

## Radio Shack's DSP40 Signal Processor

by Jim Sorrells, WA9ABB

I have tried many audio filters-ranging from simple LC filters to active IC circuits and even expensive DSP (digital signal processing) add-ons. Radio Shack recently released the DSP40, an inexpensive DSP device. The 2-by-4-by-7-inch "black box" performs well, despite its \$79 price.

The controls are straightforward; there are three modes: CW, SSB, and NR-and three bandwidths. The volume control has the on/off switch, and there is a switch to bypass the unit. The DSP40 has a built-in speaker with adequate audio. The unit operates from 12 volts DC and it comes with a power cord. It has a 1/4-inch headphone jack on the front panel, and a 1/8-inch external speaker jack on the back. Audio output at the headphone jack is weak, but the speaker jack works well with headphones. The skimpy manual omits a schematic and fails to adequately describe the notch filtering function. But you don't need a manual to operate the DSP. I tried mine with a Kenwood TS850S and with a cheap shortwave receiver.

Improvement with the shortwave receiver was dramatic. As expected, the TS850S's crystal filters rendered any advantage of the DSP on SSB signals subtle, except that in the SSB and NR modes the DSP40's notch filter magically eliminated heterodynes. In lower-performance receivers, the unit reduces the adjacent channel "monkey chatter" and background noise that contribute to operator fatigue. The CW mode effectively selects one signal from among many, but the DSP40 is not designed for the digital modes. Its small size and simple operation make it a natural for mobile service, and it even comes with a mobile-mounting bracket. The DSP40 equals the JPS NIR-10, which costs four times as much. And the DSP40 is a set-and-forget system, while the NIR-10 requires tweaking for best performance. The DSP40 enhances any receiver needing extra selectivity and noise reduction, but may not greatly benefit a top-of-the-line rig with all the right filters. On a scale of 1 to 10, I rate it an 8.

from the Pikes Peak PM "Zero Beat"-Ron Deutsch, NK0P, Editor, via the July '94 "W3OKCorral"- W3PYF, Editor

## The Other Guy's Preferences

by Judy Roush, AA7UC

Tuning the bands in search of CW DX this morning, I heard an African station call CQ. Within seconds he had a pileup. I listened for a few minutes and, following his clear cues, prepared to exchange only basic information. But many stateside callers failed to pick up on his operating preference. They prolonged their QSOs with long-winded dissertations. After each "BK TU" the DX station consistently replied, "I will QSL via the bureau. TNX and 73."

Please remember to listen before you answer CQs, and pay attention to what the other guy says. Some won't be as patient. Never forget that the person on the other end may not understand much English. Don't assume the other guy is fluent in English unless you're working an English speaking country. It's ironic that those long dissertations, which waste everyone's time are often lost on the very person to whom they were directed.

Also, remember that you are a guest of the calling station. The African station may have understood English very well. Maybe he just didn't feel like ragchewing. Since he called CQ, he had a right to whatever kind of QSO he wanted. So listen; learn the caller's preferences. Then jump into the breach.

from the May-June '94 Kachina ARC (Show Low, Ariz.) "Kachina OSO" AA7UC, Editor "Dope Sheet"

## July Meeting Program

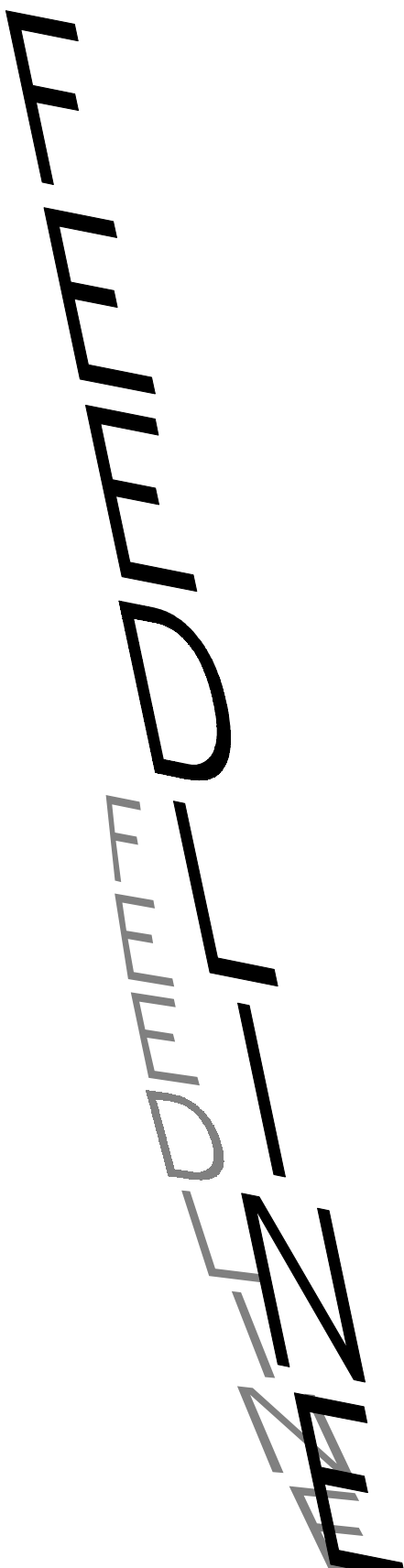
The July 27 meeting will be a review of the Field Day and Swapfest activities of the past month. This is an important activity in any large project - taking a look at what went right and what went wrong so that every year will yield improvements over the last.

## Puzzle de Jour....

Here is an anagram. Rearrange the letters to build a new word(s) that have some relation to the given phrase.

NO WIRE UNSENT

Answer on page three.



# Condo Communicator - Volume III

## *More tips on operating from restricted locations.*

### STATION DESCRIPTIONS

Kim, N5OP, describes his former condo abode: "I had limited success with a long-as-I-could-make-it vertical dipole that was capacitively loaded on both ends. It worked best on 40, 30, and 20 m but I had RF feedback/grounding troubles on 15 and 10 m. And the RFI problem was difficult to address, since I was doing all of this clandestinely. I camouflaged the antenna with the paint they were using to repaint the condos and it really was hard to see :-). I put it up on a cloudy weekday, about 10 AM, so as to have as few witnesses as possible! I fed it with 450 ohm ladder line through a tuner and worked quite a lot of DX (VE, XE, JA, ZL, VK and a very few Europeans) on whatever power level I could get away with (50 to 100 W). It was fun and I felt that I had pulled it off for the most part, but learned that I couldn't operate as freely as I wished due to RFI and neighbors who objected to the basic idea :-("

Eric, WD8RIF, was sent overseas for Desert Shield/Storm: "...and the gear I took was a Sangean AT-803A receiver and a 31 meter dipole, for listening. I strung the wire between our tent and the neighboring one. It worked pretty well, until the wind destroyed the dipole, at which time I made it into a random wire."

Upon returning: "...I found a nice flat, and the landlord there allowed, nay, helped install a 20-foot mast supporting a 2m quad, a 2m ground plane, and a ten meter dipole. The 2m work was mostly packet, and unfortunately, the 10m was mostly useless due to neighborhood electrical noise. I also had a 31m dipole strung along the ceiling for the AT-803A, the same rig that went with me to sand-land."

Mike, KC7IT: "FYI: I once worked a guy in Hawaii via OSCAR-13 who was in a restricted condo situation. He kept his antennas and rotator on a free-standing tripod (like the Radio Shack variety) in his garage, and just walked it out onto his driveway whenever he wanted to operate. So long as you can see the part of the sky you need, altitude is no advantage in satellite work."

Howard, KE7QJ: "I live in a single story townhouse with a flat roof - thus I can erect a 30-m length inverted-V, fed with ladder line, and work 10-40 via an MFJ-948 tuner. Rig is an IC-735 at 100 watts. Works great, but, still, 5-9 into some of one of my neighbor's telephones....We're working on it. "The townhouse covenants say 'no antennas unless completely concealed from public view.' Well, you CAN see mine, if you know exactly where to look, and from where."

Howard goes on to describe this inverted-V antenna: "...the center point of the inverted V is about 7' above the wood roof. There isn't much metal around, except for the heat pump and its ductwork below the antenna and feedline: far more directly underneath the feedline than the antenna itself. TVI is minimal, although my telephone RFI neighbor reported it too, along with light interference to her stereo. Her TV is

connected to CATV, and I think her stereo is, too. This is my neighbor to the north, and it's a 2-story unit. I would guess that her upstairs wiring, in-line broadside to my antenna, is picking up my signals. My neighbor to the south, literally closer to my antenna, report NO interference of any kind. Then again, they don't have fancy electronics."

As far as grounding is concerned, Howard states: "I am in a one-story unit, thus my station is at ground level. The units are 8 years old, so they're fairly new. The ground wire of the electrical outlets connect to the outside cold water pipe. If I ran a heavy wire to my 'cold water pipe' it means I'm actually forming a ground loop! Thus, I have no real ground. But my dipole has its own built in RF ground, so who cares? If I REALLY want to get serious, I'd get a galvanized ground rod and attempt to drive it into this desert soil. But the nearest soil is 14 feet away! That's going to be resonant on some band or another."

Ed, KM6CG: "My QTH is a third floor apartment. I use a Yaesu FT-301D which is a transistorized 80-10m transceiver. It's supposed to put out 100 watts when equipped with a 20 amp supply. I run it with the gain backed off and I put out about 20 watts. I run 40 M CW exclusively. I don't really have much luck with SSB at these power levels, but that's OK. I got this on the air to build my code speed and don't operate as much, now that I got over the 13 WPM test."

"My antenna is a 40 M 'Coaxial Dipole' as described in 73 in 1981 or thereabouts. It runs around the living room and kitchen ceilings. I use a counterpoise, since I don't have a decent ground. I have a low pass filter, and I don't get into OUR TV or any of the neighbors I have checked."

"I live in San Jose, CA. I've contacted about 30 states and two Canadian provinces. 40M is good mostly after dark for me. I can hear a band of stations in the Midwest (IL, OH, TN, KY) and another in the west (NV, UT, AZ) as well as lots of Los Angeles and Vancouver/Seattle stations. I hear JAs in the middle of the night, but haven't worked one yet. Haven't tried hard though. I have trouble hearing east coast stations like NY and NE, although I've got a few."

"I also run local two-meter packet. My antenna is a 1/4 wave mobile mount with a 1/4 wave wire dangling, to make a 1/2 wave dipole. It's secured to a strip of aluminum (hanging file folder rail) and it sticks out the window about 18 inches. It's secured by sitting something heavy on the other end."

### TECHNICAL CORRESPONDENCE

Be on the lookout for a book by Jim Kearman, KR1S, "Low Profile Amateur Radio, How to get on the air from almost anywhere." This book is at the printer right now and should be available soon for \$8.00 from the ARRL and dealers. Jim tells me that it will deal with keeping a low profile (like a spy), setting up a home station, setting up in the field, operating

mobile, etc., and will cover HF and VHF/UHF. Some simple antennas are included. It will also address RFI. I'll review it as soon as I can get a copy.

I'm sure many of us would like to hear from anyone with some theories about the RFI (or lack of it) reported by this issue's contributors. Some folks have little or no RFI, and others have to really restrict their operations because of it. Why? The type of rig used? The type of TV, stereo, and telephone? Grounding? (Which may actually \*cause\* RFI?) Type of transmitting antenna or its placement? Your explanations would be most welcome.

### BIBLIOGRAPHY

Only one article for the library this go-around:

1. Ford, Steve WB8IMY, editor  
Zack Lau, KH6CP/1, guest author  
Limited Space Antennas  
QST  
December 1992  
pg. 85 As Steve says in the introduction to this Q&A column, "ARRL Laboratory Engineer Zack Lau, KH6CP/1, has spent years grappling with the challenge of operating limited-space environments." A most informative article about losses, RF fields, tuners, and so forth. You can have great SWR but crummy radiation. Read this.

Okay folks, let's hear from you! Send your notes, ideas, station description, war stories, and so on to me at:

Packet: N00QS @ W0GVT.#NECO.CO.USA  
Internet: awinterb@du.edu  
US Snail: Art Winterbauer  
10047 E. Mexico Ave.  
Denver, CO 80231

Also, listen for snippets of this newsletter on Hap Holly's (KC9RP) Radio Amateur Information Network (RAIN), heard on various nets or by direct dialup (708-299-INFO, no charge except for long-distance costs).

(By the way, this newsletter is no longer distributed via packet. Local packet congestion prohibits uploading to either of the local forwarding PBBSS, even in tiny hunks. Besides, you should have heard the HF forwarding stations how!)

73,72. Art.

### *Wanted to Buy.....*

Used 14" or 15" VGA monitor.  
Call Chad at 821-2257 (h) or  
461-7860 (w) if you have a deal!

Rick is looking for a cheap dot matrix printer to replace a dying Epson printer. 467-4817 (days).

Contact the editor if you would like to place an ad in the Feedline.

# Headphones

by Paul Wilkins, AB4CY

The front panel of your receiver or transceiver has a phone jack, where you can plug in a pair of headphones. Doing so disables the built-in loudspeaker. Use of headphones (also called earphones) has several benefits. Headphones reduce the room noise so you can hear signal from the radio better. But they can also be a courtesy toward those who don't care for CW, ham chatter, or static. Headphone elements evolved from magnetic telephone "receivers" still in use today. They were designed with several thousand ohms of resistance to match the high output impedance of a vacuum-tube amplifier. "Crystal" phones, an exotic variation, use piezoelectric crystals to produce sound. These phones have even higher impedance, and good frequency response-much better than magnetic phones, which typically "cut off" above 3500 Hz.

All of today's headphones are of the "dynamic" variety-built like miniature permanent-magnet loudspeakers. Their impedance is low-under twenty ohms- for today's solid-state amplifiers. In handheld or QRP ham gear, a major portion of battery capacity goes into driving a loudspeaker. Using headphones will yield at least twenty-five percent more battery life. So if you don't use headphones, get a pair and try them. But be careful to keep the audio level down. Headphones can produce enough sonic energy to damage hearing over time. from the July '93 Foundation for Amateur Radio "Auto-Call"-Doug Allen, N3FHM, Editor

## From Leyden Jar to Telegraph

by Joe Linker, K30SH

Dean von Kleist of the Cathedral of Kamin invented the first capacitor in 1745, some say. Others credit Professor Musschenbroek of Leyden, who tried to inject electricity into a glass bottle of water while his associate held it in one hand. When Musschenbroek accidentally touched the electrostatic generator to his associate's other hand, the poor fellow got the jolt and Musschenbroek got the credit for inventing the Leyden jar.

Benjamin Franklin demonstrated that lightning carries a charge similar to what the friction generator put in the Leyden jar. He even mused about using electricity for communications. Nineteenth-century

industrialization created demand for speedy communications, and the electromagnet's magnet's invention made it possible. Hundreds of scientists and inventors accumulated knowledge of electricity during the period.

Oersted showed that electrical current exerts magnetic force. La Place proposed that magnetic compass needles might receive messages carried by wires. Ampere put small compasses near the ends of 26 wires, so the needles could signal letters of the alphabet. In 1820 Hussar Captain Baron Schilling produced a telegraphic instrument that used only five magnetic needles-and required only five wires (with ground as the return). Harrison G. Dyar operated a telegraph on Long Island in 1826. Ten years later, school master Joseph Henry developed the electromagnet telegraph and operated it between two buildings at Princeton University. A Germany's University of Gottingen, Gauss and Weber devised a magnetic telegraph in 1833. The following year, Sir Charles Wheatstone and Sir William Cooke obtained patents for their telegraph instrument, England's first. Those events set the stage for an obscure New York University professor.

In 1835 Samuel F.B. Morse proved that signals could be transmitted by a single wire, using his serial coding technique. Then, driven by a fierce desire to gain his invention's acceptance, Morse gave a public demonstration-only to be ridiculed by nearly everyone. Five years passed before Congress saw the value of appropriating \$30,()00 to construct an experimental line from Washington to Baltimore. Yet the first message Morse clicked over that line, "What hath God wrought?" grabbed public attention and made him famous. Morse's invention quickly eclipsed the express coach, Pony Express, and carrier pigeon-because of its speed. Morse had at last unshackled us from the speed of human travel. (Napoleon's semaphores were far faster-but, with "human repeaters" every few miles, they required an impractical amount of manpower.)

Three days after Morse's historic message, a dramatic incident demonstrated the telegraph's value to mankind. At the Democratic national convention in Baltimore, Martin Van Burden seemed the certain choice, yet James Polk won the

nomination. When the telegraph delivered the news to Washington, skeptics refused to believe it. But people arriving by train hours later confirmed it-demonstrating the telegraph's incredible speed, and its accuracy as well. After that, Morse easily raised money for his next venture, and he extended the line to Philadelphia and New York. Soon small telegraph companies began to spring up in the East, South and Midwest. In 1851, railroads started stringing telegraph lines along their tracks, so they could dispatch their trains more quickly. Western Union's predecessor also began operations in 1851, and the company completed the first transcontinental telegraph line in 1861.

From the November '93 Penn Wireless Association "X-MitterX-Dave Helter, K3TX, Editor

## CARC Minutes

June 22, 1995 - At the Field Day site.

Meeting called to order at 6:35 p.m., by Pres., Bob, KB9MS. Introductions.

Wake Digital Communications Group (WDCG) - Rhett, KB4HG. The Fayetteville-to-Raleigh-to-Greensboro link is working. The transceiver on RNCLAN has been replaced.

Piedmont-Coastal Repeater Network (PCRN) - Ed, AB4S. Norbert, WB4UBU, put together a repeater map. All supporters of PCRN will get a copy at the next mailing (hint, hint, ...).

Treasurer's Report - Will, K4IWW, reported:

Savings:	\$1,837.96
Checking:	396.63
C-O-H:	9.00
Total:	\$2,243.59.

Dues still being received.

SWAPFEST - Jim, N4RSE, 'FEST Czar. Things are going together, except for the mailing getting tripped up. Marcian, KC4TOI, will get a PA; Security sub-Czar, Ed, AB4S; Flea-market, Dave, N4ELM, and John, KE4IZX; K4IWW, can do the talkin, again. Parking is a big need. Thanks to Jan, N4UT, (and Harry, AB4T) who handled the parking in superb style for MANY years. THANKS!!! Also, SETUP will take place on Friday, July 14. It should be easier this year, since we will NOT have to haul tables from the rental place! The prizes have already been handled by Mike, AC4TG.

The rest of the meeting was devoted to last-minute planning for Field Day.

n4ue

Anagram: Western Union

## Cary Amateur Radio Club

The Cary Amateur Radio Club meets on the fourth Thursday of the month, 7:30 p.m. in the lower level of the Christian Life Center of White Plains United Methodist Church. The June, November, and December meetings are held off-site. Call for location of those meetings. **Next Meeting: July 27, 1995.**

### 1995 Officers

KB9MS	Bob Lukaszewski	833-0199	President
KB4LFH	Mike Crowder	319-9556	Vice-President
K4IWW	Will Harper	467-0224	Treasurer
N4UE	Herb Lacey	467-9608	Secretary

## Feedline

Feedline is a member-supported publication of the Cary Amateur Radio Club and is published monthly. Deadline for submissions is the second Thursday of the month.

Editor: Tom Klimala, KM4LB  
1545 Seabrook Avenue  
Cary, North Carolina 27511

## Rig Abuse by Power Supply?

by J. E. (Harry) Duddington, G4ATH

### *Q: Can a power supply damage my rig?*

A: Yes. Transistors generally fail shorted. When a "series-pass" transistor in a regulated power supply shorts, it connects your equipment to the full, unregulated voltage across the supply's reservoir capacitor.

Most transceivers and PA's designed to operate on 12 volts will tolerate 10 to 14 volts. They don't take kindly to 18 or 20 volts. Some high-quality power supplies incorporate "crowbar" protection, using an independent circuit to monitor the output voltage, and - if that voltage exceeds a pre-set value - trigger a thyristor (SCR) that shorts the power supply output. This protects the load by blowing the power-supply fuse. In a power supply for an expensive rig, crowbar protection makes sense.

### *Q: What happens if I short-circuit my power supply.*

A: That's a good question to ask *before* you buy a power supply...and ask for a demonstration. Sooner or later you'll short circuit any supply you buy. If it can't handle a simple short without self-destructing, don't buy it!

Electronic over-current protection is inexpensive with modern regulator IC's; they include all the functions necessary to protect both themselves as well as the load. But the cheap and dirty supplies may not have electronic protection, leaving an input fuse as their only line of defense.

So to provide your transceiver maximum safety, get a power supply that features electronic overload protection and a crowbar on its output. Install output fuses on any cheap supplies you own.

from the Feb. '95 Southwest Virginia Wireless Assn's "The GroundWave" - Bill Svec, WA4BKW, Editor.

