | 211.250 | 215.750 |
| 14 | 470 - 476 | 271.250 | 475.750 |
| 15 | 476 - 482 | 277.250 | 481.750 |
| xx | xxx-xxx+6 | xxx+1.25 | xxx+5.75 |
| 68 | 794 - 800 | 795.250 | 799.750 |
| 69 | 800 - 806 | 801.250 | 805.750 |

*Cable TV*

*Cable TV is pretty much the same as broadcast television except the ranges for some of the channels are different.*

| Ch. | MHz | |
|---|---|---|
| 2 - 13 | 54 - 216 | same as broadcast VHF |
| 14 - 22 | 120 - 174 | Mid band Ch. A-I |
| 23 - 36 | 216 - 300 | Super band J-W |
| 37 - 53 | 300 - 402 | Hyper band AA-QQ |
| 54 - 64 | 402 - 468 | Hyper band |
| 65 - 94 | 468 - 648 | Ultra band |
| 95 - 99 | 90 - 120 | Low band A5-A1 |
| 100 -125 | 648 - 804 | Ultra band |

*Citizens Band*

*Also known as CB. Mostly AM with some SSB in use. Freq's are in MHz.*

| Ch | Freq | Ch | Freq | Ch | Freq | Ch | Freq |
|---|---|---|---|---|---|---|---|
| 1 | 26.965 | 11 | 27.085 | 21 | 27.215 | 31 | 27.315 |
| 2 | 26.975 | 12 | 27.105 | 22 | 27.225 | 32 | 27.325 |
| 3 | 26.985 | 13 | 27.115 | 23 | 27.255 | 33 | 27.335 |
| 4 | 27.005 | 14 | 27.125 | 24 | 27.235 | 34 | 27.345 |
| 5 | 27.015 | 15 | 27.135 | 25 | 27.245 | 35 | 27.355 |
| 6 | 27.025 | 16 | 27.155 | 26 | 27.265 | 36 | 27.365 |
| 7 | 27.035 | 17 | 27.165 | 27 | 27.275 | 37 | 27.375 |
| 8 | 27.055 | 18 | 27.175 | 28 | 27.285 | 38 | 27.385 |
| 9 | 27.065 | 19 | 27.185 | 29 | 27.295 | 39 | 27.395 |
| 10 | 27.075 | 20 | 27.205 | 30 | 27.305 | 40 | 27.405 |

*FRS - Family Radio Service*

***These frequencies are FM. Maximum power is 1/2 watt. These channels are allowed to vary by up to 2.5KHz. You'll find that the first seven channels are shared by the GMRS (see next section).*** *They were allocated in June 1996. Freqs are in MHz.*

| Ch | Freq | Ch | Freq |
|---|---|---|---|
| 1 | 462.5625 | 8 | 467.5625 |
| 2 | 462.5875 | 9 | 467.5875 |
| 3 | 462.6125 | 10 | 467.6125 |
| 4 | 462.6375 | 11 | 467.6375 |
| 5 | 462.6625 | 12 | 467.6625 |
| 6 | 462.6875 | 13 | 467.6875 |
| 7 | 462.7125 | 14 | 467.7125 |

*GMRS - General Mobile Radio Service*

*Maximum power on these channels is 5 watts. 462.6750 may also be used as an emergency channel. The repeater is on the same frequency as the base. These are licensed stations.*

| Base | Mobile |
|---|---|
| 462.5500 | 462.5625 |
| 462.5750 | 462.5875 |
| 462.6000 | 462.6125 |
| 462.6250 | 462.6375 |
| 462.6500 | 462.6625 |
| 462.6750 | 462.6875 |
| 462.7000 | 462.7125 |
| 462.7250 | 462.7375 |

*Railroads*

*The Association of American Railroads assigned the channel designations for these frequencies, all in MHz. 2 through 6 are only used in Canada. Channel spacing above channel 6 is 15KHz.*

| Ch | Freq |
|---|---|
| 2 | 159.810 |
| 3 | 159.930 |
| 4 | 160.050 |
| 5 | 160.185 |
| 6 | 160.200 |
| 7 | 160.215 |
| 8 | 160.230 |
| xx | xxx.xx |
| 96 | 161.550 |
| 97 | 161.565 |

*The following frequencies are also shared with trucking.*

| Base | Mobile |
|---|---|
| 452.325 | 457.325 |
| 452.375 | 457.375 |
| 452.425 | 457.425 |
| 452.475 | 457.475 |
| 452.775 | 457.775 |
| 452.825 | 457.825 |
| 452.875 | 457.875 |
| 452.900 | 457.900 |

*These ones are used for slave and remote controlled locomotives.*

| | |
|---|---|
| 452.925 | 452.950 |

*These are for end of train monitors (ETM's). 161.115 is specific to Norfolk-Southern.*

| | |
|---|---|
| 457.9375 | 161.115 |

*Marine VHF*

*In US waters ships may transmit on the shore frequencies of channels 20, 24-28, and 84-87. Shore frequencies are 4.6Mhz above the ship frequency. Notice how the channel numbers are interlaced.*

| Ch | Ship | Ch | Ship |
|---|---|---|---|
| | | 60 | 156.025 |
| 1 | 156.050 | 61 | 156.075 |
| 2 | 156.100 | 62 | 156.125 |
| 3 | 156.150 | 63 | 156.175 |
| 4 | 156.200 | 64 | 156.225 |
| xx | xxx.xxx | xx | xxx.xxx |
| 25 | 157.250 | 85 | 157.275 |
| 26 | 157.300 | 86 | 157.325 |

| | | | |
|---|---|---|---|
| 27 | 157.350 | 87 | 157.375 |
| 28 | 157.400 | 88 | 157.425 |

Some channels have specific assignments.

| | | |
|---|---|---|
| 6 | 156.300 | Intership Safety |
| 9 | 156.450 | General use - recreational vessels |
| 13 | 156.650 | Bridge-to-Bridge |
| 15 | 156.750 | Weather, notices, etc |
| 16 | 156.800 | General Calling / Distress |
| 22 | 157.100 | Coast Guard Liaison |

AMTS - Automated Maritime Telecommunications System

Channel spacing is 25KHz. Ships are not allowed to transmit in groups C & D.

| Grp | Ch | Shore | Ship |
|---|---|---|---|
| D | 101-120 | 216.0125-216.4875 | |
| C | 121-140 | 216.5125-216.9875 | |
| B | 141-160 | 217.0125-217.4875 | 219.0125 - 219.4875 |
| A | 161-180 | 217.5125-217.9875 | 219.5125 - 219.9875 |

Here's some other frequencies used for one board communications.

| Ch | mobile | repeater |
|---|---|---|
| 1 | 467.750 | 457.525 |
| 2 | 467.775 | 457.550 |
| 3 | 467.800 | 457.575 |
| 4 | 467.825 | 457.600 |

Aeronautical Frequencies

There's a shitload of different frequencies and frequency ranges used in aviation. The ones listed here are voice communications. There's many others used for navigation. It is possible to obtain ariel navigational charts and have all the freqs used in a particular area laid out for you.

25KHz wide AM unless noted otherwise.

| Range | Use |
|---|---|
| 108.000 - 117.950 | NavAids - VOR & localizer, 50 kHz step |
| 118.000 - 121.400 | ATC - towers & ARTCC |
| 121.600 - 121.925 | ATC - airport ground control |
| 122.000 - 122.650 | Flight Service Stations, 50 kHz step |
| 122.700 - 123.500 | UNICOM |
| 123.600 - 128.800 | ATC - towers & ARTCC |
| 128.825 - 132.000 | Enroute - airline company freqs |
| 132.025 - 135.975 | ATC - towers & ARTCC |
| 136.000 - 136.475 | Enroute - international |
| 136.500 - 136.975 | Enroute - domestic & international |

UNICOM - Aeronautical advisory station at airport

| | | |
|---|---|---|
| 122.700 | 122.725 | |
| 122.800 | 123.000 | |
| 122.950 | | at airport w/ full-time tower |
| 122.975 | | above 10,000 feet |
| 123.050 | 123.075 | at heliports |

Multicom - common freq. at uncontrolled facilities

| | | |
|---|---|---|
| 122.850 | | |
| 122.900 | primary CTAF | |
| 122.925 | Fed/State natural resources | |

FSS - FAA Flight Service Stations

| | | |
|---|---|---|
| 122.000 | 122.050 | EFAS "Flight Watch" |
| 122.100 | | receive only (w/VOR) |
| 122.200 | | standard FSS |
| 123.600 | 123.650 | AAS Airport Advisory Svc |

Aviation Support - training, gliders, ballons, etc

| | | |
|---|---|---|
| 121.950 | | |
| 123.300 | 123.500 | |
| 122.775 | 122.850 | aviation services |

Miscellaneous

| | |
|---|---|
| 121.500 | standard emergency freq., ELTs |
| 123.100 | Search And Rescue - actual |
| 122.900 | Search And Rescue - training |
| 123.100 | control tower at special events |
| 122.825 | Enroute airline ops - local area |
| 122.875 | Enroute airline ops - local area |
| 122.750 | air-to-air - private arcft |
| 123.025 | air-to-air - helicopter |
| 131.550 | ACARS - digital (airlines) |

Ambulances

Channels Med-9 and Med-10 are sometimes used by the ambulance companies for dispatch purposes.

| chan | Hospital | Ambulance |
|---|---|---|
| Med-9 | 462.950 | 467.950 |
| Med-10 | 462.975 | 467.975 |
| Med-1 | 463.000 | 468.000 |
| Med-2 | 463.025 | 468.025 |
| Med-3 | 463.050 | 468.050 |
| Med-4 | 463.075 | 468.075 |
| Med-5 | 463.100 | 468.100 |
| Med-6 | 463.125 | 468.125 |
| Med-7 | 463.150 | 468.150 |
| Med-8 | 463.175 | 468.175 |

A special channel.

| | |
|---|---|
| 155.340 | HEAR Intersystem (Hosp. Emerg. Ambul. Radio) |

Police

| | | | |
|---|---|---|---|
| 39.46 | intersystem operations only | | |
| 45.86 | intersystem operations only | | |
| 155.370 | (widely used, but not a Federal allocation) | | |
| 155.475 | statewide emergency nets | | |
| 173.075 | stolen vehicle recovery (LoJack) | | |
| 154.665 | 154.680 | 154.695 | State Police |
| 154.905 | 154.920 | 154.935 | coordinated operations |
| 155.445 | 154.460 | 154.490 | " " " " " " |

Fire

| | |
|---|---|
| 45.88 | intersystem, primarily base-mobile |
| 154.265 | mutual aid |
| 154.280 | mutual aid |
| 154.295 | mutual aid |

Emergency Medical
For ambulance MED channels see above.

| | |
|---|---|
| 155.340 | HEAR - Hospital Emerg. Ambul. Radio |
| 460.525 | inter/intrasystem w/ Police & Fire |
| 460.550 | inter/intrasystem w/ Police & Fire |

Public Safety - all
Mobile frequencies for 220MHz range are 1 MHz above; for 460MHz range are 5 MHz above; and for 860MHz range are 45 MHz below.

| | | |
|---|---|---|
| 220.8025 - 220.8475 | | Mutual Aid (5 kHz intervals) |
| 866.0125 | 866.5125 | Mutual Aid |
| 867.0125 | 867.5125 | Mutual Aid |
| 868.0125 | | Mutual Aid |

Weather - NOAA broadcasts

The alert signal on these frequencies is a 1050Hz tone for about 5 seconds.

| Ch | Freq. | | |
|---|---|---|---|
| 1 | 162.550 | 161.650 | Environment CAN |
| 2 | 162.400 | 161.775 | marine weather |
| 3 | 162.475 | | |
| 4 | 162.425 | | |
| 5 | 162.450 | | |
| 6 | 162.500 | | |
| 7 | 162.525 | | |

Television and movies.

| | |
|---|---|
| Broadcast Remote Pickup | |
| 25.87 - 26.45 | 20/40 kHz intervals |
| 152.87 - 153.35 | 60 kHz intervals |

| | | | |
|---|---|---|---|
| 161.64 - 161.76 | | | 30 kHz intervals |
| 450.05 - 450.85 | | | 50/100 kHz intervals |
| 455.05 - 455.85 | | | 50/100 kHz intervals |

Film and Video Production

| | | | |
|---|---|---|---|
| 152.87 | 152.90 | 152.93 | |
| 152.96 | 152.99 | 153.02 | |
| 173.225 | 173.275 | 173.325 | 173.375 |

Wireless mikes
You may find some on unused FM/TV broadcast channels

| | | |
|---|---|---|
| 169.445 | 169.505 | 170.245 |
| 170.305 | 171.045 | 171.105 |
| 171.845 | 171.905 | |

Dot Frequencies

These are the channels used on the proffesional "walkie-talkies" like you'll find at construction sites and the like. They are assigned by the manufacturer or distributor.

| Color | Freq. | Comment |
|---|---|---|
| Red | 151.625 | itinerant |
| Purple | 151.955 | |
| Blue | 154.570 | |
| Green | 154.600 | |
| White | 462.575 | GMRS |
| Black | 462.625 | GMRS |
| Orange | 462.675 | GMRS |
| Brown | 464.500 | itinerant |
| Yellow | 464.550 | itinerant |
| "J" | 467.7625 | |
| "K" | 467.8125 | |
| Silver Star | 467.850 | |
| Gold Star | 467.875 | |
| Red Star | 467.900 | |
| Blue Star | 467.925 | |

Also check these frequencies.

| | | | |
|---|---|---|---|
| 27.49 | 35.04 | 43.04 | 151.505 |
| 158.400 | 469.500 | 469.550 | |

CTCSS (PL) Frequencies

Motorola differs from EIA with: XZ (L1), XA (L2), XB (L3), YZ (L4), YB (L4A), ZA (L5). ICOMM does not use 97.4 and uses one less than the amateur numbers above that (i.e. ICOM #25 = 162.2).

| Freq | Designator | | Freq | Designator | |
|---|---|---|---|---|---|
| | EIA | Ham | | EIA | Ham |
| 67.0 | L1 | 01 | 136.5 | 4Z | 21 |
| 71.9 | L2 | 02 | 141.3 | 4A | 22 |
| 74.4 | WA | 03 | 146.2 | 4B | 23 |
| 77.0 | L3 | 04 | 151.4 | 5Z | 24 |
| 79.7 | SP | 05 | 156.7 | 5A | 25 |
| 82.5 | L4 | 06 | 162.2 | 5B | 26 |
| 85.4 | YA | 07 | 167.9 | 6Z | 27 |
| 88.5 | L4A | 08 | 173.8 | 6A | 28 |
| 91.5 | ZZ | 09 | 179.9 | 6B | 29 |
| 94.8 | L5 | 10 | 186.2 | 7Z | 30 |
| 97.4 | ZB | 11 | 192.8 | 7A | 31 |
| 100.0 | 1Z | 12 | 203.5 | M1 | 32 |
| 103.5 | 1A | 13 | 206.5 | 8Z | |
| 107.2 | 1B | 14 | 210.7 | M2 | 33 |
| 110.9 | 2Z | 15 | 218.1 | M3 | 34 |
| 114.8 | 2A | 16 | 225.7 | M4 | 35 |
| 118.8 | 2B | 17 | 229.1 | 9Z | |
| 123.0 | 3Z | 18 | 241.8 | M6 | 37 |
| 127.3 | 3A | 19 | 250.3 | M7 | 38 |
| 131.8 | 3B | 20 | 254.1 | OZ | |

**Q: What are some other hacking related magazines I can get ahold of?**

A: There are still quite a few titles available if you do some looking around. Check these out for starters:

*TAP Magazine*
*P.O. Box 20264*
*Louisville, KY 40250*

*Full Disclosure*
*P.O. Box 903-C, Libertyville, Illinois 60048*
*HAC-TIC Dutch Hacking Magazine*
*P.O. Box 22953*
*1100 DL*
*Amsterdam*
*Phone: +31 20 6001480*
*E-Mail: ropg@ooc.uva.nl*

*2600 Magazine*
*P.O. Box 752*
*Middle Island, NY 11953-0752*
*(516)751-2600*

*Cybertek Magazine*
*P.O. Box 64*
*Brewster NY 10509*

*Mondo 2000*
*P.O. Box 10171*
*Berkley, CA 94709-5171*
*Phone 415-845-9018*
*Fax 415-649-9630*

*Monitoring Times*
*P.O. Box 98*
*7540 Highway 64 West*
*Brasstown, NC 28902-0098*
*(704)837-9200*
*www.grove.net*
*Email: mteditor@grove.net*

*Satellite Times*
*P.O. Box 98*
*7540 Highway 64 West*
*Brasstown, NC 28902-0098*
*(704)837-9200*
*http://www.grove.net/hmpgst.html*
*Email: steditor@grove.net*

*Scrambling News*
*1060 Niagara Falls Blvd., #110*
*Tonawanda, NY, 14150*
*(716)283-6910*
*E-Mail: scramblingnews@msn.com*
*URL: http://www.scramblingnews.com/*

*Privacy Journal*
*P.O. Box 15300*
*Washington D.C. 20003*
*Phone 202-547-2865*

**Q: I know that a beige box is just a linemans test set. I'd like to know where I can buy one of these and perhaps some other telecom tools?**

*A: Try the following places:*

*Jensen Tools*
*7815 S. 46th Street*
*Phoenix, AZ 85044-5399*
*(800)426-1194*
*http://www.jensentools.com*

*Contact East*
*335 Willow Street*
*North Andover, MA 01845-5995*
*(508)682-2000*
*www.contacteast.com*

*Time Motion Tools*
*12778 Brookprinter Place*
*Poway, CA 92064*
*(619)679-0303*

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***THUD MAGAZINE***
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# the 555 timer IC for dummies

## by: Orion

The 555 timer IC is probably one of the most versatile chips the amateur electronics builder can have at their disposal for generating controlled and even quite precise waveforms. It comes in a small 8-pin IC package, although a dual version is available in a 16-pin package. There are many uses for this device and many ways to configure it for various types of output, however this we will only deal with the basics of how to set up the chip to produce the desired frequency. The output will generally be a square wave which is usually suitable for most applications. In this article we will describe the two basic modes of operation for the 555; monostable or one-shot, and astable. Monostable operation is when the chip is setup to deliver a single pulse of desired pulse-length when an input trigger is received. Astable is when the chip is setup to run freely or continuously oscillate at a pre-determined frequency. Depending on the selected external components it is possible to make the 555 run at frequencies as high as 100KHz or so low the the siganal on time can be measued in minutes, sometimes hours.

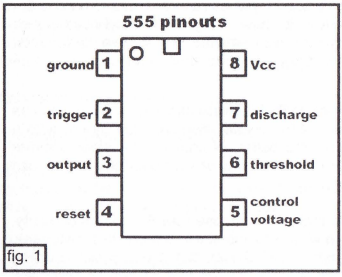


fig. 1

In *fig. 1* we have the pinouts for the 555. Note that the supply pins 1 and 8 are not what one may be used to if you deal with normal 7400 series TTL. The typical maximum Vcc operating voltage is from 12-15 volts, although I have seen devices rated as high as 18 volts. Of course the chip will work just fine on normal 5 volt power so you can use it with other CMOS and TTL devices. Pin 2 is used to trigger the chip to produce the output pulse. It's connections vary between mono and astable operation. Pin 3 is the output, not much need for an explaination there. Pin 4 is the active low reset input. For normal operation this should be tied directly to Vcc. Pin 5, the control voltage input is used to control the point at which the capacitor voltage triggers the 555 to go low or high. For our applications this is not used and is tied to ground via a .01uF capacitor. Pins 6 and 7 are used in conjunction with the external RC network to create the timing of the pulses generated.

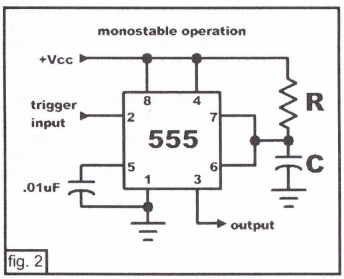


fig. 2

*Fig. 2* shows the basic schematic for simple monostable or one-shot operation. The input trigger is held high and sent low to trigger the 555. The output is low and goes high when triggered for the specified time. How long the 555 goes high is controlled by the resistor/capacitor network of R and C. As you know a cpacitor stores a charge. When used in conjuction with a resistor to control current flow, the capacitor with charge or discharge at a certain rate. This is used to control the timing of the 555. In the setup of *fig. 2* the on time found at the ouput on pin 3 can be calculated with the following simple formula:

$$t_{(seconds)} = 1.1RC$$

**e.g. 51.7milliseconds=1.1(100K)(.47uF)**

To spell it out take the resistor value in ohms and multiply it by the capacitor value in farads and then multiply that answer by 1.1 to yield an answer in seconds of how long the output will stay high when the trigger is grounded.

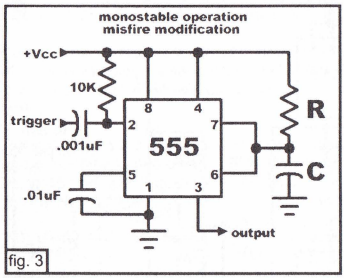


fig. 3

There is one small problem with this basic circuit. Since the input trigger must be grounded to trigger the 555, that means that it has to be held high at any other time. This means that if you are triggering the 555 with a normally open switch that only connects to ground (the most common input method) whenthe switch is pressed, the input will 'float'. This may not be a problem on the breadboard, but in the real world where the pin is could be connected by long circuit traces or wires to it's control switch, it acts like an antenna picking up interference from everything else and will be triggered falsly. The simple solution is the modification seen in *fig. 3*. You will note that a 10Kohm resistor is used to 'pull up' the input to Vcc, but will not create a short when the input is grounded. The purpose of the .001uF capacitor is to 'de-couple' the input from high frequencies. At high frequencies the capacitor is an open and can't get through whereas the lower frequency input trigger will quicky charge the small capacitor and then ground the trigger input.

Now, you might think, what's the point of monostable operation? Well, you know those outdoor lamps that only go on when someone trips the infrared sensor and then stays on for a short while? Or how about your garage door opener light that stays on for a short while after the door is opened or shut? Or what about those automatic doors that open for you when you approach them or step on the floor mat? These are all examples of timers in monostable operation. Once they are triggered, they stay 'on' for a predetermined length of time then go 'off' until another trigger pulse turns them 'on' again. Now, I admit that these examples almost surely don't use 555 timers, the principle is the same.

Now, let's move on to astable or free running operation. In this setup the 555 basically self-triggers. Whereas in the monostable setup the RC netwrok only controls how long the output remains high by how quickly the capacitor is charged, this setup also controls how long the oupt remains low by controlling how long the same RC network discharges. Actually, there is an added resistor, as can be seen in *fig. 4*. The formula for calculating the operating frequency is as follows:

$$F = 1.443/(R_1+2R_2)C$$

**e.g. 3101.22 Hz = 1.443/(330ohms+2(330ohms)).47uF**

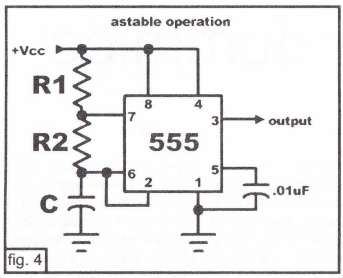


fig. 4

Now, what may not be obvious is that the 555 doesn't use the same exact circuit for charge and discharge. When the capacitor is charging it charges through both R1 and R2. When it discharges it only uses R2. Obviously this means that the 'on' and 'off' times will differ slightly. In the above example I used the same value resistor for R1 and R2. This is not necessary and you may use different values. By changing the values of each resistor, you not only change the frequency but also the duty-cycle or ratio between on and off times. To make life easier I usually use the same value resistor and calculate my values for twice the frequency I want to use. I then add the small modification as seen in *fig. 5* or something similar. Basically *fig. 5* shows a J/K flip flop hooked up as a divide-by-two frequency divider. There are other frequency divider circuits possible, and they don't have to be by 2. The advantage of this is that by using a higher frequency and dividing it down, the resulting output from the divider is perfectly symmetrical, that is it's duty cycle is exactly 50%. The on and off times of the output are equal. Also, by dividing the timer's frequency I also divide any frequency instabilities which result in a more stable output that's less likely to drift.

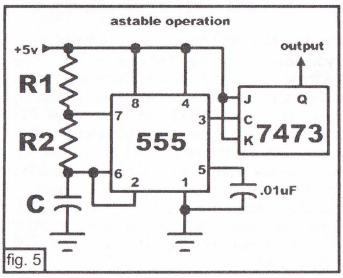


fig. 5

Now, if you really want a precise frequency you can use a crystal to control the 555. An example of just such a circuit is shown in *fig. 6*. You still need to pick your values for the RC network, but it's been reduced to a very simple formula:

**F = 1.443/RC**

You will have to choose your values so that the resulting frequency value is as close as possible to the frequency of the crystal. You can vary by up to 25% and possibly more but the closer the better, of course. The small trimmer capacitor can be used to fine tune the frequency of your oscillator so you can match it to a known standard.

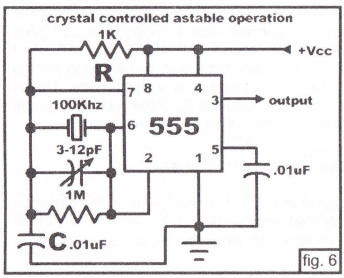
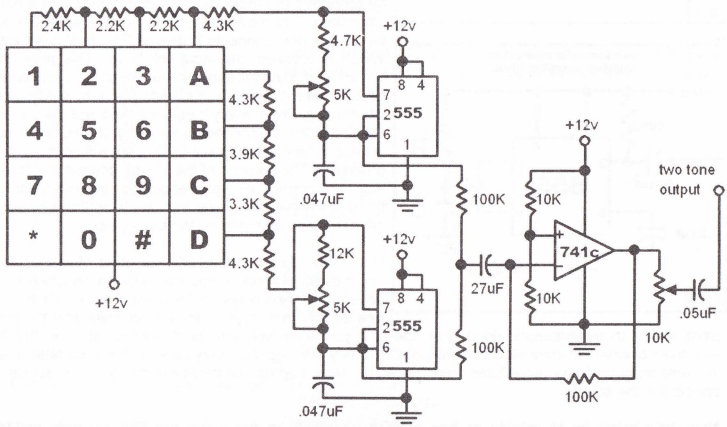


fig. 6

One little trick that you can pull is that if you choose your RC values correctly, you can force the oscillator to run at sub-harmonics fo the crystals frequency. In the example schematic that uses a 100KHz crystal, it you chose your RC values for 200Khz, the output will actually be one-half, or 50Khz. Basically, choose your RC values to be some multiple M of the crystal fundamental and the output will be 1/M of the output, like 1/3, 1/4, 1/5 the output of the fundamental crystals frequency. Great way to make an oscillator when you don't have exactly the value crystal you need. Another way to achieve a lower frequency than your output is to use divider circuits out of TTL parts.

Now for the gravy. What can you do with two 555 timers, a 12 digit keypad, and a simple opamp to mix the 555's outputs together, and the correct R and C values? A DTMF touch tone encoder, better known as a silver box. I present here a schematic with all the values figured out for you. Use the two 5K pots on each of the 555's to adjust each of the high side and low side tones. Have fun!!!

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# WIRELESS CABLE TELEVISION FREQUENTLY ASKED QUESTIONS

***Compiled by Brian J. Catlin***

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Sources

Most of this information is taken from FCC Public Notices along with information sent to me by both the FCC and the Wireless Cable Association (WCA). Other information has come from numerous newspapers, magazines, and from discussions with MMDS subscribers. I would like to thank Alan Larson, Craig Strachman, David Newman, David Simmons, and JBlitzEsq for their numerous contributions and corrections.

Questions and Answers

1.0) ABBREVIATIONS USED:

ITFS
Instructional Television Fixed Service. Channels that must have a minimum of 5 hours per week of educational programming. May be leased for wireless cable usage.

LMDS
Local Multipoint Distribution Service. Two sets of 50 channels in the 28 GHz band. Not yet available for wireless cable usage.

MDS
Multipoint Distribution Service. Two channels that are similar to MMDS. May be used in a wireless cable system.

MMDS
Multichannel Multipoint Distribution Service. Two sets of four channels each. Also, type of service known as "Wireless Cable".

2.0) WHAT IS WIRELESS CABLE?

Wireless cable is a name given to a service that is called Multichannel Multipoint Distribution Service (or MMDS). It is a type of cable television system that offers its subscribers a mix of satellite channels by transmitting the programming over MMDS frequencies along with MDS, OFS, and ITFS frequencies, if they are available. Wireless cable uses Super High Frequency ("SHF") channels to transmit satellite cable programming over-the-air instead of through overhead or underground wires.

2.1) WHAT IS CELLULARVISION?

CellularVision/Suite12 is a company that has been granted special permission by the FCC to transmit video services on a higher frequency than what wireless cable uses. They have been testing in the 28 GHz (or LMDS) band. It is believed that the FCC may allocate two sets of 50 channels in this band for wireless cable type service.

CellularVision is hoping to provide television plus much more. Since the signal is interleaved, it is possible for a large number of services to occupy a narrow bandwidth. CellularVision is planning on offering interactive networking, grocery ordering, bank transactions, and video teleconferencing. I am not sure what all CellularVision is planning on offering during this initial testing period.

However, using the 28 GHz band means sacrificing signal range. These signals aren't able to achieve even the 25-30 mile range that MMDS and other 2 GHz services are able to get, given the same transmitting power. To get around this, they are using 35 "cell sites" to transmit the programming. They hope to offer service to over 6.3 million subscribers in the region around New York City by 1995.

3.0) WHAT ARE THE BENEFITS OF WIRELESS CABLE TO THE CUSTOMER?

Availability: Wireless Cable can be made available in areas of scattered population and other areas where it is too expensive to build a traditional cable station.

Affordability: Due to the lower costs of building a Wireless Cable Station, savings can be passed on to the subscribers.

3.1) HOW DOES IT WORK?

Scrambled satellite cable programming is received at a central location where it is processed and fed into special transmitters. The SHF transmitters distribute the programming throughout the coverage area. The signals are received by special antennas installed on subscribers' roofs, combined with the existing VHF and UHF channels from the subscriber's existing antenna, and distributed within the home or building through coaxial cable into a channel program selector located near the television set.

Notice that you must provide a UHF and/or VHF antenna if you want the broadcast channels. This is because the Wireless

Cable Box only provides a UHF/VHF tuner. Of course, not all boxes include even this feature (but most do).

3.2) WHAT IS THE HISTORY OF MMDS?

It is a fairly new service that developed from MDS (multi-point distribution service) which could only send one or two channels. Originally, the FCC thought MDS would be used primarily to send business data. However, since MDS's creation in the early 70's, the service has become increasingly popular in sending entertainment programming. Because the FCC does not regulate the content of the transmission, alternative uses would not be prohibited.

Today, there are systems in use all around the U.S. and in many other countries including the former Soviet Union, and Canada. Other systems are being built all over the place, including Australia. At the rate that the FCC has been receiving applications, it looks as if many more systems are going to be built in the U.S..

3.3) HOW DOES MMDS WORK COMMERCIALLY?

A MMDS licensee, which is similar to a broadcast station owner, leases transmission time to programmers on a first-come, first- served basis. The programmers, in turn, are responsible for designing and selling their programs to the subscriber.

A MMDS applicant can choose to operate as a common carrier. In the telecommunications industry, a common carrier also may provide services such as audio only transmissions, telephone, or data.

A MMDS applicant can alternatively choose to operate as a non- common carrier. This scenario in effect would constitute a non- common carrier wireless cable system.

Also, note that a MMDS license only entitles you to FOUR channels. In order to use all 33 channels, you must apply for several different licenses. This can be very costly!

4.0) WHAT FREQUENCIES ARE USED?

| Frequency Range(MHz) | Number of Channels used | Type of Service | Channel Groups |
|---|---|---|---|
| 2,150-2,162 | 2 | MDS | 1,2,2(A) |
| 2,500-2,596 | 16 | ITFS | ABC&D |
| 2,596-2,644 | 8 | MMDS | E&F |
| 2,644-2,686 | 4 | ITFS | G |
| 2,644-2,686 | 3 | MMDS | H |
| 2,686-2,689.875 | 31* | MMDS | Response Channels |

* - Each channel's bandwidth is 125 KHz, and does not carry video.

There are also tests being made in New York for transmitting in the 28 GHz band (LMDS). The frequencies used are 27.5 GHz - 29.5 GHz. I am not sure of how these frequencies are divided between the different services.

The FCC is currently thinking about opening up more frequencies so that up to 7 wireless cable companies can compete in the larger markets.

4.1) HOW MANY CHANNELS CAN BE TRANSMITTED?

When fully implemented, wireless cable operations may have as many as 33 channels of broadcast and cable programming. This, of course, depends on which channels are already used in your area. Furthermore, 20 of the 33 channels are borrowed from ITFS services and are earmarked for educational use. This means there is a requirement to program 20 hours per week per channel of educational material. All educational programming is now allowed to be placed on one ITFS channel instead of having it spread over the four channels in the ITFS group.
For new ITFS licenses, only 12 hours per week per channel is required, but they cannot be grouped together. If any of these channels are being used, then any extra time can be leased by the MMDS station, if the owner of the license agrees.

Approximately 150 to 300 channels may become available if digital compression is used. There are a few sites that are testing this new technology, and I have heard that the video and audio signals are quite good. They are using Zenith's new 16-level digital transmission system which is also capable of delivering HDTV (High Definition Television).

Also, since the signals will be sent digitally, it is expected that the range of the signal will increase by approximately 3 times.

4.2) WHAT CHANNELS CAN BE SENT?

Wireless cable systems can carry any of the typical cable channels. In the past, some channels refused to let wireless cable systems carry their signals. However, the cable re-regulation bill made channels that are available to cable companies also available to wireless cable. It can also send the 'SuperGuide' data along with similar data services.

5.0) WHAT IS THE RANGE OF WIRELESS CABLE?

Wireless cable systems optimally can get a range of up to 25-30 miles. This depends largely on the terrain, transmitting power, both the transmitting and receiving equipment, and many other factors. In order to receive the signal, the transmitting and receiving antennas must be line-of-site.

Because of its low startup costs, and the ability to reach places that cannot be served by traditional cable, MMDS may be feasible in certain rural areas.

A range of 75 to 90 miles could be accomplished if a new digital compression system is used. (See question 4.1)

5.1) DOES WEATHER AFFECT RECEPTION?

The answer to this question depends on the type of system used. For systems that transmit their programming without modification (ie. No compression or scrambling), severe fog and/or rain can cause the signal to be reflected, causeing the picture to deteriorate. From what I have heard,you can usually expect between eight to ten days per year of interrupted service. This figure, I believe, is the average for the current systems operating in the U.S..

If the programming is scrambled, the downconverter/descrambler may loose authorization sooner.

On the other hand, if the programming is sent digitally, or is digitally compressed, the signal can deteriorate to a much lower level before the picture is affected. However, once the signal gets this weak, the picture will deteriorate at a much faster rate as the weather gets worse. From what I have read, the average number of days that this type of service would be interrupted, would be one day per year. (This sounds rather optimistic to me... does anyone have any info about this?)

Also, the farther the receiver is from the transmitter, the sooner the picture will be affected.

6.0) WHAT EQUIPMENT IS IN THE SUBSCRIBER'S HOME?

Each household subscribing to the service has a small antenna on its roof (about the size of an open newspaper) and a downconverter inside. The downconverter usually includes an addressable decoder and a VHF/UHF tuner built in. This gives it the ability to tune in broadcast channels without having to use up valuable MMDS channels. It also allows pay-per-view services and simplifies channel blocking and premium channel activation/deactivation.

Also, the subscriber will need a UHF and/or VHF antenna if they want to receive broadcast channels.

Recently, a new converter has been introduced that will send all channels out of the converter at once. This means that you can use your TV's and your VCR's built in tuner instead of having to have seperate boxes for each. This new technology is (hopefully) going to be integrated into Wireless Cable converters as well as the traditional cable boxes.

6.1) IS WIRELESS CABLE EQUIPMENT RELIABLE?

Several excellent manufacturers produce antennas and downconverters for signal reception along with decoder boxes.

Because the signal is broadcast over the air, it is not subject to the failures of traditional cable. However, the receiving end is somewhat more complex than most wired cable systems would use. Also, the signal is in a frequency range that may be attenuated by water (such as rain) and can be blocked by trees. There is also some risk of interference from microwave ovens operating in the area on 2,450 MHz.

There are several companies that provide equipment and consulting services. If you are interested in this, you may want to pick up the latest copy of The Broadcasting Yearbook or Multichannel News. These can be found at most large libraries.

7.0) WHAT ABOUT COPYRIGHT ISSUES?

In the past, wireless cable systems have assumed that they may use a compulsory license to pay for copyright issues (similar to what cable companies do today). A compulsory license enables systems to re-transmit broadcast signals for a pre-established fee to compensate producers of TV programs. The copyright office then announced that wireless cable is NOT a cable system, therefore, these systems may not use compulsory licenses.

However, the Satellite Home Viewer Act of 1994 was passed and enacted on October 18, 1994. This act establishes that wireless cable systems fully qualify for the compulsory copyright license in the same manner as cable systems. I would like to thank JBlitzEsq for this information.

8.0) WHAT ABOUT SECURITY?

In systems that use scrambling, signal security is provided by encoding each channel and equipping the converter with a decoding device that responds to a pilot signal carrying a data stream with authorization instructions. Thus, the system is totally addressable. No (legal) converter box will have any utility unless it is authorized for service by the central computer. All channels, both Basic and Premium, are hard scrambled. Because the wireless cable system is addressable, it can also accommodate pay- per-view service.

One way to defeat this is to use an illegal converter box. These are not as easy to find as the ones for regular cable systems. However, a "Universal Descrambler" will probably be able to descramble the channels. (I have not tried this).

If digital compression is used, then no scrambling is needed as a compressed signal is impossible to watch.

According to Barry Nadler of the FCC office in Vero Beach, "There is not any restrictions on receiving wireless cable transmissions. There are currently restrictions on the cellular frequencies only. If you decode scrambled signals, you are

breaking the law. Cable companies can take you to court (Title 47 Section 605,USC) for 'Use of information not specifically directed to you'." This means that you may view any unscrambled/unmodified signals with your own receiver. You may not, however, unscramble a signal without authorization. I would like to thank David Simmons for providing this quote to me.

9.0) HOW ARE WIRELESS CABLE SYSTEMS REGULATED?

The FCC has specifically preempted local regulation of wireless cable frequencies, asserting that it is interstate commerce. There is no basis for local regulation of the wireless signal. Unlike cable, no public rights of way are used, and all transmission and reception equipment is on private property.

Furthermore, the antennas are so similar to regular television antennas that there can be no basis for zoning restrictions. If a particular area does have zoning restrictions against antennas, they can be fought against in court (the newsgroup rec.video.satellite occasionally has these discussions). However, if you signed an agreement that restricted antennas, you may be out of luck.

This does not mean, however, that there is little regulation. The federal government regulates the industry heavily. This is done through processes of getting licenses, transfering licenses, applying for ITFS channels, report filings, etc.

10.0) I SAW ONE OF THOSE 'INFOMERCIALS' ABOUT WIRELESS CABLE. ARE THESE COMPANIES LEGIT?

While some companies may be legit, there are some things that they don't disclose. Because of this, two companies have had temporary restraining orders placed against them. A judge has placed some of the following restrictions on them.

They may no longer state that applicants are "virtually guaranteed" of winning a license in the FCC lottery or that most wireless cable licenses are "highly valuable."

"There may be substantial delays in the awarding of any MMDS license due to the length of time the FCC takes to process MMDS applications and award MMDS licenses."

That financing for wireless cable systems is hard to get, "given the relatively new nature of this field of technology and that such financing may require additional funds of the customer's own money as a condition" to obtaining a system.

Provide a new "Risk Disclosure" statement that applicants must sign before sale is completed. This statement informs applicants, among other items, that any representations of value of systems are opinions and not actual values, that the winner of a MMDS lottery wins only 4 channels and that there may be competition with satellite, VCR, and other media.

Also, take note that in the U.S., it is ILLEGAL to enter into (or even plan on entering into) a settlement group when applying for a license.

10.1 HOW CAN I TELL IF A COMPANY IS RUNNING A SCAM ON ME?

Many scams work the following way:

Television, radio, and newspaper ads say that a wireless cable company is looking for investors to apply for licenses for a given area, which the company will service.

Investors are asked to pay a large sum of money for application and engineering fees. The application fee is only about $155 for four channels.

The company then does an engineering study, which may not meet the technical requirements, and submits many applications at one time to the FCC for that market.

If the investor wins a license, the company may not have the funding to actually bring a system on-line.

Most legitimate companies get their investments from institutions instead of from individuals. Also, beware of any "limited liability partnerships" as they are frequently scams.

11.0) IS THERE AN INDUSTRY ASSOCIATION?

Wireless cable operators, license holders, and equipment/service suppliers have formed the Wireless Cable Association. Among its activities the WCA has established a set of industry standards, both business and technical. The WCA has also made the industry's concerns known on Capitol Hill and at Federal agencies such as the FCC, NTIA, OTA and DOJ. The WCA has also opened channels of communication with organizations such as the National League of Cities, NATOA, MPAA and the Association of State Attorneys General.

11.1) WHO DO I CONTACT FOR MORE INFORMATION?

FCC
Mass Media Bureau
Washington, DC 20554

Wireless Cable Association International, Inc.
1155 Connecticut Avenue, N.W. Suite 700
Washington, DC 20036
(202) 452-7823
FAX: (202) 452-0041

11.2) ARE THERE ANY FTP OR GOPHER SITES AVAILABLE FOR MORE INFORMATION?

The FCC is currently setting up a site (ftp.fcc.gov) for anonymous FTP of daily reports, transcripts, and many other things on

cable, radio, television, telephone, and everything else that the FCC deals with.

For more information on anonymous FTP, see your local network administrator or your BBS's sysop.

This service is also available via gopher. All you need to do is gopher to ftp.fcc.gov port 70.

12.0) WHERE CAN I GET THE LATEST COPY OF THIS FAQ?

This FAQ can be found via the World-Wide-Web (WWW) at: http://www.bearhunter.com/~bearhntr/wireless-cable.html

Other FAQs can be found at: http://www.cis.ohio-state.edu/hypertext/faq/usenet/FAQ-List.html

Disclaimer

I have no affiliation with any type of cable or broadcast system. I am definitely not an expert in these areas. I have tried, to the best of my ability, to interpret and relay the most accurate and up to date information. However, I do not guarantee the accuracy of this information as some of my sources may be biased or incorrect.

For additions, clarifications, corrections, or if you just have some questions or comments, please feel free to e-mail me.

B. J. Catlin

# *CABLE TEST CHIP FAQ*

***continued from page 32***

4. Double check all work. A mistake in wiring may cause the test device to be damaged, and perhaps the box. Check your work carefully before the box is powered up.

5. Once installed correctly, if unit fails to work, make sure that it is connected to a signal that is compatible with that of the unit under test. I.E., a Zenith box will not work with a Jerrold type signal.

7. Sometimes the cable box/descrambler itself, is defective. If the box worked before you installed the test chip, and you suspect your installation as faulty, remove and reinstall test chip.

8. To protect pins of test chips which are removed and replaced often, install test chip first into high quality socket.

9. Test chips, typically, will allow reception of all channels that the box is capable of receiving. This means that PPV or Premium channels may or may not be enabled for testing. Sometimes a second outboard descrambler, using a different scrambling method is required. Some test chips will reprogram the apparent locations of some or all channels. The box will still decode all channels, however, they may not all be in sequence. This is not a problem, it's just the way the test chip works.

10. If the box still does not operate, you must now determine whether (1) the box is at fault (2) the test chip or module is at fault (3) you have done a bad job of installing or (4) a combination of (1) through (3). If the box operates on all but a few premium channels, the cable company may be using a different descrambler to decode those channels. If this is the case, the installation is OK and the test chip is operating correctly. If not, then remove the test chip and return the box to its original condition. You may have to bridge cuts made on the PCB or re-install jumpers, etc. The easy way to do this is to follow the installation instructions for installing the chip, only do it in reverse. Start at the end of the instructions and remove instead of installing, uncut instead of cut etc.

11. Once box is returned to original condition, connect cable company cable TV, and power-up box. The box should operate as normal. I.E., you should be able to receive some sort of programming. If nothing happens, double check the work you just performed. If the box has been returned to normal condition, it should work same as it did before you began work. If it does not, the box may be defective, Or YOU may not have programming going into the box. If the box received channels before the installation of the test chip, but does not work now, you either have not returned the box to original operating condition or have damaged the box during the initial installation. If you have incorrectly installed the test chip or module the first time, you may have damaged either the box or the test chip / module or both.

12. If box works normally now, i.e., receives some channels, the box is OK. Now follow the instructions to the letter, and reinstall the test chip or module. Be sure to follow the instructions exactly. The majority of installation problems can be traced to improper installation. Very rarely, the chip or module will be bad.

13. If after re-installing the chip / module in a working box, it STILL does not work, contact us for return authorization to replace the module or chip. We have the facilities to check the chip or module. If the chip or module is defective from manufacture, we will repair, reprogram or replace it at NO CHARGE to you.

***This information was taken directly from Telecode webpage with permission to do so. Telecode sells all sorts of useful hacking material. Please take the time to check them out:***

***TELECODE***
***PO BOX 6426, YUMA AZ 85366-6426 (520)726-2833***
***http://www.hackerscatalog.com/index.htm***

**THE HACKERS UNDERGROUND DIGEST WANTS YOU!**

***Send Articles to: THUD, P.O. Box 2521, Cypress, CA 90630***

# THUD Magazine Presents....."OhMyGoD" Acronyms A-B

| | |
|---|---|
| ?A | Action field contains an error |
| ?D | Data field contains an error |
| ?E | Error exist in message but cannot be resolved to the proper field |
| ?I | Identification field contains an error |
| ?T | Time-out has occured on channel |
| ?W | Warning message |
| 15S | Fifteen seconds |
| 1CF | Singal party coin first pay phone |
| 1FAC | Interface packs |
| 1FB | One party flat business rate |
| 1OF | One party official (telco) business line |
| 2SPDT | Partial dial timeout in the 2nd stage of traditional 2stage international |
| 2SPST | Permanent sig.timeout in 2nd stage of traditional 2stage international |
| 2SVCA | Vacant code in 2nd stage of traditional 2stage international outbound |
| 2W | Two wire (pair) (circuit) |
| 2WAY | Two-way trunk groups |
| 300 | Log command menu (SARTS command) |
| 376 | Log clear (SARTS command) |
| 384 | Write log (SARTS command) |
| 385 | Read log (SARTS command) |
| 399 | Log print (SARTS command) |
| 3KHZ | Three kilohertz |
| 3RNGR | Three ringer |
| 3WO | Third wire open |
| 4W | Four wire (pair) (circuit) |
| 600 | Test menu (SARTS command) |
| 600B | 600-ohm briged connection |
| 611 | Detail tests (SARTS command) |
| 621 | Macro command menu (SARTS command) |
| 631 | Automatic test command (SARTS command) |
| 735T | 735-ohm compromise termination |
| A | A side (lead) (pair) |
| A | Area |
| A | Telephone # or trunk group & member number from trouble |
| A/B | Two wire phone connection (T&R) |
| AA | Automatic answer |
| AA | Packet analog access line INTER/TRA blocal 1-26 |
| AABS | Automatic alternate billing service |
| AAE | Auxiliary access equipment |
| AAR | Automatic alternate routing |
| AAX | Automated attendant exchange |
| AB | Packet switch trunk INTER/TRA blocal 1-26 |
| ABATS | Automatic bit access test system |
| ABATS | Automatic bit access test system (DDS service) |
| ABC | Automatic bill calling (TSPS) |
| ABF | Abandon failure |
| ABF | Abandon failure (MDII) |
| ABHC | Average busy hour calls |
| ABL | Auxiliary Buffer oder word Left half |
| ABM | Asynchronous balanced mode ( -> SABME) |
| ABME | ABM extended |
| ABR | Auxiliary Buffer order word Right half |
| ABS | Alternate billing service |
| ABS | Alternative billing service |
| ABSBH | Average busy season busy hour |
| ABT | Abort |
| ABV | Above |
| AC | Administrative computer |
| AC | Alternating current |
| AC | Assembly code |
| ACA | Asynchronous communication adapter |
| ACB | Annoyance call bureau |
| ACB | Automatic call-back |
| ACC | Audio communications controller |
| ACCS | Automated calling card service |
| ACD | Automatic call distribution |
| ACD | Automatic call distributor |
| ACDA | Automatic call disposition analyzer |
| ACDN | Access directory number |
| ACDN | Access Directory Number |
| ACE | Assignment change establish |
| ACE | Automatic calling equipment |
| ACES | Aris cabs entry system |
| ACF | Advanced communications functions |
| ACFA | Advanced CMOS frame aligner peb2030 |
| ACG | Automatic call gap |
| ACH | Attempt per circuit per hour |
| ACI | Answer controller interface (IOM2 monitor command) |
| ACIA | Asynchronous communications interface adapter |
| ACK | Acknowledge |
| ACK | No acknowledgement wink |
| ACK | No acknowledgement wink (MDII) |
| ACKDB | Acknowledgement database |
| ACM | Address complete msg. (SS7: in ISUP) |
| ACOF | Attendant control of facilities |
| ACP | Action point |
| ACSE | Association control service element |
| ACSNET | Acedemic computing services network |
| ACSR | Automatic customer station rearrangement |
| ACSU | Advanced T-1 channel service unit |
| ACT | AC testing definition |
| ACT | AC Testing definition |
| ACT | Activate |
| ACT | Active |
| ACT | Auto or automatic circuit transactions |
| ACTS | Automated coin toll service |
| ACTV | Acticated |
| ACTVD | Activated |
| ACU | Alarm control unit |
| ACU | Automatic calling unit |
| AD | Attendant INTER/TRA blocal 1-26 |
| ADAP | Audix data acquisition package |
| ADAS | Advanced directory assistance system |
| ADC | American digital cellular |
| ADC | Analog to digital converter |
| ADCCP | Advanced data communication controll procedure |
| ADCCP | Advanced data communications control procedure |
| ADCI | Automatic display call indicator |
| ADD EXP | Address expander |
| ADDL | Additional |
| ADDR | Address translations |
| ADJ | Ajust |
| ADM | Add-drop multiplex |
| ADMA | Advanced DMA controller SAB82258 |
| ADN | Abbreviated dialing number |
| ADP | Automatic diagnostic process. |
| ADPCM | Adaptive PCM |
| ADS | Administration of designed services |
| ADS | Administration of designed services review |
| ADS | Advanced digital system |
| ADS | Audio distribution system |
| ADS | Auxilary data system |
| ADSL | Asymmetrical digital subscriber line |
| ADTS | Automated digital terminal system |
| ADTS | Automatic data test system |
| ADTS | Automatic digital terminal system |
| ADU | Automatic dialing unit |
| AERM | Alignment error rate monitor |
| AF | Commercial audio fulltime INTER/TRA blocal 1-26 |
| AFACTS | Automatic facilities test system |
| AFADS | Automatic force adjustment data system |
| AFE | Analog front end |
| AFI | Authority and format identifier (ISO 7498) |
| AFSC | Advanced features service center |
| AFSK | Automatic frequency shift keying |
| AG/EEE | Above ground electronic equipment enclosures |
| AGC | Automatic gain control |
| AGM | Normal aging months |
| AGND | Analog ground |
| AGT | Accelerated aging type |
| AI | Activate indication (C/I channel code) |
| AI | Artificial intelligence |
| AI | Assigner's initials |
| AI | Automatic identified outward dialing INTER/TRA blocal 1-26 |
| AIC | Automatic intercept center |
| AICC | Automatic intercept communications controller |
| AIN | Advanced intelligent network |
| AIOD | Automatic id of outward dialing |
| AIOD | Automatic identifaction of outward dialing |
| AIS | Alarm indication signal |
| AIS | Alarm indication signals |
| AIS | Automatic intercept system |
| AIT | Analit initialization of tables |
| AIU | AI upstream |
| AL | Alternate services INTER/TRA blocal 1-26 |
| ALATS | Automatic loop access system system (DDS service) |
| ALBO | Automatic line buildout |
| ALE | Address latch enable |
| ALE | Automatic line evaluation |
| ALFE | Analog line front end |
| ALGOL | Algorhythmic computer language |
| ALI | Automatic location indentification |
| ALIT | Automatic line insulation testing |
| ALL | All events |
| ALL | All module controller maintenance interrupts |
| ALL | Turns on all IDs |
| ALPT | Alarm scan points |
| ALRM | Alarms |
| ALRU | Automatic line record update |
| ALS | Automated list service |
| AM | Administrative module |
| AM | Amplitude modulation |
| AM | Asynchronous multiplexer |
| AM | Packet |
| AMA | Automatic Message Accounting |
| AMA | Automatic message accounting |
| AMACS | AMA collection system |
| AMAIRR | Automatic message accounting irregularity |

| | |
|---|---|
| AMALOST | Lost automatic message accounting |
| AMARC | AMA recent change |
| AMARC | AMA recording center |
| AMASE | AMA standard entry |
| AMAT | Automatic message accounting transmitter |
| AMATPS | Automatic message accounting teleprocessing system |
| AMATPS | Automatic message accounting transmitter teleprocessing sys |
| AMC | Add-on module connector (-> sipb) |
| AMERITECH | American information technologies |
| AMI | Alternate mark inversion code |
| AML | Automatic maintenance limit. |
| AMP | Advance measurement processor |
| AMP | Amplifier |
| AMPS | Advanced mobile phone service |
| AMR | Automatic meter reading |
| AMWI | Active message waiting indicator |
| AN | Announcement service INTER/TRA blocal 1-26 |
| AN | Associated number |
| ANA | Automatic number announcement |
| ANC | All number calling |
| ANCT | Analysis control table |
| ANI | Automatic number identification |
| ANIF | Automatic number identification failure |
| ANM | Answer msg. (SS7: in ISUP) |
| ANS | Answer |
| ANS | Answer msg. |
| ANS | Answer On Bus |
| ANSER | AT&T Network Servicing System (i.e. via EADAS link ) |
| ANSI | American national standards institute |
| AO | Allocation order |
| AO | International/overseas audio (full time) INTER/TRA blocal 1-26 |
| AOC | Advice of charge (i.256 B) |
| AOSS | Auxilliary operator service system |
| AP-PG | Access point page |
| AP | Access point |
| AP | Application (OSI layer 7) |
| AP | Application processor |
| AP | Attached processor |
| AP | Auciliary processor |
| AP | Automatic position |
| AP | Commercial audio (part time) INTER/TRA blocal 1-26 |
| APC | Alarm processor circuit |
| APC | Amarc protocol converter |
| APD | Access point data |
| APD | Avalanche photo diode |
| APDB | Access point data base |
| APDL | Application processor data link |
| APH | Application protocol handler |
| API | Application interface |
| APM | Application processor modules |
| APPC | Advanced program to program communication (IBM) |
| APPL1-APPL5 | Reserved for application handlers |
| APS | Automatic position system |
| APS | Automatic protection switch |
| APS | Automatic protection switching system |
| AQ | Autoquote problem. |
| AR | Activation request (C/I channel code) |
| AR | Alarm report |
| AR01 | Office alarm - 1AESS alarm message |
| AR02 | Alarm retired or transferred - 1AESS alarm message |
| AR03 | Fuse blown - 1AESS alarm message |
| AR04 | Unknown alarm scan point activated - 1AESS alarm message |
| AR05 | Commercial power failure - 1AESS alarm message |
| AR06 | Switchroom alarm via alarm grid - 1AESS alarm message |
| AR07 | Power plant alarm - 1AESS alarm message |
| AR08 | Alarm circuit battery loss - 1AESS alarm message |
| AR09 | AMA bus fuse blown - 1AESS alarm message |
| AR10 | Alarm configuration has been changed (retired inhibited) |
| AR11 | Power converter trouble - 1AESS alarm message |
| AR13 | Carrier group alarm - 1AESS alarm message |
| AR15 | Hourly report on building&power alarms-1AESS alarm message |
| ARA | Automatic reservation adjustment |
| ARC | Administrative responsibility code |
| ARC | Alternate route cancellation |
| ARC | Alternate route cancellation control |
| ARC | Audio response controller |
| ARCOFI-SP | ARCOFI + speakerphone function |
| ARCOFI | Audio ringing codec filter |
| ARCOS | ARCOFI coefficient support program |
| ARCOTI | SIPB telephone module |
| ARD | AR downstream |
| ARG | Alarm reference guide |
| ARG | Assemble and run a given master file |
| ARIS | Audichron recorded information system |
| ARL | Activation request local loop (C/I channel code) |
| ARM | Activation request maintenance (C/I channel code) |
| ARM | Asynchronous response mode |
| ARM | Automatic R(emote test system) maintance |
| ARMAR | Automatic request for manual assistance resolution |
| ARN | Activation request |
| ARQ | Automatic repeat request |
| ARR | Automatic ring recovery. |
| ARS | Alternate route selection |
| ARS | Automatic route selection |
| ARSB | Automated repair service bureau |
| ARSB | Automatic repair service bureau |
| ARSSI | Automatic rought selection screening index |
| ART | Audible ringing tone |
| ARU | Activation request upstream |
| ARU | Audio response unit |
| ASAP | As soon as possible |
| ASC | Alarm and status circuit |
| ASC | Alarm and status circuit . |
| ASC | Alarm surveillance and control |
| ASCC2 | Advanced serial communication controller |
| ASCII | American standard code for information interchange |
| ASCII | American standard code for information interexchange |
| ASD | Automated SMAS diagnostics |
| ASDPE | Synchronous data link controller (SDLC) A reset |
| ASE | Application service element |
| ASEC | Assignment section |
| ASGN | Assign |
| ASGNMTS | Assignments |
| ASIC | Application specific integrated circuit |
| ASM | Analog subscriber module |
| ASOC | Administrative service oversight center |
| ASP | Advanced service platform |
| ASP | Arcofi signal processor |
| ASPACGCOMP | ASP SCP response message with an ACG component received at the switch |
| ASPBADRESP | ASP SCP response message received with invalid data |
| ASPEN | Automatic system for performance evaluation of the network |
| ASPNORTEMSG | ASP reject message ret err and a play announc received at the switch from the SCP |
| ASPSNCOMP | ASP SCP response message with a send notifi component received at the switch |
| ASPTNMSG | ASP termination notification message sent from the switch to the SCP |
| ASR | Access service request |
| ASSN | Assignment |
| AST | Position acknowledge seizure signal time-out (MDII) |
| ASYNC | Asynchronous |
| AT-1 | Auto test-1 |
| AT-2 | Auto test-2 |
| AT | Access tandem |
| AT | International/overseas audio (part time) INTER/TRA blocal 1-26 |
| AT&T | American telephone and telegraph |
| AT01 | Results of trunk test - 1AESS automatic trunk test |
| ATA | Automatic trunk analysis |
| ATAB | Area trunk assignment bureau |
| ATAI | Automatic troubler analysis interface |
| ATB | All Trunks Busy |
| ATB | All trunks busy |
| ATC | Automated testing control |
| ATC | Automatic transmission control |
| ATD | Accept date |
| ATD | Async. TDM |
| ATH | Abbreviated trouble history |
| ATI | Automatic test inhibit |
| ATI | Awake TI |
| ATICS | Automated toll integrity checking system |
| ATIS | Automatic transmitter identification system |
| ATM | Analog trunk module |
| ATM | Asynchronous transfer mode |
| ATM | Automatic teller machine |
| ATMS | Automated trunk measurement system |
| ATN | Assigner's telephone number |
| ATO | Time-out waiting for address complete signal |
| ATP | All tests pass |
| ATR | Alternate trunk routing |
| ATRS | Automated trouble reporting system |
| ATTC | Automatic transmission test and control circuit |
| ATTCOM | AT&T communications |
| ATTG | Attendant group |
| ATTIS | AT&T information system |
| AU | Access unit |
| AU | Autoscript INTER/TRA blocal 1-26 |
| AU | Auxiliary |
| AUD | Assignment list audit |
| AUD | Audits |
| AUDIT | Audit detected problem. |
| AUDIX | Audio information exchange |
| AUP | Access unit port |
| AUTO | Automaitc |
| AUTODIN | Automatic digital network |
| AUTOSEVCOM | Automatic secure voice communications |
| AUTOVON | Automatic voice network |
| AUXF | Auxillary frame |
| AVD | Alternate voice-data |
| AVD | Alternate voice data |
| AWI | Awake indication |
| AZD | All zeros data |
| B | B side (pair) (lead) |
| B | Bridged connection |
| B | Equipment number |
| B6ZS | Bipolar with 6 zero subsitution |
| B8ZS | Bipolar eight zero suppression encoding (DS-1) |
| B8ZS | Bipolar with 8 zeros substitution (T1 pri) |
| B911 | Basic 911 |

| | |
|---|---|
| BA | Basic access |
| BA | Protective alarm (CD) INTER/TRA blocal 1-26 |
| BAF | Blocking acknowledgment failure |
| BAI | Bridge lifter assignment inquiry |
| BAL | Balance |
| BAMAF | Bellcore AMA format |
| BANCS | Bell administrative network communications system |
| BANKS | Bell adminastration network systems |
| BAPCO | Bellsouth advertising & publishing company |
| BAS | Basic activity subset |
| BAT | Battery (-48v) |
| BAx | Business address x (x = number of line) |
| BB | Blue box |
| BBD0/1 | Binary 0s or 1s detected in b and d channels |
| BCC | Bellcore client companies |
| BCC | Block check character |
| BCC | Blocked call cleared |
| BCCP | Bearer ccp |
| BCD | Binary coded decimal |
| BCD | Blocked call delayed |
| BCFE | Busy call forwarding extened |
| BCID | Business customer identifier |
| BCLID | Bulk calling line identification |
| BCMS | Basic call management system |
| BCS | Batch change supplement (NTI) (DMS-100) |
| BDCA | Unk |
| BDCS | Broadband digital cross-connect system |
| BDS | Basic data service |
| BDT | Billing data transmitter |
| BEF | Band elimination filter |
| BEL | Bell |
| BELLCORE | Bell communications research |
| BER | Bit error rate |
| BERT | Bit error rate test |
| BETRS | Basic exchange telecommunications radio service |
| BG | Battery and ground signaling |
| BG/EEE | Below ground electronic equipment enclosures |
| BHC | Busy hour call |
| BHC | Busy hour calls |
| BIB | Backward indicator bit (SS7) |
| BICU | Bus interface control unit |
| BIFIFO | Bidirectional fifo |
| BIR | Bit receiver |
| BIR | Bus interface register |
| BISDN | Broadband ISDN |
| BISP | Business information system program |
| BISYNC | Binary synchronous communications |
| BIT | Bit |
| BIT | Bit transmitter |
| BITNET | Because-it's-time network |
| BITR | Bit transceiver |
| BIX | Building internal cross-connects |
| BK | Back |
| BKUP | Backup |
| BKUP | Requests a backup |
| BL | Bell & lights INTER/TRA blocal 1-26 |
| BL | Bridge lifter |
| BL | Bridge lifters - COSMOS command |
| BL/DS | Busy line/don't answer |
| BLA | Blocking acknowledgement (SS7: in ISUP) |
| BLF | Busy line field |
| BLFCA | Blocking a fully coded addressed international outbound call routed to a non-common channel signaling trunk |
| BLK | Block |
| BLKD | Blocked |
| BLO | Blocking (SS7: in ISUP) |
| BLS | Bridge lifter status |
| BLS | Business listing service |
| BLV | Busy line verification |
| BMC | Billing media coverage |
| BMD | Batch mode display |
| BMI | Batch mode input - TIMEREL and DEMAND |
| BMOSS | Building maintance operations service system |
| BMR | Batch mode release |
| BMU | Basic measurement unit (dip) |
| BND | Band number |
| BNS | Billed number screening |
| BNSDBOV | BVA BNS message received indicating data base overload |
| BNSDBUN | BVA BNS message returned because data base unable to process |
| BNSGMSG | BVA BNS message received garbled |
| BNSNBLK | BVA BNS message returned because of network blockage |
| BNSNCO | BVA BNS message returned because of network congestion |
| N | BVA BNS message returned because of no routing data |
| BNSNRTE | BVA BNS message returned because of timeout |
| BNSTOUT | BVA BNS message returned because of unequippeddestination |
| BNSUNE | BVA BNS message received with an unexpected reply |
| Q | Business name x (x = number of line) |
| BNSURPY | Bell operating companies |
| BNx | Bell operating company |
| BOC | Building operations control center |
| BOC | Byte oriented protocol |
| BOCC | Basic output report |
| BOP | Battery |
| BOR | Bit oriented signaling |
| BORSCH | Business office supervisor |
| T | Billing and order support system |
| BOS | Business office service system (NYNEX) |
| BOS | Beginning of tape |
| BOSS | Bottom |
| BOSS | Bits per inch |
| BOT | Bell point of contact |
| BOT | Bits per second |
| BPI | Binary psk |
| BPOC | Basic packet-switching service |
| BPS | Backup pump |
| BPSK | Bit robbing (CAS-BR) |
| BPSS | Business residence account tracking system |
| BPUMP | Business and residential customer service feature |
| BR | Business and residential customer services |
| BRAT | Business residence custom service |
| BRCF | Broadcase |
| BRCS | Bridge |
| BRCS | Bridged |
| BRDCST | Brevity control |
| BRDG | Baud rate generator |
| BRDGD | Basic rate interface |
| BREVC | Basic rate interface transmission extension (5ESS) |
| BRG | Break |
| BRI | Basic remote module |
| BRITE | Bell communications research practice |
| BRK | Bridge signature table |
| BRM | Backspace |
| BRM | Banded signaling |
| BRST | Bias battery (-19.1v) |
| BS | Siren control INTER/TRA blocal 1-26 |
| BS | Basic serving arrangements |
| BS | Busy season busy hour |
| BS | Business service center |
| BSA | Business/residence service center |
| BSBH | Bisynchronous communications module |
| BSC | SDLC B reset |
| BSC/RSC | Basic service elements |
| BSCM | Bell shock force |
| BSDPE | British standards institution |
| BSE | Backward sequence number (SS7) |
| BSF | Bell systems operating company |
| BSI | Bell system practice |
| BSN | Basic standard reference frequency |
| BSOC | Bell system reference frequency standard |
| BSP | Basic services terminal |
| BSRF | Bell system technical journal |
| BSRFS | British telecom |
| BST | Basic telecommunications access message |
| BSTJ | Both |
| BT | Bell telephone laboratories |
| BTAM | Billing telephone number |
| BTH | Bootstrapper board |
| BTL | British thermal unit |
| BTN | System buffers (NTI) |
| BTSR | Billing validation application |
| BTU | Billing verification and authorization for payment process |
| BUFF | Billing validation center |
| BVA | Basic voice service |
| BVAPP | Broadcast warning message |
| BVC | Broadcast warning twx |
| BVS | Bandwidth test set |
| BWM | Display the bypass file |
| BWT | Change the contents of the bypass file |
| BWTS | Commercial-automatic call distributor (OSPS) |
| BYF | C-notch |
| BYP | Counting rate |

***Testing testing testing...***
***testing one...two....three...***
***CAN ANYONE READ THIS?***
***SEND ARTICLES, PHOTOGRAPHS & ARTWORK to:***
***The Hackers Underground Digest***
***P.O. Box 2521, Cypress, CA 90630***

# PIRATE RADIO RESOURCES

*by Oxygene*

Here's a list of web sites dealing with pirate radio, ham, amateur, manufacturers, suppliers, resources and anything else that has to do with pirate radio. Enjoy.

ftp://dg-rtp.dg.com/fm10
FM-10 FTP Site
ftp://ftp.uni-paderborn.de/FAQ/alt.radio.pirate/Low_Power_Broadcasting_FAQ
Low Power Broadcasting FAQ
ftp://netacsys.com/pub/micro_radio
Micro Radio FTP Site
http://206.130.20.3:80/~glen/
Glen's Pirate Radio Site.
http://burn.ucsd.edu/~blr/
Black Liberation Radio!
http://clandjop.com/~jcruzan/frn.html
The Free Radio Network Info, pictures & audio clips.
http://comm-data.com
Communications Data Services, Inc - Broadcast & Communications Software & Data Supplier.
http://cust.iamerica.net/dwhowell/wavemach.html
Wavemach Communications - transmitters, amps, etc.
http://cust.iamerica.net/dwhowell/omnij.htm
Antennas for pirates by John Lentz.
http://deepthought.armory.com/~airbrick/frsc.html
Aaron's Free Radio Santa Cruz Page!
http://elektron.et.tudelft.nl/~stern/pulsar/scheme.htm
Diagrams etc for BA1404 transmitters, Linears and other stuff. Dutch FM transmitter schematics on-line.
http://gwis2.circ.gwu.edu/~gringo/
Clandestine Radio International.
http://home.pi.net/~freak55/home.html
FRSH Radio, Netherlands A Dutch pirate station.
http://home.pi.net/~trans/HOME.HTM
Harry's pirate radio web site. Transatlantic radio Europirates.
http://home.pi.net/users/~freak55/home.html
Joop Ter Zee: Free Radio New from the Netherlands.
http://homes.cls.net/~msievers/pirate/pirate.htm
Martin's Pirate Site in Kiel Germany.
http://http://tide1.eventide.com/
Eventide - Audio Processors.
http://indigo.ie/~cruze
Anoraks Anonymous: interesting FM band pirate radio news.
http://involved.com/ewolfe/index2.htm
Burton James of 102.1 FM Pirate & Patriot government conspiracy page 2.
http://l0pht.com/~hotrod/frb.txt
Radio Free Berkeley
http://mcradio.com
McCurdy - Hard Disk Audio, Metering and Audio Monitoring.
http://members.aol.com/abffffr/index.htm
Pirate address list, infos, DJs etc. Achim's Free Radio Disaster.
http://members.aol.com/wattsupmpr
Los Angeles Free Radio Conference 6/97. WATTS UP! - a pirate magazine.
http://members.aol.com/yaesutom
Tom's Pirate Page.
http://members.cruzio.com/~frsc/frscpage
Free Radio Santa Cruz!!
http://members.cruzio.com/~rogue/
Micro Radio, a history & a case study of Free Radio Berkeley.
http://members.tripod.com/~wlmd
A pirate radio station in Pittsburgh, PA. WMLD Radio Pittsburgh , PA with 50 watts on 99.1 FM.
http://metro.metro.mu.edu/WTPS/
WTPS PIRATE RADIO.
http://news.zippo.com/news-bin/wwwnews?alt.radio.pirate
alt.radio.pirate via www news.
http://nighthawk.reichel.net/patriot/dawn/
Burton James of 102.1 FM Pirate & Patriot government conspiracy pages!
http://ourworld.compuserve.com/homepages/SLewis2/
Stephen Lewis's Pirate Radio Page.
http://ourworld.compuserve.com/homepages/sosoft
SOSOFT - ISDN Remote Talkback & Control Software.
http://ourworld.compuserve.com/homepages/telstar901
Telstar Radio FRCG.
http://pages.prodigy.com/RFAmerica
NLNR 102.1 FM American micro-broadcaster.
http://pine.shu.ac.uk/~sejones/pirates/
Latest UK & London pirate radio listings. List of all the latest pirate radio in London.
http://pirateradio.miningco.com/
Pirate Radio at The Mining Company
http://radiolink.net/kissfm
Kiss 101.9 FM in Valdosta Georgia.
http://users.aol.com/amn92/
AM - FM Broadcasting Technology information, circuits with RealAudio.
http://users.aol.com/amn92/amn.htm
Free Radio site from Connecticut with plans etc. Micropower broadcasting movement. Mark's micropower broadcasting movement page. Micropower Broadcasting Movement.
http://users.aol.com/amn92/radio.htm
Amplifiers for Pirate Radio. AND Freedom of the airwaves!
http://users.aol.com/hldalis2/HOMEPAGE/home.html
H L Dalis - Parts and Equipment Supplier.
http://users.aol.com/Net1fm/index.htm
MORE Pirate Radio kits.
http://vanbc.wimsey.com/rkozinuk/manual.html
Pirate radio Web pages!
http://w3.one.net/~folk/frw.htm
FREE RADIO WEEKLY on-line magazine.
http://world.std.com/~maddawg/optimark.html
Optimark - Fiber Optic Components & Transmission Systems.
http://www-pp.hogia.net/jonny/pc/
PIRATE MAGAZINE costs $$$. Stephan Printz's Swedish Pirate Site.
http://www-pp.kdt.net/jonny/index.html
A U.K. Pirate Web SIte. SRS (The Swedish Report Service) European Pirate DX-ers Extensive logs (The Best European Pirate Radio Site!!).
http://www.0171.com
Stuart Kidd's REAL AUDIO "Pirate Station" on the WEB live broadcasts WED & THU evenings from London.
http://www.4zzzfm.org.au/
AUSTRALIAN PIRATE RADIO SITE.
http://www.abekas.com/
Abekas - Furniture and equipment.
http://www.abg.com/
Audio Broadcast Group - Broadcast Equipment Supplier.
http://www.access.digex.net/~cps/
Chris Smolinski's SW/Pirate/numbers Radio info page!
http://www.access.digex.net/~cps/pirate.html
Free Radio Stations Pirate INFO.
http://www.aceinfo.com/bbh/info
BBH Software - Specializes in Media Addresses and Databases.
http://www.adc.com
A D C - ADC Telecommunications - More than Patch Bays.
http://www.adtnet.com/
A/D Technologies, Inc. - Technical Services & RF Systems.
http://www.airwaves.com/fccdb.html
Pirate radio Web pages!
http://www.alpcom.it/hamradio/freewaves
Italian pirate radio freewave.
http://www.ams-neve.com
Seimans Audio - Audio Equipment.
http://www.andrew.com
Andrew Corporation - Coax, Antennas & Accessories.
http://www.angelfire.com/ma/wmbg/wmbg.html
WMBG
http://www.azstarnet.com/~dwahl
The Virtual Pirate Band TRY IT!
http://www.azstarnet.com/~dwahl/index.html
Various Pirate stations: Laryngitis, Confusion etc.
http://www.beatworld.com
Pirate station in Minneapolis.
http://www.broadcast-warehouse.com
Broadcast Warehouse Fm transmitters and products.
http://www.broadcast.harris.com
Harris/Allied Broadcast Division - Equipment Manufacturer.
http://www.broadcast.net
Broadcast.Net (BNet) - Shopping Mall of Broadcast Equipment.
http://www.broadcast.net/bsc/onestep.html
One-Step - Coaxial Cable Leak Repair.
http://www.broadcast.net/jampro/
Jampro Antennas - FM and TV Antennas.
http://www.broadcast.net/logitek/
Logitek Systems, Inc. - Digital Audio Meters, Amplifiers & consoles
http://www.broadcast.net/orban
Orban - Audio Processing.
http://www.broadcast.net/phasetek/
Phasetek - AM Phasors and Antenna Systems Components.
http://www.bssaudio.co.uk
BSS Audio - Pro Audio Signal Processing & Distribution Equipment.
http://www.ccaelectronics.com
CCA Electronics Broadcast Transmitter manufacturer.
http://www.chubs.demon.co.uk
Radio World. Radio World - A British radio related page
http://www.clandjop.com/~jcruzan/greek-p.html
J. Cruzan mirror for greek pirate radio.
http://www.comrex.com/
Comrex - Equipment Manufacturer.
http://www.cornnet.nl/~freestyle
Freestyle FM (pirate radio from Delft, Holland).

http://www.cris.com/~squest/alt-tv-pirate/index.html
Pirate Radio Newsgroup archives.
http://www.crlsystems.com
Circuit Research Labs - Audio Processing, RBDS.
http://www.csos.orst.edu/~kenneke/rfccat.html
RF Consulting Catalog
http://www.cybertron.com/~comcents/mhr/mhrgr/515.jpg
Transmitter Plans on-line.
http://www.decade.ca
The Decade Company A new Canadian company that sells, very expensive FM transmitters(starting at $900). Cool Site though!!
http://www.digiface.nl/~smc/
Stichting Media Communicatie.
http://www.directnet.com/~vasgroup
V.A.S. Group - Scan Converters - Animation Controllers.
http://www.dma.be/p/amphion/sztuka/marabu.html
Radio Marabu.
http://www.dolby.com
Dolby Labs - Dolby Equipment Web Site.
http://www.dungeon.com/~start/rds.html
Radio Data Systems (RDS) - RBDS Equipment Supplier.
http://www.durhamradio.ca/ramsey.html
Durham Radio Sales & Service Low power FM Transmitters! Canada's largest Ramsey Dealer!
http://www.ecn.bgu.edu/users/bsngd/fmradio.html
Low Power FM Broadcasting
http://www.ECNet.Net/users/bsngd/fmradio.html
This is a low power broadcasting page with some pictures, part lists and other helpful items.
http://www.ecsintl.com/ecs
Energy Control Systems - Power Quality Equipment.
http://www.edx.com
E D X Engineering - Broadcast Engineering Software Demos & Databases.
http://www.electrotex.com
Electrotex - SBE Internet Provider/Electronic Parts Supplier.
http://www.euphonix.com
Euphonix - Audio Mixing Consoles.
http://www.exactweb.com/RSMI
RADIO SAN MARINO INTERNATIONAL.
http://www.exit109.com/~jimh/radio.shtml
Jim's Radio Room - Tubes & hi-power BC transmitting LARGE graphics
http://www.ezlink.com/~mec/pirateradio/
The #PirateRadio home page, the Pirate Radio IRC channel.
http://www.faqs.org/faqs/radio/broadcasting/low-power-faq/
Another Low Power Broadcasting FAQ Page.
http://www.fcc.gov/mmb/asd/lowpwr.html
FCC Information about low power radio.
http://www.fni.com/~rice/bi/bi.html
Broadcast Systems - Broadcast Equipment Distributor.
http://www.freeradio.org
FREE RADIO pirate radio site. The Free Radio Berkeley Home Page.
http://www.freespeech.org/html/free_radio_berkeley.html
The Free Radio Berkeley page at Free Speech TV.
http://www.freezywater.u-net.com
DUNCAN's: Audio from Londons stations of the past, Radio Caroline etc. photos too!
http://www.frn.net
Free Radio Network. SW Pirate radio audio, info & chat! An incredible wealth of information. Check it out!
http://www.frn.net/ace/
ACE Clandestine Radio site.
http://www.frn.net/grapevine/chat2/chat.html
Pirate Chat Room - Real time chats, give it a try.
http://www.frn.net/rfi
Andrew Yoder's RADIO FREE INTERNET.
http://www.fused.com/www/xbones.html
The Modern Day 1990s London Pirate FM scene.
http://www.geocities.com/~garfield25/pirate.html
INFO from Radio World magazine!
http://www.geocities.com/Athens/5383/lowpower.html
Low Power Broadcasting FAQ Page.
http://www.geocities.com/Broadway/1122/
-=Channel 61=- The best of pirate radio and TV.
http://www.geocities.com/CapeCanaveral/2594/geo-pir.html
Martin's pirate radio address list. etc.
http://www.geocities.com/capecanaveral/6702
John Harper's FM Free Radio site. John Harper's Pirate FM radio site.
http://www.geocities.com/CapeCanaveral/9885/
KIWI Radio New Zealand's most prolific pirate station
http://www.geocities.com/CapitolHill/Lobby/2395/
The Pirate Monitor - great page.
http://www.geocities.com/heartland/hills/3764
FCC Enforcement comments. NLNR 101.9 MHz FM in Seattle, WA.
http://www.geocities.com/Hollywood/Hills/8244
KISS 102FM in Georgia
http://www.geocities.com/ResearchTriangle/Lab/1635/equip.html
AM transmitter schematics for 550-1700 kHz band!
http://www.geocities.com/SunsetStrip/Palms/3840/icon_corn.gif
FRHC - Free Radio Hell's Canyon
http://www.GeoCities.com/SunsetStrip/Palms/9377
KPRT Pirate Radio.
http://www.geocities.com/WestHollywood/6507/pirate.html
John Benjamin's Pirate Radio news.
http://www.glowbug.com/edge/edge.html
The Edge - 91.9 FM in Kansas
http://www.guernsey.net/~bebridel/
Pirate Radio of the Offshore Kind.
http://www.halcyon.com/rbds
Smart Radio Store - RBDS Receiving Equipment. Smart Radio Store - RBDS Receiving Equipment.
http://www.halls.com
Hall Electronics - Digital, Pro Audio & RF Equipment.
http://www.hauraki.xtra.co.nz
The Amazing History of Pirate Radio in New Zealand!
http://www.hookup.com/bdst.html
Carpenter & Associates - Broadcast Equipment Leasing.
http://www.hp.com
Hewlett - Packard - Manufacturer.
http://www.i-way.co.uk/~stunova/kickfm.htm
KICK-FM Radio Station.
http://www.imagevideo.com
Image Video - Manufacturer of Routing Switchers & Master Control Switchers.
http://www.imaginet/~rwaves/index.htm
RADIO WAVES INTERNATIONAL new updated URL.
http://www.infi.net/~jlridge
Audio Concepts and Engineering - Technical Broadcast Consulting.
http://www.internet-ireland.ie/xfm/
Xfm, Pirate radio in Dublin Ireland.
http://www.intertype.co.uk/design/talk
PIRATE RADIO DESIGN? not sure!
http://www.io.org/~dixon
Dixon Systems - Manufacturer & Services Supplier.
http://www.itc-net.com
International Tapetronics - International Tapetronics Corporation (ITC).
http://www.jagunet.com/~kodis/station.html
Broadcast Station Locator.
http://www.jvc-us.com
J V C - Commercial Video Products.
http://www.kcuf.org/radio/
KCUF Extreme Death Metal (oh well...).
http://www.kfjc.org
Psych Rock info page!!
http://www.kode.net/meret
Meret/Dynair - Optical Transmission Products.
http://www.ldbrewer.com
L.D. Brewer's Pirate pages.
http://www.ldbrewer.com/pirate.html
Pirate xmtr kits. Tampa Pirate Radio, 102.1 FM. This Guy Rules!
http://www.legend.co.uk/~veronica/
VERONICA FM transmitter kits 5 watts of pirate delight!
http://www.leitch.com
Leitch - Equipment Manufacturer.
http://www.lls.se/~jal/
The Swedish Report Service. This page contains QSL info, pirate links, sounds and other fabulous items that must be seen to be believed.
http://www.lls.se/jal/pc
Pirate Connection Magazine.
http://www.mediadesign.net
Kind Micro Radio, with Internet Audio feed.
http://www.mediadesign.net/kindmenu.htm
Micro Kind Radio 105.9 FM San Marcos, TX They've got a constant netcast going on!!!
http://www.mgnonline.com
MGN Online - Media Graphics & Photo Database.
http://www.mnet.fr/onda.caliente/
Onda Caliente A shortwave pirate station from France that transmitts on Sunday mornings. Onda Caliente Home page of a French SW Pirate
http://www.mnsinc.com/bry//ham/fm15watt.htm
A practical 15 watt FM amplifier you can build (for VHF-FM broadcast or the 144 MHz ham band).
http://www.mnsinc.com/bry/mega/xtals.htm
Suppliers of crystals for your (Medium Wave) AM band transmitter.
http://www.mnsinc.com/bry/mine/fcc_care.txt
Does the FCC still care? Some comments! (works now!!)
http://www.mnsinc.com/bry/mine/pirate.fun
A 14 year-old has fun with Free Radio!
http://www.mnsinc.com/bry/piralynx.htm
Bry's Pirate Radio Links - A huge selection of links Pirate Radio Linkss, quite a few links to quite a few sites.
http://www.mnsinc.com/bry/radio/1pirate.txt
A history of U.K. Pirate Radio.
http://www.mnsinc.com/bry/radio/2pirate.txt
The history of a U.K. Pirate Radio D.J.
http://www.mnsinc.com/bry/radio/arc5.txt
INFO about ARC5 SW transmitters from WW2 which can be converted for Pirate AM (NOT for beginners!)
http://www.mnsinc.com/bry/radio/pirat2.txt
Is it Legal? Will I get caught? The FCC and Pirates!
http://www.mnsinc.com/bry/radio/pirate.txt
MY FREE RADIO FAQ my copy available here!
http://www.mnsinc.com/bry/xtalpage.htm
Buy and sell crystals for your (Medium Wave) AM band transmitter.
http://www.mole.com
Mole/Richardson - Lighting, Grip & Camera Supplies.
http://www.monitor.net/~mycal/mpr/default.html
Mycal's Micro Radio Page excellent: starting your own FM Pirate Radio station.
http://www.nashville.com/~monte.carroll/mbc.html
Monte Carroll: Nashville, TN pirate radio fan.

http://www.netcom.com/~adscapes/new.html
Pirate radio Web pages!
http://www.netwrx.net/bsi
Broadcast Software International - Digital Studio and Other Broadcast Related Software.
http://www.northcountryradio.com
Pirate supplies from North Country.
http://www.npsnet.com/leblanc/
LeBlanc - Supplier.
http://www.omen.com
Radio Free Moscow
http://www.panasonic.com
Panasonic - Products Division.
http://www.paranoia.com/~filipg
Latest update to the FREE RADIO FAQ, IF he is still doing it!
http://www.paranoia.com/~filipg/HTML/LINK/F_FM10.html
Ramsey FM10FAQ
http://www.paranoia.com/~filipg/HTML/LINK/F_FM10_more.html
A great guide to transmitter kits. FAQ: Low Power FM Broadcast transmitters. Low Power Transmitter Kit Sources FAQ
http://www.phlat.com/bk.shtml
P0RTAL63 - Coming Soon: FM and SW transmitter Schematics.
http://www.pi.net/~freak55/home.html
Pirates & more! PIRATE RADIO is alive!
http://www.powergold.com
Powergold - Music Scheduling Software.
http://www.pp.hogia.net/jonny/fr/kiwi.html
History of KIWI Radio
http://www.pp.hogia.net/jonny/index.html
SRS The Swedish Report Service
http://www.proaudio.com/
Crouse-Kimzey Company - Equipment Supplier.
http://www.radio-online.com/radioearth
AIRWARE - Showprep Software From Corey Deitz.
http://www.radio101.de/radio101/index-e.html
RADIO 101 - a cool Euro-pirate rock station on 27 MHz Shortwave.
http://www.radio4all.org
Radio 4All This one's packed with the latest info and a wonderous collection of links.
http://www.radio510.org
RADIO 510 International, from Europe.
http://www.radioresources.com
Steve Scarborough's Radio Resources, Baltimore, MD Go to "preowned showroom"
http://www.rain.org/~dschmidt/
D. Schmidt (FM pirate gear) Seller of transmitters etc.
http://www.ramseyelectronics.com
Ramsey Home Page Ramsey Electronics AA-25 transmitter for AM Broadcasting.
http://www.rdrop.com/users/billmc/khog/khog.html
KHOGBiography
http://www.reelradio.com/
Real Audio On-air samples of old TOP40 DeeJays!
http://www.rell.com
Richardson Electronics - Tubes and Semiconductors.
http://www.rfspec.com/
R F Specialties - Broadcast Equipment Supplier.
http://www.rfspec.com/crl/mbl100.htm
Sales page with info about AM BC transmitters.
http://www.rootsworld.com/rw/feature/rrb.html
FREE RADIO PRESS: An AWESOME site w/TONS of info!
http://www.rule.com
Rule Broadcast Systems, Inc. - Equipment Rental.
http://www.speedline.ca/~glen/
Glen's Pirate Radio Site. Glen's Pirate Radio Site.
http://www.summitmedia.com/hitech/
Hi-Tech Enterprises, Inc - Dealers of used/new broadcast video eqpt.
http://www.surf.com/~graham/
Legal Briefs filed in the Stephen Dunifer "Pirate" case.
http://www.svetlana.com
Svetlana - Tubes.
http://www.swt.edu/SunsetStrip/Lounge/8311
The Dissent Show.
http://www.tek.com
Tektronix - Product Information.
http://www.teleport.com/~mmarcus/AMINFO/AM_Info.html
A less expensive route to AM transmitting!
http://www.teleport.com/~mmarcus/crrsw.html
Columbia River Radio Shortwave - 13560 kHz (22 Meter Band).
http://www.theoffice.net/barbier
Reinier de Barbier's FREE-RADIO-FADING site (Dutch FM pirate w/ photos).
http://www.threethirtysix.org/pirate/
Media Pirate's Network Media Pirates Network. The Media Pirates Network!
http://www.thud.org/mutiny.htm
Radio Mutiny in Philadelphia.
http://www.tiac.net/users/jcrose/zeplist.html
Zephyr - Audio Codec Manufacturer.
http://www.tip.nl/users/henk.leppers/
Henk Leppers Pirate Mediapage.
http://www.toshiba.com
Toshiba - Equipment Manufacturer.
http://www.tucker.com/
Tucker Electronics - New and Used Test Equipment.
http://www.tv36.com/buffalo.html
Radio Newyawk International defunct pirate station. Real Audio clips soon. Radio Newyork International Famous offshore station. Not much here, but promises Real audio clips in the future.
http://www.users.dircon.co.uk/~tomgrady/
Tom Grady, G6IGA's Ham Radio, Scanning & pirate site.
http://www.v-soft.com
V-Soft Communications - Doug Vernier AM/FM/TV Engineering Software.
http://www.vcnet.com/qvi/omi.html
Omnicron Video - Audio/Video Duplication Accessories.
http://www.vtpinc.com
Videotape Products, Inc. - Broadcast & Ind. Video Equipment Dealer.
http://www.webcom.com/~ljvideo
LJ Video Engineering - Equipment Rental & Services.
http://www.wenzel.com
Wenzel Co. Crystal Oscillators & RF modules.
http://www.worldonline.nl/~doublez
A Dutch Pirate station with great links.
http://www1.tip.nl/users/t668302/index.html
Radio Free Holland Popular European SW pirate station) cool homepage.
http://zephyr.com
TELOS Systems - ISDN & Telephone interfacing equipment.
mailto:sales@belar.com
Belar Electronics Laboratory - Send Mail to Belar - Monitoring Equipment.
news:alt.radio.pirate
alt.radio.pirate Newsgroup. alt.radio.pirate. You've got questions, they've got opinions.


BLOWOUT PRICES!

We've been selling the 6.500MHz crystals for several years now!

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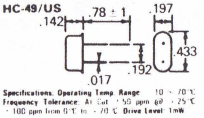
ECS QUARTZ CRYSTALS

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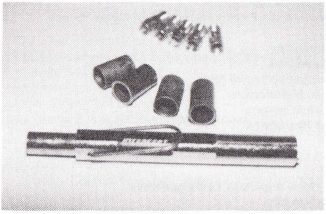
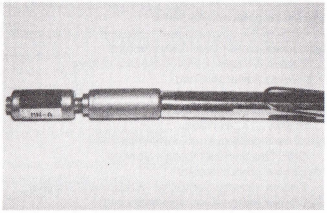
*If you need it, CALL US TODAY!*

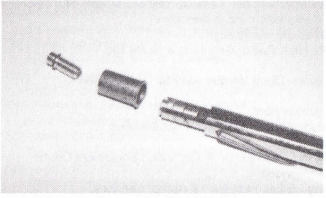
# Neato Stuph

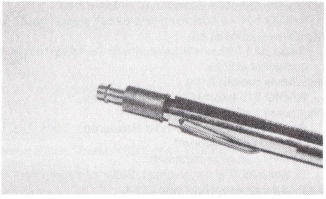
## THAT YOU MAY FIND USEFUL

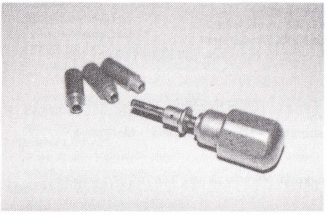




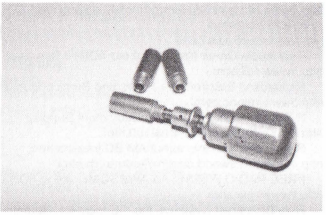
On this page are pictures of a few tools and other things we think you may find useful. Above, to the right and left of this text you see a total of 5 pictures. The security sleeve tool is used by the cable company to tighten down 75 ohm F-connectors (and the trap filters) fitted with special "sleeves" that you cannot remove using normal wrenches or pliers.

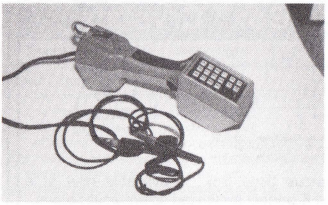




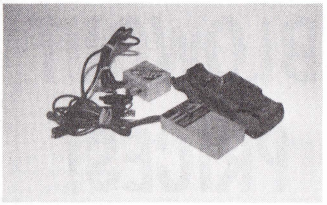


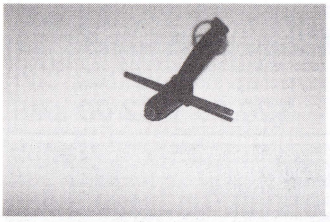
To the left and right of this text you will find the Gilbert tool pictured. The Gilbert tool is a special security tool used to terminate unused ports along the cable line so people cannot simply "plug in" and get free cable. Note how the tool works.



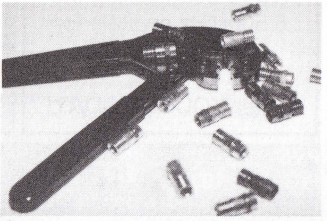


To the left, we have a Harris TS-22 linemans test set pictured. It's also known as a beige box, more or less. Pictured on the right, we have two Progressive Electronics tone generators - the 77M (smaller unit) and the 100A (the larger unit)





Pictured on the left is what cable TV field techs are equipped with. It's called a "Star Key" tool. This is the sucker that opens up the boxes mounted on the walls (if a padlock is not in use). On the right is a crimper with cable TV type F connectors.



# Cool Book List

**Computer Security Basics**
Author: Deborah Russell and G.T. Gengemi Sr.
Publisher: O'Reilly & Associates, Inc.
Copyright Date: 1991
ISBN: 0-937175-71-4

This is an excellent book. It gives a broad overview of computer security without sacrificing detail. A must read for the beginning security expert.

**Computer Security Management**
Author: Karen Forcht
Publisher: Boyd and Fraser
Copyright Date: 1994
ISBN: 0-87835-881-1

**Information Systems Security**
Author: Philip Fites and Martin Kratz
Publisher: Van Nostrad Reinhold
Copyright Date: 1993
ISBN: 0-442-00180-0

**Practical Unix Security**
Author: Simson Garfinkel and Gene Spafford
Publisher: O'Reilly & Associates, Inc.
Copyright Date: 1991
ISBN: 0-937175-72-2

Finally someone with a very firm grasp of Unix system security gets down to writing a book on the subject. Buy this book. Read this book.

**Firewalls and Internet Security**
Author: William Cheswick and Steven Bellovin
Publisher: Addison Wesley
Copyright Date: 1994
ISBN: 0-201-63357-4

**Unix System Security**
Author: Rik Farrow
Publisher: Addison Wesley
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ISBN: 0-201-57030-0

**Unix Security: A Practical Tutorial**
Author: N. Derek Arnold
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Author: David A. Curry
Publisher: Addison-Wesley
Copyright Date: 1992
ISBN: 0-201-56327-4

**Unix System Security**
Author: Patrick H. Wood and Stephen G. Kochan
Publisher: Hayden Books
Copyright Date: 1985
ISBN: 0-672-48494-3

**Network Security Secrets**
Author: David J. Stang and Sylvia Moon
Publisher: IDG Books
Copyright Date: 1993
ISBN: 1-56884-021-7

Not a total waste of paper, but definitely not worth the $49.95 purchase price. The book is a rehash of previously published information. The only secret we learn from reading the book is that Sylvia Moon is a younger woman madly in love with the older David Stang.

**Complete Lan Security and Control**
Author: Peter Davis
Publisher: Windcrest / McGraw Hill
Copyright Date: 1994
ISBN: 0-8306-4548-9 and 0-8306-4549-7

**Network Security**
Author: Steven Shaffer and Alan Simon
Publisher: AP Professional
Copyright Date: 1994
ISBN: 0-12-638010-4

**Applied Cryptography: Protocols, Algorithms, and Source Code in C**
Author: Bruce Schneier
Publisher: John Wiley & Sons
Copyright Date: 1994
ISBN: 0-471-59756-2

Bruce Schneier's book replaces all other texts on cryptography. If you are interested in cryptography, this is a must read. This may be the first and last book on cryptography you may ever need to buy.

**Cryptography and Data Security**
Author: Dorothy Denning
Publisher: Addison-Wesley Publishing Co.
Copyright Date: 1982
ISBN: 0-201-10150-5

**The Little Black Book of Computer Viruses**
Author: Mark Ludwig
Publisher: American Eagle Publications
Copyright Date: 1990
ISBN: 0-929408-02-0

The original, and still the best, book on computer viruses. No media hype here, just good clean technical information.

**Computer Viruses, Artificial Life and Evolution**
Author: Mark Ludwig
Publisher: American Eagle Publications
Copyright Date: 1993
ISBN: 0-929408-07-1

**Computer Viruses, Worms, Data Diddlers, Killer Programs, and Other Threats to Your System**
Author: John McAfee and Colin Haynes
Publisher: St. Martin's Press
Copyright Date: 1989
ISBN: 0-312-03064-9 and 0-312-02889-X

**The Hacker Crackdown: Law and Disorder on the Electronic Frontier**
Author: Bruce Sterling
Publisher: Bantam Books
Copyright Date: 1982
ISBN: 0-553-56370-X

Bruce Sterling has recently released the book FREE to the net. The book is much easier to read in print form, and the paperback is only $5.99. Either way you read it, you will be glad you did. Mr. Sterling is an excellent science fiction author and has brought his talent with words to bear on the hacking culture. A very enjoyable reading experience.

**Cyberpunk**
Author: Katie Hafner and John Markoff
Publisher: Simon and Schuster
Copyright Date: 1991
ISBN: 0-671-77879-X

**The Cuckoo's Egg**
Author: Cliff Stoll
Publisher: Simon and Schuster
Copyright Date: 1989
ISBN: 0-671-72688-9

**Hackers: Heroes of the Computer Revolution**
Author: Steven Levy
Publisher: Doubleday
Copyright Date: 1984
ISBN: 0-440-13495-6

**Secrets of a Super Hacker**
Author: The Knightmare
Publisher: Loompanics
Copyright Date: 1994
ISBN: 1-55950-106-5

The Knightmare is no super hacker. There is little or no real information in this book. The Knightmare gives useful advice like telling you not to dress up before going trashing. The Knightmare's best hack is fooling Loompanics into publishing this garbage.

**The Day The Phones Stopped**
Author: Leonard Lee
Publisher: Primus / Donald I Fine, Inc.
Copyright Date: 1992
ISBN: 1-55611-286-6

Total garbage. Paranoid delusions of a lunatic. Less factual data that an average issue of the Enquirer.

**Information Warfare**
Author: Winn Swartau
Publisher: Thunder Mountain Press
Copyright Date: 1994
ISBN: 1-56025-080-1

# Driver Bits

Regular

Phillips

Hex

Security Hex

Torx

Security Torx

Scrulox/ Robertson

Security Scrulox

Internal Line Head

Security Line Head

External Line Head

Spline

Spanner

Spanner

Torq-set

Posidrive

**So, you have some piece of equipment you want to open up, but you have no idea what the hell that little fastener is? There are all sorts of oddball screws (screw balls?) out there and here's a sample of some of them.**

**Use the Regular and Phillips diagrams to get an idea of how the diagrams work for the rest of the screw/bit types you're unfamiliar with. The white part of each diagram is where the bit fits into the screw. The Black portion of the diagram is the base of the screw that the bit is surrounded by when the bit is inserted. It'll make sense after awhile.**

**Often, you will find Spanner screws used to hold wall plates in place at schools... primarily in bathrooms.**

**You will find Security Torx screws used in all the ST-1600 thru ST-2500 cable boxes.**

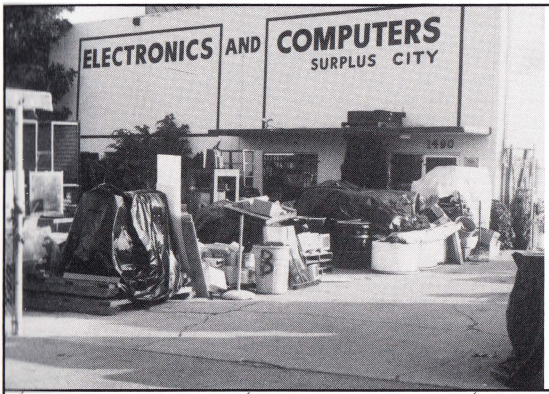
**External line head screws are really unusual. Or are they? Check out Super Nintendo, Nintendo 64, Gameboy, Pocket Gameboy, SNES Carts, N64 Carts, Gameboy Carts, Sega Genesis, etc, etc Mostly, if not entirely, Japanese made home video game systems.**

Tri-wing

**Do you want some of these? Do you need some of these? It'd be a good idea to stock up just to have them handy in case you do happen to need them some day. Find them at the following locations:**

*Jensen Tools, Inc.*
*(800)426-1194*
*http://www.jensentools.com*

*Parts Express*
*(800)338-0531*
*http://www.parts-express.com/*

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- ✓ Cases
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- ✓ Surplus equipment
- ✓ RAM
- ✓ EPROMs
- ✓ NOS (New Old Stock)
- ✓ Telephones
- ✓ Network equipment
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- ✓ Printers
- ✓ Hardware
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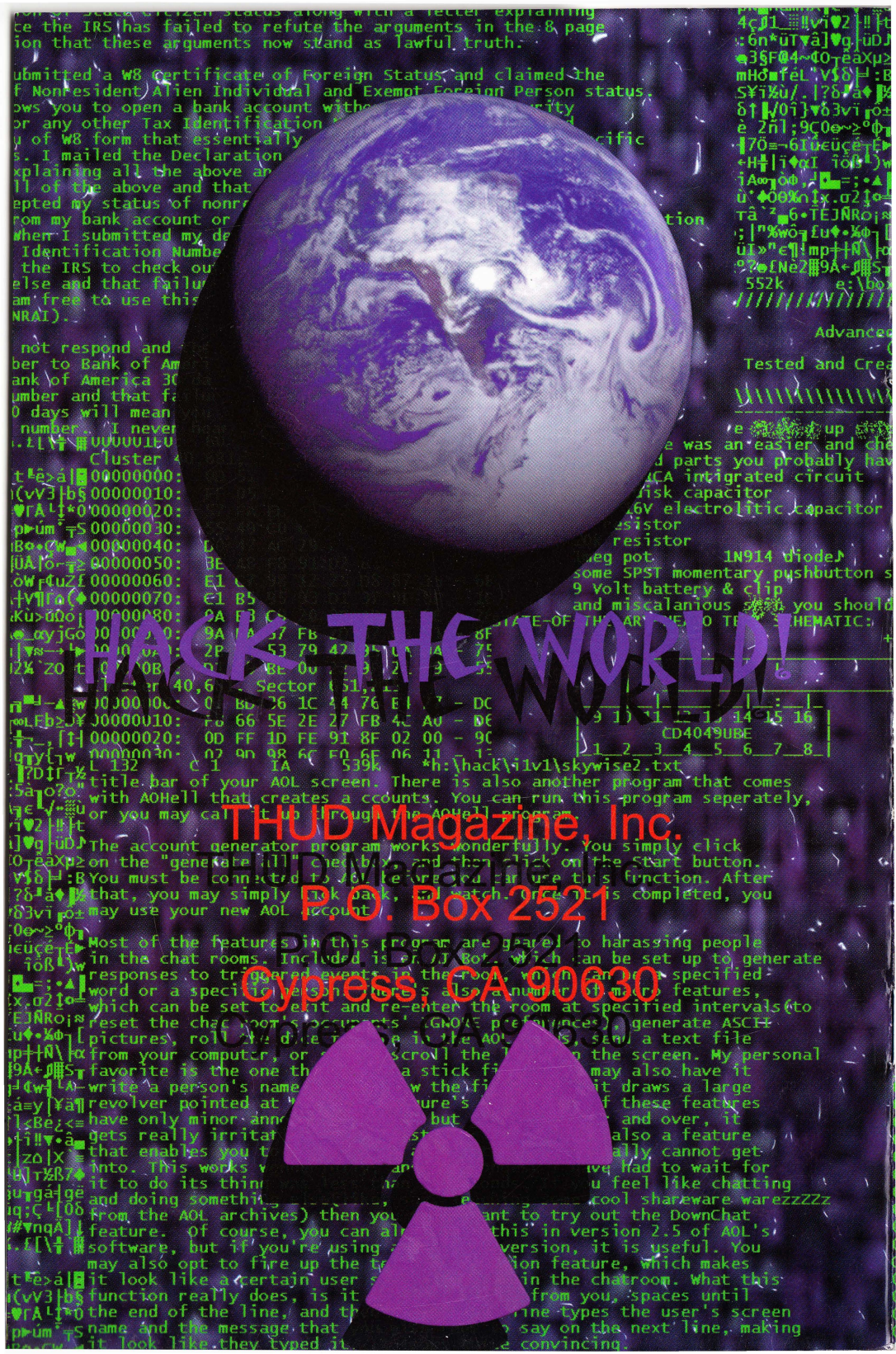
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