Viewing Pager Data - Easy!

PD204.EXE

I suspect you're going to be hearing a lot about this particular program in the next few months. Rod, N2RVM called me about a week ago and asked me if I had a 741 Op Amp in my junk box. Within an hour I was over his house and we constructed the simple interface that was described within the program docs. This seemed to easy, but within an hour the digital data that I often find offensive was being displayed on my monitor. Realizing what I was watching, I immediately pulled the cable so as not to break any laws!

The interface consists of a 741 Op Amp, 4 diodes, three resistors, and three caps. We built ours inside the shell of a DB-25 connector so you can imagine how simple it really is! The interface connects to your computers serial port and must be fed from your receivers discriminator output. This sounds complicated, but it's very simple with the information that was included. In my 2006 I simply soldered a wire to pin 9 on the discriminator IC and we were in business! But wait, the story gets better! Searching further Rod found a program called "trunker" - it too uses the same interface. Using "trunker", tuning your receiver to the annoying data channel we usually lock out, there before my eyes were three columns of data. In column 1,

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frequencies associated with the trunking system were being listed. Call groups in a second column and some sort of system data in the third. Individual data seems to follow the frequencies as the system "trunks" the data. What we discovered listening to the NJ State Police system was that the data being displayed suggests that the system is state wide and frequencies used in Southern NJ were listed though the actual signals were not able to be received from our location. In another scenario we tracked some of the frequencies to SMR services, probably maintained by Motorola as well. My guess is that many of these systems are not exclusive to Police communications. This will require more investigation. Ah, but wait - it gets even better! You guessed it, Rod found a third program called "MDT". Imbedded within the zip file was a separate file called MDT STUFF. These appear to be the compiled version of the "C" source code mentioned in the last issue. Running the program we got cryptic messages that simply said "*****0% Buffer Full" On one occasion we did get real English that printed "User ID Log on". The "ta-do" about this program on the news groups is very exciting and I suspect that a refined version is in the works. For anyone who is interested, we can send a separate e mail with the mentioned files attached. All three programs run under DOS - they will not run under any version of Windows!

Scanner Antenna Review - Which is the Best?

Shortly after purchasing my AOR 8000 I found myself searching the USENET scanner related groups, seeking out tips, tricks, mods and suggestions to allow me to get the most from my new toy. It didn't take long to see that everyone had their own opinion as to the best choice for add-ons such as batteries, carrying cases and antennas. Ah, the antenna - without it the best of scanners are worthless so I decided to do some research and see what the market had to offer. Within a few days I found several types, colors and sizes - metal, rubber, colored, flexible and firm. There were retractable, collapsible, stubby and long versions. If I didn't know better I'd say we were reading an ad for some sort of kinky sexual appliance! After a month of reading and asking questions I quickly came to the conclusion that the only way I was going to see which one was truly the best was to try each one and perform some sort of evaluation.

The Evaluation Method

While the AR-8000 provides an LCD S-meter, I've found it to be the perfect example of a "relative" signal strength. I decided to use the meter on my Icom R7100, mounting each of the selected antennas directly to the receiver using a right angle N to BNC adapter. Using the AR-8000's antenna as the baseline for comparison, each antenna was checked on several frequencies within each frequency range. The numbers represented indicate the number of "S" units each antenna delivered AS COMPARED TO THE STOCK AR-8000 ANTENNA. Hence "2" indicated that the particular antenna performed 2 "S" units better than the stock 8000 antenna. A value of 0 indicates the performance at that frequency was equal to the stock AR-8000 rubber duckie, while a negative number (-1) indicates the AR-8000 was better by that amount.

So as to arrange the data in a format that can be easily compared, the antennas presented from left to right are as follows, while the vertical column represents the frequencies at which each antenna was tested.

1. Radio Shack collapsible whip with loading coil.
2. Comet SH-55
3. Diamond RH-77CA "New Improved Version"
4. Maldol FR-30
5. Icom Dual Band 2m / 440
6. Yaesu Dual Band 2m / 440
7. Radio Shack PRO-43 Stock Antenna - Touted as " best all around antenna"
8. Miracle Baby

The Results!

	1	2	3	4	5	6	7	8
35.22	2.5	1.5	1.5	1.5	.25	0	-.3	-.4
46-49.00	3.5	2	2.5	2.5	.5	.5	-.5	-3.5
72.18	1.9	.4	.4	.4	0	0	0	n/a
95.5	5	2	2.75	3	1	1	0	-2.5
106.7	3.5	-1.5	.5	-1.5	.5	.5	0	-2.5
119.5	2.5	1	1.5	1	.5	.5	0	-.4
152.54	-.5	0	.5	-2	0	-.5	.5	n/a
162.55	0	.5	1	-3	-2	-3	-1	-6.5
224.06	3	3	3	1.5	0	0	-.5	-2
412.625	-1	-1	0	-1	0	0	-2	-2.5
452.100	0	1.2	.75	.25	1	1.2	1.7	0
470.8375	.5	.5	-.5	1	1.5	2	2	-.75
856.9625	-.1	-.1	.1	.1	.3	.3	0	.1
890.000	-2.5	-3	-1.5	-4.5	-2	0	-1	1
929.115	1	-2	0	-3.5	0	-.5	-1	0

The Winners

35.22	Radio Shack collapsible whip with loading coil
46-49.00	Radio Shack collapsible whip with loading coil
72.18	Radio Shack collapsible whip with loading coil
95.5	Radio Shack collapsible whip with loading coil
106.7	Radio Shack collapsible whip with loading coil
119.5	Radio Shack collapsible whip with loading coil
152.54	AR8K, Comet SH-55, Icom Dual Band
162.55	Diamond RH-77CA
224.06	AR-8K, Radio Shack, Comet SH-55, Diamond RH77
412.625	AR-8K, RH-77, Icom, Yaesu
452.100	Comet SH-55
470.8375	Maldol FR-30
856.9625	Icom, Yaesu Dual Band
890.000	Miracle Baby
929.225	Radio Shack collapsible whip with loading coil

Comments and Observations

1. Several antennas including the Comet, Diamond, Yaesu and Icom were originally designed as enhanced transmitting antennas for the two meter and 70 cm amateur bands. I check the transmit performance against the dual band rubber duckie that came with my Yaesu FT-51 and was very surprised with the results. While the received signal strength did vary a bit, there was NO noticeable difference in the transmitted signal. Effectively, all these antennas are something resembling a quarter wave at their respective amateur frequencies. Antennas such as the Comet and the Diamond will help you hear the signals, but don't expect the station at the other end to hear any difference!

2. I created a simple counterpoise that consisted of a 15-19" piece of wire, with a paper clip soldered to one end. The clip was bent so as to allow it to clip around the ground portion of the BNC connector of the antennas tested. Depending on the frequency, this simple addition of a counterpoise increased the signal by as much as 2.5 S units, particularly when the radio was sitting on the table. This signal gain WAS seen in transmit as well as receive. The effect of this counterpoise is lessened when the radio is hand as our body acts in the same way as the wire. I strongly recommend this simple addition if your scanner is worn "belt side."

3. As with most receiving antennas, longer is usually better. This is attributed to a larger capture area. My own conclusions, based on the fact that I live in a very high RF congested area near New York City is that the standard AR-8000 antenna is probably the best all around antenna. Adding the "free" counterpoise when the radio is worn "beltside" raises the performance to equal most of the antennas tested. And while some antennas might show a definite peak at certain frequencies, most scanners are prone to intermod in high RF environments, thus causing the gain of the antenna to degrade receiver performance rather than enhance it.

I'd like to hear your comments and I'd like to pass along my thanks to those who e mailed me with their favorite picks. A special thanks to Marv, WA2BFW and Steve, WI2W who loaned me several of the antennas that I tested.

Origins
This past Presidents I was one of the fortunate people to have the day off. The sun was out and I decided it was a great day to do some exploring! I called Rod, N2RVM and asked him if he was up for some tower hunting. I've heard that the Bergen County Police Department had a great transmitter site up in Mahwah, NJ and I had always wanted to check it out. Checking the trustee FCC data base, all the BCPD transmitter locations were listed as "Geiger Rd..". Within minutes I had a detailed map slipping out of the printer compliments of Street Map 4.0. Scanner and

Solar Powered @ BCPD Tower

camera in hand, we hit the road Northbound on Route 17.

Rule #1 - don't believe all maps. Geiger Road is suppose to exit to Rt.. 17 just at the NY/NJ border. We later discovered that there was a 100 yard stretch of dirt road that was actually the continuation of Geiger Road and it did dead end at the shoulder of Rt. 17.

Anyway, after a few wrong turns we found Geiger Road; at best it was an oiled road with loose asphalt in spots. Several switchback turns up this mountain road and we arrived at the summit. The property was posted with several signs identifying it as Bergen County Police property. Two towers stood at either side of the road, poised like guards at the gates to the edge of the earth. To the left an old rusted tower with three small microwave dishes - perhaps 100 ft in height. Across the road, surrounded by an old fence and barbed wire, the main tower, perhaps 150 ft in height. We parked and quickly jumped out of my truck to the muddy ground, greeted by a biting wind. Walking around the site I noticed two peculiar antennas outside the fenced in area. Sitting atop two 12" diameter poles, two 4 bay folded dipole arrays and two 3 element yagis faced the general direction of New York City. Walking closer I discovered that beneath each antenna a solar array seemed to be powering the system. My best guess is that these are some sort of solar powered repeater. The FCC database doesn't mention these, so the installation remains a mystery. Anybody have any info on these?

The main tower had several corner reflector antennas for each of the UHF systems BCPD uses. I also spotted a few white fiberglass enclosures that are used for the Bergen County MDT system that is used by every municipality in Bergen County. For those of you who haven't taken the time to tune in, the Bergen County Police operates an extensive system that has a presence in most of the public service bands. I've included a list of the more active frequencies in the BCPD system.

F1	477.1625 Dispatch(R)	F2	477.1625 (S)
F3	477.1875 County Alert	F4	477.2125 Tactical Repeater
F5	477.1875(S) Car - Car	F6	477.2125(S) Tactical / Radar
F7	472.7125 Sheriff Dept	F8	472.7125(S) Sheriff Car-Car
F9	477.2875 (New Assignment)	F11	155.550 Varied Uses - Old NARC Repeater
F13	154.280 Fire Mutual Aid	F15	Bergen Fire

Comments From John, KB2SGJ

HI Guys:
Great having the net back! I will be out of town next week and probably will miss the next 2 nets. Thought that I would just pass along some comments for the e-mail newsletter.

I found the i-net to be a tremendous source of info on ham, scanner and shortwave listening (as you probably knew all along). On a rec.radio.scanner I received a reply from Bob Parnass, who you may recognize as a frequent contributor to MT and PopComm, on the subject of radio mods. With this info, I was able to wire an output jack from the detector of my Icom R7100. I had done this bit of surgery to my Uniden 350A but the Icom was a little more complicated, like comparing a

Bottom of BCPD Tower

tonsillectomy to coronary bypass. Anyway, the patient is doing fine and the Universal M-400
works much better using the baseband audio output.

Another piece of info that I picked up on was the scan speed of the new Icom R10. I haven't seen this radio yet other than the full page Icom ads but it looked like something that could have been a real competitor to the AR8000. Reading the specs though has made me to think otherwise. It scans at a mere snails pace of   6 CHANNELS PER SECOND !!! Can you believe this? Are the engineers at Icom nuts or something ?? I don't understand the logic behind this.

I love my Icom R7100 but the main complaint I've had is with the scan speed. I know there are mods that can easily double the speed but in doing so, it also reduces the scan delay by 1/2. The new R8500 also suffers from a slow scan speed amongst other design flaws, but I did expect them to get it right sooner or later.

BCPD Tower

When I check into the next scanner/swl net, I hope to have some interesting frequency info on Guadalajara, Mexico. I will be there next week and I plan on bringing my Uniden XLT100. I would not chance bringing my AR8000 through customs for fear of losing it. At least if the Uniden gets confiscated at the airport I won't have a stroke. I'll also have my trusty Yacht Boy 400
along for the trip.

On my last trip to Guad, I brought my 2 meter HTX202 and got on some of the local repeaters. There must have been at least 4 active repeaters with terrific coverage of the city and surrounding burbs. The Mexican hams were cordial but all QSO's were en Espanol.(No problema para mi)
That's all for now
John Griffin
JPGRIFF@WORLDNET.ATT.NET

WABC HOME PAGE
A few weeks ago I stumbled upon a neat page that featured lots of photos from the WABC transmitter site in Lodi, NJ Knowing the C.E., I called Bill and asked him if he ever visited the page. He had, but he commented that the data was somewhat out of date. I has some trivial info to add to the page so I e mailed the person who runs it and we exchanged several rounds of e mail. In the end, I got Bill Krause and Jim together and the WABC page now reflects the present image. Visit this unique WEB site and check out a behind the scenes view of WABC! Here's some of the e mail comments...

Hi Bob,

I want to thank you very much for connecting me with Bill Krause! He was very nice and answered all the questions I had.
He took me on a tour of the WABC transmitter site last Sunday which resulted in part II of my WABC transmitter tour. URL

http://www.exit109.com/~jimh/wabcnow.shtml

Regards,
Jim Hawkins - WA2WHV

BCPD Tower Mahwah, NJ

TRUNKING SCANNERS

By now virtually all scanner ethusiasts have heard about Unidens announcement concerning the release of two scanners that will be able to track individual conversations on a Motorola trunked system. Limited by the deadline of completing this issue of The Urban DX'er, I did manage to come up with some preliminary data and pictures. More will follow in subsequent issues.

UNIDEN BC235XLT SPECIFICATIONS

Channels:
  300 channels (30 channels x 10 banks)
  (20 channels search-skip memory)
  (20 channels service search skip memory)

Freq Range (Mode):
  29 to 29.7 MHz (10 meter amateur band)
  29.7 to 50 MHz (VHF low band)
  50 to 54 MHz (6 meter amateur band)
  108 to 136.9875 (Aircraft band)
  137 to 144 MHz (Military land mobile)
  144 to 148 MHz (2 meter amateur band)
  148 to 174 MHz (VHF high band)
  406 to 420 MHz (Federal gov't land mobile)
  420 to 450 MHz (70 cm amateur band)
  450 to 470 MHz (UHF standard band)
  470 to 512 MHz (UHF ITF band)
  806 to 956 MHz (Public service band, except cellular band)
  162.400 to 162.550 MHz (.025 increments; WX channels)

Uniden BC-235

Display:
  LCD (with back light) 10 digits and special annunciator
  (Bank 1-10, SCAN, PRI, DLY, SRCH, BATT, HOLD, WX, L/O,
DATA, P, KEY/L,
  POLICE, FIRE/EMG, AIR, MRN, TRUNK)
Controls/Switches:
  Volume control with power off/on switch
  Squelch control
External jacks:
  ANT jack: BNC type
  Stereo headphone jack: 3.5 mm
  Compatible 3.5 mm monaural earphone
Internal speaker:
  8 ohms 0.5 watts
Power requirements:
  Ni-Cd battery 4.8 VDC: 800 mAH (included)
  or AC 120V 60 Hz (with AC adapter AD-70U)
Scan/search rates:
  Max 100 Ch/sec (scan)
  Max 100 step/sec (Turbo off) - VHF low/high band (search)
  Max 300 step/sec (Turbo on) - VHF low/high band (search)
  Max 100 step/sec - UHF/aircraft band (search)
  Max 100 step/sec - public service band (search)
Scan delay:
  2 seconds
Audio Output:
  Max 180 mW
Antenna:
  50 ohms (impedance)

Operating temperature:
    Minus 20 degrees to 60 degrees Celsius

Storage temperature:
    Minus 30 degrees to 60 degrees Celsius
Size:
    2.5 inches wide, 1.7 inches deep, 6 inches high
Weight:
    12.6 oz.
Accessories:
CRX120 charger, 2 rechargeable long life Ni-Cd batteries, AC adapter, rubber
antenna, belt clip, owner's manual, frequency guide, trunk system frequency
guide, earphones

BC895XLT Desktop Trunking Scanner

Similar in appearance to the BC890XLT--except with the capability of receiving trunking
signals--this new desktop" Trunk Tracker" is the answer public service monitoring in areas where
the new 800 MHZ trunking signals are in use. Like the BC235XLT above, this unit is fully
compatible with Motorola's type I, II, IIi, and hybrid systems.

The 895 will have 30 trunking indicator lights, built-in CTCSS (with tone encode and tone
reading planned), a signal strength meter, and an RS-232 port for computer download and
control. For conventional scanning uses, this scanner features wide frequency coverage (29-54,
108-174, 216-512, 806-956 MHZ--less cellular), 200 memory channels, 100-channel-per-second
TurboScan, weather alert, CTCSS (optional), channel activity counter, 10 channel priority, search
autostore, tape recorder output, memory channel transfer, and much, much more!

Uniden BC-895 Trunking Scanner