

Mmmm... Tentacles.

TECHNICAL TENTACLE INTELLIGENCE COMMUNICATIONS

ISSUE #6 - JANUARY, 2010

<http://www.iirg.net/ticomzine/>

Tom from New England (Ticom), editor
email: ticom@digivill.net

Once upon a time, there was this 'zine editor. He decided that after eighteen years of doing a semi-serious hacking and technological-survival newsletter, he wanted to do something whimsical and fun.

He soon learned that whimsical and fun is out these days. Especially among has-been drunktards who live on the public dole, haven't authored original material in at least five years, and simply copy other people's material onto their blog without giving proper credit or attribution. That is, when said loser isn't bad-mouthing other people's projects.

So anyway, here's the obligatory issue of The Barking Cephalopod, I mean Technical Tentacle Intelligence Communications, aka TICOM 'Zine. Shout-outs to the usual crew, and especially Lakota Hecate, Hyperdyne, Lostbaka, Rightcoast, Wildflower, and Zed. Yea, it's been a couple years since I've done a 'zine issue. I was writing a book: Musings of a Man In Black: Prometheus. The website is at <http://www.iirg.net/mib/>, and you should go download it. If you don't, you're wrong. Actually, you should go buy a copy to help support the author's efforts at researching, writing, and distributing dystonautical technological survival material that doesn't suck. I'd appreciate it.

Happy New Year, and enjoy the issue!

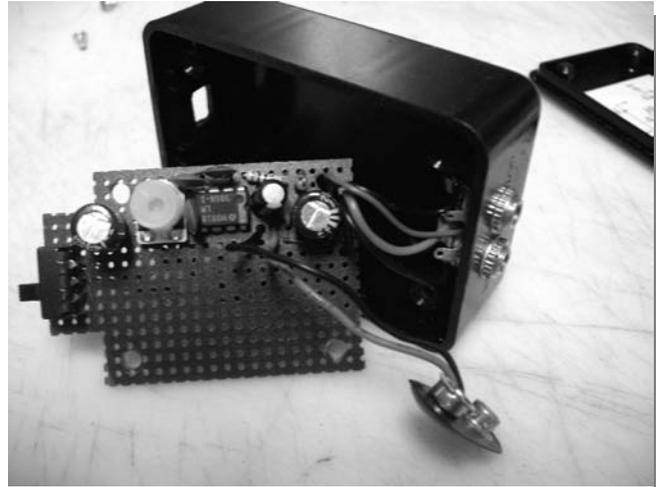
-Tom (Ticom)

Refurbishing the Radio Shack 61-2801 Portable Power Station

About six years ago, Radio Shack sold this very handy portable multi-voltage power station. It had 1 amp outputs for 1.5V, 3V, 4.5V, 6V, 9V and two 12 volt cigar jacks that would handle 10 amps between the two. It would charge off of any 13.8V-15V volt power source.

The internal battery pack on these power stations is now reaching the end of its lifespan, and "dead" power stations are appearing at tag sales and flea markets. These power stations can be given a new lease on life by replacing the internal battery pack. Upon disassembly, it was discovered that the internal battery pack is a stock, commonly available 12V 7AH gel-cell. These batteries have been a hobbyist and industry standby for many years. They are inexpensive and available from various sources.

All that is required is a small Phillips screwdriver. Remove the seven screws from the back of the unit. The two halves will separate. Pull the wire leads off the tabs on the old gel-cell. Replace with new gel-cell, making sure to observe the correct polarity of the leads. Reassemble the unit. Your power station is now good for a few more years of service. I have found the 61-2801 to be excellent for both field and bench service.



Audio Monitor

by Hyperdyne

This circuit will allow monitoring of paired audio signals without causing noise or significant voltage drop. It samples the audio and amplifies it using its own power. Clean connections and a fresh battery for a silent connection.

Parts:

LM386

capacitors: Ceramic .01mf (3). Electrolytic 10mf, 220mf (2). Tantalum .047mf

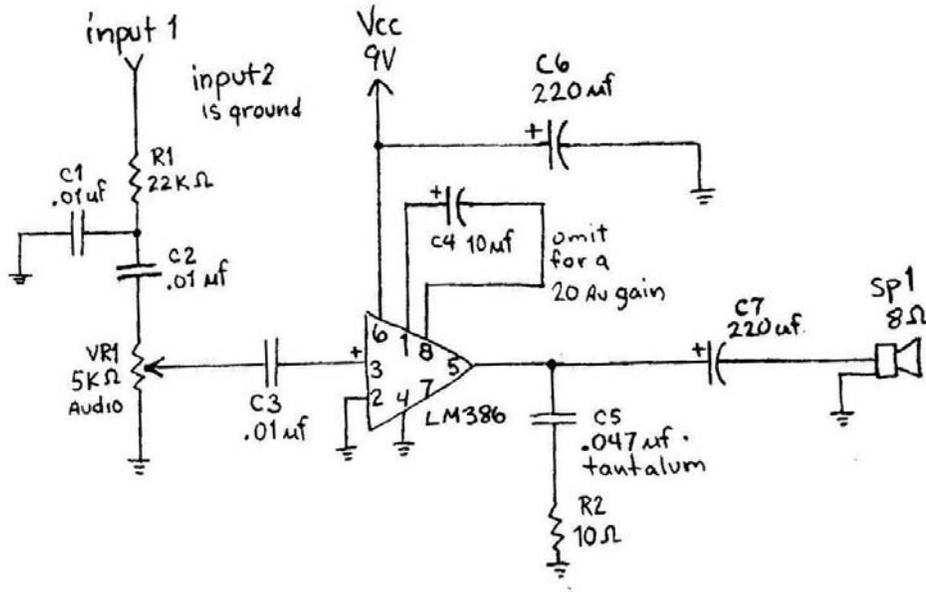
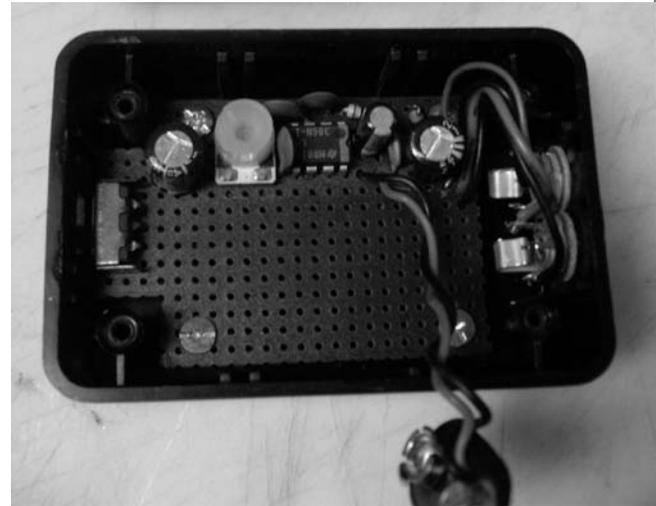
resistors: 22K ohm, 10 ohm, variable 5K ohm
RadioShack project enclosure #270-1801 3x2x1" \$2.29

perf board: 4x6 cm.

Two 1/8" mini audio jacks

SPST slide switch

Two small alligator clips





High Radio Weirdness

by Ticom (who else?)

I was Christmas shopping at the local Toys 'R Us a few days ago, and noticed a few things of interest to readers of this 'zine. One of my acid tests regarding interesting electronic ninjitsu is whether or not you can walk into a common consumer retail outlet and buy it anonymously for a fistful of Federal Reserve Notes. Let me qualify that. High-end test equipment and items such as wide-band communications receivers will necessitate finding a specialty shop if one is available in the region, or going the mail-order route. However, for the majority of your standard operational needs you should be getting used to shopping at common local sources. It's that simple.

A lot of low-end surveillance equipment is legally sold under the moniker "baby monitor". Using it to keep an eye or ear on junior in their bedroom is a perfectly legitimate application. Removing it from its case and concealing it in the bedroom of one's ex-spouse et al. is a different matter. Yet a lot of "spy shop" equipment is simply repackaged consumer electronics sold at a hefty markup. Keep that in mind.

A lot of used Part 15 consumer electronic devices eventually find their way to tag sales, flea markets, and Goodwill stores where it is sold for pennies on the dollar from its original price. This is a good source of experiment fodder for the technological enthusiast on a budget. Most of them in "non-working" condition simply have worn-out rechargeable batteries or a blown-up wall-wart transformer. Both of which are easily replaced.

Back in the 1980s, there were five frequencies that covered cordless phones, baby monitors, and license-free walkie-talkies. They were 49.83, 49.845, **49.86**, **49.875**, and 49.89 MHz. Most of the time you picked up an old tunable 30-50 MHz. VHF "public safety" receiver at a tag sale for a

few bucks. Bonus points if it was bought from a neighbor and had some pencil marks on the dial between 49.5 and 50 MHz. The high end of the low band was a cacophony of all that non-broadcast Part 15 radio could offer, and if people were too close together, reminiscent of the old telephone party line days.

These days, Part 15 has gone into the microwave region: 902 MHz., 2.4 GHz., and now up into 5.8 GHz. Video is very popular at 902 MHz. and 2.4 GHz. Spread-spectrum modes are used extensively, but you would be amazed just how much is still good old-fashioned analog FM.

Every technophreak should have a decent collection of assorted Part 15 emitters acquired on the cheap. They are excellent for testing and tweaking one's intercept set-up, especially when it comes to comparing different antenna systems. By experimenting to see just how far you can pick up such micro-power signals, you will have a good idea of system performance when you are going for the real deal in radio weirdness. Most of your Part 15 stuff is going to be either at 49 MHz. or 900 MHz. These two frequency ranges are completely different worlds when it comes to antennas, and don't expect something that works well for one frequency range to work well on another.

Looking It Up

Any "FCC Approved" RF device will have a FCCID number. This will tell you quite a bit about the device in question, including its frequency (bands) of operation. The information can be looked up on the Internet at <http://www.fcc.gov/oet/ea/fccid/>. This page is very handy when you find various pieces of Part 15 equipment during your wanderings.

The Technophreak's Guide to Radio Weirdness

One of the reasons for having a wide-band communications receiver is that RF weirdness can occur pretty much anywhere in the spectrum. You need as much DC-to-daylight capability as you can afford. Even so, there are some places in the ether where you are more likely to run into interesting stuff.

Freq. Range	NOTES
100 KHz. - 540 KHz.	Longwave. All sorts of interesting and weird stuff resides here.
1.5 - 1.8 MHz.	Top end of AM broadcast. Also very, very old cordless phones

Freq. Range	NOTES
	and other ancient "Part 15" devices.
3.87 - 3.89 MHz.	The "AM Window". Especially 3.88 and 3.885 MHz.
4.4 - 7.6 MHz.	Often used to send audio down AC power lines...
6.5 - 6.9 MHz.	Just below the 40 Meter ham band. Where a lot of the interesting traffic previously above 40 meters moved to.
7.3 - 7.5 MHz.	Just above the 40 Meter ham band. Historically a place for all sorts of pirate, clandestine, and other sorts of interesting radio traffic.
25 - 28 MHz.	Eleven meters. 'Nuff Said.
40 - 50 MHz.	Pay close attention to 49-50 MHz.
87 - 90 MHz.	The low end of the FM broadcast band. Borders TV Channel 6. A lot of "Part 15" stuff finds its way here.
107 - 109 MHz.	The high-end of FM broadcast band (88-108 MHz.), and the low-end of the aeronautical navigation band (108-118 MHz.). Used by "Part 15" devices, but not as often as 87-90 MHz.
138 - 144 MHz.	Military/Federal land mobile band. The 140-144 MHz. range is often used by individuals with modified 2 Meter ham gear.
148 - 152 MHz.	Military/Federal land mobile at 148-150.775 MHz. Low end of VHF-high land mobile band 150.775-152 MHz. MURS at 151.82, 151.88, and 151.94 MHz. Often used by individuals with modified 2 Meter ham gear.
169 - 174 MHz.	Wireless microphones at 169.445, 171.045, 169.505, 171.105, 170.245, 171.845, 170.305, and 171.905 MHz. Other weirdness is often found elsewhere in this range.
433 - 435 MHz.	Various short-range RF devices noted here.
902 - 928 MHz.	The 33cm band. Lots of interesting and weird stuff here: ham, Part 15, ISM.
2.4 - 2.5 GHz.	A popular Part 15, ISM, et al. band. Wifi and wireless cams.

Freq. Range	NOTES
5.725 - 5.875 GHz.	Expect stuff to migrate from 2.4 GHz. to here.

In addition to the above frequency ranges, I would also suggest going through an electronic parts catalog such as Mouser or Digi-Key and checking the frequencies they have listed for various crystals and oscillators. Due to ready availability, they are often used as the first building block for many a custom device. A particularly comprehensive list is available at <http://www.tscm.com/TSCM101bugfreq.html>.

I was talking with my friend "CJ" not too long ago, and he mentioned to me that it seems communications monitoring enthusiasts no longer search the spectrum looking for interesting stuff. They just go to a website, download a list of frequencies, program them into their scanner and that's it. I too shared this impression of the hobby, and surfing the usual scanner hobbyist web sites seemed to confirm this view. I mentioned it on my blog, and a few of you replied that yes, you still do spectrum searches.

Your correspondence is requested.

- I'm interested in hearing about what fellow monitoring enthusiasts are finding when they search through the RF spectrum, especially "weird stuff" and VHF low/mid-band (25-88 MHz.) skip.
- I'm also interested in pictures of interesting RF equipment to share with other readers, and (hopefully sanitized) pictures of your equipment/shack set-ups to help give beginners a better idea of how to set up their own stations.
- And of course any questions you have that are related to communications monitoring.

EMAIL: Please direct all email correspondence for this column to radiofreak@iirg.net.

Until next time, keep listening...

Companion Animal Corner

by Lakota Hecate

I don't generally agree with the maxim "Less is more" as, honestly, when is LESS money GOOD, less cake, less of a home, etc. However, when it comes to our furry four-legged friends, this is a very appropriate

mantra.

It all began in the early 90's when I began work as a veterinary technician for an "old school" veterinarian. Being the oldest vet in a three vet practice, he was the least popular with the other vets, and therefore the other techs. I was the newbie, and they put me in rotation with him to test me, not realizing that I like feral, wild people who are not afraid to get their hands dirty. In fact, in this particular business, the only vets worth their salt ARE the ones who get filthy!

Dr. M was feral - heavily into birdwatching, a die-hard vegan, and politically libertarian, he was very different from the democrat, liberal, money-hungry vets who held the majority of the practice. I fit in with him well - I was young, Native American, a college-gal, and I was willing to listen to him.

I learned a LOT from him. While the other vets (and techs) would wander from exam room to exam room looking for the right size muzzle, I learned how to make one ASAP and apply it to any angry animal without getting my fingers bitten off (roll gauze and technique). When tomcats came in riddled with the wounds of their amorous desires and the fact they didn't always win their kitty campaigns to go on fathering litters of kittens, I watched with amusement as the other vets and their techs prepared surgical suites, suited up for germ warfare, and attacked the felines with rubber tubing to "drain" the wounds...for in OUR little exam office we shaved off the fur over the wound, scrubbed it with isropol alcohol (or Betadine or hydrogen peroxide - whatever was handy), lanced it with a scalpel blade, applied a hot compress, "milked" the wound, slapped some topical BNP on it, and sent the pet home with an easy prescription: Hot compress (as hot as the animal would stand - maximum tap water hot) as often as possible, keep the area clean, put more BNP on it daily, and keep the animal well hydrated and well fed. In veterinary medicine less IS more!

With many people preparing for any eventuality, little has been mentioned about Fido, Fluffy, and Feathers as many people feel woefully ill-equipped to handle a veterinary emergency. They are so WRONG! With a little common-sense and some know-how many costly trips to the vet and the complications that can arise (veterinary medicine has MORE risks than HUMAN medicine! Veterinarians carry malpractice insurance).

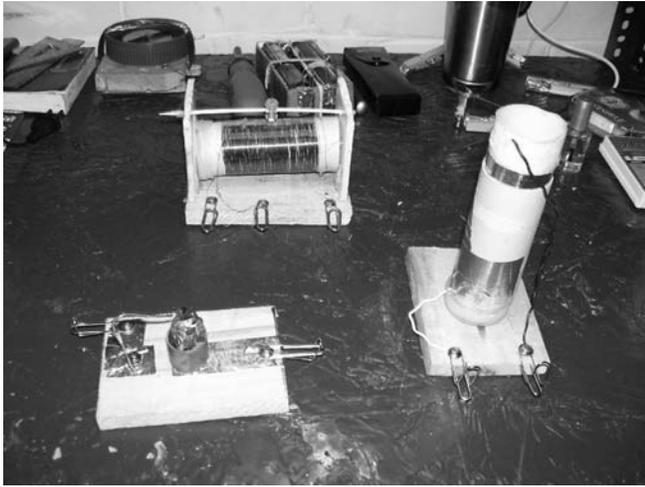
In this series I will examine some

common pet problems, and some solutions. I will write about what I know, but you should feel free to discuss anything with your veterinarian. I am NOT a licensed veterinarian, only a former tech who is Mom to a menagerie of cats and dogs, an ARBA registered breeder of rabbits, and who keeps a few fish tanks, a couple of parakeets, and a half dozen chickens around as I'm a sucker for a furry and/or feathered face.

Some things I will cover in upcoming article include:

1. Vaccines: Only one is mandated by law. Find out which one and how you CAN get around it and why you should.
2. Spay/Neuter: It does NOT necessarily prolong the life of your pet, and can even cause death. All surgery is a risk - is it one worth taking as does it really alter behavior?
3. How to care for the ever-day illnesses such as snuffles, abscesses, lethargy, diarrhea, hematomas, etc.
4. What to look for in a "good" veterinarian: Some are in it only as a business. Some actually care. What signs you should look for in office staff, and when to run.
5. Animals as companions: They are not inferior to humans, only different. How to teach them to do what you want in a peaceful, fun manner.
6. Animal myth: Dogs do NOT live in an alpha/omega pack (they live in families like we do), cats are NOT solitary (they live in colonies), and other animals myths that affect how we see animals.
7. Animal handling: Sometimes easier than it sounds!
8. Routine care made easy: You CAN trim your dog's nails without her freaking out, or brush the cat without having a band-aid moment.
9. Open letters: Feel free to email me your pet questions to LakotaHecate@yahoo.com. I will do my best to answer all questions, even if it is to refer you to a website, a book, etc.

It is my fondest desire that everyone be able to enjoy their companion animals (whatever they might be!) without fear of exorbitant vet bills as they have the knowledge to make well-informed decisions about what is right, wrong, necessary, and optional to their pet's care.

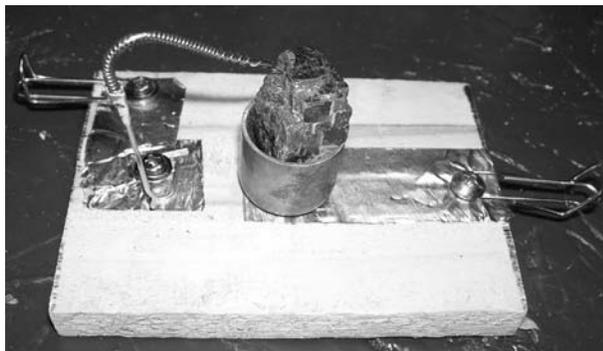


Crystal Voices by Wildflower & Ticom

These days, you can go down to the local ham shop and for a couple hundred bucks pick up a hand-held wideband receiver such as an Icom R-5 with DC-do-Daylight coverage. Yet, there is still something intriguing about the old-fashioned crystal set that continues to attract electronics hobbyists, ourselves included, and encourages them to build and experiment with crystal sets.

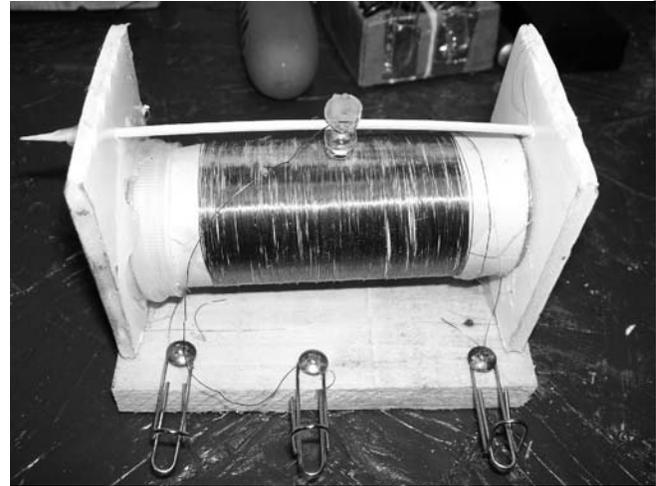
From a survivalist standpoint, crystal sets can be made with very basic components and require no batteries. Since they lack a local oscillator circuit, they also generate no compromising emanations that can be detected by those who look for such things.

Over the past couple weeks at DogSolitude, Wildflower has been experimenting with building a crystal set out of commonly available materials you might find lying around. Stone tools and yer bare hands (almost).

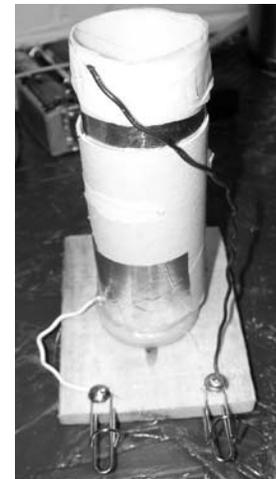


Here we have a picture of the detector crystal. This is the heart of a crystal radio system. The crystal is a piece of Galena purchased at a local rock shop, Nature's Art in Montville, CT. The cat's whisker is

salvaged from a spring taken from a disposable lighter. It was placed in a copper end cap. The base is a piece of scrap Styrofoam, and electrical connections are made with aluminum foil and paper clips. Future experimentation will be done with other minerals such as Iron Pyrite.



I believe the wire for the tuning coil was either salvaged from a transformer out of a microwave oven, or purchased from our (somewhat) local electronic/industrial surplus store, P&T Surplus in Kingston, NY. It's about an hour and a half drive to get there, but well worth the trip. The coil form is a vitamin bottle.



The heart of this capacitor is made from two paper towel rolls covered in aluminum foil and placed one inside the other. He discovered that the performance was less than adequate, so it is being re-designed.

Since we didn't have a high-impedance headphone handy, we had to use a Radio Shack amplified speaker to test the unit. Did it work? With a few feet of wire for an antenna and a modest ground connection we heard a few local stations around 1000 KHz. Sometimes we heard multiple stations on different frequencies at the same time, so selectivity was lacking a bit. However it did work!

Those of you who are interested in experimenting with crystal sets can find a wealth of information via a Google search of that term. For starters, I recommend visiting <http://www.midnightscience.com/>.